CUY-90-14.90

PID 77332/85531

APPENDIX EX-31

CUY-090-1637 PID 0.030
(Reference Document)

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

Innerbelt Bridge
Construction Contract Group 1 (CCG1)

Revision Date: 1960

CUY-90-16.37 ± CUY-77-15.62 ±

210 S

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.

COMBINED LINE DATA

LENGTH OF PROJECT PART 6 [I-71-5(6)247]	= 668.53'	= 0.126 MILE
LENGTH OF PROJECT PART 7-A [I-77-5(1)162]	= 1203.24'	= 0.227 MILE
LENGTH OF PROJECT PARTS 7-A&B [I-71-5(8)248]	= 4643.73'	= 0.879 MILE
TOTAL LENGTH OF PROJECTS	= 6,515.55'	= 1.234 MILES
LENGTH OF WORK PART 6 [I-71-5(6)247]	= 3885.53'	= 0.735 MILE
LENGTH OF WORK PART 7-A [I-77-5(1)162]	= 1395.12'	= 0.358 MILE
LENGTH OF WORK PARTS 7-A&B [I-71-5(8)248]	= 10,577.65'	= 2.003 MILES
TOTAL LENGTH OF WORK	= 16,358.30'	= 3.098 MILES

INDEX OF SHEETS

SHEET NO.					
1	TITLE SHEET	36-39	DRAINAGE PROFILES	137-144	RAMP E - 10 OVER RAMP E - 8
2	SCHEMATIC PLAN	40	DRAINAGE DETAILS		
		41-47	LIGHTING PLANS	145-155	BR. NO. CUY - 21-1573
3-4	TYPICAL SECTIONS	48	LIGHTING NOTES	156-163	BR. NO. CUY - 21 - 1559
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7	GENERAL NOTES	53-59	EXISTING UTILITIES	171-172	PIER CAP PLANS
8-11	QUANTITY CALCULATIONS	60	CROSS-SECTION KEY SHEET	173	END DAM DETAILS
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		91-97 & 91-A	RIGHT OF WAY	175	RAILING AND GUARD RAIL DETAILS
		98-98A	GENERAL NOTES FOR STRUCTURES	176-177	LIGHTING DETAILS
15-20	PAVEMENT DETAILS	99-99A	ESTIMATED QUANTITIES	177A-177B	SIGN BRIDGE DETAILS
21	OMITTED	100-113	BR. NO. CUY - 42- 1843	178-181	OMITTED
22-26	ROADWAY PROFILES	114-136	BR. NO. CUY - 42 - 1854		
27-31	MISCELLANEOUS DETAILS				
32-35	DRAINAGE PLANS				

LINE DATA

LENGTH OF PROJECT				
CUY-21-15.32 (WILLOW) I-77-5(1)162	STA 30+41.88	TO STA 42+45.12	= 1,203.24'	= 0.227 MILE
CUY-42-18.42 (INNER BELT) Part 7-A	STA. 64+68.53	TO STA. 83+09.31	= 1,840.78'	
CUY-42-18.77 (INNER BELT) Part 7-B	STA 0-200	TO STA. 26+03	= 2303.00	
		TOTAL I-71-5(8)248	= 4643.78'	= 0.879 MILE
LENGTH OF WORK				
CUY-21-15.32 (WILLOW) I-77-5(1)162	STA. 23+50	TO STA. 42+45.12	= 1895.12'	= 0.358 MILE
CUY-42-18.42 (INNER BELT) Part 7-A	STA. 64+68.53	TO STA. 83+09.31	= 1840.78'	
	(E-18) STA. 10+38	TO STA. 13+88.83	= 291.83'	
	(E-18) STA. 12+57.21	TO STA. 17+40.32	= 483.11'	
	(WILLOW) STA. 40+73.11	TO STA. 42+45.12	= 171.99'	
CUY-42-18.77 (INNER BELT) Part 7-B	STA. 0-200	TO STA. 70+86	= 7286.00'	
Add for Equation	STA. 27+08.87 Bk	= STA. 26+61.13 Ah	= 48.74'	
	TOTAL I-71-5(8)248		= 10,577.65'	= 2.003 MILES

PREPARED AND RECOMMENDED BY

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

CONSULTING ENGINEERS

KANSAS CITY CLEVELAND NEW YORK

H.G. SOURS
ASSOCIATE
COLUMBUS

00124

FILE NO.	CUYAHOGA COUNTY
	SEC. CUY-21-15.32 & CUY-42-18.42
	DATE OF LETTING 19
	CONTRACT NO.

SUPPLEMENTAL SPECIFICATIONS

NUMBER	DATE	NUMBER	DATE
S-101	12-2-59	S-207	4-28-55
M-106.6(d) Rev.	4-1-58	B-219 Rev.	3-12-59
M-206.14	7-15-49	18 Rev.	6-15-59

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
CUY-21-15.32
CUY-42-18.42
CUYAHOGA COUNTY
CITY OF CLEVELAND
WILLOW INNERBELT FREEWAY
PART 7-A

NOTE
Since the Construction Plans for PART No 6, PART No 7-A and PART No 7-B are now Combined into ONE CONTRACT and PROJECT; the General Notes and Traffic Maintenance Notes of each of the aforesaid PARTS, shall apply in the general execution and completion of this COMBINED PROJECT.

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	I-71-5(8)248 I-77-5(1)162	

1 / 181

CUY-21-15.32
CUY-42-18.42

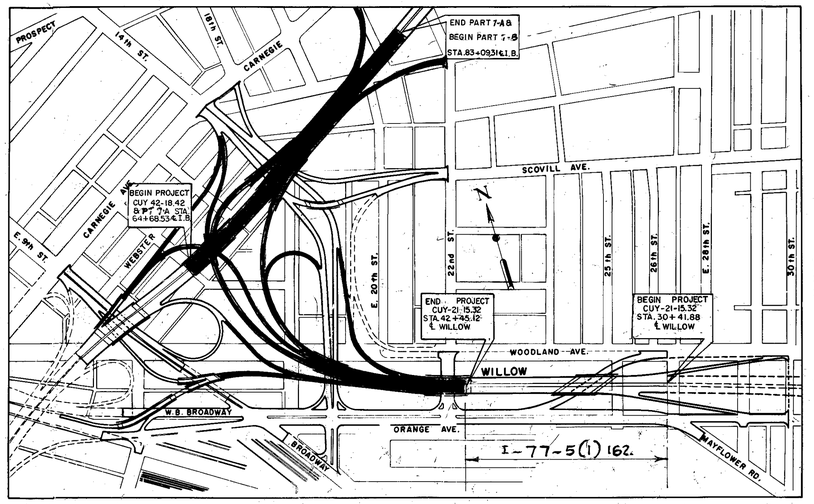
MAR 22 1965
GROUND PHOTO LAB

MICROFILMED
JUL 3 1985

I-71-5(8)248
I-77-5(1)162
LIMITED ACCESS

PART 7-A

For Part 6, see plans for CUY-42-18.29
For Part 7-B, see plans for CUY-42-18.77



DELIVERY POINT — N.Y.C. ST.L. R.R. BROADWAY TEAM TRACKS

AVERAGE HAUL 1/2 MILE

LOCATION PLAN

CONVENTIONAL SIGNS

PAVEMENT PLANS	SHEET 15
DRAINAGE PLANS	SHEET 31
LIGHTING PLANS	SHEET 43
EXISTING UTILITIES	SHEET 53

0 400 800 1200 1600
SCALE IN FEET

PORTION TO BE IMPROVED
OTHER HIGHWAYS & STREETS

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

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

THE RIGHT OF WAY FOR THIS IMPROVEMENT WILL BE PROVIDED BY THE STATE OF OHIO.

APPROVED DATE 2/12/59	Louis R. Draeger — DIRECTOR OF PUBLIC SERVICE, CITY OF CLEVELAND
APPROVED DATE 12/12/59	Wm B. Henry — DIVISION DEPUTY DIRECTOR
APPROVED DATE 3-11-60	Harry E. Heeper — DEPUTY DIRECTOR OF PLANNING AND PROGRAMMING
APPROVED DATE 3-4-60	D.H. Merriman — ENGINEER OF BRIDGES
APPROVED DATE 3-9-60	D.H. Merriman — ENGINEER OF LOCATION AND DESIGN
APPROVED DATE 3-9-60	C.W. McCaughey — DEPUTY DIRECTOR OF DESIGN AND CONSTRUCTION
APPROVED DATE 3-9-60	H.A. Berry — FIRST ASSISTANT DIRECTOR
APPROVED DATE 3-9-60	C.P. Stanton — DIRECTOR OF HIGHWAYS

No RR Hwy 3-7-60

SCALES

PLAN	1" = 50'
PROFILE HORIZONTAL	1" = 100'
" VERTICAL	1" = 10'
CROSS SECTIONS	1" = 10'

STANDARD DRAWINGS NUMBER	DATE	NUMBER	DATE
DR-1	1-3-55	IHS No 1.	11-3-58
AR-1-57	2-2-59	I-15 No. 6	7-1-59
		I-15 No. 1	8-21-59
L-3	4-1-50	F-3	9-1-59
L-3-A	4-1-50	I-15 NO. 2A	5-21-59
RI-1	7-15-58	BT-50-70-71 ENO1	10-1-47
B-T-71 R	3-2-53	AS-1-54	12-1-54
LJ NO. 1	7-1-55	G-7.07	6-1-56
I-1, 2, 3, 4 & 5	4-24-58	F-1	9-1-59
I-8CB 2-2-A&B	3-2-59	I-12	7-1-54
I-8CB NO. 9-A	1-26-59	L-1	4-1-50
I-8CB NO. 6	1-26-59	TJ	5-1-56
I-8 MH NO. 1	1-26-59	T-35	1-2-56
I-8 MH NO. 2	1-26-59	I-14G	1-22-52
I-15 NO. 1	5-21-59	I-21-A-23	8-1-56
I-8CB NO. 3	1-26-59	I-8CB NO. 7	3-2-59
I-8CB NO. 3-A	1-26-59	I-8 INO 2-A	4-23-59
I-8MH NO. 1-A	1-26-59	I-8 INO 2	4-23-59
I-8CB 2-B&2-A	1-26-59		
RD-1-55	2-2-59	RW-45	3-18-47

Sheets 116, 131, 132, 133 & 175 revised 6-17-60.
Sheets 109, 110, 111, 125, 126, 127 & 128 revised 6-20-60.
Sheets 147, 153 & 171 revised 7-22-60.
Sheet 12 revised 8-22-60. REC.
Sheets 146, 147, 150, 153, 155 & 171 revised 9-21-60.
Sheet 102 revised 12-6-60.
Sheet 121 revised 1-12-61.

Revised As-Built

MAR 22 1965
GROUND PHOTO LAB

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED:

DIVISION ENGINEER — DATE

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS

2
131

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
SCHEMATIC PLAN

Note: Federal Aid Markers will be furnished and erected by State Forces on the Right at Beginning of each Project and on the Left at End of each Project prior to acceptance of this improvement.

Note: Typical Section of adjoining pavement is the same as the proposed construction.

CUY-42-1843
BRIDGE NUMBER 3

TYPE: Continuous welded steel girder with reinforced concrete deck and substructure.
SPANS: 90'-0", 123'-8½" & 89'-9" (along ℄ I.B.F.)
ROADWAY: 102'-0" f./f. parapets
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading
SKEW: Varies
SURFACE COURSE: 1" Monolithic Concrete
ALIGNMENT: 1°30' Curve left
APPROACH SLABS: AS-1-54 (25' Long)
SUPERELEVATION: .03' per ft.

CUY-42-1854
BRIDGE NUMBER 4

TYPE: Continuous welded steel girder with reinforced concrete deck and substructure.
SPANS: 55'-0", 88'-6", 99'-0", & 60'-0" along ℄ I.B.
ROADWAY: Varies
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.
SKEW: Varies
SURFACE: 1" Monolithic Concrete
ALIGNMENT: 1°-30' Left Tangent
APPROACH SLABS: AS-1-54 (25' Long)
SUPERELEVATION: Varies

BRIDGE NUMBER 5

TYPE: Continuous steel beam with reinforced concrete deck and substructure.
SPANS: 31'-0 3/8", 48'-2½", 34'-1" along ℄ E-10
ROADWAY: Varies
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.
SKEW: Varies
SURFACE COURSE: 1" Monolithic Concrete
ALIGNMENT: 14°30' Curve left.
APPROACH SLABS: AS-1-54 (25' Long)
SUPERELEVATION: .08 ft. per ft.

CUY-21-1573
BRIDGE NUMBER 8

TYPE: Continuous steel beam with reinforced concrete deck and substructure.
SPANS: 38'-7 5/16", 43'-10 1/16", 55'-9½", & 33'-11 3/8" along E Willow Freeway.
ROADWAY: 84'-0" (nominal) face to face parapets.
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.
SKEW: Varies
SURFACE: 1" Monolithic Concrete
ALIGNMENT: 3°00'00" Rt.
APPROACH SLABS: AS-1-54 (25' Long)
SUPERELEVATION: .05 ft./ft.

CUY-21-1573
BRIDGE NUMBER 9

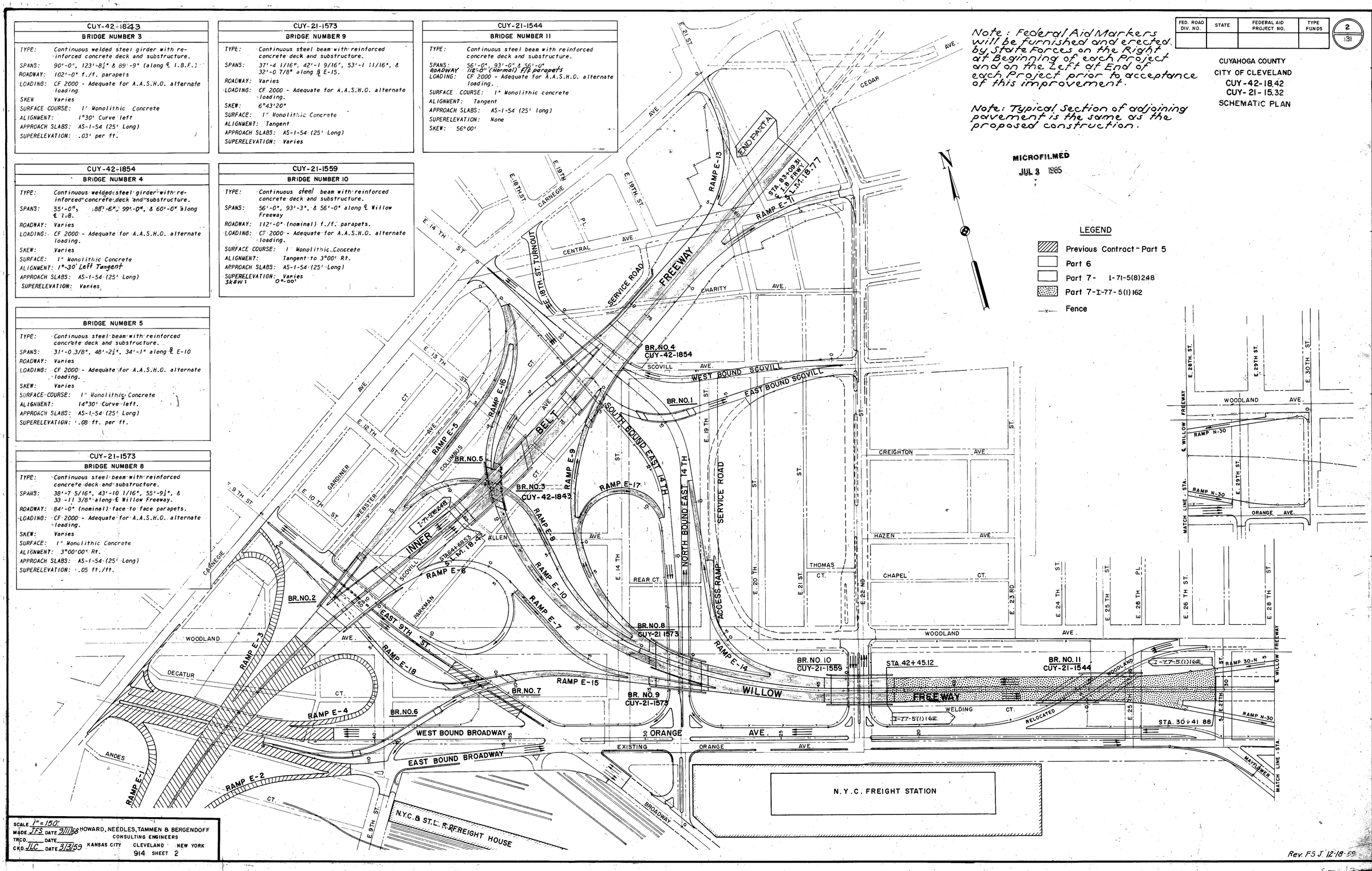
TYPE: Continuous steel beam with reinforced concrete deck and substructure.
SPANS: 37'-4 1/16", 42'-1 9/16", 53'-1 11/16", & 32'-0 7/8" along ℄ E-15.
ROADWAY: Varies
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.
SKEW: 6°43'20"
SURFACE: 1" Monolithic Concrete
ALIGNMENT: Tangent
APPROACH SLABS: AS-1-54 (25' Long)
SUPERELEVATION: Varies

CUY-21-1559
BRIDGE NUMBER 10

TYPE: Continuous steel beam with reinforced concrete deck and substructure.
SPANS: 56'-0", 93'-3", & 56'-0" along ℄ Willow Freeway
ROADWAY: 112'-0" (nominal) f./f. parapets.
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.
SURFACE COURSE: 1" Monolithic Concrete
ALIGNMENT: Tangent to 3°00' Rt.
APPROACH SLABS: AS-1-54 (25' Long)
SUPERELEVATION: Varies
Skew: 0°-00'

CUY-21-1544
BRIDGE NUMBER 11

TYPE: Continuous steel beam with reinforced concrete deck and substructure.
SPANS: 56'-0", 93'-0" & 56'-0"
ROADWAY: 112'-0" (Normal) f/f parapets
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.
SURFACE COURSE: 1" Monolithic concrete
ALIGNMENT: Tangent
APPROACH SLABS: AS-1-54 (25' long)
SUPERELEVATION: None
SKEW: 56°00'



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LEGEND

- Previous Contract - Part 5
- Part 6
- Part 7 - I-71-5(8)248
- Part 7 - I-77-5(1)162
- —x— Fence

SCALE 1" = 150'
MADE JFS DATE 9/11/58
TRCD. DATE
CKD. JLC DATE 3/3/59
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 2

Rev. FSJ 12-18-59

TYPICAL SECTIONS TYPE T-71

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

3
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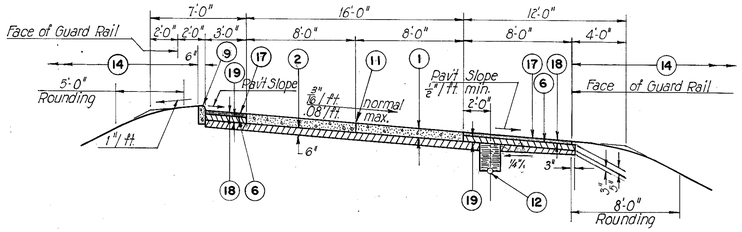
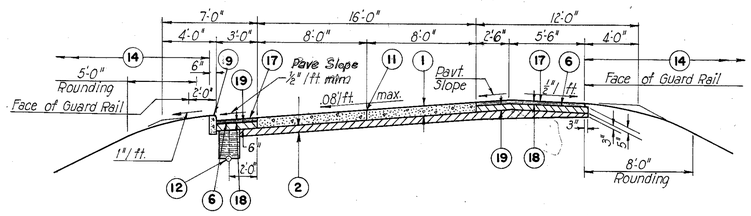
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
TYPICAL SECTIONS



ONE LANE

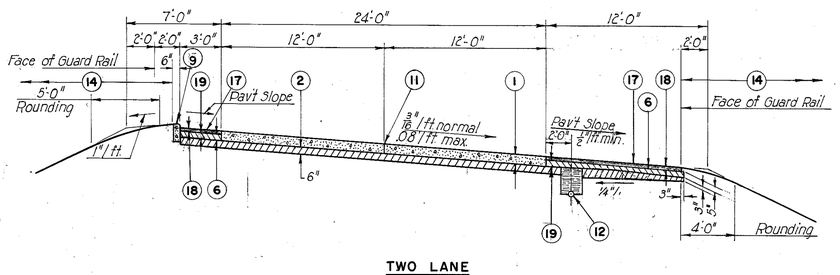
NORMAL AND CURVE RIGHT



ONE LANE

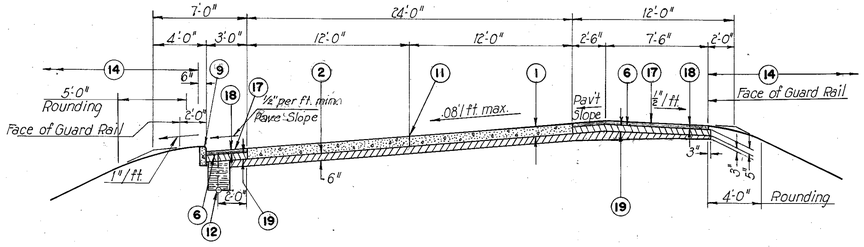
CURVE LEFT

Note: Depth of I-9 = 18" from top of pipe to bottom of I-22 unless otherwise shown.



TWO LANE

NORMAL AND CURVE RIGHT



TWO LANE

CURVE LEFT

Ramp No.	One or Two Lane Ramp	Tangent Sta.	Tangent Sta.	Curve Right Sta.	Curve Right Sta.	Curve Left Sta.	Curve Left Sta.	Diverging Trans. Sta.	Diverging Trans. Sta.	Merging Trans. Sta.	Merging Trans. Sta.	Bridges Sta.	Bridges Sta.
E-5	One	4+68.32	9+60.56	2+50.32	4+68.32			1+13.65	2+50.32	9+60.56	11+95±		
E-6**	Two			1+98.47	4+48.29			1+09±	1+98.47				
								4+48.29	5+68.20				
	One			5+68.20	10+38.11								
E-7	One	1+36.63	3+73.22			3+73.22	6+50.40			6+50.40	7+43±	7+43±	8+97.35
E-8	One	4+33.14	6+17.14	0+47.96	4+ 33.14	6+17.14	11+60.35	0+00.00	0+47.96				
		11+60.35	11+74.52							11+74.52	14+10±	14+10±	14+17.67
E-9	One			0+93.60	4+31±			0+00.00	0+93.60			4+31±	7+50.38
E-10	Two	4+18±	5+06.54			5+06.54	7+93±	0+00.00	0+79±	9+66±	9+90.07	0+79±	4+18±
						9+90.07	17+41.98					7+93±	9+66±
E-11	Variable	6+26.30	6+55.84	1+98.46	6+26.30			0+00.00	1+98.46				
E-13	Variable	1+04.35	1+41.06	1+41.06	4+96.25			0+00.00	1+04.35	4+96.25	6+12.32		
E-14	One			2+76.73	4+72.70			0+82±	2+76.73			0+00.00	0+82±
		7+76.96	10+79.56					4+72.70	7+76.96				
E-15	One	12+57.21	14+05.14							10+06±	12+57.21		
		17+ 22±	17+40.32							14+05.14	15+02±	15+02±	17+ 22±
										17+40.32	19+80.49		
E-16	One	3+44.96	4+98.38	1+82.29	3+44.96	4+98.38	6+24±	0+38.25	1+82.29	8+09±	8+32.85	6+24 ±	8+09±
E-17	Two			2+31.62	6+21.14			1+ 63±	2+31.62			0+00.00	1+63±
								6+21.14	7+06.65				
	One			7+06.65	10+70.65								
Access	One							0+00.00	3+02.49				
N-30	One	3+66.67	9+04.20	3+53.61	3+66.67			0+75±	3+53.61	9+04.20	10+51.81	0+00	0+75±
30-N	One	1+73.65	7+16.40					0+00	1+73.65	7+16.40	9+81 ±	9+81±	10+52.42

LEGEND

(1) 9" Reinforced Portland Cement Concrete Pavement, Item T-71.
(2) Subbase, Item I-22.
(6) Bituminous Prime Coat, Item T-30, Sec. M.5.1 (RT-2 or RT-3). Applied at rate of 0.4 Gal. per Sq. Yd.
(9) 6"x18" Sandstone Curb, Item I-11.
(10) Standard Type 1 Median Pavement, Item I-21.
(11) Standard Longitudinal Joint.
(12) 6" Underdrain, Item I-4.
(14) Seeding and Protecting, Item L-9.
(17) Bituminous Surface Treatment using 0.008 Cu. Yd. No. 6 Aggregate and 0.25 Gal. Bituminous Material per sq. yd. (See Note in Proposal), Item T-31.
(18) 3/4" Waterproofed Aggregate Base Course Item B-219.
(19) Stabilized Crushed Aggregate Shoulder, Item I-18.
(20) Guard Rail, Steel Beam, Barrier Type (Deep), Item I-15.

RAMP NO.	LOCATION Sta.	LOCATION Sta.	INCREASE IN WIDTH
E-6**	2+18.42	4+48.29	2'
E-6**	4+48.29	9+03.24*	3'
E-7	3+73.22	6+57.92	1'
E-8	6+17.14	11+60.35	2'
E-10	5+06.54	9+90.07	2'
Access	0+00.00	1+61.73	2'
E-14	2+97.97	4+72.70	2'
E-16	4+98.38	6+24 ±	1'
E-17	6+21.14	11+14.37*	3'

SCALE 1/2" = 1'
MADE G.M.G. DATE 9-3-58
TRCD. R.R. DATE 10-4-58
CKD. H.C. DATE 12-3-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 3

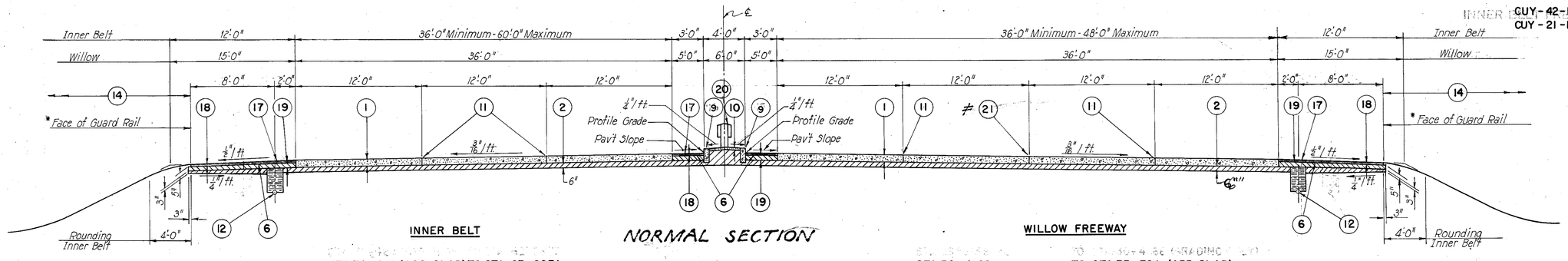
Rev. F.S.J. 12-18-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

4 / 181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

TYPICAL SECTIONS TYPE T-71



INNER BELT

STA. 74+21± (APP. SLAB) TO STA. 83+09.31

NORMAL SECTION

WILLOW FREEWAY

STA. 30+41.88 TO STA. 33+70± (APP. SLAB)
STA. 36+47± (APP. SLAB) TO STA. 42+19± (APP. SLAB)

Note: Depth of I-4 = 18" from top of pipe to bottom of I-22 unless otherwise shown.

LEGEND

(1) 9" Reinforced Portland Cement Concrete Pavement, Item T-71

(2) Subbase, Item I-22.

(6) Bituminous Prime Coat, Item T-30, Sec. M5.1 (RT-2 or RT-3) Applied at rate of 0.4 Gal. per Sq. Yd.

(9) 6"x18" Sandstone Curb, Item I-11.

(10) Standard Type I Median Pavement, Item I-21.

(11) Standard Longitudinal Joint.

(12) 6" Underdrain, Item I-4

(14) Seeding and Protecting, Item L-9.

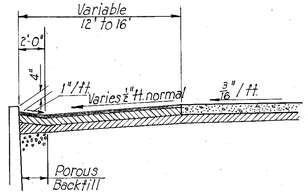
(17) Bituminous Surface Treatment Using 0.008 Cu. Yd. No. 6 Aggregate and 0.25 Gal. Bituminous Material per Sq. yd. (See Note in Proposal), Item T-31.

(18) 3" Waterproofed Aggregate Base Course Item B-219.

(19) Stabilized Crushed Aggregate Shoulder, Item I-18.

(20) Guard Rail, Steel Beam, Barrier Type (Deep), Item I-15.

≠ (21) Standard Longitudinal Key Joint without tie bars.

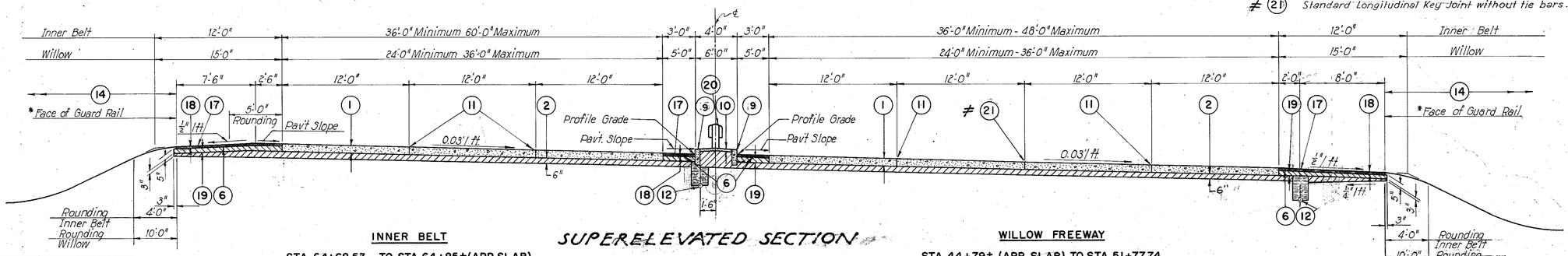


PARTIAL SECTION

STA. 74+09 TO STA. 76+25

≠ Center joint shall be a standard Longitudinal Key Joint without Tie Bars when Pavement Width exceeds 36'-0" unless otherwise shown

* Note:
Face of guard rail on Willow Freeway, is 12' from edge of pavement.



INNER BELT

STA. 64+68.53 TO STA. 64+85± (APP. SLAB)
STA. 68+46± (APP. SLAB) TO STA. 70+63± (APP. SLAB)

SUPERELEVATED SECTION

WILLOW FREEWAY

STA. 44+79± (APP. SLAB) TO STA. 51+77.74

SCALE 1/8" = 1'
MADE G.M.G. DATE 8-4-58
TRCD. R.R. DATE 8-10-58
CKD. J.L.C. DATE 12-11-58

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

914 SHEET 4

Rev. F.S.J. 12-18-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE. FUNDS
2	OHIO		

5
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

INSET I

INSET II

Note:
For centerline traverse data of existing streets, see TRAVERSE DATA sheet on file in division office or see City Engineer.

SCALE 1"=100'
MADE SWF DATE 5-6-58
TRCD. ____ DATE ____
CKD GMG DATE 9-4-58

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

914 SHEET 5

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

6
181

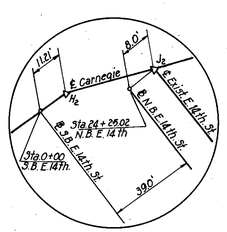
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

CURVE DATA TABULATION

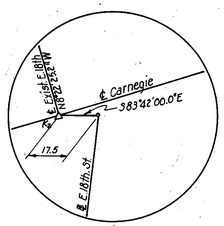
DESCRIPTION	CURVE	BEGINNING OF CURVE STATION	BEGINNING OF CURVE COORD.	P.I. OF CURVE STATION	P.I. OF CURVE COORD.	ENDING OF CURVE STATION	ENDING OF CURVE COORD.	Δ	D	R	T	L	REMARKS
FREEWAYS													
INNER BELT	"A"	45+28.225	N 86831.706 E 88267.935	52+70.170	N 87410.112 E 88732.616	59+80.200	N 87690.243 E 89419.645	29°02'23.0"	2°00'	2864.789'	741.945'	1451.980'	
	"B"	62+98.330	N 87810.354 E 89714.228	67+00.601	N 87962.236 E 90086.725	70+99.918	N 88188.383 E 90419.411	12°01'25.7"	1°30'	3819.719'	402.271'	801.588'	
WILLOW	"A"	44+07.286	N 87794.127 E 91073.603	47+97.821	N 86890.476 E 90696.991	51+77.735	N 87733.368 E 90391.179	23°06'48.5"	3°00'	1909.859'	390.535'	770.499'	
RAMPS													
RAMP E 5	"A"	0+00.000	N 88692.144 E 90207.567	1+09.796	N 88601.340 E 90269.292	2+04.877†	N 88496.247 E 90237.501	51°02'14.3"	——	230.000'	109.796	204.877'	
	"B"	2+04.877†	N 88496.247 E 90237.501	3+41.346	N 88365.624 E 90197.986	4+68.324	N 88264.859 E 90081.983	36°52'57.4"	14°00'	409.256	136.469	263.447	
	"C"	13+53.866	N 87760.775 E 89774.176	15+29.084	N 87651.079 E 89732.937	17+03.866	N 87571.361 E 89080.115	7°00'00.0"	2°00'	2864.789	175.218'	350.000	
RAMP E 6	"A"	0+00.000	N 87666.462 E 89501.697	1+09.690	N 87707.877 E 89603.268	2+18.423†	N 87725.182 E 89711.585	13°06'19.3"	6°00'	954.930	109.690	218.423	
	"B"	2+18.423†	N 87725.182 E 89711.585	3+41.446	N 87744.590 E 89833.067	4+48.286†	N 87663.085 E 89925.217	50°34'11.3"	22°00'	260.435	123.023	229.863'	
	"C"	4+48.286†	N 87663.085 E 89925.217	——	N 87550.729 E 89825.838	9+03.238†	N 87428.245 E 89739.220	173°46'43.8"	——	150.000	——	454.952	
	"D"	9+03.238†	N 87428.245 E 89739.220	10+51.595	N 87517.932 E 89618.098	11+96.766	N 87636.664 E 89534.749	20°32'48.9"	7°00'	818.511'	148.357	293.528	
RAMP E 7	"A"	0+00.000	N 87681.062 E 89941.118	0+54.287	N 87645.095 E 89981.781	1+07.302	N 87596.745 E 90006.447	21°27'37.5"	20°00'	286.479'	54.287	107.302	
	"B"	3+73.218	N 87359.898 E 90127.392	5+20.736	N 87228.514 E 90194.471	6+57.922	N 87163.982 E 90327.124	37°00'41.3"	13°00'	440.737'	147.518	284.704	
RAMP E 8	"A"	0+00.000	N 87358.965 E 90396.994	2+26.383	——	4+39.137	N 87603.309 E 90178.677	41°08'52.7"	9°30'	603.113	226.383	433.137	
	"B"	6+17.137	N 87783.262 E 90145.379	——	——	11+60.353	N 87971.121 E 89723.358	111°09'25.2"	——	280.000'	408.601'	543.216'	
RAMP E 9	"A"	0+00.000	N 87674.137 E 90289.687	1+95.640	N 87869.485 E 90300.374	3+81.963†	N 88032.271 E 90408.891	30°39'25.3"	8°00'	716.197	195.640	381.963	
	"B"	3+81.963†	N 88032.271 E 90408.891	5+68.492	N 88197.475 E 90512.353	7+50.384	N 88292.337 E 90666.618	22°06'18.9"	6°00'	954.930'	186.529	368.421'	
RAMP E 10	"A"	0+00.000	N 88466.382 E 90712.756	0+81.629	N 88420.493 E 90645.247	1+62.862	N 88386.127 E 90570.929	9°46'18.3"	6°00'	954.930'	81.629'	162.862'	
	"B"	5+06.536	N 88244.565 E 90258.037	7+83.798	N 88129.875 E 90005.608	9+90.072†	N 87853.486 E 90027.590	70°06'45.9"	14°30'	395.143	277.262	483.536	
	"C"	9+90.072†	N 87853.486 E 90027.590	13+88.623	N 87456.193 E 90059.198	17+41.980	N 87208.311 E 90371.227	44°59'33.2"	6°15'	916.732	398.551'	751.908'	
RAMP E 11	"A"	0+00.000	N 88473.756 E 90939.601	3+24.879	N 88656.394 E 91202.182	6+26.297	N 88637.288 E 91526.498	37°34'40.3"	6°00'	954.930	324.879'	626.297'	
RAMP E 13	"A"	1+41.058	N 89013.603 E 91200.250	3+21.916	N 88894.610 E 91226.567	4+83.653†	N 88750.281 E 91117.656	45°23'37.8"	13°15'00.0"	432.421	180.858'	342.595'	
	"B"	4+83.653†	N 88750.281 E 91117.656	5+48.689	N 88698.360 E 91078.492	6+12.323	N 88663.525 E 91023.571	20°33'13.9"	16°00'00.0"	358.099	65.036	128.670'	
RAMP E 14	"A"	0+00.000	N 86927.309 E 91093.444	1+50.205	N 86967.058 E 90848.594	2+97.969†	N 87049.355 E 90822.942	17°52'41.4"	6°00'	954.930'	150.205'	297.969'	
	"B"	2+97.969†	N 87049.355 E 90822.942	4+76.159	N 87146.986 E 90673.878	6+16.786	N 87329.853 E 90695.552	63°45'48.5"	20°00'	286.479'	178.190'	318.817'	
RAMP E 15	"A"	2+03.697	N 87186.161 E 89143.487	3+46.125	N 87112.289 E 89269.605	4+79.210	N 87156.582 E 89406.213	45°49'01.8"	17°00'	937.034	142.428'	269.513	
	"B"	7+04.496	N 87222.024 E 89628.047	9+91.858	N 87309.332 E 89903.667	12+57.214	N 87194.503 E 90169.625	38°41'24.8"	7°00'	818.511	287.362'	552.718'	
RAMP E 16	"A"	0+00.000	N 88623.653 E 90247.451	1+85.243	N 88444.562 E 90234.786	3+44.957	N 88296.505 E 90183.462	51°44'36.8"	15°00'	381.972	185.243'	344.957	
	"B"	4+98.379	N 88179.878 E 90091.262	5+88.238	N 88102.065 E 90037.260	6+73.539†	N 88018.536 E 90026.788	31°31'43.9"	18°00'	318.310'	89.859	175.160'	
	"C"	6+73.539†	N 88012.596 E 90026.788	7+53.397	N 87933.094 E 90021.259	8+32.854	N 87853.486 E 90027.590	9°57'25.9"	6°15'	916.732	79.858'	159.315'	
RAMP E 17	"A"	0+00.000	N 87146.369 E 90568.094	3+43.126	N 87331.086 E 90278.931	6+21.139†	N 87675.700 E 90297.675	60°33'39.6"	9°45'	587.649	343.126'	621.139'	
	"B"	6+21.139†	N 87675.700 E 90297.675	——	N 87665.507 E 90047.448	11+14.366	N 87635.525 E 90294.421	188°23'55.4"	——	150.000	——	493.227	
	"C"	13+98.352	N 87957.269 E 90537.657	14+48.394	N 87308.237 E 90527.654	14+98.396	N 87260.022 E 90514.254	04°00'06.3"	4°00'	1432.395	50.042'	100.044'	
RAMP E 18	"A"	0+00.000	N 87964.483 E 83222.690	0+68.893	N 87907.461 E 89261.395	1+37.547	N 87845.503 E 89291.518	8°15'10.2"	6°00'	954.930'	68.893'	137.547'	
	"B"	5+79.017	N 87453.467 E 89459.942	7+40.040	N 87310.653 E 89369.350	8+72.410	N 87295.520 E 89729.660	58°40'42.7"	20°00'	286.479	161.023'	293.393'	
	"C"	10+38.156	N 87219.943 E 89894.673	11+79.691	N 87266.641 E 90035.581	13+19.180	N 87213.040 E 90166.573	16°51'41.1"	6°00'	954.930	141.535'	281.024'	
STREETS													
EAST 9th ST.	"A"	10+93.130	N 87603.028 E 89512.868	11+71.005	N 87538.606 E 89556.620	12+48.686	N 87479.936 E 89607.896	7°00'00.0"	4°30'	1273.240'	77.875	155.556'	
N. B. E. 14th ST.	"A"	12+94.497	N 87809.828 E 90715.839	14+60.486	N 87969.735 E 90760.286	16+05.361	N 88107.031 E 90666.971	49°44'17.5"	16°00'	358.099'	165.989	310.864	
S. B. E. 14th ST.	"A"	0+89.740	N 86695.448 E 90219.831	1+91.758	N 86611.077 E 90277.183	2+93.432	N 86515.430 E 90321.999	06°08'51.6"	4°00'	1432.395	102.018'	203.692'	
	"B"	9+08.700	N 87966.706 E 90592.881	10+38.692	N 87849.928 E 90649.385	11+59.292	N 87722.859 E 90623.402	37°35'19.6"	15°00'	381.972'	129.992	250.592	
18th ST. Turnout	"A"	0+00.000	N 88511.078 E 90455.940	78.375	N 88570.099 E 90413.451	1+38.363	N 88642.058 E 90421.197	41°30'32.4"	30°00'	190.986'	72.375	138.363	
W.B. SCOVILL	"A"	0+40.671	N 88078.725 E 91323.705	1+63.173	N 88105.063 E 91204.068	2+85.526	N 88121.094 E 91082.619	4°53'49.6"	2°00'	2864.789	122.502	244.855	
	"B"	5+09.058	N 88150.347 E 90861.009	6+75.603	N 88172.142 E 90695.897	8+23.162	N 88307.956 E 90599.504	47°06'56.2"	15°00'	381.972	166.545	314.104	
E.B. SCOVILL	"A"	0+00.000	N 88194.791 E 90519.708	1+86.053	N 88027.652 E 90601.439	3+30.016	N 88034.346 E 90747.371	66°00'11.2"	20°00'	286.479	186.053	330.016	
	"B"	7+71.761	N 88050.239 E 91228.831	8+52.627	N 89053.148 E 91303.645	9+32.632	N 88035.760 E 91388.620	14°28'42.3"	9°00'	636.620	80.866	160.871	
SERVICE ROAD	"A"	2+71.000	N 87148.145 E 90923.558	3+69.437	N 87174.195 E 90828.630	4+50.336†	N 87268.847 E 90801.597	58°42'55.8"	——	175.000'	98.437	179.336	
	"B"	4+50.336†	N 87268.847 E 90801.597	6+51.028	N 87421.839 E 90746.482	8+41.684	N 87635.339 E 90739.671	31°18'28.3"	8°00'	716.197'	200.692	391.348'	
	"C"	9+68.761	N 87777.874 E 90833.349	12+02.454	N 85003.210 E 90895.283	13+71.927	N 88011.618 E 91128.825	72°34'11.6"	18°00'	318.310'	233.693	403.166'	
ACCESS	"A"	0+00.000	N 87182.476 E 90713.970	0+83.833	N 87260.297 E 90682.795	1+61.734	N 87341.132 E 90705.013	37°11'56.1"	23°00'	249.112'	83.833'	161.734'	
E.B. BROADWAY	"A"	8+02.580	N 87176.590 E 89133.263	9+06.179	N 87122.896 E 89221.862	10+07.340	N 87105.410 E 89323.915	21°30'00.0"	10°30'	545.674	103.539'	204.760'	
BROADWAY	"A"	0+20.760	N 86901.661 E 90113.659	0+74.677	N 86861.081 E 90149.360	1+28.514	N 86817.348 E 90180.895	5°23'15.8"	5°00'	1145.916'	53.917'	107.754'	

Note: † = P.C.C.
‡ = Center of Curve

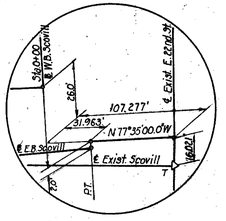
DESCRIPTION	CURVE	BEGINNING OF CURVE STATION	BEGINNING OF CURVE COORD.	P.I. OF CURVE STATION	P.I. OF CURVE COORD.	END OF CURVE STATION	END OF CURVE COORD.	Δ	D	R	T	L
Relocated Woodland	"A"	0+00.000	N.86680.881 E 92416.604	1+84.390	N 86729.676 E 92238.787	3+57.895	N.86670.695 E 92064.084	34°00'00.0"	9°30'	603.113	184.390	357.895
	"B"	5+65.516	N.86637.444 E 91856.175	7+49.870	N 86578.475 E 91681.507	9+23.344	N.86621.241 E 91503.720	33°59'37.3"	9°30'	603.113	184.354	357.828
RAMP N-30	"A"	0+00.000	N.86606.956 E 91928.320	1+83.898	N.86658.291 E 92105.662	3+66.667	N.86476.682 E 92270.460	11°00'00.0"	3°00'	1909.859	183.898	366.667
	"B"	9+41.743	N.86235.815 E 92792.908	9+96.944	N.86211.318 E 92842.376	10+51.806	N.86196.716 E 92895.611	11°00'22.7"	10°00'	572.958	55.201	110.063
30-N	"A"	7+95.695	N.86606.201 E 92328.691	9+24.252	N.86623.307 E 92201.276	10+52.423	N.86651.327 E 92077.302	7°42'06.6"	3°00'	1909.859	128.557	256.728



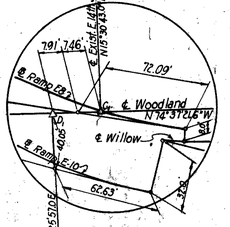
DETAIL A



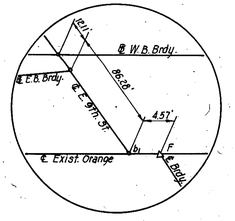
DETAIL B



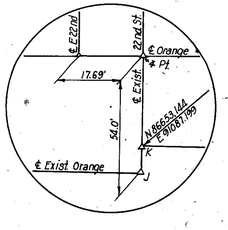
DETAIL C



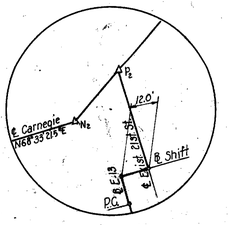
DETAIL D



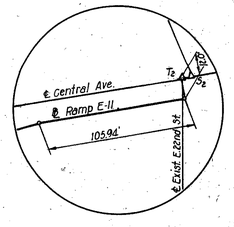
DETAIL E



DETAIL F



DETAIL G



DETAIL H

INTERSECTION · DETAILS
No Scale

SCALE No scale
MADE SWF DATE 4/16/58
TRCD. DATE
CKD. GMG DATE 7-8-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 6

GENERAL NOTES

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS

7
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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

GRADING TOLERANCES (COMBINED PROJECT)

FOR AREAS IN FRONT OF RESIDENCES, FOR AREAS BETWEEN CURB AND SIDEWALK AND FOR OTHER AREAS SPECIFICALLY INDICATED ON THE PLANS, THE SEED BED SHALL BE PREPARED TO PROVIDE A SMOOTH SURFACE. ALL STONES LARGER THAN ONE INCH IN DIAMETER SHALL BE REMOVED FROM THE SURFACE OF THE SEED BED. HAND RAKING WILL BE REQUIRED IN AREAS INACCESSIBLE TO MACHINES AND HAND RAKING MAY BE REQUIRED, IF DIRECTED BY THE ENGINEER, IN ALL THE AFOREMENTIONED AREAS IF MACHINES USED DO NOT PROVIDE RESULTS EQUIVALENT TO RESULTS OBTAINED BY HAND RAKING. COST OF THIS ADDITIONAL WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ROADWAY EXCAVATION, ITEM E-1.

DESIGN STANDARDS

THE DESIGN SPEED FOR THIS PROJECT IS 50 M.P.H.

FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE IN ACCORDANCE WITH SEC. S-0.01(b) HAVING A MINIMUM OF 500 SQ. FT. OF FLOOR SPACE. THE CONTRACTOR SHALL HAVE A TELEPHONE INSTALLED AND MAINTAINED IN THE FIELD OFFICE DURING CONSTRUCTION OF THIS PROJECT.

PERMITS, LAWS AND REGULATIONS

THE CONTRACTOR SHALL SECURE, AT HIS OWN EXPENSE, ALL NECESSARY PERMITS FROM THE MUNICIPAL OR OTHER PUBLIC AUTHORITIES, SHALL GIVE ALL NOTICES REQUIRED BY LAW OR MUNICIPAL ORDINANCES, AND SHALL PAY ALL FEES AND CHARGES INCIDENT TO THE DUE AND LAWFUL PROSECUTION OF THE WORK COVERED BY THIS CONTRACT.

UTILITIES

FOLLOWING, IS A LIST OF THE UTILITIES WITHIN THE LIMITS OF CONSTRUCTION.

EAST OHIO GAS COMPANY
CITY OF CLEVELAND WATER DEPARTMENT
CLEVELAND ELECTRIC ILLUMINATING COMPANY
MUNICIPAL ELECTRIC LIGHT AND POWER COMPANY
OHIO BELL TELEPHONE COMPANY
WESTERN UNION
AMERICAN TELEPHONE & TELEGRAPH COMPANY

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 THEY ARE ESSENTIALLY CORRECT, BUT THE STATE OF OHIO MAKES NO GUARANTEES AS TO THEIR ACCURACY OR COMPLETENESS.

UTILITY NOTE

ANY AND ALL WORK REQUIRED FOR REMOVING, RELOCATING AND CONSTRUCTION OF NEW FACILITIES FOR PRIVATE OR PUBLIC UTILITIES WILL BE DONE BY AND AT THE EXPENSE OF THE RESPECTIVE OWNERS UNLESS OTHERWISE NOTED ON THE PLANS.

WATER METER BOXES

THE CITY WATER DEPARTMENT WILL RELOCATE ALL PRIVATELY OWNED WATER METER BOXES AND THIS ITEM WILL NOT BE INCLUDED AS A PART OF THE WORK TO BE PERFORMED BY THE CONTRACTOR.

CONNECTIONS TO EXISTING SEWERS

AT PLACES WHERE THE PLANS PROVIDE FOR PROPOSED DRAINAGE PIPE TO BE CONNECTED TO EXISTING PIPES, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPE BOTH AS TO LINE AND GRADE, BEFORE HE STARTS TO LAY THE PROPOSED SEWER. THE COST OF THIS OPERATION SHALL BE INCLUDED IN THE COST BID FOR ITEM I-2 STORM SEWERS.

THE CONTRACTOR SHALL SO CONDUCT HIS OPERATIONS THAT THE FLOW OF ALL EXISTING SEWERS WILL BE MAINTAINED AT ALL TIMES. ANY ADDITIONAL LABOR OR COST INVOLVED IN MAINTAINING THIS FLOW BY PUMPING OR BY ANY OTHER APPROVED METHOD WHICH IS NECESSARY FOR THE COMPLETION OF THIS PROJECT SHALL BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF STORM SEWERS, ITEM I-2. SEE DRAINAGE NOTE 2, SHEET 40.

WORK BY THE CITY OF CLEVELAND

THE CITY WILL PROVIDE FOR THE REMOVAL OR DISPOSAL OF ALL EXISTING BUILDINGS WITHIN THE LIMITS OF THE RIGHT OF WAY LINES AS FOLLOWS:

BUILDINGS WITH BASEMENTS – TO THE LEVEL OF EXISTING GROUND
BUILDINGS WITHOUT BASEMENTS – TO THE GROUND FLOOR
BUILDING FLOOR SLABS TO BE REMOVED BY CONTRACTOR AND PAID FOR AS ITEM E-1, ROADWAY EXCAVATION.

TRAFFIC

THE CONTRACTOR, AT ALL TIMES, MUST COOPERATE WITH THE CITY OF CLEVELAND TRAFFIC ENGINEERING AND PARKING DIVISIONS IN THE PERFORMANCE OF HIS WORK, AND SHALL PRESENT ONE WEEK IN ADVANCE A PROPOSED WORK SCHEDULE, INCLUDING TIME ESTIMATES TO THE PROJECT ENGINEER, AND SECURE WRITTEN APPROVAL OF SAME BEFORE ANY WORK IS UNDERTAKEN THAT WOULD DISRUPT NORMAL FLOW 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 STREETS CONCERNED WILL BE CLOSED TO TRAFFIC.

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 BOARD WALKS, CINDER WALKS, HANDRAIL, ADJACENT TO EXCAVATIONS, 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 BID FOR "MAINTAINING TRAFFIC."

AGGREGATE AND CALCIUM CHLORIDE ARE CARRIED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER, FOR THE MAINTENANCE OF LOCAL TRAFFIC.

OVERHEAD CONSTRUCTION SHALL NOT BE CONSIDERED SUFFICIENT REASON TO CLOSE A STREET TO TRAFFIC, IF IN THE OPINION OF THE PROJECT ENGINEER THE CONSTRUCTION MAY BE ADEQUATELY ISOLATED AND TRAFFIC PROTECTED FROM FALLING OBJECTS OF WHATEVER NATURE. IN ORDER TO INSURE THAT TRAFFIC BE FULLY PROTECTED, BELOW THE STRUCTURES, FROM FALLING OBJECTS, THE CONTRACTOR SHALL PROVIDE NECESSARY PROTECTIVE NETTING OR PLATFORMS.

SURVEY DATA

FOR CENTERLINE DATA OF EXISTING STREETS, SEE SHEET SD-1 (ADJUSTED ℄ SURVEY DATA) ON FILE IN DIVISION OFFICE.

REMOVAL OF TREES AND STUMPS

THE NUMBER OF TREES INDICATED FOR REMOVAL IS APPROXIMATE AND THE STATE OF OHIO RESERVES THE RIGHT TO ORDER REMOVAL OF ADDITIONAL TREES OR STUMPS. PAYMENT FOR THE REMOVAL OF THESE ADDITIONAL TREES AND STUMPS IS INCLUDED IN THE LUMP SUM BID FOR REMOVAL OF TREES AND STUMPS, ITEM E-9.

REMOVAL OF REFUSE AND DEBRIS

ANY EXISTING REFUSE, DEBRIS OR ANY OTHER UNSUITABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ITEM E-1. THE QUANTITY OF REFUSE OR DEBRIS, OR OTHER UNSUITABLE MATERIAL REMOVED AND DISPOSED OF WILL BE DETERMINED BY FINAL CROSS SECTIONS, AND THE YARDAGE SO DETERMINED WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ROADWAY EXCAVATION, ITEM E-1.

REMOVAL AND DISPOSAL OF EXISTING PAVEMENT

THE EXTENT OF RIGID PAVEMENT REMOVAL, SHOWN ON EXISTING UTILITIES SHEETS 54 THROUGH 60, MAY BE MODIFIED AS NECESSARY BY THE ENGINEER. RIGID PAVEMENT LOCATED WITHIN THE LIMITS OF PROPOSED CONSTRUCTION AND NOT INDICATED FOR REMOVAL, IS TO BE BROKEN UP INTO PORTIONS NOT TO EXCEED 1 SQUARE FOOT IN AREA BUT NEED NOT BE REMOVED; PAYMENT FOR THIS WORK TO BE CONSIDERED INCLUDED IN THE PRICE BID FOR ITEM E-1, ROADWAY EXCAVATION.

PAVEMENT REMOVAL

REMOVAL AND DISPOSAL OF ALL EXISTING PAVEMENT WHERE REQUIRED, EXCEPT THAT SET UP FOR REMOVAL ON THE PLANS AS ITEM E-8 SHALL BE REMOVED AND PAID FOR AS ITEM E-1, ROADWAY EXCAVATION.

CLEARING, GRUBBING AND SCALPING (COMBINED PROJECT)

ALL PROPERTIES OR PORTIONS OF PROPERTIES WITHIN THE RIGHT-OF-WAY FOR THIS PROJECT SHALL BE CLEARED, GRUBBED AND SCALPED IN ACCORDANCE WITH PROVISIONS OF SEC. E-1.03 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS.

VOID

SHEET 93

PARCELS
720LA THROUGH 723LA
725LA THROUGH 726LA
728LA THROUGH 730LA
732LA THROUGH 733LA
735LA THROUGH 738LA
740LA THROUGH 741LA
184LA EAST HALF
185LA THROUGH 194LA

SHEET 94

PARCELS
196LA (NORTH 210 FT.)
205LA – 210LA (NORTH 200 FT.)
218LA (WEST 35 FT.)
220 LA THROUGH 222LA
225 LA
227 LA
228LA
229LA (WEST 50 FT.)
235LA – 242LA (WEST 65 FT.)
244LA – 245 LA (WEST 65 FT.)
282LA – 286 LA

SHEET 95

PARCELS
365LA THROUGH 367LA
371LA (SOUTH 50 FT.)
375LA (SOUTH 50 FT.)
376LA (SOUTH 50 FT.)
385LA (SOUTH 50 FT.)
387LA THROUGH 391LA (SOUTH 50 FT.)
378LA
380LA THROUGH 384LA
394LA THROUGH 398LA
392LA (WEST 90 FT.)
403LA THROUGH 422LA
441LA.
441LA THROUGH 447LA
450LA THROUGH 451LA
456LA (NORTH 100 FT.)
457LA – 460 LA (NORTH 165 FT.)
461-A-LA

SHEET 96

488LA
490LA
492LA THROUGH 496LA
509 LA
516LA THROUGH 519LA

SHEET 97

548LA THROUGH 551LA
553 THROUGH 558 LA
560LA THROUGH 562LA
563LA – 564LA (NORTH HALF)
803LA (SOUTH 170 FT.)
804LA (NORTH HALF)
805LA (ALL BUT SOUTH 60 FT.)
806LA THROUGH 816LA
817LA – 821LA (ALL BUT SOUTH 60 FT.)

PROVISIONS OF SEC. E-1.03 SHALL ALSO BE APPLICABLE WHERE THE CONDUCT OF THE CONTRACTOR'S OPERATIONS REQUIRES UTILIZATION OF OTHER PROPERTIES NOT NORMALLY AFFECTED BY CONSTRUCTION UNDER THIS CONTRACT.

SS-18 FENCING

FOR LOCATION OF FENCING, SEE RIGHT OF WAY SHEETS 92 THROUGH 97, AND SHEETS 55 TO 64 OF PART T-B

FOR ADDITIONAL NOTES SEE SHEET 10 OF PART 6 AND SHEET 7 OF PART T-B

ESTIMATED QUANTITIES (COMBINED PROJECT)

SPECIFIC LOCATIONS AND USAGE OF ESTIMATED QUANTITIES SET UP ON 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.

EARTHWORK

THE TOP 2 FEET OF ALL EMBANKMENT SHALL BE CONSTRUCTED OF SOIL MATERIAL FREE FROM ROCKS, BOULDERS AND OTHER SIMILAR MATERIALS WHICH ARE RESTRICTIVE TO VEGETATIVE GROWTH OR HANDICAP MAINTENANCE OPERATION.

DURING THE EXCAVATION AND EMBANKMENT CONSTRUCTION OPERATIONS, THE ROADWAY SECTION SHALL BE MAINTAINED AT ALL TIMES IN SUCH A SHAPE THAT NO CONCENTRATION OF WATER WILL DISCHARGE IN A CONCENTRATED FLOW OVER THE SLOPES.

L-9 SEEDING AND PROTECTING

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

THE QUANTITY AND LIMITS FOR SEEDING MAY BE REVISED WHERE CONSIDERED NECESSARY BY THE ENGINEER.

THE SEED MIX FOR ALL AREAS IS AS FOLLOWS;

30 PER CENT KENTUCKY BLUE GRASS
30 PER CENT KENTUCKY, 31 FESCUE
20 PER CENT CREEPING RED FESCUE
15 PER CENT RED TOP
5 PER CENT WHITE DUTCH CLOVER

SEED TO BE APPLIED AT THE RATE OF 3 LBS. PER 1,000 SQ. FT.

L-9 AGRICULTURAL LIMING MATERIALS

AGRICULTURAL LIMING MATERIALS SHALL BE USED IN CONNECTION WITH SEEDING AND SODDING AT THE RATE OF 100 POUNDS PER 1,000 SQ. FT.

ADDITIONAL NOTES

STRUCTURES	SHEETS 98 AND 98A
DRAINAGE	SHEET 40
LIGHTING	SHEET 48

SUGGESTED CONSTRUCTION PROCEDURE FOR COMBINED PROJECT

THE FIRST ORDER OF CONSTRUCTION SHALL COMPRISE "THE SEQUENCE OF CONSTRUCTION" AS OUTLINED ON SHEET NO. 3 IN PART 6 OF THE PLANS AND CONSTRUCTION OF RAMP NO. 8 AS OUTLINED ON SHEET NO. 7 IN PART 7B OF THE PLANS.

THE SCHEDULING OF ALL OTHER WORK, INCLUDING THE CONSTRUCTION OF THE REMAINING PORTIONS OF THE INNER BELT FREEWAY, RAMPS AND THE WILLOW FREEWAY, SHALL BE AT THE OPTION OF THE CONTRACTOR, SUBJECT TO APPROVAL BY THE ENGINEER. THIS WORK SHALL BE PERFORMED IN SUCH A MANNER SO AS NOT TO INTERFERE WITH THE CONSTRUCTION OUTLINED IN THE PRECEDING PARAGRAPH.

ALTERNATE CONSTRUCTION PROCEDURE

IN LIEU OF THE SUGGESTED CONSTRUCTION PROCEDURE, THE CONTRACTOR MAY SUBMIT AN ALTERNATE PLAN TO THE DIRECTOR FOR APPROVAL. NO ALTERNATE PLAN SHALL BE PLACED INTO EFFECT UNTIL APPROVAL HAS BEEN GRANTED, IN WRITING, BY THE DIRECTOR.

COMPACTION USING HEAVY PNEUMATIC TIRED ROLLER –

SEE NOTE ON SHEET NO. 10 OF PART 6.

HEAVY EQUIPMENT (COMBINED PROJECT)

THE CONTRACTOR SHALL EXERCISE CARE IN THE USE OF HEAVY EQUIPMENT OVER FINISHED WORK AND WILL BE REQUIRED TO REMOVE AND REPLACE ANY COMPLETED WORK DESTROYED THEREBY. CULVERTS SHALL BE BACKFILLED TO A HEIGHT OF FOUR FEET BEFORE LOADED EARTH-MOVING EQUIPMENT IS PERMITTED TO CROSS THE TRENCH. ANY ADDITIONAL FILL AND SUBSEQUENT EXCAVATION REQUIRED TO PROVIDE THIS MINIMUM COVER SHALL BE MADE AT NO ADDITIONAL COST TO THE STATE. HEAVY EQUIPMENT SHALL NOT BE OPERATED OVER ANY COMPLETED LAYER OF EMBANKMENT, COMPACTED SUBGRADE, OR SUBBASE IF SUCH OPERATION TENDS TO DESTROY THE SOIL STRUCTURE OR PIPE UNDERDRAINS; HOWEVER, IF SUCH OPERATION CANNOT BE AVOIDED, THE CONTRACTOR WILL BE REQUIRED TO REDUCE THE SIZE OF LOADS TO AN EXTENT THAT DAMAGE DOES NOT occur.

SCALE None
MADE J.L.C. DATE 11-2-59
TRCD. DATE
CKD. J.L.C. DATE 11-4-59

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

914 7

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	E FUNDS
2	OHIO		

8
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
QUANTITY CALCULATIONS

T-71 9" REINFORCED P.C.C. PAVEMENT

ROADWAY	STATION TO STATION		LENGTH	CALCULATION width ft. - 9 sq. yds.	AREA sq. yds
E-5	2+50.32	8+60.56	610.24	16	1085
	8+60.56	9+60.56	100.00	1/2(19+16)	194
	9+60.56	11+96.00	236.44	1/2(16+36)	683
				Sub Total	1962
E-7	1+36.63	2+36.63	100.00	24	267
	2+36.63	3+60.72	124.09	16	221
	3+60.72	3+85.72	25.00	1/2(16+17)	46
	3+85.72	4+50.40	64.68	17	122
	4+50.40	6+50.40	200.00	1/2(25+15)	444
	6+50.40	7+44.00	93.60	1/2(17+10)	140
				Sub Total	1240
E-8	0+00	1+47.96	147.96	24	395
	1+47.96	6+17.14	469.18	16	834
	6+17.14	9+94.52	377.38	18	755
	9+94.52	11+74.52	180.00	1/2(27+14)	410
				Sub Total	2394
E-9	0+00	1+93.60	193.60	24	516
	1+93.60	4+35	241.40	16	429
				Sub Total	945
E-10	0+00	0+78	78.00	1/2(0+4)	17
	4+18	4+81.54	63.54	24	169
	4+81.54	5+31.54	50.00	1/2(24+26)	139
	5+31.54	7+09.78	178.24	26	515
	7+09.78	7+95	85.22	1/2(36+32)	322
	9+77	10+33	56.00	1/2(24+26)	156
	10+33	17+96	763.00	24	2035
				Sub Total	3353
E-11	0+00	1+98.46	198.46	1/2(0+21)	232
	1+98.46	3+90.04	191.56	16	341
	3+90.04	5+43	152.96	1/2(16+92)	323
	5+43	6+55.84	112.84	24	301
				Sub Total	1197
E-13	0+33	1+03	70.00	Var.	356
	1+03	3+96.25	299.25	1/2(24+19.5)	723
	3+96.25	4+96.25	100.00	1/2(22.5+14)	203
	4+96.25	6+12.32	116.07	Var.	69
				Sub Total	1351
E-14	0+82	2+72.97	190.97	Var.	231
	2+72.97	3+22.97	50.00	1/2(16+18)	94
	3+22.97	4+72.70	149.73	18	299
	4+72.70	6+16.79	144.09	Var.	328
	6+16.79	8+76.96	260.17	24	694
	8+76.96	9+79.56	102.60	16	182
	9+79.56	10+79.56	100.00	Var.	208
				Sub Total	2036
Access Road	1+40	3+02.49	162.49	1/2(0+22)	199
				Sub Total	199
E-15	9+95	12+25.74	230.74	Var.	536
	12+25.74	14+05.74	180.00	1/2(19+14)	330
	14+05.74	15+01	95.26	16	169
	17+23	17+40.32	17.32	1/2(15+14)	28
				Sub Total	1063
E-16	0+38.25	1+82.29	144.04	1/2(28.12+47)	601
	1+82.29	2+82.29	100.00	24	267
	2+82.29	4+98.38	216.09	16	384
	4+98.38	5+50.36	52.08	17	98
	5+50.46	6+26	75.54	1/2(20+16.5)	153
				Sub Total	1503
E-17	1+60	1+90	30.00	1/2(38+46)	140
	1+90	2+31.62	41.62	1/2(20+31)	118
	2+31.62	6+21.14	389.52	24	1039
	6+21.14	7+06.65	85.51	Var.	120
	7+06.65	8+90.65	184.00	19	388
	8+90.65	9+70.65	80.00	1/2(27+21.5)	216
	9+70.65	10+70.65	100.00	1/2(24.5+14)	222
				Sub Total	2243
* N-30	* 0+72	* 3+53.61	281.61	Var.	* 435
	* 3+53.61	* 8+50	496.39	16	* 882
	* 8+50	* 9+04.20	54.20	1/2(18+14)	* 96
				Sub Total	* 1413
* 30-N	* 0+12	* 1+73.65	161.65	Var.	* 394
	* 1+73.65	* 2+73.65	100.00	24	* 267
	* 2+73.65	* 6+16.40	342.75	16	* 609
	* 6+16.40	* 7+16.40	100.00	1/2(18+14)	* 178
	* 7+16.40	* 9+87	270.60	Var.	* 381
				Sub Total	* 1829

T-71 9" REINFORCED P.C.C. PAVEMENT (CON'T)

ROADWAY	STATION TO STATION		LENGTH	CALCULATION width ft - 9 sq. yds	AREA sq. yds
Willow	* 30+41.88	* 30+53.44	11.56	72	* 92
	* 30+53.44	* 31+54	100.56	82	* 916
	* 31+54	* 33+74	220.00	72	* 1760
	* 36+43	* 42+19	376.00	72	* 3008
	44+79	46+37.62	158.62	72	1269
	46+37.62	49+00	262.38	Var.	2038
				Sub Total	** 9083
Inner Belt	64+68.53	64+83	14.47	72	116
	68+46	70+64	218.00	72	1744
	74+21	74+98.21	77.21	108	926
	74+98.21	78+66.68	368.47	1/2(108+96.31)	4183
	70+66.68	78+86.88	20.20	96.31	216
	78+86.88	79+85.88	99.00	1/2(94.31+92)	1025
	79+85.88	83+09.31	323.43	72	2587
				Sub Total	10,797
				CUY 42-18.42	33,590
				CUY 21-15.32	9,018
				TOTAL	42,608

* -Project CUY 21-15.32
** -Total includes 5776 sq. yds. under CUY 21-15.32

I-22 SUBBASE

ROADWAY	LOCATION	STATION TO STATION		LENGTH ft.	WIDTH ft.	AREA sq. yds.	DEPTH in.	VOLUME Cu. Yds.
E-5	Under Pavement					1922	6.00	321
	" Rt. Shoulder	1+84	12+20	1036.0	7.00	806	4.79	107
	" Lt. "	2+50.32	8+60.56	610.2	3.00	203	6.00	34
							Sub Total	462
E-7	Under Pavement					1240	6.00	207
	" Rt. Shoulder	2+36.63	4+50.40	213.8	8.25	196	4.95	27
	" Lt. "	1+36.63	7+43	606.4	1.75	118	6.00	20
							Sub Total	254
E-8	Under Pavement					2394	6.00	400
	" Rt. Shoulder	1+47.96	9+94.52	846.5	7.80	734	4.79	97
	" Lt. "	0+70	0+00	70.0	5.00	39	6.00	7
	" Lt. "	0+00	4+50	450.0	3.00	150	6.00	25
	" Lt. "	4+50	14+10	960.0	1.75	187	6.00	31
							Sub Total	560
E-9	Under Pavement					945	6.00	158
	" Rt. Shoulder	1+93.60	4+58	264.4	7.00	206	4.79	27
	" Lt. "	0+00	4+38	438.0	3.00	146	6.00	24
							Sub Total	209
E-10	Under Pavement					3353	6.00	560
	" Rt. Shoulder	3+92	7+09.78	317.8	10.25	362	4.87	49
	" Rt. "	9+40	18+25	885.0	10.25	1008	4.87	136
	" Lt. "	4+18	7+98	380.0	1.75	74	6.00	12
	" Lt. "	9+84	17+01.98	718.0	1.75	140	6.00	23
	" Lt. "	17+01.98	18+16	114.0	3.75	47	6.00	8
							Sub Total	788
E-11	Under Pavement					1197	6.00	200
	" Rt. Shoulder	0+00	4+46.40	446.4	7.00	347	4.79	46
	" Rt. "	4+46.40	5+43	96.6	1/2(7+1.38)	45	6.00	8
	" Lt. "	1+98.46	5+65	366.5	3.00	122	6.00	20
							Sub Total	274
E-13	Under Pavement					1351	6.00	226
	" Rt. Shoulder	1+02	4+96.25	394.2	7.00	307	4.79	41
	" Lt. "	0+50	3+96.25	346.2	3.00	115	6.00	19
							Sub Total	286
E-14	Under Pavement					2036	6.00	340
	" Rt. Shoulder	2+76.73	4+72.70	196.0	7.00	152	4.79	20
	" Rt. "	8+76.96	10+54.83	177.9	7.00	138	4.79	18
	" Lt. "	2+76.73	9+79.56	702.8	3.00	234	6.00	39
							Sub Total	417
Access Road	Under Pavement					199	6.00	33
	" Rt. Shoulder	0+00	2+02.50	202.5	7.00	158	4.79	21
							Sub Total	54
E-15	Under Pavement					1063	6.00	178
	" Rt. Shoulder	10+50	15+26	476.0	7.00	370	4.79	49
	" Lt. "	9+54	12+25.74	271.7	3.00	91	6.00	15
							Sub Total	242
E-16	Under Pavement					1503	6.00	251
	" Rt. Shoulder	2+82.29	6+50	367.7	8.25	337	4.95	46
	" Lt. "	0+38.25	5+50.46	512.2	1.75	90	6.00	15
							Sub Total	312

SCALE None
MADE JFS DATE 11-10-59
TRCD ___ DATE ___
CKD JLC DATE 11-11-59
914 SHEET. 8

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

Rev. F.S.J. 12-8-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

9
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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

I-22 SUBBASE (CON'T)

ROADWAY	LOCATION	STATION TO STATION		LENGTH ft.	WIDTH ft	AREA sq. yds.	DEPTH in.	VOLUME Cu. Yds.
E-17	Under Pavement					2243	6.00	375
	" Rt. Shoulder	1+42	7+06.65	564.6	9.00	565	4.73	74
	" Rt. "	7+06.65	8+90.65	184.0	7.00	143	4.79	19
	" Lt. "	2+31.62	6+21.14	389.5	3.00	130	6.00	22
	" Lt. "	7+06.65	9+70.65	264.0	3.00	88	6.00	15
							Sub Total	505
* N-30	* Under Pavement					* 1413	6.00	* 236
	* " Rt. Shoulder	* 0+38	* 1+36	108.0	9.00	* 108	4.73	* 14
	* " Rt. "	* 1+46	* 7+04.20	558.2	7.00	* 434	4.79	* 58
	* " Lt. "	* 3+53.61	* 10+03	649.4	3.00	* 216	6.00	* 36
							Sub Total	* 344
* 30-N	* Under Pavement					* 1829	6.00	* 305
	* " Rt. Shoulder	* 2+73.65	* 8+64	590.4	7.00	* 413	4.79	* 55
	* " Rt. "	* 8+64	* 10+00	136.0	9.00	* 136	4.73	* 18
	* " Lt. "	* 1+07	* 6+16.40	509.4	3.00	* 170	6.00	* 28
								* 406
Willow	Under Pavement					⊙ 9083	6.00	₮ 1517
	* " Median	* 30+41.88	* 34+00	358.1	16.00	* 637	9.35	* 166
	* " "	* 36+24	* 42+45	621.0	16.00	1104	9.35	* 287
	" "	44+54	49+31	477.0	16.00	849	9.35	221
	* " Rt. Shoulder	* 35+50	* 42+45	695.0	9.00	695	4.73	* 91
	" Rt. "	44+54	46+75	221.0	9.00	221	4.73	29
	" Rt. "	47+85.02	49+37	152.0	9.00	152	4.73	20
	* " Lt. "	* 36+95	* 42+45	550.0	9.00	550	4.73	* 72
	" Lt. "	44+53	49+11	458.0	9.00	458	4.73	60
							Sub Total	** 2463
Inner Belt	Under Pavement					10,765	6.00	1798
	" Median	64+68.53	65+10	41.5	10.00	46	9.08	11
	" "	68+20	70+90	270.0	10.00	300	9.08	76
	" "	73+97	80+09.31	612.3	10.00	680	9.08	171
	" "	80+09.31	83+09.31	300.0	13.00	433	9.08	109
	" Rt. Shoulder	64+68.63	65+10	41.5	9.00	42	4.73	6
	" Rt. "	67+90	70+86	296.0	9.00	296	4.73	39
	" Rt. "	73+98	78+86.88	488.9	9.00	489	4.73	64
	" Rt. "	79+86.88	83+09.31	322.5	9.00	322	4.73	42
	" Lt. "	64+68.53	65+10	41.5	9.00	42	4.73	6
	" Lt. "	68+50	70+96	246.0	9.00	246	4.73	32
	" Lt. "	73+98	79+85.88	587.9	9.00	588	4.73	77
	" Lt. "	79+85.88	83+09.31	323.4	9.00	323	4.73	42
							Sub Total	2473
	Noses	See Item I-21				459	11.00	140
	* Noses	* " " "				* 120	11.00	* 37
							Sub Total	177
	Approach Slabs	See Item I-7				2076	6.00	347
	* Approach Slabs	* " " "				* 606	6.00	* 101
							Sub Total	448

CUY 42-18.42	49,388	8,085
CUY 21-15.32	14,207	2,589
TOTAL	63,595	10,674

* - Project CUY 21-15.32
** - Total includes 1581 cu.yds. under CUY 21-15.32
⊙ - " " 5776 cu.yds. " CUY 21-15.32
₮ - " " 965 cu.yds. " CUY 21-15.32

SHOULDER MATERIALS

ROADWAY	SIDE	STATION TO STATION		LENGTH ft.	WIDTH ft.	AREA sq. yds.	I-18 AGG SH. Cu. Yds.	B-219 AGG BASE Cu. Yds.	T-31 BIT MAT'L NO.6 AG Cu. Yds.	T-31 BIT MAT'L BIT MAT'L gals.	T-30 PRIME COAT gals.
E-5	Rt. Shoulder	1+84	12+20	1036.0	8	921	144	77	7.4	230	322
	Lt. "	2+50.32	8+60.56	610.2	3	203	34	17	1.6	51	71
						Sub Totals	178	94	9.0	281	393
E-7	Rt. Shoulder	2+36.63	4+50.40	213.8	8	189	34	16	1.5	47	66
	Lt. "	1+36.63	7+43	606.4	3	202	34	17	1.6	51	71
						Sub Totals	68	33	3.1	98	137
E-8	Rt. Shoulder	1+47.96	4+50	302.0	8	268	42	22	2.1	67	94
	Lt. "	0-70	0+00	70.0	5	39	4	3	0.3	10	14
	Lt. "	0+00	4+50	450.0	3	150	25	12	1.2	38	53
	Lt. "	4+50	14+10	960.0	3	320	53	27	2.6	80	112
						Sub Totals	124	64	6.2	195	273
E-9	Rt. Shoulder	1+93.60	4+58	264.4	8	235	36	20	1.9	59	82
	Lt. "	0+00	4+38	438.0	3	146	24	12	1.2	37	51
						Sub Totals	60	32	3.1	96	133
E-10	Rt. Shoulder	3+92	7+09.78	317.8	10	353	55	29	2.8	88	124
	Rt. "	9+40	18+25	885.0	10	983	154	82	7.9	246	344
	Lt. "	4+18	7+98	380.0	3	127	21	10	1.0	32	44
	Lt. "	9+84	17+01.98	718.0	3	239	40	20	1.9	60	84
	Lt. "	17+01.98	18+16	114.0	5	63	11	5	0.5	16	22
						Sub Totals	281	146	14.1	442	618
E-11	Rt. Shoulder	0+00	4+46.40	446.4	8	397	62	33	3.2	99	139
	Rt. "	4+46.40	5+43	96.6	4.2	45	6	4	0.4	11	16
	Lt. "	1+98.46	5+65	366.5	3	122	20	10	1.0	30	43
						Sub Totals	88	47	4.6	140	198
E-13	Rt. Shoulder	1+02	4+96.25	394.2	8	350	55	29	2.8	88	123
	Lt. "	0+50	3+96.25	346.2	3	115	19	10	0.9	29	40
						Sub Totals	74	39	3.7	117	163
E-14	Rt. Shoulder	2+76.73	4+72.70	196.0	8	174	27	15	1.4	44	61
	Rt. "	8+76.96	10+54.83	177.9	8	158	25	13	1.3	40	55
	Lt. "	2+76.73	9+79.56	702.8	3	234	39	19	1.9	59	82
						Sub Totals	91	47	4.6	143	198
Access Road	Rt. Shoulder	0+00	2+02.49	202.5	8	180	28	15	1.4	45	63
						Sub Totals	28	15	1.4	45	63
E-15	Rt. Shoulder	10+50	15+26	476.0	8	423	66	35	3.4	106	148
	Lt. "	9+54	12+25.74	271.7	3	91	15	8	0.7	23	32
						Sub Totals	81	43	4.1	129	180
E-16	Rt. Shoulder	2+82.29	6+50	367.7	8	327	51	27	2.6	82	114
	Lt. "	0+38.25	5+50.46	512.2	3	171	29	14	1.4	43	60
						Sub Totals	80	41	4.0	125	174
E-17	Rt. Shoulder	1+42	7+06.65	564.6	10	627	98	52	5.0	157	219
	Rt. "	7+06.65	8+90.65	184.0	8	164	26	14	1.3	41	57
	Lt. "	2+31.62	6+21.14	389.5	3	130	22	11	1.0	33	46
	Lt. "	7+06.65	9+70.65	264.0	3	88	15	7	0.7	22	31
						Sub Totals	161	84	8.0	253	353
* N-30	* Rt. Shoulder	* 0+38	* 1+46	108.0	10	120	* 19	* 10	* 1.0	* 30	* 42
	* Rt. "	* 1+46	* 7+04.20	558.2	8	496	* 78	* 41	* 4.0	* 124	* 174
	* Lt. "	* 3+53.61	* 10+03	649.4	3	216	* 36	* 18	* 1.7	* 54	* 76
						Sub Totals	* 133	* 69	* 6.7	* 208	* 292
* 30-N	* Rt. Shoulder	* 2+73.65	* 8+64	590.4	8	525	* 82	* 44	* 4.2	* 131	* 184
	* Rt. "	* 8+64	* 10+00	136.0	10	151	* 24	* 13	* 1.2	* 38	* 53
	* Lt. "	* 1+07	* 6+16.40	509.4	3	170	* 28	* 14	* 1.4	* 43	* 60
						Sub Totals	* 134	* 71	* 6.8	* 212	* 297
Willow	Median	30+41	49+31	1456.0	10	1618	270	135	12.9	404	566
	Rt. Shoulder	35+50	49+37	1068.0	10	1187	186	99	9.5	297	415
	Lt. "	36+95	49+11	1008.0	10	1120	176	93	9.0	280	392
						Sub Totals	① 632	② 327	③ 31.4	④ 981	⑤ 1373
Inner Belt	Median	64+68.53	83+09.31	1224.0	6	816	136	68	6.5	204	286
	Rt. Shoulder	64+68.53	83+09.31	1148.9	10	1276	200	106	10.2	319	447
	Lt. "	64+68.53	83+09.31	1198.8	10	1332	209	111	10.7	333	466
						Sub Totals	545	285	27.4	856	1199
						CUY 42-18.42	2106	1098	106	3303	4618
						CUY 21-15.32	652	339	33	1018	1426
						TOTAL	2758	1437	139	4321	6044

* - Project CUY 21-15.32
① - Total includes 385 cu.yds. under CUY 21-15.32
② - " " 199 " " " "
③ - " " 19.2 " " " "
④ - " " 598 gals. " "
⑤ - " " 1373 " " "

SCALE None HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE JFS DATE 11-10-59 CONSULTING ENGINEERS
TRCD ___ DATE ___ KANSAS CITY CLEVELAND NEW YORK
CKD JLC DATE 11-10-59 914 SHEET. 9

QUANTITY CALCULATIONS

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
QUANTITY CALCULATIONS

I-11 SANDSTONE CURB

ROADWAY	SIDE	STATION TO STATION		LENGTH ft.
E-5	Rt.	1+13.65	2+00	86
	Lt.	1+13.65	9+60.56	847
			Sub Total	933
E-7	Rt.	1+36.63	2+36.63	100
	Rt.	5+50.40	6+50.40	100
	Lt.	1+36.63	7+54	617
			Sub Total	817
E-8	Rt.	0+47.96	1+47.96	100
	Rt.	9+94.52	11+74.52	180
	Lt.	0-70	14+10	1480
			Sub Total	1760
E-9	Rt.	0+93.60	1+93.60	100
	Lt.	0+00	4+54	454
			Sub Total	554
E-10	Rt.	7+09.78	7+95	85
	Lt.	4+05	7+95	390
	Lt.	9+83	18+14	831
			Sub Total	1306
E-11	Lt.	1+98.46	6+55.84	456
			Sub Total	456
E-13	Rt.	0+30	1+20	106
	Lt.	0+30	4+96.25	478
			Sub Total	584
E-14	Rt.	7+76.96	8+76.96	100
	Rt.	10+54	10+79.56	26
	Lt.	* 2+76.73	10+79.56	803
			Sub Total	929
E-15	Lt.	9+86	14+05.74	420
			Sub Total	420
E-16	Rt.	1+82.29	2+82.29	100
	Lt.	0+38.25	6+30	592
			Sub Total	692
E-17	Rt.	8+90.65	10+70.65	180
	Lt.	2+31.62	6+21.14	389
	Lt.	7+06.65	10+70.65	364
			Sub Total	933
* 30-N	* Rt.	* 1+73.65	* 2+73.65	* 100
	* Lt.	* 0+10	* 7+16.40	* 706
			Sub Total	* 806
* N-30	* Rt.	* 7+04.20	* 9+04.20	* 200
	* Lt.	* 3+53.61	* 9+04.20	* 551
			Sub Total	* 751
Willow	* Median	* 30+41.88	* 34+00	* 716
	* "	* 36+24	* 42+45	* 1242
	"	44+54	49+31	954
	Rt.	46+85.02	47+85.02	100
	* Lt.	* 30+53.44	* 31+53.44	* 100
			Sub Total	**3112
Inner Belt	Median	64+68.53	64+85	33
	"	68+45	70+65	440
	"	74+22	83+09.31	1775
	Rt.	78+86.88	79+86.88	100
	Lt.	79+85.88	80+85.88	100
			Sub Total	2448
			CUY 42-18.42	12,901
			CUY 21-15.32	3,615
			TOTAL	16,516

* - Project CUY 21-15.32
** - Total includes 2058 lin. ft. under CUY 21-15.32

I-21 P.C.C. MEDIAN PAVEMENT (4")

ROADWAY	STATION TO STATION		LENGTH ft	WIDTH ft.	AREA sq. yds.
Willow	* 30+41.88	* 34+00	358	5	* 199
	* 36+24	* 42+45	621	5	* 345
	44+54	49+31	477	5	265
	51+07	51+86	79	5	44
	* 31+53.44	* Nose	42	½(2+10)	* 28
	46+85.02	Nose	46	½(2+10)	31
				Sub Total	** 912
Inner Belt	64+68	65+10	42	3	14
	68+20	70+90	270	3	90
	73+97	80+09.31	612	3	204
	80+09.31	83+09.31	300	½(3+9)	200
	78+86.88	Nose	38	½(2+10)	25
	79+85.88	Nose	33	½(2+10)	22
				Sub Total	555
E-5	9+60.56	Nose	80	½(2+10)	53
	2+50.32	Nose	55	"	37
				Sub Total	90
E-7	1+36.63	Nose	18	½(2+10)	12
				Sub Total	12
E-10	8+09.78	Nose	85	½(4+10)	66
				Sub Total	66
E-14	10+79.56	Nose	79	½(2+10)	53
				Sub Total	53
E-15	14+05.74	Nose	100	½(2+10)	67
	17+40.32	Nose	45	½(2+6)	20
				Sub Total	87
E-16	0+38.25	Nose	15	½(2+10)	10
				Sub Total	10
E-17	2+31.62	Nose	48	½(2+10)	32
	7+06.65	Nose	18	"	12
	10+70.65	Nose	28	"	19
				Sub Total	63
* N-30	* 9+04.20	* Nose	78	½(2+10)	* 52
				Sub Total	* 52
* 30-N	* 1+73.65	* Nose	60	½(2+10)	* 40
				Sub Total	* 40
				CUY 42-18.42	1276
				CUY 21-15.32	664
				TOTAL	1940

* - Project CUY 21-15.32
** - Total includes 572 sq. yds. under CUY 21-15.32

I-12 2A MODIFIED (10") CONCRETE CURB

ROADWAY	SIDE	STATION TO STATION		LENGTH ft
E-15	Lt.	16+95	17+40.32	45
			Sub Total	45
Willow	Lt.	48+73.11	49+20	47
			Sub Total	47
			TOTAL	92

L-10 SODDING

ITEM	AREA Sq. yds.
Sodding	268
Sodding, Including 2" Galvanized Wire Mesh	625

I-7 APPROACH SLABS

ROADWAY	BRIDGE	LOCATION	AREA sq. yds.
Inner Belt	3	East Approach	216
		West "	217
Inner Belt	4	East Approach	329
		West "	343
E-10	5	South Approach	87
		North "	130
E-15	7	East Approach	85
Willow	8	East Approach	160
		West "	183
E-15	9	East Approach	44
		West "	76
Willow	10	* East Approach	* 200
		West "	204
Willow	11	* East Approach	* 206
		* West "	* 200
		CUY 42-18.42	2076
		CUY 21-15.32	606
		TOTAL	2682

* - Project CUY 21-15.32

SCALE None
MADE JFS DATE 11-10-59
TRCD. DATE
CKD JLC DATE 11-11-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET. 10

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

11
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CUYAHOGA COUNTY
CITY OF CLEVELAND

CUY-42-18.42
CUY-21-15.32
QUANTITY CALCULATIONS

E-8 REMOVAL & DISPOSAL EXISTING SIDEWALK

ROADWAY	SIDE	LIMITS	LENGTH	WIDTH	AREA sq. ft.
Central	N	19th St. - 21st St.	325	12	3900
	S	" - 20th St.	230	12	2760
	S	20th St. - 21st St.	170	12	2040
	N	21st St. - 22nd St.	325	13	4225
	S	" - "	294	12	3528
		Sub Total			16,453
E. 21st St.	E	Carnegie - Central	500	5	2500
	W	" "	475	6	2850
		Sub Total			5,350
Charity	N	14th St. - 20th St	320	5	1600
	S	" "	320	5	1600
		Sub Total			3,200
E. 29th St.	E	Orange - Woodland	250	6	* 1500
	W	" "	250	6	* 1500
		Sub Total			* 3,000
Woodland	N	19th St. - 20th St	152	17	2584
	S	" "	258	18.5	4773
	S	27th St. - 29th St	360	18	* 6480
	S	29th St. - 30th St	225	18	* 4050
		Sub Total			** 17,887
E. 19th St.	E	Woodland - Scovill	752	6	4512
	W	" "	740	6	4400
		Sub Total			8,952
E. 20th St.	E	Charity - Central	105	5	525
	W	" "	105	5	525
		Sub Total			1,050
			CUY 42-18.42		42,362
			CUY 21-15.32		13,530
			TOTAL		55,892

* - Project CUY 21-15.32
** - Total includes 10,530 sq. ft. under CUY 21-15.32

E-8 REMOVAL & DISPOSAL EXISTING RIGID PAVEMENT

ROADWAY	LIMITS	LENGTH	WIDTH	AREA sq. yds.
Central	E. 19th St. - E. 22nd St.	695	40	3089
Woodland	E. 19th St - E. 20th St.	217	62	1495
Parcel 184	Market Place			2167
		TOTAL		6751

SS-18 FENCING

PROJECT	SHEET	LENGTH ft.
CUY 42-18.42	Sheet #92	2255
	" #93	1587
	" #94	3218
	" #95	2380
	" #96	920
	Sub Total	10,360
CUY 21-15.32	Sheet #97	3900
	Sub Total	3900
	TOTAL	14,260

L-9 QUANTITIES

PROJECT	ITEM	CALCULATION	QUANTITY
CUY 42-18.42	SEEDING & PROTECTION	Planimeter	108,543 Sq. Yds. #
CUY 21-15.32	" " "	"	44,500 " "
		Total	153,043 " "
CUY 42-18.42	AGRICULTURAL LIMING MATERIALS	100#/1000 Sq. Ft.	48.84 Tons
CUY 21-15.32	" " "	"	20.03 Tons
		Total	68.87 Tons
CUY 42-18.42	COMMERCIAL FERTILIZER	20#/1000 Sq. Ft.	9.77 Tons
CUY 21-15.32	" "	"	4.01 "
		Total	13.78 Tons

Includes 893 Sq. Yd. Sodding

E-11 WATER

PROJECT	CALCULATION	M. GAL.
CUY 42-18.42	6.5 gal./cu. yd. embankment x 1.15 = 6.5 x 282,342	1835
CUY 42-18.42	5.0 gal./cu. yd. subbase (See I-22) = 5.0 x 8,085	40
CUY 42-18.42	5.0 gal./cu. yd. Agg. Base (See I-18) = 5.0 x 2,106	11
	Sub Total	1886
CUY 21-15.32	6.5 gal./cu. yd. embankment x 1.15 = 6.5 x 124,768	811
CUY 21-15.32	5.0 gal./cu. yd. subbase (See I-22) = 5.0 x 2,589	13
CUY 21-15.32	5.0 gal./cu. yd. Agg. Base (See I-18) = 5.0 x 632	3
	Sub Total	827
	TOTAL	2713

E-8 REMOVAL & DISPOSAL EXISTING SANDSTONE CURB

ROADWAY	SIDE	LIMITS	LENGTH ft.
E. 19th St.	E	Woodland - Scovill	782
	W	" - "	785
		Sub Total	1567
E. 20th St.	E	Charity - Central	125
	W	" - "	125
		Sub Total	250
E. 21st St.	E	Charity - Central	70
	W	" - "	70
	E	Central - Carnegie	520
	W	" - "	500
		Sub Total	1160
* E. 29th St.	E	* Orange - Woodland	* 280
	W	* " - "	* 280
		Sub Total	* 560
Central	N	19th St. - 22nd St.	780
	S	" - "	795
		Sub Total	1575
Woodland	N	19th St. - 20th St.	135
	S	" - "	265
	S	* 29th St. - 30th St.	* 180
		Sub Total	** 580
		CUY 42-18.42	4952
		CUY 21-15.32	740
		TOTAL	5692

* - Project CUY 21-15.32
** - Total includes 180 lin. ft. under CUY 21-15.32

I-15 GUARD RAIL

PROJECT	SHEET	LENGTH ft.
CUY 42-18.42	Sheet #15	457
	" #16	660
	" #18	3583
	" #19	1167
	" #20	2175
	Sub Total	8,042
CUY 21-15.32	Sheet #16	560
	" #17	1870
	Sub Total	2430
	TOTAL	10,472

I-15 BARRIER RAIL

CUY 42-18.42	Sheet #16	339
	" #18	208
	" #19	48
	" #20	1162.5
	Sub Total	1757.5
CUY 21-15.32	Sheet #16	286
	" #17	686.5
	Sub Total	972.5
	TOTAL	2730

E-1 COMPACTED SUBGRADE

PROJECT	ITEM	AREA sq. yds
CUY 42-18.42	Area of T-71+B-219+I-11+I-7	49559
CUY 21-15.32	Area of T-71+B-219+I-11+I-7	13893
	TOTAL	63452

E-9 TREE REMOVAL

SHEET	SIZE 12"	SIZE 18"	TOTAL
#92			
#93	10	3	13
#94	6	4	10
#95	38	5	43
#96			
#97	4		4
TOTAL	58	12	70

SCALE None · HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE JFS DATE 11-10-59 CONSULTING ENGINEERS
TRCD ___ DATE ___ KANSAS CITY CLEVELAND NEW YORK
CKD JLC DATE 11-11-59 914 SHEET. 11

Rev. F.S.J. 12-8-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

12
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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-121-15.32

GENERAL SUMMARY
ESTIMATED QUANTITIES

TYPE CODE 7221

PART 7

PART 6 SHEET NUMBERS	PART 6 I-71-5 (6) 247 CUY-42-1829 FED. PARTIC.	PART 6 100% CITY	PART 6 TOTAL	PART A SHEET NO.	PART A I-71-5 (8) 248 (PART 7A) 100% CITY	PART A CUY-42-18.42	PART A TOTAL	PART A SHEET NO.	PART A I-77-5 (1) 162 CUY-21-15.32 FED. PARTIC.	PART A 100% CITY	PART A TOTAL	TOTAL PART A	PART B SHEET NUMBERS	PART B I-71-5 (8) 248 (PART 7B) CUY-42-18.7 FED. PARTIC.	PART B 100% CITY	PART B TOTAL	GRAND TOTAL	UNIT	ITEM NO.	DESCRIPTION	COMBINED TOTALS 100% CITY	COMBINED TOTALS FED. PARTIC.	I-71-5 (8) 248 PART 7A & PART 7B FED. PARTIC.	I-71-5 (8) 248 PART 7A & PART 7B 100% CITY	I-71-5 (8) 248 PART 7A & PART 7B TOTAL
																				ROADWAY					
	14,937	829	15,766			72,796	72,796		3,760		3,760	76,556	10	571,955		571,955	798,677	Cu.Yds.	E-1	Roadway Excavation, Method B, as per plan.	829	797,848	644,751		644,751
13	78,010	1,786	79,796	11		49,388	49,388	11	14,207		14,207	63,595	10	45,255		45,255	188,646	Sq.Yds.	E-1	Compacted Subgrade.	1,786	186,860	94,643		94,643
12	23,469		23,469														23,469	Lin.Ft.	E-8	Removal for Re-use of Existing Sandstone Curb		23,469			
				11		4,952	4952	11	740		740	5,692	10	283		283	5,975	Lin.Ft.	E-8	Removal and Disposal Existing Sandstone Curb.		5,975	5,235		5,235
	2000		2000			1500	1500		500		500	2000					4000	Cu.Yd.	E-4	Borrow using Granular Material, as per plan		4000	1500		1500
13	48722	3663	52385	11		6,751	6751					6,751	10	79		79	592.15	Sq.Yds.	E-8	Removal and Disposal Existing Pavement	3663	55,552	6,830		6,830
13	175,193	17,100	192,293	11		42,362	42,362	11	13,530		13,530	55,892	10	3,193		3,193	251,378	Sq.Ft.	E-8	Removal and Disposal of Existing Sidewalk.	17,100	234,218	45,555		45,555
13	Lump Sum		Lump Sum	11		Lump Sum	Lump					Lump Sum	10	Lump Sum		Lump Sum	Lump Sum	Lump Sum	E-9	Removal of Trees and Stumps.		Lump Sum	Lump Sum		Lump Sum
13	1046		1046	11		1,886	1,886	11	827		827	2,713	10	115		115	3874	M.Gals.	E-11	Water		3874	2,001		2,001
				1778		Lump Sum	Lump					Lump Sum					Lump Sum	Lump Sum	Special	Sign Bridge as per plan.		Lump Sum	Lump Sum		Lump Sum
	2		2			2	2		2		2	4	10	3		3	9	Each	I-8	Monument Assemblies Standard.		9	5		5
	2		2			2	2		2		2	4					6	Each	I-8	Monument Boxes Standard.		6	2		2
11	37,157		37,157										10	2,111		2,111	39,268	Sq.Ft.	I-13	4" Concrete Sidewalk, as per plan		39,268	2,111		2,111
12	3,742		3,742	11		8,042	8042	11	2,430		2,430	10,472	10	3237.5		3237.5	17,451.5	Lin.Ft.	I-15	Guard Rail, Steel Beam Standard Type (Deep)		17,451.5	11,279.5		11,279.5
12	437.5		437.5	11		1,757.5	1757.5	11	972.5		972.5	2,730.0	10	2062.5		2062.5	5230.0	Lin.Ft.	I-15	Guard Rail, Steel Beam Barrier Type (Deep)		5,230.0	3,820.0		3,820.0
14	1000		1000			500	500					500					1500	Lin.Ft.	I-15	Guard Rail, Temporary Steel Beam, as per plan		1500			500
13	120507		120507	11		107,650	107,650	11	44,500		44,500	152,150	10	65,787		65,787	338,444	Sq.Yds.	L-9	Seeding and Protecting, as per plan.		338,444	173,437		173,437
13	10.85		10.85	11		9.77	9.77	11	4.01		4.01	13.78	10	5.92		5.92	30.55	Tons	L-9	Commercial Fertilizer (12-12-12)		30.55	15.69		15.69
13	54.23		54.23	11		48.84	48.84	11	20.03		20.03	68.87	10	29.60		29.60	152.70	Tons	L-9	Agricultural Liming Materials		152.70	78.44		78.44
13	22		22	10		625	625					625					647	Sq.Yds.	L-10	Sodding, Including 2" Galvanized Wire Mesh, as per plan.		647	625		625
13	55		55	10		268	268					268					323	Sq.Yds.	L-10	Sodding		323	268		268
110	10		10			5	5	7				5					15	Tons	M-10	Calcium Chloride Furnished and Applied for Maintaining Traffic		15	5		5
10	500		500			250	250	7				250					750	Cu.Yds.	T-10	Traffic Compacted Surface Course for Maintaining Traffic.		750	250		250
14	2		2										10	4		4	6	Each	Special	Interstate and Defense Highway Signs Furnished and Erected		6	4		4
				11		10,360	10,360	11	3,900		3,900	14,260	10	20,149		20,149	34409	Lin.Ft.	SS-18	Fence Type "C"		34409	30,509		30,509
													10	21		21	21	Each	SS-18	Fence Gates, Type "C"		21	21		21
10	100		100														100	Cu.Yds.	T-35	Asphaltic Concrete Surface Course or an Approved Bituminous Premixed Surface Course for Maintaining Traffic		100			
	Lump Sum		Lump Sum			Lump Sum	Lump		Lump Sum		Lump	Lump Sum		Lump Sum		Lump Sum	Lump Sum	Lump	Sum	Construction Layout Stakes		Lump Sum	Lump Sum		Lump Sum
10	100		100			75	75		25		25	100					200	Hours	Special	Fill Compaction Using Heavy Pneumatic Tired Roller		200	75		75
																				LIGHTING (CONTINUED ON SHEET Nº 13)					
	20	20		56		56				24	24	80	74		52	52	152	Each	S-25	15,000 Lumen Luminaire and Insulating Transformer, as per plan.	152		108		108
	205	205		104		104				13	13	117	"		38	38	360	Each	S-25	10,000 Lumen Luminaire and Insulating Transformer, as per plan.	360		142		142
													"	39		39	39	Each	S-25	Lamp Standard, 17 foot Bracket, as per plan		39	39		39
30	51	81			129	129		31		31	160		"	26		26	267	Each	S-25	Lamp Standard, 10 foot Bracket, as per plan.	51	216	155		155
	26	26											"	11		11	37	Each	S-25	Lamp Standard, Two 10 foot Brackets, as per plan.	26	11	11		11
31	143	174			129	129		31		31	160		"	76		76	410	Each	S-25	Concrete Pole Base, as per plan.	143	267	205		205
3 (7)	22 (18)	25			31	31		2		2	33		"	92		92	150	Each	S-25	Pull Boxes, Concrete, as per plan.	22 (15)	(132) 128	123		123
													"	5		5	5	Each	S-25	Double Pull Box, as per plan.		5	5		5
	20,550	20,550		15,750		15,750				3600	3,600	19,350	"		8330	8330	48230	Lin.Ft.	S-25	No. 8 AWG, 5 KV Lighting Cable. as per plan	48,230		24,080		24,080
175		175			575	575						575	"	395		395	1145	Lin.Ft.	S-25	4-Way Duct, 2-2 inch, and 2-4 inch, as per plan		1,145	970		970
52.10 (6,943)	11.30 (1493)	14440			10,460	10,460		3040		3,040	13,500		"	4,750		4,750	32,690	Lin.Ft.	S-25	1-Way Duct, 2-inch, as per plan	11,230 (7,495)	25,195	15,210	-21.46	15,210
350 (48.10)	3.75 (2.275)	4085			1165	1165		160		160	1,325		"	1,930		1,930	7340	Lin.Ft.	S-25	2-Way Duct, 2-inch, as per plan	3,735 (2,275)	5,005	3,095	-3605	3,095
					260	260						260	"	1,280		1,280	1,280	Lin.Ft.	S-25	2-Way Duct, 1-2 inch and 1-4 inch., as per plan		1,280	1,280		1,280
					140	140						140					260	Lin.Ft.	S-25	3-Way Duct, 2-inch, as per plan.		260	260		260
																	140	Lin.Ft.	S-25	4-Way Duct, 2-inch, as per plan		140	140		140
													"	85		85	85	Lin.Ft.	S-25	3-Way Duct, 2-2 inch, and 1-4 inch, as per plan		85	85		85
	1,230	1,230			690	690		70		70	760		"	90		90	2,080	Lin.Ft.	S-25	1-Way Duct, 4-inch., as per plan	1,230	850	780		780
	890	890			70	70						70	"	450		450	1,410	Lin.Ft.	S-25	2-Way Duct, 4-inch, as per plan	890	520	520		520
	8	8		22		22				2	2	24	"		28	28	60	Each	S-25	Fluorescent Underdeck Light., as per plan	60		50		50
	150	150		240		240				80	80	320	"				470	Lin.Ft.	S-25	Multiple Feeders, Nº6 Conductor, as per plan	470		240		240
													"		1,175	1,175	1,175	Lin.Ft.	S-25	Multiple Feeders, Nº 8 Conductor, as per plan	1,175		1,175		1,175
	750	750		1800		1800				250	250	2050	"		990	990	3,790	Lin.Ft.	S-25	No. 10 AWG, 600 V. Branch Conductors.	3,790		2,790		2,790
	6	6		1		1						1					7	Each	I-8	Manhole (5'x8'), as per plan	7		1		1
													"		1	1	1	Each	S-25	Regulator Vault (6'x6'), as per plan	1		1		1
	1	1											"		2	2	3	Each	S-25	Regulator Vault (8'x11'), as per plan	3		2		2
	2	2											"				2	Each	S-25	Regulator Vault (8'x22') as per plan	2				
													"	470		470	470	Lin.Ft.	S-25	3 Way Duct, 1-2 inch and 2-4 inch, as per plan.		470	470		470
													"											
													"	542		542	542	Lin.Ft.	I-9	Stone Underdrain Nº2, as per plan		542	542		542

SCALE None
MADE JLC DATE 11-10-59
TRCD. BAS DATE 11-12-59
CKD. GMG DATE 11-11-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 12

Rev 8-22-60
Rev E.S.I. 1-11-60

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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GENERAL SUMMARY
ESTIMATED QUANTITIES

TYPE CODE 7221

\# There are no 100% City participating items in Part 7-A or Part 7-B on this sheet.

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

PART 6 SHEET NUMBERS	PART 6 I-71-5(6)247 CUY-42-18.29 FED. PARTIC.	PART 6 100% CITY	PART 6 TOTAL	# PART 7 PART A SHEET NUMBERS	PART A I-71-5(8)248 CUY-42-18.42 FED. PARTIC.	PART A SHEET NUMBERS	PART A I-77-5(1)162 CUY-21-15.32 FED. PARTICIPATION	PART A TOTAL	PART 7-A TOTAL	PART B SHEET NUMBER	PART B I-71-5(8)248 CUY-42-18.77 FED. PARTIC.	PART B	PART 7-B TOTAL	GRAND TOTAL	UNIT	ITEM NO.	DESCRIPTION	COMBINED TOTALS 100% CITY	COMBINED TOTALS FED. PART.	TOTALS I-71-5(8)248 FED. PARTICN
																	PAVEMENT			
13	57		57											57	Cu.Yds	B-19	Aggregate Base Course		57	
11	105	13	118											118	Cu.Yds	B-35	Asphaltic Concrete Leveling Course (60-70)	13	105	
12	2,162	249	2,411											2,411	Sq.Yds	B-70	9" Portland Cement Concrete Base Course	249	2,162	
12	262		262	9	1,098	9	339	339	1,437	10	899		899	2,598	Cu. Yds.	B-219	Water Proofed Aggregate Base Course,		2,598	1997
11	928		928	10	2,076	10	606	606	2,682					3,610	Sq. Yds.	I-7	Reinforced Concrete Approach Slabs (T=13")		3,610	2076
12	7117	1480	8597											8,597	Lin.Ft.	I-11	Sandstone Curb reset, as per plan	1480	7117	
12	26044	602	26646	10	12,901	10	3,615	3615	16,516	10	10,121		10,121	53,283	Lin.Ft.	I-11	6"x18" Sandstone Curb, as per plan	602	52,681	23022
13	151		151	10	92				92					243	Lin. Ft.	I-12	Standard Type 2-A Concrete Curb, Modifications "A" & "B" as per plan		243	92
12	405		405	9	2,106	9	652	652	2,758	10	1,721		1721	4,884	Cu.Yds.	I-18	Stabilized Crushed Aggregate Shoulders and Approaches		4,884	3827
12	1,380		1,380	10	1,276	10	664	664	1,940	10	2,803		2,803	6123	Sq.Yds.	I-21	Portland Cement Concrete Median Pavement, 4", Std. Type I		6123	4079
12	135		135											135	Sq.Yds.	I-21	Standard Type 2 Portland Cement Concrete Median Pavement, as per plan		135	
11	13329	257	13586	9	8,085	9	2,589	2589	10,674	10	8559		8559	32,819	Cu.Yds.	I-22	Subbase	257	32,562	16644
12	247		247											247	Gals.	T-30	Bituminous Tack Coat, Sec. M-5.5, MS-2 or RS-1 or Sec. M 5.2, RC-1, RC-2, or RC-3, as per Sec. T-30.02		247	
12	1280		1280	9	4,618	9	1,426	1426	6,044	10	4,315		4,315	11639	Gals.	T-30	Bituminous Prime Coat, See M-5.7 P.T. 2 or 3		11,639	8933
12	23		23	9	106	9	33	33	139	10	86		86	248	Cu.Yds.	T-31	Bituminous Surface Treatment, No. 6 Aggregate		248	192
12	714		714	9	3,303	9	1,018	1018	4,321	10	2,697		2,697	7,732	Gals.	T-31	Bituminous Surface Treatment, Bituminous Material, as per plan		7732	6000
11	75	9	84											84	Cu.Yds.	T-35	Asphaltic Concrete Surface Course Type "C" (60-70)	11	90	
13	341		341											341	Sq.Yds.	T-70	8" Portland Cement Concrete Pavement, as per plan		341	
11	72,100	1,537	73637	8	33,590	8	9,018	9018	42,608	10	34,467		34,467	150,712	Sq.Yds.	T-71	9" Reinforced Portland Cement Concrete Pavement, as per plan	1,537	149,175	68057

RETAINING WALLS
For Estimated Quantities, see Sheet No. 11, Part 7-B

BUILDING REMOVAL
For Estimated Quantities, See Sheet Nº 14-A, 14-B & 14-C of Part Nº 7-A

STRUCTURES OVER 20 FT. SPAN

See Sheet Nº 92-92A (Part 6) For Structure Quantities

See Sheet Nº 99-99A (Part 7-A) For Structure Quantities

LIGHTING (CONTINUED FROM SHEET NO. 12.)

	150	55	205											205	Lin Ft	S-25	3 Way Duct, 4 inch, as per plan	55	150	
	1		1											1	Each	S-25	Removing Wood Pole, as per plan		1	
		1	1											11	Each	S-25	Remove and Reinstall Lighting Unit, as per plan	1		
		65	65											65	Each	S-25	Trolley Pole, 10 foot bracket, as per plan	65		
		2	2											2	Each	S-25	Trolley Pole, 10 foot duplex bracket, as per plan	2		

SCALE None
MADE J.L.C. DATE 11-10-59
TRCD. R.R. DATE 11-10-59
CKD. G.M.G. DATE 11-11-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 13

Rev. F.S.J. 1-11-60

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND

GENERAL SUMMARY
ESTIMATED QUANTITIES

TYPE CODE 7221

There are no 100% City Participating Items in Part 7-A or Part 7-B on this sheet.

CUY.-42-18.42
CUY.-21-15.32

PART 6 SHEET NUMBERS		I-71-5(6)247 CUY.-42-18.29 FED. PARTIC.	100% CITY	TOTAL	PART 7 PART A SHEET NUMBERS		I-71-5(8)248 CUY.-42-18.42 FED. PARTIC.	SHEET NUMBERS		I-77-5(1)162 CUY.-21-15.32 FED. PARTICIPATION	TOTAL	PART 7-A TOTAL	PART 7 PART B SHEET NUMBERS		I-71-5(8)248 CUY.-42-18.77 FED. PARTIC.	PART 7-B TOTAL FED. PARTIC.	I-71-5(8)248 TOTAL FED. PARTIC.	GRAND TOTAL	UNIT	ITEM NO.	DESCRIPTION	COMBINED TOTALS 100% CITY	COMBINED TOTALS FED. PART.
																					DRAINAGE (CONTINUED)		
	31-36	1,316		1,316	140	120	776	116	540	140	140	916	11	573	573	1349	2805	Lin.Ft.	I-2	12" Class B Storm Sewer		2805
	31-36	4,003	122	4,125	114	500	1,470	540	430	114	114	4,584	11	696	696	2168	6,405	Lin.Ft.	I-2	12" Class B Storm Sewer, Under Pavement or Approaches	122	6,283
	34	226		226													226	Lin.Ft.	I-2	12" Class B Storm Sewer, Sec. M-6.4 (c)		226
31	33-36	478		478			552	422	130			552				552	1,030	Lin.Ft.	I-2	15" Class B Storm Sewer		1,030
	31-35	560	98	658			147	147				147	11	623	623	770	1,428	Lin.Ft.	I-2	15" Class B Storm Sewer, Under Pavement or Approaches	98	1,330
31		74		74													74	Lin.Ft.	I-2	15" Class B Storm Sewer, Sec. M-6.5(b) or M-6.8(b)		74
							500	500				500				500	500	Lin.Ft.	I-2	15" Class B Storm Sewer, Under Pavement or Approaches, Sec M-6.6(c)		500
	35	146		146			176	-	176			176				176	322	Lin.Ft.	I-2	18" Class B Storm Sewer, Sec. M-6.5(b) or M-6.8(b)		322
31,33	35-36	388		388													388	Lin.Ft.	I-2	18" Class B Storm Sewer		388
31	35-36	748		748													748	Lin.Ft.	I-2	18" Class B Storm Sewer, Under Pavement or Approaches		748
	35	204		204			124	124				124				124	328	Lin.Ft.	I-2	18" Class B Storm Sewer, Under Pavement or Approaches, Sec. M-6.6(c)		328
	33	70		70									11	244	244	244	314	Lin.Ft.	I-2	21" Class B Storm Sewer, Under Pavement or Approaches		314
	33	264		264													264	Lin.Ft.	I-2	21" Class B Storm Sewer		264
	36		106	106			92		92			92				92	198	Lin.Ft.	I-2	24" Class B Storm Sewer, Under Pavement or Appr's. Sec. M-6.6(b) or M-6.8 (b)	106	92
	36	70		70													70	Lin.Ft.	I-2	24" Class B Storm Sewer		70
35	36	264		264													264	Lin.Ft.	I-2	24" Class B Storm Sewer Sec. M-6.6(b) or M-6.8(b)		264
													11	290	290	290	290	Lin.Ft.	I-2	27" Class B Storm Sewer, Under Pav't or Approaches, Sec M6.6 or M6.8 b		290
	32,36	2		2													2	Each	I-8	Manholes Reconstructed to Grade, as per plan		2
31,33	34,36	11		11													11	Each	I-8	Standard No 2 3-A Catch Basin		11
	31-36	31		31	1		5	2	3	1		6				5	37	Each	I-8	Standard No. 2-6 Median Inlet		37
	34	4		4	1	3	8	4	1	1		9				8	13	Each	I-8	Standard No. 2-6 Paved Shoulder Inlet		13
31-32	34-36	9		9			1	1				1				1	10	Each	I-8	Standard No. 2-8 Median Inlet		10
33	35	3		3			1		1			1				1	4	Each	I-8	Standard No. 2-10 Median Inlet		4
	31-36	28		28	3	2	19	9	8	3		22	11	24	24	43	74	Each	I-8	Standard No. 2-2-A Catch Basin		74
31-32	34-35	13	2	15			2	1	1			2				2	17	Each	I-8	Standard No. 3 Catch Basin	2	15
31-33	36	6		6		1	1					1				1	7	Each	I-8	Standard No. 7 Catch Basin		7
							1		1			1				1	1	Each	I-8	Standard No. 9-A Catch Basin		1
	31-36	42		42		2	2					2				2	44	Each	I-8	Manhole Adjusted to Grade		44
31	33	7		7			5		5			5				5	12	Each	I-8	Inlets Adjusted to Grade		12
	33	1		1													1	Each	I-8	Standard No 6 Catch Basin		1
31-34	36	33		33		2	7		5			7				7	40	Each	I-16	Manholes Abandoned		40
31-34	36	88		88		4	15		11			15				15	103	Each	I-16	Inlets Abandoned		103
													11	5	5	5	5	Each	I-16	Catch Basins Abandoned		5
													11	537	537	537	537	Lin.Ft.	I-14	Standard Paved Gutter, Type #1 Modified, as per Plan		537
31	34-36	170		170	20	20	250	100	130	20	20	270	11	270	270	520	710	Lin.Ft.	I-14	Special Paved Gutter Aprons, as per plan		710
34	36	210		210			309					309				309	519	Lin.Ft.	E-12	No 9 Sewer Removed, as per plan		519
	34	1,200		1,200													1,200	Lin.Ft.	Special	No 9 Sewer Sand Filled as per plan		1,200
	31-36	24,321	850	25,171	3089	3925	9989	2025	3650	3000	3000	12989	11	15,046	15046	25035	53,206	Lin.Ft.	I-4	6" Underdrain, as per plan	850	52356
31,33	34,36	230	10	240	16	50	120	20	50	16	16	136				120	376	Lin. Ft.	I-4	8" Pipe Outlet for Underdrain Sec. M-6.4 (a)		376
													11	292	292	292	292	Lin.Ft.	I-4	6" Pipe Outlet for Underdrain Sec. M-6.4 (c) Without Perforations		292
													11	54	54	54	54	Lin.Ft.	I-2	8" Storm Sewer, Sec. M-6.4 (c) as per Plan		54
													11	56	56	56	56	Lin.Ft.	I-2	8" Storm Sewer, Under Pav't or Approaches, Sec. M-6.4 (c) as per Plan		56
													11	122	122	122	122	Lin.Ft.	I-2	12" Class "A" Storm Sewer		122
31		26		26	276	92	276	30	54	176	176	452				276	478	Lin.Ft.	I-2	12" Class "B" Storm Sewer Sec. M-6.5 (b) or M-6.8 (b)		478
													11	1,265	1265	1265	1,265	Lin.Ft.	I-2	12" Class "A" Storm Sewer, Under Pav't or Approaches, Sec M-6.5(b) or M-6.8(b)		1,265
													11	108	108	108	108	Lin.Ft.	I-2	15" Class "A" Storm Sewer Under Pav't or Approaches Sec M-6.5(b) or M-6.8(b)		108
	33	76		76													76	Lin.Ft.	I-2	30" Class "B" Storm Sewer Under Pavement or Approaches		76
													11	228	228	228	228	Lin.Ft.	I-2	36" Class "B" Storm Sewer, Under Pavement or Approaches		228
													11	463	463	463	463	Lin.Ft.	I-2	42" Class "B" Storm Sewer, Under Pavement or Approaches		463
	35		105	105													105	Lin. Ft.	I-2	30" Class "B" Storm Sewers Under Pav't. or Approaches, Sec. M-6.6 (b) or M-6.8 (b)	105	
													11	926	926	926	926	Lin.Ft.	I-2	36" Storm Sewer, Under Pav't or Approaches, Sec. M-6.6 (b) or M-6.8 (b)		926
													11	56	56	56	56	Lin.Ft.	I-2	10" Storm Sewer, Sec. M-6.4 (c) as per Plan		56
													11	16	16	16	16	Lin.Ft.	I-2	10" Storm Sewer, Under Pav't or Approaches, Sec. M-6.4 (c) as per Plan		16
	31-36	33	2	35	6	13	22	2	7	6	6	28	11	14	14	36	77	Each	I-5	6" Pipe Special for Underdrain, as per plan		77
													11	14	14	14	14	Each	I-5	12" Pipe Special for Class "A" Storm Sewer Under Pav't or Appr's Sec. M-6.5 (b) or M-6.8 (b)		14
	31	110		110													110	Lin.Ft.	I-2	21" Class "B" Storm Sewer Under Pav't. or Appr's. Sec. M-6.6 (b) or M-6.8 (b)		110
													11	6	6	6	6	Each	I-5	12" Class "B" Pipe Special For Storm Sewer Under Pav't or Approaches		6
													11	6	6	6	6	Each	I-5	8" Pipe Special For Storm Sewer Sec. M-6.4 (c)		6
													11	3	3	3	3	Each	I-5	10" Pipe Special For Storm Sewer, Sec. M-6.4 (c)		3
	34	1		1													1	Each	I-8	Junction Chamber, as per plan		1
31,33	35-36	8		8		1	3		2			3	11	10	10	13	21	Each	I-8	Standard Manholes, #1 With City Type Frame and Cover, as per Plan		21
	32-36	10		10			1		1			1	11	4	4	5	15	Each	I-8	Standard Manholes, #2 With City Type Frame and Cover, as per Plan		15
													11	1	1	1	1	Each	I-8	Standard Catch Basin, #6 Modified, as per Plan		1
													11	11	11	11	11	Each	I-8	Special Curb Inlet, #1, as per Plan		11
													11	1	1	1	1	Each	I-8	Special Curb Inlet, #2, as per Plan		1
													11	1	1	1	1	Each	I-8	Special Catch Basin #4, as per Plan		1

DRAINAGE (CONTINUED)

DESCRIPTION	ITEM NO.	UNIT	GRAND TOTAL
6" Class B Storm Sewer, Under Pavement or Approaches Sec M6.6(c)	I-2	Lin.Ft.	710
6" Class B Storm Sewer, Under Pavement or Approaches, Sec M-10.6.6(d)	I-2	Lin.Ft.	430
6" (Radius Pipe) Class B Storm Sewer, U/P or Approaches, Sec M6.6(c)	I-2	Lin.Ft.	64
6" (Radius Pipe) Class B Storm Sewer, U/P or Approaches, Sec M-10.6.6(d)	I-2	Lin.Ft.	40
66" (Radius Pipe) Class B Storm Sewer, U/P or Approaches, Sec M-6.6 (b)	I-2	Lin.Ft.	16
66" Class B Storm Sewer Under Pav't or Apprs. Sec. M-6.6 (b)	I-2	Lin. Ft.	260

PART 6 I-71-5(6)247 CUY.-42-18.29 TOTAL FED. PART.

SHEET NUMBER	CUY.-42-18.29	TOTAL FED. PART.
34,36	710	710
34	430	430
36	64	64
34	40	40
36	16	16
36	260	260

Rev. A.E.K. 1-11-60

SCALE None
MADE G.M.G. DATE 11-10-59
TRCD. R.B. DATE 11-10-59
CKD. JFS DATE 11-11-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 14

GENERAL SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

14-A
181

CUYAHOGA COUNTY
CUY-42-18.42; CUY-21-15.32

ITEM Nº	QUANTITY		CUY 42-18.29 I-71-5(6)247	UNIT	DESCRIPTION
					BUILDING REMOVAL
S-24			Lump Sum	Lump	REMOVAL OF 1-STORY BRICK BUILDING, PARCEL Nº 116 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK BUILDING AND 1-STORY BRICK BUILDING, PARCEL Nº 182 LA
S-24			Lump Sum	Lump	REMOVAL OF 3-STORY BRICK, 2-STORY FRAME BUILDING AND 1-STORY BRICK DWELLING, PARCEL Nº 187 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK, 1-STORY BRICK BUILDING AND 1-STORY FRAME SHED, PARCEL Nº 202 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK BUILDING, 2-STORY BRICK, 1-STORY BRICK BUILDING, AND 2-STORY BRICK, 2-STORY FRAME BUILDING, PARCEL Nº 205 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK, 1-STORY BRICK BUILDING, PARCEL Nº 208 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY FRAME BUILDING, PARCE Nº 213 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK, 1-STORY BRICK BUILDING, PARCEL Nº 219 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK BUILDING AND 1-STORY SHEET METAL GARAGE, PARCEL Nº 227 LA
S-24			Lump Sum	Lump	REMOVAL OF TWO 1-STORY BRICK BUILDINGS AND 2-STORY FRAME, 1-STORY FRAME DWELLING AND 2-STORY FRAME DWELLING, PARCEL Nº 229 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK, 1½ STORY FRAME, 1-STORY FRAME DWELLING AND 1-STORY FRAME DWELLING, PARCEL Nº 232 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK, 2-STORY FRAME DWELLING AND 2-STORY BRICK AND BLOCK GARAGE, PARCEL Nº 236 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY FRAME DWELLING AND 1-STORY BRICK AND BLOCK GARAGE, PARCEL Nº 237 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY FRAME AND BRICK, 1-STORY FRAME DWELLING, PARCEL Nº 239 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY FRAME DWELLING AND 2-STORY BRICK DWELLING, PARCEL Nº 240 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY FRAME, 1-STORY FRAME DWELLING AND 2-STORY FRAME DWELLING, PARCEL Nº 241 LA
S-24			Lump Sum	Lump	REMOVAL OF TWO 2-STORY FRAME DWELLINGS, PARCEL Nº 242 LA
S-24			Lump Sum	Lump	REMOVAL OF 1-STORY FRAME DWELLING, PARCEL Nº 248 LA
S-24			Lump Sum	Lump	REMOVAL OF 1-STORY BRICK BUILDING, PARCEL Nº 257 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK, 1-STORY FRAME BUILDING, PARCEL Nº 258 LA
S-24			Lump Sum	Lump	REMOVAL OF THREE 2-STORY FRAME DWELLINGS AND 1-STORY FRAME BUILDING, PARCEL Nº 260 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY FRAME, 1-STORY FRAME DWELLING, PARCEL Nº 263 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK DWELLING AND 1-STORY GARAGE, PARCEL Nº 265 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY FRAME DWELLING, PARCEL Nº 268 LA
S-24			Lump Sum	Lump	REMOVAL OF 1½-STORY FRAME DWELLING, 2½-STORY FRAME DWELLING, 2-STORY FRAME DWELLING AND 1-STORY BRICK GARAGE, PARCEL Nº 269 LA
S-24			Lump Sum	Lump	REMOVAL OF 1-STORY FRAME GARAGE, PARCEL Nº 272 LA
S-24			Lump Sum	Lump	REMOVAL OF FOUR 1½ STORY FRAME BUILDINGS, PARCEL Nº 726 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK, 1-STORY BRICK BUILDING, PARCEL Nº 728 LA
S-24			Lump Sum	Lump	REMOVAL OF 1-STORY FRAME, 1-STORY FRAME, 2-STORY FRAME BUILDING, AND 1-STORY FRAME BUILDING AND 2-STORY FRAME BUILDING, PARCEL Nº 733 LA
S-24			Lump Sum	Lump	REMOVAL OF TWO 2-STORY FRAME BUILDINGS AND TWO 1-STORY BRICK BUILDINGS, PARCEL Nº 736 LA
S-24			Lump Sum	Lump	REMOVAL OF 3-STORY BRICK BUILDING AND 1-STORY BRICK BUILDING, PARCEL Nº 801 LA
S-24			Lump Sum	Lump	REMOVAL OF 2-STORY BRICK BUILDING, 1-STORY BRICK BUILDING, 1-STORY BRICK GARAGE, PARCEL Nº 802 LA
S-24			Lump Sum	Lump	REMOVAL OF 3-STORY BRICK BUILDING, 2-STORY FRAME, 2-STORY FRAME AND BRICK BUILDING, AND TWO 2-STORY FRAME BUILDINGS, PARCEL Nº 803 LA
S-24			Lump Sum	Lump	REMOVAL OF 1-STORY BRICK GARAGE AND 1-STORY SHEET METAL BUILDING, PARCEL Nº 804 LA
S-24			Lump Sum	Lump	REMOVAL OF 1-STORY SHEET METAL AND FRAME GARAGE WITH HEAVY CONCRETE FLOOR SLAB, 1-STORY CONCRETE BLOCK GARAGE, 3 STORY BRICK BUILDING, 1-STORY FRAME AND BRICK BUILDING WITH HEAVY CONCRETE FLOOR SLAB, PARCEL Nº 805 LA
S-24			Lump Sum	Lump	REMOVAL OF 1½-STORY FRAME AND BRICK BUILDING AND 2-STORY FRAME DWELLING, PARCEL Nº 818 LA
S-24			Lump Sum	Lump	REMOVAL OF 1-STORY FRAME GARAGE, PARCEL Nº 819 LA

(CONTINUED ON SHEET Nº 14-B)

GENERAL SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

14-B
181

CUYAHOGA COUNTY
CUY-42-18.42 ; CUY-21-15.32

ITEM Nº	QUANTITY		CUY-42-18.29 1-71-5(6)247	UNIT	DESCRIPTION
					BULDING REMOVAL (CONTINUED FROM SHEET Nº 14-A)
S-24			Lump Sum	LUMP	Removal of 1- Story Frame Dwelling and 2- Story Frame Dwelling, Parcel Nº 273 LA
S-24			Lump Sum	LUMP	Removal of Two 2- Story Frame Dwellings and Two 1- Story Frame Dwellings, Parcel Nº 298 LA
S-24			Lump Sum	LUMP	Removal of 2,3 and 4-Story Brick Church and 2- Story Frame Dwelling, Parcel Nº 334
S-24			Lump Sum	LUMP	Removal of 1- Story Brick Building, Parcel Nº 369 LA
S-24			Lump Sum	LUMP	Removal of 1 and 2 - Story Frame Dwelling and 2- Story Frame Dwelling, Parcel Nº 397 LA
S-24			Lump Sum	LUMP	Removal of 1- Story Frame Dwelling and 2-Story Frame Dwelling, Parcel Nº 412 LA
S-24			Lump Sum	LUMP	Removal of 2- Story Frame Dwelling and 1- Story Frame Shed, Parcel Nº 413 LA
S-24			Lump Sum	LUMP	Removal of 2 - Story Frame Dwelling, Parcel Nº 414 LA
S-24			Lump Sum	LUMP	Removal of 1 - Story Concrete Block Gas Station, Parcel Nº 426 LA
S-24			Lump Sum	LUMP	Removal of 2- Story Brick Building and 1- Story Frame Shed, Parcel Nº 455 LA
S-24			Lump Sum	LUMP	Removal of 2- Story Brick, 2- Story Frame, 1- Story Frame Building, Parcel Nº 459 LA
S-24			Lump Sum	LUMP	Removal of 1 - Story Brick Building, Parcel Nº 467 LA
S-24			Lump Sum	LUMP	Removal of Two 2- Story Frame and 1- Story Frame Dwellings, Parcel Nº 469 LA
S-24			Lump Sum	LUMP	Removal of 1- Story Frame Dwelling, Parcel Nº 470
S-24			Lump Sum	LUMP	Removal of 2- Story Frame Dwelling, Parcel Nº 471
S-24			Lump Sum	LUMP	Removal of Two 2- Story Frame, 1- Story Frame Dwellings and 1- Story Sheet Metal Garage, Parcel Nº 476
S-24			Lump Sum	LUMP	Removal of 2- Story Brick, 2- Story Frame, 2- Story Frame Building, Parcel Nº 477
S-24			Lump Sum	LUMP	Removal of 2- Story Frame, 1- Story Frame Dwelling, Parcel Nº 478
S-24			Lump Sum	LUMP	Removal of 2- Story Brick Dwelling, Parcel Nº 479
S-24			Lump Sum	LUMP	Removal of 1- Story Frame Office and Weight Scale, Parcel Nº 547 LA
S-24			Lump Sum	LUMP	Removal of 1- Story Brick, 1- Story Brick and Concrete Block Building, Parcel Nº 567 LA
S-24			Lump Sum	LUMP	Removal of 1- Story Brick, 2- Story Brick, 1- Story Brick Truck Loading Dock, Parcel Nº 570 LA
S-24			Lump Sum	LUMP	Removal of 1- Story Brick and Corrugated Metal, 1- Story Brick Building, Concrete Walls and Wood Loading Dock, Parcel Nº 572 LA
S-24			Lump Sum	LUMP	Removal of 1- Story Brick, 1- Story Tile (Brick Faced), 1- Story Brick, 1- Story Brick Building, Parcel Nº 579 LA
S-24			Lump Sum	LUMP	Removal of 1- Story Brick, 1½- Story Brick Building, Parcel Nº 583 LA
S-24			Lump Sum	LUMP	Removal of 1- Story Brick Building, Parcel Nº 586 LA
S-24			Lump Sum	LUMP	Removal of 2- Story Frame Building, Parcel Nº 588 LA
S-24			Lump Sum	LUMP	Removal of 2- Story Frame, 1- Story Frame Building and 1-Story Frame Building, Parcel Nº 720 LA
S-24			Lump Sum	LUMP	Removal of 1- Story Brick Building, Parcel Nº 725 LA
S-24			Lump Sum	LUMP	Removal of 1 - Stery Brick Building, Parcel Nº 437 LA
S-24			Lump Sum	LUMP	Removal of 3 - Story Brick Building, Parcel Nº 438 LA

(CONTINUED ON SHEET Nº 14-C)

GENERAL SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

14-C
181

CUYAHOGA COUNTY
CUY 42 - 18.42
CUY 21 - 15.32

ITEM Nº	QUANTITY CUY-21-15.32 I-77-5(1)162		QUANTITY CUY-42-18.42 ACI-71-5(8)248		UNIT	DESCRIPTION
						BUILDING REMOVAL (CONTINUED FROM SHEET Nº 14-B)
S-24	LUMP SUM				LUMP	REMOVAL OF 2-STORY BRICK BUILDING, PARCEL Nº 548 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 1-STORY BRICK, 1-STORY CONCRETE BLOCK BUILDING, PARCEL Nº 549 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 1-STORY BRICK AND CONCRETE BLOCK BUILDING AND 2-STORY BRICK GARAGE, PARCEL Nº 550 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 2-STORY BRICK BUILDING, PARCEL Nº 551 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 1-STORY FRAME, 2-STORY FRAME, 1-STORY FRAME BUILDING, PARCEL Nº 554 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 1-STORY BRICK BUILDING, PARCEL Nº 555 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 2-STORY FRAME, 1-STORY FRAME BUILDING AND 2-STORY FRAME, 1-STORY FRAME BUILDING AND 3-STORY BRICK BUILDING AND 2-STORY BRICK, 2-STORY FRAME, 1-STORY FRAME BUILDING AND TWO 1-STORY BRICK BUILDING AND 1-STORY FRAME BUILDING, PARCEL Nº 558 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 2-STORY BRICK, 1-STORY BRICK, 2-STORY FRAME, 1 STORY FRAME BUILDING AND 1-STORY BRICK GARAGE, PARCEL Nº 560 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 3-STORY BRICK, 2-STORY BRICK BUILDING, PARCEL Nº 806 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 2-STORY FRAME BUILDING, PARCEL Nº 808 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 2½-STORY BRICK BUILDING AND 2-STORY FRAME BUILDING, PARCEL Nº 809 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 3-STORY BRICK BUILDING AND 1-STORY BRICK, 2-STORY FRAME BUILDING, PARCEL 810 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 1-STORY BRICK CHURCH, PARCEL Nº 812 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 1-STORY BRICK BUILDING AND 1-STORY BRICK SHED, PARCEL Nº 813 LA
S-24	LUMP SUM				LUMP	REMOVAL OF 2-STORY FRAME BUILDING, PARCEL Nº 815 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 2-STORY BRICK BUILDING, PARCEL Nº 221 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 1-STORY BRICK BUILDING, PARCEL Nº 222 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 1-STORY BRICK BUILDING AND ROOF OVER CONCRETE WALK, PARCEL Nº 282 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 2-STORY FRAME, 2-STORY FRAME, 1-STORY BRICK BUILDING, PARCEL Nº 284 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 2-STORY FRAME BUILDING, PARCEL Nº 285 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 1½-STORY FRAME, 1-STORY FRAME BUILDING, PARCEL Nº 366 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 2-STORY FRAME DWELLING, PARCEL Nº 443 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 2-STORY BRICK BUILDING AND 1-STORY FRAME GARAGE, PARCEL Nº 446 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 1-STORY FRAME DWELLING AND FRAME GARAGE, PARCEL Nº 451 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 1-STORY IRON GAS STATION, PARCEL Nº 496 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 2-STORY BRICK BUILDING, PARCEL Nº 509 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 2-STORY BRICK BUILDING, PARCEL Nº 516 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 2-STORY FRAME, 1-STORY FRAME DWELLING, PARCEL Nº 517 LA
S-24			LUMP SUM		LUMP	REMOVAL OF 1-STORY BRICK GARAGE, PARCEL Nº 518 LA

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

15
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

P.I. of Shoulder
50' Transition
Paved Berm: From 3' to 6'3" from edge of pavement
Guard Rail: From 5' to 3'2" from edge of pavement
℄ Ramp E-18
Edge of Pavement
Scale: 1"= 20'

℄ Ramp E-15
P.I. of Shoulder
100' Paved Berm & Guard Rail Transition From 4'-2" to 8'-0" from edge of Pavement
Scale: 1"= 20'

Sta. 0+58.24 W. Turnout = Sta. 4+39.86 ℄ E. 14th St.
Sta. 1+45.96 W. Turnout = Sta. 29+12.66 ℄ Orange
Sta. 29+09.53 ℄ Orange = Sta. 3+16.70 ℄ E. 14th St.
Sta. 3+69 ℄ E. 14th St.
P.T. Sta. 1+88.50 ℄ E. Turnout = Sta. 4+84.69 ℄ E. 14th St.
Sta. 1+17.71 ℄ E. Turnout = Sta. 4+05.70 ℄ E. 14th St.
Sta. 0+13.78 E. Turnout = Sta. 27+99.43 ℄ Orange
Sta. 28+27.53 ℄ Orange = Sta. 3+76.70 ℄ E. 14th St.

℄ E. 14th St.
P.T. Sta. 5+05.7 ℄ E. 14th St.
150' R.
P.R.C. Sta. 4+71.3 ℄ E. 14th St.
150' R.
P.C. Sta. 4+36.9 ℄ E. 14th St.
Scale: 1"= 30'

℄ RAMP "E-18"
Widening
50' Paved Berm & Guard Rail Transition
100' Paved Berm & Guard Rail Transition
Approach Slab
Approach Slab
Type 2A Modified (6" Curb)
MATCH LINE (SEE SHEET NO. 19) STA. 7+00 ℄ E-18
P.C. Sta. 7+04.50 ℄ Ramp E-15
P.T. Sta. 8+12.41 ℄ Ramp E-18

P.C. Sta. 10+38.16 ℄ Ramp E-18
6"x 18" Sandstone Curb
P.T. Sta. 13+19.18 ℄ E-18 = Sta. 12+47.56 ℄ E-15
End Ramp E-18
End Guard Rail Sta. 12+45 ℄ E-18
100' Paved Berm & Guard Rail Transition (See Inset)
MATCH LINE P.T. STA. 12+57.21 ℄ E-15 = STA. 13+29.03 ℄ E-18 (SEE SHEET NO. 18)
Previous Contract Sta. 17+00 ℄ E. 9th St.
Begin Sidewalk at Stone Pavt.
Match Slope Paving
Sta. 17+96
Curve Data Δ = 33°17'11.2" R = 100.000' T = 29.893'
Sta. 18+97.97 ℄ E. 9th St. = Sta. 32+97.94 ℄ Brdwy.
6"x 18" Sandstone Curb
4" Concrete Sidewalk
P.T. Sta. 30+38.53 ℄ Orange Ave. = Sta. 24+04.20 ℄ W. Turnout

MATCH LINE (SEE SHEET 18) STA. 4+84.69
P.R.C. Sta. 4+71.3
P.C. Sta. 4+36.9 ℄ E. 14th St. See Inset
P.C. Sta. E. Turnout 0+00 = Sta. 27+17.53 ℄ Orange
4" Conc. Sidewalk
4" Conc. Sidewalk
4" Conc. Sidewalk
MATCH LINE (SEE SHEET NO. 16) STA. 27+17.53 ℄ ORANGE AVE.

6"x 18" Sandstone Curb
Nose Sta. 30+04.92 ℄ W. B. B. = Sta. 0+14.98 ℄ Turnout
P.C. Sta. 38+19.12 ℄ W. B. Broadway = Sta. 0+00 E. 9th St. Turnout
Nose Sta. 34+57.70 ℄ W. B. Broadway = Sta. 17+30.39 ℄ E. 9th St.
Nose Sta. 33+59.90 ℄ Orange
Sta. 32+36 ℄ Orange
Sta. 28+67.58 ℄ Orange = Sta. 3+23.70 ℄ E. 14th St.
Sta. 29+12 ℄ Orange
Approach Slab
℄ RAMP "E-15"
P.T. Sta. 4+73.21 ℄ E-15
℄ W. B. BROADWAY
℄ E. B. BROADWAY
6"x 18" Sandstone Curb
Curve Data Δ = 74°23'01.4" R = 105' T = 79.678' L = 136.318'
P.C. Sta. 8+02.58 ℄ E-15
P.C. Sta. 2+03.70 ℄ E-15
E. B. Broadway
P.T. Sta. 10+07.34 ℄ E. B. Brdwy.
Nose Sta. 10+75.87
Sta. 10+27 ℄ E. B. B.
P.T. Sta. 1+36.32 ℄ E. 9th St. Turnout
End Median Sta. 13+32
Begin Curb Sta. 13+82
Ramp E-2
Curve Data Δ = 29°38'27.3" R = 150.000' T = 39.689' L = 77.600'
Curve Data Δ = 51°47'17.1" R = 50.000' Sta. 2+69.1 E-9th St. Turnout
Match Existing Sidewalk Curb & Pavement
Gate 5
Gate 1
Gate 2
Gate 3
Gate 4
Gate 6
Curve Data Δ = 68°34'15.0" R = 50.000' T = 34.089'
Scale House
Property Line
Office
Curve Data Δ = 39°06'03.6" R = 100.000' T = 35.511'
Sta. 0+19.7 ℄ Broadway = Sta. 68+36.6 ℄ E. 9th St.
P.C. Sta. 0+40.36 ℄ Broadway
Nose Sta. 0+51.71 ℄ Broadway = Sta. 68+15.5 ℄ E. 9th St.
Sta. 1+85.00 ℄ Broadway Match Existing Curb & Pavement
P.C. Sta. 1+63.94 ℄ E. 14th St.
Nose Sta. 1+08.55 ℄ E. 14th St.
End T-21 Type 2 Median Sta. 2+42.10 ℄ E. 14th St.
Sta. 0+48 ℄ E. 14th St.
℄ E. 14TH. ST.
℄ BROADWAY
Sta. 4+40.59 ℄ Broadway = Sta. 0+00 ℄ E. 14th St.
P.T. Sta. 2+75.69 ℄ Broadway Match Existing Curb & Pavement
Nose Sta. 3+31.08 ℄ Broadway = Sta. 0+84.85 ℄ E. 14th St.
Sta. 4+76.64 ℄ Broadway
Sta. 1+40 ℄ E. 14th St.
Sta. 28+16 ℄ Orange
T-21 Type 2 Median
See Sheet #5.
Sta. 2+75 ℄ E. 14th St.
6"x 18" Sandstone Curb
Sta. 29+12 ℄ Orange
℄ E. 9TH. ST.
N.Y.C. & St. L. R.R. Freight House
Broadway Warehouse

GUARD RAIL		
LOCATION	SIDE	LENGTH
Ramp E-15 W. Wall Br. 7 to 11+75	Lt.	212'
W. Wall Br. 7 to 12+57.21	Rt.	245'

LEGEND
- Existing Pavement Curb & Sidewalk
- Previous Contract
- I-21 Std Type Portland Cement Concrete Median Pavement
- Project CUY 42-18.29 (Part 6)
- Project CUY 42-18.42 (Part 7) CUY 21-15.32

NOTE:
For Pavement Joints & Contours. See Sheet No. 22. of Part 6 Plans
For detail of "Typical Joint Layout" see: Exit Ramps - Sheet 20 of Part 7B. Entrance Ramps, Sheet 21 of Part 7B.

PAVEMENT DETAILS

SCALE 1"= 50'
MADE J.F.S. DATE
TRCD. R.R. DATE 3-1-59
CKD. J.L.C. DATE 12-24-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 15

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

16
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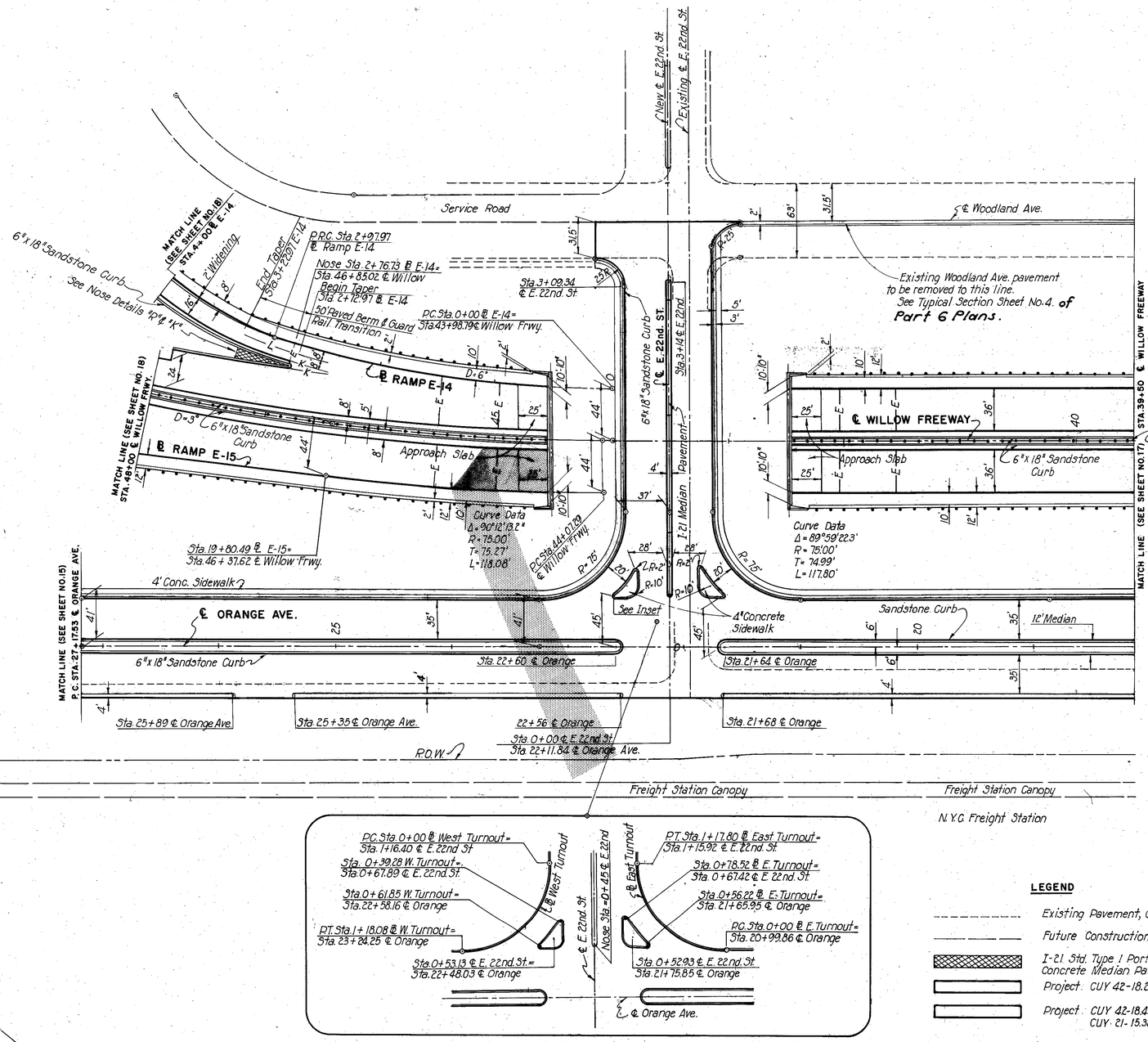
CUYAHOGA COUNTY
CITY OF CLEVELAND

CUY 42-18.42
CUY 21-15.32



GUARD RAIL			
LOCATION		SIDE	LENGTH
Ramp E-14	W. Wall Br. 10 to 4+00	Rt.	318'
Ramp E-15	18+17 to 19+80.49	Rt.	162'
Willow Frwy.	W. Wall Br. 10 to 46+37.62	Lt.	180'
	39+50 to W. Wall Br. 10	Lt.	280'
	39+50 to W. Wall Br. 10	Rt.	280'
BARRIER RAIL			
Willow Frwy.	39+50 to 42+36	Ctr.	286'
	44+61 to 48+00	Ctr.	339'

LEGEND

- Existing Pavement, Curb & Sidewalk
- Future Construction
- I-21 Std. Type 1 Portland Cement Concrete Median Pavement.
- Project CUY 42-18.29 (Part 6).
- Project CUY 42-18.42 (Part 7). CUY 21-15.32

Note: For Orange Ave. Joint Layout and contours, see Sheet 22. of Part 6 Plans

PAVEMENT DETAILS

SCALE 1" = 50'
MADE J.F.S. DATE 12-15-58
TRCD. P.R. DATE 3-1-59
CKD. J.L.G. DATE 10-24-59

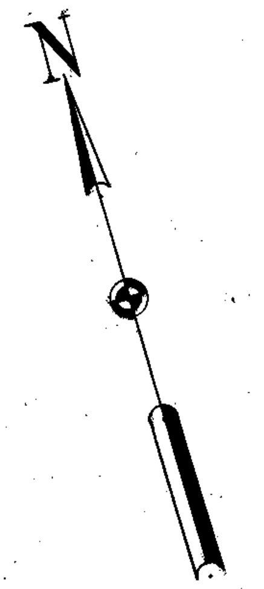
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 16

GUARD RAIL		
LOCATION	**SIDE**	**LENGTH**
Ramp 30-N 3+75 to W. Wall Br. 11	Rt.	587'
Ramp N-30 W. Wall Br. 11 to 6+97	Rt.	657'
Willow Frwy. W. Wall Br. 11 to 39+50	Rt.	399'
W. Wall Br. 11 to 39+50	Lt.	227'
BARRIER RAIL		
Willow Frwy. 30+48.5 to 33+98.5	Ctr.	350'
36+23.5 to 39+50	Ctr.	336.5'

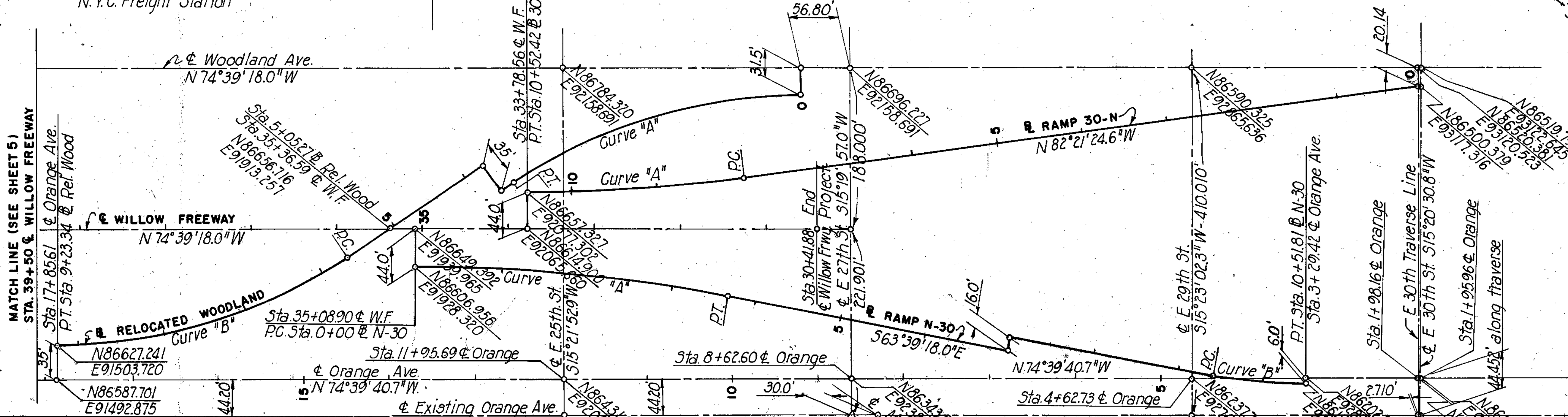
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

17
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY 42-18.42
CUY 21-15.32



NOTE: For joint Layout on Orange Ave. and relocated Woodland, see Sheet 22. of Part 6 Plans.



GEOMETRIC LAYOUT
Scale: 1"=100'

LEGEND

―	Existing Pavement, Curb & Sidewalk
▨	I-21 Std. Type I Portland Cement Concrete Median Pavement.
▭	Project CUY 42-18.29 (Part 6)
▭	Project CUY 42-18.42 (Part 7) CUY 21-15.32

Note: For Orange Ave. Pavement Joints and Contours, see Sheet # 22. of Part 6 Plans.

PAVEMENT DETAILS

SCALE 1"=50'
MADE J.F.S. DATE
TRCD. R.R. DATE
CKD. J.L.C. DATE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 17

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

18
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY 42-18.42
CUY 21-15.32

GUARD RAIL			
LOCATION		SIDE	LENGTH
Ramp E-7	2+00 to W.Wall Br. 9	Lt.	552'
	2+00 to 4+49	Rt.	251'
Ramp E-10	13+00 to 14+54	Rt.	147'
	14+00 to W.Wall Br. 8	Lt.	415'
Ramp E-15	12+57.21 to W.Wall Br. 8	Rt.	258'
	W.Wall Br. 8 to 18+17	Rt.	104'
Ramp E-17	W.Wall Br. 8 to 8+32	Rt.	645'
	4+27 to 6+21.14	Lt.	204'
	7+73 to 8+94	Lt.	141'
Ramp E-9	0+00 to 2+00	Lt.	204'
	1+67 to 2+00	Rt.	33'
Ramp E-14	4+00 to 6+00	Rt.	188'
	4+20 to 7+70	Lt.	361'
Willow Frwy.	48+45 to W.Wall Br. 8	Rt.	80'
BARRIER RAIL			
Willow Frwy.	48+00 to Bridge 8	Ctr.	129'
	Bridge 8 to 51+86	Ctr.	79'

MATCH LINE
P.T. STA. 12+57.21
(SEE SHEET NO. 15)

MATCH LINE
STA. 2+00 ℄ E-7
(SEE SHEET NO. 19)

MATCH LINE
STA. 13+00 ℄ E-10
(SEE SHEET NO. 19)

MATCH LINE
STA. 4+50 ℄ E-8
(SEE SHEET NO. 19)

MATCH LINE
STA. 2+00 ℄ E-9
(SEE SHEET NO. 20)

MATCH LINE
STA. 10+00 ℄ S.B. E. 14th. St.
(SEE SHEET NO. 20)

MATCH LINE
STA. 4+00 W.B. E. 14th. St.
(SEE SHEET NO. 20)

MATCH LINE
STA. 6+00 E.B. Scovill
(SEE SHEET NO. 20)

MATCH LINE
STA. 4+00 W.B. Scovill
(SEE SHEET NO. 20)

MATCH LINE
P.C. STA. 4+84 ℄ E. 14th. St.
(SEE SHEET NO. 15)

For Median Detail, see Sheet #15

MATCH LINE
STA. 48+00 WILLOW FRWY.
(SEE SHEET NO. 16)

MATCH LINE
STA. 4+00 ℄ E-14
(SEE SHEET NO. 16)

SEE NOSE DETAILS "X" AND "K"

℄ RAMP "E-7"
℄ RAMP "E-10"
℄ RAMP "E-8"
℄ RAMP "E-9"
℄ RAMP "E-17"
℄ RAMP "E-14"
℄ S.B. E. 14TH. ST.
℄ NORTH BOUND E. 14TH. ST.
℄ E. 14TH. ST.
℄ E.B. SCOVILL
℄ W.B. SCOVILL
℄ New E. 22nd. St.
℄ Existing E. 22nd. St.
Service Road
Willow Frwy.

LEGEND

- Existing Pavement, Curb & Sidewalk.
- Future Construction.
- I-21 Std. Type 1 Portland Cement Concrete Median Pavement.
- Project : CUY 42-18.29 (Part 6)
- Project : CUY 42-18.42 (Part 7) CUY 21-15.32

Note: For Pavement Joint Legend see Sheet No. 22. of Part 6 Plans.

PAVEMENT DETAILS

SCALE 1"=50'
MADE J.L.D. DATE 12-15-58
TRCD. R.P. DATE 3-1-59
CKD. J.L.C. DATE 10-28-59

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KANSAS CITY CLEVELAND NEW YORK
914 SHEET 18

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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181

CUYAHOGA COUNTY
CITY OF CLEVELAND

CUY 42-18.42
CUY 21-15.32

GUARD RAIL		
Location	Side	Length
Ramp E-5 10+26 to W.Wall Br. 2	Rt.	165'
Ramp E-8 7+40 to 8+75	Rt.	142'
Ramp E-10 W.Wall Br.5 to 13+00	Rt.	303'
7+48 to W.Wall Br.5	Lt.	57'
Ramp E-7 1+36.63 to 2+00	Lt.	63'
Ramp E-16 5+00 to W.Wall Br. 5	Rt.	137'
W.Wall Br. 5 to 8+45	Rt.	58'
Inner Belt 63+50 to W.Wall Br. 3	Lt.	120'
63+75 to W. Wall Br. 3	Rt.	122'
BARRIER RAIL		
Inner Belt 64+60.5 to Bridge 3	Ctr.	48'

LEGEND

- Existing Pavement, Curb & Sidewalk
- Previous Contract
- I-21 Std. Type I Portland Cement Concrete Median Pavement.
- Project CUY 42-18.29 (Part 6)
- Project CUY 42-18.42 (Part 7) CUY 21-15.32

Note: For Pavement Joint Legend, see Sheet No. 22. of Part 6 Plans.

PAVEMENT DETAILS

SCALE 1"=50'
MADE L.I.B. DATE 2-15-68
TRCD. P.R. DATE 3-1-69
CKD. J.L.C. DATE 10-2[illegible]

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 19

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

20
181.

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

(SHEET No. 21 OMITTED)

GUARD RAIL		
LOCATION	SIDE	LENGTH
Ramp E-9 2+00 to W.Wall Br. 4	Rt.	233'
2+00 to W.Wall Br. 4	Lt.	257'
Ramp E-10 W.Wall Br. 4 to 6+25	Rt.	220'
W.Wall Br. 4 to 5+25	Lt.	120'
Ramp E-16 3+50 to 5+00	Rt.	150'
Inner Belt W.Wall Br. 3 to W.Wall Br. 4	Lt.	201'
W.Wall Br. 3 to W.Wall Br. 4	Rt.	260'
W.Wall Br. 4 to 77+75	Lt.	368'
W.Wall Br. 4 to 77+75	Rt.	366'
BARRIER RAIL		
Inner Belt 68+21 to 70+83.5	Ctr.	262.5'
74+05.25 to 83+05.25	Ctr.	900'

Curve Data
Left Edge Ramp E-13
D=14°00'00"
Δ=47°24'33.6"
R=409.256
T=179.690
L=338.638

Curve Data
200'R Curb Return
R=200.00'
Δ=23°41'12"
T=41.940'
L=82.683'

LEGEND

- Existing Pavement, Curb & Sidewalk.
- Construction by others.
- Future Construction.
- I-21 Std. Type I Portland Cement Concrete Median Pavement
- Project CUY 42-18.20 (Part 6)
- Project: CUY 42-18.42 (Part 7) CUY 21-15.32

Note: For Pavement Joint Legend, see Sheet # 22. of Part 6 Plans.

PAVEMENT DETAILS

SCALE 1"=50'
MADE L.I.B. DATE 12-15-58
TRCD. R.R. DATE 3-1-59
CKD. J.L.C. DATE 10-24-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 20

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	22
2	OHIO			181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
PROFILES

(SHEET Nº 21 OMITTED)

	58+00	+25	+50	+75	59+00				60+00												
Var. Left at Taper																					
39' Left	693.22	93.59	93.90	94.20	94.44	94.68	94.92	95.16	95.40	95.64	95.88	96.13	96.36	96.60	96.85	97.09	97.36	97.69	97.92	98.21	98.46
3' Left	692.14	92.51	92.88	93.24	93.59	93.95	94.31	94.67	95.02	95.38	95.74	96.10	96.45	96.81	97.17	97.53	97.88	98.25	98.61	98.98	99.33
51' Right	690.52	90.89	91.26	91.63	91.99	92.40	92.88	93.40	93.90	94.42											
39' Right	690.88	91.25	91.62	91.99	92.35	92.72	93.20	93.69	94.16	94.63	95.12	95.62	96.10	96.60	97.10	97.60	98.08	98.58	99.08	99.57	700.06
3' Right	691.96	92.33	92.70	93.07	93.43	93.80	94.18	94.56	94.93	95.30	95.68	96.06	96.43	96.81	97.19	97.57	97.94	98.32	98.70	99.08	99.45
Profile	692.05	92.42	92.79	93.16	93.52	93.89	94.26	94.63	94.99	95.36	95.73	96.10	96.46	96.76*	97.07*	97.45*	97.82*	98.20*	98.58*	98.96*	99.33*

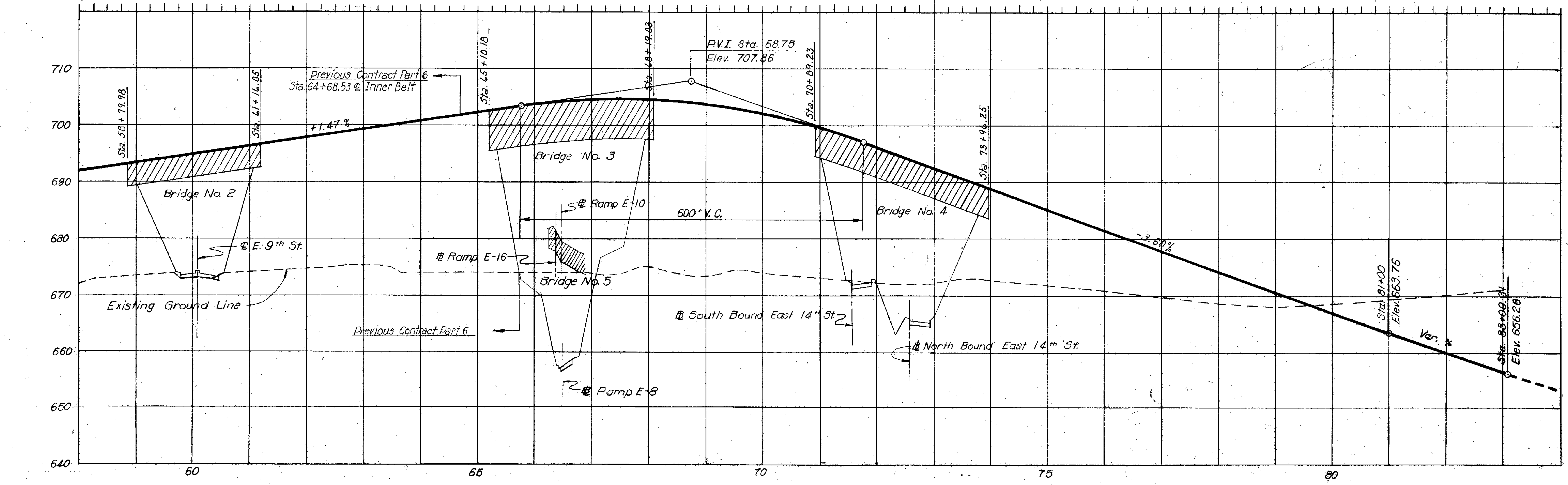
								65+00												
Var. Left at Taper																				
39' Left	98.71	99.01	99.34	99.70	700.07	00.44	00.81	01.17	01.54	01.91	02.28	02.61	02.90	03.14	03.33	03.45	03.53	03.56	03.53	03.44
3' Left	99.69	700.05	00.42	00.78	01.15	01.52	01.89	02.25	02.62	02.99	03.36	03.69	03.98	04.22	04.41	04.53	04.61	04.64	04.61	04.52
51' Right																				
39' Right	00.56	01.06	01.55	02.00	02.41	02.78	03.15	03.51	03.88	04.25	04.62	04.95	05.24	05.48	05.67	05.79	05.87	05.90	05.87	05.78
3' Right	99.83	700.21	00.59	00.96	01.33	01.70	02.07	02.43	08.80	03.17	03.54	03.87	04.16	04.40	04.59	04.71	04.79	04.82	04.79	04.70
Profile	99.71*	700.09*	00.47*	00.84*	01.21*	01.58*	01.98	02.34	02.71	03.08	03.45	03.78	04.07	04.31	04.50	04.62	04.70	04.73	04.70	04.61

								70+00												
Var. Left at Taper																				
39' Left	03.31	03.13	02.89	02.60	02.25	01.85	01.40	00.90	00.34	699.77	99.18	98.58	97.92	97.21	96.40	95.55	94.65	93.75	92.85	91.95
3' Left	04.39	04.21	03.97	03.68	03.33	02.93	02.48	01.98	01.42	00.81	00.16	699.45	98.69	97.87	97.01	96.11	95.21	94.31	93.41	92.51
51' Right																				
39' Right	05.65	05.47	05.23	04.94	04.59	04.19	03.69	03.11	02.43	01.69	00.90	00.05	699.16	98.21	97.21	96.19	95.16	94.13	93.10	92.08
3' Right	04.57	04.39	04.15	03.86	03.51	03.11	02.66	02.15	01.58	00.96	00.29	699.56	98.78	97.95	97.07	96.16	95.25	94.34	93.43	92.52
Profile	04.48	04.30	04.06	03.77	03.42	03.02	02.57	02.07	01.51	00.90	00.24	699.52	98.75	97.93	97.06	96.16	95.26	94.36	93.46	92.56

								75+00												
Var. Left at Taper								684.38	83.49	82.60	81.71	80.83	79.94	79.05	78.16	77.28	76.39	75.50	74.61	73.73
39' Left	91.05	90.15	89.25	88.35	87.45	86.55	85.65	84.75	83.85	82.95	82.05	81.15	80.25	79.35	78.45	77.55	76.65	75.75	74.85	73.95
3' Left	91.61	90.71	89.81	88.91	88.01	87.11	86.21	85.31	84.41	83.51	82.61	81.71	80.81	79.91	79.01	78.11	77.21	76.31	75.41	74.51
51' Right			89.06	88.16	87.26	86.36	85.46	84.56	83.66	82.76	81.86	80.96	80.06	79.16	78.26					
39' Right	91.08	90.15	89.25	88.35	87.45	86.55	85.65	84.75	83.85	82.95	82.05	81.15	80.25	79.35	78.45	77.55	76.65	75.75	74.85	73.95
3' Right	91.61	90.71	89.81	88.91	88.01	87.11	86.21	85.31	84.41	83.51	82.61	81.71	80.81	79.91	79.01	78.11	77.21	76.31	75.41	74.51
Profile	91.66	90.76	89.86	88.96	88.06	87.16	86.26	85.36	84.46	83.56	82.66	81.76	80.86	79.96	79.06	78.16	77.26	76.36	75.46	74.56

								80+00												
Var. Left at Taper	72.84	71.95	71.06	70.16	69.26	68.36	67.46													
39' Left	73.05	72.15	71.25	70.35	69.45	68.55	67.65	66.75	65.85	64.95	64.05	63.15	62.25	61.36	60.46	59.57	58.68	57.78	56.89	56.00
3' Left	73.61	72.71	71.81	70.91	70.01	69.11	68.21	67.31	66.41	65.51	64.61	63.71	62.81	61.92	61.02	60.13	59.24	58.34	57.45	56.56
51' Right																				
39' Right	73.05	72.15	71.25	70.35	69.45	68.55	67.65	66.75	65.85	64.95	64.05	63.15	62.25	61.36	60.46	59.57	58.68	57.78	56.89	56.00
3' Right	73.61	72.71	71.81	70.91	70.01	69.11	68.21	67.31	66.41	65.51	64.61	63.71	62.81	61.92	61.02	60.13	59.24	58.34	57.45	56.56
Profile	73.66	72.76	71.86	70.96	70.06	69.16	68.26	67.36	66.46	65.56	64.66	63.76	62.86	61.97	61.07	60.18	59.29	58.39	57.50	56.61

Variable Left Edge | 51' Left



INNER BELT

* Note:
Profile grade elevations were lowered to produce a .04'/' super elevation in the 3' right area for drainage purposes.

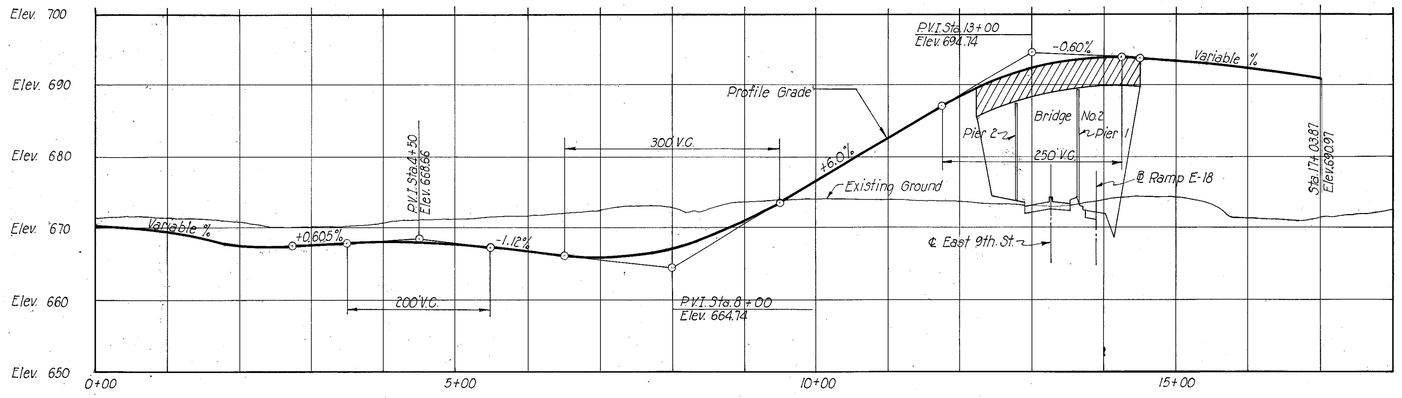
SCALE 1"=10' Ver. : 1"=100' Hor.
MADE DPH DATE 10-8-58
TRCD. DATE
CKD. GMG DATE 11/14/58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 22

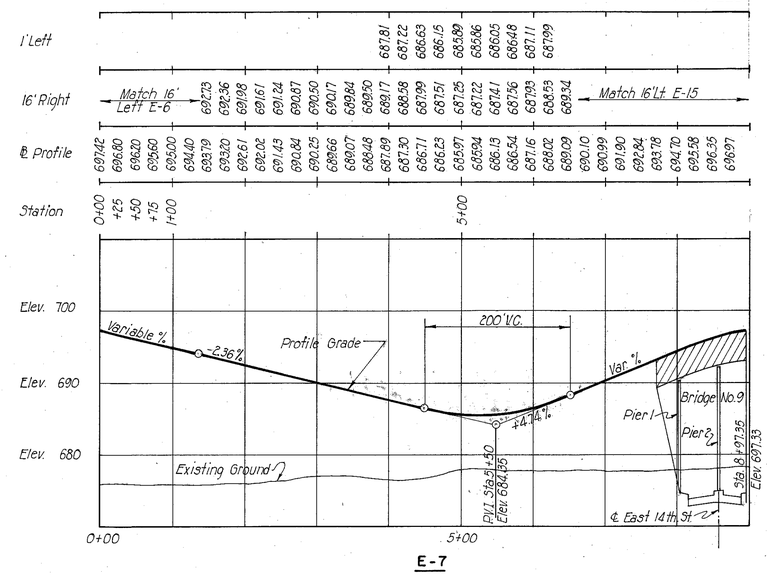
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

23
181

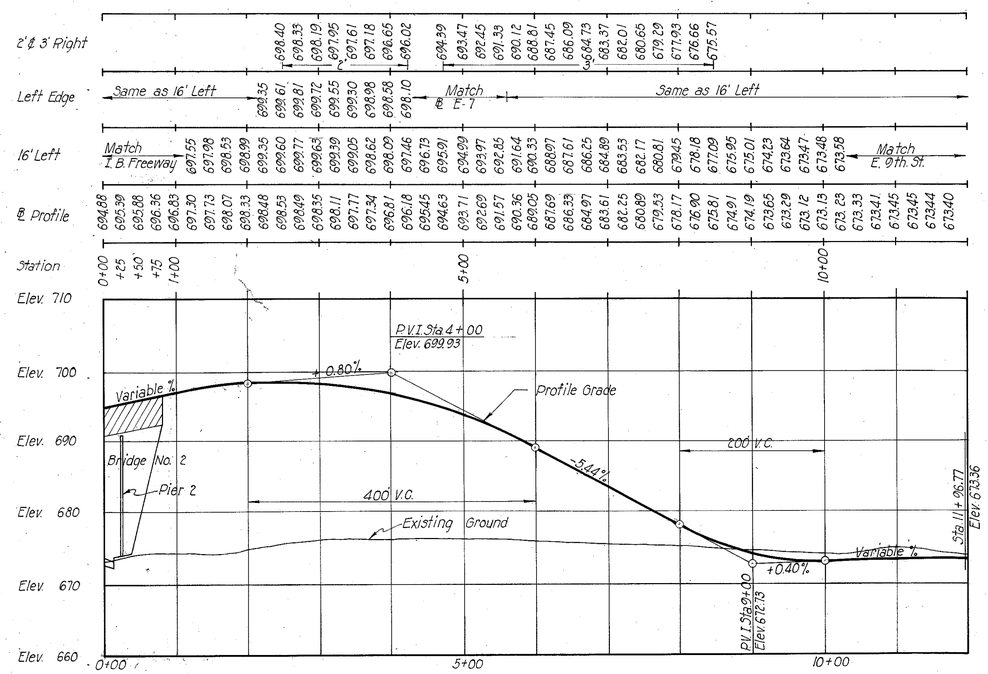
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
PROFILES



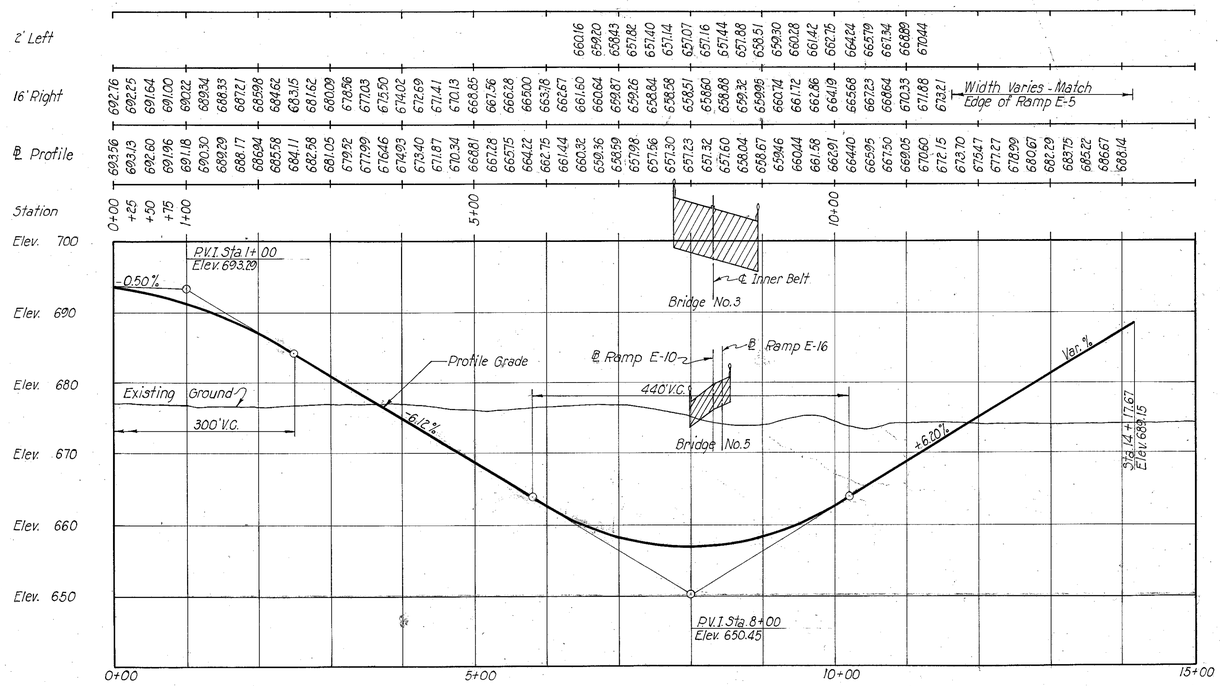
E-5



E-7



E-6*



E-8

* Not applicable to this contract

SCALE 1"-10' Ver.: 1"-100' Hor.
MADE DDH DATE 8-11-58
TRCD. RD DATE 12/16/58
CKD. GMG DATE 2-16-59
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 23

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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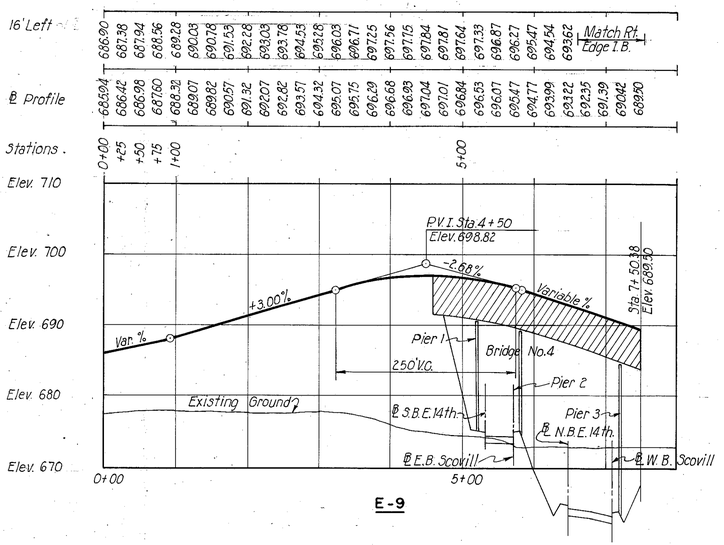
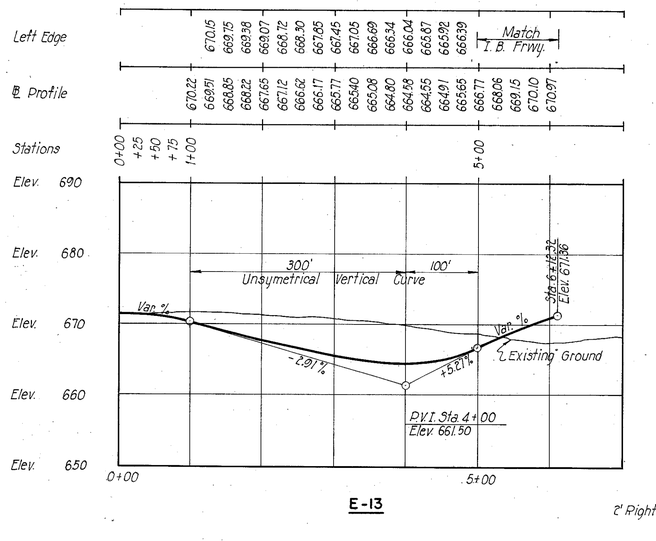
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY PART
CUY-42-18.42
CUY-21-15.32
PROFILES



E-9



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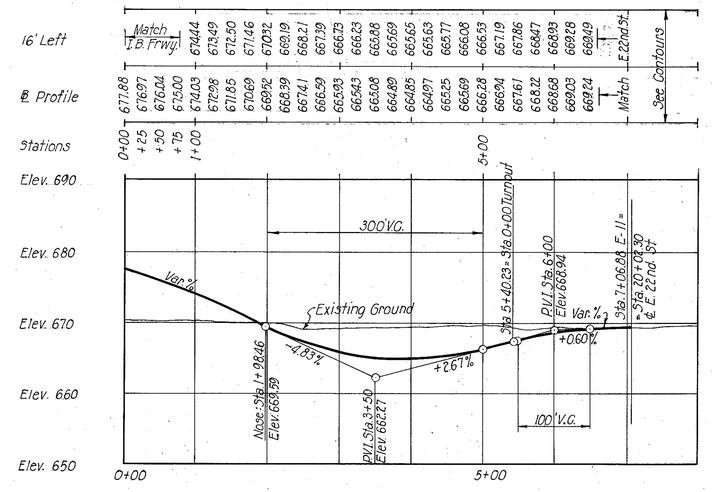

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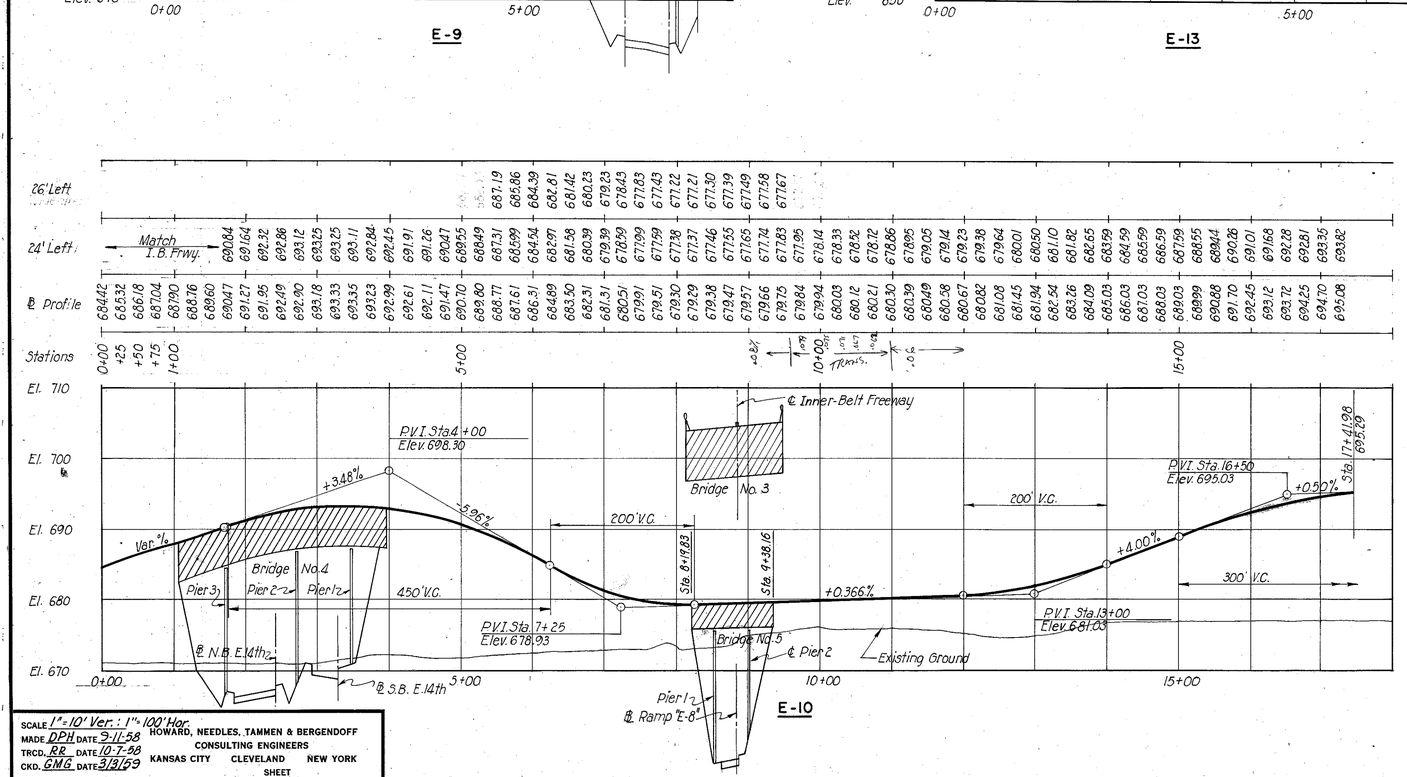

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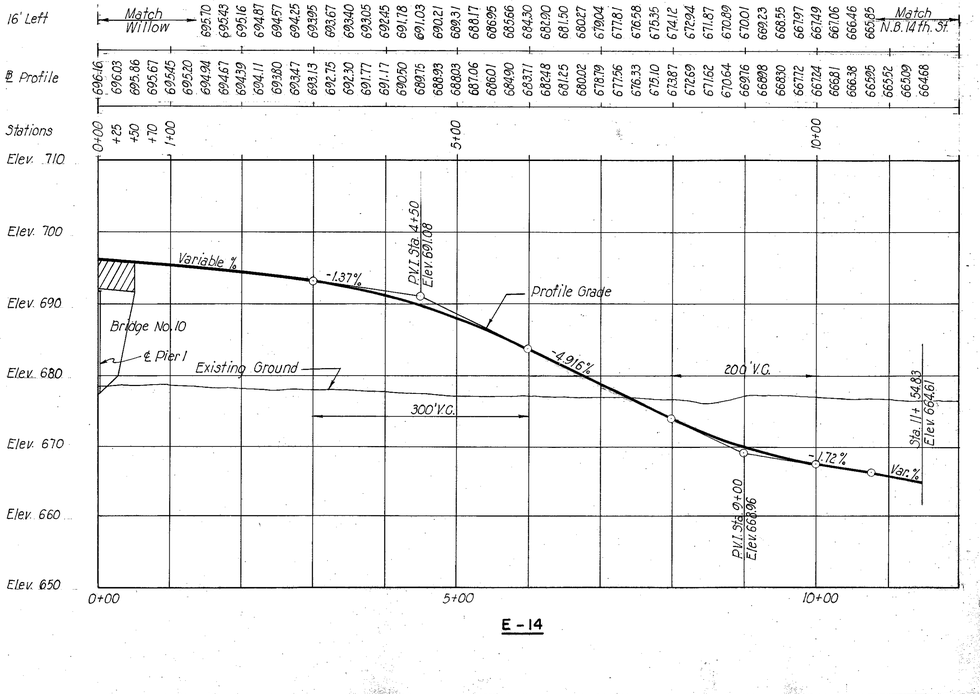

E-14

SCALE 1"=10' Ver.: 1"=100' Hor.
MADE DPH DATE 9-11-58
TRCD. RR DATE 10-7-58
CKD. GMG DATE 3/13/59
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
SHEET

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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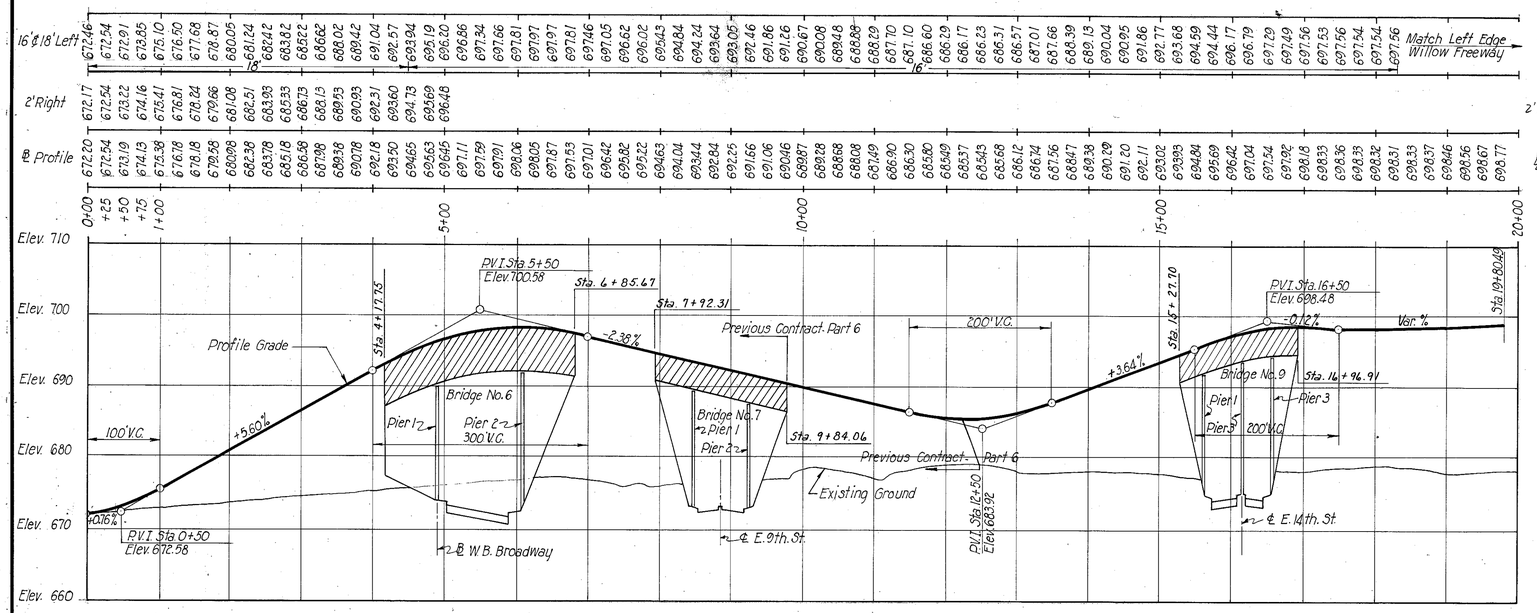
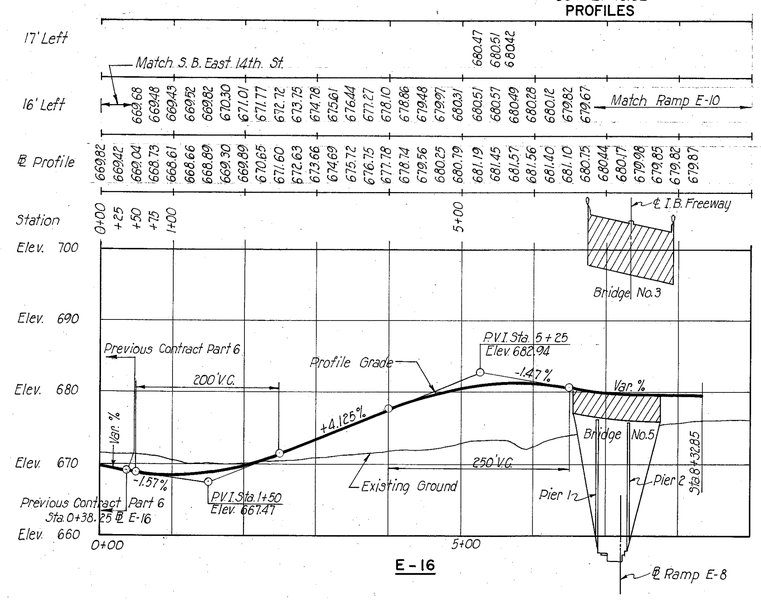
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY - PART
CUY-42-18.42
CUY-21-15.32
PROFILES



E - 15



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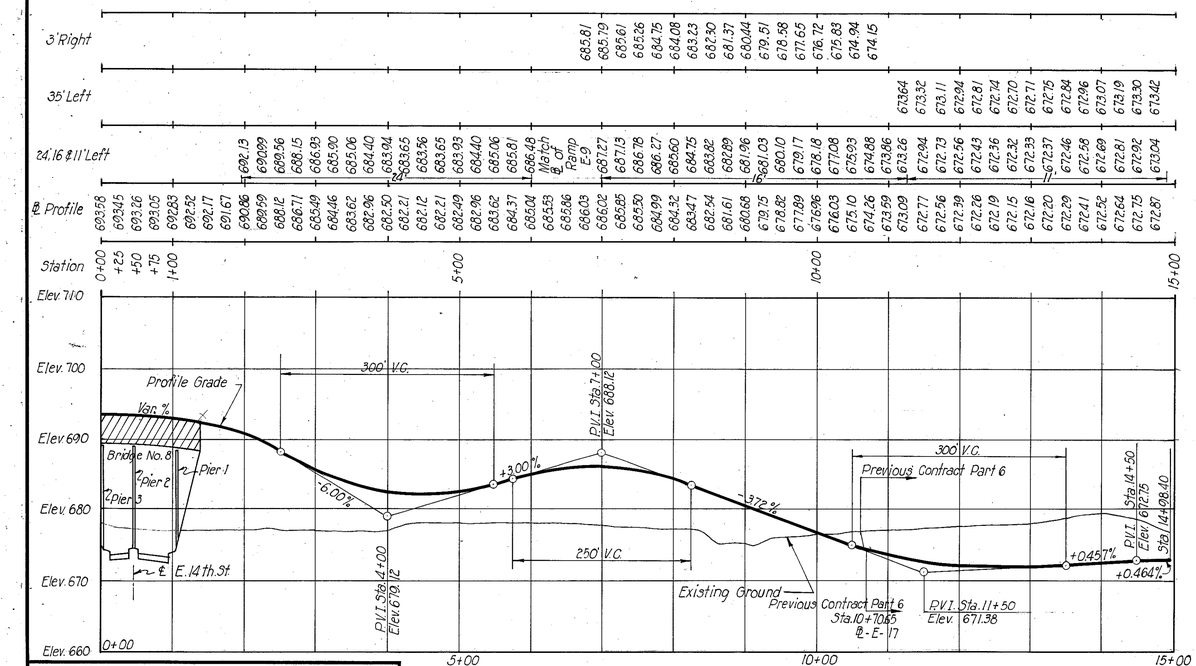

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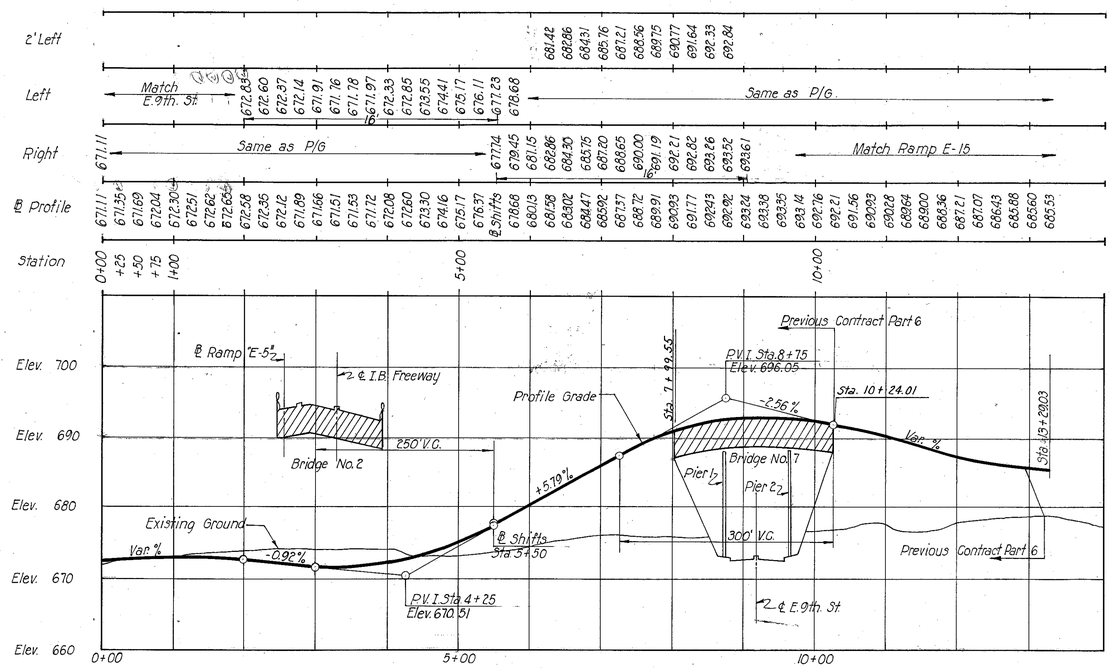

E - 18

SCALE 1"=10' Ver. : 1"=100' Hor.
MADE DPH DATE 7/21/58
TRCD. RP DATE 9-8-58
CKD. GMG DATE 10/18/58

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

914 SHEET 25

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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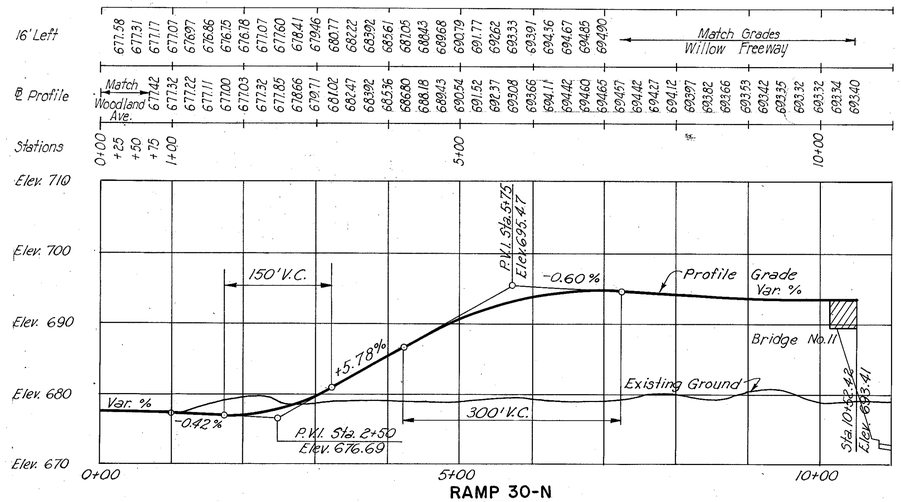
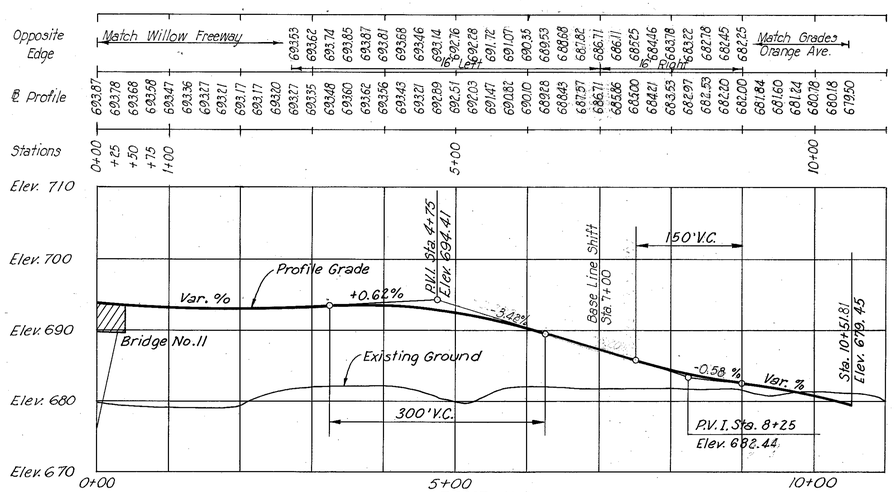
181

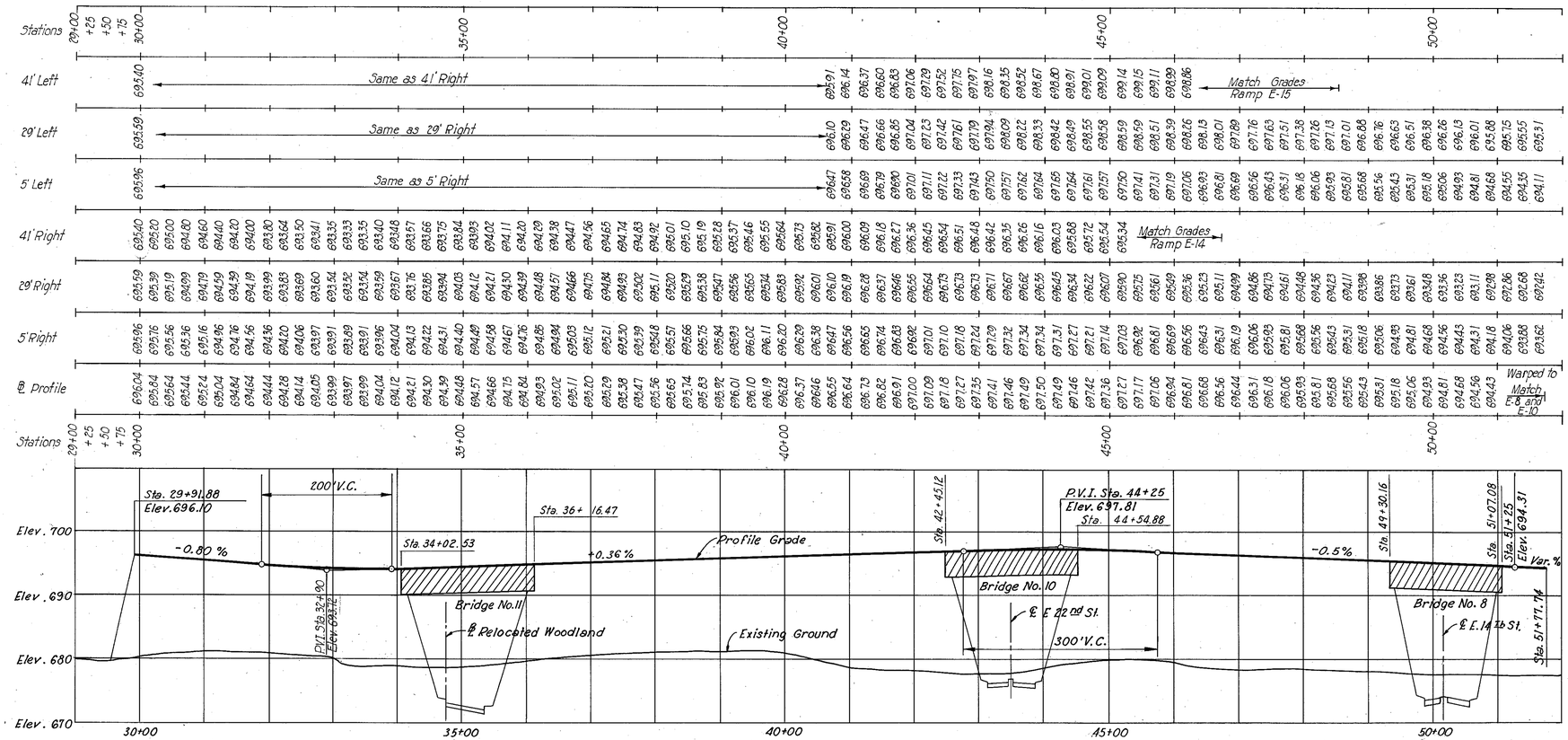
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CUY-42-18.42
CUY-21-15.32
PROFILES



RAMP 30-N



RAMP N-30



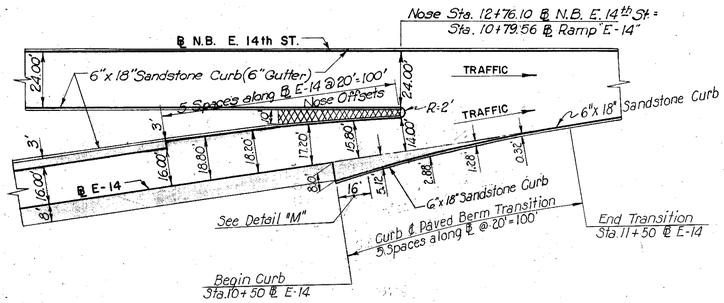
WILLOW FREEWAY

SCALE	1"=10' Ver : 1"=100' Hor.
MADE	DPH DATE 9-11-58
TRCD.	RR DATE 10-7-58
CKD.	GMG DATE 3/3/59

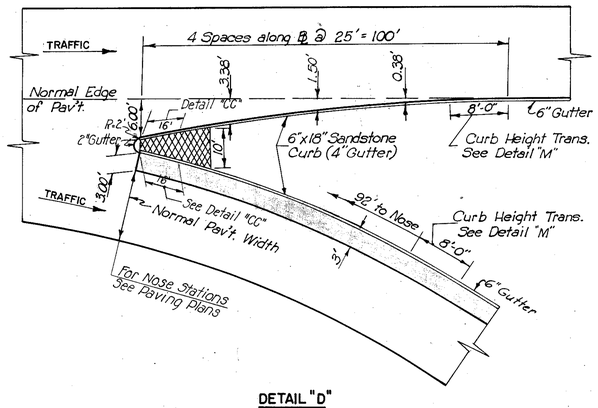
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 26

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	27
2	OHIO			181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



DETAIL "A"



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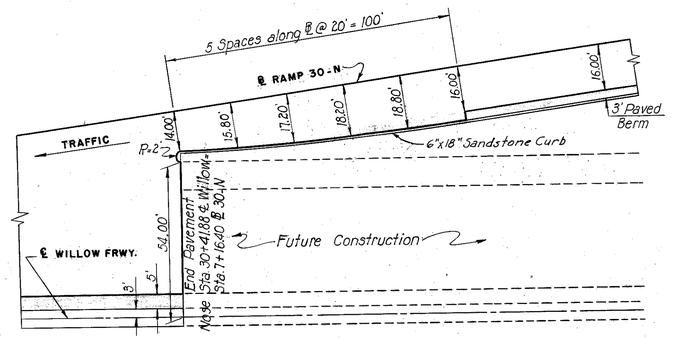
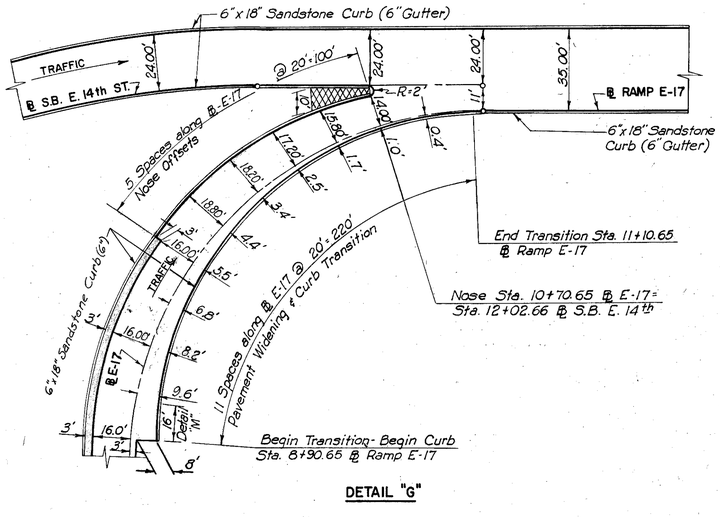


DETAIL "O"



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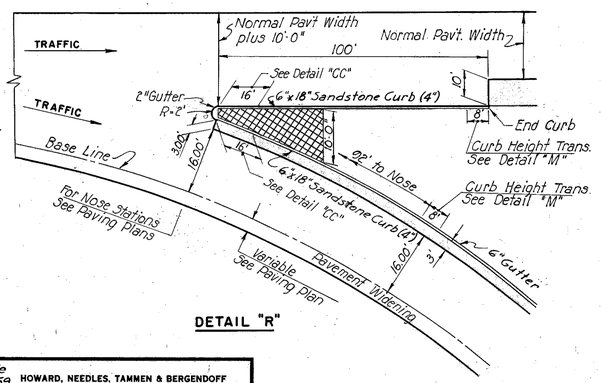
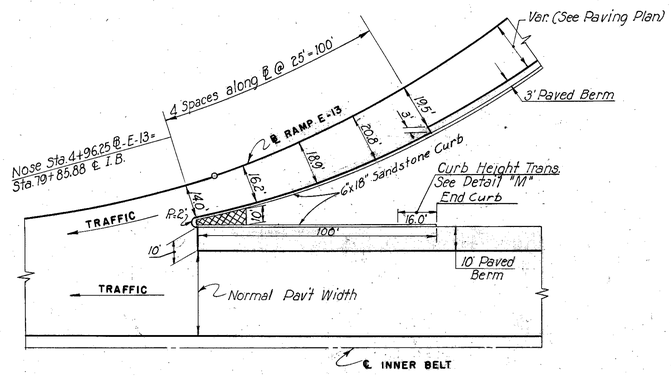
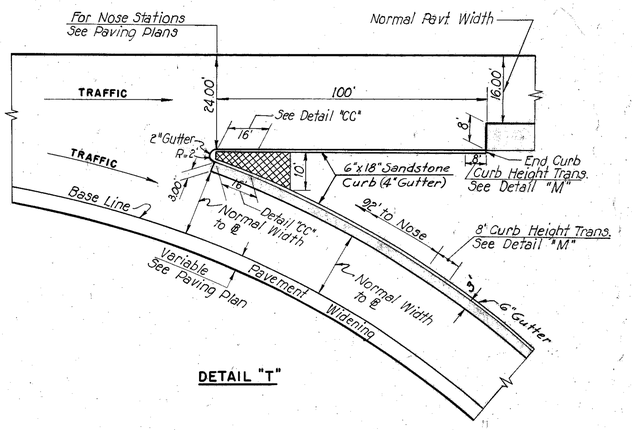


DETAIL "R"



DETAIL "S"



DETAIL "T"

LEGEND

I-21 Standard Type 1 Portland Cement Concrete Median Pavement.

Paved Berm.

NOSE DETAILS
A, D, G, O, R, S & T

SCALE Not to Scale
MADE J.E.S. DATE 11/12/59
TRCD. R.R. DATE
CKD. J.L.C. DATE 11/16/59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 27

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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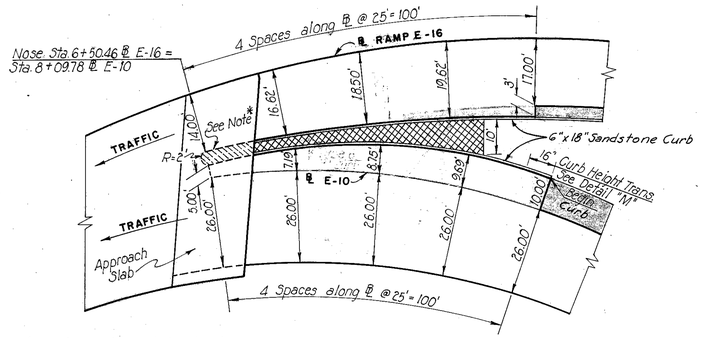
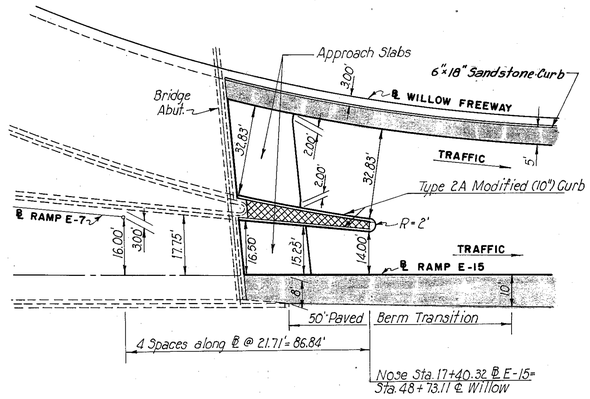
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY - ~~42-18.42~~
CUY - 21-15.32
INNER BELT FREEWAY - PART

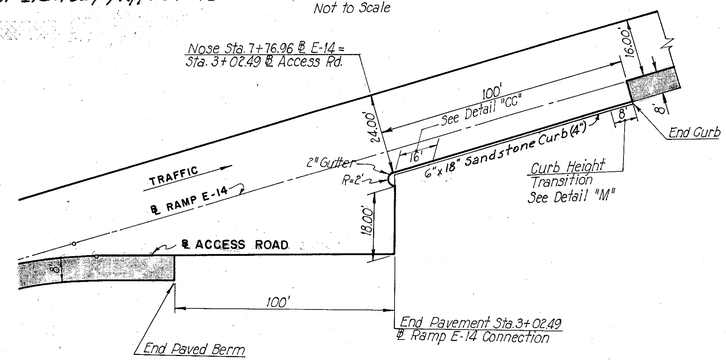


*Note:
6" Concrete median and nose to be placed on top of Approach Slab and anchored with eight (8), #5 round, straight bars, nine (9) inches long, imbedded in Approach Slab to a depth of six (6) inches. Bars to be uniformly spaced throughout median. All the above to be included for payment in the price bid for Item I-7, Approach Slabs.

DETAIL "U"
Not to Scale



DETAIL "X"



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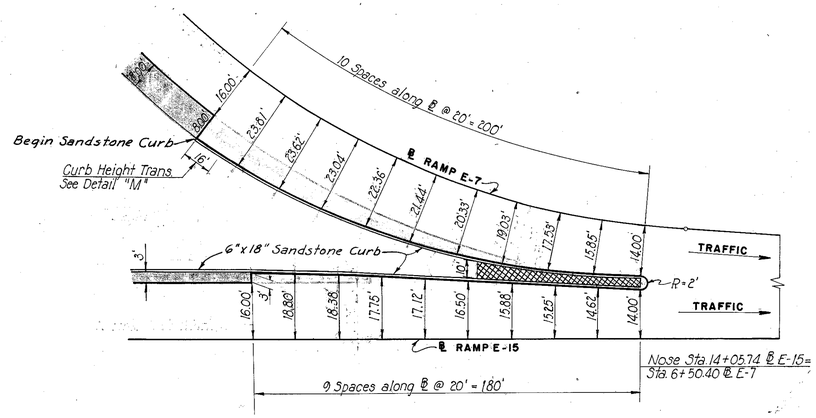
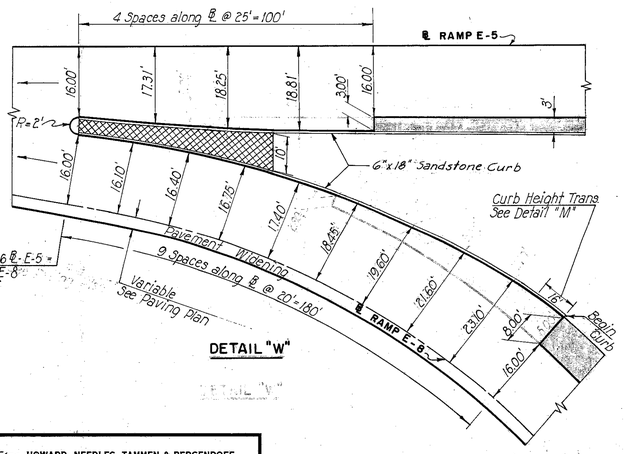
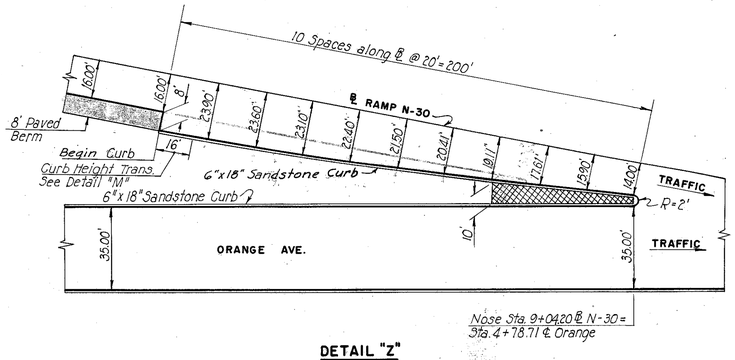


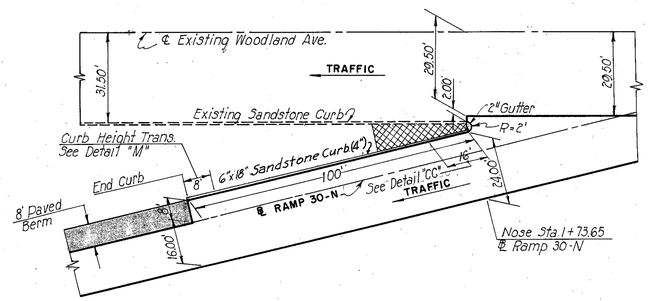
DETAIL "Y"
Not to Scale



DETAIL "W"



DETAIL "Z"
Not to Scale



DETAIL "BB"

LEGEND

I-21 Standard Type I Portland Cement Concrete Median Pavement.

Paved Berm.

NOSE DETAILS
U, V, W, X, Y, Z & BB

SCALE Not to Scale
MADE J.F.S. DATE 11/2/59
TRCD. R.R. DATE
CKD. J.L.C. DATE 11-6-59
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY . CLEVELAND NEW YORK
914 SHEET 28

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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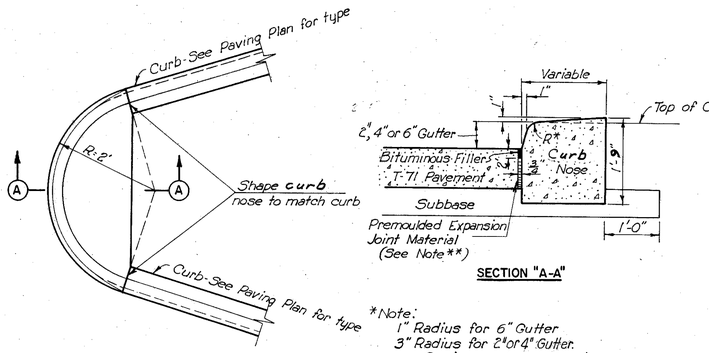
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



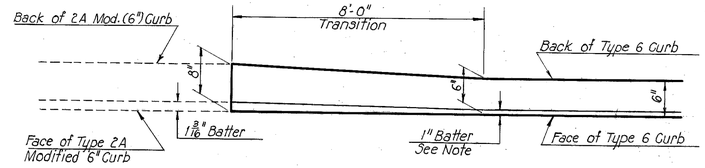
PLAN

SECTION "A-A"

*Note:
1" Radius for 6" Gutter
3" Radius for 2" or 4" Gutter.
Curb nose to be sandstone and shall be paid for at price bid per lineal foot of sandstone curb.

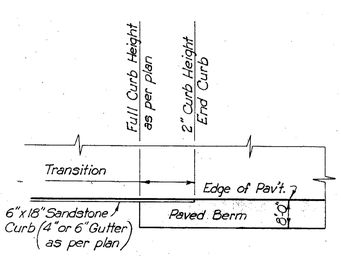
** Note:
The three quarter ($\frac{3}{4}$) inch Premoulded Joint Material shall meet the requirements of Section M-10.02 of the Standard Specifications. It shall be placed in front of the Bumper Block to within two (2) inches of the surface. The remaining space shall be filled with Bituminous Filler meeting the requirements of Section M-5.6 F2 of the Standard Specifications.
The cost of the Joint shall be included in price bid per lineal foot of curb.

DETAIL "K"
CURB TERMINATION AT NOSE AND BUMPER BLOCK
Scale: $\frac{3}{4}$"=1'-0"

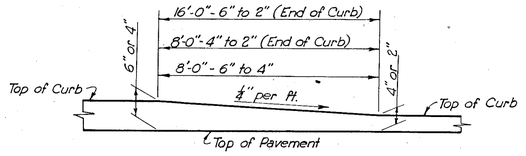


Note:
Type 6 Curb face to be transitioned to match 2A Modified (6") Curb face in the same 8'-0" transition.

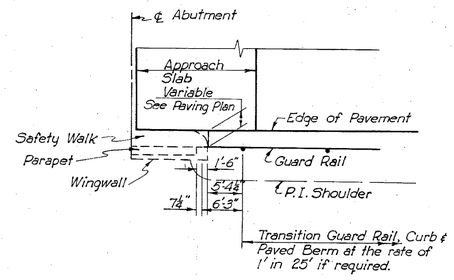
DETAIL "Q"
BACK OF CURB TRANSITION
Not to Scale



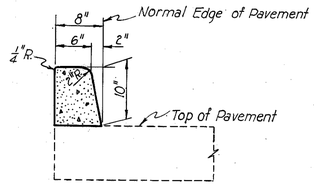
DETAIL "N"
CURB AND SHOULDER TRANSITION
Not to Scale:



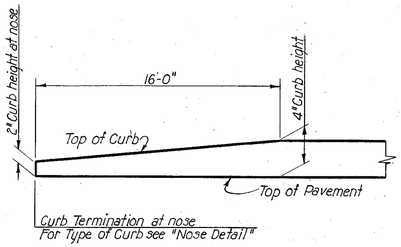
DETAIL "M"
CURB HEIGHT TRANSITION
Not to Scale:



GUARD RAIL TREATMENT AT TERMINAL POST
Not to Scale:



TYPE 2A MODIFIED (10") CURB (MODIFICATION B)
Scale: 1"=1'-0"



DETAIL "CC"
CURB HEIGHT TRANSITION AT NOSE
FOR
DIVERGING RAMPS & LANES
Not to Scale

MISCELLANEOUS DETAILS

SCALE As Shown
MADE JFS DATE 10/8/58
TRCD. BMO DATE
CKD. JLS DATE 11-14-58
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
~~914~~ SHEET 29

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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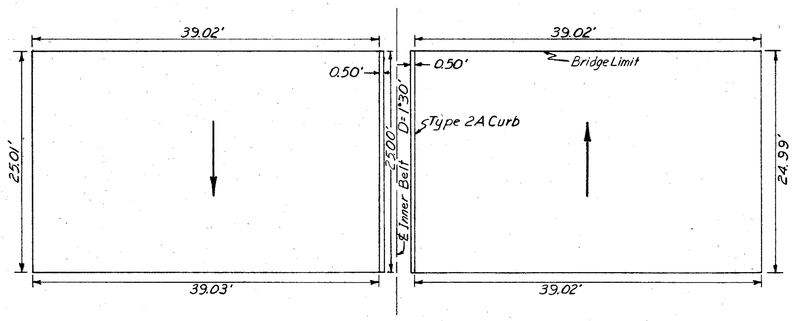
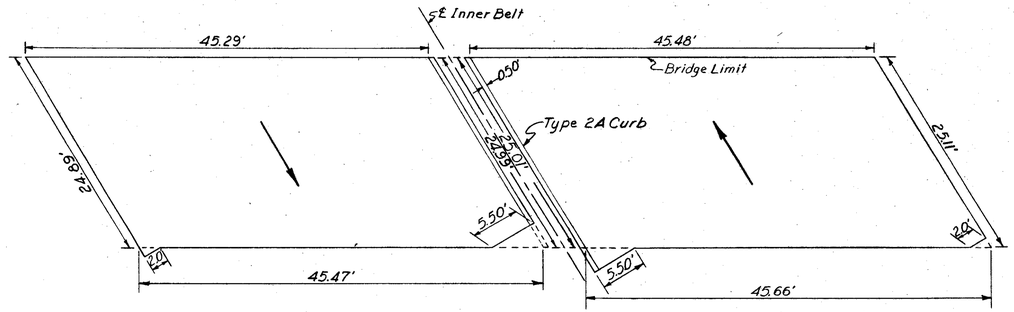
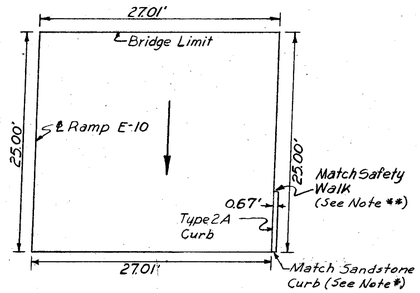
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
APPROACH SLABS



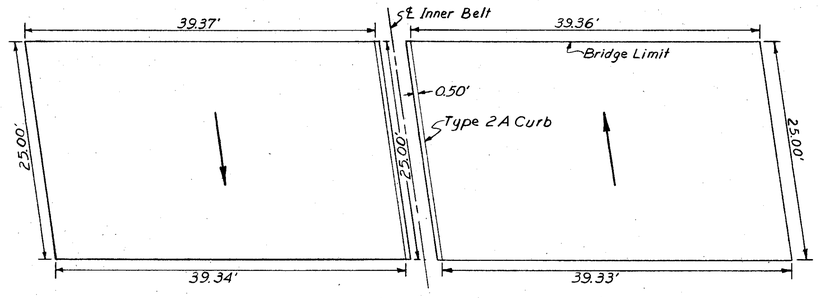
BRIDGE NO. 3
WEST APPROACH SLABS



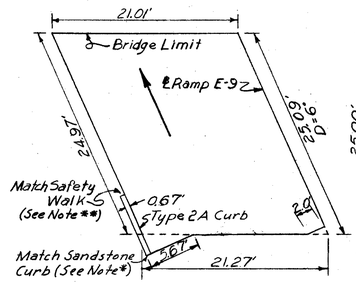
BRIDGE NO. 3
EAST APPROACH SLABS



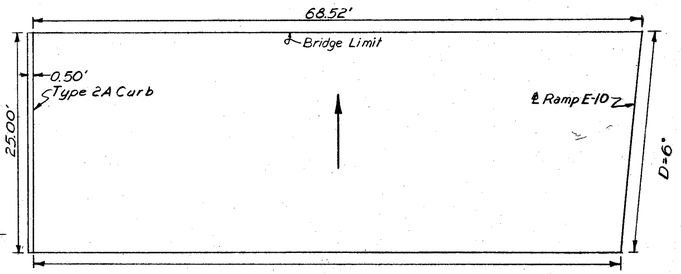
BRIDGE NO. 4
WEST APPROACH SLAB
RAMP E-10



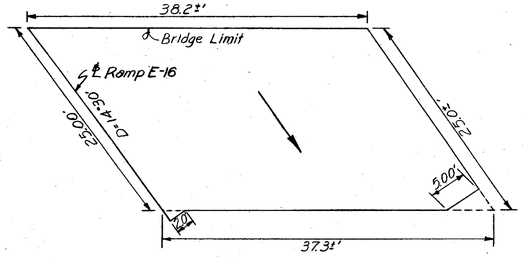
BRIDGE NO. 4
WEST APPROACH SLABS



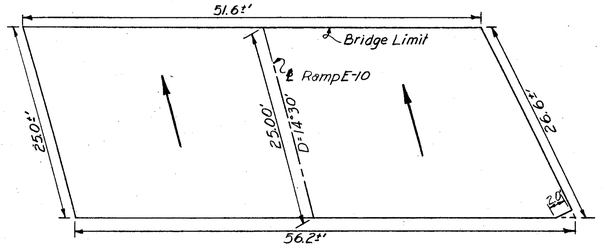
BRIDGE NO. 4
WEST APPROACH SLAB
RAMP E-9



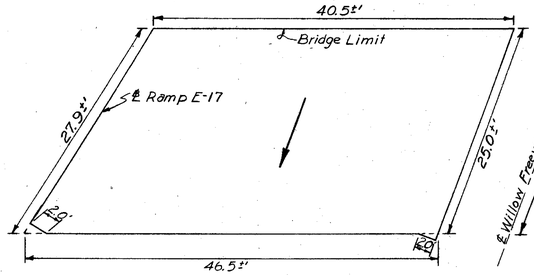
BRIDGE NO. 4
EAST APPROACH SLAB
LEFT LANE



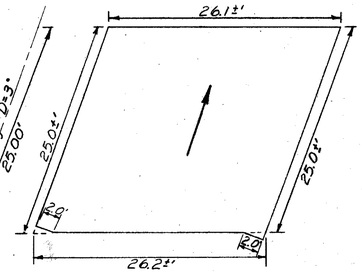
BRIDGE NO. 5
SOUTH APPROACH SLAB

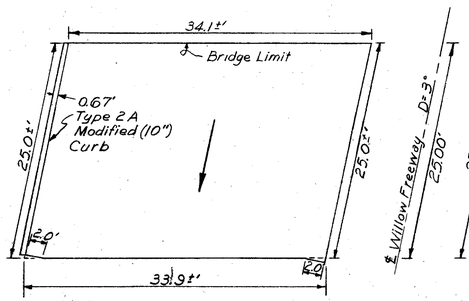


BRIDGE NO. 5
NORTH APPROACH SLAB

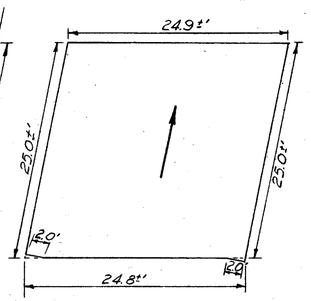


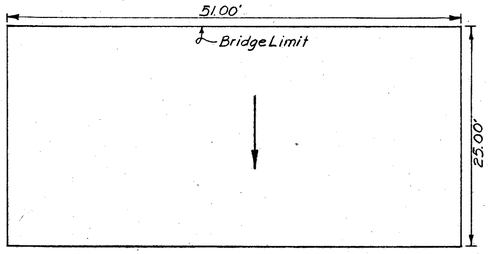
BRIDGE NO. 8
WEST APPROACH SLABS





BRIDGE NO. 8
EAST APPROACH SLAB





BRIDGE NO. 4
EAST APPROACH SLAB
RIGHT LANE

→ Direction of Traffic

* Note:
Type 2A Curb to be transitioned uniformly in eight (8) feet to match 6"x18" Sandstone Curb.

** Note:
The batter on Type 2A Curb to be transitioned uniformly in two (2) feet to match batter on Safety Walk.

Note:
Approach Slabs shall meet construction requirements as shown on State of Ohio Standard Drawing AS-1-54.

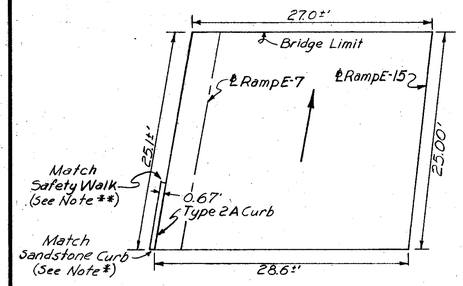
Payment for curb sections on approach slabs shall be included in the unit price bid for Item I-7, Approach Slabs.

SCALE Not to Scale
MADE EWS DATE 10/8/58
TRCD. DATE
CKD. JLC DATE 11-14-58
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 30

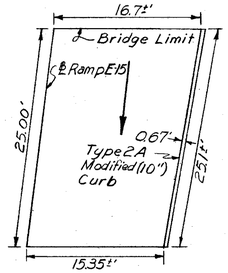
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

31
181

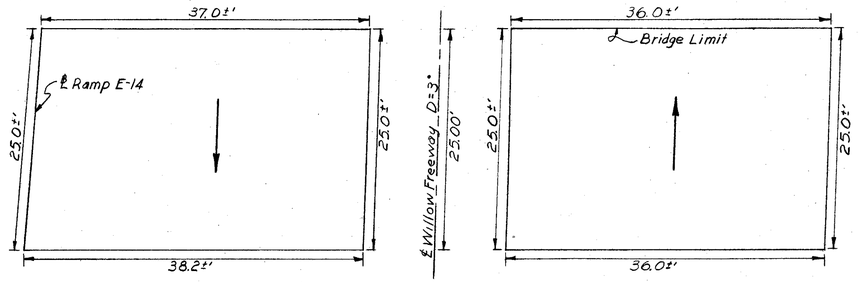
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
APPROACH SLABS



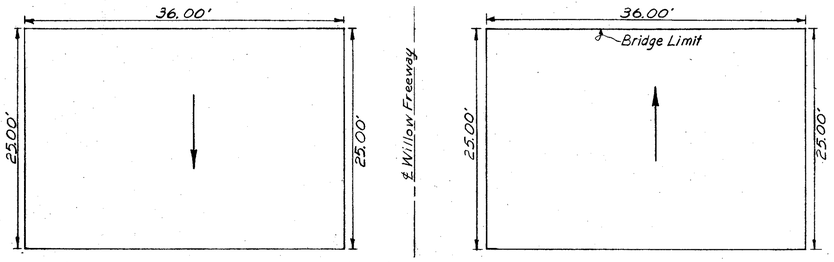
BRIDGE NO. 9
WEST APPROACH SLAB



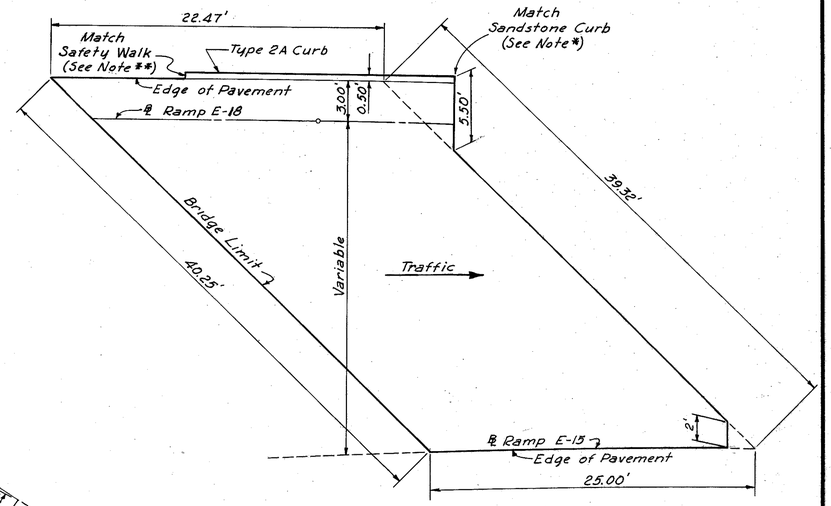
BRIDGE NO. 9
EAST APPROACH SLAB



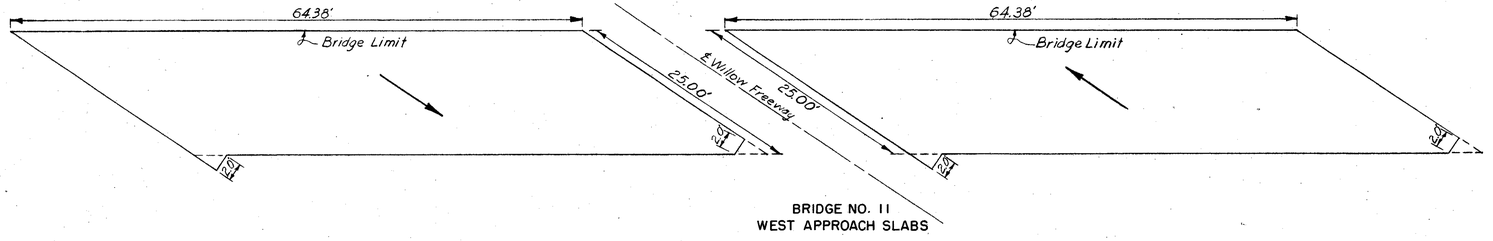
BRIDGE NO. 10
WEST APPROACH SLABS



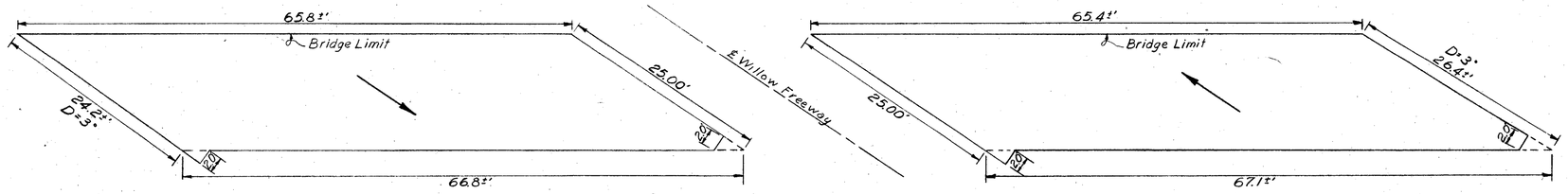
BRIDGE NO. 10
EAST APPROACH SLABS



BRIDGE NO. 7
EAST APPROACH SLAB



BRIDGE NO. 11
WEST APPROACH SLABS



BRIDGE NO. 11
EAST APPROACH SLABS

Direction of Traffic

*Note:
Type 2A Curb to be transitioned uniformly in eight (8) feet to match 6"x 18" Sandstone Curb.

**Note:
The batter on Type 2A Curb to be transitioned uniformly in two (2) feet to match batter on Safety Walk.

Note:
Approach Slabs shall meet construction requirements as shown on State of Ohio Standard Drawing AS-1-54.
Payment for curb sections on approach slabs shall be included in the unit price bid for Item I-7, Approach Slabs.

SCALE Not to Scale
MADE B.W.S DATE 10/8/58
TRCD. DATE
CKD. J.L.C DATE 11/14/58
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 31

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

32
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

DRAINAGE PLAN

B-305 · L-46 · L-51 · F-51 · F-57 · ℄ Existing Woodland Ave. · 31.5' · 2' · 4'

Match Line Sta. 39+50 ℄ Willow Freeway

E.C.P. · F.L. 690.5 · F.L. 690.7 · 12' · 36' · 16' Median · 39 · 8' · 3 · 25' · 10.85 · F.L. 691.4 · F.L. 691.0 · E.C.P. · 4" Concrete Sidewalk · 5' · 35'

℄ RELOCATED WOODLAND

P.C. Sta. 0+65.52 ℄ Rel. Woodland

P.T. Sta. 3+57.00 ℄ Rel. Woodland

P.C. Sta. 10+72.44 ℄ 30-N

Sta. 33+18.66 ℄ Willow

P.C. Sta. 0+00 ℄ Rel. Woodland

P.C. Sta. 7+95.70 ℄ 30-N

Sta. 7+00 F.L. 689.0

Sta. 3+75 F.L. 680.57

F.L. 680.5

F-53 · F.L. 674.50 · L-48 · L-49 · A-136 · F-54 · 2' · 2"

℄ RAMP 30-N

F.L. 689.97

℄ WILLOW FREEWAY

F-55 · 46' · 36' · End Pavement Sta. 30+41.88 ℄ Willow

℄ E. 27th St.

℄ E. 29th St.

F.L. 690.4 · 8' · 24"

℄ Special Slope Protection

P.C. Sta. 0+00 ℄ Ramp N-30 = Sta. 35+08.90 ℄ Willow Frwy.

L-47 · A-134 · 3' · 16' · 5

P.T. Sta. 3+26.67 ℄ Ramp N-30

℄ RAMP N-30

Sta. 7+00 F.L. 683.3

F.L. 683.4

P.C. Sta. 9+41.74 ℄ Ramp N-30

P.T. Sta. 10+51.81 ℄ Ramp N-30

Existing # 2-6A Inlet (Part 6)

F.L. 678.63

21" Pipe Part 6 Construction

E. 30½ St.

P.C. Sta. 17+85.61 ℄ Orange = Sta. 9+23.34 ℄ Rel. Woodland

℄ ORANGE AVE. · 15 · 6' · 24' · 12' Median · 0 · 2 ℄'R. · 35' · 4' Median

℄ Existing Orange Ave.

Service Road No. 10 · No. 8

Match Line Sta. 4+00 ℄ E-14 · 2' Widening · 16'

℄ RAMP E-14 · 38 · 45 · F.L. 693.0 · F-46 · F.L. 692.5 · F.L. 694.3 · F.L. 694.3 · 37'

Match Line 48+00 Willow

Sta. 19+80.49 ℄ E-15 = Sta. 46+37.62 ℄ Willow Frwy.

℄ Special Slope Protection

P.C. Sta. 0+00 ℄ E-14 = Sta. 43+98.79 ℄ Willow Frwy.

E. 22nd St. · No. 5 · 20'

℄ Special Slope Protection · F.L. 693.2 · ℄ WILLOW FREEWAY · 36' · 40 · Sta 41+75± F.L. 693.5 · 36'

℄ Special Slope Protection

Match Line Sta. 39+50 ℄ Willow Frwy. See Above

ESTIMATED QUANTITIES—UNDERDRAINS		QUANT.
I-4 6" Pipe for Underdrain	Lin. Ft.	3689
I-4 8" C.M.P. Outlet for Underdrain	Lin. Ft.	16
I-5 6" Pipe Specials	Each	6

CODE	LOCATION	EST. QUANT. C.B. & M. HS			
		I-8 Std. 2-6 Inlet Each	I-8 Std. 2-2A C.B. Each	I-14 Paved Apron L.F.	
F-51	38+50 Willow 144' Rt.		1		
* F-53	1+85 30-N 19' Lt.	1			
F-54	1+79 30N 33' Lt.		1	20	
F-55	31+50 Willow 54' Lt.	1			
F-57	35+84 Willow 149' Rt.		1		
	Total	2	3	20	

* Standard No. 2-6-A Inlet

CODE	ROADWAY	FROM	TO	EST. QUANT.-PIPES			
				I-2 12" Cl. B L.F.	I-2 12" Cl. B.U.P. L.F.	I-2 12" Cl. B M-6.5(6) or M-6.8(2)	
L-47	Willow	F-52	A-134		114		
L-48	Ramp 30-N	F-53	F-54	8			
L-49	Ramp 30-N	F-54	A-136	132			
L-46	Woodland	F-51	B-305	"		78	
L-51	Woodland	F-57	B-305	"		198	
	Total			140	114	276	

SCALE 1"=50'
MADE M.K.M. DATE 3-2-59
TRCD. R.R. DATE 3-5-59
CKD. J.L.C. DATE 3-27-59

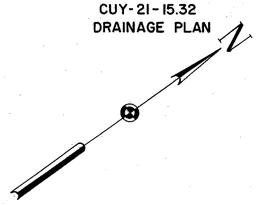
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 32

Rev. A.E.K. 1-11-60

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

33
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
DRAINAGE PLAN



CODE	LOCATION		EST. QUANTITIES C.B. & M.H'S		
			I-8 M.H. Adj. To Grade Each	I-16 M.H. Abandoned Each	I-16 Inlet Abandoned Each
E-200	2+82 E-7	126' Rt.	1		
E-203	3+90 E-14	69' Rt.	1		
E-213	2+35 E-7	125' Rt.			1
E-220	6+29 E-17	3' Rt.		1	
E-222	9+08 E-17	43' Lt.			1
E-223	8+64 E-17	28' Lt.			1
E-224	2+02 E-9	16' Rt.		1	
E-218	13+77 N.B.E. 14th.	125' Rt.			1
	Totals		2	2	4

ESTIMATED QUANTITIES- UNDERDRAINS		
I-4 6" Underdrain Pipe	L.F.	3625
I-4 8" CM.P. Outlet for Underdrains	L.F.	50
I-5 Pipe Special	Each	13

* Indicate Std. No. 2-6-A Inlets.

CODE	LOCATION		EST. QUANTITIES- INLETS AND MANHOLES					
			I-8 Std. 2-6 Inlet Each	I-8 Std. #7 C.B. Each	I-8 Std. 2-2A C.B. Each	I-8 Std. #1 M.H. Each		I-14 Paved Apron L.F.
*	F-33	5+16.5 Ramp E-7 4' Lt.	1					
	F-34	4+50 Ramp E-7 34' Lt.			1			20
	F-35	3+05 Ramp E-7 140 Rt.			1			
*	F-46	47+20 Willow 3' Lt.	1					
*	F-47	49+20 Willow 3' Lt.	1					
	F-48	49+10 Willow 75' Rt.				1		
	F-49	4+25 Ramp E-14. 60' Rt.		1				
	TOTAL CUY-42-18.42		3 *	1	2	1		20

CODE	ROADWAY	FROM	TO	ESTIMATED QUANTITIES – PIPES				
				I-2 12" Class "B" L.F.	I-2 12" B-UP L.F.	I-2, 12" C.I. & M-6.5(A) or M-6.8(B) L.F.		
L-31	Ramp E-7	F-35	E-200	26				
L-32	Ramp E-7	F-33	F-34	68				
L-33	Ramp E-7	F-34	E-200		226			
L-38	Willow	F-46	F-47		198			
L-39	Willow	F-47	F-48		76			
L-40	Willow	F-48	A-32			92		
L-41	Ramp E-14.	F-49	E-203	26				
	TOTAL CUY-42-18.42			120	500	92		

LEGEND

- No.3 — Existing Sewer
- Existing Catch Basins & Manholes
- Proposed Sewer
- Proposed Manhole
- Proposed Inlet
- Fl.680.00 — Proposed Underdrains
- Existing Sewer to be Abandoned.
- E — Existing Drainage Structure
- F — Proposed Drainage Structure
- L — Proposed Sewer
- A — Proposed Drainage Structure, Part 6
- B — Existing Drainage Structure, Part 6

SCALE 1" = 50'
MADE HOA DATE 2/14/57
TRCD. RR DATE 3/6/57
CKD. EMG DATE 11/12/57

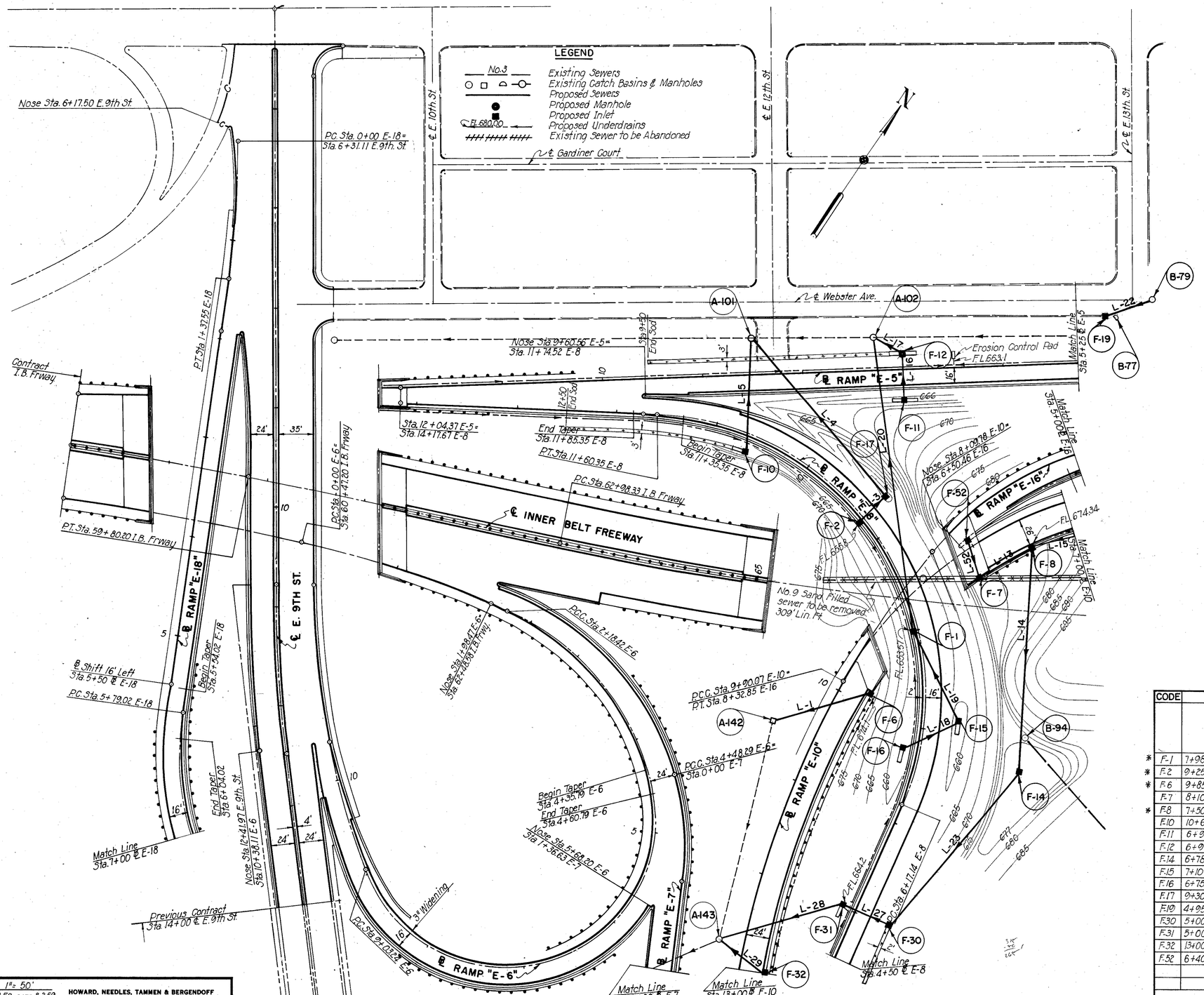
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 33

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

34
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

DRAINAGE PLAN



ESTIMATED QUANTITIES-UNDERDRAINS

I-4 6" Underdrain Pipe	L.F.	2025
I-4 8" C.M.P. Outlet for Underdrains	L.F.	20
I-5 Pipe Special	Each	2

ESTIMATED QUANTITIES, PIPES

CODE	ROADWAY	FROM	TO	I-2 12" Class 'B' L.F.	I-2 12" B-U.P. L.F.	I-2 15" Class B L.F.	I-2 15" B-U.P. L.F.	I-2 15" B.U.P. M 6.6(c) L.F.	I-2 12" Cl. B M-6.5(b) M 6.8(b) L.F.	I-2 18" B-U.P. M-6.6(c) L.F.
L-1	Ramp E-10	F-6	A-142		100					
L-3	Ramp E-8	F-2	F-17		34					
L-4	Ramp E-8	F-17	A-101					204		
L-5	Ramp E-8	F-10	A-101		110					
L-13	Ramp E-10	F-7	F-8		56					
L-14	I-B.Freeway	F-8	F-14			222				
L-15	Ramp E-10	F-24	F-8	116						
L-16	Ramp E-5	F-11	F-12		46					
L-17	Ramp E-5	F-12	A-102						30	
L-18	Ramp E-8	F-16	F-15		58					
L-19	Ramp E-8	F-15	F-1				100			
L-20	Ramp E-8	F-1	A-102					296		
L-22	Ramp E-5	F-19	B-79		46					
L-23	Ramp E-8	F-14	F-30			200				
L-27	Ramp E-8	F-30	F-31				47			
L-28	Ramp E-10	F-31	A-143							124
L-29	Ramp E-10	F-32	A-143		54					
L-52	Ramp E-16	F-52	F-7		36					
TOTAL CUY-42-18.42				116	540	422	147	500	30	124

ESTIMATED QUANTITIES, CATCH BASINS, INLETS & M.H.'S

	CODE	LOCATION	I-8 Std. 2-6 Inlet Each	I-8 Std. 2-8 C.B. Each	I-8 Std. 2-2A C.B. Each		I-8 Std. #3 C.B. Each		I-14. Paved Apron L.F.
*	F-1	7+98 Ramp E-8 5'Lt.	1						
*	F-2	9+25 Ramp E-8 5'Lt.	1						
*	F-6	9+85 Ramp E-10 20'Lt.		1					
	F-7	8+10 Ramp E-10 20'Lt.	1						
*	F-8	7+50 Ramp E-10 20'Lt.	1						
	F-10	10+65 Ramp E-8 18'Lt.			1				10
	F-11	6+97 Ramp E-5 30'Lt.			1				20
	F-12	6+97 Ramp E-5 18'Lt.			1				20
	F-14	6+78 Ramp E-8 100'Rt.			1				
	F-15	7+10 Ramp E-8 32'Rt.			1				10
	F-16	6+75 Ramp E-8 18'Lt.			1				10
	F-17	9+30 Ramp E-8 30'Rt.			1				10
	F-19	4+95 Ramp E-5 47'Rt.					1		
	F-30	5+00 Ramp E-8 37'Rt.			1				10
	F-31	5+00 Ramp E-8 15'Lt.			1				10
	F-32	13+00 Ramp E-10 27'Lt.	1						
	F-52	6+40 Ramp E-16 18'Lt.	1						
	TOTAL CUY-42-18.42		6	1	9		1		100

Note: Asterisked inlets are to be Std.-2-A inlets as per Standard drawing I-8 I 2-A 4-23-59.

Rev. A.E.K. 1-11-60

SCALE 1" = 50'
MADE J.F.S. DATE 8.2.59
TRCD. P.P. DATE 8.16.59
CKD. J.L.C. DATE 11-2-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS,
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 34

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

35
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
DRAINAGE PLAN

ESTIMATED QUANTITIES - UNDERDRAINS		
I-4, 6" Underdrain Pipe	L.F.	3650
I-4, 8" CMP Outlet for Underdrain	L.F.	50
I-5, 6" Pipe Special	Each	7

CODE	ROADWAY	FROM	TO	EST. QUANTITIES - PIPES					
				I-2 12" Cl. B L.F.	I-2 12" B.UP L.F.	I-2, 12" Cl. B M-6.5(6) M-6.8(6) L.F.	I-2 15" Cl. B. L.F.	I-2, 18" Cl. B M-6.5(6) M-6.8(6) L.F.	I-2 24" B.U.P. Sec M6.8(1) M-6.5(6) L.F.
L-10	I.B. Freeway	F.22	F.23		108				
L-11	I.B. Freeway	F.23	F.24		116				
L-12	Ramp E-10	F.25	F.24		70				
L-24	Ramp E-5	F.26	F.27	52					
L-25	Ramp E-5	F.27	F.28				34		
L-26	Ramp E-5	F.29	F.28		34				
L-34	Ramp E-11	F.37	F.38	268					
L-35	Ramp E-11	F.38	F.56				96		
L-36	Ramp E-11	F.39	F.56	16					
L-37	Ramp E-11	F.40	E.202			54			
L-42	I.B. Freeway	F.41	F.42	204					
L-43	Ramp E-13	F.44	F.43		90				
L-44	Ramp E-13	F.43	F.42					176	
L-45	E. 22nd St.	F.45	#5		12				
L-50	Ramp E-11	F.56	E.202						92
Total CUY-42-18.42				540	430	54	130	176	92

CODE	LOCATION		EST. QUANTITIES C. B. & M.H.'S		
			I-8 M.H. Adj. to Grade Each	I-16 M.H. Abandon Each	I-16 Inlet Abandon Each
E.202	80+52 Inner Belt	60'Rt.	1		
E.225	4+45 E-5	62'Rt.	1		
E.226	79+50 Inner Belt	37'Rt.			1
E.227	79+59 Inner Belt	62'Rt.	1		
E.228	79+69 Inner Belt	61'Rt.			1
E.229	79+66 Inner Belt	1'Rt.		1	
E.230	6+95 E-11	18'Lt.	1		
E.231	7+04 E-11	25'Rt.			1
E.232	7+26 E-11	5'Rt.	1		
E.233	7+36 E-11	25'Rt.			1
E.234	80+80 Inner Belt	37'Rt.			1
E.235	8+93 Inner Belt	45'Rt.		1	
E.236	81+00 Inner Belt	51'Rt.			1
E.237	2+66 E-13	32'Lt.		1	
E.238	0+49 E-13	52'Rt.			1
B-152	75+11 Inner Belt	45'Lt.		1	
B.153	77+33 Inner Belt	166'Rt.		1	
E.242	68+41 Inner Belt	66'Lt.			1
E.243	68+60 Inner Belt	33'Lt.			1
E.244	75+53 Inner Belt	8'Rt.			1
E.245	75+68 Inner Belt	℄			1
	Total		5	5	11

CODE	LOCATION		ESTIMATED QUANTITIES - INLETS & MANHOLES								
			I-8 Std. 2-6 C.B. Each	I-8 Std. 2-10 C.B. Each	I-8 Std. 2-24 C.B. Each		I-8 Std. 3 C.B. Each	I-8 Std. #1 M.H. Each	I-8 Std. #2 M.H. Each	I-14 Paved Apron L.F.	I-8 Std. #9-A C.B. Each
* F-22	70+56 I.B. Frwy.	2'Rt.	1								
* F-23	69+53 I.B. Frwy.	2'Rt.	1								
F-24	6+25 Ramp E-10	37'Lt.			1					10	
* F-25	4+15 Ramp E-16	19'Lt.	1								
F-26	1+75 Ramp E-5	℄		1							
F-27	2+31 Ramp E-5	18'Rt.			1					20	
F-28	2+73 Ramp E-5	10'Rt.						1			
F-29	1+85 Ramp E-16	8'Rt.	1								
F-37	76+85 I.B. Frwy.	87'Rt.			1					10	
F-38	2+75 Ramp E-11	18'Rt.			1					10	
F-39	3+93 Ramp E-11	18'Rt.			1					20	
F-40	3+93 Ramp E-11	31'Lt.			1					20	
F-41	77+30 I.B. Frwy.	74'Lt.									1
F-42	78+50 I.B. Frwy.	86'Lt.							1		
F-43	3+14 Ramp E-13	16'Rt.			1					20	
F-44	3+38 Ramp E-13	32'Lt.			1					20	
F-45	18+65 E-22nd.	0'Rt.					1				
F-56	3+75 Ramp E-11	32'Rt.						1			
Total	CUY-42-18.42		4	1	8		1	2	1	130	1

SCALE 1" = 50'
MADE H.V.M. DATE 7-8-59
TRCD. R.R. DATE 11-10-59
CKD. G.M.G. DATE 11-11-59

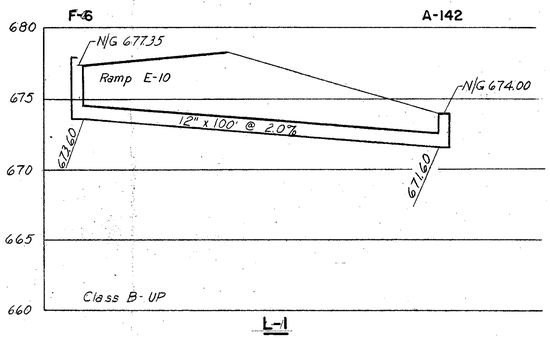
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 35

Rev. JAG 1-11-60

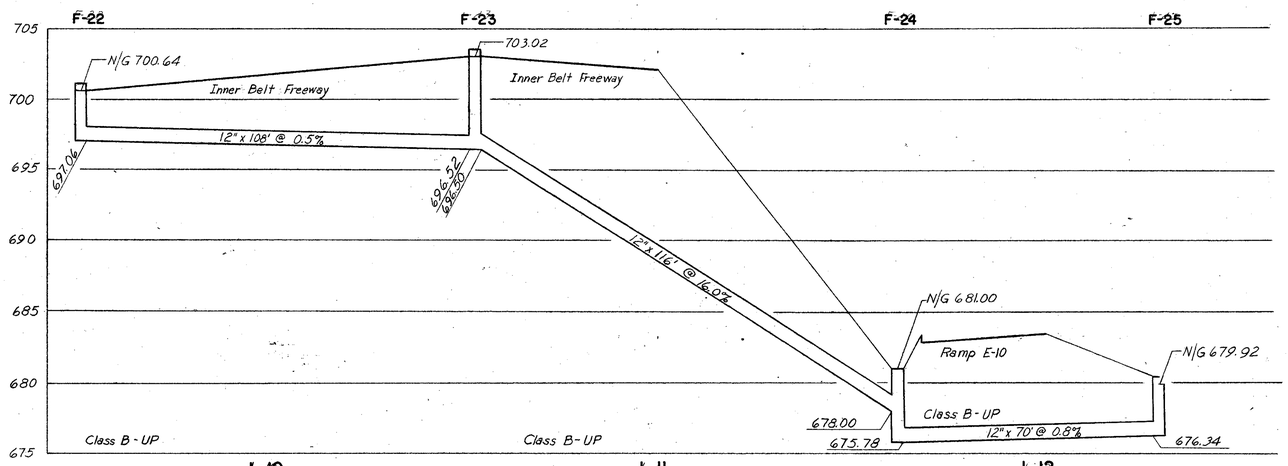
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

36
181

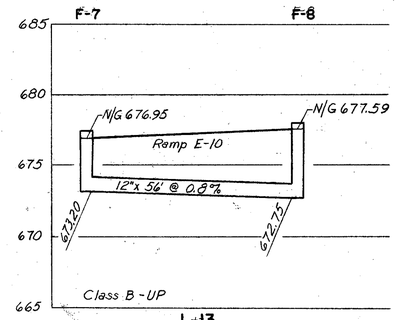
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
DRAINAGE PROFILES



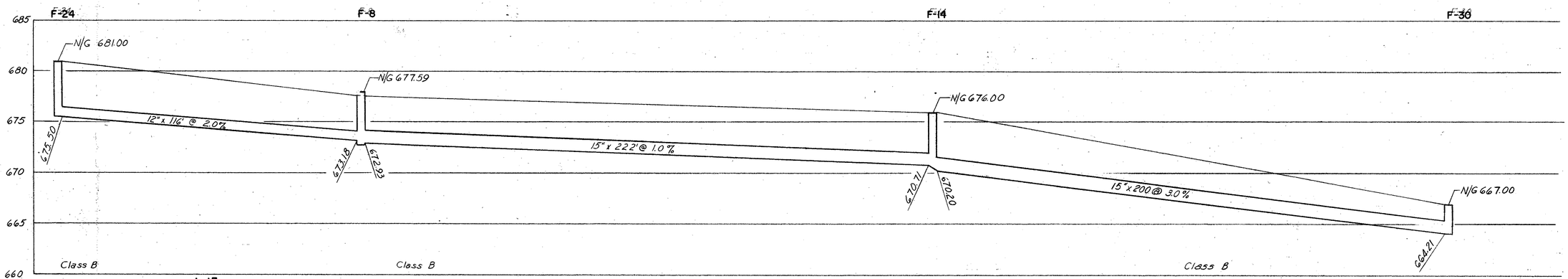
L-1



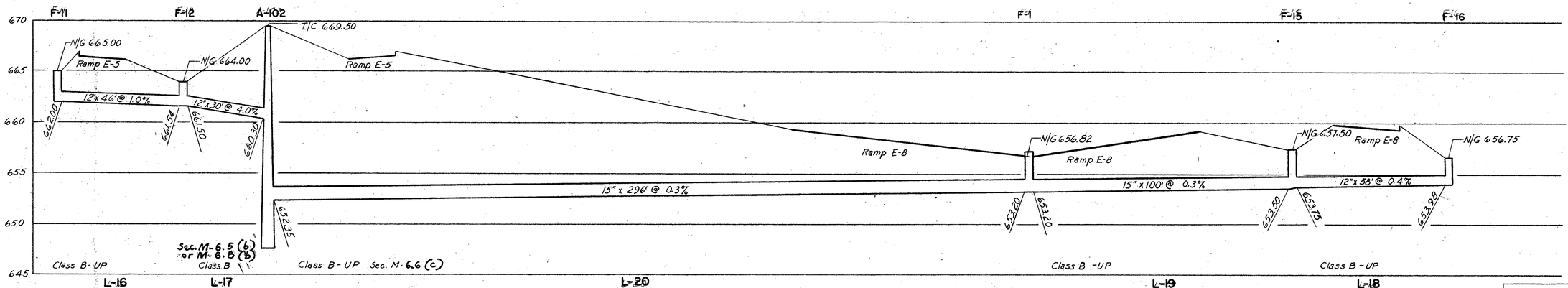
L-10 L-11 L-12



L-13



L-15 L-14 L-23



L-16 L-17 L-20 L-19 L-18

PROFILES
L-1, L-10 TO L-20, & L-23

SCALE Ver. 1"=20' Hor. 1"=50'
MADE P.H.D. DATE 7-9-59
TRCD. DATE
CKD H.V.M. DATE 11-10-59

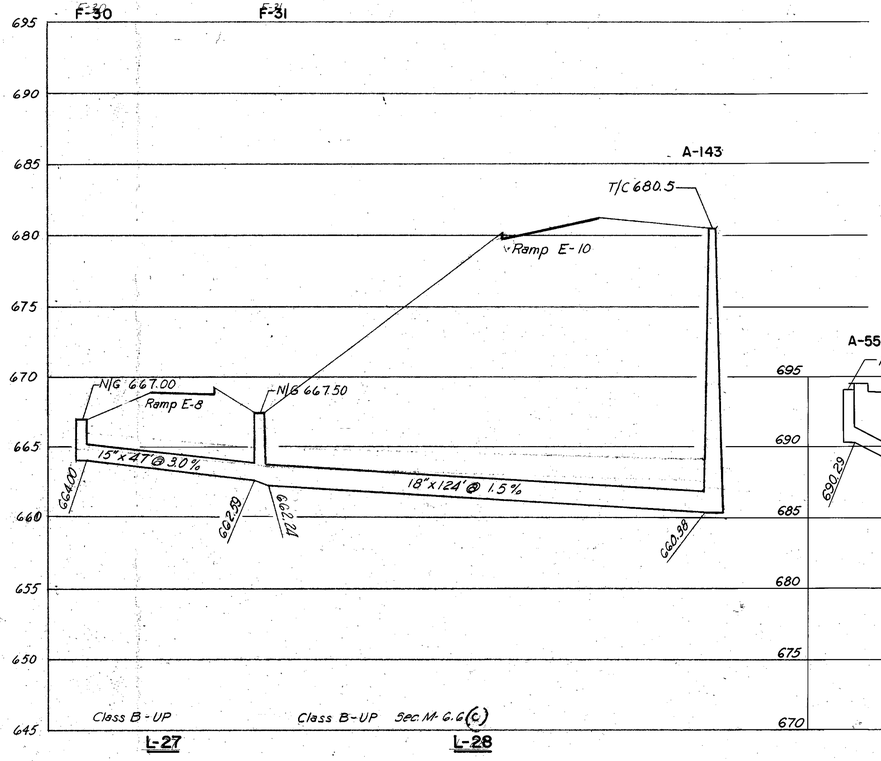
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

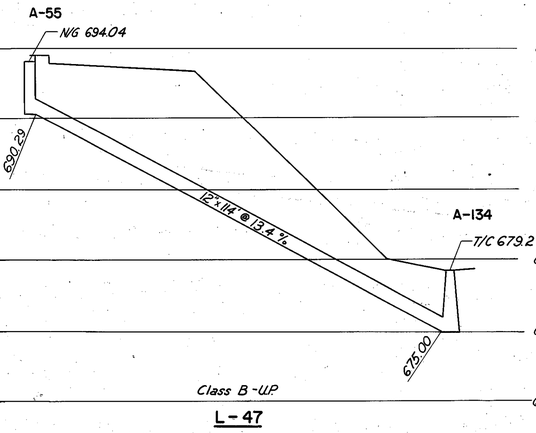
914 SHEET. 36

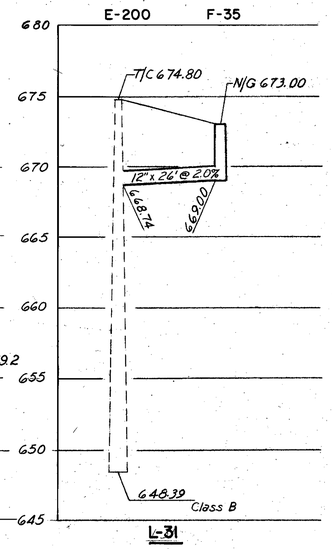
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

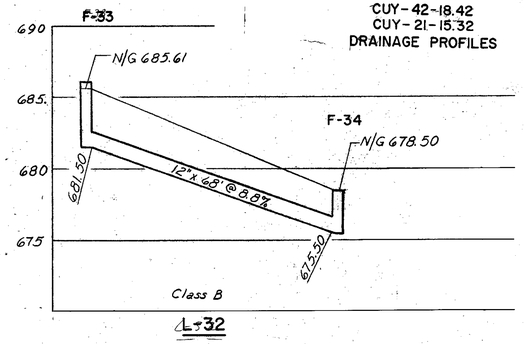
37
181

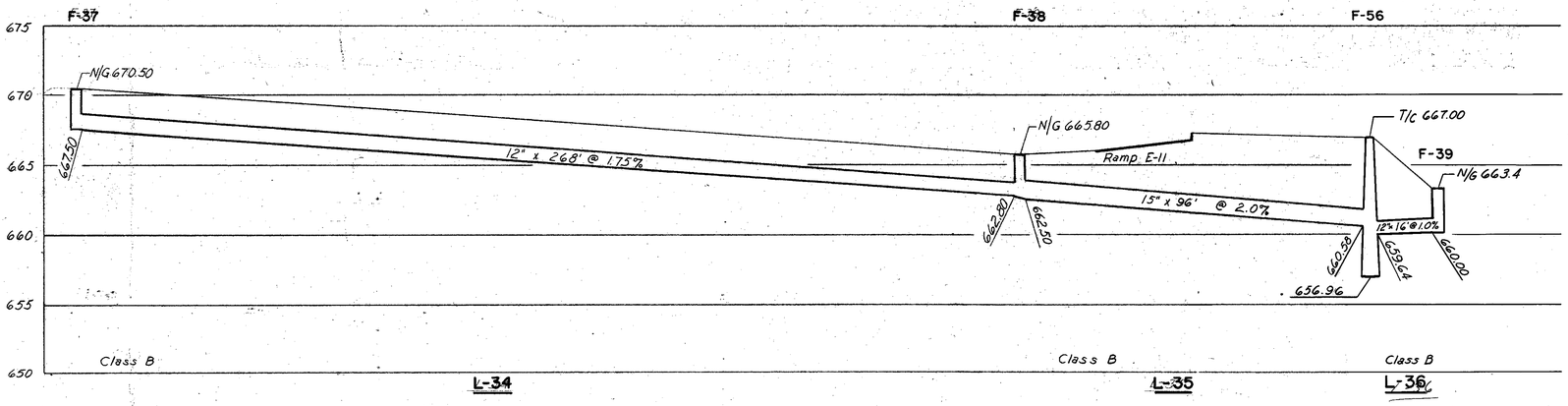
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
DRAINAGE PROFILES

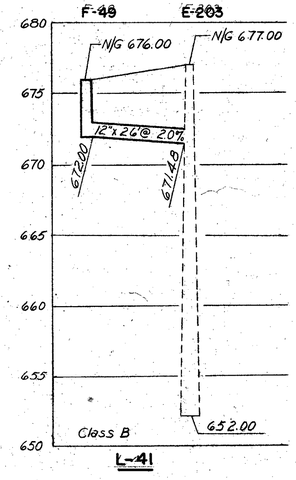












PROFILES
L-27, L-28, L-31, L-32
L-34, L-35, & L-41
L-36
L-47

Rev. R.J.K. 1-11-60

SCALE Horiz. 1"=200' Vert. 1"=20'
MADE RHL DATE 7/10/59
TRCD. ___ DATE ___
CKD MEMM DATE 7/10/59

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

714 914 SHEET. 37 37

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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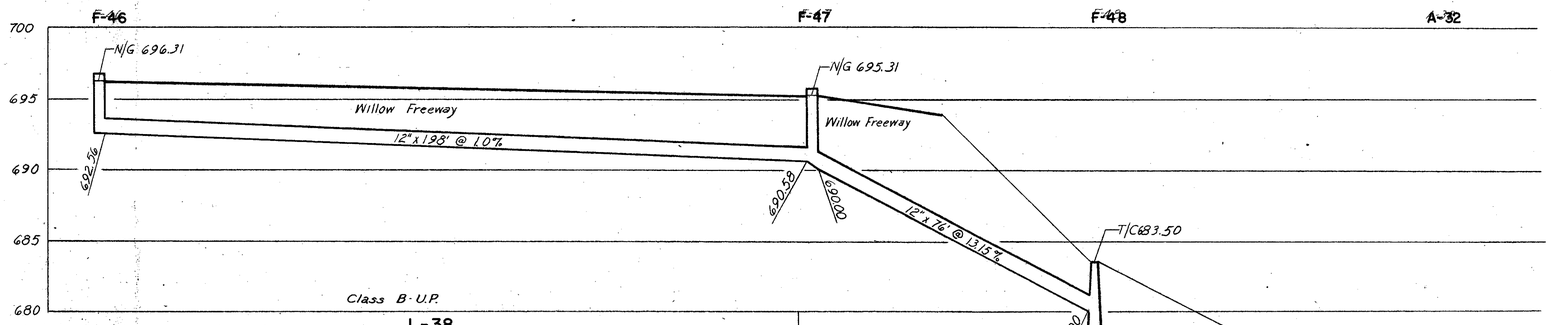
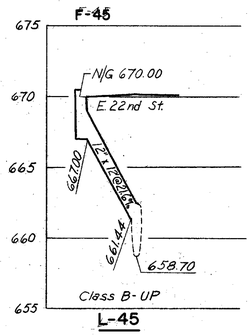
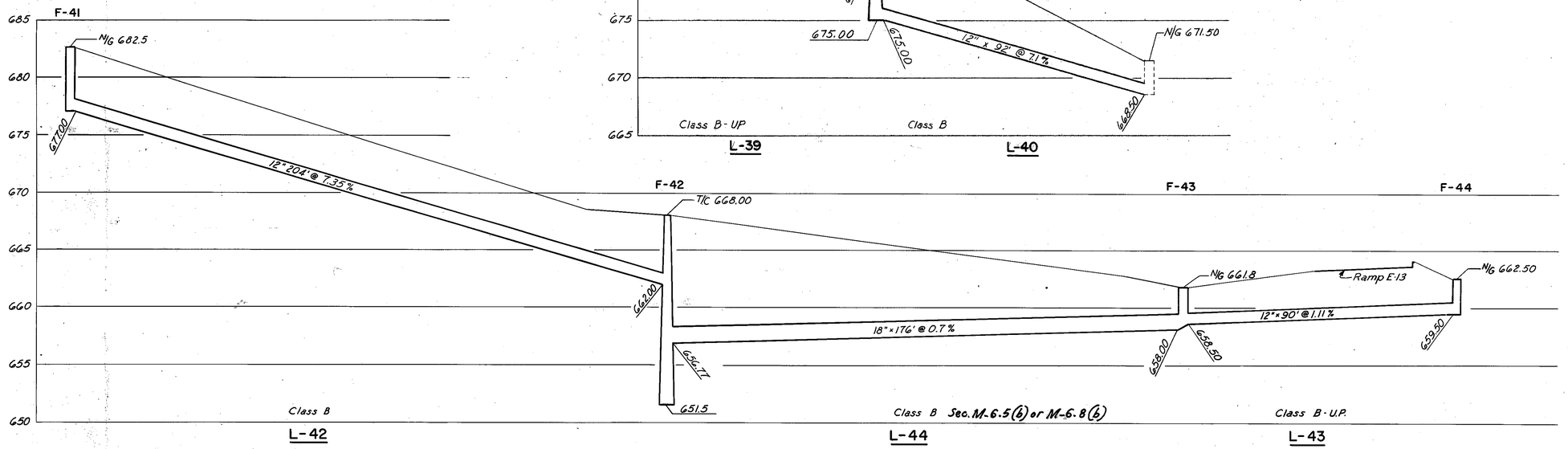
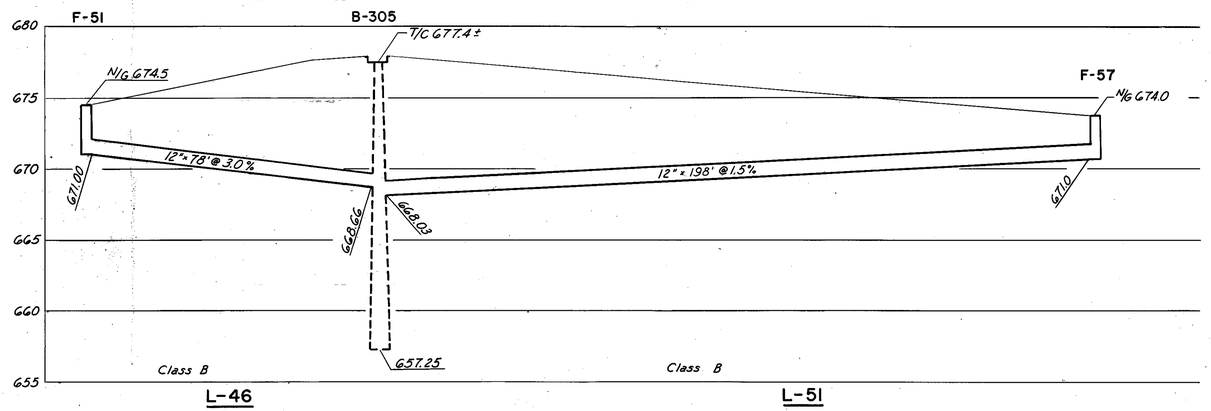
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

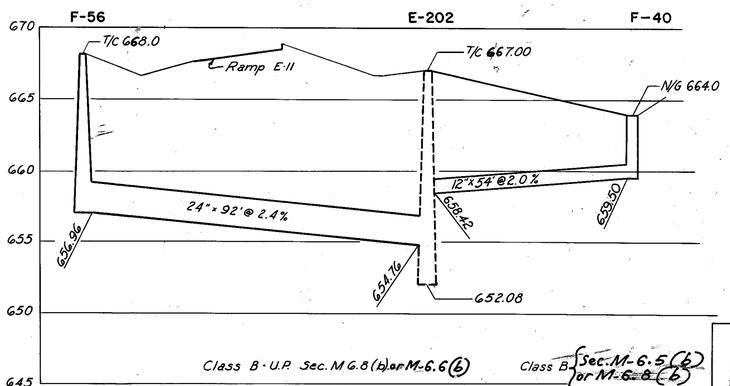
DRAINAGE PROFILES











HOR. 1"=20'
SCALE VER. 1"=6'
MADE R.H.L. DATE 7-8-59
TRCD. DATE
CKD H.K.M. DATE 11-10-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET. 38

Rev. R.J.K. 1-11-60

PROFILES
L-38 TO L-40
L-42 TO L-46
L-50 TO L-51
L-37

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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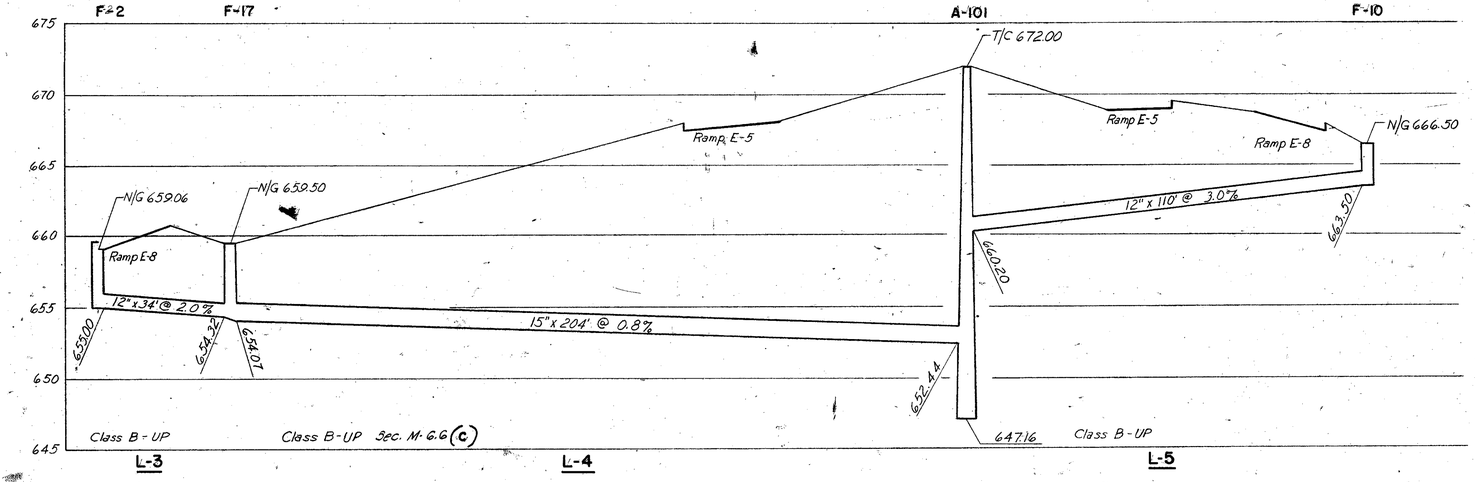
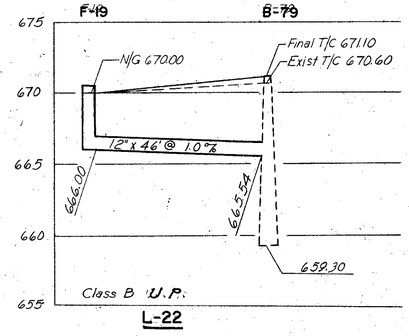
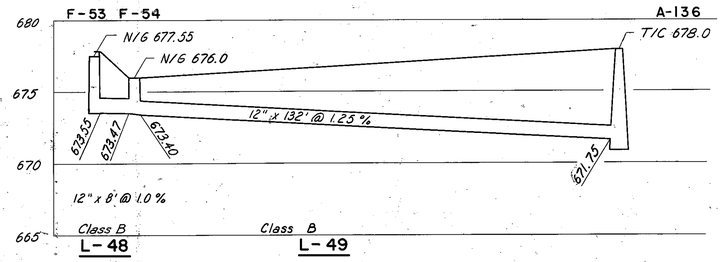
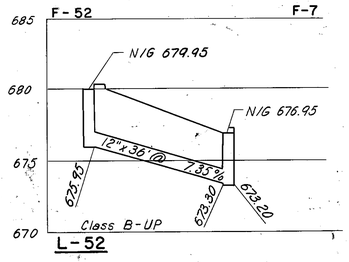
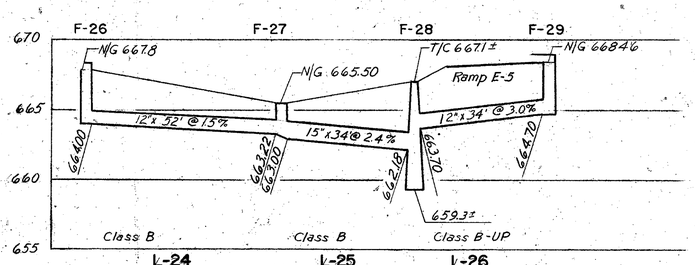
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
DRAINAGE PROFILES

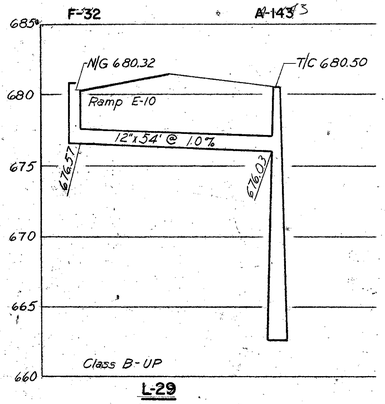


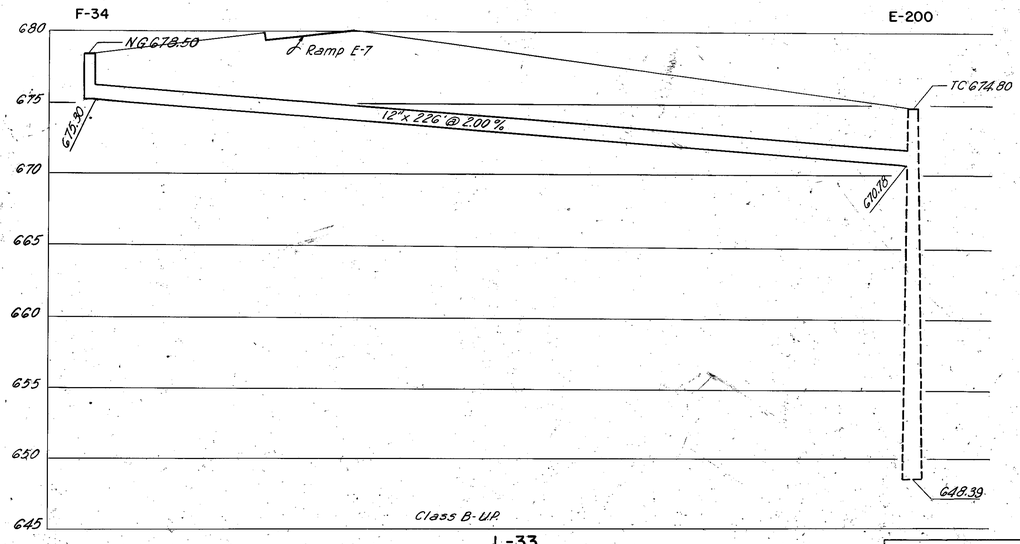












PROFILES
L-3 TO L-5
L-22
L-24 TO L-26
L-29 & L-33
L-48 TO L-49 & L-52

SCALE Vert. 1"=20' Hor. 1"=8'
MADE RH DATE 7-11-59
TRCD ___ DATE ___
CKD H.V.M DATE 11-11-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET. 39

Rev. JAG 1-11-60

Q-16

21.0

CUY-90-16.37 CUY-77-15.62

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

40
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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

DRAINAGE DETAILS

GENERAL NOTES

1. The abandoning of existing manholes shall be in accordance with Section I-16.03 of the Construction and Material Specifications with the following exceptions: (1) The existing inlet and outlet pipes shall be sealed with brick. (2) After sealing of the existing pipes is complete and the walls removed to the required depth, the manhole shall be filled with granular material and compacted in accordance with Sec. I-16.03.

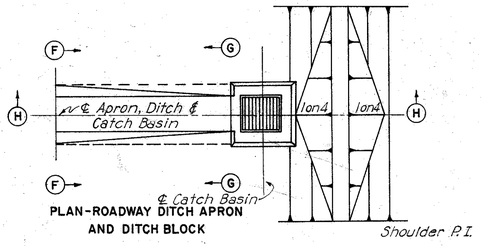
2. Where proposed sewer pipes are to be connected into existing sewers, the hole in the existing sewer shall be cut by the City of Cleveland forces.

3. Not all sewer pipes connected to existing catch basins are shown on the plans. Where sewer pipes not shown are encountered during construction, the pipes shall be cut at the limits of construction and sealed to the satisfaction of the Engineer. Payment for cutting and sealing in accordance with paragraph 4 of Item I-16.03 shall be included in the unit price bid for Item E-1 Roadway Excavation.

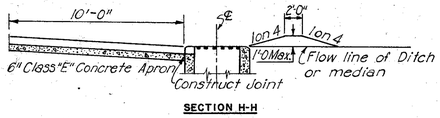
3-A. Standard City Sewer Manhole Frames and Covers as shown on sheet No 52 shall be used on all new Manholes.

4. For the location of underdrains, see typical sections. For details of underdrain outlets, see this sheet.

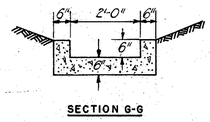
5. The Contractor's attention is directed to the removal of the existing No. 9 Brick Sewer in the areas of bridge construction. All work necessary for removal of this egg-shaped sewer, including footing, if any, in the areas indicated on the plans, shall be paid for as Item E-12, Pipe Removed."



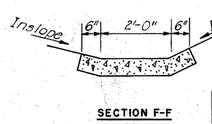
PLAN-ROADWAY DITCH APRON AND DITCH BLOCK



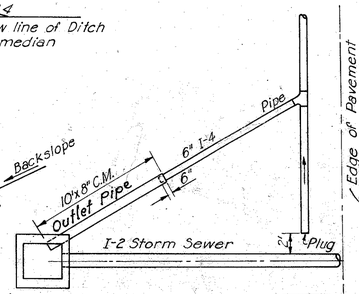
SECTION H-H



SECTION G-G

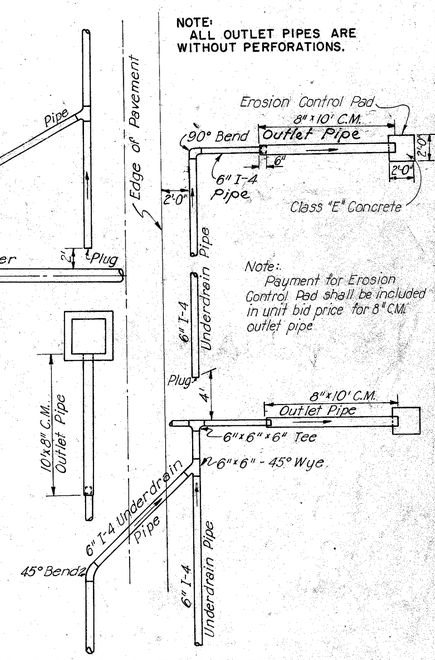


SECTION F-F



Note:
Ditch blocks shall be placed downstream from all catch basins on a continuous grade. Payment shall be included in the unit price bid for Item E-1 Excavation.
The paved apron and catch basin are separate pay items. See Summary Sheet.
The appropriate paved apron shall be installed upstream from all catch basins located in defined ditch or median. Minimum thickness of concrete is 6", concrete shall be Class "E"

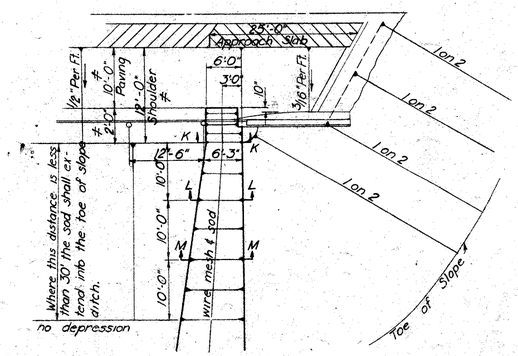
NOTE:
ALL OUTLET PIPES ARE WITHOUT PERFORATIONS.



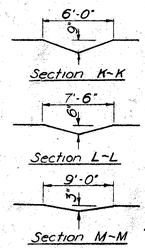
TYPICAL UNDERDRAIN AND OUTLET PIPE DETAIL

SPECIAL PAVED APRON DETAILS (PAVED GUTTER)

℄ Unless otherwise shown.



SPECIAL BERM & SLOPE PROTECTION
No Scale



NOTES

Prior to placement of sod in the berm and slope, galvanized poultry fence shall be placed on the finished grade in strands which shall be at right angles to the direction of flow. Each strand shall be staked securely on top and bottom with stakes spaced at four foot intervals and alternated in rows four (4) feet apart.

Stakes shall be 1"x 1"x 8" wood stakes and shall be perpendicular to the ground and flush with the finished grade.

The fence shall be Straight Line Poultry Fence or equivalent with strand width of four feet, having a two inch mesh and all wires No. 20 Gauge.

Each strand of fencing shall be fastened together at twelve inch intervals by means of hog rings.

The fence shall be secured to the wood stakes by metal staples.

Sod shall be laid in accordance with Construction and Materials Specifications Section L-10.07.

SCALE As Shown
MADE J.F.S. DATE 11-13-59
TRCD. DATE
CKD. H.W.M. DATE 11-11-59

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

914 SHEET 40

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

LIGHTING KEY

LEGEND
- Previous Contract - Part 5
- Part 6-
- Part 7-A

8'x11' Vault in previous contract. Regulator for Circuit No.11 by Others.

8'x22' Vault in previous contract. Regulators for Circuits No.12 and 13 by Others.

8'x22' Vault in previous contract. Regulators for Circuits No.5,6,7 and 8 by Others.

BR. NO.1
BR. NO.2
BR. NO.3 CUY-42-1843
BR. NO.4 CUY-42-1854
BR. NO.5
BR. NO.6
BR. NO.7
BR. NO.8 CUY-21 1573
BR. NO.9 CUY-21-1573
BR. NO.10 CUY-21-1559
BR. NO.11 CUY-21-1544

FREEWAY
INNER BELT
WILLOW FREEWAY
SERVICE ROAD
ACCESS RAMP
RAMP E-1 through RAMP E-18
RAMP 30-M
RAMP 30-N
RAMP M-30
RAMP N-30
MATCH LINE - STA.
Circuit No.5, Circuit No.6, Circuit No.7, Circuit No.8, Circuit No.11, Circuit No.12, Circuit No.13
New 5'8" Mfd.
N.Y.C. & ST.L.R.R. FREIGHT HOUSE
N.Y.C. FREIGHT STATION
EXISTING
RELOCATED

E. 9TH ST., E. 10TH ST., E. 12TH ST., E. 13TH ST., E. 14TH ST., E. 18TH ST., E. 19TH ST., E. 21ST ST., E. 20TH ST., E. 21ST ST., E. 22ND ST., E. 23RD ST., E. 24TH ST., E. 25TH ST., E. 26TH ST., E. 28TH ST., E. 29TH ST., E. 30TH ST.
CARNEGIE AVE., CENTRAL AVE., CHARITY AVE., SCOVILL AVE., WOODLAND AVE., ORANGE AVE., CEDAR AVE., CREIGHTON AVE., HAZEN AVE., ALLEN AVE., CHAPEL CT., THOMAS CT., REAR CT., DECATUR CT., ANDES CT., WELDING CT., GARDINER CT., COLUMBUS CT., WEBSTER CT.
WEST BOUND SCOVILL, EAST BOUND SCOVILL, WEST BOUND BROADWAY, EAST BOUND BROADWAY, NORTH BOUND EAST 14TH, SOUTH BOUND EAST 14TH, BROADWAY, MAYFLOWER

SCALE 1"=150'
MADE J.P.V. DATE 11-27-59
TRCD. DATE
CKD G.J.C. DATE 11-1-59

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

914 SHEET 41

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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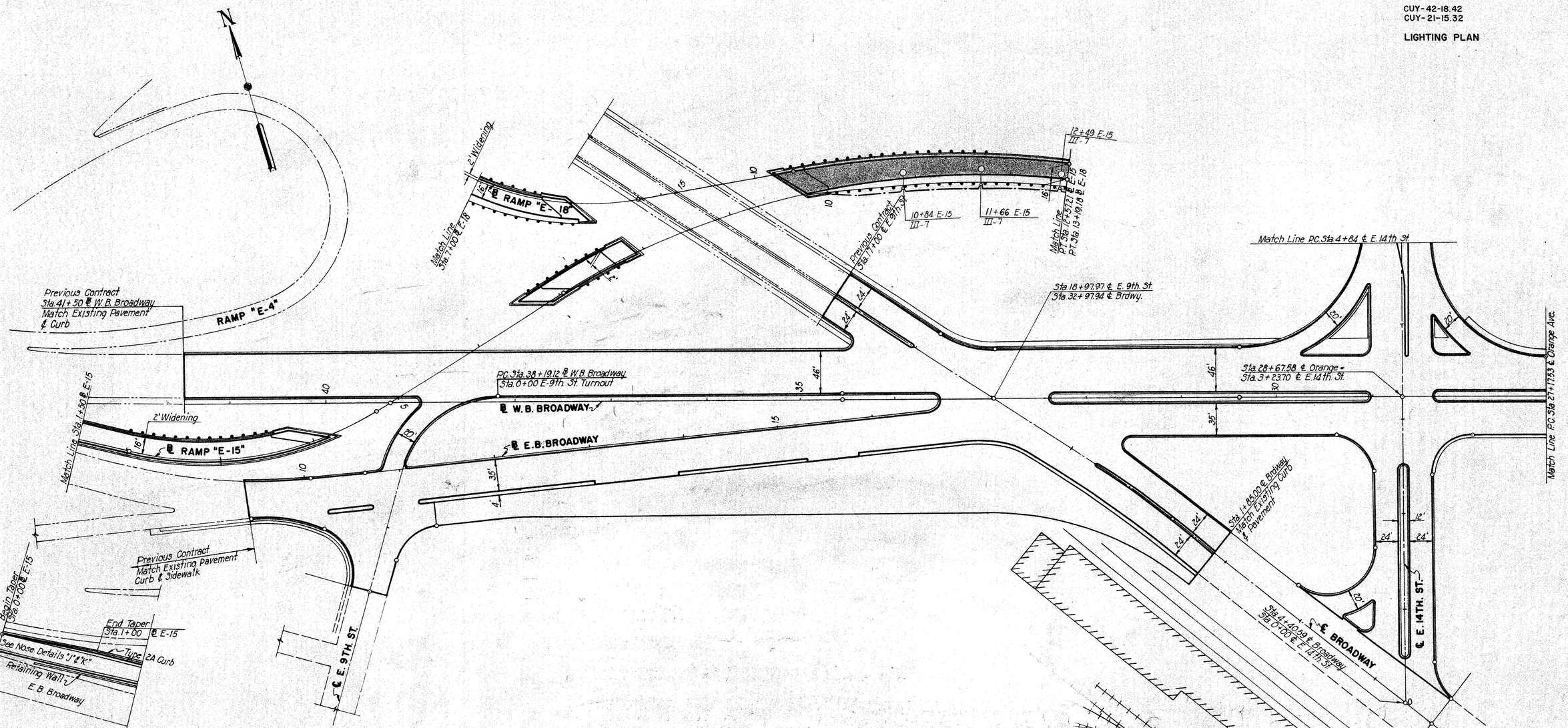
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

LIGHTING PLAN



LEGEND

- Roadway Lighting Unit: ASA-IES Type IV, 15000 Lumen incandescent lamp, 10' bracket, on Expressway, with Pole Base Box.
- Roadway Lighting Unit: ASA-IES Type IV, 15000 Lumen incandescent lamp, 10' bracket, on Expressway Bridges.
- Roadway Lighting Unit: ASA-IES Type III, 10000 Lumen incandescent lamp, 10' bracket, on Ramps and Streets, with Pole Base Box.
- Roadway Lighting Unit: ASA-IES Type III, 10000 Lumen incandescent lamp, 10' bracket, on Ramp Bridges.

IV-7 Typical Luminaire Designation: IV represents ASA-IES Type; 7 is circuit number.

Series Circuits in Concrete encased duct or Conduit on Bridges; Number of Dots represent number of Ducts in Run. All ducts are 2" unless otherwise noted.

Pull Box in Roadway Lighting Run.

Fluorescent Underdeck Lighting unit, includes 6"x6"x3" junction box.

2" ϕ Galvanized rigid conduit for underdeck lighting.

32"x12"x10" Service Panel for underdeck lighting.

¾" ϕ Galvanized rigid conduit for underdeck lighting.

6"x8"x4" Junction Box for underdeck lighting.

Regulator Vault, size called out on sheets.

5'x8' Manhole

Note: All ducts under pavement shall be 2-Way Duct, 2-inch, except as otherwise noted.

SCALE 1"=50'
MADE J.R.C. DATE 9-16-58
TRCD. ___ DATE ___
CKD. G.T.C. DATE 11-12-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 42

Rev. F.S.J. 12-16-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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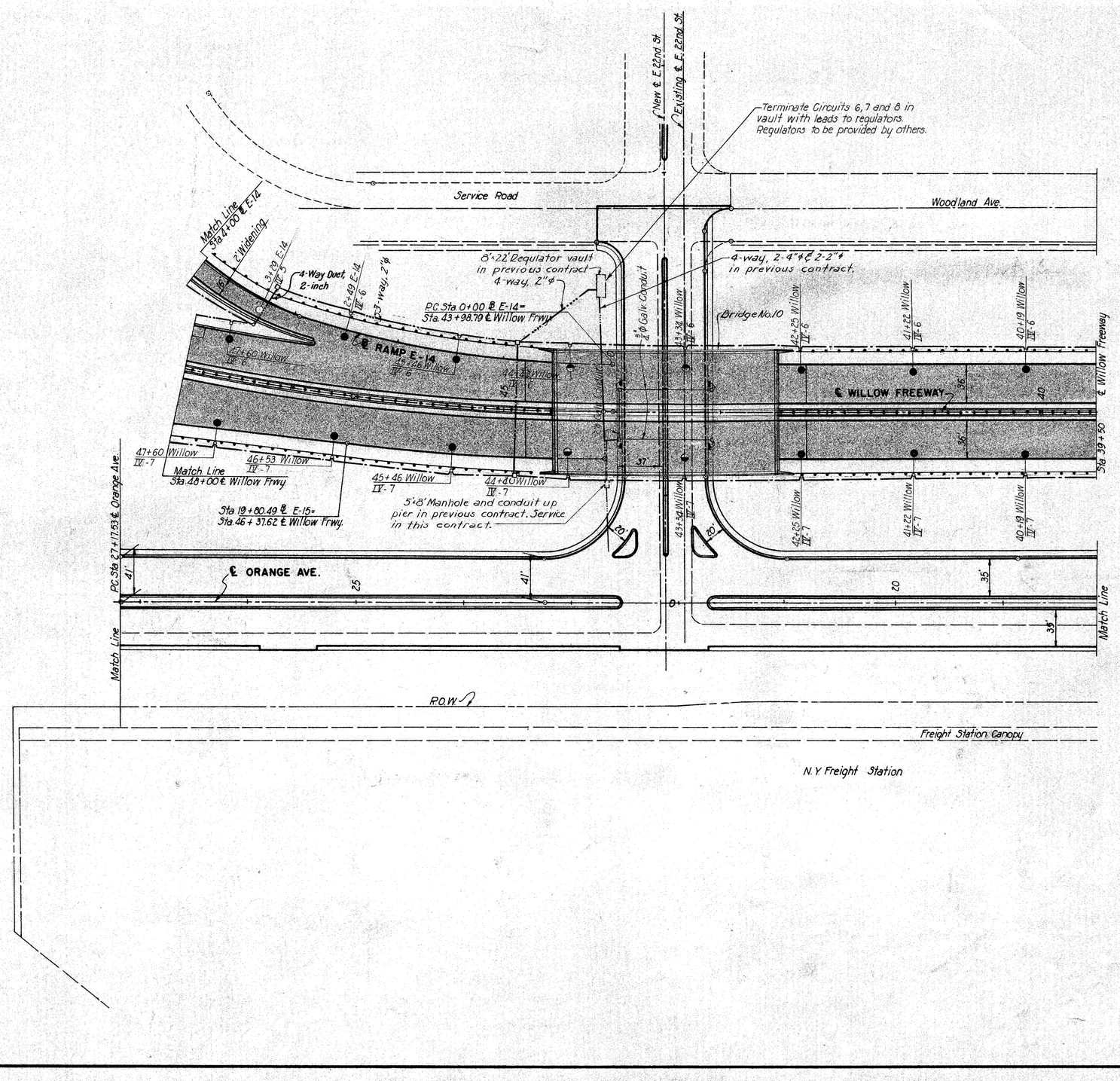
CUYAHOGA COUNTY
CITY OF CLEVELAND

CUY-42-18.42
CUY-21-15.32

LIGHTING PLAN



SCALE 1"=50'
MADE T.D.K. DATE 3-17-59
TRCD. DATE
CKD. G.J.C. DATE 11-12-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 43

FOR LEGEND SEE SHEET 42 Rev. F.S.J. 12-16-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

LIGHTING PLAN

N

℄ E. 23rd

℄ E. 25th

℄ E. 26th

℄ E. 28th

℄ E. 29th

℄ Existing Woodland Ave.

2'

4'

31.5'

P.C. Sta. 0+00 ℄ Rel. Woodland

P.C. Sta. 7+95.70 ℄ 30-N

℄ RELOCATED WOODLAND

℄ RAMP 30-N

6+88 - 30-N III-6

5+97 - 30-N III-6

5+05 - 30-N III-6

4+14 - 30-N III-6

3+22 30-N III-6

2+31 30-N III-6

1+40 30-N III-6

0+49 30-N III-6

Cap duct for future extension by others.

38+13 Willow IV-6

39+16 Willow IV-6

37+10 Willow IV-6

36+07 Willow IV-6

35+03 Willow IV-6

Bridge No. 11

37+39 Willow IV-6

Sta. 10+37.42 ℄ 30-N

Sta. 11+18.56 ℄ Willow

16' Median

℄ WILLOW FREEWAY

31+95 Willow IV-6

30+92 Willow IV-6

32+96 Willow IV-6

Match Line - Sta. 30+50 ℄ Willow Freeway

End Pavement Sta. 30+41.88 ℄ Willow

℄ E. 27th St.

℄ E. 29th St.

℄ Existing E. 30th St.

This lighting unit not in this contract. Contractor to run duct for final circuiting.

37+07 Willow IV-7

32+01 Willow IV-7

35+98 Willow IV-7

30+92 Willow IV-7

34+95 Willow IV-7

32+99 Willow IV-7

38+13 Willow IV-7

39+16 Willow IV-7

36+03 Willow IV-7

℄ RELOCATED WOODLAND

4"℄ Duct for underdeck lights in previous contract. Service in this contract.

P.C. Sta. 0+00 ℄ Ramp N-30 = Sta. 35+08.90 ℄ Willow Frwy.

P.T. Sta. 3+66.67 ℄ Ramp N-30

4"Concrete Sidewalk

℄ RAMP N-30

7+01 N-30 III-7

7+99 N-30 III-7

8+97 N-30

P.C. Sta. 9+41.74 ℄ Ramp N-30

P.T. Sta. 10+51.81 ℄ Ramp N-30

4+07 N-30 III-7

5+05 N-30 III-7

6+03 N-30 III-7

9+34 Orange

2'R.

P.C. Sta. 17+85.61 ℄ Orange = Sta. 9+23.34 ℄ Rel. Woodland

℄ ORANGE AVE.

12' Median

4' Median

℄ Existing Orange Ave.

Existing Pavement

This lighting unit not in in this contract. Contractor to run duct for final circuiting

℄ Mayflower Rd.

Freight Station Canopy

N.Y.C. Freight Station

SCALE 1"=50'
MADE EEK DATE 9-19-59
TRCD. DATE
CKD. G.J.C. DATE 11-12-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 44

FOR LEGEND SEE SHEET 42

Rev. F.S.J. 12-8-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

45
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CUYAHOGA COUNTY
CITY OF CLEVELAND

CUY-42-18.42
CUY-21-15.32

LIGHTING PLAN

Sta 5+00 ℄ E. 9th St.
℄ Carnegie Ave.
Nose Sta. 6+17.50 E. 9th St.
PC Sta. 0+00 E-18 = Sta. 6+31.11 E. 9th St.
℄ E. 10th St.
℄ E. 12th St.
℄ E. 13th St.
℄ Gardiner Court
℄ Webster Ave.
Work between these limits by City
Contractor to make connections to duct installed by City.
4"ϕ Duct
Pull box
15'-21.4" @ 10+37.2 E-5
Previous Contract Sta 58+00 I.B. Frway
PT Sta 1+37.55 E-18
2-Way Duct, 4" ϕ
Sta 12+04.37 E-5 = Sta 14+17.67 E-8
End Taper Pull box Sta 11+83.35 E-8
PT Sta 11+60.35 E-8
Begin Taper Sta 11+36.35 E-8
℄ RAMP "E-5"
Match Line Sta 5+25 ℄ E-5
Sta 5+80 ℄ E-16
Nose Sta 6+09.78 E-10 = Sta 6+50.46 E-16
End Taper Sta 5+10.88 E-16
℄ RAMP "E-16"
Sta 6+50 ℄ E-10
Sta 6+80 ℄ E-10
Sta 7+00 E-16 = Sta 0+47.20 I.B. Frway
PC Sta 60+80.33 I.B. Frway
PT Sta 59+80.20 I.B. Frway
℄ INNER BELT FREEWAY
Sta 64+68 Limit of construction
4"ϕ Duct
5'x5' M.H.
2"ϕ Galv. Rigid Conduit
Bridge No. 2
Bridge No. 3
Service for underdeck lights by contractor
℄ RAMP "E-18"
℄ E. E. 9TH ST.
℄ Shift 16' Left Sta 5+50 ℄ E-18
PC Sta 5+79.02 E-18
Begin Taper Sta 5+54.02 E-18
End Taper Sta 6+04.02
Match Line Sta 1+00 ℄ E-18
Nose Sta 12+41.97 E-9th St. Sta 10+38.11 E-6
Previous Contract Sta 14+00 ℄ E. 9th St.
3" Widening
PC Sta 9+10.03 E-6
℄ RAMP "E-6"
Nose Sta 1+98.47 E-6 Sta 62+43.81 I.B. Frway
PCC Sta 2+18.42 E-6
Nose Sta 6+69.00 E-6 Sta 1+36.63 E-7
Begin Taper Sta 4+35.19 E-6
End Taper Sta 4+60.19 E-6
PCC Sta 4+48.29 E-6 = Sta 0+00 E-7
℄ RAMP "E-7"
Match Line Sta 2+00 ℄ E-7
PCC Sta 9+20.07 E-10 = PT Sta 8+32.85 E-16
Match Line Sta 13+00 ℄ E-10
℄ RAMP "E-10"
Match Line Sta 4+50 ℄ E-8
PC Sta 6+17.14 E-8
Note: For details of 2-Way Duct, 4"ϕ, see Sheet 78 of Roadway Plans, Part B.

SCALE 1" = 50'
MADE J.P.W. DATE 9-22-59
TRCD. DATE
CKD. B.J.C. DATE 11-12-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 45

FOR LEGEND SEE SHEET 42 Rev. F.S.J. 12-8-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

LIGHTING PLAN

Match Line Sta E+00 ℄ E-7
Match Line Sta 13+00 ℄ E-10
Match Line Sta 4+50 ℄ E-8
Match Line Sta E+00 ℄ E-9
Match Line Sta 10+00 ℄ S.B. 14th St.
Match Line Pt. Sta 12+57.21 ℄ E-15
Match Line Sta 47+84 ℄ E. 14th St.
Match Line Sta. 48+00 Willow Frwy.
Match Line Sta. 4+00 ℄ E-14
Match Line Sta 4+00 ℄ N.B. 14th St.

℄ RAMP "E-7"
℄ RAMP "E-10"
℄ RAMP "E-9"
℄ RAMP "E-17"
℄ RAMP "E-15"
℄ RAMP "E-14"
℄ SOUTH BOUND E. 14TH. ST.
℄ NORTH BOUND E. 14TH. ST.
℄ E. E. 14th. St.
℄ Ramp E-17
Service Road

2+42 E-7 III-7
3+17 E-7 III-7
3+92 E-7 III-7
4+67 E-7 III-7
5+42 E-7 III-7
6+17 E-7 III-7
3+96 E-10 III-8
4+43 E-10 III-8
5+08 E-10 III-8
15+80 E-10 III-8
16+54 E-10 III-8
17+28 E-10 III-8
50+20 Willow IV-8
1+44 E-9 III-6
1+39 E-17 III-6
6+71 E-17 III-6
4+18 E-8 III-6
5+32 E-9 III-6
2+50 E-8 III-6
1+69 E-9 III-6
3+86 E-17 III-6
4+81 E-17 III-6
5+86 E-17 III-6
8+75 E-17 III-6
9+43 E-17 III-6
10+12 E-10 III-6
6+07 E-17 III-6
2+91 E-17 III-6
0+88 E-8 III-6
1+97 E-17 IV-6
50+81 Willow IV-6
49+12 Willow IV-6
48+74 Willow IV-6
PC Sta 0+00 E-9 Sta 0+00 E-17 PCC Sta 6+21.14 E-17
PT Sta 14+98.40 E-17
PT Sta 51+77.74 Willow Frwy. Sta 17+41.98 E-10
PT Sta 11+14.37 E-17 = Sta 12+50.36 S.B. E. 14th St.
PT Sta 11+54.83 E-14 = Sta 13+47.91 N.B. E. 14th St.
End Pavement Sta 3+02.49 ℄ Access
PC Sta 0+00 ℄ Access = PCC Sta 4+12.10 E-14
PC Sta 47+84 ℄ E. 14th St.
PC Sta 0+00 E-17 = Sta 49+81.46 Willow Frwy.
Sta 16+53.49 E-15 = Sta 8+97.35 E-7
Sta 14+13 E-16 III-7
15+02 E-15 III-7
49+76 Willow IV-8
48+74 Willow IV-7
14+97 E-15 III-7
16+60 E-15 III-7
6+17 E-7 III-7
7+28 E-10 III-8
13+31 E-15 III-7
14+43 E-10 III-8
15+08 E-10 III-8
16+54 E-10 III-8
1+97 E-17 III-6
PT Sta 14+98.40 E-17
50+81 Willow IV-6
49+12 Willow IV-6
48+74 Willow IV-6
5+00 E-14 III-5
5+86 E-14 III-5
4+16 E-14 III-5
6+71 E-14 III-5
7+57 E-14 III-5
8+47 E-14 III-5
9+38 E-14 III-5
10+28 E-14 III-11
1+44 E-9 III-6
1+39 E-17 III-6
6+07 E-17 III-6
8+75 E-17 III-6
9+43 E-17 III-6
10+12 E-10 III-6
5+86 E-17 III-6
4+81 E-17 III-6
3+86 E-17 III-6
2+91 E-17 III-6
0+88 E-8 III-6
4+18 E-8 III-6
5+32 E-9 III-6
2+50 E-8 III-6
1+69 E-9 III-6

1" Pavement Widening
3' Pavement Widening
2' Pavement Widening
Bridges No. 8 & 9
Manhole (5'x8') and Duct and Conduit in abutment in previous contract. Service in this contract.
Extend to and join existing 2" duct.
Sta 16+53.49 E-15 = Sta 8+97.35 E-7

24'
16'
15'
30'
35'
10'
8'

SCALE 1"=50'
MADE J.R.K. DATE 3-24-58
TRCD. ____ DATE ____
CKD. G.J.G. DATE 11-12-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 46

FOR LEGEND SEE SHEET 42

Rev. F.S.J. 12-8-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

LIGHTING PLAN

PC Sta 0+00 E-5 = Sta 0+85.00 S.B.E. 14th St.
PC Sta 0+00 E-16 = Sta 0+80 E-5
PC Sta 0+89.74 S.B.E. 14th St. = Sta 23+43.36 N.B.E. 14th St.
Existing M.E.L.P. M.H.
℄ Carnegie Ave.
2-4"ϕ Ducts for primary line to bridge underdeck lighting in previous contract.
℄ 18TH. ST. TURNOUT
℄ SOUTH BOUND E. 14TH. ST.
℄ Central Ave.
PC Sta 0+00 18th St. Turnout = Sta 20+58.09 N.B.E. 14th St.
Manhole, duct and conduit in pier in previous contract. Service in this Contract.
3"ϕ galv. rigid conduit
½"ϕ Galvanized rigid conduit.
Service Rd. (by others)
Retaining Wall
℄ Chantry Ave.
℄ INNER BELT FREEWAY
Sign Bridge
Bridge No. 4 2"ϕ cond.
PC Sta 0+00 E-9 = Sta 6+71.92 S.B.E. 14th St.
PT Sta 4+43.36 N.B.E. 14th St. = Sta 18+09.46 S.B.E. 14th St.
PC Sta 0+00 E-10 = Sta 14+98.81 Inner Belt Frwy.
PC Sta 0+00 E-11 = Sta 16+85.50 I.B. Frwy.
PT Sta 6+12.32 E-13 = Sta 78+66.68 ℄ Inner Belt Frwy.
PC Sta 4+83.65 ℄ E-13
Sta 0+00 E-13 = Sta 1+04.35 ℄ E. 21st St.
PC Sta 1+41.06 E-13
End Median Transition Sta 83+09.31 ℄ I.B. Frwy.
Pull Box
2-Way Duct, 2-inch
1-Way Duct, 2 inch
4-Way Duct, Two 4 inch
Contractor shall provide approximately 530 lin. ft. of 4-way duct bank from lighting unit at Sta. 6+56 Ramp E-11 to existing regulator vault on northwest corner of Scovill and E. 22nd St.
℄ New E. 22nd St.
℄ Existing E. 22nd St.
℄ N.B. SCOVILL
℄ E.B. SCOVILL
℄ WEST BOUND SCOVILL
℄ NORTH BOUND E. 14TH. ST.
℄ RAMP E-5
℄ RAMP E-16
℄ RAMP E-10
℄ RAMP E-9
℄ RAMP E-11
℄ RAMP E-13
2'Widening
Match Line Sta 5+00 ℄ E-16
Match Line Sta 5+28 ℄ E-5
Match Line Sta 7+00 ℄ E-10
Match Line Sta 2+00 ℄ E-9
Match Line Sta 10+00 S.B.E. 14th St.
Match Line Sta 12+00 ℄ N.B.E. 14th St.
Match Line Sta 4+00 ℄ W.B. Scovill
Match Line Sta 5+00 ℄ E.B. Scovill
1+57 E-5 III-8
2+24 E-5 III-8
2+93 E-5 III-8
3+62 E-5 III-8
3+60 E-16 III-8
2+43 E-16 III-8
3+27 E-16 III-8
4+75 E-16 III-8
5+00 E-5 III-8
5+40 E-10 III-8
6+19 E-10 III-8
6+46 E-10 III-8
2+02 E-10 III-8
3+03 E-10 III-8
2+23 E-10 III-8
3+95 E-9 III-6
3+12 E-9 III-6
2+29 E-9 III-6
4+50 E-9 III-6
5+64 E-9 III-12
6+34 E-9 III-12
1+05 E-13 III-13
1+86 E-13 III-13
2+68 E-13 III-13
3+50 E-13 III
4+26 E-13 III-13
5+02 E-11 III-12
5+79 E-11 III-12
6+56 E-11 III-12
4+18 E-11 III-12
3+35 E-11 III-12
2+51 E-11 III-12
68+79 Frwy IV-13
69+66 Frwy IV-13
70+53 Frwy IV-13
71+37 Frwy IV-13
72+49 Frwy IV-13
73+52 Frwy IV-13
74+53 Frwy IV-12
75+51 Frwy IV-12
76+50 Frwy IV-12
77+48 Frwy IV-12
78+47 Frwy IV-12
79+45 Frwy III-12
80+43 Frwy IV-13
81+42 Frwy IV-13
82+40 Frwy IV-13
68+79 Frwy IV-12
69+66 Frwy IV-12
70+53 Frwy IV-12
71+41 Frwy IV-12
73+59 Frwy IV-12
74+57 Frwy IV-12
76+59 Frwy IV-12
77+48 Frwy IV-12
78+42 Frwy IV-12
79+45 Frwy III-12
80+43 Frwy IV-12
81+42 Frwy IV-12
82+40 Frwy IV-12
75+64 Frwy IV-13
73+47 Frwy IV-13
71+49 Frwy IV-13
73+45 Frwy III-13
44'
41'
80'
75'
36'
24'
35'
20'
15'
16'

FOR LEGEND SEE SHEET 42

Rev. F.S.J 12-16-59

SCALE	1"=50'
MADE	J.P.K. DATE 9-26-59
TRCD.	DATE
CKD.	G.J.C. DATE 11-12-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 47

LIGHTING NOTES

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
LIGHTING NOTES

1. GENERAL

THIS SPECIFICATION SHALL SUPPLEMENT THE STATE OF OHIO CONSTRUCTION AND MATERIAL SPECIFICATIONS DATED JANUARY 1, 1959, FOR THE MATERIAL USED AND FOR THE INSTALLATION OF COMPLETE SERIES ROADWAY AND MULTIPLE UNDERDECK LIGHTING SYSTEMS FOR THE PART 7 PORTION OF THE INNER BELT-WILLOW INTERCHANGE AND BRIDGES. THE TYPE AND LOCATION OF LIGHTS, THE CIRCUITS AND THE LOCATION OF CABLES AND CONDUITS SHALL BE AS INDICATED ON THE PLANS. THE CABLES FOR ROADWAY LIGHTS SHALL BE IN CONCRETE ENCASED FIBER OR ASBESTOS-CEMENT CONDUIT. FOR THE ROADWAY LIGHTING, 15,000 LUMEN AND 10,000 LUMEN INCANDESCENT LIGHTS ARE TO BE INSTALLED WHERE AND AS INDICATED ON THE PLANS, AND ARE TO BE OPERATED ON 5 PARTIAL AND TWO COMPLETE 6.6 AMP. SERIES CIRCUITS. THE UNDERDECK LIGHTS ARE TO BE 250 WATT. BALLASTS ARE TO BE INSTALLED FOR 230 VOLT OPERATION FROM TRANSFORMER STATIONS AS INDICATED ON SHEETS 41 TO 49 INCLUSIVE, 49A AND 49B.

THE CONTRACTOR SHALL CONSULT AND COOPERATE WITH THE CLEVELAND DIVISION OF LIGHT AND POWER AND THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, BUT HE WILL NOT BE REQUIRED TO FURNISH, INSTALL OR CONNECT CONSTANT CURRENT OR MULTIPLE PRIMARY SERVICES, METERS, METER MOUNTS, METERING EQUIPMENT OR HOUSINGS FOR SAME.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL LIGHTING EQUIPMENT, INCLUDING MANHOLES, LAMPS, LUMINAIRES, UNDERDECK LIGHTING, FIXTURES, BALLASTS, SERIES CABLES, WIRING, LUMINAIRE BRACKETS AND STANDARDS FOR ROADWAY UNITS OFF STRUCTURES, MULTIPLE FEEDERS, FLEXIBLE CONDUIT CONNECTIONS TO UNDERDECK LIGHTING FIXTURES, JUNCTION BOXES, ADAPTERS, POLE CAP SCREWS, CABLE, CONCRETE POLE BASES, INSULATING TRANSFORMERS, POTHEADS, CONCRETE POLE BASE BOXES, GROUNDS, ALL CONDUITS AND DUCTS FOR PRIMARY AND LIGHTING CIRCUITS WHERE INDICATED, COUPLINGS, FEEDERS AND ALL INCIDENTALS NECESSARY AND INDICATED FOR COMPLETE CIRCUIT INSTALLATIONS, INSTALLED, ACCEPTED AND CONNECTED FOR OPERATION. THE CLOSED TYPE LOOPS OF ALL SERIES LIGHTING CIRCUITS SHALL BE COMPLETE, AND THE CONTRACTOR SHALL FURNISH AND INSTALL ALL EQUIPMENT NECESSARY FOR THE SATISFACTORY OPERATION OF THE CIRCUITS AND FOR THE COMPLETE OPERATION OF THE LIGHTING SYSTEMS, (EXCLUDING PRIMARY SERVICE LEADS, DISTRIBUTION, TRANSFORMERS, PRIMARY ARRESTERS, PRIMARY INSULATORS, CONSTANT CURRENT REGULATORS, SECONDARY ARRESTERS, CONTROLLERS FOR SERIES CIRCUITS, OIL SWITCHES, PRIMARY CONTACTORS, POWER POLES, PRIMARY FUSE CUTOUTS, AND PRIMARY CONNECTIONS TO THE POWER SOURCES) WHETHER SPECIFICALLY MENTIONED OR NOT.

LIGHTING STANDARDS ON BRIDGE AND RETAINING WALL STRUCTURES, COMPLETE WITH BRACKETS, POLE AND BRACKET CABLE, AND GROUNDING; EMPTY JUNCTION BOXES, INSULATING TRANSFORMER BOXES, AND CONDUITS ON STRUCTURES AND IN PIERS AND ABUTMENTS; THE CONTROLLERS FOR UNDERDECK LIGHTING; SERVICE PANELS FOR FLUORESCENT UNDERDECK LIGHTS; AND STRUCTURAL MEMBERS FOR THE MOUNTING OF THE UNDERDECK LIGHTS WILL BE PROVIDED AS A PART OF THE CONSTRUCTION OF THE RESPECTIVE BRIDGES.

THE LIGHTING INSTALLATION, WHEN COMPLETED, SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF THE A.I.E.E. STANDARDS AND PRACTICES, AMERICAN STANDARDS, AND NATIONAL ELECTRIC MANUFACTURERS' ASSOCIATION STANDARDS, AND SHALL CONFORM TO ALL LOCAL AND SPECIAL LAWS AND/OR ORDINANCES GOVERNING SUCH 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 ENGINEER, AND THE CONTRACTOR SHALL MAKE THE NECESSARY CORRECTIONS IN THE INSTALLATION AS MAY BE DIRECTED BY THE ENGINEER.

INSOFAR AS PRACTICABLE, ALL MAJOR ITEMS OF ELECTRICAL EQUIPMENT SUCH AS LUMINAIRES, CABLE, POLES, INSULATING TRANSFORMERS, ETC., SHALL CONSIST OF PRODUCTS OF THE SAME MANUFACTURER IN ORDER TO SECURE SINGLE RESPONSIBILITY AND MOST SATISFACTORY SERVICE. UNLESS SPECIFICALLY NOTED OTHERWISE, ALL ELECTRICAL EQUIPMENT SHALL BE EQUAL TO THE BEST GRADE OF THAT TYPE OF EQUIPMENT AS MANUFACTURED BY THE GENERAL ELECTRIC COMPANY, THE WESTINGHOUSE ELECTRIC COMPANY, OR THE LINE MATERIAL COMPANY. REFERENCE TO ANY NAME, MAKE OR MANUFACTURER'S NUMBER FOR AN ARTICLE OF EQUIPMENT OR MATERIAL IS INTENDED TO BE DESCRIPTIVE AND SET A STANDARD OF DESIRED QUALITY AND STYLE, BUT IS NOT RESTRICTIVE. IT INDICATES THE MATERIALS THAT WILL BE ACCEPTABLE AND THAT SHOULD BE USED AS THE BASIS OF THE BIDS.

A LAYOUT WIRING DIAGRAM SHOWING IN GENERAL THE ARRANGEMENTS AND LOCATION OF THE EQUIPMENT IS SHOWN ON THE PLANS. THIS SHALL BE CONSIDERED ONLY AS ILLUSTRATIVE AND, SUBJECT TO THE APPROVAL OF THE ENGINEER, THE CONTRACTOR SHALL MODIFY IT AS NECESSARY FOR COMPLETE AND PROPER CONSTRUCTION AND OPERATION. THE LOCATION OF THE TRANSFORMERS, SERVICES, CONDUIT AND LUMINAIRES SHOWN ON THE PLANS ARE DIAGRAMMATIC ONLY, AND MAY BE SUBJECT TO SLIGHT SHIFTING AS THE ENGINEER MAY DIRECT IN ORDER TO CONFORM TO LOCAL CONDITIONS.

BEFORE COMMENCEMENT OF INSTALLATION OF THE ROADWAY AND UNDERDECK LIGHTING SYSTEMS, A COMPLETE SCHEDULE OF MATERIALS AND EQUIPMENT PROPOSED FOR INSTALLATION SHALL BE SUBMITTED FOR THE APPROVAL OF THE ENGINEER. THE SCHEDULE SHALL INCLUDE CATALOGS, CUTS, BROCHURES, DIAGRAMS, DRAWINGS, AND OTHER SUCH DESCRIPTIVE DATA AS MAY BE REQUIRED BY THE ENGINEER. IN THE EVENT ANY ITEMS OF MATERIAL OR EQUIPMENT CONTAINED IN THE SCHEDULE FAIL TO COMPLY WITH SPECIFICATION REQUIREMENTS, SUCH ITEMS WILL BE REJECTED.

2. MATERIALS AND EQUIPMENT

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. HOT-DIP GALVANIZING WILL BE CONSIDERED SUCH APPROVED TREATMENT. 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.

EACH ROADWAY LIGHTING UNIT SHALL COMPRISE A POLE WITH A 10 FT. BRACKET AND EITHER A 15,000 LUMEN LUMINAIRE SIMILAR TO GENERAL ELECTRIC FORM 79-AD OR A 10,000 LUMEN LUMINAIRE SIMILAR TO WESTINGHOUSE AK-10 AS INDICATED ON SHEET 49. LUMINAIRES LIGHTING THE ROADWAY ON THE STRUCTURE, RAMPS AND STREETS SHALL MEET THE GENERAL REQUIREMENTS OF I.E.S. TYPE III OR TYPE IV DISTRIBUTION AS INDICATED.

LIGHT STANDARDS SHALL CONFORM AS NEARLY AS POSSIBLE TO THE SPECIFICATIONS HEREIN AND SHALL BE SIMILAR TO UNION METAL DESIGN NO. 70161-Y23 FOR STANDARDS ALONG ROADWAYS AS TO GENERAL DESIGN AND FINISH, HEIGHT, BASE, MAST ARM, DIMENSIONS AND TO METHOD OF FABRICATION. IN GENERAL, EACH STANDARD SHALL CONSIST OF A CAST STEEL ANCHOR BASE TO WHICH SHALL BE WELDED A TAPERED STEEL POLE. TO THE STEEL POLE SHALL BE FASTENED AN ORNAMENTAL POLE TOP TO WHICH SHALL BE WELDED A MAST ARM BRACKET FOR SUPPORTING THE LIGHTING UNIT.

THE TRANSFORMER BOX FOR ALL STANDARDS OFF STRUCTURES SHALL BE A PART OF THE POLE BASE FOUNDATION AS INDICATED ON THE PLANS, WITH CLASS C CONCRETE USING NO. 4 AGGREGATE. GROUND POLES BY A 1" BY 8' COPPER CLAD GROUND ROD WITH TOP EXTENDING THROUGH BOTTOM OF BOX. CONNECT TO POLE BY NO. 6 COPPER WIRE.

THE STEEL SHAFT OF THE LIGHTING STANDARDS SHALL BE FABRICATED FROM NOT LESS THAN NO. 11 MANUFACTURER'S STANDARD GUAGE. THE SHAFT SHALL BE FORMED AND WELDED WITH ONLY ONE LONGITUDINAL, AUTOMATICALLY ELECTRICALLY WELDED JOINT AND SHALL HAVE NO HORIZONTAL JOINTS OR WELDS. THE WELD SHALL BE OF FULL PENETRATION. AFTER FORMING AND WELDING, THE TAPERED SHAFT SHALL BE COLD ROLLED OR WORKED UNDER SUFFICIENT PRESSURE TO FLATTEN OUT THE WELD, TO INCREASE THE ELASTIC LIMIT OF THE METAL IN THE COMPLETED SHAFT, AND TO PRODUCE A TRUE TAPERED TUBE WITHOUT FLAT SPOTS AND A CIRCULAR CROSS SECTION THROUGHOUT THE LENGTH OF THE SHAFT. IF THE SHAFT IS FABRICATED BY MEANS OF A BRAKE OR OTHER PROCESS WHICH DOES NOT UTILIZE THE COLD ROLLING PRINCIPLE, IT SHALL BE FABRICATED FROM A STEEL SHEET HAVING A THICKNESS OF NO. 7 MANUFACTURER'S STANDARD GAUGE.

EACH STANDARD SHALL HAVE A MAST OR BRACKET ARM MADE OF STANDARD PIPE OF THE SIZE AND LENGTH AS SHOWN ON THE PLANS. THE INNER END OF THE BRACKET ARM SHALL BE WELDED TO A CAST STEEL HEAD BLOCK SO DESIGNED THAT THE BLOCK CAN BE BOLTED THROUGH A CAST IRON NECK PIECE TO A PLATE WELDED TO THE TOP OF THE POLE TO PERMIT RADIAL ADJUSTMENT OF THE BRACKET ARM. PROVISIONS SHALL BE MADE TO PERMIT PASSAGE OF THE CONCEALED WIRES TO BRACKET ARM. THE ORNAMENTAL CASTING WELDED TO THE OUTER END OF THE BRACKET SHALL BE ARRANGED WITH A LEVELING DEVICE OR "PLUMIZER" FOR ADJUSTMENT OF A PENDANT LIGHTING FIXTURE AND SHALL BE TAPPED FOR 1-1/4 INCH PIPE CONNECTION. THE POLE BASE FOUNDATIONS SHALL BE CLASS "C" CONCRETE WITH 1-1/4 " x 5' CADMIUM COATED STEEL ANCHOR BOLTS EXTENDED 3-1/16 INCH ABOVE BASE WITH 4 INCH L-BEND AT BOTTOM. EACH ROD SHALL HAVE ONE GALVANIZED AMERICAN STANDARD HEX-NUT. EACH CABLE SHALL ENTER THE STANDARD THROUGH 2-INCH FIBER CONDUIT INSTALLED IN THE CONCRETE FOUNDATION FROM TRANSFORMER POLE BASE BOX. CONDUIT SHALL EXTEND AT LEAST 3 INCHES ABOVE TOP OF FOUNDATION. ALL STANDARDS SHALL HAVE GROUNDING LUGS.

EACH STANDARD SHALL HAVE TWO 9/16 INCH HOLES PROVIDED WHERE SHOWN ON SHEET NO. 49. ALL POLES AND BRACKETS SHALL HAVE A FACTORY APPLIED PRIMER, TOUCHED UP AND THEN SHALL BE PAINTED WITH TWO FIELD COATS OF DARK GREEN WEATHER RESISTING ENAMEL AS USED ON CITY STREETS. FINISH FIELD COATS SHALL BE APPLIED AFTER ERECTION. THE FIRST FIELD COAT SHALL BE TINTED.

EACH LUMINAIRE SHALL CONSIST OF A SUPPORTING HOOD, AND EXTERNAL BODY OR CASING, MAIN REFLECTOR AND A REFRACTOR GLOBE. THE HOOD SHALL BE MADE OF CAST ALUMINUM AND SHALL BE TAPPED FOR 1-1/4 INCH STANDARD PIPE. THE EXTERNAL BODY OR CASING SHALL BE MADE OF CAST ALUMINUM AND SHALL BE FIRMLY ATTACHED TO THE HOOD BY MEANS OF ADEQUATE SCREWS OR BOLTS. THE MAIN REFLECTOR SHALL BE MADE OF HEAVY GAUGE ALUMINUM SHEET, ALZAK FINISHED AND POLISHED. THE ENTIRE REFLECTING ELEMENT SHALL BE RIGIDLY ATTACHED TO THE EXTERNAL BODY BY MEANS OF SCREWS OR BOLTS.

THE GLOBES SHALL BE SUPPLIED WITH A NON-RUSTING METAL SUPPORTING RING OR BAND WITH CLAMPS AROUND THE RIM OR FLANGE OF THE GLOBE. THE SUPPORTING RING SHALL BE SO DESIGNED THAT BROKEN GLOBES CAN BE REPLACED AT THE LAMP LOCATION WITH THE USE OF SIMPLE HAND TOOLS. ALL SCREWS, NUTS, WASHERS, ETC., WHICH MUST BE REMOVED IN ORDER TO REPLACE A BROKEN GLOBE SHALL BE NON-FERROUS AND CORROSION-PROOF. THE GLOBE SUPPORTING RING SHALL BE ATTACHED TO THE REFLECTOR BY MEANS OF A HINGE OR ITS EQUIVALENT ON ONE SIDE AND A LATCH, THUMB SCREW, OR EQUIVALENT ON THE OPPOSITE SIDE. THESE DEVICES SHALL BE SO DESIGNED THAT WITH THE GLOBE IN PLACE, THE LATCH OR THUMB SCREW CAN BE RELEASED BY HAND, THE GLOBE SWUNG DOWN AND THEN LIFTED OFF THE HINGE SO THAT THE GLOBE CAN BE WASHED SEPARATELY FROM THE FIXTURE. THE DESIGN SHALL BE SUCH THAT AFTER WASHING, THE GLOBE CAN BE HOOKED ONTO THE HINGE AND THEN PUSHED UP INTO PLACE AGAINST THE GASKET WITH ONE HAND WHILE THE LATCH OR THUMB SCREW IS TIGHTENED WITH THE OTHER HAND. THE BEST DESIGN SHALL BE THAT WHICH COMBINES SIMPLICITY AND EASE OF OPERATION WITH THE MOST EFFECTIVE SEAL BETWEEN THE GLASS GLOBE AND THE REFLECTOR. FIXTURES HAVING THE REFLECTOR PERMANENTLY ATTACHED OR "SPUN ON" TO THE GLASS GLOBE WILL NOT BE ACCEPTED. A SKELETON TYPE MOGUL MULTIPLE SOCKET SHALL BE MOUNTED IN THE HOOD AND SHALL BE SUITABLE FOR 10,000 OR 15,000 LUMEN, 20 AMPERE LAMPS. THE LUMINAIRES SHALL PRODUCE AN I.E.S. TYPE IV LIGHT DISTRIBUTION CURVE EQUAL TO THE CURVE PRODUCED BY THE GENERAL ELECTRIC FORM 79-AD OR AN I.E.S. TYPE III PRODUCED BY WESTINGHOUSE AK-10, AS REQUIRED.

LAMPS FOR UNDERDECK LUMINAIRES SHALL BE NOMINAL 85 WATT, FLUORESCENT TYPE CW/HO, AND FOR ROADWAY UPRIGHT LUMINAIRES SHALL BE 10,000 LUMEN OR 15,000 LUMEN, 2,000 HOUR LAMPS FOR REGULAR REPLACEMENT, PS-40 BULBS, MOGUL BASE.

EXTERNAL PARTS OF ALL LUMINAIRES SHALL BE FINISHED ALUMINUM. GASKETS USED FOR SEALING THE JOINT BETWEEN GLOBES AND REFLECTORS OR CASINGS SHALL BE PREFORMED CORK OR FELT AND SHALL BE CEMENTED IN PLACE. THE FIXTURES AS SPECIFIED ARE PRECISION OPTICAL DEVICES AND IN ORDER TO DELIVER THE PERFORMANCE REQUIRED THEY MUST HAVE THE LAMP FILAMENT CORRECTLY LOCATED WITH REFERENCE TO THE REFLECTING OR REFRACTING ELEMENTS. THE SOCKETS SHALL PREFERABLY BE SOLIDLY MOUNTED, WITH THE LAMP FILAMENT AT THE CORRECT OPTICAL CENTER. IF THE MANUFACTURER'S DESIGN PROVIDES FOR VERTICAL ADJUSTMENT OF THE SOCKET, HE SHALL FURNISH A DRAWING SHOWING THE PROPER DIMENSION TO SOME CONVENIENT REFERENCE POINT, SUCH AS THE LOWER EDGE OF THE REFLECTOR OR CASING, SO THAT THE PURCHASER CAN MAKE A GAUGE TO BE USED FOR ACCURATELY SETTING AND LOCKING THE SOCKETS. REFRACTING GLOBES SHALL PREFERABLY BE KEYED TO THE SUPPORTING REFLECTOR SO THAT THEY CANNOT BE PLACED IN ANY OTHER THAN THE CORRECT ANGULAR LOCATION. IN ANY EVENT, THE GLOBES MUST BE PLAINLY MARKED TO INDICATE THE "STREET SIDE" AND THE "HOUSE" OR "SIDEWALK SIDE." ALL LAMPS USED IN THESE FIXTURES WILL BE STANDARD 20 AMPERE, BASE UP MAZDA TYPE WITH MOGUL BASES AND 7 INCH LIGHT CENTERS.

LAMP SOCKETS USED IN ENCLOSED FIXTURES OF THE TYPES SPECIFIED ARE SUBJECTED TO HIGH TEMPERATURES AND THE SOCKETS FURNISHED SHALL BE FOR HEAVY DUTY AND SHALL INCORPORATE ALL THE LATEST DESIGN FEATURES AVAILABLE SUCH AS CENTER SPRING LOADED CONTACTS, PLATED PARTS AND EXTRA HEAVY CAST TERMINALS TO REDUCE THE POSSIBILITY OF CONTACT TROUBLES AND WELDING OF THE LAMP BASE TO THE SOCKET SHELL. EACH FIXTURE SHALL PREFERABLY BE COMPLETELY ASSEMBLED AT THE FACTORY AND SHIPPED IN A SINGLE CONTAINER AS A COMPLETE UNIT.

ALL OF THE SERIES STREET LIGHTING INSULATING TRANSFORMERS WILL BE CONNECTED WITH THEIR PRIMARY WINDINGS IN A 6.6 AMPERE, 60 CYCLE REGULATED CIRCUIT, AND SHALL BE LOCATED EITHER IN CONCRETE POLE BASE BOXES OR IN PARAPET JUNCTION BOXES. TRANSFORMERS FOR LIGHTING UNITS ON RAMPS, ROADWAYS AND LANES SHALL BE LOCATED IN THE POLE BASE BOX OF EACH POLE. THE SECONDARY OF THE 10,000/15,000 LUMEN TRANSFORMERS WILL SUPPLY 20 AMPERES TO ONE LAMP RATED 10,000 OR 15,000 LUMENS. WHEN THE LAMP WATTAGE VARIES BETWEEN 8% ABOVE AND 20% BELOW NORMAL, THE SECONDARY OR LAMP CURRENT SHALL NOT VARY MORE THAN 1% FROM 20 AMPERES WITH 6.6 AMPERES AT 60 CYCLES SUPPLIED TO THE PRIMARY WINDING. EACH TRANSFORMER SHALL BE GIVEN A DIELECTRIC TEST BY THE MANUFACTURER AND SHALL WITHSTAND 22,000 VOLTS BETWEEN PRIMARY WINDING AND ALL OTHER PARTS OF THE TRANSFORMER AND 1,500 VOLTS BETWEEN THE SECONDARY WINDING AND ALL OTHER PARTS OF THE TRANSFORMER. BOTH OF THE ABOVE TESTS SHALL BE APPLIED FOR ONE MINUTE, WITHOUT FAILURE. THE STREET LIGHTING TRANSFORMERS SHALL BE FOR POLE BASE MOUNTING WITH TAPING SLEEVES SIMILAR TO G. E. CAT. NO. 9SA6A2 WHICH WILL BE THE CRITERION IN JUDGING THE ADEQUACY OF THE TYPE PROPOSED BY THE CONTRACTOR. INDIVIDUAL TRANSFORMERS SHALL BE FURNISHED FOR EACH LIGHT.

EACH TRANSFORMER SHALL BE SUPPLIED WITH A NON-CORROSIVE NAME PLATE SHOWING THE FOLLOWING DATA: MAKER'S NAME AND STYLE OR CATALOG NUMBER, RATING IN LUMENS, PRIMARY CURRENT, SECONDARY CURRENT, AND FREQUENCY.

CONDUCTORS FOR ROADWAY LIGHTING SHALL BE TWO SINGLE NO. 8 AWG SOLID SOFT DRAWN COPPER OF NOT LESS THAN 98% CONDUCTIVITY AND SHALL BE COATED WITH LEAD, TIN, OR ANTIMONY ALLOY. INSULATION SHALL CONSIST OF 10/64 INCH OF POLYVINYL CHLORIDE COMPOUND MADE IN ACCORDANCE WITH A.S.T.M. SPEC. D-734. ALL CONDUCTORS SHALL BE PLACED IN CONDUIT.

CABLE TO BE INSTALLED IN POLES FROM THE SECONDARY TAPS OF THE ISOLATING TRANSFORMERS TO THE BRACKET END AT LUMINAIRE SHALL BE NO. 8 AWG, SINGLE CONDUCTORS, 600 V. CABLE. INSULATION SHALL CONSIST OF 4/64 INCH OF RUBBER OR RUBBER LIKE COMPOUND KNOWN COMMERCIALLY AS OZONE RESISTANT INSULATION WITH AN OUTSIDE JACKET OR SHEATH OF NEOPRENE, 1/64 INCH THICK. POLE AND BRACKET ASBESTOS WIRE SHALL BE INSTALLED BETWEEN THE BRACKET END AT LUMINAIRE AND LAMP SOCKET. IT SHALL BE NO. 8 AWG SINGLE CONDUCTOR, SOLID. INSULATION SHALL BE ASBESTOS APPLIED TO THE CONDUCTOR TO FORM A CONTINUOUS TUBE OF ASBESTOS FIBRES AT LEAST 40 MILS THICK TIGHTLY COMPRESSED AND IMPREGNATED WITH A FLAME, HEAT AND MOISTURE-PROOF COMPOUND, AND AN OUTER ASBESTOS BRAID AT LEAST 45 MILS THICK.

UNDERDECK LUMINAIRES SHALL BE EQUAL TO LINE MATERIAL NO. LFIFI WITH TWO 1-AMP. STREET LIGHTING, HIGH OUTPUT FLUORESCENT LAMPS, PRE-HEATED CATHODE, CAT. NO. F72T12-CW-HO, COMPLETE WITH 230 VOLT AC MULTIPLE BALLASTS. THE JUNCTION BOX AT EACH UNDERDECK LUMINAIRE SHALL BE CAST IRON, WATERTIGHT, AND EQUAL TO O.Z. TYPE YH CAT. NO. 060603. FOR THE UNDERDECK LIGHTS ON BRIDGE 4, THE CONTRACTOR SHALL PROVIDE ONE 30 AMP. 250 VOLT, DOUBLE POLE CIRCUIT BREAKER IN THE "SERVICE PANEL" PROVIDED WITH BRIDGE 4 CONSTRUCTION.

3. CONSTRUCTION METHODS

THE INSTALLATION AS A WHOLE SHALL BE CARRIED OUT IN CONFORMANCE WITH THE REQUIREMENTS HEREIN STATED AND IMPLIED, AND UPON COMPLETION OF THE WORK SHALL PRESENT A NEAT AND WORKMANLIKE FINISHED APPEARANCE. SAFE CONSTRUCTION AND OPERATING PRACTICES MEETING THE REQUIREMENTS OF THE NATIONAL ELECTRIC SAFETY CODE SHALL BE MAINTAINED.

POLES SHALL BE CAREFULLY SET, THEY SHALL BE RAKED SO THAT THE BACK TAPERED SIDE IS VERTICAL AS SHOWN ON SHEET 53 AND THE LUMINAIRES SHALL BE SUPPORTED WITH BRACKETS ABOUT 28'-0" ABOVE PAVEMENT AS INDICATED. THE CAREFUL ALIGNING AND GRADING OF POLES IS CONSIDERED TO BE AN ESSENTIAL FEATURE OF THE INSTALLATION. THE WORK SHALL BE AS NEARLY PERFECT AS PRACTICABLE, AND NO PERCEPTIBLE TOLERANCES WILL BE PERMITTED. IN ORDER TO ACCOMPLISH THE DESIRED PERFECTION OF ALIGNMENT OF THE LUMINAIRES, THE POLES SHALL BE CAREFULLY ALIGNED IN PLACE, SUPPORTED BY SHIMS AS REQUIRED, AND SECURELY BOLTED.

THE INSTALLATION OF ALL LUMINAIRES AND WIRING SHALL CONFORM TO THE RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURERS AND THE PRACTICE OF THE POWER COMPANY

CABLES SHALL BE INSTALLED IN CONTINUOUS LENGTHS WITHOUT SPLICES, FROM TERMINAL TO TERMINAL. AT THE TERMINALS, CABLE SHALL BE SPLICED TO THE EQUIPMENT LEADS IN STRICT CONFORMITY WITH THE MANUFACTURER'S INSTRUCTIONS AND AS DIRECTED. CARE SHALL BE TAKEN TO INSURE WATERTIGHT JOINTS. SPLICES MAY BE MADE IN CONCRETE PULL BOXES.

SPLICES SHALL NOT BE MADE IN CONDUITS. SPLICES OF CONDUCTORS SHALL BE MADE MECHANICALLY AND ELECTRICALLY SECURE BY USING FOUR SCREW COPPER CONNECTORS AND WRAPPING IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE CABLE SO THAT THE INSULATION AND THE MECHANICAL AND ELECTRICAL QUALITIES OF THE SPLICES SHALL BE EQUAL TO THAT OF THE REMAINDER OF THE CONDUCTOR. TAPE OF THE SAME COMPOSITION AS THE CABLE INSULATION OR SCOTCH BRAND TAPE SHALL BE USED.

FOR LIGHTING NOTES APPLICABLE TO INSTALLATIONS ON STRUCTURES, SEE SHEETS 48A, 176 AND 177.

4. TESTS

THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT AND APPLIANCES NECESSARY TO TEST THE COMPLETED CABLE SYSTEMS. A BURNING TEST WILL BE REQUIRED FOR THE LIGHTS. IN ADDITION, THE CITY OF CLEVELAND WILL MAKE A "MEGGER" TEST OF ALL CIRCUITS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DEMONSTRATE TO THE SATISFACTION OF THE DIRECTOR OF HIGHWAYS THAT ALL LIGHTING CIRCUITS ARE CONTINUOUS AND FREE FROM SHORT CIRCUITS AND UNSPECIFIED GROUNDS, THAT ALL CIRCUITS ARE PROPERLY CONNECTED IN ACCORDANCE WITH THE APPLICABLE WIRING DIAGRAMS AND THAT THE RESISTANCE TO GROUND OF NON-GROUNDED SERIES CIRCUITS IS NOT LESS THAN 50,000 OHMS AND PARALLEL UNGROUNDED CIRCUITS IS NOT LESS THAN 100,000 OHMS. THE CONTRACTOR SHALL FURNISH A COMPLETE REPORT OF MEGOHM READINGS ON ALL CIRCUITS INSTALLED.

5. PAYMENT FOR ROADWAY AND UNDERDECK LIGHTING

PAYMENT FOR THE ROADWAY AND UNDERDECK LIGHTING SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR ITEMS AS INDICATED IN THE SCHEDULE OF QUANTITIES, WHICH PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY, WHETHER SPECIFICALLY MENTIONED OR NOT, TO COMPLETE THE ENTIRE WORK, INSTALLED AND IN OPERATING CONDITION FOR FULL ACCEPTANCE, ACCORDING TO THE PLANS AND SPECIFICATIONS. PAYMENT WILL BE MADE AS FOLLOWS:

a. "15,000 LUMEN LUMINAIRES AND INSULATING TRANSFORMER," PER EACH AND SHALL INCLUDE LAMP, GLOBE, REFLECTOR, REFRACTOR, LAMP RECEPTACLE, CORROSION RESISTANT FITTINGS, LATCHES, SAFETY CHAIN, GASKETS AND INSULATING TRANSFORMER.

B. "10,000 LUMEN LUMINAIRE AND INSULATING TRANSFORMER," PER EACH AND SHALL INCLUDE ALL FEATURES SPECIFIED FOR 15,000 LUMEN LUMINAIRE, ITEM A, EXCEPT USING 10,000 LUMEN LUMINAIRE.

C. "STANDARD, 10-FOOT BRACKET," PER EACH AND SHALL INCLUDE POLE FOR 28-FOOT MOUNTING HEIGHT, BRACKET ATTACHMENTS, 10-FOOT STEEL BRACKET, SHIMS, ANCHOR BOLTS, HANDHOLE, ANCHOR BASE, LEAF COVERS, PAINTING, END KNOB WITH PLUMBIZER AND PIPE NIPPLE, SINGLE CONDUCTOR NO. 8 AWG, 600 VOLT POLE AND BRACKET CABLE TO INSULATING TRANSFORMER, ATTACHMENTS TO "J" HOOK, SCREWS, BOLTS, NUTS, WASHERS AND ALL MODIFICATIONS AND INCIDENTALS REQUIRED.

D. "CONCRETE POLE BASE," PER EACH AND SHALL INCLUDE CONCRETE POLE BASE BOX, EXCAVATIONS, FORMS, CONCRETE, REINFORCING STEEL, SETTING ANCHOR BOLTS, 2-INCH CONDUIT THRU BASE TO BOX FOR WIRING, GROUNDING POLE, BACKFILLING, TAMPING, REMOVING WASTE, 90-DEGREE BENDS, GALVANIZED COUPLINGS, PIPE NIPPLES, INSULATING BUSHINGS, CONDUIT STUBS THRU POLE BASE BOX WALLS FOR CONTINUOUS RUNS, AND CONDUIT STUBS AND PLUGGING.

E. "PULL BOXES, CONCRETE", PER EACH AND SHALL INCLUDE EXCAVATION, FORMS, CONCRETE, REINFORCING STEEL, CONDUIT STUBS THRU WALLS, BACKFILLING, TAMPING AND REMOVING WASTE.

F. "NO. 8 AWG, 5 KV LIGHTING CABLE," PER LINEAL FOOT AND SHALL INCLUDE TWO SINGLE CONDUCTOR CABLES IN DUCTS AND JUNCTION BOXES, SPLICING, TERMINALS, CONNECTIONS AND TESTING. MEASUREMENT FOR CABLE SHALL INCLUDE TWO LENGTHS OF SINGLE CABLE RUNS.

G. "1-WAY DUCT, 2-INCH", PER LINEAL FOOT AND SHALL INCLUDE FORMS FOR CONCRETE, CONCRETE, END BELLS, PLUGGING DUCTS, CONDITIONING DUCTS, NO. 9 AWG GALVANIZED IRON PULLIN WIRE, AND SEALING AROUND DUCTS WHERE THEY ENTER MANHOLES OR VAULTS.

H. "2-WAY DUCT, 2-INCH", PER LINEAL FOOT AND SHALL INCLUDE ALL FEATURES REQUIRED FOR "1-WAY DUCT, 2-INCH", ITEM G, EXCEPT USING TWO DUCT RUNS.

I. "3-WAY DUCT, 2-INCH", PER LINEAL FOOT AND SHALL INCLUDE ALL FEATURES REQUIRED FOR "1-WAY DUCT, 2-INCH", ITEM G, EXCEPT USING THREE DUCT RUNS.

J. "4-WAY DUCT, 2-INCH", PER LINEAL FOOT AND SHALL INCLUDE ALL FEATURES REQUIRED FOR "1-WAY DUCT, 2-INCH", ITEM G, EXCEPT USING FOUR DUCT RUNS.

K. "1-WAY DUCT, 4-INCH", PER LINEAL FOOT AND SHALL INCLUDE ALL FEATURES REQUIRED FOR "1-WAY DUCT, 2-INCH", ITEM G EXCEPT USING 4-INCH DUCT.

L. "FLUORESCENT UNDERDECK LIGHT", PER EACH AND SHALL INCLUDE FIXTURE, 2 LAMPS, 230 VOLT DUAL, HIGH POWER FACTOR, LOW STARTING TEMPERATURE BALLAST, BRACKETS, SUPPORT WHERE REQUIRED, GROUNDING FIXTURE, 6" x 6" x 3" JUNCTION BOX, FIXTURE WIRE FROM BALLAST TO FIXTURE, CONNECTION FROM JUNCTION BOX TO FIXTURE, ALL CONNECTIONS TO BALLAST, 3/4 INCH I. D. VINYL-JACKETED, FLEXIBLE CONDUIT, FITTINGS, MOUNTING LUGS AND FASTENINGS.

M. "MULTIPLE FEEDERS", PER LINEAL FOOT AND SHALL INCLUDE TWO NO. 6 AWG SINGLE CONDUCTOR CABLES IN CONDUITS, DUCTS, MANHOLES, JUNCTION BOXES, AND SERVICE PANEL, SPLICING, TERMINATIONS, CONNECTIONS AND TESTING. MEASUREMENT FOR CABLE SHALL INCLUDE TWO LENGTHS OF SINGLE CABLE RUNS.

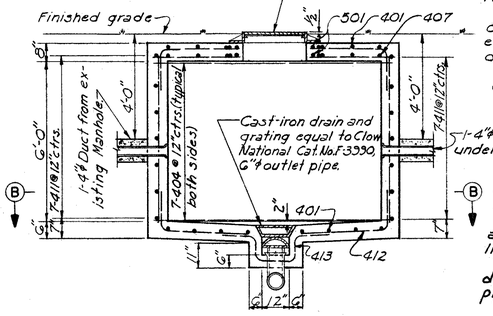
N. "MANHOLE", PER EACH AND SHALL INCLUDE REQUIRED EXCAVATION FOR 5 FT. BY 8 FT. MANHOLE, FORMS, REINFORCING STEEL, CONCRETE, MANHOLE FRAMES AND COVERS, BOLTS AND FASTENINGS FOR HOLDING MANHOLE FRAME DOWN, END BELLS FOR DUCTS, PULLING IRONS, CONNECTIONS, TERMINALS, SPLICING, BACKFILLING, TAMPING, COMPACTING, REMOVAL OF WASTE, CAST IRON

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

49
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY 42-18.42
CUY 21-15.32
LIGHTING DETAILS

For manhole frames and covers, see Standard Drawing No. 2371, of The City of Cleveland. Sheet No. 52.



SECTION A-A

Notes:

The top and sides of the manhole shall be provided with "Type B" waterproofing according to Ohio Standard Construction and Materials Specifications. For the floor vapor barrier a 0.004" polyethylene film shall be applied over the sub-grade. The film shall be lapped not less than 6".

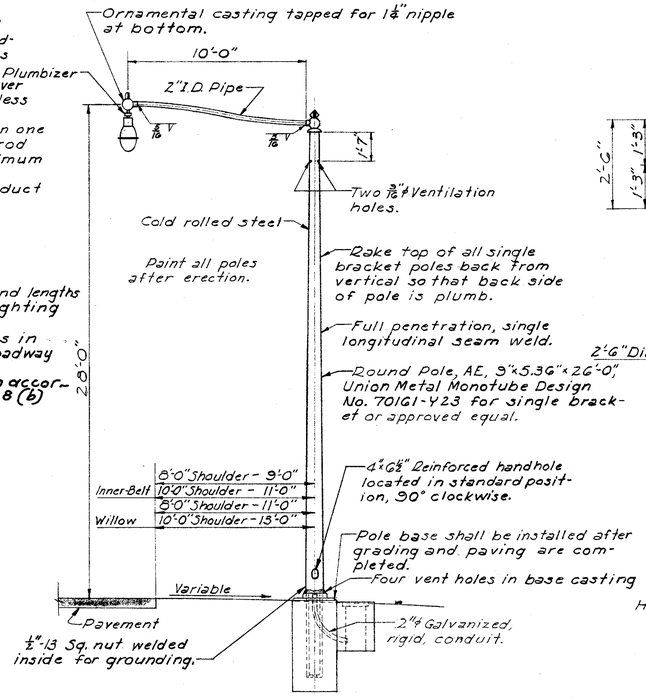
A 1"ϕ x 10'-0" ground rod shall be placed in one corner of the manhole, with 6" of the rod extending above the floor, for a minimum of 5 ohms to ground.

Install one pulling iron opposite each duct entrance.

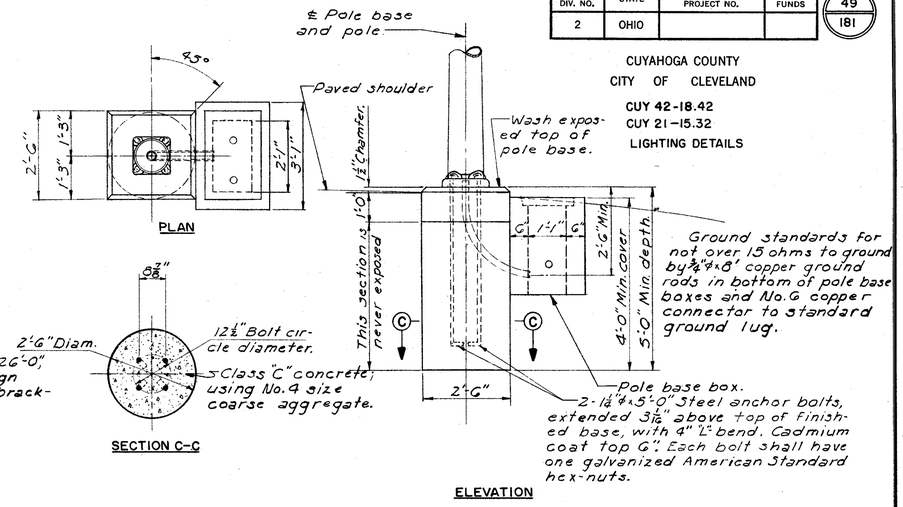
For location of drainage manholes and lengths of 6" Vitreous Clay Pipe, see Roadway Lighting Plans.

For number and placement of ducts in and out of Transformer Manhole, see Roadway lighting Plans.

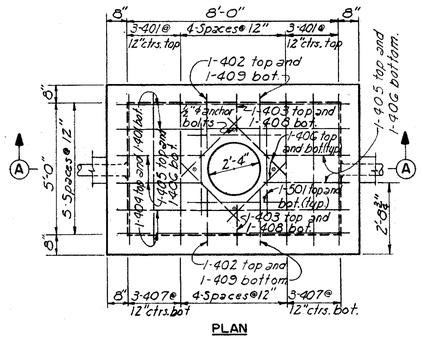
6" outlet pipe shall be constructed in accordance with Item I-2 using Sec. M-6.8 (b) pipe.



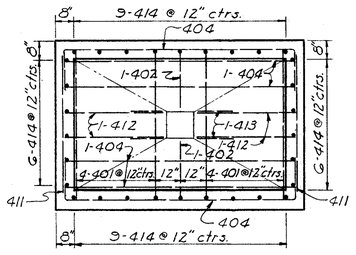
TYPICAL ROADWAY LIGHTING UNIT
No Scale



TYPICAL POLE BASE
Scale: ½" = 1'-0"

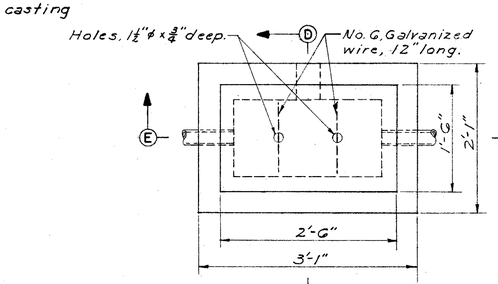


PLAN

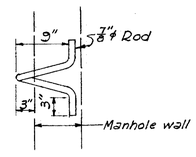


SECTION B-B

TRANSFORMER MANHOLE
Scale: ⅜" = 1'-0"

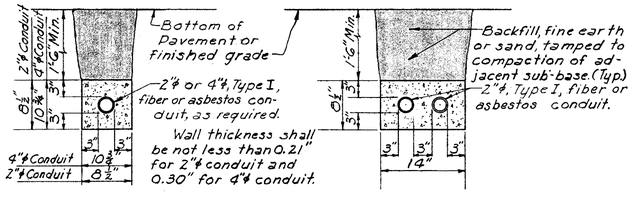


REINFORCING BAR SCHEDULE						
MARK	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	
401	14	8'-8"	105	5'-8"	1'-6"	
402	6	3'-8"	104	2'-2"	1'-6"	
403	2	3'-2"	104	1'-8"	1'-6"	
404	22	11'-8"	105	8'-8"	1'-6"	
405	4	4'-9"	104	3'-3"	1'-6"	
406	12	3'-3"	Str.			
407	6	6'-0"	Str.			
408	2	1'-9"	Str.			
409	4	2'-3"	Str.			
410	4	9'-0"	Str.			
411	14	5'-6"	Str.			
412	4	4'-11"	104	3'-5"	1'-6"	
413	2	5'-10"	121	11"	1'-6"	
414	30	6'-3"	Str.			
501	8	3'-6"	Str.			



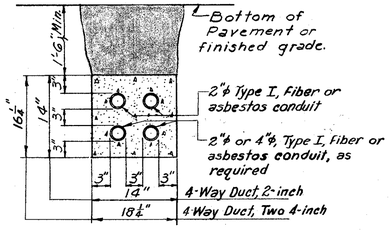
PULLING IRON
No Scale

Note: Allow at least 4 days after pouring before allowing compaction by rollers over duct bank.

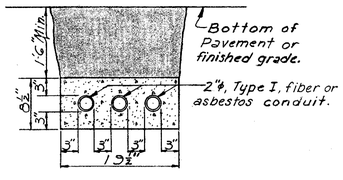


ONE-WAY DUCT BANK
Scale: 1" = 1'-0"

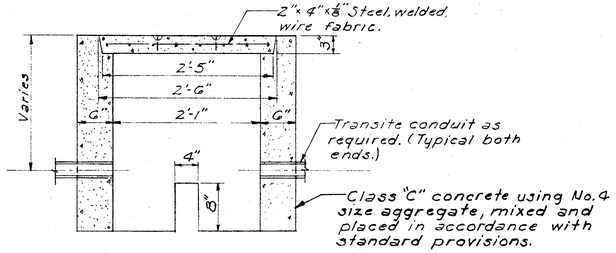
TWO-WAY DUCT BANK
Scale: 1" = 1'-0"



FOUR-WAY DUCT BANK
Scale: 1" = 1'-0"



THREE-WAY DUCT BANK
Scale: 1" = 1'-0"



SECTION E-E

CONCRETE PULL BOX
Scale: 1" = 1'-0"

Note:

Pitch ducts to drain toward boxes, manholes and vaults a minimum of 1 ft. in 100 ft.

Forms for ducts may be omitted if Engineer considers soil sufficiently firm.

SCALE As Noted
MADE J.R.K. DATE 10-28-59
TRCD DATE
CKD B.J.C. DATE 11-12-59

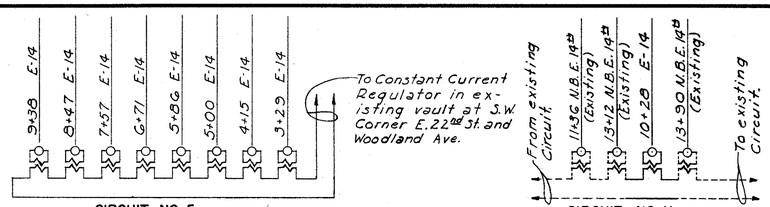
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 49

Rev. F.S.J. 12-16-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

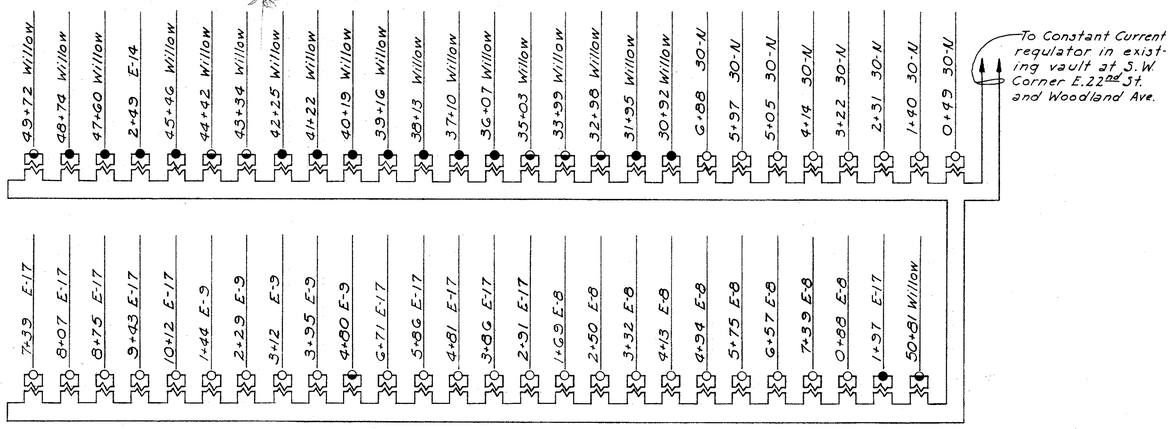
50
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY 42-18.42
CUY 21-15.32

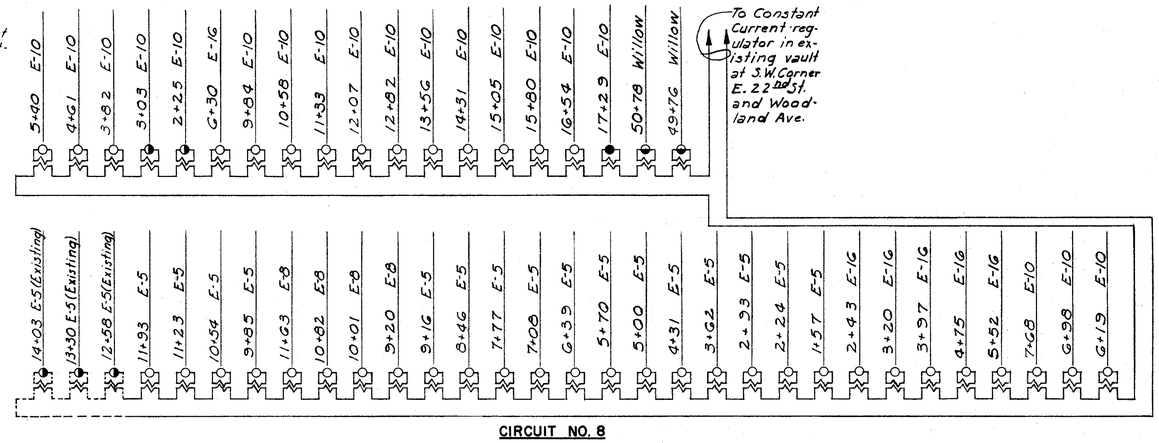


CIRCUIT NO. 5

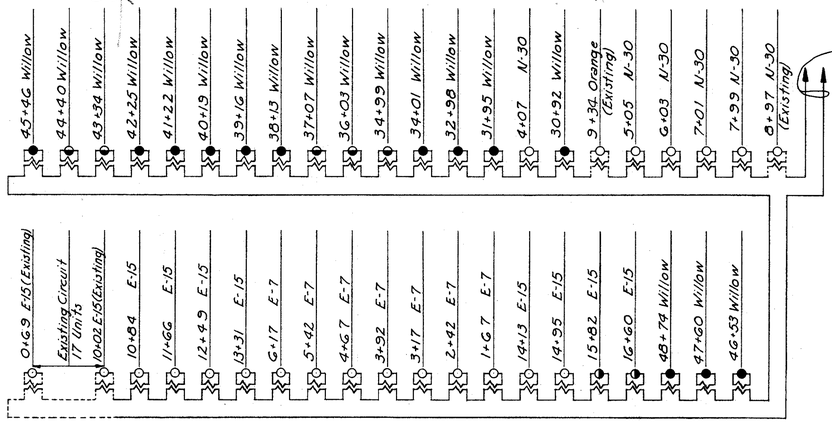
CIRCUIT NO. 11



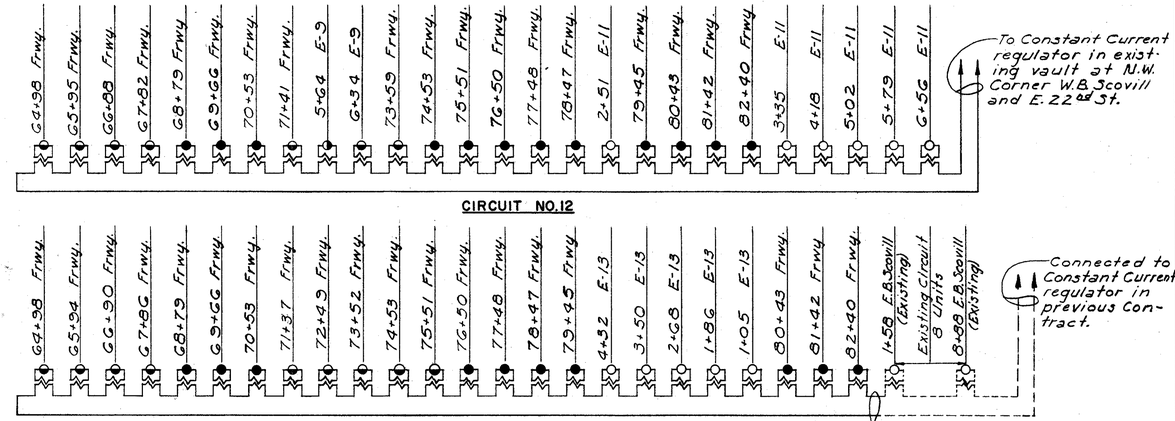
CIRCUIT NO. 6



CIRCUIT NO. 8



CIRCUIT NO. 7



CIRCUIT NO. 12

CIRCUIT NO. 13

Note: Where Contractor connects with existing ducts, provide coupling and install wiring to next lighting unit.

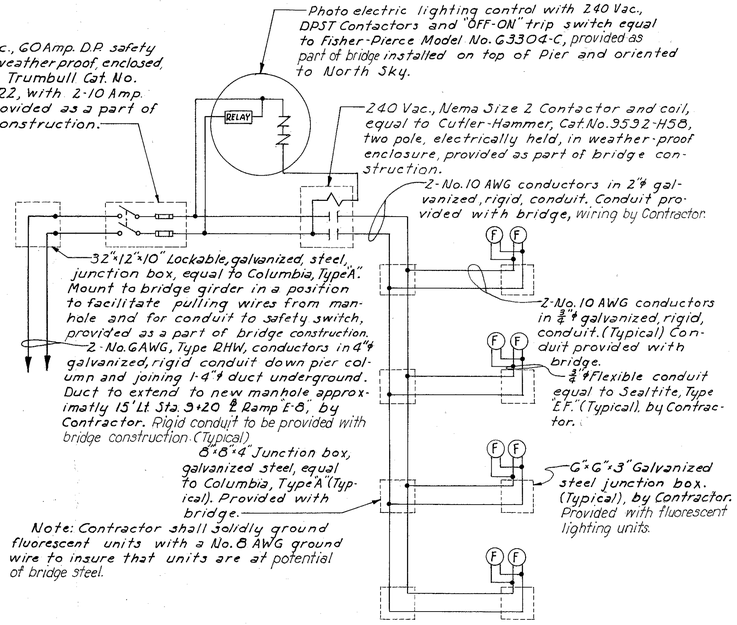
SCALE None
MADE J.P.K. DATE 9/15/58
TRCD. DATE
CKD. G.J.C. DATE 11/12/59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET- 50

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

51
181

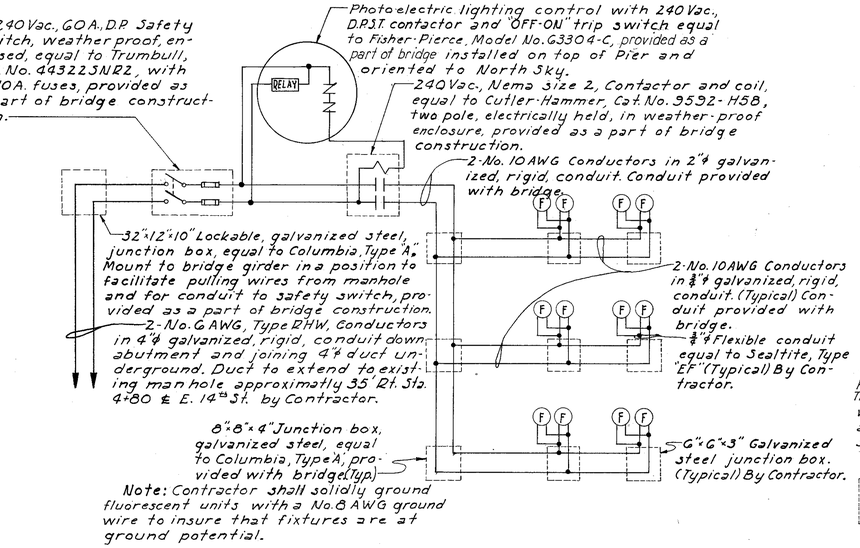
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY - 42 - 18.42
CUY - 21 - 15.32
UNDERDECK LIGHTING



BRIDGE NO. 3 UNDERDECK LIGHTING

WIRING DIAGRAM

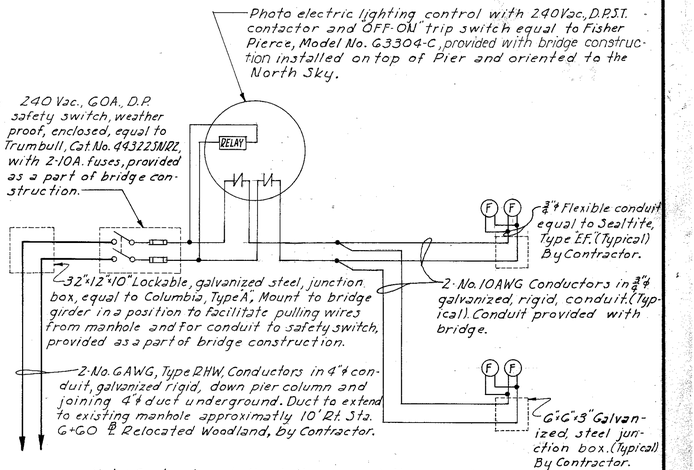
No Scale



BRIDGE NO. 8&9 UNDERDECK LIGHTING

WIRING DIAGRAM

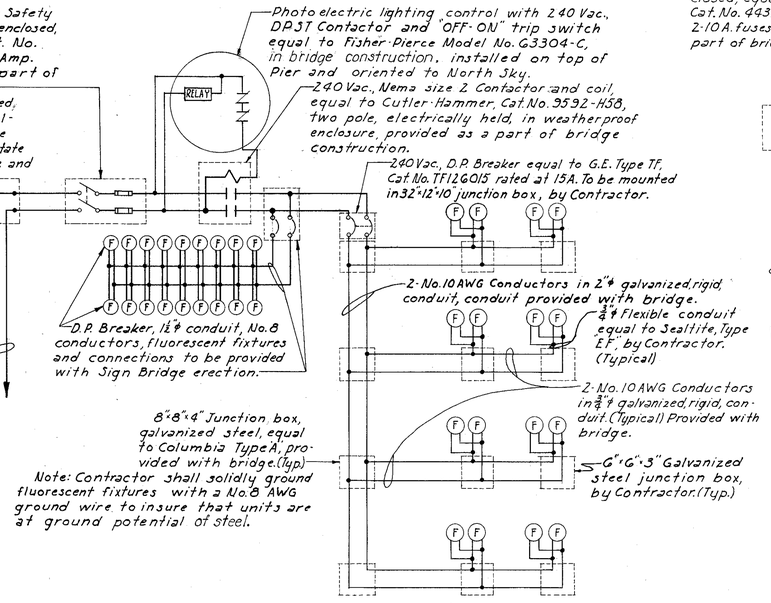
No Scale



BRIDGE NO. 11 UNDERDECK LIGHTING

WIRING DIAGRAM

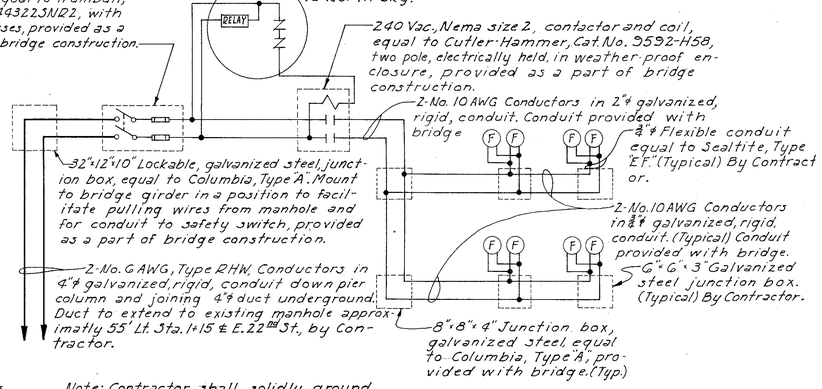
No Scale



BRIDGE NO. 4 UNDERDECK LIGHTING

WIRING DIAGRAM

No Scale



BRIDGE NO. 10 UNDERDECK LIGHTING

WIRING DIAGRAM

No Scale

SCALE None
MADE J.R.K. DATE 11-11-59
TRCD. DATE
CKD G.J.C. DATE 11-12-59

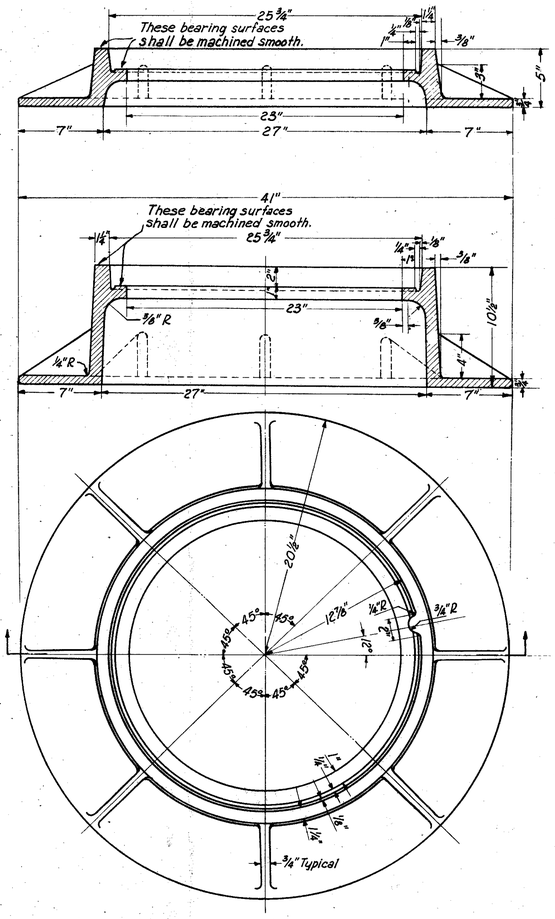
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914 SHEET 51

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

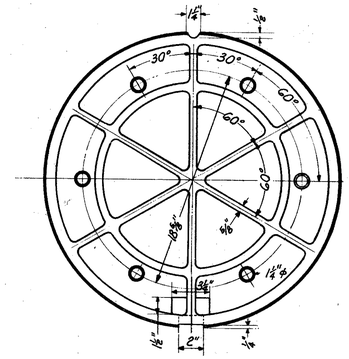
52
181

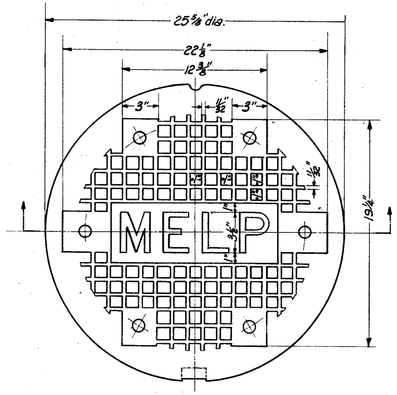
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY - 42 - 18.42
CUY - 21 - 15.32

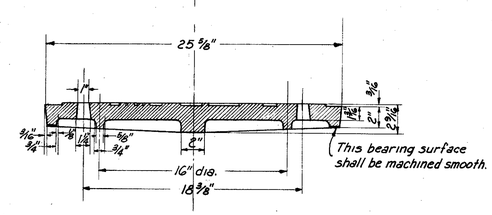


Scale: 2"=1'-0"

Weight of Frame 400 lbs. min.

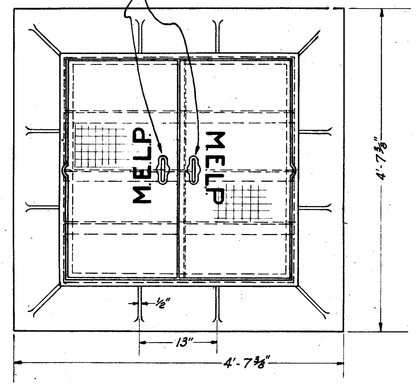


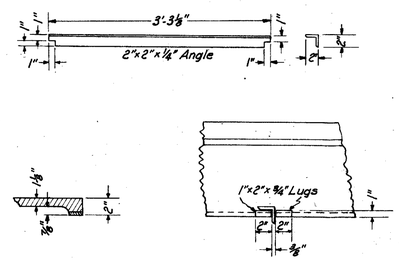


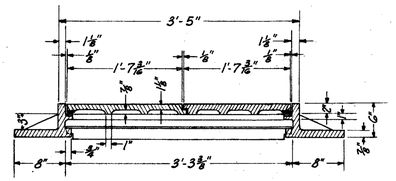


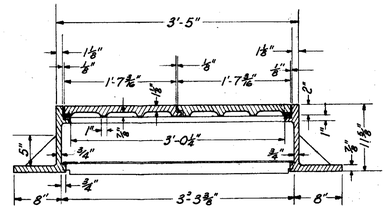
Scale: 2"=1'-0"

Appropriate handles to be installed in each half cover for lifting. After use handle should slip into holes and be flush with surface of cover.



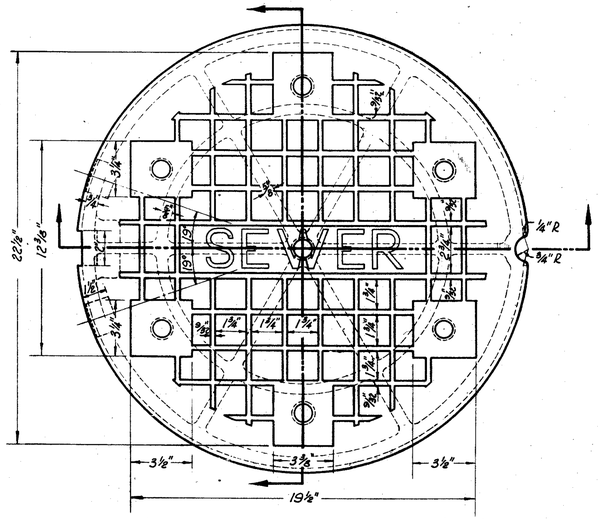




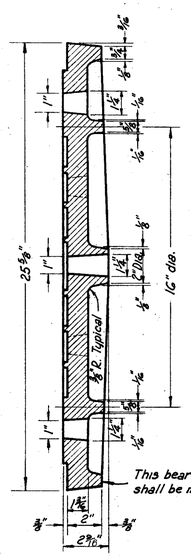


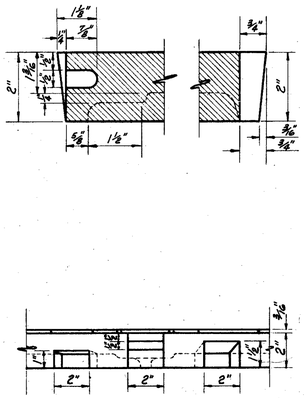
Weight	
Street Type Square Manhole Casting Without Cover	700 lbs.
Sidewalk Type Square Manhole Casting Without Cover	450 lbs.
Square Manhole Cover	250 lbs.

Scale: 1"=1'-0"



Weight of Cover 195 lbs. min.





Scale: 3"=1'-0"

Taken from Std. Drawings 2346 & 2731 of City of Cleveland.

SCALE As Shown
MADE BAS DATE 9-8-59
TRCD. ___ DATE ___
CKD. JLC. DATE 9/22/59

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

914 SHEET 52

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	TYPE FUNDS
2	OHIO		

53
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

WOODLAND AVE. 99'

DECATUR CT. 16.5'

ANDES CT. 16.5'

ORCHARD COURT

BROADWAY 99' 8"P.C.L.P.

100' BROADWAY

WEST BOUND BROADWAY

EAST BOUND BROADWAY

EAST 9TH PL. 16.5'

EAST 9TH ST. 66'

EAST 9TH ST. 82.5'

EAST 14TH ST. 84.8'

86'

RAMP E-2

RAMP E-7

RAMP E-15

RAMP E-18

E 9th ST.

INNER BELT FREEWAY

Medina Blk. (12) (No Curbs)

3 Sheet Asphalt on 7" Conc. Base

10' Sidewalk To Be Abandoned

13.5' Sidewalk

Asphalt on 8" 7" Brick tar over Conc. parking each side.

Ducts Abandoned

To Be Abandoned

Abandoned

Dead

Retaining Wall

℄ Abutment

℄ Pier

Previous Contract

Sta 11+00 ℄ E 9th St.

Sta 0+00 ℄ E-15

Sta 0+00 ℄ E-2

Fly others

5 Ducts To Reg. Hole

6 Ducts

8 Ducts

N. 87500 E. 89000

N. 87000 E. 89500

N. 87680

F.L. 656.93 F.L. 657.68 F.L. 647.77 F.L. 648.39 F.L. 649.94 F.L. 650.32 F.L. 670.72 F.L. 647.40 F.L. 647.06 F.L. 648.15 F.L. 665.5 F.L. 666.31 F.L. 666.12 F.L. 665.00 F.L. 665.4 F.L. 662.00 F.L. 662.90 F.L. 661.4 F.L. 662.30 F.L. 662.80

No. 4 No. 12 No. 11 No. 1 No. 0

LEGEND

- Right of Way
- Curb
- M.E.L.P.
- O.B.T.
- C.E.I. Light
- C.E.I. Steam
- Western Union
- Transit System Pole
- Telephone & Telegraph Pole
- Power Pole
- Light Pole
- Pole (General)
- Muny Steam
- Sewer (C.B., Face of Curb, Plug or Bulkhead, M.H.)
- Water (Hydrant, Meter Vault, Valve)
- Gas (Valve)
- W.W.L. (Light Pole, M.H.)

EXISTING UTILITIES

SCALE 1"=50'
MADE DATE
TRCD. RR DATE 10/3/29
CKD. DATE
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 53

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

54
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

EAST 14TH ST. 84.8'

94.8'

EAST 14TH ST. 80'

Asphalt on 8" Concrete
Brick sealed with tar over Conc. 7 parking each side (Abandoned)

12' Sidewalk

REAR CT. 12'

S.B. EAST 14TH ST.

N.B. EAST 14TH ST.

EAST 19TH ST. 66'

4" Brick (Abandoned)
Sandstone Curb

ACCESS ROAD

SERVICE

6' Sidewalk

By others

EAST 20TH ST. 50'

Brick (Sandstone Curb) (Abandoned)

17' Sidewalk

17.5' Sidewalk

EAST 21ST ST. 10.75+

Brick Sandstone Curbs

THOMAN CT. 12.75'

EAST 22ND ST. 63'

EAST 22ND ST. 60'

ORANGE AVE. 80'

WOODLAND AVE. 99'

SCOVILL AVE. 60'

RAMP E-8
RAMP E-15
RAMP E-7
RAMP E-17
RAMP E-10
RAMP E-14

E. 90500
N. 57100
E. 91000
N. 56800

℄ West Abutment
℄ Pier
℄ East Abutment
℄ W. Abutment
℄ E. Abutment

18' Sidewalk
18.5' Sidewalk
17.5' Sidewalk
7' Sidewalk
10' Sidewalk
6' Sidewalk

To Be Abandoned
Sheet Asphalt on 7" Concrete
Abandoned
Asphalt on Stone Ca Base
Anna Wagner R.I.W.
X-over
Proposed 36" Water Main
Asphalt on Sand
EXISTING UTILITIES

SCALE 1"=50'
MADE DATE
TRCD. RR DATE 10/8/59
CKD. DATE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 54

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

55
181

CUYAHOGA COUNTY
CITY OF . CLEVELAND
CUY - 42-18.42
CUY - 21-15.32

WOODLAND AVE. 99'
E 23RD ST 45'
E. 24TH ST. 12'
E 25TH ST. 50'
E 26TH PL. 12'
E 22ND ST. 63'
EAST 25TH ST. 60'
WELDING CT 16.5'
ORANGE AVE. 80'
℄ WILLOW FREEWAY
Sheet Asphalt on 7" Conc. base
Vacated W W Duct
Lateral Pole
18' Sidewalk
6' Sidewalk
15' Sidewalk
10' Sidewalk
1 Duct to U.G. Cable Pole #236541
U.G. Cable Pole #514457
M.H. #6005-1
1 Duct to Lateral Pole
9 Ducts
Brick Sandstone Corbel
℄ Abut.
℄ Pier
No. 8 Sewer
No. 7 Sewer
No. 3 Sewer
No. 1 Sewer
No. 10 Sewer
12" Water
8" Water
6" Water
6 Ducts
20" Gas
3" Gas
6" Gas
12" Gas
OBT 12D
OBT 6D
OBT 14D
OBT 10D
CEI 9D
CEI 12D
CEI 14D
A&H Cistern

LEGEND

Right of Way
Curb
M.E.L.P.
O.B.T.
C.E.I. Light
C.E.I. Steam
Western Union
Transit System Pole
Telephone & Telegraph Pole
Power Pole
Light Pole
Pole (General)
Muny Steam
Sewer
Water
Gas
W.W.L.

C.B. Face of Curb M.H. Plug or Bulkhead Hydrant Meter Vault Valve Light Pole

EXISTING UTILITIES

SCALE 1" = 50'
MADE DATE
TRCD. R.R. DATE 10/3/59
CKD. DATE

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

914 SHEET 55

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

56
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

E.26TH. PL. 12'
E. 26 TH. ST. 50'
E.27TH. ST. 16'
EAST 28TH. ST.
WOODLAND AVE. 99'
EAST 29TH. ST.
18' Sidewalk
17.5' Sidewalk
Asphalt on 7" Concrete
No. 7 Sewer
No. 6 Sewer
6' Sidewalk
WOODLAND
RELOCATED
RAMP 30-N
WILLOW FREEWAY
WELDING CT. 16.5'
EAST 25TH. ST. 60'
EAST 27TH. ST. 60'
EAST 29TH. ST. 60'
EAST 30TH. ST. 50'
30' Brick
30' Asphalt on Brick
15' Sidewalk
No. 4 Sewer
30' Asphalt on Granite Blk. on 6" Concrete
ORANGE AVE. 80'
RAMP N-30
60'
10' Sidewalk
Asphalt on Concrete
No. 3 Sewer
ORANGE AVE.
MAYFLOWER AVE.

N

Right of Way
Curb
M.E.L.P.
O.B.T.
C.E.I. Light
C.E.I. Steam
Western Union
Transit System Pole
Telephone & Telegraph Pole
Power Pole
Light Pole
Pole (General)
Muny Steam
Sewer — C.B. — C.B. — Face of Curb — M.H.
Water — Plug or Bulkhead — Hydrant — M.H. — Meter Vault
Gas — Valve
W.W.L. — Light Pole — M.H.

EXISTING UTILITIES

SCALE 1"=50'
MADE B.W.S. DATE 12/1/58
TRCD. R.C. DATE 10/12/59
CKD. _____ DATE _____

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 56

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

58
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

CARNEGIE AVE. 99'
GARDINER CT. 15'
WEBSTER AVE. 60'
COLUMBUS CT. 15'
SCOVILL AVE. 60'
PARKMAN CT. 12.5'
HINDOO CT. 12'
ALLEN AVE.
EAST 12TH ST.
EAST 13TH ST.
EAST 14TH ST. 80
EAST 14TH ST. 86'
NORTH BOUND E. 14th
SOUTH BOUND E. 14th
18TH STREET TURNOUT
CENTRAL AVE. 86'
E. 18TH
EAST 19TH ST. 66'
INDEPENDENT TOWEL SUPPLY CO. BUILDINGS
CHARITY AVE. 28'
SCOVILL AVE. 60'
EAST 20TH ST. 50'
℄ INNER BELT FREEWAY
RAMP E-5
RAMP E-16
RAMP E-10
RAMP E-8
RAMP E-9
RAMP E-13
RAMP E-11
Existing C.E.I. 132 KV Cable in 1-8" Steel Pipe
Proposed 36" Water Main
9 Ducts
12 Ducts
6 Ducts E-D
10' Sidewalk
13' Sidewalk
6' Sidewalk
Brick (Sandstone Curbs) Abandoned
Brick (No Curbs) (11)
Brick (Sandstone Curbs)
Brick (8.5) (No Curbs)
Brick (10) (No Curbs)
Asphalt over Stone 6" Cond. Base
Abandoned
To Be Abandoned
Driveway
Pavement
Z.F.O.
#1941

SCALE 1" = 50'
MADE ____ DATE ____
TRCD. RR DATE 10/3/58
CKD. ____ DATE ____
914 SHEET 58

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

EXISTING UTILITIES

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

57
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

CARNEGIE AVE. 99'
EAST 12TH ST.
GARDINER CT. 15'
WEBSTER AVE. 60'
COLUMBUS CT. 15'
SCOVILL AVE. 60
PARKMAN CT. 12.5'
EAST 10TH ST.
EAST 9TH ST.
E.9TH PL. 16.5'
EDWARDS CT.
INNERBELT FREEWAY
E. 13TH ST. 60'
RAMP E-16
RAMP E-10
RAMP E-9
RAMP E-5
RAMP E-6
RAMP E-3
RAMP E-8
RAMP E-17
RAMP E-7
HINDOO CT. 12'
SOUTH BOUND 14th STREET
EAST 14TH ST. 80'
ALLEN AVE. 45'
E. 12TH 35'
WOODLAND AVE. 99'

Existing c.e.i. 18kV cable in 8" Steel Pipe
M.H.'S. 6 & 16
Brick Stone Curbs
Brick (10') (No Curbs)
6' Sidewalk
4' Sidewalk
5.5' Sidwalk
11' Sidewalk
12' Sidewalk
Asphalt over Stone & Conc. Base
Brick (6.5') (No Curbs)
Abandoned
To Be Abandoned
℄ Abutment
℄ Pier
Previous Contract
O.B.T. Cable Buried Cable
5 Ducts To Reg. Hole
Asphalt on 8" Conc. Base over conc. parking strip each side
7 Brick-Tar over Conc.

EXISTING UTILITIES

SCALE 1"=50'
MADE ____ DATE ____
TRCD. RR DATE 10/3/59
CKD. ____ DATE ____

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 57

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

59
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

EAST 19TH ST. 66'
CARNEGIE AVE. 86'
CENTRAL AVE. 66'
EAST 21ST ST 49'
EAST 20TH ST. 50'
CHARITY AVE. 28'
EAST 21ST ST. 12'
SCOVILL AVE. 60'
CHARITY AVE. 20'
EAST 22ND ST. 60'
CEDAR AVE. 66'
E. 22ND ST. 60'
W.B. SCOVILL
E.B. SCOVILL
℄ INNER BELT FREEWAY
RAMP E-11
℄ NEW E. 22nd ST.
℄ EXISTING E. 22nd ST.
℄ CARNEGIE CEDAR RELOCATION
℄ CEDAR RELOCATION
Proposed 36" Water Main
12 Ducts
4 Ducts
9-4" Ducts
3 Ducts
2 Ducts to Lat. Pole
By others
3 Ds PARALLEL I-D TO 6 Ds
1135-3 10"x10"
Brick (Sandstone Curbs) Abandoned
4" Brick (Sandstone Curbs) Abandoned
5" Brick (Sandstone Curbs)
4" Stone on Edge (Curbs)
Abandoned
Abandoned Basin
Abandoned Catch Basin
1" Asphalt Over Conc. Curbless Gutter
Asphalt Over Conc. Curbless Gutter
5' Side walk
0.30% GR.
0.31% GR.

SCALE 1"=50'
MADE ____ DATE ____
TRCD. RR DATE 10/8/59
CKD. ____ DATE ____
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 59

EXISTING UTILITIES

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

60
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32
CROSS SECTION LAYOUT

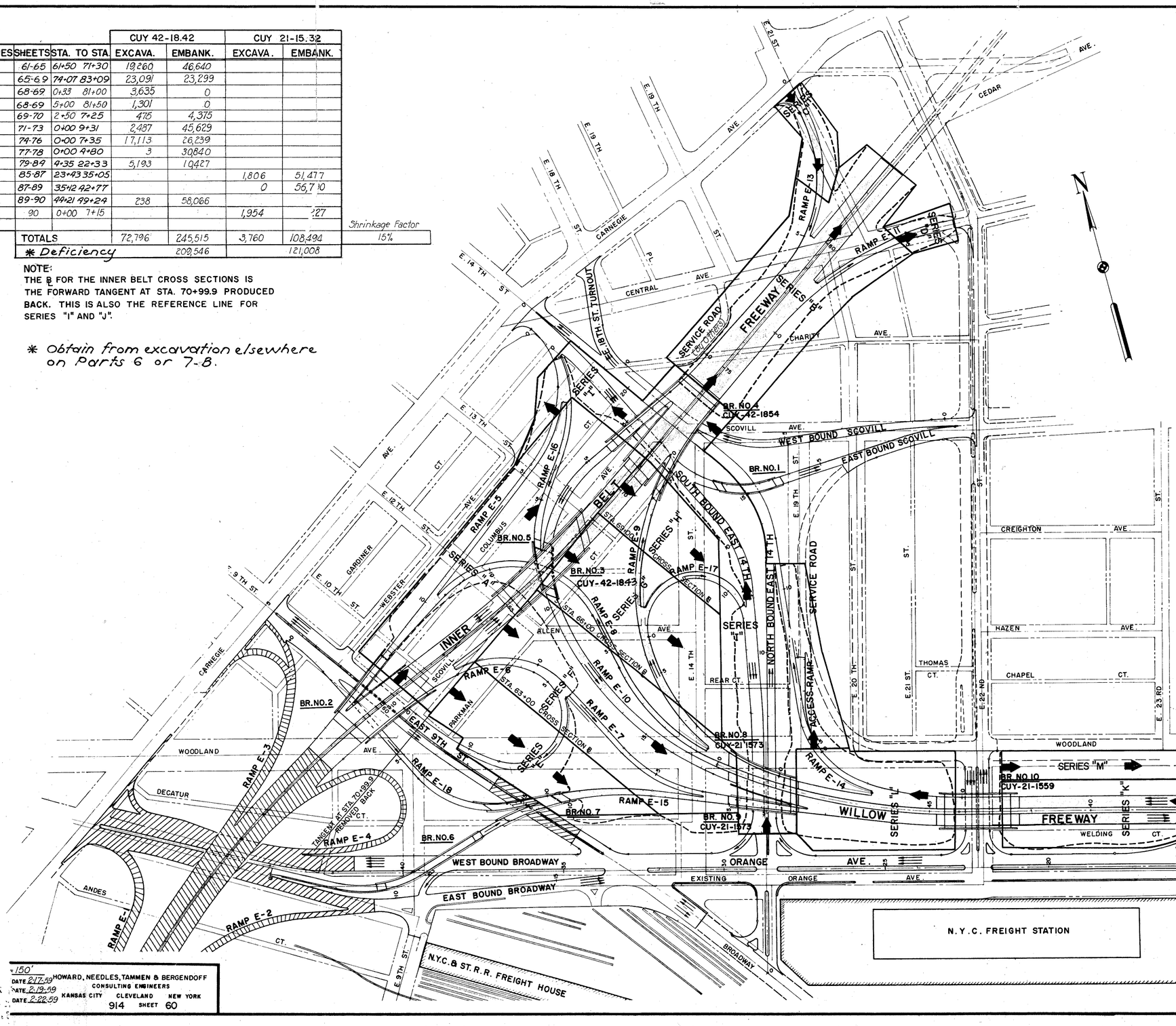
SERIES	SHEETS	STA. TO STA	CUY 42-18.42 EXCAVA.	CUY 42-18.42 EMBANK.	CUY 21-15.32 EXCAVA.	CUY 21-15.32 EMBANK.
A	61-65	61+50 71+30	19,260	46,640		
B	65-69	74+07 83+09	23,091	23,299		
C	68-69	0+33 81+00	3,635	0		
D	68-69	5+00 81+50	1,301	0		
E	69-70	2+50 7+25	475	4,375		
F	71-73	0+00 9+31	2,487	45,629		
G	74-76	0+00 7+35	17,113	26,239		
H	77-78	0+00 4+80	3	30,840		
I	79-89	4+35 22+33	5,193	10,427		
J	85-87	23+43 35+05			1,806	51,477
K	87-89	35+12 42+77			0	56,710
L	89-90	44+21 49+24	238	58,066		
M	90	0+00 7+15			1,954	727
TOTALS			72,796	245,515	3,760	108,494
* Deficiency				209,546		121,008

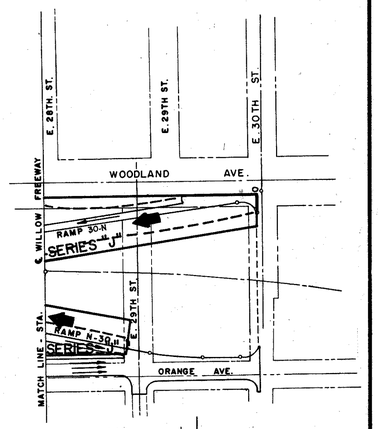
Shrinkage Factor 15%

NOTE:
THE ℄ FOR THE INNER BELT CROSS SECTIONS IS THE FORWARD TANGENT AT STA. 70+99.9 PRODUCED BACK. THIS IS ALSO THE REFERENCE LINE FOR SERIES "I" AND "J".

* Obtain from excavation elsewhere on Parts 6 or 7-B.

LEGEND
- Previous Contract - Part 5
- Part 6 - Previous Project
- Part 7 - Present Project
- Construction Limits





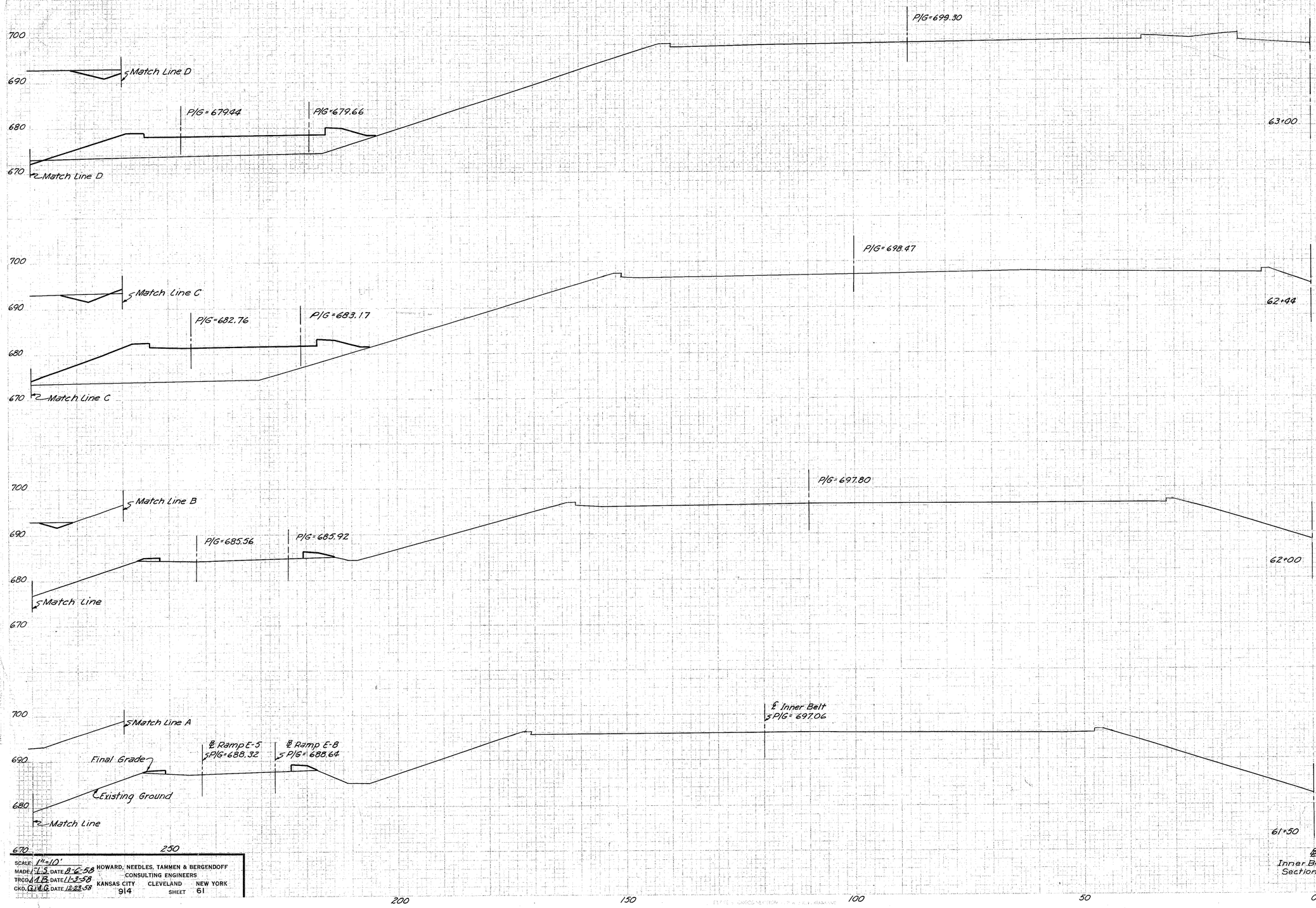
1" = 150'
DATE 2-17-59
DATE 2-19-59
DATE 2-22-59

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

914 SHEET 60

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	
2	OHIO			61 181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
63+00					14	266		
							24	713
62+44					9	422		
							11	351
62+00					5	9		
							5	16
61+50					0	8		

SERIES A
INNER BELT SECTIONS
STA. 61+50 TO STA. 63+00

SCALE 1"=10'
MADE F.L.S. DATE 8-6-58
TRCD. A.B. DATE 11-3-58
CKD. G.M.G. DATE 12-23-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 61

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

62
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
				1285	0		
						1775	2
				632	2		
						983	2
				430	0		
						537	0
				150	0		
						156	96
				18	104		
						26	343
				14	266		

65+50
65+00
64+50
64+00
63+50
63+00 (See Sheet 61)

℄ Inner Belt Sections

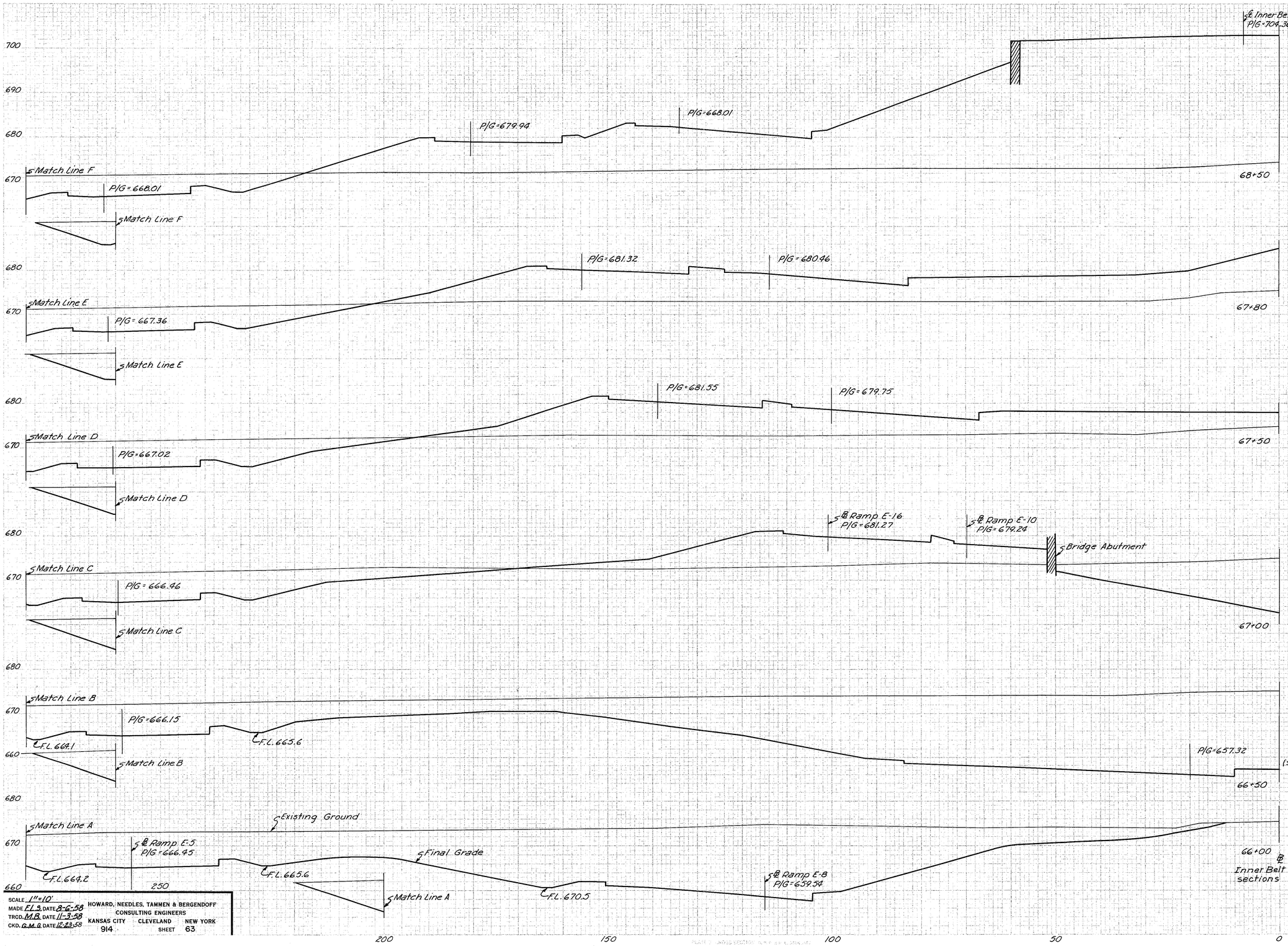
SERIES A
INNER BELT SECTIONS
STA. 63+50 TO STA. 65+50

SCALE 1"=10'
MADE E.L.S. DATE 8-6-58
TRCD. M.B. DATE 11-3-58
CKD. S.M.G. DATE 12-22-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 62

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	63
2	OHIO			181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
				290	3250		
						861	5734
				374	1173		
						454	1196
				444	980		
						1224	1404
				878	536		
						3427	496
				2823	0		
						4849	0
				2414	0		
						3425	0
				1285	0		

SERIES A
INNER BELT SECTIONS
STA. 66+00 TO STA. 68+50

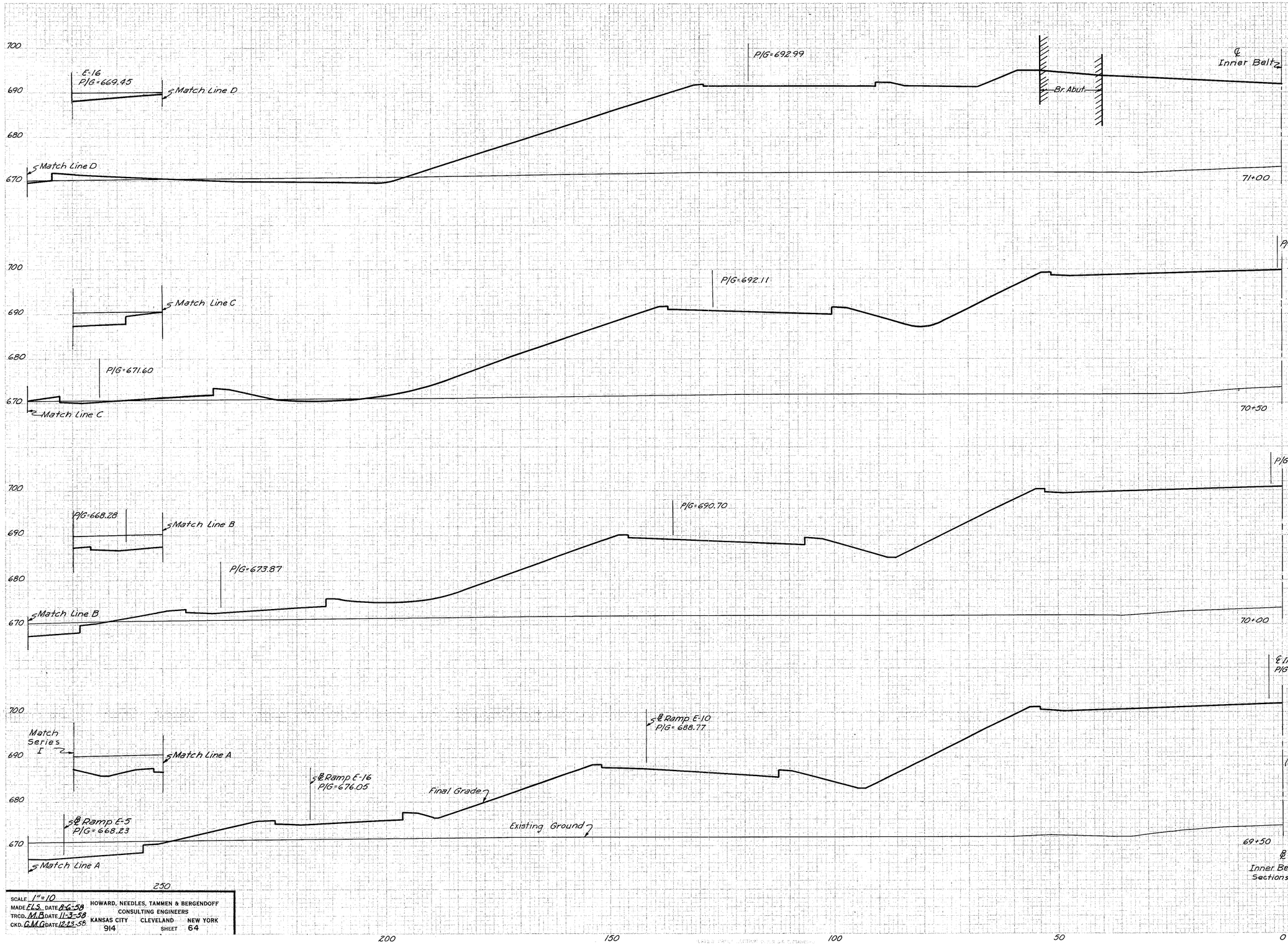
SCALE 1"=10'
MADE FLS DATE 8-6-58
TRCD. M.B. DATE 11-3-58
CKD. G.M.G DATE 12-23-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 63

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

64
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
				71+00			
				72	3352		
						109	6543
				70+50			
				46	3714		
						132	6985
				70+00			
				27	3830		
						268	7032
				69+50			
				192	3765		
						893	12991
				68+50			
				(See sheet 63)			
				290	3250		

SERIES A
INNER BELT SECTIONS
STA. 69+50 TO STA. 71+00

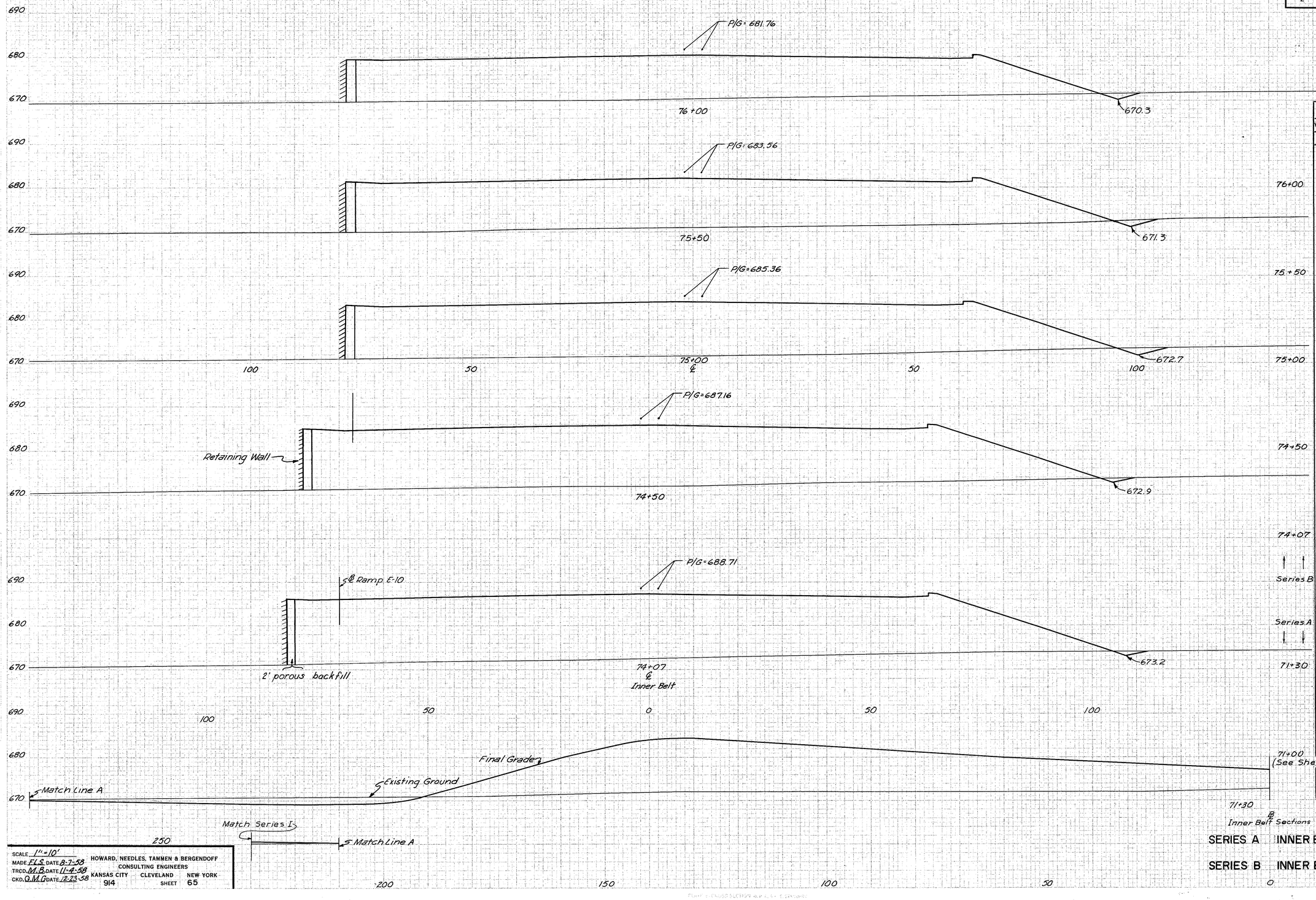
SCALE 1"=10
MADE F.L.S. DATE 8-6-58
TRCD. M.B. DATE 11-3-58
CKD. G.M.G. DATE 12-23-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 64

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

65
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK				
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME		
L. F.	SQ. YD.	S. F.	C. Y.		EXC.	EMB.	EXC.	EMB.
				76+00				
					8	1501		
				75+50				
							14	2969
					7	1705		
				75+00				
							16	3347
					10	1910		
				74+50				
							13	3755
					4	2201		
				74+07				
							6	3600
					4	2632		
				Series B				
				Series A				
				71+30				
					109	1575		
							101	2736
				71+00				
				(See Sheet 64)	72	3352		

71+30 ℄ Inner Belt Sections

SERIES A INNER BELT SECTIONS STA. 71+30

SERIES B INNER BELT SECTIONS STA. 74+07 TO STA. 76+00

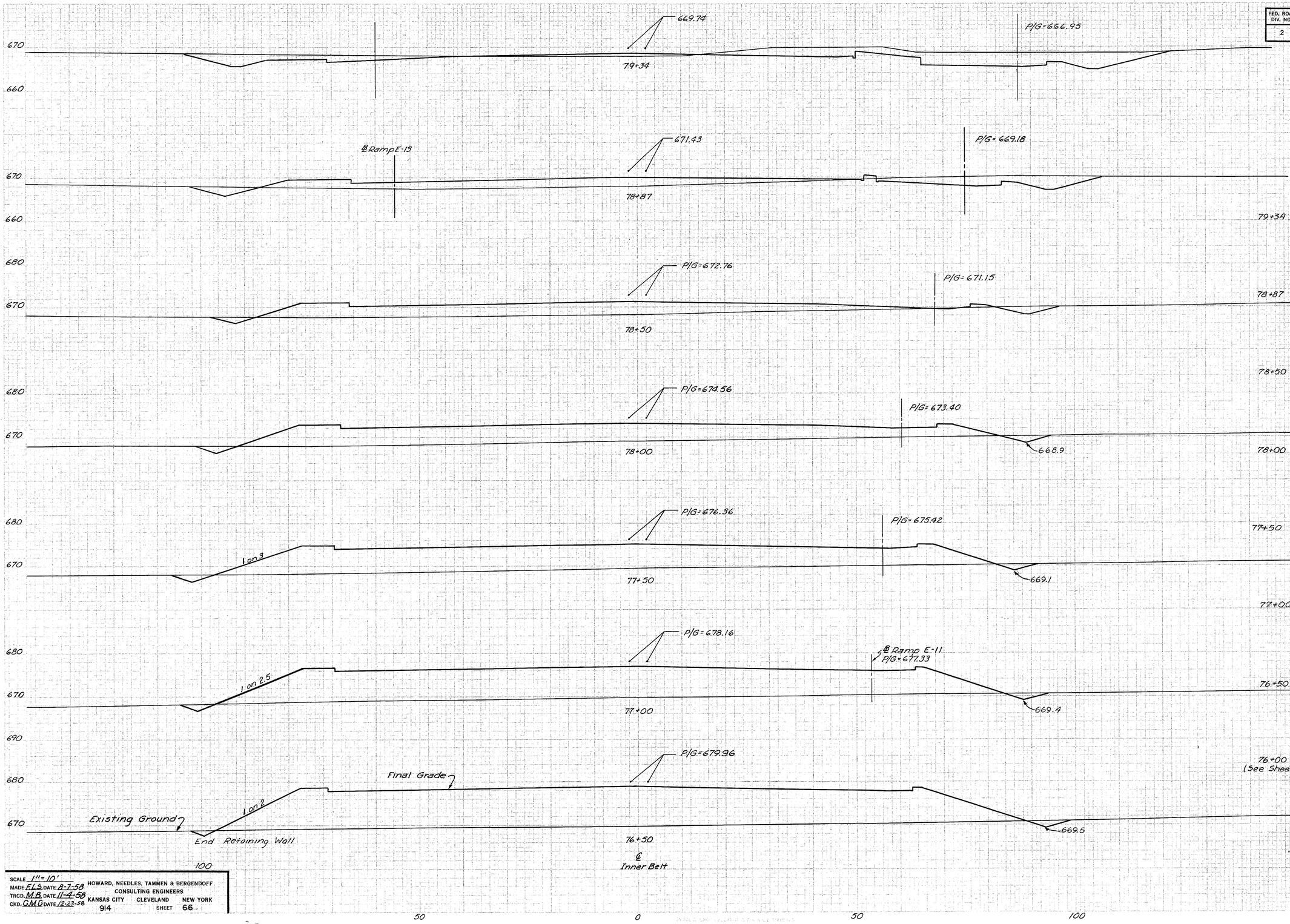
SCALE 1"=10'
MADE F.L.S. DATE 8-7-58
TRCD. M.B. DATE 11-4-58
CKD. O.M.G. DATE 12-23-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 65

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

66
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
				324	18		
						377	191
				109	202		
						90	378
				23	349		
						31	877
				10	598		
						16	1344
				7	854		
						14	1834
				8	1127		
						15	2320
				8	1379		
						15	2667
				8	1501		

79+34
77+50
77+00
76+50
76+00
(See Sheet 65)

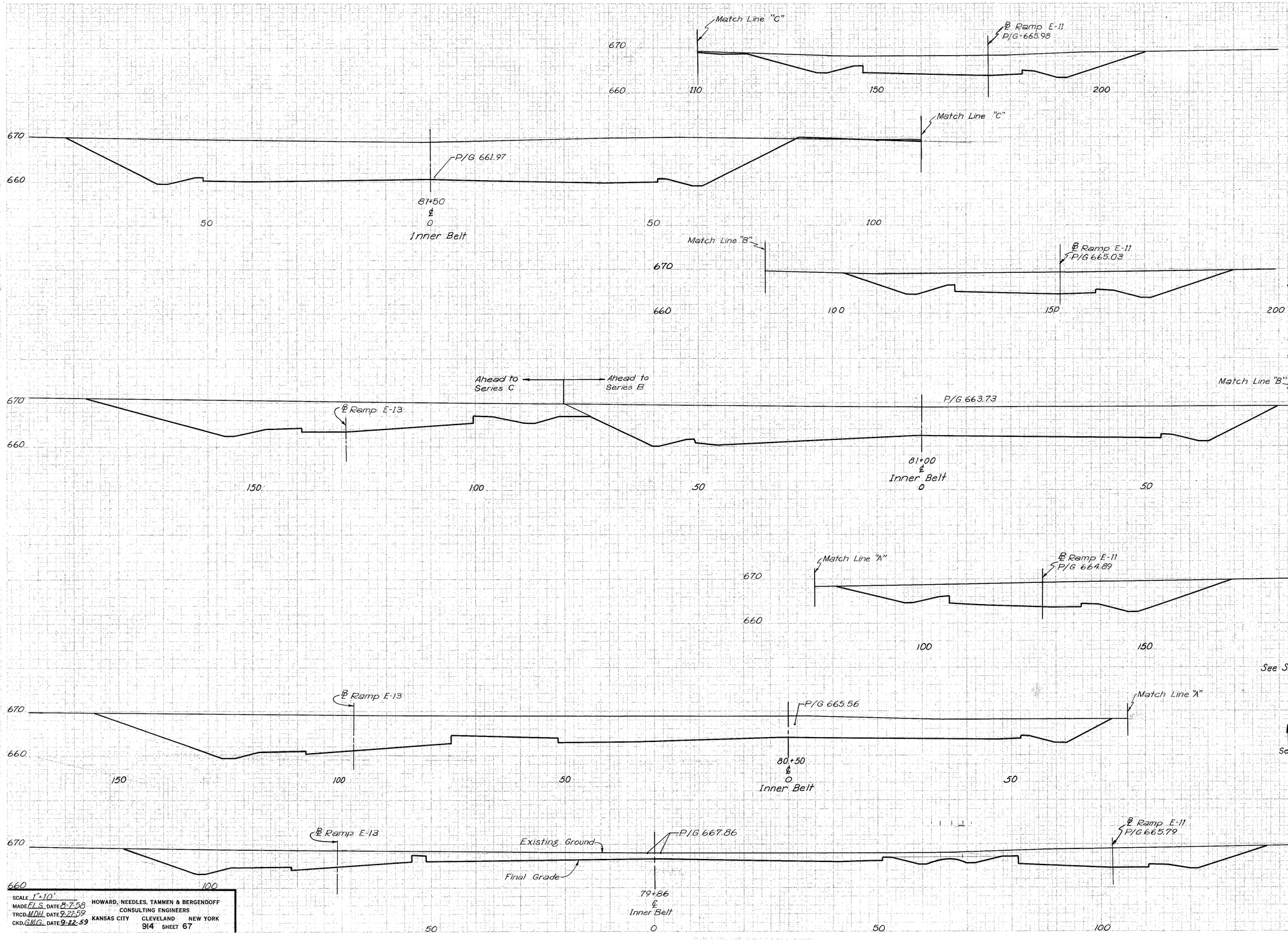
SERIES B
INNER BELT SECTIONS
STA. 76+50 TO STA. 79+34

SCALE 1"=10'
MADE F.L.S. DATE 8-7-58
TRCD. M.B. DATE 11-4-58
CKD. G.M.G. DATE 12-23-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 65

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	
2	OHIO			67 / 181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
				81+50 1720	0		
						2933	0
				81+00 1448	0		
				81+00 2019	0		
						3740	0
				80+50 1687	0		
						2874	0
				79+86 738	0		
						1023	17
				79+34 324	18		

SERIES B
INNER BELT SECTIONS
STA. 79+86 TO STA. 81+50

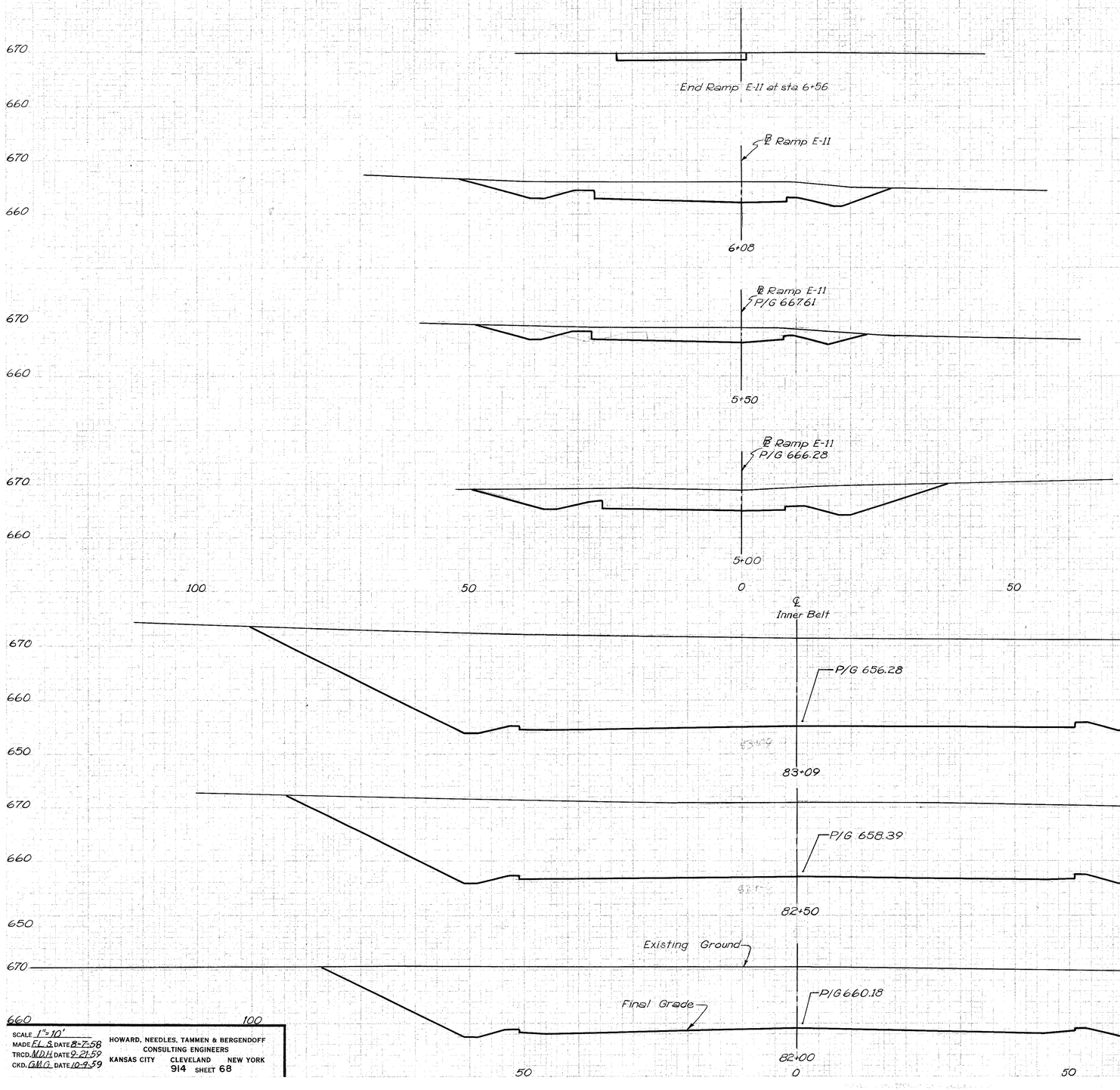
SCALE 1"=10'
MADE F.L.S. DATE 8-7-58
TRCD. M.D.H. DATE 9-21-59
CKD. G.M.G. DATE 9-22-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 67

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

68
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
Series D								
6+56					30	0		
							238	0
6+08					238	0		
							416	0
5+50					149	0		
							418	0
5+00					302	0		
							229	0
81+50 (See Sheet 67)					317	0		
Series D / Series B								
83+09					2669	0		
							5311	0
82+50					2192	0		
							3667	0
82+00					1768	0		
							2936	0
81+50 See Sheet 67					1403	0		

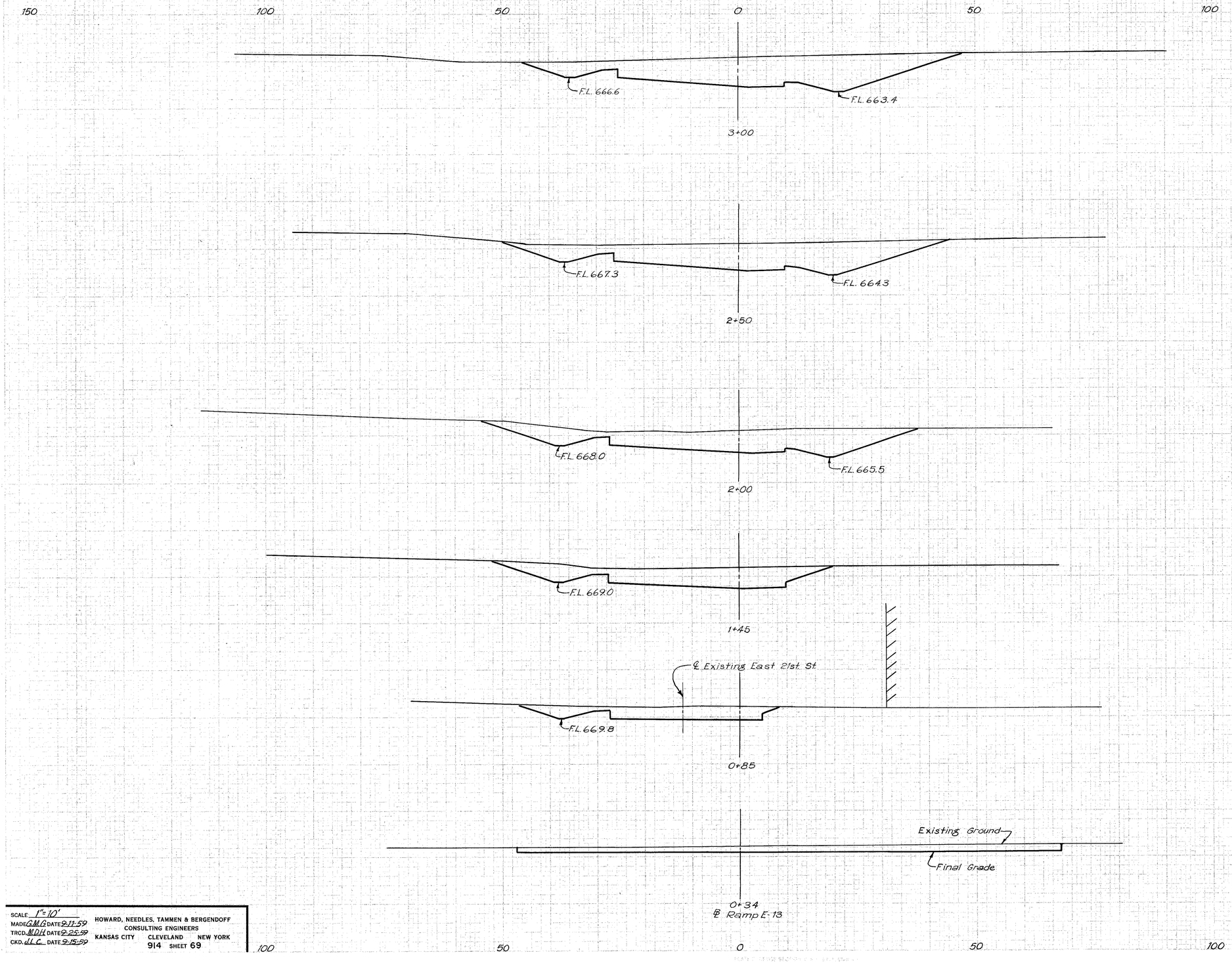
SERIES B INNER BELT SECTIONS
STA. 82+00 TO STA. 83+09
SERIES D RAMP E-11 SECTIONS
STA. 5+00 TO STA. 6+56

SCALE 1"=10'
MADE EL. S. DATE 8-7-58
TRCD. MDH DATE 9-21-59
CKD. GMG DATE 10-9-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 68

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	69
2	OHIO			181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
81+00 (See Sheet 67)					571	0		
							1109	0
3+00					411	0		
							734	0
2+50					382	0		
							645	0
2+00					315	0		
							541	0
1+45					216	0		
							364	0
0+85					112	0		
							242	0
0+34					144	0		
Series C								

SERIES C
RAMP E-13 SECTIONS
STA. 0+33 TO STA. 3+00

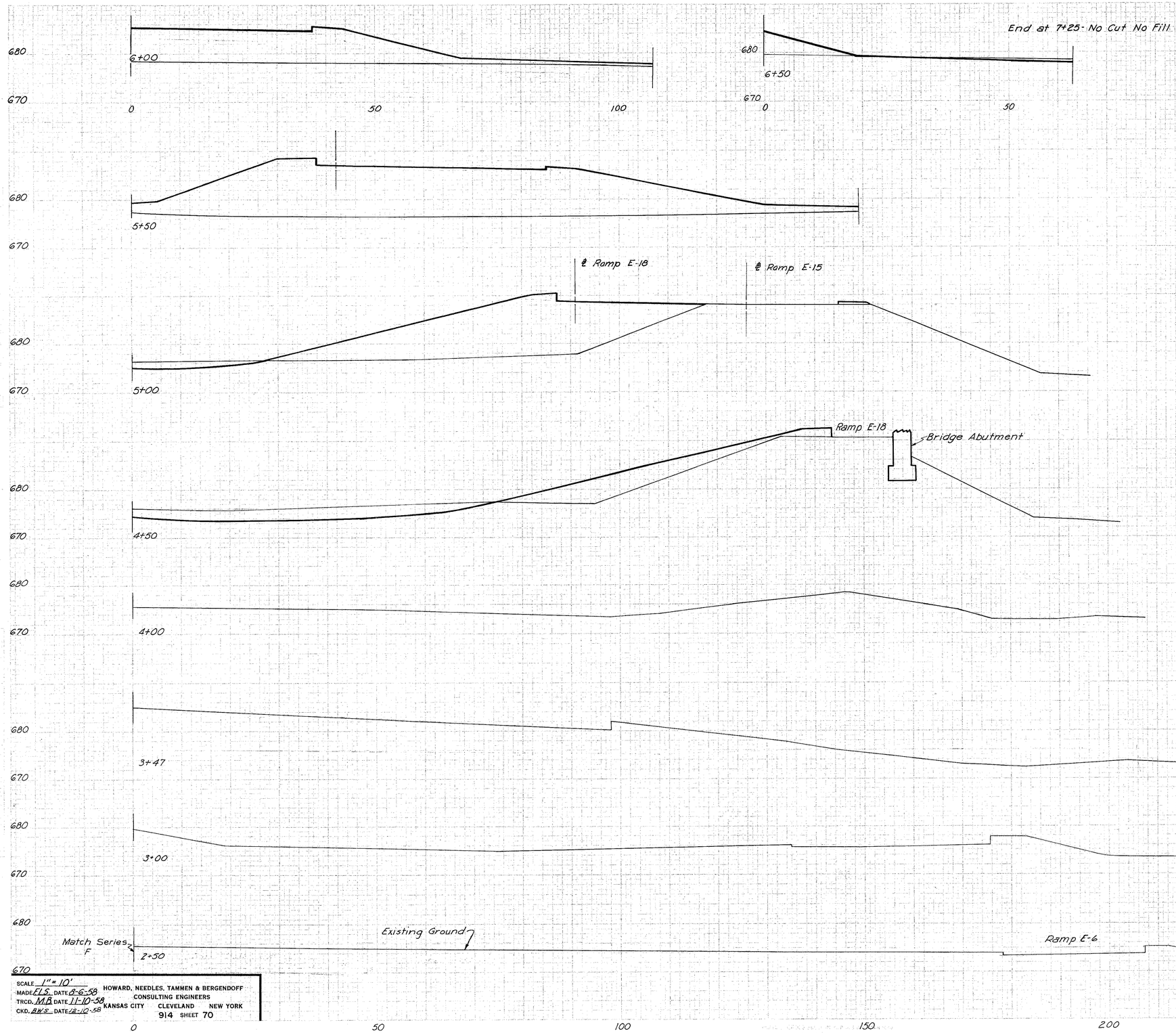
SCALE 1"=10'
MADE G.M.G. DATE 9-11-59
TRCD. M.D.H. DATE 9-25-59
CKD. J.L.C. DATE 9-15-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 69

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

70
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
7+25					0	0		
							18	68
6+50					13	49		
							12	440
6+00					0	426		
							0	1394
5+50					0	1079		
							30	1570
5+00					32	617		
							269	737
4+50					158	179		
							146	166
4+00					0	0		
							0	0
3+47					0	0		
							0	0
3+00					0	0		
							0	0
2+50					0	0		

SERIES E
SECTIONS RIGHT OF STA. 63+00 B INNER BELT
STA. 2+50 TO STA. 7+25

SCALE 1" = 10'
MADE ELS. DATE 8-6-58
TRCD. MB DATE 11-10-58
CKD. BWS DATE 12-10-58

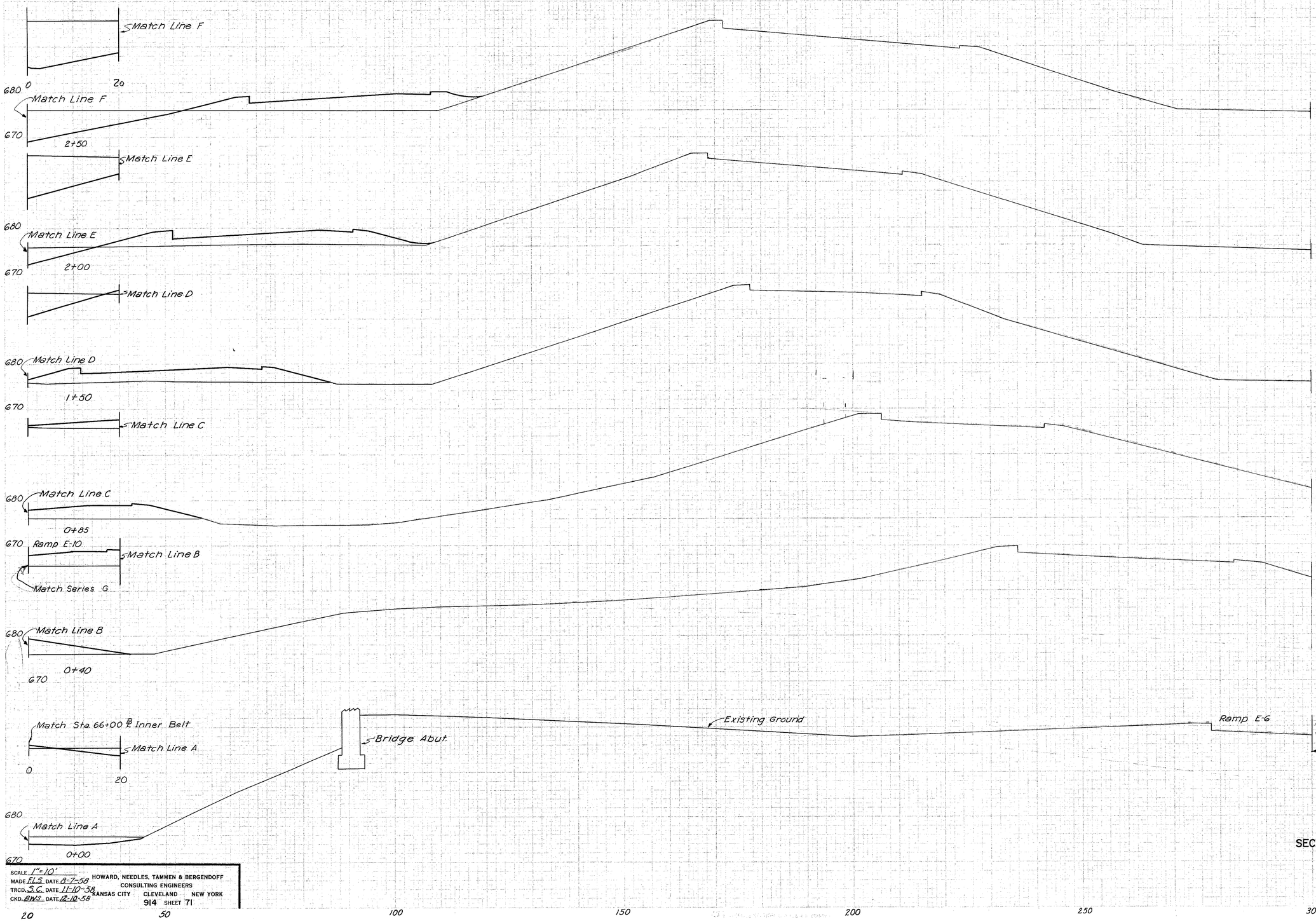
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914 SHEET 70

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

71
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
2+50					302	158		
							424	285
2+00					156	150		
							188	295
1+50					47	169		
							57	345
0+85					0	118		
							0	182
0+40					0	100		
							39	76
0+00					52	2		

SERIES F
SECTIONS RIGHT OF STA. 66+00 ℄ INNER BELT
STA. 0+00 TO STA. 2+50

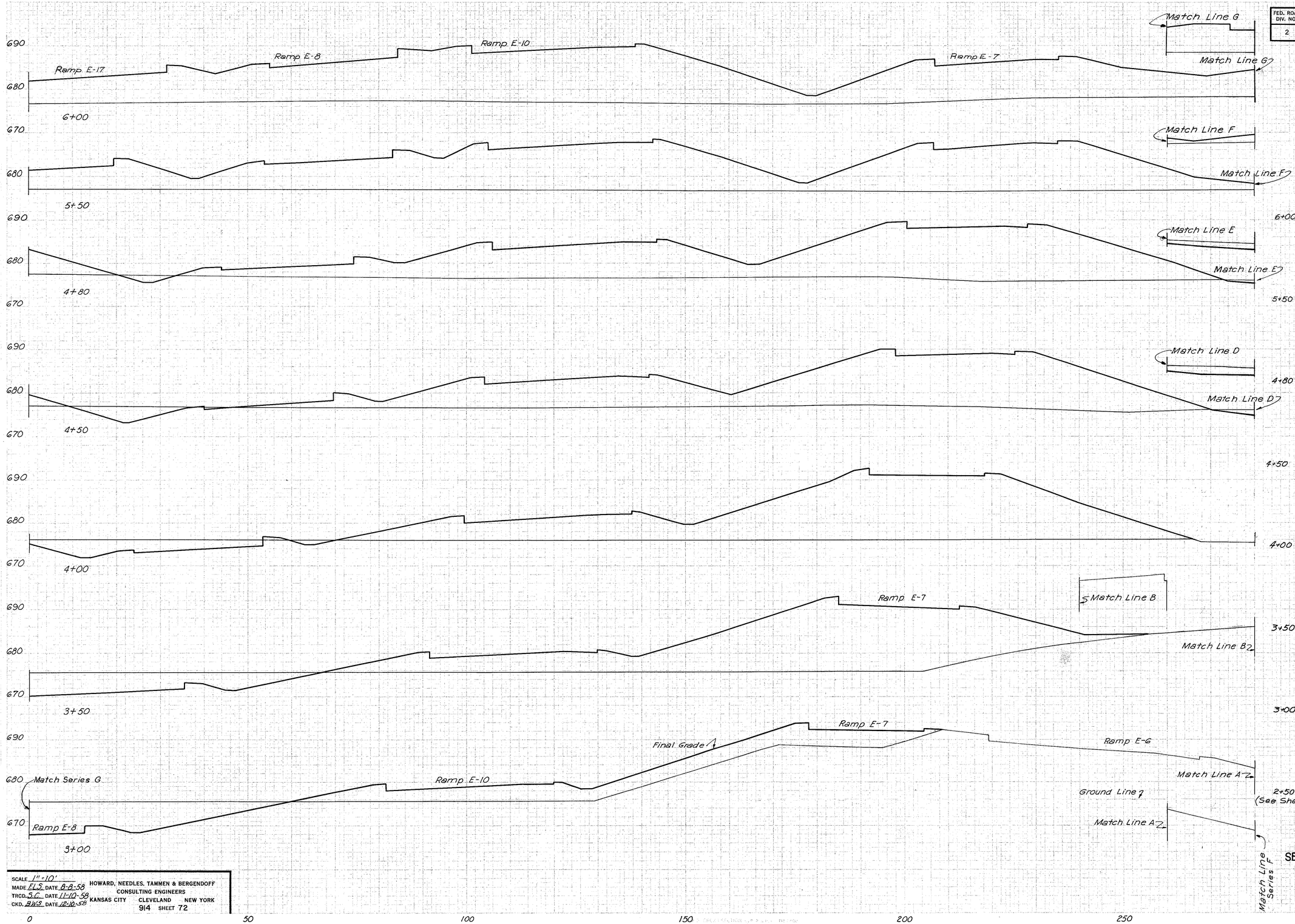
SCALE 1"=10'
MADE F.L.S. DATE 8-7-58
TRCD. S.C. DATE 11-10-58
CKD. B.W.S. DATE 12-10-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 71

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

72
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
				0	2402		
						0	4292
				0	2073		
						51	4888
				39	1698		
						75	1762
				96	1473		
						222	2814
				144	1566		
						365	2793
				250	1369		
						509	1737
				300	480		
						557	591
				302	158		

SERIES F
SECTION RIGHT OF STA. 66+00
℄ INNER BELT
STA. 3+00 TO STA. 6+00

SCALE 1"=10'
MADE F.L.S. DATE 8-8-58
TRCD. S.C. DATE 11-10-58
CKD. B.W.S. DATE 12-10-58

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

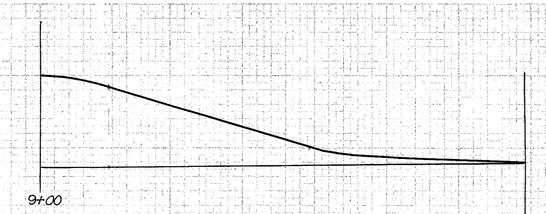
914 SHEET 72

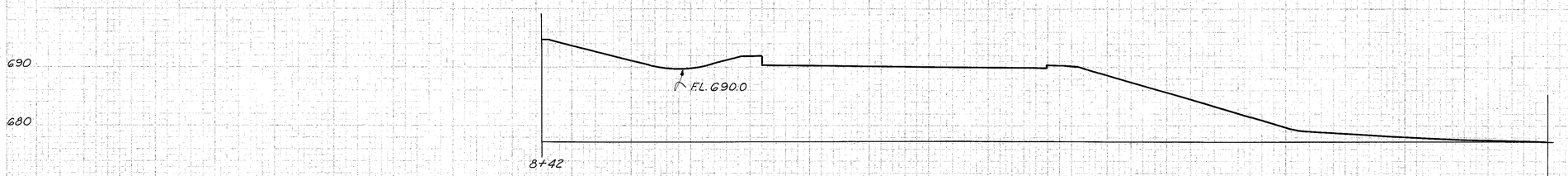
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

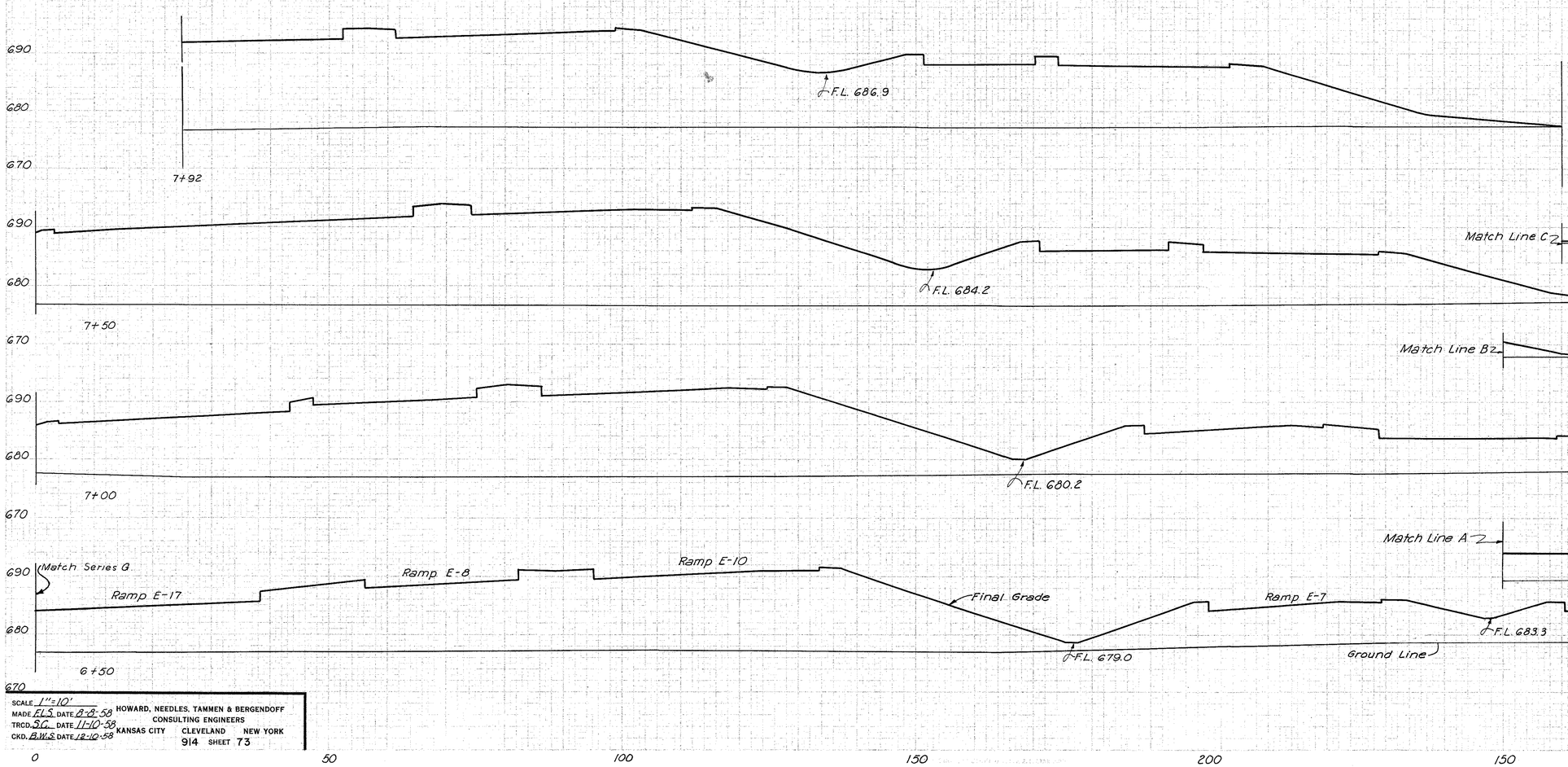
73
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

End Computations Sta. 9+31
0-Cut 0-Fill







SEEDING		SUBBASE		EARTHWORK				
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME		
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.	
				9+31				
				0	0			
						0	181	
				9+00				
				0	315			
						0	1967	
				8+42				
				0	1516			
						0	3886	
				7+92				
				0	2681			
						0	4466	
				7+50				
				0	3061			
						0	5373	
				7+00				
				0	2774			
						0	4956	
				6+50				
				0	2300			
						0	4788	
				6+00				
				0	2402			

SERIES F
SECTIONS RIGHT OF STA. 66+00 ℄ INNER BELT
STA. 6+50 TO STA. 9+31

SCALE 1"=10'
MADE FLS DATE 8-8-58
TRCD. SC DATE 11-10-58
CKD. B.W.S DATE 12-10-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 73

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

74
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

690
680
670
1+50
Match Line D
Match Line D
℄
680
670
1+00
Match Line C
Match Line C
℄
660
Match Line B
700
690
680
670
0+50
Match Line B
℄
Match Line A
Match Line Series F
700
Final Grade
Bridge Abutment
Match Series H
690
Match Sta. 69+00 ℄ Inner Belt
680
Existing Ground
Match Line A
670
0+00
℄
Ramp E-8
0
50
100
150
200
250

SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
				1907	889		
						3476	2023
				1847	1296		
						3044	4398
				1440	3454		
						2565	6228
				1330	3272		

SERIES G
SECTIONS RIGHT OF STA. 69+00 ℄ INNER BELT
STA. 0+00 TO STA. 1+50

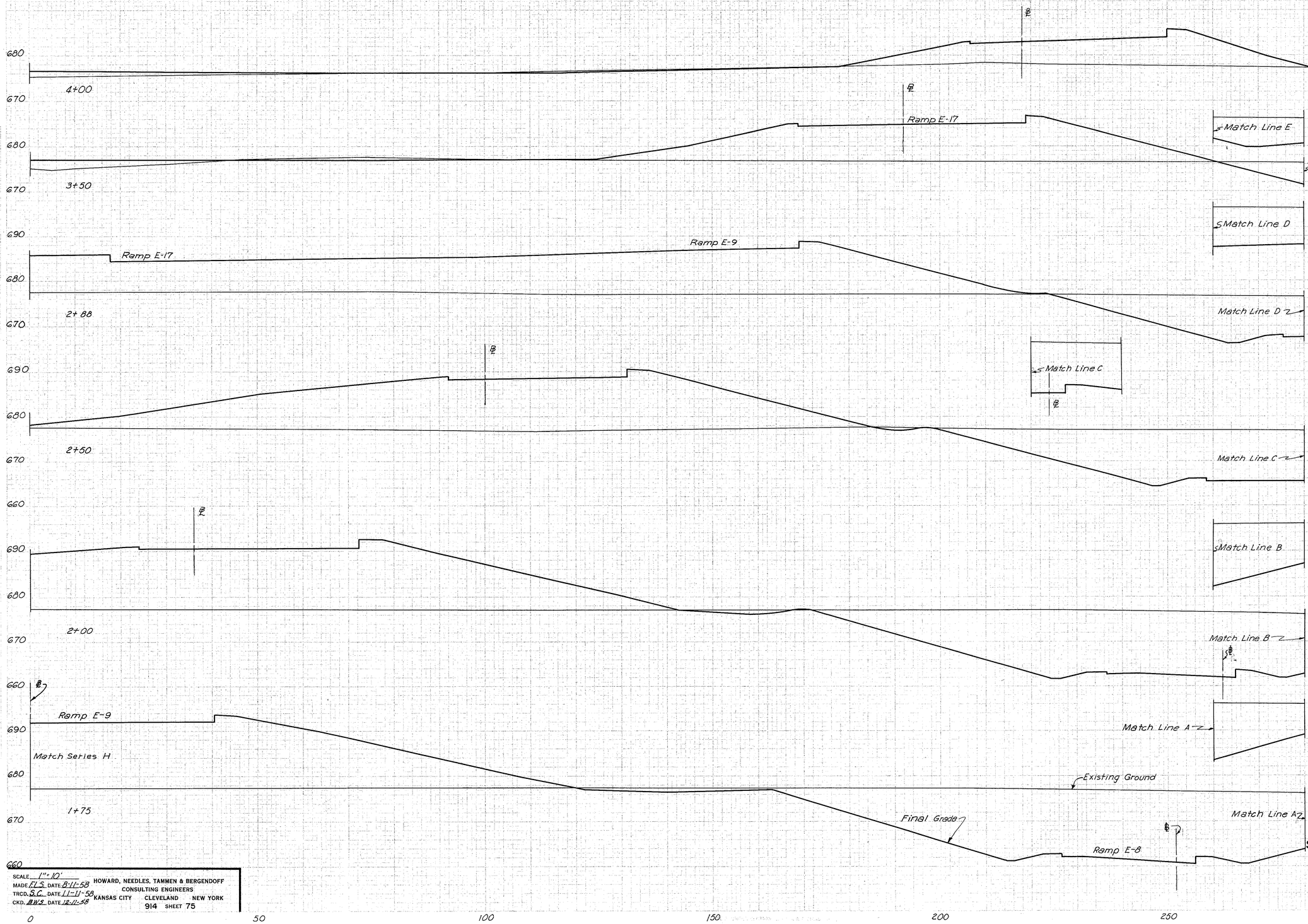
SCALE 1"=10'
MADE F.L.S. DATE 8-11-58
TRCD. S.G. DATE 11-11-58
CKD. BWS DATE 12-10-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 74

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

75
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.32
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
				4+00			
				33	493		
						199	1273
				3+50			
				182	882		
						820	2989
				2+88			
				532	1721		
						1002	2243
				2+50			
				892	1467		
						2160	2780
				2+00			
				1441	1535		
						1431	1300
				1+75			
				1650	1273		
						1697	1001
				1+50 (See Sheet 74)			
				1907	889		

SERIES G
SECTIONS RIGHT OF STA. 69+00 ℄ INNER BELT
STA. 1+75 TO STA. 4+00

SCALE 1"=10'
MADE F.L.S. DATE 8-11-58
TRCD. S.C. DATE 11-11-58
CKD. B.W.S. DATE 12-11-58

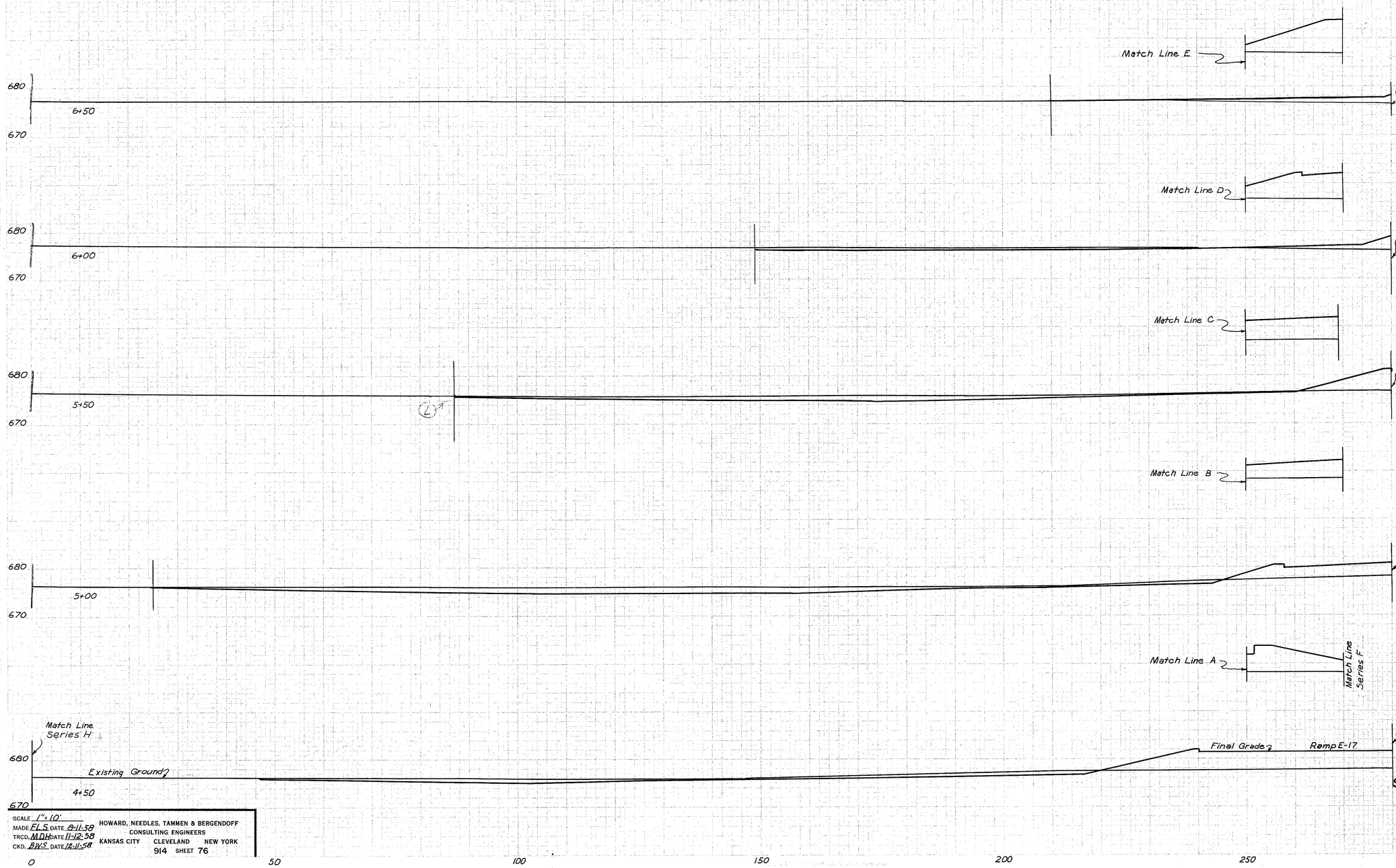
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 75

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

76
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

End Computations
Sta. 7+35 0 Cut 0 Fill



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
				7+35 0	0		
						0	198
				6+50 0	126		
						32	222
				6+00 35	114		
						129	227
				5+50 104	131		
						257	258
				5+00 174	148		
						241	390
				4+50 86	273		
						110	709
				4+00 33	493		

[See Sheet 13]

SERIES G
SECTIONS RIGHT OF STA. 69+00 R INNER BELT
STA. 4+50 TO STA. 7+35

SCALE 1" = 10'
MADE FLS DATE 9-11-58
TRCD. MDH DATE 11-12-58
CKD. BWS DATE 12-11-58

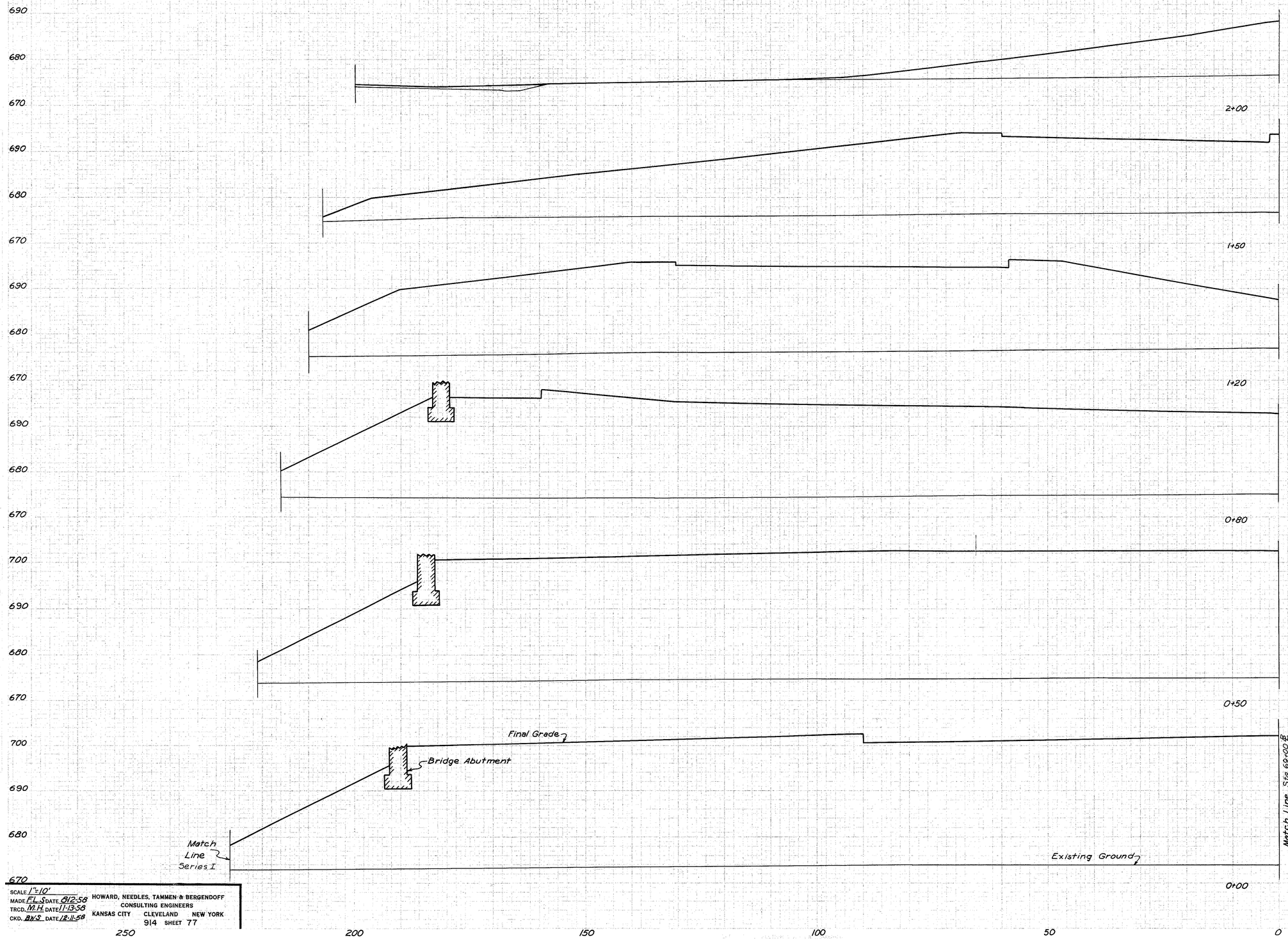
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 76

OF

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

77
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
				0	582		
						0	2926
				0	2578		
						0	3406
				0	3552		
						0	5734
				0	4189		
						0	5420
				0	5567		
						0	10547
				0	5824		

2+00
1+50
1+20
0+80
0+50
0+00

SERIES H
SECTIONS LEFT OF STA. 69+00 ℄ INNER BELT
STA. 0+00 TO STA. 2+00

SCALE 1"=10'
MADE F.L.S. DATE 8-12-58
TRCD. M.H. DATE 11-13-58
CKD. B.K.S. DATE 12-11-58

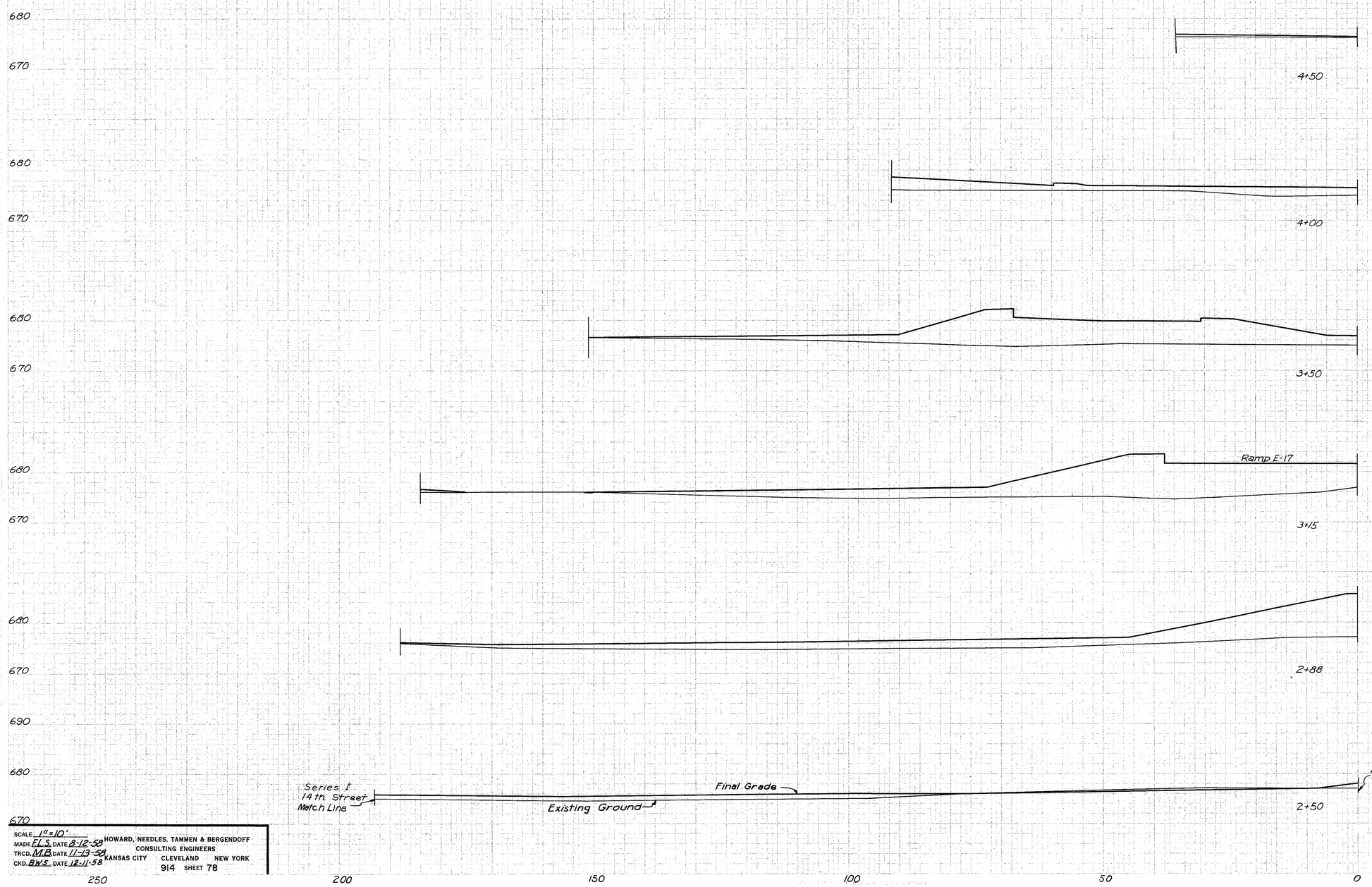
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 77

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

78
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21 - 16.32

End Computations
Sta 4+80 0 Cut 0 Fill



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
4+80					0	0		
							0	6
4+50					0	11		
							0	131
4+00					0	131		
							0	533
3+50					0	445		
							0	693
3+15					0	547		
							0	474
2+88					0	400		
							1	367
2+50					2	122		
							2	653
2+00 (See Sheet 77)					0	582		

SERIES H
SECTIONS LEFT OF STA. 69 00 ℄ INNER BELT
STA. 2+50 TO STA. 4+80

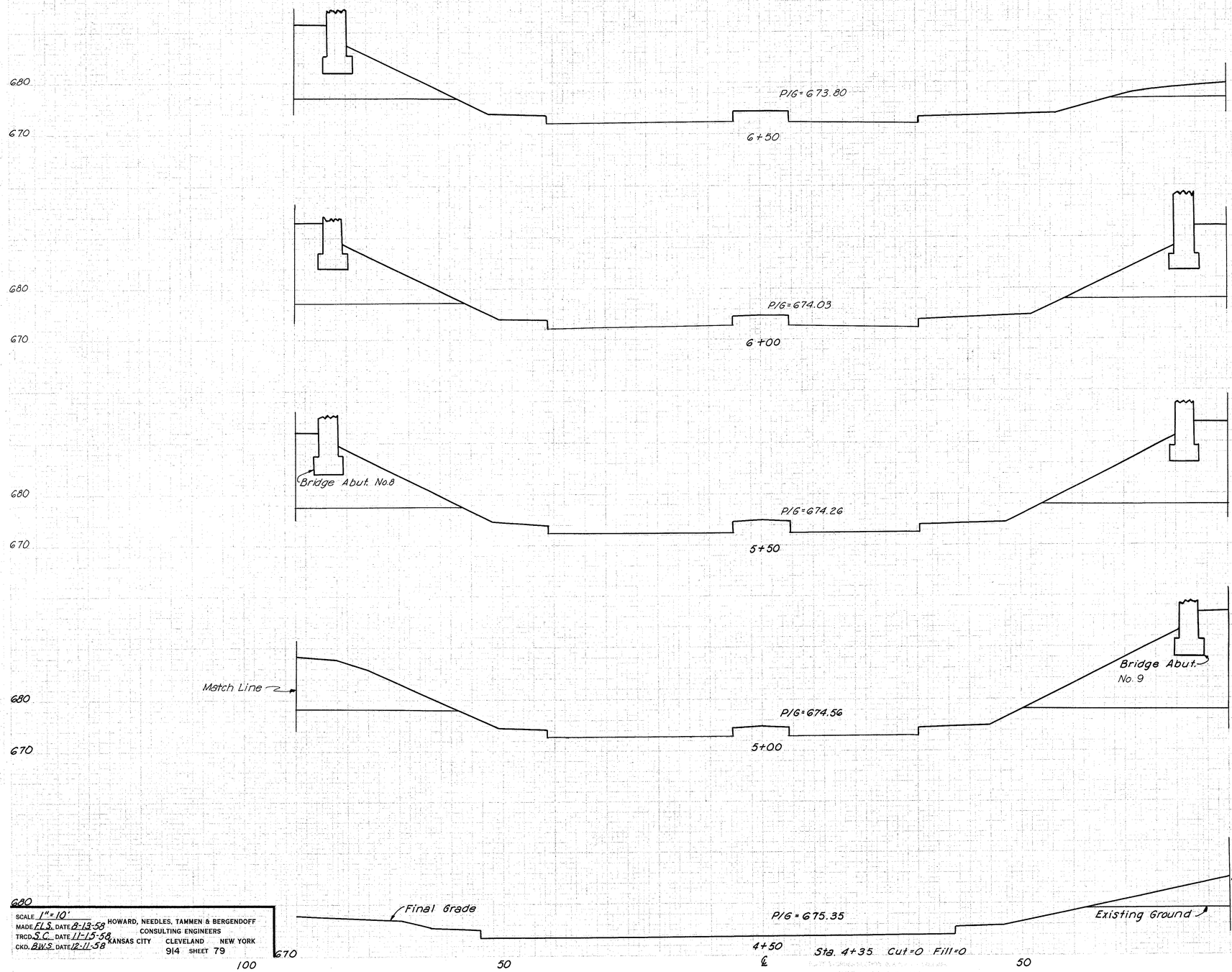
SCALE 1" = 10'
MADE F.L.S. DATE 8-12-58
TRCD. M.B. DATE 11-13-58
CKD. B.W.S. DATE 12-11-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 78

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

79
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
6+50					0	262		
							0	665
6+00					0	456		
							0	913
5+50					0	530		
							0	1024
5+00					0	576		
							0	609
4+50					0	82		
							0	23
4+35					0	0		

SERIES I
EAST 14TH ST. SECTIONS
STA. 4+35 TO STA. 6+50

150

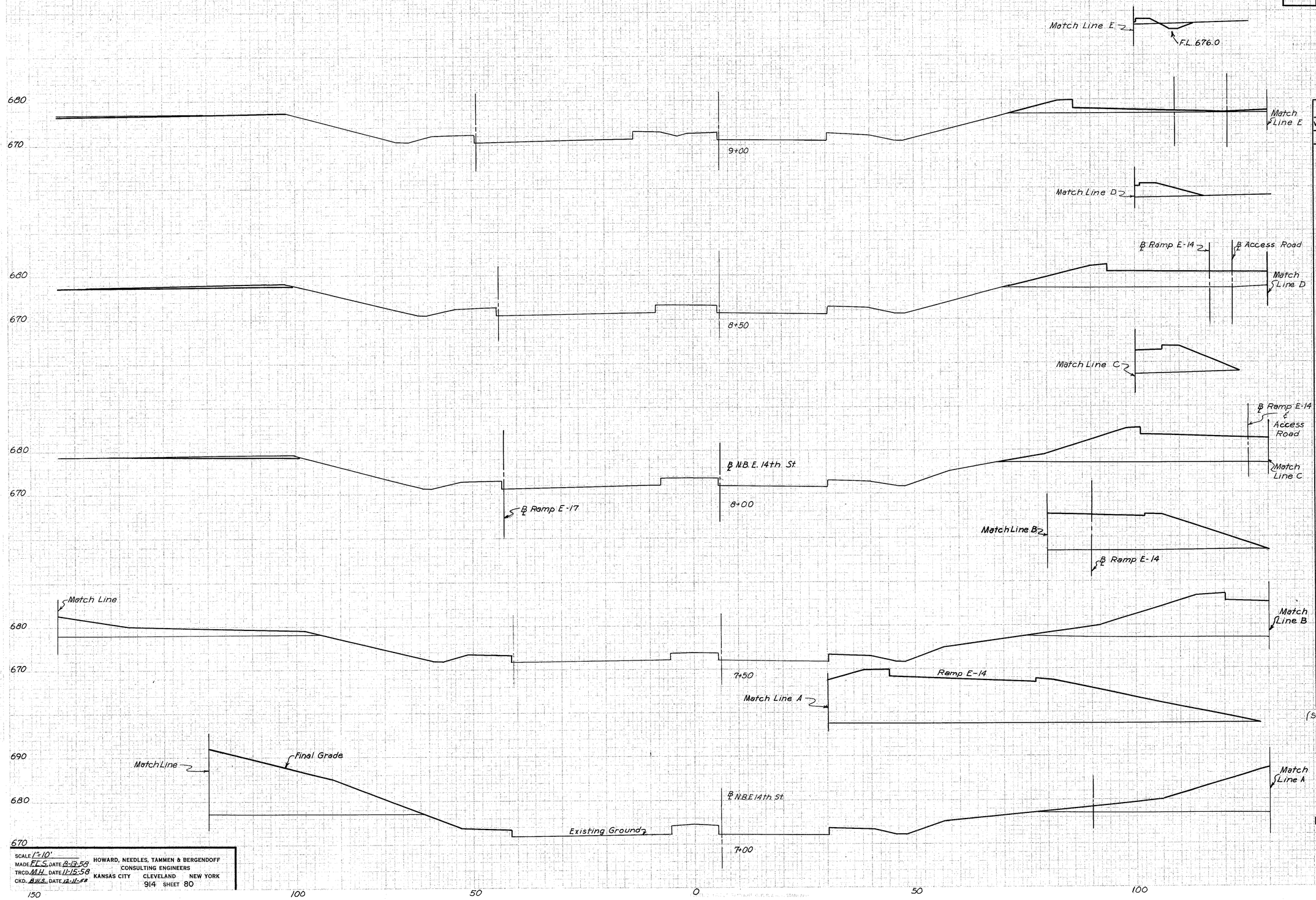
SCALE 1"=10'
MADE F.L.S. DATE 8-13-58
TRCD. S.C. DATE 11-15-58
CKD. B.W.S. DATE 12-11-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 79

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

80
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
				9+00		13	70
						36	272
				8+50		26	224
						41	579
				8+00		18	401
						17	1081
				7+50		0	766
						0	1994
				7+00 (Ahead)		0	1388
				7+00 (Back)		0	407
						0	619
				6+50 (See Sheet 79)		0	262

SERIES I
EAST 14TH ST. SECTIONS
STA. 7+00 TO STA. 9+00

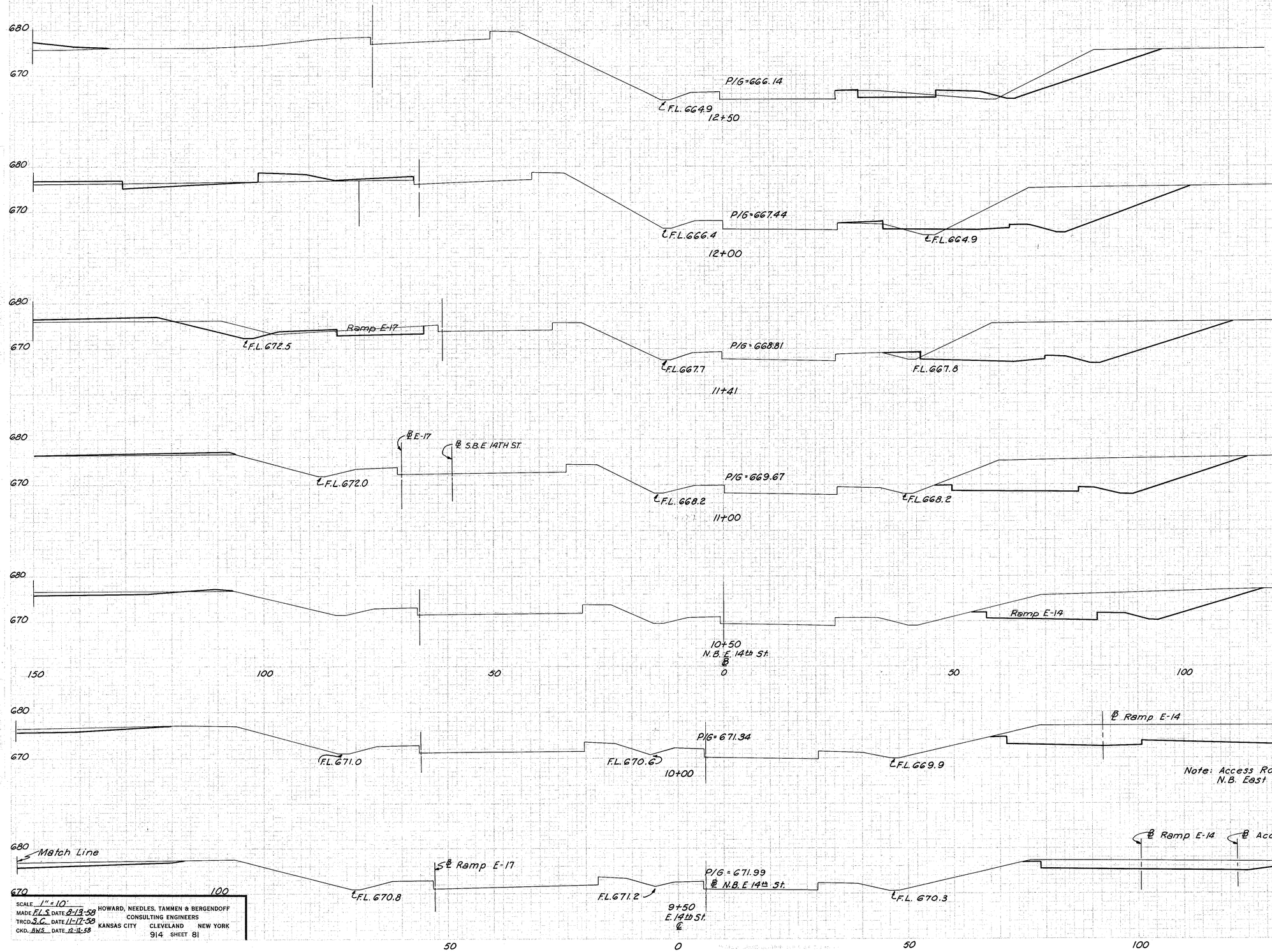
SCALE 1"=10'
MADE F.L.S. DATE 8-13-58
TRCD. M.H. DATE 11-15-58
CKD. A.W.S. DATE 12-11-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 80

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

81
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
				114	32		
						381	78
				298	52		
						825	96
				457	36		
						617	36
				355	12		
						572	12
				263	1		
						507	1
				285	0		
						403	0
				150	0		
						151	65
				13	70		

12+50
11+41
11+00
10+50
10+00
9+00
(See Sheet 80)

Note: Access Road Ends at N.B. East 14th St. Sta. 9+82

SERIES I
EAST 14TH ST. SECTIONS
STA. 9+50 TO STA. 12+50

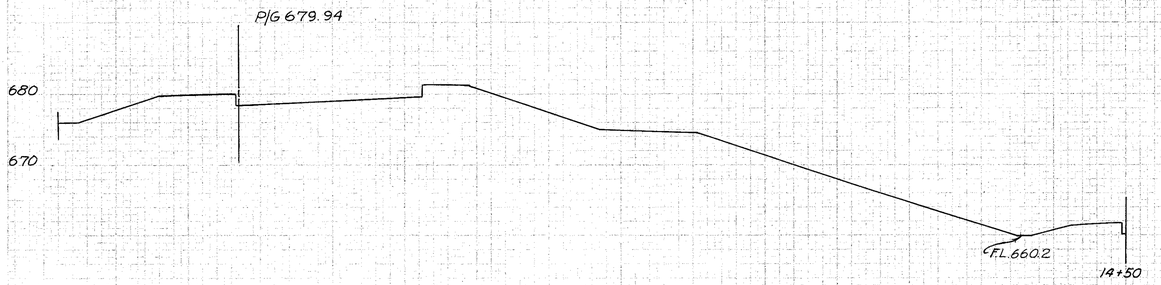
SCALE 1" = 10'
MADE F.L.S. DATE 8-13-58
TRCD. S.C. DATE 11-17-58
CKD. A.W.S. DATE 12-11-58

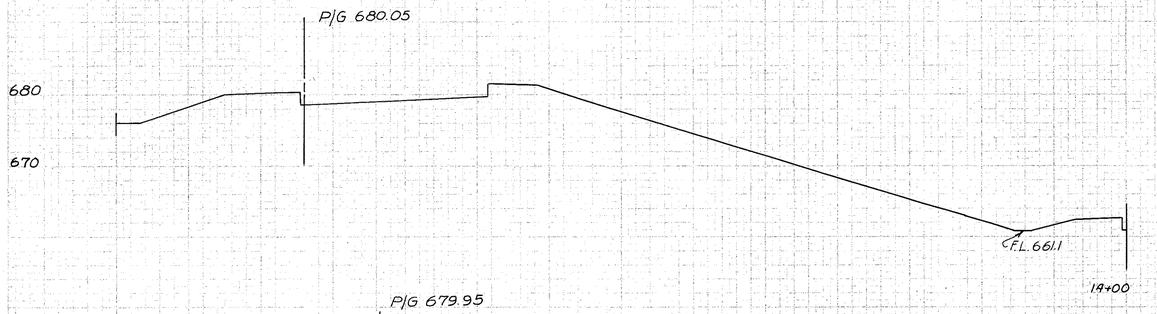
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 81

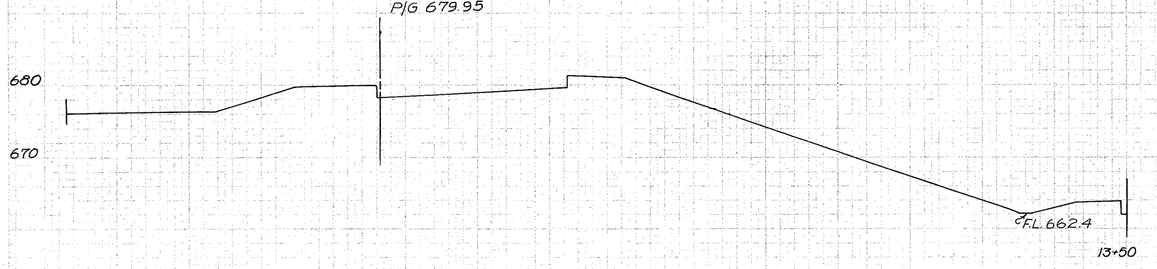
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

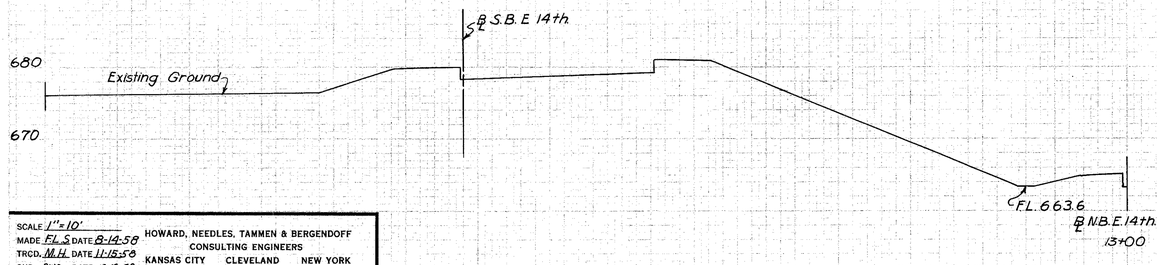
82
181

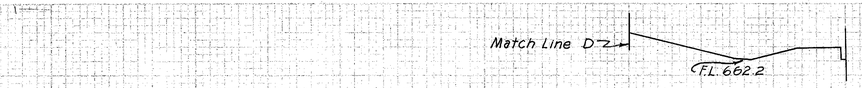
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-42-15.32

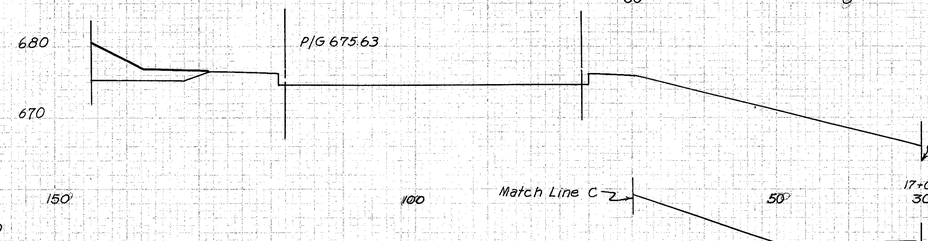


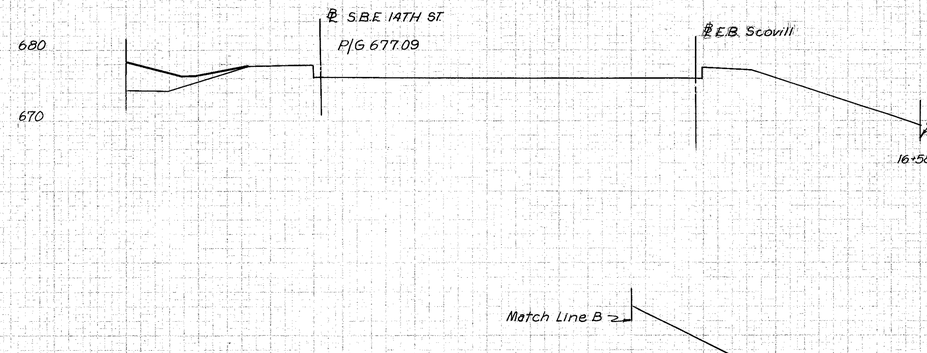


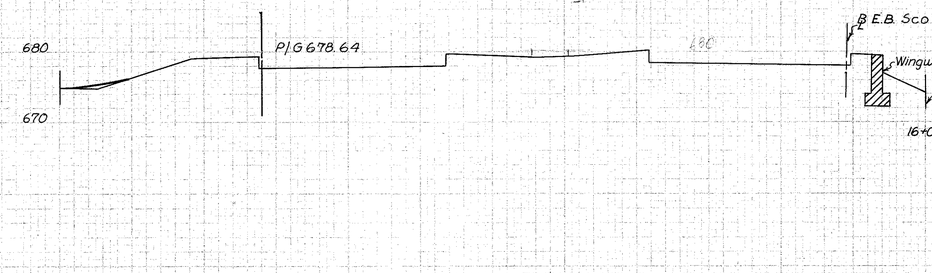


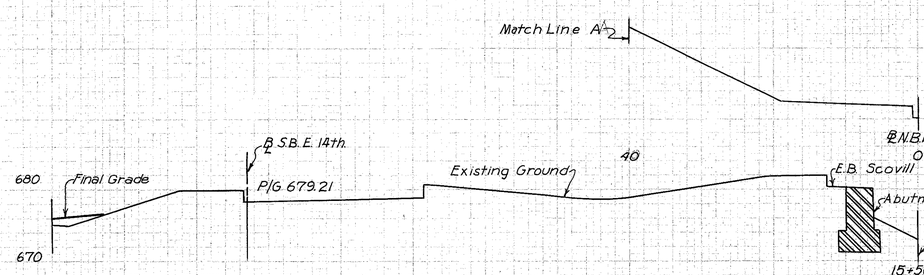












SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
				0	31		
						0	45
				0	27		
						0	32
				0	3		
						0	8
				0	6		
						0	6
				0	0		
						0	0
				0	0		
						0	0
				0	0		
						0	0
				0	0		
						106	30
				114	32		

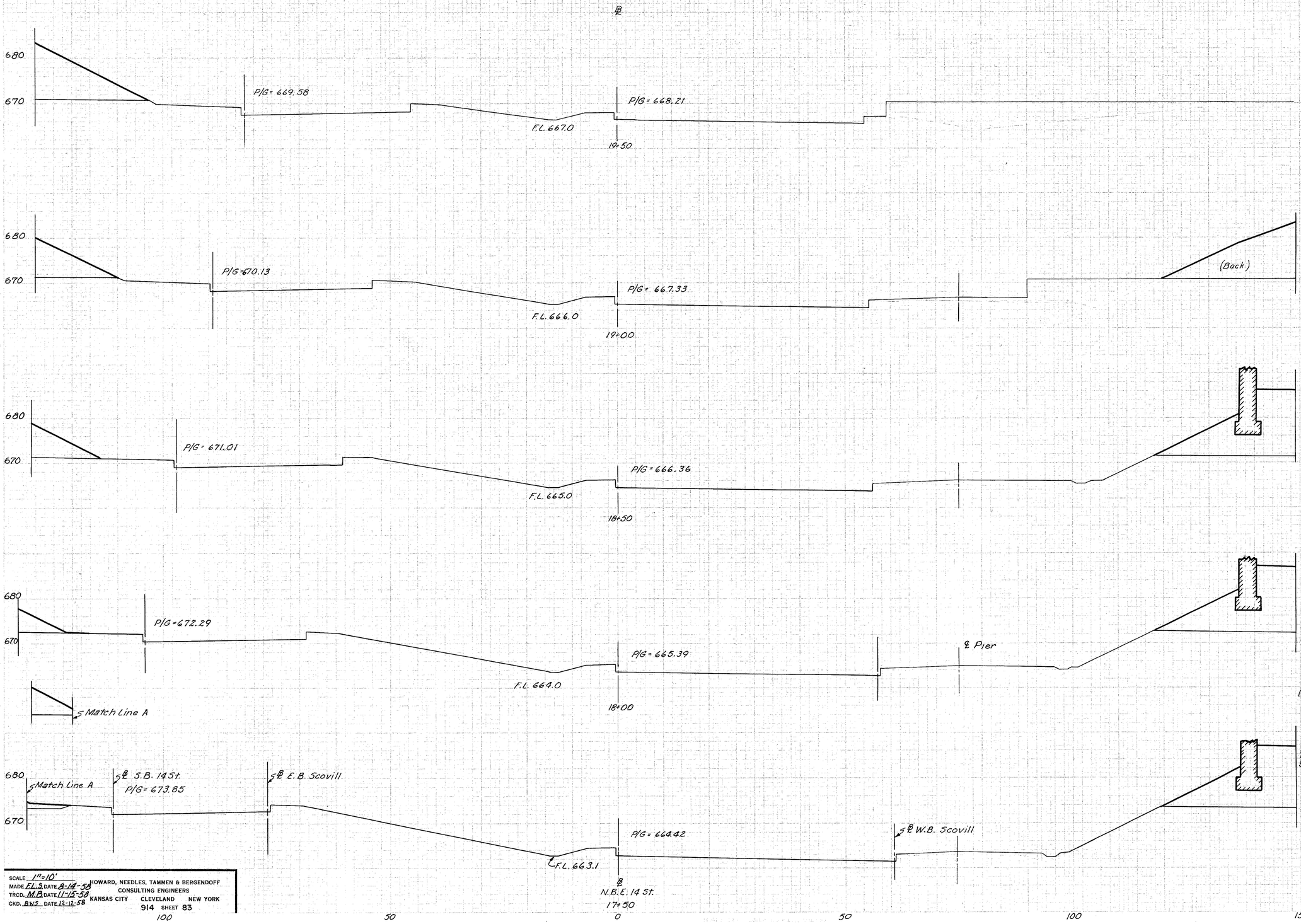
SERIES I
EAST 14TH ST. SECTIONS
STA. 13+00 TO STA. 17+00

SCALE 1" = 10'
MADE F.L.S DATE 8-14-58
TRCD. M.H. DATE 11-15-58
CKD. RWS. DATE 12-12-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 82

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	83 / 181
2	OHIO			

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
19+50					0	156		
							0	220
19+00 (Ahead)					0	81		
19+00 (Back)					0	276		
							0	542
18+50					0	309		
							0	548
18+00					0	283		
							0	508
17+50					0	266		
							0	275
17+00 (See Sheet 82)					0	31		

SERIES I
EAST 14TH ST. SECTIONS
STA. 17+50 TO STA. 19+50

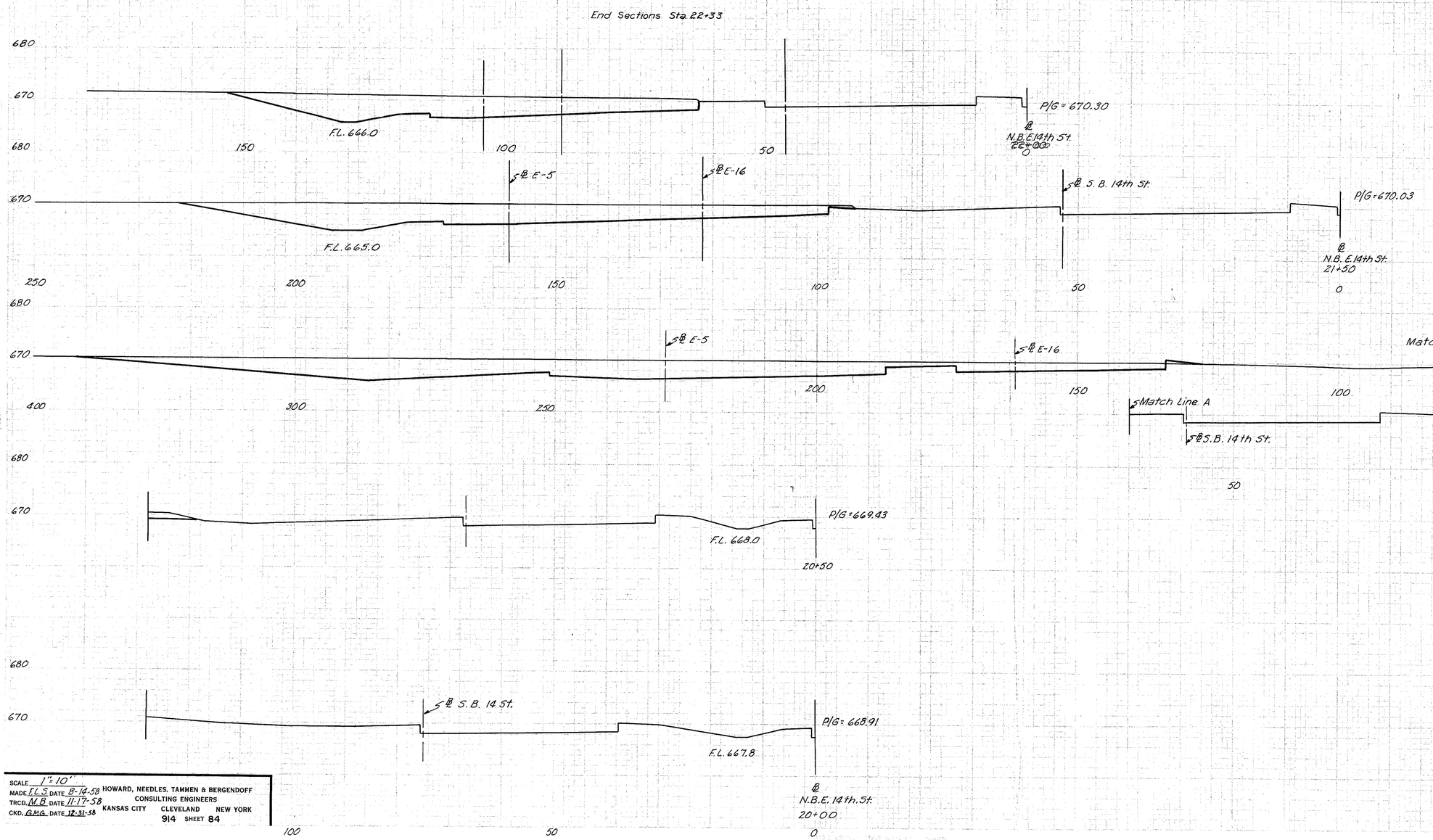
SCALE 1"=10'
MADE F.L.S. DATE 8-14-58
TRCD. M.B. DATE 11-15-58
CKD. B.W.S. DATE 12-12-58

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 83

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

84
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
22+33					0	0		
							181	0
22+00					297	0		
							624	0
21+50					377	0		
							717	2
21+07					523	2		
21+07					10	0		
							8	0
20+50					8	0		
							7	0
20+00					0	0		
							0	144
19+50 (See Sheet 83)					0	156		

SERIES I
EAST 14TH ST. SECTIONS
STA. 20+00 TO STA. 22+33

SCALE 1" = 10'
MADE F.L.S. DATE 8-14-58
TRCD. M.B. DATE 11-17-58
CKD. G.M.G. DATE 12-31-58

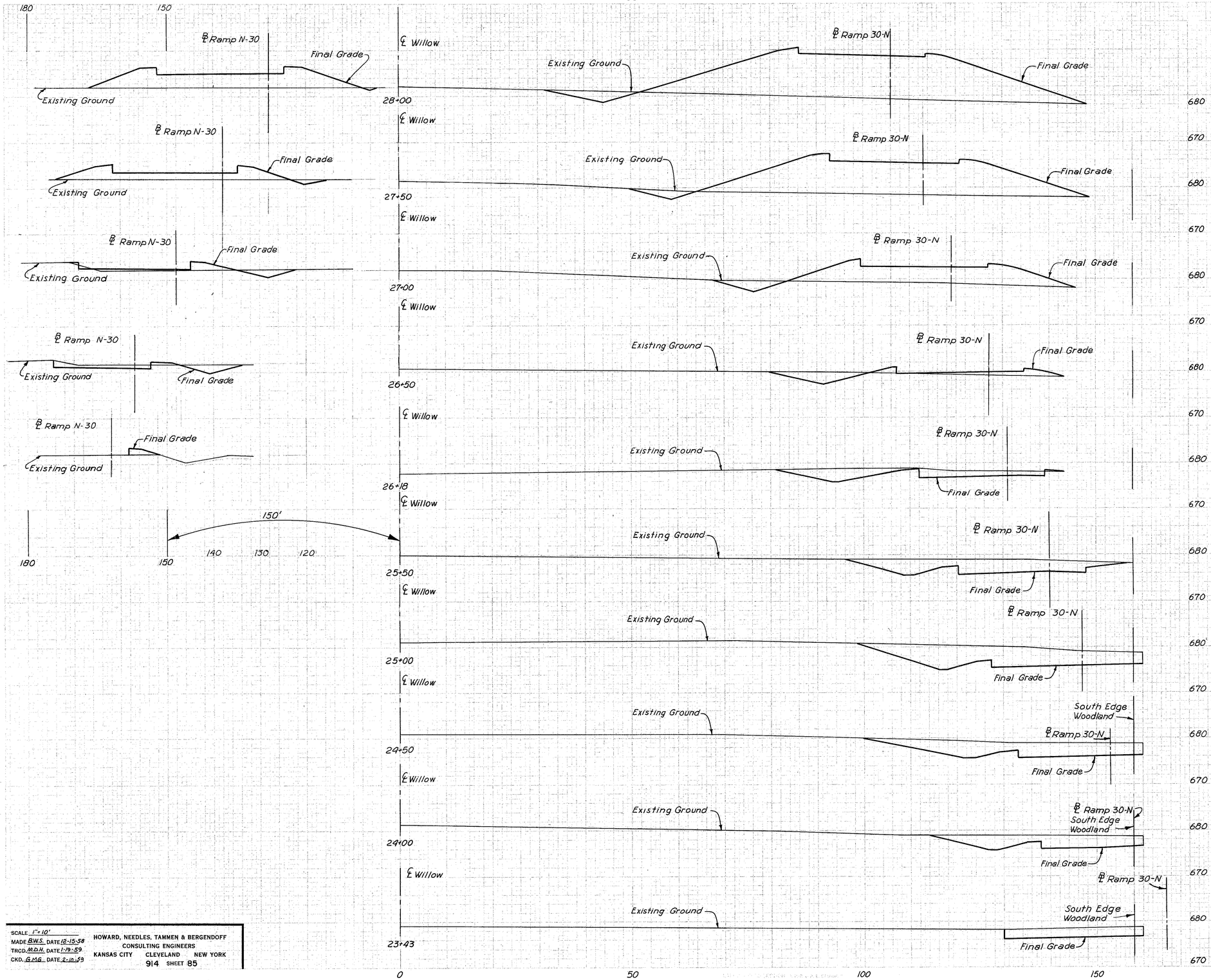
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914 SHEET 84

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

85
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



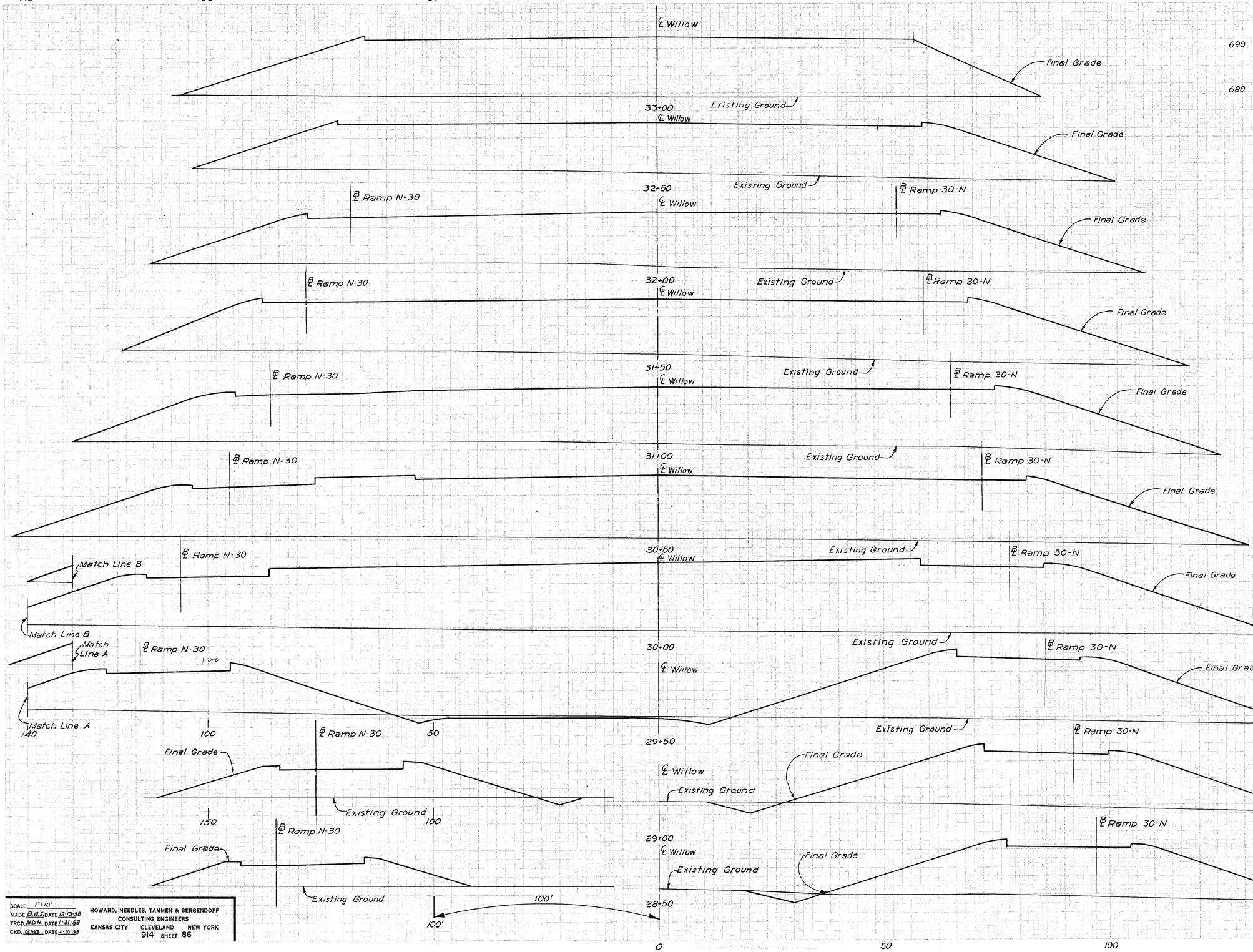
	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
28+00					26	823		
							43	1258
27+50					20	536		
							48	683
27+00					22	202		
							88	211
26+50					63	26		
							83	20
26+18					77	7		
							277	9
25+50					143	0		
							326	0
25+00					209	0		
							330	0
24+50					147	0		
							232	0
24+00					104	0		
							175	0
23+43					62	0		

SERIES J
WILLOW FREEWAY SECTIONS
STA.23+43 TO STA.28+00

SCALE 1"=10'
MADE B.W.S. DATE 12-15-58
TRCD. M.D.H. DATE 1-19-59
CKD. G.M.G. DATE 2-10-59

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

914 SHEET 85



FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

86
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
690								
680								
670 690	33+00					2032		
							0	3644
680	32+50					1903		
670 690							0	3761
680	32+00					2159		
							0	4306
670 690	31+50					2491		
680							0	4765
	31+00					2655		
670 690							0	5368
680	30+50					3142		
							0	6278
670 690	30+00				0	3638		
680							43	5013
	29+50				46	1776		
670 690							71	2944
680	29+00				31	1403		
							47	2347
670 690	28+50				20	1132		
680							43	1810
670 690	28+00 (See Sheet 85)				26	823		

SERIES J
WILLOW FREEWAY SECTIONS
STA. 28+50 TO STA. 33+00

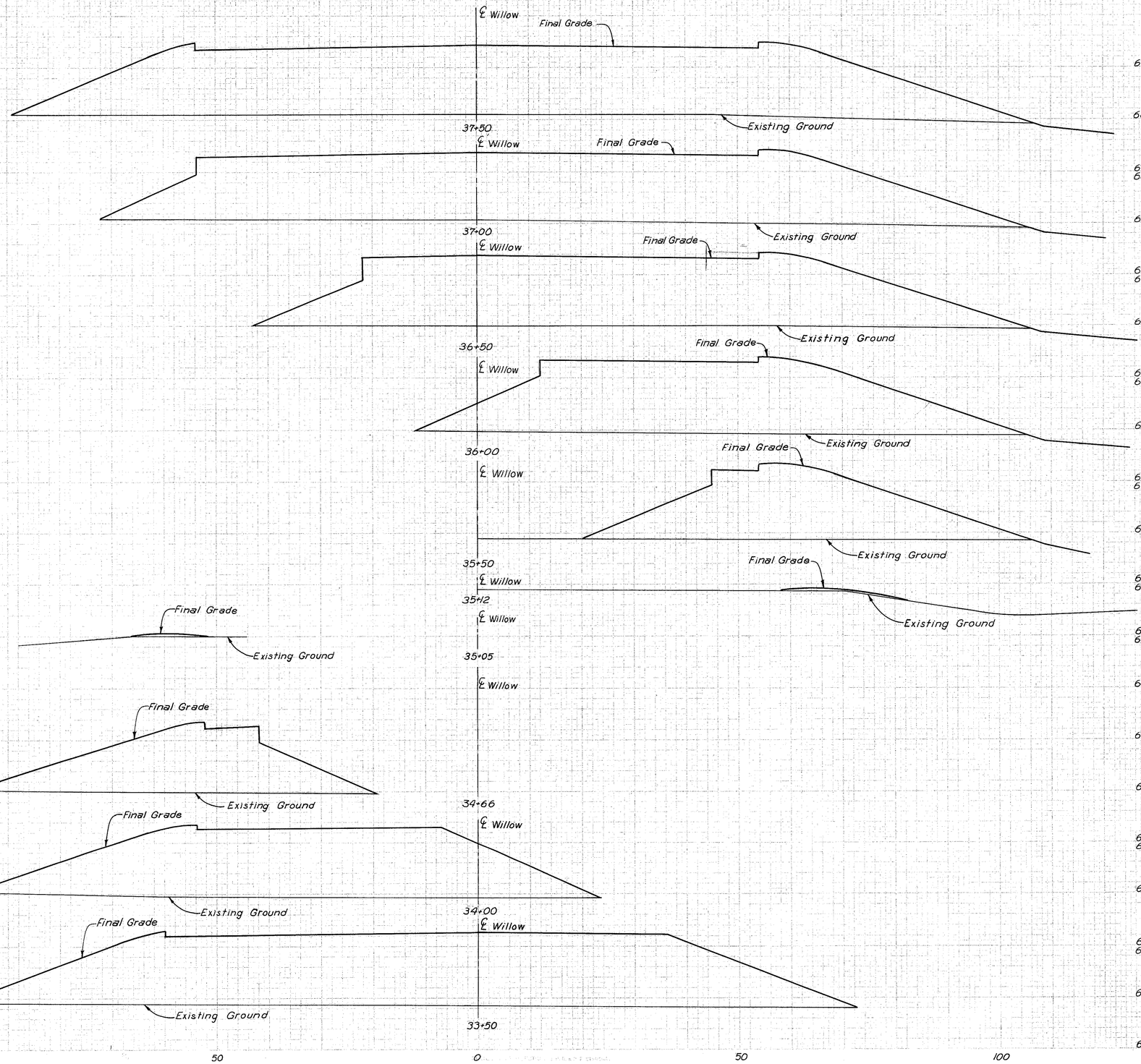
SCALE 1"=10'
MADE B.W.S. DATE 12-13-58
TRCD. M.D.H. DATE 1-21-59
CKD. G.M.G. DATE 2-10-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 86

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

87
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
				0	2095		
						0	3673
				0	1872		
						0	3170
				0	1552		
						0	2504
				0	1152		
						0	1730
				0	716		
						0	506
				0	3		
				0	2		
						0	417
				0	576		
						0	2161
				0	1192		
						0	2852
				0	1888		
						0	3630
				0	2032		

Series K

Series J

(See Sheet 86)

SERIES J WILLOW FREEWAY SECTIONS
STA. 33+50 TO STA. 35+05

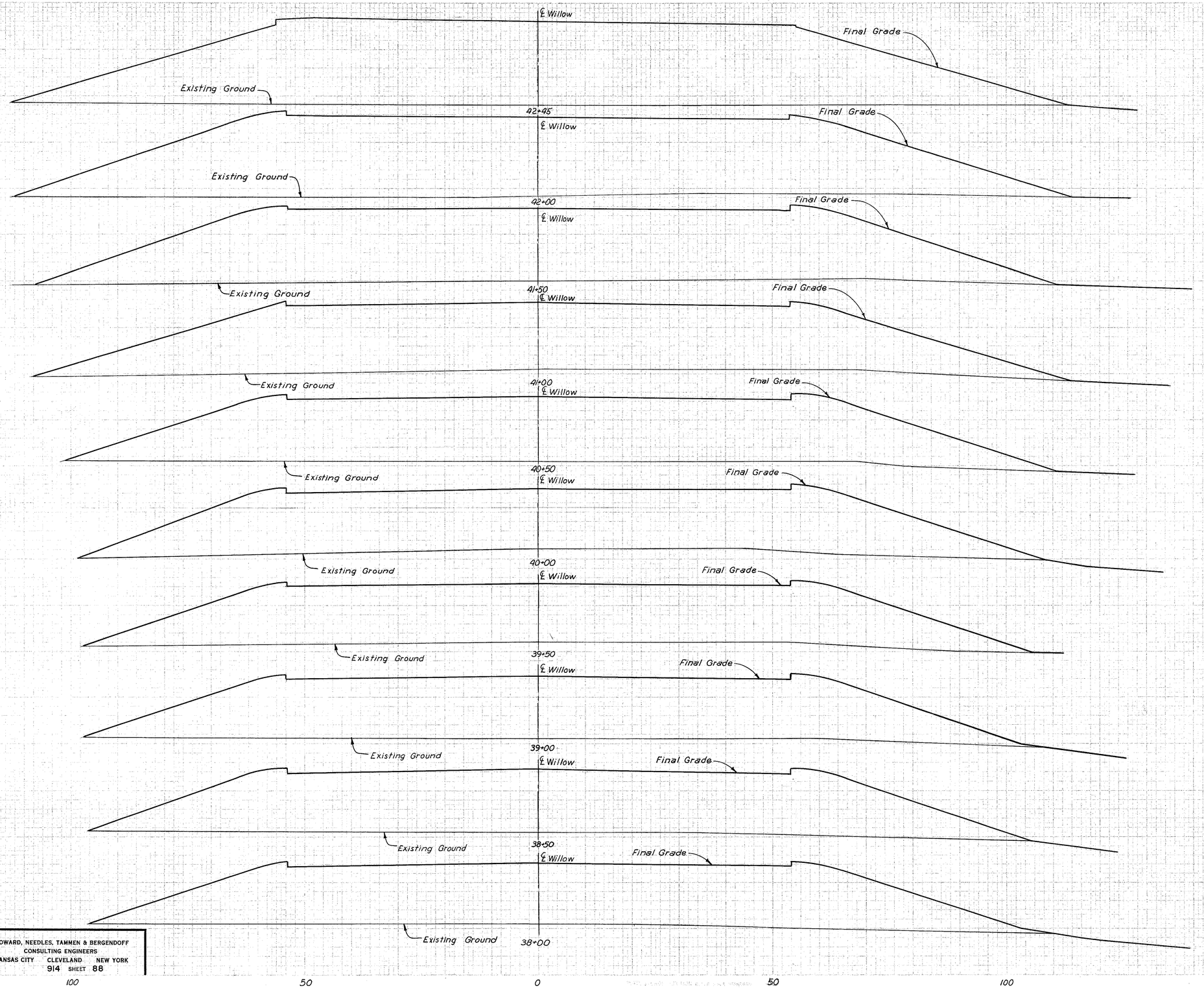
SERIES K WILLOW FREEWAY SECTIONS
STA. 35+12 TO STA. 37+50

SCALE 1"=10'
MADE G.W.S. DATE 12-12-58
TRCD. M.O.H. DATE 1-21-59
CKD. G.M.G. DATE 2-10-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 87

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	88 / 181
2	OHIO			

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
42+45					0	3008		
							0	5007
42+00					0	3000		
							0	5230
41+50					0	2948		
							0	4708
41+00					0	2437		
							0	4432
40+50					0	2350		
							0	4194
40+00					0	2180		
							0	3954
39+50					0	2090		
							0	3935
39+00					0	2160		
							0	4015
38+50					0	2176		
							0	4012
38+00					0	2157		
							0	3937
37+50					0	2045		

(See Sheet 87)

SERIES K
WILLOW FREEWAY SECTIONS
STA. 38+00 TO STA. 42+45

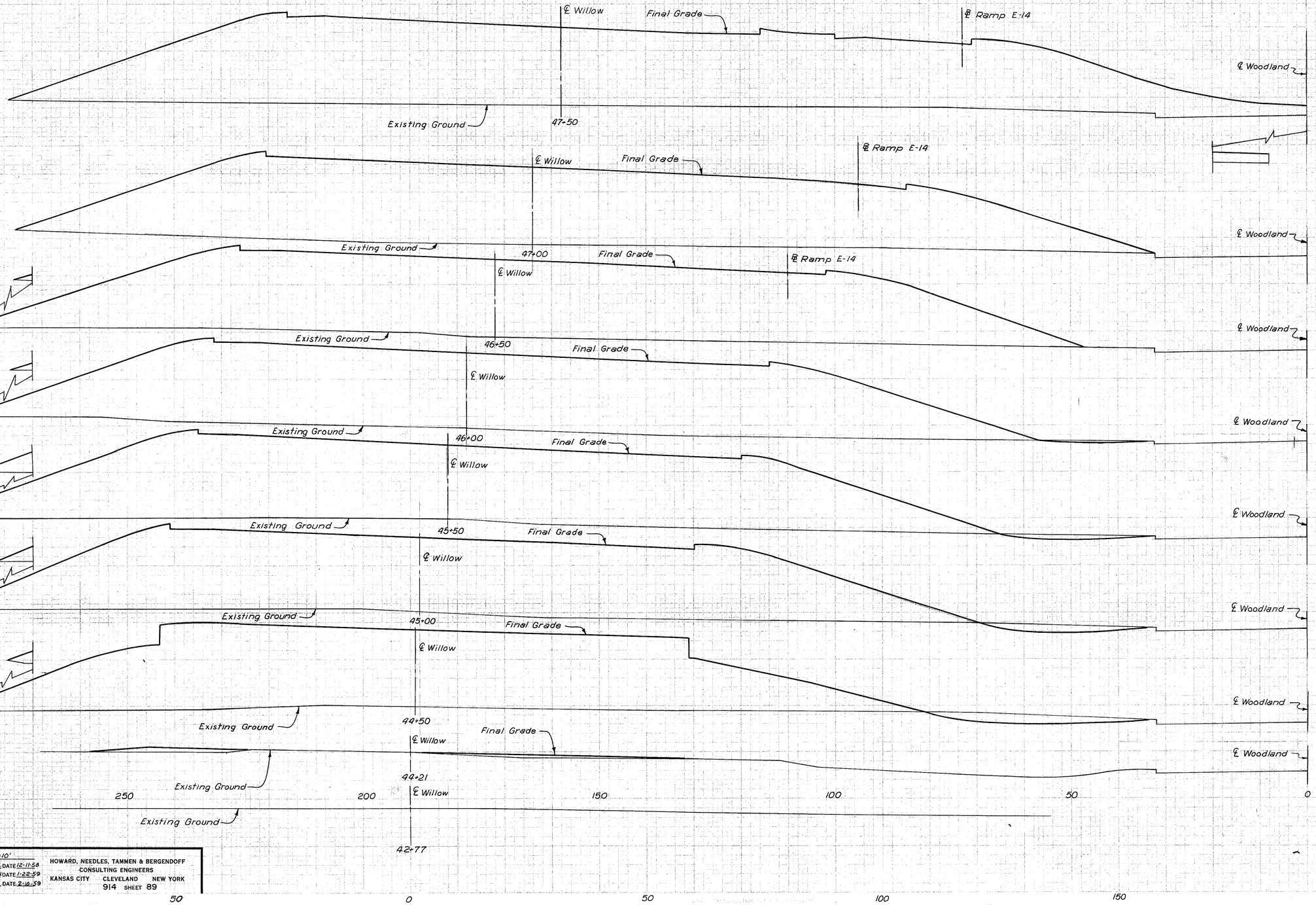
SCALE 1"=10'
MADE B.W.S. DATE 12-12-58
TRCD. M.D.H. DATE 1-21-59
CKD. G.M.G. DATE 2-10-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 88

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

89
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32



STA.	SEEDING WIDTH L.F.	SEEDING AREA SQ.YD.	SUBBASE AREA S.F.	SUBBASE VOL. C.Y.	EARTHWORK END AREA EXC.	EARTHWORK END AREA EMB.	VOLUME EXC.	VOLUME EMB.
690								
680								
670	47+50				0	3540		
							0	6160
690	47+80				0	3113		
							0	5673
680								
	46+80				0	3014		
670							6	5505
690								
	46+60				7	2931		
680							21	5443
	46+50				23	2947		
670								
690							63	5323
680	45+60				45	2802		
							109	4967
670								
690	44+50				73	2562		
							39	1402
680								
	44+21				0	48		
670								
690	Series L							
680	Series K							
	42+77				0	0		
670								
690							0	1783
680	42+45 (See Sheet 88)				0	3008		
670								
680								
670								

SERIES K
WILLOW FREEWAY SECTIONS
STA. 42+77
SERIES L
WILLOW FREEWAY SECTIONS
STA. 44+21 TO STA. 47+50

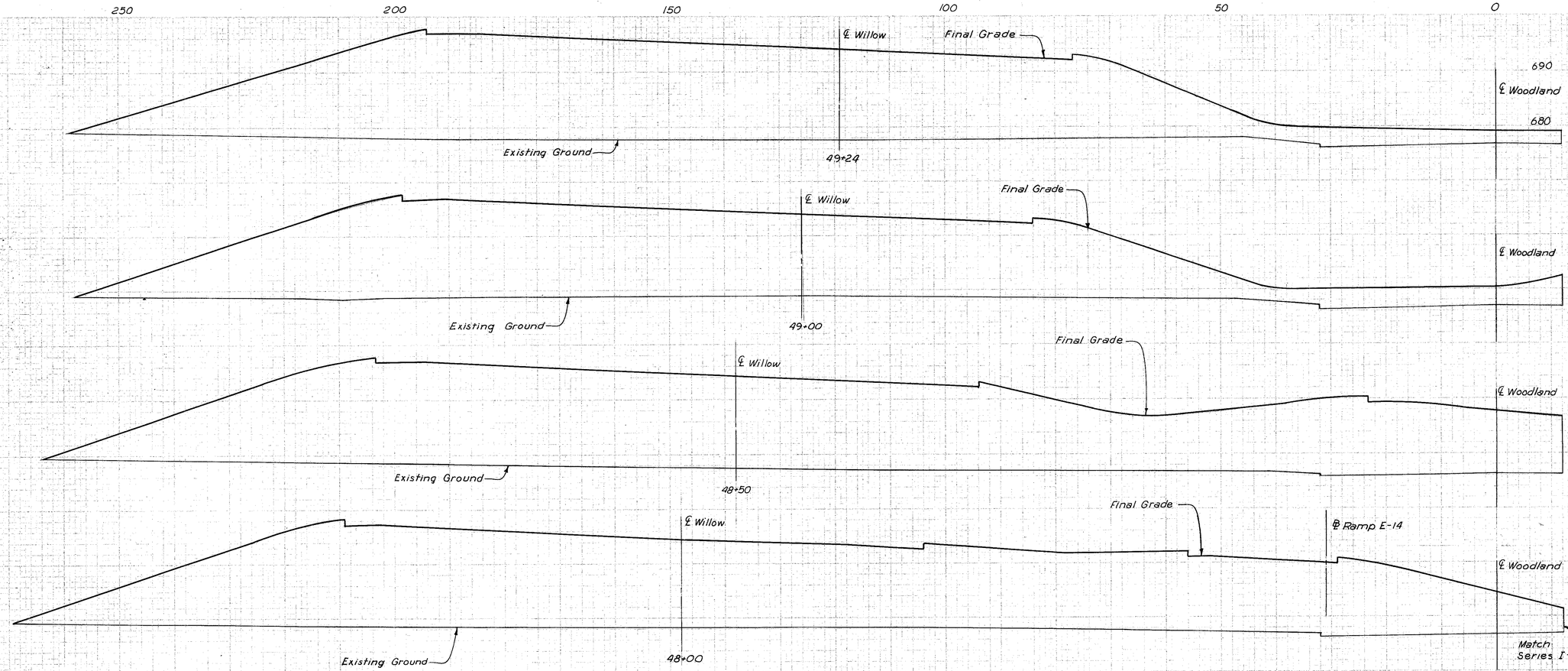
SCALE 1"=10'
MADE BWS DATE 12-11-58
TRCD. M.D.H DATE 1-22-59
CKD. G.M.G. DATE 2-10-59

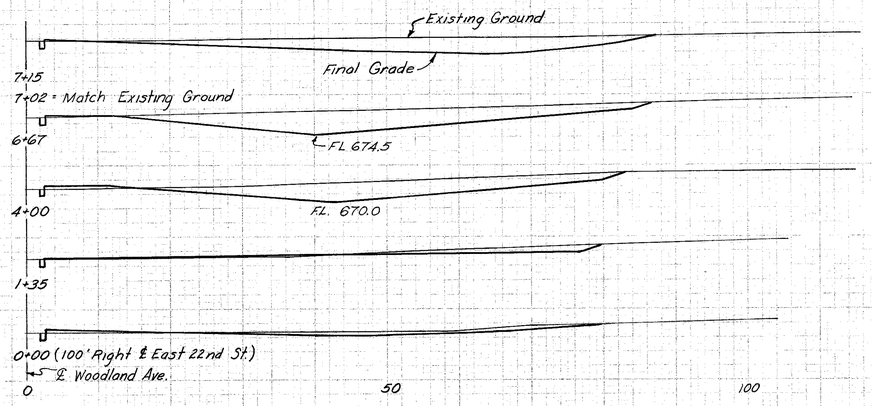
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 89

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32





SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
				0	3188		
						0	2790
				0	3089		
						0	6629
				0	4070		
						0	7332
				0	3849		
						0	6842
				0	3540		
				99	1		
						24	0
				0	0		
						86	1
				133	2		
						1162	40
				102	6		
						589	128
				18	20		
						93	58
				19	3		

47+50 (See Sheet 89)
Series L
Series M
7+15
7+02
6+67
4+00
1+35
0+00
Series M

SERIES L
WILLOW FREEWAY SECTIONS
STA. 48+00 TO 49+24

SERIES M
WOODLAND AVE. SECTIONS
STA. 0+00 TO STA. 7+15

SCALE 1"=10'
MADE B.W.S. DATE 12-11-58
TRCD. MDH DATE 1-22-59
CKD. GMG DATE 2-10-59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 90

6-33

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS

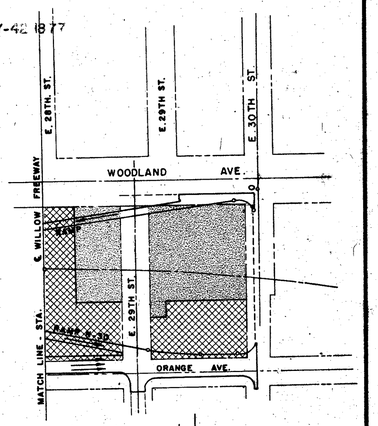
91
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

SCHEMATIC PLAN OF RIGHT OF WAY

LEGEND

- Previously Acquired
- Part 6 R.O.W.
- Part 7 R.O.W.
- Acquired for Project CUY-42 18 77



SCALE 1" = 150'
MADE JLC DATE 3-25-59
TRCD. R.R. DATE 3-27-59
CKD. JLC DATE 11-12-59

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

914 S. 91

CUY-90-16.37

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

91A
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

RIGHT OF WAY
SUMMARY

RIGHT OF WAY SUMMARY

SHEET NO.	PARCEL NO.	OWNER	AREA	BLDGS	REMARKS
87	216LA	HAROLD SOGLOVITZ, ET AL.	ALL	NO	
87	220LA	MAURICE NECAMKEN	ALL	YES	
"	221LA	MARGHERITA SANSON	ALL	YES	
"	222LA	MACHELENA SANSONE	ALL	YES	
87	225LA	H. & F. REALTY CO.	ALL	YES	
87	282LA	CENTRAL NATIONAL BANK, TRUSTEE (FARMER'S MARKET)	8,054	YES	
"	283LA	GAITANO ZINGALES	960	NO	
"	284LA	FRANK SCAINGULA	960	YES	
"	285LA	GAITANO & G. ZINGALES	480	YES	
88	365LA	JOHN J. SULLIVAN, SR.	300	YES	
"	366LA	V. GENTILE	998	YES	
"	367LA	J. BURGIO	1,402	YES	
88	441LA	H. J. PATTISON	10,590	NO	
"	442LA	A. JOHNSON	ALL	YES	
"	443LA	WALTER & G. ATTAWAY	ALL	YES	
"	444LA	C. R. & E. HEMMINGWAY	ALL	YES	
"	445LA	CLEVELAND TRUST CO.	8,730	NO	
"	446LA	C. PAUL	3,776	YES	
"	447LA	C. M. BLANK	3,245	NO	
"	450LA	JESSIE MC GHEE	3,751	YES	
"	451LA	J. ROBBINS	870	YES	
89	488LA	EDWIN I. & DIANE R. FERTMAN	1,148	YES	
89	490LA	WELDON REALTY CO.	4,798	YES	
89	492LA	AARON, ET AL.	2,117	NO	
"	493LA	PAULINE MC PHAIL	1,253	YES	
"	494LA	PETER PERILIO	1,132	YES	
"	495LA	TESSIE GALLETTI	1,561	YES	
"	496LA	GULF REFINING CO.	1,877	YES	
89	509LA	THE MITTELMAN CO.	646	YES	
"	516	CLEVELAND FED. OF MUSICIANS LOCAL N. 4 AFM	4,991	YES	
"	517LA	COLETTE SCHLEICHER, ET AL.	1,456	YES	
"	518LA	THE TRUNDLE CONSULTANTS INC.	2,275	YES	
"	519LA	THE TRUNDLE CONSULTANTS INC.		NO	
90	548LA	RAYMOND L. WEISFIELD	ALL	YES	
"	549LA	ETHEL B. LUX	ALL	YES	
"	550LA	JAKE M. & FRIEDA BERGER	ALL	YES	
"	551LA	MEYER & JENNIE GREENES	ALL	YES	
90	553LA	FLAVIA NASTASI	ALL	NO	
"	554LA	NETTIE CARCIONE	ALL	YES	
"	555LA	RENA ALSBACHER, ET. AL.	ALL	YES	
"	556LA	NETTIE CARCIONE	ALL	NO	
"	557LA	JOSEPHINE LOMBARDO, ET AL.	ALL	YES	
"	558LA	NETTIE CARCIONE	ALL	YES	
90	560LA	JENNIE CASTELLANA PASSAFIUME	ALL	YES	
90	806LA	THE MITTLEMAN CO.	ALL	YES	
"	807LA	CATHERINE E. WENHAM	ALL	NO	
"	808LA	BESSIE KIRSHENBAUM	ALL	YES	
"	809LA	STELLA LA QUATRA	ALL	YES	
"	810LA	JOHN GRECO	ALL	YES	
"	811LA	ANGELINE LA MONTIA	ALL	NO	
"	812LA	H. & F. REALTY CO., INC.	ALL	YES	
"	813LA	SARAH SOBO, TR.	ALL	YES	
"	814LA	GRACE & A. G. PALMERI	ALL	YES	
"	815LA	JOHN GRECO	ALL	YES	
"	816LA	GRACE & A. G. PALMERI	ALL	NO	

SCALE None
MADE J.L.C. DATE 11.6.59
TRCD. DATE
CKD. J.L.O. DATE 11.6.59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET- 91A

PART 7

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

92
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

INNER BELT FREEWAY
RAMP E-3
RAMP E-18
RAMP E-6
RAMP E-7
RAMP E-10
RAMP E-15
WOODLAND AVE. 99'
DECATUR CT. 16.5'
EAST 9TH PL. 16.5'
EAST 9TH ST. 66'
JOHN BARR'S SUBD.
UNRECORDED ALLOT.
EAST 14TH ST. 84.80'
BROADWAY 99'
BROADWAY 100'
EAST BOUND BROADWAY
ANDES CT. 16.5'
EAST 9TH ST. 82.5'
ORANGE AVE. 80'
PERRY ESTATE PART
EAST 15TH ST. 55'
BROADWAY 86'
Limits of Construction Part 6
See Right Edge
See Insert
Match Line
10' outside toe of slope
Note: No Federal participation

R/W Acquired for project CUY. 42-18.02

SCALE	1"-50'	HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE	JLC DATE 2-11-59	CONSULTING ENGINEERS
TRCD.	RB DATE 2-11-59	KANSAS CITY CLEVELAND NEW YORK
CKD.	JFS DATE 11-18-59	914 SHEET 92

J.L.C.	Revised Const. Adj. to E.B. Brdwy.	10-30-59
J.L.C.	Revised Parcel Numbering System	4-6-59
J.L.C.	Revised Limits of Grading	2-26-59
MADE	REVISION	DATE

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

R/W Aquired for Project CUY. 42-18.02

CARNEGIE AVE. 99'
EAST 12TH ST. 60'
EAST 13TH ST. 60'
EAST 10TH ST.
WEBSTER AVE. 60'
SCOVILL AVE. 60'
EAST 9TH ST. 99'
E. 9TH PL. 165'
EDWARDS CT.
GARDINER CT. 165'
COLUMBUS CT. 165'
PARKMAN CT. 125'
HINDOO CT. 125'
ALLEN AVE. 45'
WOODLAND AVE. 99'
EAST 14TH ST. 80'

RAMP E-5
RAMP E-10
RAMP E-17
RAMP E-3
RAMP E-18
RAMP E-6
RAMP E-7
RAMP E-8
RAMP E-9
66" Sewer to be constructed under Part 6
Limits of Const. Part 7
Limits of Const. Part 6
Limits of Construction Part 6
INNER BELT FREEWAY
Ramp E-6 0+00
Gas Pump
Corrugated Roof
Market Stalls
Const. Slab over Basement
12" Wall - 4 High
Check Previous Contract

RICHARD BOEHM ALLOT.
EDITH TAYLORS RESUBD.
UNRECORDED ALLOT.

SCALE 1"-50'
MADE JLC DATE 2-11-59
TRCD RR DATE 2-11-59
CKD JFS DATE 11/12/59
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 93

MADE	REVISION	DATE
R.J.K.	Added and removed Bldgs.	11-13-59
J.L.C.	Revised Parcel Numbering System	4-6-59
J.L.C.	Revised Limits of Grading	2-26-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

94
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

948 EAST 14 ST. 848'
Westerly Line Sublot No. 26 — Westerly Line Sublot No. 51

EAST 14TH ST. 80'

RAMP E-15 · RAMP E-7 · RAMP E-10 · RAMP E-8 · RAMP E-17 · RAMP E-17 · RAMP E-14

MALDA AUBURNDALE

SOUTH BOUND SCOVILL

PHILO SCOVILL ALLOT.

SOUTH BD. 14 TH STREET

N.B. E. 14TH. ST.

REAR C.T. 12'

SUBD.

Limits of Construction Part 6

EAST 19TH ST. 66'

Limit of Construction Part 7

MARAH EVERETT SUBD.

Concrete Wall 6½'

Brk. Smoke Stack

Concrete Wall 2.0' x 10' Thick

Concrete Walk - Roof on Top

ISRAELITE BAPTIST CHURCH

PERRY ESTATE

Playground

Storage Yard

PART

RAMP E-14

EAST 20TH ST. 50'

HARMON & PARKS ALLOT.

EAST 21ST ST. 10.75'

Limits of Const. Part 6

E. A. SCOVILL ALLOT.

THOMAN CT. 12.75'

EAST 22ND ST. 60'

C NEW ORANGE AVE. 80'

ORANGE AVE.

WOODLAND AVE. 99'

SCOVILL AVE. 60'

HOFFMAN & THORMAN RE-SUBD.

Part 6 Limit of Construction

HOFFMAN & THORMAN RE-SUBD.

FREEWAY

COORDINATES		
Pt.*	N	E
K_R	87988.637	91205.500
L_R	87971.870	91074.402
M_R	87971.179	90972.557
N_R	87968.625	90895.111
P_R	87527.098	90773.756
Q_R	87489.685	90796.660
R_R	87318.050	90749.486
S_R	87221.650	90753.066
V_W	87115.102	90835.026

* Pertains to R.O.W. sheets only.

SCALE 1"=50'
MADE J.L.C. DATE 2-11-59
TRCD. R.R. DATE 2-11-59
CKD. J.F.S. DATE 11/2/59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 94

MADE	REVISION	DATE
J.A.G.	Added and removed Bldgs.	11-13-59
G.M.G.	Deleted E 20th. St. Connection & Affected R/W	10-26-59
R.J.K.	Removed 1 & 2 Story Frame Bldg. - 283 LA	6-16-59
J.L.C.	Revised Parcel Numbering System	4-6-59
J.L.C.	Revised Limits of Grading	2-26-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-42-18.42
CUY-21-15.32

COORDINATES		
Pt.*	N	E
G_W	88575.758	90819.932
H_W	88551.457	90807.019
I_W	88474.800	90693.206
J_W	88451.768	90658.798
K_W	88432.842	90626.796
L_W	88413.557	90593.512
M_W	88394.204	90550.423
N_W	88399.579	90546.769
O_W	88479.631	90489.354
P_W	88513.295	90459.100
Q_W	88581.186	90436.710
R_W	88624.290	90365.245
S_W	88684.085	90374.430
T_W	88749.741	90382.863
U_W	88809.695	90382.070
T_R	88538.572	91132.798
U_R	88515.042	91072.408
V_R	88429.921	90966.132
W_R	88406.822	90935.961
X_R	88311.277	90793.747
Y_R	88252.806	90777.713
Z_R	88222.140	90862.626
A	88653.435	90900.006
B	88588.348	90836.180
C_O	88680.321	90438.319
D_O	88543.262	90204.542
E_O	88451.461	90175.993

* Pertains to R.O.W. Sheets only.

MADE	REVISION	DATE
A.E.K.	Added and removed Bldgs.	11-13-59
J.L.C.	Revised Taking Line for 438 LA, 441 LA, 452 LA, 454 LA & 455 LA	10-30-59
R.J.K.	Added Frame Double Garage-446 LA	6-16-59
J.C.T.	Revised Taking Line for Parcels 426 LA & 437 LA	5-26-59
J.L.C.	Revised Parcel Numbering System	4-6-59
J.L.C.	Revised Limits of Grading	2-26-59

SCALE 1"=50'
MADE JLC DATE 2-11-59
TRCD. RR DATE 2-11-59
CKD. JFS DATE 11/2/59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 SHEET 95

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
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EAST 19TH ST 66'
CARNEGIE AVE. 86'
CHARITY AVE. 28'
CENTRAL AVE. 66'
WEST BOUND SCOVILL
EAST BOUND SCOVILL
SCOVILL AVE 60'
CHARITY AVE. 20'
℄ INNER BELT FREEWAY
EAST 20TH ST. 50'
EAST 21ST. ST. 49'
EAST 21ST. ST. 66'
EAST 22ND ST. 60'
℄ CEDAR RELOCATION
RAMP E-11
RAMP E-15
Limits of Construction Part 6
Limits of Construction Part 7
Limits of Const. Part 6
Limits of Construction Part 7
UNRECORDED LOT.
PILLO SCOVILL
2 St. Brk. & Conc. Bldg.
CRAIG'S ALLOT.
ALLOT.
1 Story Brick Garage
3 St. Br.
1 St. Brick & Conc. Block
2 St. Brick
2 St. Br.
1 St. Br.
2 St. Frame
2 St. Fr.
2 St. Fr. House
1 St. Fr.
1 St. Br. Gar.
2 St. Br. Bldg.
1 St. Sheet Metal Garage
3 St. Br. Bldg.
2 St. Br. Bldg.
1 St. Iron Gas Sta
1 St. Br. Bldg.
2 St. Fr. Dbl. House
13 St. Brk. & Brk.
Platform
1 St. Corr. Metal
1 St. Sheet Metal
461 LA
467 LA
468
469 LA
470
471
472
473
474
476
477
478
479
488 LA
490 LA
492 LA
493 LA
494 LA
495 LA
496 LA
509 LA
516 LA
517
518 LA
519 LA

R/W Acquired for Project CUY. 42-18.77

* Pertains to R.O.W. sheets only.

COORDINATES

Pt*	N	E
W_R	88406.715	90935.926
Z_R	88222.140	90862.626
F_O	88192.717	91010.095
G_O	88359.749	91116.038
H_O	88334.650	91161.005
J_O	88164.024	91171.249
K_O	88143.407	91279.847
L_O	88110.550	91424.153
M_O	88161.090	91469.113
N_O	88540.322	91182.982
P_O	88537.264	91234.892
Q_O	88557.231	91236.038
R_O	88576.781	91346.291
S_O	88578.072	91358.387
T_O	88588.051	91410.055
U_O	88588.283	91535.465
V_O	88577.396	91568.898
W_O	88712.835	91009.303
X_O	88743.131	91044.432
Y_O	88902.581	91127.865
Z_O	89090.298	91174.041
A_W	89100.803	91183.614
B_W	89131.473	91179.103
C_W	89145.914	91155.155
D_W	88544.831	91574.276

MADE	REVISION	DATE
R.J.K.	Removed and added Bldgs.	11-13-59
G.M.G.	Deleted E. 20th. St. Connection & Affected R/W	10-30-59
J.L.C.	Revised Parcel Numbering System	4-6-59
J.L.C.	Revised Limits of Grading	2-26-59

SCALE 1"=50'
MADE JLC DATE 2-1-59
TRCD RD DATE 2-11-59
CKD JFS DATE 11/21/63

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
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FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	FUNDS
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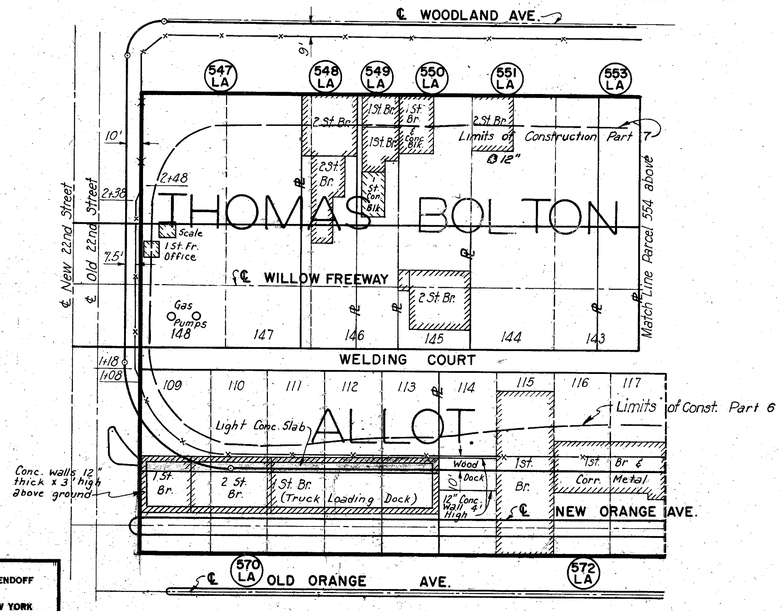
Part 6 - Construction Limits
Limits of Construction - Part 7
WOODLAND AVE.
Part 6 Construction Limits
RELOCATED WOODLAND
Match Line Parcel 453 below
THOMAS BOLTON
H. TAYLOR & SON
J.M. HOYT
JOHN ERWIN SLADE, TAYLOR & HOYTS ALLOT
JOSEPH PERKINS ALLOT
WILLOW FREEWAY
RAMP 30-N
RAMP N-30
E. 25TH ST. 60'
E. 27TH ST. 60'
E. 29TH ST. 60'
E. 30TH ST. 50'
WELDING COURT
ALLOT.
Limits of Construction - Part 6
Limits of Const. Part 6
Limits of Construction - Part 7
Limits of Construction - Part 6
Heavy conc. wall 3' high above ground
1 St. Sheet Metal & Fr. Garage with Heavy Conc. Slab
Truck Loading Dock
Heavy conc. wall 3' high above ground
1 Sty. Fr. & Br. with heavy conc. slab (Truck Loading Dock)
NEW ORANGE AVE.
Part 6 - Construction Limits
ORANGE AVE. 80'
MAYFLOWER RD. 80'
60.33'
Limits of Construction - Part 6
Limits of Construction Part 6
ALLEY 125'



A.E.K.	Added and removed Bldgs.	11-13-59
J.L.C.	Revised Parcel Numbering System	4-6-59
J.L.C.	Revised Limits of Grading	2-26-59
MADE	REVISION	DATE

SCALE 1"=50
MADE JLC DATE 2-11-59
TRCD. GR DATE 2-11-59
CKD. JFS DATE 11/12/59
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY CLEVELAND NEW YORK
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J-17

DESIGN SPECIFICATIONS

DESIGN SPECIFICATIONS FOR HIGHWAY STRUCTURES OF THE STATE OF OHIO, DEPARTMENT OF HIGHWAYS, DATED SEPTEMBER 1, 1957, AND REVISED FEBRUARY 21, 1958.

SUPPLEMENTAL SPECIFICATIONS

REFERENCE SHALL BE MADE TO SUPPLEMENTAL SPECIFICATIONS NO. S-207, HIGH STRENGTH STEEL BOLTS, DATED APRIL 28, 1955, AND NO. M-206.14 ASBESTOS CEMENT CONDUIT DATED JULY 15, 1949, AND S-101 DATED 12-2-59

REFERENCE DRAWINGS

REFERENCE SHALL BE MADE TO STANDARD DRAWING NUMBERS RB-1-55 REVISED 2/2/59, AR-1-57 REVISED 2/2/59, AND TO AS-1-54 REVISED 12/1/54.

DIMENSIONS

DIMENSIONS GIVEN ARE MEASURED HORIZONTALLY AND AT 60°F. UNLESS OTHERWISE NOTED.

UTILITIES

ANY EXISTING UTILITY FACILITIES ENCOUNTERED AT THE SITE OF THE WORK WHICH WILL INTERFERE WITH PORTIONS OF THE FINISHED ROADWAYS OR STRUCTURES WILL BE REMOVED OR RELOCATED BY OTHERS, UNLESS OTHERWISE SHOWN. 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.

EXISTING SEWERS WILL BE RELOCATED OR REMOVED BY THE CONTRACTOR AS SHOWN ON THE ROADWAY PLANS.

EXCAVATION

AT THE PIERS THE EXCAVATION QUANTITY FOR PAYMENT WILL BE COMPUTED FROM THE COMPLETED CONSTRUCTION CROSS SECTIONS AND GRADE LINES OF THE LOWER ROADWAY.

FOR THE ABUTMENTS THE EXCAVATION QUANTITY FOR PAYMENT WILL BE COMPUTED FROM THE COMPLETED CROSS SECTION OF THE LOWER ROADWAY AND/OR THE SURFACE OF THE PROPOSED EMBANKMENT.

THE EMBANKMENT SHALL BE PLACED AND COMPACTED UP TO THE FINISHED SPILL-THRU SLOPE AND TO THE LEVEL OF THE SUBGRADE, AFTER WHICH THE EXCAVATION SHALL BE MADE. BACKFILL BEHIND THE ABUTMENTS SHALL BE MADE WITH MATERIAL MEETING THE REQUIREMENTS OF SEC. I-22 AND SHALL BE COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS FOR EMBANKMENT COMPACTION. THE PAYMENT FOR THIS I-22 BACKFILL SHALL BE CONSIDERED AS INCLUDED IN THE PAYMENT FOR E-2. UNCLASSIFIED EXCAVATION.

BORINGS

BORING INFORMATION, LOGS AND SAMPLES OF MATERIALS ENCOUNTERED MAY BE EXAMINED AT THE DIVISION OFFICE IN GARFIELD HEIGHTS, OHIO AND AT THE BRIDGE BUREAU OFFICE IN COLUMBUS, OHIO, BUT THE STATE DOES NOT GUARANTEE THESE BORINGS TO PRESENT A COMPLETE PICTURE OF SUBSURFACE CONDITIONS TO BE ENCOUNTERED. FOUNDATION DESIGN AND FOUNDATION QUANTITIES ARE BASED ON A STUDY OF THE BORINGS.

PILING

PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 35 TONS FOR THE ABUTMENTS AND 45 TONS FOR THE PIERS.

CONCRETE

a. THE CONCRETE ROADWAY SLABS SHALL BE SO CONSTRUCTED THAT, AFTER COMPLETION AND AFTER REMOVAL OF FORMS AND ANY FALSEWORK, AND AFTER THE STEELWORK HAS DEFLECTED UNDER THE WEIGHT OF THE CONCRETE, THE TOP SURFACE OF THE ROADWAY SHALL CONFORM AS NEARLY AS PRACTICABLE TO THE ELEVATIONS AND CONTOUR LINES SHOWN ON THE PLANS.

b. THE TOTAL DEPTH OF THE BRIDGE SLAB AND HAUNCH OVER EACH BEAM (TOP OF CONCRETE TO TOP OF FLANGE) OR GIRDER (TOP OF CONCRETE TO TOP OF WEB) AT THE SUPPORTS IS GIVEN ON THE PLANS. THE STEEL BEAMS AND GIRDERS SHALL BE FABRICATED WITH THE CAMBER, AS SPECIFIED ON THE PLANS, TO COMPENSATE FOR THE DEFLECTIONS DUE TO WEIGHT OF CONCRETE AND STEEL.

THE THEORETICAL DEFLECTIONS ARE TABULATED ON THE PLANS. TO COMPENSATE FOR DEFLECTIONS DUE TO THE DEAD LOAD OF THE CONCRETE THE SCREEDS USED TO STRIKE OFF THE SURFACE OF THE CONCRETE SLAB SHALL BE SET UP WITH CAMBER ABOVE THE FINAL DESIRED GRADE LINE BY AMOUNTS EQUAL TO DEFLECTIONS SHOWN FOR THIS DEAD LOAD. SCREEDS MAY REQUIRE FURTHER ADJUSTMENT DUE TO IRREGULARITIES IN THE FABRICATED STEEL. THE CONCRETE SLAB SHALL BE OF UNIFORM THICKNESS BETWEEN BEAMS WITH CAMBER SETTING OBTAINED BY VARYING THE THICKNESS OF THE HAUNCHES OVER THE BEAMS.

REINFORCING STEEL

BARS SHALL, UNLESS OTHERWISE SHOWN, BE 3 INCHES CLEAR FROM THE FACE OF CONCRETE IN FOOTINGS AND 2 INCHES CLEAR ELSEWHERE, EXCEPT IN SLABS WHERE BARS SHALL BE 1 INCH CLEAR ON THE BOTTOM AND 1 INCH PLUS THE THICKNESS OF THE MONOLITHIC WEARING SURFACE ON THE TOP.

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.

IF REINFORCING BARS ARE FABRICATED FROM STOCK WHICH HAS PREVIOUSLY BEEN TESTED AND APPROVED BY THE OHIO HIGHWAY TESTING LABORATORY, TEST SAMPLES AS PROVIDED IN SEC. S-4.02 NEED NOT BE FURNISHED, AND REPLACEMENT BARS WILL NOT BE REQUIRED.

WATERPROOFING

ALL CONTRACTION AND EXPANSION JOINTS IN BACK FACE OF SUBSTRUCTURE AGAINST WHICH EARTH IS TO BE PLACED SHALL BE WATERPROOFED WITH A PREMOLDED SEALING STRIP OR TYPE "B" WATERPROOFING AS SHOWN IN THE PLANS.

WELDING

ALL WELDING SHALL BE CLASS "A" EXCEPT AS NOTED IN THE TAIL OF THE WELDING SYMBOL. B

RADIOGRAPHIC EXAMINATION OF WELDS

THIS WORK SHALL CONSIST OF THE PERFORMANCE AND INTERPRETATION OF A RADIOGRAPHIC EXAMINATION OF BUTT WELDS AS REQUIRED BY THESE SPECIFICATIONS. IT SHALL INCLUDE THE PREPARATION AND POSITIONING OF WELDS FOR EXAMINATION, THE RADIOGRAPHING OF WELDS, THE PROCESSING AND EXAMINATION OF RADIOGRAPHS, THE INTERPRETATION OF RADIOGRAPHS FOR COMPLIANCE WITH THESE SPECIFICATIONS, AND THE PERFORMANCE AND INTERPRETATION OF ANY RETAKES OF RADIOGRAPHS REQUIRED FOR WELDS MADE TO REPLACE UNSATISFACTORY WELDS.

a. APPROVAL OF DIRECTOR

THE CONTRACTOR SHALL FURNISH EVIDENCE, ACCEPTABLE TO THE DIRECTOR, OF THE ADEQUACY OF THE EQUIPMENT TO BE USED AND THE COMPETENCE OF THE PERSONNEL.

THE INTERPRETATION OF RADIOGRAPHS AND THE CORRECTION OF DEFECTIVE WELDS SHALL BE SUBJECT TO THE APPROVAL OF THE DIRECTOR.

b. SCOPE OF EXAMINATION

BY MEANS OF RADIOGRAPHIC EXAMINATION, THE CONTRACTOR SHALL FURNISH EVIDENCE OF THE ACCEPTABLE QUALITY OF THE BUTT WELDS OF ALL GIRDERS. THE PARTS OF THESE MEMBERS TO BE RADIOGRAPHED ARE AS FOLLOWS:

(1) THE COMPLETE BUTT WELDS IN THE FLANGES OF EACH GIRDER EXCEPT THE BOTTOM FLANGE OVER THE BEARING DEVICES.

(2) ONE FOOT AT EACH END OF EACH OF THE WEB SPLICE WELDS.

THE SHOP EXAMINATION OF THE BUTT WELDS OF THE FLANGE PLATES AND OF THE WEB PLATES SHALL BE DETERMINED TO BE ACCEPTABLE BEFORE THESE FLANGE AND WEB PLATES ARE ASSEMBLED AND WELDED TO FORM THE GIRDERS. THE EXAMINATION OF FIELD WELDS SHALL BE MADE AS SOON AS PRACTICABLE AFTER WELDING AT EACH FIELD SPLICE IS COMPLETED.

RADIOGRAPHIC INSPECTION OF WELDS OF ROLLED BEAMS WILL NOT BE REQUIRED.

c. WELD CONDITION

ALL WELDED JOINTS WHICH ARE TO BE RADIOGRAPHED SHALL BE FREE OF PAINT, SCALE AND GREASE AND SHALL BE FOUND FREE OF ALL WELD RIPPLES AND SURFACE IRREGULARITIES ON BOTH SIDES. THE DIRECTION OF GRINDING SHALL BE PERPENDICULAR TO THE LENGTH OF THE WELD. THE WELDS SHALL BE GROUND TO SUCH A DEGREE THAT THE RESULTING RADIOGRAPHIC CONTRAST, DUE TO REMAINING IRREGULARITIES, CANNOT MASK OR BE CONFUSED WITH THAT OF ANY OBJECTIONABLE DEFECT AND THAT THE WELD SURFACE WILL MERGE SMOOTHLY INTO THE PLATE SURFACE. UNLESS SPECIFIED TO BE GROUND FLUSH, THE FINISHED SURFACE OF THE REINFORCEMENT MAY HAVE A CROWN EQUAL TO ONE-EIGHTH THE THICKNESS OF THE METAL BUT NOT MORE THAN ONE-EIGHTH INCH.

d. RADIOGRAPHIC TECHNIQUE

THE WELD SHALL BE RADIOGRAPHED WITH A TECHNIQUE WHICH WILL DETERMINE QUANTITATIVELY THE SIZE OF DEFECTS WITH THICKNESSES EQUAL TO OR GREATER THAN 2 PER CENT OF THE THICKNESS OF THE BASE METAL. IN THE CASE OF A WELD JOINING PLATES OF UNEQUAL THICKNESS, BOTH PLATES MUST BE RADIOGRAPHED AT 2 PER CENT SENSITIVITY TOGETHER OR SINGLY, WITH THE WELD JUNCTION EVIDENT IN BOTH VIEWS.

TO DETERMINE WHETHER THE RADIOGRAPHIC TECHNIQUE EMPLOYED IS DETECTING DEFECTS OF A THICKNESS EQUAL TO OR GREATER THAN 2 PER CENT OF THE THICKNESS OF THE BASE MATERIAL, THICKNESS GAGES OR PENETRAMETERS OF THE TYPE HEREINAFTER SPECIFIED SHALL BE PLACED ON THE SIDE OF THE WELDED PLATE NEAREST THE SOURCE OF RADIATION AT AN EXTREME EDGE OF THE RADIOGRAPHIC PLATE OR FILM.

THE MATERIAL OF THE PENETRAMETER SHALL BE SUBSTANTIALLY THE SAME AS THAT OF THE WELDED PLATE.

THE THICKNESS OF THE PENETRAMETER SHALL BE NOT MORE THAN 2 PER CENT OF THE THICKNESS OF THE PLATE EXCLUSIVE OF ANY WELD REINFORCEMENT. PENETRAMETERS DESIGNED FOR INCREMENTS OF 1/8" OF PLATE THICKNESS ARE ACCEPTABLE.

IN EACH PENETRAMETER THERE SHALL BE THREE HOLES WITH DIAMETERS EQUAL RESPECTIVELY TO TWO, THREE, AND FOUR TIMES THE PENETRAMETER THICKNESS, BUT IN NO CASE SHALL LESS THAN 1/16" DIAMETER BE USED.

EACH PENETRAMETER SHALL CARRY AN IDENTIFYING NUMBER REPRESENTING IN TWO SIGNIFICANT FIGURES THE MINIMUM THICKNESS IN INCHES OF THE PLATE FOR WHICH IT MAY BE USED. PENETRAMETERS MAY BE ESTABLISHED FOR DIFFERENCES IN THICKNESS NOT TO EXCEED 1/8" SO THAT A SET OF PENETRAMETERS VARYING FOR INCREMENTS OF PLATE THICKNESS OF 1/8" WILL BE ADEQUATE TO SERVE PLATES HAVING THICKNESSES BETWEEN THESE 1/8" DIMENSIONS.

THE IMAGES OF IDENTIFYING NUMBERS AND THE HOLES OF EACH PENETRAMETER MUST APPEAR CLEARLY ON THE RADIOGRAPH TO ESTABLISH THE 2 PER CENT SENSITIVITY.

FOR PLATES UP TO AND INCLUDING 2-1/2" IN THICKNESS, EACH PENETRAMETER SHALL BE 1-1/2" LONG AND 1/2" WIDE. FOR PLATES THICKER THAN 2-1/2", EACH PENETRAMETER SHALL BE 2-1/4" LONG AND 1" WIDE.

THE FILM DURING EXPOSURE SHALL BE AS CLOSE TO THE WELD AS PRACTICABLE. IF POSSIBLE, THIS DISTANCE SHALL BE NOT GREATER THAN 1 INCH. IN ANY EVENT, THE RATIO

$$\frac{\text{DISTANCE FROM SOURCE OF RADIATION TO WELD SURFACE TOWARD RADIATION}}{\text{DISTANCE FROM WELD SURFACE TOWARD RADIATION TO FILM}}$$

SHALL BE AT LEAST 7 TO 1.

ALL RADIOGRAPHS SHALL BE FREE FROM EXCESSIVE MECHANICAL PROCESSING DEFECTS WHICH WOULD INTERFERE WITH PROPER INTERPRETATION OF THE RADIOGRAPH.

IDENTIFICATION MARKERS, THE IMAGES OF WHICH WILL APPEAR ON THE FILM, SHALL BE PLACED ADJACENT TO THE WELD, AND THEIR LOCATIONS SHALL BE ACCURATELY AND PERMANENTLY MARKED ON THE OUTSIDE SURFACE NEAR THE WELD SO THAT A DEFECT APPEARING ON THE RADIOGRAPH MAY BE ACCURATELY LOCATED.

THE SIZE OF FILM TO BE USED SHALL BE at least 4" WIDE x 15" LONG UNLESS PERMISSION TO USE A DIFFERENT SIZE IS OBTAINED IN WRITING FROM THE DIRECTOR

e. STANDARDS OF ACCEPTABILITY

THE ACCEPTABILITY OF THE WELDS EXAMINED BY RADIOGRAPHY SHALL BE JUDGED BY THE FOLLOWING STANDARDS.

(1) CRACKS:

DEFINITION - A DISCONTINUITY RESULTING FROM A VERY NARROW SEPARATION OF METAL.

STANDARD - NO WELD CONTAINING CRACKS, REGARDLESS OF LENGTH, SIZE OR LOCATION, SHALL BE CONSIDERED ACCEPTABLE.

(2) GAS POROSITY:

DEFINITION - GAS POCKETS OR VOIDS IN METAL.

STANDARD - THE MAXIMUM DIMENSION OF ANY INDIVIDUAL GAS POCKET SHALL NOT EXCEED 1/8 INCH. THE MAXIMUM ACCUMULATION OF GAS POCKETS SHALL NOT EXCEED THAT SHOWN IN THE "POROSITY STANDARDS" OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

(3) SLAG INCLUSIONS:

DEFINITION - NONMETALLIC, SOLID MATERIAL ENTRAPPED IN WELD METAL OR BETWEEN WELD METAL AND BASE METAL.

STANDARD-A - ELONGATED SLAG INCLUSIONS: NO ELONGATED SLAG INCLUSION SHALL EXCEED TWO-THIRDS OF THE THICKNESS OF THE THINNER PLATE OF THE JOINT IN LENGTH AND 1/16" IN WIDTH, EXCEPT THAT REGARDLESS OF THE PLATE THICKNESS, NO SUCH INCLUSION SHALL BE LONGER THAN 3/4" AND EXCEPT THAT NO SUCH INCLUSION WHICH IS SHORTER THAN 1/4" SHALL BE CAUSE FOR REJECTION.

B - ISOLATED SLAG INCLUSIONS: IN ANY 12 INCH LENGTH OF WELD, THE MAXIMUM WIDTH OF ANY ISOLATED SLAG INCLUSION SHALL NOT EXCEED 1/8 INCH, THE SUMMATION OF LENGTHS OF ISOLATED SLAG INCLUSIONS SHALL NOT EXCEED 1 INCH, AND THERE SHALL BE NO MORE THAN FOUR ISOLATED SLAG INCLUSIONS OF THE MAXIMUM WIDTH OF 1/8 INCH. ANY TWO SUCH INCLUSIONS SHALL BE SEPARATED BY AT LEAST 2 INCHES OF SOUND WELD METAL.

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(4) INCOMPLETE FUSION:

DEFINITION - FAILURE OF THE WELD METAL TO FUSE COMPLETELY WITH THE BASE METAL OR PRECEDING BEADS.

STANDARD - NO INDIVIDUAL LACK OF FUSION SHALL EXCEED 1/2 INCH IN LENGTH. IN ANY 12 INCH LENGTH OF WELD, THE SUMMATION OF LENGTHS OF LACK OF FUSION SHALL NOT EXCEED 3/4 INCH AND INDIVIDUAL DEFECTS SHALL BE SEPARATED BY AT LEAST 6 INCHES OF SOUND METAL.

(5) INCOMPLETE PENETRATION:

DEFINITION - ROOT PENETRATION WHICH IS LESS THAN COMPLETE OR FAILURE OF A ROOT PASS AND A BACKING PASS TO FUSE WITH EACH OTHER.

STANDARD - NO INDIVIDUAL LACK OF PENETRATION SHALL EXCEED 1/2 INCH IN LENGTH. IN ANY 12 INCH LENGTH OF OF WELD, THE SUMMATION OF LENGTHS OF LACK OF PENETRATION SHALL NOT EXCEED 3/4 INCH AND INDIVIDUAL DEFECTS SHALL BE SEPARATED BY AT LEAST 6 INCHES OF SOUND METAL.

f. REPAIR OF DEFECTIVE WELDS

DEFECTIVE WELDS SHALL BE REPAIRED BY CHIPPING OR MELTING OUT SUCH DEFECTS FROM ONE OR BOTH SIDES OF THE JOINT AS REQUIRED, REMOVING ONLY SUFFICIENT WELD METAL TO CORRECT THE DEFECT. THE JOINT SHALL THEN BE REWELDED AND AGAIN RADIOGRAPHED.

g. ADDITIONAL RADIOGRAPHS

WHEREVER AN UNACCEPTABLE WELD OCCURS, A RADIOGRAPH SHALL BE MADE OF THE ADJOINING 12-INCH LENGTHS OF WELD TO DETERMINE IF THE FLAWS EXTEND BEYOND THE LIMITS OF THE ORIGINAL RADIOGRAPH. IF UNACCEPTABLE FLAWS OCCUR IN THESE ADJOINING LENGTHS OF WELD, THESE DEFECTIVE WELDS SHALL BE REPAIRED, AND THIS ENTIRE PROCEDURE REPEATED FOR THE NEXT ADJOINING 12-INCH LENGTH OF WELD.

h. CUSTODY OF RADIOGRAPHS

AS SOON AS THE RADIOGRAPHING OF THE WELDMENTS ON THE FULL LENGTH OF EACH FLANGE OR WEB PLATE BETWEEN FIELD SPLICES HAS BEEN COMPLETED, THE CONTRACTOR SHALL SEND TO THE STATE THE PROCESSED CONTACT FILM (THAT FILM CLOSEST TO THE SOURCE OF RADIATION) OF ALL ORIGINAL AND RETAKE RADIOGRAPHS. THESE RADIOGRAPHS SHALL BE ACCOMPANIED BY A CERTIFICATION FROM THE CONTRACTOR THAT THE RADIOGRAPHIC EXAMINATION WAS PERFORMED IN CONFORMANCE WITH THESE SPECIFICATIONS. THE RADIOGRAPHS SHALL BECOME THE PROPERTY OF THE STATE. EACH RADIOGRAPH SHALL BE CLEARLY IDENTIFIED TO SHOW THE LOCATION ON THE STRUCTURE AT WHICH IT WAS TAKEN. UNACCEPTABLE DEFECTS SHALL BE IDENTIFIED IN EACH RADIOGRAPH IN WHICH THEY OCCUR, AND THE REPAIR OR REPLACEMENT OF EACH UNACCEPTABLE WELD DEFECT SHALL BE NOTED AND IDENTIFIED.

i. REPORT OF COST

AFTER THE COMPLETION OF THE RADIOGRAPHIC INSPECTION OF WELDS, THE CONTRACTOR SHALL FURNISH THE STATE A COMPLETE REPORT OF THE COST OF PERFORMING THIS WORK, SEPARATED INTO THE ITEMS MENTIONED IN THE FOLLOWING PARAGRAPH.

j. BASIS OF PAYMENT

PAYMENT FOR THIS WORK, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR S-7, "STRUCTURAL STEEL."

PART 7-A

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

GENERAL NOTES

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN H.A.M.	TRACED	CHECKED J.G.T.	REVIEWED JCF	REVISED
DATE 10-4-57	DATE	DATE 11-10-59	DATE 11-10-59	SHEET 98

W-F 21160

CUYAHOGA COUNTY
CITY OF CLEVELAND
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CUY -42-18.42

PAINTING

PAINTING OF SUPERSTRUCTURE METALWORK SHALL BE ACCORDING TO ITEM S-8 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS EXCEPT AS MODIFIED HEREIN.

A. COATS OF PAINT. THE PAINT SHALL BE APPLIED BY BRUSHING IN FOUR COATS AS FOLLOWS:
   a. A FIRST COAT OF RED LEAD PAINT APPLIED IN THE SHOP ON CLEAN METAL SURFACES PREPARED FOR PAINTING AS SPECIFIED IN SEC. S-8.03.
   b. A SECOND COAT OF RED LEAD PAINT APPLIED IN THE FIELD AFTER ERECTION. FOR SURFACES THAT WILL BE INACCESSIBLE AFTER ERECTION, THIS SECOND COAT MAY BE APPLIED EITHER IN THE SHOP OR IN THE FIELD.
   c. A THIRD AND A FOURTH COAT CONSISTING OF WHITE LEAD PAINT. THE FOURTH COAT SHALL BE TINTED A MEDIUM SHADE OF GRAY THAT MEETS THE APPROVAL OF THE DIRECTOR OF HIGHWAYS AND THE CITY OF CLEVELAND.
   d. LIGHT STANDARDS SHALL BE PAINTED WITH TWO FIELD COATS OF DARK GREEN WEATHER RESISTING ENAMEL AFTER ERECTION. THE FIRST FIELD COAT SHALL BE TINTED.

B. MATERIALS
   a. THE PAINT TO BE USED FOR THE FIRST AND SECOND RED LEAD COATS SHALL BE OF THE FOLLOWING COMPOSITION AND PROPERTIES:

PIGMENT
RED LEAD (97% GRADE)----------99.6% (MINIMUM)
ALUMINUM STEARATE---------- 0.3-0.4%

VEHICLE
RAW LINSEED OIL---------- 35% to 50%
*PALE HEAT BODIED LINSEED OIL (Z_2)----------15% to 30%
VOLATILE MINERAL SPIRITS AND DRIER---------- 35%(MAXIMUM)
*THE ACID NUMBER OF THIS OIL SHALL NOT BE OVER 11, THE COLOR NOT DARKER THAN 7 (GARDINER 1933) AND SHALL HAVE A WIJS IODINE VALUE OF 110-125.

PAINT	FIRST COAT	SECOND COAT
PIGMENT	73%(MINIMUM)----------	----77%(MIN.)
VEHICLE	27%(MAXIMUM)----------	----23%(MAX.)
WEIGHT PER GALLON	21.0 LBS. (MINIMUM)----------	----24.0 LBS. (MIN.)
CONSISTENCY	175 GRAMS TO 250 GRAMS	(ASTM METHOD D562-42-T OR FEDERAL SPECIFICATION TT-P-141a, METHOD 428.1)
FINENESS OF GRIND	5 (MINIMUM)	

DRYING TIME:
SET TO TOUCH----6 HOURS (MAXIMUM)
DRY THROUGH----36 HOURS (MAXIMUM)

THE PAINT SHALL BE WELL GROUND, SHALL NOT SETTLE EXCESSIVELY OR CAKE IN THE CONTAINER, SHALL BE READILY BROKEN UP WITH A PADDLE TO A SMOOTH UNIFORM PAINT HAVING GOOD BRUSHING PROPERTIES. THE PAINT WHEN BRUSHED ON A CLEAN, SMOOTH STEEL PANEL MAINTAINED IN A VERTICAL POSITION, SHALL DRY TO A SMOOTH UNIFORM FINISH FREE FROM ROUGHNESS, GRIT, UNEVENNESS, STREAKING, SEPARATION, RUNNING, CURTAINING AND SAGGING.

FOR CONTRAST BETWEEN THE FIRST AND SECOND COATS, THE SECOND COAT SHALL BE TINTED WITH LAMPBLACK-IN-OIL TO CHANGE ITS COLOR TO A CHOCOLATE BROWN.

   b. THE WHITE LEAD THIRD AND FOURTH COATS OF PAINT SHALL CONFORM TO THE FOLLOWING:

1. TYPE. THIS SPECIFICATION COVERS A GRADE OF READY-MIXED LINSEED OIL WHITE OR TINTED PAINT MADE ON A WHITE LEAD (BASIC LEAD CARBONATE) BASE SUITABLE FOR USE AS FINISH COATS ON EITHER WOOD OR METAL AND AFTER THINNING (SEC. M-9.7 (b) AS A PRIME COAT FOR WOOD.

COMPOSITION AND PROPERTIES

2. PIGMENT. THE PIGMENT SHALL BE BASIC CARBONATE WHITE LEAD CORRESPONDING APPROXIMATELY TO THE FORMULA 2 Pb CO_3: $Pb(OH)_2$. IT SHALL MEET THE FOLLOWING COMPOSITION REQUIREMENTS:

	MAXIMUM PER CENT	MINIMUM PER CENT
BASIC CARBONATE WHITE LEAD		
LEAD CARBONATE ($PbCO_3$)----------	75	65
LEAD HYDROXIDE ($Pb(OH)_2$)----------	35	25
OTHER PIGMENTS*----------	0.0	--

*TINTING COLORS NOT TO EXCEED 5 PER CENT OF THE TOTAL PIGMENT MAY BE ADDED WHEN A TINTED PAINT IS REQUIRED.

3. LIQUID. THE LIQUID SHALL CONTAIN NOT LESS THAN 85 PER CENT RAW OR BOILED LINSEED OIL (SEC. M-9.1 OR M-9.2), THE BALANCE COMBINED DRIER (SEC. M-9.5) AND THINNER. THE THINNER SHALL BE TURPENTINE (SEC. M-9.3), MINERAL SPIRITS (SEC. M-9.4) OR A MIXTURE THEREOF.

4. FINISHED PAINT. THE PAINT SHALL BE WELL GROUND, SHALL NOT SETTLE TO THE EXTENT THAT THE PIGMENT CANNOT BE READILY AND UNIFORMLY DISPERSED THROUGHOUT THE VEHICLE OR CAKE IN THE CONTAINER AND SHALL BE READILY BROKEN UP BY STIRRING AND BOXING TO A SMOOTH, UNIFORM PAINT OF GOOD BRUSHING CONSISTENCY. WHEN BRUSHED ON A SMOOTH VERTICAL TIN PANEL IT SHALL DRY WITHIN 18 HOURS WITHOUT STREAKING, RUNNING OR SAGGING. THE COLOR AND HIDING POWER, WHEN SPECIFIED, SHALL BE EQUAL TO THOSE OF A SAMPLE MUTUALLY AGREED UPON BY THE LABORATORY AND THE SELLER. THE PAINT SHALL ALSO MEET THE FOLLOWING REQUIREMENTS:

	MAXIMUM	MINIMUM
PIGMENT----------	75%	71%
LIQUID (CONTAINING AT LEAST 85 PER CENT LINSEED OIL)----------	29%	25%
PIGMENT BY VOLUME (BASED ON TOTAL NON-VOLATILE PORTION OF PAINT)----------	32%	28%
WATER----------	0.2%	----
COARSE PARTICLES AND "SKINS" (TOTAL RESIDUE RETAINED ON NO. 325 SIEVE; BASED ON PIGMENT)----------	2.0%	----
WEIGHT PER GALLON----------	-----	19.5 Lbs.
DRYING TIME----------	18 Hrs.	----

   c. THE TWO COATS OF DARK GREEN WEATHER RESISTING ENAMEL SHALL CONFORM TO THE SPECIFICATIONS OF THE CITY OF CLEVELAND, DIVISION OF LIGHT AND POWER.

LIGHTING SYSTEM

GENERAL

THIS SPECIFICATION SUPPLEMENTS THE STATE OF OHIO CONSTRUCTION AND MATERIAL SPECIFICATIONS DATED JANUARY 1, 1959, FOR THE MATERIALS USED AND FOR THE INSTALLATION OF ROADWAY AND UNDERDECK LIGHTING UNITS FOR THE WILLOW-INNER BELT FREEWAY STRUCTURES. THE TYPE AND LOCATION OF LIGHTS AND CONDUITS ON THE BRIDGES AND RETAINING WALLS SHALL BE AS INDICATED ON THE PLANS.

THE CONTRACTOR SHALL CONSULT AND COOPERATE WITH THE CLEVELAND DIVISION OF LIGHT AND POWER AND THE CLEVELAND ELECTRIC ILLUMINATING COMPANY.

THE CONTRACTOR SHALL FURNISH AND INSTALL LIGHTING EQUIPMENT AS SHOWN ON THE PLANS AND AS FURTHER DESCRIBED HEREIN AND ON SHEET 48.

INSOFAR AS PRACTICABLE, ALL MAJOR ITEMS OF ELECTRICAL EQUIPMENT SHALL CONSIST OF PRODUCTS OF THE SAME MANUFACTURER, IN ORDER TO SECURE SINGLE RESPONSIBILITY AND MOST SATISFACTORY SERVICE. REFERENCE TO ANY NAME, MAKE OR MANUFACTURER'S NUMBER FOR AN ARTICLE OF EQUIPMENT OR MATERIAL IS INTENDED TO BE DESCRIPTIVE, BUT NOT RESTRICTIVE AND IS INTENDED TO INDICATE THE MATERIALS THAT WILL BE ACCEPTABLE.

BEFORE COMMENCEMENT OF INSTALLATION, A COMPLETE SCHEDULE OF MATERIALS AND EQUIPMENT PROPOSED FOR INSTALLATION SHALL BE SUBMITTED FOR THE APPROVAL OF THE ENGINEER. THE SCHEDULE SHALL INCLUDE CATALOG CUTS, DIAGRAMS, AND OTHER SUCH DESCRIPTIVE DATA AS MAY BE REQUIRED BY THE ENGINEER. 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.

MATERIALS AND EQUIPMENT

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; HOT-DIP GALVANIZING WILL BE CONSIDERED SUCH APPROVED TREATMENT. 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.

LIGHT STANDARDS SHALL CONFORM AS NEARLY AS POSSIBLE TO THIS SPECIFICATION AS TO GENERAL DESIGN AND FINISH, HEIGHT, BASE, BRACKET, DIMENSIONS AND TO METHOD OF FABRICATION, AND SHALL BE SIMILAR TO UNION METAL COMPANY DESIGN NO. 70161-23.

IN GENERAL, EACH STANDARD SHALL CONSIST OF A CAST STEEL ANCHOR BASE TO WHICH SHALL BE WELDED A TAPERED STEEL POLE. TO THE STEEL POLE SHALL BE FASTENED AN ORNAMENTAL POLE TOP TO WHICH SHALL BE WELDED A BRACKET FOR SUPPORTING THE LIGHTING UNIT.

THE STEEL SHAFT OF THE LIGHTING STANDARDS SHALL BE FABRICATED FROM NOT LESS THAN NO. 11 MANUFACTURER'S STANDARD GAUGE. THE SHAFT SHALL BE FORMED AND WELDED WITH ONLY ONE LONGITUDINAL, AUTOMATICALLY, ELECTRICALLY WELDED JOINT AND SHALL HAVE NO HORIZONTAL JOINTS OR WELDS. THE WELD SHALL BE OF FULL PENETRATION.

AFTER FORMING AND WELDING, THE TAPERED SHAFT SHALL BE COLD ROLLED OR WORKED UNDER SUFFICIENT PRESSURE TO FLATTEN OUT THE WELD, TO INCREASE THE ELASTIC LIMIT OF THE METAL IN THE COMPLETED SHAFT, AND TO PRODUCE A TRUE TAPERED TUBE WITHOUT FLAT SPOTS AND A CIRCULAR CROSS-SECTION THROUGHOUT THE LENGTH OF THE SHAFT. IF THE SHAFT IS FABRICATED BY MEANS OF A BRAKE OR OTHER PROCESS WHICH DOES NOT UTILIZE THE COLD ROLLING PRINCIPLE, IT SHALL BE FABRICATED FROM A STEEL SHEET HAVING A THICKNESS OF NO. 7 MANUFACTURER'S STANDARD GAUGE.

EACH STANDARD SHALL HAVE A BRACKET MADE OF STANDARD PIPE OF THE SIZE AND LENGTH AS SHOWN ON THE PLANS. THE INNER END OF THE BRACKET ARM SHALL BE WELDED TO A CAST STEEL HEAD BLOCK SO DESIGNED THAT THE BLOCK CAN BE BOLTED THROUGH A CAST IRON NECK PIECE TO A PLATE WELDED TO THE TOP OF THE POLE TO PERMIT RADIAL ADJUSTMENT OF THE BRACKET. PROVISIONS SHALL BE MADE TO PERMIT PASSAGE OF THE CONCEALED WIRES TO BRACKET. THE ORNAMENTAL CASTING WELDED TO THE OUTER END OF THE BRACKET SHALL BE ARRANGED WITH A LEVELING DEVICE OR "PLUMBIZER" FOR ADJUSTMENT OF A PENDANT LIGHTING FIXTURE AND SHALL BE TAPPED FOR 1-1/4 INCH PIPE CONNECTIONS. THE ANCHOR BOLTS SHALL BE OF THE SIZE AND MATERIALS AS SHOWN ON SHEETS 122 AND 176. EACH POLE BASE SHALL HAVE A 2-INCH, SHOP BENT, RIGID GALVANIZED ELBOW, FROM JUNCTION BOX AND EXTENDED AT LEAST 3 INCHES ABOVE TOP OF CONCRETE.

EACH POLE SHALL HAVE TWO 9/16 INCH HOLES PROVIDED, WHERE SHOWN ON SHEET 176 ALL POLES AND BRACKETS SHALL HAVE ONE FACTORY APPLIED PRIMER COAT, TOUCHED UP, AND THEN SHALL HAVE TWO FIELD COATS APPLIED OF DARK GREEN WEATHER-RESISTING ENAMEL, CONFORMING TO THE SPECIFICATIONS OF THE CITY OF CLEVELAND, DIVISION OF LIGHT AND POWER. FINISH FIELD COATS SHALL BE APPLIED AFTER ERECTION. THE FIRST FIELD COAT SHALL BE TINTED.

CONDUIT IN PARAPETS OF BRIDGES AND IN RETAINING WALLS SHALL BE OF ASBESTOS CEMENT CONFORMING TO SUPPLEMENTAL SPECIFICATION NO. M-206.14 OR FIBER EQUIVALENT TO ORANGEBURG NOCRETE. THE CONDUITS SHALL BE 2-INCH INSIDE DIAMETER AND SHALL BE PLACED AS SHOWN ON BRIDGE DECK AND RETAINING WALL PLANS AND DETAILS.

THE JUNCTION BOX AT EACH ROADWAY LIGHTING UNIT ON BRIDGES AND RETAINING WALLS FOR BRANCHES TO LIGHTS FROM THE 2-INCH LONGITUDINAL CONDUIT RUNS SHALL BE WATER-TIGHT AND MOUNTED IN PARAPETS, CURBS AND WALLS WHERE INDICATED. SEE SHEETS 176 AND 177 FOR METHODS OF MOUNTING. BOXES SHALL BE GALVANIZED WELDED PLATE OR CAST IRON AND SIMILAR TO O. Z. TYPE YU, CAT. NO. 241010.

RIGID METAL CONDUIT FOR UNDERDECK LIGHTS SHALL BE 3/4-INCH, 2-INCH OR 4-INCH AS INDICATED, AND NATIONAL "SHERARDUCT" OR AN APPROVED EQUAL.

JUNCTION BOXES FOR UNDERDECK LIGHTING BRANCH CIRCUITS AND FOR EACH UNDERDECK LIGHTING UNIT SHALL BE CAST IRON, WATER-TIGHT AND EQUAL TO O. Z. TYPE YH, CAT. NO. 080804 AND 060603, RESPECTIVELY.

ALL LUMINAIRES, TRANSFORMERS, CIRCUIT CONDUCTORS, AND POLE AND BRACKET CONDUCTORS SHALL CONFORM TO THE SPECIFICATIONS SHOWN ON SHEET 48 OF THE PLANS.

CONSTRUCTION METHODS

THE INSTALLATION AS A WHOLE SHALL BE CARRIED OUT IN CONFORMANCE WITH THE REQUIREMENTS HEREIN STATED AND IMPLIED, AND UPON COMPLETION OF THE WORK SHALL PRESENT A NEAT AND WORKMANLIKE FINISHED APPEARANCE. SAFE CONSTRUCTION AND OPERATING PRACTICES MEETING THE REQUIREMENTS OF THE NATIONAL ELECTRIC SAFETY CODE SHALL BE MAINTAINED.

POLES SHALL BE CAREFULLY SET. THEY SHALL BE RAKED AS SHOWN ON SHEET 176 THE CAREFUL ALIGNING AND GRADING OF POLES IS CONSIDERED TO BE AN ESSENTIAL FEATURE OF THE INSTALLATION. THE WORK SHALL BE AS NEARLY PERFECT AS PRACTICABLE AND NO PERCEPTIBLE TOLERANCES WILL BE PERMITTED. IN ORDER TO ACCOMPLISH THE DESIRED PERFECTION OF ALIGNMENT OF THE LUMINAIRES THE POLES SHALL BE CAREFULLY ALIGNED BY THE USE OF SHIMS AS REQUIRED.

CONDUITS SHALL BE FIRMLY CLAMPED TO THE STRUCTURES TO PREVENT RATTLING, SHALL BE RUN IN LINES PARALLEL AND PERPENDICULAR TO LINES OF STRUCTURE AND SHALL BE SO PLACED THAT DIRT WILL NOT ACCUMULATE AROUND THEM. SUPPORTS SHALL BE AT NOT MORE THAN 6-FOOT CENTERS. THERE SHALL BE AT LEAST ONE INCH CLEARANCE BETWEEN CONDUITS. IF ON A HORIZONTAL SURFACE FOR OVER ONE FOOT, THEY SHALL CLEAR THE SURFACE BY AT LEAST THREE INCHES. ADEQUATE APPROVED PROVISION FOR THE MOVEMENT OF CONDUITS SHALL BE MADE WHEREVER CONDUITS CROSS EXPANSION OR FIXED JOINTS IN THE SUPPORTING STRUCTURES. FOR CONDUIT IN PARAPETS OF BRIDGES AND IN RETAINING WALLS, ONE FACTORY EXPANSION COUPLING WITH RUBBER RING SHALL BE USED AT ALL EXPANSION JOINTS, INCLUDING PARAPET JOINTS. RIGID CONDUIT ACROSS EXPANSION JOINTS, WHERE USED, SHALL HAVE AN EXPANSION COUPLING SIMILAR TO O. Z. TYPE "EX" OR "AX" AS REQUIRED, COMPLETE WITH BONDING JUMPER, OR BE IN FLEXIBLE COUPLINGS EQUAL TO GROUSE-HINDS TYPE "EC".

ELECTRICAL GROUNDS

FOR BRIDGES NOS. 3, 4, 8, 9, 10 AND 11 ALL PARTS OF THE SUPERSTRUCTURE STEELWORK AND THE CONDUIT AND EQUIPMENT FOR THE LIGHTING SYSTEM SHALL BE THOROUGHLY GROUNDED AT TWO PIER COLUMNS.

FOR BRIDGE NO. 3 A SOLID NO. 0 BARE COPPER WIRE ELECTRICAL GROUND SHALL BE EMBEDDED IN AN OUTSIDE COLUMN OF THE FIXED PIERS, AS NOTED ON SHEETS 101 AND 102. THE LOWER ENDS OF THE WIRES SHALL BE BRAZED TO THE STEEL SHELL OF ONE OF THE C. I. P. REINFORCED CONCRETE PILES AND THE UPPER ENDS SHALL EXTEND SUFFICIENTLY ABOVE THE TOP OF CONCRETE TO PROVIDE FOR A SUITABLE SPLICE AND EXTENSION FOR CONNECTION TO THE SUPERSTRUCTURE. FOR BRIDGE NOS. 4, 8, 9, 10 AND 11, SEE NOTE ON SHEET NO. 91A-6.

SEE SHEET 171 FOR LOCATIONS.

THE GIRDERS OR BEAMS SHALL BE GROUNDED BY A NO. 6 COPPER WIRE BOLTED OR BRAZED TO THE BOTTOM FLANGE AND TO THE BOTTOM PORTION OF THE SHOE AND CARRIED TO CONNECTION WITH THE GROUND WIRE EXTENDING TO THE FOUNDATION PILE. CONDUIT AND EQUIPMENT SECURELY ATTACHED TO THE SUPERSTRUCTURE STEELWORK REQUIRES NO FURTHER GROUNDING.

FOR OTHER DESCRIPTIVE NOTES OF THE LIGHTING SYSTEM SEE SHEETS 48 AND 176.

PAYMENT FOR ROADWAY AND UNDERDECK LIGHTING

PAYMENT FOR ITEMS OF ROADWAY AND UNDERDECK LIGHTING ON STRUCTURES SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR THE FOLLOWING ITEMS. PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY, WHETHER SPECIFICALLY MENTIONED OR NOT, TO COMPLETE THE ENTIRE WORK, INSTALLED, ACCEPTED, AND IN OPERATING CONDITION, ACCORDING TO THE PLANS AND SPECIFICATIONS. PAYMENT WILL BE MADE AS FOLLOWS:

A. "LIGHT STANDARD ON STRUCTURE, 10-FOOT BRACKET", PER EACH, AS PER PLAN, AND SHALL INCLUDE POLE FOR 28-FOOT MOUNTING HEIGHT, BRACKET ATTACHMENTS, 10-FOOT STEEL BRACKET, SHIM, ANCHOR BOLTS, HANDHOLE, ANCHOR BASE, LEAF COVERS, PAINTING, END KNOB WITH PLUMBIZER AND PIPE NIPPLE, SINGLE CONDUCTOR NO. 8 AWG, 600 VOLT POLE AND BRACKET CABLE, ALL CONNECTIONS AND SPLICING, 2-INCH RGID GALVANIZED ELBOW, SCREWS, BOLTS, NUTS, WASHERS, AND ALL MODIFICATIONS AND INCIDENTALS REQUIRED.

B. "SERVICE PANEL," PER EACH AND SHALL INCLUDE 32-INCH BY 12-INCH BY 10-INCH STEEL JUNCTION BOX, SAFETY SWITCH, CONTACTOR, PHOTO-CELL CONTROL UNIT, MOUNTINGS, ALL INTERCONNECTING CONDUITS, ALL EXTRA WIRING AND CABLE NOT SPECIFICALLY CALLED FOR, ALL CONNECTIONS, TERMINALS, SPLICES, FLEXIBLE CONDUITS, CONDUIT ADAPTERS, LOCKNUTS, INSULATING BUSHINGS, MOUNTING BOLTS, NUTS, WASHERS AND SPACERS.

C. "PARAPET JUNCTION BOX", PER EACH AND SHALL INCLUDE 24-INCH BY 10-INCH BY 10-INCH GALVANIZED WELDED PLATE OR CAST IRON JUNCTION BOX, COVER, GASKET, MODIFICATIONS, THREADED BOSSES, DRAIN HOLE, DRAIN PIPE, CONDUIT CONNECTIONS, LOCKNUTS, BUSHINGS AND GROUT.

D. "JUNCTION BOX", PER EACH AND SHALL INCLUDE 8-INCH BY 8-INCH BY 4-INCH JUNCTION BOX, COVER, GASKET, ATTACHMENTS, FITTINGS, FASTENINGS, CONDUIT CONNECTIONS, AND A SEPARATELY ENCLOSED CIRCUIT BREAKER.

E. "TWO-INCH CONDUIT," PER LINEAL FOOT AND SHALL INCLUDE HANGERS, COUPLINGS, EXPANSION FITTINGS, ATTACHMENTS, BUSHINGS, ADAPTERS, LOCKNUTS, CONDITIONING DUCTS, NO. 9 AWG GALVANIZED IRON PULL-IN WIRE, AND FASTENINGS.

F. "FOUR-INCH RIGID GALVANIZED CONDUIT," PER LINEAL FOOT AND SHALL INCLUDE REAMING, THREADING, COUPLINGS, FITTINGS, FASTENINGS, ATTACHMENTS, LOCKNUTS, BUSHINGS, EXPANSION COUPLINGS, CONDULETS, RIGID TO NON-METALLIC ADAPTERS, AND JUMPERS.

G. "TWO-INCH RIGID, GALVANIZED CONDUIT," PER LINEAL FOOT AND SHALL INCLUDE COUPLINGS, FITTINGS, FASTENINGS, ATTACHMENTS, LOCKNUTS, INSULATING BUSHINGS, AND ALL FEATURES REQUIRED FOR "4-INCH RIGID GALVANIZED CONDUIT," ITEM F.

H. "THREE-QUARTER-INCH RIGID GALVANIZED CONDUIT," PER LINEAL FOOT AND SHALL INCLUDE ALL FEATURES AND ITEMS SPECIFIED FOR, "TWO-INCH RIGID GALVANIZED CONDUIT," ITEM H, EXCEPT FOR 3/4-INCH CONDUIT IN LIEU OF 2-INCH, AND SHALL INCLUDE ALL NO. 12 AWG BRANCH CIRCUIT WIRING.

I. "ONE-WAY DUCT, FOUR-INCH, " PER LINEAL FOOT AND SHALL INCLUDE FORMS FOR CONCRETE, CONCRETE, END BELLS, PLUGGING DUCTS, CONDITIONING DUCTS, JOINT FILLER, NO. 9 AWG GALVANIZED IRON PULL-IN WIRE, AND SEALING AROUND DUCTS WHERE THEY ENTER MANHOLES OR VAULTS.

J. "ELECTRICAL GROUNDS," PER EACH AND SHALL INCLUDE NO. 0 BARE GROUND IN PIER BRAZED TO PILE AT LOWER END, NO. 6 GROUND TO GIRDER OR BEAM, AND CONNECTIONS, AS REQUIRED.

ALL LUMINAIRES, FLUORESCENT UNDERDECK LIGHTS AND LIGHTING CABLE ARE INCLUDED FOR PAYMENT WITH LIGHTING UNDER ROADWAY PLANS. SEE SHEET 48.

Cross References are to sheets in Part 7-A

CONSTRUCTION UNDER OTHER CONTRACTS: Reference to work under other contracts (previous or future) shall be considered void.

PART 7-A

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

GENERAL NOTES

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN N.A.M.	TRACED	CHECKED J.C.T.	REVIEWED J.C.T.	REVISED
DATE 10-6-59	DATE	DATE 11-10-59	DATE 11-13-59	SHEET 98A

MICROFILMED JUL 3 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32 .
CUY-42-18.42

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	BRIDGE NO. 3 I-71-5(8)248					BRIDGE NO. 4 I-71-5(8)248					AS BUILT		BRIDGE NO. 5 I-71-5(8)248					AS BUILT		BRIDGE NO. 8 I-71-5(8)248				
			ABUT-MENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL	ABUT-MENTS	RETAINING WALL	SUPER-STRUCTURE	GENERAL	TOTAL ⑨			ABUT-MENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL			④ ABUT-MENTS	SUPER-STRUCTURE	GENERAL	TOTAL ⑨		
E-2	Cofferdams, Cribs & Sheeting	Lump Sum				Lump Sum	Lump Sum		Lump Sum			Lump Sum						Lump Sum	Lump Sum							
E-2	Excavation for Structures (Unclassified)	Cu. Yd.	620	680			1,300	710	480			1,190			275	325			600			470			470	
S-1	Class "C" Concrete, Superstructure	Cu. Yd.			965		965			1,605		~~1,605~~	CO 2, -1570	39			195		195				480		480	
S-1	Class "C" Concrete, Pier Columns & Cap	Cu. Yd.		225			225									75			75							
S-1	Class "C" Concrete, Walls	Cu. Yd.							210			210														
S-1	Class "C" Concrete, Abutments & Walls	Cu. Yd.	15 ①				15 ①	70 ②				70 ②														
S-1	Class "E" Concrete, Stub Abutments (above footings)	Cu. Yd.	300				300	310				310			110				110			185			185	
S-1	Class "E" Concrete, Footings	Cu. Yd.	182	223			405	255	235			490			90	80			170			170			170	
S-3	Waterproofing, Premolded Sealing Strip	Lin. Ft.	80				80	63	92			~~155~~	CO 15 -11	144	15				15			10			10	
S-4	Reinforcing Steel	Lbs.	33,425	93,475	272,500		399,400	44,984	37,476	454,440		536,900			14,293	20,463	52,644		87,400			23,963	138,337		162,300	
S-7	Structural Steel	Lbs.			1,174,000		1,174,000			1,454,000		1,454,000					147,000		147,000				368,000		368,000	
S-8	Field Painting of Structural Steel (3 Coats)	Lbs.			1,174,000		1,174,000			1,454,000		1,454,000					147,000		147,000				368,000		368,000	
S-9	1" Gray Rubber Preformed Expansion Joint Filler	Sq. Ft.	95				95	95	70			165										75	-		75	
S-14	Aluminum Railing (Including Parapet)	Lin. Ft.	92		612		704	133		1,136		1,269			59		241		300			64	353		417	
S-14	Guard Rail, Steel Beam Barrier Type (Deep)	Lin. Ft.			305		305			303		303											173		173	
S-16	First Test Pile (12" or 14" C.I.P.)	Lump Sum				Lump Sum	Lump Sum ⑤												⑧							
S-17	First Pile Test Load	Lump Sum				Lump Sum	Lump Sum																			
S-17	Subsequent Pile Test Load	Ea.				1	1																			
S-18	12" C.I.P. Reinforced Concrete Piles	Lin. Ft.	3,890				3,890	4,230	2,460			~~6,690~~	CO 12 +939	7029	1,190				~~890~~	CO 12 +250	1440	2,740			2,740	
S-18	14" C.I.P. Reinforced Concrete Piles	Lin. Ft.		5,400			5,400									2,210			~~2,210~~	CO 12 -75	2135					
S-25	Electrical Grounds	Ea.				2	2																			
S-25	Light Standard on Structure, 10-Foot Bracket	Ea.	2		6		8		2	11		13											4		4	
S-25	Parapet Junction Box (24" x 10" x 10")	Ea.	2		6		8		2	15		17											4		4	
S-25	2" ϕ Conduit	Lin. Ft.	103		612		715	110	215	1025		1,350			27		128		155			65	355		420	
S-25 ‡	10,000 Lumen Luminaire & Insulating Transformer	Ea.									5	‡														
S-25 ‡	15,000 Lumen Luminaire & Insulating Transformer	Ea.				8	‡				8	‡												4	‡	
S-25 ‡	Fluorescent Underdeck Light	Ea.				4	‡				8	‡												4	‡	
S-25	Service Panel	Ea.			1		1			1		+ 1														
S-25	Junction Box (8" x 4" x 4")	Ea.			2		2			3		+ 3											1		+ 1	
S-25	¾" ϕ Rigid Galvanized Conduit	Lin. Ft.			175		175			695		+ 695											270		+ 270	
S-25	2" ϕ Rigid Galvanized Conduit	Lin. Ft.			65		65			165	+ 80 ⑦	165											45		+ 45	
S-25	4" ϕ Rigid Galvanized Conduit	Lin. Ft.		45			45																			
S-25	1-Way Duct, 4 inch	Lin. Ft.				20	20																			
S-29	Porous Backfill	Cu. Yd.	140				140	170	205			375			40				40			75			75	
S-29	6" ϕ W.I. or Galvan. Steel Pipe, incl. Fastenings & Specials	Lin. Ft.		60			60				37 ⑥	37														
S-29	8" ϕ W.I. or Galvan. Steel Pipe, incl. Fastenings & Specials	Lin. Ft.									100 ⑥	100														
I-10	Crushed Aggregate Slope Protection Sec. I-10.04	Sq. Yd.				3,180 ⑤	3,180																	775	775	
I-10	Crushed Aggregate Slope Protection (No. 4 or 4A Stone or Slag)	Sq. Yd.																						450	450	
I-10	Concrete Slope Protection Sec. I-10.05	Sq. Yd.									1,645	1,645														
I-10	Concrete Slope Protection (4")	Sq. Yd.									1,670	1,670														
I-14	Type I - Modified Paved Gutter	Lin. Ft.									155	155														

NOTES:
Pile Test Loads shall be performed only if required by the Engineer.
① North Wingwall, West Abutment.
② North Wingwall and adjoining section of abutment as per plan, East Abutment.
③ Includes Bridge No. 5
④ Includes entire East Abutment common to Bridges No. 8 & 9.
⑤ At Pier 2, Bridge No. 4.
⑥ At Piers 2 & 3, Bridge No. 4.
⑦ Included in the 145' total.

† 100 % City Participation
‡ 100 % City Participation. Included with quantities under Roadway Plans.
See sheet 12.-7A

⑧ FIRST TEST PILE: Payment will be made for only one first test pile. It may be driven for either H.N.T.B. Bridge No. 3 or H.N.T.B. Bridge No. 5.
⑨ For additional quantities see sheet 92A-Part 6

H.N.T.B. BR. NO.	STATE BR. NO.
3	CUY-42-1843
4	CUY-42-1854
5	Ramp E-10 over Ramp E-8
8	CUY-21-1573 A

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

ESTIMATED QUANTITIES
BR. NOS. 3, 4, 5 & 8

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
D.R.K.	A.E.K.	G.A.T.	J.C.T.	
DATE 1-14-59	DATE 11-6-59	DATE 11-9-59	DATE 11-13-59	SHEET 99

Revised AS BUILT OAM 2-27-64

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

99A / 181

MICROFILMED JUL 3 1965

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY - 21 - 15.32
CUY - 42 - 18.42

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	BRIDGE NO. 9 I-71-5(8)248 ABUTMENTS ②	SUPERSTRUCTURE	GENERAL	TOTAL ⑨	AS BUILT		BRIDGE NO. 10 I-71-5(8)248 ABUTMENTS	SUPERSTRUCTURE	GENERAL	TOTAL ②	AS BUILT		BRIDGE NO. 11 I-71-5(1)162 ABUTMENTS	SUPERSTRUCTURE	GENERAL	TOTAL ⑨	AS BUILT		SIGN BRIDGE AT STA. 74+25 TOTAL
Special	Sign Bridge, as per Plan	Lump Sum																			Lump Sum
E-2	Excavation for Structures (Unclassified)	Cu. Yd.	110			110			480			480			850			850			
S-1	Class "C" Concrete, Superstructure	Cu. Yd.		190		~~190~~	CO 21 -187	3		735		735				755		~~755~~	CO 16 -754	1	
S-1	Class "C" Concrete, Abutments and Walls	Cu. Yd.													20 ①			~~20~~ ①	CO 11 5	15	
S-1	Class "E" Concrete, Stub Abutments (above Footings)	Cu. Yd.	45			45			190			~~190~~	CO 15 +11	201	365			365			
S-1	Class "E" Concrete, Footings	Cu. Yd.	35			35			140			140			300			300			
S-3	Waterproofing, Premolded Sealing Strip	Lin. Ft.							50			~~50~~	CO 15 +6	56	90			90			
S-4	Reinforcing Steel	Lbs.	4,981	49,819		54,800			25,000	200,400		225,400			41,070	194,830		235,900			
S-7	Structural Steel	Lbs.		133,500		133,500				839,000		839,000				855,000		~~855,000~~	CO 8 +24,621	879,621	
S-8	Field Painting of Structural Steel (3 Coats)	Lbs.		133,500		133,500				839,000		839,000				855,000		~~855,000~~	CO 8 +24,621	879,621	
S-9	1" Gray Rubber Preformed Expansion Joint Filler	Sq. Ft.							80			80			95			95			
S-14	Aluminum Railing (Including Parapet)	Lin. Ft.	26	334		360			54	413		467			65	419		484			
S-14	Guard Rail, Steel Beam Barrier Type (Deep)	Lin. Ft.								207		207				208		208			
S-18	12" C.I.P. Reinforced Concrete Piles	Lin. Ft.	490			~~490~~	CO 14 -81	409	2920			2920			4050			~~4050~~	CO 11 -181	5869	
S-25	Light Standard on Structure, 10-Foot Bracket	Ea.		2		2				4		4			1	4		5			
S-25	Parapet Junction Box (24" x 10" x 10")	Ea.		2		2				4		4			1	4		5			
S-25	2" ϕ Conduit	Lin. Ft.	15	170		185			60	415		475			70	415		485			
S-25 ‡	10,000 Lumen Luminaire & Insulating Transformer	Ea.			2	‡															
S-25 ‡	15,000 Lumen Luminaire & Insulating Transformer	Ea.									4	‡					5	‡			
S-25 ‡	Fluorescent Underdeck Light	Ea.			2	‡					4	‡					2	‡			
S-25 †	Service Panel	Ea.		1		1				1		1				1		1			
S-25 †	3/4" ϕ Rigid Galvanized Conduit	Lin. Ft.		125		125				† 235		235				220		~~220~~	CO 14 -7	113	
S-25 †	1-Way Duct, 4 inch	Lin. Ft.			50	~~50~~	CO 30 +19	69													
S-29	Porous Backfill	Cu. Yd.	12			12			80			~~80~~	CO 18 +11	91	180			180			
S-29	6" ϕ W.I. or Galvanized Steel Pipe incl. Fastenings & Specials	Lin. Ft.									16 ③	16									
I-10	Crushed Aggregate Slope Protection, Sec. I-10.04	Sq. Yd.			345	~~345~~	CO 14 -39	306									1375	1375			
I-10	Crushed Aggregate Slope Protection (No. 4 or 4A Stone or Slag)	Sq. Yd.			145	~~145~~	CO 20 -27	118									580	580			
I-10	Concrete Slope Protection, Sec. I-10.05	Sq. Yd.									910	~~910~~	CO 18 +84	994							
I-10	Concrete Slope Protection (4")	Sq. Yd.									855	855									

NOTES:

Pile Test Loads shall be performed only if required by the Engineer.

① Southwest and Northeast Wingwalls.

② West Abutment only.

③ At Pier 2, Bridge No. 10.

⑨ For additional quantities see sheet 92A-Part 6

† 100 % City Participation

‡ 100 % City Participation. Included with quantities under Roadway Plans. See sheet 12-7A

H.N.T.B. BR. NO.	STATE BR. NO.
9	CUY-21-1573 B
10	CUY-21-1559
11	CUY-21-1544

PART 7A

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

ESTIMATED QUANTITIES

BR. NOS. 9, 10 & 11
AND SIGN BRIDGE AT STA. 74+25

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
D.R.K.	A.E.K.	G.A.T.	J.C.T.	
DATE 1-14-59	DATE 11-6-59	DATE 11-9-59	DATE 11-13-59	SHEET 99A

Revised As-Built CAM 2-27-64

21-0

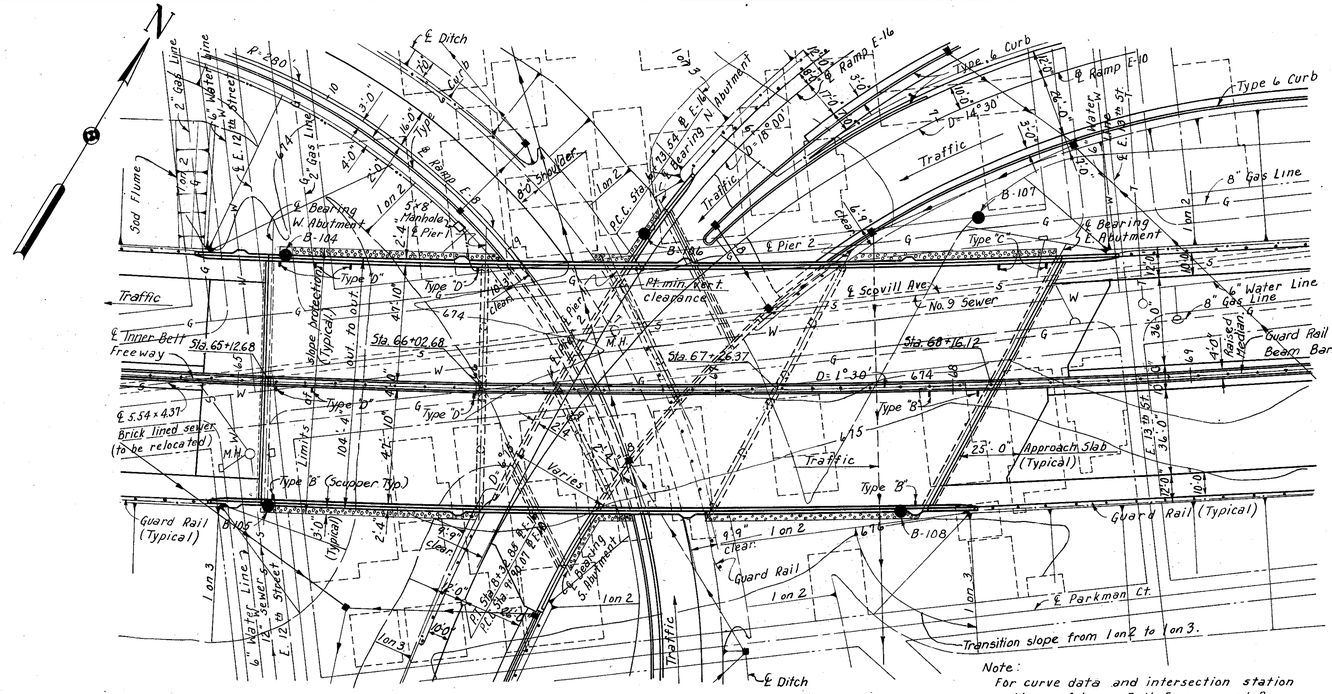
Q-16

CUY-90-16.37 CUY-77-15.62

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

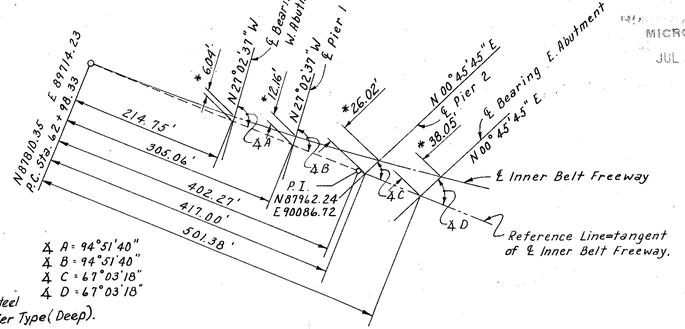
100
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



PLAN

Note:
For curve data and intersection station equations of Inner Belt Freeway and Ramps see Site Plan Bridge #5 sheet 137-7A



℄ A = 94°51'40"
℄ B = 94°51'40"
℄ C = 67°03'18"
℄ D = 67°03'18"

BRIDGE LAYOUT DIAGRAM

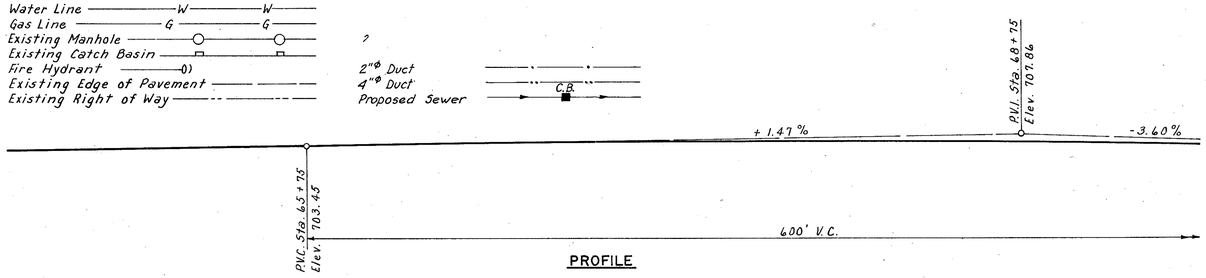
No Scale

* Offsets measured from reference line to ℄ Inner Belt Freeway along ℄ bearings.

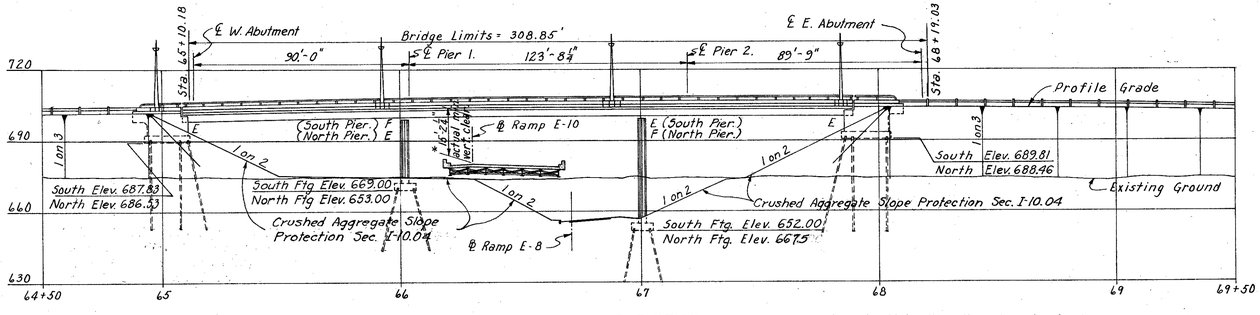
LEGEND

Existing Sewer ——S——S——
O.B.T. Line ——T——T——
Water Line ——W——W——
Gas Line ——G——G——
Existing Manhole ——○——○——
Existing Catch Basin ——□——□——
Fire Hydrant ——0)——
Existing Edge of Pavement ——————
Existing Right of Way ——·——·——

2"℄ Duct ——·——·——
4"℄ Duct ——··——··——
Proposed Sewer ——C.B.——



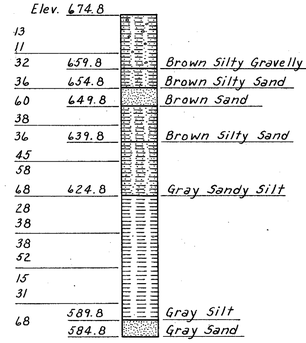
PROFILE



ELEVATION

* 15'-0" Required minimum vertical clearance. Point of actual minimum vertical clearance occurs at North exterior girder and 2'-6" At ℄ Ramp E-16.

Note: Elevations for pier footings are shown for exterior footing only. For other elevations see sheets 101-7A & 102-7A



BORING B-106

Vertical Scale 1" = 20'
Sta. 66+70 65' Lt.

Note:
The figures to the left indicates the number of hammer blows required to drive the sample spoon 1 ft. They are given at 5' intervals starting at Elev. 674.8

NOTES:
Rod soundings only were taken at location B-104, B-105, B-107 and B-108. The core drilling made at B-106 is plotted.
For details of slope protection see sheet 174-7A
The following items are not included in the Bridge Plans. (See Roadway Plans for details.)
Removal of existing pavements, etc.
Relocation or removal of existing utilities.
Approach grading, pavement and slab.
Roadway guard rail.

PILE INFORMATION			
Location	Diameter	Number	Estimated ave. length
W. Abutment	12"	48	38'
E. Abutment	12"	51	40'
Pier 1	14"	56	27'
Pier 2	14"	60	65'

Pile lengths are based on boring data and are approximate only. The Contractor shall assume full responsibility for length of piling selected for driving.

PROPOSED STRUCTURE

Type: Continuous welded steel girder with reinforced concrete deck and substructure
Spans: 90'-0", 123'-8¼" & 89'-9" (along ℄ Inner Belt Frwy.)
Roadway: 102'-0" t/t. parapets
Loading: C F 2000 - Adequate for A.A.S.H.O. alternate loading
Skew: Varies
Surface Course: 1" Monolithic Concrete.
Alignment: 1° 30' curve left.
Approach Slabs: AS-1-54 (25' Long)
Superelevation: .03' per ft.

H.N.T.B. BR. NO. 3 PART 7A

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

SITE PLAN
INNER BELT FREEWAY OVER RAMPS E-8, E-10 AND E-16

BR. NO. CUY-42-1843 STA. 65+10.18
Scale: 1" = 30' STA. 68+19.03

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

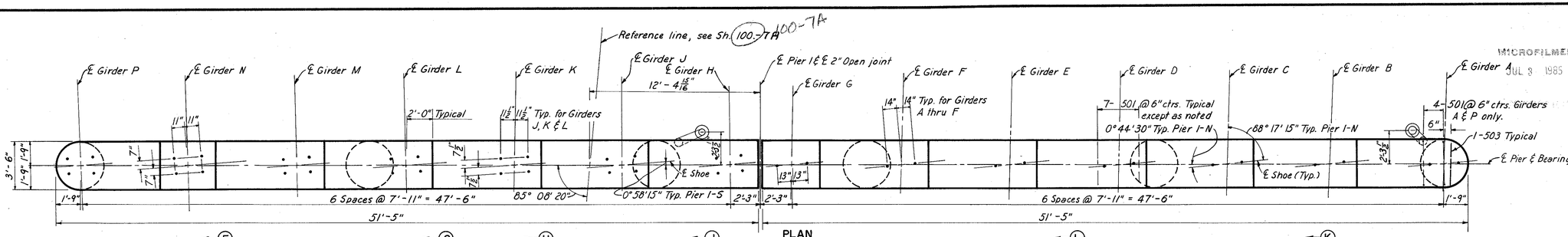
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.J.S.	A.E.K.	D.R.K.	J.C.T.	
DATE 7-2-58	DATE 8-20-58	DATE 8-4-58	DATE 11-13-59	SHEET 100

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

101
181

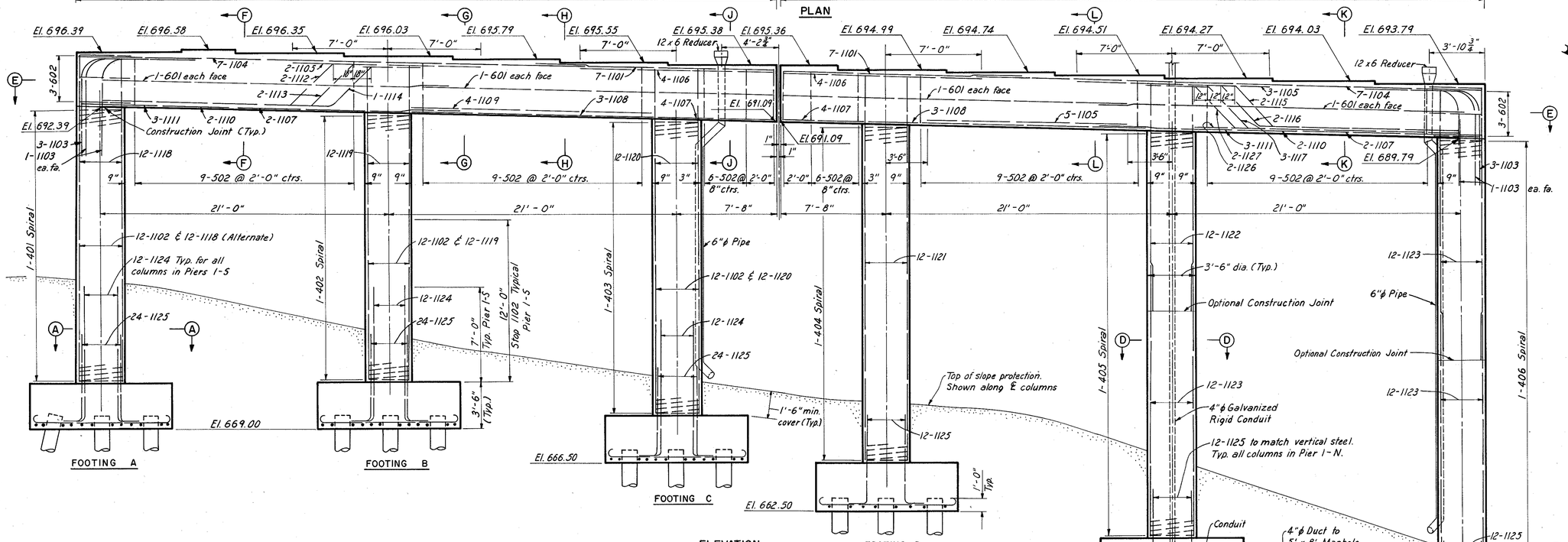
MICROFILMED JUL 8 1985

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-2|-15.32
CUY-42-18.42



PLAN

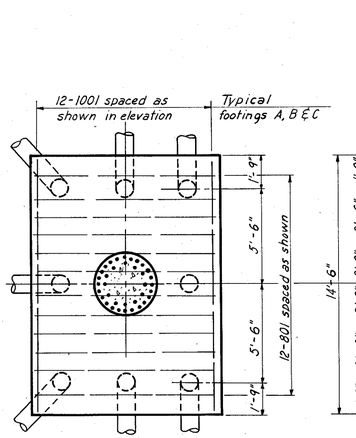
Note:
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bolt or anchor bar setting.

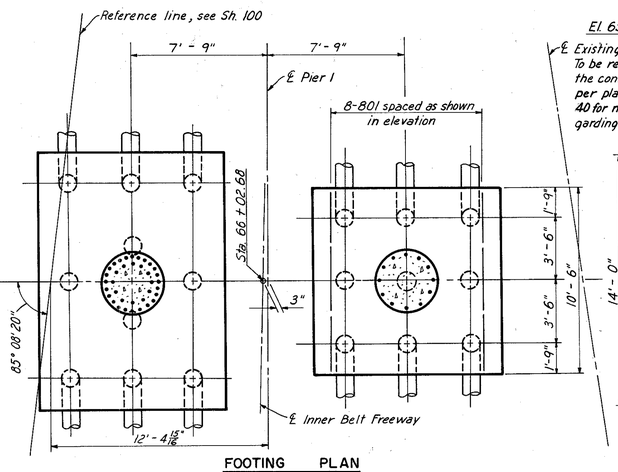


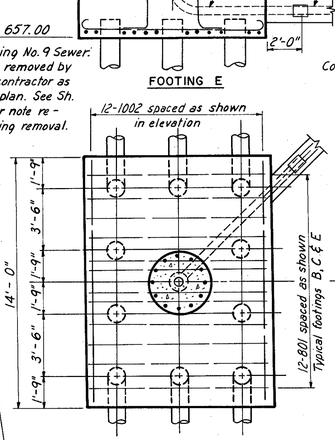
ELEVATION

Note: Prefix "PA" shall be assigned to all bar marks.

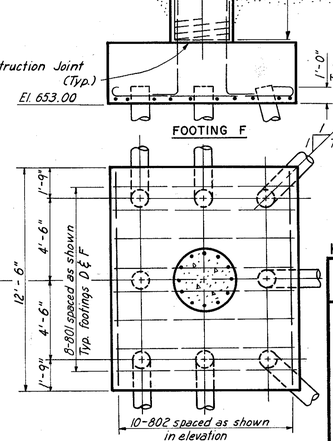
NOTES:
All piles shall be 14" ϕ C.I.P. Reinforced Concrete.
All battered piles shall be battered 3 in 12 in direction shown.
For Sections and Reinforcement Schedule, see Sh. 103-7A
For details of 4" ϕ rigid conduit, see Sh. 177-7A
For masonry plate details, see Sh. 173-7A and Ohio Standards, Drawing RB-1-55.
Reinforcement bars shall be 3 inches clear from bottom of footing and 2 inches elsewhere.
Provide electrical ground wire in Column A. See notes on Sh. 98A.-7A
Pile spacings are given along bottom of footings.







℄ Existing No. 9 Sewer: To be removed by the contractor as per plan. See Sh. 40 for note regarding removal.



H.N.T.B. BR. NO. 3 PART 7A

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

PIER 1
INNER BELT FREEWAY OVER RAMPS E-8, E-10 AND E-16
BR. NO. CUY-42-1843 STA. 65+10.18
Scale: 1/4" = 1'-0" STA. 68+19.03
WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L.	J.A.G	DRK	JCT	
DATE 7-23-58	DATE 5-11-59	DATE 8-22-58	DATE 11-13-59	SHEET 101

Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bolt or anchor bar setting.

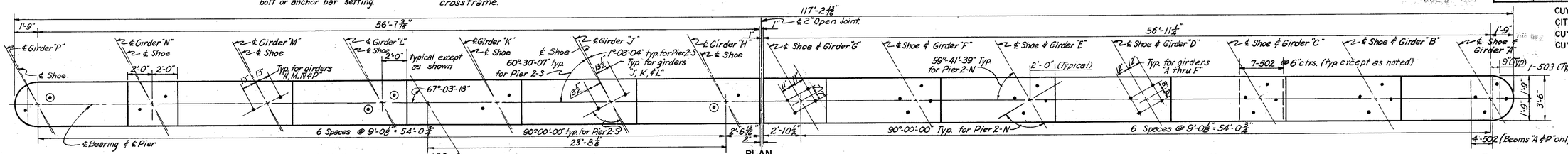
Holes for anchor bars noted as thus ⊙ are to be drilled before placing bottom angle of the crossframe.

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

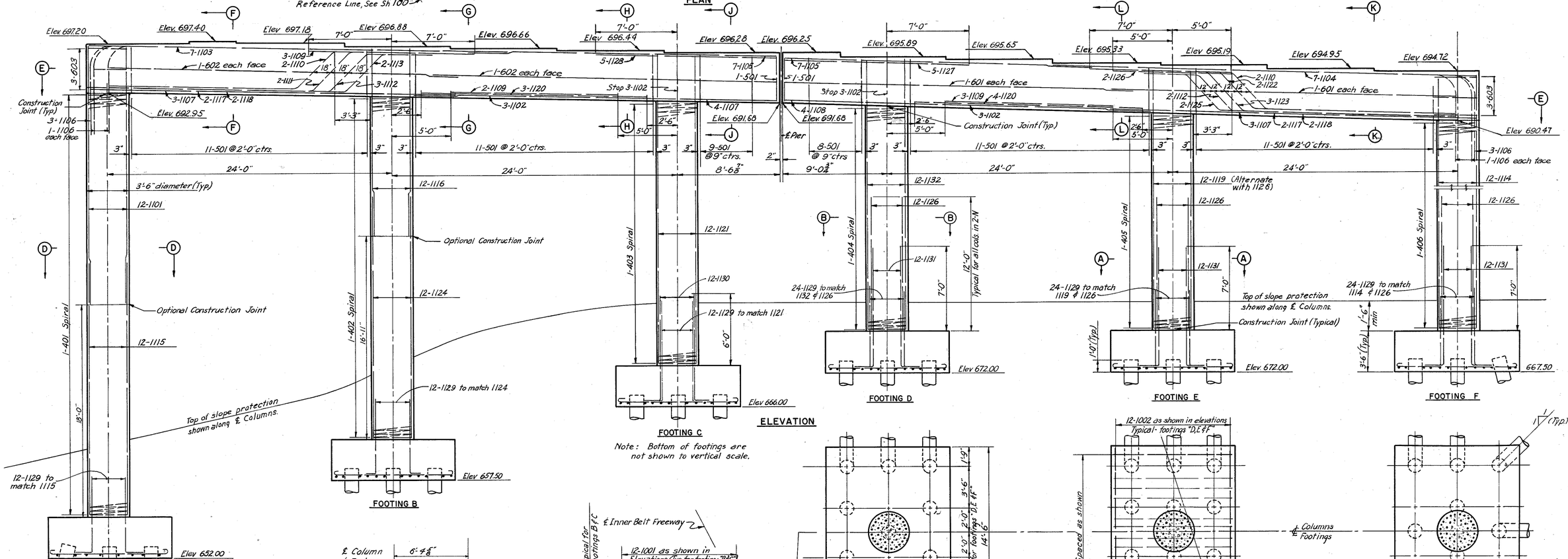
102
181

MICROFILMED JUL 8 1965

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



PLAN



FOOTING A

FOOTING B

FOOTING C

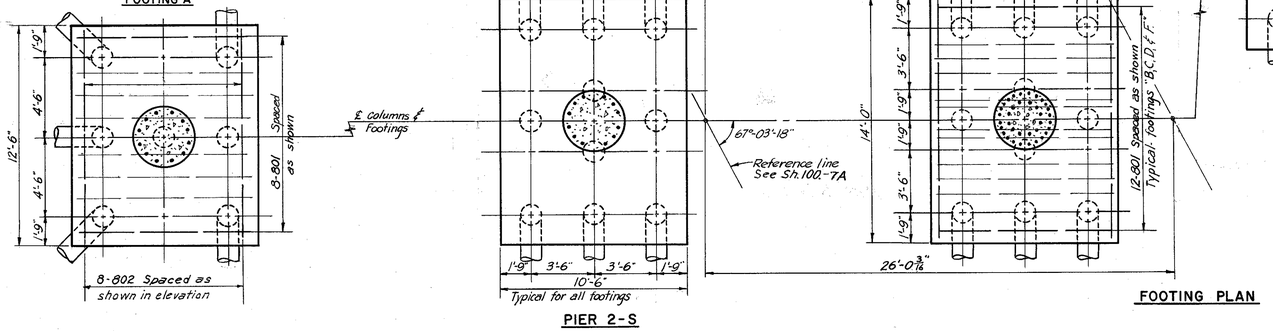
FOOTING D

FOOTING E

FOOTING F

ELEVATION

Note: Bottom of footings are not shown to vertical scale.



PIER 2-S

FOOTING PLAN

PIER 2-N

For notes see sheet 101.-7A
For reinforcement schedule see sheet 103.-7A
Provide electrical ground wire in column 'F'. See notes on sheet 98A-7A

Note: Prefix "PB" shall be assigned to all bar marks.

℄ Existing No. 9 Sewer. To be removed by the contractor as per plan. See sh. 40-7A for note regarding removal.

H.N.T.B. BR. NO. 3 PART 7A

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

PIER 2

INNER BELT FREEWAY OVER RAMPS E-8, E-10 AND E-16

BR. NO. CUY-42-1843 STA. 65+10.18

Scale: 1/4" = 1'-0" STA. 68+19.03

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN CAT	TRACED HRH	CHECKED J.J.S	REVIEWED JCT	REVISED
DATE 7-24-58	DATE 10-1-58	DATE 8-22-58	DATE 11-13-59	SHEET 102

REINFORCEMENT SCHEDULES FOR PIER 1

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (POUNDS)
501	92	5'-11"	105	3'-2"	1'-6"				568
502	50	13'-10"	109	3'-2"	3'-6"				721
503	2	5'-9"	105	3'-0"	1'-6"				12
601	8	25'-9"	Str.						309
602	6	8'-10"	144	1'-11"	5'-0"				80
801	72	12'-10"	100	10'-2"					2467
802	10	14'-10"	100	12'-2"					396
1001	36	17'-10"	100	14'-2"					2763
1002	12	16'-4"	100	13'-8"					843
1101	14	17'-6"	Str.						1302
1102	36	12'-0"	Str.						2295
1103	14	14'-6"	123	5'-10"	5'-10"				1079
1104	14	37'-0"	Str.						2752
1105	10	14'-0"	Str.						744
1106	8	14'-6"	Str.						616
1107	12	26'-6"	Str.						1690
1108	6	19'-0"	Str.						606
1109	4	17'-6"	Str.						372
1110	4	27'-9"	Str.						590
1111	6	28'-0"	Str.						893
1112	2	29'-2"	118	11'-0"	14'-0"	3'-1"	3'-1"		310
1113	2	23'-2"	118	3'-6"	15'-6"	3'-1"	3'-1"		246
1114	3	24'-8"	118	3'-6"	17'-0"	3'-1"	3'-1"		393
1115	2	29'-2"	118	11'-6"	13'-8"	2'-10"	2'-10"		310
1116	2	29'-2"	118	10'-6"	14'-8"	2'-10"	2'-10"		310
1117	3	23'-2	118	3'-6"	15'-8"	2'-10"	2'-10"		369
1118	12	23'-3"	Str.						1729
1119	12	23'-0"	Str.						1466
1120	12	25'-6"	Str.						1626
1121	12	28'-6"	Str.						1817
1122	12	16'-6"	Str.						1052
1123	36	20'-3"	Str.						3873
1124	36	11'-5"	104	10'-3"	1'-6"				2184
1125	108	7'-11"	104	6'-9"	1'-6"				4543
1126	2	19'-3"	Str.						205
1127	2	24'-2"	118	3'-6"	16'-8"	2'-10"	2'-10"		257
							Total		41,788

REINFORCEMENT SCHEDULES FOR PIER 2

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (POUNDS)
501	43	14'-7"	109	3'-2"	3'-11"				958
502	92	5'-11"	105	3'-2"	1'-6"				568
503	2	5'-9"	105	3'-0"	1'-6"				12
601	4	29'-6"	Str.						177
602	4	29'-3"	Str.						176
603	6	8'-10"	144	1'-11"	5'-0"				80
801	68	12'-2"	100	10'-0"					2209
802	8	14'-2"	100	12'-0"					303
1001	24	16'-4"	100	13'-6"					1487
1002	36	16'-10"	100	14'-0"					2608
1101	12	23'-6"	Str.						1498
1102	6	22'-3"	Str.						709
1103	7	35'-6"	Str.						1320
1104	7	36'-0"	Str.						1339
1105	14	26'-0"	Str.						1934
1106	14	14'-6"	123	5'-10"	5'-10"				1079
1107	10	30'-9"	Str.						1634
1108	4	31'-3"	Str.						664
1109	8	14'-0"	Str.						595
1110	4	32'-0"	118	12'-0"	15'-11"	3'-1"	3'-1"		680
1111	2	32'-5"	118	10'-6"	17'-7"	3'-4"	3'-4"		344
1112	5	26'-6"	118	3'-6"	18'-11"	3'-1"	3'-1"		704
1113	2	28'-0"	118	3'-6"	20'-5"	3'-1"	3'-1"		298
1114	12	23'-3"	Str.						1482
1115	12	21'-3"	Str.						1355
1116	12	18'-9"	Str.						1195
1117	4	30'-3"	Str.						643
1118	4	29'-0"	Str.						616
1119	12	19'-3"	Str.						1227
1120	7	19'-0"	Str.						707
1121	12	26'-6"	Str.						1690
1122	2	32'-0"	118	11'-0"	16'-11"	3'-1"	3'-1"		340
1123	3	32'-5"	118	10'-0"	17'-11"	3'-4"	3'-4"		517
1124	12	20'-3"	Str.						1291
1125	2	27'-6"	118	3'-6"	19'-11"	3'-1"	3'-1"		292
1126	38	12'-0"	Str.						2423
1127	5	16'-0"	Str.						425
1128	5	15'-6"	Str.						412
1129	108	8'-0"	104	6'-9"	1'-6"				4590
1130	12	10'-6"	104	9'-3"	1'-6"				669
1131	36	11'-6"	104	10'-3"	1'-6"				2200
1132	12	20'-0"	Str.						1275
							Total		44,925

SPIRAL REINFORCEMENT SCHEDULE

MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (POUNDS)
401	1	3'-2"	19'-10"	4"	62	461
402	1	3'-2"	19'-4"	4"	61	454
403	1	3'-2"	21'-3"	4"	67	498
404	1	3'-2"	24'-10"	4"	78	580
405	1	3'-2"	29'-10"	4"	92	685
406	1	3'-2"	33'-3"	4"	103	767
					Total	3,445

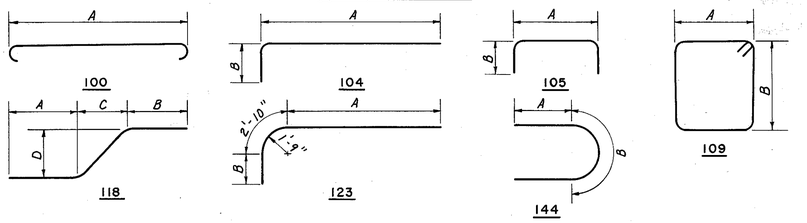
NOTE:
All bar dimensions are given out to out.

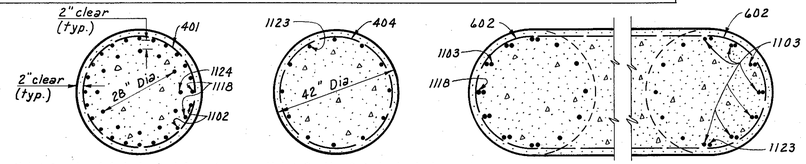
SPIRAL REINFORCEMENT SCHEDULE

MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (POUNDS)
401	1	3'-2"	37'-5"	4"	115	859
402	1	3'-2"	31'-5"	4"	97	724
403	1	3'-2"	22'-5"	4"	70	522
404	1	3'-2"	16'-0"	4"	51	380
405	1	3'-2"	15'-6"	4"	49	365
406	1	3'-2"	19'-5"	4"	61	455
					Total	3,305

Note: Prefixes shall be assigned to bar marks as follows:
Pier 1 "PA"
Pier 2 "PB"

BENDING DIAGRAMS





Note: Section A-A is typical for columns A, B & C in Pier 1 & C, D, E & F in Pier 2, except for bar marks.

SECTION A-A

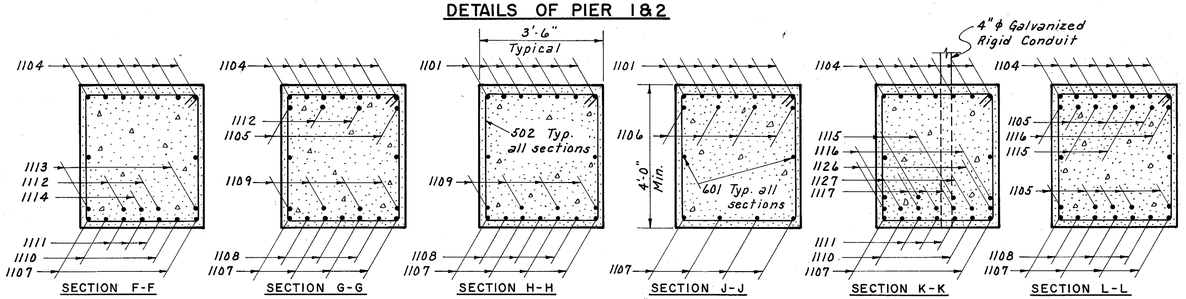
Note: Section D-D is typical for all columns in Pier 1 & Pier 2, except for bar marks

SECTION D-D

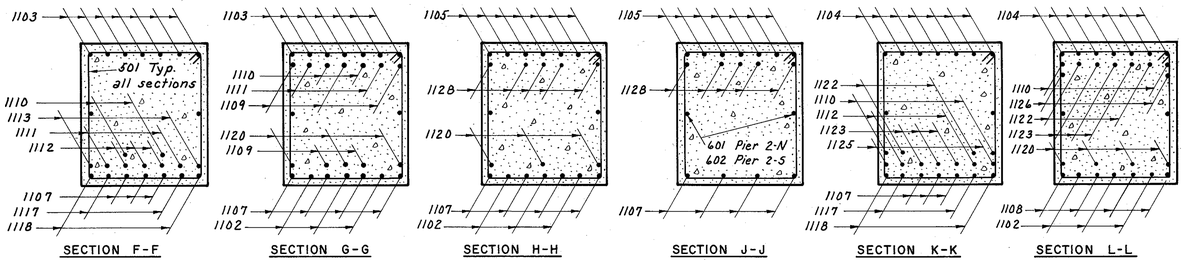
Note: Section E-E is typical for Pier 1 & Pier 2, except for bar marks.

SECTION E-E

DETAILS OF PIER 1&2



DETAILS OF PIER 1



DETAILS OF PIER 2

SPIRAL REINFORCING BARS:

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.

The "No. of Turns" shown is the "Length" divided by the pitch, plus 3 turns (total number of closed coils), expressed as the nearest whole number.

Spiral reinforcing bars shall not have deformations, but shall in other respects conform to Item 5-4.

1½ closed coils shall be provided at the ends of each spiral unit.

Four steel channel, tee or angle spacers, weighing approximately 0.68 lb. per lin. ft. 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 lb. per lin. ft., will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

REPLACEMENT REINFORCEMENT SCHEDULE

SIZE	NO.	LENGTH	TYPE
4	2	5'-3"	Str.
5	24	5'-9"	Str.
6	51	6'-0"	Str.
7	4	6'-3"	Str.
8	1	6'-6"	Str.
9	1	7'-0"	Str.
10	1	7'-3"	Str.
11	4	7'-6"	Str.

Replacement bars are listed for the entire contract.

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

H.N.T.B. BR. NO. 3 PART 7A

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

PIER DETAILS
INNER BELT FREEWAY OVER
RAMPS E-8, E-10 AND E-16

BR. NO. CUY-42-1843 STA. 65+10.18
Scale: 1/2"=1'-0" STA. 68+19.03

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L	AEK	DRK	JCT	
DATE 7-23-58	DATE 5-6-59	DATE 9-9-58	DATE 11-13-59	SHEET 103

Note : Prefix "AA" shall be assigned to all bar marks.

MICROFILMED JUL 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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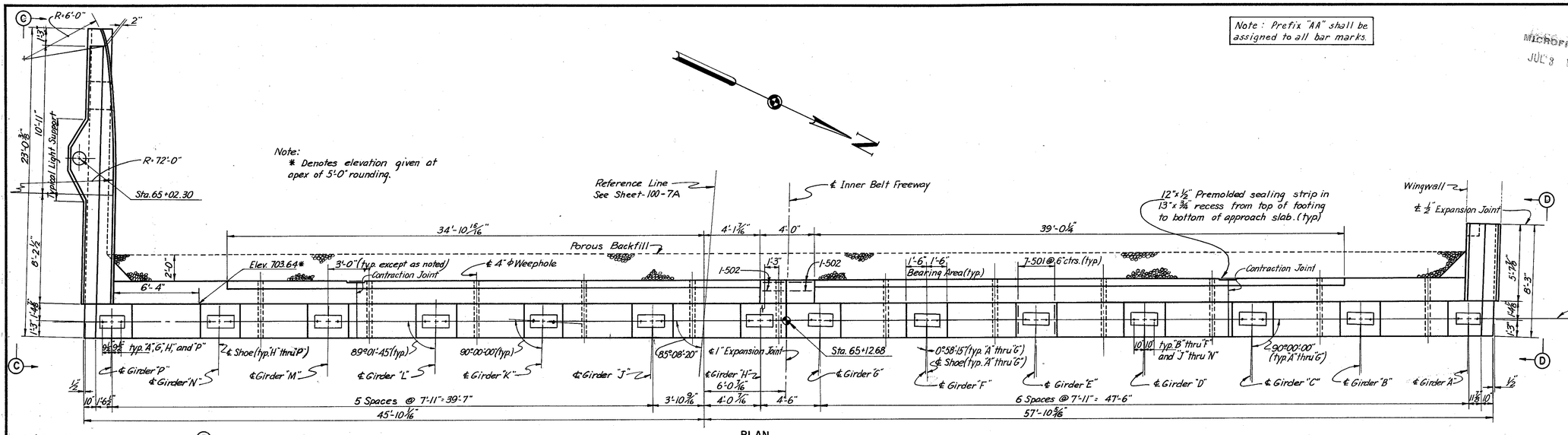
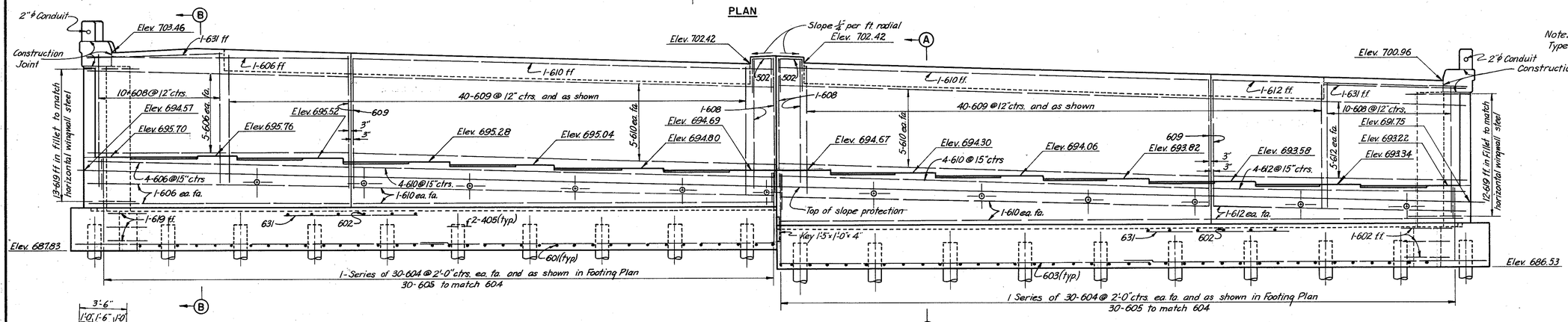
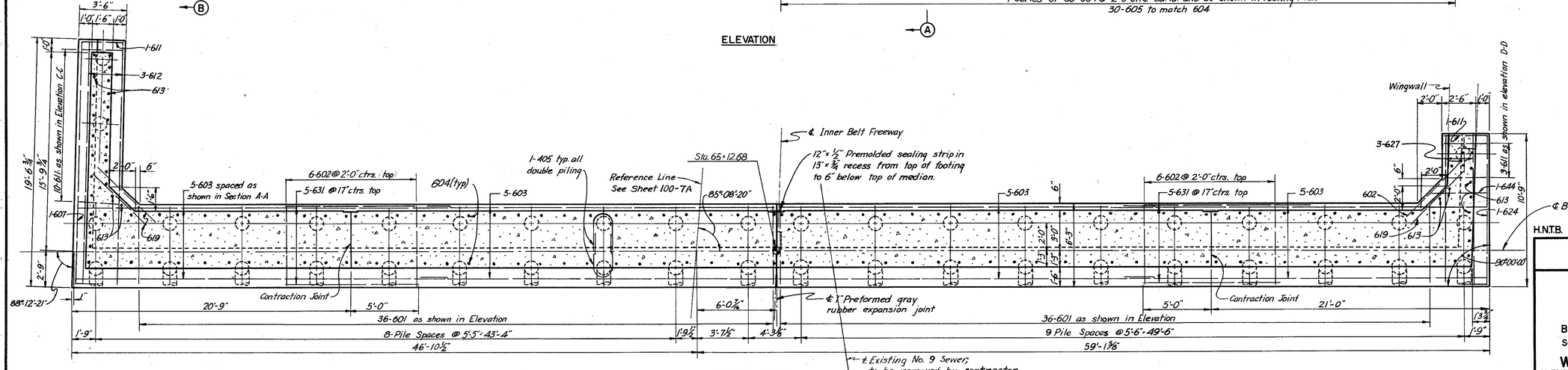
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



PLAN



ELEVATION



FOOTING PLAN

Note:
For sections and additional notes, See Sheet 105-7A

H.N.T.B. BR. NO. 3 PART 7.4

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

WEST ABUTMENT
INNERBELT FREEWAY OVER RAMPS E-8, E-10 AND E-16

BR. NO. CUY-42-1843 STA. 65+10.18
Scale : 1/4"=1'-0" STA. 68+19.03

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN M.M.	TRACED H.R.H	CHECKED F.S.T	REVIEWED J.C.T	REVISED
DATE 7-26-58	DATE 3-16-59	DATE 2-20-59	DATE 4-13-59	SHEET 104

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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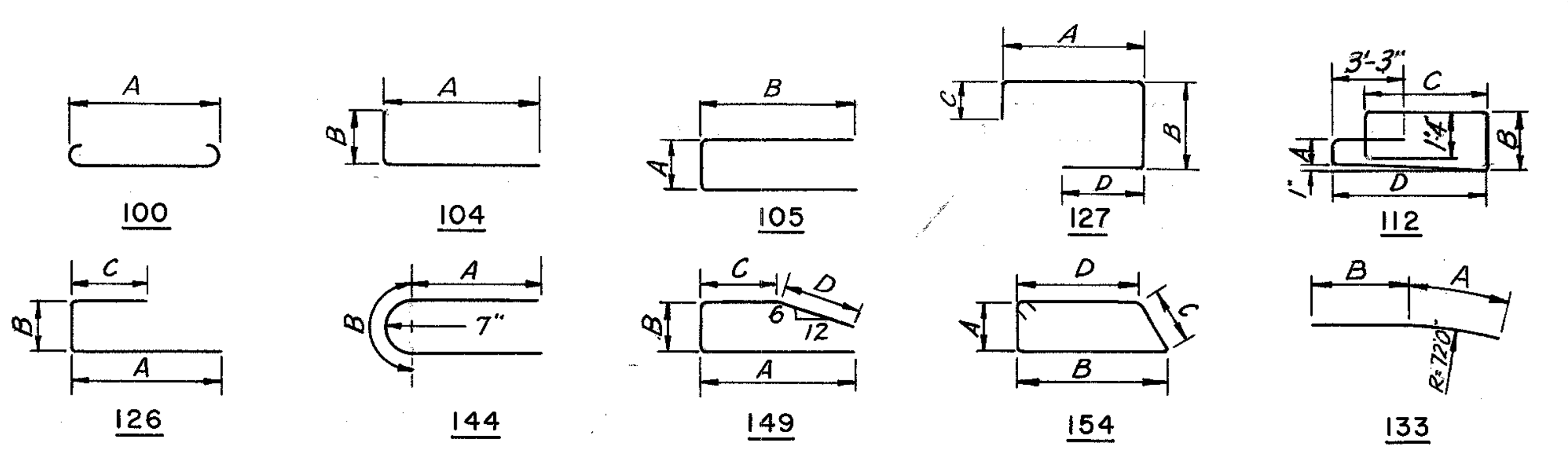
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

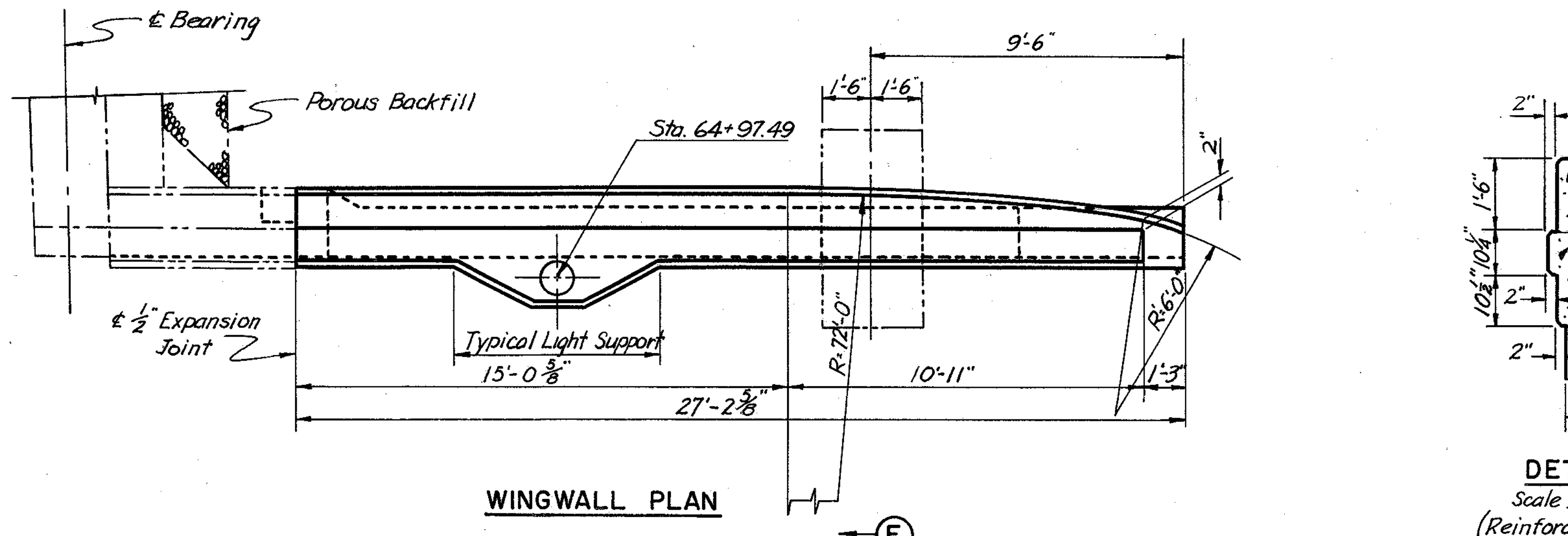
Note: Prefix "AA" shall be assigned to all bar marks.

REINFORCEMENT SCHEDULE

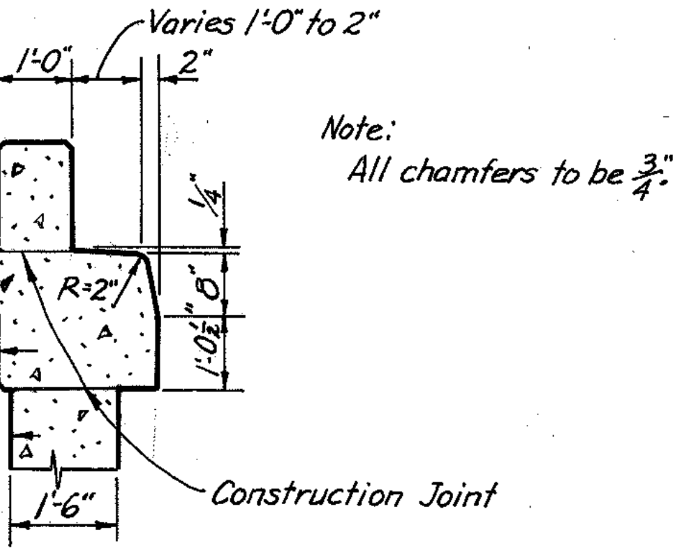
MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCREMENT	WEIGHT (LBS.)
				A	B	C	D		
401	32	6'-7"	154	1'-4"	1'-10"	1'-4"	1'-8"		141
402	2 Series 6	6'-1" to 6'-7"	154	1'-4"	1'-7" to 1'-10"	1'-4"	1'-5" to 1'-8"	1 3/16"	51
403	2 Series 6	4'-7" to 5'-11"	154	1'-4"	10" to 1'-6"	1'-4"	8" to 1'-4"	3 3/16"	42
404	41	5'-7"	105	8"	2'-7"				153
405	42	6'-4"	144	2'-3"	1'-10"				178
*451	4	8'-11"	131	2'-6"	1'-2"				24
*452	4	9'-11"	131	3'-0"	1'-8"				26
*453	6	9'-5"	131	3'-2"	1'-0"				38
*454	4	5'-7"	155	2'-2"					14
*455	4	6'-1"	155	2'-8"					16
*456	6	6'-3"	155	2'-10"					26
501	98	5'-1"	105	2'-2"	1'-7"				520
502	4	5'-5"	105	1'-8"	2'-0"				23
601	72	7'-3"	100	5'-11"					784
602	15	5'-9"	Str.						130
603	20	27'-6"	Str.						826
604	4 Series 30	6'-3" to 7'-8"	104	5'-7" to 7'-0"	10"			9/16"	1254
605	60	7'-5"	105	3'-11"	1'-11"				668
606	19	19'-3"	Str.						549
607	1	20'-9"	104	19'-0"	1'-11"				31
608	24	22'-6"	154	9'-6"	1'-5"	9'-6"	1'-4"		811
609	80	23'-8"	112	10"	1'-5"	8'-2"	9'-6"		2844
610	38	31'-9"	Str.						1812
611	15	4'-6"	100	3'-2"					101
612	25	19'-0"	Str.						713
613	37	5'-6"	104	4'-10"	10"				306
614	5	18'-5"	104	16'-8"	1'-11"				138
615	3	22'-6"	Str.						101
616	5	16'-6"	Str.						124
617	3	20'-0"	Str.						90
618	31	12'-9"	Str.						594
619	30	6'-9"	Str.						304
620	6	11'-3"	Str.						101
621	14	3'-9"	Str.						79
622	20	4'-3"	Str.						128
623	3	20'-0"	133	12'-0"	8'-0"				90
624	1	12'-0"	104	10'-3"	1'-11"				18
‡625	6	25'-6"	Str.						—
626	4	7'-0"	100	5'-8"					42
627	3	10'-3"	Str.						46
628	4	12'-11"	127	7'-11"	8"	1'-11"	2'-11"		78
629	8	11'-2"	126	7'-11"	8"	2'-11"			134
630	6	5'-3"	Str.						47
631	20	10'-0"	Str.						300
632	13	11'-9"	Str.						229
633	3	26'-10"	133	12'-0"	14'-10"				121
634	4	3'-8"	105	8"	1'-8"				22
635	21	4'-3"	104	2'-9"	1'-8"				134
636	9	7'-7"	149	2'-9"	7"	1'-8"	3'-0"		103
637	4	4'-0"	100	2'-8"					24
638	9	26'-9"	Str.						362
639	2 Series 5	6'-0" to 18'-9"	Str.					3'-2 1/4"	186
640	2 Series 10	5'-6" to 10'-0"	Str.					6"	233
‡641	6	18'-9"	Str						—
642	6	8'-11"	104	8'-3"	10"				80
‡643	6	5'-3"	Str.						—
644	1	5'-6"	100	4'-2"					8
*651	4	9'-5"	141	2'-11"	1'-10"				56
*652	6	14'-6"	141	5'-3"	3'-0"				130
*653	2	5'-0"	Str.						16
801	2	25'-0"	Str.						134
								Total	16,333



BENDING DIAGRAMS



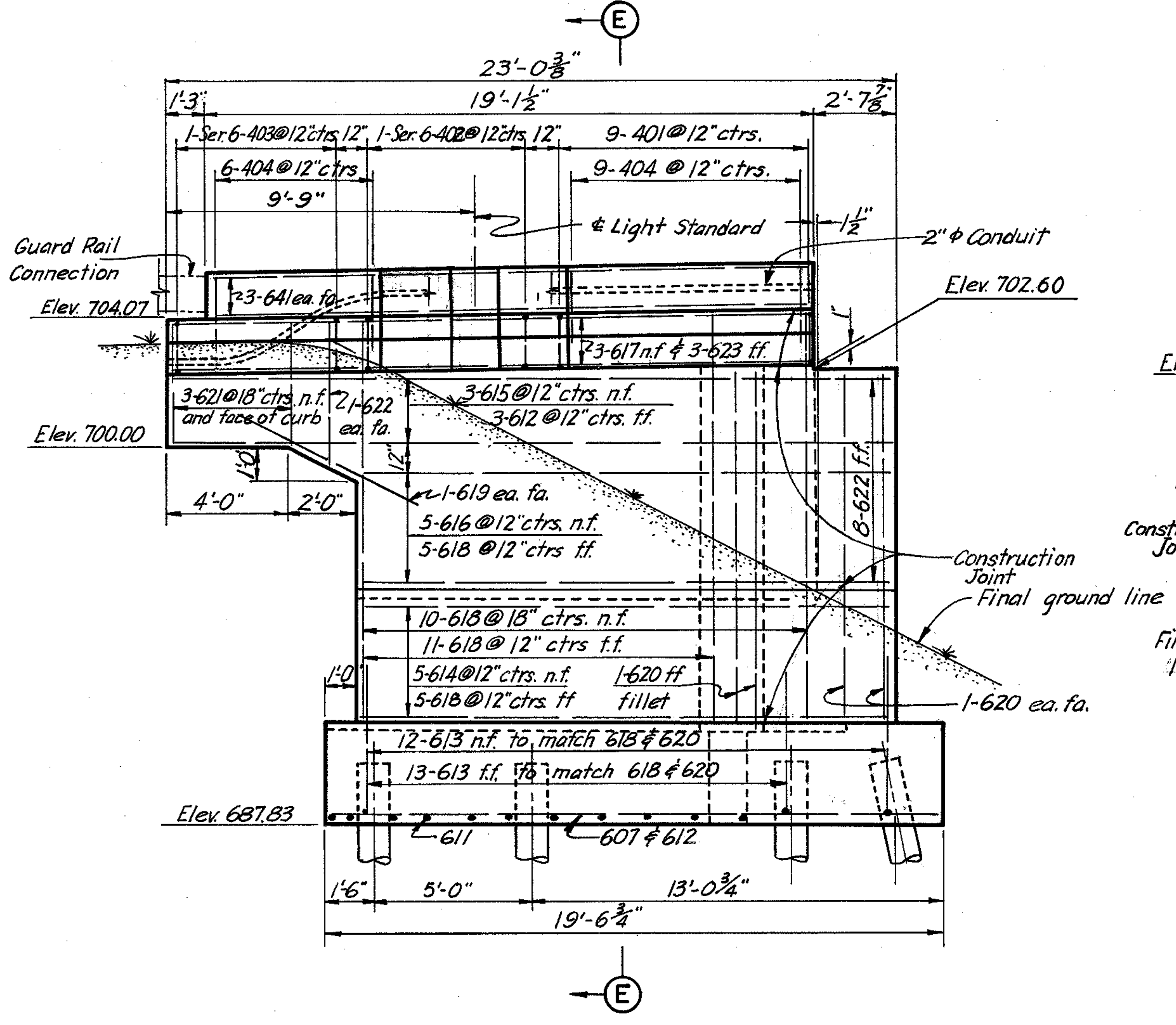
WINGWALL PLAN



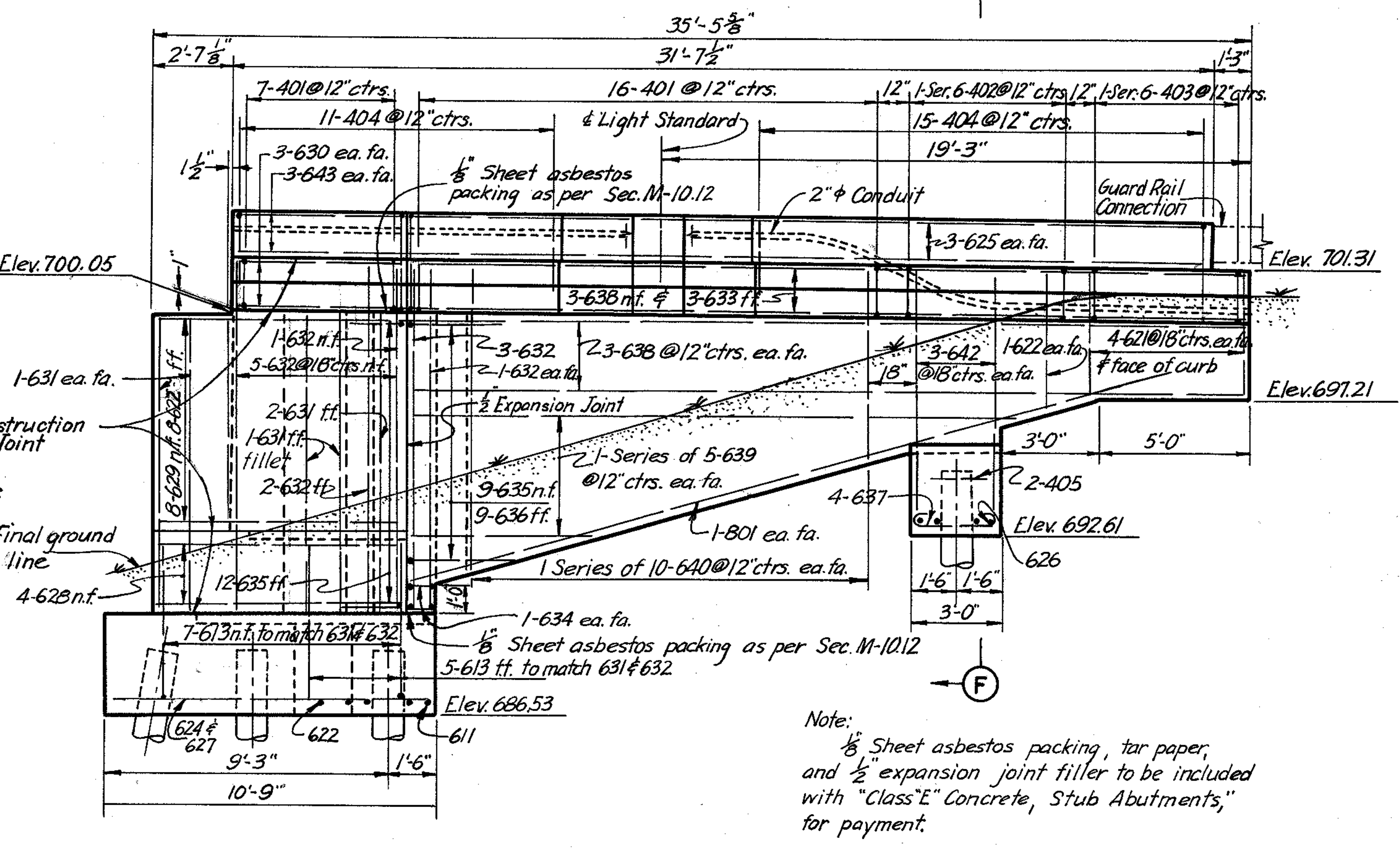
Note:
All chamfers to be 3/4".

DETAIL "A"
Scale 3/4" = 1'-0"
(Reinforcement not shown)

Notes:
Backfill shall be completed prior to erection of curb.
End of Railing Parapet to be normal to top of safety curb.
Type "A" railing not shown.

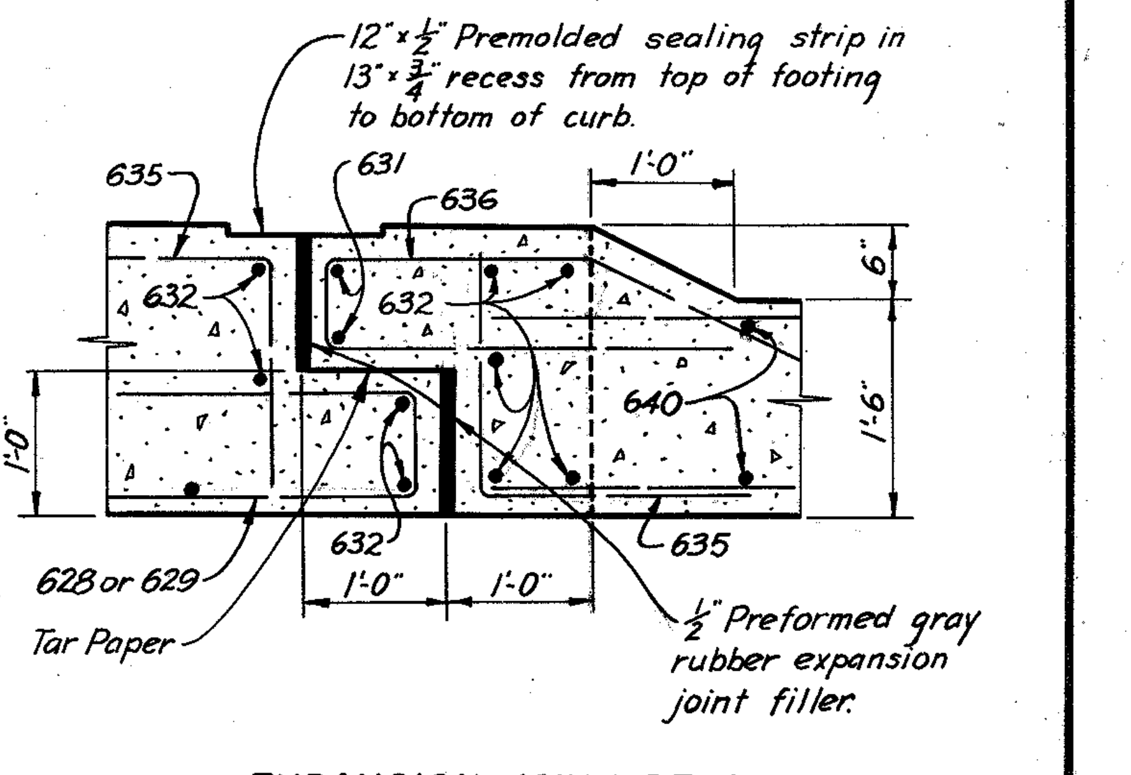


ELEVATION C-C



Note:
1/8" Sheet asbestos packing, tar paper, and 1/2" expansion joint filler to be included with "Class E" Concrete, Stub Abutments," for payment.

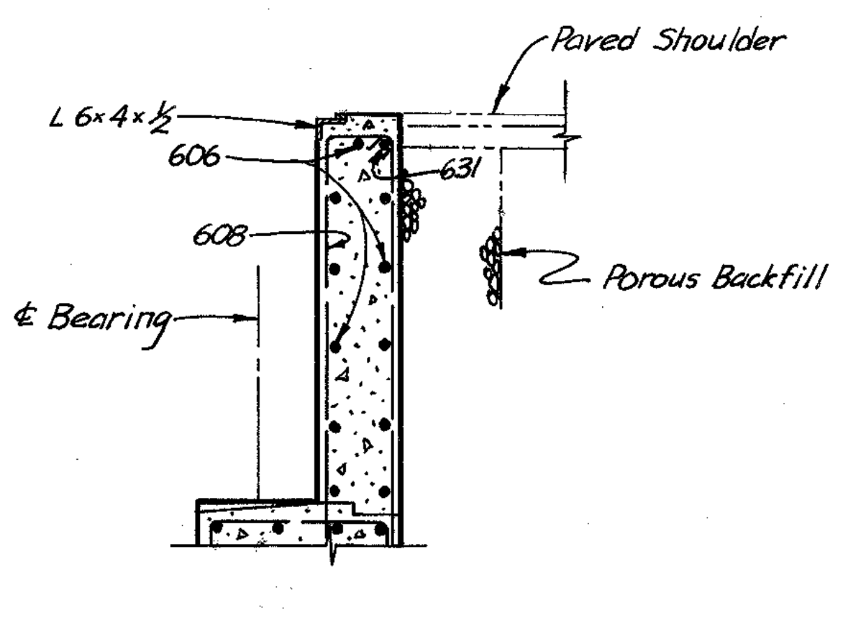
ELEVATION D-D



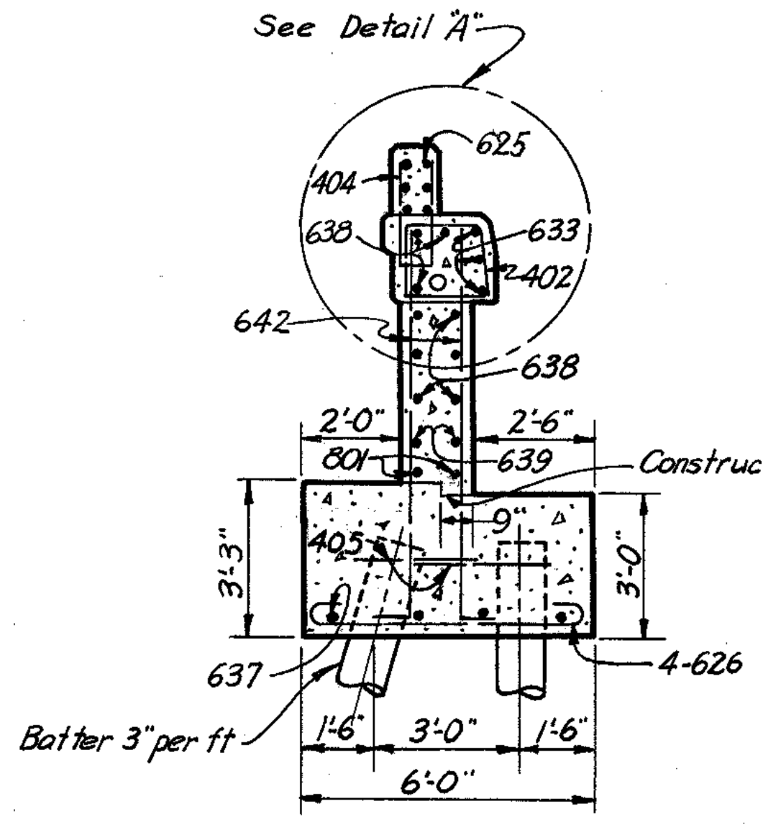
EXPANSION JOINT DETAIL
Scale 3/4" = 1'-0"

NOTES:

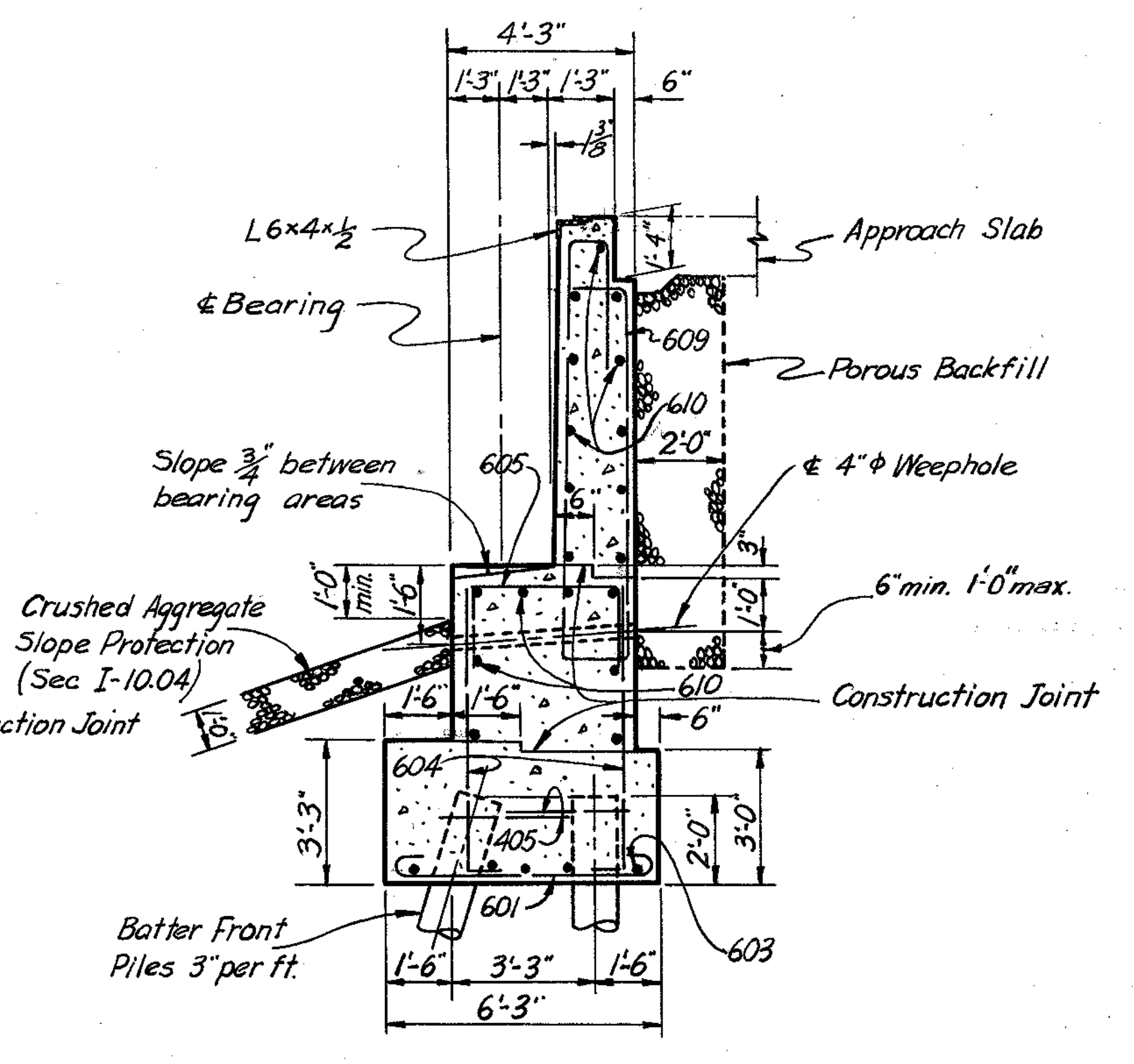
All piles shall be 12"φ cast-in-place reinforced concrete piles.
All battered piles shall be battered 3 in 12 in direction shown.
Pile spacings given along bottom of footing.
For details of end dam, see sheet 173-7A
For masonry plate details, see sheet 173-7A
For Railing Post spacing, details of Railing and Guard Rail Connection, see sheet 175-7A
Reinforcement bars shall be 3 inches clear from bottom of footings and 2 inches elsewhere.
n.f. = near face; f.f. = far face; ea. fa. = each face.
‡ Bars 625, 641, and 643 are included for payment with "Item S-14, Railing."
For Slope Protection details, see sheet 174-7A
Bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
For Replacement Schedule, see sheet 103-7A
For reinforcement details of Light Standard Support, see sheet 176-7A
* Designates Light Standard Support Reinforcement steel.
For details of Light Standard Support, see sheet 176-7A



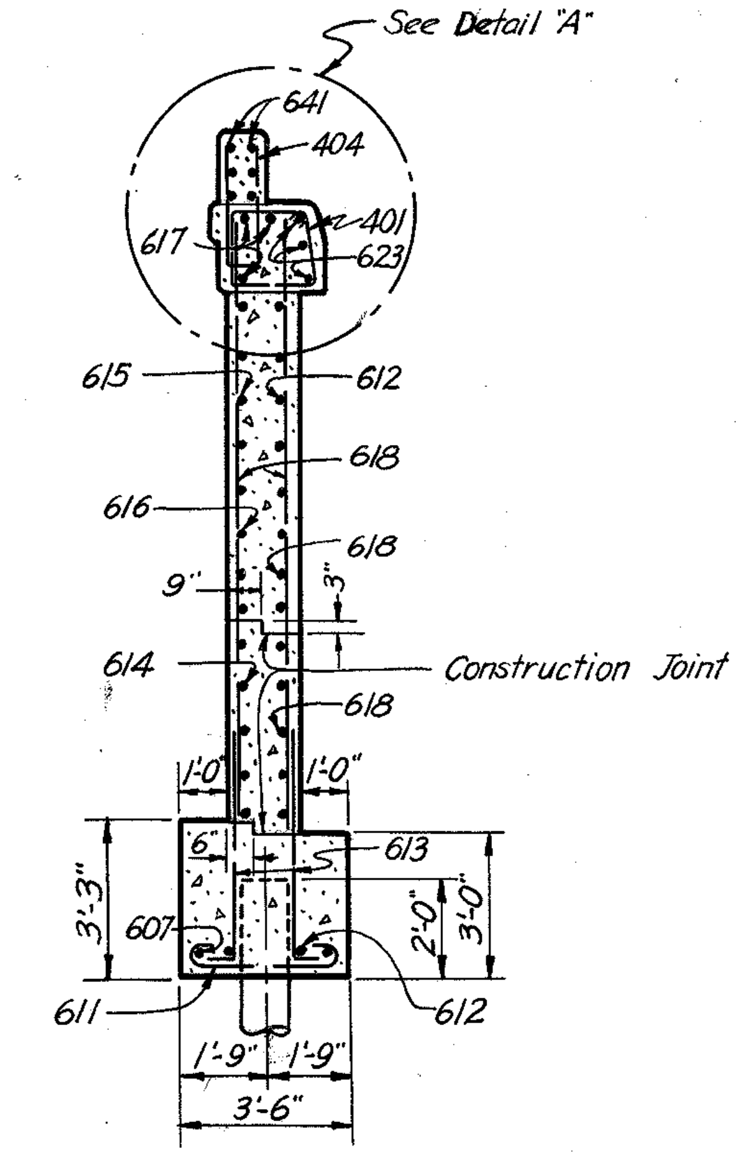
SECTION B-B



SECTION F-F



SECTION A-A



SECTION E-E

H.N.T.B. BR. NO. 3
PART 7A

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

WEST ABUTMENT DETAILS
INNER BELT FREEWAY OVER
RAMPS E-8, E-10 AND E-16
BR. NO. CUY-42-1843 STA. 65+10.18
Scale: 1/4" = 1'-0" Except as noted STA. 68+19.03
WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN N.N.	TRACED HRH	CHECKED F.S.T.	REVIEWED JCT	REVISED
DATE 7-26-58	DATE 3-16-59	DATE 2-23-59	DATE 11-13-59	SHEET 105

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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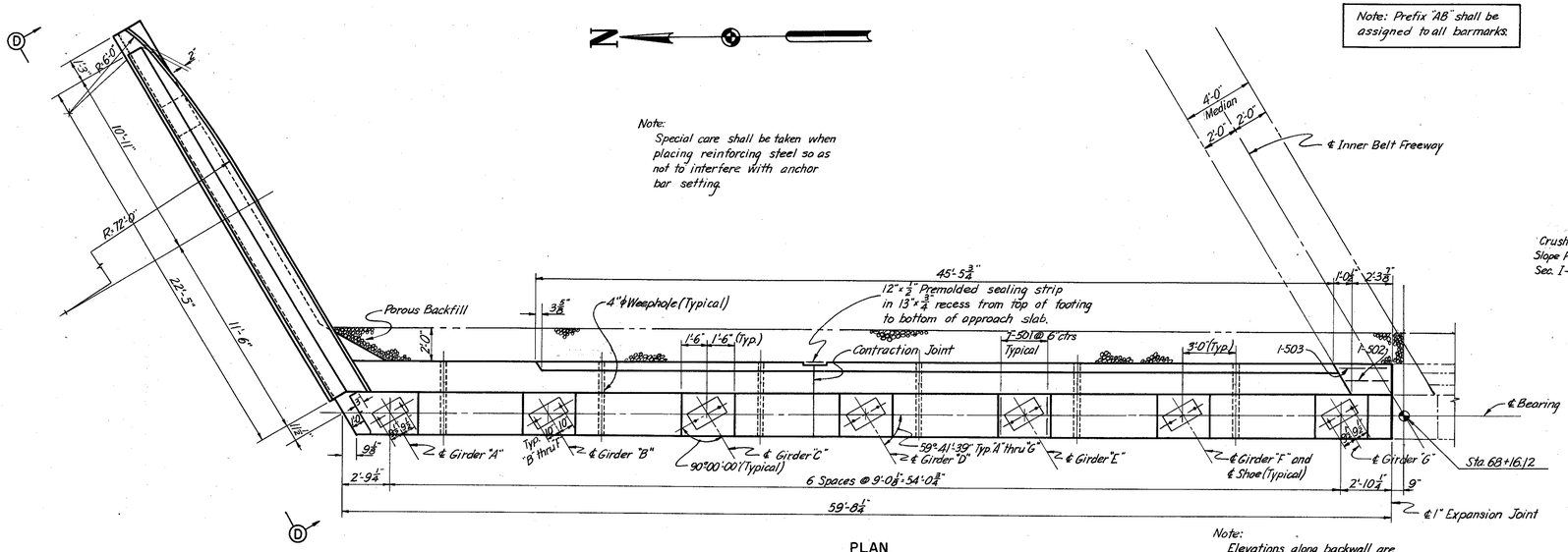
MICROFILMED JUL 3 1985

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

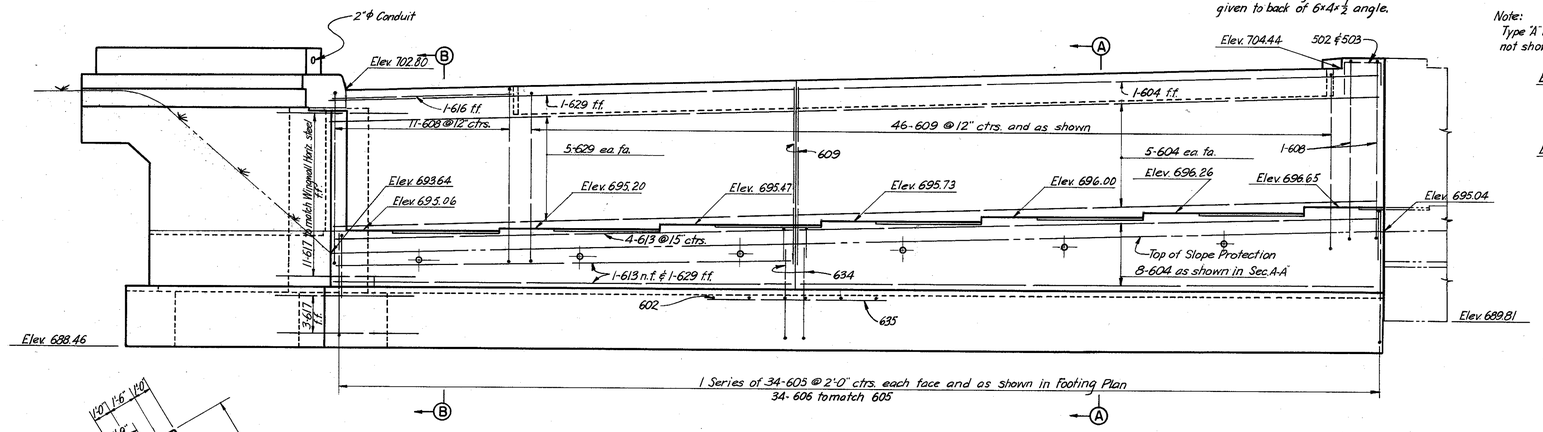
Note: Prefix "AB" shall be assigned to all barmarks.

Note:
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

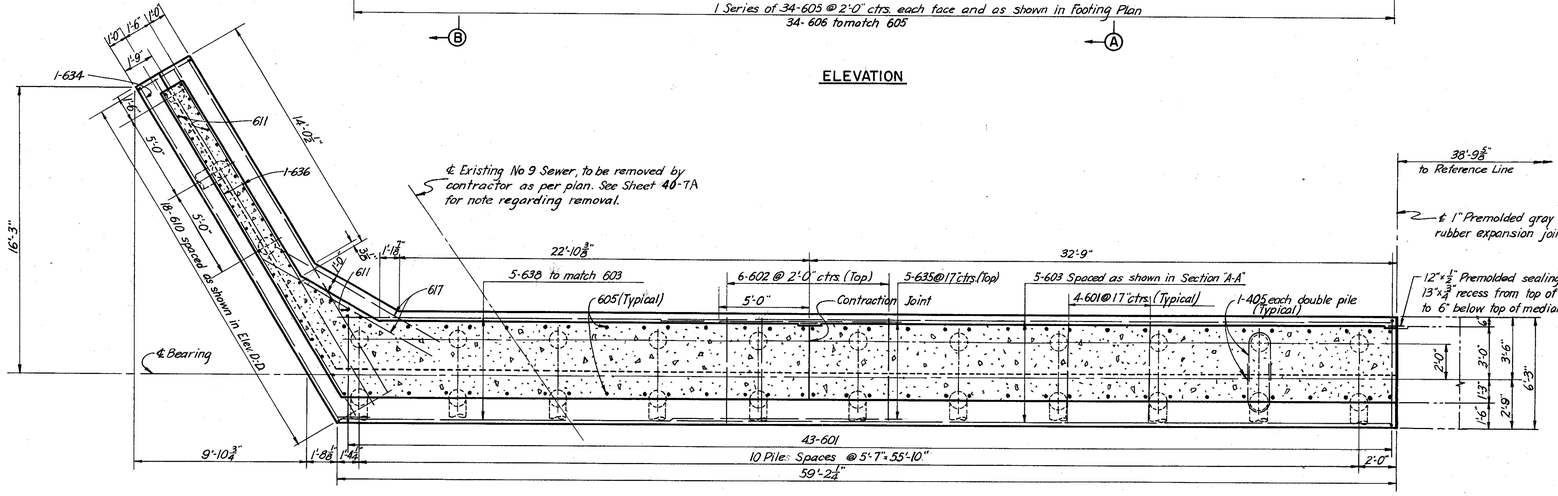


PLAN

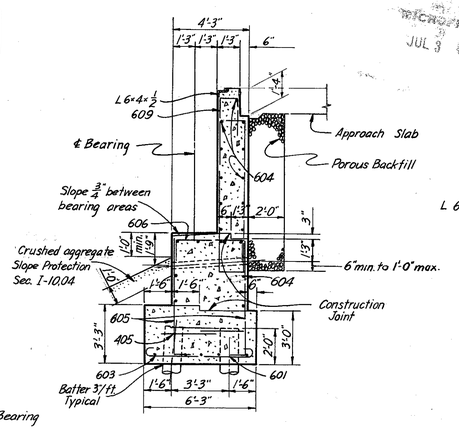
Note:
Elevations along backwall are given to back of 6×4×½ angle.



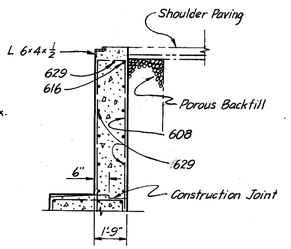
ELEVATION



FOOTING PLAN

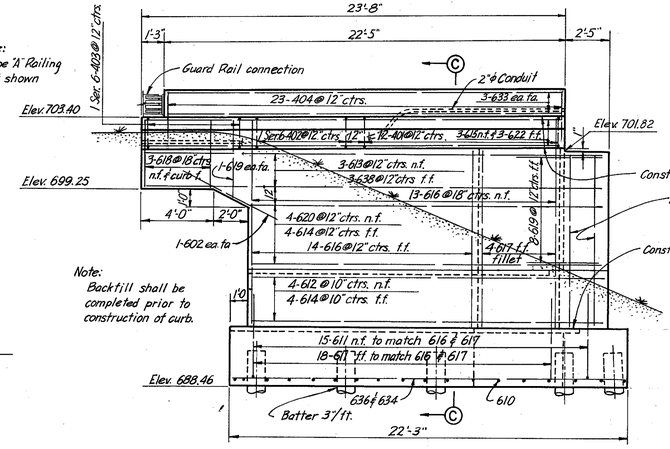


SECTION A-A (shown)
SECTION E-E (similar)



SECTION B-B (shown)
SECTION H-H (similar)

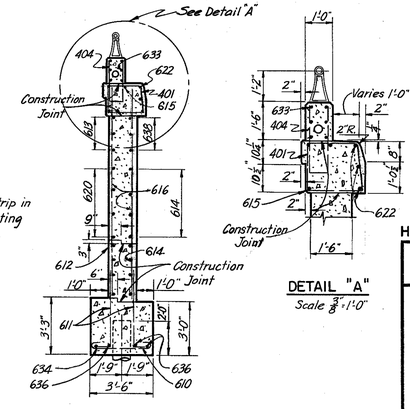
Note:
"A" Railing not shown



Note:
Backfill shall be completed prior to construction of curb.

Note:
End of Railing Parapet to be normal to top of safety curb.

ELEVATION D-D



SECTION C-C (shown)
SECTION F-F (similar)

DETAIL "A"
Scale ⅜"-1'-0"

NOTES:
For Reinforcement schedule see sheet 107-7A
For additional notes see sheet 107-7A

H.N.T.B. BR. NO. 3 PART 7A

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

EAST ABUTMENT - NORTH HALF
INNER BELT FREEWAY OVER RAMPS E-8, E-10 AND E-16

BR. NO. CUY-42-1843 STA. 65+10.18
Scale: 1/4"=1'-0" Except as noted STA. 68+19.03

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN N.N.	TRACED IZH	CHECKED T.P.	REVIEWED CT	REVISED
DATE 6-20-58	DATE 3-12-59	DATE 2-18-59	DATE 11-13-59	SHEET 106

Note:
Prefix AB shall be assigned to all barmarks

Note:
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

Note:
≠ Denotes Elevation given at P.V.I. of 5'-0" rounding

Reference Line
See Sheet 100-TA

℄ Inner Belt Freeway

4'-0" Median 2'-0" 2'-0"

1'-0" 1'-1" 6¾"

Porous Backfill

2'-0"

I-504
I-505

36'-5⅝"

12"x¾" Premolded sealing strip in 13"x⅜" recess from top of footing to bottom of approach slab.

8'-0½"

11'-8½"

4"ϕ Weephole (Typical)

1'-6" 1'-6" Typical

Contraction Joint

7-501 @ 6" ctrs. (Typ)

Elev. 705.70 ≠

℄ Bearing

Sta. 68+16.12

℄ 1" Expansion Joint

9" 3'-4½"

38'-0⅝"

60'-7⅞"

21'-10¼"

2⅞"

8¼"

1'-9⅞"

10"

℄ Girder "H"

℄ Girder "J"

℄ Girder "K"

℄ Girder "L"

℄ Girder "M"

℄ Girder "N"

℄ Girder "P"

typ. 5 thru "N"

90°-00'-00" (Typical)

60°-30'-01" typ. "H" thru "P"

67°-03'-18"

3'-0" typ.

6 Spaces @ 9'-0⅝" = 54'-0¾"

R-6'-0"

2"

13"

10'-1¼"

R-72'-0"

19'-2"

8'-3"

11'-5"

PLAN

Note:
Elevation along backwall are given to back of 6"x4"x½" angle.

Note:
Type "A" Railing not shown.

505 ≠ 504

Elev. 704.46

I-604 f.f.

I-639 f.f.

I-616 f.f.

Elev. 705.56

2" ϕ Conduit

46-609 @ 12" ctrs. and as shown

609

11-609 @ 12" ctrs.

I-608

5-604 ea. fa.

Elev. 697.87

Elev. 697.81

Elev. 697.11

Elev. 696.73

Elev. 696.86

Elev. 697.37

Elev. 697.62

5-639 ea. fa.

Elev. 698.51

Elev. 695.04

I-Series 4-640 @ 15" ctrs

13-602 ≠ to match Wingwall Horizontal Steel.

8-604

Top of Slope Protection

634

602

I-601 n.f. & I-639 f.f.

I-632

635

3-602 ≠ 15

Elev. 688.46

Elev. 689.81

1 Series of 34-605 ea. fa. @ 2'-0" ctrs (As shown in footing Plan)
34-606 to match 605

2'-0"

ELEVATION

Reference Line
See Sheet 100-1A

10'-0⅜"

1'-0" 1'-6" 1'-0" 1'-9"

4'-6" 4'-6"

14-610 Spaced as shown in Elev G-G

4-637

611

15'-5⅞"

℄ 1" Premolded gray rubber expansion joint

12"x½" Premolded sealing strip in 13"x¾" recess from top of footing to 6" below top of median

6'-3"

6" 3'-6" 3'-0" 2'-0" 2'-9" 1'-6" 1'-3"

38'-9⅝"

6'-1¾"

15'-11¾"

5-603 Spaced as shown in Section E-E

6-602 @ 2'-0" ctrs. (Top)

5'-0"

5-635 @ 17" ctrs (Top)

5-615 to match 603

602

605

I-405 each double pile (Typical)

Contraction Joint

632

℄ Bearing

I-621

4-601 @ 17" ctrs. (Typical)

43-601

67°-03'-18"

6 Pile Spaces @ 5'-7"=33'-6"

3'-5¾"

2'-1¼"

3 Pile Spaces @ 5'-7"=16'-9"

3'-0"

4⅞"

1'-1½"

61'-0¾"

FOOTING PLAN

Note:
End of Railing Parapet to be normal to top of safety curb.
Backfill shall be completed prior to construction of safety curb.

20'-5"

2'-10¾"

2"ϕ Conduit

19'-2"

Guard Rail Connection

1'-3"

1 Ser. 6-405 @ 12" ctrs.

Elev. 706.42

3-631 ea. fa.

20-404 @ 12" ctrs.

Elev. 704.69

9-401 @ 12" ctrs.

3-621 n.f. 3-630 f.f.

12 (3 ser. 402 @ 12" ctrs.

1"

3-625 @ 12" ctrs. n.f.

3-637 @ 12" ctrs. f.f.

1-619 ea. fa.

3-618 @ 18" ctrs. n.f. & curb face

Elev. 702.27

10"

1'-11¾"

4'-0"

5-624 @ 12" ctrs. n.f.

5-626 @ 12" ctrs. f.f.

11-628 @ 18" ctrs. n.f.

1-616 ea. fa.

8-602 @ 12" ctrs. f.f.

1-602 ea. fa.

Construction Joint

2'-616 f.f.

5-623 @ 12" ctrs. n.f.

5-626 @ 12" ctrs. f.f.

11-628 @ 12" ctrs. f.f.

Final Ground Line

1'-6"

1'-0"

13-611 n.f. to match 616 & 628

13-611 n.f. to match 628 & 616

Elev. 689.81

637

610

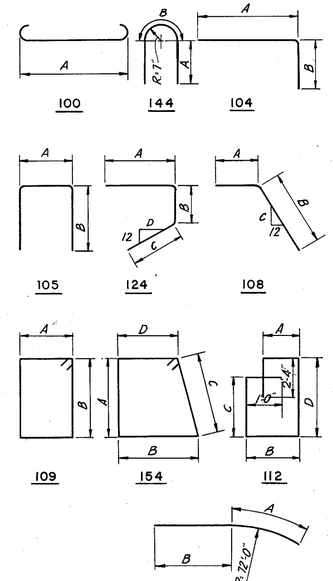
Batter 3"/ft.

19'-10"

ELEVATION G-G

REINFORCEMENT SCHEDULE									
MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT
401	21	6'-9"	154	1'-5	1'-10"	1'-5	1'-8"		95
402	2 Ser of 6	6'-3" to 6'-9"	154	1'-5	1'-7" to 1'-10"	1'-5	1'-5" to 1'-8"	1 3/16	52
403	2 Ser of 6	4'-9" to 6'-1"	154	1'-5	10" to 1'-6"	1'-5	8" to 1'-4"	3 3/16	43
404	43	5'-5"	105	8"	2'-6"				156
405	44	6'-3"	144	2'-3"	1'-9"				184
501	98	5'-1"	105	2'-2"	1'-7"				520
502	1	5'-5"	105	2'-6"	1'-7"				6
503	1	5'-9"	105	2'-10"	1'-7"				6
504	1	3'-10"	105	11"	1'-7"				4
505	1	4'-5"	105	1'-6"	1'-7"				5
601	86	7'-3"	100	5'-11"					936
602	40	5'-9"	Str.						345
603	10	40'-0"	Str.						601
604	38	32'-3"	Str.						1841
605	4 Ser. of 34	6'-2" to 7'-8"	104	5'-6" to 7'-0"	10"			½"	1413
606	68	7'-5"	105	3'-11"	1'-11"				758
607	2	27'-9"	Str.						83
608	26	22'-7"	109	1'-5"	9'-6"				882
609	92	22'-6"	112	11"	1'-5"	8'-2"	9'-6"		3109
610	32	4'-6"	100	3'-2"					216
611	59	5'-6"	104	4'-10"	10"				487
612	4	21'-7"	108	19'-9"	1'-11"	20			130
613	9	25'-9"	Str.						348
614	8	15'-0"	Str.						180
615	8	23'-3"	Str.						279
616	35	11'-3"	Str.						591
617	22	9'-9"	Str.						322
618	12	3'-9"	Str.						68
619	12	4'-3"	Str.						77
620	4	19'-9"	Str.						119
621	1	6'-6"	124	2'-9"	2'-0"	2'-0"	8		10
622	3	23'-9"	133	12'-0"	11'-9"				107
623	5	19'-2"	124	17'-0"	6"	1'-11"	8		144
624	5	17'-0"	Str.						128
625	3	23'-0"	Str.						104
626	10	12'-0"	Str.						180
627	3	20'-0"	Str.						90
628	22	13'-0"	Str.						430
629	13	27'-3"	Str.						532
630	3	19'-6"	133	12'-0"	7'-6"				88
*631	6	8'-9"	Str.						—
632	1	7'-8"	104	7'-0"	10"				12
*633	6	22'-0"	Str.						—
634	1	23'-9"	108	21'-11"	1'-11"	20			36
635	10	10'-0"	Str.						150
636	3	22'-3"	Str.						100
637	7	18'-9"	Str.						197
638	8	21'-0"	Str.						252
639	13	26'-0"	Str.						508
640	1 Ser. of 4	26'-0" to 27'-9"	Str.					7"	161
								Total	17,085

BENDING DIAGRAMS



NOTES:
All piles shall be 12"ϕ Cast-in-place reinforced concrete piles.
All battered piles shall be battered 3 in 12 in direction shown.
Pile spacings are given along bottom of footing.
Reinforcement bars shall be 3 inches clear from bottom of footing and 2 inches elsewhere.
For Replacement Schedule see sheet 103-1A
Bars of a series shall vary in length by a constant increment.
* Bars 631 ϕ 633 are included for payment with "Item S-14, Railing."
Bar dimensions are given out to out.
n.f. = near face ; f.f. = far face ; ea. fa. = each face.
For masonry plate details see sheet 173-7A
For details of end dam see sheet 173-7A
For Slope Protection details see sheet 174-7A
For location of lighting conduit see sheet 176-7A
For Railing Post spacing, details of Railing, and Guard Rail connection see sheet 175-7A
For additional sections see sheet 106-7A

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

JUL 3 1985

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

H.N.T.B. BR. NO. 3 PART 7A

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

EAST ABUTMENT-SOUTH HALF

INNER BELT FREEWAY OVER
RAMPS E-8, E-10 AND E-16

BR. NO. CUY-42-1843 STA. 65+10.18
Scale: 1/4" = 1'-0" STA. 68+19.03

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
NN	1101	T.P.	JCT	
DATE 7-12-58	DATE 3-16-59	DATE 2-21-59	DATE 11-13-59	SHEET 107

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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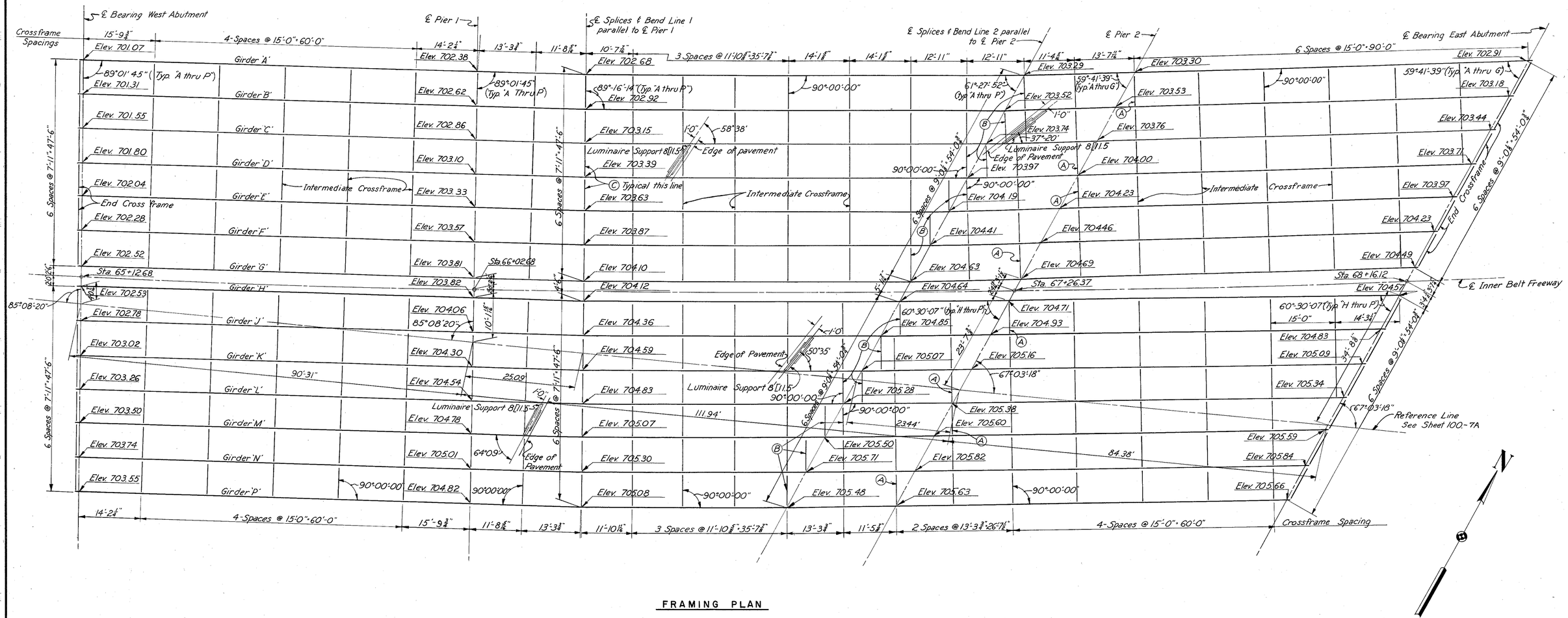
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



FRAMING PLAN

NOTES:
Elevations shown are to the top of pavement
For superstructure details, other then girder elevations, see sheet 112-7A
For girder notes see sheet 109-7A
Ⓐ Ⓑ & Ⓒ indicate special crossframes, see sheet 112-7A for their details.

H.N.T.B. BR. NO. 3 PART 7A

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

FRAMING PLAN
INNER BELT FREEWAY OVER RAMPS E-8, E-10 AND E-16

BR. NO. CUY-42-1843 STA. 65+10.18
Scale: 3/32" = 1'-0" STA. 68+19.03

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN A.B.	TRACED R.C.	CHECKED C.A.B	REVIEWED JCT	REVISED
DATE 4-18-58	DATE 5-7-59	DATE 5-25-59	DATE 11-13-59	SHEET 108

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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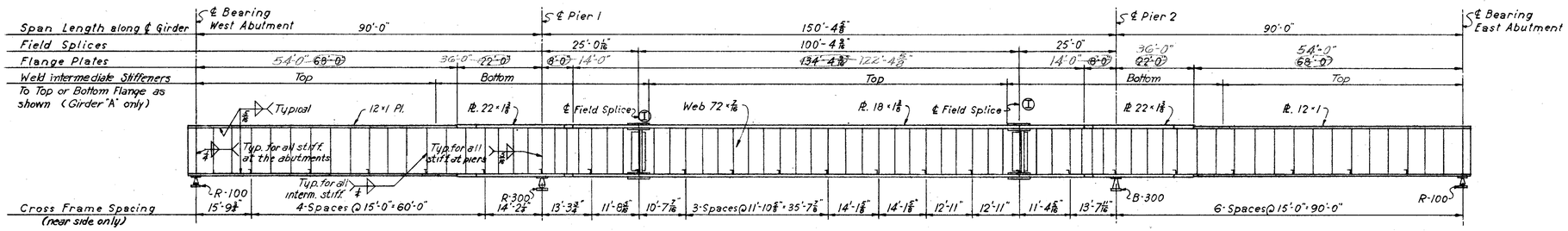
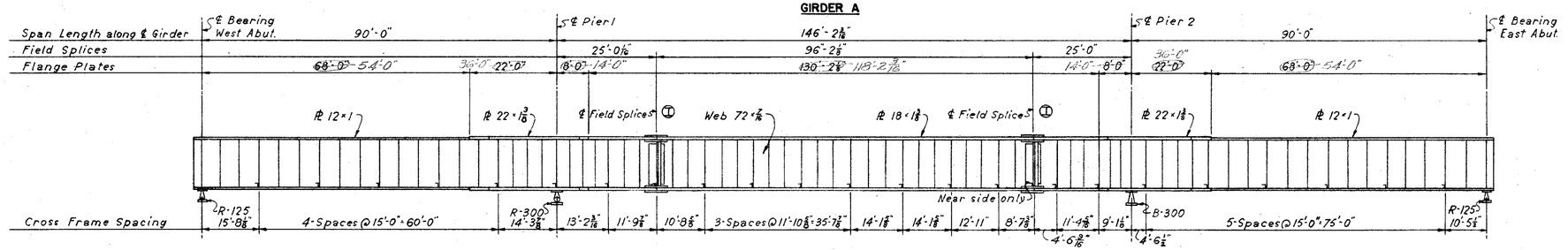
JUL 3 1958

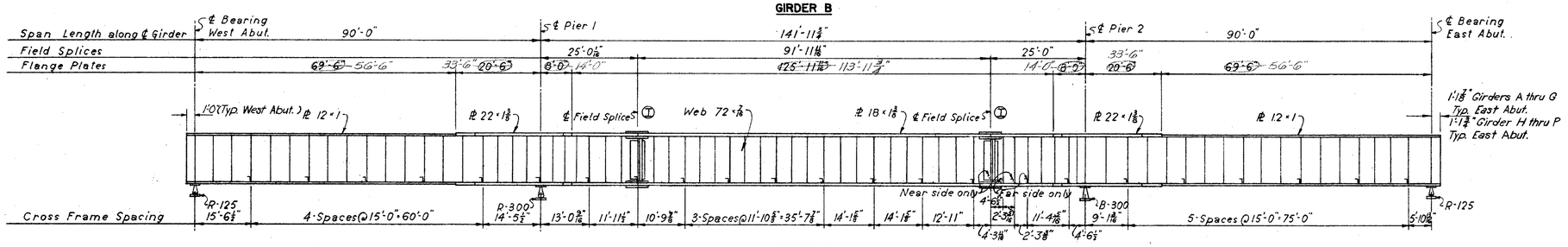
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



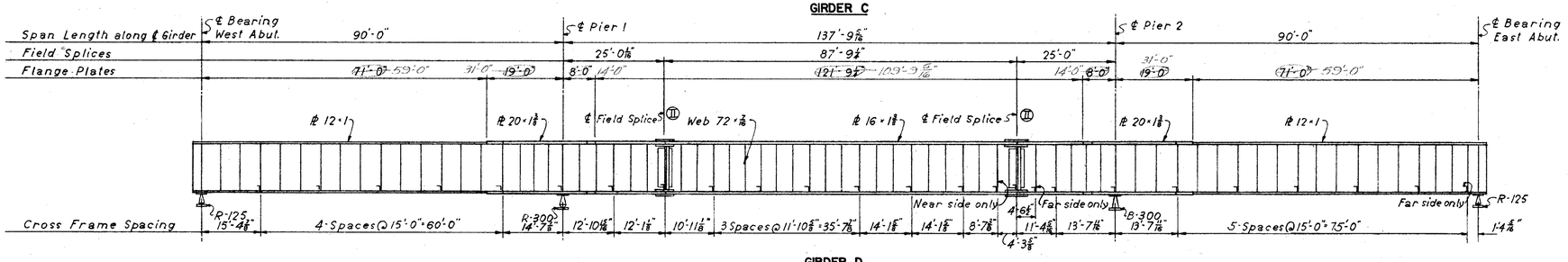
GIRDER A



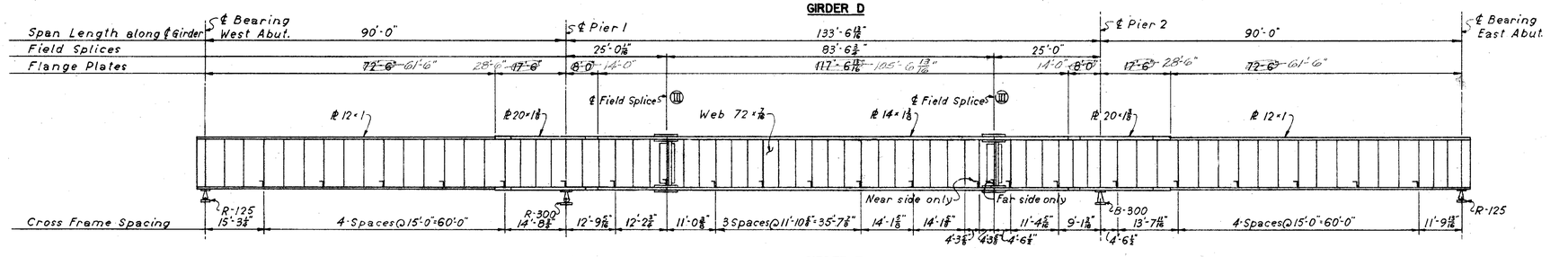
GIRDER B



GIRDER C



GIRDER D



GIRDER E

Horizontal Scale 1/16" = 1'-0"
No Vertical Scale

NOTES:

Top of finished pavement elevations along ℄ girders are given at tenth points between bearings and are shown on sheet 111-7A. The girders shall be fabricated to lines parallel to profiles formed by these elevations, plus the camber required to compensate for dead load deflections.

Top and bottom flange plates are to be the same and shall be spliced at the points shown in the girder elevations, and as otherwise required.

The web plate may be spliced as required by available plate lengths.

Intermediate stiffeners shall be as shown in Table "A" below and shall be placed in pairs on all interior girders. These stiffeners shall not be welded to the flanges, but fitted to close enough contact that the shop coat, when applied, shall fill and close the openings.

Intermediate stiffeners shall be used on the inside only of exterior girders and shall be welded to top or bottom flanges within the limits shown on the girder elevations with a 5/16" fillet weld on both sides of the joint for a distance of 2" from the outside edge of the stiffener. The other end shall have a tight fit with the flange.

Bearing stiffeners shall be 5 x 5/8 Pls. at the abutments and 8 x 1 Pls. at the piers and shall be placed in pairs on all girders. They shall be grooved and fully butt welded to the lower flange and fitted to close contact, without welding, at the upper flange.

Angles shall be used as shown in Table "A" at all field splices. All girder field splices shall be made with 7/8" ϕ high strength bolts conforming to Supplemental Spec. S-207. The bolts shall be placed with the heads on the outside face of exterior girders and on bottom of girder flanges.

At bend points, the girders change direction at the center line of the field splice. Specially cut splice plates will be required at these locations.

Welding shown for girder "A" is typical for all girders.

Welding shall be done in accordance with Sec. S-7.22 of the Specifications.

Longitudinal dimensions of the girders are measured horizontally along ℄ of web plate.

For top of pavement elevations and deflections see sheet 111-7A.

For splice details and other superstructure details see sheet 112-7A.

For details of rocker masonry plates see sheet 113-7A.

For other rocker details and details of bolsters see Ohio Standards, Dwg. RB-1-55.

For details of end dams see sheet 113-7A.

Intermediate stiffeners shall be spaced equally as shown between cross frames.

For Shop Drawing and Assembly Notes see sheet 128-7A.

TABLE "A"

GIRDER FLANGE WIDTH	INTERMEDIATE STIFFENER	SPLICE ANGLE
12"	Pl. 5X⅜	5X3½X⅜
14"-16"	Pl. 6X⅜	6X3½X⅜
18"℄ Up	Pl. 8X½	8X4X½

H.N.T.B. BR. NO. 3 PART 7A

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

GIRDER ELEVATIONS
INNER BELT FREEWAY OVER
RAMPS E-8, E-10 AND E-16

BR. NO. CUY-42-1843 STA. 65+10.18
Scale: As noted STA. 68+19.03

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.B		T.L.C.	JCT	
DATE 5-1958	DATE	DATE 7-2-58	DATE 11-13-59	SHEET 109

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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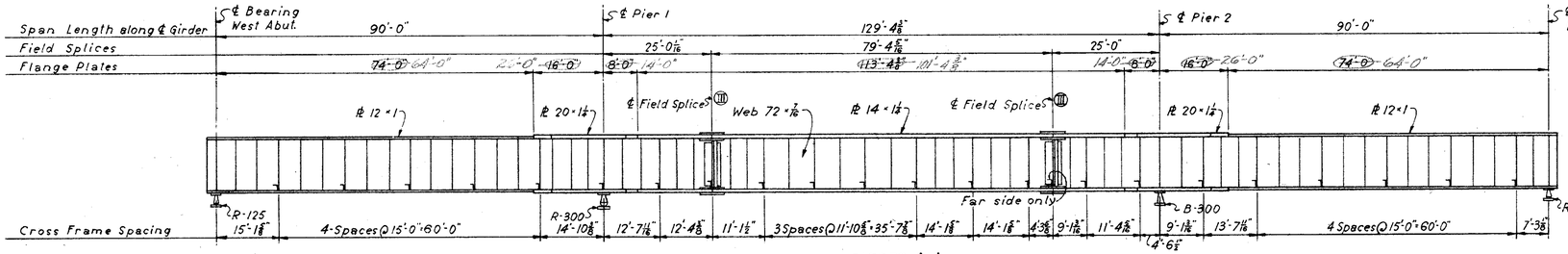
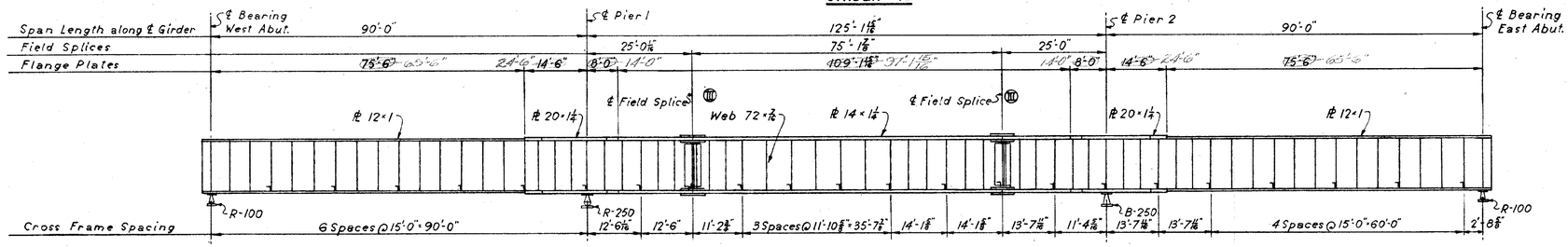
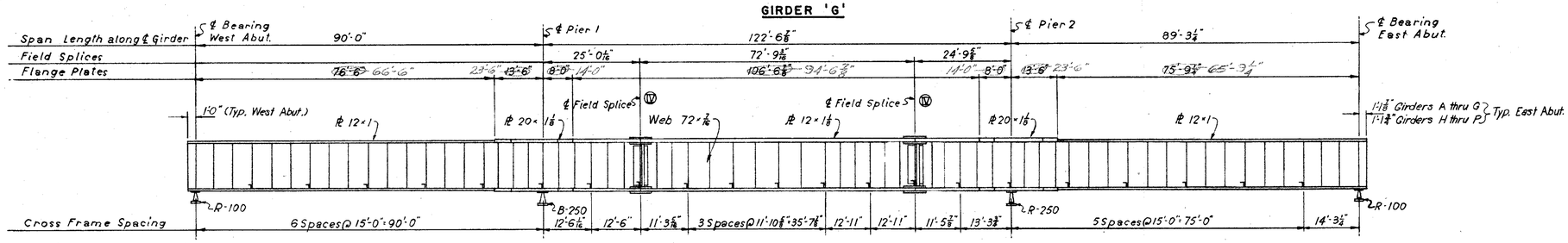
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



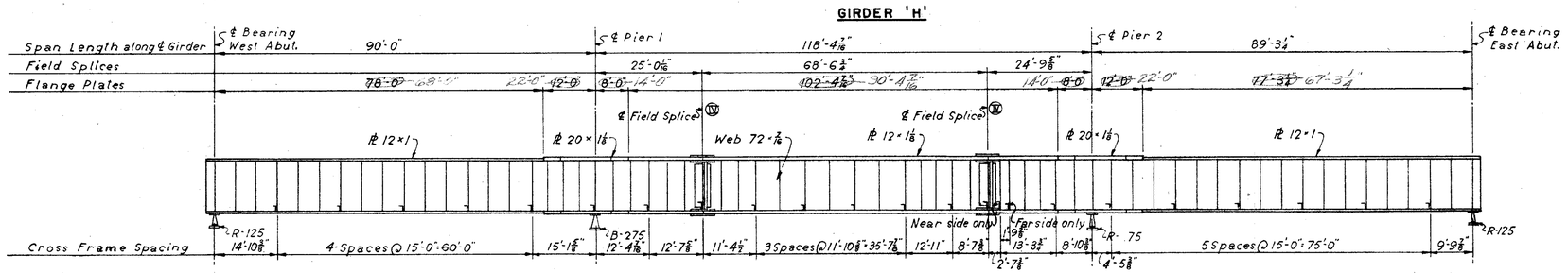
GIRDER 'F'



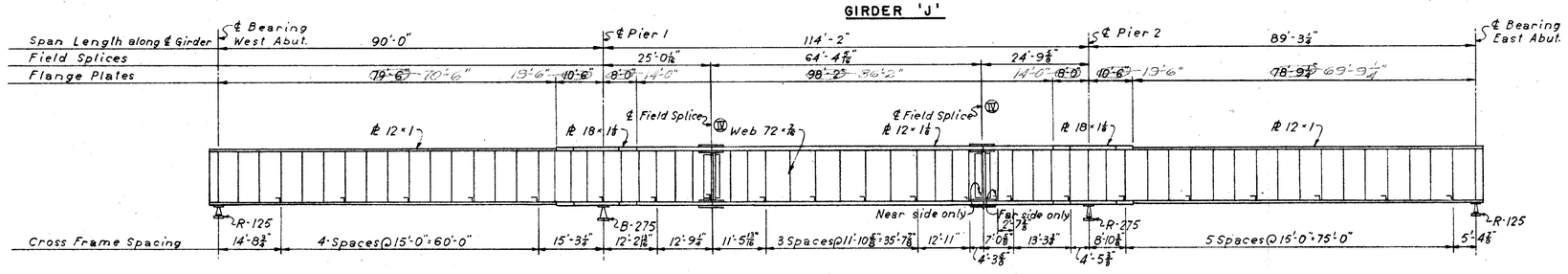
GIRDER 'G'



GIRDER 'H'



GIRDER 'J'



GIRDER 'K'

Horizontal Scale: 1/16" = 1'-0"
No Vertical Scale

NOTE: For girder notes see sheet 109-7A.

H.N.T.B. BR. NO. 3 PART 7A

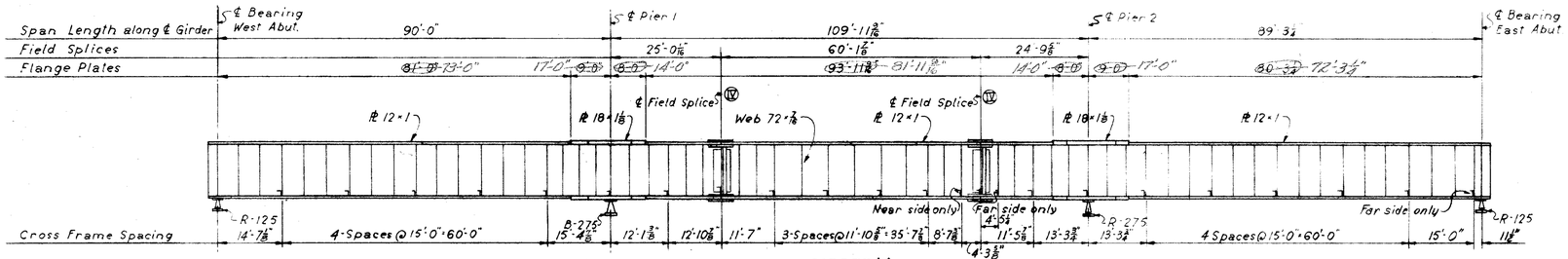
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

GIRDER ELEVATIONS
INNER BELT FREEWAY OVER RAMPS E-8, E-10 AND E-16

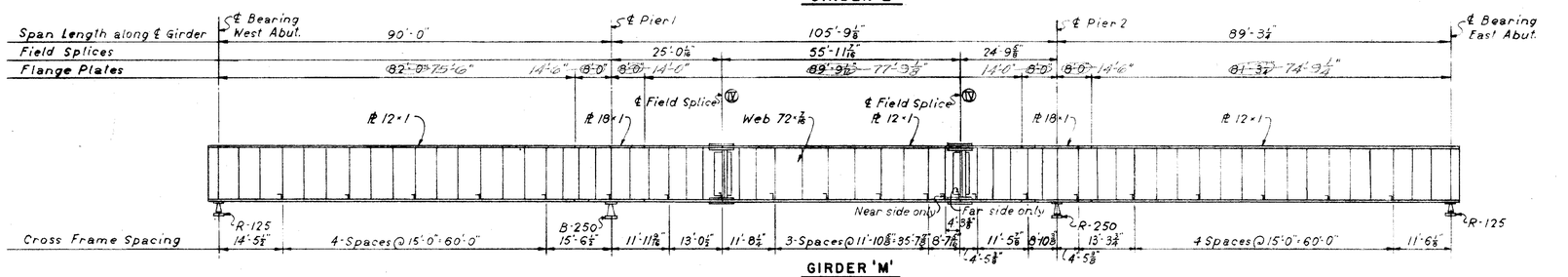
BR. NO. CUY-42-1843 STA. 65+10.18
Scale: As noted STA. 68+19.03

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

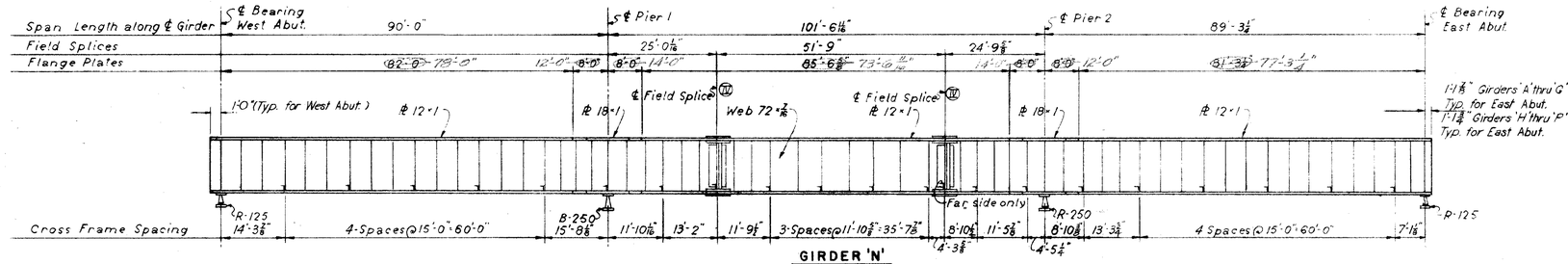
DRAWN A.B.	TRACED	CHECKED L.C.	REVIEWED JCT	REVISED 6-20-60
DATE 5-23-58	DATE	DATE 7-3-58	DATE 11-13-59	SHEET 110



GIRDER 'L'



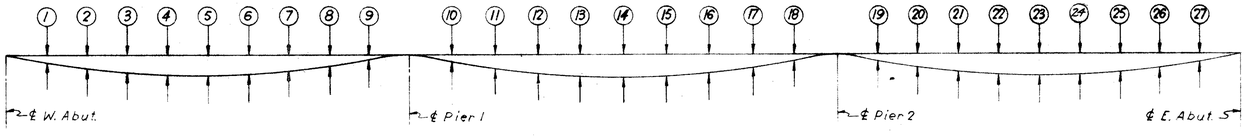
GIRDER 'M'



GIRDER 'N'

GIRDER 'P'

Horizontal Scale 1/16" = 1'-0"
No Vertical Scale



DEAD LOAD DEFLECTION DIAGRAM

This diagram locates points only and does not necessarily show the correct direction of deflections

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2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

TOP OF PAVEMENT ELEVATIONS AND DEAD LOAD DEFLECTIONS

GIRDERS

	A	B	C	D	E	F	G	H	J	K	L	M	N	P
1	701.20	701.44	701.68	701.92	702.17	702.41	702.65	702.68	702.90	703.14	703.38	703.62	703.87	703.68
	0	0	1/16	1/16	1/16	1/16	1/8	1/8	1/16	1/8	1/8	3/16	1/4	1/4
2	701.34	701.58	701.82	702.06	702.30	702.54	702.78	702.80	703.03	703.27	703.51	703.76	704.00	703.82
	0	0	1/8	1/8	1/8	1/8	1/4	1/4	1/8	1/8	1/8	1/4	1/4	1/4
3	701.47	701.71	701.95	702.19	702.43	702.67	702.91	702.93	703.16	703.40	703.64	703.88	704.12	703.95
	1/8	1/16	1/16	1/16	1/8	1/8	1/4	1/4	1/4	1/8	1/8	1/4	1/4	1/4
4	701.60	701.84	702.08	702.32	702.56	702.80	703.04	703.06	703.30	703.54	703.78	704.01	704.25	704.08
	1/4	1/16	0	0	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
5	701.74	701.97	702.21	702.45	702.69	702.93	703.17	703.20	703.43	703.67	703.91	704.14	704.38	704.21
	1/8	1/16	1/16	1/16	0	1/8	1/8	1/16	1/4	1/4	1/8	1/8	1/8	1/8
6	701.87	702.11	702.35	702.59	702.83	703.06	703.30	703.33	703.56	703.80	704.04	704.28	704.52	704.32
	1/2	1/16	1/8	1/8	1/16	0	0	1/8	1/16	1/4	1/8	1/8	1/8	1/8
7	702.00	702.24	702.48	702.72	702.96	703.20	703.44	703.46	703.69	703.93	704.17	704.41	704.65	704.47
	1/8	1/16	1/4	1/16	1/8	1/8	0	0	1/16	1/16	1/16	1/8	1/8	1/8
8	702.14	702.37	702.61	702.85	703.09	703.33	703.57	703.59	703.82	704.06	704.30	704.54	704.78	704.60
	1/8	1/16	1/16	1/4	1/16	1/8	1/8	1/16	1/16	1/16	1/16	1/8	1/8	1/8
9	702.26	702.50	702.74	702.98	703.22	703.45	703.69	703.71	703.94	704.18	704.42	704.66	704.90	704.71
	1/16	1/8	1/4	1/16	1/16	1/8	1/8	1/8	1/16	1/16	1/16	0	0	0
10	702.56	702.80	703.03	703.27	703.50	703.73	703.96	703.98	704.21	704.44	704.67	704.91	705.14	704.93
	1/16	1/8	1/16	1/16	1/16	1/8	1/8	1/8	1/16	1/16	1/16	0	0	0
11	702.72	702.96	703.96	703.41	703.65	703.88	704.10	704.12	704.34	704.57	704.80	705.03	705.26	705.03
	1/8	1/16	1/4	1/8	1/8	1/2	1/8	1/16	1/8	1/16	1/4	1/8	0	1/16
12	702.86	703.09	703.31	703.54	703.77	704.00	704.22	704.23	704.46	704.68	704.91	705.14	705.36	705.13
	1/16	1/16	1/16	1/8	1/8	1	1/16	1/16	1/8	1/8	1/8	1/8	1/8	1/8
13	702.98	703.21	703.43	703.66	703.88	704.10	704.33	704.34	704.56	704.78	705.00	705.23	705.45	705.22
	1/16	1/16	1/16	1/16	1/8	1	1/8	1/8	1/8	1/16	1/8	1/8	1/16	1/16
14	703.10	703.31	703.53	703.75	703.98	704.20	704.42	704.43	704.65	704.87	705.09	705.31	705.53	705.31
	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
15	703.17	703.39	703.61	703.84	704.06	704.28	704.50	704.57	704.73	704.95	705.17	705.39	705.61	705.39
	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/8	1/16	1/16	1/16	1/16	1/16	1/16
16	703.23	703.46	703.68	703.91	704.13	704.35	704.57	704.58	704.80	705.02	705.24	705.46	705.68	705.46
	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
17	703.28	703.51	703.73	703.96	704.18	704.41	704.63	704.64	704.86	705.08	705.30	705.52	705.74	705.52
	1/16	1/16	1/16	1/8	1/8	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
18	703.30	703.53	703.76	703.99	704.22	704.44	704.66	704.68	704.90	705.12	705.34	705.57	705.78	705.58
	1/16	1/8	1/16	1/16	1/8	1/8	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
19	703.28	703.52	703.76	704.00	704.23	704.46	704.70	704.72	704.95	705.18	705.40	705.63	705.85	705.66
	1/16	1/8	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
20	703.27	703.51	703.75	703.99	704.23	704.46	704.70	704.73	704.96	705.19	705.42	705.65	705.88	705.69
	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
21	703.25	703.49	703.74	703.98	704.22	704.46	704.70	704.73	704.97	705.20	705.43	705.66	705.89	705.72
	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
22	703.22	703.46	703.71	703.96	704.20	704.44	704.68	704.73	704.96	705.20	705.44	705.67	705.90	705.73
	1/16	1/16	1/16	1/16	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
23	703.18	703.43	703.68	703.93	704.18	704.42	704.67	704.72	704.96	705.20	705.44	705.67	705.91	705.74
	1/16	1/16	1/16	1/16	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
24	703.14	703.39	703.65	703.90	704.15	704.40	704.65	704.70	704.94	705.19	705.43	705.67	705.91	705.74
	1/16	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
25	703.09	703.35	703.61	703.86	704.12	704.37	704.62	704.68	704.92	705.17	705.42	705.66	705.90	705.73
	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
26	703.04	703.30	703.56	703.82	704.07	704.33	704.58	704.65	704.90	705.16	705.40	705.64	705.89	705.71
	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
27	702.97	703.24	703.50	703.77	704.03	704.28	704.54	704.62	704.87	705.12	705.37	705.62	705.87	705.69
	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16

NOTES:

Figures in the left columns are the total deflections due to the dead load of concrete and steel. Figures in the right columns are dead load deflections due to concrete only.

Negative sign indicates upward deflection. Deflections are given to the nearest 1/16 th inch.

Note: For girder notes see sheet 109-7A

H.N.T.B. BR. NO. 3 PART 7A

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

GIRDER ELEVATIONS
INNER BELT FREEWAY OVER
RAMPS E-8, E-10 AND E-16
BR. NO. CUY-42-1843 STA. 65+10.18
Scale: As noted STA. 68+19.03

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

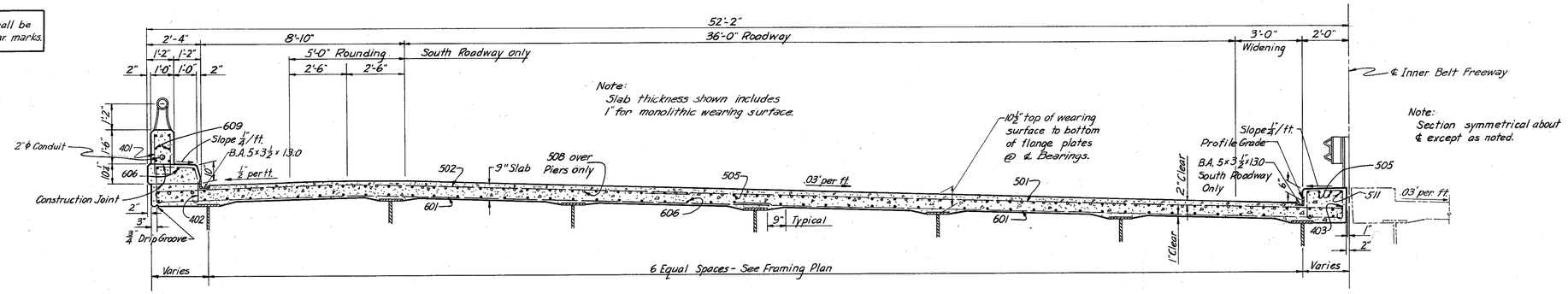
DRAWN A. B.	TRACED	CHECKED J.L.C.	REVIEWED JCT	REVISED 6-20-60
DATE 5-29-58	DATE	DATE 7-7-59	DATE 11-13-59	SHEET 111

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

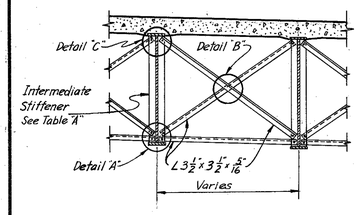
112
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

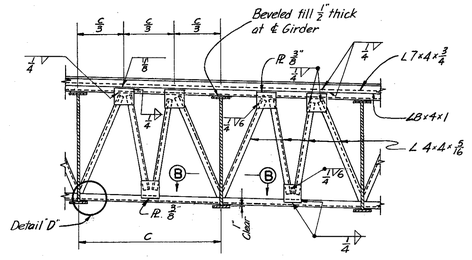
Note: Prefix "5" shall be assigned to all bar marks.



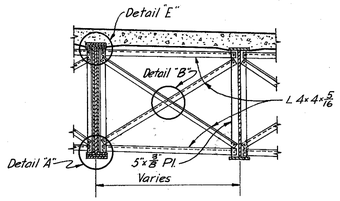
SECTION A-A
Scale: ⅜"=1'-0"



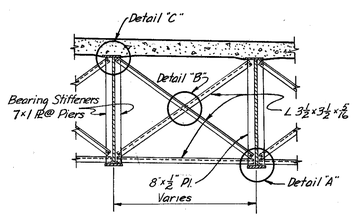
INTERMEDIATE CROSSFRAME
Scale: ¼"=1'-0"



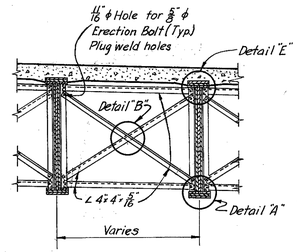
END CROSSFRAME
Scale: ¼"=1'-0"



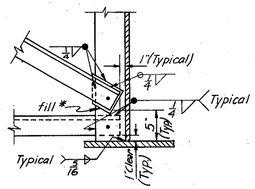
CROSSFRAME "B"
Scale: ¼"=1'-0"



CROSSFRAME "A"
Scale: ¼"=1'-0"

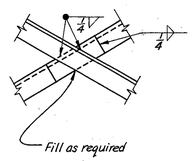


CROSSFRAME "C"
Scale: ¼"=1'-0"

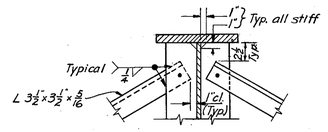


* Fill as required

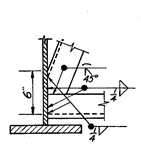
DETAIL "A"
Scale: 1½"=1'-0"



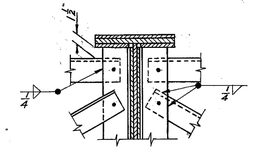
DETAIL "B"
Scale: 1"=1'-0"



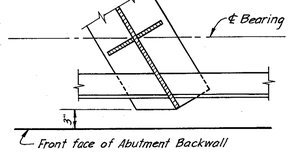
DETAIL "C"
Scale: 1"=1'-0"



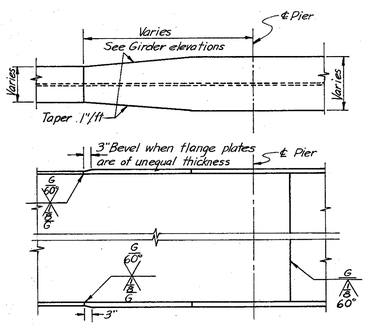
DETAIL "D"
Scale: 1"=1'-0"



DETAIL "E"
Scale: 1"=1'-0"

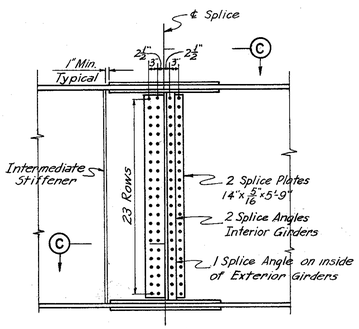


SECTION B-B
Scale: 1"=1'-0"

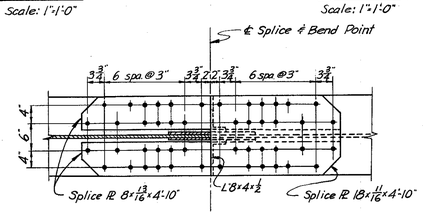


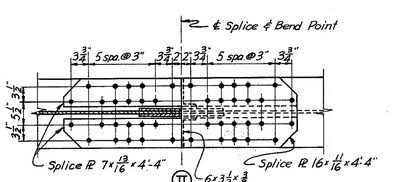
Note: Shop Splices may be located as required by available plate lengths. Web and flange splices shall not coincide.

GIRDER SHOP SPLICE DETAILS
No Scale



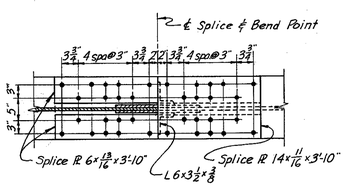
ELEVATION
Scale: ½"=1'-0"





SECTION C-C
Scale: ¾"=1'-0"

GIRDER FIELD SPLICE DETAILS



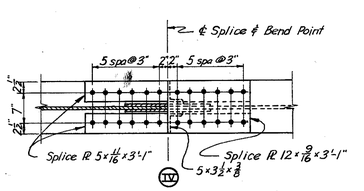


TABLE "A"	
FLANGE WIDTH	INTERMEDIATE STIFFENER
12"	PL 5"×⅜"
14" to 16"	PL 6"×⅜"
18" and Up	PL 8"×½"

NOTES:
For Deck Plan and location of Section A-A see sheet 113-7A
For additional notes see sheet 109-7A

H.N.T.B. BR. NO. 3 PART 7A

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

SUPERSTRUCTURE DETAILS
INNER BELT FREEWAY OVER RAMPS E-8, E-10 AND E-18

BR. NO. CUY-42-1843 STA. 65+10.18
Scale: As noted STA. 68+19.03

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN ARL	TRACED HJH	CHECKED DRK	REVIEWED JCT	REVISED
DATE 6-20-58	DATE 9 Mar-59	DATE 7-21-58	DATE 11-13-59	SHEET 112

NOTE :
In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to the transverse bars in the slab and are located near the center of any span.

NOTES :
For details of railing, parapet joints and guard rail see sheet 175-7A
(1). For details of Light Standard Support and other lighting details see sheet 176-7A
For cross section thru deck and other superstructure details see sheet 112-7A
For Drainage details see sheet 174-7A
For End Dam details see sheet 173-7A
For Section A-A see sheet 112-7A

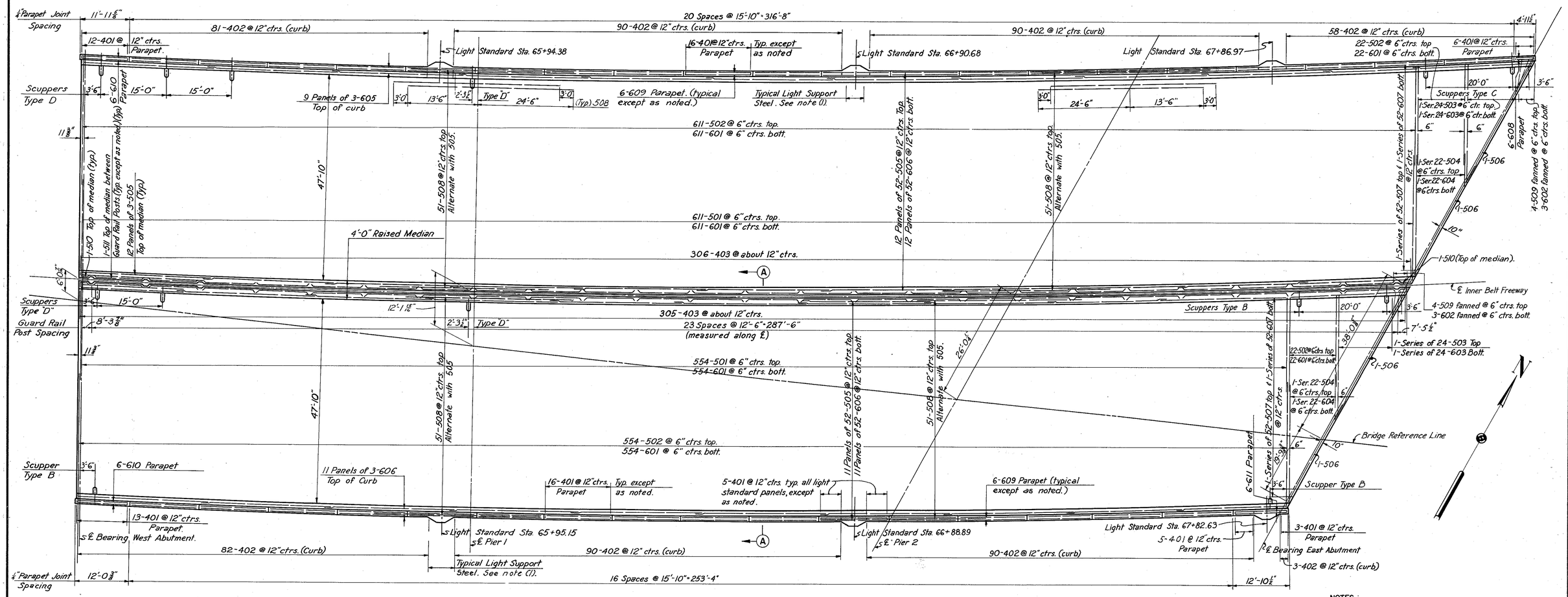
Note : Prefix "S" shall be assigned to all bar marks.

RECEIVED JUL 3 1959

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

113
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

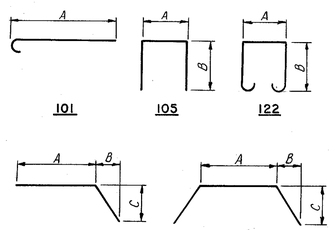


PLAN

REINFORCEMENT SCHEDULE

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INC.	WEIGHT (LBS.)
401	585	4'-5"	105	8"	2'-0"				1,726
402	584	5'-1"	122	1'-8"	1'-4"				1,983
403	611	4'-3"	122	1'-6"	1'-0"				1,735
501	1165	30'-7"	101	30'-0"					37,162
502	1209	23'-7"	101	23'-0"					29,738
503	2 Series of 24	7'-7" to 29'-7"	101	7'-0" to 29'-0"				11½"	930
504	2 Series of 22 & 52	8'-6" to 28'-0"	Str.					11⅛"	838
505	1268	26'-9"	Str.						35,378
506	4	30'-3"	Str.						126
507	2 Series of 52	3'-0" to 29'-0"	Str.					6⅛"	1376
508	204	38'-0"	Str.						8085
509	8	7'-6"	Str.						63
510	4	2'-11"	108	2'-0"	0'-6"	0'-10"			12
511	48	13'-0"	159	11'-2"	0'-6"	0'-10"			651
601	2374	26'-9"	Str.						95,384
602	6	7'-6"	Str.						68
603	2 Series of 24	7'-0" to 29'-0"	Str.					11½"	1298
604	2 Series of 52	5'-6" to 24'-6"	Str.					10⅛"	991
605	27	38'-9"	Str.						1,571
606	1229	27'-0"	Str.						49,841
607	2 Series of 52	3'-0" to 29'-0"	Str.					6⅛"	2,499
*608	6	4'-6"	Str.						—
*609	216	15'-6"	Str.						—
*610	12	11'-6"	Str.						—
*611	6	12'-6"	Str.						—
‡451	12	8'-11"	131	2'-6"	1'-2"				72
‡452	12	9'-11"	131	3'-0"	1'-8"				78
‡453	18	9'-5"	131	3'-2"	1'-0"				114
‡454	12	5'-7"	155	2'-2"					42
‡455	12	6'-1"	155	2'-8"					48
‡456	18	6'-3"	155	2'-10"					78
‡651	12	9'-5"	141	2'-11"	1'-10"				168
‡652	18	14'-6"	141	5'-3"	3'-0"				390
‡653	6	5'-0"	Str.						48
								Total	272,493

BAR BENDING DIAGRAMS



NOTES :
‡ Bars are for the Light Standard Supports. For their bending diagrams and placement see sheet 176-7A
** Bars are included with Item 511-14, Railing for payment.*
For Replacement Schedule See Sheet 103-7A
All bar dimensions are given out to out. Bars of a series shall vary in length by a constant increment.

H.N.T.B. BR. NO. 3 PART 7A

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

DECK PLAN
INNER BELT FREEWAY OVER RAMPS E-8, E-10 AND E-16

BR. NO. CUY-42-1843 STA. 65+10.18
Scale : 3/32"=1'-0 STA. 68+19.03

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.B	R.K	A.L	JCT	-
DATE 4-25-58	DATE 3-4-59	DATE 6-30-59	DATE 11-13-59	SHEET 113

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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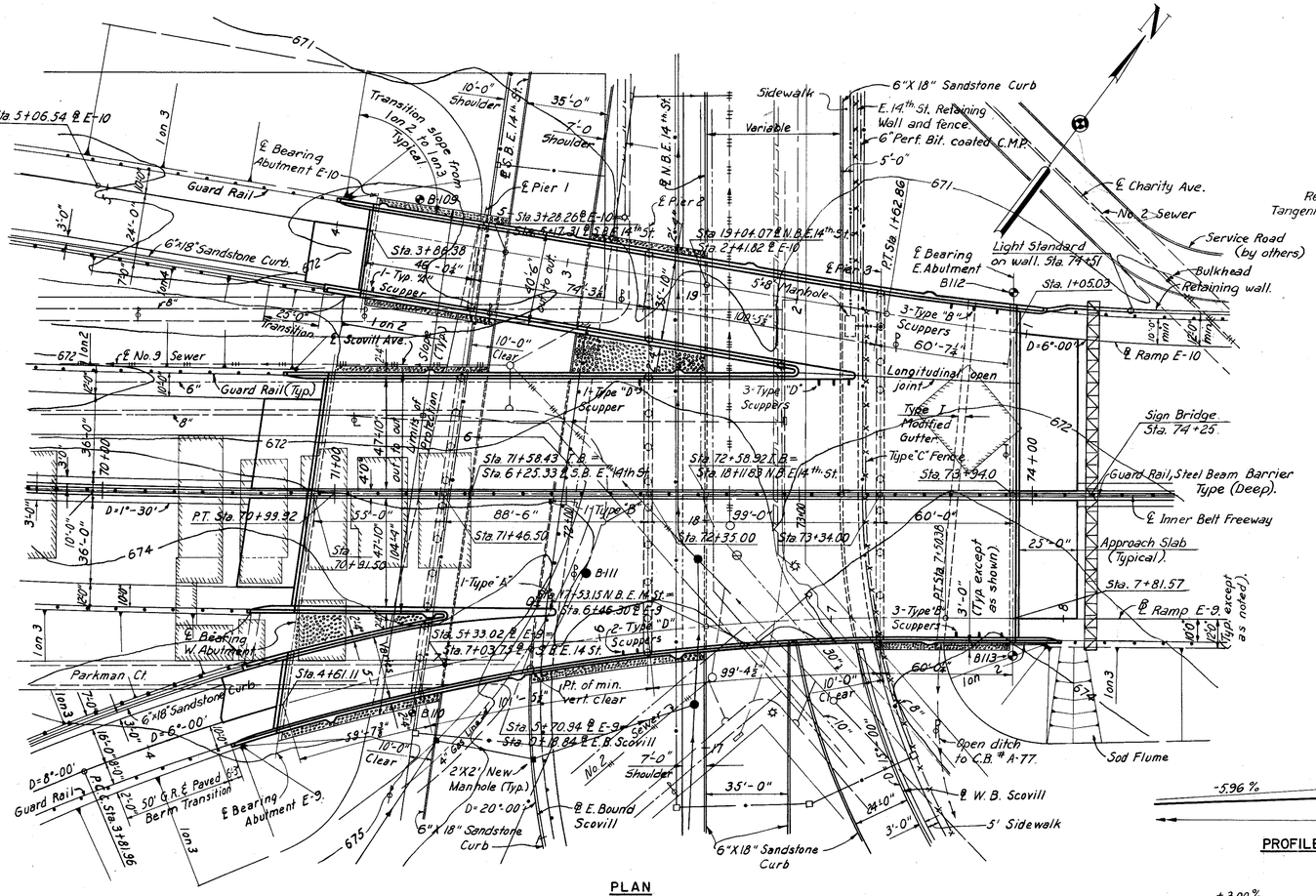
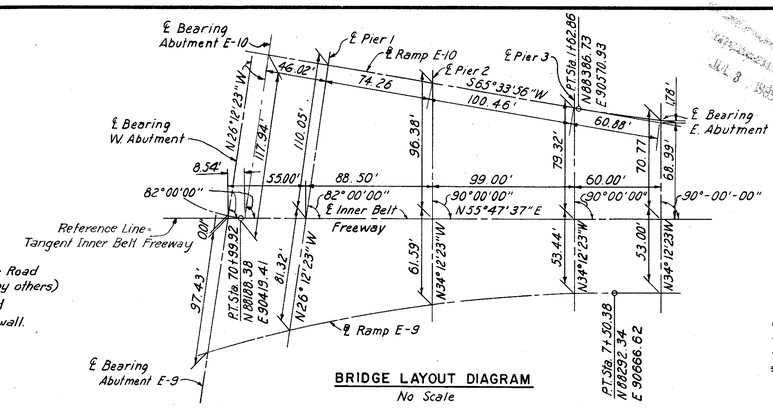
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



PLAN

ELEVATION

*15'-0" Required minimum vertical clearance Point of actual minimum vertical clearance occurs at South beam of Ramp E-9 and East gutter of E.B. Scovill.

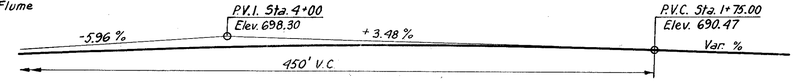


BRIDGE LAYOUT DIAGRAM
No Scale

Elev.		
673.0		Brick & Cinder
668.0		Brown Silty Sand
663.0		Brown Silty Gravelly Sand
41		
18		
21		
40		
93	638.0	Brown Silty Sand
36	633.0	Gray Sandy Silt
34		
21		
39		
20		
26		
34		
27		
45	592.0	Gray Silt

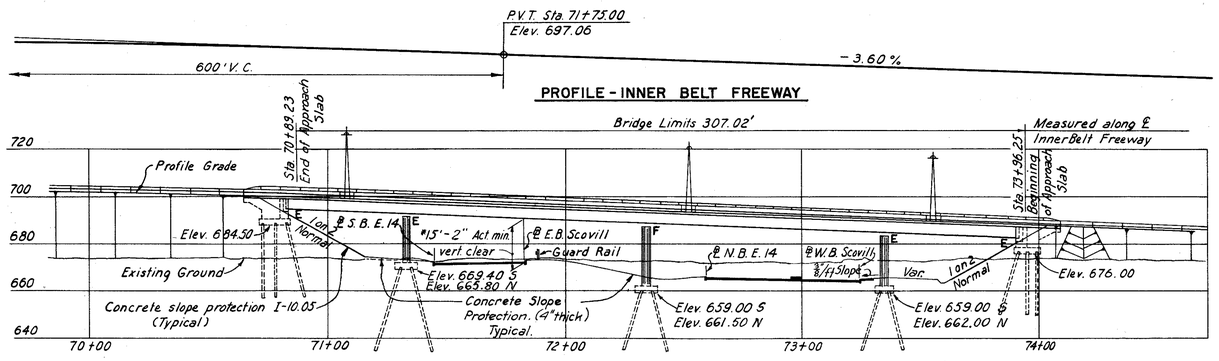
Note: The column at the left indicates the number of blows required to drive the sample spoon 1 ft. They are given at 5' intervals starting at elev. 673.0.

BORING B-111
Vertical scale: 1"=20'
Sta. 72+07 ℄ Inner Belt 35' Rt.



PROFILE - RAMP E-10

PROFILE - RAMP E-9



PROFILE - INNER BELT FREEWAY

CURVE DATA I. B. FREEWAY
Δ = 12°01'26
D = 1°30'
R = 3819.72'
T = 402.27'
L = 801.59'

CURVE DATA RAMP E-9
Δ = 22°06'19"
D = 6°00
R = 954.93'
T = 186.53'
L = 368.42'

CURVE DATA RAMP E-10
Δ = 9°46'18"
D = 6°00'
R = 954.93'
T = 81.63'
L = 162.86'

CURVE DATA W. B. SCOVILL
Δ = 47°06'56"
D = 15°00'
R = 381.97'
T = 166.55'
L = 314.10'

CURVE DATA E. B. SCOVILL
Δ = 66°00'11"
D = 20°00'
R = 286.48'
T = 186.05'
L = 330.02'

LEGEND

Right of Way	
Telephone Pole	℄
M.E.L.P.	
Power Pole	℄
Curb	Face of curb / C.B.
Sewer	M.H.
* Sewer	Inlet M.H.
* Sewer to be Abandoned	Full Box
* 2" ℄ Duct	
* 4" ℄ Duct	Fire hydrant
Water	
Gas	
W.W.L.	
Light Pole	℄ Light Pole

* Built under previous contract.

NOTES:

The following items are not included in the Bridge Plans: (See Roadway Plans for Details) Approach grading, pavement and slabs. Roadway Guard Rail, Sod Flumes.

For details of pier plans & drain pipe locations at piers see sheets 135-7A, 172-7A & 174-7A

For details of slope protection, see Sh. 174-7A

Rod sounding only were taken at location B-109, B-110, B-112, & B-113. The core drilling made at B-111 is plotted.

Pile lengths are based on boring data and are approximate only. The Contractor shall assume full responsibility for length of piling selected for driving.

For details of slope protection behind Pier 3, see sheet 120.-7A

For details of Sign Bridge, see sheets 177A-7A, 177B-7A

PILE INFORMATION

Location	Diameter	Number	Estimated ave. length
Abutment E-9	12"	17	23'
Abutment E-10	12"	20	23'
W. Abutment	12"	42	28'
E. Abutment	12"	74	28'
Retaining wall	12"	92	27'
Pier 1	14"	48	28'
Pier 2	14"	80	26'
Pier 3	14"	56	27'
E. 14th St. Retain. wall	12"	39	29'

All piles to be C.I.P. Reinforced Concrete.

Note: Piers for Br. No. 4 and E. 14th St. Retaining Walls, are included in Part 6.

PROPOSED STRUCTURE

TYPE: Continuous welded steel girder with reinforced concrete deck and substructure.
SPANS: 55'-0", 88'-6", 99'-0", & 60'-0" along ℄ I. B.
ROADWAY: Varies
LOADING: C.F-2000 - Adequate for A.A.S.H.O. alternate loading.
SKEW: Varies
SURFACE COURSE: 1" Monolithic Concrete
ALIGNMENT: 1°30' Lt. Tangent
APPROACH SLABS: AS-1-54 (25' long)
SUPERELEVATION: Varies

H.N.T.B. BR. NO. 4 PART 7A

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

SITE PLAN

INNER BELT FREEWAY OVER EAST 14th ST.
BR. NO. CUY-42-1854 STA. 70+89.23
- Scale: 1" = 30' STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN R.A.	TRACED J.A.G.	CHECKED A.J.S	REVIEWED J.C.T	REVISED
DATE 11-4-58	DATE 12-18-58	DATE 10-21-58	DATE 11-13-59	SHEET 114

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

115
181

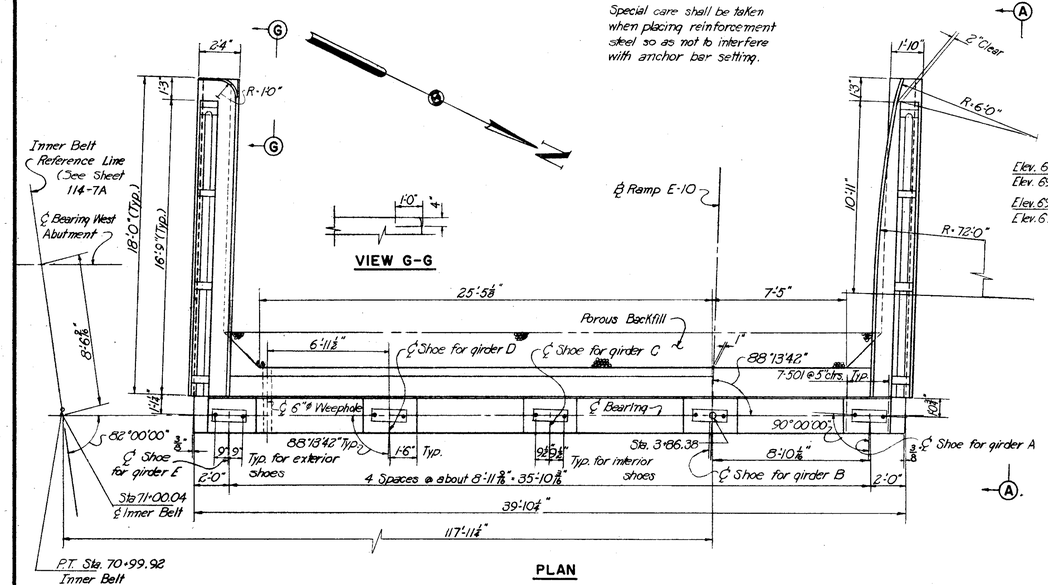
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-1842

RECTIFIED JUL 3 1995

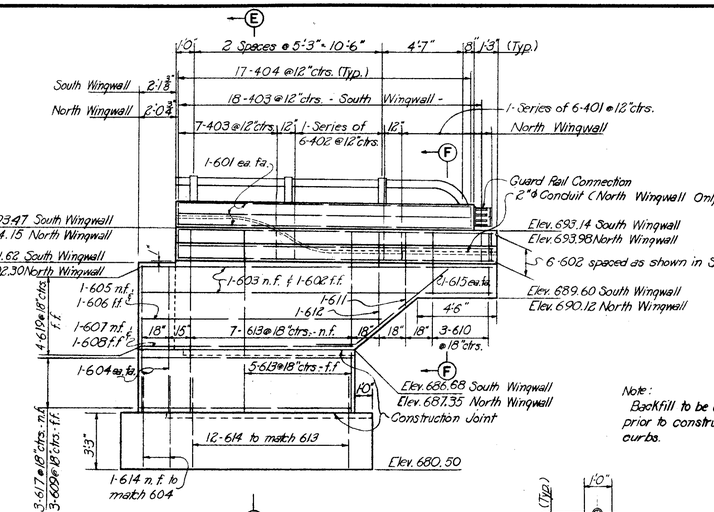
Note: Prefix "AA" shall be assigned to all bar marks.

Note: End of railing parapet to be normal to top of safety curb.

Special care shall be taken when placing reinforcement steel so as not to interfere with anchor bar setting.



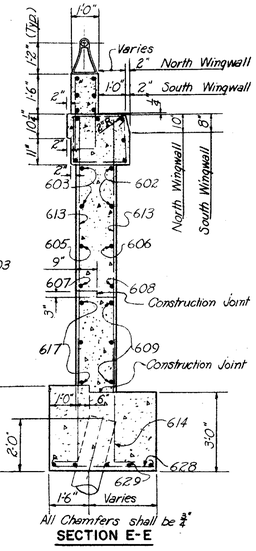
PLAN



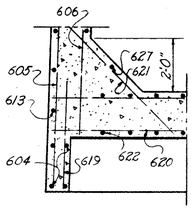
ELEVATION A-A

South Wingwall similar (except as noted)

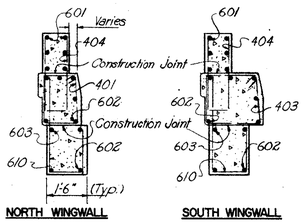
Note: Backfill to be completed prior to construction of curbs.



SECTION E-E

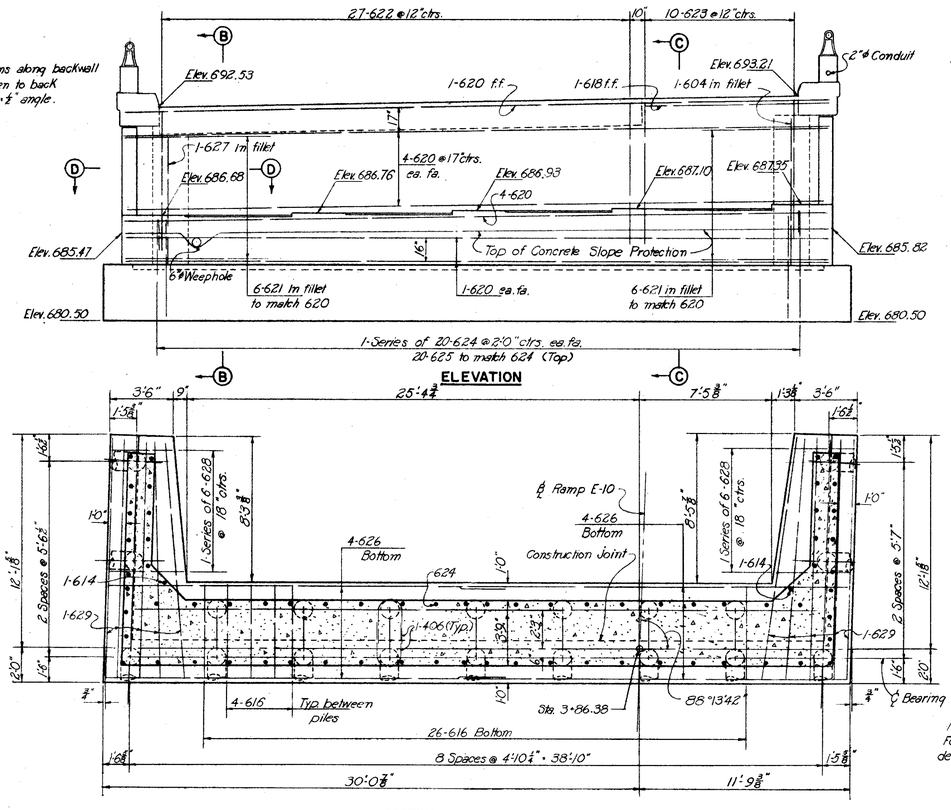


SECTION D-D



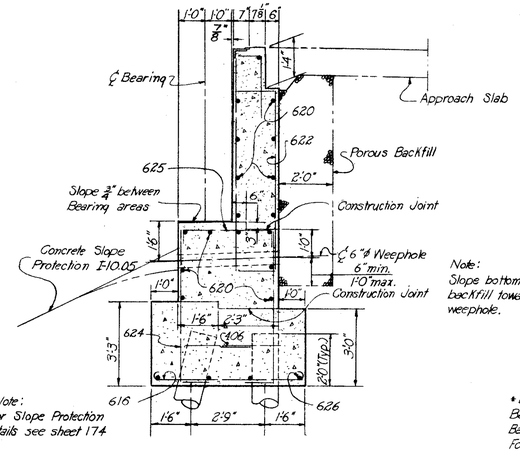
SECTIONS F-F

Note: Scale for all Sections is ⅜" = 1'-0"



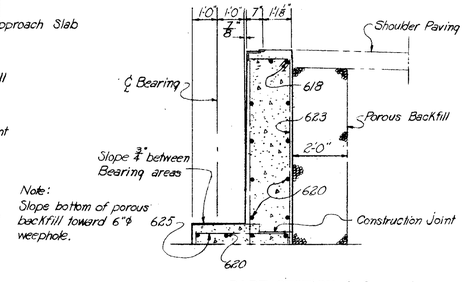
ELEVATION

FOOTING PLAN



Note: For Slope Protection details see sheet 174

SECTION B-B



Note: Slope bottom of porous backfill toward 6" ϕ weephole.

PART SECTION C-C

Reinforcement Notes

* Bars are to be included with "Item S-14, Railing" for payment.
Bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
For replacement schedule see sheet 103.-7A

REINFORCEMENT SCHEDULE

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT
401	1-Ser. of 6	4'-6" to 6'-0"	109	8" to 1'-3"	1'-5"			5/8"	21
402	1-Ser. of 6	6'-2" to 6'-6"	109	1'-6" to 1'-8"	1'-5"			3/8"	25
403	25	6'-6"	109	1'-8"	1'-5"				109
404	34	5'-7"	105	8"	2'-7"				127
406	14	6'-10"	144	2'-6"	1'-10"	7"			64
501	35	4'-5"	105	1'-8"	1'-6"				162
601 *	12	16'-3"	Str.						
602	16	17'-6"	Str.						421
603	4	19'-6"	Str.						117
604	9	7'-6"	Str.						101
605	2	13'-6"	Str.						41
606	2	11'-0"	Str.						33
607	2	11'-9"	Str.						35
608	2	9'-9"	Str.						29
609	6	8'-3"	Str.						74
610	6	5'-9"	126	1'-8"	1'-2"	3'-3"			52
611	2	8'-4"	105	1'-2"	3'-9"				25
612	2	10'-10"	105	1'-2"	5'-0"				33
613	24	9'-3"	Str.						333
614	30	6'-4"	104	5'-8"	10"				285
615	4	8'-8"	108	6'-9"	1'-6"	1'-3"			52
616	26	6'-9"	100	5'-5"					264
617	6	13'-4"	104	11'-6"	2'-0"				120
618	1	10'-6"	Str.						16
619	8	4'-0"	Str.						48
620	17	39'-6"	Str.						1009
621	12	6'-0"	Str.						108
622	27	19'-11"	112	10"	7'-8"	6'-4"	0"		808
623	10	18'-7"	109	7'-8"	1'-4"				279
624	2-Serial 20	6'-2" to 6'-8"	104	5'-6" to 6'-0"	10"			5/16"	386
625	20	7'-1"	105	3'-5"	2'-0"				212
626	8	21'-9"	Str.						261
627	1	7'-3"	Str.						11
628	2-Serial 6	4'-7" to 5'-4"	100	3'-3" to 4'-0"				1¾"	45
629	10	15'-1"	100	13'-9"					226
								Total	5932

NOTES:
All piles shall be 12" C.I.P. reinforced concrete.
All battered piles shall be battered 3 in 12 in the direction shown.
Pile spacings are given along bottom of footing
For details of end diam see sheet 173-7A
For masonry plate detail see sheet 173-7A
Reinforcement bars shall be 3" clear from bottom of footing, 2" elsewhere.
For Reinforcement Bending Diagram see sheet 117-7A
For location of lighting conduit see sheet 176-7A
For guard rail connection and railing details see sheet 175-7A
n.f. = near face, f.f. = far face, ea. fa. = each face;

H.N.T.B. BR. NO. 4 PART 7A

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

ABUTMENT E-10

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23
Scale: 1/4" = 1'-0" STA. 73+96.25
Except as noted

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

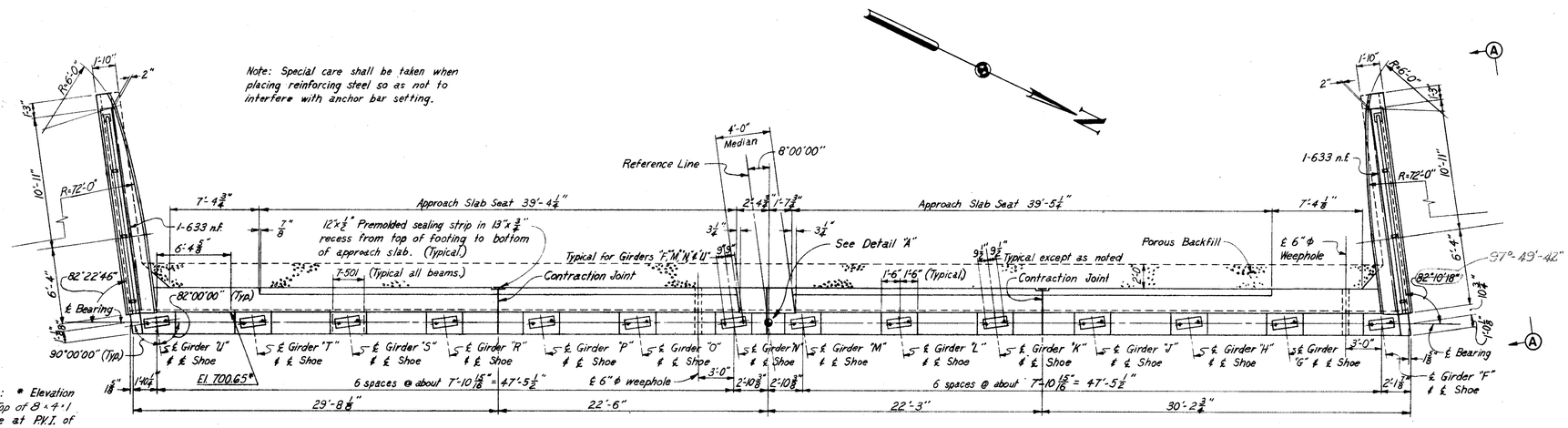
DRAWN CAB	TRACED	CHECKED C.J.M.	REVIEWED JCT	REVISED
DATE 1-3-59	DATE	DATE 2-26-59	DATE 11-13-59	SHEET 115

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

116
181

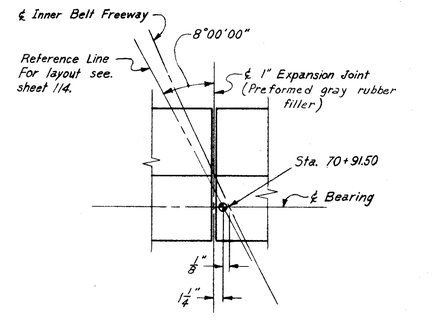
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Note: Prefix "AB" shall be assigned to all bar marks.



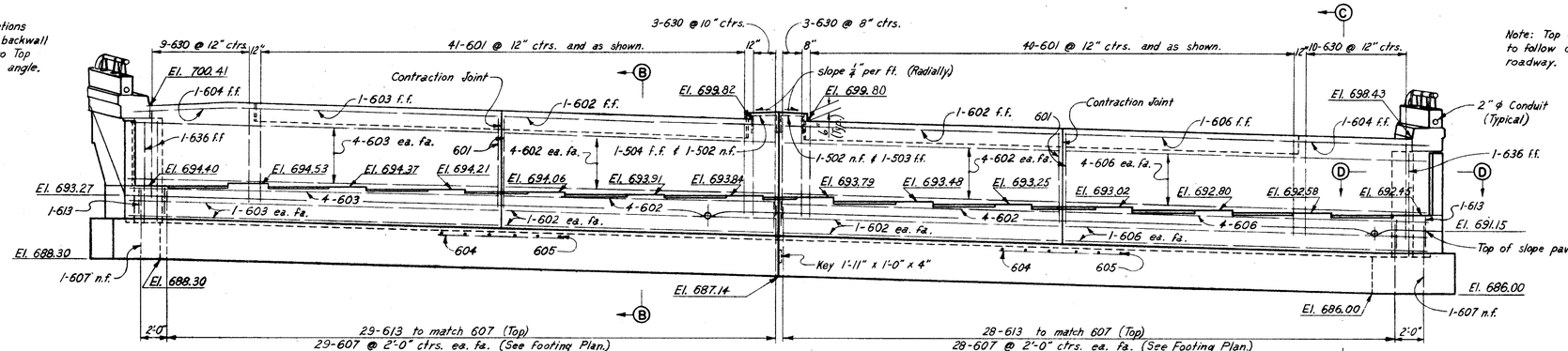
Note: * Elevation to Top of 8 x 4 x 1 angle at P.V.I. of 5'-0" rounding.

PLAN



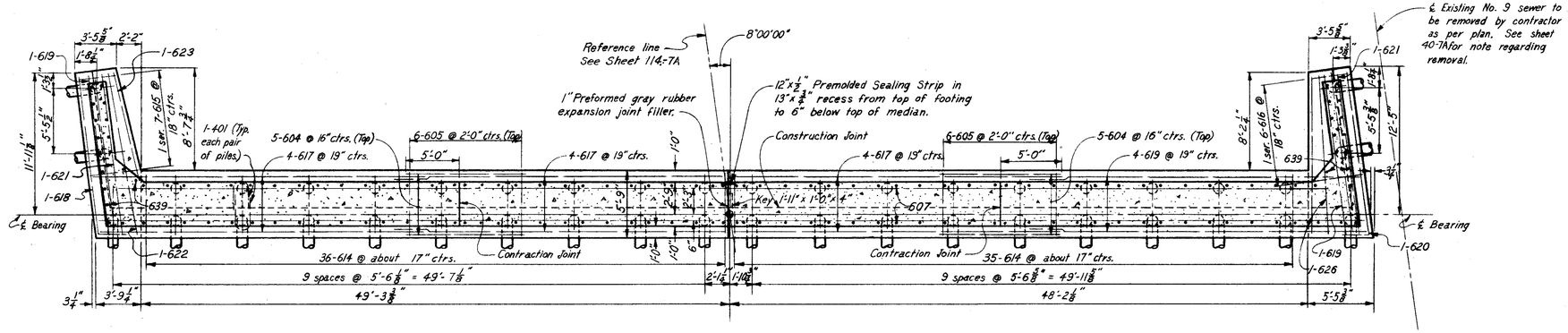
DETAIL "A"
Scale: 1/2"=1'-0"

Note: Elevations given along backwall are given to Top of 8 x 4 x 1 angle.



ELEVATION

Note: Top of backwall to follow crown of roadway.



FOOTING PLAN

NOTES:

All piles shall be 12" ϕ Cast-in-Placed reinforced Concrete.
All battered piles shall be battered 3 in 12 in direction shown.
Pile spacings are given along bottom of footing.
For details of end dam, see Sheet 173-7A
For masonry plate details, see Sheet 173-7A
Reinforcement bars shall be 3 inches clear from bottom of footing and 2 inches elsewhere.
For Reinforcement Schedule, see Sheet 117-7A
For Slope Protection details, see Sheet 174-7A
For location of lighting conduit, see Sheet 176-7A
For Railing details and Guard Rail connection details, see Sheet 175-7A
For sections, see Sheet 117-7A
n.f. = near face; f.f. = far face; ea. fa. = each face.

Backfill shall be placed prior to placing of curb.

H.N.T.B. BR. NO. 4 PART 7A

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

WEST ABUTMENT

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: 3/16" = 1'-0" STA. 73+96.25

Except as noted

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

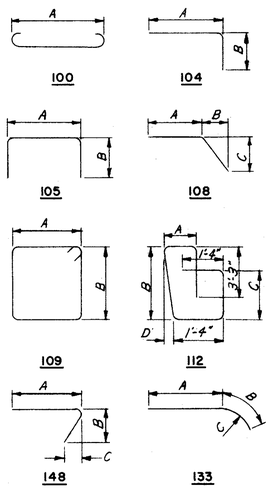
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.M.		H.R.L.	JCT	6-17-60
DATE 1-14-59	DATE	DATE 1-22-59	DATE 11-13-59	SHEET 116

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

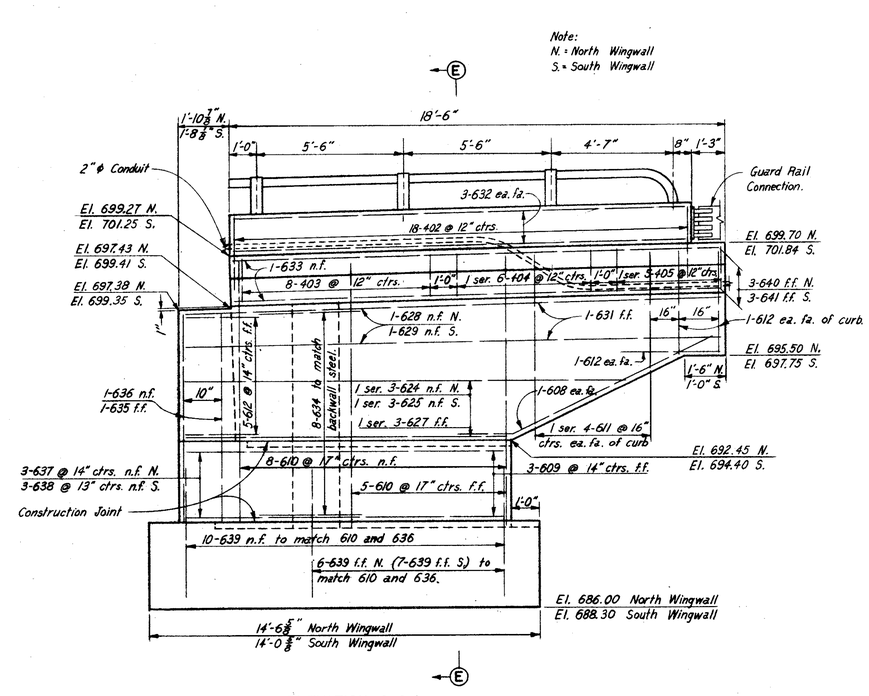
117 / 181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Note: Prefix "AB" shall be assigned to all bar marks.



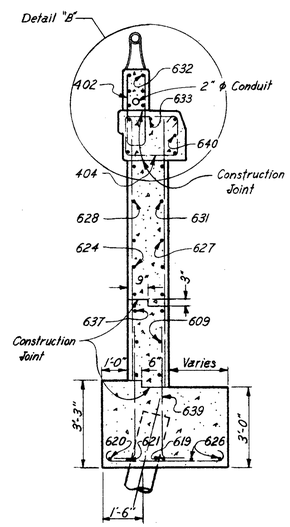
BENDING DIAGRAMS



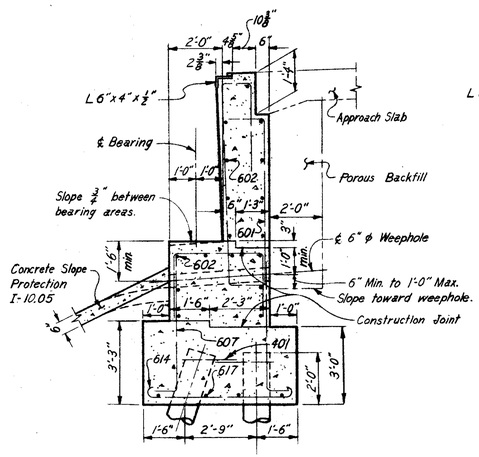
ELEVATION A-A

Elevation South Wingwall similar except as noted.

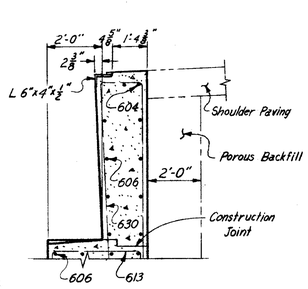
Note: End of railing parapet to be normal to top of safety curb.



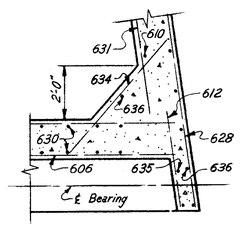
SECTION E-E



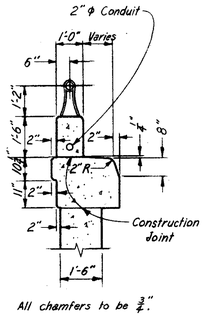
SECTION B-B



PART SECTION C-C



SECTION D-D



All chamfers to be ¾".

DETAIL "B"

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
401	36	5'-10"	144	2'-0"	1'-10"	7"			140
402	36	5'-9"	105	8"	2'-8"				138
403	16	6'-7"	109	1'-8"	1'-5"				70
404	2-series-6	6'-1" to 6'-7"	109	1'-5" to 1'-8"	1'-5"			1⅛"	51
405	2-series-5	4'-3" to 5'-11"	109	0'-6" to 1'-1"	1'-5"			5"	34
501	98	4'-5"	105	1'-8"	1'-6"				452
502	2	4'-7"	105	1'-8"	1'-7"				10
503	1	4'-4"	105	1'-5"	1'-7"				5
504	1	4'-10"	105	1'-11"	1'-7"				5
601	81	19'-10"	112	1'-1"	7'-6"	6'-2"	2"		2413
602	34	22'-0"	str.						1123
603	17	29'-6"	str.						753
604	12	10'-0"	str.						180
605	12	5'-3"	str.						95
606	17	29'-3"	str.						747
607	116	6'-2"	104	5'-6"	10"				1074
608	4	10'-8"	108	8'-9"	1'-9½"	10⅜"			64
609	6	8'-3"	str.						74
610	26	9'-6"	str.						371
611	4-series-4	4'-3" to 6'-3"	str.					8"	126
612	22	3'-9"	str.						124
613	59	7'-1"	105	3'-5"	2'-0"				627
614	71	6'-9"	100	5'-5"					720
615	1-series-7	4'-6" to 5'-6"	100	3'-2" to 4'-2"				2"	53
616	1-series-6	4'-6" to 5'-6"	100	3'-2" to 4'-2"				2⅜"	45
617	16	27'-9"	str.						667
618	1	15'-8"	108	13'-9"	3¼"	1'-11"			23
619	2	13'-9"	str.						41
620	1	15'-9"	148	14'-2"	1'-11"	3½"			24
621	2	14'-0"	str.						42
622	1	14'-3"	str.						21
623	1	10'-6"	str.						16
624	1-series-3	12'-0" to 16'-9"	str.					2'-4½"	65
625	1-series-3	11'-9" to 16'-6"	str.					2'-4½"	64
626	2	13'-6"	str.						41
627	2-series-3	8'-3" to 13'-0"	str.					2'-4½"	96
628	2	20'-0"	str.						60
629	2	19'-9"	str.						59
630	25	18'-6"	154	1'-4"	1'-7"	7'-6"	7'-6"		695
631	4	16'-0"	str.						96
*632	12	16'-9"	str.						
633	6	18'-0"	str.						162
634	16	5'-9"	str.						138
635	4	6'-9"	str.						41
636	7	7'-6"	str.						79
637	3	13'-10"	148	12'-0"	2'-0"	3"			62
638	3	13'-6"	108	11'-8"	3"	2'-0"			61
639	33	5'-8"	104	5'-0"	10"				281
640	3	18'-0"	133	6'-0"	12'-0"	7'-10"			81
641	3	18'-4"	133	6'-4"	12'-0"	7'-10"			83
								Total	12,492

NOTES:

*Bars included for payment with "Item 5-14, Railing."
Bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
For replacement schedule, see Sheet 103-7A.
For additional notes, see Sheet 116-7A.

Note:
Sections are typical except for bar marks.

H.N.T.B. BR. NO. 4 PART 7A

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

WEST ABUTMENT - SECTIONS

INNER BELT FREEWAY OVER EAST 14th ST.
BR. NO. CUY - 42-1854 STA. 70+89.23
Scale: 3/8" = 1'-0" STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

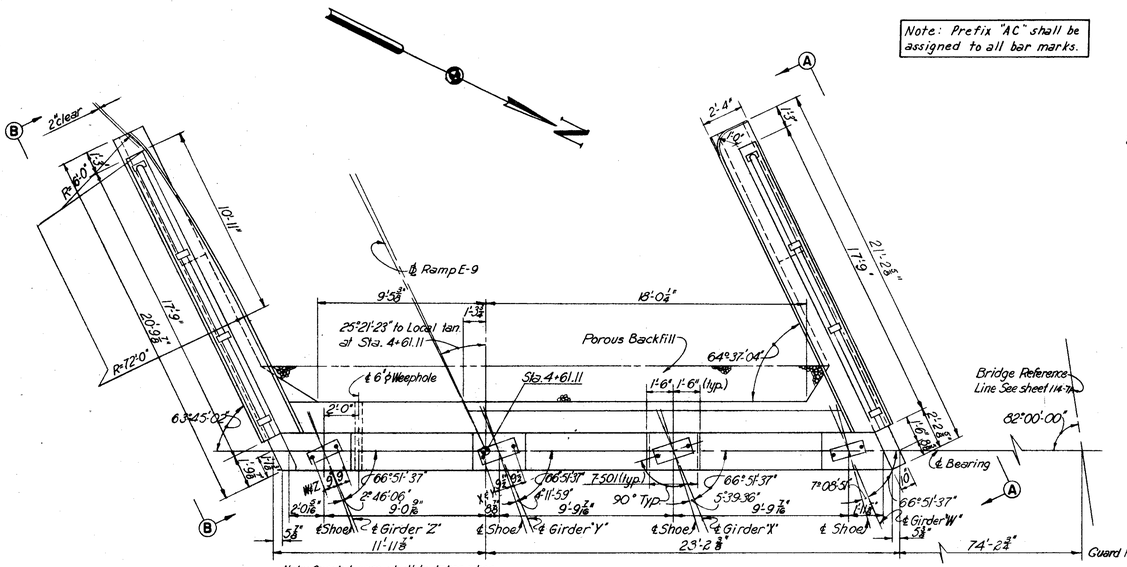
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.M.		W.P.L.	JCT	
DATE 1-14-59	DATE	DATE 1-22-59	DATE 11-13-59	SHEET 117

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

118
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-1842

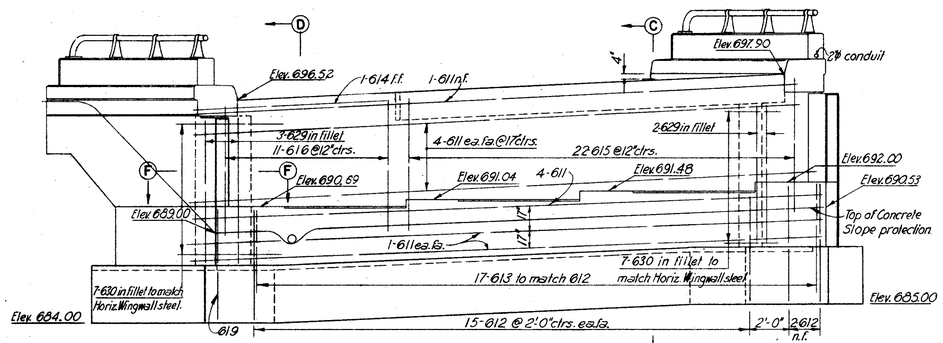
Note: Prefix "AC" shall be assigned to all bar marks.



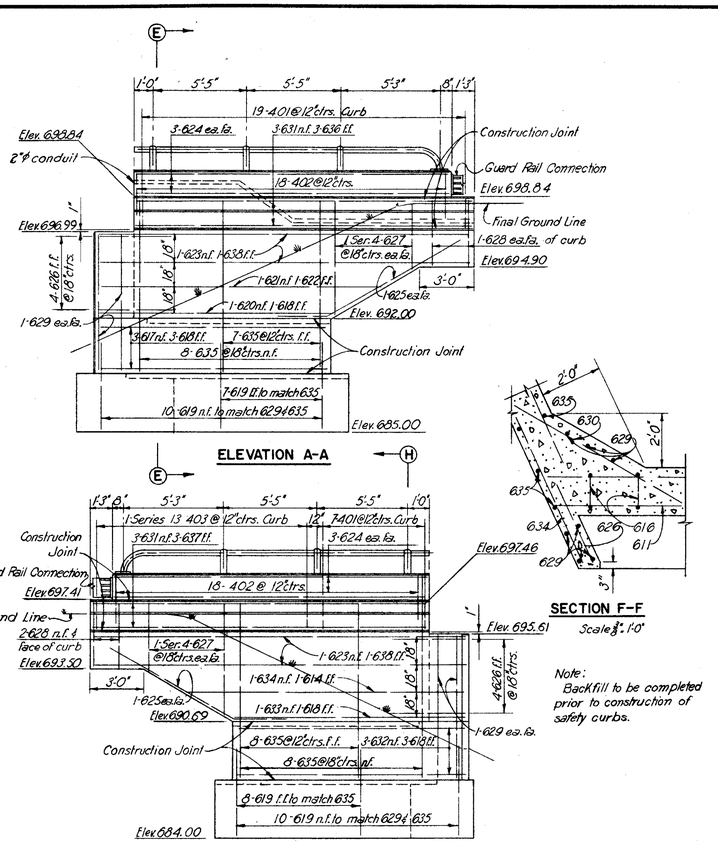
Note: Special care shall be taken when placing reinforcement steel so as not to interfere with anchor bar setting.

PLAN

Note: Elevations along backwall are given to back of L 6x4x½



ELEVATION

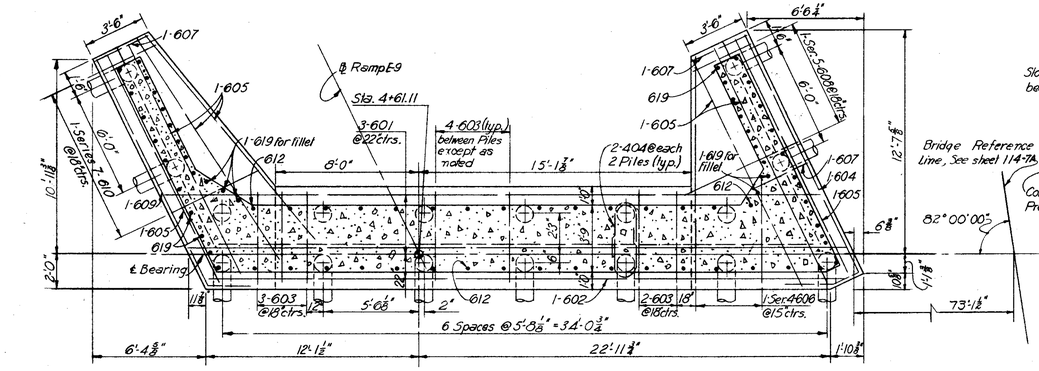


ELEVATION A-A

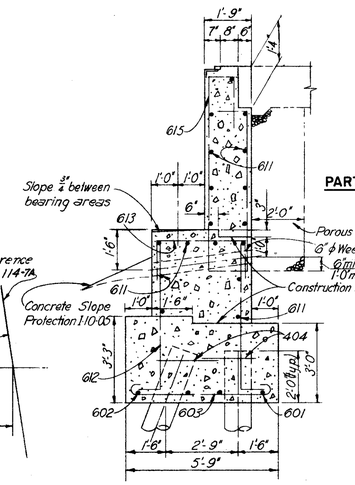
ELEVATION B-B

SECTION F-F
Scale ⅜" : 1'-0"

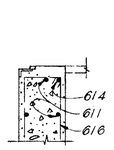
Note:
Backfill to be completed prior to construction of safety curbs.



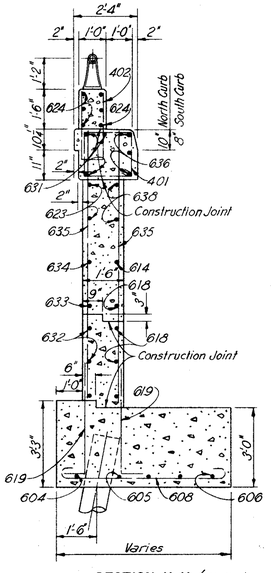
FOOTING PLAN



SECTION C-C
Scale ¾" : 1'-0"

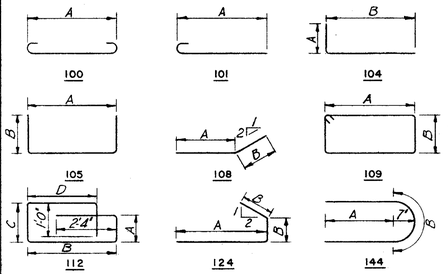


PART SECTION D-D



SECTION H-H (Similar)
SECTION E-E (Shown)
Scale ¾" : 1'-0"

REINFORCEMENT SCHEDULE									
MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT
401	26	6'-6"	109	1'-8"	1'-5"				113
402	36	5'-5"	105	8"	2'-6"				130
403	1 Ser. 13	4'-8" to 6'-6"	109	6" to 1'-8"	1'-5"			2"	48
404	12	6'-10"	144	6"	1'-10"				55
501	28	4'-7"	105	1'-8"	1'-7"				134
601	3	37'-0"	Str.						167
602	1	36'-0"	Str.						54
603	17	6'-8"	100	5'-4"					170
604	1	18'-1"	124	14'-9"	1'-7"	2'-0"			27
605	7	14'-9"	Str.						135
606	1 Ser. 4	7'-5" to 13'-5"	101	69" to 129"				2'-0"	83
607	3	4'-6"	100	3'-2"					20
608	1 Ser. 5	4'-10" to 8'-4"	100	3'-6" to 7'-0"				10½"	49
609	1	16'-0"	108	14'-0"	2'-0"				24
610	1 Ser. 7	4'-7" to 6'-7"	100	33" to 53"				4"	59
611	17	34'-3"	Str.						875
612	32	6'-5"	104	10"	5'-9"				308
613	17	7'-5"	105	3'-5"	2'-2"				189
614	2	11'-0"	Str.						33
615	22	20'-6"	112	11"	8'-6"	1'-5"	7'-2"		677
616	11	20'-4"	109	1'-5"	8'-6"				336
617	3	15'-0"	124	12'-9"	6"	2'-0"			68
618	8	9'-0"	Str.						108
619	40	5'-8"	104	10"	5'-0"				340
620	1	13'-3"	Str.						20
621	1	16'-0"	Str.						24
622	1	12'-3"	Str.						18
623	4	20'-9"	Str.						125
*624	12	17'-3"	Str.						
625	4	10'-6"	108	8'-6"	2'-0"				63
626	8	4'-0"	Str.						48
627	4 Ser. 4	3'-6" to 6'-3"	Str.					11"	117
628	8	3'-6"	Str.						42
629	13	6'-3"	Str.						161
630	14	6'-0"	Str.						126
631	6	18'-6"	Str.						167
632	3	14'-6"	108	12'-6"	2'-0"				65
633	1	12'-6"	Str.						19
634	1	15'-0"	Str.						22
635	31	10'-0"	Str.						466
636	3	18'-0"	Str.						81
637	3	19'-0"	Str.						86
638	4	17'-3"	Str.						104
								Total	5956



BAR BENDING DIAGRAM

NOTES:
* bars are included for payment with Item "514" Railing
For additional notes see sheet 115-7A

H.N.T.B. BR. NO. 4 PART 7A

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

ABUTMENT E-9

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23
Scale: 1/4" = 1'-0" STA. 73+96.25
Except as noted

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN N.N.	TRACED	CHECKED C.H.B.	REVIEWED JCT	REVISED
DATE 1-20-59	DATE	DATE 1-22-59	DATE 11-13-59	SHEET 118

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Note: Prefix "AD" shall be assigned to all bar marks.

Retaining Wall. See sheets 121-7A & 122-7A for details.

Face of safety curb shall be formed to match Retaining Wall.

Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

Note: Elevations given along backwall are given to top of 8"x4"x1 angle

℄ Inner Belt Freeway

Approach Slab Seat 68'-6½"

Approach Slab Seat 51'-0"

℄ 3"ϕ Sleeve for 1½"ϕ Conduit

12"x½" Premolded sealing strip in 13"x¾" recess from top of footing to bottom of approach slab. (Typical)

Girder "A" ℄ Girder "B" ℄ Girder "C" ℄ Girder "D" ℄ Girder "E" ℄ Girder "F" ℄ Girder "G" ℄ Girder "H" ℄ Girder "J" ℄ Girder "K" ℄ Girder "L" ℄ Girder "M" ℄ Girder "N" ℄ Girder "O" ℄ Girder "P" ℄ Girder "R" ℄ Girder "S" ℄ Girder "T" ℄ Girder "U" ℄ Girder "X" ℄ Girder "Z"

Elev. 688.93 Elev. 689.14 Elev. 688.21

Porous Backfill

Contraction Joint

℄ 6"ϕ Weephole

℄ Bearing ℄ Shoe

Sta 73+94.00

6 Spaces @ 7'-10" = 47'-0"

63'-10"

81'-8"

PLAN

Class "C" Concrete except as noted

Class "E" Concrete

3-617 @ 12" ctrs.

69-616 @ 12" ctrs. and as shown

3-617 @ 9" ctrs.

51-616 @ 12" ctrs. and as shown

2-501

Slope ¼" per ft.

1-604 f.f. 1-613 f.f. 1-615 f.f. 1-603 f.f. 1-613 f.f. 1-614 f.f. 1-604 f.f.

2-2"ϕ Conduit (Typ)

8-610 f.f. fillet to match horizontal wingwall steel

1-620 f.f. fillet

1-612

Elev. 681.00

Top of concrete slope protection

1-611 n.f. Elev. 676.00 (Typical)

Construction Joint

Elev. 682.01 4-603 ea. fa. Elev. 682.25 Elev. 682.13 Elev. 682.31 Elev. 682.39 Elev. 682.40 Elev. 682.52 4-615 ea. fa. Elev. 682.64 Elev. 682.77 4-603 ea. fa. Elev. 682.89 Elev. 683.01 Elev. 683.21 Elev. 683.01 Elev. 682.89 Elev. 682.77 4-613 ea. fa. Elev. 682.64 Elev. 682.52 Elev. 682.48 4-614 ea. fa. Elev. 682.39 Elev. 682.29

4-603 1-603 ea. fa. 4-615 1-615 ea. fa. 4-603 1-603 ea. fa. 4-613 1-613 ea. fa. 4-614 1-614 ea. fa.

3-619 @ 16" ctrs

605 604 605 604 2 Key 1'-11" x 1'-0" x 4" 605 604

44-612 to match 611 (Top)
44-611 @ 2'-0" ctrs ea. fa. (See Footing Plan)

34-612 to match 611 (Top)
34-611 @ 2'-0" ctrs. ea. fa. (See Footing Plan)

Class "E" Concrete

ELEVATION
(Piles not shown)

Construction Joint

5-604 @ 16" ctrs. (Top) 6-605 @ 2'-0" ctrs. (Top) 5-603 3-601 between piles (Typical) 5-604 @ 16" ctrs. (Top) 6-605 @ 2'-0" ctrs. (Top) 5-603

12"x½" Premolded sealing strip in 13"x¾" recess from top of footing to 6" below top of median

℄ Inner Belt Freeway

℄ Expansion Joint

1" Preformed gray rubber expansion joint filler

5-602 5-602

Series 5-604 @ 18" ctrs

1-609

1-601 @ 18" ctrs.

1-608 1-619 1-611 1-601 1-608 1-607

Contraction Joint Contraction Joint

Key 1'-11" x 1'-0" x 4"

Sta 73+94.00

15 Pile spaces @ 4'-7½" = 69'-4½"
85'-2½"

13 Pile spaces @ 4'-8½" = 61'-2½"
64'-10"

1-401 (Typ each pair of piles)

36" Type "B" Waterproofing from top of wingwall footing to bottom of concrete slope protection. See Section H-H, sheet 120-7A.

FOOTING PLAN

NOTES:
All piles shall be 12"ϕ Cast-in-place reinforced concrete.
All battered piles shall be battered 3 in 12 in direction shown.
Pile spacings are given along bottom of footing.
For details of end dam, see sheet 173-7A.
For details of masonry plates, see sheet 173-7A.
Reinforcement bars shall be 3 inches clear from bottom of footing and 2 inches elsewhere.
For Reinforcement Schedule, see sheet 120-7A.
For location of lighting conduit, see sheet 176-7A.
For Railing details, Railing Post spacing and Guard Rail connection details, see sheet 175-7A.

For Slope Protection details, abutment details, and additional notes, see sheet 120-7A
n.f. = near face, f.f. = far face, ea. fa. = each face

H.N.T.B. BR. NO. 4 PART 7.4

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

EAST ABUTMENT

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: 3/16" = 1'-0" STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CKB		JCT		
DATE 10-28-59	DATE	DATE 11-4-59	DATE 11-13-59	SHEET 119

RECEIVED JUL 3 1959

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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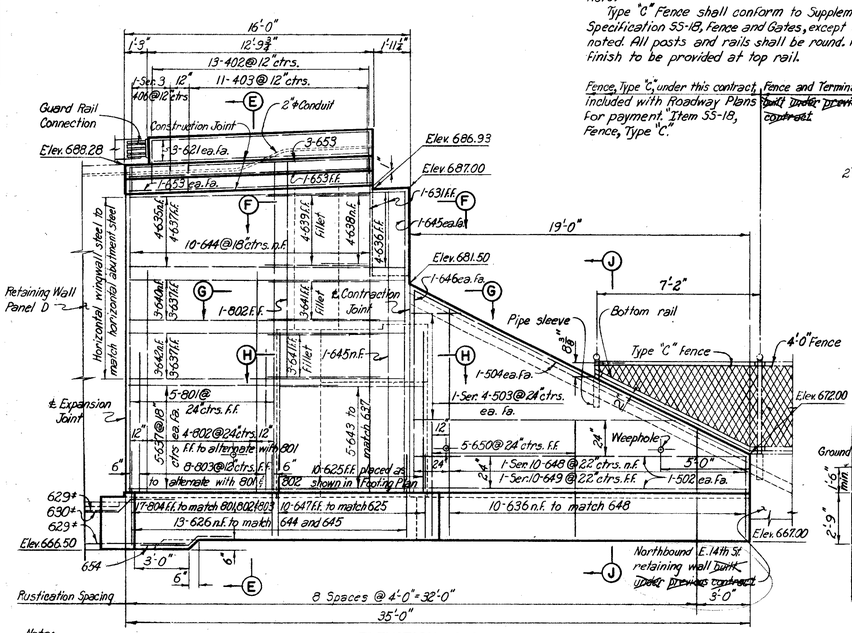
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

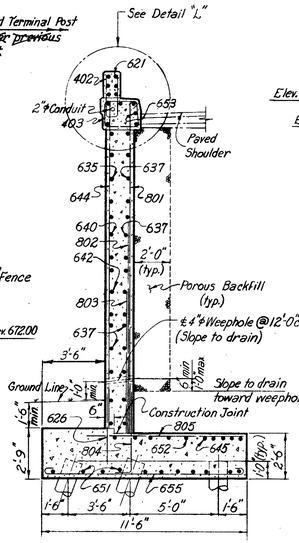
Note:
Type "C" Fence shall conform to Supplemental Specification S5-18, Fence and Gates, except as otherwise noted. All posts and rails shall be round. Knuckle finish to be provided at top rail.

Fence, Type "C" under this contract, Fence and Terminal Post Included with Roadway Plans ~~built under previous contract~~ For payment, Item 55-18, Fence, Type "C."

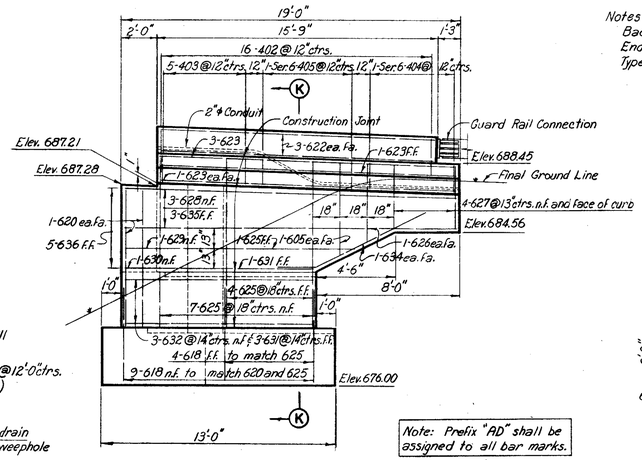


ELEVATION A-A
(Piles not shown)

Note:
* designates Retaining Wall Panel D Footing reinforcement. See Sheets 121-7A and 122-7A.



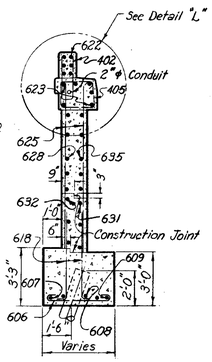
SECTION E-E



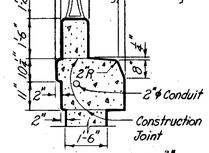
ELEVATION B-B
(Piles not shown)

Note: Prefix "AD" shall be assigned to all bar marks.

Notes:
Backfill shall be completed prior to construction of safety curb. Ends of railing parapets shall be normal to top of safety curb. Type "A" Railing not shown.

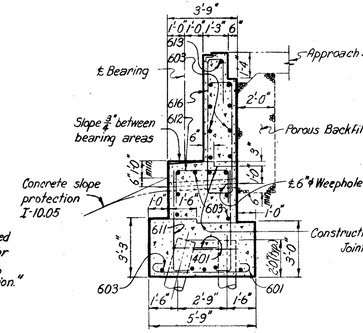


SECTION K-K

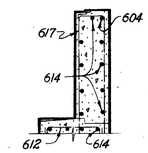


Note: All chamfers to be ¾"

DETAIL "L"
Scale: ¾"=1'-0"
(Reinforcement not shown)

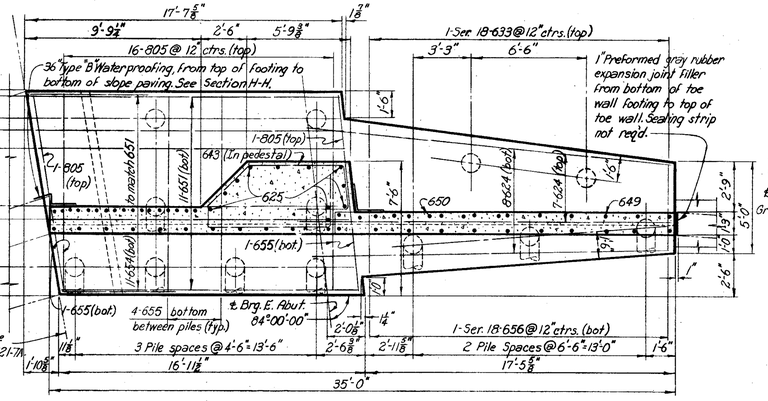


SECTION C-C

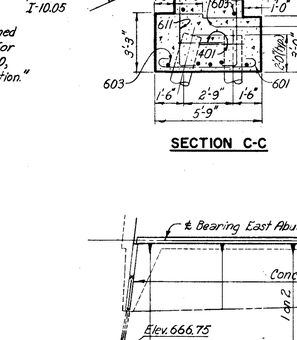


PART SECTION D-D

NOTES:
For Expansion joint detail, see Sheet 122-7A.
* Bars are included with "Item 5-14, Railing" For payment.
Bars of a series shall vary in length by a constant increment.
Bar dimensions are given out to out
For Bending Diagrams, see Sheet 122-7A.
For Replacement Schedule, see Sheet 109-7A.
For additional notes, see Sheet 119-7A
For rustication details, see Sheet 122-7A.

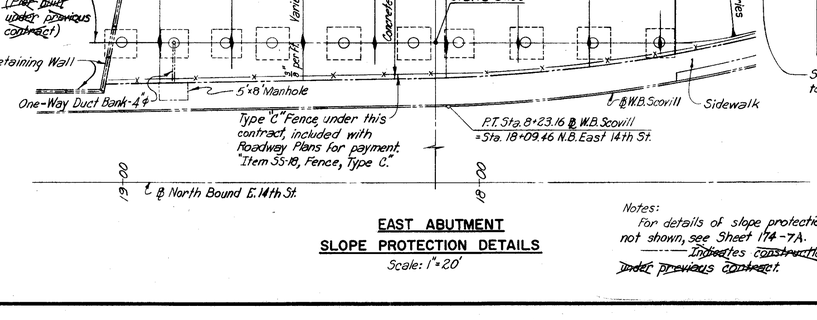


FOOTING PLAN



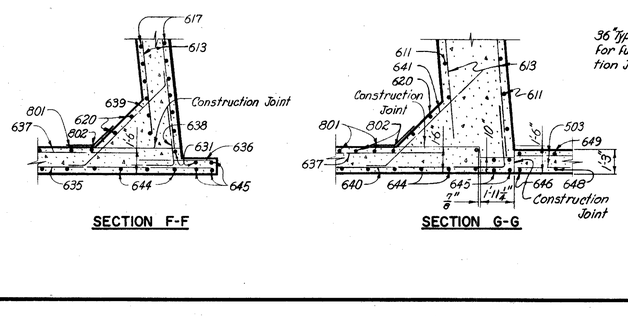
SECTION J-J

Notes:
Type "C" Fence not shown.
For typical weephole placement, see Section E-E.



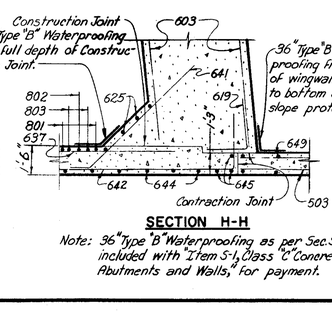
EAST ABUTMENT
SLOPE PROTECTION DETAILS
Scale: 1"=20'

Notes:
For details of slope protection not shown, see Sheet 174-7A.
——— Indicates construction ~~built under previous contract~~



SECTION F-F

SECTION G-G



SECTION H-H

Note: 36" Type "B" Waterproofing as per Sec. S-3.06, included with "Item S-1, Class "C" Concrete, Abutments and Walls," for payment.

REINFORCEMENT SCHEDULE									
Mark	Number	Length	Type	Dimensions A	B	C	D	Series Increment	Weight (lbs.)
401	58	5'-10"	144	2'-0"	1'-10"				226
402	29	5'-9"	105	8"	2'-8"				111
403	16	6'-9"	109	1'-8"	1'-5"				70
404	1-Ser. 6	4'-7" to 5'-11"	109	8"to1'-4"	1'-5"			3⅜"	21
405	1-Ser. 6	6'-1" to 6'-7"	109	1'-5"to1'-8"	1'-5"			1⅜"	25
406	1-Ser. 3	5'-9" to 6'-7"	109	1'-0"to1'-8"	1'-5"			8"	12
501	151	4'-7"	105	1'-8"	1'-7"				722
502	4	18'-9"	Str.						78
503	2-Ser. 4	2'-9" to 14'-9"	Str.					4'-0"	79
504	2	20'-9"	Str.						43
601	92	6'-9"	100	5'-5"					933
602	10	93'-3"	Str.						499
603	48	27'-9"	Str.						2,001
604	17	10'-0"	Str.						255
605	20	5'-3"	Str.						158
606	1-Ser. 5	4'-8" to 5'-10"	100	32"to49"				4"	39
607	1	14'-6"	104	12'-8"	2'-0"				22
608	3	12'-6"	Str.						56
609	1	9'-6"	Str.						14
610	8	7'-5"	100	6'-8"	10"	12			89
611	158	6'-2"	104	5'-6"	10"				1463
612	80	9'-1"	105	3'-5"	2'-6"				971
613	18	28'-9"	Str.						777
614	17	34'-6"	Str.						881
615	17	23'-3"	Str.						594
616	120	19'-9"	112	11"	7'-6"	6'-2"	1'-5"		3560
617	24	18'-7"	109	7'-6"	1'-5"				670
618	16	5'-8"	104	5'-0"	10"				136
619	3	5'-4"	148	3'-0"	2'-6"	1			24
620	7	7'-9"	Str.						81
*621	6	12'-6"	Str.						—
*622	6	15'-6"	Str.						—
623	6	16'-9"	Str.						151
624	15	20'-9"	Str.						467
625	22	9'-3"	Str.						306
626	15	4'-6"	Str.						101
627	8	3'-6"	Str.						42
628	3	18'-9"	Str.						84
629	1	12'-9"	Str.						19
630	1	10'-9"	Str.						16
631	6	11'-0"	Str.						63
632	3	18'-6"	104	1'-11"	10'-9"				50
633	1-Ser. 18	4'-9" to 6'-9"	Str.					1"/16"	135
634	2	8'-10"	108	1'-11"	7'-0"	6			27
635	7	15'-9"	Str.						166
636	19	4'-0"	Str.						114
637	20	11'-9"	Str.						353
638	4	5'-9"	148	4'-0"	1'-11"	1			35
639	4	8'-0"	141	6'-6"	10"				48
640	3	19'-6"	148	15'-8"	4'-0"	1			88
641	6	8'-2"	108	7'-6"	10"	12			74
642	3	19'-7"	104	15'-6"	3'-1"				84
643	5	24'-7"	135	7'-0"	3'-0"	2'-9"	1'-4"		185
644	10	18'-3"	Str.						274
645	8	17'-0"	Str.						204
646	2	11'-6"	Str.						35
647	10	5'-2"	104	4'-6"	10"				78
648	1-Ser. 10	2'-0" to 10'-6"	Str.					11⅜"	34
649	1-Ser. 10	3'-2" to 13'-6"	104	4'6to180°	10"			11⅜"	141
650	5	17'-2"	104	6'-6"	10"				54
651	11	14'-0"	Str.						231
652	5	16'-9"	Str.						126
653	6	13'-9"	Str.						124
654	11	5'-5"	118	2'-10"	6"	6"			89
655	16	12'-6"	100	11'-2"					300
656	1-Ser. 18	6'-0" to 9'-8"	100	48"to84"				2"/16"	212
801	5	18'-6"	Str.						247
802	5	12'-0"	Str.						160
803	8	8'-0"	Str.						171
804	17	5'-8"	104	4'-3"	1'-1"				257
805	18	9'-0"	Str.						433
								Total	20,468

H.N.T.B. BR. NO. 4 PART 7A

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

EAST ABUTMENT DETAILS

INNER BELT FREEWAY OVER EAST 14th ST.
BR. NO. CUY-42-1854 STA. 70+89.23
Scale: 1/4"=1'-0" Except as noted STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN F.S.J.	TRACED	CHECKED C.K.B.	REVIEWED J.C.T.	REVISED F.S.J. 11-24-59
DATE 10-29-59	DATE	DATE 11-4-59	DATE 11-13-59	SHEET 120

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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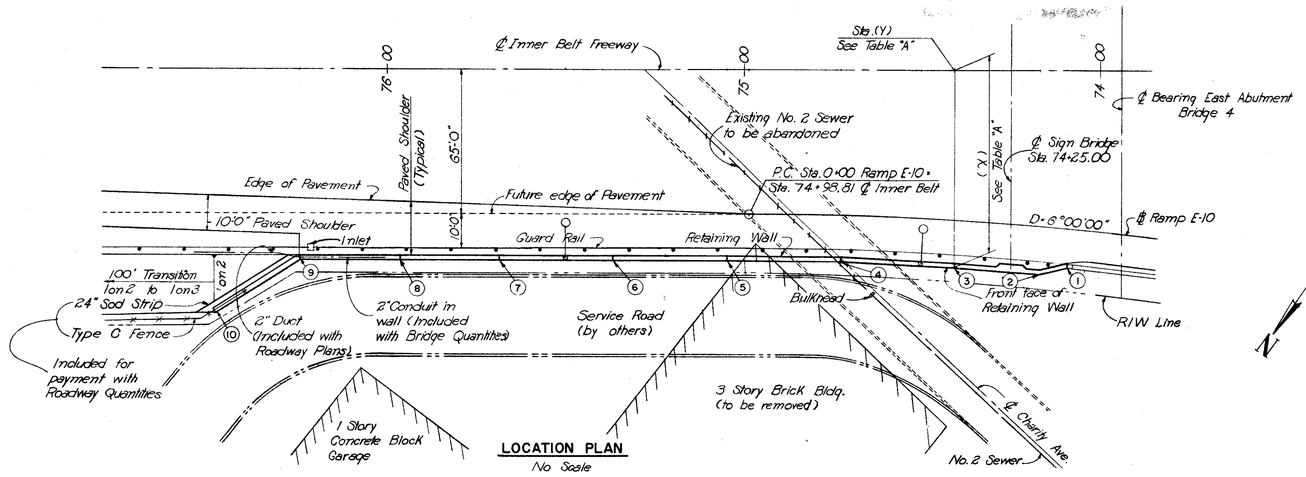
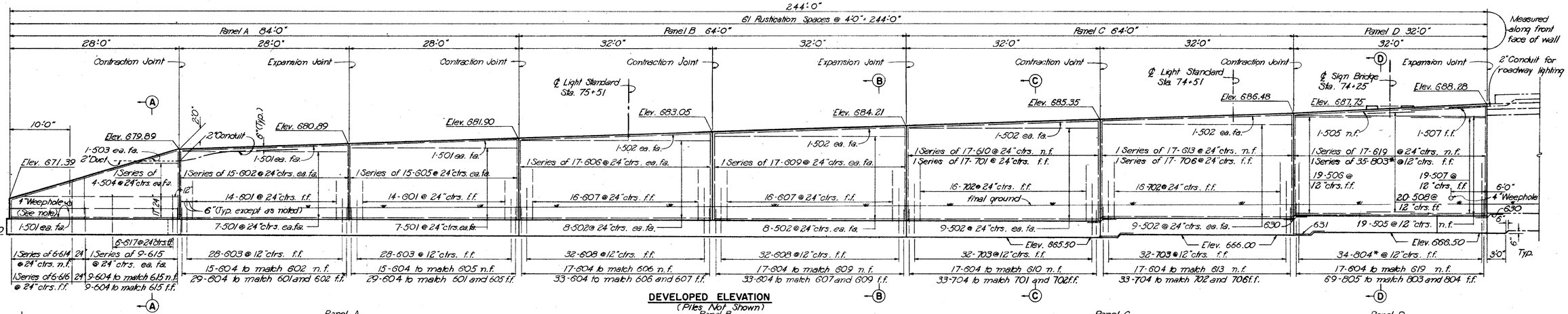
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

JUL 3 1985

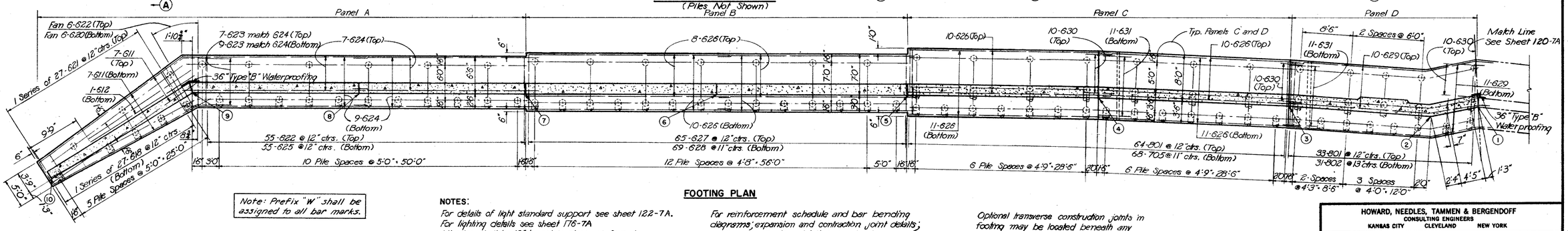
TABLE "A"		
Location	Offset (X)	Station (Y)
①	80.08'	74+09.07
②	81.82'	74+16.88
③	80.04'	74+40.81
④	78.61	74+72.78
⑤	78.25	75+04.78
⑥	78.25	75+36.78
⑦	78.25	75+68.78
⑧	78.25	75+96.78
⑨	78.25	76+24.78
⑩	93.29	76+48.39



LOCATION PLAN
No Scale



DEVELOPED ELEVATION
(Piles Not Shown)



FOOTING PLAN

Note: Prefix "W" shall be assigned to all bar marks.

NOTES:

For details of light standard support see sheet 122-7A.
For lighting details see sheet 176-7A
All piles shall be 12"ϕ cast-in-place reinforced concrete.
Front and center row piles shall be battered 3 in 12 in the direction shown.
Pile spacings are given along front face of retaining wall.
Reinforcing bars shall be 3-inches clear from bottom of footing and 2-inches elsewhere.
Spacing of longitudinal footing reinforcement in a panel is similar to that shown in the section for that panel.

For reinforcement schedule and bar bending diagrams; expansion and contraction joint details; sections; rustication details; sign bridge support details see sheet 122-7A.
The two extreme weepholes shown in the "Developed Elevation" shall be set 1'0" above final ground. Intermediate weepholes, not shown, shall be placed at 12'0" ctrs., measured along the front face of the wall, and set on a straight line grade between the two extreme weepholes.
* For placement of these bars see sign bridge details, sheet 122-7A.
n.f. = near face; f.f. = far face; ea. fa. = each face.

Optional transverse construction joints in footing may be located beneath any wall joint.

H.N.T.B. BR. NO. 4
PART 7A

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

RETAINING WALL

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: 1/8" = 1'-0" STA. 73+96.25
Except as noted

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.H.B.		A.E.L.	K.C.T.	
DATE 1-3-85	DATE	DATE 1-13-85	DATE 11-18-85	SHEET 121

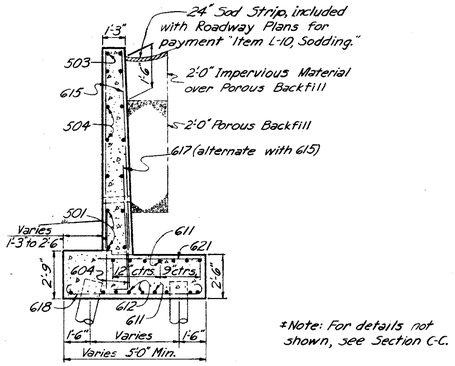
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

122
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

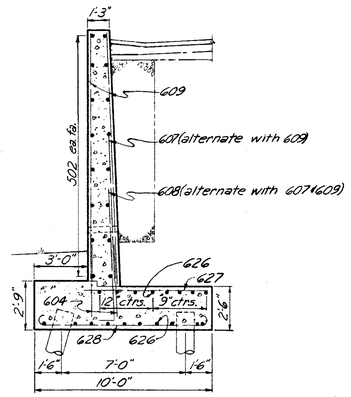
MICROFILMED
JUL 3 1985

Note: Prefix "W" shall be assigned to all bar marks.

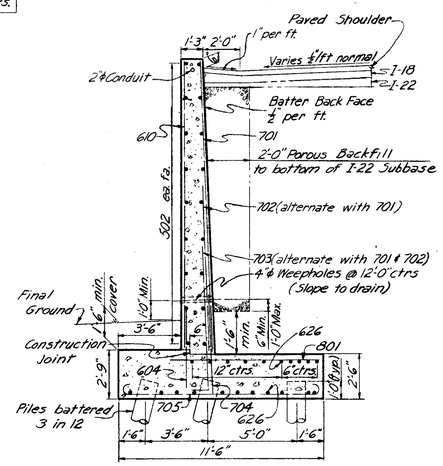


SECTION A-A ≠
Typical Panel A
except for Sod Strip

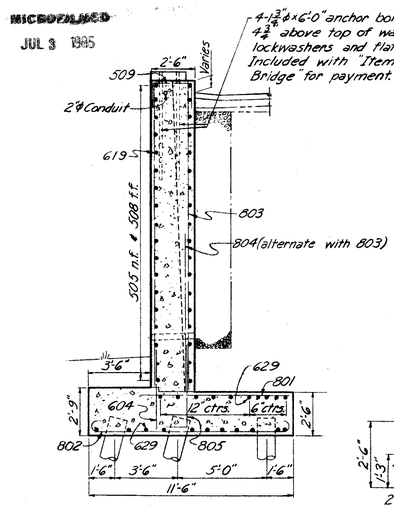
≠Note: For details not shown, see Section C-C.



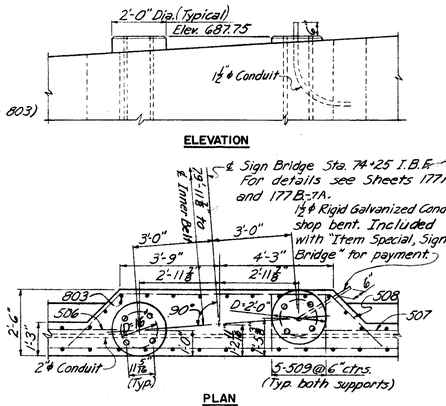
SECTION B-B ≠
Typical Panel B



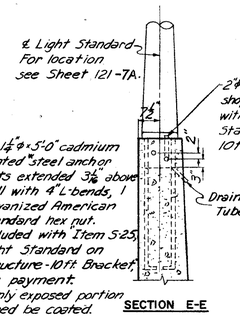
SECTION C-C
Typical Panel C



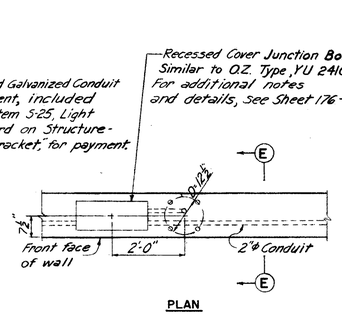
SECTION D-D ≠
Typical Panel D
except for wall width



SIGN BRIDGE SUPPORT DETAILS
Scale: ⅜"=1'-0"
Note: Sign Bridge support pads to be poured monolithic with retaining wall. For general notes and details not shown, see Sheet 177B-7A.

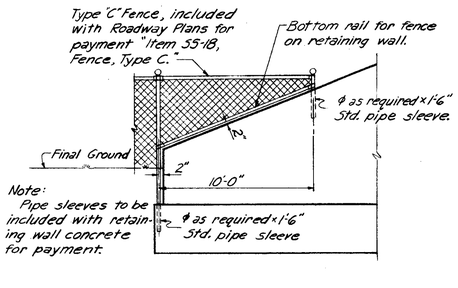


SECTION E-E

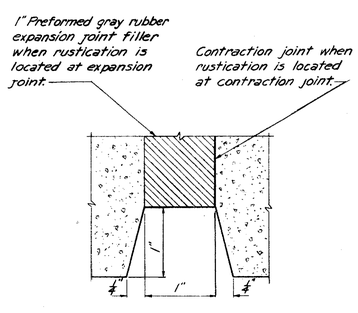


PLAN

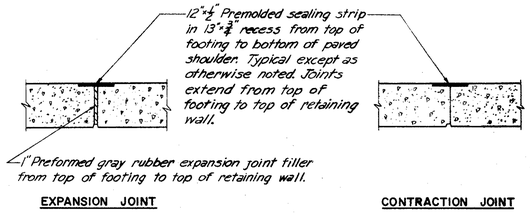
DETAILS AT LIGHT STANDARDS
Scale: ½"=1'-0"



FENCE DETAIL



RUSTICATION DETAIL
Scale: Full Size



EXPANSION JOINT

CONTRACTION JOINT

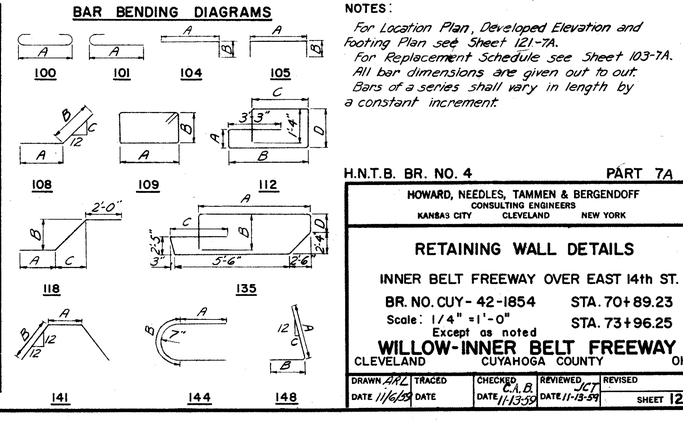
JOINT DETAILS
Scale: ½"=1'-0"

REINFORCEMENT SCHEDULE

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	SERIES INCREMENT	WEIGHT (LBS)
501	36	27'-6"	Str.					1033
502	76	31'-6"	Str.					2497
503	2	28'-9"	Str.					60
504	2 Series of 2	6'-6" to 26'-6"	Str.				6'-8"	138
505	20	31'-8"	108	23'-10"	7'-10"	3½"		661
506	19	12'-6"	Str.					248
507	20	12'-3"	108	4'-5"	7'-10"	3½"		236
508	20	13'-2"	141	7'-8"	2'-10"			275
509	10	3'-3"	105	2'-2"	8"			34
601	28	6'-6"	Str.					273
602	2 Series of 15	11'-6" to 12'-6"	Str.				1/8"	541
603	56	6'-5"	148	5'-9"	10"	½"		540
604	257	4'-6"	Str.					1737
605	2 Series of 15	12'-6" to 13'-6"	Str.				1/8"	586
606	2 Series of 15	13'-6" to 14'-6"	Str.				1/8"	715
607	32	8'-6"	Str.					409
608	64	8'-5"	148	7'-9"	10"	½"		809
609	2 Series of 17	14'-6" to 15'-9"	Str.				1/8"	772
610	1 Series of 17	15'-9" to 16'-9"	Str.				1/8"	415
611	14	30'-0"	Str.					631
612	2	20'-3"	Str.					61
613	1 Series of 17	16'-3" to 17'-6"	Str.				1/8"	431
614	1 Series of 6	5'-6" to 8'-6"	Str.				1/8"	63
615	2 Series of 6	6'-6" to 11'-3"	Str.				1/8"	240
616	1 Series of 6	6'-2" to 9'-2"	148	5'-8⅛" to 8'-6"	10"	½"	1/8"	69
617	6	6'-11"	148	6'-3"	10"	½"		62
618	1 Series of 2	6'-0" to 9'-6"	100	4'-8" to 8'-2"			1/8"	314
619	1 Series of 15	17'-0" to 18'-9"	Str.				1/8"	456
620	6	9'-4"	101	8'-8"				84
621	1 Series of 27	4'-6" to 6'-3"	Str.				1/8"	218
622	61	6'-9"	Str.					619
623	16	3'-11"	108	2'-0"	2'-0"	7		94
624	32	31'-0"	Str.					1490
625	55	10'-0"	100	8'-8"				826
626	78	34'-0"	Str.					3983
627	65	7'-0"	Str.					683
628	69	11'-0"	100	9'-8"				1140
629	21	34'-0"	118	24'-0"	2'-4"	7'-8"		1072
630	30	4'-7"	118	2'-0"	6"	6"		207
631	22	5'-7"	118	3'-0"	6"	6"		184
701	1 Series of 17	15'-9" to 16'-9"	Str.				3/4"	565
702	32	9'-6"	Str.					621
703	64	9'-1"	148	8'-3"	1'-0"	½"		1188
704	66	4'-9"	Str.					641
705	68	12'-10"	100	11'-2"				1784
706	1 Series of 17	16'-3" to 17'-6"	Str.				1/16"	586
801	97	8'-6"	Str.					2201
802	31	13'-4"	100	11'-2"				1104
803	1 Series of 33	17'-0" to 18'-9"	Str.				1/8"	1670
804	34	12'-0"	Str.					1089
805	69	5'-11"	148	5'-0"	1'-1"	½"		1090

Total Weight: 37,965

BAR BENDING DIAGRAMS



NOTES:
For Location Plan, Developed Elevation and Footing Plan see Sheet 121-7A.
For Replacement Schedule see Sheet 103-7A.
All bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.

H.N.T.B. BR. NO. 4 PART 7A

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

RETAINING WALL DETAILS

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23
Scale: 1/4"=1'-0" STA. 73+96.25
Except as noted

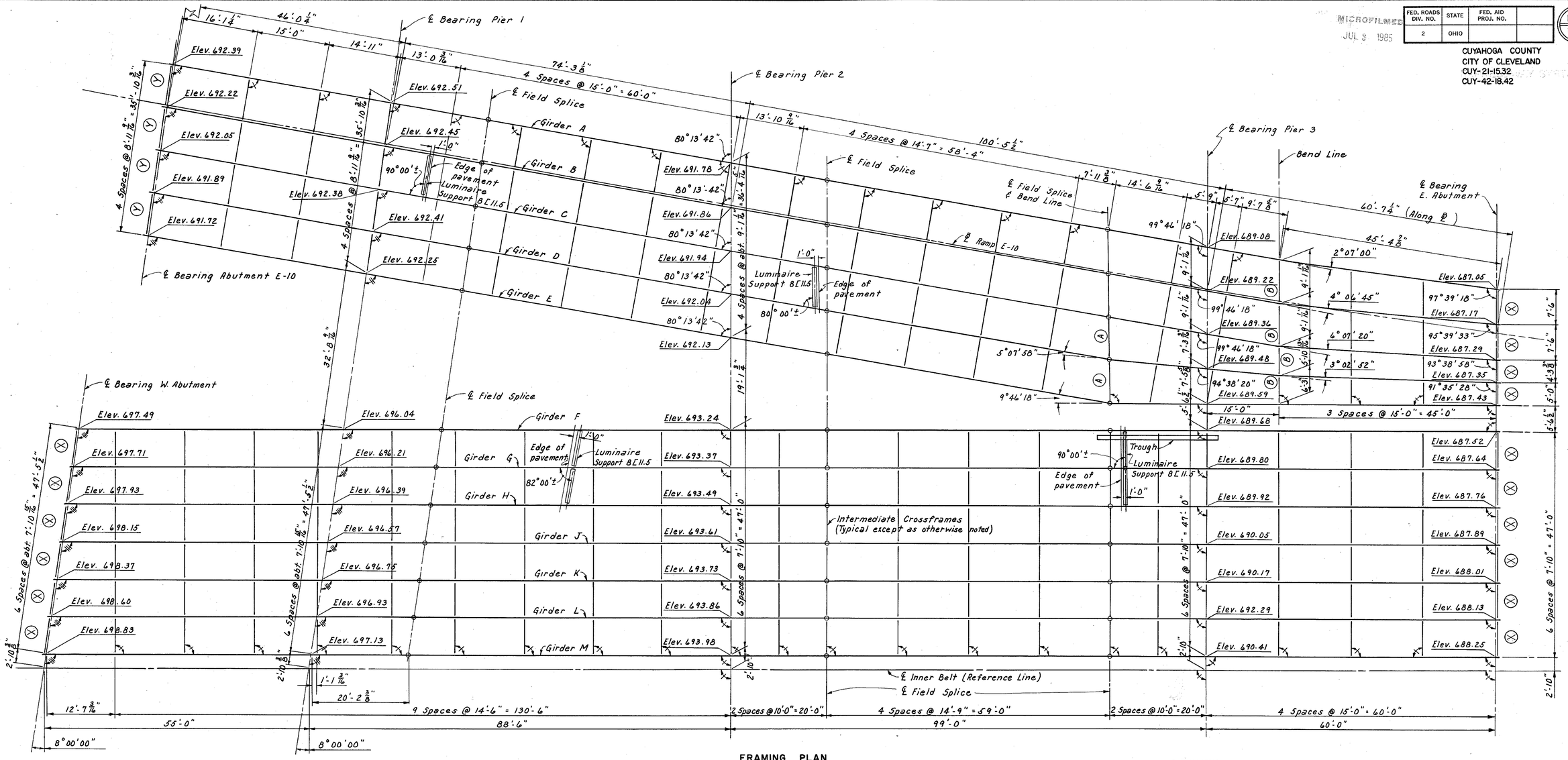
WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
ARC		C.A.B.	JCT	
DATE 11/6/59	DATE	DATE 11-13-59	DATE 11-13-59	SHEET 122

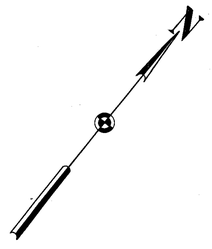
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

123
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



FRAMING PLAN



LEGEND

- Indicates 90° angles
- Indicates 88°13'42 angle
- Indicates 98°00'00" angle
- (A), (B) (X) or (Y) indicates type of crossframe, see sheet 130 for details.

NOTES:
For end dam details see sheet 173-7A
For trough details see sheet 174-7A
For details of underdeck lighting see sheets 176-7A and 177-7A
For details of shoes see Ohio State Standard, Drawing AB-1-55.
Elevations shown are to the top of web over the supports.

H.N.T.B. BR. NO. 4 PART 7A

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

FRAMING PLAN - NORTH HALF

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: 1" = 10'-0" STA. 73+96.25

WILLOW-INNER BELT FREEWAY

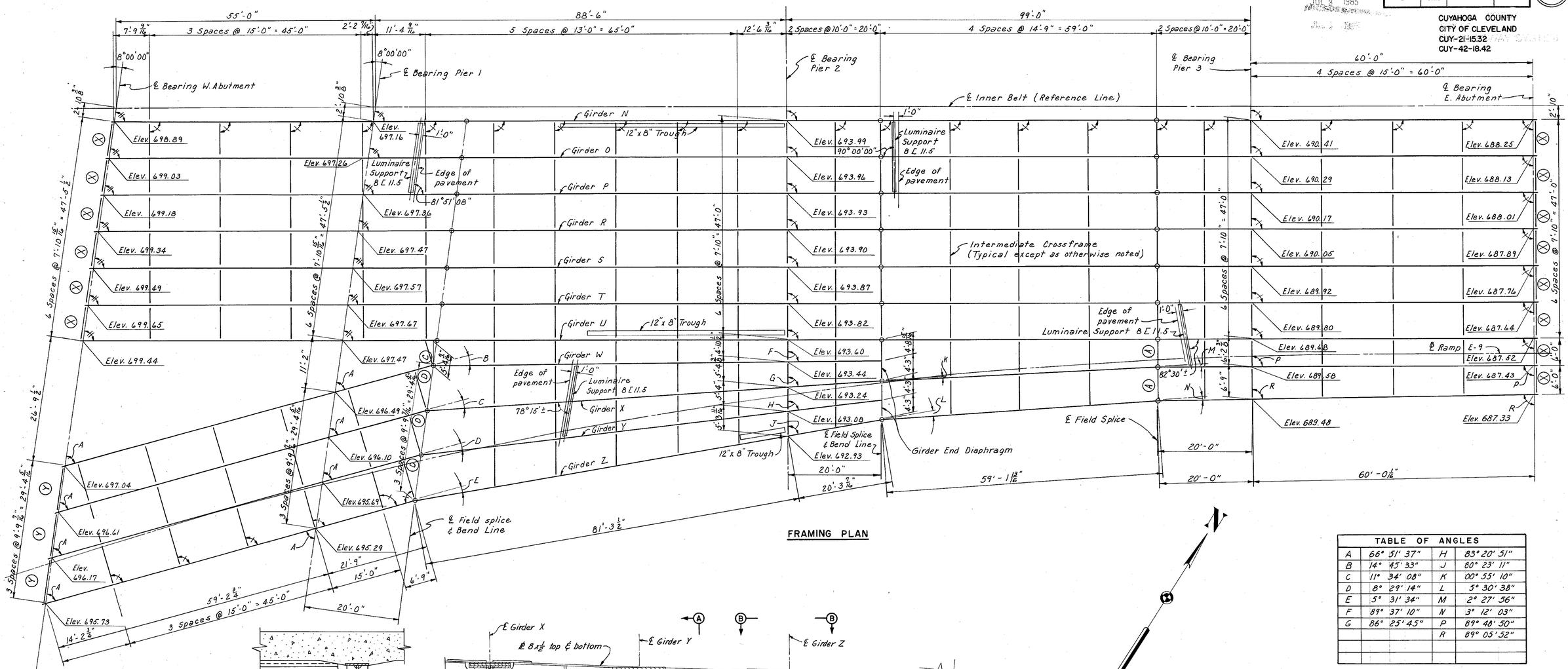
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.S.G. L.D.F.	R.C. A.E.K.	RLR	JCT	
DATE 5-10-58	DATE 4-20-59	DATE 7-10-58	DATE 11-13-59	SHEET 123

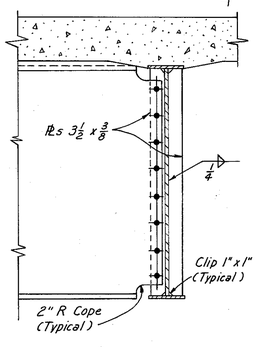
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

124
181

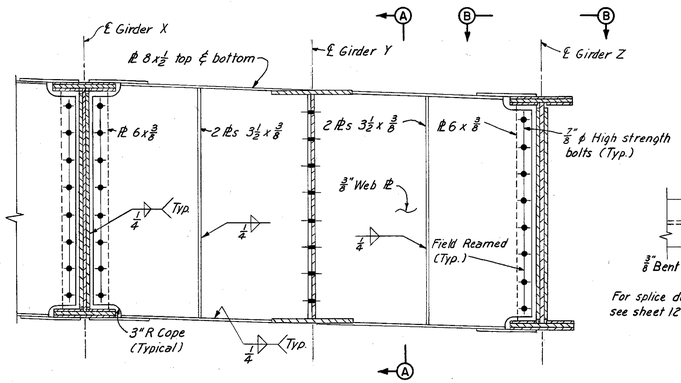
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



FRAMING PLAN

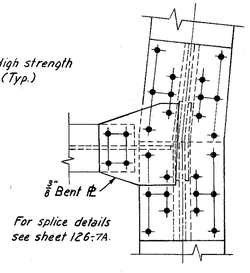


SECTION A-A
Scale: ¾" = 1'-0"



ELEVATION

GIRDER END DIAPHRAGM
Scale: ¾" = 1'-0"



VIEW B-B
Scale: 1" = 1'-0"

TABLE OF ANGLES			
A	66° 51' 37"	H	83° 20' 51"
B	14° 45' 33"	J	80° 23' 11"
C	11° 34' 08"	K	00° 55' 10"
D	8° 29' 14"	L	5° 30' 38"
E	5° 31' 34"	M	2° 27' 56"
F	89° 37' 10"	N	3° 12' 03"
G	86° 25' 45"	P	89° 48' 50"
		R	89° 05' 52"

LEGEND

Indicates 90° angle

Indicates 82° angle

(A) (C) (D) (X) or (Y) indicates type of crossframe, see sheet 130 for details

NOTES:
For end dam details see sheet 173-7A
For trough details see sheet 174-7A
For details of underdeck lighting see sheets 176-7A & 177-7A.
For details of shoes see Ohio State Standard, Drawing RB-1-55.
Elevations shown are to the top of web over the supports.

H.N.T.B. BR. NO. 4 PART 7A

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

FRAMING PLAN-SOUTH HALF

INNER BELT FREEWAY OVER EAST 14th ST.
BR. NO. CUY-42-1854 STA. 70+89.23
Scale: As shown STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

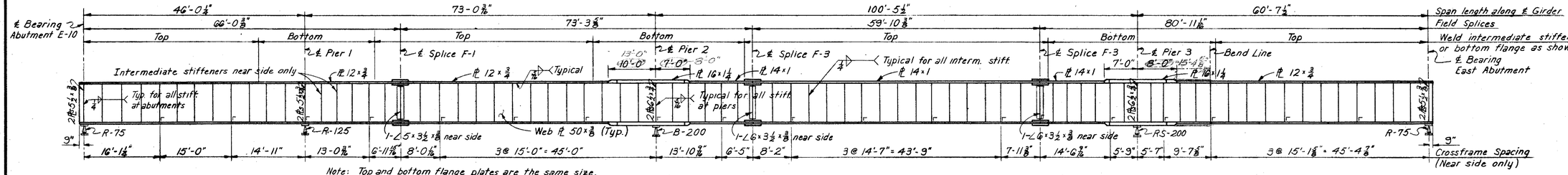
DRAWN LDF	TRACED R.C. A.E.K.	CHECKED RSG	REVIEWED JCT	REVISED
DATE 5-10-58	DATE 4-23-59	DATE 7-8-58	DATE 11-13-59	SHEET 124

RECEIVED JUL 3 1965

FED. ROADS DIV. NO.	STATE	FED. AND PROJ. NO.	
2	OHIO		

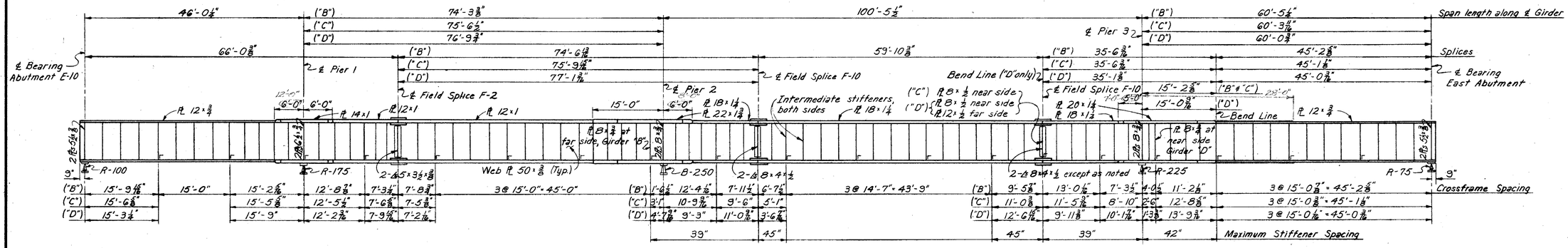
125
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-1842



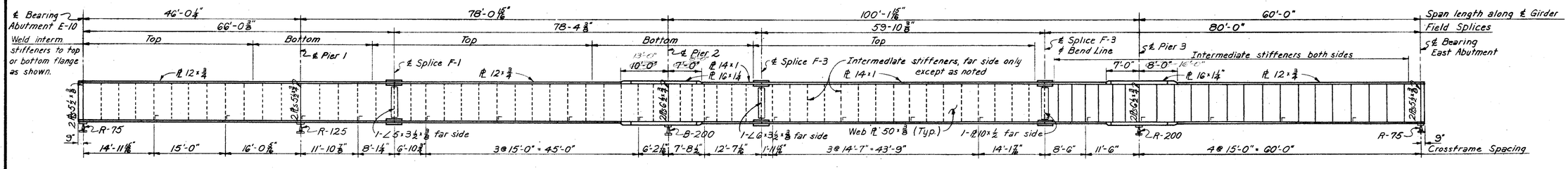
Note: Top and bottom flange plates are the same size.
All intermediate stiffeners are spaced equally between crossframes as shown.

GIRDER A



GIRDERS B,C&D.

(Girder B shown, Girders C & D similar except as noted)



GIRDER E

For notes see sheet 127-7A

H.N.T.B. BR. NO. 4 PART 7A

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

GIRDER ELEVATIONS

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: None STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

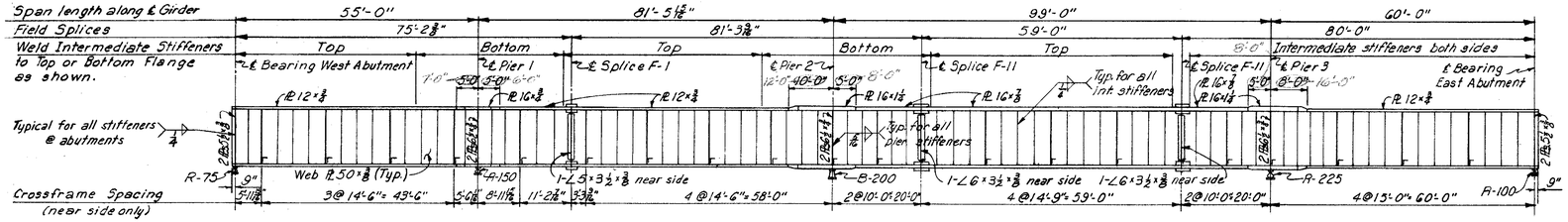
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CKB		PH	JCT	6-20-60
DATE 1-3-59	DATE	DATE 1-15-59	DATE 11-13-59	SHEET 125

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

126
181

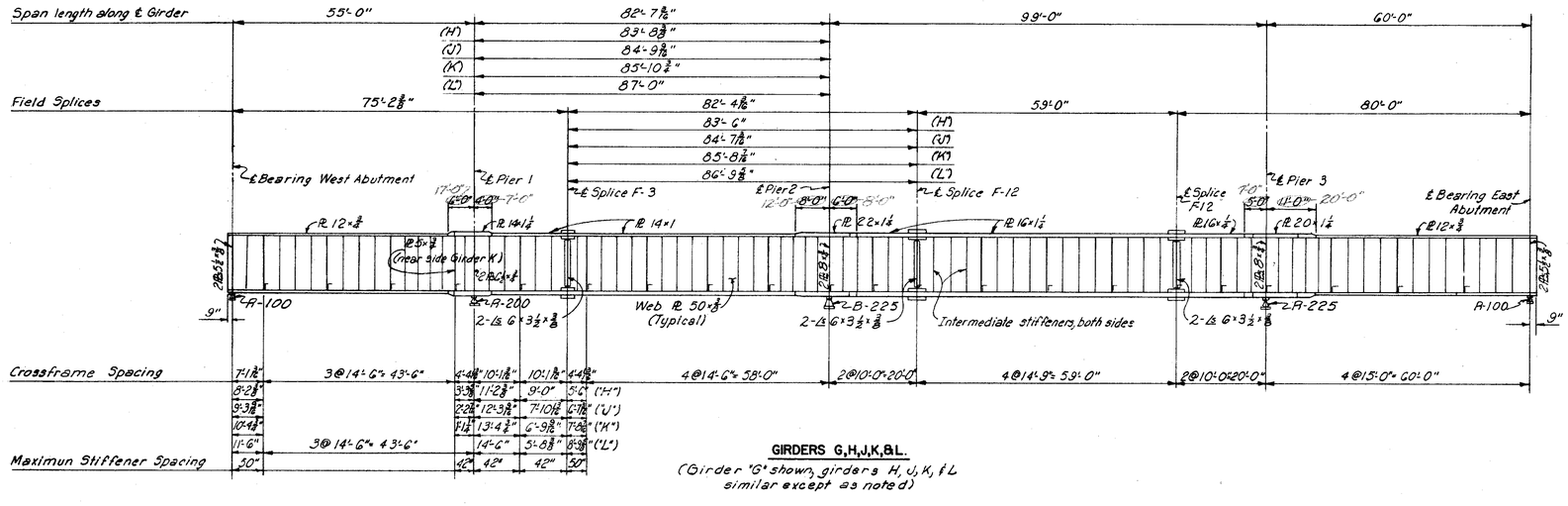
INCORPORATED JUL 3 1985

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



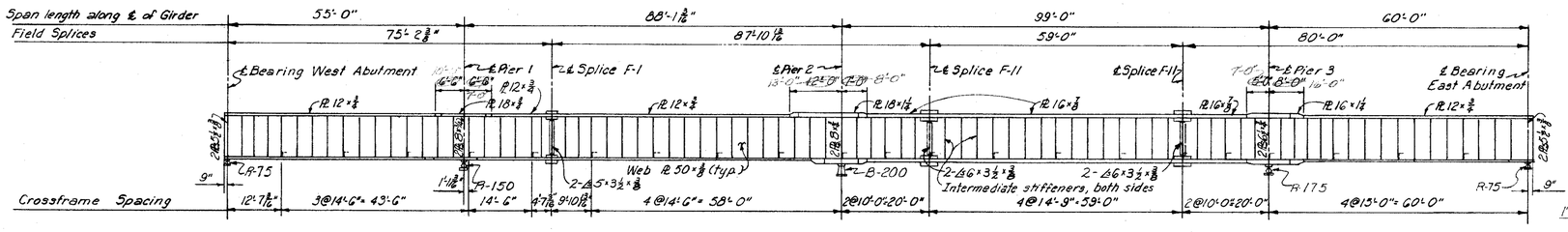
GIRDER F

Note: Intermediate stiffeners near side only except as noted.



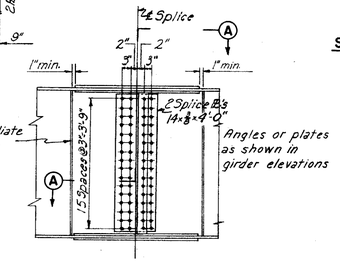
GIRDERS G,H,J,K,&L.

(Girder "G" shown, girders H, J, K, & L similar except as noted)



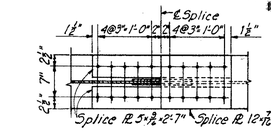
GIRDER M

NOTES:
For modification of splices at crossframes Types A, C & D see Detail "A" sheet 130-7A
For girder notes see sheet 127-7A

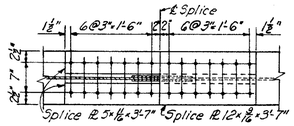


ELEVATION

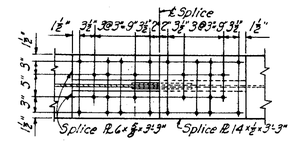
FIELD SPLICE DETAILS



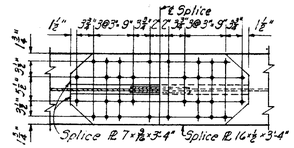
F-1



F-2



F-3



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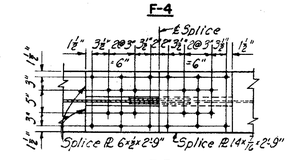
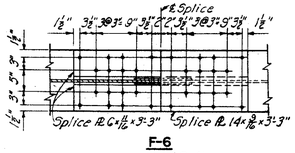


F-5



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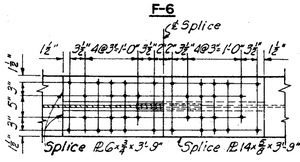

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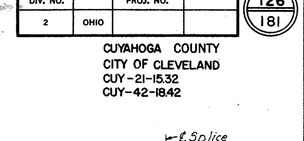

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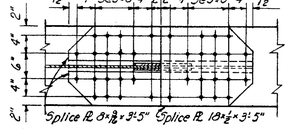

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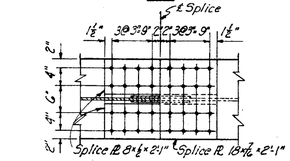

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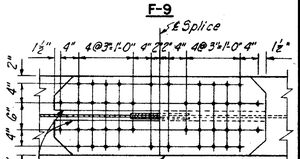

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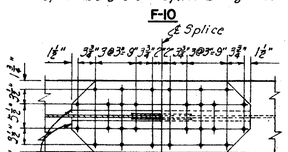
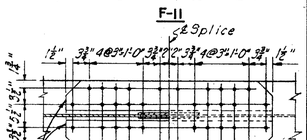


F-12



F-13

SECTION A-A

H.N.T.B. BR. NO. 4 PART 7A

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

GIRDER ELEVATIONS

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: None STA. 73+96.25

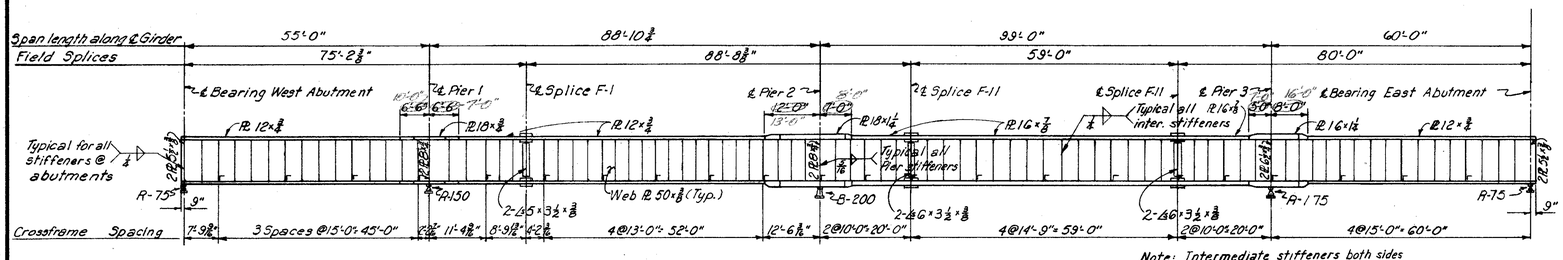
WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED 6-20-60
FA		CAH	JCT	
DATE 1-7-57	DATE	DATE 1-23-59	DATE 11-13-59	SHEET 126

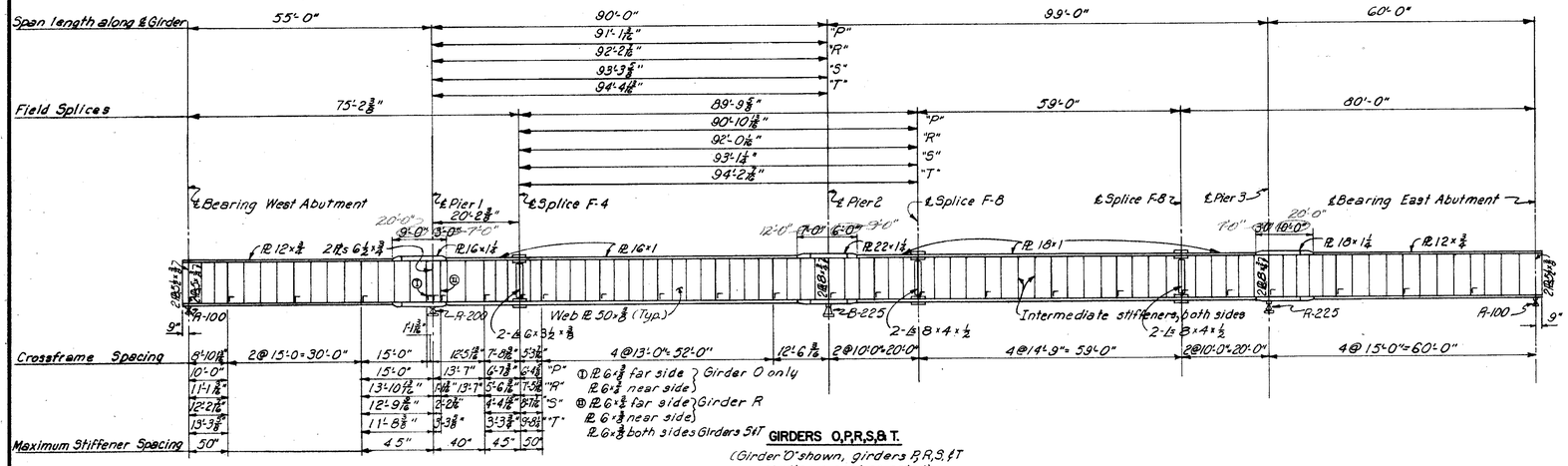
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

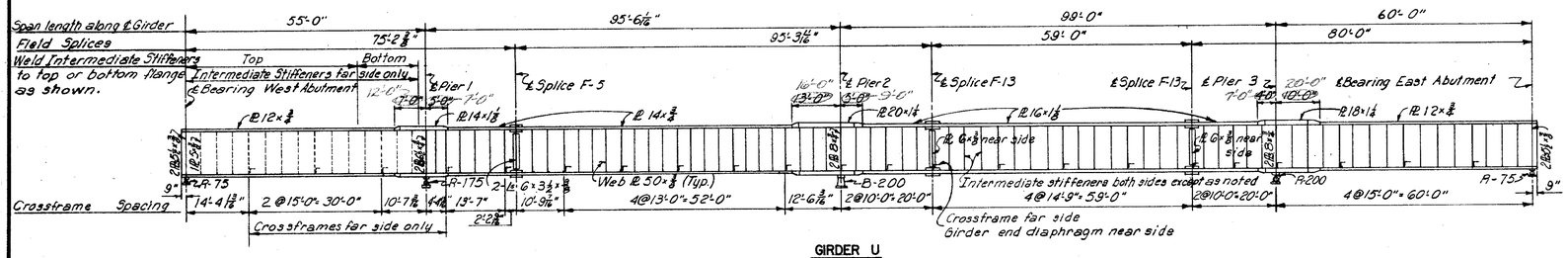


Note: Intermediate stiffeners both sides

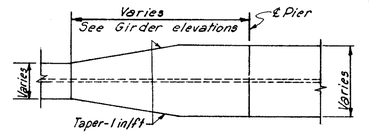
GIRDER N



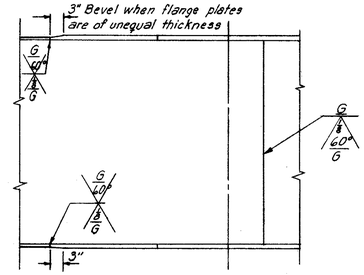
GIRDERS O,P,R,S,& T.
(Girder 'O' shown, girders P,R,S,&T similar except as noted)



GIRDER U



PLAN



ELEVATION
TYPICAL SHOP SPLICE DETAIL

Note: Shop splices may be located as required by available plate lengths. Web and flange splices should not coincide.

GIRDER NOTES

The girders shall be fabricated to lines parallel to profiles formed by top of pavement elevations directly over the girders, plus the camber required to compensate for dead load deflections.

Top and bottom flange plates are to be the same and shall be spliced at the points shown in girder elevations, and as otherwise required.

The web plate may be spliced as required by available plate lengths.

Intermediate stiffeners shall be as shown in Table "A", except as otherwise noted at special crossframes. These stiffeners shall be placed singly or in pairs as shown on the girder elevations. Stiffeners placed in pairs shall not be welded to the flanges, but shall be fitted to close enough contact that the shop coat, when applied, will fill and close the openings. Stiffeners placed singly shall be welded to top or bottom flanges within the limits shown on the girder elevations with a 5/16" fillet weld on both sides of the joint for a distance of 2" from the outside edge of the stiffener. The other end shall have a tight fit with the flange.

Angles or plates as noted on the girder elevations shall be used at all field splices.

Bearing stiffeners at abutments and piers shall be as shown on the girder elevations and shall be placed in pairs on all girders. They shall be grooved and fully butt welded to the lower flange and fitted to close contact, without welding, at the upper flange.

All field connections and girder field splices shall be made with ⅞" ϕ high strength bolts conforming to Supplemental Spec. 5-207. The bolts shall be placed with their heads on the outside face of exterior girders and on the bottom of girder flanges.

At bend points, the girders change direction at the center line of the field splice. Specially cut splice plates will be required at these locations.

Welding shall be done in accordance with Sec. 5-7.22 of the Specifications.

Longitudinal dimensions of the girders are measured horizontally along center line of web plate.

For top of pavement elevations see sheets 134-7A & 135-7A.
For deflections see sheet 129-7A.
For splice details see sheet 126-7A.
For cross section through deck and other superstructure details see sheet 130-7A.
For details of rocker masonary plates see sheet 173-7A.
For other rocker details and details of bolsters see Ohio Standard's, Dwg. RB-1-55.
For details of end dams see sheet 173-7A
For Shop Drawing and Assembly Notes see sheet 128-7A

TABLE "A"	
GIRDER FLANGE WIDTH	INTERMEDIATE STIFFENER
12"	PL 5×⅜
14" to 16"	PL 6×⅜
18" and up	PL 8×½

H.N.T.B. BR. NO. 4 PART 7A

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

GIRDER ELEVATIONS

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: None STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

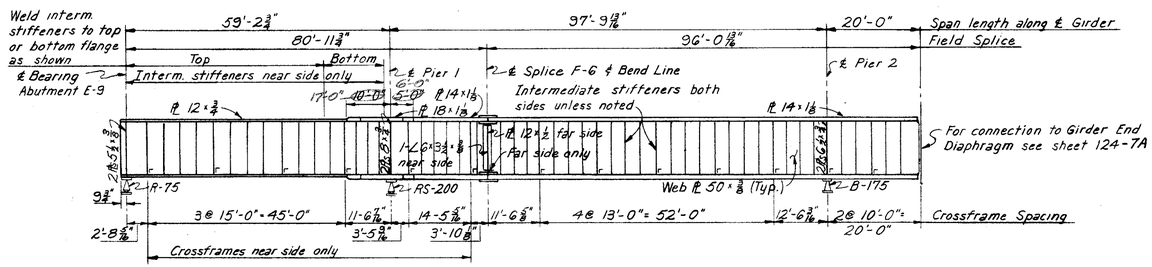
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.		P.H.	JCT	6-20-60
DATE 1-7-59	DATE	DATE 1-16-59	DATE 11-13-59	SHEET 127

DISCONTINUED JUL 3 1985

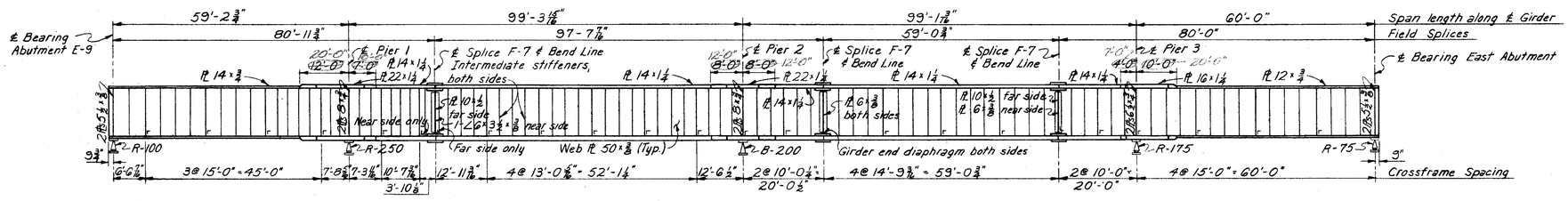
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

128 / 181

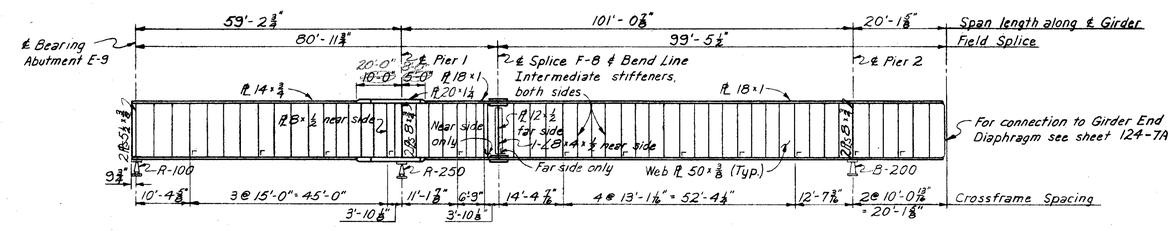
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



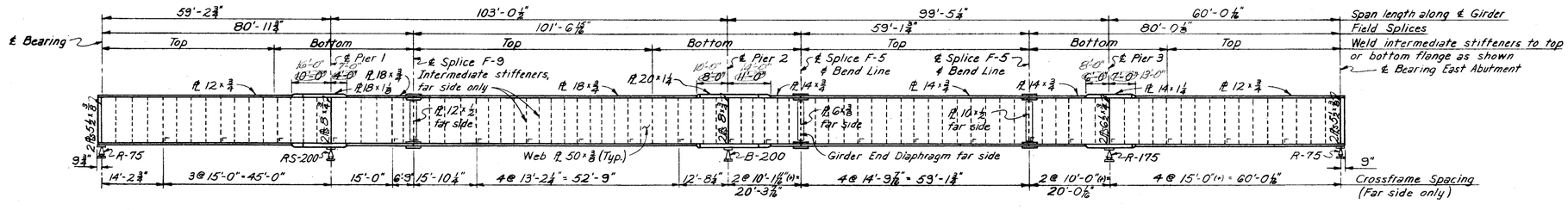
GIRDER W



GIRDER X



GIRDER Y



GIRDER Z

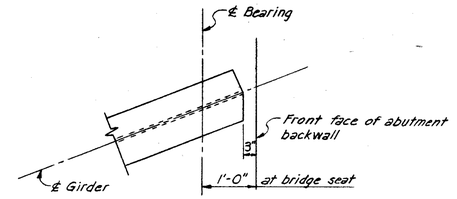
For notes see sheet 127-7A.

SHOP DRAWING AND ASSEMBLY NOTES

SHOP DRAWINGS *for the girders shall include an overall layout with dimensions showing the relative unloaded vertical position of each girder or girder segment with respect to the others in the same girder line and with respect to a full length base or work line taking into account camber and the profile of the highway.*

SHOP ASSEMBLY. *At least three adjacent girder segments shall be assembled in the shop in their correct unloaded positions as shown on the shop drawing layout required in the adjacent note, so that the faced joints for welding the segments together may be checked for proper Fit-up.*

The same procedure of assembly shall also be used for reaming of holes for high strength bolts in field splices.



GIRDER END DETAIL

H.N.T.B. BR. NO. 4 PART 7A

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

GIRDER ELEVATIONS

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: None STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CKB		PH	JCT	6-20-60
DATE 5-3-59	DATE	DATE 2-5-59	DATE 11-13-59	SHEET 128

DEFLECTION TABLE - SPAN 1

Beam	A Dead Load Conc.	A Live Load Total	B Dead Load Conc.	B Live Load Total	C Dead Load Conc.	C Live Load Total	D Dead Load Conc.	D Live Load Total	E Dead Load Conc.	E Live Load Total	F Dead Load Conc.	F Live Load Total	G Dead Load Conc.	G Live Load Total	H Dead Load Conc.	H Live Load Total	J Dead Load Conc.	J Live Load Total
A	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	3 1/16"	1 1/8"	3 1/16"	1 1/8"	1 1/8"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	0"	0"
B	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"
C	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"
D	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"
E	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	3 1/16"	1 1/8"	3 1/16"	1 1/8"	1 1/8"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	0"	0"
F	1 1/16"	1 1/8"	1 1/8"	3 1/16"	3 1/16"	1 1/4"	3 1/16"	1 1/8"	3 1/16"	1 1/8"	3 1/16"	3 1/16"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	0"	0"
G	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	3 1/16"	1 1/8"	3 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"
H	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	3 1/16"	1 1/8"	3 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"
J	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	3 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"
K	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/8"	0"	0"	0"	0"	0"	-1/16"
L	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"	-1/16"	-1/16"
M	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	3 1/16"	1 1/8"	3 1/16"	1 1/8"	1 1/8"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"
N	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	3 1/16"	1 1/8"	3 1/16"	1 1/8"	1 1/8"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"
O	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	-1/16"	-1/16"	-1/16"	-1/16"
P	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	-1/16"	-1/16"	-1/16"	-1/16"
R	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	-1/16"	-1/16"	-1/16"	-1/16"
S	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"	-1/16"	-1/16"	-1/16"	-1/16"
T	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"	-1/16"	-1/16"	-1/16"	-1/16"
U	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	3 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"	0"	0"
W	1 1/16"	1 1/8"	1 1/8"	3 1/16"	3 1/16"	1 1/4"	3 1/16"	1 1/4"	3 1/16"	3 1/16"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"
X	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	-1/16"	-1/16"	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/8"
Y	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"	0"	0"
Z	1 1/16"	1 1/16"	1 1/8"	3 1/16"	3 1/16"	3 1/16"	3 1/16"	3 1/16"	1 1/8"	3 1/16"	1 1/16"	1 1/16"	0"	0"	-1/16"	-1/16"	-1/16"	-1/16"

DEFLECTION TABLE - SPAN 2

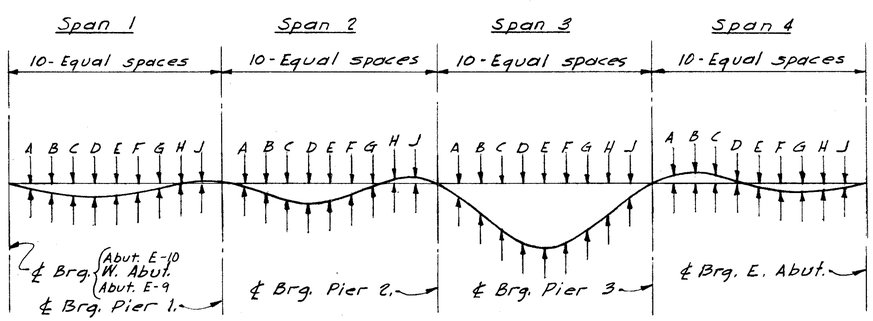
Beam	A Dead Load Conc.	A Live Load Total	B Dead Load Conc.	B Live Load Total	C Dead Load Conc.	C Live Load Total	D Dead Load Conc.	D Live Load Total	E Dead Load Conc.	E Live Load Total	F Dead Load Conc.	F Live Load Total	G Dead Load Conc.	G Live Load Total	H Dead Load Conc.	H Live Load Total	J Dead Load Conc.	J Live Load Total
A	0"	0"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	-1 1/16"	-1 1/16"	-1 1/8"	-3 1/16"	-9 1/16"	-1 1/4"	-3 1/16"	-3 1/16"
B	0"	0"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"	-1 1/16"	-1 1/8"	-1 1/8"	-1 1/8"	-1 1/8"	-1 1/8"
C	0"	0"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"	-1 1/16"	-1 1/16"	-1 1/8"	-1 1/8"	-1 1/8"	-1 1/8"
D	0"	0"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"	-1 1/16"	-1 1/16"	-1 1/8"	-1 1/8"	-1 1/8"	-1 1/8"
E	0"	0"	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	0"	0"	-1 1/16"	-1 1/16"	-1 1/16"	-1 1/8"	-1 1/16"	-1 1/8"
F	1 1/16"	1 1/16"	1 1/8"	3 1/16"	3 1/16"	1 1/4"	1 1/8"	1 1/8"	1 1/4"	3 1/16"	1 1/8"	3 1/16"	0"	0"	-1 1/16"	-1 1/8"	-1 1/8"	-3 1/16"
G	0"	0"	1 1/16"	1 1/8"	1 1/8"	3 1/16"	1 1/4"	3 1/16"	3 1/16"	3 1/16"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	-1 1/16"	-1 1/16"	-1 1/16"	-1 1/16"
H	0"	0"	1 1/8"	1 1/8"	3 1/16"	3 1/16"	1 1/4"	3 1/16"	3 1/16"	1 1/4"	1 1/8"	3 1/16"	1 1/16"	1 1/16"	0"	0"	1 1/16"	1 1/16"
J	0"	0"	1 1/8"	1 1/8"	3 1/16"	1 1/4"	1 1/4"	3 1/16"	1 1/4"	3 1/16"	3 1/16"	1 1/4"	1 1/8"	1 1/8"	0"	0"	1 1/16"	1 1/16"
K	0"	1 1/16"	1 1/8"	3 1/16"	3 1/16"	1 1/4"	1 1/4"	3 1/16"	1 1/4"	3 1/16"	3 1/16"	1 1/4"	1 1/8"	1 1/8"	0"	0"	1 1/16"	1 1/16"
L	1 1/16"	1 1/16"	1 1/8"	3 1/16"	1 1/4"	3 1/16"	1 1/4"	3 1/16"	3 1/16"	1 1/4"	1 1/8"	3 1/16"	1 1/16"	1 1/16"	0"	0"	1 1/16"	1 1/16"
M	1 1/8"	3 1/16"	3 1/8"	7 1/16"	1 1/2"	9 1/16"	1 1/16"	1 3/16"	1 1/16"	7 1/8"	9 1/16"	3 1/4"	5 1/16"	3 1/8"	3 1/16"	1 1/4"	0"	0"
N	1 1/8"	3 1/16"	3 1/8"	7 1/16"	1 1/2"	9 1/16"	1 1/16"	1 3/16"	1 1/16"	7 1/8"	9 1/16"	3 1/4"	5 1/16"	3 1/8"	3 1/16"	1 1/4"	0"	0"
O	1 1/16"	1 1/16"	3 1/16"	3 1/16"	1 1/4"	5 1/16"	1 1/16"	1 1/16"	1 1/16"	3 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"
P	1 1/16"	1 1/16"	3 1/16"	1 1/4"	1 1/16"	3 1/8"	1 1/16"	1 1/2"	1 1/16"	1 1/2"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	0"	0"	0"	0"
R	1 1/16"	1 1/8"	1 1/4"	1 5/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	0"	0"	0"	0"
S	1 1/8"	1 1/8"	1 1/16"	1 3/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"
T	1 1/8"	3 1/16"	1 1/16"	1 1/16"	1 1/2"	1 5/8"	1 1/16"	1 3/16"	1 1/16"	1 3/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"
U	1 1/4"	1 5/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1"	1 1/4"	1 1/4"	1 3/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"
W	3 1/16"	3 1/16"	3 1/8"	1 1/2"	1 1/16"	3 1/4"	1 1/2"	1 5/16"	1 1/16"	1 5/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"
X	1 1/8"	1 1/8"	1 1/16"	1 1/8"	1 1/2"	1 5/8"	1 1/16"	1 3/16"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/8"	1 1/16"	1 1/16"
Y	-3 1/16"	-1/4"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/4"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"
Z	3/8"	7 1/16"	3/4"	1 5/16"	1 3/16"	1 1/16"	1 1/16"	1 3/4"	1 1/2"	1 3/16"	1 3/16"	1 3/8"	1"	1 1/4"	1 1/16"	1 1/16"	1 1/16"	1 1/16"

DEFLECTION TABLE - SPAN 3

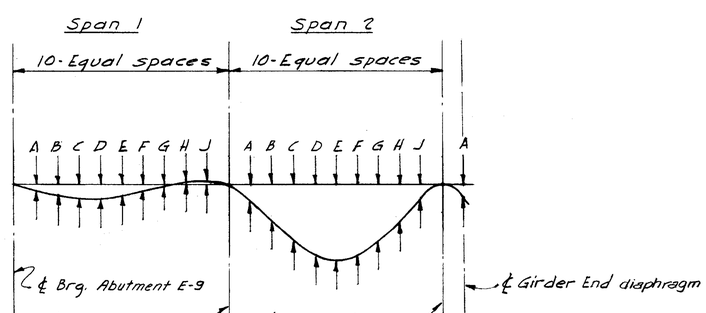
Beam	A Dead Load Conc.	A Live Load Total	B Dead Load Conc.	B Live Load Total	C Dead Load Conc.	C Live Load Total	D Dead Load Conc.	D Live Load Total	E Dead Load Conc.	E Live Load Total	F Dead Load Conc.	F Live Load Total	G Dead Load Conc.	G Live Load Total	H Dead Load Conc.	H Live Load Total	J Dead Load Conc.	J Live Load Total
A	1/4"	5/16"	5/8"	3/4"	1"	1 3/16"	1 1/4"	1 1/2"	1 3/8"	1 9/16"	1 5/16"	1 1/2"	1"	1 3/16"	5/8"	3/4"	1/4"	5/16"
B	1/8"	3/16"	3/8"	7/16"	9/16"	5/8"	11/16"	1 3/16"	3/4"	1/8"	1"	1 1/16"	9/16"	11/16"	3/8"	1/16"	3/8"	7/16"
C	1/8"	3/16"	3/8"	7/16"	9/16"	5/8"	11/16"	1 3/16"	3/4"	7/8"	1 1/16"	1 3/16"	9/16"	11/16"	3/8"	7/16"	3/16"	3/16"
D	1/8"	5/16"	9/16"	7/16"	9/16"	11/16"	3/4"	7/8"	3/4"	7/8"	1 1/16"	1 3/16"	5/8"	3/4"	1/16"	3/16"	1/16"	3/16"
E	3/16"	1/4"	9/16"	11/16"	15/16"	1 1/16"	1 1/4"	1 7/16"	1 3/8"	1 9/16"	1 5/16"	1 1/16"	1"	1 3/16"	5/8"	3/4"	1/4"	5/16"
F	3/16"	1/4"	9/16"	5/8"	1 1/16"	1 1/16"	1 1/8"	1 3/16"	1 1/16"	1 3/16"	1 1/16"	1 1/8"	7/8"	1"	5/16"	3/8"	1/8"	3/16"
G	1/8"	3/16"	5/16"	7/16"	1/2"	11/16"	1"	1 1/16"	1"	1 3/16"	7/8"	1"	3/4"	7/8"	1/16"	1/16"	1/8"	3/16"
H	1/8"	3/16"	5/16"	7/16"	1/2"	5/8"	5/8"	13/16"	3/4"	1 7/16"	5/8"	13/16"	1/2"	11/16"	1/16"	1/16"	1/8"	3/16"
J	1/8"	1/8"	5/16"	3/8"	1/2"	5/8"	5/8"	13/16"	3/4"	1 7/16"	5/8"	13/16"	1/2"	11/16"	1/16"	1/16"	1/8"	3/16"
K	1/8"	1/8"	3/16"	3/8"	7/16"	9/16"	9/16"	3/4"	11/16"	1/8"	5/8"	3/4"	1/2"	5/8"	1/16"	1/16"	1/8"	3/16"
L	1/8"	1/8"	1/4"	5/16"	7/16"	9/16"	9/16"	3/4"	5/8"	13/16"	9/16"	3/4"	1/2"	5/8"	5/16"	3/8"	1/8"	1/8"
M	3/16"	1/4"	1/16"	5/8"	13/16"	1"	1"	1 1/16"	1 1/8"	1 3/8"	1 1/16"	1 5/16"	13/16"	1"	9/16"	11/16"	1/4"	5/16"
N	3/16"	1/4"	1/2"	5/8"	1 3/16"	1"	1"	1 1/16"	1 1/8"	1 3/8"	1 1/16"	1 5/16"	13/16"	1"	9/16"	11/16"	1/4"	5/16"
O	1/16"	1/8"	1/4"	5/16"	7/16"	9/16"	5/8"	3/4"	11/16"	7/8"	5/8"	13/16"	1/2"	5/8"	5/16"	7/16"	1/8"	3/16"
P	1/16"	1/8"	5/16"	3/8"	1/4"	5/8"	3/8"	13/16"	11/16"	7/8"	3/8"	1/2"	3/16"	1/4"	1/16"	7/16"	1/8"	3/16"
R	1/8"	1/8"	5/16"	3/8"	1/2"	5/8"	5/8"	13/16"	3/4"	15/16"	5/8"	13/16"	5/16"	7/16"	1/16"	1/16"	1/8"	3/16"
S	1/8"	1/8"	5/16"	3/8"	1/2"	11/16"	11/16"	7/8"	3/4"	15/16"	11/16"	7/8"	3/8"	1/2"	1/16"	1/16"	1/8"	3/16"
T	1/8"	1/8"	5/16"	7/16"	9/16"	11/16"	11/16"	7/8"	3/4"	1"	3/4"	15/16"	3/8"	1/2"	3/16"	1/16"	3/16"	3/16"
U	1/8"	3/16"	3/8"	1/2"	9/16"	3/4"	3/4"	1"	3/4"	1"	13/16"	1 1/16"	7/16"	5/8"	1/16"	1/16"	3/16"	1/4"
W	3/16"	1/4"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
X	0	0"	0"	1/16"	1/8"	3/16"	1/4"	5/16"	5/16"	7/16"	3/16"	1/2"	5/16"	3/8"	3/16"	1/4"	0"	0"
Y	1/8	1/8"	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Z	1/16"	1/16"	3/16"	1/4"	7/16"	9/16"	5/8"	13/16"	3/4"	15/16"	11/16"	7/8"	9/16"	11/16"	5/16"	3/8"	1/8"	1/8"

DEFLECTION TABLE - SPAN 4

Beam	A Dead Load Conc.	A Live Load Total	B Dead Load Conc.	B Live Load Total	C Dead Load Conc.	C Live Load Total	D Dead Load Conc.	D Live Load Total	E Dead Load Conc.	E Live Load Total	F Dead Load Conc.	F Live Load Total	G Dead Load Conc.	G Live Load Total	H Dead Load Conc.	H Live Load Total	J Dead Load Conc.	J Live Load Total
A	3 1/16"	3 1/16"	-3 1/16"	-1/4"	-3 1/16"	-1/4"	-1 1/8"	-3 1/16"	-1 1/8"	-1 1/8"	-1 1/16"	-1 1/16"	0"	0"	0"	0"	0"	0"
B	-1/8"	-3 1/16"	-3 1/16"	-1/4"	-3 1/16"	-1/4"	-3 1/16"	-1/4"	-3 1/16"	-1/4"	-1 1/16"	-1 1/16"	0"	0"	0"	0"	0"	0"
C	-1/8"	-3 1/16"	-3 1/16"	-1/4"	-1/4"	-1/4"	-3 1/16"	-1/4"	-3 1/16"	-1/4"	-1 1/16"	-1 1/16"	0"	0"	0"	0"	0"	0"
D	-1/8"	-3 1/16"	-1/4"	-1/8"	-1/4"	-5 1/16"	-1/4"	-1/4"	-3 1/16"	-1/4"	-1/8"	-3 1/16"	-1/16"	-1/16"	0"	0"	0"	0"
E	-1/8"	-3 1/16"	-3 1/16"	-1/4"	-3 1/16"	-1/4"	-1/8"	-3 1/16"	-1/8"	-1/4"	-1/8"	-3 1/16"	0"	0"	0"	0"	0"	0"
F	-1/8"	-1/8"	-1/8"	-3 1/16"	-1/8"	-3 1/16"	-1/2"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	0"	0"	0"	0"
G	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	0"	0"	-1/16"	-1/16"	1/16"	1/8"	1/16"	1/16"	1/16"	1/16"
H	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	0"	0"	-1/16"	-1/16"	1/16"	1/8"	1/16"	1/16"	1/16"	1/16"
J	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	0"	0"	-1/16"	-1/16"	1/16"	1/8"	1/16"	1/16"	1/16"	1/16"
K	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	0"	0"	-1/16"	-1/16"	1/16"	1/8"	1/16"	1/16"	1/16"	1/16"
L	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	0"	0"	1/16"	1/16"	1/16"	1/8"	1/16"	1/16"	1/16"	1/16"
M	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	1/16"	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"
N	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	1/16"	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"
O	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	0"	0"	1/16"	1/16"	1/16"	1/8"	1/16"	1/16"	1/16"	1/16"
P	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	1/16"	1/16"	1/16"	1/16"	1/8"	1/8"	1/16"	1/8"	1/16"	1/16"
R	-1/16"	-1/8"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	1/16"	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"
S	-1/16"	-1/16"	-1/8"	-1/8"	-1/16"	-1/16"	0"	0"	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"
T	-1/16"	-1/16"	-1/16"	-1/16"	0"	0"	1/16"	1/16"	1/16"	1/16"	1/8"	1/8"	1/8"	3/16"	1/8"	1/8"	1/16"	1/16"
U	0"	0"	0"	0"	0"	0"	1/16"	1/16"	1/16"	1/16"	1/8"	3/16"	1/8"	3/16"	1/8"	1/8"	1/16"	1/16"
W	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
X	0"	-1/16"	0"	-1/16"	0"	0"	1/16"	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/8"	1/16"	1/16"
Y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Z	0"	0"	0"	0"	1/16"	1/16"	1/8"	1/8"	1/8"	3/16"	3/16"	1/4"	3/16"	3/16"	1/8"	3/16"	1/16"	1/16"



ALL GIRDERS EXCEPT W & Y



GIRDERS W & Y

DEFLECTION DIAGRAMS

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

129
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Legend:
(Conc.) in deflection table refers to deflections due to dead load of concrete.

Note:
Deflections are measured to the nearest 1/16". Negative sign indicates upward deflection.

H.N.T.B. BR. NO. 4 PART 7A

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

GIRDER DEFLECTIONS

INNER BELT FREEWAY OVER EAST 14th ST.
BR. NO. CUY-42-1854 STA. 70+89.23
Scale: None STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

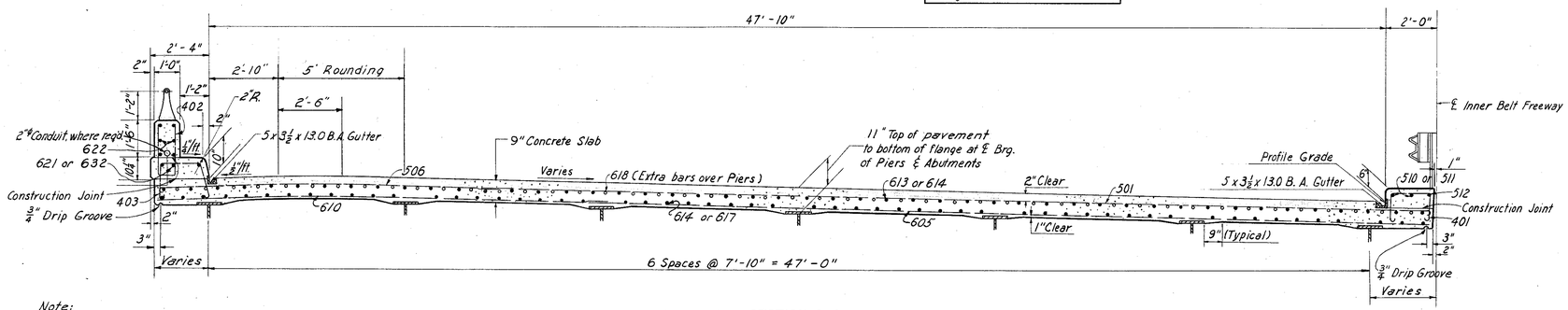
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
LDF		PTC	JCT	
DATE 7-1-58	DATE	DATE 7-15-58	DATE 11-13-59	SHEET 129

Note: Prefix "58" shall be assigned to all bar marks.

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

130
181

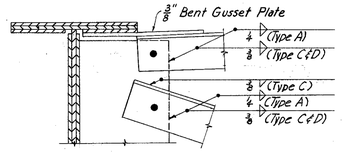
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



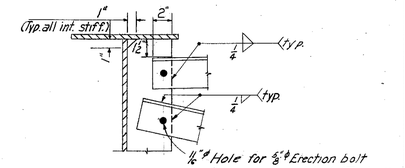
Note:
Slab thickness shown includes 1" for monolithic wearing surface.

SECTION A-A
Scale: ⅜" = 1'-0"

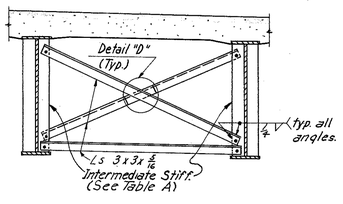
Note:
Details shown in section A-A are typical throughout superstructure except for bar marks, direction of roadway slope, and roadway width.
For location of Section A-A see sh. 132-7A.
For location of 2"ϕ Conduit see sh. 134-7A & 135-7A.



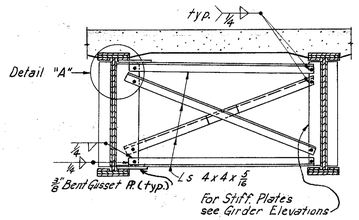
DETAIL "A"
Scale: 1½" = 1'-0"



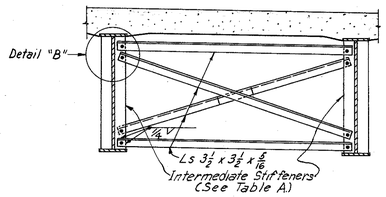
DETAIL "B"
Scale: 1½" = 1'-0"



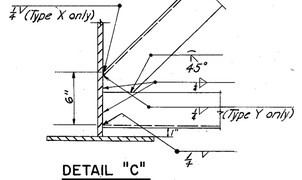
TYPICAL INTERMEDIATE CROSSFRAME



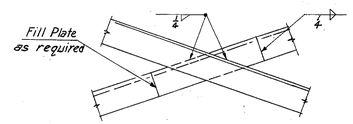
BEND LINE CROSSFRAME AT FIELD SPLICE
TYPE (A)



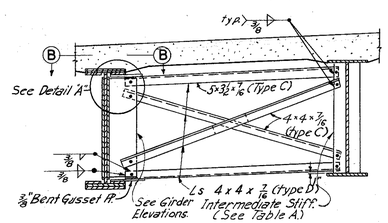
BEND LINE CROSSFRAME
TYPE (B)



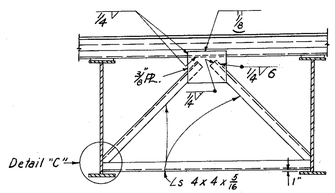
DETAIL "C"
Scale: 1½" = 1'-0"



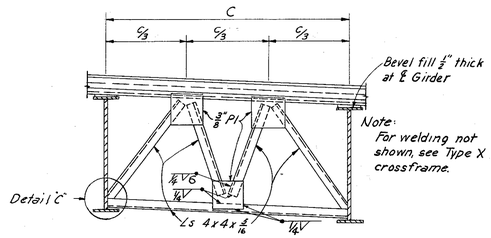
DETAIL "D"
Scale: 1½" = 1'-0"



BEND LINE CROSSFRAME AT FIELD SPLICE
TYPE (C&D)



END CROSSFRAME
TYPE (X)

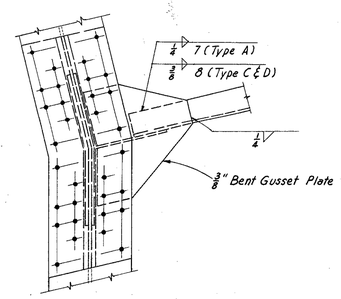


Note:
For welding not shown, see Type X crossframe.

END CROSSFRAME
TYPE (Y)

TABLE A	
FLANGE WIDTH	INTERMEDIATE STIFFENER
12"	5" x ⅜"
14" - 16"	6" x ⅜"
18" - 22"	8" x ½"

Note:
For End Dam Details see sh. 173-7A
For Drainage Details see sh. 174-7A



SECTION B-B
Scale: 1" = 1'-0"
(Connection typical for top and bottom flanges, crossframes types A, C & D.)

H.N.T.B. BR. NO. 4 PART 7A

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

TYPICAL SECTIONS

INNER BELT FREEWAY OVER EAST 14th ST.
BR. NO. CUY.-42-1854 STA. 70+89.23
Scale: 3/8"=1'-0" Except as noted STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
GAT	G.A.T.	A.T.	JCT	
DATE 2-27-59	DATE 2-27-59	DATE 11-4-59	DATE 11-13-59	SHEET 130

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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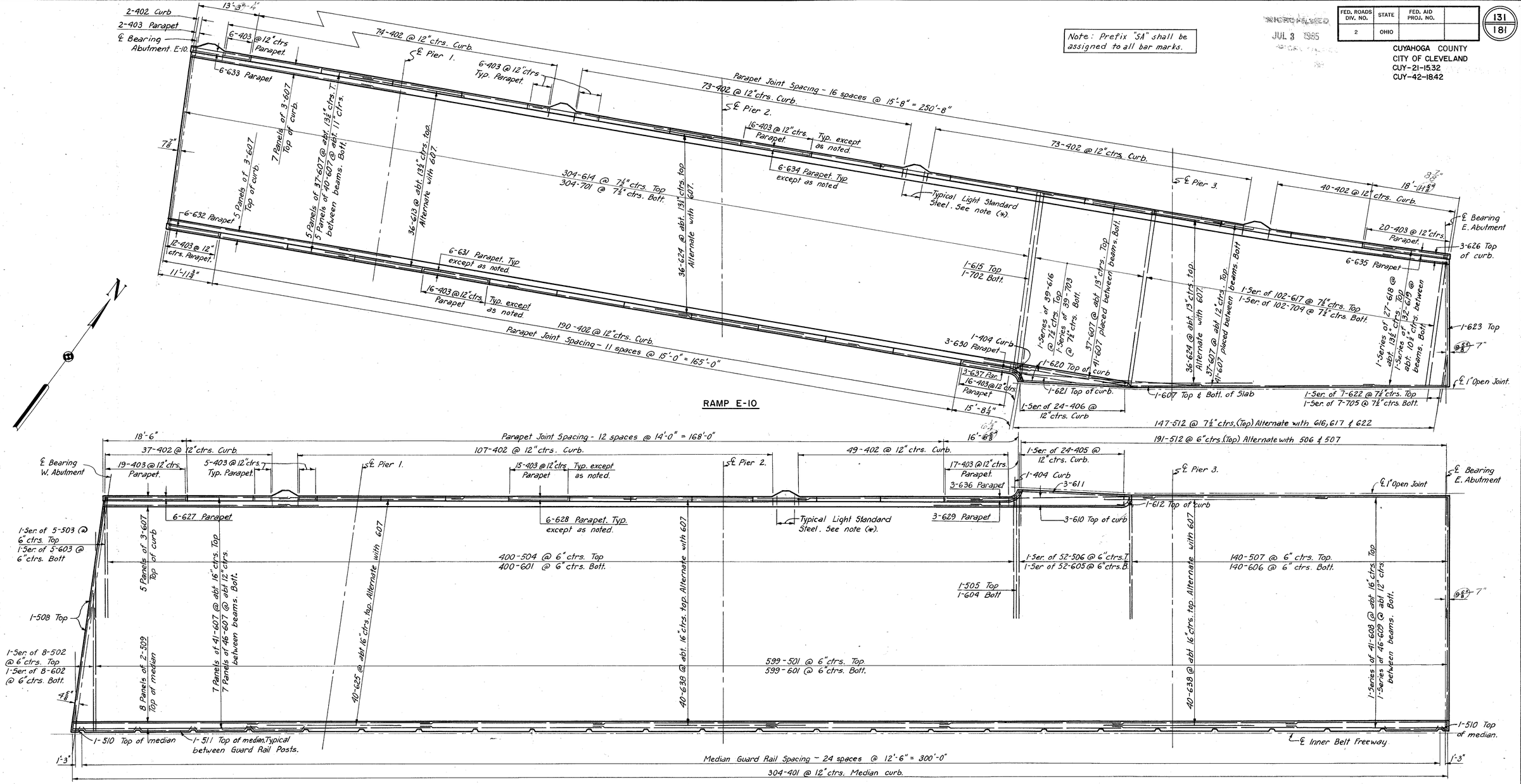
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

MICROFILMED
JUL 3 1985

Note: Prefix "5A" shall be assigned to all bar marks.



NOTES:

For Typical Roadway Section , see Sheet 130-7A
For Reinforcement Schedule, see Sheet 133-7A
For Light Standard locations, see Sheet 134-7A
(*) For Light Standard Support details, see Sheet 176.-7A
For additional notes, see Sheet 132.-7A
For nose details, see Sheet 136.-7A

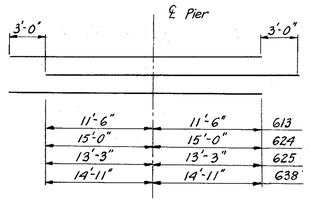


DIAGRAM SHOWING STAGGER OF BARS
613, 624, 625 & 638 OVER PIERS

NORTH ROADWAY

H.N.T.B. BR. NO. 4 PART 7A

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

DECK PLAN - NORTH HALF

INNER BELT FREEWAY OVER EAST 14th ST.
BR. NO. CUY-42-1854 STA. 70+89.23
Scale: 1" = 10'-0" STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN A.L.	TRACED A.L.	CHECKED GAT	REVIEWED JCT	REVISED 6-17-60
DATE 2-6-59	DATE 2-6-59	DATE 2-9-59	DATE 11-13-59	SHEET 131

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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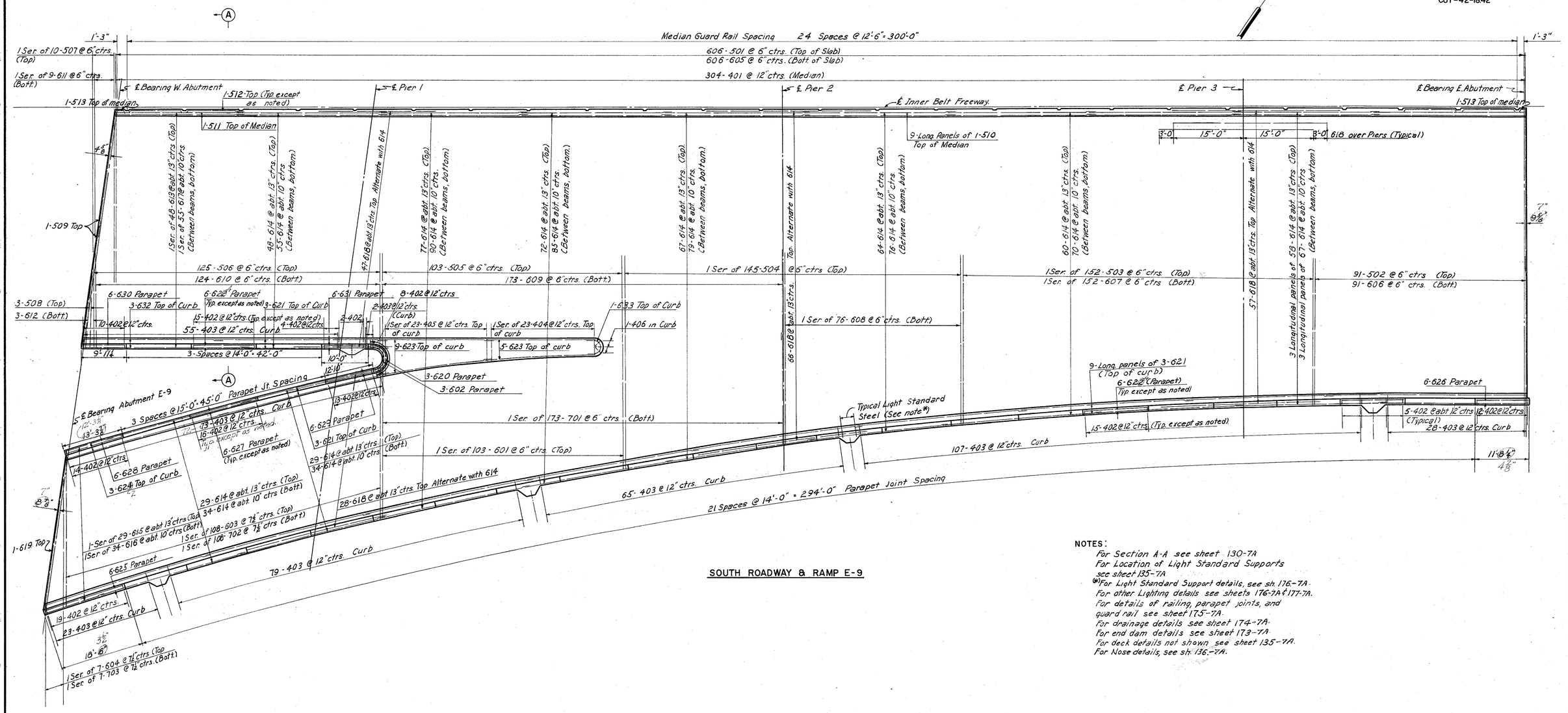
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Note: Prefix "SB" shall be assigned to all bar marks.



SOUTH ROADWAY & RAMP E-9

NOTES:

For Section A-A see sheet 130-7A
For Location of Light Standard Supports see sheet 135-7A
(*) For Light Standard Support details, see sh. 176-7A.
For other Lighting details see sheets 176-7A & 177-7A.
For details of railing, parapet joints, and guard rail see sheet 175-7A.
For drainage details see sheet 174-7A.
For end dam details see sheet 173-7A.
For deck details not shown see sheet 135-7A.
For Nose details, see sh. 136-7A.

H.N.T.B. BR. NO. 4 PART 7A

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

DECK PLAN - SOUTH HALF

INNER BELT FREEWAY OVER EAST 14th. ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: 1" = 10'-0" STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 2-12-59	DATE 2-13-59	DATE 2-24-59	DATE 11-13-59	6-17-60

SHEET 132

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Note: Prefixes shall be assigned to bar marks as follows:
North Roadway & Ramp E-10 "5A"
South Roadway & Ramp E-9 "5B"

NORTH ROADWAY & RAMP E-10

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
401	304	4'-6"	122	1'-7"	1'-1"				914
402	645	5'-3"	122	1'-8"	1'-5"				2262
403	682	4'-5"	105	0'-8"	2'-0"				2012
404	2	5'-8"	122	2'-3"	1'-4"				8
405	1 Ser of 23	6'-11" to 5'-8"	122	3'-6" to 2'-3"	1'-4"			5/8	101
406	1 Ser of 24	6'-11" to 4'-5"	122	3'-6" to 1'-0"	1'-4"			1 5/16	91
501	599	31'-4"	101	30'-9"					19,576
502	1 Ser of 8	31'-4" to 5'-7"	101	30'-9" to 5'-0"				3'-2 1/2"	154
503	1 Ser of 9	22'-4" to 5'-0"	Str					4'-4"	71
504	400	22'-11"	101	22'-4					9561
505	1	23'-11"	101	23'-4"					25
506	1 Ser of 32	24'-10" to 23'-7"	101	24'-3" to 23'-0"				5/16	1313
507	140	23'-7"	101	23'-0					3444
508	2	27'-8"	101	27'-1"					56
509	16	39'-3"	Str						655
510	2	1'-11"	108	1'-0"	0'-6"	0'-10"			4
511	24	13'-0"	159	11'-2"	0'-6"	0'-10"			325
512	338	6'-0"	101	5'-5"					2115
601	999	26'-9"	Str						40,130
602	1 Ser of 8	30'-9" to 5'-0"	Str					3'-2 1/2"	215
603	1 Ser of 5	26'-9" to 11'-0"	Str					3'-11 1/4"	141
604	1	27'-6"	Str						41
605	1 Ser of 22	28'-6" to 27'-3"	Str					3/16"	2177
606	140	27'-3"	Str						5730
607	1203	40'-0"	Str						72,276
608	1 Ser of 41	36'-6" to 29'-6"	Str					2 1/4"	2032
609	1 Ser of 26	36'-6" to 29'-6"	Str					1 3/8"	2280
610	3	34'-3"	Str						154
611	3	23'-9"	Str						107
612	1	4'-11"	153	3'-0"	1'-11"				7
613	36	26'-0"	Str						1406
614	304	41'-2"	100	39'-10"					18797
615	1	41'-10"	100	40'-6"					63
616	1 Ser of 39	43'-2" to 40'-2"	100	41'-10" to 38'-10"				1"	2441
617	1 Ser of 108	40'-2" to 30'-5"	100	38'-10" to 29'-1"				1 7/16"	5407
618	1 Ser of 27	21'-9" to 16'-9"	Str					2 1/4"	781
619	1 Ser of 32	21'-9" to 16'-9"	Str					1 3/4"	925
620	3	23'-9"	Str						107
621	1	15'-0"	Str						23
622	1 Ser of 7	29'-9" to 5'-8"	101	29'-1" to 5'-0"				6'-0 3/4"	186
623	1	30'-2"	100	28'-10"					45
624	72	33'-0"	Str						3569
625	40	29'-6"	Str						1772
626	3	16'-9"	Str						75
†627	6	18'-3"	Str						
†628	72	13'-9"	Str						
†629	3	16'-11"	138	12'-8"	4'-9"	2'-10"			
†630	3	16'-1"	138	11'-10"	4'-3"	2'-10"			
†631	66	14'-9"	Str						
†632	6	11'-9"	Str						
†633	6	13'-0"	Str						
†634	96	15'-3"	Str						
†635	6	18'-3"	Str						
†636	3	15'-11"	138	12'-8"	3'-3"	2'-2"			
†637	3	15'-1"	138	11'-10"	3'-3"	2'-2"			
638	80	32'-10"	Str						3945
701	304	39'-9"	Str						24,700
702	1	40'-6"	Str						83
703	1 Ser of 39	41'-6" to 38'-9"	Str					7/8"	3199
704	1 Ser of 108	38'-9" to 29'-0"	Str					1 7/16"	7063
705	1 Ser of 7	29'-0" to 5'-0"	Str					6'-0"	243
451	12	8'-11"	131	2'-6"	1'-2"				72
452	12	9'-11"	131	3'-0"	1'-8"				78
453	18	9'-5"	131	3'-2"	1'-0"				114
454	12	5'-7"	155	2'-2"					42
455	12	6'-1"	155	2'-8"					48
456	18	6'-3"	155	2'-10"					78
651	12	9'-5"	141	2'-11"	1'-10"				168
652	18	19'-6"	141	5'-3"	3'-0"				390
653	6	5'-0"	Str						48

TOTAL 243,855

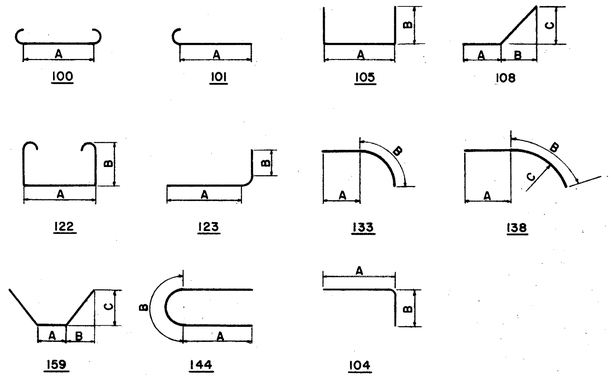
SOUTH ROADWAY & RAMP E-9

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
401	304	4'-6"	122	1'-7"	1'-1"				914
402	462	4'-5"	105	0'-8"	2'-0"				1363 (1384)
403	431	5'-3"	122	1'-8"	1'-5"				1519 (1512)
404	1 Ser of 23	6'-9" to 5'-8"	122	3'-4" to 2'-3"	1'-4"			1/16	111
405	1 Ser of 23	7'-8" to 10'-6"	122	4'-4" to 7'-1"	1'-4"			3/16	140
406	3	2'-6"	104	1'-3"	1'-4"				5
501	606	39'-6"	101	38'-11"	0'-7"				24,966
502	91	26'-10"	101	26'-3"	0'-7"				2547
503	1 Ser of 32	26'-10" to 31'-2"	101	26'-3" to 30'-7"	0'-7"			5/16	1,573 (1598)
504	1 Ser of 16.5	31'-2" to 41'-1"	101	30'-7" to 40'-6"	0'-7"			11/16	1,696 (1463)
505	103	15'-0"	Str.						1611
506	125	14'-6"	101	13'-11"	0'-7"				1,890
507	1 Ser of 10	31'-2" to 33'-9"	Str.					3'-2 1/2"	205
508	3	13'-7"	101	13'-0"	0'-7"				43
509	2	27'-4"	101	26'-9"	0'-7"				57
510	18	32'-6"	Str.						610
511	2	25'-0"	Str.						52
512	24	13'-0"	159	11'-2"	0'-6"	0'-10"			325
513	2	1'-11"	108	1'-0"	0'-6"	0'-10"			4
601	1 Ser of 103	27'-9" to 57'-10"	101	27'-0" to 32'-2"	0'-8"			3/16"	5073
†602	3	7'-2"	144	0'-4"	6'-6"	R=2'-7"			32
603	1 Ser of 108	33'-1" to 34'-10"	100	31'-9" to 33'-6"	0'-8"			3/16"	5509
604	1 Ser of 7	3'-8" to 28'-8"	101	3'-0" to 28'-0"	0'-8"			4'-0"	170
605	606	34'-9"	Str.						31630
606	91	30'-9"	Str.						4203
607	1 Ser of 102	30'-9" to 35'-0"	Str.					3/16	7505
608	1 Ser of 76	35'-0" to 39'-8"	Str.					1/16	4252
609	173	17'-3"	Str.						4482
610	124	18'-6"	Str.						3446
611	1 Ser of 8	7'-0" to 32'-6"	Str.					2 6/8"	233
612	3	19'-0"	Str.						86
613	1 Ser of 48	28'-6" to 33'-9"	Str.					7/8"	2316
614	1,344	32'-6"	Str.						65607
615	1 Ser of 29	12'-6" to 18'-6"	Str.					2 1/2"	675
616	1 Ser of 54	12'-6" to 14'-6"	Str.					1 1/8"	792
617	1 Ser of 55	28'-6" to 33'-9"	Str.					2 1/4"	2654
618	198	33'-0"	Str.						9814
619	1	36'-1"	100	34'-9"	0'-8"				54
†620	3	9'-2"	144	0'-4"	8'-6"	R=2'-9"			(41)
621	33	37'-9"	Str.						1871
622	3	36'-9"	Str.						166
623	14	23'-9"	Str.						499
†624	144	13'-9"	Str.						
†625	6	18'-3"	Str.						
†626	6	8'-9"	Str.						
†627	18	14'-9"	Str.						
†628	6	13'-0"	Str.						
†629	6	12'-6"	Str.						
†630	6	9'-6"	Str.						
†631	6	9'-9"	Str.						
632	3	30'-6"	Str.						137
633	1	9'-7"	144	1'-11"	5'-9"	R=1'-10"			14
701	1 Ser of 123	24'-3" to 40'-0"	Str.					1 1/16"	11,360
702	1 Ser of 108	31'-9" to 33'-6"	Str.					3/16	7,202
703	1 Ser of 7	3'-8" to 28'-0"	Str.					4'-0"	222
451	10	8'-11"	131	2'-6"	1'-2"				60
452	10	9'-11"	131	3'-0"	1'-8"				65
453	15	9'-5"	131	3'-2"	1'-0"				95
454	10	5'-7"	155	2'-2"					35
455	10	6'-1"	155	2'-8"					40
456	15	6'-3"	155	2'-10"					65
651	10	9'-5"	141	2'-11"	1'-10"				140
652	15	14'-6"	141	5'-3"	3'-0"				325
653	5	5'-0"	Str.						40

TOTAL (210,541) 217,274

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)

BAR BENDING DIAGRAMS



NOTES:
All bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
† Bars are included with "Item 5-14, Railing" for payment.
Bars 451 thru 456 and 651 thru 653 are for the Light Standard supports. For their placement, see sheet 176-7A
For replacement schedule, see sheet 103-7A

H.N.T.B. BR. NO. 4 PART 7A

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

REINFORCEMENT SCHEDULE-DECK

INNER BELT FREEWAY OVER EAST 14th ST.

BR. NO. CUY-42-1854 STA. 70+89.23

Scale: None STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN GAT
DATE 3

MICROFILMED
JUL 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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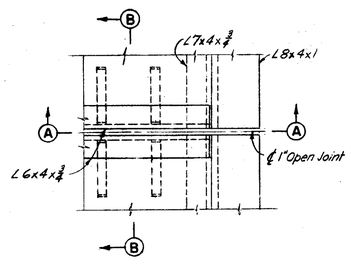
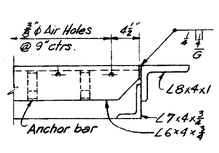
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-1842

℄ Bearing Abutment E-10
℄ Light Standard Sta 3+82.31
℄ Ramp E-10
4+00
8'-10"
Sta 3+86.38
℄ Bearing Pier 1
2"ϕ Conduit
℄ Light Standard Sta 3+03.72
Stop bulb angle gutter @ Sta. 3+10
℄ Bearing Pier 2
3+50
8'-10"
Sta 3+40.36
693.30
35'-10 3/16"
3+00
692.00
5'-0" Type A Scupper
Bulb angle gutter.
35'-10 3/16"
Stop bulb angle gutter @ Sta. 3+10
Bulb angle gutter.
℄ Light Standard Sta 2+25.39
8'-11 1/4"
Sta 2+66.10
36'-4 1/2"
692.00
2+50
℄ Bearing Pier 3
1 1/2"ϕ Conduit for Sign Bridge. (To be included for payment with "Item Special, Sign Bridge.)
℄ Light Standard Sta 73+52.33
℄ Bearing East Abutment
2"ϕ Conduit
2+00
Provide junction box for conduit under roadway
8'-11 1/4"
Sta 1+65.64
Service Panel
1+50
1 1/2"ϕ Rigid Galv. Conduit for Sign Bridge @ Sta. 74+25.
692.00
33'-10"
35'-11 1/4"
6'-0" 6'-0" 6'-0"
Type B Scuppers
Sta 1+05.03
27'-10 1/4"
2'-4" Typical
℄ Light Standard Sta 71+37.61
Bulb angle gutter.
2"ϕ Conduit
℄ Light Standard Sta 72+49.61
in parapet
2"ϕ Rigid Galv. Conduit for Roadway Lighting
in curb
1" Open Joint. See Details below.
Sta. 1+72.02 ℄ E-10
Sta. 73+22.79 ℄ I.B.
2'-0" Type D Scupper
Type D Scuppers
5'-0" 5'-0"
℄ Scupper Sta 73+22.00
48'-3 5/8"
692.00
691.00
694.00
695.00
47'-10"
694.00
695.00
692.00
691.00
690.00
689.00
47'-10"
50'-6 3/4"
50'-6 3/4"
℄ Girder Typical
82°00'00"
82°00'00"
82°00'00"
90°00'00"
2'-0"
71+00
PT Sta 70+99.92
Sta 70+91.50
71+50
Sta. 71+46.50
72+00
℄ Inner Belt
2'-0"
72+50
Sta. 72+35.00
Edge of median curb.
73+00
Sta. 73+34.00
2'-0"
90°00'00"
73+50
Sta. 73+94.00
2'-0"
74+00
Reference Line ℄ Inner Belt Tangent
(For layout see sheet 114-7A)

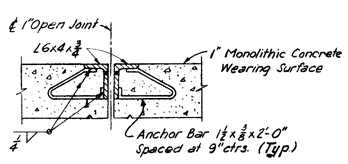
PLAN



PARTIAL PLAN AT ABUTMENT

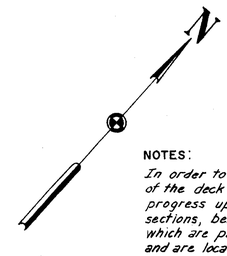


SECTION A-A



SECTION B-B

DETAILS OF 1" OPEN JOINT
Scale 1"=1'-0"



NOTES:
In order to facilitate water curing of the concrete of the deck slab, 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.
For Light Standard support and other lighting details see sheets 176-7A & 177-7A
For Railing details see sheet 176-7A
For Guard Rail details see sheet 175-7A
For Drainage details see sheet 135-7A & 174-7A
Conduit shown crossing ramps shall be placed below girders. For details see sheets 176-7A & 177-7A
For Nose details see sheet 136-7A

H.N.T.B. BR. NO. 4 PART 7A

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

DECK DETAILS-NORTH HALF

INNER BELT FREEWAY OVER EAST 14th ST
BR. NO. CUY-42-1854 STA. 70+89.23
Scale: 1" = 10'-0" Except as noted STA. 73+96.25
WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN L.D.F.	TRACED	CHECKED DLM	REVIEWED JCT	REVISED
DATE 5-19-58	DATE	DATE 6-6-58	DATE 11-13-59	SHEET 134

MICROFILMED
JUL 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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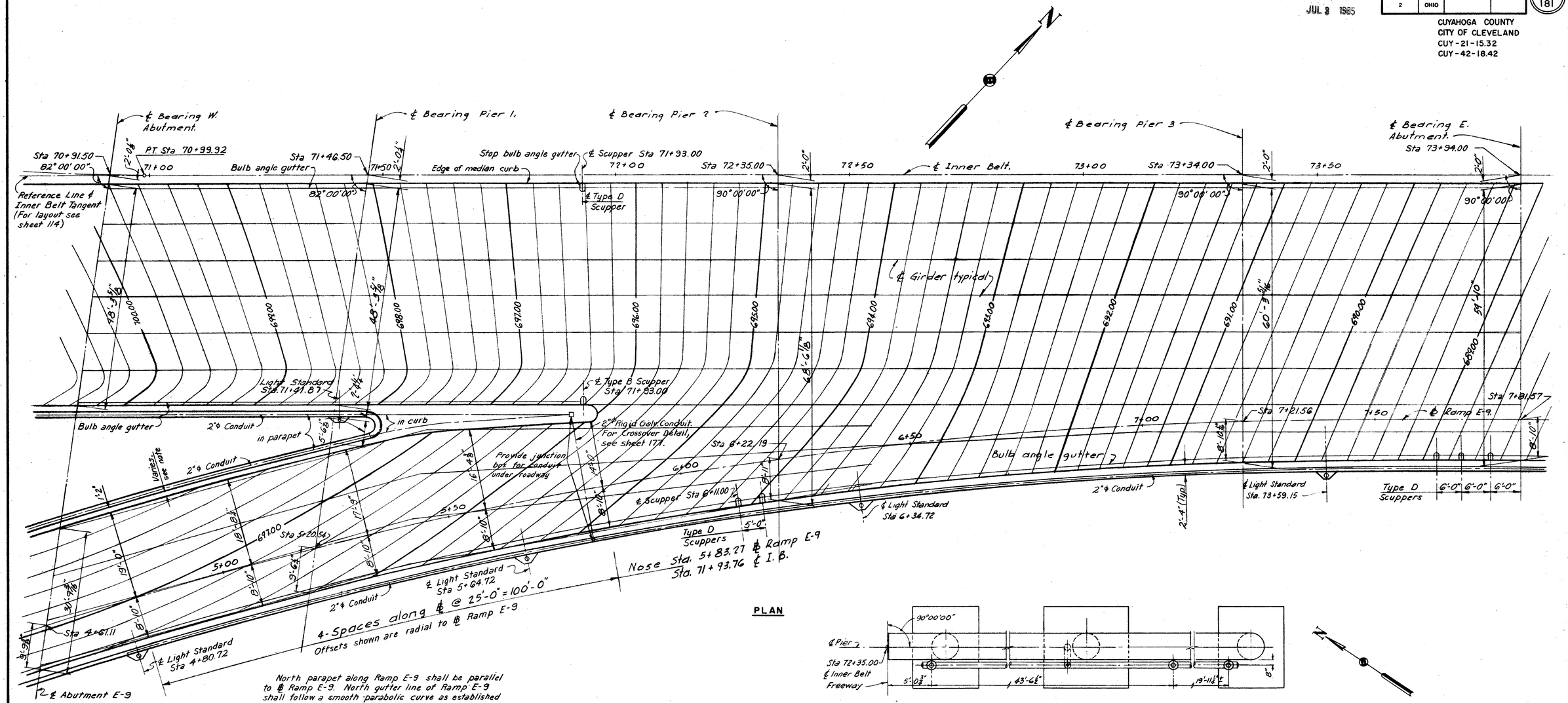
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

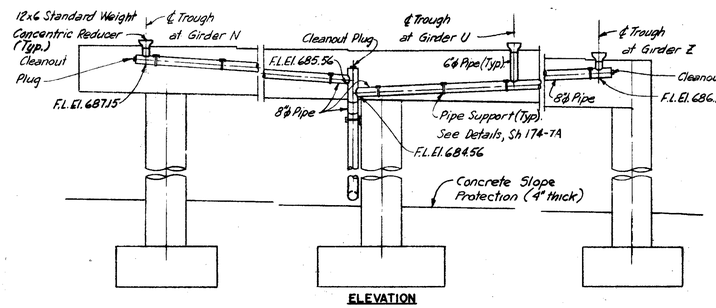


PLAN

North parapet along Ramp E-9 shall be parallel to ℄ Ramp E-9. North gutter line of Ramp E-9 shall follow a smooth parabolic curve as established by offsets shown.

For notes see sheet 134-7A

PLAN



ELEVATION

DRAINAGE PROVISION AT PIER 2-S
Scale 1/2"=1'-0"

H.N.T.B. BR. NO. 4 PART 7A

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

DECK DETAILS - SOUTH HALF

INNER BELT FREEWAY OVER EAST 14th ST.
BR. NO. CUY-42-1854 STA. 70+89.23
Scale: 1" = 10'-0" Except as noted STA. 73+96.25
WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN L.D.F.	TRACED	CHECKED DAH	REVIEWED JCT	REVISED
DATE 5-20-58	DATE ,	DATE 6-5-58	DATE 11-13-59	SHEET 135

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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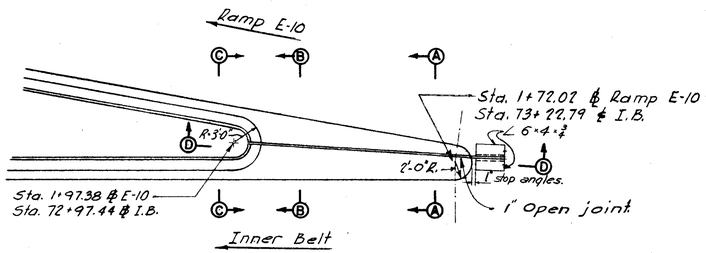
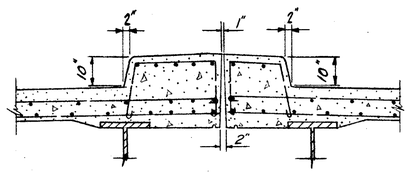
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY - 21-15.32
CUY - 42-18.42

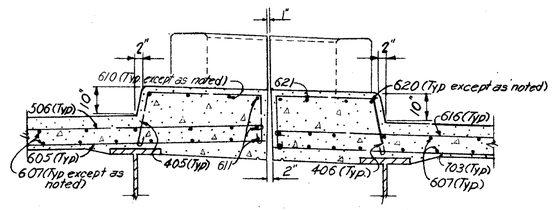


NOSE PLAN - WEST BOUND

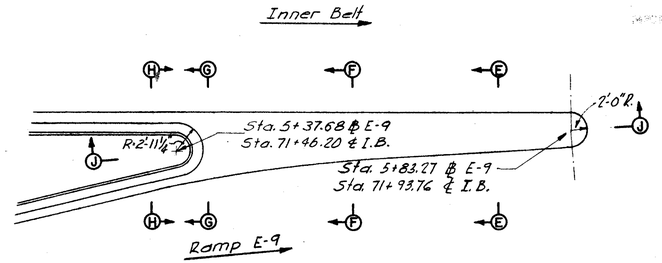
Note: Prefix "5A" shall be assigned to all bar marks.



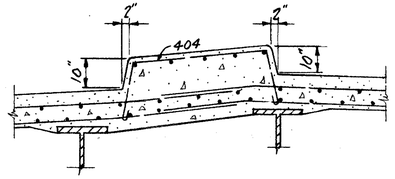
SECTION A-A



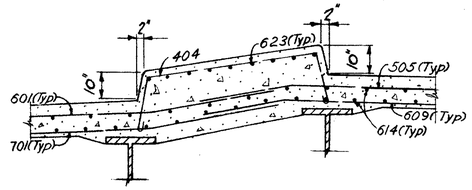
SECTION B-B



NOSE PLAN - EAST BOUND

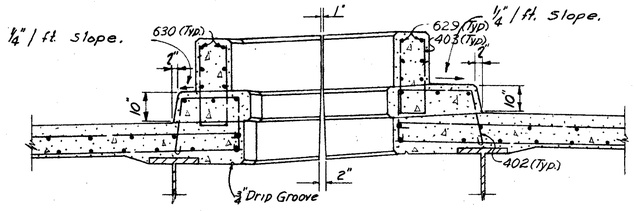


SECTION E-E

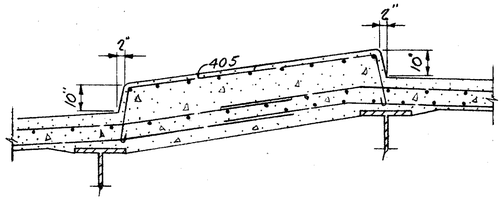


SECTION F-F

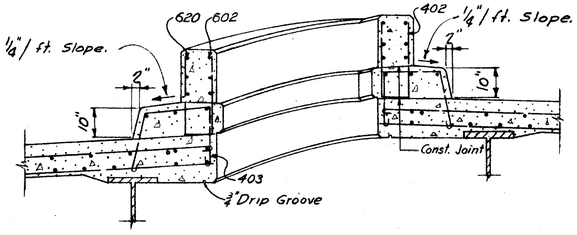
Note: Prefix "5B" shall be assigned to all bar marks.



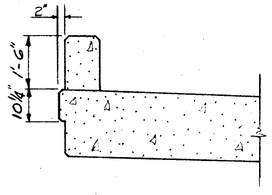
SECTION C-C

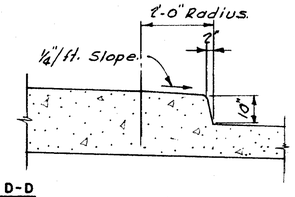


SECTION G-G

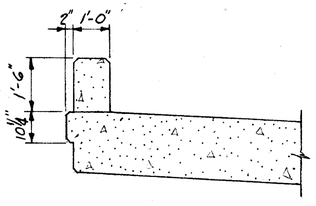


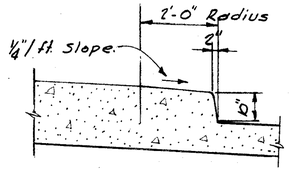
SECTION H-H





SECTION D-D





SECTION J-J

H.N.T.B. BR. NO. 4 PART 7A

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

NOSE DETAILS

INNER BELT FREEWAY OVER EAST 14th ST.
BR. NO. CUY-42-1854 STA. 70+89.23
Scale: 1/2"=1'-0" STA. 73+96.25

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
L.D.F.		VEH	JCT	
DATE 6-3-58	DATE	DATE 1-7-59	DATE 11-13-59	SHEET 136

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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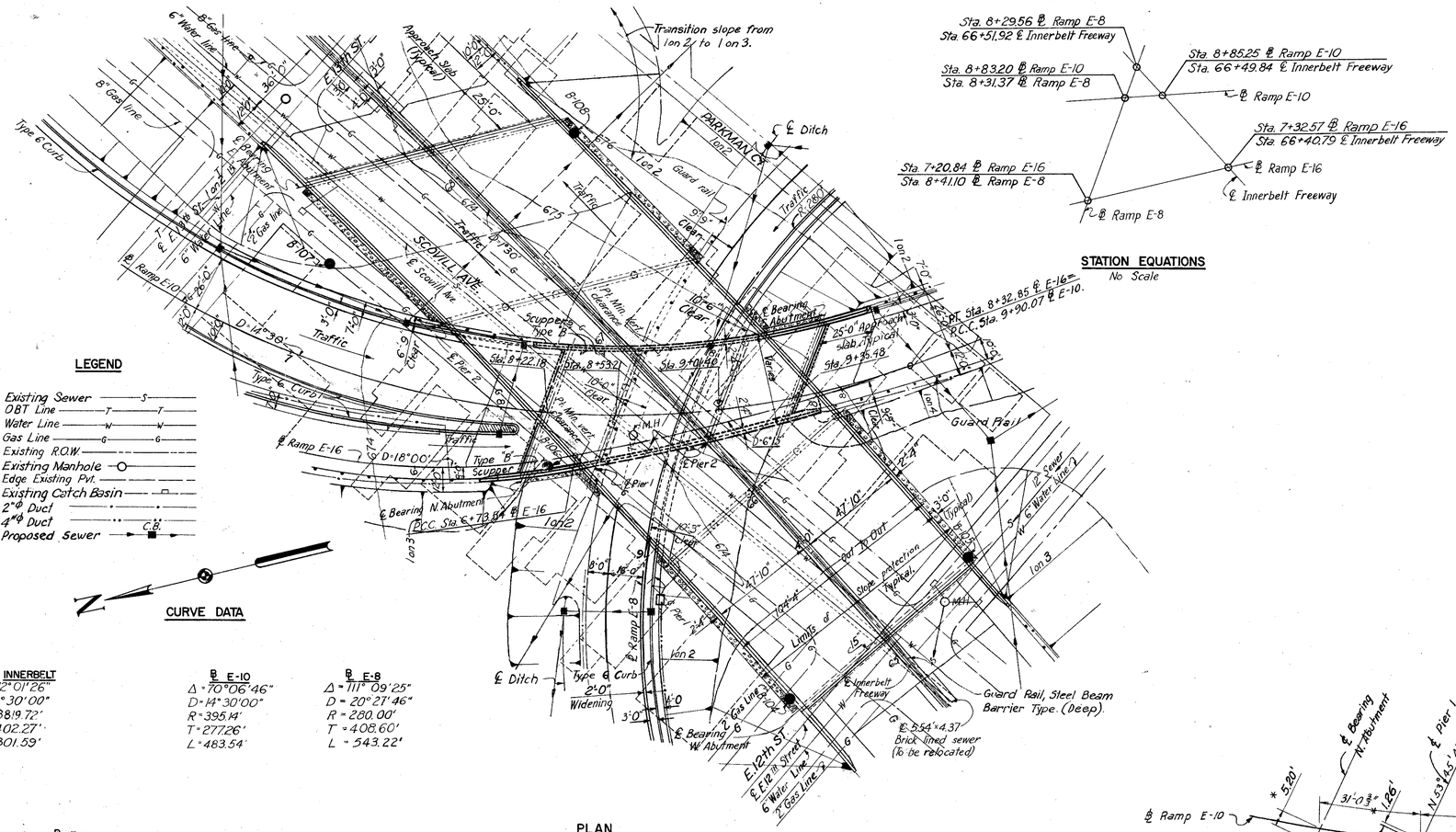
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



PLAN

LEGEND

- Existing Sewer —S—
- OBT Line —T—T—
- Water Line —W—W—
- Gas Line —G—G—
- Existing R.O.W.
- Existing Manhole
- Edge Existing Pvt.
- Existing Catch Basin
- 2"ϕ Duct
- 4"ϕ Duct
- Proposed Sewer —S—

CURVE DATA

INNERBELT
Δ = 12° 01' 26"
D = 1° 30' 00"
R = 3819.72'
T = 402.27'
L = 801.59'

℄ E-10
Δ = 70° 06' 46"
D = 14° 30' 00"
R = 395.14'
T = 277.26'
L = 483.54'

℄ E-8
Δ = 111° 09' 25"
D = 20° 27' 46"
R = 280.00'
T = 408.60'
L = 543.22'

℄ E-16
Δ = 31° 31' 44"
D = 18° 00' 00"
R = 318.31'
T = 89.86'
L = 175.16'

Δ = 9° 57' 26"
D = 6° 15' 00"
R = 916.73'
T = 79.86'
L = 159.32

STATION EQUATIONS

No Scale

Sta. 8+29.56 ℄ Ramp E-8 = Sta. 66+51.92 ℄ Innerbelt Freeway
Sta. 8+83.20 ℄ Ramp E-10 = Sta. 8+31.37 ℄ Ramp E-8
Sta. 8+85.25 ℄ Ramp E-10 = Sta. 66+49.84 ℄ Innerbelt Freeway
Sta. 7+32.57 ℄ Ramp E-16 = Sta. 66+40.79 ℄ Innerbelt Freeway
Sta. 7+20.84 ℄ Ramp E-16 = Sta. 8+41.10 ℄ Ramp E-8

PROPOSED STRUCTURE BR. NO. 5

Type: Continuous steel beam with reinforced concrete deck and substructure
Spans: 31'-0⅜", 48'-2¼", 34'-1" along ℄ E-10
Roadway: Varies.
Loading: CF-2000-Adequate for AASHO. alternate loading.
Skew: Varies.
Surface Course: 1" Monolithic Concrete.
Alignment: 14°30' curve left.
Approach Slabs: AS-1-54 (25' long).
Superelevation: .08 ft. per ft.

NOTES:

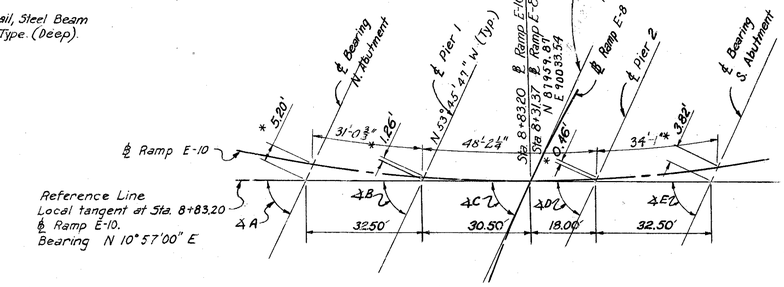
The following items are not included in the Bridge Plans: (See Roadway Plans for Details).
Removal of existing pavements, etc.
Relocation or removal of existing utilities.
Approach grading, pavement and slabs.
Roadway Guard Rail.

Rod soundings were taken at location B-104, B-105, B-107 and B-108. The core drilling made at B-106 is platted on site plan for Bridge No. 3.
For details of slope protection see sheet 174-YA

PILE INFORMATION			
Location	Diameter	Number	Estimated ave. length
N. Abutment	12"	22	29'
S. Abutment	12"	19	29'
Pier 1	14"	18	65'
Pier 2	14"	16	65'

All piling to be C.I.P. Reinforced Concrete.

Pile lengths are based on boring data and are approximate only. The Contractor shall assume full responsibility for length of piling selected for driving.

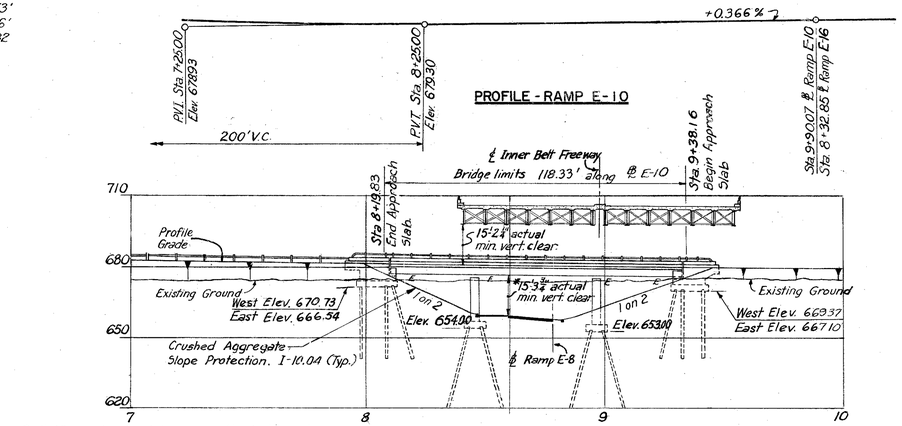


ΔA = 64°-42'-47"
ΔB = 64°-42'-47"
ΔC = 65°-12'-47"
ΔD = 64°-42'-47"
ΔE = 64°-42'-47"

BRIDGE LAYOUT DIAGRAM

No Scale

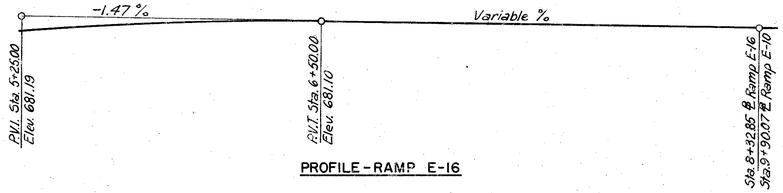
*Offsets measured from reference line to ℄ Ramp E-10 along ℄ Bearings.



*15'-0" Required minimum vertical clearance. Point of actual minimum vertical clearance occurs at East exterior beam and North edge of Ramp E-8.

ELEVATION BRIDGE NO. 5

Note: Slopes shown in Elevation are normal to Ramp E-8.



H.N.T.B. BR. NO. 5 PART 7A

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

SITE PLAN

RAMP E-10 OVER RAMP E-8

Scale: 1" = 30'

STA 8+19.83
STA 9+38.16

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN J.J.S.	TRACED	CHECKED DMK	REVIEWED JCT	REVISED
DATE 6-19-58	DATE	DATE 7-28-58	DATE 11-13-59	SHEET 137

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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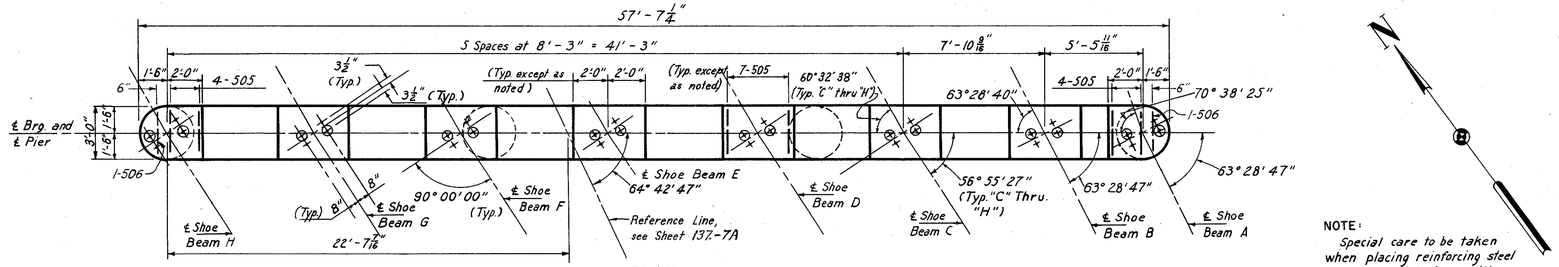
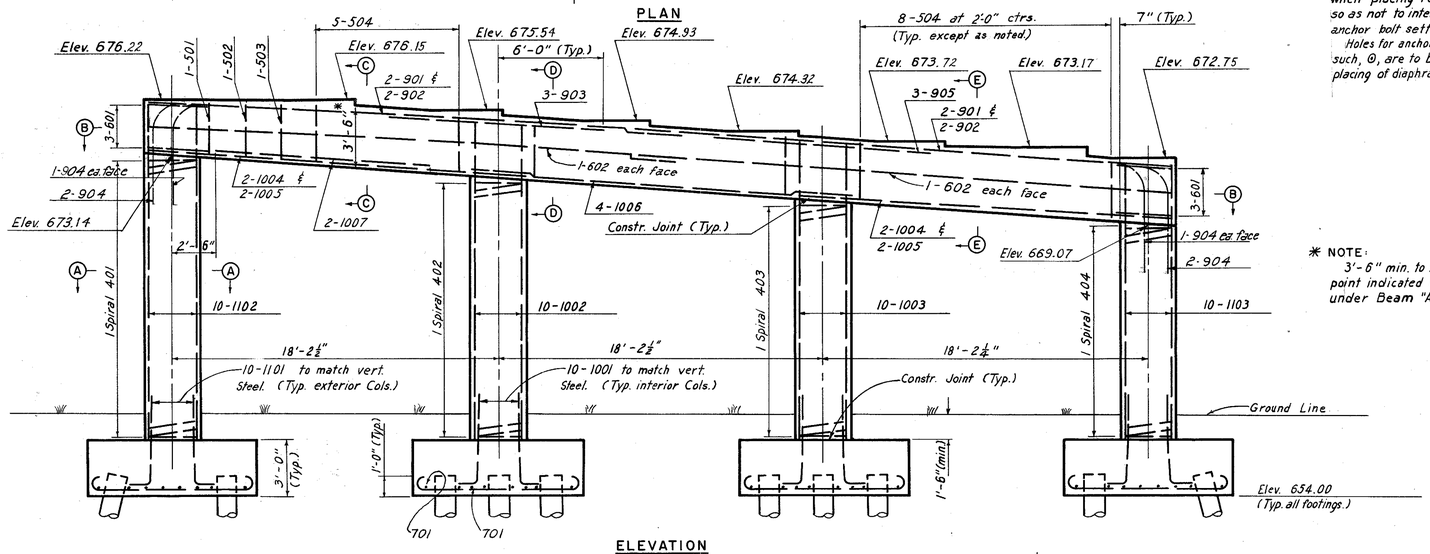
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-2-1-15.32
CUY-42-18.42



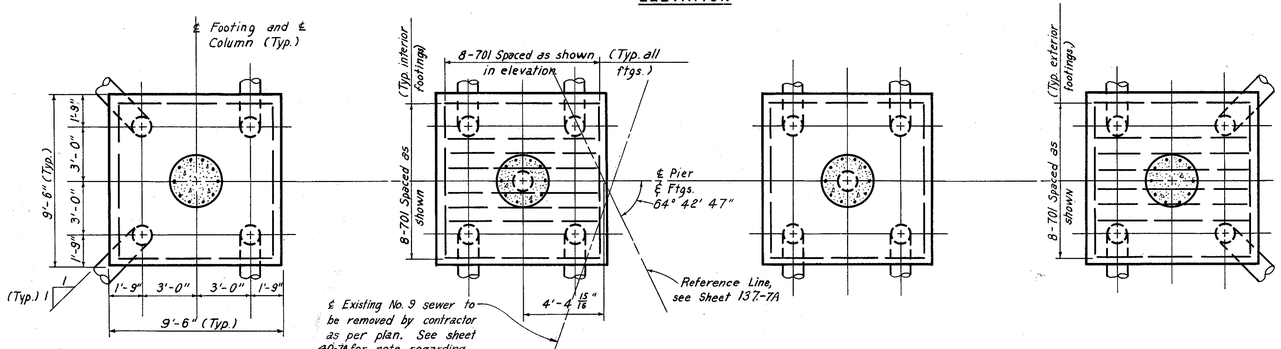
PLAN



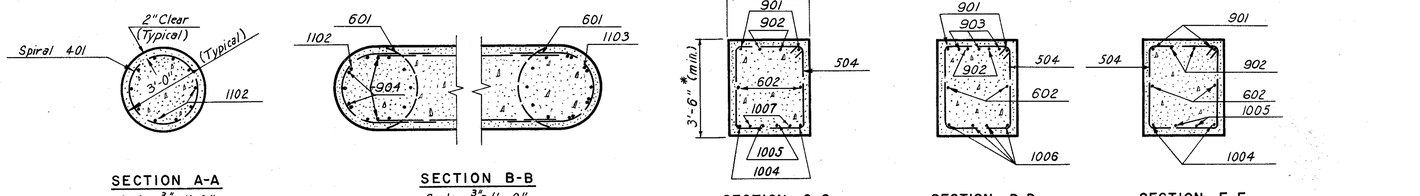
NOTE:
Special care to be taken when placing reinforcing steel so as not to interfere with anchor bolt setting.
Holes for anchor bolts, noted as such, ⊙, are to be drilled before placing of diaphragm .

✱ NOTE:
3'-6" min. to be held from point indicated through section under Beam "A".

ELEVATION



FOOTING PLAN



SECTION A-A
Scale: 3/8" = 1'-0"
Typ. for all columns except for Reinforcement Marks.

SECTION B-B
Scale: 3/8" = 1'-0"

SECTION C-C
Scale: 3/8" = 1'-0"

SECTION D-D
Scale: 3/8" = 1'-0"

SECTION E-E
Scale: 3/8" = 1'-0"

Note: Prefix "PA" shall be assigned to all bar marks.

REINFORCEMENT SCHEDULE

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	DIMENSIONS D	SERIES INCREMENT	WEIGHT (POUNDS)
501	1	11'-6"	109	2'-8"	2'-10"				12
502	1	11'-10"	109	2'-8"	3'-0"				12
503	1	12'-0"	109	2'-8"	3'-1"				12
504	21	12'-2"	109	2'-8"	3'-2"				266
505	30	5'-5"	105	2'-8"	1'-6"				283
506	2	5'-3"	105	2'-6"	1'-6"				11
601	6	7'-11"	144	1'-11"	4'-1"				71
602	4	28'-3"	str.						170
701	64	10'-10"	100	9'-2"					1417
901	4	28'-9"	Str.						391
902	4	30'-0"	Str.						408
903	6	12'-0"	str.						245
904	8	11'-6"	123	4'-4"	4'-4"				313
1001	20	6'-11"	104	5'-10"	1'-4"				595
1002	10	17'-9"	str.						764
1003	10	16'-6"	str.						710
1004	4	19'-9"	str.						340
1005	4	21'-0"	str.						361
1006	4	21'-6"	str.						370
1007	2	12'-0"	str.						103
1101	20	7'-0"	104						744
1102	10	18'-9"	str.						996
1103	10	15'-3"	str.						810
								Total =	9,404

SPIRAL REINFORCEMENT SCHEDULE

MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (POUNDS)
401	1	2'-8"	16'-0"	4 1/2"	46	416
402	1	2'-8"	14'-8"	4 1/2"	42	379
403	1	2'-8"	13'-4"	4 1/2"	38	342
404	1	2'-8"	11'-11"	4 1/2"	35	305
					Total =	1442

NOTES:
All Battered Piles shall be battered 3 in 12 in direction shown.
All Piles shall be 14" φ C.I.P. Reinforced Concrete.
For bar bending diagram, see sheet 103-7A
For masonry plate details, see Ohio Standards, Drawing RB-1-55.
For replacement steel schedule, see sheet 103-7A
For spiral reinforcement notes, see sheet 103-7A
Pile spacings are given along bottom of footing.
Reinforcement bars shall be 3 inches clear from face of concrete in footings and 2 inches elsewhere.
All bar dimensions are given out to out.

H.N.T.B. BR. NO. 5 PART 7A

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

PIER 1

RAMP E-10 OVER RAMP E-8

Scale: 1/4"=1'-0"
Except as noted

STA. 8+19.83
STA. 9+38.16

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN C.M.	TRACED J.A.G.	CHECKED G.T.	REVIEWED J.C.T.	REVISED
DATE 7-11-58	DATE 8-22-58	DATE 7-25-58	DATE 11-13-59	SHEET 138

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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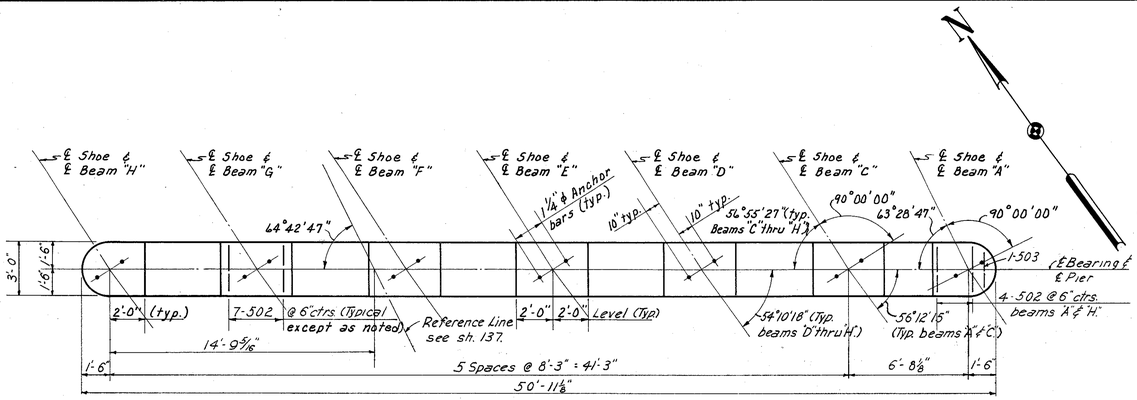
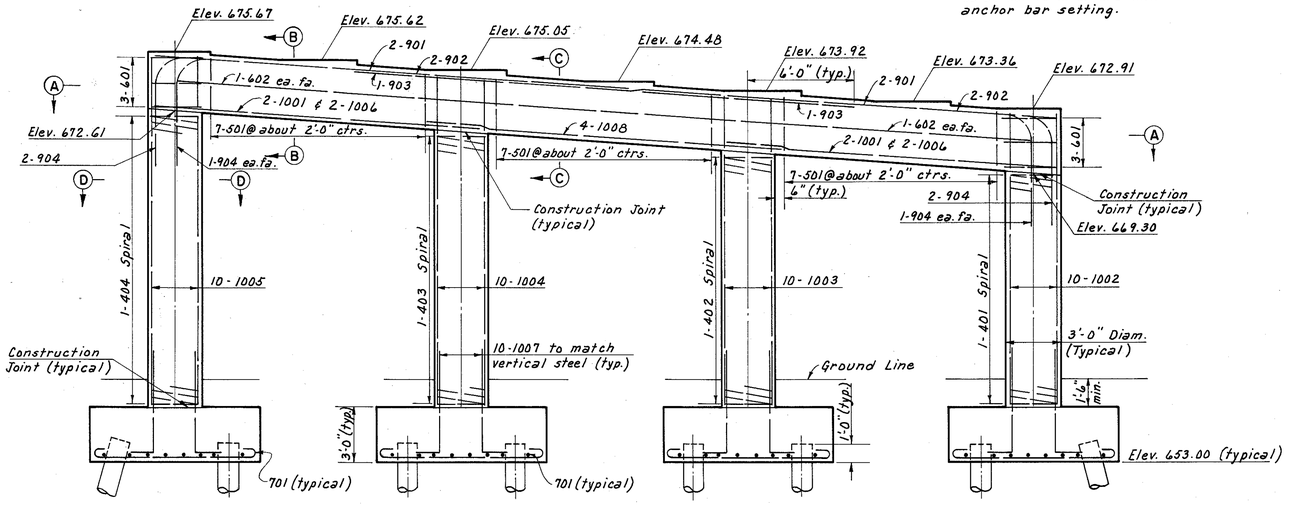
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

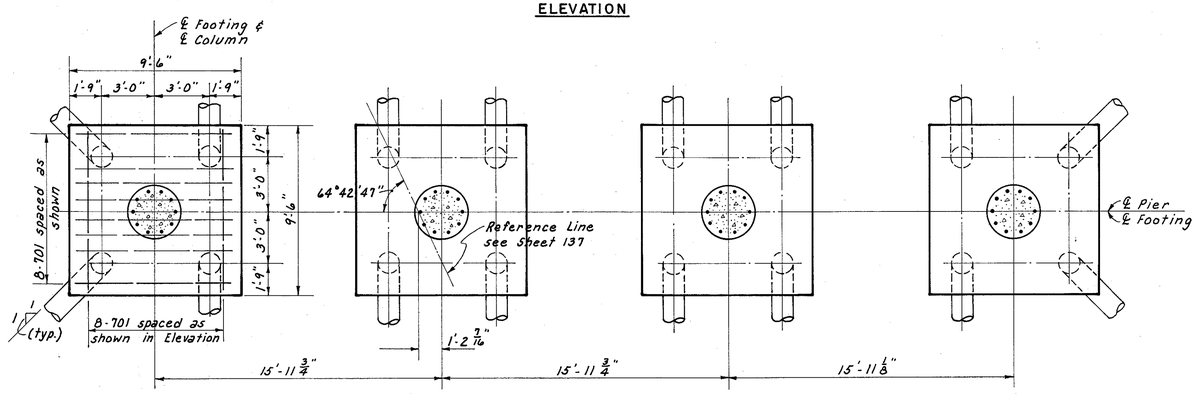


PLAN

Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

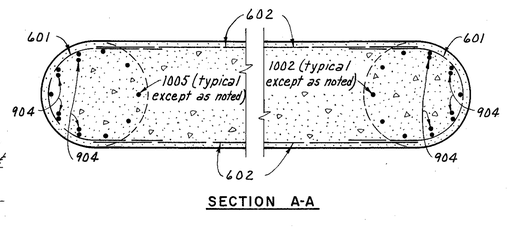


ELEVATION

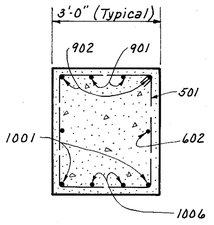


Note: Footing reinforcement and dimensions are typical for all footings.

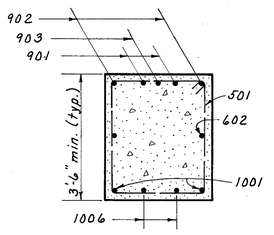
FOOTING PLAN



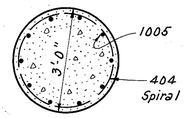
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D
Scale: ½" = 1'-0"
Typical for all columns except for bar marks

NOTES:
All battered piles shall be battered 3 in 12 in direction shown.
For details of masonry plate, see sheet 173-7A.
Reinforcement bars shall be 3 inches clear from face of concrete in footings and 2 inches elsewhere.
Bar dimensions are given out to out.
For bar bending diagram, see sheet 103-7A.
For Spiral Reinforcement Note, see sheet 103-7A.
For Replacement Schedule, see sheet 103-7A.

Note: Prefix "PB" shall be assigned to all bar marks.

REINFORCEMENT SCHEDULE

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (POUNDS)
1001	4	17'-9"	Str.						306
1002	10	16'-6"	Str.						710
1003	10	17'-6"	Str.						753
1004	10	18'-9"	Str.						807
1005	10	19'-3"	Str.						828
1006	4	18'-9"	Str.						323
1007	40	6'-10"	104	5'-9"	16½"				1176
1008	4	19'-3"	Str.						331
901	4	26'-6"	Str.						361
902	4	25'-3"	Str.						343
903	2	12'-0"	Str.						82
904	8	11'-6"	123	4'-4"	4'-4"				313
701	64	10'-10"	100						1417
601	6	7'-11"	144	1'-11"	4'-0"				71
602	4	24'-6"	Str.						147
501	21	12'-1"	109	2'-8"	3'-2"				265
502	43	3'-8"	105	2'-8"	1'-6"				247
503	2	3'-6"	105	2'-6"	1'-6"				11
								Total	8,491

SPIRAL REINFORCEMENT SCHEDULE

MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (POUNDS)
401	1	2'-8"	13'-2"	4½"	39	254
402	1	2'-8"	14'-4"	4½"	41	267
403	1	2'-8"	15'-5"	4½"	44	287
404	1	2'-8"	16'-6"	4½"	47	307
				Total		1115

H.N.T.B. BR. NO. 5 PART 7A

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

PIER 2

RAMP E-10 OVER RAMP E-8

Scale: 1/4" = 1'-0" Except as noted

STA. 8+19.83
STA. 9+38.16

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R. A.	A.E.K.		JCT	
DATE 9-3-58	DATE 5-13-59	DATE 9-16-59	DATE 11-13-59	SHEET 139

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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181

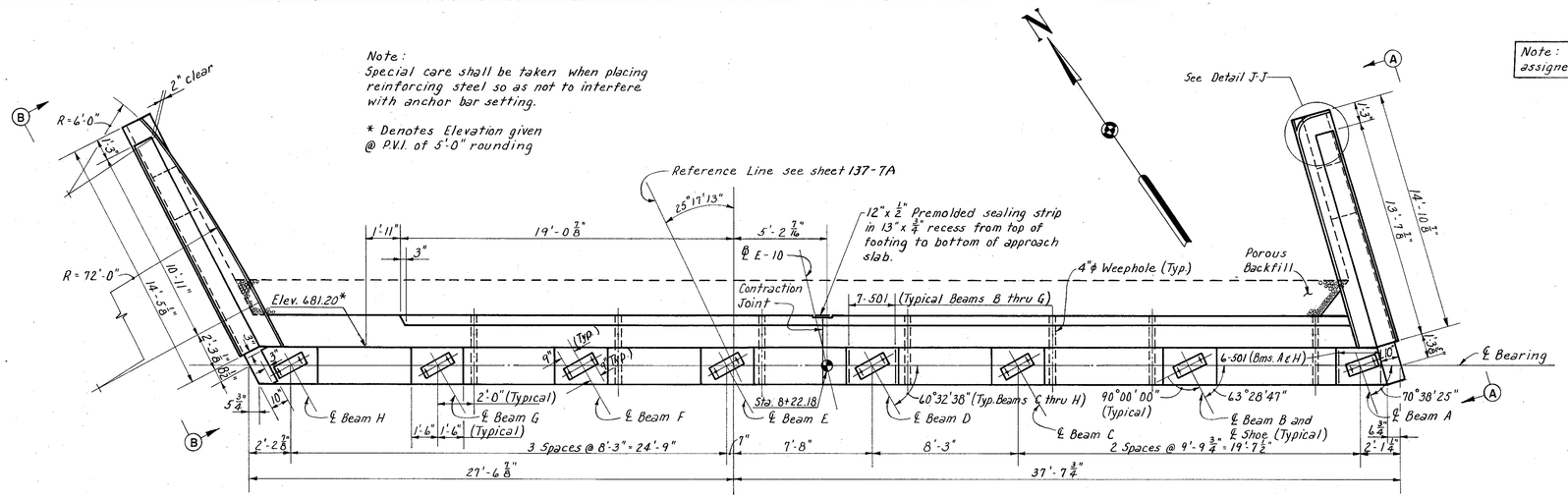
MICROFILMED
JUL 8 1985

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Note: Prefix "AA" shall be assigned to all bar marks.

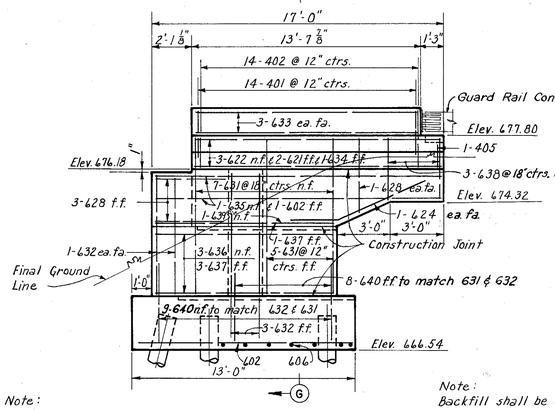
Note:
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

* Denotes Elevation given @ P.V.I. of 5'-0" rounding



PLAN

Note:
Elevations along backwall are given to back of 6 x 4 x 1/2 angle.

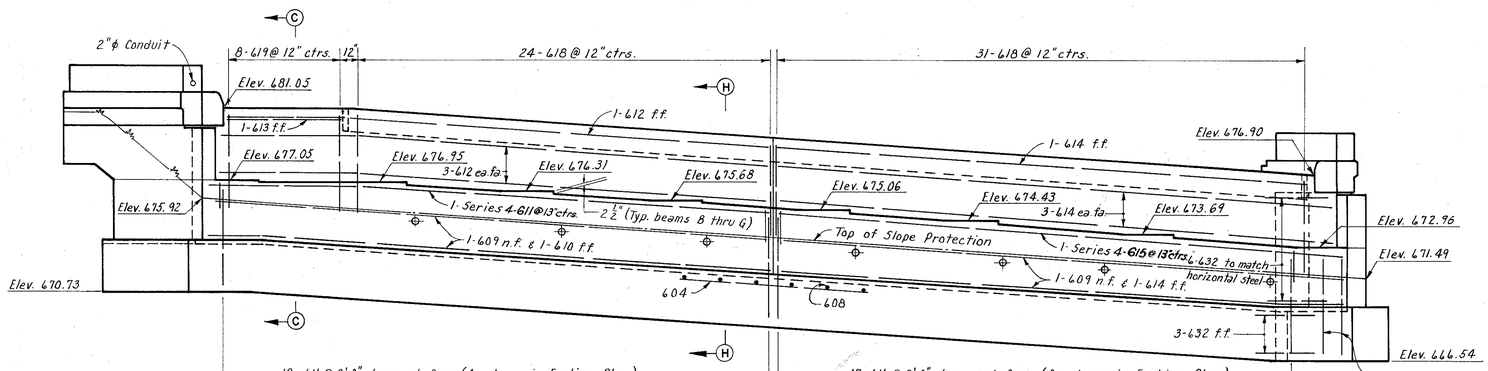


ELEVATION A-A

Note:
End of Railing Parapet to be normal to top of safety curb.

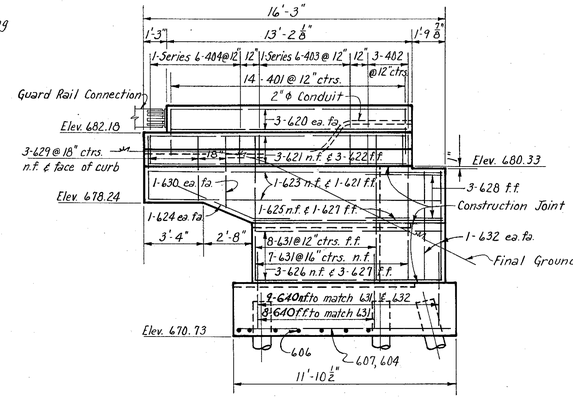
Note:
Backfill shall be completed prior to construction of curb.

Note:
Type "A" Railing not shown.



ELEVATION

FOOTING PLAN



ELEVATION B-B

NOTES:
For additional notes see Sheet 141-7A
For sections see Sheet 142-7A

H.N.T.B. BR. NO. 5 PART 7A

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

NORTH ABUTMENT

RAMP E-10 OVER RAMP E-8

Scale: 1/4"=1'-0"

STA. 8+19.83
STA. 9+38.16

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN A.B.	TRACED A.E.K.	CHECKED T.J.S.	REVIEWED J.C.T.	REVISED
DATE 6-26-58	DATE 3-3-59	DATE 8-26-58	DATE 11-13-59	SHEET 140

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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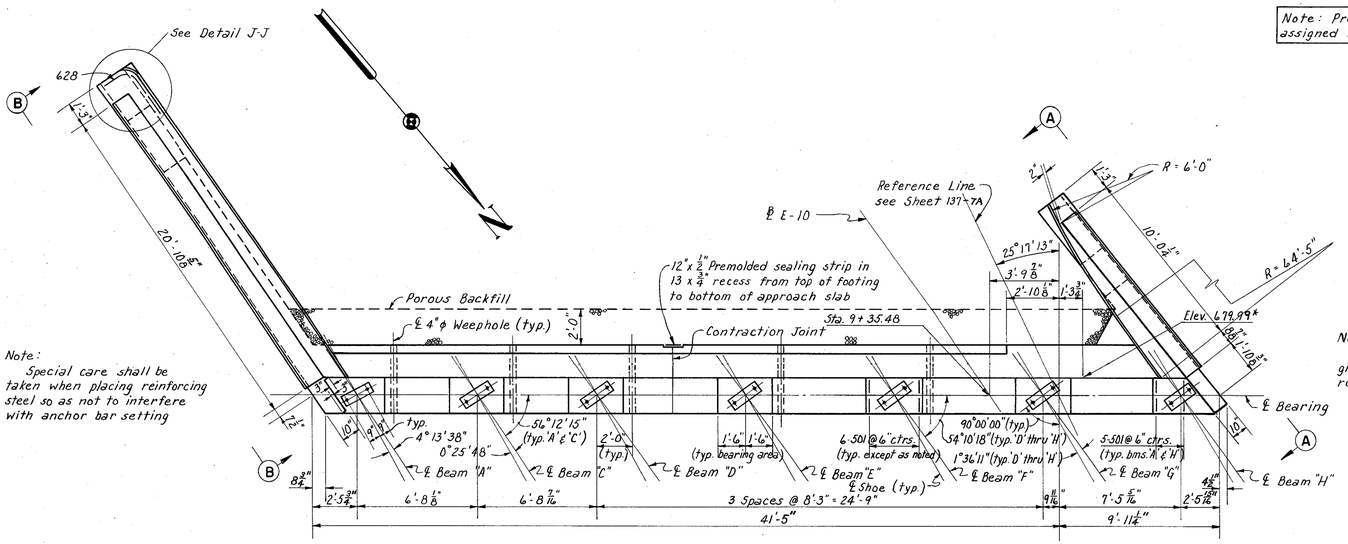
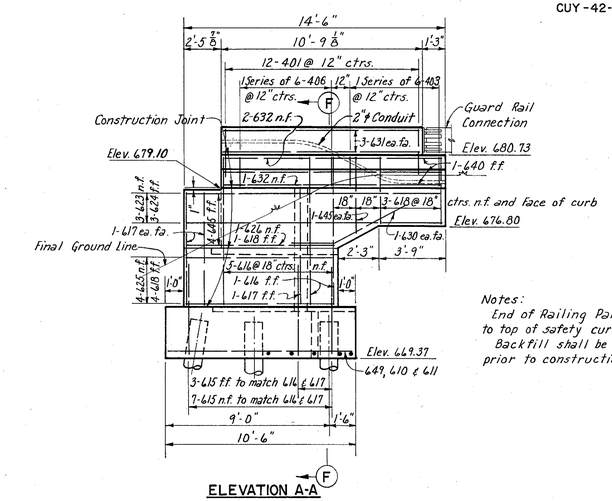
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Note: Prefix "AB" shall be assigned to all bar marks.

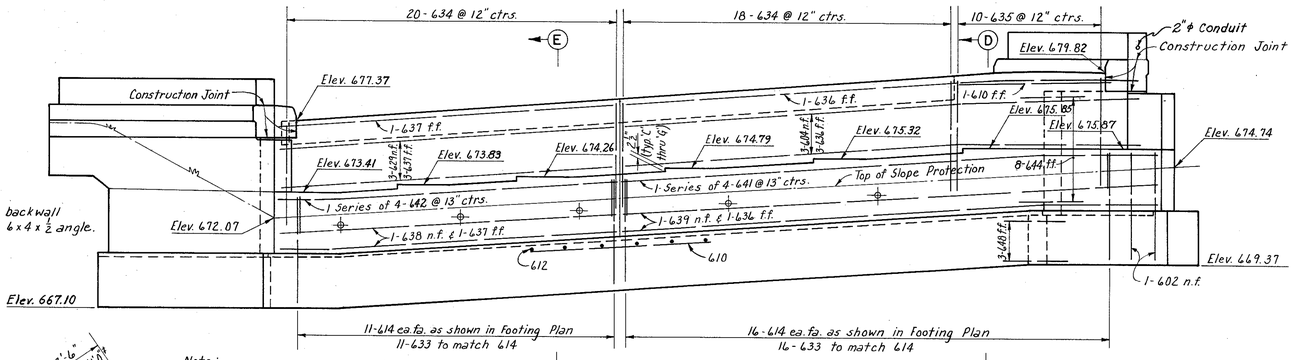


PLAN



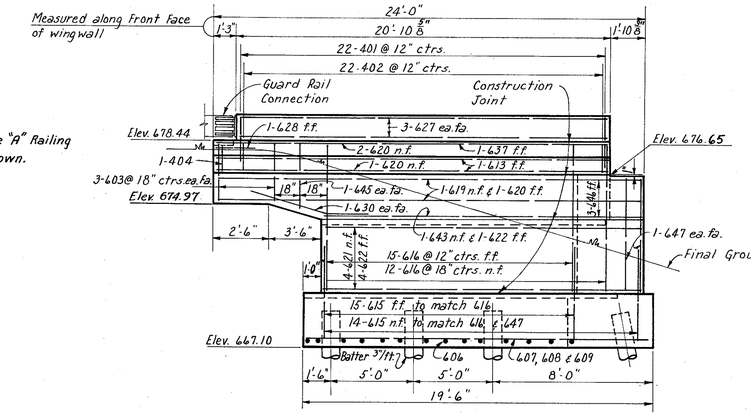
ELEVATION A-A

Notes:
End of Railing Parapet to be normal to top of safety curb.
Backfill shall be completed prior to construction of curb.



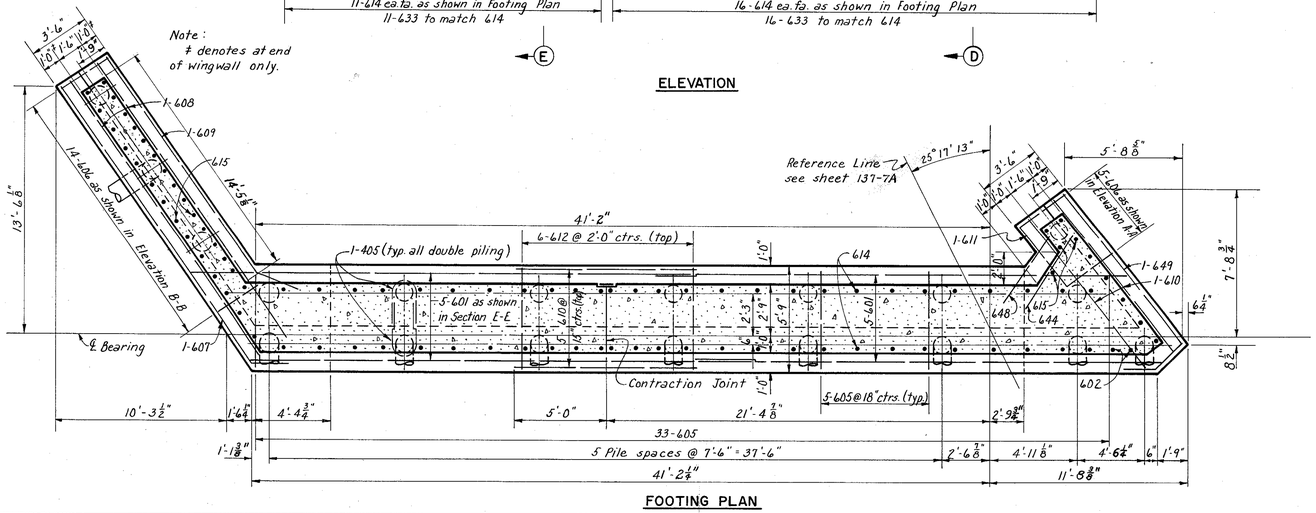
ELEVATION

Note: Elevations along backwall are given to back of 6x4x1/2 angle.



ELEVATION B-B

Note: Type "A" Railing not shown.



FOOTING PLAN

NOTES:
All piles shall be 12" ϕ cast-in-place reinforced concrete piles.
All battered piles shall be battered 3 in 12 in direction shown.
Pile spacings given along bottom of footing.
For details of end dam, see Sheet 173-7A
For masonry plate details, see Sheet 173-7A
For Railing Post spacing, details of Railing and Guard Rail connection, see Sheet 175-7A
For Reinforcement Schedule, see Sheet 142-7A
For Replacement Schedule, see Sheet 103-7A
Reinforcement bars shall be 3 inches clear from bottom of footings and 2 inches elsewhere.
n.f. = near face; f.f. = far face; ea. fa. = each face.
For Slope Protection details, see Sheet 174-7A
For Sections and additional notes, see Sheet 142-7A
For location of lighting conduit, see Sheet 176-7A

H.N.T.B. BR. NO. 5 PART 7A

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

SOUTH ABUTMENT

RAMP E-10 OVER RAMP E-8

Scale: 1/4" = 1'-0"

STA. 8+19.83
STA. 9+38.16

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN A.B.	TRACED AEK	CHECKED C.L.	REVIEWED JCT	REVISED
DATE 6-6-58	DATE 3-5-59	DATE 7-29-58	DATE 11-13-59	SHEET 141

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

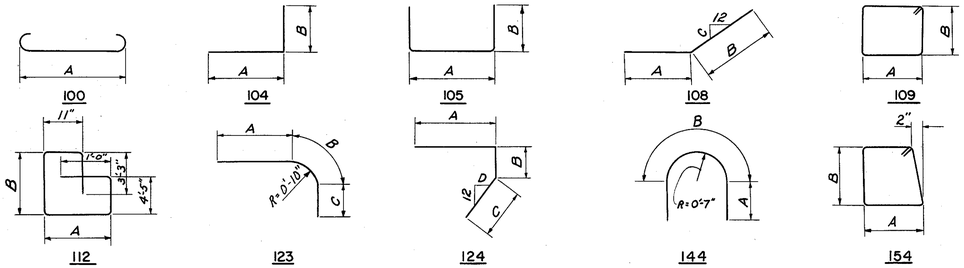
REINFORCEMENT SCHEDULE FOR NORTH ABUTMENT

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
401	28	5'-7"	105	8"	2'-7"				105
402	17	6'-7"	154	1'-10"	1'-4"				75
403	1 ser. of 6	6'-1" to 6'-7"	154	1'-7" to 1'-10"	1'-4"			1 1/8"	25
404	1 ser. of 6	4'-7" to 5'-11"	154	10" to 1'-6"	1'-4"			3 3/16"	21
405	1	6'-3"	109	1'-10"	1'-1"				4
406	20	6'-4"	144	2'-3"	1'-10"				85
501	54	4'-7"	105	1'-8"	1'-7"				258
601	10	34'-9"	Str.						522
602	6	12'-3"	Str.						110
603	1	5'-9"	124	2'-4"	1'-8"	1'-11"	4		9
604	8	10'-0"	Str.						120
605	47	6'-9"	100	5'-5"					477
606	14	4'-6"	100	3'-2"					95
607	1	13'-4"	108	11'-6"	1'-11"	24			20
608	6	5'-3"	Str.						47
609	4	31'-9"	Str.						191
610	2	33'-0"	Str.						99
611	1 ser. of 4	31'-9" to 33'-0"	Str.					5"	195
612	7	32'-6"	Str.						342
613	1	9'-0"	Str.						14
614	9	31'-0"	Str.						419
615	1 ser. of 4	31'-0" to 31'-9"	Str.					3"	189
616	72	6'-1"	104	5'-5"	10				458
617	35	7'-7"	106	3'-5"	2'-3"				399
618	55	15'-11"	112	1'-5"	5'-9"				1,315
619	8	15'-1"	109	1'-5"	5'-9"				181
*620	6	12'-9"	Str.						–
621	7	14'-0"	Str.						147
622	6	14'-6"	Str.						131
623	2	15'-9"	Str.						47
624	4	6'-10"	108	1'-11"	5'-0"	6			41
625	1	9'-9"	Str.						15
626	3	11'-9"	108	9'-11"	1'-11"	24			53
627	4	8'-6"	Str.						51
628	8	4'-0"	Str.						48
629	6	3'-6"	Str.						32
630	2	4'-9"	Str.						14
631	27	7'-9"	Str.						314
632	20	6'-0"	Str.						180
*633	6	13'-3"	Str.						–
634	1	15'-3"	123	13'-2"	1'-3"	10"			23
635	2	16'-6"	Str.						50
636	3	12'-10"	124	10'-8"	6"	1'-11"	4		58
637	4	6'-3"	Str.						38
638	6	3'-0"	Str.						27
639	1	10'-6"	Str.						16
640	34	5'-6"	104	4'-10"	10"				281
								Total	7,541

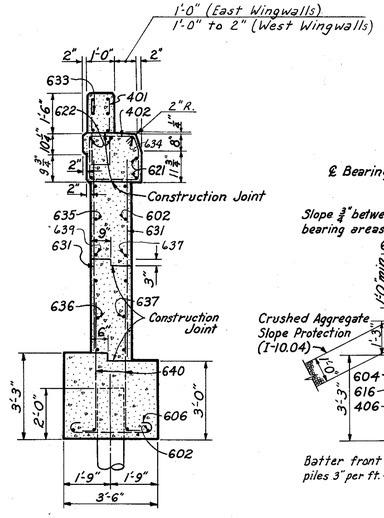
REINFORCEMENT SCHEDULE FOR SOUTH ABUTMENT

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
401	34	5'-7"	105	8"	2'-7"				127
402	22	6'-7"	154	1'-10"	1'-4"				97
403	1 ser. of 6	4'-3" to 5'-9"	154	8" to 1'-5"	1'-4"			3 3/8"	20
404	1	6'-3"	109	1'-10"	1'-1"				4
405	14	6'-4"	144	2'-3"	1'-10"				59
406	1 ser. of 6	5'-11" to 6'-7"	154	1'-6" to 1'-10"	1'-4"			1 5/8"	25
501	40	4'-5"	105	1'-8"	1'-6"				184
601	10	28'-0"	Str.						421
602	2	6'-6"	104	5'-10"	10"				20
603	6	3'-0"	Str.						27
604	3	29'-9"	Str.						134
605	33	6'-9"	100	5'-5"					335
606	19	4'-6"	100	3'-2"					128
607	1	21'-0"	108	19'-1"	2'-0"	16			32
608	2	19'-6"	Str.						59
609	1	17'-6"	108	15'-0"	2'-7"	12			26
610	8	10'-0"	Str.						120
611	1	4'-0"	Str.						6
612	6	5'-3"	Str.						47
613	2	22'-3"	Str.						69
614	54	6'-1"	104	5'-5"	10"				493
615	39	5'-8"	104	5'-0"	10"				332
616	34	7'-9"	Str.						396
617	5	6'-3"	Str.						47
618	11	3'-6"	Str.						58
619	2	23'-6"	Str.						71
620	5	21'-9"	Str.						163
621	4	19'-7"	108	17'-8"	2'-0"	16			118
622	5	15'-9"	Str.						118
623	3	14'-0"	Str.						63
624	3	9'-3"	Str.						42
625	4	10'-4"	124	8'-2"	6"	1'-11"	9		62
626	1	8'-0"	Str.						12
*627	6	20'-6"	Str.						–
628	1	4'-1"	123	2'-0"	1'-3"	10"			6
629	3	20'-3"	Str.						91
630	4	6'-10"	108	1'-11"	5'-0"	6			41
*631	6	10'-3"	Str.						–
632	3	11'-9"	Str.						53
633	27	7'-1"	105	3'-5"	2'-0"				287
634	38	15'-11"	112	1'-5"	5'-9"				908
635	10	15'-1"	109	1'-5"	5'-9"				227
636	6	28'-6"	Str.						257
637	7	21'-3"	Str.						223
638	2	19'-0"	Str.						57
639	2	30'-6"	Str.						92
640	3	11'-0"	Str.						50
641	1 ser. of 4	28'-6" to 30'-6"	Str.					8"	177
642	1 ser. of 4	19'-0" to 21'-3"	Str.					9"	121
643	1	17'-6"	Str.						26
644	8	5'-6"	Str.						66
645	8	4'-3"	Str.						51
646	3	3'-9"	Str.						17
647	4	6'-0"	Str.						36
648	3	5'-0"	Str.						23
649	1	13'-7"	124	10'-0"	1'-10"	2'-0"	9		20
								Total	4,744

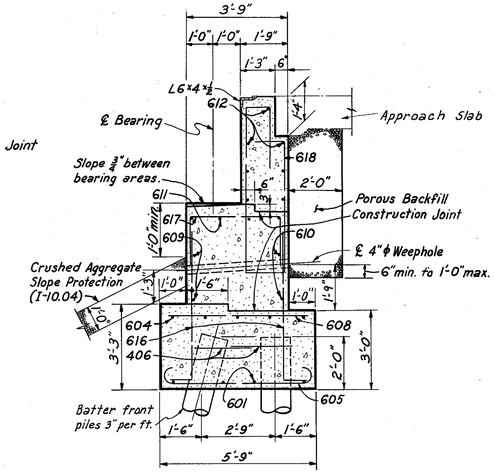
BENDING DIAGRAMS



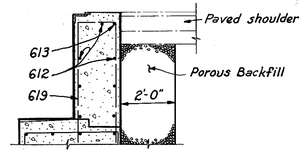
Note: All chamfers to be 3/4".



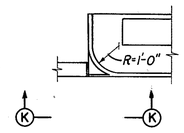
SECTION G-G (SHOWN)
SECTION F-F (SIMILAR)



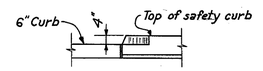
SECTION H-H (SHOWN)
SECTION E-E (SIMILAR)



SECTION C-C (SHOWN)
SECTION D-D (SIMILAR)



DETAIL J-J



ELEVATION K-K

NOTES:
* Bars are included with "Item S-14, Railing" for payment.
Bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
For replacement schedule see sheet 103-7A
For additional notes, see sheet 141-7A

Note: Prefixes shall be assigned to bar marks as follows:
North Abutment: "AA"
South Abutment: "AB"

H.N.T.B. BR. NO. 5 PART 7A

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

ABUTMENT DETAILS

RAMP E-10 OVER RAMP E-8

Scale: 3/8" = 1'-0"

STA. 8+19.83
STA. 9+38.16

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.B.	R.K.	J.C.	J.C.T.	
DATE 6-26-58	DATE 3-7-59	DATE 7-31-58	DATE 11-13-59	SHEET 142

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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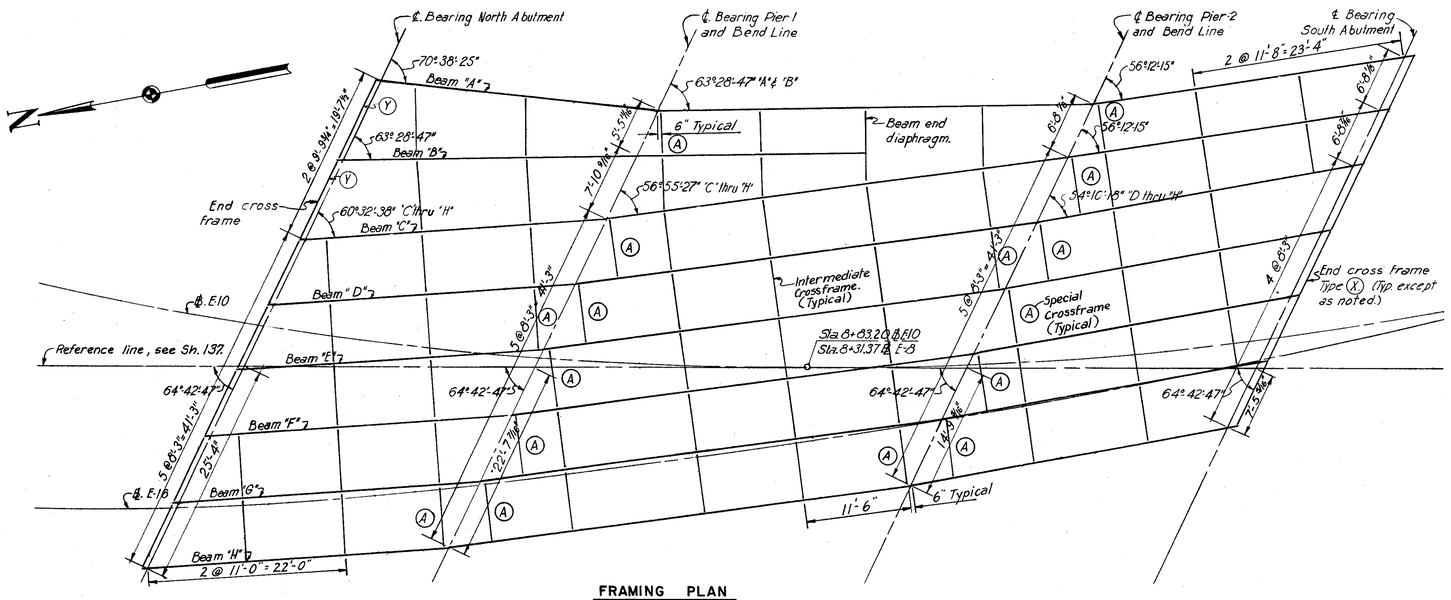
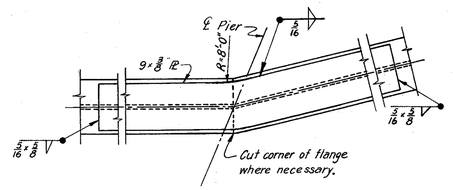
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



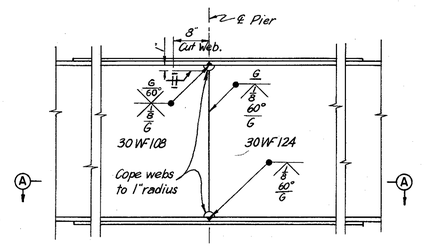
FRAMING PLAN

BEAM SPLICE WELDING PROCEDURE

1- With the beams in their final position, butt-weld the beam flanges and web at the piers, using the following sequence; make two passes on each flange, then two on the web; repeat, using one pass at each location, until welds are completed.
2- Weld bottom and top cover plates.
3- Weld Type "A" cross frames into position.

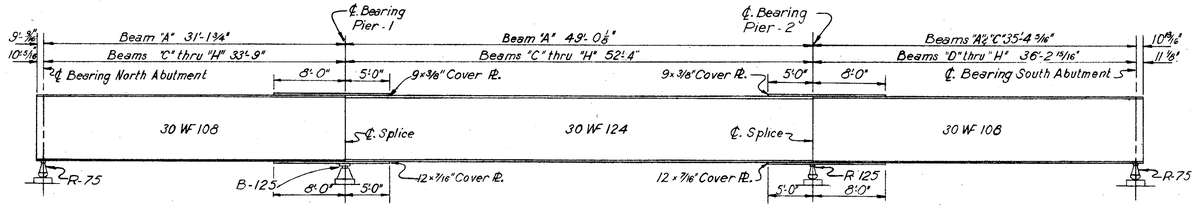


PLAN

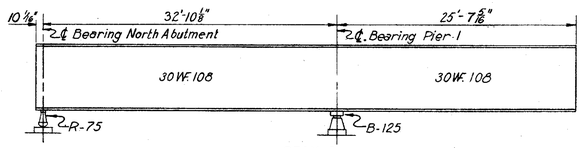


ELEVATION

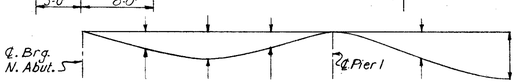
NOTES:
Cover Plates may be fabricated from a single wide plate or from two plates butt welded for full strength and ground smooth in the shop. The splice shall be a minimum of 2'-0" from the bend point.
"G" indicates a smooth grind in the direction of the stress.



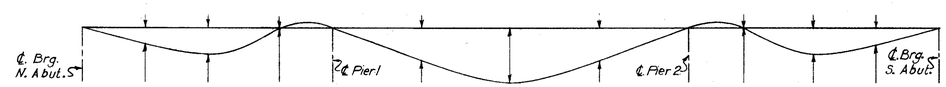
BEAMS A, & C THRU H.



BEAM B



BEAM B



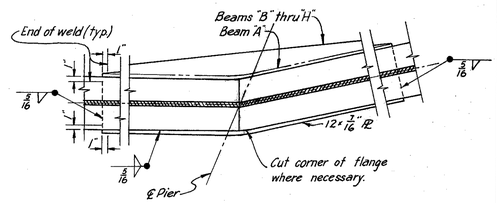
BEAMS A & C THRU H

BEAM DEFLECTION DIAGRAMS.

No Scale

Deflections are given at the quarter points and are measured to the nearest 1/16 inch.

(D.L. Defl.) - denotes dead load deflections.
(Tot.) - refers to the total deflection from dead load of steel and concrete.
(Con.) - denotes deflections for concrete.
(PVMT) - denotes pavement.



SECTION A-A

BEAM SPLICE DETAIL

NOTES:
For details of end dams, see Sh. 173-7A
For cross frame details, see Sh. 144-7A.
For details of rocker masonry plates, see Sh. 173-7B
For other rocker details and details of bolsters, see Ohio Standards Sh. RB-1-55.

Elevations shown in table are located at intersection of ℄ bearings & ℄ beams

ELEVATIONS

No cambering of the beams is required, but they shall be so fabricated and erected that any curved beam shall be placed with the convex flange up.

DEFLECTION & ELEVATION TABLE

BEAM	NORTH ABUTMENT		SPAN 1											PIER 1		SPAN 2											PIER 2		SPAN 3											SOUTH ABUTMENT	
			1/4				℄				3/4					1/4				℄				3/4					1/4				℄				3/4				
	TOP OF BEAM ELEV.	TOP OF PVMT. ELEV.	TOP OF PVMT. ELEV.	CONV.	DL. DEF. CON	DL. DEF. TOT	TOP OF PVMT. ELEV.	CONV.	DL. DEF. CON	DL. DEF. TOT	TOP OF PVMT. ELEV.	CONV.	DL. DEF. CON	DL. DEF. TOT	TOP OF BEAM ELEV.	TOP OF PVMT. ELEV.	TOP OF PVMT. ELEV.	CONV.	DL. DEF. CON	DL. DEF. TOT	TOP OF PVMT. ELEV.	CONV.	DL. DEF. CON	DL. DEF. TOT	TOP OF PVMT. ELEV.	CONV.	DL. DEF. CON	DL. DEF. TOT	TOP OF BEAM ELEV.	TOP OF PVMT. ELEV.	TOP OF PVMT. ELEV.	CONV.	DL. DEF. CON	DL. DEF. TOT	TOP OF PVMT. ELEV.	CONV.	DL. DEF. CON	DL. DEF. TOT	TOP OF PVMT. ELEV.	CONV.	DL. DEF. CON	DL. DEF. TOT	TOP OF BEAM ELEV.	TOP OF PVMT. ELEV.
A	676.25	677.00	677.02	0	1/16"	1/16"	677.05	0	1/16"	1/16"	677.10	0	0	0	676.29	677.16	677.16	0	1/4"	1/4"	677.19	0	3/16"	7/16"	677.25	0	1/8"	5/16"	676.48	677.35	677.35	0	0	0	677.37	0	1/16"	1/16"	677.40	0	1/16"	1/16"	676.71	677.46
B	676.99	677.74	677.67		1/16"	1/16"	677.62		1/16"	1/16"	677.58		0	0	676.69	677.56			1/16"	1/16"			1/8"	3/8"	End of beam																	
C	677.73	678.48	678.37		1/16"	1/16"	678.27		1/16"	1/16"	678.19		0	0	677.26	678.13	677.99		1/16"	1/16"	677.89		3/16"	5/16"	677.83		1/4"	1/4"	676.93	677.80	677.79		0	0	677.80		0	0	677.83		1/16"	1/16"	677.13	677.88
D	678.35	679.10	678.99		1/16"	1/16"	678.89		1/16"	1/16"	678.80		0	0	677.86	678.73	678.58		1/4"	1/4"	678.47		5/16"	5/8"	678.40		1/4"	1/4"	677.49	678.36	678.32		0	0	678.29		1/16"	1/16"	678.39		1/16"	1/16"	677.55	678.30
E	678.98	679.73	679.60		1/16"	1/16"	679.50		1/16"	1/16"	679.41		0	0	678.47	679.34	679.18		1/4"	1/4"	679.06		5/16"	3/8"	678.97		1/4"	1/4"	678.05	678.92	678.87		0	0	678.84		1/16"	1/16"	678.83		1/16"	1/16"	678.08	678.83
F	679.61	680.36	680.23		1/16"	1/16"	680.12		1/16"	1/16"	680.02		0	0	679.07	679.94	679.78		1/4"	1/4"	679.65		7/16"	9/16"	679.55		1/4"	1/4"	678.62	679.49	679.43		0	0	679.39		1/16"	1/16"	679.37		1/16"	1/16"	678.61	679.36
G	680.24	680.99	680.85		1/16"	1/16"	680.74		1/16"	1/16"	680.64		0	0	679.68	680.55	680.38		1/4"	1/4"	680.24		5/16"	9/16"	680.13		1/4"	1/4"	679.19	680.06	679.99		0	0	679.95		1/16"	1/16"	679.91		1/16"	1/16"	679.15	679.90
H	680.34	681.09	680.99	0	1/16"	1/16"	680.88	0	1/16"	1/16"	680.76	0	0	0	679.77	680.64	680.49	0	5/16"	5/8"	680.35	0	1/2"	7/8"	680.22	0	3/8"	5/8"	679.24	680.11	680.11	0	0	0	680.00	0	3/8"	3/4"	679.95	0	1/8"	1/4"	679.16	679.91

H.N.T.B BR. NO. 5 PART 7A

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

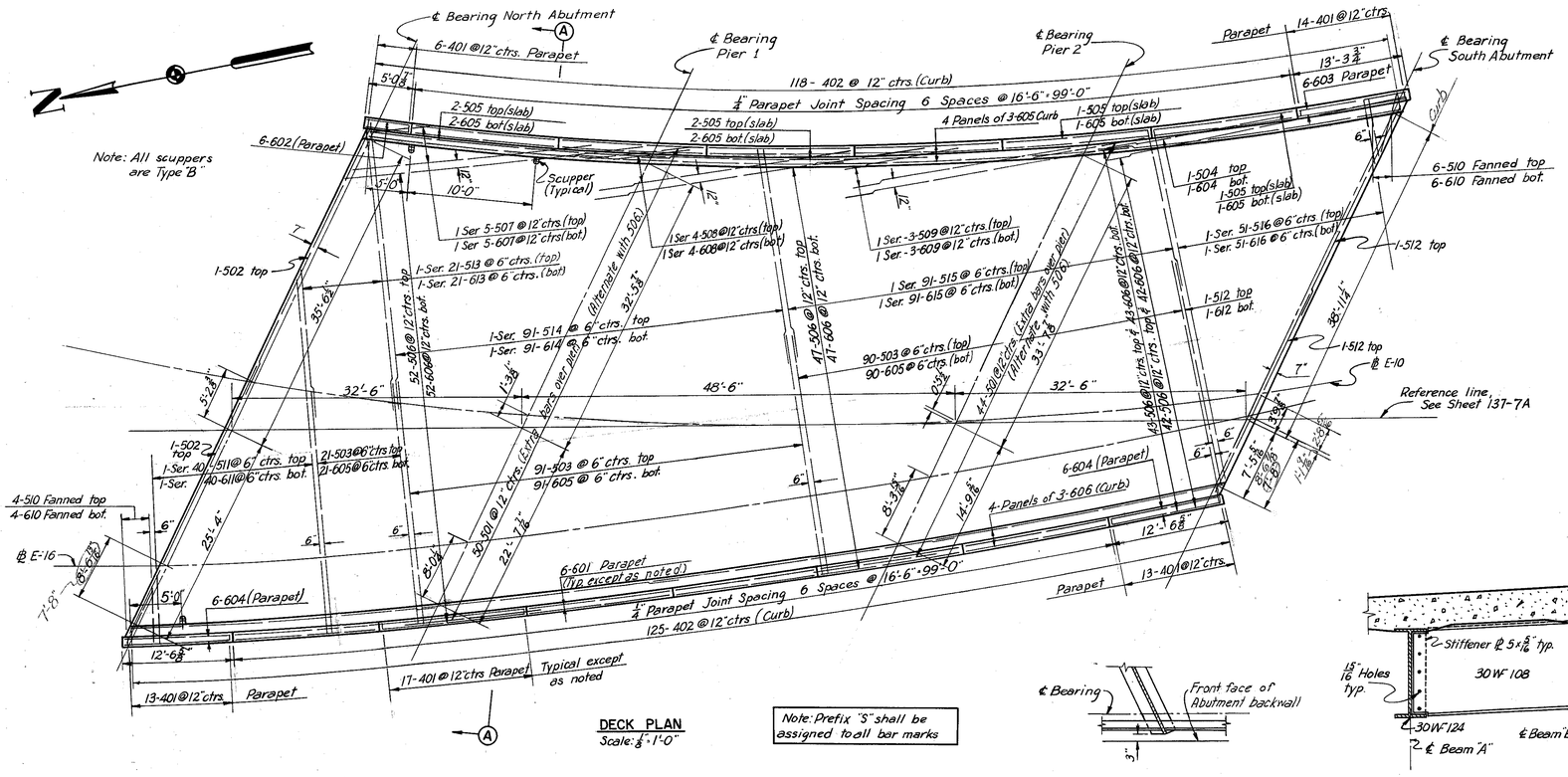
FRAMING PLAN
RAMP E-10 OVER RAMP E-8

Scale: 1/8" = 1'-0"
Except as noted

STA. 8+19.83
STA. 9+38.16

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

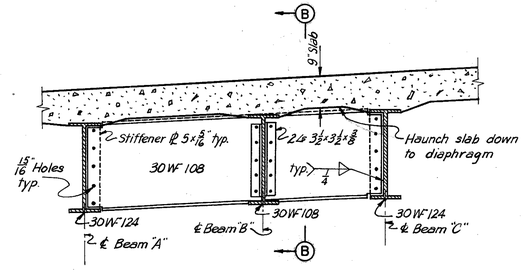
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
N.N.		A.L.	JCT	
DATE 4/17/58	DATE	DATE 4-29-58	DATE 11-13-59	SHEET 143



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

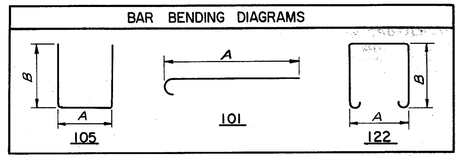
Note: Prefix "S" shall be assigned to all bar marks

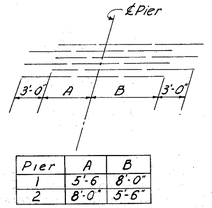
SECTION C-C
Scale: 3/8"=1'-0"



BEAM END DIAPHRAGM
Scale: 1/2"=1'-0"

BAR BENDING DIAGRAMS





Pier	A	B
1	5'-6	8'-0"
2	8'-0"	5'-6"

DIAGRAM SHOWING STAGGER OF EXTRA BARS (501) OVER PIERS
Scale: 1/8"=1'-0"

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

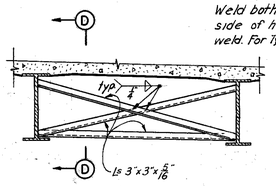
MICROFILMED
JUL 3 1995

REINFORCEMENT SCHEDULE

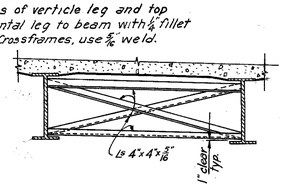
MARK	NO.	LENGTH	TYPE	DEMENSIONS A	DEMENSIONS B	SERIES INCRE-MENT	WEIGHT
401	250	4'-5"	105	8"	2'-0"		738
402	243	5'-1"	122	1'-8"	1'-4"		825
501	94	16'-6"	Str.				1617
502	2	32'-9"	Str.				68
503	202	28'-1"	101	27'-6"			5917
504	1	12'-0"	Str.				12
505	6	30'-6"	Str.				191
506	184	32'-3"	Str.				6189
507	1Ser.of 5	5'-9" to 26'-9"	Str.			5'-3"	85
508	1Ser.of 4	6'-9" to 26'-9"	Str.			6'-8"	70
509	1Ser.of 3	8'-9" to 26'-9"	Str.			9'-0"	56
510	10	6'-7"	101	6'-0"			69
511	1Ser.of 40	7'-7" to 40'-7"	101	7'-0" to 40'-0"		10 3/16"	1005
512	3	26'-0"	Str.				81
513	1Ser.of 21	15'-1" to 30'-7"	101	14'-6" to 30'-0"		9 3/16"	500
514	1Ser.of 91	22'-10" to 31'-7"	101	22'-3" to 31'-0"		1 3/16"	2583
515	1Ser.of 91	17'-4" to 22'-10"	101	16'-9" to 22'-3"		5/16"	1906
516	1Ser.of 51	7'-4" to 40'-7"	101	6'-9" to 40'-0"		8"	1274
℄601	72	16'-0"	Str.				—
℄602	6	4'-9"	Str.				—
℄603	6	13'-0"	Str.				—
℄604	12	12'-3"	Str.				—
605	220	30'-9"	Str.				10161
606	196	32'-6"	Str.				9568
607	1Ser.of 5	5'-9" to 26'-9"	Str.			5'-3"	122
608	1Ser.of 4	7'-0" to 27'-0"	Str.			6'-8"	102
609	1Ser.of 3	9'-0" to 27'-0"	Str.			9'-0"	81
610	10	6'-0"	Str.				90
611	1Ser.of 40	7'-0" to 40'-0"	Str.			10 3/16"	1412
612	1	29'-6"	Str.				44
613	1Ser.of 21	11'-9" to 26'-9"	Str.			9"	607
614	1Ser.of 91	19'-3" to 27'-9"	Str.			1 3/16"	3212
615	1Ser.of 91	13'-9" to 19'-3"	Str.			3/16"	2256
616	1Ser.of 51	6'-9" to 40'-0"	Str.			8"	1791
						Total	52632

NOTES:
Bars of a series shall vary in length by a constant increment.
For replacement schedule, see Sheet 103.-7A
All bar dimensions are given out to out.
℄Bars are included with "Item S-14, Railing" for payment.
For drainage details, see Sheet 174.-7A
For Railing and Parapet Joint details, see Sheet 175.-7A
In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to transverse bars in the slab, and are located near the center of any span.
For Lighting details, see Sheet 176.-7A
For End Finish details not shown see Sheet 156-7A

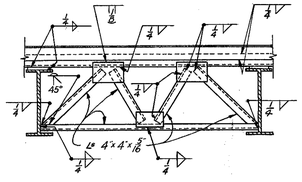
Note:
Intermediate Crossframes:
Weld both sides of vertical leg and top side of horizontal leg to beam with 1/4 fillet weld. For Type A Crossframes, use 5/16" weld.



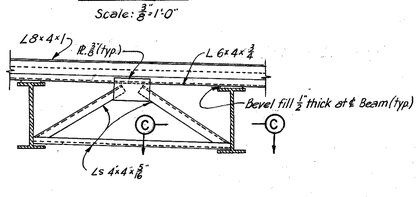
TYPICAL INTERMEDIATE CROSSFRAME
Scale: 3/8"=1'-0"



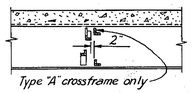
TYPE 'A' CROSSFRAME
Scale: 3/8"=1'-0"



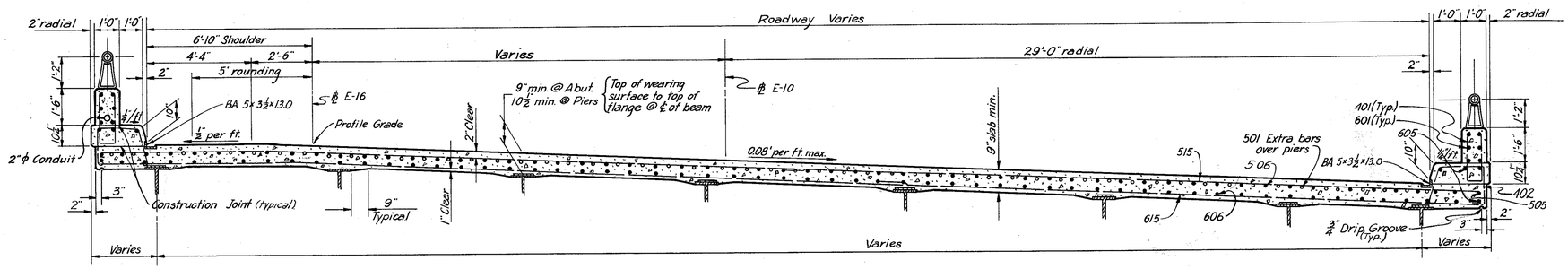
END CROSSFRAME TYPE (Y)
Scale: 3/8"=1'-0"



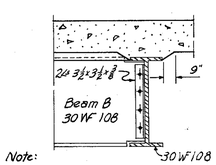
END CROSSFRAME TYPE (X)
Scale: 3/8"=1'-0"
Welding similar to that shown for Type Y crossframe.



SECTION D-D
Scale: 1/4"=1'-0"



SECTION A-A
Scale: 3/8"=1'-0"



Note:
Beam end diaphragm field connections shall be made with 7/8" ℄ high strength bolts conforming to Supplemental Specs. S-207.

BEAM END DIAPHRAGM
Scale: 1/2"=1'-0"

H.N.T.B. BR. NO. 5 PART 7A

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

DECK PLAN

RAMP E-10 OVER RAMP E-8

Scale: 1/8"=1'-0" Except as noted
STA. 8+19.83
STA. 9+38.16

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN N.N.	TRACED HBH	CHECKED C.T.	REVIEWED JCT	REVISED 1-12-61
DATE 9-25-58	DATE 5-7-59	DATE 3-11-59	DATE 11-13-59	SHEET 144

21-0

MICROFILMED JUL 3 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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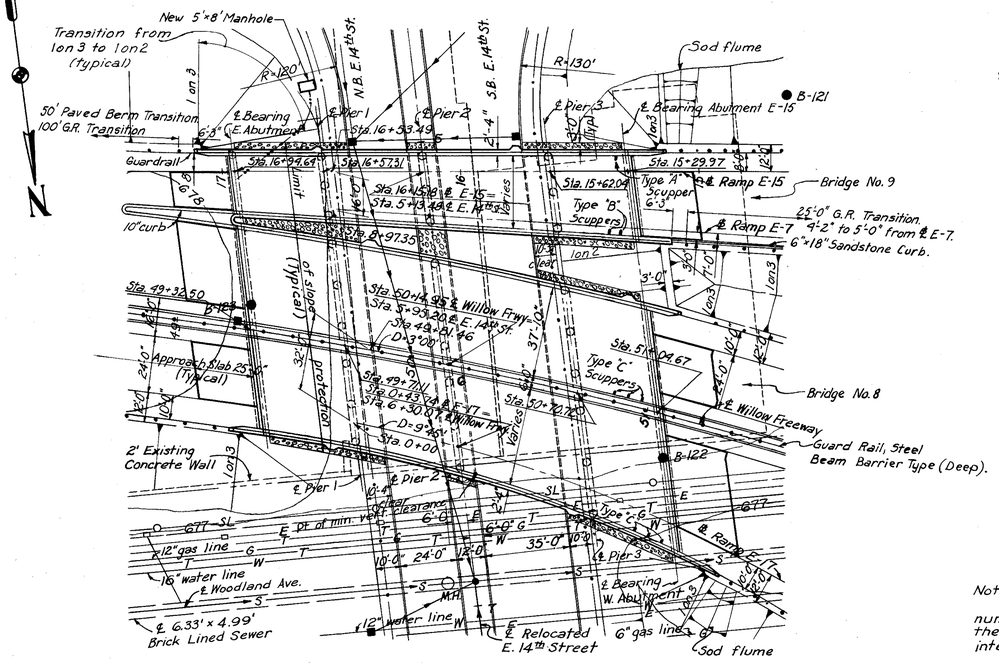
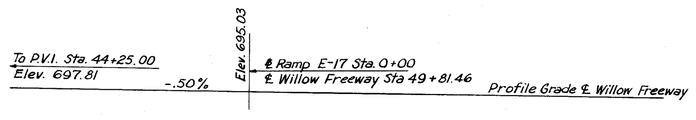
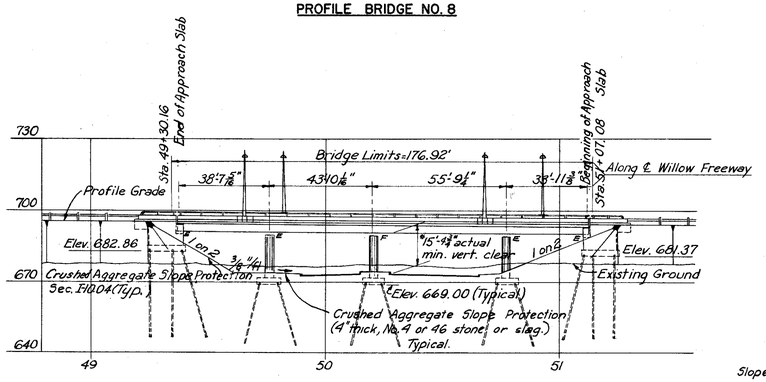
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



PLAN



PROFILE BRIDGE NO. 8



ELEVATION BRIDGE NO. 8

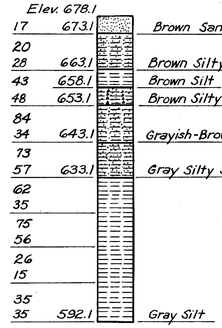
*15'-0" required minimum vertical clearance. Point of actual minimum vertical clearance occurs at the median curb of Southbound E. 14th St. and the north exterior beam.

Slopes shown in Elevation are normal to E. 14th St.

CURVE DATA

℄ Willow Freeway
Δ = 23°06'48"
D = 3°00'00"
R = 1909.86'
T = 390.54'
L = 770.50'

℄ Ramp E-17
Δ = 60°33'40"
D = 9°45'00"
R = 587.65
T = 343.13'
L = 621.14'



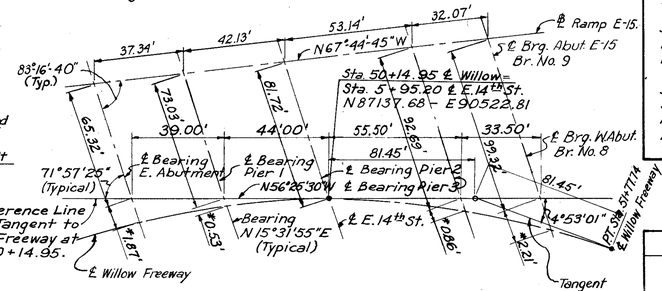
BORING 121
Vertical Scale: 1"=20'
Sta. 14+63 ℄ Ramp E-15 33' Rt.

Note:
The figures to the left indicate the number of hammer blows required to drive the sampling spoon 1 ft. They are given at 5' intervals starting at elev. 678.1.

LEGEND

Existing R/W		*Sewers
Existing Edge of Pavement		*Inlets
Existing Sewer	S	*Manholes
OBT Line	T	*2"℄ Duct
Water Line	W	*4"℄ Duct
Gas Line	G	
Street Lights	SL	
CEI Line	E	
Existing Manhole		
Existing Catch Basin		

* Built under previous contract.



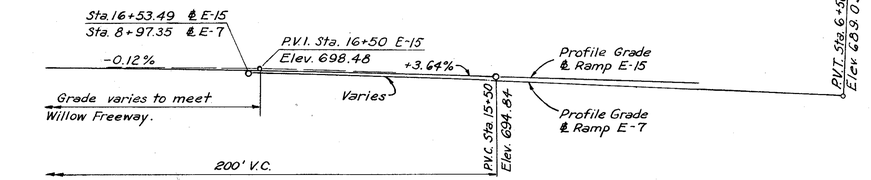
LAYOUT DIAGRAM BRIDGES NO. 8 & 9.
No Scale
*Offsets measured from reference line to ℄ Willow Freeway along ℄ bearings.

PROPOSED STRUCTURE BR. NO. 8

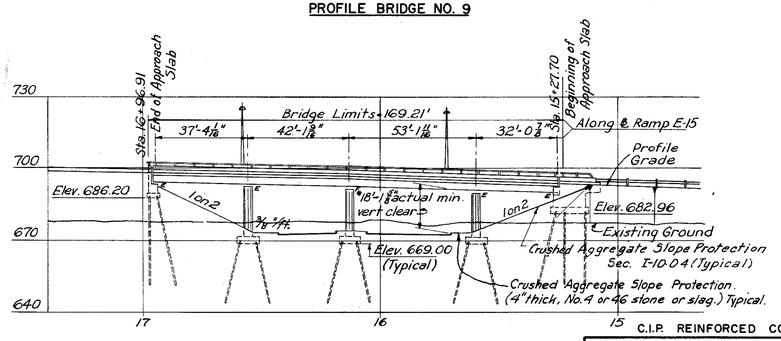
Type: Continuous steel beam with reinforced concrete deck and substructure.
Spans: 38'-7 7/16", 43'-10 1/16", 55'-9 1/4", 38'-11 3/8" along ℄ Willow Fwy
Roadway: 64'-0" (nominal) face to face parapets
Loading: CF-2000-Adequate for A.A.H.S.O. alternate loading.
Skew: Varies
Surface Course: 1" Monolithic Concrete.
Alignment: 3°00'00" Rt.
Approach Slabs: AS-1-54 (25' Long)
Superelevation: .05 ft/ft.

PROPOSED STRUCTURE BR. NO. 9

Type: Continuous steel beam with reinforced concrete deck and substructure.
Spans: 37'-4 1/16", 42'-1 7/16", 53'-1 1/16", & 32'-0 7/8" along ℄ E-15.
Roadway: Varies
Loading: CF-2000-Adequate for A.A.H.S.O. alternate loading.
Skew: 6°43'20"
Surface Course: 1" Monolithic Concrete.
Alignment: Tangent.
Approach Slabs: AS-1-54 (25' Long)
Superelevation: Varies.



PROFILE BRIDGE NO. 9



ELEVATION BRIDGE NO. 9

*15'-0" required minimum vertical clearance. Point of actual minimum vertical clearance occurs at the west curb of Southbound E. 14th St. and the north exterior beam.

RAMP E-15 OVER EAST 14th ST.

C.I.P. REINFORCED CONCRETE PILES.

PILE INFORMATION			
Location	Diameter	Number	Estimated ave. length
Bridge 8			
West Abutment	12"	36	35 ft.
Piers 1, 2, & 3.	14"	75	27 ft.
Bridge No. 9.			
Abutment E-15.	12"	14	35 ft.
Piers 1, 2, & 3.	14"	36	27 ft.
Bridge No. 8 & No. 9			
East Abutment	12"	40	37 ft.

NOTES:

Rod soundings only were taken at location B-122 and B-123. The core drilling made at B-121 is plotted.

Pile lengths are based on boring data and are approximate only. The Contractor shall assume full responsibility for length of piling selected for driving.

The following items are not included in the bridge plans: (See Roadway Plans for details).
Approach grading, pavements, and slabs.
Roadway Guard Rail, Sod Flumes.
For details of slope protection see Sh. 174-7A
For details of pier plans & drain pipe locations at piers see Sh. 171-7A & 174-7A.

Note:
Piers for Bridges 8 & 9 are included in Part 6.

H.N.T.B. BRS. NO. 8 AND 9 PART 7A

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

SITE PLAN

WILLOW FREEWAY & RAMP E-15 OVER E. 14TH. STREET
STA. 49+30.16 STA. 51+07.08 (WILLOW FREEWAY)
STA. 15+27.70 STA. 16+96.91 (RAMP E-15)
BR. NO. CUY-21-1573 A & B Scale: 1" = 30'

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN AJS	TRACED DLV	CHECKED DRK	REVIEWED ACT	REVISED
DATE 6-26-58	DATE 7-29-58	DATE 7-14-58	DATE 11-13-59	SHEET 145

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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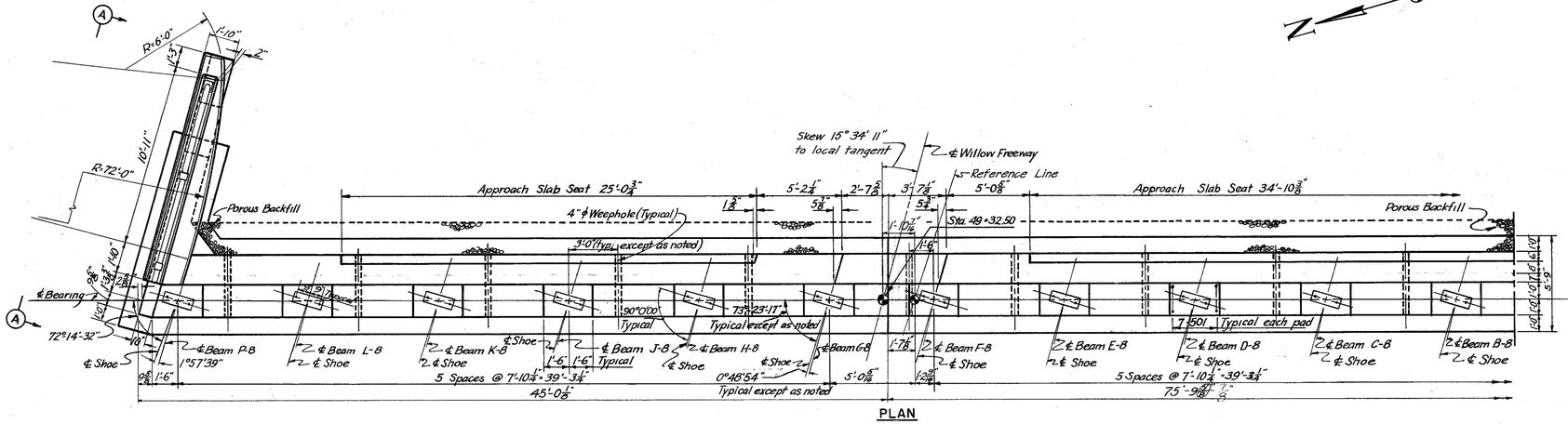
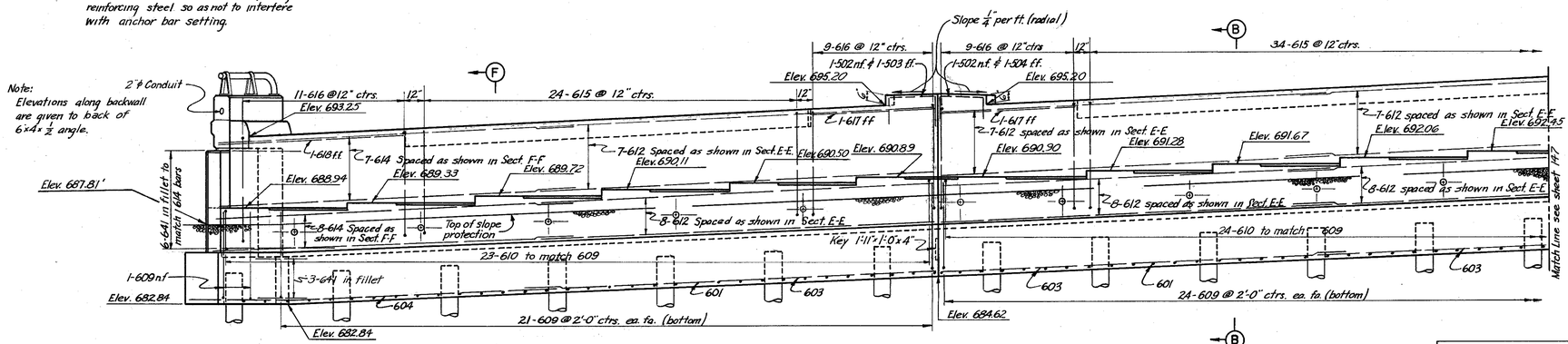
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



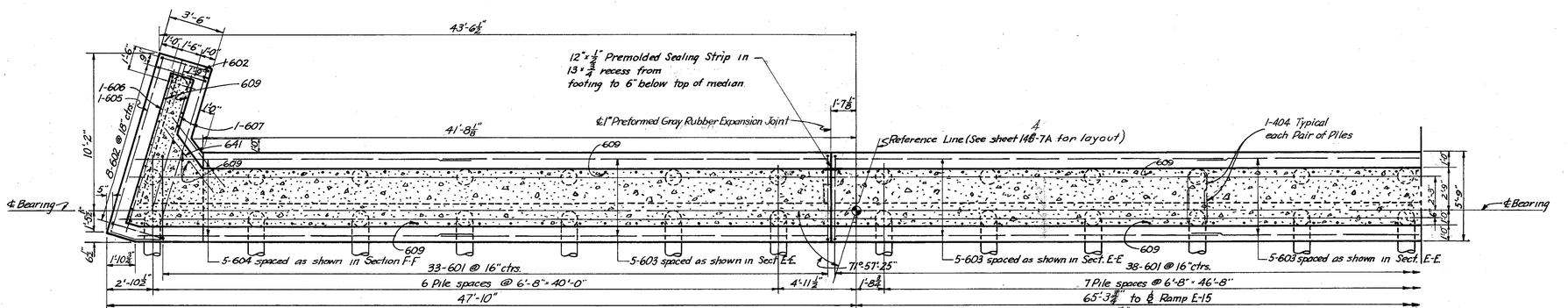
Note:
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.



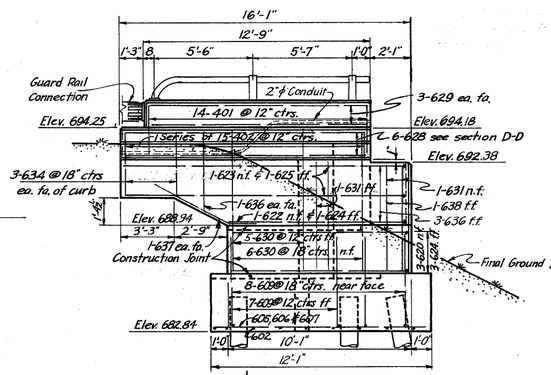
ELEVATION

Note: Top of backwall to follow crown of roadway

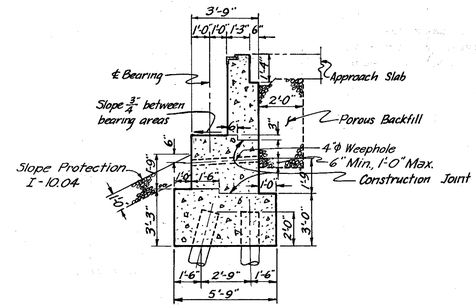
Note: Prefix "AA" shall be assigned to all bar marks.



FOOTING PLAN



ELEVATION A-A



SECTION B-B

Reinforcing not shown.

NOTES:

All piles shall be 12"ϕ Cast-in-place reinforced concrete
All battered piles shall be battered 3in12 in direction shown
Pile spacings given along bottom of footing
For details of roadway expansion dam see sht. 173-7A
For Masonry Plate details see sheet 173-7A
For Railing details and Guard Rail connection details see sheet 175-7A
For location of lighting conduits see sheet 176-7A
For Reinforcement schedule see sheet 151-7A
For Replacement schedule see sheet 103-7A
Reinforcement bars shall be 3 inches clear from bottom of footing and 2" inches elsewhere.
For slope Protection Details see sheet 174-7A
Top of parapet and safety curb construction joints are to be parallel to roadway grade.
n.f. = near face; f.f. = far face; ea. fa. = each face
For additional sections see sheet 147-7A

H.N.T.B. BRS. NO. 8 AND 9 PART 7A

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

EAST ABUTMENT-NORTH HALF

WILLOW FREEWAY OVER EAST 14th ST.
STA. 49+30.16 STA. 51+07.08 (WILLOW FREEWAY)
STA. 15+27.70 STA. 16+96.91 (RAMP E-15)
BR. NO. CUY-21-1573 A & B Scale: 1/4" = 1'-0"

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN GBC	TRACED MRH	CHECKED GAL-S	REVIEWED JCT	REVISED 9-21-60
DATE 7-18-58	DATE 8-25-58	DATE 7-25-58	DATE 11-13-59	SHEET 146

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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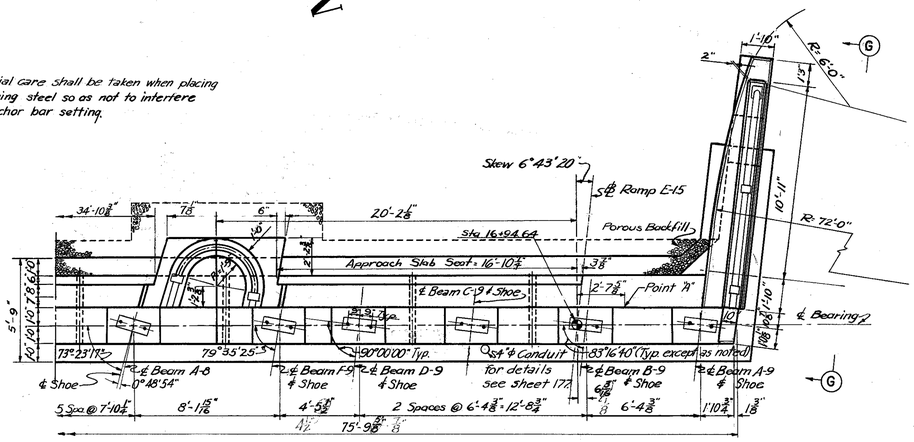
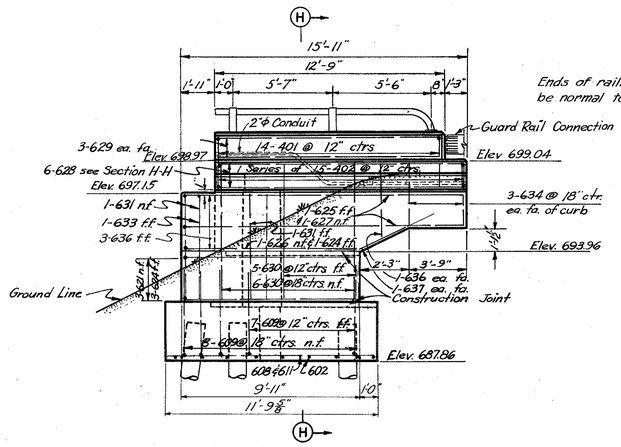
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

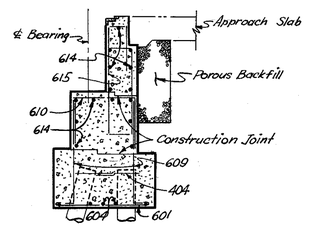
Note:
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.



PLAN

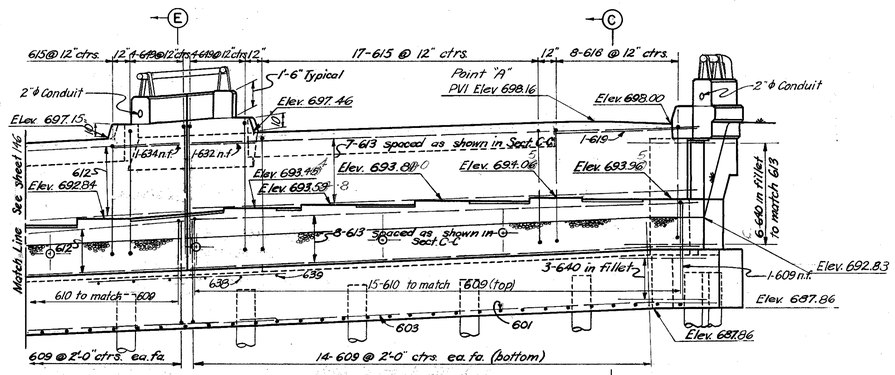


ELEVATION G-G



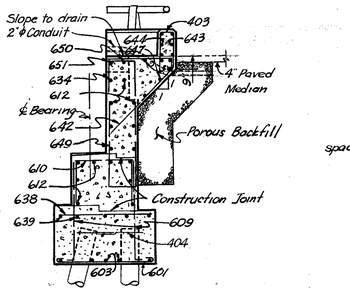
SECTION F-F

Note:
Elevations along backwall are given to back of 6"x4"x½" angle.

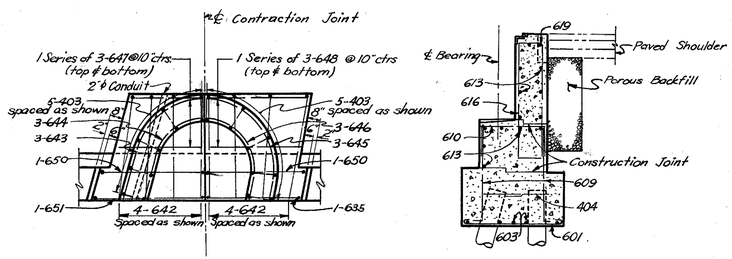


ELEVATION

Note: Top of backwall to follow crown of roadway

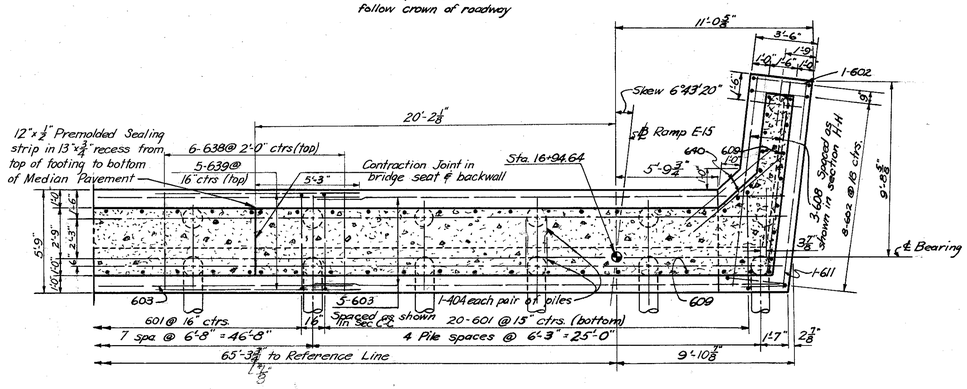


SECTION E-E

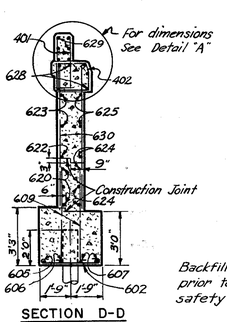


COMMON PARAPET DETAIL
Scale = ⅜" = 1'-0"

SECTION C-C

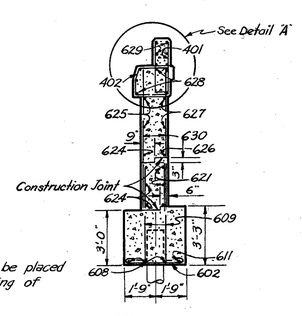


FOOTING PLAN

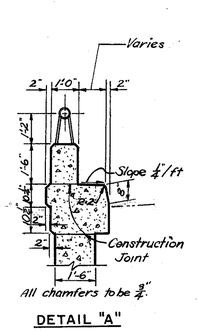


SECTION D-D

Backfill shall be placed prior to placing of safety curb.



SECTION H-H



DETAIL "A"

Reinforcing not shown
Scale: ⅜" = 1'-0"

Note: Prefix "A" shall be assigned to all bar marks.

NOTES:
For dimensions and details not shown in Section views see Section B-B sheet 146.-7A.
Top of parapet and safety curb construction joints are to be parallel with roadway grade.
n.f. = near face; f.f. = far face; ea. fa. = each face
For reinforcement schedule see sheet 151.-7A
For additional notes see sheet 146.-7A

H.N.T.B. BRS. NO. 8 AND 9 PART 7A

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

EAST ABUTMENT-SOUTH HALF

WILLOW FREEWAY OVER EAST 14th ST.
STA. 49+30.16 STA 51+07.08 (WILLOW FREEWAY)
STA. 15+27.70 STA. 16+96.91 (RAMP E-15)
BR. NO. CUY-21-1573.^A^B Scale: 1/4" = 1'-0" Except as noted

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DWL	WDV	K.K.B.	JCT	9-60
DATE 7/27/58	DATE 8/18/58	DATE 7/31/58	DATE 11-13-59	SHEET 147

Revised 9-21-60

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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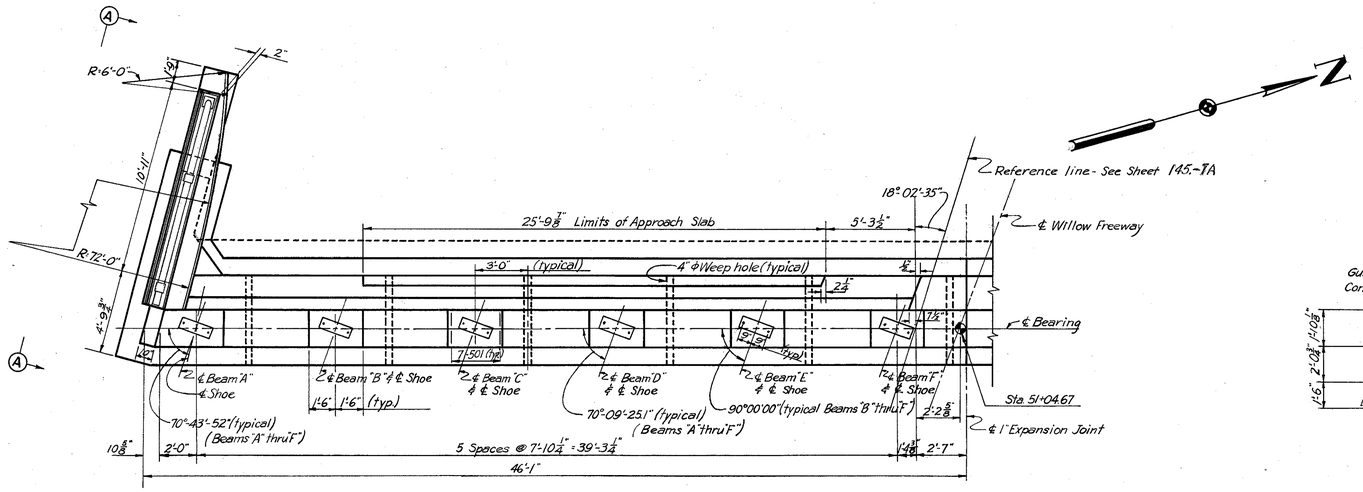
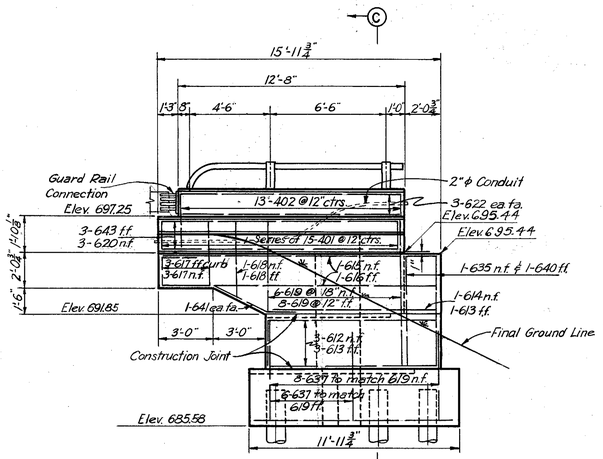
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

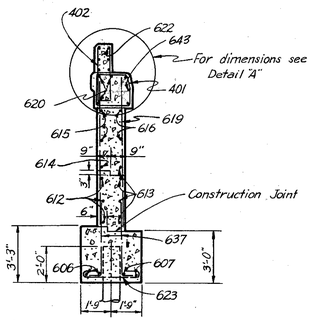


PLAN

Note:
Ends of railing parapet shall be normal to top of safety curb.



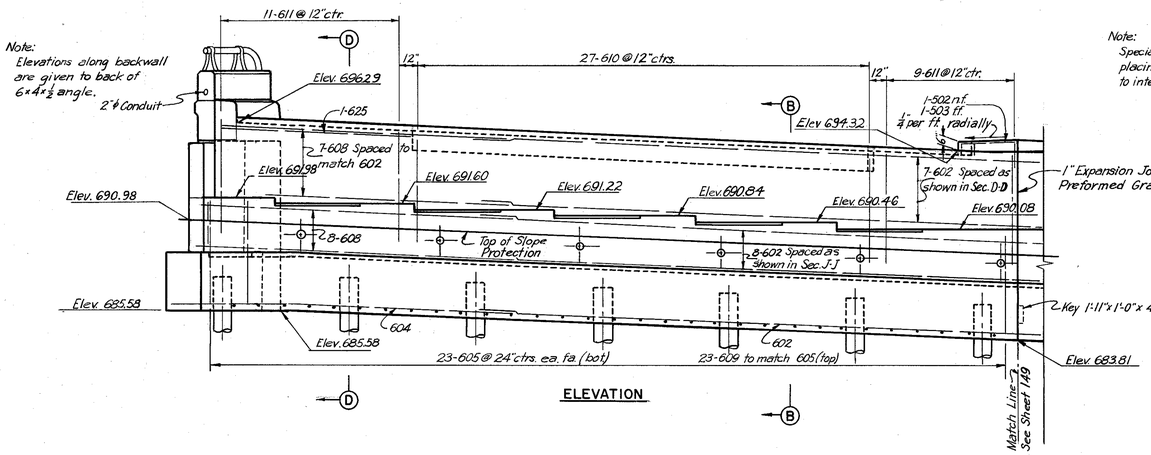
ELEVATION A-A



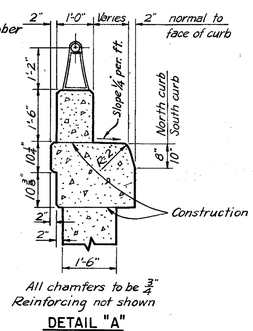
SECTION C-C

Note:
Elevations along backwall are given to back of 6×4×½ angle.

Note:
Special care shall be taken when placing reinforcing steel so as not to intertere with anchor bar setting.

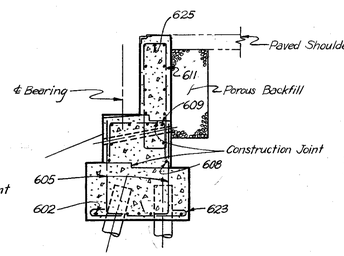


ELEVATION

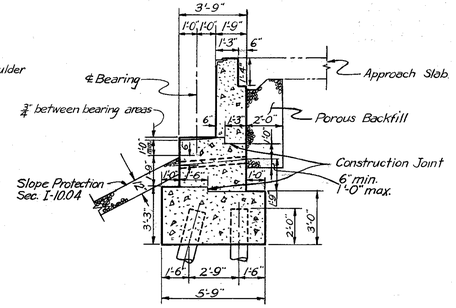


All chamfers to be ¾" Reinforcing not shown

DETAIL "A"

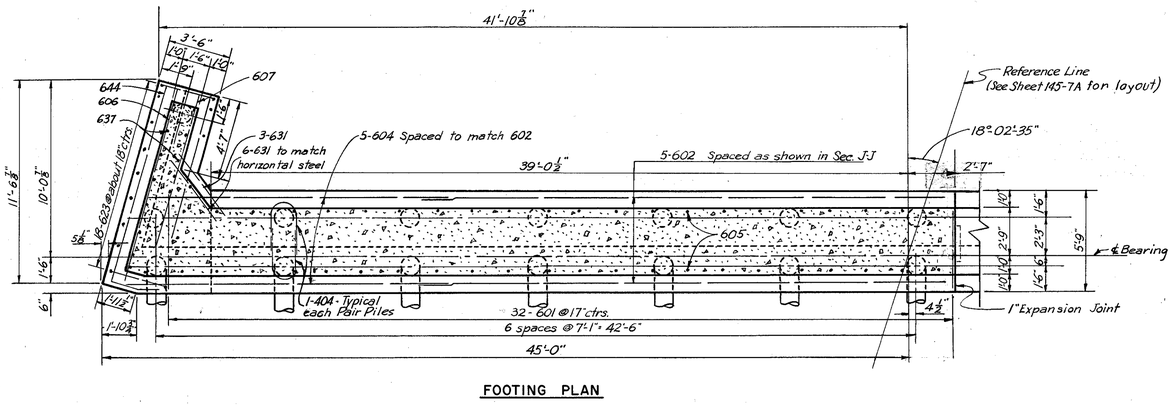


SECTION D-D



SECTION B-B

Reinforcing not shown



FOOTING PLAN

NOTES:
All piles shall be 12" C.I.P. reinforced concrete
All battered piles shall be battered 3 in 12 in direction shown
Pile spacings are given along bottom of footing
For additional notes see sh. 146.-7A

Note: Prefix "AB" shall be assigned to all bar marks.

H.N.T.B. BR. NO. 8 PART 7A

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

WEST ABUTMENT - SOUTH HALF

WILLOW FREEWAY OVER EAST 14th ST.
BR. NO. CUY-21-1573 A STA. 49+30.16
Scale: 1/4" = 1'-0" Except as noted STA. 51+07.08

WILLOW - INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN R.A.	TRACED J.R.H.	CHECKED C.K.B.	REVIEWED J.C.T.	REVISED
DATE 7-18-58	DATE 9-5-58	DATE 8-4-58	DATE 11-13-59	SHEET 148

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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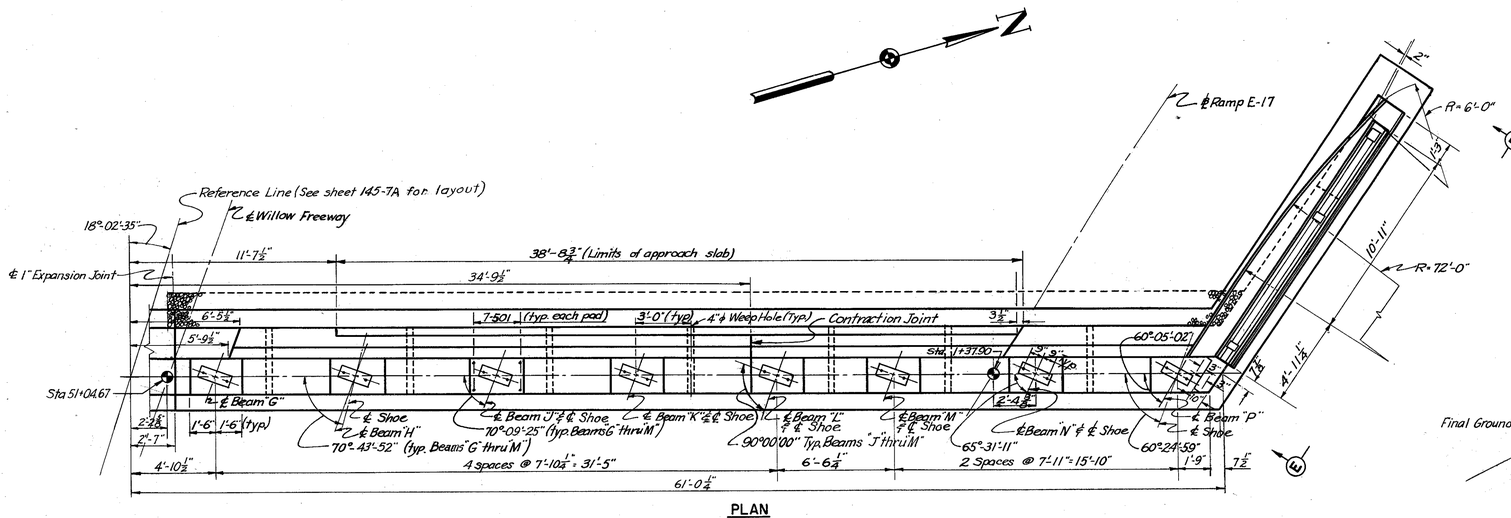
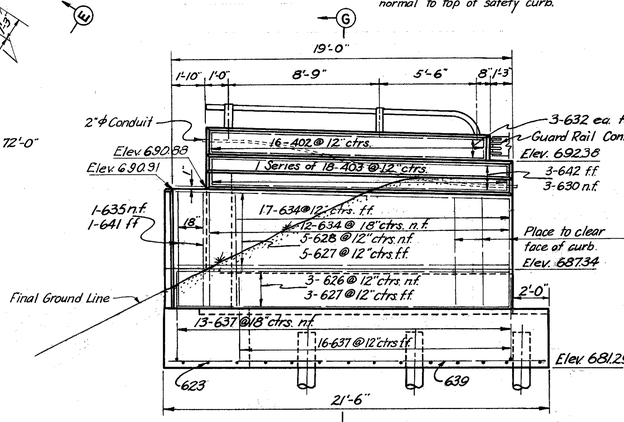
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

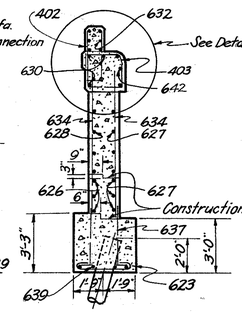


PLAN

Note:
Ends of railing parapet shall be normal to top of safety curb.



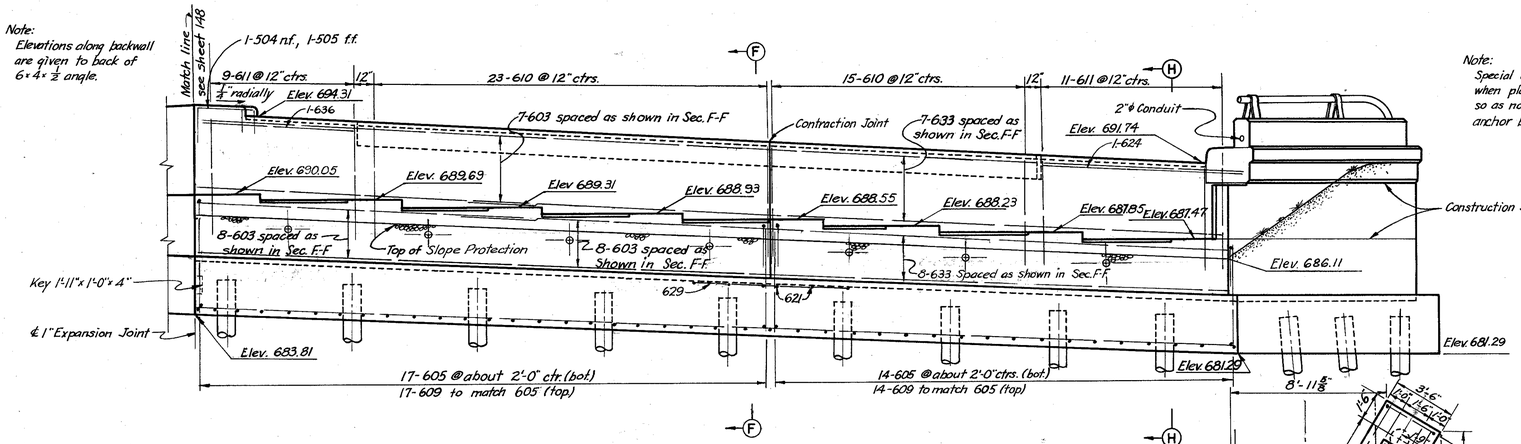
ELEVATION E-E



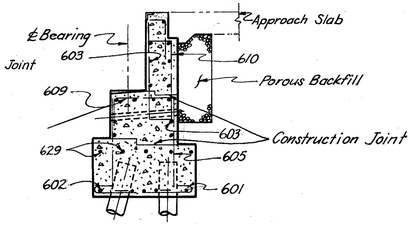
SECTION G-G

Note:
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

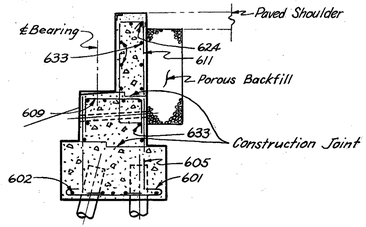
Note:
Elevations along backwall are given to back of 6"x4"x½" angle.



ELEVATION



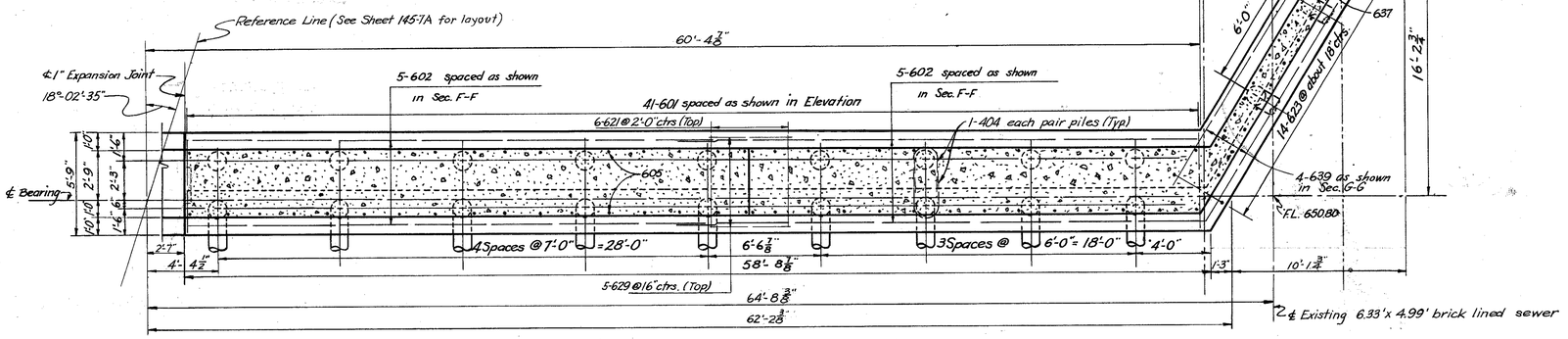
SECTION F-F (shown)
SECTION J-J (similar)



For dimensions and details not shown in view, see section B-B sheet

SECTION H-H

For additional notes see sheet 146.-7A



FOOTING PLAN

Note: Prefix "AB" shall be assigned to all bar marks.

H.N.T.B. BR. NO. 8 PART 7A

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

WEST ABUTMENT - NORTH HALF

WILLOW FREEWAY OVER EAST 14th ST.
BR. NO. CUY-21-1573A STA. 49+30.16
Scale: 1/4" = 1'-0" STA. 51+07.08

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.	A.R.H	C.K.B	JCT	
DATE 7-31-58	DATE 8-20-58	DATE 8-7-58	DATE 11-13-59	SHEET 149

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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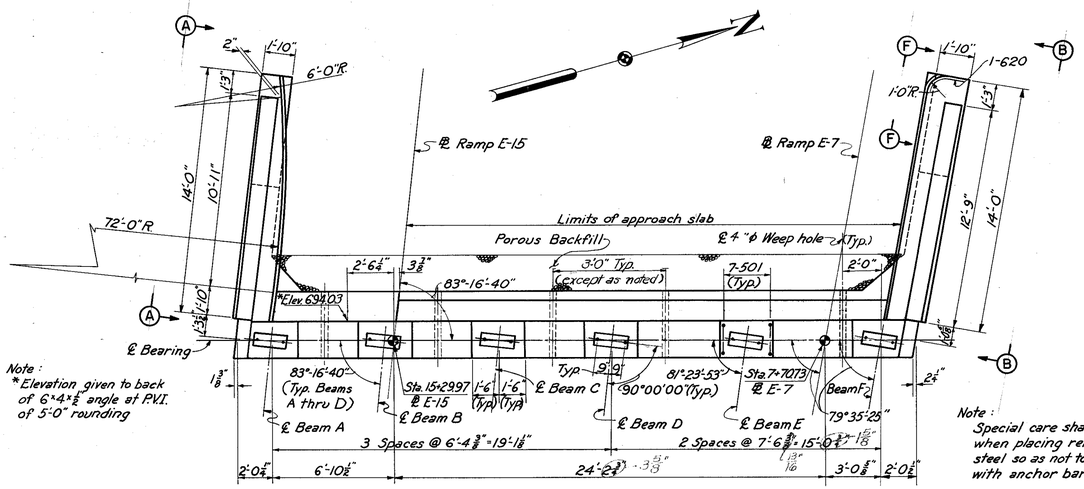
181

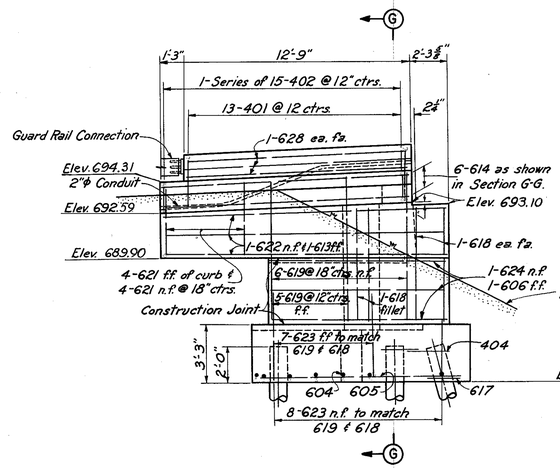
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



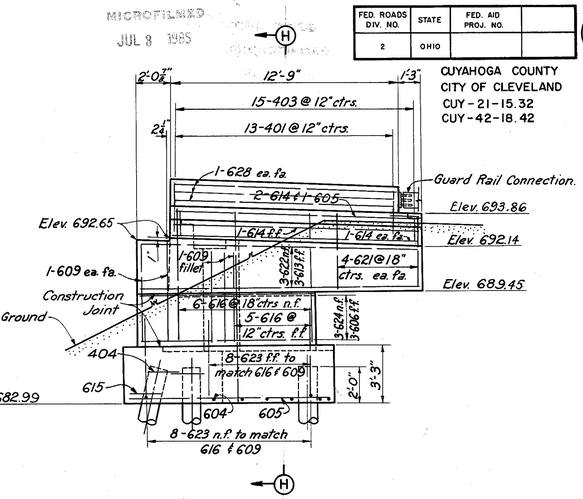
Note :
* Elevation given to back of 6"×4"×5/16" angle at P.V.I. of 5'-0" rounding

Note :
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

PLAN
Top of backwall to follow crown of roadway.

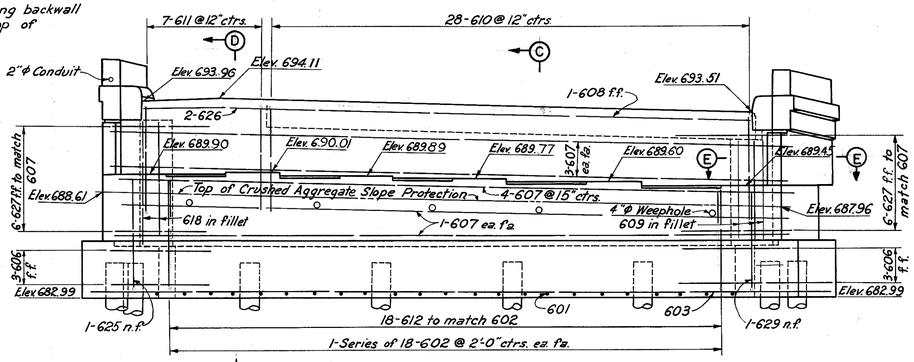


ELEVATION A-A

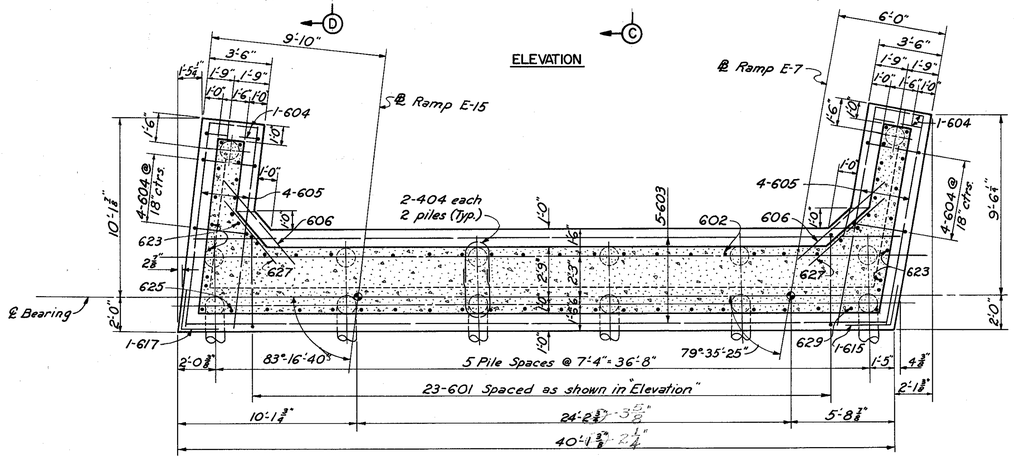


ELEVATION B-B

Note :
Elevations along backwall are given to top of 8×4×1" angle.

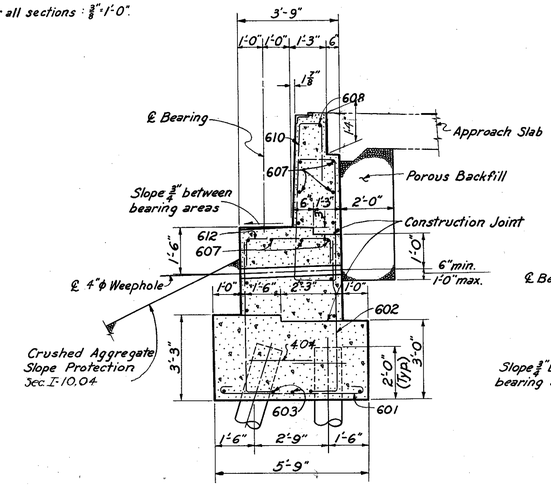


ELEVATION

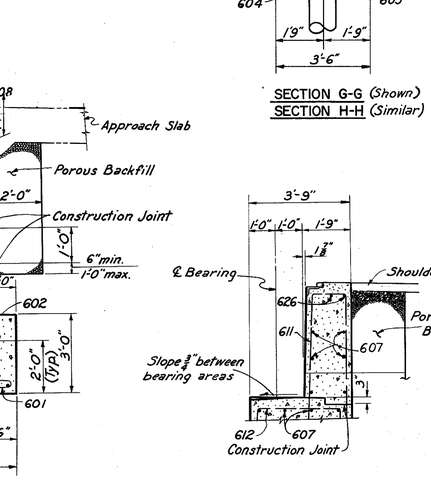


FOOTING PLAN

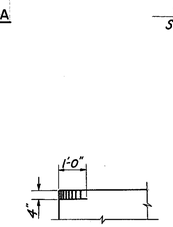
Note : Scale for all sections : 3/8" = 1'-0".



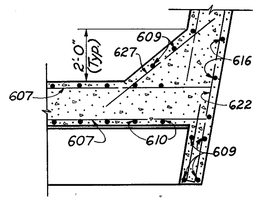
SECTION C-C



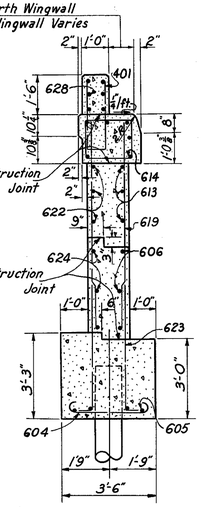
PARTIAL SECTION D-D



VIEW F-F



SECTION E-E



SECTION G-G (Shown)
SECTION H-H (Similar)

NOTES :
All piles shall be 12" cast in place reinforced concrete.
All battered piles shall be battered 3 in 12 in direction shown.
Pile spacing given along bottom of footing.
For details of end dam, see sheet 173-7A
For masonry plate details, see sheet 173-7A
For Railing Post spacing, details of Railing and Guard Rail Connection, see sheet 175-7A
Reinforcement bars shall be 3 inches clear from bottom of footing and 2 inches elsewhere.
n.f. = near face ; f.f. = far face ; ea. f.a. = each face.
For Reinforcement Schedule, see sheet 131-7A
For location of lighting conduit, see sheet 176-7A
Ends of railing parapet to be normal to top of safety curb.
For slope protection details, see sheet 174-7A
Backfill shall be placed prior to placing of curb.

Note : Prefix "AC" shall be assigned to all bar marks.

H.N.T.B. BR. NO. 9 PART 7A

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

ABUTMENT E-15

RAMP E-15 OVER EAST 14th. ST.
BR. NO. CUY-21-1573 B STA. 15+27.70
Scale : 1/4" = 1'-0" Except as noted. STA. 16+96.91

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN C.C.D.	TRACED RJK	CHECKED C.A.B.	REVIEWED JCT	REVISED 9-21-60
DATE 3-20-59	DATE 3-25-59	DATE 3-25-59	DATE 11-13-59	SHEET 150

EAST ABUTMENT

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
601	91	6'-9"	100	5'-5"					923
602	18	4'-6"	100	3'-2"					122
603	20	26'-9"	Str.						804
604	5	19'-8"	108	4'-6"	15'-2"	1/2	12		148
605	1	15'-3"	124	11'-9"	1'-9"	2'-0"	3		23
606	1	11'-9"	Str.						18
607	2	9'-6"	Str.						29
608	3	11'-6"	Str.						52
609	151	5'-7"	104	4'-11"	10"				1266
610	62	8'-3"	105	3'-5	2'-7"				768
611	1	13'-4"	108	11'-6"	2'-0"	12	1		20
612	45	24'-3"	Str.						1439
613	15	28'-6"	Str.						642
614	15	22'-9"	Str.						513
615	75	15'-8"	112	1'-5"	6'-0"	4'-8"	11"		1765
616	37	15'-7"	109	1'-5"	6'-0"				866
617	2	8'-0"	Str.						24
618	1	11'-0"	Str.						17
619	1	8'-6"	Str.						13
620	3	12'-2"	124	9'-9"	8"	1'-11"	3		55
621	3	11'-4"	108	9'-7"	1'-11"	12	1		51
622	1	10'-0"	Str.						15
623	2	15'-9"	Str.						47
624	8	6'-0"	Str.						72
625	4	12'-0"	Str.						72
626	1	9'-9"	Str.						15
627	2	15'-6"	Str.						47
628	12	13'-6"	Str.						243
*629	12	12'-3"	Str.						
630	22	7'-6"	Str.						248
631	8	5'-9"	Str.						69
632	1	3'-3"	Str.						5
633	2	5'-0"	Str.						15
634	13	3'-9"	Str.						73
635	1	7'-10"	155	3'-3"	1'-11"				12
636	10	4'-3"	Str.						64
637	4	5'-4"	108	3'-6"	1'-11"	6	12		32
638	8	5'-3"	Str.						63
639	5	10'-6"	Str.						79
640	9	7'-0"	Str.						95
641	9	5'-6"	Str.						74
642	8	8'-10"	124	3'-7"	6"	5'-0"	12		106
643	3	4'-10"	133	3'-1"	1'-9"	2'-6"			22
644	3	4'-1"	133	2'-5"	1'-8"	2'-0"			18
645	3	4'-9"	133	4'-2"	7"	2'-6"			21
646	3	4'-0"	133	3'-4"	8"	2'-0"			18
647	2 Series of 3	3'-6" to 2'-0"	Str.					3"	25
648	2 Series of 3	3'-0" to 3'-6"	Str.					3"	29
649	8	17'-3"	109	1'-5"	6'-10"				207
650	2	8'-1"	155	3'-6"	1'-11"				24
651	1	8'-5	155	3'-10"	1'-11"				13
501	119	4'-7"	105	1'-8"	1'-7"				569
502	2	0'-6"	105	2'-9"	2'-0"				14
503	1	6'-0"	105	2'-3"	2'-0"				6
504	1	7'-0"	105	3'-3"	2'-0"				7
401	28	5'-7"	105	8"	2'-7"				105
402	2 Series of 15	4'-1" to 6'-5"	109	1'-6" to 8"	1'-4"			2"	105
403	10	5'-3"	122	8"	1411"				35
404	36	5'-10"	144	2'-0"	1'-10				140
								Total	12,562

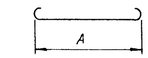
WEST ABUTMENT (BRIDGE NO. 8)

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
601	73	6'-9"	100	5'-5"					740
602	30	30'-0"	Str.						1352
603	30	17'-0"	Str.						766
604	5	17'-6"	Str.						131
605	108	6'-0"	104	5'-4"	10"				973
606	1	11'-6"	Str.						17
607	2	9'-3"	Str.						28
608	15	17'-0"	Str.						383
609	54	7'-7"	105	3'-5"	2'-3"				615
610	65	16'-0"	112	1'-5"	6'-0"	4'-8"	11"		1562
611	40	15'-3"	109	1'-5"	6'-0"				916
612	3	11'-7"	124	9'-3"	0'-8"	1'-11"	4		52
613	4	5'-0"	Str.						30
614	1	13'-5"	126	9'-3"	0'-6"	4'-0"			20
615	2	19'-8"	126	15'-6"	0'-6"	4'-0"			59
616	2	12'-6"	Str.						38
617	6	3'-6"	Str.						32
618	2	4'-9"	Str.						14
619	14	8'-3"	Str.						173
620	6	13'-6"	Str.						122
621	6	5'-3"	Str.						47
*622	6	12'-3"	Str.						
623	22	4'-6"	100	3'-2"					149
624	1	11'-0"	Str.						17
625	1	10'-6"	Str.						16
626	3	20'-4"	108	18'-6"	1'-11"	12	5		92
627	8	16'-0"	Str.						192
628	5	22'-8"	126	18'-6"	0'-6"	4'-0"			170
629	5	8'-6"	Str.						64
630	6	16'-9"	Str.						151
631	9	6'-6"	Str.						88
*632	6	15'-6"	Str.						
633	15	24'-0"	Str.						386
634	29	7'-6"	Str.						326
635	4	6'-0"	Str.						18
636	1	8'-6"	Str.						13
637	46	5'-7"	104	4'-11"	0'-10"				386
638	1	7'-9"	Str.						12
639	4	21'-3"	Str.						128
640	4	3'-0"	Str.						18
641	2	5'-4"	108	3'-6"	1'-11"	6	12		16
642	3	17'-6"	Str.						79
643	3	13'-3"	Str.						60
644	1	15'-0"	124	11'-6"	1'-9"	2'-0"	4		23
501	98	3'-1"	105	1'-8"	10"				315
502	1	7'-4"	105	2'-7"	2'-6"				8
503	1	6'-11"	105	2'-2"	2'-6"				7
504	1	7'-6"	105	2'-3"	2'-6"				8
505	1	7'-11"	105	3'-2"	2'-6"				8
401	1 Series of 15	4'-1" to 6'-5"	109	0'-6" to 1'-8"	1'-4"			2"	53
402	29	5'-7"	105	0'-8"	2'-7"				121
403	1 Series of 18	4'-1" to 6'-5"	109	0'-6" to 1'-8"	1'-4"			1 5/8"	63
404	28	5'-10"	144	2'-0"	1'-10"				109
								Total	11,361

ABUTMENT E-15 (BRIDGE NO. 9)

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
401	26	5'-5"	105	8"	2'-6"				94
402	1 Series of 15	4'-1" to 6'-5"	109	6" to 1'-6"	1'-4"			2"	53
403	15	6'-5"	109	1'-8"	1'-4"				64
404	12	5'-10"	144	2'-0"	1'-10"				47
501	42	4'-5"	105	1'-8"	1'-6"				193
601	23	6'-9"	100	5'-5"					233
602	2 Series of 18	6'-9" to 7'-2"	104	5'-11" to 6'-4"	1'-0"			5/16"	376
603	5	39'-9"	Str.						299
604	12	4'-6"	100	3'-2"					81
605	9	11'-3"	Str.						152
606	12	6'-6"	Str.						117
607	14	37'-9"	Str.						794
608	1	30'-0"	Str.						45
609	7	5'-9"	Str.						61
610	28	14'-4"	112	1'-5"	5'-6"	4'-2"	7"		603
611	7	14'-2"	109	5'-6"	1'-4"				149
612	18	6'-1"	105	3'-5"	1'-6"				164
613	6	12'-3"	Str.						110
614	11	13'-6"	Str.						223
615	1	3'-10"	108	2'-0"	2'-0"	12"	2"		6
616	11	7'-6"	Str.						124
617	1	3'-10"	148	2'-0"	2'-0"				6
618	6	6'-3"	Str.						59
619	11	7'-9"	Str.						128
620	1	4'-0"	123	2'-0"	1'-4"	8"			6
621	16	4'-0"	Str.						96
622	6	19'-5"	126	15'-6"	9"	3'-9"			175
623	31	5'-10"	104	5'-0"	1'-0"				272
624	6	11'-3"	104	9'-6"	1'-11"				101
625	1	7'-2"	104	6'-4"	1'-0"				11
626	2	8'-6"	Str.						25
627	12	3'-0"	Str.						90
628	12	12'-3"	Str.						—
629	1	6'-9"	104	5'-11"	1'-0"				10
								Total	4967

BENDING DIAGRAMS



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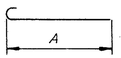

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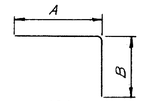

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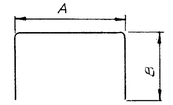

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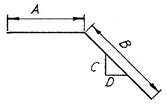

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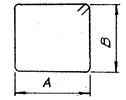

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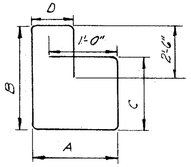

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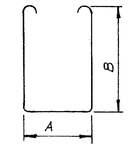

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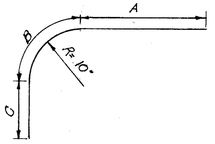

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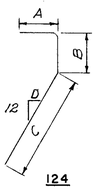

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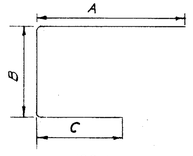

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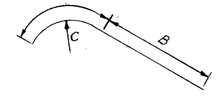

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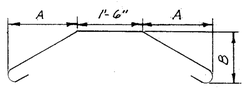

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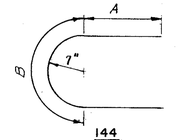

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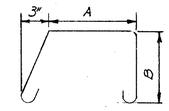

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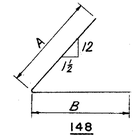
Note: Prefixes shall be assigned to bar marks as follows:
East Abutment "AA"
West Abutment "AB"
Abutment E-15 "AC"



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NOTES:
All bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
For Replacement Schedule see Sheet 103-7A
* Denotes bars to be included with "Item 514, Railing" for payment.

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

151
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

H.N.T.B. BRS. NO. 8 AND 9 PART 7A

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

REINFORCEMENT SCHEDULE—ABUTMENTS

WILLOW FREEWAY & RAMP E-15 OVER E. 14th STREET
STA. 49+30.16 STA. 51+07.08 (WILLOW FREEWAY)
STA. 15+27.70 STA. 16+96.91 (RAMP E-15)
BR. NO. CUY-21-1573A & B Scale: None

WILLOW—INNER BELT FREEWAY

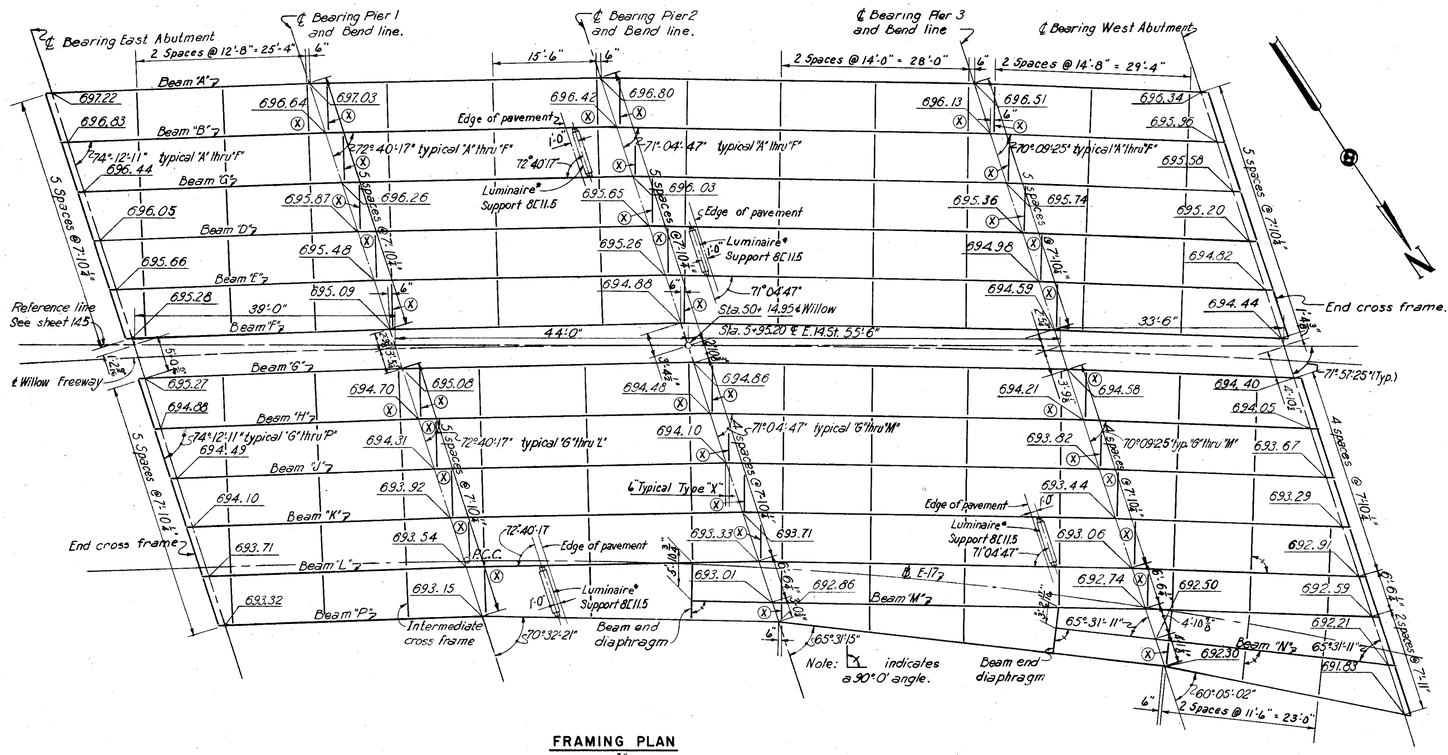
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN ARL	TRACED	CHECKED RA	REVIEWED JCT	REVISED
DATE 8-28-58	DATE	DATE 9-4-58	DATE 11-13-59	SHEET 151

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

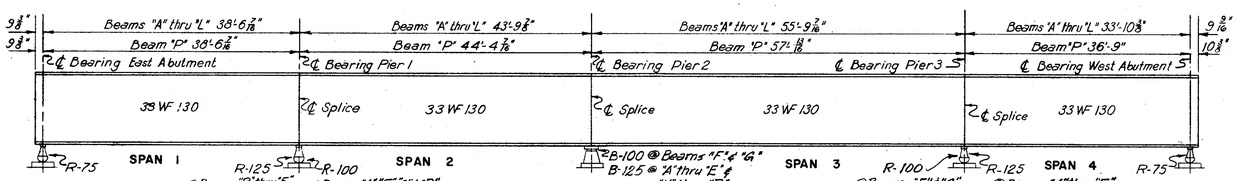
152
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

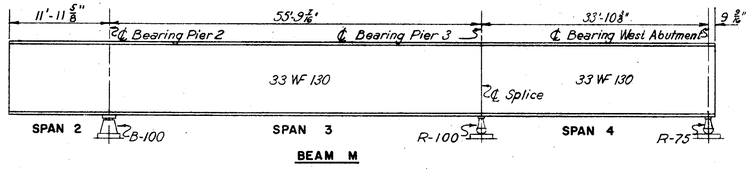


FRAMING PLAN

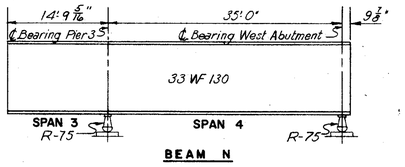
Scale: 3/32" = 1'-0"



BEAMS A THRU L & BEAM P



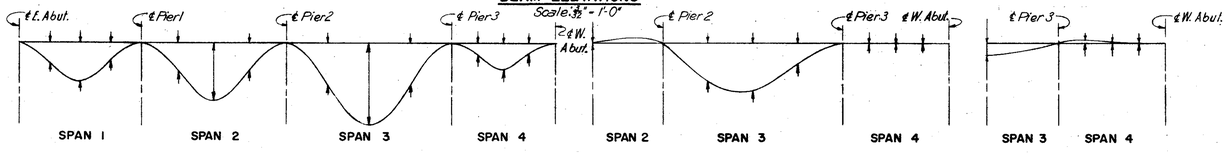
BEAM M



BEAM N

BEAM ELEVATIONS

Scale: 3/32" = 1'-0"



BEAMS A THRU L & BEAM P

BEAM M

BEAM N

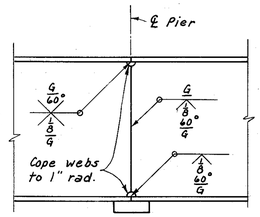
BEAM DEFLECTION DIAGRAMS

No Scale.

These diagrams locate points only and do not necessarily show the correct direction of deflections.

BEAM SPLICE WELDING PROCEDURE

1. Raise beams "A" thru "L" ½" ℄ beam "P" 5/8" at Pier 1
2. Butt-weld the beam flanges and web at Pier 2, using the following sequence: make two passes on each flange, then two on the web; repeat, using one pass at each location, until welds are completed.
3. Weld Type "X" crossframes into position.
4. Lower the beam ends to final position.
5. Repeat step 2 at Piers 1 and 3 for all beams. No raising of beams at abutments required.



BEAM SPLICE DETAIL

Scale: 3/4" = 1'-0"

TOP OF PAVEMENT ELEVATIONS

BEAM	SPAN 1			SPAN 2			SPAN 3			SPAN 4		
	1/4	℄	3/4	1/4	℄	3/4	1/4	℄	3/4	1/4	℄	3/4
A	697.17	697.12	697.07	696.97	696.91	696.86	696.72	696.65	696.58	696.46	696.42	696.38
B	696.78	696.73	696.69	696.58	696.52	696.47	696.34	696.26	696.19	696.08	696.04	696.00
C	696.39	696.34	696.30	696.20	696.14	696.08	695.95	695.88	695.81	695.70	695.66	695.62
D	696.00	695.96	695.91	695.81	695.75	695.70	695.57	695.49	695.42	695.32	695.28	695.24
E	695.61	695.57	695.52	695.42	695.36	695.31	695.18	695.11	695.04	694.93	694.89	694.85
F	695.23	695.18	695.14	695.03	694.98	694.92	694.80	694.73	694.66	694.55	694.51	694.47
G	695.22	695.17	695.12	695.02	694.96	694.91	694.79	694.72	694.65	694.53	694.49	694.4
H	694.83	694.78	694.74	694.61	694.58	694.54	694.41	694.34	694.27	694.16	694.12	694.09
J	694.44	694.40	694.35	694.25	694.20	694.15	694.02	693.95	693.88	693.78	693.74	693.70
K	694.05	694.00	693.96	693.87	693.81	693.76	693.64	693.57	693.50	693.40	693.36	693.32
L	693.66	693.62	693.58	693.48	693.42	693.38	693.25	693.18	693.12	693.02	692.98	692.94
M							*693.09	692.93	692.86	692.80	692.70	692.66	692.63
N										*692.64	692.43	692.35	692.28
P	693.28	693.23	693.19	693.07	693.00	692.92	692.71	692.57	692.43	692.18	692.06	691.94

* Denotes end of beam

DEAD LOAD DEFLECTION TABLE

BEAM	SPAN 1						SPAN 2						SPAN 3						SPAN 4					
	1/4		℄		3/4		1/4		℄		3/4		1/4		℄		3/4		1/4		℄		3/4	
	D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		D.L. DEFL.	
	CON.	TOT.	CON.	TOT.	CON.	TOT.	CON.	TOT.	CON.	TOT.	CON.	TOT.	CON.	TOT.	CON.	TOT.	CON.	TOT.	CON.	TOT.	CON.	TOT.	CON.	TOT.
A	3/16"	3/16"	1/16"	1/16"	0"	1/8"	0	0	0	0	0	0	0"	3/16"	1/16"	1/8"	0"	1/8"	0	0	0	0	0	0
B	3/16"	3/16"	1/16"	1/16"	0"	1/16"	0	0	0	0	0	0	1/16"	1/8"	1/16"	1/8"	0"	1/16"	0	0	0	0	0	0
C	1/8"	1/8"	1/16"	3/16"	1/16"	1/16"	0	0	0	0	0	0	1/16"	1/8"	1/16"	1/8"	1/16"	1/8"	0	0	0	0	0	0
D	1/16"	1/16"	1/16"	1/8"	1/16"	1/16"	0	0	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0
E	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0
F	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0
G	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0
H	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0
J	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0
K	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0
L	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	0	0
M											*0	0	1/16"	1/16"	3/16"	1/8"	1/16"	0"	0	0	0	0	0	0
N																	*1/16"	1/16"	0	0	0	0	0	0
P	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	-1/16"	-1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	1/16"	1/16"	1/16"	1/16"

NOTES:

In Dead Load Deflection Table, CON = Dead load deflection due to concrete.
TOT. = Total dead load deflection

On Framing Plan, Elevations shown are to top of pavement, 0.81' above top of beams.

Deflections are given at the quarter points and are measured to the nearest ⅛ inch

For details of rocker masonry plates see sheet 173-7A

For other rocker details and details of bolsters see Ohio Standards, Sheet RB-1-55.

For details of end dams see sheet 173-7A

**For under deck lighting details see sheet 176-7A & 177-7A*

The W beams shall not be cambered but shall be fabricated so that any curved beam will be placed with the convex flange up.

For cross frame details see sheet 154-7A

H.N.T.B. BR. NO. 8 PART 7A

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

FRAMING PLAN

WILLOW FREEWAY OVER EAST 14th ST.
BR. NO. CUY-21-1573 A STA. 49+30.16
Scale: As noted STA. 51+07.08

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
N.N.		T.J.A.	W.C.T.	
DATE 7-1-58	DATE	DATE 7-28-58	DATE 11-13-59	SHEET 152

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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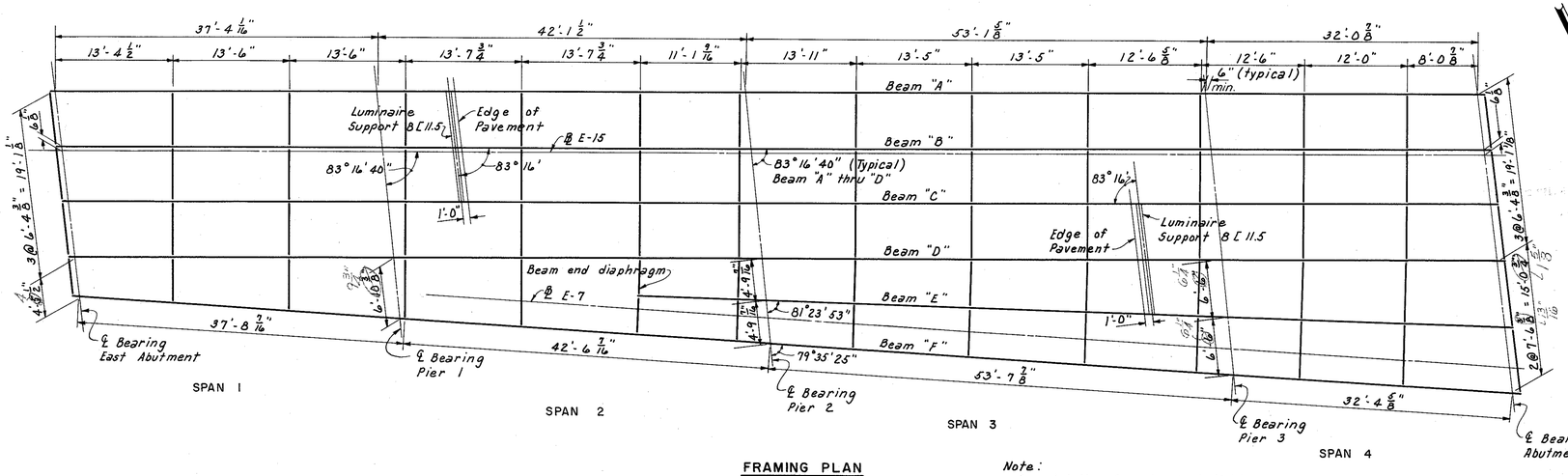
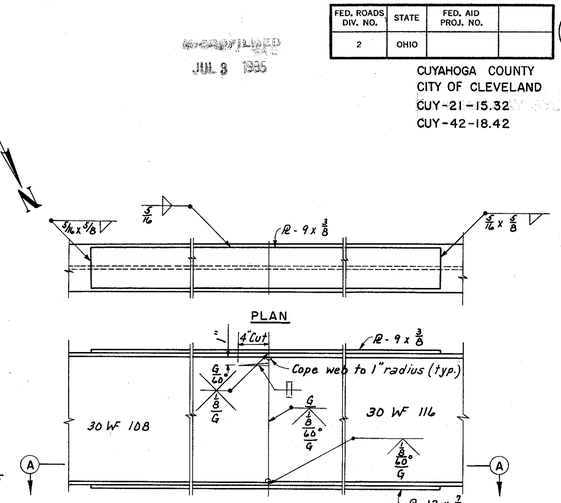
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

MODIFIED
JUL 3 1995

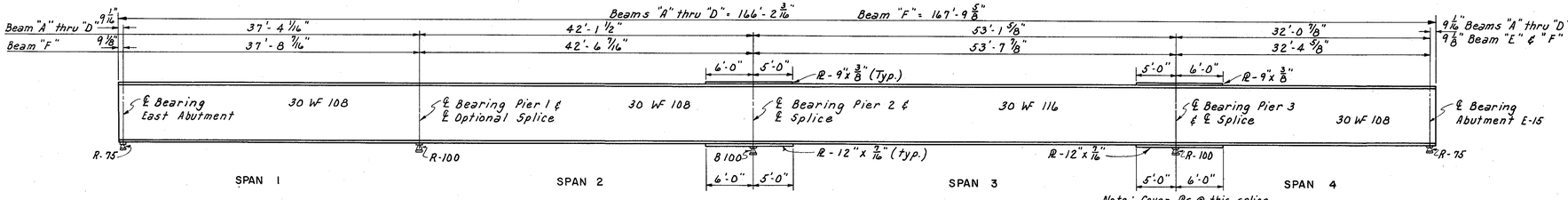


FRAMING PLAN
Scale: 1/8" = 1'-0"

Note:
For details of underdeck lighting see sheets 176 & 177.

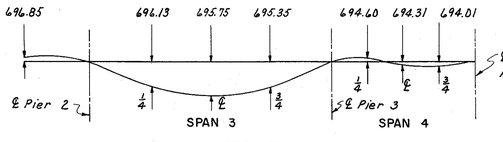


Note:
"G" indicates a smooth grind in the direction of the stress.



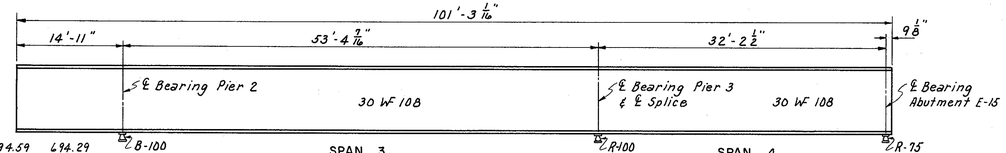
Note: Cover Pls @ this splice required for beam "D" only.

BEAMS A THRU D AND F



BEAM E

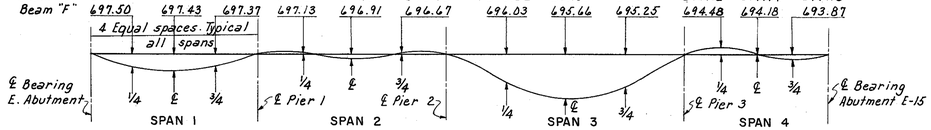
Note:
Elevations shown above base lines are top of pavement elevations at 1/4 points between supports.



BEAM E

BEAM ELEVATIONS
No Scale

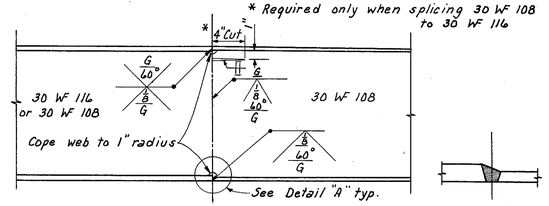
Beam "A"	697.94	697.83	697.70	697.36	697.15	696.93	696.36	695.98	695.60	694.88	694.59	694.29
Beam "B"	698.05	697.93	697.80	697.48	697.27	697.06	696.47	696.08	695.70	694.97	694.68	694.40
Beam "C"	697.84	697.77	697.67	697.37	697.16	696.94	696.34	695.97	695.58	694.85	694.56	694.28
Beam "D"	697.64	697.59	697.50	697.26	697.05	696.83	696.22	695.85	695.47	694.72	694.44	694.16
Beam "F"	697.50	697.43	697.37	697.13	696.91	696.67	696.03	695.66	695.25	694.48	694.18	693.87



BEAMS A THRU D AND F

BEAM DEFLECTION DIAGRAMS

NOTES:
Top of beam elevations are exclusive of cover plates.
For details of end dams, see sheet 173-7A
For crossframe details, see sheet 155-7A
For Drainage Details, see sheet 174-7A
For details of rocker masonry plates, see sheet 173-7A
For other rocker and bolster details, see Ohio Standard Drawing RB-1-55.
Elevations shown in table are located at intersections of ℄ bearing and ℄ beams.



BEAM SPLICE

BEAM SPLICE WELDING PROCEDURE

1. Raise ends of beams "A" thru "D" and "F" 3/8" at Pier 3.
2. Butt-weld the beam flanges and web at Pier 2 using the following sequence: make two passes on each flange then two on the web; repeat, using one pass at each location, until welds are completed.
3. Weld the top and bottom cover plates.
4. Lower the beam ends at Pier 3 to final position.
5. Repeat step 2 and, in the case of beam "D", also step 3 at Pier 3. No raising of beam ends @ Abutment E-15 required. (The above procedure assumes that no splice is made at Pier 1. If the beams are spliced at Pier 1, only step 2 is required.)

ELEVATIONS AND DEFLECTIONS

BEAM	EAST ABUTMENT		SPAN 1						PIER NO. 1		SPAN 2						PIER NO.2		SPAN 3								PIER NO. 3		SPAN 4						ABUTMENT E-15	
			1/4		℄		3/4				1/4		℄		3/4				1/4			℄			3/4											
	TOP OF BEAM ELEVATION	TOP OF PVMT. ELEVATION	D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		TOP OF BEAM ELEVATION	TOP OF PVMT. ELEVATION	D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		TOP OF BEAM ELEVATION	TOP OF PVMT. ELEVATION	D.L. DEFL.		CONVEXITY	D.L. DEFL.		CONVEXITY	D.L. DEFL.		CONVEXITY	TOP OF BEAM ELEVATION	TOP OF PVMT. ELEVATION	D.L. DEFL.		D.L. DEFL.		D.L. DEFL.		TOP OF BEAM ELEVATION	TOP OF PVMT. ELEVATION
			CON	TOT	CON	TOT	CON	TOT			CON	TOT	CON	TOT	CON	TOT			CON	TOT		CON	TOT		CON	TOT					CON	TOT	CON	TOT	CON	TOT		
A	697.25	698.05	3/16	3/16	1/4	1/4	1/8	1/8	696.73	697.53	0	0	1/16	1/16	0	0	695.90	696.70	3/8	3/8	1/2	9/16	5/8	1/4	3/8	3/8	5/8	694.36	695.16	-1/16	-1/16	0	0	0	0	693.20	694.00
B	697.34	698.15	1/8	1/8	3/16	3/16	1/16	1/16	696.87	697.67	0	0	0	0	0	0	696.02	696.82	1/4	1/4	1/2	5/16	3/8	5/8	1/4	1/4	3/4	694.43	695.25	0	0	0	0	0	0	693.32	694.11
C	697.10	697.90	1/8	1/8	3/16	3/16	1/16	1/16	696.70	697.55	0	0	0	0	0	0	695.90	696.70	1/4	1/4	3/8	5/16	3/8	5/8	1/4	1/4	5/8	694.34	695.14	0	0	0	0	0	0	693.20	693.99
D	696.88	697.68	1/8	1/8	1/8	1/8	1/16	1/16	696.62	697.42	0	0	0	0	0	0	695.77	696.57	1/4	1/4	1/2	5/16	3/8	3/4	3/16	3/16	3/4	694.22	695.02	0	0	0	0	0	0	693.06	693.87
E											End of beam				-1/16	-1/16	695.68	696.48	1/4	1/4	5/8	5/16	3/8	7/8	1/4	1/4	7/8	694.08	694.88	0	0	0	0	1/16	1/16	692.90	693.70
F	696.74	697.54	1/4	1/4	5/16	5/16	3/16	3/16	696.49	697.29	0	0	0	0	-1/16	-1/16	695.61	696.41	3/8	3/8	3/8	9/16	5/8	1	3/8	3/8	1	693.93	694.76	-1/16	-1/16	0	0	0	0	692.75	693.55

NOTES:
The beams in Span 3 shall be cambered as follows:
Where the sum of the deflections and convexity is 3/4" to 1" the required camber will be 1", and if greater than 1", the required camber will be the same as the sum.
Beams in Span 1, 2 & 4 do not require camber, but shall be fabricated so that any curved beam will be placed with the convex flange up.
Deflections are given at the quarter points and are measured to the nearest 1/16 inch.
In Elevation and Deflection Table, the following abbreviations are used:
(D.L. Defl.) denotes dead load deflections. (Tot.) refers to total deflections from dead load of steel and concrete.
(Con.) denotes deflections for concrete.
Convexity denotes corrections required for vertical curvature of the roadway gradient.
(PVMT)- denotes pavement.

Revised 9-21-60.

H.N.T.B. BR. NO. 9 PART 7A

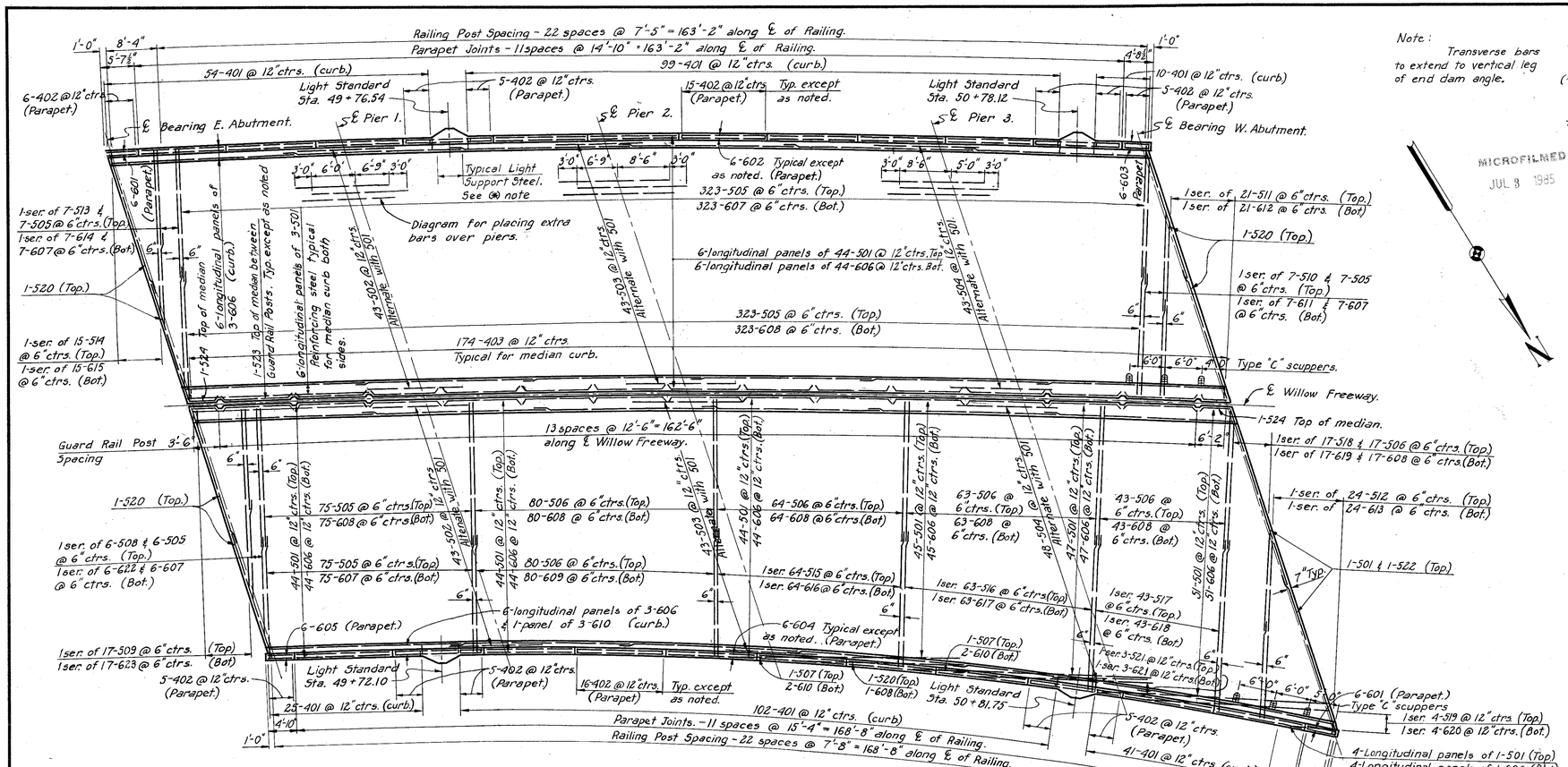
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN

RAMP E-15 OVER EAST 14th ST.
BR. NO. CUY-21-1573 B STA. 15+27.70
Scale: As noted STA. 16+96.91

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN R.A.	TRACED RJK AEK	CHECKED AL	REVIEWED JCT	REVISED 7-22-60
DATE 8-8-58	DATE 5-18-59	DATE 8-15-58	DATE 11-13-59	SHEET 153



Note: Transverse bars to extend to vertical leg of end dam angle.

Note: Prefix "SA" shall be assigned to all bar marks.

NOTES:
Bars of a series shall vary in length by a constant increment.
For replacement schedule, see Sh. 103.-7A
All bar dimensions are given out to out.
(*) Bars 451 thru 456 and 651 thru 653 are for light standard support. For their placement and bending diagram, see Sh. 176.-7A
‡ Bars 601 thru 605 are to be included with "Item 5-14, Railing", for payment.

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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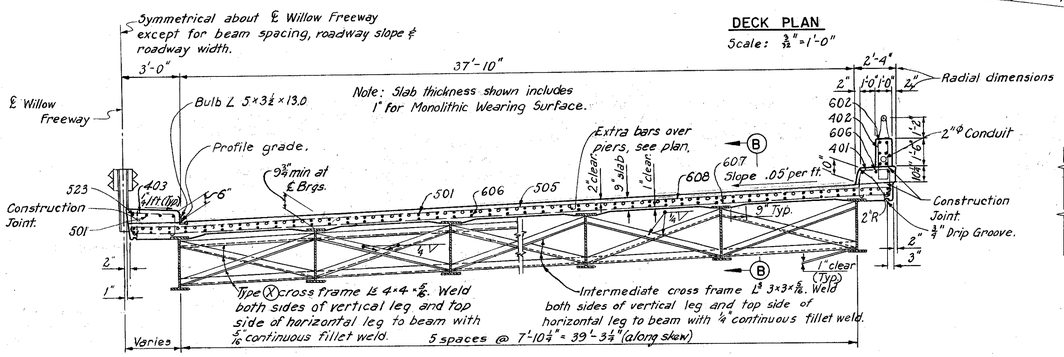
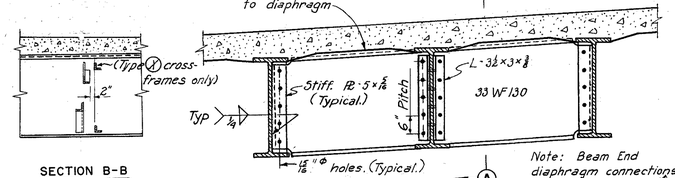
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

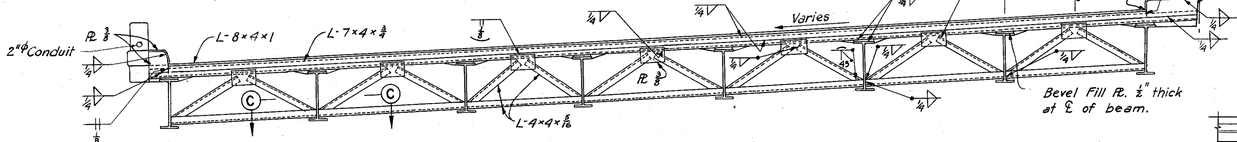
MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (POUNDS)
401	321	5'-1"	122	1'-8"	1'-4"				1090
402	341	4'-3"	105	0'-8"	2'-0"				1310
403	348	5'-2"	122	2'-5"	1'-0"				1201
451 *	8	9'-3"	131	2'-6"	3'-0"	1'-2"			49
452 *	8	10'-3"	131	3'-0"	3'-0"	1'-8"			55
453 *	12	9'-9"	131	3'-2"	3'-0"	1'-0"			78
454 *	8	5'-9"	155	2'-2"	1'-6"				31
455 *	8	6'-5"	155	2'-8"	1'-6"				34
456 *	12	6'-7"	155	2'-10"	1'-6"				53
501	580	30'-9"	5tr						18602
502	86	15'-9"	5tr						1413
503	86	18'-3"	5tr						1637
504	91	16'-6"	5tr						1566
505	816	22'-8"	101	22'-1"					19291
506	347	23'-1"	101	22'-6"					8354
507	2	12'-0"	5tr						25
508	1 ser of 6	11'-6" to 19'-6"	5tr					1-7 3/8"	97
509	1 ser of 17	2'-10" to 30'-7"	101	2'-3" to 30'-0"				1'-8 13/16"	296
510	1 ser of 7	11'-6" to 19'-6	5tr					1'-4"	113
511	1 ser of 21	2'-10" to 30'-7"	101	2'-3" to 30'-0"				1'-4 9/16"	366
512	1 ser of 24	2'-10" to 30'-7"	101	2'-3" to 30'-0"				1'-2 1/8"	418
513	1 ser of 7	11'-6" to 21'-6"	5tr					1'-8"	120
514	1 ser of 15	2'-10" to 30'-7"	101	2'-3" to 30'-0"				1'-11 13/16"	261
515	1 ser of 64	23'-2" to 25'-2"	101	22'-7" to 24'-7"				3/8"	1613
516	1 ser of 63	25'-2" to 28'-2"	101	24'-7" to 27'-7"				9/16"	1752
517	1 ser of 43	28'-2" to 31'-2	101	27'-7" to 30'-7"				5/8"	1331
518	1 ser of 17	10'-3" to 29'-9"	5tr					1'-2 7/8"	355
519	1 ser of 4	7'-0" to 25'-0"	5tr					6'-0"	67
520	7	24'-0"	5tr						175
521	1 ser of 3	10'-0" to 26'-0"	5tr					8'-0"	56
522	1	27'-9"	5tr						29
523	26	13'-0"	141	1'-0"	11'-2"				353
524	4	4'-1"	108	3'-2"	1'-0"				17
601 ‡	12	5'-3"	5tr						—
602 ‡	66	14'-6"	5tr						—
603 ‡	6	4'-3"	5tr						—
604 ‡	66	15'-0"	5tr						—
605 ‡	6	4'-6"	5tr						—
606	579	30'-9"	5tr						26742
607	418	18'-0"	5tr						11301
608	666	26'-6"	5tr						26509
609	80	19'-0"	5tr						2283
610	5	7'-0"	5tr						53
611	1 ser of 7	16'-0 to 24'-0"	5tr					1'-4"	210
612	1 ser of 21	2'-6" to 30'-0"	5tr					1'-4 1/2"	513
613	1 ser of 24	2'-6" to 30'-0"	5tr					1'-2 3/8"	586
614	1 ser of 7	16'-0" to 26'-0"	5tr					1'-8"	221
615	1 ser of 15	2'-6" to 30'-0"	5tr					1'-11 7/16"	366
616	1 ser of 64	19'-0" to 21'-0"	5tr					3/8"	1923
617	1 ser of 63	21'-0 to 24'-0"	5tr					9/16"	2129
618	1 ser of 43	24'-0 to 27'-0"	5tr					5/8"	1647
619	1 ser of 17	6'-6" to 26'-3"	5tr					1'-2 1/16"	418
620	1 ser of 4	7'-0" to 25'-0"	5tr					6'-0"	96
621	1 ser of 3	10'-0" to 26'-0"	5tr					8'-0"	81
622	1 ser of 6	16'-0" to 25'-0"	5tr					1'-9 5/8"	185
623	1 ser of 17	2'-6" to 30'-0"	5tr					1'-8 5/8"	415
651 *	8	9'-5"	141	2'-11"	1'-10"				113
652 *	12	14'-6"	141	5'-3"	3'-0"				261
653 *	4	5'-0"	5tr						30
							Total		138,290



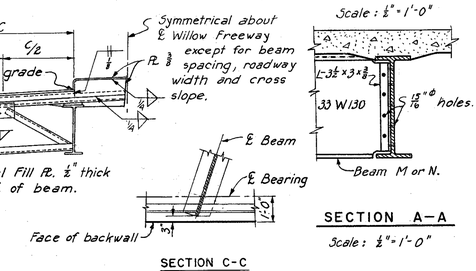


HALF SECTION AT TYPE (X) CROSSFRAMES
Scale: 1/4" = 1'-0"

HALF SECTION AT INTERMEDIATE CROSS FRAMES
Scale: 1/4" = 1'-0"



HALF SECTION AT ABUTMENTS
Scale: 1/4" = 1'-0"



BEAM END DIAPHRAGM
Scale: 1/2" = 1'-0"
SECTION A-A
Scale: 1/2" = 1'-0"

NOTES:
For drainage details, see Sh. 174.-7A
For light standard support and other lighting details, see Sh. 176.-7A & 177.-7A
For Railing, Guard Rail, and Parapet Joint details, see Sh. 175.-7A
In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints, which are parallel to the transverse bars in the slab, and are located near the center of any span.
For bar bending diagrams, see Sh. 170.-7A

H.N.T.B. BR. NO. 8
PART 7A

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

DECK PLAN

WILLOW FREEWAY OVER EAST 14th ST.
BR. NO. CUY-21-1573 A STA. 49+30.16
Scale: As noted STA. 51+07.08
WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.S.J. DATE 9-10-58	A.L. DATE 9-10-58	T.J.P. DATE 9-12-58	J.C.T. DATE 11-13-59	SHEET 154

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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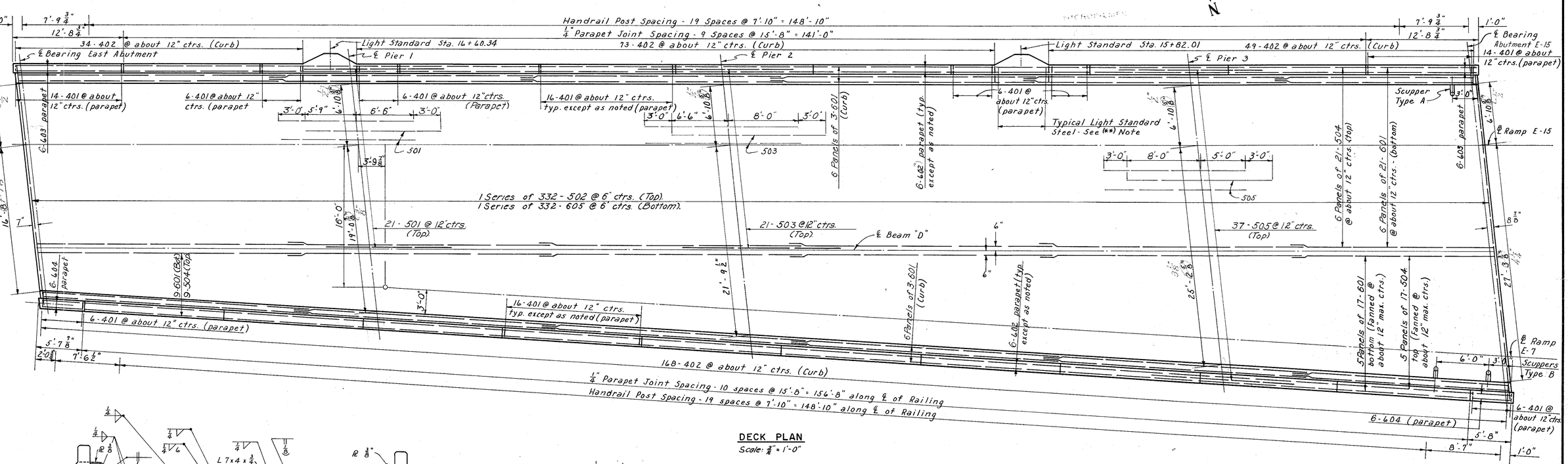
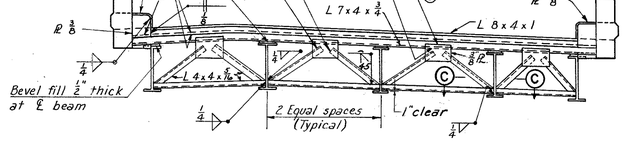
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

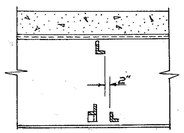
Note: Prefix "5B" shall be assigned to all bar marks.



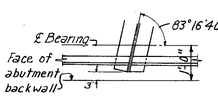


SECTION AT END FINISH

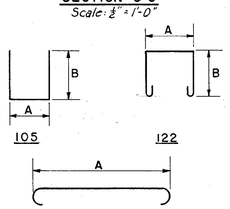
East End Shown, West End similar except for the number of panels.
Scale: 1/4" = 1'-0"



SECTION B-B
Scale: 1/2" = 1'-0"

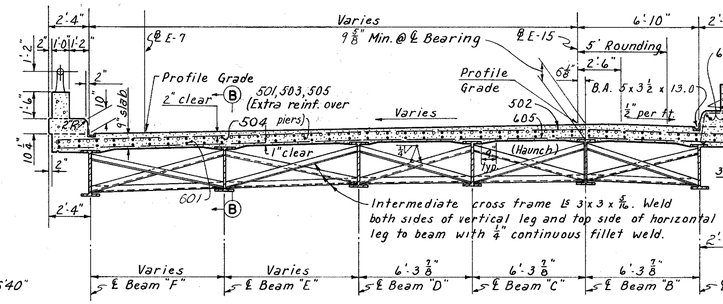


SECTION C-C
Scale: 1/2" = 1'-0"



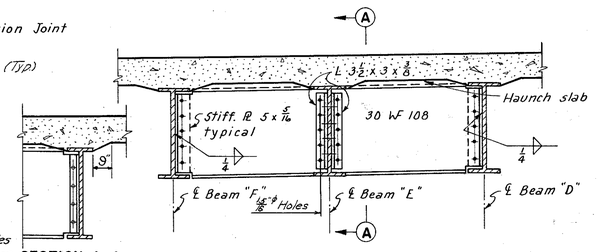
BAR BENDING DIAGRAMS

DECK PLAN
Scale: 3/8" = 1'-0"



TYPICAL SECTION AT INTERMEDIATE CROSS FRAMES
Scale: 1/2" = 1'-0"

Note:
Slab thickness shown includes 1" for monolithic wearing surface.



SECTION A-A
Scale: 1/2" = 1'-0"

BEAM END DIAPHRAGM
Scale: 1/2" = 1'-0"

Note:
Beam end diaphragm connections shall be made with 7/8" ϕ high strength bolts conforming to Supplemental Specs. S-201.

REINFORCEMENT SCHEDULE

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (POUNDS)
401	336	4'-5"	105	0'-8"	2'-0"				991
402	324	5'-1"	122	1'-8"	1'-4"				1100
* 451	4	9'-3"	131	2'-6"	1'-2"				24
* 452	4	10'-3"	131	3'-0"	1'-8"				28
* 453	6	9'-9"	131	3'-2"	1'-0"				40
* 454	4	5'-11"	155	2'-2"					16
* 455	4	6'-5"	155	2'-8"					18
* 456	6	6'-7"	155	2'-10"					26
501	21	15'-3"	Str.						334
502	1 Ser. of 332	28'-5" to 39'-2"	100	21'-3" to 38'-0"				3/8"	11701
503	21	17'-6"	Str.						383
504	220	29'-3"	Str.						6712
505	37	16'-0"	Str.						617
601	256	29'-6"	Str.						11343

REINFORCEMENT SCHEDULE

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (POUNDS)
‡ 602	114	15'-3"	Str.						
‡ 603	12	12'-3"	Str.						
‡ 604	12	5'-0"	Str.						
605	1 Ser. of 332	27'-3" to 38'-0"	Str.					3/8"	16269
* 651	4	9'-5"	141	2'-11"	1'-10"				57
* 652	6	14'-6"	141	5'-3"	3'-0"				131
* 653	2	5'-0"	Str.						15
								Total	49,805

NOTES:

In order to facilitate water curing of the concrete of the deck slab, the placing of the concrete shall progress upgrade. The slab may be placed in sections between transverse construction joints which are parallel to the transverse reinforcing steel and are located near the center of any span.
For Railing details see sheet 175-7A
** For Light Standard Support and other lighting details see sheet 176-7A & 177-7A
For drainage details see sheet 174-7A
For end dam details see sheet 173-7A
* Bars are for the Light Standard Support. For their placement and bending diagram see sheet 176-7A
‡ Bars included for payment with "Item 5-14, Railing"
For replacement bars see sheet 103-7A

H.N.T.B BR. NO. 9 PART 7A

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

DECK PLAN

RAMP E-15 OVER EAST 14th ST.
BR. NO. CUY-21-1573 8 STA. 15+27.70
Scale: As noted STA. 16+96.91
WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

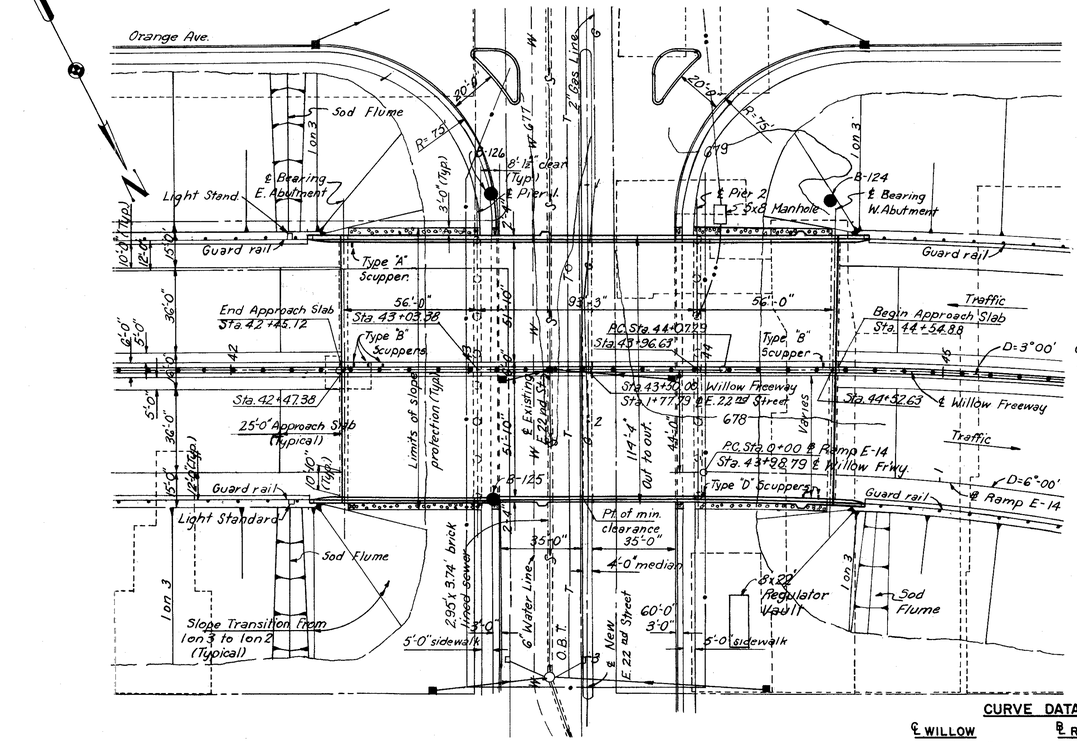
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CKB	AEK	TJP	JCT	7-21-60
DATE 5-13-58	DATE 9-3-58	DATE 6-12-58	DATE 11-13-59	SHEET 155

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

156
181

MICROFILMED
JUL 3 1965

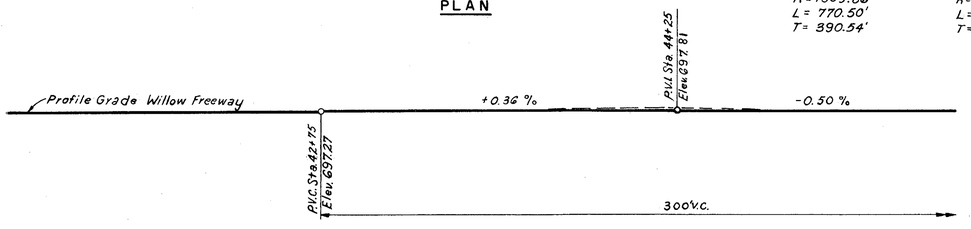
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



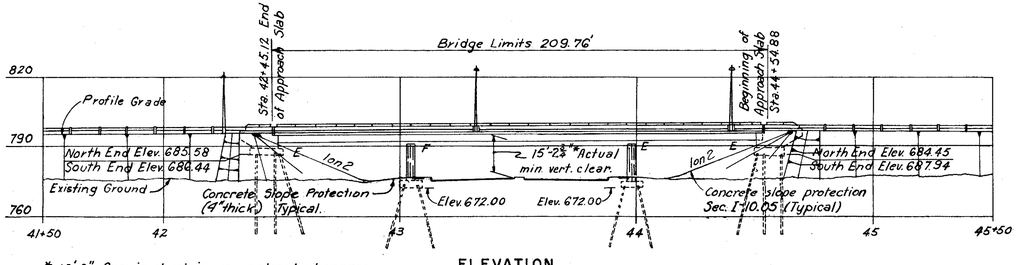
CURVE DATA

℄ WILLOW	℄ RAMP E-14
Δ= 23°06'48"	Δ= 17°52'41"
D= 3°00'00"	D= 6°00'00"
R= 1909.86'	R= 954.93'
L= 770.50'	L= 297.97'
T= 390.54'	T= 150.20'

PLAN



PROFILE



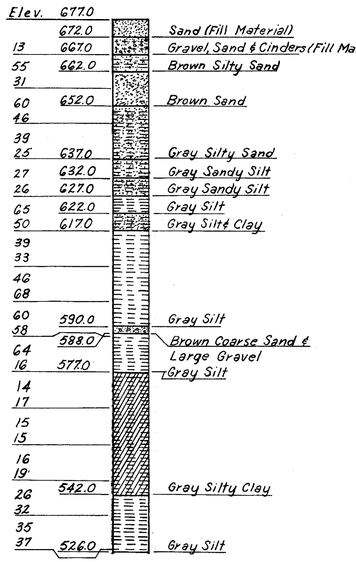
ELEVATION

* 15'-0" Required minimum vertical clearance. Point of actual minimum vertical clearance occurs at East edge of median and the North exterior beam.

LEGEND

- Existing Right of Way
- Existing Edge of Pavement
- Existing Sewer Line — S
- O.B.T. Line — T
- Water Line — W
- Gas Line — G
- Existing Manhole
- Existing Catch Basin
- *Inlet
- *Manhole
- *Sewer
- *2"ø Duct
- *4"ø Duct

* Built under previous contract.



BORING B-125

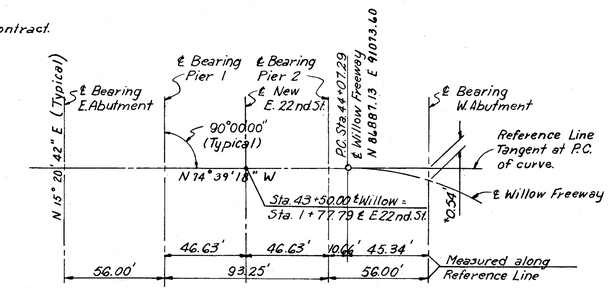
Sta. 43+10 60' Rt.
Vertical Scale: 1"=20'

Note:
The figures to the left indicates the number of hammer blows required to drive the sample spoon 1 ft. They are given at 5' intervals starting at elevation 667.0.

PROPOSED STRUCTURE

Type: Continuous steel beam with reinforced concrete deck and substructure
Spans: 56'-0", 93'-3", 56'-0" along ℄ Willow Frwy.
Roadway: 112'-0" (nominal) F.F. parapets.
Loading: CF 2000-Adequate for A.A.S.H.O. alternate loading.
Surface Course: 1" Monolithic Concrete.
Alignment: Tangent to 3°00' Rt.
Approach Slabs: AS-1-54 (25' Long)
Superelevation: Varies.
Skew: 0°00'.

Note:
Piers for Bridge No. 10 are included in Part 6.



BRIDGE LAYOUT DIAGRAM

No Scale

* Offset measured from reference line to ℄ Willow Freeway along ℄ Bearings

PILE INFORMATION

Location	Diameter	Number	Estimated ave. length
E. Abutment	12"	42	34'
W. Abutment	12"	42	35'
Pier 1	14"	50	26'
Pier 2	14"	50	26'

All piling to be C.I.P. Reinforced Concrete.

NOTES:

Rod soundings only were taken at location B-124 & B-126. The core drilling made at B-125 is plotted.

Detail for slope protection see sheet 174-7A

Pile lengths are based on boring data and are approximate only. The Contractor shall assume full responsibility for length of piling selected for driving.

The following items are not included in the bridge plans. See Roadway Plans for details.
Approach grading, pavements and slabs.
Roadway Guard Rail.
Sod Flumes.
For details of pier plans & drain pipe locations at piers see sheets 172-7A & 174-7A.

H.N.T.B. BR. NO. 10 PART 7A

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

SITE PLAN

WILLOW FREEWAY OVER EAST 22nd. ST.
BR. NO. CUY-21-1559 STA. 42+45.12
Scale: 1"=30' STA. 44+54.88

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

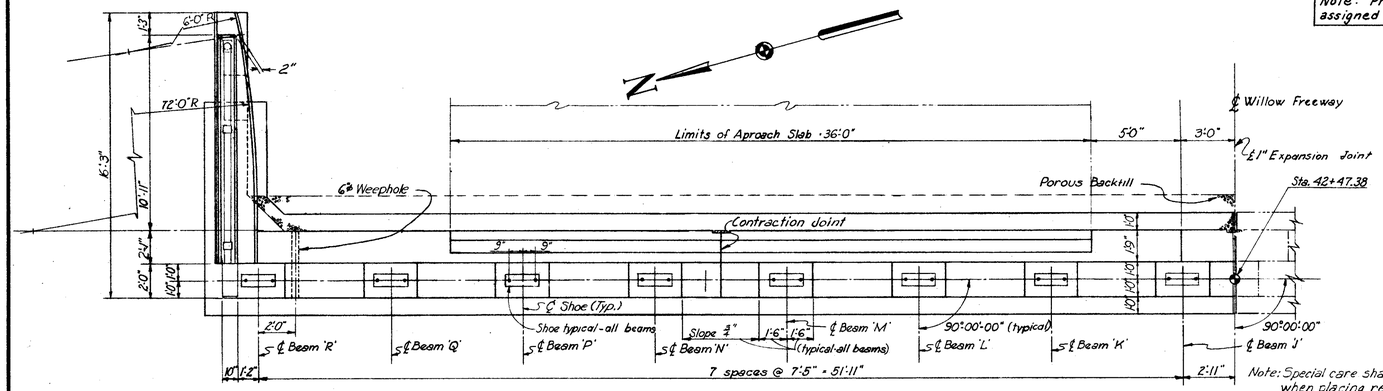
DRAWN AJS	TRACED NES	CHECKED DHK	REVIEWED JCT	REVISED
DATE 4/14/58	DATE	DATE 7-23-58	DATE 11-13-59	SHEET 156

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.		157 / 181
2	OHIO			

MICROFILMED JUL 3 1985

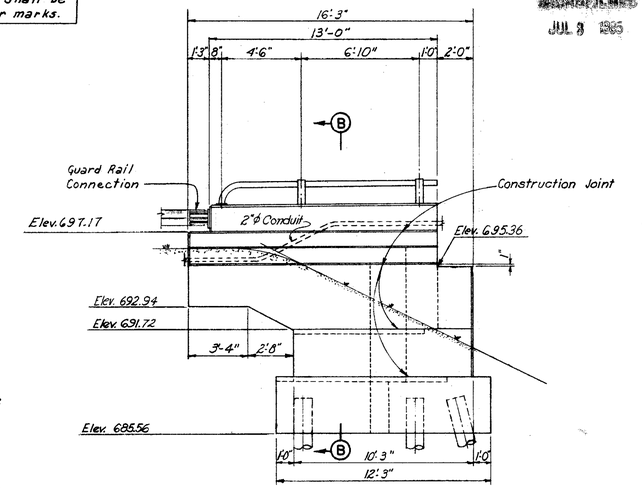
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Note: Prefix "AA" shall be assigned to all bar marks.

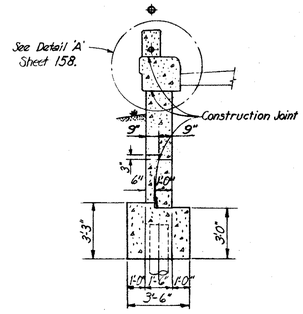


PLAN

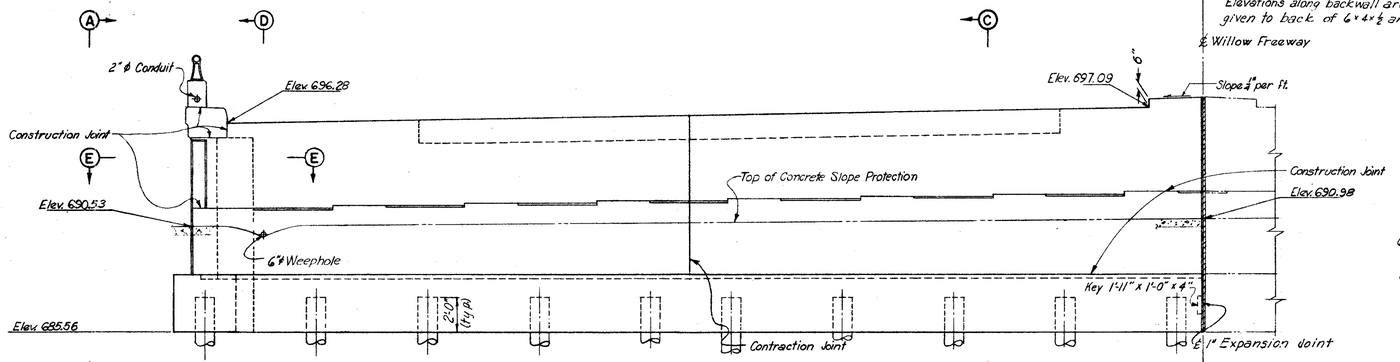
Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.



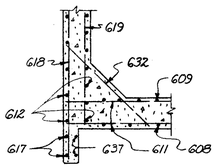
ELEVATION A-A (For reinforcement see sheet 158-7A)



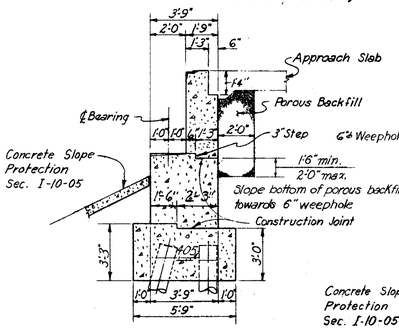
SECTION B-B
(Reinforcement not shown)



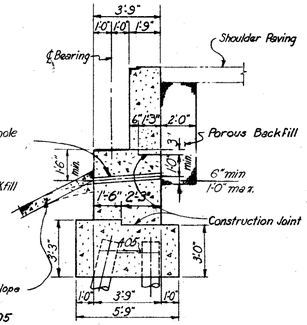
ELEVATION (For Reinforcement see Sheet 158)
Top of backwall to follow crown of roadway



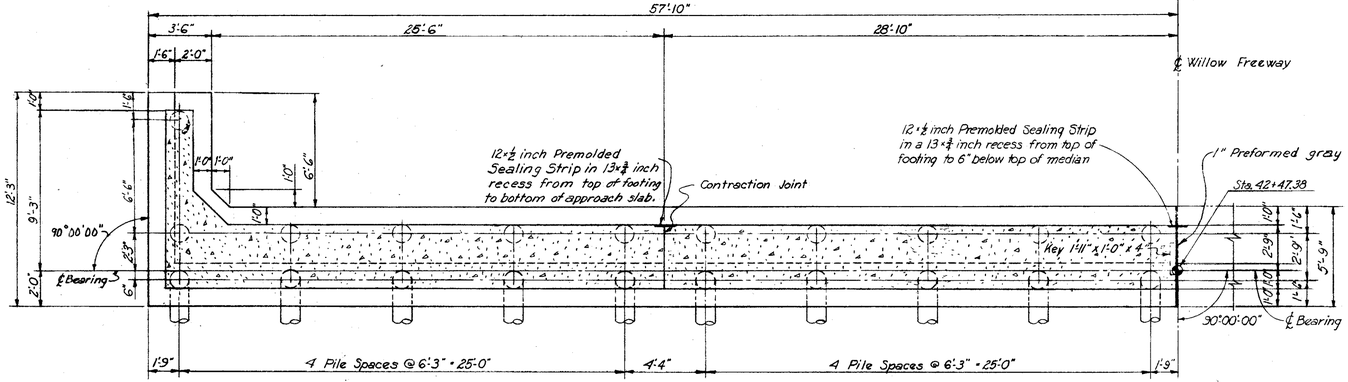
SECTION E-E



SECTION C-C
(Reinforcement not shown, See Sheet 158-7A)



SECTION D-D
(Reinforcement not shown See Sheet 158-7A)



FOOTING PLAN (For Reinforcement see Sheet 158)

BEAM SEAT ELEVATIONS	
Beam	Elevation
J	692.53
K	692.42
L	692.30
M	692.19
N	692.07
P	691.95
Q	691.84
R	691.72

NOTES:

All piles shall be 12" dia. C.I.P. reinforced concrete.
Pile spacing given along bottom of footing.
All battered piles shall be battered 3 in 12 in direction shown.
For Masonry Plate details, see sheet 173-7A.
For Railing details and Guard Rail connection details, see Sheet 175-7A.
For location of lighting conduits, see Sheet 176-7A.
For Reinforcement schedule, see Sheet 161-7A.
For Replacement schedule, see Sheet 103-7A
Reinforcement bars shall be 3 inches clear from bottom of footing and 2 inches elsewhere.
For details of end dam, see Sheet 173-7A
For slope Protection details, see Sheet 174-7A
n.f. = near face; f.f. = far face; ea. fa. = each face.
Backfill shall be placed prior to placing of curb.
Ends of railing parapet shall be normal to top of safety curb.

H.N.T.B. BR. NO. 10 PART 7A

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

EAST ABUTMENT-NORTH HALF

WILLOW FREEWAY OVER EAST 22nd ST.
BR. NO. CUY-21-1559 STA. 42+45.12
Scale: 1/4" = 1'-0" STA. 44+54.88

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

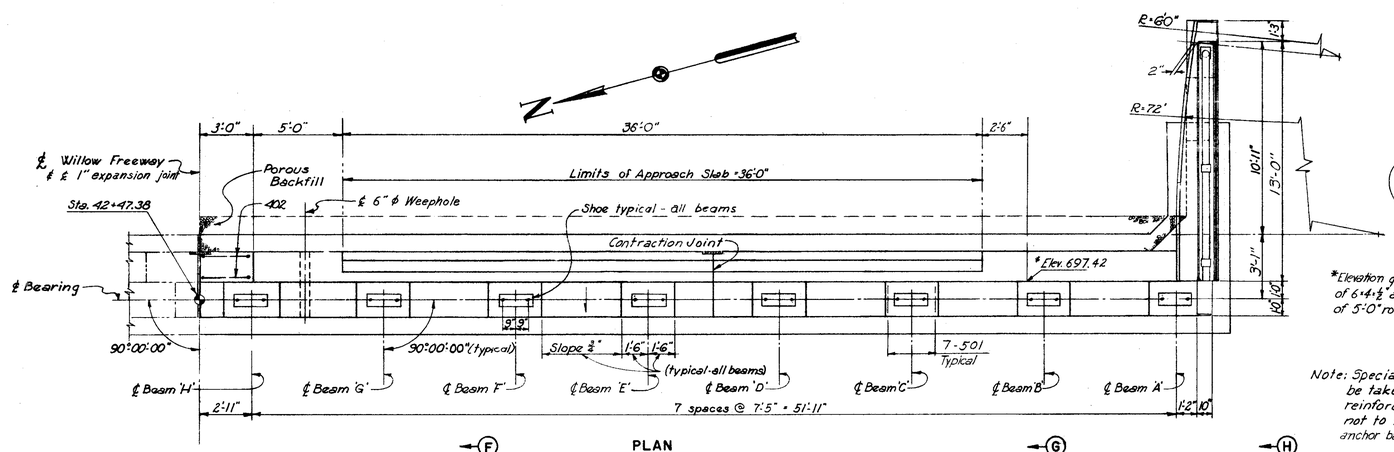
DRAWN C.D.D.	TRACED	CHECKED C.M.	REVIEWED JCT	REVISED
DATE 5-9-58	DATE	DATE 2-27-59	DATE 11-13-59	SHEET 157

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

158
181

MICROFILMED JUL 8 1985

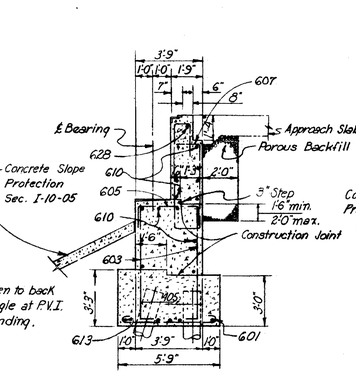
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
Shoulder Paving CUY-42-18.42



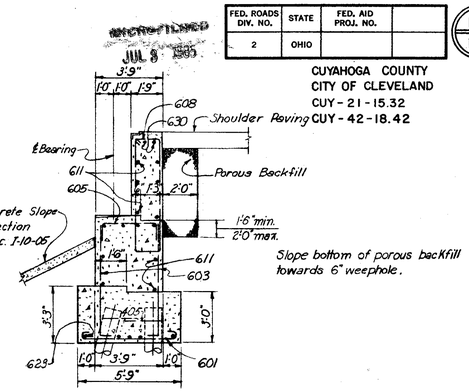
PLAN

*Elevation given to back of 6"x4"x½" angle at P.V.I. of 5'-0" rounding.

Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.



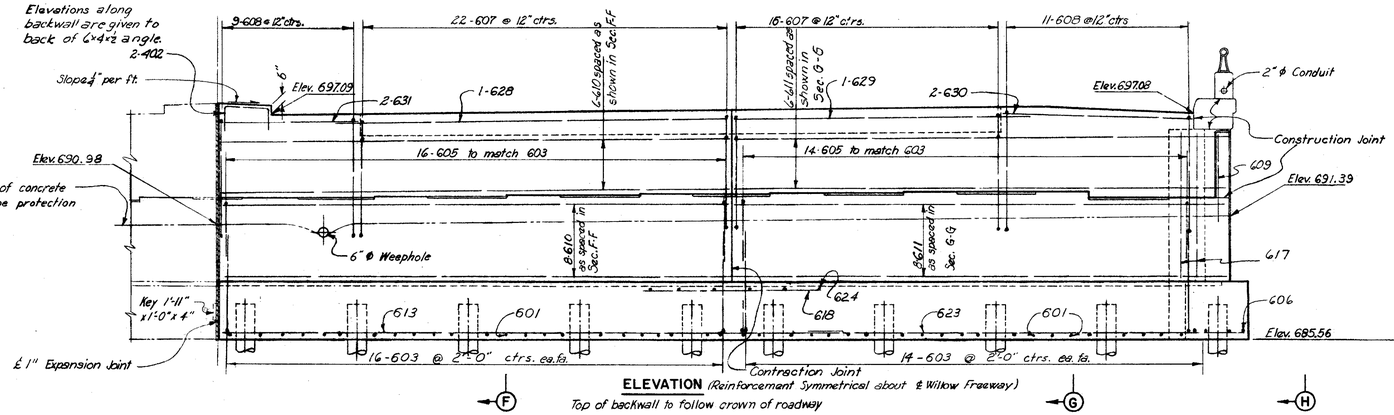
SECTION F-F



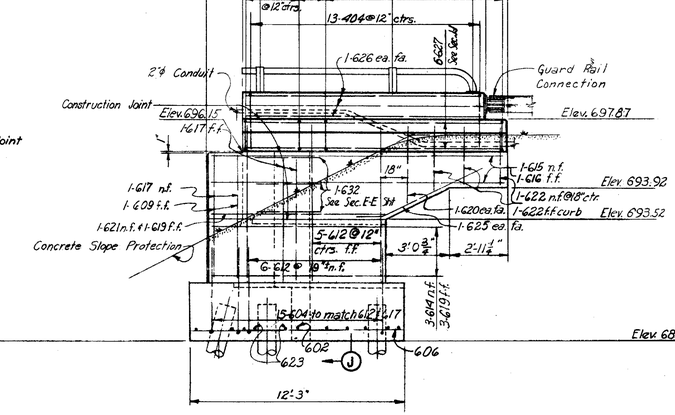
SECTION G-G

Slope bottom of porous backfill towards 6" weephole.

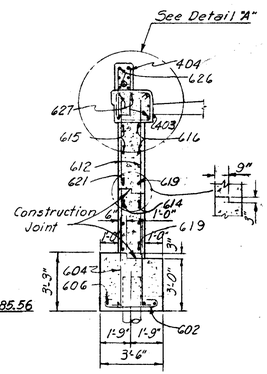
Note: Prefix "AA" shall be assigned to all bar marks.



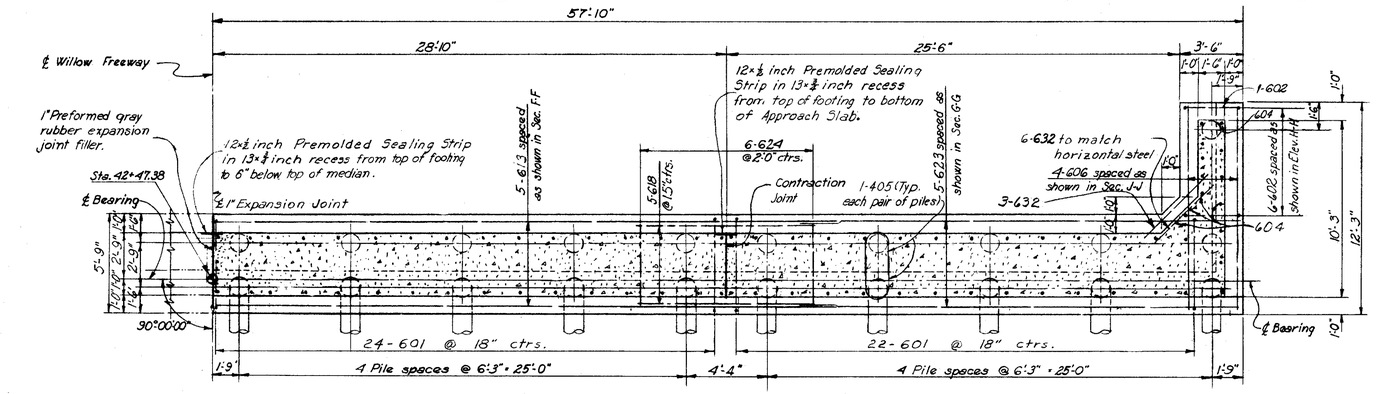
ELEVATION (Reinforcement Symmetrical about ℄ Willow Freeway)
Top of backwall to follow crown of roadway



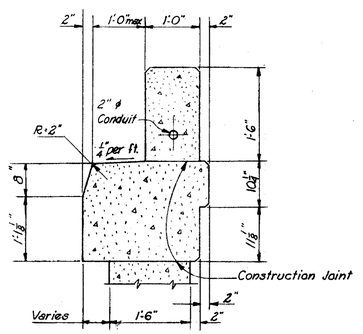
ELEVATION H-H (Reinforcement typical both Wingwalls)



SECTION J-J



FOOTING PLAN (Reinforcement symmetrical about ℄ Willow Freeway)



DETAIL 'A'
(Reinforcement omitted)
All chamfers to be ¾".

BEAM SEAT ELEVATIONS	
Beam	Elevation
A	692.52
B	692.82
C	692.82
D	692.76
E	692.71
F	692.65
G	692.59
H	692.53

For Notes see Sheet 157-7A.

H.N.T.B. BR. NO. 10 PART 7A

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

EAST ABUTMENT - SOUTH HALF

WILLOW FREEWAY OVER EAST 22nd ST.
BR. NO. CUY - 21-1559 STA. 42+45.12
Scale: 1/4" = 1'-0" Except as noted STA. 44+54.88

WILLOW - INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

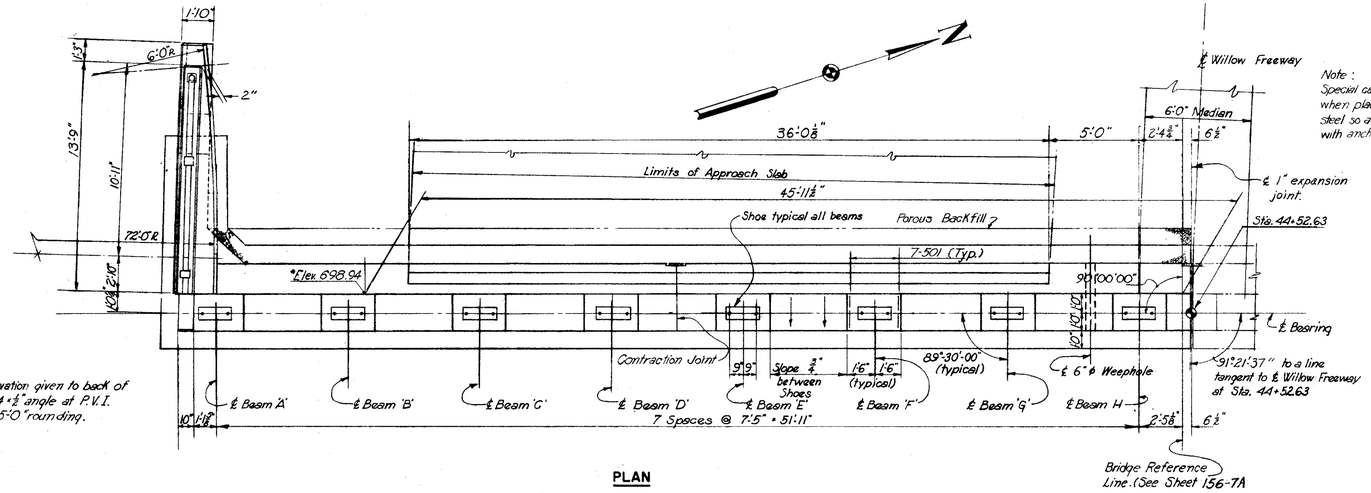
DRAWN C.D.D.	TRACED	CHECKED CM	REVIEWED JCT	REVISED
DATE 5-14-58	DATE	DATE 2-27-59	DATE 11-13-59	SHEET 158

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

159
181

MICROFILMED JUL 3 1985

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

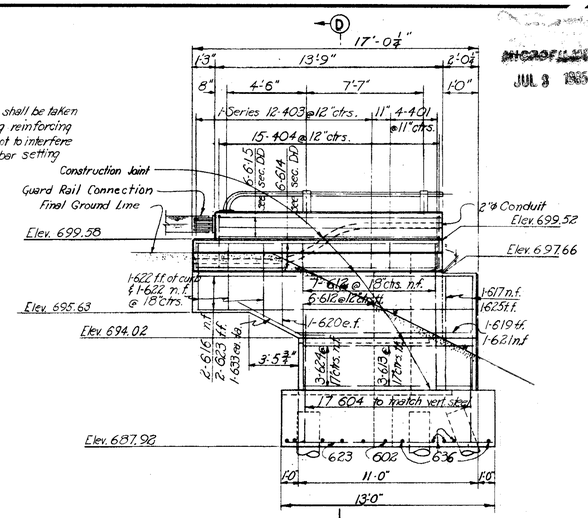


*Elevation given to back of 6"x4"x1/2" angle at P.V.I. of 5'-0" rounding.

PLAN

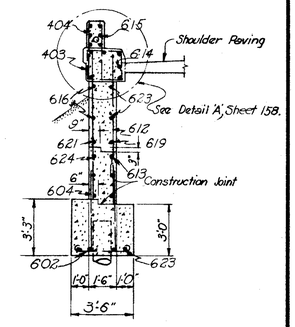
Note: Elevations along backwall are given to back of 6"x4"x1/2" angle.

Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting

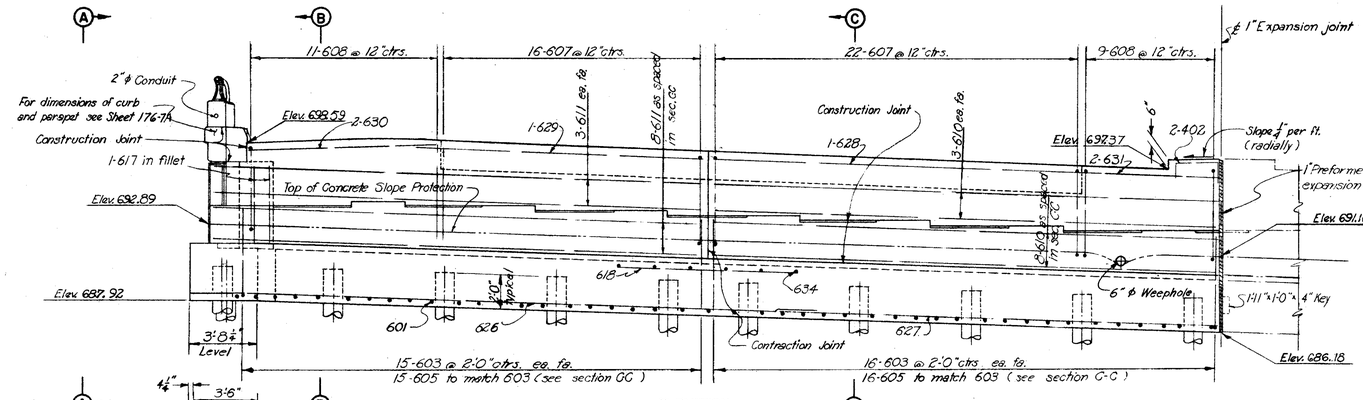


ELEVATION A-A

Note: Prefix "18" shall be assigned to all bar marks.

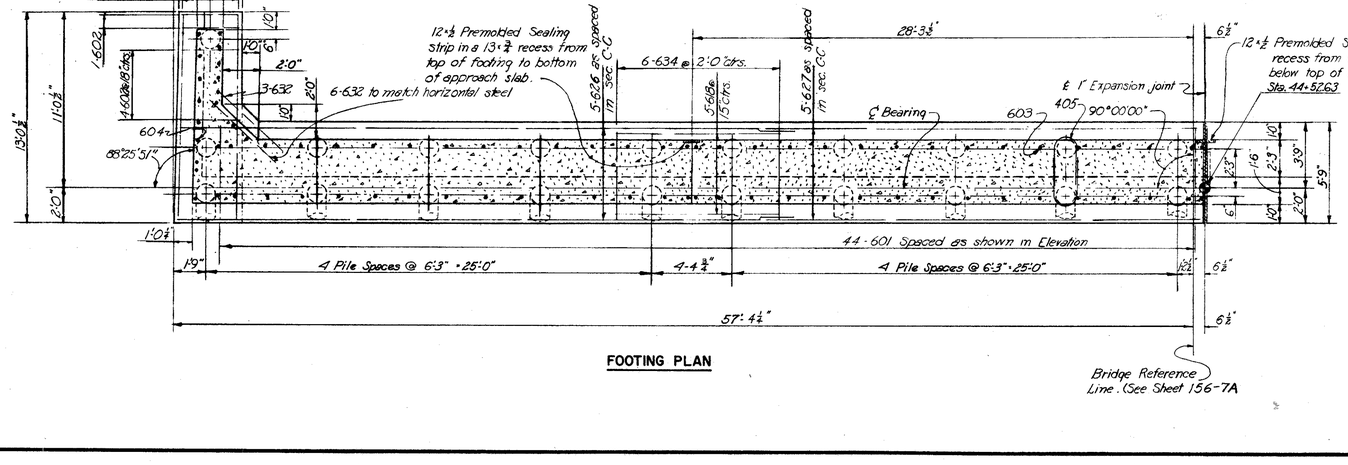


SECTION D-D

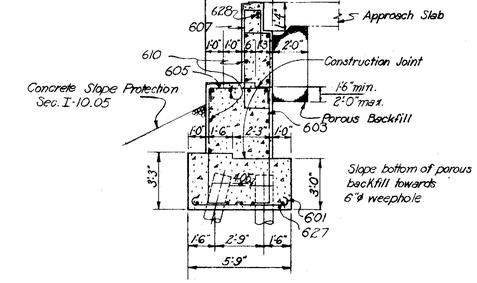


ELEVATION

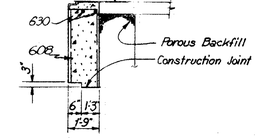
Note: Top of backwall to follow crown of roadway



FOOTING PLAN



SECTION C-C



PARTIAL SECTION B-B

BEAM SEAT ELEVATIONS	
Beam	Elevation
A	694.02
B	694.31
C	694.14
D	693.88
E	693.61
F	693.35
G	693.08
H	692.82

NOTES:
For Masonry Plate details, see sheet 173-7A.
For Railing details and Guard Rail connection details, see sheet 175-7A.
For location of lighting conduits, see sheet 176-7A.
For Reinforcement schedule, see sheet 161-7A.
For Replacement schedule, see sheet 103-7A.
Reinforcement bars shall be 3 inches clear from bottom of footing and 2 inches elsewhere.
All piles shall be 12"ϕ Cast-in-Place reinforced concrete.
All battered piles shall be 3 in 12 in direction shown.
Pile spacing given along bottom of footing.
For details of end dams, see 173-7A.
For Slope Protection details, see sheet 174-7A.
n.f. = near face; f.f. = far face; ea. fa. = each face.
Backfill shall be placed prior to placing of curb.
Ends of railing parapet shall be normal to top of safety curb.

H.N.T.B. BR. NO. 10 PART 7A

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

WEST ABUTMENT-SOUTH HALF

WILLOW FREEWAY OVER EAST 22nd ST.
BR. NO. CUY-21-1559 STA. 42+45.12
Scale: 1/4" = 1'-0" STA. 44+54.88

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN C.D.D.	TRACED	CHECKED C.M.	REVIEWED J.C.T.	REVISED
DATE 5-16-58	DATE	DATE 2-27-59	DATE 11-13-59	SHEET 159

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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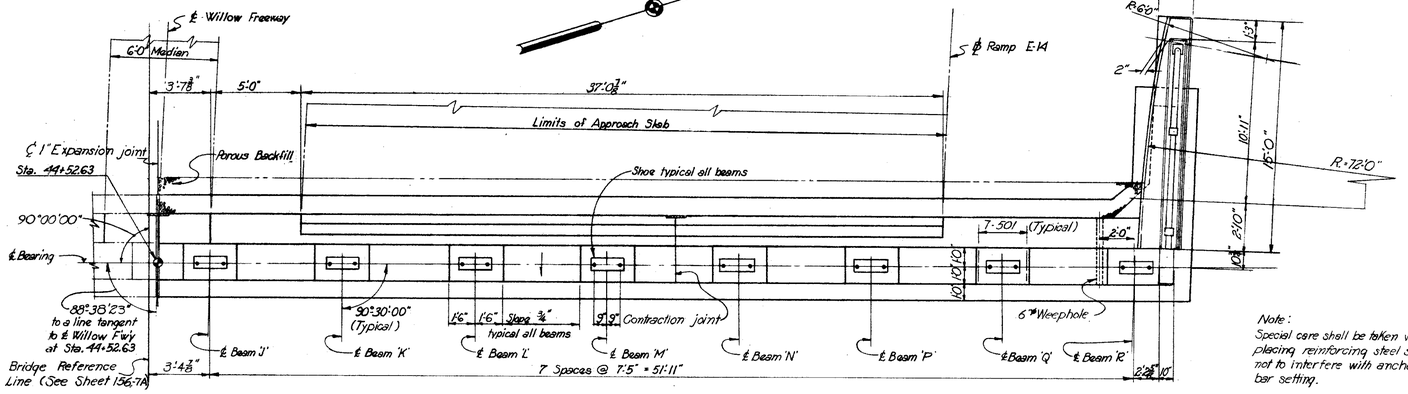
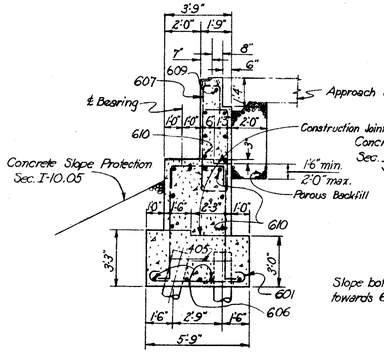
JUL 8 1959

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

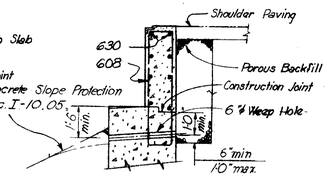


PLAN

Note:
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.



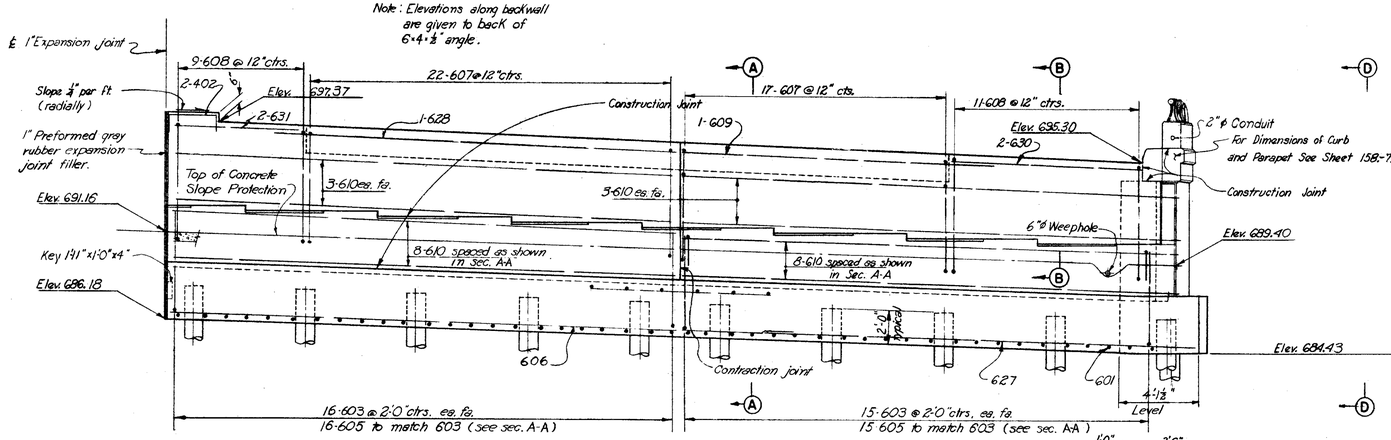
SECTION A-A



SECTION B-B

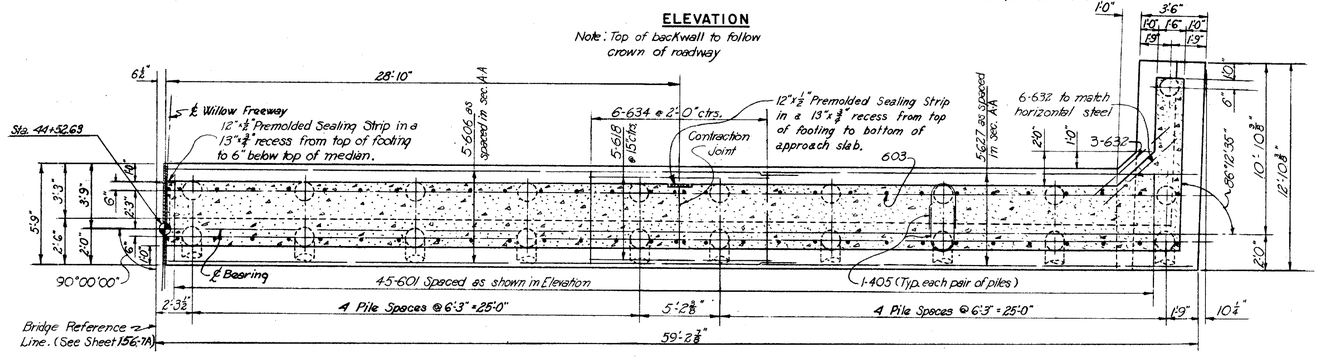
Slope bottom of porous backfill towards 6" ϕ weephole.

Note: Prefix "AB" shall be assigned to all bar marks.

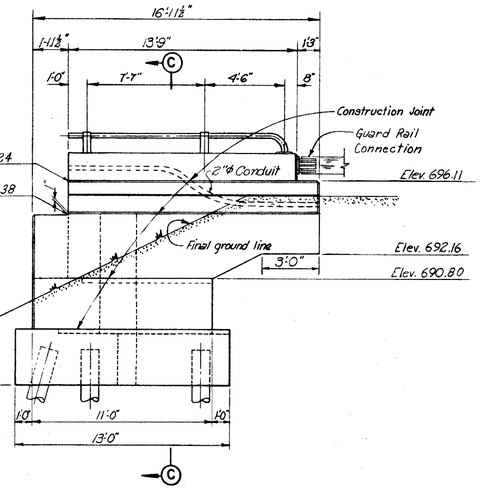


ELEVATION

Note: Top of backwall to follow crown of roadway

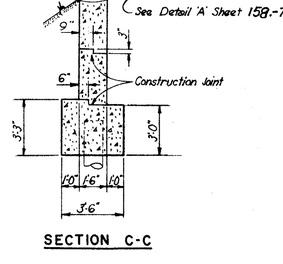


FOOTING PLAN



ELEVATION D-D

Reinforcement same as South Wingwall - West Abutment



SECTION C-C

BEAM SEAT ELEVATIONS	
Beam	Elevation
J	692.82
K	692.53
L	692.25
M	691.96
N	691.67
P	691.38
Q	691.09
R	690.80

For notes see sheet 159-7A.

H.N.T.B. BR. NO. 10 PART 7A

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

WEST ABUTMENT-NORTH HALF

WILLOW FREEWAY OVER EAST 22nd ST
BR. NO. CUY-21-1559 STA. 42+45.12
Scale: 1/4" = 1'-0" STA. 44+54.88

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN C.D.D.	TRACED	CHECKED C.M.	REVIEWED JCT	REVISED
DATE 5-20-59	DATE	DATE 2-27-59	DATE 11-13-59	SHEET 160

EAST ABUTMENT

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
401	6	6'-7"	109	1'-8"	1'-5"				26
402	4	4'-9"	105	2'-6"	1'-3"				13
403	2 Series of 12	4'-7" to 6'-7"	109	0'-8½" to 1'-8"	1'-5"			2 3/16"	90
404	26	6'-5"	105	8"	3'-0"				111
405	40	5'-10"	144	2'-0"	1'-10"	7"			156
501	112	4'-5"	105	1'-8"	1'-6"				526
601	92	6'-9"	100	5'-5"					933
602	12	4'-6"	100	3'-2"					81
603	120	6'-2"	104	5'-6"	10"				1112
604	30	5'-8"	104	5'-0"	10"				255
605	60	9'-5"	105	3'-5"	3'-2"				849
606	8	12'-0"	Str.						144
607	76	17'-10"	112	6'-6"	1'-5"	0'-11"	5'-2"		2035
608	40	16'-4"	109	6'-6"	1'-5"				981
609	4	3'-3"	Str.						20
610	28	28'-6"	Str.						1198
611	28	27'-6"	Str.						1157
612	28	8'-3"	Str.						273
613	10	35'-0"	Str.						526
614	6	11'-7"	104	9'-10"	1'-11"				104
615	4	19'-6"	126	15'-11"	0'-6"	3'-9"			117
616	4	12'-9"	Str.						77
617	8	6'-3"	Str.						75
618	10	10'-3"	Str.						154
619	8	6'-9"	Str.						81
620	4	4'-3"	Str.						26
621	2	13'-6"	126	9'-11"	0'-6"	3'-9"			41
622	12	3'-6"	Str.						63
623	10	25'-0"	Str.						376
624	12	5'-3"	Str.						95
625	4	7'-2"	108	2'-0"	5'-3"	6	12		43
*626	12	18'-6"	Str.						
627	12	13'-9"	Str.						248
628	2	22'-9"	Str.						68
629	2	17'-3"	Str.						52
630	4	10'-6"	Str.						63
631	4	7'-6"	Str.						45
632	18	6'-0"	Str.						162
								Total	12,377

WEST ABUTMENT

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
401	8	6'-7"	109	1'-8"	1'-5"				35
402	4	4'-9"	105	2'-6"	1'-3"				13
403	2 Series of 12	4'-7" to 6'-7"	109	0'-8½" to 1'-8"	1'-5"			2 3/16"	90
404	30	6'-5"	105	8"	3'-0"				129
405	40	5'-10"	144	2'-0"	1'-10"				156
501	112	4'-5"	105	1'-8"	1'-6"				526
601	89	6'-9"	100	5'-5"					902
602	12	4'-6"	100	3'-2"					81
603	124	6'-2"	104	5'-6"	10"				1149
604	34	5'-8"	104	5'-0"	10"				290
605	62	9'-5"	105	3'-5"	3'-2"				877
606	5	36'-0"	Str.						270
607	77	17'-10"	112	1'-5"	6'-6"	0'-11"	5'-2"		2063
608	40	16'-4"	109	6'-6"	1'-5"				981
609	1	18'-0"	Str.						27
610	42	28'-6"	Str.						1798
611	14	27'-6"	Str.						578
612	26	8'-3"	Str.						322
613	6	7'-3"	Str.						65
614	12	14'-6"	Str.						261
*615	12	13'-3"	Str.						
616	4	20'-7"	126	16'-8"	0'-6"	3'-9"			124
617	8	6'-3"	Str.						75
618	10	10'-3"	Str.						154
619	2	7'-6"	Str.						23
620	4	4'-3"	Str.						26
621	2	14'-8"	126	10'-9"	0'-6"	3'-9"			44
622	12	3'-6"	Str.						63
623	12	12'-6"	Str.						226
624	6	12'-3"	104	10'-11"	1'-11"				110
625	4	3'-3"	Str.						20
626	5	35'-0"	Str.						263
627	10	25'-0"	Str.						375
628	2	22'-9"	Str.						68
629	1	17'-3"	Str.						26
630	4	10'-6"	Str.						63
631	4	7'-6"	Str.						45
632	18	6'-0"	Str.						162
633	4	7'-2"	108	2'-0"	5'-3"	6	12		43
634	12	5'-3"	Str.						95
								Total	12,618

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)

Note: Prefixes shall be assigned to bar marks as follows:
East Abutment "AA"
West Abutment "AB"

MICROFILMED JUL 8 1968

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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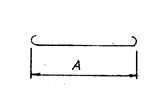
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

BENDING DIAGRAMS



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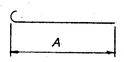

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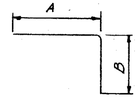

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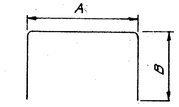

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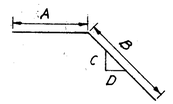

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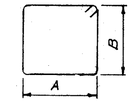

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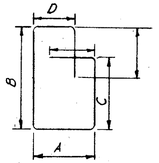

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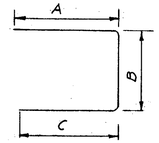

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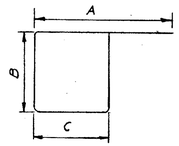

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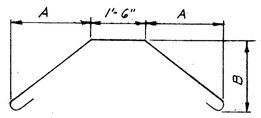

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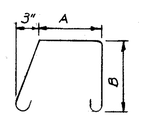

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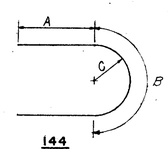

144

NOTE:
* Bars included for payment with "Item S-14 Railing".
Bar dimensions are given out to out.
Bars in a series shall vary in length by a constant increment.
For replacement schedule see Sh. 103.-7A

H.N.T.B. BR. NO. 10 PART 7A

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

REINFORCEMENT SCHEDULE-ABUTMENTS

WILLOW FREEWAY OVER EAST 22nd ST.
BR. NO. CUY-21-1559 STA. 42+45.12
Scale: None STA. 44+54.88

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.		C.M.	JCT	
DATE 8/28/58	DATE	DATE 2-27-59	DATE 11-13-59	SHEET 161

MICROFILMED
Jul 3 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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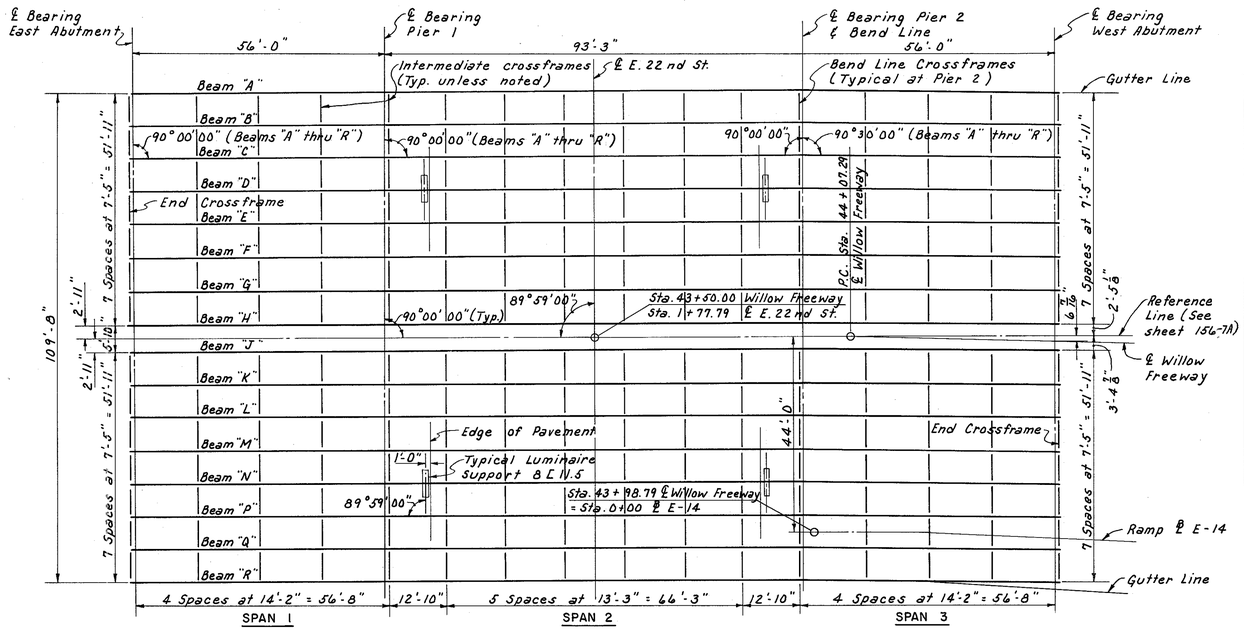
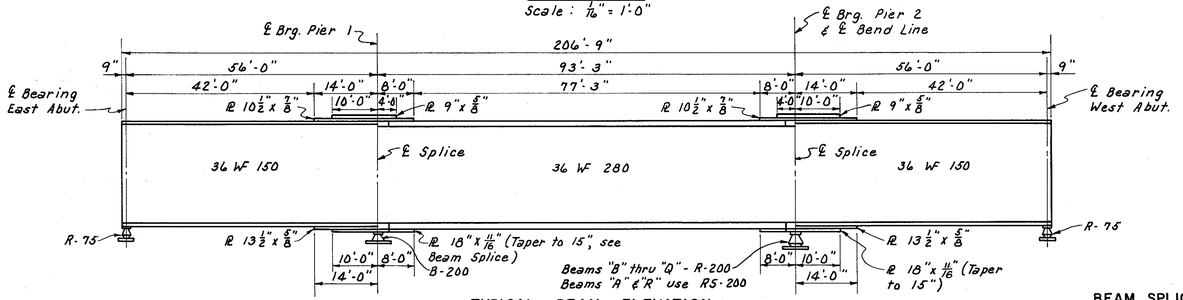
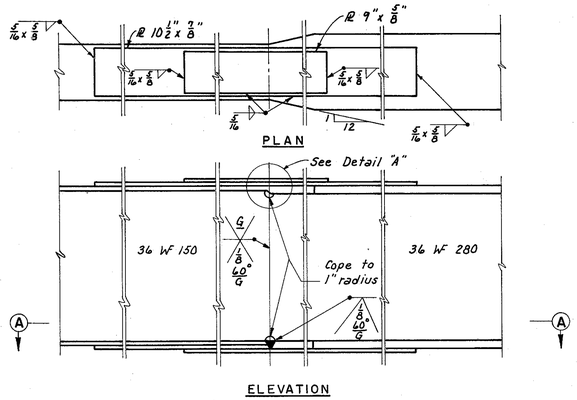
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



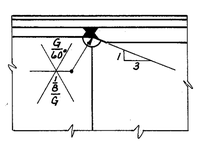
FRAMING PLAN
Scale : 1/16" = 1'-0"

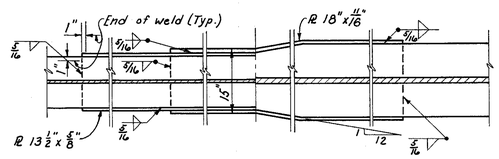


TYPICAL BEAM ELEVATION
No Scale



Note:
"G" indicates a smooth grind in the direction of the stress





BEAM SPLICE
No Scale

BEAM SPLICE WELDING PROCEDURE

1. Raise the abutment ends of the beams 1 1/2"
2. Butt-weld the beam flanges and web, using the following sequences: make two passes on each flange, then two on the web; repeat using one pass at each location, until welds are completed.
3. Weld the top and bottom cover plates.
4. Lower the beam ends to final position.

NOTES:

The beams in Span 2 shall be cambered as follows: Where the sum of the deflections and convexity is 3/4" to 1" the required camber will be 1", and if greater than 1" the required camber will be the same as the sum. Beams in Spans 1 and 3 do not require camber, but shall be fabricated so that any curved beam will be placed with the convex flange up.

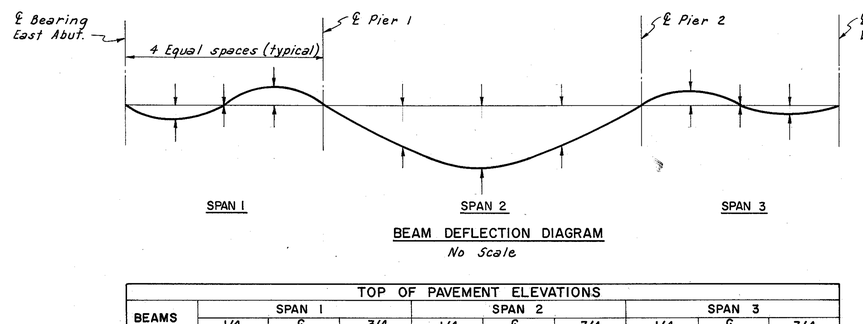
Deflections are given at the quarter points and are measured to the nearest 1/16 inch.
In Elevation and Deflection Table, the following abbreviations are used.
(D.L. Defl.) denotes dead load deflections.
(Tot.) refers to total deflections from dead load of steel and concrete.
(Con.) denotes deflections due to concrete.

Elevations shown in the "Elevation and Deflection Table" are given at intersection of ℄ bearings and ℄ beams. Top of beam elevations are exclusive of cover plates.

Notes:
For details of end dams see sheet 173-7A
For crossframe details see sheet 163-7A
For drainage details see sheet 174.-7A
For details of rocker masonry plates see sheet 173-7A
For other rocker and bolster details see Ohio Standard Drawing RB 1-55.
For details of Underdeck Lighting see sheet 177-7A

ELEVATION AND DEFLECTION TABLE

BEAM	EAST ABUTMENT		SPAN 1						PIER 1		SPAN 2								PIER 2		SPAN 3						WEST ABUTMENT	
			1/4		℄		3/4				1/4			℄			3/4				1/4		℄		3/4			
	TOP OF BEAM ELEV.	TOP OF PAVEMENT ELEV.	D.L. DEFL. CON	D.L. DEFL. TOT.	D.L. DEFL. CON	D.L. DEFL. TOT.	D.L. DEFL. CON	D.L. DEFL. TOT.	TOP OF BEAM ELEV.	TOP OF PAVEMENT ELEV.	D.L. DEFL. CON	D.L. DEFL. TOT.	CONVEXITY	D.L. DEFL. CON	D.L. DEFL. TOT.	CONVEXITY	D.L. DEFL. CON	D.L. DEFL. TOT.	CONVEXITY	TOP OF BEAM ELEV.	TOP OF PAVEMENT ELEV.	D.L. DEFL. CON	D.L. DEFL. TOT.	D.L. DEFL. CON	D.L. DEFL. TOT.	D.L. DEFL. CON	D.L. DEFL. TOT.	TOP OF BEAM ELEV.	TOP OF PAVEMENT ELEV.
"A"	696.32	697.16	1/8	1/8	0	0	-1/4	-1/4	696.85	697.69	1 1/16	1 3/16	1/4	7/16	7/16	3/8	15/16	1 3/16	1/4	697.53	698.37	-1/4	-1/4	0	0	1/8	1/8	697.82	698.66
"B"	696.62	697.46	1/16	1/16	0	0	-3/16	-3/16	697.14	697.98	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	697.82	698.66	-3/16	-3/16	0	0	1/16	1/16	698.11	698.95
"C"	696.62	697.46	1/16	1/16	0	0	-3/16	-3/16	697.09	697.93	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	697.78	698.53	-3/16	-3/16	0	0	1/16	1/16	697.94	698.78
"D"	696.56	697.40	1/16	1/16	0	0	-3/16	-3/16	696.98	697.82	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	697.49	698.33	-3/16	-3/16	0	0	1/16	1/16	697.68	698.52
"E"	696.51	697.34	1/16	1/16	0	0	-3/16	-3/16	696.87	697.70	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	697.28	698.12	-3/16	-3/16	0	0	1/16	1/16	697.41	698.25
"F"	696.45	697.29	1/16	1/16	0	0	-3/16	-3/16	696.75	697.59	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	697.07	697.91	-3/16	-3/16	0	0	1/16	1/16	697.15	697.99
"G"	696.39	697.23	1/16	1/16	0	0	-3/16	-3/16	696.64	697.47	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	696.86	697.70	-3/16	-3/16	0	0	1/16	1/16	696.88	697.72
"H"	696.33	697.17	1/8	1/8	0	0	-3/16	-3/16	696.52	697.36	7/8	1 1/16	1/4	1/8	1 11/16	3/8	7/8	1 1/16	1/4	696.66	697.50	-3/16	-3/16	0	0	1/8	1/8	696.62	697.46
"J"	696.33	697.17	1/8	1/8	0	0	-3/16	-3/16	696.52	697.36	7/8	1 1/16	1/4	1/8	1 11/16	3/8	7/8	1 1/16	1/4	696.66	697.50	-3/16	-3/16	0	0	1/8	1/8	696.62	697.46
"K"	696.22	697.06	1/16	1/16	0	0	-3/16	-3/16	696.36	697.20	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	696.42	697.26	-3/16	-3/16	0	0	1/16	1/16	696.34	697.17
"L"	696.10	696.94	1/16	1/16	0	0	-3/16	-3/16	696.20	697.04	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	696.18	697.02	-3/16	-3/16	0	0	1/16	1/16	696.05	696.89
"M"	695.99	696.82	1/16	1/16	0	0	-3/16	-3/16	696.04	696.88	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	695.94	696.78	-3/16	-3/16	0	0	1/16	1/16	695.76	696.60
"N"	695.87	696.71	1/16	1/16	0	0	-3/16	-3/16	695.88	696.72	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	695.70	696.54	-3/16	-3/16	0	0	1/16	1/16	695.47	696.31
"P"	695.75	696.59	1/16	1/16	0	0	-3/16	-3/16	695.72	696.56	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	695.46	696.30	-3/16	-3/16	0	0	1/16	1/16	695.18	696.02
"Q"	695.64	696.48	1/16	1/16	0	0	-3/16	-3/16	695.56	696.40	11/16	7/8	1/4	1/8	1 7/16	3/8	11/16	1 7/16	1/4	695.22	696.06	-3/16	-3/16	0	0	1/16	1/16	694.89	695.73
"R"	695.52	696.36	1/8	1/8	0	0	-1/4	-1/4	695.40	696.24	1 1/16	1 3/16	1/4	3/16	1 7/16	3/8	15/16	1 3/16	1/4	694.98	695.82	-1/4	-1/4	0	0	1/8	1/8	694.60	695.44



BEAM DEFLECTION DIAGRAM
No Scale

TOP OF PAVEMENT ELEVATIONS

BEAMS	SPAN 1			SPAN 2			SPAN 3		
	1/4	℄	3/4	1/4	℄	3/4	1/4	℄	3/4
"A"	697.29	697.42	697.55	697.88	698.07	698.23	698.45	698.52	698.59
"B"	697.58	697.71	697.84	698.17	698.36	698.52	698.75	698.82	698.89
"C"	697.58	697.70	697.81	698.11	698.27	698.41	698.59	698.65	698.71
"D"	697.51	697.61	697.71	697.97	698.11	698.23	698.37	698.42	698.46
"E"	697.44	697.53	697.61	697.83	697.95	698.04	698.15	698.18	698.22
"F"	697.36	697.44	697.52	697.69	697.78	697.86	697.93	697.95	697.97
"G"	697.29	697.36	697.42	697.55	697.62	697.67	697.71	697.71	697.72
"H"	697.22	697.27	697.32	697.42	697.46	697.49	697.49	697.49	697.48
"J"	697.22	697.27	697.32	697.42	697.46	697.49	697.49	697.49	697.48
"K"	697.10	697.14	697.17	697.24	697.26	697.27	697.24	697.22	697.20
"L"	696.97	697.00	697.02	697.06	697.06	696.05	696.99	696.96	696.92
"M"	696.85	696.86	696.87	696.88	696.86	696.83	696.74	696.69	696.64
"N"	696.72	696.72	696.72	696.70	696.66	696.61	696.48	696.43	696.37
"P"	696.55	696.59	696.58	696.52	696.46	696.39	696.23	696.16	696.09
"Q"	696.47	696.45	696.43	696.33	696.26	696.17	695.98	695.90	695.81
"R"	696.35	696.31	696.28	696.15	696.06	695.95	695.73	695.63	695.54

H.N.T.B. BR. NO. 10 PART 7A

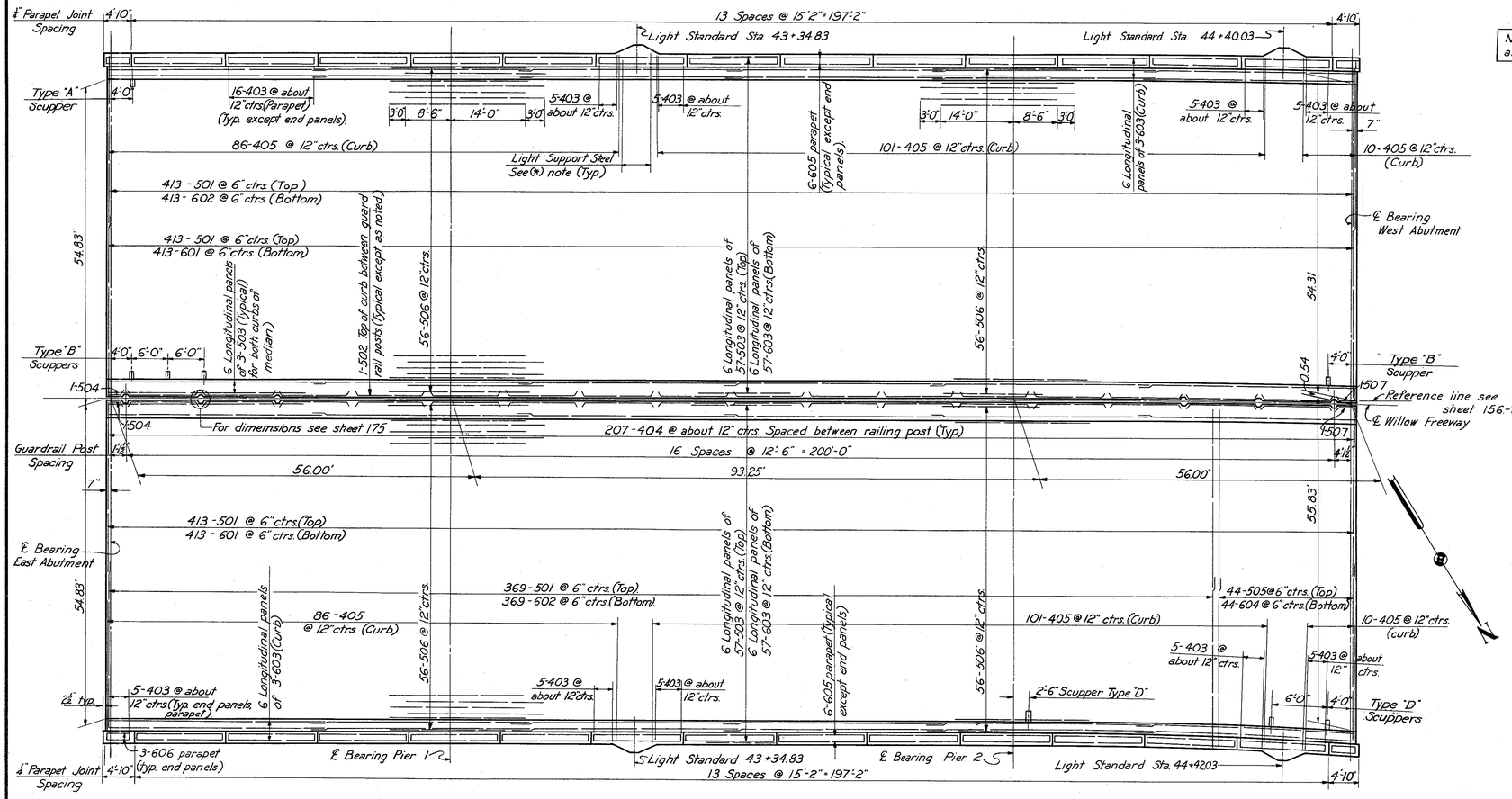
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN

WILLOW FREEWAY OVER EAST 22nd ST.
BR. NO. CUY - 21-1559 STA. 42+45.12
Scale : As noted STA. 44+54.88

WILLOW - INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN R.A.	TRACED AEK	CHECKED D.R.K.	REVIEWED JCT	REVISED 12-6-60
DATE 4-15-58	DATE 10-2-59	DATE 6-25-58	DATE 11-13-59	SHEET 162



Note : Prefix "S" shall be assigned to all bar marks.

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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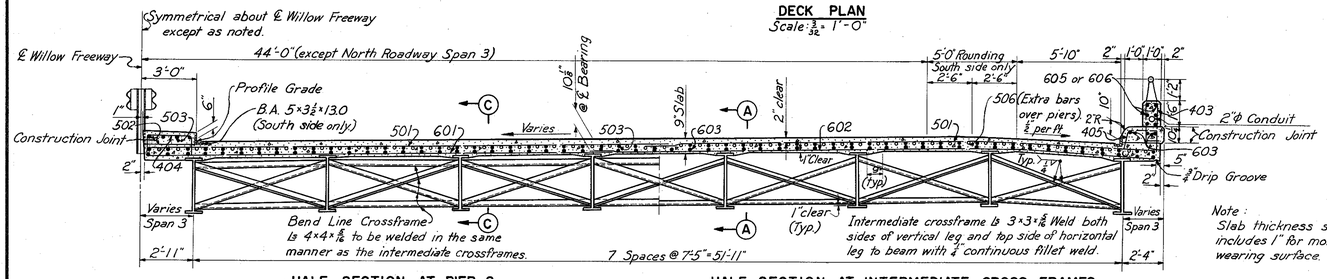
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

REINFORCEMENT SCHEDULE

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS.)
403	412	4'-5"	105	0'-8"	2'-0"				1,217
404	414	5'-3"	122	2'-6"	1'-0"				1,454
405	394	5'-1"	122	1'-8"	1'-4"				1,340
451*	8	9'-3"	131	2'-6"	3'-0"	1'-2"			48
452*	8	10'-3"	131	3'-0"	3'-0"	1'-8"			56
453*	12	9'-9"	131	3'-2"	3'-0"	1'-0"			80
454*	8	5'-9"	155	2'-2"	1'-6"				32
455*	8	6'-5"	155	2'-8"	1'-6"				36
456*	12	6'-7"	155	2'-10"	1'-6"				52
501	1608	29'-7"	101	29'-0"					49,615
502	32	13'-0"	159	11'-2"	0'-6"	0'-10"			434
503	720	35'-9"	Str.						26,847
504	2	1'-9"	108	0'-10"	0'-6"	0'-10"			4
505	44	30'-10"	101	30'-3"					1,415
506	224	25'-6"	Str.						5,958
507	2	4'-8"	108	3'-9"	0'-6"	0'-10"			10
601	826	27'-9"	Str.						34,428
602	782	30'-9"	Str.						36,118
603	720	36'-0"	Str.						38,932
604	44	32'-0"	Str.						2,115
605+	156	14'-9"	Str.						
606+	24	4'-6"	Str.						
651*	8	9'-5"	141	2'-11"	1'-10"				112
652*	12	14'-6"	141	5'-3"	3'-0"				260
653*	4	5'-0"	Str.						32
								Total	200,595

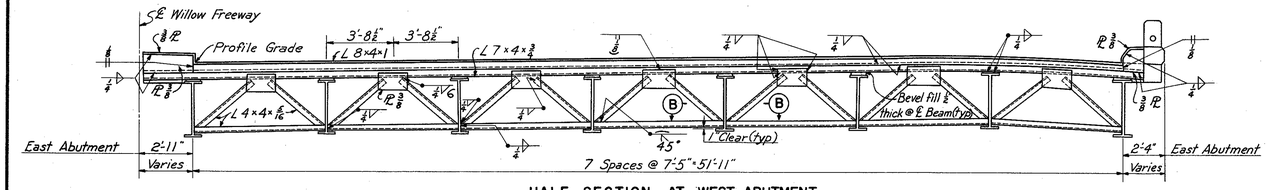
NOTES :
*Bars 451 thru 456 and 651 thru 653 are for the light standard supports. For their bar bending diagrams and placement see sheet 176-7A
+Bars 605 and 606 are included for payment with "Item 5-14, Railing".
All bar dimensions are given out to out.
For replacement schedule see sheet 103-7A
For light standard and other lighting details see sheets 176-7A & 177-7A
For railing details see sheet 175-7A
For expansion dam details see sheet 173-7A
For parapet joint details see sheet 175-7A
For drainage details see sheet 174-7A
In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to the transverse bars in the slab and are located near the center of any span.
For bar bending diagram, see sheet 170-7A



HALF SECTION AT PIER 2

HALF SECTION AT INTERMEDIATE CROSS FRAMES

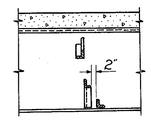
Scale 1" = 1'-0"



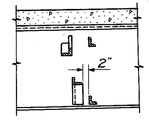
HALF SECTION AT WEST ABUTMENT

Scale: ¼" = 1'-0"

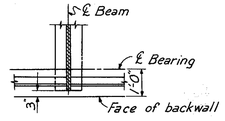
Note : Section at East Abutment similar except for superelevation and as noted.



SECTION A-A



SECTION C-C



SECTION B-B

H.N.T.B. BR. NO. 10 PART 7A

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

DECK PLAN

WILLOW FREEWAY OVER EAST 22nd ST.
BR. NO. CUY-21-1559 STA. 42+45.12
Scale: As noted STA. 44+54.88

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN R.A.	TRACED R.J.K.	CHECKED C.A.B.	REVIEWED JCT	REVISED
DATE 6/17/59	DATE 8/6/59	DATE 6-28-60	DATE 11-13-59	SHEET 163

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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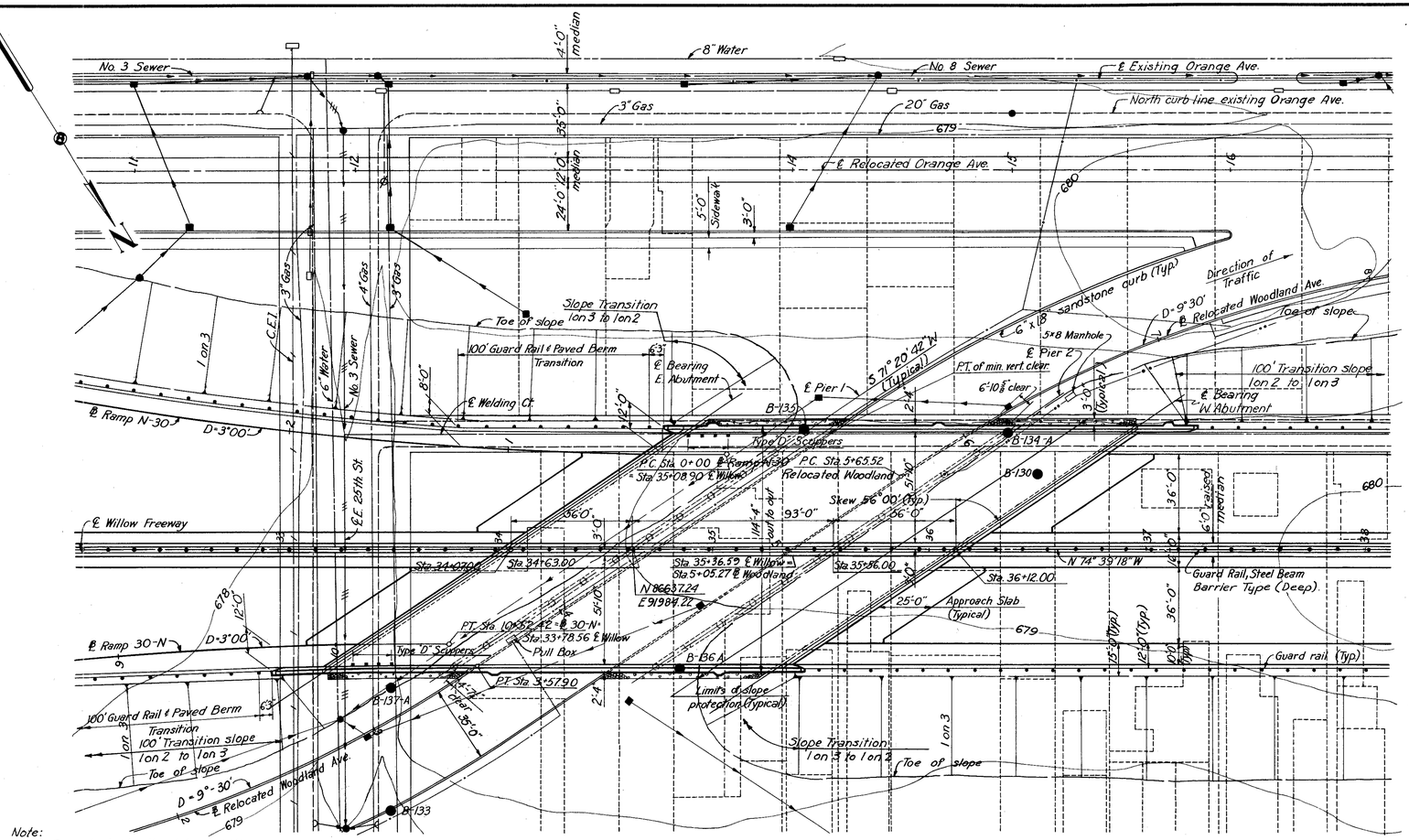
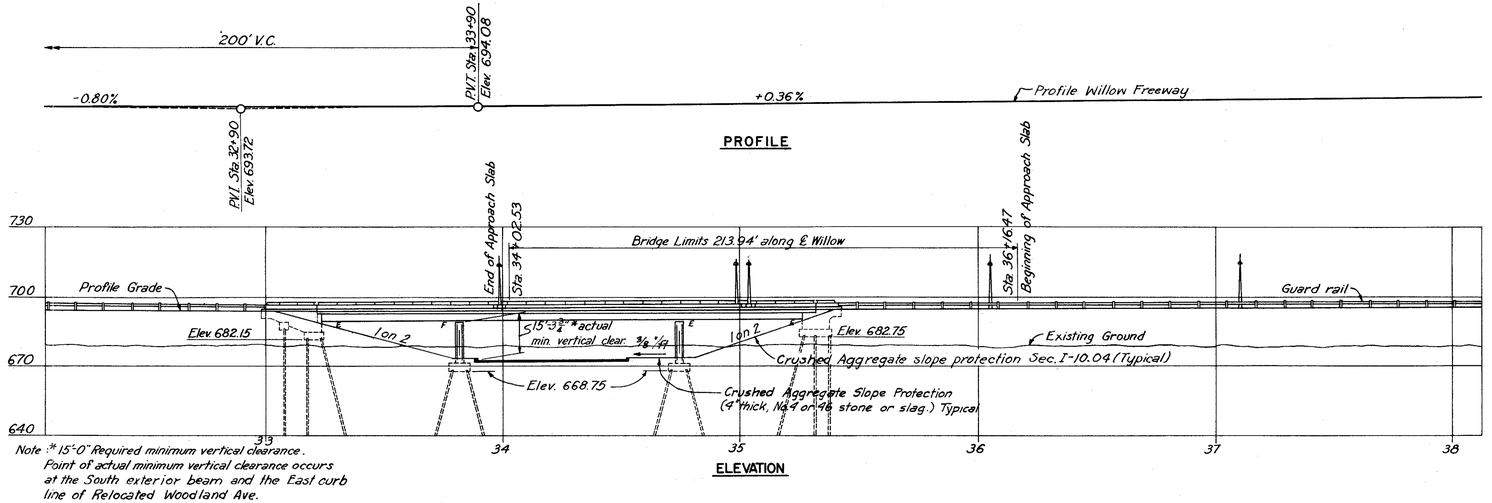
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



Note:
℄ Relocated Woodland Ave. shifts from left to right at Sta. 3+75.

PLAN



PROFILE

ELEVATION

Note: * 15'-0" Required minimum vertical clearance. Point of actual minimum vertical clearance occurs at the South exterior beam and the East curb line of Relocated Woodland Ave.

Elev. 678.3		
19	673.3	Brown Silty Gravelly Sand
10		
11	663.3	Brown Gravelly Sand
12	658.3	Brown Sand
15	653.3	Brown Silty Sand
36	648.3	Gray Silty Sand
11		
15	638.3	Gray Silt
32	633.3	Gray Gravelly Sand
51	628.3	Gray Sandy Silt
118		
47		
9		
20		
60		
26	598.3	Gray Silt

BORING B-134 A
Vertical Scale: 1"=20'
Sta. 36+36 55 Lt.

Elev. 676.5		
5	671.5	Brown Sand
8	666.5	Brown Silty Gravelly Sand
8		
17	656.5	Brown Silty Sand
16		
14		
18	641.5	Gray Silt
36	636.5	Brown Gravelly Sandy Silt
57	631.5	Gray Sandy Gravelly Silt
67		
19		
40		
14		
70		
	601.5	Gray Silt

BORING B-137 A
Vertical Scale: 1"=20'
Sta. 33+52 65' Rt

Note:
The figures to the left indicates the number of hammer blows required to drive the sample spoon 1 ft. They are given at 5' intervals starting at Elev. 678.3 and Elev. 676.5.

CURVE DATA

℄ RAMP N-30	℄ RAMP 30-N	REL. WOODLAND AVE.	REL. WOODLAND AVE.
Δ=11°00'00"	Δ=7°42'07"	Δ=34°00'00"	Δ=33°59'37"
D=3°00'	D=3°00'	D=9°30"	D=9°30'
R=1909.86'	R=1909.86'	R=603.11'	R=603.11'
T=183.90'	T=128.56'	T=184.39'	T=184.35'
L=366.67'	L=256.73'	L=357.90'	L=357.83'

PROPOSED STRUCTURE

Type: Continuous steel beam with reinforced concrete deck and substructure.
Spans: 56'-0", 93'-0", & 56'-0".
Roadway: 112'-0" (normal) f/f parapets.
Loading: C.F. 2000 - Adequate for A.A.S.H.O. alternate loading.
Surface Course: 1" Monolithic Concrete.
Alignment: Tangent.
Approach Slabs: AS-1-54. (25' long).
Superelevation: None.
Skew: 56°00'.

LEGEND

- Right of Way
- Curb
- M.E.L.P.
- Sewer
- C.E.I.
- Water
- Gas
- * Sewer
- *2" ϕ Duct
- *4" ϕ Duct
- Sewer to be abandoned

* Drill under previous contract.

Note:
Piers for Bridge No. 11 are included in Part 6.

NOTES:

Rod soundings only were taken at location B-130, B-133, B-135 A & B-136 A. The core drillings made at B-134 A & B-137 A are plotted.
For details of slope protection see sheet 174.-7A
Foundation design and foundation quantities are based on a study of these borings.
The following items are not included in the Bridge Plans. See Roadway Plans for details.
Approach grading, pavement and slabs.
Roadway guard rail.
For details of pier plans & drain pipe locations at piers see sheets 172-7A & 174-7A.

PILE INFORMATION

Location	Diameter	Number	Estimated ave. length
East Abutment	12"	61	49'
West Abutment	12"	61	50'
Pier 1	14"	56	35'
Pier 2	14"	56	35'

All piling to be C.I.P. Reinforced Concrete.
Pile lengths are based on boring data and are approximate only. The Contractor shall assume full responsibility for lengths of piling selected for driving.

H.N.T.B. BR. NO. 11 PART 7A

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

SITE PLAN

WILLOW FREEWAY OVER REL. WOODLAND AVE.
BR. NO. CUY-21-1544 STA. 34+02.53
Scale: 1"=30' STA. 36+16.47

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.J.S.	RJK	RBH	JCT	
DATE 11-24-58	DATE 12-30-58	DATE 12-11-58	DATE 11-13-59	SHEET 164

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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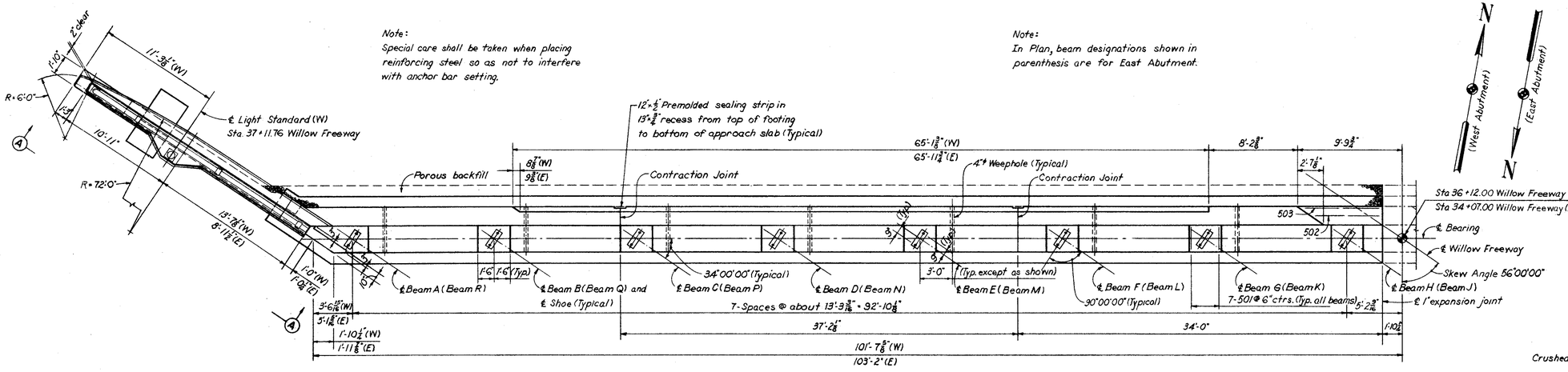
RECEIVED
JUL 3 1959

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

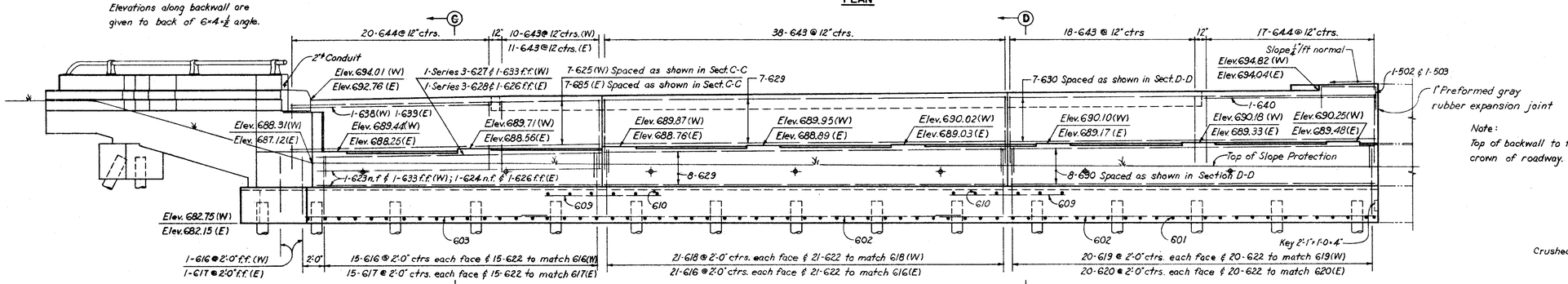
Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

Note: In Plan, beam designations shown in parenthesis are for East Abutment.

Note: Prefix "A" shall be assigned to all bar marks.

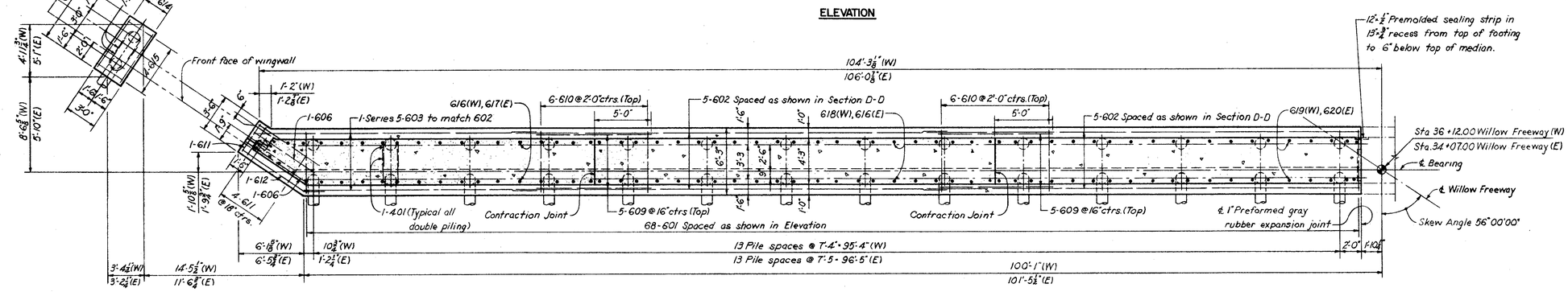


PLAN



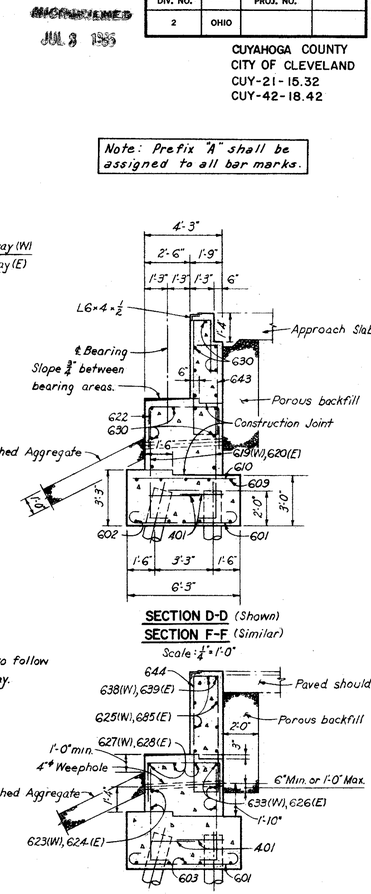
Note: Top of backwall to follow crown of roadway.

ELEVATION



FOOTING PLAN

Note:
Dimensions and reinforcement are the same for both abutments except where noted as follows:
(W) denotes West Abutment
(E) denotes East Abutment



NOTES:
All piles shall be 12" ϕ C.I.P. Reinforced Concrete.
All battered piles shall be battered 3 in 12 in direction shown.
For details of end dam see sheet 173-7A
For details of masonry plates see sh. 173-7A
For Reinforcment schedule see sheet 168-7A
For Railing details and Guard Rail connection details see sheet 175-7A
Reinforcement bars shall be 3 inches clear from bottom of footing and 2 inches elsewhere.
Top of parapet and safety curb construction joints are to be parallel to roadway grade.
Pile spacings given along bottom of footing.
For additional notes and sections see sheet 167-7A

H.N.T.B. BR. NO. 11 PART 7A

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

ABUTMENTS

WILLOW FREEWAY OVER REL. WOODLAND AVE.

BR. NO. CUY-21-1544 STA. 34+02.53

Scale: 3/16" = 1'-0" Except as noted STA. 36+16.47

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN TJP	TRACED	CHECKED FSJ	REVIEWED JCT	REVISED
DATE 12/29/58	DATE	DATE 1-10-59	DATE 1-13-59	SHEET 165

MICROFILMED
JUL 3 1965

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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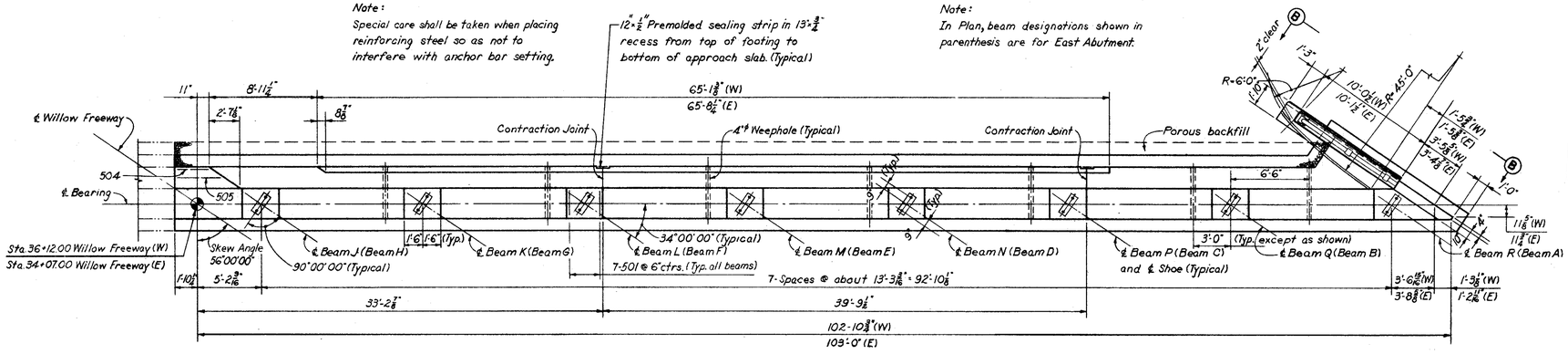
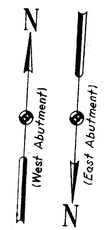
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

Note:
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

Note:
12"×½" Premolded sealing strip in 13'-3¾" recess from top of footing to bottom of approach slab. (Typical)

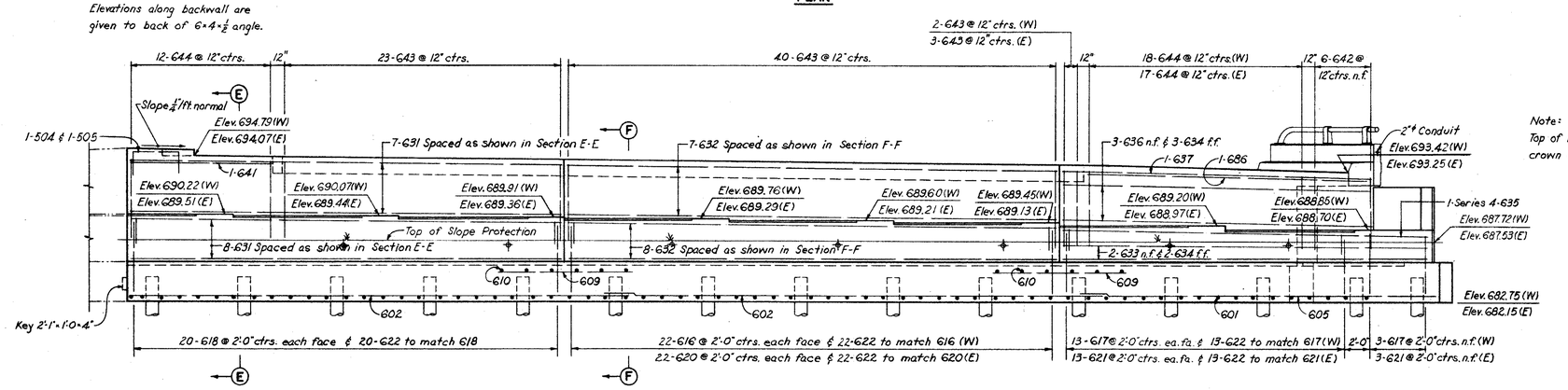
Note:
In Plan, beam designations shown in parenthesis are for East Abutment.





PLAN

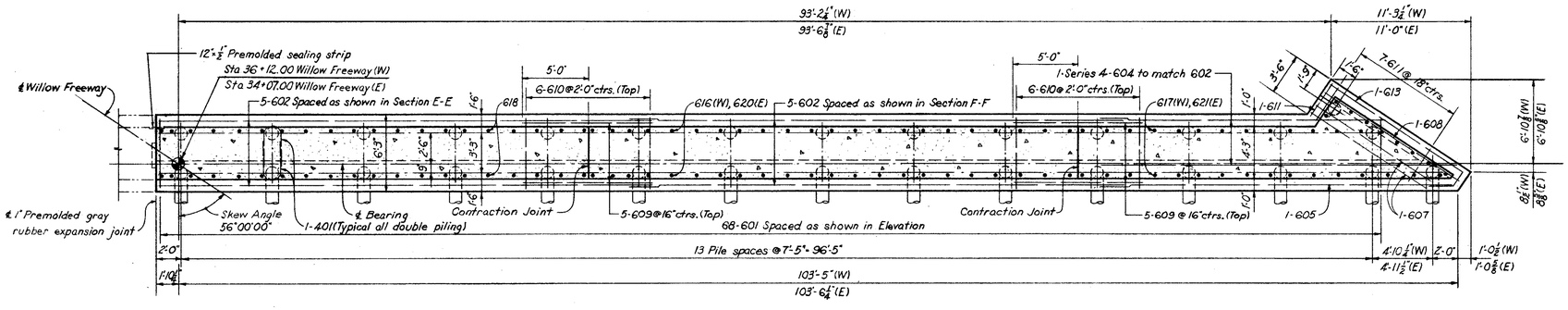
Note:
Elevations along backwall are given to back of 6×4×½ angle.



Note:
Top of backwall to follow crown of roadway.

Note: Prefix "A" shall be assigned to all bar marks.

ELEVATION



FOOTING PLAN

Note:
Dimensions and reinforcement are the are the same for both abutments except where noted as follows:
(W) denotes West Abutment
(E) denotes East Abutment

NOTES:
n.f. = near face; f.f. = far face; ea. fa. = each face
For additional notes and sections see sheets 165-7A & 147-7A

H.N.T.B. BR. NO. 11 PART 7A

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

ABUTMENTS

WILLOW FREEWAY OVER REL. WOODLAND AVE.
BR. NO. CUY-21-1544 STA. 34+02.53
Scale: 3/16" = 1'-0" STA. 36+16.47

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN T.J.P.	TRACED	CHECKED F.S.J.	REVIEWED J.C.T.	REVISED
DATE 12/30/58	DATE	DATE 1-15-59	DATE 11-13-59	SHEET 166

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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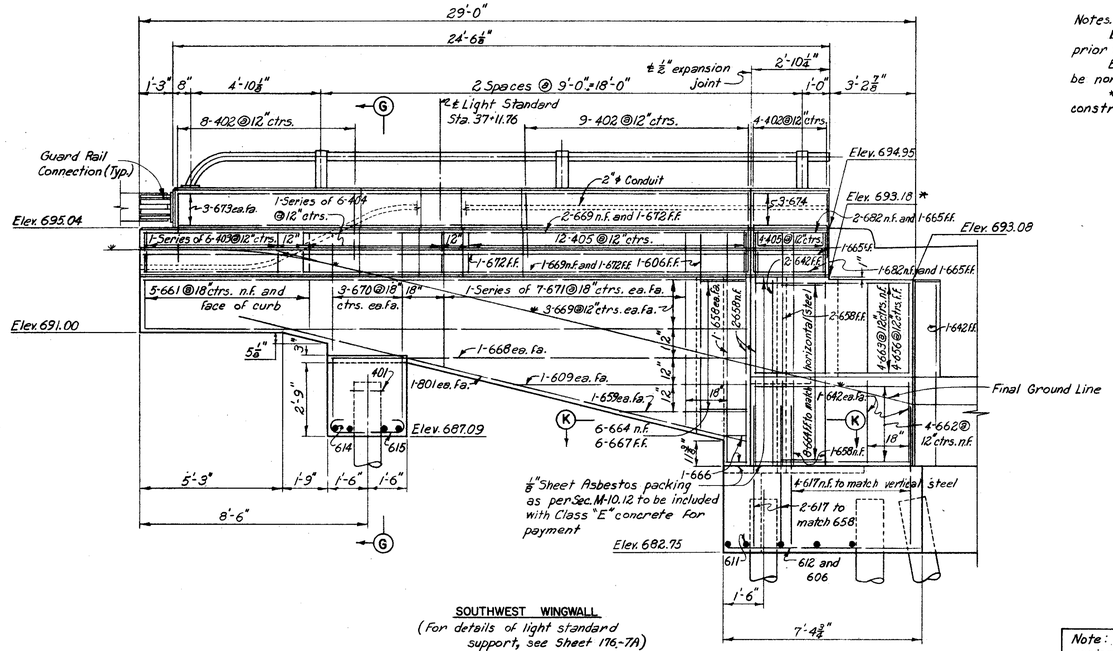
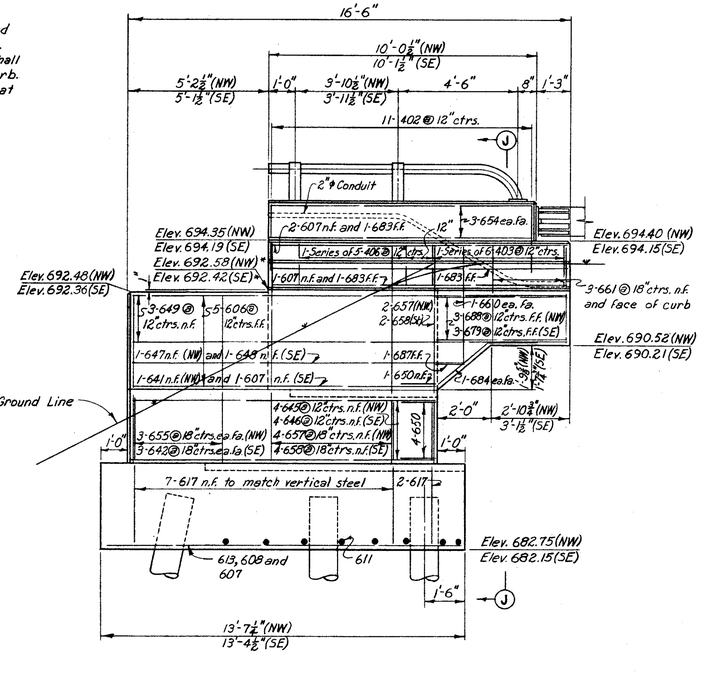
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



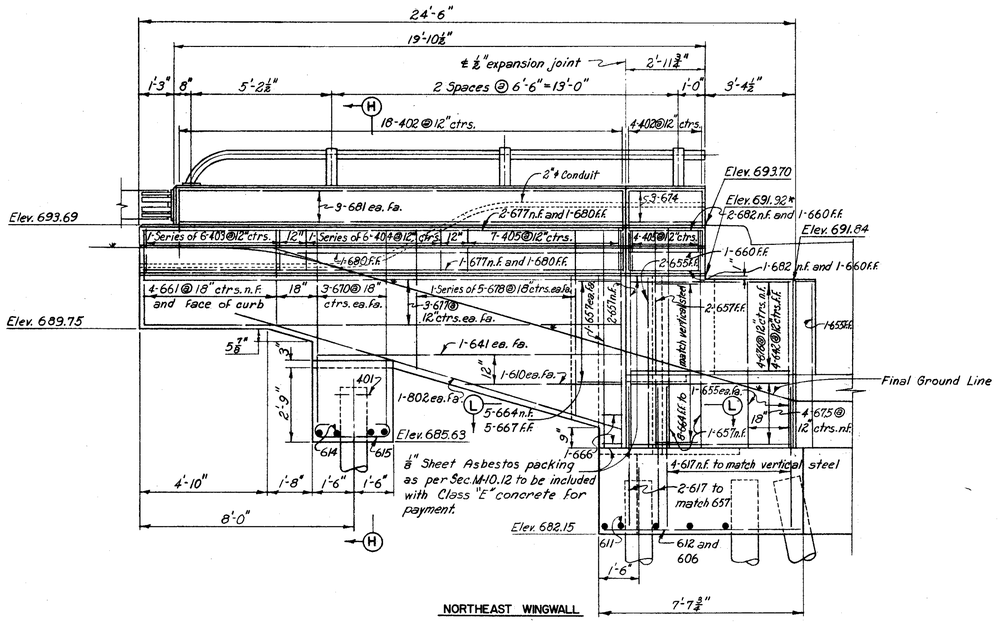
SOUTHWEST WINGWALL
(For details of light standard support, see Sheet 176-7A)

Notes.
Backfill shall be completed prior to construction of curb.
Ends of Railing parapet shall be normal to top of safety curb.
* denotes elevation given at construction joint.

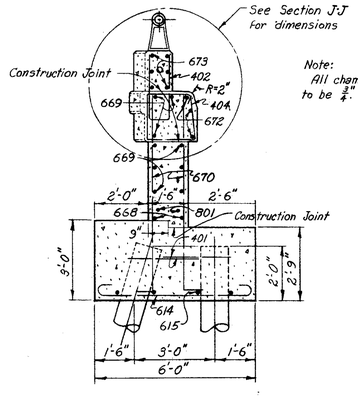
Note: Prefix "A" shall be assigned to all bar marks.



ELEVATION B-B
(Northwest wingwall shown)
(Southeast wingwall similar except as noted)



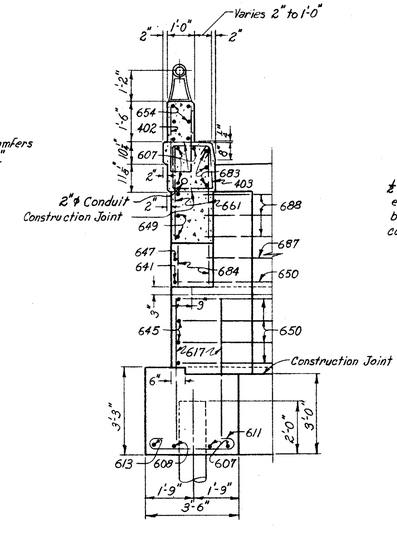
NORTHEAST WINGWALL
ELEVATION A-A



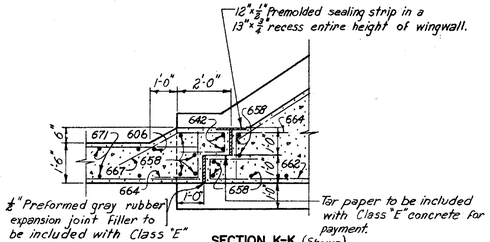
SECTION G-G (Shown)

SECTION H-H (Similar except for bar marks and lighting standard)

Note: All chamfers to be ¾".



SECTION J-J
(Northwest wingwall shown)
(Southeast wingwall similar)



SECTION K-K (Shown)
SECTION L-L (Similar except for bar marks)

NOTES:
For location of lighting conduit, see Sheet 176-7A
For Railing details and Guard Rail connection details, see Sheet 175-7A
Following abbreviations are used: (NW) = Northwest; (SE) = Southeast; n.f. = near Face; f.f. = far face and ea. fa. = ea. face.
For additional notes, see Sheet 165-7A

H.N.T.B. BR. NO. 11 PART 7A

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

ABUTMENT DETAILS

WILLOW FREEWAY OVER REL. WOODLAND AVE.
BR. NO. CUY-21-1544 STA. 34+02.53
Scale: 3/8" = 1'-0" STA. 36+16.47

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN F.S.J.	TRACED	CHECKED T.A.P.	REVIEWED J.C.T.	REVISED
DATE 1-31-59	DATE	DATE 1-15-59	DATE 11-13-59	SHEET 167

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
401	116	6'-11"	144	2'-7"	1'-9"				537
402	65	5'-7"	105	8"	2'-7"				243
403	4-Series 6	4'-9"to 6'-1"	154	8"to 1'-4"	1'-5"	10"to 1'-6"	1'-5"	3 3/16"	87
404	2-Series 6	6'-3"to 6'-9"	154	1'-5"to 1'-8"	1'-5"	1'-7"to 1'-10"	1'-5"	1 3/16"	52
405	27	6'-9"	154	1'-8"	1'-5"	1'-10"	1'-5"		122
406	2-Series 5	6'-1"to 6'-9"	154	1'-4"to 1'-8"	1'-5"	1'-6"to 1'-10"	1'-5"	2"	43
451*	2	8'-11"	131	2'-6"	1'-2"				12
452*	2	9'-11"	131	3'-0"	1'-8"				13
453*	3	9'-5"	131	3'-2"	1'-0"				19
454*	2	5'-7"	155	2'-2"					7
455*	2	6'-1"	155	2'-8"					8
456*	3	6'-3"	155	2'-10"					13
501	224	5'-1"	105	2'-2"	1'-7"				1188
502	2	9'-3"	105	6'-4"	1'-7"				19
503	2	10'-6"	105	7'-7"	1'-7"				22
504	2	5'-4"	105	2'-5"	1'-7"				11
505	2	6'-8"	105	3'-9"	1'-7"				14
601	272	7'-3"	100	5'-11"					2962
602	40	40'-0"	Str.						2403
603	2-Series 5	23'0"to 27'0"	Str.					1'-0"	376
604	2-Series 4	23'3"to 28'9"	Str.					1'-10"	312
605	2	28'-9"	Str.						86
606	17	7'-3"	Str.						185
607	11	11'-0"	Str.						182
608	2	13'-0"	Str.						39
609	42	10'-0"	Str.						631
610	50	5'-9"	Str.						432
611	26	4'-6"	100	3'-2"					176
612	2	9'-0"	108	7'-2"	1'-11"	7"			27
613	2	16'-2"	124	13'-0"	1'-6"	1'-11"	18		49
614	8	7'-0"	100	5'-8"					84
615	8	4'-0"	100	2'-8"					48
616	118	6'-5"	104	5'-9"	10"				1137
617	95	5'-10"	104	5'-2"	10"				832
618	122	6'-10"	104	6'-2"	10"				1252
619	40	7'-0"	104	6'-4"	10"				421
620	84	6'-8"	104	6'-0"	10"				841
621	29	6'-3"	104	5'-7"	10"				272
622	222	7'-9"	105	3'-11"	2'-1"				2384
623	2	26'-6"	Str.						80
624	2	27'-9"	Str.						83
625	7	29'-0"	Str.						305
626	3	31'-0"	Str.						140
627	1-Series 3	26'6"to 30'0"	Str.					1'-9"	127
628	1-Series 3	27'9"to 31'6"	Str.					1'-10½"	133
629	30	36'-9"	Str.						1656
630	30	33'-6"	Str.						1510
631	30	34'-9"	Str.						1566
632	30	39'-6"	Str.						1780
633	7	29'-6"	Str.						310
634	10	23'-3"	Str.						349
635	2-Series 4	23'3"to 29'6"	Str.					2'-1"	317
636	6	26'-0"	Str.						234
637	2	24'-6"	Str.						74
638	1	19'-6"	Str.						29
639	1	20'-0"	Str.						30
640	2	15'-9"	Str.						47
641	5	11'-3"	Str.						84
642	29	6'-9"	Str.						294
643	264	17'-10"	112	1'-5"	6'-8"	11"	5'-4"		7071
644	133	16'-8"	109	1'-5"	6'-8"				3329
645	4	12'-11"	148	1'-11"	11'-3"	8			78
646	4	12'-8"	148	1'-11"	11'-0"	8			76
647	1	12'-3"	Str.						18
648	1	12'-0"	Str.						18
649	6	16'-0"	Str.						144
650	10	6'-10"	104	2'-0"	5'-0"				103
651*	2	9'-5"	141	2'-11"	1'-10"				28
652*	3	14'-6"	141	5'-3"	3'-0"				65
653*	1	5'-0"	Str.						8
654†	12	9'-9"	Str.						

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)
655	13	6'-3"	Str.						122
656	4	6'-6"	Str.						39
657	16	8'-0"	Str.						192
658	16	8'-6"	Str.						204
659	2	5'-0"	Str.						15
660	7	4'-3"	Str.						45
661	30	3'-6"	Str.						158
662	4	9'-10"	149	2'-0"	5'-9"	1'-11"	8		59
663	4	8'-1"	126	5'-9"	8"	2'-0"			49
664	27	3'-5"	104	2'-0"	1'-7"				139
665	3	4'-0"	Str.						18
666	4	6'-5"	112	1'-8"	1'-7"	8"	7"		39
667	11	6'-6"	149	1'-8"	1'-8"	3'-0"	6		107
668	2	15'-6"	Str.						47
669	9	22'-6"	Str.						304
670	12	8'-2"	104	7'-6"	10"				147
671	2-Series 7	5'-0"to 7'-3"	Str.					4 3/16"	129
672	3	22'-7"	133	12'-0"	10'-7"				102
673†	6	21'-3"	Str.						——
674†	6	6'-10"	109	2'-6"	8"				——
675	4	10'-1"	149	2'-0"	6'-0"	1'-11"	8		61
676	4	8'-4"	126	6'-0"	8"	2'-0"			50
677	9	17'-9"	Str.						240
678	2-Series 5	5'-3"to 7'-0"	Str.					5/16"	92
679	3	8'-9"	104	5'-1"	3'-10"				39
680	3	17'-9"	133	12'-0"	5'-9"				80
681	6 †	16'-6"	Str.						——
682	6	2'-6"	Str.						23
683	6	9'-6"	139	9'-6"					86
684	4	6'-4"	108	1'-11"	4'-6"	.10			38
685	7	29'-9"	Str.						313
686	2	21'-6"	Str.						65
687	2	4'-8"	104	1'-0"	3'-10"				14
688	3	8'-6"	104	4'-10"	3'-10"				38
801	2	19'-0"	Str.						101
802	2	15'-0"	Str.						80
								Total	41,062

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	B	C	D	SERIES INCREMENT	WEIGHT (LBS)

Note: Prefix "A" shall be assigned to all bar marks.

MICROFILMED JUL 8 1965

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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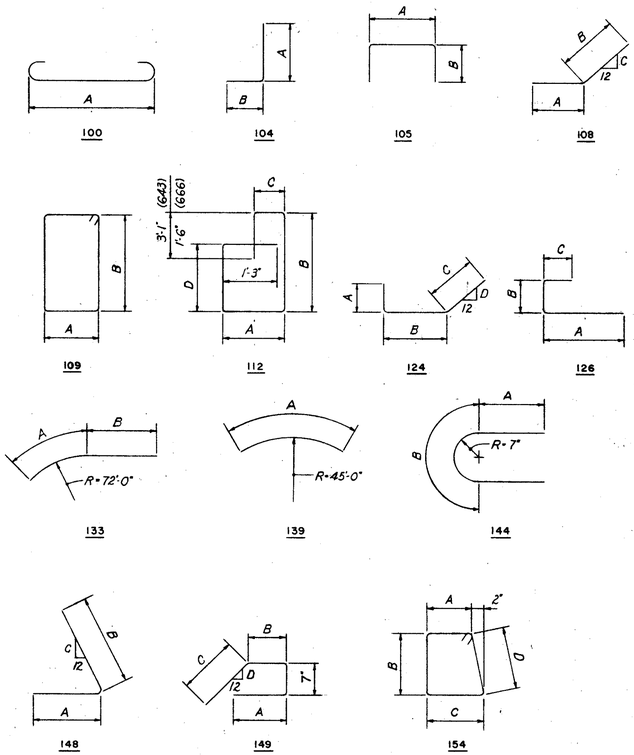
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

BENDING DIAGRAMS



NOTES:
*Bars 451 thru 456 and 651 thru 653 are for the Light Standard Support. For their bar bending diagrams and placement see sheet 176-7A
†Bars 654, 673, 674 and 681 are included for payment with "Item S-14, Railing."
All bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
For Replacement Schedule see sheet 103-7A

H.N.T.B. BR. NO. 11 PART 7A

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

REINFORCEMENT SCHEDULE - ABUTMENTS

WILLOW FREEWAY OVER REL. WOODLAND AVE.
BR. NO. CUY-21-1544 STA. 34+02.53
Scale: None STA. 36+16.47

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN TJP	TRACED	CHECKED RS	REVIEWED JCT	REVISED
DATE 1-16-59	DATE	DATE 1-19-59	DATE 11-13-59	SHEET 168

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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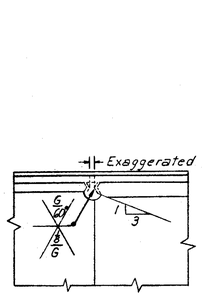
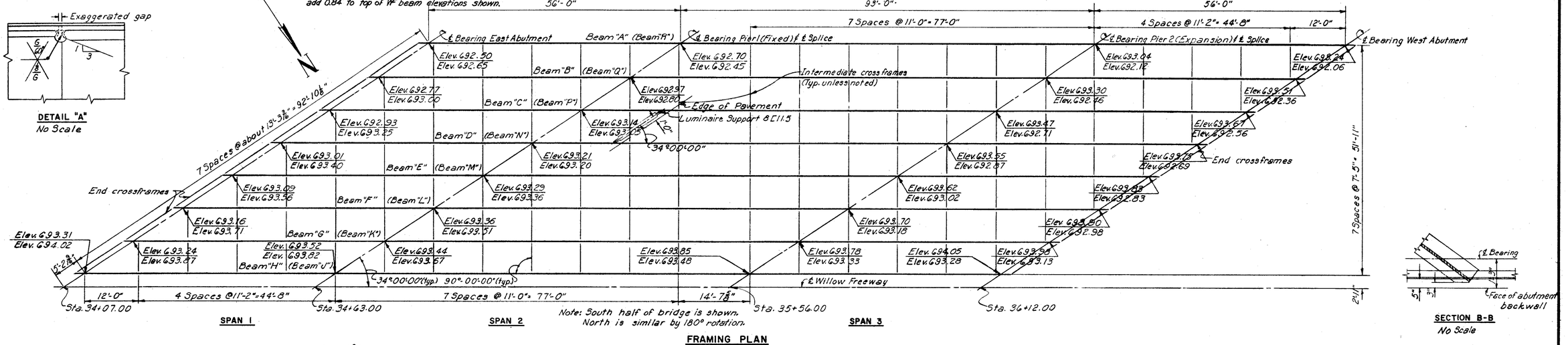
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



DETAIL "A"
No Scale

Note: Elevations shown are to the top of WF beams. (Exclusive of cover plates)
Top elevations are for the south half.
Bottom elevations are for the north half.
To obtain top of pavement elevations at supports add 0.84' to top of WF beam elevations shown.

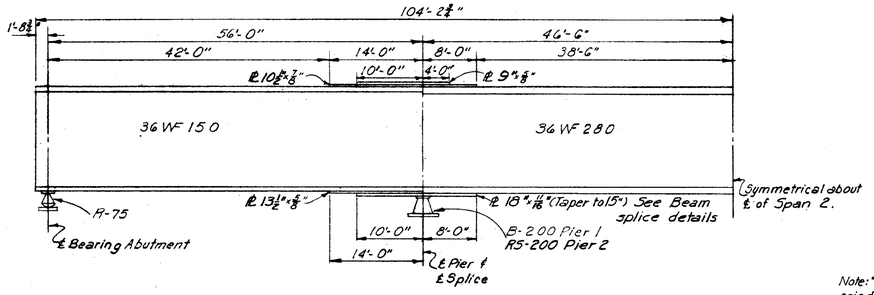


SPAN 1 SPAN 2 SPAN 3

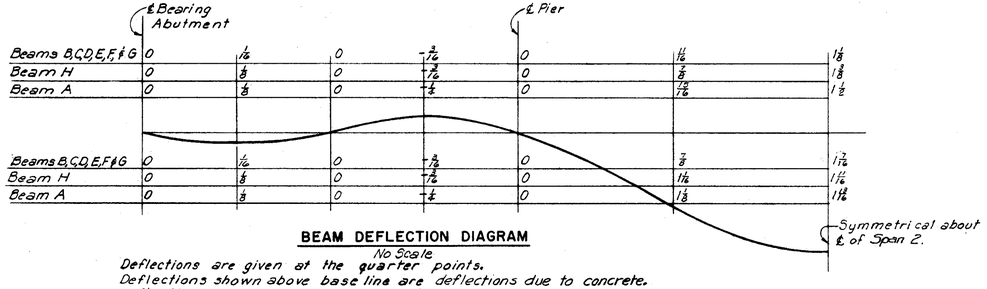
Note: South half of bridge is shown. North is similar by 180° rotation.

FRAMING PLAN
Scale 1/32" = 1'-0"

SECTION B-B
No Scale

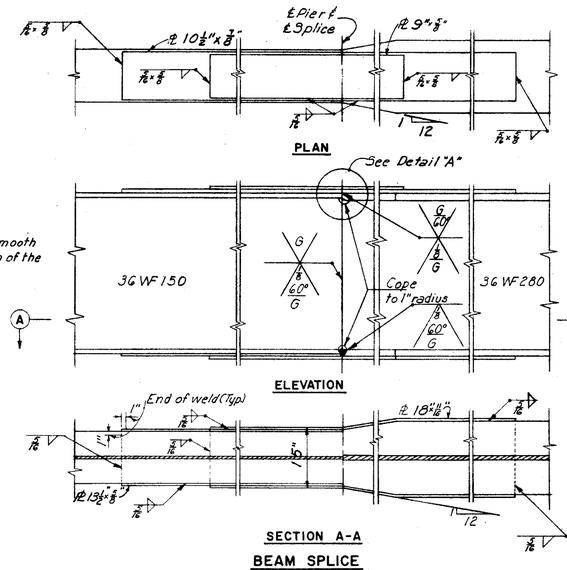


TYPICAL BEAM ELEVATION
No Scale



BEAM DEFLECTION DIAGRAM
No Scale

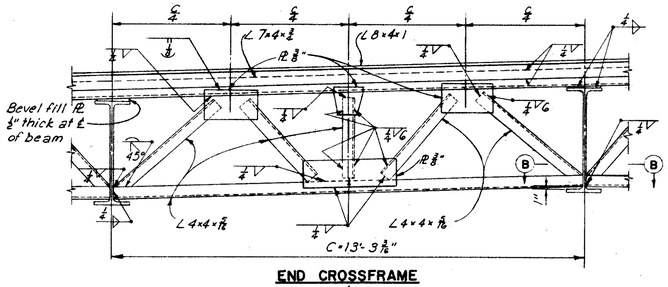
Deflections are given at the quarter points.
Deflections shown above base line are deflections due to concrete.
Deflections shown below base line are total dead load deflections.
Deflections are measured to the nearest 1/16 inch.
Negative deflections are upward.



BEAM SPLICE
No Scale

BEAM SPLICE WELDING PROCEDURE

1.-Raise the abutment ends of the beams 1 1/2".
2.-Butt-Weld the beam flanges and web using the following sequence: make two passes on each flange, then two on the web; repeat, using one pass at each location, until welds are completed.
3.-Weld the bottom and top cover plates.
4.-Lower the beam ends to final position.



END CROSSFRAME
Scale 1/2" = 1'-0"

NOTES:

The beams in Span 2 shall be cambered as follows. Where the total deflection is 3/4" to 1", the required camber will be 1", and if greater than 1", the required camber will be the same as this amount.
Beams in Spans 1 & 3 do not require camber, but shall be fabricated so that any curved beam will be placed with the convex flange down.
For drainage details, see Sh. 174-7A
For Intermediate cross-frame details, see Sh. 163-7A
For typical cross-section through deck, see Sh. 170-7A
For details of end dams, see Sh. 173-7A
For details of underdeck lighting see Sh. 176-7A & 177-7A.
For details of rocker base plates, see Sh. 173-7A
For other rocker details, and details of bolsters, see Ohio Standard Drawing RB-1-55.

H.N.T.B. BR. NO. 11 PART 7A

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

FRAMING PLAN

WILLOW FREEWAY OVER REL. WOODLAND AVE.

BR. NO. CUY-21-1544 STA. 34+02.53

Scale: As noted STA. 36+16.47

WILLOW INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN R.A.	TRACED	CHECKED A.R.K.	REVIEWED J.C.T.	REVISED
DATE 11-15-57	DATE	DATE 12-2-58	DATE 11-13-59	SHEET 169

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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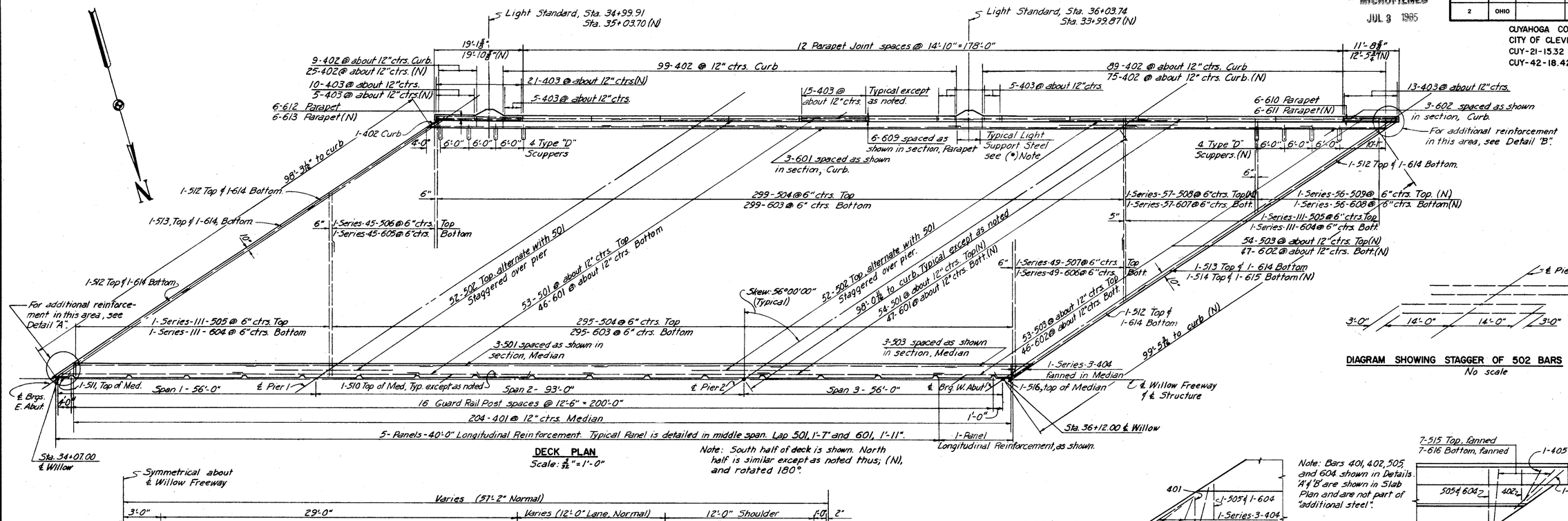
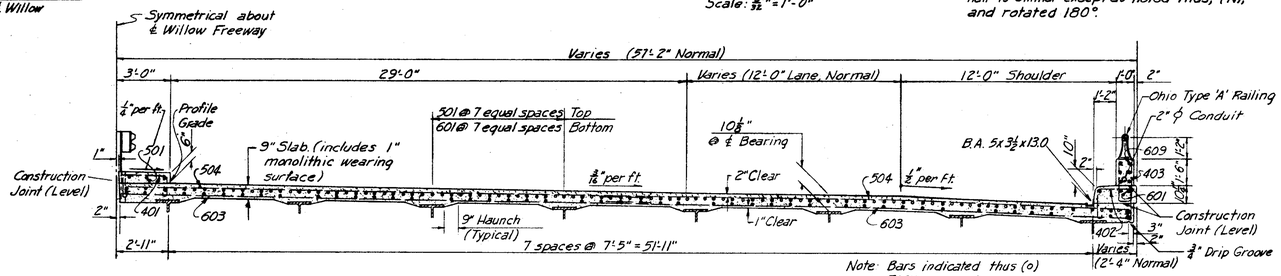
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



DECK PLAN
Scale: ⅜"=1'-0"

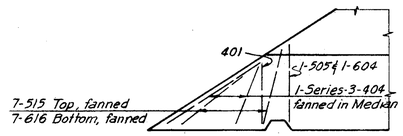
Note: South half of deck is shown. North half is similar except as noted thus; (N), and rotated 180°.

DIAGRAM SHOWING STAGGER OF 502 BARS
No scale

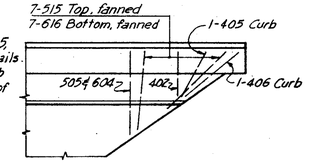


TYPICAL SECTION
Scale: ½"=1'-0"

Note: Bars indicated thus (o) are 502's over piers only.



DETAIL A
Scale: ¾"=1'-0"



Note: Bars 401, 402, 505 and 604 shown in Details 'A' & 'B' are shown in Slab Plan and are not part of "additional steel".

DETAIL B
Scale: ¾"=1'-0"

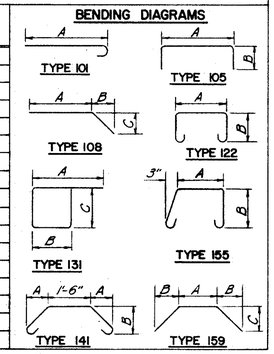
Note: Prefix "S" shall be assigned to all bar marks.

NOTES:
In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress upgrade. The slab may be placed in sections, between transverse construction joints which are parallel to the transverse bars in the slab and are located near the center of any span.
For intermediate cross frame details see sheet 163-7A
For end cross frame details, see sheet 169-7A
For light standard support and other lighting details, see sheet 176-7A
For Railing, Guard Rail and Parapet Joint details, see sheet 175-7A
For Drainage details, see sheet 174-7A
For End Dam details, see sheet 173-7A
Bars of a series shall vary in length by a constant increment.

REINFORCEMENT SCHEDULE

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS A	B	C	SERIES INCREMENT	WEIGHT POUNDS
401	408	5'-3"	122	2'-6"	1'-0"			1431
402	398	5'-1"	122	1'-8"	1'-4"			1351
403	422	4'-5"	105	8"	2'-"			1201
404	4 Series of 3	5'-3" to 6'-11"	122	2'-6" to 4'-2"	1'-0"		.10"	49
405	2	5'-3"	122	1'-10"	1'-4"			7
406	2	6'-1"	122	2'-8"	1'-4"			8
*451	8	8'-11"	131	2'-6"	1'-2"	2'-10"		48
*452	8	9'-11"	131	3'-0"	1'-8"	2'-10"		52
*453	12	9'-5"	131	3'-2"	1'-0"	2'-10"		76
*454	8	5'-7"	155	2'-2"	1'-4"			28
*455	8	6'-1"	155	2'-8"	1'-4"			32
*456	12	6'-3"	155	2'-10"	1'-4"			52
501	561	40'-0"	Str.					23405
502	208	31'-0"	Str.					6725
503	113	16'-0"	Str.					1886
504	1188	29'-10"	101	29'-3"				36966
505	3 Series of 111	3'-6" to 40'-7"	101	2'-11" to 40'-0"			4⅛"	7655
506	2 Series of 45	12'-10" to 27'-8"	Str.				4⅛"	1901
507	3 Series of 49	13'-1" to 29'-3"	Str.				4⅛"	2164
508	1 Series of 57	21'-10" to 40'-7"	101	21'-3" to 40'-0"			4"	1855
509	1 Series of 56	3'-7" to 21'-7"	101	3'-0" to 21'-0"			3 15/16"	735
510	32	13'-0"	159	11'-2"	0'-6"	0'-10"		434
511	2	6'-0"	108	5'-1"	0'-6"	0'-10"		13
512	8	35'-1"	101	34'-6"				293
513	3	34'-6"	Str.					108
514	1	36'-0"	Str.					38
515	28	3'-7"	101	3'-0"				105
516	2	3'-2"	108	2'-3"	0'-6"	0'-10"		7
601	491	40'-0"	Str.					29499
602	99	17'-9"	Str.					2639
603	1188	29'-6"	Str.					52639
604	3 Series of 111	2'-11" to 40'-0"	Str.				4⅛"	10733
605	2 Series of 45	12'-11" to 27'-9"	Str.				4⅛"	2749
606	2 Series of 49	13'-4" to 29'-6"	Str.				4⅛"	3152
607	1 Series of 57	21'-3" to 40'-0"	Str.				4"	2622
608	1 Series of 56	3'-0" to 21'-0"	Str.				3 15/16"	1009
‡609	144	14'-6"	Str.					—
‡610	6	11'-3"	Str.					—
‡611	6	12'-0"	Str.					—
‡612	6	18'-9"	Str.					—
‡613	6	19'-6"	Str.					—
614	11	34'-9"	Str.					574
615	1	36'-0"	Str.					54
616	28	3'-0"	Str.					126
*651	8	9'-5"	141	2'-11"	1'-10"			113
*652	12	14'-6"	141	5'-3"	3'-0"			261
*653	4	5'-0"	Str.					30
							Total	Weight 194,825

BENDING DIAGRAMS



* Bars 451 through 456 and 651 through 653 are for the light supports. For their placement, see sheet 176
‡ Bars 609, 610, 611, 612 & 613 are included for payment with "Item 5-14, Railing."

Note: All bar dimensions are given out to out.
For Replacement Schedule, see sheet 103-7A

H.N.T.B. BR. NO. 11 PART 7A

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

DECK PLAN

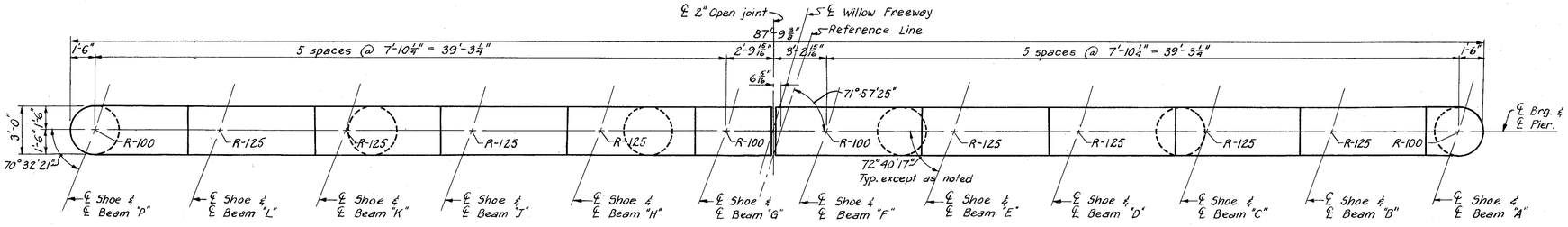
WILLOW FREEWAY OVER REL. WOODLAND AVE.

BR. NO. CUY-21-1544 STA. 34+02.53
Scale: As noted STA. 36+16.47

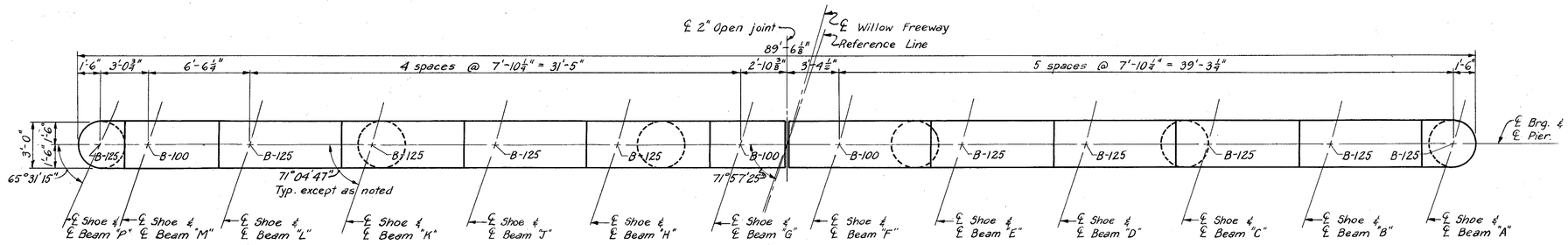
WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

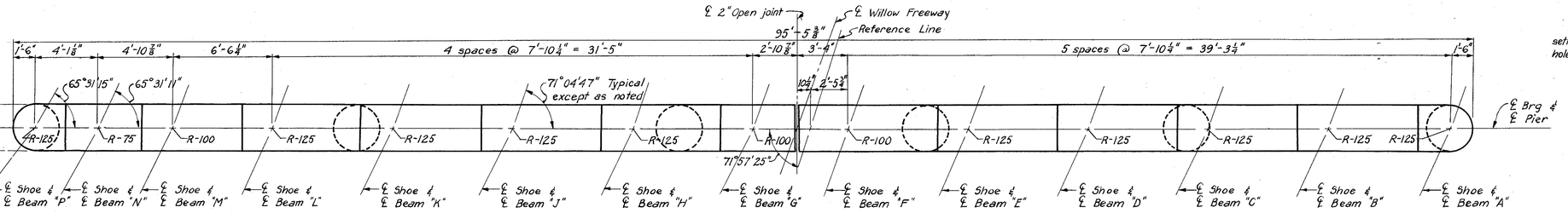
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DRK		G.A.T.	JCT	
DATE 11-20-58	DATE	DATE 12-3-58	DATE 11-13-59	SHEET 170



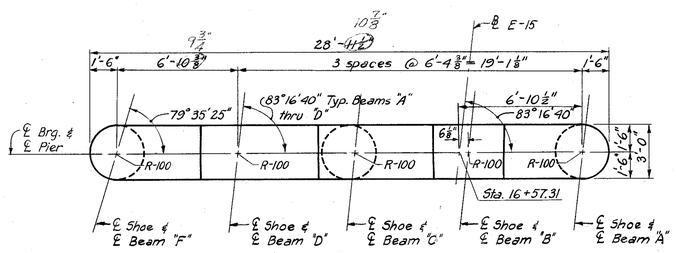
BRIDGE NO. 8 - PIER 1



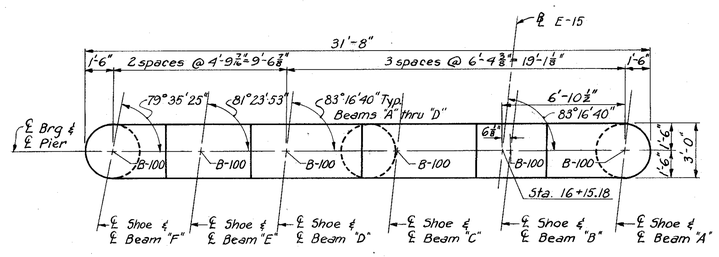
BRIDGE NO. 8 - PIER 2



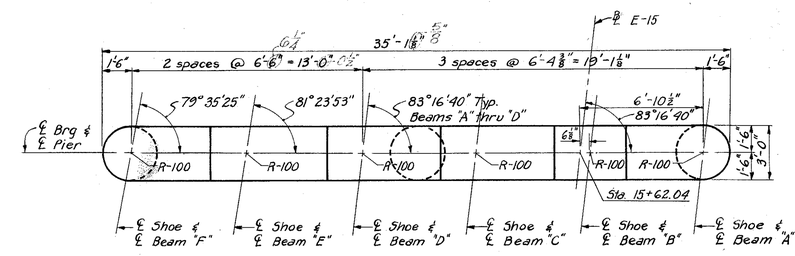
BRIDGE NO. 8 - PIER 3



BRIDGE NO. 9 - PIER 1



BRIDGE NO. 9 - PIER 2

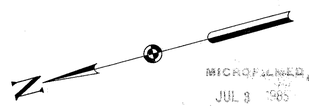


BRIDGE NO. 9 - PIER 3

TOP OF MASONRY ELEVATIONS

BRIDGE NO. 8								BRIDGE NO. 9			
BEAM	PIER 1	PIER 2	PIER 3	BEAM	PIER 1	PIER 2	PIER 3	BEAM	PIER 1	PIER 2	PIER 3
A	692.57	692.21	691.92	H	690.11	689.89	689.62	A	693.35	692.447	690.90
B	692.06	691.83	691.54	J	689.72	689.51	689.24	B	693.49	692.569	690.99
C	691.67	691.44	691.15	K	689.34	689.12	688.85	C	693.37	692.447	690.88
D	691.28	691.06	690.77	L	688.95	688.74	688.47	D	693.24	692.324	690.76
E	690.89	690.67	690.39	M	——	688.64	688.28	E	——	692.30	690.70
F	690.63	690.29	690.13	N	——	——	688.12	F	693.11	692.578	690.50
G	690.61	690.27	689.11	P	688.69	688.27	687.71				

Revised 9-21-60



FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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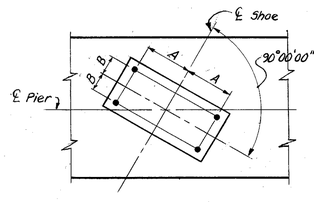
MICROFILMED
JUL 9 1985

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



ANCHOR BOLTS ANCHOR BARS

LAYOUT DIAGRAMS

No scale

NOTES:

The anchor bolts and anchor bars and all drainage provisions shall be furnished and set under this contract.

The 4"ϕ rigid galvanized conduits were placed and capped 1'-0" above tops of masonry under a previous contract. Connections to service panels shall be included in this contract.

Electrical grounds which extend above top of masonry were placed under a previous contract. These grounds shall be spliced and connected to the superstructure with a No.6 copper wire bolted to the bottom flange and to the bottom portion of the shoe. Grounds are located in the outside columns as follows:

Bridge No.4 Pier 2-N ℄S.
Bridge No.8 Pier 2. Bridge No.10 Pier 1.
Bridge No.9 Pier 2. Bridge No.11 Pier 1.

For drainage details, see Sh. 174-7A
For additional drainage details at Pier 2, Bridge 4, see Sh. 135-7A
For details of 4"ϕ rigid galvanized conduit, see Sh. 177-7A
Crossframes or beam/girder flanges will interfere with the setting of anchor bars or anchor bolts at all piers, therefore the holes shall be drilled prior to erection of the interfering member.

TYPE OF SHOE	DIMENSIONS A	B
R-75	9"	
R-100	9½"	
R-125	10"	
B-100	7½"	3"
B-125	8"	3½"

PART 7A

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

PIER CAP PLANS
BRIDGE NOS. 8 & 9

Scale: 1/4"=1'-0"

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L.	A.L.	CKB	JCT	9-22-60
DATE 12-6-59	DATE 1-26-59	DATE 1-29-59	DATE 11-13-59	SHEET 171

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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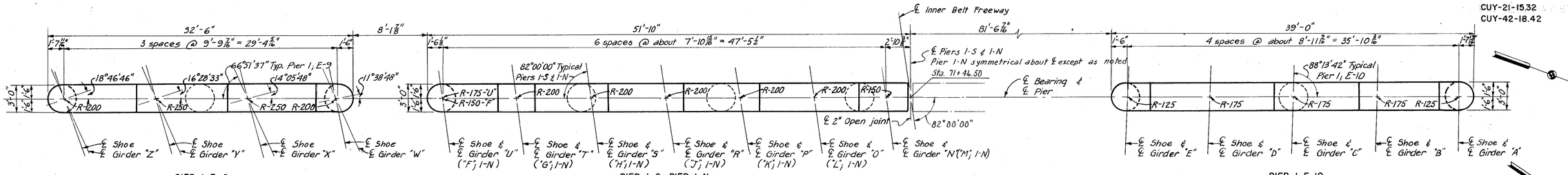
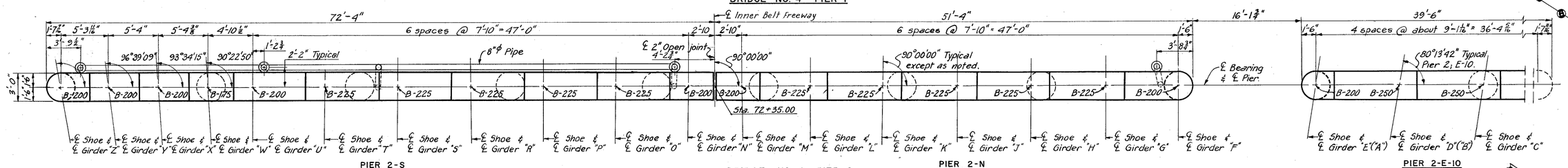
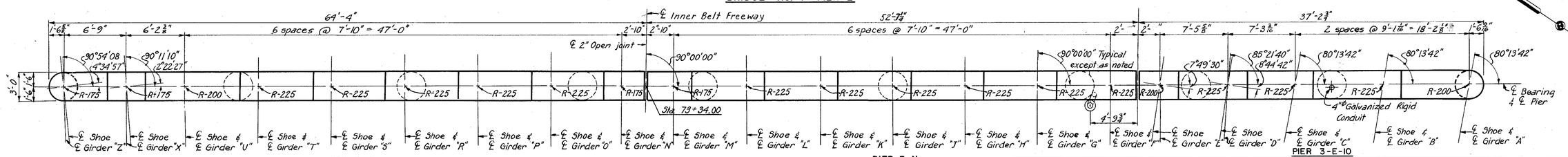
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



BRIDGE NO. 4 - PIER 1

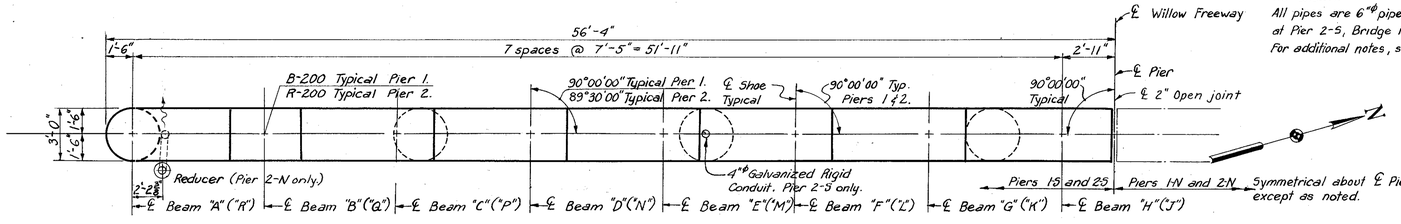


BRIDGE NO. 4 - PIER 2



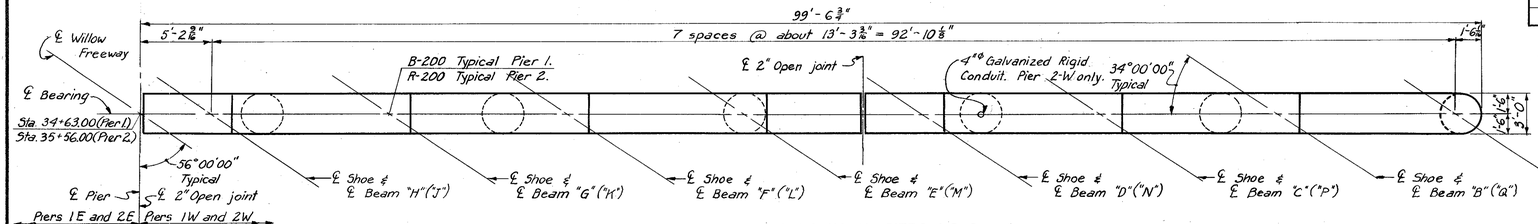
BRIDGE NO. 4 - PIER 3

(◎) - Indicates 6"×12" reducer
(--) - Indicates similar girder not shown.
All pipes are 6"ϕ pipe, except at Pier 2-S, Bridge No. 4.
For additional notes, see Sh. 171.-7A



BRIDGE NO. 10 - PIERS 1 & 2

Scale: 1/4" = 1'-0"



BRIDGE NO. 11 - PIERS 1 & 2

TOP OF MASONRY ELEVATIONS

BRIDGE NO. 4

GIRDER	PIER 1	PIER 2	PIER 3	GIRDER	PIER 1	PIER 2	PIER 3	GIRDER	PIER 1	PIER 2	PIER 3
A	687.26	686.13	683.43	J	690.92	687.92	684.36	S	691.92	688.18	684.23
B	686.93	686.07	683.53	K	691.10	688.04	684.48	T	692.02	688.13	684.11
C	686.86	686.15	683.67	L	691.28	688.17	684.60	U	691.94	687.95	684.03
D	686.79	686.25	683.79	M	691.78	688.33	684.87	W	690.86	687.91	
E	687.00	686.47	683.94	N	691.81	688.34	684.87	X	690.35	687.59	684.04
F	690.69	687.59	683.99	O	691.61	688.27	684.60	Y	689.94	687.46	
G	690.56	687.68	684.11	P	691.71	688.24	684.48	Z	689.66	687.28	683.94
H	690.74	687.80	684.23	R	691.82	688.21	684.36				

BRIDGE NO. 10 | BRIDGE NO. 11

BEAM	PIER 1	PIER 2	BEAM	PIER 1	PIER 2	BEAM	PIER 1	PIER 2	BEAM	PIER 1	PIER 2
A	692.38	693.06	J	692.05	692.19	A	688.23	688.57	J	689.02	689.35
B	692.67	693.35	K	691.89	691.95	B	688.50	688.84	K	688.86	689.20
C	692.63	693.28	L	691.73	691.71	C	688.67	689.00	L	688.71	689.04
D	692.51	693.02	M	691.57	691.47	D	688.74	689.08	M	688.55	688.89
E	692.40	692.81	N	691.41	691.23	E	688.82	689.15	N	688.40	688.73
F	692.28	692.60	P	691.25	690.99	F	688.90	689.23	P	688.24	688.58
G	692.17	692.39	Q	691.09	690.75	G	688.97	689.31	Q	688.00	688.33
H	692.05	692.19	R	690.93	690.51	H	689.05	689.38	R	687.65	687.98

For layout diagrams, see Sh. 171.-7A

TYPE OF SHOE	DIMENSIONS A	B
R-125	10"	
R-150	11"	
R-175	11½"	
R-200	12"	
R-225	12½"	
R-250	13"	
B-175	9½"	5"
B-200	10"	6"
B-225	10½"	6½"
B-250	11"	7"

PART 7A

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

PIER CAP PLANS
BRIDGE NOS. 4, 10 & 11

Scale: 3/16" = 1'-0" Except as noted

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L.	A.L.	C.K.B	J.C.T	
DATE 1-29-59	DATE 1-29-59	DATE 1-30-59	DATE 11-13-59	SHEET 172

Note : Roadway and curb joints shall be shop assembled, corrected to provide uniform close contact between the two mating parts of each joint, match-marked and erected to required lines and grades. Omit shop coat on all portions of end dams. Portions in contact with steel or concrete shall not be painted. All other portions shall be cleaned and given the shop coat in the field as well as the two field coats.

All sliding contact surfaces of the expansion joint materials shall not be painted and shall be lubricated with flake graphite prior to placing of backwall concrete.

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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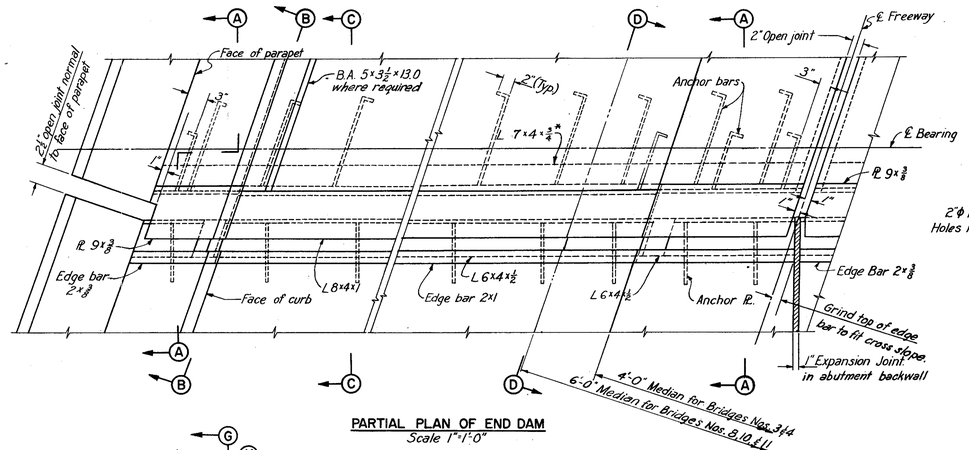
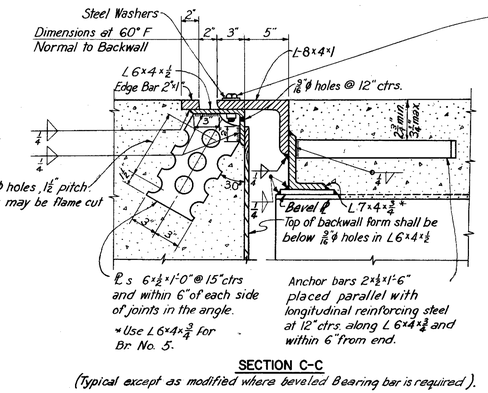
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



PARTIAL PLAN OF END DAM
Scale 1"=1'-0"

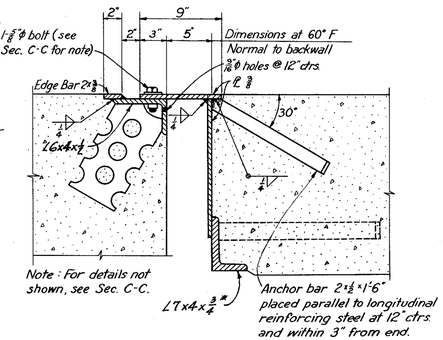


⅞" ϕ x 2" bolts at not more than 2'-0" ctrs. with nuts tack-welded to under side of lower angle. Holes to be 1 1/16" ϕ in upper angle. Center ⅞" ϕ bolts in 1 1/16" holes. Apply flake graphite between washers and angles. Turn bolts tight and release one-half turn. Remove bolts as soon as concrete has reasonably set, preferably within 2 hours after placing. Fill holes with bituminous material.

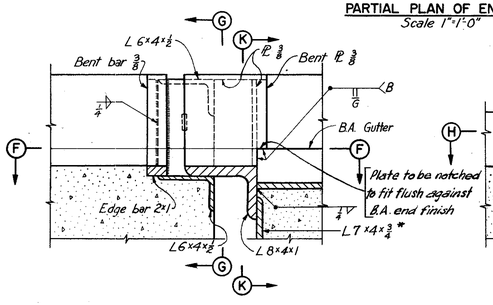
Note : A welded butt joint shall be provided at the apex of the 5'-0" rounding for that portion of the end dam attached to the superstructure of Bridges No. 3,4,5,9,10 & 11. (See detail of Welded Butt Joint.) The portion attached to the backwall shall be placed in segments not less than 6'-0" in length with a joint at the apex of the 5'-0" rounding and at all abutment contraction joints. These shall be closely butted but shall not be welded.

Beveled bearing bars shall be used for end dams at the following locations only :
1. Bridge No. 4, East and West Abutments
2. Bridge No. 9, Abutment E-15
See detail of Beveled Bearing Bar.

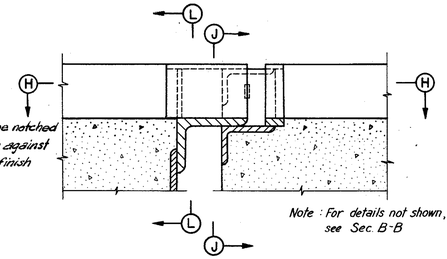
SECTION C-C
(Typical except as modified where beveled Bearing bar is required).



SECTION A-A
(Typical except as modified where beveled bearing bar is required.)



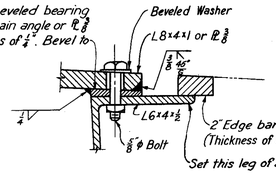
SECTION B-B

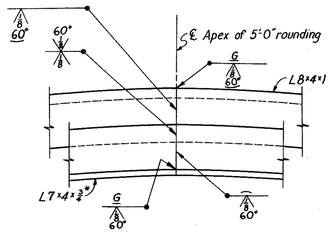


Note : For details not shown, see Sec. B-B

SECTION D-D

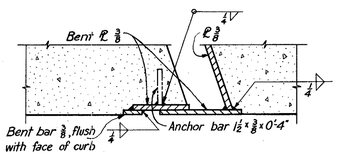
Continuous 3" beveled bearing bar welded to main angle or ℄ ⅜ with min. thickness of ¼". Bevel to match grade..



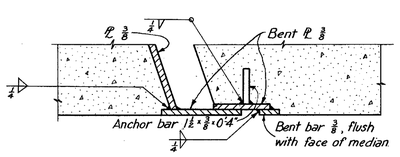


WELDED BUTT JOINT IN SUPERSTRUCTURE END DAM ANGLES AT APEX OF 5'-0" ROUNDING

Note:
All end dam steel shall be included with "Item 5-7, Structural Steel" for payment.



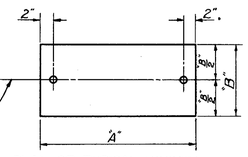
SECTION F-F



SECTION H-H

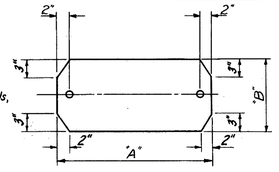
DETAIL OF BEVELED BEARING BAR
(This section taken parallel to line of expansion)
Scale 3"=1'-0"

1⅛" ϕ holes for 1½" ϕ x1'-6" anchor bars. Anchor bars to be embedded to such depth that the top of bar is ¼" below the top of masonry ℄. Typical for all masonry plates.



PLAN OF TYPICAL ROCKER MASONRY PLATE
No Scale

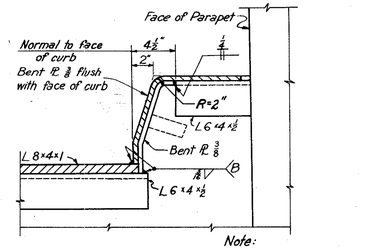
Note : For other Rocker Details, see Ohio State Standard Drawing RB-1-55.



PLAN OF SPECIAL ROCKER MASONRY PLATE FOR ROCKERS MARKED "R S"
No Scale

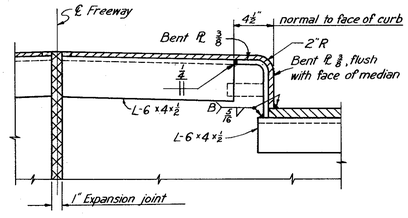
ROCKER NO.	DIMENSIONS A (in.)	B (in.)
R-75	22	8
R-100	23	10
R-125	24	11
R-150	26	12
R-175	27	14
R-200	28	16
R-225	29	17
R-250	30	18
R-275	31	19
R-300	32	20

Note:
Details for Rockers marked "RS" are the same as for Rockers marked "R".

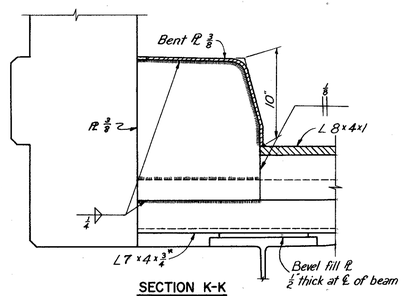


SECTION G-G

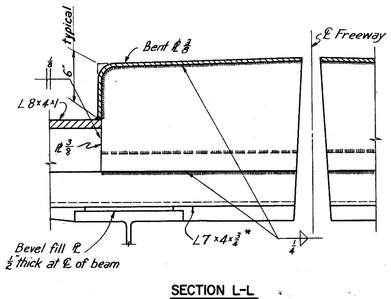
Note:
Bend Curb ℄ at Safety Curb with B.A. Gutter only.



SECTION J-J



SECTION K-K



SECTION L-L

PART 7A

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

END DAM DETAILS

Scale: 1 1/2 = 1'-0" Except as noted

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
FLC	RJK	A.J.	JCT	
DATE 11-24-58	DATE 11-26-58	DATE 12-5-58	DATE 11-13-59	SHEET 173

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

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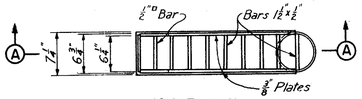
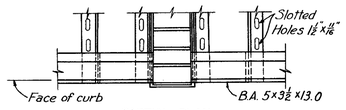
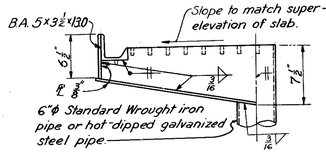
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



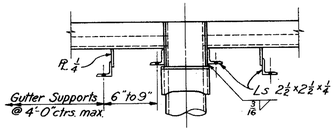
SCUPPER PLAN



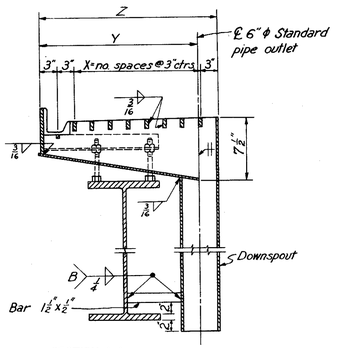
PARTIAL PLAN



SCUPPER ELEVATION



ELEVATION

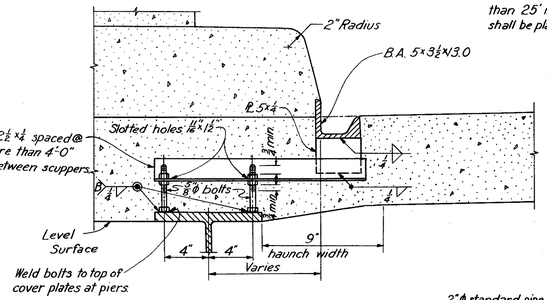


SECTION A-A
(Typical except where scupper empties into trough or 12x6 Standard Concentric reducer)

SCUPPER TYPE	DIMENSIONS		
	X	Y	Z
A	2	11⅞"	1'-3"
B	3	1'-2¾"	1'-6"
C	5	1'-8¾"	2'-0"
D	7	2'-2¾"	2'-6"

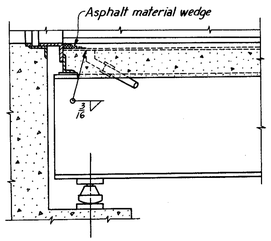
SCUPPER DETAILS
Scale 1"=1'-0"

Note:
Milled end butt joints shall be used in the bulb angle gutter at not less than 25' intervals. Support angles shall be placed 6" to 9" on each side of joint.

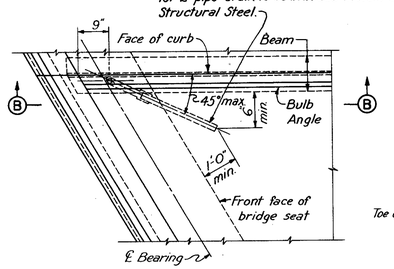


GUTTER SUPPORT
Scale 1½"=1'-0"

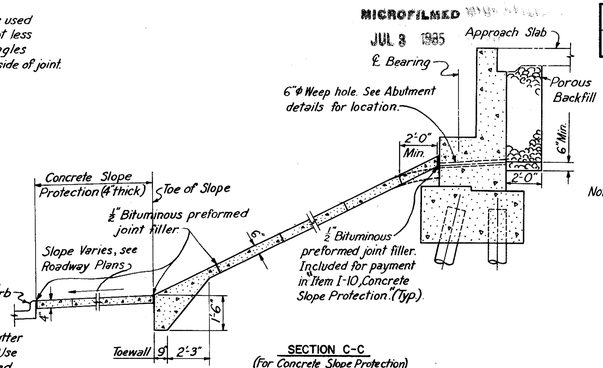
2"ø standard pipe drain at end of B.A. gutter where grade slopes down to end dam. Use standard elbow and coupling. A welded bend may be used where space does not permit use of a standard elbow. Payment for 2" pipe drain to be included in Item S-7 Structural Steel.



SECTION B-B



PARTIAL PLAN AT ABUTMENT

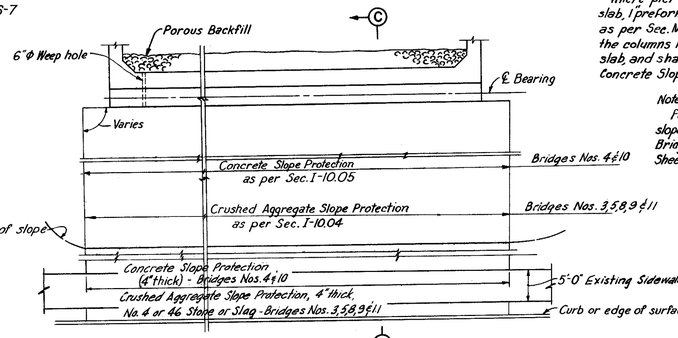


SECTION C-C
(For Concrete Slope Protection)
Scale ¼"=1'-0"

Note:
Concrete or Crushed Aggregate Slope Protection material, as required, shall be placed within the limits shown on the Site Plans.
Slope Protection material required on all roadway areas beyond the toe of slopes shall be as follows:
Concrete shall conform to Sec. I-10.05 except that it shall be 4" thick.

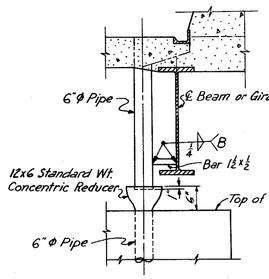
Crushed aggregate shall be 4" thick and shall consist of No. 4 or 46 stone or slag placed flush with the adjacent finished ground.
Where pier columns extend through the slab, I preformed expansion joint material, as per Sec. M-10.02, shall be placed around the columns for the full thickness of the slab, and shall be included with "Item I-10, Concrete Slope Protection, (4") for payment.

Note:
For additional details of slope protection treatment at Bridge No. 4, E. Abutment, see Sheet 120.-7A

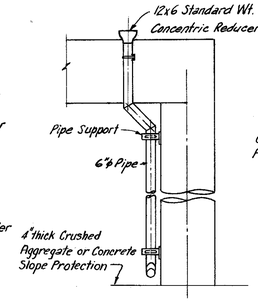


PLAN
Not to scale

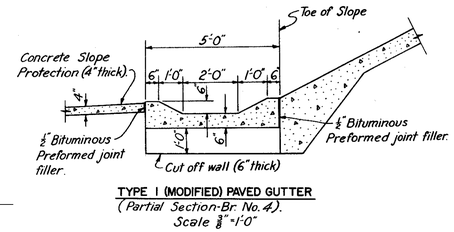
DETAIL OF DRAIN AT LOW END OF GUTTER
Scale ½"=1'-0"



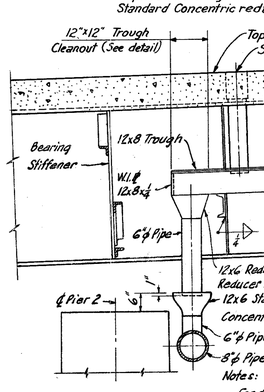
SECTION E-E
Scale ½"=1'-0"



DRAINAGE PROVISIONS AT PIERS
Scale ½"=1'-0"

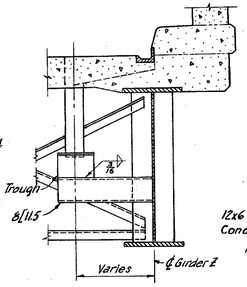


TYPE I (MODIFIED) PAVED GUTTER
(Partial Section-Br. No. 4).
Scale ⅜"=1'-0"

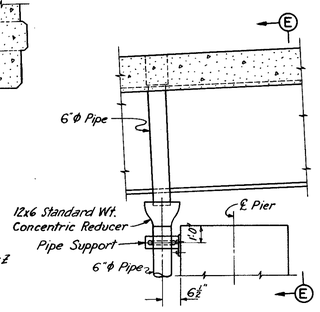


TROUGH ELEVATION
(Elevation of trough attached to Girder E, Bridge No. 4. shown. Other troughs similar).
Scale ½"=1'-0"

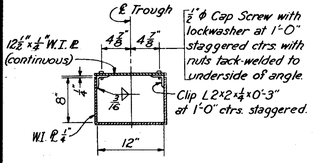
Notes:
For details of 8"ø Pipe along West face of Pier 2, see Sheet 135-N Deck Details - South Half.
6"ø Pipe emptying trough shall be positioned so that it will be centered over 12x6 Std. Wt. Concentric Reducer at 60°F.



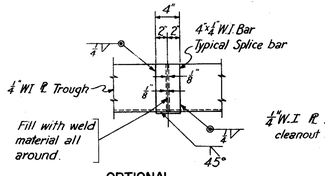
SECTION D-D
Scale ½"=1'-0"



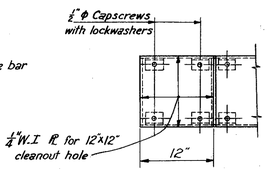
TYPICAL SCUPPER ELEVATION AT PIERS
Scale ½"=1'-0"



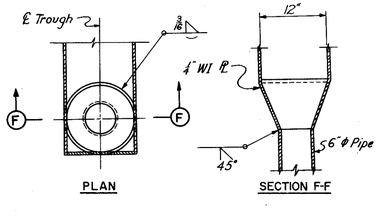
TYPICAL TROUGH SECTION
Scale 1"=1'-0"



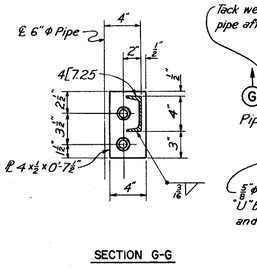
OPTIONAL TROUGH FIELD SPLICE
Scale 1"=1'-0"

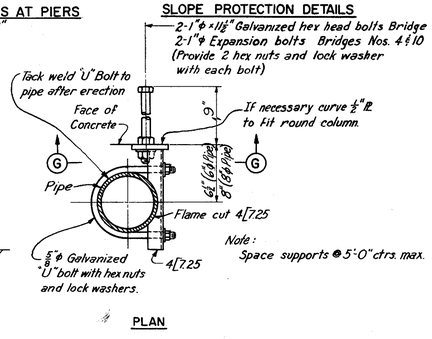


PLAN OF TROUGH CLEANOUT
Scale 1"=1'-0"



REDUCER DETAILS
Scale 1"=1'-0"





PIPE SUPPORT DETAILS
Scale ½"=1'-0"

SLOPE PROTECTION DETAILS
2-1"ø x 11½" Galvanized hex head bolts Bridge No. 3
2-1"ø Expansion bolts Bridges Nos. 4 & 10
(Provide 2 hex nuts and lock washer with each bolt)

Note:
Space supports @ 5'-0" ctrs. max.

NOTES:
All 6"ø & 8"ø pipe shall be standard weight wrought iron or hot dipped galvanized steel pipe with extra strong weld type seamless steel fittings or galvanized Victaulic couplings or approved equal.
Welded joints of all pipes and fittings to be single bevel butt welds - full penetration with ⅛" root opening and 45° included angle.
Where W.I. plates are called for, Mayari R or Cor-Ten steel may be used.
All welds on drainage fittings shall be ¼" fillet welds except as shown.
Steel pipe, all steel fittings, all pipe supports, trough supports, nuts, bolts and washers shall be hot dipped galvanized after fabrication.
Field welds shall be field galvanized by an approved method.
Cut 7"ø holes in 10 Ga. ℄ of trough for 6"ø pipes.
For scupper locations, see Deck Plans.
For trough locations, see Framing Plans Bridge No. 4.
All pipes attached to the substructure including fittings, supports and accessories shall be included in Item S-29, 6"ø W.I. or Galvanized Steel Pipe including Fastenings & Specials" For payment.
All other metalwork of the drainage system shall be included in Item S-7.

PART 7A

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

DRAINAGE DETAILS

Scale: As shown

WILLOW-INNER BELT FREEWAY

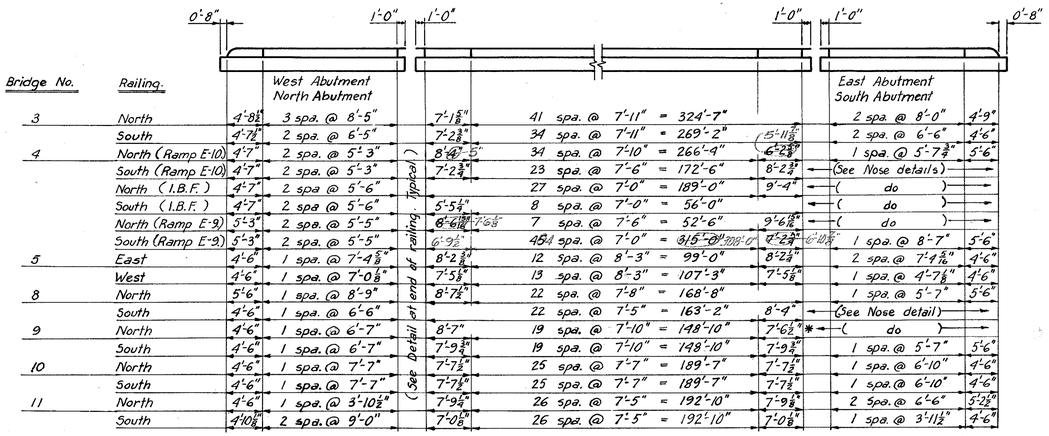
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN F.L.C	TRACED R.J.K	CHECKED F.S.J	REVIEWED J.C.T	REVISED
DATE 11-6-58	DATE 11-24-58	DATE 12-22-58	DATE 11-13-59	SHEET 174

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

175
181

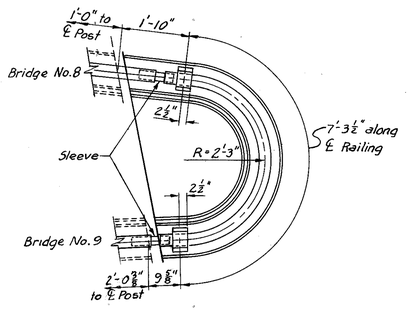
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42



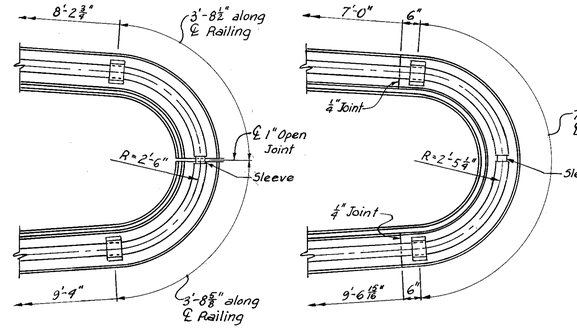
Bridge No.	Railing	West Abutment / North Abutment			East Abutment / South Abutment
3	North	4'-8½"	3 spa. @ 8'-5"	7'-1⅝"	41 spa. @ 7'-11" = 324'-7"	2 spa. @ 8'-0"	4'-9"
	South	4'-7⅞"	2 spa. @ 6'-5"	7'-2⅜"	34 spa. @ 7'-11" = 269'-2"	2 spa. @ 6'-6"	4'-6"
4	North (Ramp E-10)	4'-7"	2 spa. @ 5'-3"	8'-4"	34 spa. @ 7'-10" = 266'-4"	1 spa. @ 5'-7¾"	5'-6"
	South (Ramp E-10)	4'-7"	2 spa. @ 5'-3"	7'-2¾"	23 spa. @ 7'-6" = 172'-6"	(See Nose details)	
	North (I.B.F.)	4'-7"	2 spa @ 5'-6"		27 spa. @ 7'-0" = 189'-0"	9'-4"	(do)
	South (I.B.F.)	4'-7"	2 spa @ 5'-6"	5'-5¼"	8 spa. @ 7'-0" = 56'-0"	(do)	
	North (Ramp E-9)	5'-3"	2 spa. @ 5'-5"	8'-6⅛"	7 spa. @ 7'-6" = 52'-6"	9'-6⅛"	(do)
	South (Ramp E-9)	5'-3"	2 spa. @ 5'-5"	6'-9½"	484 spa. @ 7'-0" = 3415'-0"	7'-2¾"	1 spa. @ 8'-7"	5'-6"
5	East	4'-6"	1 spa. @ 7'-4⅝"	8'-2⅜"	12 spa. @ 8'-3" = 99'-0"	8'-2⅛"	2 spa. @ 7'-4⅞"	4'-6"
	West	4'-6"	1 spa. @ 7'-0⅛"	7'-5⅛"	13 spa. @ 8'-3" = 107'-3"	7'-5⅝"	1 spa. @ 4'-7⅛"	4'-6"
8	North	5'-6"	1 spa. @ 8'-9"	8'-7¼"	22 spa. @ 7'-8" = 168'-8"		1 spa. @ 5'-7"	5'-6"
	South	4'-6"	1 spa. @ 6'-6"		22 spa. @ 7'-5" = 163'-2"	8'-9"	(See Nose detail)	
9	North	4'-6"	1 spa. @ 6'-7"	8'-7"	19 spa. @ 7'-10" = 148'-10"	7'-6½" *	(do)
	South	4'-6"	1 spa. @ 6'-7"	7'-9⅜"	19 spa. @ 7'-10" = 148'-10"	7'-9⅜"	1 spa. @ 5'-7"	5'-6"
10	North	4'-6"	1 spa. @ 7'-7"	7'-7½"	25 spa. @ 7'-7" = 189'-7"	7'-7½"	1 spa. @ 6'-10"	4'-6"
	South	4'-6"	1 spa. @ 7'-7"	7'-7½"	25 spa. @ 7'-7" = 189'-7"	7'-7½"	1 spa. @ 6'-10"	4'-6"
11	North	4'-6"	1 spa. @ 3'-10½"	7'-9¾"	26 spa. @ 7'-5" = 192'-10"	7'-9⅝"	2 spa. @ 6'-6"	5'-2½"
	South	4'-10⅝"	2 spa. @ 9'-0"	7'-0⅝"	26 spa. @ 7'-5" = 192'-10"	7'-0⅛"	1 spa. @ 3'-11½"	4'-6"

* See Nose detail for distance from ℄ Post to end of parapet.

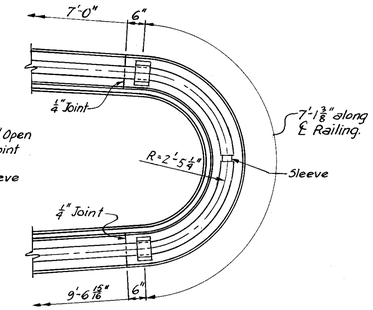
RAILING POST SPACING
No Scale



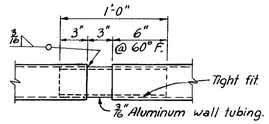
NOSE DETAIL FOR BRIDGE NO. 8 & 9
Scale: ½" = 1'-0"



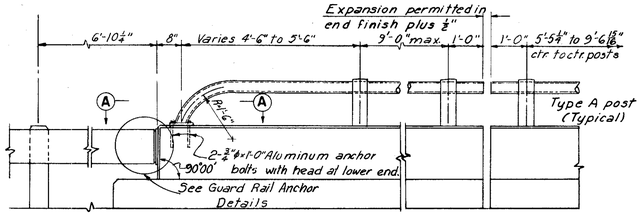
NOSE DETAIL FOR INNER BELT & RAMP E-10
Scale: ½" = 1'-0"



NOSE DETAIL FOR INNER BELT & RAMP E-9
Scale: ½" = 1'-0"

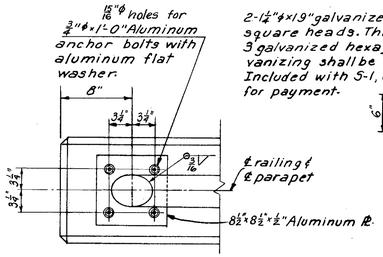


RAILING SLEEVE DETAIL
Scale: 1½" = 1'-0"

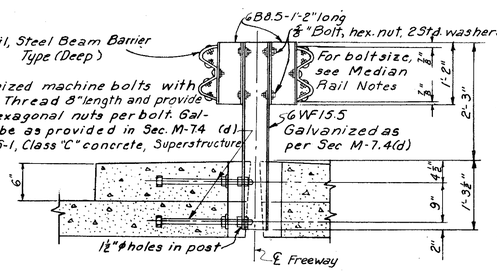


ELEVATION
Scale: ½" = 1'-0"

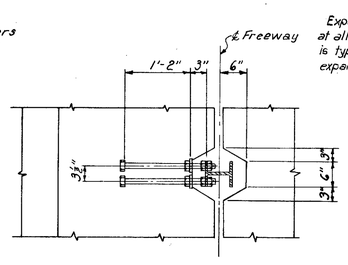
DETAILS AT END OF RAILING



SECTION A-A
Scale: 1½" = 1'-0"

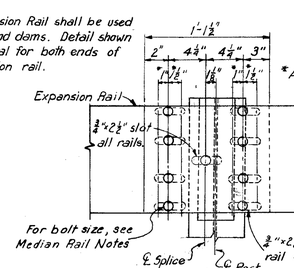


MEDIAN GUARD RAIL
Scale: ¾" = 1'-0"

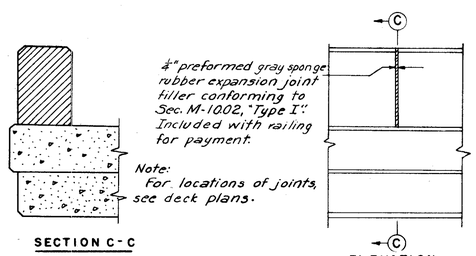


POST ANCHOR DETAIL
Scale: ½" = 1'-0"

Expansion Rail shall be used at all end dams. Detail shown is typical for both ends of expansion rail.



SPECIAL MEDIAN GUARD RAIL SPLICE
Scale: 1½" = 1'-0"



SECTION C-C
ELEVATION

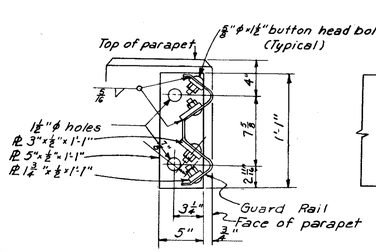
PARAPET JOINT
Scale: ¾" = 1'-0"

Railing shall be fabricated in lengths not less than three panels each and furnished railing shall be free of burrs, sharp corners and rough surfaces. Shims if required for adjustment to line or grade, shall be of aluminum alloy, 2⅜"×7/16"×8", and shall be slotted to permit insertion after posts are in place. Anchor bolts shall be aluminum with a head or nut at lower end. They shall be 1'-0" long and shall have a minimum diameter of 0.62" at the root of the thread. Bolts and nuts shall be anodized. Railing posts shall be normal to grade and the final adjustment of the railing shall be such that the top rail shall not depart more than ½" from correct line or grade.

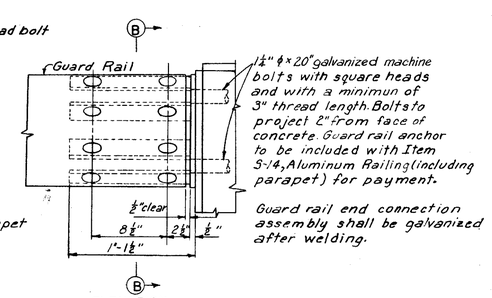
For additional details and notes regarding railing see Ohio Standard Drawing AR-1-57.

Payment for Railing shall be made at the contract unit price bid for Item S-14, Aluminum Railing (including parapet). Pay length shall be the overall length of the parapets and shall include cost of anchor bolts, set screws, nuts, shims and etc. necessary to complete the installation of railing.

Concrete and longitudinal reinforcing steel in the parapet shall be included in "Item S-14, Railing", (including parapet) for payment. All other reinforcing steel in parapet shall be included in Item S-9 for payment.



SECTION B-B



ELEVATION
(As seen from pavement side)

GUARD RAIL ANCHOR DETAILS
Scale: 1½" = 1'-0"

Median Rail Notes.

Bolts for rail splice and for fastening rail to posts shall be ⅝" diameter with button head, washer and hexagon nuts.

For median guard rail spacing See Deck plans.

PART 7A

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

RAILING AND GUARD RAIL DETAILS

Scale: As noted

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.L. 2-26-59.	A.L. 2-26-59.	DRK DATE 3-20-59	JCT DATE 11-13-59	6-17-60

SHEET 175

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

176
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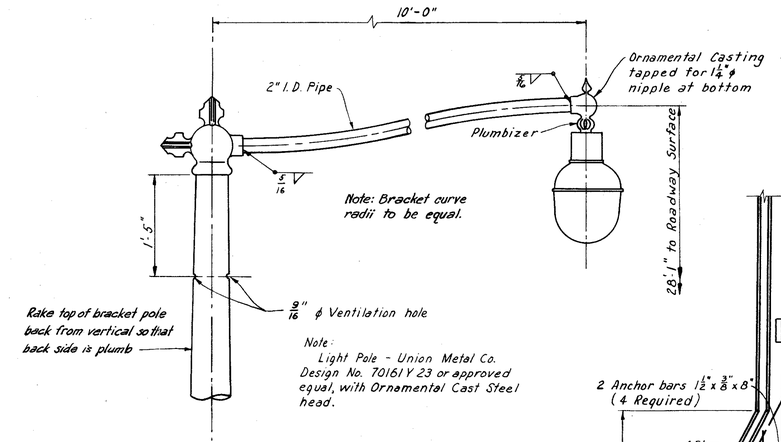
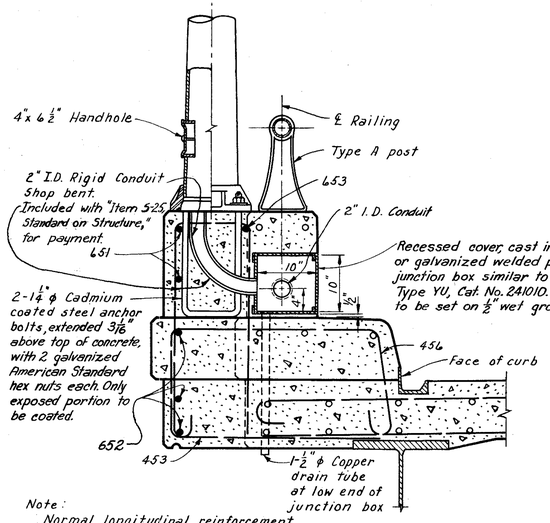
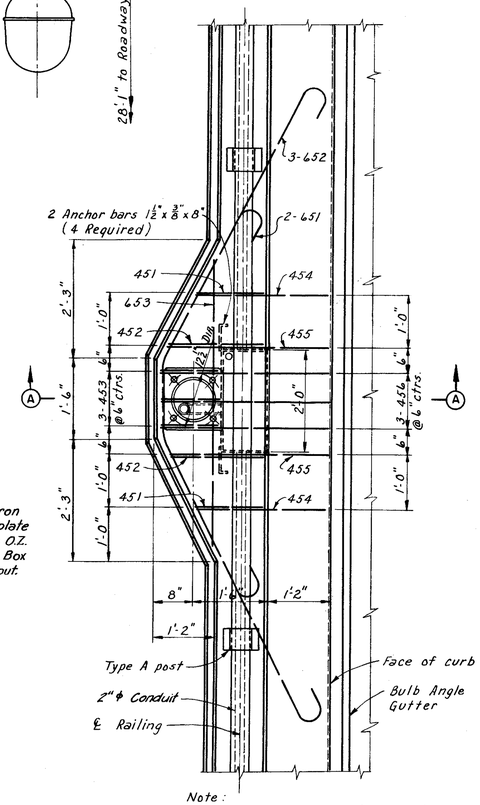
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42





Note:
Normal longitudinal reinforcement shown as a circle. Additional longitudinal light support reinforcement is shown blackened.

SECTION A-A
Scale : 1" = 1'-0"



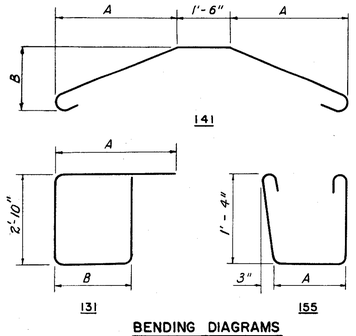
Note:
Only additional reinforcement for light support shown.

PARTIAL PLAN OF LIGHT STANDARD SUPPORT
Scale : ⅜" = 1'-0"

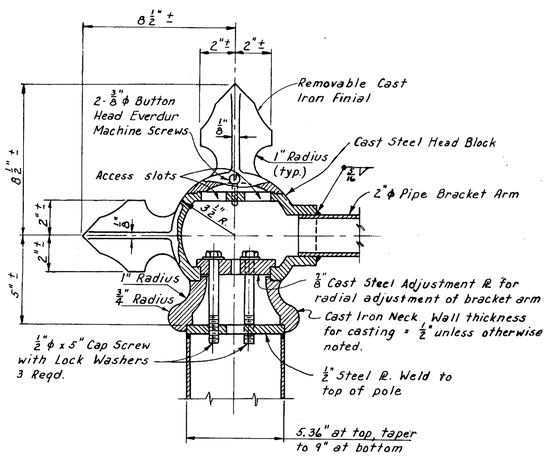
Note: For details of light standard support on the retaining wall adjoining Bridge No.4, East Abutment, see sheet 122-7A

REINFORCEMENT SCHEDULE FOR LIGHT STANDARD SUPPORT						
MARK	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT
451	2	8'-11"	131	2'-6"	1'-2"	12
452	2	9'-11"	131	3'-0"	1'-8"	13
453	3	9'-5"	131	3'-2"	1'-0"	19
454	2	5'-7"	155	2'-2"		7
455	2	6'-1"	155	2'-8"		8
456	3	6'-3"	155	2'-10"		19
651	2	9'-5"	141	2'-11"	1'-10"	28
652	3	14'-6"	141	5'-3"	3'-0"	65
653	1	5'-0"	Str.			8
					Total	173

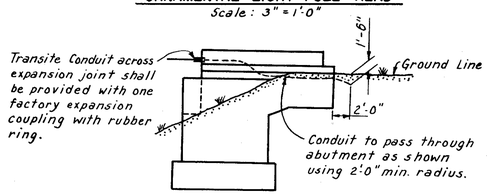
Notes: Bar list is for one light standard support. Bar dimensions are given out to out. Total No. Required: 34.



BENDING DIAGRAMS

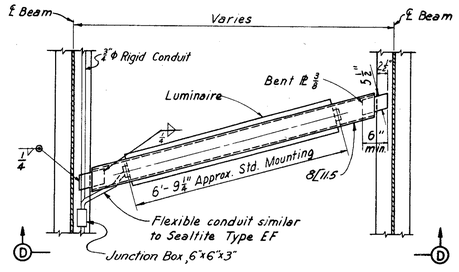


ORNAMENTAL LIGHT POLE HEAD
Scale : 3" = 1'-0"

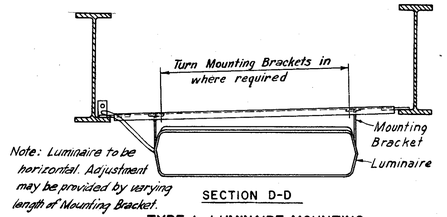


TYPICAL DETAIL FOR CONDUIT AT ABUTMENT.
No Scale

Note:
Expansion Coupling in Conduit shall be provided at expansion joints between abutment and wingwalls and at all parapet joints.

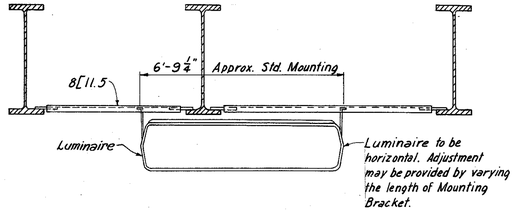


PARTIAL PLAN



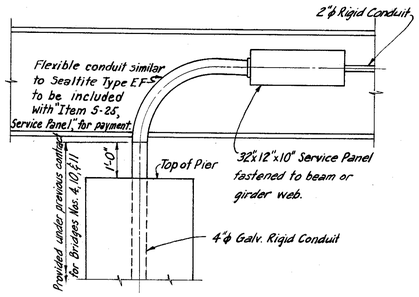
SECTION D-D

TYPE A LUMINAIRE MOUNTING
Scale : ½" = 1'-0"



TYPE B LUMINAIRE MOUNTING
Scale : ½" = 1'-0"

Note:
Junction box 6"x6"x3" to be included with "Item 5-25, Fluorescent Underdeck Light" for payment.
The 8[11.5 supports and connections to beams are to be included with "Item 5-7, Structural Steel" for payment.
Underdeck luminaires shall be equal to Line Material No LF1F1.
For size of safety switch, contactor and photo-cell control unit in Service Panel, see Sheet 48-7A of Roadway Plans.



DETAIL C
For Pier 1 of Bridge No.3; Pier 3 of Bridge No.4, Pier 2 of Bridge No.10; Pier 2 of Bridge No.11. See Pier Sheets for location.
Scale ½"=1'-0"

NOTES:
For location of light standards and conduit, see Deck Plans.
For location of Underdeck Luminaires see sheet 177-7A
For additional lighting notes, see Sheet 177-7A

PART 7A

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

LIGHTING DETAILS

Scale as noted

WILLOW-INNER BELT FREEWAY

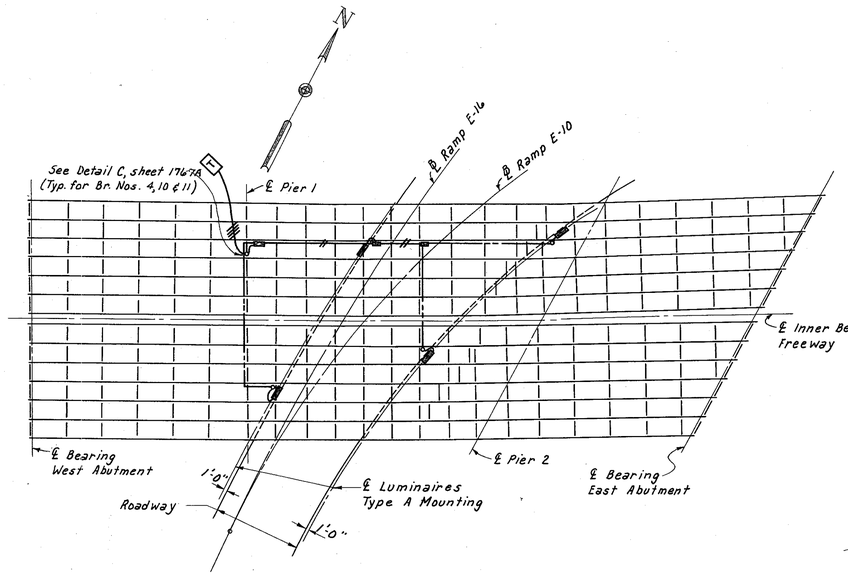
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN F.L.C.	TRACED J.A.G.	CHECKED F.S.J.	REVIEWED K.T.	REVISED
DATE 9-24-58	DATE 11-26-58	DATE 12-18-58	DATE 11-13-59	SHEET 176

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

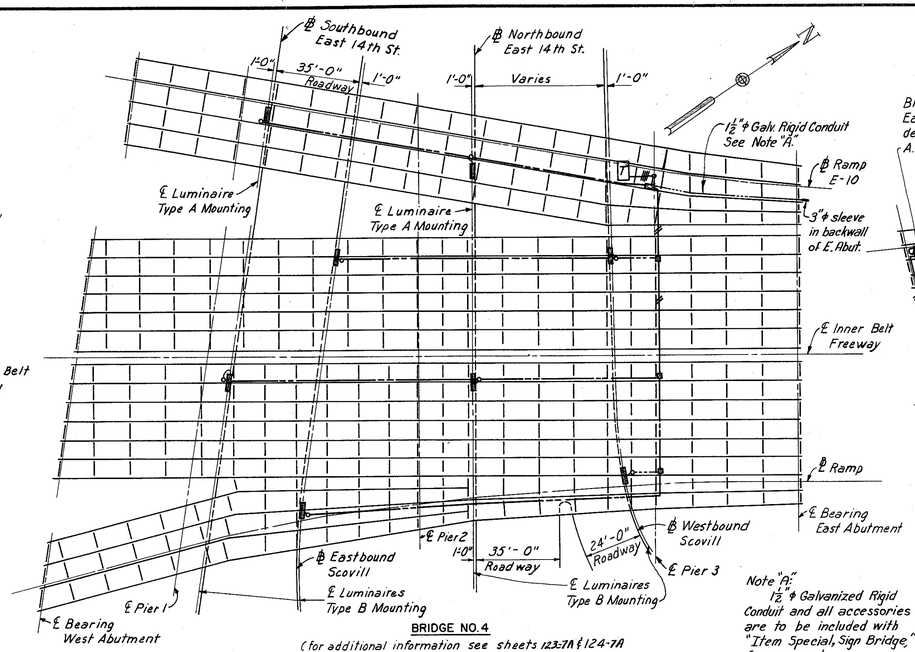
177
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY - 21 - 15.32
CUY - 42 - 18.42



BRIDGE NO. 3

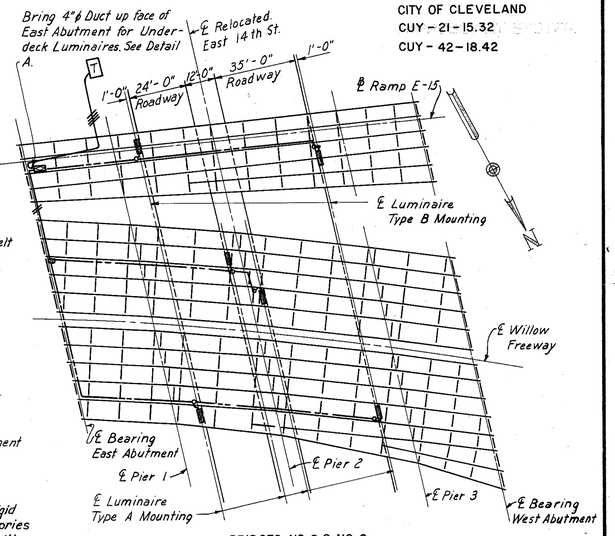
(for additional information see sheet 108-7A)



BRIDGE NO. 4

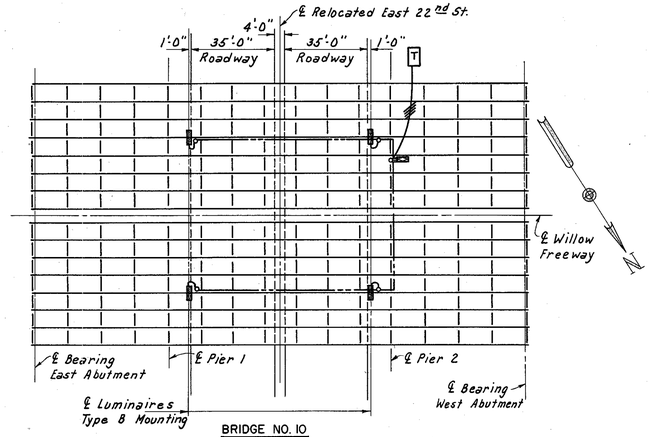
(for additional information see sheets 123-7A & 124-7A)

Note "A":
1½"ϕ Galvanized Rigid Conduit and all accessories are to be included with "Item Special, Sign Bridge," for payment.



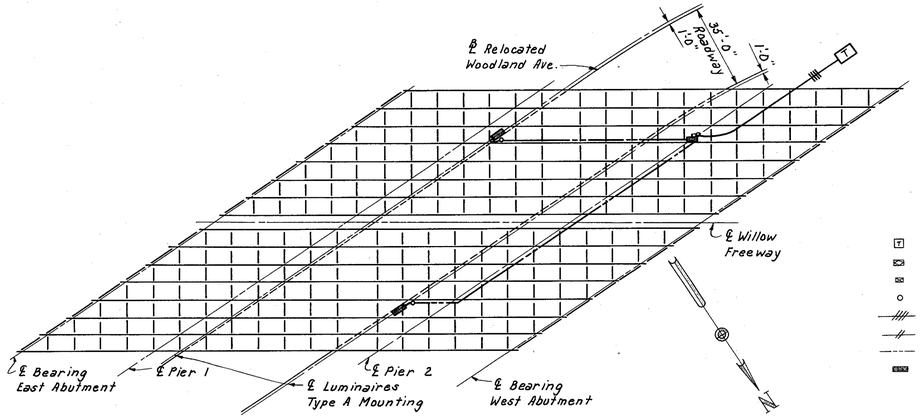
BRIDGES NO. 8 & NO. 9

(for additional information see sheets 152-7A & 153-7A)



BRIDGE NO. 10

(for additional information see sheet 162-7A)

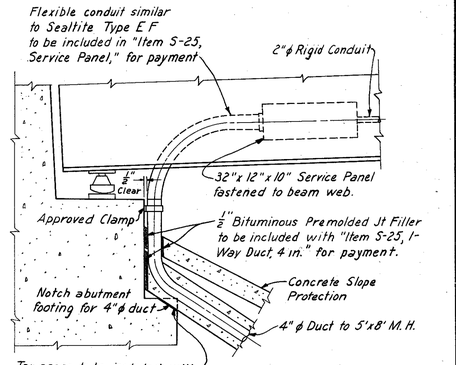


BRIDGE NO. 11

(for additional information see sheet 149-7A)

LEGEND

- T — Manhole for transformer
- Service Panel, 32"x12"x10"
- Junction Box, 8"x8"x4"
- Junction Box, 6"x6"x3"
- 4"ϕ Duct
- 2"ϕ Galvanized Rigid Conduit
- ¾"ϕ Galvanized Rigid Conduit
- Underdeck Luminaire



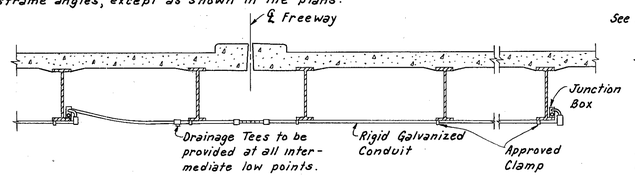
DETAIL A

Scale: ½" = 1'-0"

LOCATION OF UNDERDECK LUMINAIRES

Scale: 1" = 30'-0"

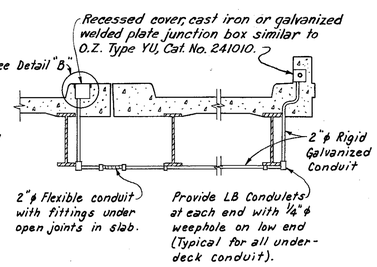
Note:
Conduit running parallel to the beams shall be fastened to the beam web just above the intersection of the diagonal and bottom chord crossframe angles with approved clamps at not more than 6'-0" ctrs.*
Conduit running transversely to beams and girders shall be fastened to the beam or girder flanges and shall be located in-line with the crossframe angles, except as shown in the plans.



* Note: For girder bridges, conduit shall be fastened to alternate stiffeners just above the intersection of the diagonal and bottom chord crossframe angles.

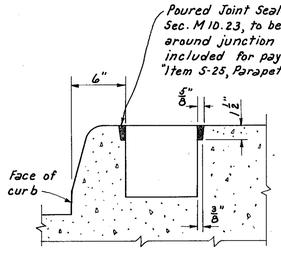
UNDERDECK LIGHTING - CONDUIT DETAILS

Scale: ¼" = 1'-0"



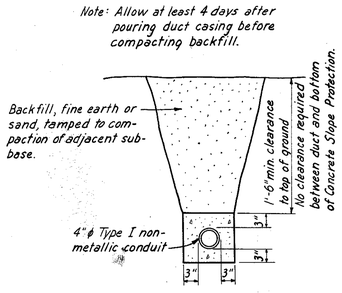
CONDUIT CROSSOVER DETAIL

Scale: ¼" = 1'-0"



DETAIL B

Scale: 1½" = 1'-0"



ONE-WAY DUCT BANK

Scale: ¾" = 1'-0"

PART 7A

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

LIGHTING DETAILS

Scale as noted

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
FLC	JAG REK	F.S.J.	JCT	
DATE 12-12-58	DATE 5-22-59	DATE 6-20-59	DATE 11-13-59	SHEET 177

W 21960

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

177A
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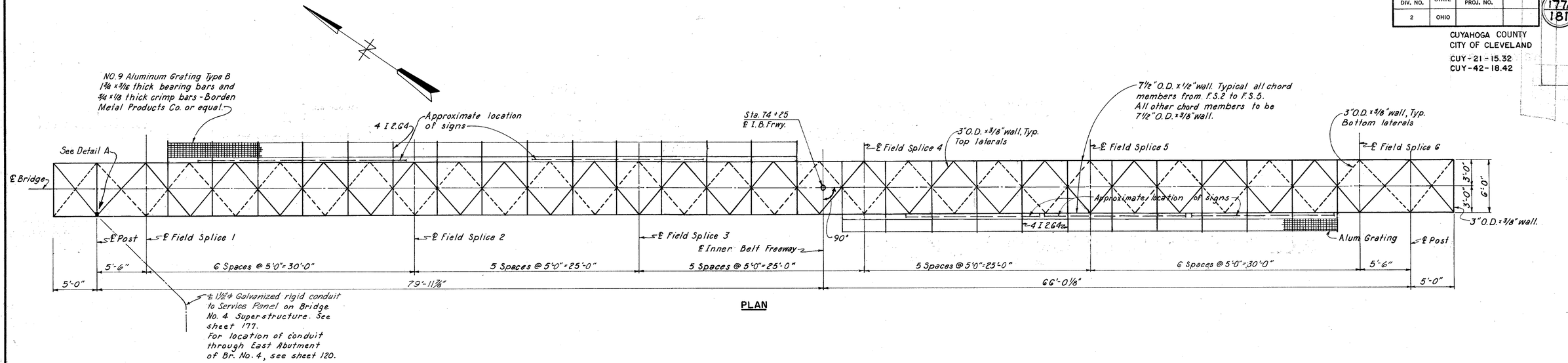
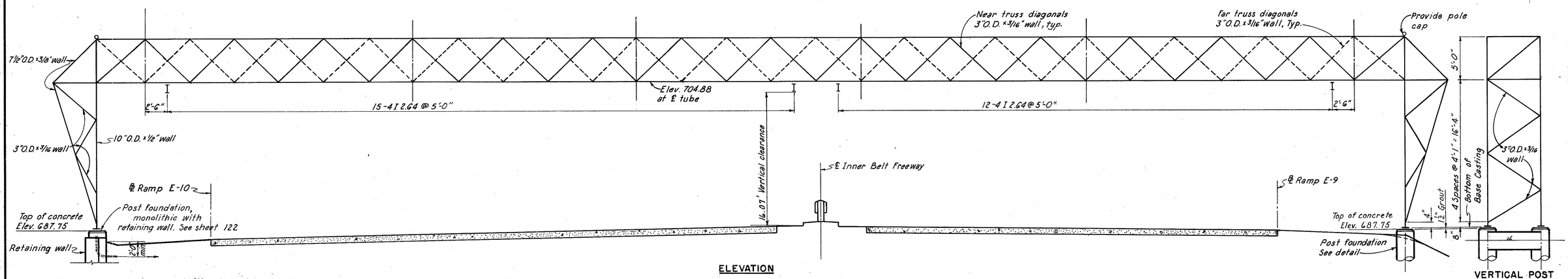
CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-21-15.32
CUY-42-18.42

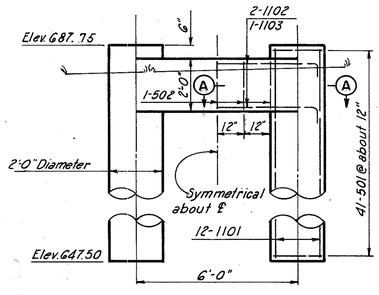


PLAN

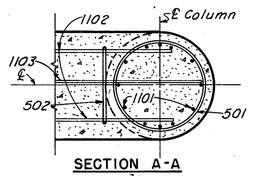


ELEVATION

VERTICAL POST END ELEVATION

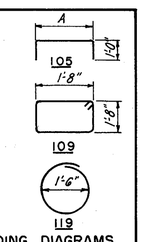


CONCRETE FOUNDATION FOR SOUTH POST
Scale: ⅜" = 1'-0"



SECTION A-A
Scale: ¾" = 1'-0"

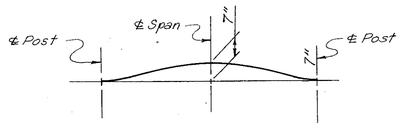
REINFORCEMENT SCHEDULE				
MARK	NO.	LENGTH	TYPE	DIM. "A"
501	82	6'-4"	119	
502	5	7'-2"	109	
1101	24	39'-9"	Str.	
1102	4	7'-9"	105	6'-4"
1103	2	8'-9"	105	7'-4"



BENDING DIAGRAMS

Note: Prefix "SB" shall be assigned all bar marks.

Note: Reinforcing included for payment under "Item Special, Sign Bridge, as per plan."



CAMBER DIAGRAM

Notes:

Sway braces not shown in plan and elevation views.
Bracing shown in post End Elevation is in the vertical plane only.

Rev. 3-16-60 R.E.C.

PART 7

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

SIGN BRIDGE AT STA. 74+25

GENERAL PLAN AND ELEVATION

Scale: 3/16"=1'-0" Except as noted

WILLOW-INNER BELT FREEWAY

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN W.T.D.	TRACED C.R.J.	CHECKED B.L.C.	REVIEWED JCT	REVISED
DATE 8-6-59	DATE 10-14-59	DATE 8-13-59	DATE 11-13-59	SHEET 177A

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

177B
181

CUYAHOGA COUNTY
CITY OF CLEVELAND
CUY-2I-15.32
CUY-42-18.42

A. FOUNDATIONS

One foundation shall be monolithic with the retaining wall as shown on the plans. The other foundation shall be constructed as specified in Section S-25.11 of the Specifications except that concrete shall be Class E. Posts shall be adjusted by leveling nuts as shown on the plans. Anchor rods shall be accurately held in place until the concrete has set. Grout shall consist of one (1) part Portland Cement, one (1) part Embeco or equal, one (1) part sand. The 24" diameter shafts for the post foundations shall not be placed until all pile driving in the area is completed.

B. STRUCTURAL MATERIALS

All metalwork shall conform to the following applicable A.S.T.M. Designations -B-209-58T, B-210-58T, B-211-58T, B-221-58T, B-235-58T and B-241-58T for GS11A-T6 aluminum alloy unless otherwise specified herein or shown on the plans. Stainless steel U-bolts and bolts for field splices shall conform to A.S.T.M. Designation A 320-58T Grade B8 annealed. Nuts shall conform to A.S.T.M. Designation A 194-58T, and washers shall be of the same material as the bolts. Castings shall conform to the requirements of A.S.T.M. Designation B-26-58T for SG70A-T6 aluminum alloy. Ornamental pole cap shall be aluminum alloy of a standard design.

Grating shall be constructed of GS11A-T6 aluminum alloy except crimp bars may be of GS10A-T5 aluminum alloy.

C. FABRICATION AND ERECTION

The sign bridge structure shall be shop fabricated in sections suitable for shipment. All shop connections shall be welded. The sections shall be assembled in the field with bolts.

Fabrication and erection shall conform to the requirements of Item S-7 except as hereinafter modified.

Aluminum tubing shall be sawed or cut with a router. Other material may be sheared, sawed or cut with a router.

Cut edges shall be true and smooth and free from excessive burrs or ragged breaks.

Center punching and scribing shall not be used where such marks will remain on completed members. Hole centers may be punch marked by punching or scribing. All fabrication marks and irregularities shall be removed.

Parts shall be welded with an arc or resistance welding process. No welding process that requires the use of a welding flux shall be used. The filler metal shall be aluminum alloy 4043 (ASTM Designation S5B), 5154 (ASTM Designation GR40A) or approved equal. Preheating for welding is permissible provided the temperature does not exceed 400° F. for a total time of 30 minutes.

In preparation for welding, dirt, grease, forming or machining lubricants or any organic materials shall be removed from the areas to be welded by cleaning with a suitable solvent or by vapor degreasing.

Additional operations to remove the oxide coating just prior to welding are required when the inert gas tungsten arc welding method is used. This may be done by etching or by scratch brushing. The oxide coating may not need to be removed if the welding is done with the automatic or semiautomatic inert gas shielded metal arc.

Suitable edge preparation to ensure 100 per cent penetration in butt welds shall be used. Flame cutting shall not be used. Sawing, chipping or machining may be used.

Holes in castings shall be cored or drilled.

Drain holes shall be provided for hollow members.

Conduit inlet holes and handholes shall be provided in the structural columns to provide access for installation of electrical cables.

The bottom surface of the post base castings shall be coated with one (1) heavy coat of alkali-resistant bituminous paint equal to Bitumastic Super-Service Black as manufactured by Koppers Company, Inc.

D. ELECTRICAL WORK

a. General

The sign bridge item shall include furnishing and installing *electrical components as noted below* and structure grounding in accordance with Item S-25. This work shall include:

Underground *conduit* from "Service Panel" under deck of Bridge No. 4, including conduit on bridge *and through* approaches.

Grounding of the sign bridge.

Conduit through sign bridge foundation, and all mounting holes and fittings.

The photo cell control unit for feeder on Bridge No. 4 is not included in the sign bridge item.

Where materials, equipment, or other products are specified by manufacturer, brand name type, or catalog number, such designation is to establish standards of desired quality and style and shall be the basis of the bid; however, materials and equipment appfoved equal by the Director will be allowed.

Where such substitutions alter design or space requirements, the Contractor shall include all items of cost for the revised design and construction including cost of all trades involved.

All electrical materials, construction and installations shall meet the requirements of the Cleveland Division of Light and Power and the Cleveland Electric Illuminating Company in addition to the requirements of the Standard Specifications.

The electrical work shall be laid out and installed in conjunction with the construction of the Bridge 4 abutment and slab and shall include furnishing and installing all necessary hangers to support the conduit on Bridge 4.

b. Service

Power for the sign fixtures will be available from the load side of photo-cell-controlled contactors in the service panel below the deck of Bridge No. 4 over 14th Street. This service will be 230 volts.

~~This item shall include furnishing and installing a weatherproof, double pole, 250 volt safety switch and all wiring connections to the load side of the contactors. Terminals, conduit, fittings, lugs, etc., as necessary to make a complete connection shall be provided. The safety switch shall be mounted on or immediately adjacent to the service panel.~~

c. Grounding

The sign bridge structure shall be grounded by an equipment ground for not over 25 ohms resistance to ground. Grounding shall be accomplished by means of at least one copper-clad ground rod, 1-inch diameter, and ten feet long with an approved type grounding clamp at the top and a No. 6 AWG bare stranded copper conductor to the sign bridge grounding lug.

The top of the ground rod shall be at least one foot below finished grade. The grounding conductor shall be so installed through the sign bridge base so as to permit the shortest and most direct path from support to ground rod. The ground conductor shall be installed in a 1" concealed galvanized rigid metal conduit sleeve with conductor and conduit bonded at each end.

The resistance between ground and absolute earth shall be measured by the Contractor in the presence of the Engineer.

d. Conduits

Conduit on Bridge No. 4 and in the underground portion shall be 1-1/2" galvanized steel.

Insulated bushings shall be used at terminations of the 1-1/2" conduits. Insulated bushings shall be equal to O. Z. Type A.

Exposed conduits under Bridge No. 4 shall be securely fastened in place at not more than 5-foot centers, and hangers, supports or fastenings shall be provided at each elbow. Conduit runs on Bridge No. 4 may be supported by hangers, two-hole malleable straps or beam clamps. Hangers shall be made of durable materials suitable for the application and shall be galvanized. The use of perforated iron for supporting conduits will not be permitted.

An expansion coupling similar to O.Z. Type AX shall be provided at the abutment, complete with bonding jumper, and a malleable "T" 1-1/2" x 1-1/2" x 1/2" drain at the low point in the run, complete with one-half cubic yard gravel pocket.

~~e. Cables~~

~~All conductors shall be insulated for 600 volts. The conductors for the branch circuit between the service panel on Bridge No. 4 and the handhole at the sign bridge shall be stranded, Type RHW. The pole and bracket cable for circuits on the sign bridge above the handhole to the ballast primaries shall be type for 600 volt rating, stranded, polyvinylchloride insulation.~~

~~Conductors shall be thoroughly tinned, soft drawn copper. Wire size, insulation type and manufacturer's name shall be permanently marked on the conductor jackets at regular intervals. Wires shall be color coded and the coding used consistently throughout the installation.~~

~~Wire and cable shall be as manufactured by Okonite, Phelps Dodge, Anaconde, General Electric, General Cable, Kaiser, or approved equal.~~

~~f. Wireway~~

~~A wireway shall be provided along each walkway, complete with necessary fittings, to house ballasts, the transverse branch circuit, and the transverse wiring between ballast secondaries and lamps. The cross-sectional dimensions of the wireways shall be 6 inch by 6 inch.~~

~~Wireways shall be of high strength, corrosion resistant aluminum alloy extrusions, and shall conform with the Joint Industry Conference Standards. Metal shall be aluminum alloy 6061-T6, not less than .071" thick in body and .125" thick flanges.~~

~~Wireways shall be sectionalized generally in not less than ten foot sections. The top cover shall have a sponge-rubber Neoprene gasket. Closure plates and telescoping fittings shall have solid Neoprene gaskets. Double 1/8 inch drain holes shall be placed in bottom at not over 12 inch centers. Attach wireway by not less than 3/8 inch stainless steel bolts at each support, complete with stainless steel nuts and lock washers. Covers shall be lift-off hinges with two chains per cover. External clamps shall be at not over 4 foot centers. Use telescoping fittings to move flanges off supports. Nuts and bolts for joining sections of wireway shall be aluminum or stainless steel. Attach ballasts to wireway with same type bolts and nuts. Knockouts shall be provided at the proper locations for attaching conduits by "Screwlite" connectors with Neoprene gaskets. The wireway with complete complement of fittings shall be oil-tight sectionalized type as manufactured by the Hoffman Engineering Corporation of Anoka, Minnesota or approved equal.~~

~~g. Fixtures~~

~~The sign lighting fixtures shall consist of aluminum housings with baked enamel reflecting surfaces, cast aluminum end fittings suitable for standard 3/4-inch conduit connections, spring loaded telescopic lamp holders, and clear door covers of impact-resistant plastic material. The units shall be for 4 foot power groove lamps, and shall have all external surfaces protected by weather and corrosion resistant enamel, with stainless steel hardware.~~

~~Fixtures shall be adjusted for optimum sign illumination and uniformity, and shall be adjustable so as to permit positive locking in any desired position.~~

~~Fixtures shall be wired with not smaller than No. 14 Type AF asbestos covered wire. No splices or tap shall be located within an arm. Wire shall be continuous from lamp sockets to ballast terminals.~~

~~The units shall be listed by Underwriters' Laboratories. Units shall be General Electric Type L-104 Fluorofloods or as approved by the Director.~~

~~h. Ballasts~~

~~Ballasts shall be of the high power factor type and their construction shall conform to the Certified Ballast Manufactures' Standards.~~

~~Ballasts shall provide completely reliable starting to -20° F., shall be for 230 volt operation, shall fit in the 6 x 6 wireways, and shall be designed for power groove or super high output lamps.~~

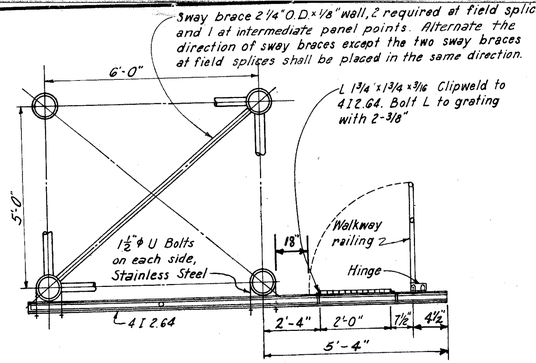
~~The ballasts for each set of 2 lamps shall be No. 6G3519 outdoor type with one No. 9T51Y6432 (240-120)-500 Va transformer as manufactured by the General Electric Company, or approved equal.~~

~~i. Lamps~~

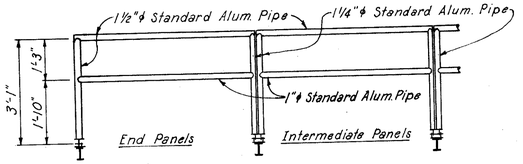
~~Fixtures shall be provided with cool white double dimpled power groove or super high output lamps equal to General Electric F48PG17/CW.~~

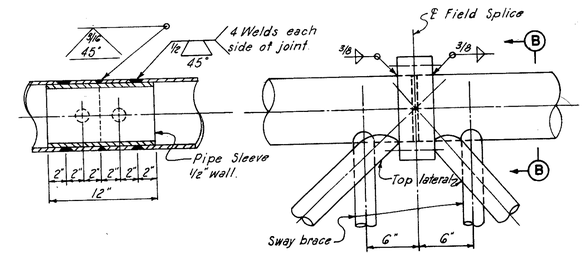
E. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Except as noted below, no measurement will be made of the component parts comprising the Sign Bridge Installation and payment will be made at the contract lump sum price for "Item Special, Sign Bridge as per plan" in place completed and accepted, which price and payment shall constitute full compensation for all excavation, backfill, concrete, reinforcing steel, anchor bolts, aluminum alloy, stainless steel, welding, preparing and erecting all materials including electrical work connections, sisting of grounds, conduits, *and* connections, and all other items specified herein and that may be required to construct the Sign Bridge, complete, and for all labor, materials, equipment, tools, and incidentals necessary to complete this item. Payment for the foundation that is monolithic with the retaining wall will be measured for payment as concrete and reinforcing steel in the retaining wall. The signs will be furnished and mounted on the bridge by others.



TYPICAL SECTION
Scale: 1/2" = 1'-0"

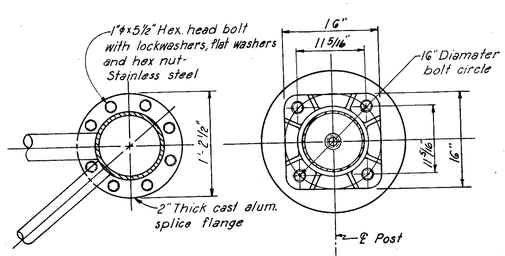


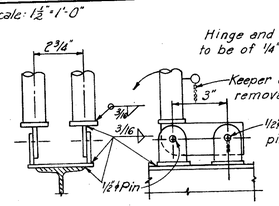


SHOP CHORD SPLICE
Scale: 1 1/2" = 1'-0"

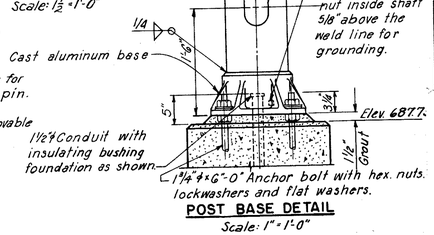
FIELD CHORD SPLICE
Scale: 1 1/2" = 1'-0"

WALKWAY RAILING DETAIL
Scale: 1/2" = 1'-0"



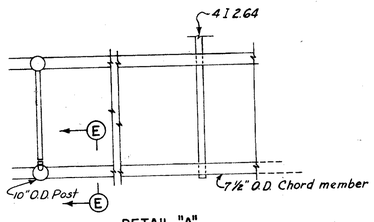


WALKWAY RAILING HINGE DETAIL
Scale: 3" = 1'-0"

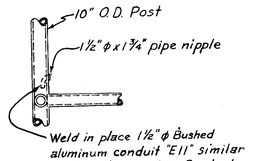


SECTION B-B
Scale: 1 1/2" = 1'-0"

POST BASE DETAIL
Scale: 1" = 1'-0"



DETAIL "A"
Scale: 1/4" = 1'-0"



SECTION E-E
Scale: 1/4" = 1'-0"

PART 7

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

SIGN BRIDGE AT STA. 74 + 25

GENERAL NOTES AND DETAILS

Scale: As noted

WILLOW-INNER BELT FREEWAY
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN W.E.D.	TRACED C.R.J.	CHECKED A.L.P.	REVIEWED J.C.T.	REVISED
DATE 8-6-59	DATE 10-16-59	DATE 8-13-59	DATE 11-13-59	SHEET 177B

Rev. 3-16-60 R.E.C.