



**CUY-90-14.90**

**PID 77332/85531**

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**APPENDIX EX-28**

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**CUY-090-1624 PID 0.030**

**(Reference Document)**

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

**Innerbelt Bridge  
Construction Contract Group 1 (CCG1)**

01-0

2-15

CUY-90-16.24±

MICROFILMED  
JUL 8 1985

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	I-71-5(6)247	

175

CUY-42-18.29

MAR 6 1965  
GROUND PHOTOLOG

PART 6

I-71-5(6)247  
LIMITED ACCESS

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS

CUY 42-18.29

CUYAHOGA COUNTY  
CITY OF CLEVELAND

WILLOW INNERBELT FREEWAY  
PART 6

**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.

For Part 7-A, see plans for CUY-21-15.32; CUY-42-18.42  
For Part 7-B, see plans for CUY-42-18.77

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 12/12/59  
APPROVED DATE 12/11/59  
APPROVED DATE 3-11-60  
APPROVED DATE 3-4-60  
APPROVED DATE 3-9-60  
APPROVED DATE 3-9-60  
APPROVED DATE 3-9-60

Louis R. Drasler  
DIRECTOR OF PUBLIC SERVICE, CITY OF CLEVELAND  
Wm. B. Henry  
DIVISION DEPUTY DIRECTOR  
Amy C. Heppner  
DEPUTY DIRECTOR OF PLANNING AND PROGRAMMING  
W.A. Overman  
ENGINEER OF BRIDGES  
W. J. ...  
ENGINEER OF LOCATION AND DESIGN  
C. W. ...  
DEPUTY DIRECTOR OF DESIGN AND CONSTRUCTION  
Ed. J. ...  
FIRST ASSISTANT DIRECTOR  
E. S. ...  
DIRECTOR OF HIGHWAYS

Sheets 134 & 140 revised 6-14-60.  
Sheet 131 revised 6-16-60.  
Sheets 123 & 124 revised 6-29-60.  
Sheets 129, 110 & 112 revised 7-15-60.  
Sheet 143 revised 7-22-60.  
Sheets 14, 45-50 revised 8-22-60 REC.  
Sheets 148 & 149 revised 9-27-60.  
Sheet 98 revised 12-8-60.

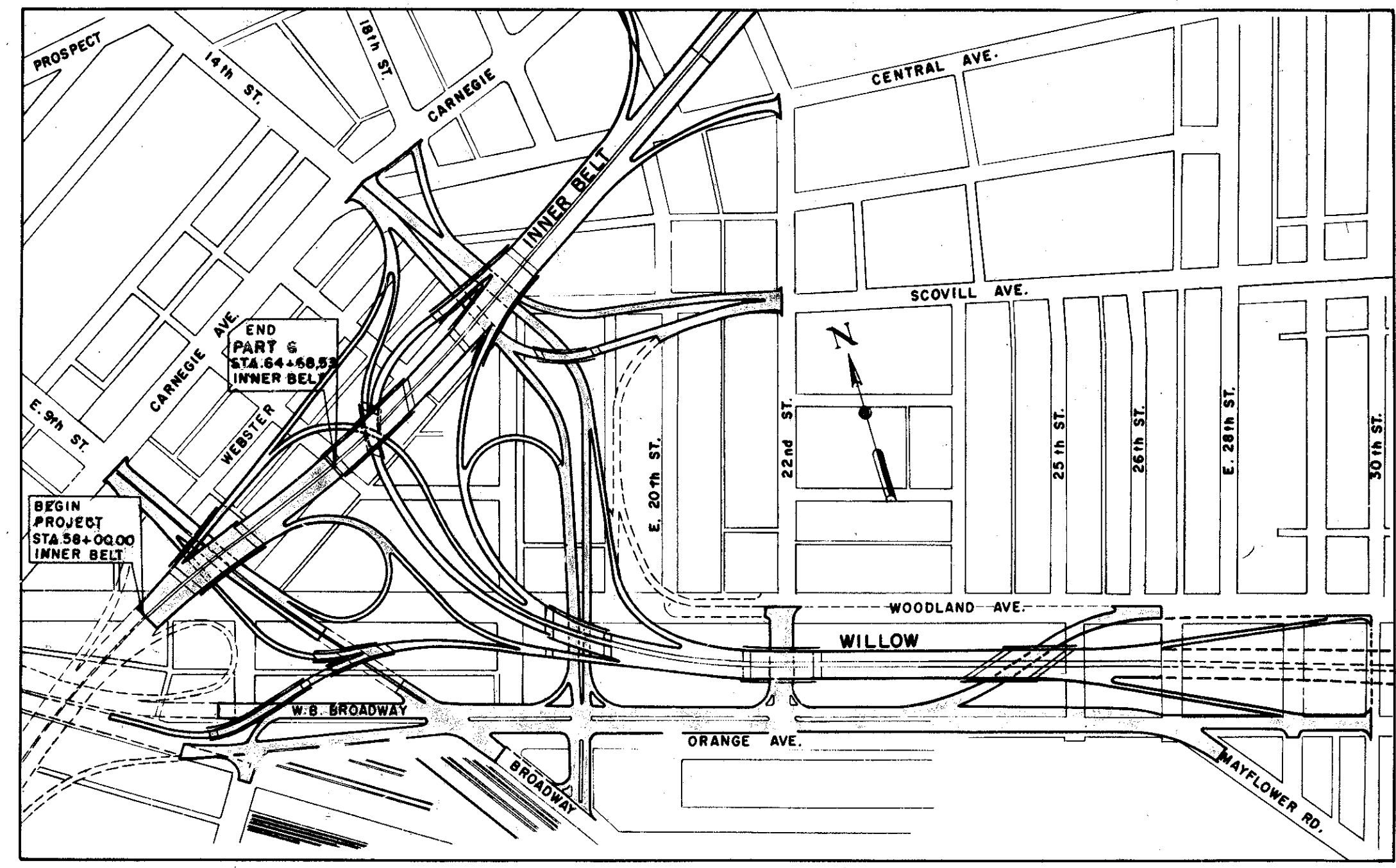
IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR OF HIGHWAYS IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 REVISED CODE OF OHIO.

INDEX OF SHEETS

SHEET NO.	TITLE	NO.	DESCRIPTION	NO.	DESCRIPTION
1	TITLE SHEET	37-41, 44	DRAINAGE PROFILES	116-120	BR. NO. CUY-42-1854
2	SCHEMATIC PLAN	42-43	DRAINAGE DETAILS	121-131	RAMP E-15 OVER W.B. BROADWAY
3	SEQUENCE OF CONSTRUCTION	44-50	LIGHTING PLANS		RAMPS E-15 & E-18 OVER E. 9TH ST.
4-7	TYPICAL SECTIONS	51	LIGHTING NOTES	132-143	BR. NO. CUY-21-1573
8-9	GEOMETRICS	52, 52-A, 53, 53-A	LIGHTING DETAILS		BR. NO. CUY-21-1559
10	GENERAL NOTES	54-60	EXISTING UTILITIES	144-149	BR. NO. CUY-21-1544
11-13	QUANTITY CALCULATIONS	61	CROSS-SECTION KEY SHEET	150-153	END DAM DETAILS
14	GENERAL SUMMARY OF QUANTITIES	62-83, 83-A, 83-B, 83-C, 83-D, 83-E	CROSS-SECTIONS	154-155	DRAINAGE DETAILS
15	SUMMARY OF DRAINAGE QUANTITIES	84, 84-A, 85, 90	RIGHT OF WAY	156	RAILING AND GUARD RAIL DETAILS
16-22	PAVEMENT DETAILS	92-92A	ESTIMATED QUANTITIES	157	LIGHTING DETAILS
23-27	ROADWAY PROFILES	93-99	E.B. SCOVILL OVER W.B.	159-160	RETAINING WALLS ALONG E. 14TH ST.
28-29	MISCELLANEOUS DETAILS		EAST 14TH ST.	161	OMITTED
27-A, 30	APPROACH SLABS	100-115	BR. NO. CUY-42-1832		
31-36	DRAINAGE PLANS			162-175	

LINE DATA

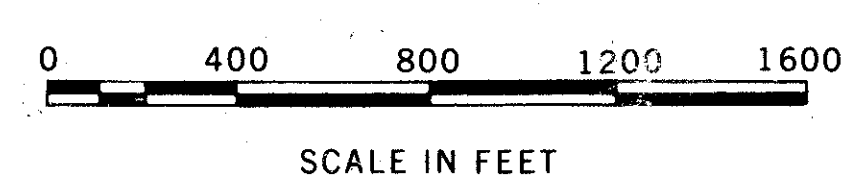
LENGTH OF PROJECT	STA. 58+00 TO STA. 64+68.53	= 668.53'	= 0.126 MILE
INNER BELT	I-71-5(6)247	LENGTH OF PROJECT	= 668.53' = 0.126 MILE
LENGTH OF WORK	STA. 53+45 TO STA. 64+68.53	= 1123.53'	
ADD SCOVILL (EAST BOUND)	STA. 1+05 TO STA. 9+97	= 892'	
ADD E. 14th ST. (SOUTH BOUND)	STA. 0+33 TO STA. 7+85	= 752'	
ADD E. 9th ST.	STA. 5+35 TO STA. 14+00	= 865'	
ADD RAMP E-18	STA. 7+15 TO STA. 10+38	= 253'	
I-71-5(6)247	LENGTH OF WORK	= 2885.53'	= 0.735 MILE



LOCATION PLAN

CONVENTIONAL SIGNS

PAVEMENT PLANS	SHEET 16
DRAINAGE PLANS	SHEET 31
LIGHTING PLANS	SHEET 45
EXISTING UTILITIES	SHEET 54



PORTION TO BE IMPROVED    
 OTHER HIGHWAYS & STREETS

STANDARD DRAWINGS

NUMBER	DATE	NUMBER	DATE
L-1	1-1-50	1-15 NO.	5-21-59
L-1-A	4-1-50	BT-50-70-1 ENO.	10-1-47
RI-1	7-12-58	AS-54	12-1-54
B-T 71 R	3-1-53	G-107	6-1-56
LJ NO. 1	7-1-55		
I-1, 2, 3, 4, 5	4-24-58		
I-8CB NO. 2	2-25-59	I-2	7-1-54
I-8CB NO. 3	2-25-59	L-1	4-1-50
DR-1	3-59	T-35	5-1-56
I-8 MH NO. 1	26-59	T-35	1-2-59
I-8 MH NO. 2	26-59	I-140	1-2-59
I-15 NO.	5-2-59	I-2123	2-1-56
I-8CB NO. 3	1-26-59	I-8CB NO. 7	3-2-59
I-8CB NO. 3-A	1-26-59	I-8 I NO. 2-A	4-23-59
I-8MH NO. 1-A	1-26-59	I-8 I NO. 2	4-23-59

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

H.G. SOURS  
ASSOCIATE  
COLUMBUS

SUPPLEMENTAL SPECIFICATIONS

NUMBER	DATE	NUMBER	DATE
S-27	4-28-58		
B-19	3-12-59		
M 206-14	7-15-49	S-18	6-15-59
CE-101-04	5-22-56		

00124-1

FILE NO.	CUYAHOGA COUNTY
	SEC. CUY-42-18.29
	DATE OF LETTING
	CONTRACT NO.

DEPARTMENT OF COMMERCE  
BUREAU OF PUBLIC ROADS

APPROVED: \_\_\_\_\_  
DIVISION ENGINEER

DATE \_\_\_\_\_

MICROFILMED  
JUL 8 1965

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829  
SCHEMATIC PLAN

**E. B. SCOVILL OVER N.B. 14TH ST.**  
BRIDGE NUMBER 1  
TYPE: Continuous steel beam with reinforced concrete deck and substructure.  
SPANS: 42'-1-5/16", 70'-7-1/16" & 42'-6 1/2" (along E. B. Scovill)  
ROADWAY: 24'-0" f./f. 2'-0" safety curbs  
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.  
SKEW: Varies  
SURFACE COURSE: 1" Monolithic Concrete  
ALIGNMENT: 20°00' curve left.  
APPROACH SLABS: AS-1-54 (25' Long)  
SUPERELEVATION: Varies

**CUY-42-1832**  
BRIDGE NUMBER 2  
TYPE: Continuous rolled beam with reinforced concrete deck and substructure.  
SPANS: 87'-9", 88'-9" & 55'-0" along E. I.B.  
ROADWAY: 114'-0" (nominal) f./f. parapets  
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.  
SURFACE COURSE: 1" Monolithic Concrete  
ALIGNMENT: 2°00' R. Tangent.  
APPROACH SLABS: AS-1-54 (25' Long)  
SUPERELEVATION: Varies

**E-15 OVER W.B. BROADWAY**  
BRIDGE NUMBER 6  
TYPE: Continuous welded steel girder with reinforced concrete deck and substructure.  
SPANS: 71.65', 120.00', and 72.00' (along E-15)  
ROADWAY: 20'-0" f./f. 2'-0" safety curbs.  
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.  
SKEW: Varies  
SURFACE COURSE: 1" Monolithic Concrete  
APPROACH SLABS: AS-1-54 (25'-0" long)  
SUPERELEVATION: Varies  
ALIGNMENT: 17°-00' Curve Lt. & Tangent

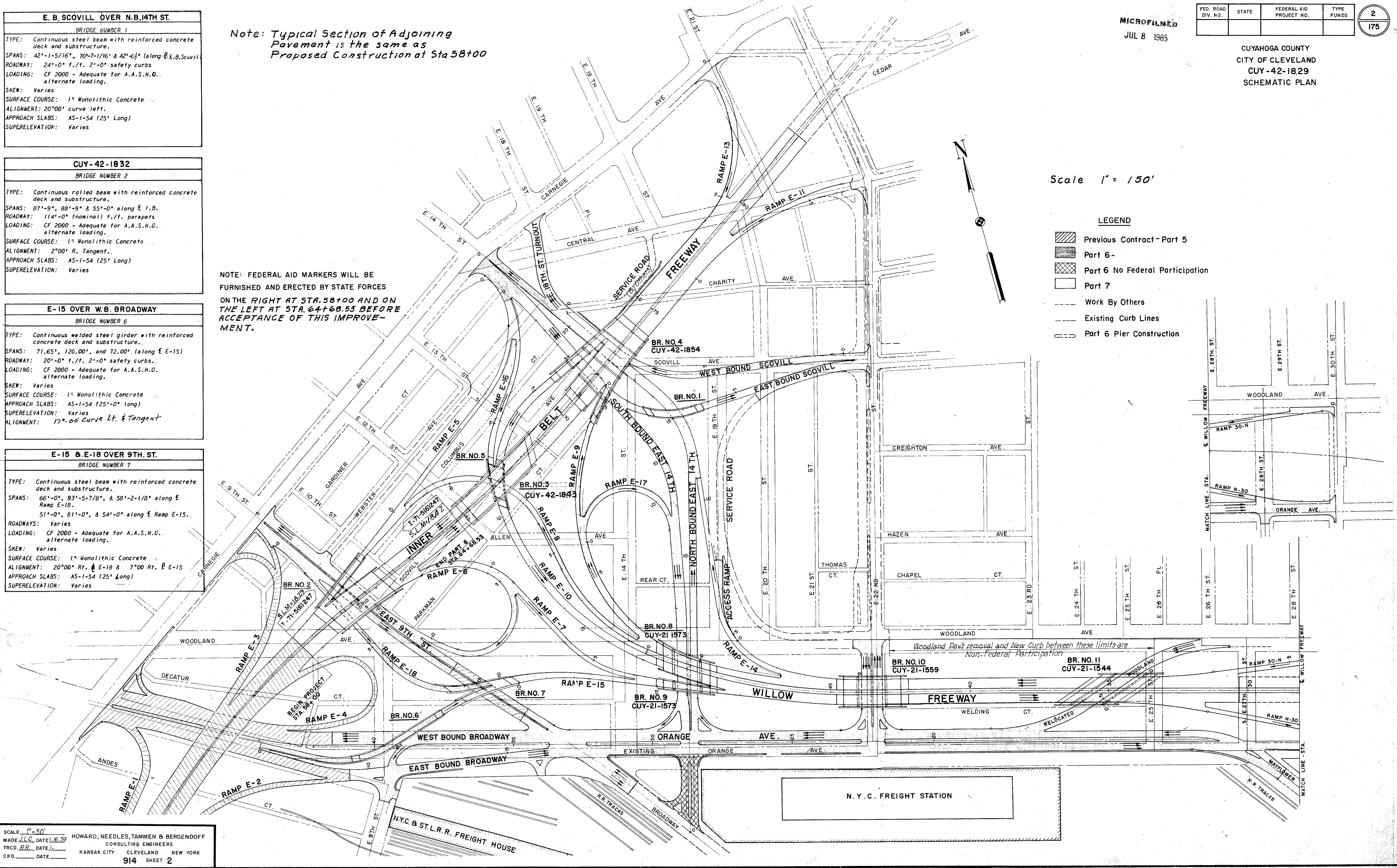
**E-15 & E-18 OVER 9TH ST.**  
BRIDGE NUMBER 7  
TYPE: Continuous steel beam with reinforced concrete deck and substructure.  
SPANS: 66'-0", 93'-5-7/8", & 58'-2-1/8" along E Ramp E-18.  
51'-0", 81'-0", & 54'-0" along E Ramp E-15.  
ROADWAYS: Varies  
LOADING: CF 2000 - Adequate for A.A.S.H.O. alternate loading.  
SKEW: Varies  
SURFACE COURSE: 1" Monolithic Concrete  
ALIGNMENT: 20°00' Rt. E-18 & 7°00' Rt. E-15  
APPROACH SLABS: AS-1-54 (25' Long)  
SUPERELEVATION: Varies

Note: Typical Section of Adjoining Pavement is the same as Proposed Construction at Sta 58+00

NOTE: FEDERAL AID MARKERS WILL BE FURNISHED AND ERECTED BY STATE FORCES ON THE RIGHT AT STA. 58+00 AND ON THE LEFT AT STA. 64+68.53 BEFORE ACCEPTANCE OF THIS IMPROVEMENT.


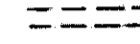
Scale 1" = 150'

- LEGEND**
- Previous Contract - Part 5
  - Part 6 -
  - Part 6 No Federal Participation
  - Part 7
  - Work By Others
  - Existing Curb Lines
  - Part 6 Pier Construction

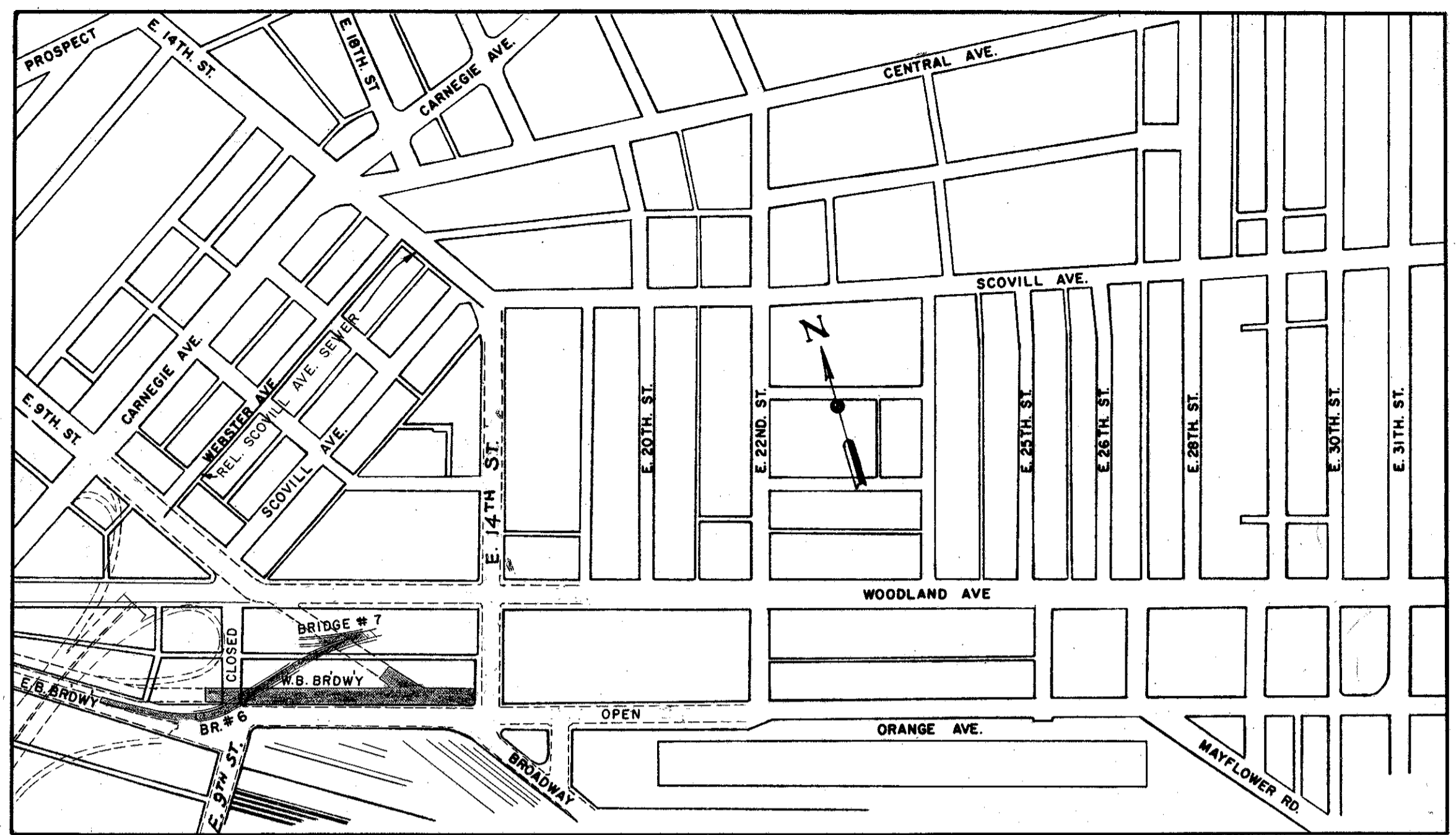


CUY - 42-18.29  
 SUGGESTED  
 SEQUENCE OF CONSTRUCTION

**LEGEND**

CONST. THIS STAGE   
 KEY STREETS REMAINING OPEN 

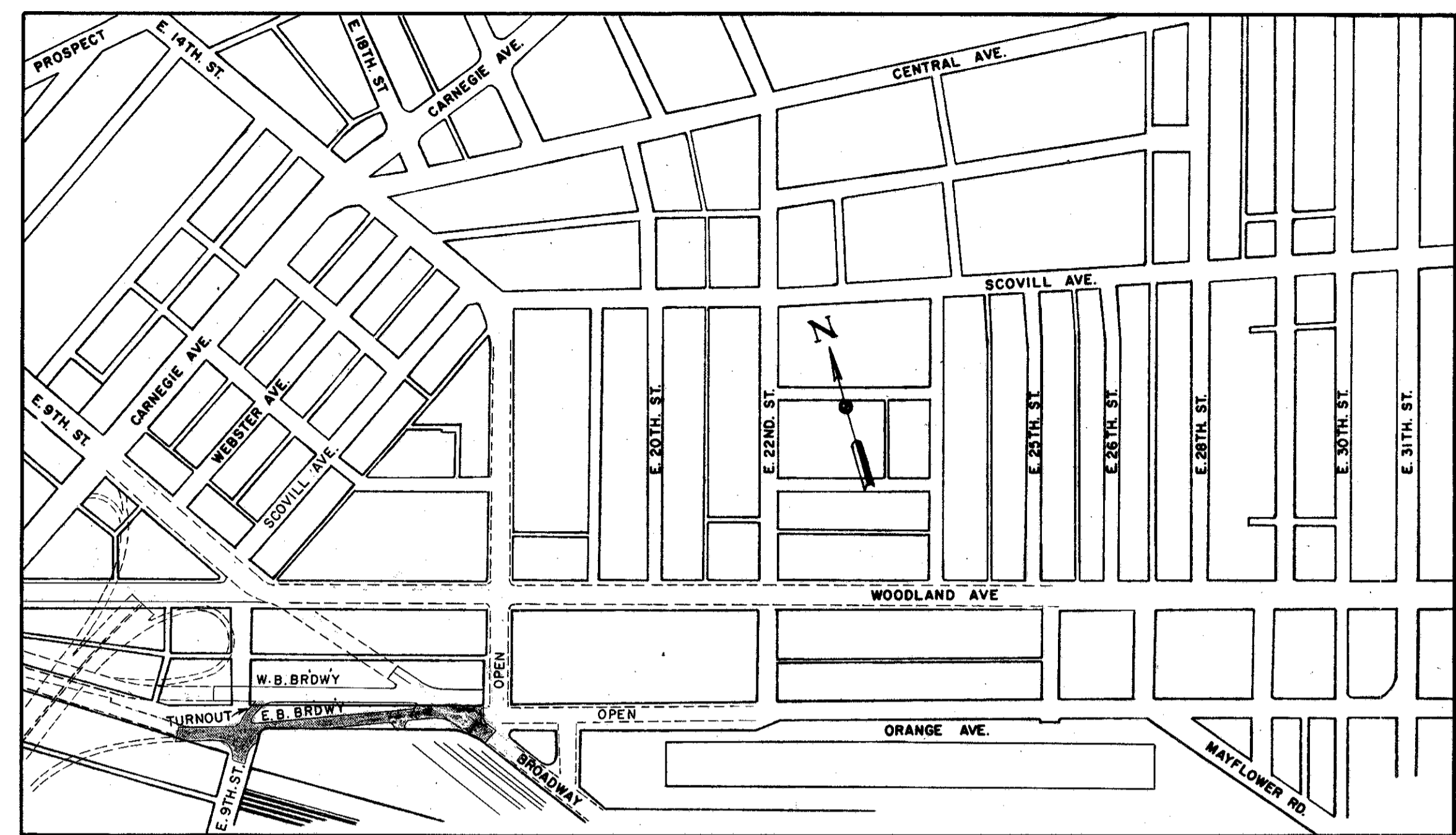
**NOTE:**  
 The Contractor shall use High Early Strength Portland Cement for his concrete mix in the following areas:  
 (1) W. B. Broadway and E. 9th St. intersection - (Stage I)  
 (2) All pavement areas in Stage II  
 (3) Woodland Ave. pavement mergers - (Stage IV)  
 (4) Orange Ave. from Sta. 30+50 to Sta. 31+30 - (Stage V)  
 This cement shall meet the requirements of Sec. M-1.2 of Sec. M-1.4. If Sec. M-1.4 is used, an admixture as provided by Sec. M-1.5 shall be incorporated in the mixture.  
 The cost of furnishing the High-Early Strength Concrete shall be included in the Unit Price Bid for Item T-71 and B-70



**STAGE I**

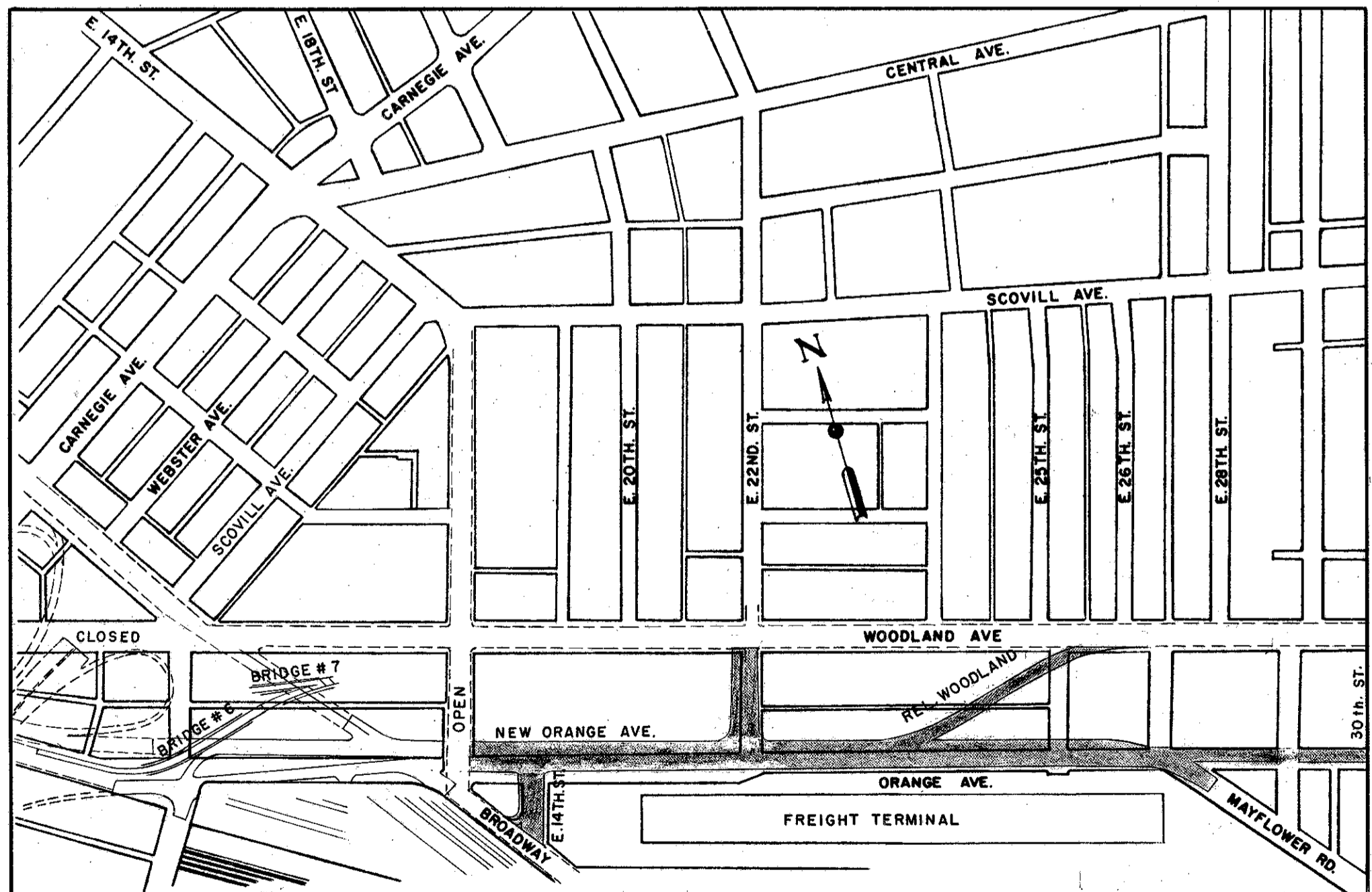
1. Construct crossover between E.B. Broadway & W.B. Broadway from approximately Sta. 44+60 to Sta. 45+70. (See Sheet 16 for Detail)
2. Eastbound traffic to be routed over existing E.B. Broadway and existing Broadway; Westbound traffic to be routed over existing Broadway then E.B. Broadway up to the Crossover at approximately Sta. 44+60 where it will be transferred to W.B. Broadway
3. Construction to include W.B. Broadway to Sta. 31+30, Ramp E-15 thru Bridge 6, Bridge #6 and #7 and Relocated Scovill Ave. Sewer. (See note below)
4. The intersection of E. 9th St. and W.B. Broadway to be constructed in such a manner as to permit one lane of traffic in each direction at all times. (See note on this sheet pertaining to High Early Strength Cement)

**NOTE:**  
 During the construction of the Relocated Scovill Ave. sewer at E. 9th St. and E. 14th St., traffic shall be maintained as follows:  
 E. 9th St. - 2 lanes  
 E. 14th St. - 3 lanes (entire easterly portion of undisturbed pavement)



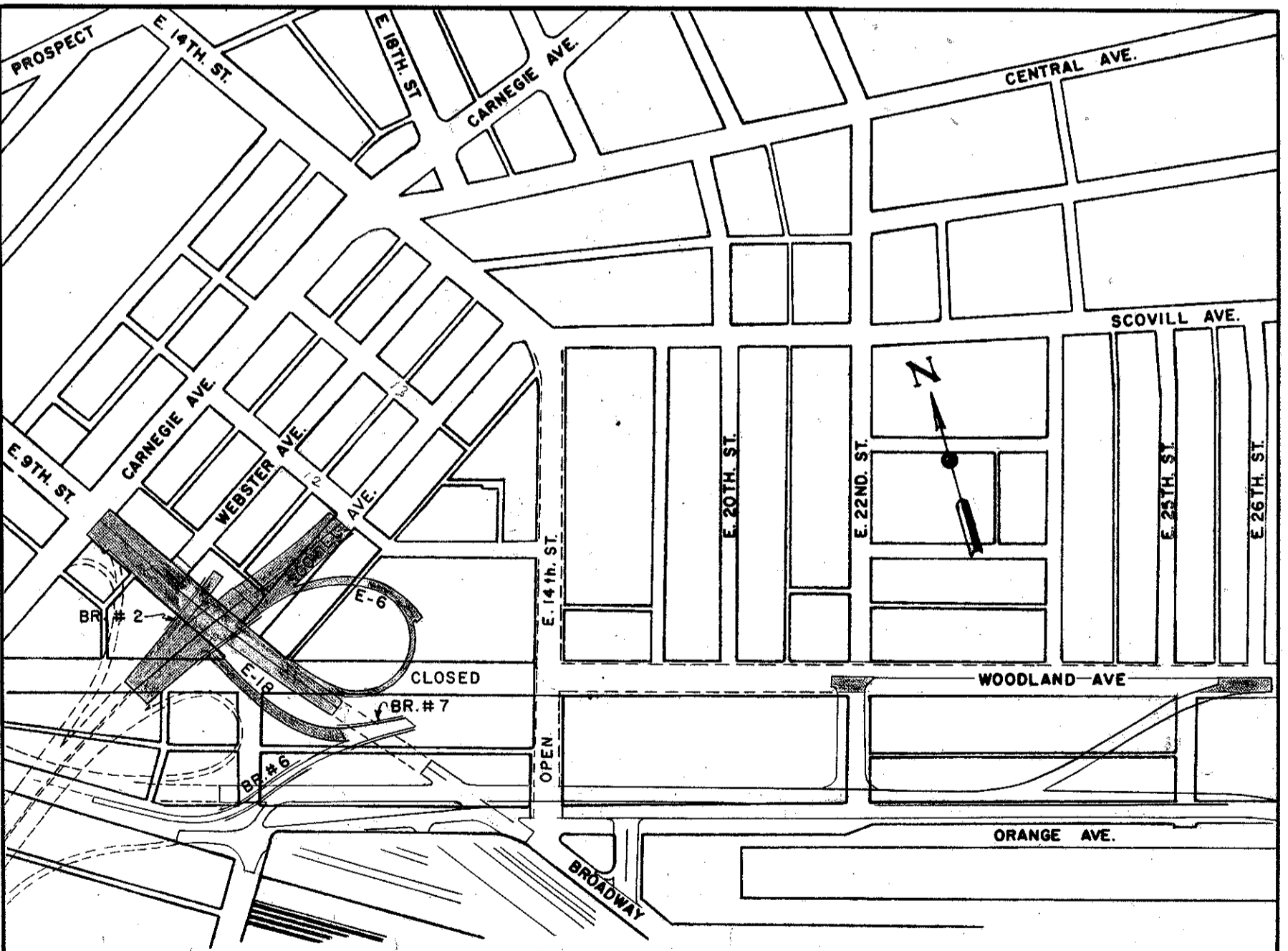
**STAGE II**

1. E.B. traffic to be routed over existing E.B. Broadway up to the crossover constructed in stage I where it will be transferred to W.B. Broadway. W.B. traffic to be routed over newly constructed W.B. Broadway.
2. Construction to include E.B. Broadway to Sta. 31+30 and E. 9th St. turnout.
3. E. 9th St. pavement South of turnout to be placed in such a manner as to permit access to existing E. 9th St. south of Broadway at all times. Further, Orange and Brdwy intersection is to be completed as soon as possible after beginning of Stage II.
4. Existing Broadway, new E. 9th St. intersection to be constructed in such a manner as to permit one lane of traffic in each direction at all times.



**STAGE III**

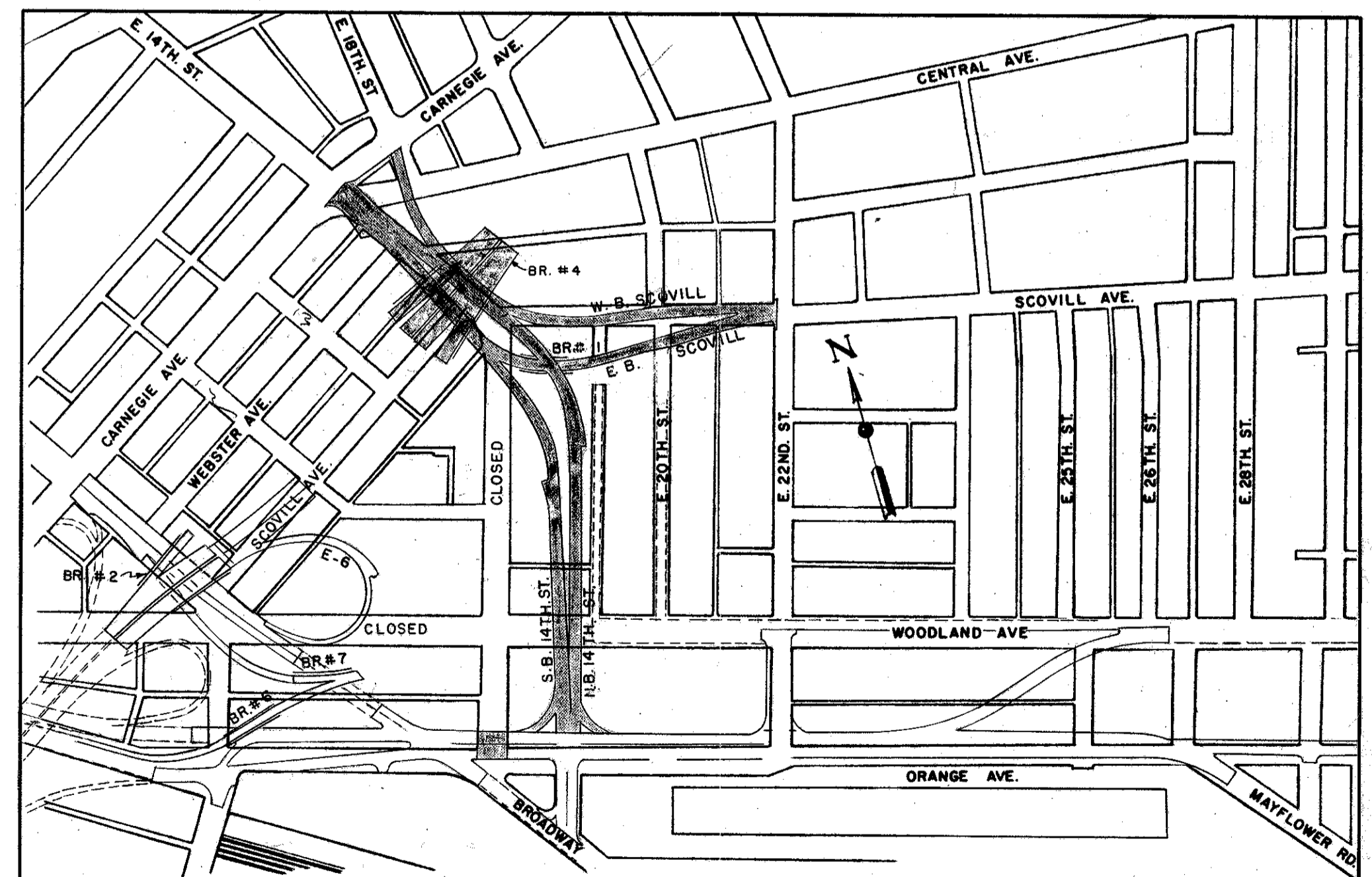
1. Construction to include Orange Ave. from Sta. 2+08.95 to Sta. 30+50, E. 14th St. So of Orange, East 22nd St. from Woodland to Orange and Relocated Woodland Ave. in Part as shown.
2. Provision to be made for truck movements in the freight terminal area.
3. Curb along Woodland Ave. and No. side of Rel. Woodland to be delayed until Stage IV



**STAGE IV**

1. Broadway-Orange reopened to traffic.
2. Woodland closed to traffic between E. 9th St. and E. 14th St.
3. Construction to include remaining part of E. 9th St., Ramps E-6 and E-18, Inner Belt from Sta. 58+00 to Sta. 64+68, Bridge #2 and Woodland Ave. pavement mergers.

**NOTE:**  
 The Contractor, upon securing approval from the Director, can go from one stage to the next without having completed all the construction called for in that stage.  
 For additional traffic notes, See General Notes on Sheet 10.



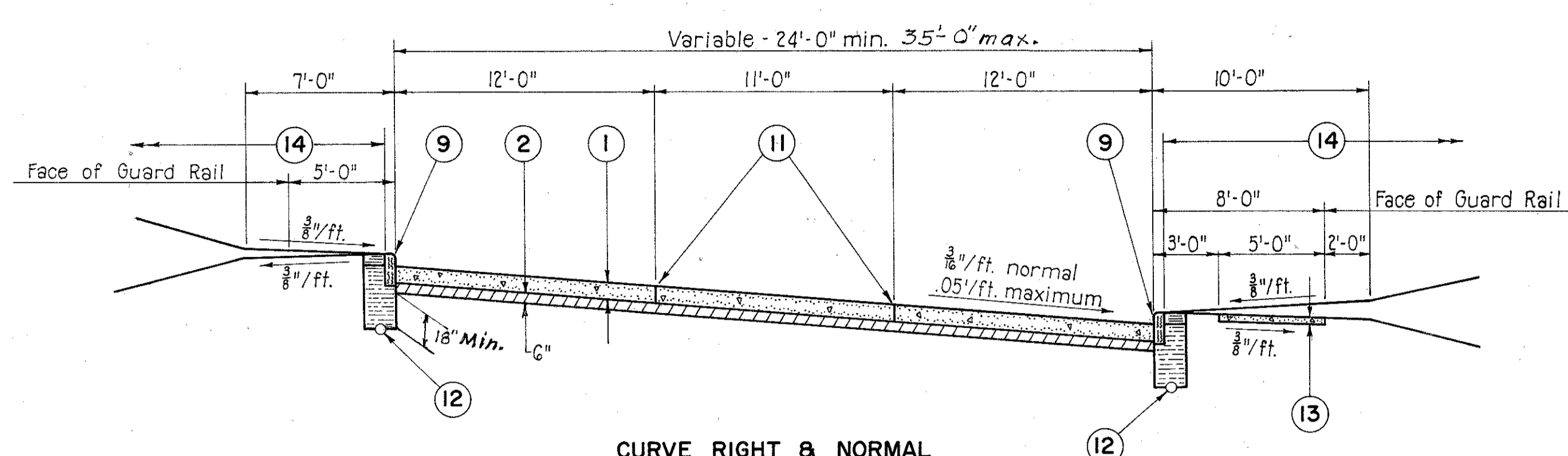
**STAGE V**

1. East 14th St. from Carnegie to Orange and Woodland Ave. between E. 14th St. and E. 19th St. closed to traffic.
2. Construction to include E.B. & W.B. Scovill Ave., N.B. & S.B. E. 14th Sts., Bridge #1 and Bridge #4.
3. Complete pavement and curbing on Orange Ave., approximately from Sta. 30+50 to Sta. 31+30. (See note above pertaining to High Early Strength Cement.)

# TYPICAL SECTIONS TYPE T-71

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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
TYPICAL SECTIONS



**CURVE RIGHT & NORMAL**

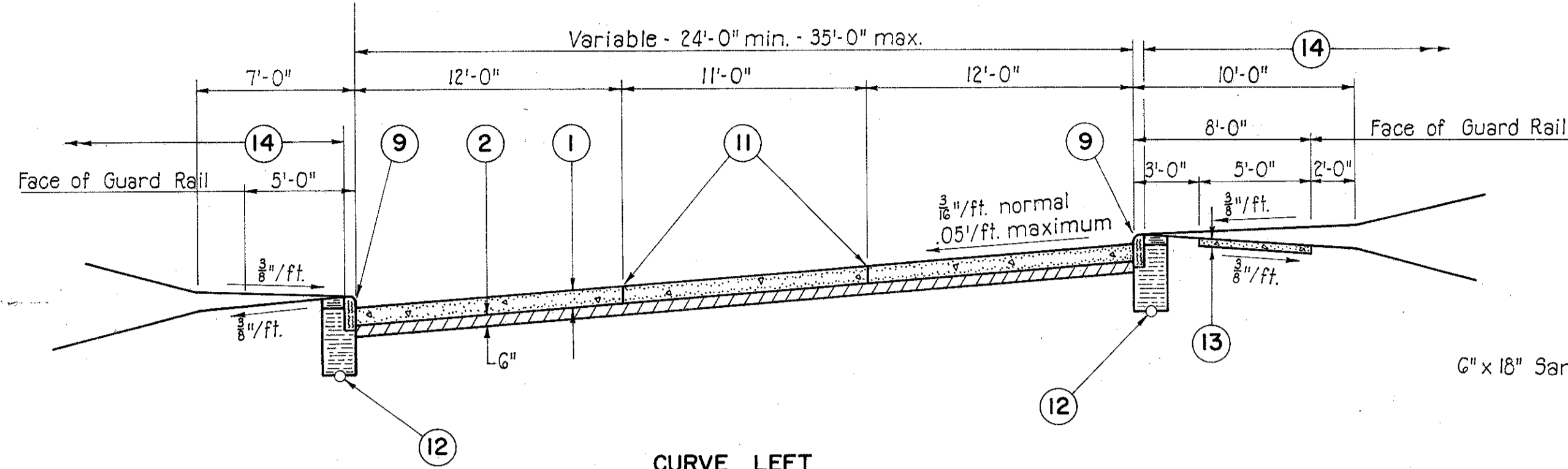
NORTHBOUND E.-14th ST.	WIDTH	SOUTHBOUND E.-14th ST.	WIDTH
STA. 7+10.79 TO STA. 12+94.50	24'	STA. 0+00.00 TO STA. 6+71.92	35'
STA. 16+05.36 TO STA. 18+09.46	35'	STA. 6+71.92 TO STA. 12+50.36	24'
STA. 18+09.46 TO STA. 20+58.49	VAR.		
STA. 20+58.49 TO STA. 24+25.02	24'		

EASTBOUND SCOVILL	WIDTH	WESTBOUND SCOVILL	WIDTH
STA. 3+30.02 TO STA. 6+70.36	24'	STA. 2+85.53 TO STA. 8+23.16	24'
STA. 6+70.36 TO STA. 9+87.92	35'		

RELOCATED WOODLAND AVE.	WIDTH
STA. 3+57.90 TO STA. 9+23.34	35'

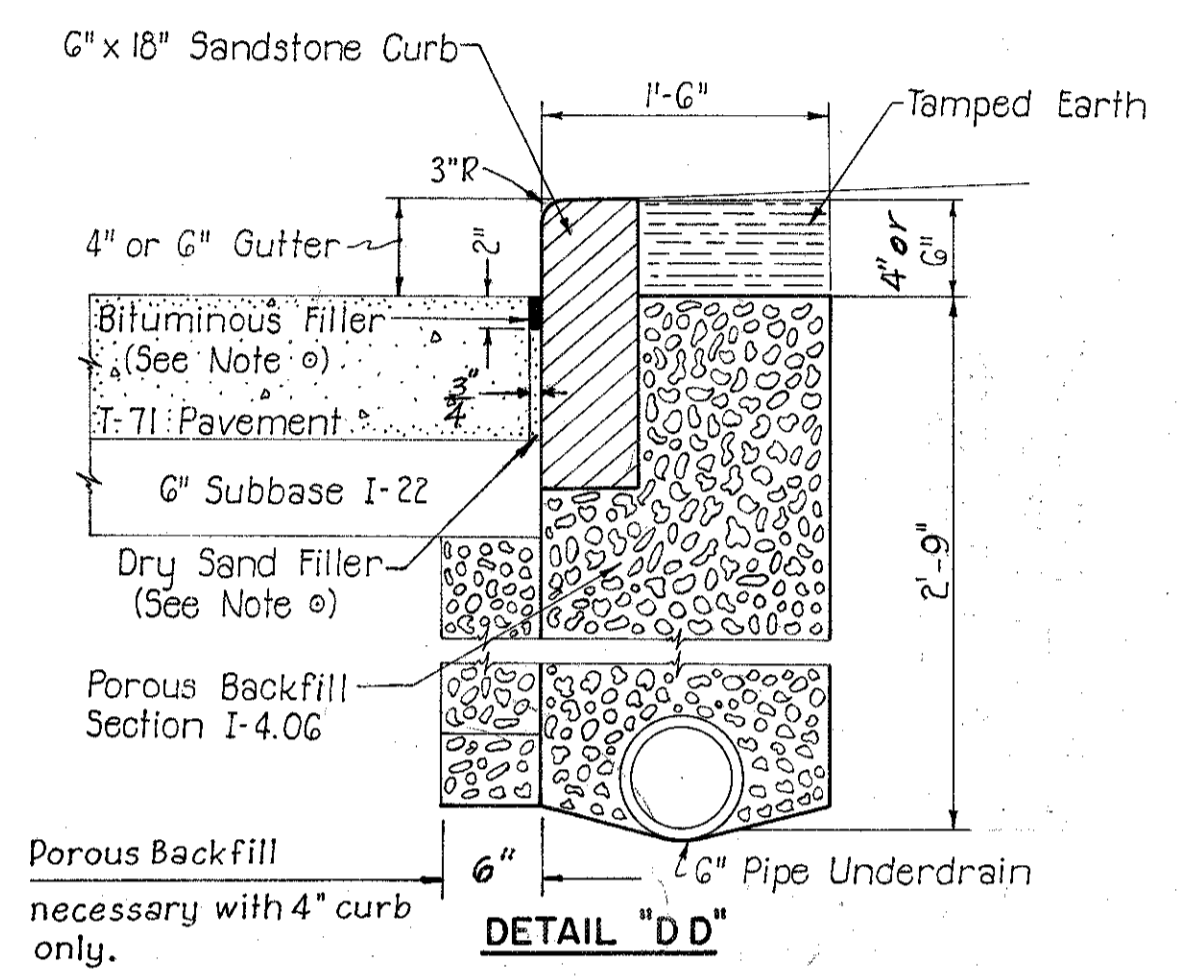


**CURVE LEFT**

NORTHBOUND E.-14th ST.	WIDTH	RELOCATED WOODLAND AVE.	WIDTH
STA. 12+94.50 TO STA. 13+47.91	24'	STA. 0+00 TO STA. 3+57.90	35'
STA. 13+47.91 TO STA. 16+05.36	35'		

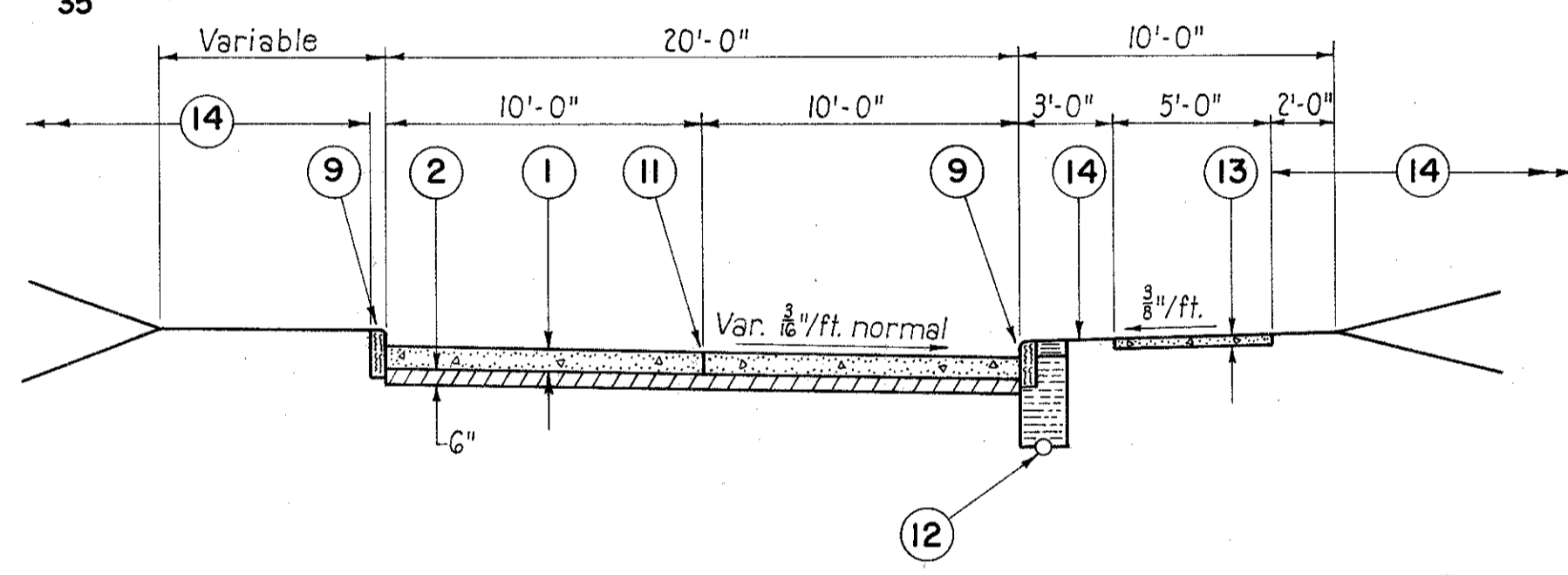
  

EASTBOUND SCOVILL	WIDTH	WESTBOUND SCOVILL	WIDTH
STA. 0+00.00 TO STA. 3+30.02	24'	STA. 0+00 TO STA. 2+85.53	24'

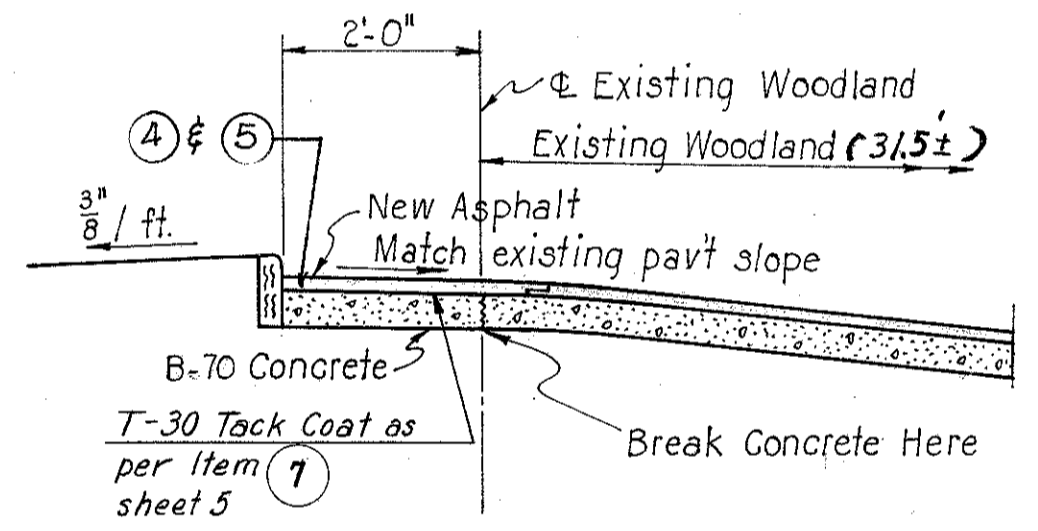


**DETAIL "D D"**  
Scale: 1"=1'-0"

Note: If pavement is built before the curb is placed, it shall be built full width and any opening between curb and pavement shall be filled with dry sand to within two (2) inches of the surface; the remaining space shall be filled with Bituminous Filler meeting the requirements of Section M-5.6F2 of the Standard Specifications. Sand to meet the requirements of Section M2.1. The cost of joint to be included in the price bid per lineal foot of curb.

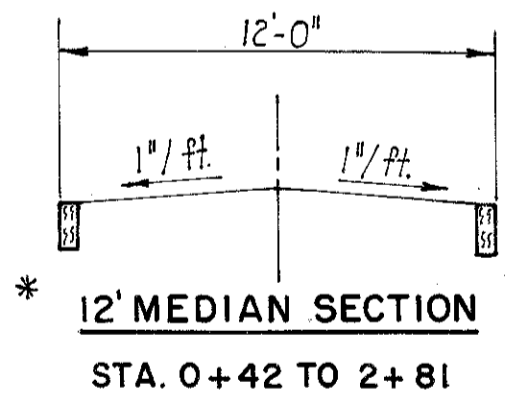


**TYPICAL TURNOUT**

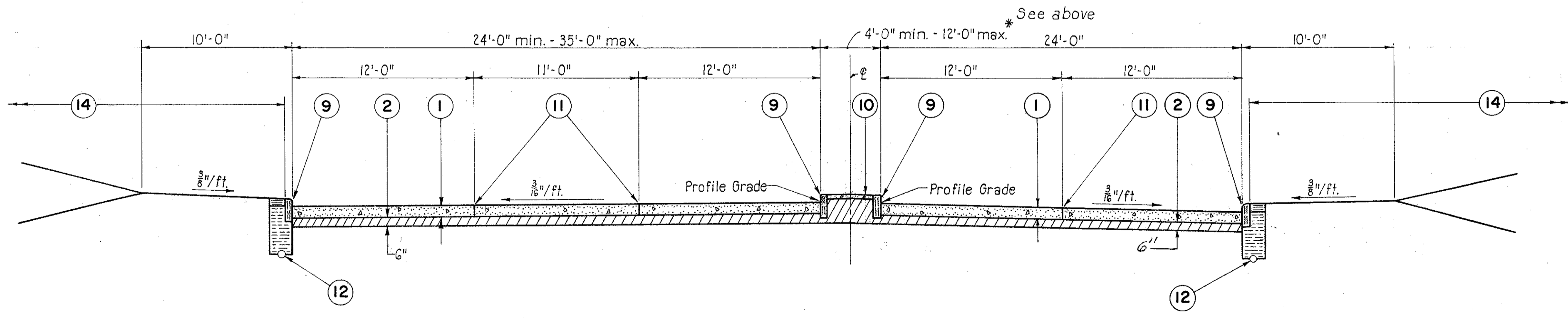


**WOODLAND AVE. REMOVAL \*\***

From 22nd St. to Relocated Woodland  
No Scale  
\*\*For typical of existing tracks under surface see Utilities and Existing Conditions sheet number 56.



**\* 12' MEDIAN SECTION**  
STA. 0+42 TO 2+81



**EAST 14th STREET**  
STA. 0+42 TO STA. 2+81  
STA. 3+69 TO STA. 7+10.79

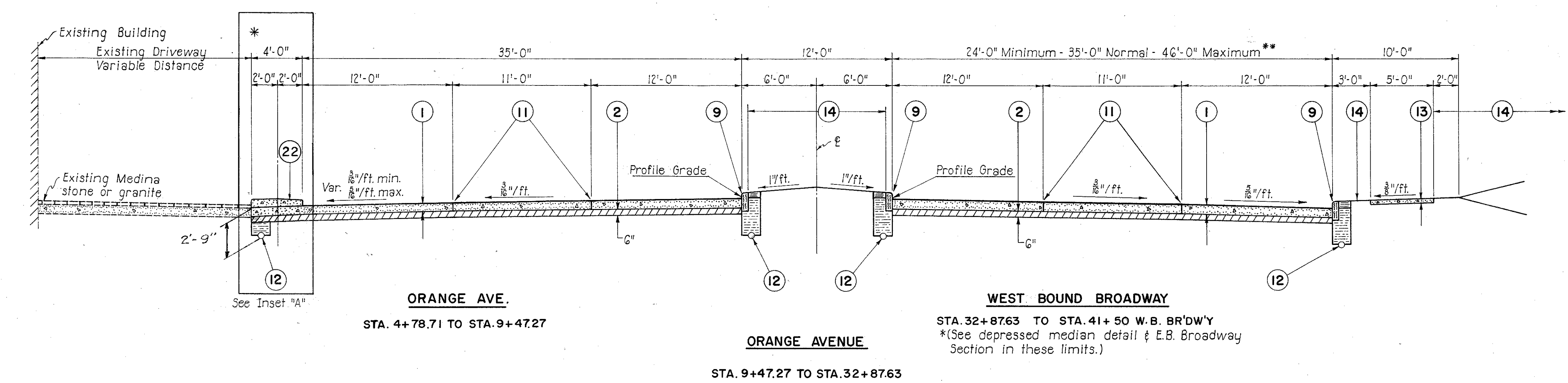
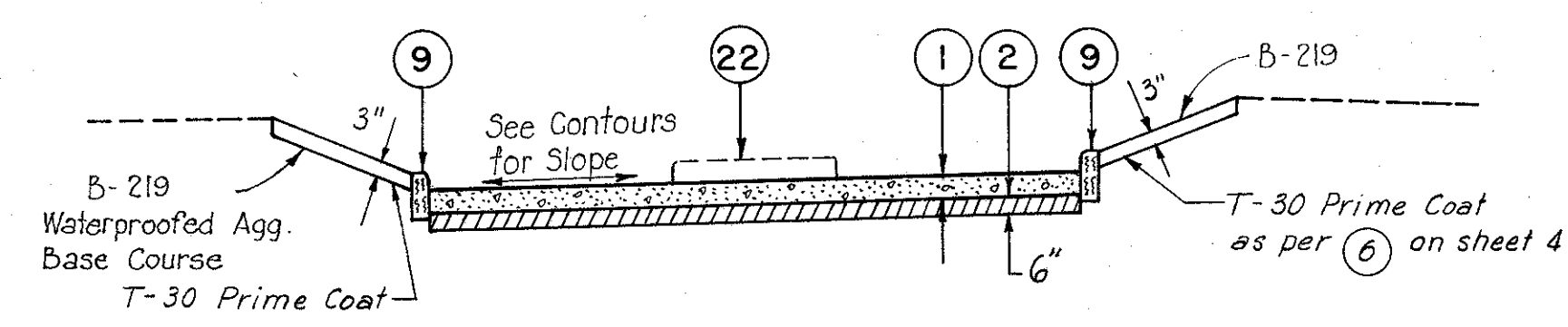
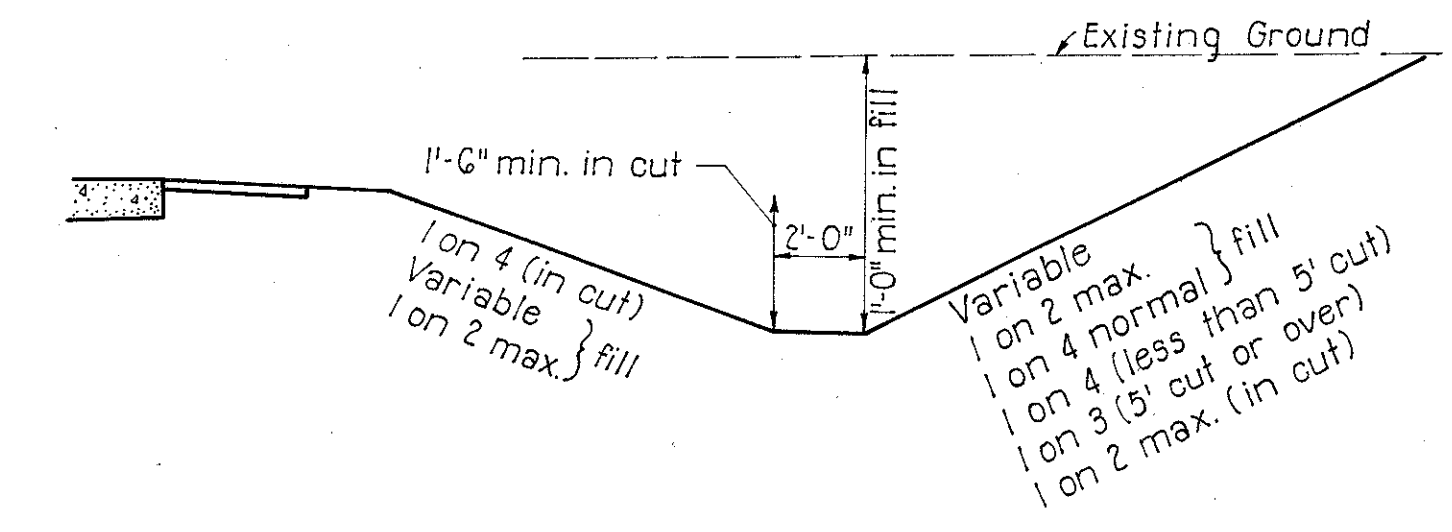
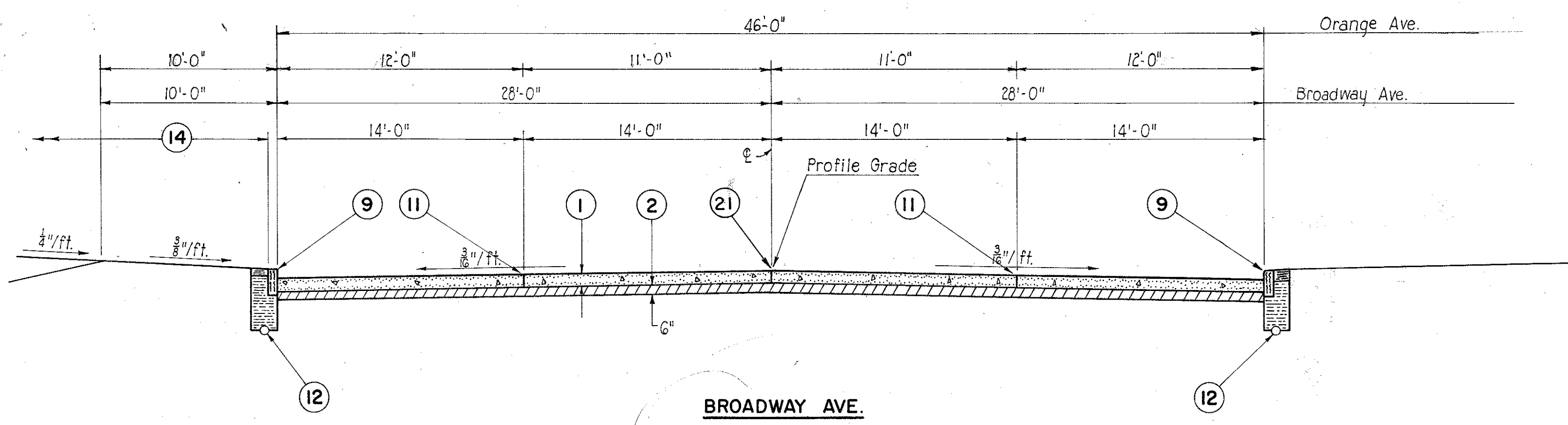
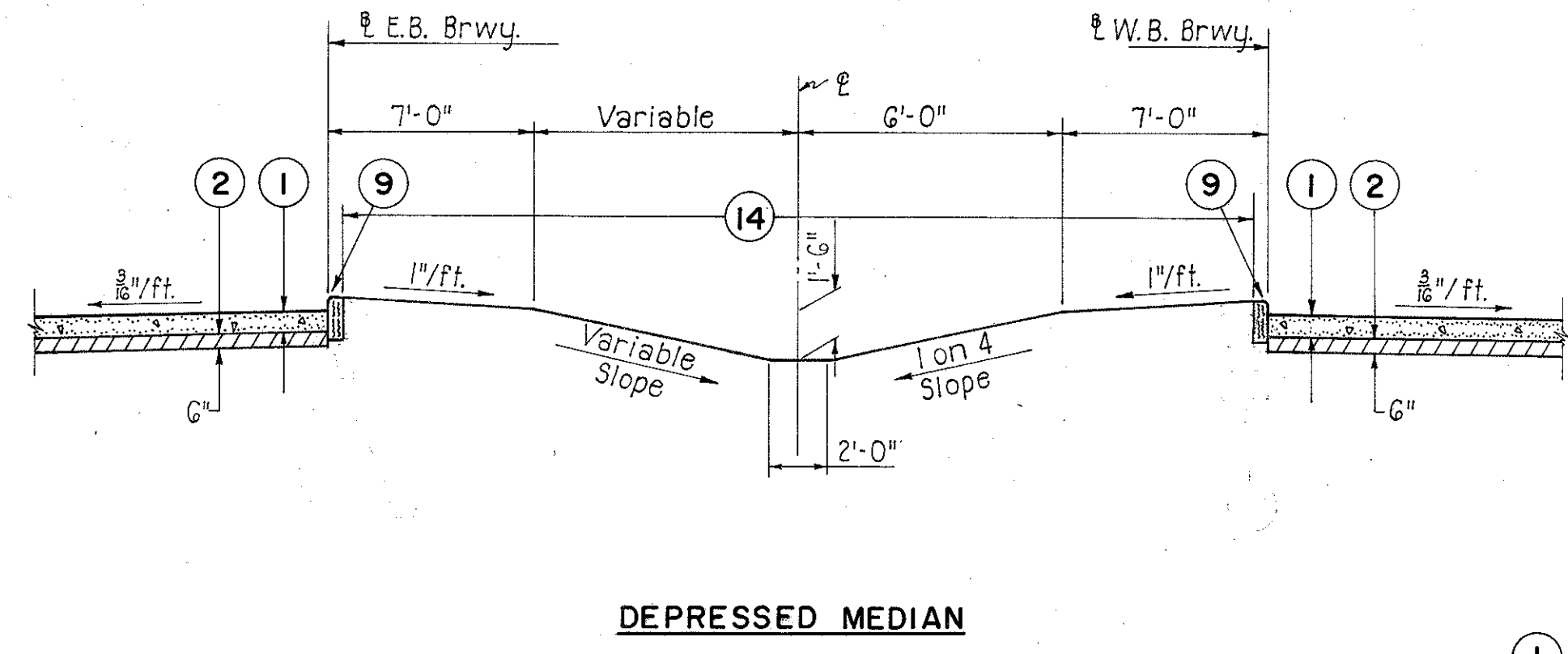
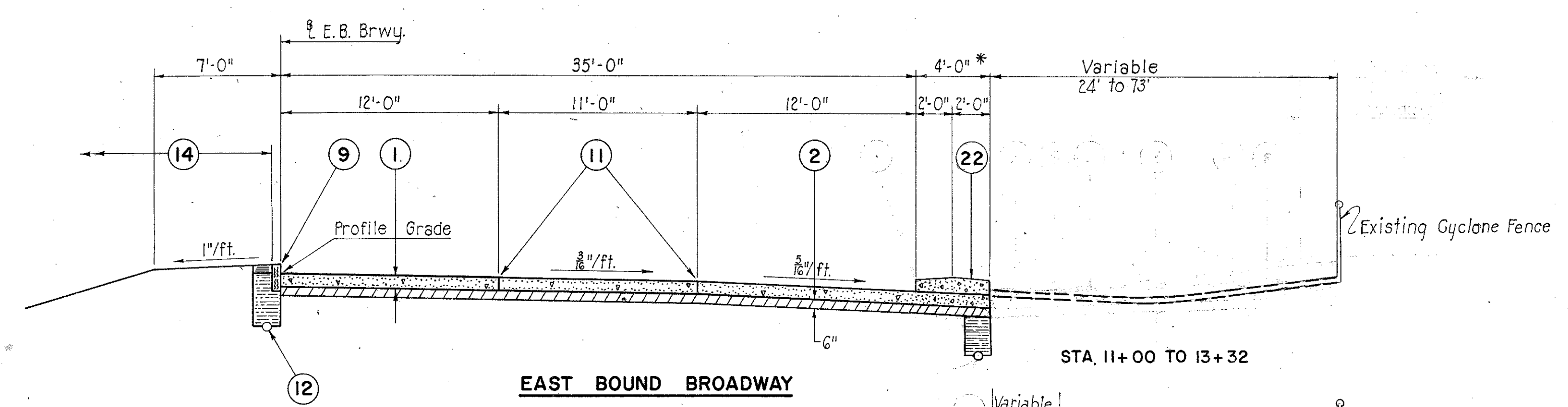
**LEGEND**

- ① 9" Reinforced Portland Cement Concrete Pavement, Item T-71.
- ② Subbase, Item I-22.
- ④ 1 1/4" Asphaltic Concrete Surface Course, Type C(60-70), Item T-35.
- ⑤ 1 1/4" Asphaltic Concrete Leveling Course, (60-70), Item B-35.
- ⑥ Bituminous Prime Coat, Item T-30, Sec. M5.7 (RT-2 or RT-3) Applied at rate of 0.4 Gal. per Sq. Yd.
- ⑨ 6" x 18" Sandstone Curb, Item I-11.
- ⑩ Standard Type I Median Pavement, Item I-21.
- ⑪ Standard Longitudinal Joint
- ⑫ 6" Underdrain, Item I-4.
- ⑬ 4" Concrete Sidewalk, Item I-13.
- ⑭ Seeding and Protecting, Item L-9.

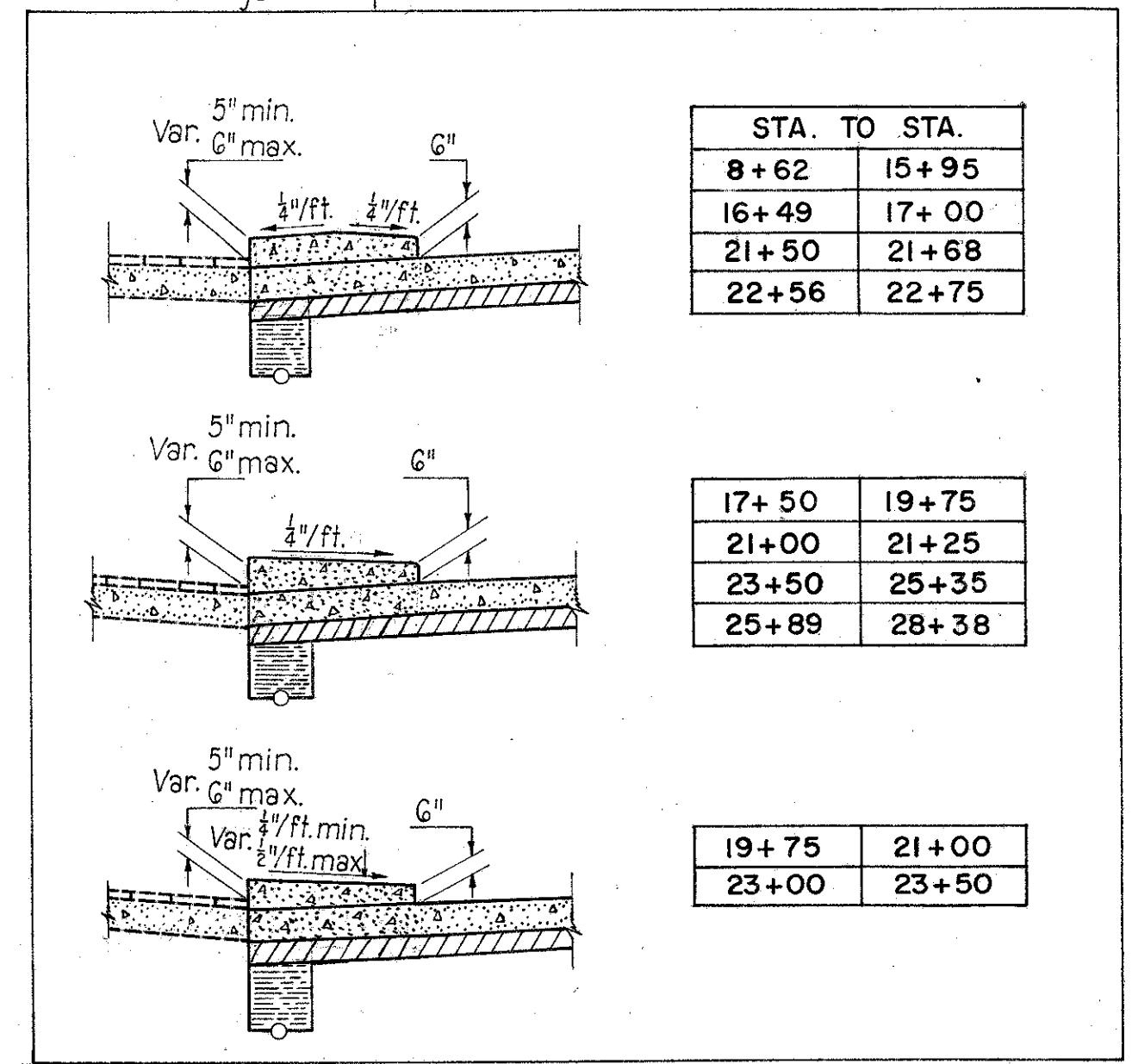
# TYPICAL SECTIONS TYPE T-71

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		5

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
TYPICAL SECTIONS



Note: Top of curb elevations for left side of median are given on Orange Ave. profile.



- LEGEND**
- (1) 9" Reinforced Portland Cement Concrete Pavement, Item T-71.
  - (2) Subbase, Item I-22.
  - (4) 1 1/2" Asphaltic Concrete Surface Course, Type C(60-70), Item T-35.
  - (5) 1 1/2" Asphaltic Concrete Leveling Course, (60-70), Item B-35.
  - (7) Bituminous Tack Coat, Item T-30, Sec. M5.5, MS-2 or RS-1 or Sec. M-5.2, RC-1, RC-2 or RC-3 as per Sec. T-30.02 applied at rate of 0.10 gal. per sq. yd.
  - (8) 9" Portland Cement Concrete Base Course, Item B-70.
  - (9) 6" x 18" Sandstone Curb, Item I-11.
  - (10) Standard Type 1 Median Pavement, Item I-21.
  - (11) Standard Longitudinal Joint
  - (12) 6" Underdrain, Item I-4.
  - (13) 4" Concrete Sidewalk, Item I-13.
  - (14) Seeding and Protecting, Item L-9.
  - (21) Standard Longitudinal Key Joint without tie bars.
  - (22) Standard Type 2 Median, Pavement, Item I-21.\*\*\* (4' Wide unless otherwise shown)

\*\*\* Note:  
The Portland Cement Concrete Median, Item I-21, Type 2, as per plan, shall be placed according to specification Item I-12 with the exception that the 5/8 inch round deformed rods if required shall be placed 2 feet inside of and parallel to the edge forms.

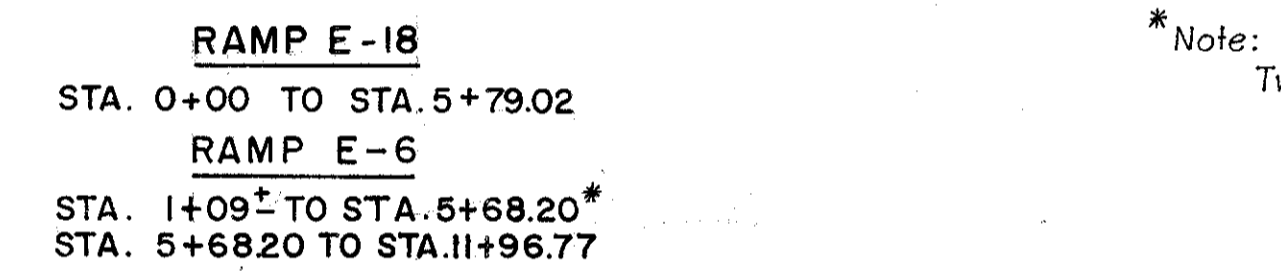
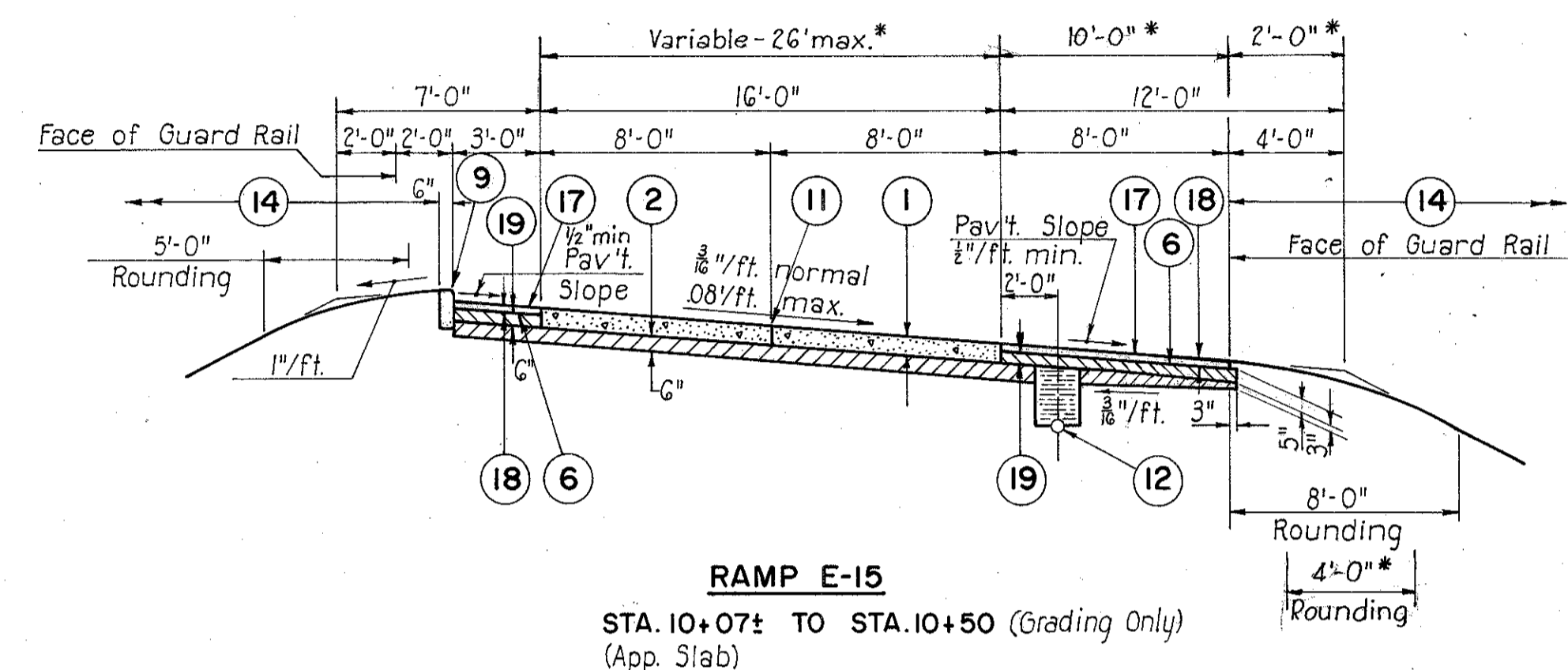
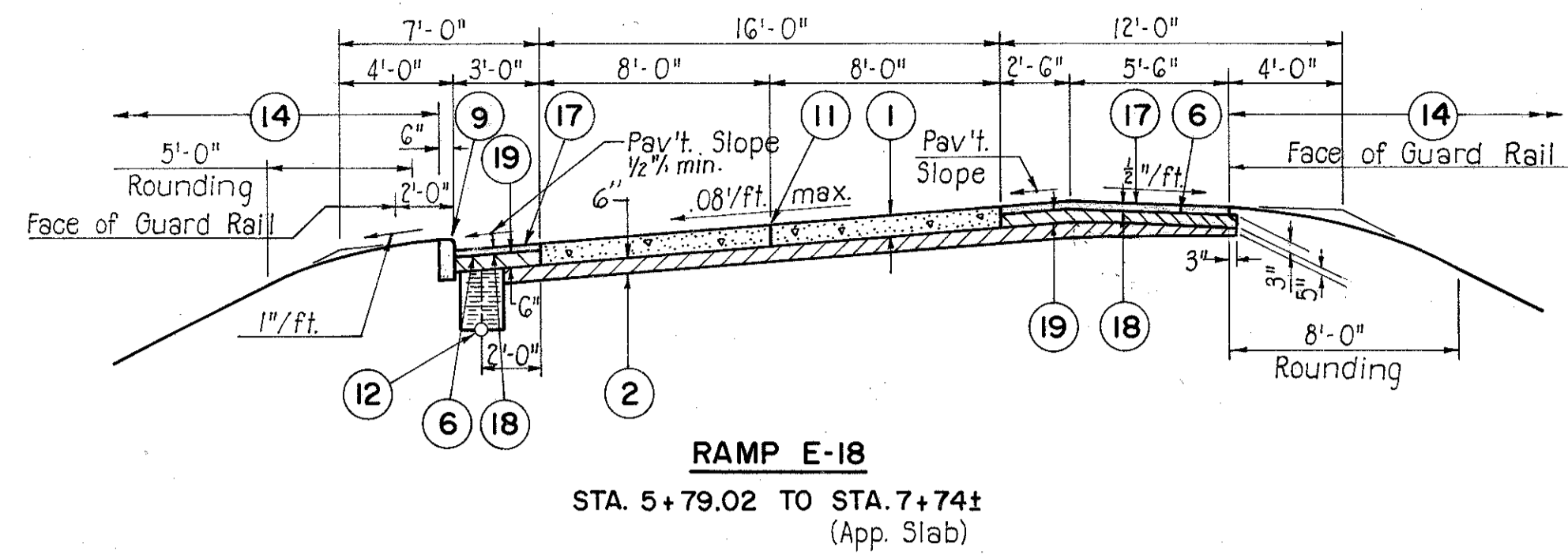
\*\* Note:  
Center joint shall be Standard Longitudinal Key Joint without tie bars when pavement width exceeds 36'-0" unless otherwise shown.

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
TYPICAL SECTIONS

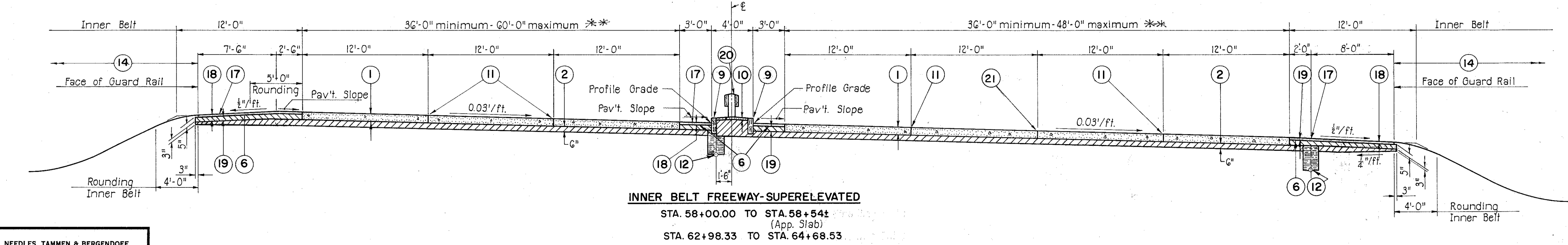
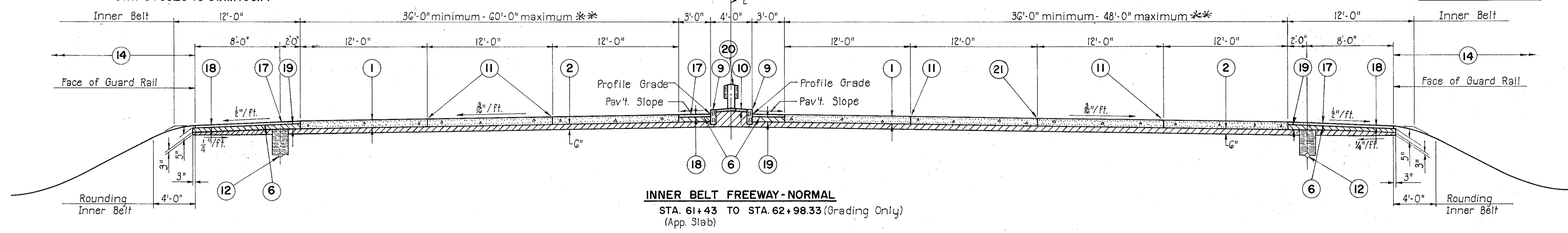
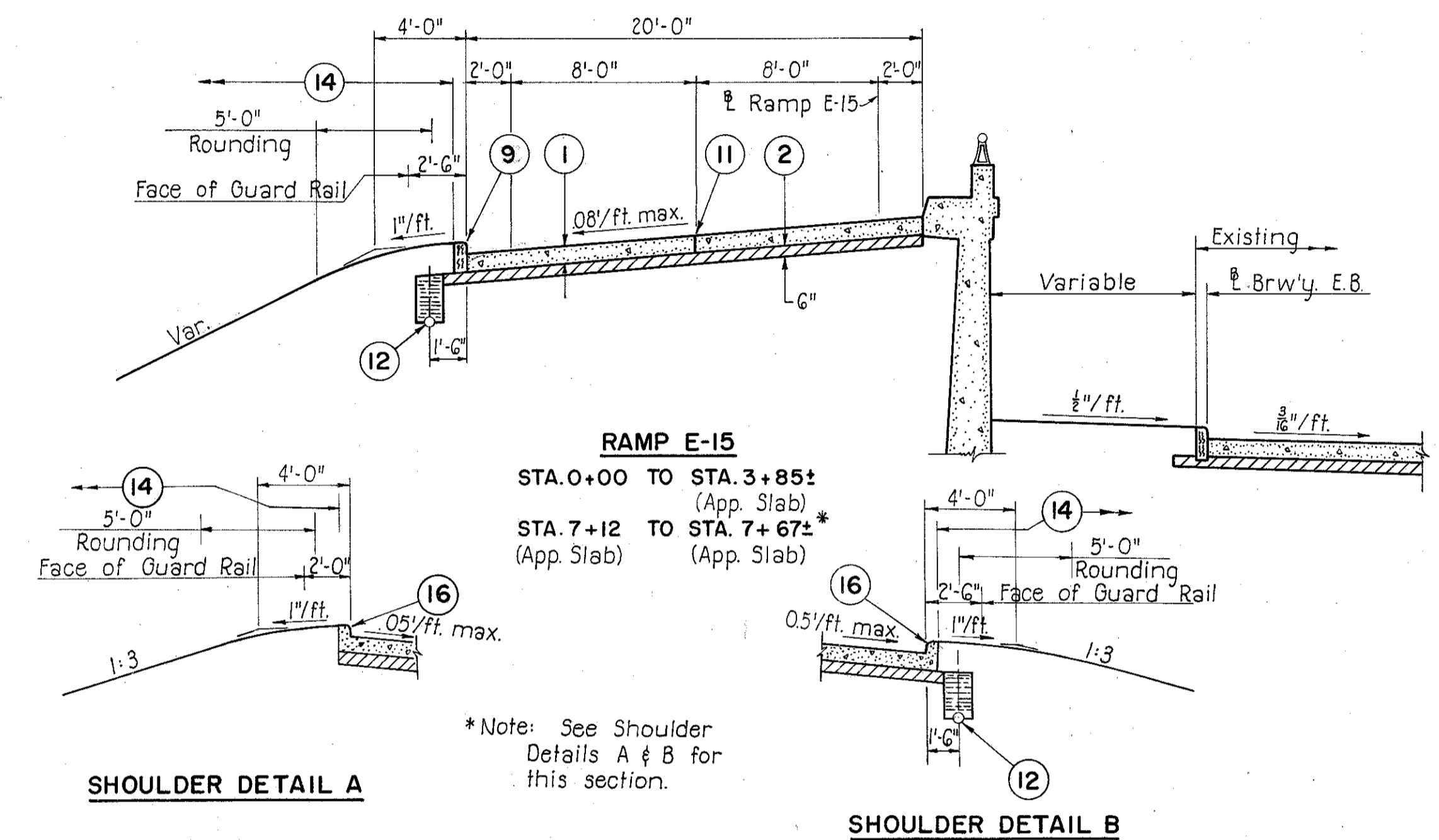
# TYPICAL SECTIONS TYPE T-71

## LEGEND

- ① 9" Reinforced Portland Cement Concrete Pavement, Item T-71.
- ② Subbase, Item I-22.
- ⑥ Bituminous Prime Coat, Item T-30, Sec. M5.7(RT-2 or RT-3) Applied at Rate of 0.4 Gal. per Sq. Yd.
- ⑨ 6" x 18" 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.
- ⑯ Standard Type 2A Modified Concrete Curb, Item I-12.
- 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.
- ⑳ Guard Rail, Steel Beam, Barrier Type (Deep), Item I-15.
- ㉑ Standard Longitudinal Key Joint without tie bars \*\* (See Note on Sheet 5)



\*Note: Two Lane Ramp

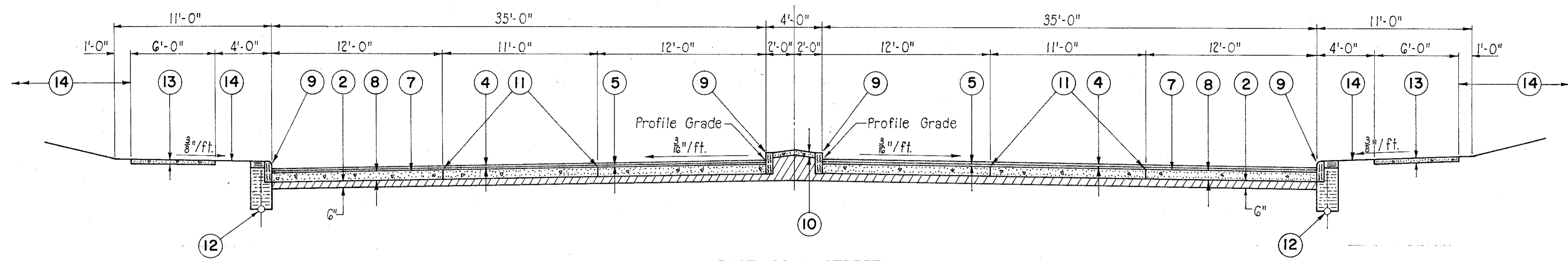


# TYPICAL SECTIONS TYPE T-71 & T-35 ON B-70

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

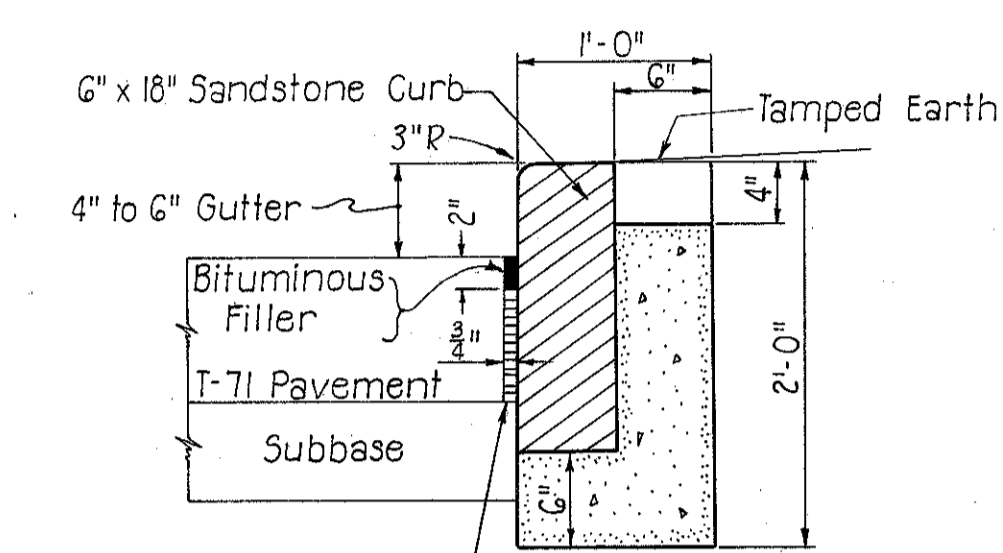
7  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
TYPICAL SECTIONS



**EAST 22nd STREET**

STA. 0+00 TO STA. 3+67.79

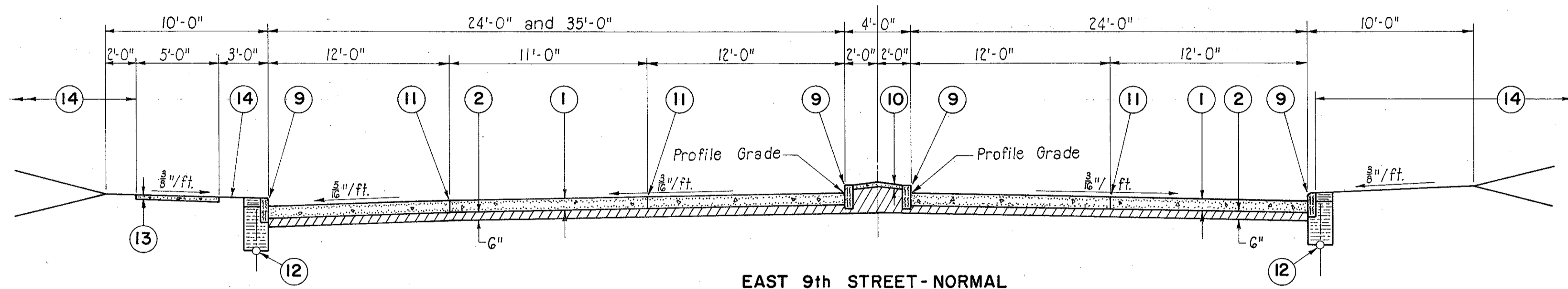


**DETAIL "C C"**  
**RADIAL CURB DETAIL**

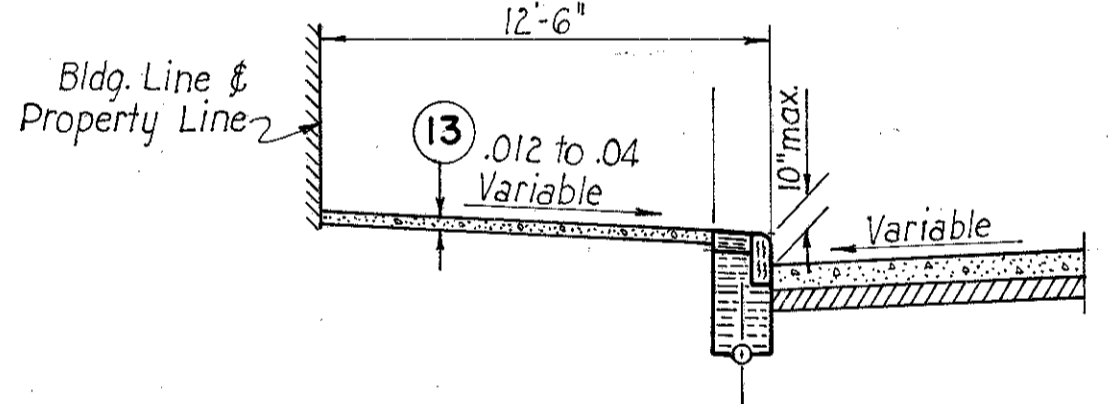
For radii, 55' and less  
Scale: 1" = 1'-0"

\*Note: The three quarter (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 Radial Curb 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 and the cost of the Glass "E" Concrete to be included in price bid per lineal foot of curb.

- LEGEND**
- ① 9" Reinforced Portland Cement Concrete Pavement, Item T-71.
  - ② Subbase, Item I-22.
  - ④ 1 1/4" Asphaltic Concrete Surface Course, Type C (60-70), Item T-35.
  - ⑤ 1 1/2" Asphaltic Concrete Leveling Course, (60-70), Item B-35.
  - ⑦ Bituminous Tack Coat to 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 applied at rate of 0.10 gal. per Sq. yd.
  - ⑧ 9" Portland Cement Concrete Base Course, Item B-70.
  - ⑨ 6" x 18" Sandstone Curb, Item I-11.
  - ⑩ Standard Type I Median Pavement, Item I-21.
  - ⑪ Standard Longitudinal Joint.
  - ⑫ 6" Underdrain, Item I-4.
  - ⑬ 4" Concrete Sidewalk, Item I-13.
  - ⑭ Seeding and Protecting, Item L-9.



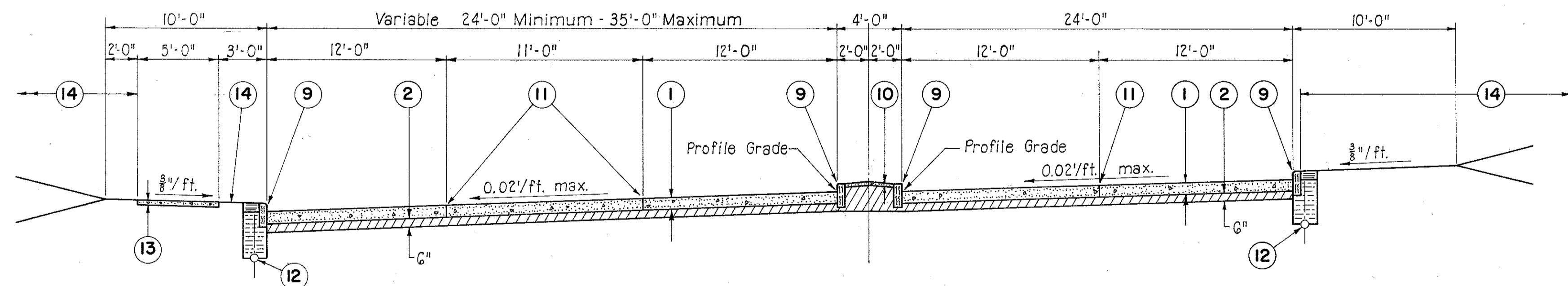
**EAST 9th STREET - NORMAL**



**SPECIAL CURB & SIDEWALK \***  
STA. 5+37.50 TO STA. 7+25.00

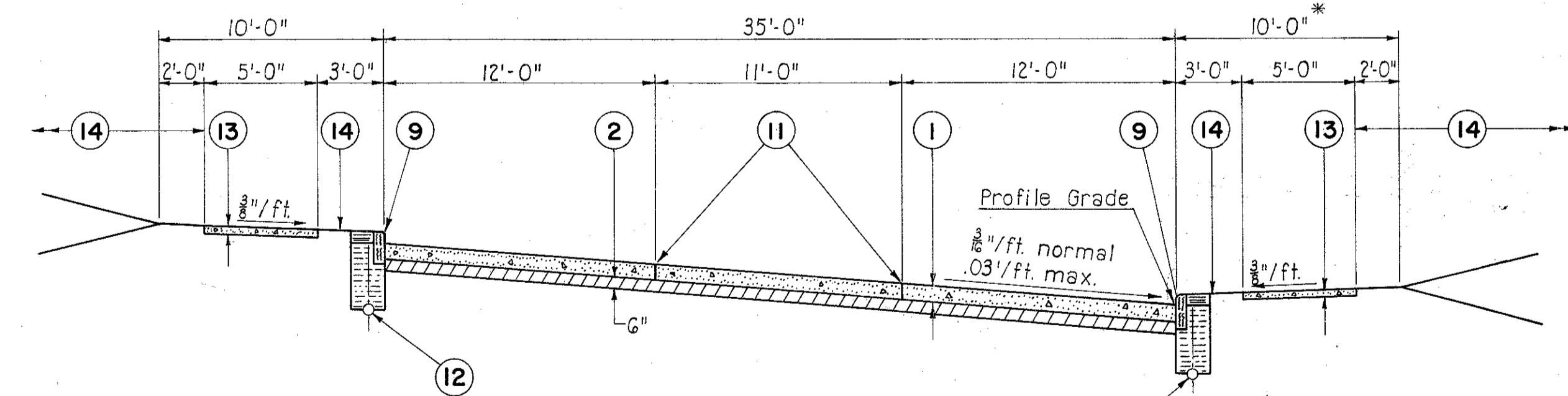
\* Note: For Variable curb height see profile sheet number 25

LEFT SIDE	WIDTH	RIGHT SIDE	WIDTH
STA. 5+00.00 TO STA. 10+93.13	35'	STA. 5+00.00 TO STA. 10+93.13	24'
STA. 12+48.69 TO STA. 18+12.93	24'	STA. 12+48.69 TO STA. 17+30.39	24'



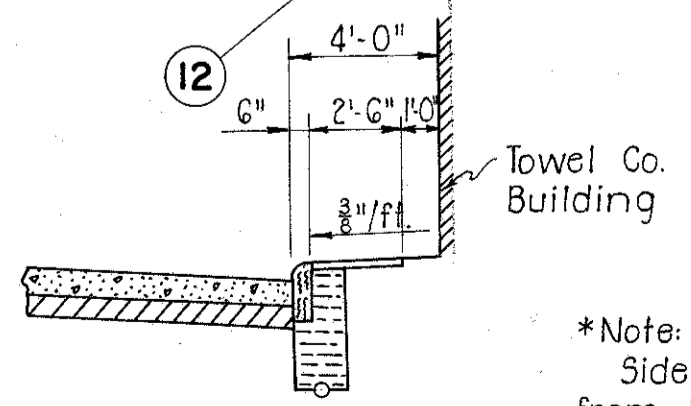
**EAST 9th STREET - CURVE LEFT**

LEFT SIDE	WIDTH	RIGHT SIDE	WIDTH
STA. 10+93.13 TO STA. 12+48.69	VAR.	STA. 10+93.13 TO STA. 12+48.69	24'



**18th STREET TURNOUT**

STA. 0+00 TO STA. 3+69.88

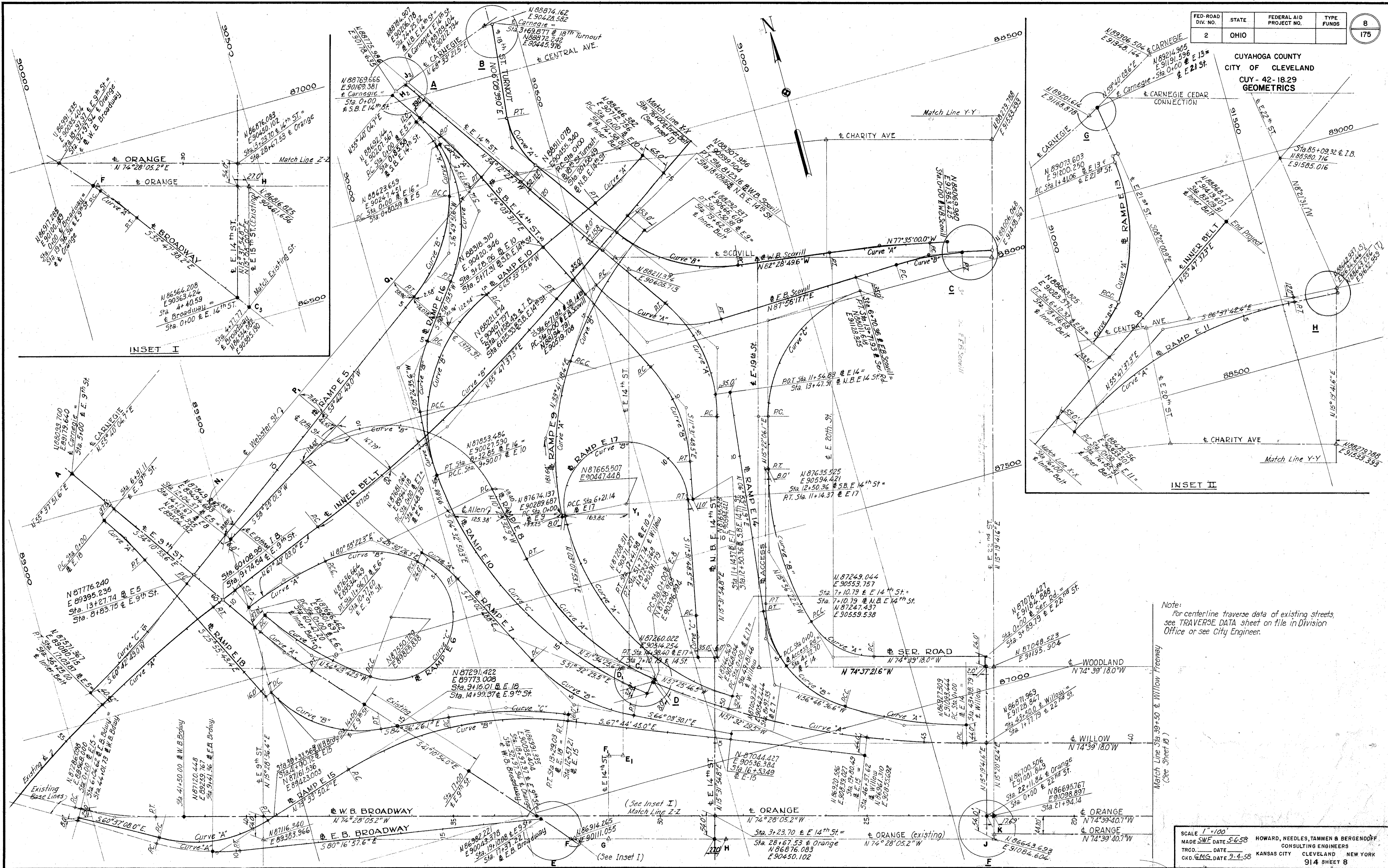


**SIDEWALK SECTION**  
STA. 0+00

\*Note: Sidewalk transitions from Sta. 0+00 to normal section at Sta. 1+38.36.



CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29  
GEOMETRICS



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



# GENERAL NOTES

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

10  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

## ITEM I-15 TEMPORARY GUARD RAIL (COMBINED PROJECT)

AN ESTIMATED QUANTITY OF 1500 LIN. FT. IS CARRIED TO THE GENERAL SUMMARY FOR CHANNELING TRAFFIC DURING CONSTRUCTION, WHERE AND AS DIRECTED BY THE ENGINEER, SEE NOTE IN PROPOSAL DESCRIBING THIS I-15 ITEM.

## MANHOLE ADJUSTMENT

IT IS THE INTENT OF THIS PLAN THAT ANY MANHOLE ADJUSTMENT NOT SPECIFICALLY DETAILED FOR WHICH THE GRADE IS RAISED MORE THAN 12 INCHES OR LOWERED MORE THAN 6 INCHES SHALL BE CONSIDERED AS "RECONSTRUCTED TO GRADE."

## DESIGN STANDARDS

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

## SUBGRADE COMPACTION (COMBINED PROJECT)

THE SUBGRADE FOR DRIVES AND MAILBOX TURNOUTS PAVED WITH B-19 AND T-70 MATERIAL SHALL BE COMPACTED FOR A DEPTH OF SIX (6) INCHES TO THE DENSITY REQUIREMENTS SHOWN IN TABLE III, ITEM E-1. PAYMENT FOR SUBGRADE COMPACTION, AS SPECIFIED ABOVE, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM E-1 ROADWAY EXCAVATION.

## 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 32.

## WORK BY THE CITY OF CLEVELAND (COMBINED PROJECT)

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. FOR SUGGESTED SEQUENCE OF CONSTRUCTION, SEE SHEET 3.

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, HANDRAILS 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 WHAT-EVER 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 50-(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.

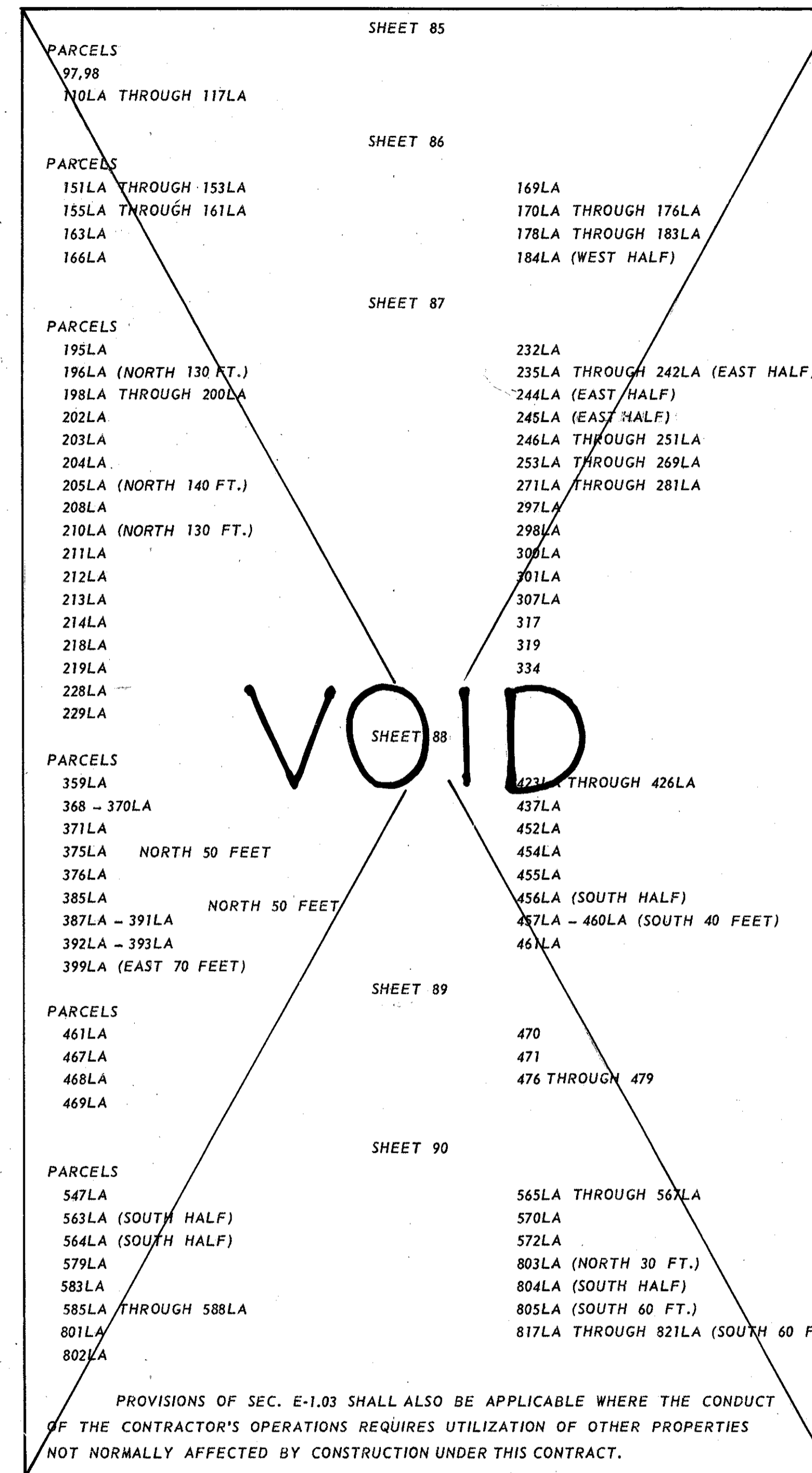
## REMOVAL OF REFUSE AND DEBRIS

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.

**CONTRACTION JOINTS (Combined Project)**  
Although specific locations of certain contraction joints have been detailed on these plans, no waiver of the specifications is intended and the maximum distance between contraction joints shall in all cases be in accordance with standard Drawing T. J.



## SALVAGED SANDSTONE CURB

SALVABLE SANDSTONE CURB IS TO BE RESET ALONG CITY STREETS IN LOCATIONS INDICATED IN THE PLANS. SALVAGED CURB IS NOT TO BE INTERSPERSED WITH NEW CURB. THE AMOUNT OF SALVABLE CURB HAS BEEN ESTIMATED BY FIELD OBSERVATION, AS INDICATED ON SHEETS, 54 THROUGH 60; HOWEVER IF MORE OR LESS CURB IS DETERMINED USABLE, THE LIMITS AND LOCATIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER. PAYMENT FOR THE REMOVAL OF ALL SANDSTONE CURB SHALL BE MADE UNDER ITEM E-8, REMOVAL FOR RE-USE OF EXISTING CURB. PAYMENT FOR SALVAGED CURB RESET WILL BE MADE IN ACCORDANCE WITH ITEM I-11, SANDSTONE CURB RESET.

## 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.

## 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 OPERATIONS. 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

THE QUANTITY SHOWN IN THE PLANS FOR SEEDING AND PROTECTING OF PART 6 IS BASED GENERALLY UPON THE AREA OF ACTIVE GRADING FOR PART 6 AS APPEARING ON THE CROSS SECTIONS. PROVISION HAS BEEN MADE IN THE QUANTITY TOTAL FOR SEEDING AREAS UP TO THE RIGHT OF WAY LINE WHERE SUCH SEEDING WILL NOT BE DISTURBED BY GRADING OPERATIONS IN PARTS 7-A AND 7-B. 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 1000 SQ. FT.

## ADDITIONAL NOTES

- STRUCTURES SHEETS 91 AND 91A
- DRAINAGE SHEET 32
- LIGHTING SHEET 51

## SUGGESTED CONSTRUCTION PROCEDURE FOR COMBINED PROJECT

SEE NOTE ON SHEET NO 7 OF PART 7-A.

## COMPACTION USING HEAVY PNEUMATIC TIRED ROLLER-ITEM SPECIAL

THIS OPERATION CALLED FOR IN THE PLANS CONSISTS OF FURNISHING AND OPERATING SUCH HEAVY PNEUMATIC TIRED COMPACTION EQUIPMENT OVER AREAS WHERE EMBANKMENT IS TO BE PLACED, AS INDICATED IN THE PROPOSAL.

PARTICULAR ATTENTION SHALL BE EXERCISED IN BACKFILLED BASEMENT AREAS ENCLOSED BY E. 9th ST.-WEBSTER AVE.-E. 14th ST. AND SCOVILL AVE. LIMITS. IF UNSUITABLE FOUNDATION MATERIAL SHOULD BE ENCOUNTERED DURING THESE ROLLING OPERATIONS, IT SHALL BE REMOVED AND REPLACED WITH A SUITABLE MATERIAL IN ACCORDANCE WITH SEC. E-108 OF THE SPECS. REMOVAL OF UNSUITABLE MATERIAL SHALL BE PAID FOR PER ITEM E-1-ROADWAY EXCAVATION, METHOD B, AS PER PLAN.

## ASPHALTIC CONCRETE SURFACE COURSE OR AN APPROVED BITUMINOUS PREMIXED SURFACE COURSE FOR MAINTAINING TRAFFIC

FOR DESCRIPTION OF THIS ITEM SEE NOTE IN PROPOSAL. AN ESTIMATED QUANTITY OF ASPHALTIC CONCRETE SURFACE COURSE OR AN APPROVED BITUMINOUS PREMIXED SURFACE COURSE FOR MAINTAINING TRAFFIC HAS BEEN ENTERED IN THE GENERAL SUMMARY.

For additional notes, see sheet 7 of part 7-A and sheet 7 of part 7-B.

SCALE None  
MADE J.L.C. DATE 9-27-59  
TRCD. DATE  
CHK. J.L.C. DATE 10-2-59  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 10

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
QUANTITY CALCULATIONS

T-71 9" REINFORCED P.C.C. PAVEMENT				
ROADWAY	STATION TO STATION	LENGTH ft.	CALCULATION width ft. - 9 sq. yds.	AREA sq. yds.
East 9th St.	5+35.50 to 12+41.97	706.47	$(24 + 35) \div 9$	4631
	12+41.97 to 14+00	158.03	$(24 + 24) \div 9$	843
	Summary of Extra Areas			955
			Sub Total	6429
South Bound E. 14th St.	0+30 to 6+71.92	641.92	$35 \div 9$	2460
	6+71.92 to 12+02.66	530.74	$24 \div 9$	1434
	12+02.66 to 4+84 N.B. E. 14th St.	560.00	$35 \div 9$	2170
	Sum. Ex. Areas			1102
			Sub Total	7166
Northbound E. 14th St.	3+66 to 13+47.91	981.91	$24 \div 9$	2610
	13+47.91 to 18+09.46	461.55	$35 \div 9$	1790
	18+09.46 to 20+58.49	249.03	$(57.16 + 52.12) \div 2 \times 9$	1510
	20+58.49 to 23+93	334.01	$24 \div 9$	893
	Sum. Ex. Areas			458
			Sub Total	7241
Westbound Scovill	0-98 to 7+69.32	867.32	$24 \div 9$	2313
	Sum. Ex. Areas			183
			Sub Total	2496
Eastbound Scovill	1+05 to 1+56	51	$24 \div 9$	136
	3+75 to 5+62	187	$24 \div 9$	499
	5+62 to 9+96	434	$35 \div 9$	1688
	Sum. Ex. Areas			281
			Sub Total	2604
Northbound E. 14th St. (100% City)	0+64 to 2+83	219	$(24 + 24) \div 9$	1168
	Sum. Ex. Areas			369
			Sub Total	1537*
18th St. Turnout	0+63 to 3+34	271	$35 \div 9$	1050
	Sum. Ex. Areas			350
			Sub Total	1400
Ramp E-18	1+00 to 7+75	675	$16 \div 9$	1200
	Sum. Ex. Areas			301
			Sub Total	1501
Inner Belt Freeway	58+00 to 58+44	44	$(48 + 48) \div 9$	471
	61+64 to 64+68	304	$(36 + 36) \div 9$	2512
	Sum. Ex. Areas			283
			Sub Total	3266
Ramp E-15	0+00 to 1+00	100	$(18.5 + 20.5) \div 2 \times 9$	217
	1+00 to 3+56	256	$20.5 \div 9$	583
	7+12 to 7+66	54	$20.5 \div 9$	123
	Sum. Ex. Areas			77
			Sub Total	1000
Orange Avenue	2+07 to 4+83	276	$46 \div 9$	1411
	4+83 to 10+25	542	$35 \div 9$	2108
	10+25 to 17+87	762	$(39 + 24) \div 9$	5330
	17+87 to 32+98	1511	$(39 + 35) \div 9$	12425
	Sum. Ex. Areas			2832
			Sub Total	24,106
E. 22nd St.	0+77 to 1+16	75	$(24 + 24) \div 9$	400
	Sum. Ex. Areas			333
			Sub Total	733
Westbound Broadway	32+98 to 41+50	852	$46 \div 9$	4355
Eastbound Broadway	11+40 to 16+65	525	$39 \div 9$	2270
	Sum. Ex. Areas			1093
			Sub Total	7718
Broadway	Sum. Ex. Areas	165	$(28 + 28) \div 9$	1025
				317
			Sub Total	1342
Relocated Woodland	1+04.04 to 7+44.30	652	$35 \div 9$	2536
	Sum. Ex. Areas			53
			Sub Total	2589
Ramp E-6	1+98.47 to 4+48.29	249.82	$(16 + 27) \div 2 \times 9$	597
	4+48.29 to 5+68.20	120	$27 \div 9$	360
	5+68.20 to 8+38.11	370	$19 \div 9$	570
	8+38.11 to 9+38	100	$(23 + 27.5) \div 2 \times 9$	280
	9+38 to 10+38	100	$(23 + 14.5) \div 2 \times 9$	208
	Sum. Ex. Areas			122
				Sub Total
Railroad Turnout	Summary of Irregular Areas			372
<b>TOTAL</b>				73,637*

\* Total includes 1537 sq. yds. 100% City.

I-22 SUBBASE				
ROADWAY	STATION TO STATION	AREA sq. yds.	THICKNESS ft.	VOLUME Cu. Yds.
East 9th St.	5+35.50 to 12+41.97	4631	0.5	772
	12+41.97 to 14+00	843	0.5	141
	Summary of Extra Areas	922	0.5	160
	Area Not Under T-71 Pvm't.	383	Variable	160
			Sub Total	1233
S.B. E. 14th St.	0+30 to 6+71.92	2460	0.5	411
	6+71.92 to 12+02.66	1434	0.5	239
	12+02.66 to 4+84 N.B. E. 14th St.	2170	0.5	362
	Sum. Ex. Areas	1102	0.5	184
			Sub Total	1196
N.B. E. 14th St.	3+66 to 13+47.91	2610	0.5	436
	13+47.91 to 18+09.46	1790	0.5	299
	18+09.46 to 20+58.49	1510	0.5	252
	20+58.49 to 23+93	893	0.5	149
	Sum. Ex. Areas	438	0.5	73
	Area Not Under T-71 Pvm't.		Variable	189
			Sub Total	1398
W.B. Scovill	0-98 to 7+69.32	2313	0.5	385
	Sum. Ex. Areas	183	0.5	31
			Sub Total	416
E.B. Scovill	1+05 to 1+56	136	0.5	23
	3+75 to 5+62	499	0.5	83
	5+62 to 9+96	1688	0.5	281
	Sum. Ex. Areas	281	0.5	47
			Sub Total	456
N.B. E. 14th St. (100% City)	0+64 to 2+83	1168	0.5	195
	Sum. Ex. Areas	369	0.5	62
			Sub Total	257*
18th St. Turnout	0+63 to 3+34	1050	0.5	175
	Sum. Ex. Areas	350	0.5	58
			Sub Total	233
Ramp E-18	1+00 to 7+75	1200	0.5	200
	Sum. Ex. Areas	301	0.5	50
	Area Not Under T-71 Pvm't.		Variable	114
			Sub Total	364
Inner Belt Frwy	58+00 to 58+44	471	0.5	79
	61+64 to 64+68	2512	0.5	420
	Sum. Ex. Areas	288	0.5	47
	Area Not Under T-71 Pvm't.		Variable	250
			Sub Total	796
Ramp E-15	0+00 to 1+00	217	0.5	35
	1+00 to 3+56	583	0.5	97
	7+12 to 7+66	123	0.5	20
	Sum. Ex. Areas	77	0.5	13
	Area Not Under T-71 Pvm't.		Variable	30
			Sub Total	195
E. 22nd St.	0+41 to 3+09.34	1904	0.5	317
	Sum. Ex. Areas	916	0.5	153
	Area Not Under B-70 Conc.		Variable	50
			Sub Total	520
Orange Ave.	2+07 to 4+83	1411	0.5	237
	4+83 to 10+25	2108	0.5	351
	10+25 to 17+87	5330	0.5	890
	17+87 to 32+98	12425	0.5	2075
	Sum. Ex. Areas	2832	0.5	473
				Sub Total
W.B. Broadway	32+98 to 41+50	4355	0.5	727
E.B. Broadway	11+40 to 16+65	2270	0.5	379
	Sum. Ex. Areas	1093	0.5	183
			Sub Total	1289
Broadway	Sum. Ex. Areas	1025	0.5	171
		317	0.5	53
			Sub Total	224
Rel. Woodland	1+04.04 to 7+44.30	2536	0.5	424
	Sum. Ex. Areas	53	0.5	9
			Sub Total	433
Ramp E-6	1+98.47 to 4+48.29	597	0.5	100
	4+48.29 to 5+68.20	360	0.5	60
	5+68.20 to 8+38.11	570	0.5	95
	8+38.11 to 9+38	280	0.5	47
	9+38 to 10+38	208	0.5	35
	Sum. Ex. Areas	122	0.5	20
	Area not Under T-71 Pvm't.		Variable	131
				Sub Total
Railroad Turnout	Sum. of Irregular Areas			62
<b>TOTAL</b>				13,586*

\* Total includes 257 cu. yds. 100% City.

I-13 4" P.C.C. SIDEWALK				
ROADWAY	STATION TO STATION	LENGTH ft.	WIDTH ft.	AREA sq. ft.
E.B. Broadway	9+38 to 10+42	144	5	720
Orange	4+80 to 6+75	Var.	5	1098
	6+75 to 18+10	1100 ±	5	5652
	18+10 to 21+00	290	5	1450
	23+24 to 27+18	394	5	1970
	28+00 to 29+72	Var.	Var.	2700
30+05 to 32+95	290	5	1450	
			Sub Total	14,320
E. 9th St.	5+35 to 5+68	Var.	Var.	333
	5+68 to 7+80	190	12	2280
	8+20 to 10+78	258	5	1290
	13+05 to 14+00	96	5	480
		210	5	1050
			Sub Total	5433
Ramp E-G	9+59 to 9+84	25	8	200
	9+84 to 11+97	213	5	1065
			Sub Total	1265
E.B. Scovill	6+10 to 9+95	382	5	1910
W.B. Scovill	0-98 to 2+75	385	5	1925
	3+05 to 4+00	100	5	500
	4+00 to 8+23	424	5	2120
			Sub Total	4545
22nd St.	0+90 to 3+65	670	5	3350
18th St. Turnout	0+00 to 1+32	132	Var.	657
	1+32 to 3+50	236	5	1180
	0+80 to 3+50	250	5	1250
				Sub Total
N.B. E. 14th St.	18+09 to 19+31	122	5	610
	19+31 to 20+59	128	Var.	702
	21+52 to 23+95	243	5	1215
			Sub Total	2527
<b>TOTAL</b>				37,157

B-35 ASPHALTIC CONC. LEVELING COURSE				
ROADWAY	STATION TO STATION	AREA sq. yds.	DEPTH in.	VOLUME Cu. Yds.
P-28 & P-123		67	1 3/4	3
East 22nd St.	1+16 to 3+68	2129	1 3/4	103
Woodland	26th St. to 22nd St.	249	1 3/4	12
<b>TOTAL</b>				118*

\* Total includes 13 cu. yds. 100% City.

T-35 ASPHALTIC CONCRETE SURFACE COURSE				
ROADWAY	STATION TO STATION	AREA sq. yds.	DEPTH in.	VOLUME Cu. Yds.
P-28 & P-123		67	1 1/4	2
East 22nd St.	1+16 to 3+68	2129	1 1/4	74
Woodland	26th St. to 22nd St.	249	1 1/4	8
<b>TOTAL</b>				84*

\* Total includes 9 cu. yds. 100% City.

I-7 APPROACH SLABS		
BRIDGE	LOCATION	AREA sq. yds.
1	East	68
	West	65
2	West	303
	East (Inner Belt Freeway)	263
6	East	57
	West	62
7	West (Ramp E-15)	57
	West (Ramp E-18)	53
<b>TOTAL</b>		928

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
QUANTITY CALCULATIONS

6" x 18" I-II SANDSTONE CURB			
ROADWAY	SIDE	STATION TO STATION	LENGTH ft.
Orange (W.B.)	Left	22+54 to 27+17.53	467
	Left	27+17.53 to 28+22	107
	Left	29+06 to 32+42	342
	Right	30+38.53 to 32+56.5	257
		Sub Total	1173
W.B. Broadway	Right	34+54 to 41+50	696
	Left	33+54 to 38+19.12	474
	Left	39+00 to 41+50	259
		Sub Total	1429
Orange (E.B.)	Right	22+54 to 27+17.53	467
	Right	27+17.53 to 28+22	107
	Right	29+06 to 32+42	342
	Left	29+36 to 31+62	229
		Sub Total	1145
E.B. Broadway	Right	9+36 to 10+50	147
	Left	9+36 to 10+79	142
	Left	11+05 to 16+75	570
		Sub Total	859
E. 9th St. Turnout	Left	0+00 to 1+36	136
	Right	0+70 to 1+43	81
		Sub Total	217
Broadway	Right	0-74 to 1+85	225
	Left	0+41 to 1+85	150
		Sub Total	375
Ramp E-15	Left	0+00 to 3+55	355
	Right	0+00 to 0+40	40
		Sub Total	395
East 14th St. 100% City	Right	3+67 to 4+84	444
	Left	0+00 to 2+81	602*
	Left	3+67 to 4+84	765
	Rt. & Lt.	4+84 to 7+10.79	908
		Sub Total	2719
N.B.E. 14th St.	Right	7+10.79 to 14+00	689
	Left	7+10.79 to 14+00	704
	Right	14+00 to 17+47.93	371
	Right	18+09.46 to 20+58.49	249
	Right	21+32.05 to 23+90	268
	Left	14+00 to 23+67	968
		Sub Total	3249
S.B.E. 14th St.	Right	0+00 to 0+85	82
	Right	2+09.75 to 10+00	797
	Left	0+60 to 6+71.92	705
	Left	7+84.91 to 10+00	224
	Right	10+00 to 12+02.66	209
	Left	10+00 to 12+50.36	250
		Sub Total	2267
East 9th St.	Right	5+42 to 14+00	1442
	Left	5+36 to 14+00	1520
	Right	17+00 to 18+04	166
	Left	17+00 to 18+75	273
	Left	Median Island	72
		Sub Total	3473
Ramp E-18	Right	0-15 to 0+85	106
	Left	1+92.54 to 7+76	576
		Sub Total	682
22nd Street	Right	0+70 to 3+68	744
	Left	0+70 to 3+68	710
		Sub Total	1454
Inner Belt Frwy.	Right	58+00 to 58+53	53
	Right	61+43 to 64+68.53	429
	Left	58+00 to 58+53	53
	Left	61+43 to 64+68.53	326
		Sub Total	861

Table continued above.

6" x 18" I-II SANDSTONE CURB (CON'T)			
ROADWAY	SIDE	STATION TO STATION	LENGTH ft.
Ramp E-17	Right	10+70.65 to 14+98.40	428
	Left	11+14.37 to 14+98.40	384
		Sub Total	812
18th St. Turnout	Right	0+00 to 3+55	372
	Left	0+63.20 to 3+55	282
		Sub Total	654
Ramp E-5	Right	0+00 to 1+13.65	114
Railroad Turnout	East		270
	West		135
		Sub Total	405
W.B. Scovill	Right	0-98 to 2+53	361
	Right	3+32 to 4+00	68
	Left	0-47 to 4+00	450
	Right	4+00 to 8+23.16	424
	Left	4+00 to 7+69.32	390
		Sub Total	1693
E.B. Scovill	Right	0+00 to 1+56	156
	Right	3+69 to 5+00	131
	Left	1+05.28 to 1+75	78
	Left	3+75 to 5+00	125
	Right	5+00 to 9+37	440
		Sub Total	930
Ramp E-6	Left	1+98.47 to 4+48.29	275
	Right	5+68.20 to 10+38.11	538
		Sub Total	813
Ramp E-7	Left	0+00 to 1+36.63	137
	Right		
		Sub Total	137
		<b>TOTAL</b>	<b>26,046 *</b>

\* Total includes 602 ft. 100% City.

I-21 P.C.C. MEDIAN PAVEMENT (4")			
ROADWAY	STATION TO STATION	LENGTH ft.	AREA sq. yds.
East 22nd St.	0+44 to 3+15	271	90
Inner Belt Frwy.	58+00 to 58+79	79	26
	61+17 to 64+68.53	352	117
		Sub Total	143
East 9th St.	5+41 to 14+00	859	286
	17+00 to 17+97	97	32
	8+25.62 (Nose)	45	30
	12+41.97 (Nose)	60	20
		Sub Total	368
S.B. East 14th St.	2+09.75 (Nose)	18	12
	7+84.91 (Nose)	18	12
		Sub Total	24
N.B. East 14th St.	22+00 to 23+66	166	111
	17+47.93 (Nose)	50	32
	21+32.05 (Nose)	20	13
		Sub Total	196
Ramp E-6	1+98.47 (Nose)	42	28
East 14th St.	3+68 to 7+10.8	343	328
Ramp E-15	0+00 (Nose)	253	173
Orange Ave.	7+73.90 (Nose)	7	6
	8+50 (Island)	46	20
	15+98 (Nose)	28	19
		Sub Total	45
Rel. Woodland	1+04 (Nose)	38	25
		<b>TOTAL</b>	<b>1380</b>

I-21 TYPE 2 MEDIAN PAVEMENT			
ROADWAY	STATION TO STATION	LENGTH ft.	AREA sq. yds.
E.B. Broadway Railroad Turnout	E. 9th St. to 13+32	257	114
	Median Island		21
		<b>TOTAL</b>	<b>135</b>

T-30 BITUMINOUS TACK COAT			
ROADWAY	STATION TO STATION	AREA sq. yds.	T-30 gals.
East 22nd St.	1+16 to 3+68	1960	196
	Summary of Extra Areas	169	17
Woodland Ave.	1,120 x 2.5 = 2800	311	31
P-28 & P-123		33	3
		<b>Total</b>	<b>247</b>

B-70 9" PCC BASE COURSE				
ROADWAY	STATION TO STATION	LENGTH	CALCULATION width ft. ÷ 9 sq. yds.	AREA sq. yds.
East 22nd St.	1+16 to 3+68	252	(35+35) ÷ 9	1960
Woodland	26th St. to 22nd St.	1121	2 ÷ 9	169
				249*
		<b>TOTAL</b>		<b>2411 *</b>

\* Total includes 249 sq. yds. 100% City, and 33 sq. yds. for P-28 & P-123

I-II SANDSTONE CURB RESET			
ROADWAY	SIDE	STATION TO STATION	LENGTH ft.
Woodland Ave.	South	E. 22nd St. to E. 26th St.	1121*
Orange Ave.	Right	2+07 to 9+47	746
	Left	2+07 to 7+74	713
Orange (W.B.)	Right	9+47 to 15+98.37	660
	Right	17+85.61 to 18+11	25
	Left	9+47.27 to 18+11	866
	Right	18+11 to 20+99.86	289
Orange (E.B.)	Right	23+24.25 to 27+17.53	393
	Left	18+11 to 21+70	362
Orange (E.B.)	Right	9+47.27 to 18+11	866
	Right	18+11 to 21+70	362
E. 14th St.	Right	0+00 to 2+81	359*
Rel. Woodland	Right	1+04.04 to 9+23.34	840
	Left	0+00 to 7+44.30	761
		<b>TOTAL</b>	<b>8597 *</b>

\* Total includes 1480 ft. 100% City.

SANDSTONE CURB FOR REUSE	
SHEET	LENGTH ft.
Sheet 54	4681
Sheet 55	4784
Sheet 56	2477
Sheet 57	2575
Sheet 58	4291
Sheet 59	4417
Sheet 60	244
<b>TOTAL</b>	<b>23,469</b>

GUARD RAIL	
SHEET	LENGTH ft.
Sheet 16	482
Sheet 19	487
Sheet 20	2134
Sheet 21	639
<b>TOTAL</b>	<b>3742</b>
BARRIER RAIL	
Sheet 20	437.5

SHOULDER MATERIALS					T-30 PRIME COAT	T-31 NO. 6 AGG	T-31 BIT MAT'L	B-219 AGG BASE	I-18 AGG SH.
ROADWAY	SIDE	STATION TO STATION	LENGTH ft.	AREA sq. yds.	gals.	Cu. Yds.	gals.	cu. yds.	Cu. Yds.
Ramp E-18	Right	0+71 to 7+00	635	564	225.6	4.5	141.0	46.8	80.8
	Right	7+00 to 8+10	119	82	32.8	0.7	20.5	6.8	11.8
	Left	1+92.54 to 7+00	507	169	67.6	1.4	42.3	14.0	23.5
	Left	7+00 to 7+68	69	15	6.0	0.2	3.8	1.2	2.1
		Sub Total			332.0	6.8	207.6	68.8	118.2
Ramp E-6	Right	0+86 to 8+38	752	776	310.4	6.2	194.0	64.4	110.8
	Left	1+98.47 to 1+36.37 (E-7)	407	136	54.4	1.1	34.0	11.3	18.9
	Left	5+68.20 to 9+36	368	123	49.2	1.0	30.8	10.2	17.1
		Sub Total			414.0	8.3	258.8	85.9	146.8
Inner Belt	Right	58+00 to 58+88	142	116	46.4	0.9	29.0	9.6	16.5
	Right	61+43 to 64+68.53	446	242	96.8	1.9	60.5	20.1	34.1
	Left	58+00 to 58+75	125	87	34.8	0.7	21.8	7.2	12.4
	Left	61+08 to 64+68.53	687	510	204.0	4.1	127.5	42.3	72.3
		Sub Total			382.0	7.6	238.8	79.2	135.3
Ramp N-30	Left	8+06 to 9+04.2	98	33	13.2	0.3	8.3	2.7	4.6
		<b>TOTAL</b>			<b>1280*</b>	<b>23</b>	<b>714</b>	<b>262*</b>	<b>405</b>

\* Total includes 25 cu. yds. for R.R. Yard Turnout.

\* Total includes 139 gals. for R.R. Yard Turnout.

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
QUANTITY CALCULATIONS

E-8 REMOVAL & DISPOSAL EXISTING SIDEWALK						
ROADWAY	SIDE	LIMITS	LENGTH	WIDTH	AREA Sq. ft.	
Woodland	N	E. 9 <sup>th</sup> St. - E. 14 <sup>th</sup> St.	647	10	6470	
	S	"	540	10	5400	
	N	E. 14 <sup>th</sup> St. - E. 19 <sup>th</sup> St.	198	18	3564	
	S	"	198	18.5	3663	
	S	E. 22 <sup>nd</sup> St. - E. 25 <sup>th</sup> St. E. 25 <sup>th</sup> St. - E. 27 <sup>th</sup> St.	950	18	17,100*	
Sub Total			285	18	5130	
Broadway	N	E. 9 <sup>th</sup> St. - E. 14 <sup>th</sup> St.	557	13.5	7520	
	S	"	90	5	450	
Sub Total					7970	
Orange	N	E. 14 <sup>th</sup> St. - E. 22 <sup>nd</sup> St.	803	12	9636	
	N	E. 22 <sup>nd</sup> St. - E. 25 <sup>th</sup> St.	951	10	9510	
	N	E. 25 <sup>th</sup> St. - E. 30 <sup>th</sup> St.	1048	10	10,480	
	S	Mayflower - E. 29 <sup>th</sup> St.	260	10	2600	
	Sub Total					32,226
E. 14 <sup>th</sup> St.	E	Orange - Woodland	205	10	2050	
	W	"	205	10	2050	
	E	Woodland - Allen	248	12	2976	
	W	"	235	12	2820	
	E	Allen - Scovill	421	12	5052	
	W	"	421	12	5052	
	W	Scovill - Carnegie	667	10#12	6966	
Sub Total			659	10#12	6939	
E. 9 <sup>th</sup> St.	E	Broadway - Woodland	372	5	1860	
	W	"	436	Var.	2511	
	Median	"	127	3	381	
	E	Woodland - Carnegie	646	22	14,212	
	W	"	562	22	12,364	
Sub Total					31,328	
Scovill	N	E. 9 <sup>th</sup> St. - E. 12 <sup>th</sup> St.	32	11	352	
	S	"	35	12	420	
	N	E. 12 <sup>th</sup> St. - E. 14 <sup>th</sup> St.	240	6	1440	
	S	"	215	6	1290	
	N	E. 14 <sup>th</sup> St. - E. 20 <sup>th</sup> St.	289	10	2890	
	N	E. 14 <sup>th</sup> St. - E. 20 <sup>th</sup> St.	131	7	917	
	S	E. 14 <sup>th</sup> St. - E. 19 <sup>th</sup> St.	124	11	1364	
	S	E. 14 <sup>th</sup> St. - E. 19 <sup>th</sup> St.	136	6	816	
	S	E. 19 <sup>th</sup> St. - E. 20 <sup>th</sup> St.	145	6	870	
	N	E. 20 <sup>th</sup> St. - E. 22 <sup>nd</sup> St.	343	6	2058	
	S	E. 20 <sup>th</sup> St. - E. 22 <sup>nd</sup> St.	148	16	2368	
	S	"	134	6	804	
	S	"	53	10	530	
	Sub Total					16,119
	Allen	N	Parkman - E. 14 <sup>th</sup> St.	74	5.5	407
N		"	267	4	1068	
S		"	450	4	1800	
Sub Total					3275	
E. 12 <sup>th</sup> St.	E	Parkman - Scovill	19	4.5	86	
	W	"	19	4	76	
	E	Scovill - Webster	178	6	1068	
	W	"	178	6	1068	
Sub Total					2298	
E. 19 <sup>th</sup> St.	E	Woodland - Scovill	160	6	960	
	W	"	160	6	960	
Sub Total					1920	
Central	N	E. 14 <sup>th</sup> St. - E. 18 <sup>th</sup> St.	154	13	2002	
	S	"	150	12	1800	
Sub Total					3802	
E. 13 <sup>th</sup> St.	E	Central - Carnegie	112	10	1120	
	W	"	105	10	1050	
Sub Total					2170	
E. 13 <sup>th</sup> St.	E	Webster - Columbus	90	6	540	
	W	"	90	6	540	
Sub Total					1080	
E. 30 <sup>th</sup> St.	W	Orange - Woodland	34	6	204	
	E	Orange - Woodland	316	6	1896	
Sub Total			345	6	2070	
E. 25 <sup>th</sup> St.	E	Orange - Woodland	106	15	1590	
	E	"	91	6	546	
	W	"	180	6	1080	
Sub Total					3216	
E. 20 <sup>th</sup> St.	E	Woodland - Scovill	130	6	780	
	W	"	107	6	642	
	E	Scovill - Charity	42	5	210	
	W	"	40	5	200	
Sub Total					1832	

Table continued above.

E-8 REMOVAL & DISPOSAL EXISTING SIDEWALK (CON'T.)					
ROADWAY	SIDE	LIMITS	LENGTH	WIDTH	AREA Sq. ft.
E. 27 <sup>th</sup> St.	E	Orange - Woodland	56	6	336
	E	"	19	15	285
	W	"	75	6	450
Sub Total					1071
E. 29 <sup>th</sup> St.	E	Orange - Woodland	77	6	462
	W	"	77	6	462
Sub Total					924
Webster Ave.	E	E. 13 <sup>th</sup> St. - E. 14 <sup>th</sup> St.	305	6	1830
	W	"	305	6	1830
Sub Total					3660
TOTAL					192,293*

\* Total includes 17,100 sq. ft. 100% City.

### E-8 REMOVAL & DISPOSAL EXISTING RIGID PAVEMENT

ROADWAY	LIMITS	LENGTH ft.	WIDTH ft.	AREA sq. yds.
Woodland	E. 9 <sup>th</sup> St. - E. 14 <sup>th</sup> St.	707	63	4902
	E. 14 <sup>th</sup> St. - E. 19 <sup>th</sup> St.	198	63	1386
	E. 22 <sup>nd</sup> St. - E. 25 <sup>th</sup> St.	1109	29.5	3663*
	E. 25 <sup>th</sup> St. - E. 27 <sup>th</sup> St.	152	29.5	522
Sub Total				10,473
Scovill	E. 9 <sup>th</sup> St. - E. 12 <sup>th</sup> St.	54	36	250
	E. 12 <sup>th</sup> St. - E. 14 <sup>th</sup> St.	216	36	864
	E. 14 <sup>th</sup> St. - E. 22 <sup>nd</sup> St.	830	38	3643
Sub Total				4757
Orange	E. 14 <sup>th</sup> St. - E. 22 <sup>nd</sup> St.	801	12 - Var.	2059
	E. 22 <sup>nd</sup> St. - E. 25 <sup>th</sup> St.	1062	21.5	2530
	E. 25 <sup>th</sup> St. - E. 30 <sup>th</sup> St.	962	21.5 - 42	2324
Sub Total				6913
Broadway	E. 9 <sup>th</sup> St. - E. 14 <sup>th</sup> St.	1115	Var.	8227
	E. 14 <sup>th</sup> St.			
E. 14 <sup>th</sup> St.	Orange - Woodland	220	55	2526
	Woodland - Allen	272	55	1737
	Allen - Scovill	421	55	2573
	Scovill - Carnegie	795	60	6478
Sub Total				13,314
E. 9 <sup>th</sup> St.	Broadway - Woodland	295	52	1511
	Woodland - Carnegie	640	55	4237
Sub Total				5748
Central	E. 14 <sup>th</sup> St. - E. 18 <sup>th</sup> St.	142	40	631
E. 18 <sup>th</sup> St.	Central - Carnegie	115	47	528
E. 15 <sup>th</sup> St.	Orange - Broadway	200	11	216
Parcel 184	Woodland to Allen	Var.	Var.	1578
TOTAL 52,385*				

\* Total includes 3663 sq. yds. 100% City.

### I-12 STD. TYPE 2A CONCRETE CURB-MOD.

ROADWAY	SIDE	STATION TO STATION	LENGTH ft.
Ramp E-15	Right	7+20 to 7+74	55
	Left	6+70 to 7+66	96
TOTAL			151

### L-10 SODDING

TYPE	AREA Sq. yds.
Sodding	55
Sodding, including 2" Galv. wire mesh.	22
Total	77

L-9 QUANTITIES		
ITEM	CALCULATION	QUANTITY
SEEDING & PROTECTION SODDING	From Planimeter	120,507 Sq. Yd. 72 Sq. Yd.
AGRICULTURAL LIMING MATERIALS	100#/1000 Sq. ft.	54.23 Tons
COMMERCIAL FERTILIZER	20#/1000 Sq. ft.	10.85 Tons

E-11 WATER	
CALCULATION	M.GAL.
6.5 gal./Cu. Yd. - 6.5 x 150,166 Emb.	976
5 gal./Cu. Yd. - 5 x 13,586 (I-22)	68
5 gal./Cu. Yd. - 5 x 462 (I-18)(B-19)	2
TOTAL	1046

E-1 COMPACTED SUBGRADE	
ITEM	AREA sq. yds.
I-7 Approach Slabs	928
T-71 9" R.C.C. Pavement	73,637
Shoulders	2853
B-70 9" P.C.C. Base Course	2378
TOTAL	79,796*

\* Total includes 1786 sq. yds. 100% City.

T-70 & B-19 QUANTITIES			
ITEM	STATION TO STATION	T-70 PCC Pmnt.	B-19 Agg.
Driveways	3+15 Orange Ave.	44	7.3
	3+90 Orange Ave.	33	5.5
	2+15 E. 9 <sup>th</sup> St. Turnout	97	16.2
	6+25 E. 9 <sup>th</sup> St.	20	3.3
Crossover	44+60 to 45+70 W.B. Broadway	147	25.0
	TOTAL	341	57.3

E-9 TREE REMOVAL				
SHEET	SIZE			
	12"	18"	24"	36"
Sheet 85	2			
Sheet 86	2	1		
Sheet 87	30	7	1	
Sheet 88	8	3		1
Sheet 89	4	1		
TOTAL	46	12	1	1

# GENERAL SUMMARY ESTIMATED QUANTITIES

TYPE CODE 7221

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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
INNER CUY-42-18.29

SHEET NUMBER	PROJECT	100% CITY	GRAND TOTAL	UNIT	ITEM NO.	DESCRIPTION
<b>PAVEMENT</b>						
11	105	13	118	Cu. Yds.	B-35	Asphaltic Concrete Leveling Course (60-70)
12	2,162	249	2,411	Sq. Yds.	B-70	9" Portland Cement Concrete Base Course
13	57		57	Cu. Yds.	B-19	Aggregate Base Course
12	262		262	Cu. Yds.	B-219	Water Proofed Aggregate Base Course
11	928		928	Sq. Yds.	I-7	Reinforced Concrete Approach Slabs (T=13")
12	7,117	1480	8,597	Lin. Ft.	I-11	Sandstone Curb reset, as per plan
12	26,044	602	26,646	Lin. Ft.	I-11	6"X18" Sandstone Curb, as per plan
13	151		151	Lin. Ft.	I-12	Standard Type 2-A Concrete Curb, modification "A" as per plan
12	405		405	Cu. Yds.	I-18	Stabilized Crushed Aggregate Shoulders and Approaches
12	1,380		1,380	Sq. Yds.	I-21	Portland Cement Concrete Median Pavt 4" Standard Type I
12	135		135	Sq. Yds.	I-21	Portland Cement Median Pavement, Standard Type 2, as per plan
11	13,329	257	13,586	Cu. Yds.	I-22	Subbase
12	247		247	Gals.	T-30	Bituminous Tack Coat, Sec. M-55, MS-2 or RS-1 or Sec. M-52, RC-1, RC-2, or RC-3, as per Sec. T-30.02
12	1,280		1,280	Gals.	T-30	Bituminous Prime Coat, Sec. M-57, Pt 2 or 3
12	23		23	Cu. Yds.	T-31	Bituminous Surface Treatment, No. 6 Aggregate.
12	714		714	Gals.	T-31	Bituminous Surface Treatment, Bituminous Material, as per plan
11	75	9	84	Cu. Yds.	T-35	Asphaltic Concrete Surface Course Type "C" (60-70)
13	341		341	Sq. Yds.	T-70	8" Portland Cement Concrete Pavement, as per plan
11	72,100	1,537	73,637	Sq. Yds.	T-71	9" Reinforced Portland Cement Concrete Pavement, as per plan
<b>STRUCTURES OVER 20 FOOT SPAN</b>						
For Quantities see sheets no. 92 and 92A - Part 6, and sheets no. 99 and 99A - Part 7A.						

SHEET NUMBER	PROJECT	100% CITY	GRAND TOTAL	UNIT	ITEM NO.	DESCRIPTION
<b>ROADWAY</b>						
13	149,337	829	150,166	Cu. Yds.	E-1	Roadway Excavation, Method B, as per plan
	78,010	1,796	79,796	Sq. Yds.	E-1	Compacted Subgrade
	2000		2000	Cu. Yd.	E-4	Borrow using Granular Material, as per plan
12	23,469		23,469	Lin. Ft.	E-8	Removal for Re-use of Existing Sandstone Curb
13	48,722	3,663	52,385	Sq. Yds.	E-8	Removal and Disposal of Existing Pavement
13	175,193	17,100	192,293	Sq. Ft.	E-8	Removal and Disposal of Existing Sidewalk
13	Lump			Lump Sum	E-9	Removal of Trees and Stumps
13	1,046		1,046	M. Gals.	E-11	Water
	2		2	Each	I-8	Monument Assemblies Standard
	2		2	Each	I-8	Monument Boxes Standard
11	37,157		37,157	Sq. Ft.	I-13	4" Portland Cement Concrete Sidewalk, as per plan
12	3,742		3,742	Lin. Ft.	I-15	Guard Rail, Steel Beam Std. Type (Deep)
12	437.5		437.5	Lin. Ft.	I-15	Guard Rail Steel Beam Barrier Type (Deep)
	1000		1000	Lin. Ft.	I-15	Guard Rail, Temporary Steel Beam, as per plan
13	120,507		120,507	Sq. Yds.	L-9	Seeding and Protecting, as per plan
13	10.85		10.85	Tons	L-9	Commercial Fertilizer (12-12-12)
13	54.23		54.23	Tons	L-9	Agricultural Liming Materials
13	22		22	Sq. Yds.	L-10	Sodding, including 2" Galvanized Wire Mesh, as per plan
13	55		55	Sq. Yds.	L-10	Sodding, as per plan
	2		2	Each	Special	Interstate 6, Defense Highway Signs Furnished & Erected
10	10		10	Ton	M-10	Calcium Chloride Furnished and Applied for Maintaining Traffic
10	500		500	Cu. Yds.	T-10	Traffic Compacted Surface Course for Maintaining Traffic
10	100		100	Cu. Yds.	T-35	Asphaltic Concrete Surface Course or an Approved Bituminous Premixed Surface Course for Maintaining Traffic
10	100		100	Hours	Special	Fill Compaction Using Heavy Pneumatic Tire Roller
				Lump Sum	Lump Sum	Construction Layout Stakes
<b>LIGHTING</b>						
		20	20	Each	S-25	15,000 Lumen Luminaire and Insulating Transformer, as per plan
		205	205	Each	S-25	10,000 Lumen Luminaire and Insulating Transformer, as per plan
		30	81	Each	S-25	Standard 10 Foot Bracket, as per plan.
		26	26	Each	S-25	Standard 10 Ft. Duplex Bracket, as per plan
		31	174	Each	S-25	Concrete Pole Base, as per plan
		22 7/8	25	Each	S-25	Pull Boxes, Concrete as per plan
		20,550	20,550	Lin. Ft.	S-25	No. 8 AWG, 5 KV Lighting Cable, as per plan
3210	5945	11,200	14,440	Lin. Ft.	S-25	1-Way Duct, 2 inch, as per plan
		1230	1,230	Lin. Ft.	S-25	1-Way Duct, 4 inch, as per plan
		890	890	Lin. Ft.	S-25	2-Way Duct, 4 inch, as per plan
		150	205	Lin. Ft.	S-25	3-Way Duct, 4 inch, as per plan
		175	175	Lin. Ft.	S-25	4-Way Duct, Two-4 inch, and Two-2 inch, as per plan
		1	1	Each	S-25	Removing Wood Pole, as per plan
		8	8	Each	S-25	Fluorescent Underdeck Light, as per plan
		150	150	Each	S-25	Multiple Feeders, as per plan (No 6 Conductor)
		2	2	Each	S-25	Regulator Vault, 8 foot by 22 foot, as per plan
		1	1	Each	S-25	Regulator Vault, 8 foot by 11 foot, as per plan.
	350	3735	4,085	Lin. Ft.	S-25	2-Way Duct, 2 inch, as per plan
		6	6	Each	I-8	Manhole (5'x8') as per plan
		750	750	Each	S-25	No. 10 AWG, 600V. Branch Conductors, as per plan
		1	1	Each	S-25	Remove and Reinstall Lighting Unit, as per plan.
		65	65	Each	S-25	Trolley Pole, 10 foot bracket, as per plan
		2	2	Each	S-25	Trolley Pole, 10 foot Duplex Bracket, as per plan

# GENERAL SUMMARY ESTIMATED QUANTITIES

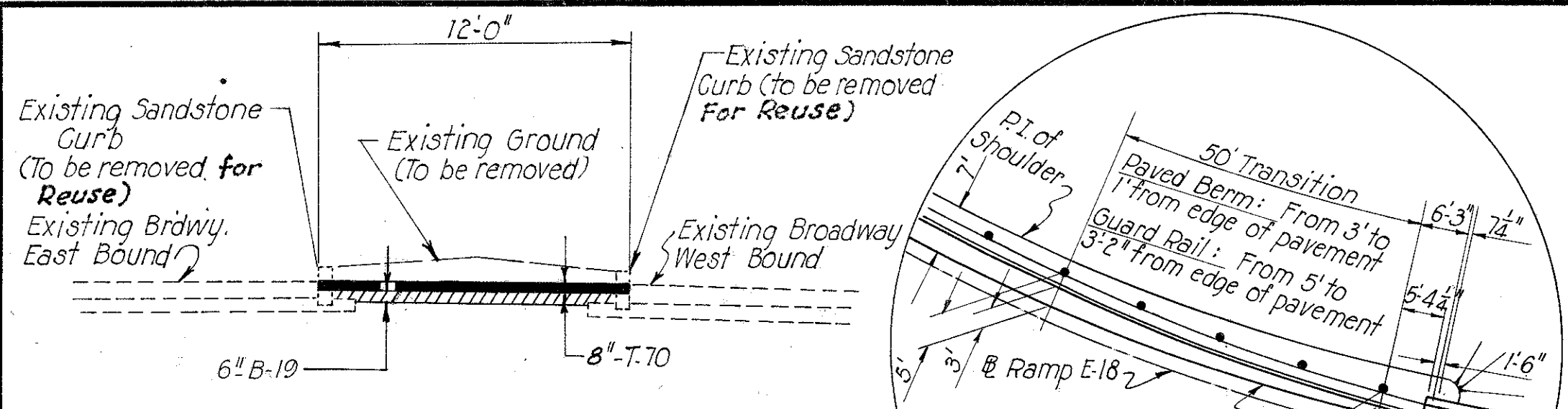
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

FEDERAL PARTICIPATION						TYPE CODE 7221					
PLAN SHEET NUMBERS						100% CITY <small>Sheet No.</small>	GRAND TOTAL	UNIT	ITEM NO.	DESCRIPTION	
31	32	33	34	35	36						
<b>DRAINAGE</b>											
							26		Lin. Ft.	I-2	12" Class B Storm Sewers; Sec. M-6.5(b) or Sec. M-6.8(b)
							1316		Lin. Ft.	I-2	12" Class B Storm Sewer
							4125		Lin. Ft.	I-2	12" Class B Storm Sewer, under Pavement or Approaches
							226		Lin. Ft.	I-2	12" Class B Storm Sewer, Sec. M-6.6(c)
							478		Lin. Ft.	I-2	15" Class B Storm Sewer
							658		Lin. Ft.	I-2	15" Class B Storm Sewer, under Pavement or Approaches
							74		Lin. Ft.	I-2	15" Class B Storm Sewers, Sec. M-6.5(b) or Sec. M-6.8(b)
							388		Lin. Ft.	I-2	18" Class B Storm Sewer
							748		Lin. Ft.	I-2	18" Class B Storm Sewer, under Pavement or Approaches
							204		Lin. Ft.	I-2	18" Class B Storm Sewer, Under Pavement, or Approaches, Sec. M-6.6(c)
							264		Lin. Ft.	I-2	21" Class B Storm Sewer
							70		Lin. Ft.	I-2	21" Class B Storm Sewer, Under Pavement or Approaches
							146		Lin. Ft.	I-2	18" Class B Storm Sewers, Sec. M-6.5(b) or Sec. M-6.8(b)
							70		Lin. Ft.	I-2	24" Class B Storm Sewer
							106		Lin. Ft.	I-2	24" Class B Storm Sewer, Under Pavt. or Appr's Sec. M-6.6(b) or M-6.8(b)
							264		Lin. Ft.	I-2	24" Class B Storm Sewers, Sec. M-6.6(b) or Sec. M-6.8(b)
							16		Lin. Ft.	I-2	66"(Radius Pipe) Class B Storm Sewer Under Pavt. or Appr's Sec. M-6.6(b)
							76		Lin. Ft.	I-2	30" Class B Storm Sewer, Under Pavement or Approaches
							105		Lin. Ft.	I-2	30" Class B Storm Sewers Under Pavt. or Appr's Sec. M-6.6(b) or M-6.8(b)
							710		Lin. Ft.	I-2	66" Class "B" Storm Sewer, Under Pavement or Approaches, Sec. M-6.6(c)
							430		Lin. Ft.	I-2	66" Class "B" Storm Sewer, Under Pavement or Approaches, Sec. M-106.6(d)
							64		Lin. Ft.	I-2	66"(Radius Pipe) Class "B" Storm Sewer, U.P. or Approaches, Sec. M-6.6(c)
							40		Lin. Ft.	I-2	66"(Radius Pipe) Class "B" Storm Sewer, U.P. or Approaches, Sec. M-106.6(d)
							260		Lin. Ft.	I-2	66" Class B Storm Sewers, Under Pavement or Approaches Sec. M-6.6(b)
							25171		Lin. Ft.	I-4	6" Underdrain, as per plan
							240		Lin. Ft.	I-4	8" Pipe Outlet for Underdrains, Sec. M-6.4(a)
							110		Lin. Ft.	I-2	21" Class B Storm Sewer Under Pavt. or Appr's Sec. M-6.6(b) or M-6.8(b)
							35		Each	I-5	6" Pipe Specials for Underdrain, as per plan
							31		Each	I-8	Standard No. 2-6 Median Inlet
							4		Each	I-8	Standard No. 2-6 Paved Shoulder Inlet
							9		Each	I-8	Standard No. 2-8 Median Inlet
							3		Each	I-8	Standard No. 2-10 Median Inlet
							28		Each	I-8	Standard No. 2-2-A Catch Basin
							15		Each	I-8	Standard No. 3 Catch Basin
							11		Each	I-8	Standard No. 3-A Catch Basin
							1		Each	I-8	Standard No. 6 Catch Basin
							6		Each	I-8	Standard No. 7 Catch Basin
							8		Each	I-8	Standard No. 1 Manhole, using City type castings, as per plan
							10		Each	I-8	Standard No. 2 Manhole, using City type castings, as per plan
							42		Each	I-8	Manhole Adjusted to Grade
							7		Each	I-8	Inlets Adjusted to Grade
							1		Each	I-8	Junction Chamber, as per plan
							2		Each	I-8	Manholes Reconstructed to Grade, as per plan
							33		Each	I-16	Manholes Abandoned, as per plan
							88		Each	I-16	Inlets Abandoned
							210		Lin. Ft.	E-12	No. 9 Sewer Removed, as per plan
							170		Lin. Ft.	I-14	Paved Apron, as per plan
							1200		Lin. Ft.	Special	No. 9 Sewer Sand Filled, as per plan

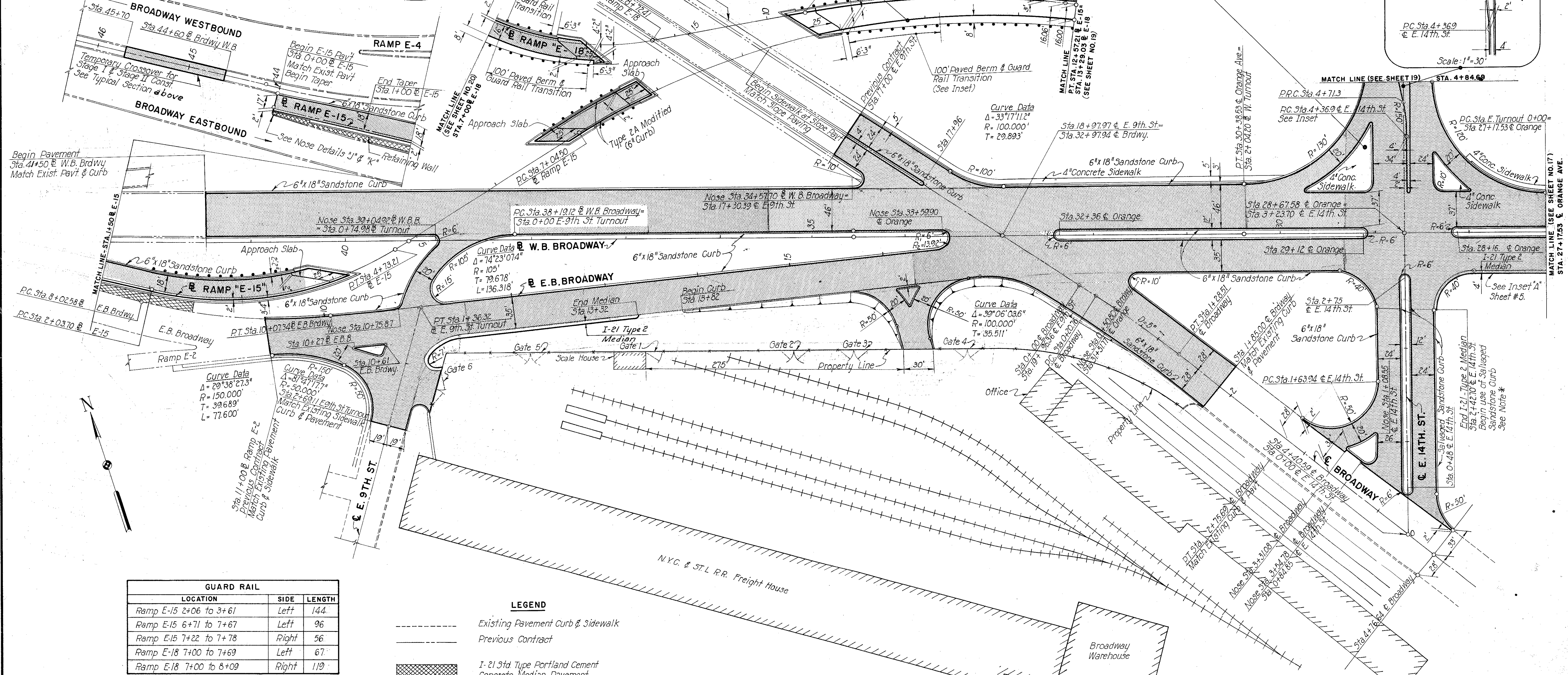
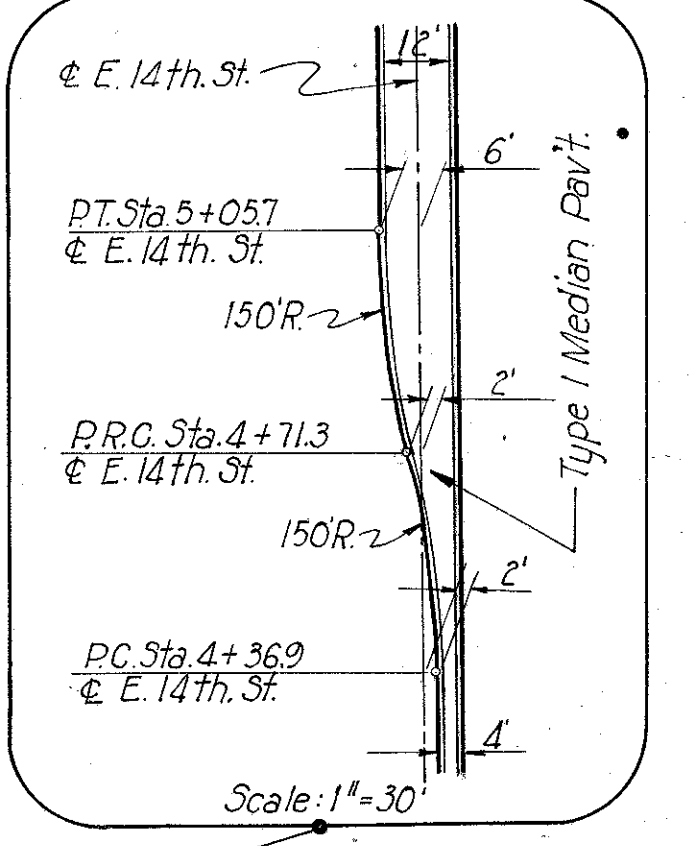
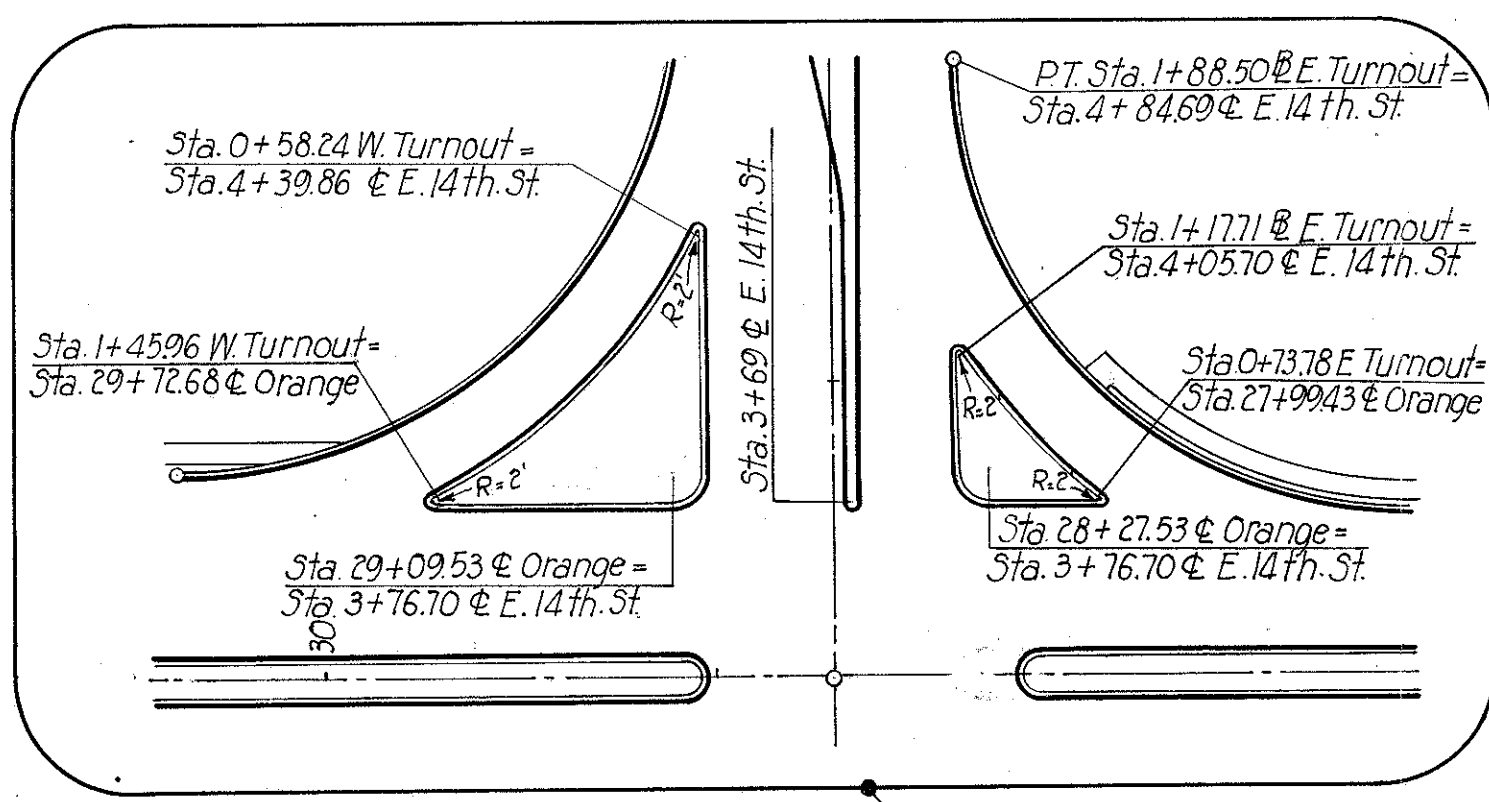
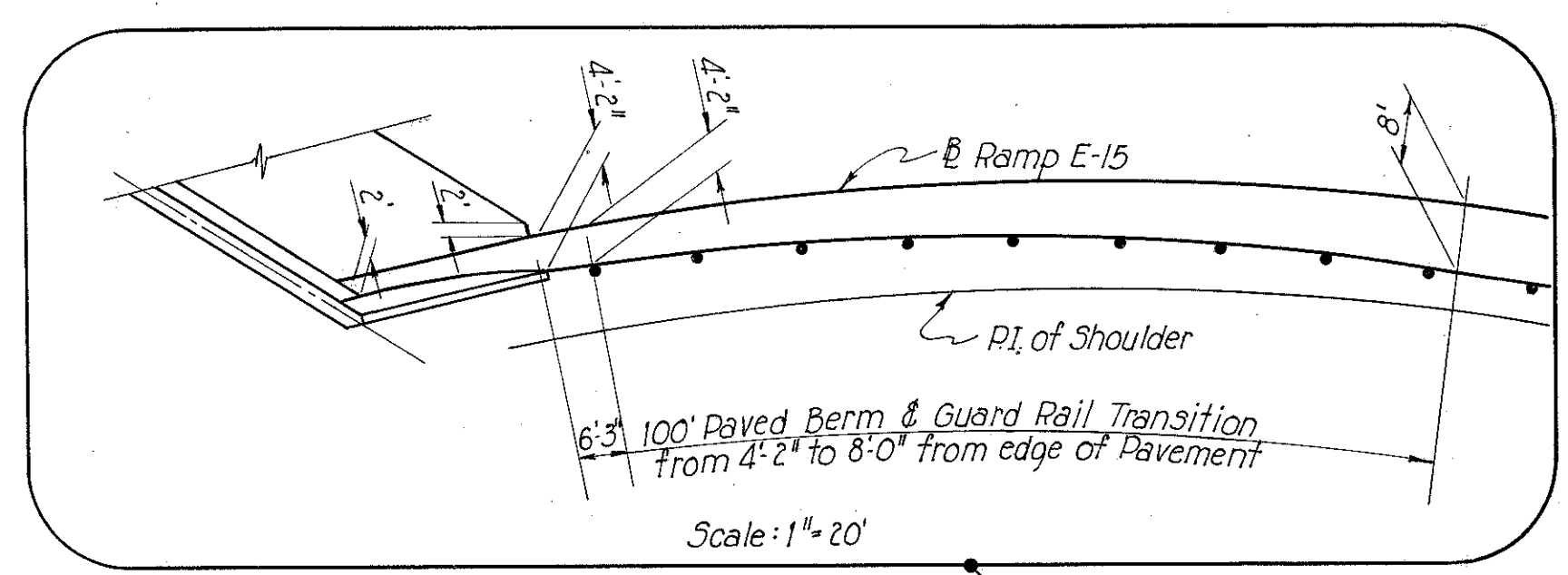
SCALE None  
 MADE H.K.M. DATE 11/10/59 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 TRCD. ER DATE 11/12/59 CONSULTING ENGINEERS  
 CND. G.M.G. DATE 11-13-59 KANSAS CITY CLEVELAND NEW YORK  
 914 SHEET 15





**CROSSOVER TYPICAL SECTION**  
**STA. 44+60 TO STA. 45+70 @ W.B. BROADWAY**  
Scale:  $\frac{3}{16} = 1'$

Note: At conclusion of Stage II, Contractor to replace Sandstone curb and median. **Placements and removals shall be measured and paid for at unit prices bid for the various items involved.**



GUARD RAIL		
LOCATION	SIDE	LENGTH
Ramp E-15 2+06 to 3+61	Left	144
Ramp E-15 6+71 to 7+67	Left	96
Ramp E-15 7+22 to 7+78	Right	56
Ramp E-18 7+00 to 7+69	Left	67
Ramp E-18 7+00 to 8+09	Right	119

- 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

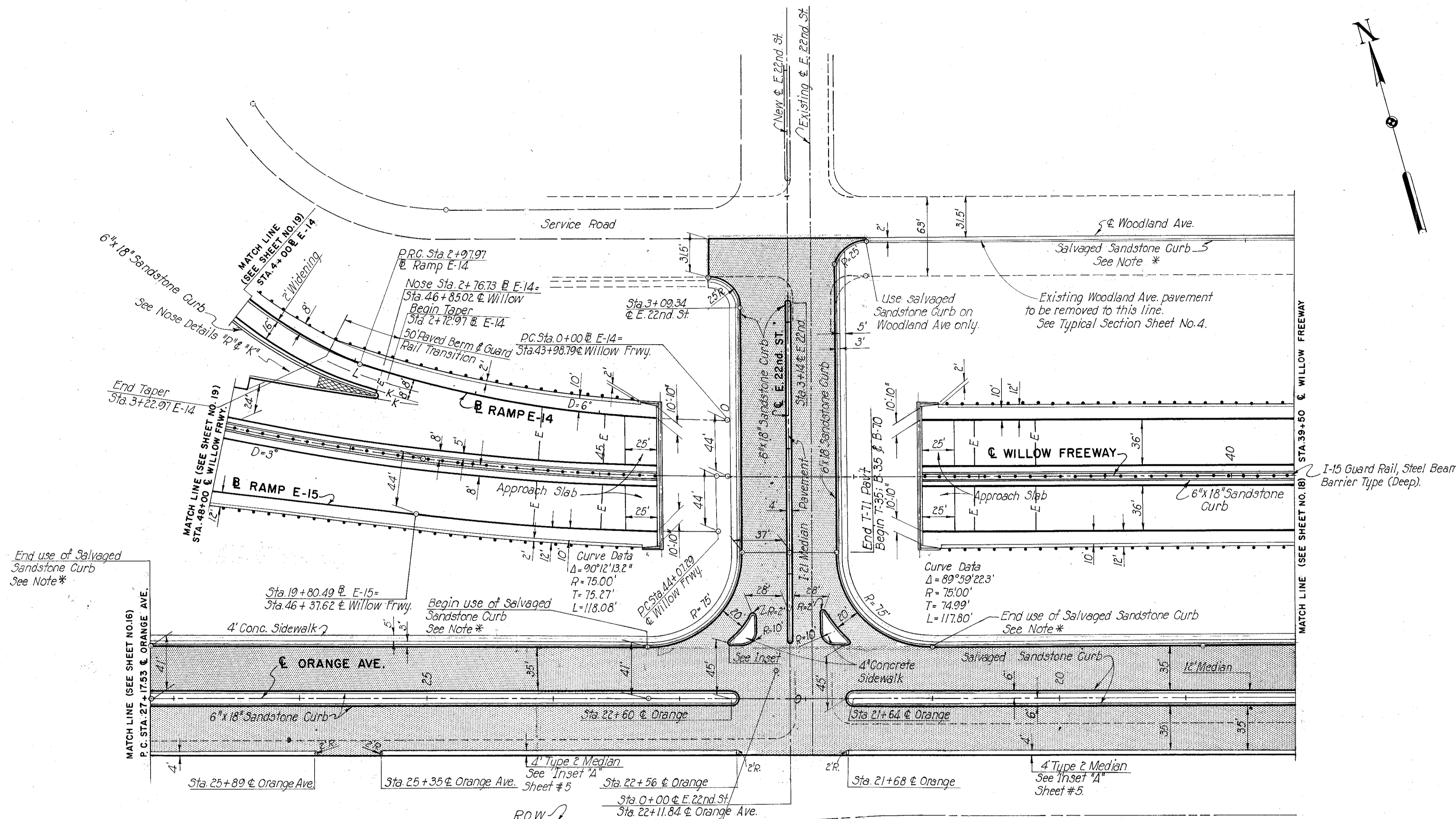
**NOTE:**  
For Pavement Joints & Contours.  
See Sheet No. 22.

**Note:**  
For use of Salvaged Sandstone Curb,  
See General Notes.

**NOTE**  
For detail of "Typical Joint Layout" See  
Exit Ramps, Sheet 20 of Part 7B  
Entrance Ramps, Sheet 21 of Part 7B

**PAVEMENT DETAILS**

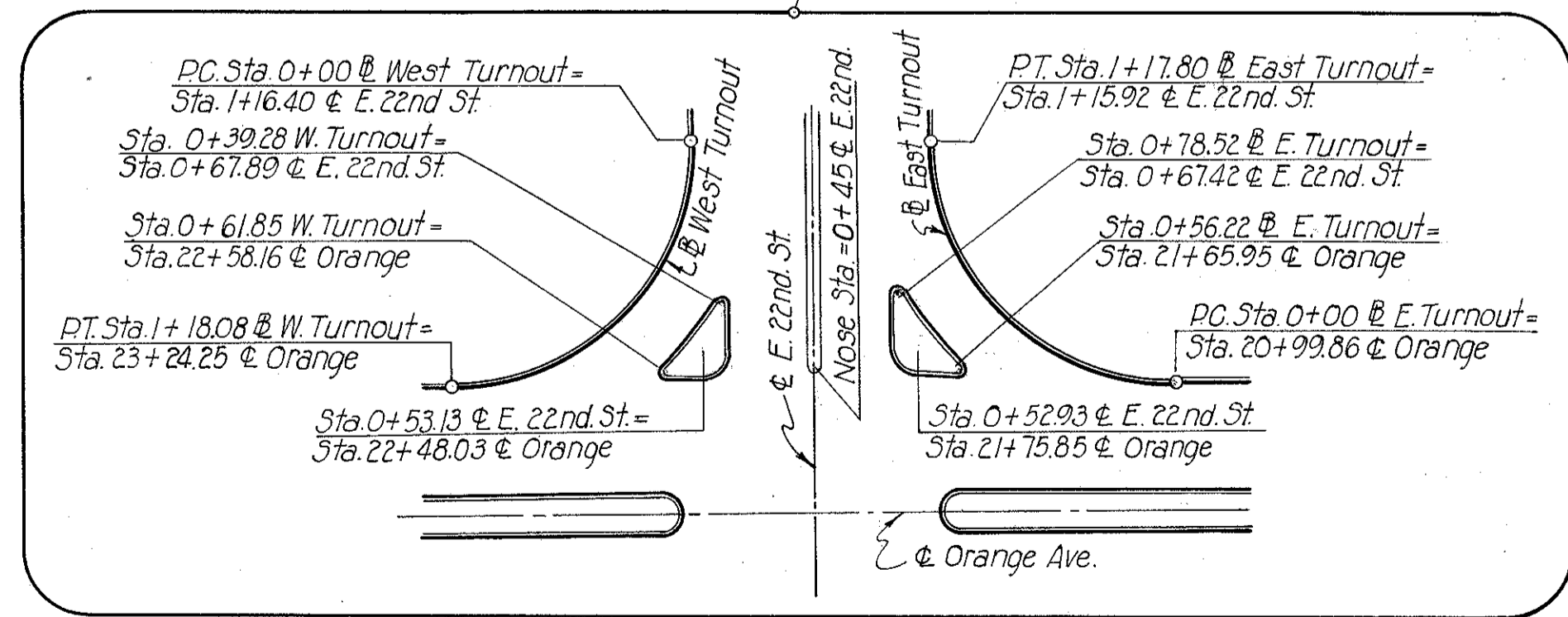
Note: For Contours and Joists, see Sheet No. 22.



End use of Salvaged Sandstone Curb See Note\*

MATCH LINE (SEE SHEET NO. 16) P.C. STA. 27+17.83 @ ORANGE AVE.

MATCH LINE (SEE SHEET NO. 18) STA. 39+50 @ WILLOW FREEWAY



- 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.

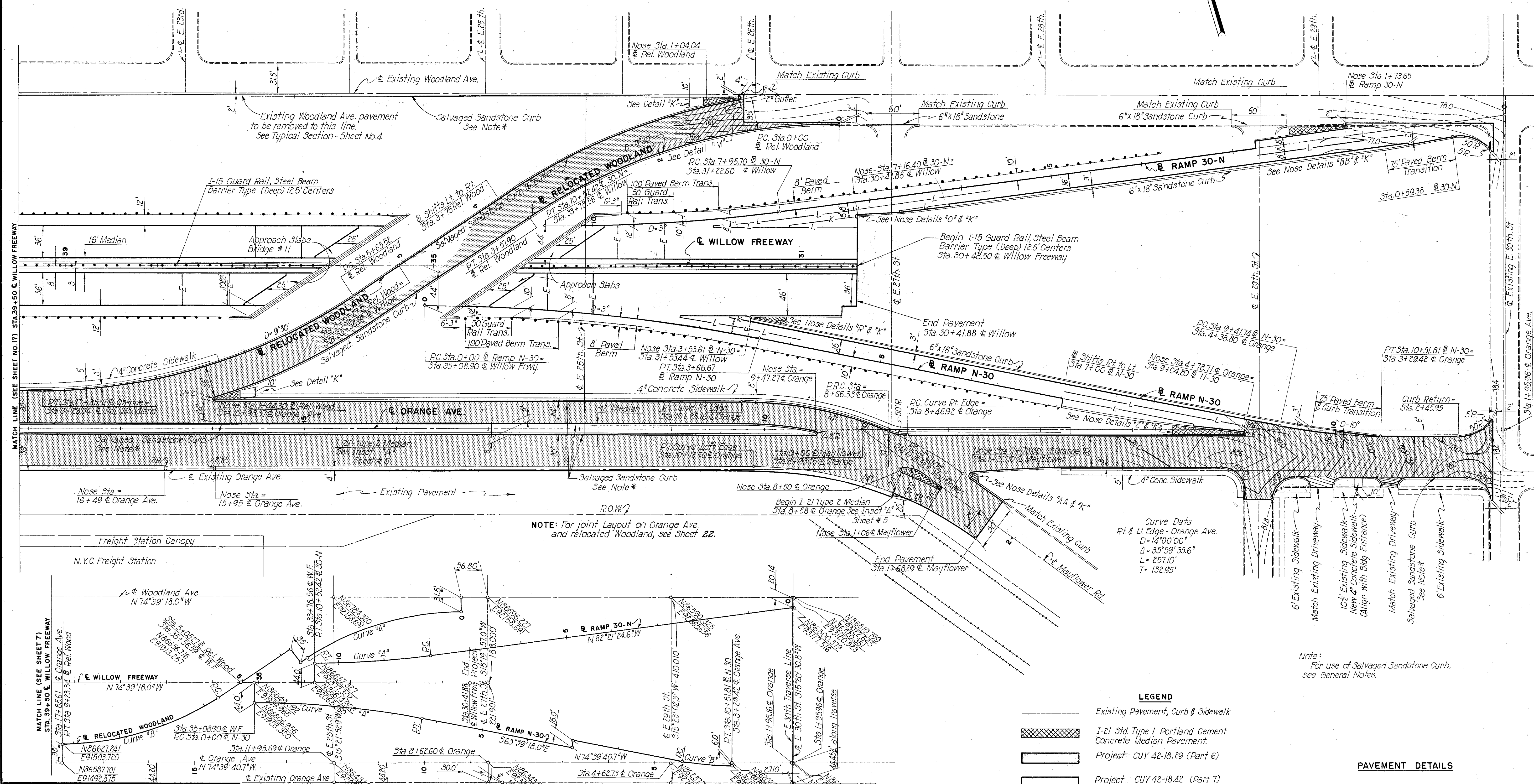
Note: \* For use of Salvaged Sandstone Curb, see General Notes.

**PAVEMENT DETAILS**

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

18  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
INNER CUY 42-18-29 - PART



NOTE: For joint layout on Orange Ave. and relocated Woodland, see Sheet 22.

Curve Data  
Pt & Lt Edge - Orange Ave.  
D = 14°00'00"  
Δ = 35°59'35.6"  
L = 257.10'  
T = 132.95'

Note:  
For use of Salvaged Sandstone Curb, see General Notes.

LEGEND

- Existing Pavement, Curb & Sidewalk
- I-21 Std. Type 1 Portland Cement Concrete Median Pavement
- Project CUY 42-18-29 (Part 6)
- Project CUY 42-18-29 (Part 7) CUY 21-15-32

PAVEMENT DETAILS

Note: For Orange Ave. Pavement Joints and Contours, see Sheet # 22.

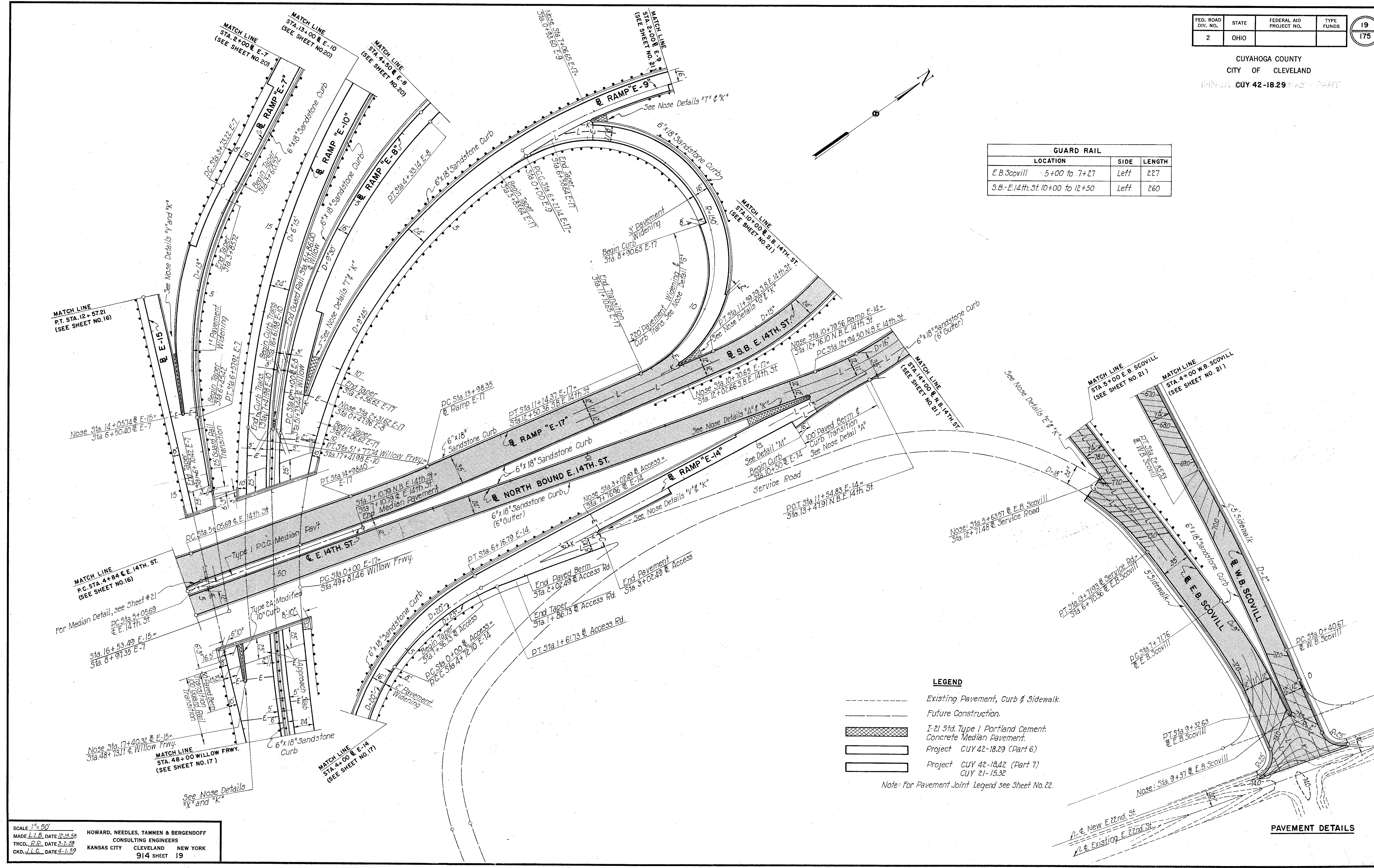
SCALE 1"=50'  
MADE I.F.S. DATE 12.15.58  
TRCD. R.R. DATE 3.1.59  
CKD. J.L.C. DATE 4.1.59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 18

GEOMETRIC LAYOUT  
Scale: 1"=100'

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
DRAWING CUY 42-18.29 PART

GUARD RAIL		
LOCATION	SIDE	LENGTH
E.B.Scovill - 5+00 to 7+27	Left	227
S.B.-E.14th.St. 10+00 to 12+50	Left	260



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

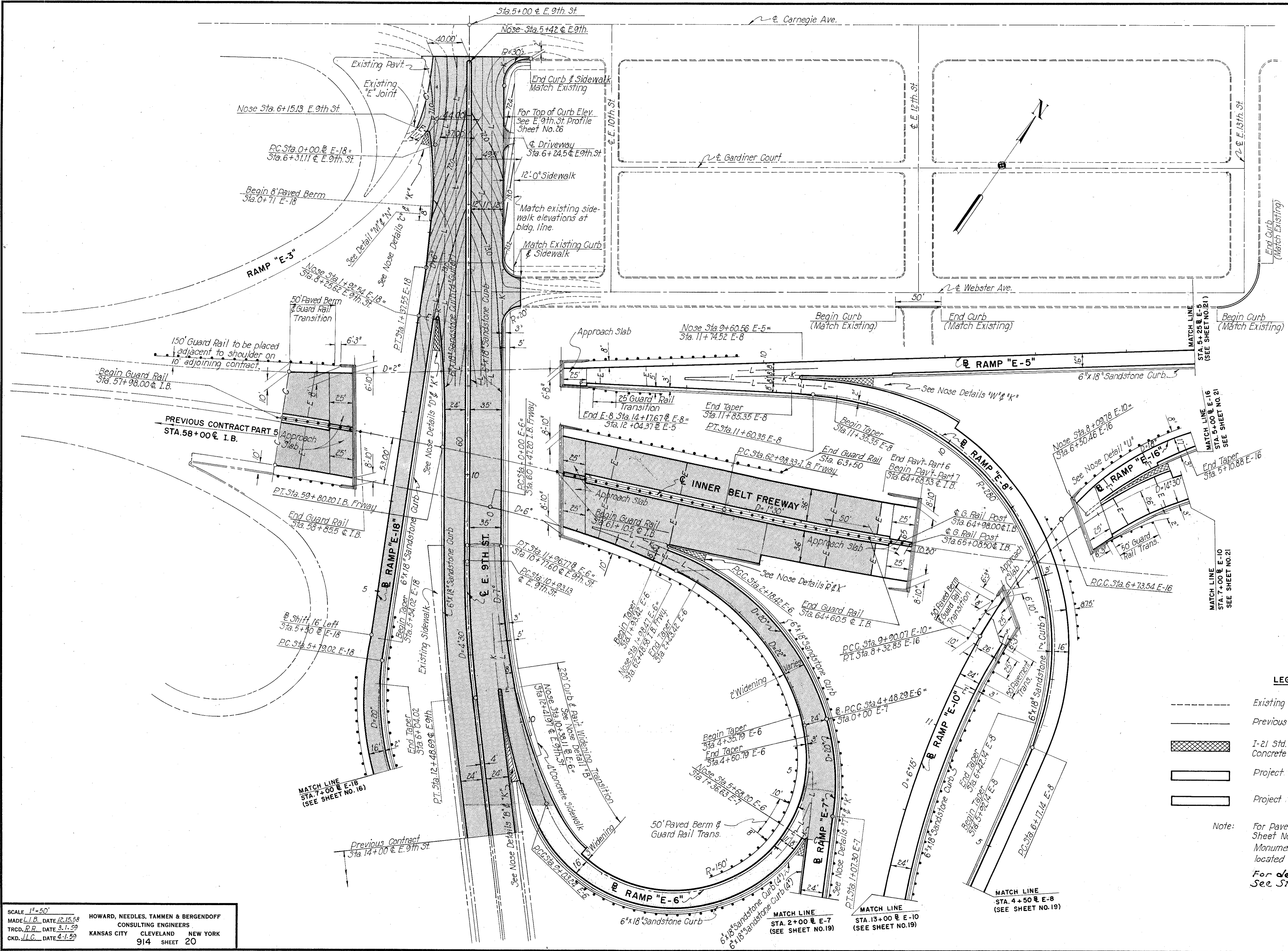
Note: For Pavement Joint Legend see Sheet No. 22.

SCALE 1"=50'  
MADE L.I.B. DATE 12-10-58  
TRCD. R.P. DATE 3-1-59  
CKD. J.L.C. DATE 4-1-59

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

PAVEMENT DETAILS

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
INVEST. CUY 42-18.29



GUARD RAIL			
Location	Side	Length	
Ramp E-18	5+18 to 7+00	Left	176'
Ramp E-18	5+25 to 7+00	Right	112'
Ramp E-6	1+12 to 6+72	Right	531'
Ramp E-6	3+50 to 4+48	Left	106'
Ramp E-6	6+20 to 8+13	Left	225'
Ramp E-7	0+00 to 1+37	Left	140'
Ramp E-8	7+45 to 8+71	Right	138'
Inner Belt Freeway	56+50 to 58+53	Left	203'
Inner Belt Freeway	58+06 to 58+76	Right	70'
Inner Belt Freeway	61+27 to 63+50	Left	225'

BARRIER RAIL			
Location	Side	Length	
Inner Belt Freeway	57+98 to 58+83	Center	875'
Inner Belt Freeway	61+05 to 64+60	Center	350'

**LEGEND**

- Existing Pavement, Curb & Sidewalk
- Previous Contract
- 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.

Monument Assemblies to be located by the Engineer  
For detail of Monument Assemblies, see Std. Dwg. RI-1.

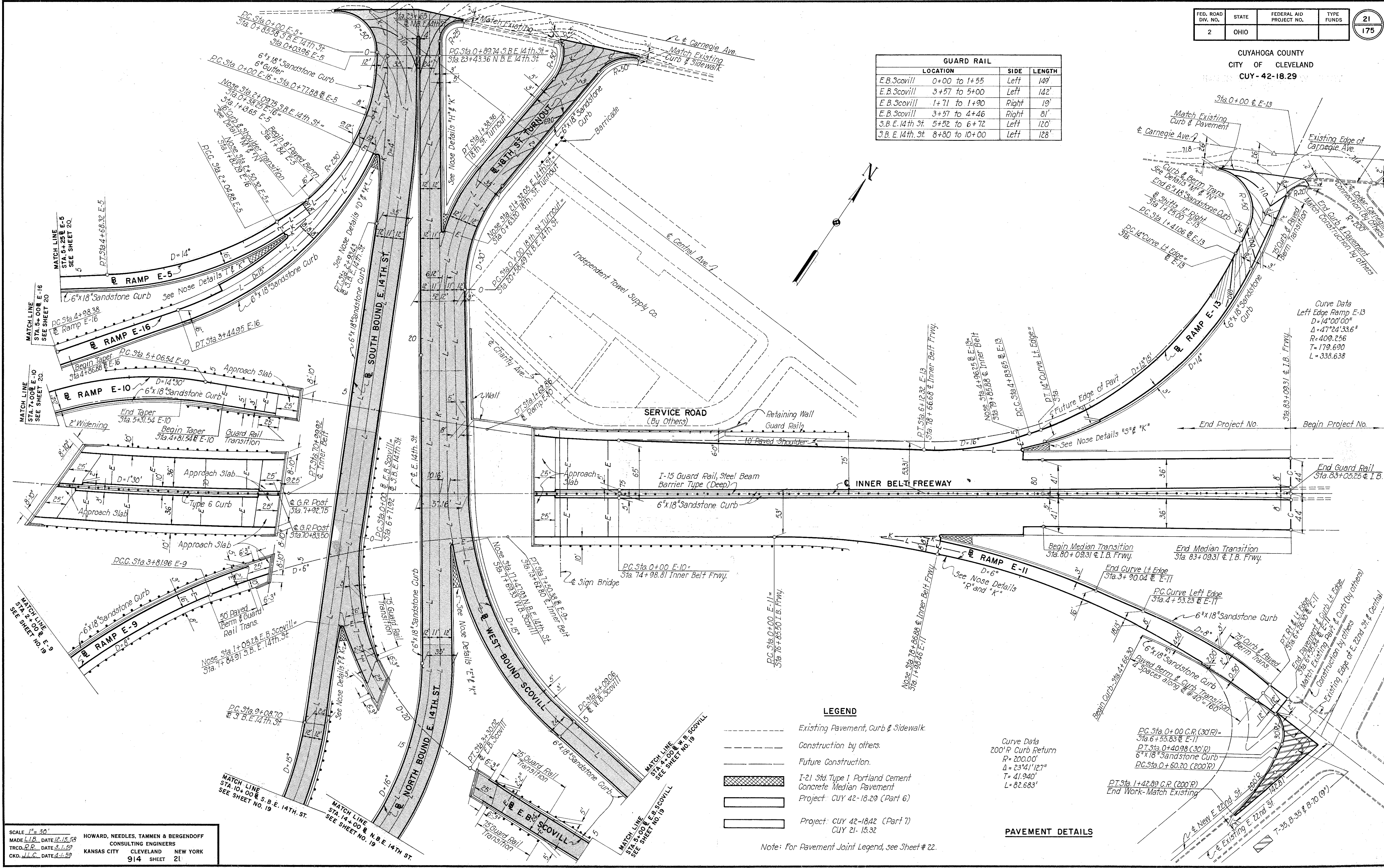
**PAVEMENT DETAILS**

SCALE 1"=50'  
MADE I.B. DATE 12-15-58  
TRCD. P.R. DATE 3-1-59  
CKD. J.L.C. DATE 4-1-59

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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29

GUARD RAIL			
LOCATION	SIDE	LENGTH	
E.B.Scovill 0+00 to 1+55	Left	149'	
E.B.Scovill 3+57 to 5+00	Left	142'	
E.B.Scovill 1+71 to 1+90	Right	19'	
E.B.Scovill 3+57 to 4+46	Right	81'	
S.B.E. 14th St. 5+52 to 6+72	Left	120'	
S.B.E. 14th St. 8+80 to 10+00	Left	128'	



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°41'12.7"  
T=41.940'  
L=82.683'

- LEGEND**
- Existing Pavement, Curb & Sidewalk
  - Construction by others.
  - 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

**PAVEMENT DETAILS**

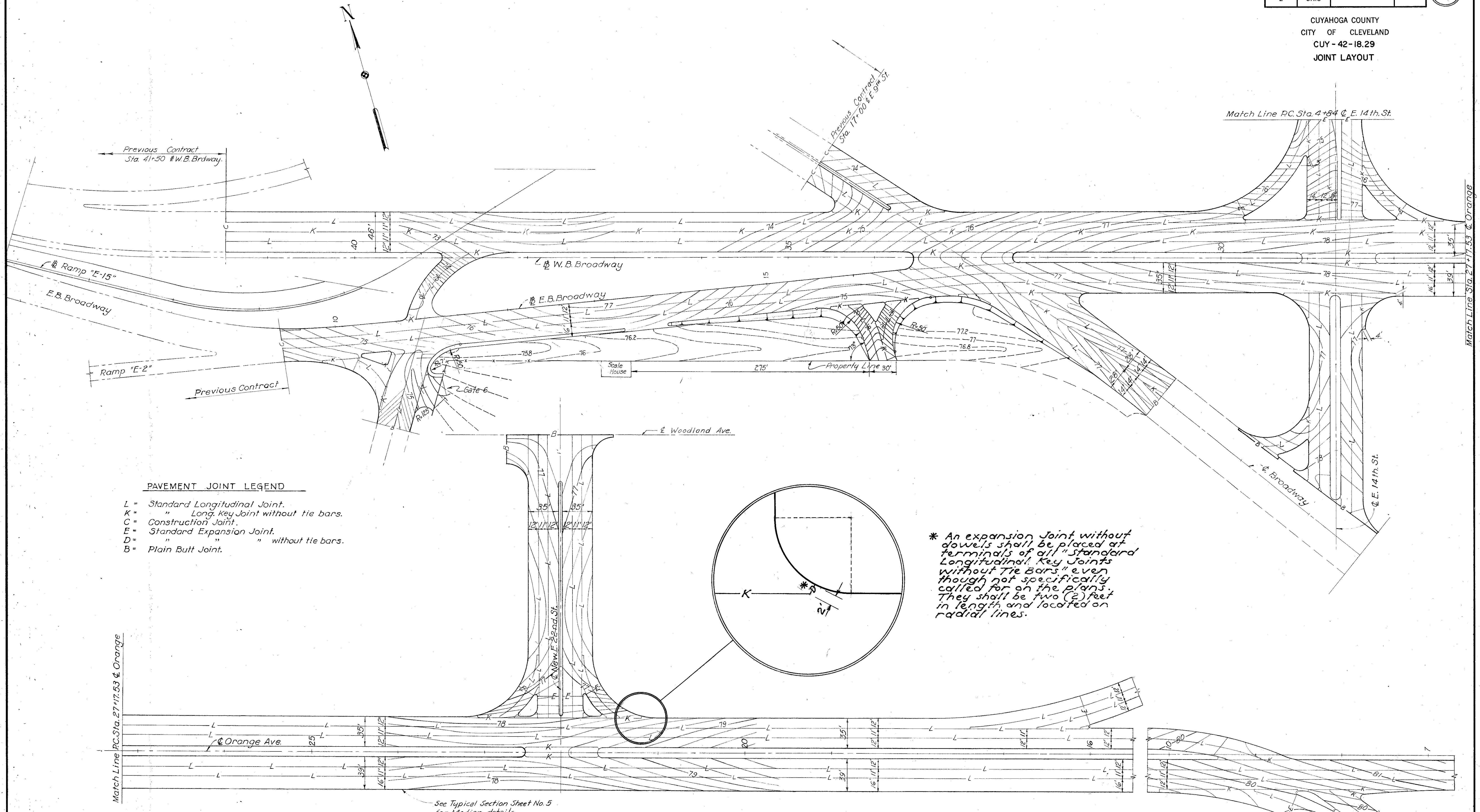
SCALE 1" = 50'  
MADE L.I.B. DATE 12.15.59  
TRCD. R.R. DATE 3.1.59  
CKD. J.L.C. DATE 4.1.59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 21

Note: For Pavement Joint Legend, see Sheet # 22.

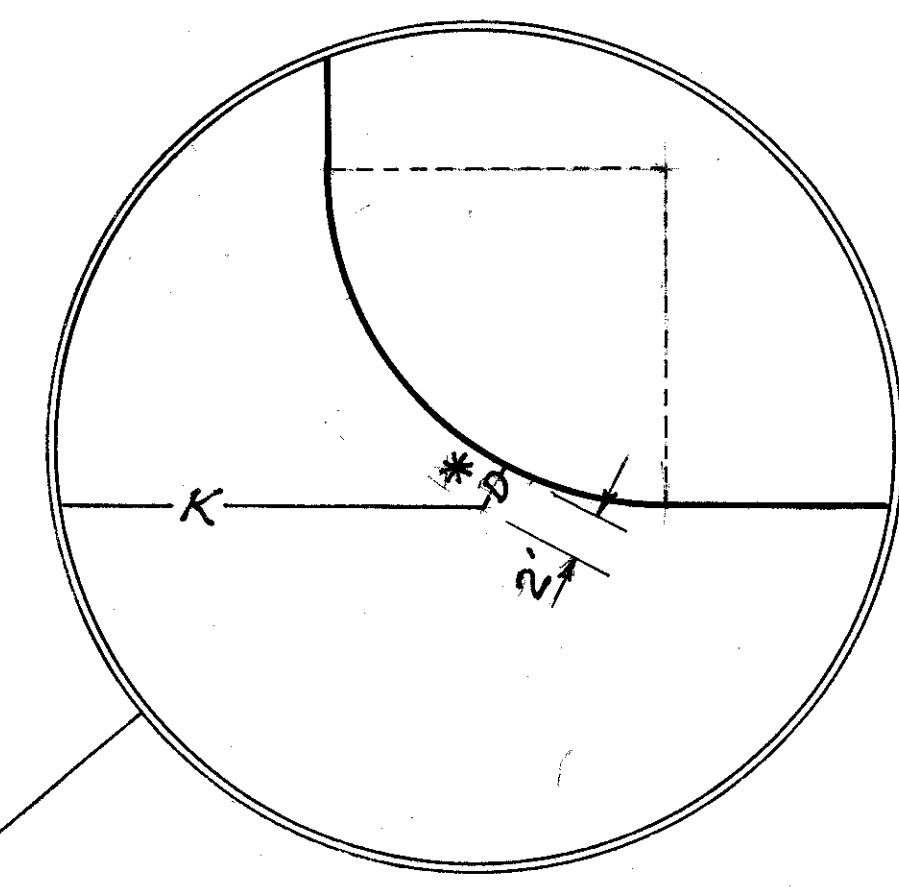
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	22 175
2	OHIO			

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29  
JOINT LAYOUT



**PAVEMENT JOINT LEGEND**

- L = Standard Longitudinal Joint.
- K = Long Key Joint without tie bars.
- C = Construction Joint.
- E = Standard Expansion Joint.
- D = " " " without tie bars.
- B = Plain Butt Joint.

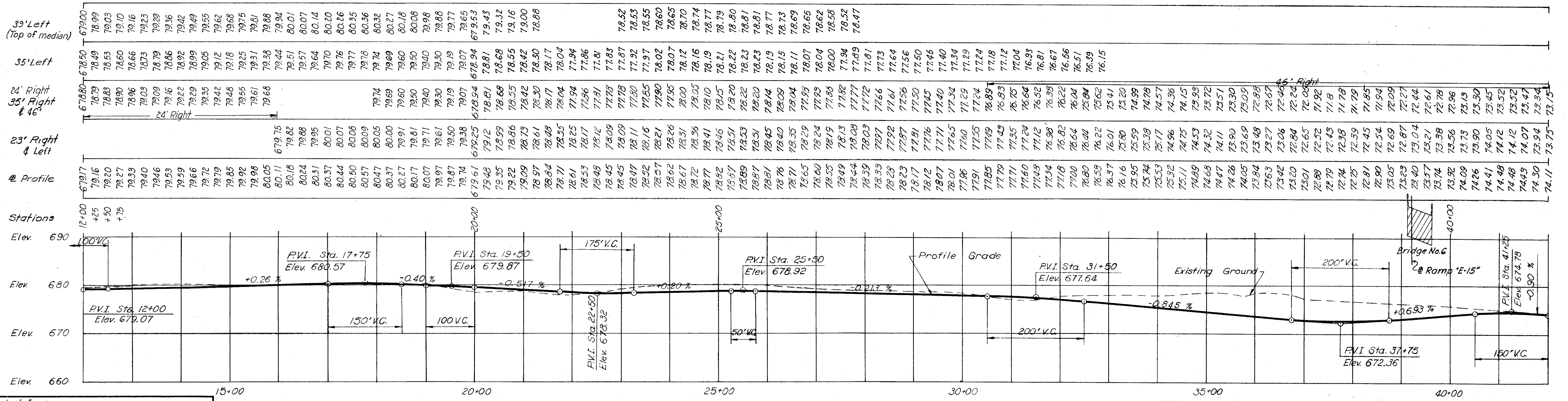
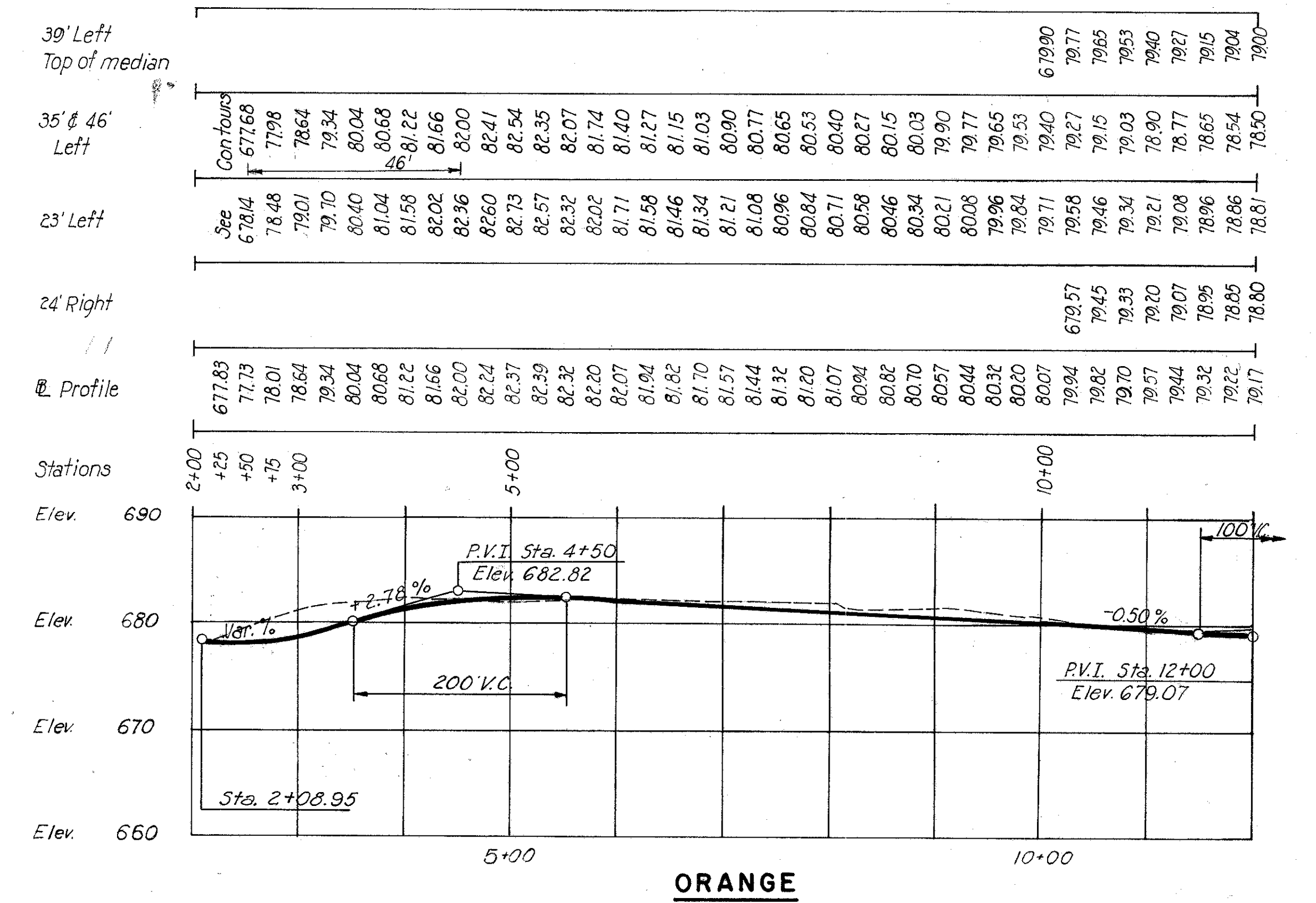
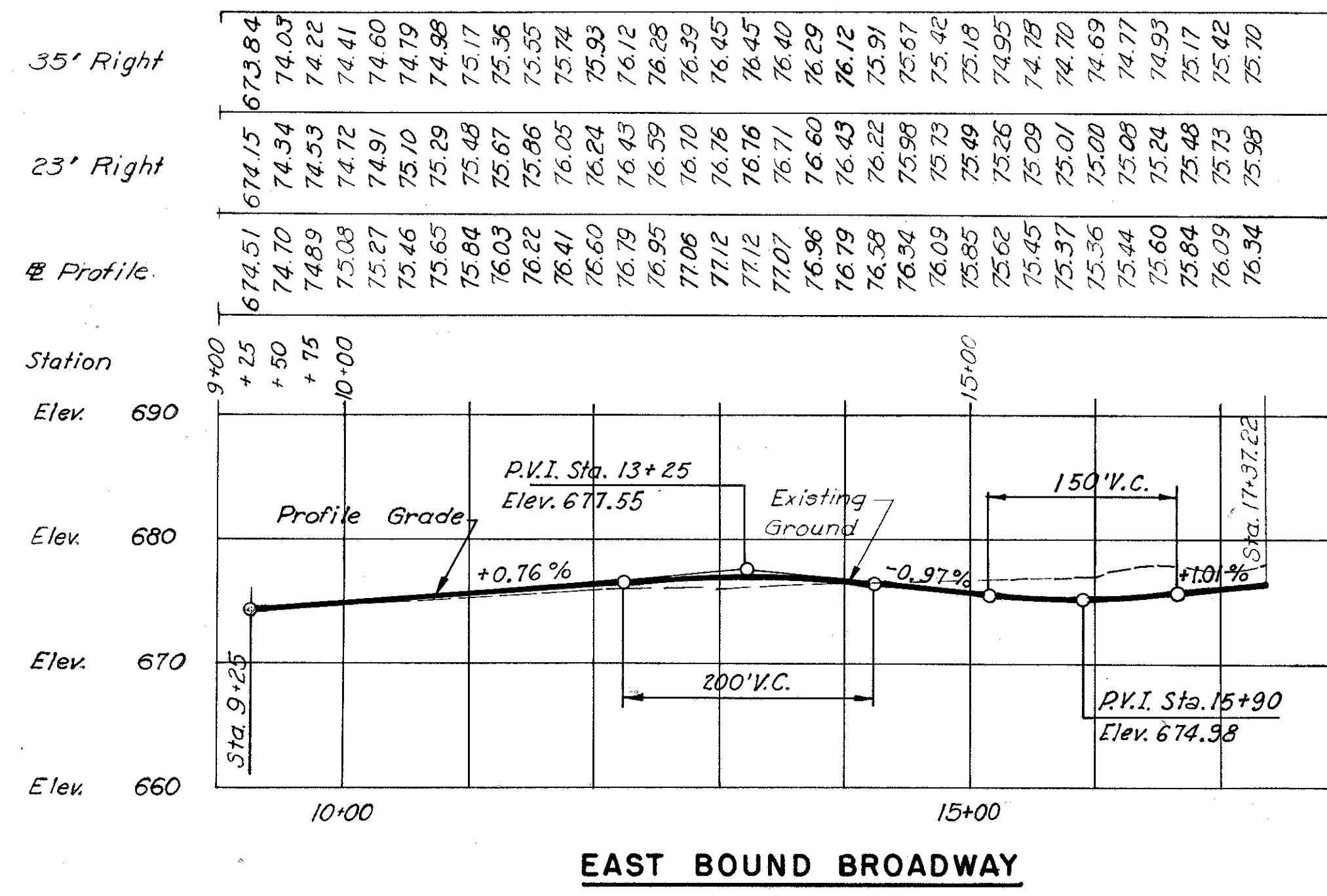
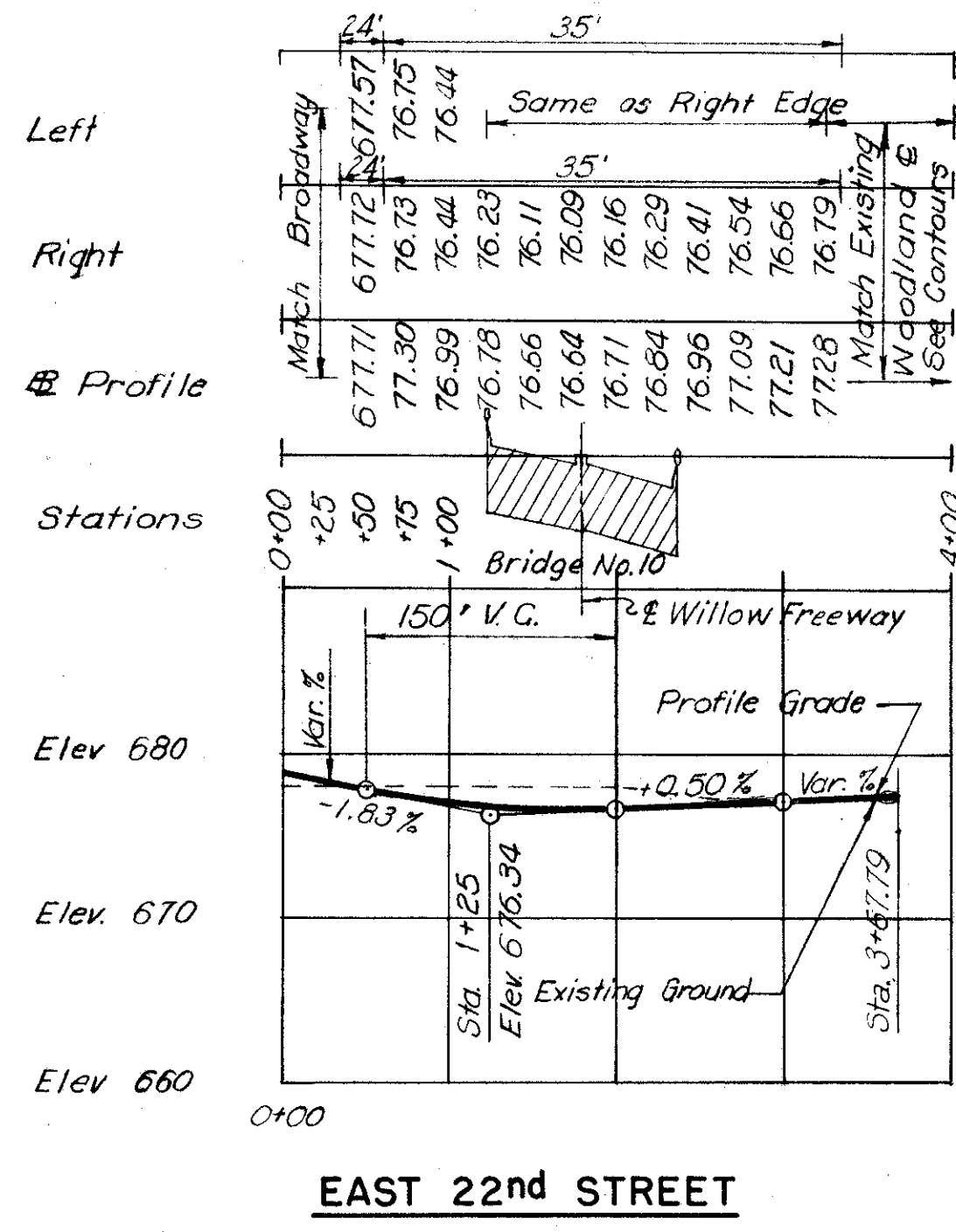


Match Line PC Sta. 27+17.53 @ Orange

Match Line PC Sta. 27+17.53 @ Orange

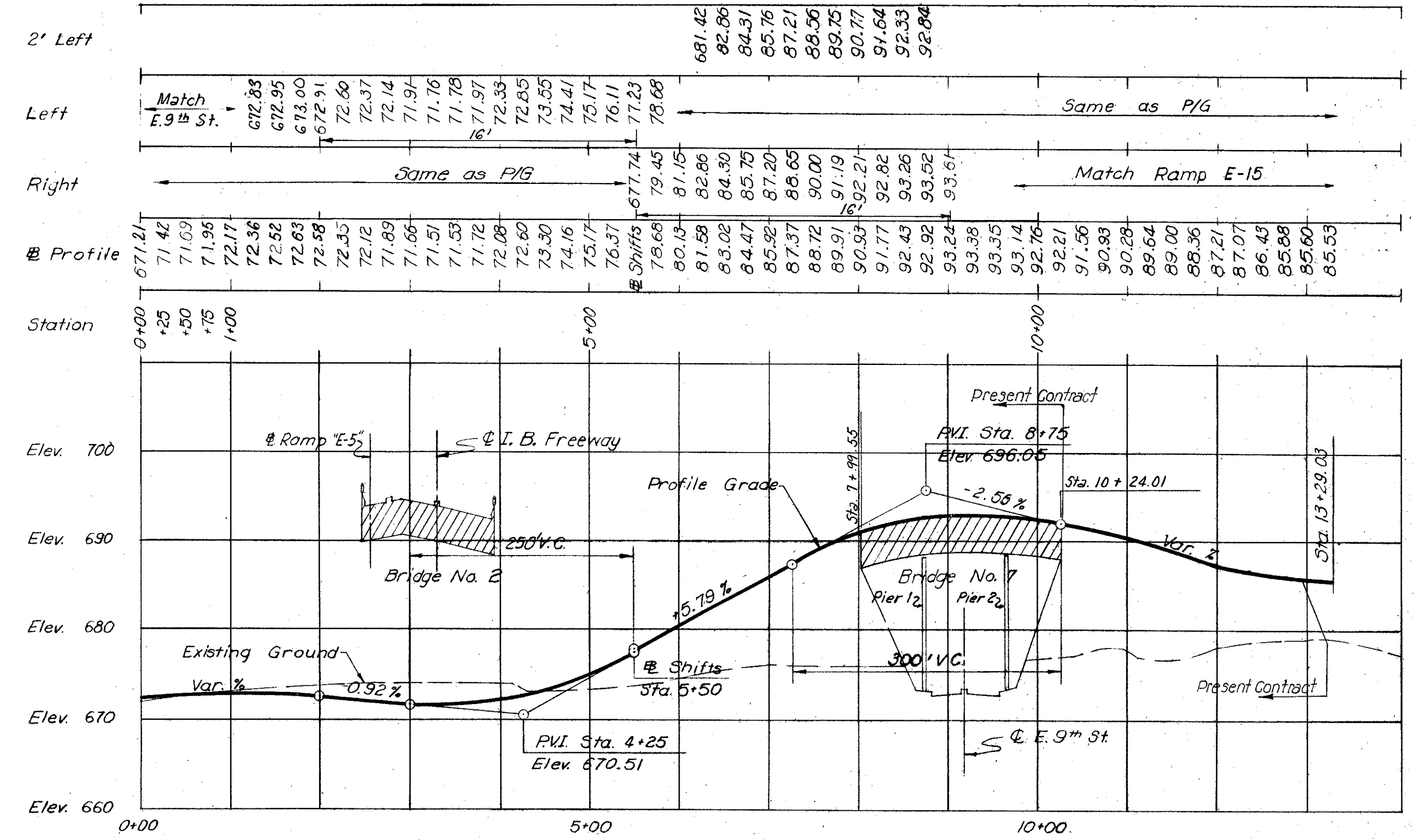
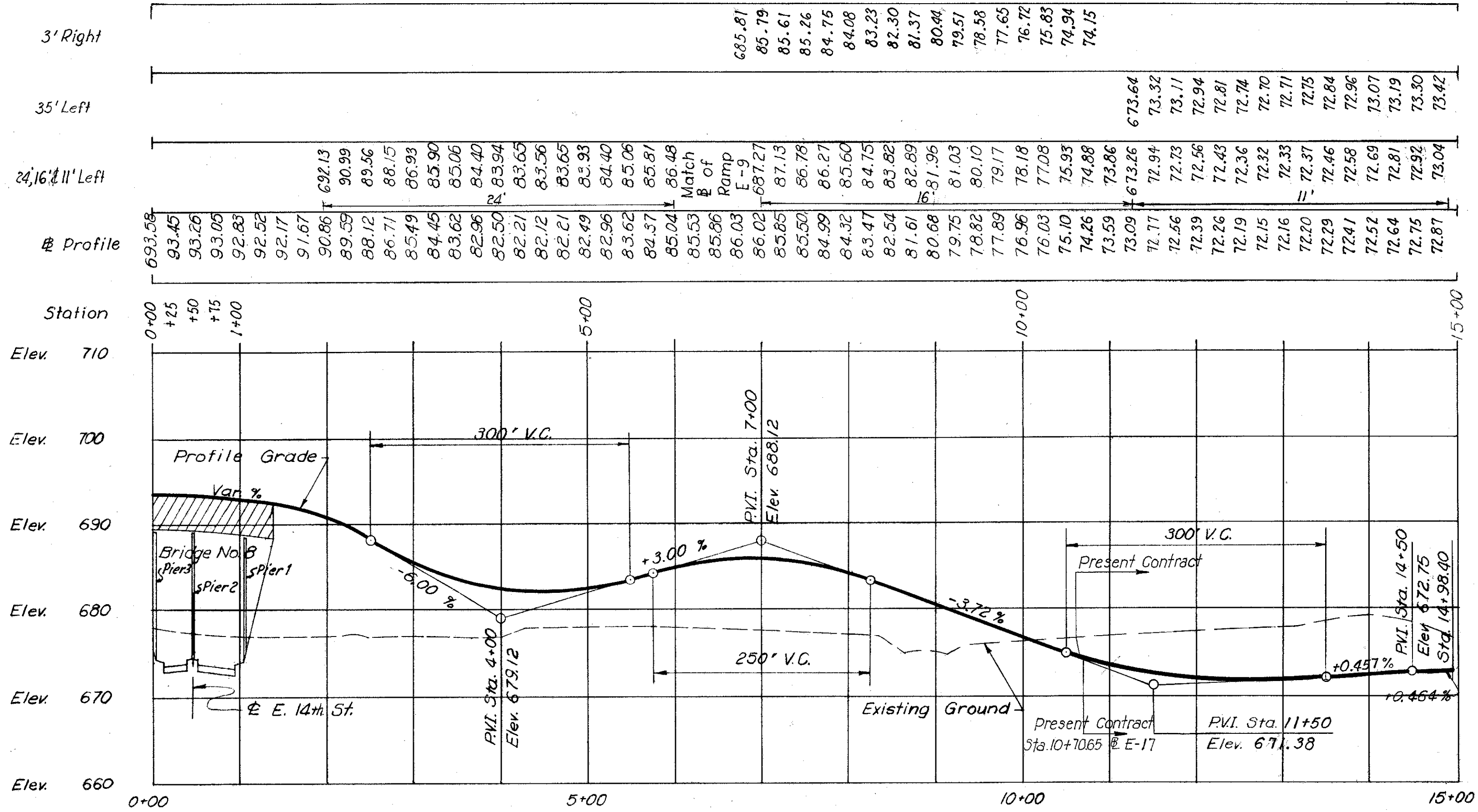
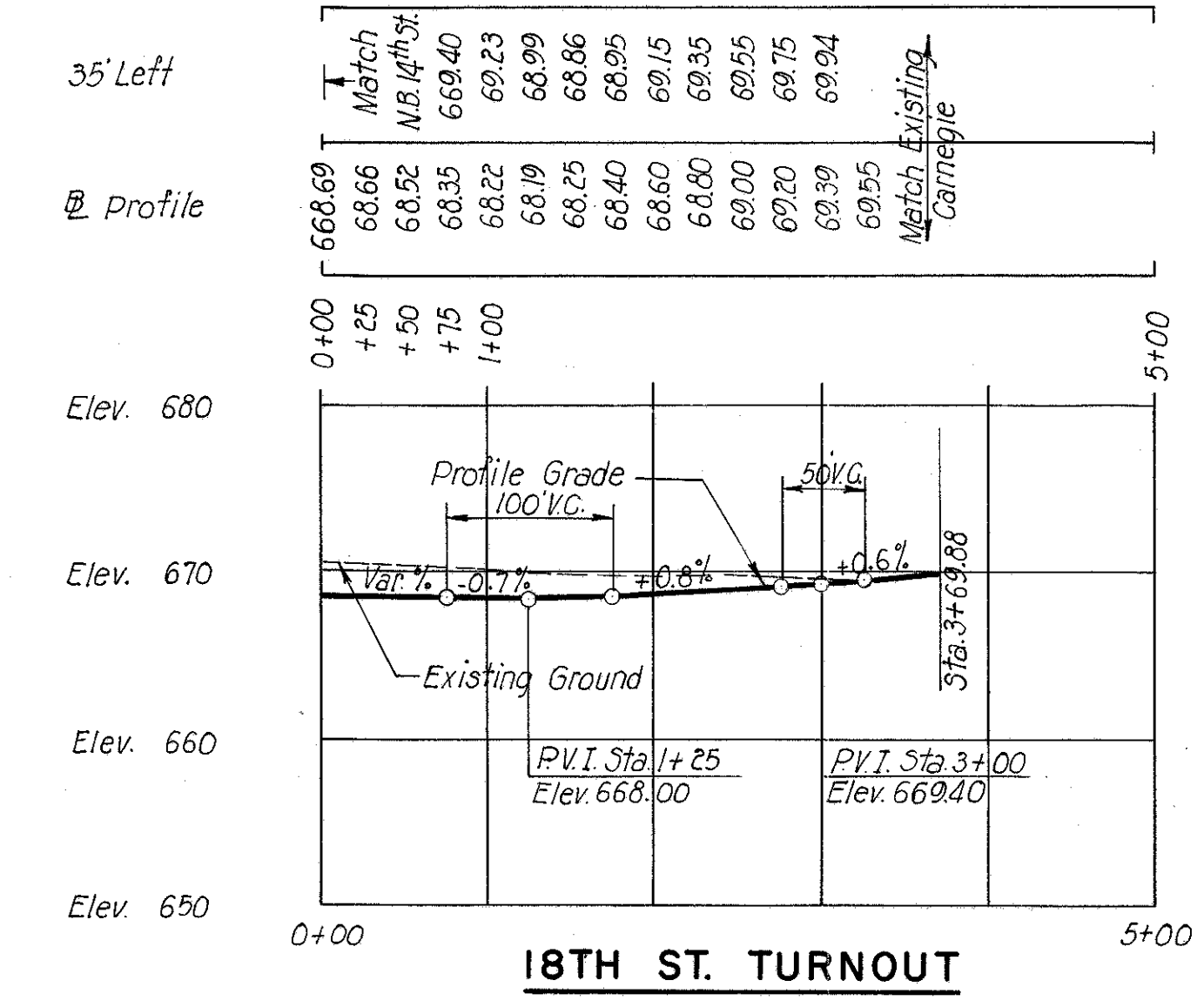
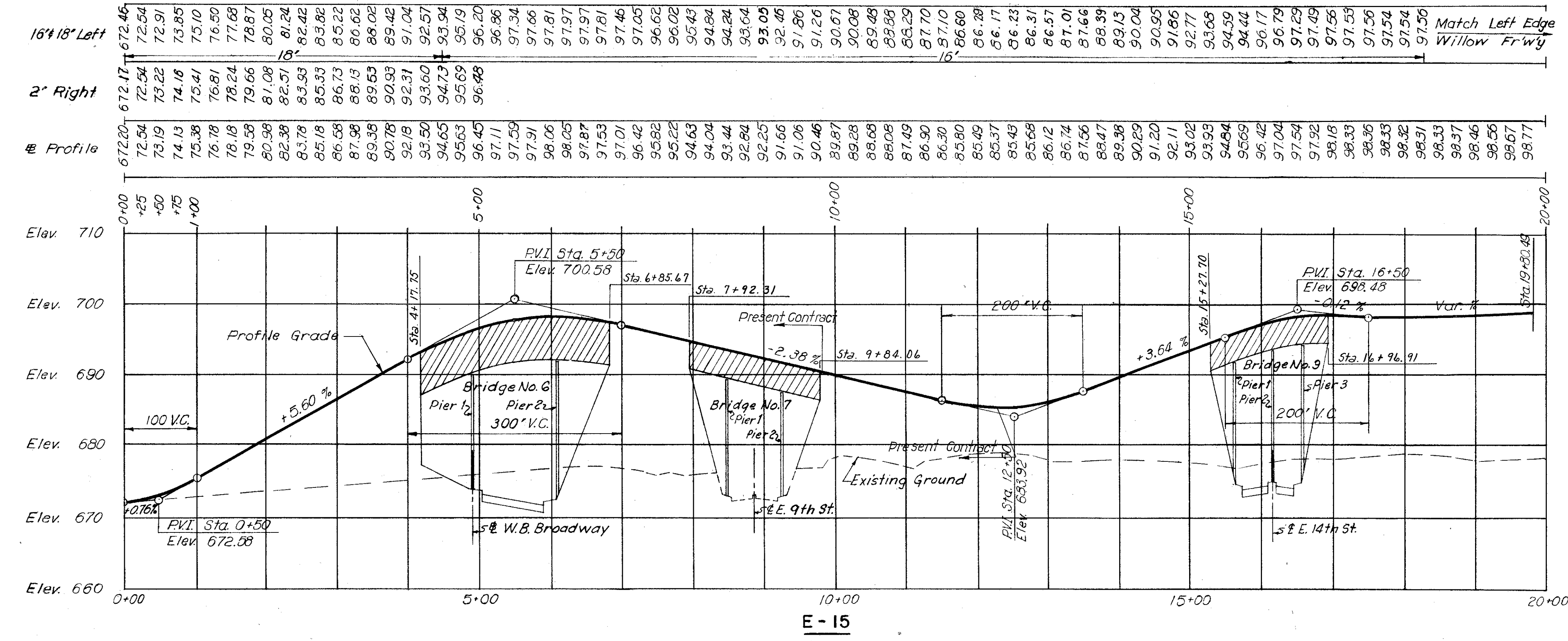
See Typical Section Sheet No. 5 for Median details.

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29  
PROFILES



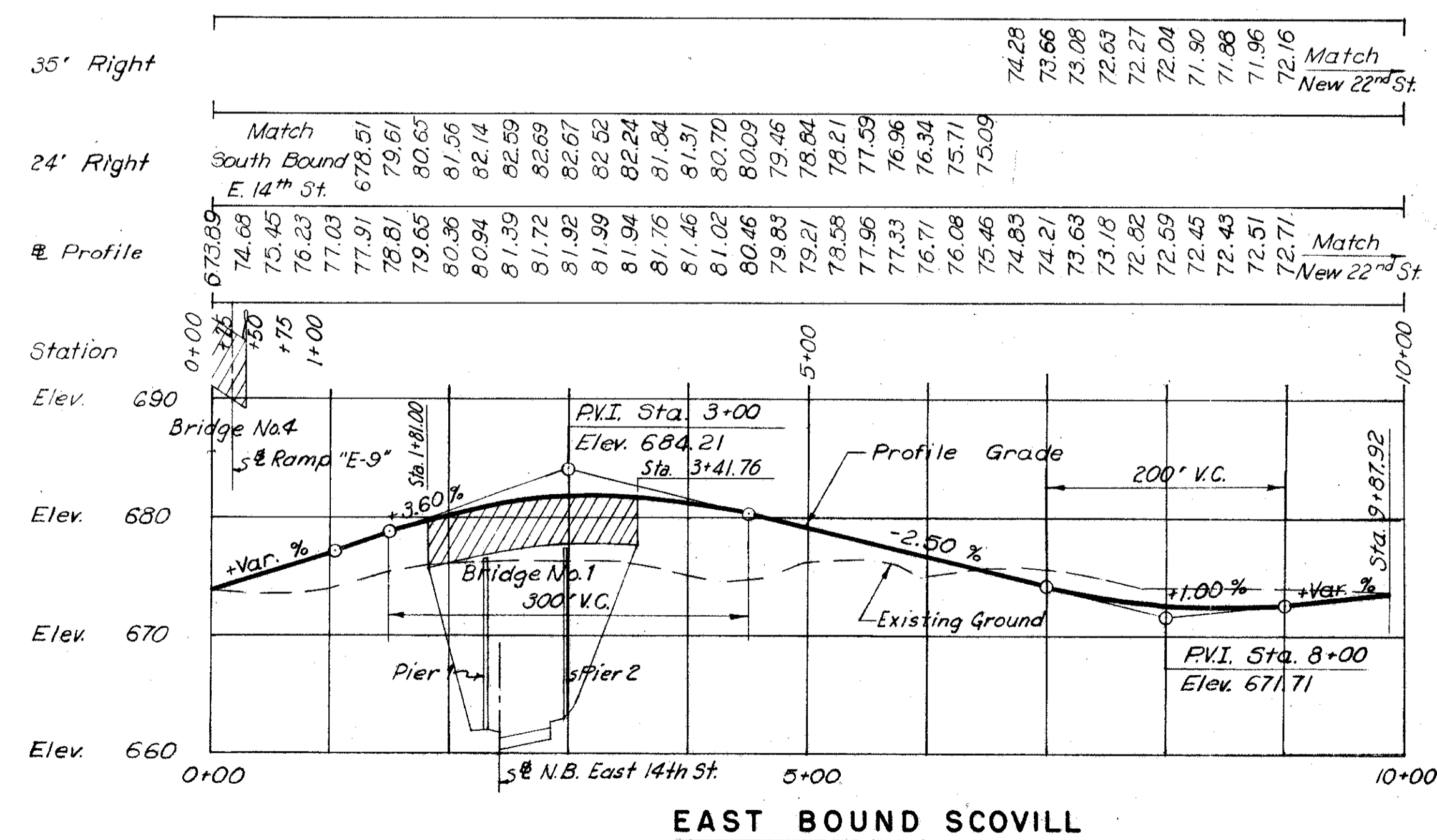
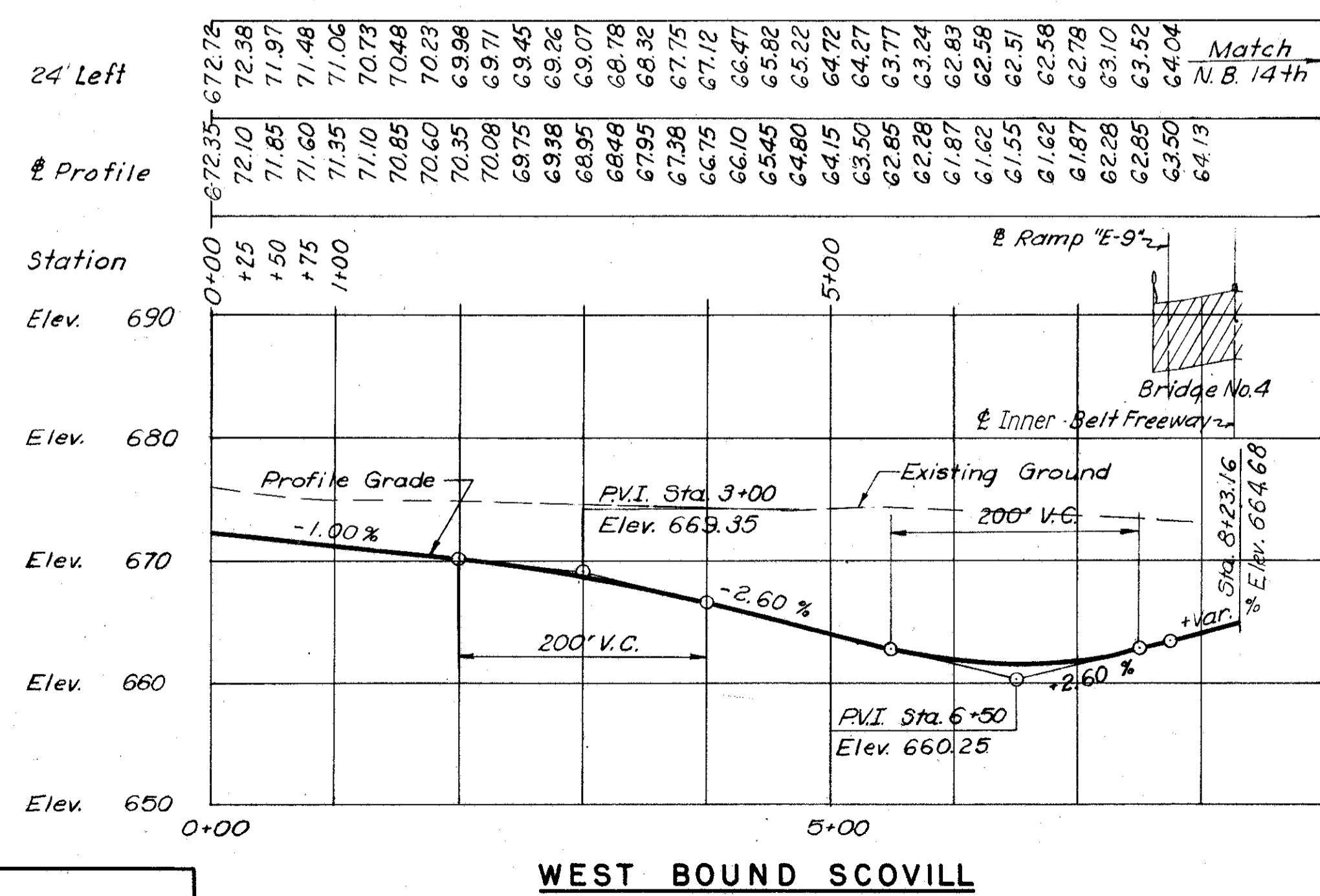
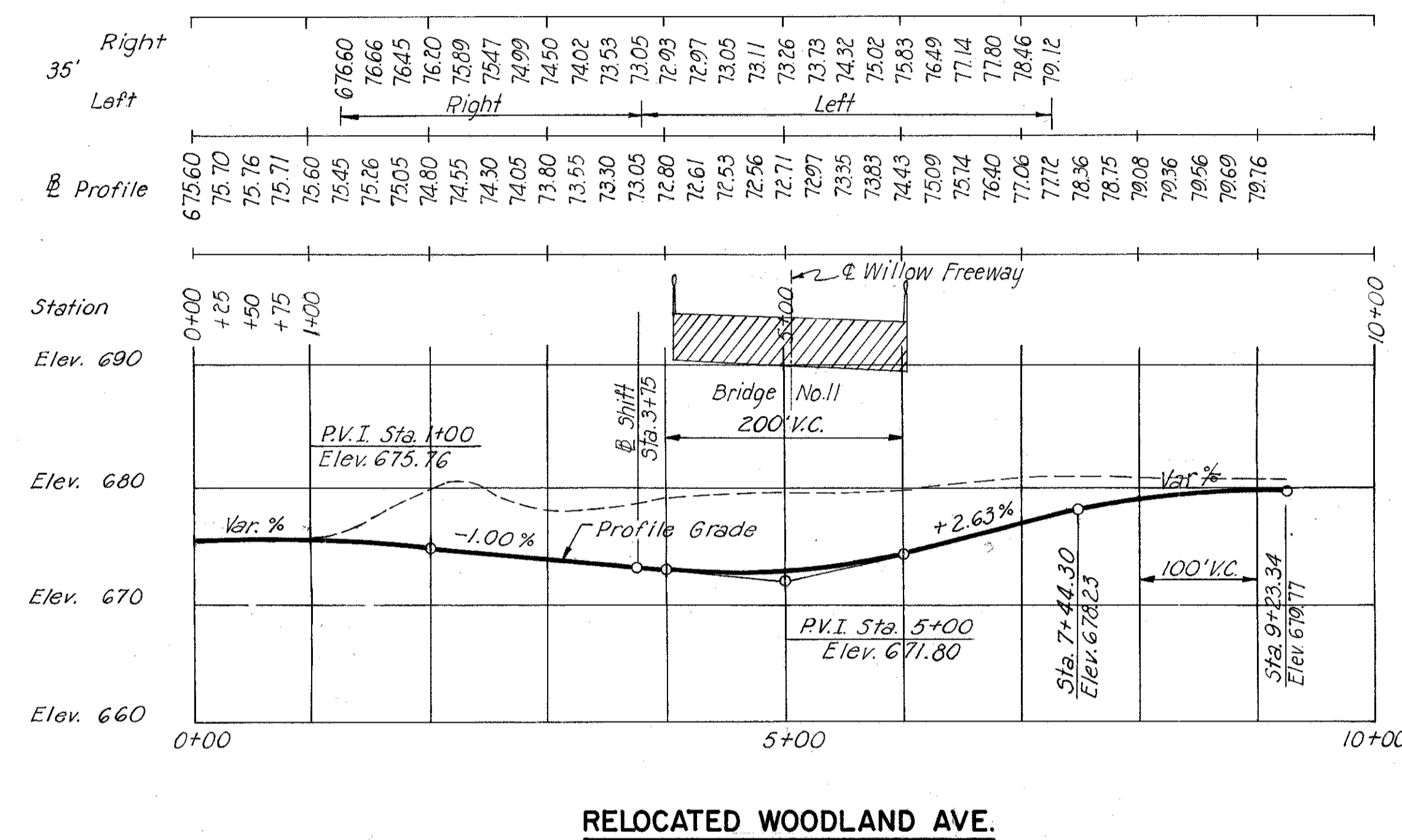
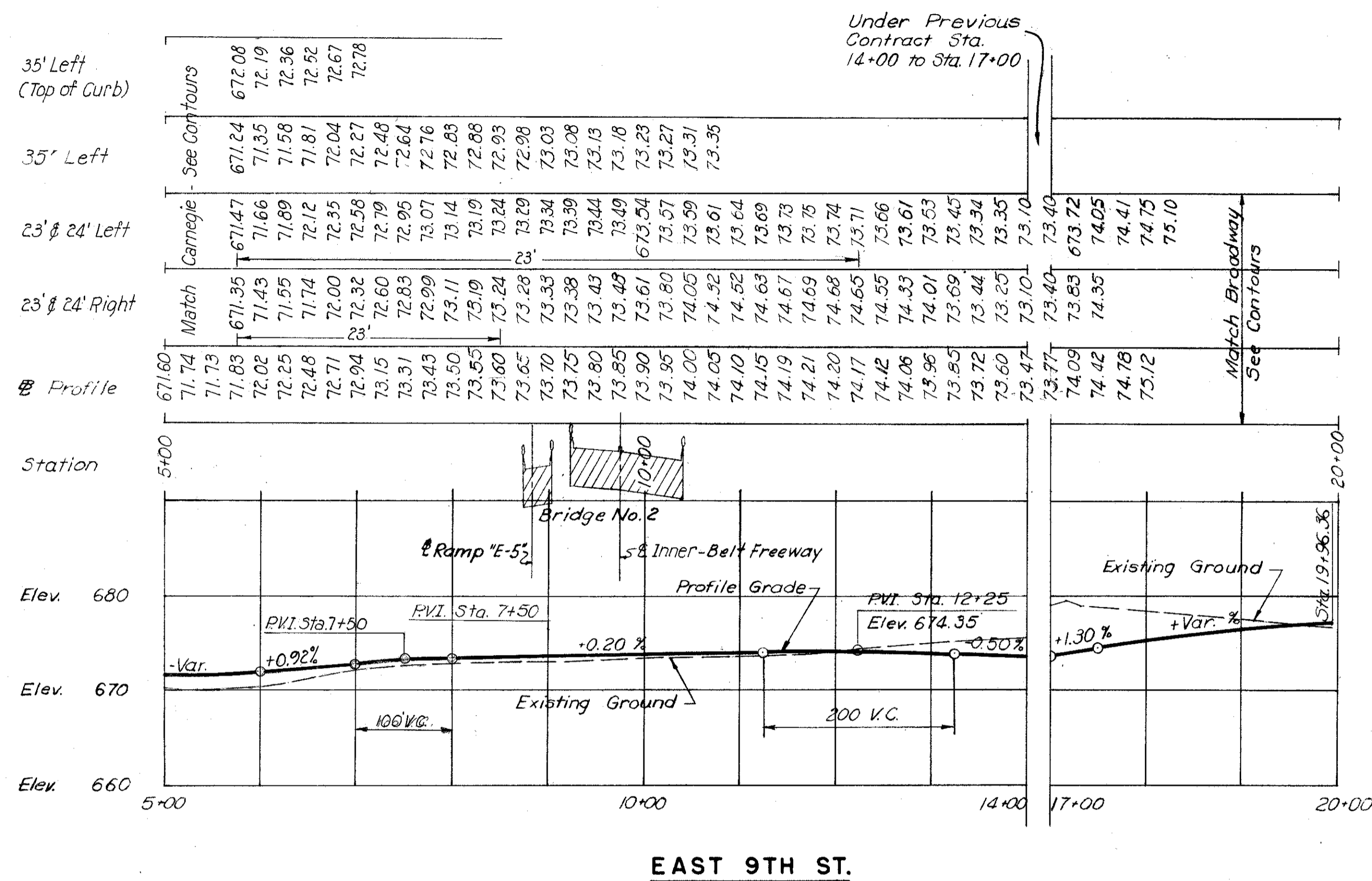


CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29  
PROFILES



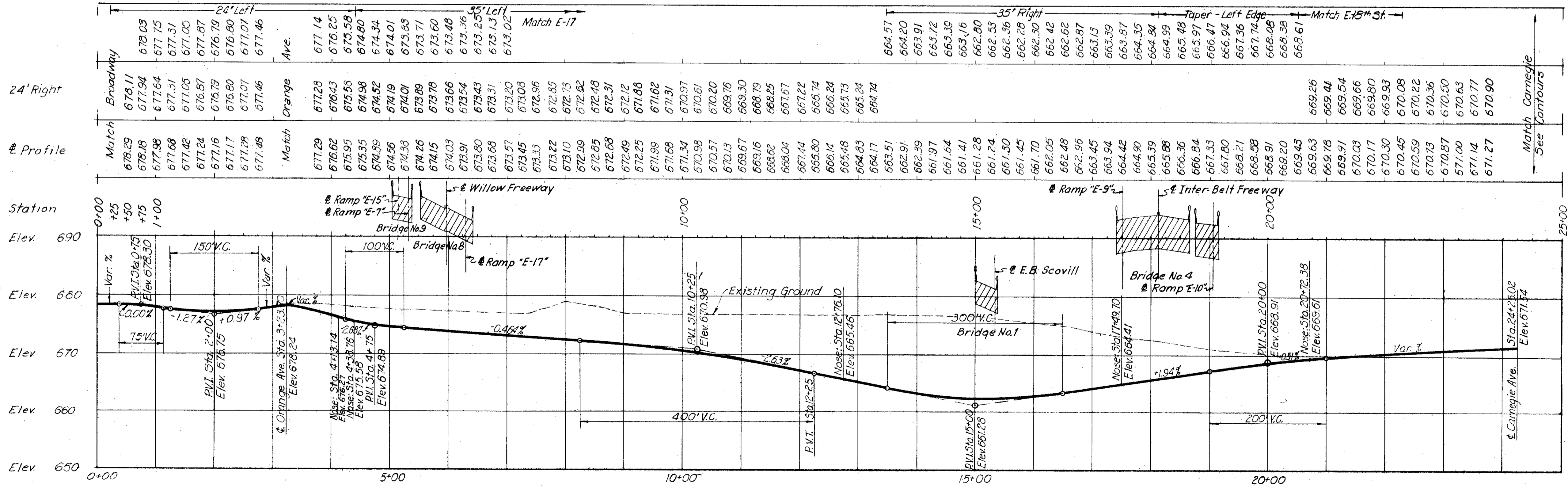
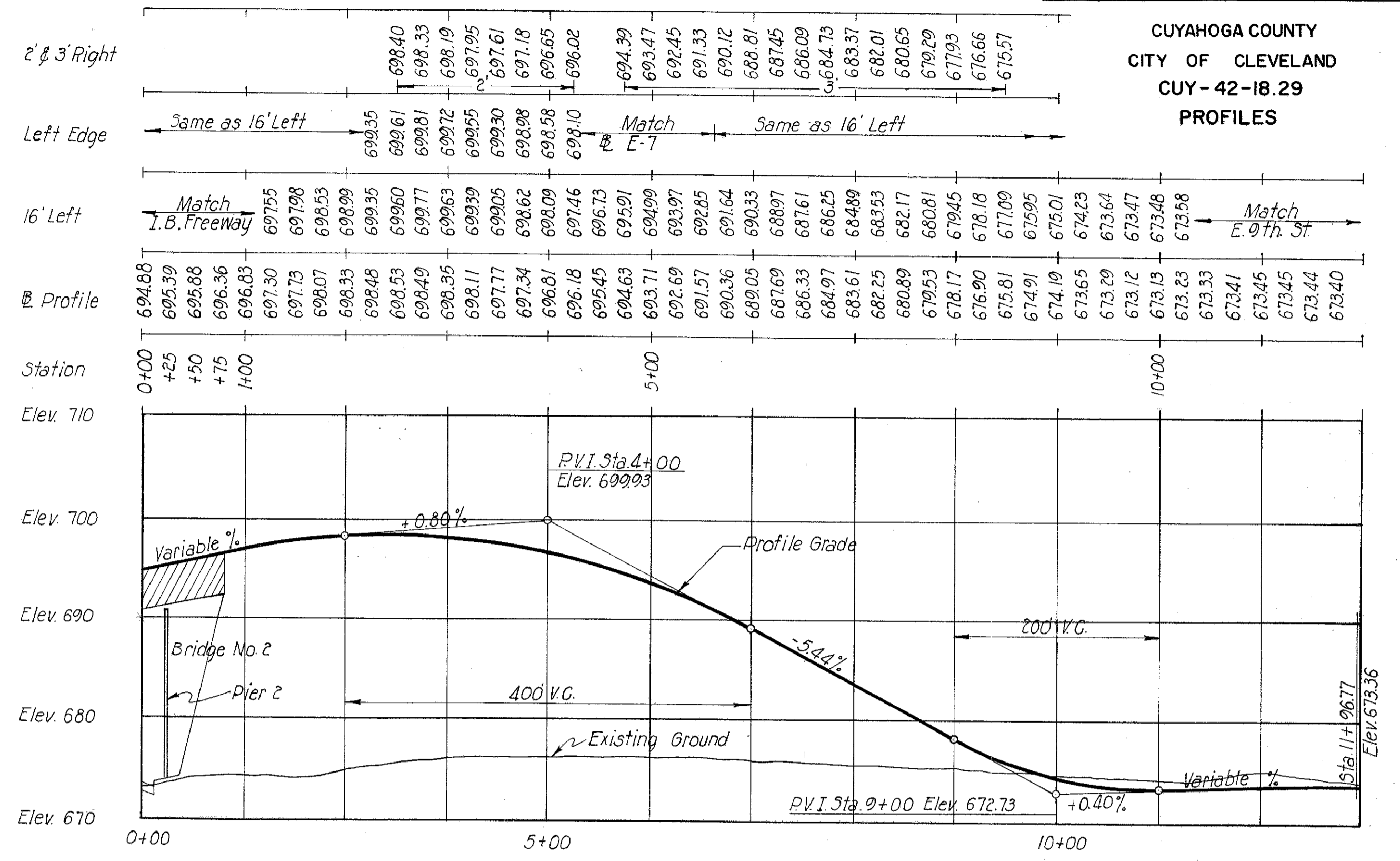
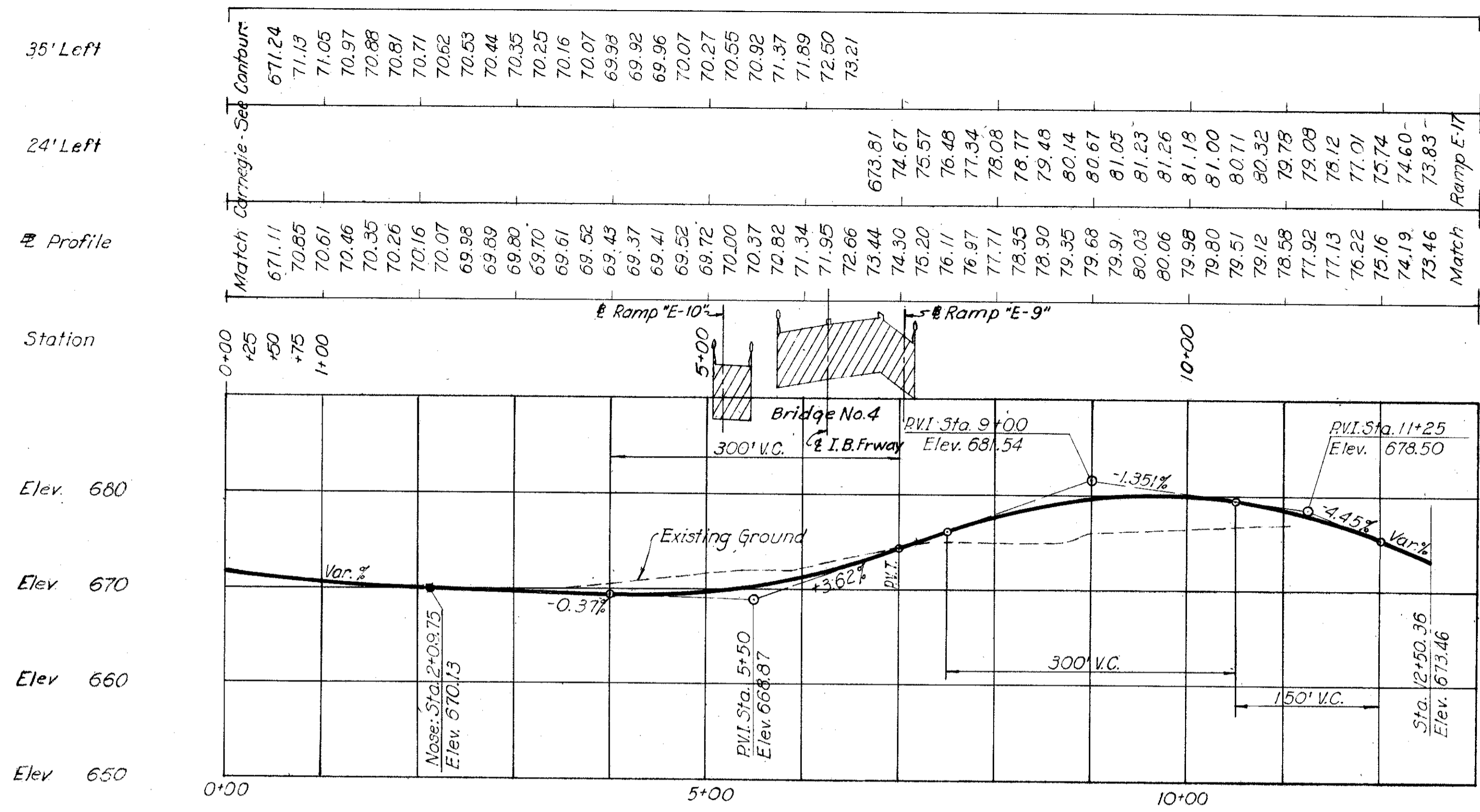
SCALE: 1" = 10' Vert, 1" = 100' Hor  
MADE DPH DATE 7-16-58 HOWARD, NEEDLES, TAMMEN & BERGENOFF  
TRCD. DATE CONSULTING ENGINEERS  
CKD. G.M.G. DATE 12-18-58 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 24

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
PROFILES

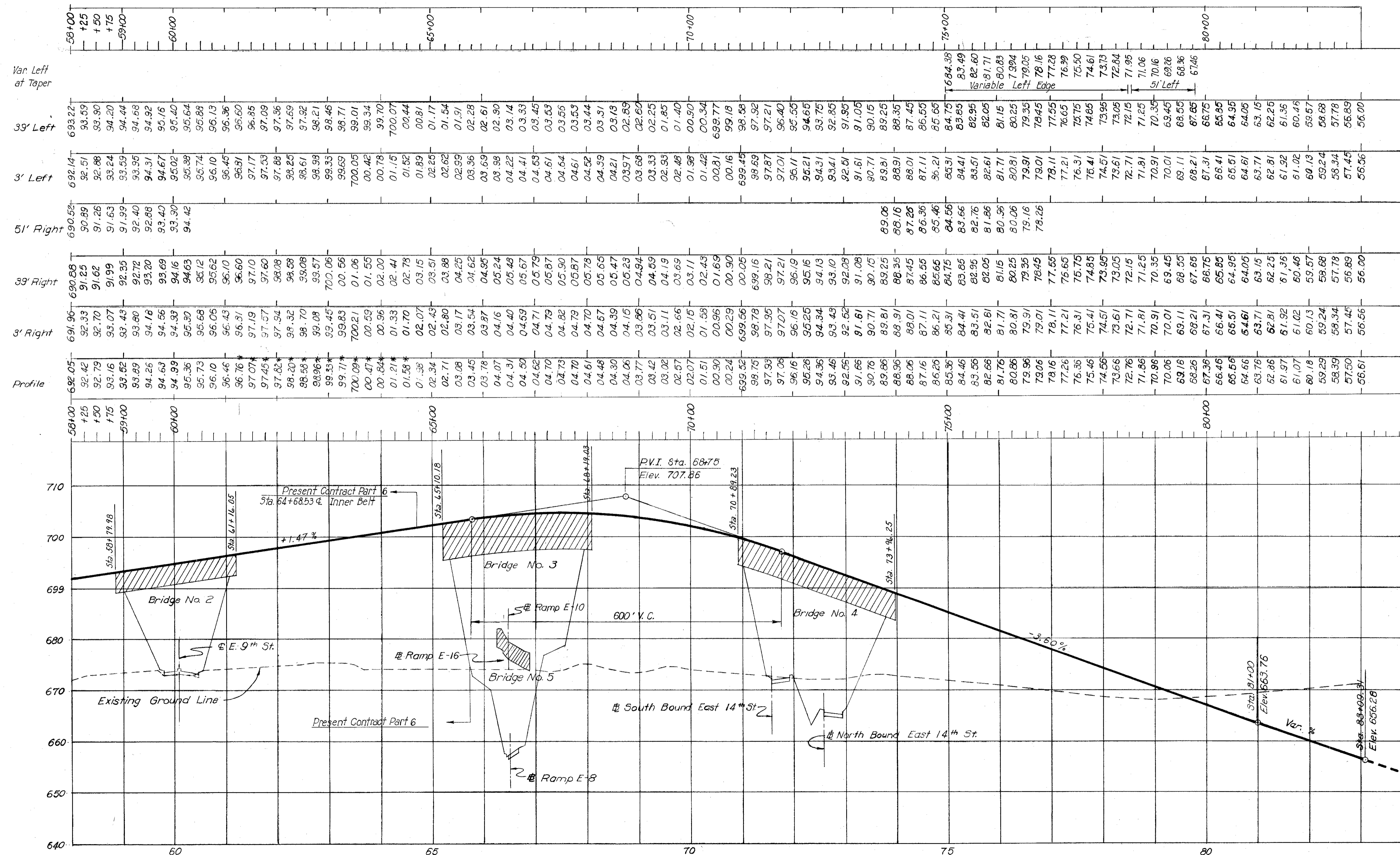


SCALE 1"=10' Ver. 1"=100' HOP.  
MADE D.B.H. DATE 7-4-58 HOWARD, NEEDLES, TAMMEN & BERGENOFF  
CONSULTING ENGINEERS  
TRCD. DATE KANSAS CITY CLEVELAND NEW YORK  
CKD. G.M.C. DATE 2-26-59 914 SHEET 25

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
PROFILES



CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
PROFILES



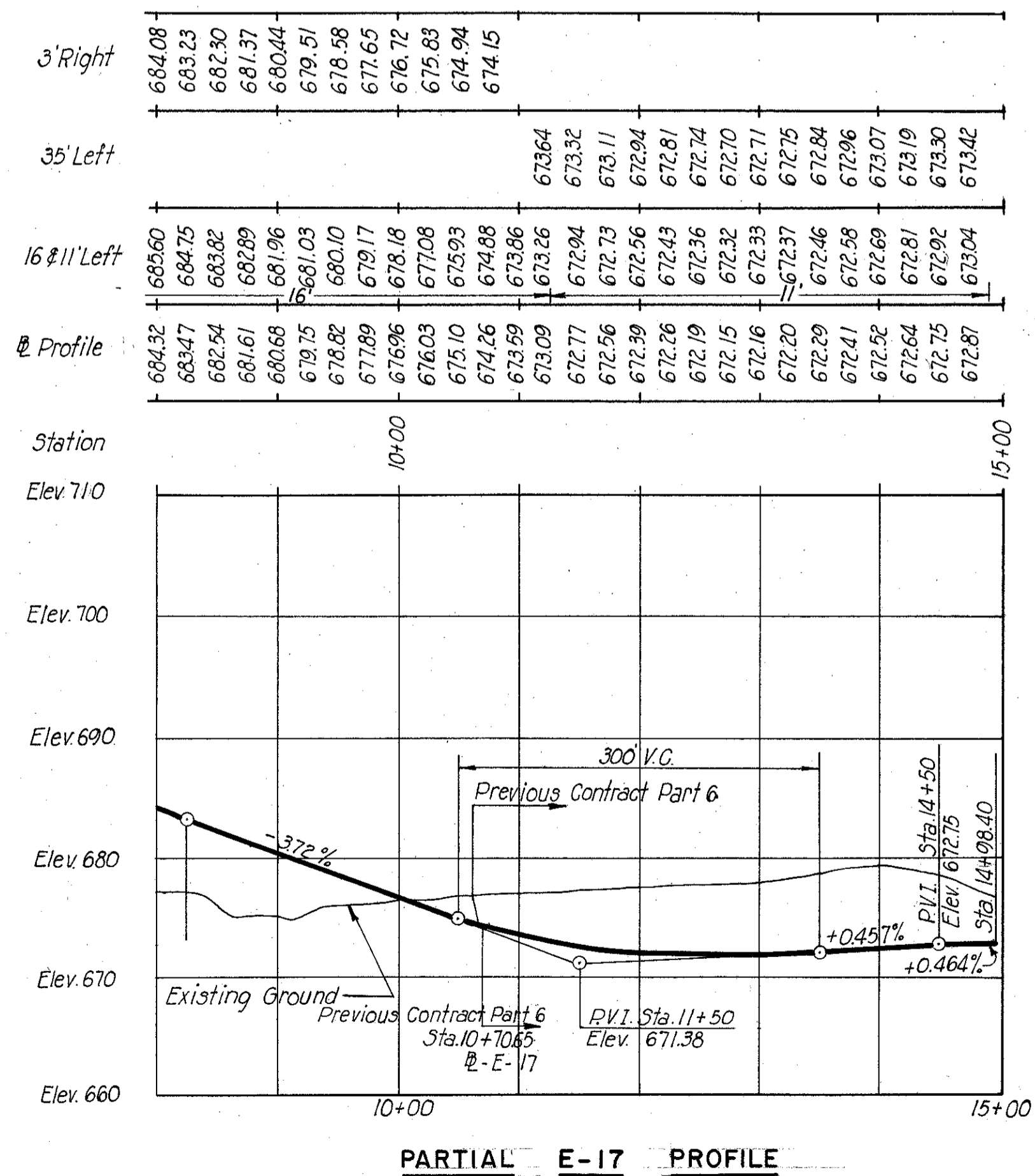
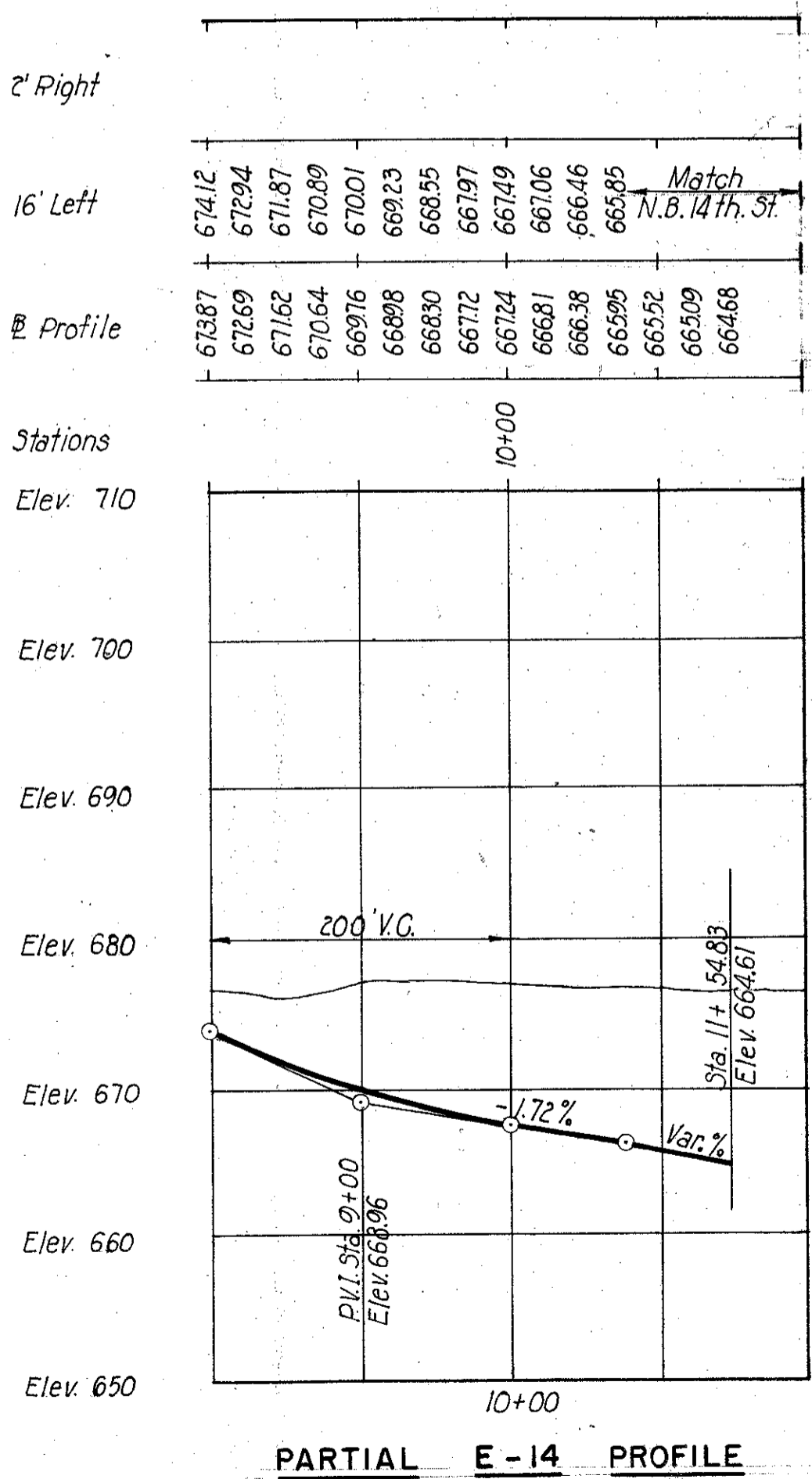
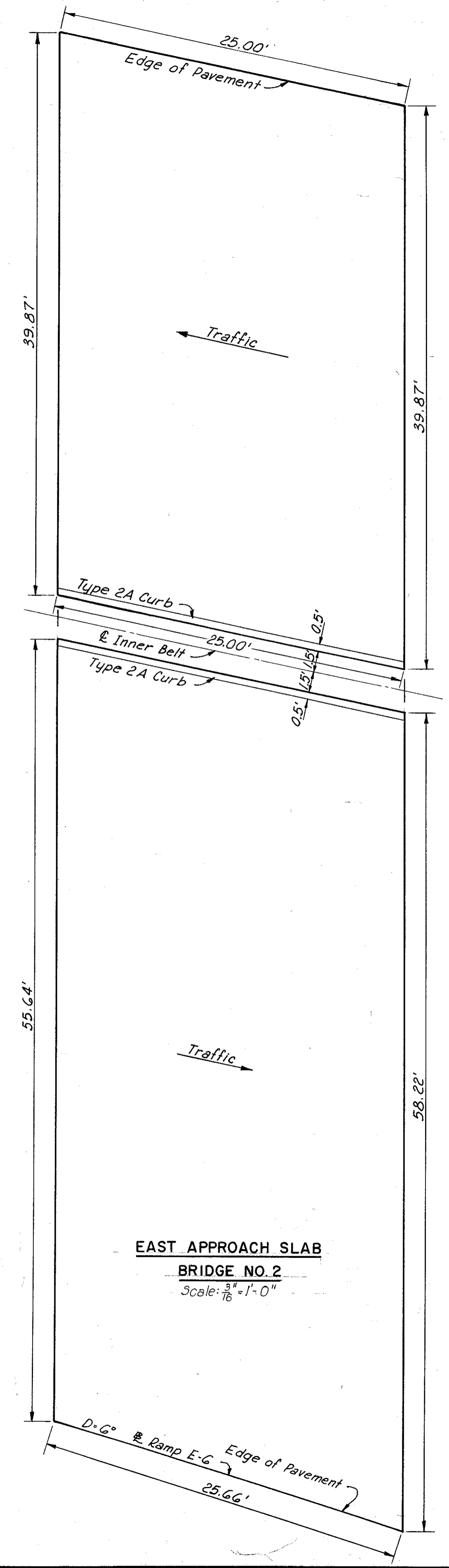
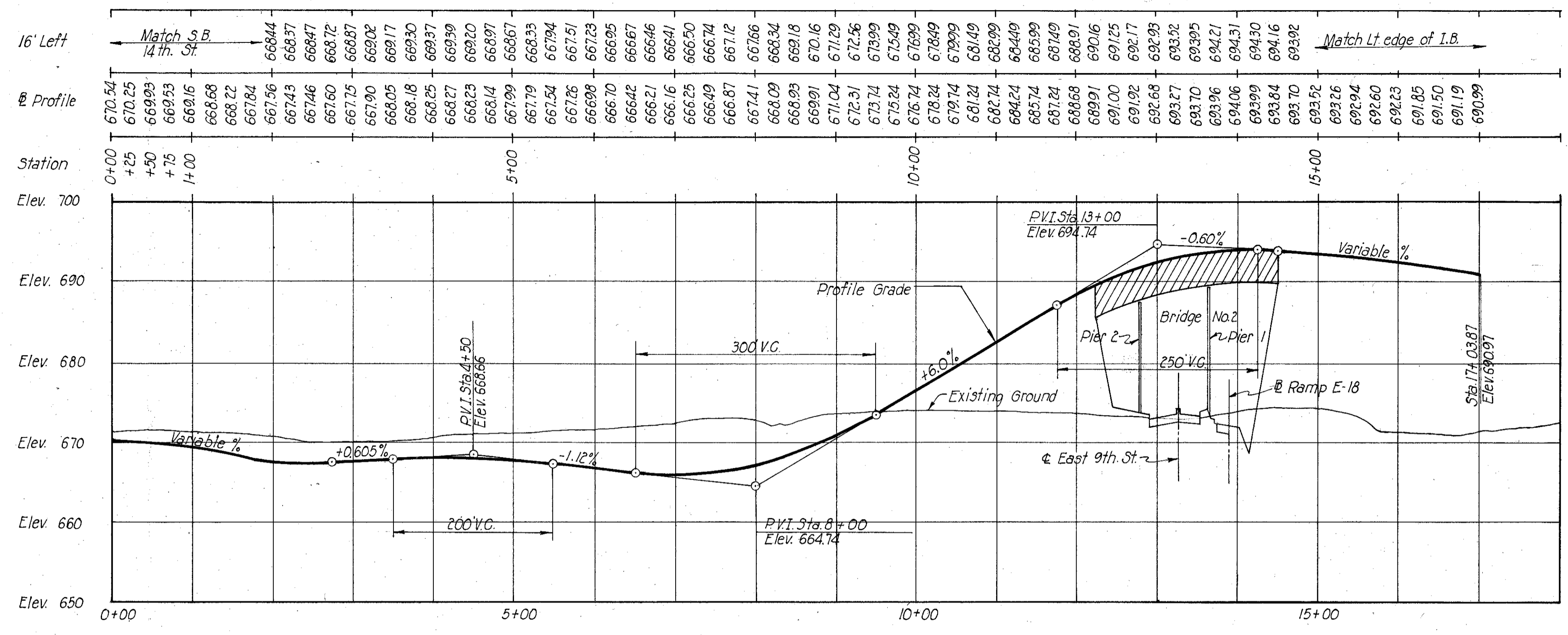
INNER BELT

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

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

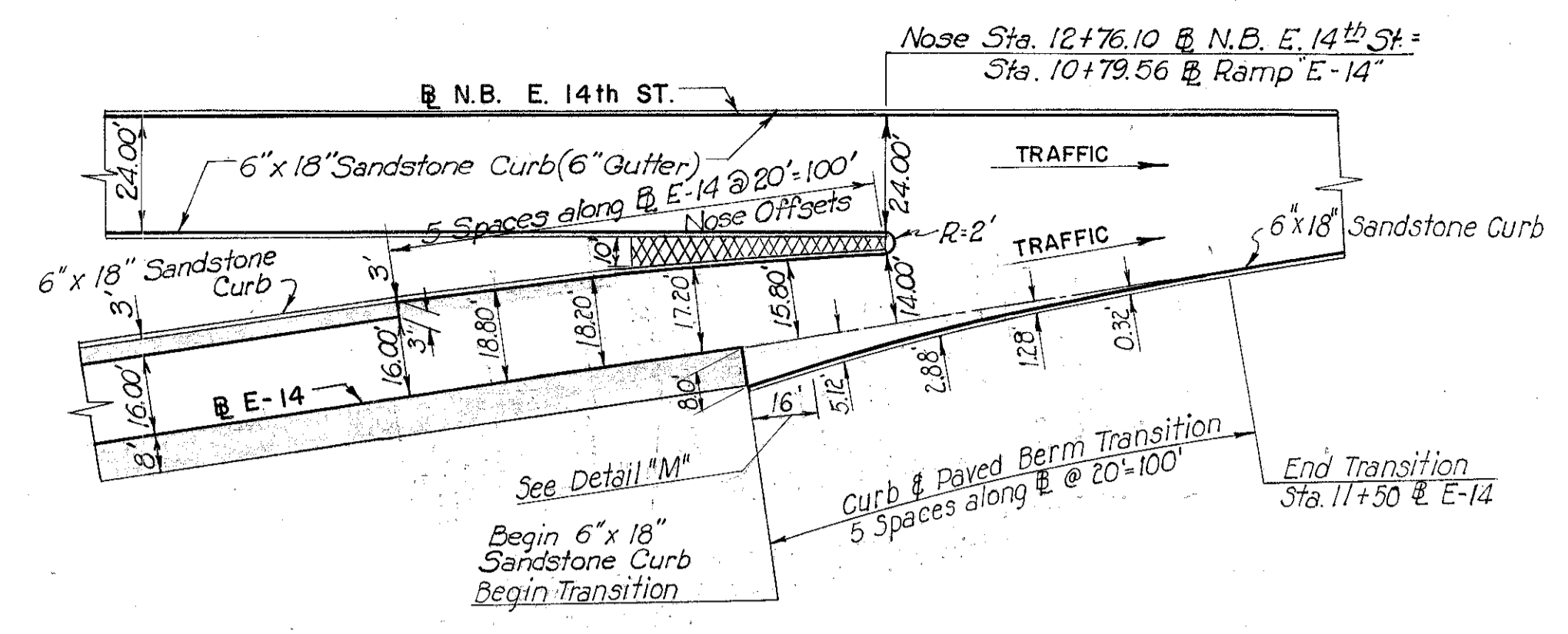
27A  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
PROFILES &  
APPROACH SLABS

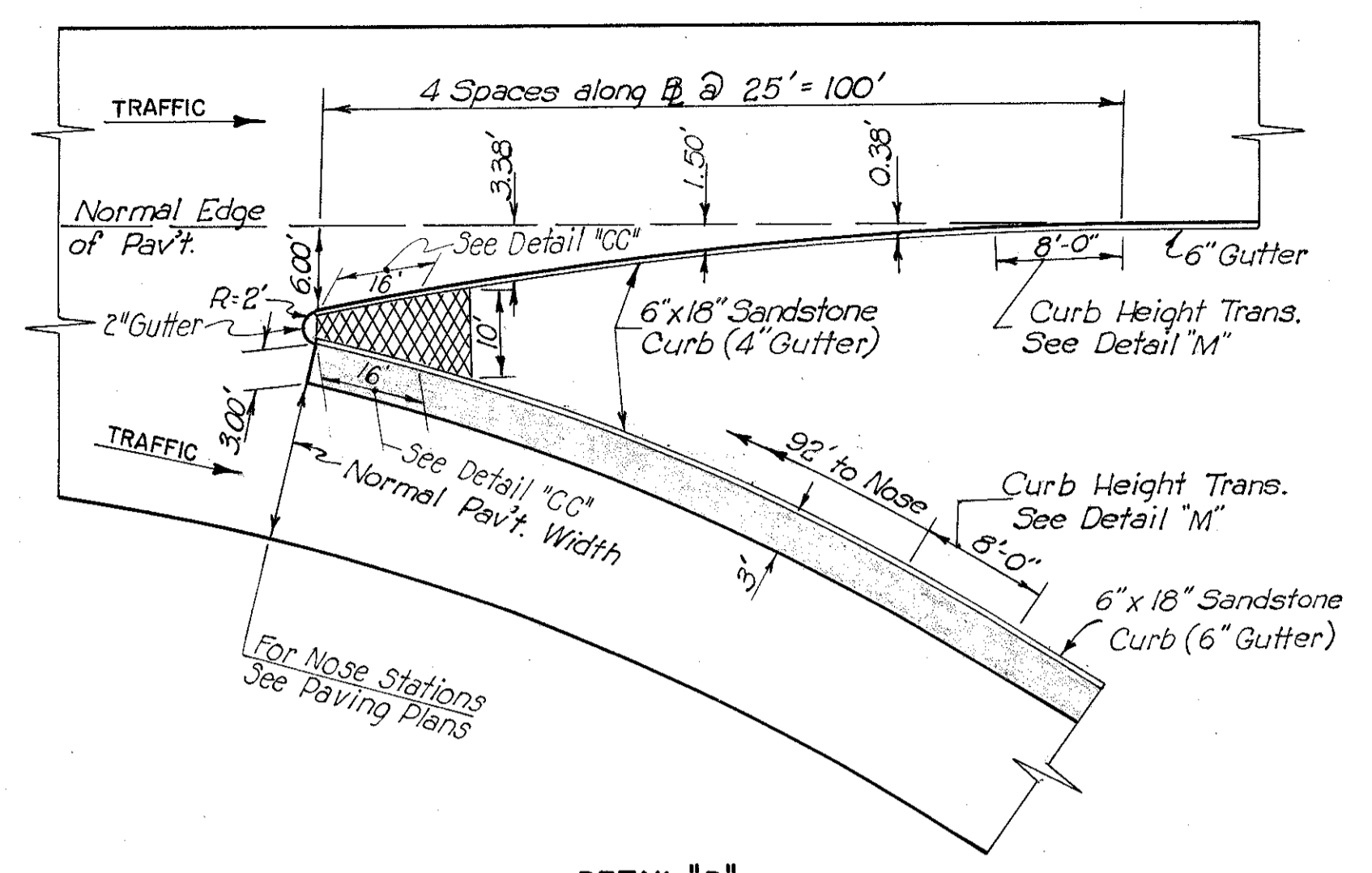


SCALE Hor. 1"=100' Vert. 1"=10'  
MADE J.L.C. DATE 2.14.59 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD. R.P. DATE 2.23.59 CONSULTING ENGINEERS  
CKD. S.M.B. DATE 2.15.59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 27A

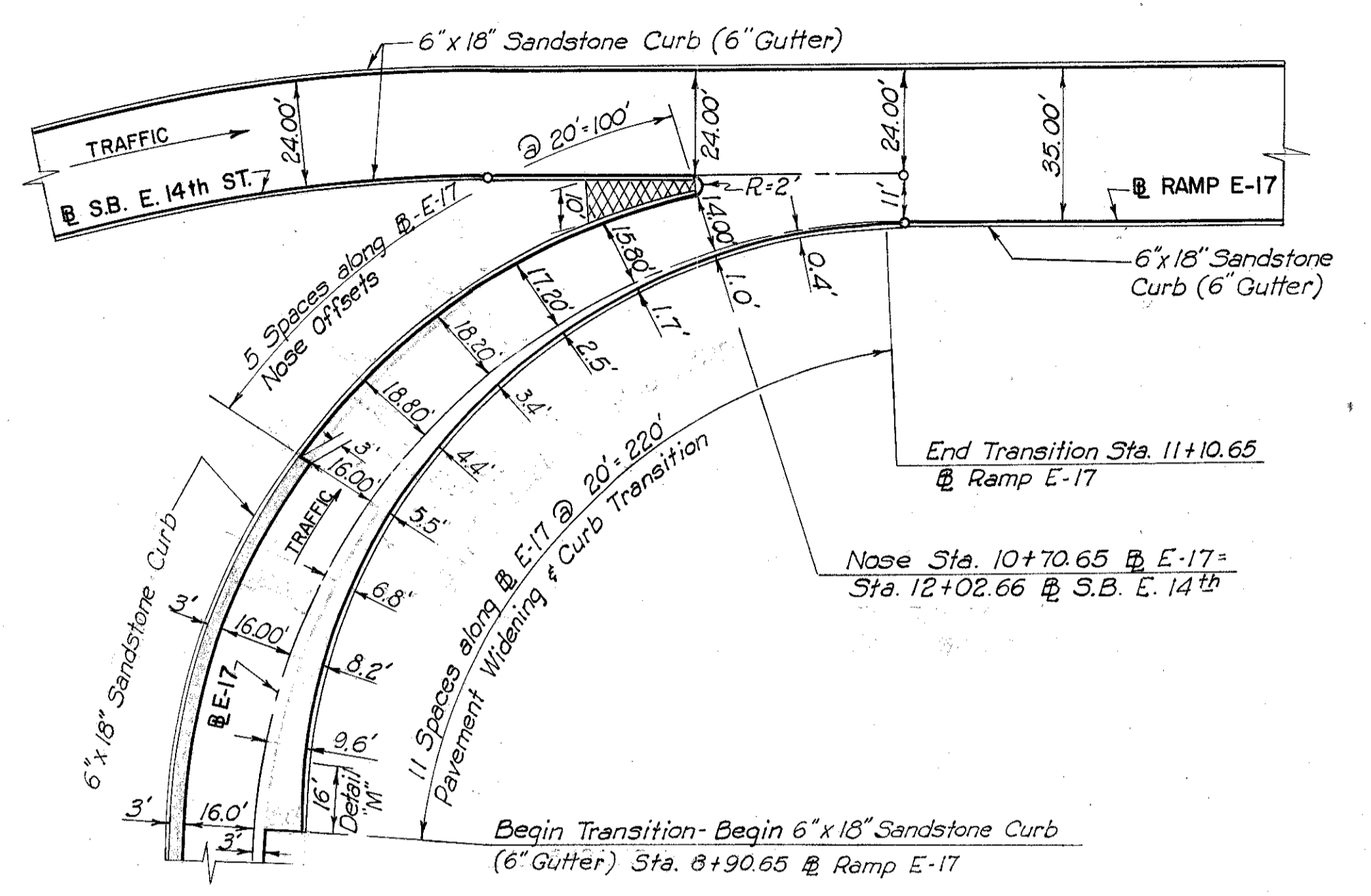
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29



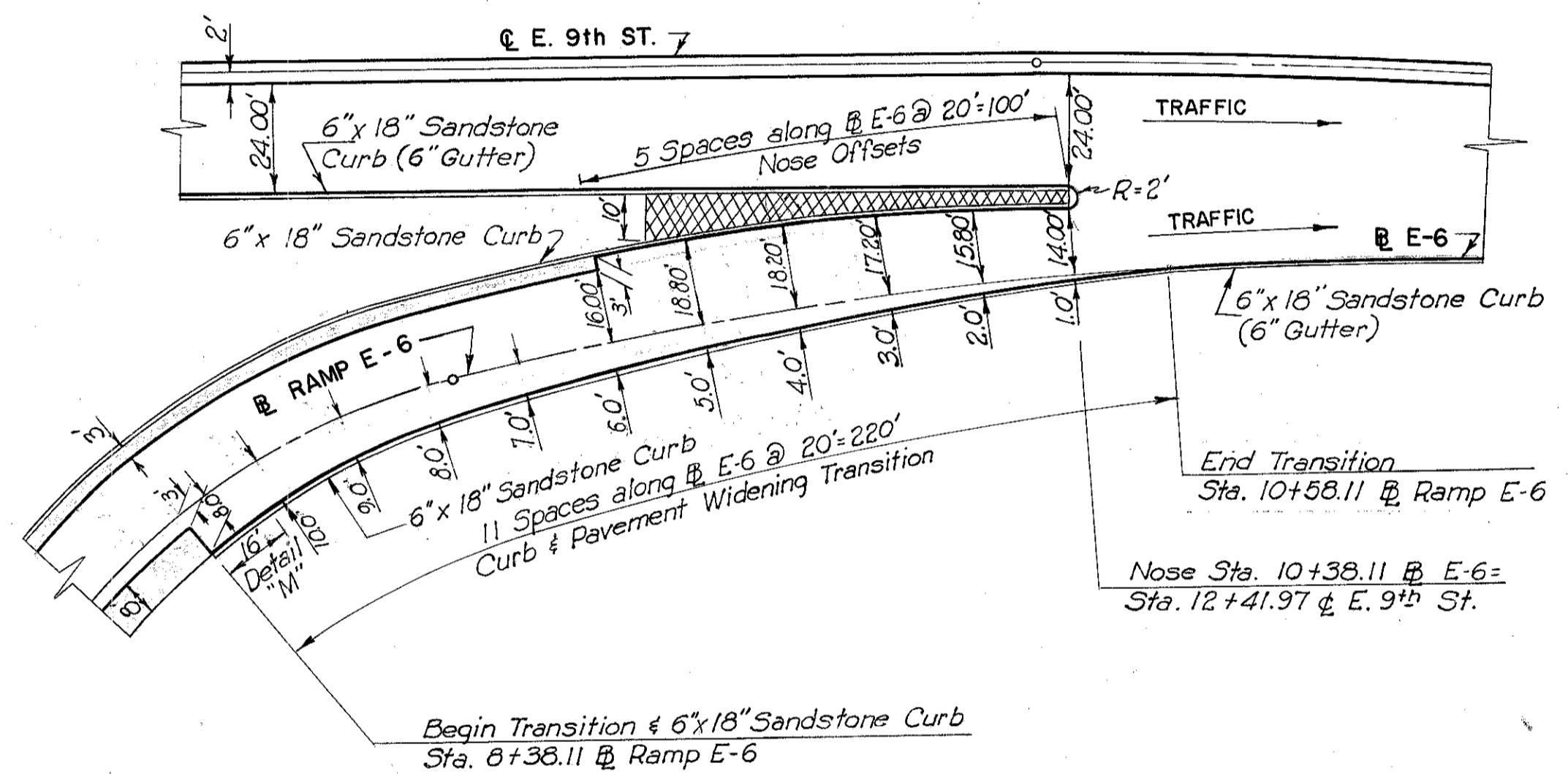
DETAIL "A"  
Not to Scale



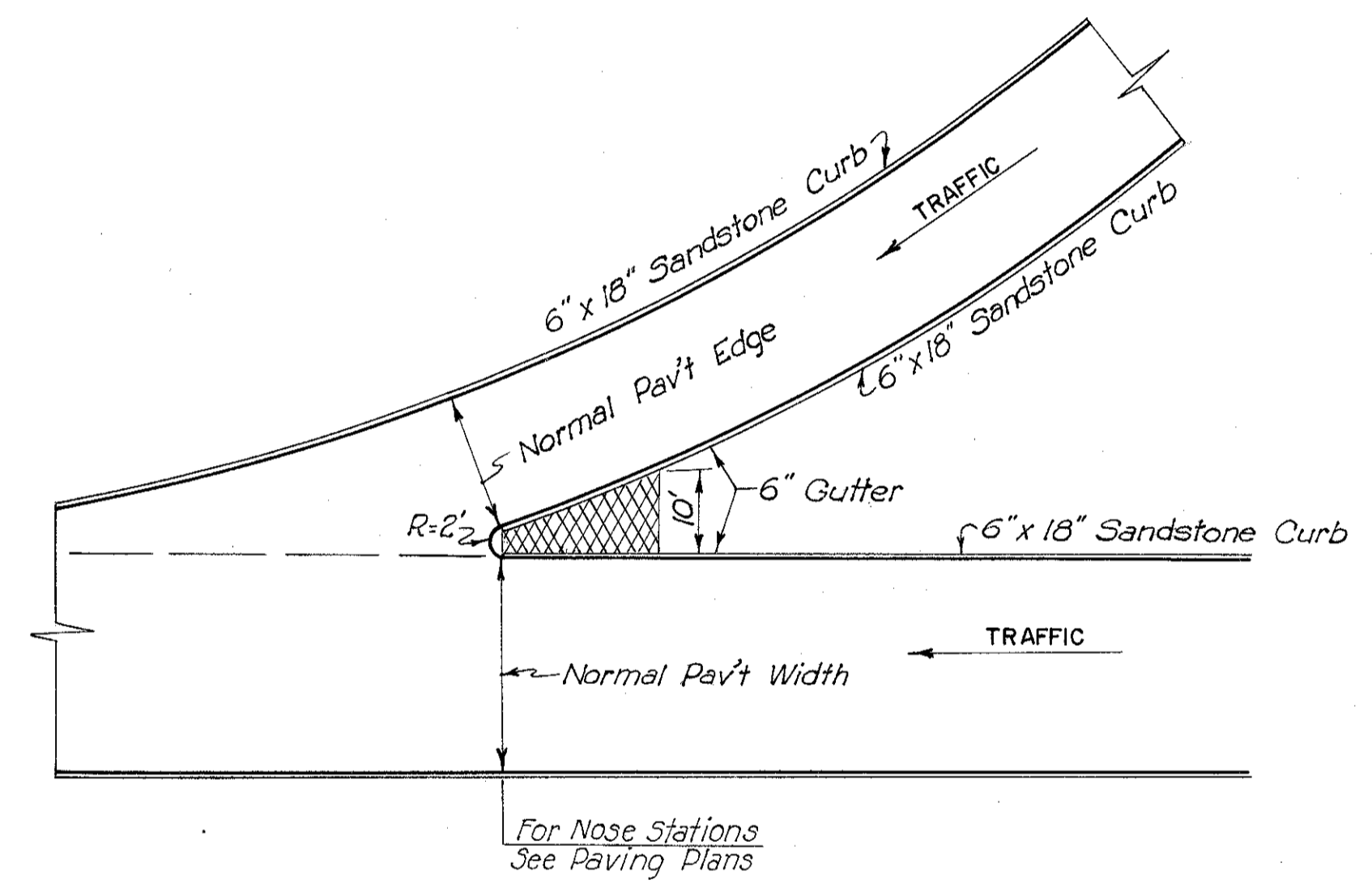
DETAIL "D"



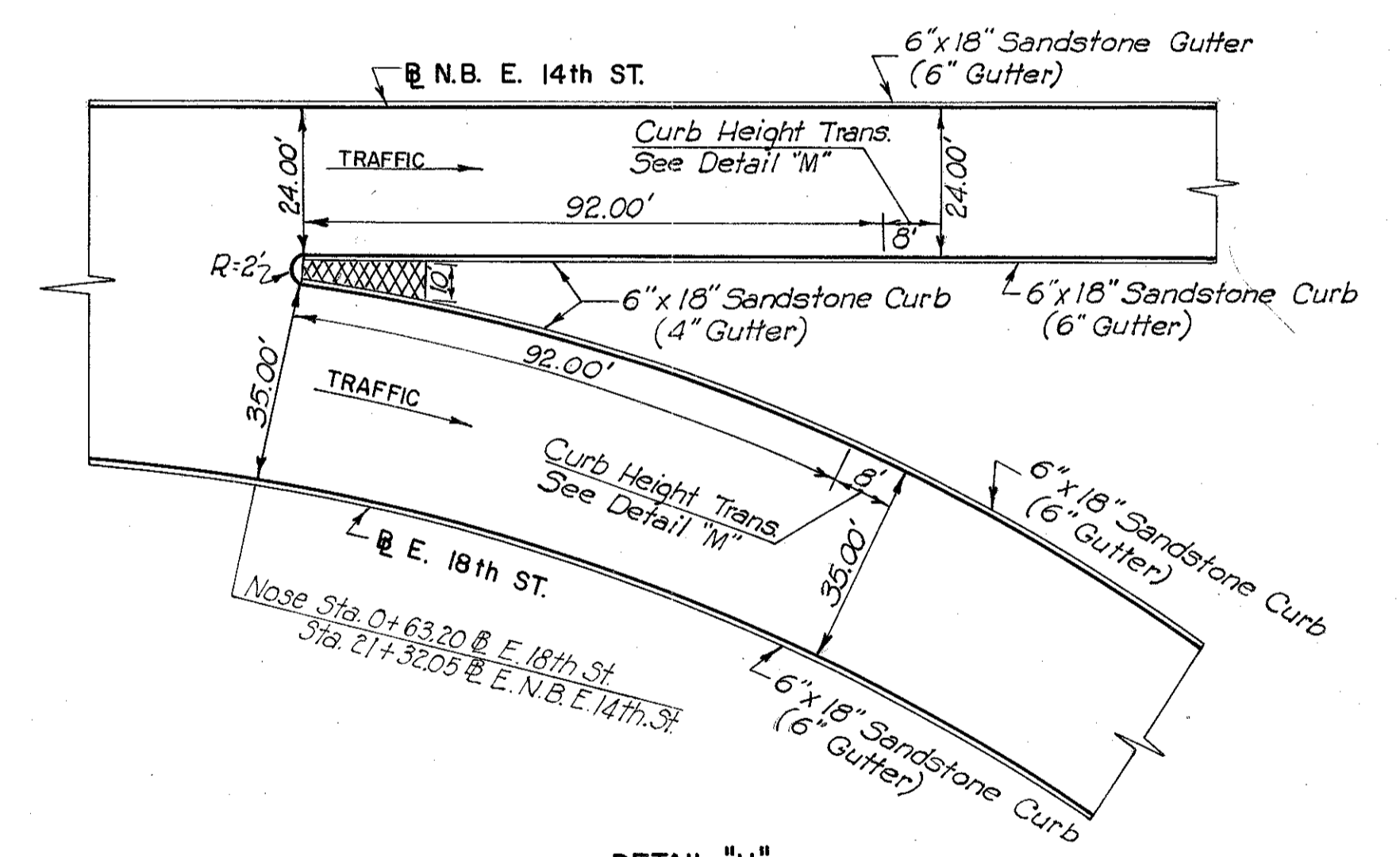
DETAIL "G"



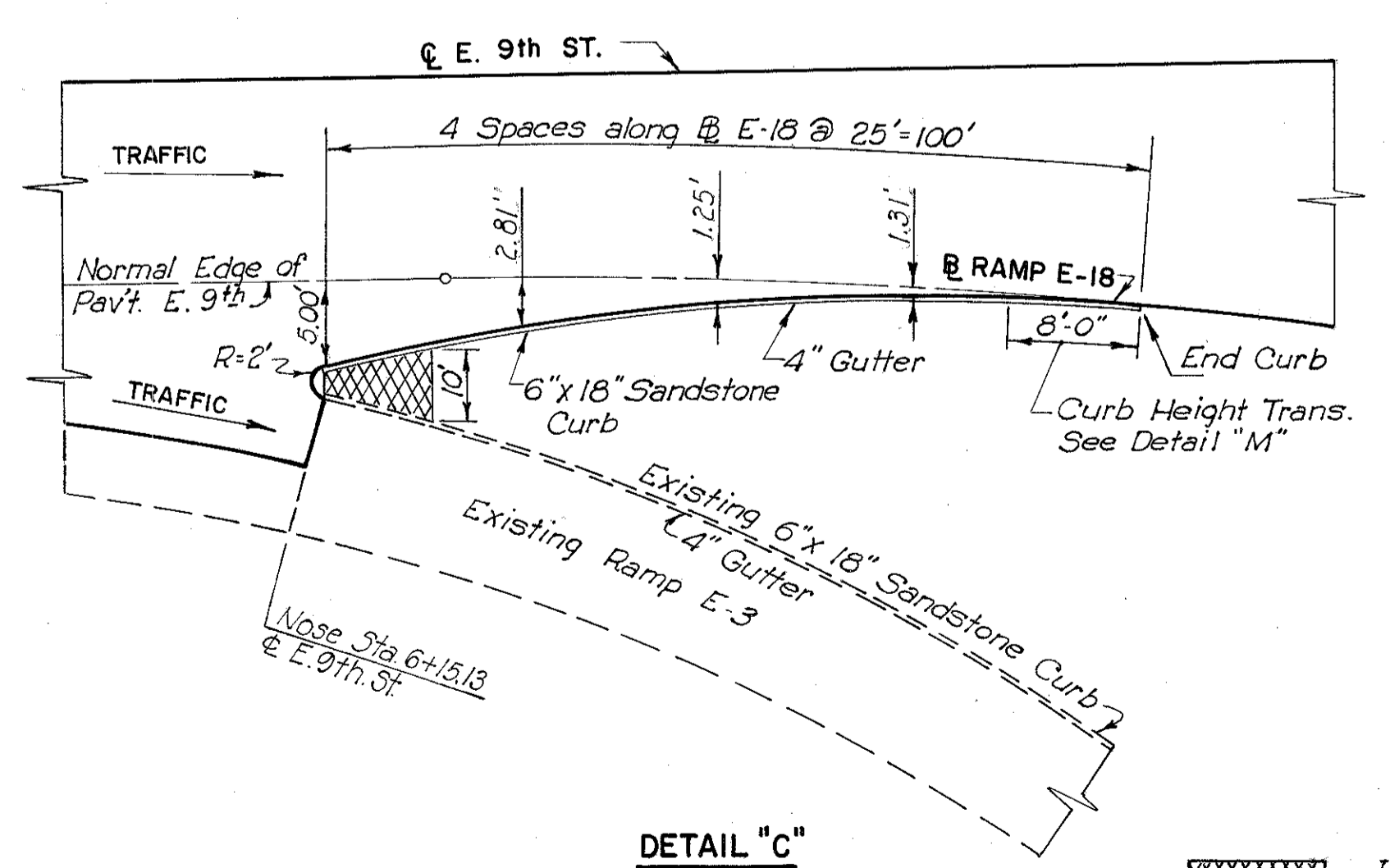
DETAIL "B"  
Not to Scale



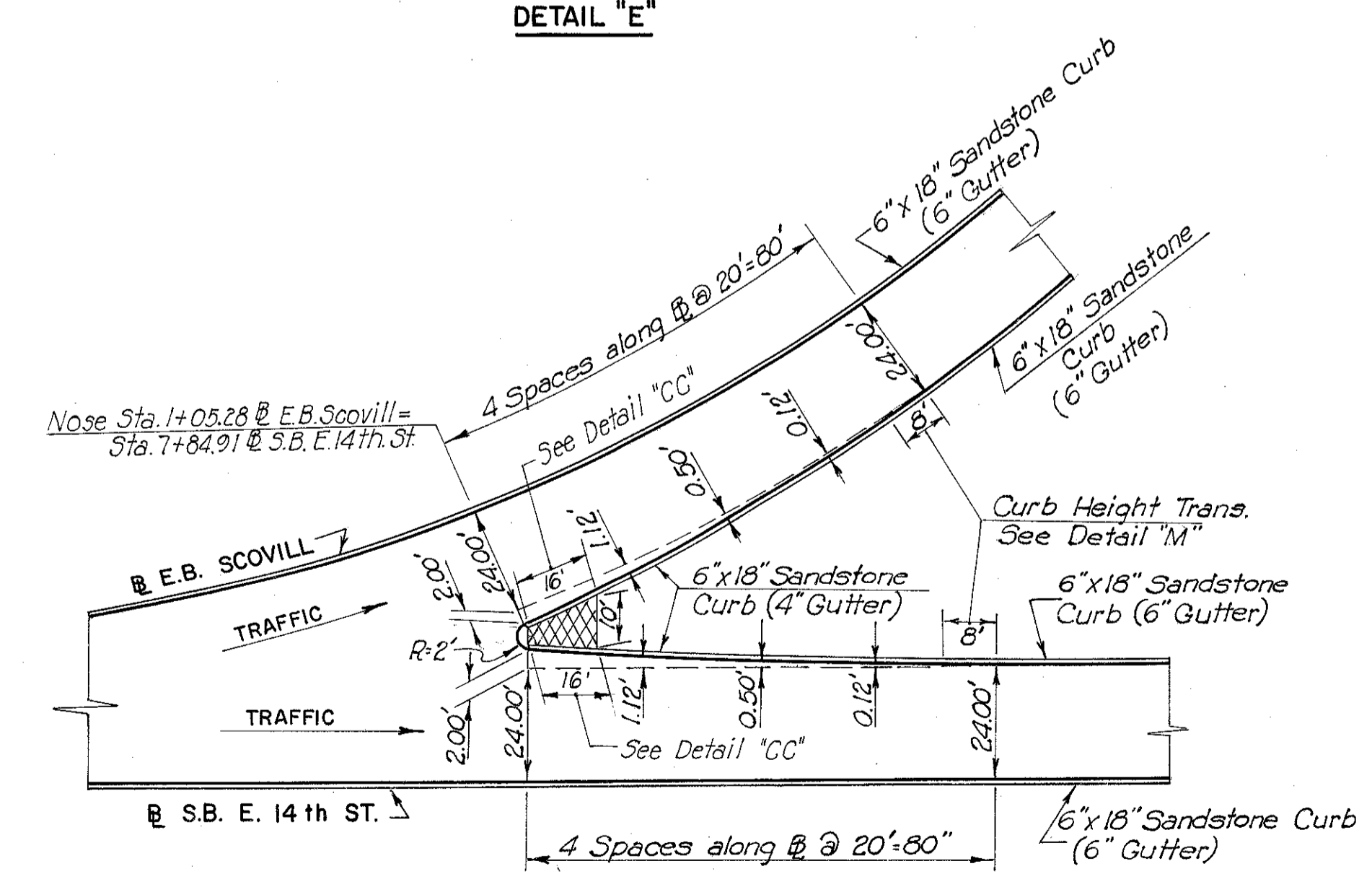
DETAIL "E"



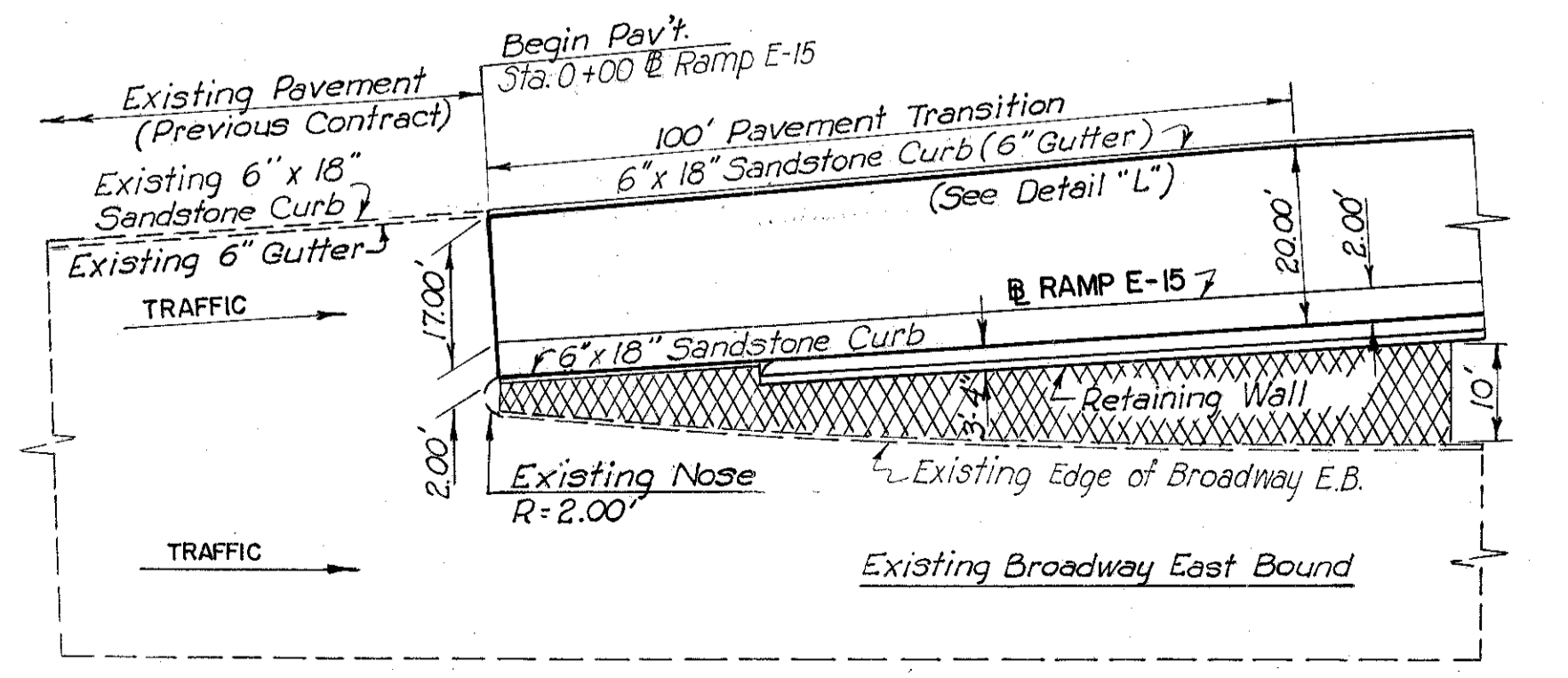
DETAIL "H"



DETAIL "C"



DETAIL "F"



DETAIL "J"

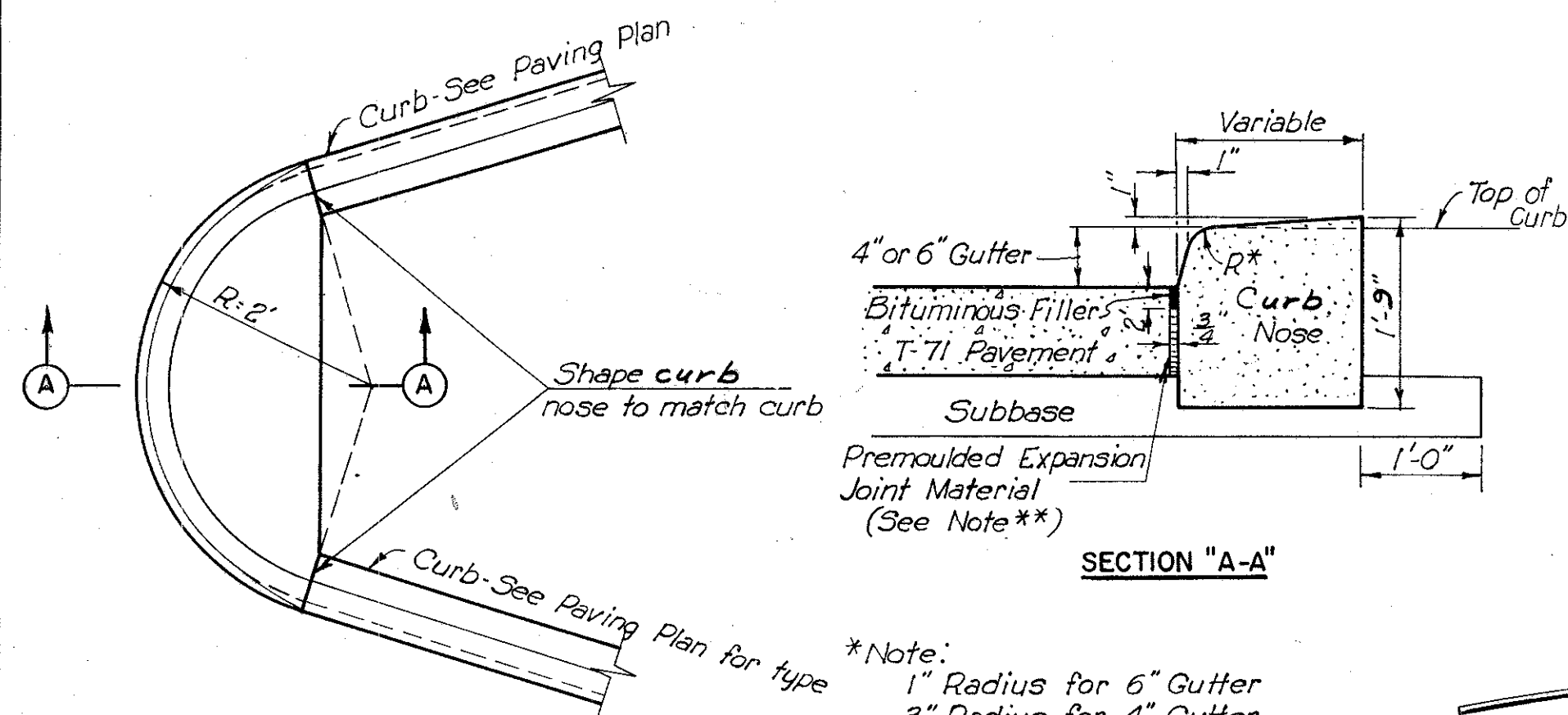
NOSE DETAILS

LEGEND

- I-21 Standard Type I Portland Cement Concrete Median Pavement
- Paved Berm

SCALE Not to Scale  
MADE I.E.S. DATE 8-2-59  
TRCD. B.M. DATE 9-2-59  
CKD. J.L.C. DATE 11-2-59  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
SHEET

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



**\*\* Note:**  
The three quarter (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.

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

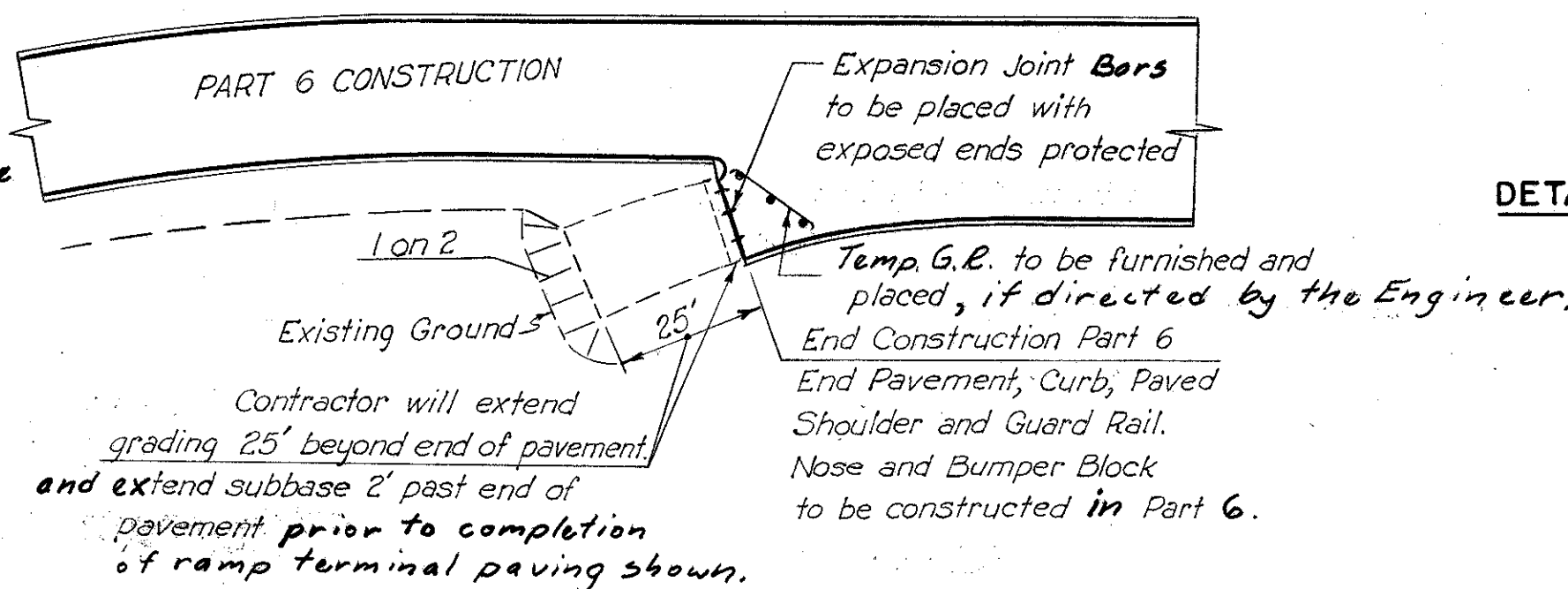
**DETAIL "K"**

**CURB TERMINATION AT NOSE AND BUMPER BLOCK**

Scale: 3/4" = 1'-0"

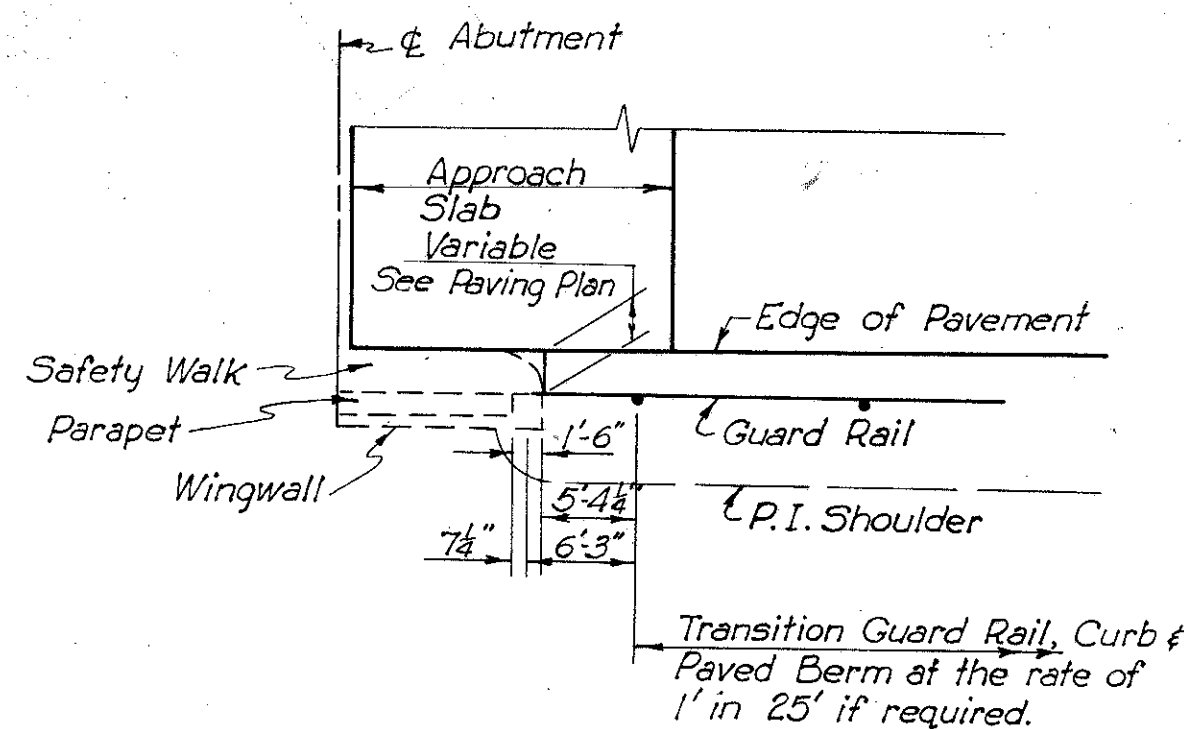
**PLAN**

**NOTE: FOR JOINT DETAIL AT GUARD RAIL POSTS IN CONCRETE MEDIAN, SEE SHEET N2 4 OF PART 7-B.**



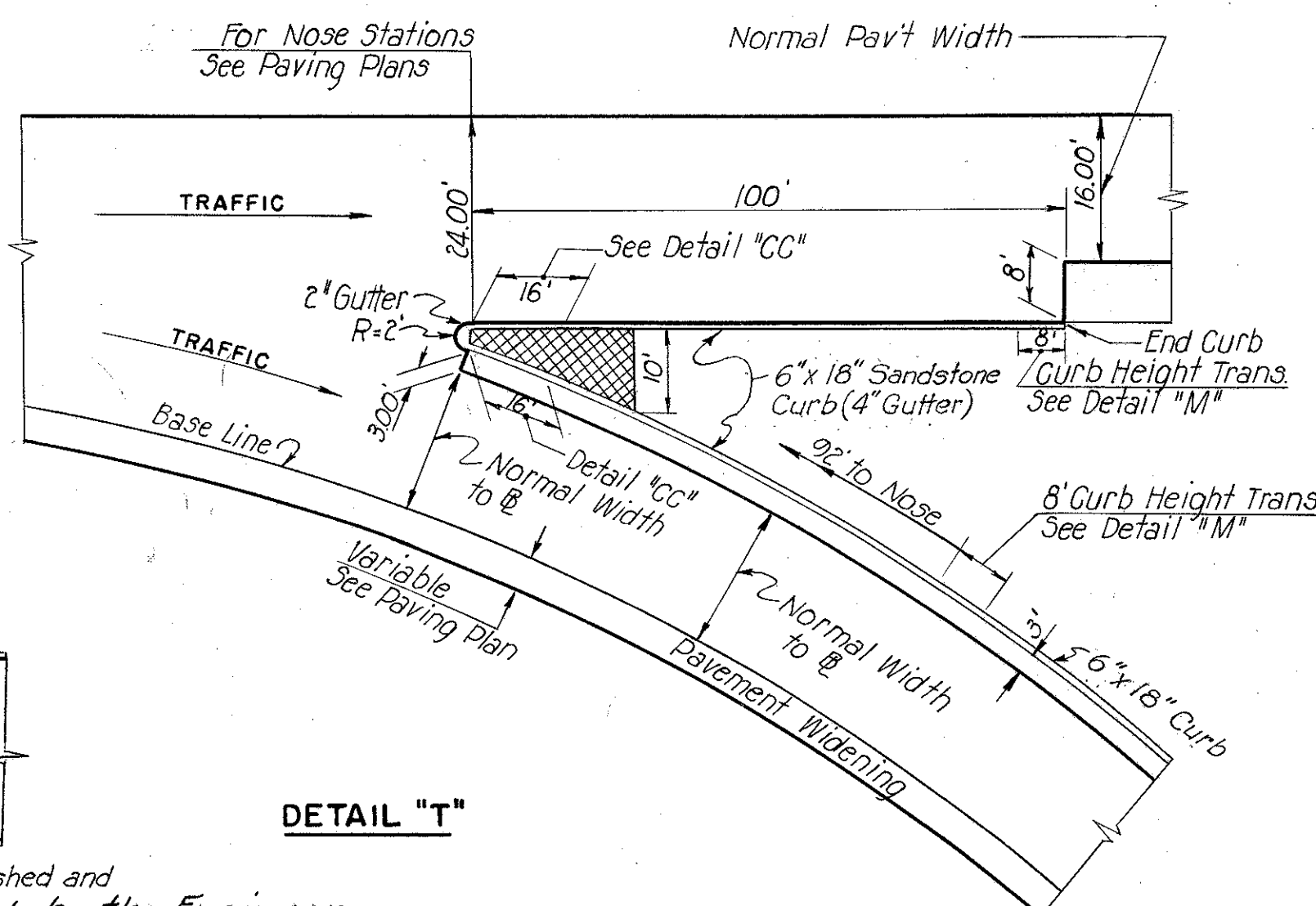
**TYPICAL TERMINATION OF CONSTRUCTION**

**AT NOSE**

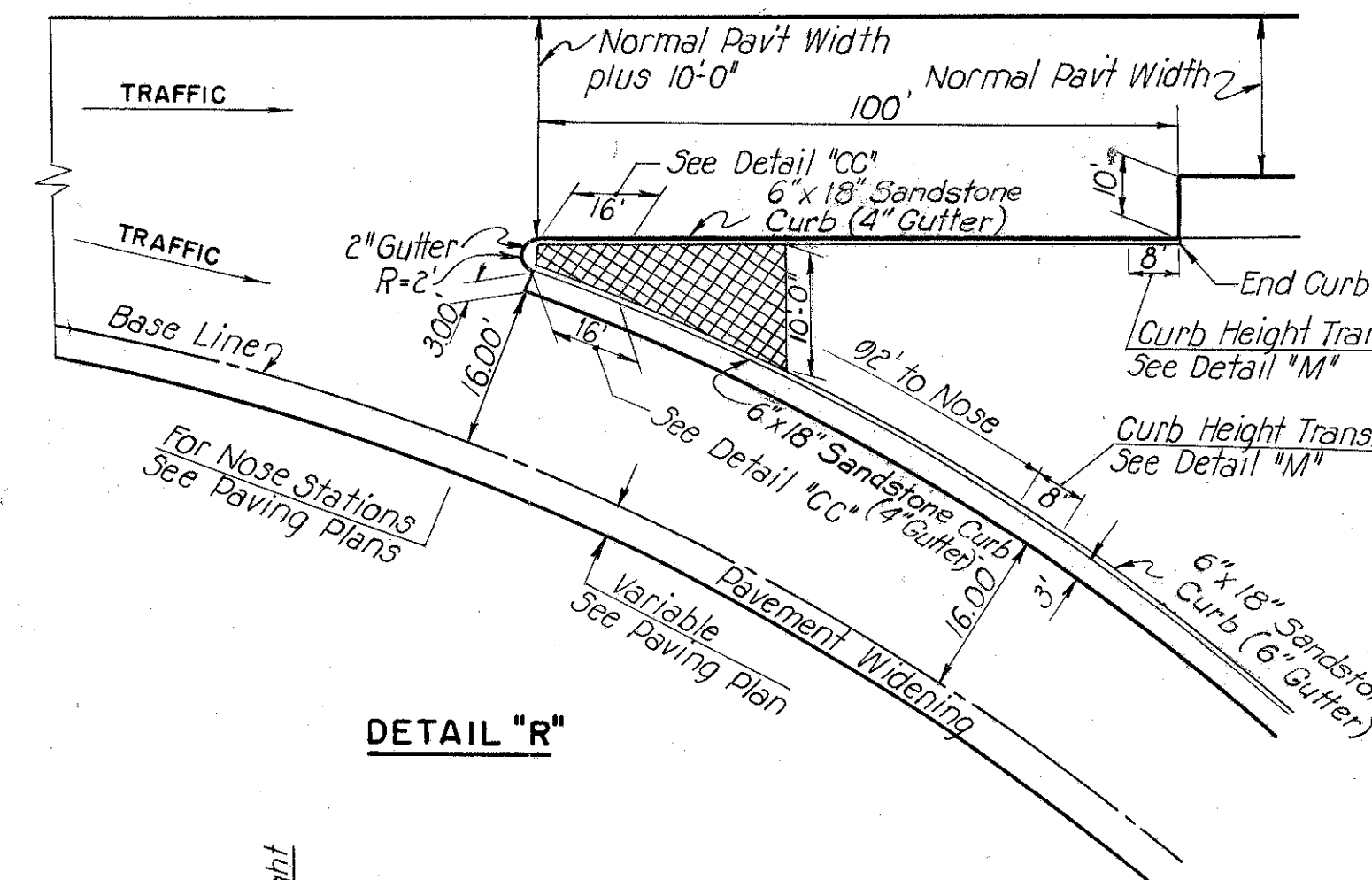


**GUARD RAIL TREATMENT AT TERMINAL POST**

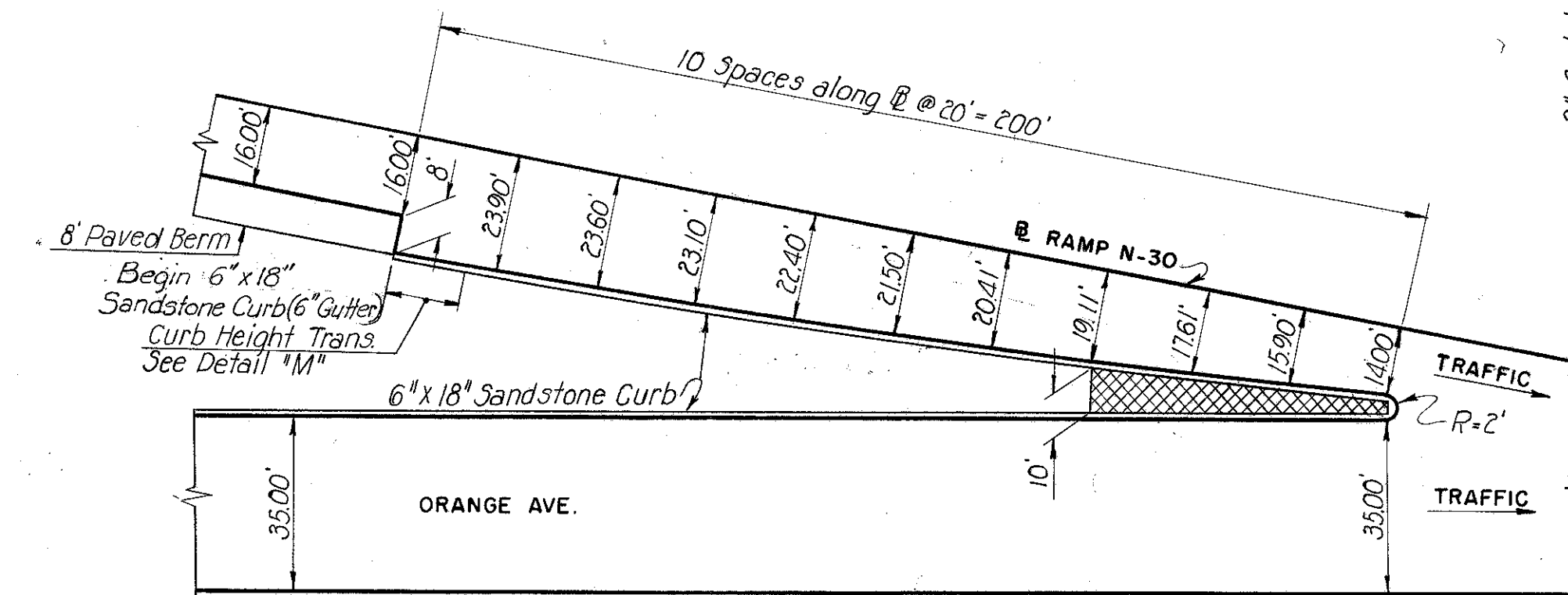
Not to Scale:



**DETAIL "T"**

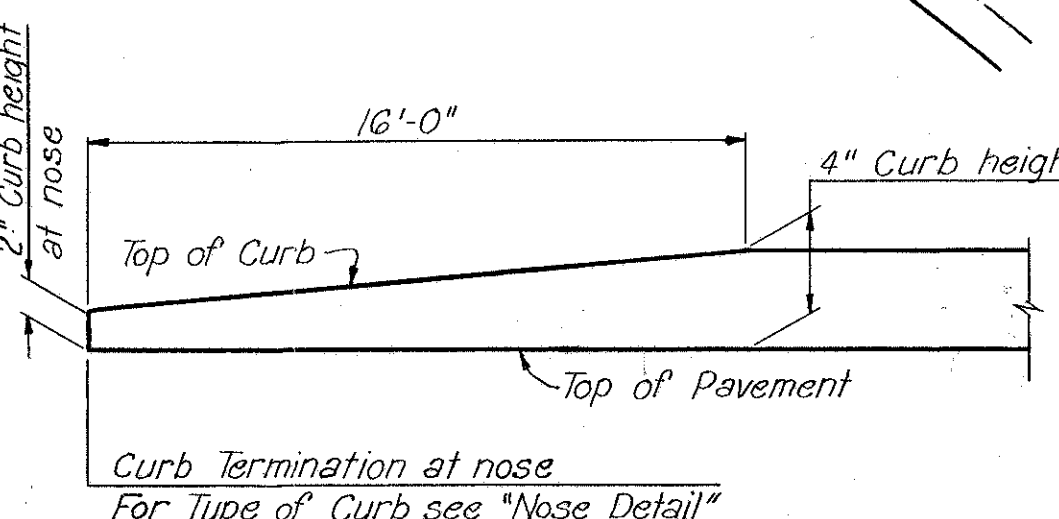


**DETAIL "R"**



**DETAIL "Z"**

Not to Scale



**DETAIL "C"**

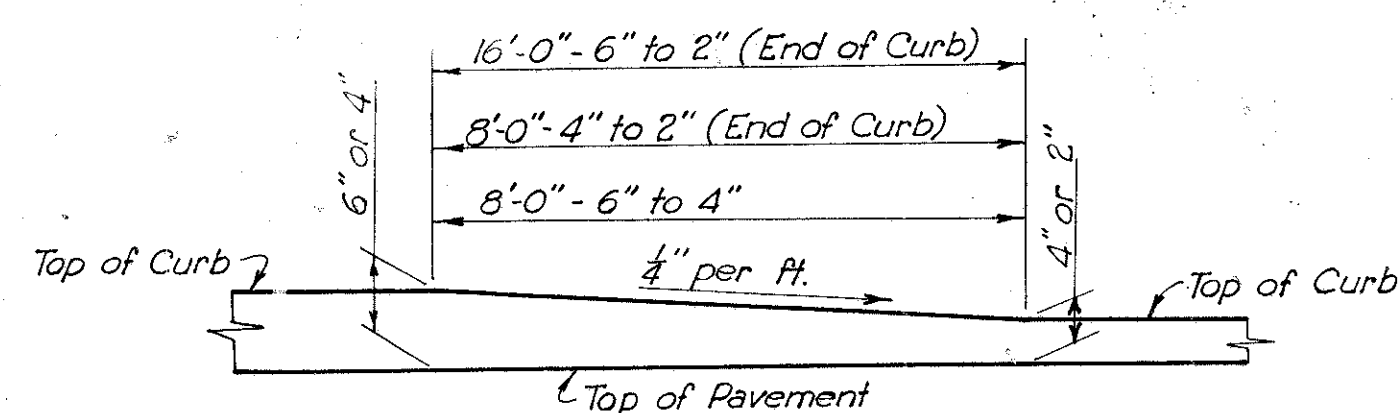
**CURB HEIGHT TRANSITION AT NOSE**

**DIVERGING RAMPS & LANES**

Not to Scale

**LEGEND**

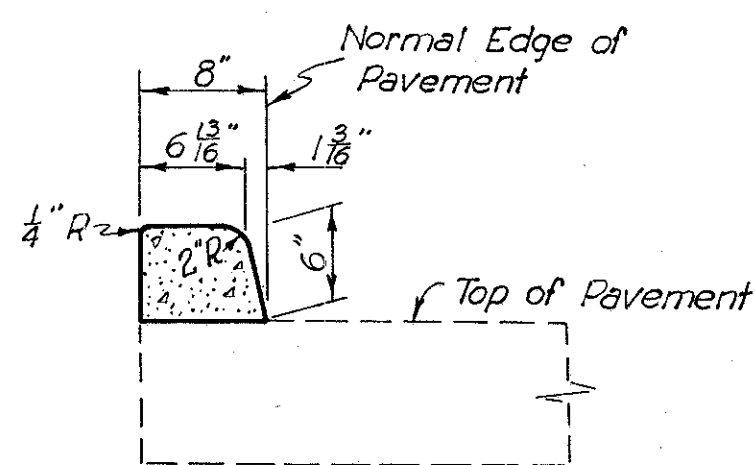
- 1-21 Standard Type 1 Portland Cement Concrete Median Pavement.
- Paved Berm.



**DETAIL "M"**

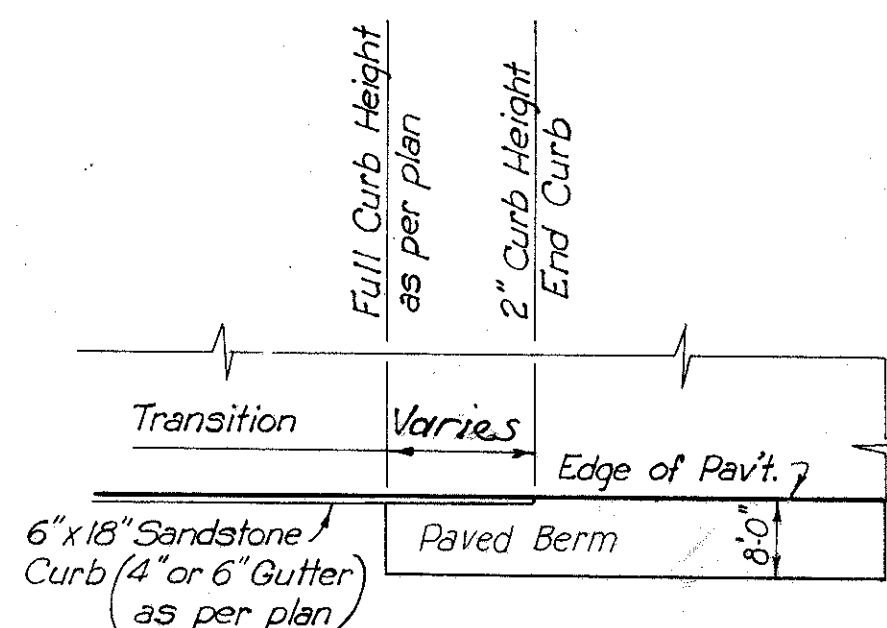
**CURB HEIGHT TRANSITION**

Not to Scale:



**TYPE 2A MODIFIED (6") CURB (MODIFICATION A)**

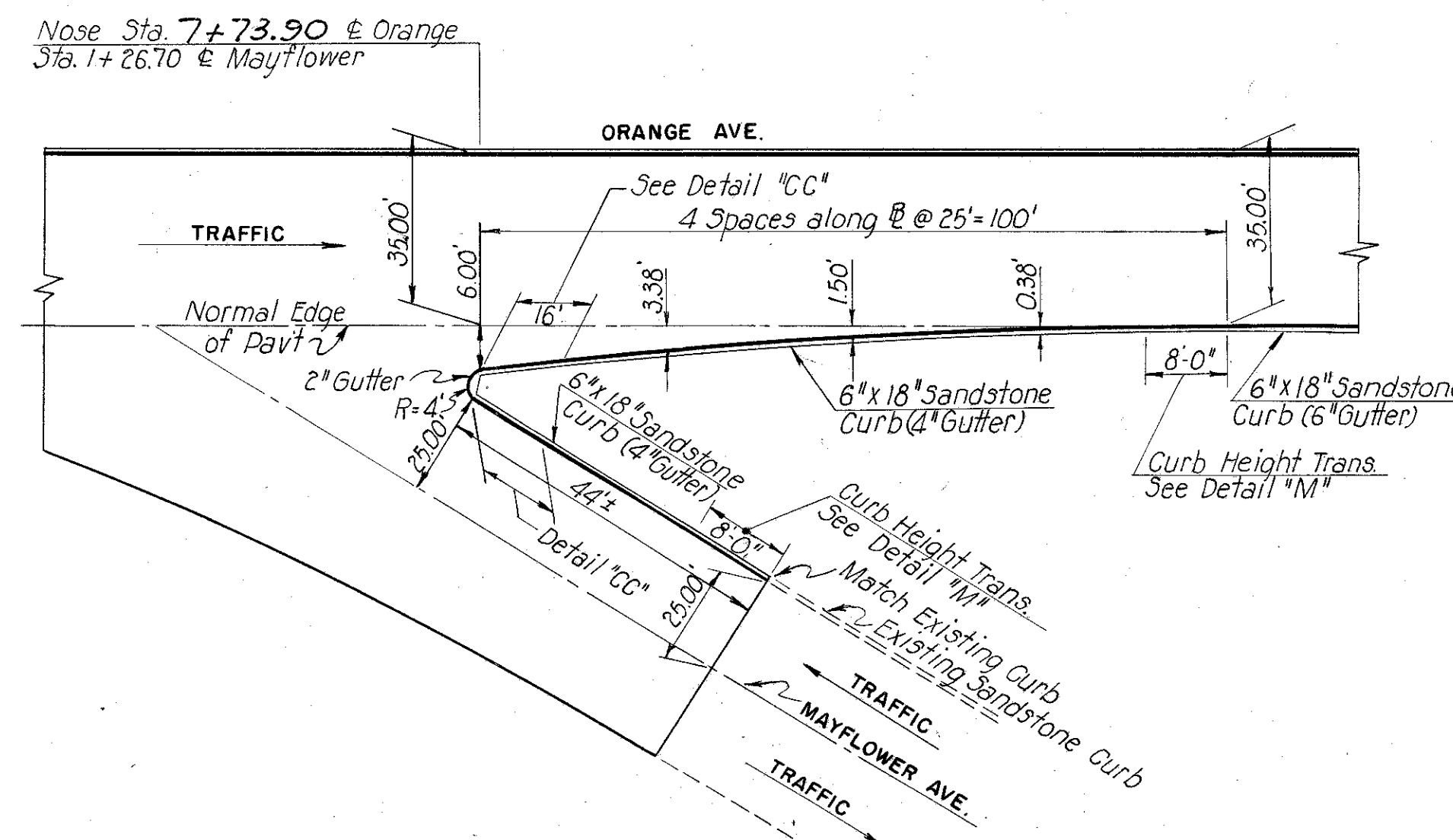
Scale: 1" = 1'-0"



**DETAIL "N"**

**CURB AND SHOULDER TRANSITION**

Not to Scale:



**DETAIL "AA"**

**NOSE DETAILS**

MISCELLANEOUS DETAILS

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
APPROACH SLABS

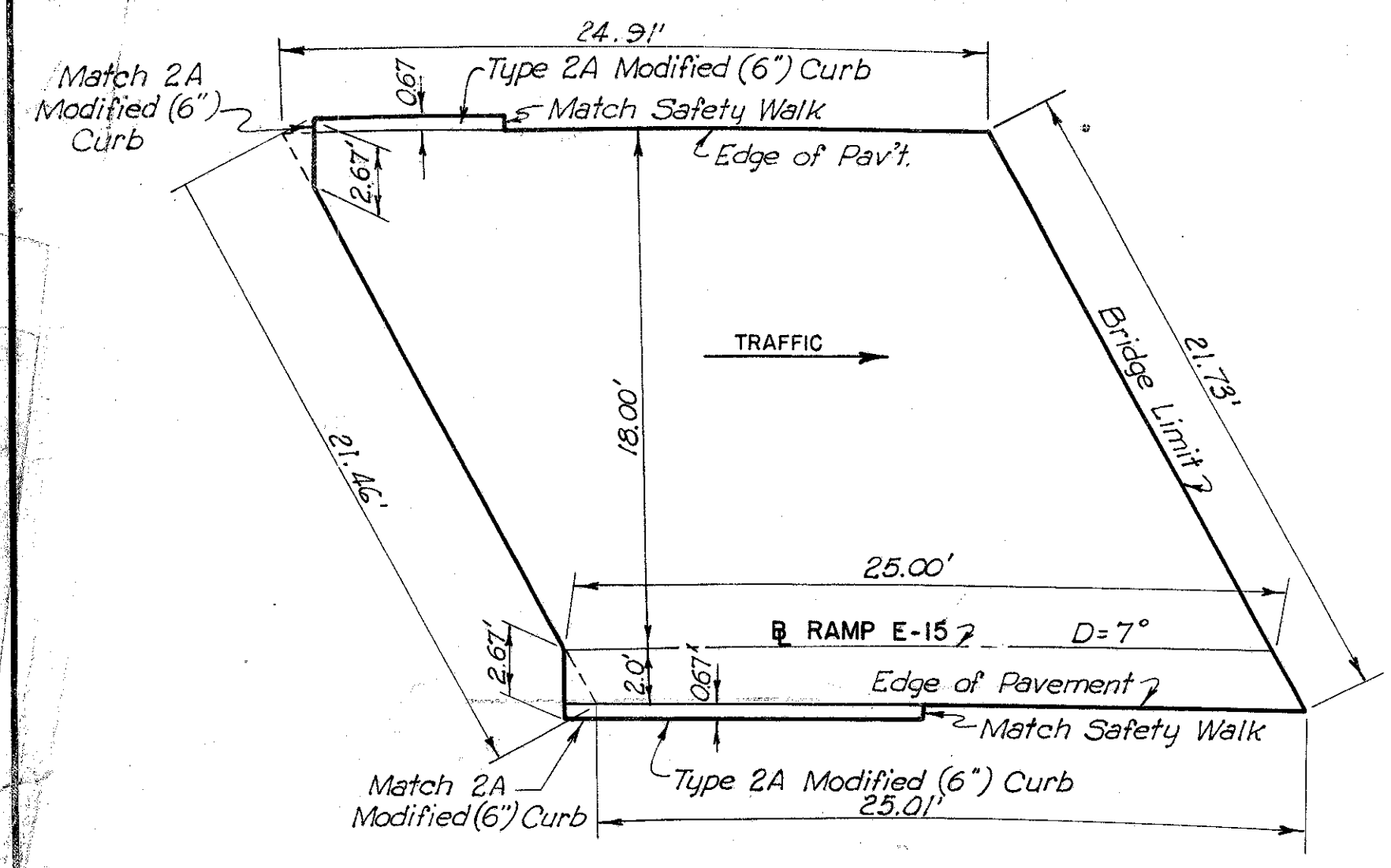
\*Note:  
Type 2A Curb to be transitioned uniformly in eight (8) feet to match 6"x18" Sandstone Curb.

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

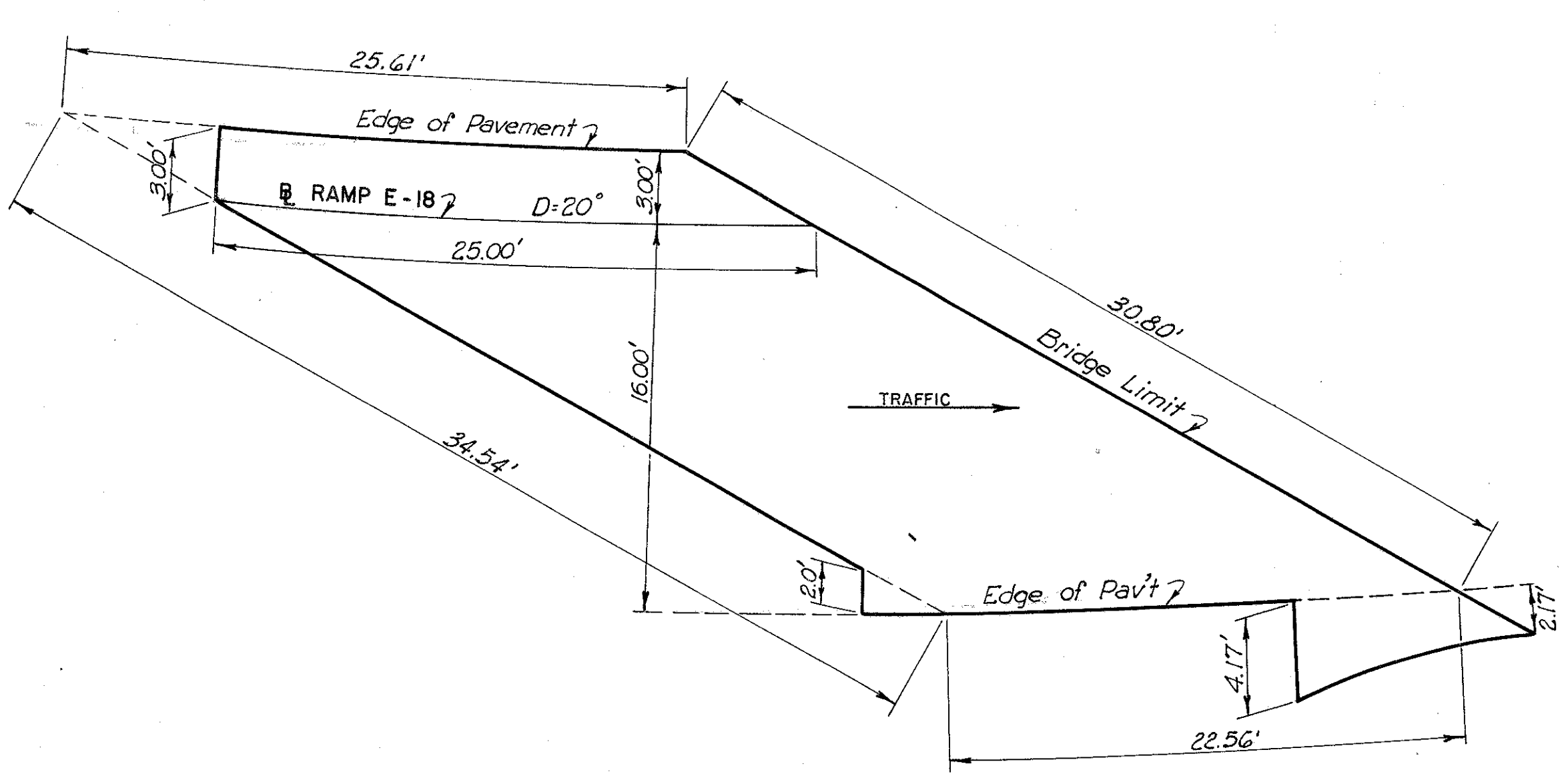
Note:  
Approach Slabs shall meet construction requirements as shown on State of Ohio Standard Drawing AS-1-54.

Note:  
For the East Approach Slab of Bridge No. 2, see sheet 27A.

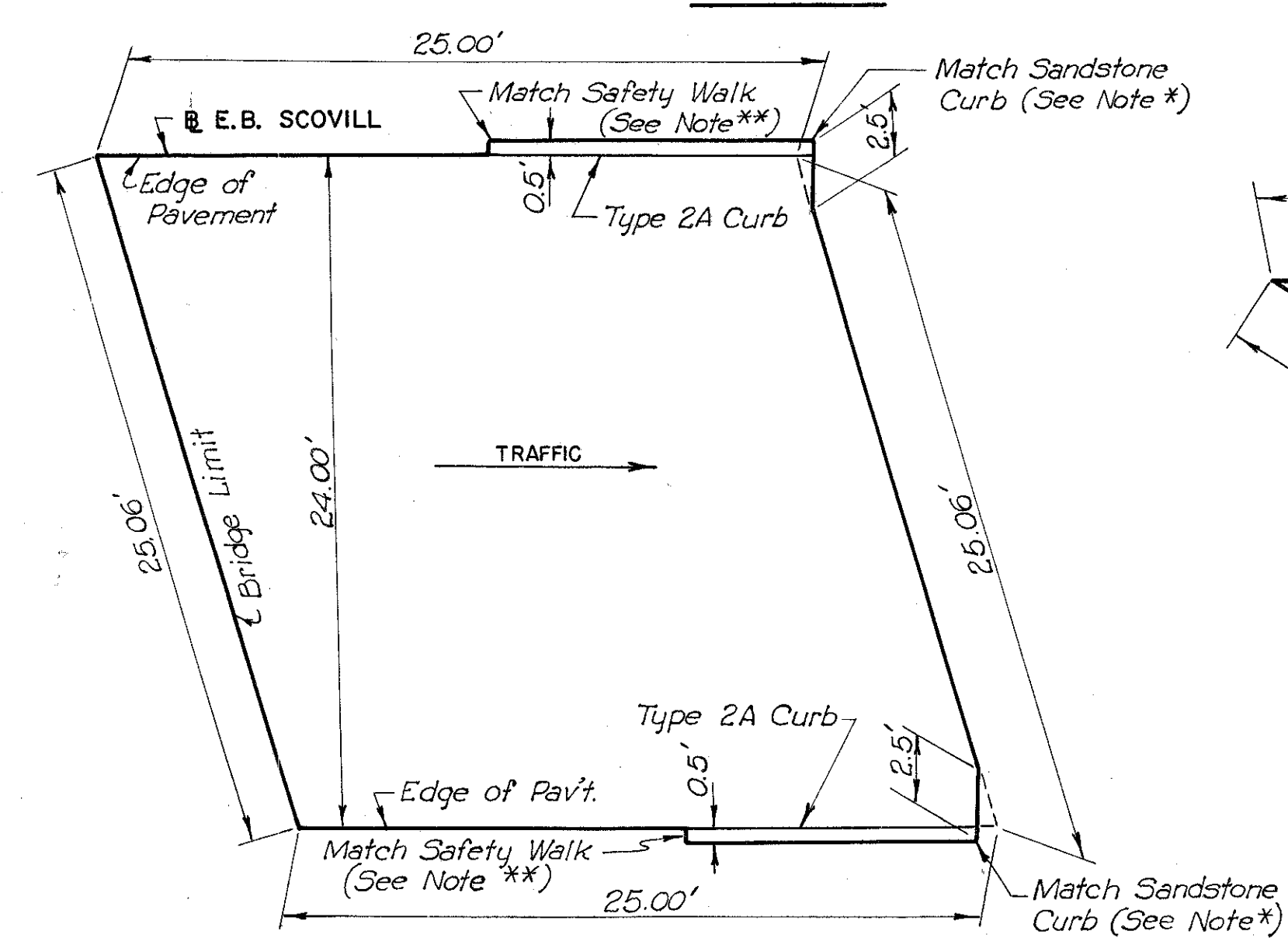
Note:  
Payment for curb sections on approach slabs shall be included in the unit price bid for Item I-7.



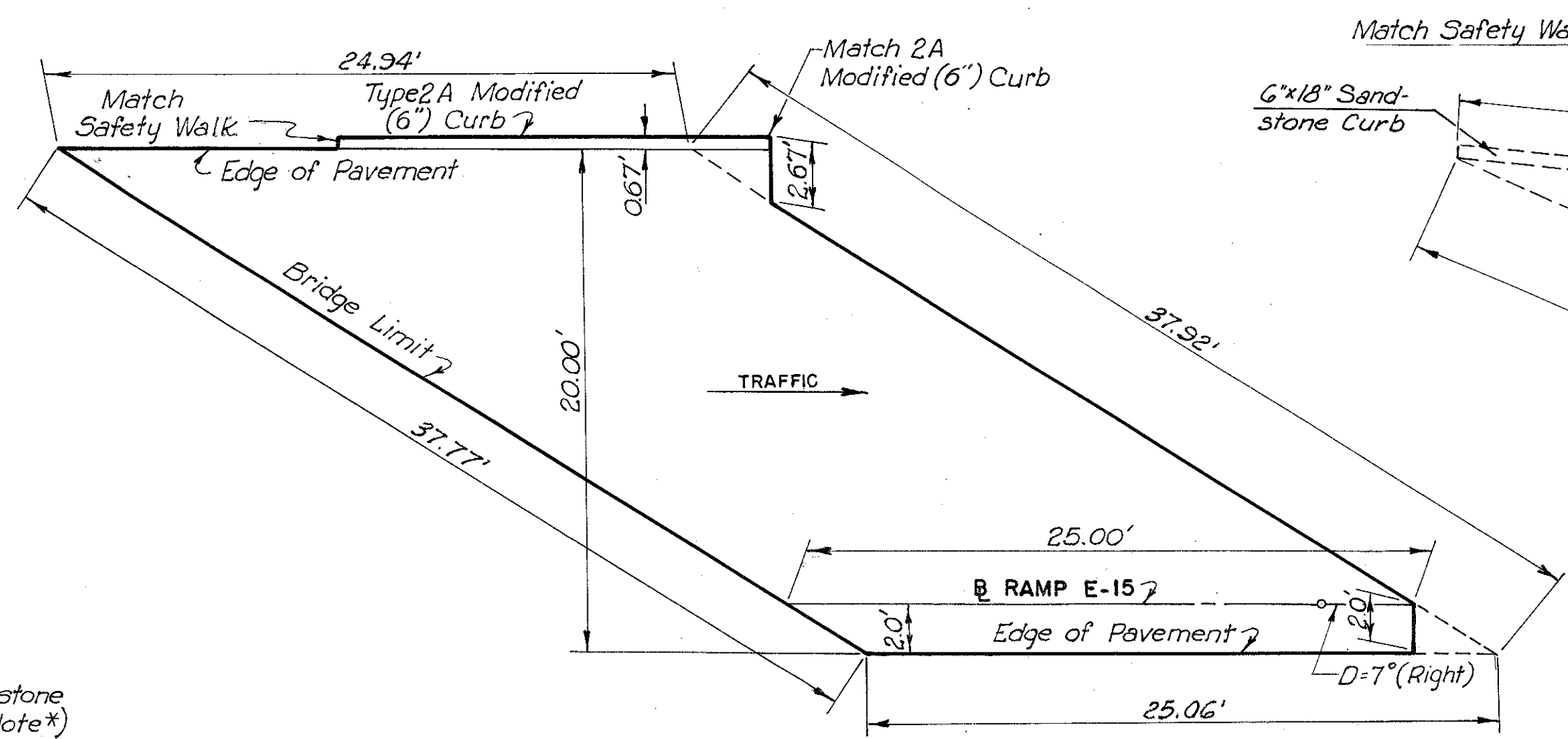
WEST APPROACH SLAB - RAMP E-15  
BRIDGE NO. 7



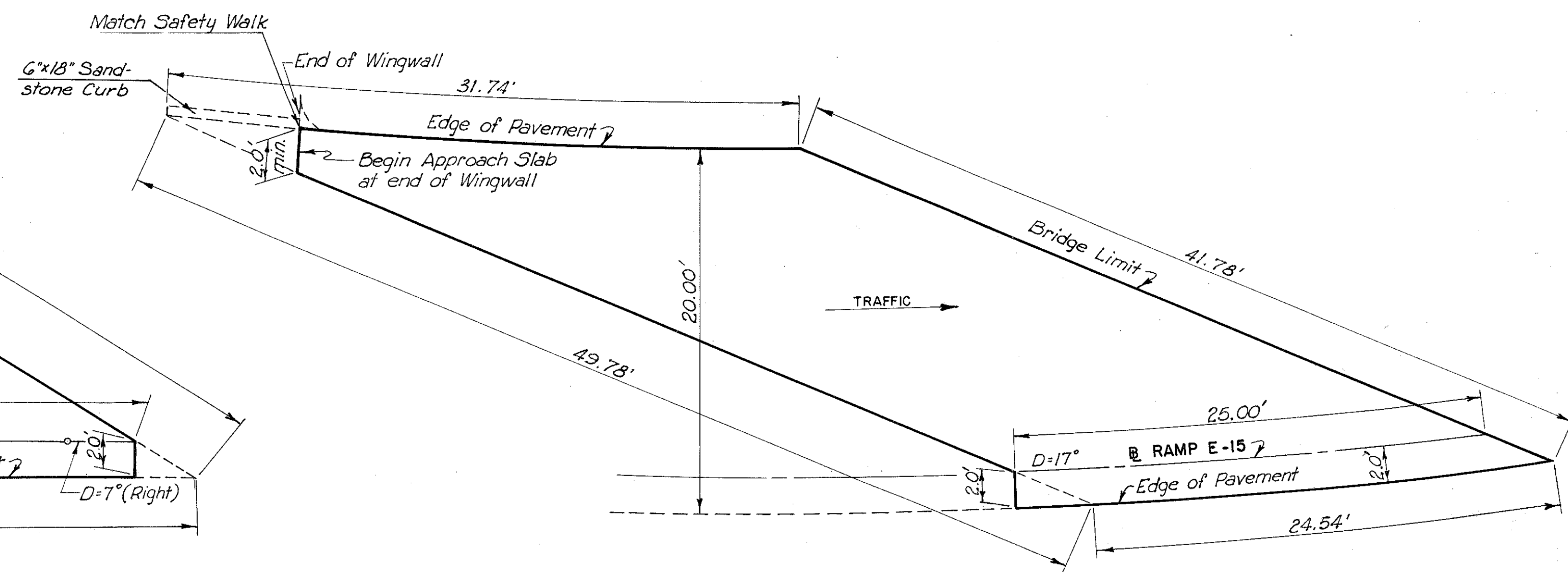
WEST APPROACH SLAB - RAMP E-18  
BRIDGE NO. 7



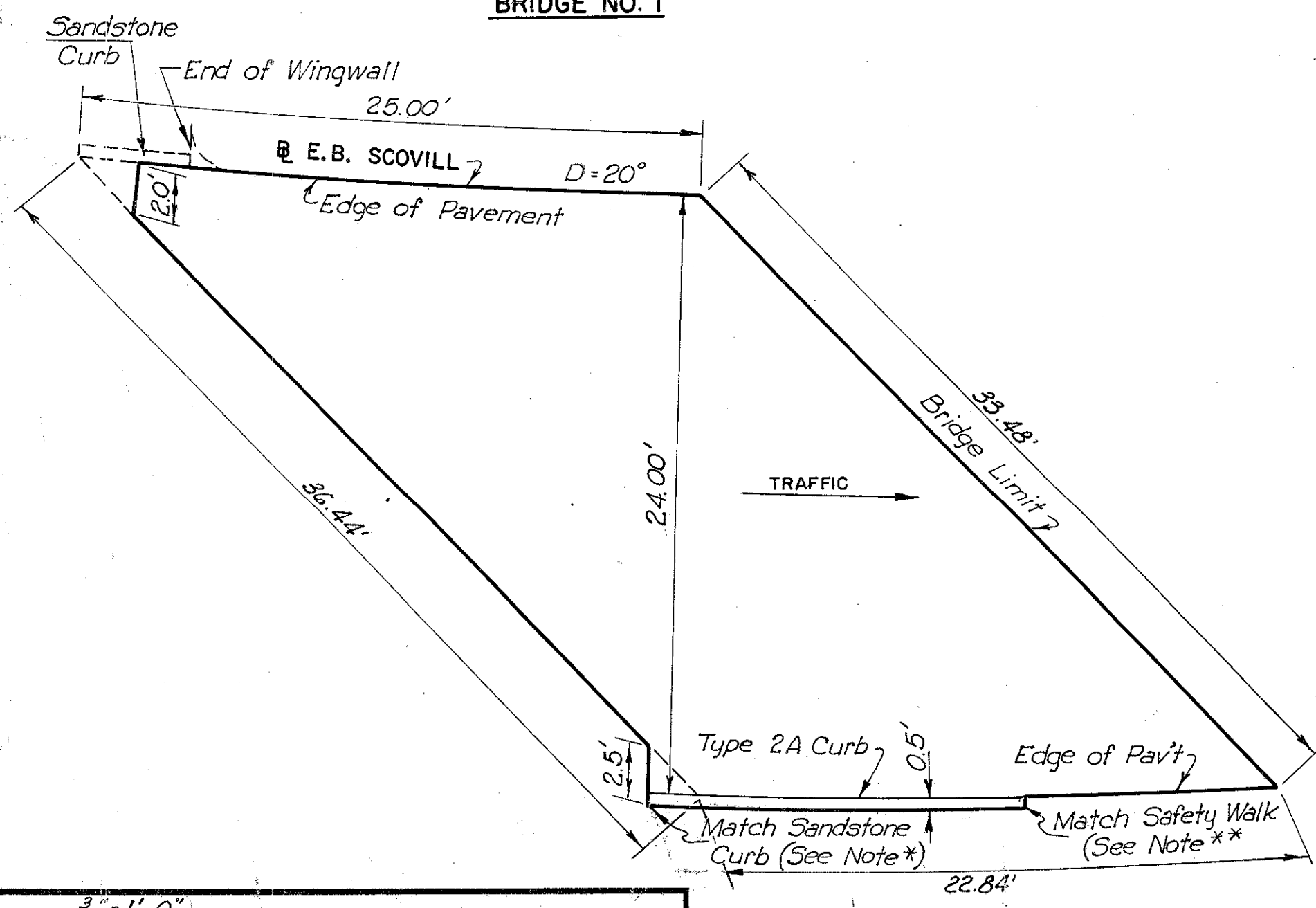
EAST APPROACH SLAB  
BRIDGE NO. 1



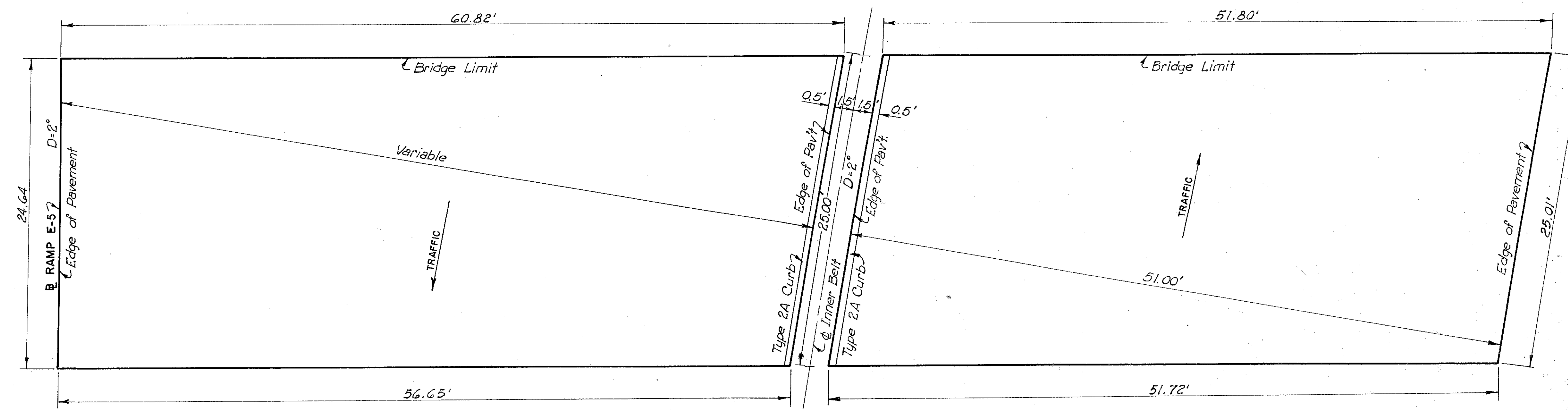
EAST APPROACH SLAB  
BRIDGE NO. 6



WEST APPROACH SLAB  
BRIDGE NO. 6



WEST APPROACH SLAB  
BRIDGE NO. 1

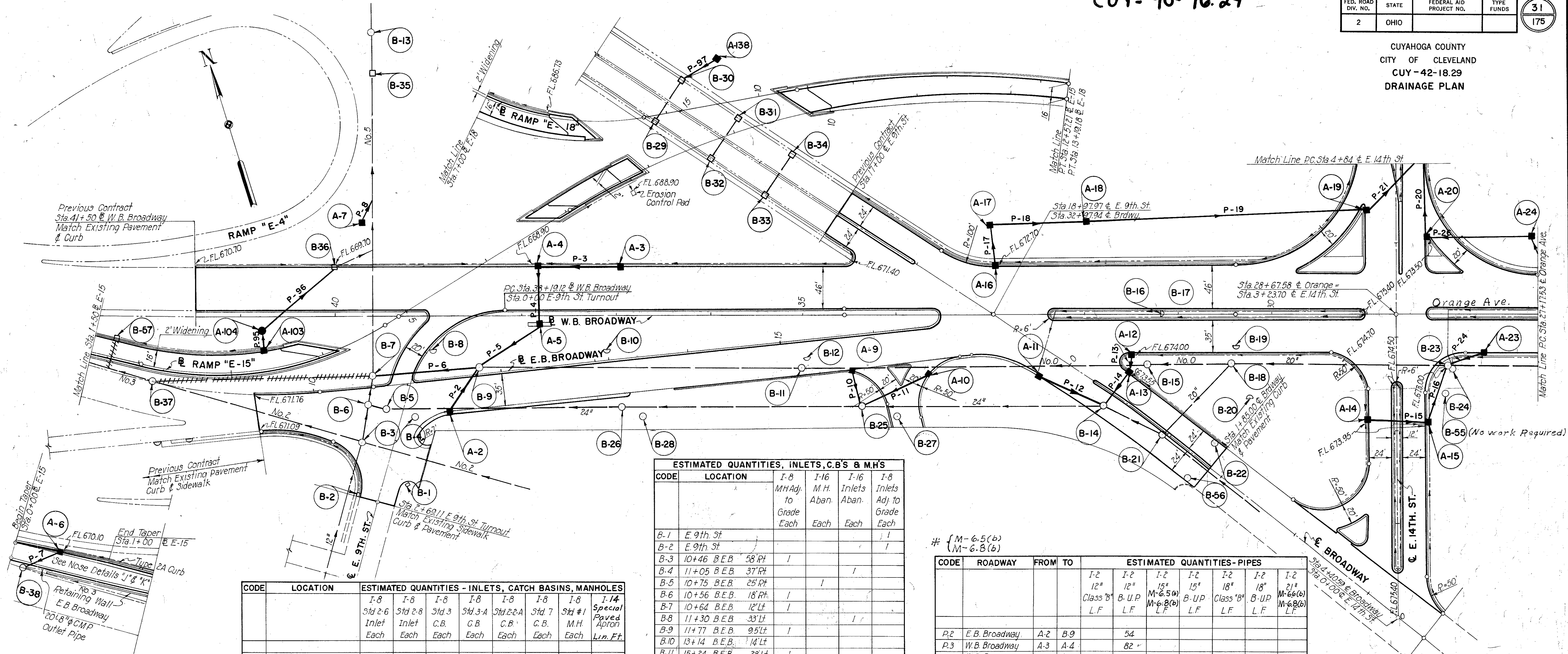


WEST APPROACH SLAB  
BRIDGE NO. 2



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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
DRAINAGE PLAN



CODE	LOCATION	ESTIMATED QUANTITIES - INLETS, CATCH BASINS, MANHOLES							
		I-8 Std Inlet	I-8 Std Inlet	I-8 Std Inlet	I-8 Std Inlet	I-8 Std Inlet	I-8 Std Inlet	I-8 Std Inlet	I-14 Special Paved Apron
A-2	11+40 B.E.B.	35							
A-3	37+00 B.W.B.	52							
A-4	37+84.95 B.W.B.	52							
A-5	37+85 B.W.B.	14							20
A-6	0+50 Ramp E-15	17							
A-7	40+30 B.W.B.	100							
A-9	15+87.93 B.E.B.	35							
A-10	16+00 B.E.B.	39							
A-11	5+20 Brdwy	28							
A-12	31+45 B.W.B.	41							
A-13	4+40 Brdwy	28							
A-14	2+10 E. 14th St	30							
A-15	2+07 E. 14th St	30							
A-16	32+95 B.W.B.	52							
A-17	33+00 B.W.B.	95							
A-18	32+00 B.W.B.	100							
A-19	4+35 N.B. 14th St	33							
A-20	4+05 N.B. 14th St	31							
A-23	27+75 Orange	41							
A-24	27+25 B.W.B.	80							
A-103	3+40 E-15	19							
A-104	3+40 E-15	41							
A-138	15+00 E-9th St	65							
Totals		6	3	6	1	4	2	1	20

ESTIMATED QUANTITIES, INLETS, C.B.'S & M.H.S					
CODE	LOCATION	I-8 M.H. Adj. to Grade Each	I-16 M.H. Aban. Each	I-16 Inlets Each	I-8 Inlets Adj. to Grade Each
B-1	E. 9th St				1
B-2	E. 9th St				1
B-3	10+46 B.E.B.	58			
B-4	11+05 B.E.B.	37			
B-5	10+75 B.E.B.	25			
B-6	10+56 B.E.B.	18			
B-7	10+64 B.E.B.	12			
B-8	11+30 B.E.B.	33			
B-9	11+77 B.E.B.	95			
B-10	13+14 B.E.B.	14			
B-11	15+24 B.E.B.	28			
B-12	15+31 B.E.B.	17			
B-13	4+95 E-4	66			
B-14	4+44 Brdwy	15			
B-15	31+32 B.W.B.	54			
B-16	31+19 B.W.B.				
B-17	30+62 B.W.B.	55			
B-18	30+45 B.W.B.	53			
B-19	30+38 B.W.B.	33			
B-20	30+24 B.W.B.	88.5			
B-21	3+74 Brdwy	3			
B-22	3+25 Brdwy	26			
B-23	28+14 Br. & Org.	54			
B-24	28+11 Br. & Org.	56			
B-27	33+97 Br. & Org.	107			
B-35	5+22 E-4	45			
B-36	40+00 B.W.B.	52			
B-37	8+27 B.E.B.	3			
B-56	3+23 Brdwy	23			
B-57	7+80 B.E.B.	31			
Totals		11	3	10	6

# { M-6.5(b)  
M-6.8(b)

CODE	ROADWAY	FROM	TO	ESTIMATED QUANTITIES-PIPES							
				I-2 12" Class B L.F.	I-2 12" B-UP L.F.	I-2 15" M-6.5(b) L.F.	I-2 15" B-UP L.F.	I-2 18" Class B L.F.	I-2 18" B-UP L.F.	I-2 21" M-6.8(b) L.F.	
P-2	E.B. Broadway	A-2	B-9		54						
P-3	W.B. Broadway	A-3	A-4		82						
P-4	W.B. Broadway	A-4	A-5			58					
P-5	W.B. Broadway	A-5	B-9			74					
P-6	E.B. Broadway	B-9	B-7						110		
P-7	Ramp E-15	A-6	B-38		42						
P-8	W.B. Broadway	A-7	No.5		26	#					
P-10	E.B. Broadway	A-9	B-25		30						
P-11	E.B. Broadway	A-10	B-25		74						
P-12	Broadway	A-11	B-14		78						
P-13	W.B. Broadway	A-12	A-13		22						
P-14	Broadway	A-13	B-14		42						
P-15	E. 14th St	A-14	A-15		60						
P-16	East 14th St.	A-15	B-23		62						
P-17	W.B. Broadway	A-16	A-17		42						
P-18	W.B. Broadway	A-17	A-18				96				
P-19	W.B. Broadway	A-18	A-19					296			
P-20	East 14th St.	A-20	A-22			92					
P-21	East 14th St.	A-19	A-22					92			
P-24	Broadway W.B.	A-23	B-23		40						
P-26	E. 14th St.	A-24	A-20		112						
P-25	Ramp E-15	A-103	A-104		22						
P-26	Broadway W.B.	A-104	B-36			96					
P-27	E. 9th St.	A-138	B-30		36						
Totals					122	772	74	150	98	388	110

Note: The existing No. 1 Brick Sewer from MH "B-9" to MH "B-7" shall be removed. Payment for this removal shall be included in the unit price bid for Pipe "P-6", Item I-2.

ESTIMATED QUANTITIES-UNDERDRAINS	
I-4, 6" Pipe for Underdrain	LF 4375
I-4, 8" CMP Outlet for Underdrain	LF 38
I-5, 6" Pipe Special	Ea. 9

**LEGEND**

- No. 3 Existing Sewers
- □ △ Existing Catch Basins & Manholes
- Proposed Sewers
- Proposed Manholes
- Proposed Inlets
- ~ FL 680.00 Proposed Underdrains
- Existing Sewer to be abandoned.
- \*\*\* Existing Sewer to be Sand Filled.
- Existing Sewer to be removed.

A - PROPOSED DRAINAGE STRUCTURE  
B - EXISTING DRAINAGE STRUCTURE  
P - PROPOSED SEWER

910

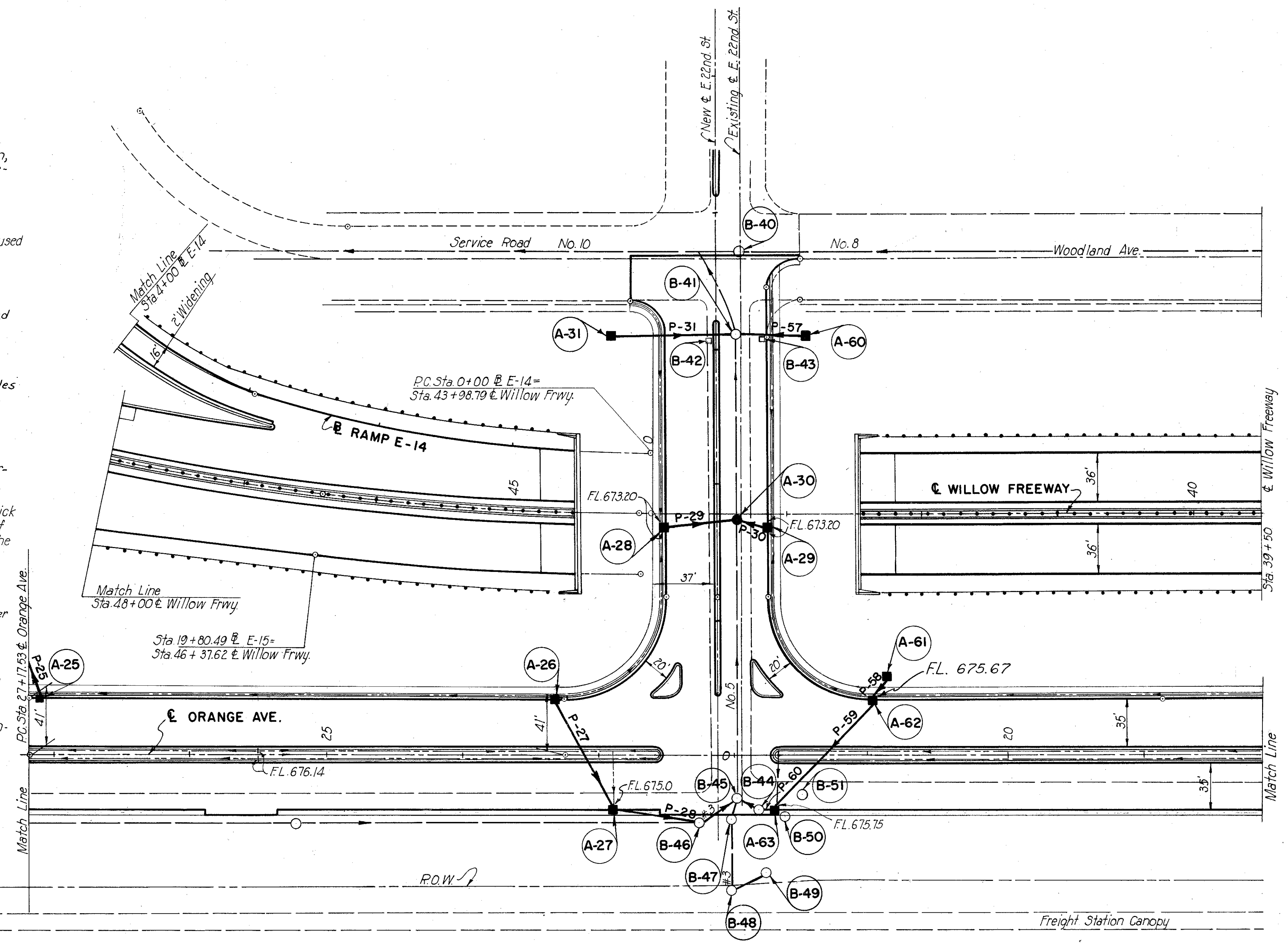
GENERAL NOTES

- 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 completed 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.
- 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.
- 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 16.03 shall be included in the unit price bid for Item E-1 Roadway Excavation.
- Standard City Manhole Frames and Covers as shown on Sheet 42 shall be used on all new manholes.
- Where it is necessary to reconstruct an existing manhole to grade, the work involved shall consist of the careful removal of the existing manhole to an elevation below the new grade, as required and the reconstruction of the manhole to the new grade, conforming as nearly as practicable to the existing dimensions and type of construction and using the salvaged manhole frame and cover. Payment shall be made at the unit price bid for Item I-8, Manholes Reconstructed to Grade and shall include all materials, labor and incidentals necessary to complete this item.
- For the location of underdrains, see typical sections. For details of underdrain outlets, see Sheet 43.
- 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."
- Item Special-"Abandoning No. 9 Brick Sewer." Abandoning of the existing No. 9 brick sewer from Manhole A-34 to manhole B-63 shall include its bulkheading and filling with sand. The bulkheads shall be constructed of brick masonry, as specified in Sec. I-805 to the dimensions and at the locations indicated. The sand shall meet the grading requirements of Sec. M-2.1 but it is not required that the sand meet requirements pertaining to physical properties, soundness and sulfur limitations of the above section. Payment shall be made at the unit price bid per lineal foot of No. 9 sewer abandoned and filled which price and payment shall constitute full compensation for all labor, furnishing and placing all materials, tools, equipment, excavation, backfill, disposal of materials and incidentals necessary to complete this item.
- A quantity for Items B-70, T-30 Tack Coat, B-35 and T-35 is provided in the General Summary for pavement replacement necessitated by drainage crossovers of existing pavements.

CUY-90-16.24

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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
DRAINAGE PLAN



CODE	LOCATION	EST. QUANTITIES - C. B. & M. H.'S			
		I-8 M.H. Adj. to Grade Each	I-8 Inlet Adj. to Grade Each	I-16 M.H. Aband. Each	I-16 Inlets Aband. Each
B-96	4+69 E-14 52' Lt.				1
B-97	7+20 NB 14th 57' Rt.				1
B-98	7+87 NB 14th 14' Rt.			1	
B-99	6+30 E-14 7' Lt.			1	
B-100	6+70 E-14 14' Lt.				1
B-101	8+15 E-14 34' Rt.				1
B-102	9+43 E-14 38' Rt.			1	
B-103	13+27 E-17 138' Rt.				1
B-104	13+09 E-17 102' Rt.				1
B-105	11+71 E-17 182' Rt.				1
B-106	11+32 E-17 125' Rt.				1
B-108	13+02 E-17 154' Rt.			1	
B-109	11+00 E-17 145' Rt.			1	
B-111	4+76 W.B. Scovill 31' Lt.				1
B-112	4+65 W.B. Scovill 25' Lt.			1	
B-113	4+48 W.B. Scovill 34' Lt.				1
B-114	11+94 Orge 23' Lt.			1	
B-115	3+00 W.B. Scovill 51' Lt.				1
B-116	6+19 E. B. Scovill 25' Lt.	1*			
B-117	2+72 W.B. Scovill 58' Lt.				1
B-118	2+96 W.B. Scovill 13' Lt.			1	
B-119	E 20th St. 6	1			
B-120	13+73 E-22nd St. 44' Lt.				1
B-121	13+54 E-22nd St. 25' Lt.	1			
B-123	13+35 E-22nd St. 39' Lt.				1
B-176	6+26 E-9 5' Rt.			1	
B-318	6+68 30-N 58' Rt.			1	
B-319	2+25 Rel Woodland 42' Rt.				1
B-320	2+90 Rel Woodland 75' Rt.				1
B-321	2+54 Rel Woodland 92' Rt.	1			
B-322	38+00 Willow 155' Lt.				1
B-323	2+70 30-N 3' Rt.			1	
B-324	2+72 Rel Woodland 36' Rt.			1	
Totals		3		12	17

\* Item I-8 Manhole Reconstructed to Grade, as per plan.

CODE	LOCATION	ESTIMATED QUANTITIES - INLETS, CATCH BASINS, MANHOLES							CODE	LOCATION
		I-8 Std. 2-6 Inlet Each	I-8 Std. 2-8 Inlet Each	I-8 Std. 3 C.B. Each	I-8 Std. 2-24 C.B. Each	I-8 Std. 7 C.B. Each	I-8 Std. 2 MH Each	I-8 MHA Adj. to Grade Each		
A-25	27+10 B.W.B. 41' Rt.			1						
A-26	23+30 Orge. 41' Rt.			1					B-40	3+72 E 22 St. 16' Rt.
A-27	22+89 B.W.B. 41' Lt.	1							B-41	3+11 E 22 St. 15' Rt.
A-28	1+67.81 E-22 St. 37' Lt.			1					B-42	3+06 E 22 St. 6
A-29	1+67.81 E-22 St. 37' Rt.			1					B-43	3+06 E 22 St. 32' Rt.
A-30	1+75 E-22 St. 14' Rt.						1		B-44	21+83 B.W.B. 40' Lt.
A-31	3+10 E-22 St. 75' Lt.					1			B-45	21+98 B.W.B. 31' Lt.
A-60	3+10 E-22 St. 65' Rt.					1			B-46	22+26 B.W.B. 50' Lt.
A-61	20+90 Orge. 60' Rt.					1			B-47	22+02 B.W.B. 47' Lt.
A-62	21+00 Orge. 41' Lt.		1							
A-63	21+70 Orge. 41' Lt.		1							
Totals		1	2	4	2	1	1	7	B-50	21+64 B.W.B. 45' Lt.
									B-51	21+51 B.W.B. 28' Lt.

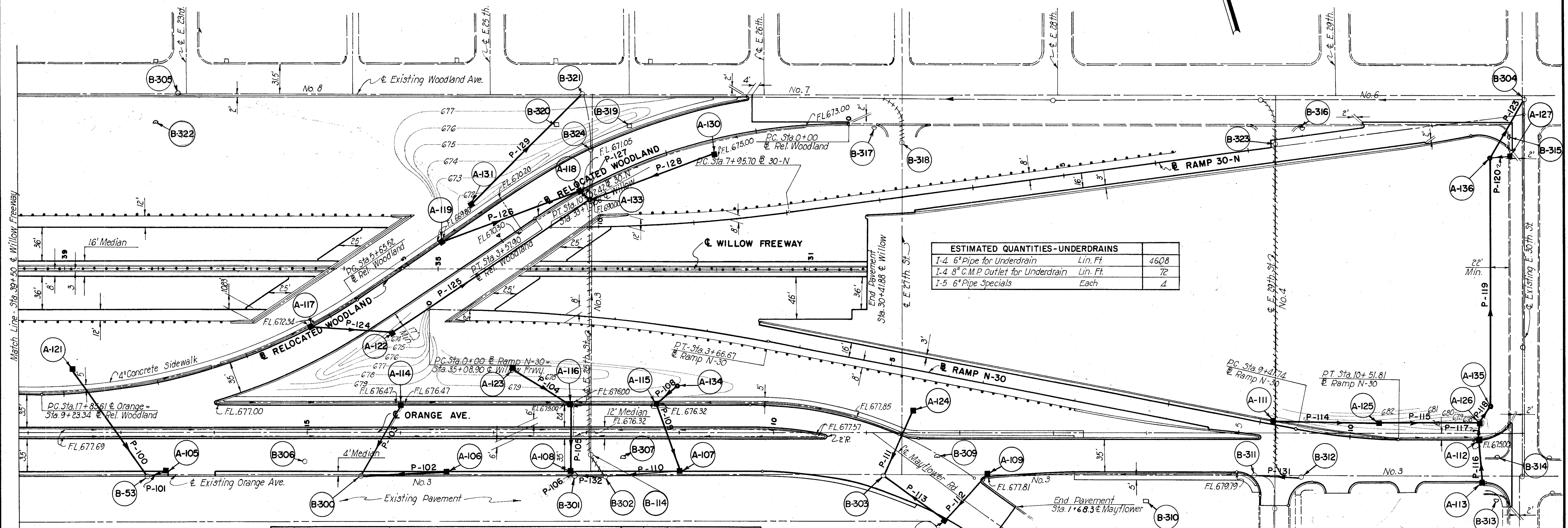
CODE	ROADWAY	FROM	TO	ESTIMATED QUANTITIES - PIPES		
				I-2 12" Class B L.F.	I-2 12" B-U.P. L.F.	I-2 15" B-U.P. L.F.
P-25	Broadway W.B.	A-25	A-24	38		
P-27	Broadway W.B.	A-26	A-27		90	
P-28	Broadway W.B.	A-27	B-46		62	
P-29	East 22nd St.	A-28	A-30		50	
P-30	East 22nd St.	A-29	A-30		22	
P-31	East 22nd St.	A-31	B-41		88	
P-57	East 22nd St.	A-60	B-41		48	
P-58	Broadway W.B.	A-61	A-62	18		
P-59	Broadway W.B.	A-62	A-63			108
P-60	Broadway W.B.	A-63	B-44			10
Totals				56	360	118

ESTIMATED QUANTITIES UNDERDRAINS	
I-4, 6" Pipe for Underdrain	L.F. 2975
I-4, 8" C.M.P. Outlet for Underdrain	L.F. 0
I-5, Pipe Special	4

SCALE: 1"=50'  
MADE P.L. DATE 12-3-58  
TRCD. P.R. DATE 3-5-59  
CHK. J.C. DATE 11/1/59

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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29  
DRAINAGE PLAN



I-4 6" Pipe for Underdrain	Lin. Ft.	4608
I-4 8" C.M.P. Outlet for Underdrain	Lin. Ft.	72
I-5 6" Pipe Specials	Each	4

Freight Station Canopy  
N.Y.C. Freight Station

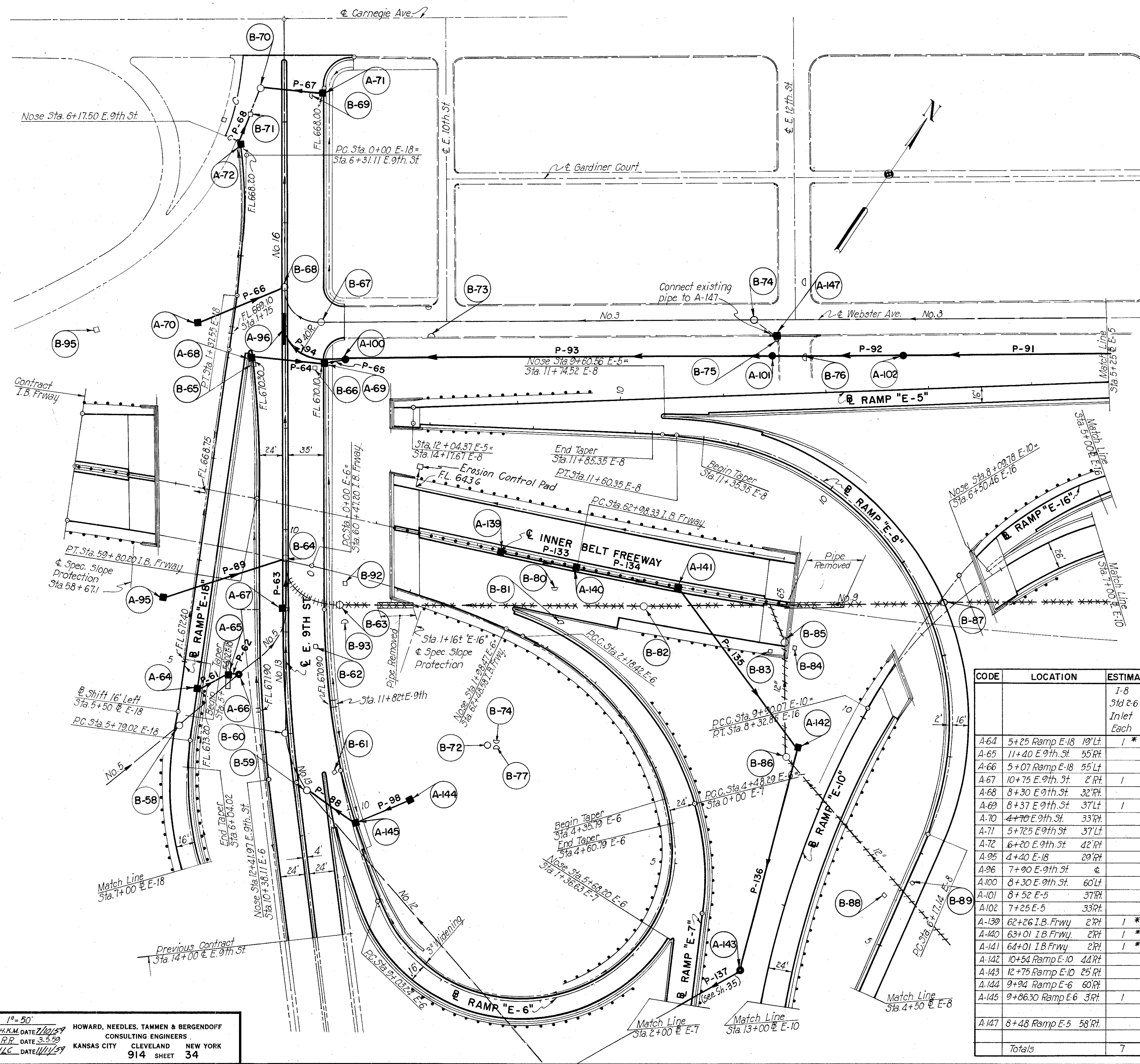
CODE	LOCATION	ESTIMATED QUANTITIES-INLETS, CATCH BASINS & M.H.'S								CODE	LOCATION
		I-8 Std 2-6 Inlet Each	I-8 Std 2-10 Inlet Each	I-8 Std 3-A C.B. Each	I-8 Std #6 C.B. Each	I-8 Std 2-2A C.B. Each	I-8 Std 7 C.B. Each	I-8 Std #1 M.H. Each	I-8 Std #2 M.H. Each		
A-105	16+54 Orange	41		1		1				A-126	2+42 Orange
A-106	13+50 Orange	41			1					A-127	0+20 30-N
A-107	11+00 Orange	41				1				A-130	1+50 Relo. Woodland
A-108	12+15.8 Orange	41				1				A-131	4+07 Relo. Woodland
A-109	7+70 Orange	43									
A-110	14+17 Mayflower	29			1					A-133	2+95 Relo. Woodland
A-111	9+15 N-30	3						1		A-134	11+02 Orange
A-112	2+43 Orange	6								A-135	2+30 Orange
A-113	2+39 Orange	52			1					A-136	0+42 30-N
A-114	14+00 Orange	30									
A-115	11+25 Orange	30									
A-116	12+15.8 Orange	30			1						
A-117	6+25 Relo. Woodland			1							
A-118	3+00 Relo. Woodland			1							
A-119	4+55.10 Relo. Woodland				1						
A-121	8+90 Reloc. Woodland					1					
A-122	5+56 Reloc. Woodland					1					
A-123	12+80 Orange	70									
A-124	8+50 Orange	23				1					
A-125	3+50 Orange	11				1					
Totals		6	2	7	1	6	1	3	1		

CODE	LOCATION	EST. QUANT.	C.B. & M.H.'S			
			I-8 M.H. Adj. Each	I-8 Inlet Adj. Each	I-16 M.H. Aban. Each	I-16 Inlets Aban. Each
B-300	14+420r	45	1			
B-301	12+12 Orge.	45	1			
B-302	11+80 Orge.	45	1			
B-303	8+82 Orge.	45	1			
B-304	0+00 30-N	15	1			
B-305	37+80 Willow	183	1			
B-306	15+03 Orge.	30			1	
B-307	11+62 Orge.	28			1	
B-308	11+96 Orge.	25			1	
B-309	8+24 Orge.	26			1	
B-310	6+00 Orge.	71			1	
B-311	4+85 Orge.	45	1			
B-312	4+34 Orge.	45	1			
B-313	2+24 Orge.	70			1	
B-314	2+22 Orge.	25			1	
B-315	0+18 30-N	21			1	
B-316	2+39 30-N	20			1	
B-317	6+95 30-N	80	1			
Totals		8	1	1	8	

Note: For disposition of structures B-318 thru B-324, see Sheet 32.

CODE	ROADWAY	FROM	TO	ESTIMATED QUANTITIES-PIPES								CODE	FROM	TO	ROADWAY			
				I-2 12" B-UP L.F.	I-2 12" C.I.B. L.F.	I-2 15" C.I.B. L.F.	I-2 15" B-UP L.F.	I-8 18" C.I.B. L.F.	I-2 21" C.I.B. L.F.	I-2 21" B-UP L.F.	I-2 30" C.I.B. L.F.							
P-100	Orange	A-121	B-53	136			18					P-120	A-127	A-136	30-N			
P-101	Orange	A-105	B-53	16								P-123	A-136	B-304	30-N			
P-102	Orange	A-106	B-300	90	84							P-124	A-117	A-122	Rel. Woodland			
P-103	Orange	A-114	B-300	84		254						P-125	A-122	A-133	Rel. Woodland			
P-104	Orange	A-123	A-116	156			72					P-126	A-119	A-118	Rel. Woodland			
P-105	Orange	A-116	A-108				12		70			P-127	A-118	A-133	Rel. Woodland			
P-106	Orange	A-108	B-301				136		4			P-128	A-130	A-133	Rel. Woodland			
P-108	Orange	A-134	A-115			26	165					P-129	A-131	B-321	Rel. Woodland			
P-109	Orange	A-115	A-107	74														
P-110	Orange	A-107	B-302	76														
P-111	Orange	A-124	B-303	70									46	P-131	B-312	B-311	Orange	
P-112	Mayflower	A-109	A-110	62										30	P-132	B-302	B-301	Orange
P-113	Orange	A-110	B-303	78														
P-114	N-30	A-111	A-125			96												
P-115	N-30	A-125	A-126				104											
P-116	Orange	A-113	A-112	44														
P-117	Orange	A-112	A-126			14												
P-118	Orange	A-126	A-135						20									
P-119	Exist. 30th St	A-135	A-136							264								
Totals				970	703	176	74	20	264	70	76							

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
DRAINAGE PLAN



CODE	LOCATION	FROM	TO	ESTIMATED QUANTITIES-PIPES										
				I-2 12" Class B L.F.	I-2 12" B-UP L.F.	I-2 6" B-UP M.6.6(c) L.F.	I-2 6" B-UP M.10.6.6(c) L.F.	I-2 6" Rad B-UP M.10.6.6(c) L.F.	Special No.9 Sand Filled L.F.	I-2 15" Class B L.F.	I-2 15" B-UP L.F.			
P61	Ramp E-18	A-64	A-65	28										
P62	Ramp E-18	A-65	A-66	6										
P63	East 9th St.	A-67	B-64		42									
P64	East 9th St.	A-68	A-69		68									
P65	East 9th St.	A-69	A-100		20									
P66	East 9th St.	A-70	B-68		88									
P67	East 9th St.	A-71	B-70		66									
P68	East 9th St.	A-72	B-71		24									
P88	East 9th St.	A-145	B-59										54	
P89	Ramp E-18	A-95	B-64		122									
P92	Ramp E-5	A-102	A-101			122								
P93	Ramp E-5	A-101	A-100				416							
P94	Ramp E-5	A-100	A-96				14	40						
P98	Ramp E-6	A-144	A-145										56	
R133	I.B. Freeway	B-87	B-63							585				
R134	I.B. Freeway	A-139	A-140		72									
R135	I.B. Freeway	A-140	A-141		98									
R136	I.B. Freeway	A-141	A-142		192									
R136	I.B. Freeway	A-142	A-143		226									
R136	I.B. Freeway	A-84	B-87							615				
Totals					34	792	122	430	40	1200	56		54	

\* Sec. M-6.6(c)

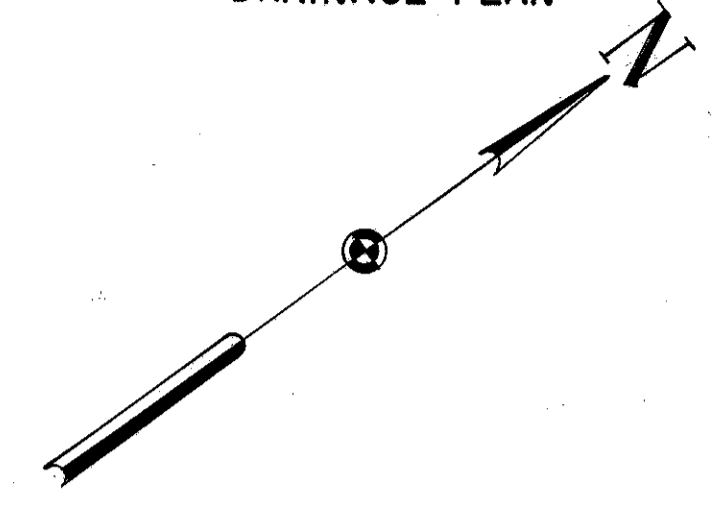
ESTIMATED QUANTITIES-UNDERDRAINS		
I-4, 6" Underdrain Pipe	LF	3313
I-4, 8" C.M.P. Outlet for Underdrains	LF	20
I-5, 6" Pipe Special	Each	3

Note: Inlets noted thus \* are Standard No. 2-6-A Inlets.

ESTIMATED QUANTITIES, INLETS, CATCH BASINS, MANHOLES				
CODE	LOCATION	I-8 MH adj to Grade Each	I-16 MH. Aban. Each	I-16 Inlet Aban. Each
B-58	5+65 E-18	3	1	
B-59	12+57 E 9th St.	10		1
B-60	12+00 E 9th St.	4		1
B-61	12+41 E 9th St.	39		1
B-62	11+17 E 9th St.	29		1
B-63	10+74 E 9th St.	53		1
B-64	10+28 E 9th St.	1		1
B-65	2+03 E 18th	27		1
B-66	8+40 E 9th St.	30		1
B-67	7+95 E 9th St.	35		1
B-68	7+62 E 9th St.	1		1
B-69	5+74 E 9th St.	27		1
B-70	5+67 E 9th St.	22		1
B-71	5+94 E 9th St.	33		1
B-73	11+82 E-5	68		1
B-75	8+49 E-5	54		1
B-76	8+18 E-5	35		1
B-72	2+36 E-6	112		1
B-78	6+56 E-5	25		1
B-74	2+44 E-6	102		1
B-80	62+84 Frwy	25		1
B-81	62+95 Frwy	57		1
B-82	63+72 Frwy	25		1
B-83	64+99 Frwy	47		1
B-84	65+20 Frwy	41		1
B-85	65+09 Frwy	37		1
B-86	65+30 Frwy	149		1
B-87	66+58 Frwy	22		1
B-88	5+46 E-8	16		1
B-89	5+72 E-8	3		1
B-92	10+54 E 9th St.	59		1
B-93	10+92 E 9th St.	58		1
B-94	7+00 E-8	100		1
B-95	1+87 E-18	129		1
B-77	2+50 E-6	110		1
Totals		5	9	21

CODE	LOCATION	I-8 Std 2-6 Inlet Each	I-8 Std 2-8 Inlet Each	I-8 Std 3-A C.B. Each	I-8 Std 2-A C.B. Each	I-8 Std #2 M.H. Each	I-8 Junc. Cham. Each	I-8 Std #3 C.B. Each	I-14 Paved Apron Lin. Ft.
A-64	5+25 Ramp E-18	1	*						
A-65	11+40 E 9th St.				1				20
A-66	5+07 Ramp E-18					1			
A-67	10+75 E 9th St.	1							
A-68	8+30 E 9th St.			1					
A-69	8+37 E 9th St.	1							
A-70	4+70 E 9th St.				1				
A-71	5+72 E 9th St.		1						
A-72	6+20 E 9th St.			1					
A-95	4+40 E-18				1				
A-96	7+90 E 9th St.					1			
A-100	8+30 E 9th St.						1		
A-101	8+52 E-5						1		
A-102	7+25 E-5						1		
A-139	62+26 I.B. Frwy	2	*						
A-140	63+01 I.B. Frwy	2	*						
A-141	64+01 I.B. Frwy	2	*						
A-142	10+54 Ramp E-10				1				
A-143	12+75 Ramp E-10				1				
A-144	9+94 Ramp E-6				1				
A-145	9+86.30 Ramp E-6				1				
A-147	8+48 Ramp E-5							1	
Totals		7	1	2	5	5	1	1	20

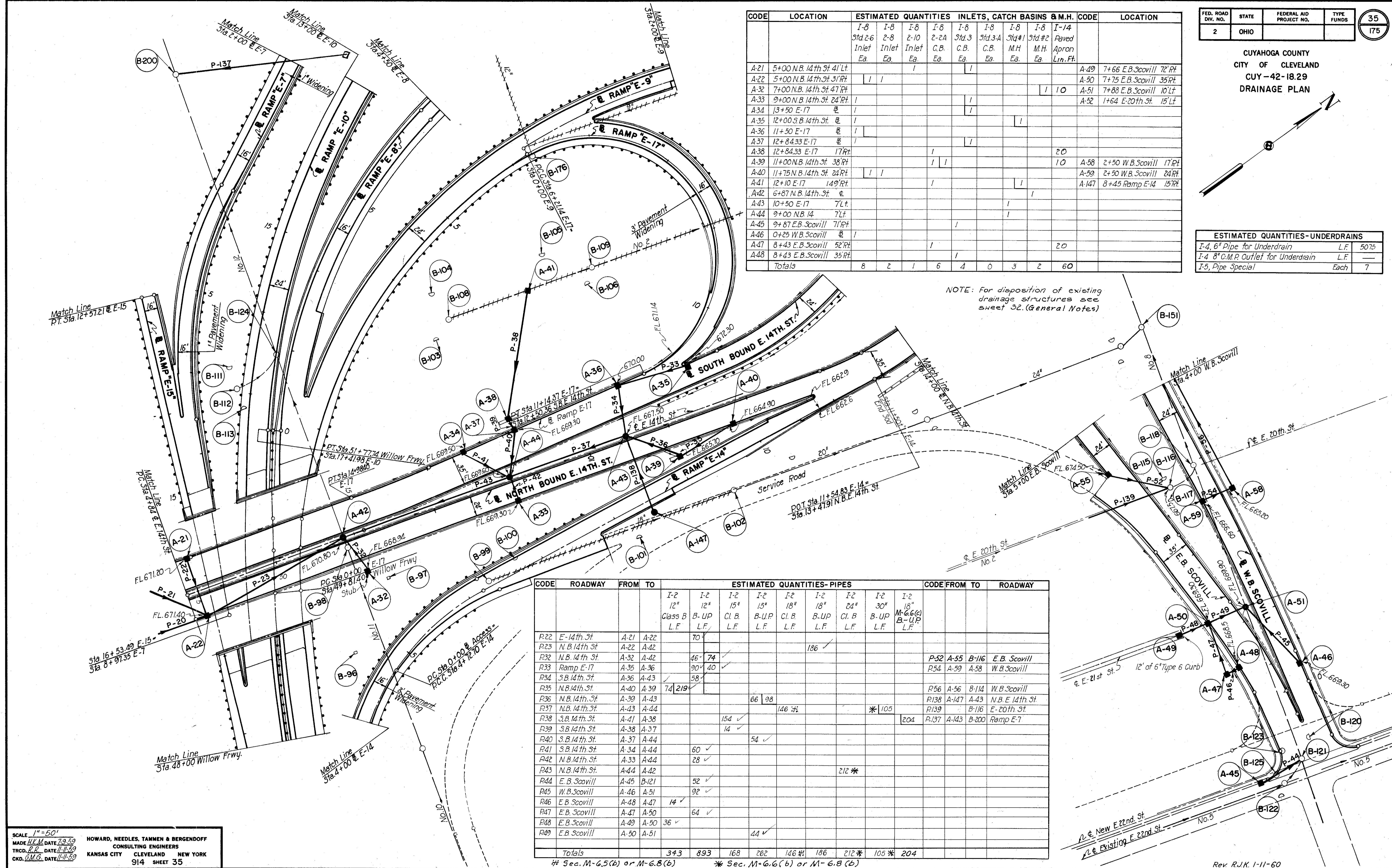
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
DRAINAGE PLAN



CODE	LOCATION	ESTIMATED QUANTITIES										CODE	LOCATION	
		I-8	I-8	I-8	I-8	I-8	I-8	I-8	I-8	I-8	I-8			I-8
A-21	5+00 N.B. 14th St. 41' Lt	Std. 2-6	2-8	2-10	2-10	2-2A	Std. 3	Std. 3-A	Std. #1	Std. #2	I-8	I-14	A-49	7+66 E.B. Scovill 72' Rt
A-22	5+00 N.B. 14th St. 31' Rt	Inlet Ea	Inlet Ea	Inlet Ea	C.B. Ea	C.B. Ea	C.B. Ea	M.H. Ea	M.H. Ea	Apron	Lin. Ft.		A-50	7+75 E.B. Scovill 35' Rt
A-32	7+00 N.B. 14th St. 47' Rt												A-51	7+88 E.B. Scovill 10' Lt
A-33	9+00 N.B. 14th St. 24' Rt												A-52	1+64 E. 20th St. 15' Lt
A-34	13+50 E-17													
A-35	12+00 S.B. 14th St.													
A-36	11+50 E-17													
A-37	12+84.33 E-17													
A-38	12+84.33 E-17													
A-39	11+00 N.B. 14th St. 38' Rt												A-58	2+50 W.B. Scovill 17' Rt
A-40	11+75 N.B. 14th St. 24' Rt												A-59	2+50 W.B. Scovill 24' Rt
A-41	12+10 E-17												A-147	8+45 Ramp E-14 15' Rt
A-42	6+87 N.B. 14th St.													
A-43	10+50 E-17													
A-44	9+00 N.B. 14													
A-45	9+87 E.B. Scovill													
A-46	0+25 W.B. Scovill													
A-47	8+43 E.B. Scovill													
A-48	8+43 E.B. Scovill													
Totals		8	2	1	6	4	0	3	2	60				

ESTIMATED QUANTITIES-UNDERDRAINS		
I-4, 6" Pipe for Underdrain	L.F.	5075
I-4 8" G.M.P. Outlet for Underdrain	L.F.	
I-5, Pipe Special	Each	7

NOTE: For disposition of existing drainage structures see sheet 32. (General Notes)



CODE	ROADWAY	FROM	TO	ESTIMATED QUANTITIES-PIPES										CODE	FROM	TO	ROADWAY		
				I-2	I-2	I-2	I-2	I-2	I-2	I-2	I-2	I-2	I-2						
P-22	E-14th St	A-21	A-22	12"	12"	15"	15"	18"	18"	24"	30"	18"							
P-23	N.B. 14th St	A-22	A-42																
P-32	N.B. 14th St	A-32	A-42												P-52	A-55	B-116	E.B. Scovill	
P-33	Ramp E-17	A-35	A-36	46"	74"										P-54	A-59	A-58	W.B. Scovill	
P-34	S.B. 14th St	A-36	A-43																
P-35	N.B. 14th St	A-40	A-39	74"	219"										P-56	A-56	B-114	W.B. Scovill	
P-36	N.B. 14th St	A-39	A-43												P-138	A-147	A-43	N.B. E. 14th St.	
P-37	N.B. 14th St	A-43	A-44												P-139		B-116	E-20th St	
P-38	S.B. 14th St	A-41	A-38			154"									204	P-137	A-143	B-200	Ramp E-7
P-39	S.B. 14th St	A-38	A-37			14"													
P-40	S.B. 14th St	A-37	A-44					54"											
P-41	S.B. 14th St	A-34	A-44			60"													
P-42	N.B. 14th St	A-33	A-44			28"													
P-43	N.B. 14th St	A-44	A-42																
P-44	E.B. Scovill	A-45	B-121			52"													
P-45	W.B. Scovill	A-46	A-51			92"													
P-46	E.B. Scovill	A-48	A-47			14"													
P-47	E.B. Scovill	A-47	A-50			64"													
P-48	E.B. Scovill	A-49	A-50			36"													
P-49	E.B. Scovill	A-50	A-51					44"											
Totals				343	893	168	262	146	186	212	*	105	*	204					

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
DRAINAGE PLAN

CODE	ROADWAY	FROM	TO	ESTIMATED QUANTITIES - PIPES												CODE	FROM	TO	ROADWAY
				I-2 12" L.F.	I-2 12" B-UP L.F.	I-2 15" C.I.B. L.F.	I-2 18" C.I.B. L.F.	I-2 18" B-UP L.F.	I-2 24" C.I.B. L.F.	I-2 24" B-UP L.F.	I-2 24" M.6.6(L) L.F.	I-2 24" M.6.6(C) L.F.	I-2 24" Rad. Pipe L.F.	I-2 24" 66" L.F.	I-2 24" 66" L.F.				
P-69	N.B. 14th St.	A-73	A-74																
P-70	N.B. 14th St.	A-74	A-75																
P-71	N.B. 14th St.	A-75	A-76																
P-72	W.B. Scovill	A-77	A-78	14															
P-73	W.B. Scovill	A-78	A-79																
P-74	N.B. 14th St.	A-79	A-76																
P-75	N.B. 14th St.	A-76	A-80																
P-76	S.B. 14th St.	A-81	A-82																
P-77	S.B. 14th St.	A-82	A-83																
P-78	S.B. 14th St.	A-83	A-80																
P-79	N.B. 14th St.	A-80	A-84																
P-80	S.B. 14th St.	A-85	A-88																
P-81	S.B. 14th St.	A-86	A-87	44															
P-82	S.B. 14th St.	A-87	A-88																
P-84	W.B. Scovill	B-151																	
P-85	East 18th St.	A-92	A-93																
P-86	East 14th St.	A-93	B-162																
Totals				58	338	78	270	174	70	106	588	64							

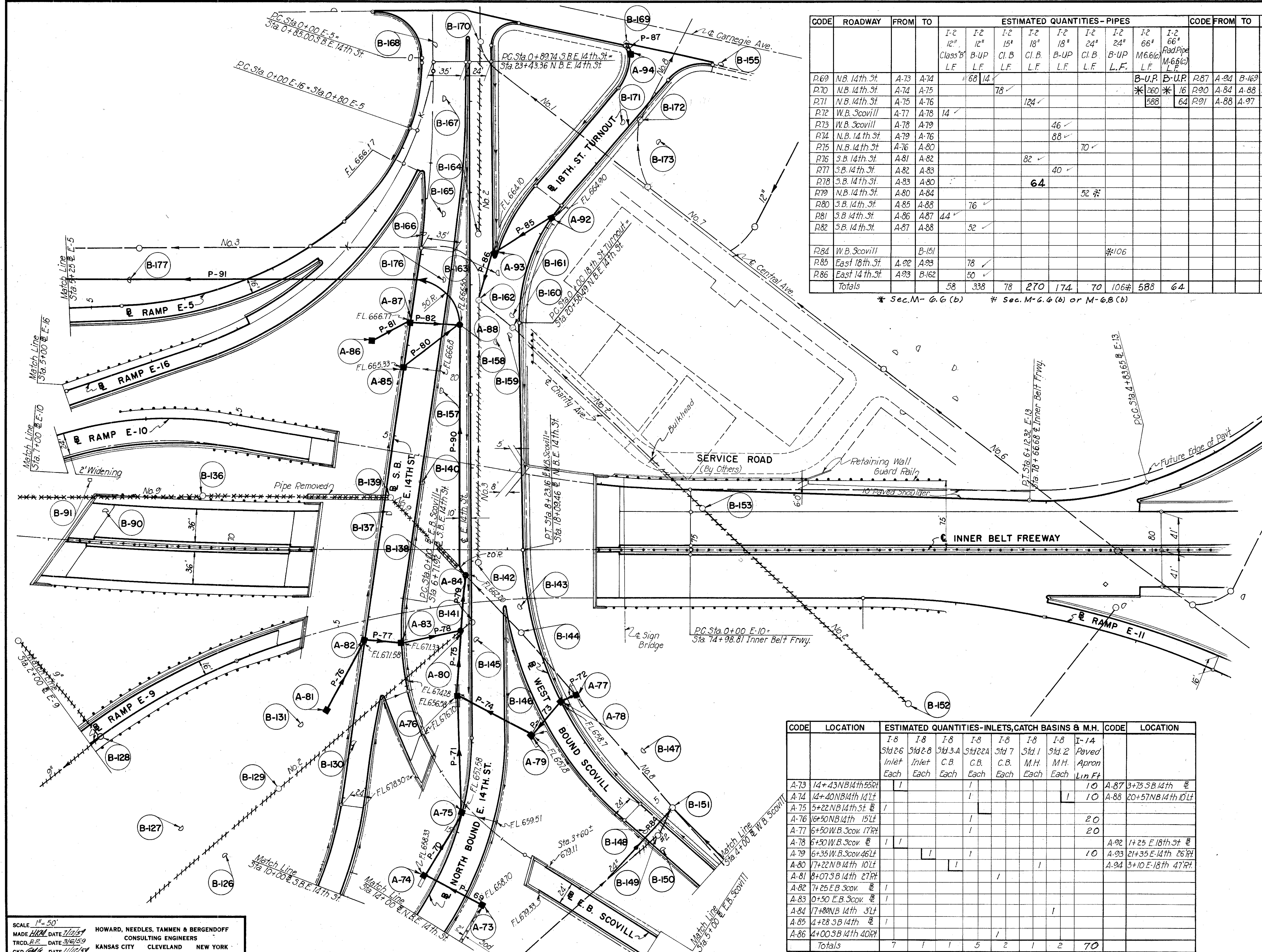
ESTIMATED QUANTITIES UNDERDRAINS		
1-4, 6" Underdrain Pipe	L.F.	4825
1-4, 8" C.M.P. Outlet For Underdrains	L.F.	110
1-5, Pipe Special	Each	8

\* Sec. M-6.6 (b) # Sec. M-6.6 (b) or M-6.8 (b)

CODE	LOCATION	ESTIMATED QUANTITIES - C.B.M.H.'S		
		I-8 M.H. Adj. to Grade Each	I-16 M.H. Aban. Each	I-16 Inlet Aban. Each
B-90	68+58 Frwy	23' Lt.		1
B-91	68+39 Frwy	59' Lt.		1
B-126	10+04 S.B.E. 14th	106' Rt.		1
B-127	9+96 S.B.E. 14th	161' Rt.		1
B-128	2+15 E-9	1' Rt.		1
B-129	9+00 S.B.E. 14th	70' Rt.		1
B-130	8+40 S.B.E. 14th	3' Lt.		1
B-131	8+26 S.B.E. 14th	54' Lt.		1
B-136	69+67 I.B. Frwy	54' Lt.		1
B-137	5+85 S.B.E. 14th	7' Lt.		1
B-138	6+26 S.B.E. 14th	61' Lt.		1
B-139	5+66 S.B.E. 14th	6' Lt.		1
B-140	5+46 S.B.E. 14th	38' Lt.		1
B-141	17+32 N.B.E. 14th	6		1
B-142	17+96 N.B.E. 14th	9' Rt.		1
B-143	7+67 W.B. Scovill	9' Lt.		1
B-144	7+38 W.B. Scovill	14' Lt.		1
B-145	17+13 N.B.E. 14th	5' Rt.		1
B-146	7+34 W.B. Scovill	32' Lt.		1
B-147	5+53 W.B. Scovill	144' Rt.		1
B-148	4+85 W.B. Scovill	18' Lt.		1
B-149	4+73 W.B. Scovill	12' Lt.		1
B-150	4+48 W.B. Scovill	22' Lt.		1
B-151	4+85 W.B. Scovill	21' Rt.	1*	
B-157	4+44 S.B.E. 14th	46' Lt.		1
B-158	20+41 N.B.E. 14th	29' Rt.		1
B-159	20+49 N.B.E. 14th	43' Rt.		1
B-160	20+53 N.B.E. 14th	46' Rt.	1	
B-161	20+68 N.B.E. 14th	44' Rt.		1
B-162	20+85 N.B.E. 14th	10' Rt.	1	
B-163	21+15 N.B.E. 14th	29' Rt.		1
B-164	21+54 N.B.E. 14th	10' Rt.	1	
B-165	21+76 N.B.E. 14th	28' Lt.		1
B-166	21+56 N.B.E. 14th	51' Lt.		1
B-167	23+02 N.B.E. 14th	28' Lt.		1
B-168	23+61 N.B.E. 14th	38' Lt.		1
B-169	23+61 N.B.E. 14th	171' Rt.		1
B-170	23+66 N.B.E. 14th	11' Rt.		1
B-172	22+79 N.B.E. 14th	188' Rt.	1	
B-173	22+64 N.B.E. 14th	207' Rt.		1
B-176	3+20 S.B. 14th	30' Lt.		1
B-177	4+32 E-5	27' Rt.		1
B-171	2+54 18th St. TO	8' Lt.		1
Totals			5	29

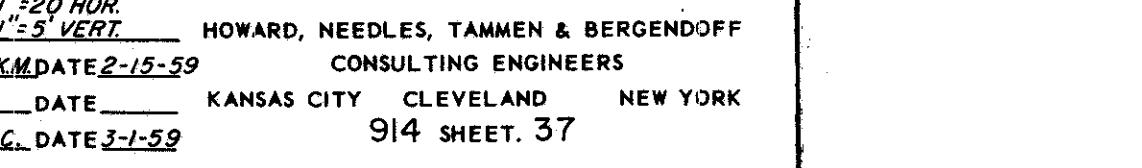
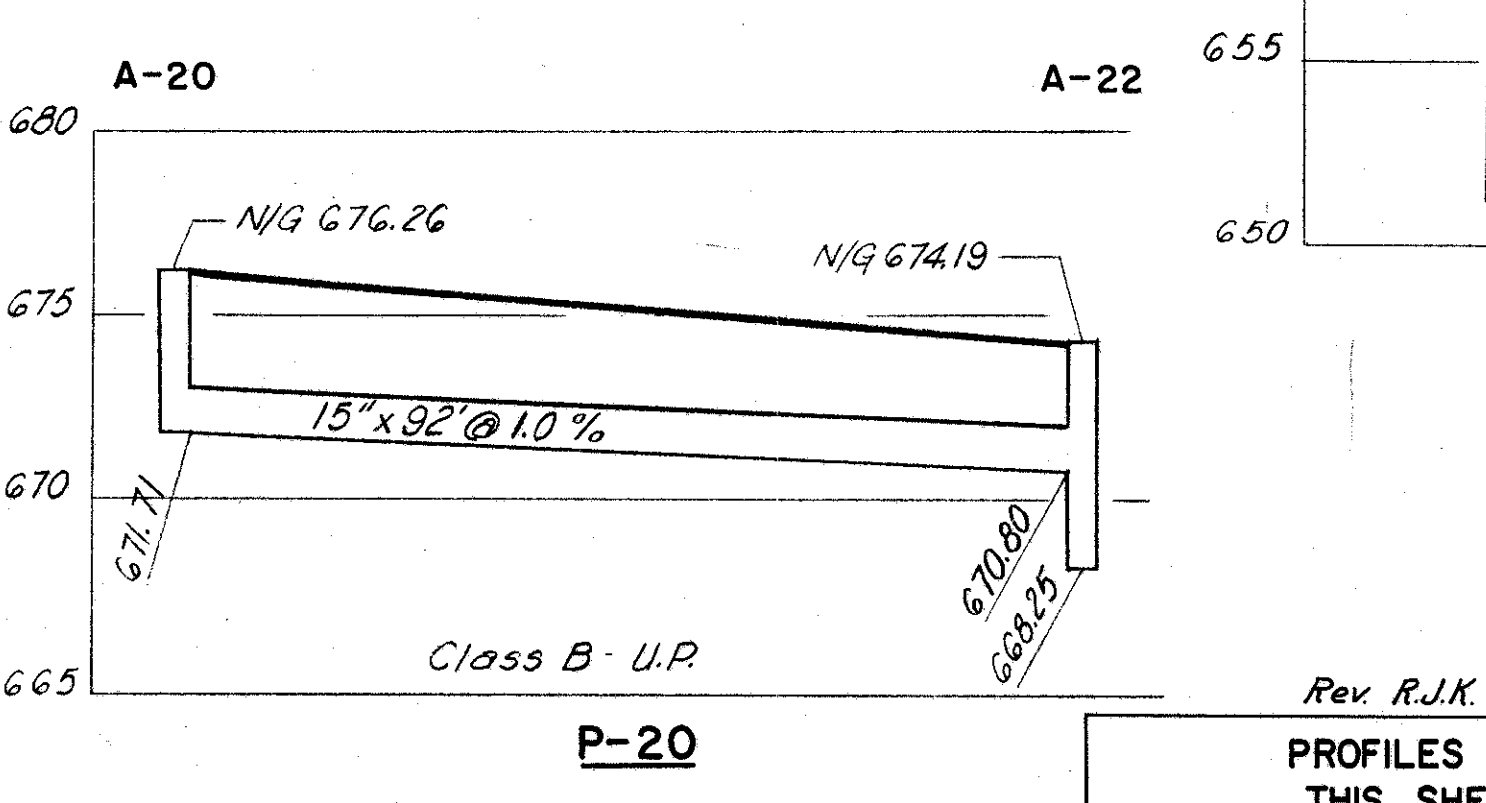
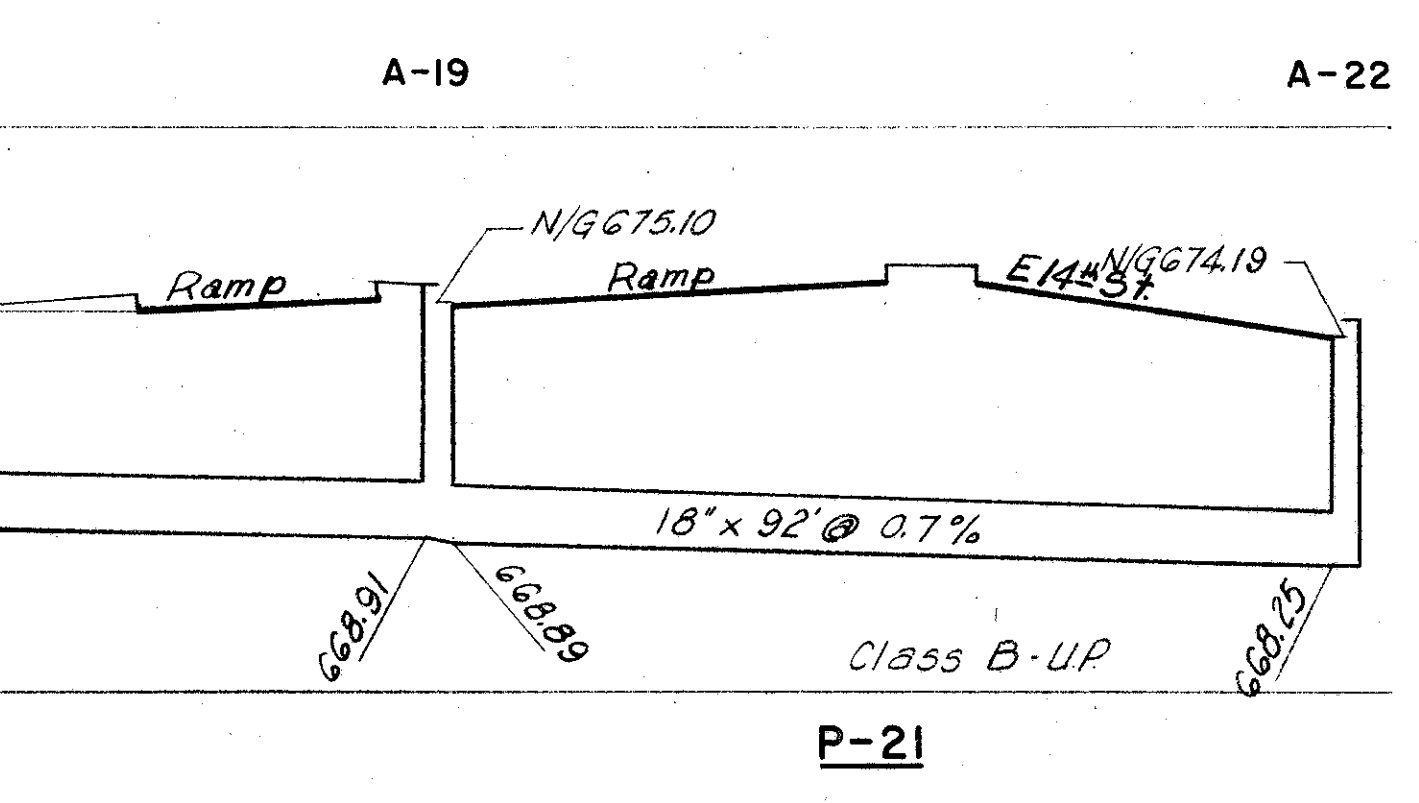
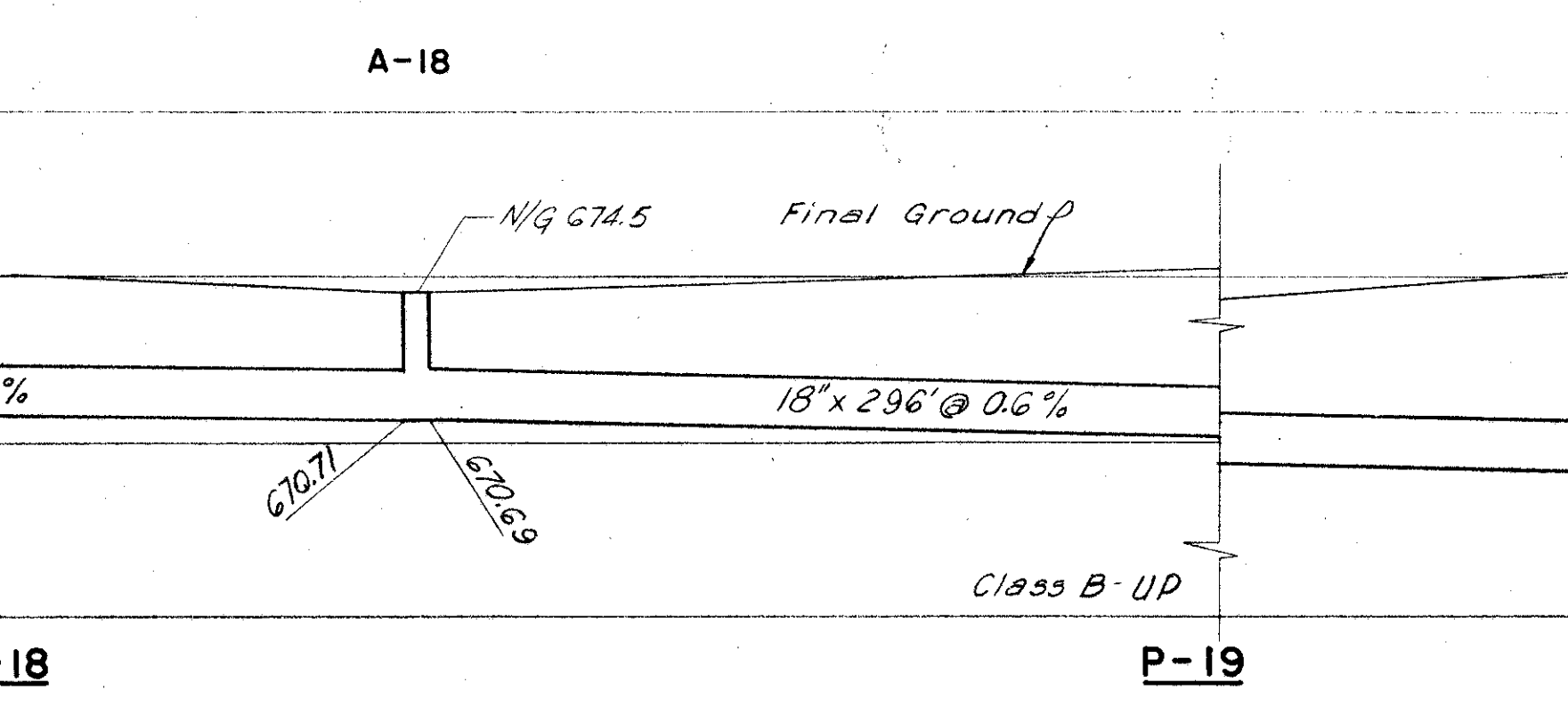
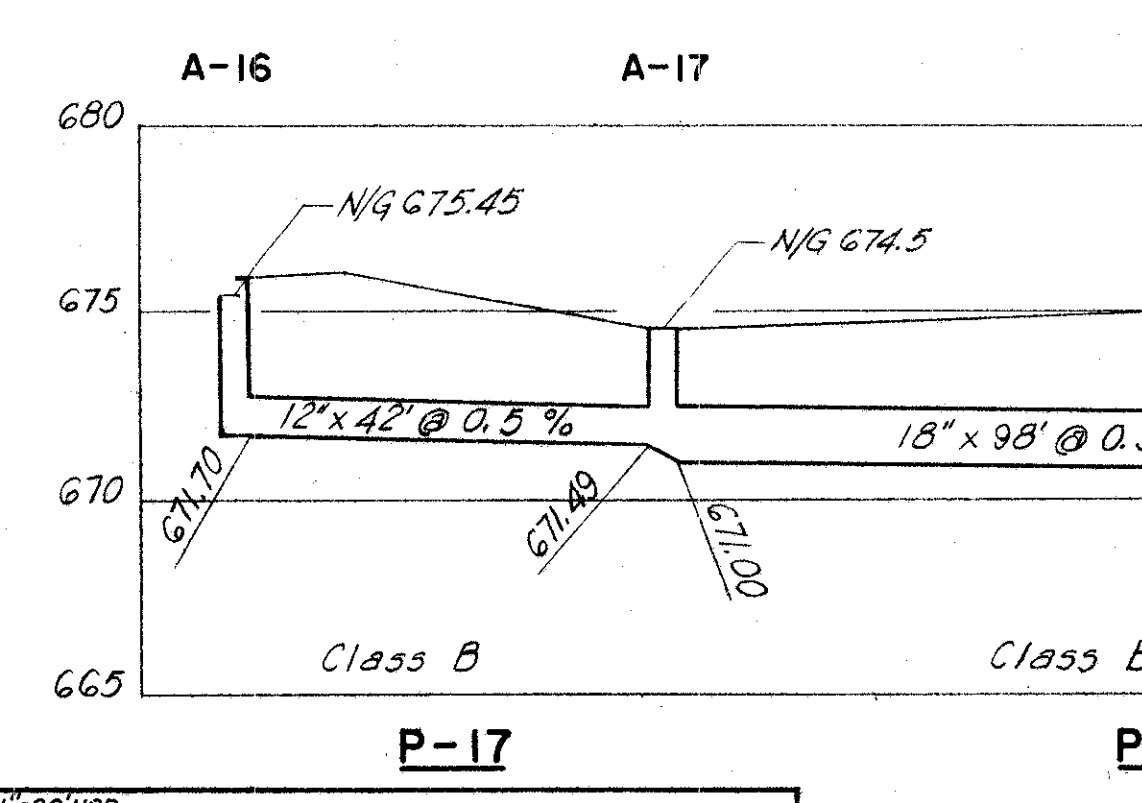
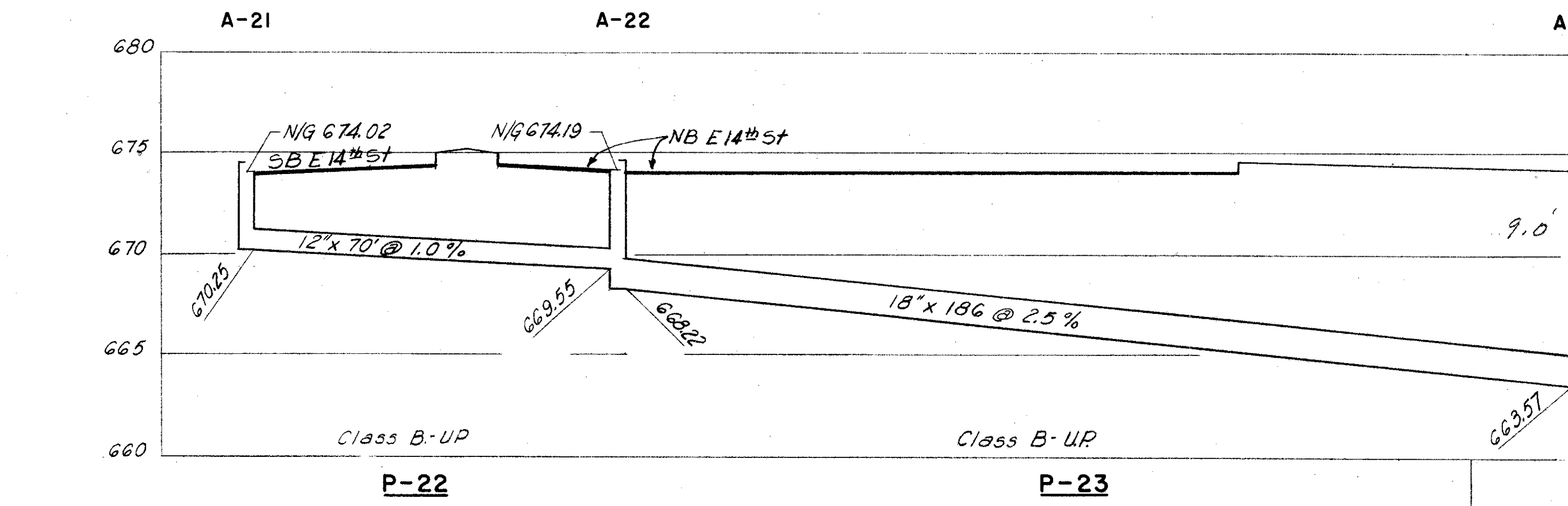
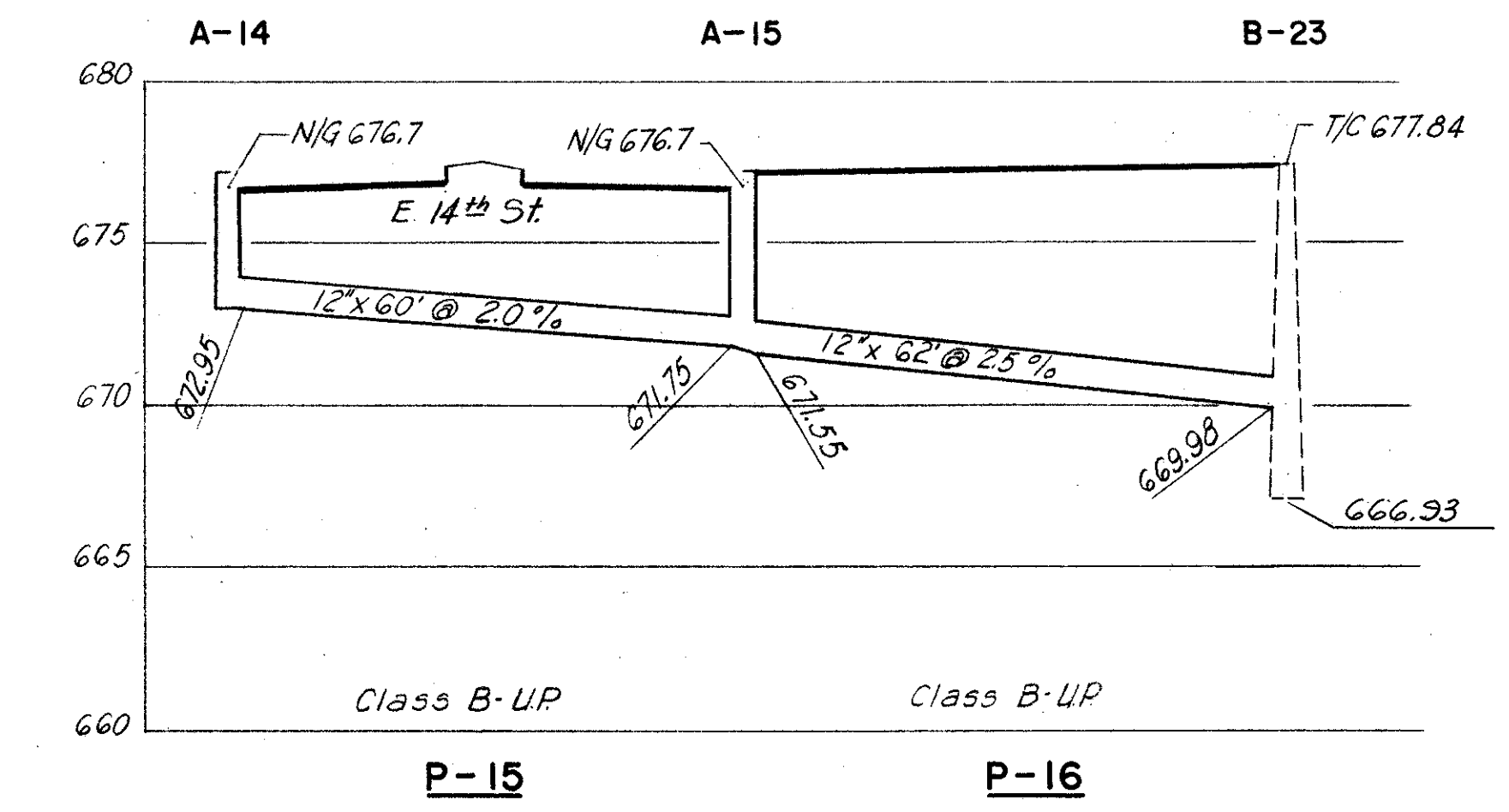
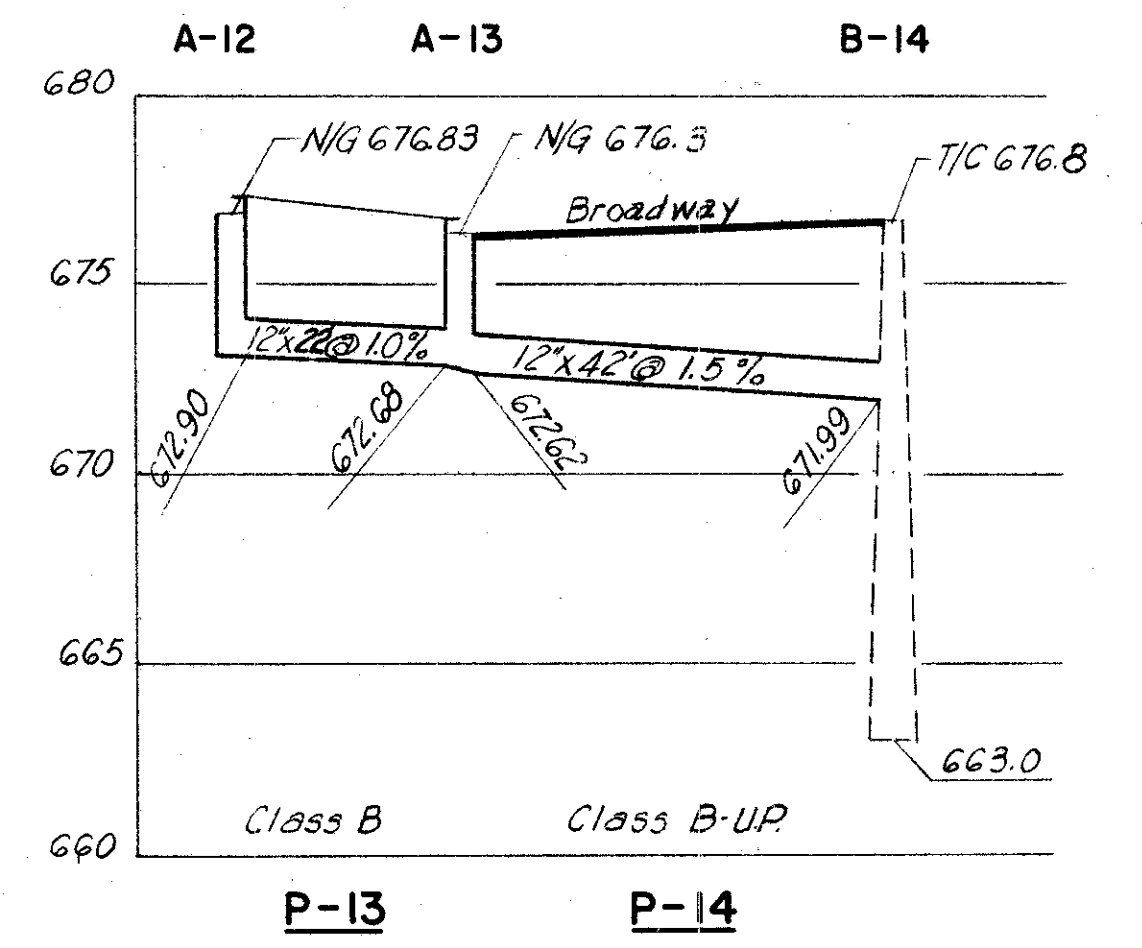
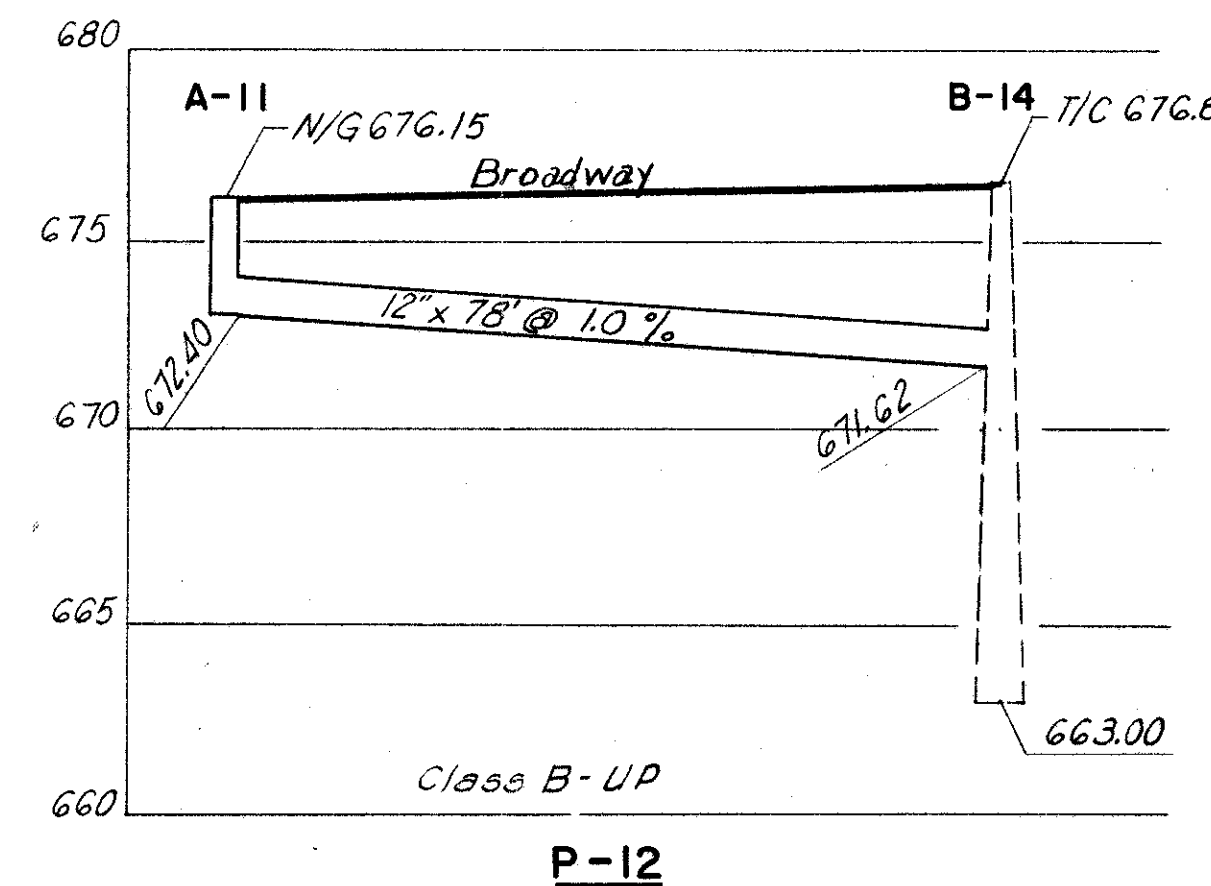
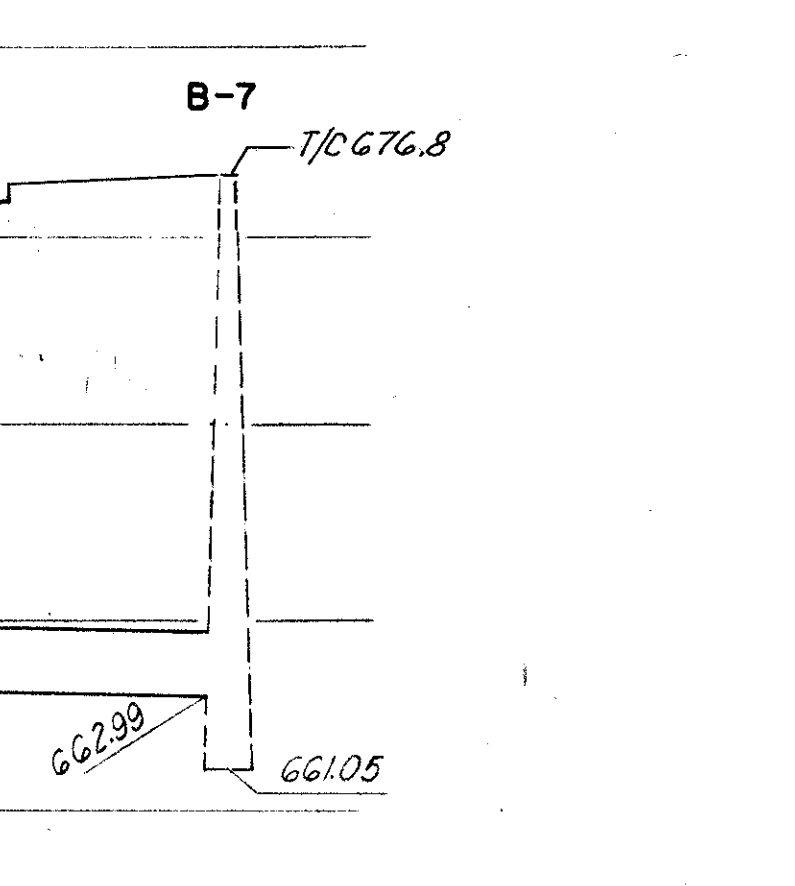
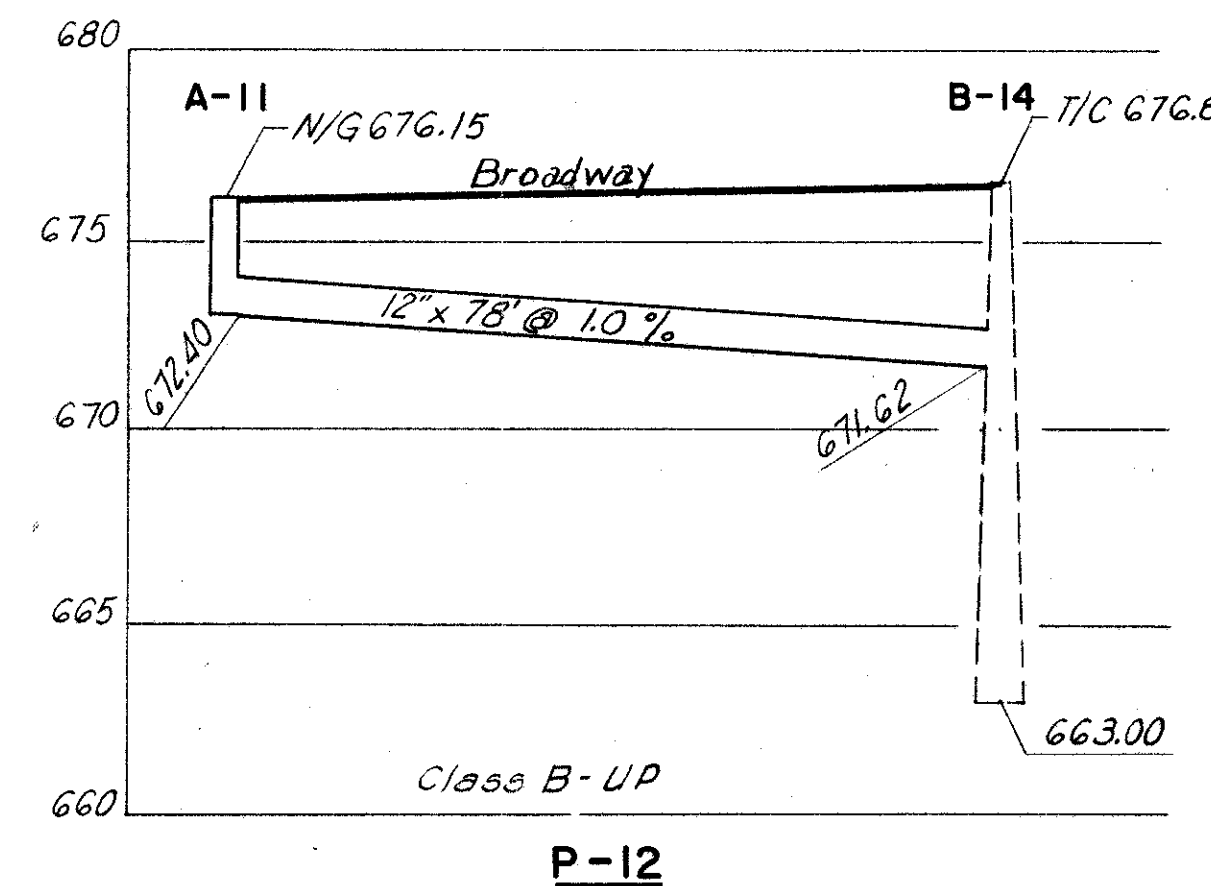
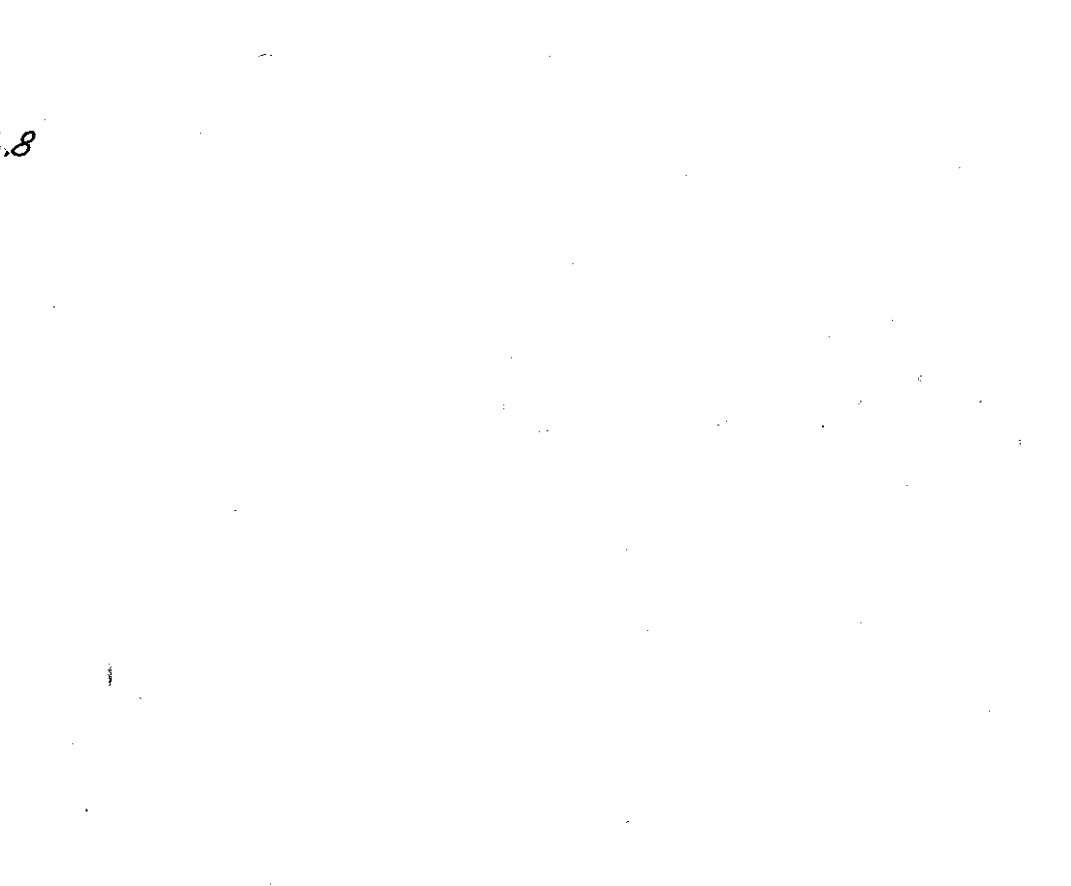
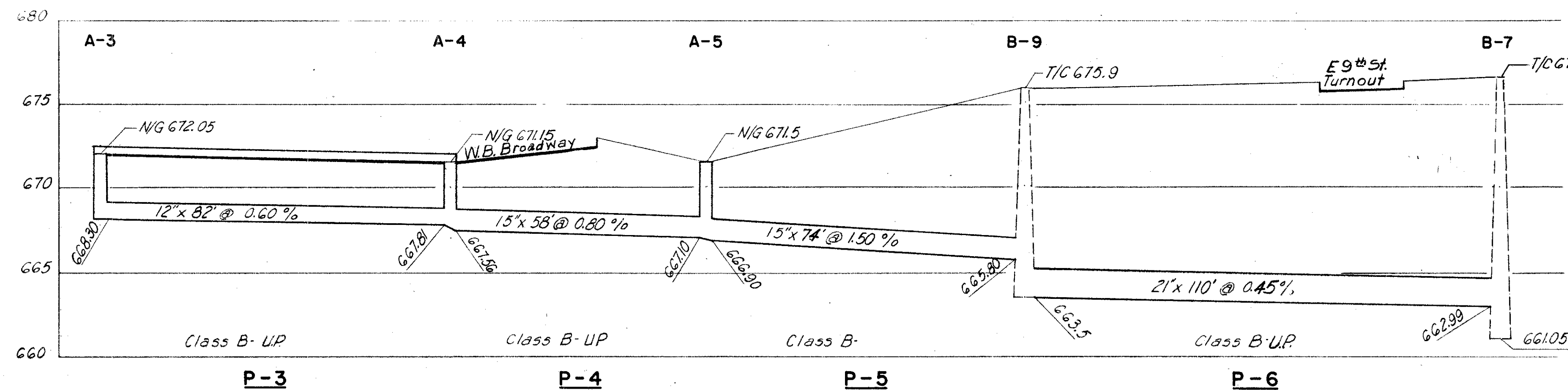
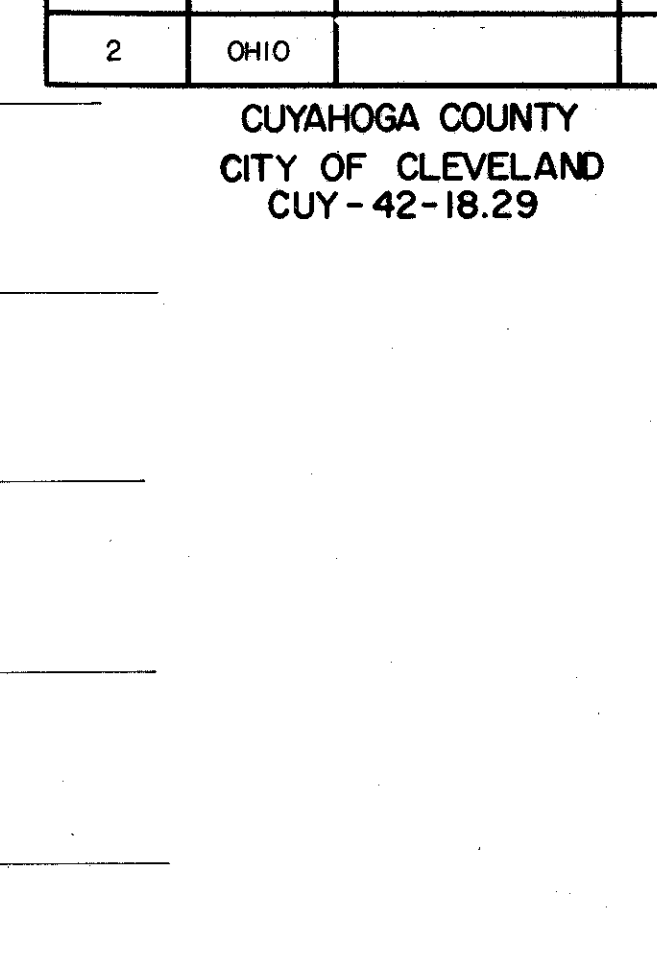
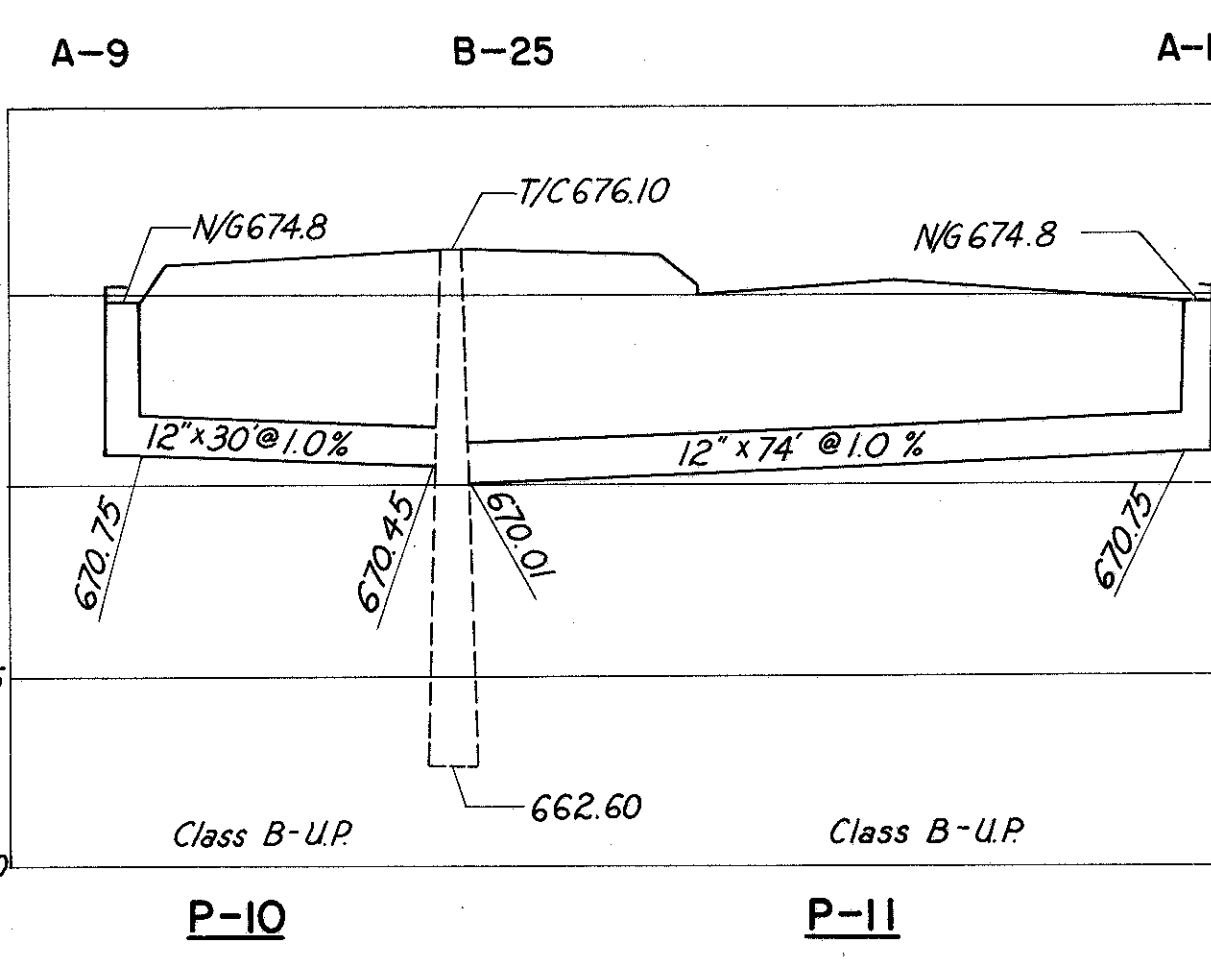
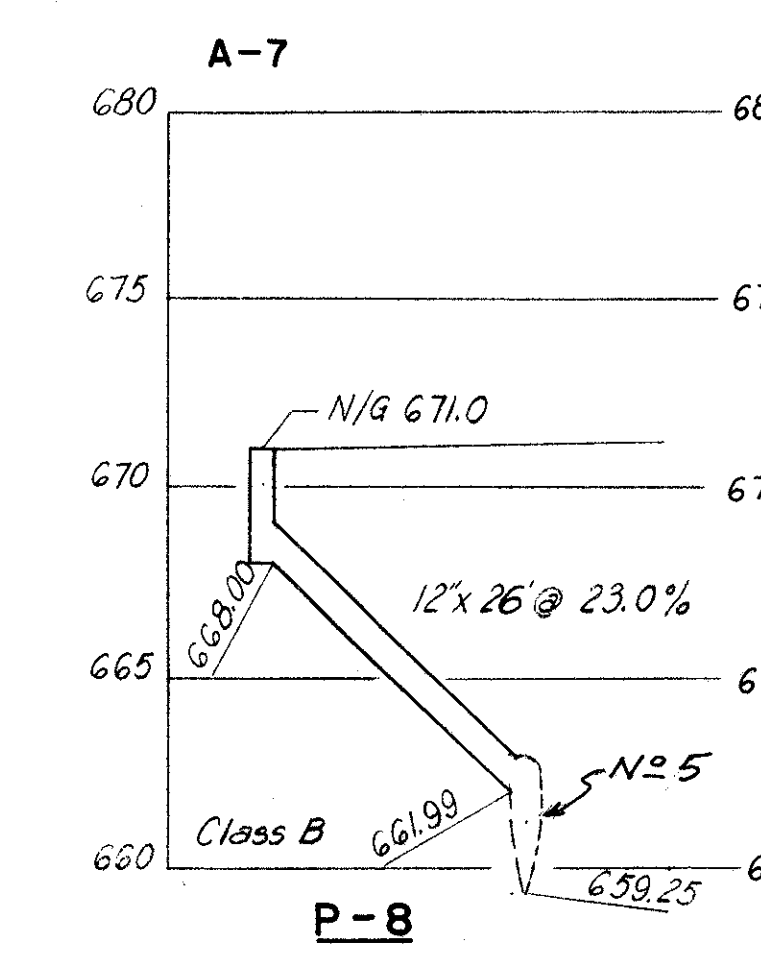
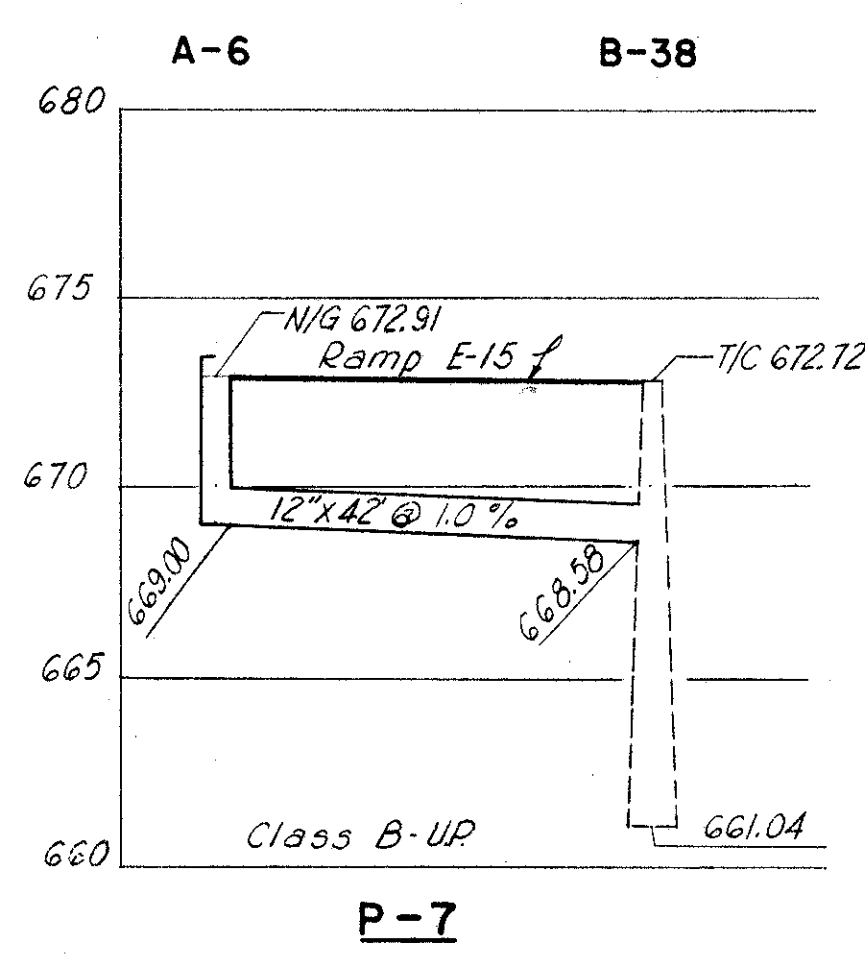
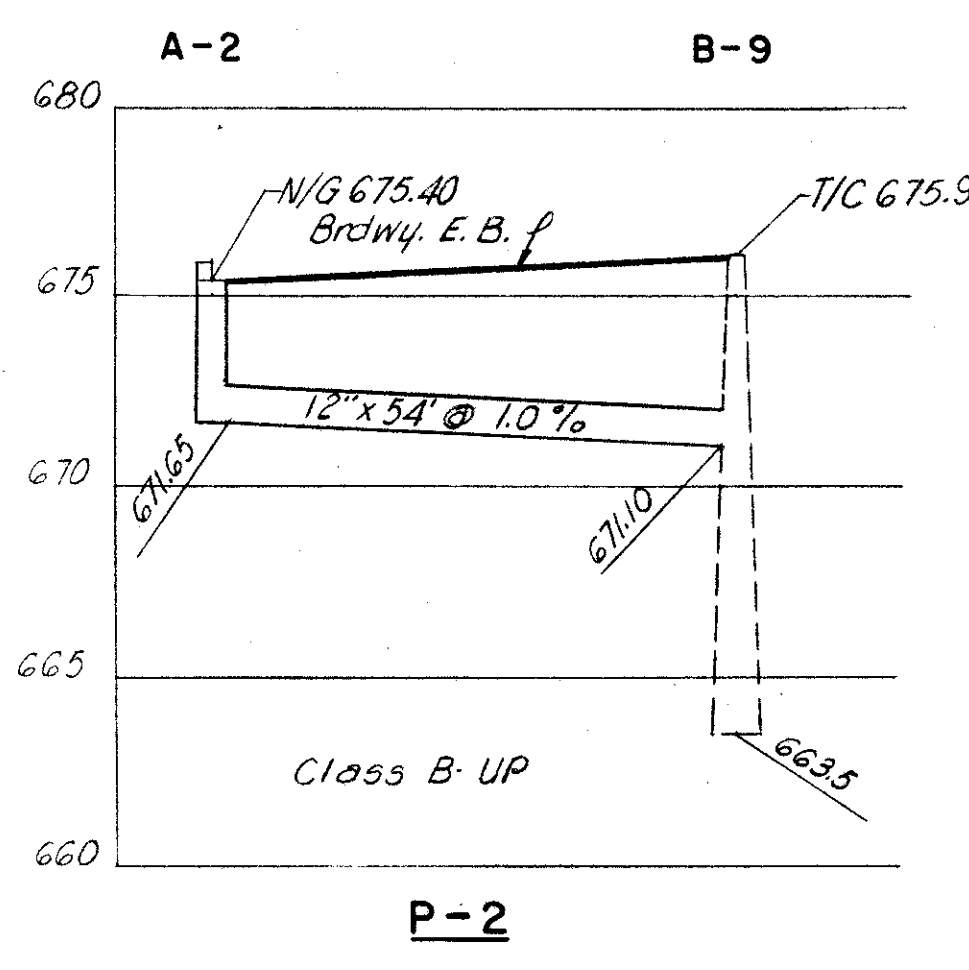
\* Item I-8, Manhole Reconstructed to Grade, as per plan.

CODE	LOCATION	ESTIMATED QUANTITIES - INLETS, CATCH BASINS & M.H.							CODE	LOCATION
		I-8 Std 2.6 Inlet Each	I-8 Std 2.8 Inlet Each	I-8 Std 3.4 C.B. Each	I-8 Std 2.2 C.B. Each	I-8 Std 7 C.B. Each	I-8 Std 1 M.H. Each	I-8 Std 2 M.H. Each		
A-73	14+43 N.B. 14th 55Rt	1						10	A-87	3+75 S.B. 14th
A-74	14+40 N.B. 14th 14' Lt							10	A-88	20+57 N.B. 14th 10' Lt
A-75	5+22 N.B. 14th St	1								
A-76	16+50 N.B. 14th 15' Lt							20		
A-77	6+50 W.B. Scov. 17' Rt							20		
A-78	6+50 W.B. Scov. 6	1	1							
A-79	6+35 W.B. Scov. 46' Lt							10		
A-80	17+22 N.B. 14th 10' Lt									
A-81	8+07 S.B. 14th 27' Rt									
A-82	7+25 E.B. Scov. 6	1								
A-83	0+50 E.B. Scov. 6	1								
A-84	17+80 N.B. 14th 3' Lt									
A-85	4+28 S.B. 14th 6	1								
A-86	4+00 S.B. 14th 40' Rt									
Totals		7	1	1	5	2	1	2	70	



SCALE 1" = 50'  
MADE BY DATE 1/15/51 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD. BY DATE 3/16/59 CONSULTING ENGINEERS  
CKD. BY DATE 1/14/51 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 36

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



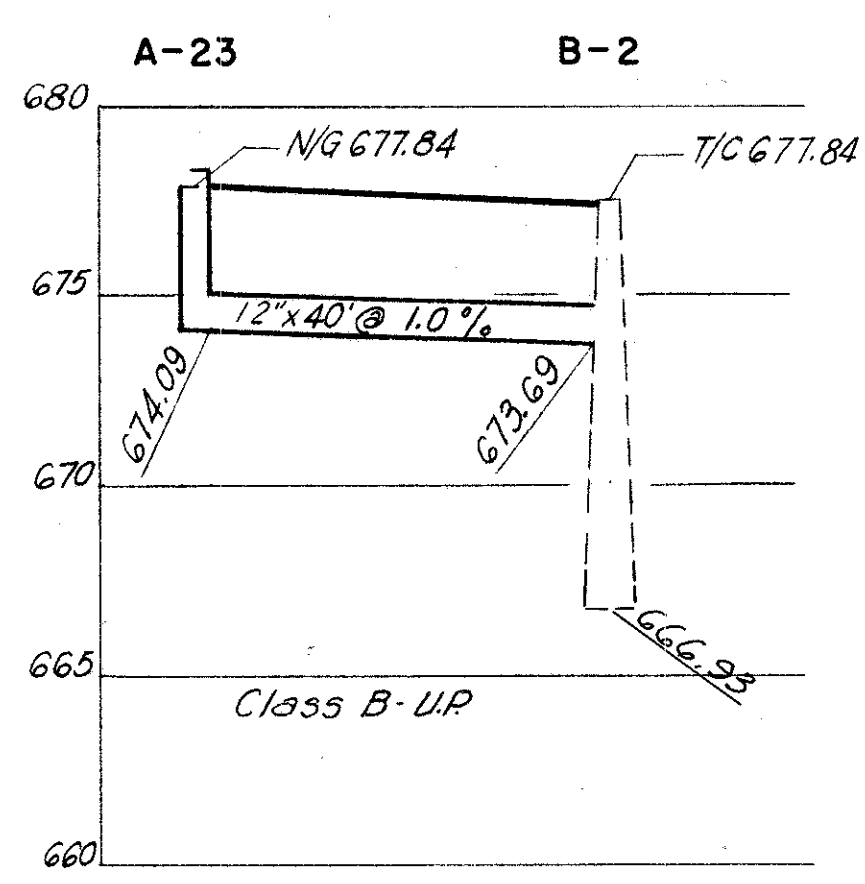
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SCALE 1"=3' VERT  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
DATE 2-15-59  
914 SHEET 37

Rev. R.J.K. 1-11-60  
PROFILES ON THIS SHEET  
P-2 TO P-23

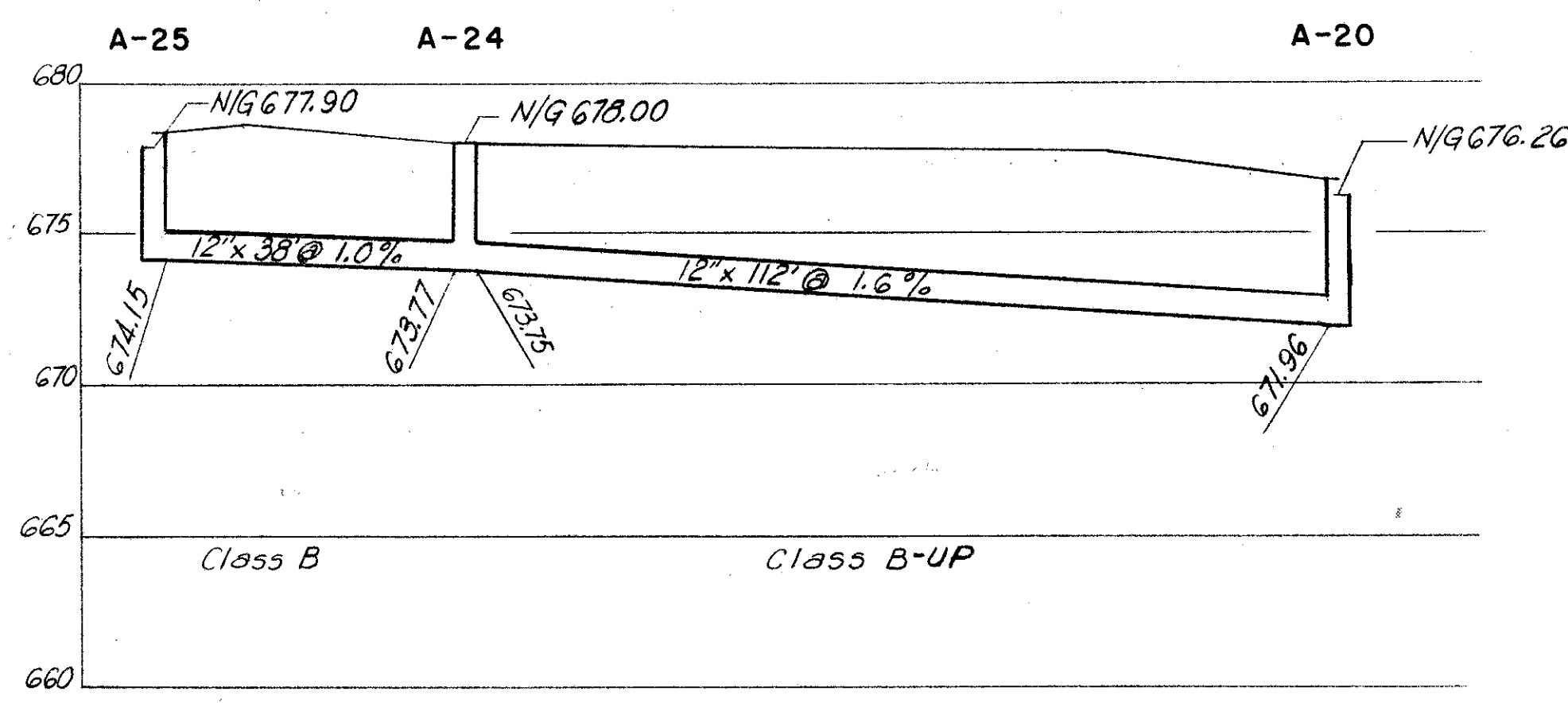
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2	OHIO		

38  
175

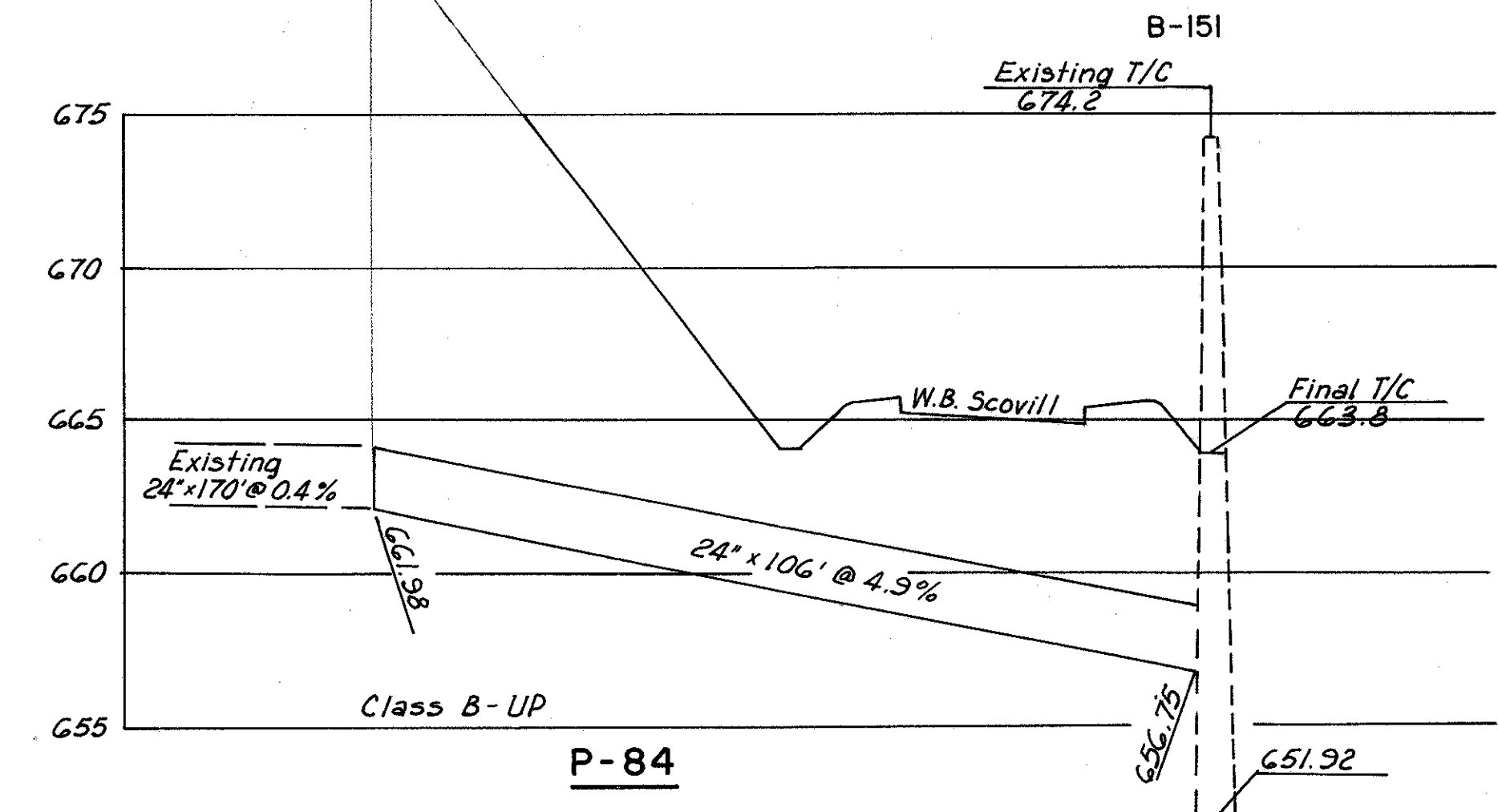
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUI-42-18.29



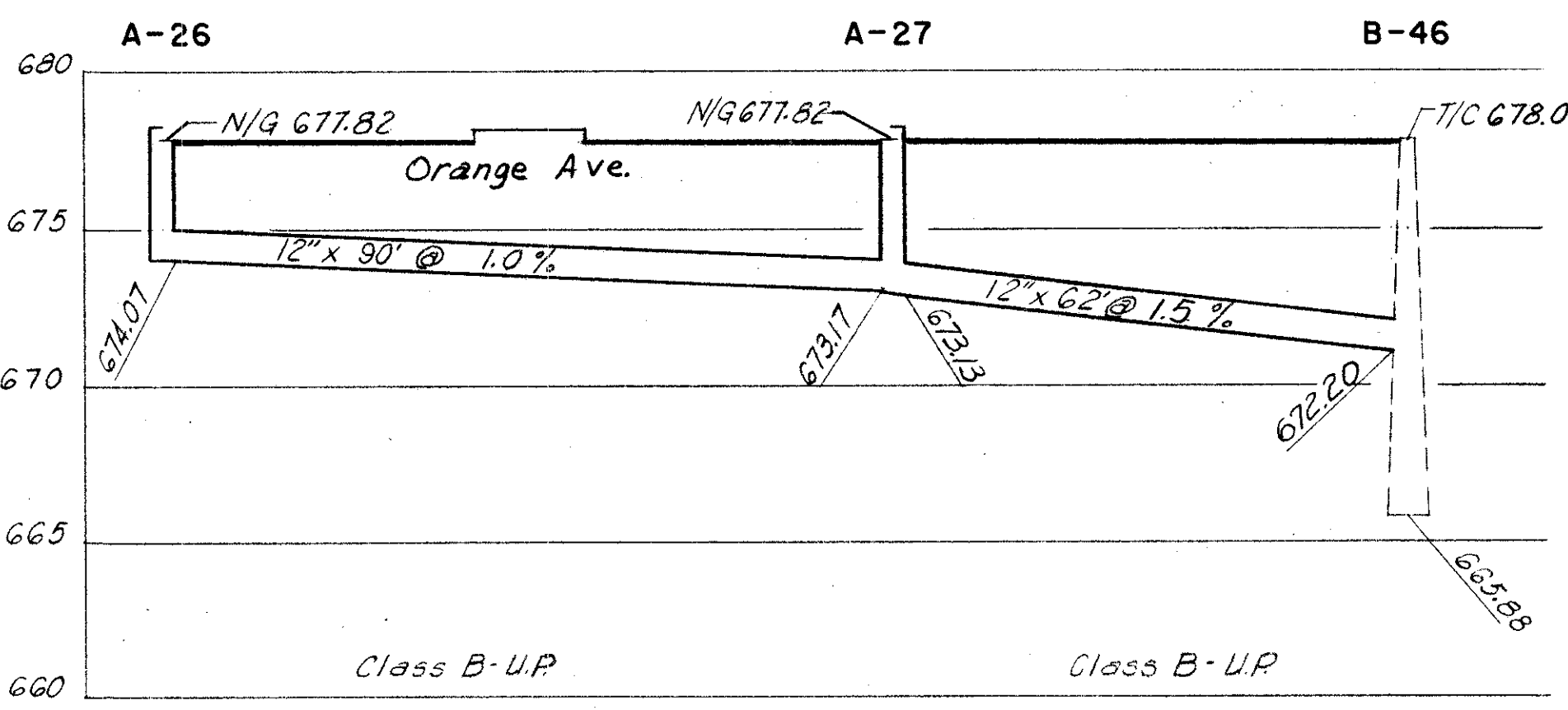
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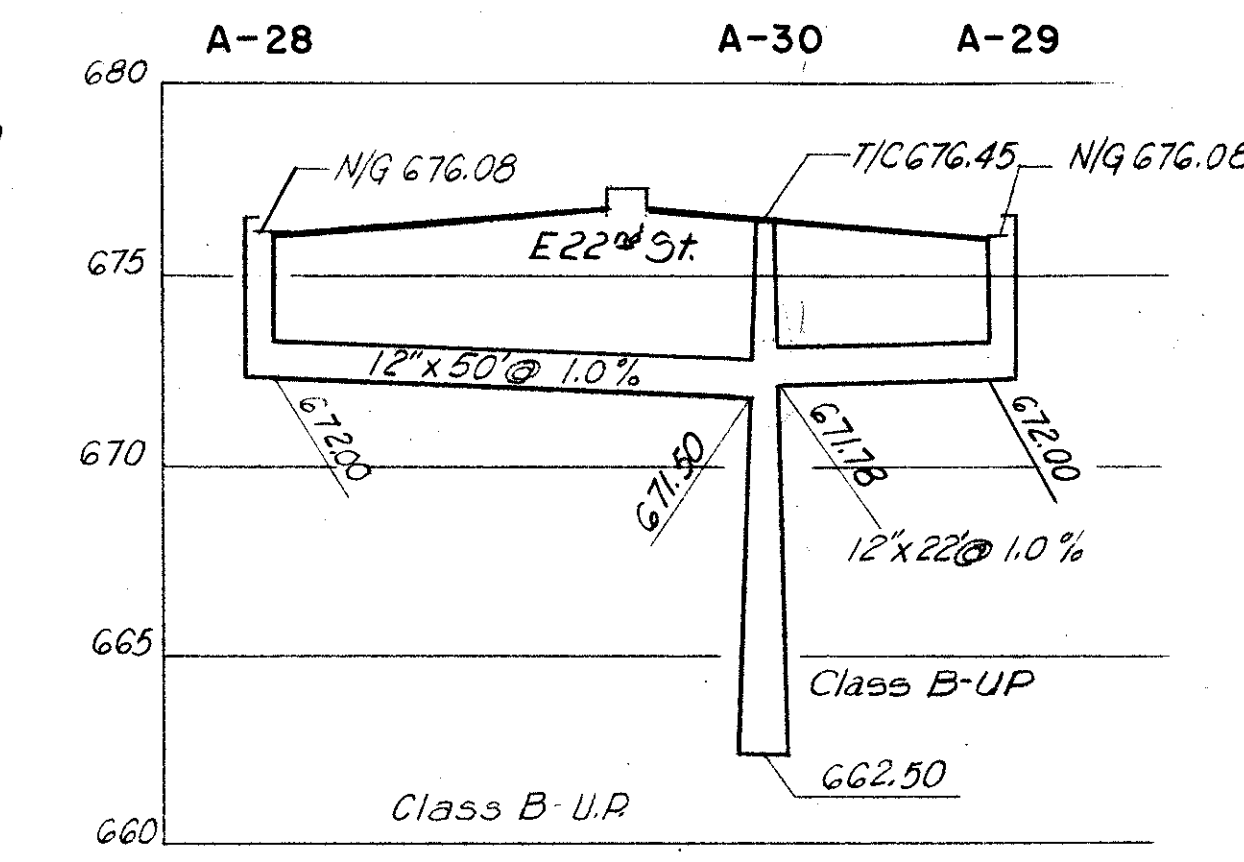
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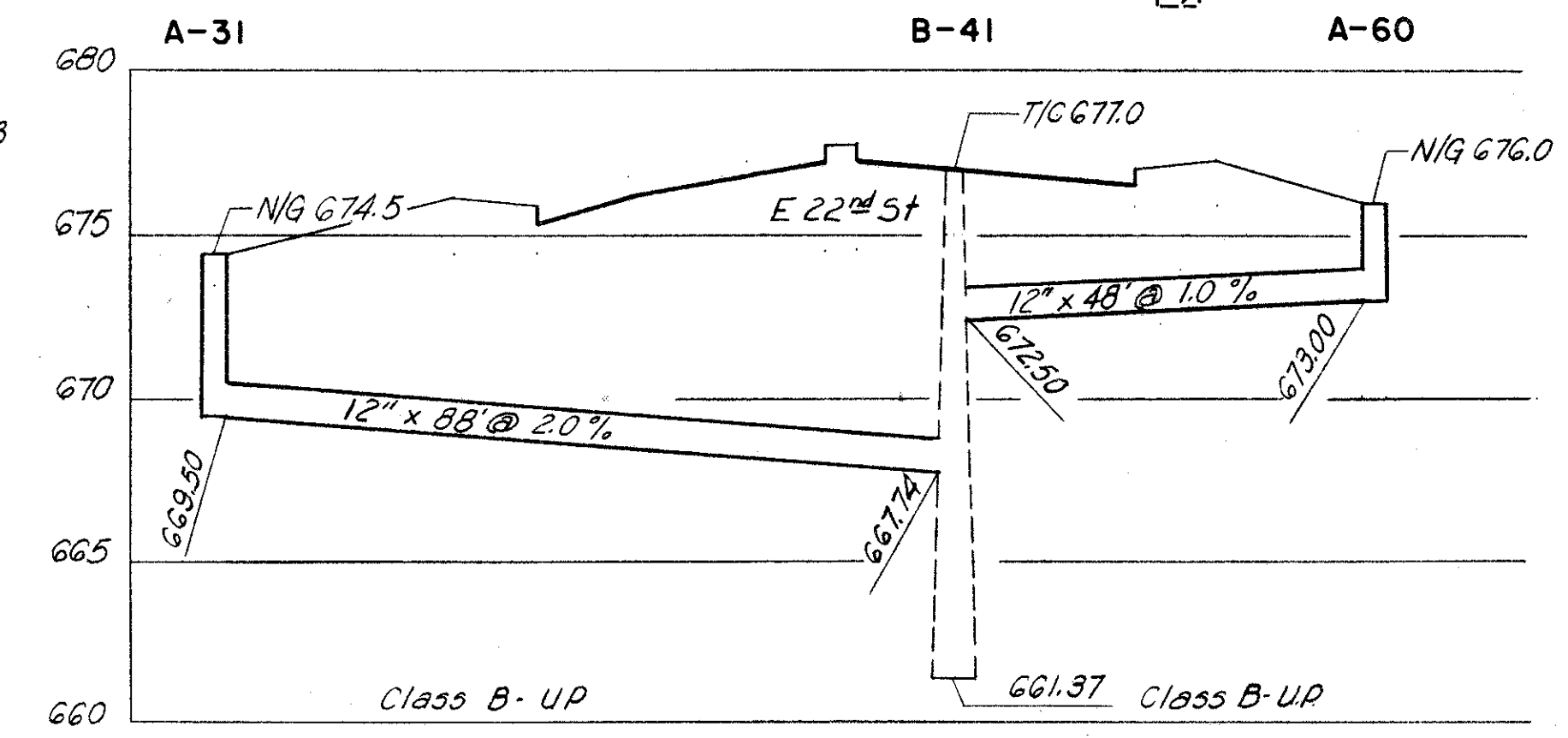
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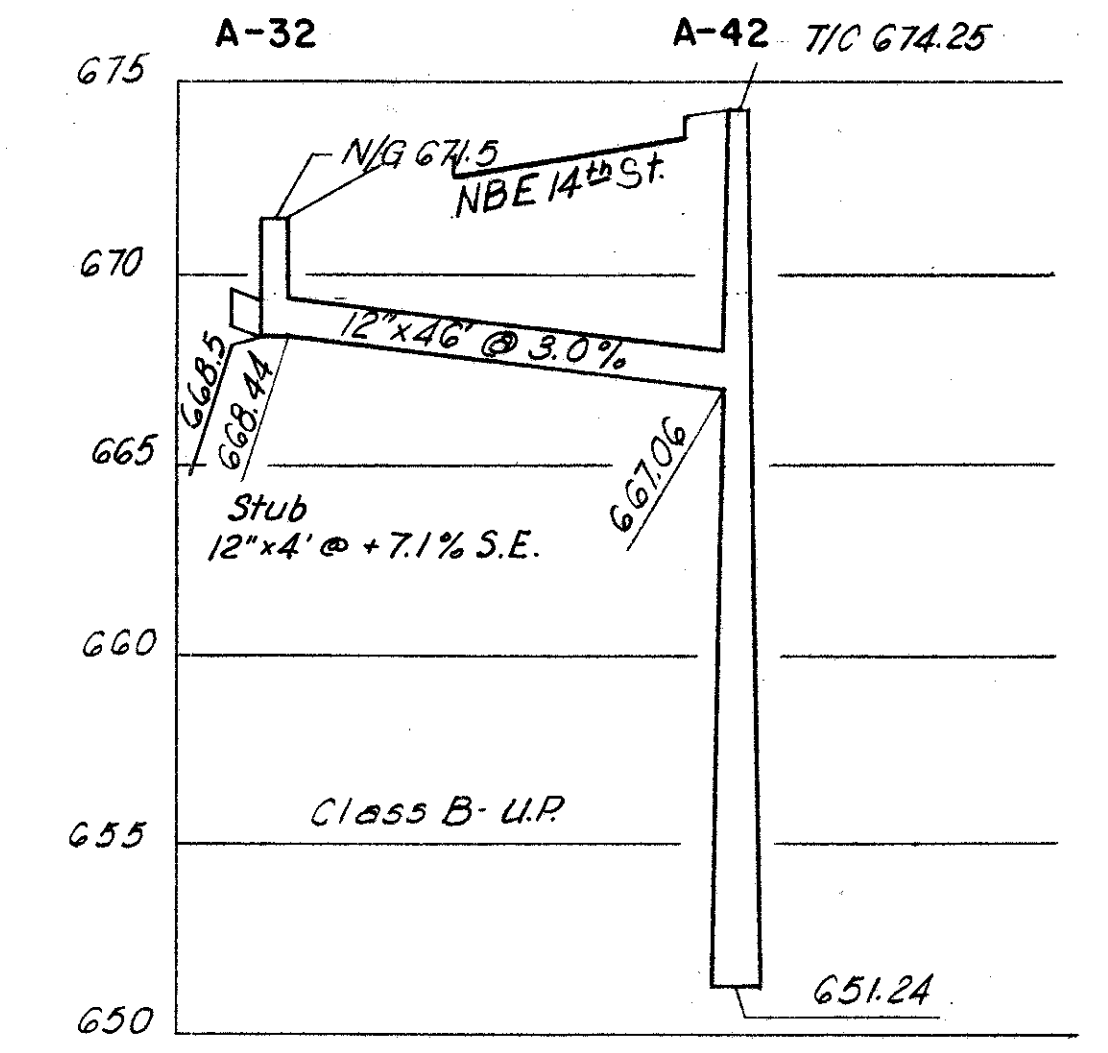
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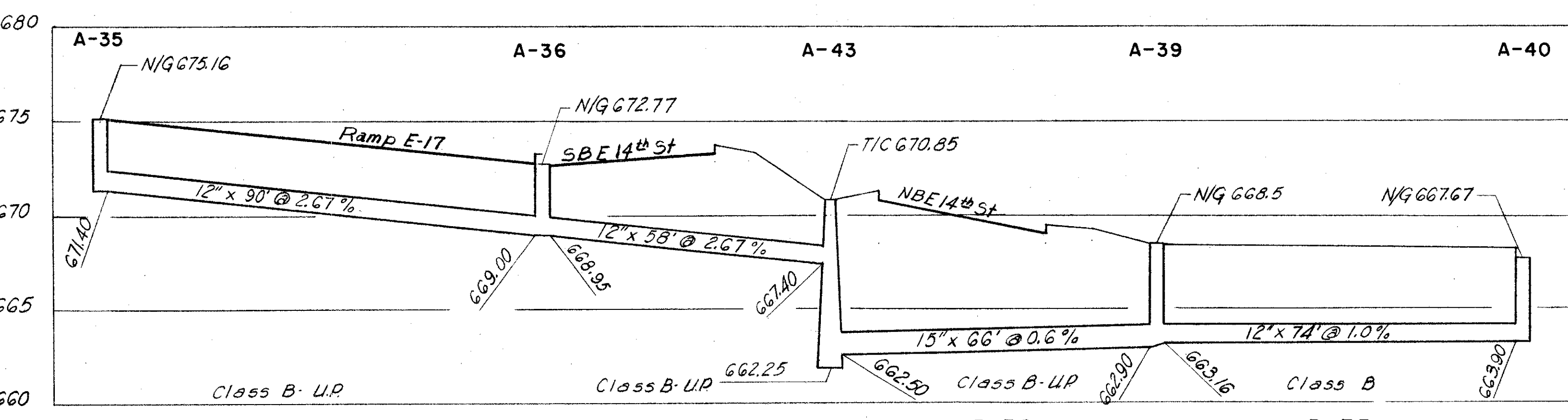
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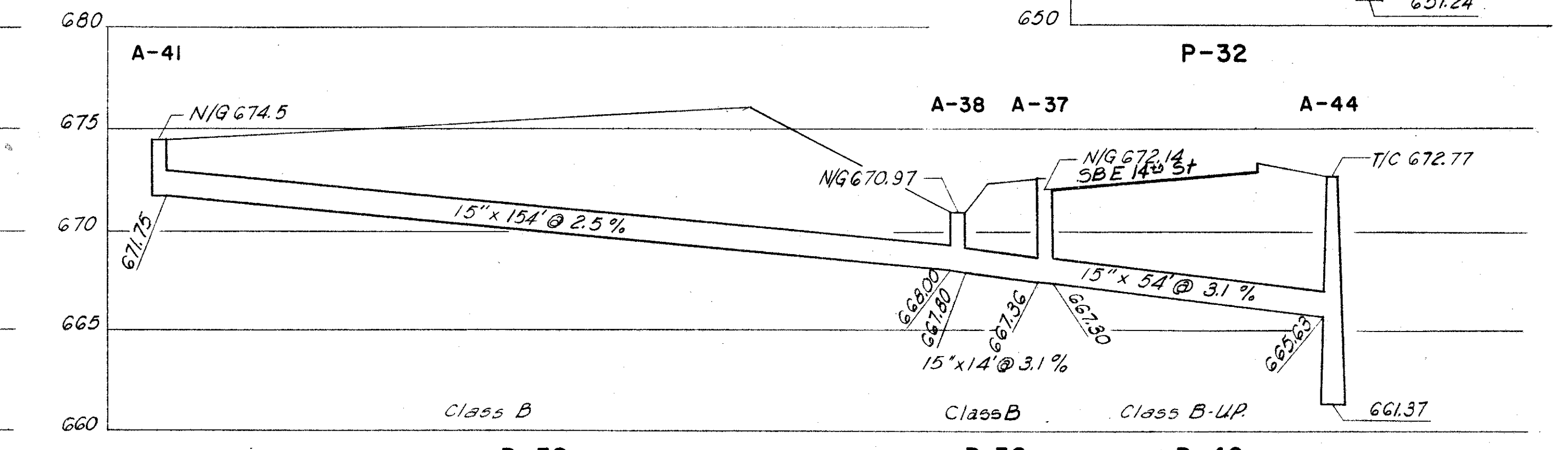
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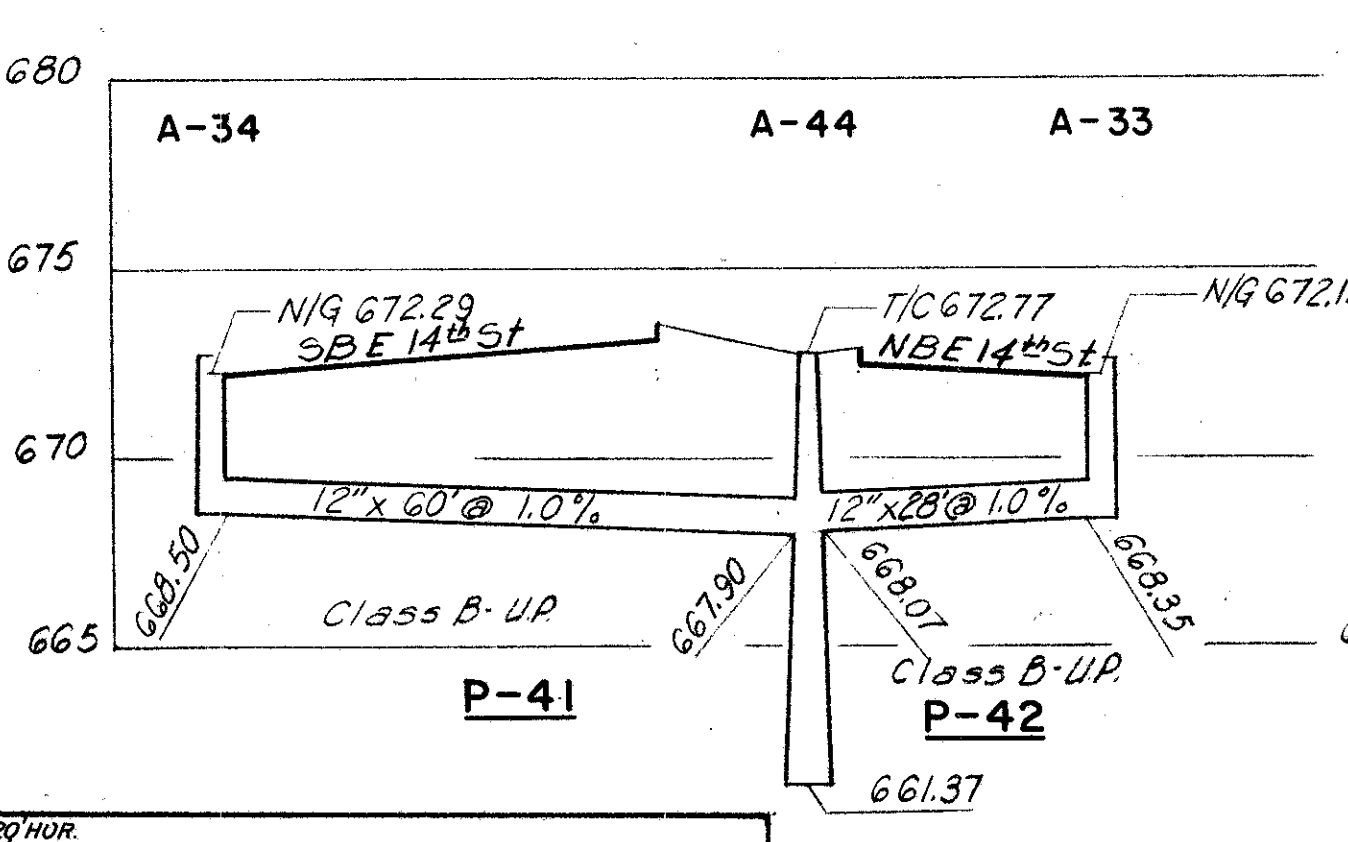
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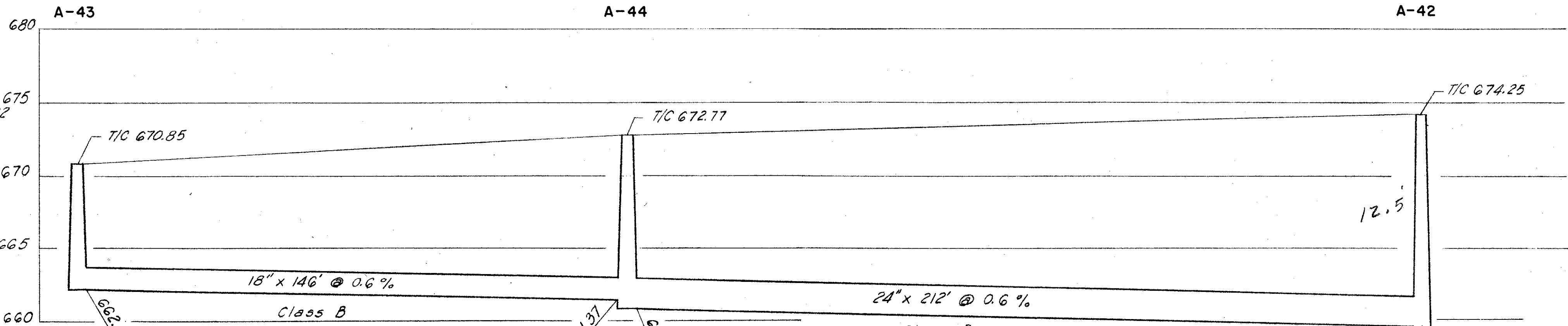
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P-38



P-41



P-37

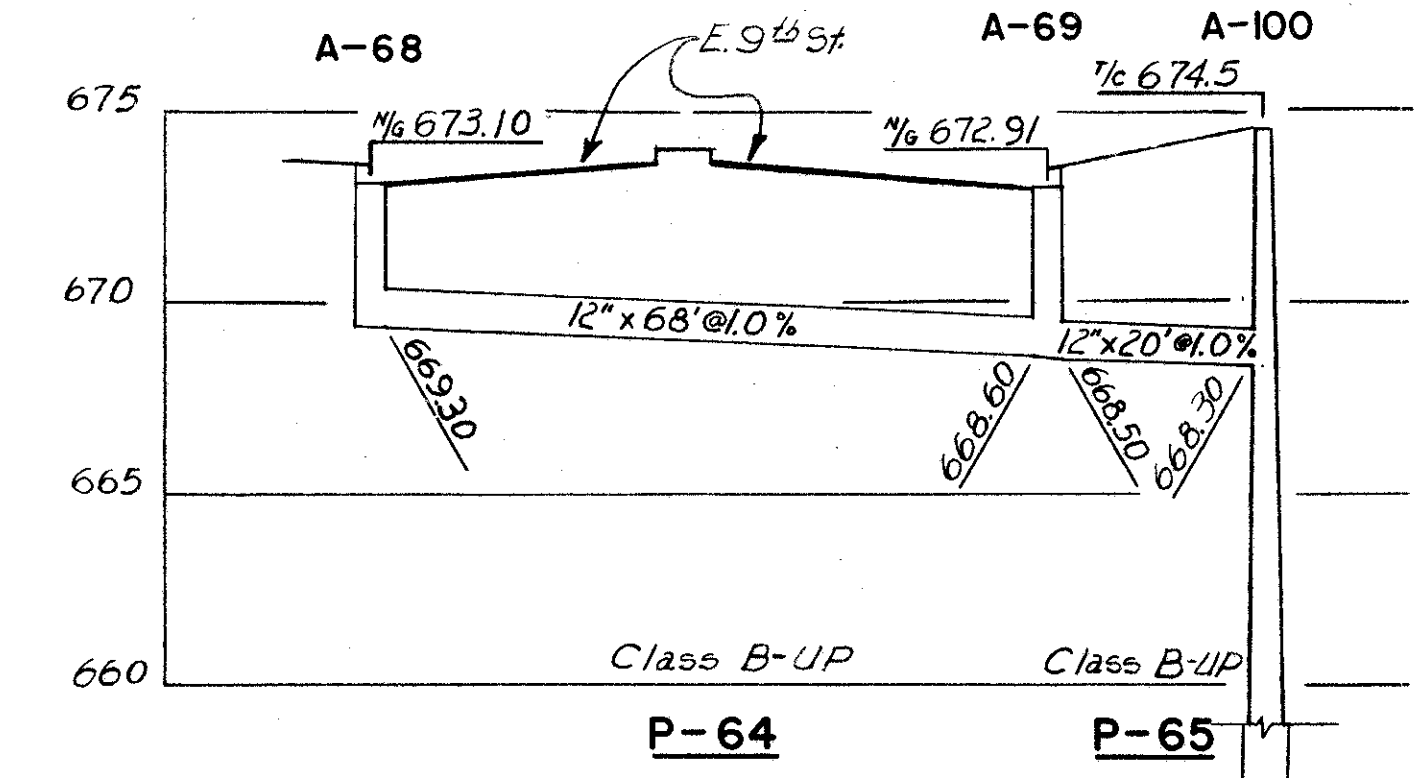
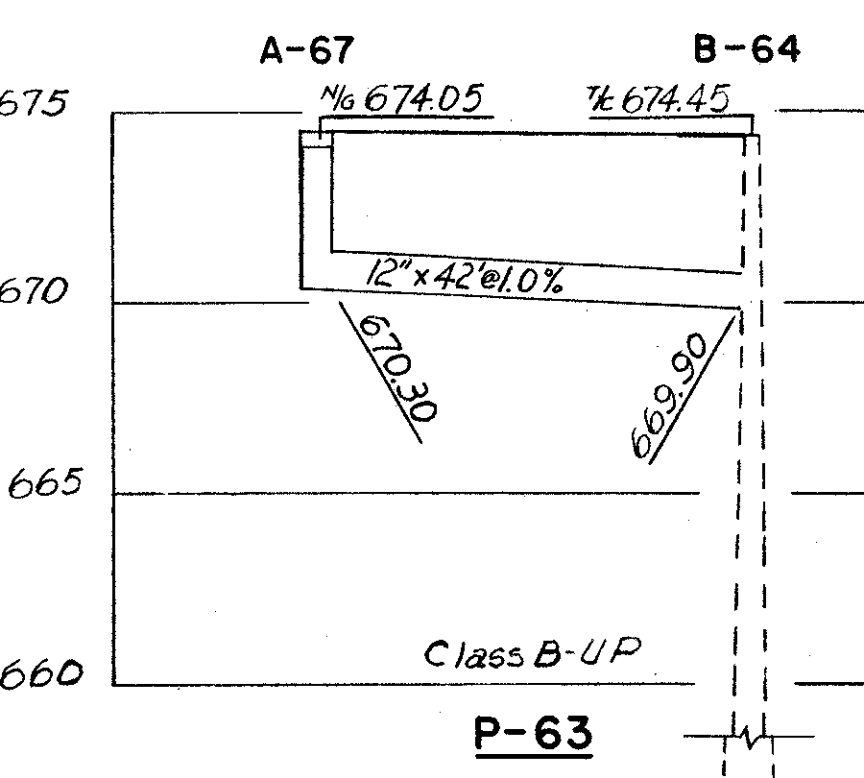
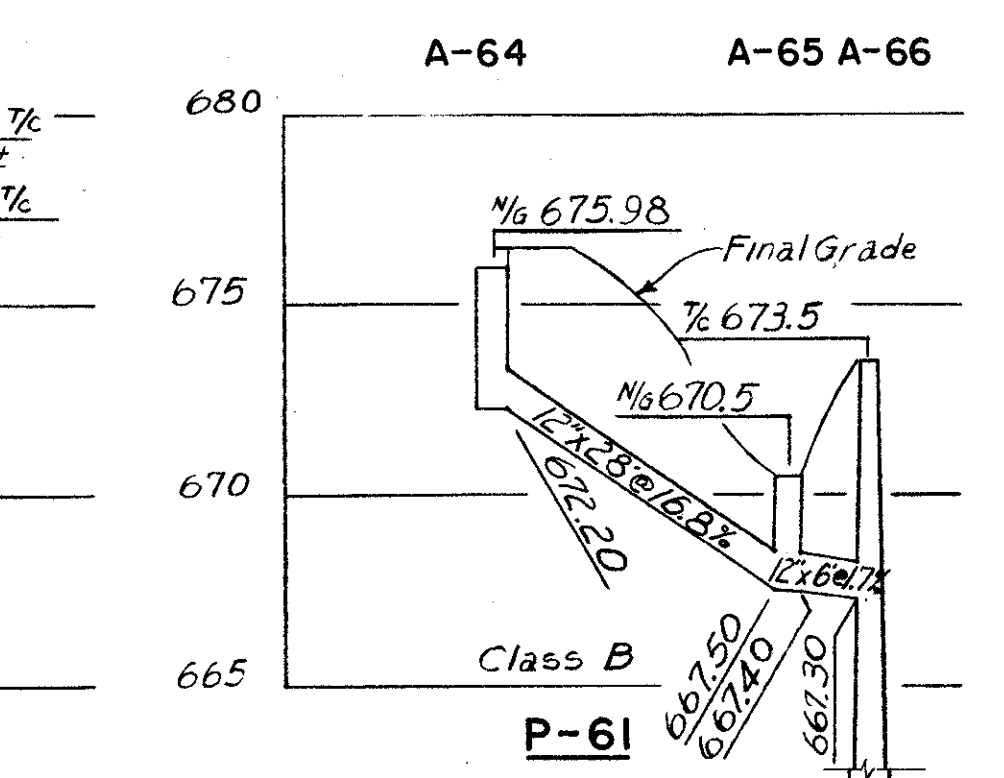
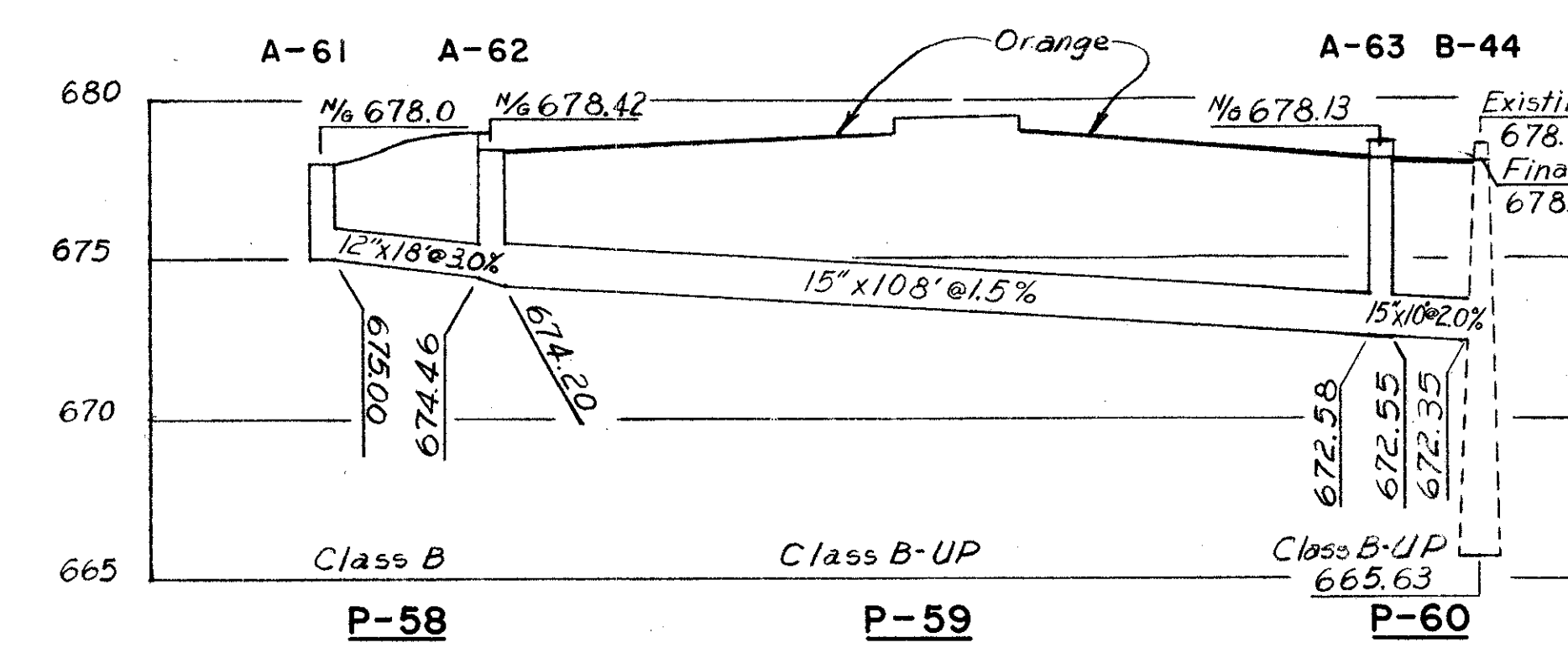
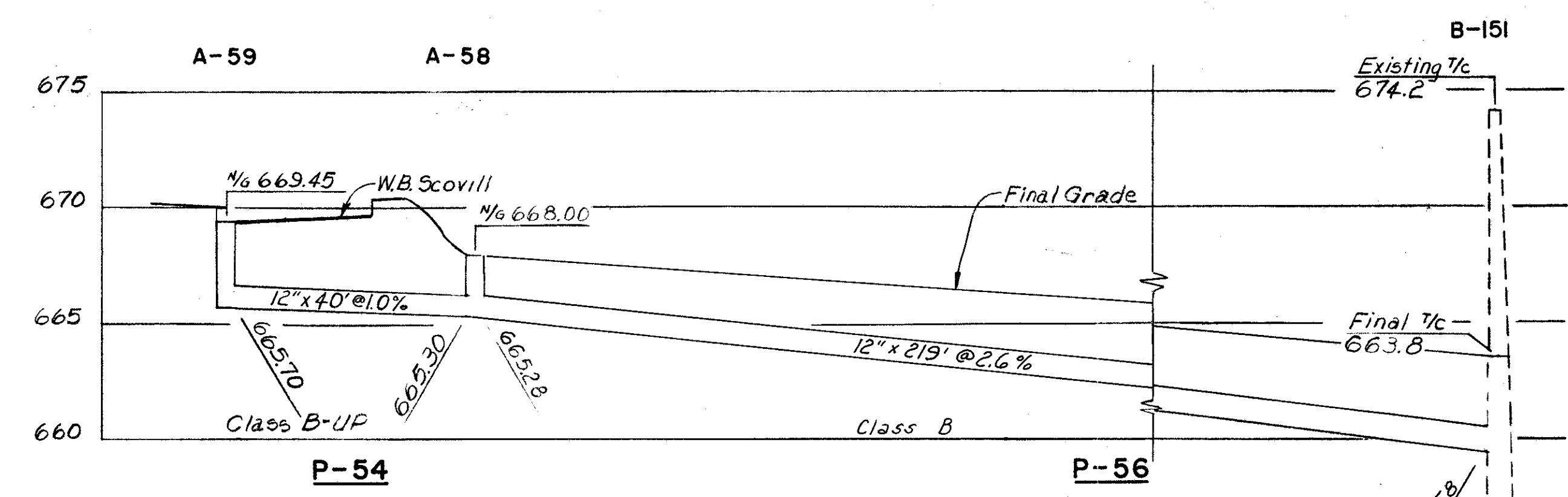
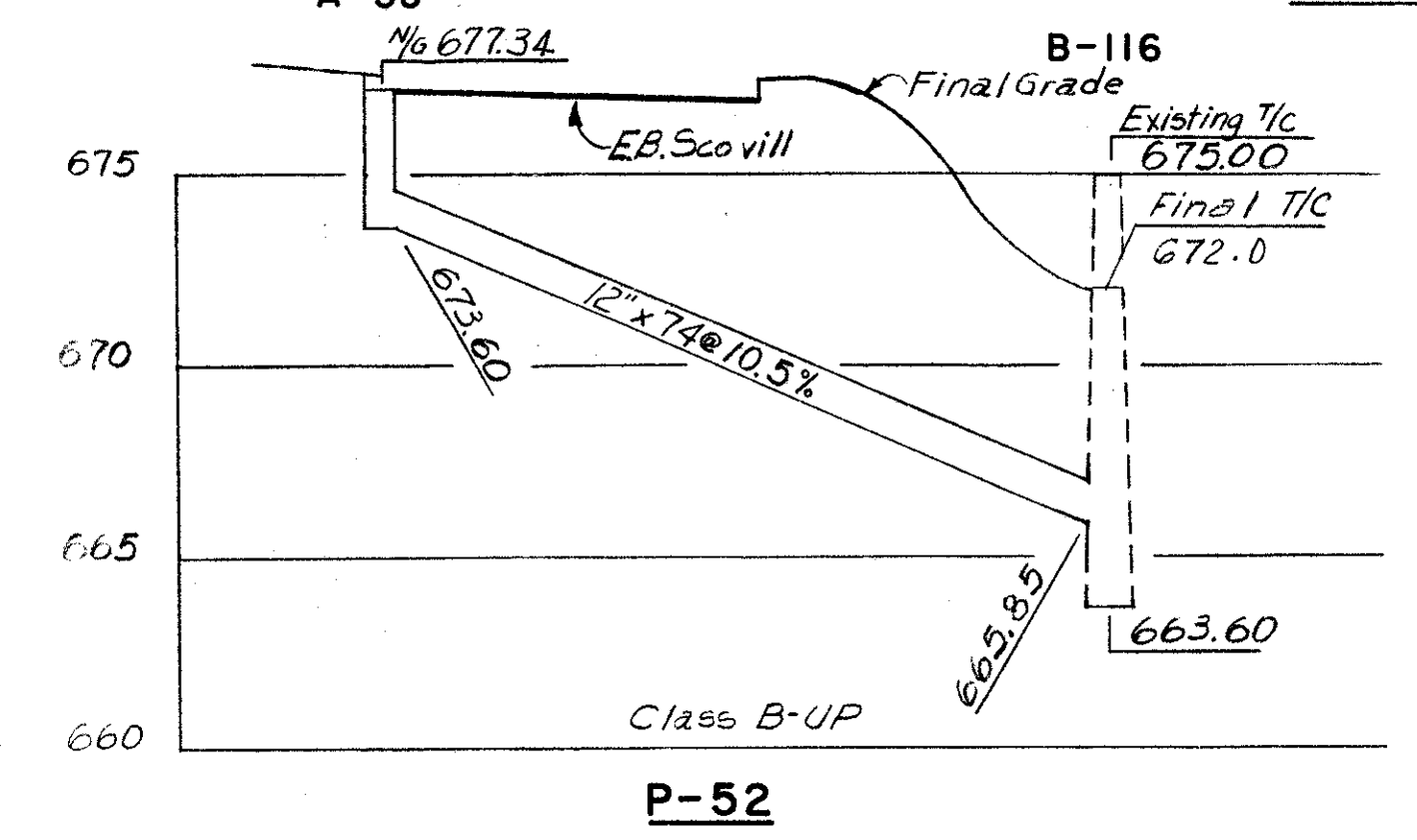
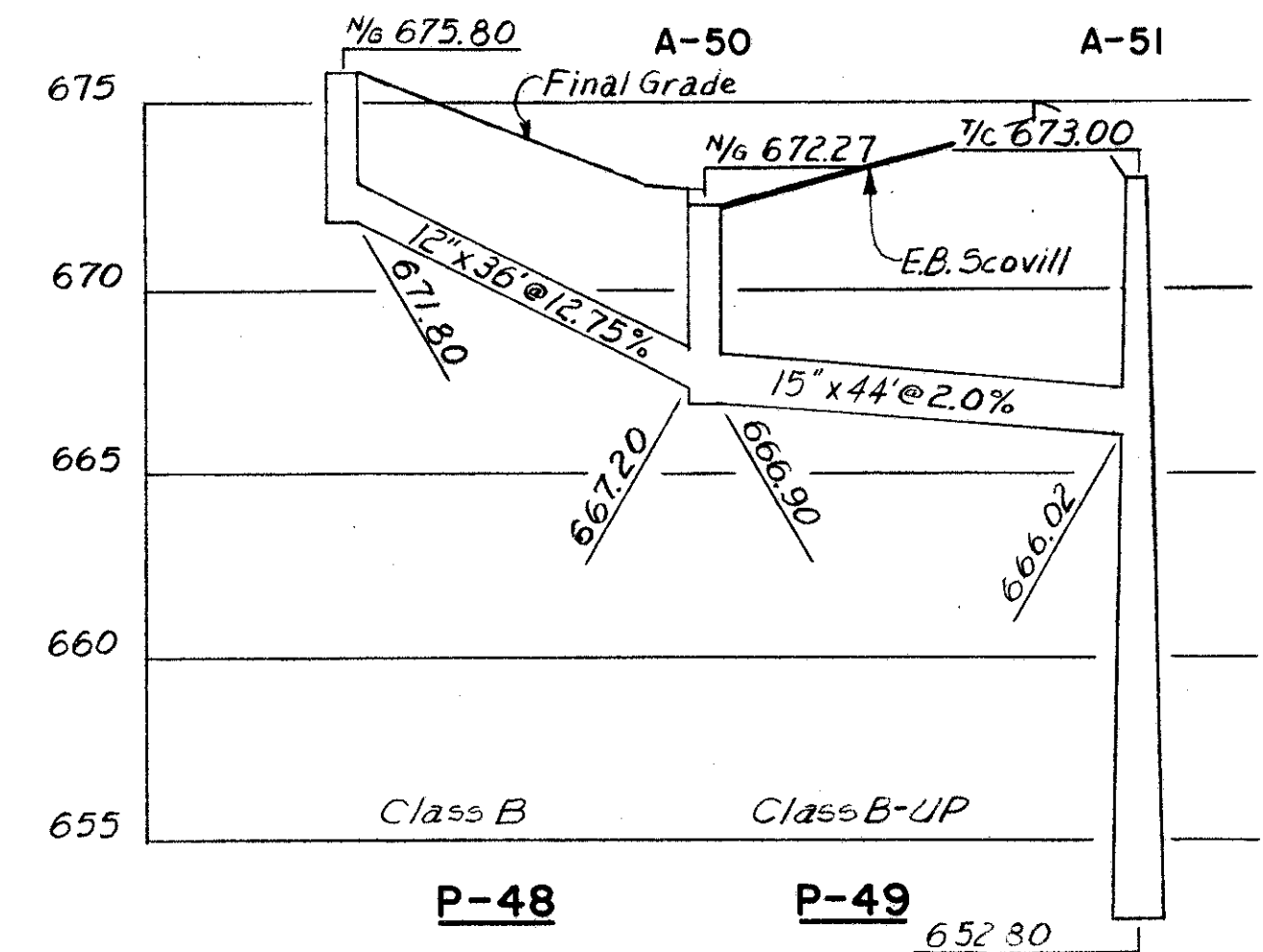
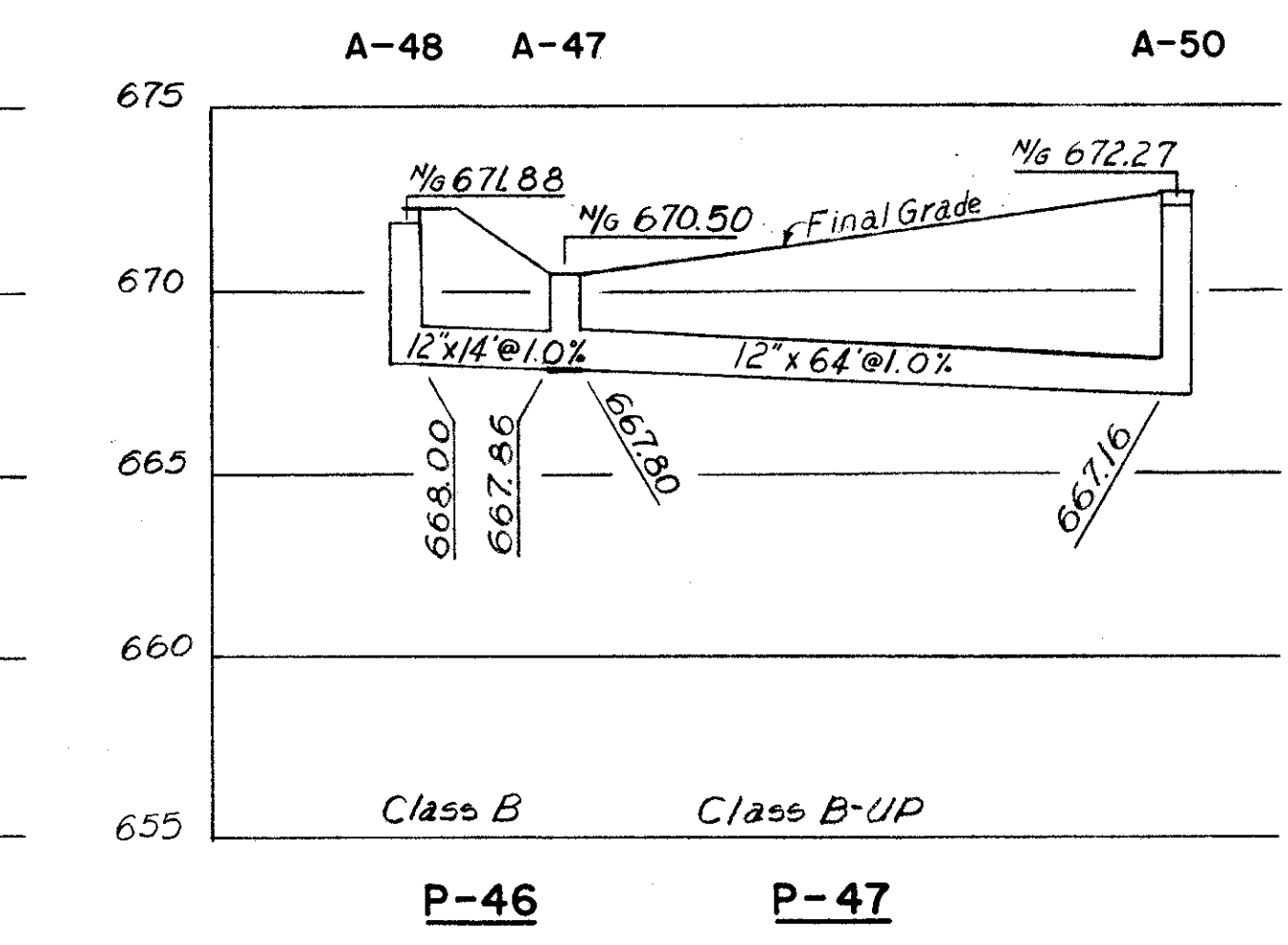
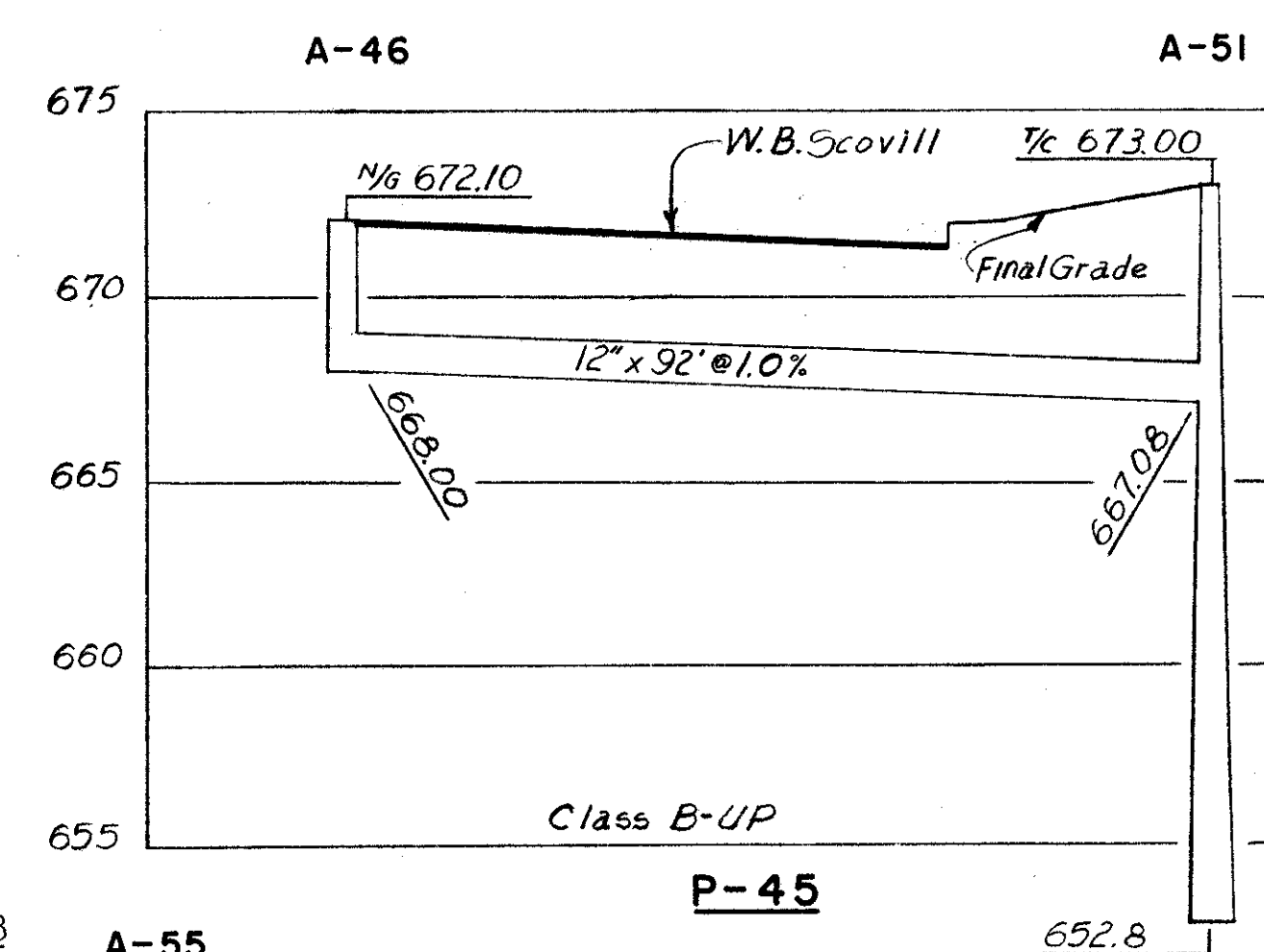
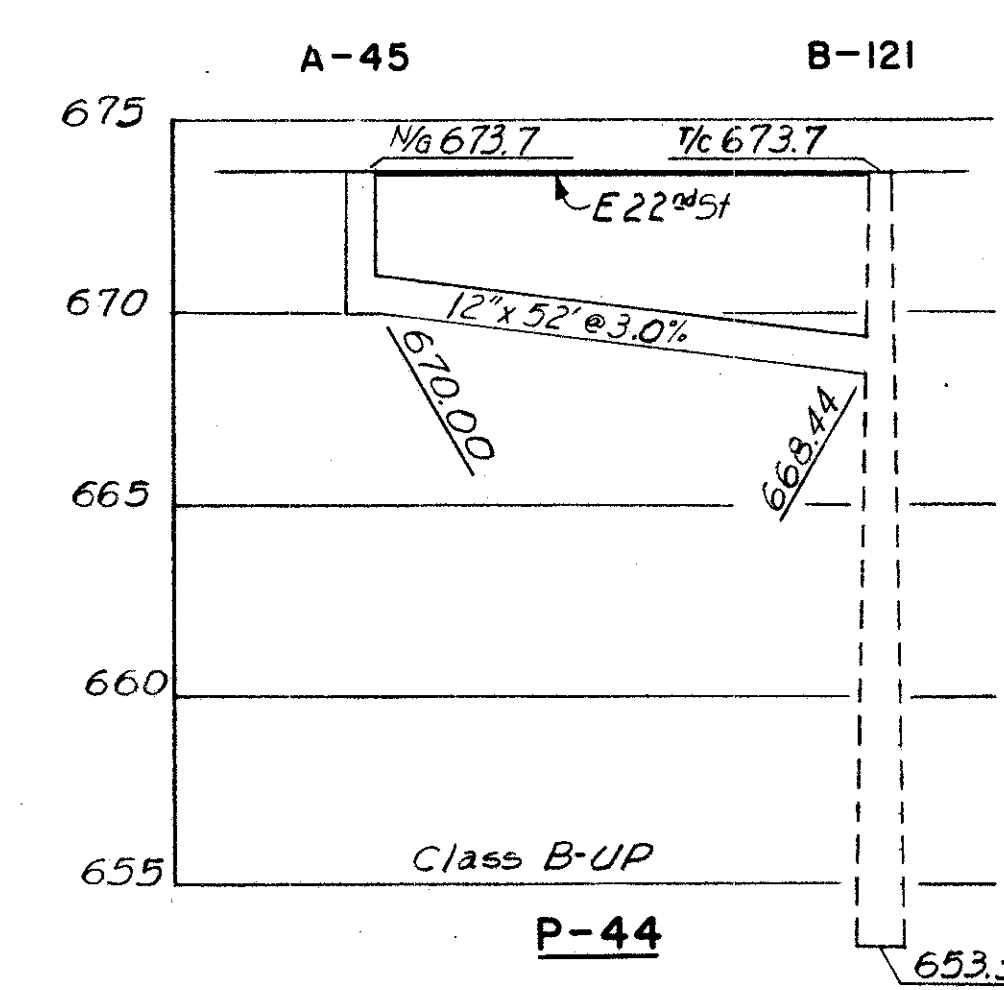
P-43

1" = 20' HOR  
SCALE 1/2" = 5' VERT  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
MADE IN U.S.A.  
TRCD DATE: KANSAS CITY CLEVELAND NEW YORK  
CKD J.L.C. DATE 3-1-59 914 SHEET 38

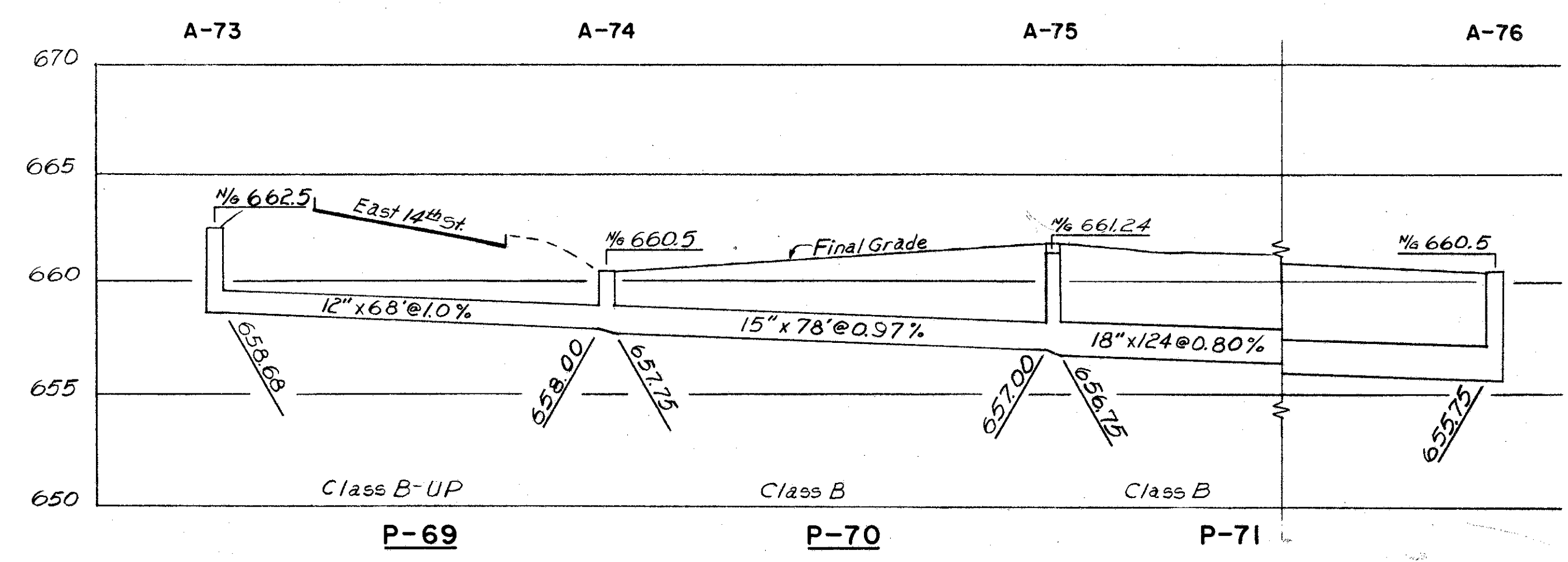
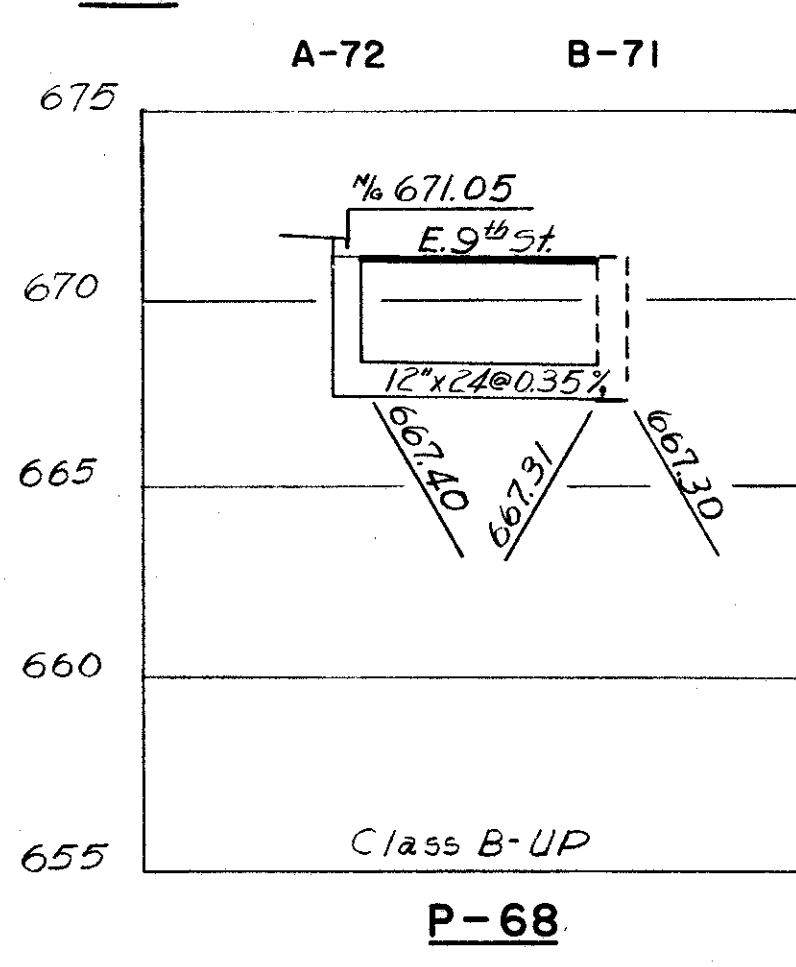
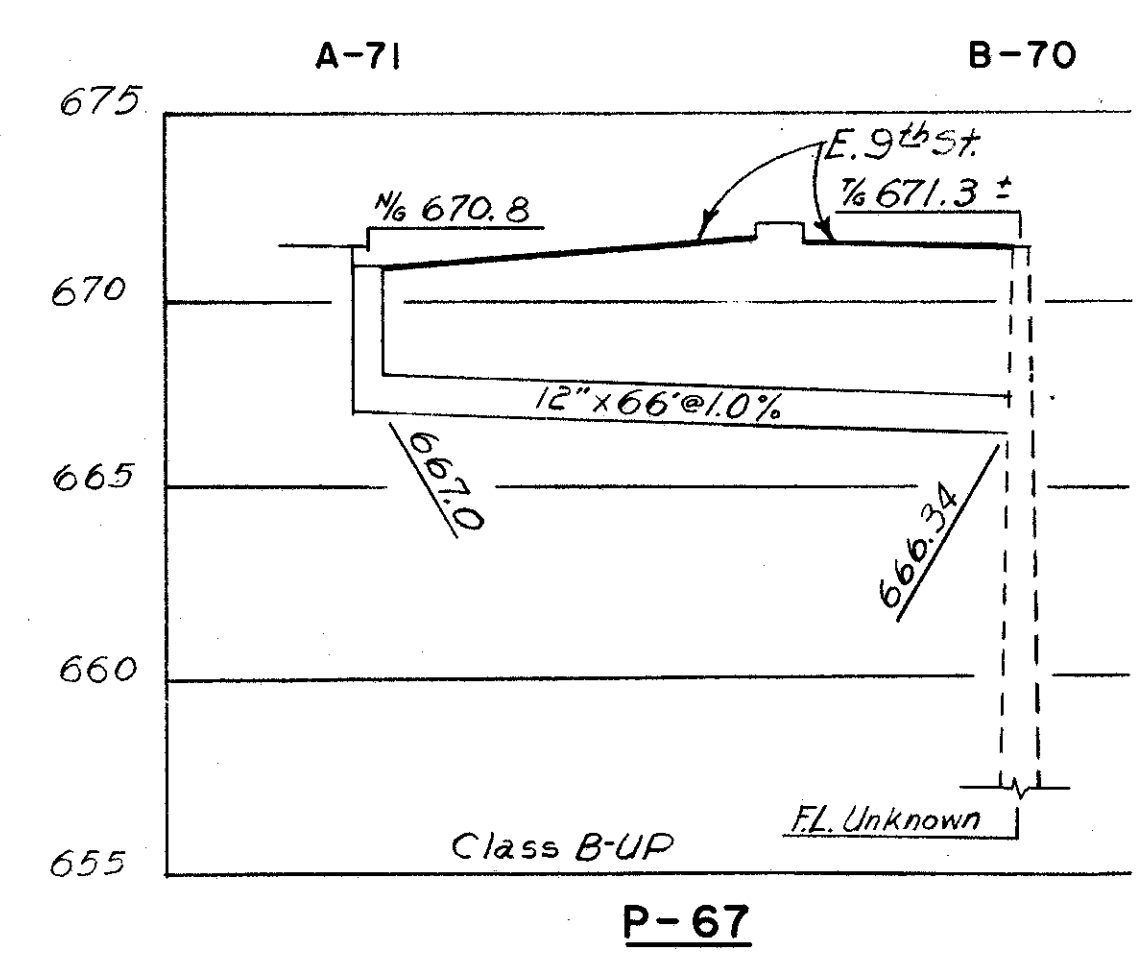
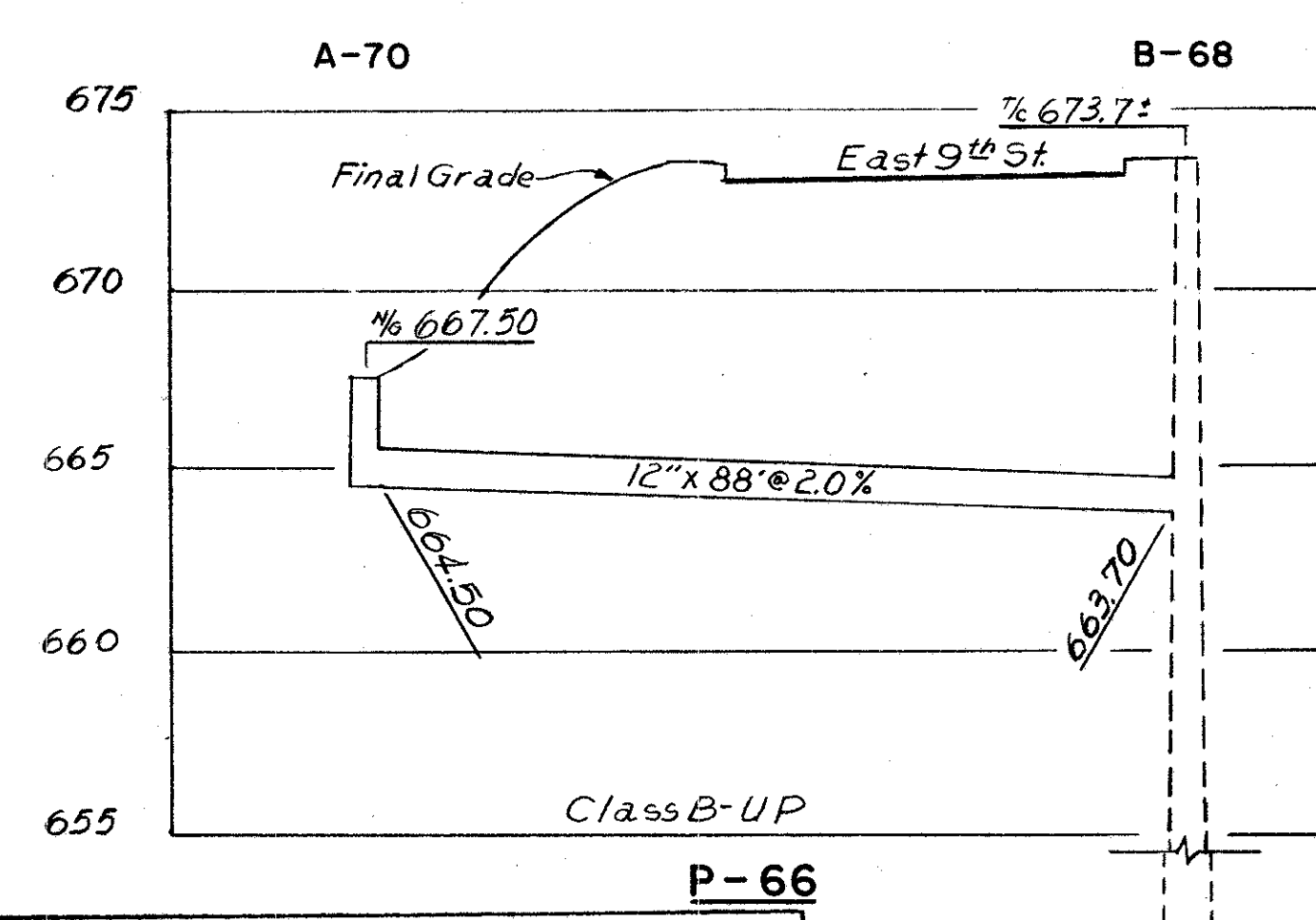
PROFILES ON  
THIS SHEET  
P-24 TO P-43  
P-84 & P-57



CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42 - 18.29



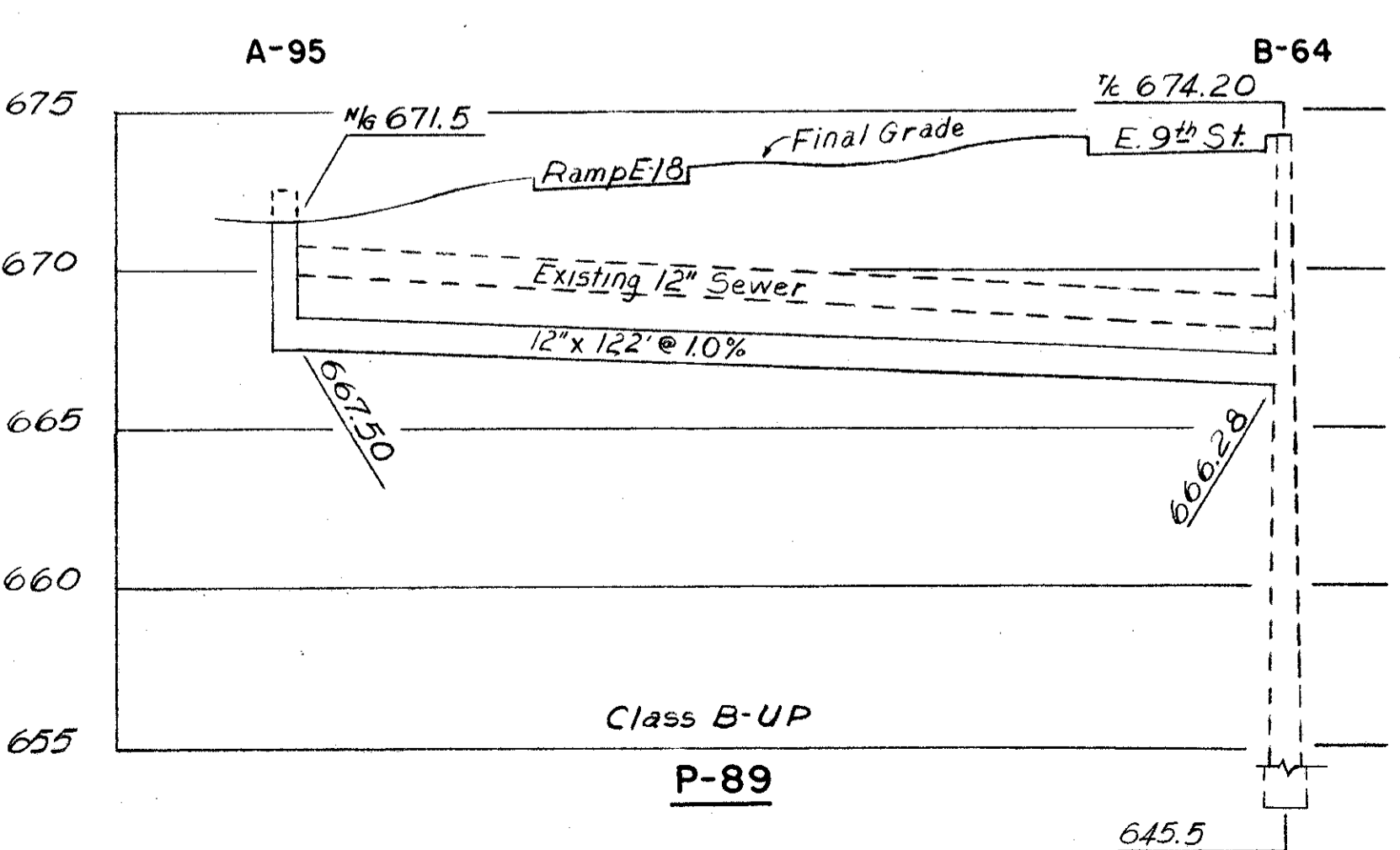
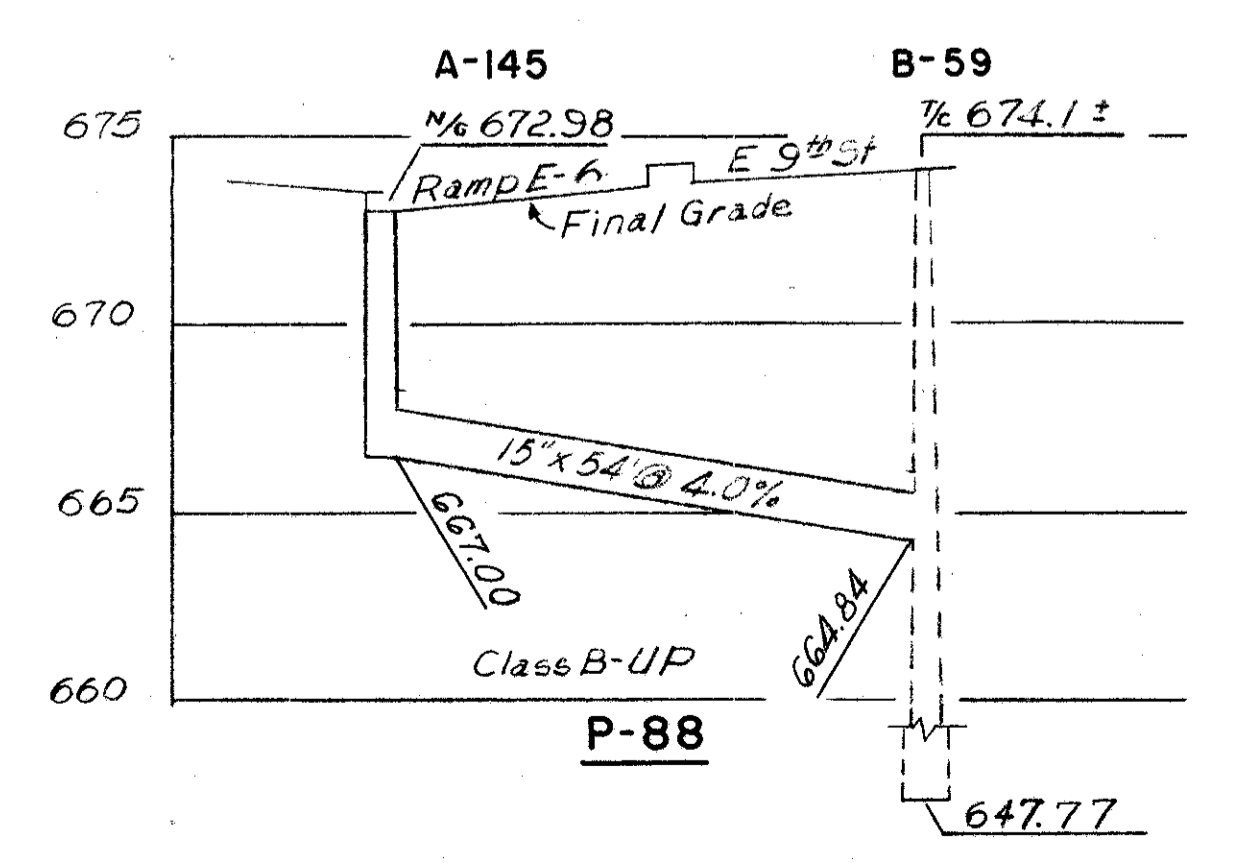
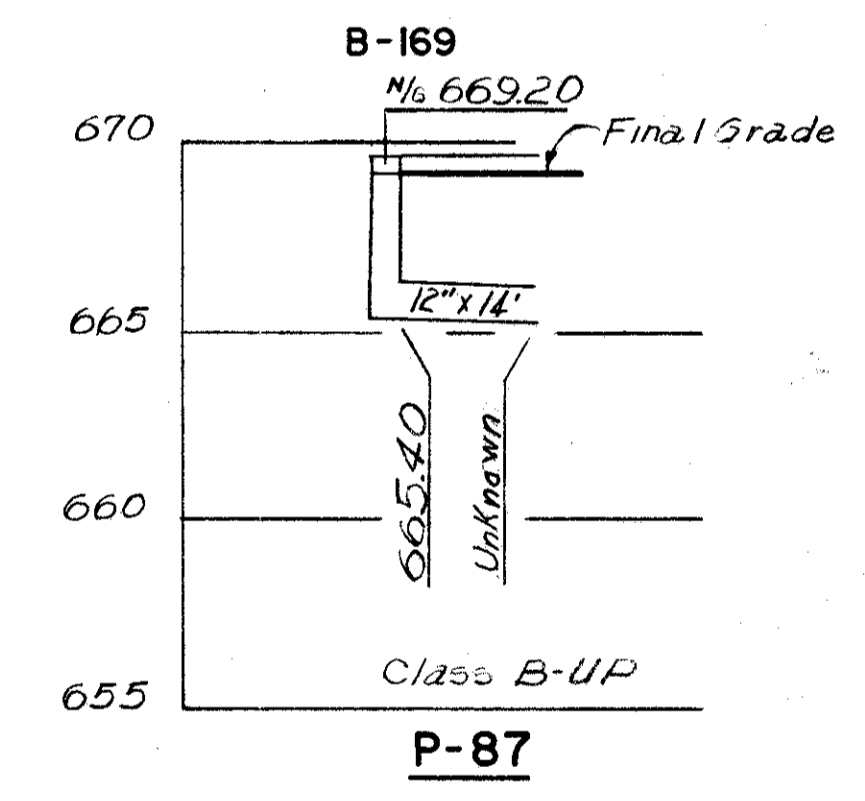
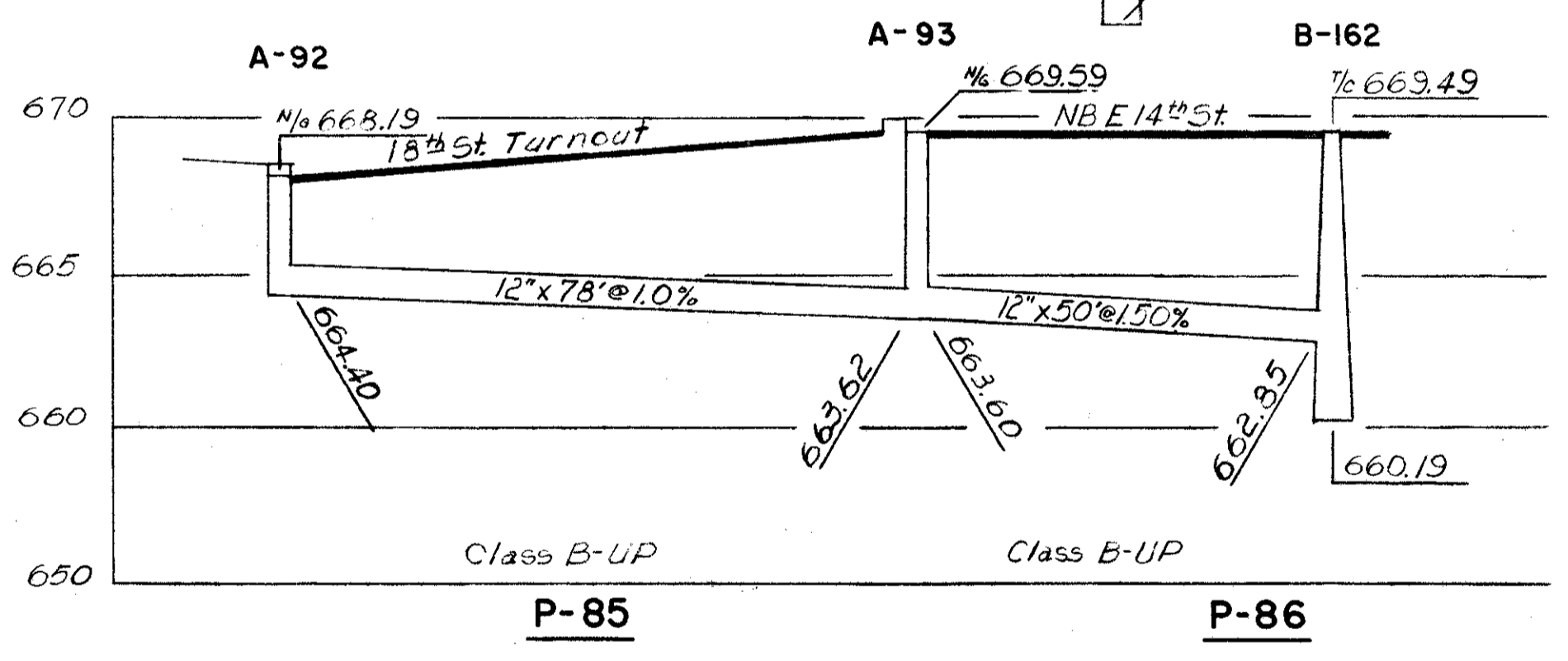
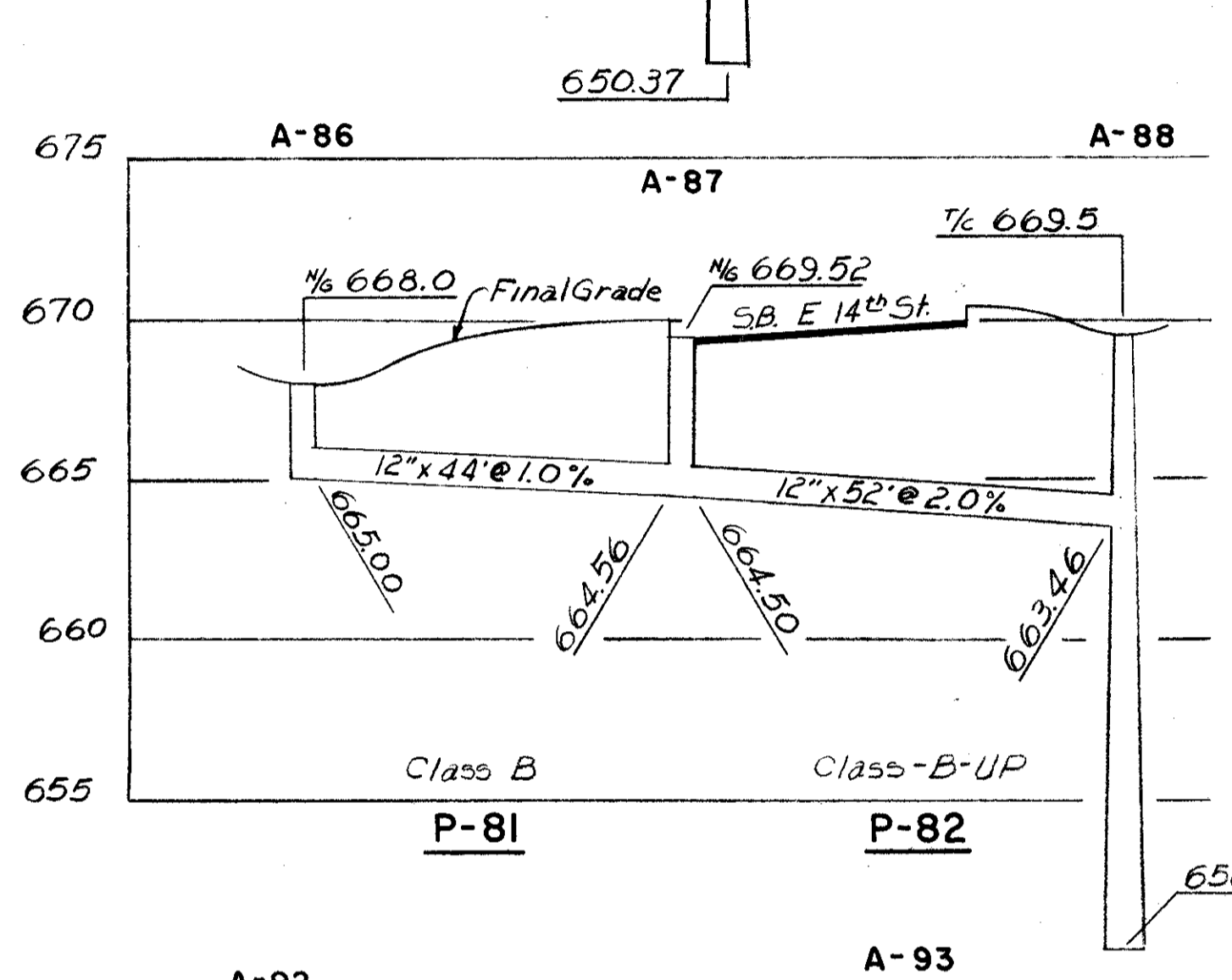
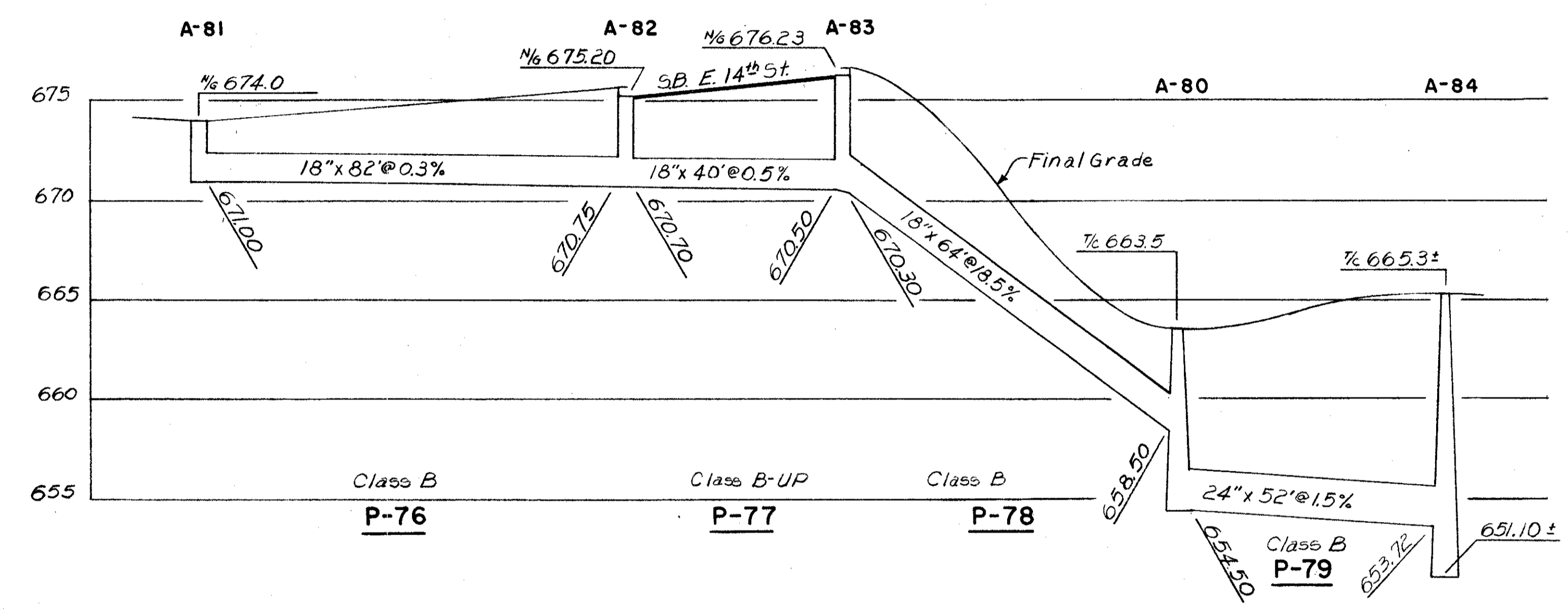
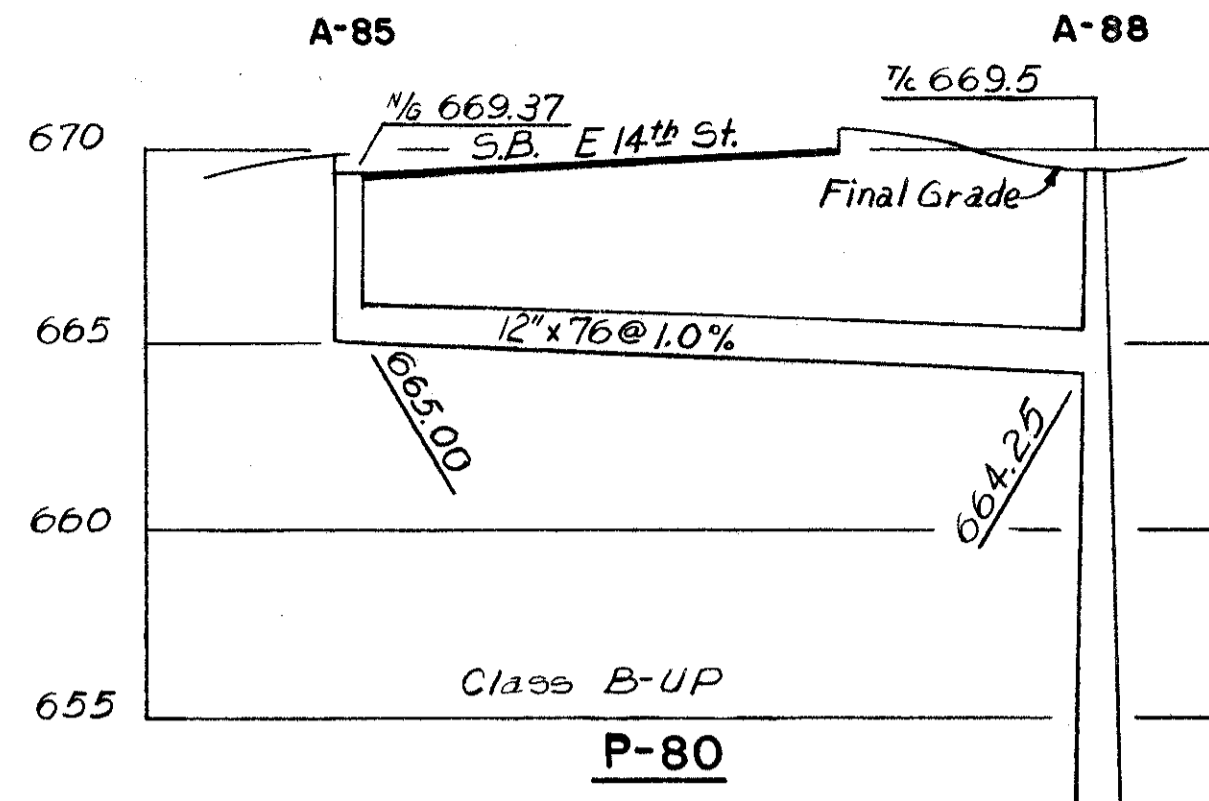
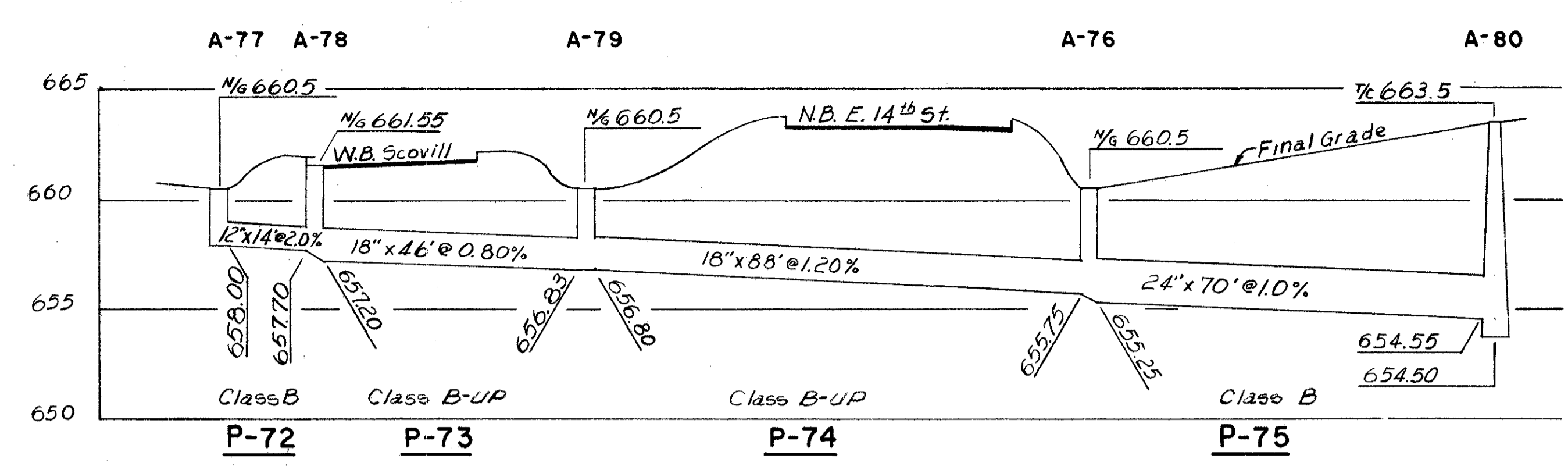
PROFILES ON THIS SHEET  
P-44 TO P-49, P-52, P-54, P-56 & P-58 TO P-71



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

40  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29



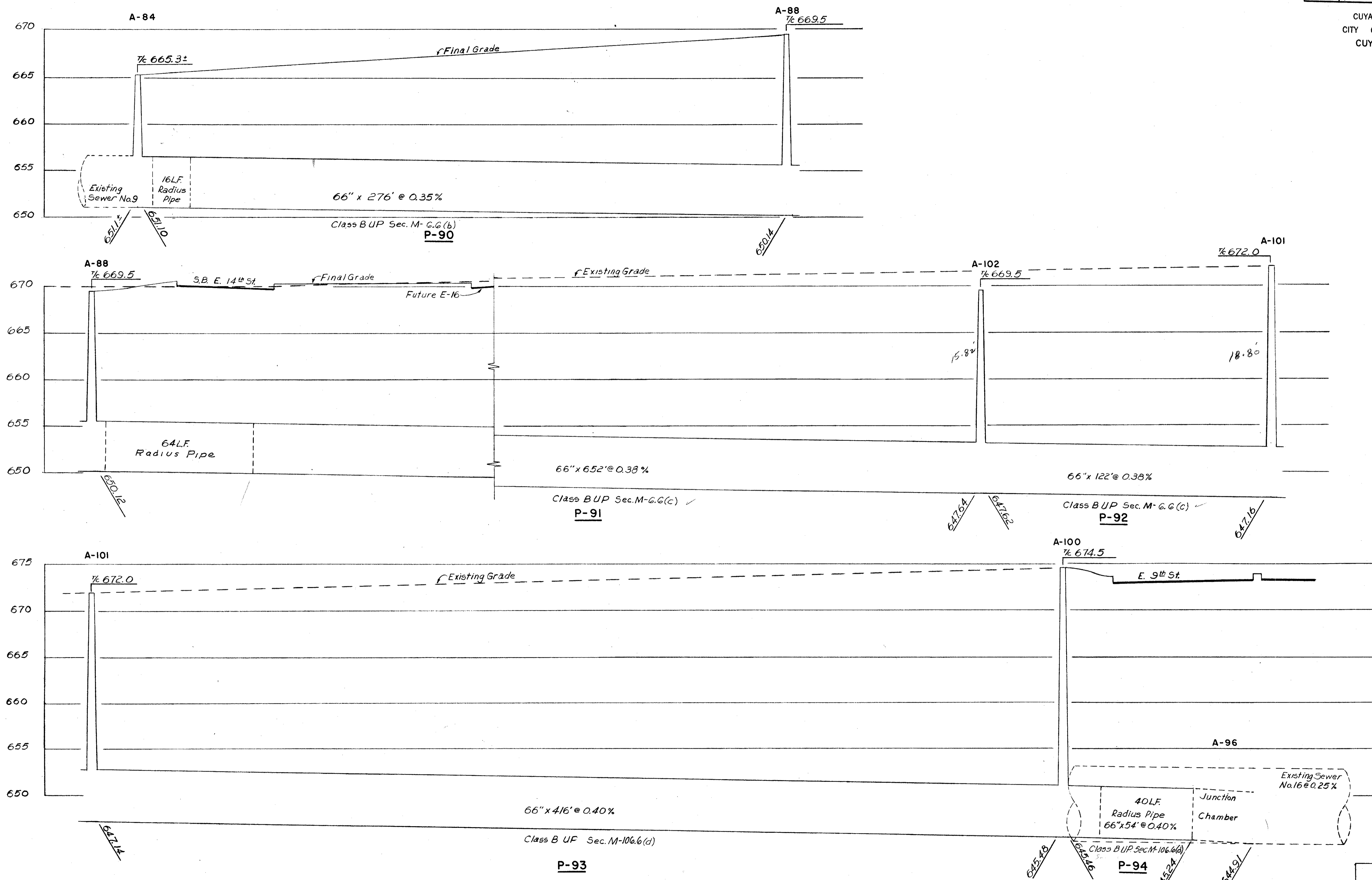
1" = 20' HOR  
SCALE 1" = 5' VERT  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
DATE 2-18-59  
TRCD DATE 3-1-59  
CKD J.L.C. DATE 3-1-59  
914 SHEET 40

PROFILES ON THIS SHEET  
P-72 TO P-83  
P-85 TO P-89

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

41  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29



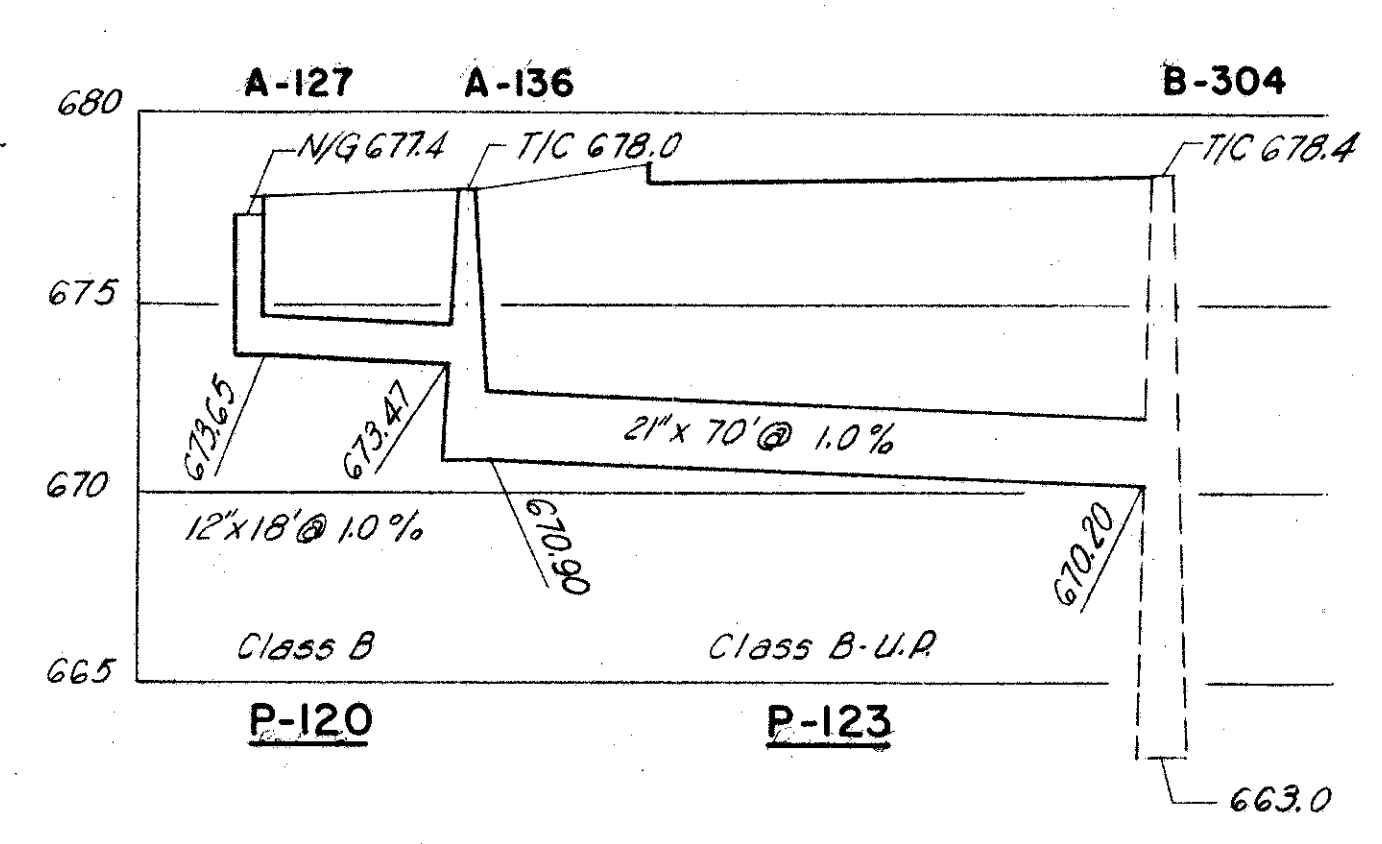
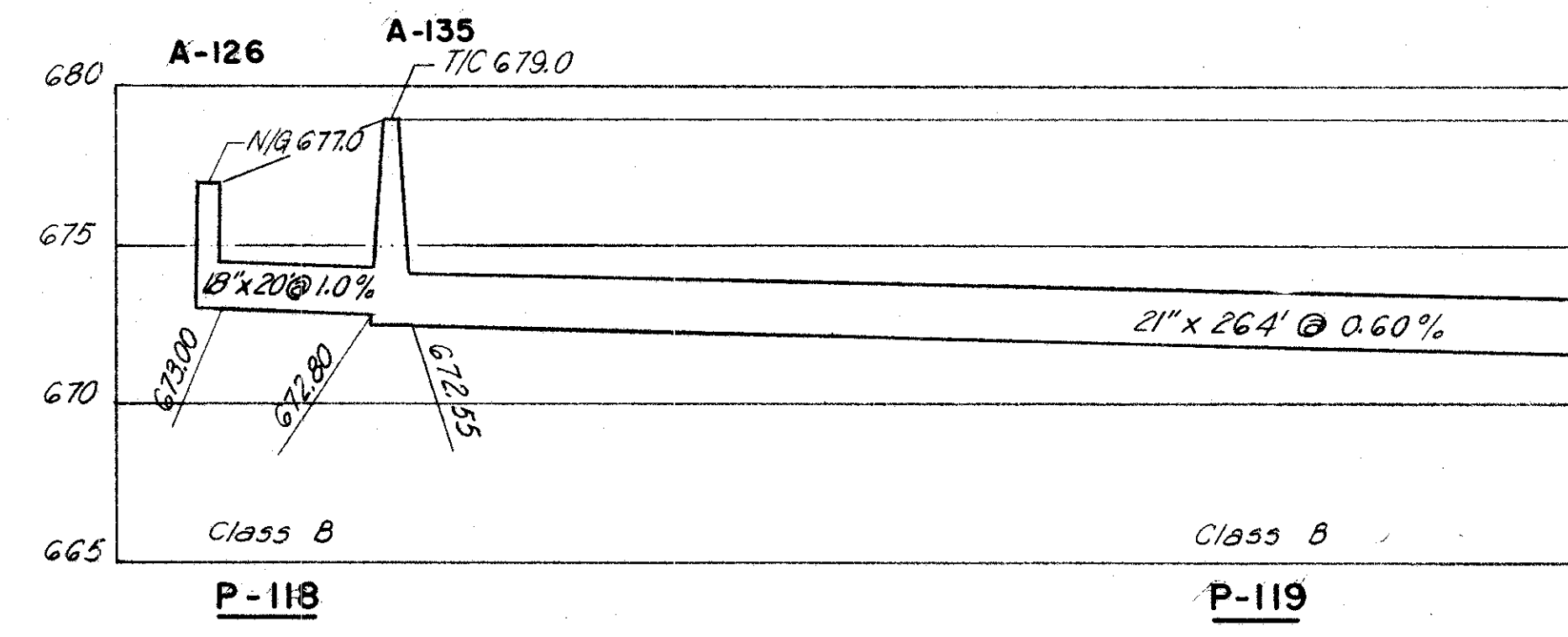
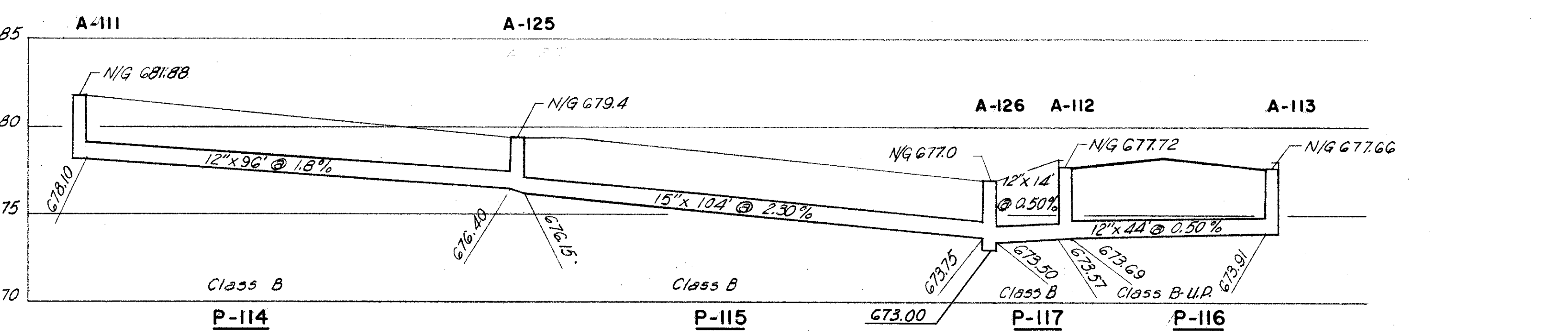
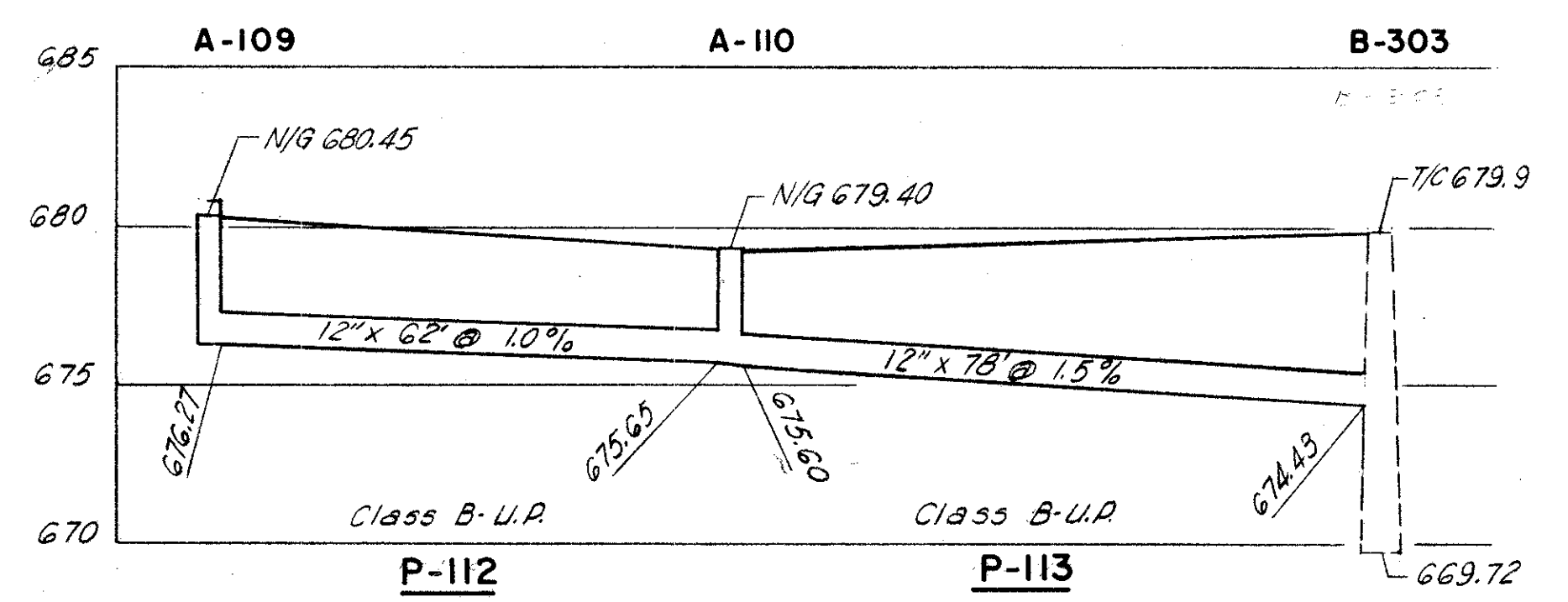
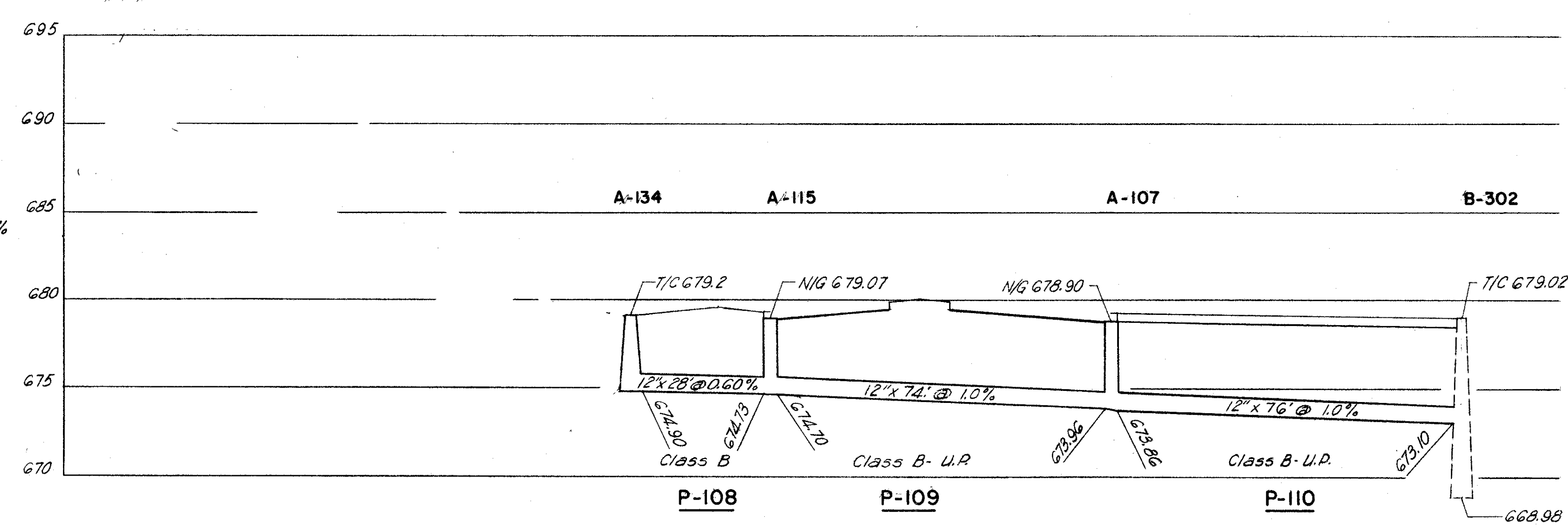
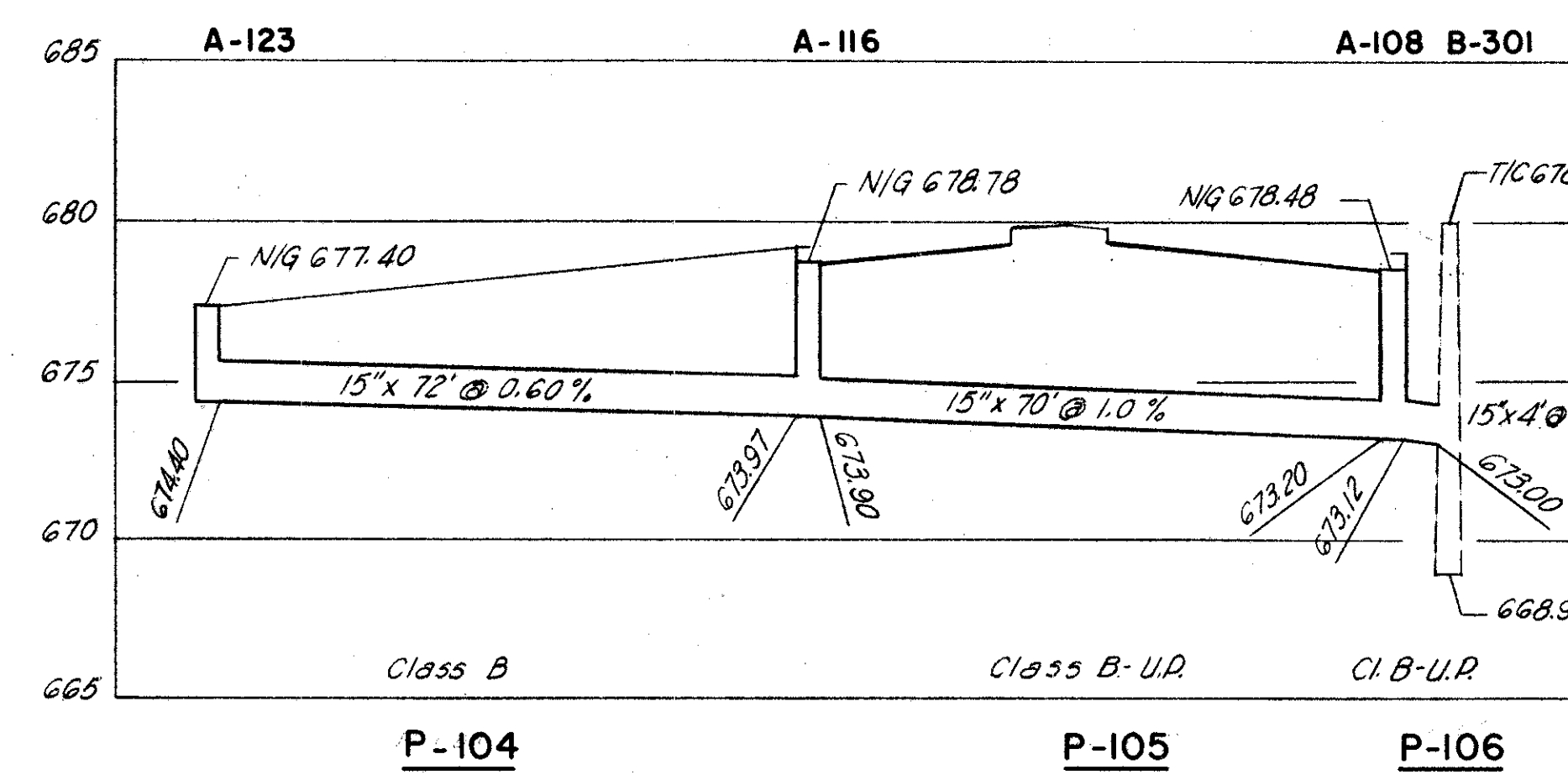
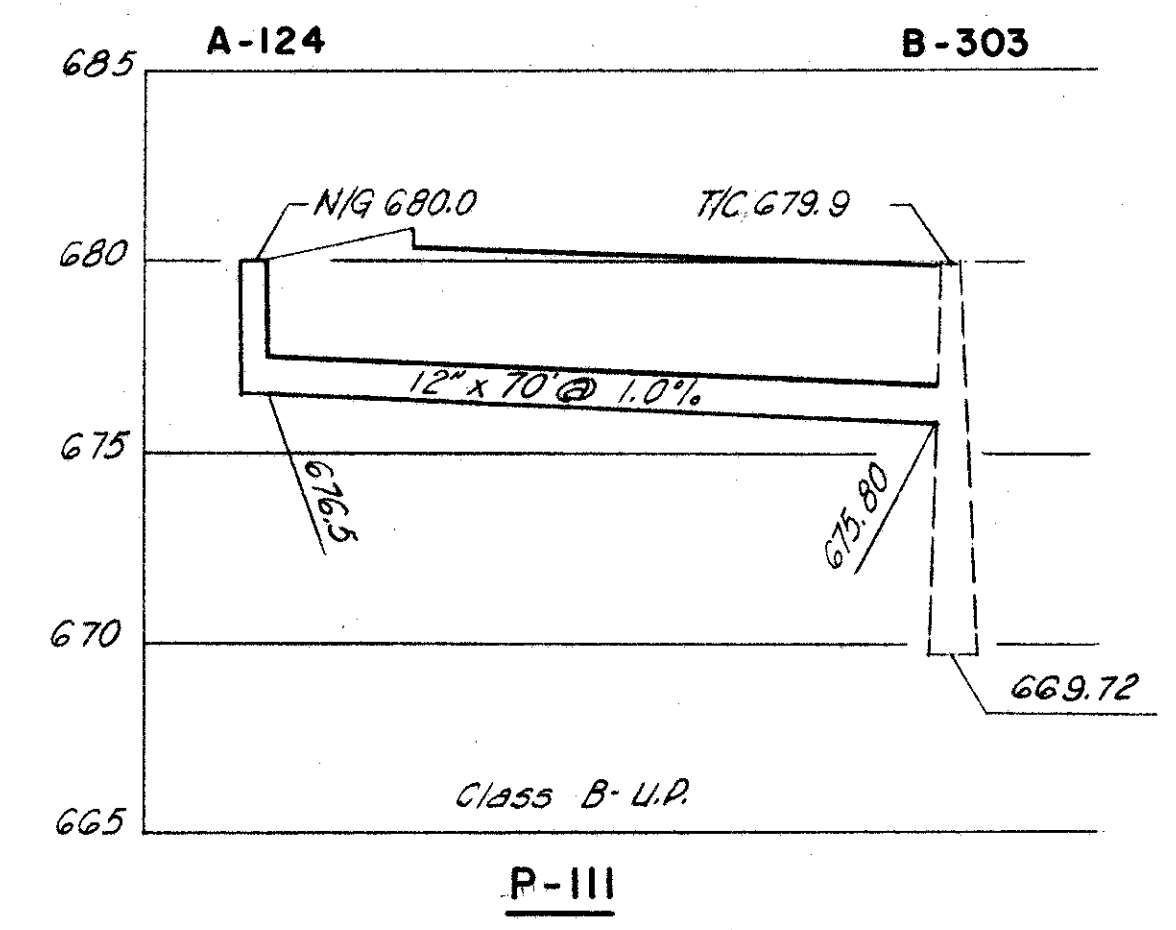
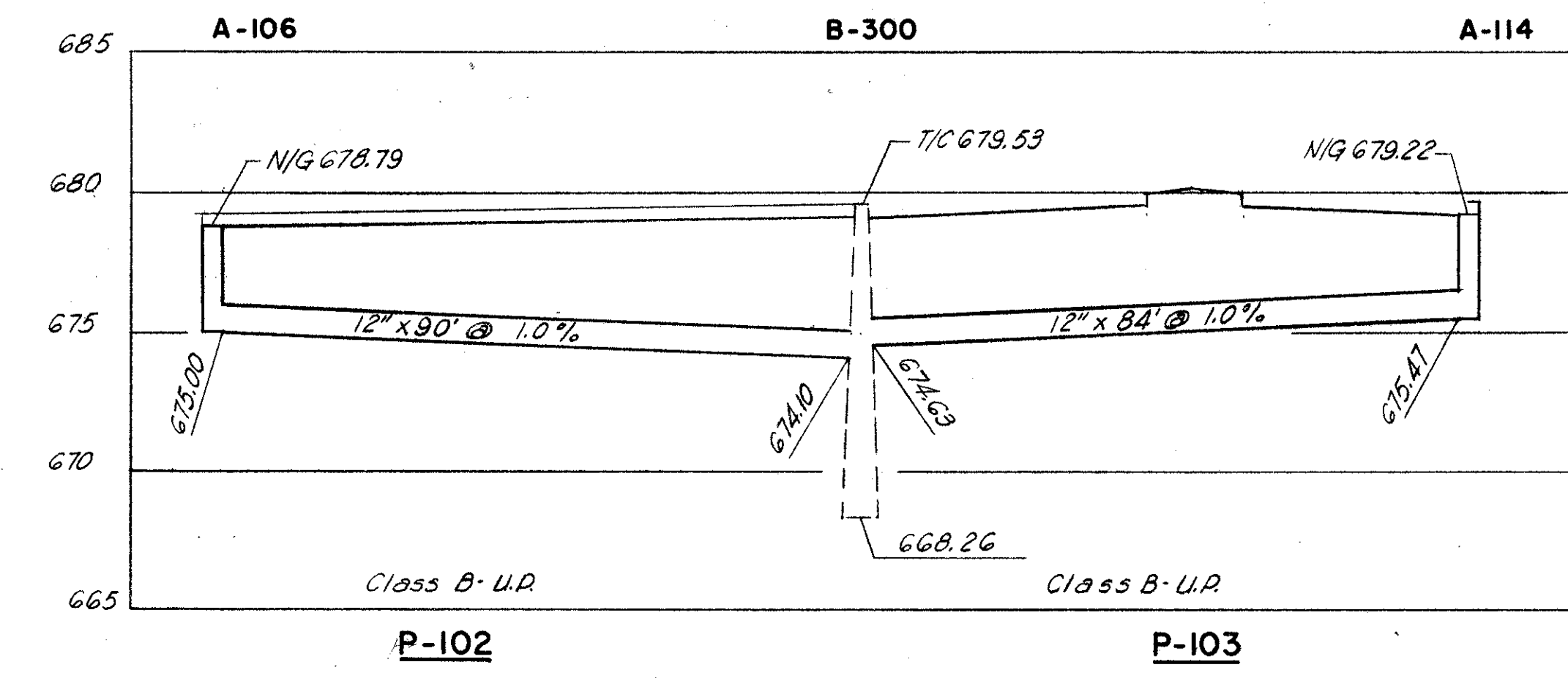
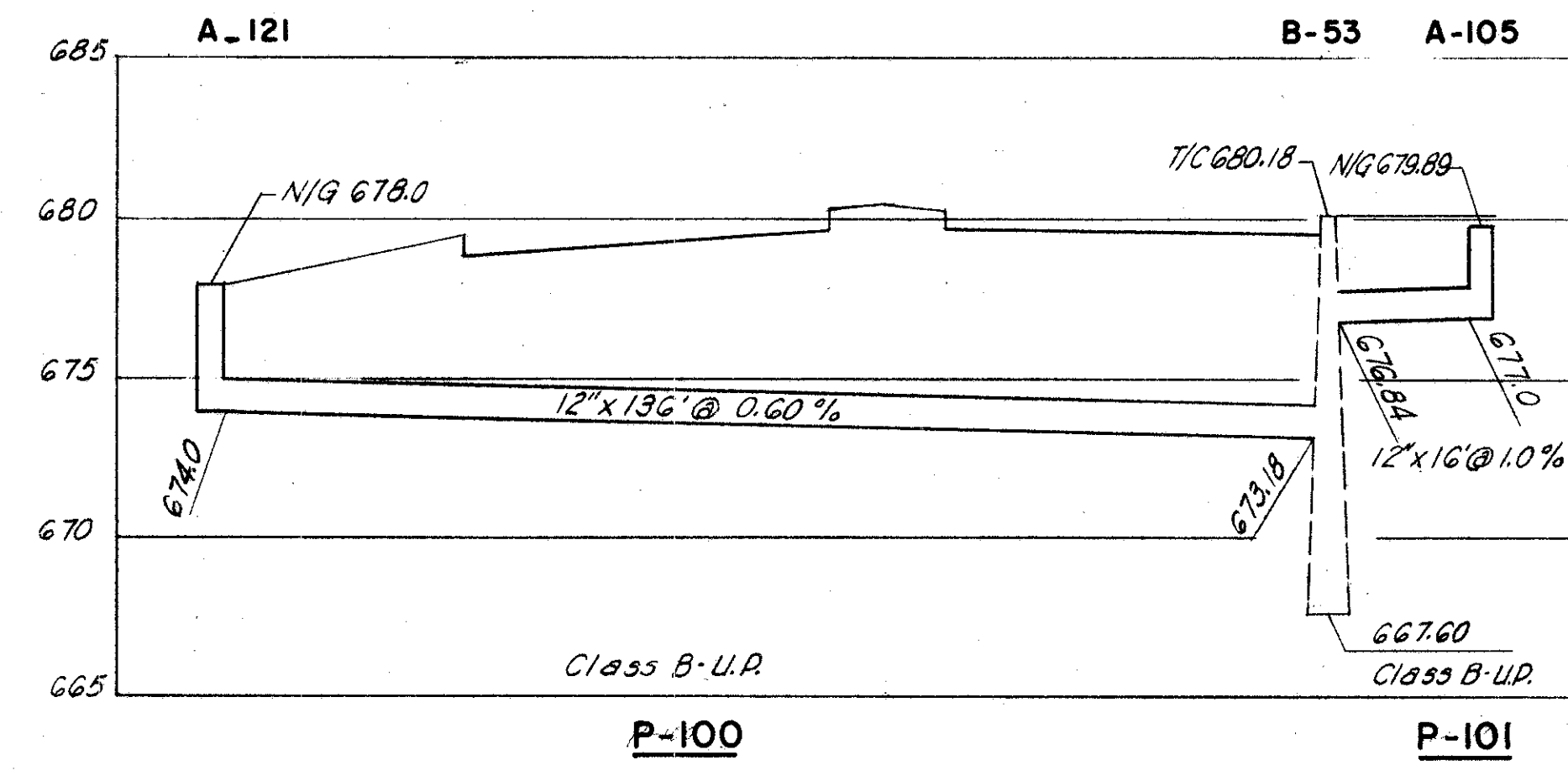
SCALE: 1" = 20' HOR. 1" = 2' VERT.  
HOWARD, NEEDLES, TAMMEN & BERGENOFF  
CONSULTING ENGINEERS  
MADE IN U.S.A. DATE 2-15-59  
TRCD. DATE KANSAS CITY CLEVELAND NEW YORK  
CKD J.L.C. DATE 3-1-59 914 SHEET. 41

PROFILES ON THIS SHEET  
P-90 TO P-94

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

41A  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

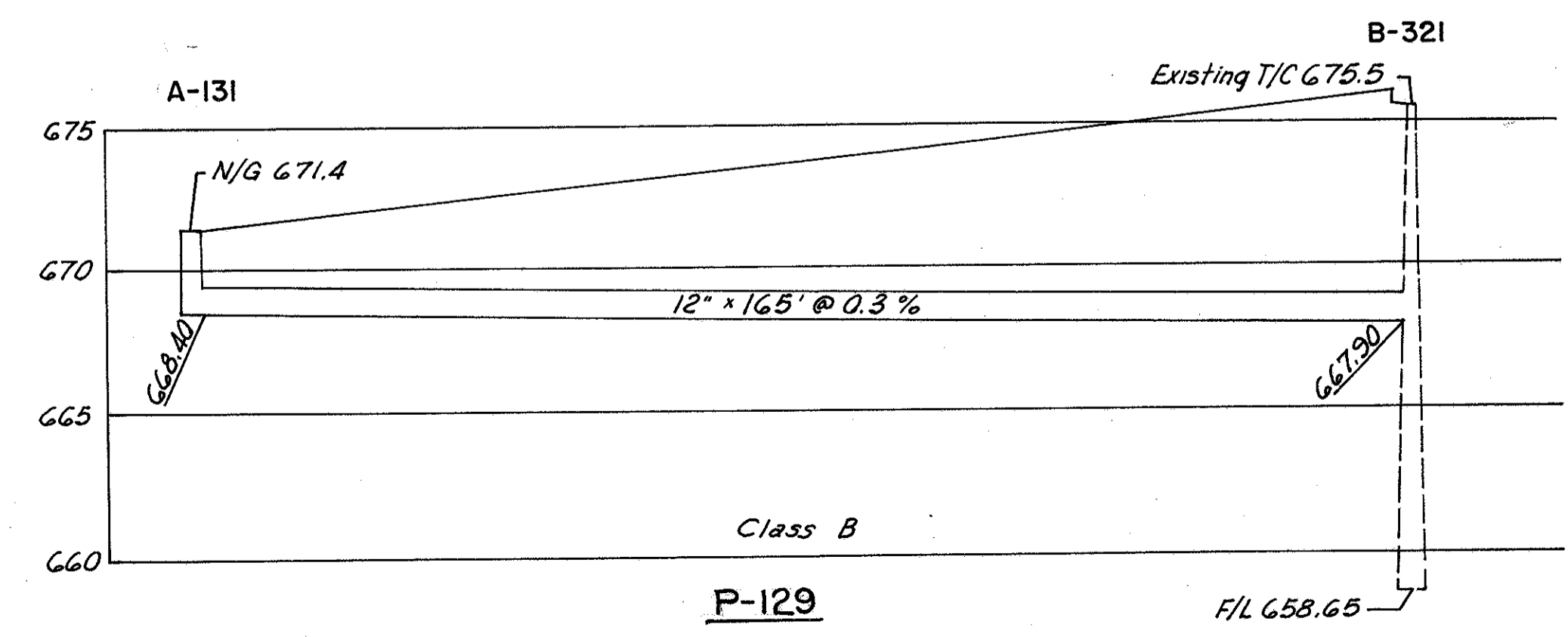
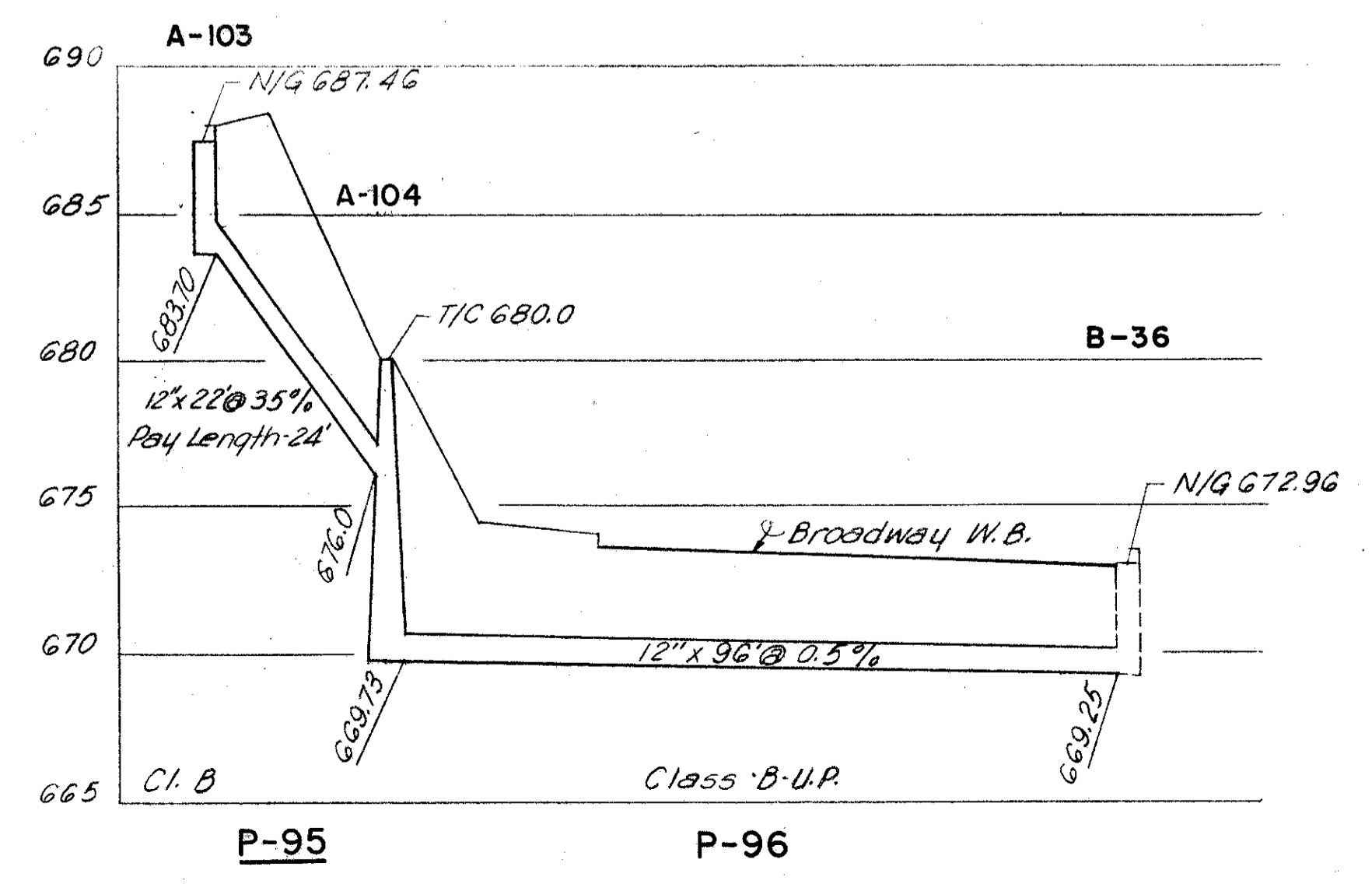
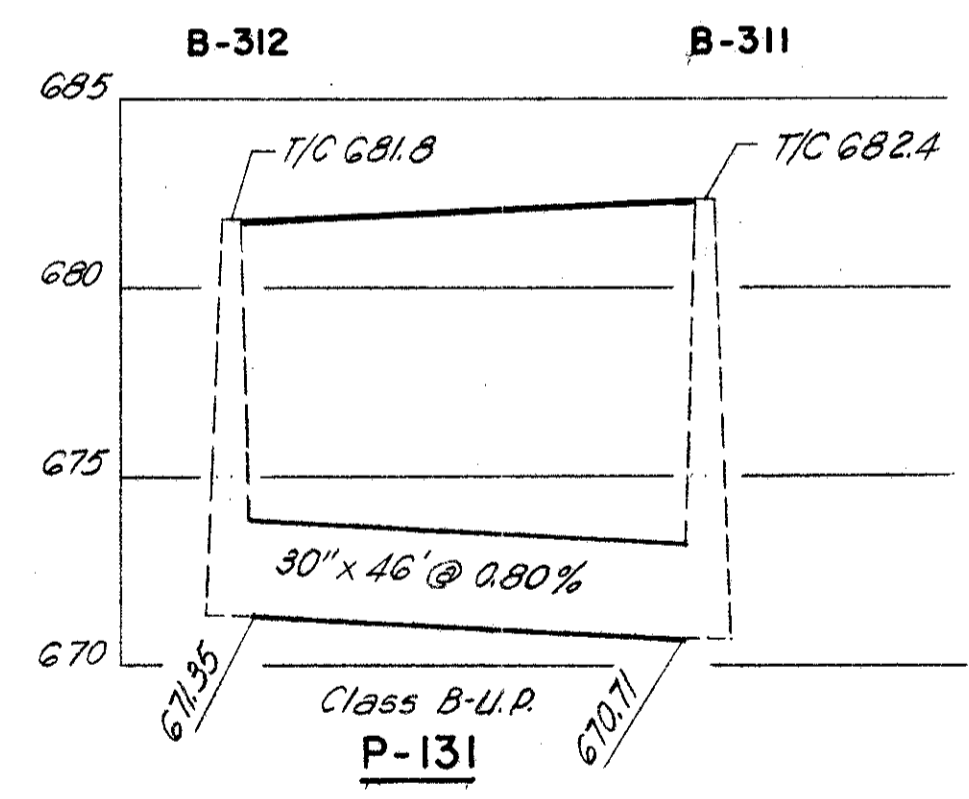
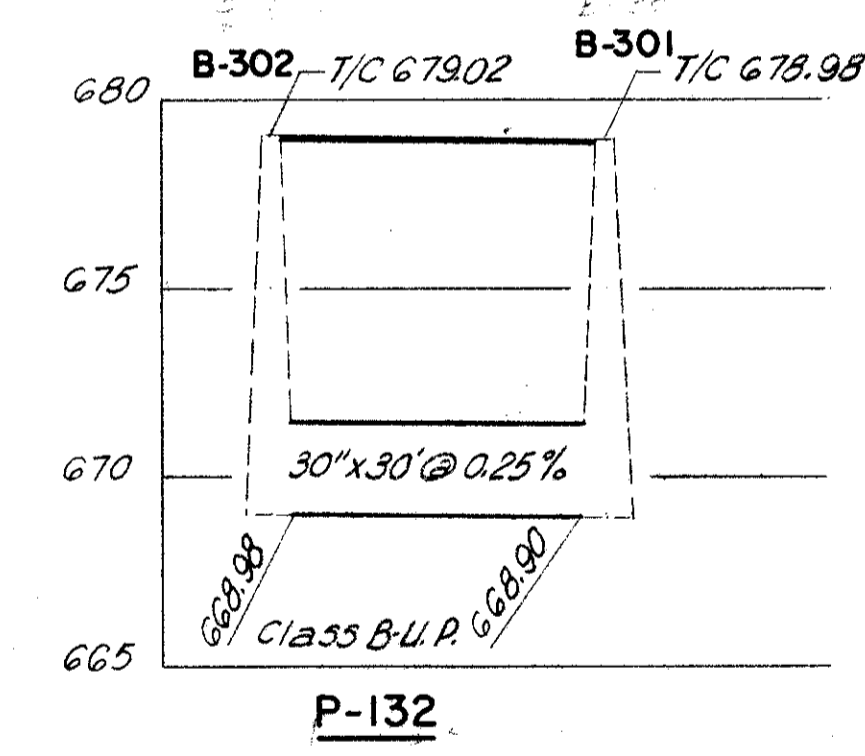
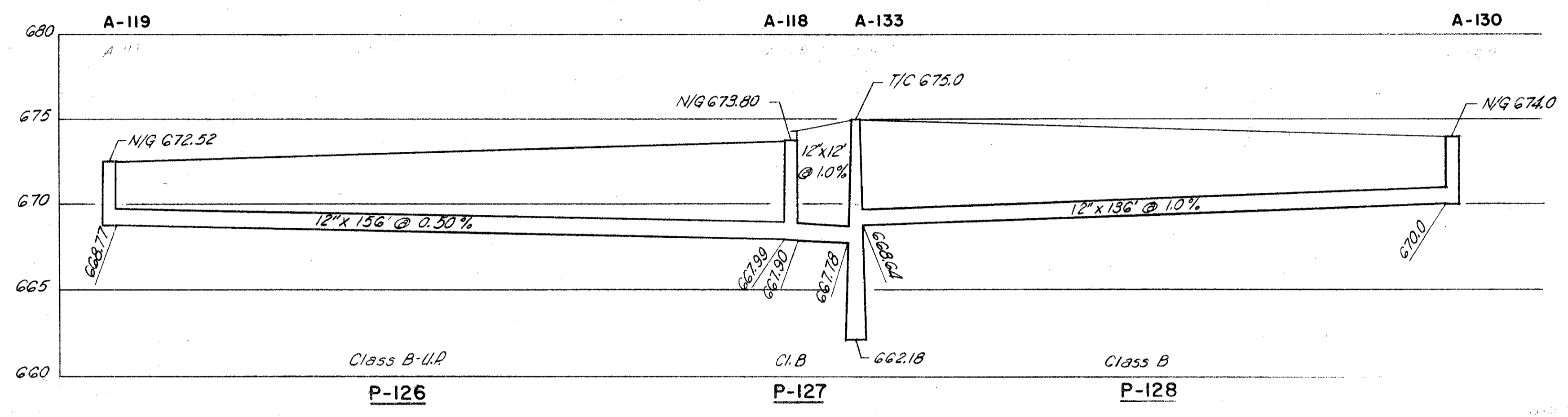
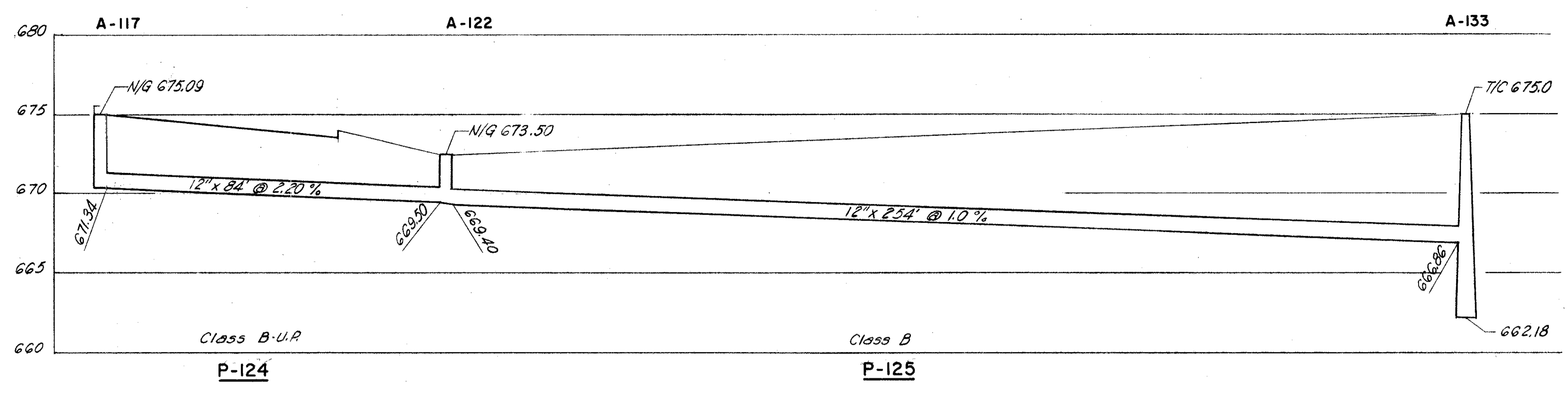


PROFILES ON THIS SHEET  
P-100 TO P-106  
P-108 TO P-120  
& P-123

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

41B  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29



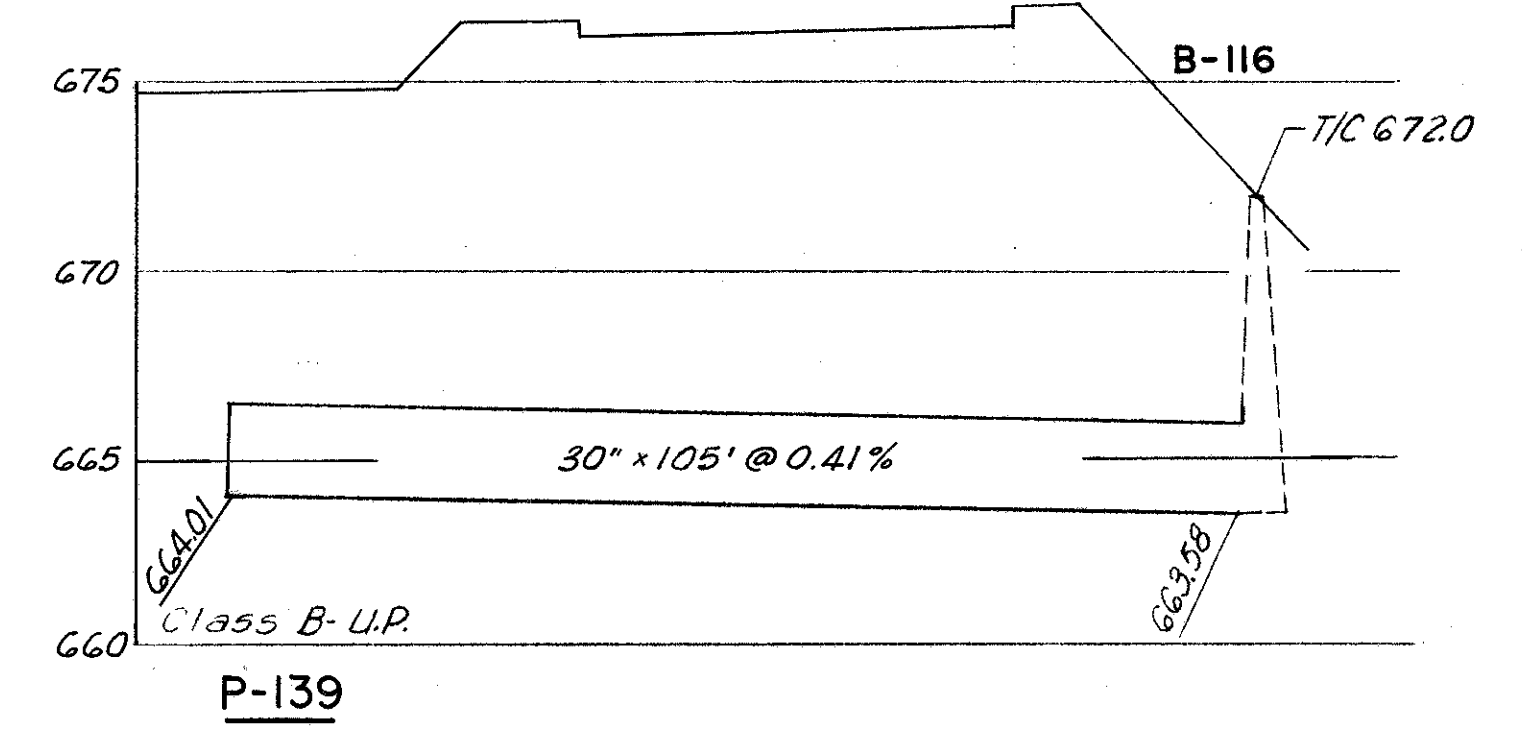
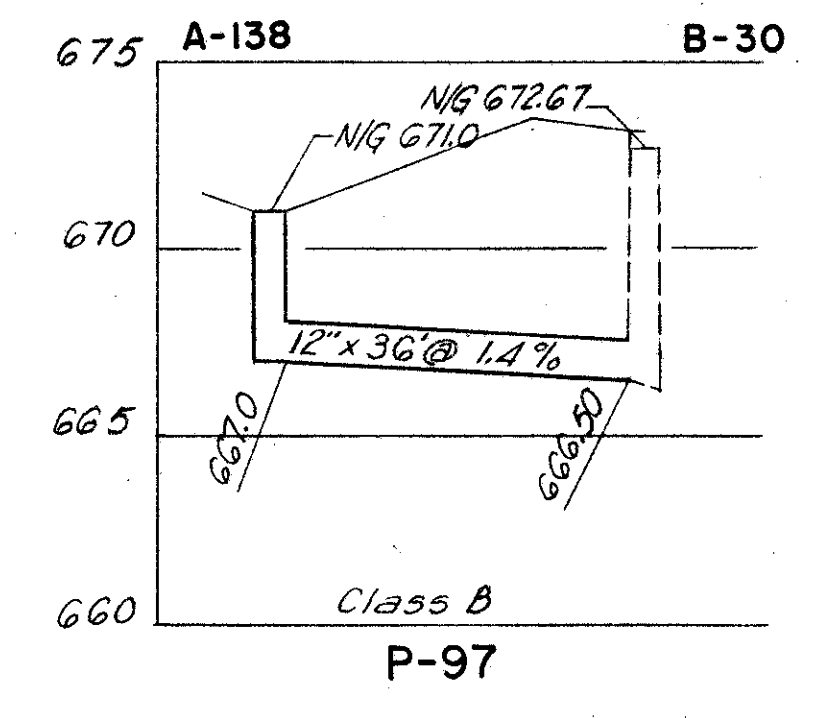
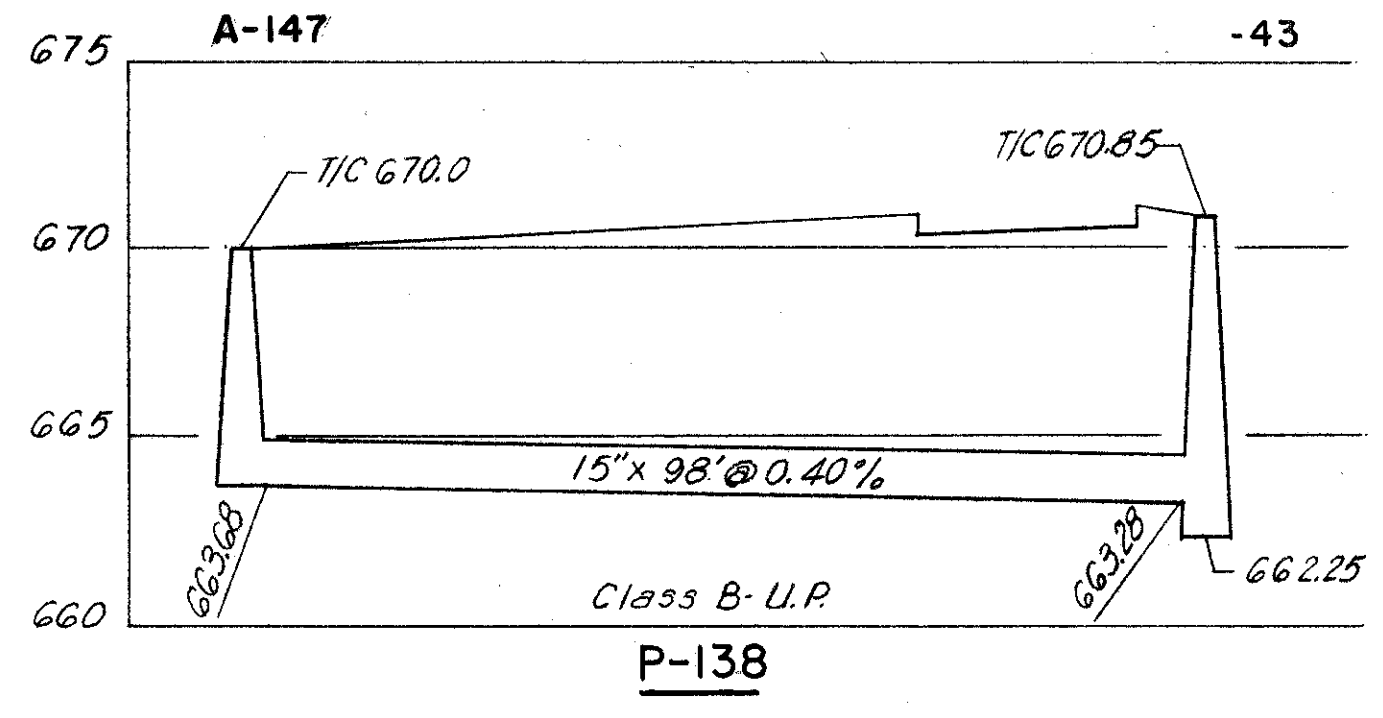
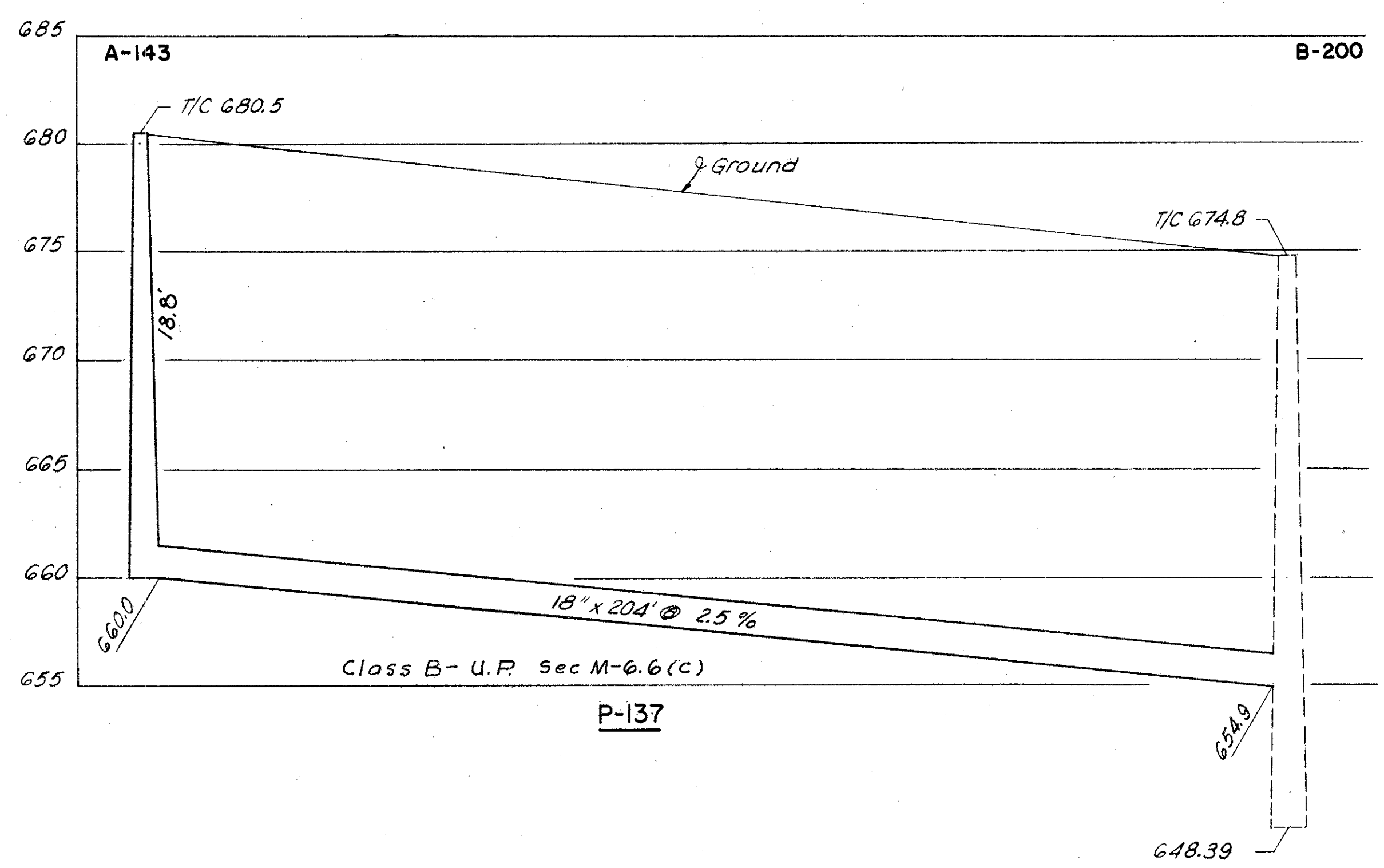
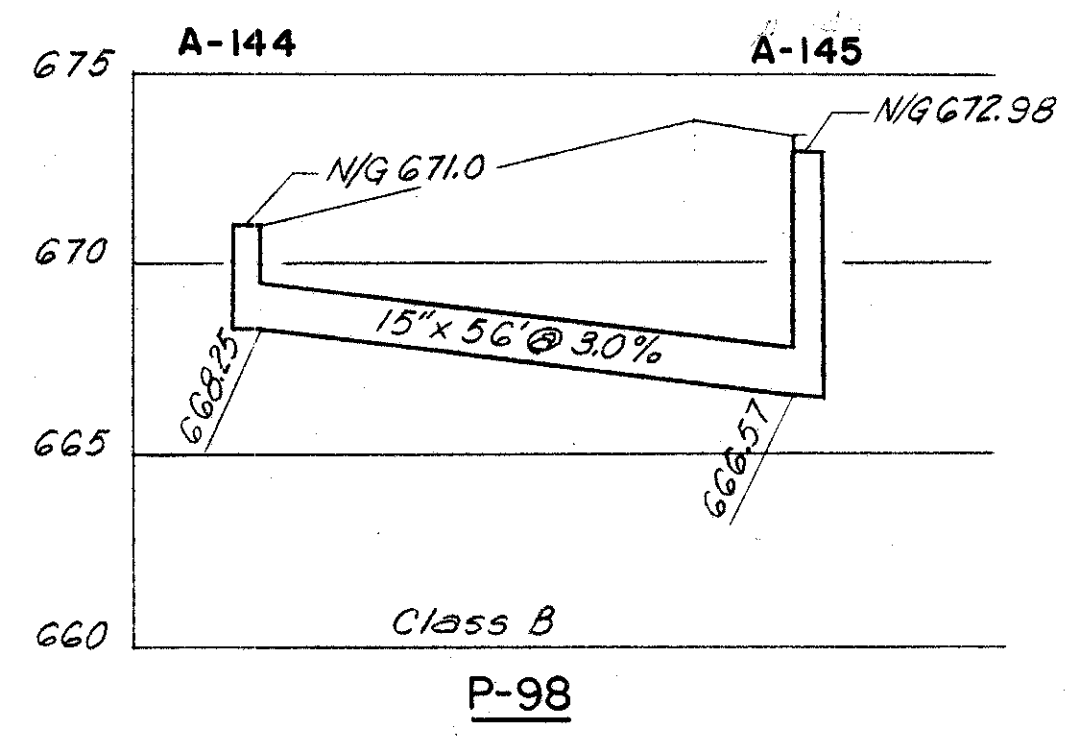
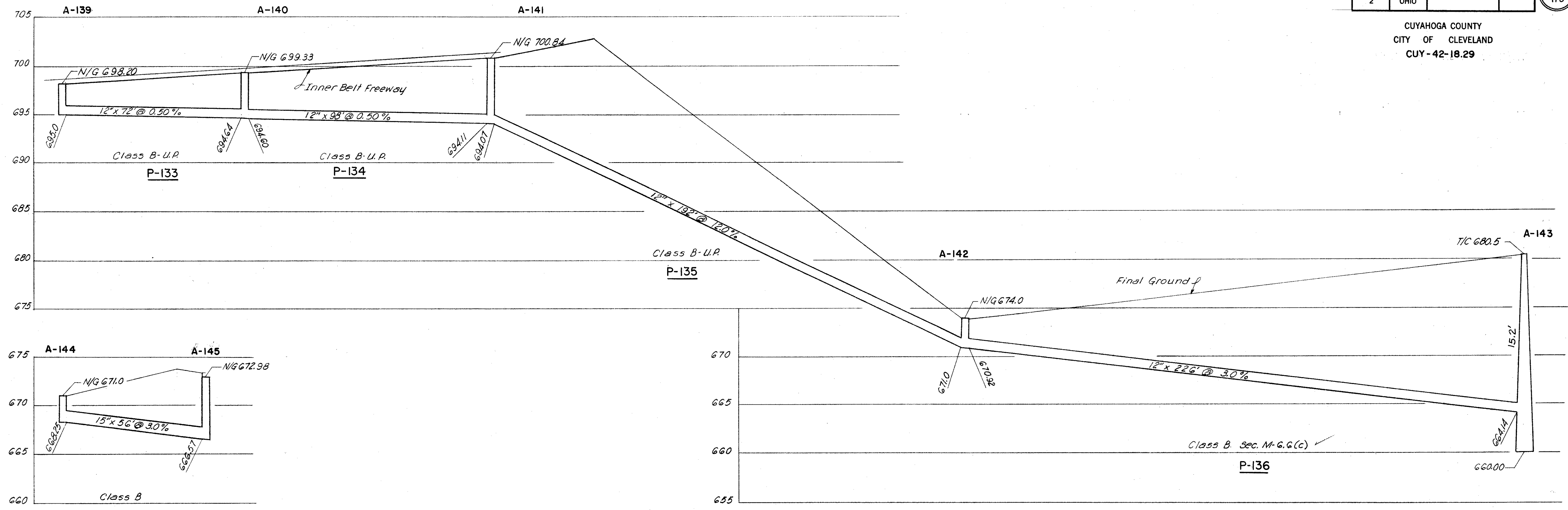
SCALE 1" = 5' HORIZ.  
1" = 1' VERT.  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
DATE 2-15-59  
DATE 3-1-59  
914 SHEET 43

PROFILES ON THIS SHEET  
P-124 TO P-129, P-131, P-132, P-95 & P-96

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

41C  
175

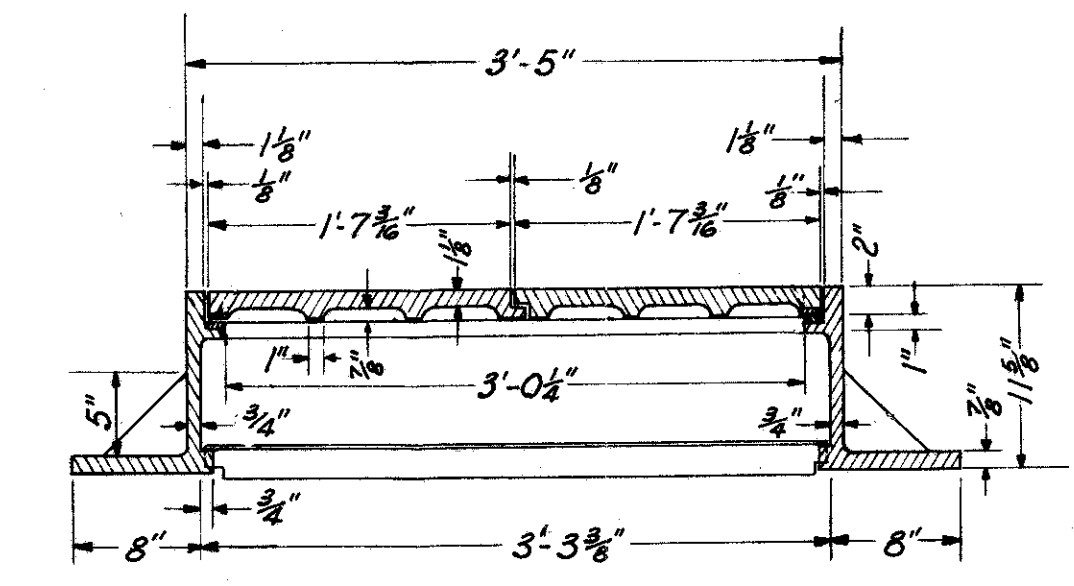
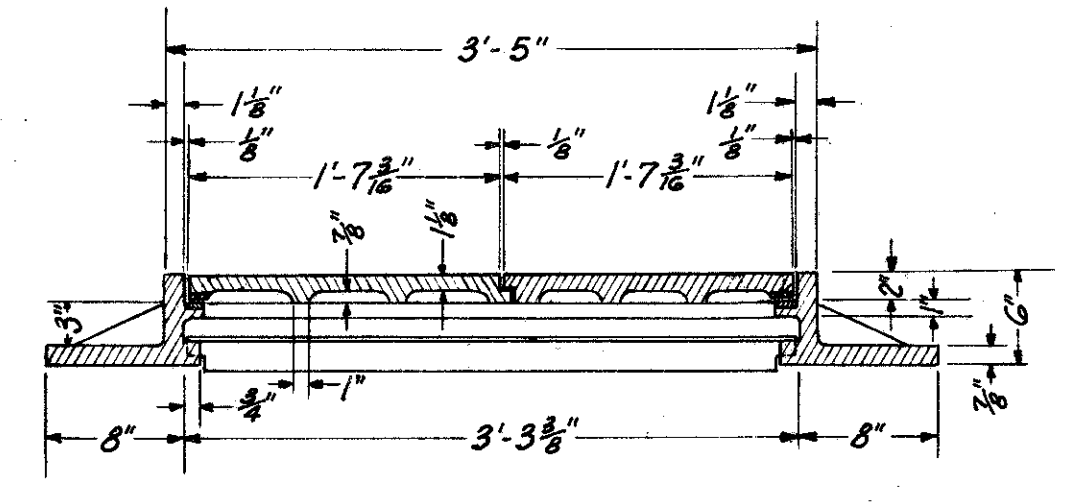
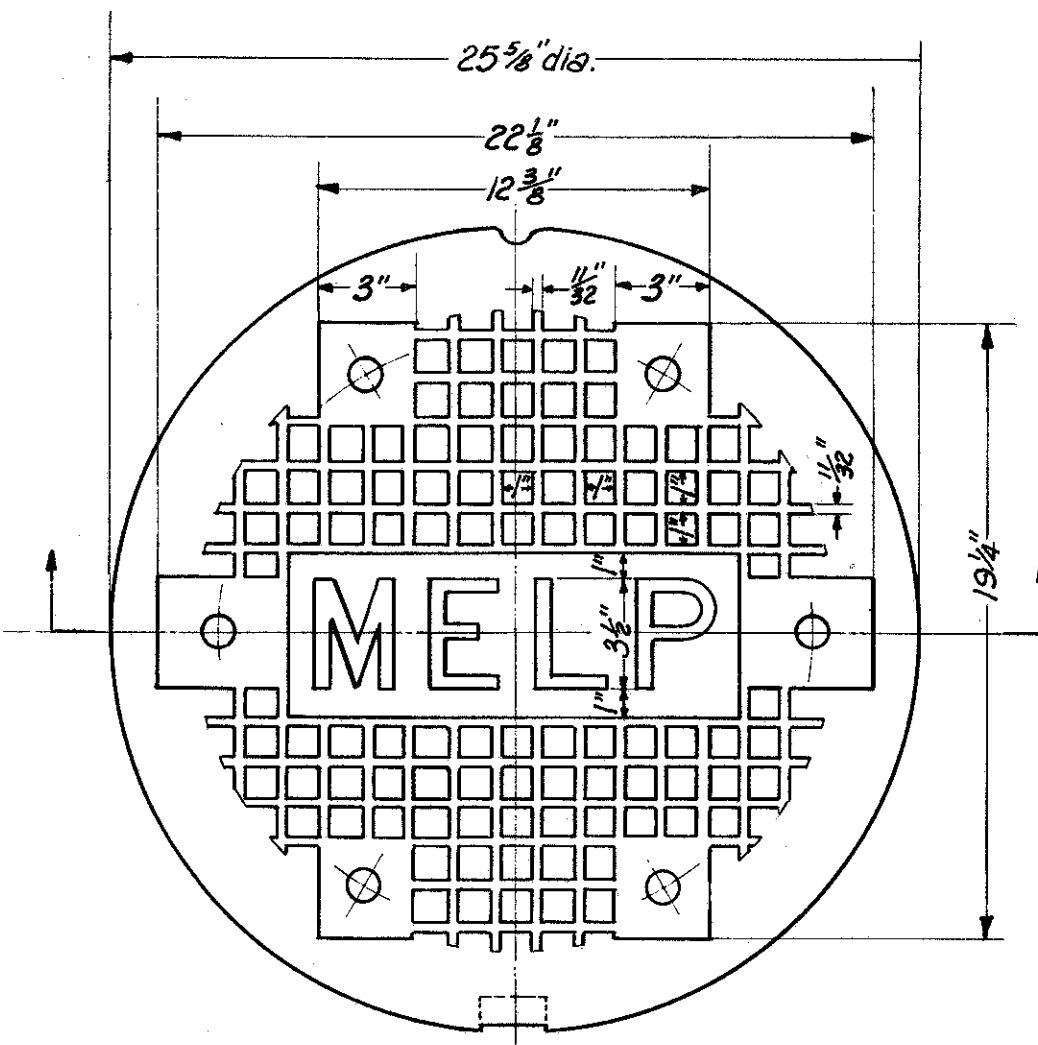
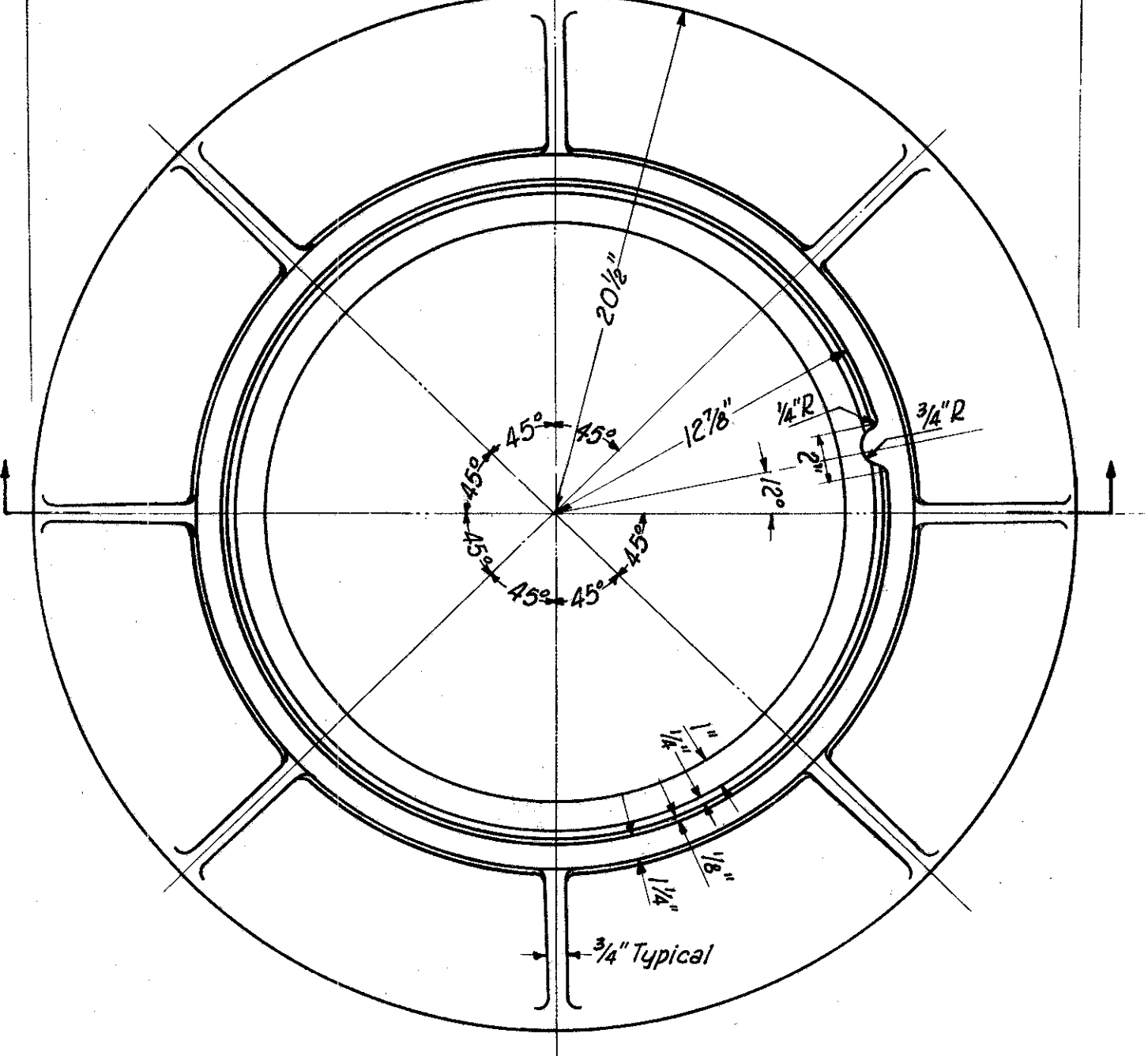
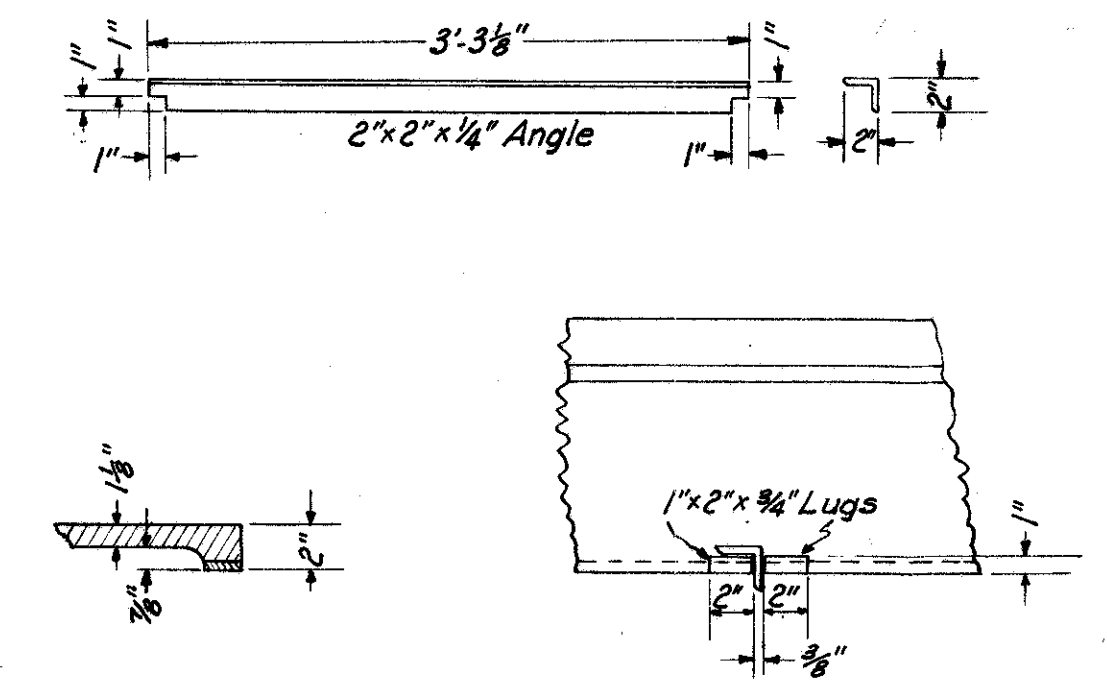
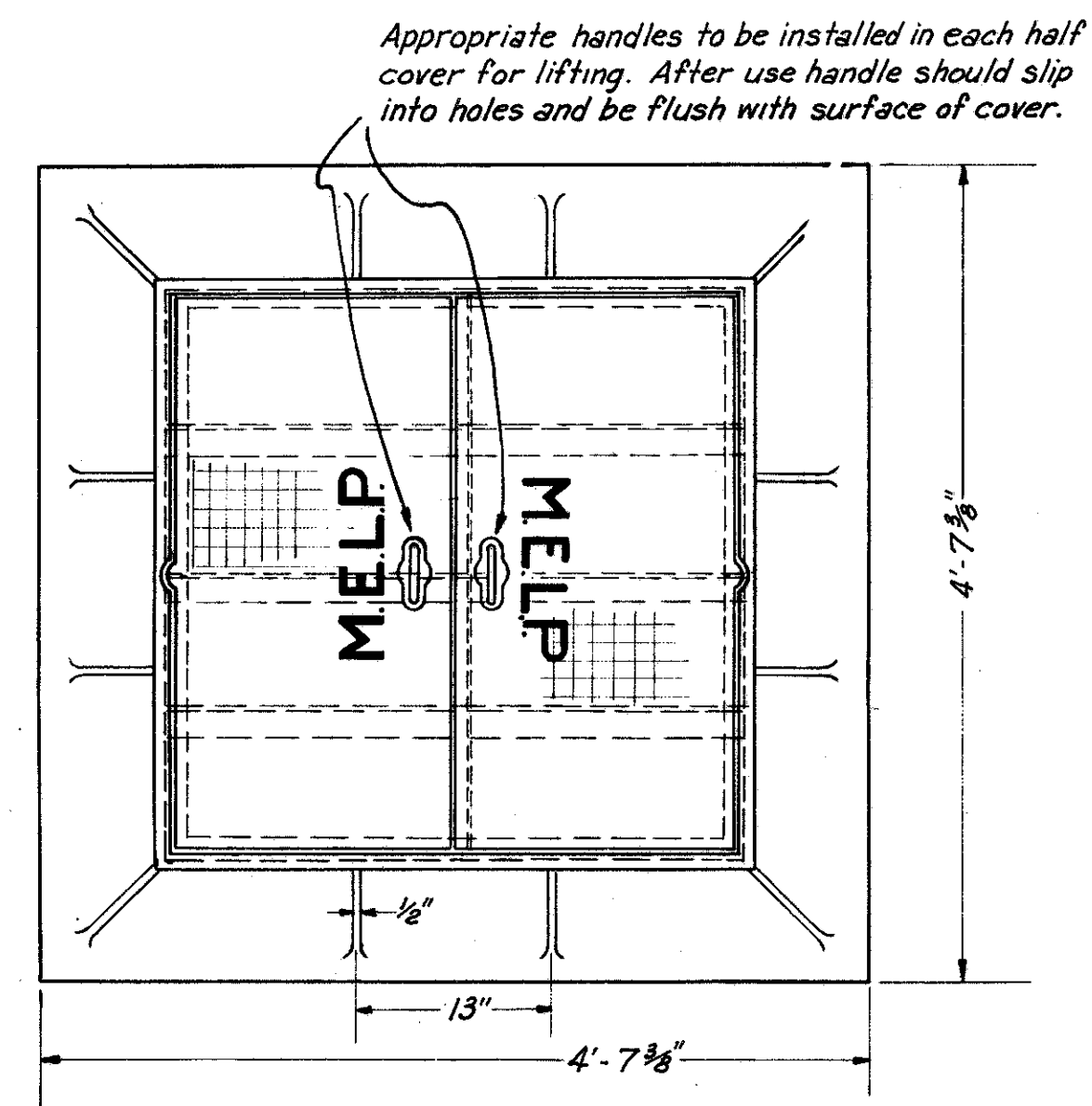
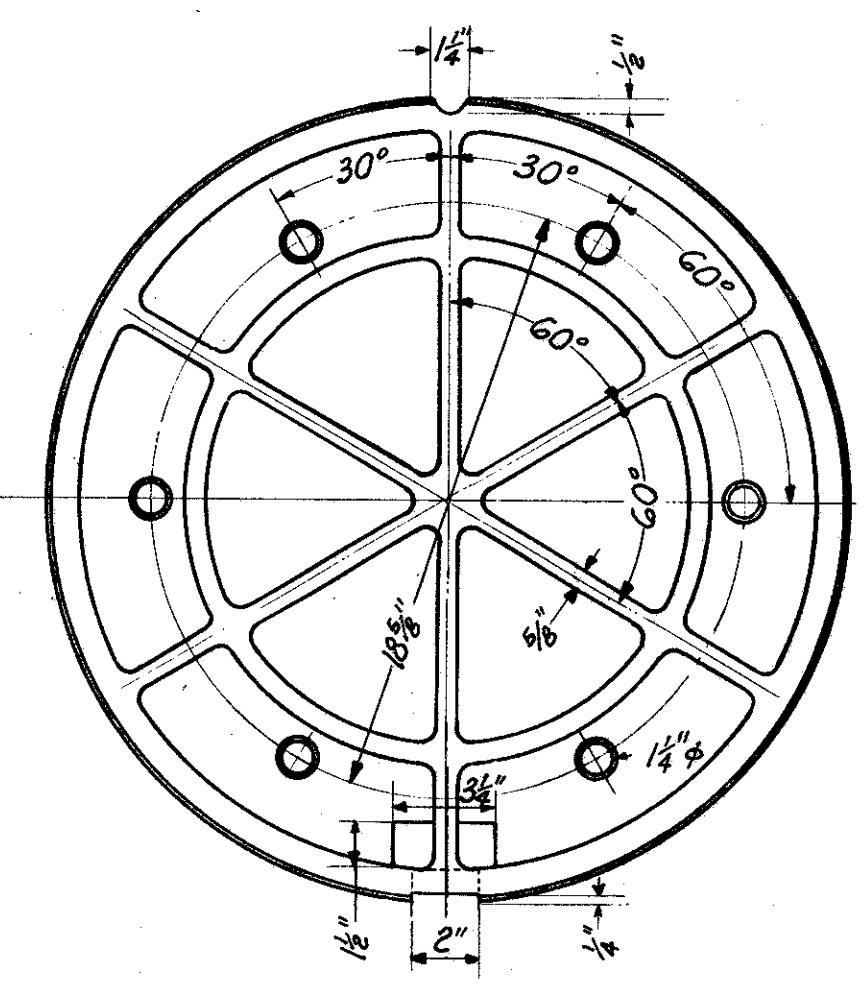
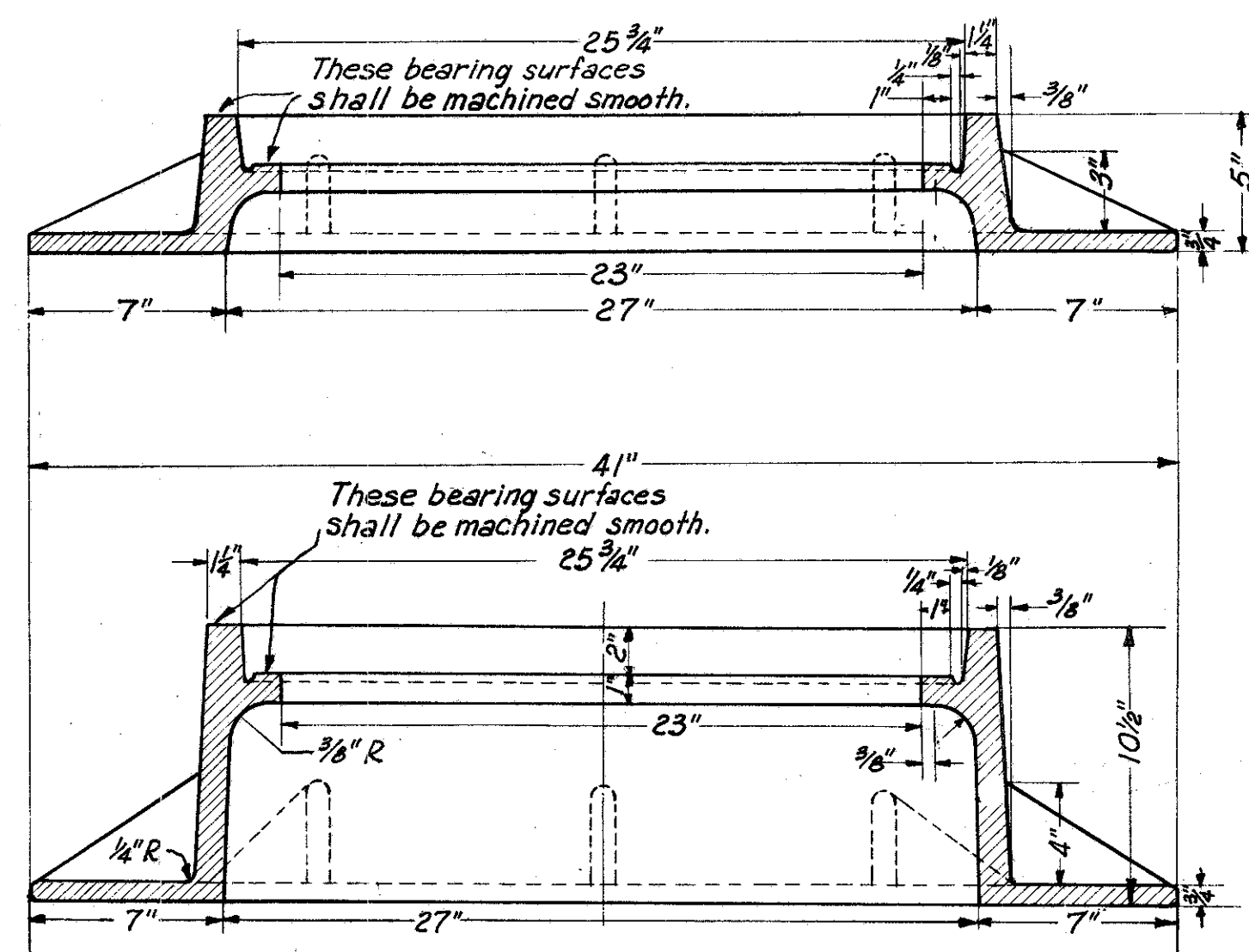
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



SCALE: 1" = 20' HOR.  
1" = 5' VERT.  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
DATE 3-1-59  
914 SHEET. 44

PROFILES ON THIS SHEET  
P-97, P-98 & P-133 TO P-139

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
CITY MANHOLE  
FRAMES & COVERS

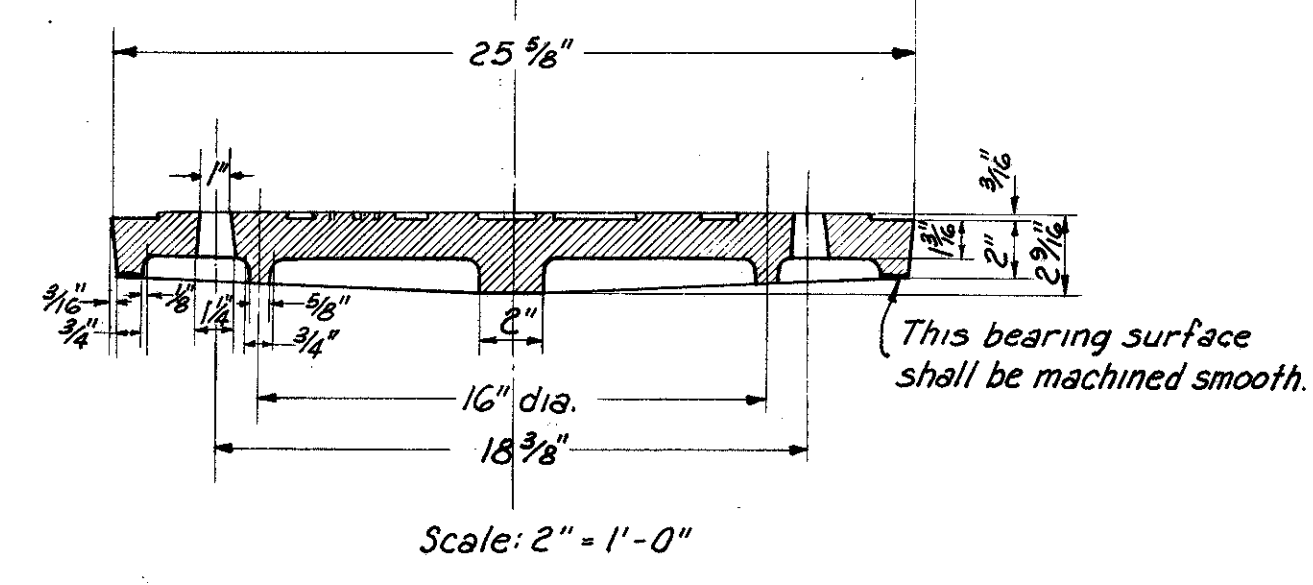


Weight  
Street Type Square Manhole Casting Without Cover 700 lbs.  
Sidewalk Type Square Manhole Casting Without Cover 450 lbs.  
Square Manhole Cover 250 lbs.

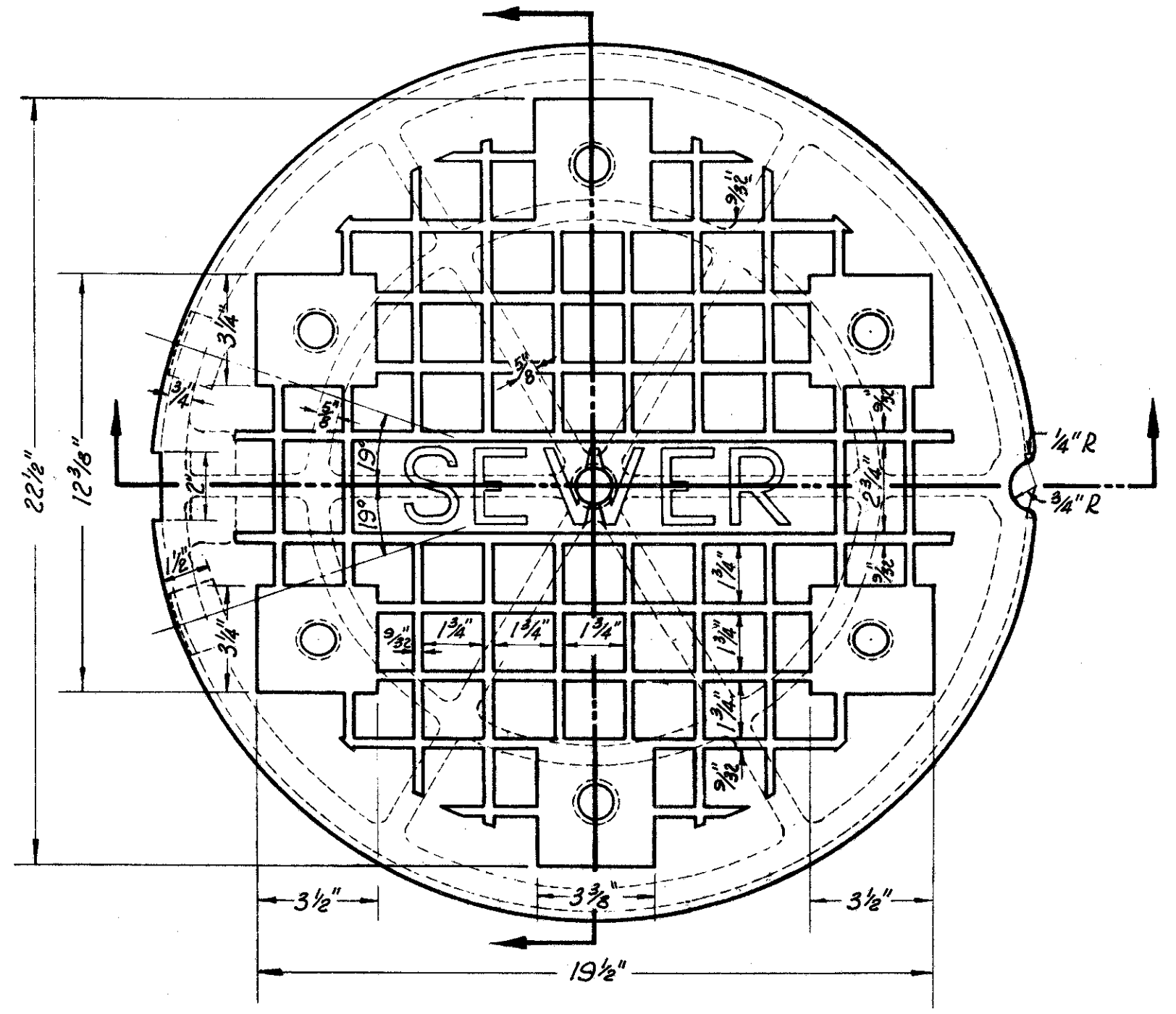
Scale: 1" = 1'-0"

Scale: 2" = 1'-0"

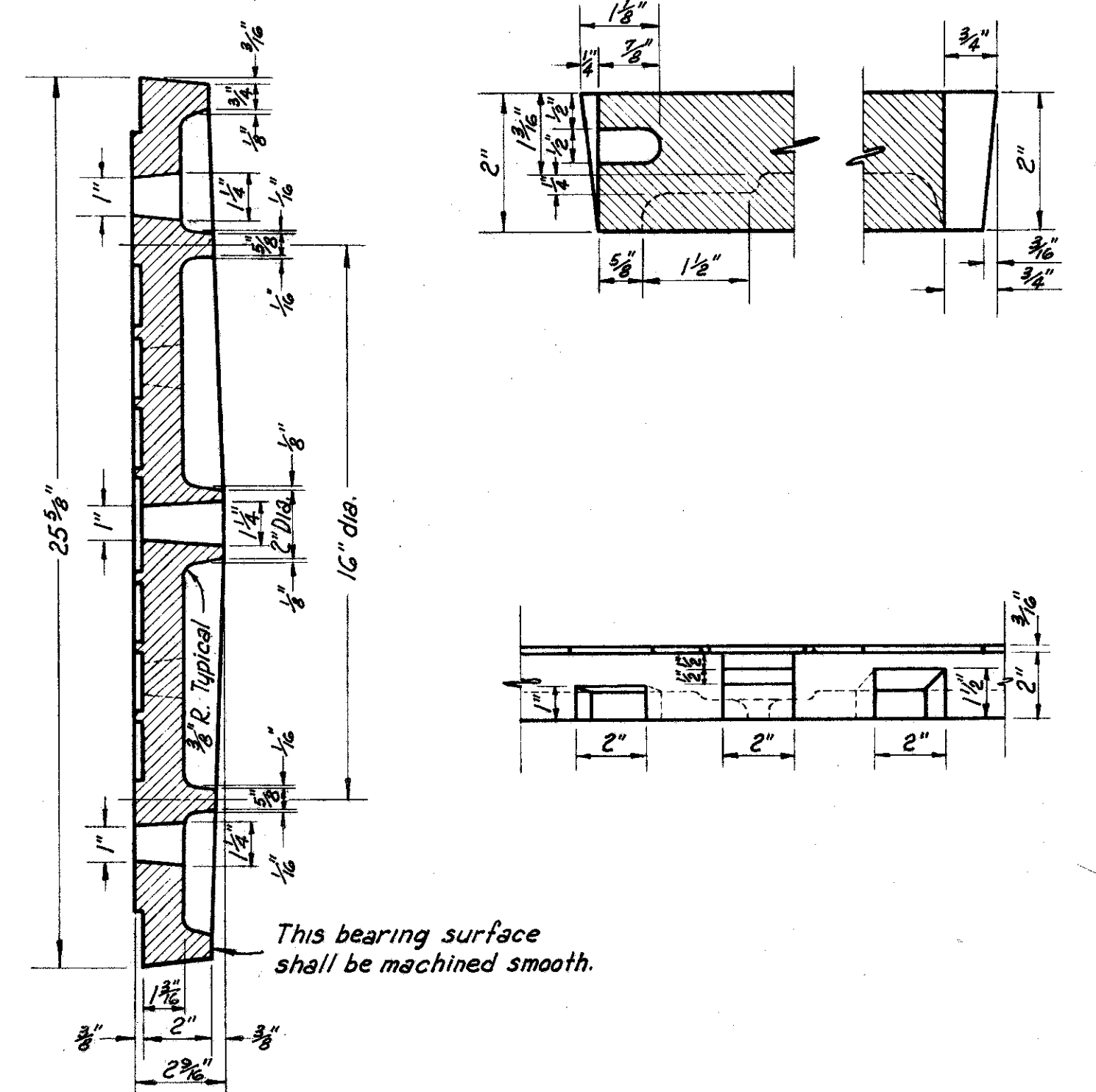
Weight of Frame 400 lbs. min.



Scale: 2" = 1'-0"

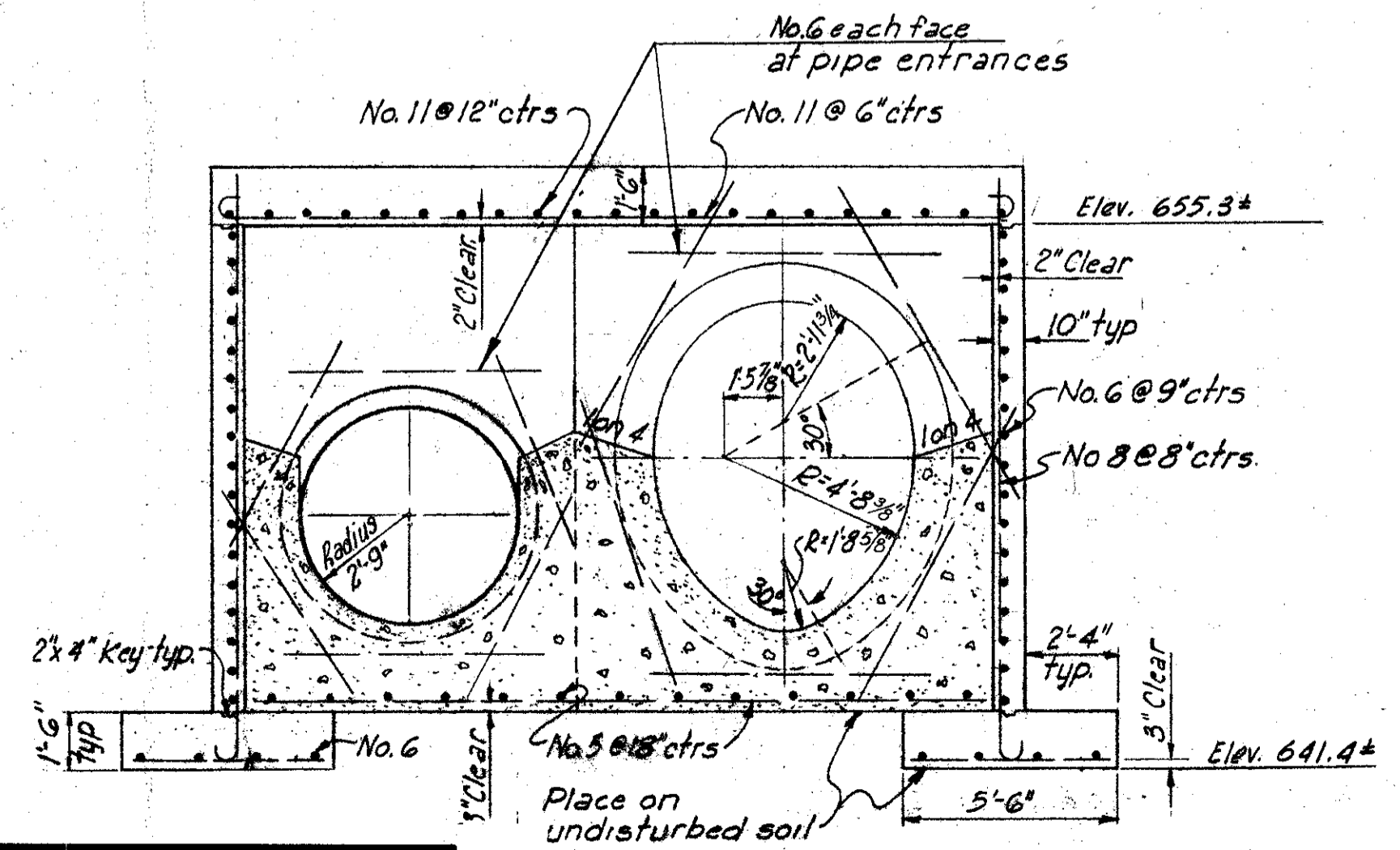
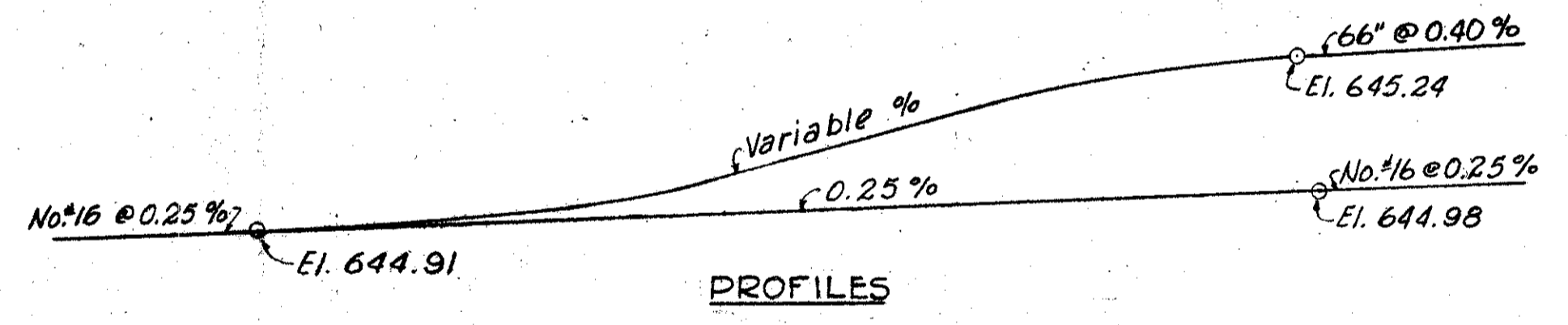
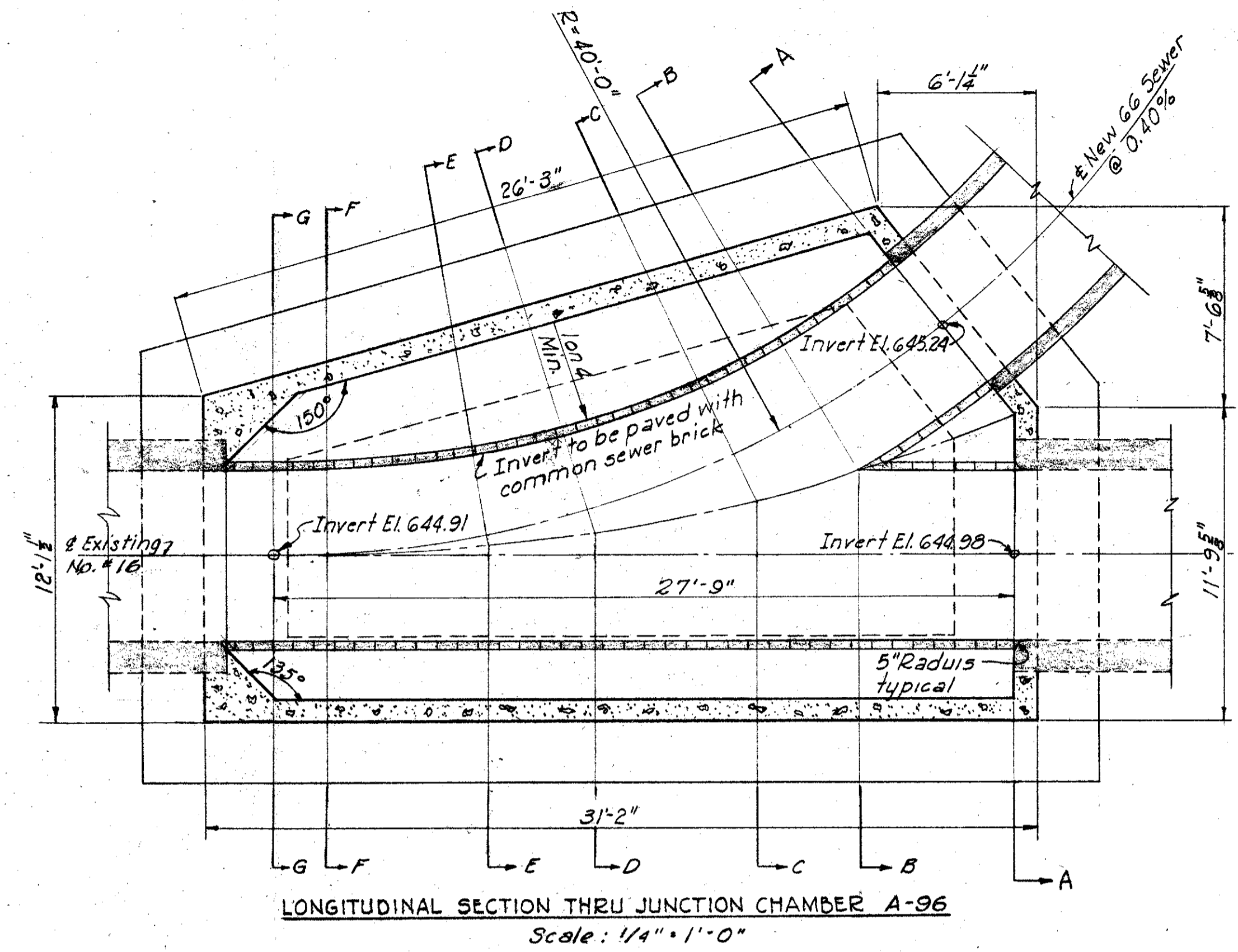


Weight of Cover 195 lbs. min.



Scale: 3" = 1'-0"

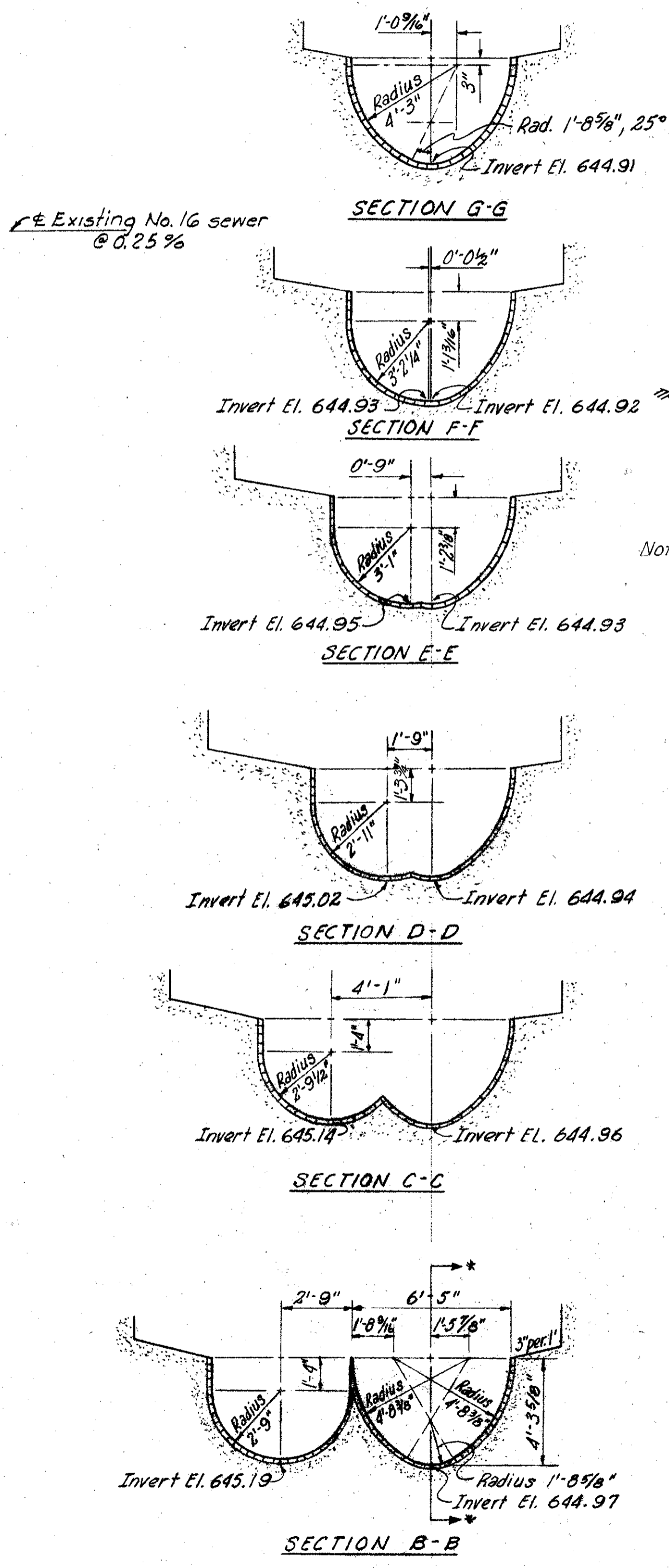
**CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
JUNCTION CHAMBER &  
MISCELLANEOUS DRAINAGE DETAILS**



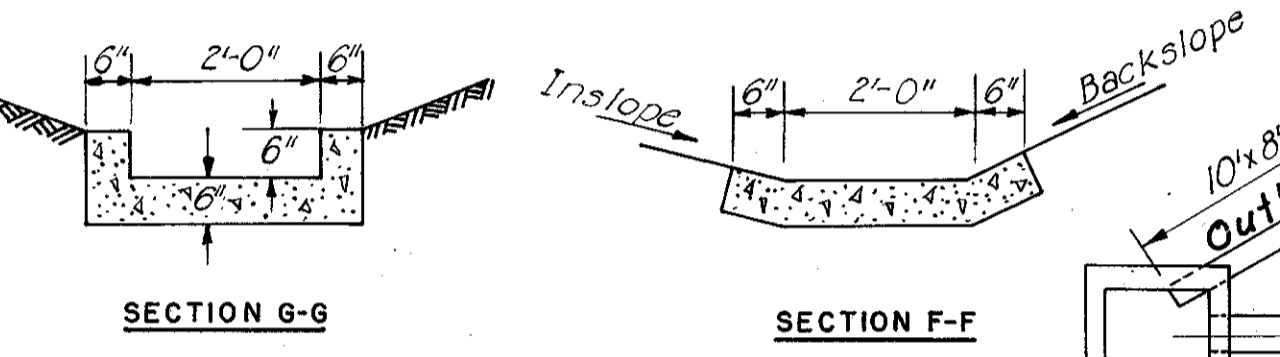
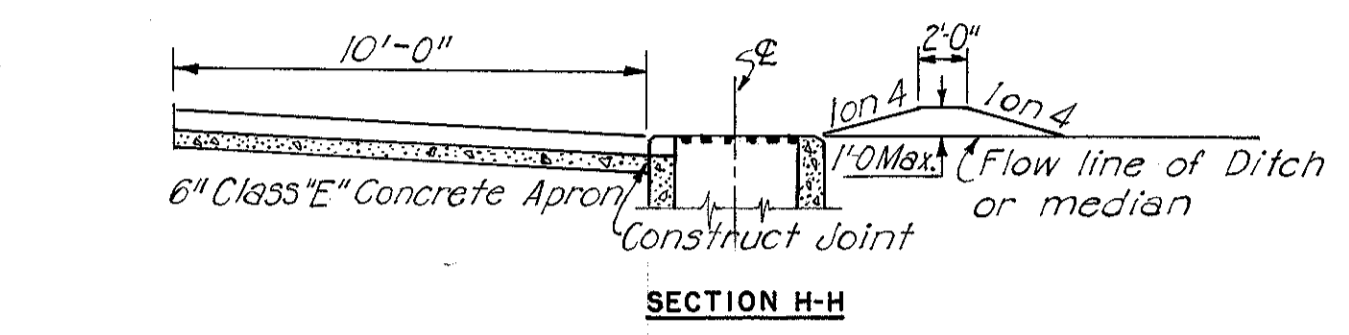
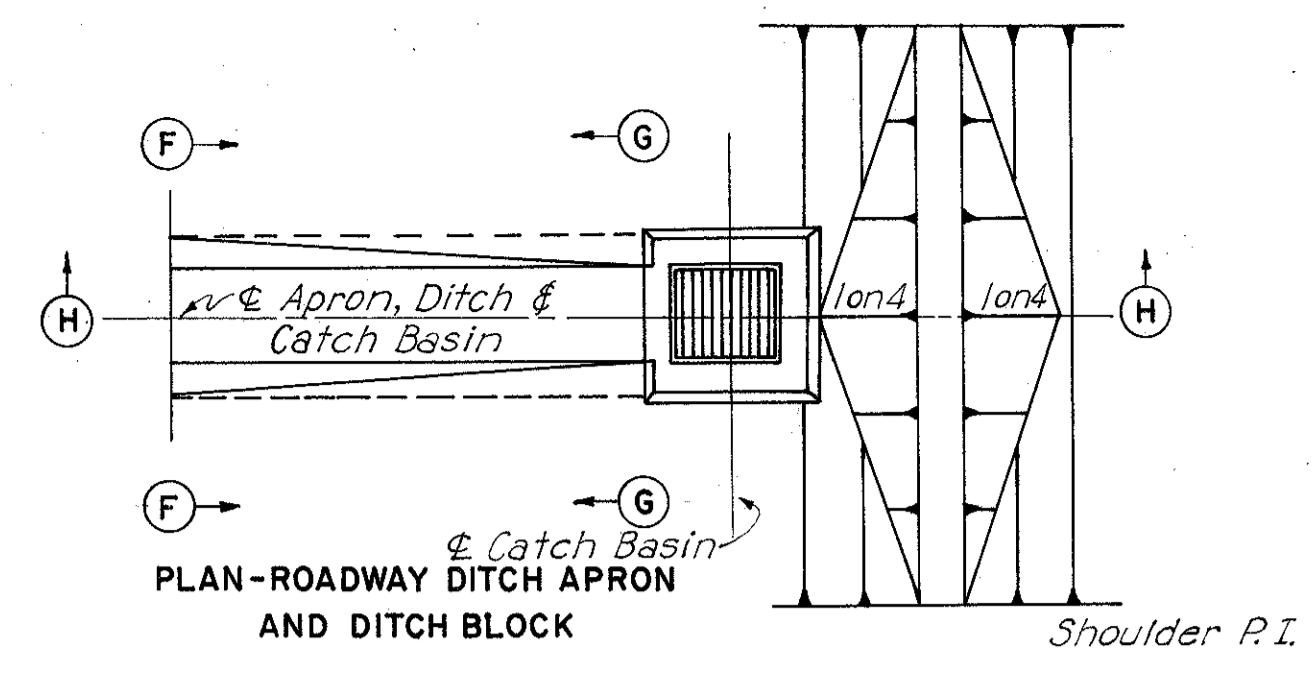
SCALE: As Shown  
MADE I.E.S. DATE 8.2.59  
TRCD. P.P. DATE 8.14.59  
CKD. J.L.C. DATE 11.2.59

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

**SECTION A-A**  
Scale: 1/4" = 1'-0"

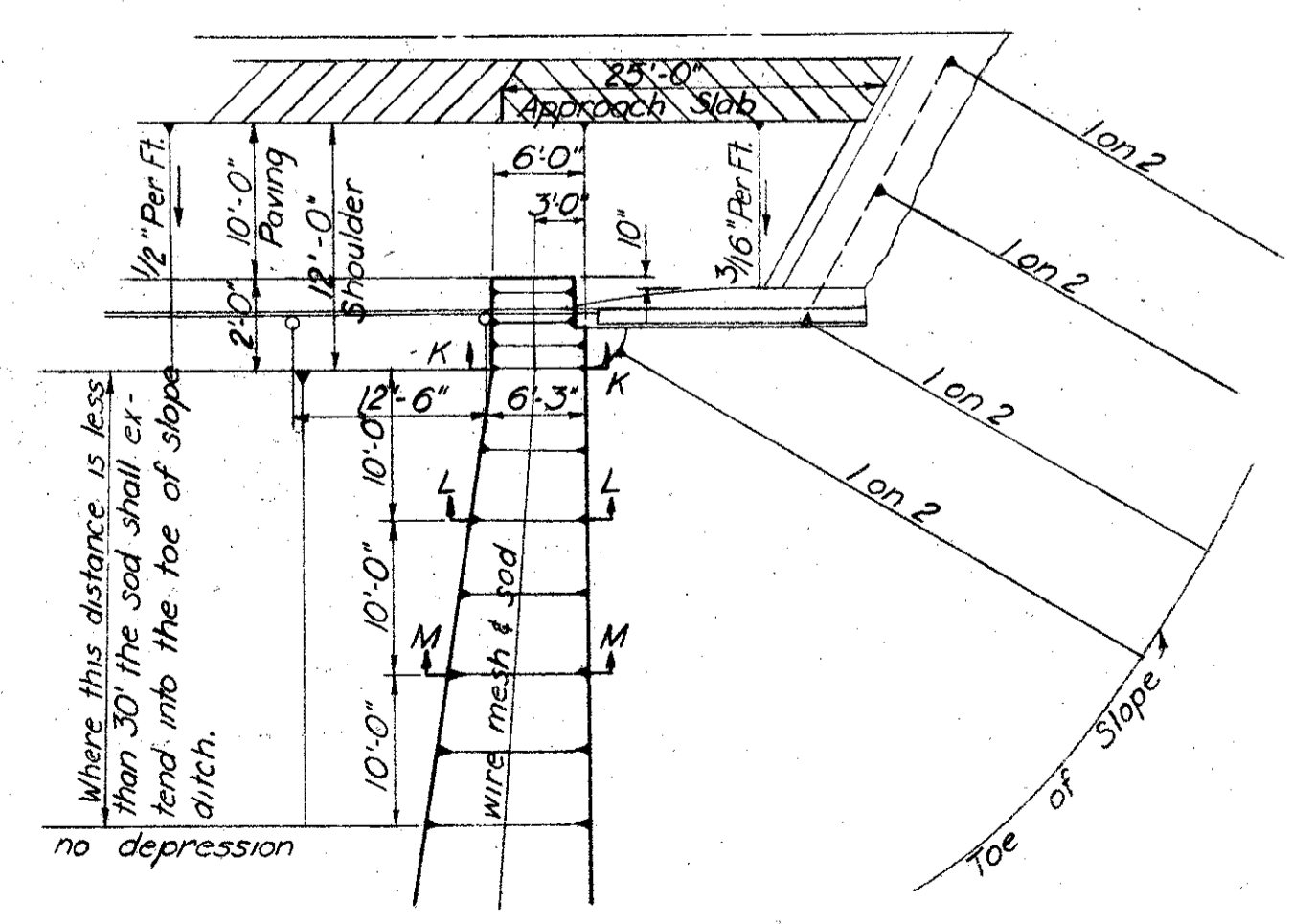


\* Note: Right side from & shall be uniform thru all sections and conform with dimensions of City Sewer No. #16.

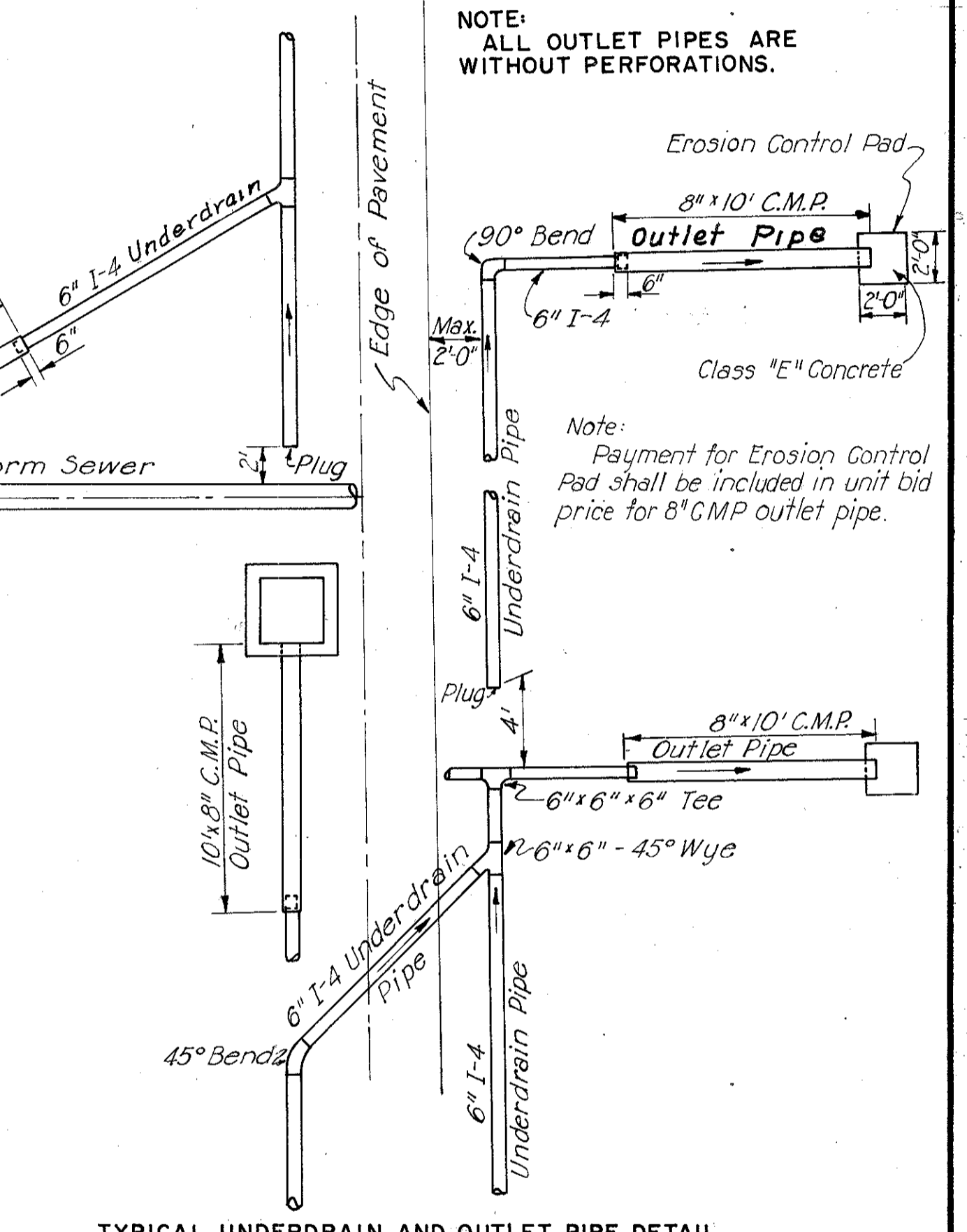


Note:  
Ditch blocks shall be placed downstream from all catch basins on a continuous grade. Payment shall be included in the unit price bid for Item E-1 Excavation.  
The paved apron and catch basin are separate pay items. See Summary Sheet.  
The appropriate paved apron shall be installed upstream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

**SPECIAL PAVED APRON DETAILS (PAVED GUTTER)**



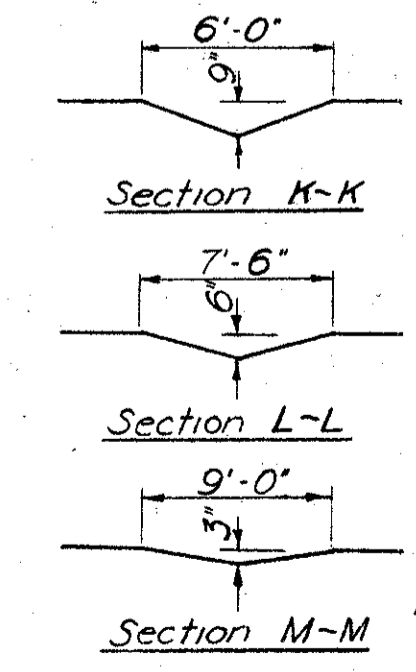
**SPECIAL BERM & SLOPE PROTECTION**  
No Scale



**TYPICAL UNDERDRAIN AND OUTLET PIPE DETAIL**

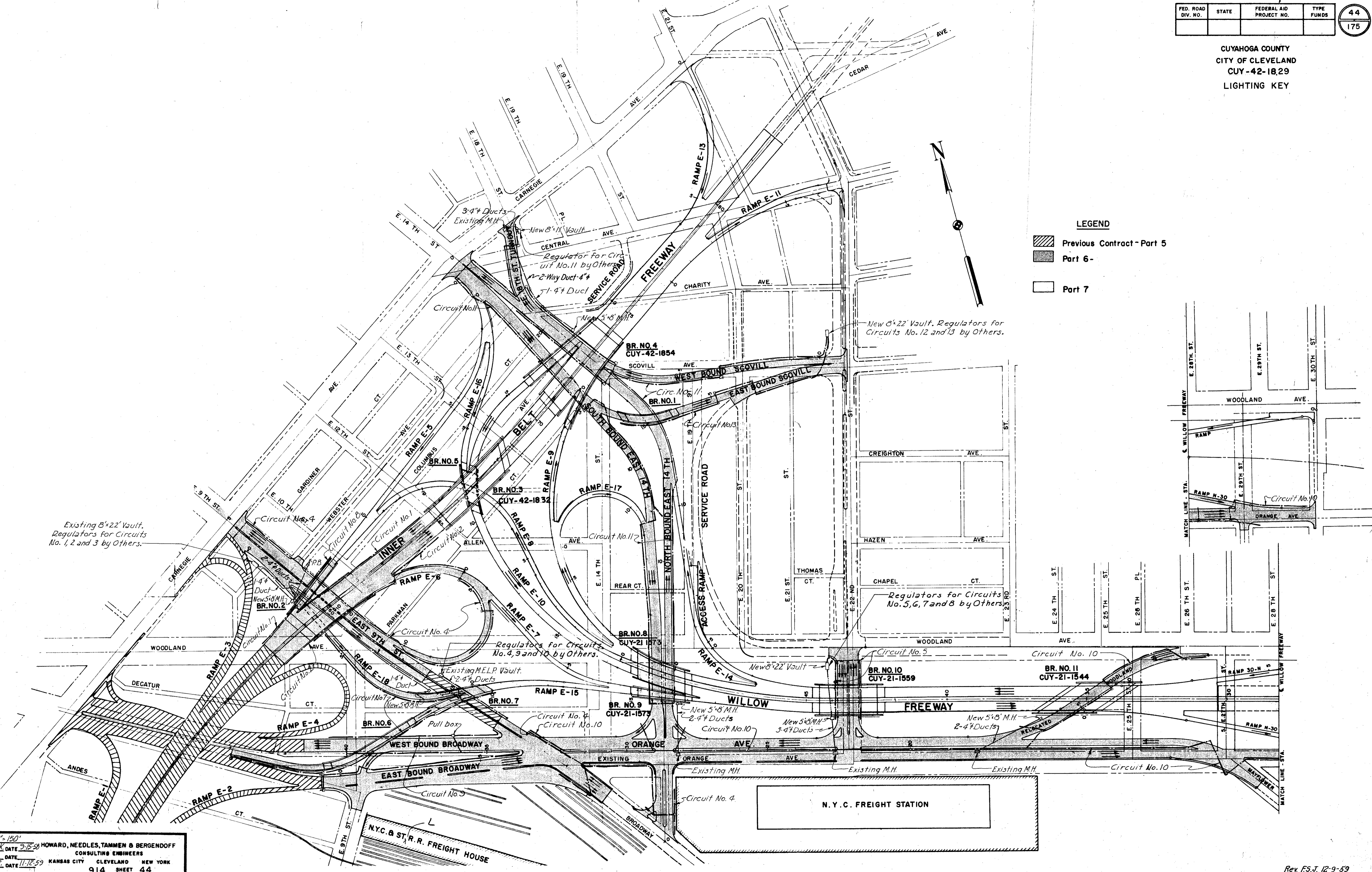
**NOTES**

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 alternates in rows four 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.



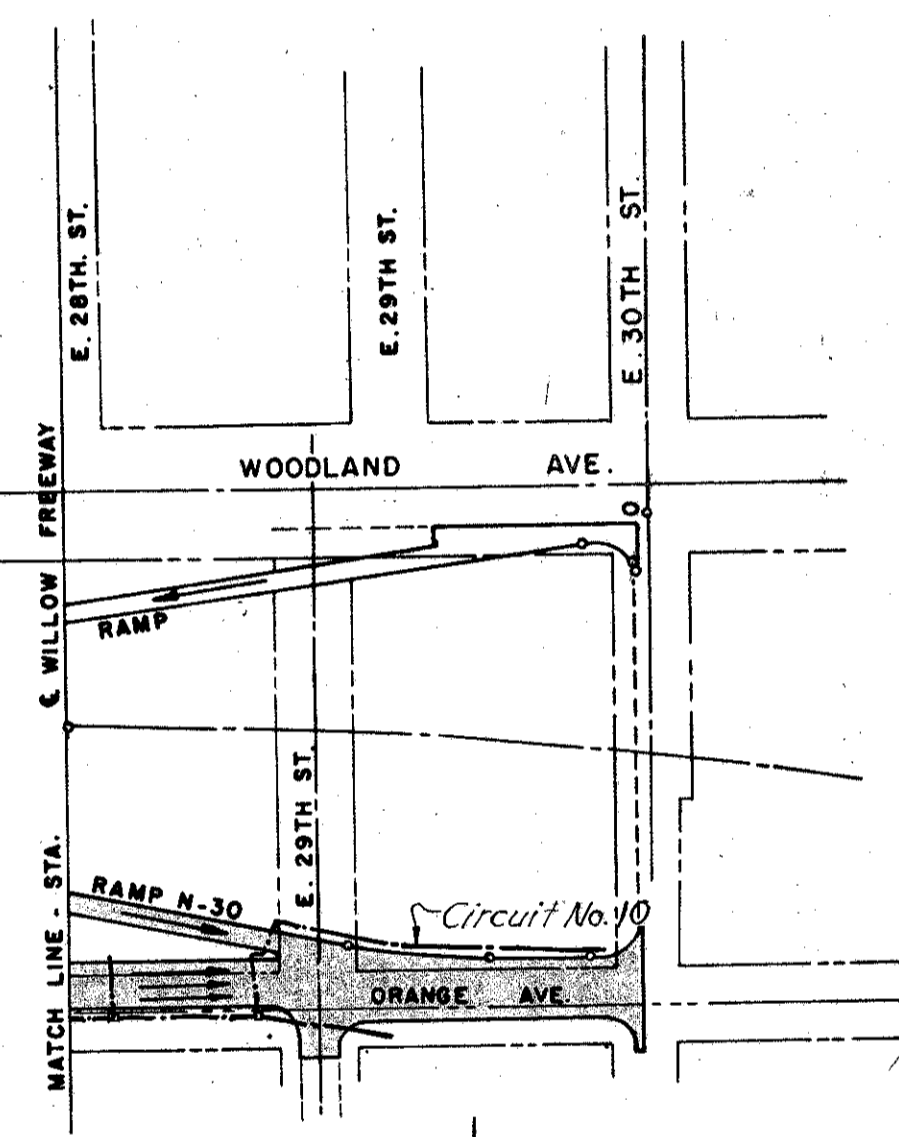


CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18,29  
LIGHTING KEY



**LEGEND**

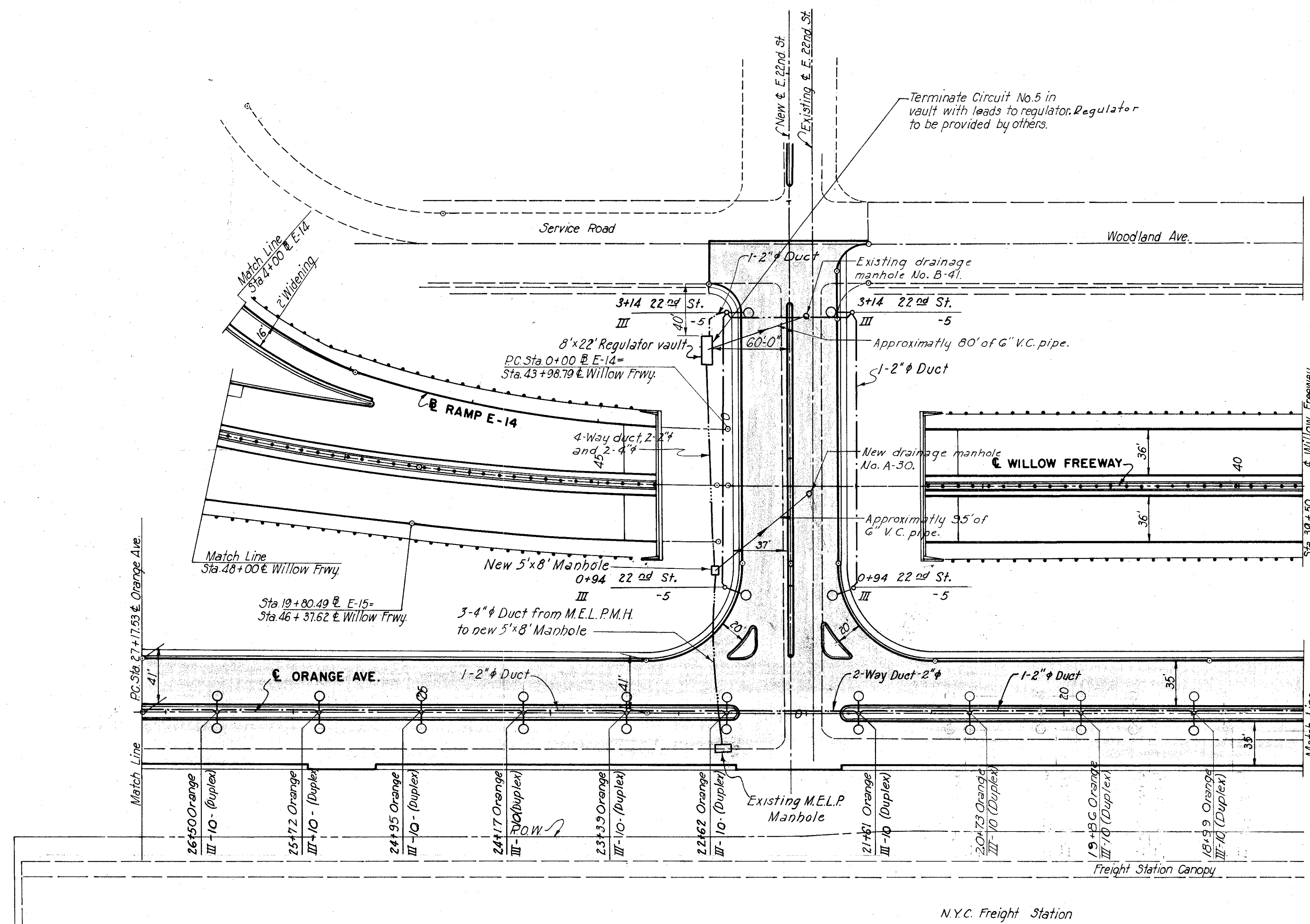
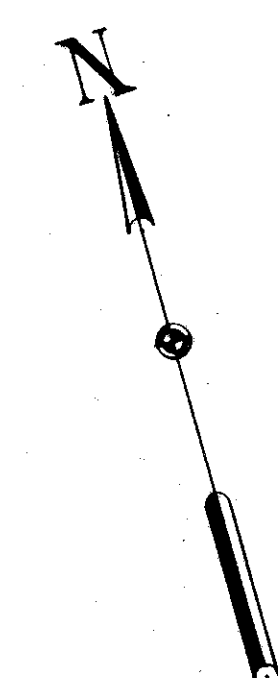
- Previous Contract - Part 5
- Part 6-
- Part 7



SCALE 1"=150'  
 MADE BY J.R.K. DATE 3-15-59 HOWARD, NEEDLES, TAMMEN & BERGENOFF  
 CONSULTING ENGINEERS  
 TRCD. DATE 11-12-59 KANSAS CITY CLEVELAND NEW YORK  
 914 SHEET 44



CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
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.
- Duplex Roadway Lighting Unit: ASA-IES Type III, 10000 Lumen incandescent lamp, 10' bracket, on Streets, with Pole Base Box.
- Trolley Pole; Brackets, attachments, luminaires, wiring, pole base box and erection by Contractor; pole only furnished and delivered to site by C.T.S. Trolley wires, cable bands, trolley brackets, etc., will be furnished and installed by C.T.S.
- 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 represents 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" Galvanized, rigid, conduit for underdeck lighting.
- 32" x 12" x 10" Service Panel for underdeck lighting.
- 2" Galvanized, rigid, conduit for underdeck lighting.
- 8" x 8" x 4" Junction Box for underdeck lighting.
- Regulator Vault, size called out on sheets.
- 5' x 8' Manhole.

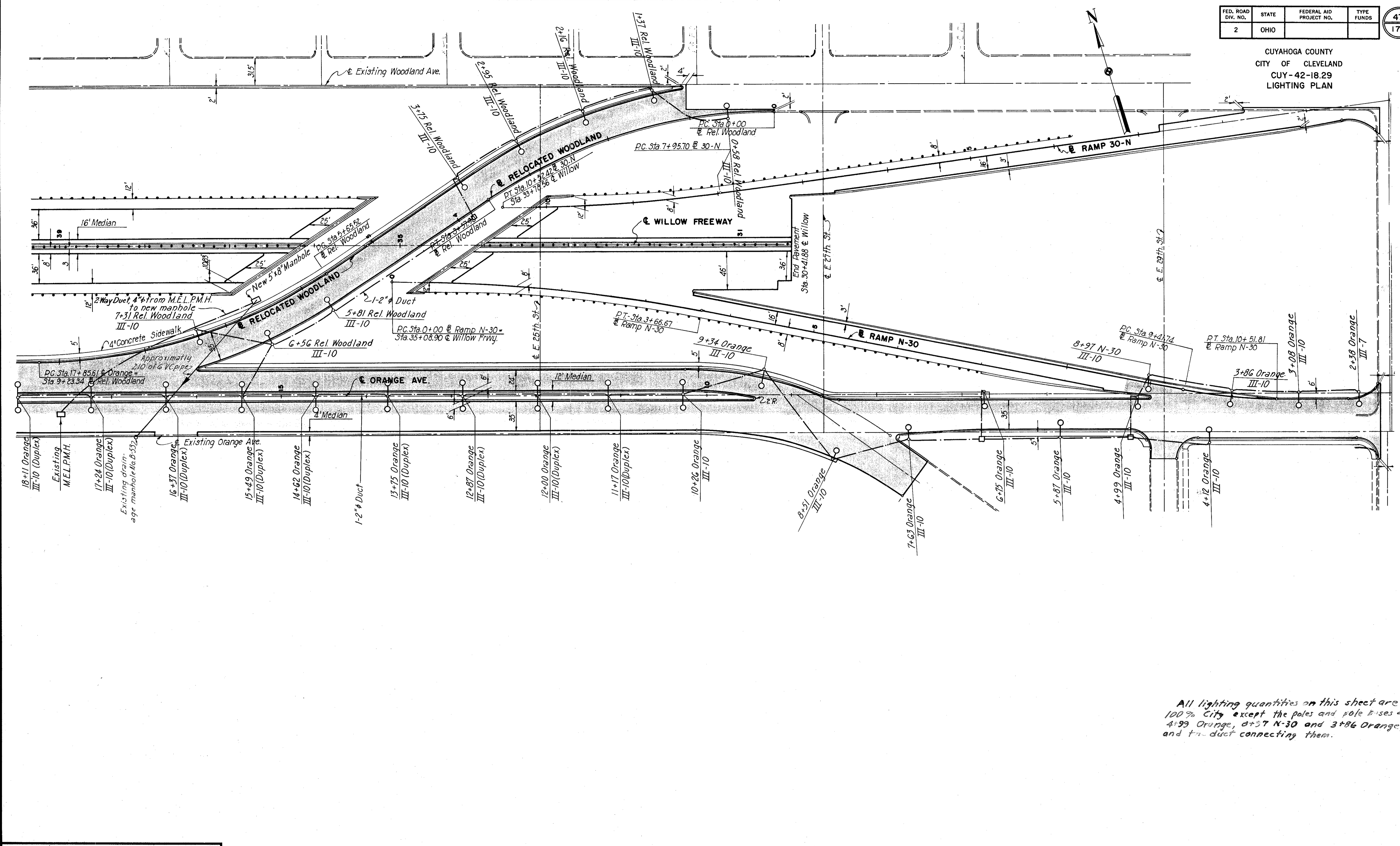
Note: All ducts under pavement shall be 2-Way Duct, 2-inch, except as otherwise noted.

All lighting quantities on this sheet are 100% City except the duct from the existing M.E.L.P. Manhole in Orange Ave to the Regulator Vault left Sta. 2+80 E. 22nd St.

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

47  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
LIGHTING PLAN

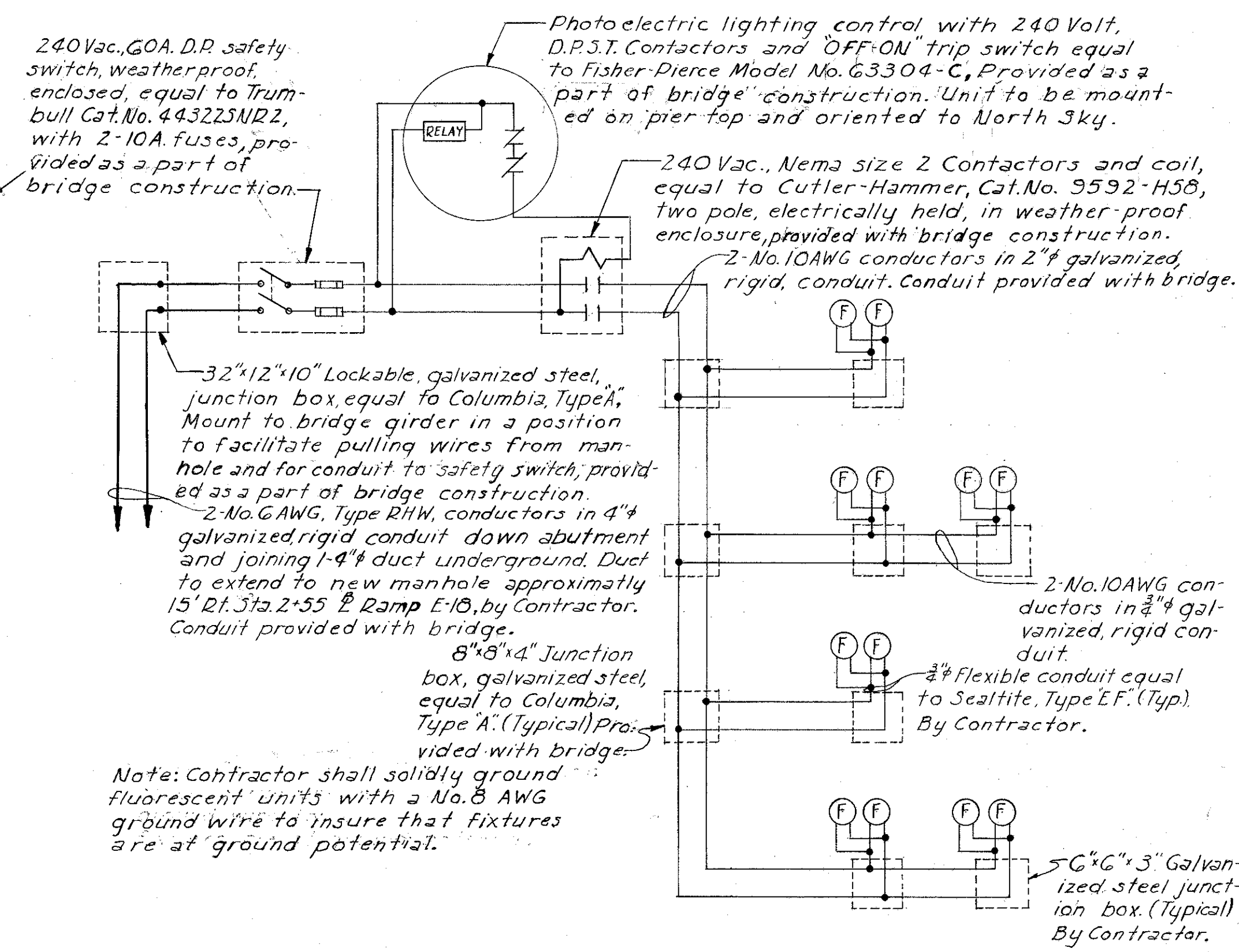
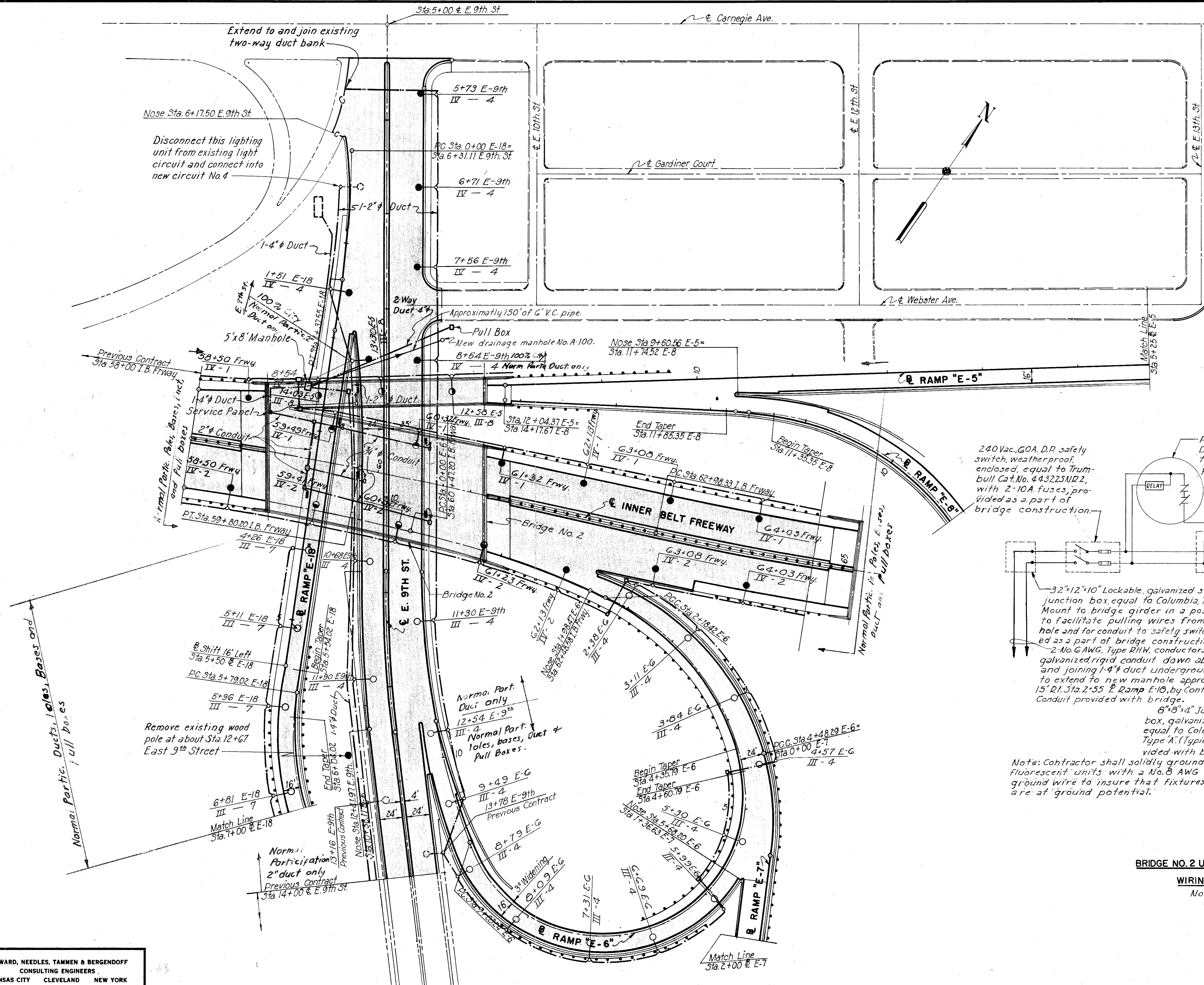


All lighting quantities on this sheet are 100% City except the poles and pole bases at 4+99 Orange, 8+57 N-30 and 3+86 Orange, and the duct connecting them.

SCALE 1" = 50'  
MADE J.R.K. DATE 2-22-59  
TRCD. DATE  
CKD. G.J.C. DATE 11-12-59  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 47

Rev. 8-22-60 REC.  
PART 6  
FOR LEGEND SEE SHEET 46 Rev.F5.J12.9-59

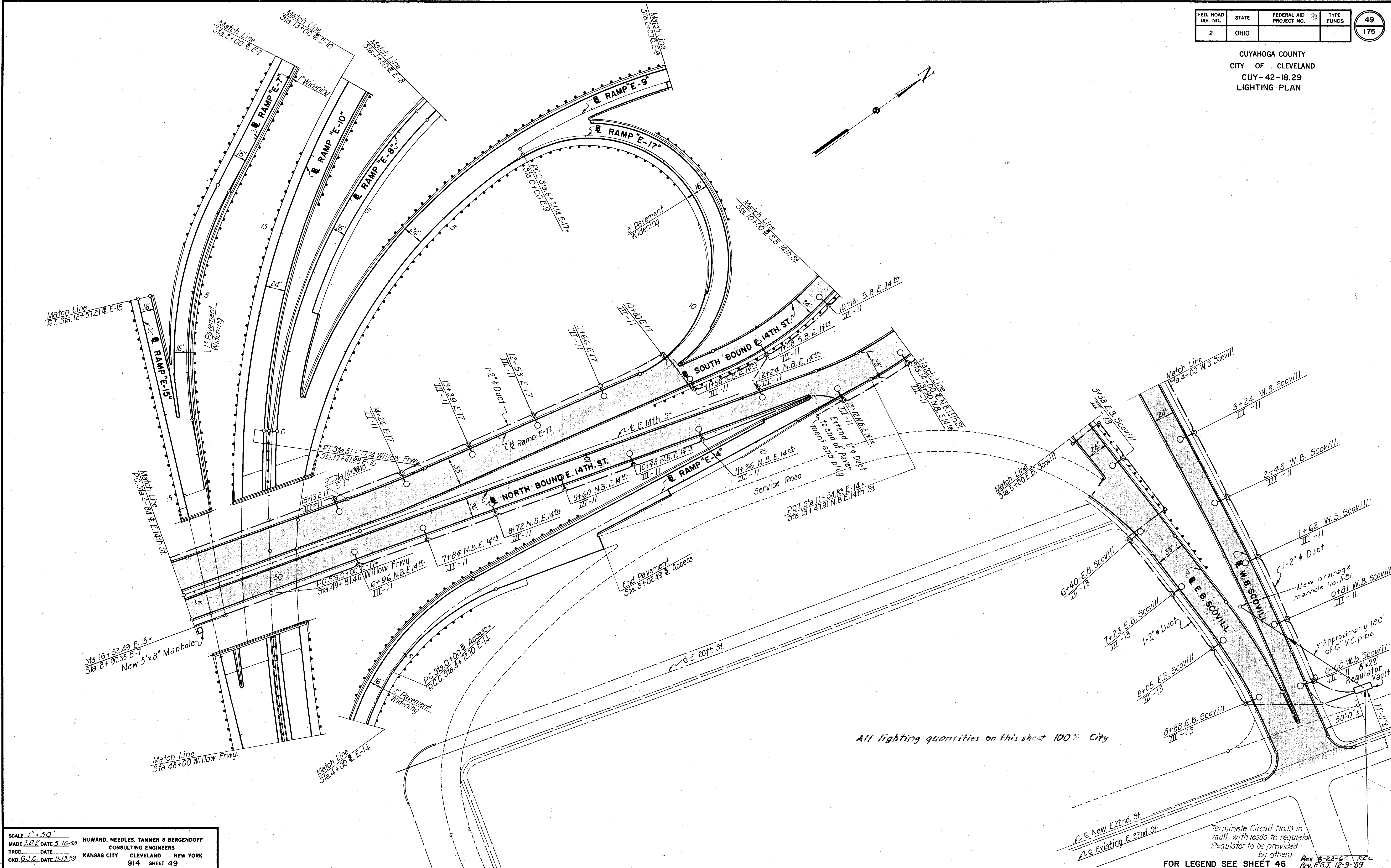
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829  
LIGHTING PLAN



BRIDGE NO. 2 UNDERDECK LIGHTING  
WIRING DIAGRAM  
No Scale

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	49
2	OHIO			175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
LIGHTING PLAN



All lighting quantities on this sheet 100% City

SCALE 1" = 50'  
MADE I.R.L. DATE 5-16-50  
TRCD. DATE  
CKD. DATE 11-13-59  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 49

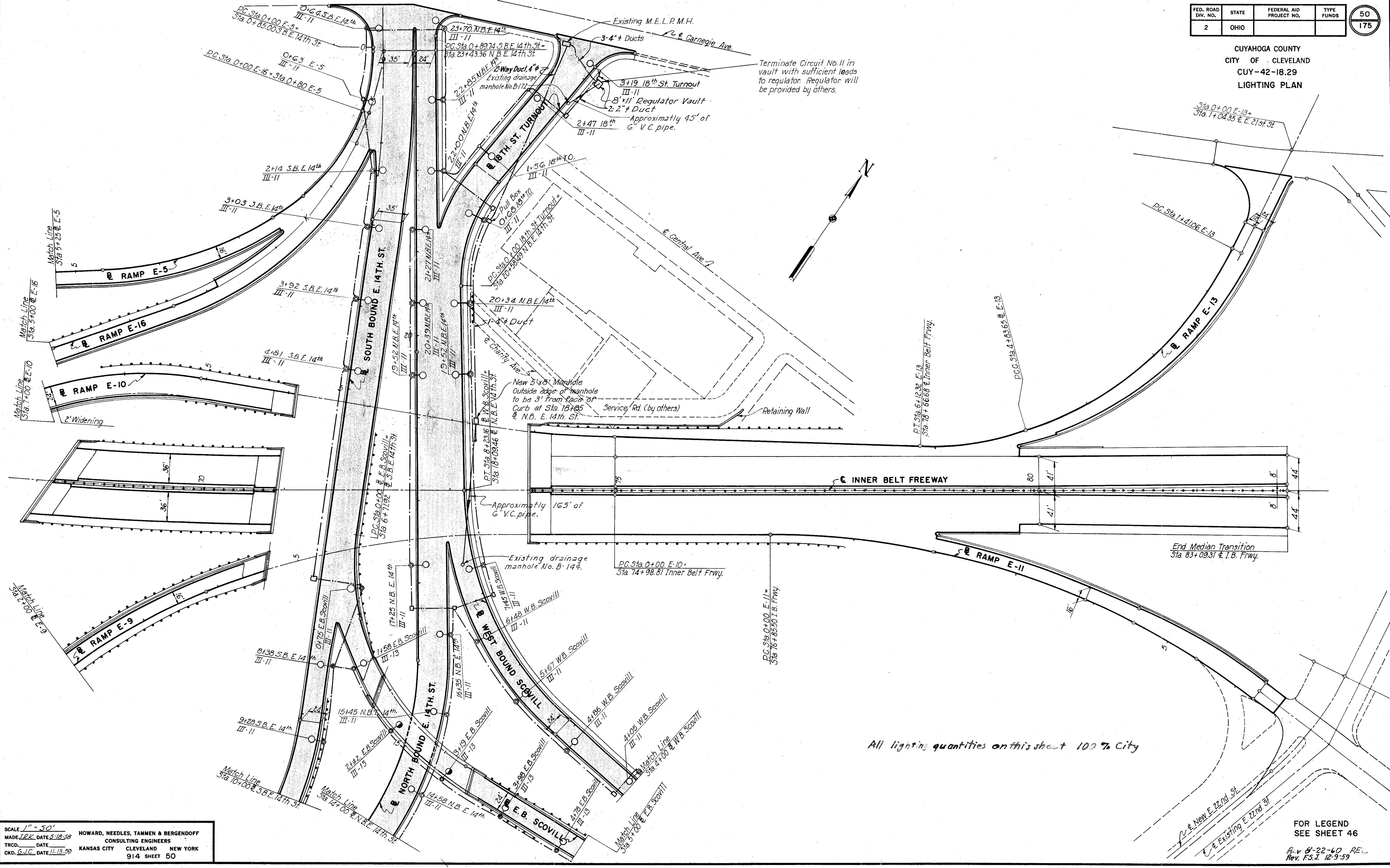
FOR LEGEND SEE SHEET 46  
Rev 8-23-60 REC  
Rev. P.S.J. 12-9-59

Terminate Circuit No. 13 in vault with leads to regulator. Regulator to be provided by others.

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

50  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
LIGHTING PLAN



SCALE 1" = 50'  
 MADE RR DATE 5-18-59 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 TRCD. DATE CONSULTING ENGINEERS  
 CKD. G.J.C. DATE 11-13-59 KANSAS CITY CLEVELAND NEW YORK  
 914 SHEET 50

All lighting quantities on this sheet 100% City

FOR LEGEND  
SEE SHEET 46  
 A.V. 8-22-60 REC  
 Rev. F.S.J. 12-9-59

# LIGHTING NOTES

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

51  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

## LIGHTING NOTES

### 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 6 PORTION OF THE INNER BELT-WILLOW INTERCHANGE AND BRIDGES. THE TYPE AND LOCATION OF LIGHTS, THE CIRCUITS AND THE LOCATION OF REGULATOR VAULTS, MANHOLES, DISTRIBUTION, DUCTS AND CONDUITS SHALL BE AS INDICATED ON THE PLANS. THE CABLES FOR ROADWAY LIGHTS SHALL BE IN CONCRETE ENCASED FIBER OR ASBESTO-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 9 PARTIAL AND ONE COMPLETE .66 AMP. SERIES CIRCUIT. THE UNDERDECK LIGHTS ARE TO BE 250 WATT. BALLASTS ARE TO BE INSTALLED FOR 230 VOLT OPERATION FROM TRANSFORMER STATIONS AS INDICATED ON SHEETS 44, 45, 46, 47, 48, 50, 52, 53, 53A AND 53 B.

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 REGULATOR VAULTS, MANHOLES, LAMPS, LUMINAIRES, UNDERDECK LIGHTING FIXTURES, BALLASTS, SERIES CABLES, WIRING, LUMINAIRE BRACKETS AND STANDARDS FOR UNITS OF 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, MULTIPLE FEEDERS, REMOVING WOOD POLES, 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, TIME CLOCKS FOR SERIES CIRCUITS, OIL SWITCHES, PRIMARY CONTACTORS, POWER POLES, PRIMARY FUSE CUTOFFS, 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 CABLES, AND GROUNDING; EMPTY JUNCTION BOXES, INSULATING TRANSFORMER BOXES AND CONDUITS ON STRUCTURES AND IN PIERS AND ABUTMENTS; SERVICE PANELS FOR FLUORESCENT UNDERDECK LIGHTS; AND STRUCTURAL MEMBERS FOR THE MOUNTING OF THE FLUORESCENT 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 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 EITHER ONE OR TWO 10 FT. BRACKETS 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 53. 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 OR ARMS 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 UP THROUGH BOTTOM OF BOX. CONNECT TO POLE BY NO. 6 COPPER WIRE.

THE STEEL SHAFT OF THE LIGHTING STANDARDS FOR SINGLE LUMINAIRES 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. THE STEEL SHAFT OF ALL DUPLEX POLES SHALL BE FABRICATED FROM A MINIMUM OF 7 GAUGE STEEL PLATE.

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 "PLUMBER" FOR ADJUSTMENT OF A PENDANT LIGHTING FIXTURE AND SHALL BE TAPPED FOR 1-1/4 INCH PIPE CONNECTION.

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, AN 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" 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 ON TO 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 KEYS TO THE SUPPORTING REFLECTOR SO THAT THEY CANNOT BE PLACED IN ANY OTHER THEN 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 SUBJECT 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. 95A62 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 COMMERCIALY 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.

### 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 SIDE IS VERTICAL AS SHOWN ON SHEET 53 AND THE LUMINAIRES SHALL BE SUPPORTED WITH BRACKETS ABOUT 28" 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 BOLDED.

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 OR 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 91A, 159 AND 160.

### 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:

- "15,000 LUMEN LUMINAIRES AND INSULATING TRANSFORMER", PER EACH AND SHALL INCLUDE LAMP, GLOBE, REFLECTOR, REFRACTOR, LAMP RECEPTACLE, WIRING, CORROSION RESISTANT FITTINGS, LATCHES, SAFETY CHAIN, GASKETS AND INSULATING TRANSFORMER.
- "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.
- "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 KNOBS WITH PLUMBIZER AND PIPE NIPPLE SINGLE CONDUCTOR NO. 8 AWG, 600 VOLT POLE AND BRACKET CABLE TO INSULATING TRANSFORMER, ATTACHMENTS TO "U" HOOK, SCREWS, BOLTS, NUTS, WASHERS AND ALL MODIFICATIONS AND INCIDENTALS REQUIRED.

D. "STANDARD, 10-FOOT DUPLEX BRACKET", PER EACH AND SHALL INCLUDE TWO 10-FOOT BRACKETS, ATTACHMENTS FOR TWO BRACKETS AND INCLUDING ALL FEATURES SPECIFIED FOR "STANDARD, 10-FOOT BRACKET", ITEM C.

E. "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, COVER, 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.

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

G. "NO. 8 AWG, 5 KV LIGHTING CABLE", PER LINEAL FOOT AND SHALL INCLUDE TWO SINGLE CONDUCTOR CABLES FOR DOUBLE-WIRE CIRCUITS IN DUCTS AND JUNCTION BOXES, INCLUDING ON BRIDGES, SPLICING, TERMINALS, CONNECTIONS AND TESTING. MEASUREMENT FOR CABLE SHALL INCLUDE TWO LENGTHS OF SINGLE CABLE RUNS.

H. "1-WAY DUCT, 2-INCH", PER LINEAL FOOT AND SHALL INCLUDE EXCAVATING, GRADING, FORMS FOR CONCRETE, CONCRETE BACK FILLING, COMPACTING END BELLS, PLUGGING DUCTS, CONDITIONING DUCTS, NO. 9 AWG GALVANIZED IRON PULL-IN WIRE, AND SEALING AROUND DUCTS WHERE THEY ENTER MANHOLES OR VAULTS.

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

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

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

L. "3-WAY DUCT, 4-INCH", PER LINEAL FOOT AND SHALL INCLUDE ALL FEATURES REQUIRED FOR "1-WAY DUCT, 4-INCH", ITEM J, EXCEPT USING THREE DUCT RUNS.

M. "4-WAY DUCT, TWO 4-INCH", PER LINEAL FOOT AND SHALL INCLUDE ALL FEATURES REQUIRED FOR "2-WAY DUCT, 4-INCH", ITEM K, EXCEPT THE BOTTOM TWO DUCTS SHALL BE 4-INCH AND THE TOP TWO SHALL BE 2-INCH.

N. "REMOVING WOOD POLE", PER EACH AND SHALL INCLUDE EXCAVATION, REMOVING 35-FOOT POLE, POTHEAD FOR CABLE, 80 FEET OF 2-INCH RIGID CONDUIT, FITTINGS, STRAPS, GALVANIZED PIPE COUPLINGS, AND FASTENINGS, AND DELIVERING TO POWER COMPANY YARD.

O. "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, CONNECTION, FITTINGS, MOUNTING LUGS AND FASTENINGS.

P. "MULTIPLE FEEDERS", PER LINEAL FOOT AND SHALL INCLUDE TWO NO. 6 AWG CONDUCTOR CABLES FOR FLUORESCENT UNDERDECK LIGHTS 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.

Q. "REGULATOR VAULT, 8-FOOT BY 22-FOOT" PER EACH AND SHALL INCLUDE REQUIRED EXCAVATION, FORMS, REINFORCING STEEL, CONCRETE, MANHOLE FRAMES AND COVERS, BOLTS AND FASTENINGS FOR HOLDING MANHOLE FRAMES DOWN, CAST IRON DRAIN AND GRATING, 6-INCH DIAMETER REINFORCING CONCRETE PIPE, CONNECTION TO EXISTING SEWER, LIGHTING, DUCTS, END BELLS, PULLING IRONS, VENTILATION COMPLETE WITH VENT CAP, FASTENINGS, FITTINGS AND STRAPS, GROUNDING OF VAULT, WATERPROOFING, BACKFILLING, TAMPING, COMPACTING AND REMOVAL OF WASTE.

R. "REGULATOR VAULT, 8-FOOT BY 11-FOOT" PER EACH AND SHALL INCLUDE ALL FEATURES REQUIRED FOR, "REGULATOR VAULT, 8-FOOT BY 22-FOOT", ITEM Q, EXCEPT SHALL BE 8-FOOT BY 11-FOOT.

S. "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 DRAIN AND GRATING, 6-INCH DIAMETER VITREOUS CLAY PIPE, CONNECTION TO EXISTING SEWER, AND WATERPROOFING, AND CABLE HANGERS.

T. "NO. 10 AWG, 600 V. BRANCH CONDUCTORS", PER LINEAL FOOT AND SHALL INCLUDE TWO NO. 10 AWG SINGLE CONDUCTORS FOR FLUORESCENT UNDERDECK LIGHTS IN CONDUITS, JUNCTION BOXES, AND SERVICE PANEL, SPLICING, TERMINATIONS, CONNECTIONS AND TESTING. MEASUREMENT FOR CONDUCTORS SHALL INCLUDE TWO LENGTHS OF SINGLE CONDUCTOR RUNS.

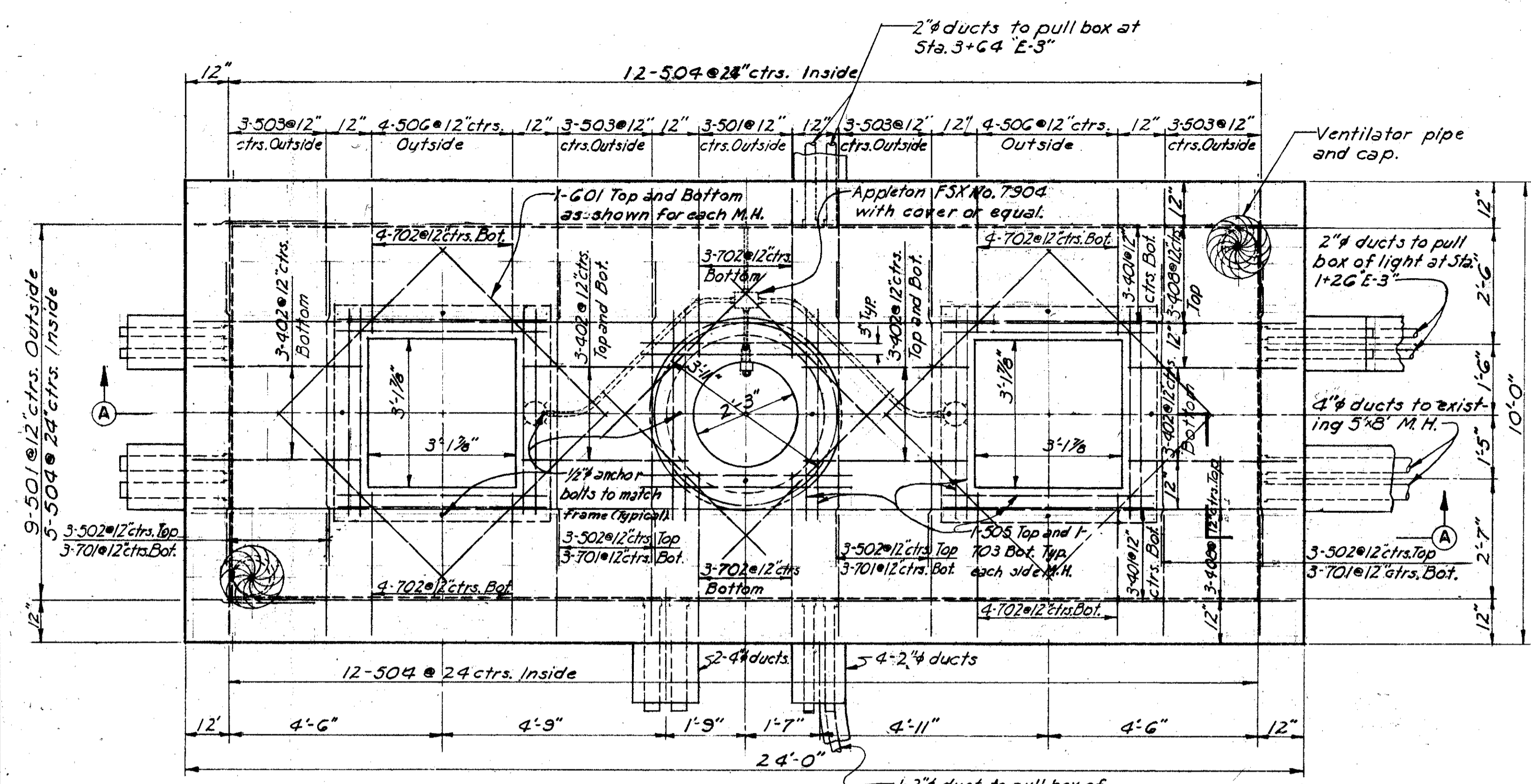
U. "TROLLEY POLE, 10-FOOT BRACKET", PER EACH AND SHALL INCLUDE ALL FEATURES SPECIFIED FOR "STANDARD, 10-FOOT BRACKET", ITEM C, EXCEPT THAT POLE AND ANCHOR BASE ONLY WILL BE FURNISHED AND DELIVERED, TO SITE BY OTHERS. THE CONTRACTOR SHALL FASTEN AN ADJUSTABLE TYPE ORNAMENTAL POLE TOP TO THE POLES FOR SUPPORTING THE LIGHTING UNIT AS SPECIFIED FOR ALL POLES.

V. "TROLLEY POLE, 10-FOOT DUPLEX BRACKET", PER EACH AND SHALL INCLUDE TWO 10-FOOT BRACKETS ATTACHMENTS FOR TWO BRACKETS, AND INCLUDING ALL FEATURES SPECIFIED FOR "TROLLEY POLE, 10-FOOT BRACKET", ITEM U.

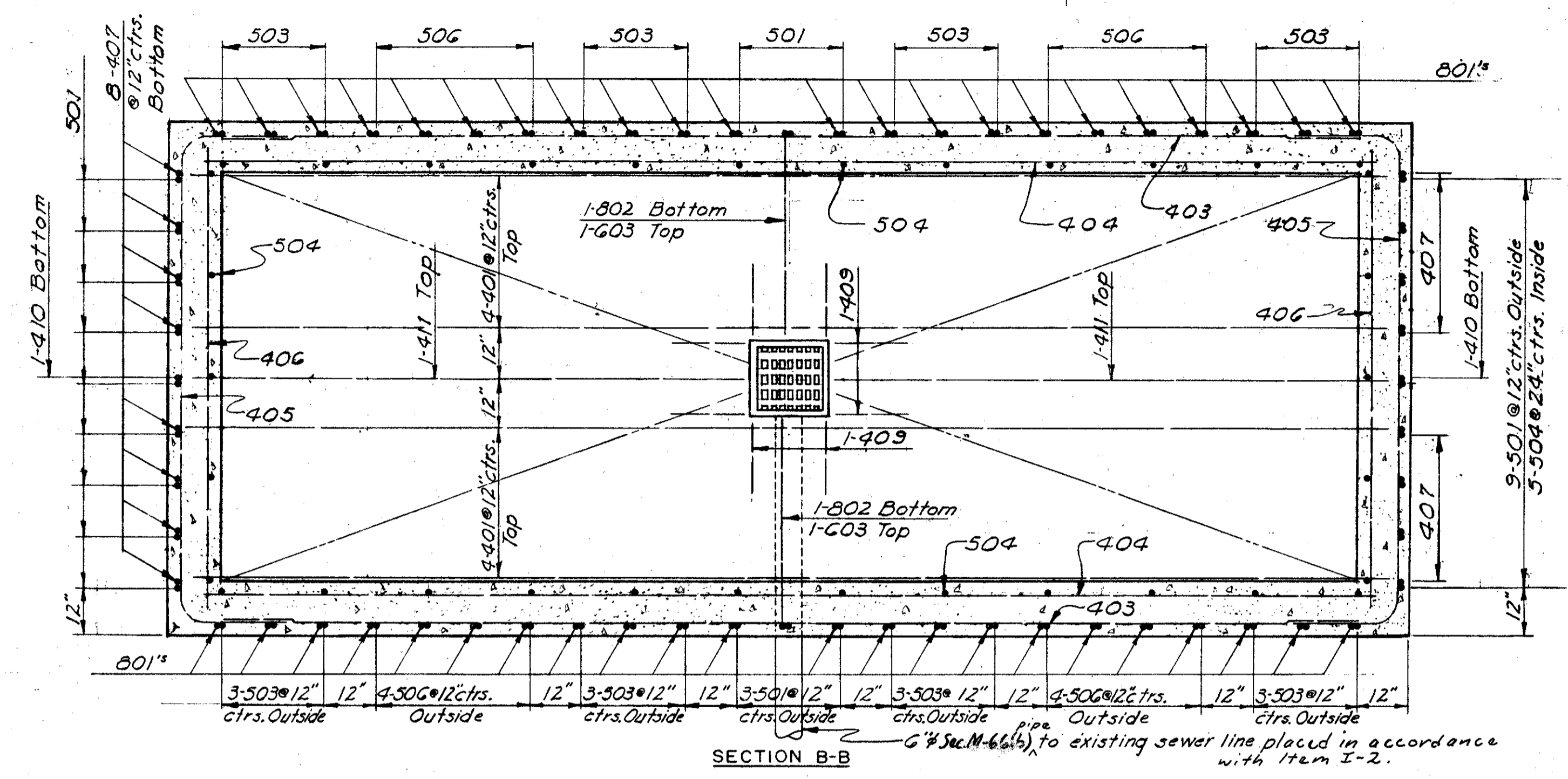
W. "REMOVE AND REINSTALL LIGHTING UNIT", PER EACH AND SHALL INCLUDE REMOVING AND REINSTALLING THE EXISTING LIGHTING UNIT LOCATED IN BROADWAY AVENUE WEST OF EAST 9TH STREET, PROVIDING NEW CONCRETE POLE BASE AND POLE BASE BOX WITH FEATURES OF ITEM E, LEVELING, TOUCHING UP DAMAGED PAINT, SPLICES, AND DISPOSING OF OLD POLE BASE AND BOX.



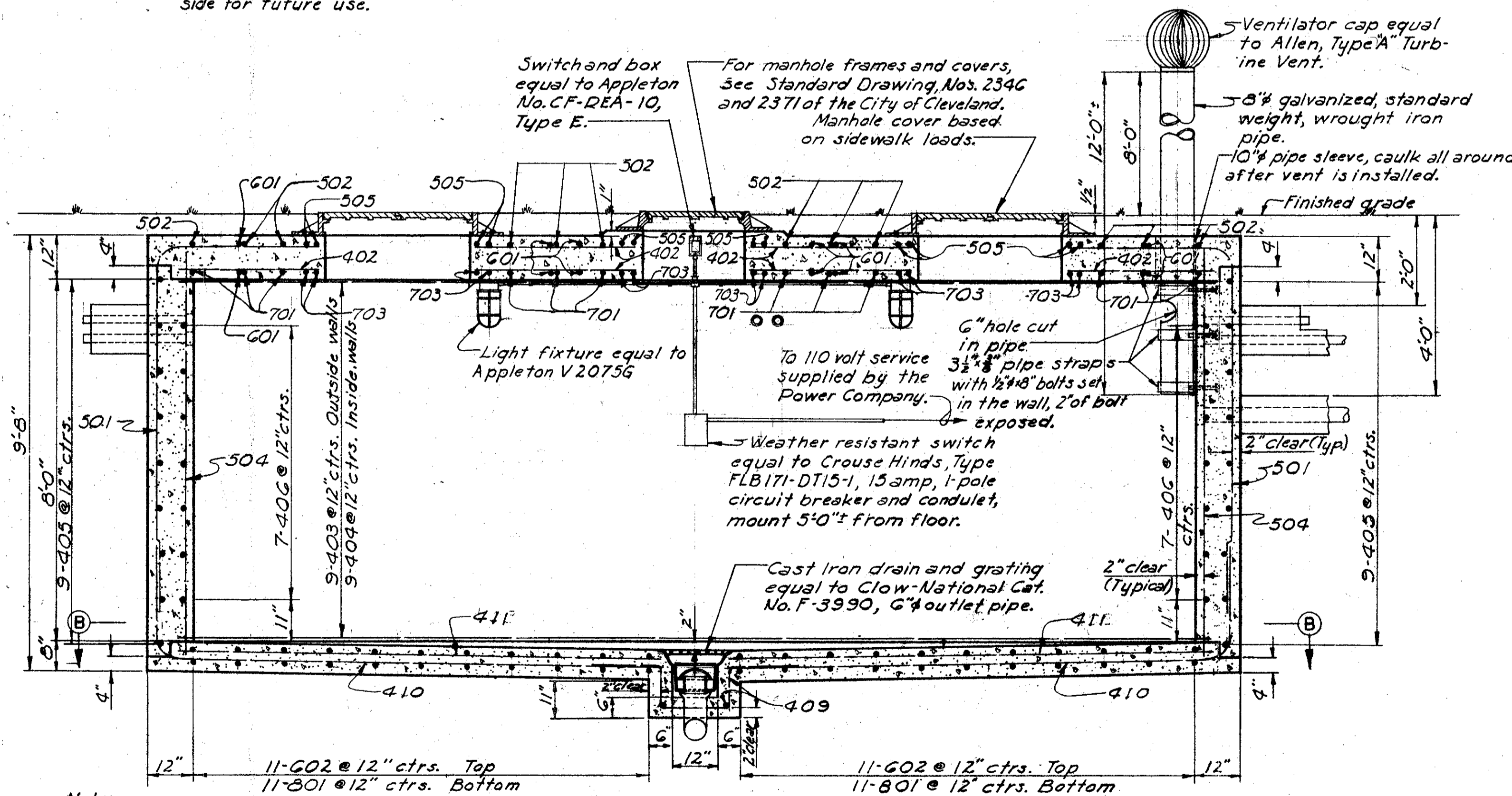
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY 42-18.29  
REGULATOR VAULT



Note: Where initial use of indicated duct banks is not required, extend the ducts thru the walls a minimum of 18" and cap on the outside for future use.



SECTION B-B  
G<sup>1</sup>/<sub>2</sub>" Sec. M-66<sup>1</sup>/<sub>2</sub>" to existing sewer line placed in accordance with Item I-2.



SECTION A-A  
TRANSFORMER VAULT  
Scale: 1/2"=1'-0"

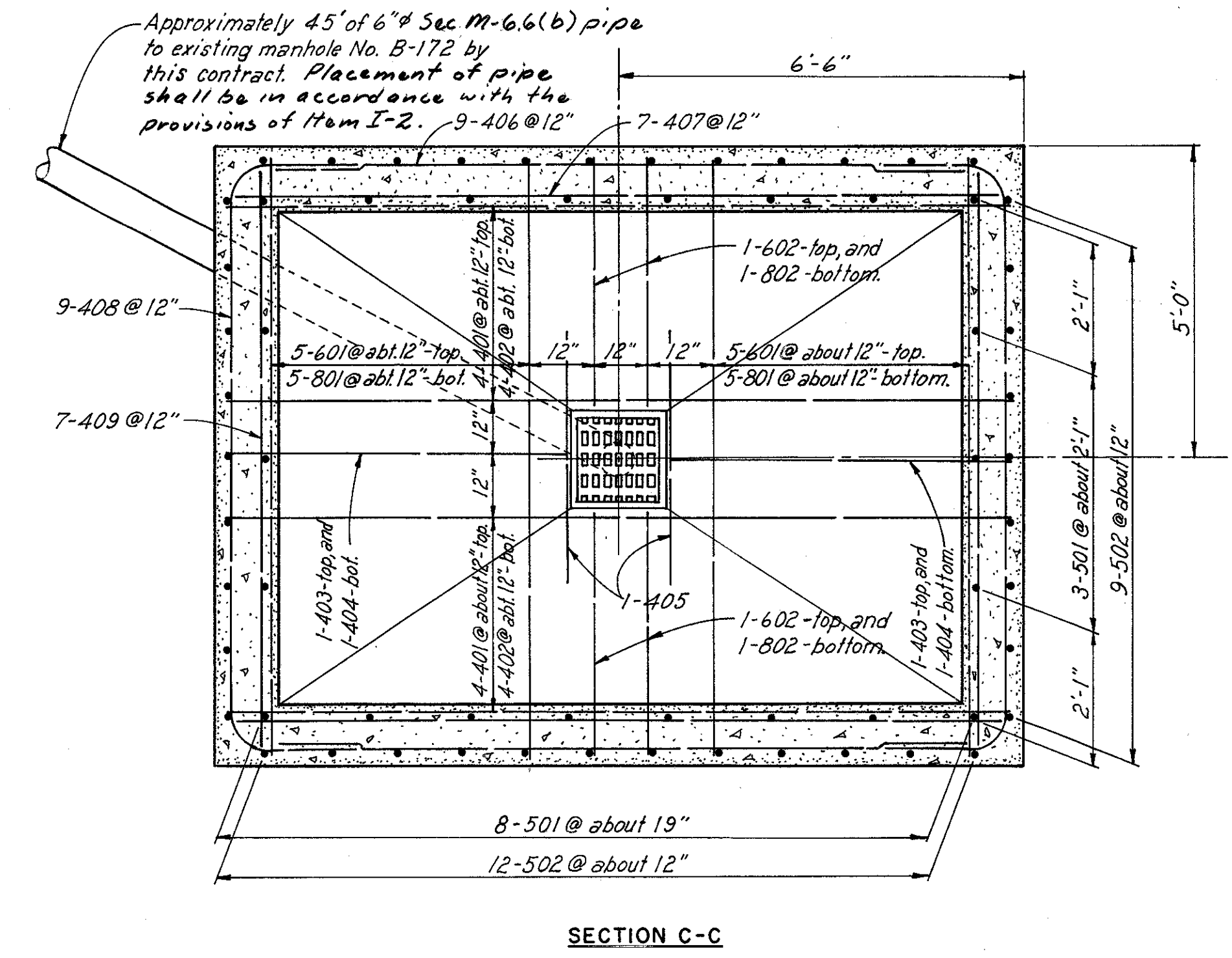
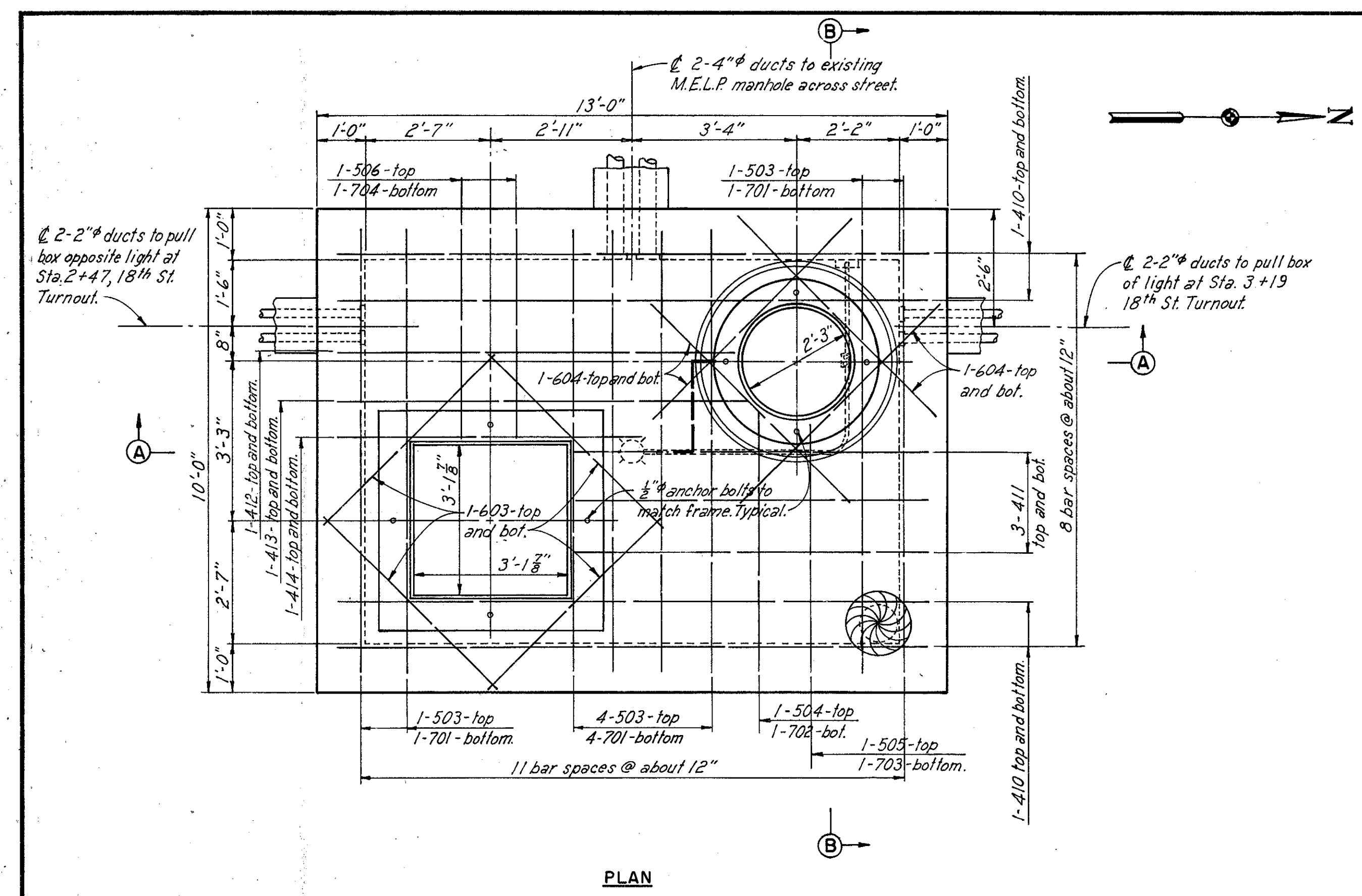
Note: 1/4"x10'-0" ground rods shall be placed in diagonal corners of the vault with G<sup>1</sup>/<sub>2</sub>" of the rod extending above the floor. Additional ground rods shall be driven if required to insure not over 5 ohm ground.

Note: The top and sides of transformer vault 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" with the top lap placed in the direction of the spreading of the concrete.

REINFORCING BAR SCHEDULE					
MARK	SIZE	NO. REQD	LENGTH	TYPE	DIMENSIONS
					A B
401	4	14	23'-0"	Str.	
402	4	18	3'-0"	Str.	
403	4	18	22'-0"	Str.	
404	4	18	22'-6"	Str.	
405	4	18	13'-6"	105	2'-0" 9'-6"
406	4	14	9'-0"	Str.	
407	4	8	26'-2"	104	2'-6" 23'-8"
408	4	6	21'-0"	Str.	
409	4	4	6'-6"	121	1'-6" 1'-0"
410	4	2	13'-6"	104	2'-6" 11'-0"
411	4	2	10'-6"	Str.	
501	3	24	12'-0"	104	3'-6" 8'-6"
502	3	12	6'-6"	Str.	
503	3	24	10'-8"	104	2'-8" 8'-0"
504	3	34	9'-0"	Str.	
505	3	24	4'-6"	Str.	
506	3	16	11'-7"	104	3'-7" 8'-6"
601	C	24	5'-0"	Str.	
602	C	22	8'-6"	Str.	
603	C	2	3'-6"	Str.	
701	7	12	8'-6"	Str.	
702	7	22	3'-0"	Str.	
703	7	24	4'-6"	Str.	
801	8	22	14'-8"	105	2'-6" 9'-8"
802	8	2	6'-7"	104	2'-6" 4'-7"

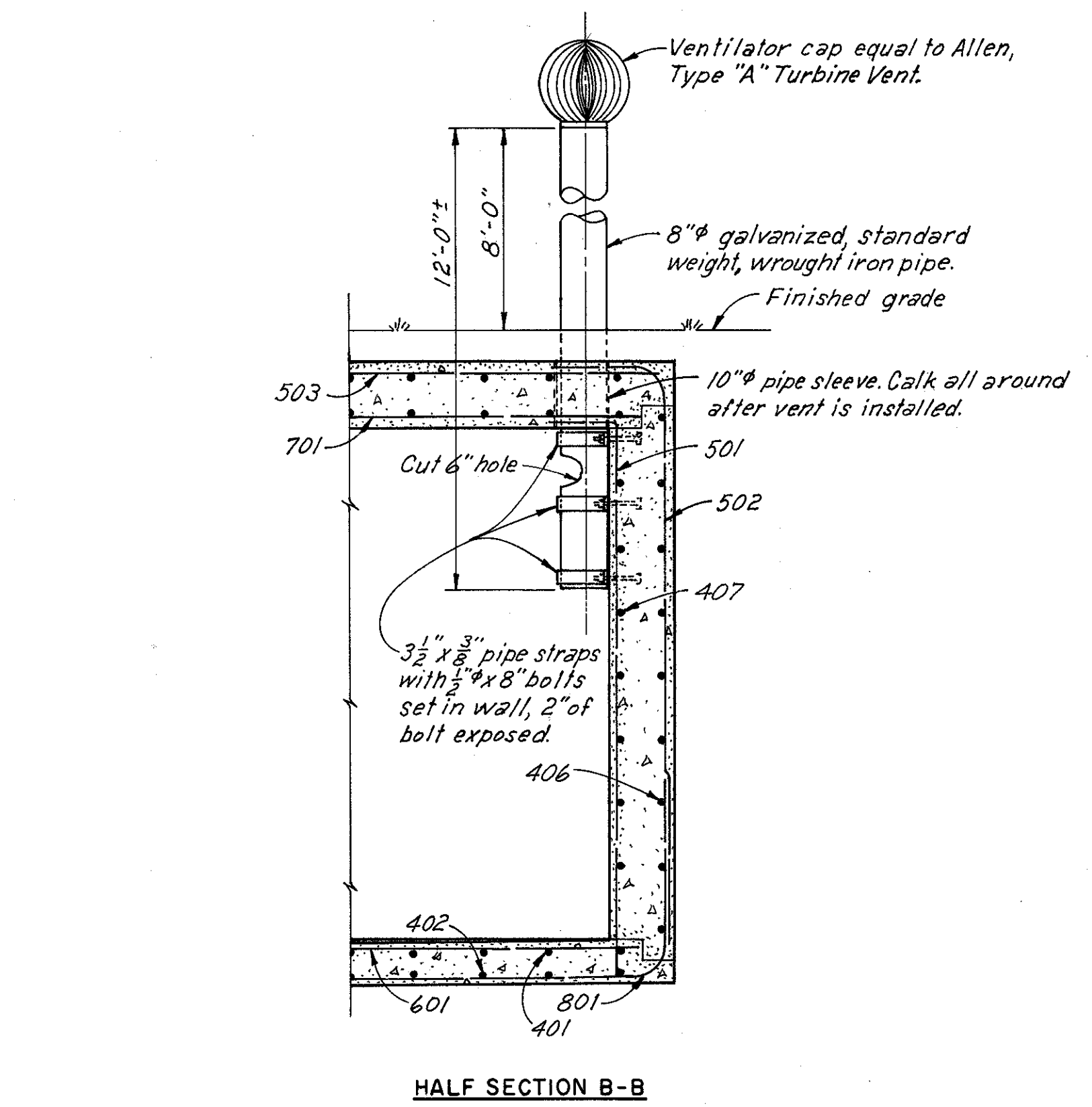
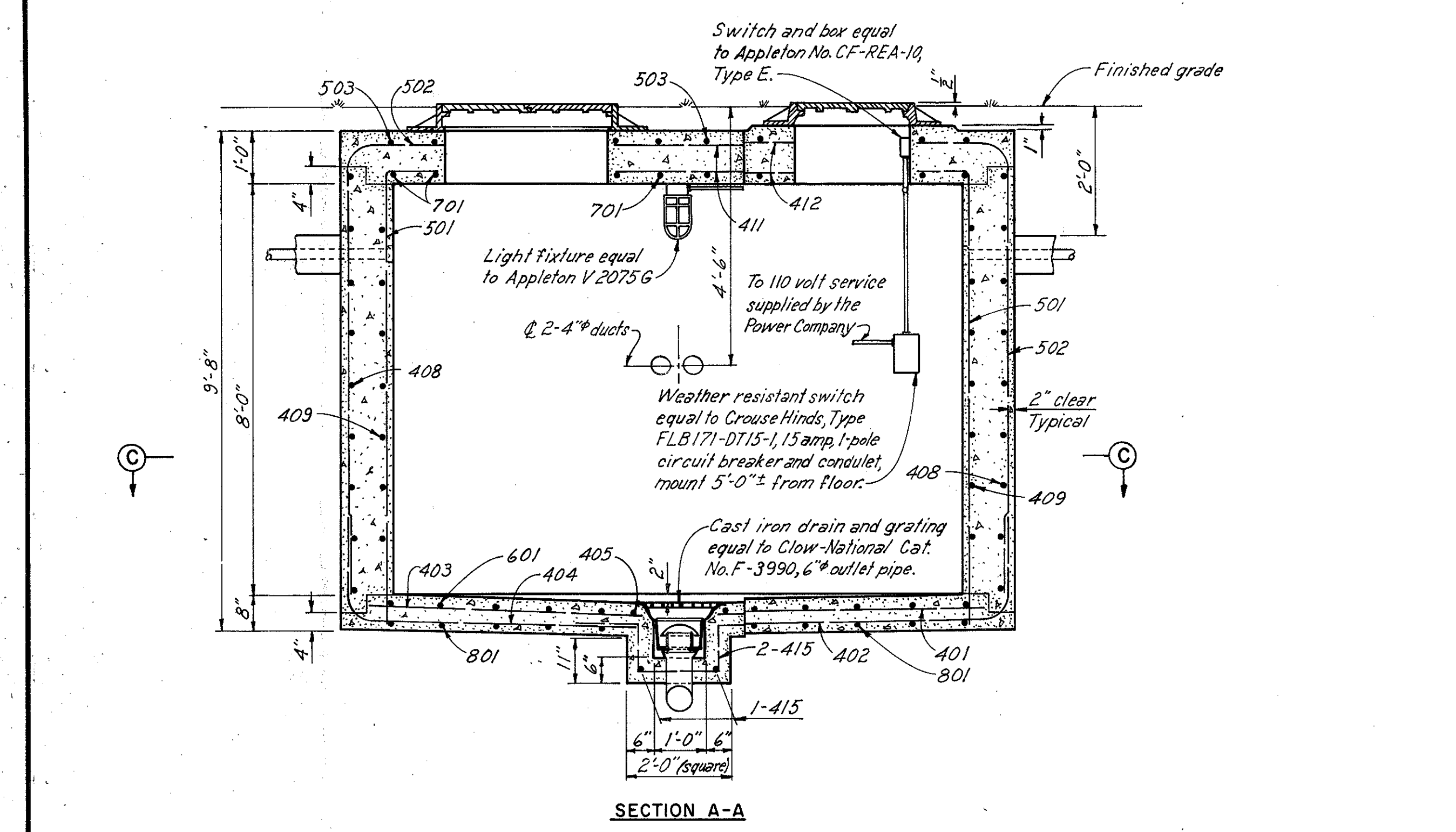
R = Minimum of 15 bar diameters

CUYAHOGA COUNTY  
 CITY OF CLEVELAND  
 CUY-42-18.29  
 REGULATOR VAULT



REINFORCEMENT SCHEDULE						
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS		BENDING DIAGRAMS
				A	B	
401	8	11'-9"	str.			 104
402	8	16'-8"	105	2'-3"	12'-8"	
403	2	5'-3"	str.			
404	2	7'-7"	123	2'-3"	5'-7"	
405	2	4'-6"	str.			
406	18	11'-6"	str.			
407	14	12'-6"	str.			
408	18	13'-6"	105	2'-3"	9'-6"	
409	14	9'-6"	str.			
410	8	11'-9"	str.			
411	6	7'-0"	str.			
412	2	8'-0"	str.			
413	2	8'-3"	str.			
414	2	6'-6"	str.			
415	4	5'-10"	121			
501	22	9'-7"	104	1'-0"	8'-8"	 121
502	42	10'-2"	123	1'-8"	8'-10"	
503	8	9'-6"	str.			
504	1	5'-6"	str.			
505	1	5'-3"	str.			
506	2	4'-6"	str.			
601	10	8'-9"	str.			 123
602	4	3'-9"	str.			
603	8	5'-0"	str.			
604	8	5'-9"	str.			
701	8	8'-9"	str.			
702	1	5'-3"	str.			
703	1	5'-0"	str.			
704	2	4'-0"	str.			
801	10	15'-8"	105	3'-6"	9'-8"	
802	4	7'-1"	123	3'-6"	4'-1"	

R=15 bar diameters  
 Bar dimensions are given out to out.



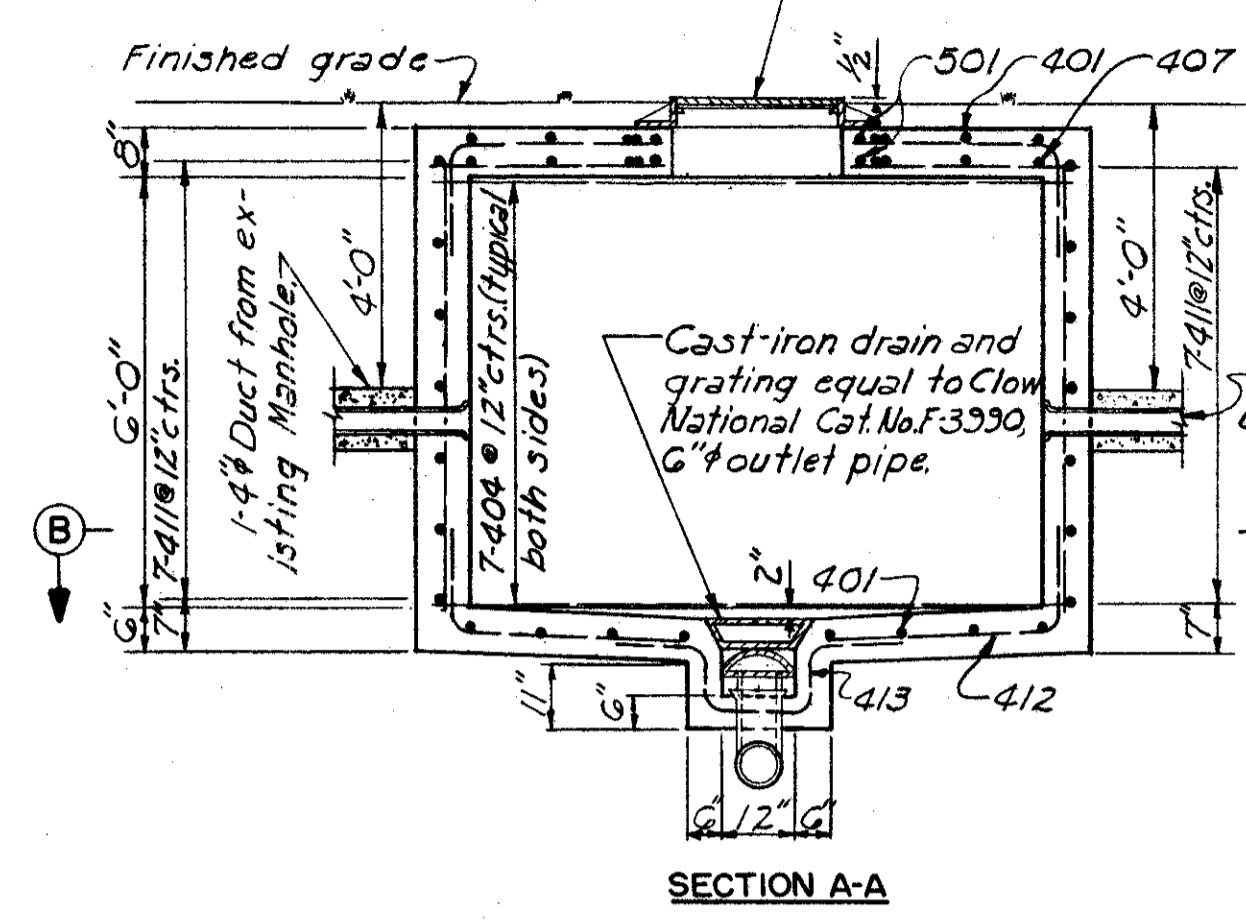
REGULATOR VAULT

Notes:  
 The top and sides of transformer vault 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 subgrade. The film shall be lapped not less than 6" with the top placed in the direction of the spreading of the concrete.  
 1" x 10'-0" ground rods shall be placed in two opposite corners of the vault with 6" of the rod extending above the floor. Additional ground rods shall be driven if required to insure not over 5 ohm grounds.  
 For manhole frames and covers, see sheet 42.

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
LIGHTING DETAILS

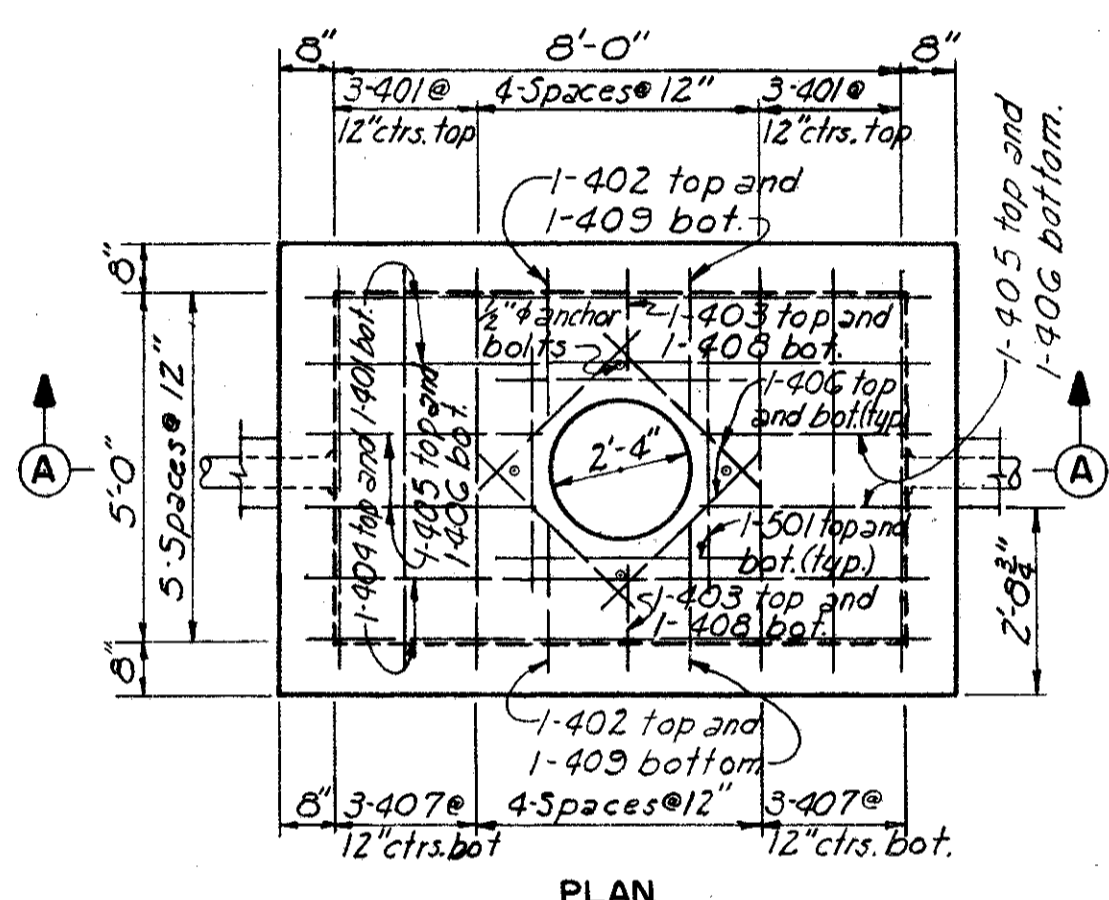
For manhole frames and covers, see Standard Drawing No. 2371, of The City of Cleveland, Sheet No. 42.

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 Plumber's a 0.004" polyethylene film shall be applied over the sub-grade. The film shall be lapped not less than 6".  
A 1" 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.

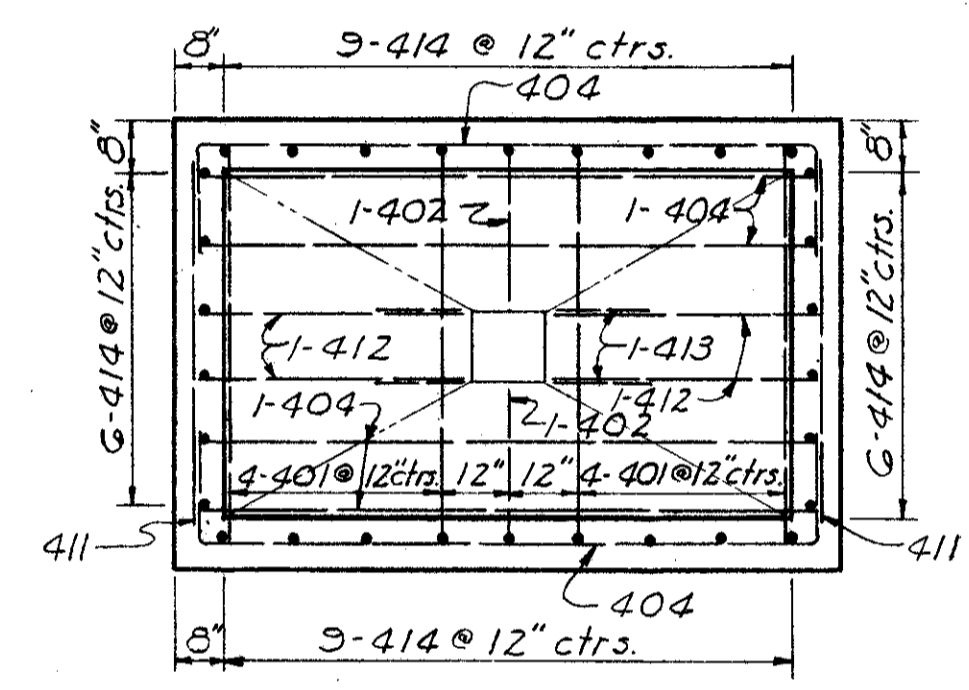


SECTION A-A

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.

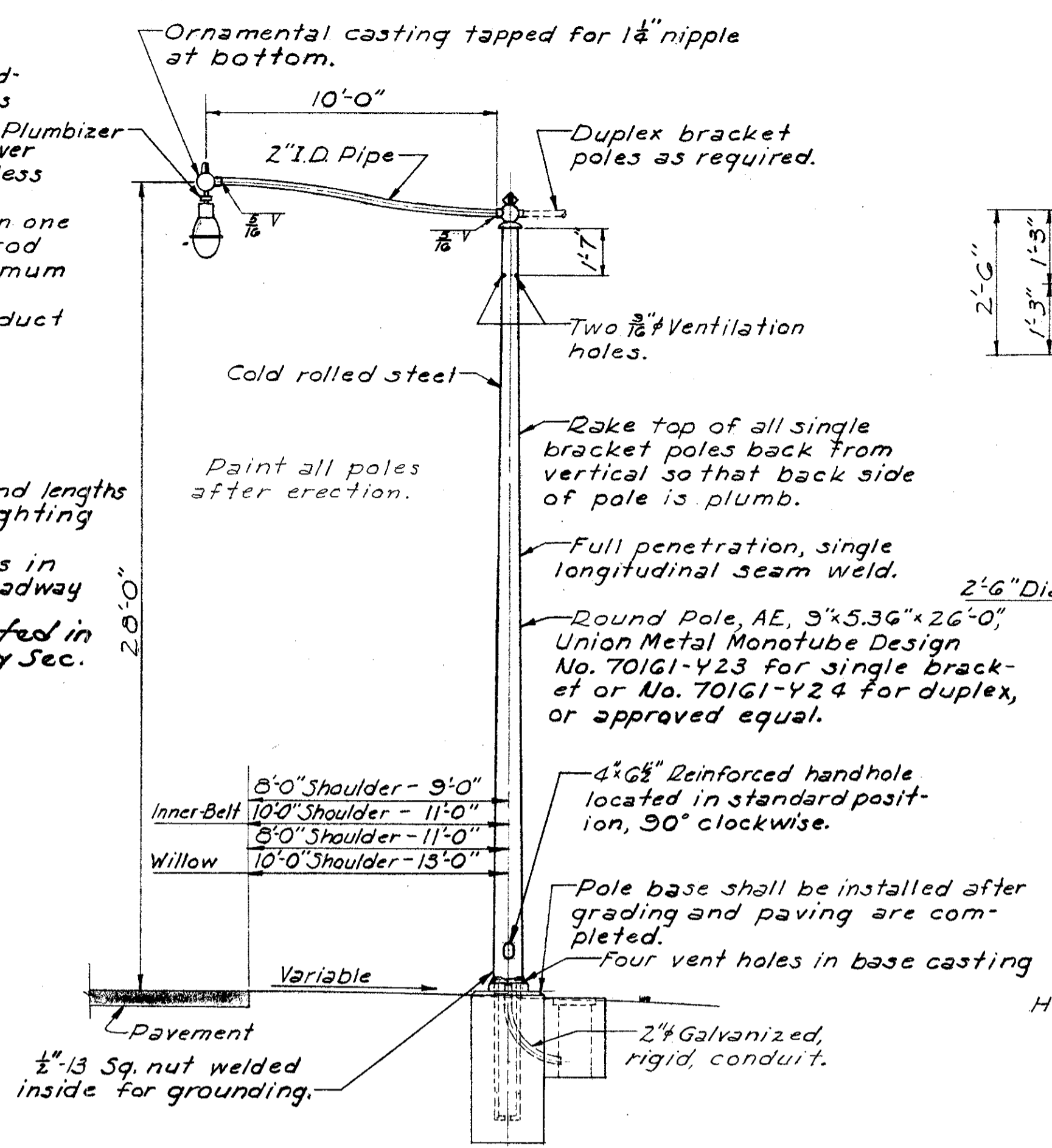


PLAN



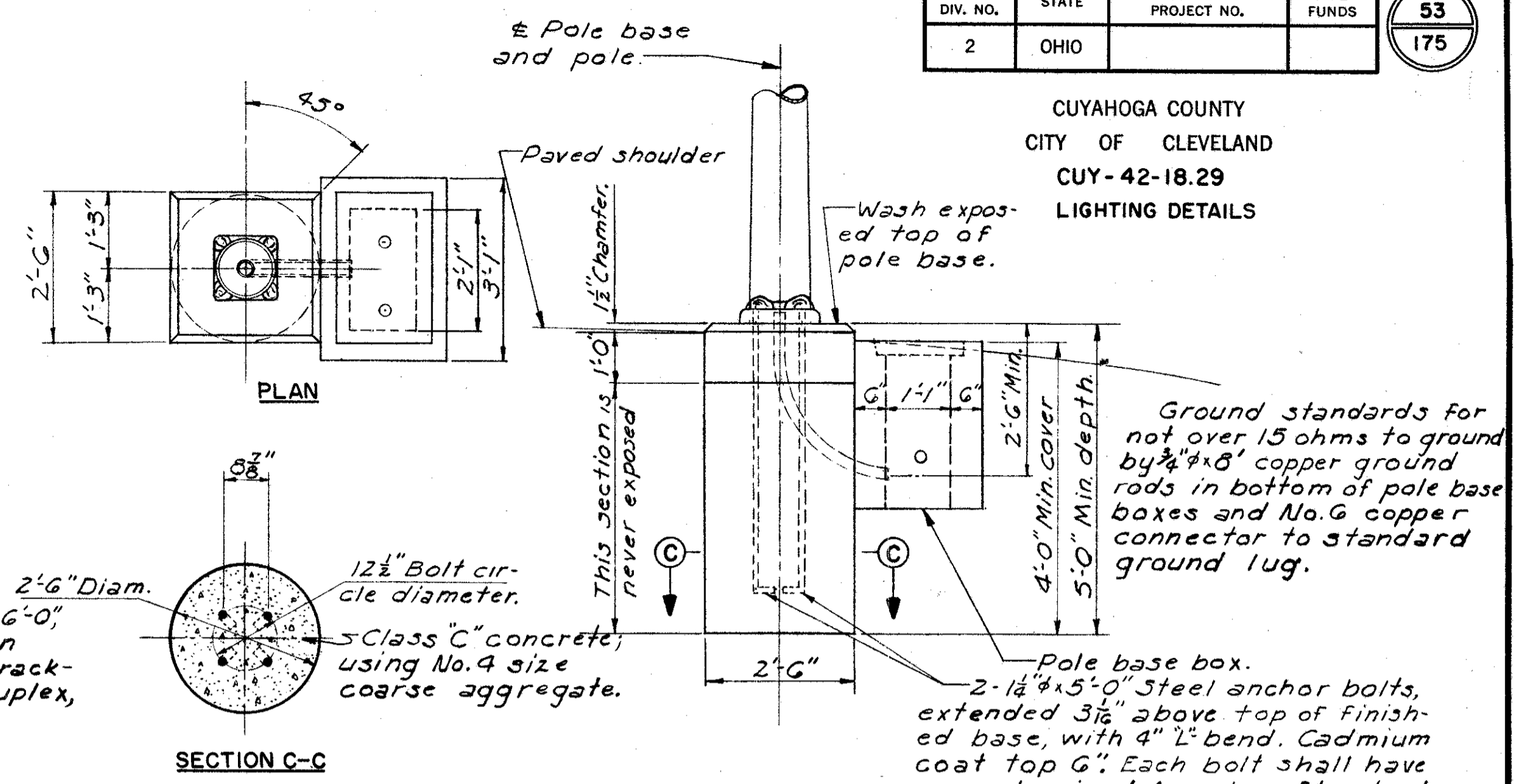
SECTION B-B

TRANSFORMER MANHOLE  
Scale: 3/8" = 1'-0"



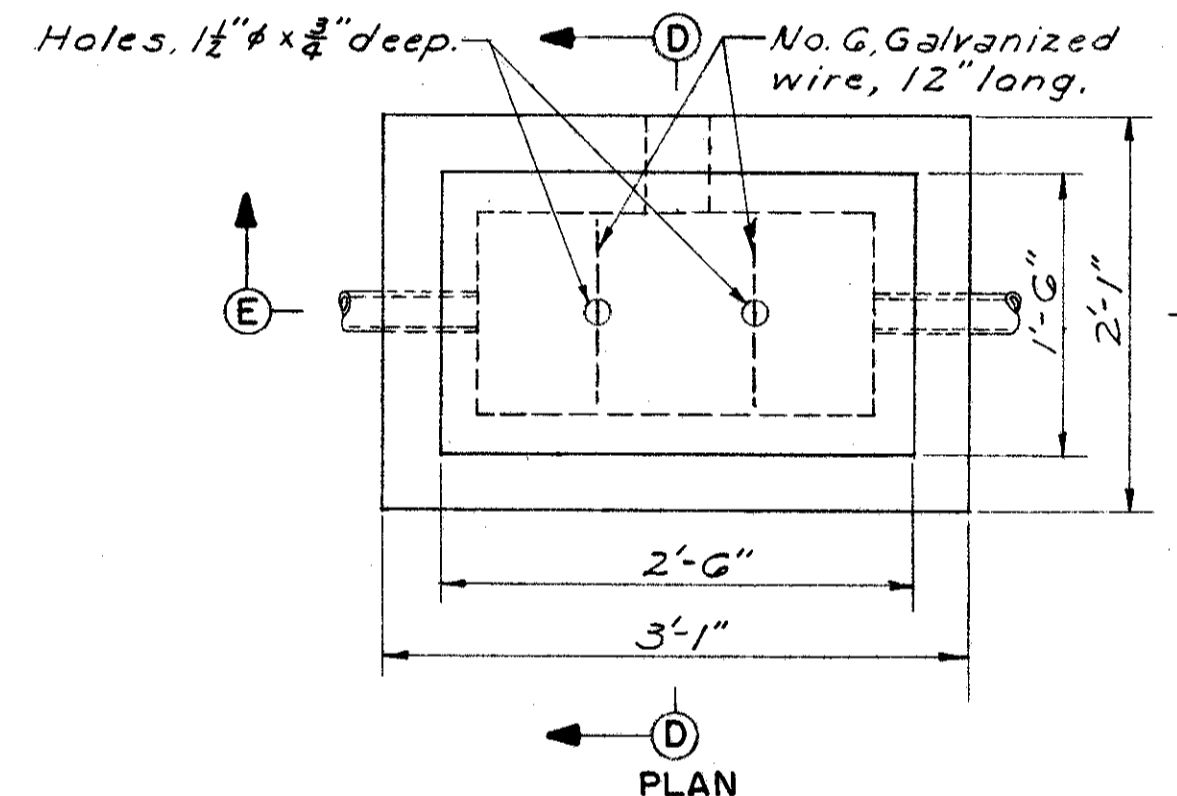
TYPICAL ROADWAY LIGHTING UNIT  
No Scale

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



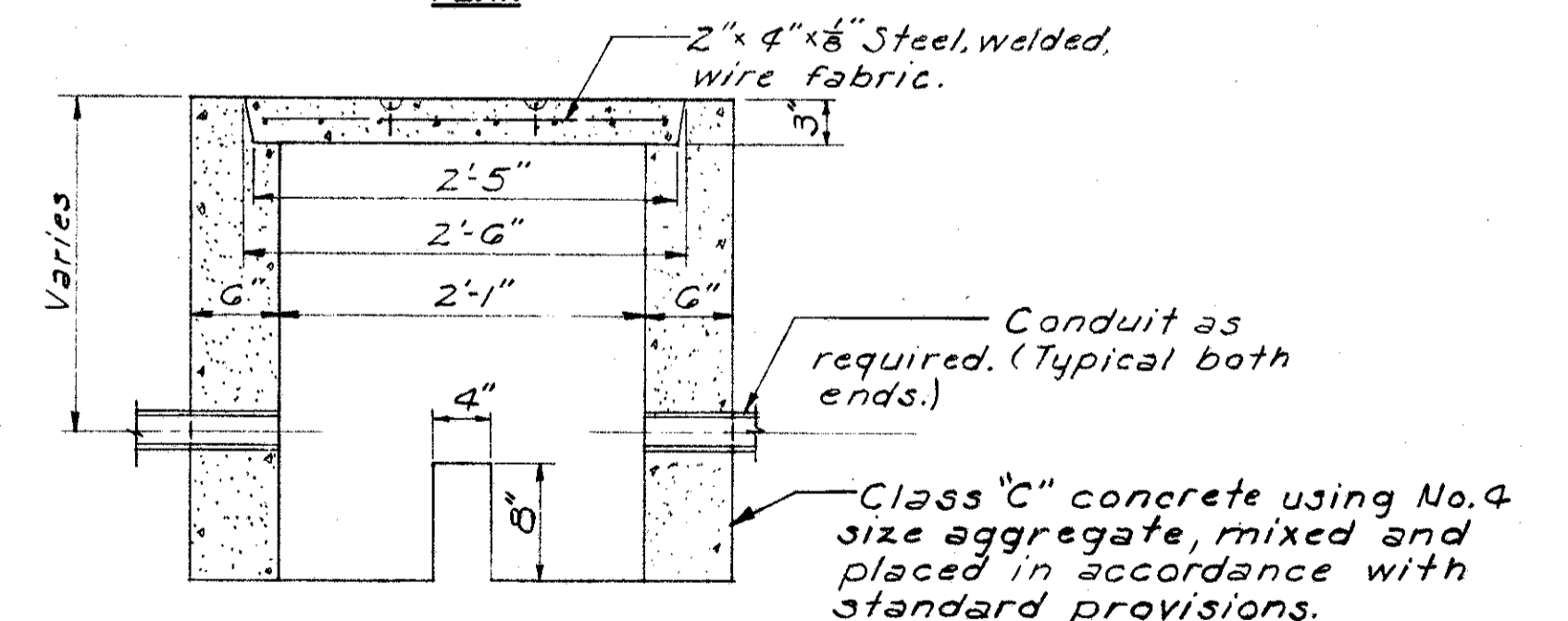
TYPICAL POLE BASE  
Scale: 1/2" = 1'-0"

Note: Anchor bolts for trolley poles shall be 1/2" and furnished by Contractor. C.T.S. has template for setting anchor rods which Contractor may use. Contractor shall work closely with representatives of C.T.S.



PLAN

SECTION D-D

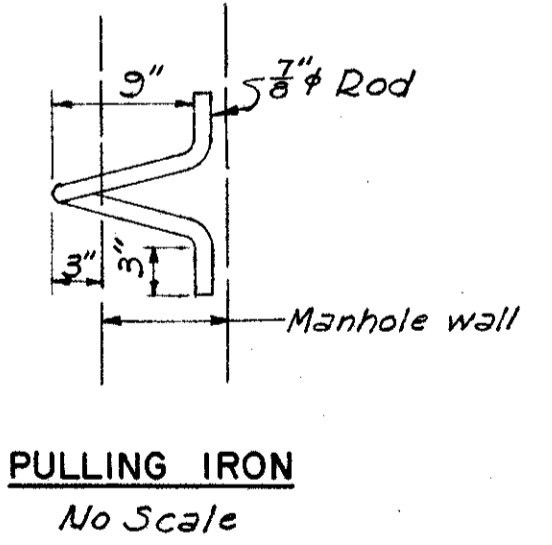


SECTION E-E

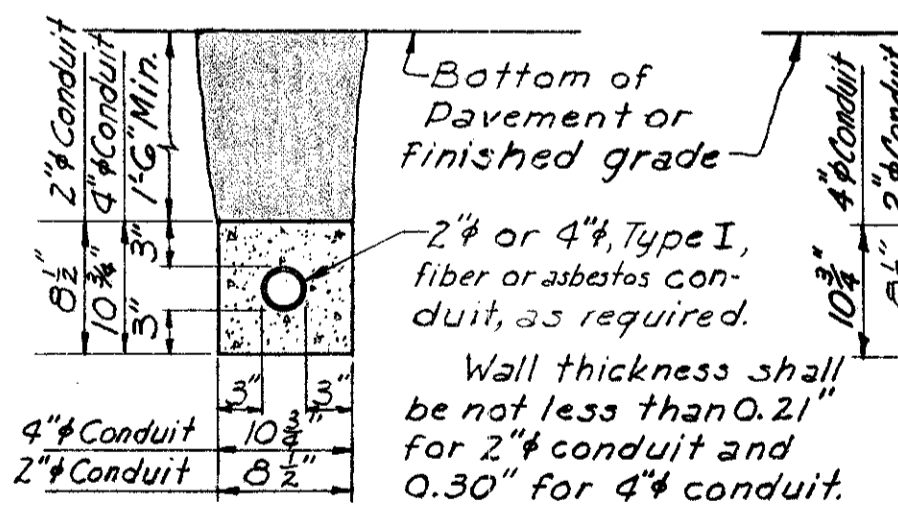
CONCRETE PULL BOX  
Scale: 1" = 1'-0"

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.

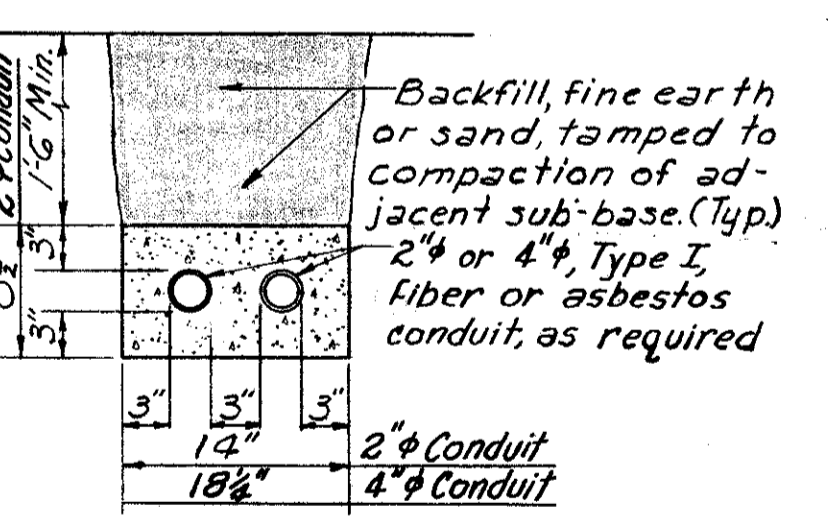
REINFORCING BAR SCHEDULE					
MARK	NO.	LENGTH	TYPE	DIMENSIONS	
				A	B
401	14	8'-8"	105	5'-8"	1'-6"
402	6	3'-8"	104	2'-2"	1'-6"
403	2	3'-2"	104	1'-8"	1'-6"
404	22	11'-8"	105	8'-8"	1'-6"
405	4	4'-9"	104	3'-3"	1'-6"
406	12	3'-3"	Str.		
407	6	6'-0"	Str.		
408	2	1'-9"	Str.		
409	4	2'-3"	Str.		
410	4	3'-0"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



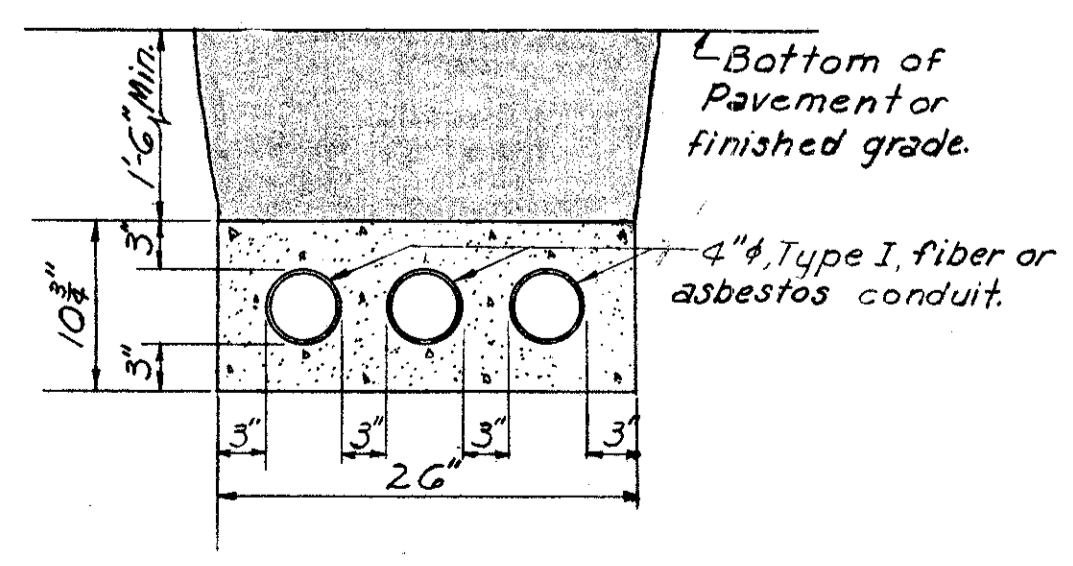
PULLING IRON  
No Scale



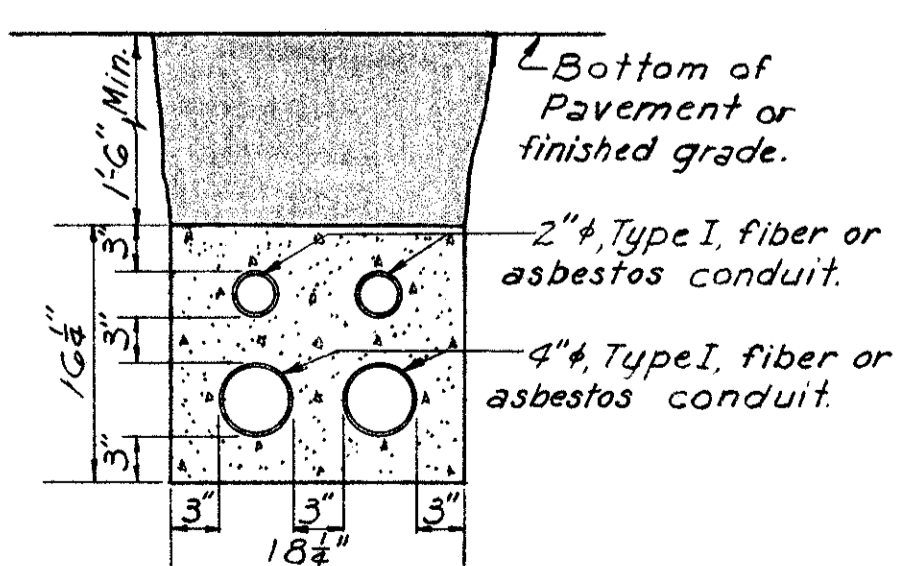
ONE-WAY DUCT BANK  
Scale: 1" = 1'-0"



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



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

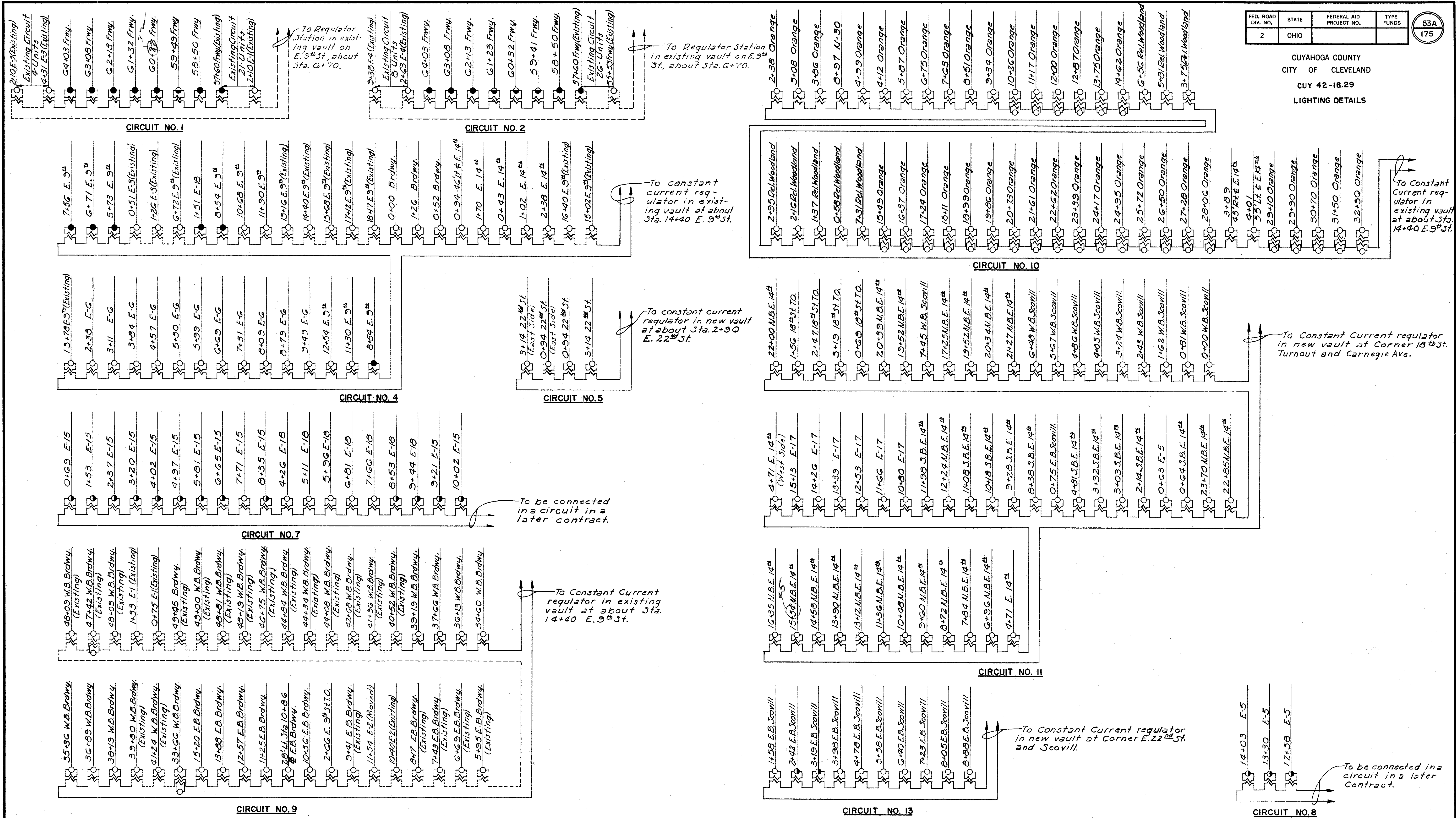


FOUR-WAY DUCT BANK  
Scale: 1" = 1'-0"

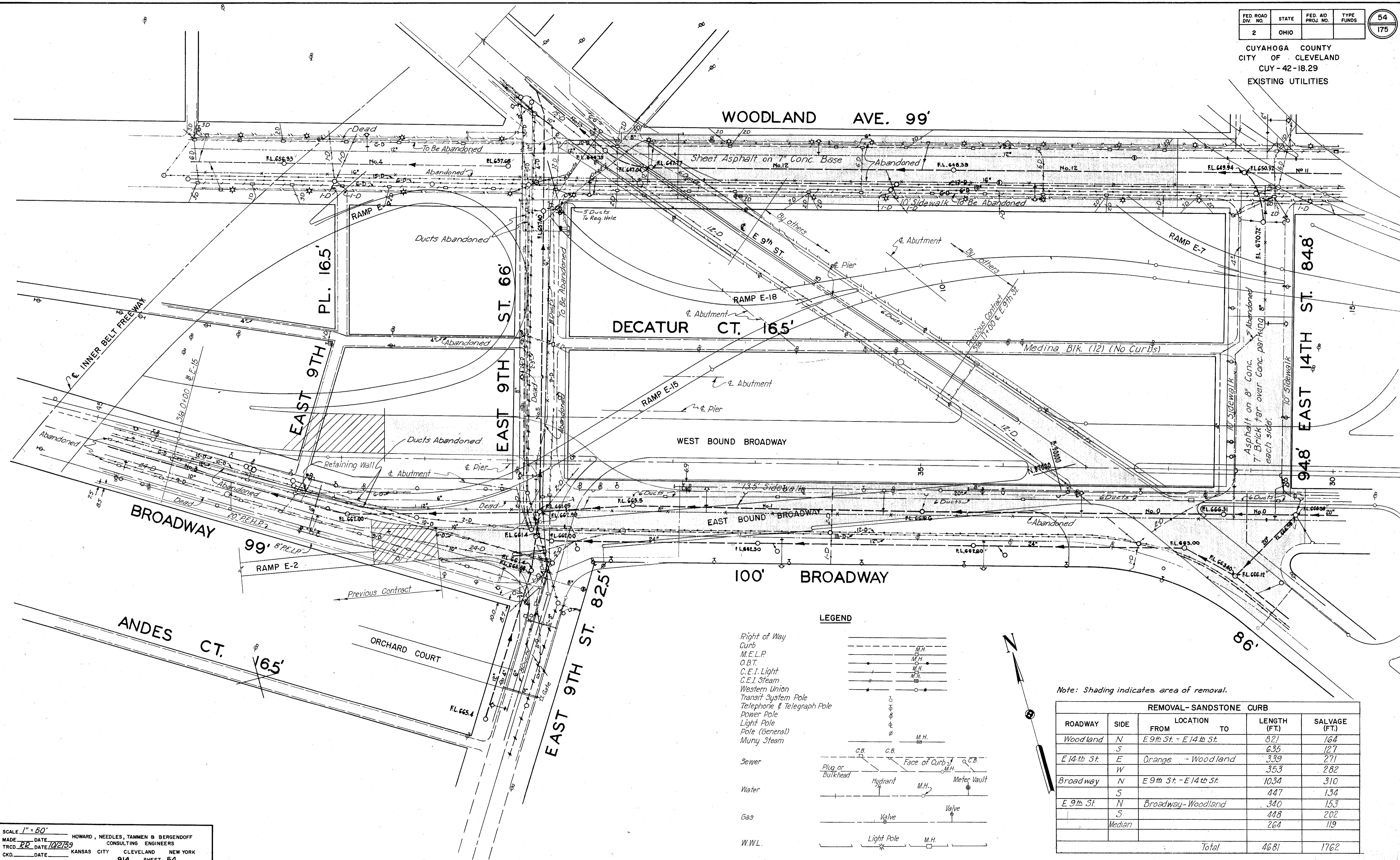
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

53A  
175

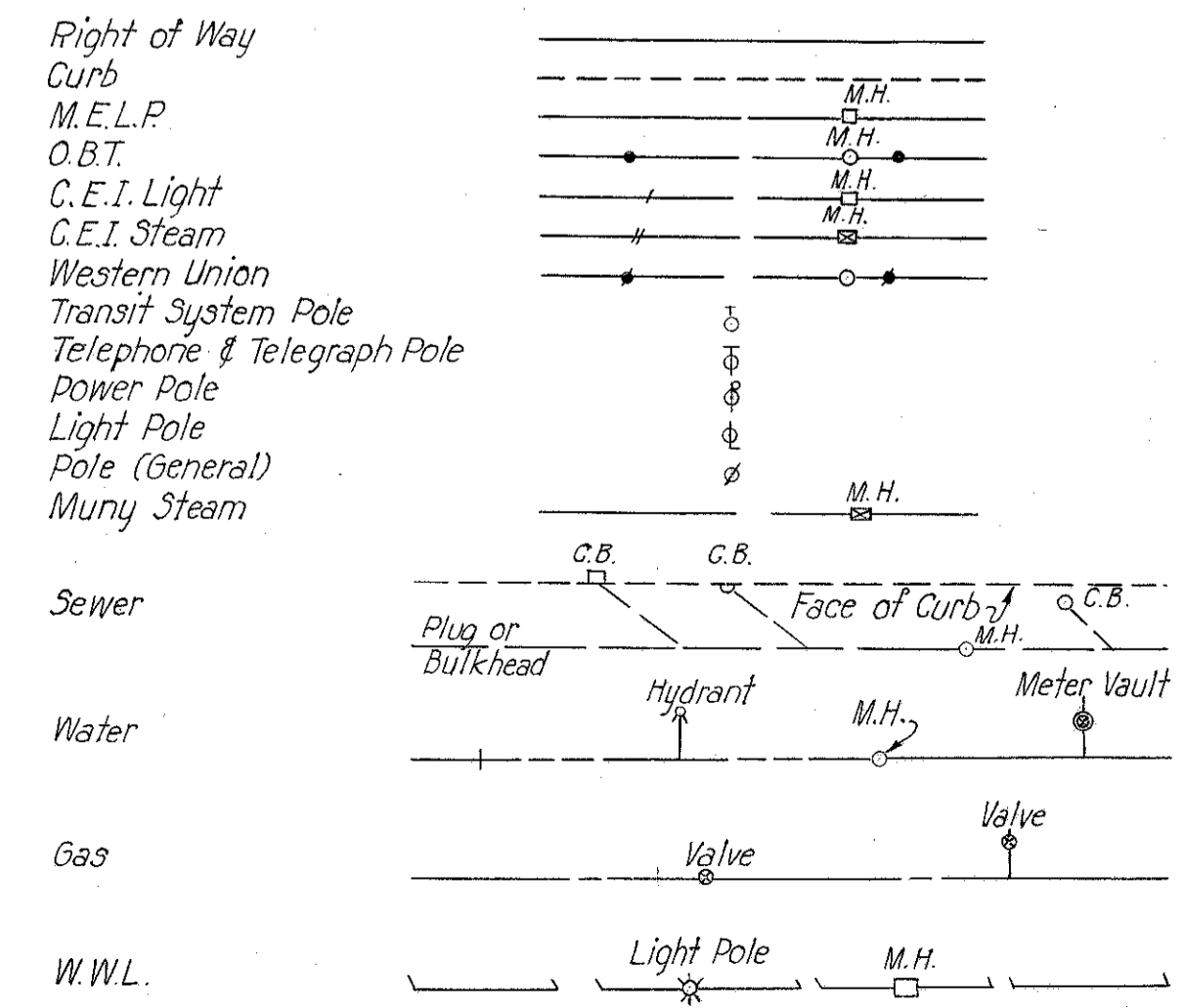
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY 42-18.29  
LIGHTING DETAILS



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

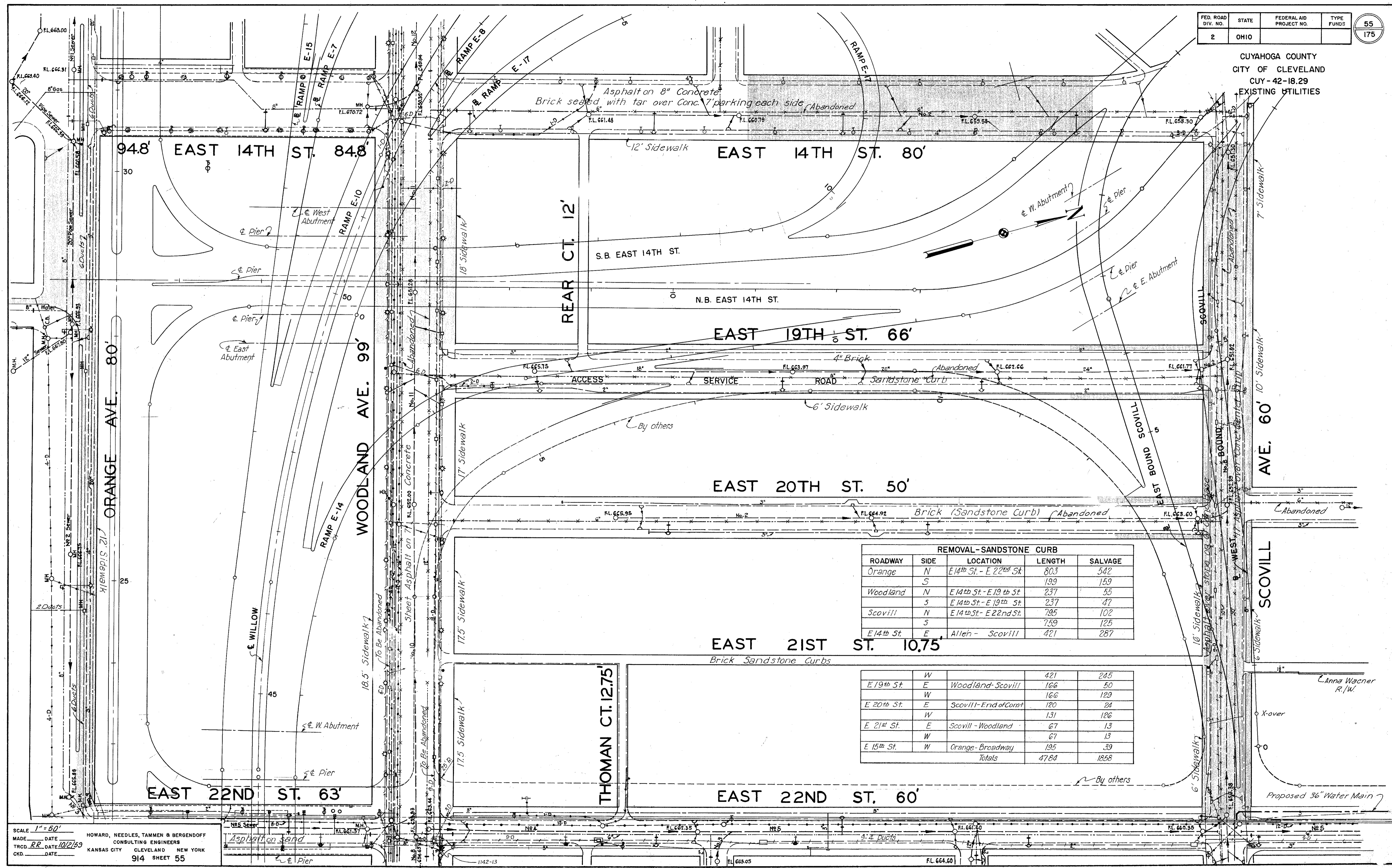


**LEGEND**



Note: Shading indicates area of removal.

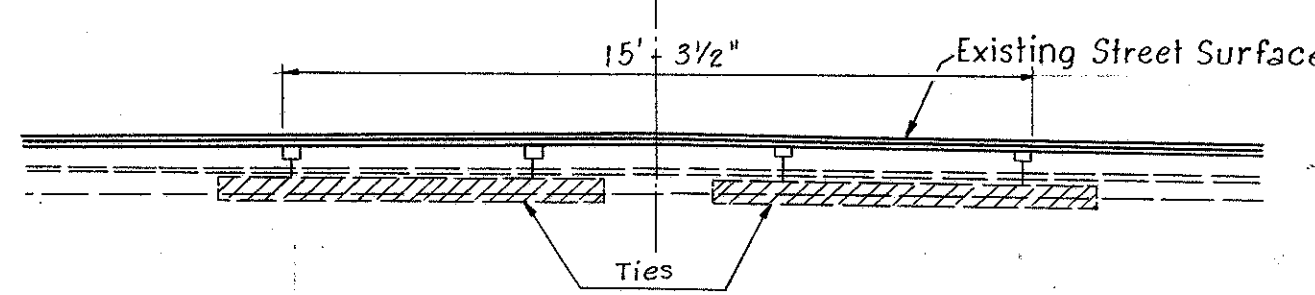
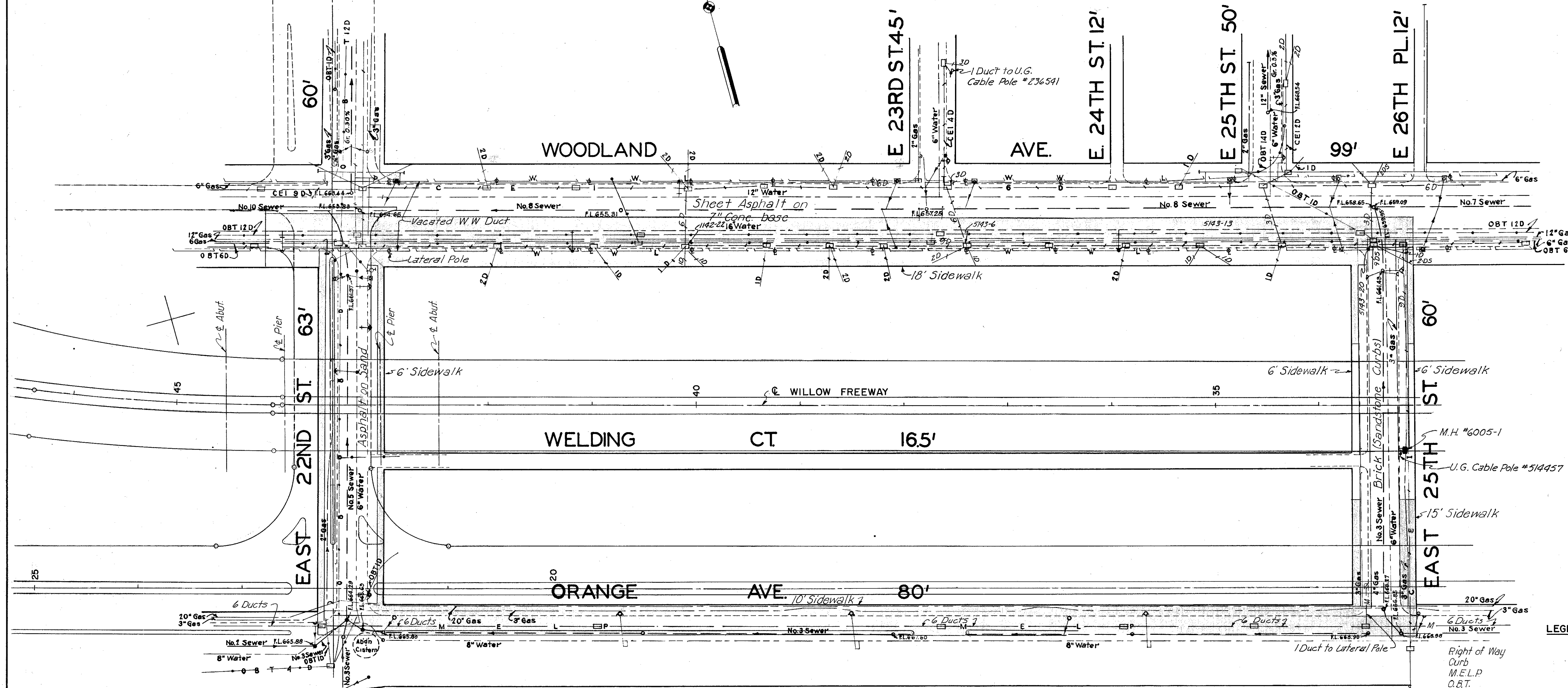
REMOVAL-SANDSTONE CURB					
ROADWAY	SIDE	LOCATION	TO	LENGTH (FT.)	SALVAGE (FT.)
Woodland	N	E 9th St. - E 14th St.		827	164
	S			635	127
E 14th St.	E	Orange	- Woodland	339	271
	W			353	282
Broadway	N	E 9th St. - E 14th St.		1034	310
	S			447	134
E 9th St.	N	Broadway - Woodland		340	153
	S			448	202
	Median			264	119
Total				4681	1762



REMOVAL - SANDSTONE CURB				
ROADWAY	SIDE	LOCATION	LENGTH	SALVAGE
Orange	N	E 14th St. - E 22nd St.	80.3	542
	S		139	159
Woodland	N	E 14th St. - E 19th St.	237	55
	S	E 14th St. - E 19th St.	237	47
Scovill	N	E 14th St. - E 22nd St.	785	102
	S		759	125
E 14th St.	E	Allen - Scovill	421	287

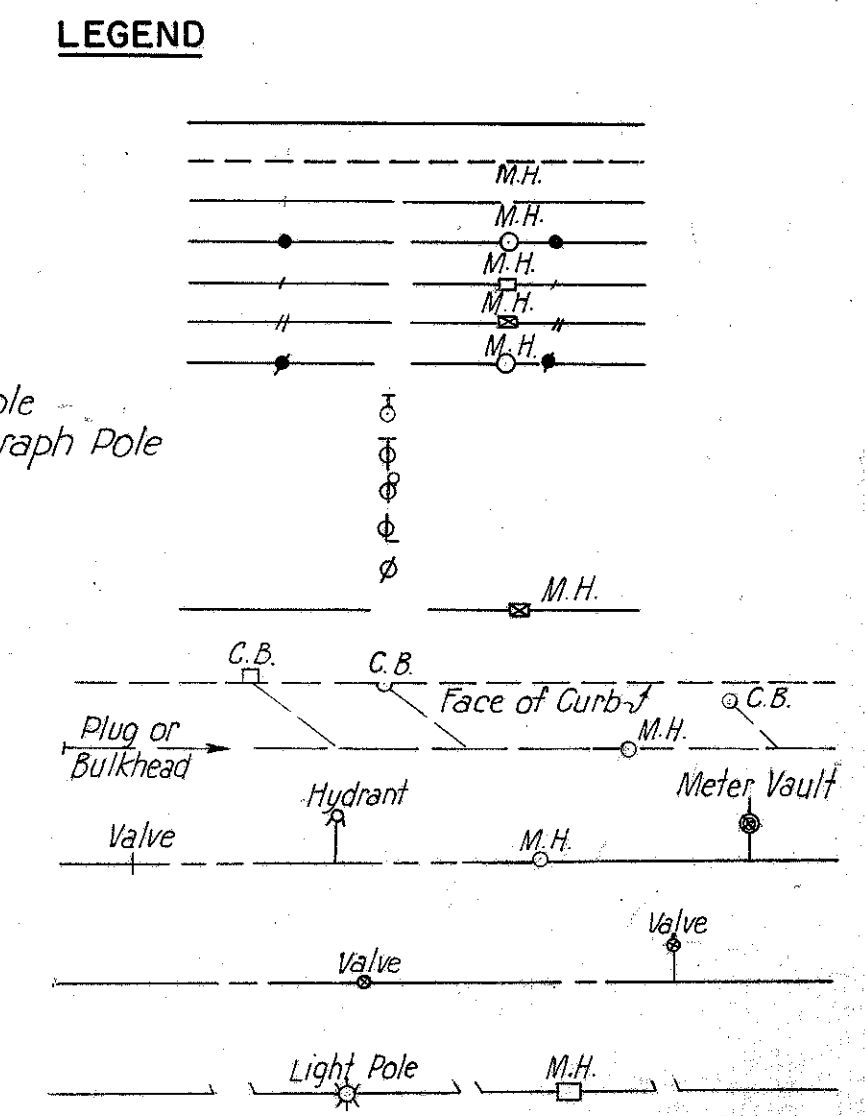
E 19th St.	W	Woodland - Scovill	421	245
E 20th St.	E	Woodland - Scovill	166	50
	W	Scovill - End of Const	166	129
E 21st St.	E	Scovill - End of Const	120	24
	W	Scovill - Woodland	131	126
E 15th St.	E	Scovill - Woodland	67	13
	W	Orange - Broadway	67	13
Totals			4784	1858

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29  
EXISTING UTILITIES

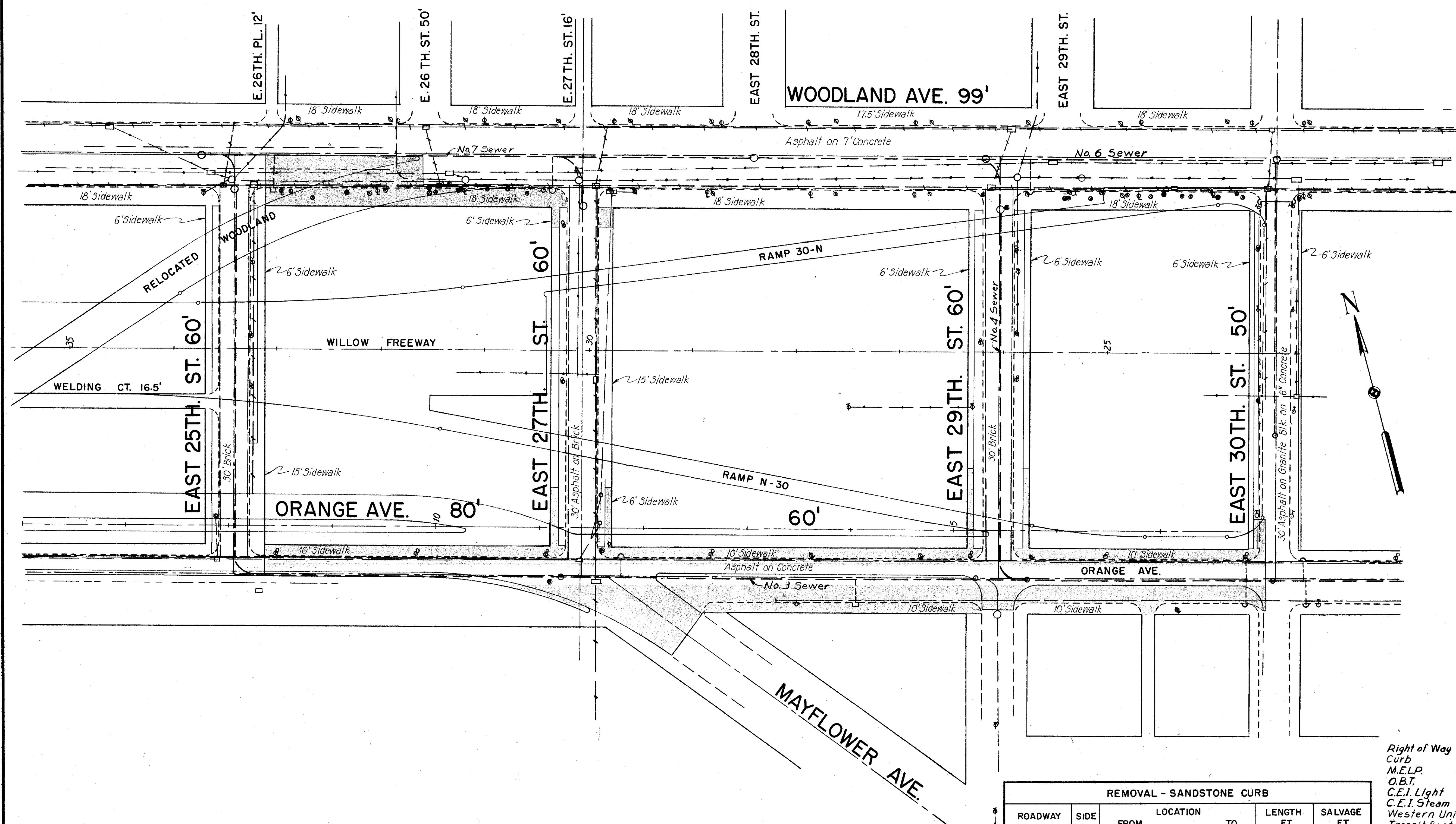


\* See Quantity Calculations for location of removals.  
RAILS AND TIES UNDER EXISTING  
SCOVILL AVE.-BROADWAY AVE.-WOODLAND AVE.-EAST 9 TH ST.\*

REMOVAL-SANDSTONE CURB					
ROADWAY	SIDE	LOCATION FROM	TO	LENGTH (FT.)	SALVAGE (FT.)
E 22nd St.	E	Orange - Woodland		348	0
	W			363	290
Orange	N	E 22nd St - E 25th St		100	80
Woodland	S	E 22nd St - E 25th St		956	239
E 25th St.	E	Orange - Woodland		367	0
	W			343	0
Totals				2477	609

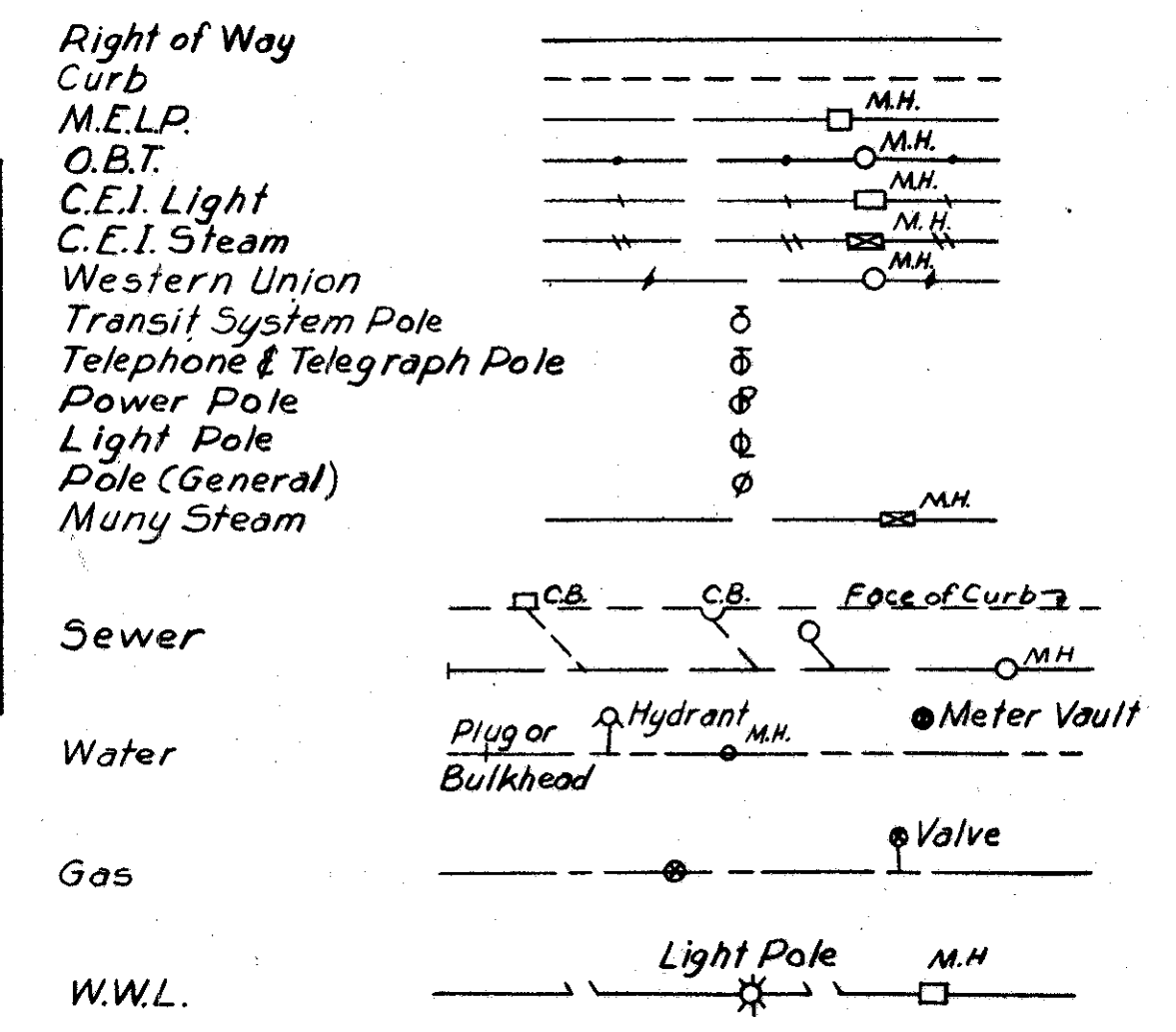


CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29  
EXISTING UTILITIES



**REMOVAL - SANDSTONE CURB**

ROADWAY	SIDE	LOCATION FROM	TO	LENGTH FT.	SALVAGE FT.
Woodland	S	E. 25th St. - E. 27th St.		288	58
Orange	N	E. 25th St. - E. 30th St.		925	462
	S	Mayflower - E. 30th St.		510	255
E. 27th St.	E	Orange - Woodland		345	0
	W			345	104
E. 29th St.	E	Orange - Woodland		81	8
	W			81	0
Totals				2575	887



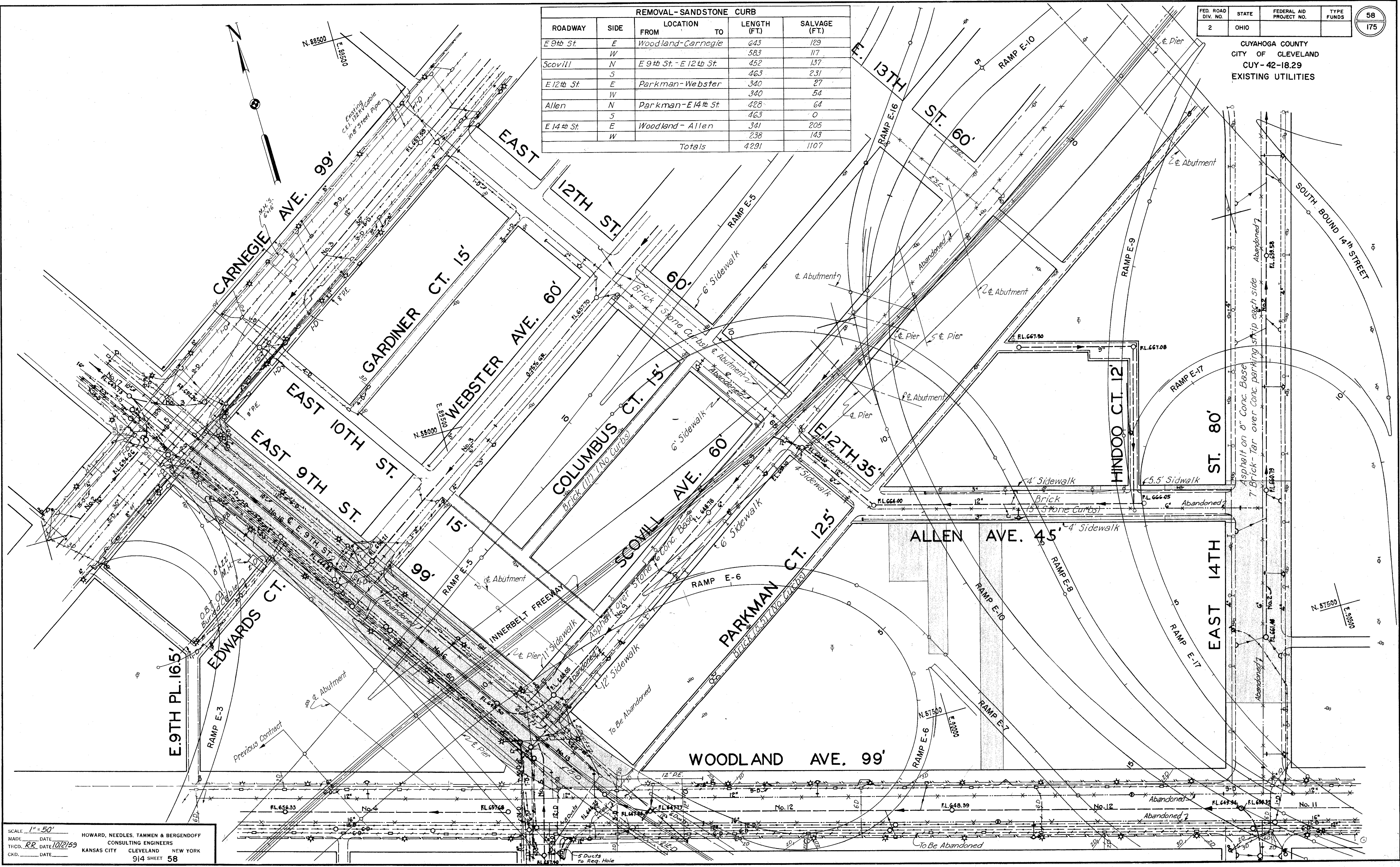


REMOVAL - SANDSTONE CURB					
ROADWAY	SIDE	FROM LOCATION	TO	LENGTH (FT.)	SALVAGE (FT.)
E 9th St.	E	Woodland-Carnegie		643	129
	W			583	117
Scovill	N	E 9th St. - E 12th St.		452	137
	S			463	231
E 12th St.	E	Parkman-Webster		340	27
	W			340	54
Allen	N	Parkman - E 14th St.		428	64
	S			463	0
E 14th St.	E	Woodland - Allen		341	205
	W			238	143
Totals				4291	1107

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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
EXISTING UTILITIES

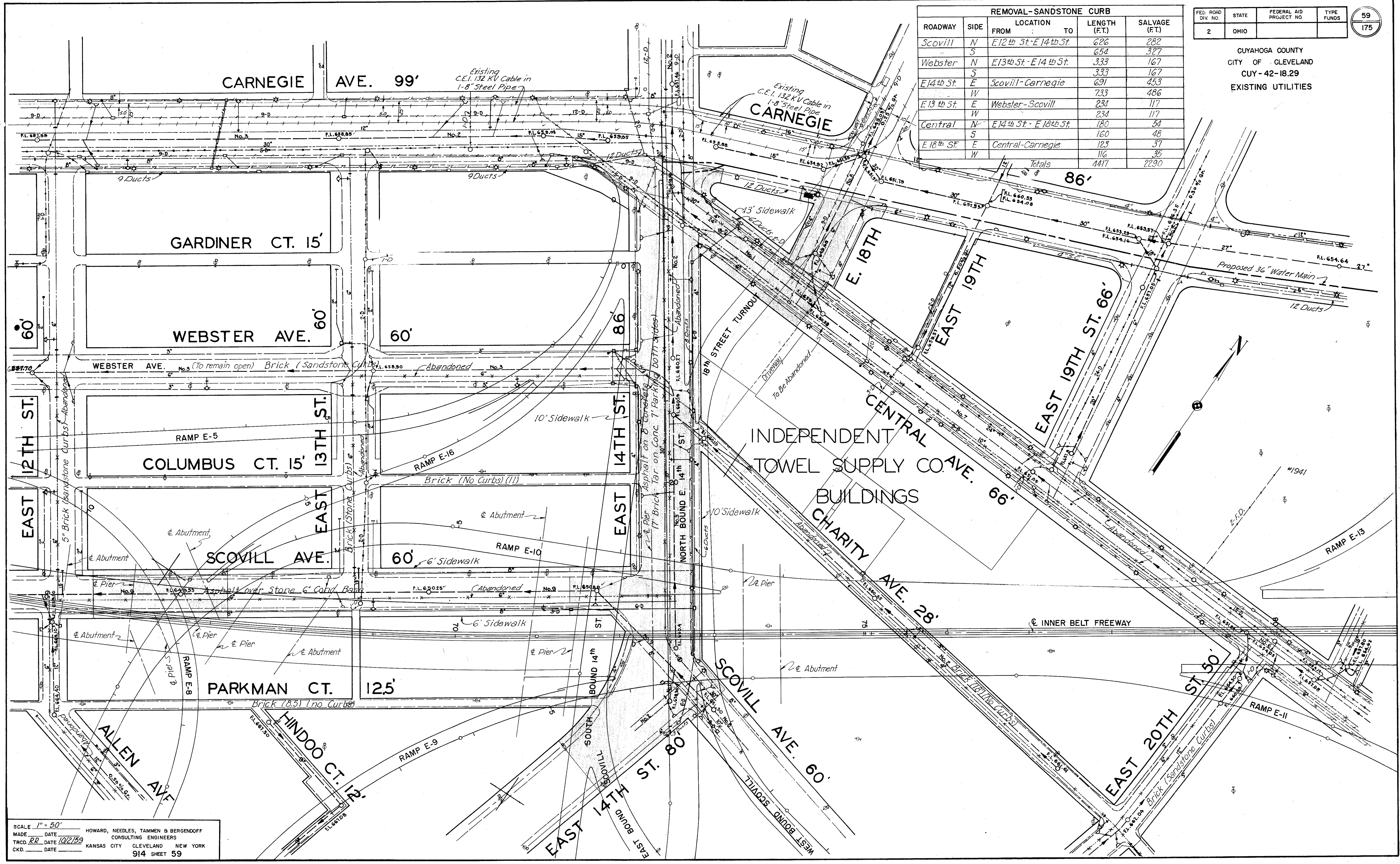
58  
175



SCALE: 1" = 50'  
 MADE: \_\_\_\_\_ DATE: \_\_\_\_\_  
 TRCD: RR DATE: 10/2/59  
 CKD: \_\_\_\_\_ DATE: \_\_\_\_\_  
 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY CLEVELAND NEW YORK  
 914 SHEET 58

CUYAHOGA COUNTY  
 CITY OF CLEVELAND  
 CUY - 42-18.29  
 EXISTING UTILITIES

REMOVAL-SANDSTONE CURB					
ROADWAY	SIDE	LOCATION FROM	TO	LENGTH (F.T.)	SALVAGE (F.T.)
Scovill	N	E 12th St - E 14th St.		626	282
	S			654	327
Webster	N	E 13th St - E 14th St.		333	167
	S			333	167
E 14th St.	E	Scovill - Carnegie		691	453
	W			733	486
E 13th St.	E	Webster - Scovill		234	117
	W			234	117
Central	N	E 14th St - E 18th St.		180	54
	S			160	48
E 18th St.	E	Central - Carnegie		123	37
	W			116	35
Totals				4417	2290



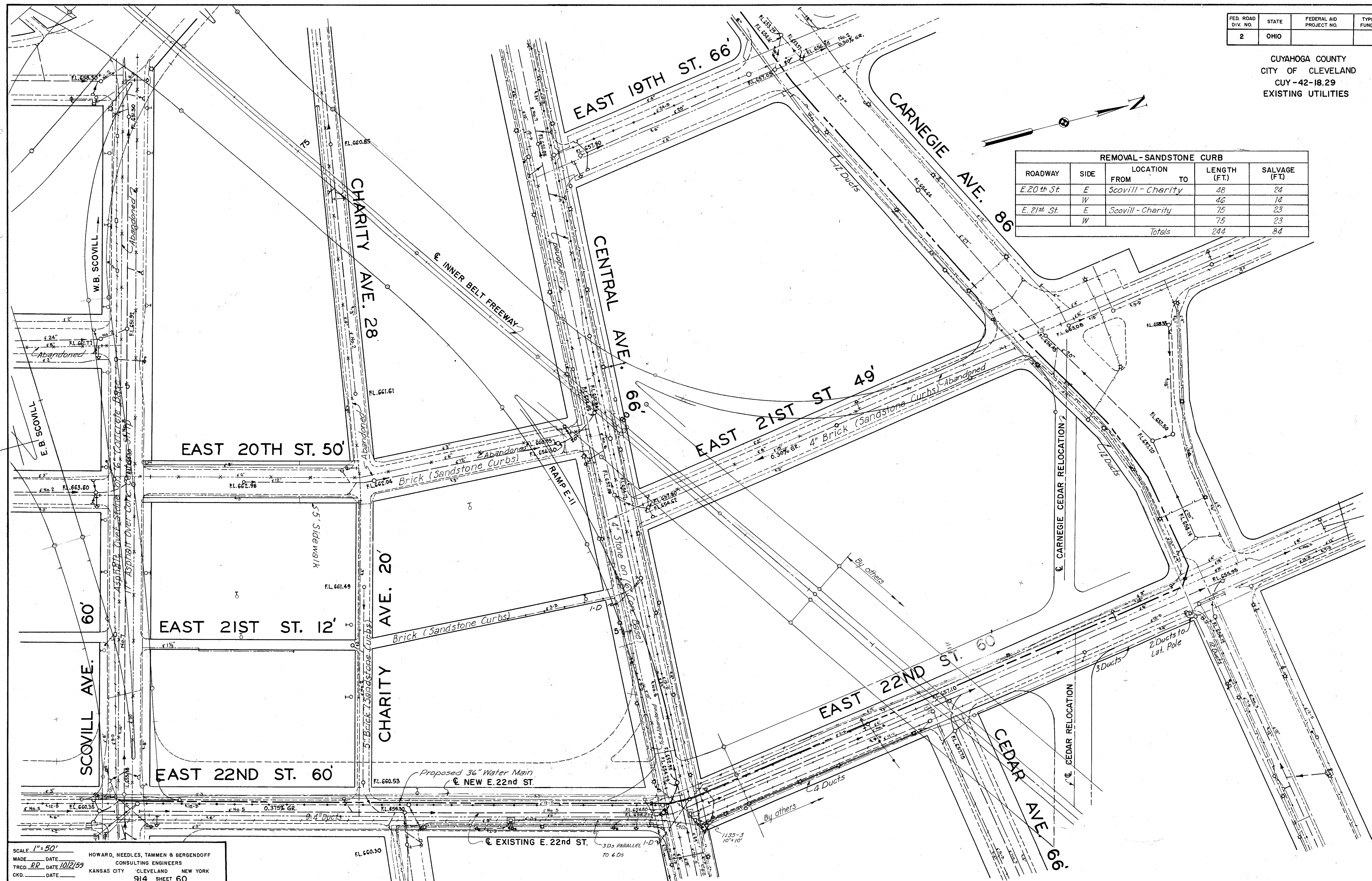
SCALE 1" = 50'  
 MADE DATE HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 TRCD. RR DATE 10/2/59 CONSULTING ENGINEERS  
 CKD. DATE KANSAS CITY CLEVELAND NEW YORK  
 914 SHEET 59

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

60  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
EXISTING UTILITIES

REMOVAL - SANDSTONE CURB					
ROADWAY	SIDE	LOCATION FROM	TO	LENGTH (FT.)	SALVAGE (FT.)
E. 20th St.	E	Scovill - Charity		48	24
	W			46	14
E. 21st St.	E	Scovill - Charity		75	23
	W			75	23
Totals				244	84



SCALE: 1" = 50'  
 MADE DATE \_\_\_\_\_ HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 TRCD. RR. DATE 10/2/59 CONSULTING ENGINEERS  
 CKD. DATE \_\_\_\_\_ KANSAS CITY CLEVELAND NEW YORK  
 914 SHEET 60

01-0

15

CUY-90-16.24

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	61 175
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CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
CROSS SECTION LAYOUT

SERIES	SHEETS	STA. TO STA.	EXCAVATION	EMBANKMENT
A	62-65	5+38 15+10	7741	7575
B	65-66	0+50 2+80	829*	296
C	66-71	3+80 23+94	68584	4599
D	72-73	0-91 5+37	14611	1814
E		DELETED		
F		DELETED		
G	74	58+00 58+88	157	8
H	74-76	61+00 66+50	0	63802
I	77-78	0+00 5+50	4826	7731
J	79-80	0+00 6+73	221	31013
K	81-83C	2+09 44+00	39096	14965
L	83D	0+00 8+90	10879	28
M	83E	0+51 3+10	3222	13
TOTALS			150,166	131,844

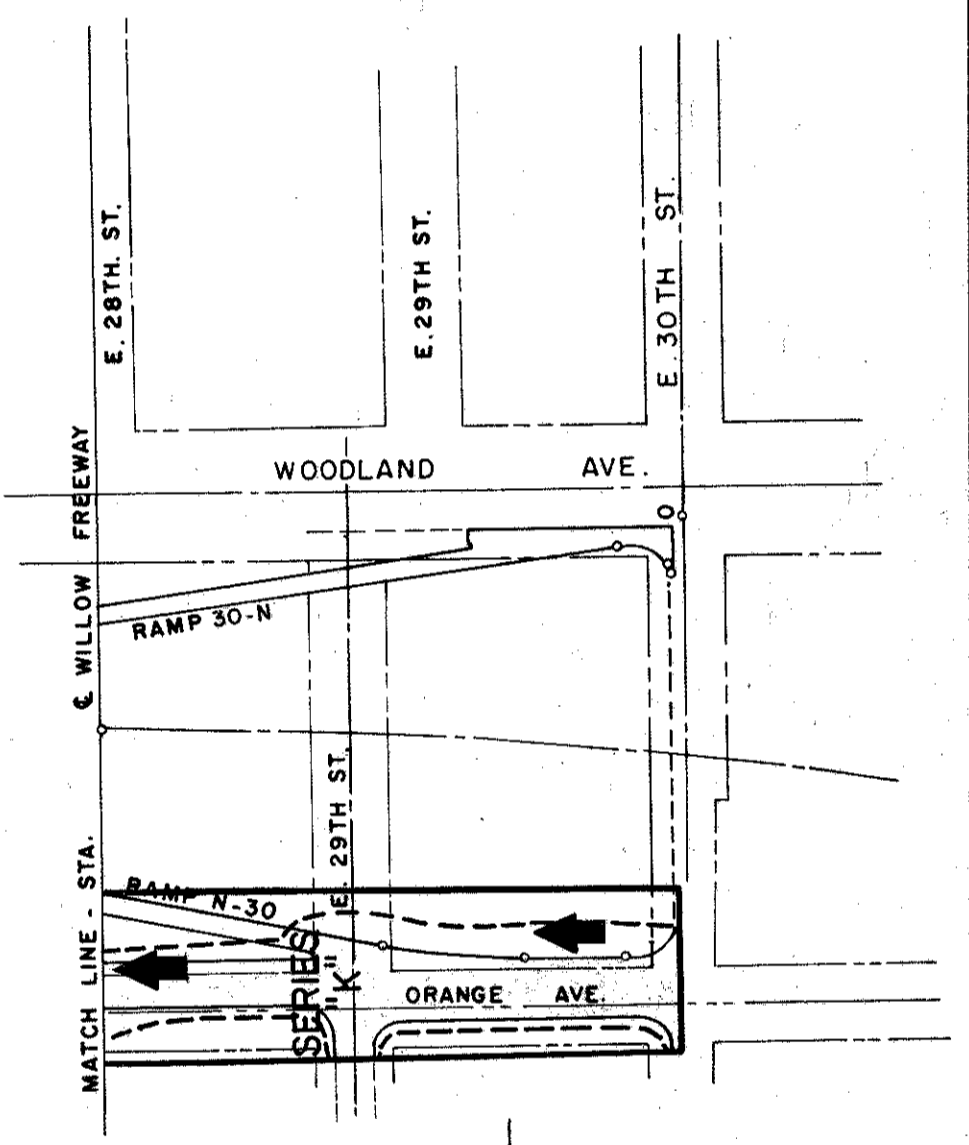
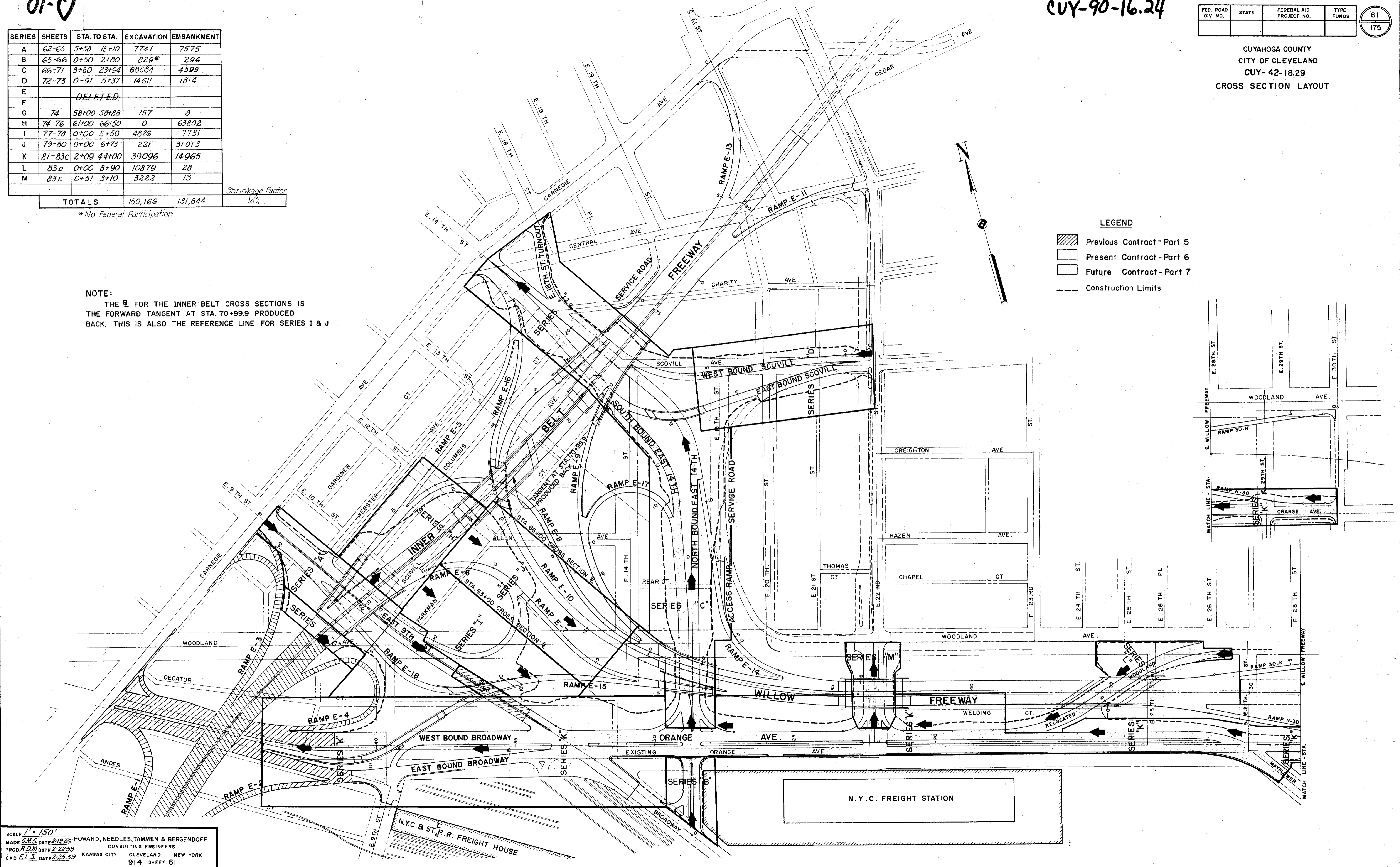
Shrinkage Factor  
14%

\*No Federal Participation.

NOTE:  
THE  $\square$  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 & J

**LEGEND**

- Previous Contract - Part 5
- Present Contract - Part 6
- Future Contract - Part 7
- Construction Limits

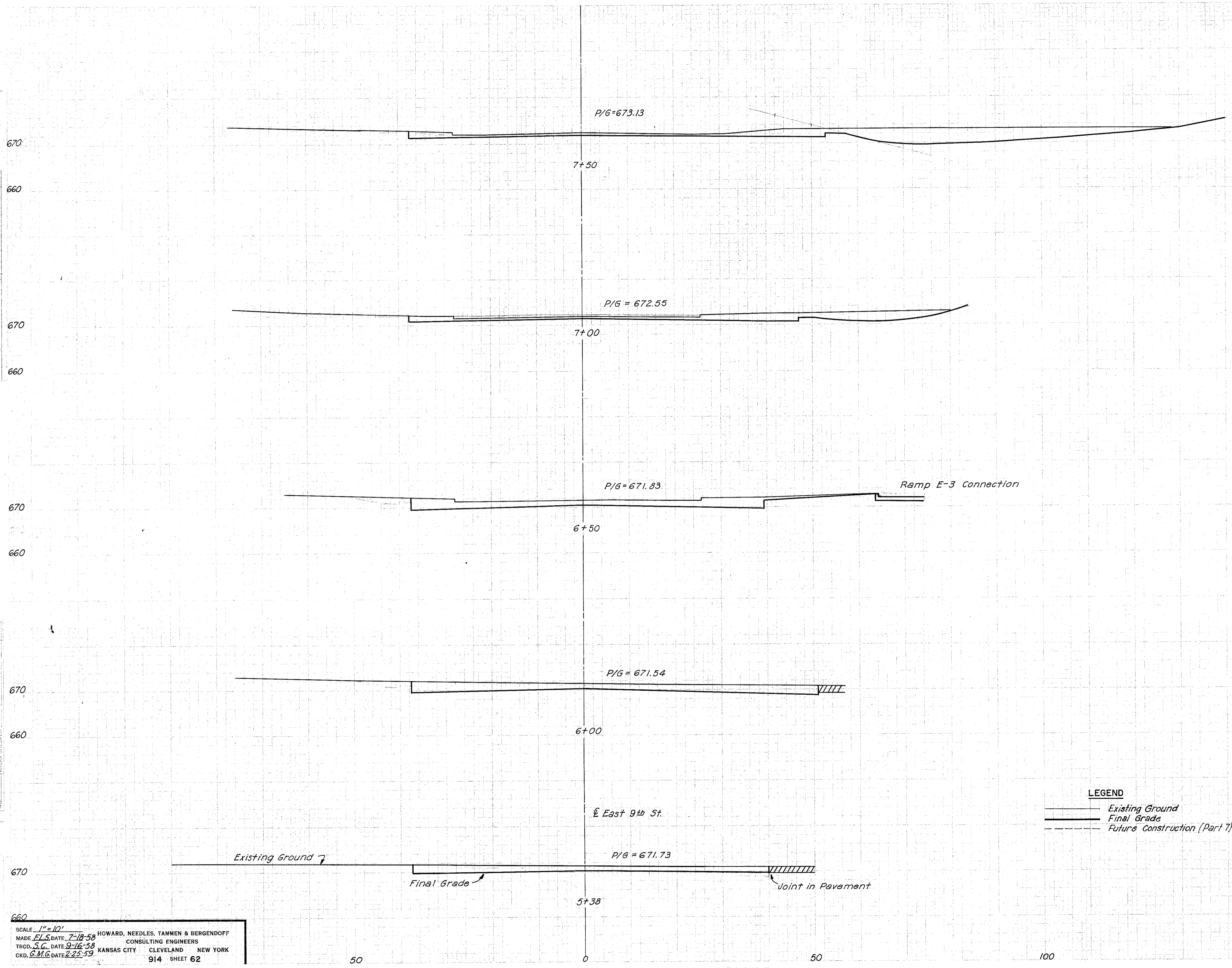


SCALE 1" = 150'  
MADE S.M.G. DATE 2-19-59 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD P.D.M. DATE 2-22-59 CONSULTING ENGINEERS  
CKD F.L.S. DATE 2-25-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 61

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

FINAL SURVEY PLOTTED  
SURVEY PLOTTED  
NOTE BOOK  
AREAS CHECKED

ORIGINAL SURVEY PLOTTED  
SURVEY PLOTTED  
NOTE BOOK  
AREAS CHECKED



L.F.	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	SQ. YD.	S.F.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
7+50					244	0		
							361	0
7+00					146	0		
							257	0
6+50					132	0		
							289	0
6+00					158	0		
							289	0
5+38					94	0		

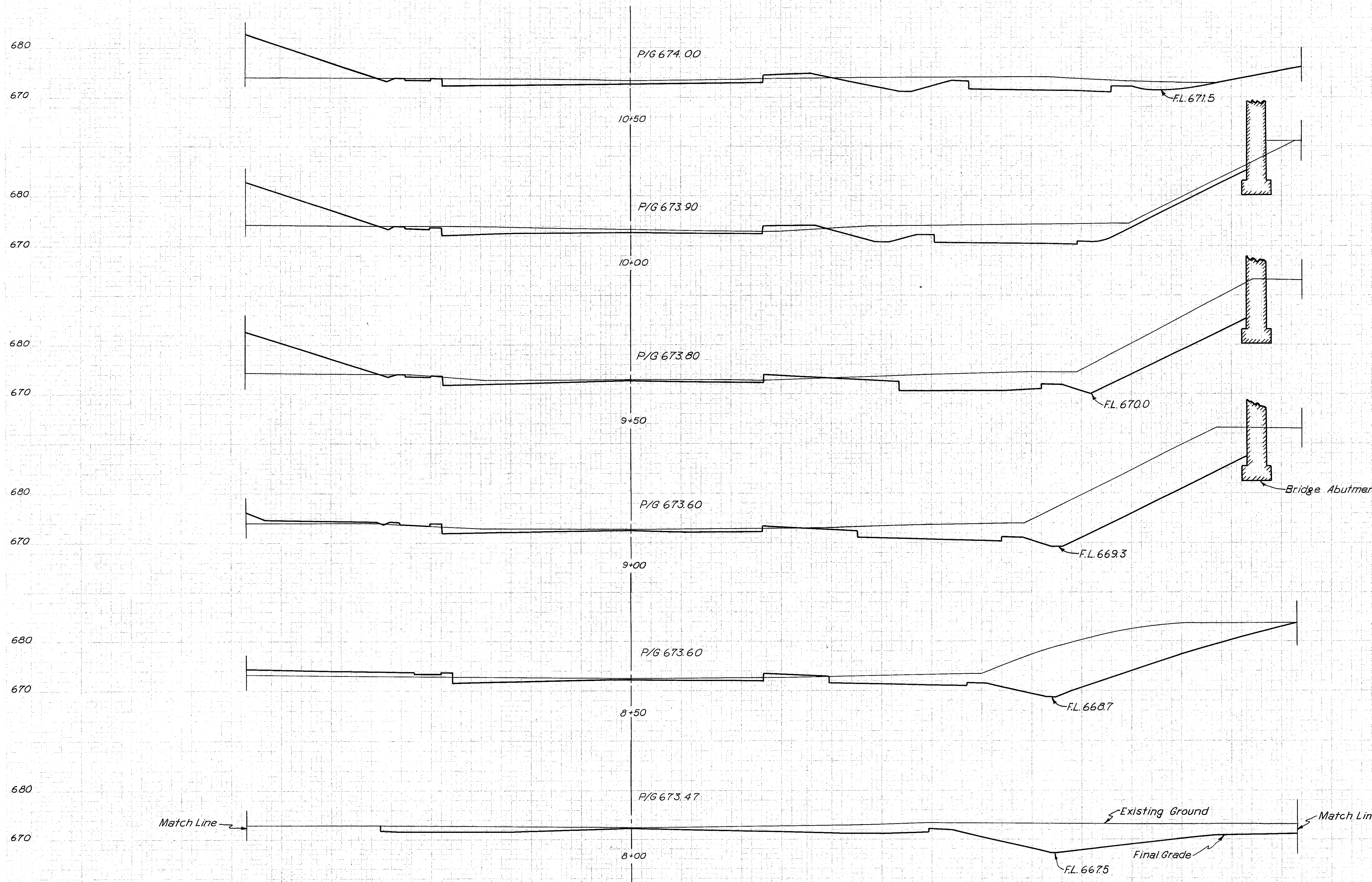
**LEGEND**  
 - - - Existing Ground  
 — Final Grade  
 ····· Future Construction (Part 1)

SERIES A  
EAST 9th STREET SECTIONS  
STA. 5+38 TO STA. 7+50

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

63  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



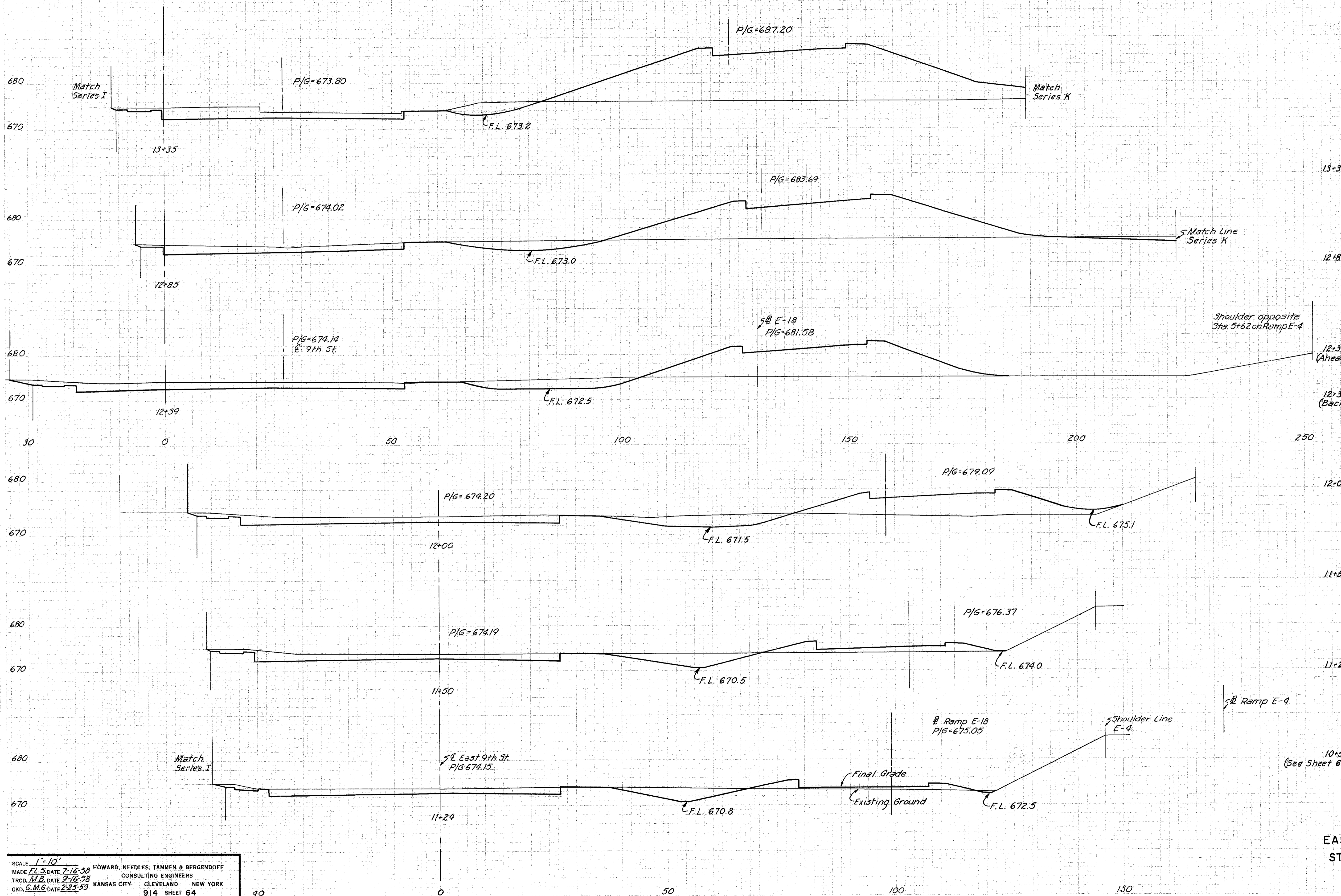
STATION	SEEDING		SUBBASE		EARTHWORK			
	WIDTH L.F.	AREA SQ.YD.	AREA S.F.	VOL. C.Y.	END AREA EXC.	AREA EMB.	VOLUME EXC.	VOLUME EMB.
10+50					212	227		
10+00					316	126		
9+50					472	124		
9+00					551	17		
8+50					500	38		
8+00					384	0		
7+50					244	0		
							973	51
							730	231
							489	327

(See Sheet 62)

SERIES A  
EAST 9TH STREET SECTIONS  
STA. 8+00 TO STA. 10+50

SCALE 1"=10'  
MADE F.L. DATE 7-17-58 HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS  
TRCD. M.B. DATE 9-16-58 KANSAS CITY CLEVELAND NEW YORK  
CRD. G.M.G. DATE 11-15-58 914 SHEET 63

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



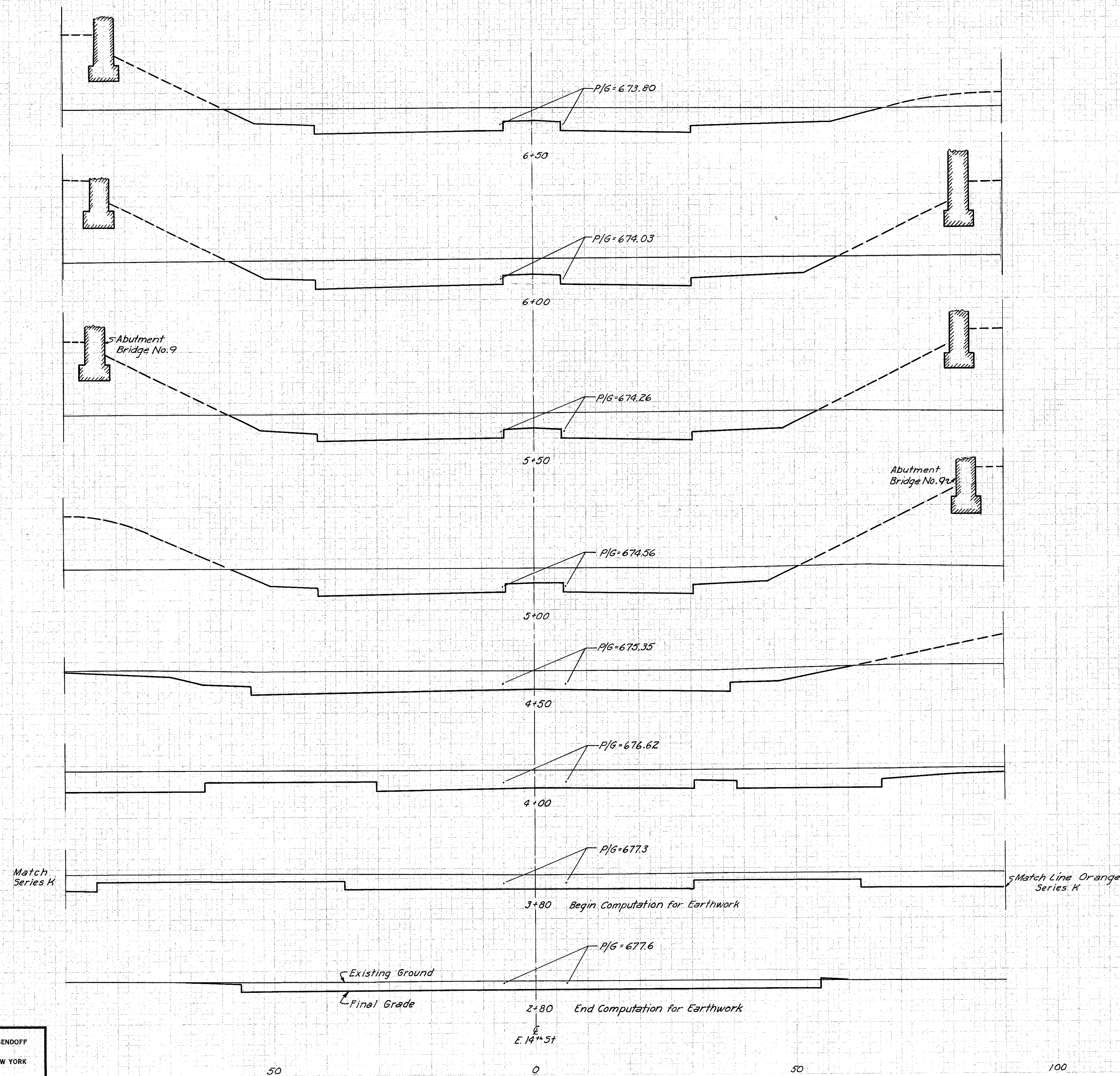
L.F.	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	SQ. YD.	S.F.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
13+35					130	837		
12+85					140	578	250	1310
12+39 (Ahead)					153	366		
12+39 (Back)					205	366		
250							277	440
12+00					179	243		
11+50					165	66	319	286
11+24					149	44		
10+50 (See Sheet 63)					212	227	495	371

SERIES A  
EAST 9th STREET SECTIONS  
STA. 11+24 TO STA. 13+35





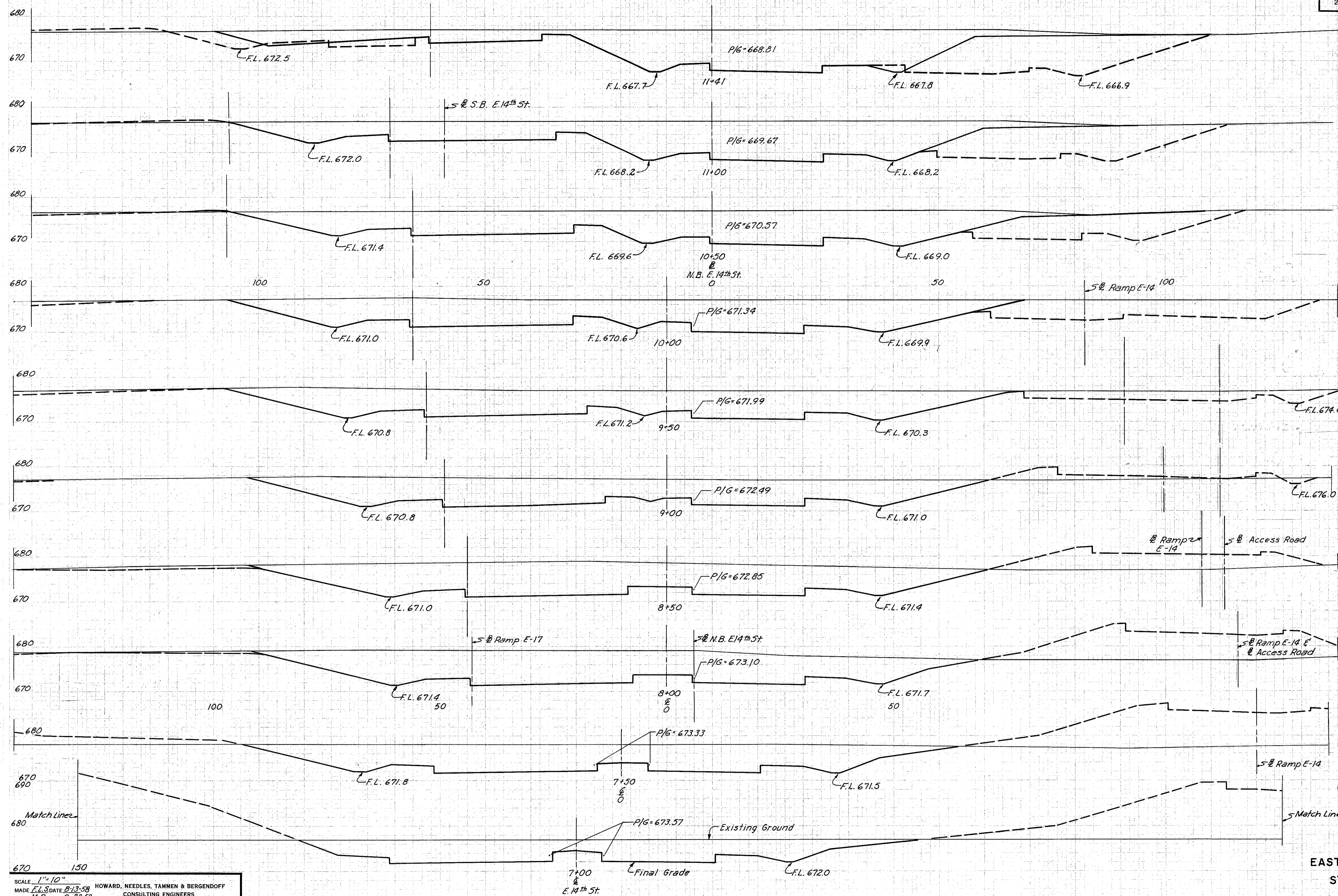
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



L. F.	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	SQ. YD.	S. F.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
6+50					456	0		
							876	0
6+00					490	0		
							883	0
5+50					464	0		
							845	0
5+00					449	0		
							843	0
4+50					467	0		
							960	0
4+00					570	0		
							370	0
3+80					430	0		
2+80					191	0		
							181	0
2+50					135	0		

SERIES B EAST 14th STREET SECTIONS  
STA. 2+80  
SERIES C EAST 14th STREET SECTIONS  
STA. 3+80 TO STA. 6+50

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



STATION	SUBBASE		EARTHWORK			
	AREA	VOL.	END AREA		VOLUME	
	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
11+41			873			
11+00			937		1374	0
10+50			940		1738	0
10+00			944	0	1744	0
10+00			944	0	1675	0
9+50			865	0	1542	0
9+00			800	0	1586	0
8+50			913	0	1667	0
8+00			887	0	1506	0
7+50			740	0	1169	0
7+00			523	0	906	0
6+50 (See Sheet 66)			456	0		

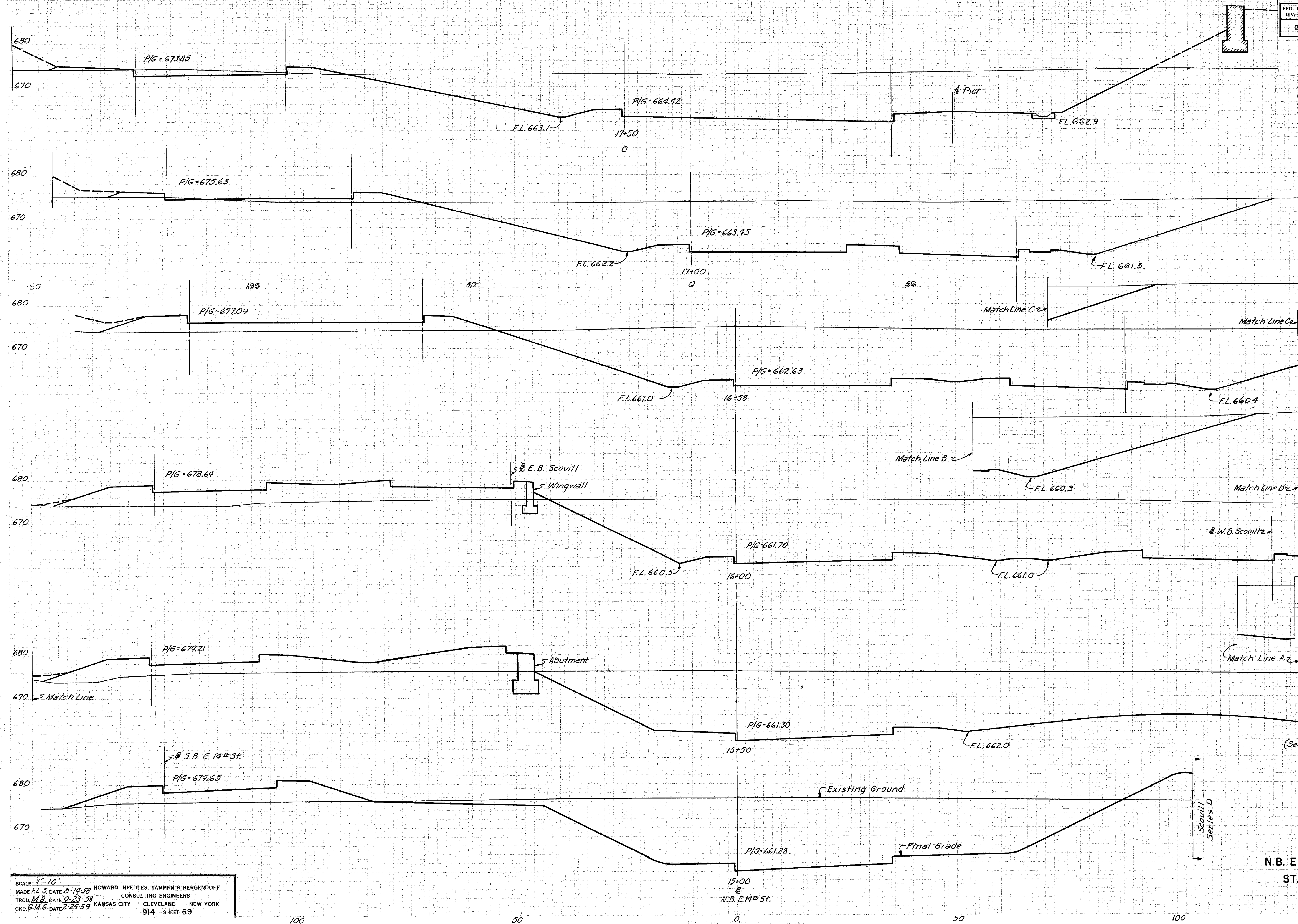
SERIES C  
EAST 14th STREET SECTIONS  
STA. 7+00 TO STA. 11+41

SCALE 1"=10'  
MADE C.L.S. DATE 8-13-58 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD. M.B. DATE 9-22-58 CONSULTING ENGINEERS  
CKD. S.M.G. DATE 2-25-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 67

50 0 50 100 150



CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18-29



STATION	SUBBASE		EARTHWORK	
	AREA	VOL.	END AREA	VOLUME
	S.F.	C.Y.	EXC.	EMB.
17+50			1533	18
				3060
17+00			1772	61
				3061
16+58			2164	207
				5132
16+00			2614	388
				4453
15+50			2195	367
				3520
15+00			1607	263
				3084
14+50			1724	210

SERIES C  
N.B. EAST 14th STREET SECTIONS  
STA. 15+00 TO STA. 17+50

SCALE 1"=10'  
MADE FL.S. DATE 8-14-58 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD. M.B. DATE 9-23-58 CONSULTING ENGINEERS  
CKD. C.M.G. DATE 2-25-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 69

100

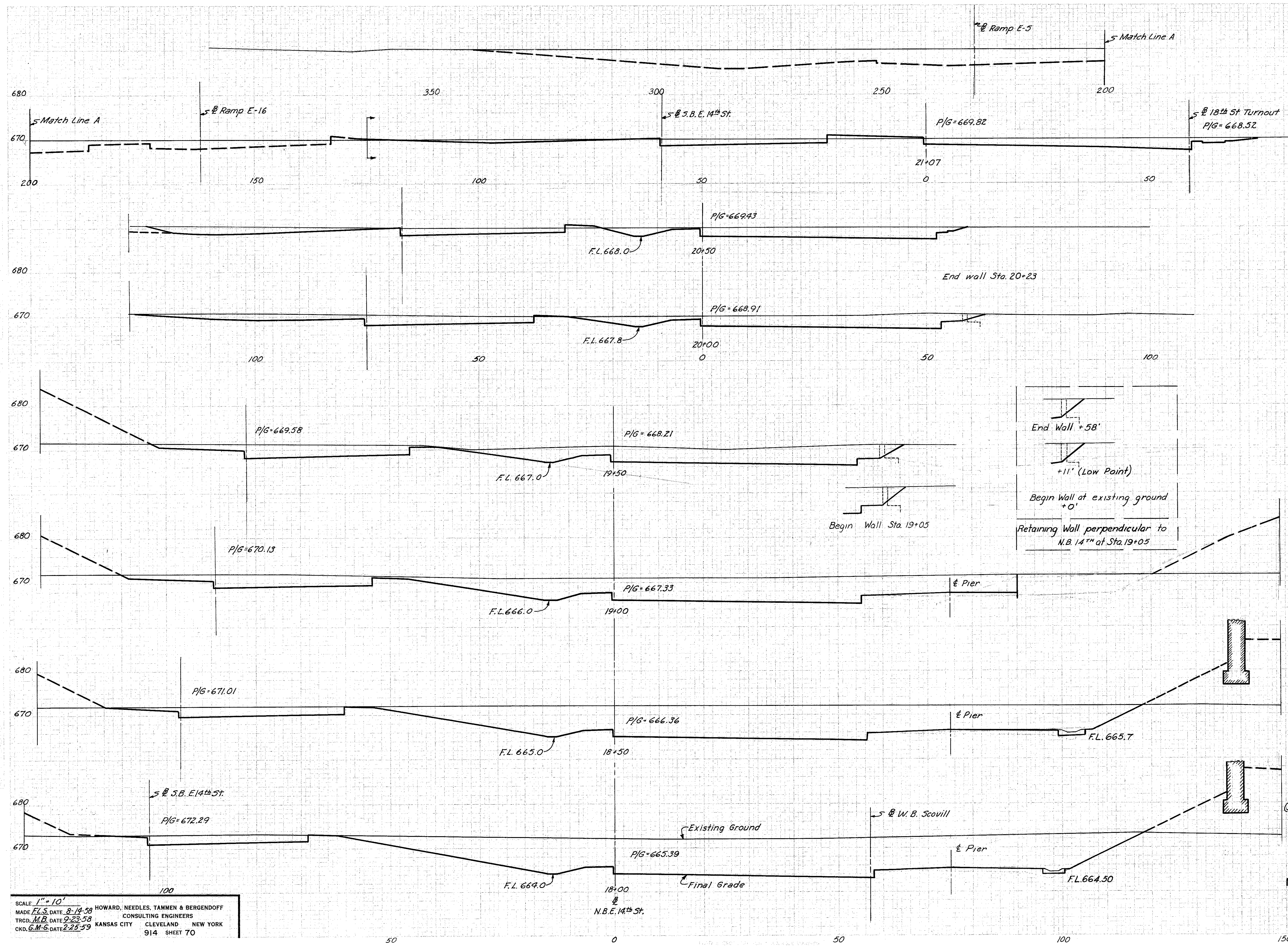
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0

50

100

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18-29

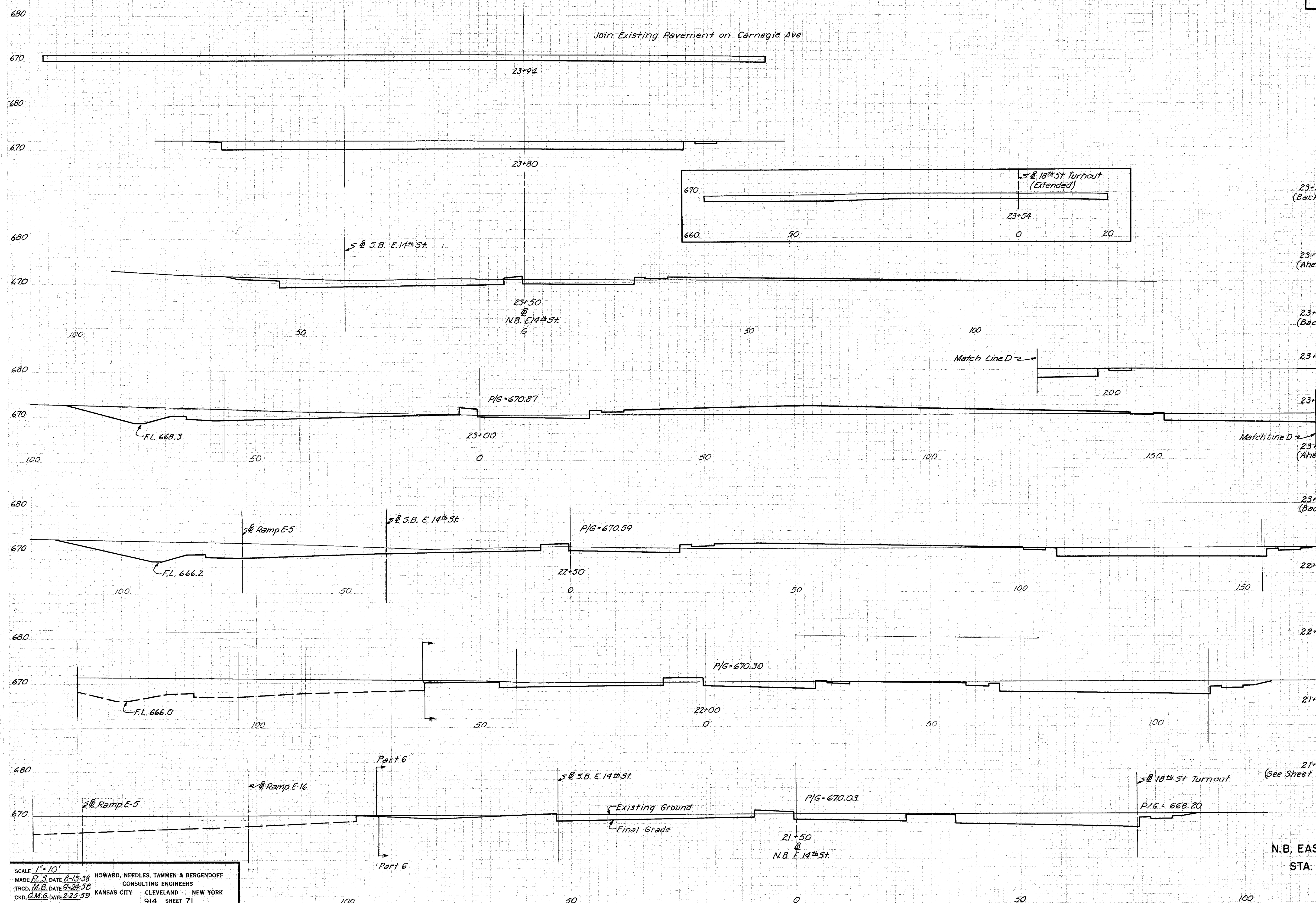


STATION	SEEDING		SUBBASE		EARTHWORK			
	WIDTH L.F.	AREA SQ. YD.	AREA S.F.	VOL. C.Y.	END AREA EXC.	END AREA EMB.	VOLUME EXC.	VOLUME EMB.
21+07					198	13		
							511	17
20+50					286	3		
							550	4
20+00					308	1		
							666	1
19+50					411	0		
							941	0
19+00					605	0		
							316	
18+88					819	0		
							1321	
18+50					1058	0		
							2144	0
18+00					1258	0		
							2584	17
17+50 (See Sheet 69)					1533	18		

SERIES C  
N.B. EAST 14th STREET SECTIONS  
STA. 18+00 TO STA. 21+07

SCALE 1" = 10'  
MADE F.L.S. DATE 8-14-58  
TRCD. M.B. DATE 9-23-58  
CKD. G.M. DATE 2-25-59  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 70

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18-29

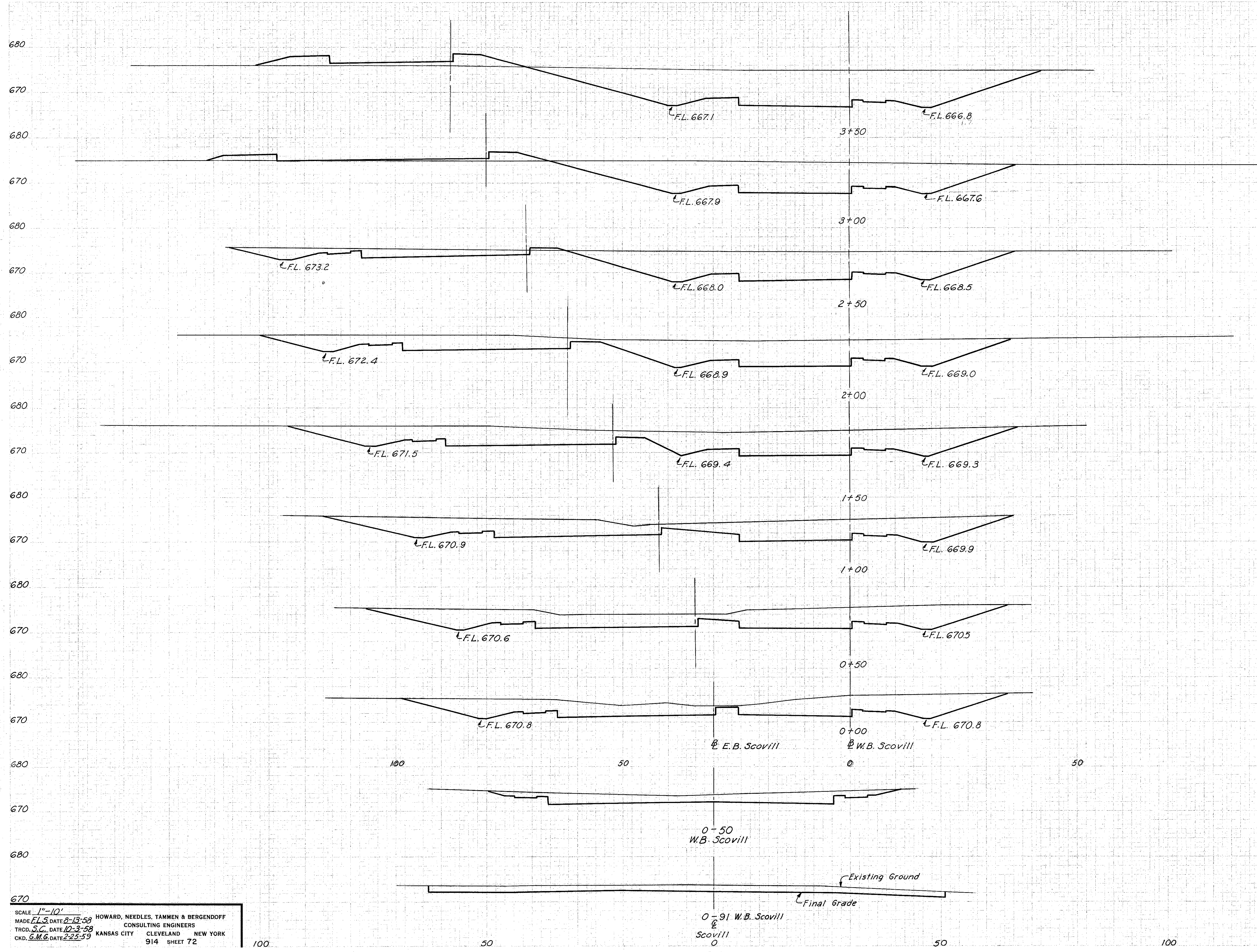


SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
						120	0
							204
				84	0		
						209	0
							105
						195	0
							172
				115	24		
							254
						159	166
						243	166
							587
				391	45		
							572
						227	7
							414
						220	5
							333
						198	13

SERIES C  
N.B. EAST 14th STREET SECTIONS  
STA. 21+50 TO STA. 23+94

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	72
2	OHIO			175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ. YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
3+50				662	74		
						1102	109
3+00				528	44		
						1030	44
2+50				584	4		
						1122	4
2+00				628	0		
						1159	0
1+50				624	0		
						1085	0
1+00				548	0		
						944	0
0+50				472	0		
						827	0
0+00				421	0		
						535	0
0-50				157	0		
						230	0
0-91				146	0		

SERIES D  
W.B. SCOVILL SECTIONS  
STA. 0-91 TO STA. 3+50

SCALE: 1"=10'  
MADE P.L.S. DATE 8-13-58 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD. S.C. DATE 12-3-58 CONSULTING ENGINEERS  
CKD. G.M.G. DATE 2-23-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 72

0-50 W.B. Scovill  
0 W.B. Scovill  
0 Scovill

100 50 0 50 100

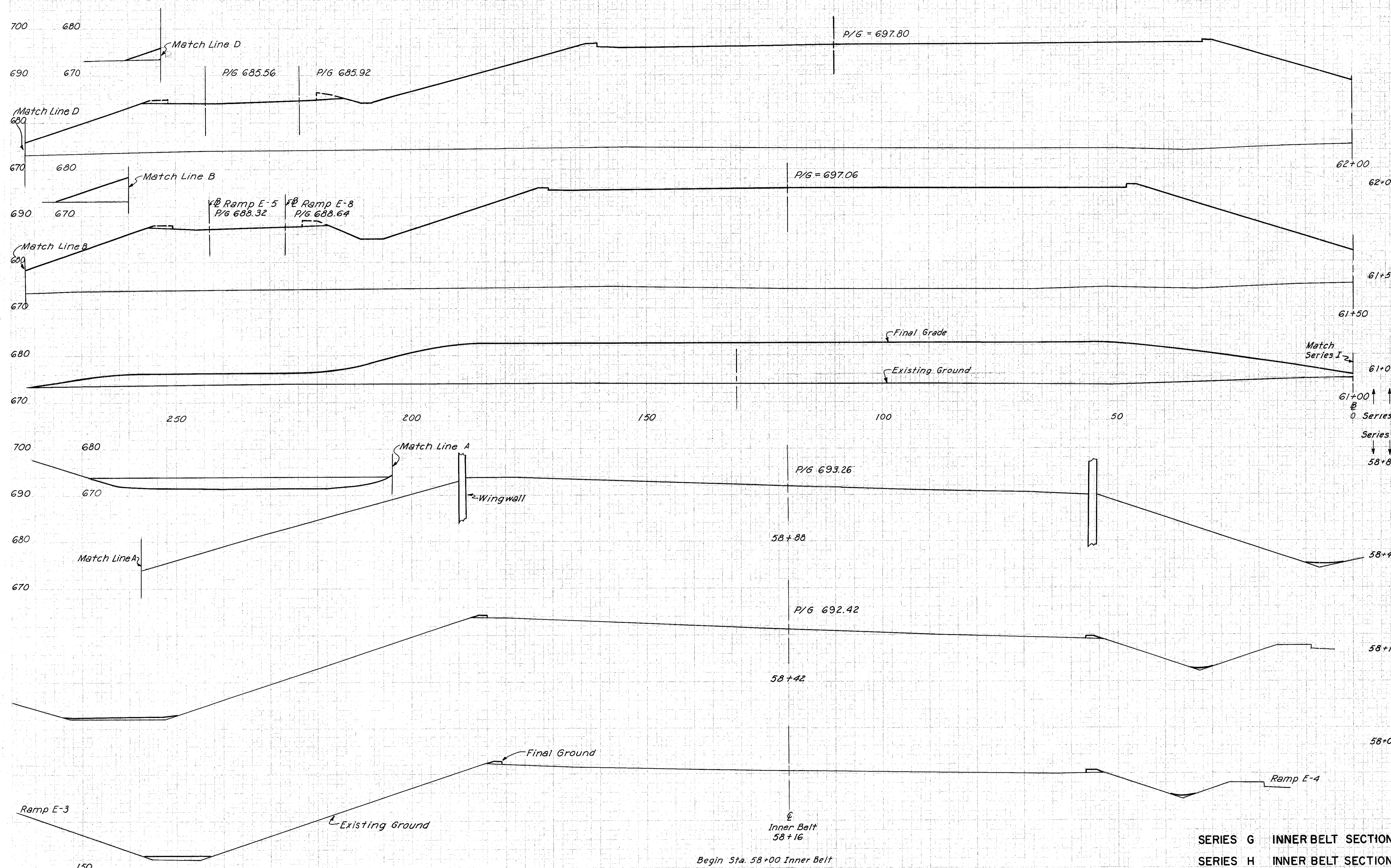




FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

74  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA	VOLUME		
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
				0	4901		
				0	4888		0 9067
				0	4888		0 6141
				0	1744		
				150	0		
				14	4		140 3
				13	4		13 4
							4 1
				0	0		

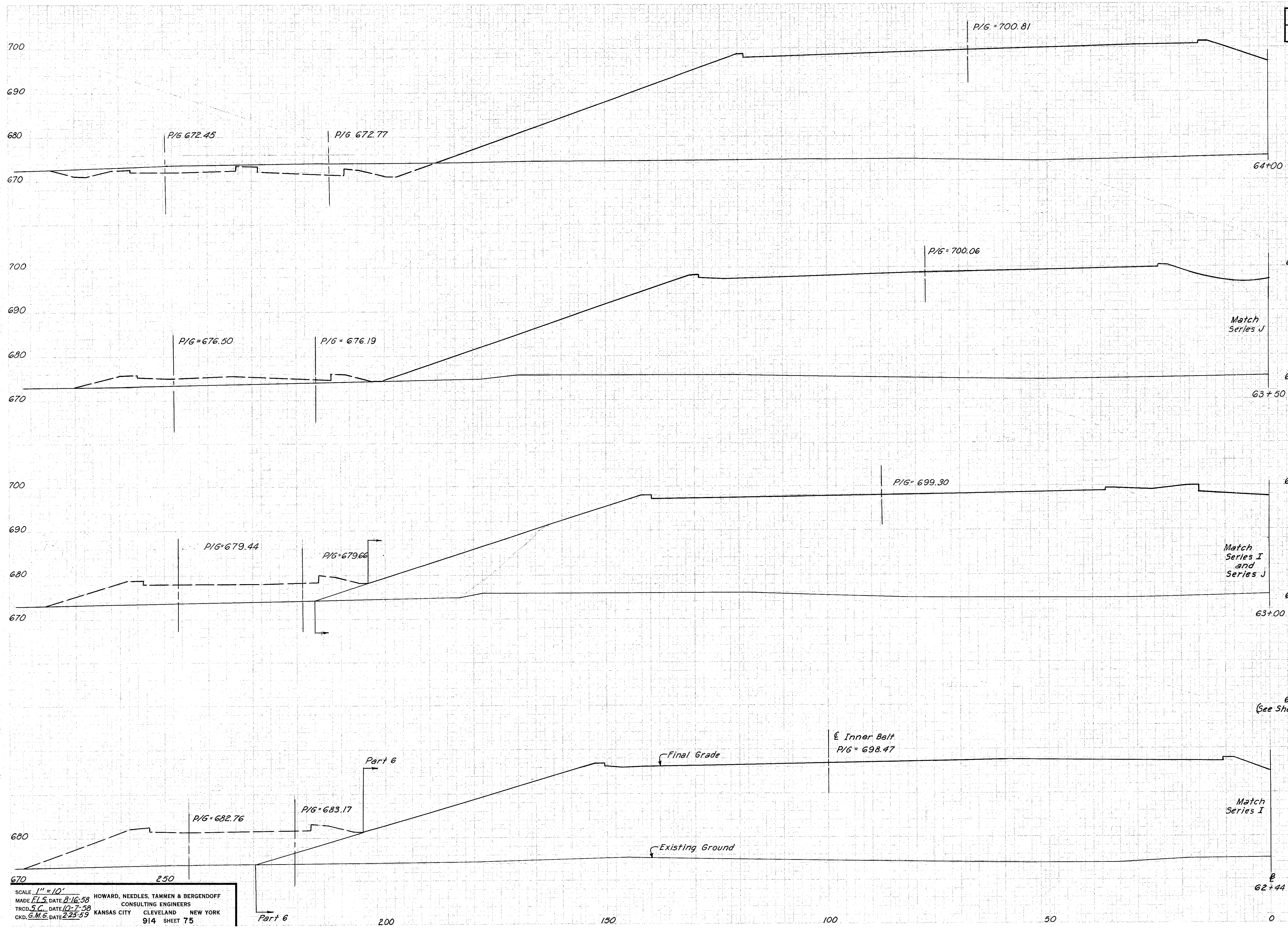
SERIES G INNER BELT SECTION STA. 58+00 TO STA. 58+88  
SERIES H INNER BELT SECTION STA. 61+00 TO STA. 62+00

SCALE 1"=10'  
MADE E.L.S. DATE 3-14-58 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD. S.C. DATE 10-6-58 CONSULTING ENGINEERS  
CKD. E.M.G. DATE 2-23-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 74

150 100 50 0 50 100

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	75 175
2	OHIO			

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L. F.	SQ. YD.	S. F.	C. Y.	EXC.	EMB.	EXC.	EMB.
					0 3798		
						0 7081	
					0 3850		
						0 7381	
					0 4121		
						0 8776	
					0 4342		
						0 7531	
					0 4901		

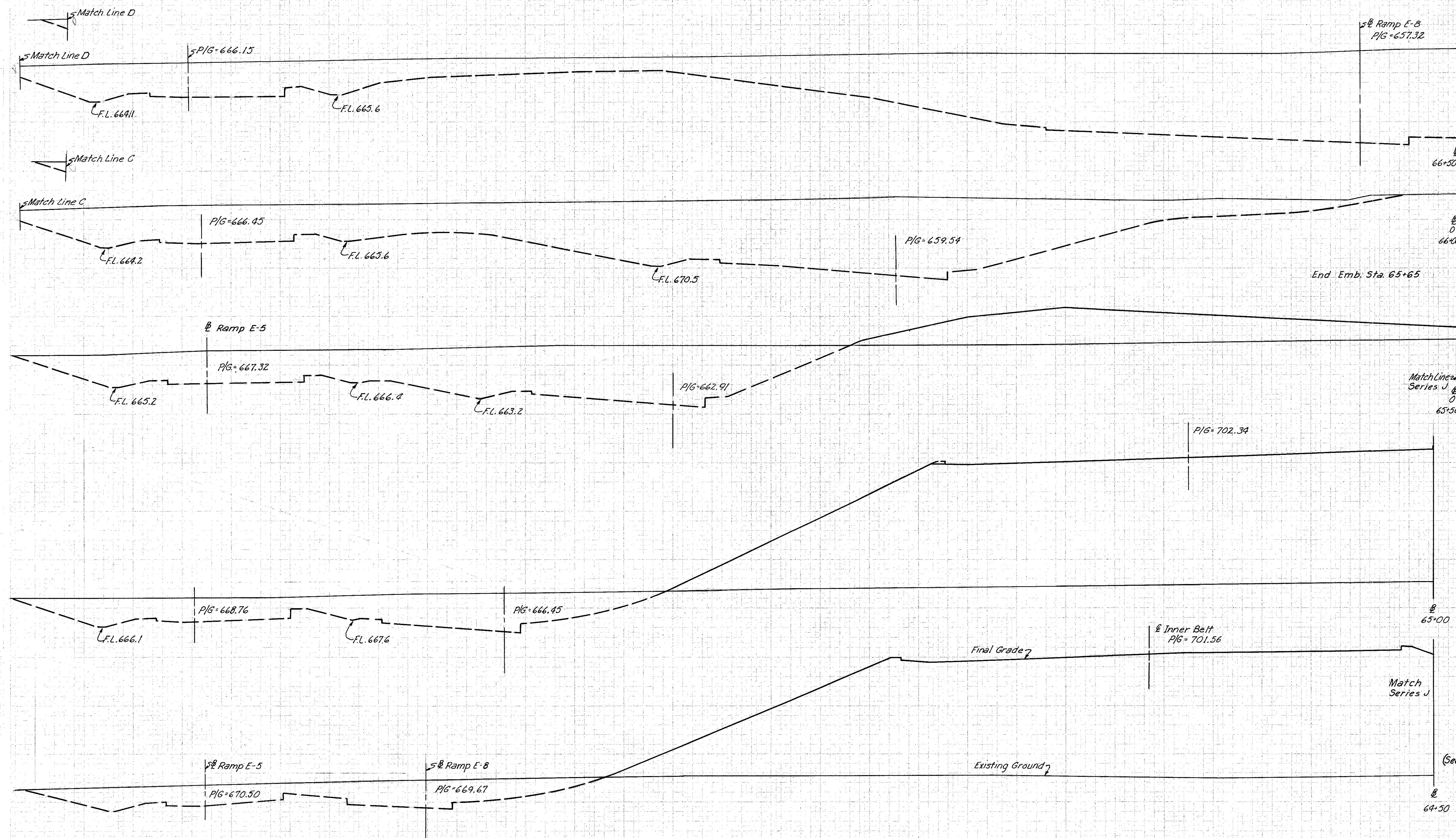
SERIES H  
INNER BELT SECTIONS  
STA. 62+44 TO STA. 64+00

SCALE 1" = 10'  
MADE F.L.S. DATE 8-16-58  
TRCD. S.C. DATE 10-7-58  
CKD. G.M.E. DATE 2-25-59

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

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CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



STA.	SUBBASE		EARTHWORK	
	AREA S.F.	VOL. C.Y.	END AREA EXC.	VOLUME EMB.
66+50			0	0
66+00			0	0
65+65			0	0
65+50				0 117
65+50			0	617
65+00			0	3401
65+00				0 6440
64+50			0	3554
64+00			0	3798

SERIES H  
INNER BELT SECTIONS  
STA. 64+50 TO STA. 66+50

SCALE 1"=10'  
MADE E.L.S. DATE 8-13-58 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD. M.B. DATE 10-7-58 CONSULTING ENGINEERS  
CKD. S.M.C. DATE 2-23-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 76  
250

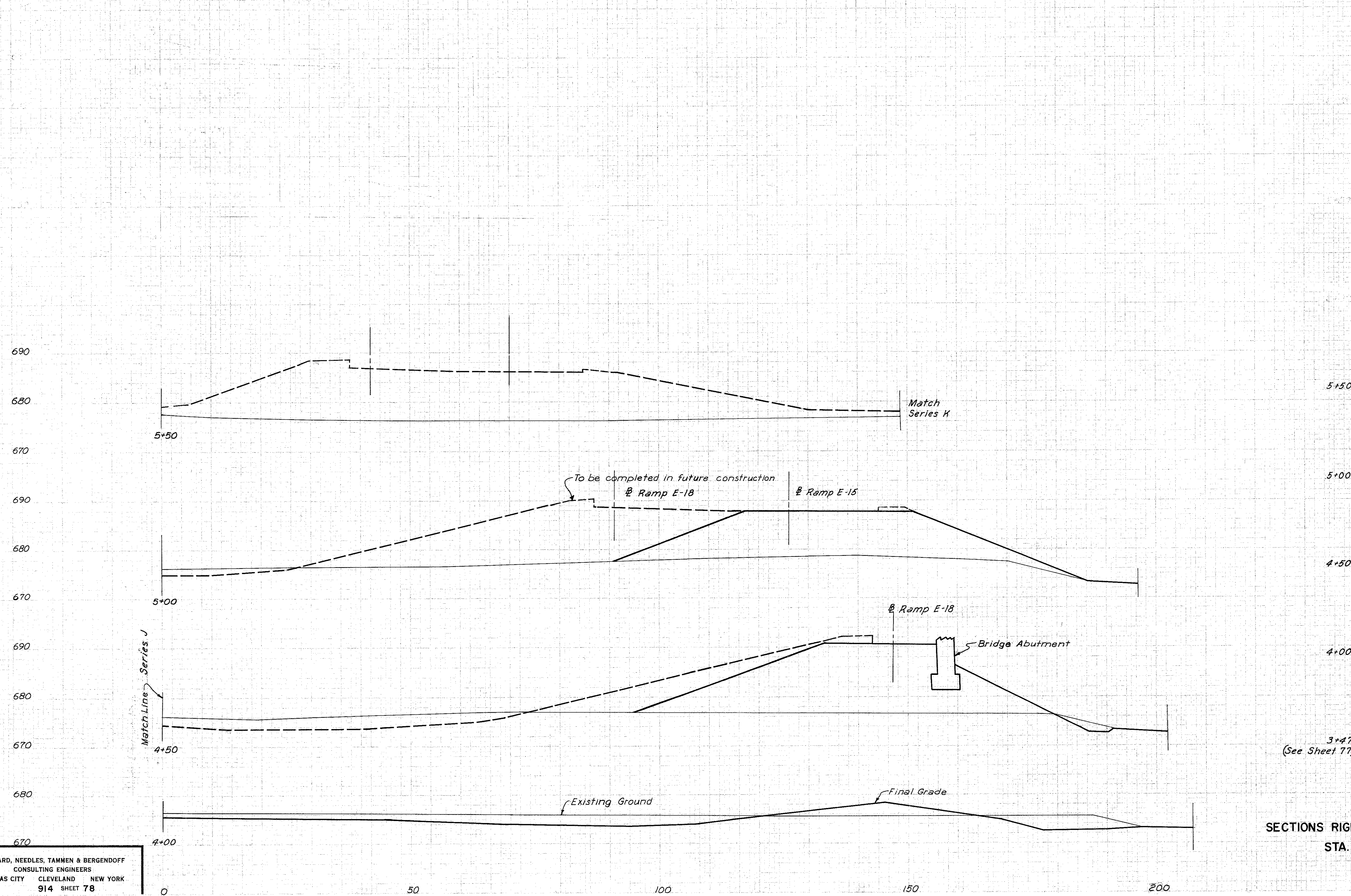
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FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

78  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



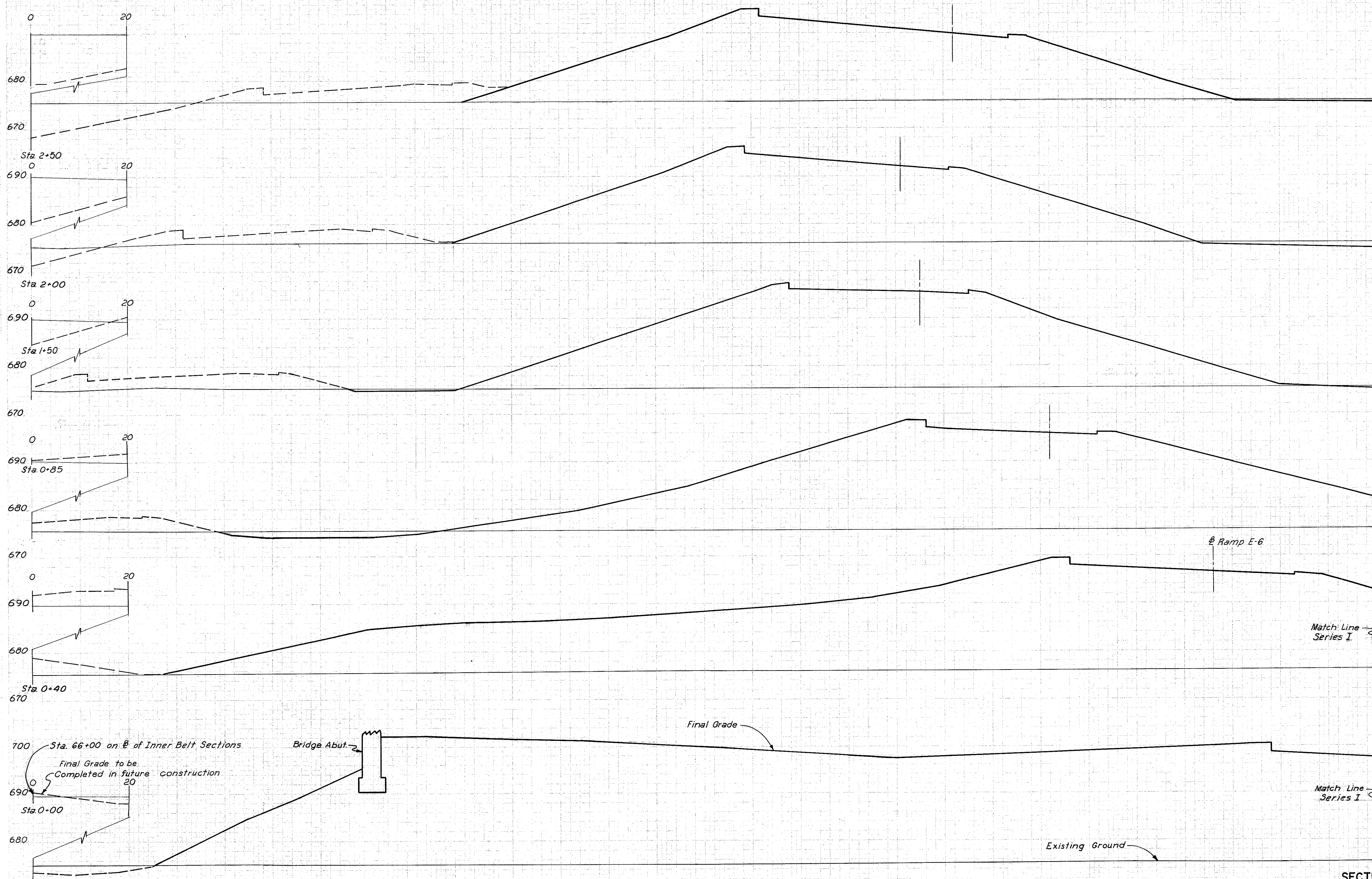
L. F.	SEEDING		SUBBASE		EARTHWORK				
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME		
	SQ. YD.	S. F.	C. Y.		EXC.	EMB.	EXC.	EMB.	
5+50					0	0		0	558
5+00					0	603		11	1232
4+50					12	728		245	728
4+00					253	58		394	894
3+47 (See Sheet 77)					148	853			

SERIES I  
SECTIONS RIGHT OF STA. 63+00 INNER BELT  
STA. 4+00 TO STA. 5+50

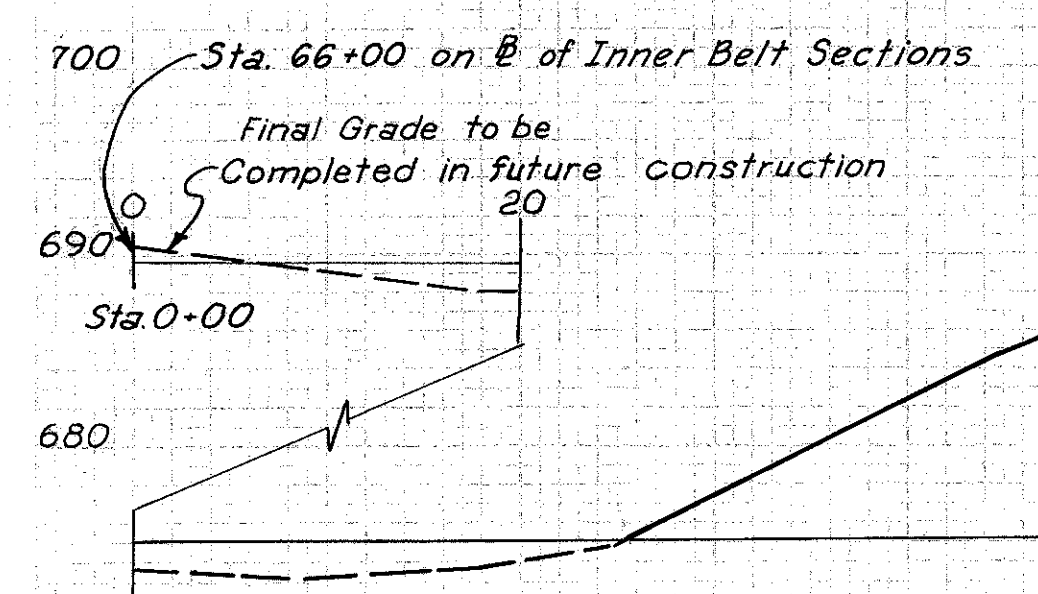
SCALE: 1"=10'  
MADE FLS DATE 8-6-58 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD. MDH DATE 2-2-59 CONSULTING ENGINEERS  
CKD. G.M.G. DATE 2-25-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 78

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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



STATION	SEEDING		SUBBASE		EARTHWORK			
	WIDTH L.F.	AREA SQ.YD.	AREA S.F.	VOL. C.Y.	END AREA EXC.	END AREA EMB.	VOLUME EXC.	VOLUME EMB.
2+50					9	1809		
							25	3356
2+00					18	1816		
							27	3711
1+50					11	2192		
							77	5750
0+85					53	2585		
							44	5118
0+40					0	3557		
							0	6849
0+00					0	5689		



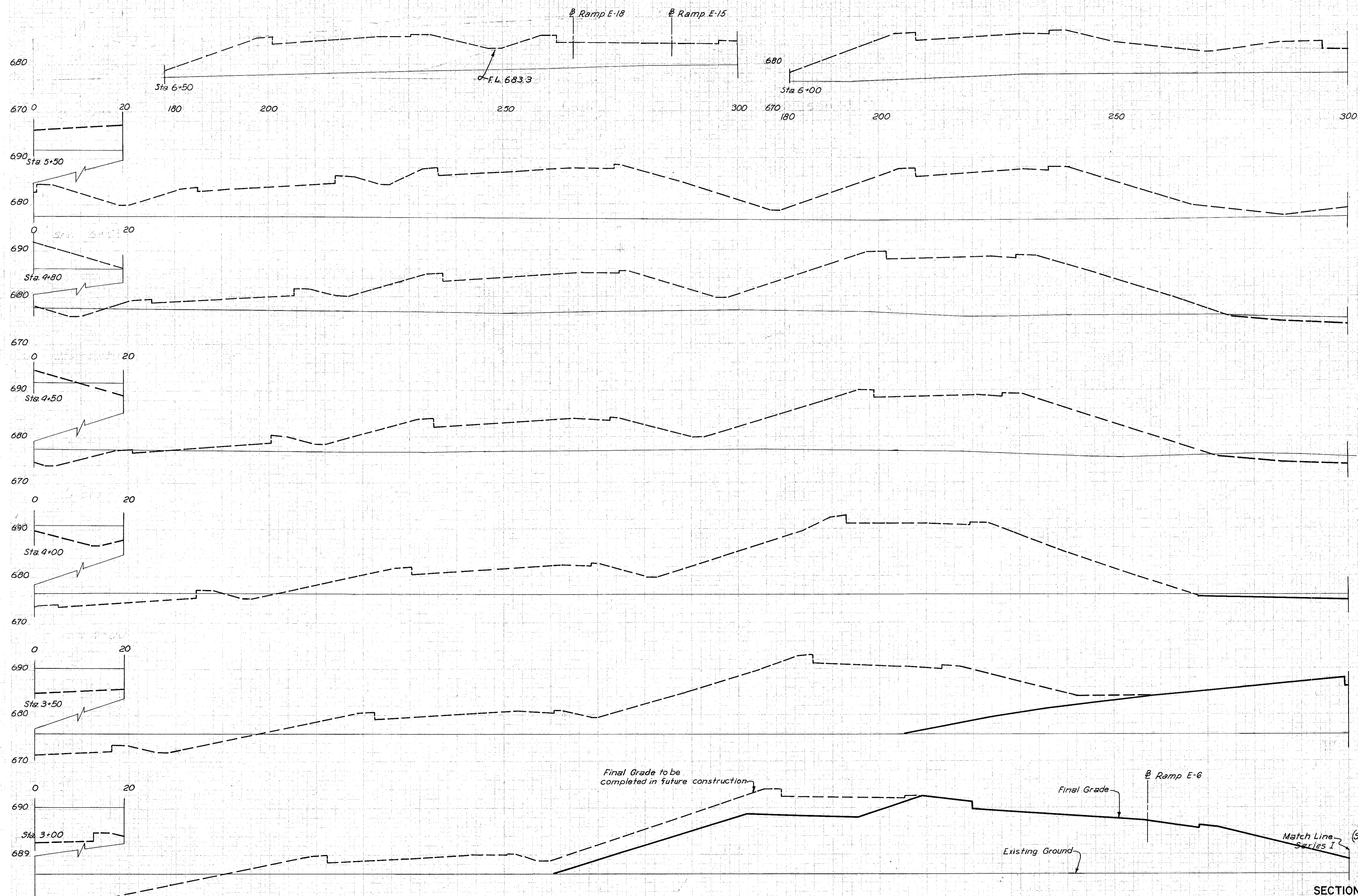
SCALE 1"=10'  
MADE F.L.S. DATE 9-7-58 HOWARD, NEEDLES, TAMMEN & BERGENOFF  
TRCD. M.D.H. DATE 1-20-59 CONSULTING ENGINEERS  
CKD. G.M.G. DATE 2-25-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 79

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

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



CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ. YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
				0	0		
						0	0
				0	0		
						0	0
				0	0		
						0	0
				0	0		
						0	0
				0	0		
						0	0
				0	0		
						20	0
				22	0		
						20	646
				0	698		
						0	2277
				0	1761		
				8	3306		
				9	1809		

SERIES J

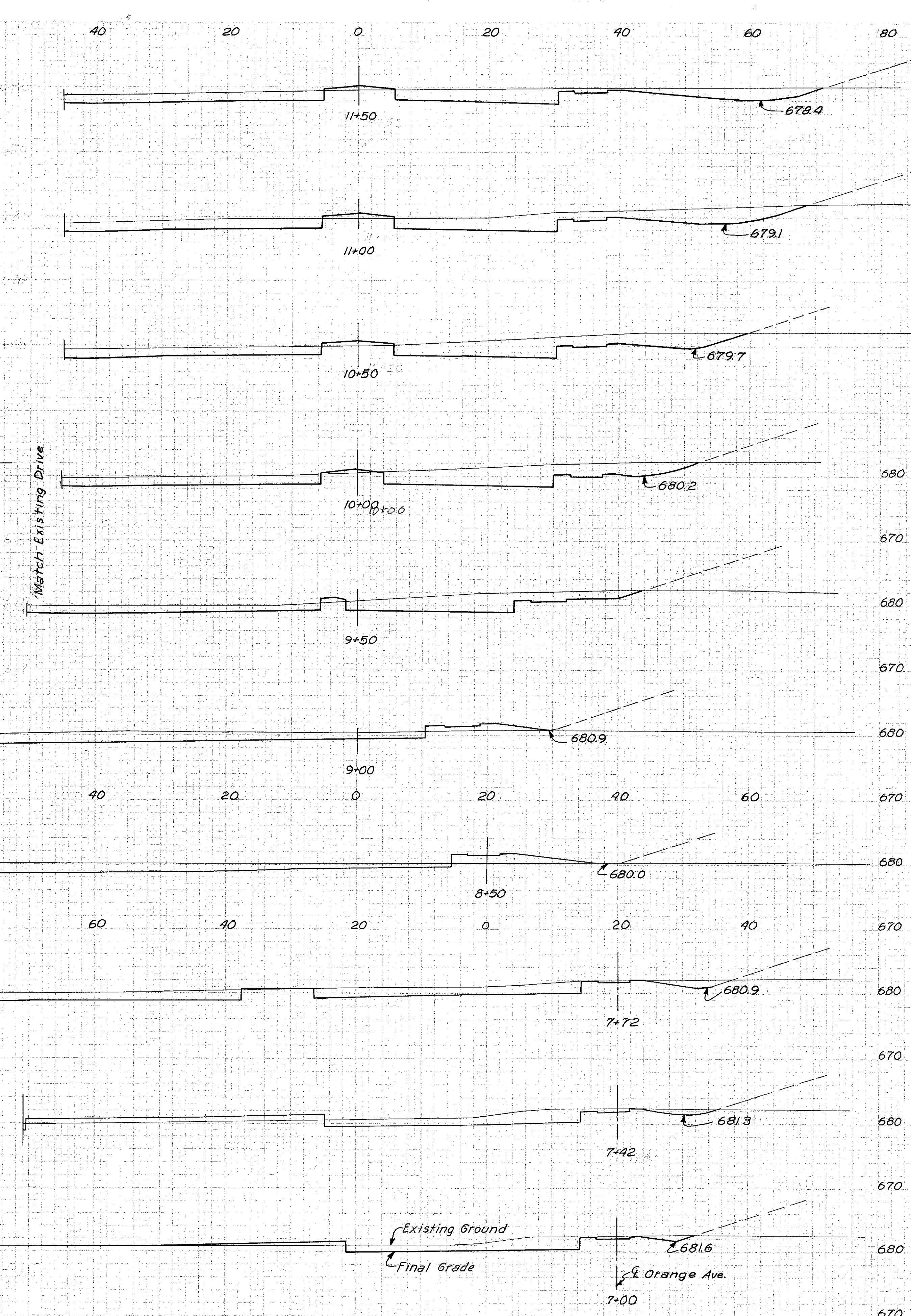
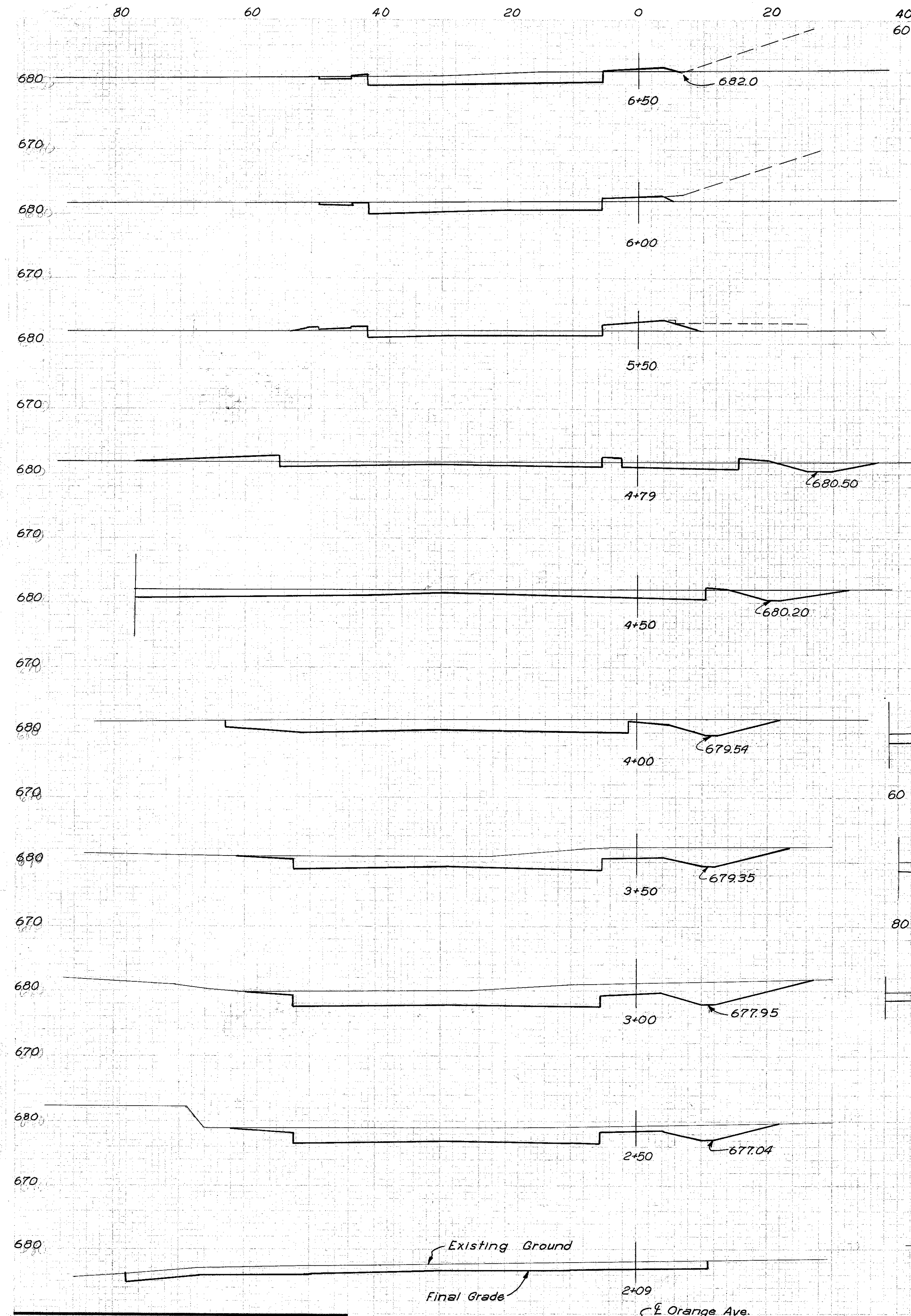
SECTIONS RIGHT OF STA. 66+00 INNER BELT  
STA. 3+00 TO STA. 6+73

SCALE: 1"=10'  
MADE F.L.S. DATE 8-8-58  
TRCD. M.C.H. DATE 1-24-59  
CKD. C.M.C. DATE 2-25-59

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		

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



STATION	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L.F.	SQ. YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
11+50					143	4		
11+00					184	6	303	9
10+50					168	7	326	12
10+00					163	2	306	8
9+50					133	3	274	5
9+00					95	13	211	15
8+50					84	25	166	35
7+72					132		312	38
7+42					69	28	112	16
7+00					59	13	100	32
6+50					55	3	106	24
6+00					55	9	102	11
5+50					28	18	77	25
4+79					66	15	124	43
4+50					98	1	88	9
4+00					138	0	219	1
3+50					146	0	263	0
3+00					193	0	314	0
2+50					143	0	311	0
2+09					111	0	193	0

SERIES K  
ORANGE AVE. SECTIONS  
STA. 2+09 TO STA. 11+50

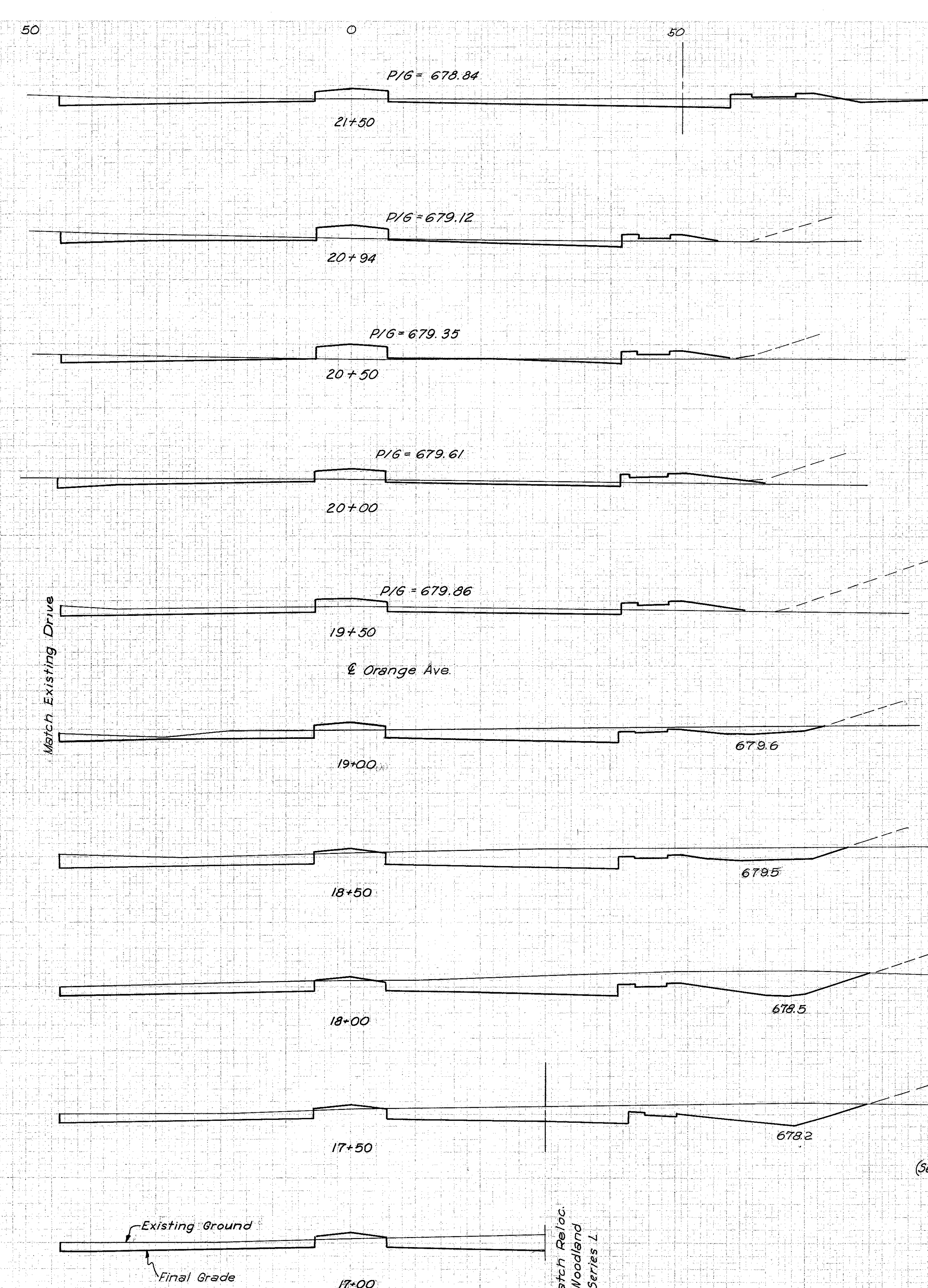
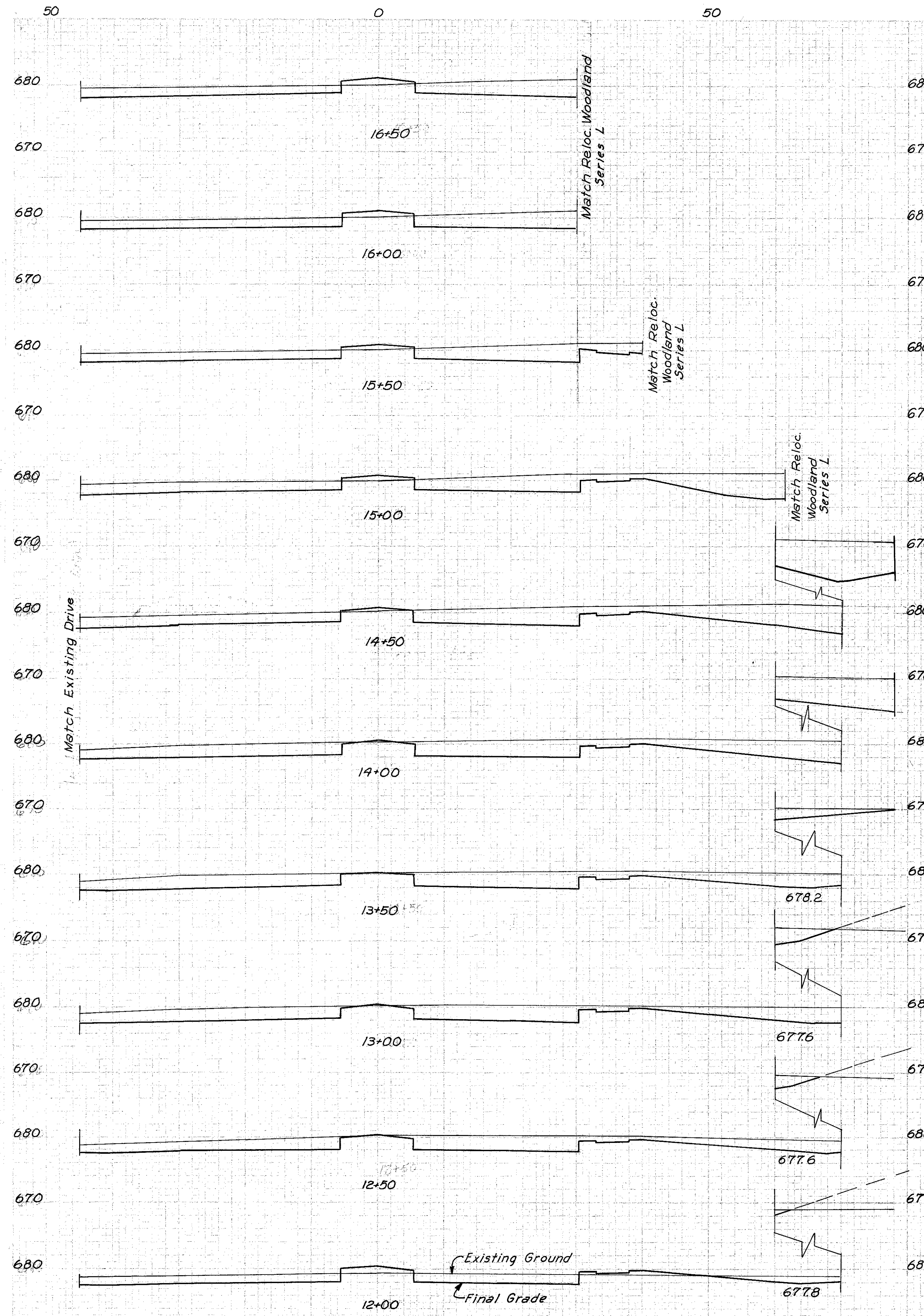
SCALE 1"=10'  
MADE E.L.S. DATE 8-18-58 HOWARD, NEEDLES, TAMMEN & BERGENOFF  
TRCD. MDH. DATE 2-3-59 CONSULTING ENGINEERS  
CKD. G.M.G. DATE 2-25-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 81



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

82  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



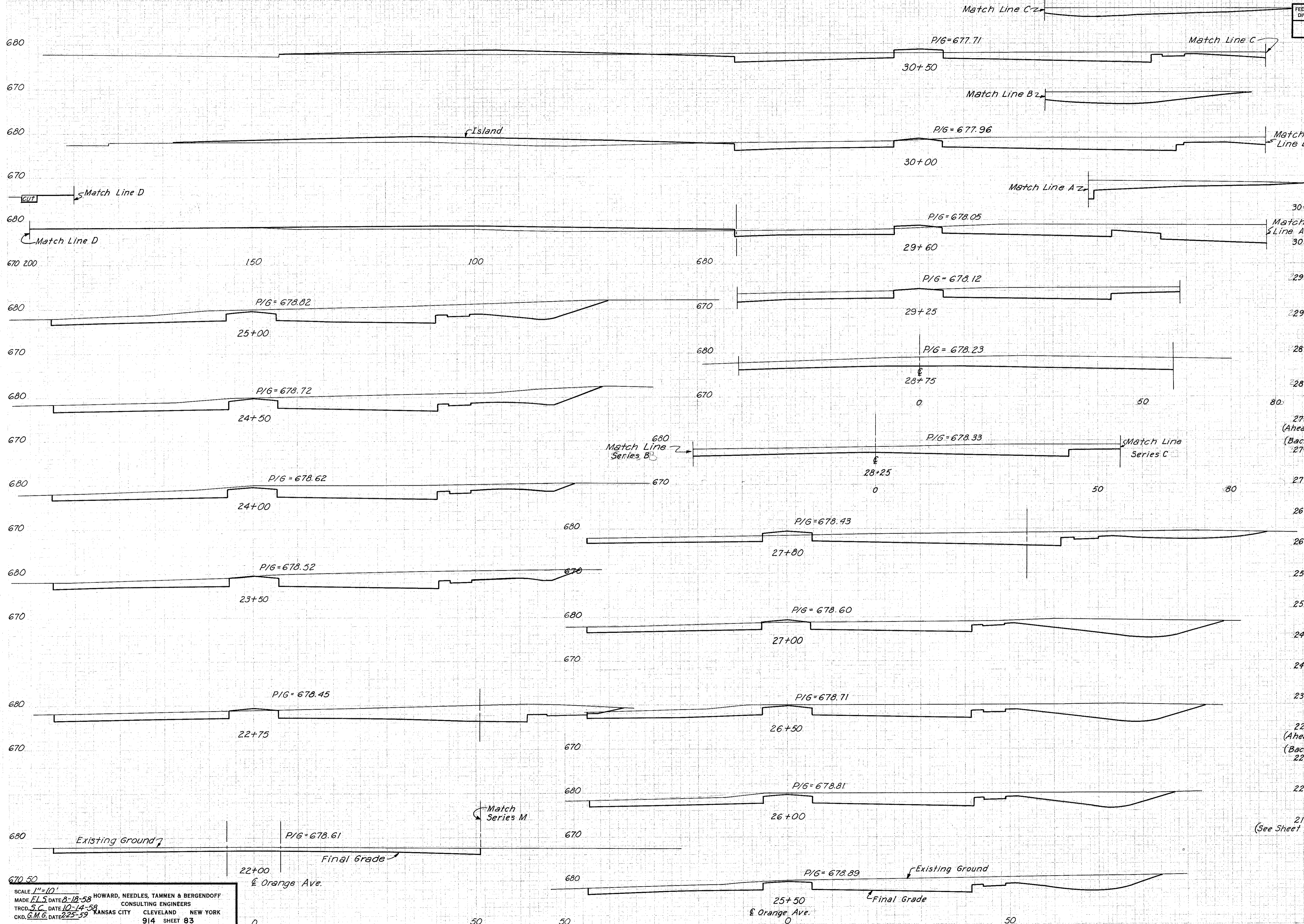
STATION	SEEDING		SUBBASE		EARTHWORK			
	WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
	L.F.	SQ. YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
21+50					89	28		
20+94					50	33	144	63
20+50					32	42	67	61
20+00					55	39	81	75
19+50					59	32	106	66
19+00					145	8	189	37
18+50					206	7	325	14
18+00					243	2	416	8
17+50 (Ahead)					210	6	419	7
17+50 (Back)					100	6	179	13
17+00					93	8	177	16
16+50					98	9	183	17
16+00					100	9	187	16
15+50 (Ahead)					102	8	278	14
15+50 (Back)					117	8	452	9
15+00					183	7	540	4
14+50					305	3	454	1
14+00					278	1	379	0
13+50					212	0	354	0
13+00					197	0	268	11
12+50					185	0	229	15
12+00					104	12		
11+50 (See Sheet 81)					143	4		

SERIES K  
ORANGE AVE. SECTIONS  
STA. 12+00 TO STA. 21+50

SCALE 1" = 10'  
MADE E.L.S. DATE 3-18-58  
TRCD. S.C. DATE 10-14-58  
CKD. G.M.E. DATE 2-25-59  
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	83 175
2	OHIO			

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

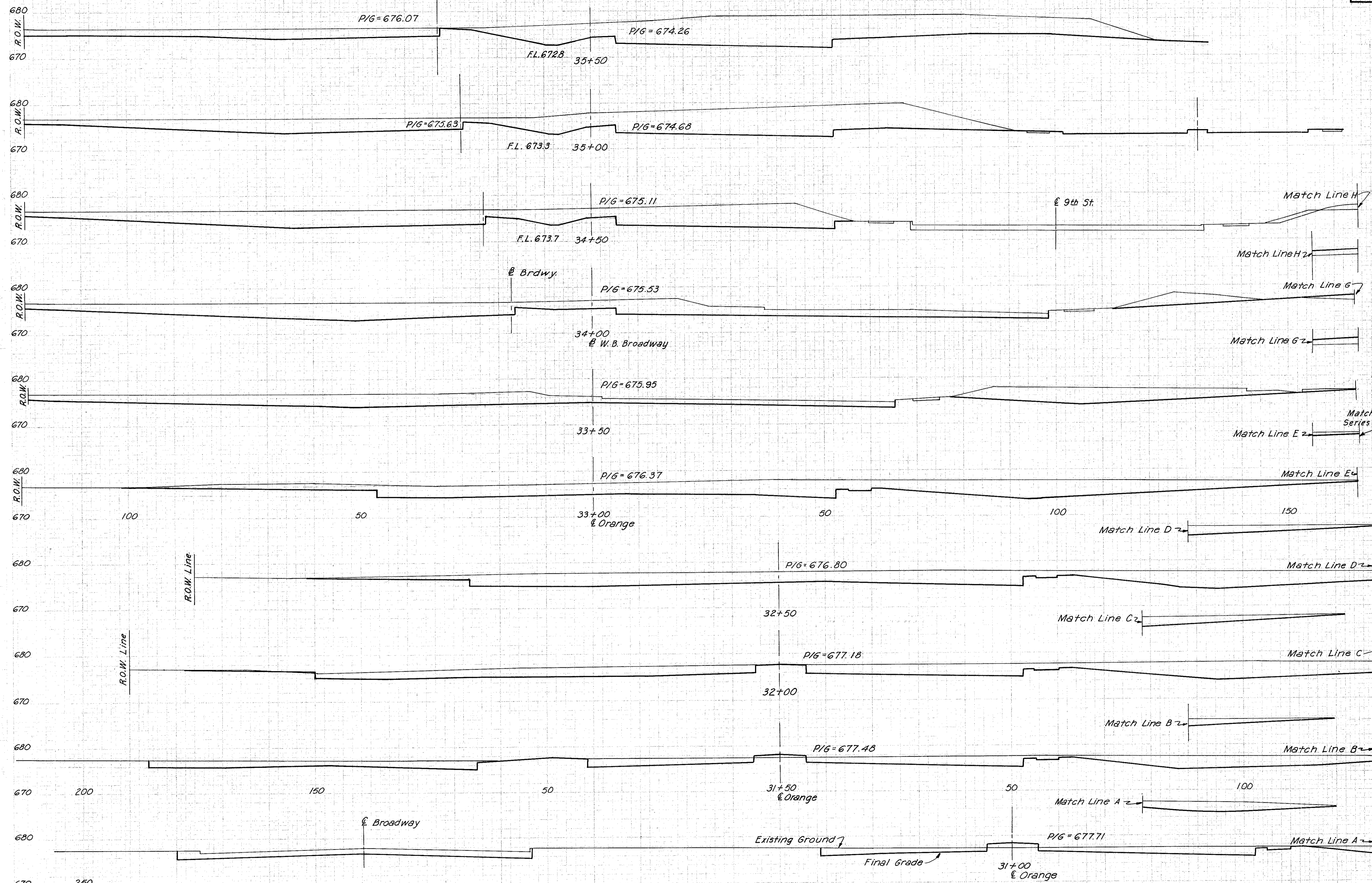


SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA	VOLUME		
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
						345	54
						331	111
						182	2
						174	1
						214	0
						167	0
						159	8
						264	8
							813
						285	5
						315	0
						274	0
						292	0
						321	0
						273	0
						229	0
						252	0
						267	3
						188	3
						96	0
						75	18

SERIES K  
ORANGE AVE. SECTIONS  
STA. 22+00 TO STA. 30+50

SCALE 1"=10'  
MADE F.L.S. DATE 8-18-58 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
TRCD. S.C. DATE 10-14-58 CONSULTING ENGINEERS  
CKD. G.M.G. DATE 2-25-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 83

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829



STATION	SUBBASE		EARTHWORK			
	AREA	VOL.	END AREA	VOLUME		
	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
35+50			817	0		
35+00			744	0	1445	0
34+50			667	19	1306	18
34+00			550	19	1127	35
33+50			534	2	1004	19
33+00			678	0	534	2
32+50			682	0	1122	2
32+00			597	0	1259	0
31+50			500	10	682	0
31+00			302	11	1184	0
30+50			245	54	597	0
					1016	9
					743	19
					506	60

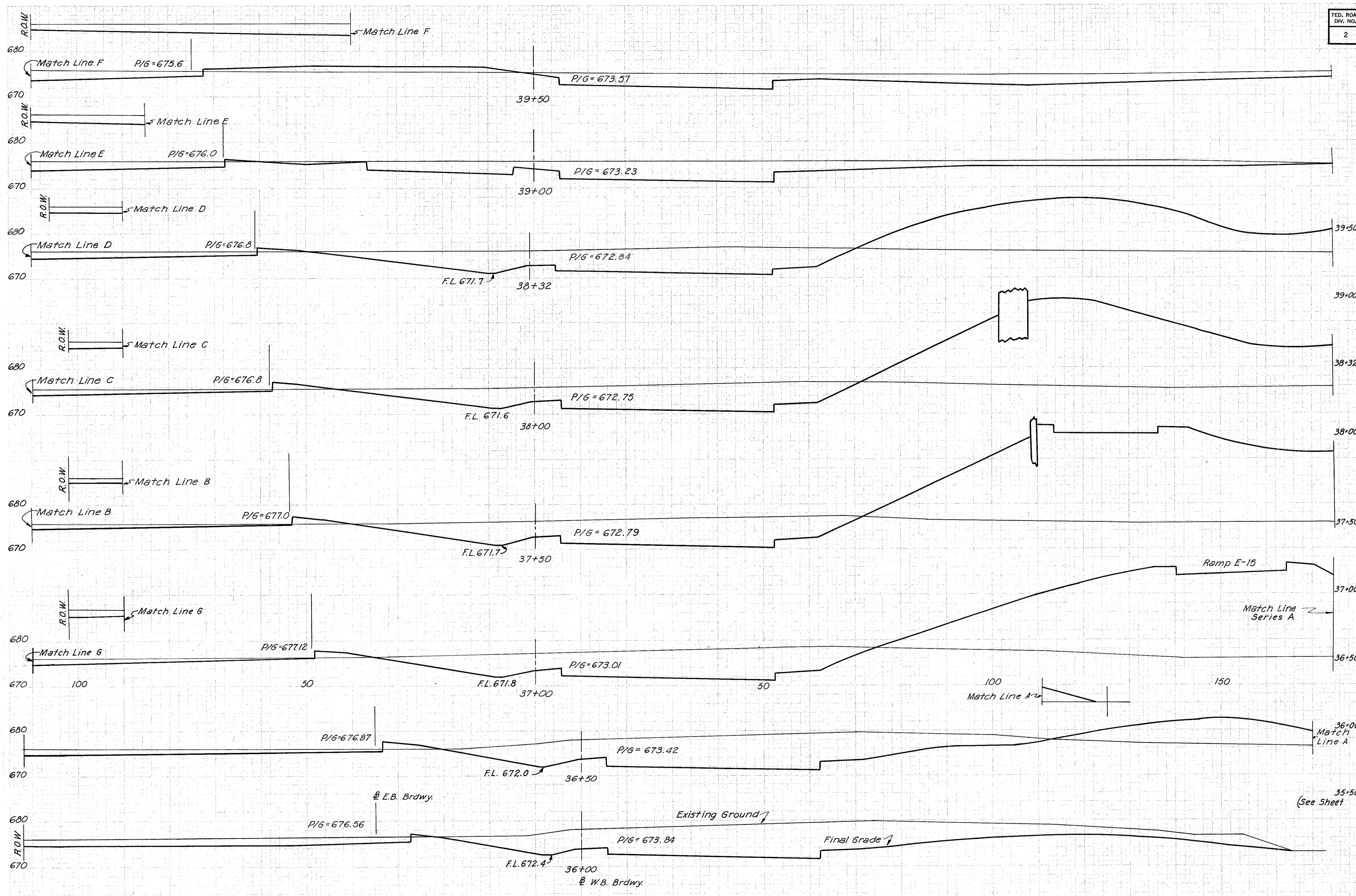
SERIES K  
ORANGE AVE SECTIONS  
STA. 31+00 TO STA. 35+50

SCALE 1"=10'  
MADE E.L.S. DATE 8-18-58  
TRCD. S.C. DATE 10-14-58  
CKD. C.M.G. DATE 2-25-59

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

200 150 100 50 0 50

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
				649	70		
						1180	66
				625	1		
						1497	991
				564	786		
						658	1213
				547	1261		
						1001	2674
				534	1627		
						1006	2818
				553	1413		
						1163	1565
				703	274		
						1440	255
				852	1		
						1545	1
				817	0		

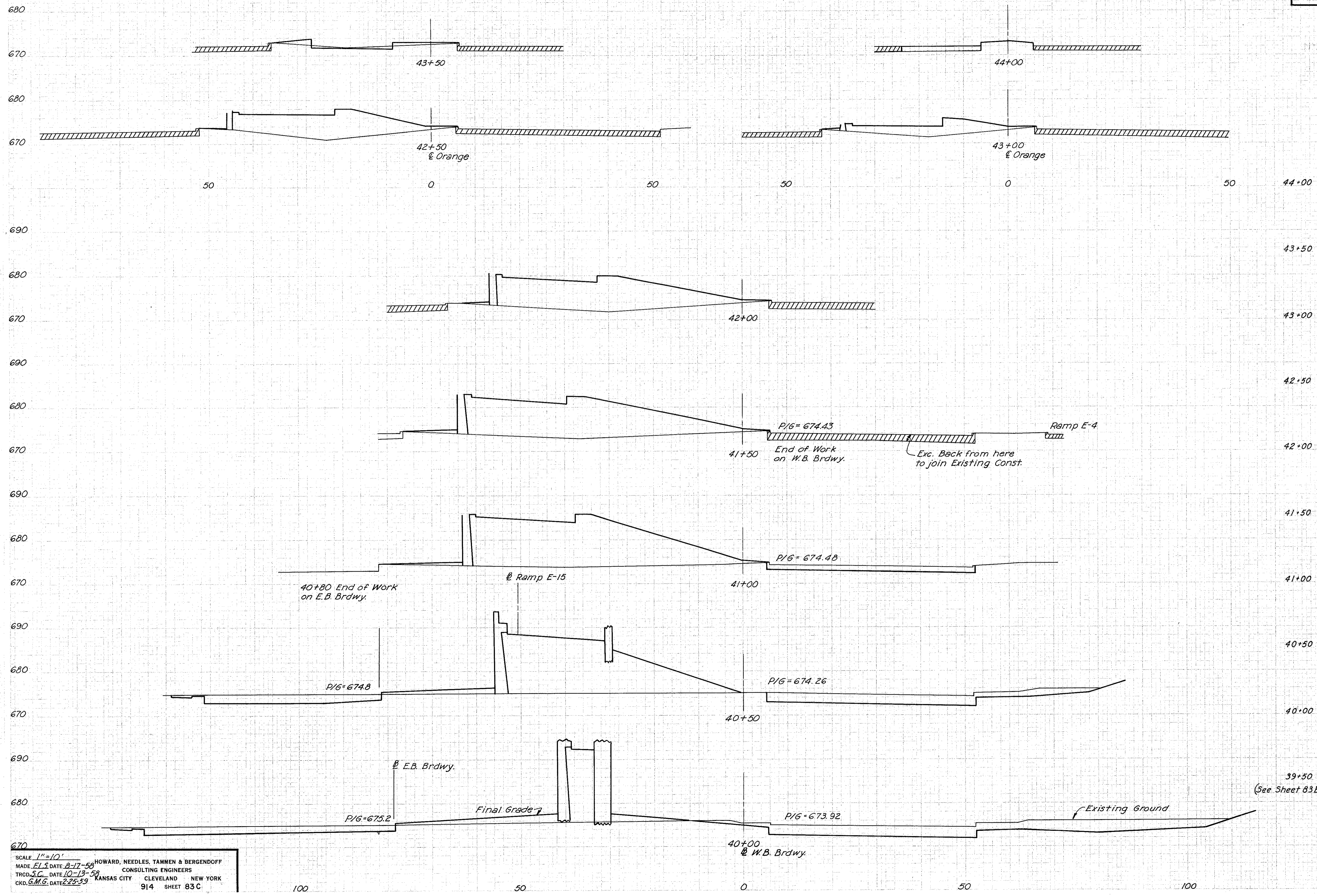
SCALE 1"=10'  
MADE F.L.S. DATE 8-18-58  
TRCD. S.C. DATE 10-14-58  
CKD. S.M.G. DATE 2-25-59

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

914 SHEET 83B

SERIES K  
ORANGE AVE. SECTIONS  
STA. 36+00 TO STA. 39+50

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



SEEDING		SUBBASE		EARTHWORK			
WIDTH	AREA	AREA	VOL.	END AREA		VOLUME	
L.F.	SQ.YD.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
						24	0
							29
						7	15
							6
						0	84
							0
						0	202
							0
						0	312
							0
						82	413
							132
						61	519
							256
						215	489
							504
						329	171
							906
						649	70

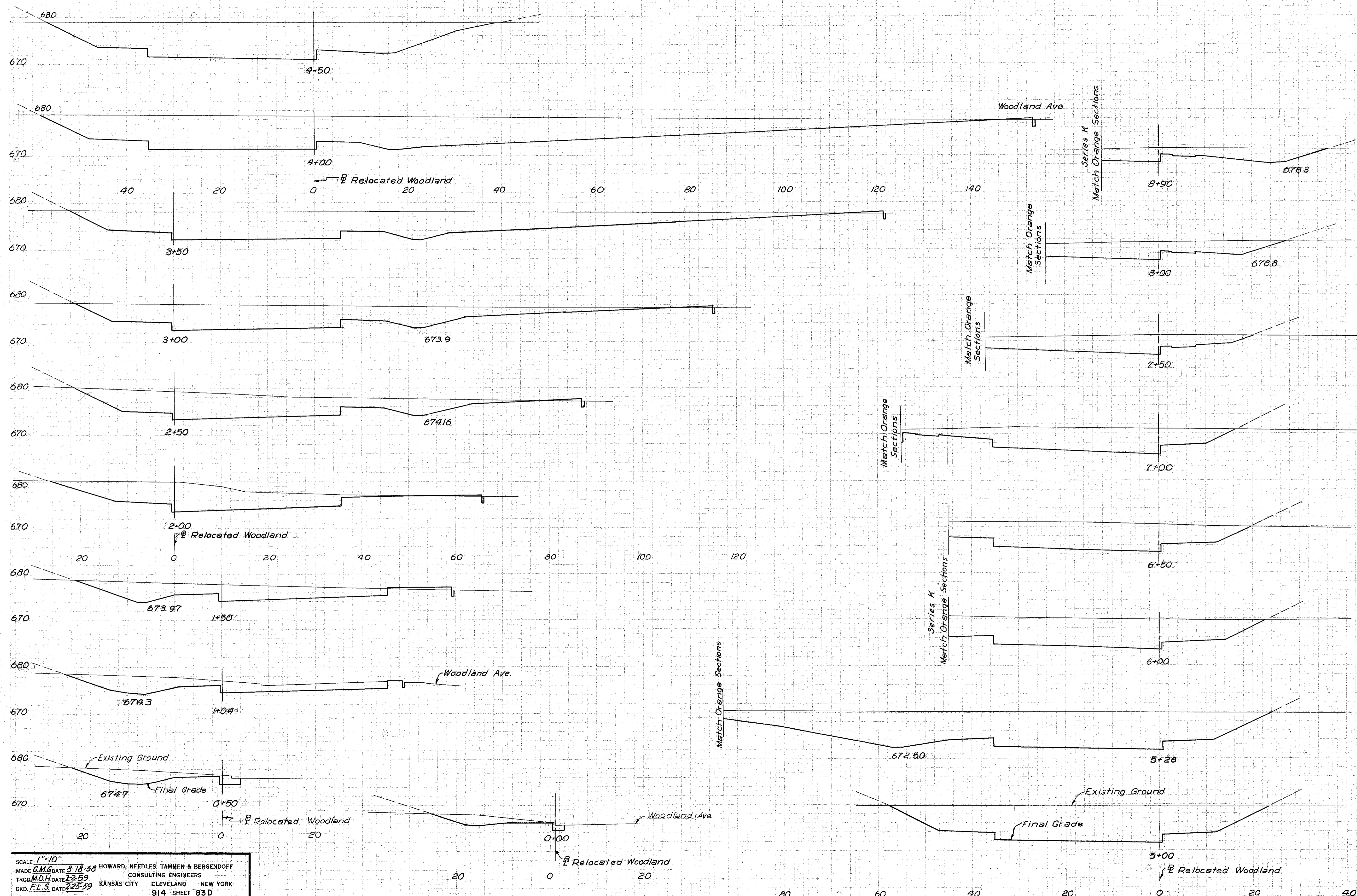
SERIES K  
ORANGE AVE SECTIONS  
STA. 40+00 TO 44+00

SCALE 1"=10'  
MADE E.L.S. DATE 8-17-58 HOWARD, NEEDLES, TAMMEN & BERGENOFF  
TRD. DATE 10-13-58 CONSULTING ENGINEERS  
CKD. DATE 2-25-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 83 C

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

83D  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



STATION	SUBBASE		EARTHWORK			
	AREA	VOL.	END AREA	VOLUME		
STA.	S.F.	C.Y.	EXC.	EMB.	EXC.	EMB.
8 + 90			110	0		
8 + 00			136	0	410	0
7 + 50			169	0	282	0
7 + 00 (Ahead)			256	0		394
7 + 00 (Back)			242	0		501
6 + 50			299	0		597
6 + 00			346	0		1391
5 + 28			697	0		613
5 + 00			485	0		945
4 + 50			536	0		1331
4 + 00			901	2		1401
3 + 50			612	1		933
3 + 00			396	1		662
2 + 50			319	2		500
2 + 00			221	1		364
1 + 50			172	7		263
1 + 04			137	1		200
0 + 50			63	0		92
0 + 00			36	0		

SERIES L  
RELOCATED WOODLAND SECTIONS  
STA. 0+00 TO STA. 8+90

SCALE 1"=10'  
MADE C.M.G. DATE 8-18-58 HOWARD, NEEDLES, TAMMEN & BERGENOFF  
TRCD. M.D.H. DATE 2-2-59 CONSULTING ENGINEERS  
CKD. F.L.S. DATE 2-25-59 KANSAS CITY CLEVELAND NEW YORK  
914 SHEET 83D



**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 FIRST COAT OF RED LEAD PAINT APPLIED IN THE SHOP ON CLEAN METAL SURFACES PREPARED FOR PAINTING AS SPECIFIED IN SEC. S-8.03.
  - 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.
  - 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.
  - 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
- 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 <sub>2</sub> )-----	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.

- 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) 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<sub>3</sub>: Pb(OH)<sub>2</sub>. IT SHALL MEET THE FOLLOWING COMPOSITION REQUIREMENTS:

	MAXIMUM PER CENT	MINIMUM PER CENT
BASIC CARBONATE WHITE LEAD		
LEAD CARBONATE (PbCO <sub>3</sub> )-----	75	65
LEAD HYDROXIDE (Pb(OH) <sub>2</sub> )-----	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.	---

- 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 51-6.

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, EXCEPT AS OTHERWISE NOTED. 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 SHEET 59-6 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 59-6 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 CONCRETE. 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 159 AND 160 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 SHEETS 51-6 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 159-6. 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 BRIDGE NOS. 1, 2, 6 AND 7 ALL PARTS OF THE SUPERSTRUCTURE STEELWORK AND THE CONDUIT AND EQUIPMENT FOR THE LIGHTING SYSTEM SHALL BE THOROUGHLY GROUNDED AT TWO PIER COLUMNS. A SOLID NO. 0 BARE COPPER WIRE SHALL BE EMBEDDED IN THE OUTSIDE COLUMN ON EACH SIDE OF THE STRUCTURE AT A FIXED PIER, AS NOTED ON THE PLANS. 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 TO THE SUPERSTRUCTURE. AT EACH SUCH PIER COLUMN THE GIRDETS OR BEAMS SHALL BE GROUNDED BY A NO. 6 COPPER WIRE BOLTED 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 BRIDGE NOS. 4, 8, 9, 10 AND 11, A SOLID NO. 0 BARE COPPER WIRE SHALL BE EMBEDDED IN THE PIER COLUMNS AS NOTED ABOVE.

FOR OTHER DESCRIPTIVE NOTES OF THE LIGHTING SYSTEM SEE SHEETS 51-6 AND 159-6.

**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:

- "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 RIGID GALVANIZED ELBOW, SCREWS, BOLTS, NUTS, WASHERS, AND ALL MODIFICATIONS AND INCIDENTALS REQUIRED.

RECORDED  
 JUL 8 1959

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

91A  
 175

CUYAHOGA COUNTY  
 CITY OF CLEVELAND  
 CUY - 42-18.29

B. "LIGHT STANDARD ON STRUCTURE, 6-FOOT BRACKET" PER EACH, AS PER PLAN, AND SHALL INCLUDE 6-FOOT STEEL BRACKET AND ALL FEATURES SPECIFIED FOR "LIGHT STANDARD ON STRUCTURE, 10-FOOT BRACKET" EXCEPT POLE FOR 28-FOOT MOUNTING HEIGHT, WHICH WILL BE FURNISHED AND DELIVERED TO THE SITE BY THE CLEVELAND TRANSIT SYSTEM AND INSTALLED BY THE CONTRACTOR UNDER THIS ITEM.

C. "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.

D. "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.

E. "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.

F. "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.

G. "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.

H. "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.

I. "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.

J. "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.

K. "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 51-6.

*Cross references are to sheets in Part G.*

*CONSTRUCTION UNDER OTHER CONTRACTS:  
 Reference to work under other contracts (future) shall be considered void.*

**PART 6**

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 10-4-59	DATE	DATE 11-10-59	DATE 11-12-59	SHEET 91A





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JUL 8 1985

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42 - 18.29

ESTIMATED QUANTITIES																								
ITEM	DESCRIPTION	UNIT	BRIDGE NO. 4 I-71-5(6)247			BRIDGE NO. 8 I-71-5(6)247			BRIDGE NO. 9 I-71-5(6)247			BRIDGE NO. 10 I-71-5(6)247			BRIDGE NO. 11 I-71-5(6)247			* E. 14th ST. RETAINING WALLS						
			PIERS	GENERAL	TOTAL	PIERS	GENERAL	TOTAL	PIERS	GENERAL	TOTAL	PIERS	GENERAL	TOTAL	PIERS	GENERAL	TOTAL	PIERS	GENERAL	TOTAL	WALL	GENERAL	TOTAL	
E-2	Cofferdams, Cribs and Sheeting	Lump Sum																						
E-2	Excavation for Structures (Unclassified)	Cu. Yd.	950		950	520		520	190		190	390		390			650		650			Lump Sum	Lump Sum	
S-1	Class "C" Concrete, Pier Columns & Caps	Cu. Yd.	365		365	190		190	75		75	150		150			245		245			50	50	
S-1	Class "C" Concrete, Walls	Cu. Yd.																				100	100	
S-1	Class "E" Concrete, Footings	Cu. Yd.	335		335	175		175	85		85	170		170			240		240			30	30	
S-3	Waterproofing, Premolded Sealing Strip	Lin. Ft.																				7300	7300	
S-4	Reinforcing Steel	Lbs.	125,000		125,000	49,700		49,700	21,800		21,800	50,300		50,300			70,100		70,100			20	20	
S-9	1" Gray Rubber Preformed Expansion Joint Filler	Sq. Ft.																						
S-16	First Test Pile (12" or 14" C.I.P.)	Lump Sum																					Lump Sum	
S-17	First Pile Test Load	Lump Sum																					Lump Sum	
S-17	Subsequent Pile Test Load	Ea.	1		1																		Lump Sum	
S-18	12" C.I.P. Reinforced Concrete Piles	Lin. Ft.																				1130	1130	
S-18	14" C.I.P. Reinforced Concrete Piles	Lin. Ft.	5,770		5,770	1,950		1,950	980		980	2,600		2,600	2014	2124	3,730		3,730					
S-25†	4" Rigid Galvanized Conduit	Lin. Ft.	25		25							25		25			25		25					
S-25†	1-Way Duct, 4 inch	Lin. Ft.		1	1								35		35	2014	51		60		60			
S-25	Electrical Grounds	Ea.		2	2			2	2			2		2			2		2					
S-29	Porous Backfill	Cu. Yd.																				70	70	
S-29	6" Perforated Bituminous Coated C.M.P. including Specials	Lin. Ft.																				170	170	
SS-18	Fence, Type "C", as per plan	Lin. Ft.																				188	188	

NOTES:

Pile Test Loads shall be performed only if required by the Engineer.

† 100 % City Participation

③ FIRST TEST PILE: Payment will be made for only one first test pile. It may be driven at either H.N.T.B. Bridge No. 8 or H.N.T.B. Bridge No. 9.

①, ② For additional quantities see sheets 99A and 99 - Part 7A

\* Included in Roadway Quantities on Sheet 71, Part 7-B.

H.N.T.B. BR. NO.	STATE BR. NO.
4	CUY - 42 - 1854
8	CUY - 21 - 1573 A
9	CUY - 21 - 1573 B
10	CUY - 21 - 1559
11	CUY - 21 - 1554

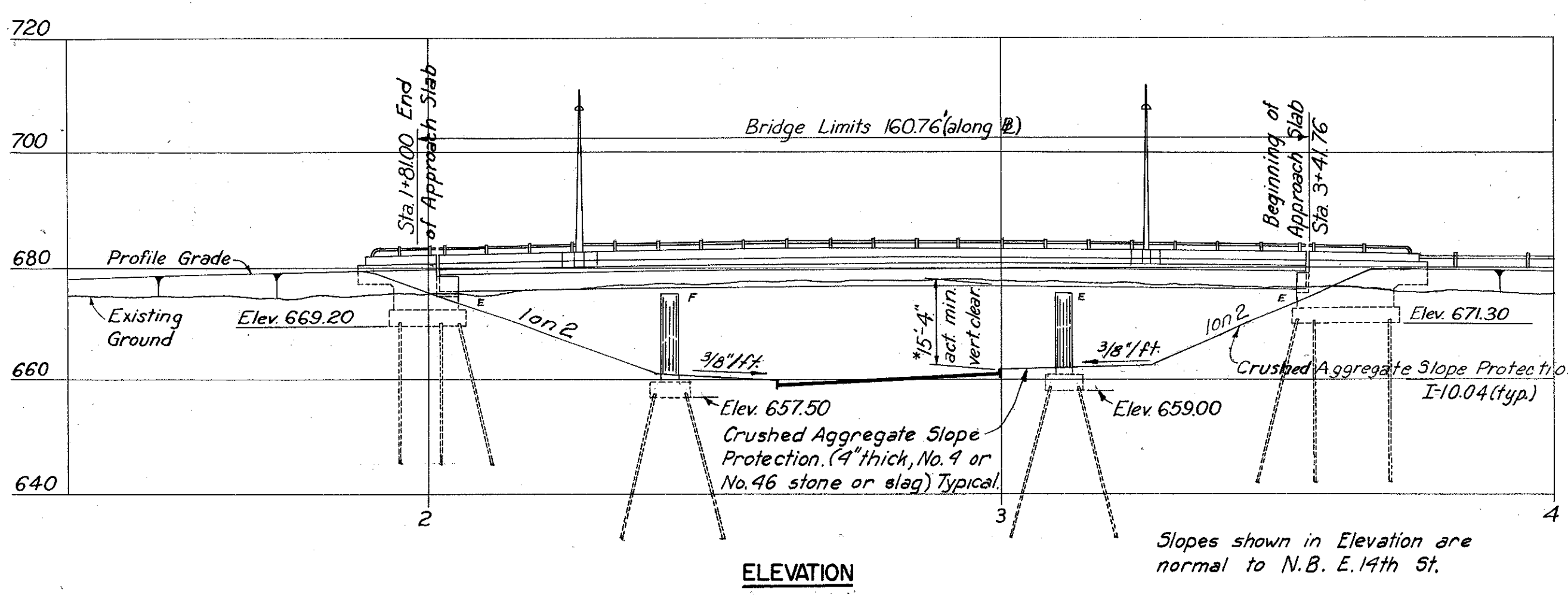
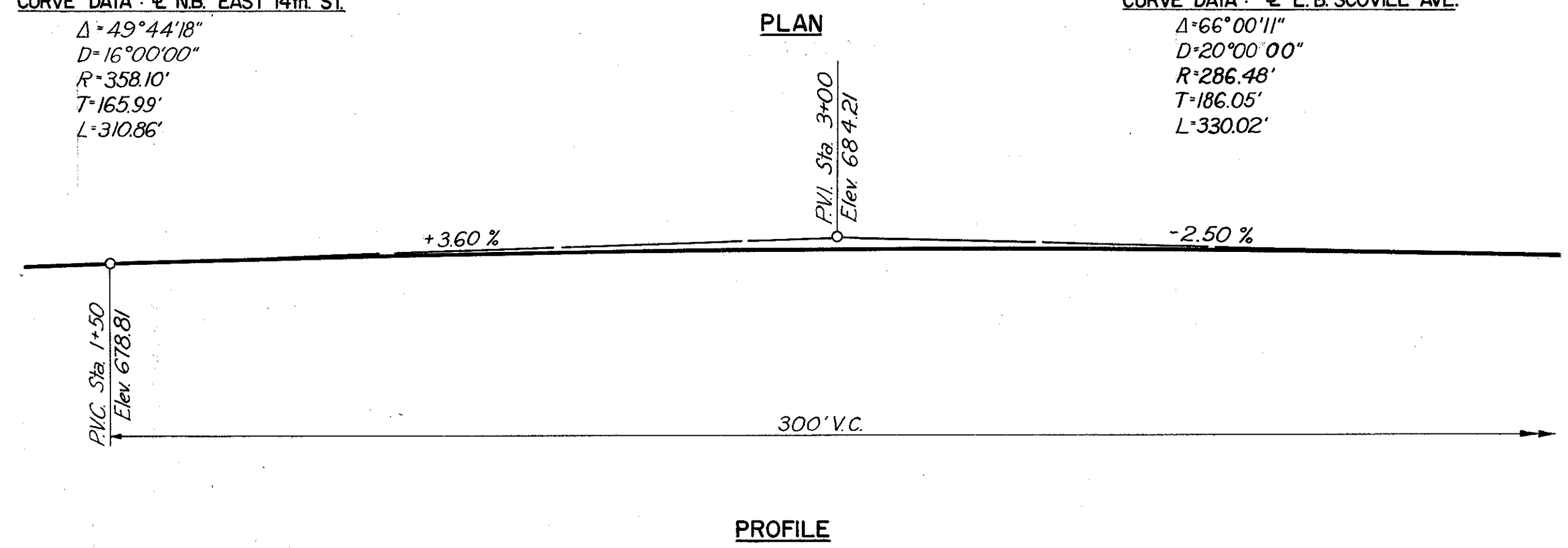
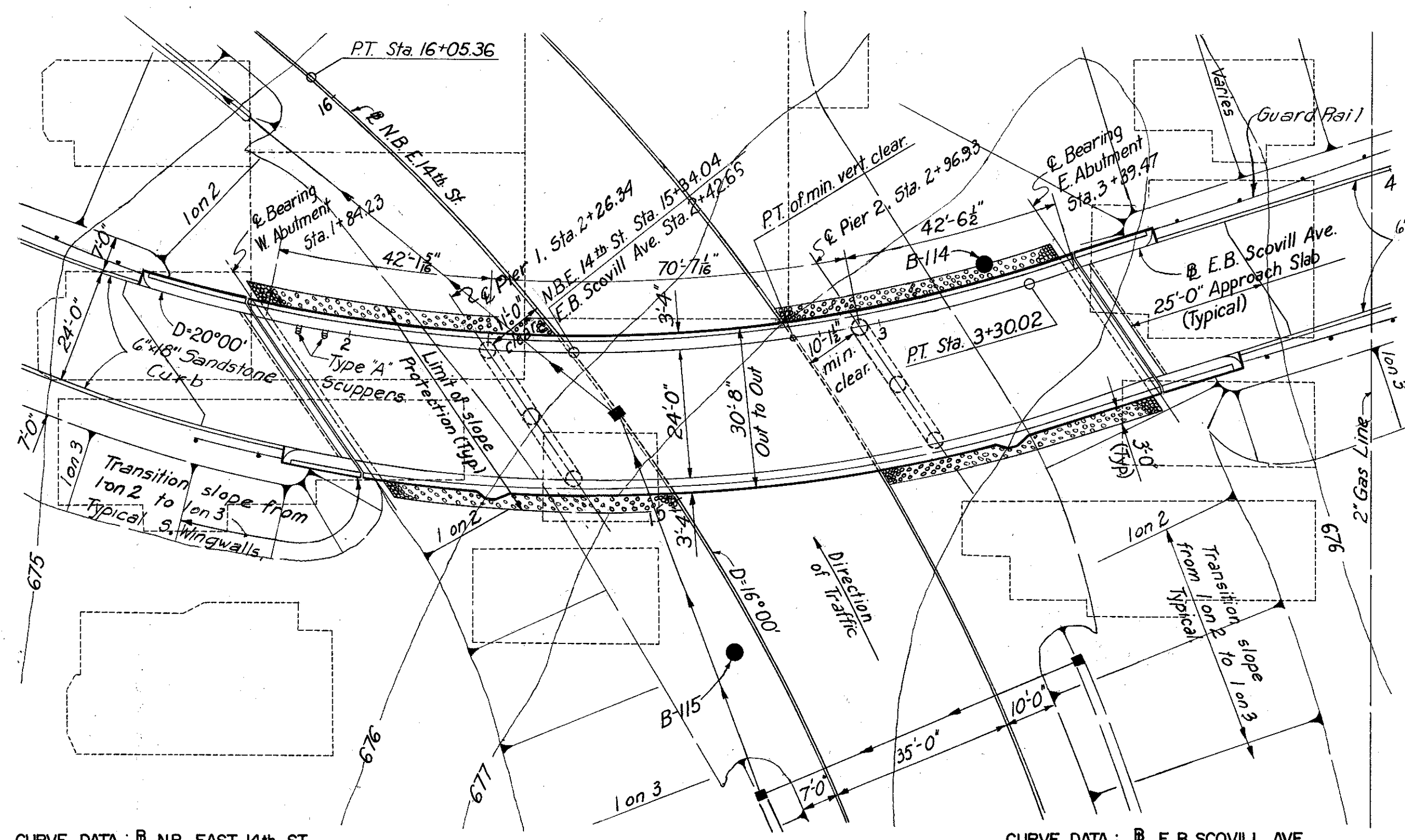
PART 6

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

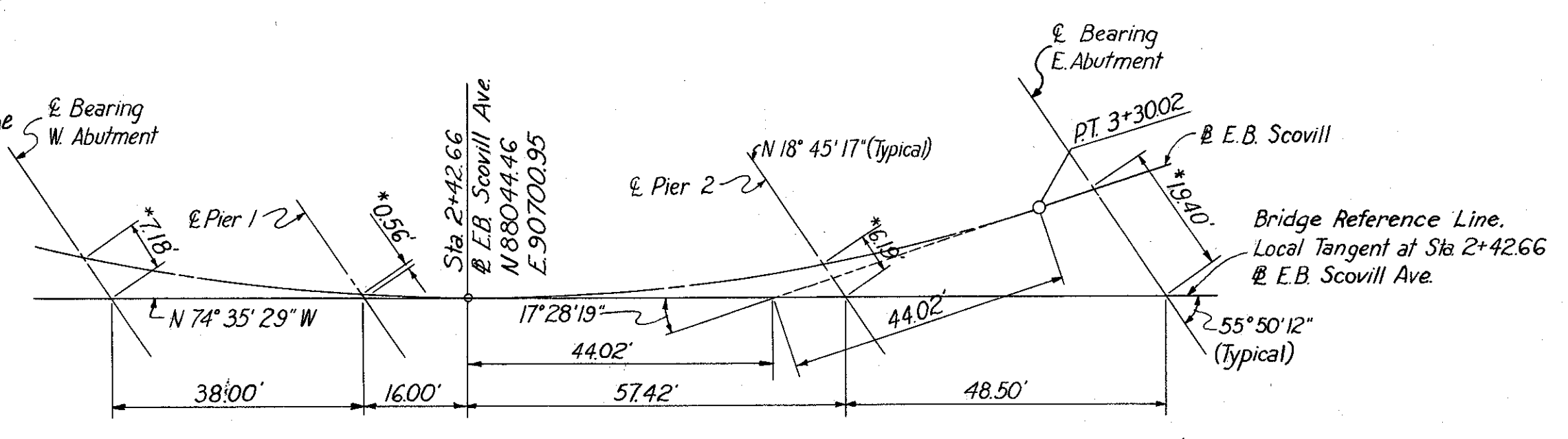
**ESTIMATED QUANTITIES**  
BR. NOS. 4, 8, 9, 10 & 11  
AND E. 14th ST. RETAINING WALLS  
WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN D.R.K.	TRACED	CHECKED A.E.K.	REVIEWED G.R.T.	REVISED
DATE 1-16-59	DATE 10-30-59	DATE 4-8-59	DATE 11-23-59	

SHEET 92A



Note: 15'-0" required minimum vertical clearance. Point of actual minimum vertical clearance occurs at the North beam of Br. 1 & East curb of Northbound East 14th St.



**BORING - 114**  
Vertical Scale: 1" = 20'  
Sta. 3+22 6' L.F.

Elev. 678.6	
673.6	Brown Sandy Gravel-Fill
668.6	Brown Sand
663.6	Brown Gravel & Sandstone Fragments
653.6	Gray Gravelly Sand
648.6	Gray Silty Gravelly Sand
638.6	Gray Silty Sand
628.6	Gray Sandy Silt
618.6	Gray Silt
613.6	Gray Sandy Silt
577.6	Gray Silt

Note: The figures to the left indicates the number of hammer blows required to drive the sampling spoon 1 ft. They are given at 5' intervals starting at elev. 678.6.

**PROPOSED STRUCTURE**

Type: Continuous steel beam with reinforced concrete deck and substructure.  
 Spans: 42'-1 1/2", 70'-7 1/2", and 42'-6 1/2" (along  $\mathbb{E}$ ).  
 Roadway: 24'-0" w/ 2'-0" safety curbs.  
 Loading: CF 2000-Adequate for A.A.S.H.O alternate loading.  
 Skew: Varies.  
 Surface Course: 1" Monolithic Concrete.  
 Alignment: 20'00" curve left.  
 Approach Slabs: AS-1-54 (25' Long)  
 Superelevation: Varies.

**PILE INFORMATION**

Location	Diameter	Number	Estimated ave. length
W. Abutment	12"	19	25'
E. Abutment	12"	14	27'
Pier 1	14"	13	26'
Pier 2	14"	13	27'

All piles 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.

**NOTES:**  
 Rod soundings only were taken at location B-115. The core drilling made at B-114 is plotted for details of slope protection, see Sheet 157-G. The following items are not included in the Bridge Plans. See Roadway Plans for details. Approach grading, pavement and slabs. Guard Rails.

STRUCT. STEEL = 146,000 lbs

H.N.T.B. BR. NO. 1 PART 6

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

**SITE PLAN**  
 E. B. SCOVILL OVER N. B. EAST 14th ST.  
 STA. 1+81.00  
 STA. 3+41.76  
 Scale: 1" = 20'

**WILLOW-INNER BELT FREEWAY**  
 CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN BY	TRACED BY	CHECKED	REVIEWED	REVISED
DATE 6-25-58	DATE 9/15/58	DATE 7-7-59	DATE 11-12-59	

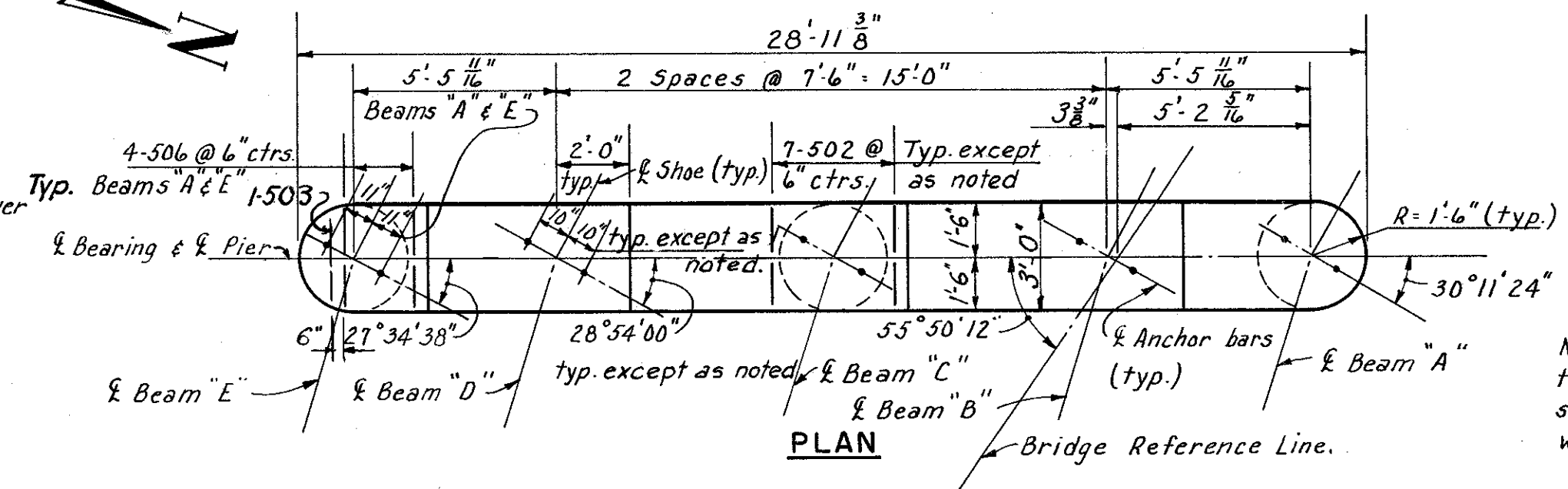
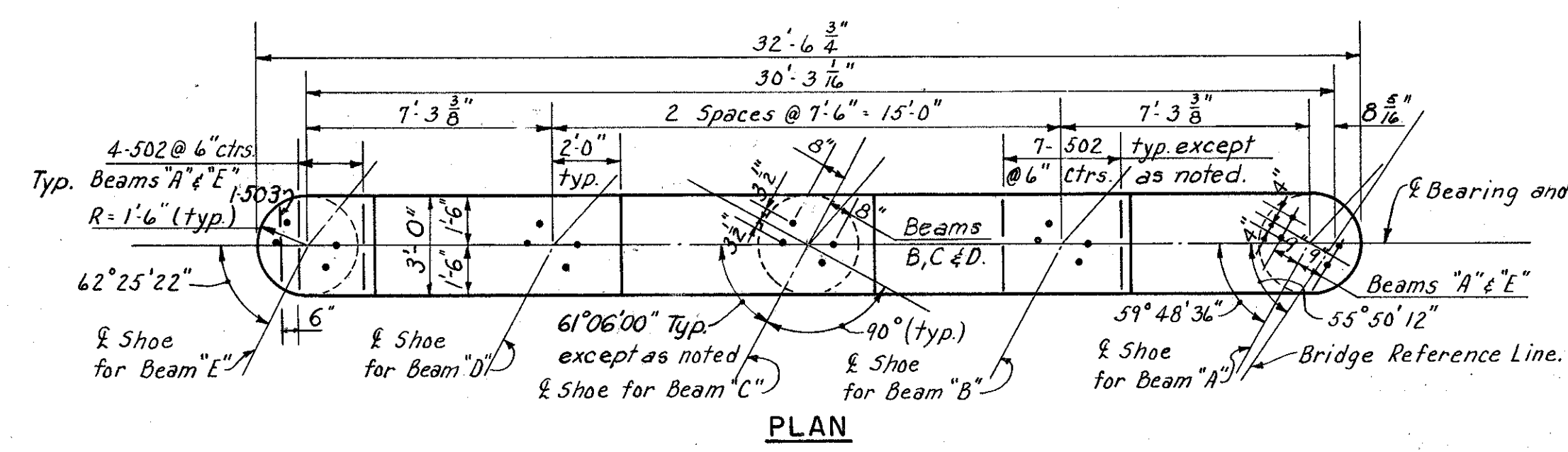
SHEET 93

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CUY-42-1829

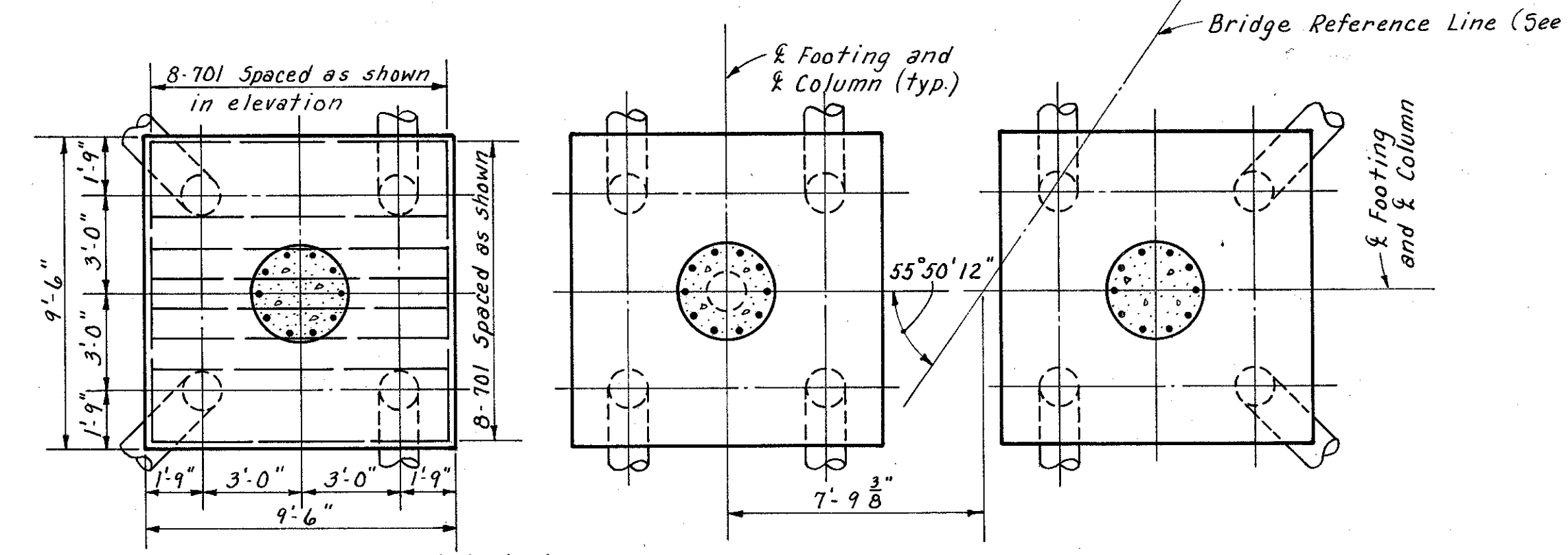
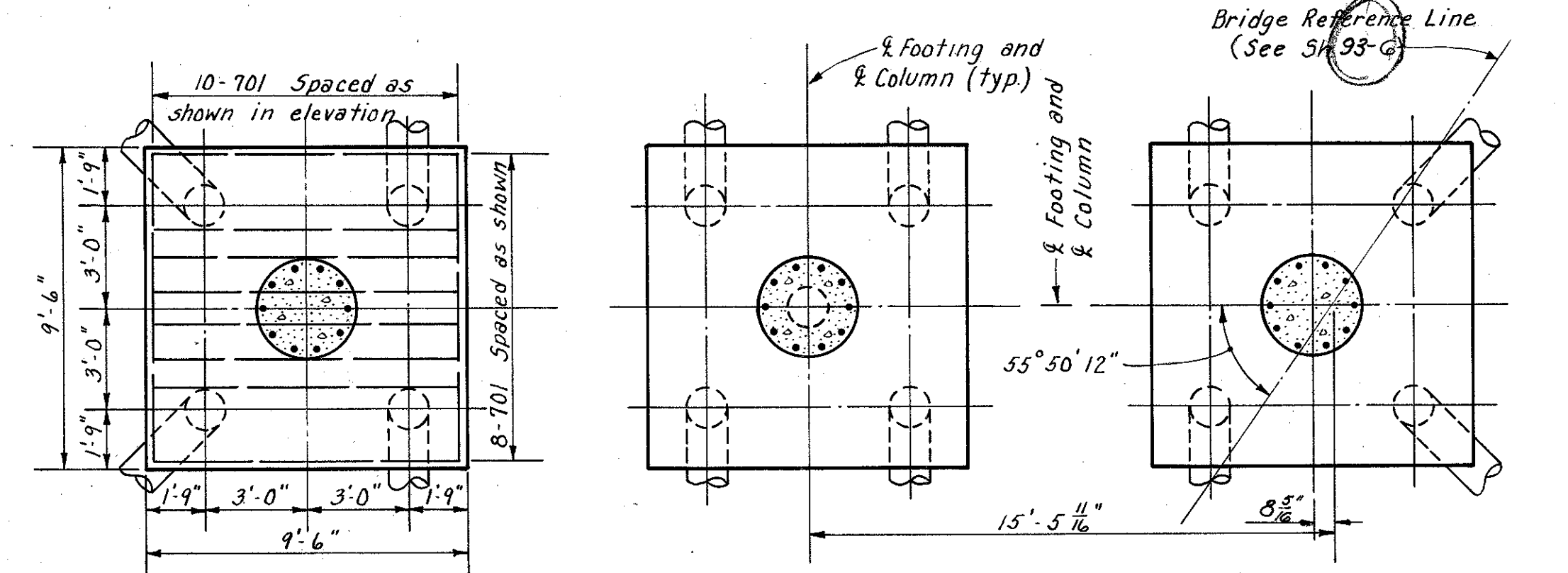
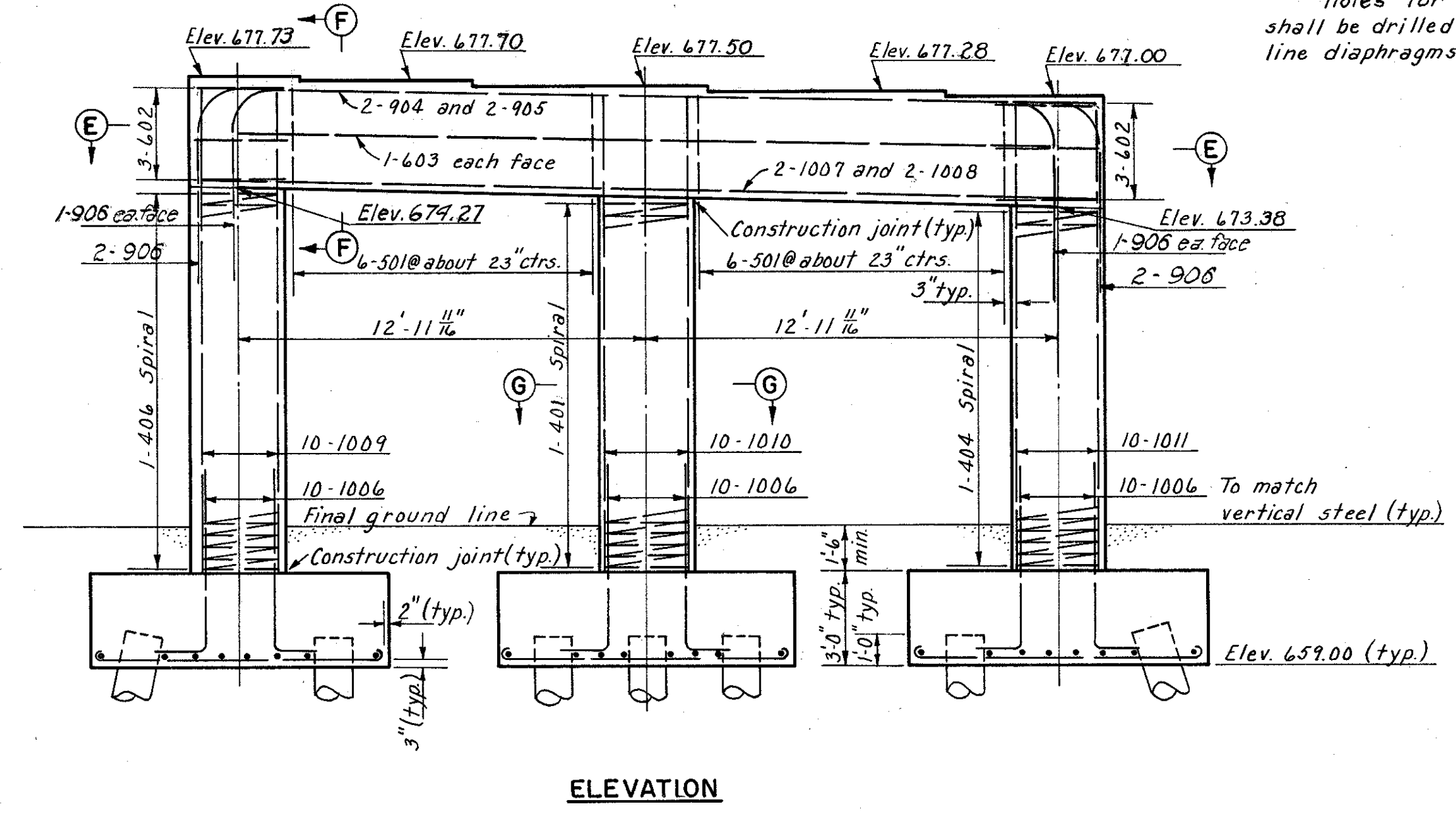
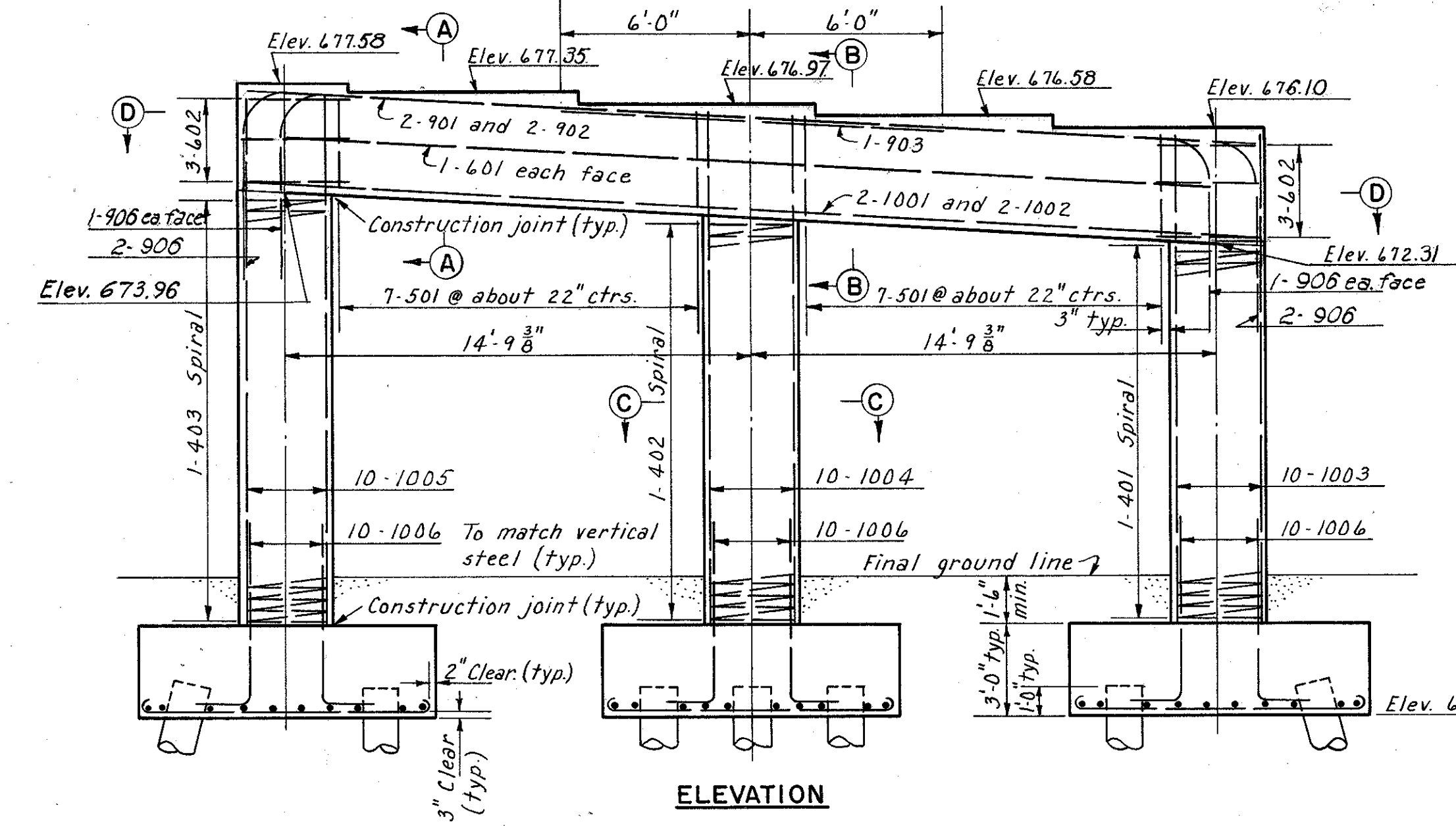
Note: Beam flanges will interfere with the setting of anchor bolts. See Sec. 5-0.03 of the Specifications.

Note: Provide electrical ground wire in outside columns of Pier 1. See notes on sheet 91-G.



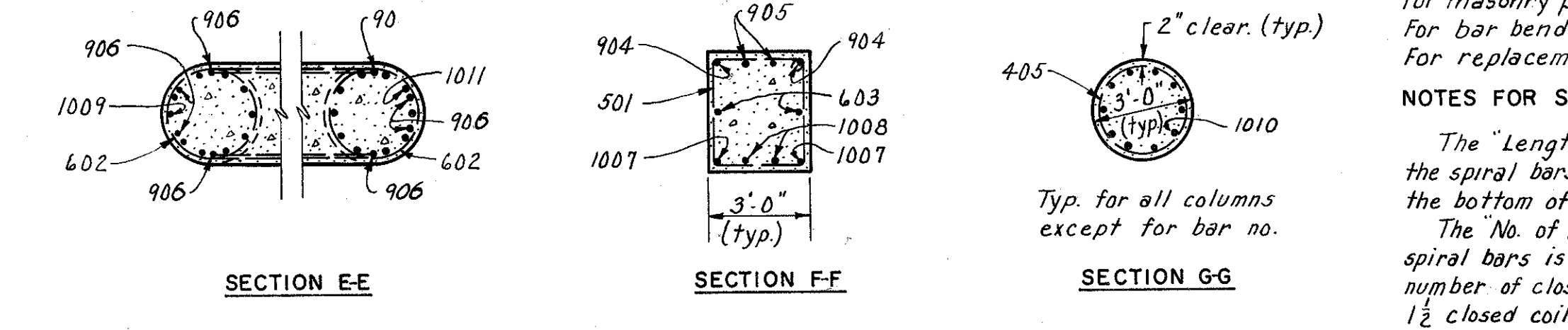
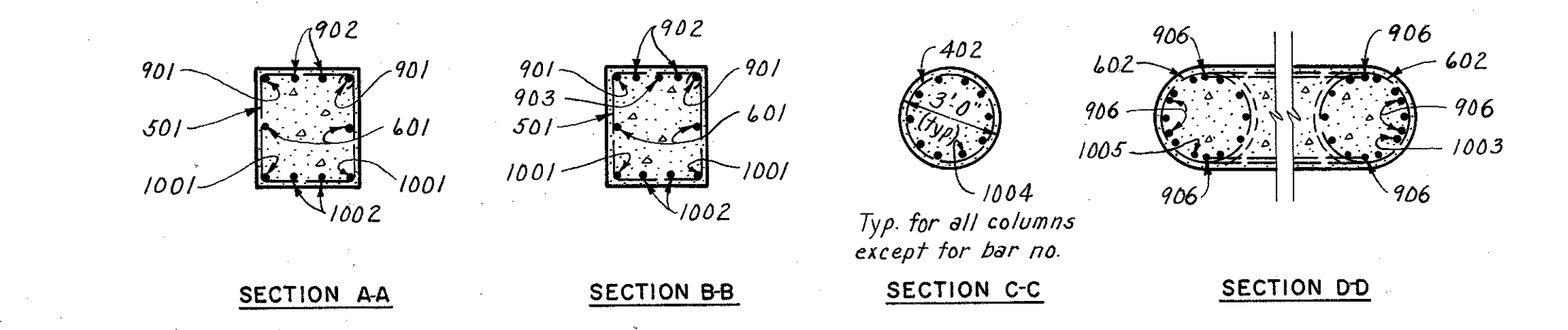
Note: Special care shall be taken when placing reinforcing steel so as not to interfere with shoe anchor bar setting.

Holes for anchor bars shall be drilled before bend line diaphragms are erected.



Note: Dimensions and steel typical for all footings.

Note: Dimensions and steel typical for all footings.



PIER 1

PIER 2

MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCREMENT	WEIGHT (LBS.)
				A	B	C	D		
501	26	12'-2"	109	2'-8"	3'-2"				330
502	58	3'-9"	105	2'-8"	8"				227
503	4	3'-7"	105	2'-6"	8"				15
601	2	29'-6"	Str.						89
602	12	8'-0"	144	1'-11"	4'-2"				144
603	2	26'-0"	Str.						78
701	102	11'-0"	100	9'-2"					2293
901	2	29'-6"	Str.						200
902	2	32'-0"	Str.						218
903	1	12'-0"	Str.						41
904	2	26'-0"	Str.						177
905	2	28'-6"	Str.						194
906	16	12'-0"	123	4'-7"	4'-7"				651
1001	2	29'-6"	Str.						254
1002	2	31'-9"	Str.						273
1003	10	15'-3"	Str.						656
1004	10	16'-0"	Str.						688
1005	10	16'-9"	Str.						721
1006	60	7'-1"	104	5'-10"	1'-5"				1829
1007	2	26'-0"	Str.						224
1008	2	28'-0"	Str.						241
1009	10	15'-3"	Str.						656
1010	10	15'-0"	Str.						645
1011	10	14'-6"	Str.						629
Total weight									11468

MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (LBS.)
402	1	2'-8"	12'-7"	4 1/2"	37	238
403	1	2'-8"	13'-4"	4 1/2"	39	252
404	1	2'-8"	11'-4"	4 1/2"	33	213
405	1	2'-8"	12'-2"	4 1/2"	35	226
Total weight =						1367

Note: Prefix 'p' shall be assigned to all bar marks.

NOTES:

Pile spacings are given along bottom of footing.  
All battered piles shall be battered 3 in 12 in direction shown.  
All piles shall be 14" C.I.P. reinforced concrete.  
For masonry plate details see sheet 156-G, Ohio Standard Drawing RB-1-55.  
For bar bending diagrams see sheet 97-G.  
For replacement steel schedule see sheet 97-G.

NOTES FOR 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 in the reinforcement schedule for the spiral bars is the "Length" divided by the pitch, plus 3 turns (total number of closed coils), expressed as the nearest whole number.  
1/2 closed coils shall be provided at the ends of each spiral unit.  
Four steel channels, 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.  
Spiral reinforcing bars shall not have deformations but shall in other respects conform to item 5-4.

H.N.T.B. BR. NO. 1 PART 6

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

PIERS  
E. B. SCOVILL OVER N. B. EAST 14th ST.  
Scale: 1/4" = 1'-0" STA. 1+81.00  
STA. 3+41.76

WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN C.A.B. TRACED A.E.K. CHECKED A.L. REVIEWED J.C.T. REVISION  
DATE 6-5-58 DATE 7-31-58 DATE 6-18-58 DATE 11-12-57

SHEET 94



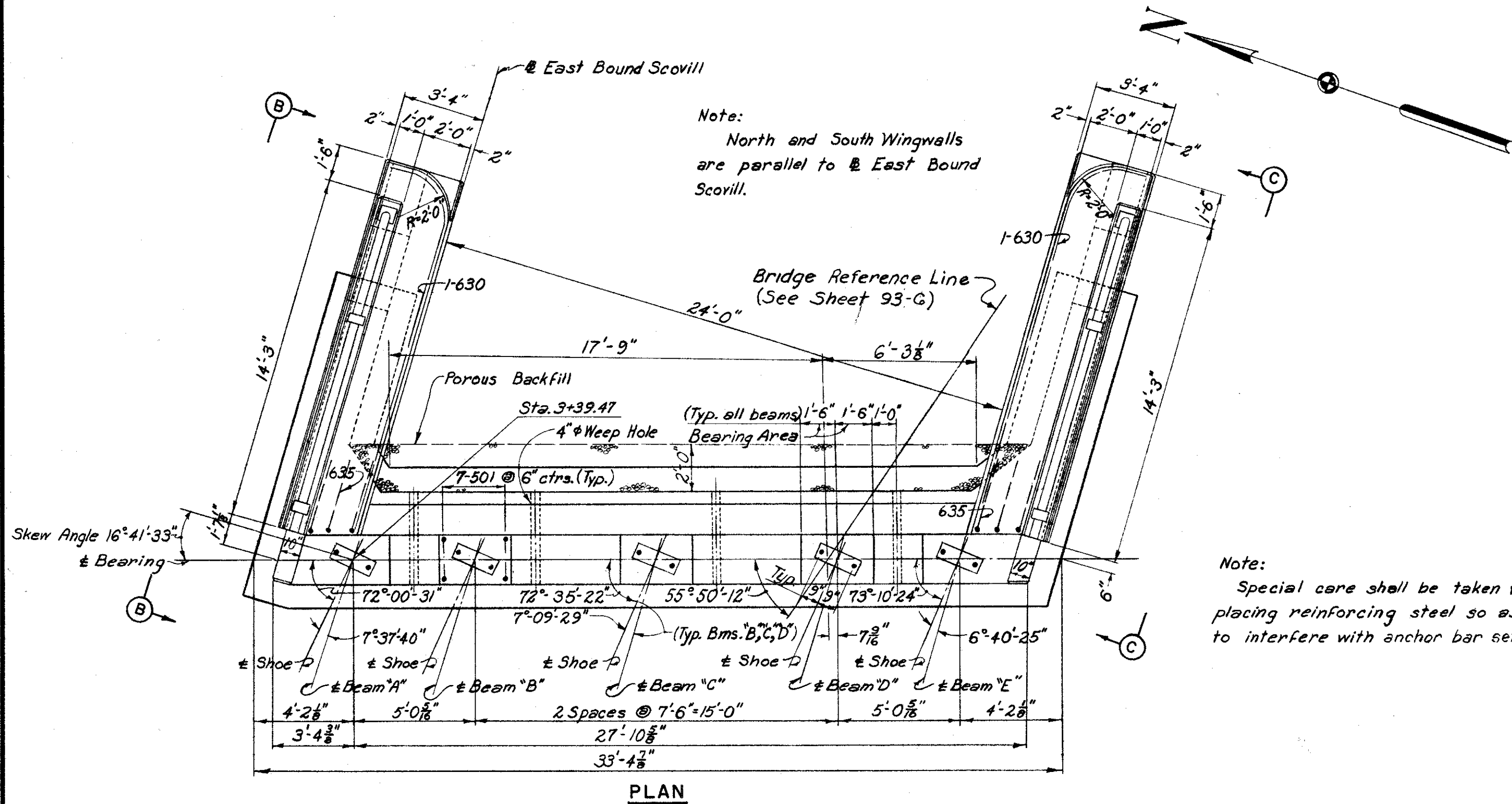
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2	OHIO	

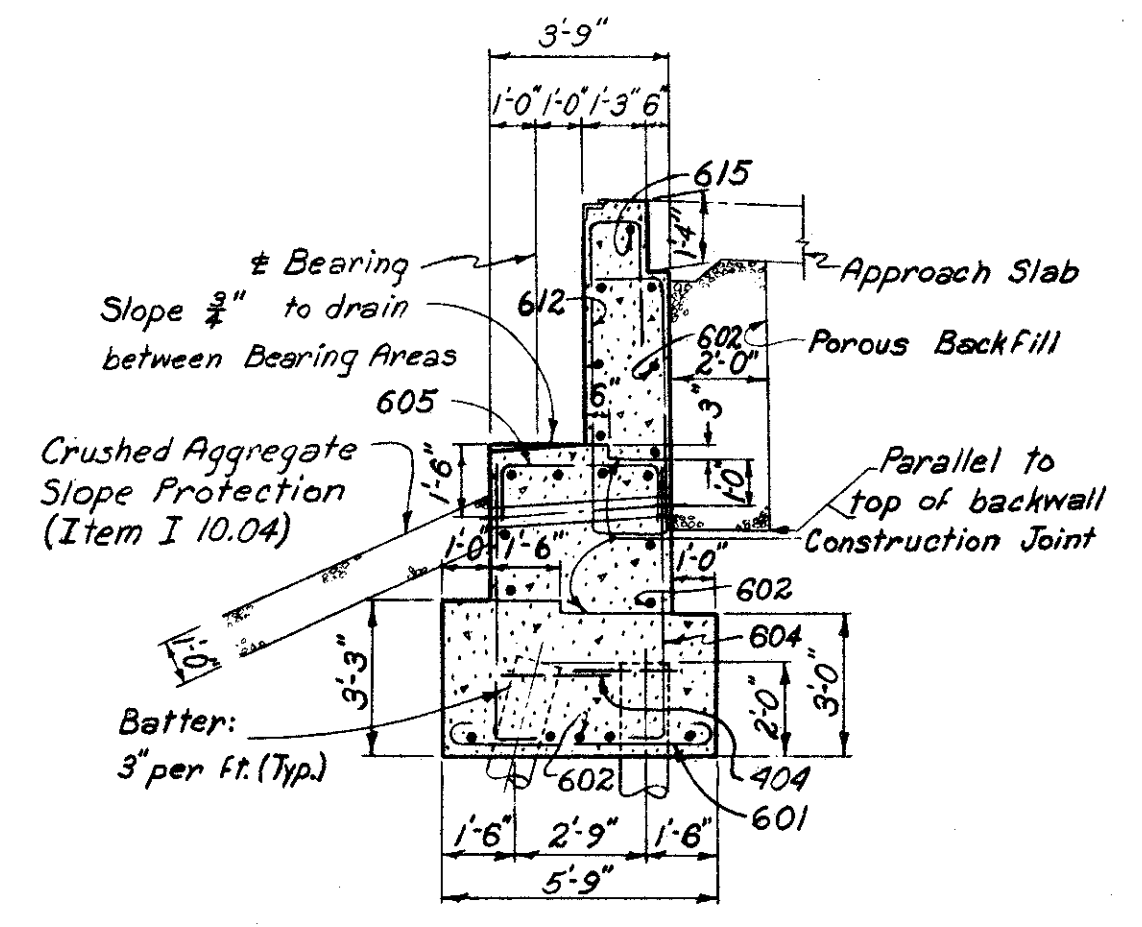
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CITY OF CLEVELAND  
CUY-42-1829

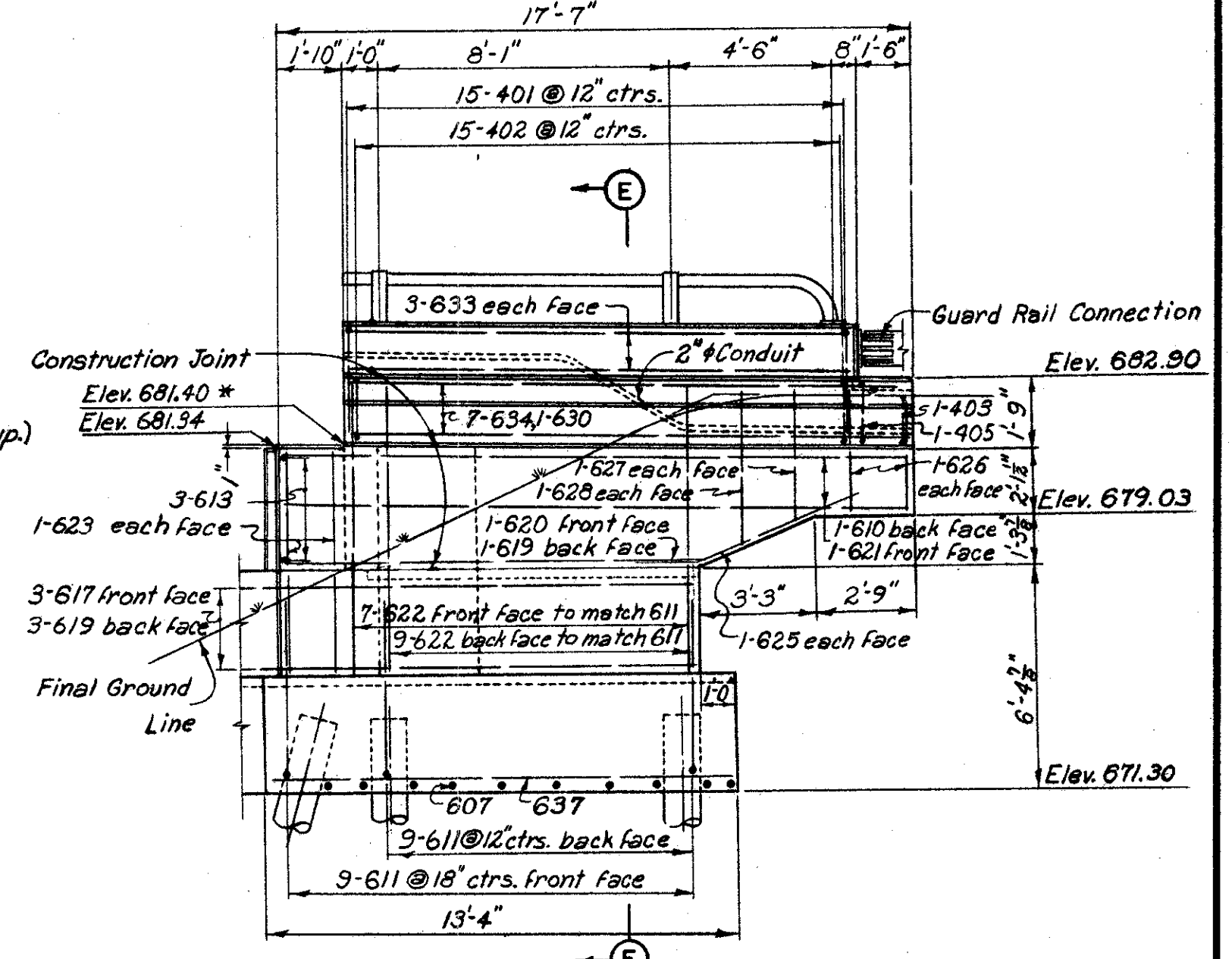
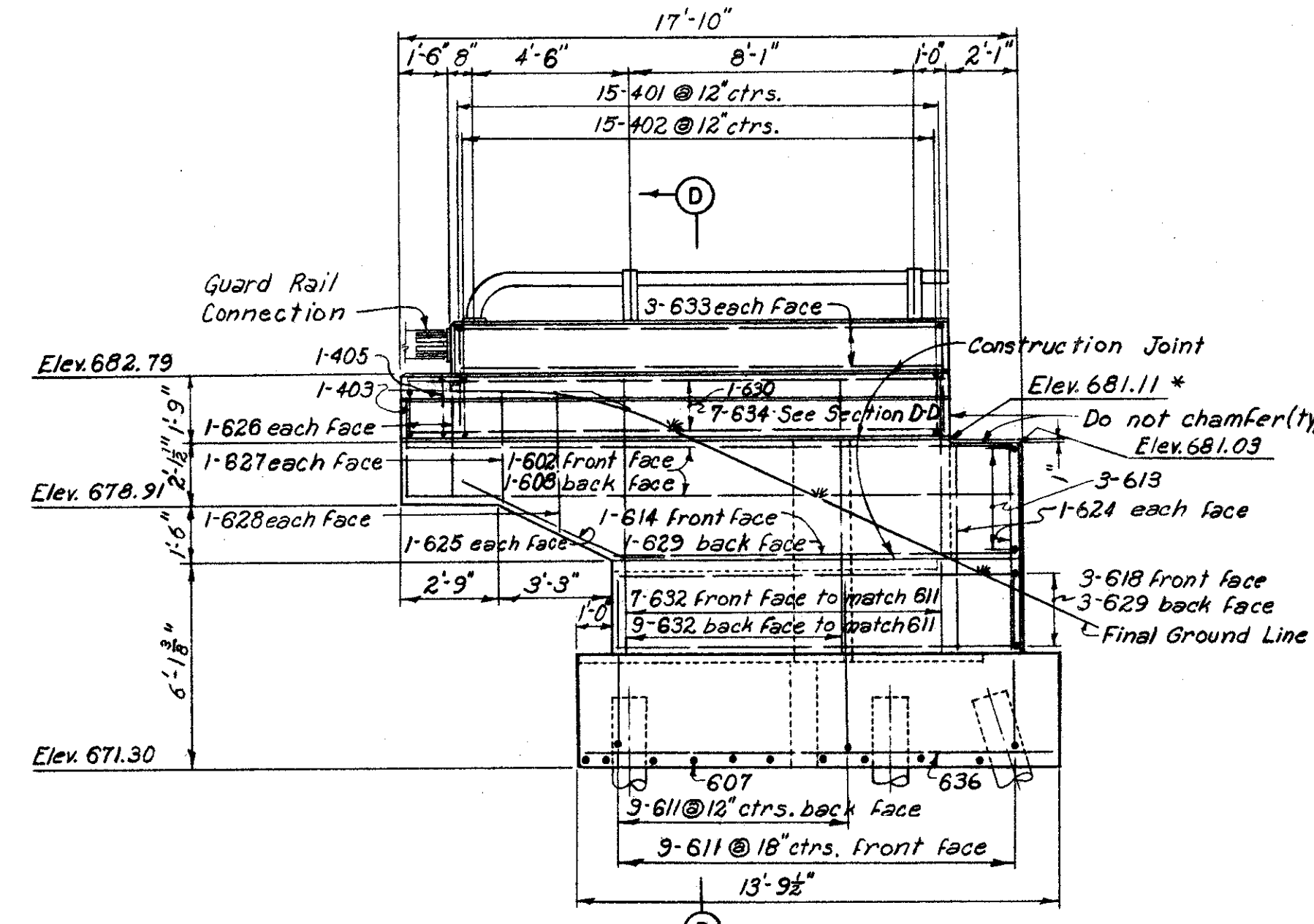
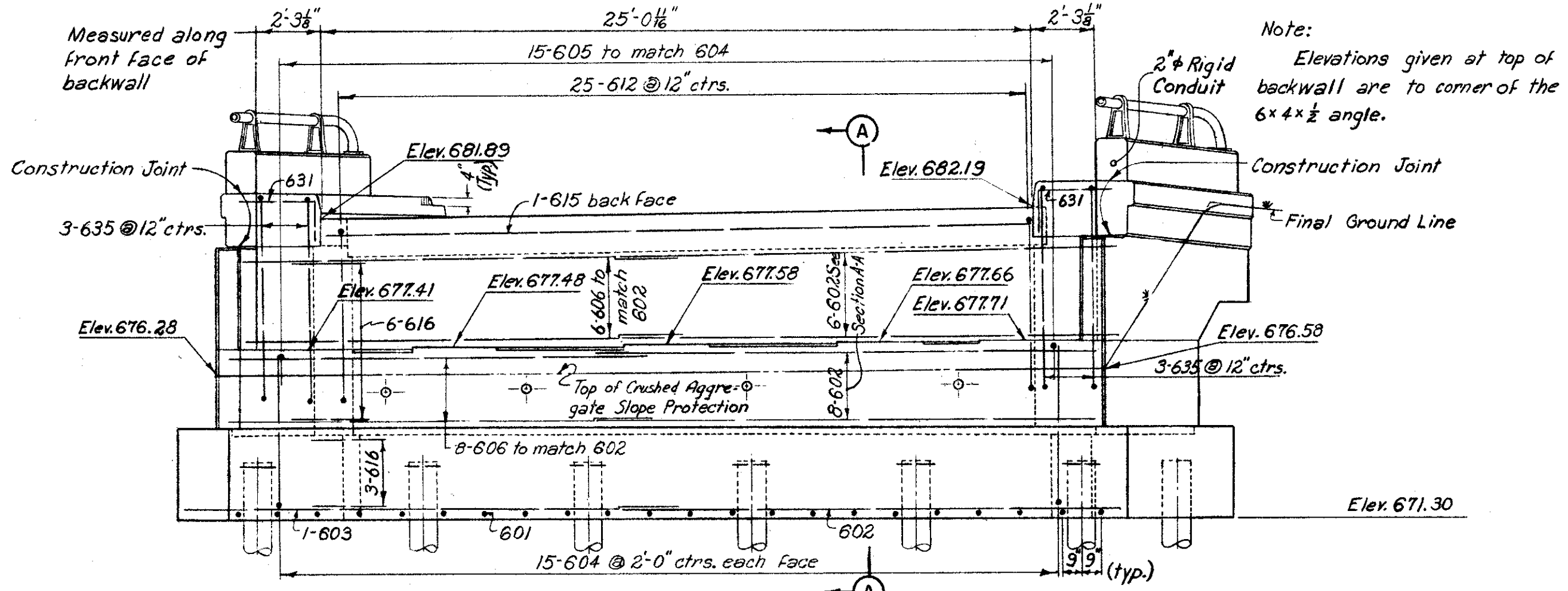
Note: Prefix "AB" shall be assigned to all bar marks.



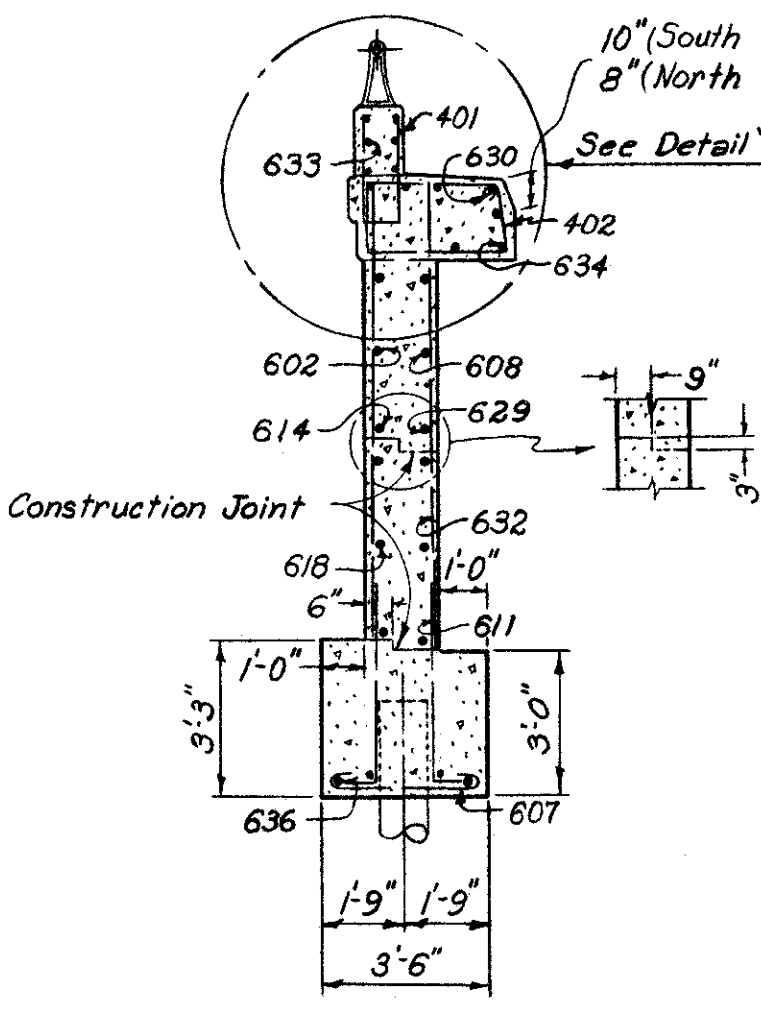
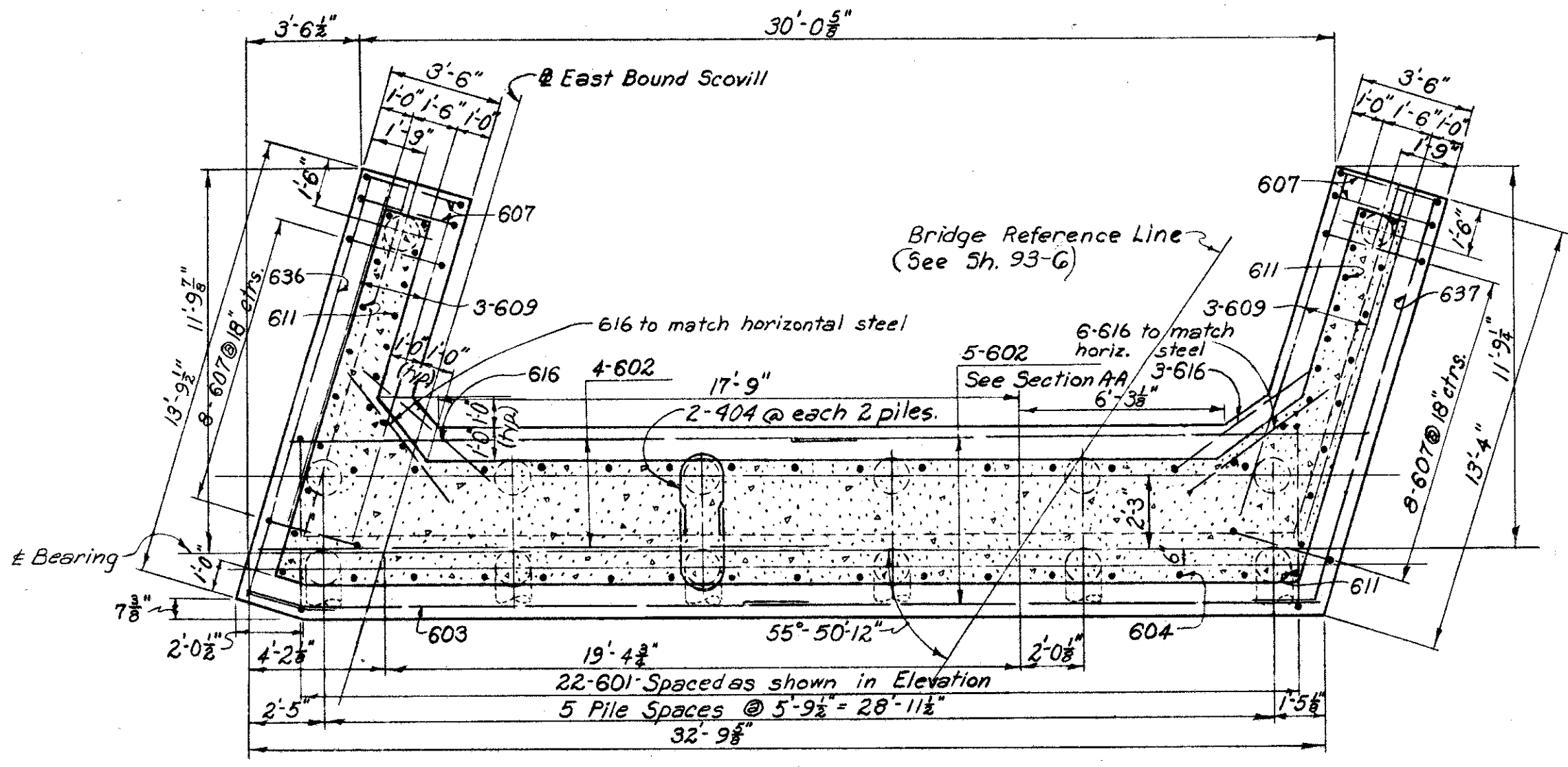
Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.



Notes: End of Railing Parapet to be normal to top of safety curb.  
Backfill shall be completed prior to construction of curb.



NOTE: For abutment notes, see Sheet 95-G  
\* denotes elevation at construction joint



H.N.T.B. BR. NO. 1 PART 6

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

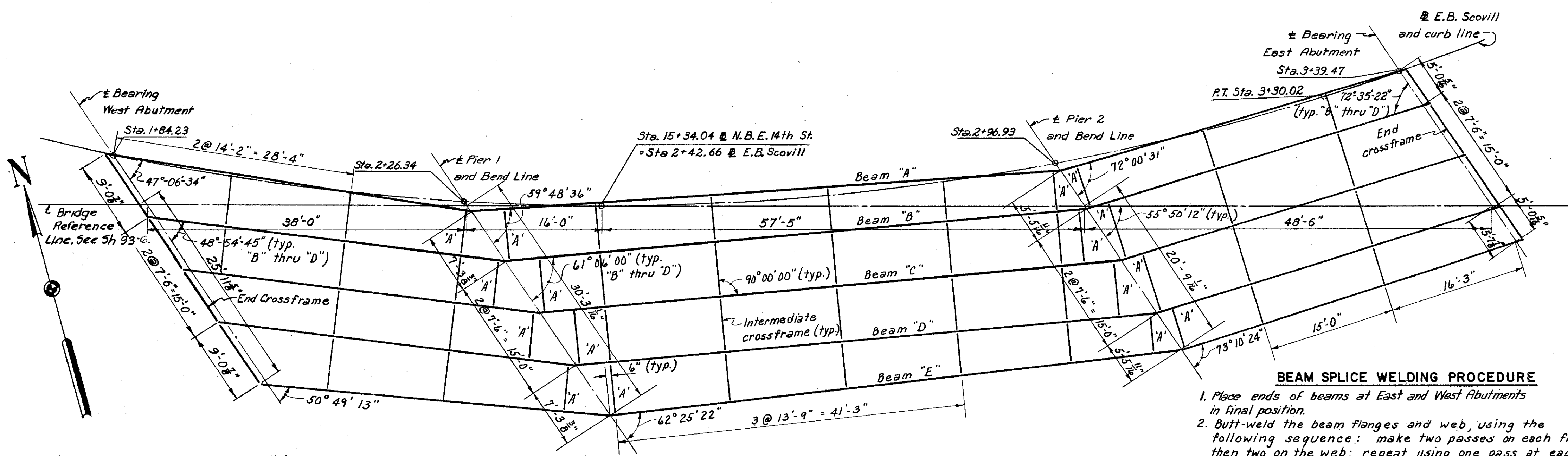
**EAST ABUTMENT**  
E. B. SCOVILL OVER N.B. EAST 14th ST.  
Scale: 1/4" = 1'-0" STA. 1+81.00  
STA. 3+41.76

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN F.S.L. TRACED CHECKED G.7. REVIEWED D.C.T. REVISOR  
DATE 6-16-58 DATE 7-1-58 DATE 11-12-59 SHEET 96



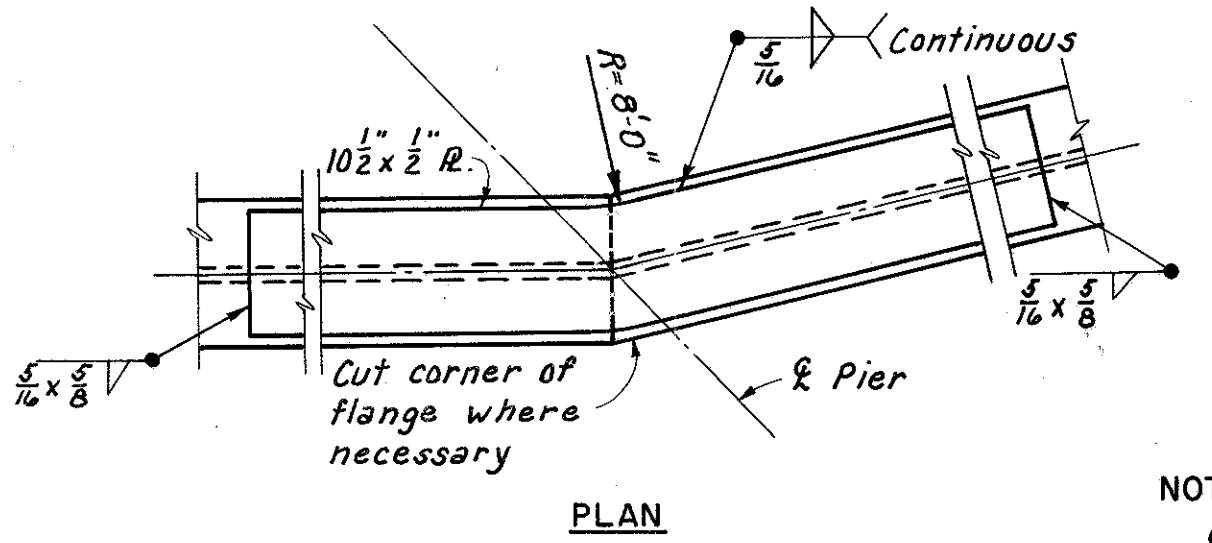
REPRODUCED JUL 8 1985



Note: For detail of Type "A" crossframe, see Sheet 99-G.

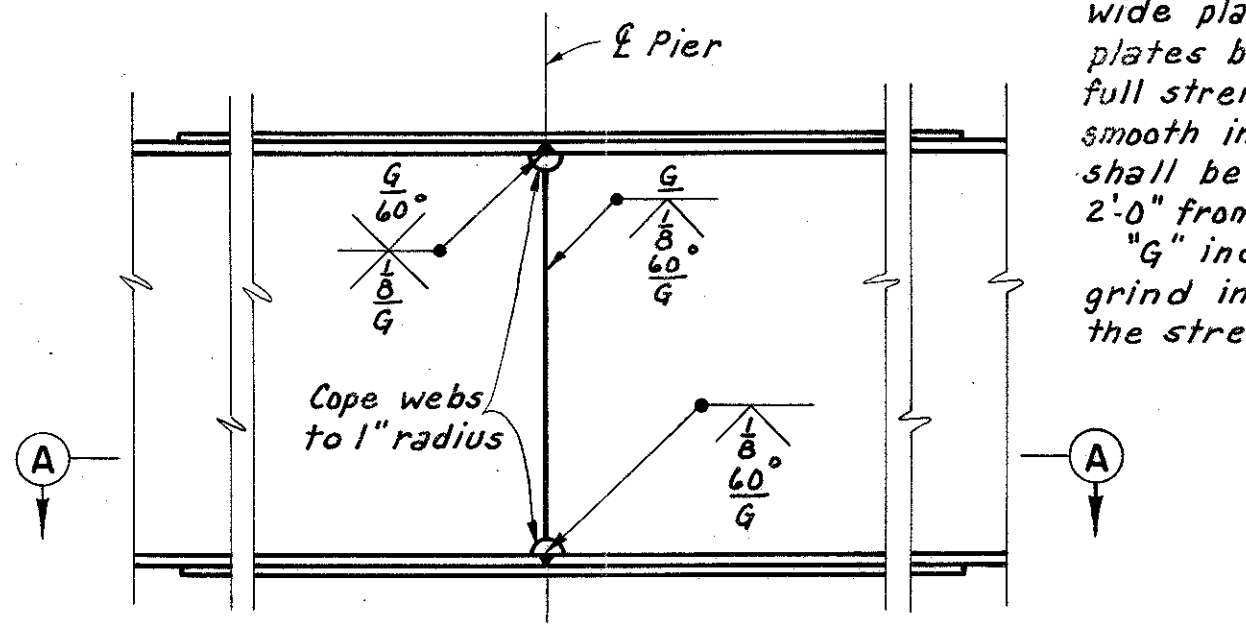
FRAMING PLAN Scale: 1/8" = 1'-0"

- BEAM SPLICE WELDING PROCEDURE**
1. Place ends of beams at East and West Abutments in final position.
  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 top and bottom cover plates on each side of splice.
  4. Weld Type "A" crossframes in position.

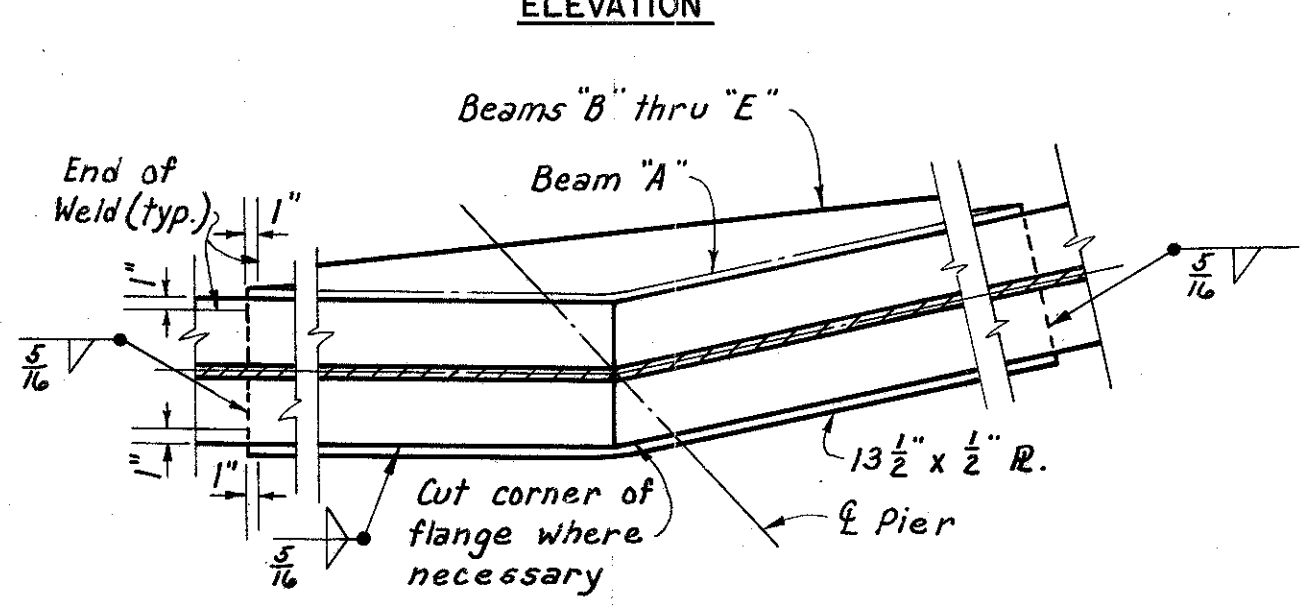


PLAN

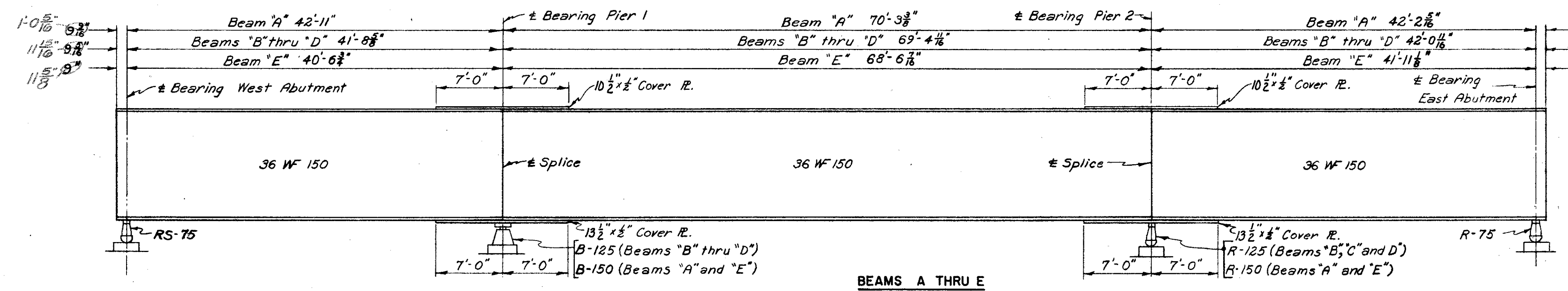
**NOTES:**  
Cover plates may be fabricated from a single wide plate or from two plates butt welded for full strength and ground smooth in the shop. Splice shall be a minimum of 2'-0" from the bend point. "g" indicates a smooth grind in the direction of the stress.



ELEVATION

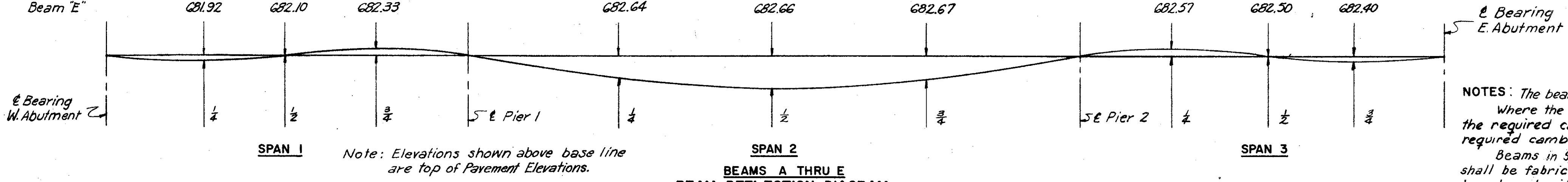


SECTION A-A BEAM SPLICE DETAIL Scale: 3/4" = 1'-0"



BEAMS A THRU E BEAM ELEVATION No Scale

Beam "A"	680.22	680.50	680.79	681.29	681.55	681.76	681.97	681.98	681.99
Beam "B"	680.70	680.92	681.17	681.62	681.82	681.98	682.11	682.10	682.09
Beam "C"	681.09	681.32	681.55	681.99	682.13	682.24	682.30	682.26	682.20
Beam "D"	681.43	681.71	681.95	682.34	682.43	682.49	682.47	682.40	682.32
Beam "E"	681.92	682.10	682.33	682.64	682.66	682.67	682.57	682.50	682.40



BEAMS A THRU E BEAM DEFLECTION DIAGRAM No Scale

**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 this sum. Beams in Spans 1 and 3 do not require camber but shall be fabricated so that any curved beams 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. Def.) denotes dead load deflections. (Tot) refers to total deflection from dead load of steel and concrete. (Con.) denotes deflections for concrete. (Conv.) denotes convexity corrections required for vertical curvature of the roadway gradient. (Pvmt) denotes pavement. Elevations shown in table are located at intersections of bearings and beams.

**ELEVATION AND DEFLECTION TABLE**

BEAM	WEST ABUTMENT		SPAN 1			PIER 1		SPAN 2			PIER 2		SPAN 3			EAST ABUTMENT				
	TOP OF BEAM	TOP OF PVMT.	D.L. DEF.	D.L. DEF.	D.L. DEF.	TOP OF BEAM	TOP OF PVMT.	D.L. DEF.	D.L. DEF.	D.L. DEF.	TOP OF BEAM	TOP OF PVMT.	D.L. DEF.	D.L. DEF.	D.L. DEF.	TOP OF BEAM	TOP OF PVMT.			
	ELEV.	ELEV.	TOT.	CON.	TOT.	CON.	ELEV.	ELEV.	TOT.	CON.	TOT.	CON.	ELEV.	ELEV.	TOT.	CON.	TOT.	CON.		
A	679.15	679.92	1/8	0	1/8	1/8	680.26	681.03	1/8	1/8	1/8	1/8	681.16	681.94	1/8	1/8	1/8	1/8	681.21	681.98
B	679.63	680.40	0	0	0	0	680.63	681.41	1/8	1/8	1/8	1/8	681.33	682.11	1/8	1/8	0	0	681.28	682.05
C	680.04	680.81	0	0	0	0	681.02	681.79	1/8	1/8	1/8	1/8	681.55	682.33	1/8	1/8	0	0	681.37	682.15
D	680.46	681.23	0	0	0	0	681.40	682.17	1/8	1/8	1/8	1/8	681.75	682.53	1/8	1/8	0	0	681.46	682.24
E	680.91	681.71	1/8	1/8	0	0	681.74	682.54	1/8	1/8	1/8	1/8	681.89	682.67	1/8	1/8	0	0	681.51	682.29

**NOTES:** For details of end dams, see Sheet 156-G. For crossframe details, see Sheet 99-G. For Drainage Details, see Sheet 157-G. Beam flanges will interfere with the setting of anchor bolts. See Sec. 5-0.03 of the Specifications. Holes for anchor bars shall be drilled before bend line diaphragms are erected. For details of rocker masonry plates see Sh. 156-G. For other rocker details and details of bolsters see Ohio Standards, Sheet RB-1-55.

H.N.T.B. BR. NO. 1 PART 6

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

**FRAMING PLAN**  
E. B. SCOVILL OVER N. B. EAST 14th ST.  
Scale: As noted STA. 1 + 81.00 STA. 3 + 41.76

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DATE 5-12-59 DATE 6-28-59 DATE 11-12-59 REVISIONS 12-B-60 SHEET 98

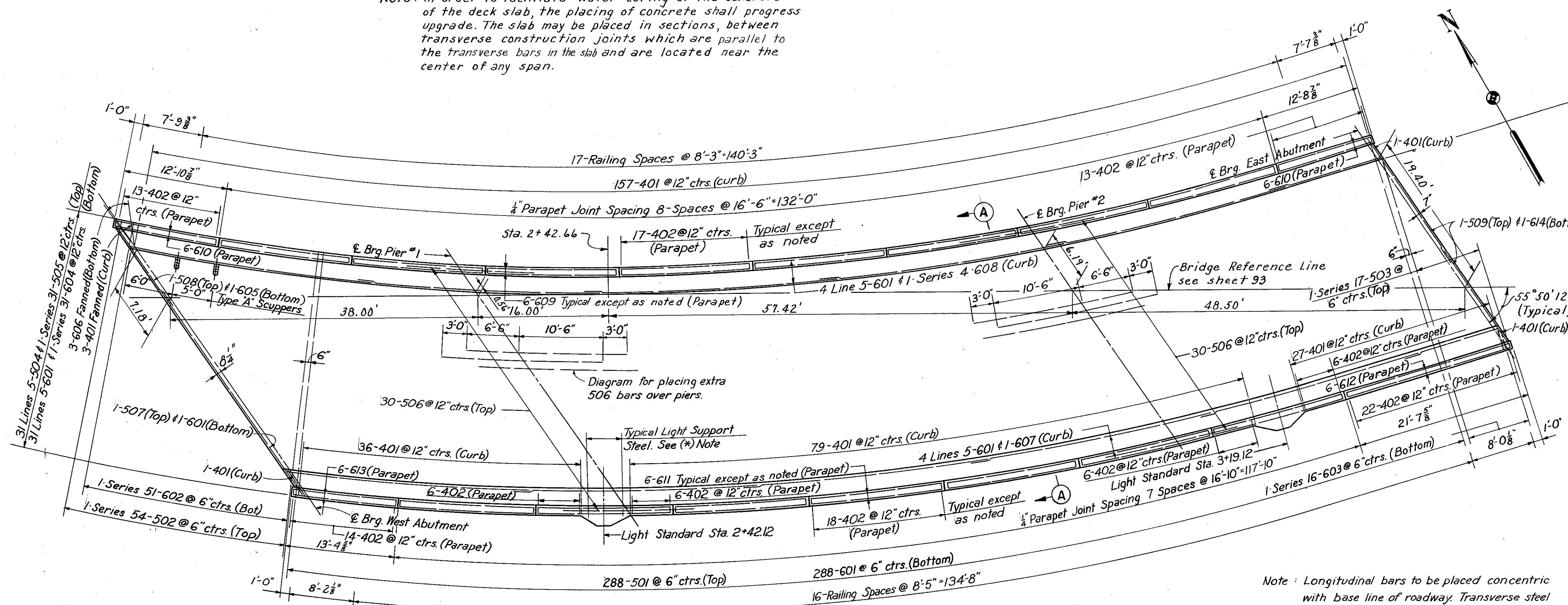


CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829

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.

Note: Prefix "S" shall be assigned to all bar marks.

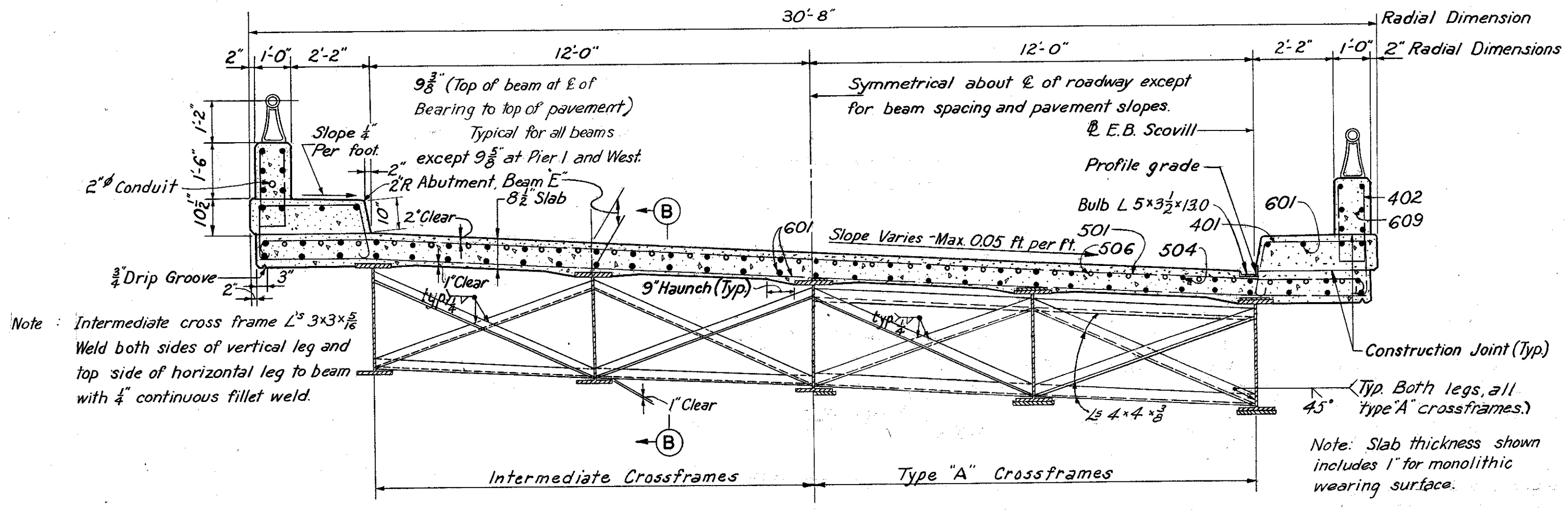
\*Note: Bars 451 thru 456 and 651 thru 653 are for the Light Standard Supports. For their bar bending diagrams and placement see sheet 159-G.



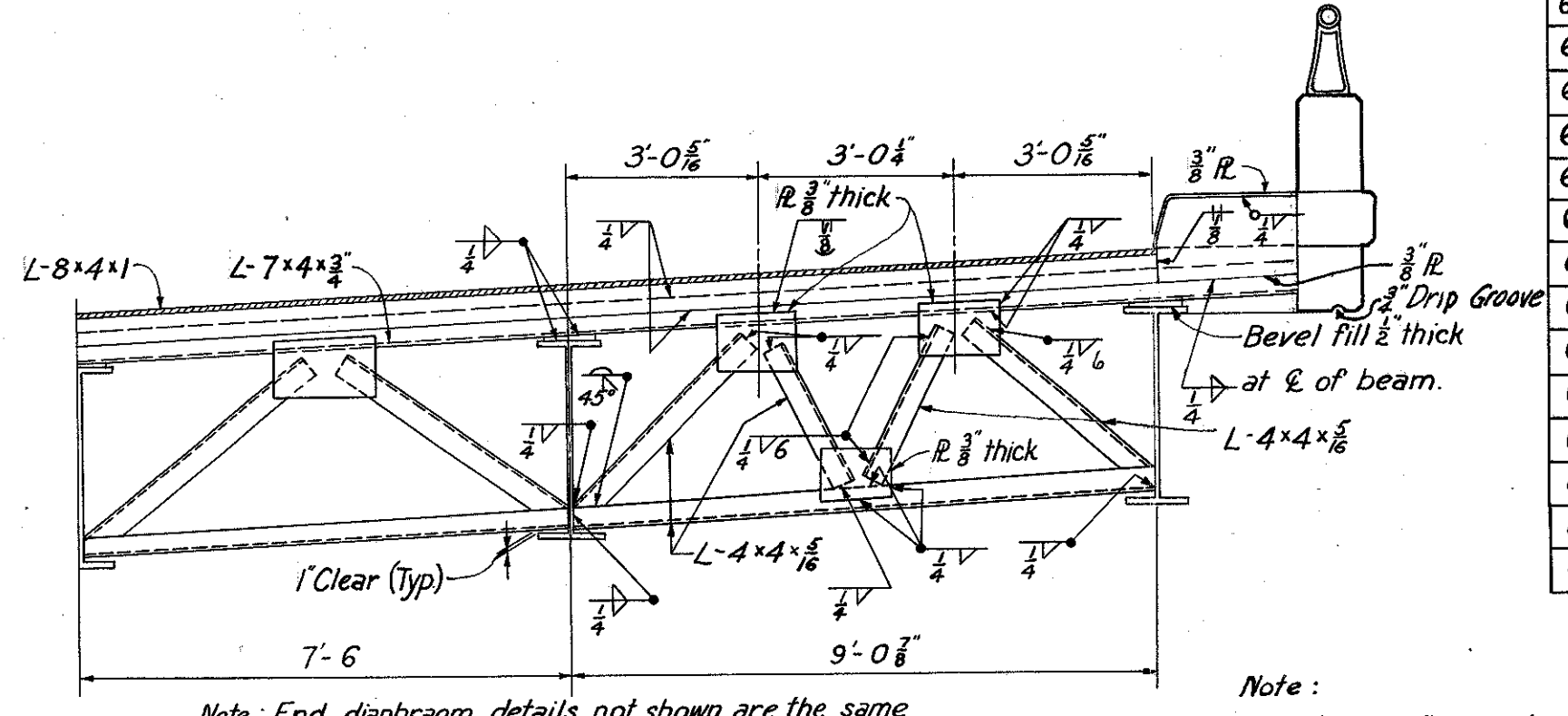
SLAB PLAN  
Scale: 3/8" = 1'-0"

MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCREMENT	WEIGHT (POUNDS)
				A	B	C	D		
401	305	6'-1"	122	2'-8"	1'-4"			1241	
402	312	4'-5"	105	0'-8"	2'-0"			1198	
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	6'-7"	155	3'-2"	1'-0"			18	
455*	4	7'-1"	155	3'-8"				18	
456*	6	7'-3"	155	3'-10"				30	
501	288	31'-2"	100	30'-0"				9362	
502	1 Ser. of 54	1'-7" to 29'-1"	101	1'-0" to 28'-6"			6 1/2"	863	
503	1 Ser. of 17	1'-7" to 28'-4"	101	1'-0" to 27'-9"			1'-8 1/2"	265	
504	155	30'-0"	Str.					4850	
505	1 Ser. of 31	10'-6" to 15'-0"	Str.				1 1/8"	412	
506	60	20'-0"	Str.					1252	
507	1	30'-7"	101	30'-0"				32	
508	1	14'-1"	101	13'-6"				15	
509	2	17'-1"	101	16'-6"				36	
601	484	30'-0"	Str.					21,809	
602	1 Ser. of 51	2'-6" to 28'-6"	Str.				6 1/2"	1,187	
603	1 Ser. of 16	2'-6" to 27'-9"	Str.				1'-8 3/8"	363	
604	1 Ser. of 31	12'-3" to 16'-6"	Str.				1 1/8"	669	
605	1	13'-9"	Str.					21	
606	3	2'-6"	Str.					11	
607	4	12'-3"	Str.					74	
608	1 Ser. of 4	16'-0" to 16'-6"	Str.				2	98	
609*	48	16'-0"	Str.						
610*	12	12'-3"	Str.						
611*	42	16'-6"	Str.						
612*	6	21'-3"	Str.						
613*	6	12'-9"	Str.						
614	2	16'-9"	Str.					50	
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	
								Total	44,164

Note: Longitudinal bars to be placed concentric with base line of roadway. Transverse steel to be placed on radial lines, spacing given along south side of slab. Short transverse bars to extend to vertical leg of end dam angle.



SECTION A-A

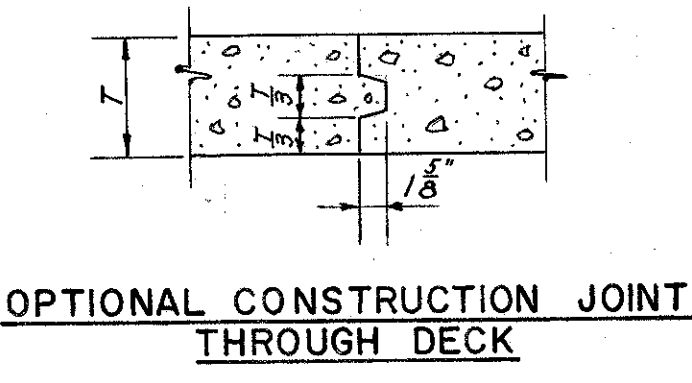


HALF SECTION END DAM - WEST ABUTMENT  
(Other half similar)

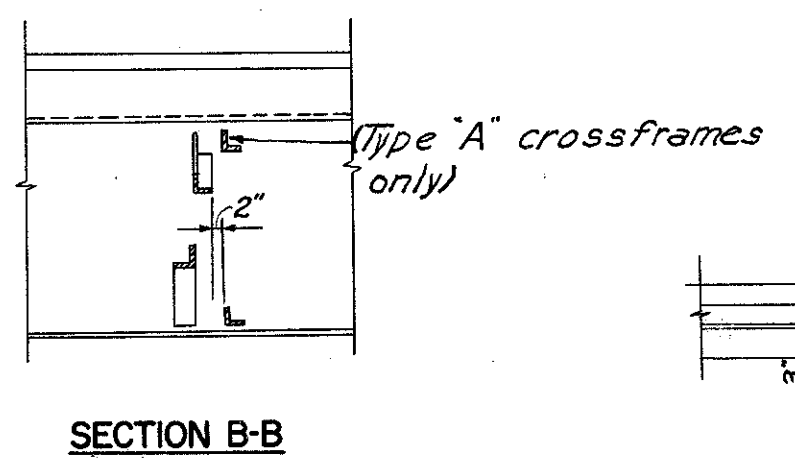
Notes: For Railing details see sheet 158-G. For light standard support & other lighting details see sheet 159-G.

Notes: Bars of a series shall vary in length by a constant increment.

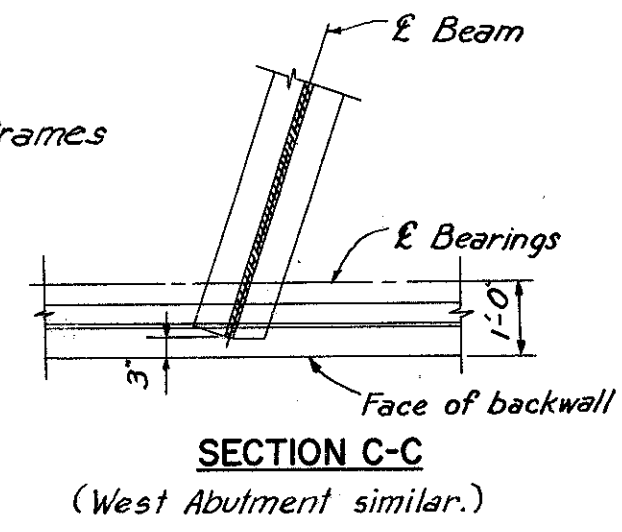
For Drainage details see sheet 157-G. For end dam details, see sheet 156-G. For replacement bars see sheet 97-G. For Parapet Joint details see sheet 158-G. For bar bending diagrams see sheet 97-G. \* Bars 609, 610, 611, 612, & 613 are included for payment with Item S-14, Railing. All bar dimensions are given out to out.



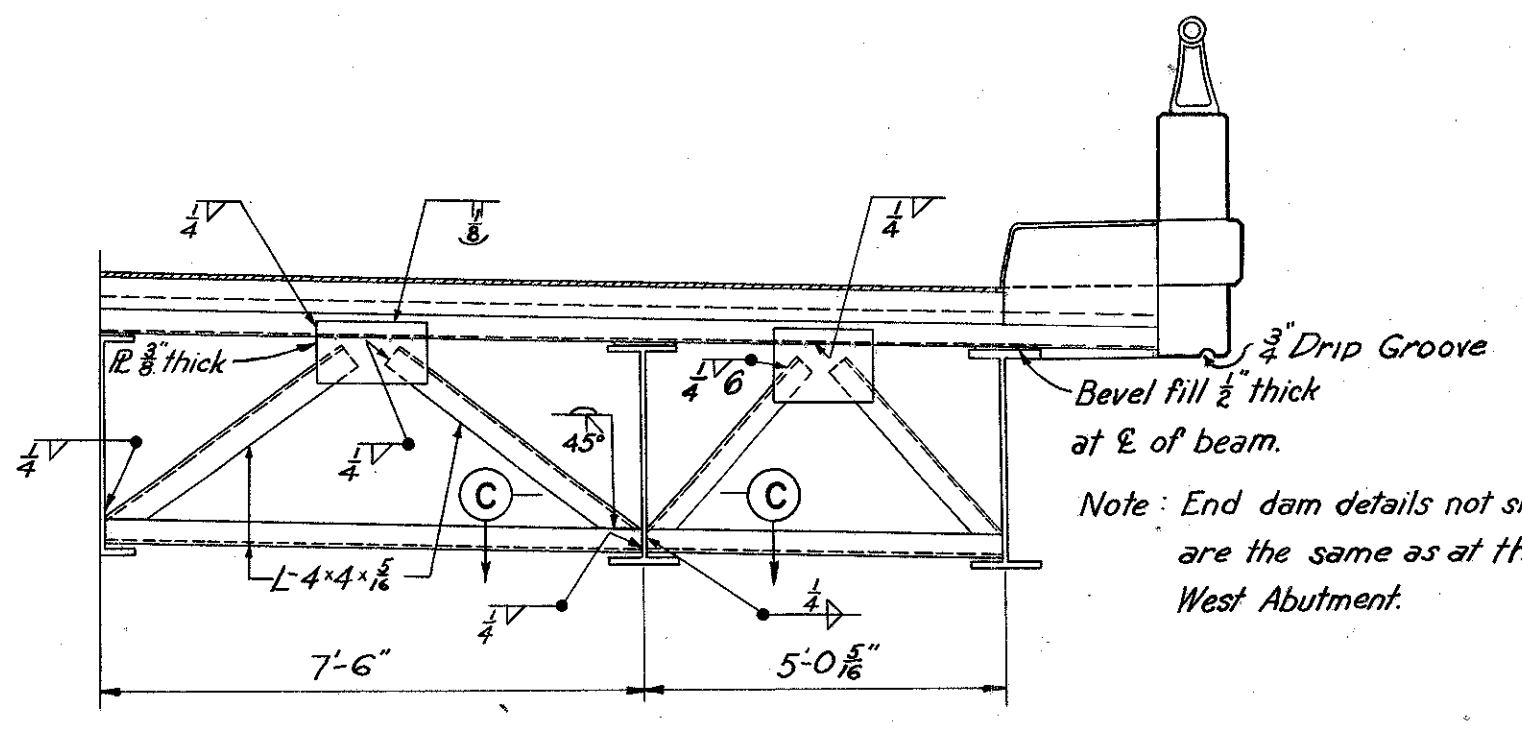
OPTIONAL CONSTRUCTION JOINT THROUGH DECK



SECTION B-B



SECTION C-C  
(West Abutment similar.)



HALF SECTION END DAM - EAST ABUTMENT  
(Other half similar)

H.N.T.B. BR. NO. 1 PART 6

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

DECK PLAN AND CROSS SECTION  
E. B. SCOVILL OVER N. B. EAST 14th ST.  
Scale: 3/8" = 1'-0" STA. 1+81.00  
Unless noted STA. 3+41.76

WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN TJP	TRACED RJK	CHECKED	REVIEWED	REVISED
DATE 6-4-58	DATE 9-7-58	DATE 12-23-58	DATE 4-12-59	

SHEET 99

MICROFILMED  
JUL 8 1965

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

100  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29

**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.
- Proposed Sewer
- Proposed 2" Duct
- Proposed 4" Duct
- Sewer to be abandoned
- Proposed Inlet
- Proposed Manhole

**PROPOSED STRUCTURE**

Type: Continuous rolled beam with reinforced concrete deck and substructure.  
Spans: 87'-9", 88'-9" & 55'-0" along E Innerbelt Freeway  
Roadway: 114'-0" (nominal) 1/2 parapets.  
Loading: CF 2000 Adequate for A.A.S.H.O. alternate loading  
Surface Course: 1" Monolithic Concrete.  
Alignment: 2° 00' R. Tangent  
Approach Slabs: AS-1-54 (25' long)  
Superelevation: Varies  
Skew: Varies

**CURVE DATA**

Inner Belt Freeway	Ramp E-5	Ramp E-6
$\Delta = 29^{\circ} 02' 23"$	$\Delta = 7^{\circ} 00' 00"$	$\Delta = 13^{\circ} 06' 19"$
$D = 2^{\circ} 00'$	$D = 2^{\circ} 00'$	$D = 6^{\circ} 00'$
$R = 2864.79'$	$R = 2864.79'$	$R = 954.93'$
$T = 741.94'$	$T = 175.22'$	$T = 109.69'$
$L = 1451.98'$	$L = 350.00'$	$L = 218.42'$

**BORING B-103**  
Sta. 10+45 E. 9th St., 105' Lt.  
Vertical Scale: 1" = 20'

Elev. 674.5		
15	669.5	Brown Silty Gravelly Sand
23	664.5	Brown Silty Sandy Gravel
14	659.5	Brown Silty Sand
57	654.5	Brown Silty Gravelly Sand
44	649.5	Brown & Gray Sandy Silt
40	644.5	Gray Silty Sand
87		
87	634.5	Gray Sandy Silt
70		
77		
90		
126		
81	609.5	Gray Silt
21		
19		
17	593.5	Gray Silt & Clay

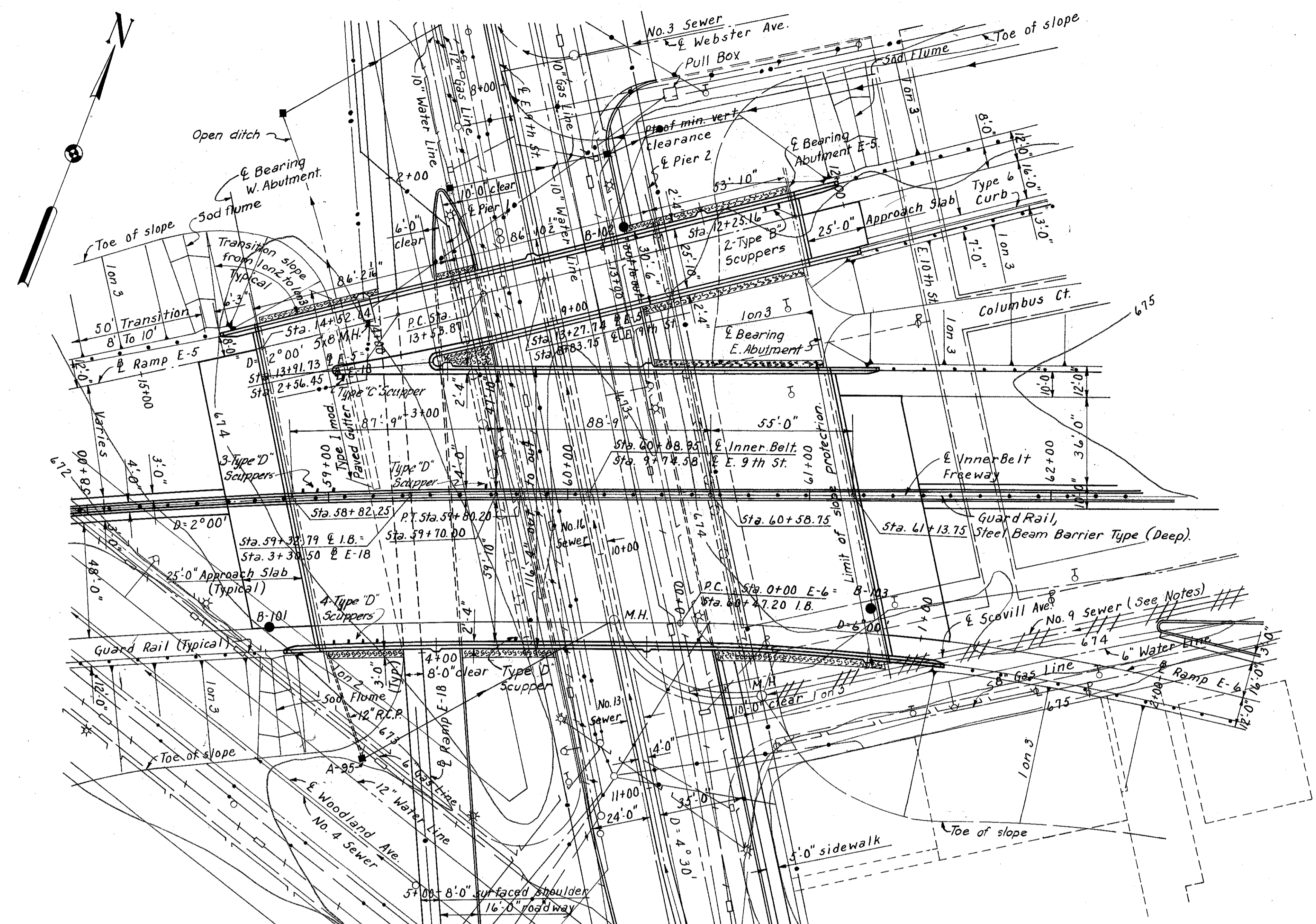
**PILE INFORMATION**

Location	Diameter	Number	Estimated ave. length
Pier 1	14"	68	35'
Pier 2	14"	51	35'
W. Abutment	12"	36	42'
E. Abutment	12"	48	46'
E. Abut. - E-5	12"	18	40'

All piles 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.

**NOTES:**

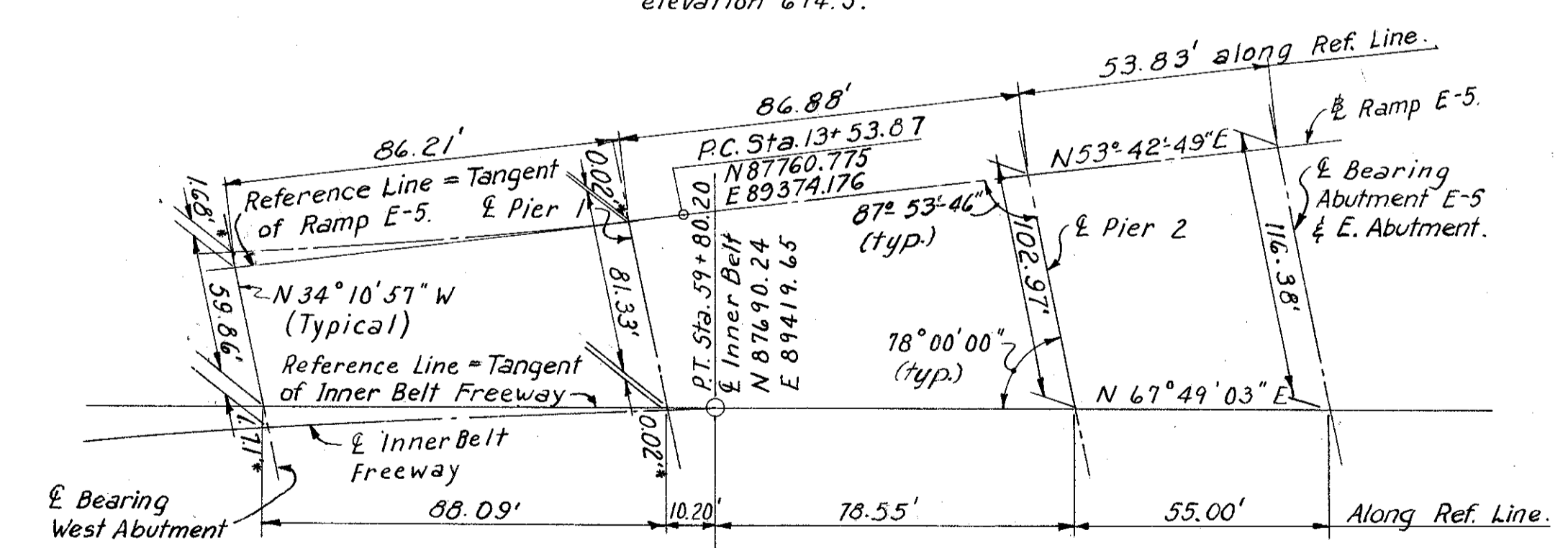
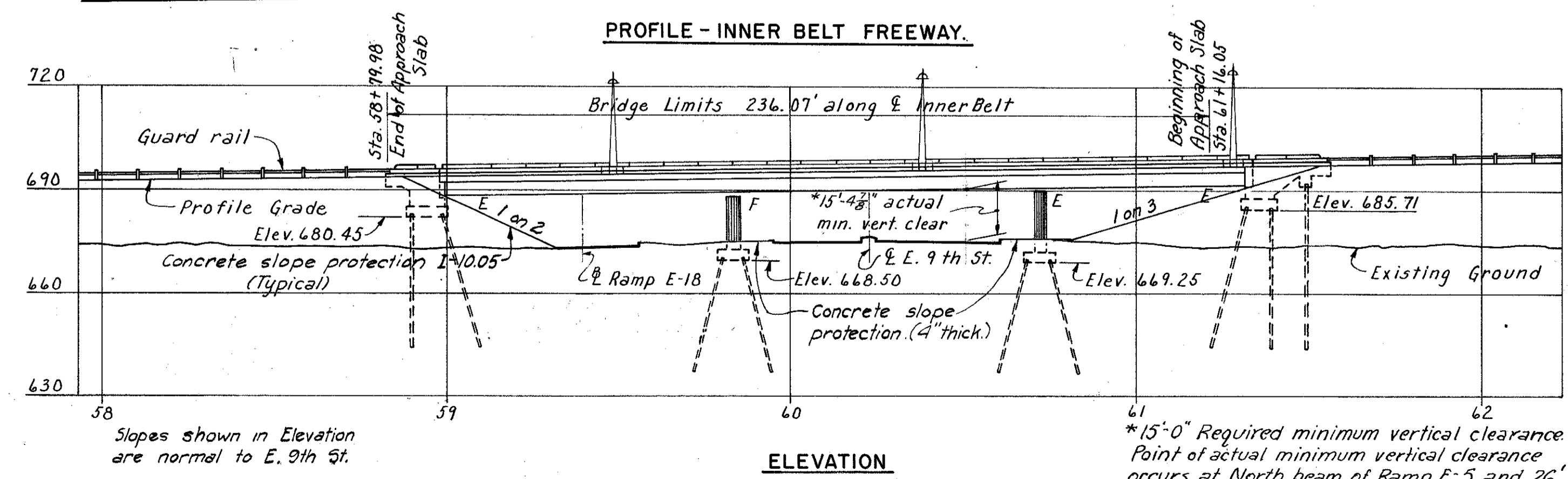
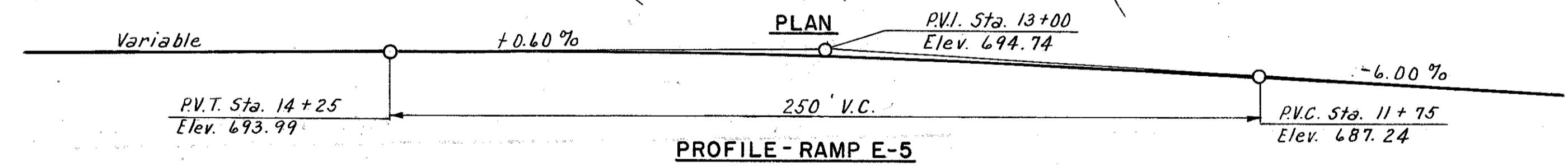
Rod soundings only were taken at location B-101 and B-102. The core drilling made at B-103 is plotted.  
Foundation design and foundation quantities are based on a study of these borings.  
For details of slope protection see sheet 157-C.  
The following items are not included in the Bridge Plans. See Roadway Plans for details.  
Removal of existing pavement, etc.  
Relocation or removal of existing utilities.  
Approach grading, pavement and slabs.  
Roadway Guard Rail, Sod Flumes.



**BORING B-103**

Sta. 10+45 E. 9th St., 105' Lt.  
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 674.5.



**BRIDGE LAYOUT DIAGRAM**

No scale  
\*Offset measured from reference line to E Inner Belt Freeway or E Ramp E-5 along E bearings.

H.N.T.B. BR. NO. 2 PART 6

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

**SITE PLAN**  
INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY-42-1832 STA. 58+79.98  
Scale: 1" = 30' STA. 61+16.05

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN A.J.S. TRACED A.E.K. CHECKED H.A. REVIEWED J.C.T. REVISIONS  
DATE 10-2-58 DATE 11-20-58 DATE 11-7-58 DATE 11-12-58 SHEET 100

\*15'-0" Required minimum vertical clearance.  
Point of actual minimum vertical clearance occurs at North beam of Ramp E-5 and 26' East of E. 9th St.

Slopes shown in Elevation are normal to E. 9th St.



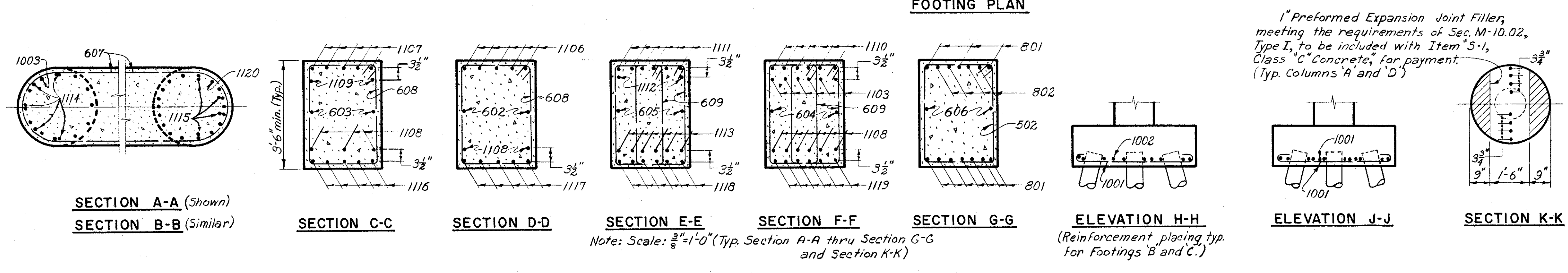
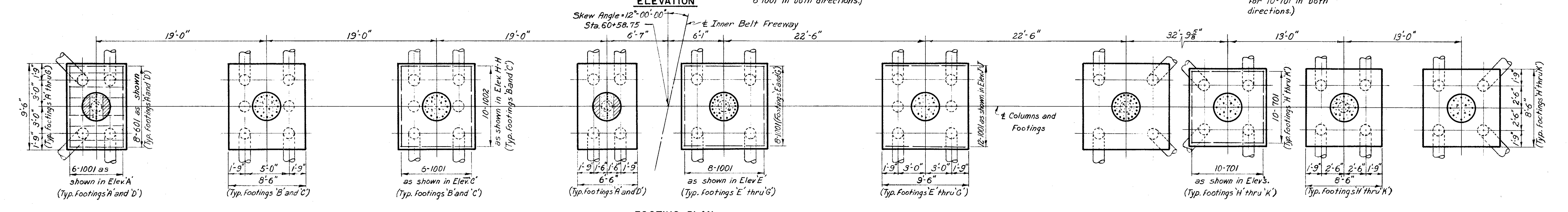
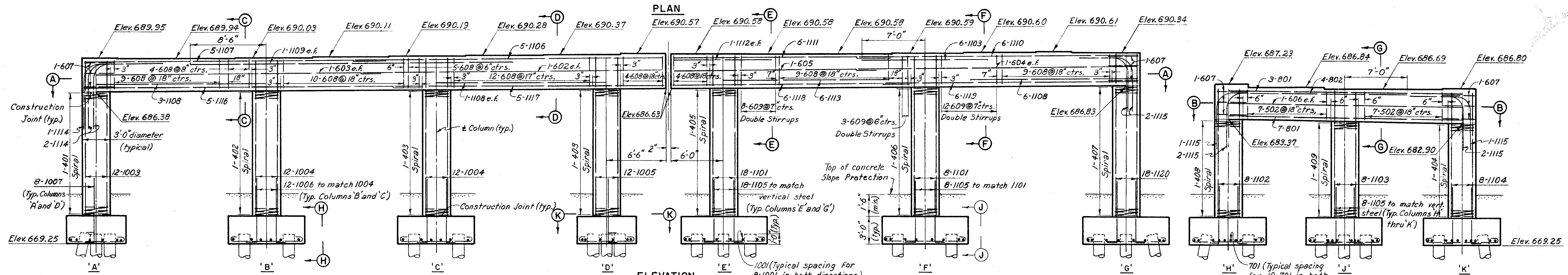
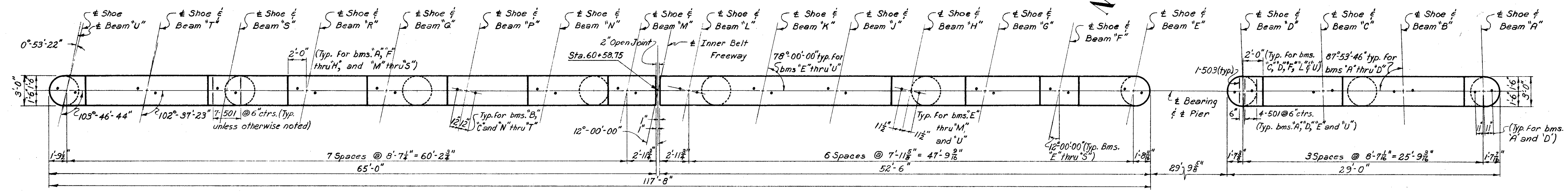
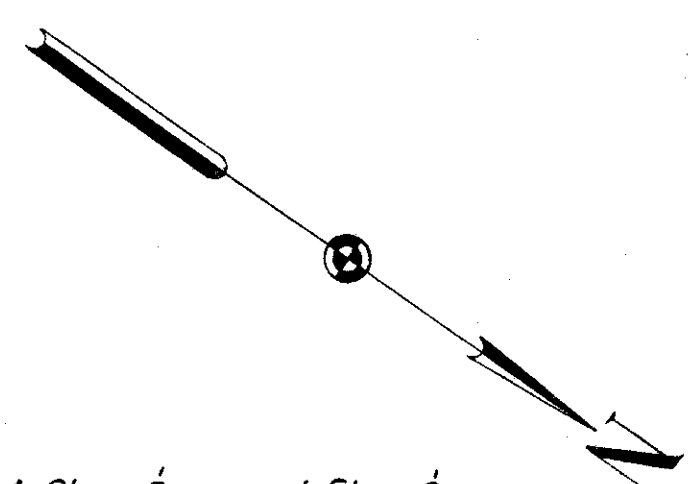
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JUL 8 1985

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CITY OF CLEVELAND  
CUY-42-1829

Note: Prefix "PB" 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.

Note:  
Where cross frames interfere with the setting of anchor bars, the holes shall be drilled prior to erection of cross frames.



1" Preformed Expansion Joint Filler, meeting the requirements of Sec. M-10.02, Type I, to be included with Item 5-1, Class "C" Concrete, for payment. (Typ. Columns A and D)

NOTES:  
All piles shall be 14" cast-in-place reinforced concrete.  
All battered piles to be battered 3 in 12 in direction shown.  
Pile spacings are given along bottom of footing.  
For Reinforcement schedule, see Sheet 103G.  
For Replacement bar schedule, see Sheet 97A.  
Reinforcement bars shall be 3 inches clear from bottom of footings and 2 inches elsewhere.  
For masonry plate details see Sheet 156-G and Ohio Standards, Sheet RB-1-55.

H.N.T.B. BR. NO. 2 PART 6

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

PIER 2  
INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY- 42-1832 STA. 58+79.98  
Scale: 3/16" = 1'-0" Except STA. 61+16.05 as noted

WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN S.J. TRACED	CHECKED J.C.T.	REVIEWED J.C.T.	REVISED
DATE 9-24-58	DATE 10-2-58	DATE 11-12-58	

SHEET 102



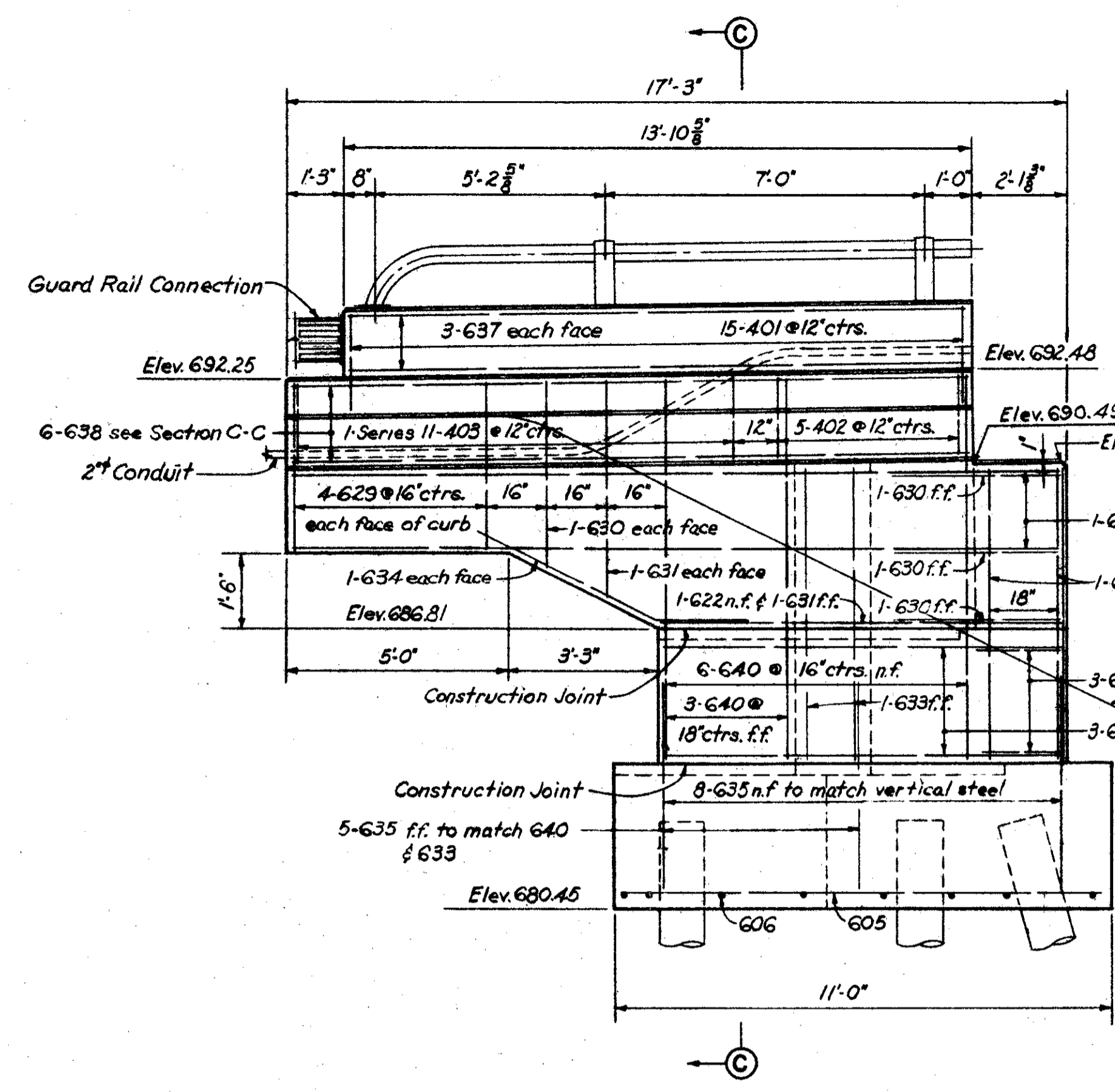


MICROFILMED  
JUL 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

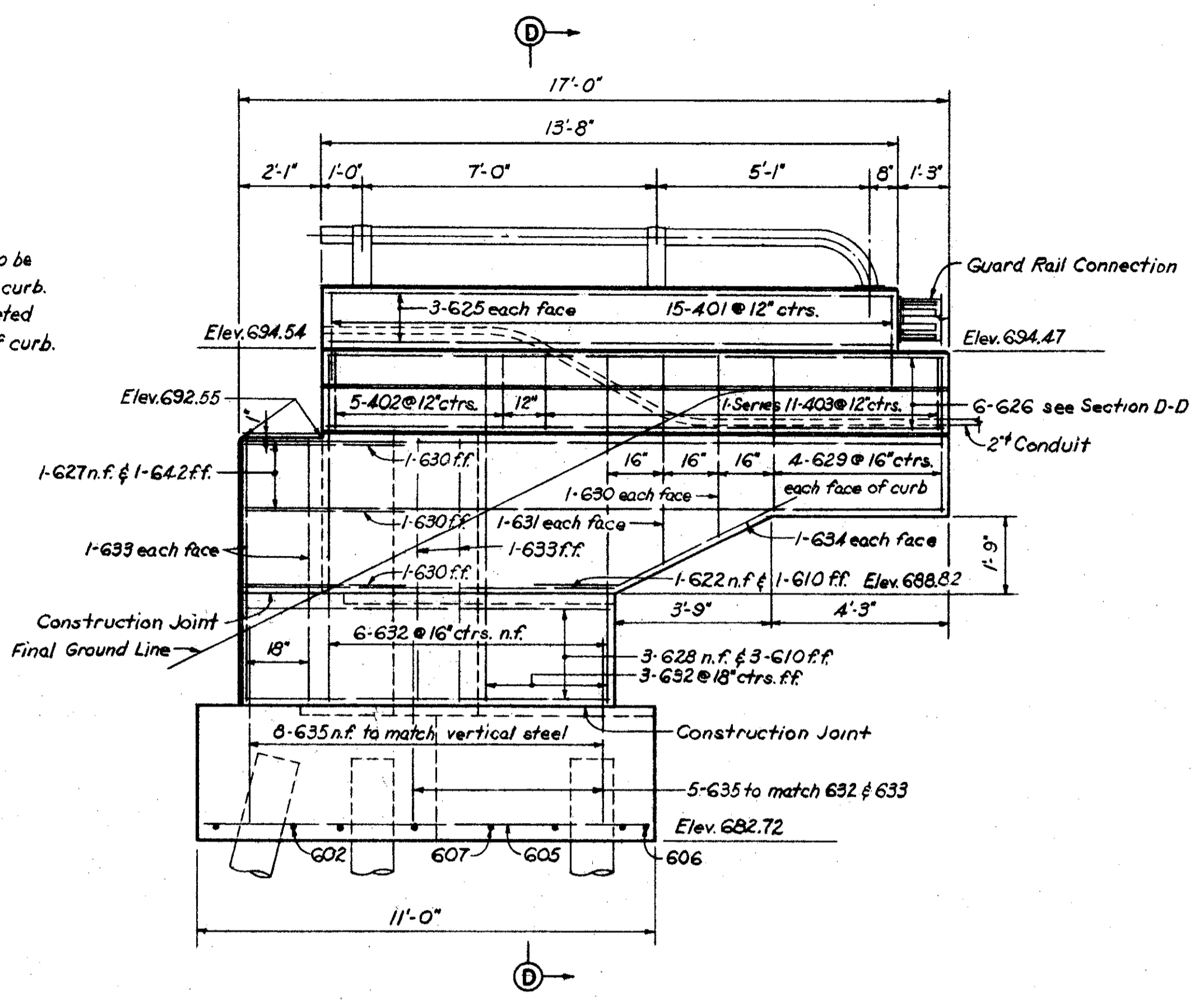
105  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829



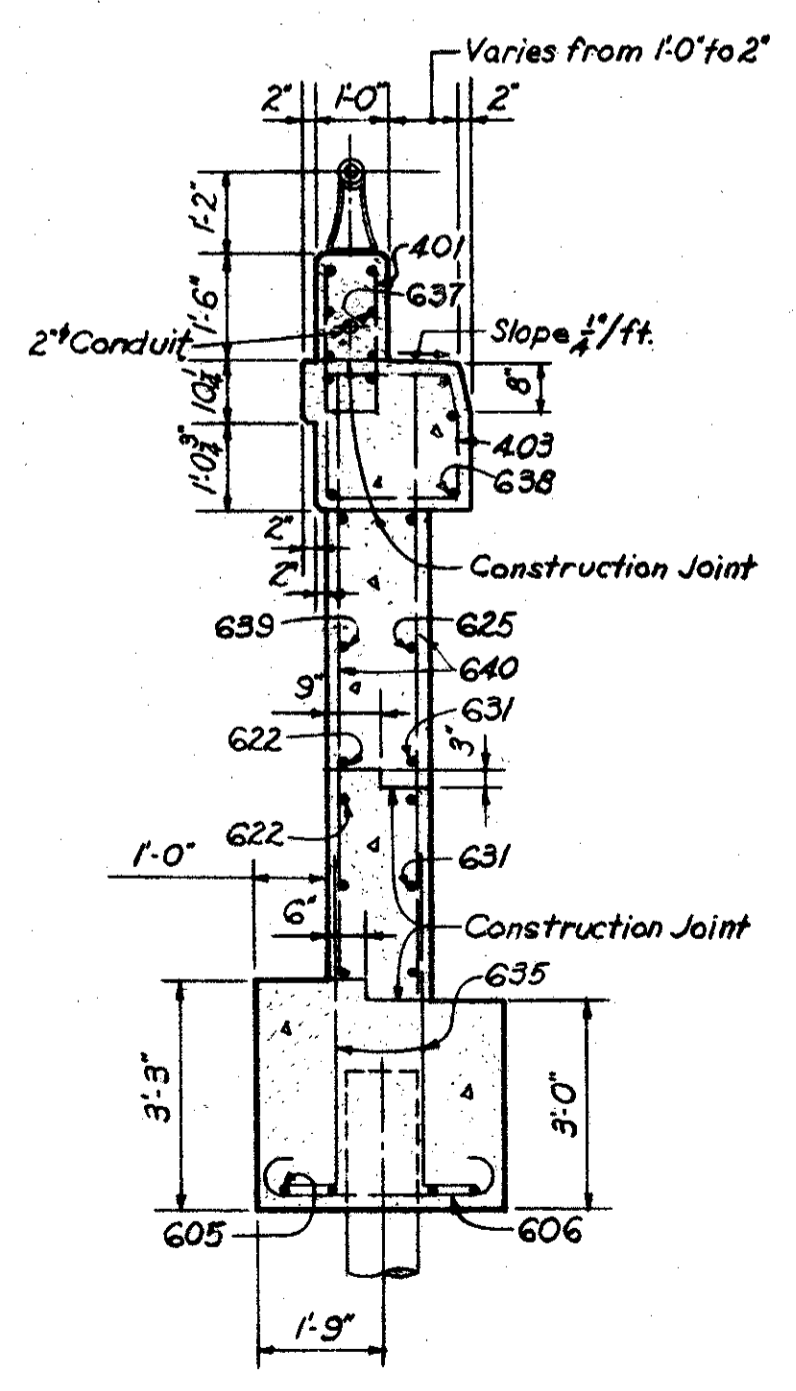
ELEVATION A-A

Note:  
End of Railing Parapet to be normal to top of safety curb. Backfill shall be completed prior to construction of curb.

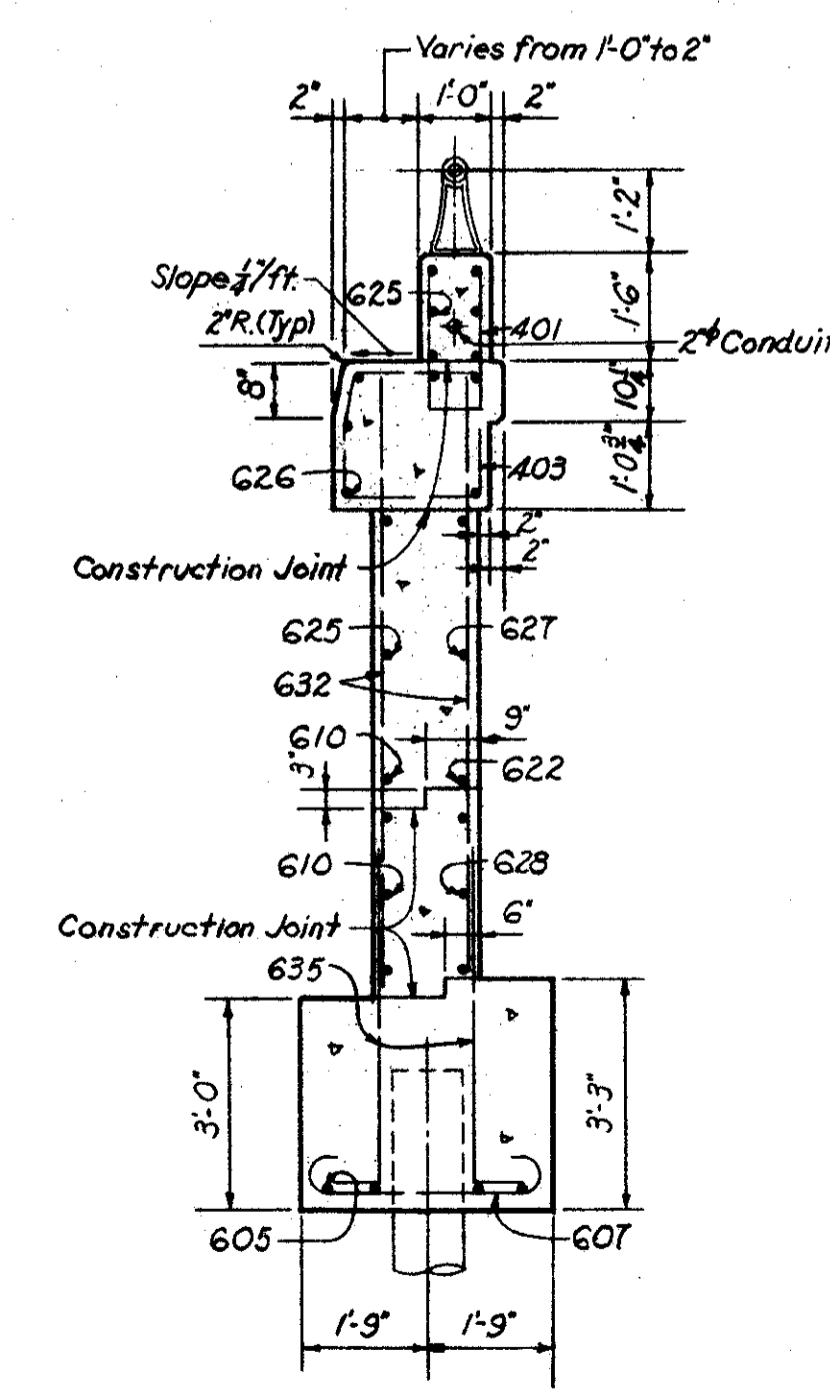


ELEVATION B-B

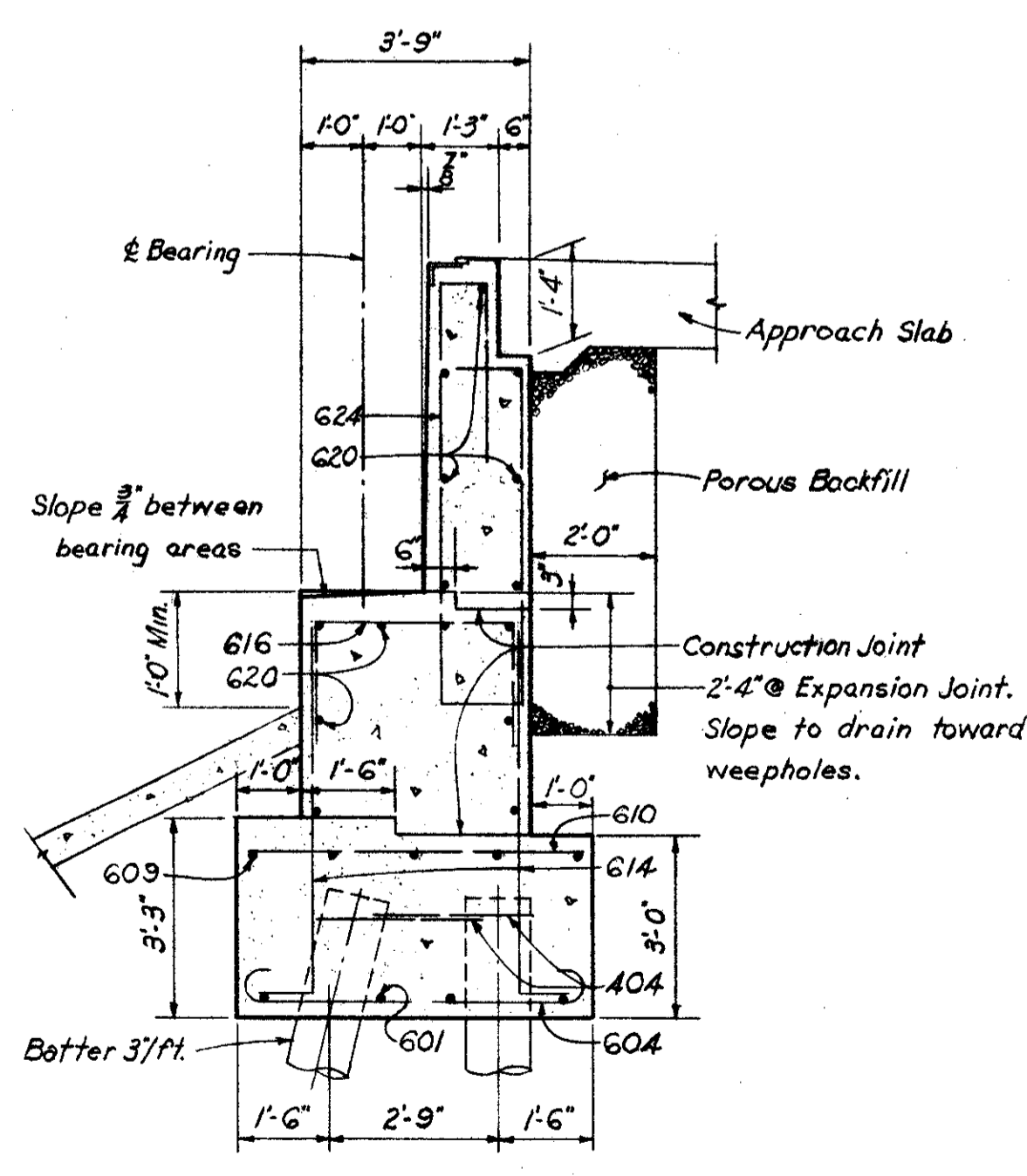
Note: Prefix "AA" shall be assigned to all bar marks



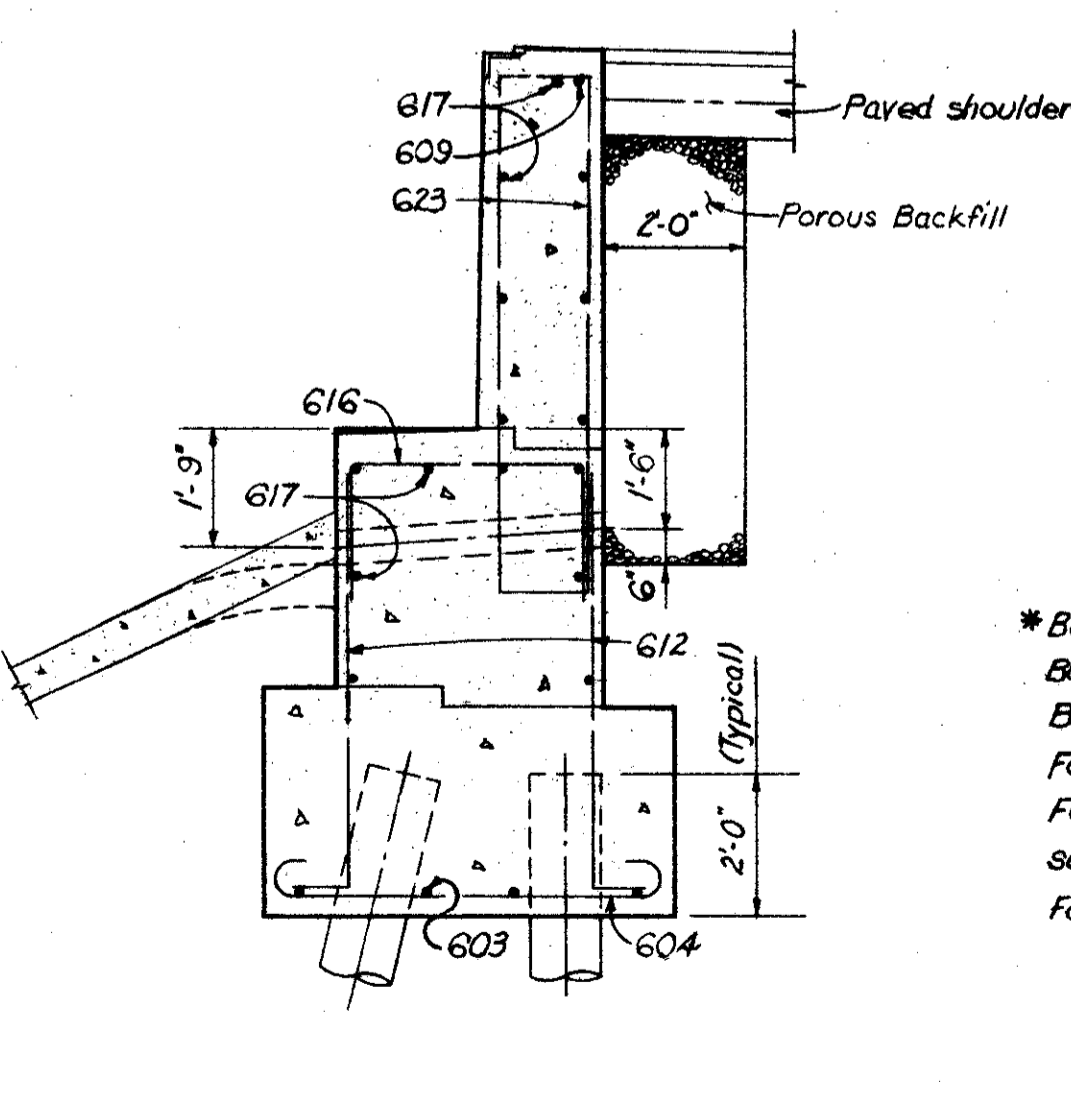
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

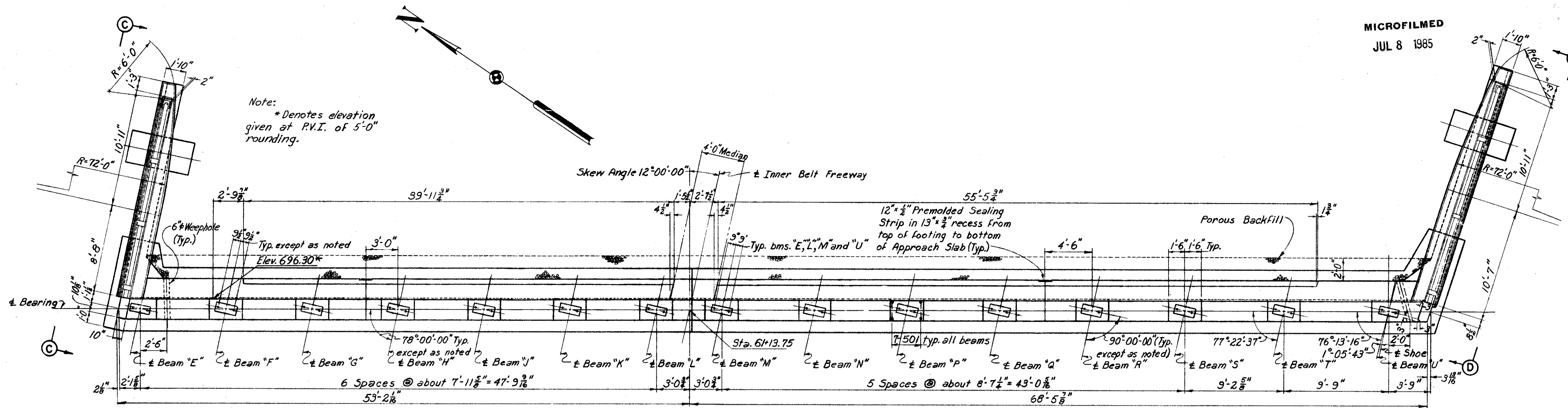
REINFORCEMENT SCHEDULE										
MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCR.	WEIGHT (LBS)	
				A	B	C	D			
401	30	4'-5"	105	8"	2'-0"				89	
402	10	7'-1"	109	1'-9"	1'-7"				47	
403	2 Series of 11	5'-7 1/2 7'-1"	109	0'-9 1/2 1'-9"	1'-7"			2 3/8"	90	
404	52	8'-3"	144	2'-5"	3'-5"				287	
501	114	4'-7"	105	1'-8"	1'-7"				545	
502	2	4'-11"	105	1'-4"	1'-11"				10	
503	2	5'-3"	105	1'-8"	1'-11"				11	
601	8	40'-0"	Str.						481	
602	4	34'-6"	Str.						207	
603	4	26'-6"	Str.						159	
604	102	6'-9"	100	5'-5"					1034	
605	8	10'-6"	Str.						126	
606	9	4'-6"	100	3'-2"					61	
607	1 Series of 3	4'-9" to 5'-8"	100	3'-5" to 4'-4"				5 1/2"	23	
608	1	7'-3"	Str.						11	
609	16	10'-0"	Str.						240	
610	22	5'-3"	Str.						173	
611	1	6'-10"	108	5'-0"	1'-11"	1 1/2"			10	
612	62	6'-2"	104	5'-6"	10"				574	
613	14	6'-5"	104	5'-9"	10"				135	
614	74	6'-8"	104	6'-0"	10"				741	
615	10	6'-0"	104	5'-4"	10"				90	
616	80	6'-11"	105	3'-5"	1'-11"				832	
617	15	32'-0"	Str.						721	
618	15	31'-6"	Str.						710	
619	15	21'-6"	Str.						484	
620	15	29'-3"	Str.						659	
621	15	20'-0"	Str.						451	
622	5	8'-6"	Str.						64	
623	23	17'-4"	109	1'-5"	7'-0"				599	
624	114	18'-2"	112	1'-5"	6'-9"	5'-5"	1"		3111	
625*	6	13'-3"	Str.							
626	6	14'-6"	Str.						131	
627	2	16'-6"	Str.						50	
628	3	10'-5"	104	8'-8"	1'-11"				47	
629	16	3'-6"	Str.						84	
630	10	4'-0"	Str.						60	
631	8	4'-9"	Str.						57	
632	9	8'-3"	Str.						112	
633	24	6'-3"	Str.						225	
634	4	8'-2"	108	1'-11"	6'-3"	6"			51	
635	26	5'-8"	104	5'-0"	10"				221	
637*	6	13'-6"	Str.							
638	6	14'-9"	Str.						133	
639	2	17'-0"	Str.						51	
640	9	8'-6"	Str.						115	
641	3	4'-6"	124	1'-11"	10"	1'-11"	2"		20	
642	4	13'-9"	Str.						83	
									Total 14,215	

\* Bars included for payment with "Item S-1A, 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 97-C.  
For bar bending diagram see sheet 107-C.  
For additional notes see sheet 104-G.

H.N.T.B. BR. NO. 2 PART 6  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK

**WEST ABUTMENT-DETAILS**  
INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY- 42-1832 STA. 58+79.98  
Scale: 3/8" = 1'-0" STA. 61+16.05  
**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO  
DRAWN T.J.R. TRACED J.C.T. CHECKED W.F. REVISIONS DATE 10-27-59 DATE 1-9-59 DATE 4-12-59 SHEET 105

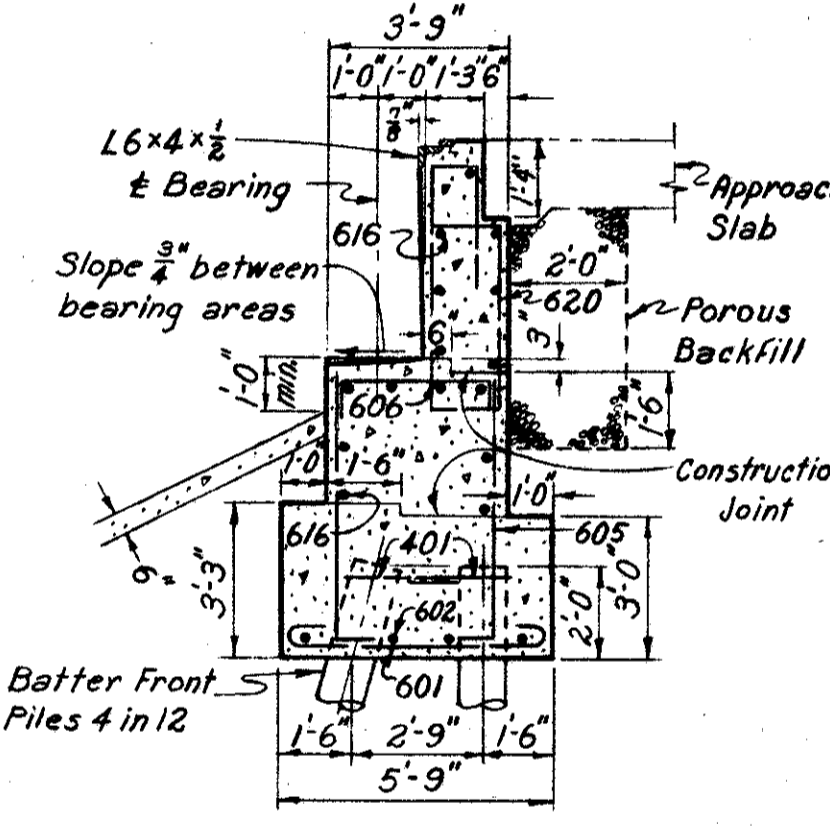
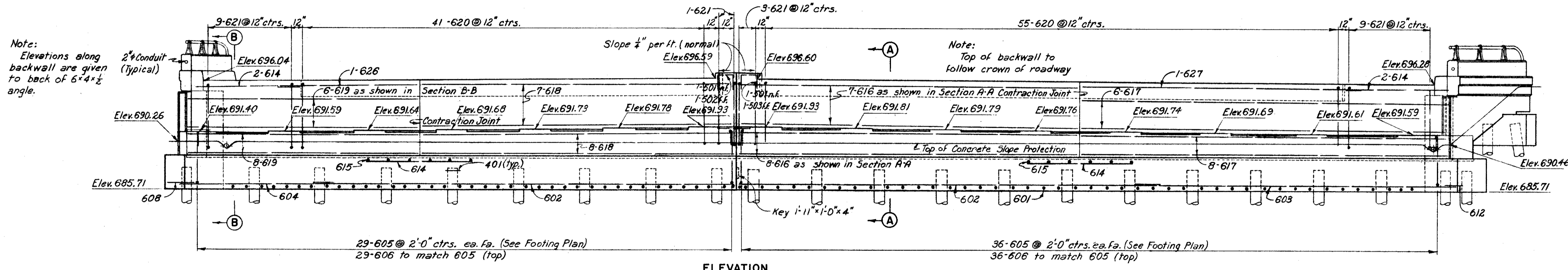
MICROFILMED  
JUL 8 1985



Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

Note: Prefix "AB" shall be assigned to all bar marks.

PLAN

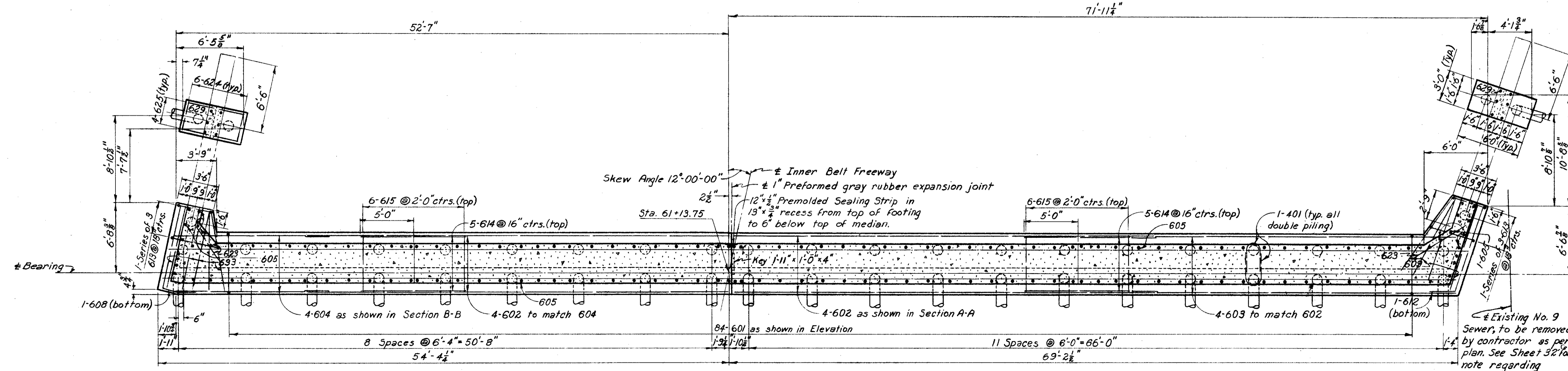


ELEVATION

SECTION A-A

NOTES:

- All piles shall be 12" cast-in-place reinforced concrete.
- All battered piles shall be battered 4 in 12 in direction shown.
- Pile spacings given along bottom of footing.
- For details of end dam, see Sheet 156-G.
- For anchor bar details, see Sheet 156-G.
- Reinforcement bars shall be 3 inches clear from bottom of footings and 2 inches elsewhere.
- For Reinforcement Schedule, see Sheet 107-G.
- For Slope Protection details, see Sheet 157-G.
- For location of lighting conduit, see Sheet 107-G.
- n.f. = near face; f.f. = far face; ea. fa. = each face
- For additional sections, see Sheet 107-G.
- For Railing details and Guard Rail connection details, see Sheet 158-G.



FOOTING PLAN

H.N.T.B. BR. NO. 2 PART 6

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

**EAST ABUTMENT**

INNER BELT FREEWAY OVER EAST 9th ST  
BR. NO. CUY-42-1832 STA. 58+79.98  
Scale: 3/16" = 1'-0" Except STA. 61+16.05  
as noted

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN F.S.T.	TRACED	CHECKED DYO	REVIEWED JCT	REVISED
DATE 10-8-58	DATE	DATE 3-11-59	DATE 11-12-59	

SHEET 106



Note: Prefix "AB" shall be assigned to all bar marks.

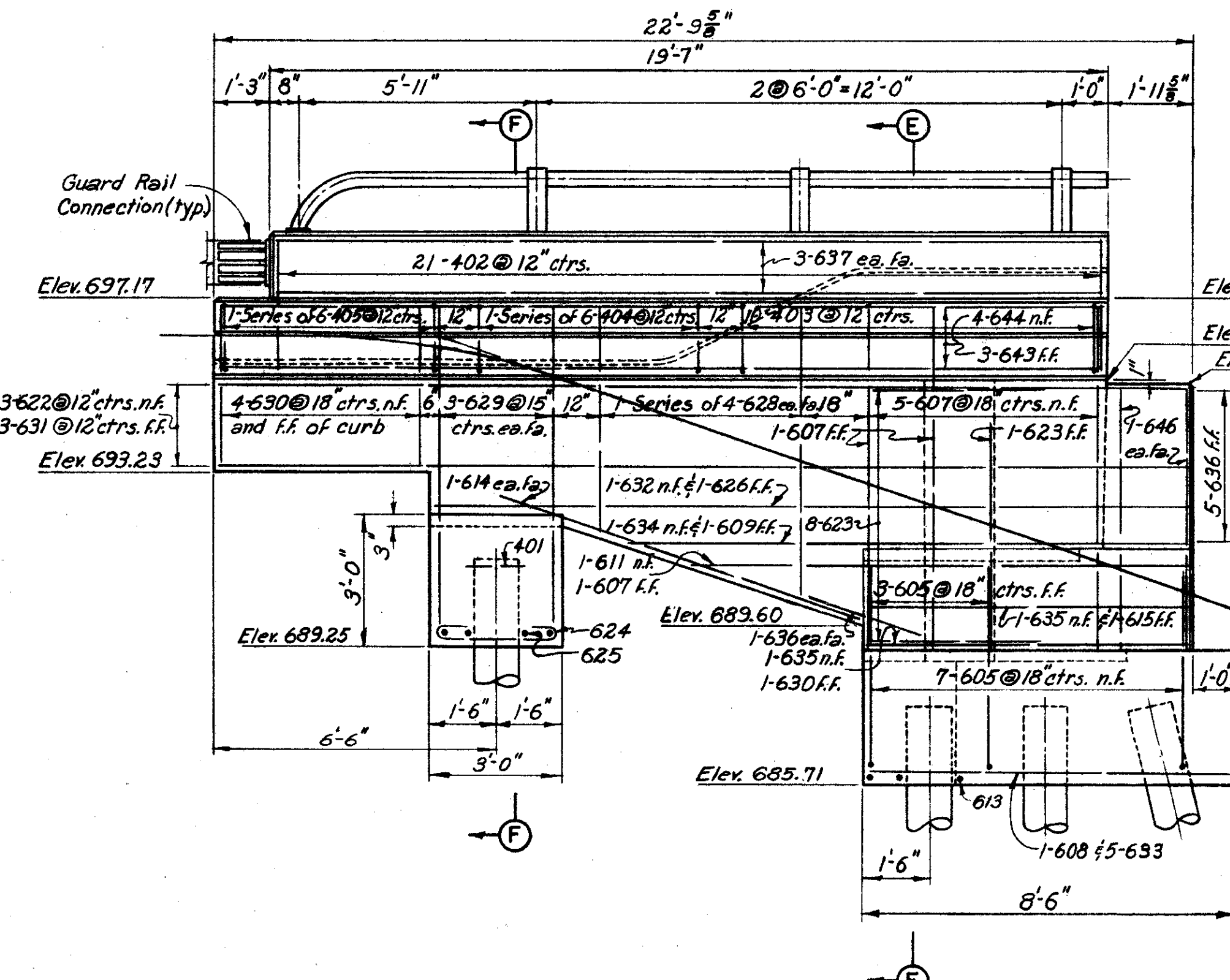
MICROFILMED  
JUL 8 1985

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

107  
175

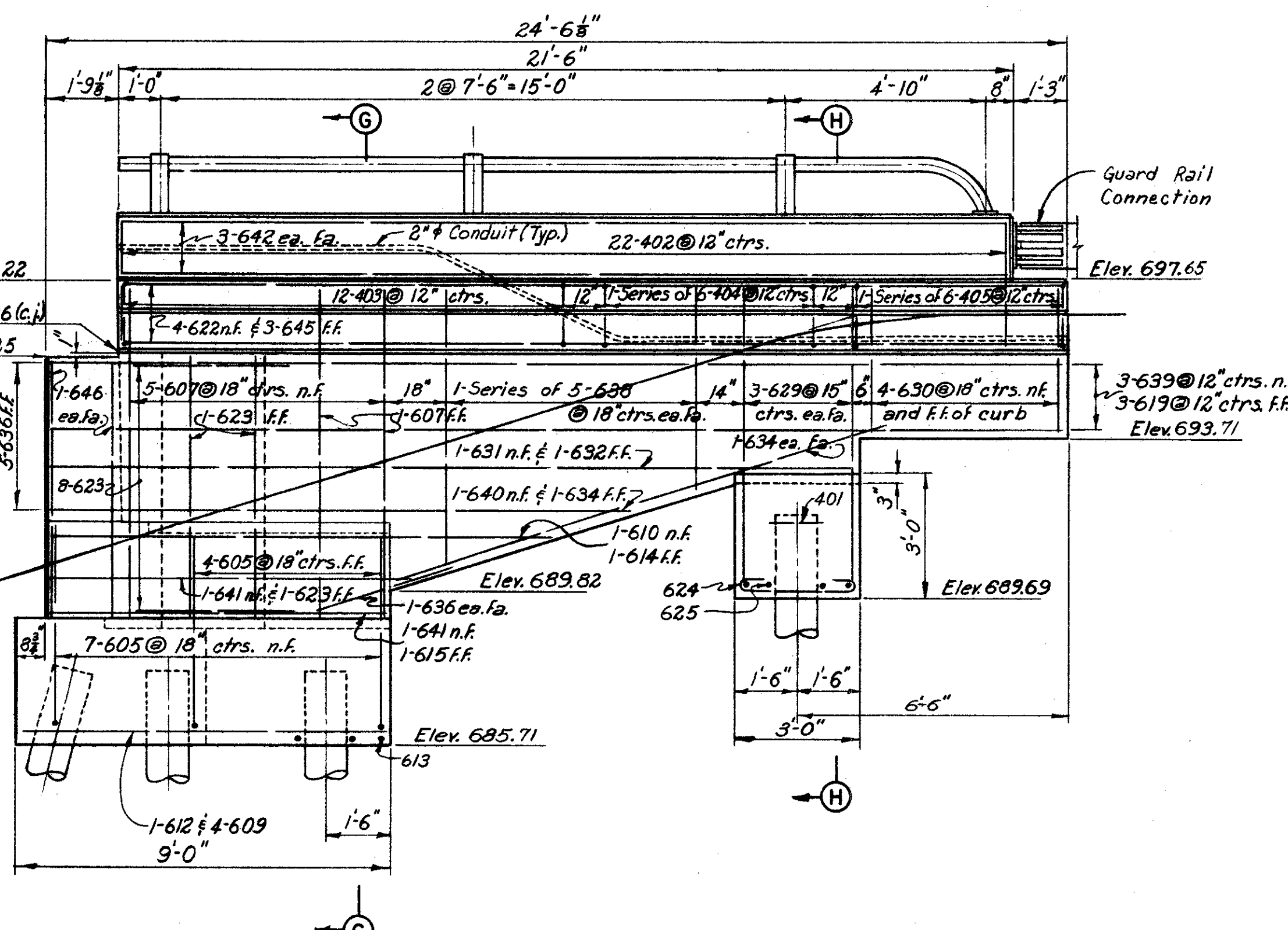
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829

MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCR-MENT	WEIGHT (LBS)
				A	B	C	D		
401	46	5'-10"	144	2'-0"	1'-10"	7"		180	
402	43	5'-7"	105	8"	2'-7"			160	
403	22	6'-11"	154	1'-8"	1'-6"	1'-10"	1'-6"	102	
404	2Ser of 6	6'-5" to 6'-11"	154	1'-5" to 1'-8"	1'-6"	1'-7" to 1'-10"	1'-6"	1 3/8" 53	
405	2Ser of 6	4'-11" to 6'-3"	154	8" to 1'-4"	1'-6"	10" to 1'-6"	1'-6"	3 7/8" 45	
501	107	4'-7"	105	1'-8"	1'-7"			511	
502	1	4'-9"	105	1'-4"	1'-7"			4	
503	1	4'-11"	105	2'-0"	1'-7"			5	
601	84	6'-9"	100	5'-5"				352	
602	8	40'-0"	Str.					481	
603	4	30'-9"	Str.					185	
604	4	14'-9"	Str.					89	
605	151	5'-6"	104	4'-10"	10"			1247	
606	65	6'-11"	105	3'-5"	1'-11"			676	
607	15	7'-9"	Str.					175	
608	1	11'-7"	124	8'-2"	1'-9"	1'-11"	3	17	
609	5	8'-6"	Str.					64	
610	1	13'-10"	108	12'-0"	1'-11"	12	4	21	
611	1	13'-5"	124	11'-9"	6"	1'-11"	9	20	
612	1	10'-6"	108	8'-8"	1'-11"	12	4	16	
613	2Ser of 3	4'-6" to 5'-4"	100	3'-2" to 4'-0"				44	
614	17	10'-0"	Str.					255	
615	14	5'-3"	Str.					110	
616	15	32'-9"	Str.					727	
617	14	35'-0"	Str.					736	
618	15	29'-9"	Str.					670	
619	17	22'-0"	Str.					562	
620	96	18'-1"	112	1'-5"	6'-8"	5'-4"	0	2607	
621	23	16'-1"	109	1'-5"	6'-3"			555	
622	7	22'-3"	Str.					234	
623	20	6'-0"	Str.					180	
624	12	4'-0"	100	2'-8"				72	
625	8	7'-0"	100	5'-8"				84	
626	2	13'-9"	Str.					40	
627	1	27'-0"	Str.					41	
628	2Ser of 4	5'-0" to 6'-6"	Str.				6"	69	
629	12	7'-10"	104	7'-2"	10"			141	
630	17	3'-6"	Str.					89	
631	4	19'-0"	Str.					114	
632	2	17'-6"	Str.					53	
633	5	8'-5"	101	7'-9"				63	
634	4	12'-3"	Str.					74	
635	2	9'-2"	124	7'-0"	6"	1'-11"	3	28	
636	14	4'-0"	Str.					84	
637*	6	19'-0"	Str.					—	
638	2Ser of 4	4'-9" to 6'-9"	Str.				6"	86	
639	3	24'-0"	Str.					108	
640	1	14'-0"	Str.					21	
641	2	9'-10"	108	8'-0"	1'-11"	12	4	30	
642*	6	21'-0"	Str.					—	
643	3	20'-2"	133	12'-0"	8'-2"	71'-10"		91	
644	4	20'-6"	Str.					123	
645	3	22'-8"	133	12'-0"	10'-8"	71'-10"		102	
646	8	5'-9"	Str.					69	
Total								13,165	

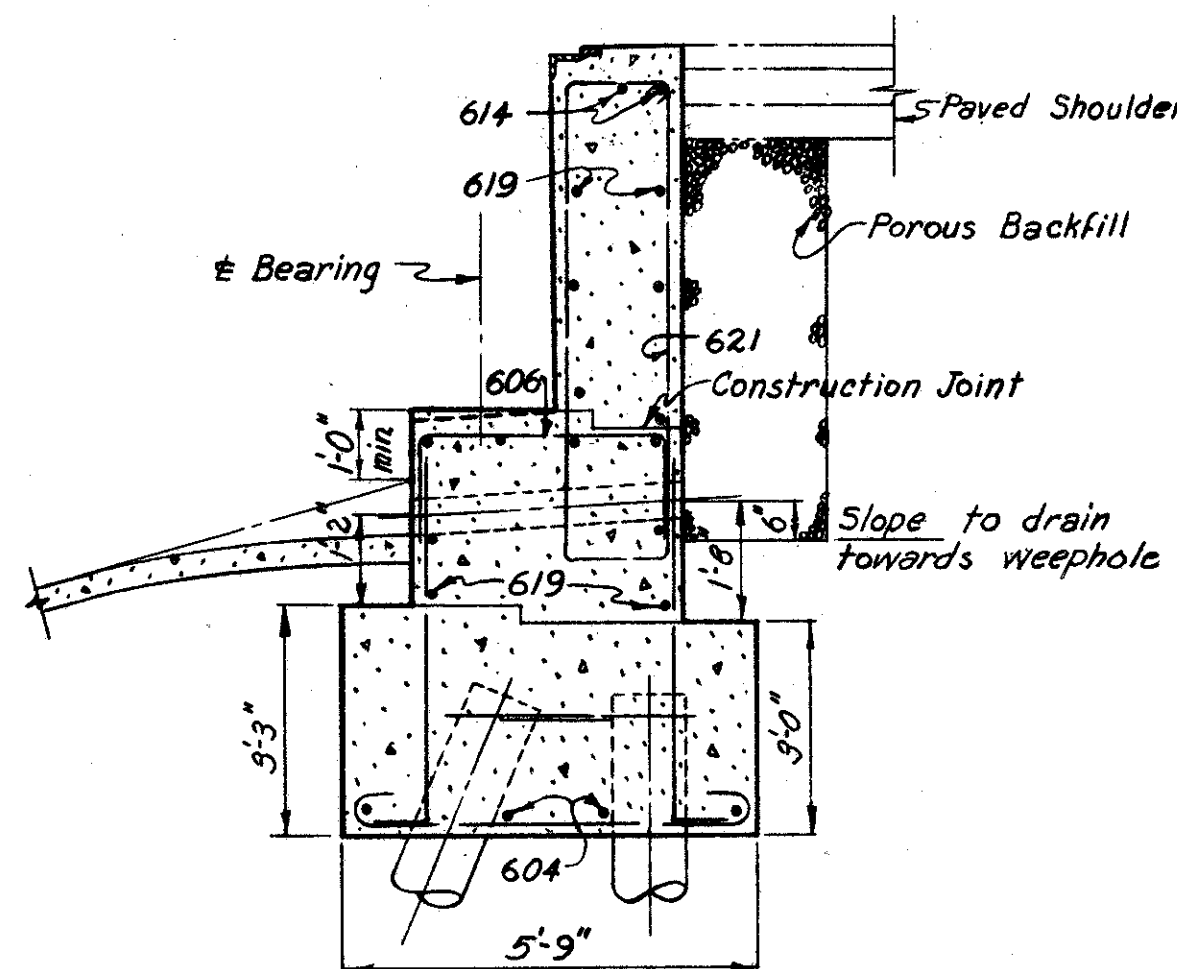


ELEVATION C-C

Notes:  
End of Railing Parapet to be normal to top of safety curb.  
Backfill shall be completed prior to construction of curb.

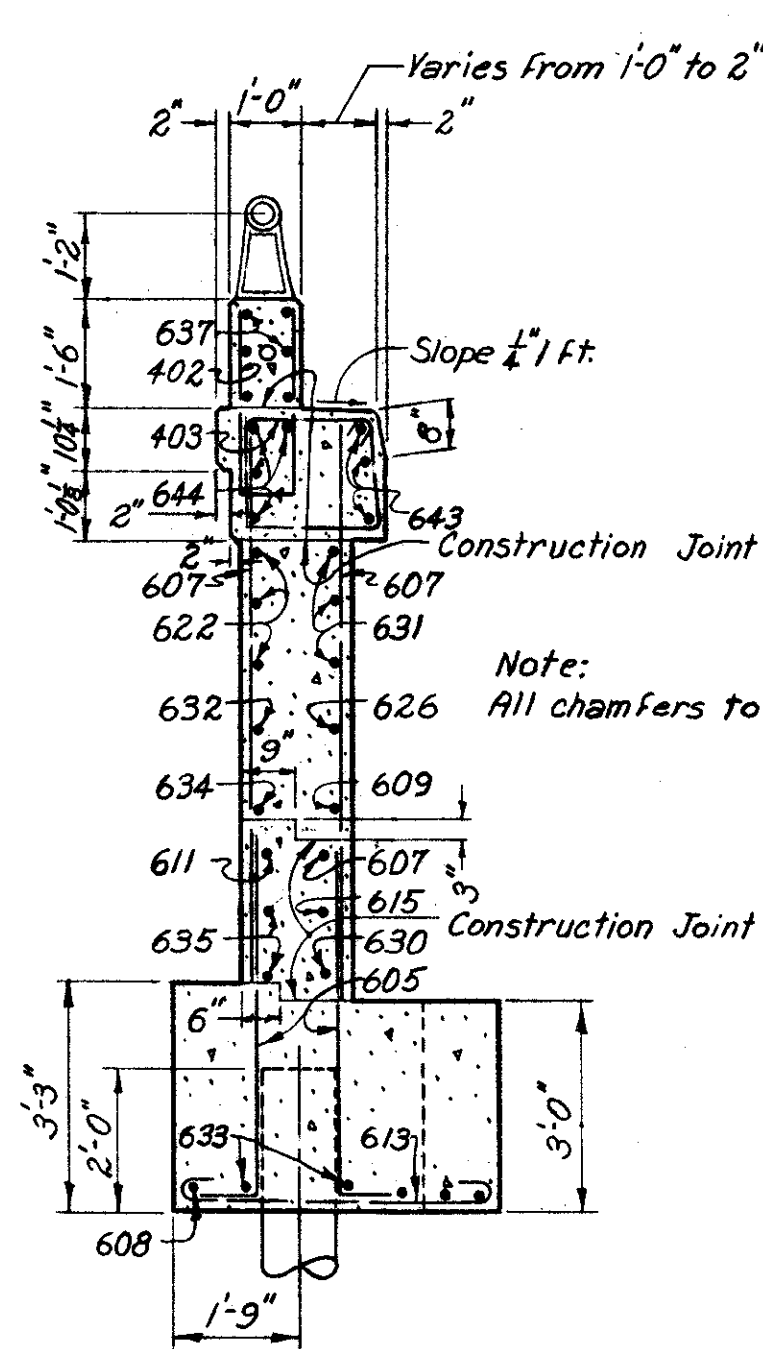


ELEVATION D-D

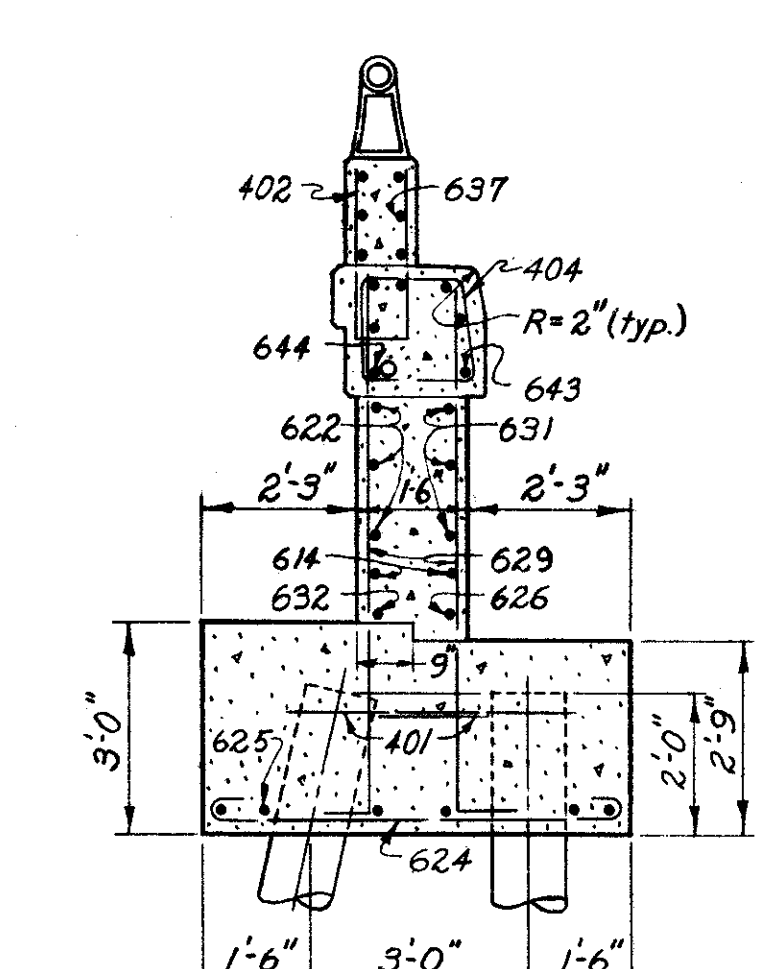


SECTION B-B

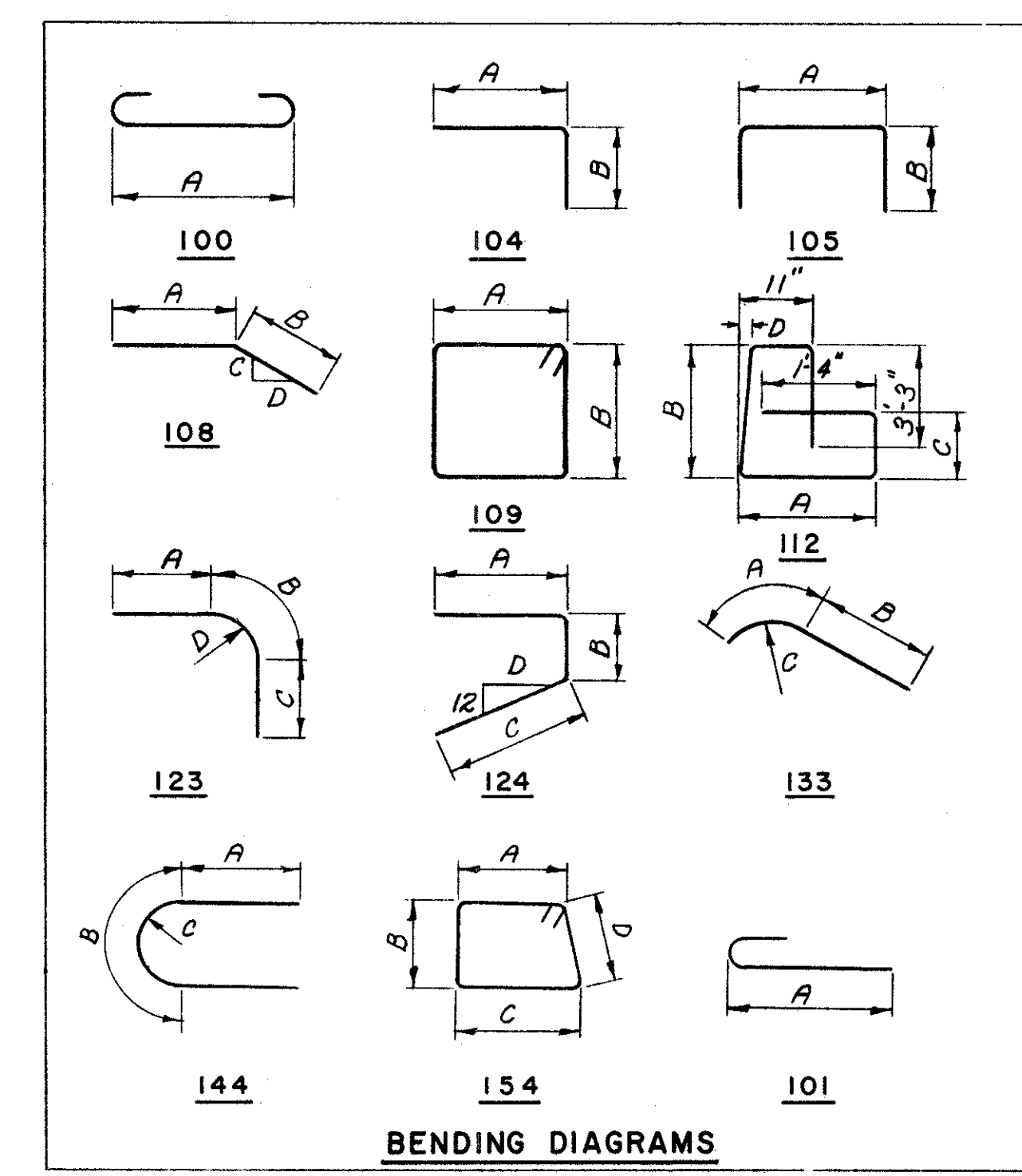
Note: For additional dimensions, see Section A-A



SECTION E-E (Shown)  
SECTION G-G (Similar)



SECTION F-F (Shown)  
SECTION H-H (Similar)



BENDING DIAGRAMS

NOTES:  
Bar dimensions are given out to out.  
\* Bars 637 and 642 are included for payment with Item 5-14 Railing.  
For Replacement Schedule, see Sheet 97-C  
Bars of a series shall vary in length by a constant increment.  
(c.j.) denotes elevation at construction joint.

H.N.T.B. BR. NO. 2 PART 6

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

**EAST ABUTMENT-DETAILS**

INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY-42-1832 STA. 58+79.98  
Scale: 3/8" = 1'-0" STA. 61+16.05

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

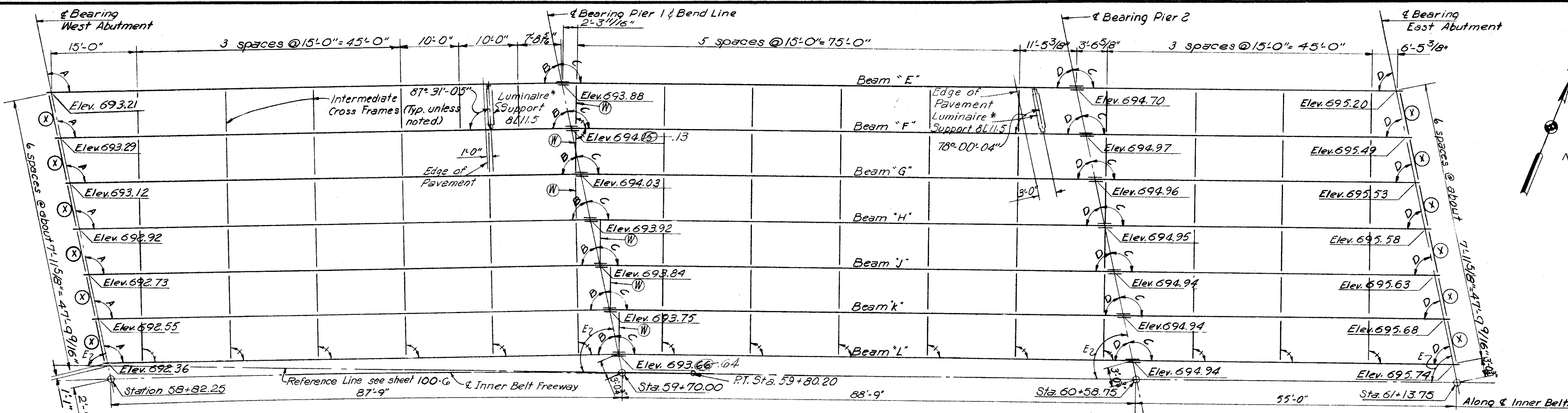
DRAWN F.S.J. TRACED	CHECKED D.Y.O.	REVIEWED J.C.T.	REVISED
DATE 10-14-58	DATE 3-11-59	DATE 11-12-59	

SHEET 107



MICROFILMED  
JUL 8 1985

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



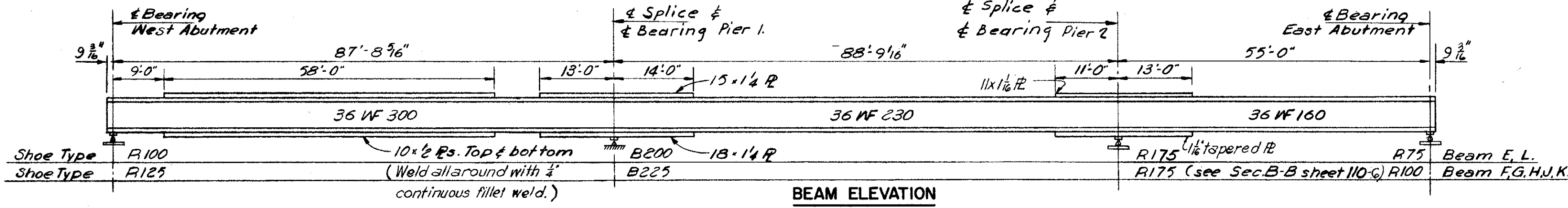
FRAMING PLAN

Note:  
 (X) indicates type of end cross frame.  
 (Y) indicates 90° angle  
 (W) indicates type of bend line cross frame.  
 Elevations are to top of WF beams at points shown, exclusive of cover plates.

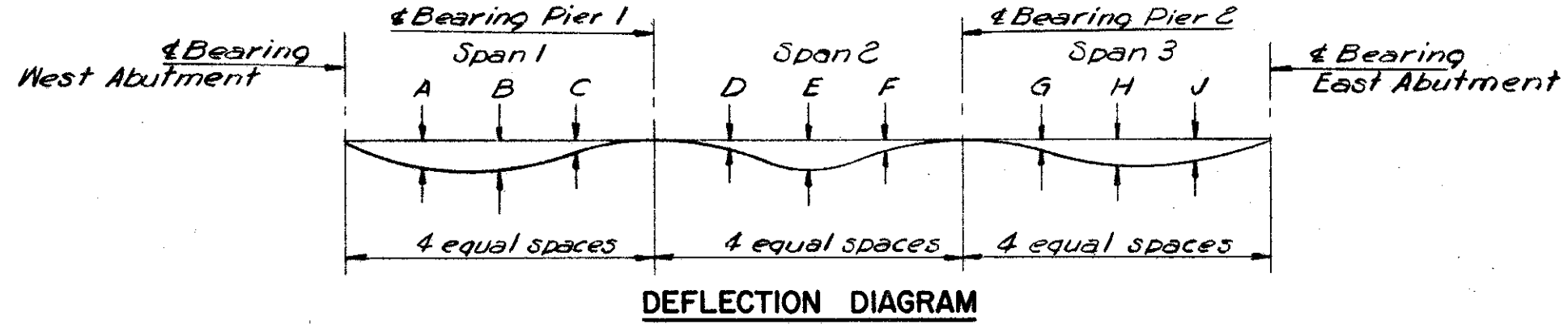
NOTES:  
 For details of intermediate, bend line (W), and end (X) cross frames, see sheet 111.  
 For details of end dams, see sheet 156-G

For drainage details, see sheet 157-G  
 \* For details of underdeck lighting, see sheets 158 & 160-G  
 For beam splice details, see sheet 110-G  
 For details of rocker masonry plates see sh. 156-G  
 For other rocker details and details of bolsters see Ohio Standards, Sheet AB-1-55.

A	100° 44' - 08"
B	79° 15' - 52"
C	102° 00' - 00"
D & E	78° 00' - 00"



BEAM ELEVATION  
(Typ. except as noted)



BEAM	SPAN 1			SPAN 2			SPAN 3		
	DEAD CONC.	LOAD TOTAL	CONV.	DEAD CONC.	LOAD TOTAL	CONV.	DEAD CONC.	LOAD TOTAL	CONV.
A	1 3/8	1 3/8	4 9/16	1 3/8	1 3/8	2 1/2	3 1/2	3 1/2	1 1/2
B	1 3/8	1 3/8	1 7/8	1 3/8	1 3/8	2 1/4	9 1/8	3 1/2	1 1/2
C	3 1/2	1"	1 5/16	1 5/16	1 5/16	2 1/16	1 1/2	1 1/2	1 1/2
D	1 3/8	1 3/8	1 7/8	1 3/8	1 3/8	2 1/4	3 1/2	3 1/2	1 1/2
E	1"	1 1/2	0	1 1/2	1 1/2	0	1 1/2	1 1/2	0
F	1 3/8	1 3/8	0	1 1/2	1 3/8	0	9 1/8	3 1/2	1 1/2
G	1 3/8	1 3/8	0	1 1/2	1 3/8	0	9 1/8	3 1/2	1 1/2
H	1 3/8	1 3/8	0	1 1/2	1 3/8	0	9 1/8	3 1/2	1 1/2
J	1 3/8	1 3/8	0	1 1/2	1 3/8	0	9 1/8	3 1/2	1 1/2
K	1 3/8	1 3/8	0	1 1/2	1 3/8	0	9 1/8	3 1/2	1 1/2
L	1 3/8	1 3/8	0	1 1/2	1 3/8	0	9 1/8	3 1/2	1 1/2
M	1 3/8	1 3/8	1"	1 3/8	1 3/8	1"	9 1/8	3 1/2	1 1/2
N	1 3/8	1 3/8	3 3/4"	1 3/8	1 3/8	3 3/4"	9 1/8	3 1/2	1 1/2
P	1 3/8	1 3/8	1"	1 3/8	1 3/8	1"	9 1/8	3 1/2	1 1/2
Q	1 3/8	1 3/8	3 3/4"	1 3/8	1 3/8	3 3/4"	9 1/8	3 1/2	1 1/2
R	1 3/8	1 3/8	7 3/8"	1 3/8	1 3/8	7 3/8"	9 1/8	3 1/2	1 1/2
S	1 3/8	1 3/8	1 1/2"	1 3/8	1 3/8	1 1/2"	9 1/8	3 1/2	1 1/2
T	1 3/8	1 3/8	1 1/2"	1 3/8	1 3/8	1 1/2"	9 1/8	3 1/2	1 1/2
U	1"	1 1/2	1 1/2"	1 1/2	1 1/2	1 1/2"	9 1/8	3 1/2	1 1/2

NOTES:  
 The beams shall be cambered as follows:  
 Where the sum of the deflections and convexity is 3/4" to 1", the required camber will be one (1) inch, and if greater than 1", the required camber will be the same as this sum.  
 No camber will be required if this sum is less than 3/4".  
 Beams which do not require camber 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 the deflection table, the following abbreviations are used:  
 (D.L. Def.) - denotes dead load deflections.  
 (Tot.) - refers to the total deflection from dead load of steel and concrete.  
 (Con.) - denotes deflections for concrete.  
 (Conv.) - denotes convexity corrections required for vertical curvature of the roadway gradient.

H.N.T.B. BR. NO. 2 PART 6

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

**FRAMING PLAN-NORTH HALF**  
INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY-42-1832 STA. 58+79.98  
Scale: None STA. 61+16.05

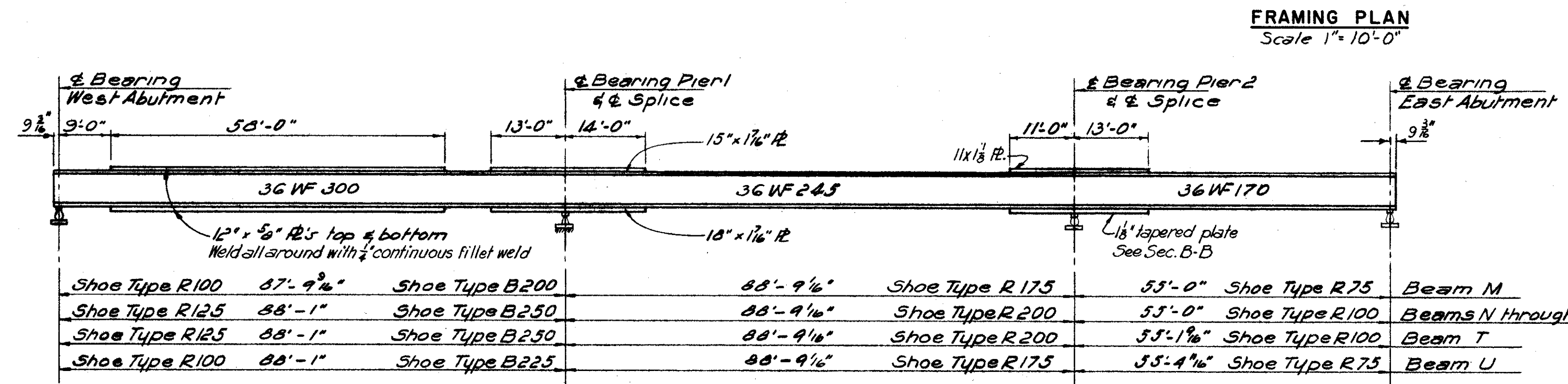
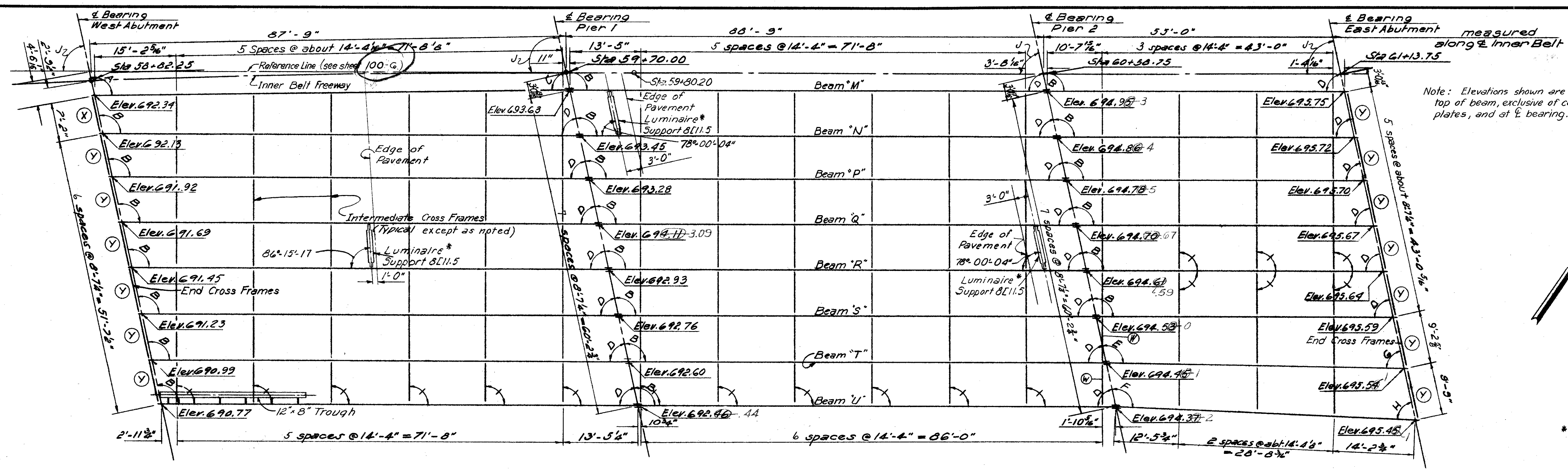
**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 5-23-58	DATE	DATE 7-7-58	DATE 11-12-59	DATE 7-15-60

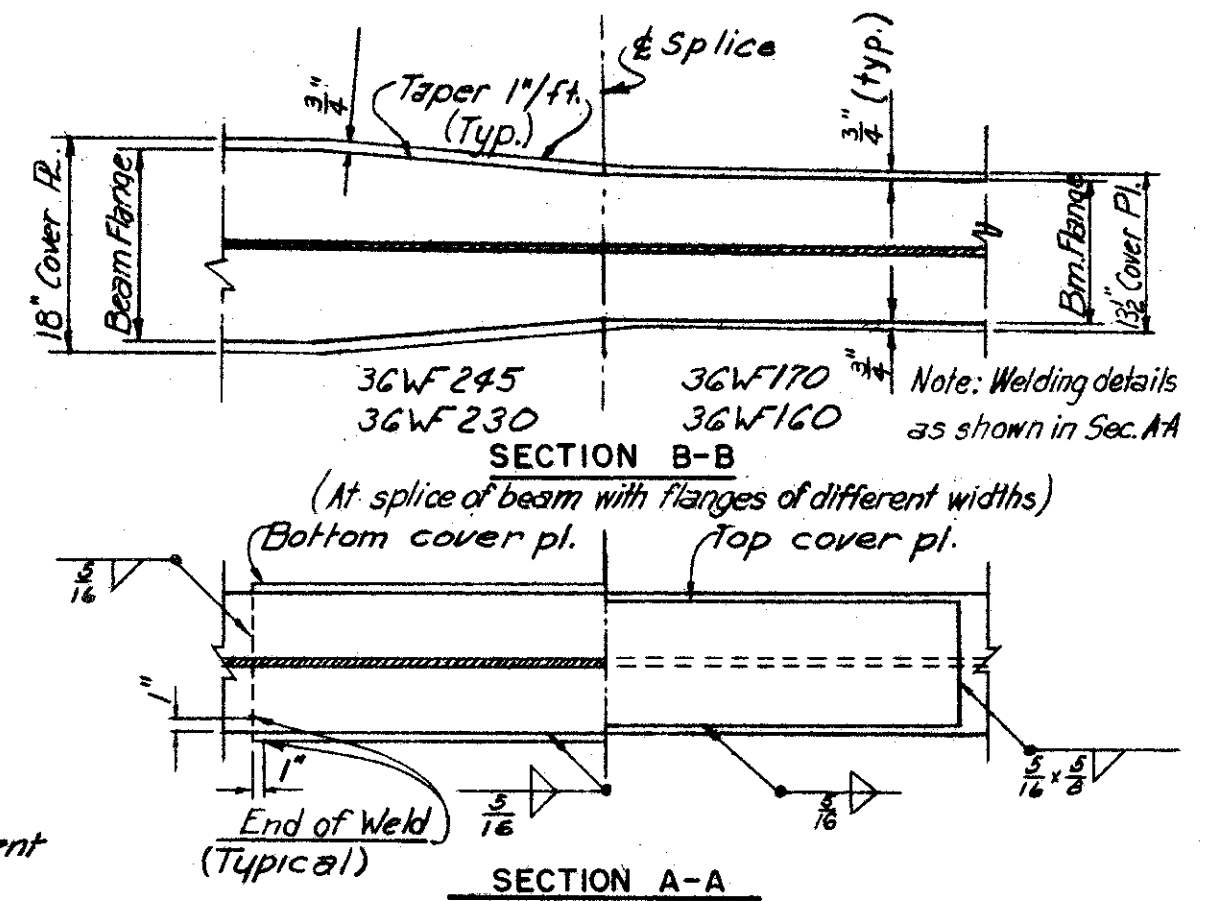
SHEET 109

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829

MICROFILMED  
JUL 8 1985



Note: Cover plates may be fabricated from a single wide plate or from two plates but welded for full strength and ground smooth in the shop. The splice shall be a minimum of 2'-0" from the bearing of the beam splice.

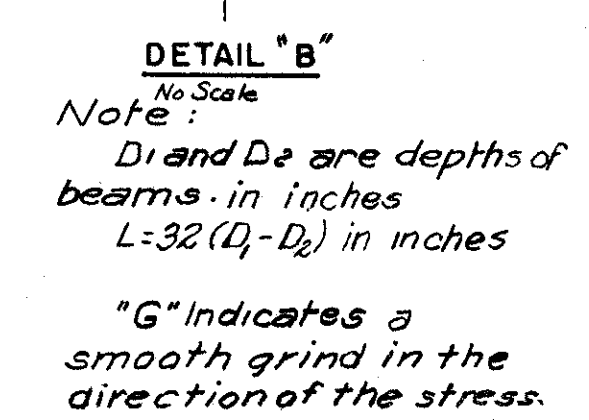


NOTE:  
For additional notes, see sheet 109-G

A	101°-04'-55"
B	102°-00'-00"
C	78°-55'-05"
D	78°-00'-00"
E	102°-37'-23"
F	103°-46'-04"
G	77°-22'-37"
H	76°-13'-16"
J	78°-00'-00"

For splice at Pier	1	2
Raise beam at West Abut.		
Raise beam at East Abut.		
Beam A through D	5/8"	2"
Beam E through L	5/8"	2 1/8"
Beam M through U	5/8"	2 1/4"

Note:  
Raise beam at West Abutment and beam at East Abutment at the same time and splice at Piers 1 and 2.



BEAM SPLICE WELDING PROCEDURE

1. Raise end of beam to be spliced amount shown in table at East & West Abut.
2. Butt weld the beam flanges and web, using following sequence: make two passes on each flange, then two on the web; repeat until welds are completed.
3. Weld the bottom and top cover plates.
4. Weld splice at other pier following steps 3 thru 5.
5. Lower the beam ends to final positions.

H.N.T.B. BR. NO. 2 PART 6

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

**FRAMING PLAN-SOUTH HALF**  
INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY-42-1832 STA. 58+79.05  
Scale: As noted STA. 61+16.05  
**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

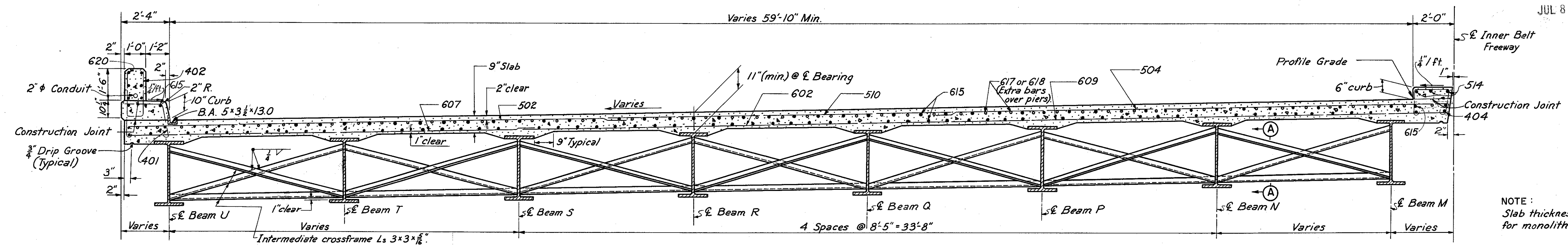
DRAWN BY	TRACED	CHECKED	REVIEWED	REVISED
DATE 5-14-54	DATE	DATE 8/17/54	DATE 11-12-59	7-15-60

SHEET 110

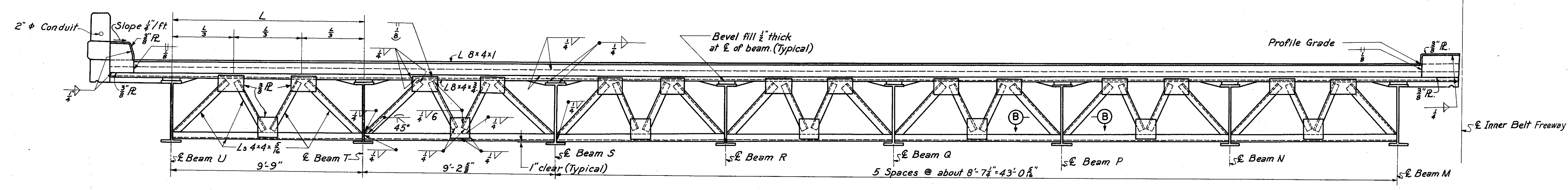
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829

Note: Prefix "SA" shall be assigned to all bar marks.

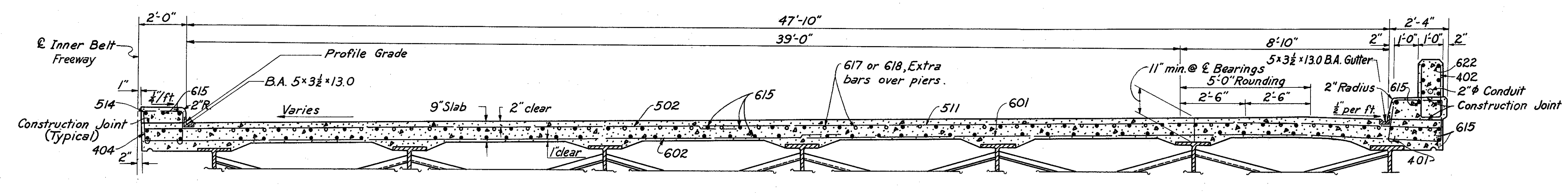
NOTE:  
Slab thickness shown includes 1" for monolithic wearing surface.



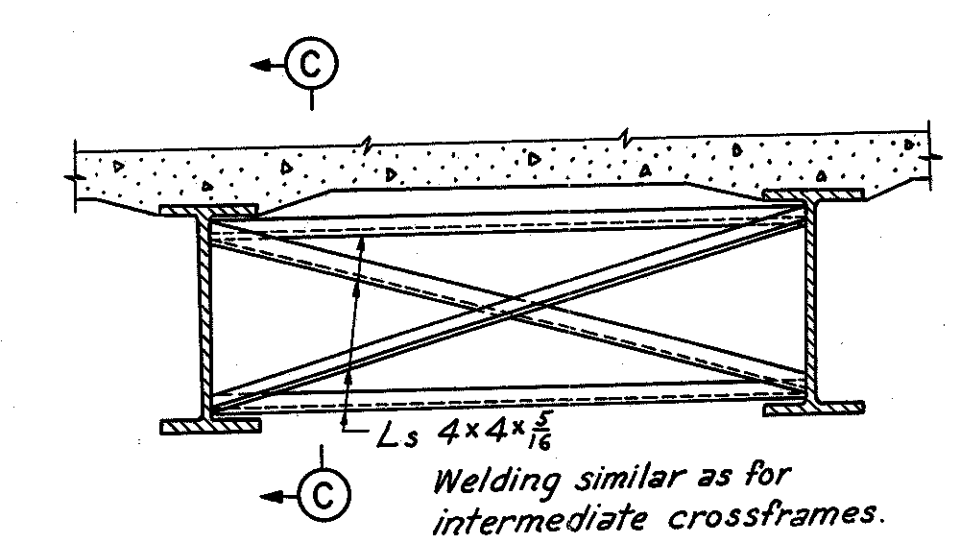
SECTION THRU SOUTH ROADWAY AT INTERMEDIATE CROSSFRAMES



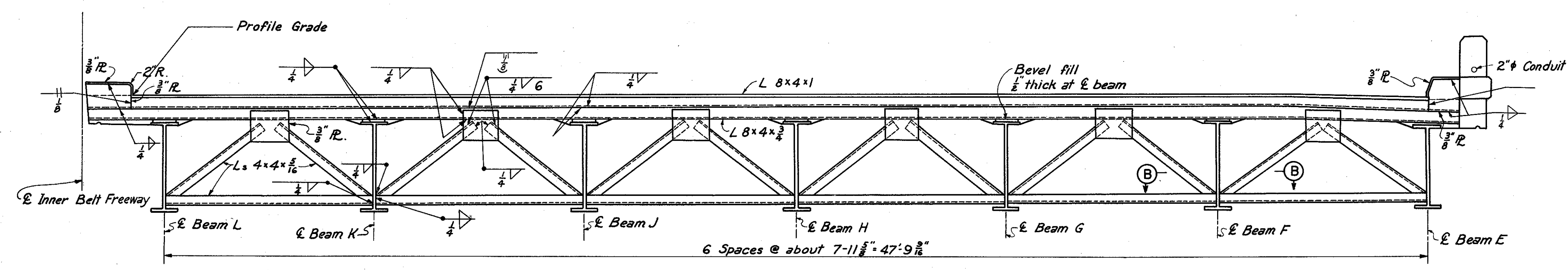
SECTION THRU SOUTH ROADWAY AT END FINISH  
TYPE (Y) CROSSFRAMES SHOWN



SECTION THRU NORTH ROADWAY AT INTERMEDIATE CROSSFRAMES



BEND LINE CROSSFRAME - TYPE (W)



SECTION THRU NORTH ROADWAY AT END FINISH  
TYPE (X) CROSSFRAMES SHOWN

NOTES:  
For sections A-A, B-B and C-C, see sheet 113-G.  
For details of end dams, see sheet 156-G.

H.N.T.B. BR. NO. 2 PART 6

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

**TYPICAL SECTIONS**

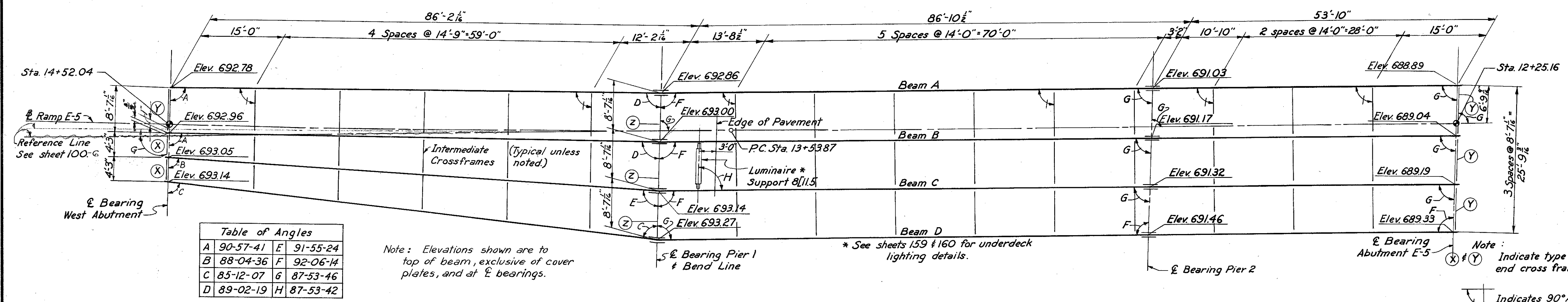
INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY-42-1832 STA. 58 + 79.98  
Scale 3/8" = 1'-0" STA. 61 + 16.05

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN A/g	TRACED R/K	CHECKED R/W	REVIEWED JCT	REVISED
DATE 6-27-59	DATE 4-9-59	DATE 7-3-59	DATE 11-12-59	

SHEET 111

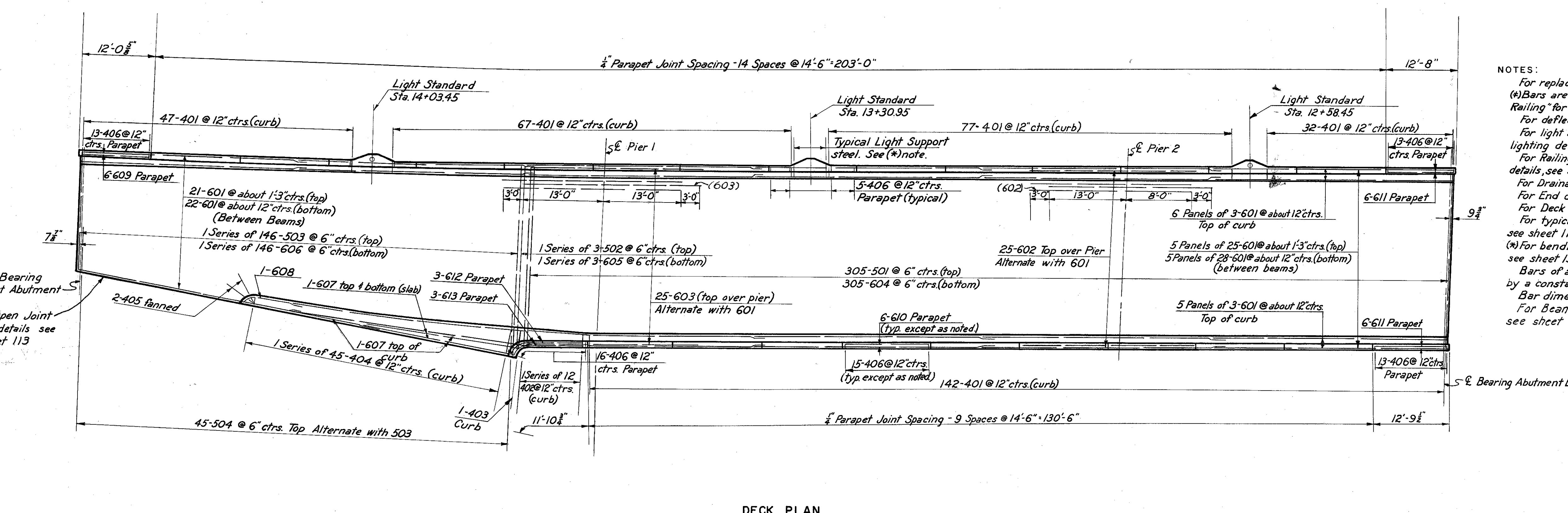
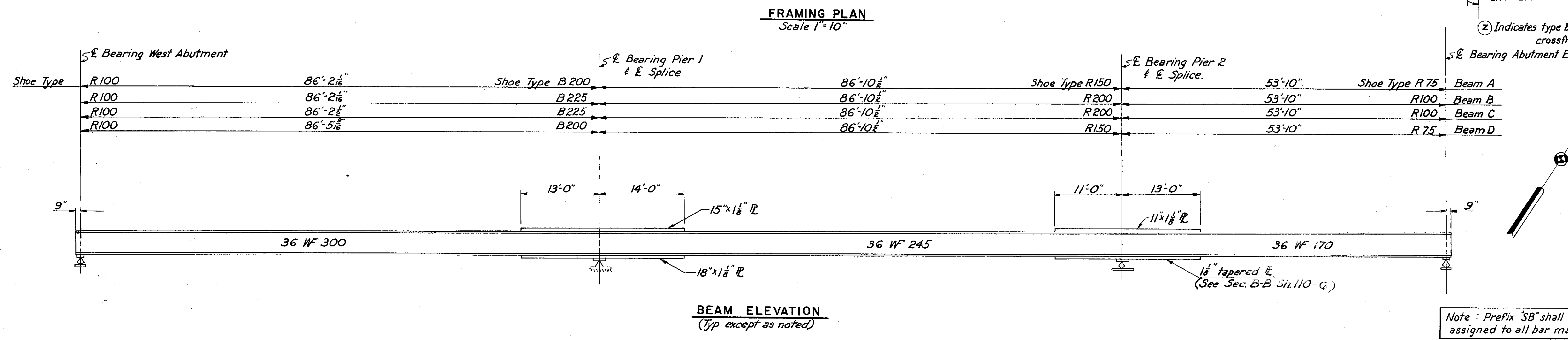
CUYAHOGA COUNTY  
 CITY OF CLEVELAND  
 CUY - 42 - 18.29



**REINFORCEMENT SCHEDULE**

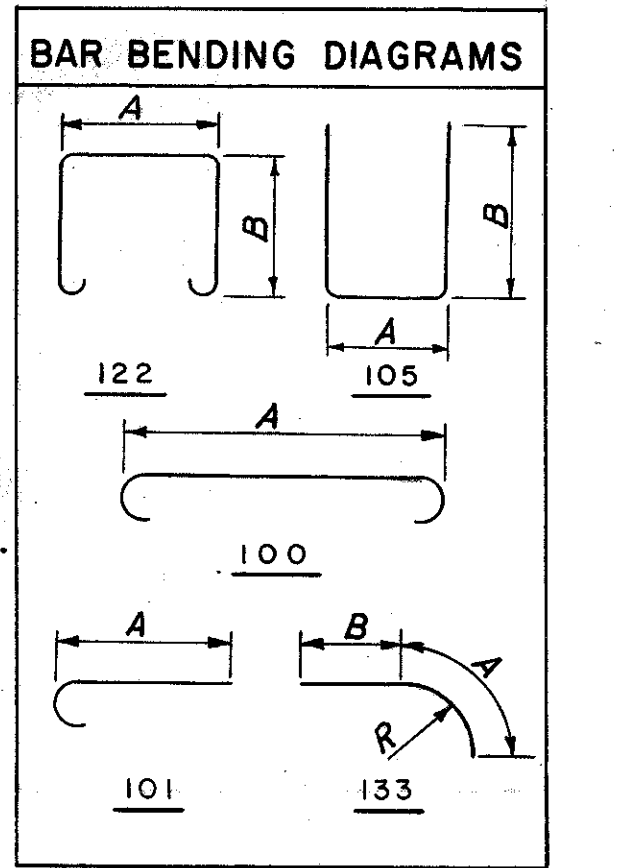
MARK	NO	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	SER. INC.	WT. LBS.
401	364	5'-3"	122	1'-8"	1'-5"		1278
402	1 Series of 12	5'-7 1/2" to 6'-7"	122	2'-0" to 3'-0"	1'-5"	1 1/2"	49
403	1	8'-0"	122	4'-5"	1'-5"		5
404	1 Series of 2	5'-4 1/2" to 7'-11"	122	1'-9 1/2" to 4'-4"	1'-5"	3/8"	199
405	2	5'-4"	122	1'-9"	1'-5"		7
406	384	4'-5"	105	0'-8"	2'-0"	C	1133
*451	6	9'-3"	131	2'-6"	3'-0"	1'-2"	36
*452	6	10'-3"	131	3'-0"	3'-0"	1'-8"	42
*453	9	9'-9"	131	3'-2"	3'-0"	1'-0"	60
*454	6	5'-11"	155	2'-2"	1'-6"		24
*455	6	6'-5"	155	2'-8"	1'-6"		27
*456	9	6'-7"	155	2'-10"	1'-6"		39
501	305	30'-11"	100	29'-9"			9835
502	1 Series of 3	31'-5 1/2" to 32'-5 1/2"	100	30'-3 1/2" to 31'-3 1/2"		6"	100
503	1 Series of 2	21'-2 1/2" to 21'-11 1/2"	100	20'-0" to 21'-11 1/2"		1 1/2"	4175
504	145	7'-7"	101	7'-0"			1147
601	341	39'-9"	Str.				20359
602	25	24'-0"	Str.				901
603	25	29'-0"	Str.				1089
604	305	29'-9"	Str.				13629
605	1 Series of 3	30'-3 1/2" to 31'-3 1/2"	Str.			6"	139
606	1 Series of 2	20'-0" to 21'-11 1/2"	Str.			1 1/2"	5675
607	7	22'-9"	Str.				239
608	1	10'-8"	133	2'-8"	8'-0"	R-1'-10"	16
*609	6	11'-9"	Str.				-
*610	138	14'-0"	Str.				-
*611	12	12'-6"	Str.				-
*612	3	16'-0"	133	4'-3"	11'-9"	R-2'-10"	-
*613	3	15'-0"	133	3'-3"	11'-9"	R-2'-2"	-
*651	6	9'-5"	141	2'-11"	1'-10"		74
*652	9	14'-6"	141	5'-3"	3'-0"		195
*653	3	5'-0"	Str.				24

Total 60496



**NOTES:**

- For replacement schedule, see sheet 97-G.
- (\*) Bars are to be included with Item S-14, Railing for payment.
- For deflections, see sheet 109-G.
- For light standard support and other lighting details, see sheet 159-G & 160-G.
- For Railing, Guard Rail & Parapet Joint details, see sheet 158-G.
- For Drainage details, see sheet 157-G.
- For End dam details, see sheet 156-G.
- For Deck details, see sheet 113-G & 115-G.
- For typical crosssections through deck, see sheet 113-G.
- (x) For bending diagram and placement, see sheet 159-G.
- Bars of a series shall vary in length by a constant increment.
- Bar dimensions are given out to out.
- For Beam Splice Welding Procedure see sheet 110-G.



H.N.T.B. BR. NO. 2 PART 6

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

**FRAMING & DECK PLAN**  
**RAMP E-5**

INNER BELT FREEWAY OVER EAST 9th ST.  
 BR. NO. CUY - 42-1832 STA. 58 + 79.98  
 Scale: 1" = 10' STA. 61 + 16.05

**WILLOW-INNER BELT FREEWAY**  
 CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN BY TRACED BY CHECKED BY REVIEWED BY REVISIONS  
 DATE 5-12-58 DATE 5-13-59 DATE 10-23-59 DATE 11-12-59 SHEET 112

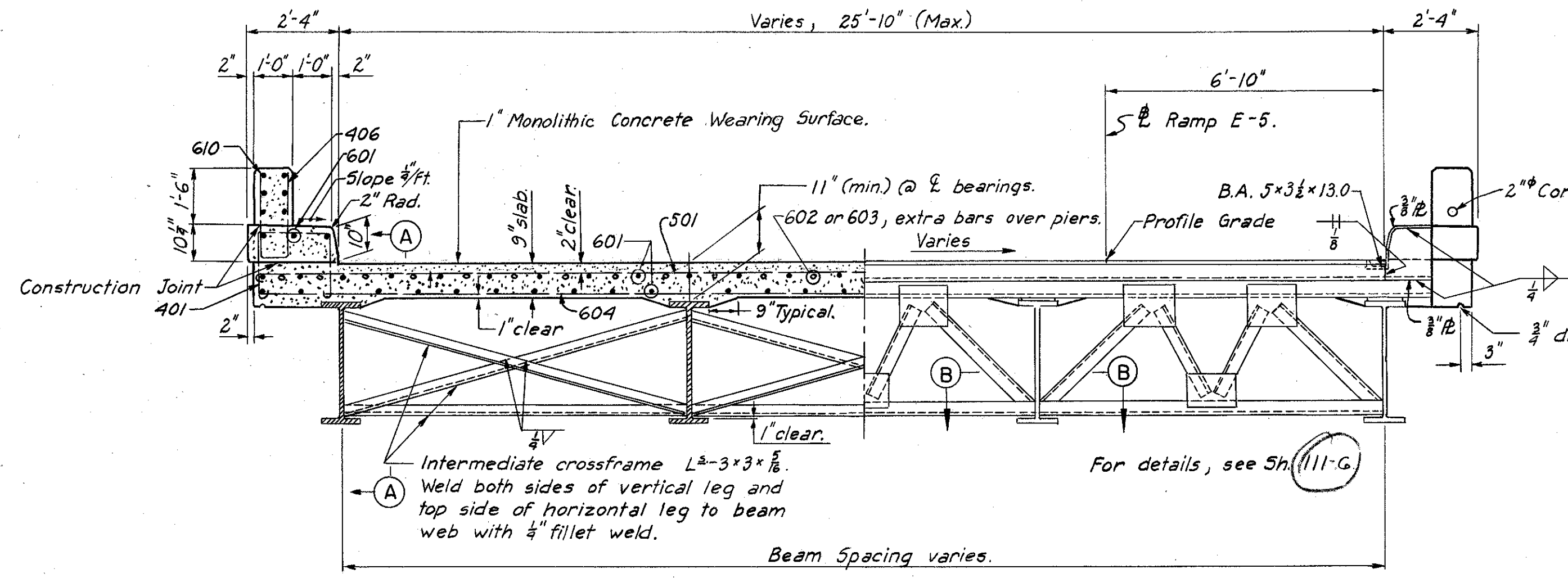
Note: Slab thickness shown includes 1" for monolithic wearing surface.

Note: Prefix "SB" shall be assigned to all bar marks.

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JUL 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	113 175
2	OHIO		

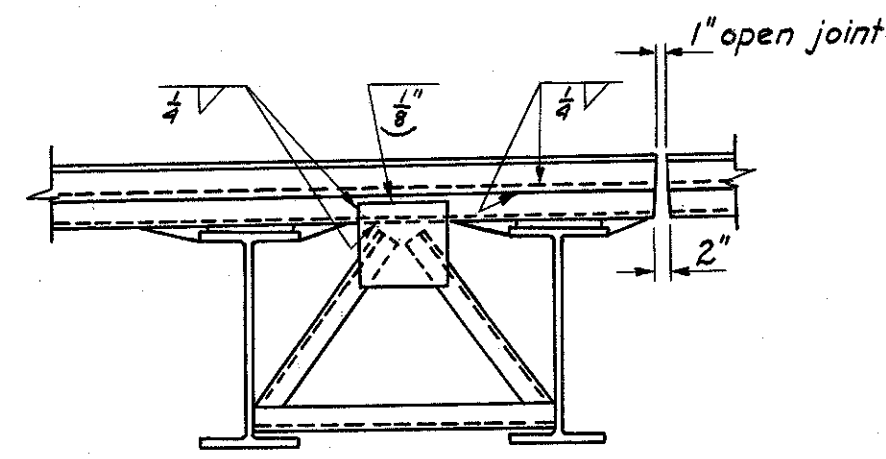
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



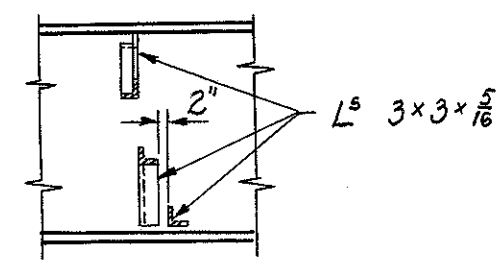
PART SECTION AT INTERMEDIATE CROSS FRAMES.

PART SECTION AT END FINISH.

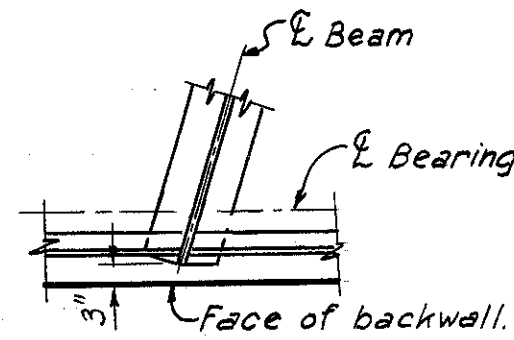
TYPICAL SECTION RAMP E-5.



For details, see Sh. 111-G

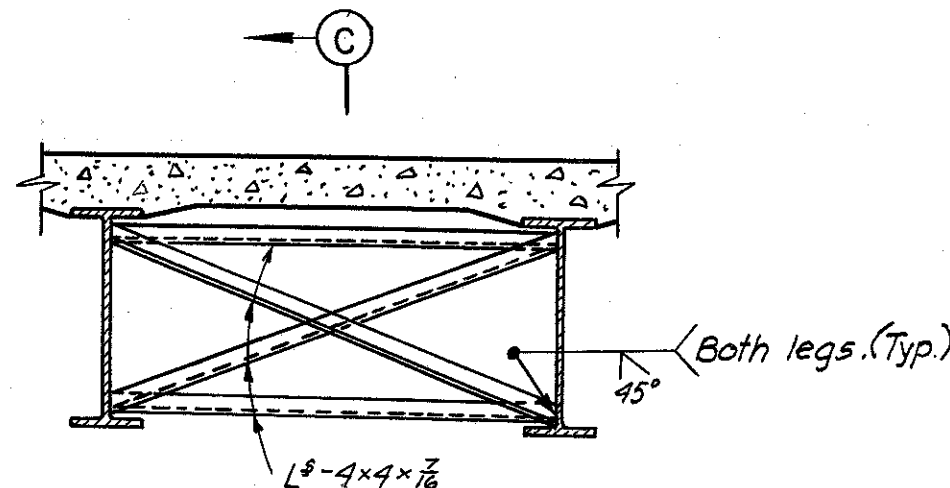


SECTION A-A.

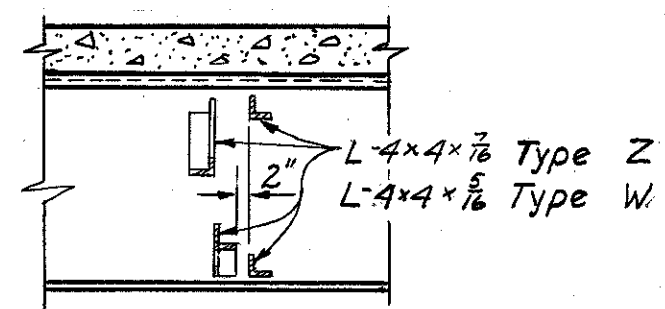


SECTION B-B.

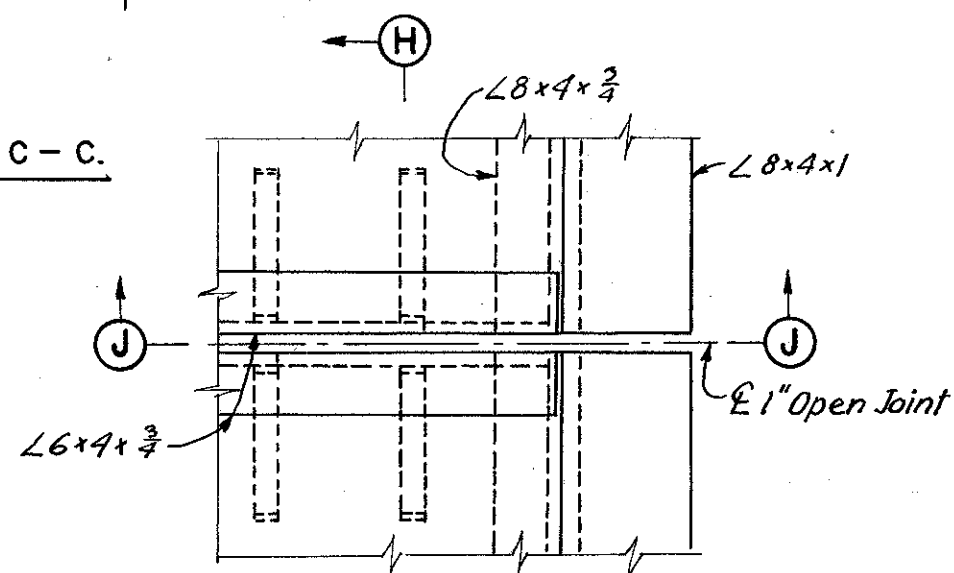
PART SECTION SHOWING END FINISH AT W. ABUT. AT JUNCTION OF RAMP E-5 WITH N. ROADWAY.



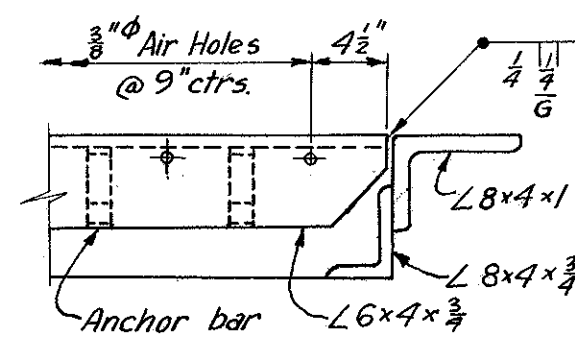
BEND LINE CROSS FRAME TYPE (Z)



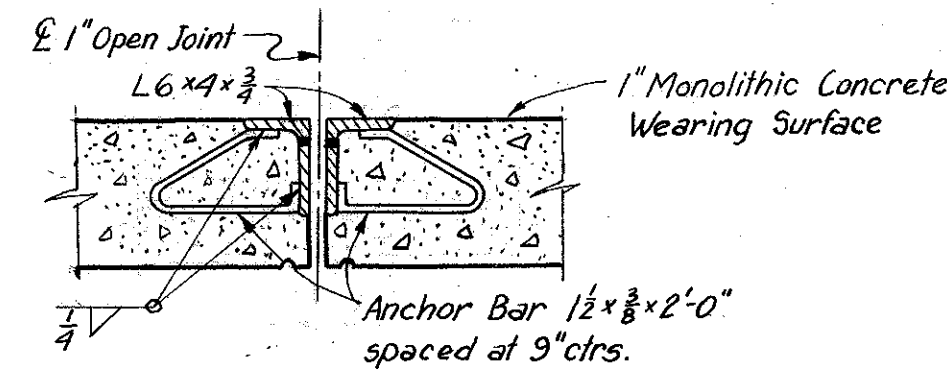
SECTION C-C.



PARTIAL PLAN AT ABUTMENT



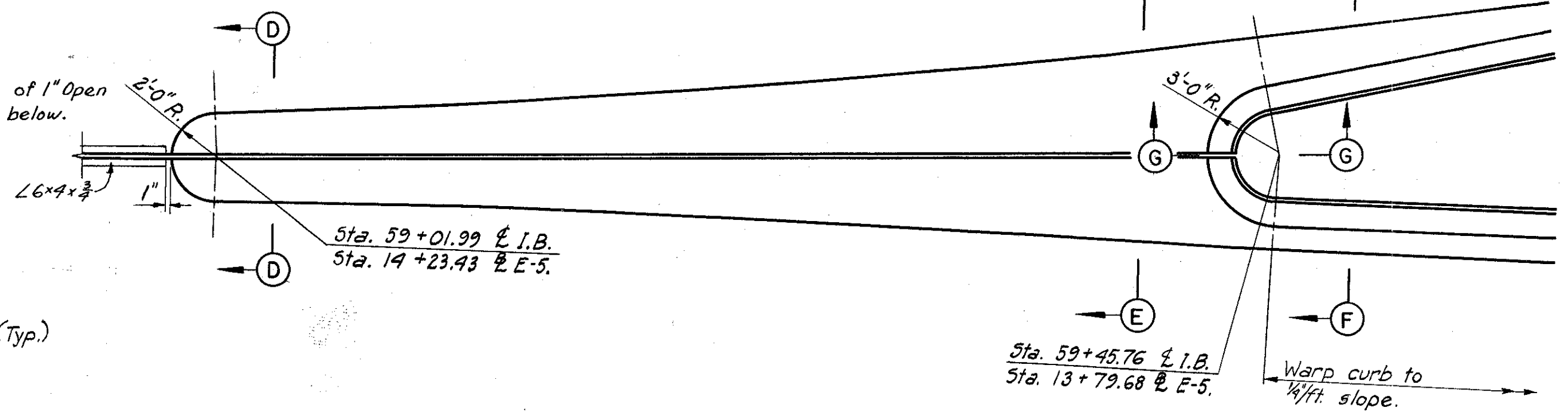
DETAIL FOR 1" OPEN JOINT Scale: 1" = 1'-0"



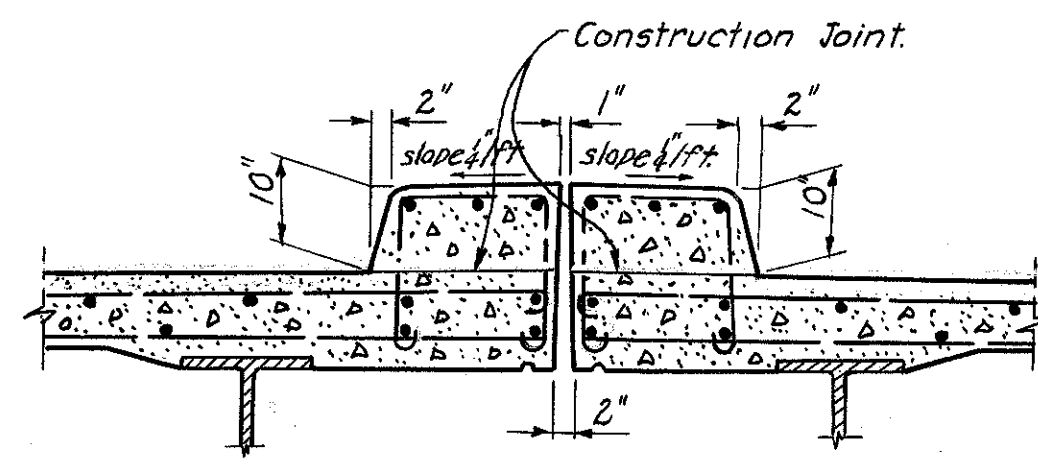
SECTION H-H

NOSE DETAILS, RAMP E-5. Scale: 1/2" = 1'-0"

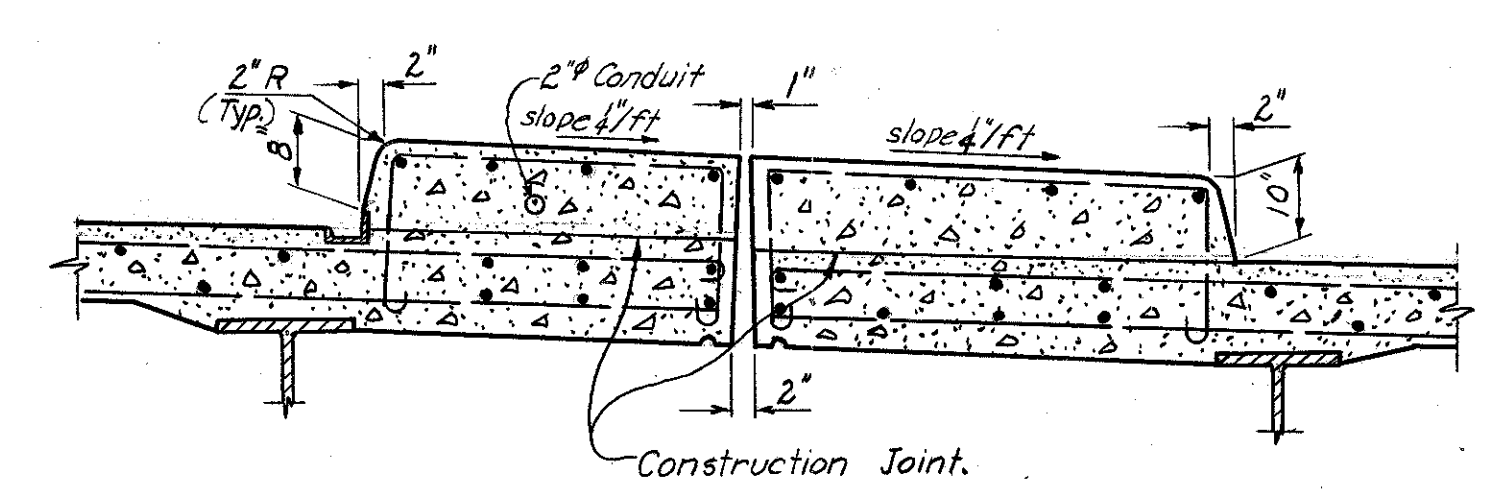
For notes, see Sh. 112-G.



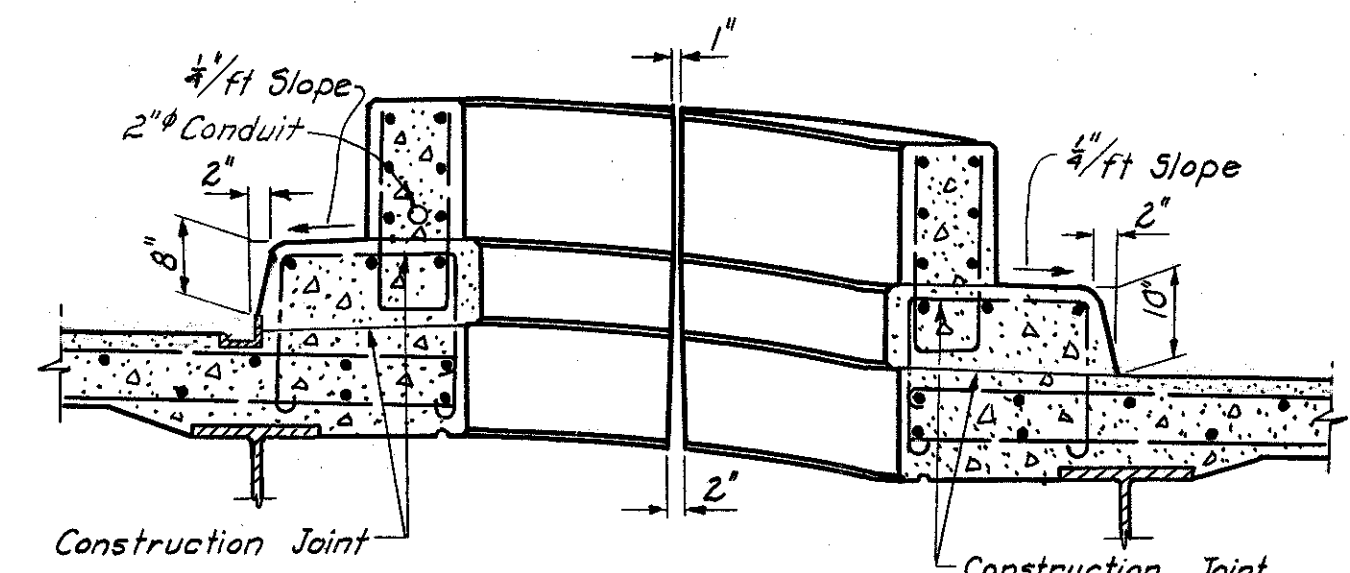
PLAN Scale: 3/8" = 1'-0"



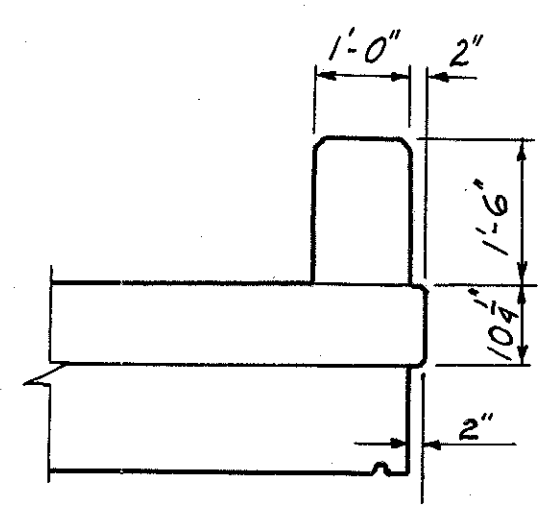
SECTION D-D.



SECTION E-E.



SECTION F-F.



SECTION G-G.

H.N.T.B. BR. NO.2 PART 6

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

**RAMP E-5 SUPERSTRUCTURE & NOSE DETAILS**

INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY-42-1832 STA. 58+79.98  
Scale: 3/8" = 1'-0" except as noted STA. 61+16.05

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN A.L.	TRACED A.L.	CHECKED G.A.T.	REVIEWED J.C.T.	REVISED
DATE 11-25-59	DATE 11-25-59	DATE 12-13-59	DATE 11-12-59	

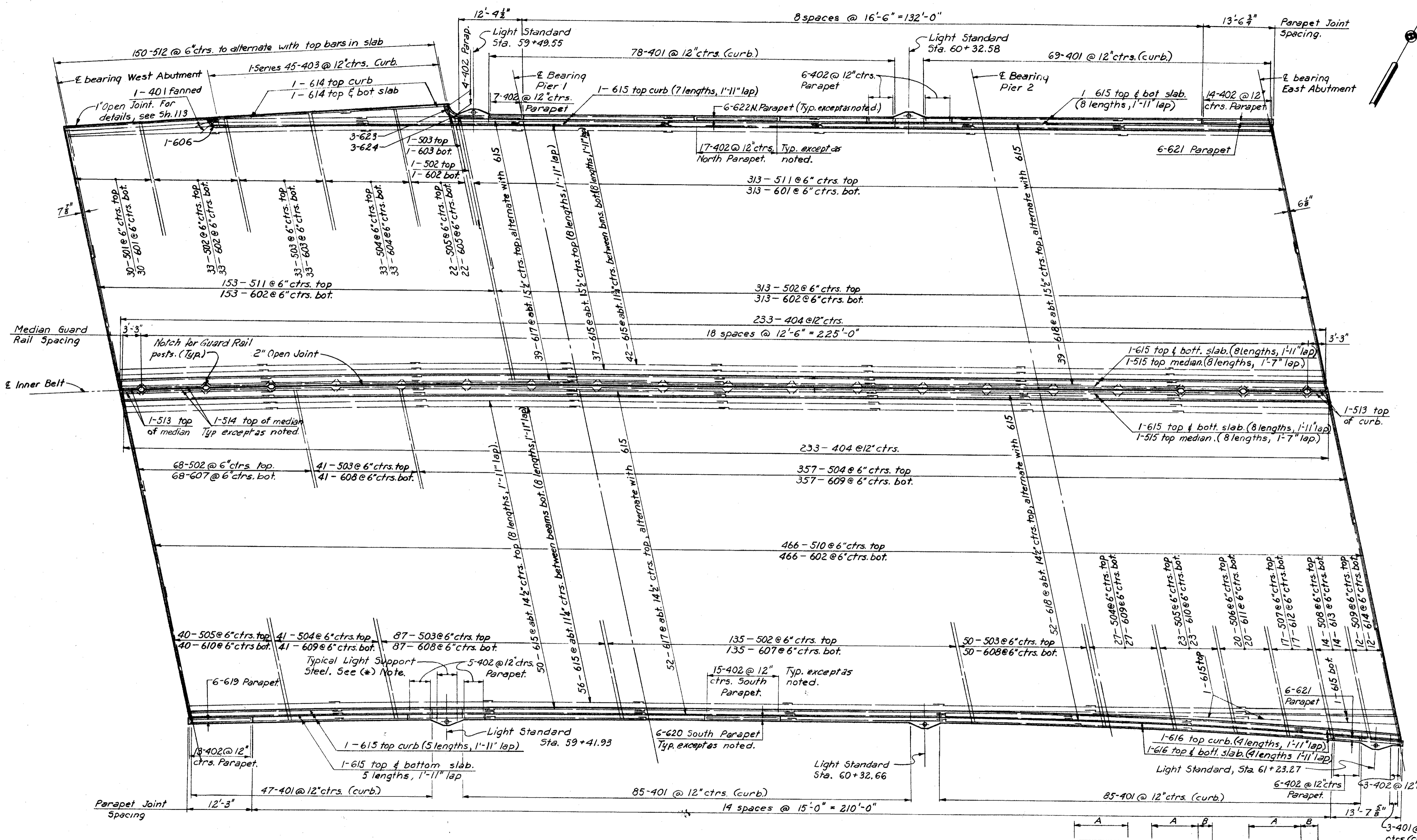
SHEET 113

Note: Prefix "SA" shall be assigned to all bar marks.

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APR 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	114
2	OHIO		175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42 - 18.29



**REINFORCEMENT SCHEDULE**

MARK	NO.	LENGTH	TYPE	DIMENSIONS		SERIES INC.	WEIGHT POUNDS
				A	B		
401	369	5'-3"	122	1'-8"	1'-5"		1296
402	378	4'-5"	105	0'-8"	2'-0"		1115
403	Series of 45	5'-3" to 7'-3"	122	1'-8" to 1'-8"	1'-5"	9 1/2"	188
404	466	4'-6"	122	1'-7"	1'-1"	C	1403
*451	10	9'-3"	131	2'-6"	3'-0"	1'-2"	62
*452	10	10'-3"	131	3'-0"	3'-0"	1'-8"	68
*453	15	9'-9"	131	3'-2"	3'-0"	1'-0"	98
*454	10	5'-9"	155	2'-2"	1'-6"		38
*455	10	6'-5"	155	2'-8"	1'-6"		43
*456	15	6'-7"	155	2'-10"	1'-6"		66
501	30	24'-7"	101	24'-0"			769
502	550	25'-1"	101	24'-6"			14389
503	212	25'-7"	101	25'-0"			5657
504	459	26'-1"	101	25'-6"			12487
505	85	26'-7"	101	26'-0"			2357
506	20	27'-1"	101	26'-6"			565
507	17	27'-7"	101	27'-0"			489
508	14	28'-1"	101	27'-6"			410
509	12	28'-7"	101	28'-0"			358
510	466	18'-9"	Str.				9113
511	466	30'-0"	Str.				14581
512	150	6'-0"	101	5'-5"	C		939
513	4	3'-11"	108	3'-0"	0'-6"	0'-10"	16
514	36	13'-0"	159	11'-2"	0'-6"	0'-10"	488
515	32	30'-6"	Str.				1018
601	343	27'-3"	Str.				14039
602	966	27'-9"	Str.				40263
603	34	28'-3"	Str.				1443
604	33	28'-9"	Str.				1425
605	22	29'-3"	Str.				967
606	1	4'-9"	133	2'-10"	1'-11"	R=1'-10"	7
607	203	20'-3"	Str.				6174
608	178	20'-9"	Str.				5548
609	425	21'-3"	Str.				13565
610	63	21'-9"	Str.				2058
611	20	22'-3"	Str.				668
612	17	22'-9"	Str.				581
613	14	23'-3"	Str.				489
614	18	23'-9"	Str.				642
615	1636	30'-9"	Str.				75561
616	32	24'-0"	Str.				1154
617	91	29'-6"	Str.				4032
618	91	24'-6"	Str.				3349
†619	6	12'-0"	Str.				
†620	84	17'-6"	Str.				
†621	12	13'-3"	Str.				
†622	48	16'-0"	Str.				
†623	3	16'-5"	133	4'-3"	12'-2"	R=2'-10"	
†624	3	15'-5"	133	3'-3"	12'-2"	R=2'-2"	
*651	10	9'-5"	141	2'-11"	1'-10"		141
*652	15	14'-6"	141	5'-3"	3'-0"		327
*653	5	5'-0"	Str.				38
						Total	240484

**NOTES:**  
All bar dimensions are given out to out. For replacement schedule, see Sh. 97-G. (\*) Bars 451 thru 456 and 651 thru 653 are for the light standard support. For their placement and bending diagram, see Sh. 153-G. (†) Bars 619, 620, 621, 622, 623 and 624 are to be included with "Item 5-14, Railing" for payment. For light standard support and other lighting details, see Sh. 153-G. For Railing, Guard Rail, and Parapet Joint details, see Sh. 158-G. For Drainage details, see Sh. 157-G. Bars of a series shall vary in length by a constant increment.

For End Dam details, see Sh. 156-G. For Deck details not shown, see Sh. 113-G & 115-G.

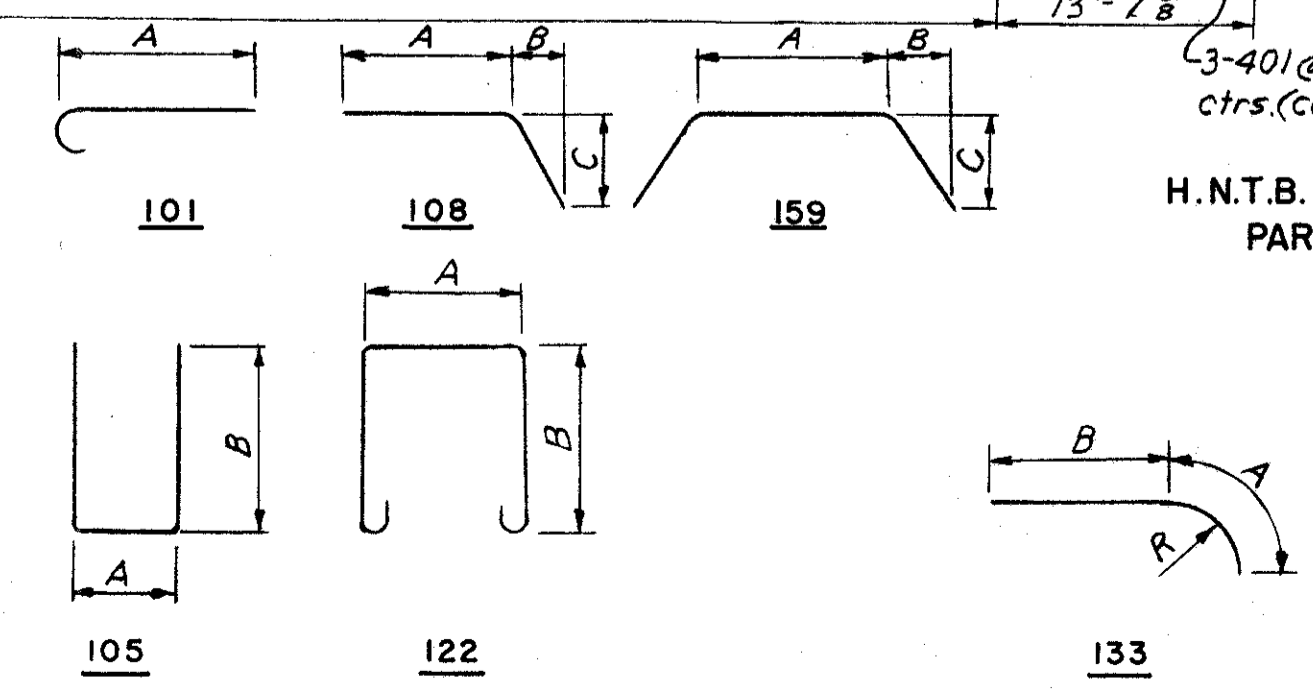
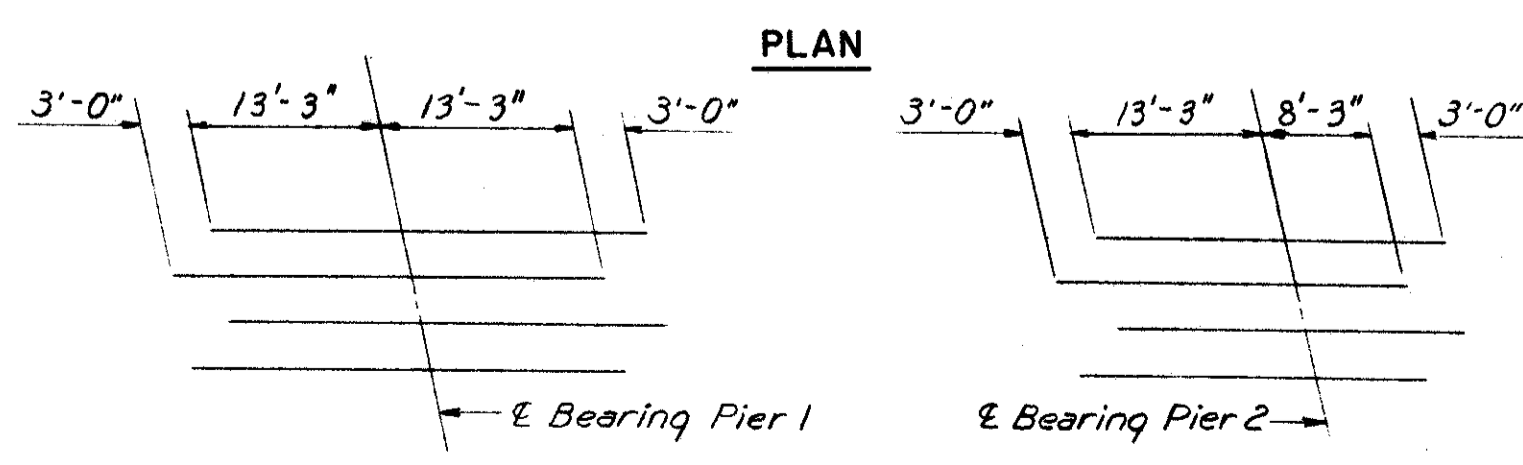


DIAGRAM SHOWING STAGGER OF 617 & 618 OVER PIERS

BENDING DIAGRAMS

H.N.T.B. BR. NO. 2  
PART 6

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

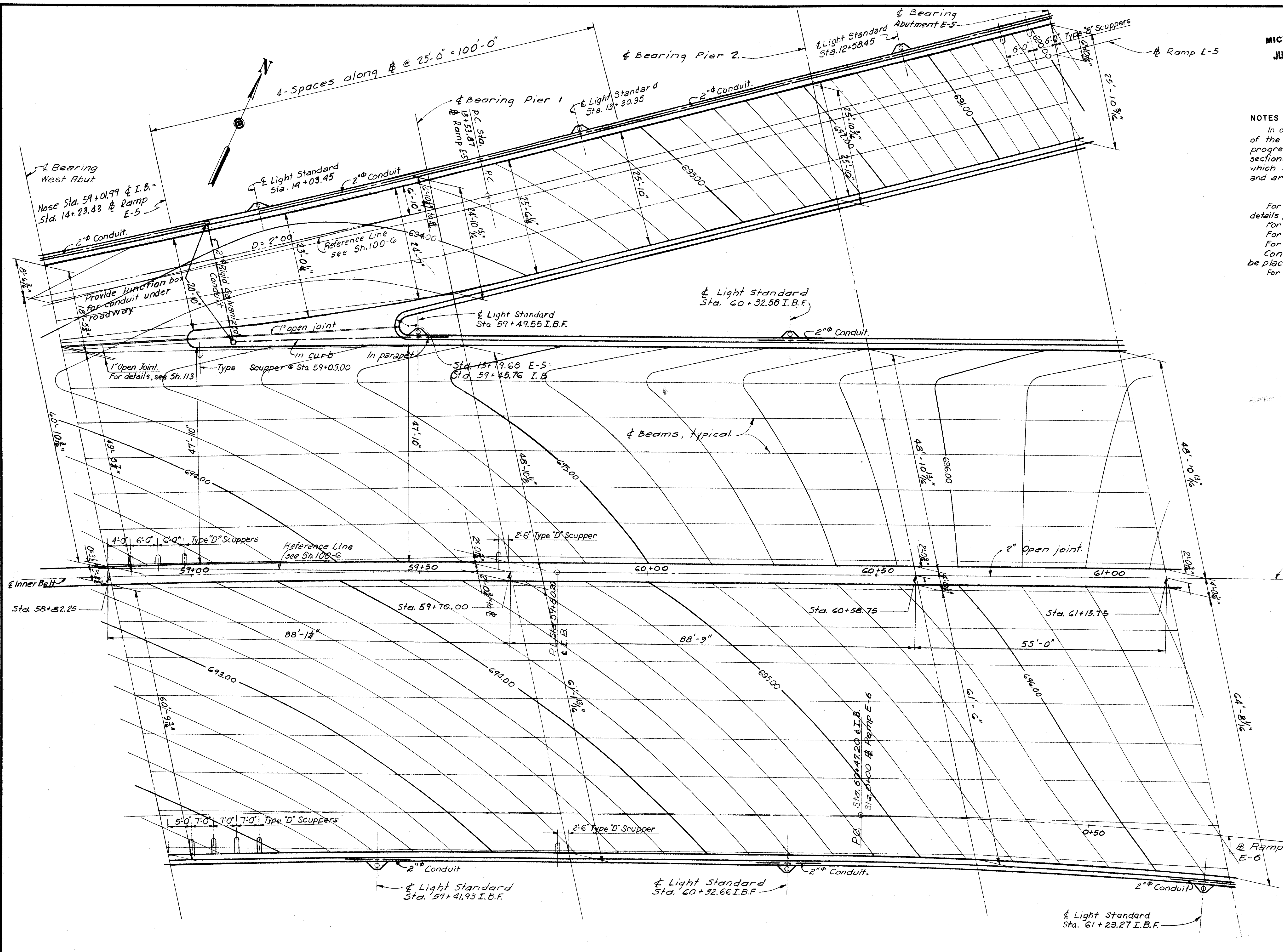
**DECK PLAN**  
INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY- 42-1832 STA. 58+79.98  
Scale: 1" = 10' STA. 61+16.05  
**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
J.E.H.	DATE	DATE	DATE	DATE
3-11-59		5-22-59	1-12-59	



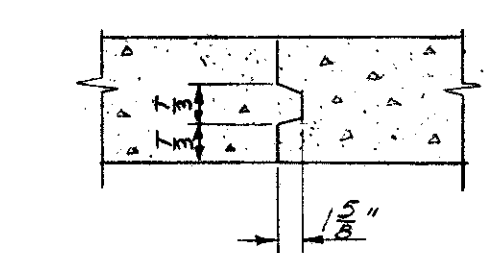
MICROFILMED  
JUL 8 1985

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29



NOTES:  
In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress up grade. 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 light standard support and other lighting details, see Sheets 159-G & 160-G.  
For Railing details, see Sh. 158-G.  
For Guard Rail details, see Sh. 158-G.  
For Drainage details, see Sh. 157-G.  
Conduit shown crossing Ramp E-5 shall be placed below beams. For details see Sh. 160-G.  
For Section H-H and Detail "A" see Sh. 113-G.



OPTIONAL CONSTRUCTION JOINT THROUGH DECK

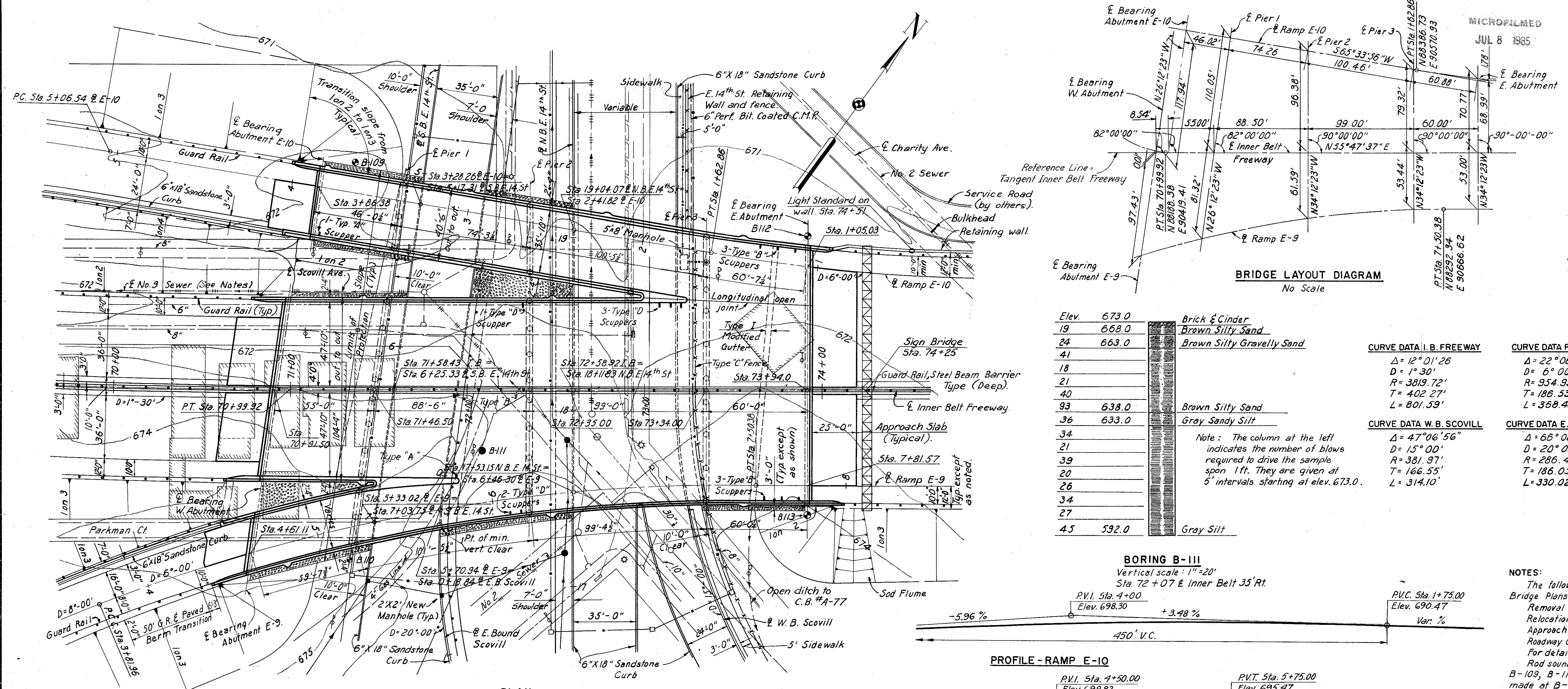
H.N.T.B. BR. NO. 2 PART 6

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

**DECK DETAILS**  
INNER BELT FREEWAY OVER EAST 9th ST.  
BR. NO. CUY- 42-1832 STA. 58+79.98  
Scale: 1" = 10' STA. 61+16.05  
**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN/DF	TRACED	CHECKED/HJM	REVIEWED/JCT	REVISED
DATE 5/7/58	DATE	DATE 7-7-58	DATE 7/12-59	

MICROFILMED JUL 8 1985



BRIDGE LAYOUT DIAGRAM No Scale

Elev. 673.0	Brick & Cinder
19 668.0	Brown Silty Sand
24 663.0	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

CURVE DATA I.B. FREEWAY

$\Delta = 12^{\circ} 01' 26''$
$D = 1^{\circ} 30'$
$R = 3819.72'$
$T = 402.27'$
$L = 801.59'$

CURVE DATA RAMP E-9

$\Delta = 22^{\circ} 06' 19''$
$D = 6^{\circ} 00'$
$R = 954.93'$
$T = 186.53'$
$L = 368.42'$

CURVE DATA RAMP E-10

$\Delta = 9^{\circ} 46' 18''$
$D = 6^{\circ} 00'$
$R = 954.93'$
$T = 81.63'$
$L = 162.86'$

CURVE DATA W.B. SCOVILL

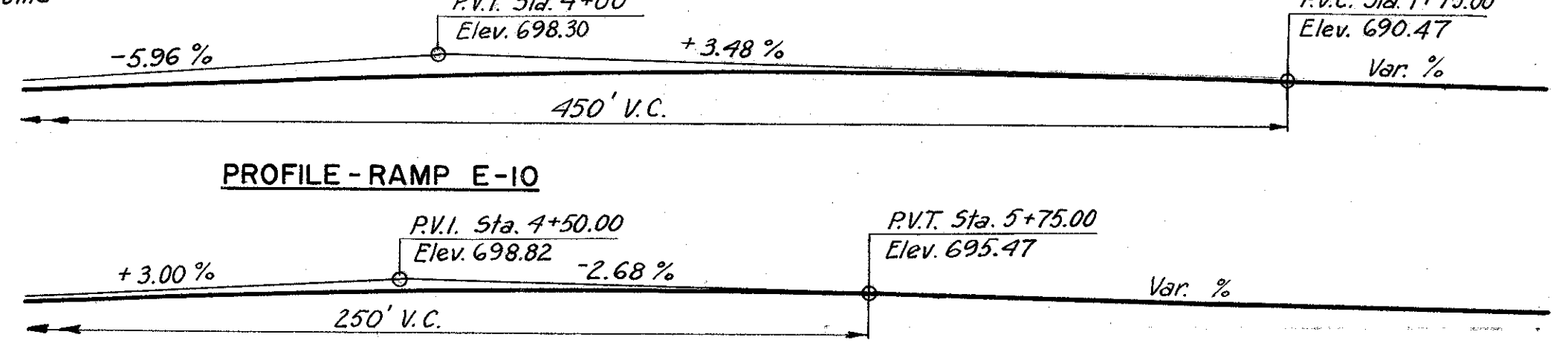
$\Delta = 47^{\circ} 06' 56''$
$D = 15^{\circ} 00'$
$R = 381.97'$
$T = 166.55'$
$L = 314.10'$

CURVE DATA E.B. SCOVILL

$\Delta = 66^{\circ} 00' 11''$
$D = 20^{\circ} 00'$
$R = 286.48'$
$T = 186.05'$
$L = 330.02'$

Note: The column at the left indicates the number of blows required to drive the sample spoon 1ft. They are given at 5' intervals starting at elev. 673.0.

BORING B-111 Vertical scale: 1"=20' Sta. 72+07 E Inner Belt 35' Rt.



PROFILE - RAMP E-10

PROFILE - RAMP E-9

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, Sod Flumes. For details of slope protection, see Sh. 157-G. 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 grading behind Pier 3, see sheet 161-G. For details of E. 14th St. retaining walls, see sheet 161-G.

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. walls	12"	39	29'

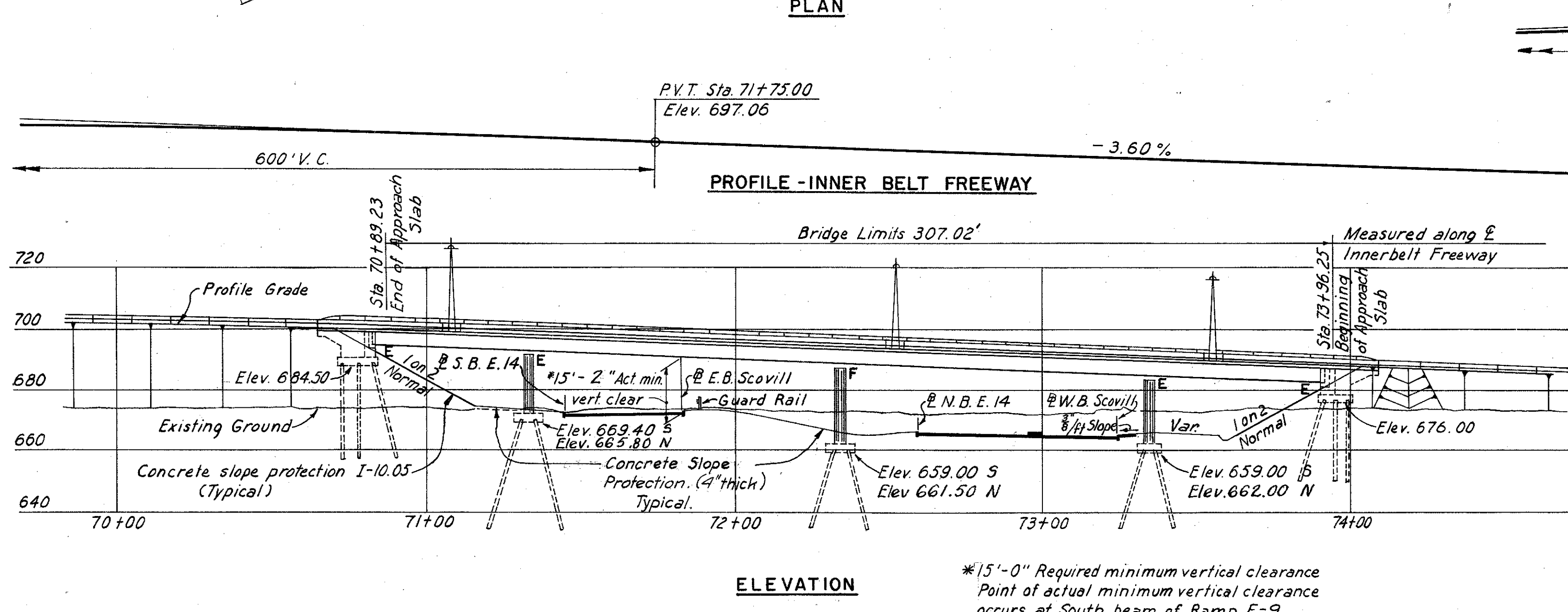
All piles to be C.I.P. Reinforced Concrete. Note: Part C includes only Piers 1, 2, & 3 for Br. No. 4, and the E. 14th St. Retaining walls. Abutments and superstructure for this bridge are in Part A.

**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: CF-2000 - Adequate for A.A.S.H.O. alternate loading.  
 SKEW: Varies  
 SURFACE COURSE: 1" Monolithic Concrete.  
 ALIGNMENT: 1° 30' Lt. Tangent  
 APPROACH SLABS: A5-1-54 (25' long)  
 SUPERELEVATION: Varies

H.N.T.B. BR. NO. 4 PART 6

HOWARD, NEEDLES, TAMMEN & BERGENOFF 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



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.

Note:  
Anchor bars to be furnished and set under former contract.  
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

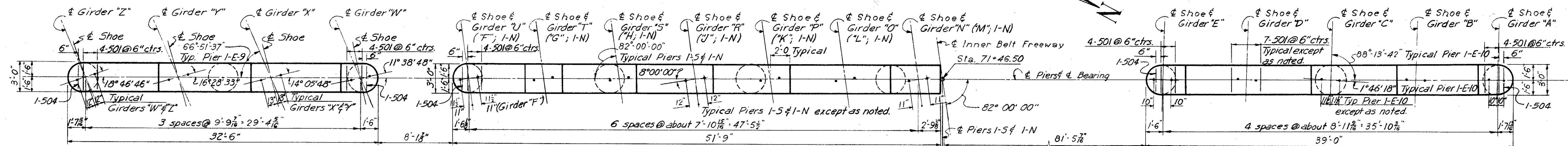
Note: Prefix "PA" shall be assigned to all bar marks.

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

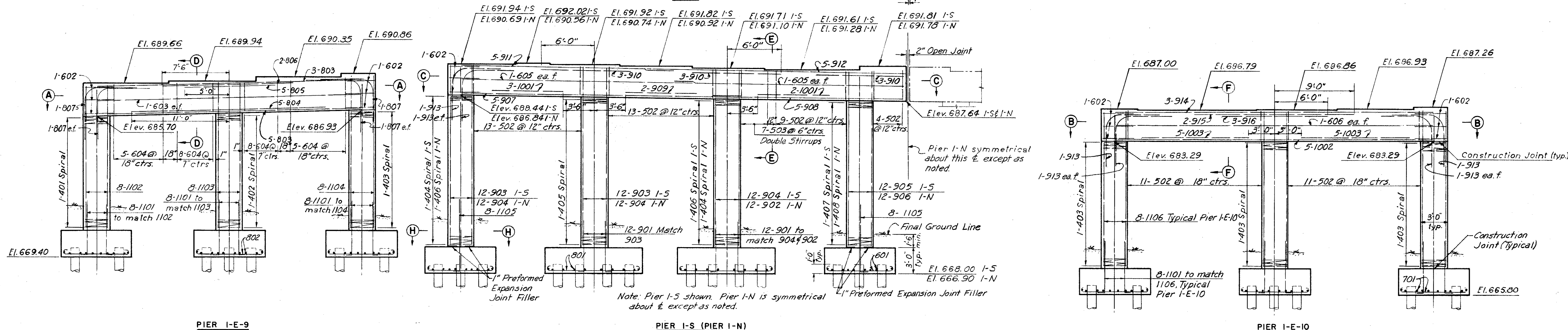
117  
175

JUL 8 1985

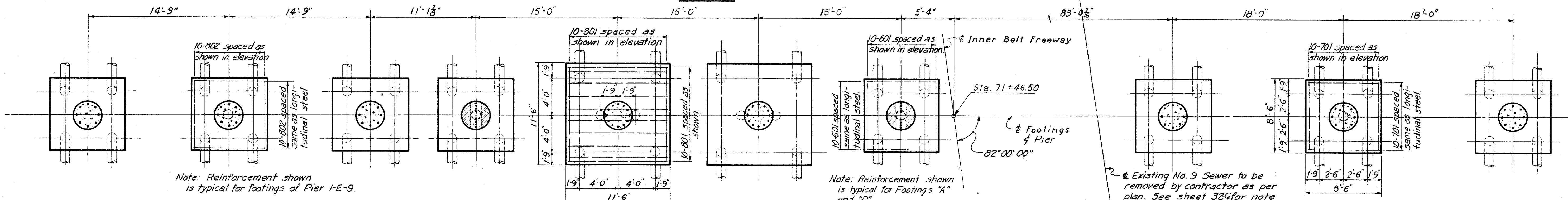
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829



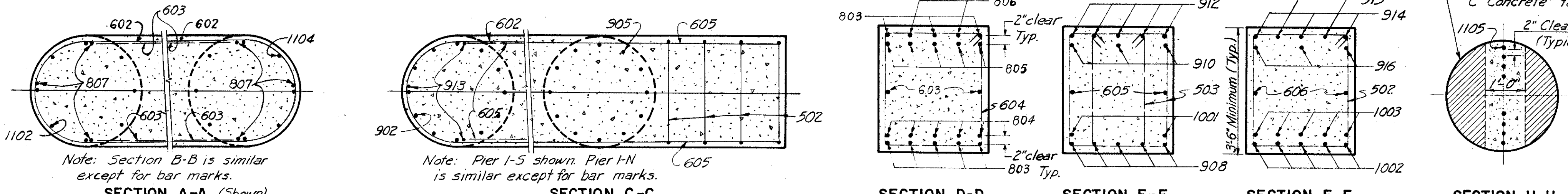
PLAN



ELEVATION



FOOTING PLAN



Note: Scale for sections: 1/2" = 1'-0"

NOTES:  
All piles shall be 14"  $\phi$  C.I.P. Reinforced Concrete  
All battered piles to be battered 3 in 12 in direction shown  
Pile spacings are given along bottom of footings.  
Reinforcement bars shall be 3" clear from face of concrete in footings and 2" elsewhere.  
For Masonry Plate details, see Sheet 156-G  
For Reinforcement Schedule see Sheet 120-G

H.N.T.B. BR. NO. 4 PART 6

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

PIER I  
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

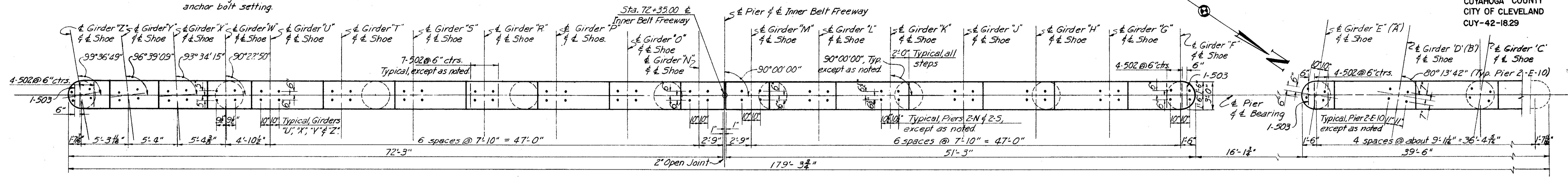
WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN A.B.	TRACED	CHECKED C.K.B.	REVIEWED J.C.T.	REVISED
DATE 9-3-83	DATE	DATE 11-12-83	DATE 11-12-83	SHEET 117

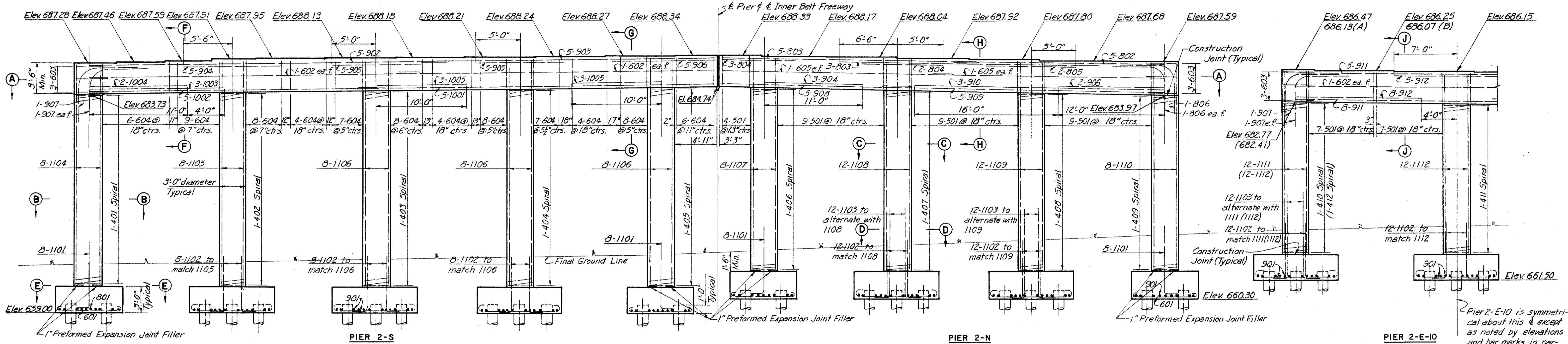
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829

Note: Anchor bolts to be furnished and set under structure contract.  
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bolt setting.

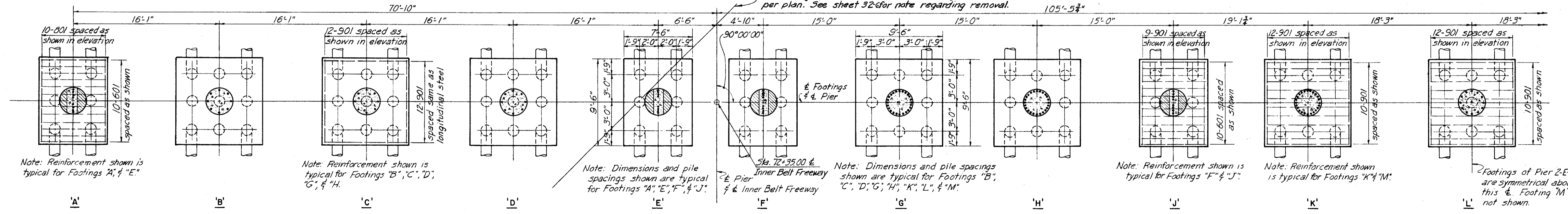
Note: Prefix "PB" shall be assigned to all bar marks.



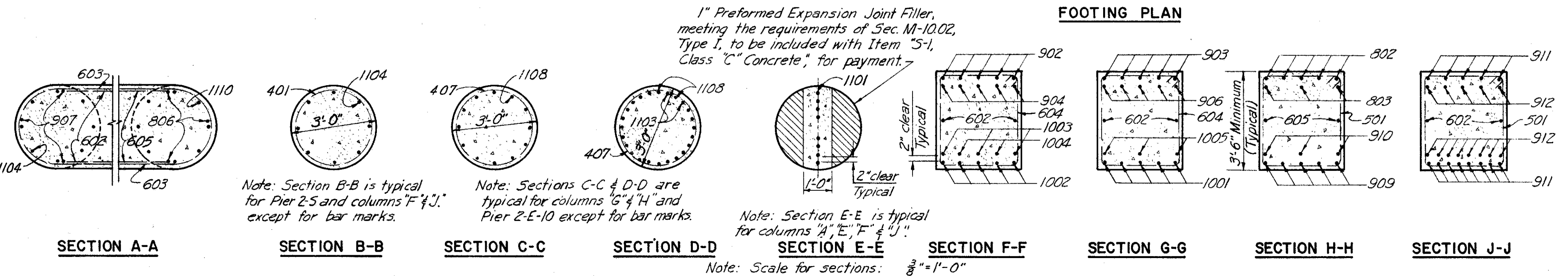
PLAN



ELEVATION



FOOTING PLAN



**NOTES:**  
All piles shall be 14" C.I.P. Reinforced Concrete.  
All battered piles to be battered 3 in 12 in direction shown.  
Pile spacings are given along bottom of footings.  
Reinforcement bars shall be 3" clear from bottom of concrete in footings and 2" elsewhere.  
For anchor bolt details, see Ohio Standard Drwg. RB-1-55 For Reinforcement Schedule, see sheet 120-G.  
Provide electrical ground wire in columns 'A' & 'J'. See notes on sheet 91A-G.  
Special care shall be taken in placing of electrical ground wire so as not to interfere with shoe base plates.

H.N.T.B. BR. NO. 4 PART 6

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

**PIER 2**

INNER BELT FREEWAY OVER EAST 14th ST.  
BR. NO. CUY - 42-1854 STA. 70 + 89.23  
Scale: 3/16" = 1'-0"  
Except as noted STA. 73 + 96.25

**WILLOW-INNER BELT FREEWAY**

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN A.P. DRK	TRACED DATE	CHECKED CKB	REVIEWED JCT	REVISED DATE
10-10-50		11-18-58	11-12-59	

SHEET 118



01-0

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
MICROFILMED  
JUL 8 1985

PIER 1									
MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCR- MENT	WEIGHT (LBS)
				A	B	C	D		
501	143	3'-9"	105	2'-8"	8"				559
502	100	12'-1"	109	2'-8"	3'-2"				1260
503	28	10'-11"	109	2'-1"	3'-2"				319
504	6	3'-7"	105	2'-6"	8"				22
601	80	9'-6"	100	8'-2"					1142
602	18	8'-0"	144	1'-11"	4'-2"				216
603	2	29'-6"	Str						89
604	26	12'-2"	109	2'-8"	3'-2"				475
605	8	26'-0"	Str						312
606	2	36'-0"	Str						108
701	60	9'-10"	100	8'-2"					1206
801	80	13'-4"	100	11'-2"					2848
802	60	10'-4"	100	8'-2"					1655
803	8	29'-6"	Str						630
804	5	22'-0"	Str						296
805	5	10'-0"	Str						134
806	2	15'-0"	Str						80
807	6	10'-6"	123	3'-10"	3'-10"				168
901	48	6'-7"	104	5'-7"	1'-3"				1074
902	12	20'-9"	Str						847
903	24	20'-6"	Str						1673
904	36	20'-3"	Str						2478
905	12	20'-0"	Str						816
906	12	21'-0"	Str						857
907	10	31'-6"	Str						1071
908	10	21'-6"	Str						731
909	4	8'-0"	Str						109
910	18	10'-0"	Str						612
911	10	24'-0"	Str						816
912	10	29'-0"	Str						986
913	12	11'-2"	123	4'-2"	4'-2"				456
914	3	36'-0"	Str						367
915	2	18'-0"	Str						122
916	3	12'-0"	Str						122
1001	10	8'-0"	Str						344
1002	5	36'-0"	Str						775
1003	10	12'-0"	Str						516
1101	48	7'-6"	104	6'-3"	1'-6"				1913
1102	8	16'-9"	Str						712
1103	8	17'-0"	Str						723
1104	8	18'-0"	Str						765
1105	32	9'-0"	104	7'-9"	1'-6"				1530
1106	24	17'-6"	Str						2231
Total Weight									34,165

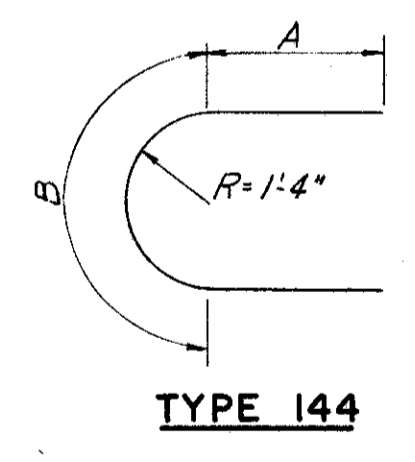
PIER 2									
MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCR- MENT	WEIGHT (LBS)
				A	B	C	D		
501	59	12'-1"	109	2'-8"	3'-2"				743
502	149	3'-9"	105	2'-8"	8"				583
503	4	3'-7"	105	2'-6"	8"				15
601	40	8'-6"	100	7'-2"					511
602	6	36'-6"	Str						329
603	12	8'-0"	144	1'-11"	4'-2"				144
604	79	12'-2"	109	2'-8"	3'-2"				1444
605	4	25'-9"	Str						155
801	20	11'-4"	100	9'-2"					605
802	5	23'-3"	Str						310
803	8	29'-0"	Str						619
804	5	9'-0"	Str						120
805	2	10'-0"	Str						53
806	3	11'-4"	123	4'-3"	4'-3"				91
901	204	11'-8"	100	9'-2"					8092
902	5	40'-0"	Str						680
903	5	33'-6"	Str						570
904	8	11'-0"	Str						299
905	10	10'-0"	Str						340
906	7	12'-0"	5						286
907	9	11'-4"	123	4'-3"	4'-3"				347
908	5	21'-0"	Str						357
909	5	31'-6"	Str						536
910	3	28'-0"	Str						286
911	13	36'-6"	Str						1613
912	21	14'-3"	Str						1017
1001	5	40'-0"	Str						861
1002	5	33'-9"	Str						726
1003	3	15'-0"	Str						194
1004	2	11'-0"	Str						95
1005	6	10'-0"	Str						258
1101	32	8'-11"	104	7'-9"	1'-6"				1516
1102	84	7'-5"	104	6'-3"	1'-6"				3310
1103	48	10'-11"	104	9'-9"	1'-6"				2784
1104	8	24'-9"	Str						1052
1105	8	25'-6"	Str						1084
1106	24	25'-9"	Str						3283
1107	8	24'-6"	Str						1041
1108	12	24'-3"	Str						1545
1109	12	24'-0"	Str						1530
1110	8	23'-9"	Str						1009
1111	12	21'-6"	Str						1371
1112	24	21'-3"	Str						2710
Total Weight									44,514

PIER 3									
MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCR- MENT	WEIGHT (LBS)
				A	B	C	D		
501	141	3'-9"	105	2'-8"	8"				551
502	99	12'-2"	109	2'-8"	3'-2"				1256
503	98	10'-10"	109	2'-0"	3'-2"				1107
504	2	3'-7"	105	2'-6"	8"				7
601	4	32'-3"	Str						194
602	6	8'-0"	144	1'-11"	4'-2"				72
603	4	27'-3"	Str						164
604	2	35'-3"	Str						106
701	60	9'-10"	100	8'-2"					1206
801	5	35'-3"	Str						471
802	5	10'-0"	Str						134
803	5	9'-0"	Str						120
804	3	11'-4"	123	4'-3"	4'-3"				91
901	40	10'-8"	100	8'-2"					1451
902	100	11'-8"	100	9'-2"					3967
1001	5	40'-0"	Str						861
1002	5	26'-0"	Str						559
1003	6	17'-6"	Str						452
1004	2	14'-0"	Str						120
1005	3	33'-0"	Str						426
1006	5	29'-9"	Str						640
1007	5	36'-0"	Str						775
1008	3	38'-6"	Str						497
1009	2	10'-0"	Str						86
1010	2	10'-6"	Str						90
1011	3	11'-4"	123	4'-3"	4'-3"				146
1101	12	8'-11"	104	7'-9"	1'-6"				568
1102	64	7'-5"	104	6'-3"	1'-6"				2522
1103	16	21'-6"	Str						1828
1104	8	22'-0"	Str						935
1105	8	22'-3"	Str						946
1106	8	20'-3"	Str						861
1107	8	20'-0"	Str						850
1108	8	19'-6"	Str						829
1109	8	18'-3"	Str						776
1110	16	18'-0"	Str						1530
1111	10	27'-9"	Str						1474
1112	11	16'-6"	Str						964
1113	4	12'-6"	Str						266
1114	5	39'-0"	Str						1036
1115	6	10'-6"	Str						335
1116	10	14'-0"	Str						744
1117	5	35'-3"	Str						936
Total Weight									32,949

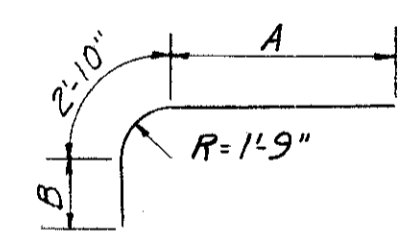
SPIRAL REINFORCEMENT SCHEDULE PIER 1						
MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (LBS)
401	1	2'-8"	13'-3"	4 1/2"	38	246
402	1	2'-8"	13'-10"	4 1/2"	40	259
403	4	2'-8"	14'-6"	4 1/2"	42	1084
404	2	2'-8"	17'-4"	3"	72	888
405	2	2'-8"	17'-2"	3"	72	886
406	2	2'-8"	16'-9"	3"	70	864
407	1	2'-8"	16'-7"	3"	69	425
408	1	2'-8"	17'-7"	3"	73	450
Total						5,102

SPIRAL REINFORCEMENT SCHEDULE PIER 2						
MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (LBS)
401	1	2'-8"	21'-8"	4 1/2"	61	395
402	1	2'-8"	21'-10"	4 1/2"	61	396
403	1	2'-8"	22'-2"	4 1/2"	62	402
404	1	2'-8"	22'-5"	4 1/2"	63	408
405	1	2'-8"	22'-7"	4 1/2"	63	409
406	1	2'-8"	21'-3"	3 1/2"	76	477
407	1	2'-8"	21'-1"	3 1/2"	75	471
408	1	2'-8"	20'-10"	3 1/2"	74	465
409	1	2'-8"	20'-7"	3 1/2"	74	464
410	1	2'-8"	18'-3"	3 1/2"	66	414
411	1	2'-8"	18'-1"	3 1/2"	65	407
412	1	2'-8"	17'-11"	3 1/2"	64	401
Total						5,109

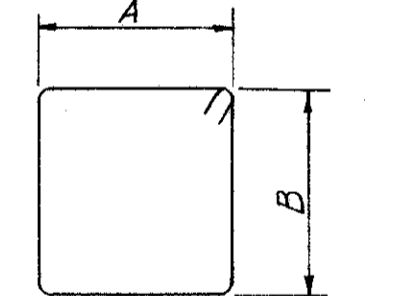
SPIRAL REINFORCEMENT SCHEDULE PIER 3						
MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (LBS)
401	1	2'-8"	18'-1"	4 1/2"	51	331
402	1	2'-8"	18'-5"	4 1/2"	52	337
403	1	2'-8"	18'-9"	4 1/2"	53	342
404	1	2'-8"	19'-0"	4 1/2"	54	350
405	1	2'-8"	17'-0"	4 1/2"	48	312
406	1	2'-8"	16'-9"	4 1/2"	48	311
407	1	2'-8"	16'-5"	4 1/2"	47	303
408	1	2'-8"	15'-3"	4 1/2"	44	284
409	1	2'-8"	15'-0"	4 1/2"	43	278
410	1	2'-8"	14'-10"	4 1/2"	43	277
Total						3,125



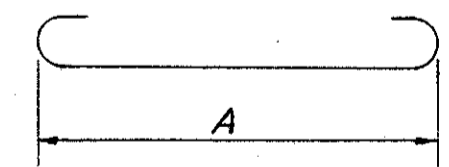
TYPE 144



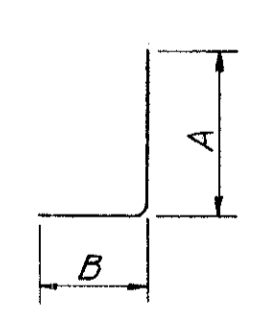
TYPE 123



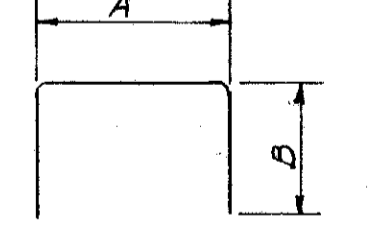
TYPE 109

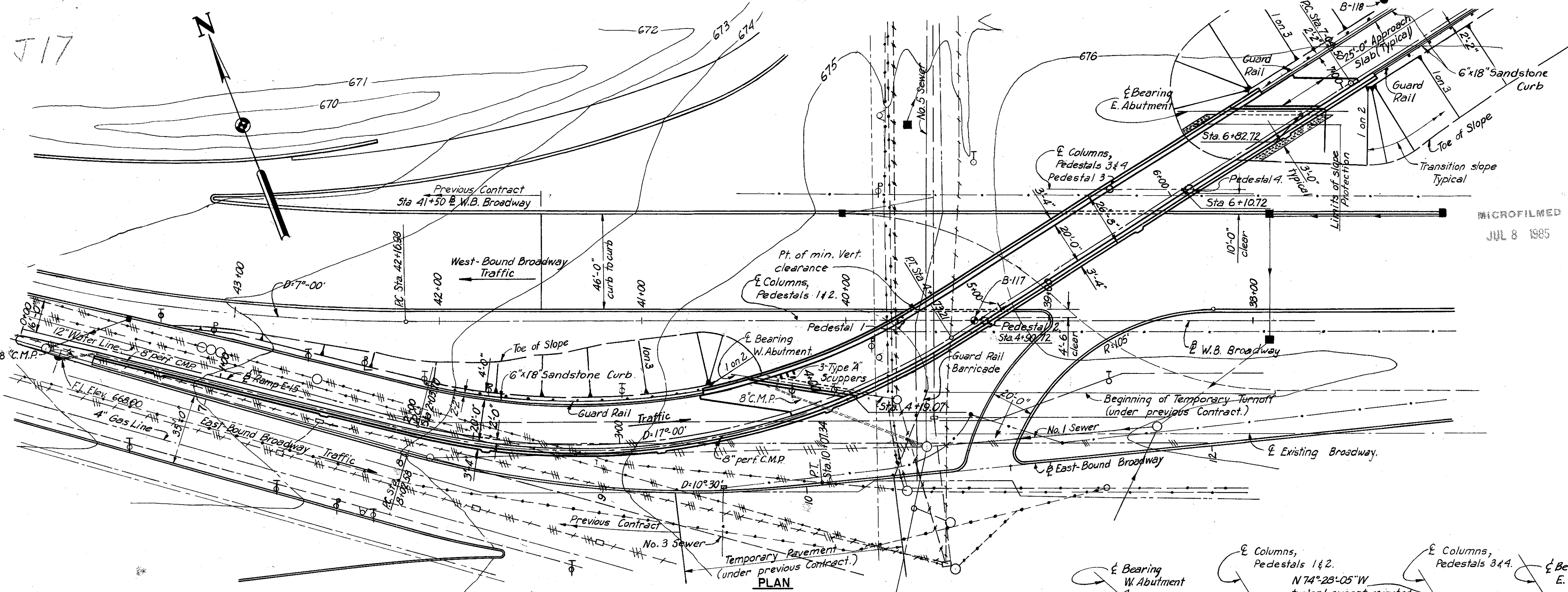


TYPE 100



TYPE 104





**Curve Data E. B. Broadway**

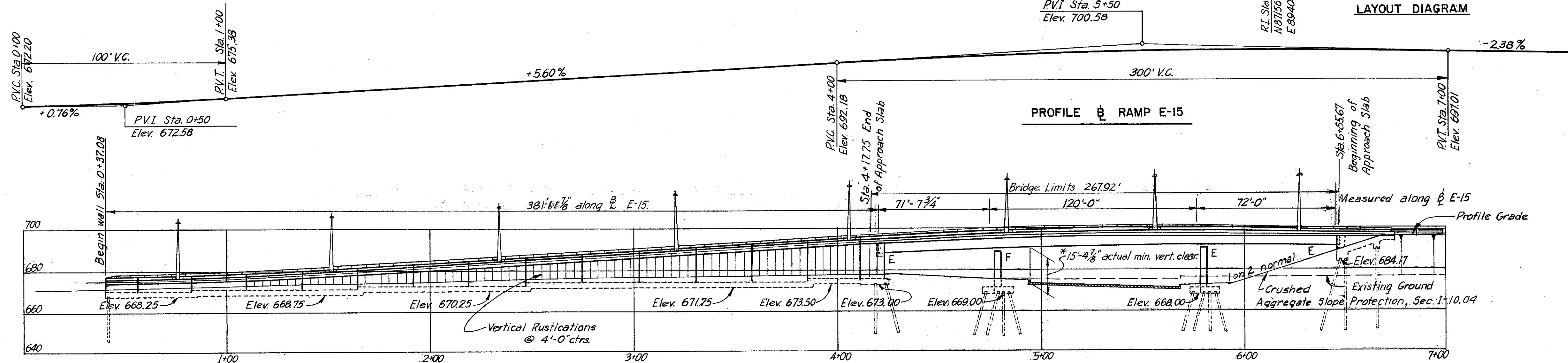
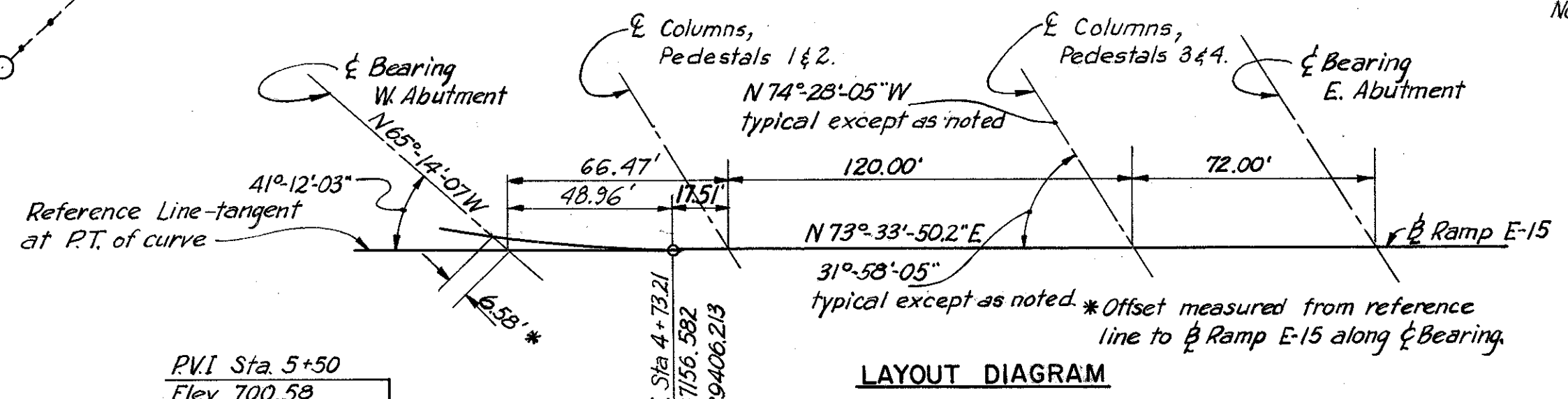
Δ	27°-30'-00"
D	10°-30'
R	545.67'
T	103.60'
L	204.76'

**Curve Data Ramp E-15**

Δ	45°-49'-02"	Δ	38°-41'-25"
D	17°-00'	D	7°-00'
R	337.03'	R	818.51'
T	142.43'	T	287.36'
L	269.51'	L	552.72'

**Curve Data W.B. Broadway**

Δ	13°-50'-57"
D	7°-00'
R	818.51'
T	99.41'
L	197.84'



**ELEVATION**

\* 15'-0" Required minimum vertical clearance, Point of actual minimum vertical clearance occurs at South Girder and South curb of W.B. Broadway.

**PROPOSED STRUCTURE**

Type: Continuous welded steel girder with reinforced concrete deck and substructure.

Spans: 71'-7 3/4", 120'-0", and 72'-0" (along E-15).

Roadway: 20'-0" fl 2'-0" safety curbs.

Loading: CF 2000 - Adequate for A.A.S.H.O. alternate loading.

Skew: Varies.

Surface Course: 1" Monolithic Concrete.

Approach Slabs: AS-1-54 (25'-0" Long).

Superelevation: Varies

Alignment: 17°00' Curve Lt. & Tangent.

**LEGEND**

Right of Way

M.E.L.P.

O.B.T.

C.E.I. Light

Western Union

Transit System Pole

Telephone & Telegraph Pole

Power Pole

Light Pole

Sewer

Water

Gas

Existing Curb

Proposed 2" Duct

Proposed sewer

Proposed inlet

**CUYAHOGA COUNTY**  
CITY OF CLEVELAND  
CUY-42-18.29

**BORING B-118**

Vertical scale: 1" = 20'

Sta. 7+50 @ Ramp E-5 10' Lt.

19	676.1	
32		
28	661.1	Brown Silty Sand
75	656.1	Brown Gravelly Sand
82		
92	646.1	Brown Silty Sand
63	641.1	Gray Sandy Silt
185	636.1	Gray Silty Sand
42		
43		
54	621.1	Gray Silt
101	616.1	Brown Silty Sand
90	611.1	Brown & Gray Silty Sand
25		
17		
29	595.1	Gray Silt

**NOTES:**

The figures at the left indicates the number of hammer blows required to drive the sample spoon 1ft. They are given at 5' intervals starting at elev. 676.1

**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.

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, see Sh. 157-6.

**C.I.P. REINFORCED CONCRETE PILES.**

PILE INFORMATION			
Location	Diameter	Number	Estimated ave. length
Retaining wall	12"	113	23 Ft
West Abutment	12"	24	25 Ft
Pedestals	14"	36	22 Ft
East Abutment	12"	18	36 Ft

**H.N.T.B. BR. NO. 6 PART 6**

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

**SITE PLAN**

**RAMP E-15 OVER W.B. BROADWAY**

Scale: 1" = 30'

STA. 4 + 17.75

STA. 6 + 85.67

**WILLOW-INNER BELT FREEWAY**

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN R.A. TRACED M.H. CHECKED A.S. REVIEWED J.C.T.

DATE 10-29-58 DATE 11-13-58 DATE 10-14-58 DATE 11-12-58

SHEET 121

MICROFILMED  
JUL 8 1985

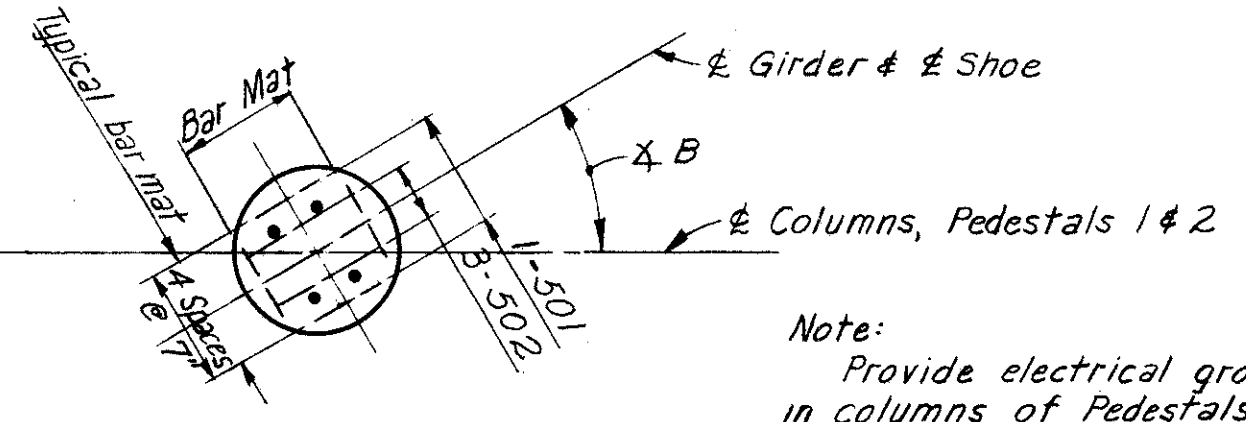
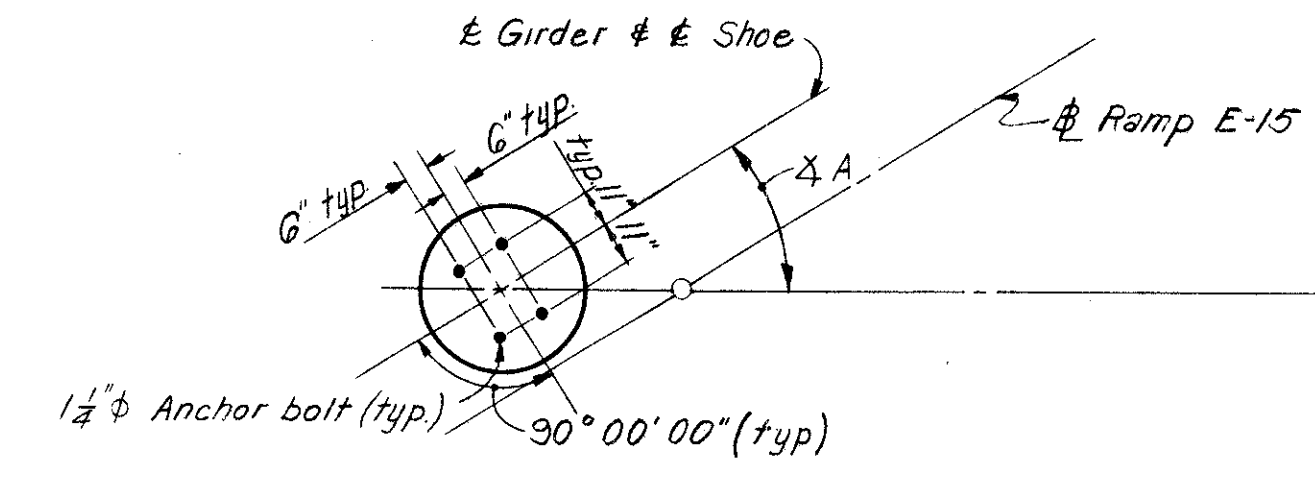
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

122  
175

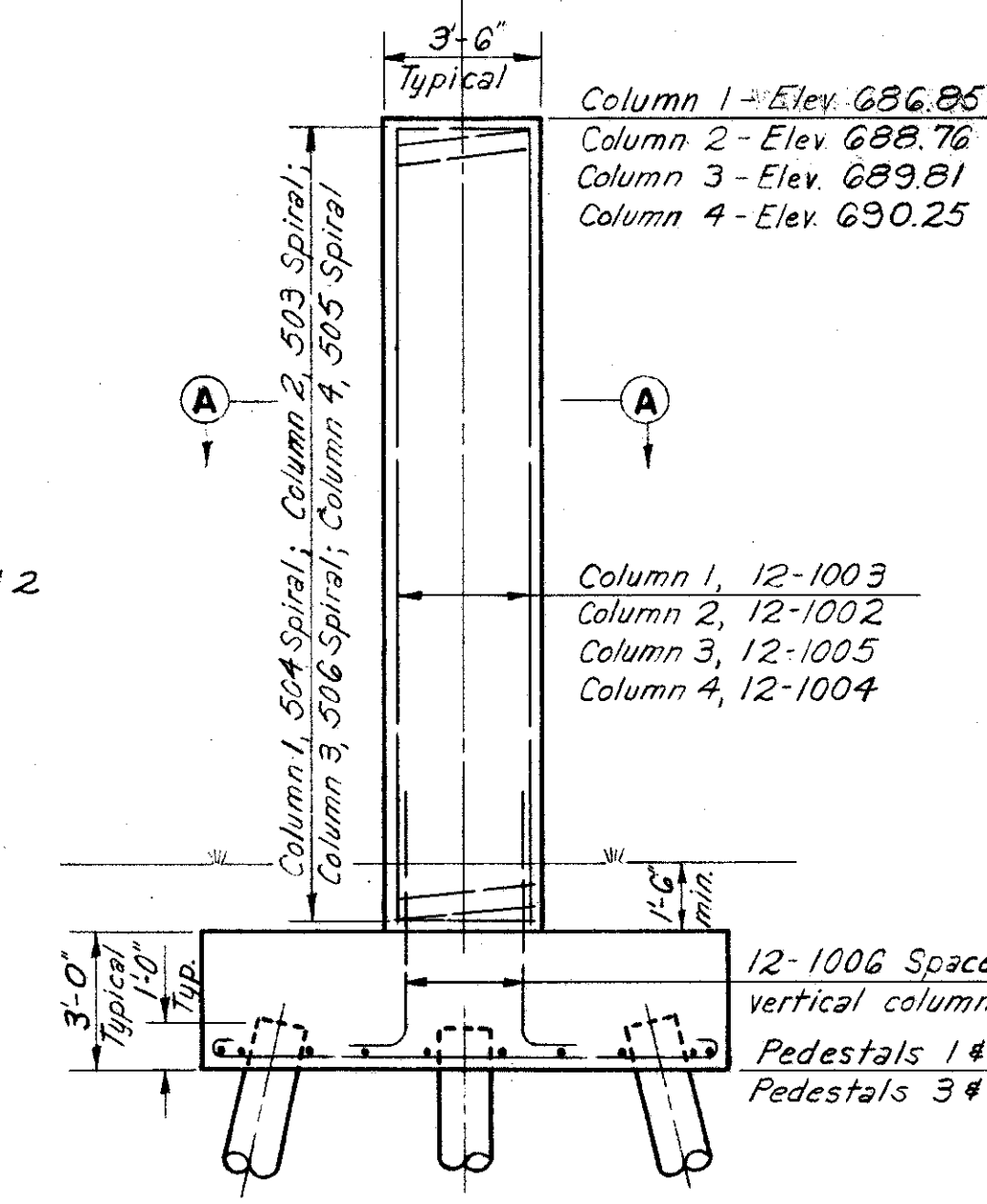
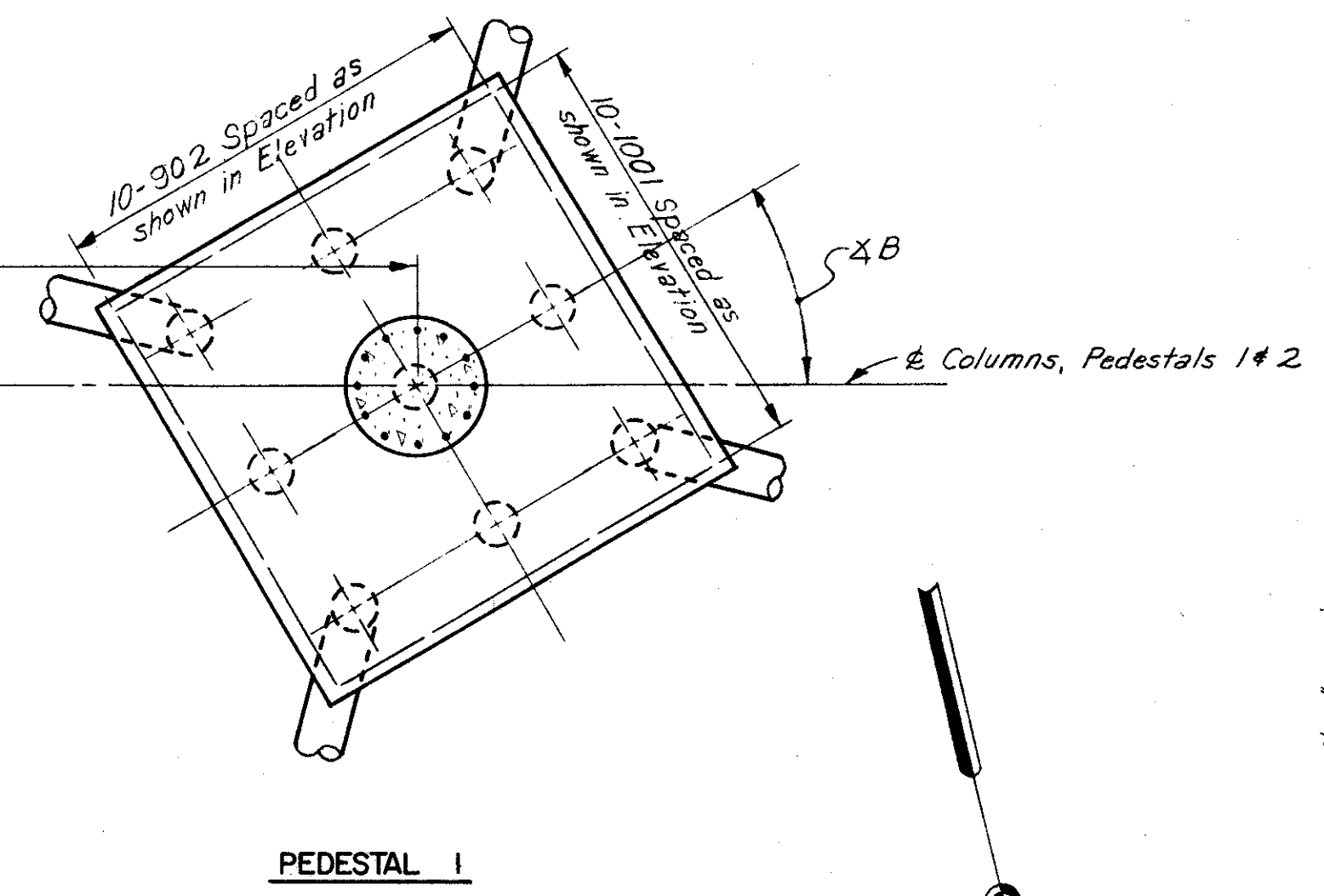
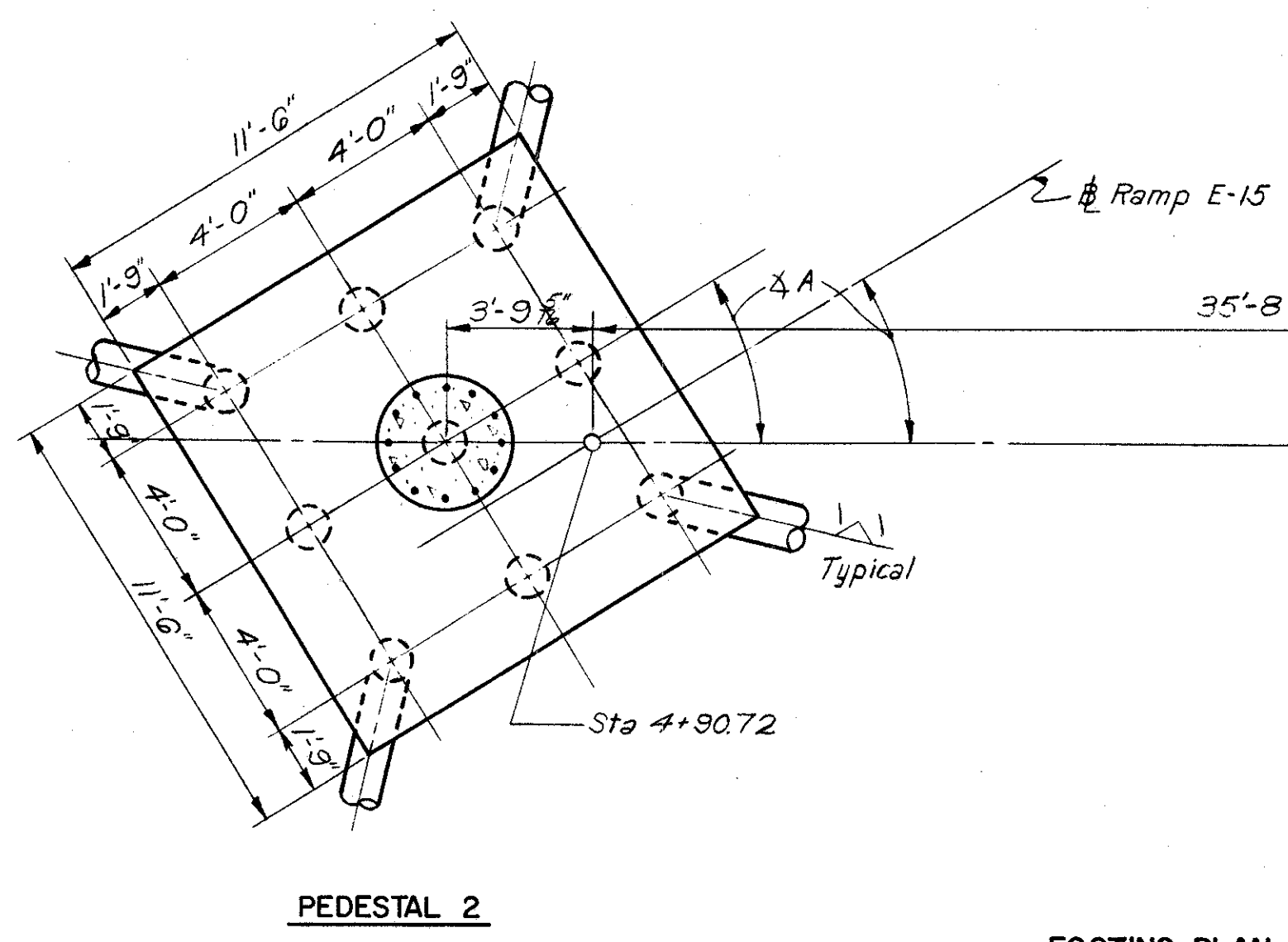
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42 - 18.29

Note:  
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

$\Delta A = 31^{\circ} 58' 05''$   
 $\Delta B = 30^{\circ} 21' 15''$



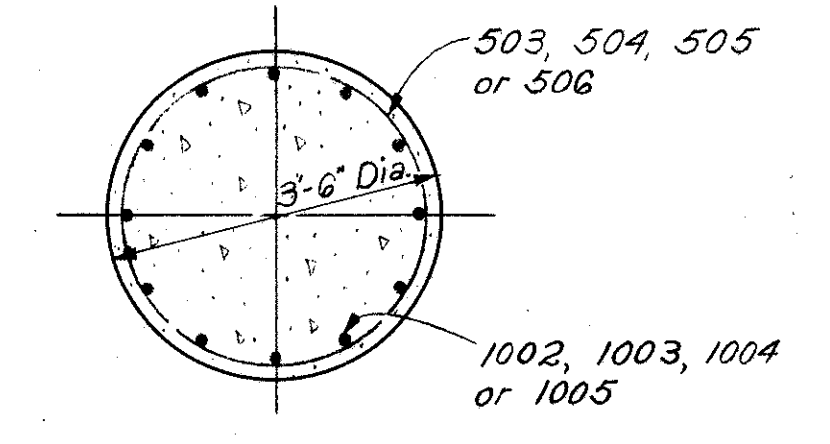
Note:  
Provide electrical ground wire in columns of Pedestals 1 & 2.  
See notes on Sh. 91A-G.



Column 1 - Elev. 686.85  
Column 2 - Elev. 688.76  
Column 3 - Elev. 689.81  
Column 4 - Elev. 690.25

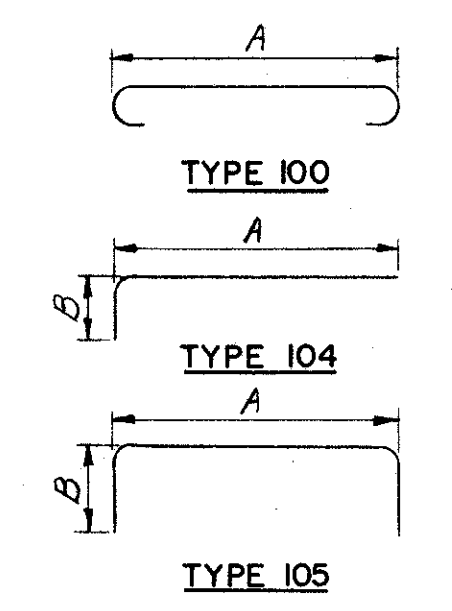
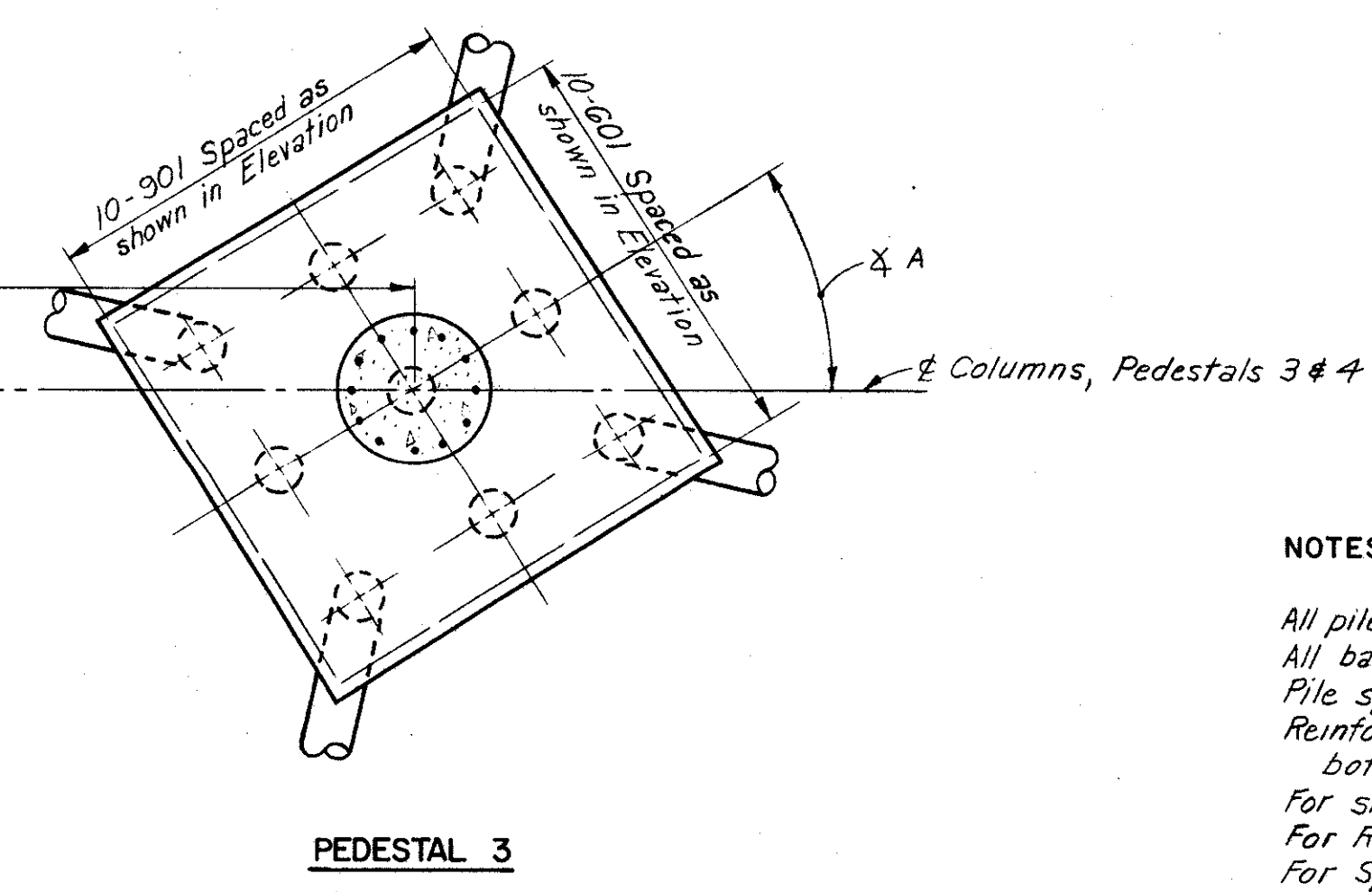
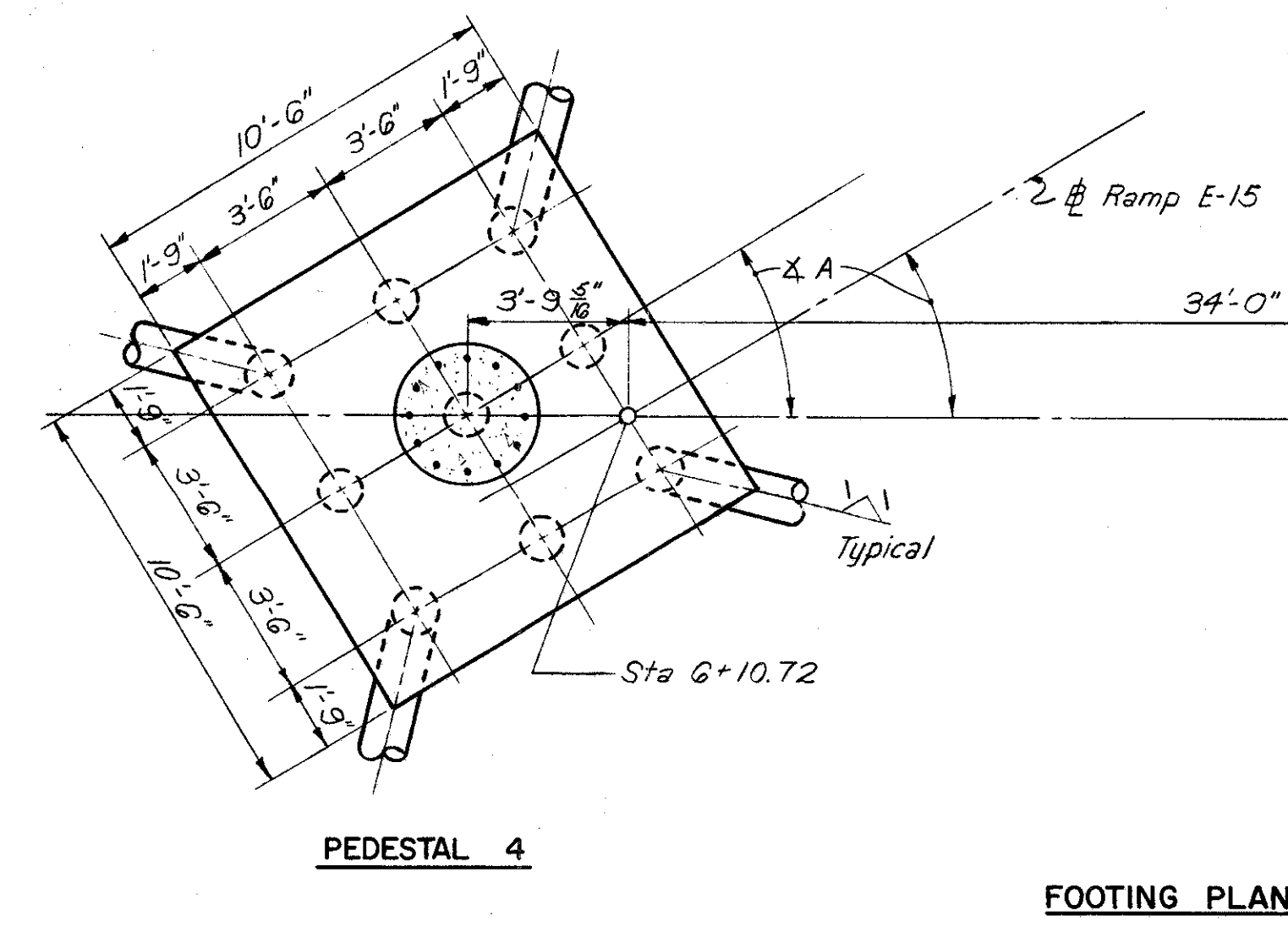
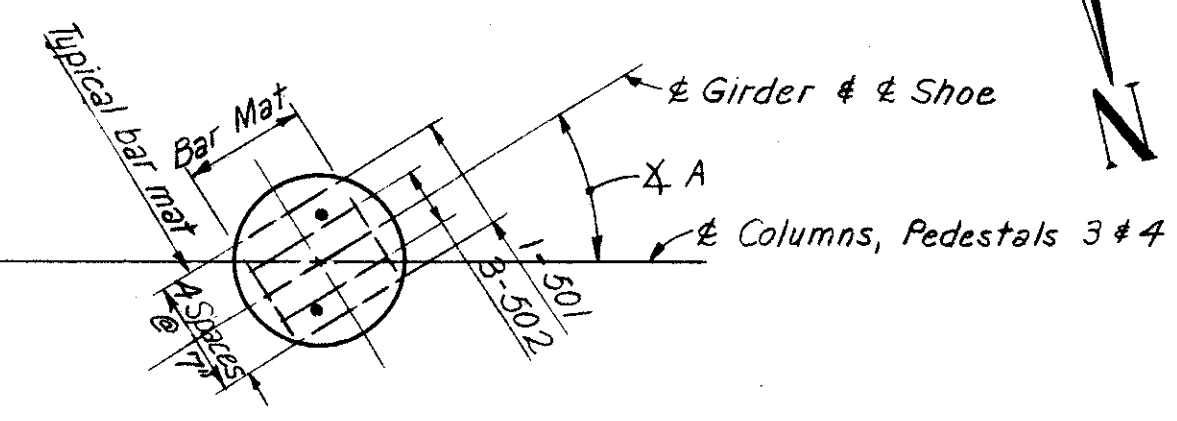
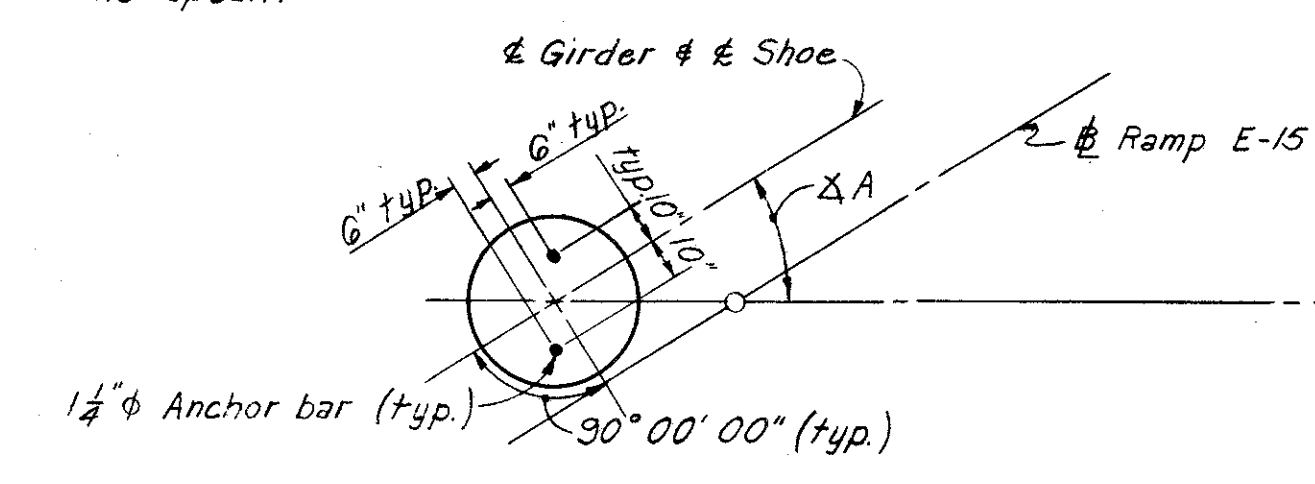
Column 1, 12-1003  
Column 2, 12-1002  
Column 3, 12-1005  
Column 4, 12-1004

12-1006 Spaced to match vertical column steel (Typical)  
Pedestals 1 & 2 - Elev. 669.00  
Pedestals 3 & 4 - Elev. 668.00



Note: Prefix "P" shall be assigned to all bar marks.

Note:  
Girder flanges will interfere with the setting of anchor bolts and anchor bars. See Sec. 5-0.03 of the Specifications



NOTES:

All piles shall be 14" C.I.P. reinforced concrete.  
All battered piles to be battered 3 in 12 in direction shown.  
Pile spacings are given along bottom of footings.  
Reinforcement bars shall be 3-inches clear from face of concrete at bottom of footings and 2 inches elsewhere.  
For shoe details see Sheet 130-G.  
For Replacement Schedule see Sheet 97-G.  
For Spiral Reinforcement Note see Sheet 94-G.  
All bar dimensions are given out to out.

MARK	NO.	CORE DIA.	LENGTH	PITCH	NO. OF TURNS	WEIGHT (LBS)
503	1	3'-2"	16'-6"	3"	68	750
504	1	3'-2"	14'-6"	3"	61	663
505	1	3'-2"	19'-0"	3"	78	859
506	1	3'-2"	18'-6"	3"	77	838
Total =						3110

MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCREMENT	WEIGHT
				A	B	C	D		
501	16	3'-1"	105	2'-0"	0'-8"			52	
502	24	3'-10"	105	2'-9"	0'-8"			96	
601	20	11'-6"	100	10'-2"				345	
901	20	12'-8"	100	10'-2"				860	
902	20	13'-8"	100	11'-2"				930	
1001	20	14'-0"	100	11'-2"				1205	
1002	12	16'-6"	Str.					852	
1003	12	14'-6"	Str.					749	
1004	12	19'-0"	Str.					981	
1005	12	18'-6"	Str.					955	
1006	12	6'-10"	104	5'-8"	1'-5"			1420	
Total =									8445

H.N.T.B. BR. NO. 6 PART 6

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

PEDESTALS  
RAMP E-15 OVER W.B. BROADWAY  
Scale: 1/4" = 1'-0" STA. 4 + 17.75  
Except as noted STA. 6 + 85.67

WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISOR
DATE 10-17-59	DATE 10-17-59	DATE 10-3-59	DATE 11-12-59	

SHEET 122





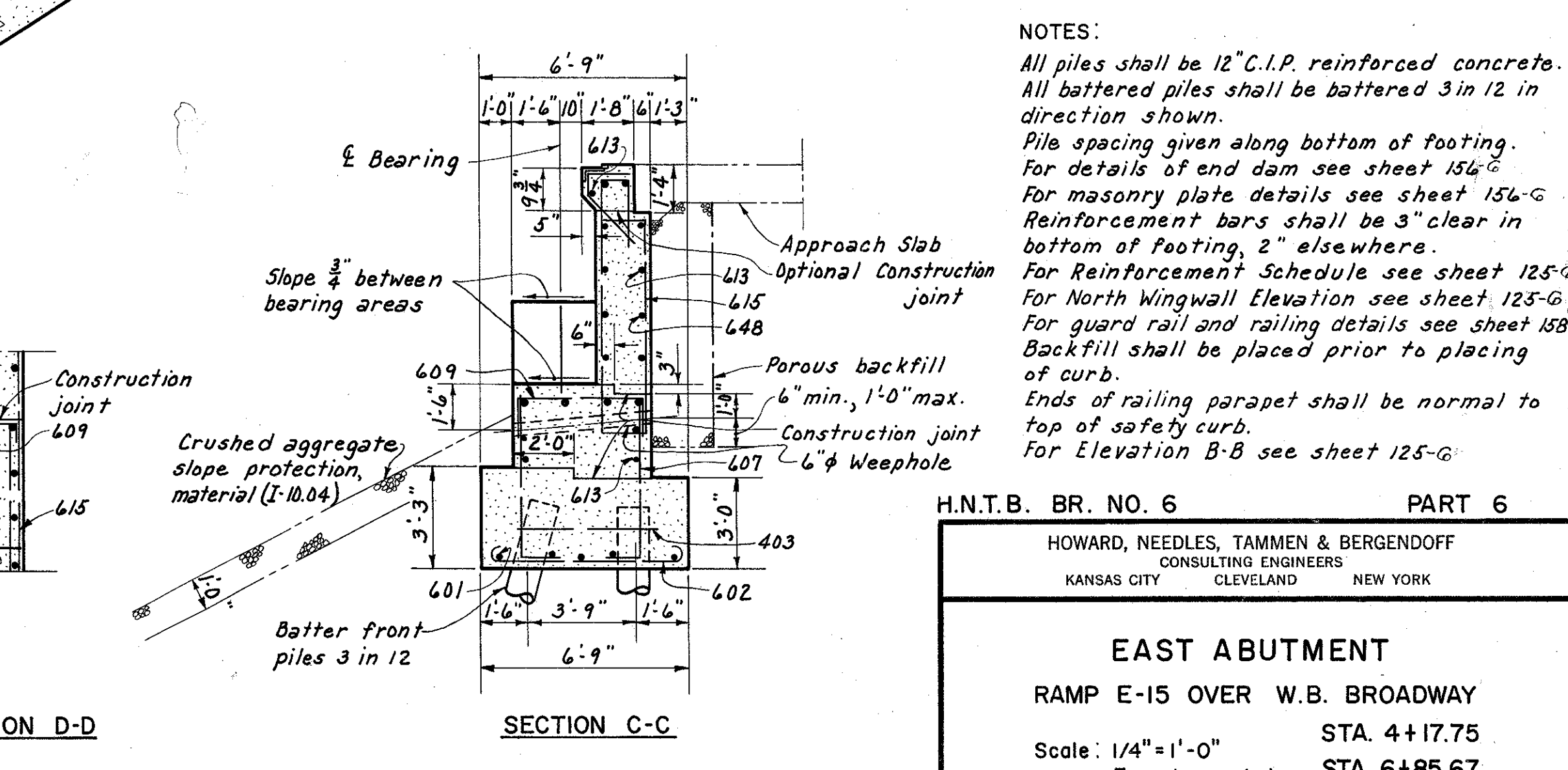
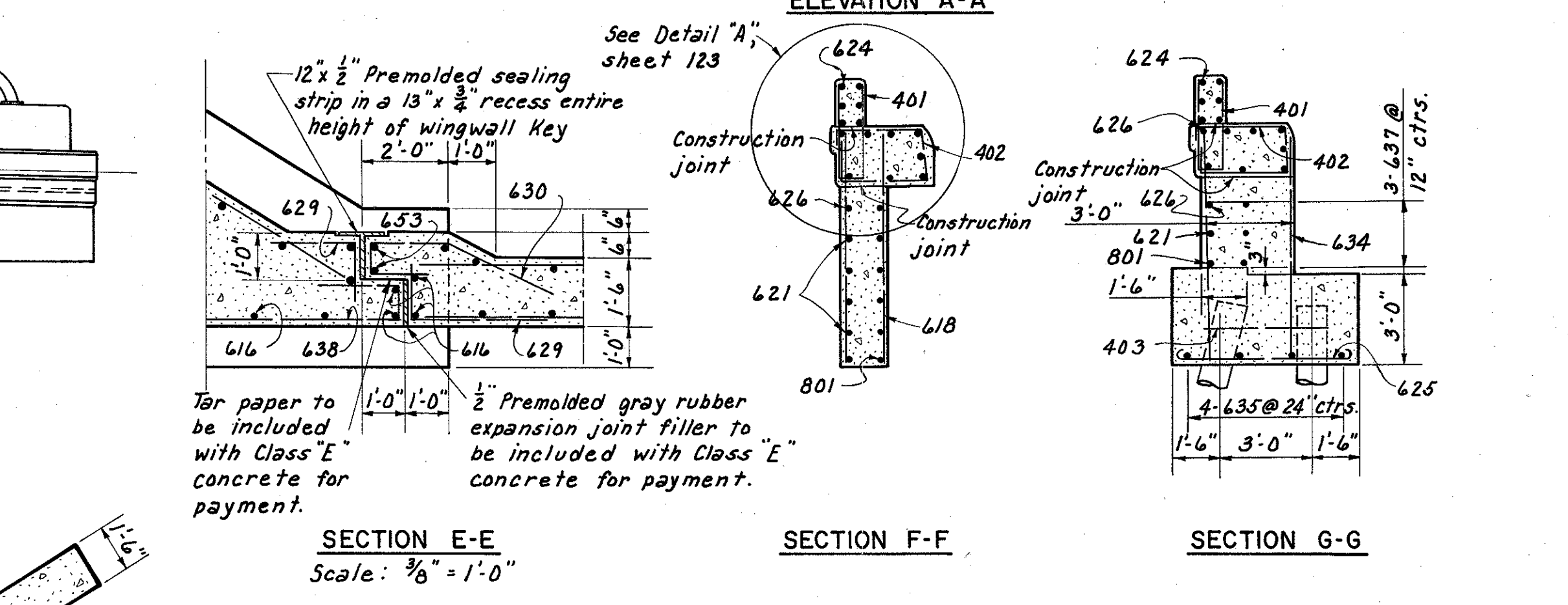
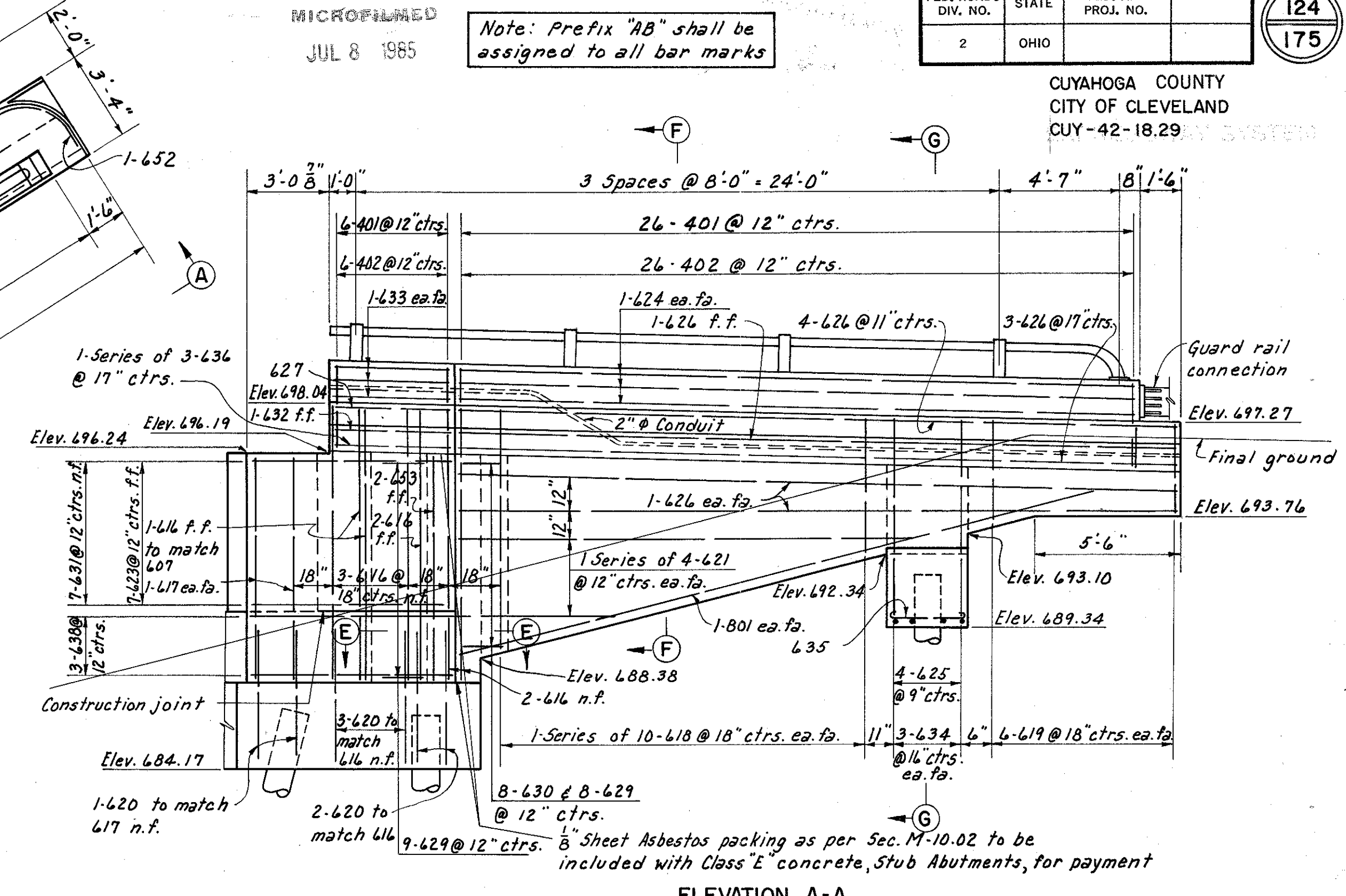
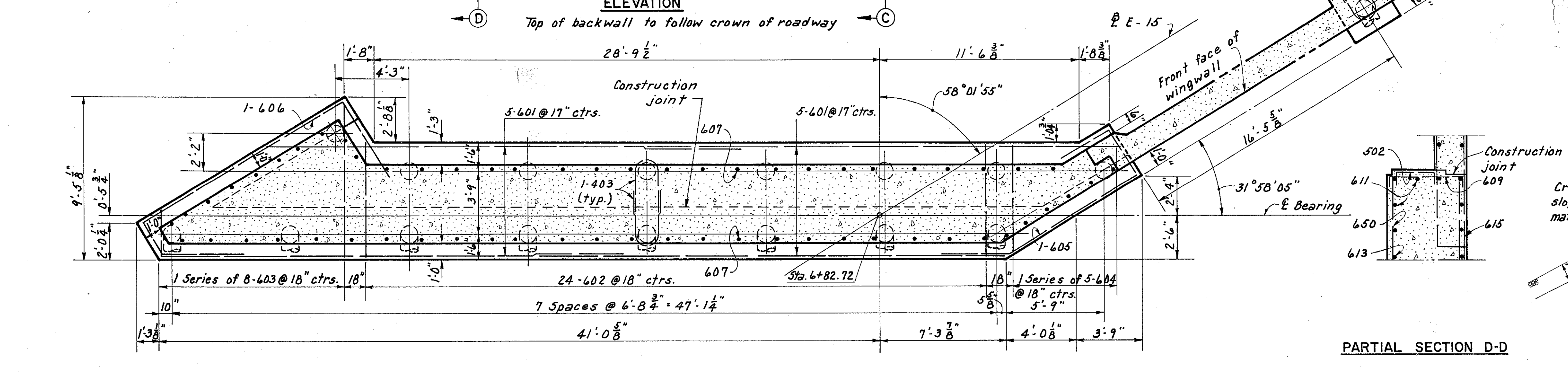
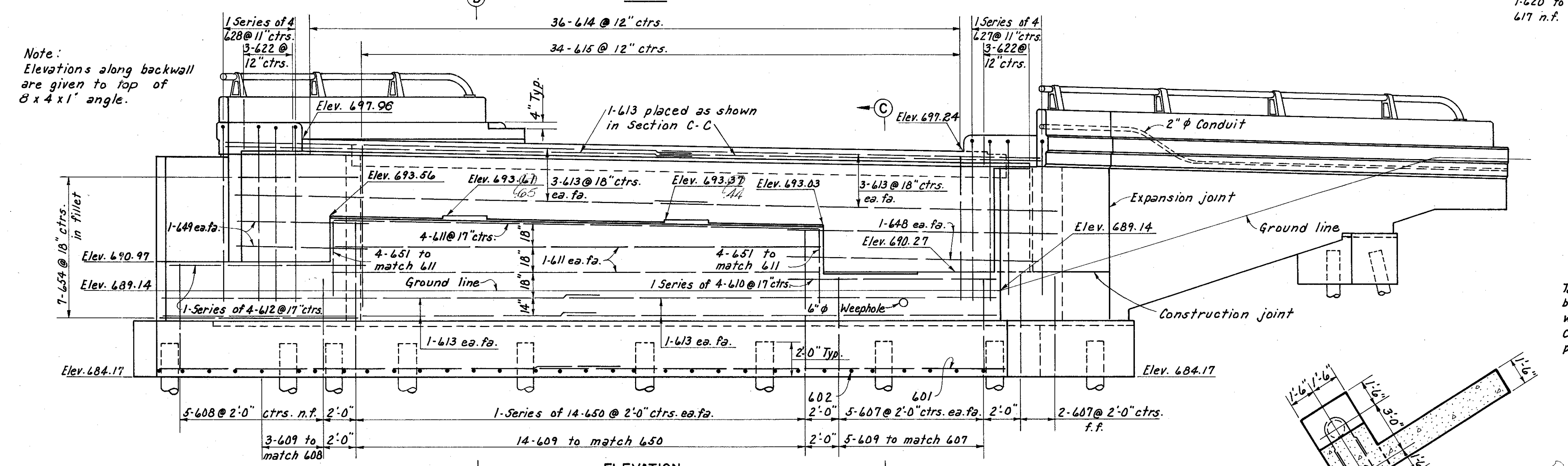
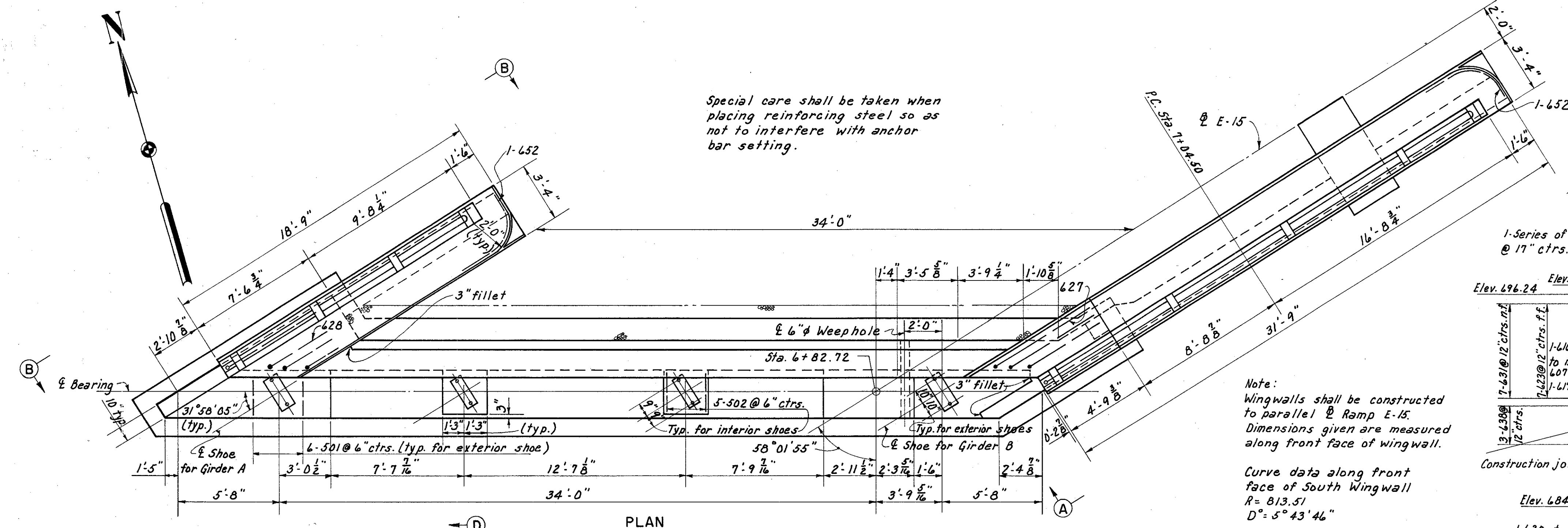
MICROFILMED  
JUL 8 1985

Note: Prefix "AB" shall be assigned to all bar marks

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

124  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



NOTES:

- All piles shall be 12" C.I.P. 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 154-G.
- Reinforcement bars shall be 3" clear in bottom of footing, 2" elsewhere.
- For Reinforcement Schedule see sheet 125-G.
- For North Wingwall Elevation see sheet 125-G.
- For guard rail and railing details see sheet 158-G.
- Backfill shall be placed prior to placing of curb.
- Ends of railing parapet shall be normal to top of safety curb.
- For Elevation B-B see sheet 125-G.

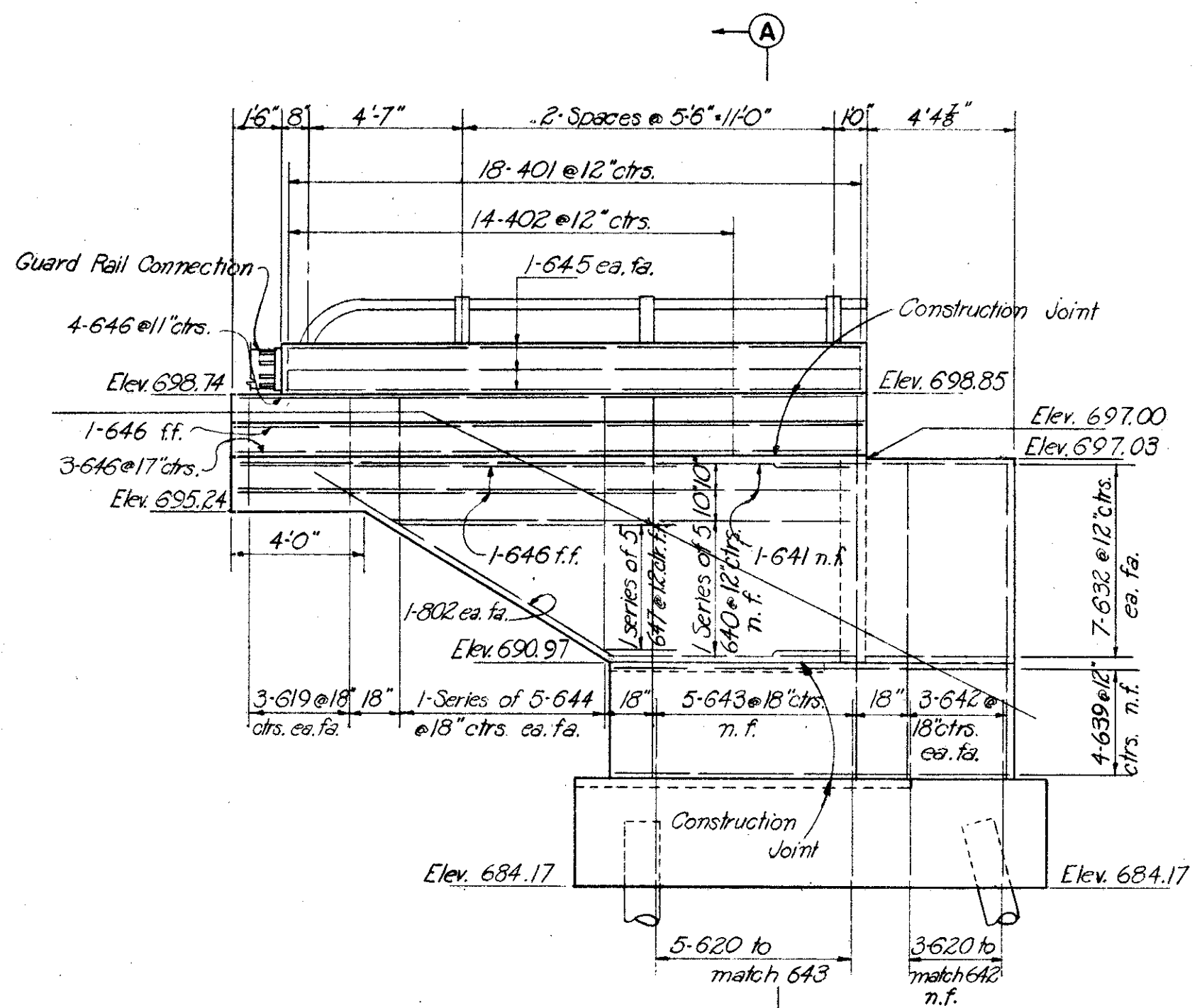
H.N.T.B. BR. NO. 6 PART 6

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

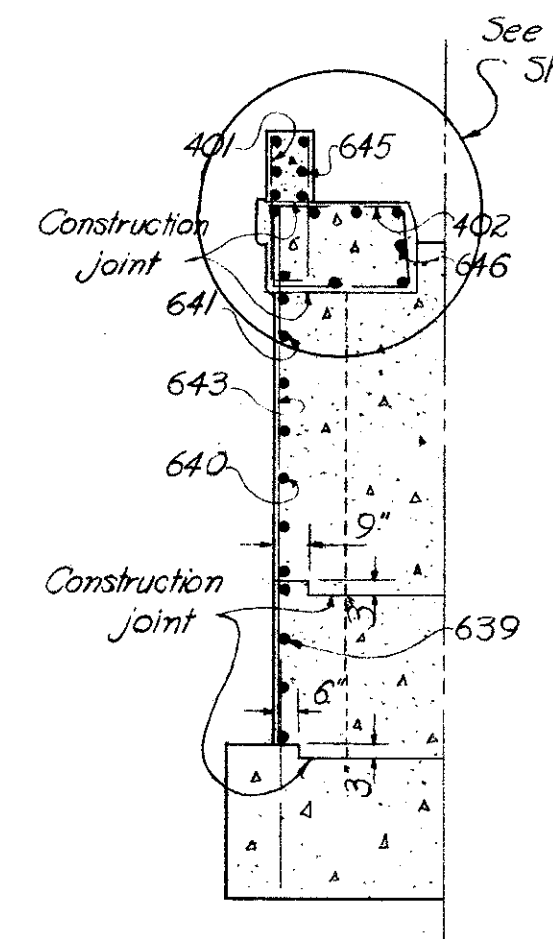
**EAST ABUTMENT**  
RAMP E-15 OVER W.B. BROADWAY  
Scale: 1/4" = 1'-0" STA. 4+17.75  
Except as noted STA. 6+85.67

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

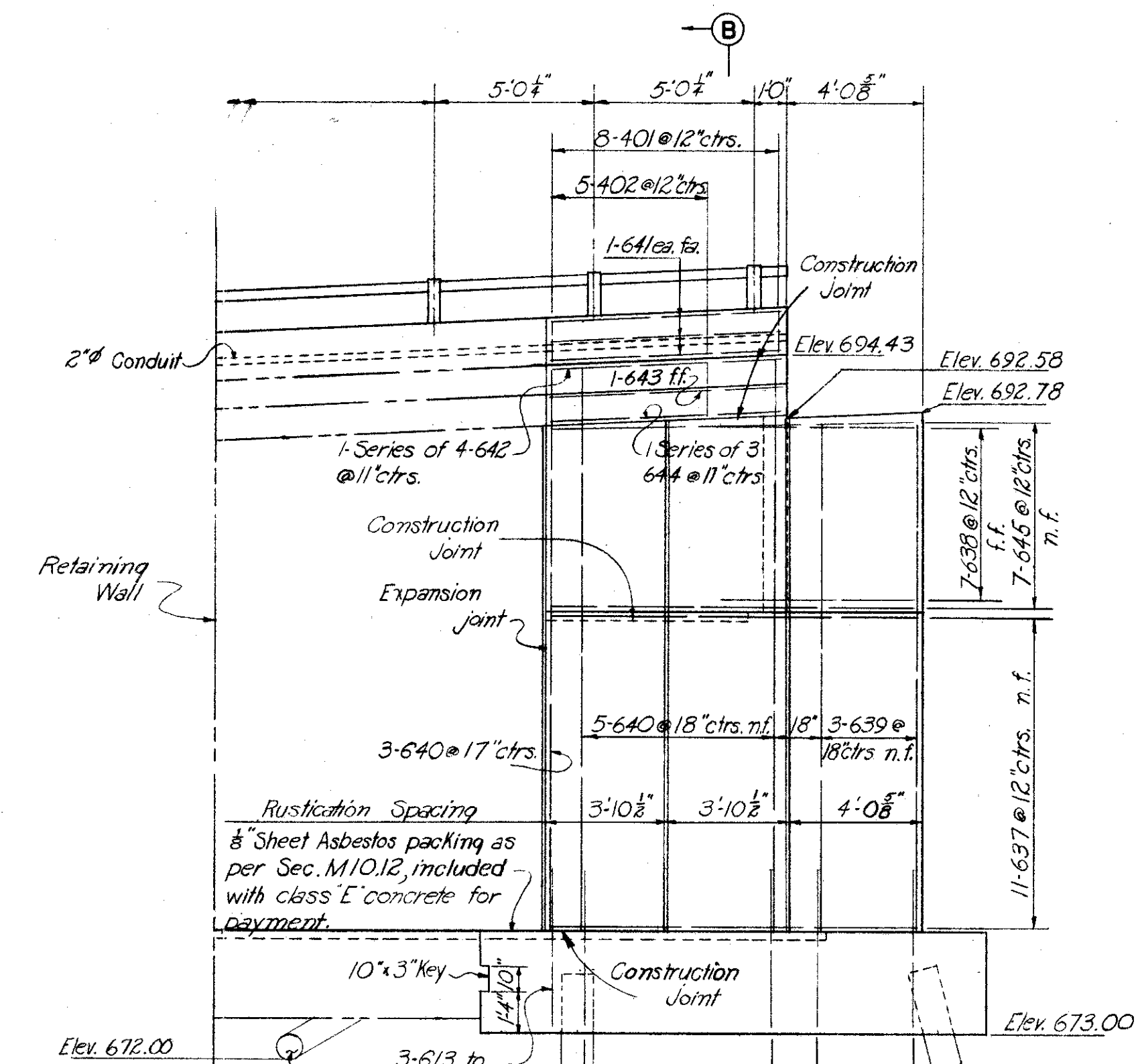
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DATE 1-15-59 DATE 4-16-59 DATE 2-1-59 DATE 11-12-59 SHEET 124



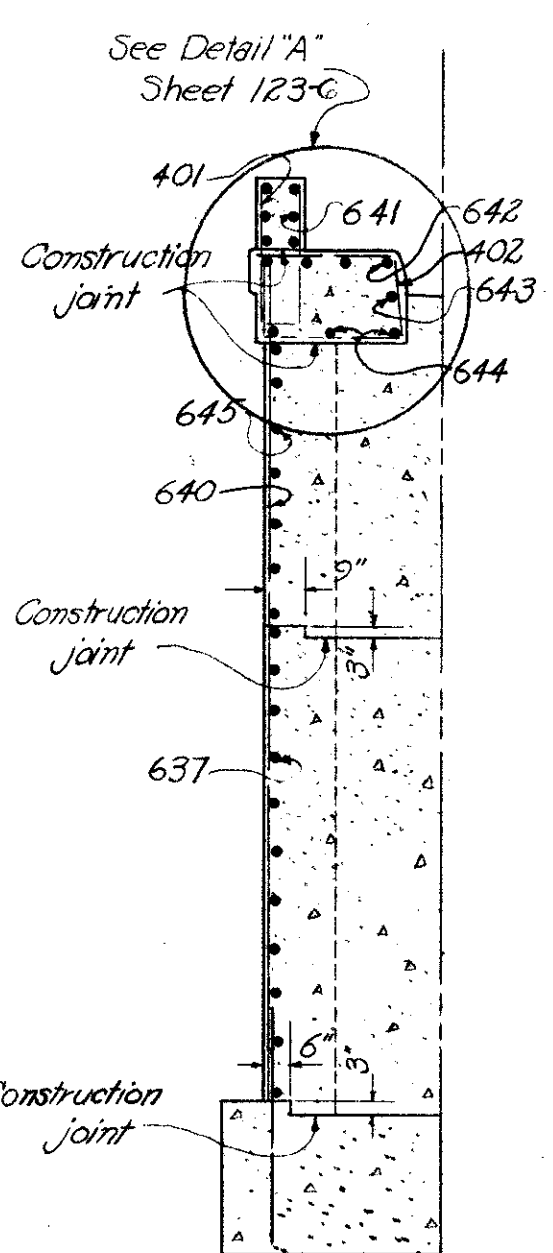
ELEVATION B-B  
NORTH WINGWALL - EAST ABUTMENT



SECTION A-A



ELEVATION A-A  
SOUTH WINGWALL - WEST ABUTMENT

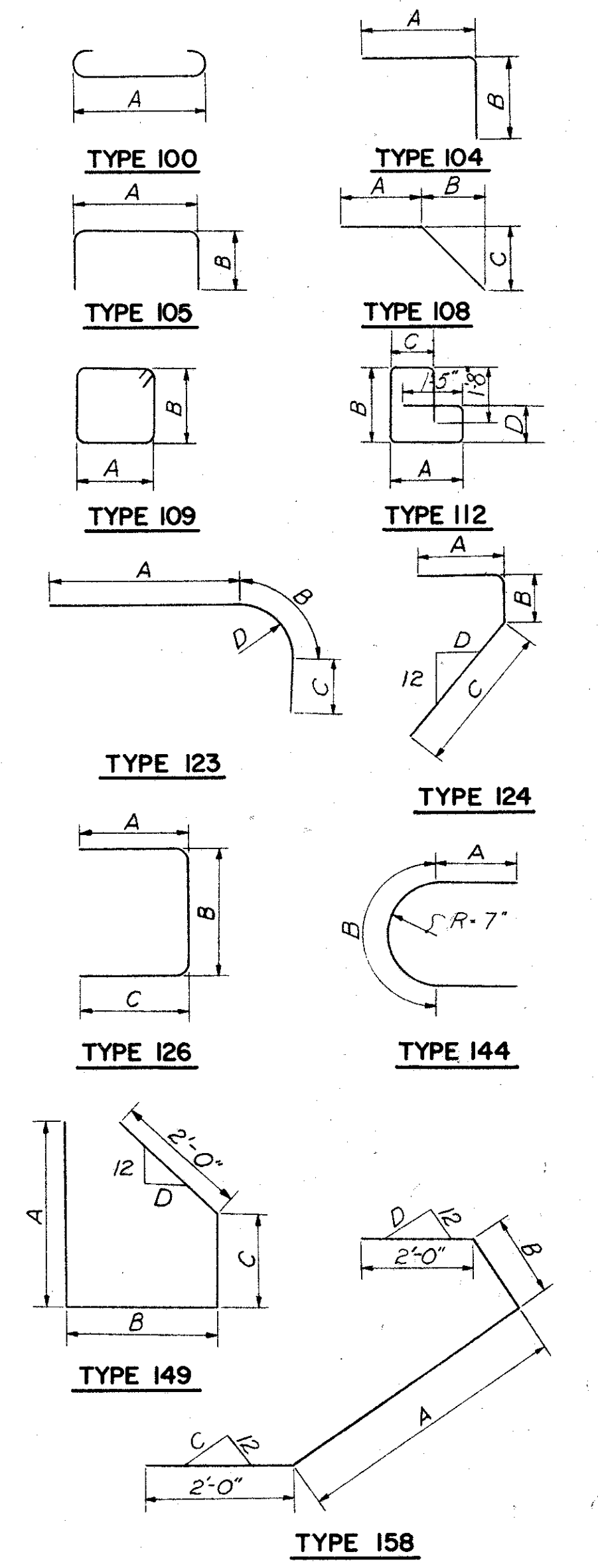


SECTION B-B

REINFORCEMENT SCHEDULE

WEST ABUTMENT										EAST ABUTMENT									
MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCREMENT	WEIGHT (LBS)	MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCREMENT	WEIGHT (LBS)
				A	B	C	D							A	B	C	D		
401	31	5'-11"	105	8"	2'-9"			122	401	50	5'-11"	105	0'-8"	2'-9"			197		
402	28	8'-7"	109	2'-8"	1'-5"			161	402	46	8'-7"	109	2'-8"	1'-5"			263		
403	10	11'-10"	144	5'-0"	1'-10"			79	403	14	6'-10"	144	2'-6"	1'-10"			64		
501	12	5'-2"	105	2'-5"	1'-6"			65	501	12	5'-4"	105	2'-7"	1'-6"			67		
502	10	4'-11"	105	2'-2"	1'-6"			51	502	10	4'-11"	105	2'-2"	1'-6"			51		
601	12	29'-6"	Str.					532	601	10	26'-9"	Str.					402		
602	25	10'-0"	100	8'-8"				376	602	24	7'-9"	100	6'-5"				279		
603	1 Series of 8	5'-1" to 11'-9"	100	3'-9" to 10'-3"				11 1/2"	603	1 Series of 8	3'-9" to 10'-4"	100	2'-3" to 9'-0"				84		
604	1 Series of 8	5'-7" to 10'-0"	100	4'-3" to 8'-8"				7 3/8"	604	1 Series of 8	3'-7" to 7'-2"	100	2'-3" to 5'-10"				26		
605	1	23'-5"	149	4'-0"	15'-3"	2'-7"	19	35	605	1	17'-0"	149	3'-9"	3'-2"	8'-8"	7'	134		
606	1	19'-10"	158	12'-4"	3'-11"	4'	3'	30	606	5	8'-1"	104	6'-4"	1'-11"			61		
607	7	10'-7"	104	6'-7"	4'-2"			111	607	12	7'-5"	104	5'-8"	1'-11"			253		
608	6	13'-10"	104	9'-10"	4'-2"			125	608	5	8'-1"	104	6'-4"	1'-11"			89		
609	1 Series of 4	13'-8" to 16'-8"	104	12'-4" to 15'-4"	1'-6"			0 7/8"	609	22	7'-8"	105	4'-2"	1'-11"			330		
610	1 Series of 4	11'-7" to 14'-9"	126	9'-0" to 12'-2"	11"	2'-0"		0 1/2"	610	1 Series of 4	11'-9" to 18'-0"	Str.					52		
611	41	2'-5"	124	1'-4"	4"	12"	24	149	611	8	27'-6"	Str.					810		
612	8	3'-2"	124	1'-4"	1'-1"	12"	24	38	612	22	7'-8"	105	4'-2"	1'-11"			135		
613	99	5'-8"	104	5'-0"	10"			843	613	36	2'-6"	124	1'-4"	5"	12"	24	1056		
614	6	11'-5"	104	9'-8"	1'-11"			103	614	34	20'-8"	112	1'-5"	8'-9"	11"	7'-4"	169		
615	1 Series of 21	13'-7" to 16'-4"	104	9'-7" to 12'-4"	4'-2"			472	615	11	10'-3"	Str.					51		
616	34	28'-0"	Str.					1430	616	4	8'-6"	Str.					207		
617	8	21'-6"	Str.					258	617	2 Series of 10	5'-0" to 8'-9"	Str.					81		
618	1 Series of 4	11'-9" to 17'-0"	Str.					86	618	18	3'-0"	Str.					121		
619	7	11'-8"	108	2'-0"	8'-7"	4'-3"		1'-9"	619	17	4'-9"	Str.					138		
620	12	9'-9"	Str.					176	620	2 Series of 6	5'-0" to 18'-0"	Str.					29		
621	2 Series of 6	4'-0" to 11'-9"	Str.					1'-6 5/8"	621	6	3'-3"	124	1'-4"	1'-2"	12	24	53		
622	6	19'-0"	Str.					172	622	7	5'-0"	Str.					42		
623	6	12'-3"	Str.					110	623	6	25'-0"	Str.					478		
624	6	14'-0"	Str.					126	624	4	7'-0"	100	5'-8"				89		
625	2 Series of 7	6'-6" to 10'-0"	Str.					7"	625	12	26'-6"	Str.					78		
626	6	8'-3"	Str.					74	626	1 Series of 4	13'-4" to 16'-4"	104	9'-9"	3'-9" to 6'-9"			83		
627	14	3'-3"	Str.					68	627	1 Series of 4	11'-6" to 14'-6"	104	9'-9"	1'-11" to 4'-11"			61		
628	4	13'-9"	Str.					83	628	17	3'-3"	104	1'-11"	1'-6"			103		
629	4	7'-0"	100	5'-8"				42	629	8	5'-1"	124	8"	1'-8"	3'-0"	6	152		
630	6	21'-6"	Str.					8	630	7	9'-9"	126	7'-6"	8"	1'-11"		68		
631	1 Series of 4	23'-0" to 25'-0"	Str.					1'-4 1/2"	631	15	6'-9"	Str.					24		
632	1 Series of 4	23'-0" to 25'-9"	Str.					39	632	6	4'-3"	Str.					24		
633	1	25'-9"	Str.					60	633	4	4'-0"	100	2'-8"				35		
634	8	5'-0"	Str.					46	634	3	7'-8"	105	2'-8"	2'-8"			57		
635	4	7'-8"	105	2'-8"	2'-8"			24	635	4	12'-9"	149	3'-0"	8"	7'-6"	7	83		
636	4	4'-0"	100	2'-8"				227	636	3	13'-10"	124	11'-7"	6"	2'-0"	19	77		
637	11	13'-9"	124	11'-6"	6"	2'-0"	19	66	637	1 Series of 5	7'-0" to 13'-6"	Str.					54		
638	7	6'-3"	Str.					144	638	4	18'-0"	Str.					83		
639	6	16'-0"	Str.					210	639	6	9'-3"	Str.					84		
640	8	17'-6"	Str.					8	640	5	11'-3"	Str.					86		
641	6	7'-0"	Str.					11"	641	2	18'-0"	Str.					195		
642	1 Series of 4	4'-0" to 6'-9"	Str.					6	642	2 Series of 5	4'-0" to 7'-6"	Str.					105		
643	1	4'-0"	Str.					24	643	10	13'-0"	Str.					42		
644	1 Series of 7	4'-0" to 6'-9"	Str.					121	644	4	17'-6"	Str.					435		
645	7	11'-6"	Str.					108	645	4	7'-0"	Str.					57		
646	4	18'-0"	Str.					50	646	2 Series of 1/2	10'-4" to 10'-7"	104	8'-4" to 8'-10"	1'-11"			25		
647	1 Series of 4	5'-6" to 11'-0"	Str.					56	647	8	4'-9"	Str.					45		
648	2	18'-6"	Str.					189	648	2	8'-9"	123	2'-0"	5'-9"	1'-0"	1'-10"	128		
649	4	31'-6"	Str.					51	649	7	4'-3"	Str.					25		
650	4	8'-6"	Str.					650	2	8'-3"	Str.						45		
651	1	5'-10"	123	2'-0"	2'-10"	1'-0"	1'-10"	13	651	2	24'-0"	Str.					56		
801	2	17'-0"	Str.					91	801	2	10'-6"	Str.					56		
Total									10,152	Total									8,189

Note: Prefixes shall be assigned to bar marks as follows:  
West Abutment "AA"  
East Abutment "AB"



BENDING DIAGRAMS

NOTES:  
Bar dimensions are out to out.  
\* Bars are included with "Item S-14, Railing" for payment.  
Bars of a series shall vary in length by a constant increment.  
For Replacement Schedule see sheet 97-G.

H.N.T.B. BR. NO. 6 PART 6

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

ABUTMENT DETAILS  
RAMP E-15 OVER W.B. BROADWAY  
Scale: 1/4" = 1'-0" STA. 4 + 17.75  
STA. 6 + 85.67

WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN: C.A.B. TRACED: [ ] CHECKED: W.J. [ ] REVIEWED: J.C.T. [ ] REVISION: [ ]  
DATE: 1-15-59 DATE: 2-1-59 DATE: 11-12-59 SHEET 125

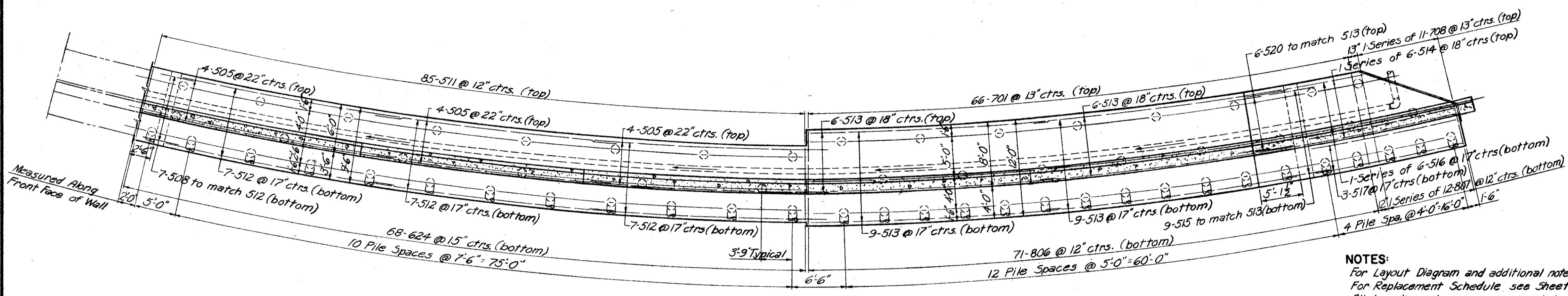
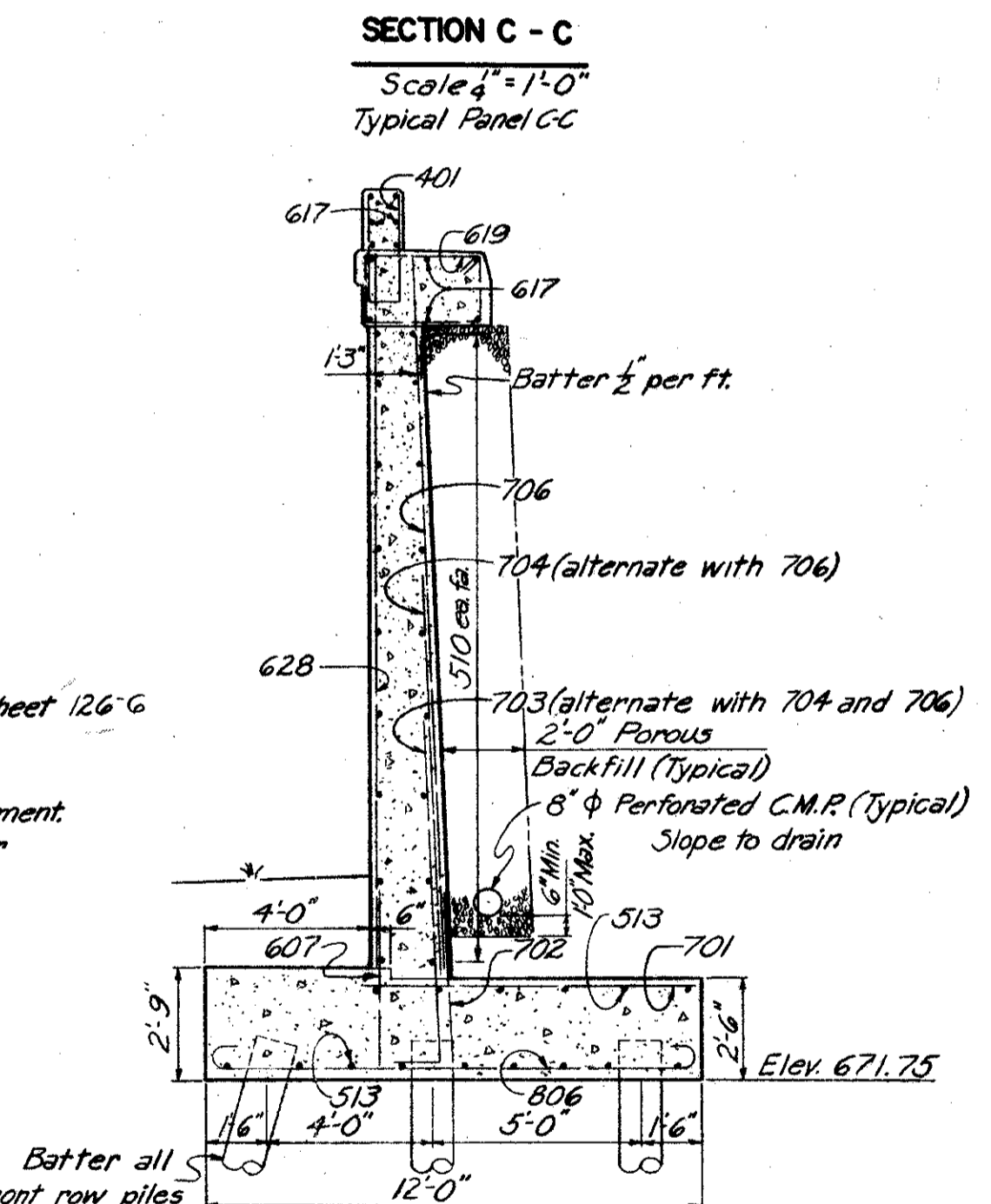
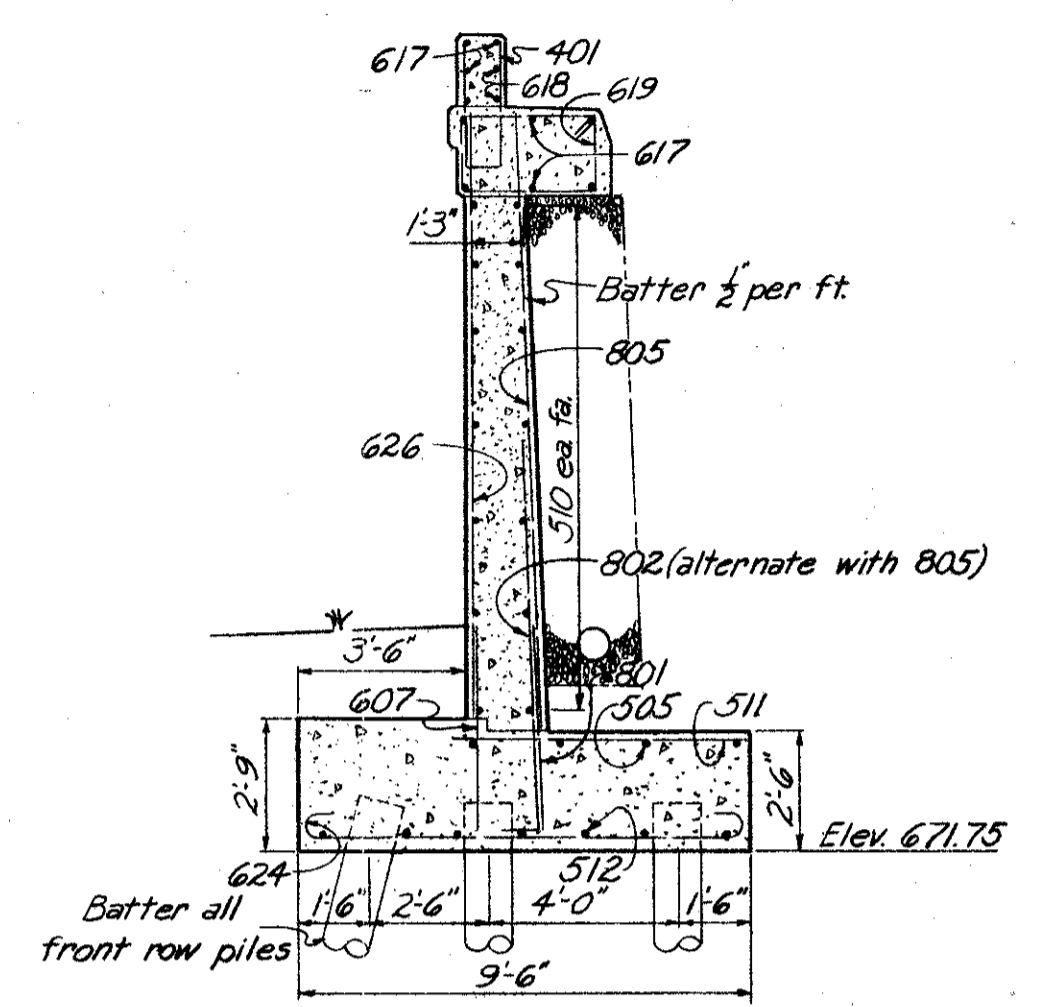
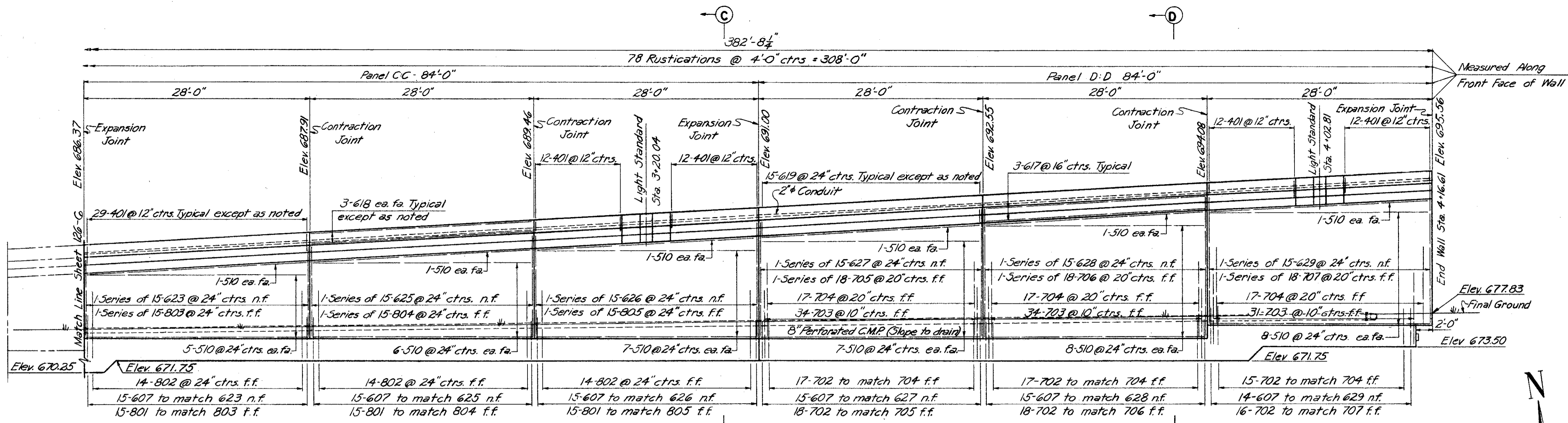


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JUL 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

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175

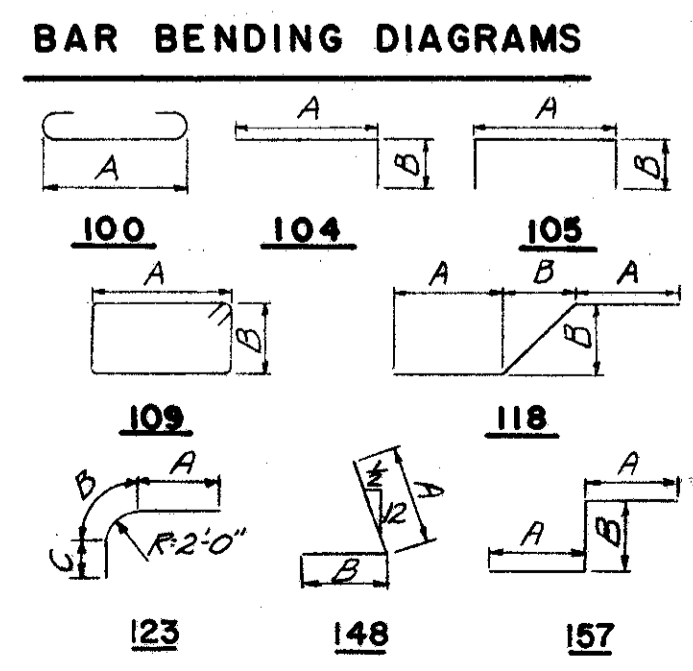
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



NOTES:  
For Layout Diagram and additional notes and sections see Sheet 126-G  
For Replacement Schedule see Sheet 97-G  
All bar dimensions are given out to out.  
Bars of a series shall vary in length by a constant increment.  
\* Denotes bars for the light standard support. For their placement, and bending diagrams see Sheet 153-G  
\*\* Denotes bars to be included with "Item 5-14, Railing" for payment.

Note: Prefix "W" shall be assigned to all bar marks.

REINFORCEMENT SCHEDULE																											
MARK	NO.	LENGTH	TYPE	DIMENSIONS			SERIES INCREMENT	WEIGHT (LBS.)	MARK	NO.	LENGTH	TYPE	DIMENSIONS			SERIES INCREMENT	WEIGHT (LBS.)	MARK	NO.	LENGTH	TYPE	DIMENSIONS			SERIES INCREMENT	WEIGHT (LBS.)	
				A	B	C							A	B	C							A	B	C			
401	371	5'-7"	105	8"	2'-7"		1386	512	21	28'-6"	Str.					624	611	150"	10	9'-5"	141	2'-11"	1'-10"		140		
*451	10	8'-11"	131	2'-6"	1'-2"		60	513	30	31'-3"	Str.					978	612	150"	10	14'-6"	141	5'-3"	3'-0"		325		
*452	10	9'-11"	131	3'-0"	1'-8"		65	514	150"	14'-6" to 25'-6"	Str.				2'-2 3/8"	119	613	46	5'-2"	104	4'-6"	10"			40		
*453	15	9'-5"	131	3'-2"	1'-0"		95	515	9	5'-10"	118	1'-9"	1'-9"		55	614	150"	10	5'-3" to 6'-9"	Str.					207		
*454	10	6'-7"	155	3'-2"			45	516	150"	7'-9" to 18'-9"	Str.				2'-2 3/8"	83	615	150"	10	6'-9" to 8'-3"	Str.					259	
*455	10	7'-1"	155	3'-8"			45	517	3	18'-9"	Str.				59	616	5	18'-3"	Str.						137		
*456	15	7'-3"	155	3'-10"			75	518	4	3'-9"	157	1'-9"	6"		16	617	78	27'-6"	Str.						3222		
								519	8	4'-9"	157	1'-9"	1'-6"		40	618	78	27'-6"	Str.						1016		
								520	6	5'-0"	157	1'-9"	1'-9"		31	619	205	8'-5"	109	2'-8"	1'-9"					2592	
																620	42	8'-0"	148	7'-4"	10"					505	
501	150"	3'-9" to 4'-9"	Str.				226									621	250"	10	6'-9" to 8'-6"	Str.						343	
502	37	4'-9"	Str.				183	601	150"	5'-3" to 8'-0"	100	3'-11" to 6'-8"		2 1/2"	507	622	250"	10	8'-6" to 10'-0"	Str.						417	
503	56	5'-6"	Str.				321	602	37	8'-0"	100	6'-8"			445	623	150"	10	10'-0" to 11'-6"	Str.						727	
504	18	26'-0"	Str.				488	603	56	9'-6"	100	8'-2"			799	624	68	10'-6"	100	9'-2"						1072	
505	51	30'-0"	Str.				1596	604	150"	5'-0" to 5'-6"	Str.				79	625	150"	10	11'-6" to 13'-3"	Str.						279	
506	18	28'-0"	Str.				526	605	150"	5'-6" to 6'-9"	Str.				138	626	150"	10	13'-3" to 14'-9"	Str.						315	
507	5	4'-1"	118	1'-9"	6"		21	606	150"	4'-3" to 7'-9"	Str.				158	627	150"	10	14'-9" to 16'-3"	Str.						349	
508	13	5'-6"	118	1'-9"	1'-6"		75	607	209	4'-6"	Str.				1413	628	150"	10	16'-3" to 17'-9"	Str.						383	
509	4	18'-3"	Str.				76	608	150"	5'-3" to 6'-9"	Str.				135	629	150"	10	17'-9" to 19'-3"	Str.						377	
510	152	27'-6"	Str.				4360	609	150"	6'-9" to 8'-3"	Str.				169	630	6	18'-3"	Str.							30	
511	85	6'-0"	Str.				532	610	150"	5'-8" to 6'-2"	104	3'-3" to 10"			142	631	1	20'-3"	123	16'-2"	3'-4"	1'-0"					41,696



H.N.T.B. BR. NO. 6 PART 6

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

RETAINING WALL  
RAMP E-15 OVER W.B. BROADWAY

Scale: 1/8" = 1'-0"  
Except as noted

STA. 4 + 17.75  
STA. 6 + 85.67

WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

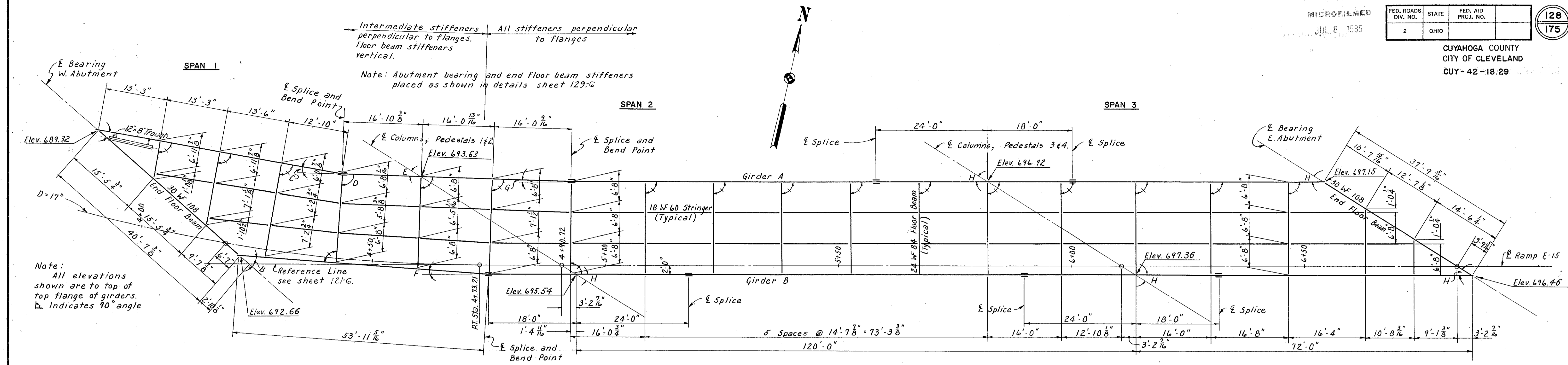
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SHEET 127

MICROFILMED  
JUL 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	128
2	OHIO		175

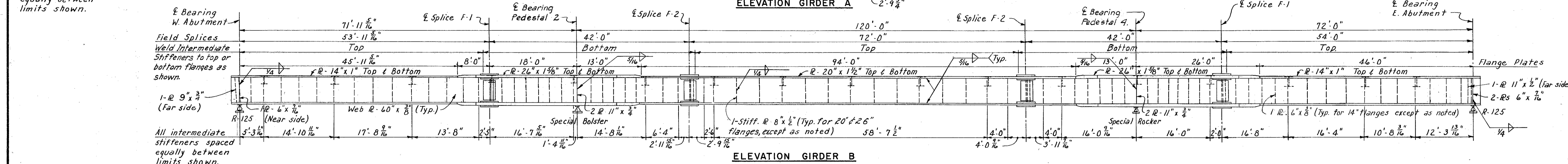
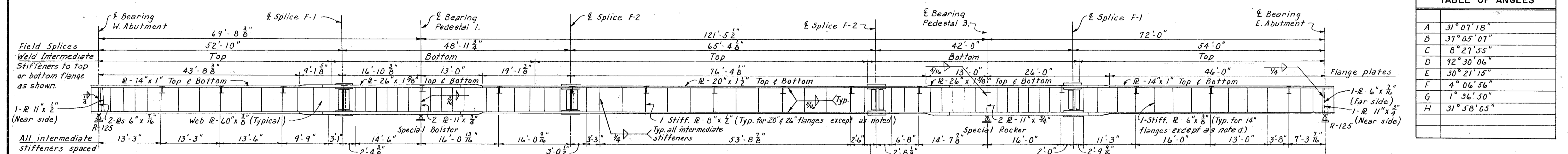
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



Note:  
All elevations shown are to top of top flange of girders.  
∠ Indicates 90° angle

**TABLE OF ANGLES**

A	31° 07' 18"
B	37° 05' 07"
C	8° 27' 55"
D	92° 30' 06"
E	30° 21' 15"
F	4° 06' 56"
G	1° 36' 50"
H	31° 58' 05"



**NOTES:**

All girders shall be fabricated to lines parallel to profiles formed by top of pavement elevation directly over the girder, plus the camber required to compensate for dead load deflections.

Top and bottom flange plates are to be same size, and shall be spliced at the point shown in the girder elevations, and as otherwise required.

The web plate may be spliced as required by available plate lengths.

All intermediate stiffeners, including those carrying floor beams, shall be as shown in elevations and placed on the inside face of the girder only. They shall be welded to top or bottom flanges, within the limits shown on the girder elevations, with a 3/16" 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 shall be used at field splices as shown in details on sheet 129-G

Bearing stiffeners shall be 6"x 7/16" Rs at the abutments and placed as shown in details, and 11"x 3/4" Rs placed in pairs at the piers. Bearing stiffeners 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 7/8" φ high-strength bolts conforming to Supplemental Spec. S-207. The bolts shall be placed with their heads on the outside face of 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. 5-1.22. of the Specifications.

Longitudinal dimensions of girders are measured horizontally along E of web plate.

For cross section through deck see sheet 129-G

For splice and other girder details see sheet 129-G

For details of rocker base plates at abutments see sheet 156-G

For other rocker details at abutments see Ohio Standards sheet RB-1-55.

For details of shoes at pedestals see sheet 130-G

For details of expansion dams see sheets 129-G & 156-G

For slab contour plan see sheet 131-G

For railing details see sheet 158-G

For drainage details see sheet 157-G

Connections of end floor beams to girders, and of intermediate floor beams to end floor beams shall be field reamed. Connections for intermediate floor beams and stringers shall be reamed assembled, or to a metal template.

Bolts shall be tightened prior to the placing of the deck slab.

**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.

H.N.T.B. BR. NO. 6 PART 6

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

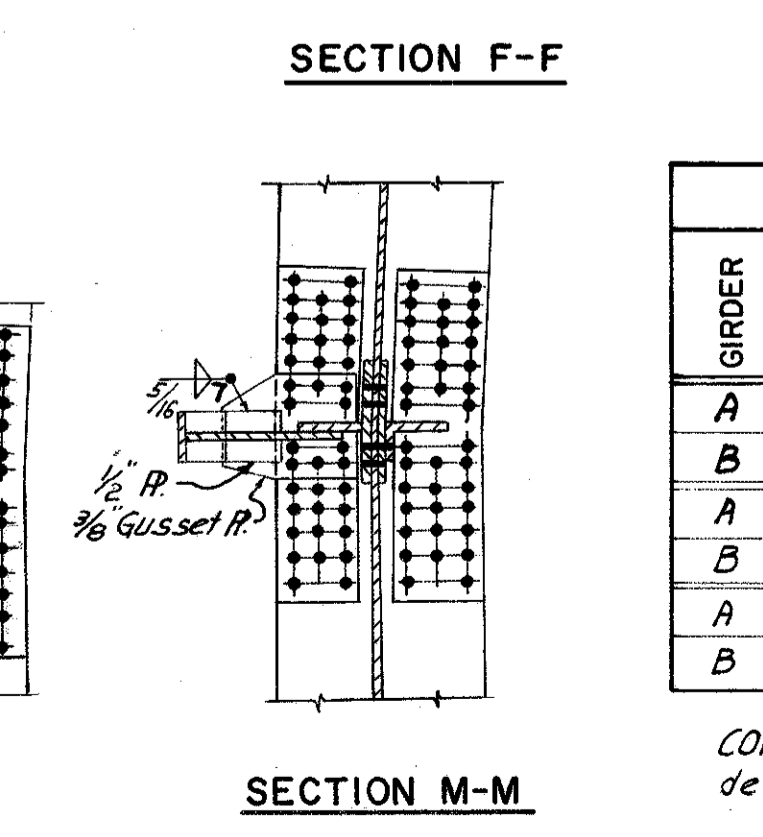
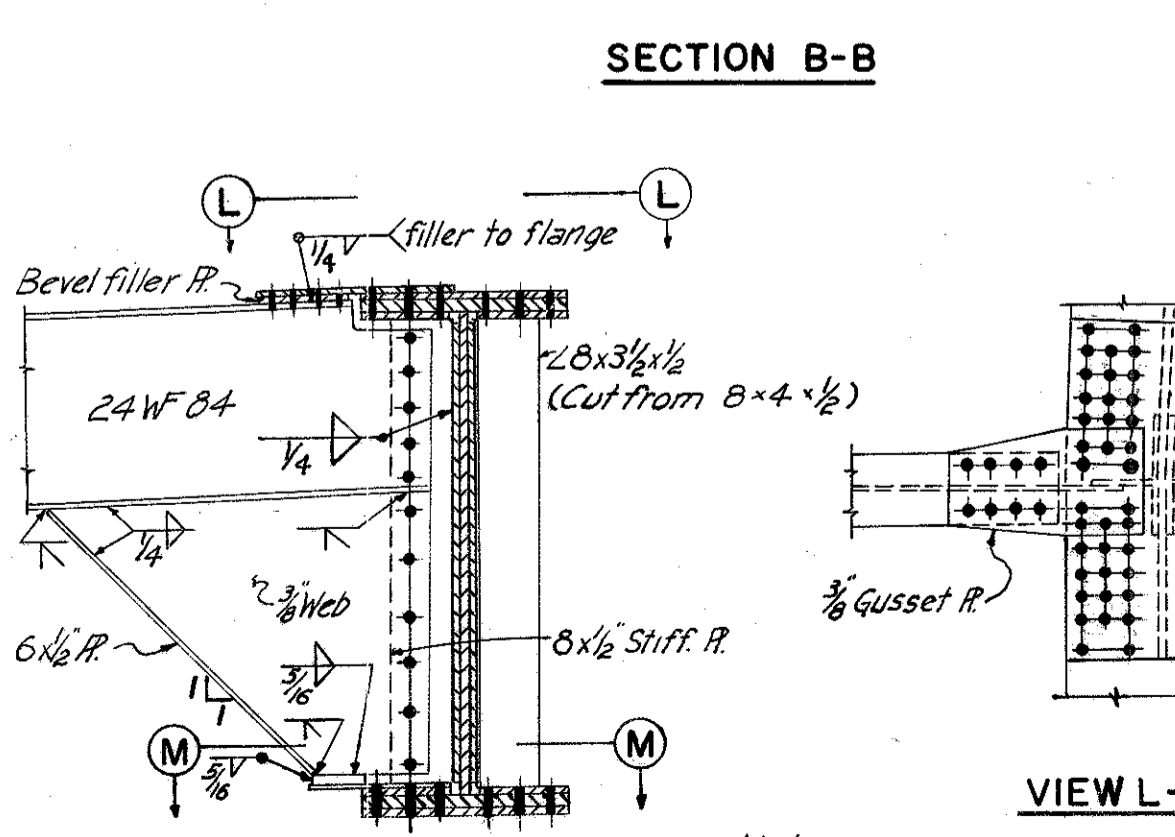
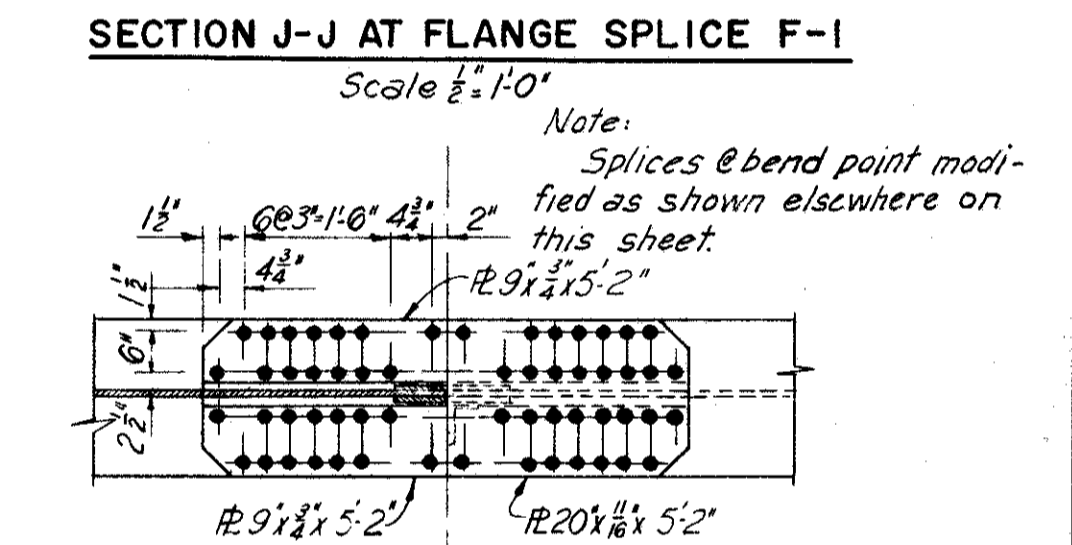
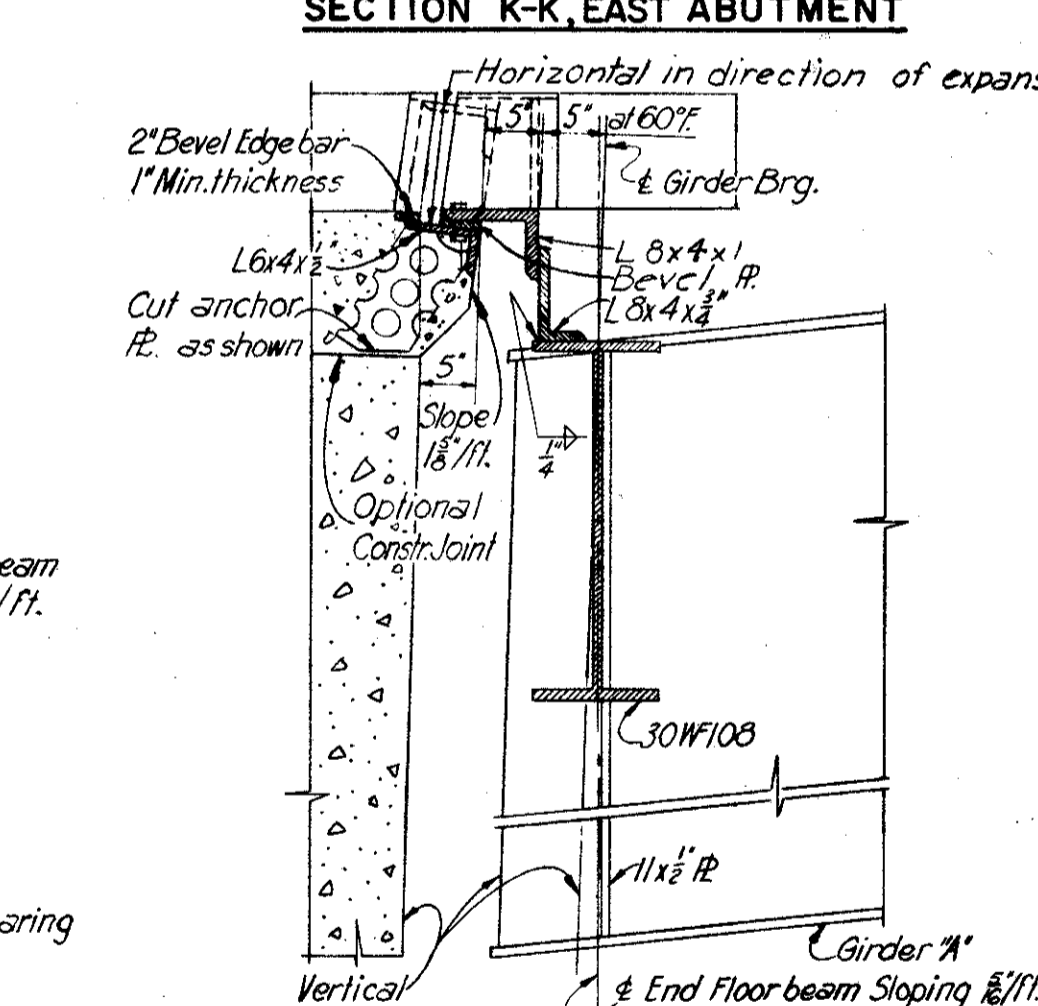
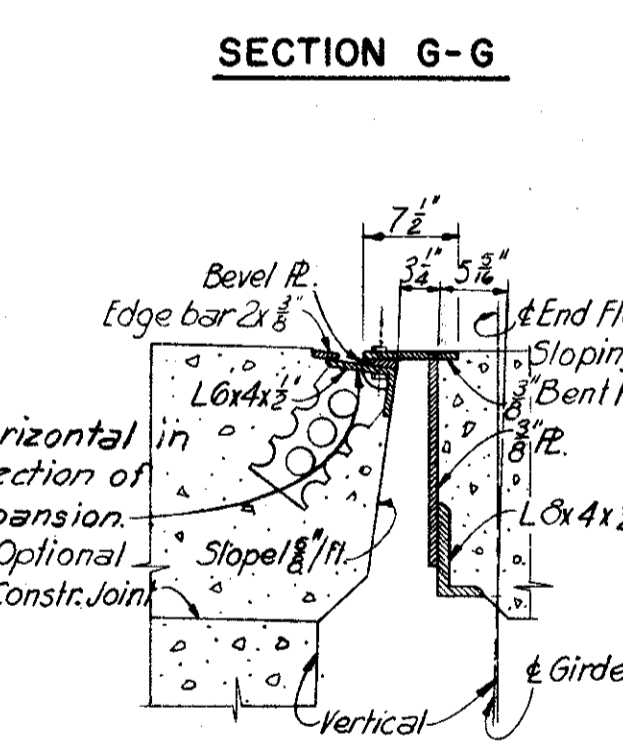
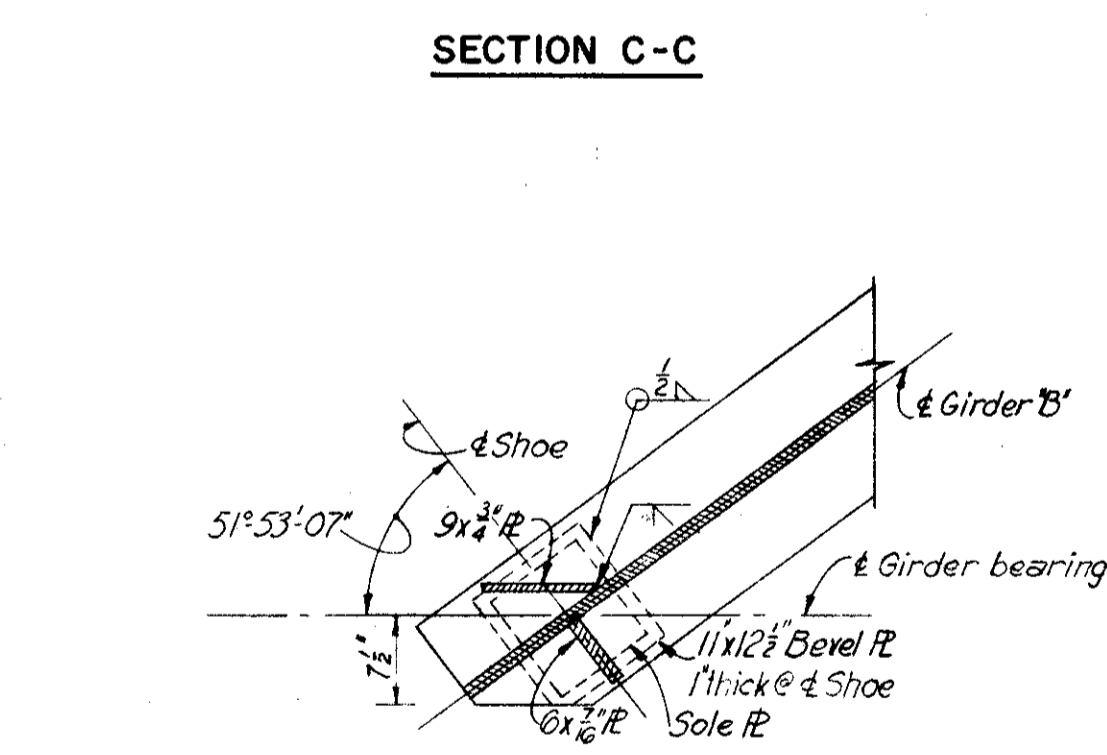
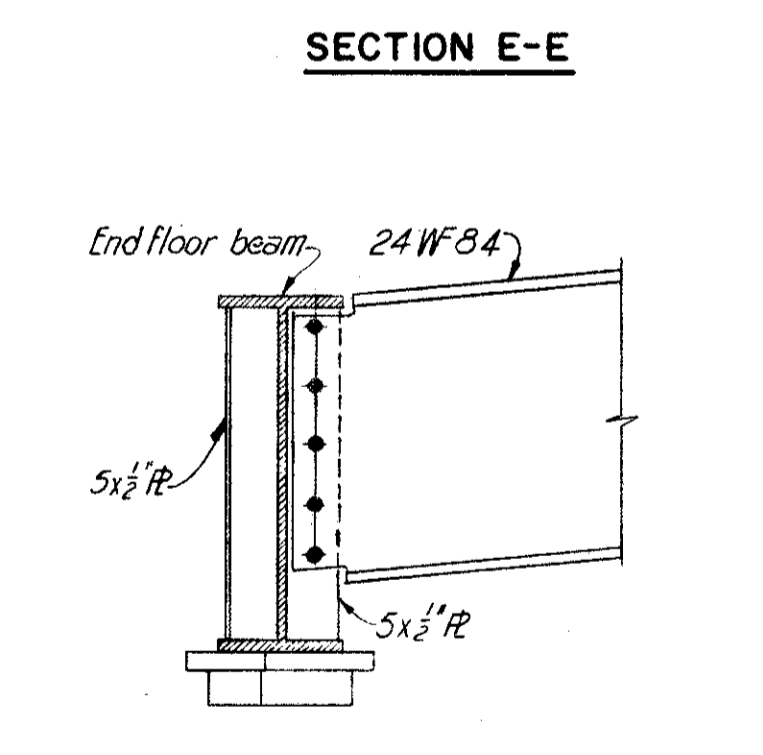
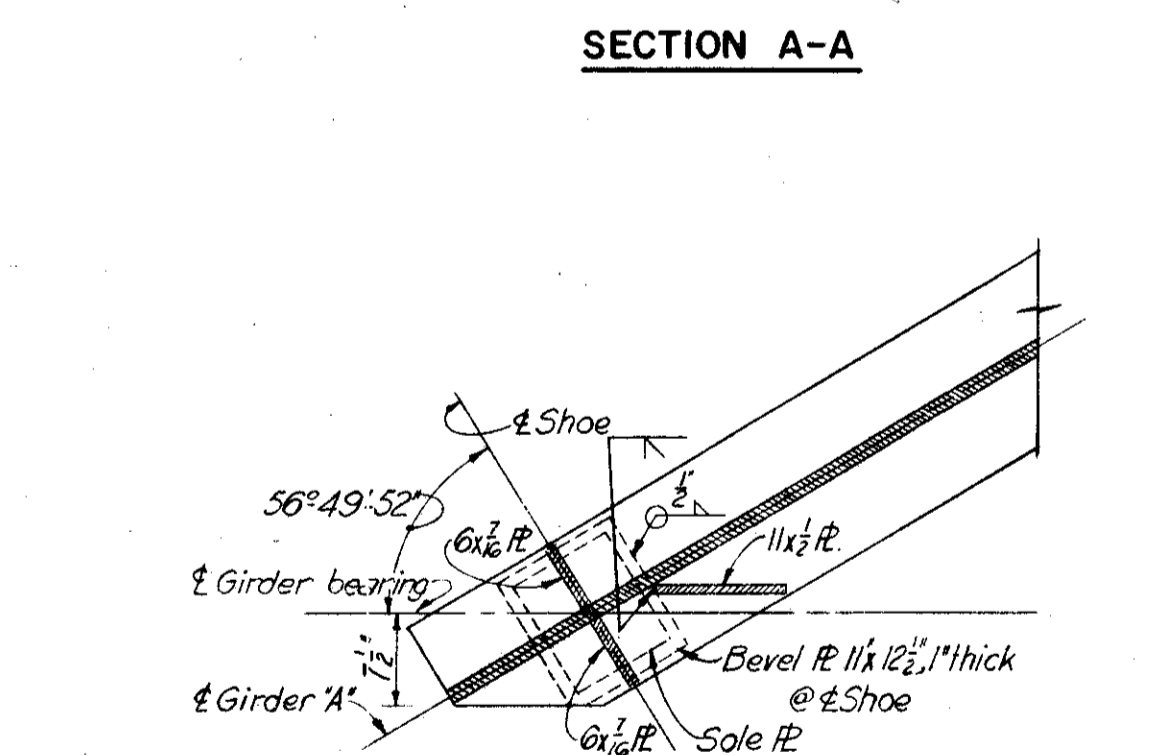
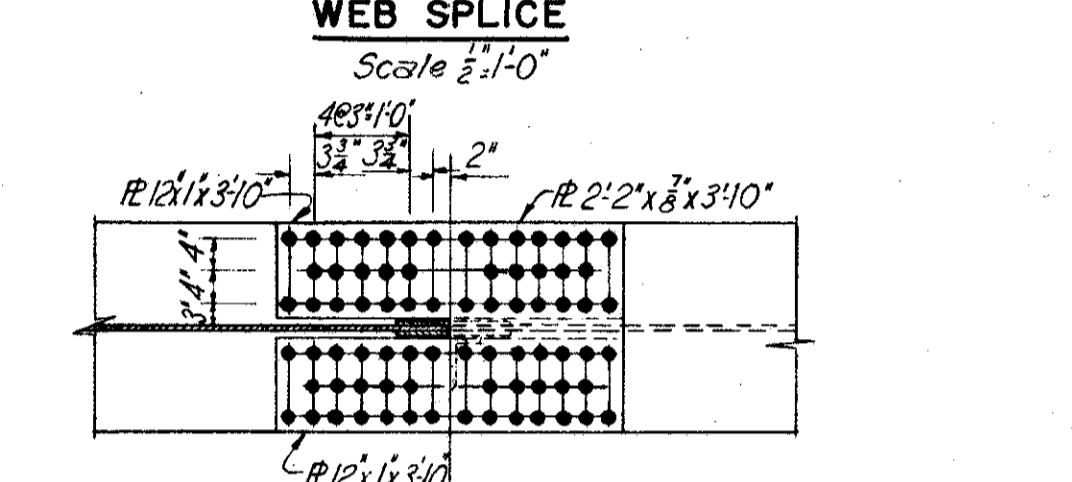
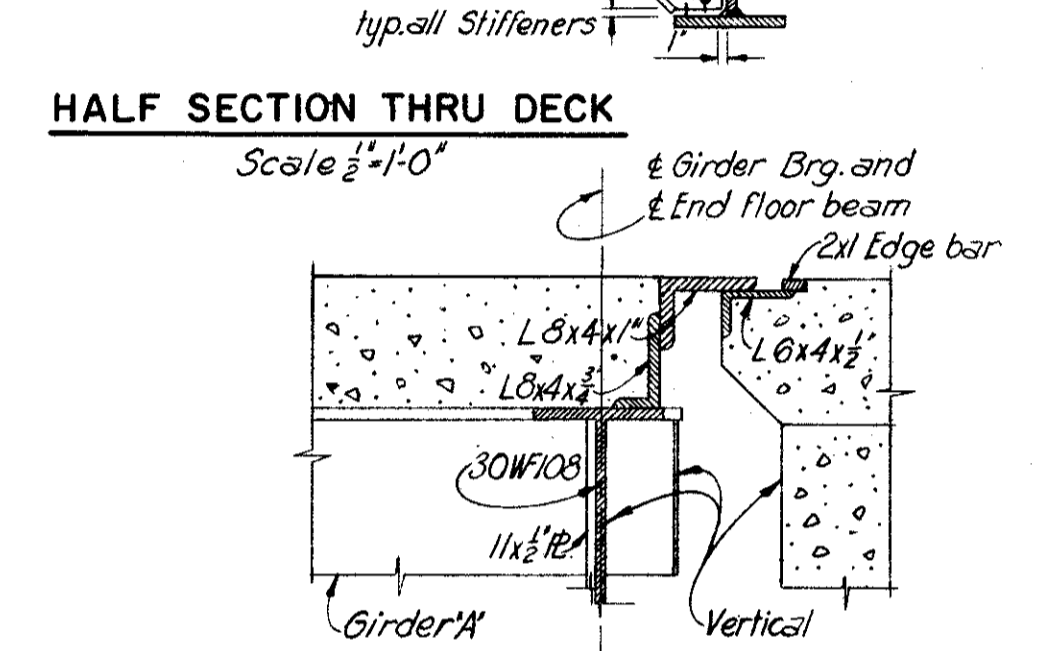
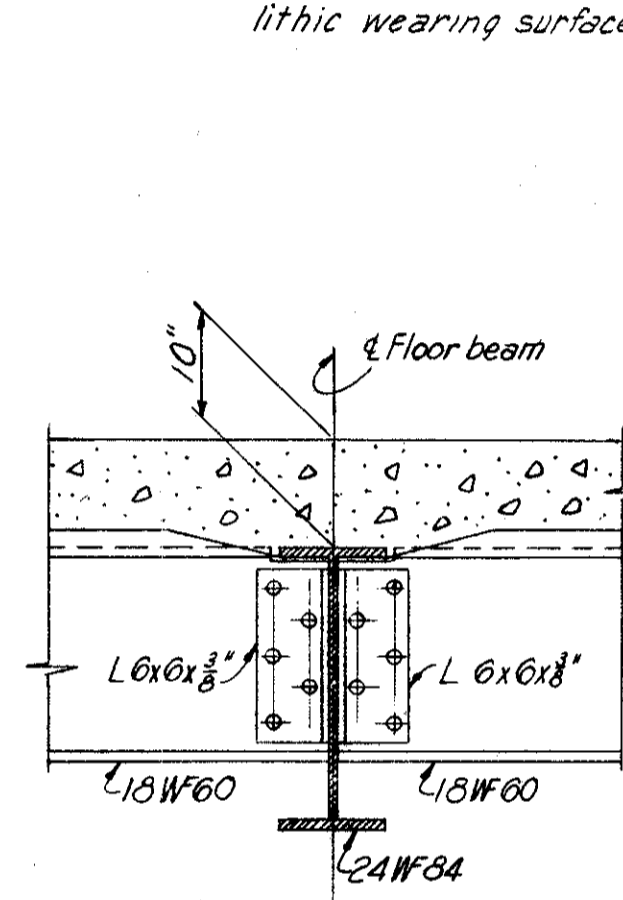
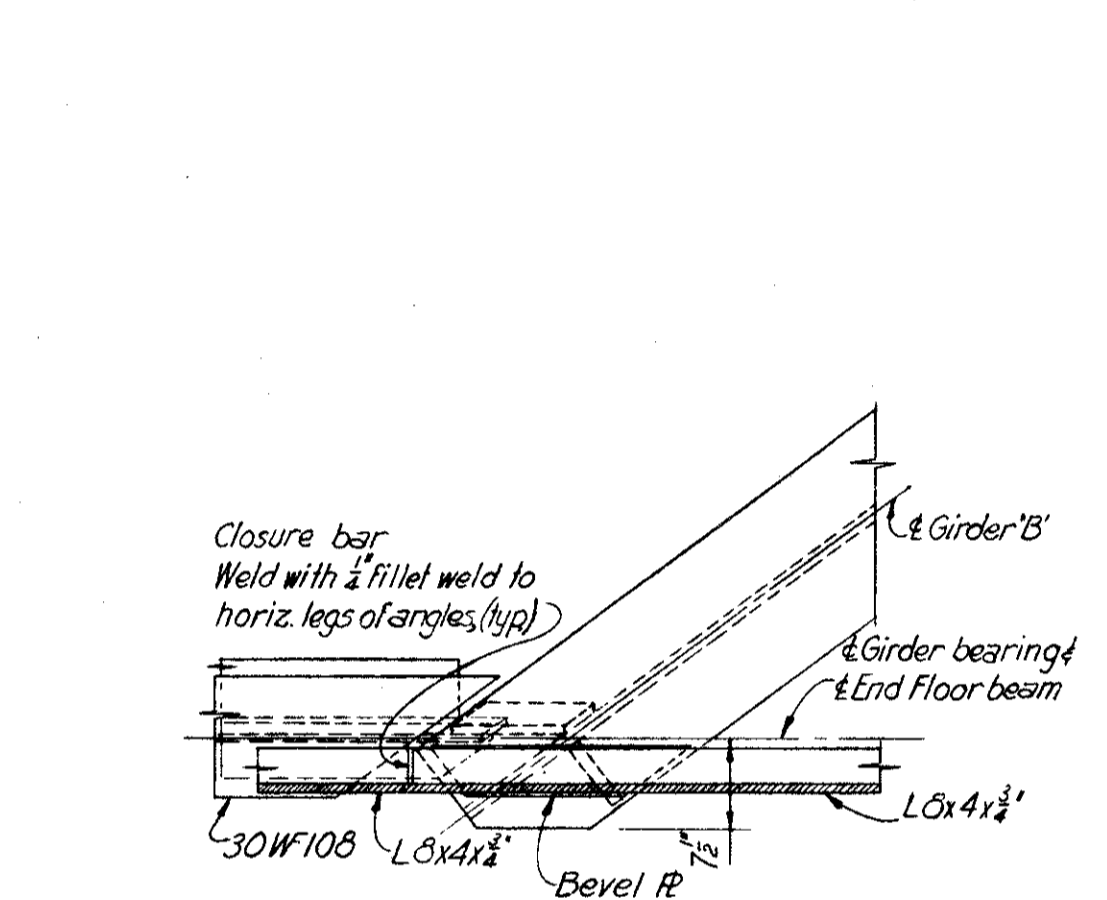
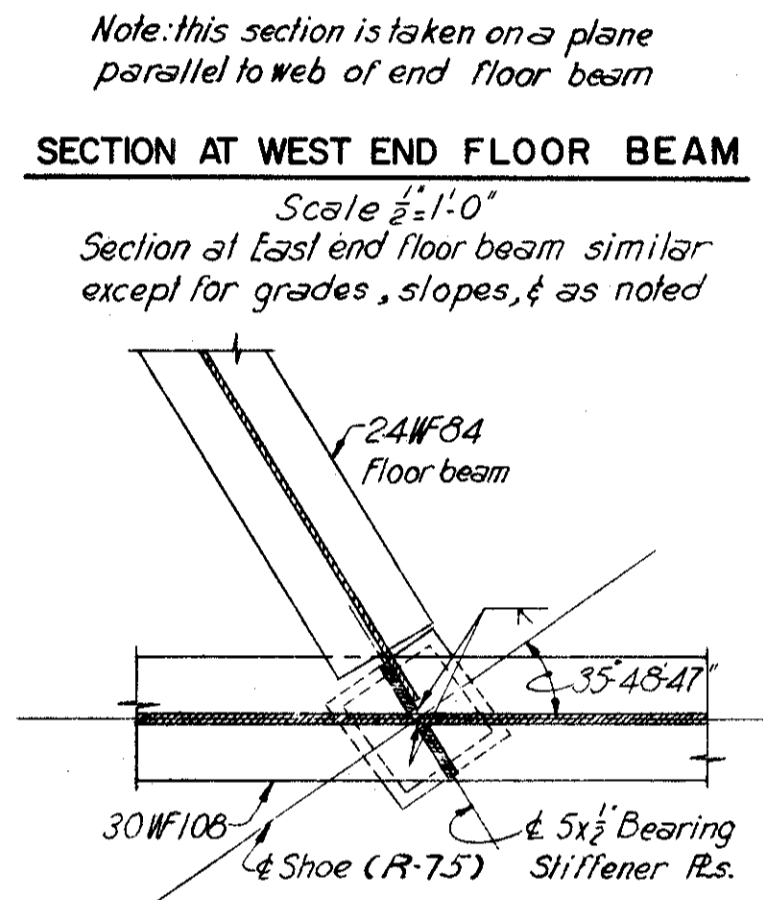
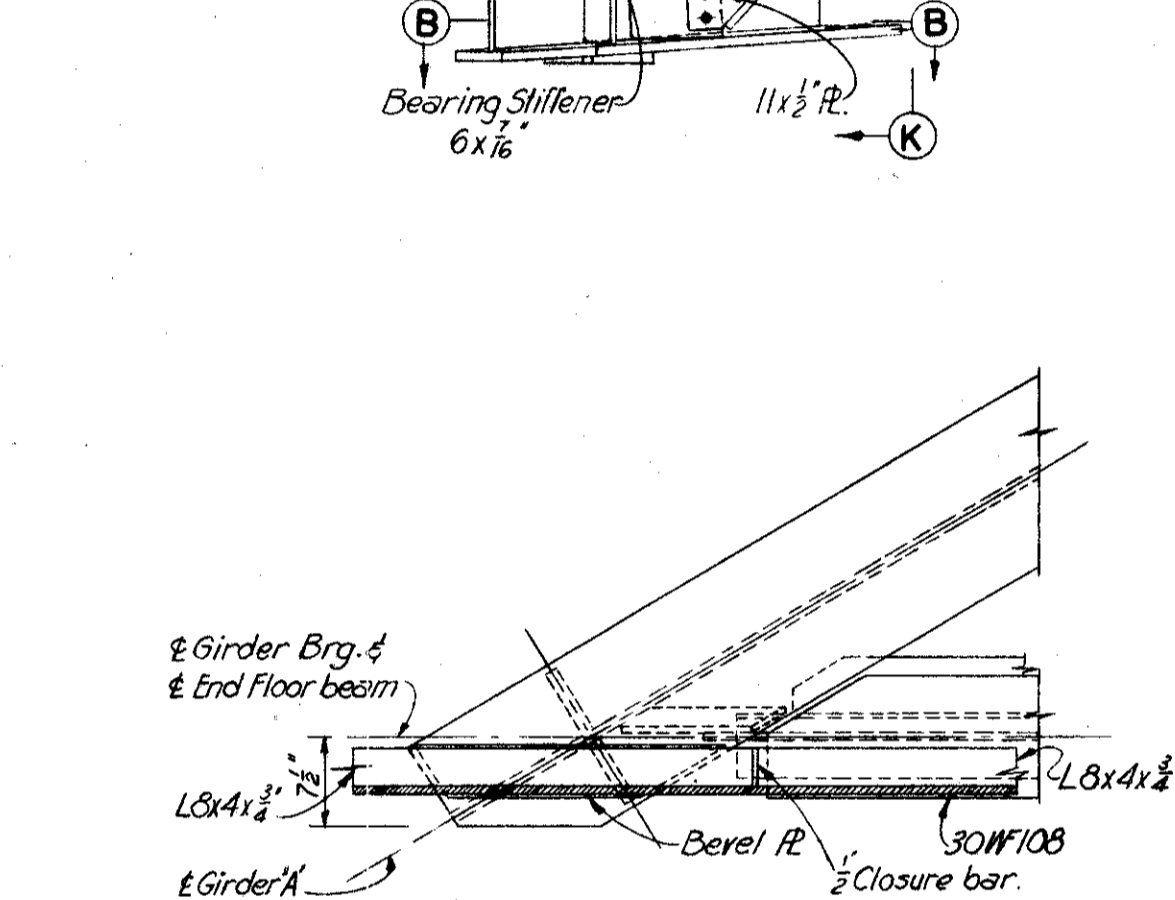
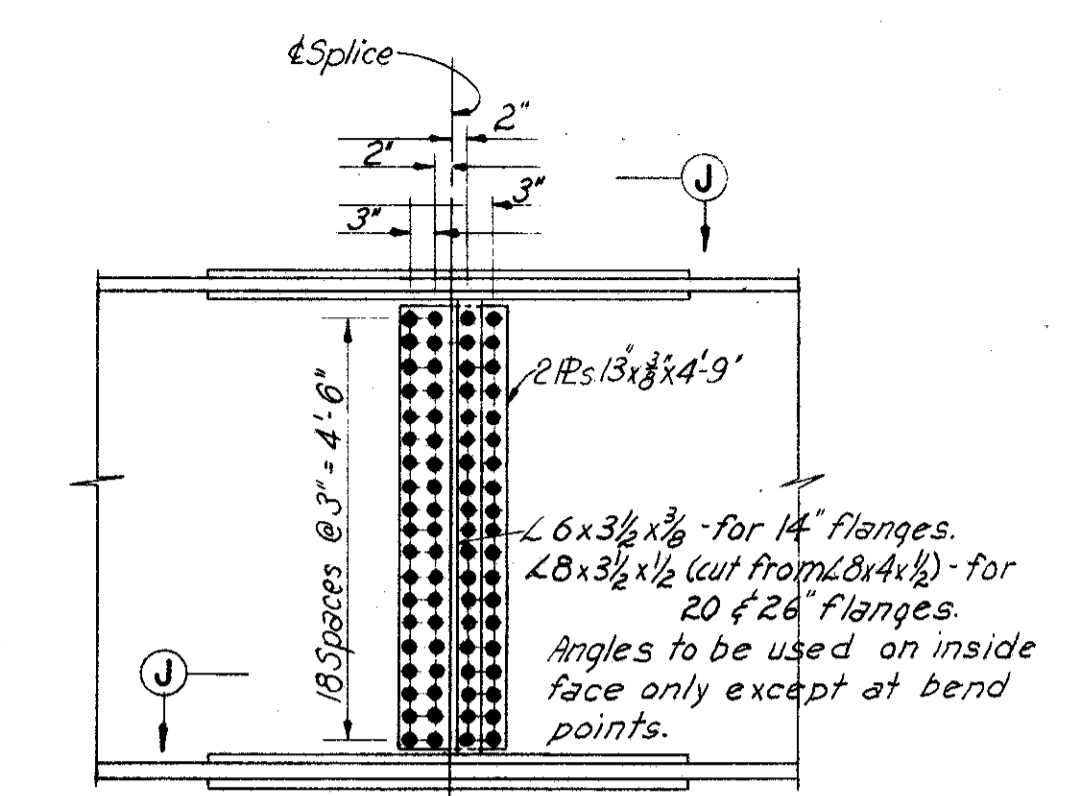
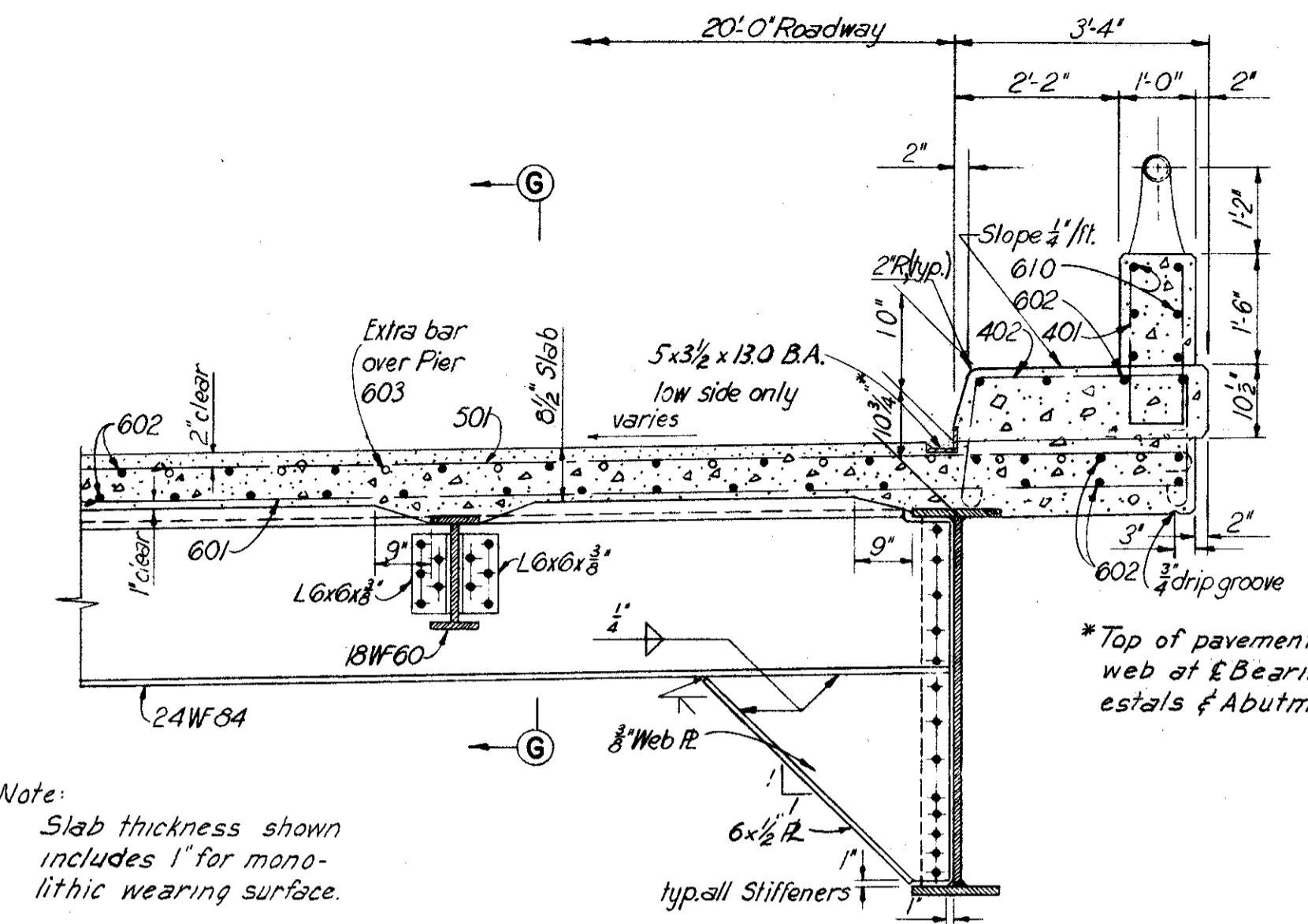
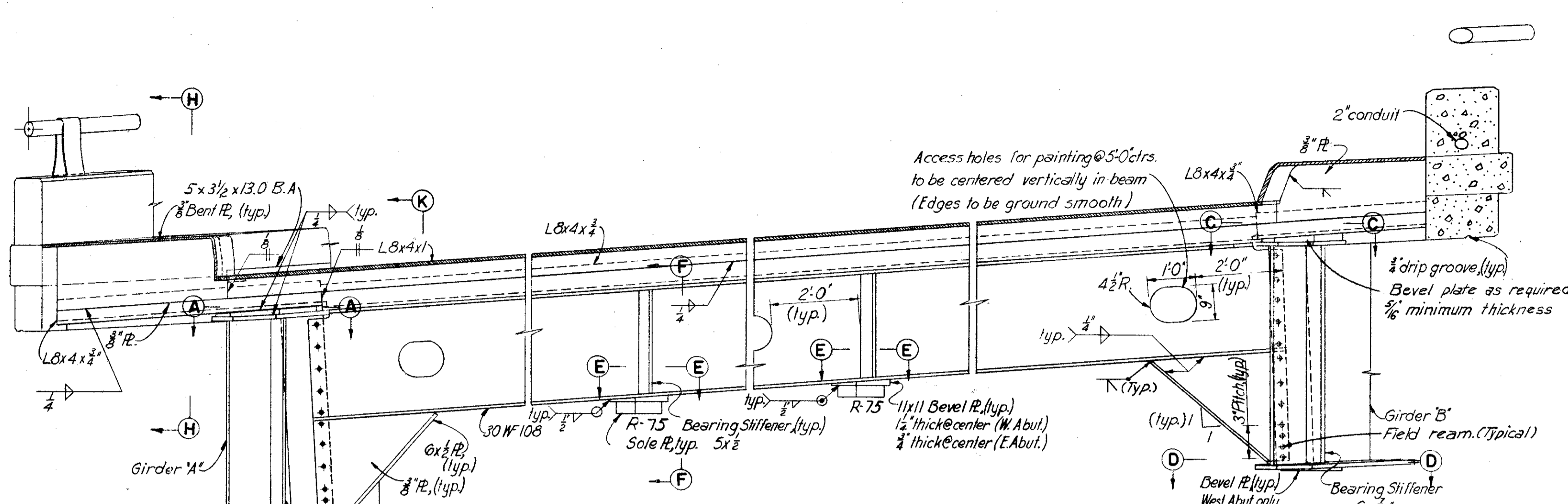
**FRAMING PLAN**  
RAMP E-15 OVER W.B. BROADWAY  
Scale: 1" = 10'  
STA. 4 + 17.75  
STA. 6 + 85.67

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

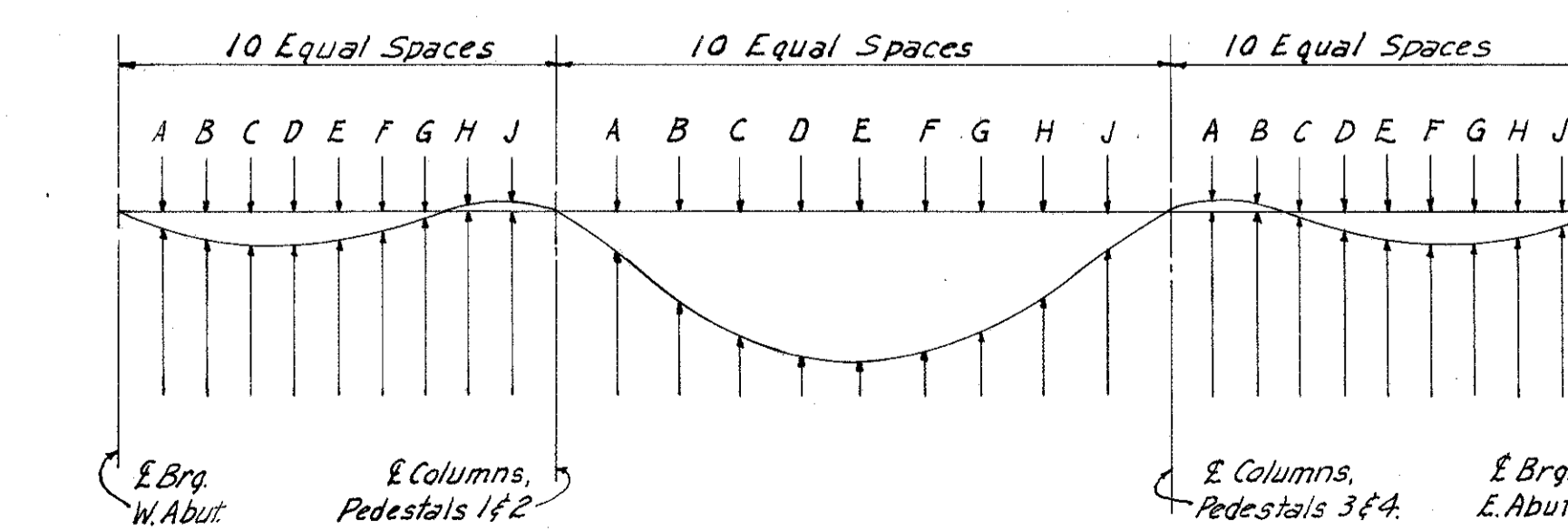
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 7-2-58	DATE 11-20-58	DATE 4-7-59	DATE 11-12-59	

SHEET 128

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829



GIRDER	DEFLECTION TABLE																	
	A		B		C		D		E		F		G		H		J	
	DEAD	TOT	DEAD	TOT	DEAD	TOT	DEAD	TOT	DEAD	TOT	DEAD	TOT	DEAD	TOT	DEAD	TOT	DEAD	TOT
A	1/8	1/8	3/16	3/16	3/16	1/4	3/16	1/4	1/8	3/16	1/8	1/8	0	0	-1/16	-1/16	-1/16	-1/16
B	1/8	1/8	3/16	3/16	3/16	1/4	3/16	1/4	1/8	3/16	1/8	1/8	0	0	-1/16	-1/16	-1/16	-1/16
A	5/16	3/8	1/2	1/2	1/4	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 1/8	1 1/8	1 1/8	1 1/8	1 1/8
B	5/16	3/8	1/2	1/2	1/4	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 1/8	1 1/8	1 1/8	1 1/8	1 1/8
A	-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	1/16	1/16	1/16	1/16
B	-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	1/16	1/16	1/16	1/16

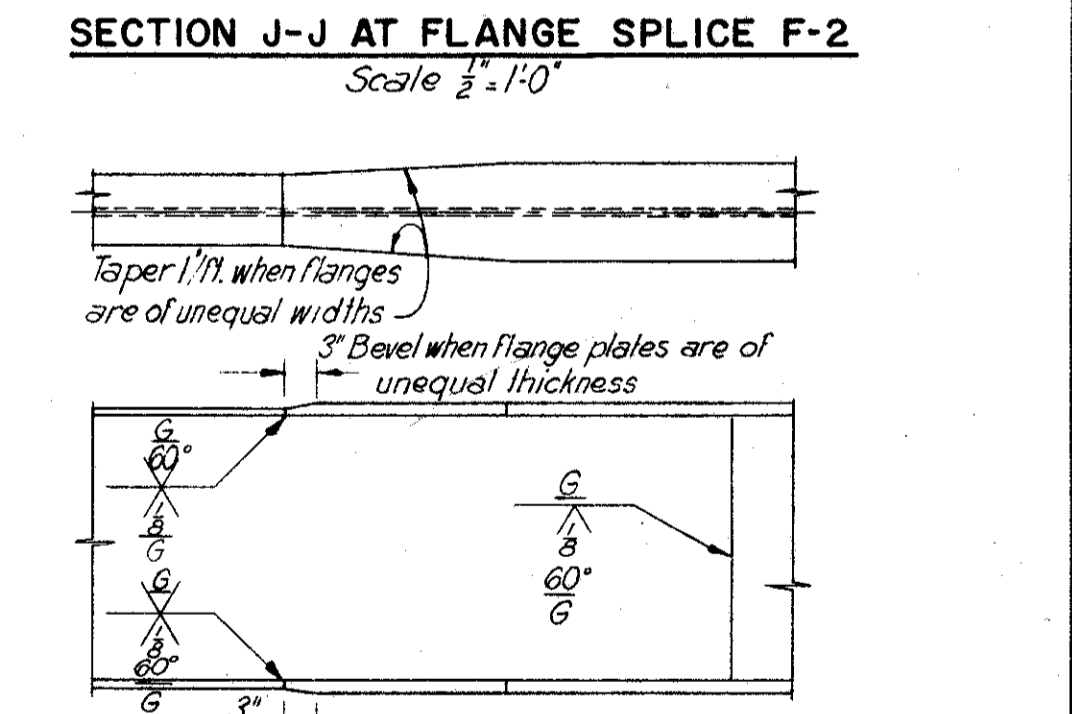


FLOOR BEAM CONNECTION AT BEND POINT

Note: Connection shown for Splice F-1. Connection @ Splice F-2 similar except 4 bolts only shall be used for Gusset R. connections to girder flanges & floor beams.

CONC denotes deflections due to dead load of concrete.  
TOTAL denotes deflections due to dead load of steel and concrete.  
Deflections are measured to the nearest 1/16"

For additional End dam details, see sheet 156-G  
Sections A-A, B-B, C-C, & D-D are taken on horizontal planes.  
For additional notes, see sh. 128-G



Note: Shop splices may be located as required by available plate lengths. Web/flange splices shall not coincide.

H.N.T.B. BR. NO. 6 PART 6

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

SUPERSTRUCTURE DETAILS  
RAMP E-15 OVER W.B. BROADWAY  
Scale: 3/4"=1'-0" Unless noted

STA. 4 + 17.75  
STA. 6 + 85.67

WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DATE: 11-28-54 TRACED DATE: 12-8-55 CHECKED A.J.J. DATE: 11-12-59 REVIEWED R.C.T. DATE: 11-12-59 REVISIONS

SHEET 129

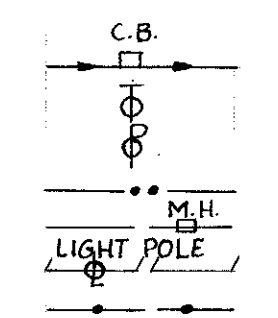






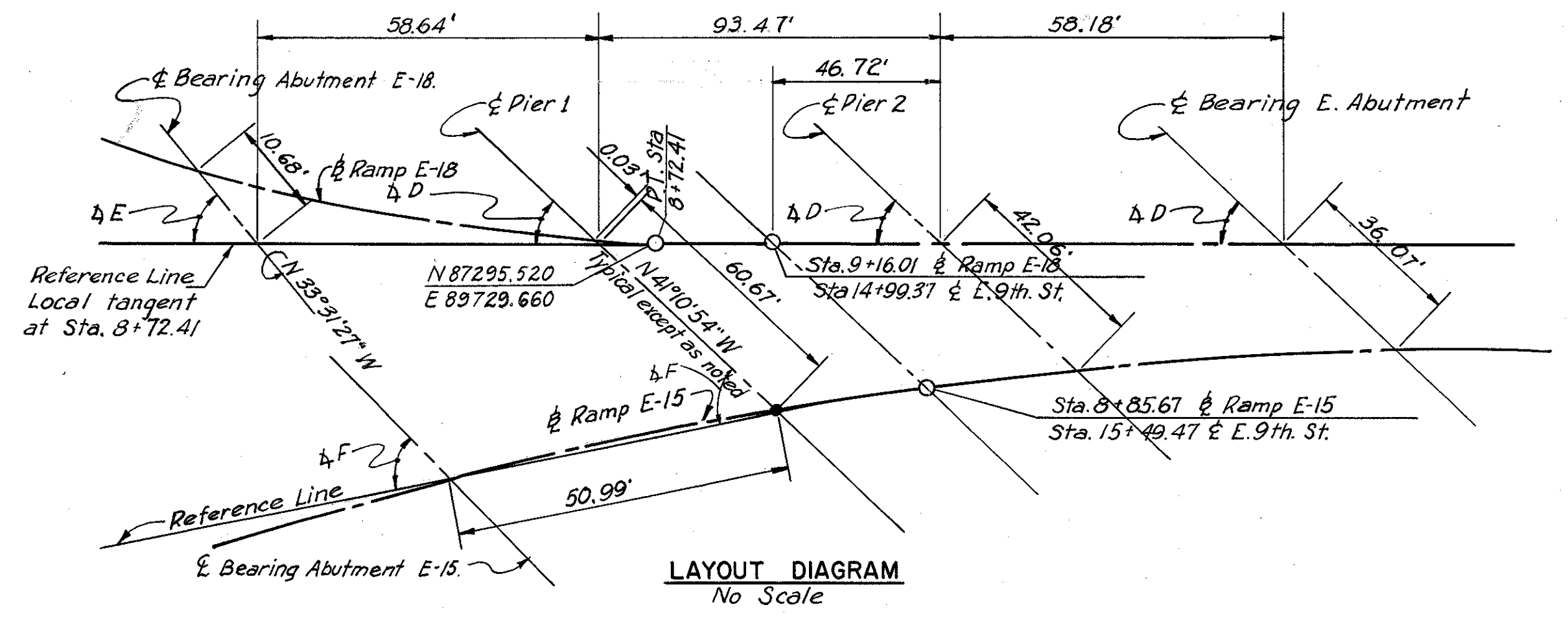
**LEGEND**

Existing Sewer  
Telegraph & Telephone Pole  
Power Pole  
Proposed 4" Duct  
M.E.L.P.  
W.W.L.  
O.B.T.



MICROFILMED  
JUL 8 1985

Δ D: 43°25'32"  
Δ E: 51°04'59"  
Δ F: 57°08'20"



**CURVE DATA**

Δ Ramp E-18	Δ Ramp E-18	Δ Ramp E-15
Δ: 16°51'41"	Δ: 58°40'43"	Δ: 38°41'25"
D: 6°00'	D: 20°00'00"	D: 7°00'00"
R: 954.93'	R: 286.48'	R: 818.51'
T: 141.54'	T: 161.02'	T: 287.36'
L: 281.02'	L: 293.30'	L: 552.72'

**BORING I18**

Elev.	Soil Description
676.1	
19	
32	
28	661.1 Brown Silty Sand
75	656.1 Brown Gravelly Sand
82	
92	646.1 Brown Silty Sand
63	
185	636.1 Gray Silty Sand
42	
48	
54	621.1 Gray Sand
101	616.1 Brown Silty Sand
90	611.1 Brown & Gray Silty Sand
25	
17	
29	595.1 Gray Silt

**NOTES:**  
For details of slope protection see sheet 157-G.  
The following items are not included in the Bridge Plans. (See Roadway Plans for details.)  
Removal of existing sidewalk.  
Site Grading Plan.  
Approach grading, pavement and slab.  
Roadway guard rail.

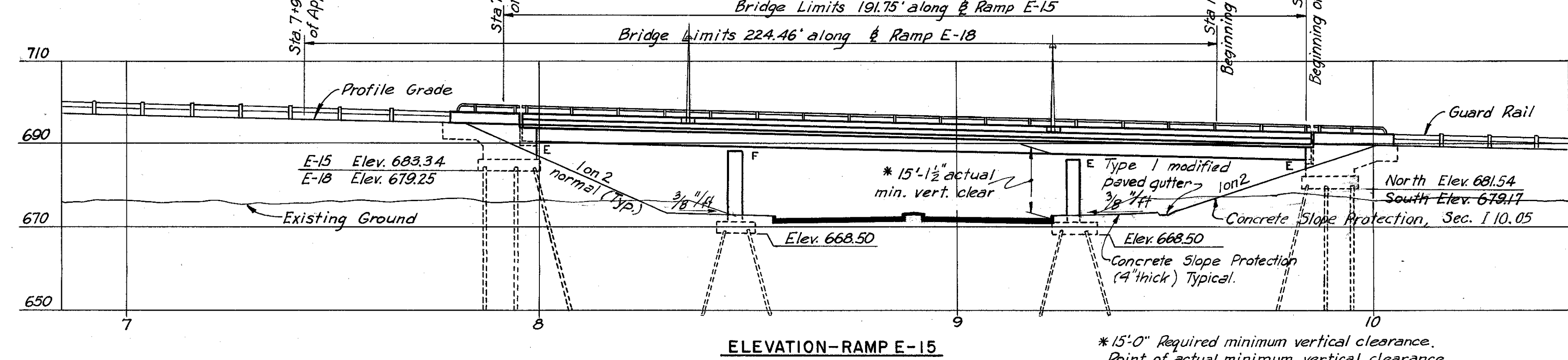
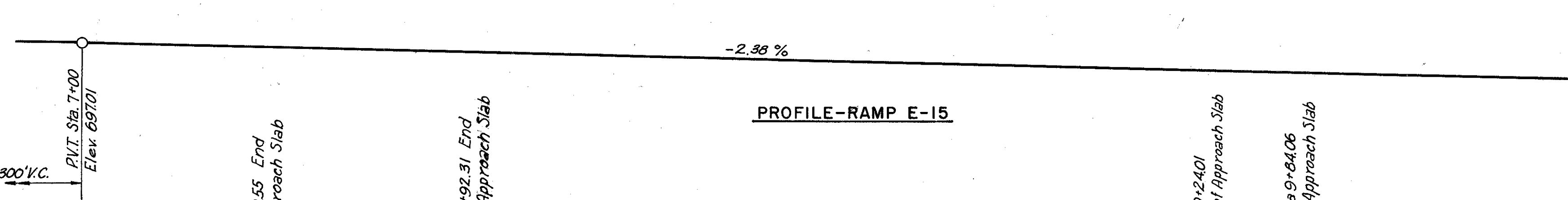
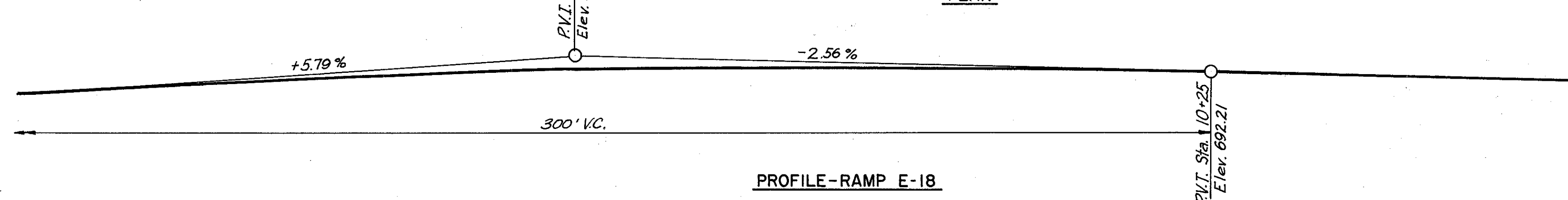
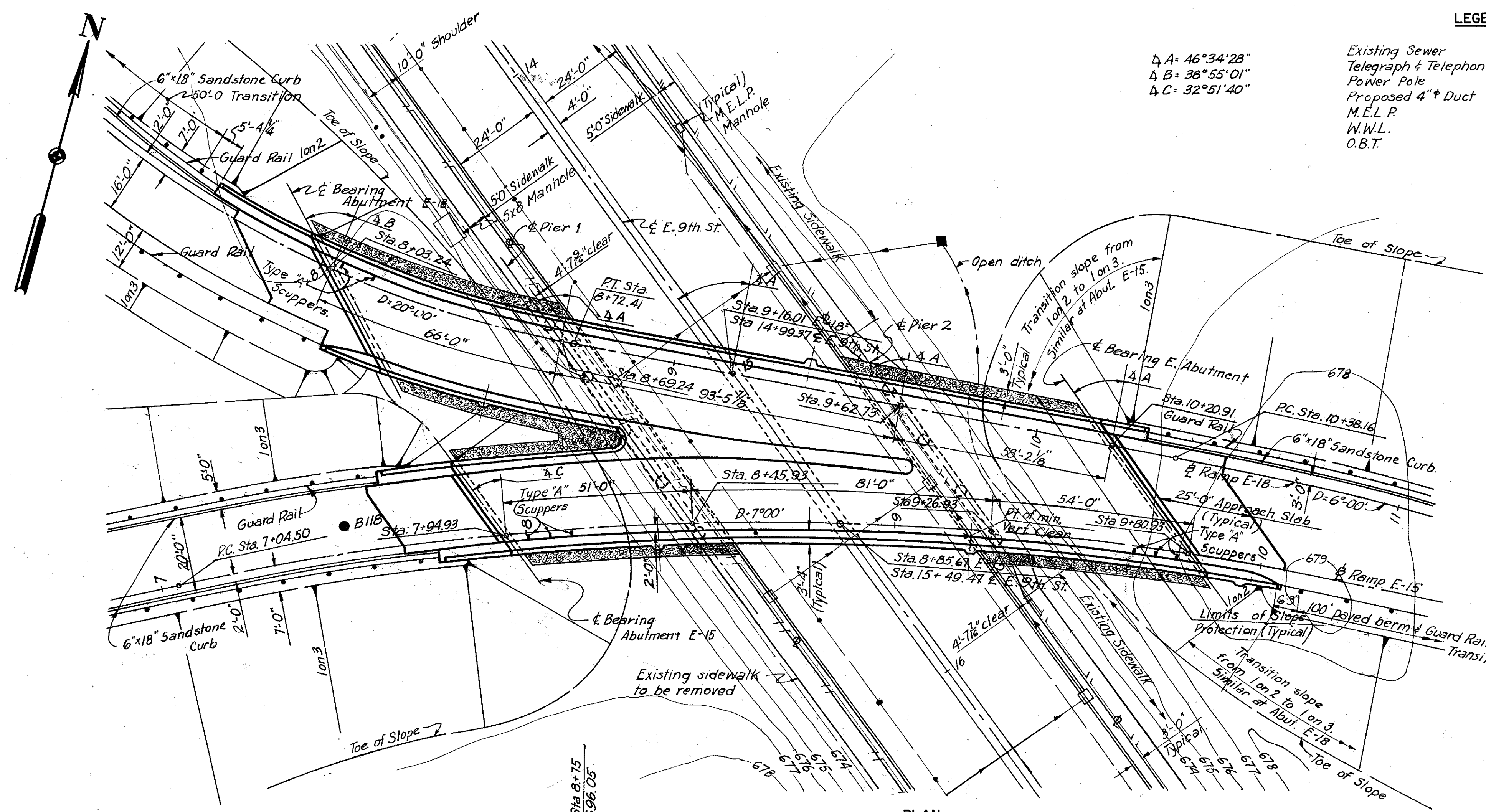
**Vertical Scale: 1"=20'**  
Sta. 7+50 @ Ramp E-15 10' Lt.  
Note: The figures to the left indicate the number of hammer blows required to drive the sampling spoon 1 ft. They are given at 5' intervals starting at elev. 676.1.

**PROPOSED STRUCTURE**  
Type: Continuous steel beam with reinforced concrete deck and substructure.  
Spans: 66'-0", 93'-5 7/8", & 53'-2 1/8" along Ramp E-18.  
51'-0", 81'-0", & 54'-0" along Ramp E-15.  
Roadways: Varies  
Loading: C.E. 2000 - Adequate for A.A.S.H.O. alternate loading.  
Skew: Varies  
Surface Course: 1" Monolithic Concrete.  
Alignment: 20°00' Rt. @ E-18 & 7°00' Rt. @ E-15.  
Approach Slabs: AS-1-54 (25' Long).  
Superelevation: Varies

H.N.T.B. BR. NO. 7 PART 6  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK

**SITE PLAN**  
RAMPS E-15 AND E-18 OVER EAST 9TH STREET  
STA 7+92.31 STA 9+84.06 (E-15)  
STA 7+99.55 STA 10+24.01 (E-18)  
Scale: 1"=20'  
**WILLOW-INNERBELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN BY J.S. TRACED BY R.H. CHECKED BY J.A. REVIEWED BY J.C.T. REVISIONS  
DATE 10-10-58 DATE 11-19-58 DATE 11-6-58 DATE 11-12-58 SHEET 132

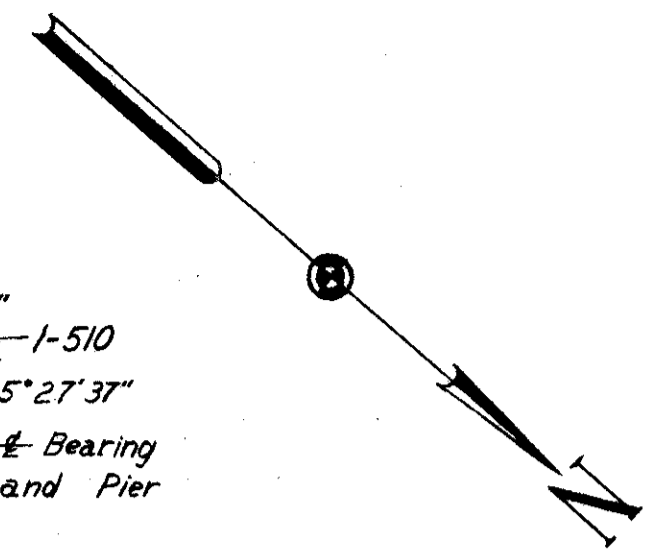


\* 15'-0" Required minimum vertical clearance.  
Point of actual minimum vertical clearance occurs at South beam and East gutter of E. 9th St.

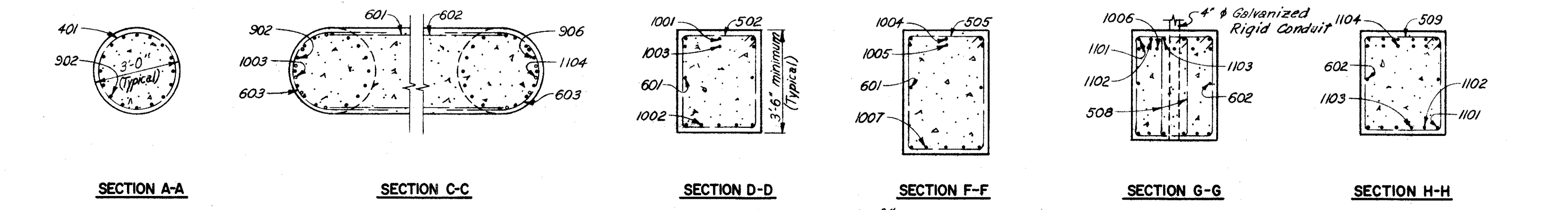
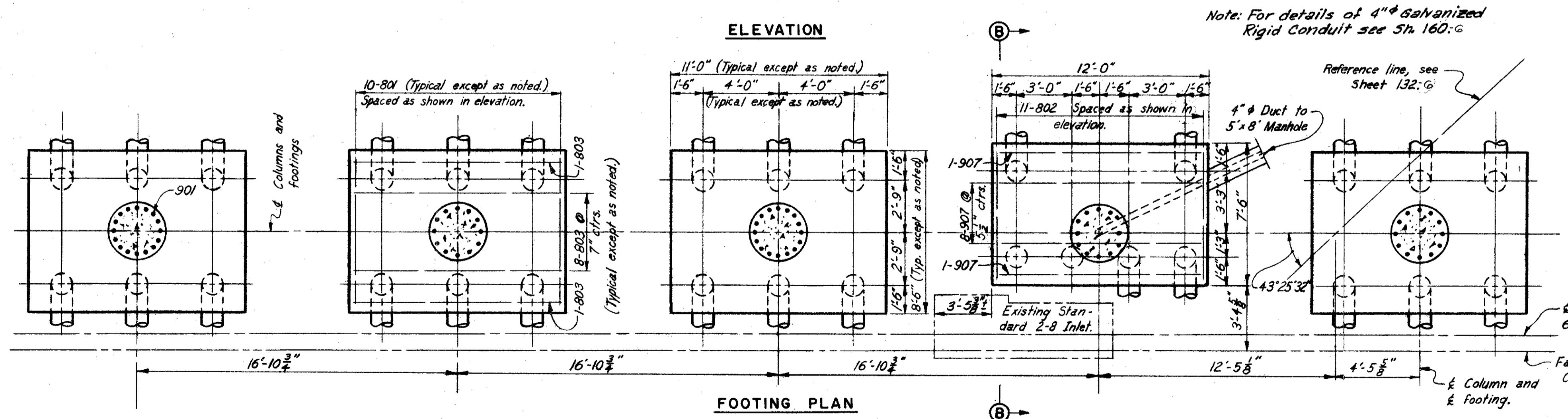
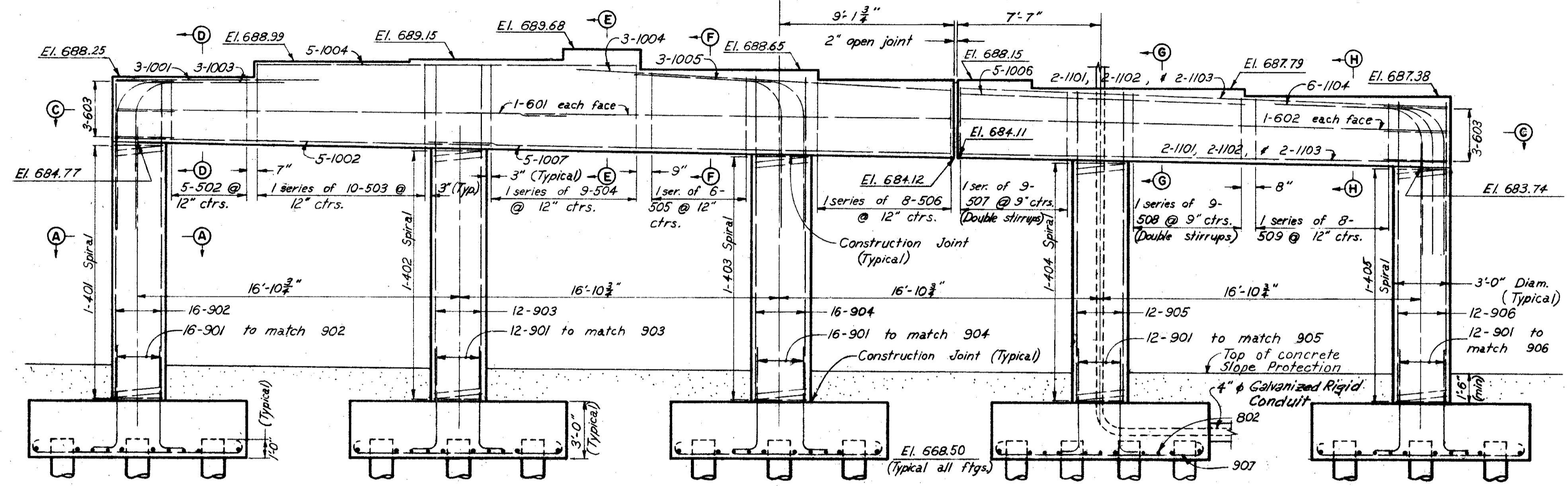
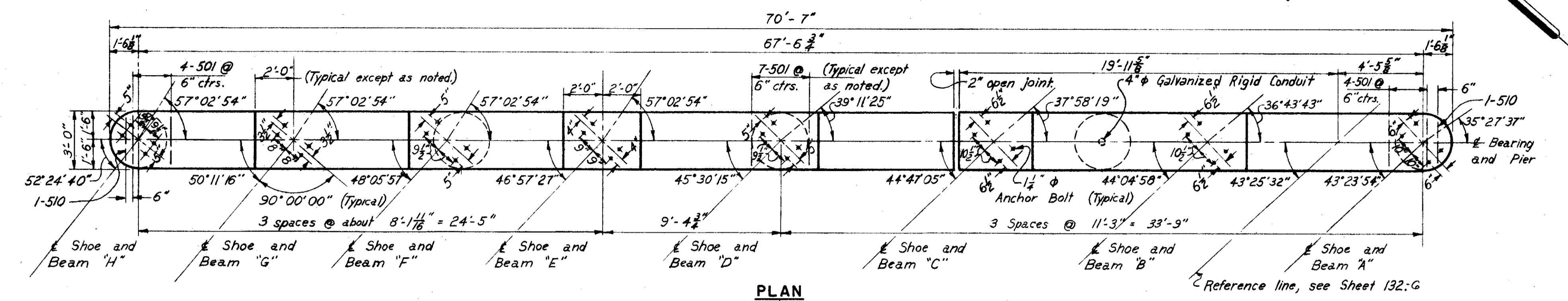
MICROFILMED JUL 8 1985

CUYAHOGA COUNTY CITY OF CLEVELAND CUY-42-18.29

NOTE: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bolt setting.



Note: Prefix "PA" shall be assigned to all bar marks.



NOTES:  
 All piles shall be 14" Ø, C.I.P. Reinforced Concrete.  
 All battered piles shall be battered 3" in 12" in direction shown.  
 Pile spacings given along bottom of footing.  
 For masonry plate details, see Ohio Standards, Drawing RB 1-55.  
 For bar bending diagrams, see Sheet 134-G.  
 For replacement steel schedule, see Sheet 97-G.  
 For spiral reinforcing notes, see Sheet 94-G.  
 Reinforcing bars shall be 3" clear from bottom of concrete in footings and 2" clear elsewhere.  
 All bar dimensions are given out to out.  
 Bars of a series shall vary in length by a constant increment.  
 Provide electrical ground wire in outside columns. See notes on Sheet 91A-G.

REINFORCEMENT SCHEDULE						
MARK	NO.	LENGTH	TYPE	DIMENSIONS		WEIGHT
				A	B	
501	50	3'-9"	105	2'-8"	8"	196
502	5	12'-2"	109	3'-2"	2'-8"	63
503	1ser of 10	13'-10" to 14'-2"	109	4'-0" to 4'-2"	2'-8"	146
504	1ser of 9	14'-3" to 14'-5"	109	4'-3" to 4'-4"	2'-8"	134
505	1ser of 6	13'-4" to 13'-9"	109	3'-9" to 4'-0"	2'-8"	88
506	1ser of 8	12'-4" to 13'-0"	109	3'-3" to 3'-7"	2'-8"	106
507	2ser of 9	10'-6" to 10'-9"	109	3'-4" to 3'-6"	1'-8"	200
508	2ser of 9	10'-1" to 10'-4"	109	3'-2" to 3'-3"	1'-8"	192
509	1ser of 8	11'-8" to 12'-0"	109	2'-11" to 3'-1"	2'-8"	99
510	2	3'-7"	105	2'-6"	8"	7
601	4	22'-6"	str.			135
602	2	24'-3"	str.			73
603	6	7'-11"	144	1'-11"	4'-1"	71
801	40	10'-4"	100	8'-2"		1104
802	11	9'-4"	100	7'-2"		274
803	40	12'-10"	100	10'-8"		1371
901	68	6'-5"	104	5'-5"	1'-3"	1484
902	16	16'-3"	str.			884
903	12	17'-3"	str.			704
904	16	16'-9"	str.			911
905	12	15'-9"	str.			643
906	12	15'-6"	str.			632
907	10	13'-10"	100	11'-8"		470
1001	3	10'-9"	str.			139
1002	5	20'-0"	str.			430
1003	3	14'-10"	123	6'-0"		192
1004	8	19'-9"	str.			680
1005	3	14'-10"	123	6'-0"		192
1006	5	15'-0"	str.			323
1007	5	27'-6"	str.			592
1101	4	24'-3"	str.			515
1102	4	25'-0"	str.			531
1103	4	25'-6"	str.			542
1104	6	14'-10"	123	6'-0"		473
Total =						14,596

SPIRAL REINFORCEMENT SCHEDULE						
MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT
401	1	2'-8"	13'-3"	3"	56	345
402	1	2'-8"	13'-0"	3"	55	339
403	1	2'-8"	12'-9"	3"	54	333
404	1	2'-8"	12'-6"	3"	53	327
405	1	2'-8"	12'-2"	3"	52	320
Total =						1664

H.N.T.B. BR. NO. 7 PART 6  
 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY CLEVELAND NEW YORK  
**PIER I**  
 RAMPS E-15 AND E-18 OVER EAST 9th STREET  
 STA. 7+92.31 STA. 9+84.06 (E-15)  
 STA. 7+99.55 STA. 10+24.01 (E-18)  
 Scale: 1/4" = 1'-0" Except as noted  
**WILLOW-INNER BELT FREEWAY**  
 CLEVELAND CUYAHOGA COUNTY OHIO  
 DRAWN C.L.M./TRACED DATE 9-20-59 CHECKED W.F./REVIEWED J.C.T. DATE 1-7-59 REVISIONS DATE 11-2-59 SHEET 133

NOTE: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

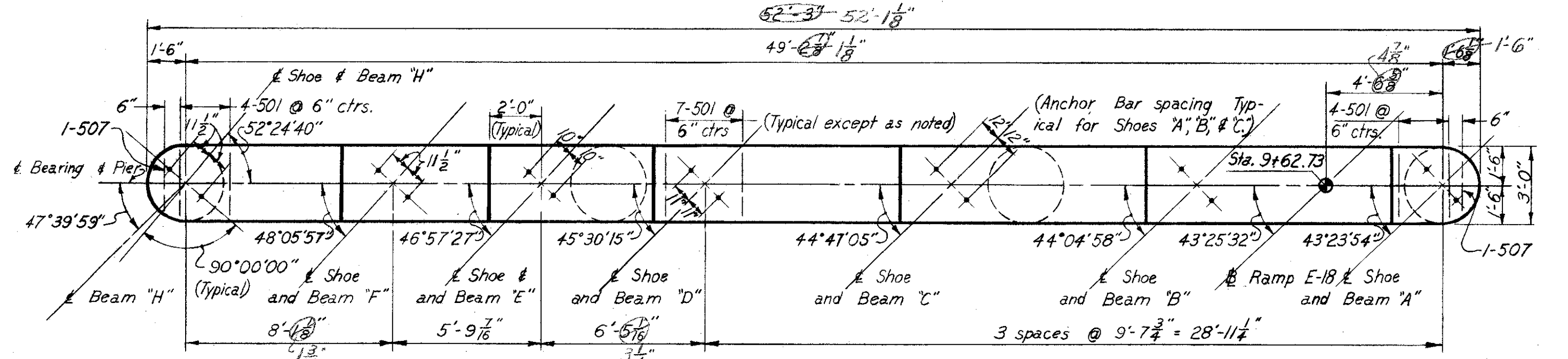
134  
175

MICROFILMED

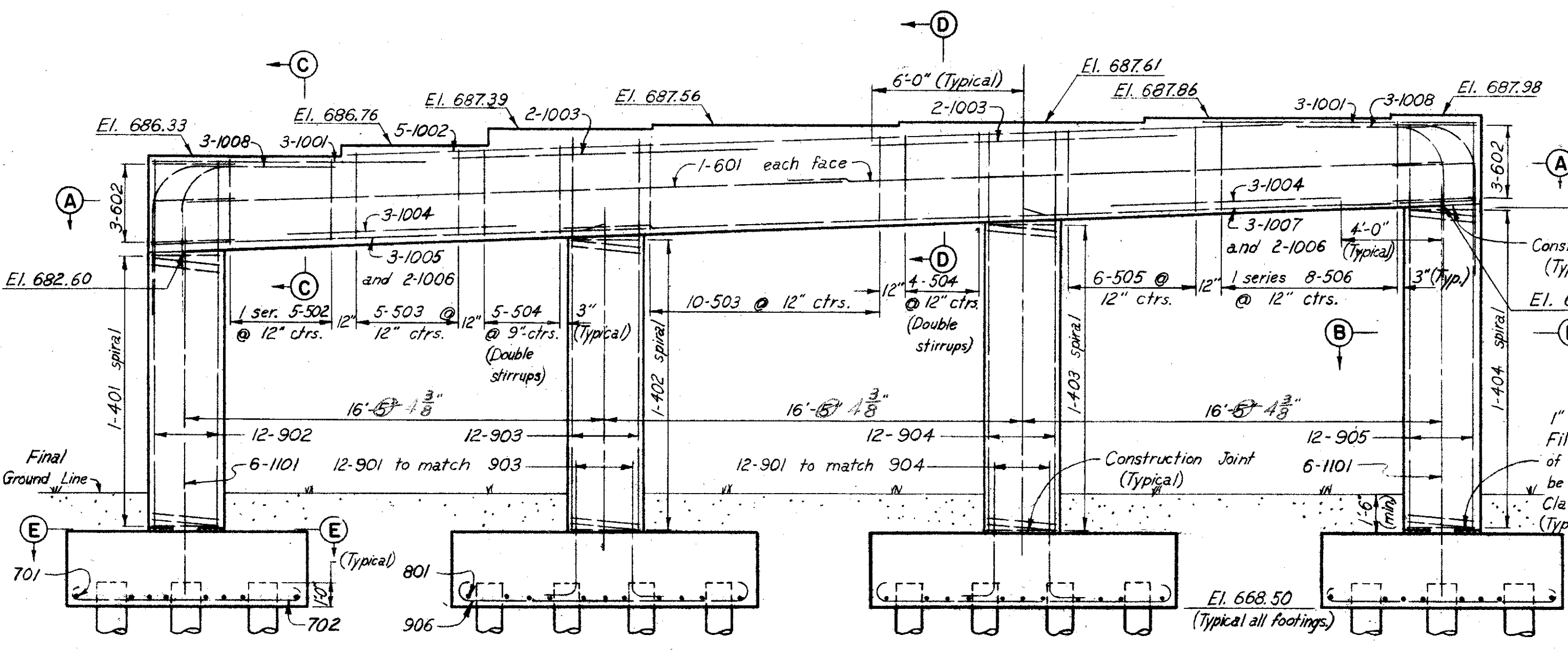
JUL 8 1985

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42 - 18.29

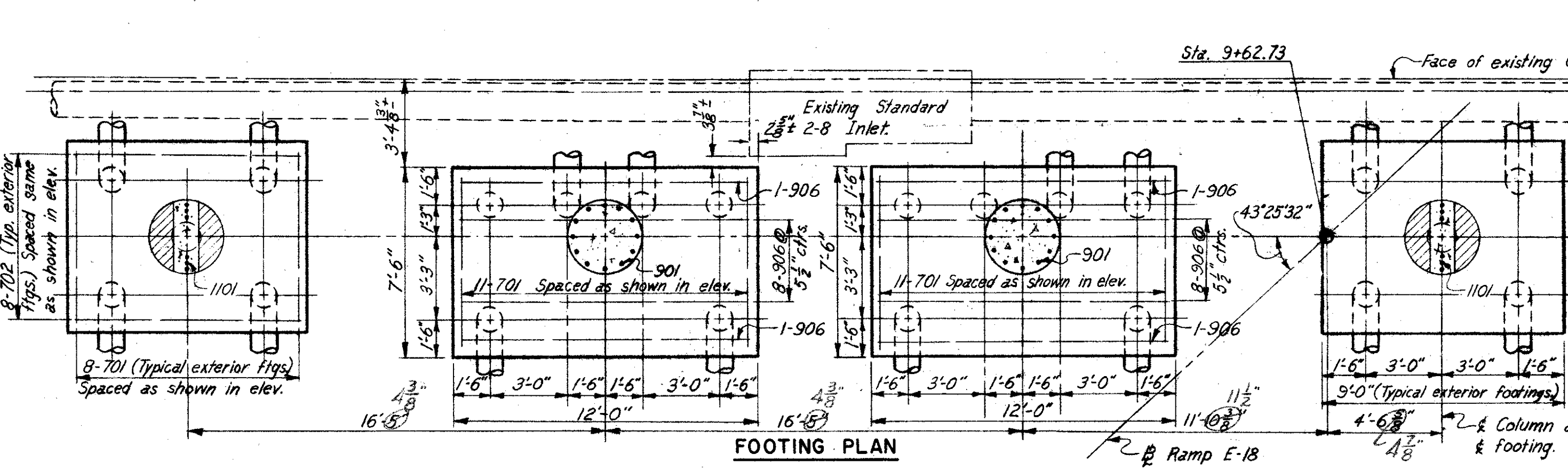
Note: Prefix "PB" shall be assigned to all bar marks.



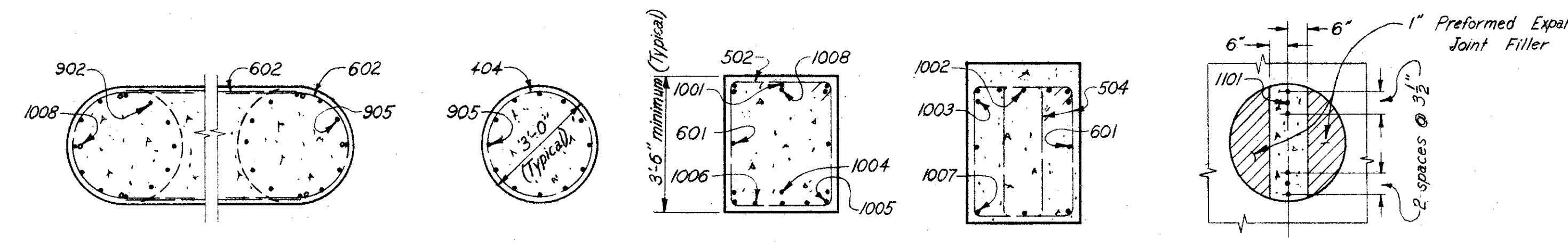
PLAN



ELEVATION



FOOTING PLAN



SECTION A-A

SECTION B-B

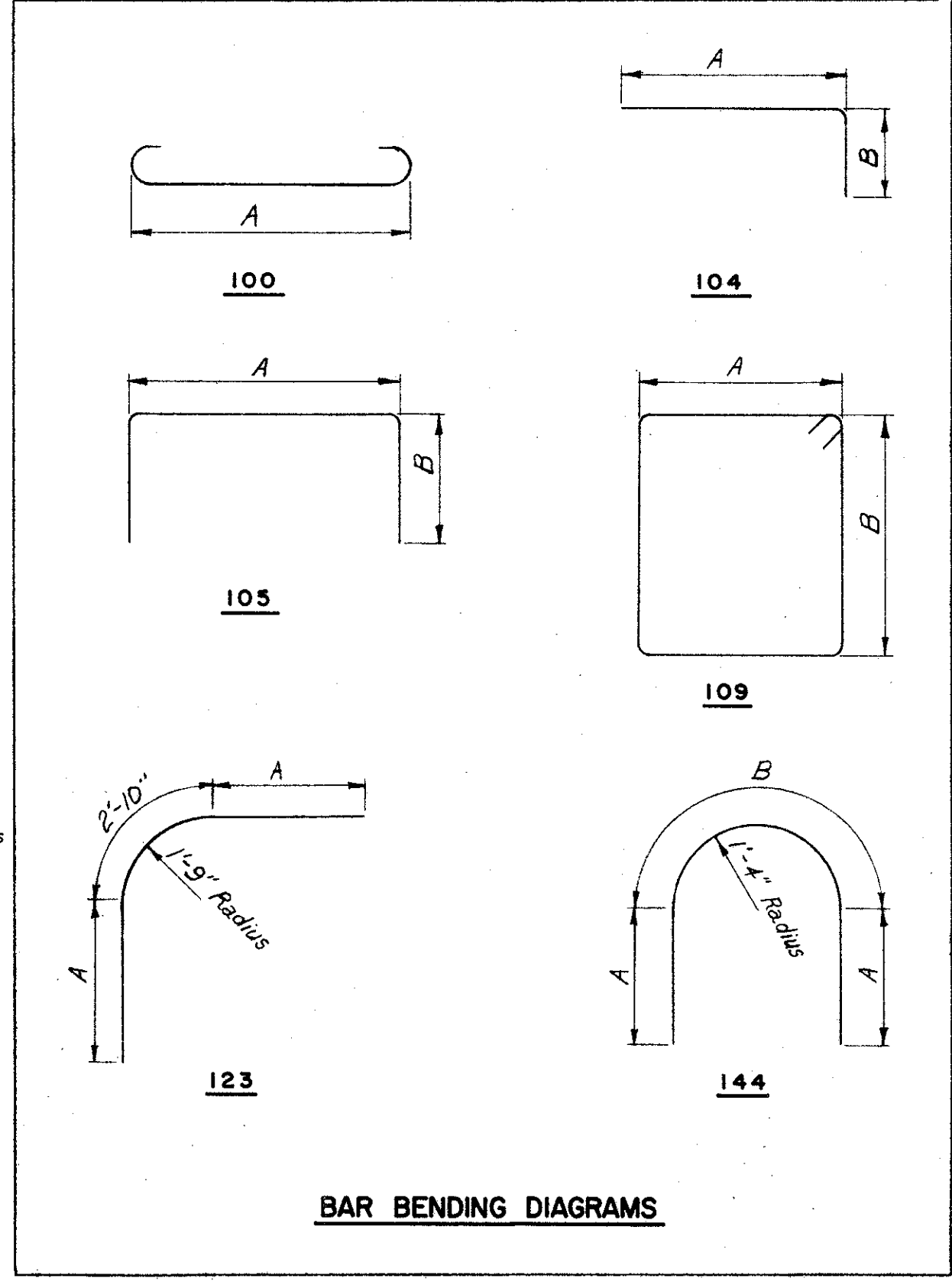
SECTION C-C

SECTION D-D

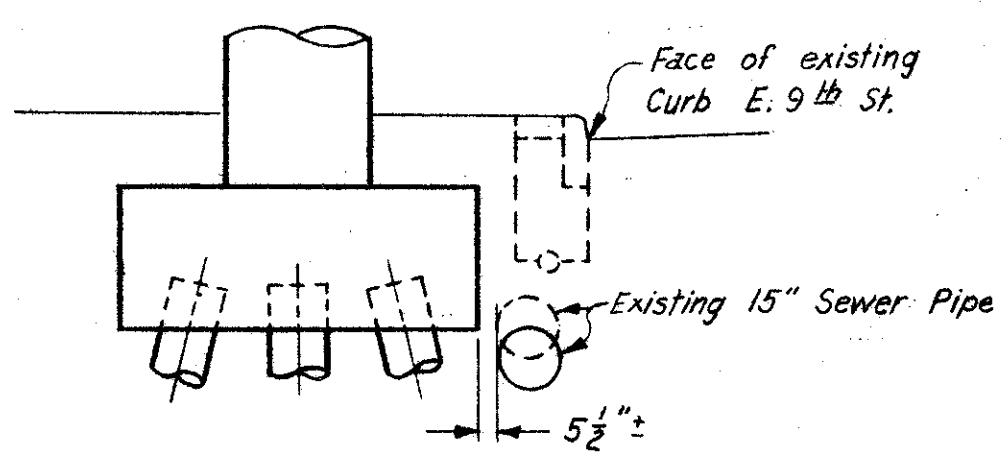
SECTION E-E

Typical for all columns except for bar marks.

Scale for Sections: 3/8" = 1'-0"



BAR BENDING DIAGRAMS



SECTION F-F

Scale: 1/4" = 1'-0"

NOTES:

- All piles shall be 14"  $\phi$ , C.I.P. Reinforced Concrete.
- All battered piles to 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 concrete in footings and 2-inches elsewhere.
- For masonry plate details see Sheet 156-G
- For Replacement Steel Schedule, see Sheet 97-G
- All bar dimensions are given out to out.
- For spiral reinforcing notes, see Sheet 94-G
- Bars of a series shall vary in length by a constant increment.
- For section through existing Standard 2-8 Inlet see Section B-B sheet 133-G

REINFORCEMENT SCHEDULE						
MARK	NO.	LENGTH	TYPE	DIMENSIONS		WEIGHT
				A	B	
501	43	3'-9"	105	2'-8"	8"	168
502	1 ser of 5	12'-0" to 12'-4"	109	2'-8"	3 1/4" to 3 3/8"	63
503	15	12'-6"	109	2'-8"	3'-4"	196
504	18	10'-8"	109	1'-9"	3'-4"	200
505	6	12'-4"	109	2'-8"	3'-3"	77
506	1 ser of 8	12'-2" to 12'-8"	109	2'-8"	3 1/2" to 3 5/8"	104
507	2	3'-7"	105	2'-6"	8"	7
601	4	25'-9"	str.			155
602	6	7'-11"	144	1'-11"	4'-1"	71
701	38	8'-10"	100	7'-2"		686
702	16	10'-4"	100	8'-8"		338
901	24	6'-5"	104	5'-5"	1'-3"	524
902	12	14'-6"	str.			592
903	12	15'-6"	str.			632
904	12	15'-9"	str.			643
905	12	16'-0"	str.			653
906	20	14'-2"	100	11'-8"		964
1001	6	10'-9"	str.			278
1002	5	36'-9"	str.			791
1003	4	12'-0"	str.			206
1004	6	9'-0"	str.			232
1005	3	19'-6"	str.			252
1006	4	17'-9"	str.			306
1007	3	35'-9"	str.			462
1008	6	10'-10"	123	4'-0"		280
1101	12	8'-10"	104	7'-8"	1'-6"	563
Total =						9443

SPIRAL REINFORCEMENT SCHEDULE						
MARK	NO.	CORE DIA.	LENGTH	PITCH	NO. OF TURNS	WEIGHT
401	1	2'-5"	11'-0"	3"	47	289
402	1	2'-8"	11'-8"	3"	50	308
403	1	2'-8"	12'-3"	3"	52	320
404	1	2'-8"	12'-10"	3"	54	333
Total =						1250

H.N.T.B. BR. NO. 7 PART 6

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

**PIER 2**  
RAMPS E-15 AND E-18 OVER EAST 9th STREET  
STA. 7+92.31 STA. 9+84.06 (E-15)  
STA. 7+99.55 STA. 10+24.01 (E-18)  
Scale: 1/4" = 1'-0" Except as noted  
**WILLLOW BELT FREEWAY**

CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN BY	TRACED	CHECKED BY
DATE	DATE	DATE
9-29-58	7-57	11-12-59
REVIEWED		REVISED
JCT		6-14-60
SHEET		134

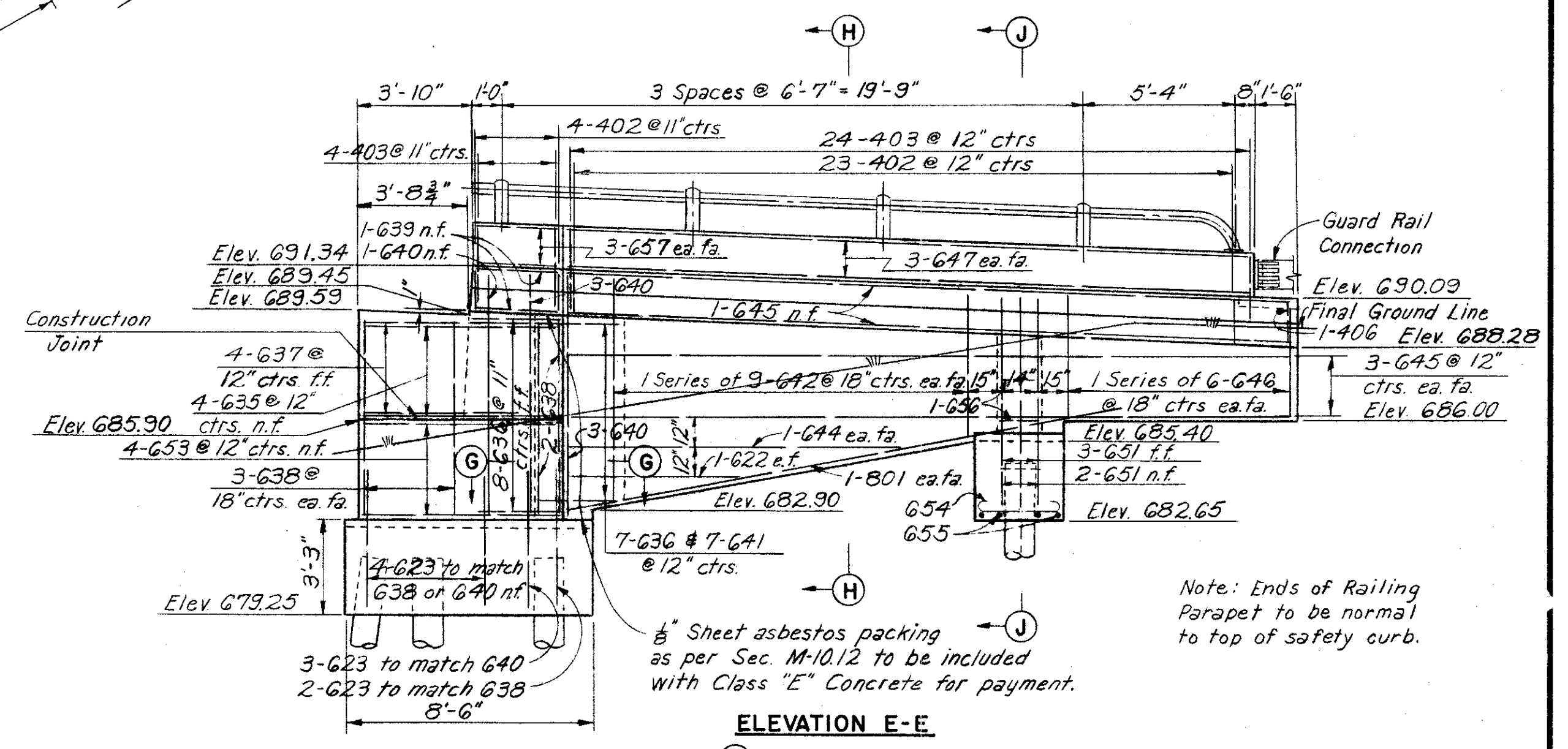
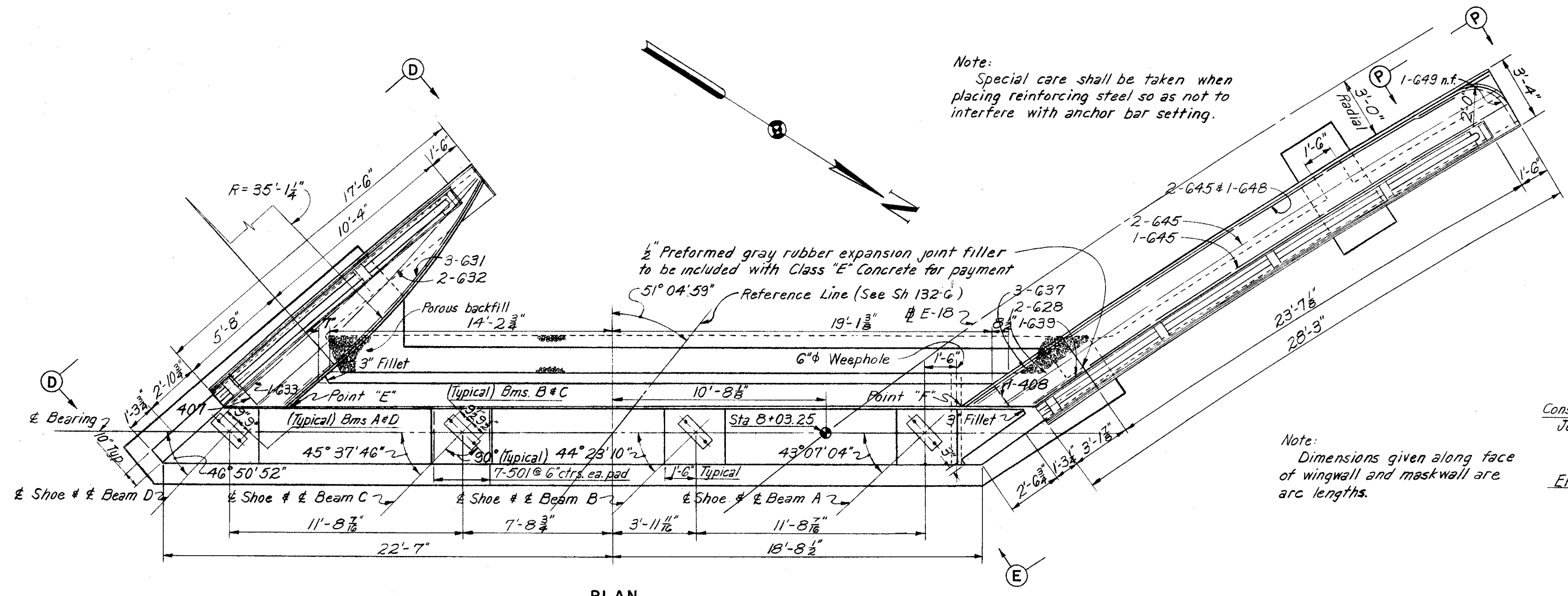
MICROFILMED  
JUL 8 1985

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

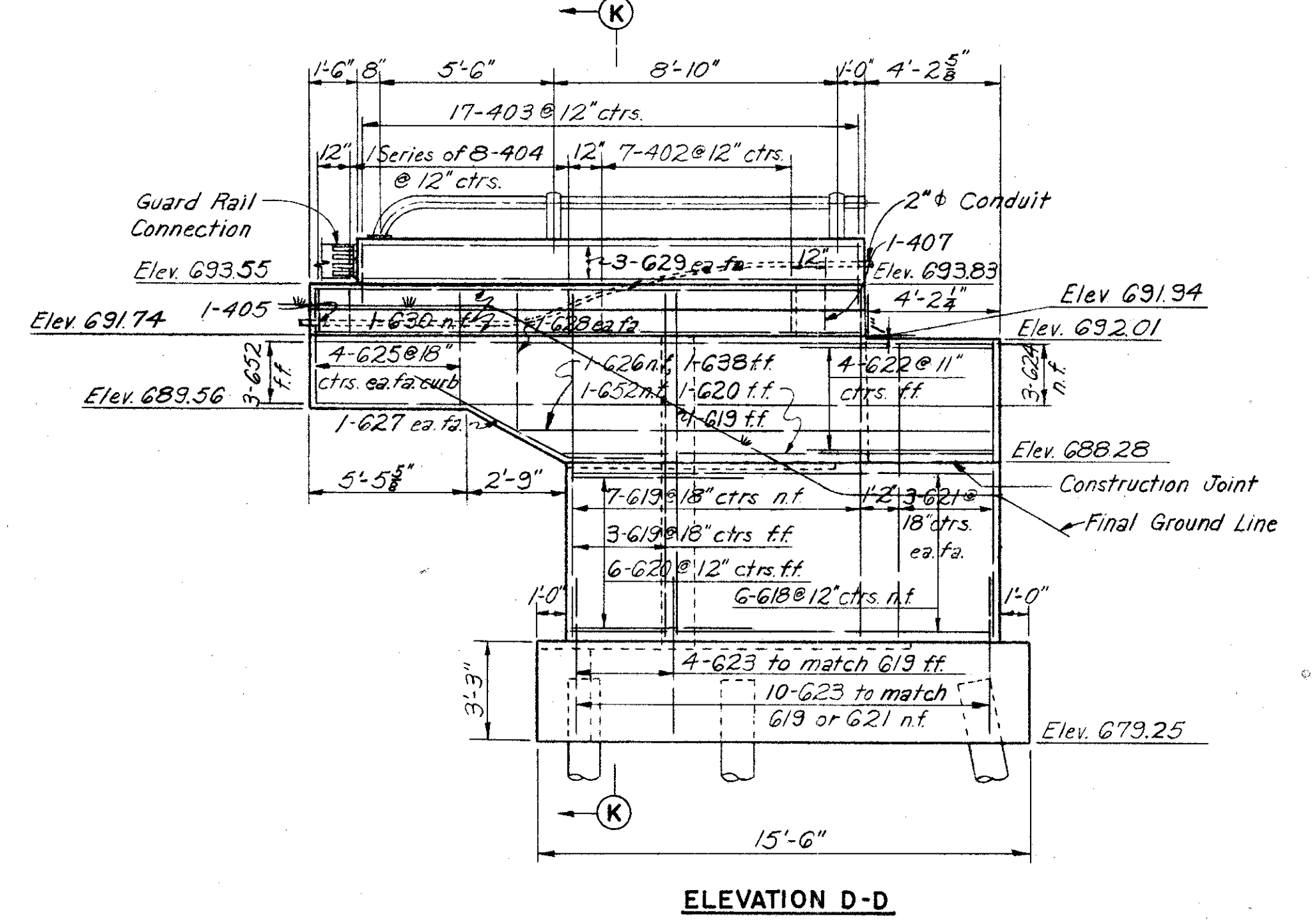
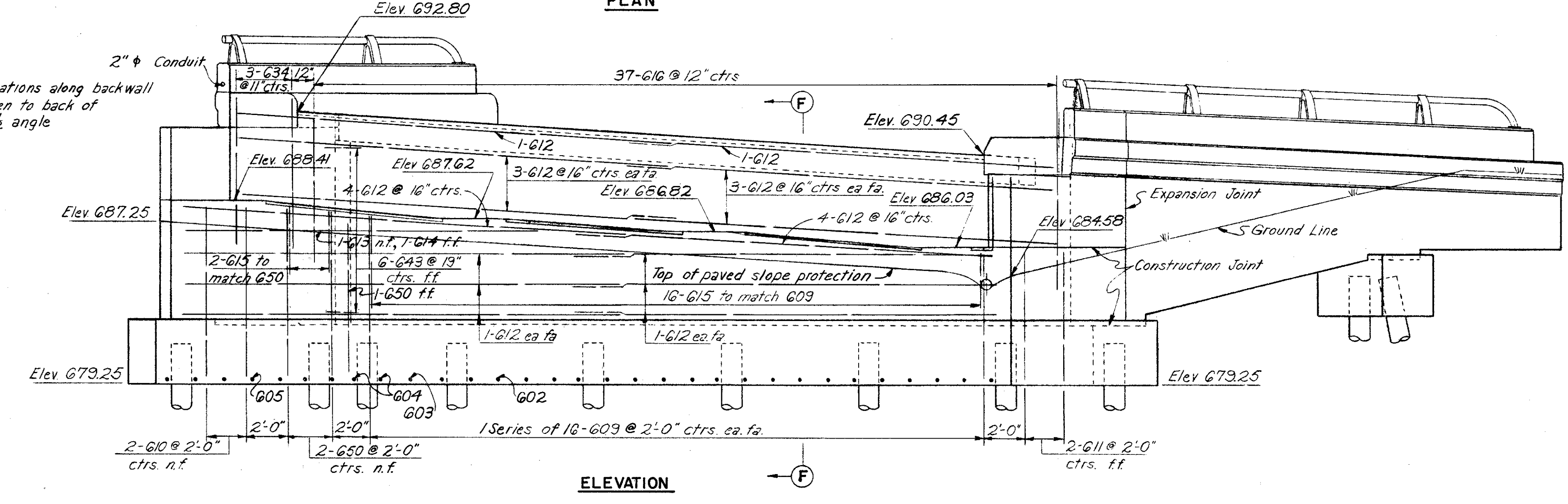
Note: Prefix "AA" shall be assigned to all bar marks.

Note:  
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.

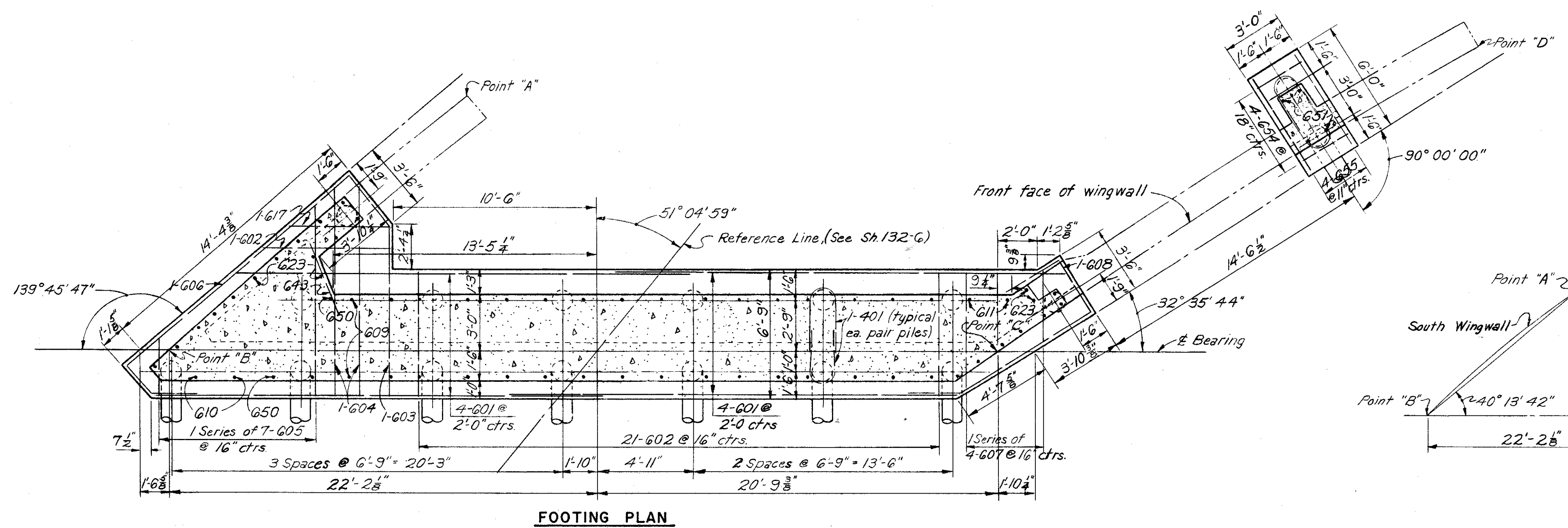
Note:  
Dimensions given along face of wingwall and maskwall are arc lengths.



Note:  
Elevations along backwall are given to back of 6x4 1/2 angle

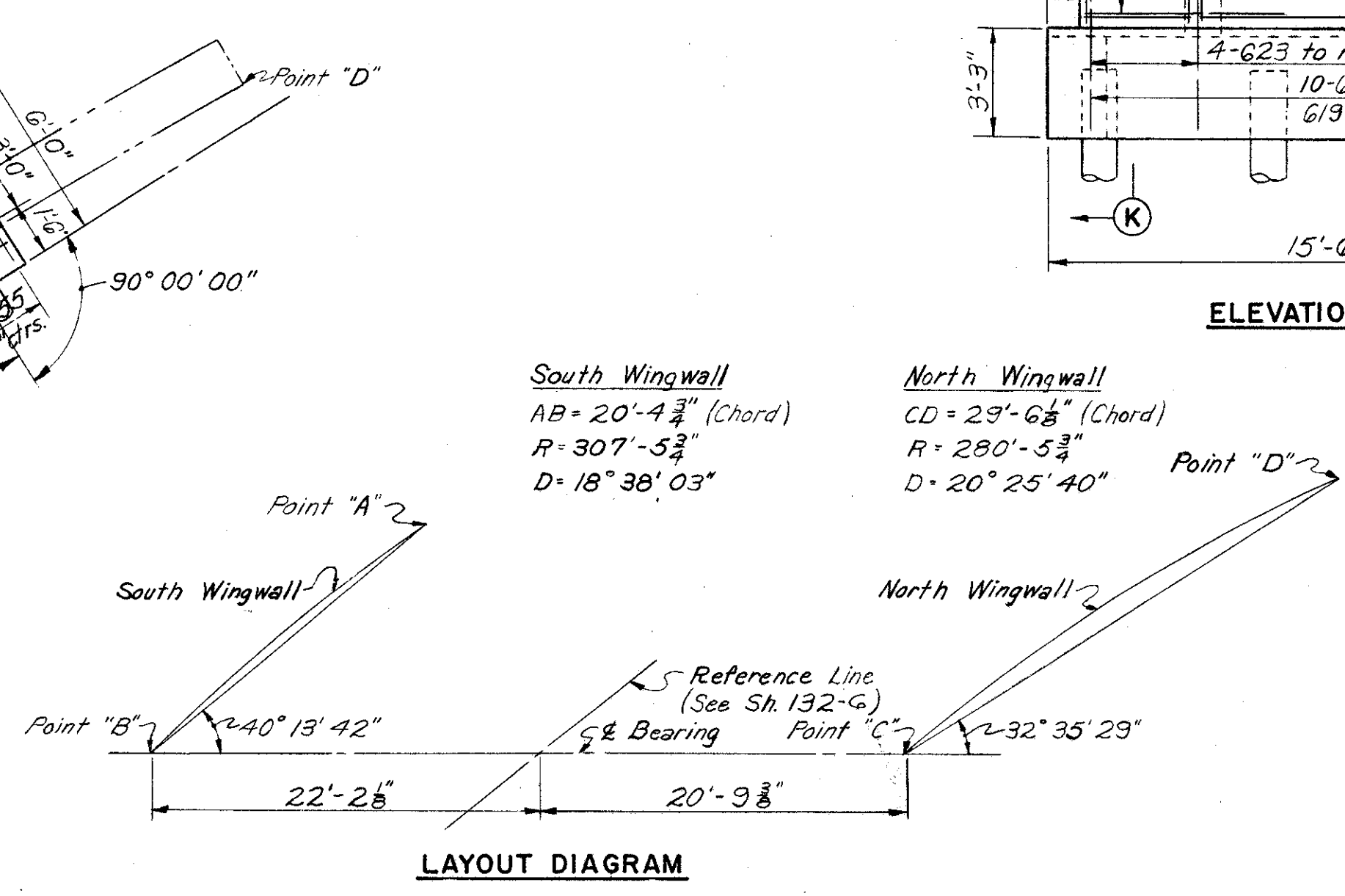


NOTES:  
For additional Notes and Sections see Sh. 138-G.  
For Reinforcement Schedule see Sh. 139-G.



South Wingwall  
AB = 20'-4 3/4" (Chord)  
R = 307'-5 3/8"  
D = 18° 38' 03"

North Wingwall  
CD = 29'-6 1/2" (Chord)  
R = 280'-5 3/8"  
D = 20° 25' 40"



H.N.T.B. BR. NO. 7 PART 6

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

**ABUTMENT E-18**

RAMPS E-15 AND E-18 OVER EAST 9th STREET  
STA. 7+92.31 STA. 9+84.06 (E-15)  
STA. 7+99.55 STA. 10+24.01 (E-18)

Scale: 1/4" = 1'-0"

**WILLOW-INNER BELT FREEWAY**

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 1/23/85	DATE	DATE 1/23/85	DATE 11-12-85	

SHEET 135

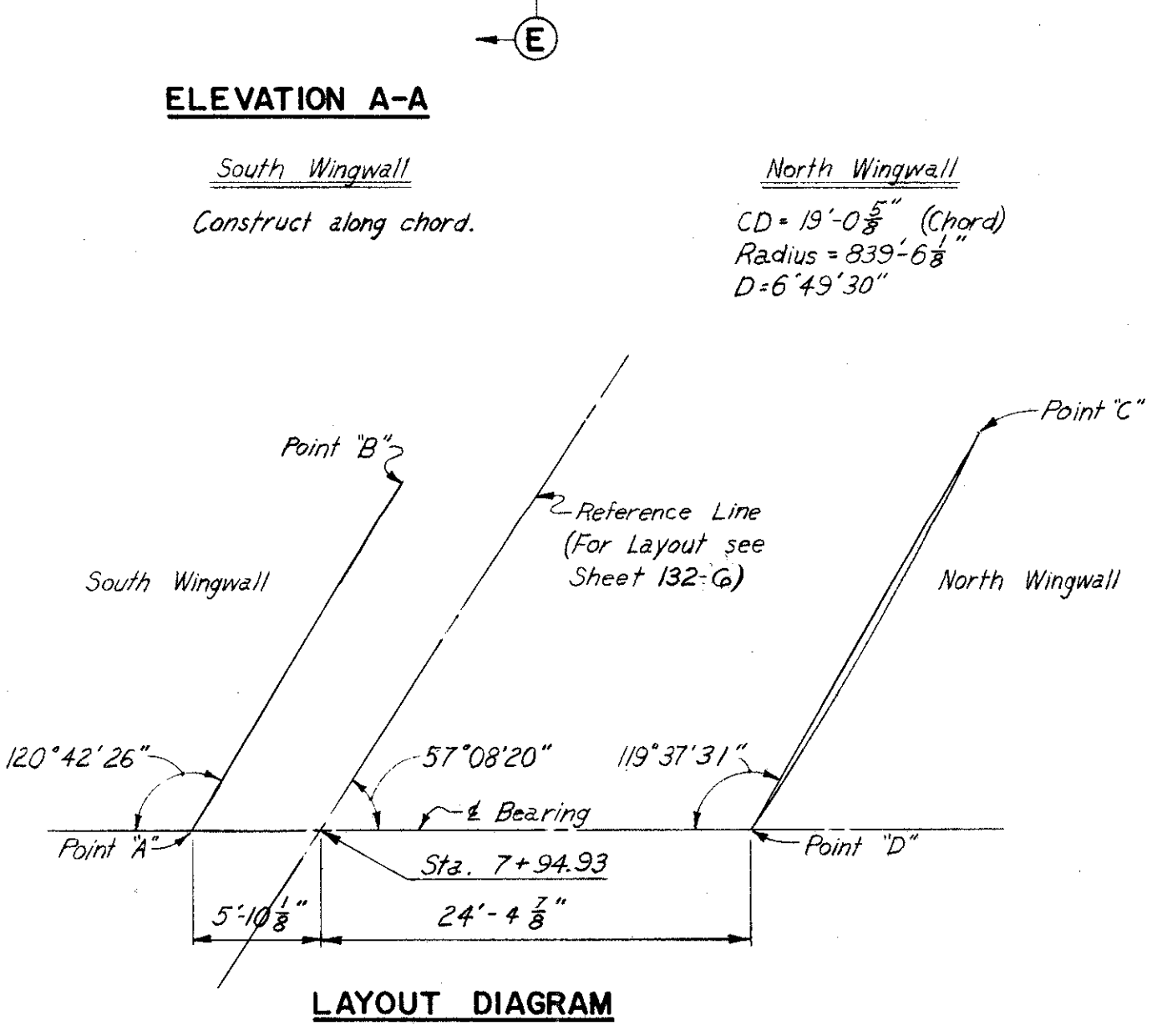
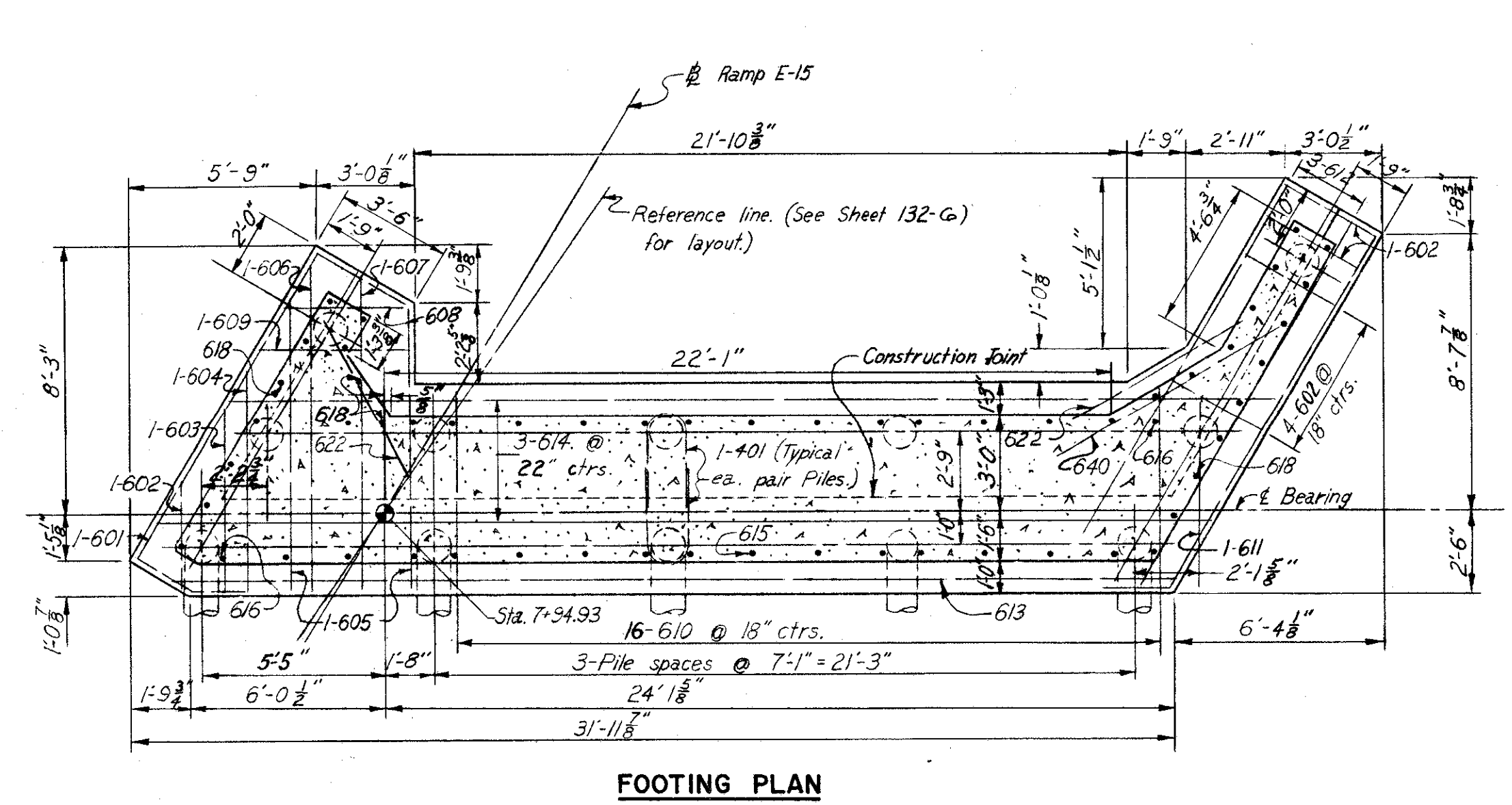
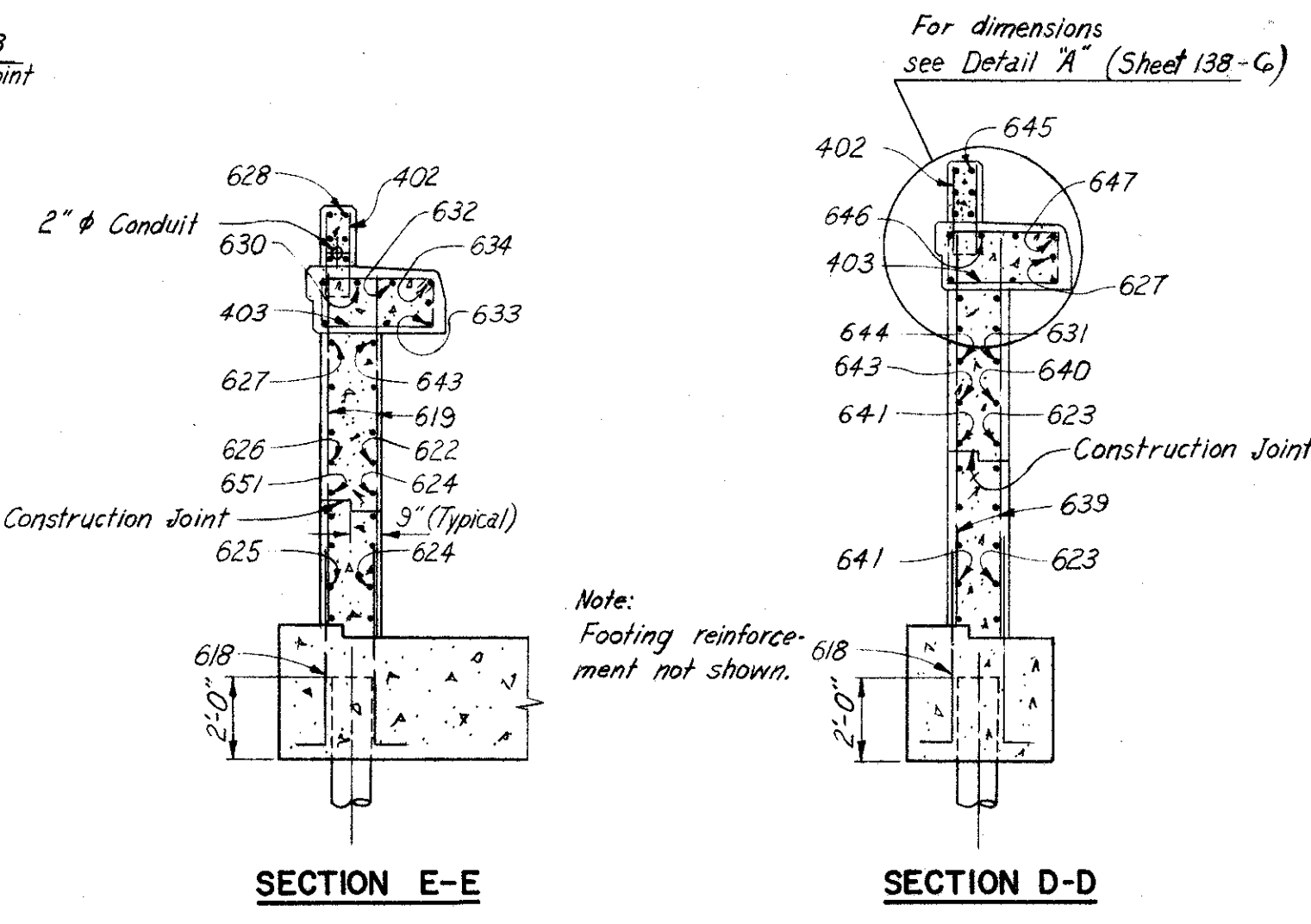
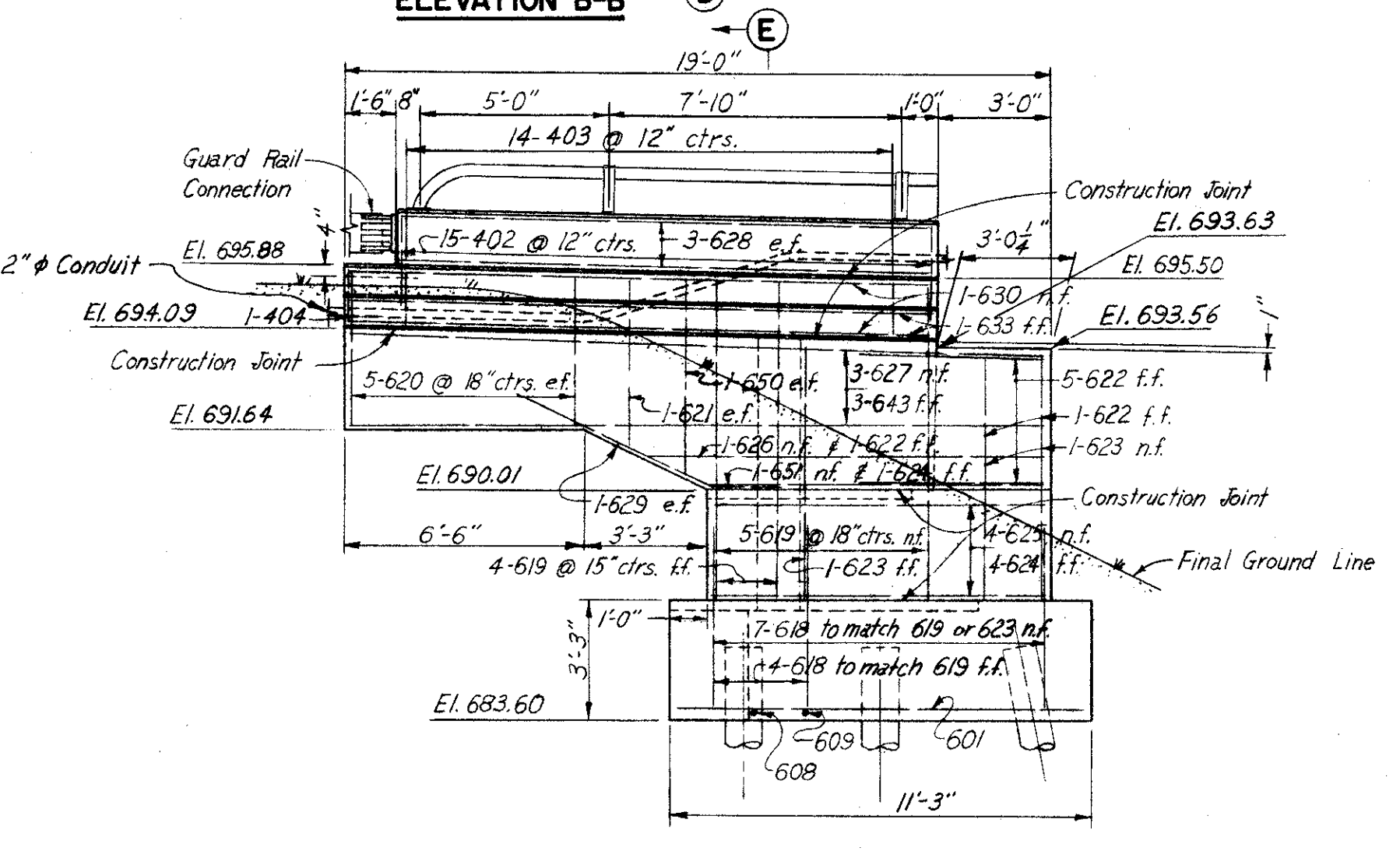
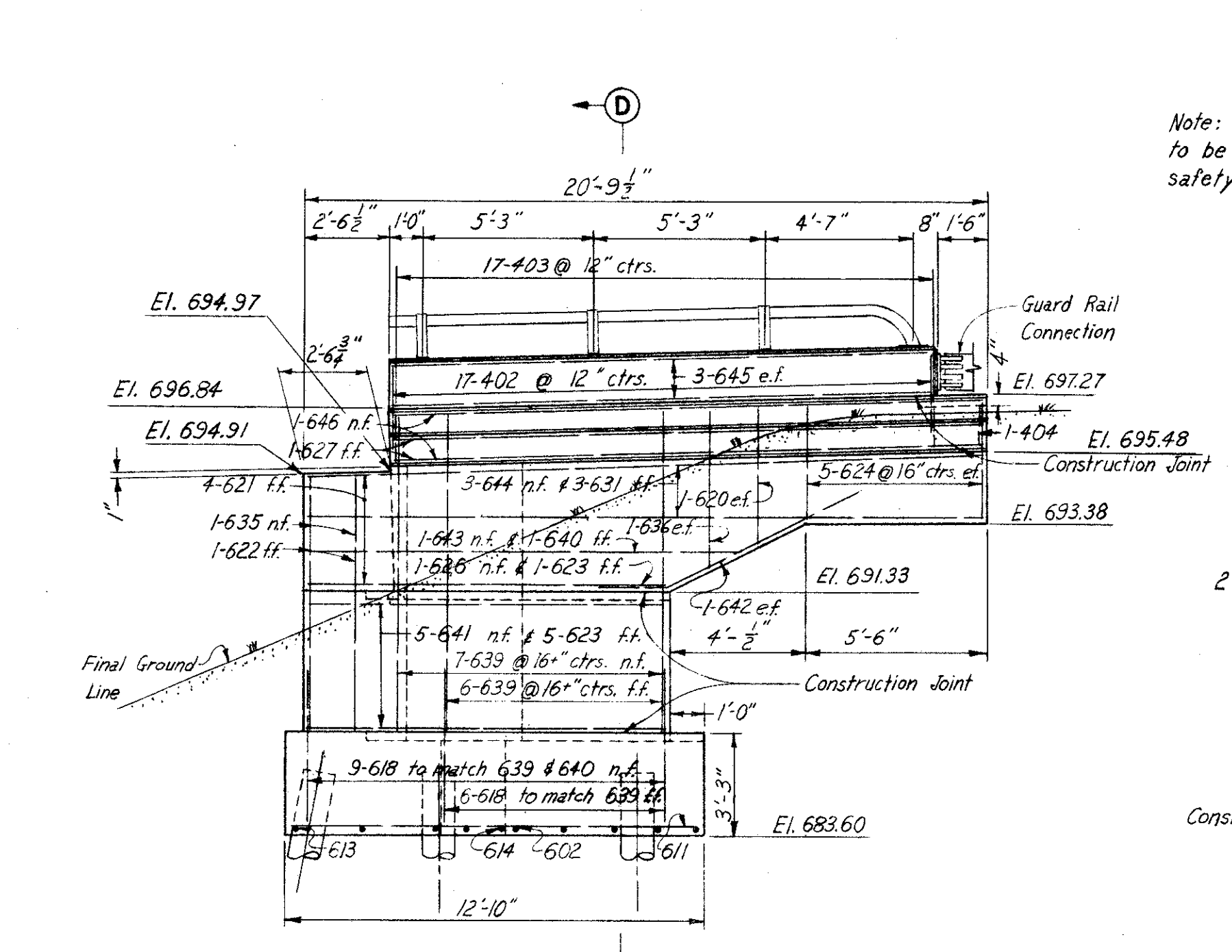
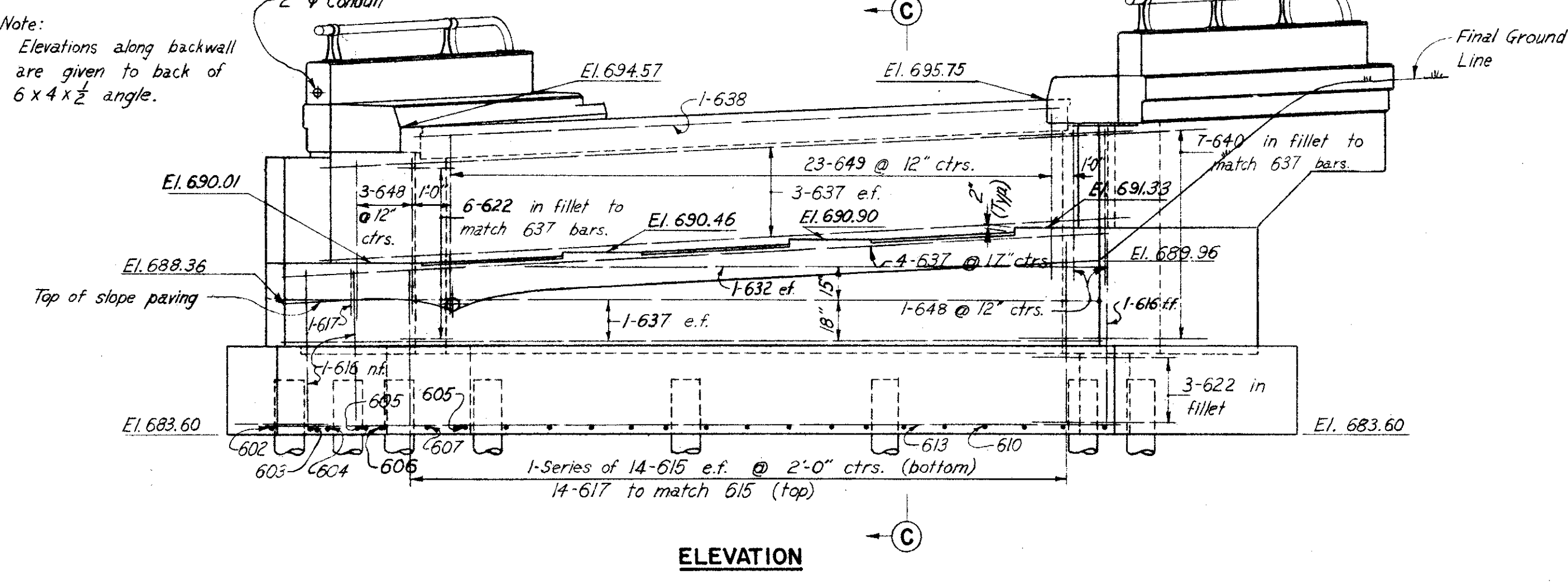
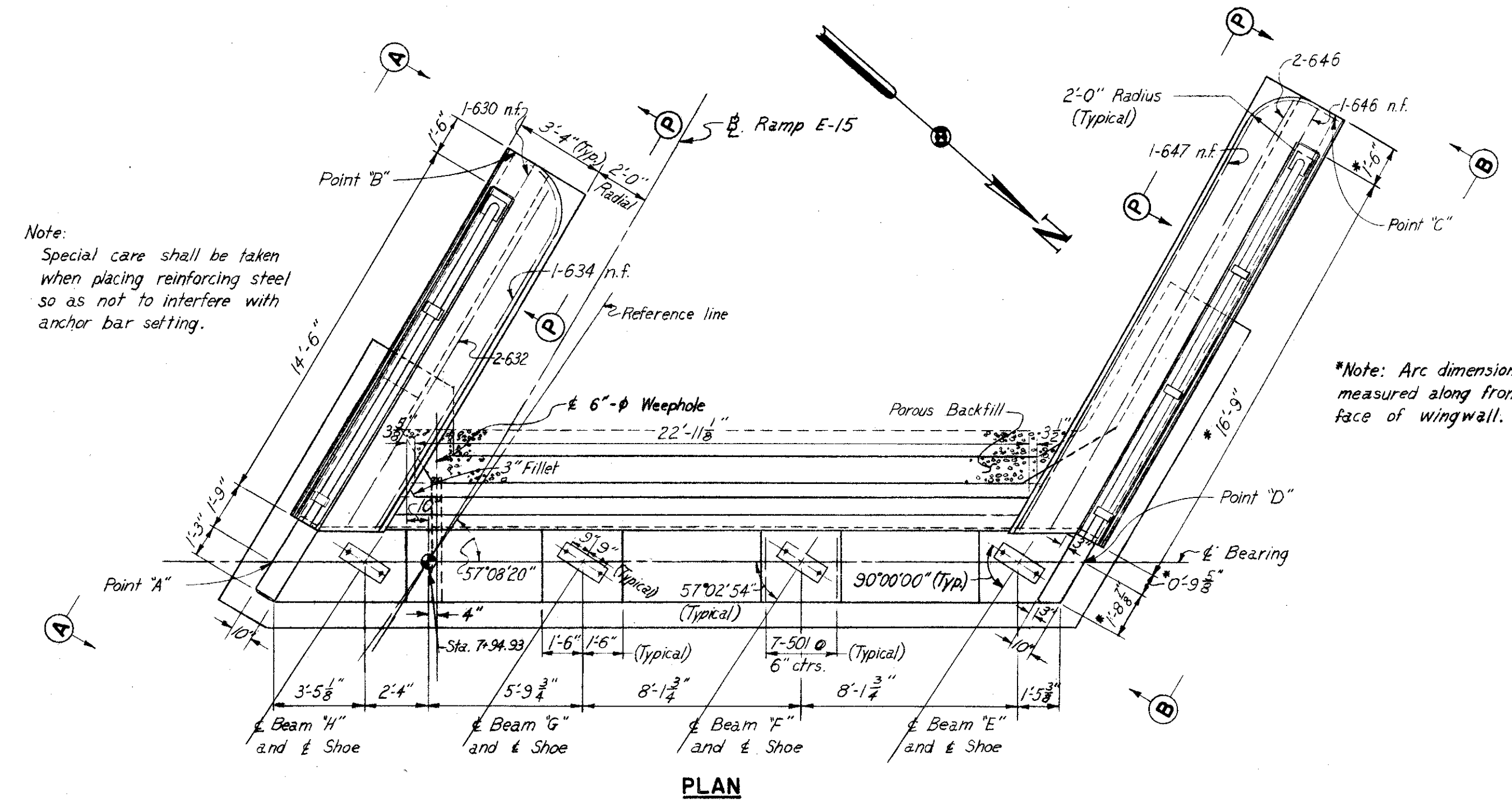
MICROFILMED  
JUL 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

136  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

Note: End of railing parapet to be normal to top of safety curb.



NOTES:  
For additional notes and sections see Sheet 138-C.  
For Reinforcement Schedule see Sheet 139-G.

H.N.T.B. BR. NO. 7 PART 6

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

**ABUTMENT E-15**  
RAMPS E-15 AND E-18 OVER EAST 9th STREET  
STA. 7+92.31 STA. 9+84.06 (E-15)  
STA. 7+99.55 STA. 10+24.01 (E-18)  
Scale: 1/4" = 1'-0"

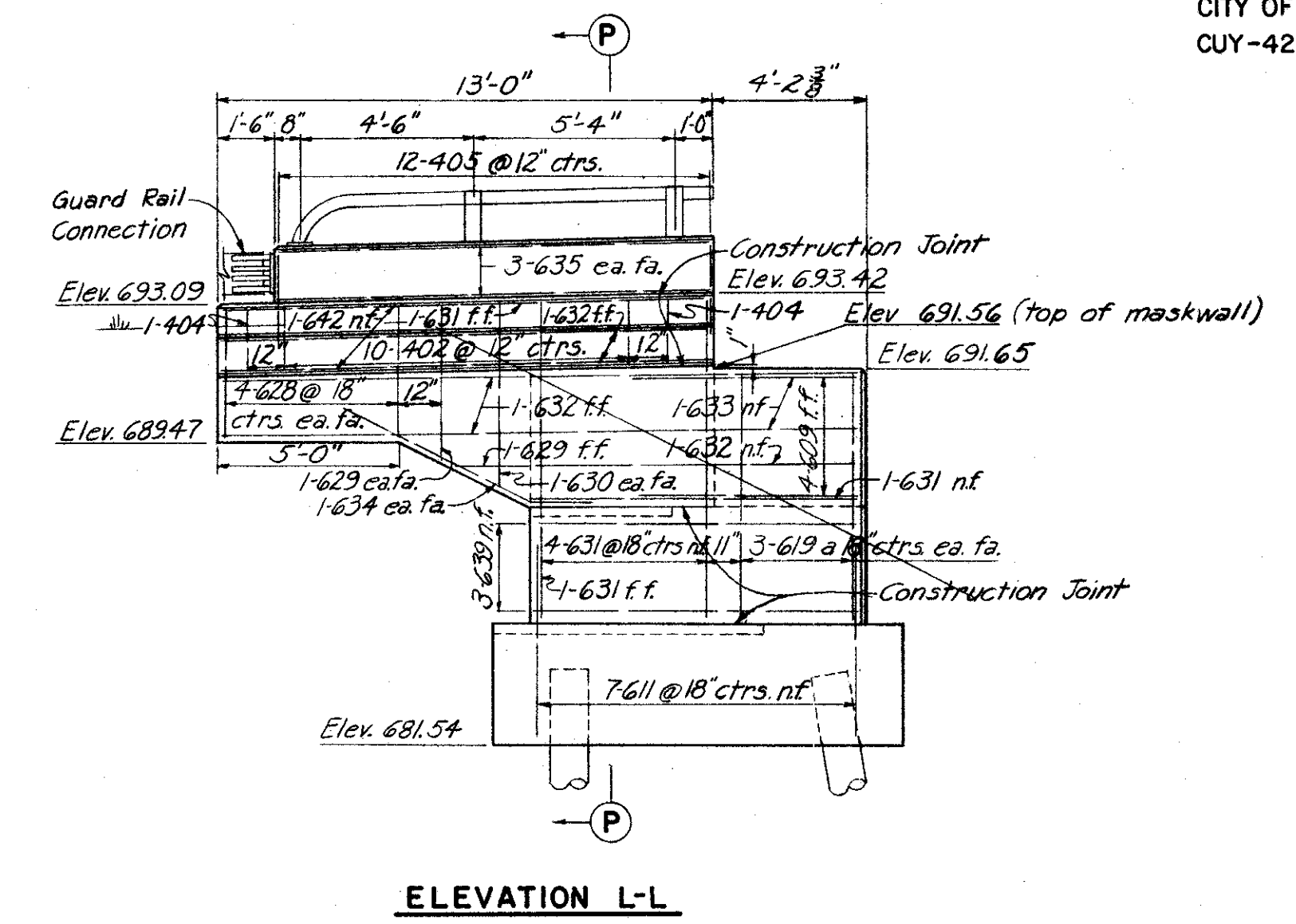
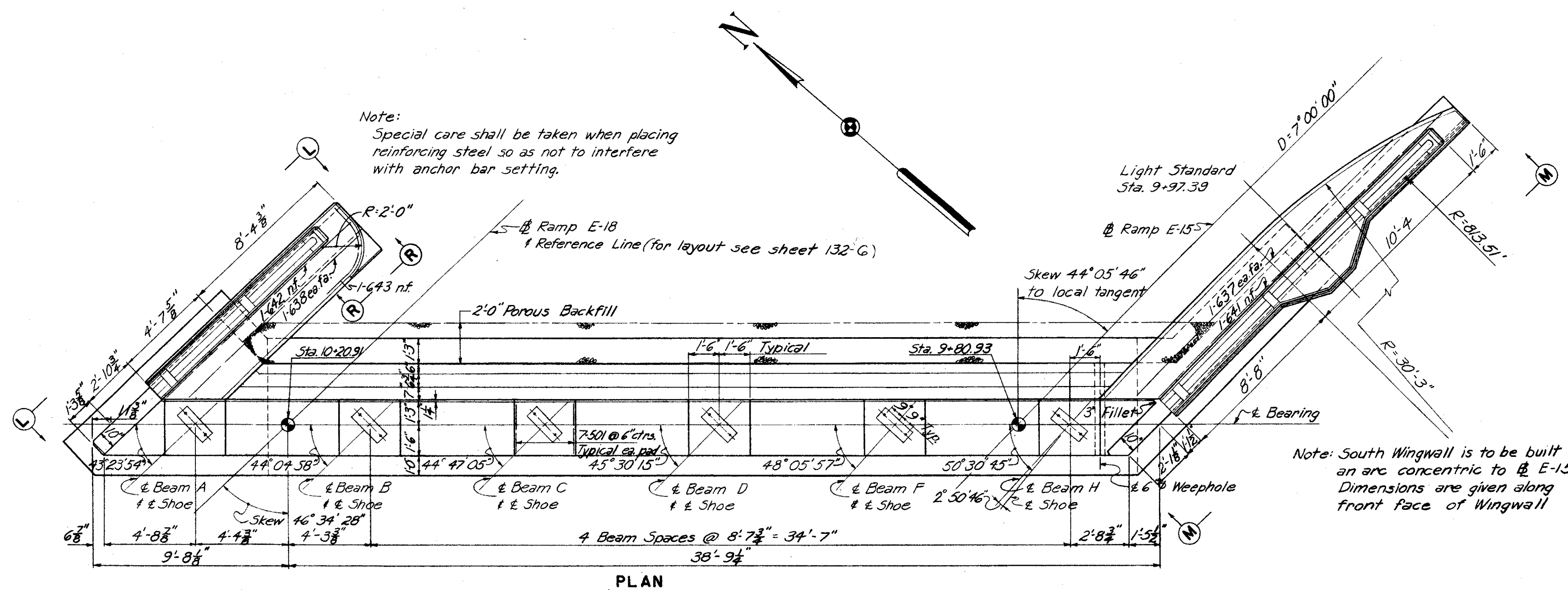
**WILLOW-INNER BELT FREEWAY**

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN C.L.M.	TRACED	CHECKED C.A.B.	REVIEWED J.C.T.	REVISED
DATE 10/22/53	DATE	DATE 1/29/54	DATE 11-12-59	SHEET 136

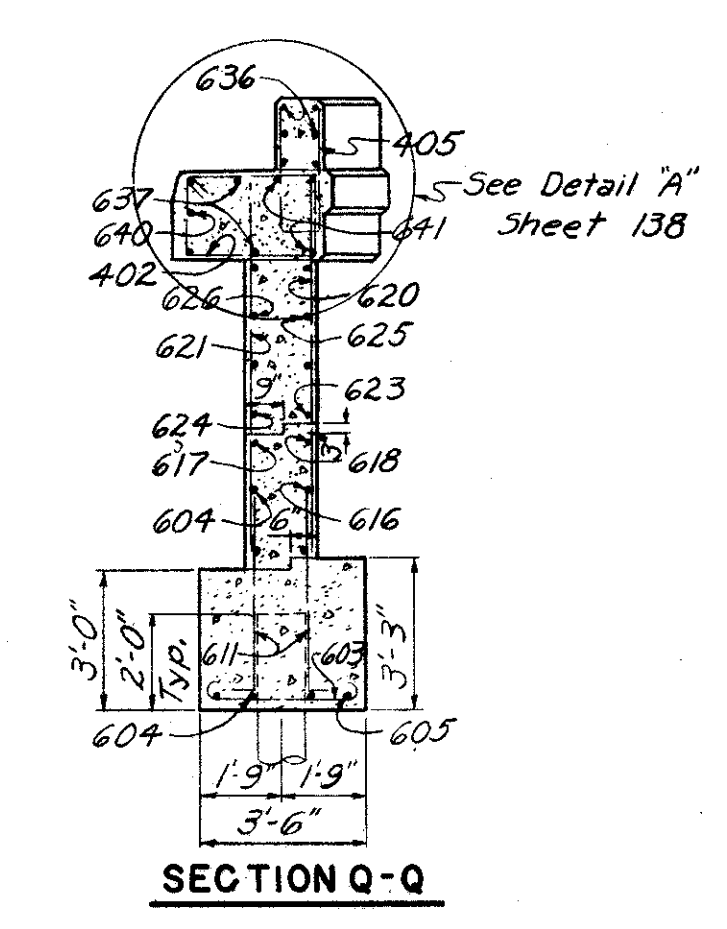
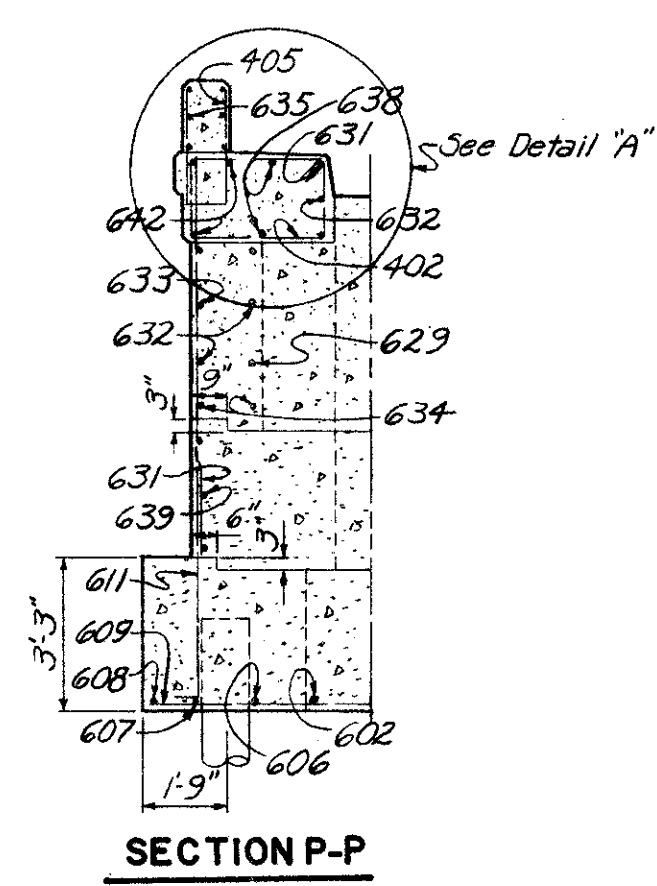
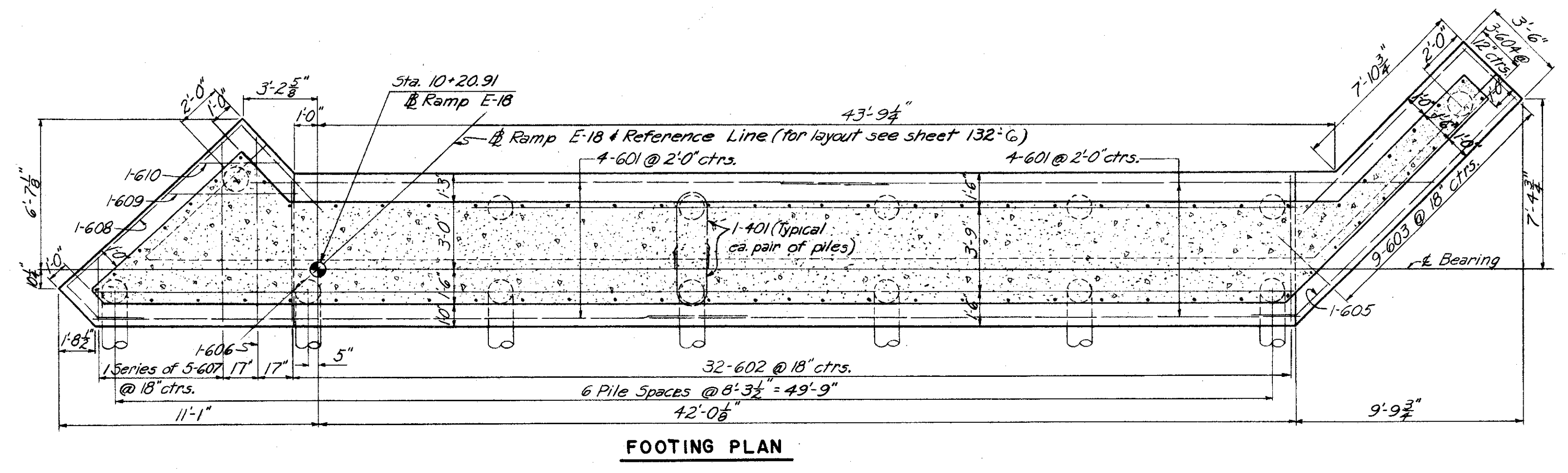
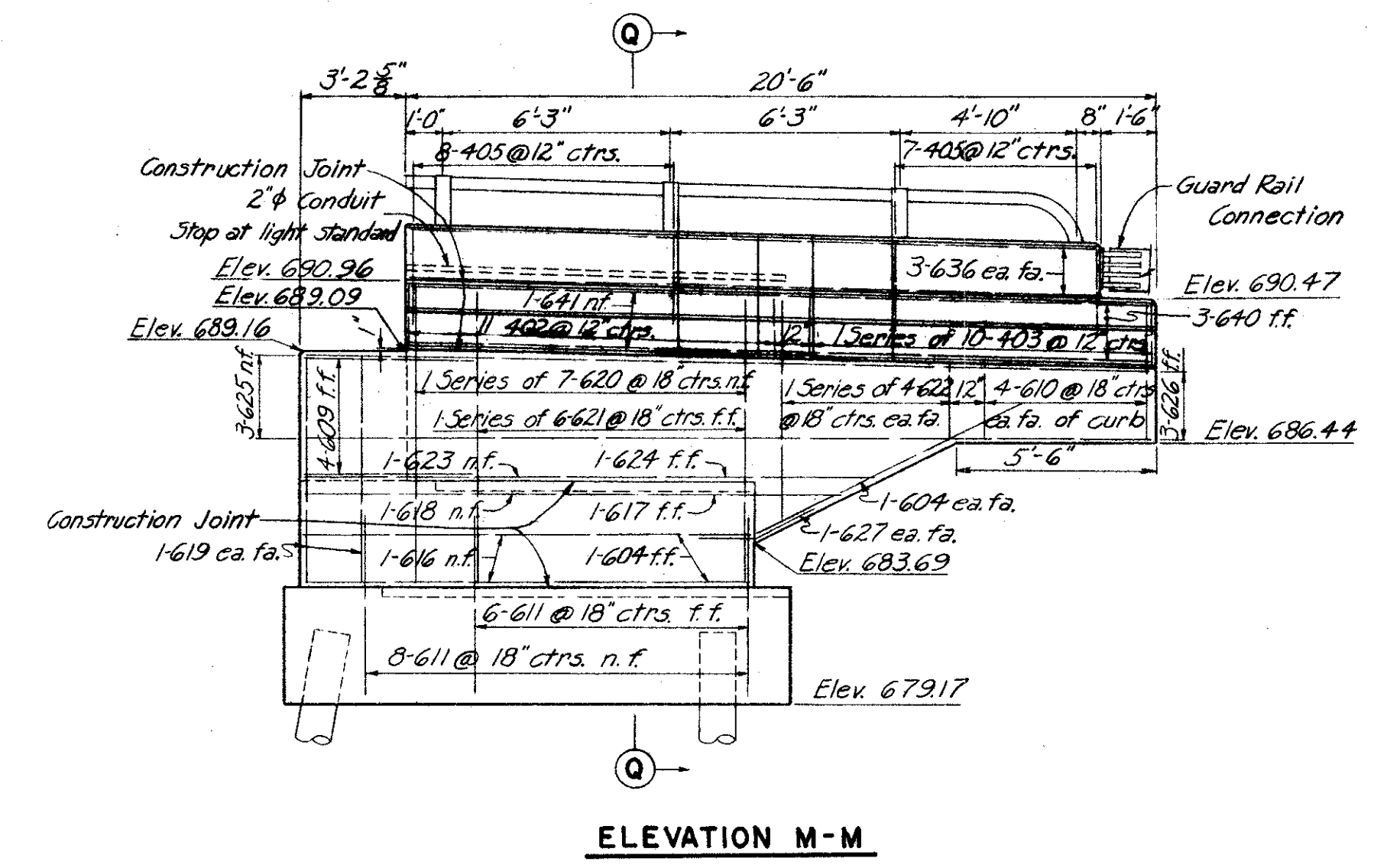
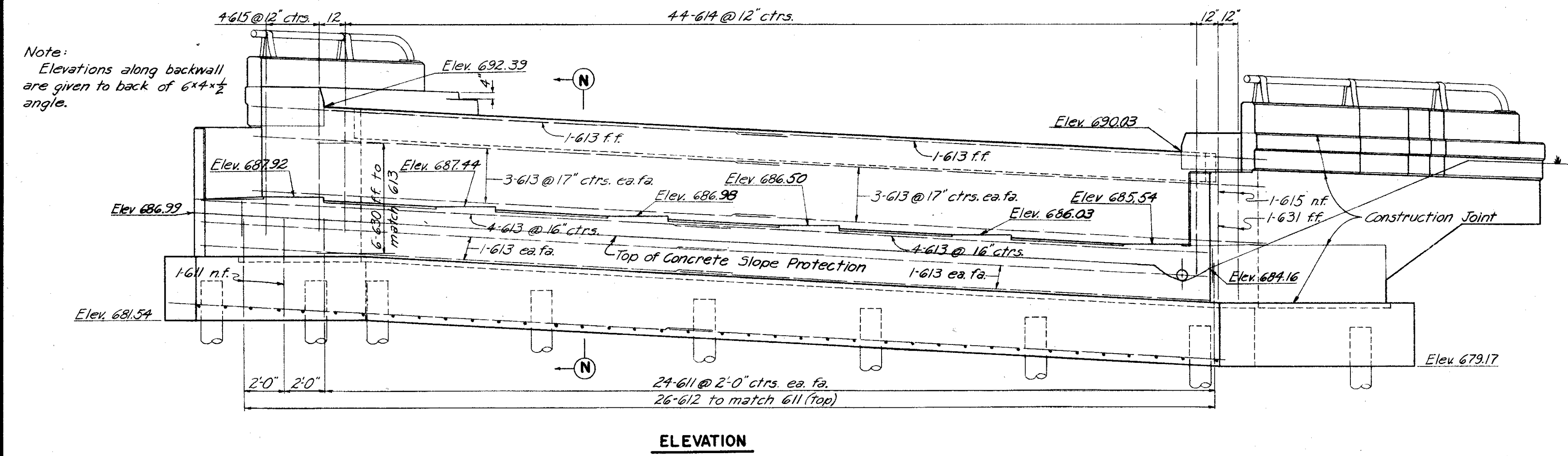
MICROFILMED  
JUL 8 1985

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



Note: Prefix 'AC' shall be assigned to all bar marks.

Note: End of Railing Parapet to be normal to top of safety curb.



NOTES:  
For additional notes and sections see Sheet 138-G.  
For Reinforcement Schedule see Sheet 139-G.  
For light standard support and other lighting details see Sheets 159-G, 160-G.  
n.f. = near face; f.f. = far face; ea. fa. = each face

H.N.T.B. BR. NO. 7 PART 6

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

**EAST ABUTMENT**  
RAMPS E-15 AND E-18 OVER EAST 9th STREET  
STA. 7+92.31 STA. 9+84.06 (E-15)  
STA. 7+99.55 STA. 10+24.01 (E-18)  
Scale: 1/4" = 1'-0"

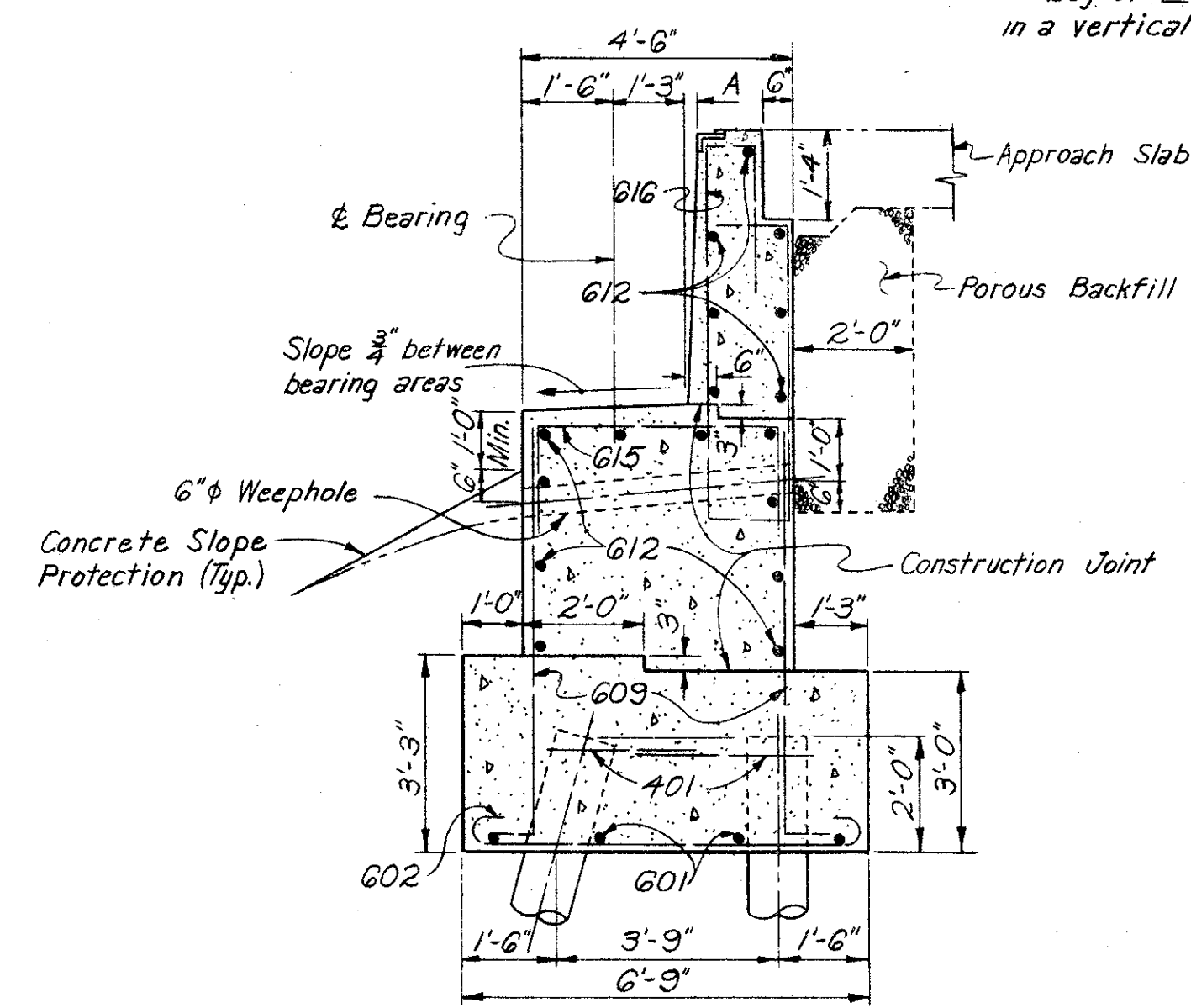
**WILLOW-INNER BELT FREEWAY**

CLEVELAND CUYAHOGA COUNTY OHIO

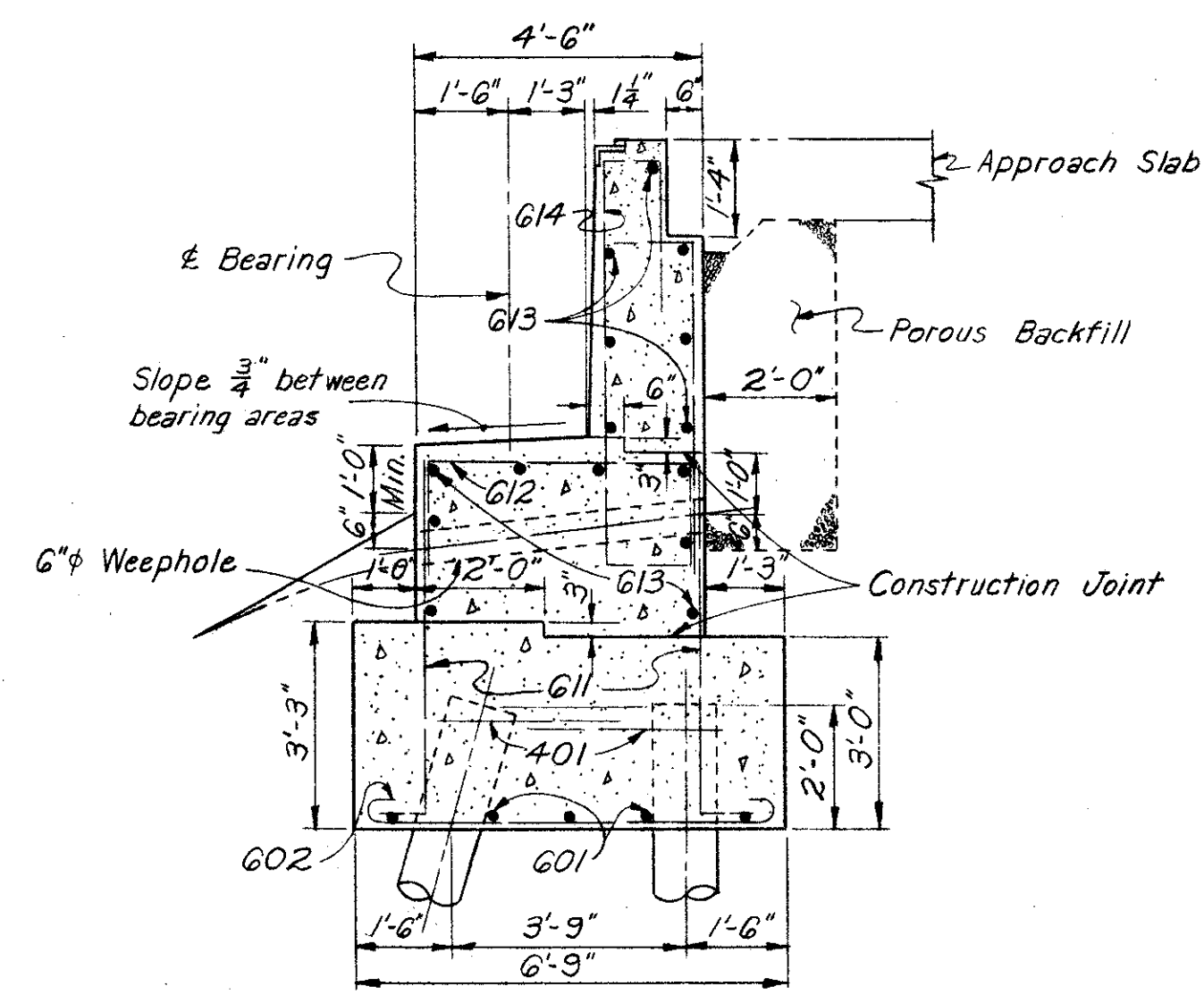
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE: 10-28-58	DATE:	DATE: 10-30-58	DATE: 11-12-59	

SHEET 137

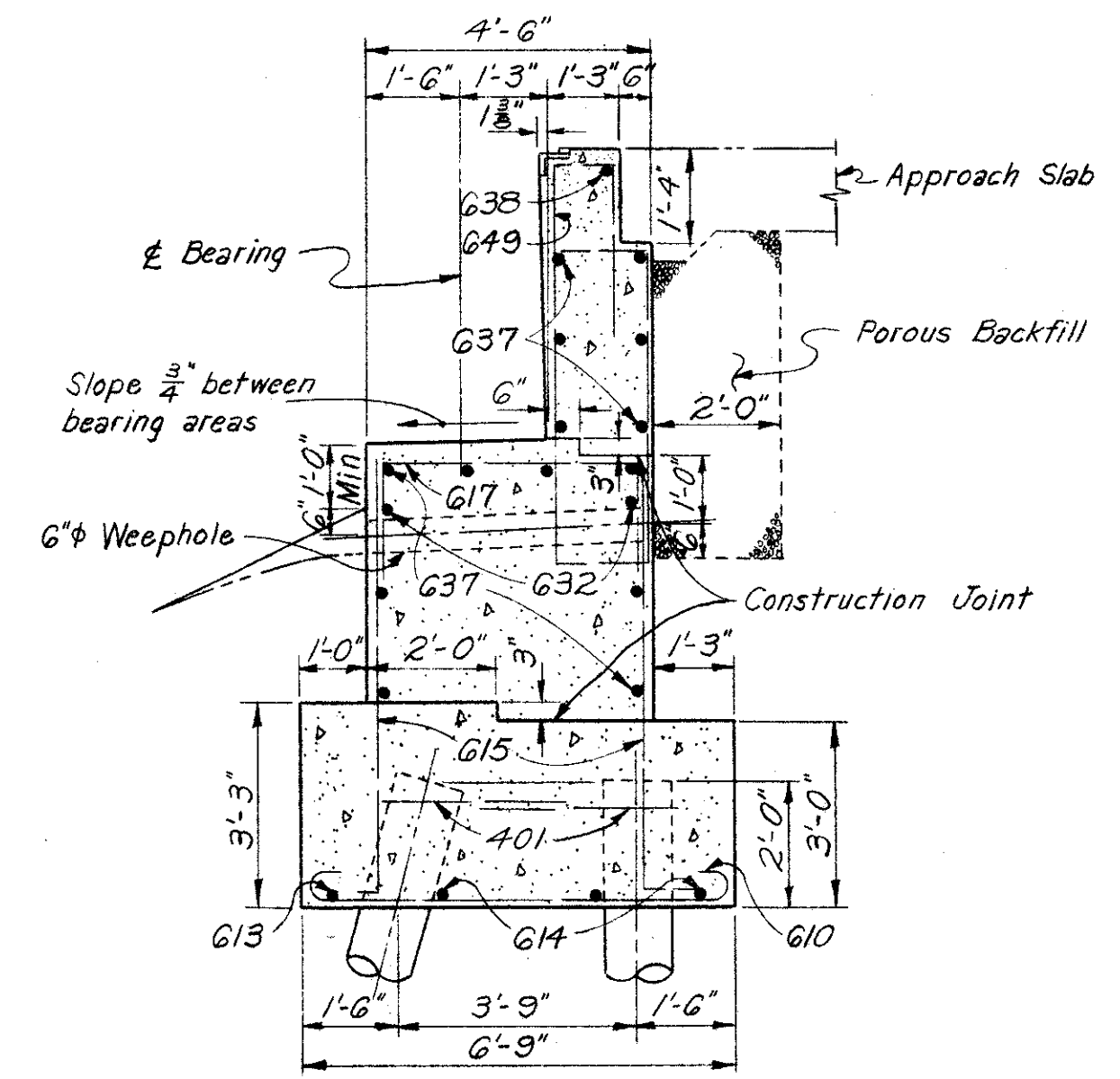
Note:  
Backwall slope (Dimension "A")  
varies from  $\frac{3}{4}$ " at Point "E" to  $1\frac{1}{4}$ " at  
Point "F" (See Sheet 135-G)  
Leg of  $L6 \times 4 \times \frac{1}{2}$  shall be placed  
in a vertical position. (See Sheet 156-G)



SECTION F-F  
Abutment E-18



SECTION N-N  
East Abutment

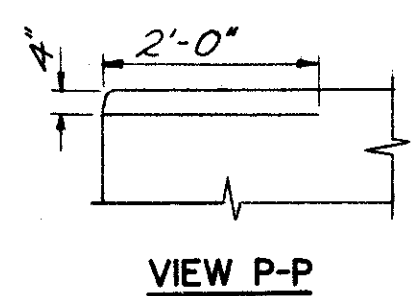


SECTION C-C  
Abutment E-15

Note: Prefixes shall be assigned to  
bar marks as follows:  
Abutment E-18 "AA"  
Abutment E-15 "AB"  
East Abutment "AC"

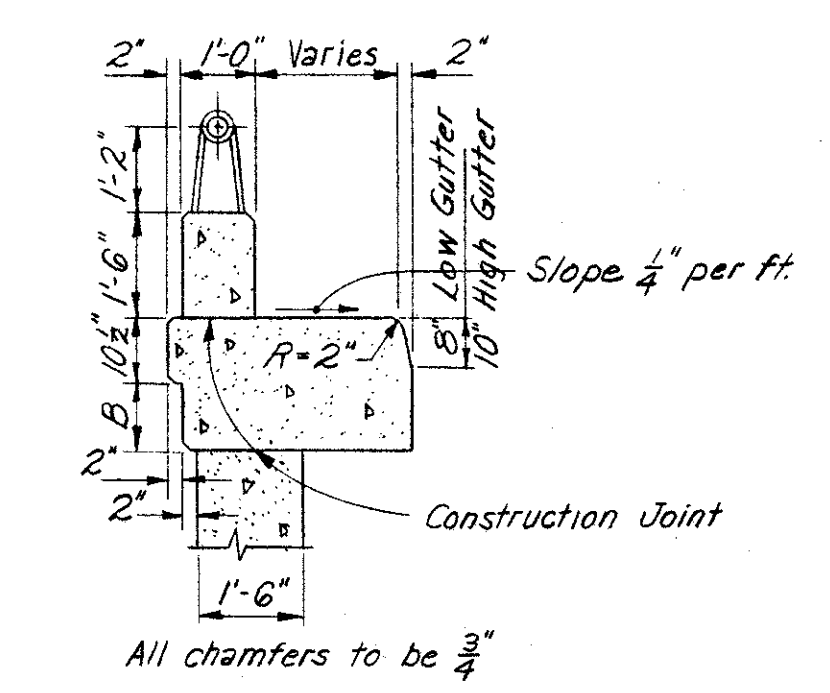
NOTES:

All piles shall be 12"  $\phi$  C.I.P. reinforced concrete.  
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 156-G.  
For anchor bar details see Sheet 156-G.  
Reinforcement bars shall be 3 inches clear from  
bottom of footing and 2" elsewhere.  
For Reinforcement Schedule see Sheet 139-G.  
n.f. = near face, f.f. = far face, ea, fa or e.f. =  
each face.  
For slope protection details see Sheet 157-G.  
Backfill shall be completed prior to construction  
of curb.

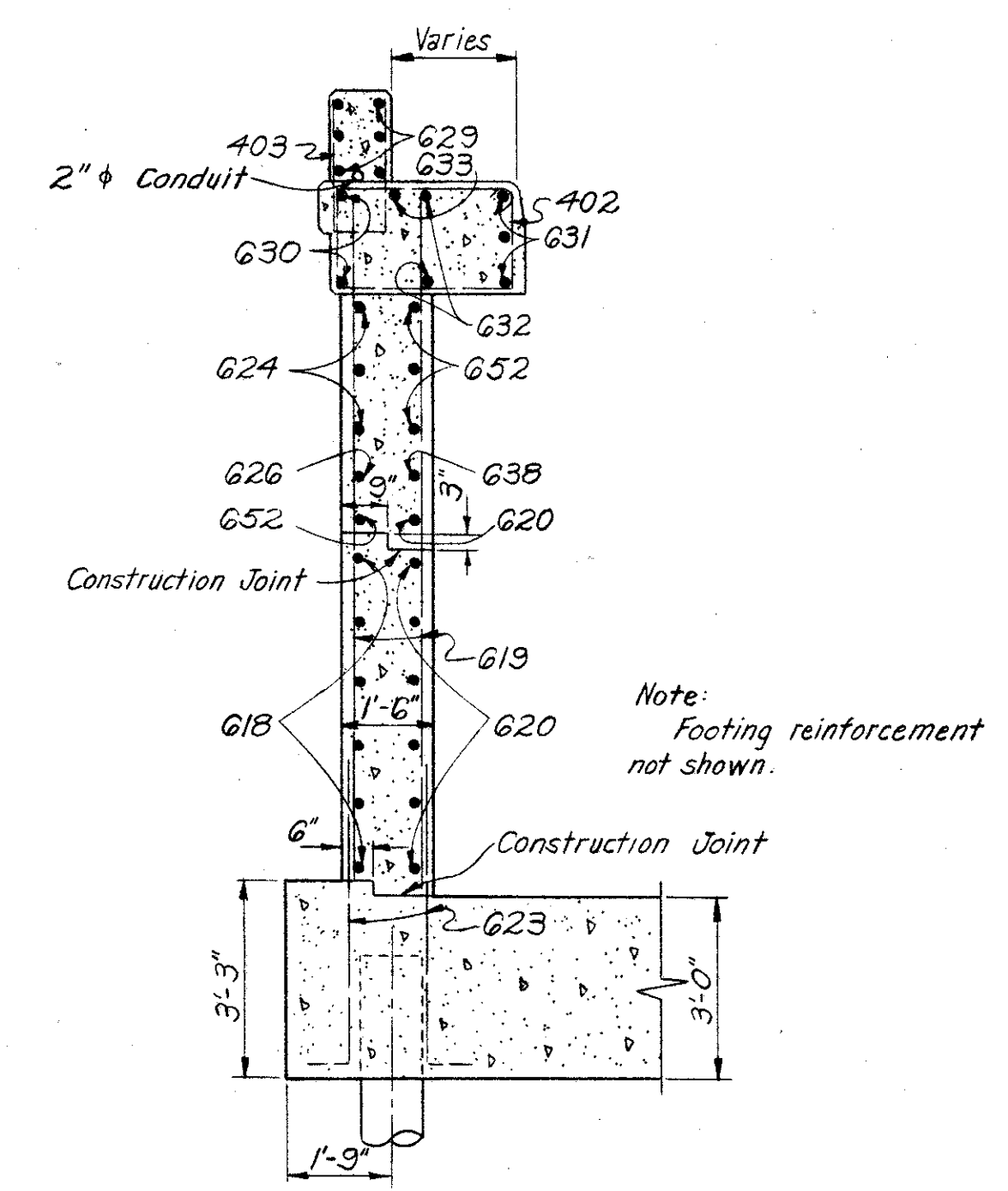


VIEW P-P

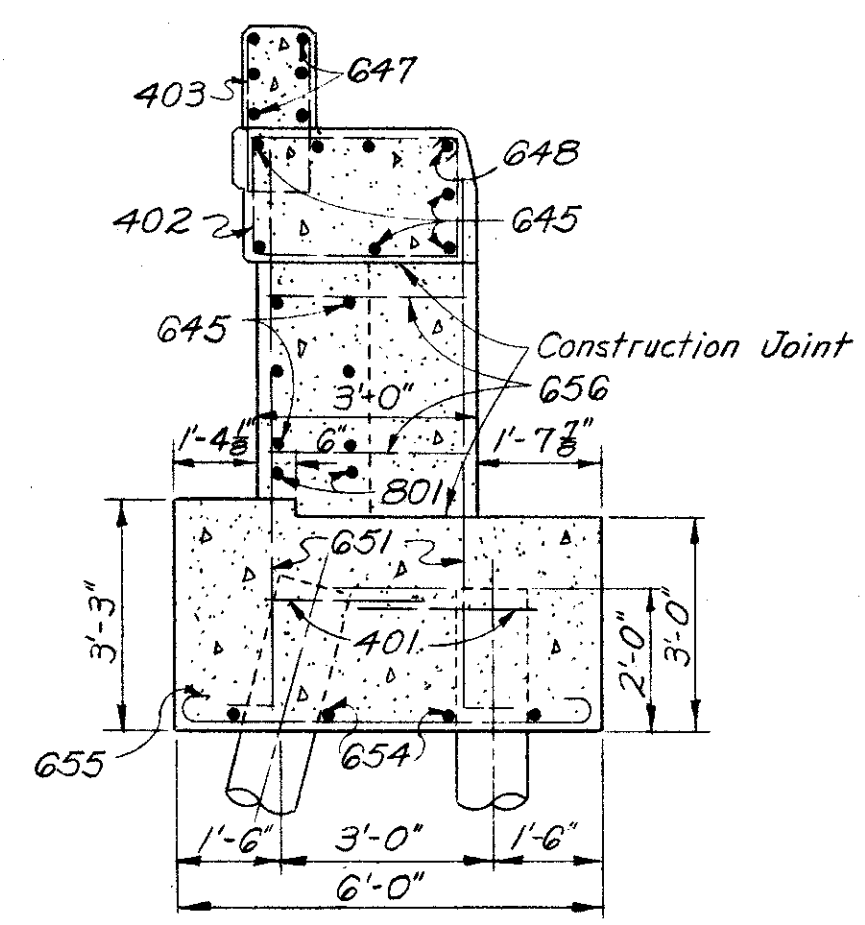
Note:  
Dimension "B"  
East Abutment = 11"  
Abutment E-15 = 11 1/2"  
Abutment E-18 = 11"



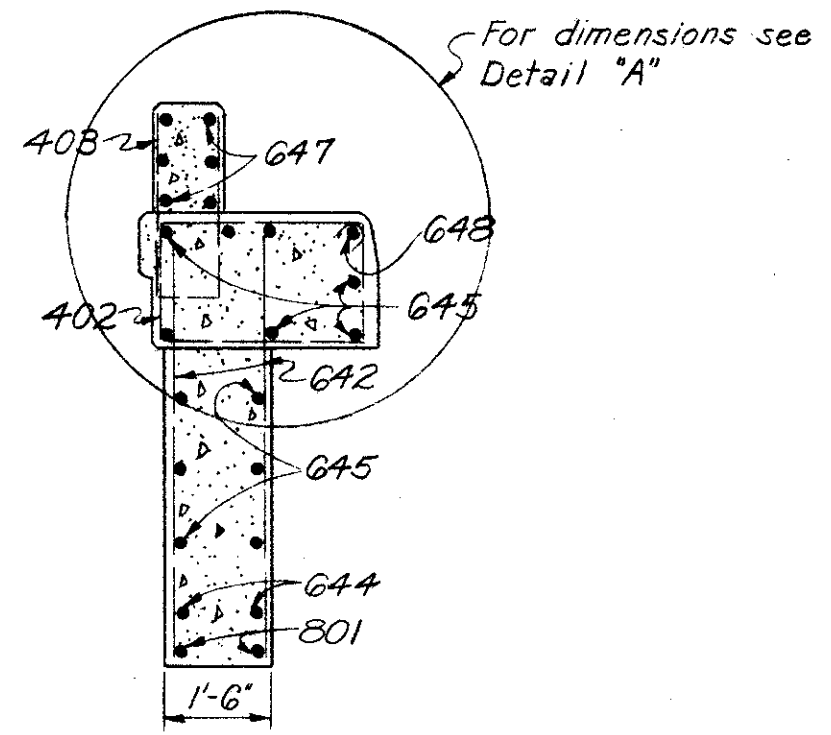
DETAIL A



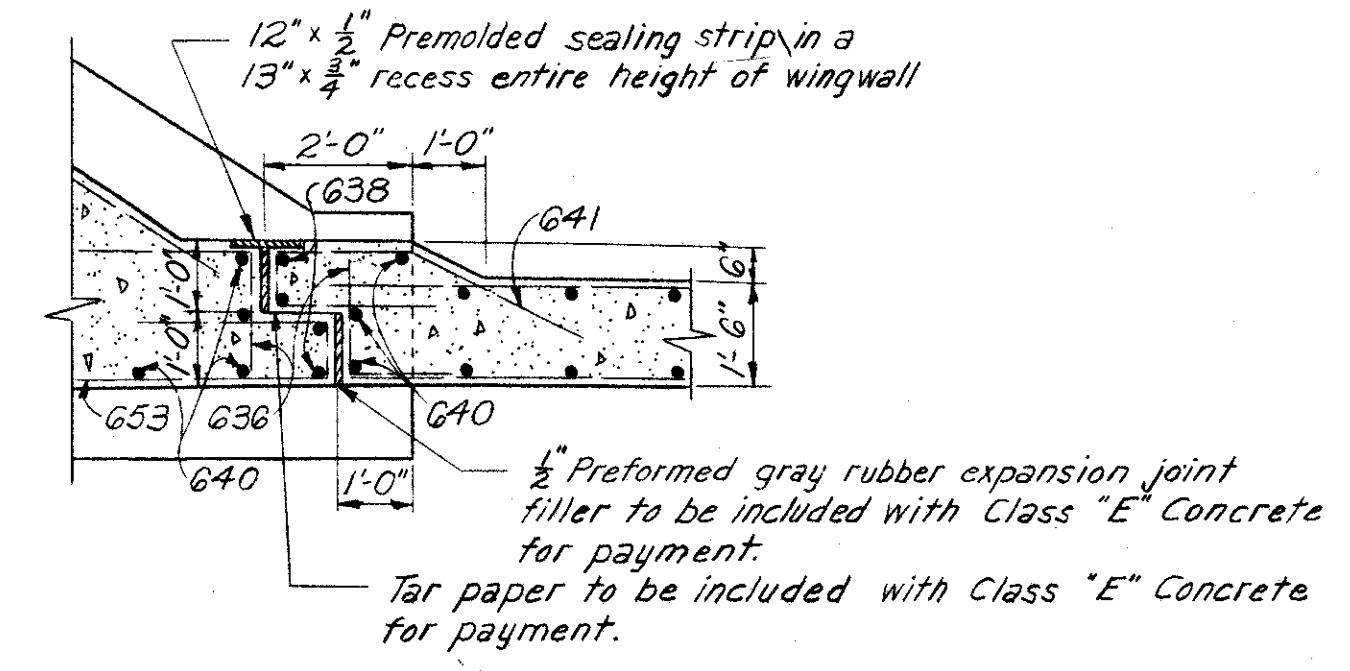
SECTION K-K  
Abutment E-18



SECTION J-J  
Abutment E-18



SECTION H-H  
Abutment E-18



SECTION G-G  
Abutment E-18

H.N.T.B. BR. NO. 7 PART 6

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
<b>ABUTMENT SECTIONS</b>			
RAMPS E-15 AND E-18 OVER EAST 9th STREET		STA. 7+92.31 STA. 9+84.06 (E-15)	
STA. 7+99.55		STA. 10+24.01 (E-18)	
Scale: 3/8" = 1'-0"			
<b>WILLOW-INNER BELT FREEWAY</b>			
CLEVELAND		CUYAHOGA COUNTY OHIO	
DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE
CAB 11-11-58	JRL 12-4-58	JCT 11-12-59	JCT 11-12-59
			SHEET 138

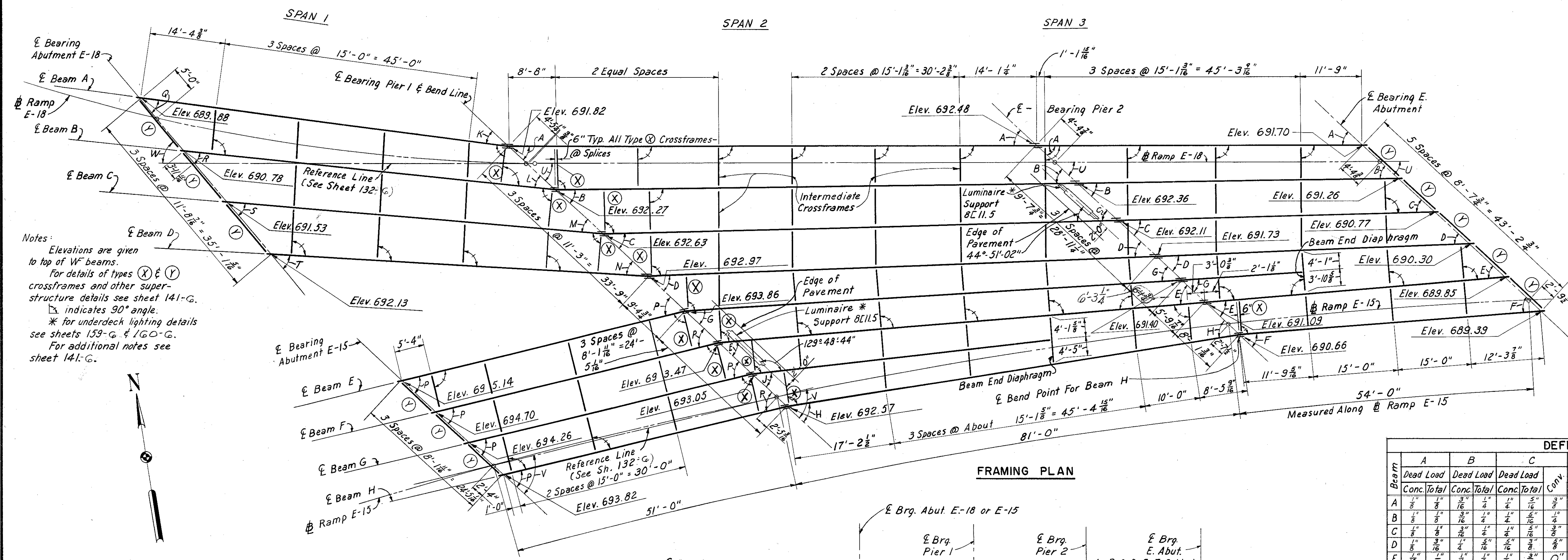


CUYAHOGA COUNTY  
 CITY OF CLEVELAND  
 CUY-42-18.29

EAST ABUTMENT									
MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCREMENT	WEIGHT (LBS)
				A	B	C	D		
401	10	6'-10"	144	2'-6"	1'-10"	7"			46
402	21	8'-7"	109	2'-8"	1'-5"				120
403	1 Ser. of 22	4'-3" to 8'-5"	109	0'-6" to 2'-7"	1'-5"		5 3/8"		42
404	2	7'-1"	109	1'-11"	1'-5"				9
405	27	5'-7"	105	0'-8"	2'-7"				101
*451	2	8'-11"	131	2'-6"	1'-2"				12
*452	2	9'-11"	131	3'-0"	1'-8"				18
*453	3	9'-5"	131	3'-2"	1'-0"				19
*454	2	6'-7"	155	3'-2"					9
*455	2	7'-1"	155	3'-8"					9
*456	3	7'-3"	155	3'-10"					15
501	42	3'-6"	105	2'-5"	0'-8"				153
601	8	28'-0"	Str.						336
602	32	7'-9"	100	6'-5"					372
603	9	4'-6"	100	3'-2"					61
604	7	9'-9"	Str.						103
605	1	15'-2"	108	13'-3"	1'-11"	12			23
606	1	9'-4"	100	8'-0"					14
607	1 Ser. of 5	4'-1" to 9'-1"	100	2'-9" to 7'-9"			15"		49
608	9	18'-9"	149	5'-0"	10'-3"	2'-0"	12		28
609	9	5'-6"	Str.						74
610	9	3'-6"	Str.						47
611	71	5'-8"	104	5'-0"	10"				604
612	26	8'-10"	105	4'-2"	2'-6"				345
613	30	26'-9"	Str.						1205
614	44	17'-9"	112	6'-9"	5'-5"	9"	3'-0"		1173
615	6	9'-1"	104	7'-3"	2'-0"				82
616	2	13'-11"	108	12'-0"	1'-11"	12			42
617	1	12'-0"	Str.						18
618	1	16'-5"	108	14'-6"	1'-11"	12			25
619	10	6'-3"	Str.						94
620	1 Ser. of 6	8'-0" to 8'-3"	Str.				1/2"		85
621	1 Ser. of 6	8'-0" to 8'-3"	Str.				5/8"		73
622	2 Ser. of 9	3'-9" to 6'-3"	Str.				10"		60
623	1	15'-9"	Str.						24
624	1	13'-0"	Str.						20
625	3	23'-0"	Str.						104
626	3	20'-3"	Str.						91
627	2	4'-0"	108	2'-0"	2'-0"	6			12
628	8	3'-3"	Str.						39
629	3	4'-0"	Str.						18
630	8	4'-9"	Str.						57
631	9	8'-3"	Str.						112
632	5	10'-6"	Str.						79
633	2	16'-6"	Str.						50
634	2	7'-9"	108	5'-9"	2'-0"	6			23
**635	6	11'-0"	Str.						
**636	6	18'-6"	Str.						
637	2	18'-6"	Str.						56
638	2	11'-0"	Str.						33
639	3	10'-6"	124	8'-3"	7"	12			47
640	3	21'-9"	133	11'-6"	10'-3"	30'-0"			98
641	3	20'-0"	Str.						90
642	3	12'-6"	Str.						56
643	1	5'-10"	123	2'-0"	2'-10"	1'-0"			9
*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 6580

ABUTMENT E-18									
MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCREMENT	WEIGHT (LBS)
				A	B	C	D		
401	14	6'-10"	144	2'-6"	1'-10"	0'-7"			64
402	34	8'-7"	109	2'-8"	1'-5"				195
403	45	5'-6"	105	0'-8"	2'-7"				165
404	1 Ser. of 8	5'-3" to 8'-5"	109	1'-0" to 2'-7"	1'-5"		5 7/8"		37
405	1	3'-4"	105	0'-9"	1'-5"				2
406	1	9'-4"	112	2'-8"	1'-6"	1'-1"	2'-1"		6
407	1	6'-9"	109	1'-9"	1'-5"				5
408	1	5'-3"	109	1'-0"	1'-5"				4
501	28	3'-6"	105	2'-5"	0'-8"				102
601	8	24'-0"	Str.						288
602	22	7'-9"	100	6'-5"					256
603	1	10'-2"	100	8'-10"					15
604	2	12'-1"	100	10'-9"					36
605	1 Ser. of 7	4'-2" to 11'-1"	100	2'-10" to 9'-9"			1'-1 3/8"		80
606	1	21'-11"	149	3'-2"	15'-2"	2'-0"	10		33
607	1 Ser. of 2	4'-10" to 7'-4"	100	3'-6" to 6'-0"			10"		38
608	1	15'-9"	149	3'-0"	3'-2"	8'-0"	7		24
609	2 Ser. of 16	6'-8" to 8'-5"	104	6'-0" to 7'-9"	0'-10"		1 3/8"		362
610	2	8'-8"	104	8'-0"	0'-10"				26
611	2	6'-8"	104	6'-0"	0'-10"				20
612	34	21'-3"	Str.						1085
613	1	17'-0"	Str.						26
614	1	13'-0"	Str.						20
615	18	9'-8"	105	4'-2"	2'-11"				261
616	37	17'-3"	112	6'-6"	5'-2"	0'-9"	3'-0"		959
617	1	6'-4"	100	5'-0"					9
618	6	15'-5"	124	13'-2"	0'-6"	10			139
619	11	10'-9"	Str.						178
620	7	5'-6"	Str.						58
621	6	9'-0"	Str.						81
622	6	6'-0"	Str.						54
623	23	5'-8"	104	5'-0"	0'-10"				196
624	3	21'-3"	Str.						96
625	8	3'-3"	Str.						39
626	1	14'-6"	Str.						22
627	2	7'-5"	108	5'-6"	2'-0"	6			22
628	4	4'-3"	Str.						25
**629	6	15'-6"	Str.						
630	2	17'-0"	Str.						51
631	3	15'-0"	139	15'-0"	35'-0"				68
632	2	16'-3"	139	16'-3"	48'-0"				49
633	1	16'-9"	Str.						25
634	3	9'-4"	104	7'-6"	2'-0"				42
635	4	9'-0"	126	2'-0"	0'-8"	6'-8"			54
636	15	4'-2"	104	1'-6"	2'-10"				94
637	7	5'-6"	Str.						58
638	11	6'-9"	Str.						112
639	3	2'-9"	Str.						13
640	7	8'-3"	Str.						87
641	7	6'-0"	149	2'-0"	0'-8"	1'-8"	6		63
642	2 Ser. of 9	4'-9" to 7'-6"	Str.				3 1/8"		166
643	6	4'-0"	Str.						36
644	2	11'-6"	Str.						35
645	13	24'-9"	Str.						483
646	2 Ser. of 6	3'-6" to 4'-0"	Str.				1 3/8"		68
**647	6	23'-3"	Str.						
648	1	22'-6"	Str.						34
649	1	5'-10"	123	1'-0"	2'-10"	2'-0"			9
650	3	8'-5"	104	7'-9"	0'-10"				38
651	5	7'-8"	104	7'-0"	0'-10"				58
652	4	13'-3"	Str.						80
653	4	9'-0"	149	2'-0"	0'-8"	6'-8"	7		54
654	4	4'-0"	100	2'-8"					24
655	4	7'-0"	100	5'-8"					42
656	2	6'-2"	105	1'-2"	2'-8"				19
**657	6	2'-9"	Str.						
801	2	20'-0"	Str.						107
									Total 6997

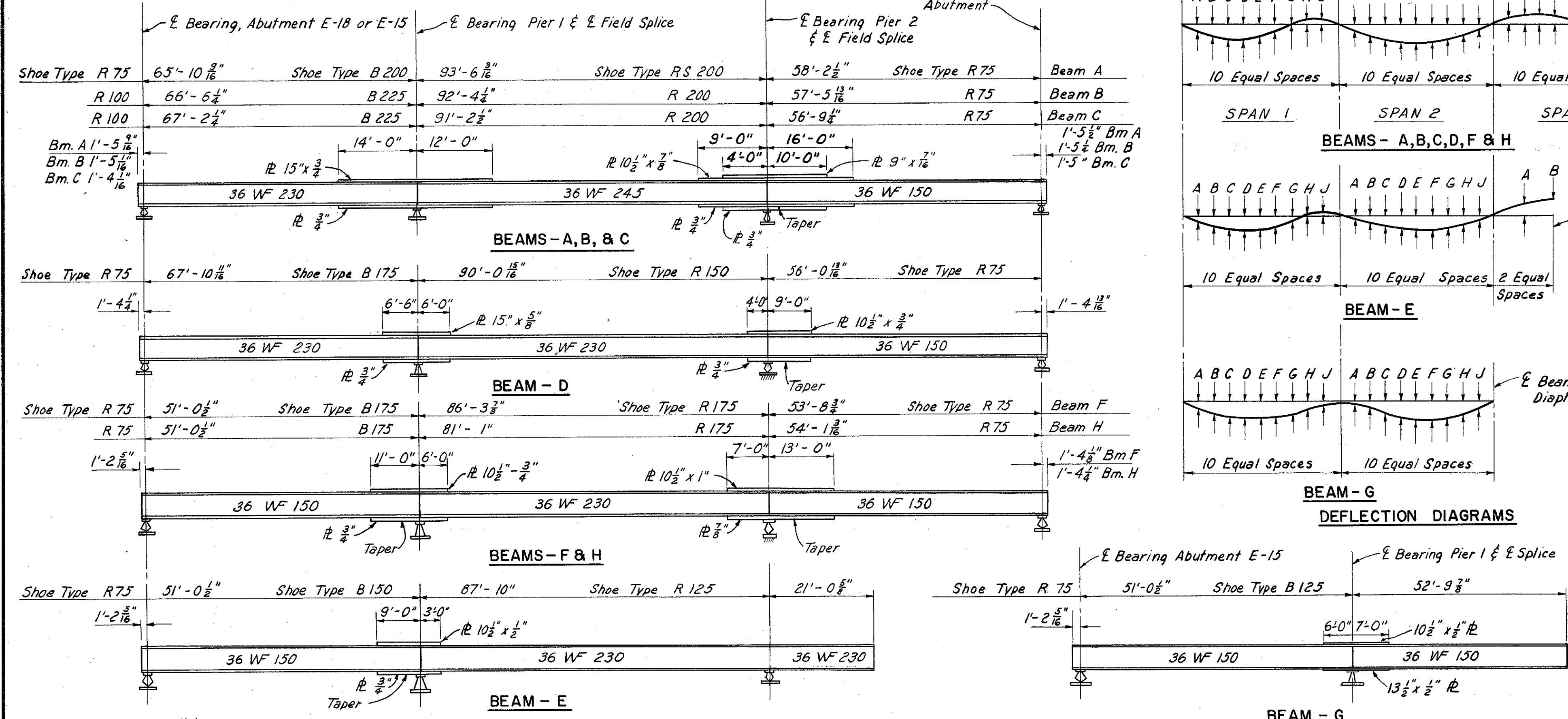
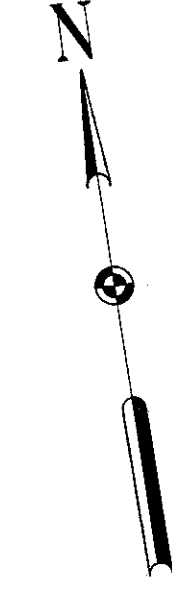
ABUTMENT E-15									
MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCREMENT	WEIGHT (LBS)
				A	B	C	D		
401	10	8'-6"	144	3'-4"	1'-10"	0'-7"			57
402	32	5'-7"	105	8"	2'-7"				119
403	31	8'-7"	109	2'-8"	1'-5"				178
404	2	9'-1"	112	2'-8"	1'-0"	1'-1"	2'-4"		12
501	28	3'-6"	105	2'-5"	0'-8"				102
601	1	17'-7"	149	3'-2"	10'-11"	1'-11"	5		26
602	7	4'-6"	100	3'-2"					47
603	1	7'-0"	100	5'-8"					11
604	1	8'-1"	100	6'-9"					12
605	2	10'-2"	100	8'-10"					31
606	1	11'-4"	100	10'-0"					17
607	1	10'-11"	100	9'-7"					16
608	1	5'-1"	100	3'-9"					8
609	1	5'-11"	100	4'-7"					9
610	16	7'-9"	100	6'-5"					186
611	1	14'-5"	108	12'-6"	2'-0"	21			22
612	3	12'-6"	Str.						56
613	1	30'-6"	Str.						46
614	3	32'-0"	Str.						144
615	2 Ser. of 14	6'-0" to 7'-2"	104	5'-4" to 6'-6"	0'-10"		1 1/4"		276
616	3	6'-4"	104	5'-8"	0'-10"				28
617	15	8'-6"	105	4'-2"	2'-4"				191
618	26	5'-6"	104	4'-10"	0'-10"				214
619	9	8'-3"	Str.						111
620	12	3'-9"	Str.						68
621	6	4'-3"	Str.						38
622	19	5'-3"	Str.						150
623	9	6'-3"	Str.						84
624	15	3'-6"	Str.						79
625	4	11'-2"	124	8'-11"	0'-6"	5			67
626	2	10'-9"	Str.						32
627	5	18'-9"	Str.						141
**628	6	14'-3"	Str.						
629	2	7'-5"	108	5'-9"	1'-9"	6			22
630	3	15'-9"	Str.						71
631	3	15'-3"	Str.						69
632	2	21'-0"	Str.						63
633	2	14'-3"	Str.						43
634	1	15'-0"	123	12'-9"	1'-5"	0'-10"			22
635	2	7'-6"	Str.						22
636	2	4'-9"	Str.						14
637	14	29'-3"	Str.						614
638	1	26'-0"	Str.						38
639	13	9'-9"	Str.						190
640	8	7'-9"	Str.						93
641									



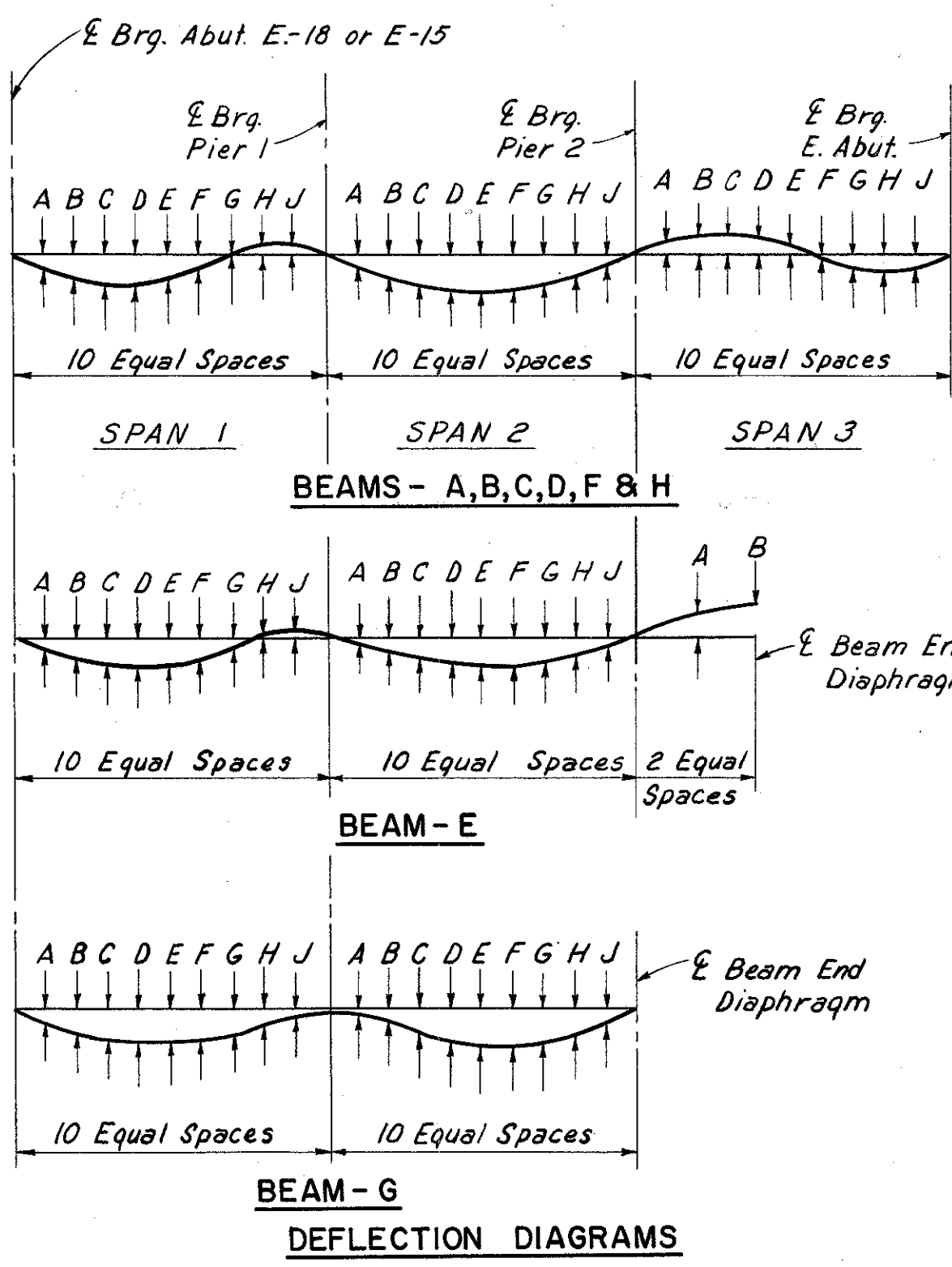
**TABLE OF ANGLES**

A	43°-23'-54"	K	35°-27'-37"
B	44°-04'-58"	L	36°-43'-43"
C	44°-47'-05"	M	37°-58'-19"
D	45°-30'-15"	N	39°-11'-25"
E	48°-05'-57"	P	57°-02'-54"
F	47°-39'-59"	Q	43°-07'-04"
G	46°-57'-27"	R	44°-23'-10"
H	52°-24'-40"	S	57°-02'-54"
J	50°-11'-16"	T	46°-50'-52"
U	43°-25'-32"	V	57°-08'-20"
W	51°-04'-59"		

**Notes:**  
Elevations are given to top of Wf beams.  
For details of types (X) & (Y) crossframes and other superstructure details see sheet 141-G.  
⊥ indicates 90° angle.  
\* for underdeck lighting details see sheets 159-G & 160-G.  
For additional notes see sheet 141-G.



**BEAM ELEVATIONS**  
Scale 1/16" = 1'-0"



**DEFLECTION DIAGRAMS**

**DEFLECTION TABLE - SPAN 1**

Beam	A		B		C		D		E		F		G		H		J	
	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total
A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
C	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
D	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
E	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16

**DEFLECTION TABLE - SPAN 2**

Beam	A		B		C		D		E		F		G		H		J	
	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total
A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
C	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
D	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
E	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16

**DEFLECTION TABLE - SPAN 3**

Beam	A		B		C		D		E		F		G		H		J	
	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total	Dead Load	Conc. Total
A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
C	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
D	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
E	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16

**NOTES:**  
The beams shall be cambered as follows:  
Where the sum of the deflections and convexity is 3/8" to 1", the required camber will be one inch, and if greater than 1", the required camber will be the same as this sum.  
No camber will be required if this sum is less than 3/8".  
Beams which do not require camber shall be fabricated so that any curved beam shall be placed with the convex flange up.  
Deflections are given at the tenth points and are measured to the nearest 1/16 inch.  
Legend for deflection tables:  
Conc. denotes deflections for concrete.  
Total denotes total deflection from dead load of steel and concrete.  
Conv. denotes convexity corrections required for vertical curvature of the roadway gradient.

H.N.T.B. BR. NO. 7 PART 6

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

**FRAMING PLAN**  
RAMPS E-15 AND E-18 OVER EAST 9th STREET  
STA. 7+92.31 STA. 9+84.06 (E-15)  
STA. 7+99.55 STA. 10+24.01 (E-18)

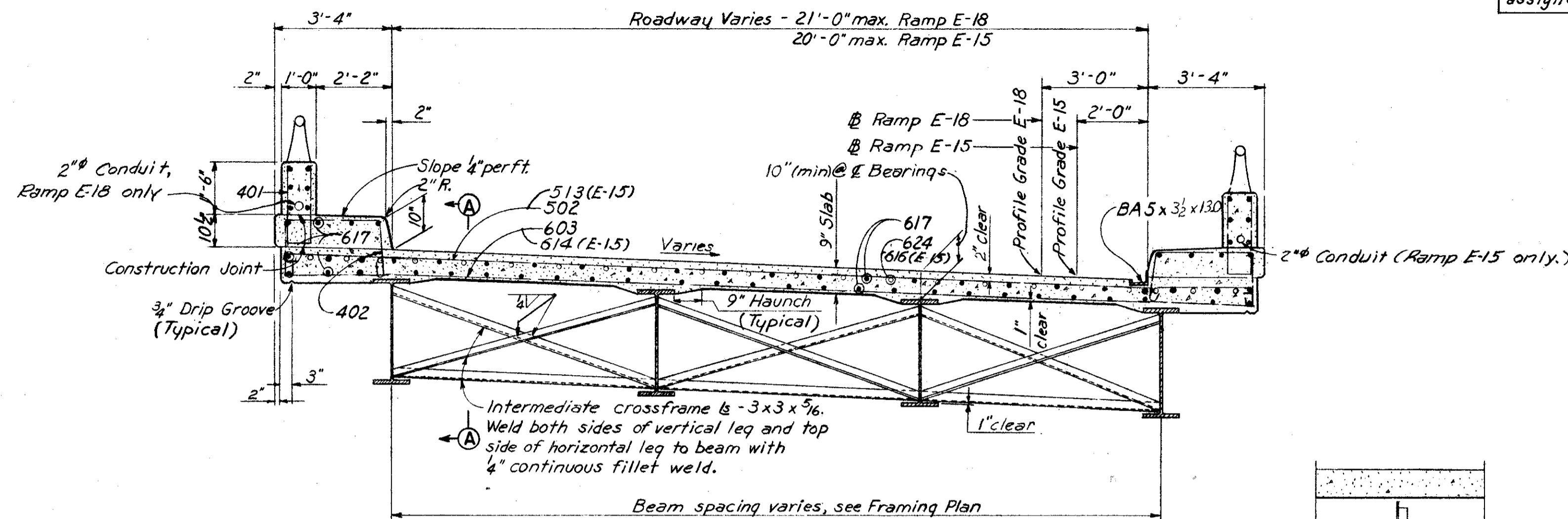
Scale: 1" = 10' Except as noted

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN L.D.F. TRACED J.A.G. CHECKED G.A.J. REVIEWED J.C.T. REVISION 6-11-60  
DATE 5-8-58 DATE 4-9-59 DATE 4-12-59 DATE 11-12-59

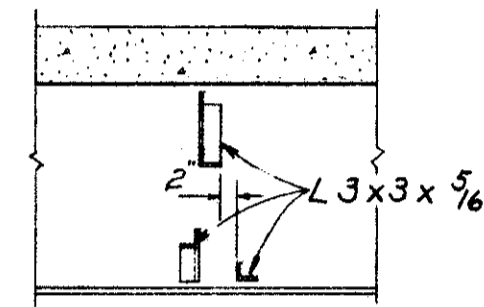
SHEET 140

Note: Prefix "S" shall be assigned to all bar marks.

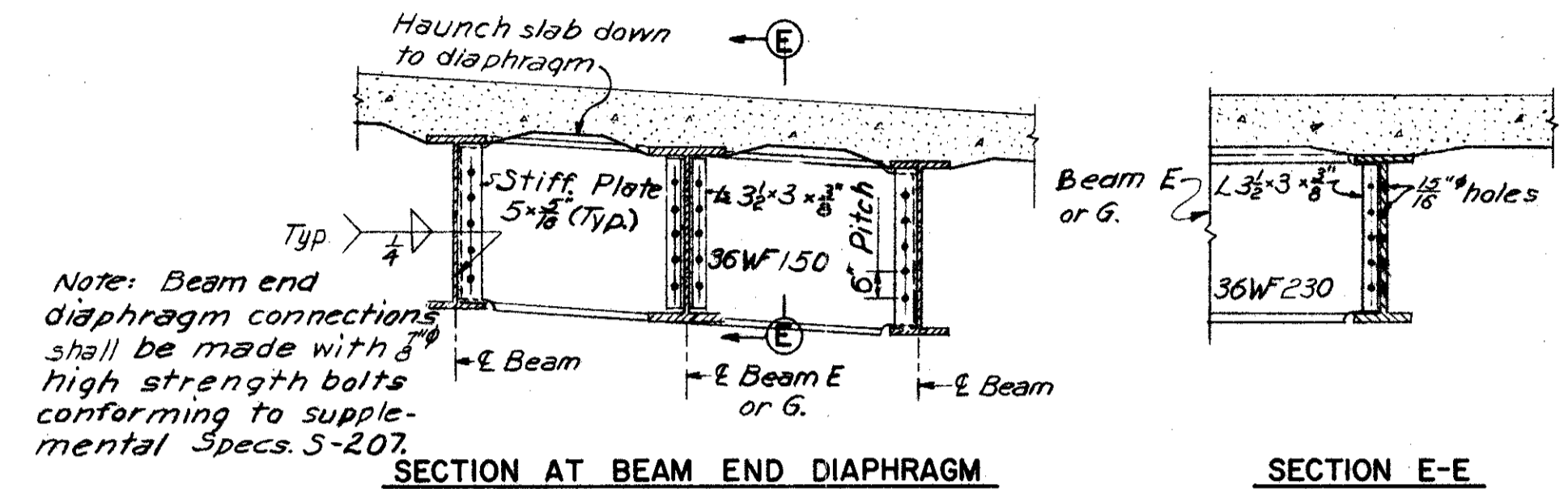


Note:  
Slab thickness shown includes 1" for monolithic wearing surface.

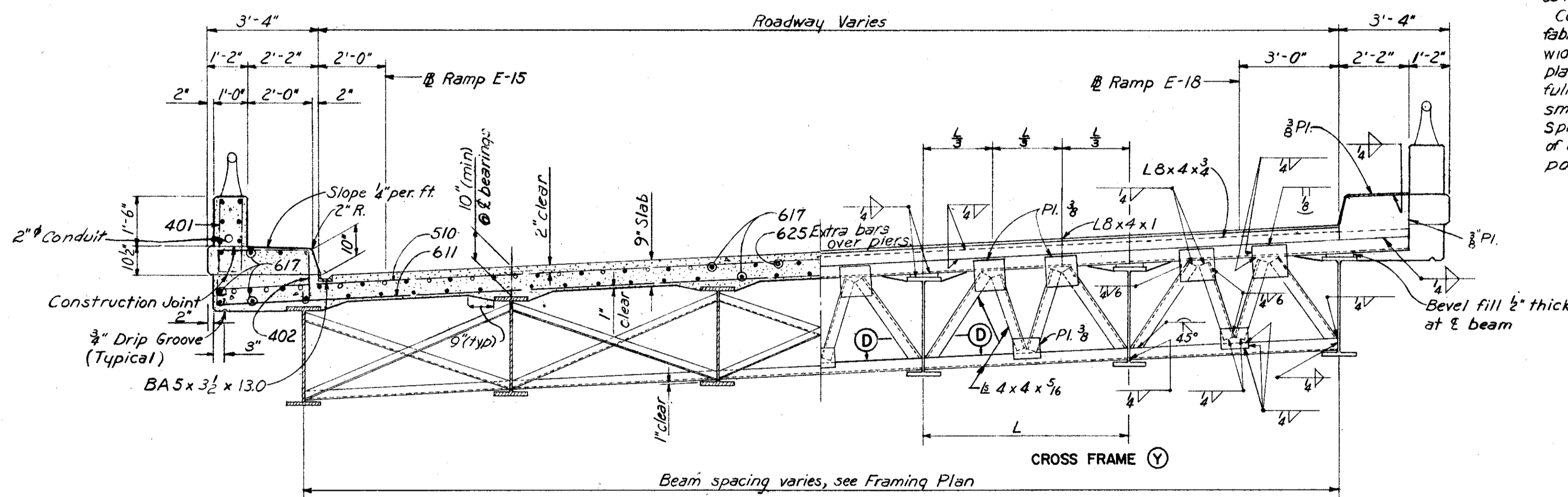
**TYPICAL SECTION AT INTERMEDIATE CROSS FRAME - SPAN I**  
Ramp E-18 shown, Ramp E-15 similar but opposite hand, and except as noted.



**SECTION A-A**



Note: Beam end diaphragm connections shall be made with high strength bolts conforming to supplemental Specs. S-207.

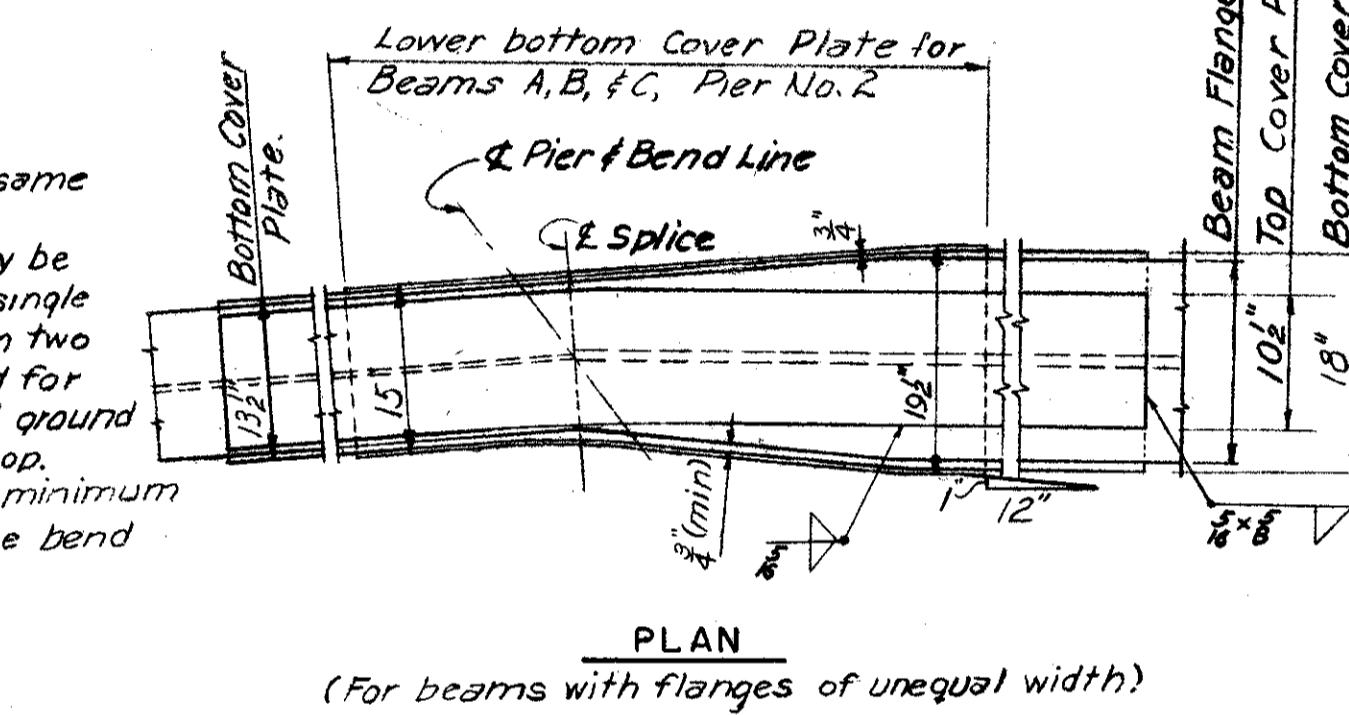


**PART SECTION AT INTERMEDIATE CROSS FRAME**  
Spans 2 & 3

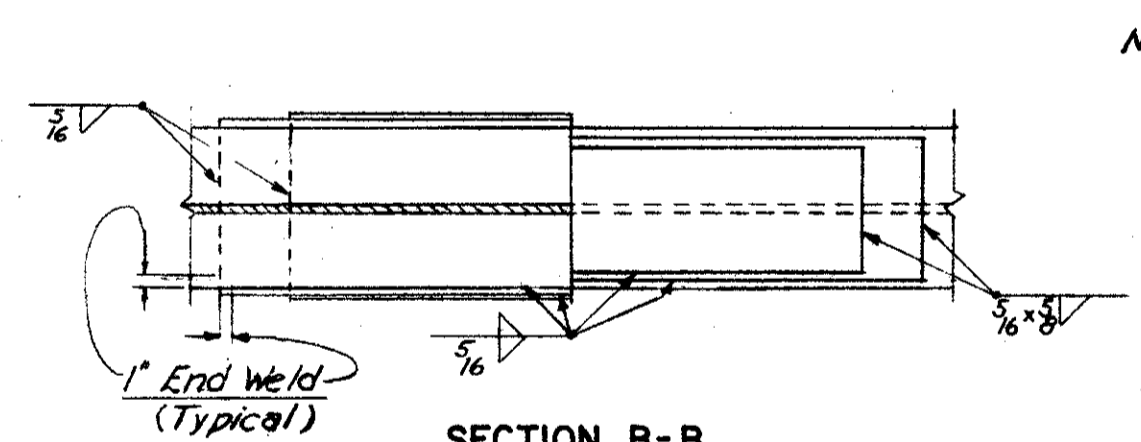
**PART SECTION AT END FINISH - EAST ABUTMENT**  
Details at Abutments E-18 & E-15 similar

**TYPICAL SECTION THROUGH ROADWAY**

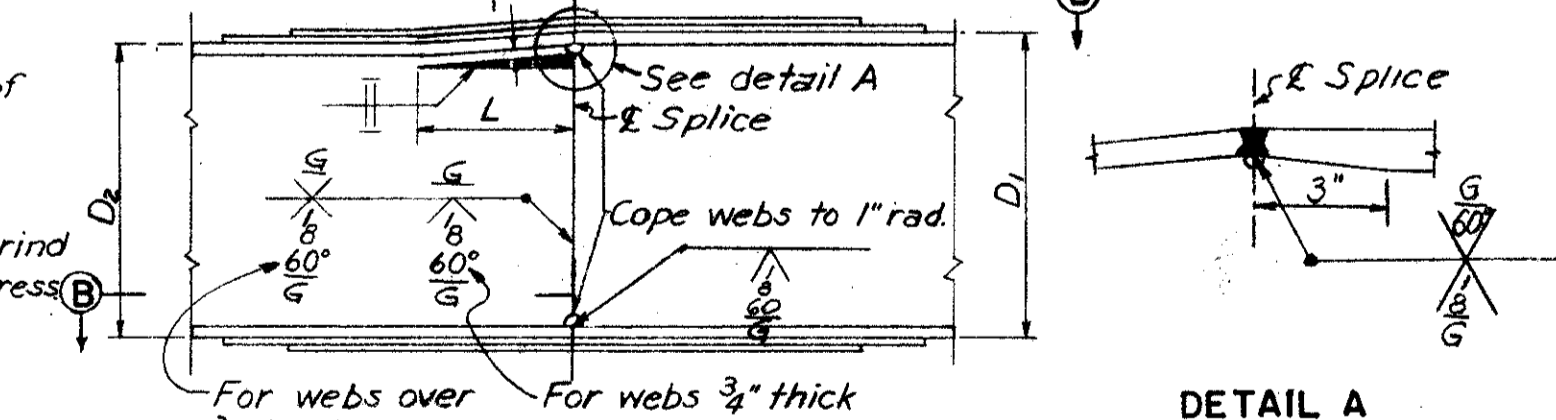
Note:  
D<sub>1</sub> and D<sub>2</sub> are depths of beams in inches.  
L is length of cut.  
L > 32(D<sub>1</sub> - D<sub>2</sub>) in inches  
"G" indicates a smooth grind in the direction of the stress



**PLAN**  
(For beams with flanges of unequal width)

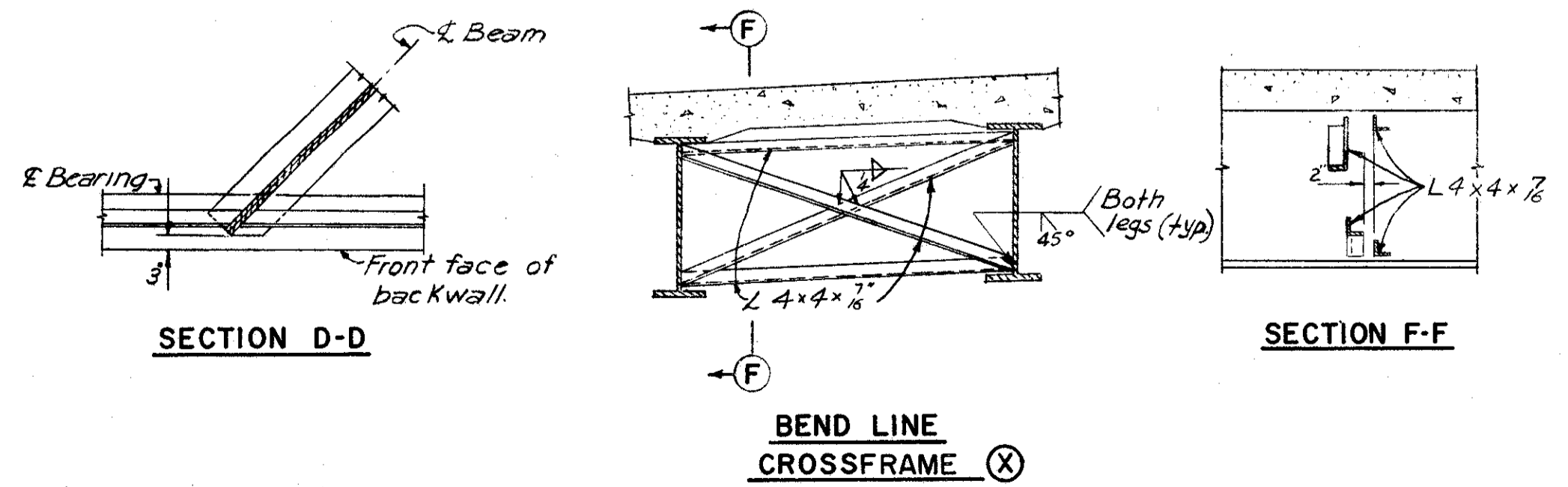


**SECTION B-B**  
(For beams with flanges of equal width)



**ELEVATION**  
**BEAM FIELD SPLICE DETAILS**  
TYPICAL

**DETAIL A**



**SECTION D-D**

**SECTION F-F**

**BEND LINE**  
**CROSSFRAME** (X)

AMOUNT OF JACKING IN INCHES		
For splice at Pier	1	2
Raise beam at	Abut. E-18 East	Abut.
Beam A	2 3/8	1 1/8
Beams B and C	2 1/8	1 1/2
Beam D	2 1/8	1 3/8
Beam E	1	-
Beam F	1 1/8	1 3/8
Beam G	-	-
Beam H	7/8	1 5/8

**BEAM SPLICE WELDING PROCEDURE**

1. Raise the abutment ends of the beams to be spliced the tabulated amount in the Jacking Table.
2. Butt-weld the beam flanges and webs at Piers 1 and 2, using the following sequence: Make two passes on each flange, then 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. Weld Type "X" Crossframe into position.
5. Lower the beam ends to final position.

H.N.T.B. BR. NO. 7 PART 6

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

**SUPERSTRUCTURE DETAILS**  
RAMPS E-15 AND E-18 OVER EAST 9TH STREET  
STA. 7+92.31 STA. 9+84.06 (E-15)  
STA. 7+99.55 STA. 10+24.01 (E-18)

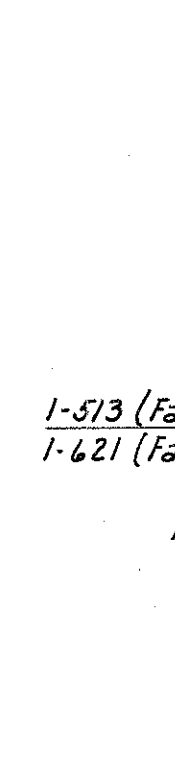
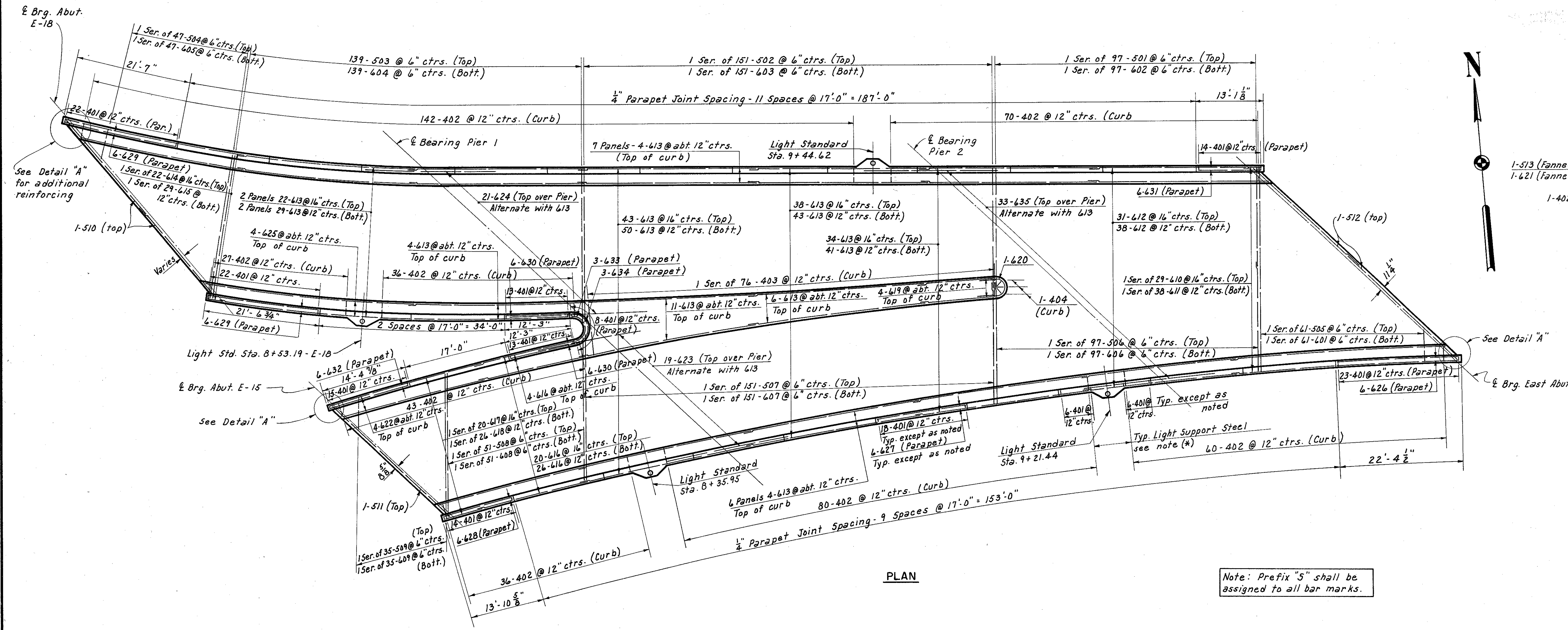
Scale: 3/8" = 1'-0"  
**WILLOW-INNER BELT FREEWAY**

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN JEH	TRACED DATE	CHECKED DLM DATE	REVIEWED JCT DATE	REVISED
5-19-58		6-6-58	11-18-58	

SHEET 141

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



DETAIL "A"  
Scale: 1/4" = 1'-0"

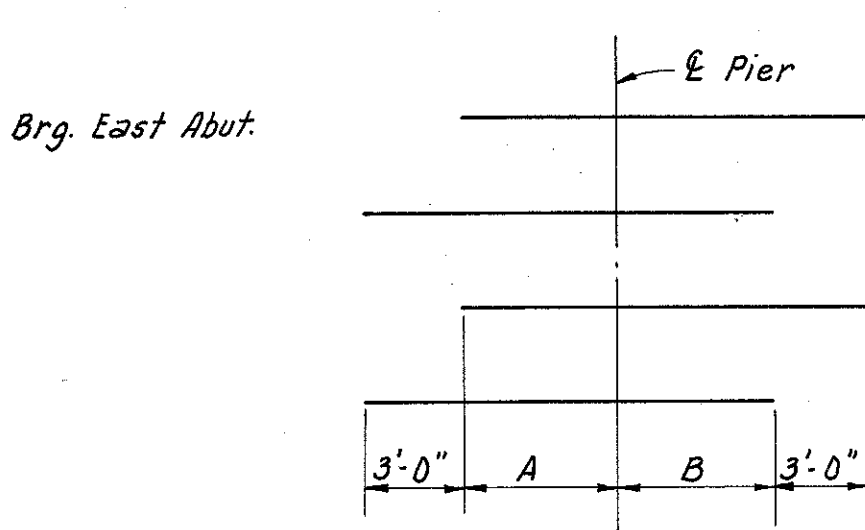


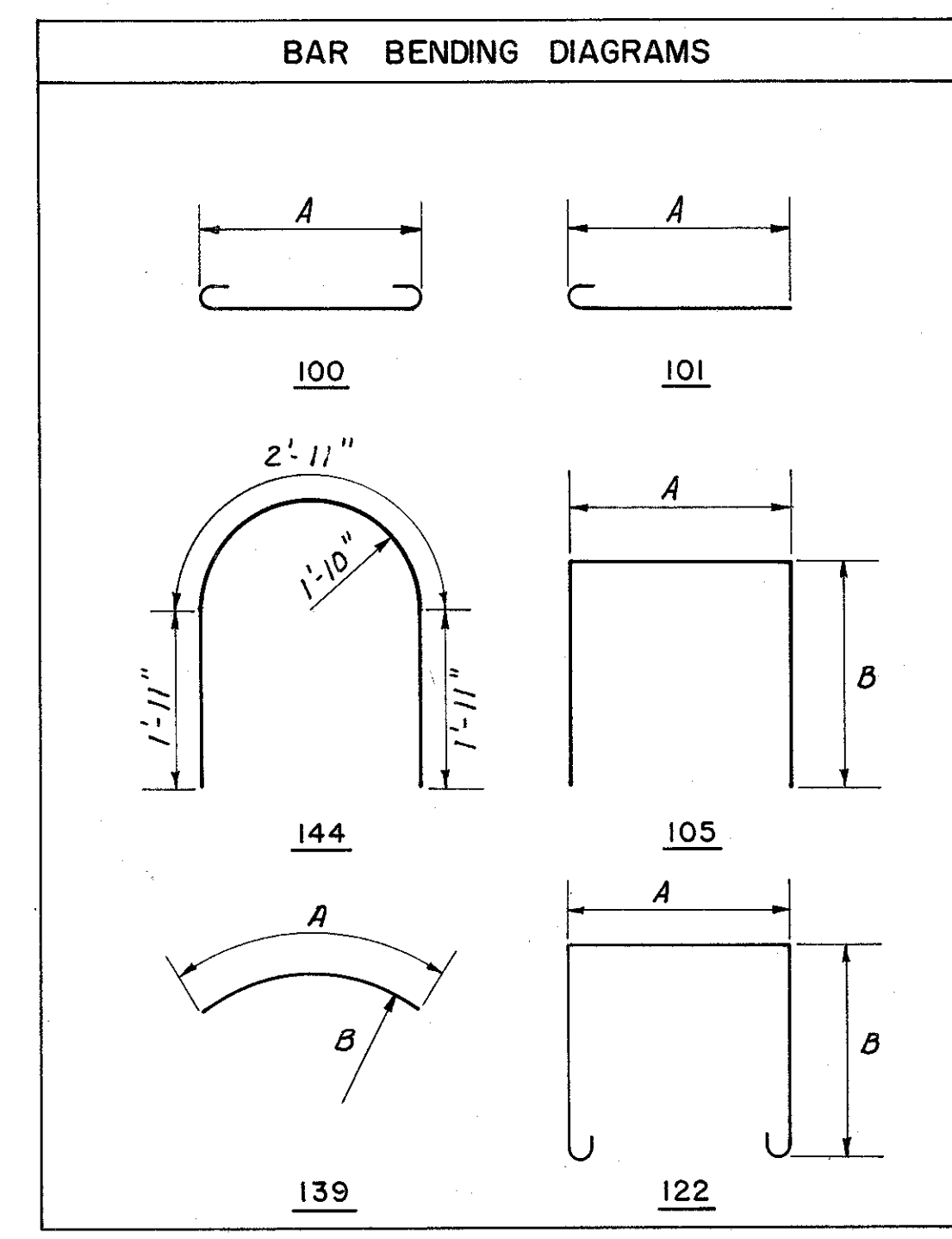
DIAGRAM SHOWING STAGGER OF  
623, 624 OR 635 BARS OVER PIERS

LOCATION	A	B
Pier 1 (E-18)	10'-6"	13'-6"
Pier 1 (E-15)	7'-6"	13'-6"
Pier 2	13'-6"	9'-0"

Note: Prefix "5" shall be assigned to all bar marks.

PLAN

REINFORCEMENT SCHEDULE																								
MARK	NO.	LENGTH	TYPE	DIMENSIONS		SERIES	WEIGHT	MARK	NO.	LENGTH	TYPE	DIMENSIONS		SERIES	WEIGHT	MARK	NO.	LENGTH	TYPE	DIMENSIONS		SERIES	WEIGHT	
				A	B							A	B							A	B			
401	534	4'-5"	105	8"	2'-0"	1575																		
402	500	6'-5"	122	2'-10"	1'-5"	2143																		
403	1 Ser. of 47-504 @ 6" ctrs. (Top)	7'-3"	122	3'-8"	1'-5"	527																		
404	3	5'-2"	122	1'-7"	1'-5"	10																		
*451	8	8'-11"	131	2'-6"	1'-2"	48	601	1 Ser. of 37'-6" to 6'-0"	Str.	6 1/2"	1993	626	6	22'-0"	Str.									
*452	8	9'-11"	131	3'-0"	1'-8"	52	602	1 Ser. of 22'-0" to 26'-3"	Str.	1 1/2"	3515	627	138	16'-6"	Str.									
*453	12	9'-5"	131	3'-2"	1'-0"	76	603	1 Ser. of 23'-3" to 29'-9"	Str.	1 1/2"	6010	628	6	13'-6"	Str.									
*454	8	6'-7"	155	3'-2"	1'-4"	36	604	1 Ser. of 27'-3"	Str.	1 1/2"	5689	629	12	21'-3"	Str.									
*455	8	7'-1"	155	3'-8"	1'-4"	36	605	1 Ser. of 27'-4" to 6'-0"	Str.	5 7/8"	1177	630	12	11'-9"	Str.									
*456	12	7'-3"	155	3'-10"	1'-4"	60	606	1 Ser. of 17'-6" to 20'-0"	Str.	5 7/8"	2732	631	6	12'-9"	Str.									
							607	1 Ser. of 24'-0" to 30'-0"	Str.	1 1/2"	6124	632	6	14'-0"	Str.									
							608	1 Ser. of 26'-9" to 27'-0"	Str.	1 1/2"	2059	633	3	6'-5"	139	6'-5"	2'-2"							
501	1 Ser. of 97	19'-4" to 23'-7"	101	18'-9" to 23'-0"		2171	609	1 Ser. of 27'-0" to 6'-0"	Str.	7 1/2"	867	634	3	8'-2"	139	8'-2"	2'-10"							
502	1 Ser. of 151	23'-7" to 31'-1"	101	23'-0" to 29'-4"		4305	610	1 Ser. of 4'-0" to 40'-0"	Str.	1 1/2 3/8"	958	635	33	25'-6"	Str.									
503	139	28'-6"	100	27'-4"		4132	611	1 Ser. of 4'-0" to 40'-0"	Str.	1 1/2 3/8"	1256													
504	1 Ser. of 27	27'-11" to 6'-7"	101	27'-4" to 6'-0"		846	612	49	29'-3"	Str.	5 1/2"	3031												
505	1 Ser. of 61	38'-1" to 6'-7"	101	37'-6" to 6'-0"		1421	613	424	33'-3"	Str.	6 1/2"	21175												
506	1 Ser. of 97	21'-1" to 23'-7"	101	20'-6" to 23'-0"		2259	614	1 Ser. of 10'-6" to 36'-0"	Str.	1-1 3/8"	768													
507	1 Ser. of 27	23'-7" to 30'-0"	101	23'-0" to 29'-5"		4220	615	1 Ser. of 10'-6" to 36'-0"	Str.	10 1/2"	1013													
508	1 Ser. of 51	27'-11" to 28'-2"	100	26'-9" to 27'-0"		1492	616	50	22'-0"	Str.	10 3/8"	1652												
509	1 Ser. of 35	27'-7" to 6'-7"	101	27'-0" to 6'-0"		624	617	1 Ser. of 10'-3" to 27'-6"	Str.	10 3/8"	567	*651	8	9'-5"	141	2'-11"	1'-10"							
510	2	23'-3"	101	22'-8"		48	618	1 Ser. of 10'-3" to 27'-6"	Str.	8"	746	*652	12	14'-6"	141	5'-3"	3'-0"							
511	1	30'-8"	100	29'-6"		32	619	4	15'-0"	Str.	90	*653	4	5'-0"	Str.									
512	2	27'-4"	101	26'-9"		57	620	1	6'-9"	144	10													
513	15	6'-7"	101	6'-0"		103	621	15	6'-0"	Str.														
																Total						91,450		



NOTES:  
For sections through deck see sheet 141-G  
For Light Standard Support and other lighting details see sheet 157-G  
For Railing and Parapet Joint details see sheet 158-G  
For End Dam details see sheet 156-G  
For Drainage details see sheet 157-G  
For Deck details not shown see sheet 143-G  
All bar dimensions are given out to out.  
For replacement schedule see sheet 97-G  
\* Bars 451 thru 454, and 451 thru 453 are for the Light Standard Support. For their placement and bending diagrams see sheet 159-G  
† Bars 622 thru 634 are to be included with 'Item 5-14, Railing', for payment.  
Bars of a series shall vary in length by a constant increment.

H.N.T.B. BR. NO. 7 PART 6

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

DECK PLAN  
RAMPS E-15 AND E-18 OVER EAST 9th STREET  
STA. 7+92.31 STA. 9+84.06 (E-15)  
STA. 7+99.55 STA. 10+24.01 (E-18)  
Scale: 1" = 10'

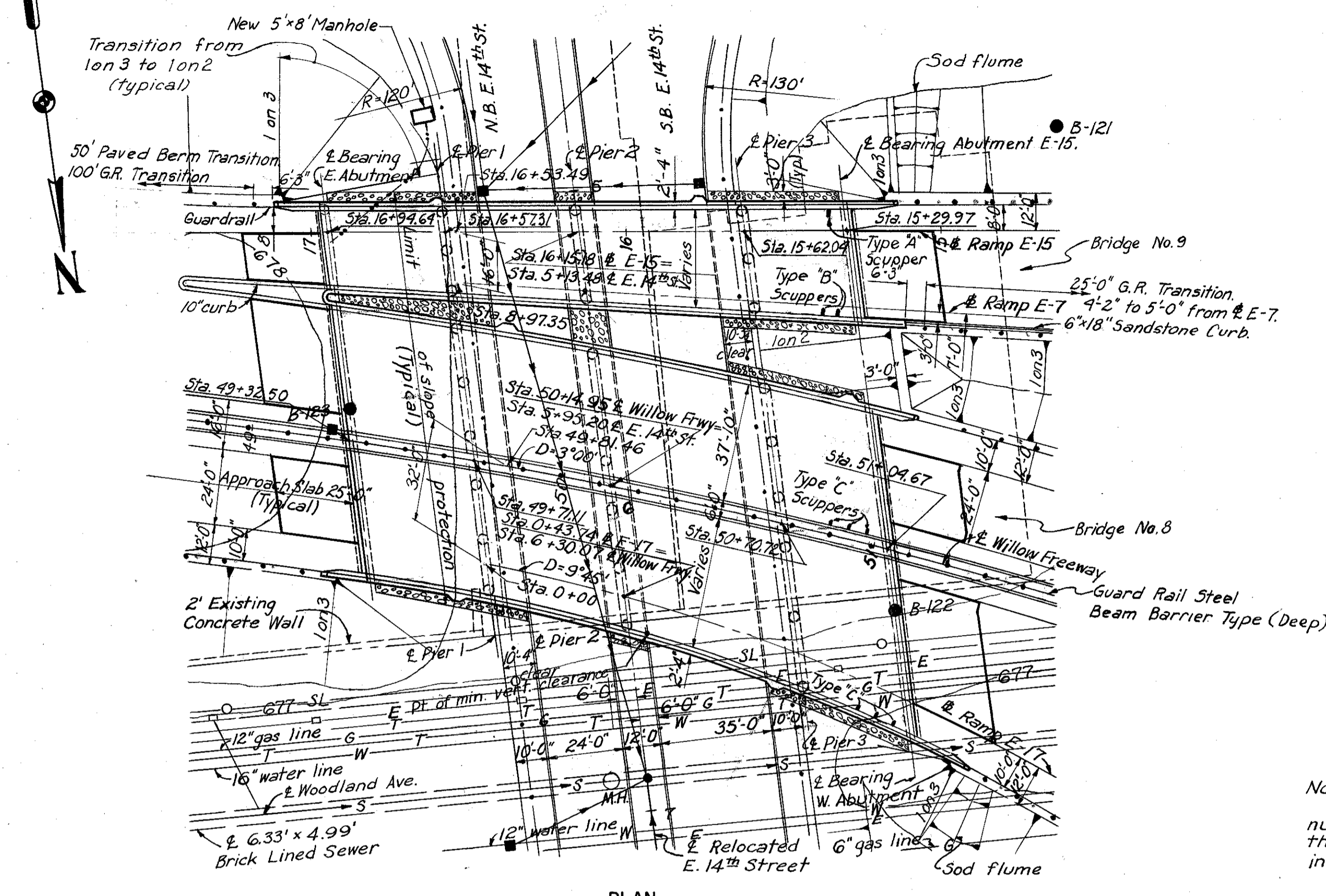
WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN BY R.L.R. TRACED BY J.E.K. CHECKED BY J.S.G. REVIEWED BY J.C.T.  
DATE 5-13-58 DATE 4-29-59 DATE 5-17-59 DATE 7-12-59

SHEET 142



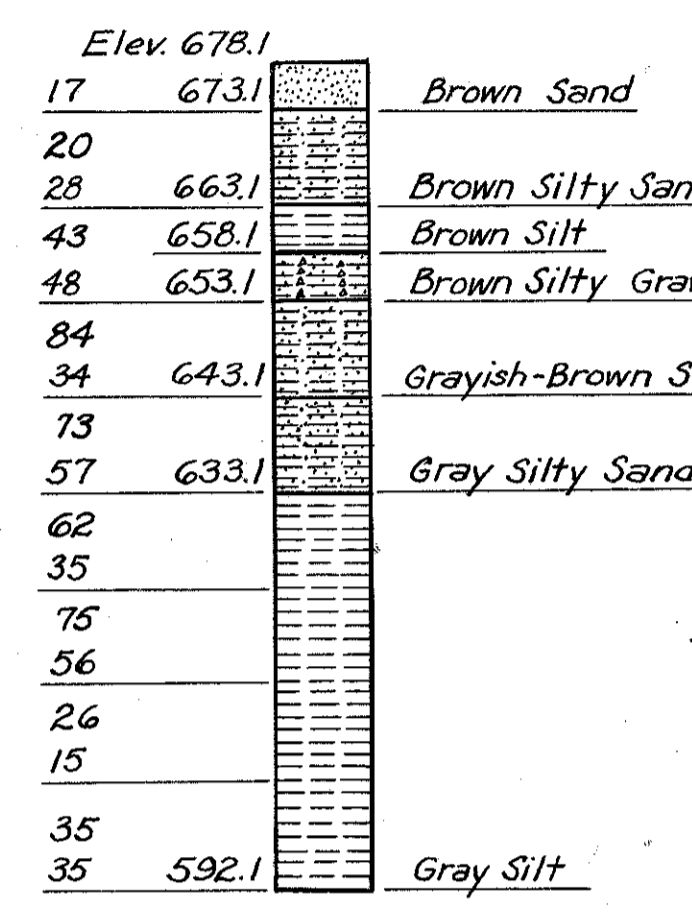
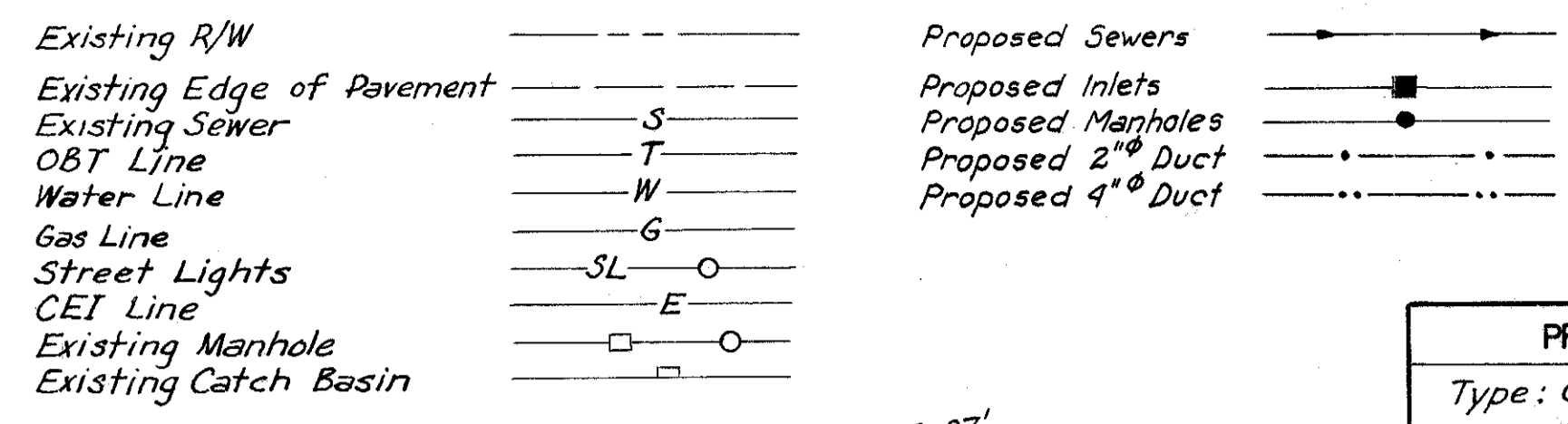
MICROFILMED JUL 9 1965



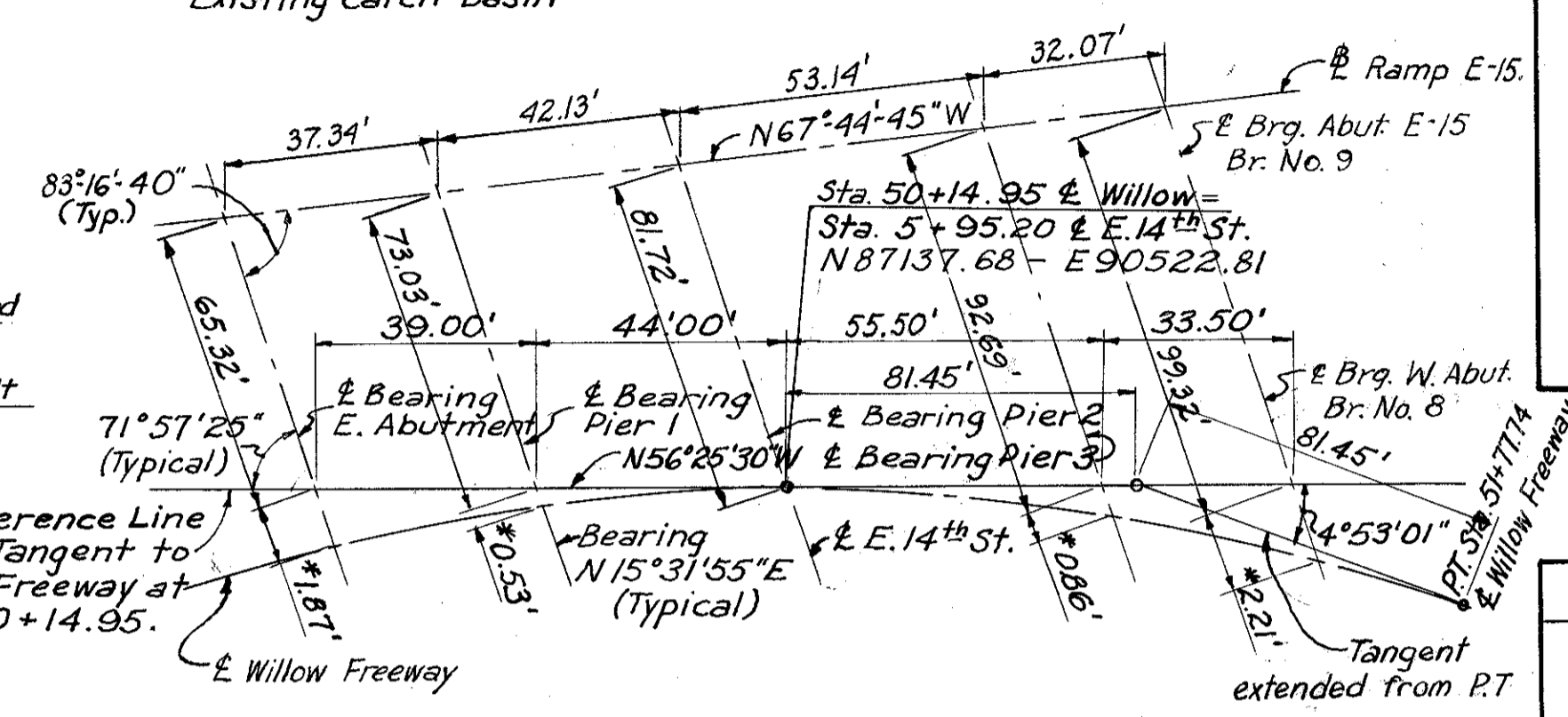
**CURVE DATA**

<b>Willow Freeway</b>	<b>Ramp E-17</b>
$\Delta = 23^{\circ}06'48''$	$\Delta = 60^{\circ}33'40''$
$D = 3^{\circ}00'00''$	$D = 9^{\circ}45'00''$
$R = 1909.86'$	$R = 587.65'$
$T = 390.54'$	$T = 343.13'$
$L = 770.50'$	$L = 621.14'$

**LEGEND**



**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.



**LAYOUT DIAGRAM BRIDGES NO. 8 & 9**

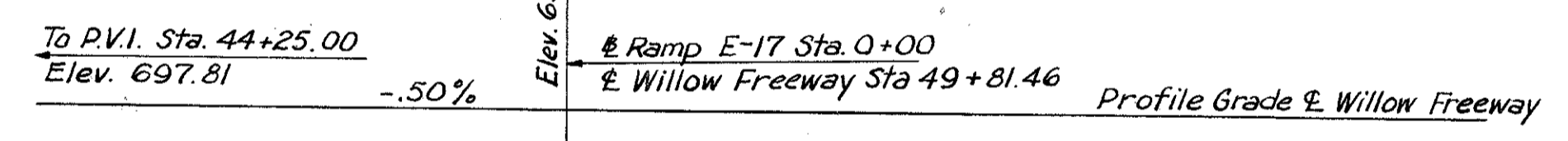
No Scale  
\*Offsets measured from reference line to Willow Freeway along bearings.

**PROPOSED STRUCTURE BR. NO. 8**

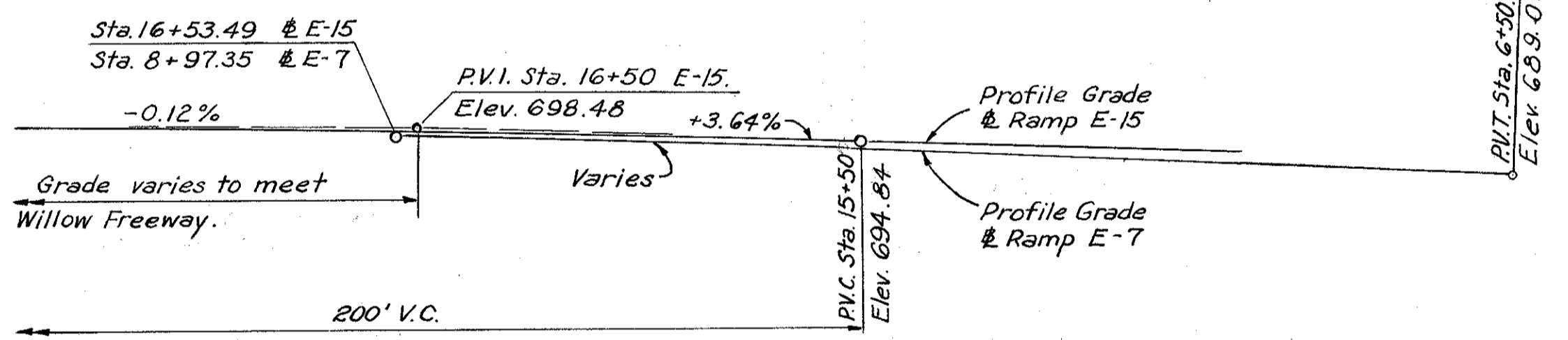
Type: Continuous steel beam with reinforced concrete deck and substructure.  
Spans: 38'-7 $\frac{1}{2}$ ", 43'-0", 55'-9 $\frac{1}{2}$ ", 33'-11 $\frac{1}{2}$ " along Willow Freeway  
Roadway: 84'-0" (nominal) face to face parapets  
Loading: CF-2000-Adequate for A.A.H.S.O. alternate loading.  
Skew: 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**

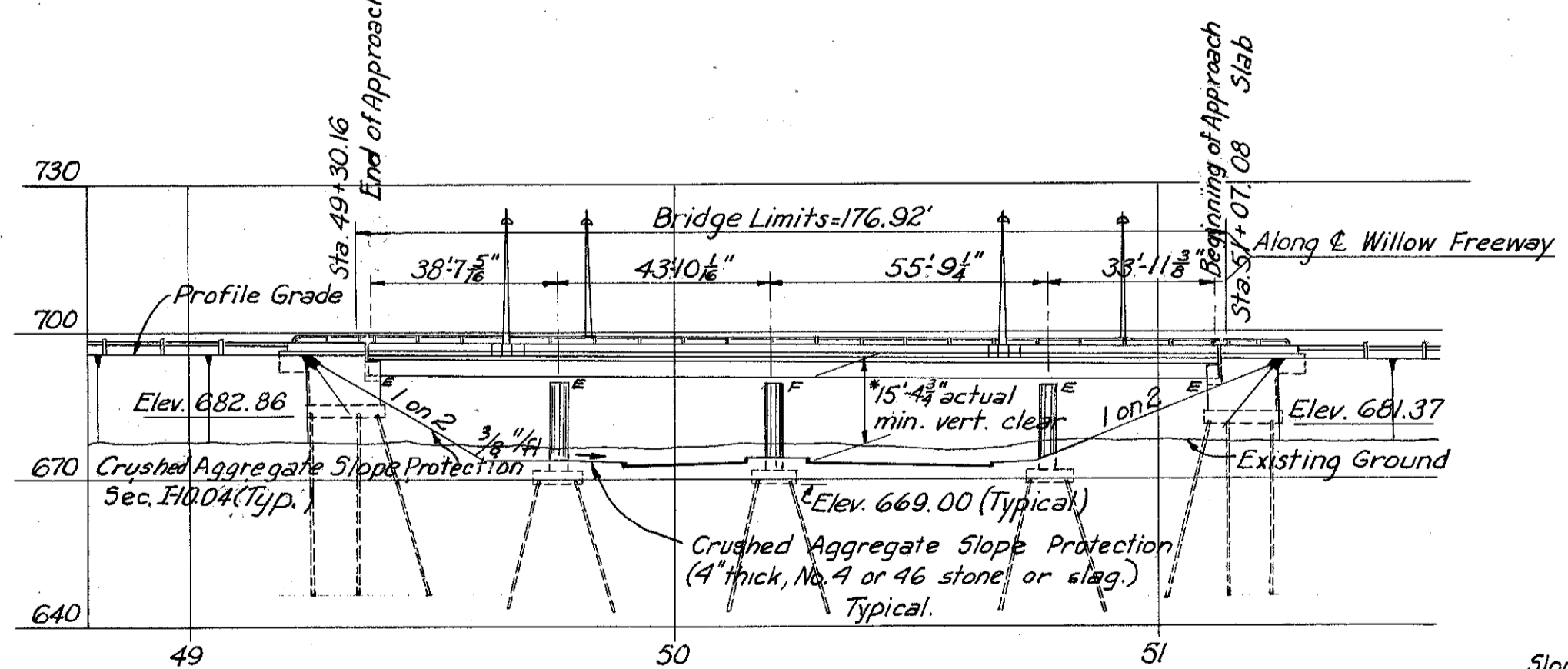
Type: Continuous steel beam with reinforced concrete deck and substructure.  
Spans: 37'-4 $\frac{1}{2}$ ", 42'-1 $\frac{1}{2}$ ", 53'-1 $\frac{1}{2}$ ", 32'-0 $\frac{1}{2}$ " along E-15.  
Roadway: Varies  
Loading: CF-2000-Adequate for A.A.H.S.O. alternate loading.  
Skew: 6°43'20"  
Surface Course: 1" Monolithic Concrete  
Alignment: Tangent  
Approach Slabs: AS-1-54 (25' Long)  
Superelevation: Varies.



**PROFILE BRIDGE NO. 8**



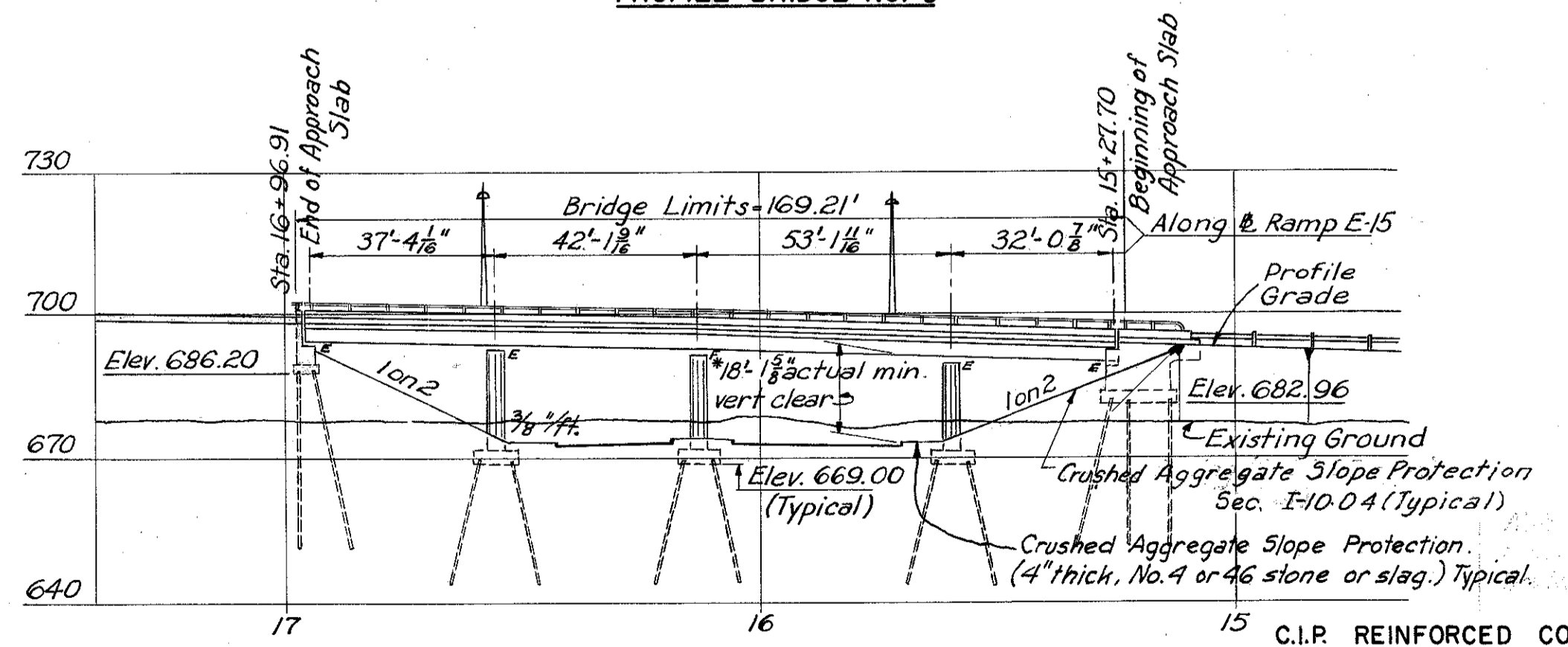
**PROFILE BRIDGE NO. 9**



**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.



**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.

**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).  
Removal of existing pavements, etc.  
Relocation or removal of existing utilities.  
Approach grading, pavements, and slabs.  
Roadway Guard Rail, Sod Flumes.  
For details of slope protection see Sh. 157-G.

This includes only Piers 1, 2, & 3 for Brs. No. 8 and No. 9. Abutments, and superstructure for these bridges are in Part 149.

**H.N.T.B. BR. NO. 8 AND 9 PART 6**

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-21-1573A #B Scale: 1" = 30'

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

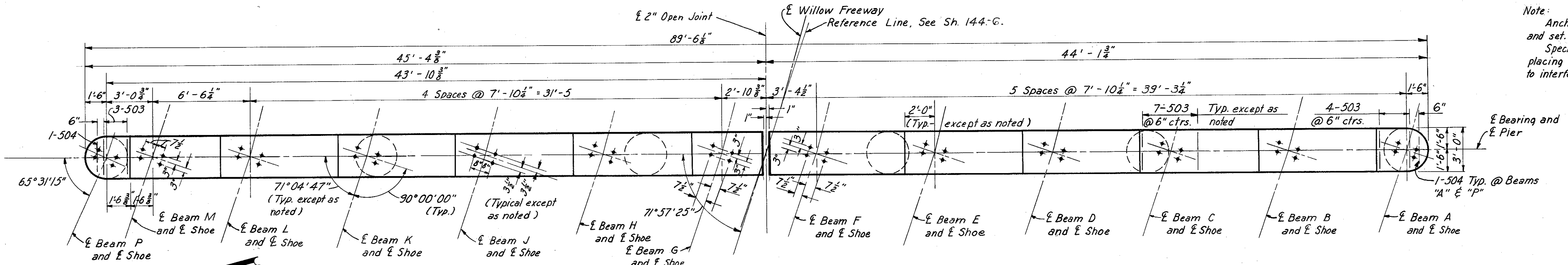
DRAWN: JLS CHECKED: DLV DATE: 6-26-58  
TRACED: DLV CHECKED: BRK DATE: 7-29-58  
REVISED: JCT DATE: 11-12-59 SHEET: 144



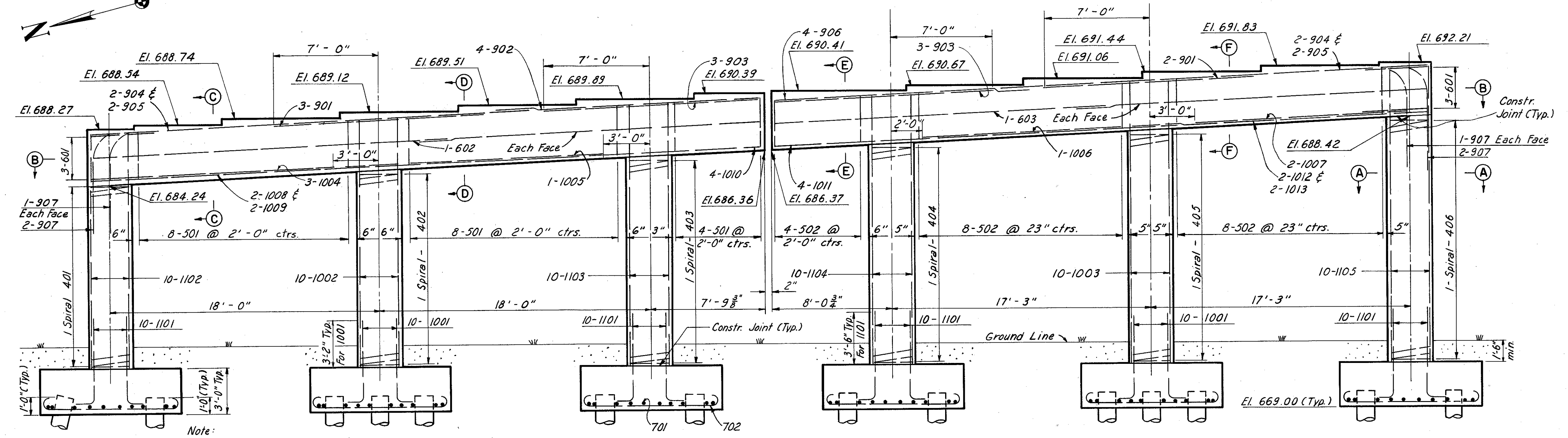
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29

MICROFILMED  
JUL 9 1985

Note:  
Anchor bolts to be furnished and set under ~~contract~~ ~~contract~~. Special care to be taken when placing reinforcing steel so as not to interfere with anchor bolt setting.

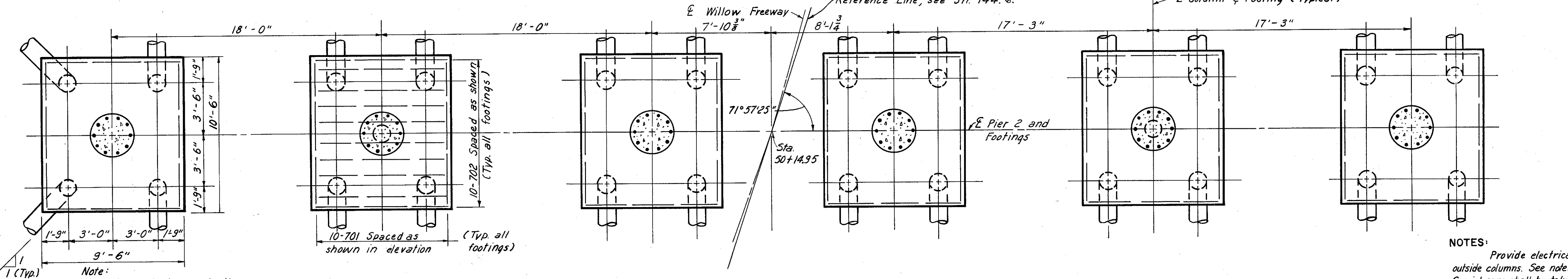


PLAN

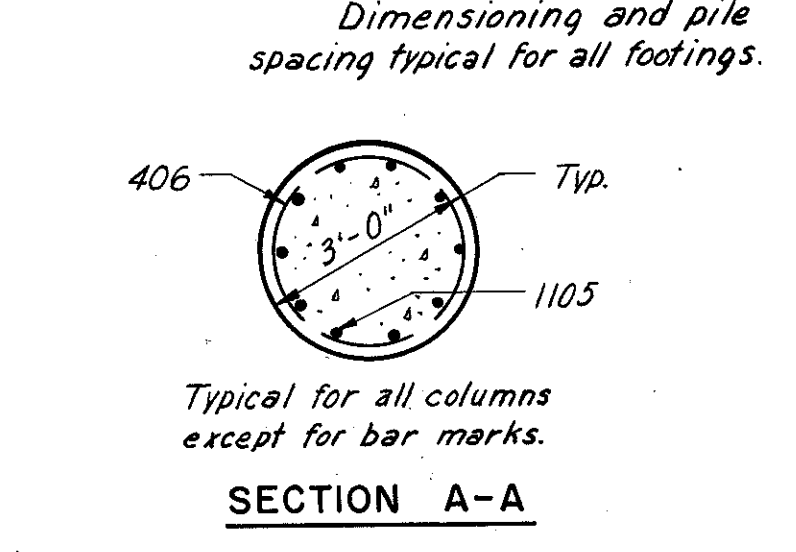


ELEVATION

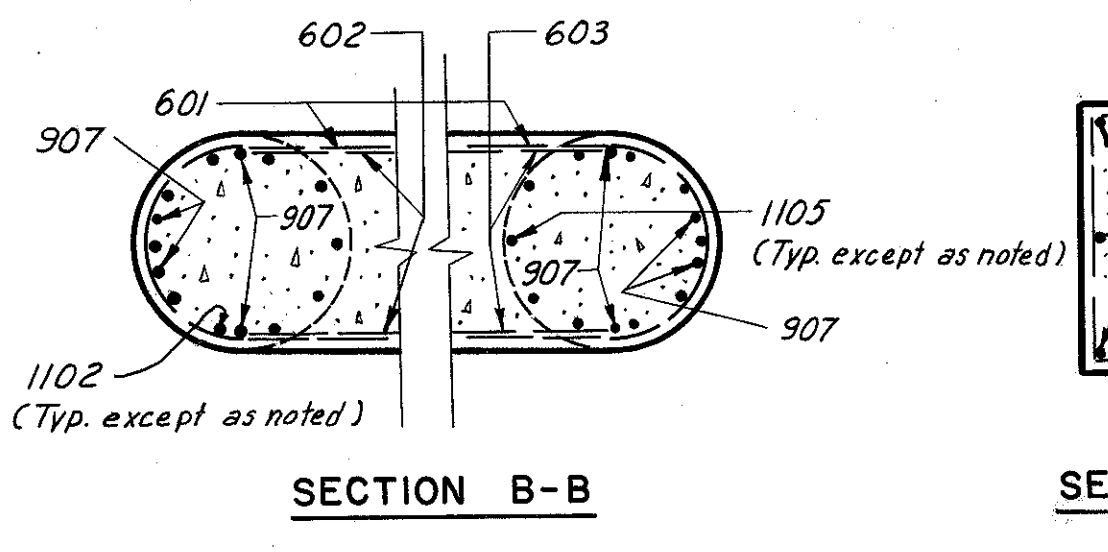
Note: All dowels to match vertical reinforcing in columns.



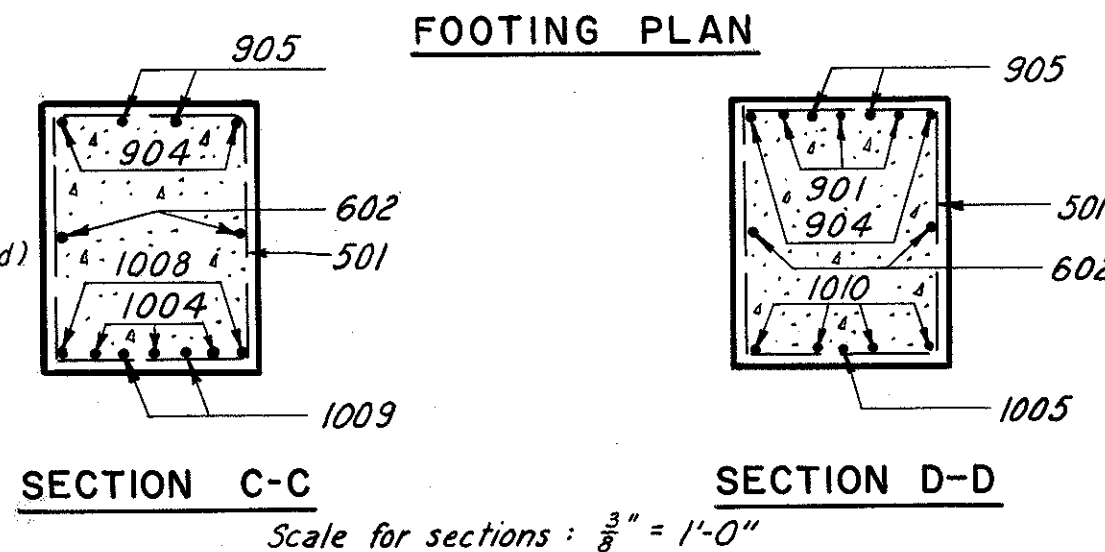
FOOTING PLAN



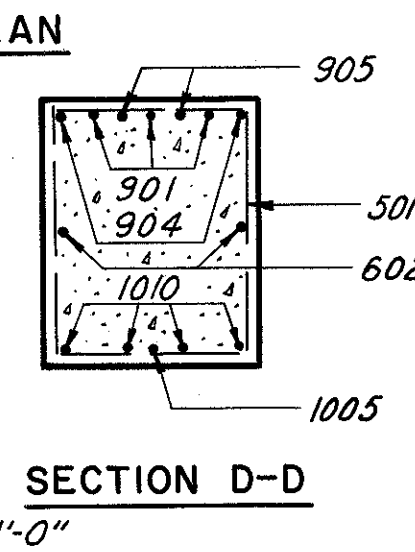
SECTION A-A



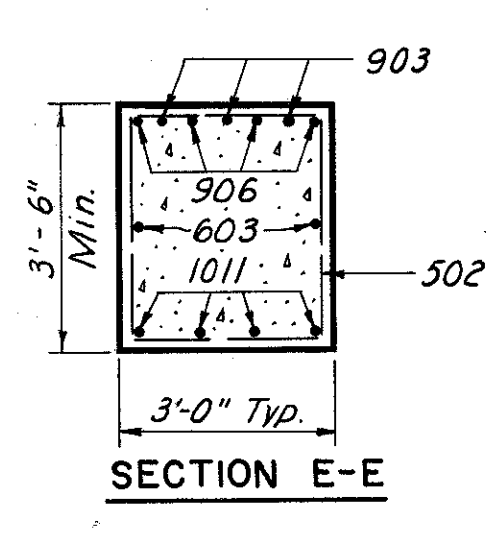
SECTION B-B



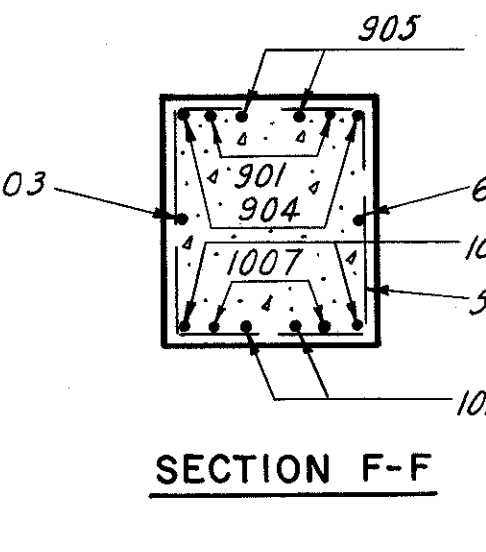
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

Scale for sections: 3/8" = 1'-0"

REINFORCEMENT SCHEDULE						
MARK	NO.	LENGTH	TYPE	DIMENSIONS		WEIGHT (POUNDS)
				A	B	
501	20	12'-8"	109	2'-8"	3'-5"	264
502	20	12'-2"	109	2'-8"	3'-2"	254
503	84	3'-9"	105	2'-8"	0'-8"	329
504	2	3'-7"	105	2'-6"	0'-8"	7
601	6	8'-0"	144	1'-11"	4'-2"	72
602	4	22'-9"	Str.			137
603	4	22'-3"	Str.			134
701	60	10'-10"	100	9'-2"		1328
702	60	11'-10"	100	10'-2"		1451
901	5	14'-0"	Str.			238
902	4	19'-3"	Str.			262
903	6	15'-0"	Str.			306
904	4	27'-6"	Str.			374
905	4	28'-9"	Str.			391
906	4	18'-0"	Str.			245
907	8	12'-6"	123	4'-10"		340
1001	20	6'-11"	104	5'-10"	1'-5"	596
1002	10	16'-9"	Str.			721
1003	10	18'-9"	Str.			807
1004	3	15'-0"	Str.			194
1005	1	13'-0"	Str.			56
1006	1	13'-3"	Str.			57
1007	2	14'-3"	Str.			123
1008	2	19'-9"	Str.			170
1009	2	21'-0"	Str.			181
1010	4	27'-3"	Str.			469
1011	4	26'-9"	Str.			460
1012	2	19'-0"	Str.			164
1013	2	20'-3"	Str.			174
1101	40	7'-4"	104	6'-2"	1'-6"	1558
1102	10	16'-0"	Str.			850
1103	10	17'-6"	Str.			930
1104	10	18'-0"	Str.			956
1105	10	19'-9"	Str.			1049
TOTAL						15647

Note: Prefix "PB" shall be assigned to all bar marks.

SPIRAL REINFORCEMENT SCHEDULE						
MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (POUNDS)
401	1	2'-8"	12'-2"	4 1/2"	35	226
402	1	2'-8"	13'-0"	4 1/2"	38	245
403	1	2'-8"	13'-11"	4 1/2"	40	259
404	1	2'-8"	14'-8"	4 1/2"	42	272
405	1	2'-8"	15'-6"	4 1/2"	44	285
406	1	2'-8"	16'-4"	4 1/2"	47	303
TOTAL						1590

NOTES:  
Provide electrical ground wire in outside columns. See notes on sheet 91A-G. Special care shall be taken in placing of electrical ground wire so as not to interfere with shoe base plate.  
All piles shall be 14" 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 masonry plate details see Ohio Standards, Drawing RB-1-55.  
All bar dimensions are given out to out. For Replacement Schedule see Sheet 97-G. Reinforcement bars shall be 3 inches clear from face of concrete at bottom of footings and 2 inches elsewhere.  
For spiral reinforcing notes, see Sh. 148-G. For bar bending diagrams, see Sh. 134-G.

H.N.T.B. BR. NO. 8 PART 6  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK

**PIER 2**  
WILLOW FREEWAY OVER EAST 14th ST.  
BR. NO. CUY - 21-15734 STA. 49+30.16  
Scale: 1/4" = 1'-0" Except STA. 51+07.08 as noted

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN C.L.M.	CHECKED C.A.B.	REVIEWED J.C.T.	REVISED
DATE 8-27-59	DATE 4-21-59	DATE 6-28-58	DATE 11-12-59

SHEET 146





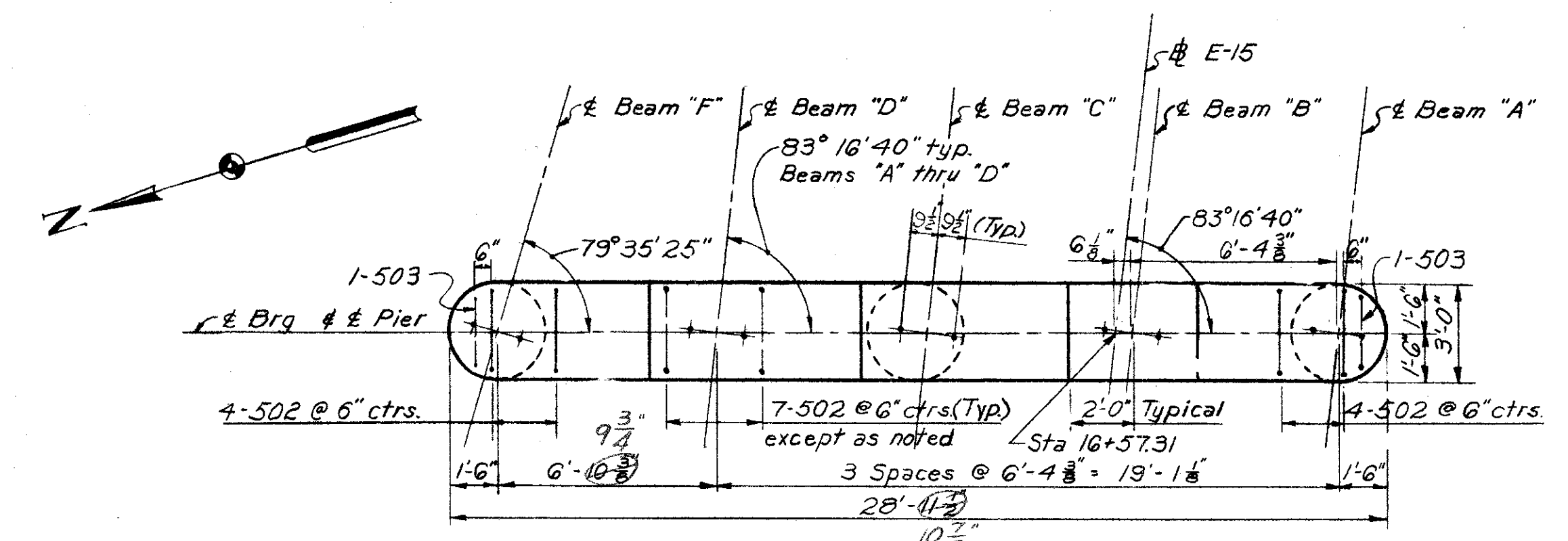
MICROFILMED  
JUL 9 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

148  
175

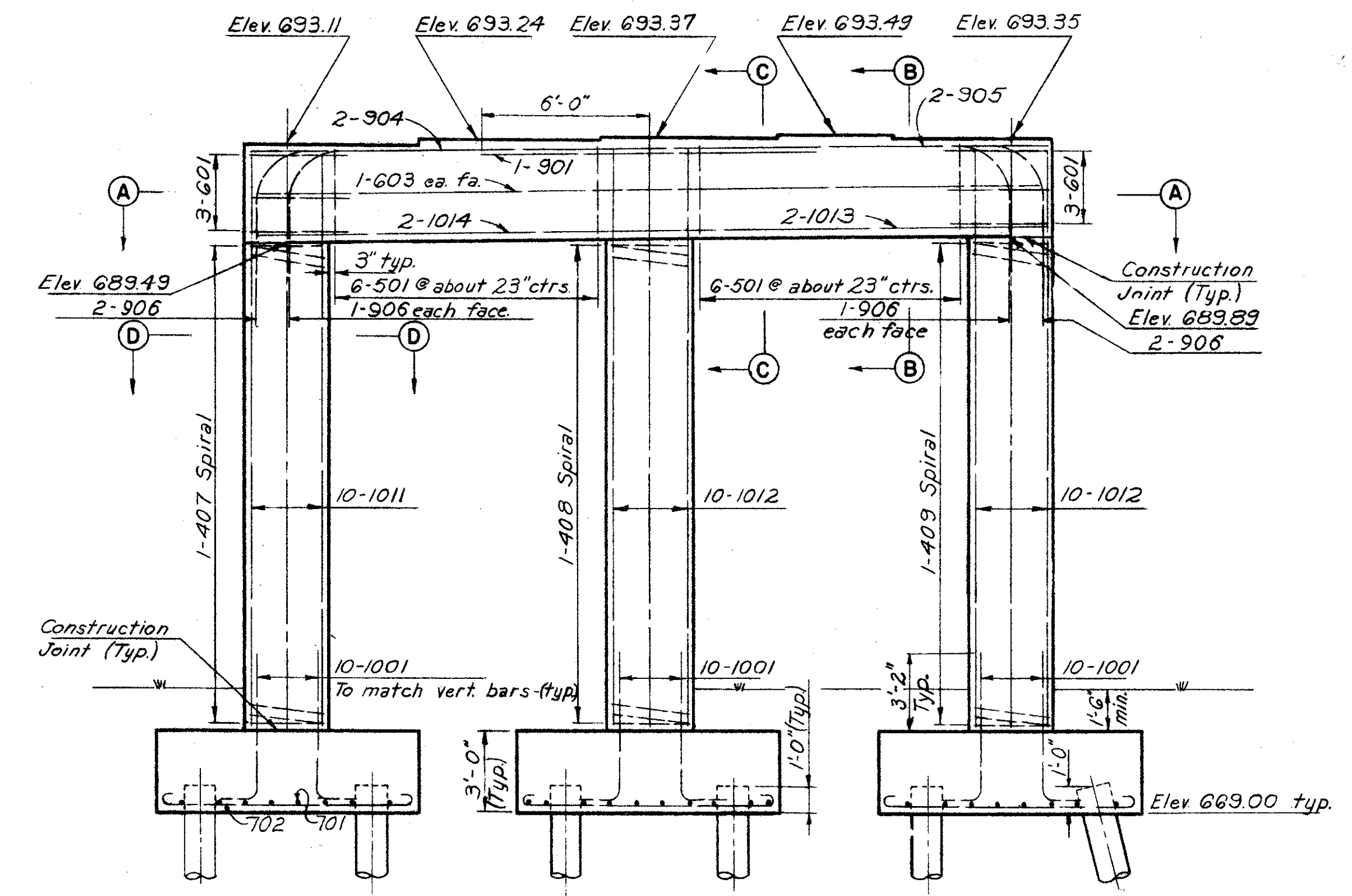
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

Note: Prefix "PD" shall be assigned to all bar marks.

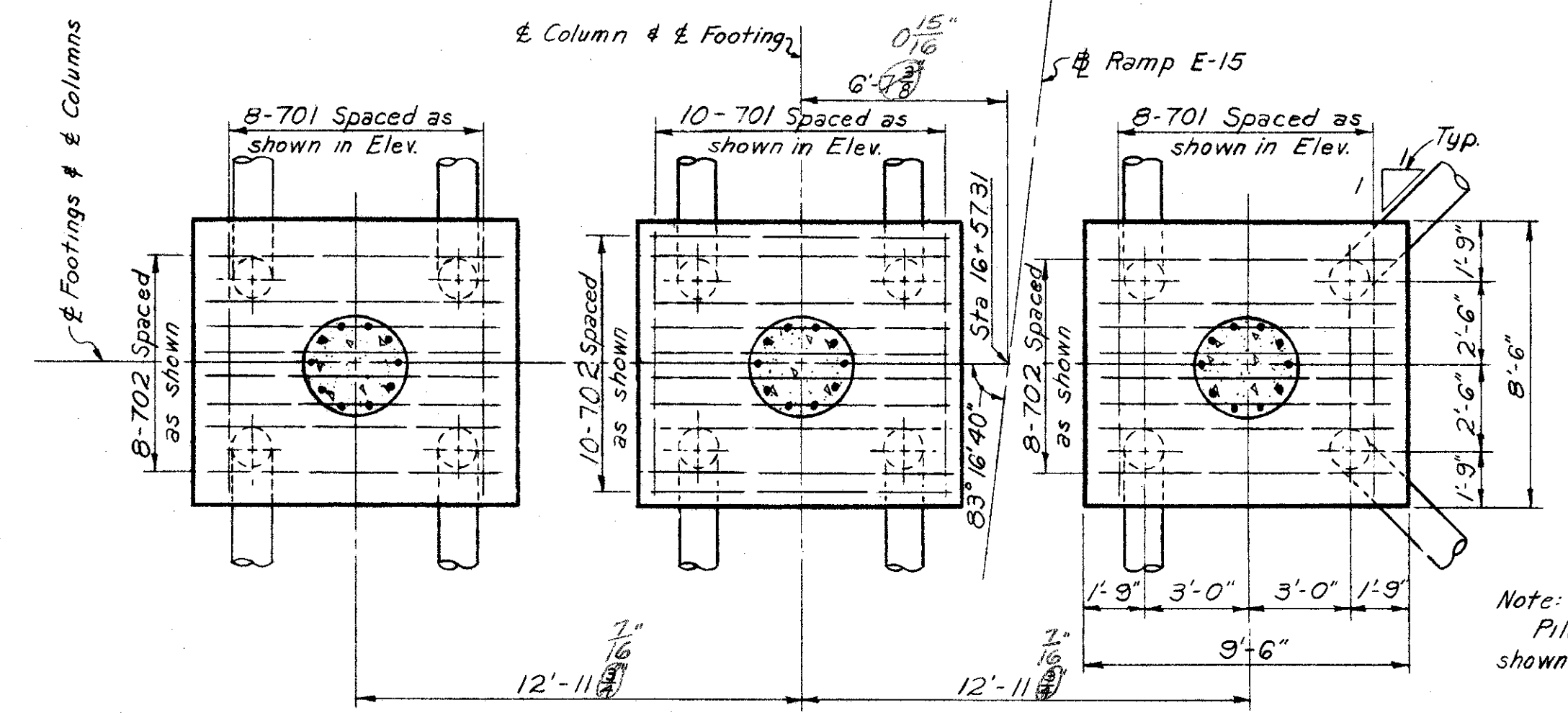


PLAN

Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting. Anchor bars to be furnished and set under future contact.

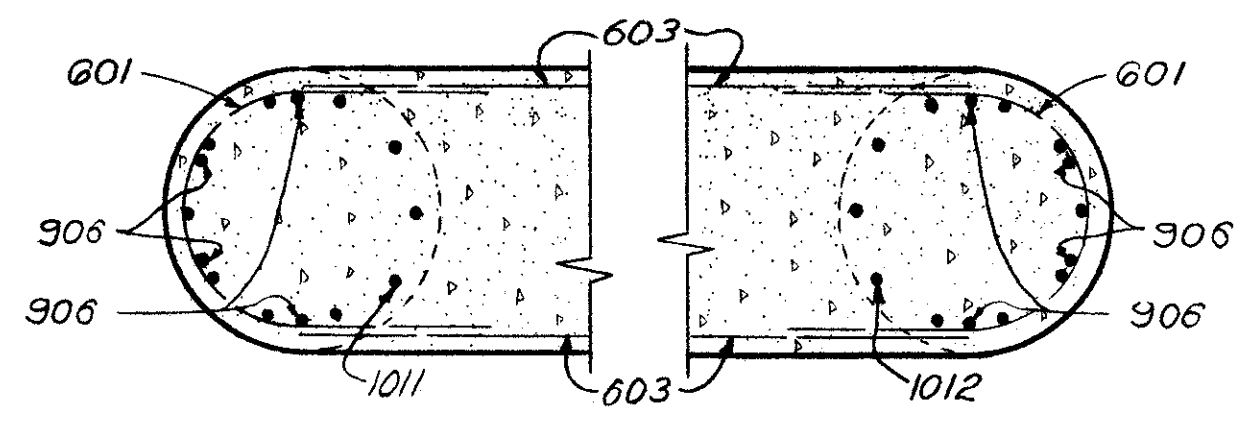


ELEVATION

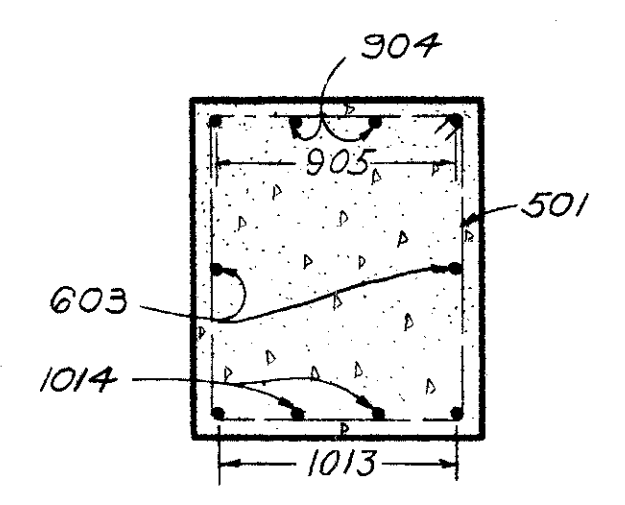


FOOTING PLAN  
PIER 1

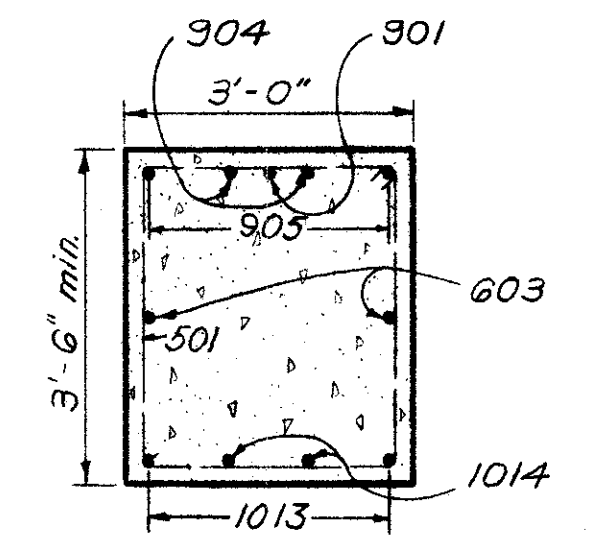
Note: Pile spacing and dimensioning shown is typical for all footings



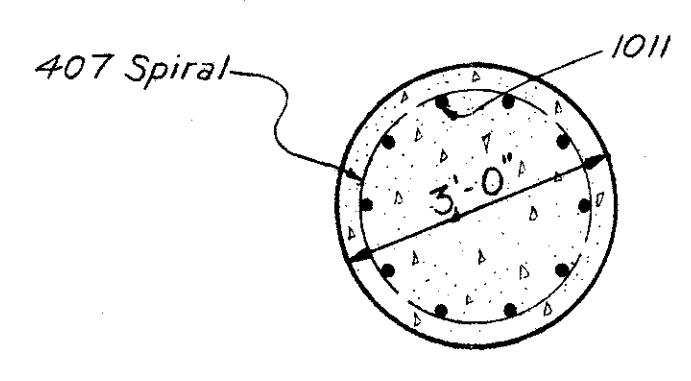
SECTION AA



SECTION BB



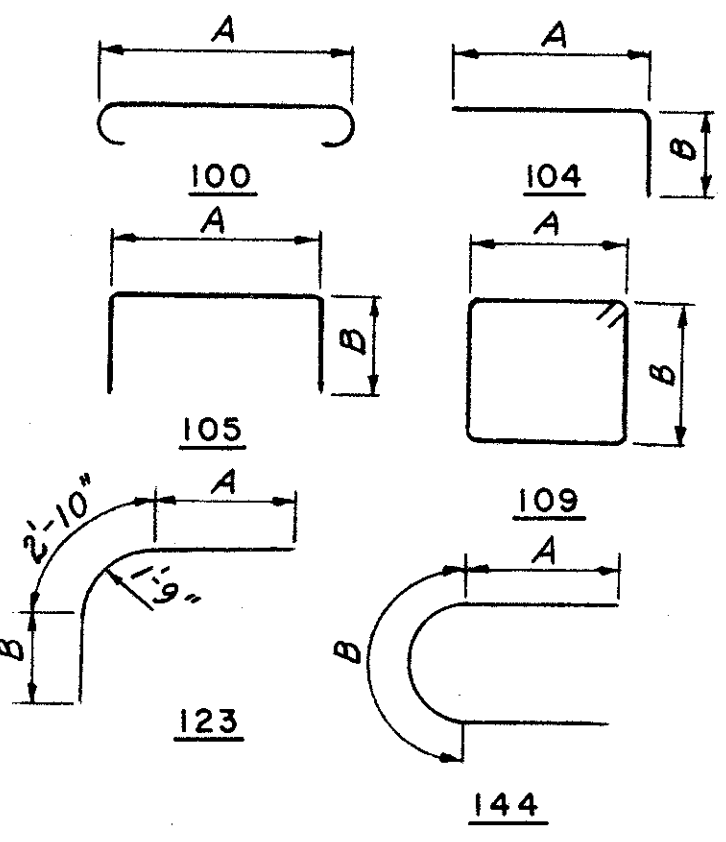
SECTION CC



SECTION DD

Typ for all columns except for bar marks  
Scale for sections: 1/2"=1'-0"

NOTE: Sections shown for Pier 1. Sections for Piers 2 and 3 are similar except for bar marks.



BAR BENDING DIAGRAMS

NOTES:  
Reinforcement bars shall be 3" clear from face of concrete at bottom of footings and 2" elsewhere. Pile spacings are given along bottom of footings. All piles shall be 14" C.I.P. reinforced concrete. All battered piles to be battered 3 in 12 in direction shown. All bar dimensions are given out to out. For masonry plate details, see sh 156-G. For replacement steel schedule, see sh. 37-G.

NOTES FOR 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 in the reinforcement schedule for the spiral bars is the "Length" divided by the pitch, plus 3 turns (total number of closed coils), expressed as the nearest whole number. 1/2 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. Spiral reinforcing bars shall not have deformations but shall in other respects conform to Item S-4.

MARK	NO.	LENGTH	TYPE	DIMENSIONS				SERIES INCR- MENT	WEIGHT (POUNDS)
				A	B	C	D		
501	42	12'-1"	109	2'-8"	3'-2"				530
502	101	3'-9"	105	2'-8"	0'-8"				396
503	6	3'-7"	105	2'-6"	0'-8"				22
601	18	6'-9"	144	1'-4"	4'-1"				183
602	4	15'-6"	Str.						33
603	2	14'-0"	Str.						42
604	4	17'-0"	Str.						102
701	52	9'-10"	100	8'-2"					1045
702	108	10'-10"	100	9'-2"					2391
901	2	12'-0"	Str.						82
902	2	31'-3"	Str.						213
903	2	28'-9"	Str.						195
904	2	28'-6"	Str.						194
905	2	26'-0"	Str.						177
906	16	11'-8"	123	4'-5"	4'-5"				635
1001	90	6'-11"	104	5'-9"	1'-5"				2680
1002	10	18'-0"	Str.						775
1003	10	18'-3"	Str.						785
1004	10	18'-6"	Str.						796
1005	2	34'-6"	Str.						298
1006	2	32'-0"	Str.						275
1007	10	19'-9"	Str.						850
1008	10	20'-0"	Str.						801
1009	10	20'-3"	Str.						871
1010	8	17'-2"	Str.						591
1011	10	20'-9"	Str.						893
1012	20	21'-0"	Str.						1807
1013	2	26'-0"	Str.						224
1014	2	28'-4"	Str.						244
1015	8	12'-4"	123	4'-9"	4'-9"				425
1101	8	17'-9"	Str.						754
									Total 19,429

MARK	NO.	CORE DIA. % SPIRAL	LENGTH	PITCH	NO. OF TURNS	WEIGHT (POUNDS)
401	1	2'-8"	15'-0"	4 1/2"	43	237
402	1	2'-8"	15'-2"	4 1/2"	43	237
403	1	2'-8"	15'-5"	4 1/2"	44	243
404	1	2'-8"	16'-7"	4 1/2"	47	259
405	1	2'-8"	16'-9"	4 1/2"	48	265
406	1	2'-8"	16'-11"	4 1/2"	48	265
407	1	2'-8"	17'-6"	4 1/2"	50	276
408	1	2'-8"	17'-8"	4 1/2"	50	276
409	1	2'-8"	17'-10"	4 1/2"	51	282
					Total	2,340

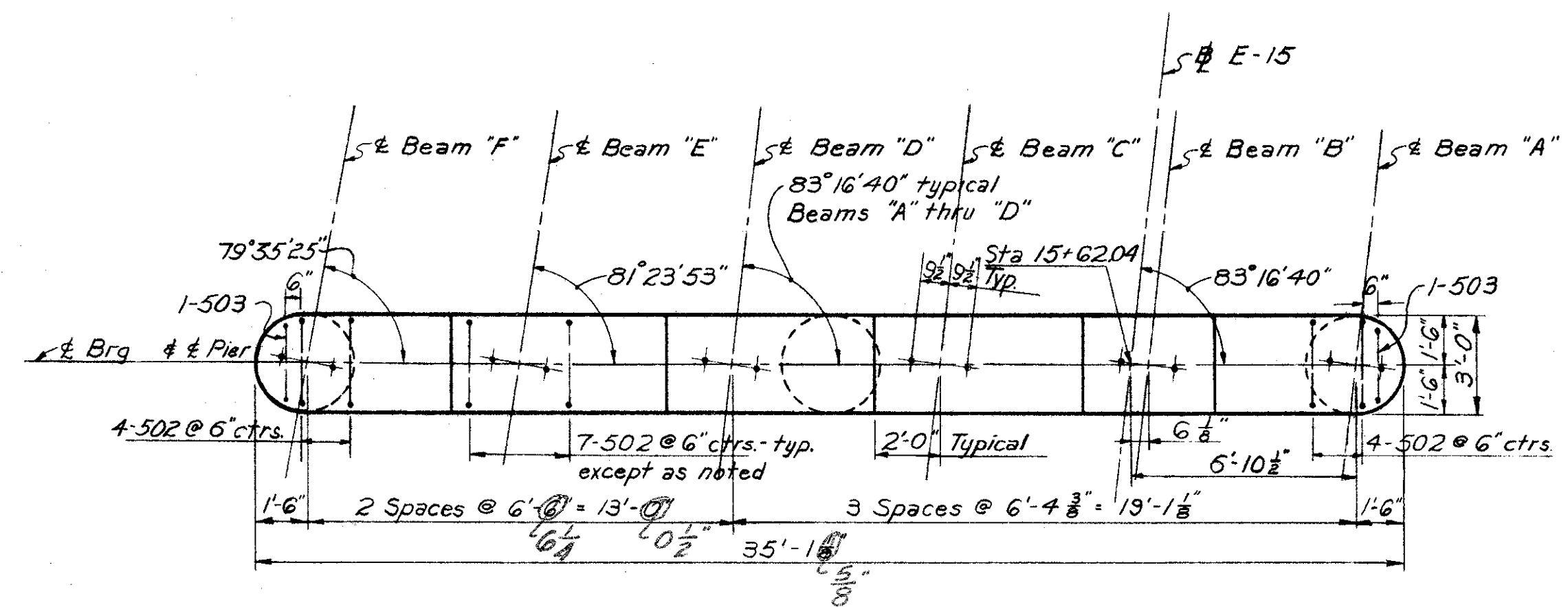
H.N.T.B BR. NO. 9 PART 6

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

PIER 1  
RAMP E-15 OVER EAST 14 TH ST.  
BR. NO. CUY-21-1573B STA. 15+27.70  
Scale: 1/4"=1'-0" Except STA. 16+96.91 as noted.  
WILLOW-INNER BELT FREEWAY

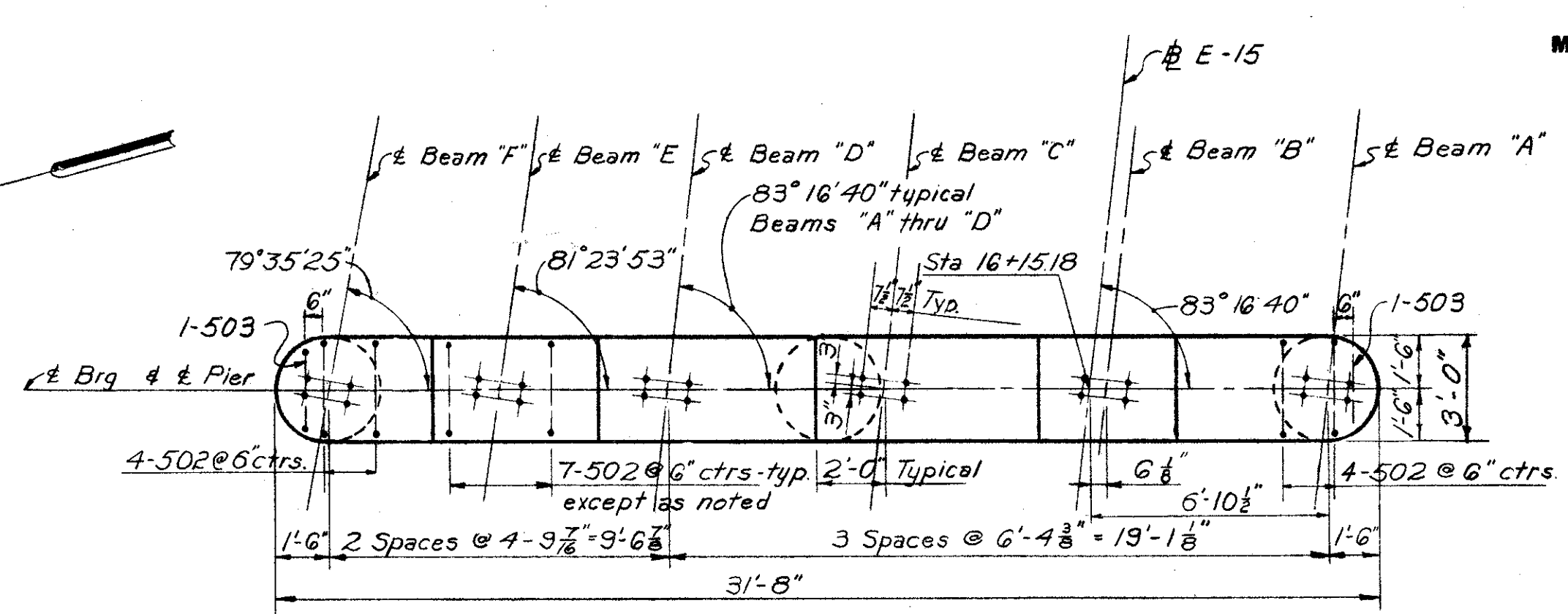
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 7-4-53	DATE	DATE 6-18-58	DATE 11-12-59	DATE 9-21-60

SHEET 148



PLAN

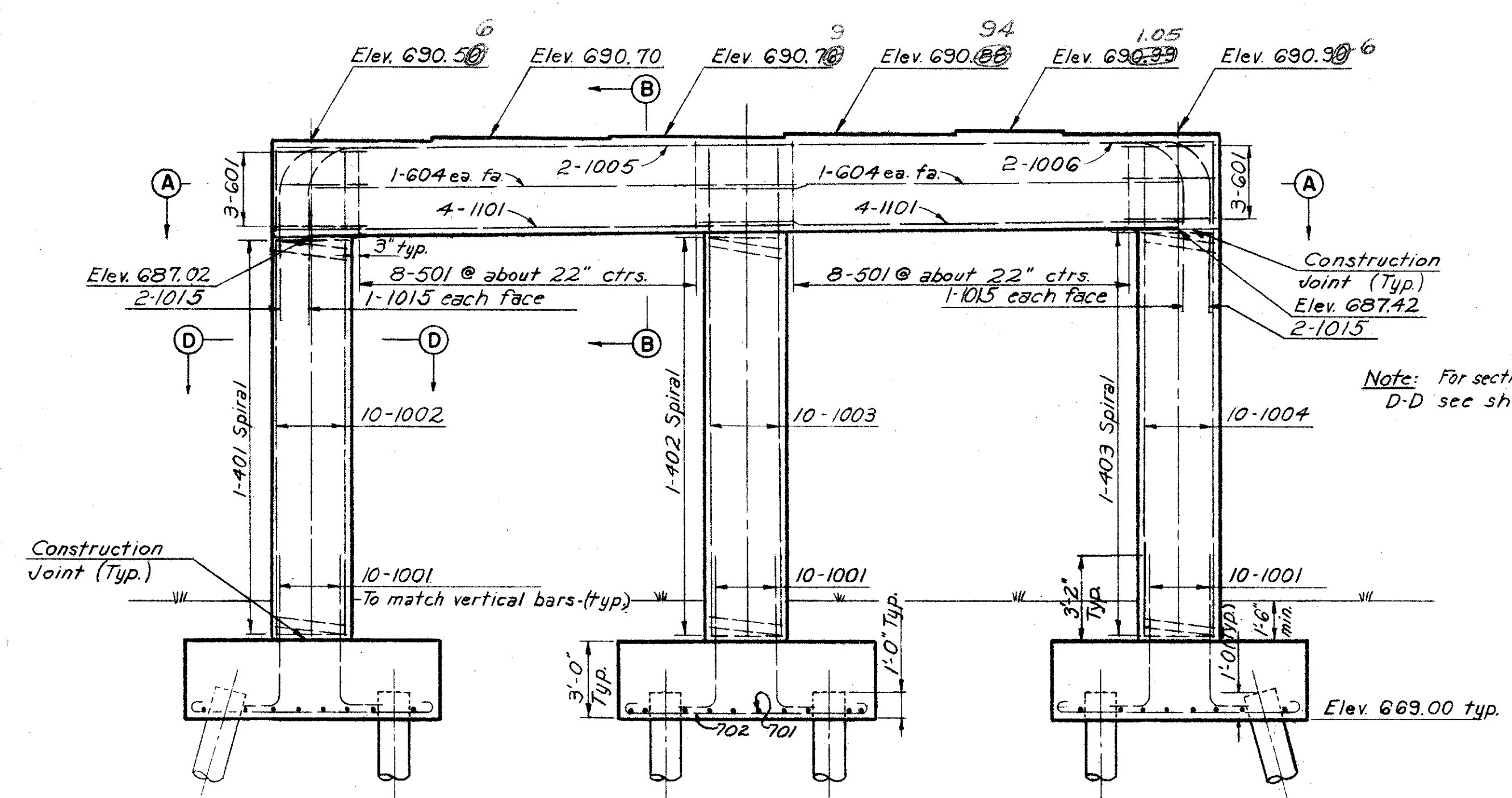
Note:  
Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bar setting.  
Anchor bars to be furnished and set under future contract.



PLAN

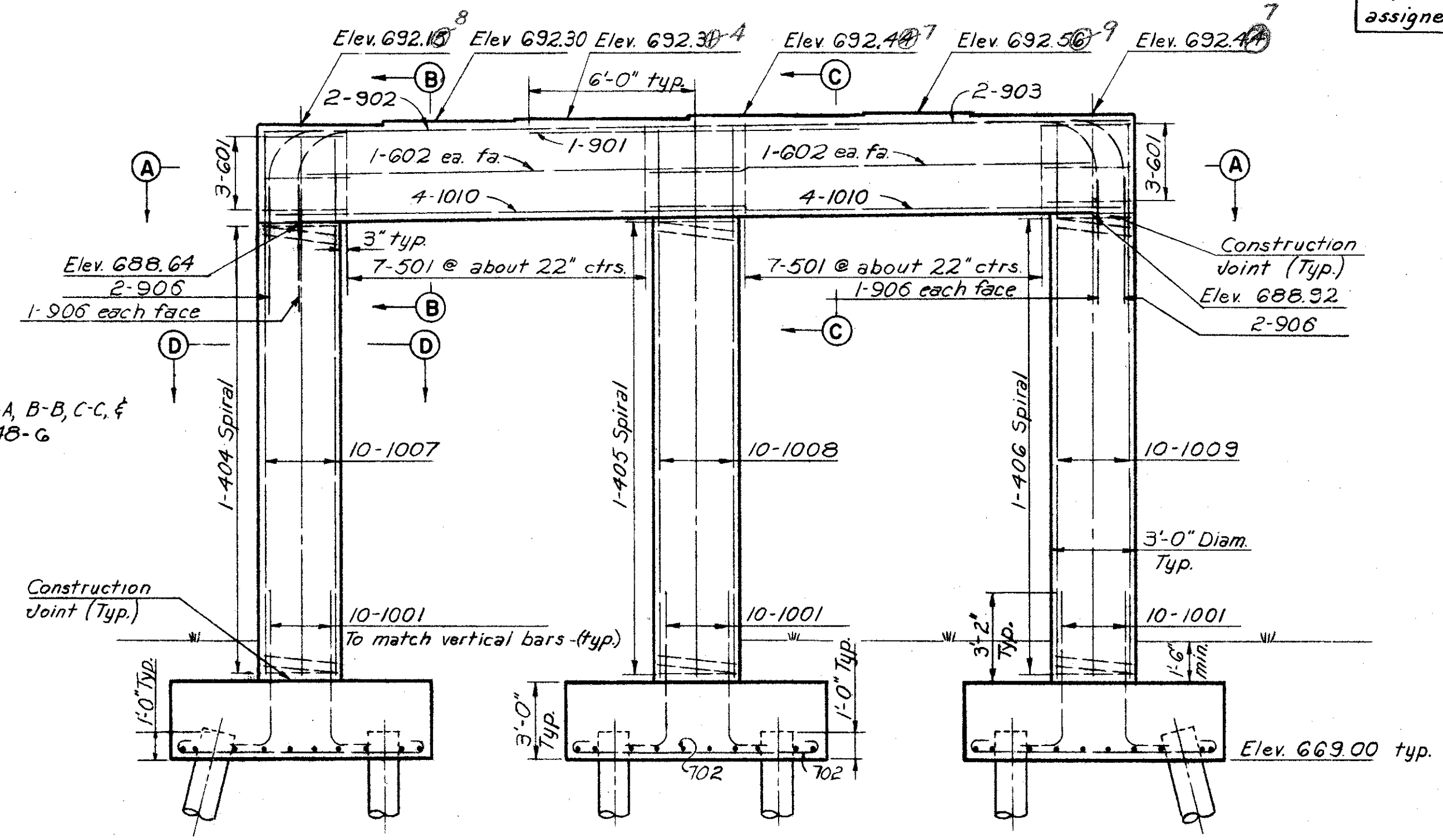
Note:  
Provide electrical ground wire in outside columns of Pier 2. See notes on Sh. 91A-G.  
Special care shall be taken in placing of electrical ground so as not to interfere with shoe base plate.

Note: Prefix "PD" shall be assigned to all bar marks.

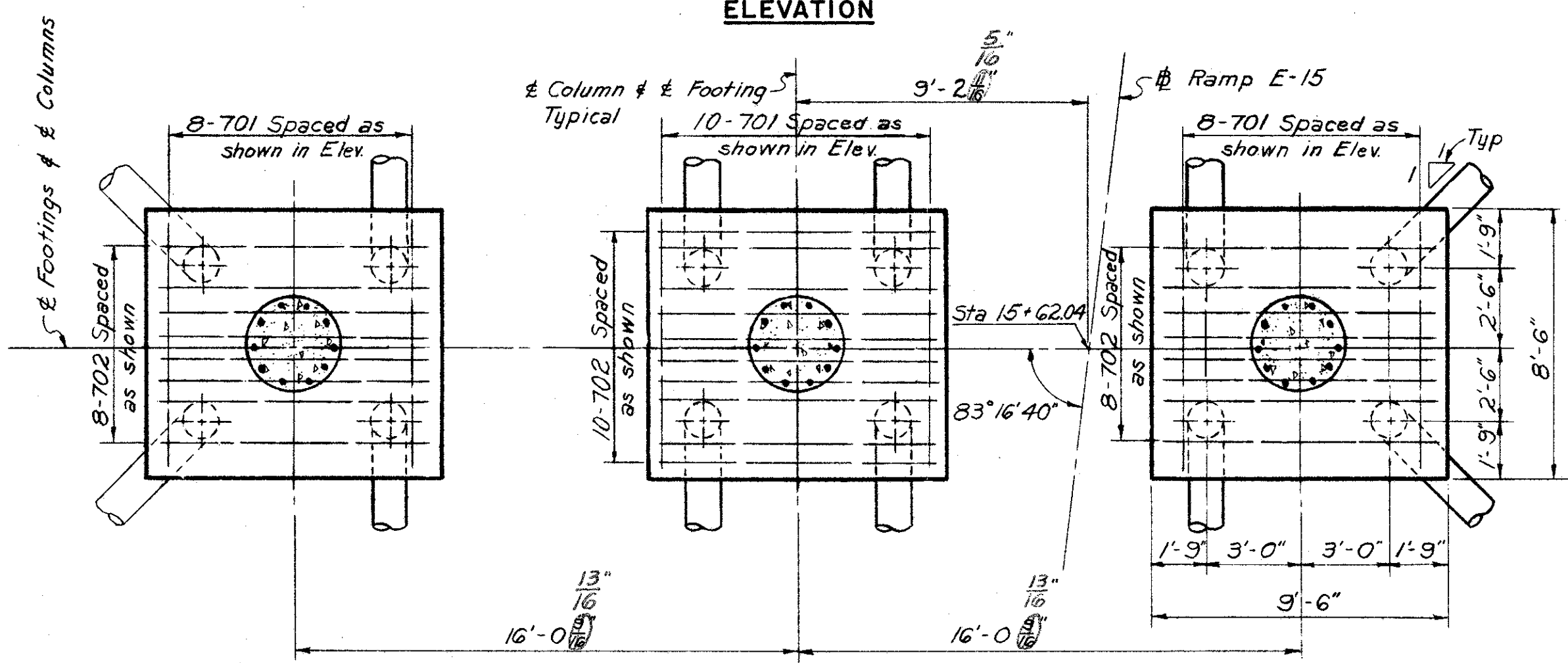


ELEVATION

Note: For sections A-A, B-B, C-C, & D-D see sheet 148-G



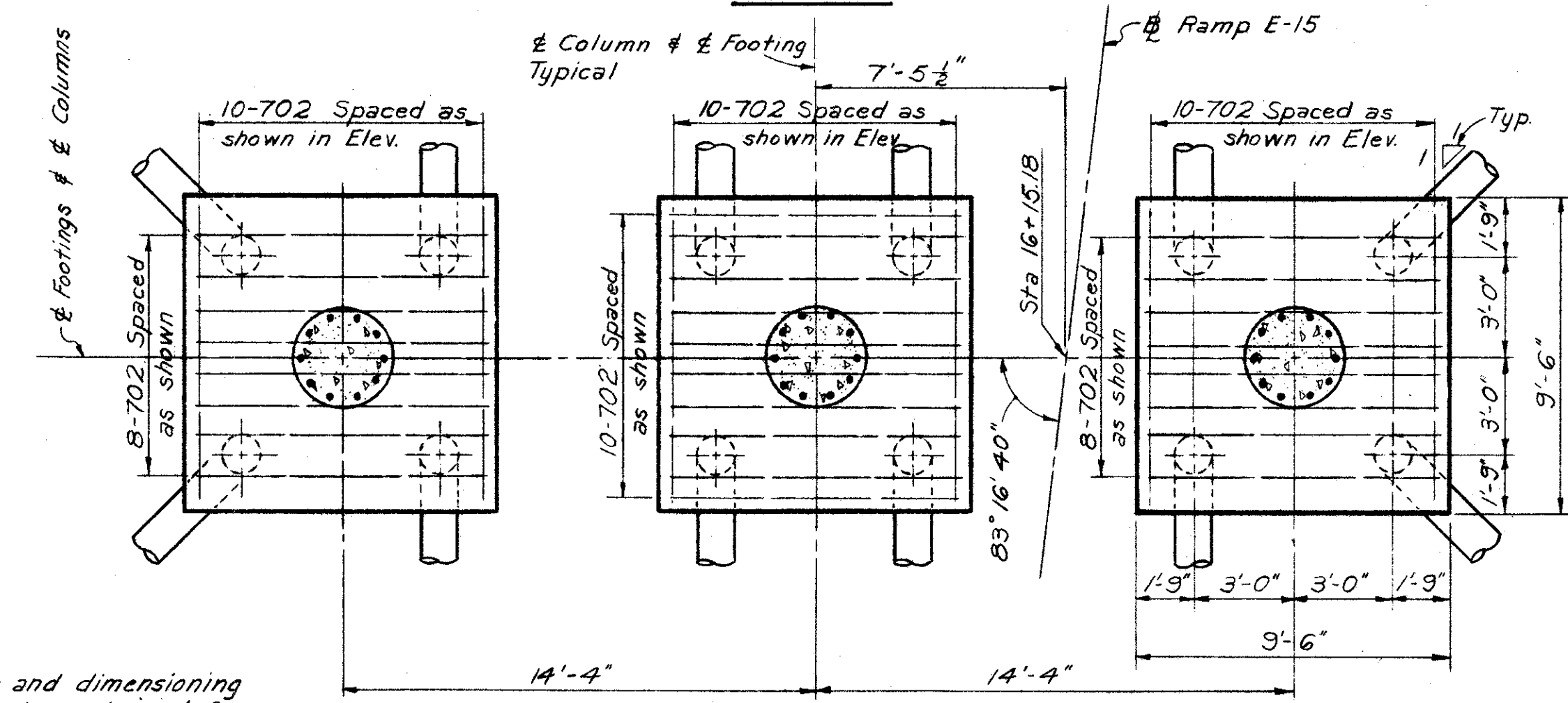
ELEVATION



FOOTING PLAN

PIER 3

Note:  
Pile spacing and dimensioning shown for each pier is typical for all footings.



FOOTING PLAN

PIER 2

NOTE:  
For Reinforcement Schedule and Notes see sheet 148-G.

H.N.T.B. BR. NO. 9 PART 6

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

PIERS 2 & 3  
RAMP E-15 OVER EAST 14th ST.  
BR. NO. CUY-21-1573B STA. 15+27.70  
Scale: 1/4" = 1'-0" STA. 16+96.91

WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 9-11-58	DATE	DATE 6-19-58	DATE 11-12-59	DATE 7-22-60

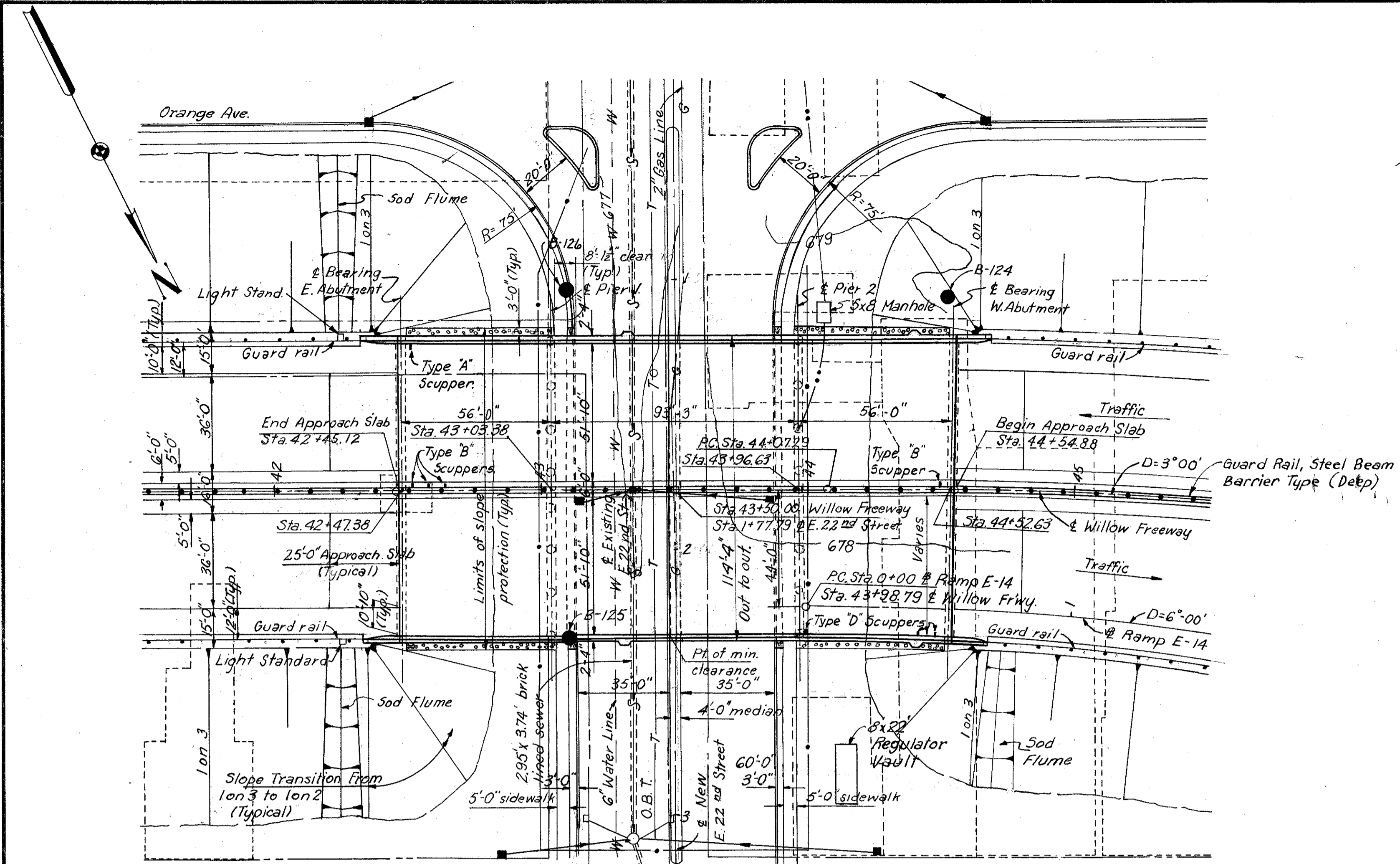
SHEET 149

Revised 9-21-60.

MICROFILMED  
JUL 9 1985

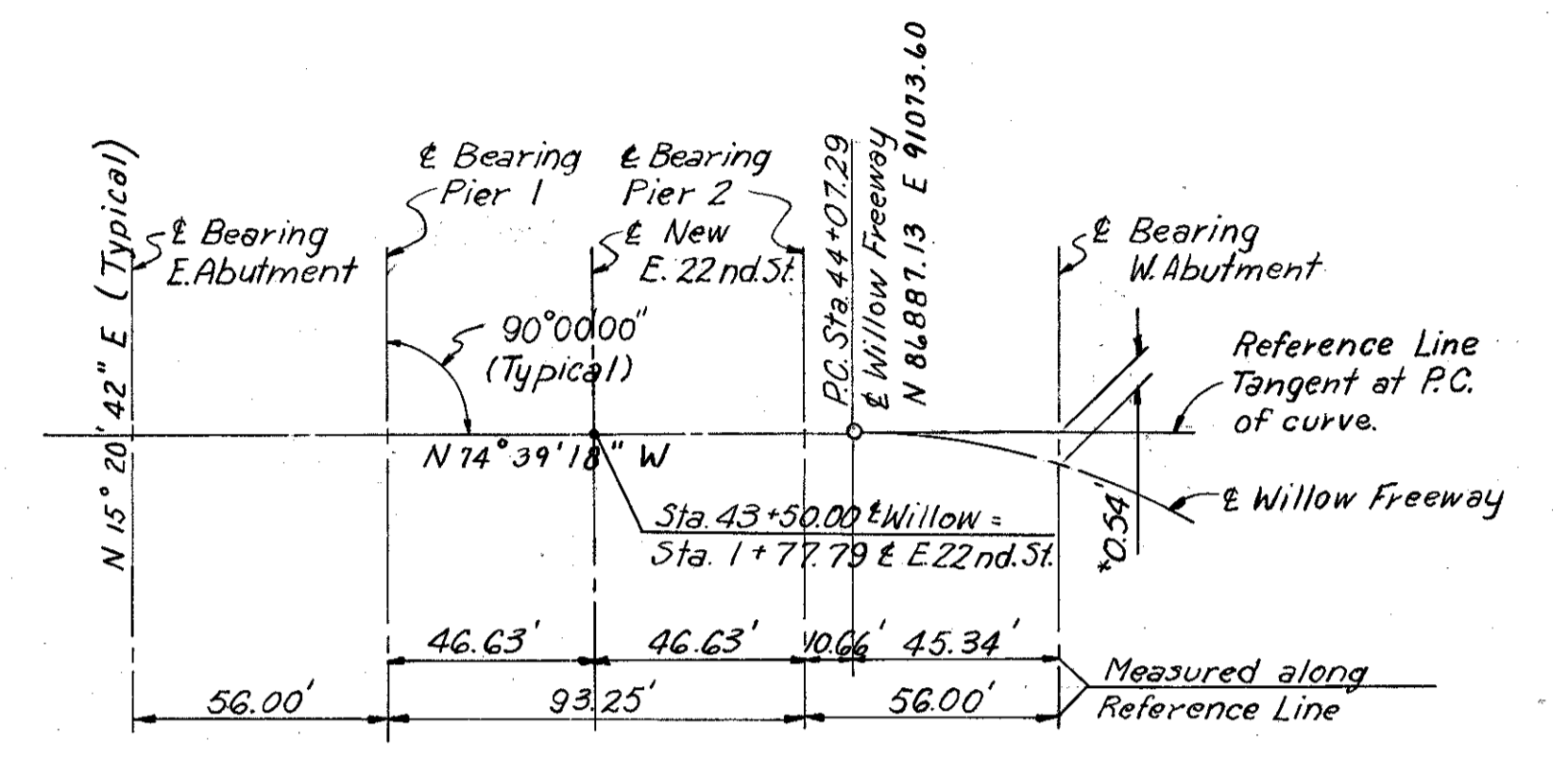
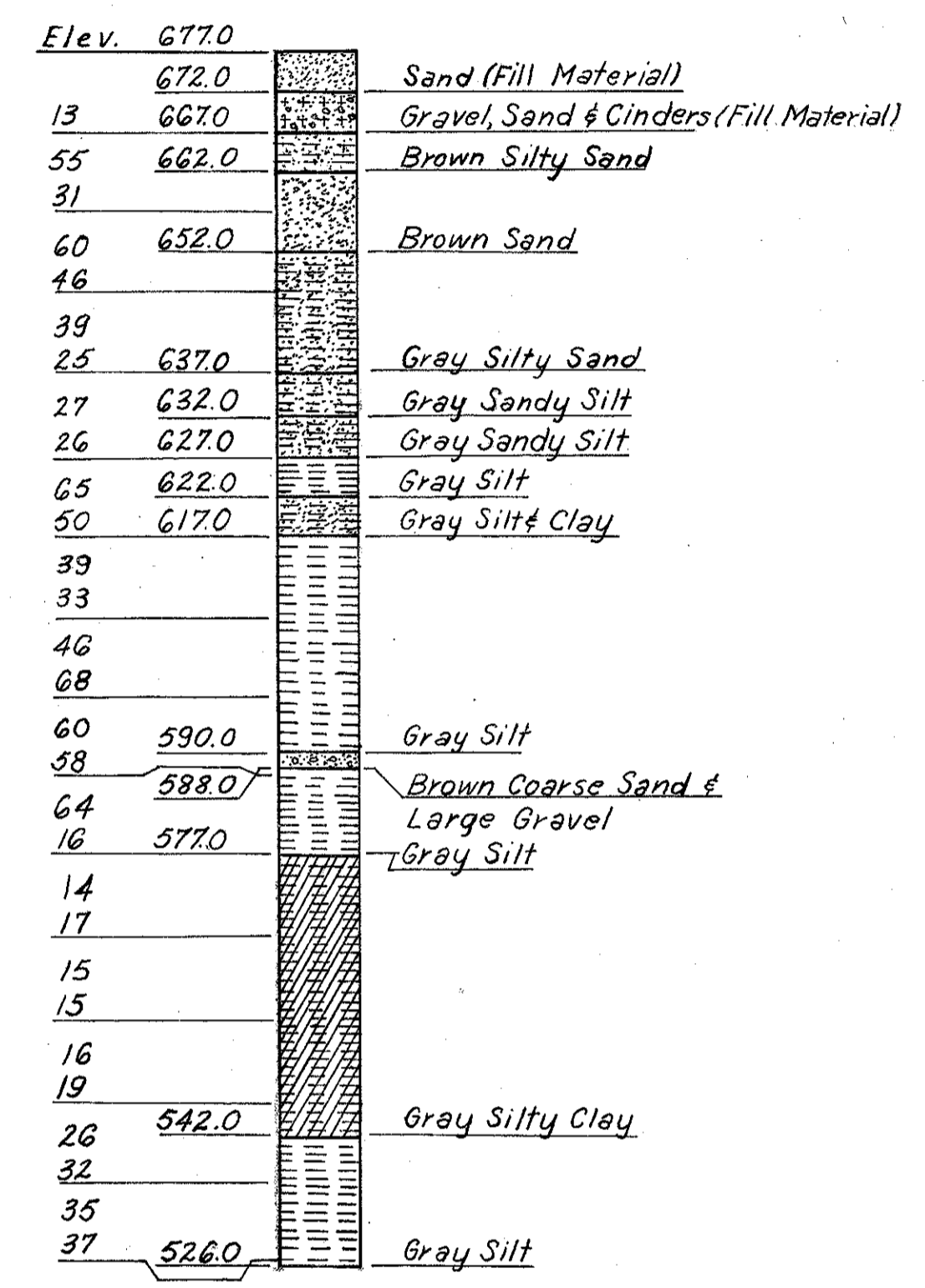
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18-29

- LEGEND**
- Existing Right of Way
  - Existing Edge of Pavement
  - Existing Sewer Line
  - O.B.T. Line
  - Water Line
  - Gas Line
  - Existing Manhole
  - Existing Catch Basin
  - Proposed Inlet
  - Proposed Manhole
  - Proposed Sewer
  - Proposed 2" Duct
  - Proposed 4" Duct



**CURVE DATA**

WILLOW	RAMP E-14
$\Delta = 23^{\circ}06'48''$	$\Delta = 17^{\circ}52'41''$
$D = 3^{\circ}00'00''$	$D = 6^{\circ}00'00''$
$R = 1909.86'$	$R = 954.93'$
$L = 770.50'$	$L = 297.97'$
$T = 390.54'$	$T = 150.20'$



**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.

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 6670.

**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) flt. 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:  
This includes only Piers 1 and 2 for Br. No. 10. Abutments and superstructure for this bridge are in Part 17A.

**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 157-G  
 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:  
 Removal of existing pavement, etc.  
 Relocation or removal of existing utilities.  
 Approach grading, pavements and slabs.  
 Roadway Guard Rail.  
 Sod Flumes.

H.N.T.B. BR. NO. 10 PART 6

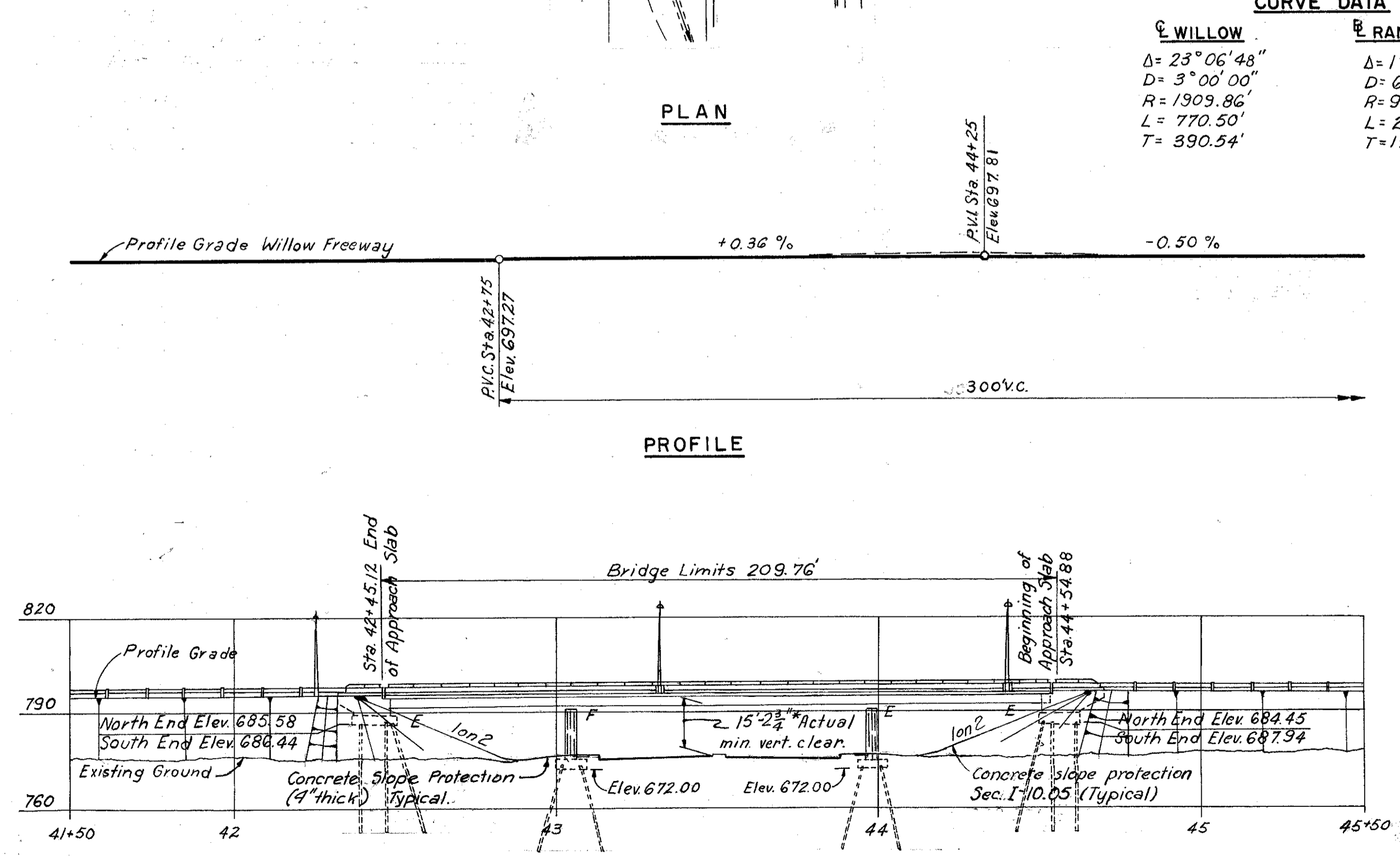
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK

**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 DRK REVIEWED JCT REVISOR  
 DATE 6/14/58 DATE 8-1-58 DATE 7-16-58 DATE 11-12-59 SHEET 150

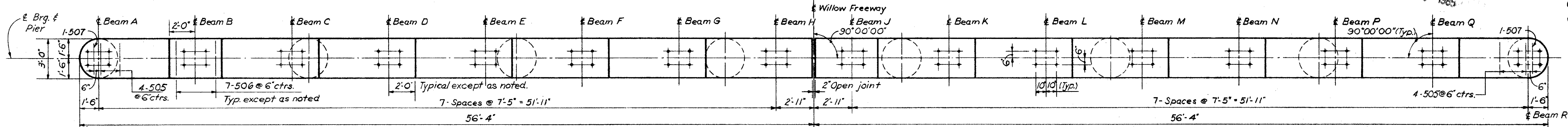


**ELEVATION**

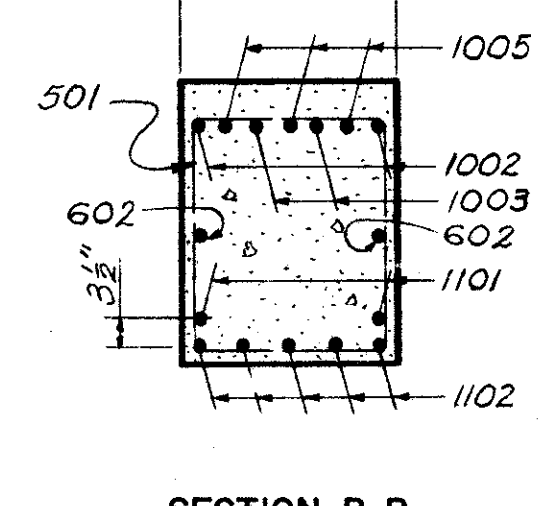
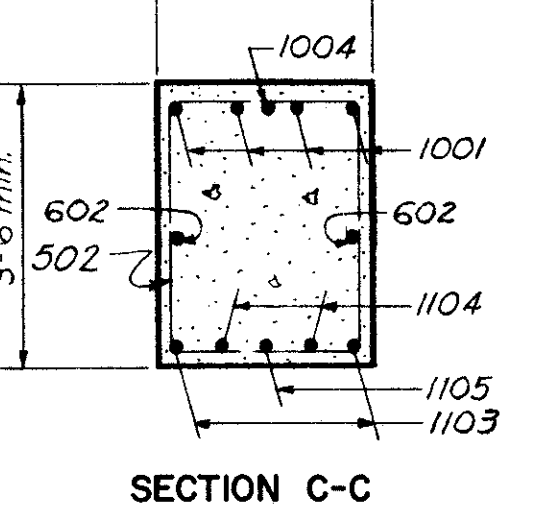
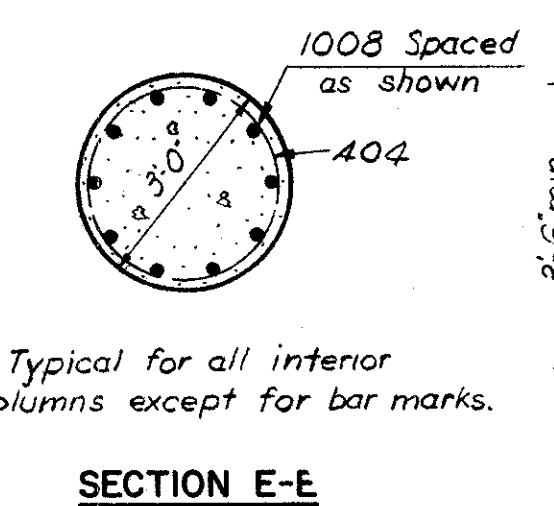
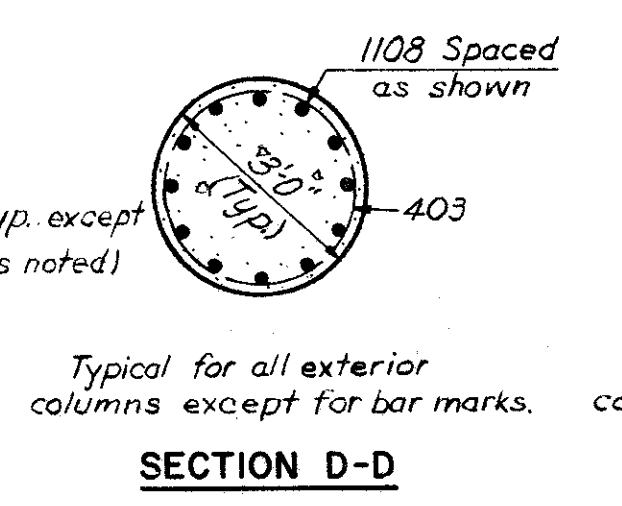
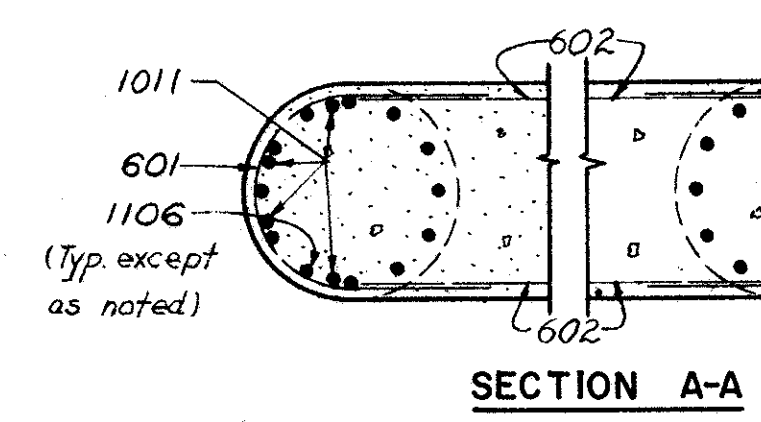
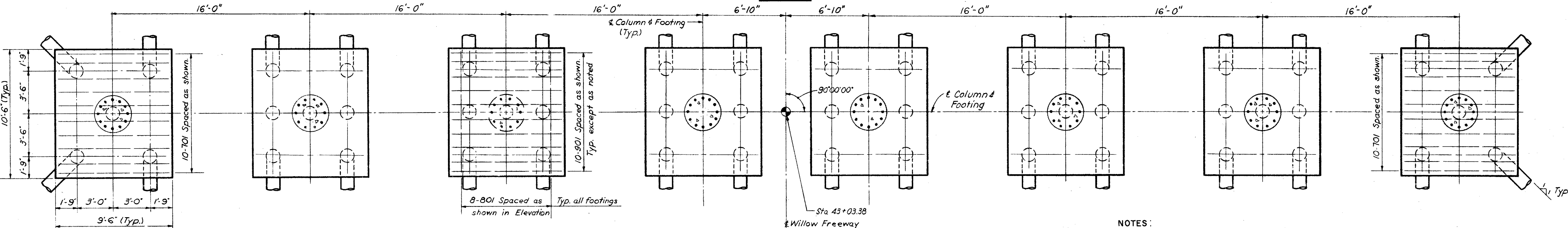
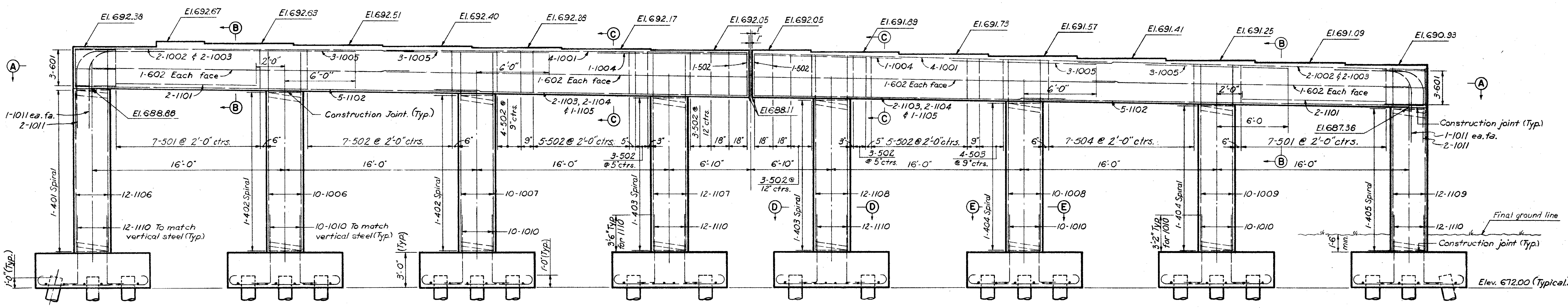
\* 15'-0" Required minimum vertical clearance.  
 Point of actual minimum vertical clearance occurs at East edge of median and the North exterior beam.

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-18.29

RECORDED  
JUL 9 1985



Note: Prefix "PA" shall be assigned to all bar marks.



NOTES:  
All piles shall be 14"  $\phi$  C.I.P. reinforced concrete.  
All battered piles to be battered 3 in 12, in direction shown.  
For Reinforcement Schedule, see Sh. 153-G.  
For Masonry plate and shoe details, see Ohio Stds. Drwg. RB-1-58.

Pile spacings are given along bottom of footings.  
Reinforcement bars shall be 3" clear from face of concrete at bottom of footings, and 2" elsewhere.  
Provide electrical ground wire in outside columns. See notes on sheet 9A-G.  
Special care shall be taken in placing of electrical ground wire so as not to interfere with shoe base plate.

H.N.T.B. BR. NO. 10 PART 6

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

PIER I  
WILLOW FREEWAY OVER EAST 22nd ST.  
BR. NO. CUY-21-1559 STA. 42+45.12  
Scale: 1/4" = 1'-0" Except STA. 44+54.88 as noted  
WILLOW-INNER BELT FREEWAY  
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN F.J.P.	TRACED	CHECKED C.M.	REVIEWED J.C.T.	REVISED
DATE 5-22-58	DATE	DATE 6-23-58	DATE 11-12-59	SHEET 151

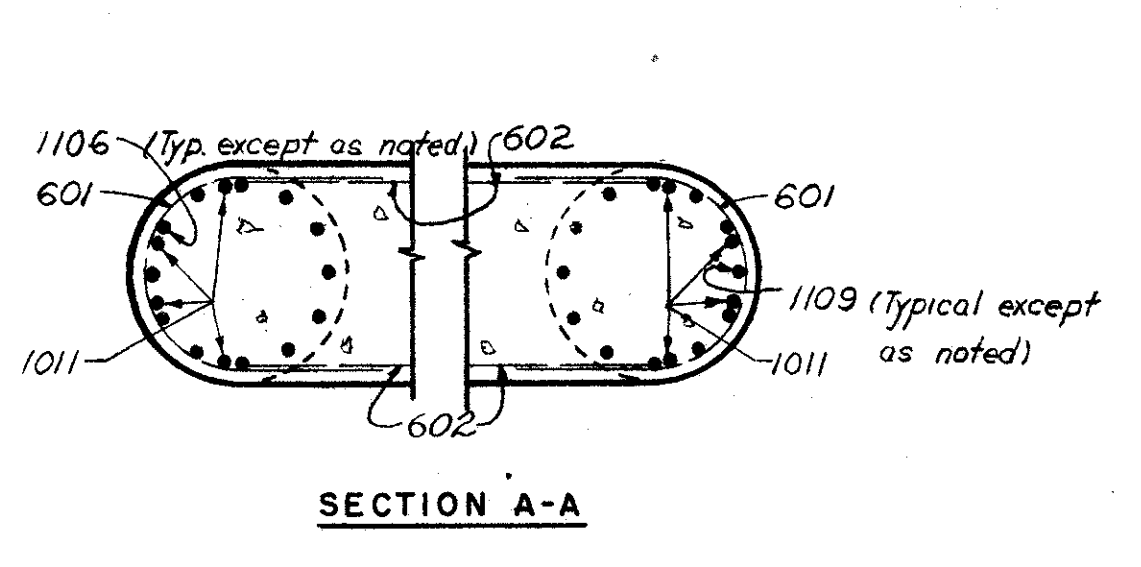
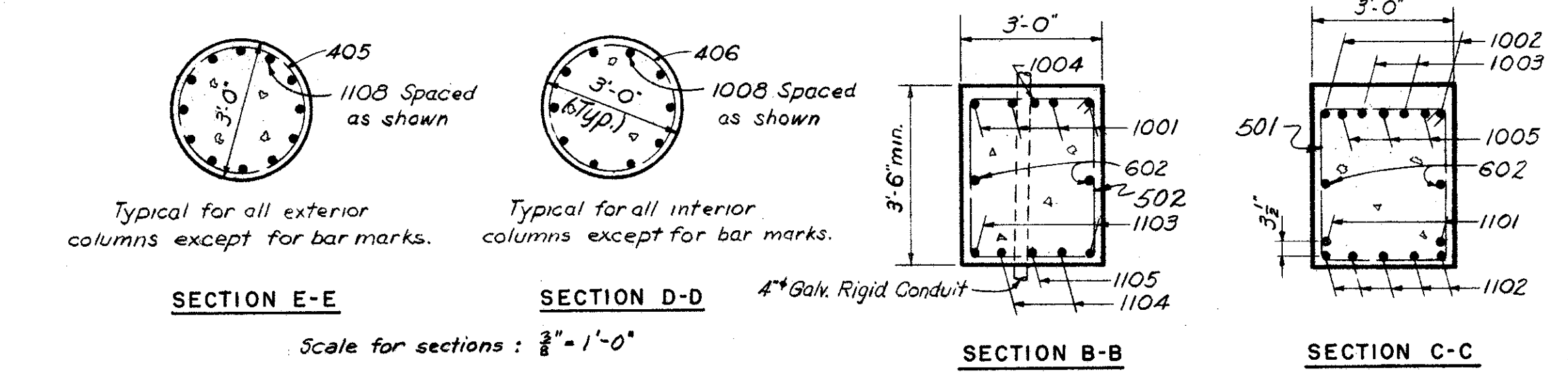
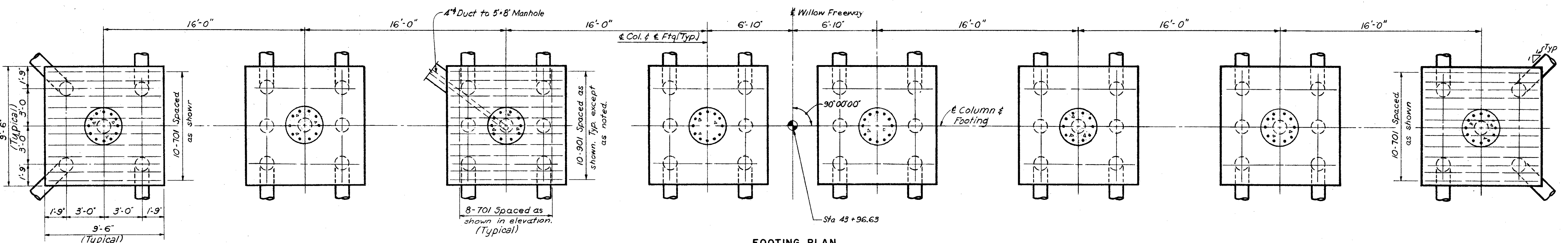
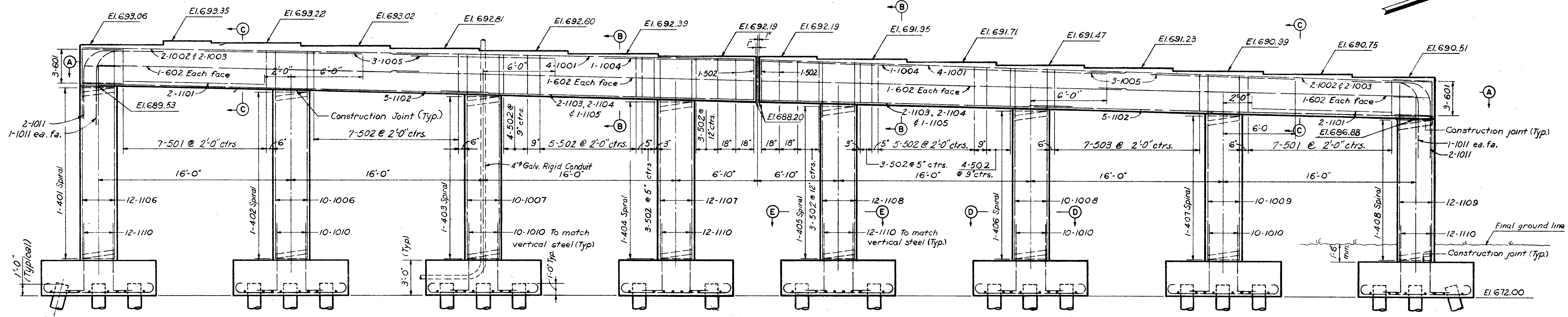
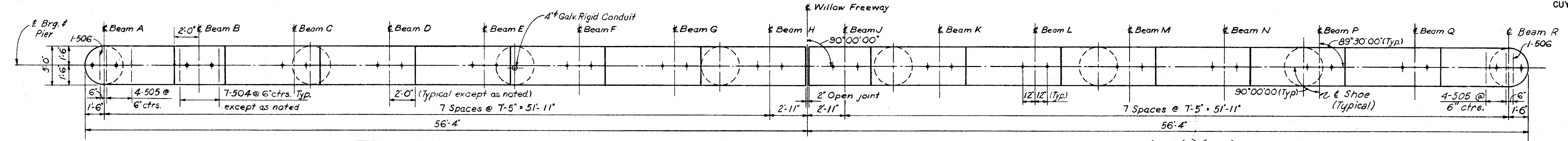
Scale for sections: 3/8" = 1'-0"

MICROFILMED  
JUL 9 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

152  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42 - 18.29



NOTES:  
For Reinforcement Schedule, see Sh. 153-G.  
For masonry plate details, see Sh. 156-G.  
For details of 4" Rigid Conduit, see Sh. 160-G.  
For other notes, see Sh. 151-G.

H.N.T.B. BR. NO. 10 PART 6

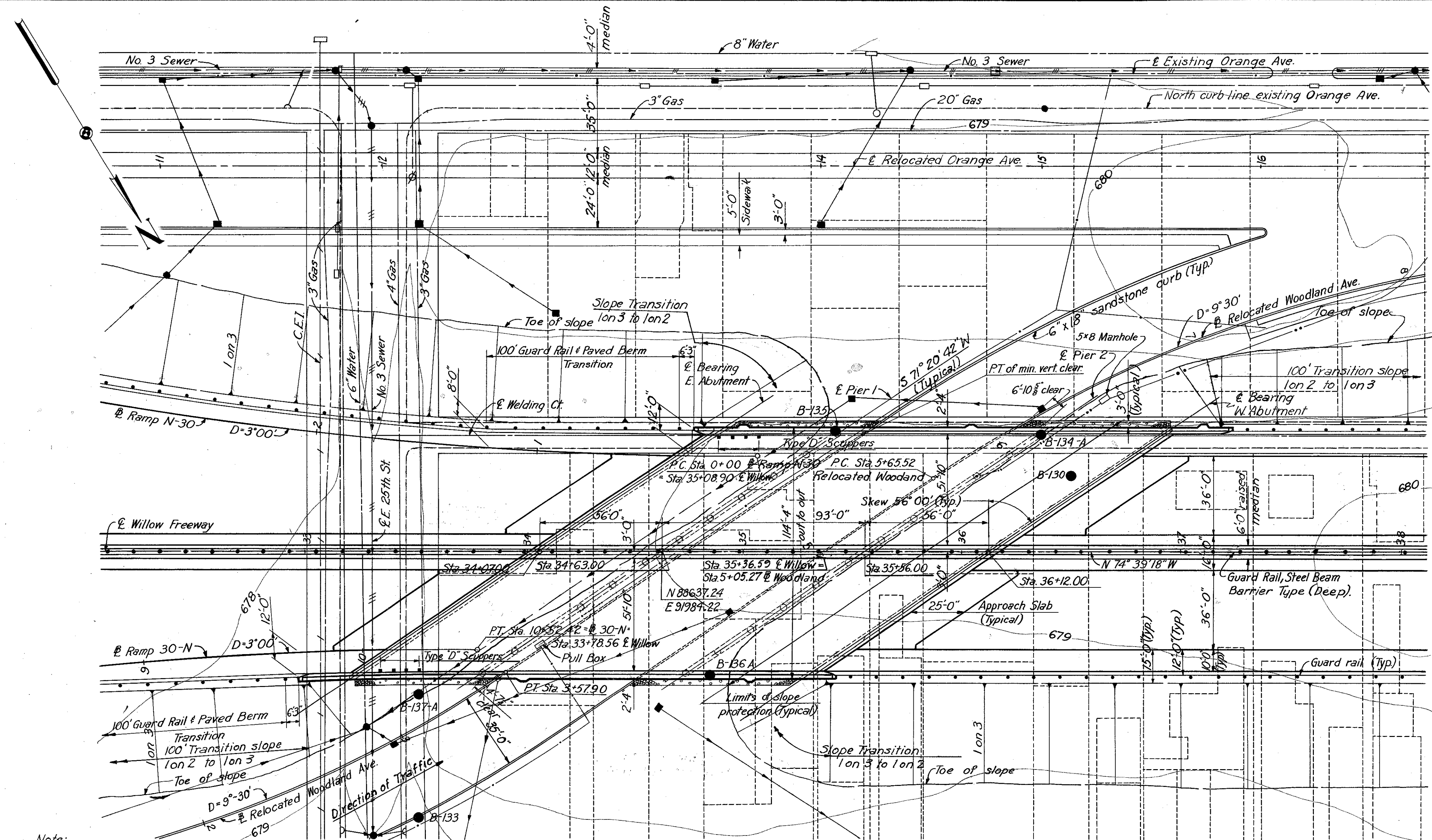
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK

PIER 2  
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

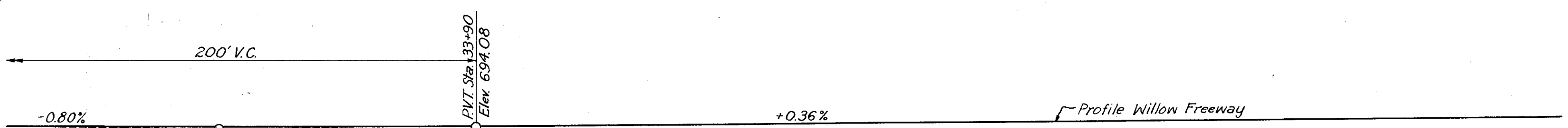
DRAWN T.J.P. TRACED [ ] CHECKED [ ] REVIEWED [ ] REVISION [ ]  
DATE 5-16-88 DATE 6-24-88 DATE 11-12-83 SHEET 152



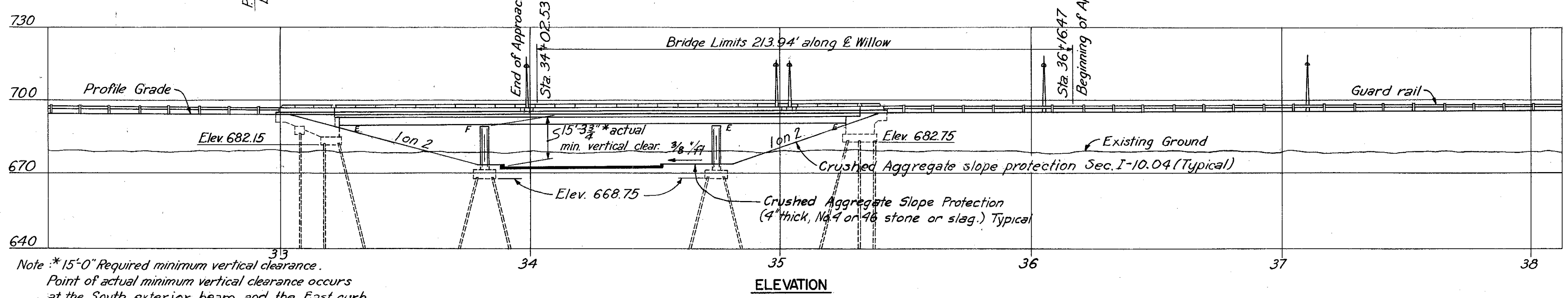


Note: Relocated Woodland Ave. shifts from left to right at Sta. 3+75.

PLAN



PROFILE



ELEVATION

Note: \*15'-0\"/>

Elev. 678.3		Elev. 676.5	
19	673.3	5	671.5
10		8	666.5
11	663.3	11	
12	658.3	8	
15	653.3	17	656.5
36	648.3	16	
		14	
11		18	641.5
15	638.3	36	636.5
32	633.3	57	631.5
51	628.3	67	
48		19	
47		40	
9		14	
20		70	
60			
26	598.3		

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.

**BORING B-134 A**  
Vertical Scale: 1"=20'  
Sta. 36+36 55 Lt.

**BORING B-137 A**  
Vertical Scale: 1"=20'  
Sta. 33+52 65 Rt.

CURVE DATA

RAMP N-30	RAMP 30-N	REL. WOODLAND AVE.	REL. WOODLAND AVE.
$\Delta=11^{\circ}00'00''$	$\Delta=7^{\circ}42'07''$	$\Delta=34^{\circ}00'00''$	$\Delta=33^{\circ}59'37''$
$D=3^{\circ}00'$	$D=3^{\circ}00'$	$D=9^{\circ}30'$	$D=9^{\circ}30'$
$R=1909.86'$	$R=1909.86'$	$R=603.11'$	$R=603.11'$
$T=183.90'$	$T=128.56'$	$T=184.39'$	$T=184.39'$
$L=366.67'$	$L=256.73'$	$L=357.90'$	$L=357.83'$

**PROPOSED STRUCTURE**  
Type: Continuous steel beam with reinforced concrete deck and substructure.  
Spans: 56'-0", 93'-0", & 56'-0"  
Roadway: 112'-0" (normal) 1/4 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'.

**LEGEND**

	Right of Way
	Curb
	M.E.L.P.
	Sewer
	C.E.I.
	Water
	Gas
	Proposed Sewer
	Proposed 2" $\phi$ Duct
	Proposed 4" $\phi$ Duct
	Sewer to be abandoned

Note: This includes only Piers 1 & 2 for Br. No. 11. Abutments and superstructure for this bridge are in Part 7A.

**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 157-G.  
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.  
Removal of existing pavements, etc.  
Relocation or removal of existing utilities.  
Approach grading, pavement and slabs.  
Roadway guard rail.

**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 6

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

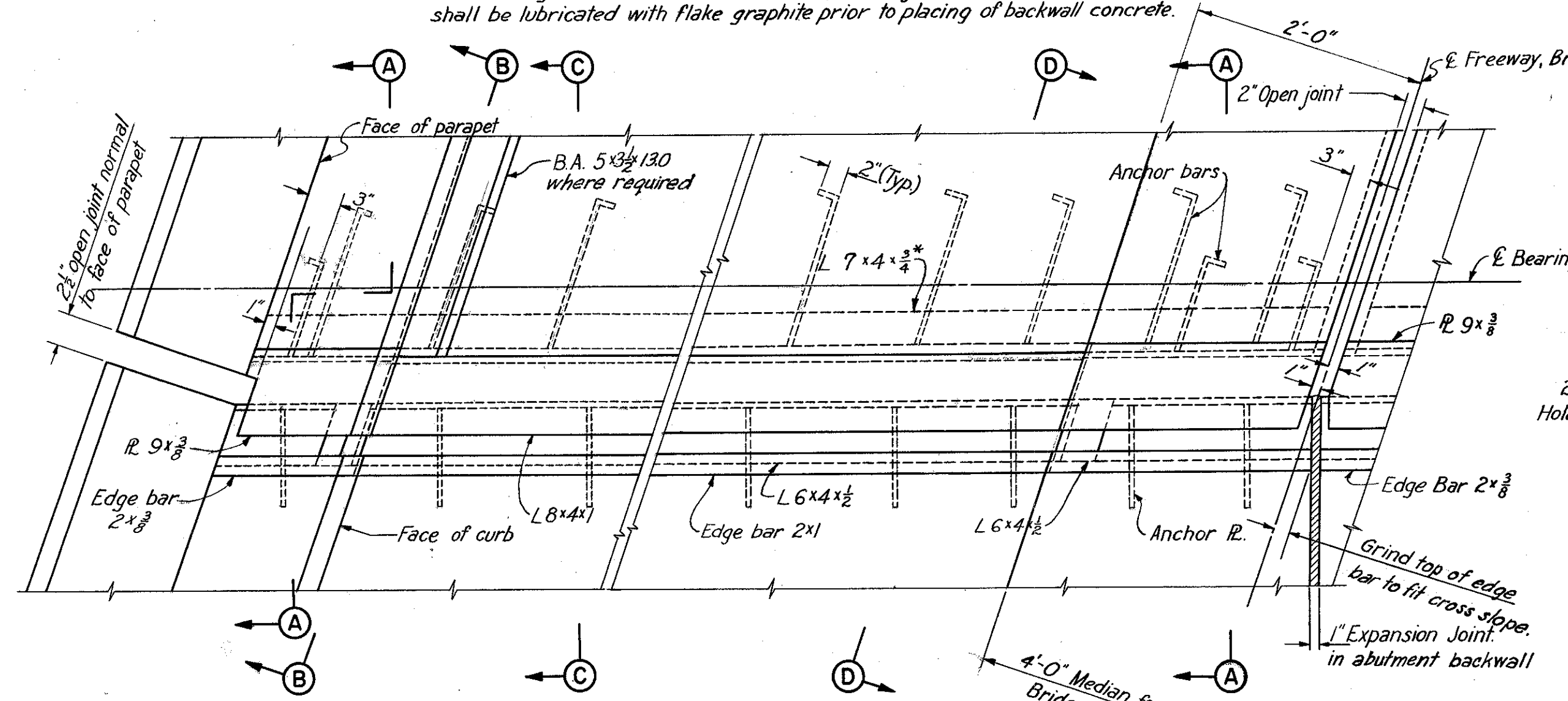
DRAWN: J.S. TRACED: J.R. CHECKED: J.R. REVIEWED: J.C. REVISION:  
DATE: 11-24-38 DATE: 12-30-38 DATE: 12-11-38 DATE: 11-12-39

SHEET 154

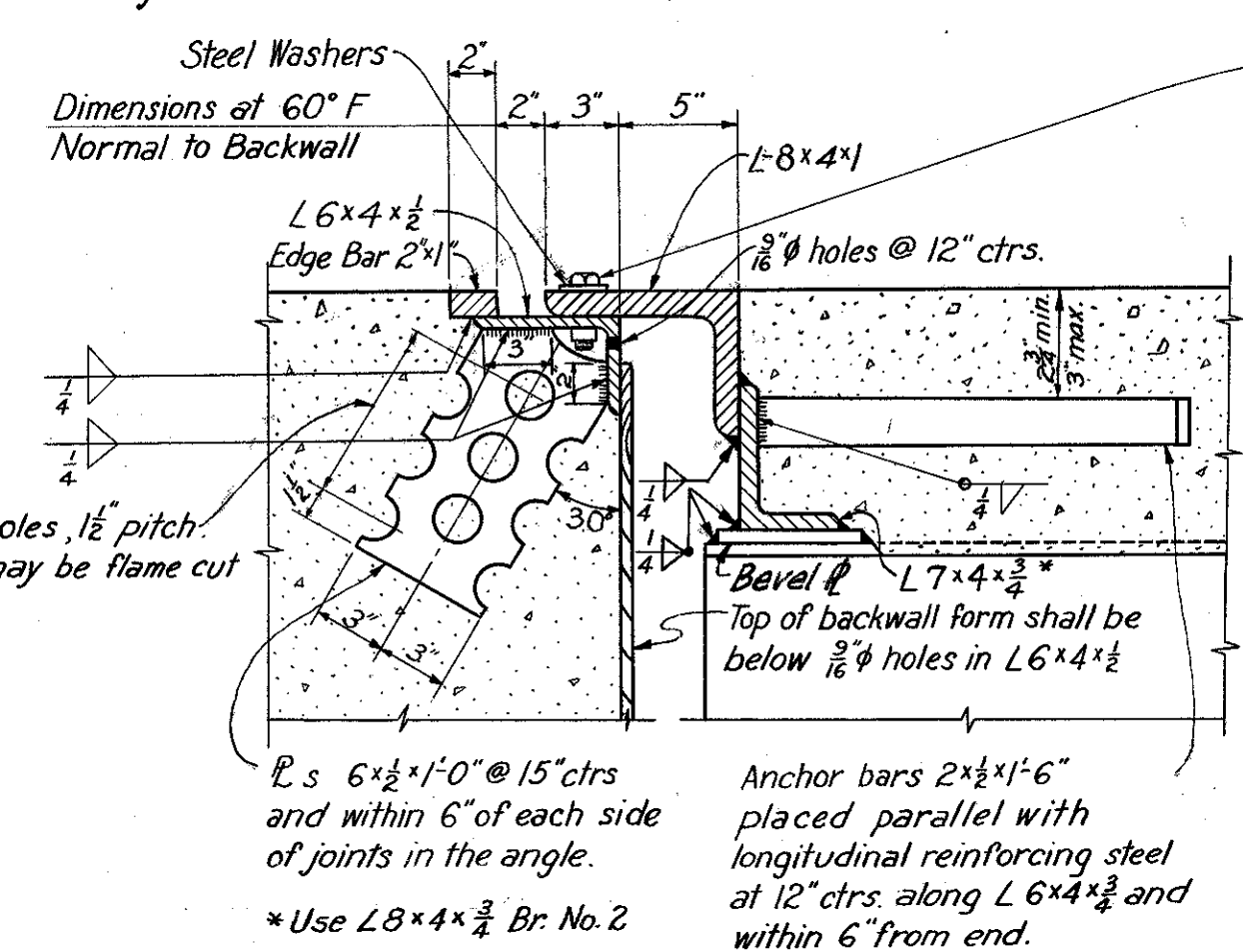




Note: Roadway and curb joints shall be shop assembled, corrected to provide uniform close contact between the two mating parts of each joint, match-marked and erected to required lines and grades. Omit shop coat on all portions of end dams. Portions in contact with steel or concrete shall not be painted. 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.



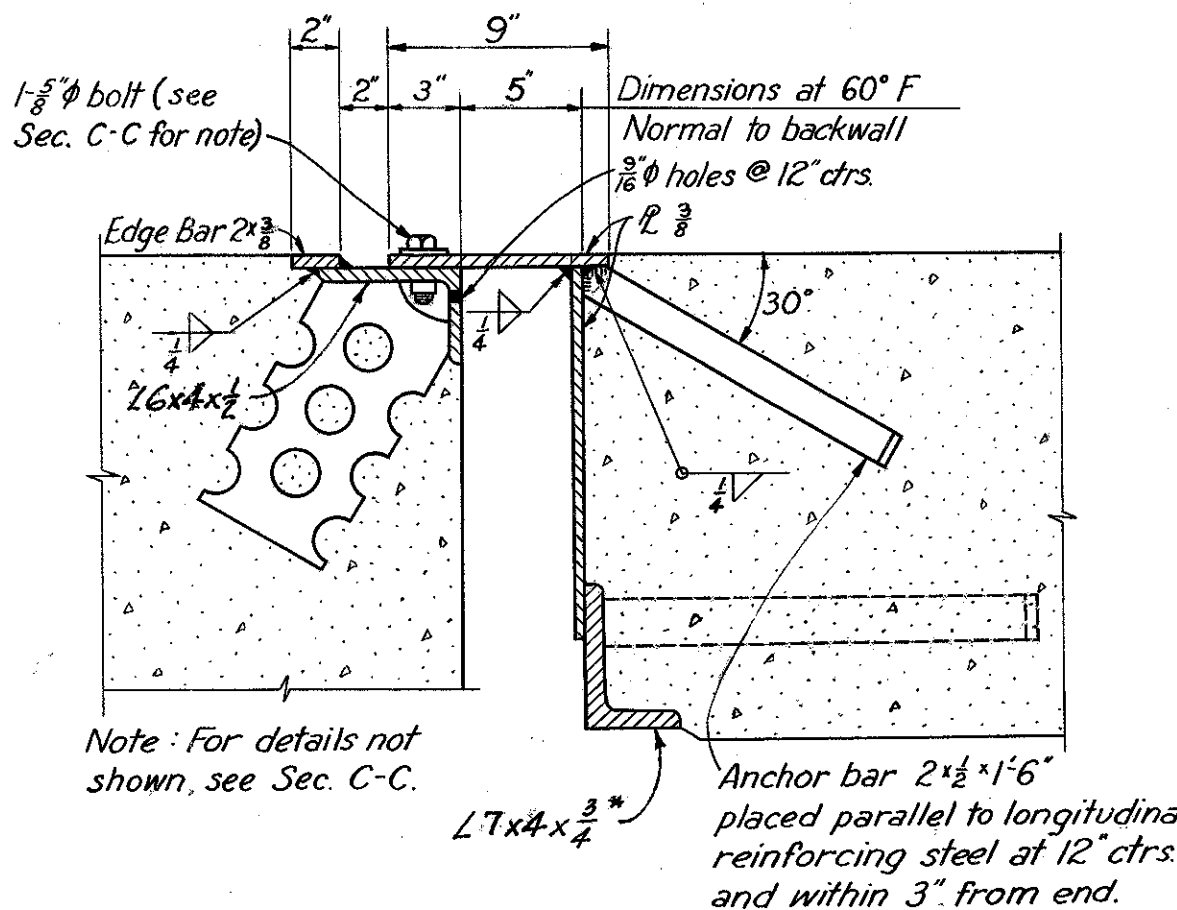
**PARTIAL PLAN OF END DAM**  
Scale 1"-1'-0"



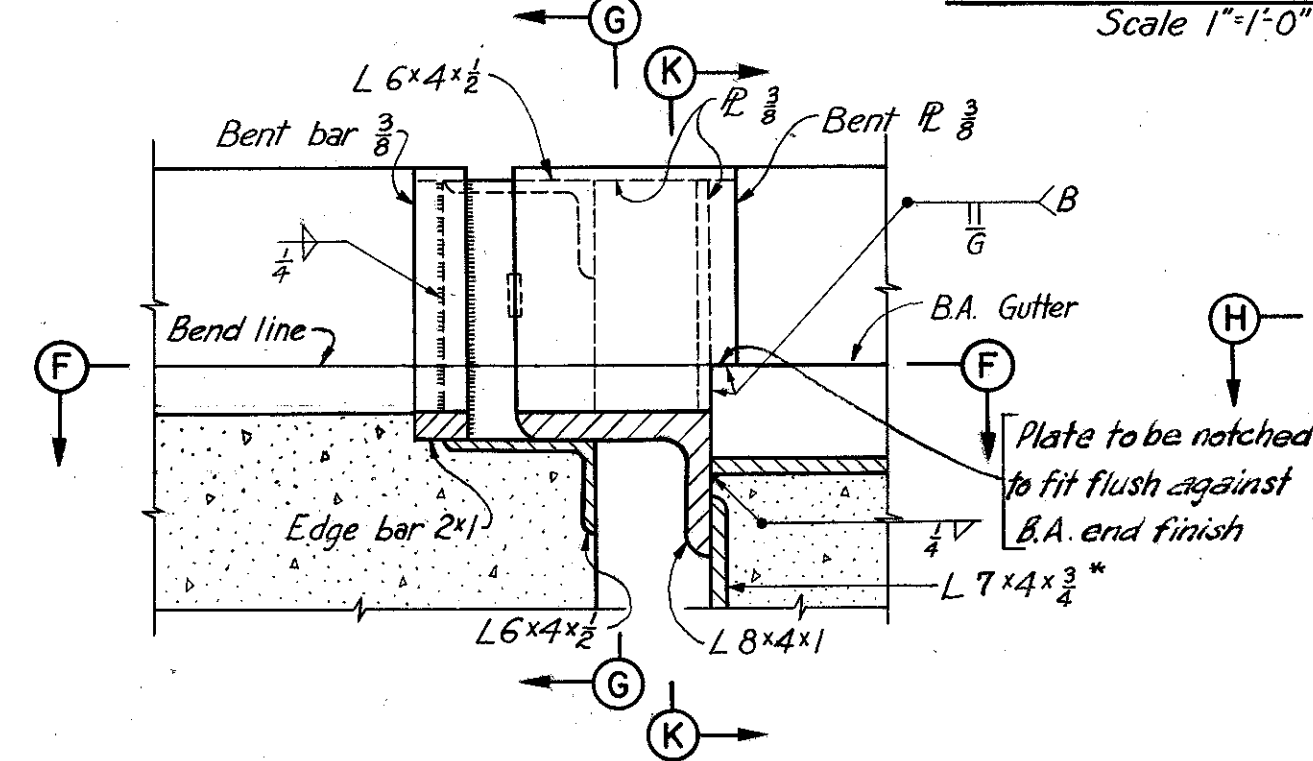
**SECTION C-C**  
(Typical except as modified for Bridge No. 6 Abutments and where beveled bearing bar is required. For Section at Bridge No. 6 Abutments see Section K-K, sheet 129-C)

3/8" x 2" bolts at not more than 2'-0" ctrs. with nuts tack-welded to under side of lower angle. Holes to be 1 1/2" in upper angle. Center 3/8" bolts in 1 1/2" 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.

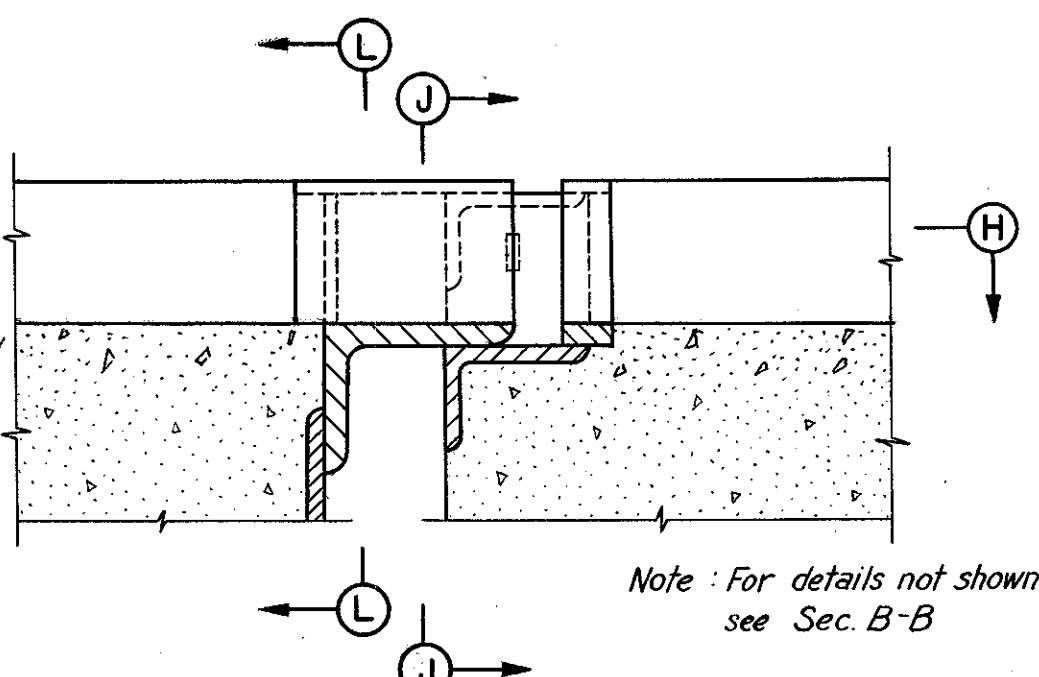
Note: A welded butt joint shall be provided at the apex of the 5'-0" rounding for that portion of the end dam attached to the superstructure of Bridge No. 2 (See detail of Welded Butt Joint). The portion attached to the backwall shall be placed in segments not less than 6'-0" in length with a joint at 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. 2, Abutment E-5.  
2. Bridge No. 6, West Abutment.  
See detail of Beveled Bearing Bar.



**SECTION A-A**  
(Typical except as modified where beveled bearing bar is required.)

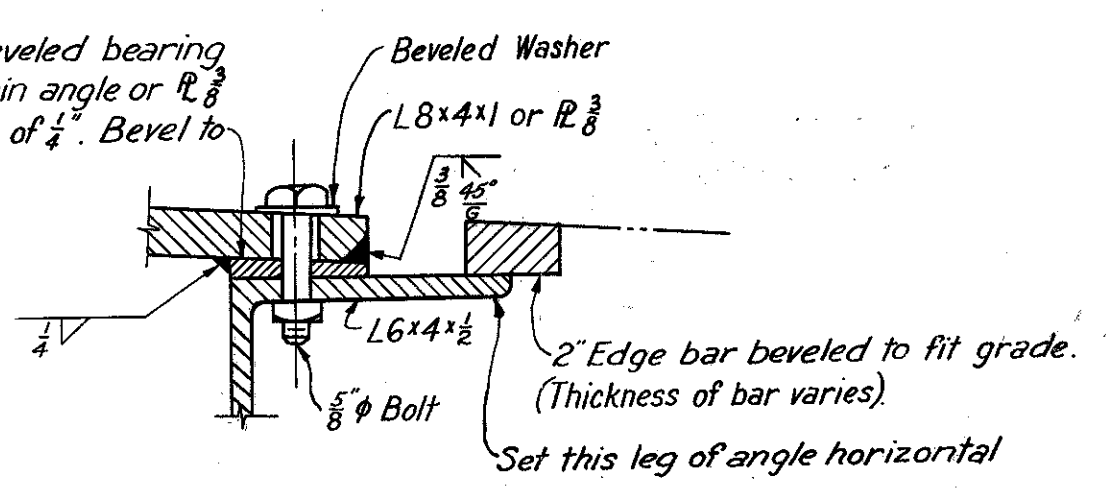


**SECTION B-B**

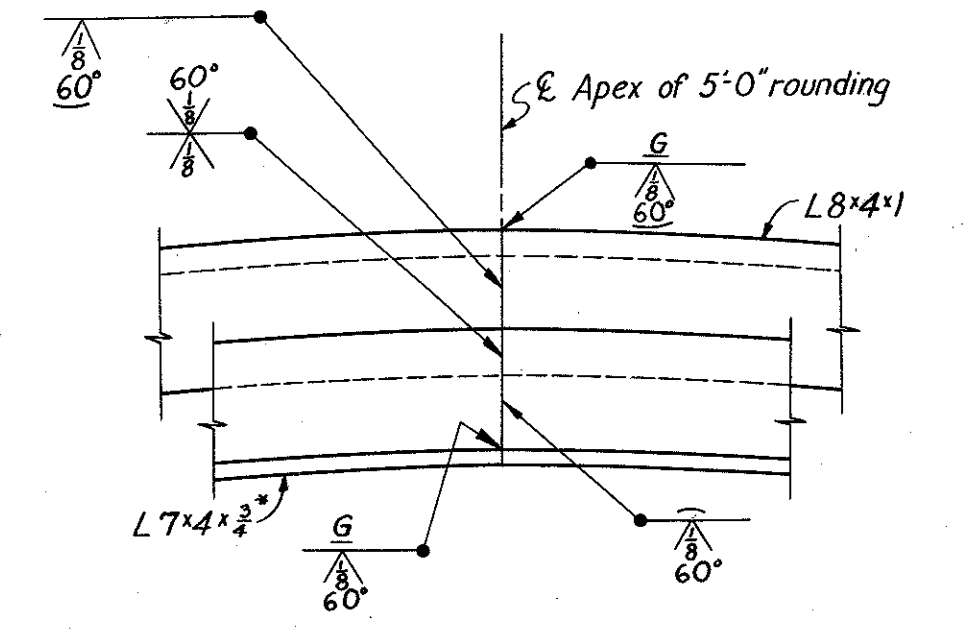


**SECTION D-D**

Continuous 3" beveled bearing bar welded to main angle or L-8 with min. thickness of 3/4". Bevel to match grade.

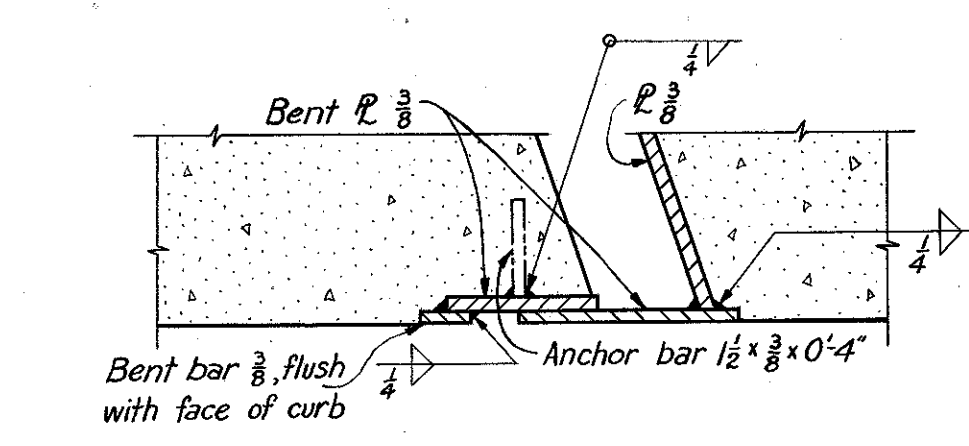


**DETAIL OF BEVELED BEARING BAR**  
(This section taken parallel to line of expansion Scale 3"-1'-0")

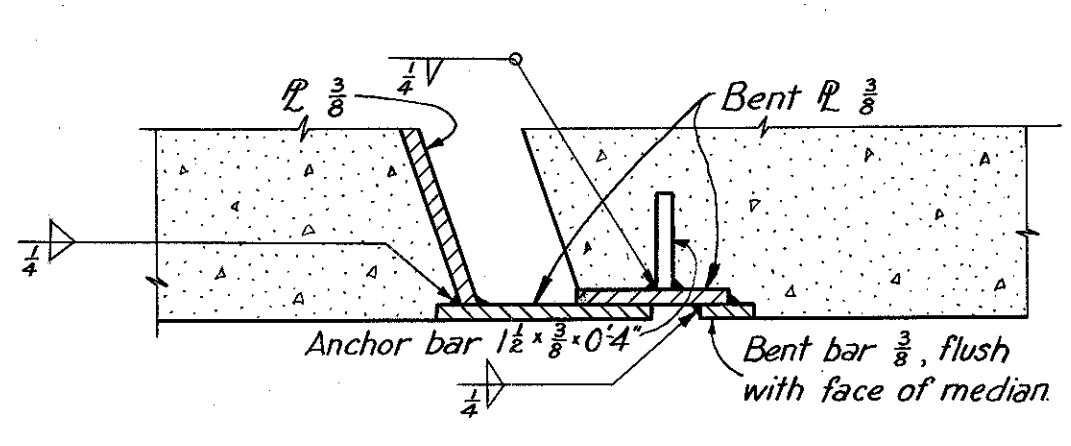


**WELDED BUTT JOINT IN SUPERSTRUCTURE END DAM ANGLES AT APEX OF 5'-0" ROUNDING**

Note: All end dam steel shall be included with Item 5-7, Structural Steel for payment.

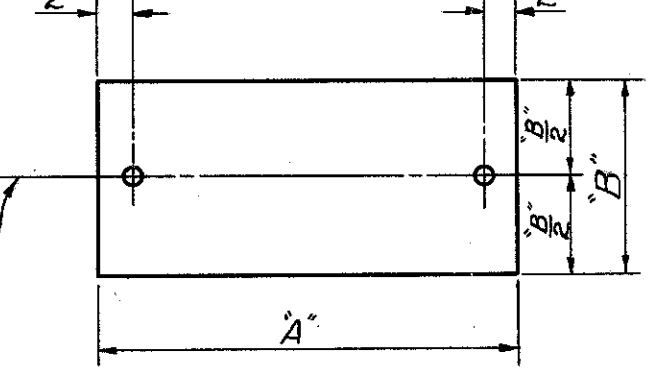


**SECTION F-F**



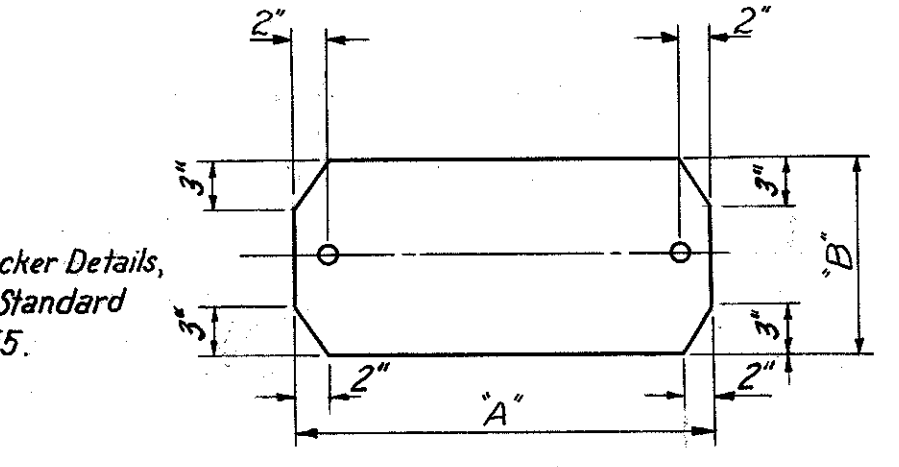
**SECTION H-H**

1 1/8" holes for 1 1/2" x 1'-6" anchor bars. Anchor bars to be embedded to such depth that the top of bar is 1/4" below the top of masonry L. (Typical for all rocker masonry plates)



**PLAN OF TYPICAL ROCKER MASONRY PLATE**  
No Scale

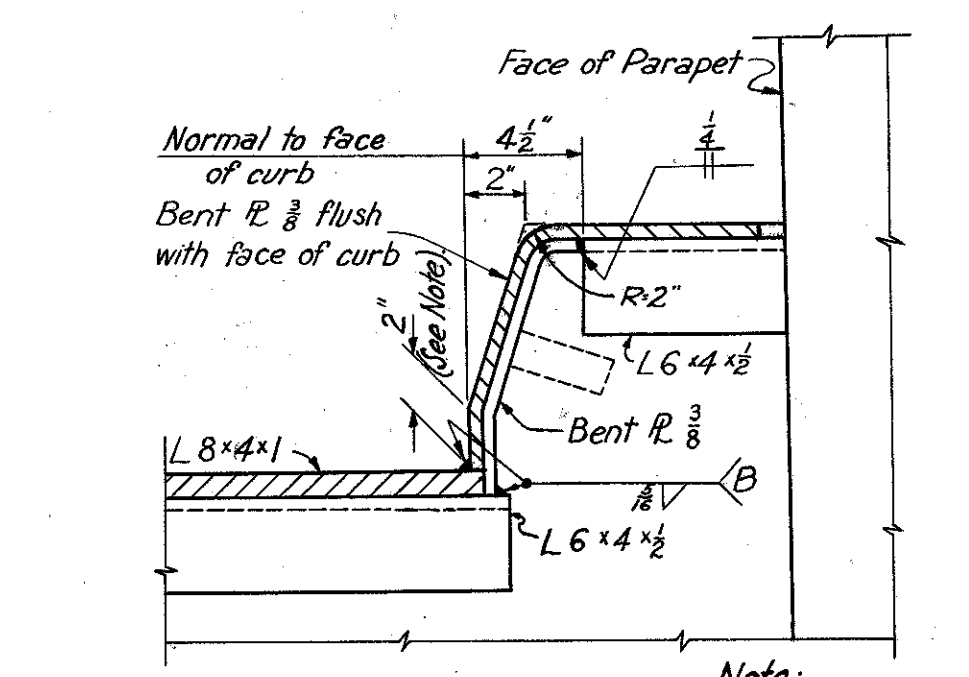
Note: For other Rocker Details, see Ohio State Standard Drawing RB-1-55.



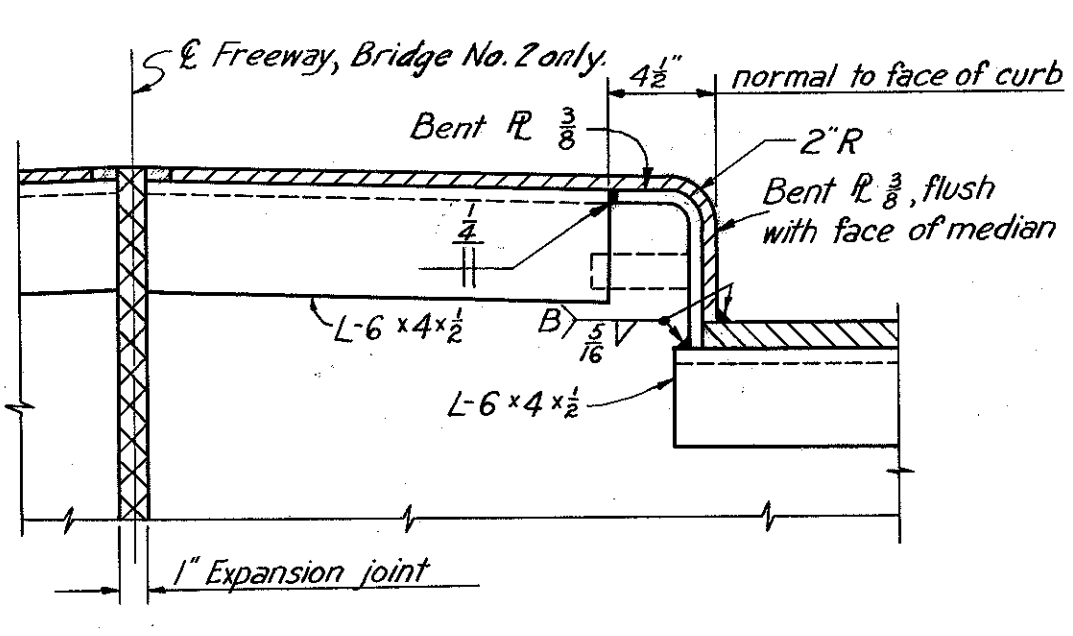
**PLAN OF SPECIAL ROCKER MASONRY PLATE FOR ROCKERS MARKED "R S"**  
No Scale

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

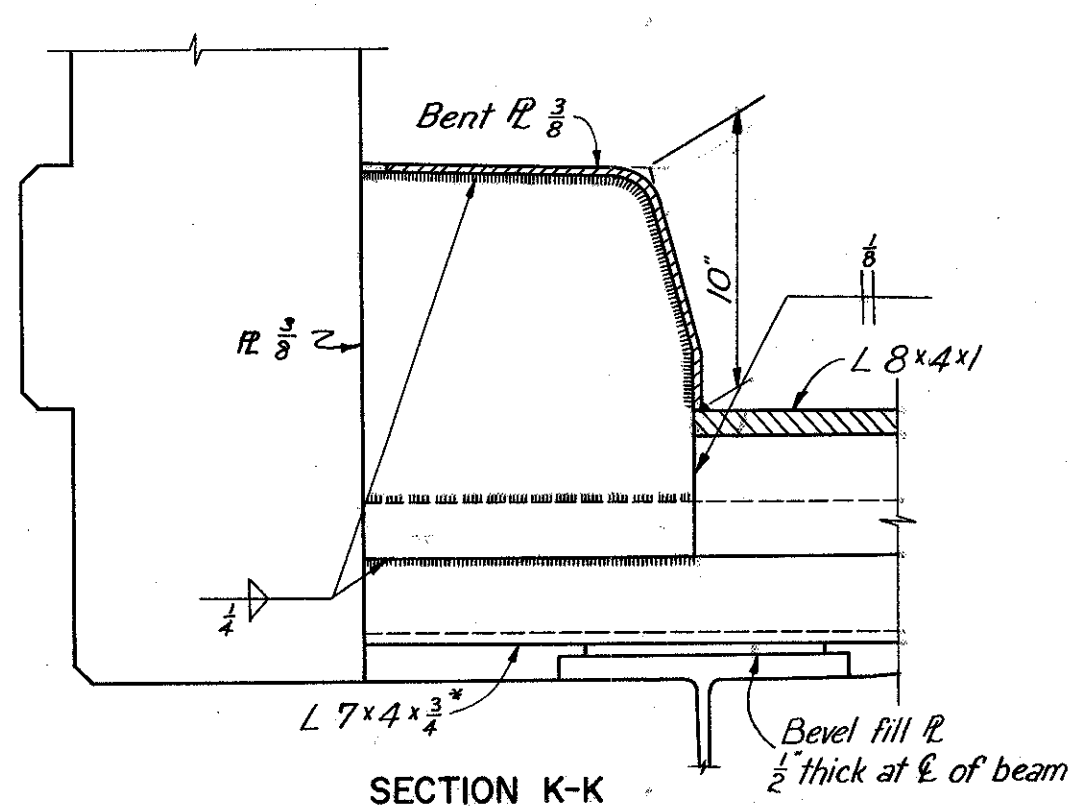
Note: Details for Rockers marked 'RS' are the same as for those marked 'R'.



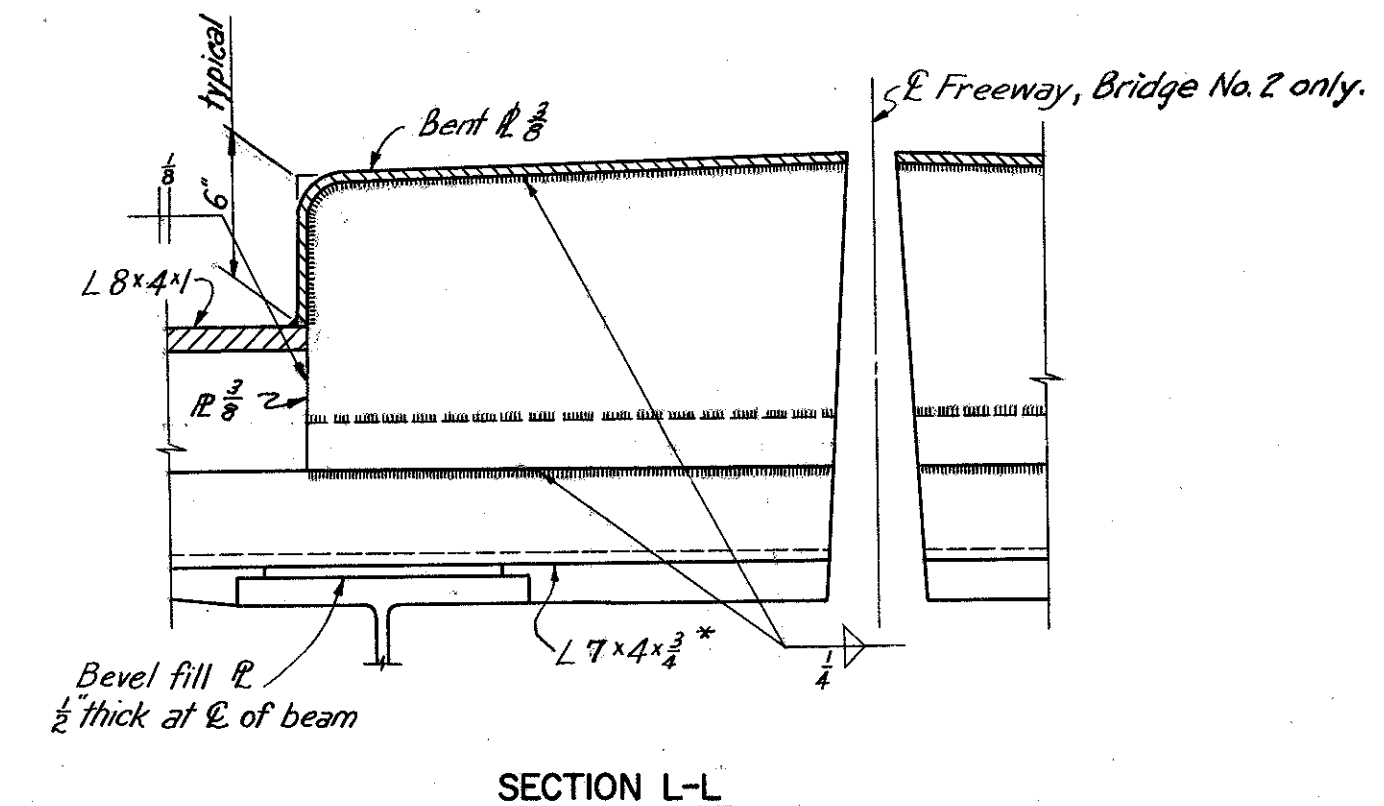
**SECTION G-G**



**SECTION J-J**



**SECTION K-K**



**SECTION L-L**

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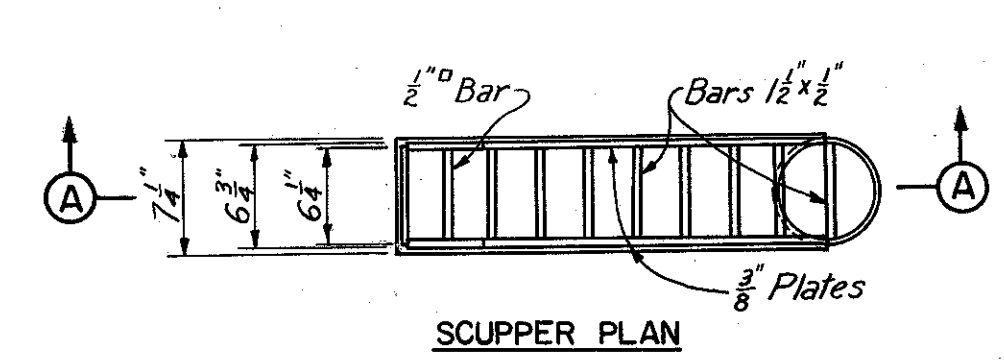
**END DAM DETAILS**

Scale: 1/2" = 1'-0" Except as noted

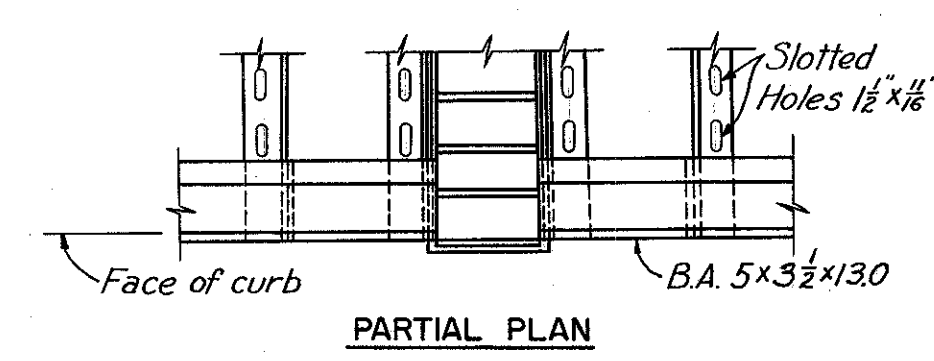
**WILLOW-INNER BELT FREEWAY**

CLEVELAND CUYAHOGA COUNTY OHIO

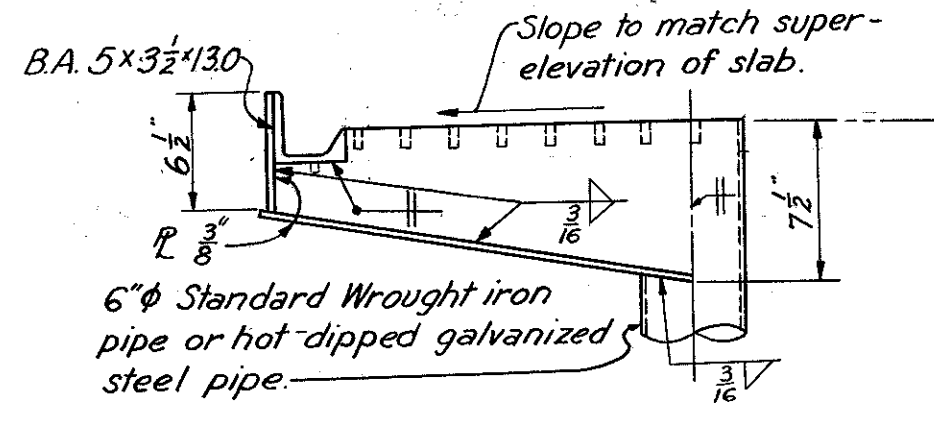
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DATE 11-24-58 DATE 11-26-58 DATE 12-5-59 DATE 11-12-59 SHEET 156



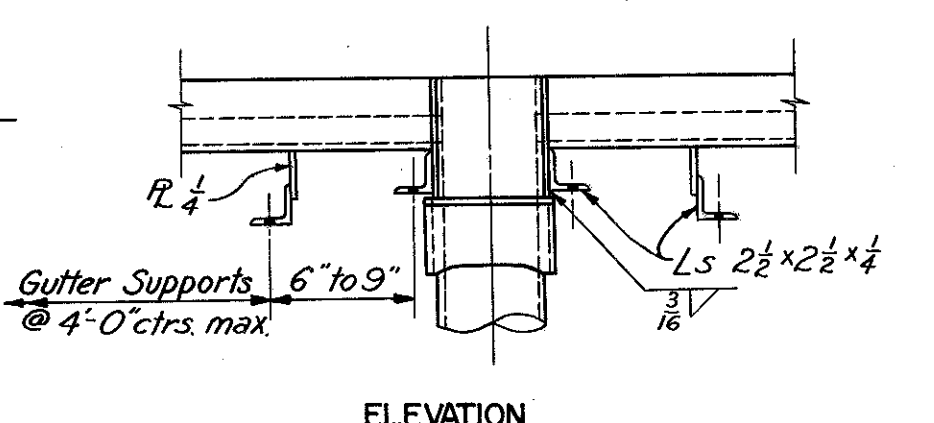
SCUPPER PLAN



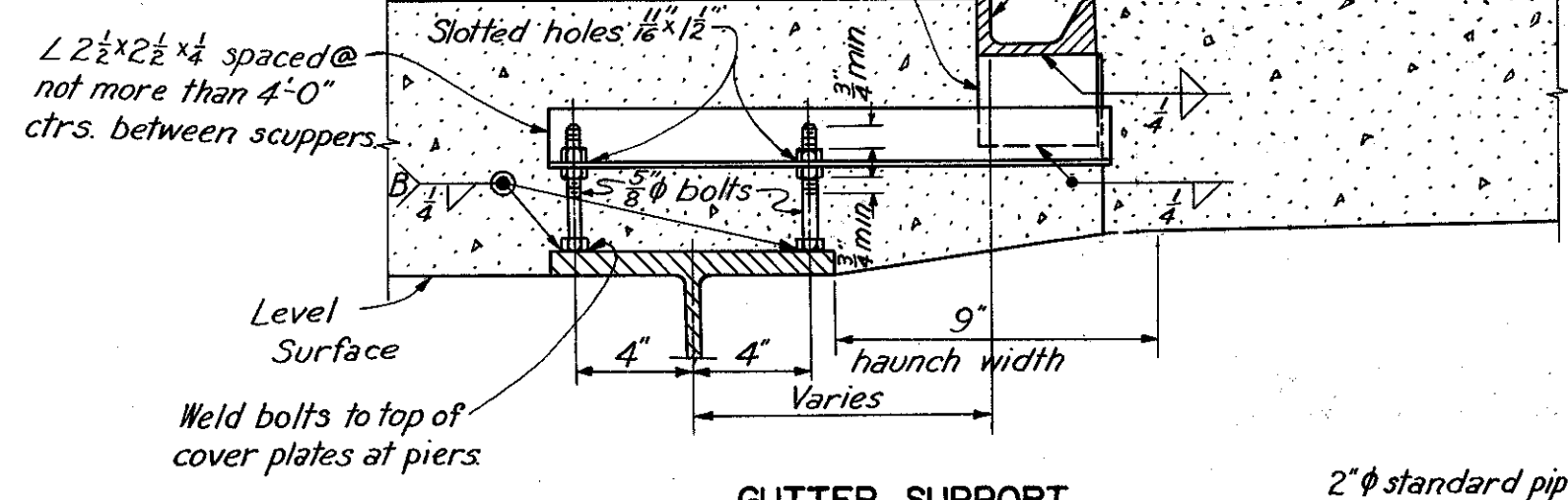
PARTIAL PLAN



SCUPPER ELEVATION

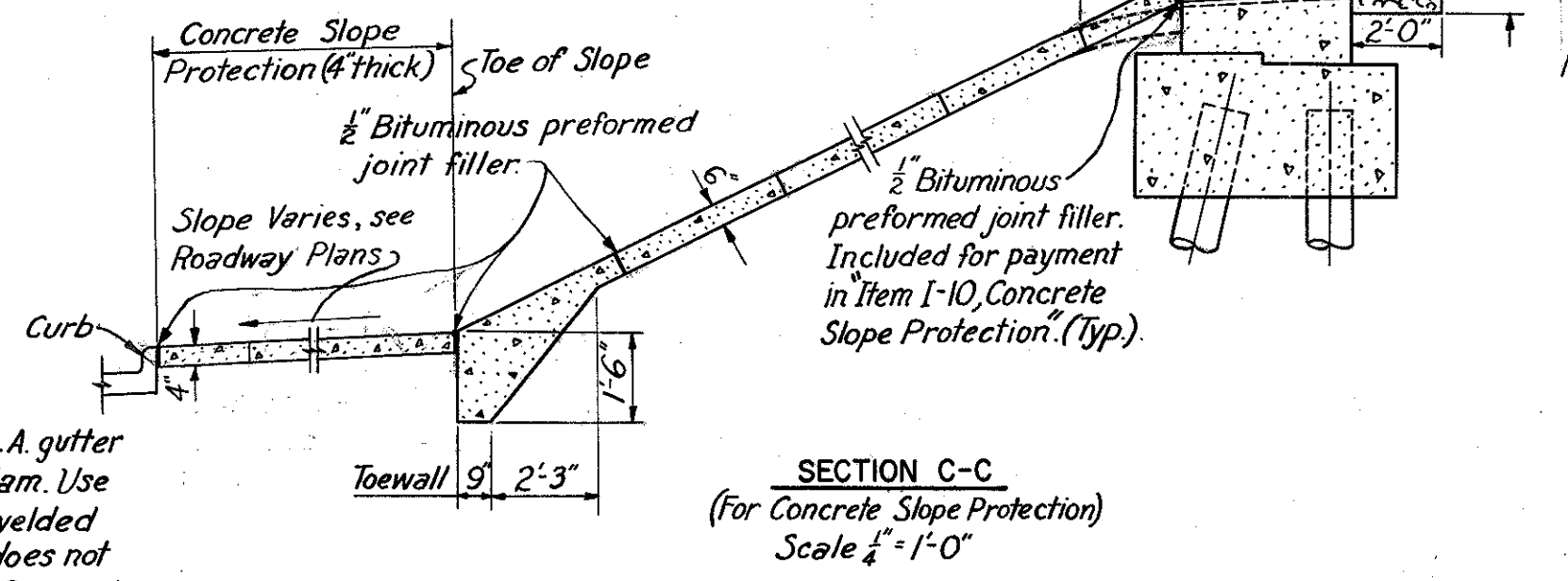


ELEVATION



GUTTER SUPPORT  
Scale 1/2" = 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.

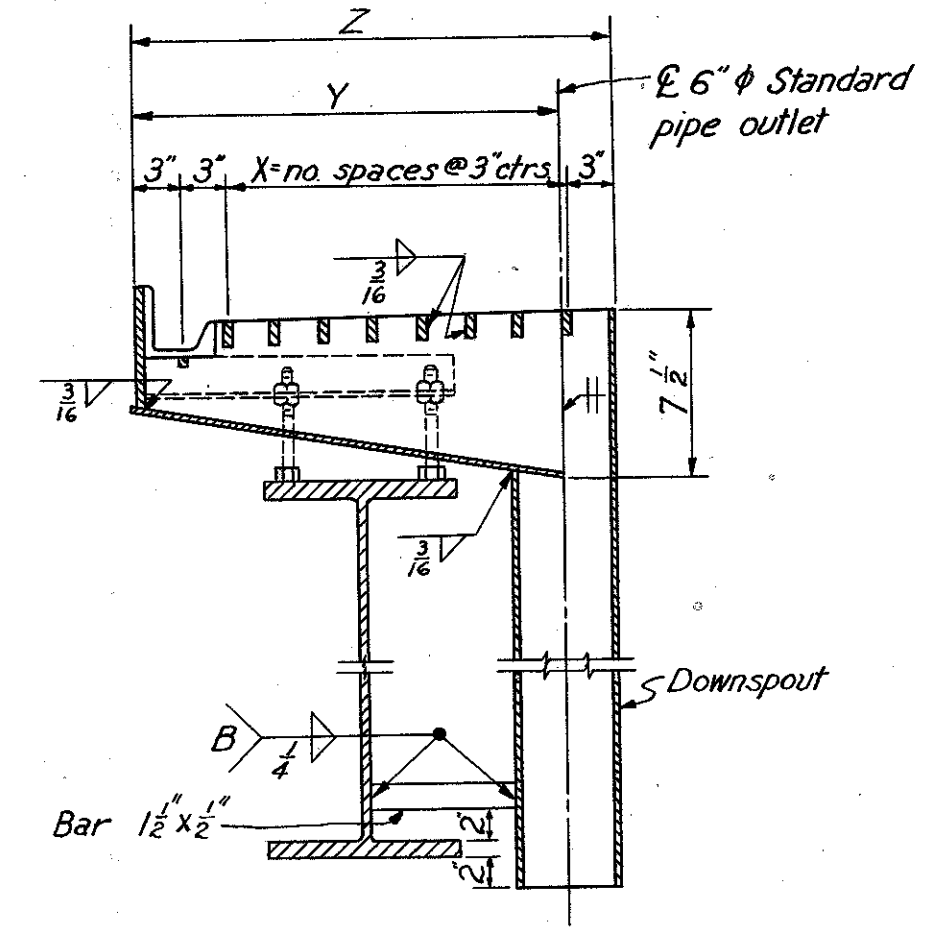


SECTION C-C  
(For Concrete Slope Protection)  
Scale 1/4" = 1'-0"

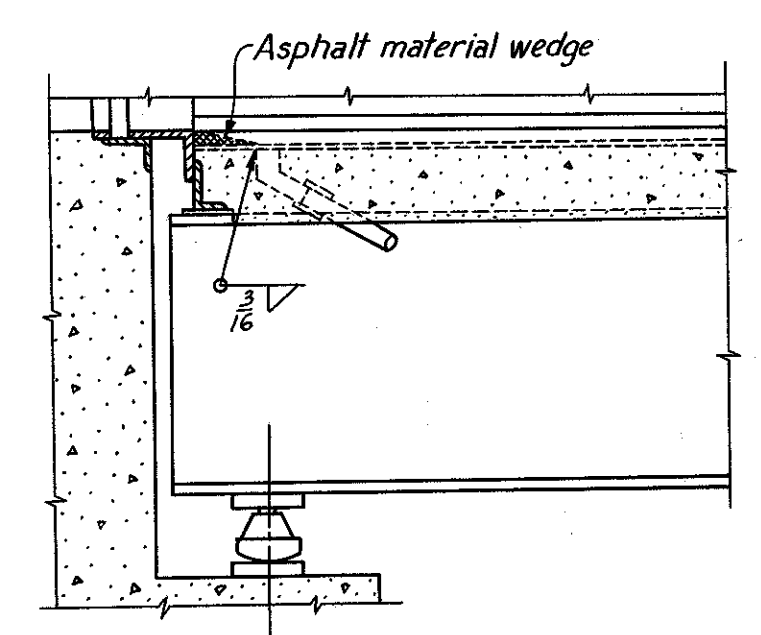
Note:  
Concrete or Crushed Aggregate Slope Protection material, as required, shall be placed within the limits shown on the Site Plans. Slope Protection material required on all roadway areas beyond the toe of slopes shall be as follows:  
Concrete shall conform to Sec. I-10.05 except that it shall 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, 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.

SCUPPER TYPE	X	Y	Z
A	2	11 3/4"	1'-3"
B	3	1'-2 3/4"	1'-6"
C	5	1'-8 3/4"	2'-0"
D	7	2'-2 3/4"	2'-6"

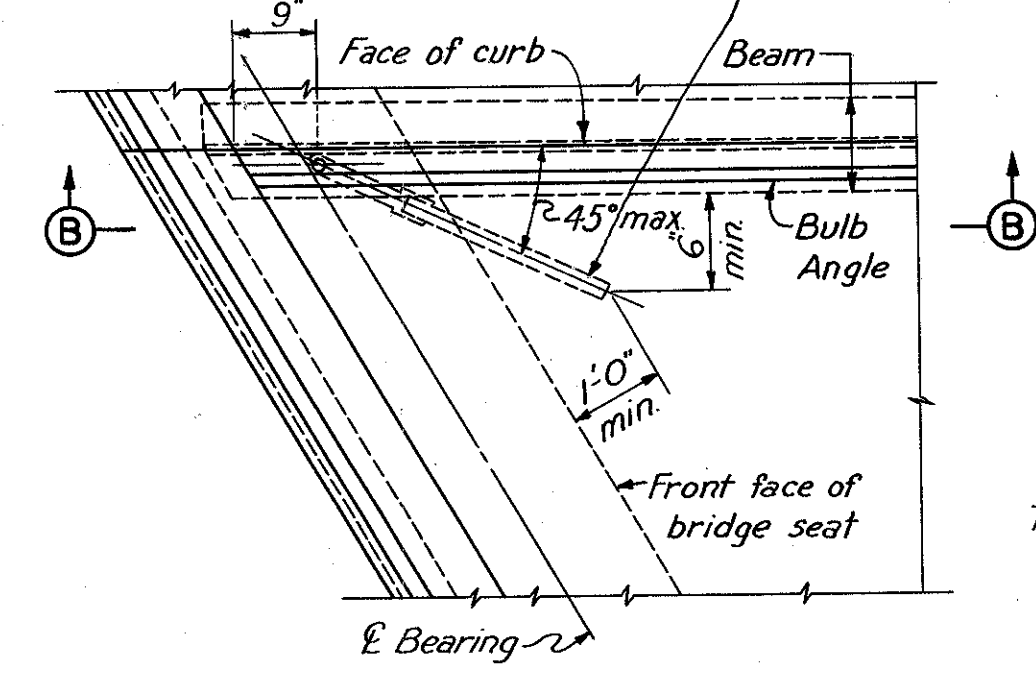
SCUPPER DETAILS  
Scale 1" = 1'-0"



SECTION A-A  
(Typical except where scupper empties into trough or 12x6 Standard Concentric Reducer)



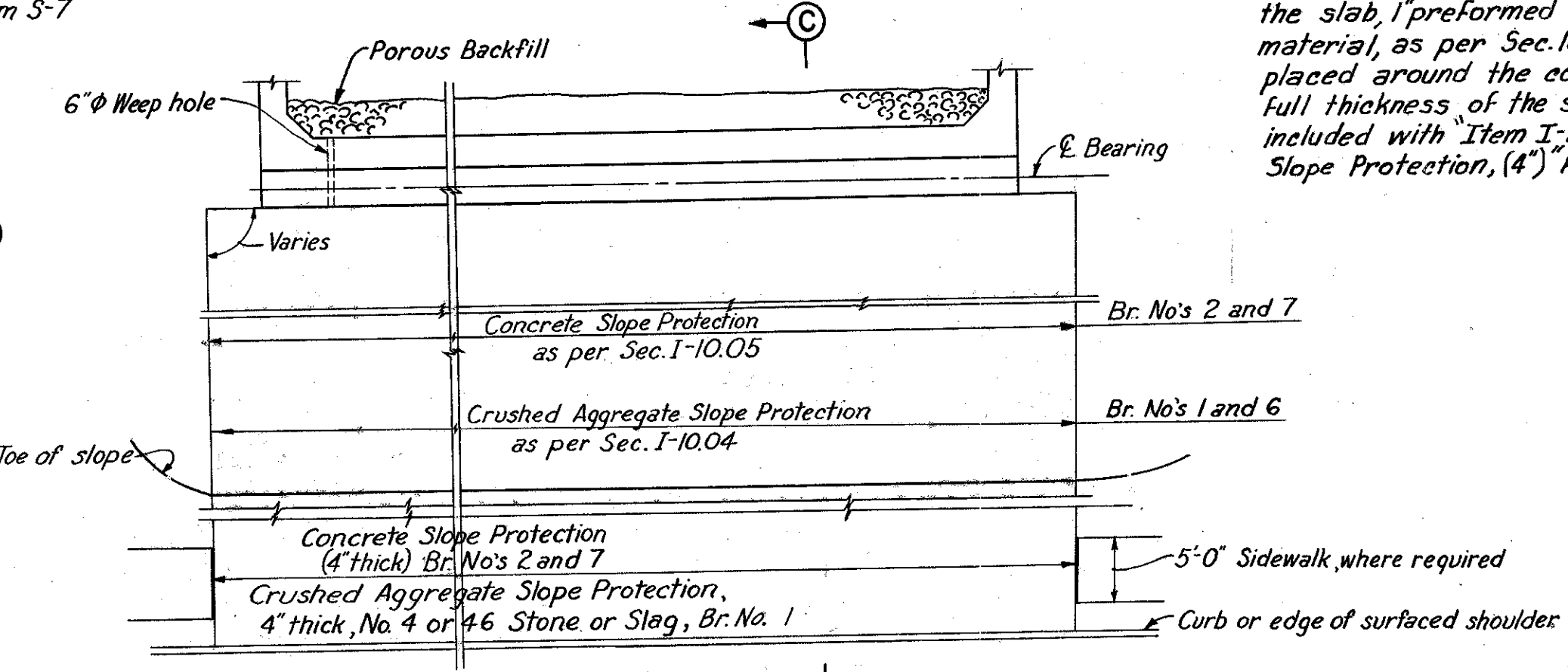
SECTION B-B



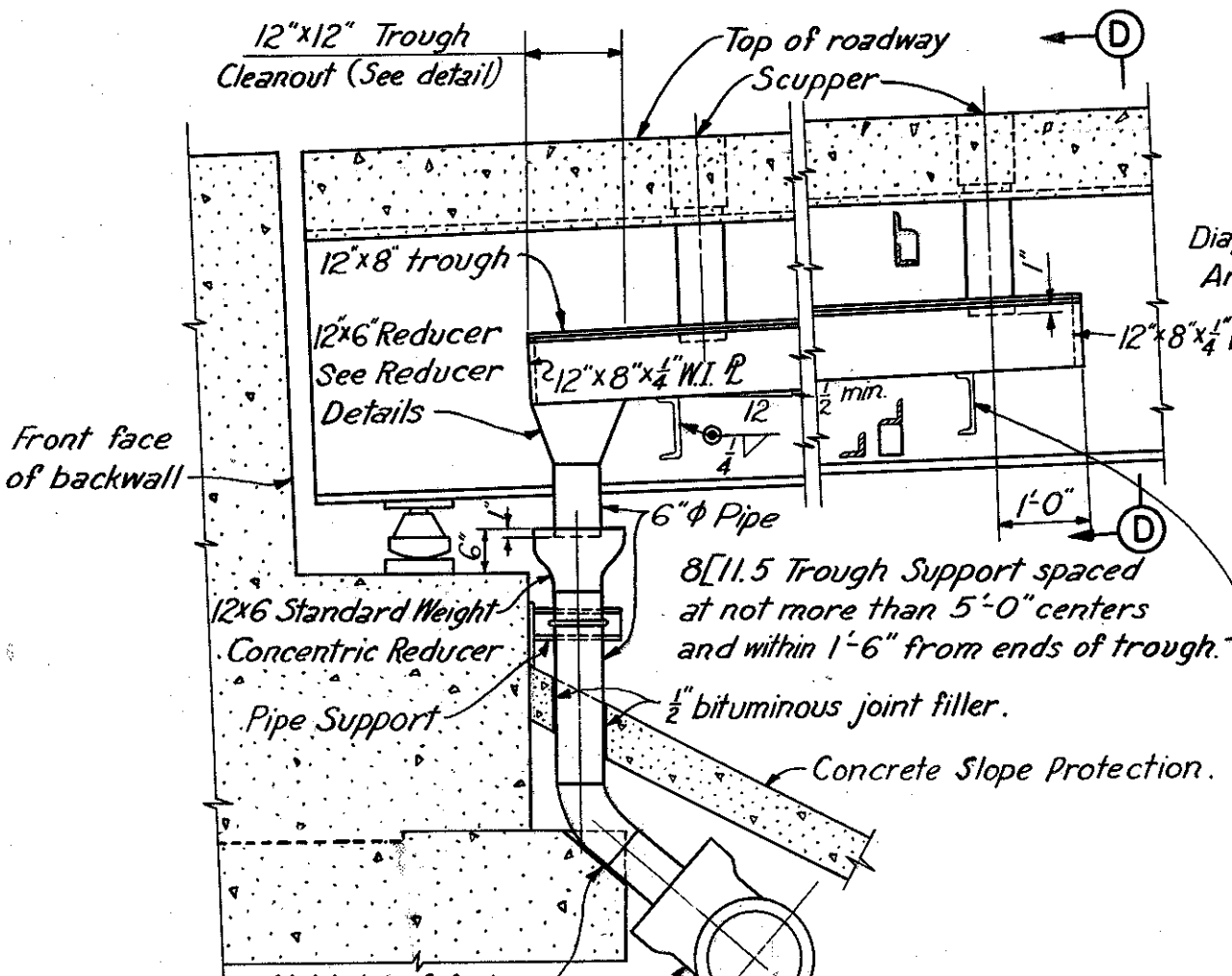
PARTIAL PLAN AT ABUTMENT

DETAIL OF DRAIN AT LOW END OF GUTTER  
Scale 1/2" = 1'-0"

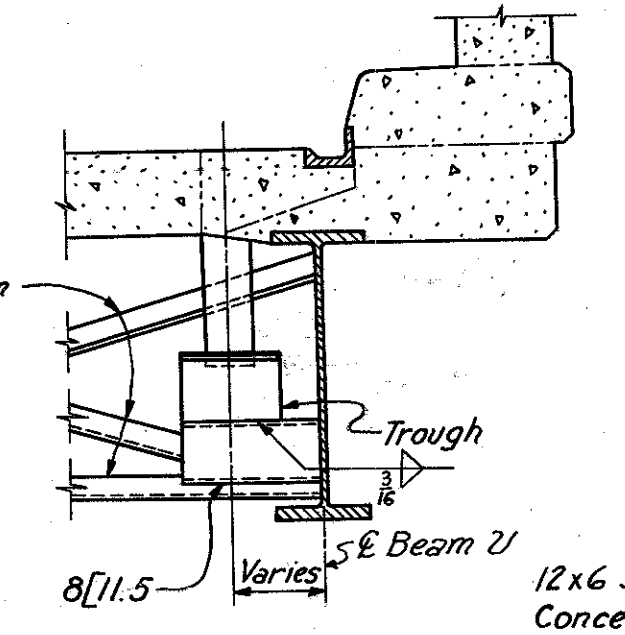
Note:  
For details not shown, see Trough Elevation, Bridge No. 2, West Abutment.



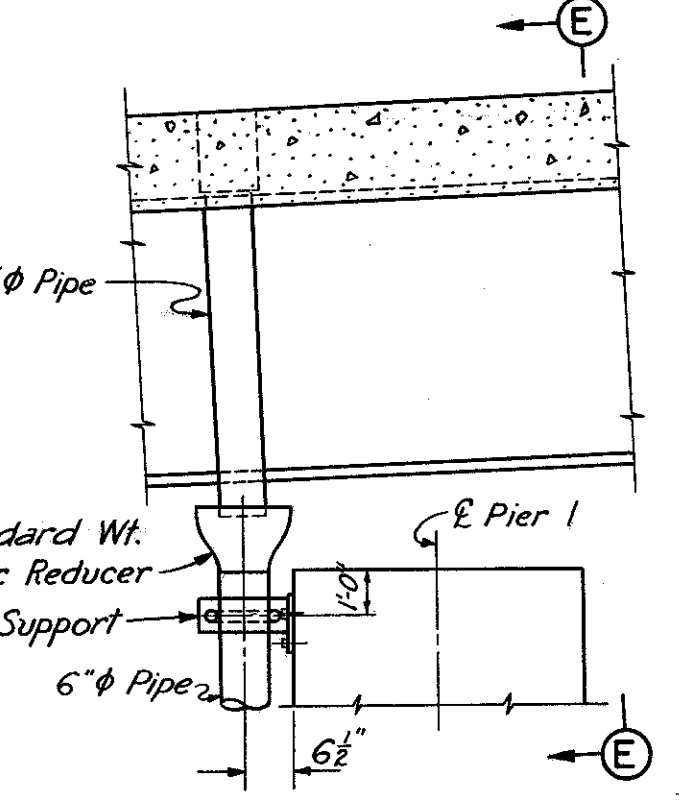
PLAN  
Not to scale



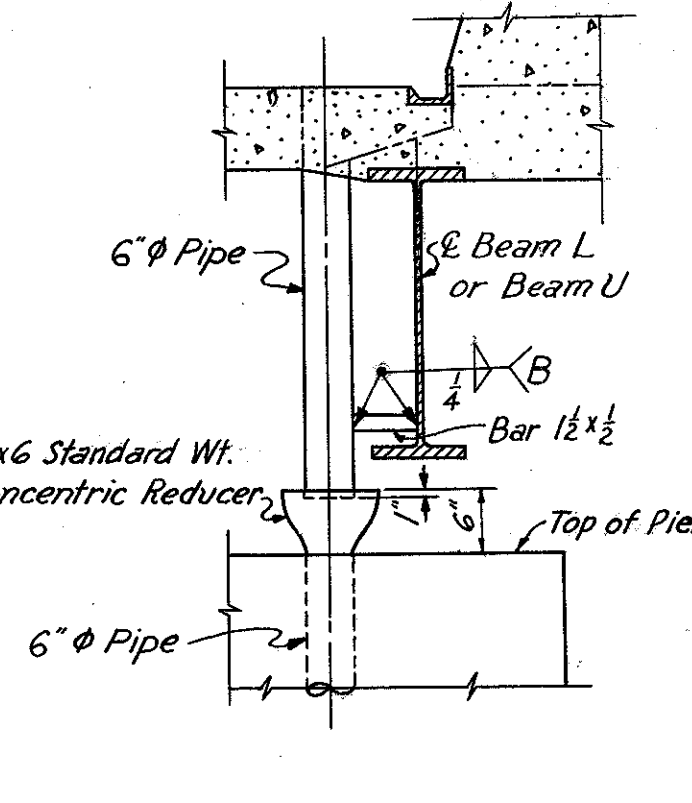
TROUGH ELEVATION  
(Bridge 2 @ West Abutment)  
Scale 1/2" = 1'-0"



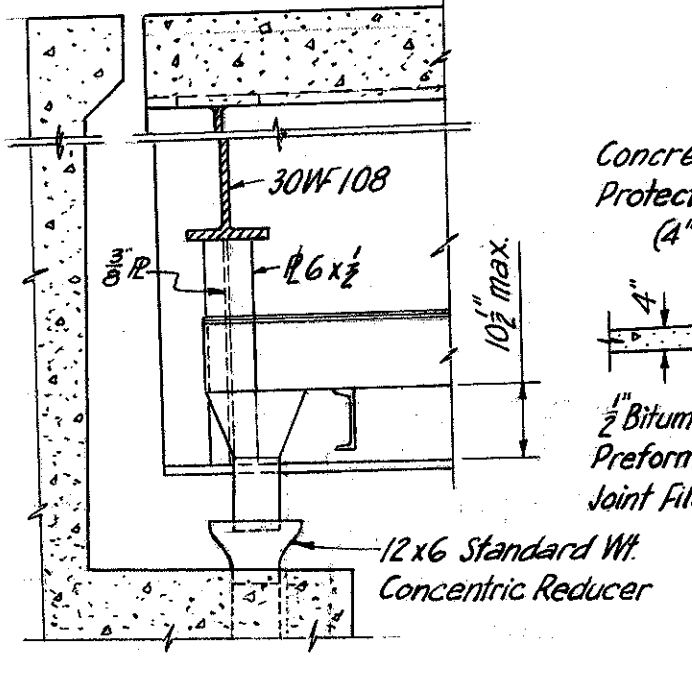
SECTION D-D  
Scale 1/2" = 1'-0"



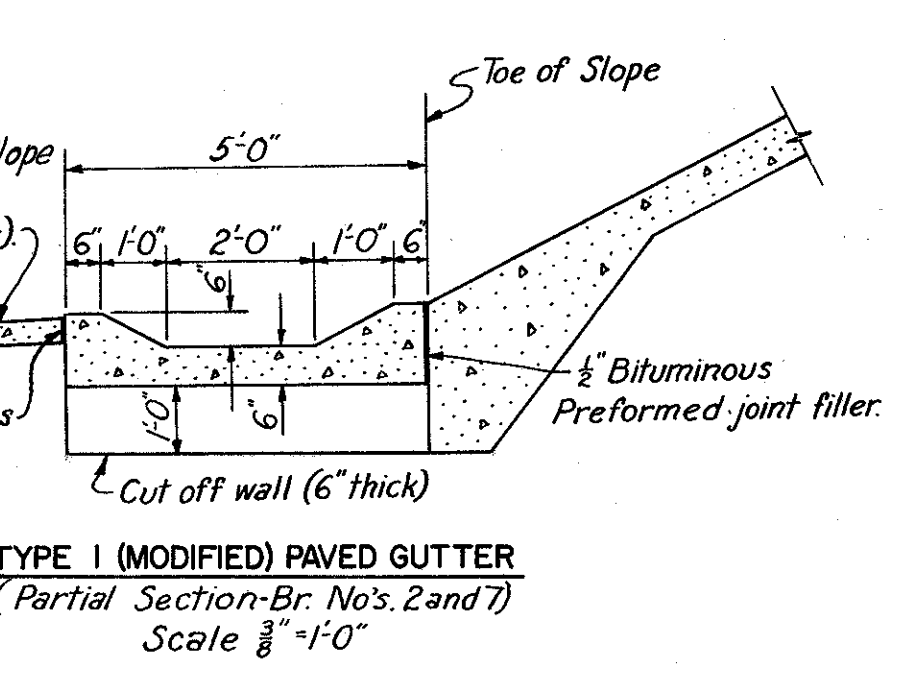
ELEVATION-SCUPPER AT PIER 1, BRIDGE NO. 2  
Scale 1/2" = 1'-0"



SECTION E-E  
Scale 1/2" = 1'-0"

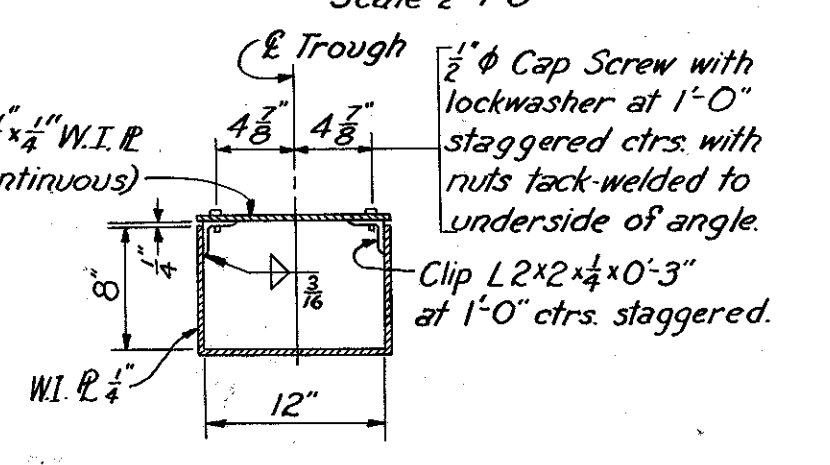


TROUGH ELEVATION  
(Bridge No. 6 @ West Abutment)  
Scale 1/2" = 1'-0"

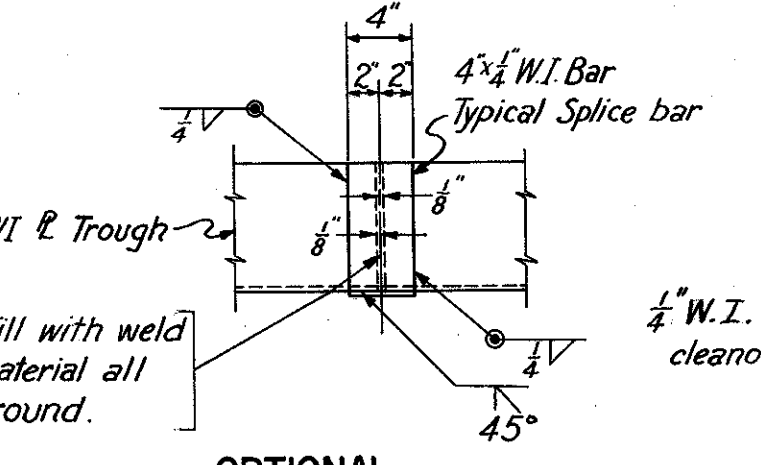


SLOPE PROTECTION DETAILS

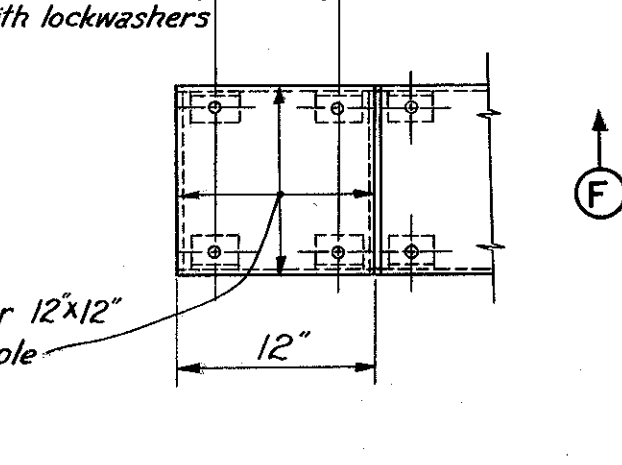
NOTES:  
All 6" pipe shall be standard weight wrought iron or hot dipped galvanized steel pipe with extra strong weld type seamless steel fittings or galvanized Victaulic couplings or approved equal.  
Welded joints of all pipes and fittings to be single bevel butt welds - full penetration with 1/8" 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 3/16" 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" holes in 10 Ga. P. of trough for 6" pipes.  
For scupper locations, see Deck Plans.  
For trough location, see Framing Plan Bridge No. 2.  
All pipes attached to the substructure including fittings, supports, and accessories shall be included in "Item 5-29, 6" W.I. Galvanized Steel Pipe including Fastenings & Specials" for payment.  
All other metalwork of the drainage system shall be included in Item 5-7.



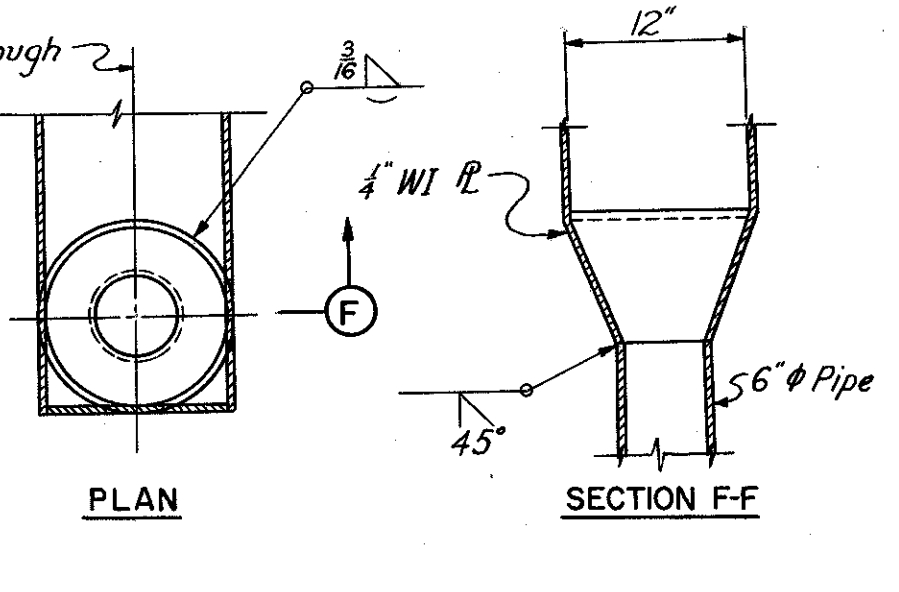
TYPICAL TROUGH SECTION  
Scale 1" = 1'-0"



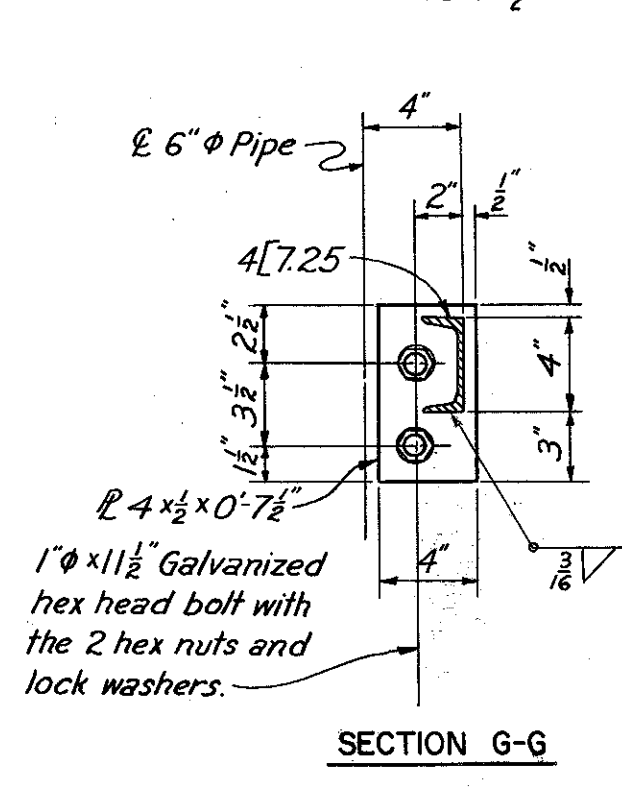
OPTIONAL TROUGH FIELD SPICE  
Scale 1" = 1'-0"



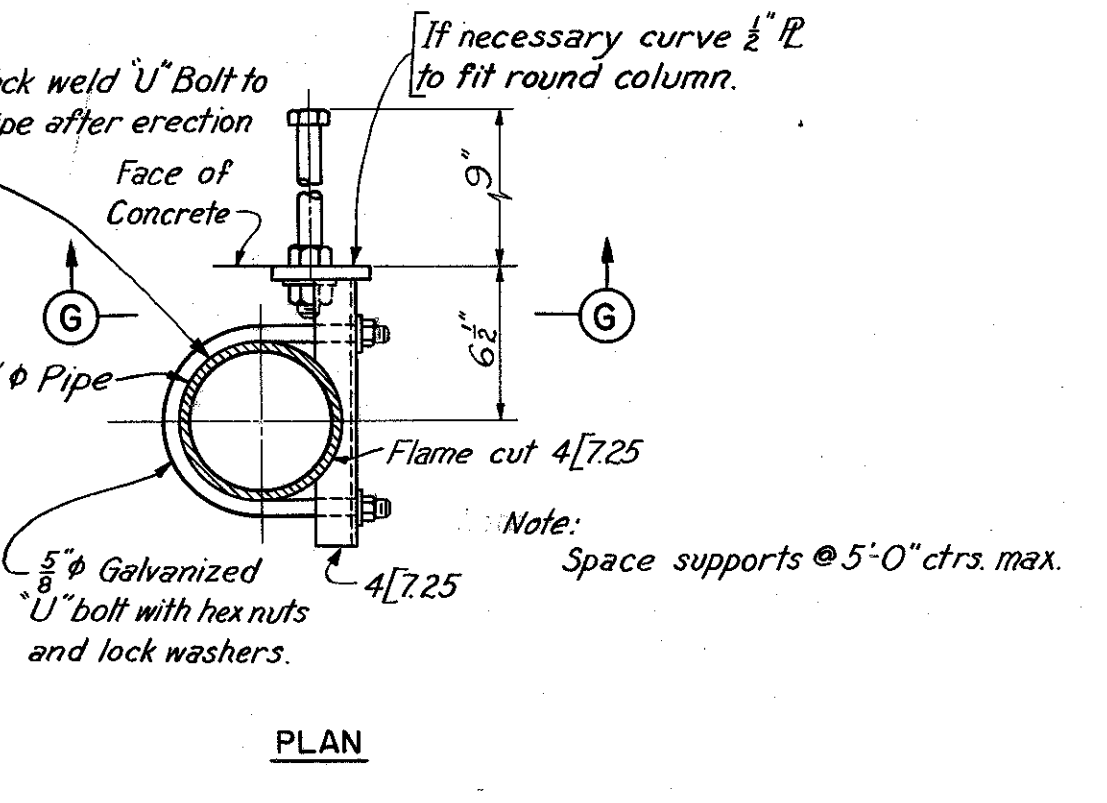
PLAN OF TROUGH CLEANOUT  
Scale 1" = 1'-0"



REDUCER DETAILS  
Scale 1" = 1'-0"



PIPE SUPPORT DETAILS  
Scale 1/2" = 1'-0"



PLAN

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 P.C. TRACED R.W.K. CHECKED F.S.J. REVIEWED J.C.T. REVISED

DATE 11-4-58 DATE 11-24-58 DATE 12-22-58 DATE 1-12-59

PART 6

SHEET 157

MICROFILMED  
JUL 9 '85

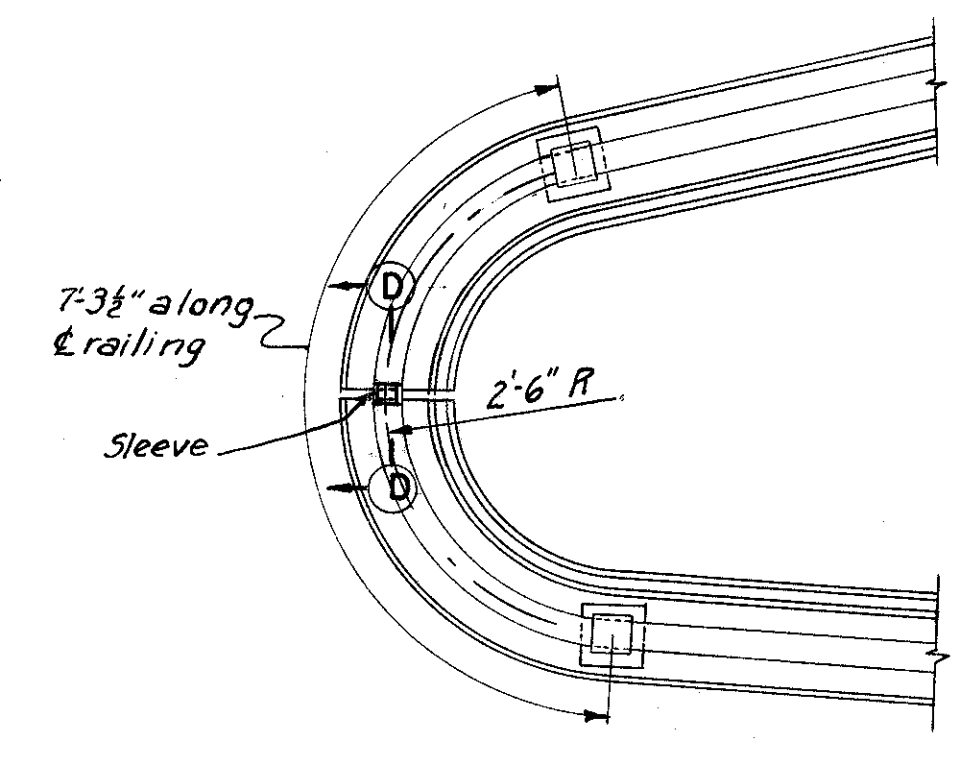
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	156
2	OHIO		175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42 - 18.29

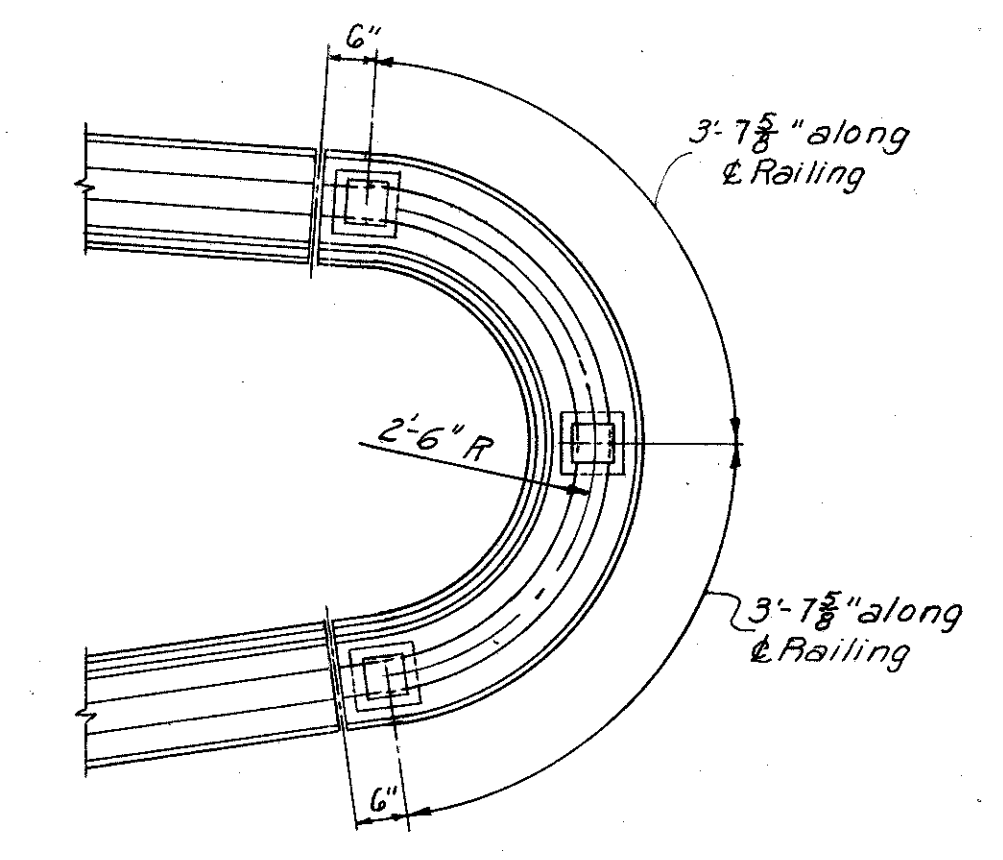
Bridge No.	Railing	West Abutment	East Abutment
1	North	5'-1 1/2" 2 Spaces @ 5'-6"	7'-8 3/4" 17 Spaces @ 8'-3" = 140'-3"
	South	4'-6" 1 Space @ 7'-5"	8'-2 1/2" 16 Spaces @ 8'-5" = 134'-8"
2	North (Ramp E-5)	5'-4" 1 Space @ 7'-0"	7'-5 1/2" 29 Spaces @ 7'-3" = 195'-9"
	South (Ramp E-3)	(See Nose Detail)	8'-3 1/2" 19 Spaces @ 7'-3" = 137'-9"
	North (I.B.F.)	( " )	8'-5 1/2" 25 Spaces @ 6'-6"
	South (I.B.F.)	5'-2 1/2" 1 Space @ 7'-0"	7'-6" 29 Spaces @ 7'-6" = 217'-6"
6	North	5'-1 1/2" 25 Spaces @ 7'-9"	6'-5 3/8" 36 Spaces @ 7'-0" = 252'-0"
	South	25 Spaces @ 5'-0 1/2"	6'-7" 35 Spaces @ 8'-0"
7	North (Ramp E-18)	5'-4" 35 Spaces @ 6'-7"	7'-10" 24 Spaces @ 8'-4" = 204'-0"
	South (Ramp E-18)	5'-6" 1 Space @ 8'-10"	7'-9 3/4" 7 Spaces @ 8'-6" = 59'-6"
	North (Ramp E-15)	4'-7" 2 Spaces @ 5'-3"	9'-1 1/8" 4 Spaces @ 8'-4" = 34'-0"
	South (Ramp E-15)	5'-0" 1 Space @ 7'-10"	8'-7 1/8" 25 Spaces @ 6'-3"

\*See Retaining Wall Railing Post Spacing

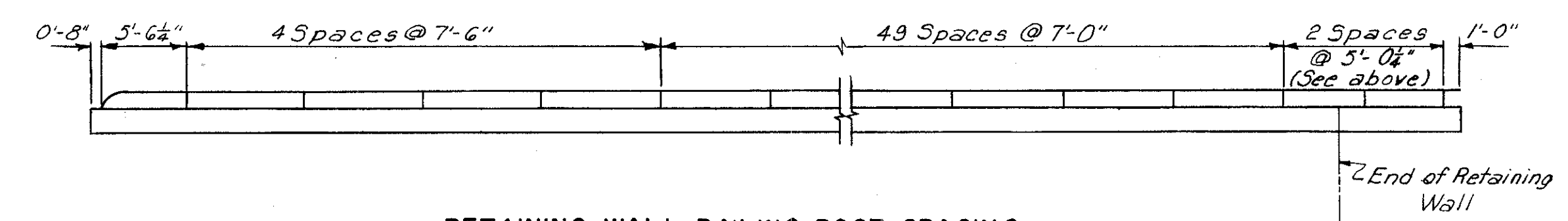
**RAILING POST SPACING**  
No Scale



**NOSE DETAIL FOR BR. NO. 2**  
Scale: 1/2" = 1'-0"

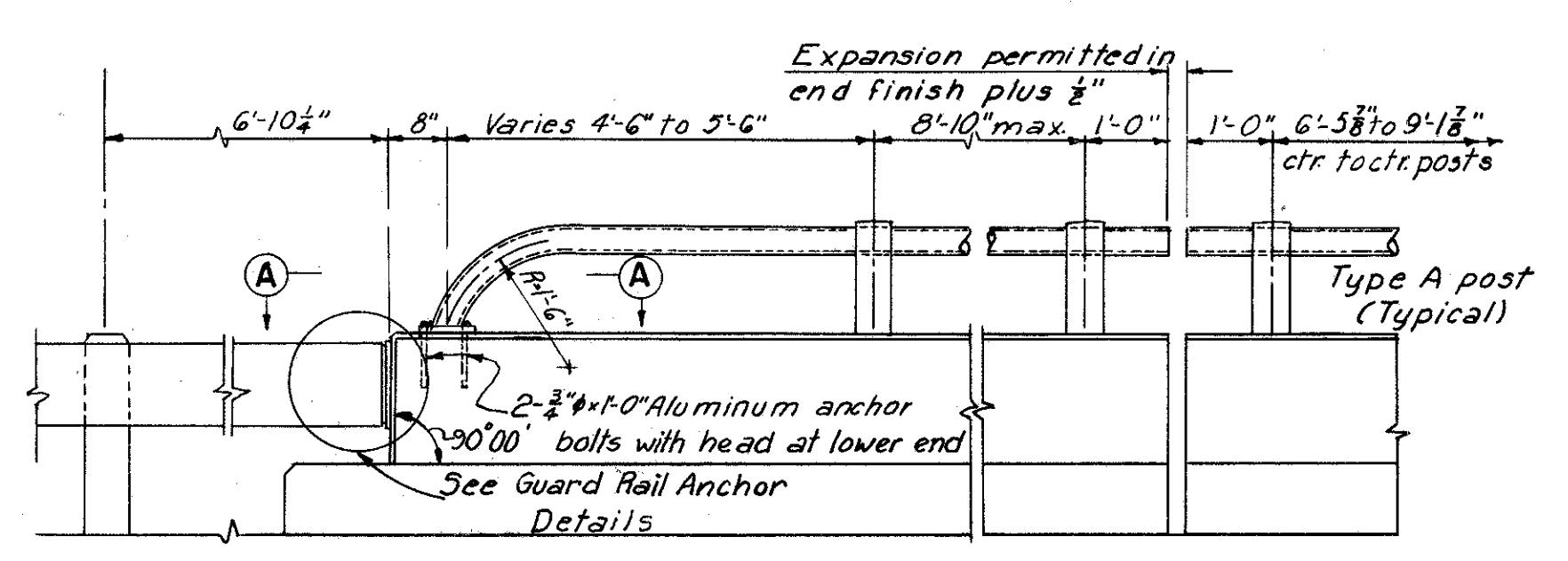
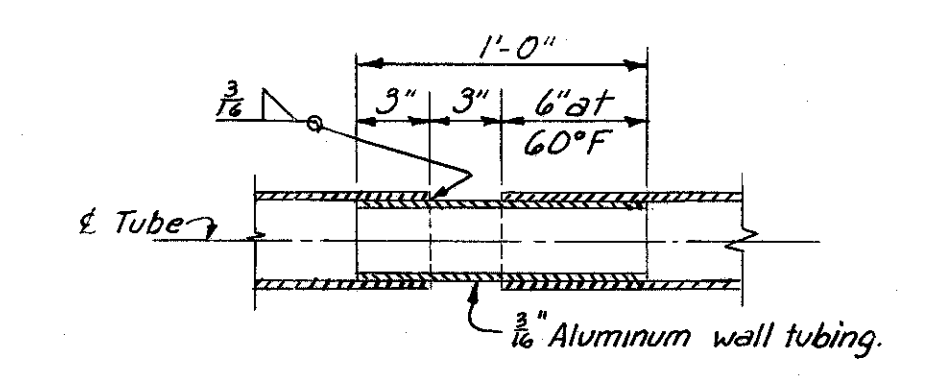


**NOSE DETAIL FOR BR. NO. 7**  
Scale: 1/2" = 1'-0"

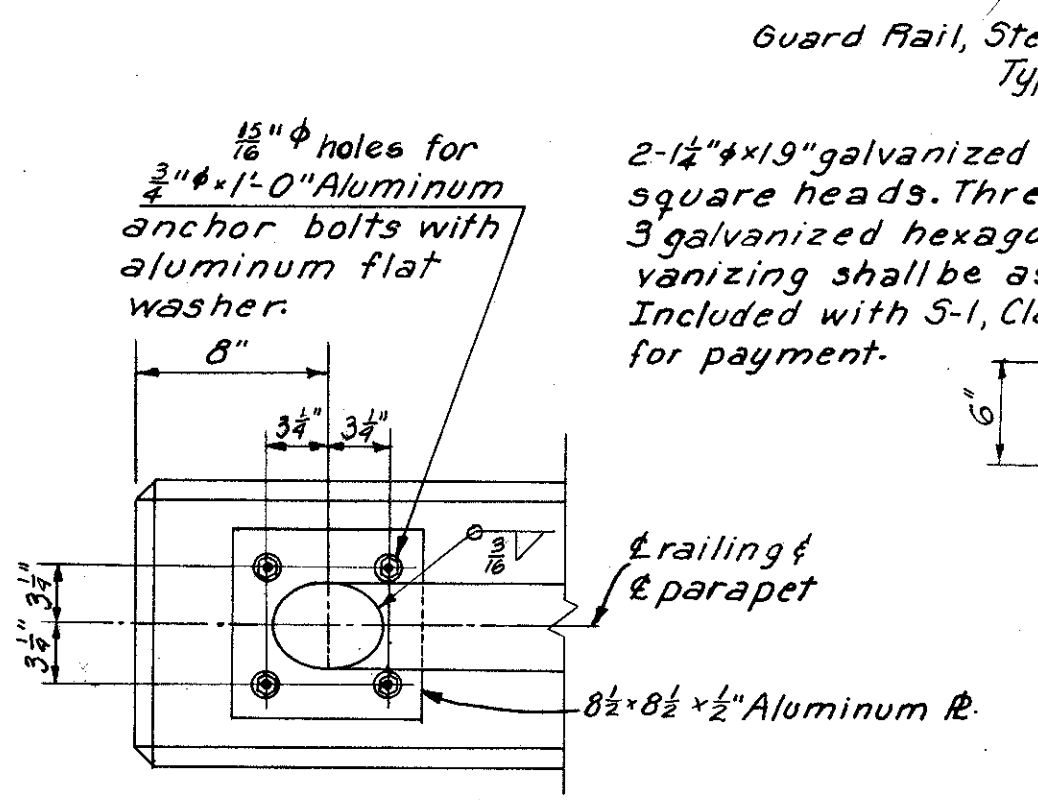


**RETAINING WALL RAILING POST SPACING**  
No Scale

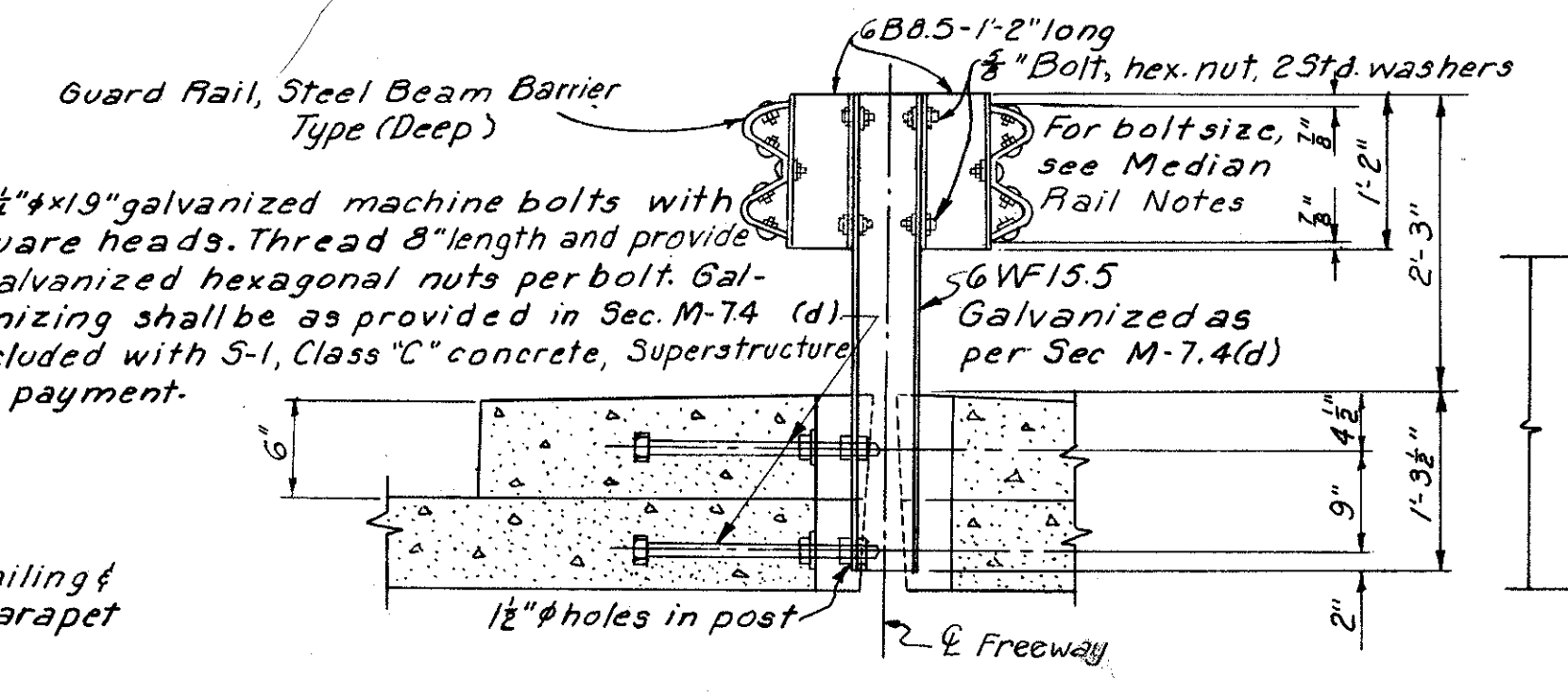
Note: Contraction and expansion joints in the wall shall be continued through the parapet. 1" preformed gray rubber expansion joint filler shall be included with "Item 5-14, Railing" for payment.



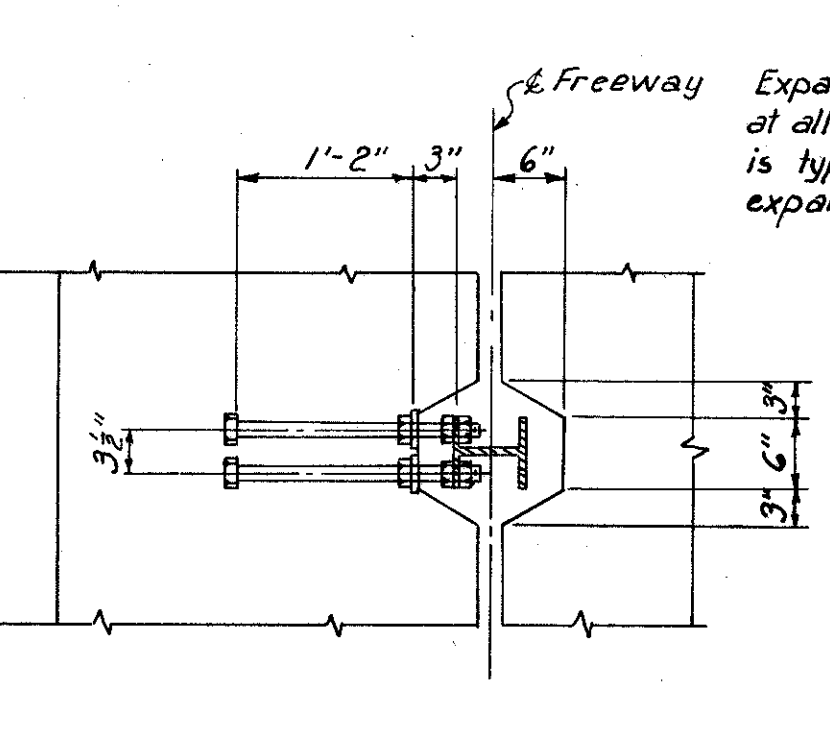
**DETAILS AT END OF RAILING**  
Scale: 1/2" = 1'-0"



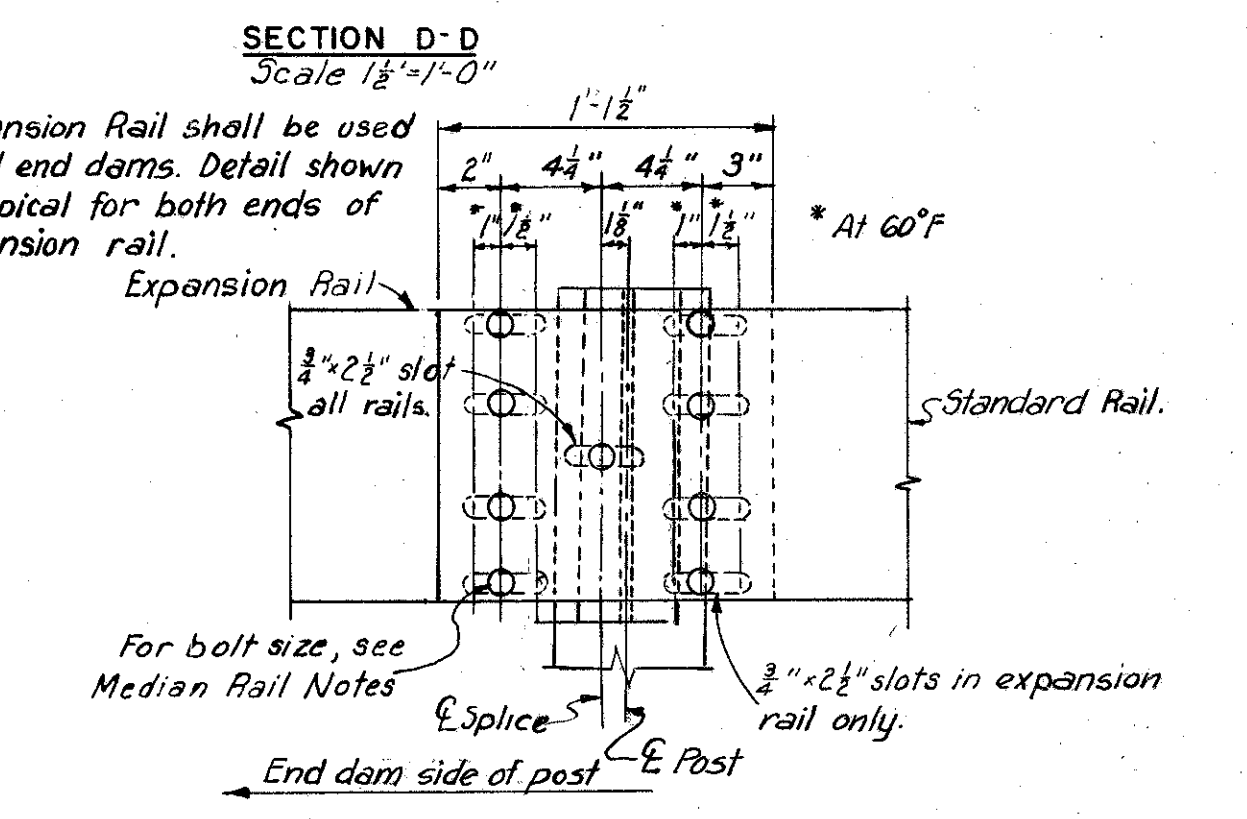
**SECTION A - A**  
Scale: 1 1/2" = 1'-0"



**MEDIAN GUARD RAIL**  
Scale: 3/4" = 1'-0"

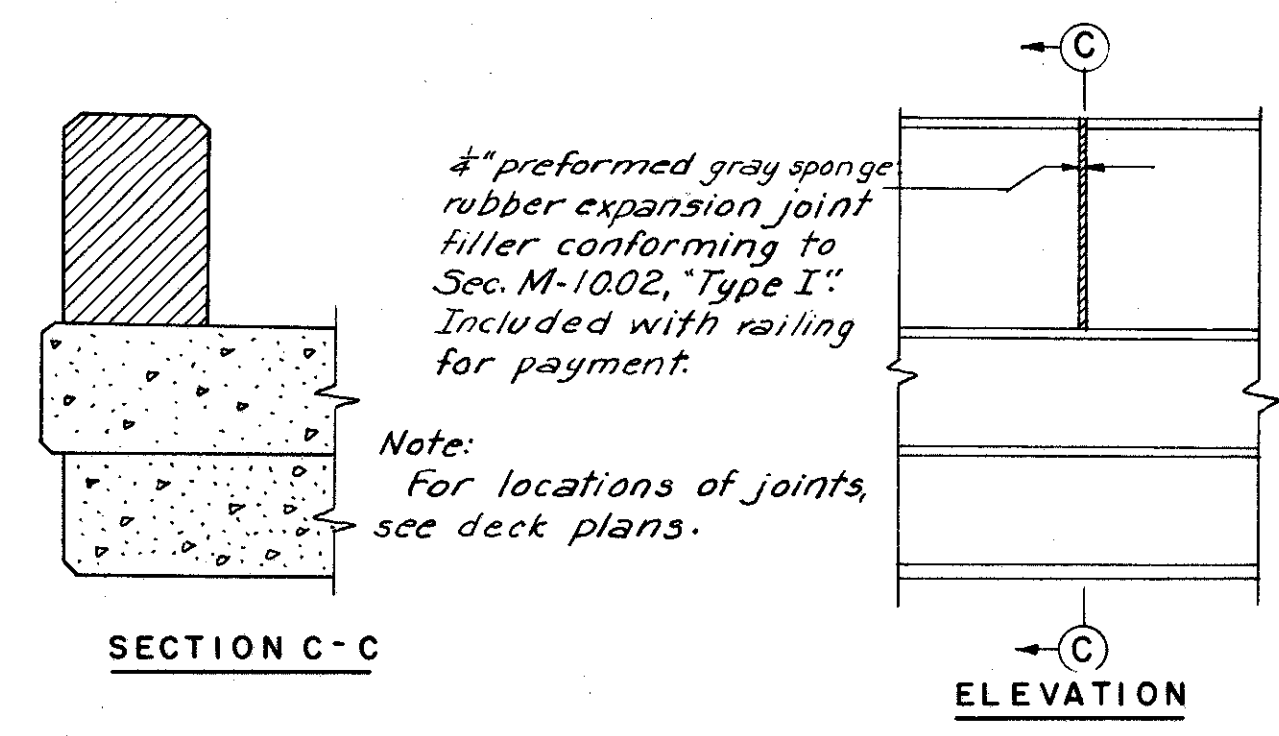


**POST ANCHOR DETAIL**  
Scale: 3/4" = 1'-0"

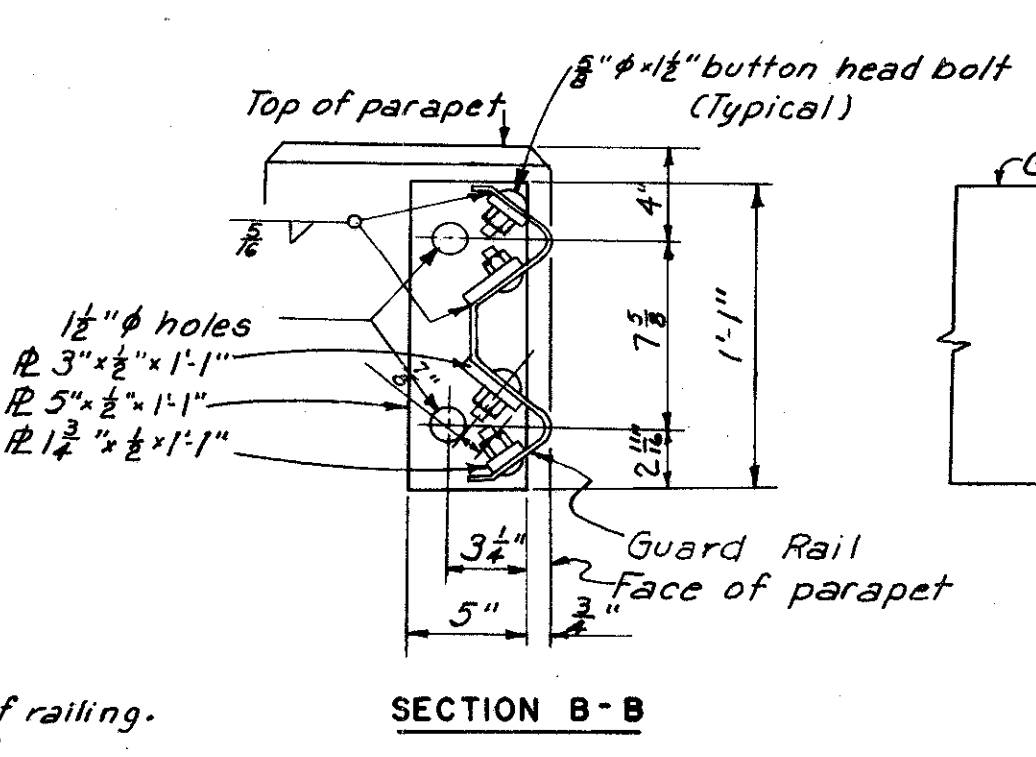


**MEDIAN GUARD RAIL SPLICE**  
Scale: 1 1/2" = 1'-0"

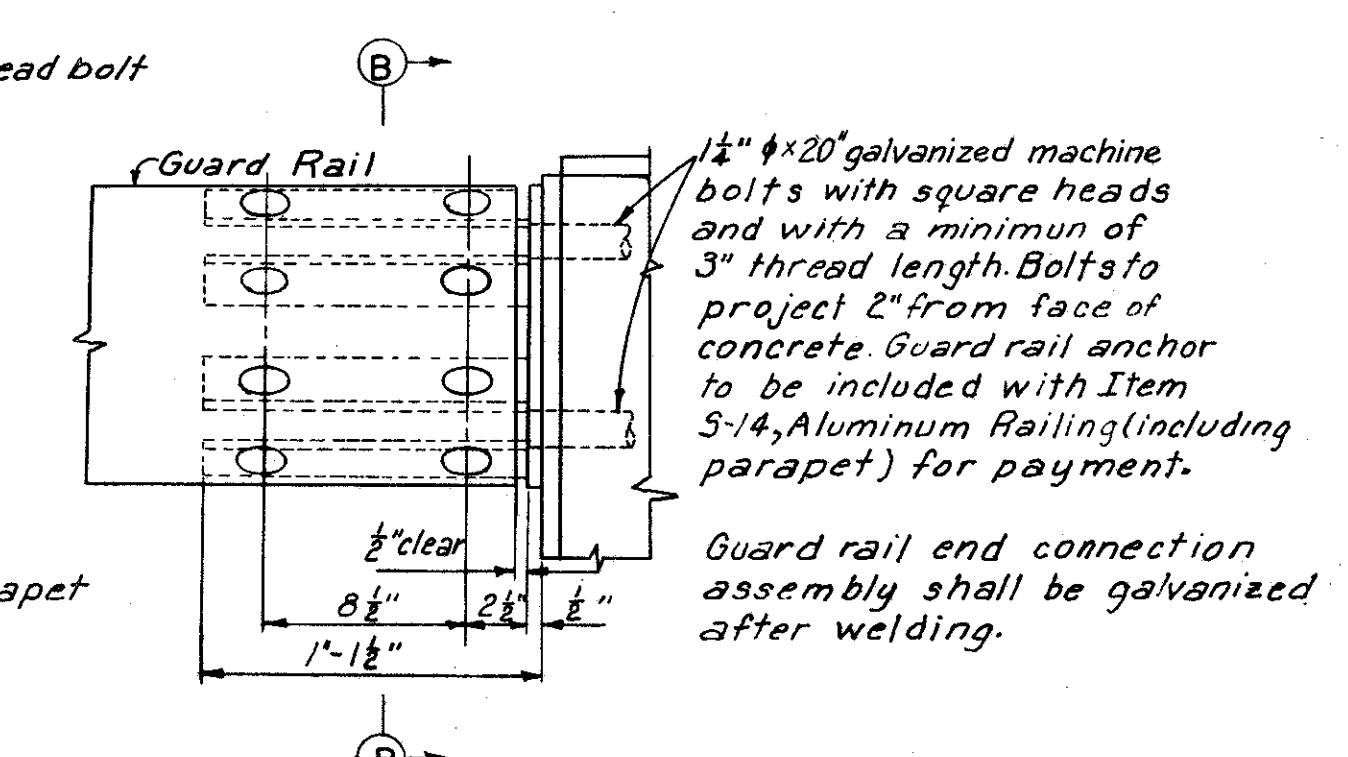
**NOTES:**  
Railing shall be fabricated in lengths not less than three panels each and furnished railing shall be free of burrs, sharp corners and rough surfaces. Shims if required for adjustment to line or grade, shall be of aluminum alloy, 2 3/8" x 3", and shall be slotted to permit insertion after 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 1/4" 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 5-14, 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 5-14, Railing, (including parapet)" for payment. All other reinforcing steel in parapet shall be included in Item 5-4 for payment.



**PARAPET JOINT**  
Scale: 1/2" = 1'-0"



**SECTION B - B**



**ELEVATION**  
(As seen from pavement side)  
**GUARD RAIL ANCHOR DETAILS**  
Scale: 1 1/2" = 1'-0"

**Median Rail Notes.**  
Bolts for rail splice and for fastening rail to posts shall be 3/8" diameter with button head, washer and hexagon nuts.  
For median guard rail spacing See Deck plans.

**PART 6**

**RAILING AND GUARD RAIL DETAILS**

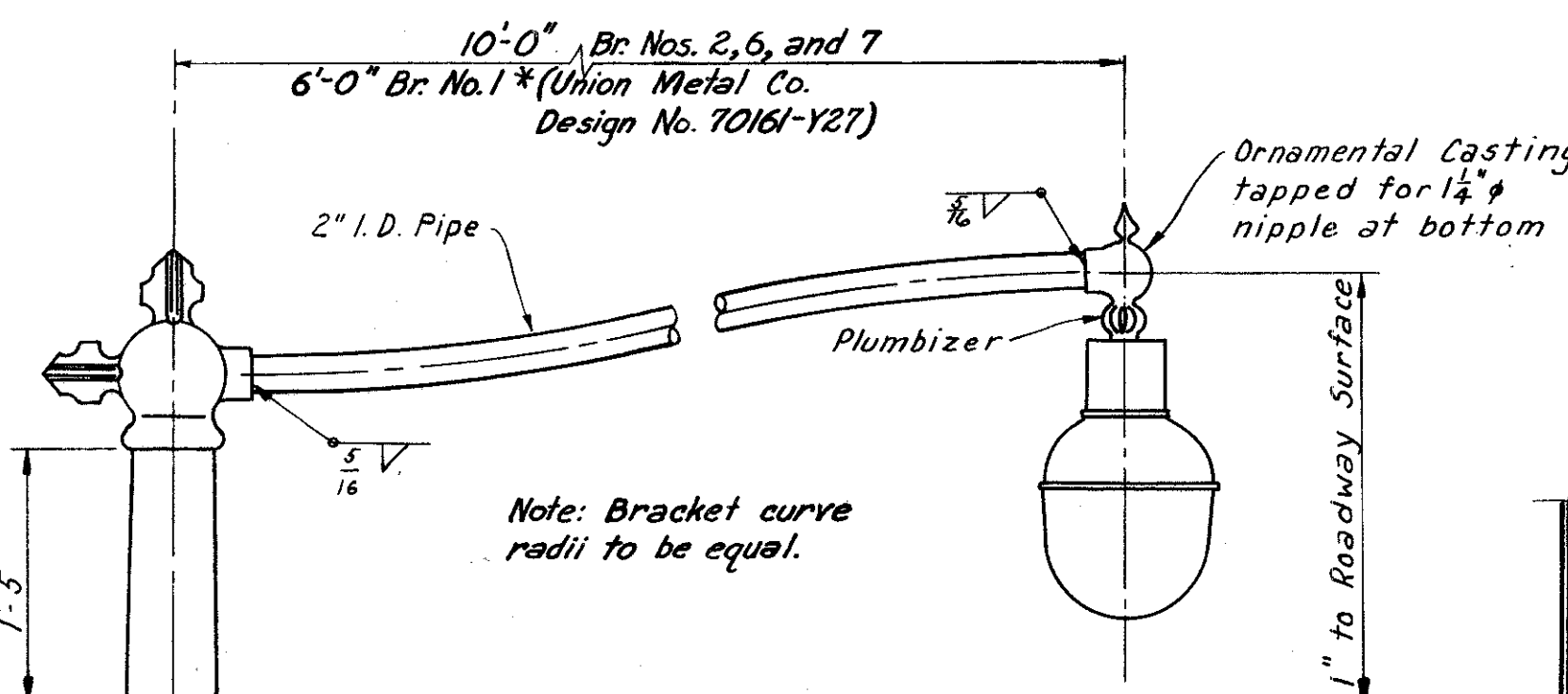
Scale: As noted

**WILLOW-INNER BELT FREEWAY**

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN RA	TRACED RA	CHECKED A.L.	REVIEWED CT	REVISED
DATE 11-11-58	DATE 11-24-58	DATE 12-6-58	DATE 11-12-59	

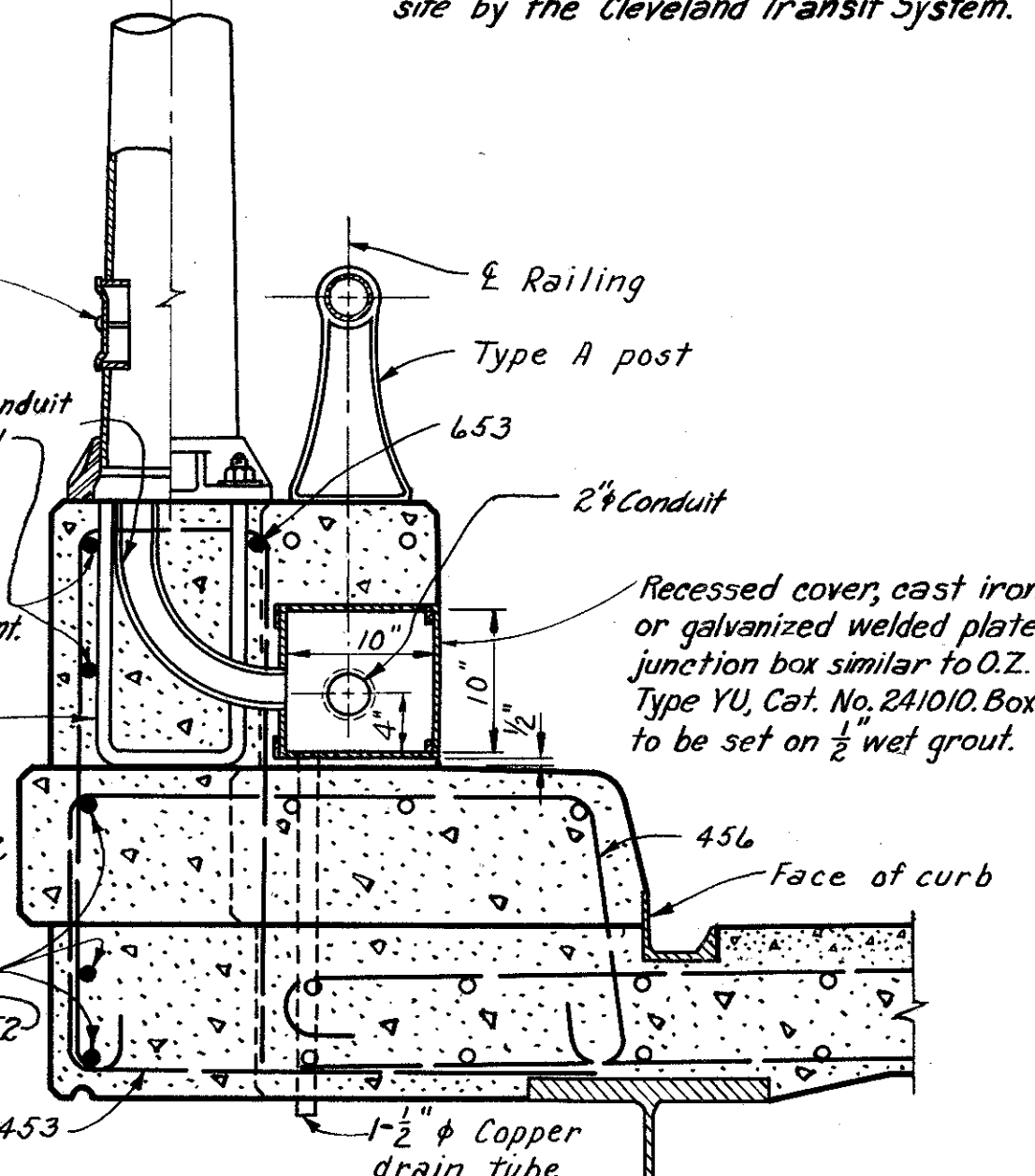
SHEET 158



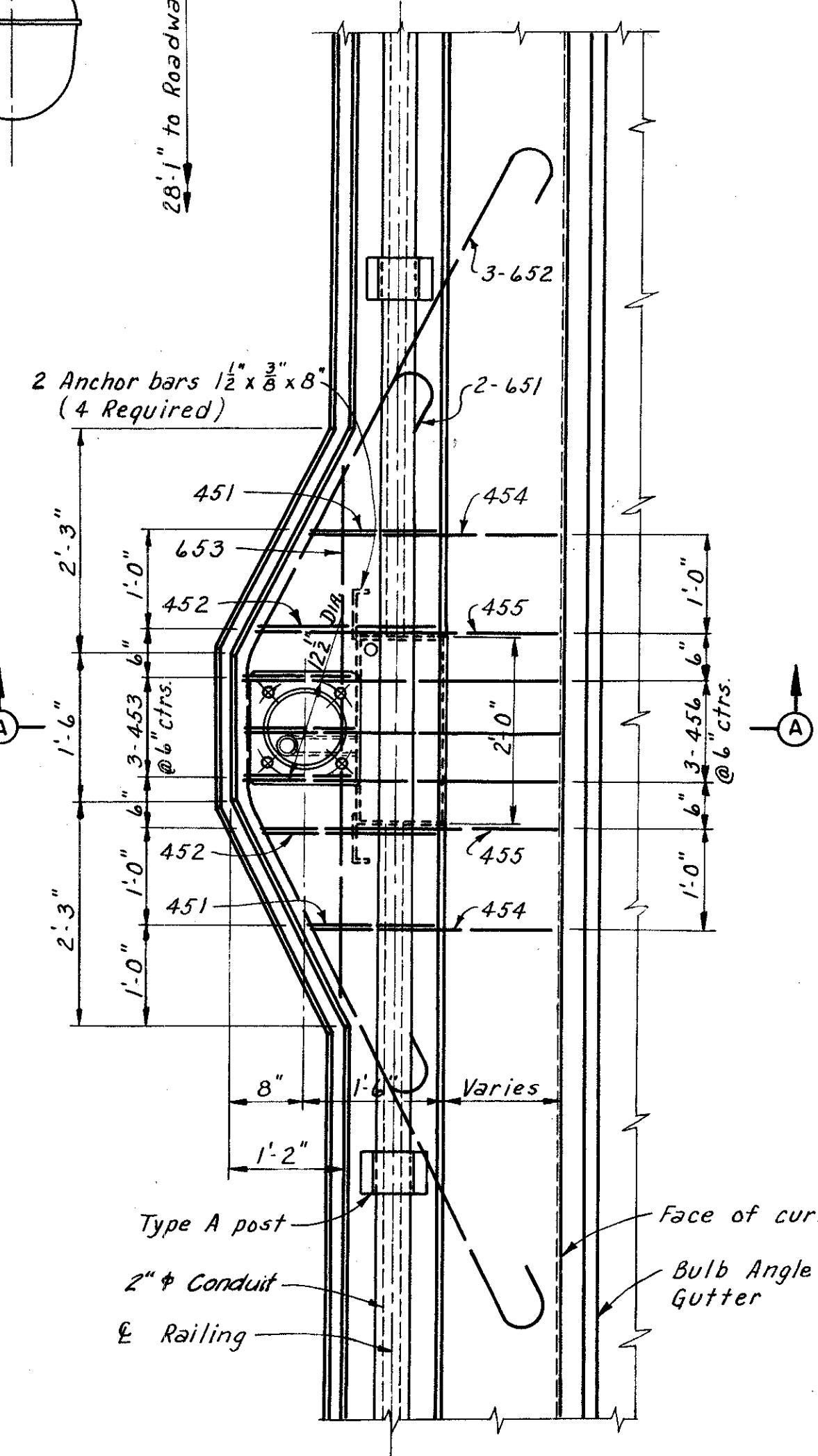
Rake top of bracket pole back from vertical so that back side is plumb.

Note: Light Pole - Union Metal Co. Design No. 70161 Y 23 or approved equal, with Ornamental Cast Steel head.

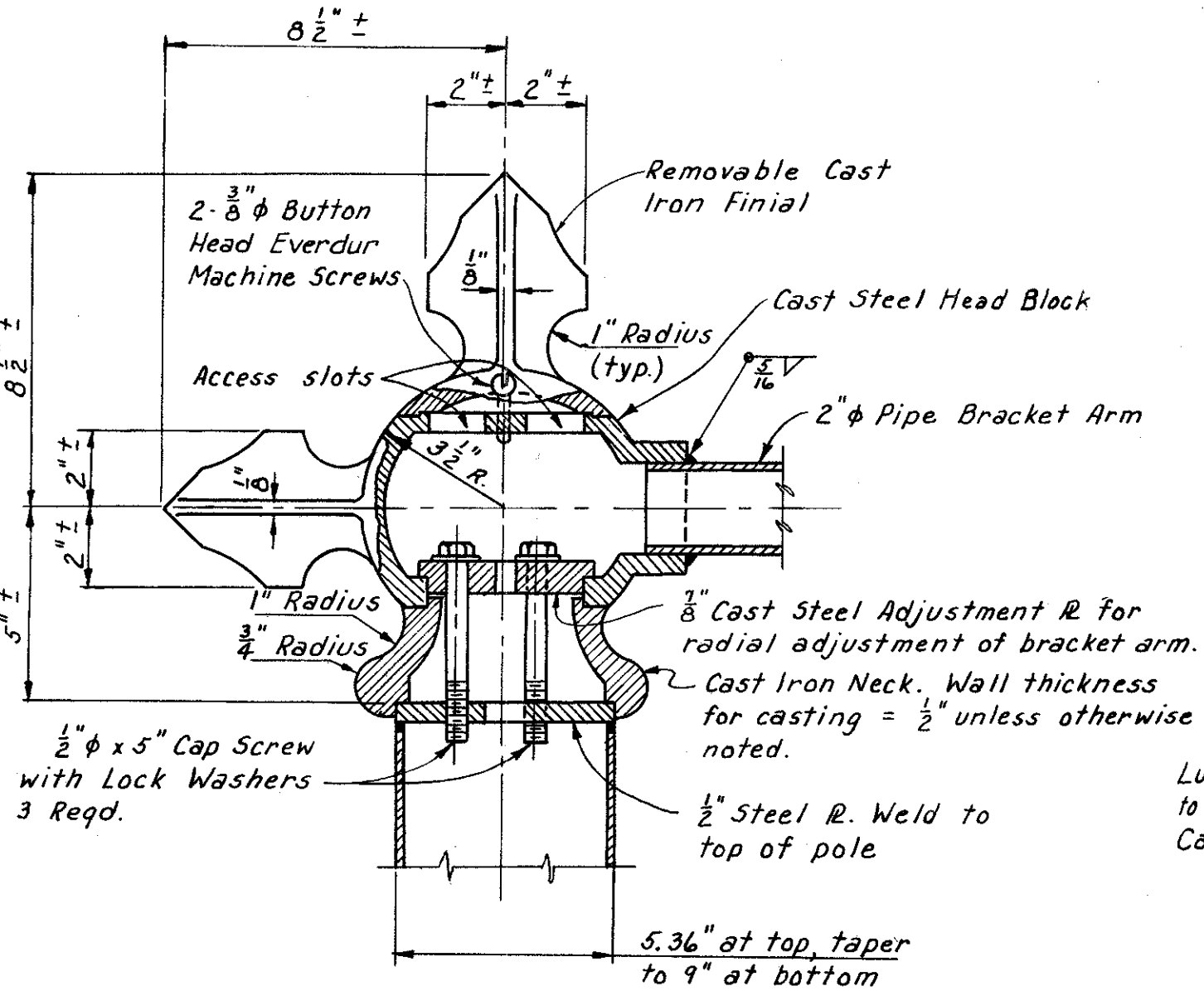
\* Light poles for Br. No. 1 will be furnished and delivered to the site by the Cleveland Transit System.



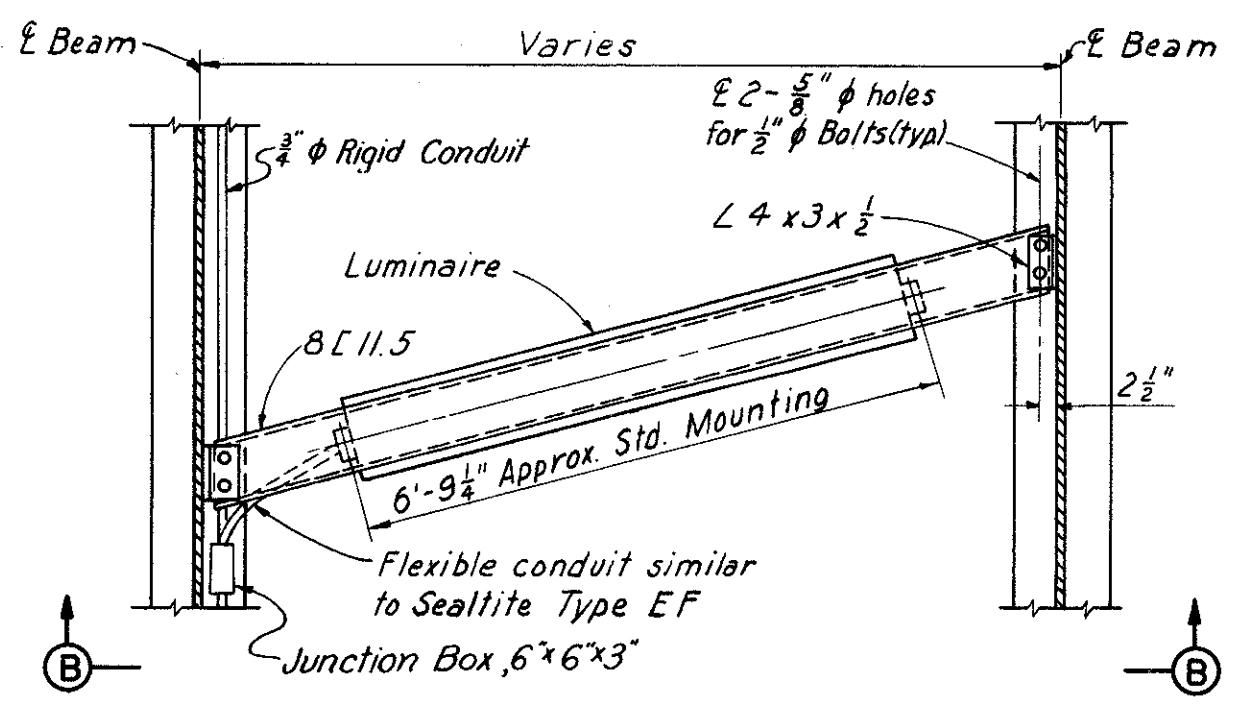
SECTION A-A  
Scale: 1" = 1'-0"



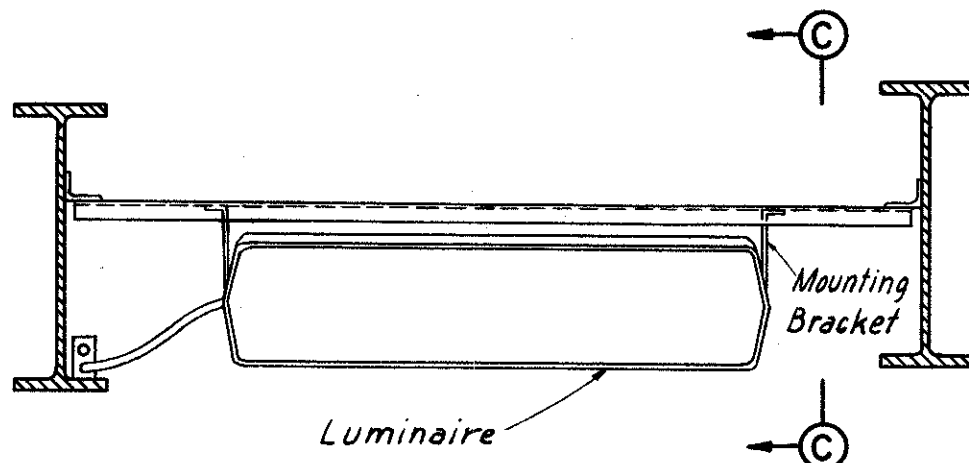
PARTIAL PLAN OF LIGHT STANDARD SUPPORT  
Scale: 1/2" = 1'-0"



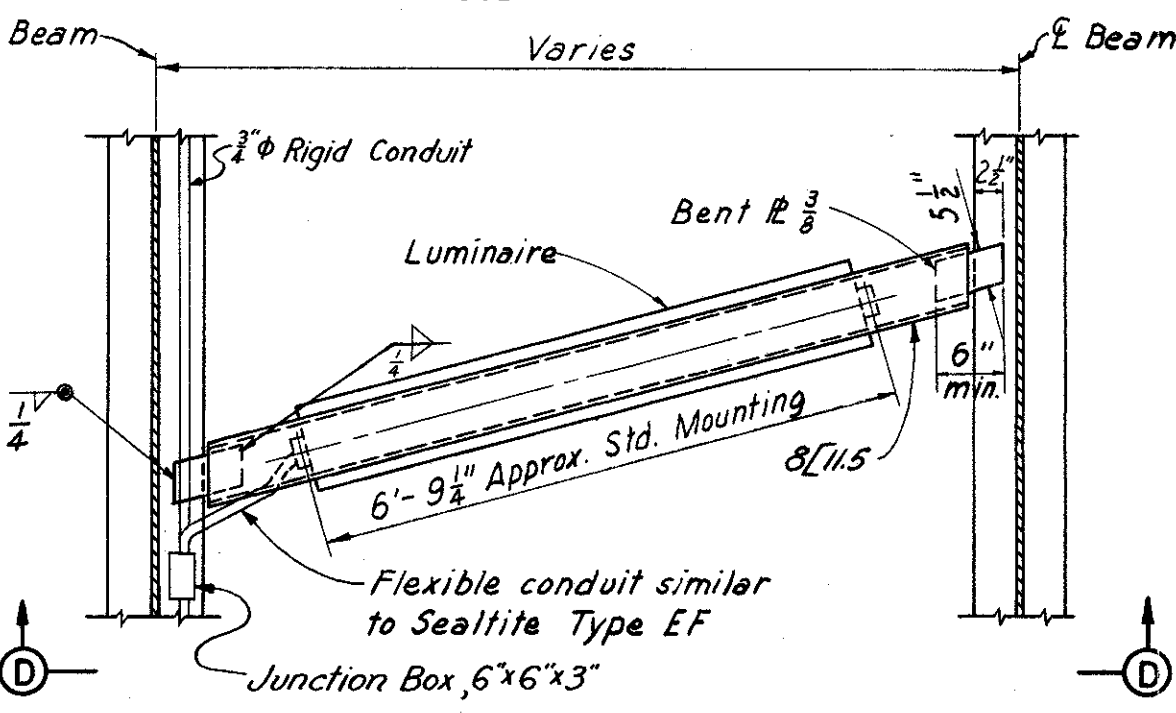
ORNAMENTAL LIGHT POLE HEAD  
Scale: 3/4" = 1'-0"



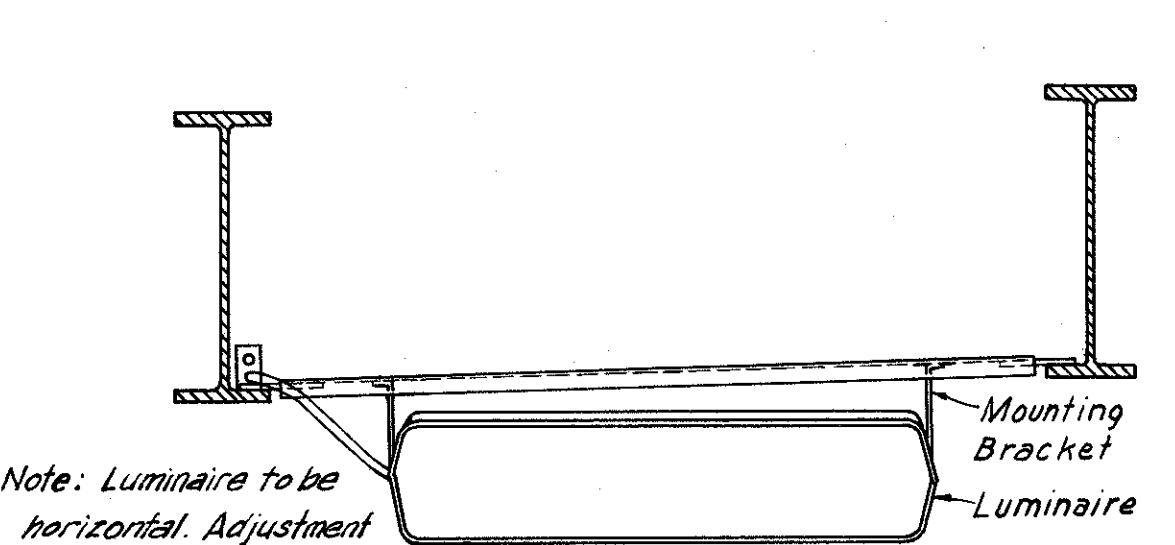
PARTIAL PLAN



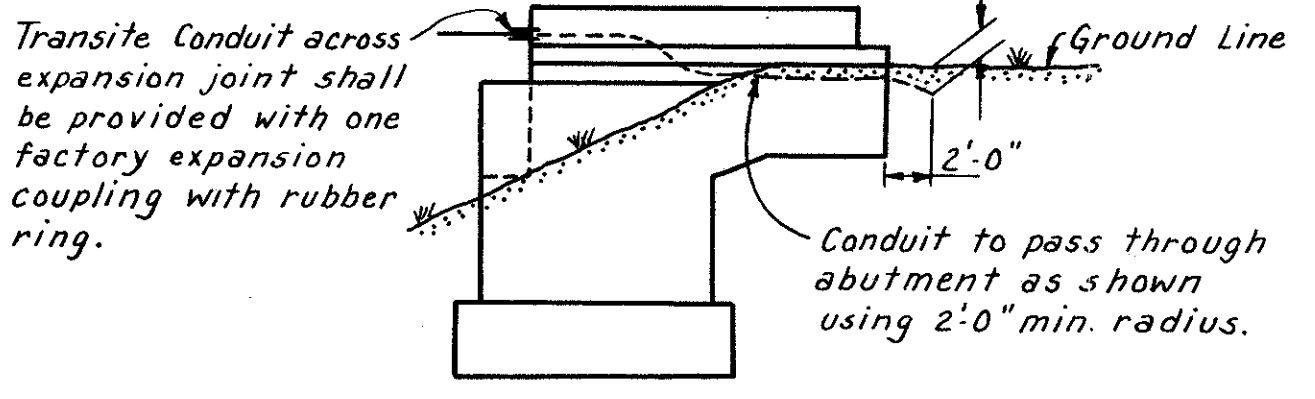
SECTION B-B  
TYPE A LUMINAIRE MOUNTING  
Scale: 1/2" = 1'-0"



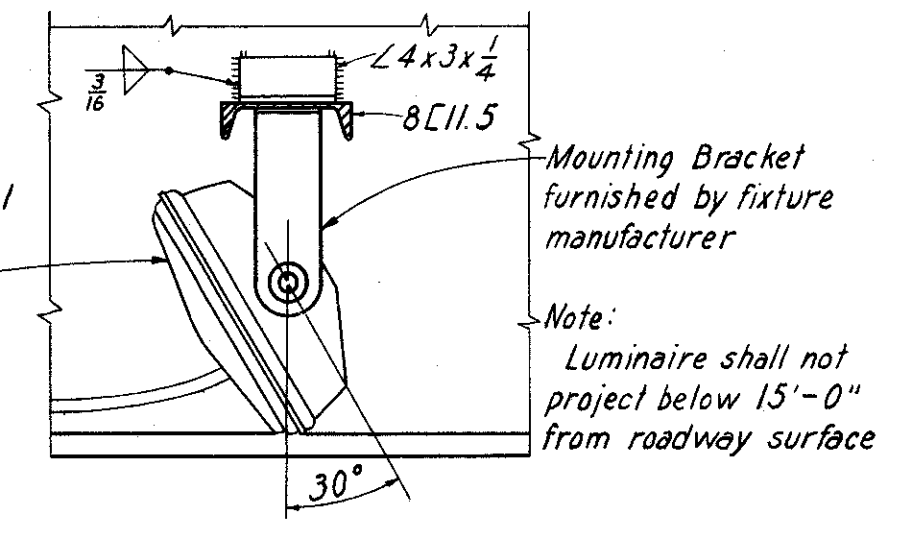
PARTIAL PLAN



SECTION D-D  
TYPE B LUMINAIRE MOUNTING  
Scale: 1/2" = 1'-0"



TYPICAL DETAIL FOR CONDUIT AT ABUTMENT  
No Scale



SECTION C-C  
Scale: 1" = 1'-0"

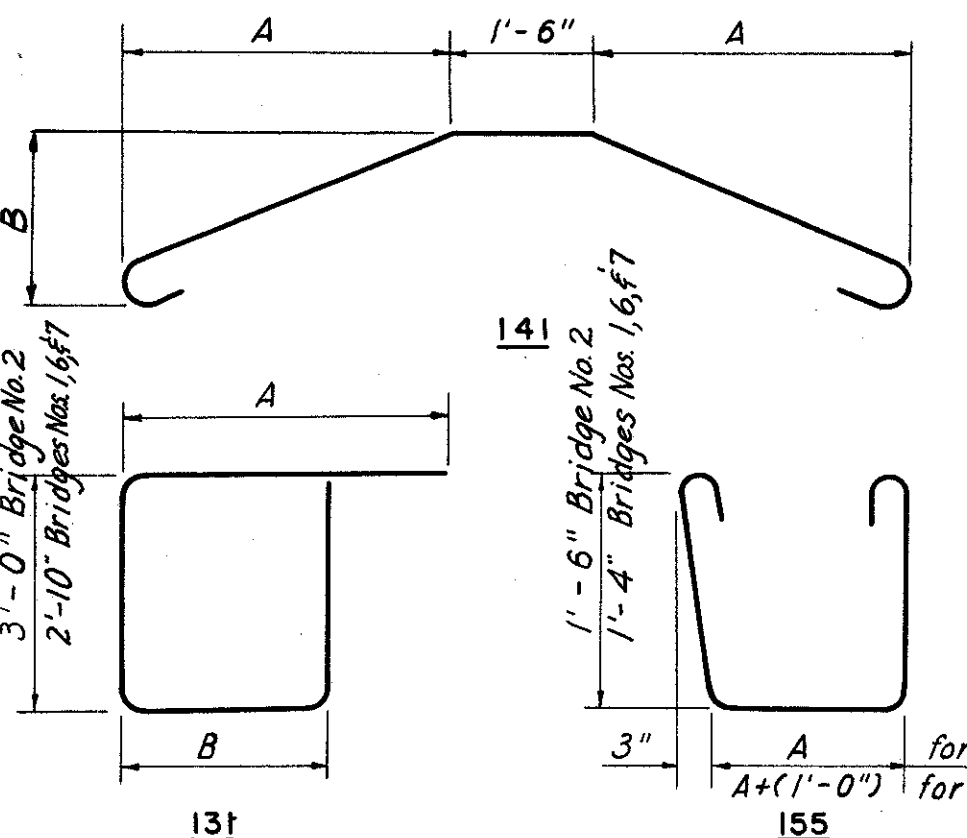
Note: Expansion Coupling in Conduit shall be provided at expansion joints between abutment and wingwalls and at all parapet joints.

NOTES:  
For location of light standards and conduit, see Deck Plans.  
For location of Underdeck Luminaires see sheet 160-G.  
For additional lighting notes, see Sht 51-6 & 91A-G.  
Junction box 6'x6'x3" to be included with Item 5-25, Fluorescent Underdeck Light for payment.  
The 8C11.5 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 51-8f Roadway Plans.

Note: Reference to Bridge No. 6 includes the Light Standards on the adjoining retaining wall.

MARK	NO.	LENGTH		TYPE	DIMENSIONS		WEIGHT	
		BRIDGES NOS. 1, 6 & 7	BRIDGE NO. 2		A	B	BRIDGES NOS. 1, 6 & 7	BRIDGE NO. 2
451	2	8'-11"	9'-3"	131	2'-6"	1'-2"	12	12
452	2	9'-11"	10'-3"	131	3'-0"	1'-8"	13	14
453	3	9'-5"	9'-9"	131	3'-2"	1'-0"	19	20
454	2	6'-7"	5'-11"	155	2'-2"		9	8
455	2	7'-1"	6'-5"	155	2'-8"		9	9
456	3	7'-3"	6'-7"	155	2'-10"		15	13
651	2	9'-5"	9'-5"	141	2'-11"	1'-10"	28	28
652	3	14'-6"	14'-6"	141	5'-3"	3'-0"	65	65
653	1	5'-0"	5'-0"	Str.			8	8
					Total		178	177

Notes: Bar list is for one light standard support. Total No. Required: Bridges Nos. 1, 6 & 7 - 15 Bridge No. 2 - 8



BENDING DIAGRAMS

PART 6

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

**LIGHTING DETAILS**

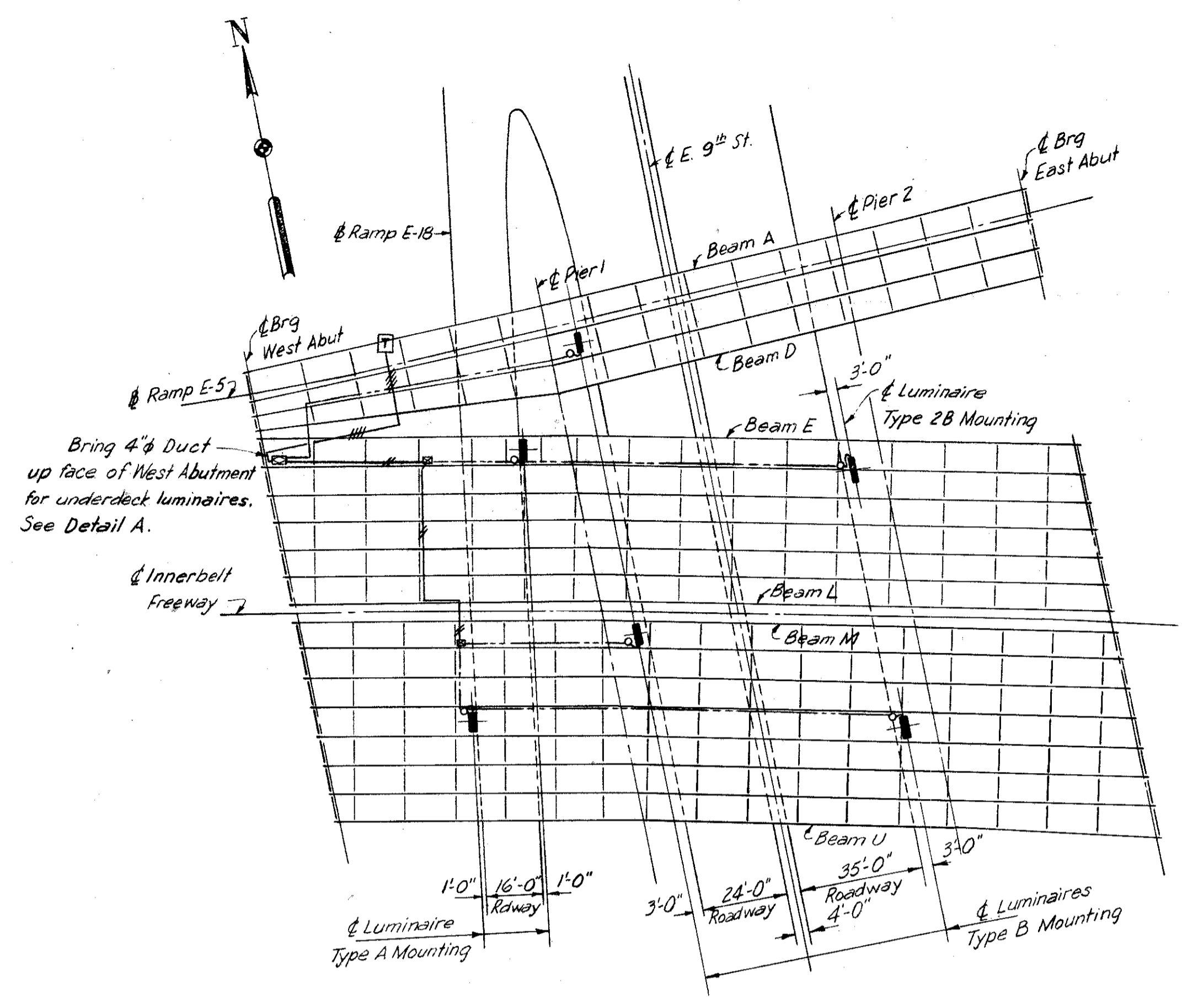
Scale as noted

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY OHIO

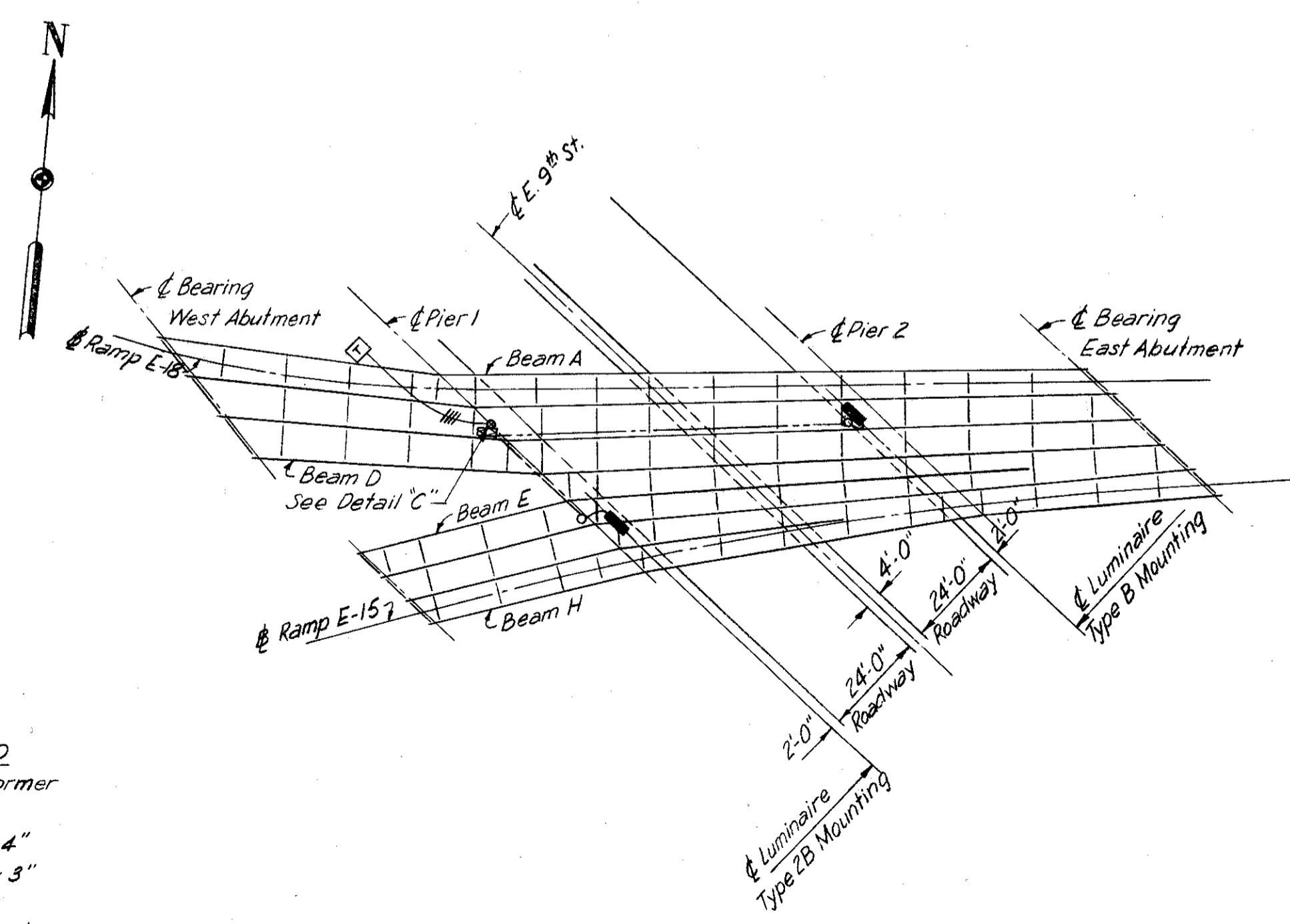
DRAWN P.L.C. TRACED J.A.G. CHECKED F.S.Z. REVIEWED J.C.T. REVISION  
DATE 9-24-58 DATE 11-26-58 DATE 12-18-58 DATE 1-12-59

SHEET 159

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY - 42-1829



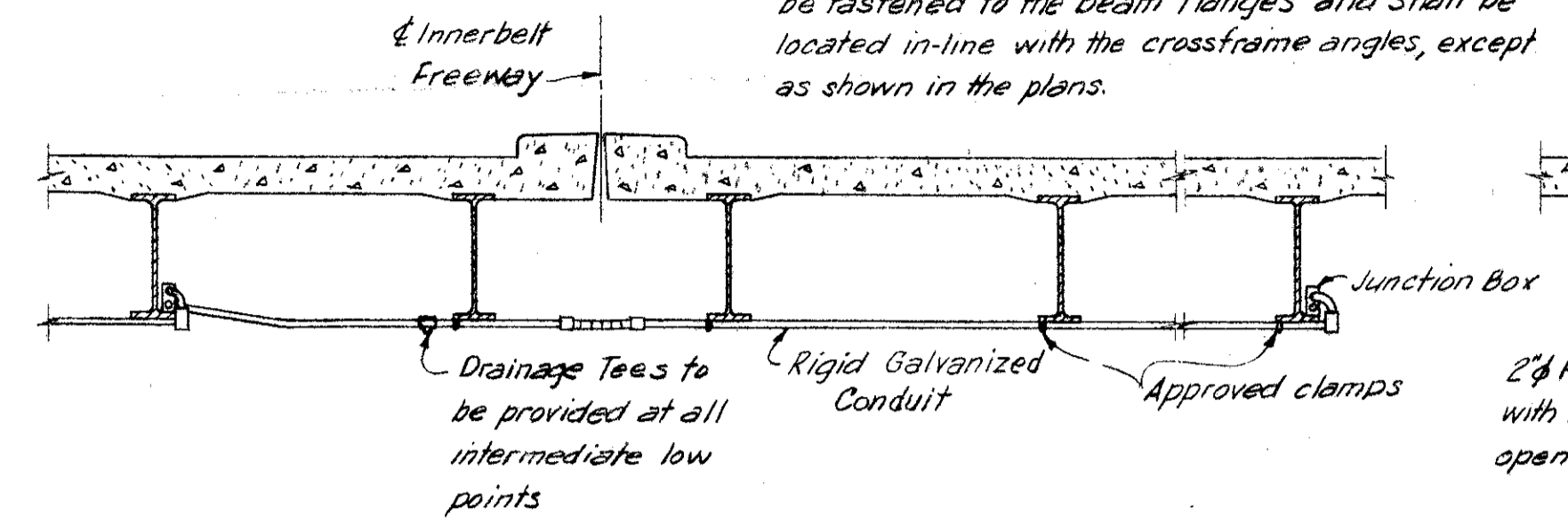
**LOCATION OF UNDERDECK LUMINAIRES - BRIDGE NO. 2**  
(For additional information see Sheets 109-G, 110-G, 112-G)  
Scale 1" = 30'-0"



**LOCATION OF UNDERDECK LUMINAIRES - BRIDGE NO. 7**  
(For additional information, see Sheet 140-G)  
Scale 1" = 30'-0"

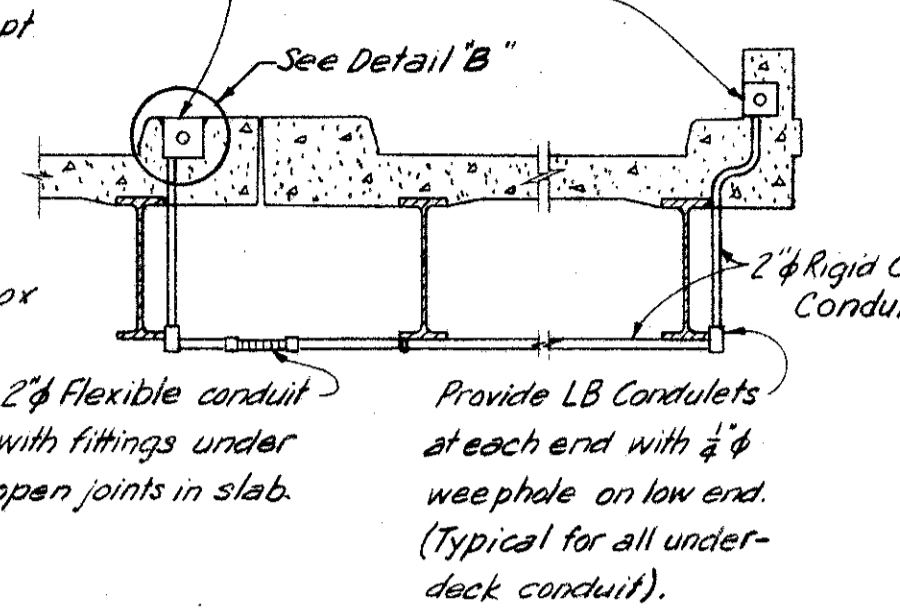
- LEGEND**
- Manhole for transformer
  - ▣ Service Panel
  - Junction Box, 8" x 8" x 4"
  - Junction Box, 6" x 6" x 3"
  - 4" Duct
  - 2" Rigid Galvanized Conduit
  - 1/2" Rigid Galvanized Conduit
  - Underdeck Luminaire

**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" cts.  
Conduit running transversely to the beams shall be fastened to the beam flanges and shall be located in-line with the crossframe angles, except as shown in the plans.

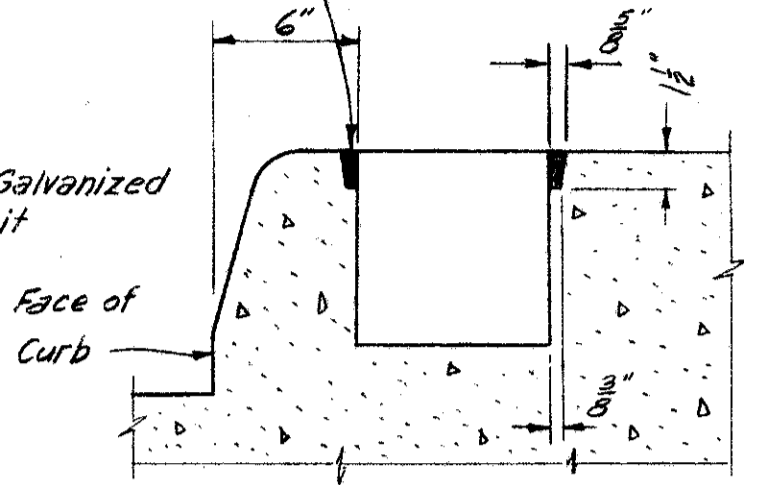


**UNDERDECK LIGHTING-CONDUIT DETAILS**  
Scale 1/4" = 1'-0"

Recessed cover, cast iron or galvanized welded plate junction box similar to O.Z. Type YU, Cat. No. 241010.



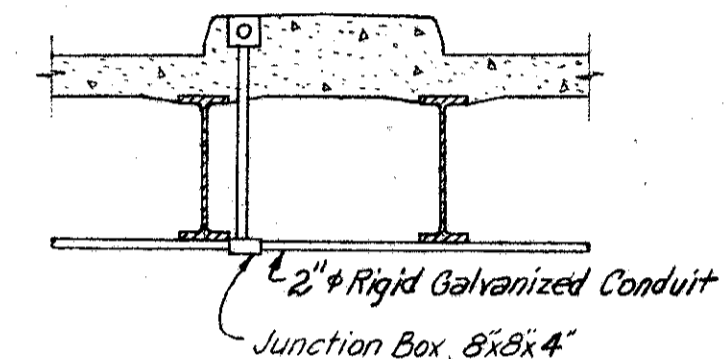
Poured Joint Sealer, as per Sec. M10.23, to be placed all around junction box, to be included for payment in Item S-25, Parapet Junction Box.



**DETAIL B**  
Scale 1/2" = 1'-0"

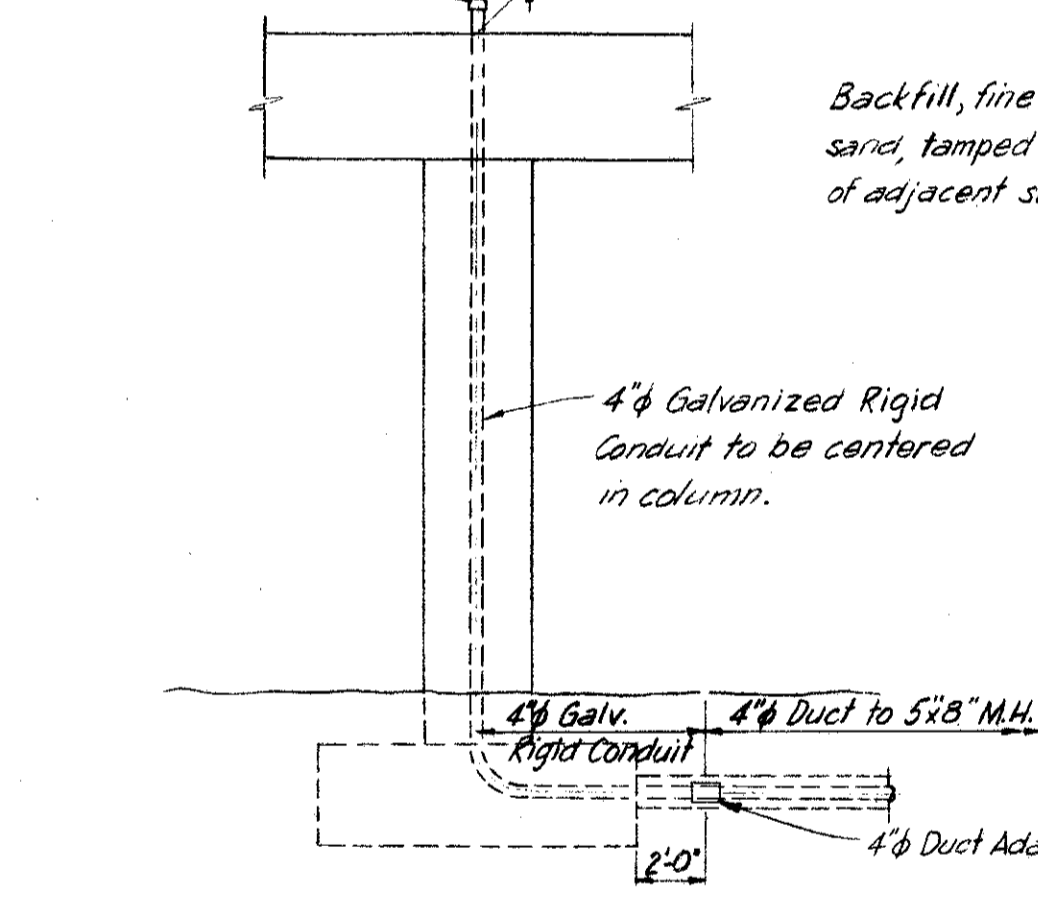
**CONDUIT CROSSOVER DETAIL**

Bridge No. 2-Crossover shown.  
Bridge No. 7-Crossover similar except as shown in Detail D. See Slab Plans for location.  
Scale 1/4" = 1'-0"



**DETAIL D**  
Scale 1/2" = 1'-0"

To Service Panel; no expansion fitting req'd.  
Cap top of conduit with approved cap for Bridges Nos. 4, 10 & 11.  
4" Seattle Type EF Conduit or approved equal, included in Item S-25, 4" Galv. Rigid Conduit, for payment. To be used at Bridge No. 7 only.

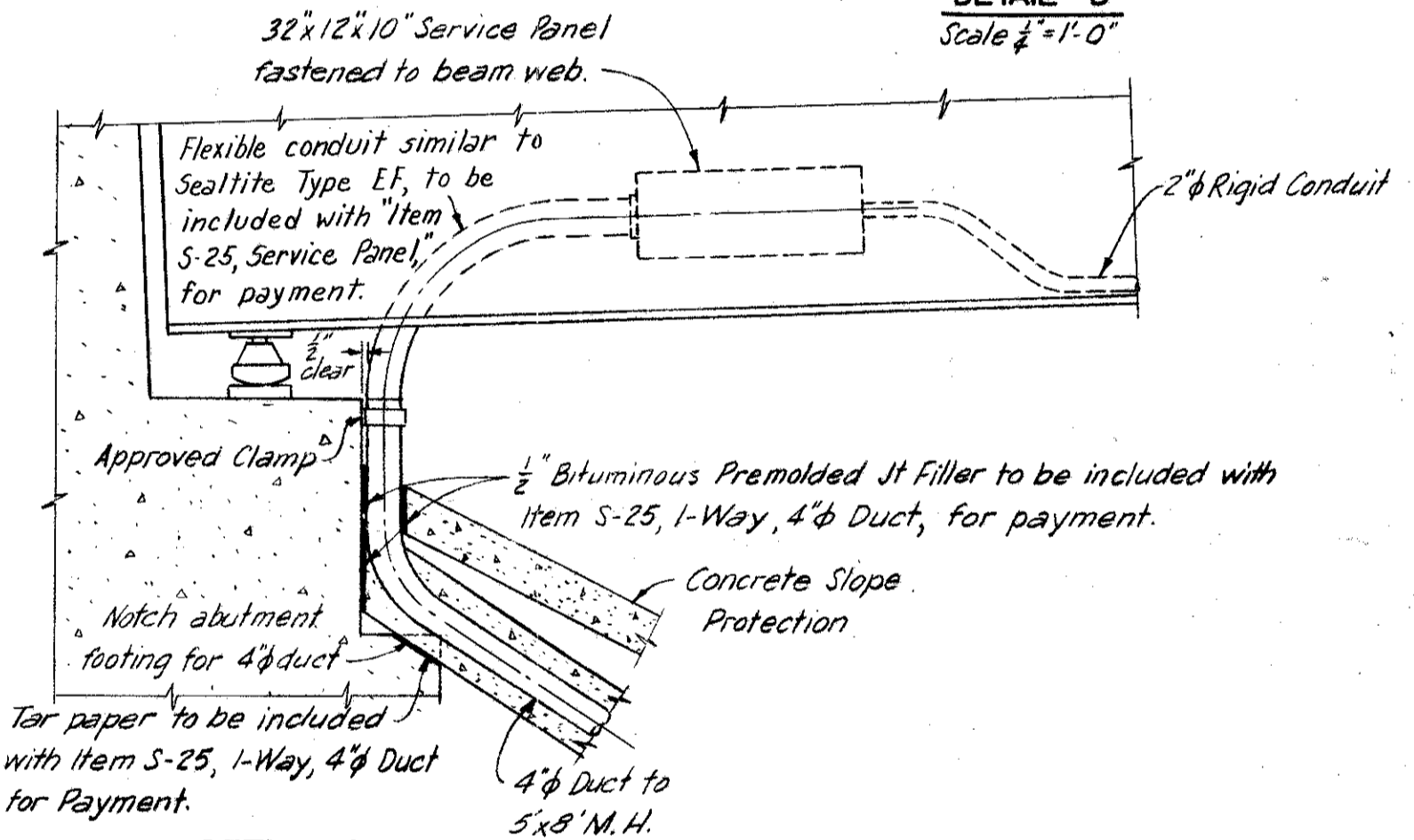


**Note:** Allow at least 4 days after pouring duct casing before compacting backfill.

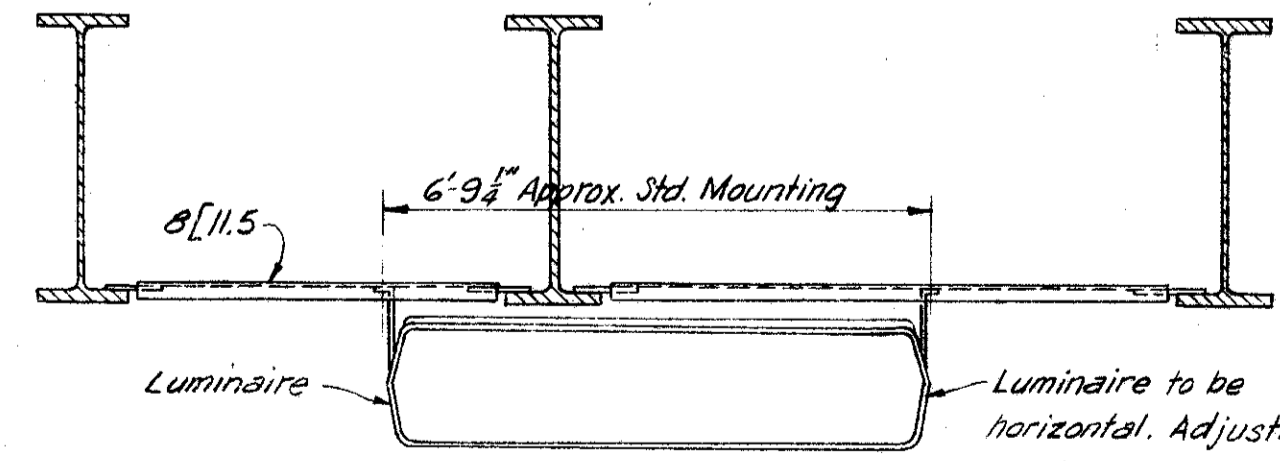
Backfill, fine earth or sand, tamped to compaction of adjacent sub-base.

**ONE WAY DUCT BANK**  
Scale: 3/4" = 1'-0"

**DETAIL C**  
Pier 3 of Bridge No. 4; Pier 1 of Bridge No. 7; Pier 2 of Bridge No. 10; and Pier No. 2 of Bridge No. 11. See Pier Sheets for location.  
Scale 3/8" = 1'-0"



**DETAIL A**  
Scale 1/2" = 1'-0"



**TYPE 2B LUMINAIRE MOUNTING**  
Scale 1 1/2" = 1'-0"

**PART 6**

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 RZC	TRACED	CHECKED ASJ	REVIEWED JCT	REVISED
DATE 11-8-58	DATE	DATE 12-19-58	DATE 11-12-59	

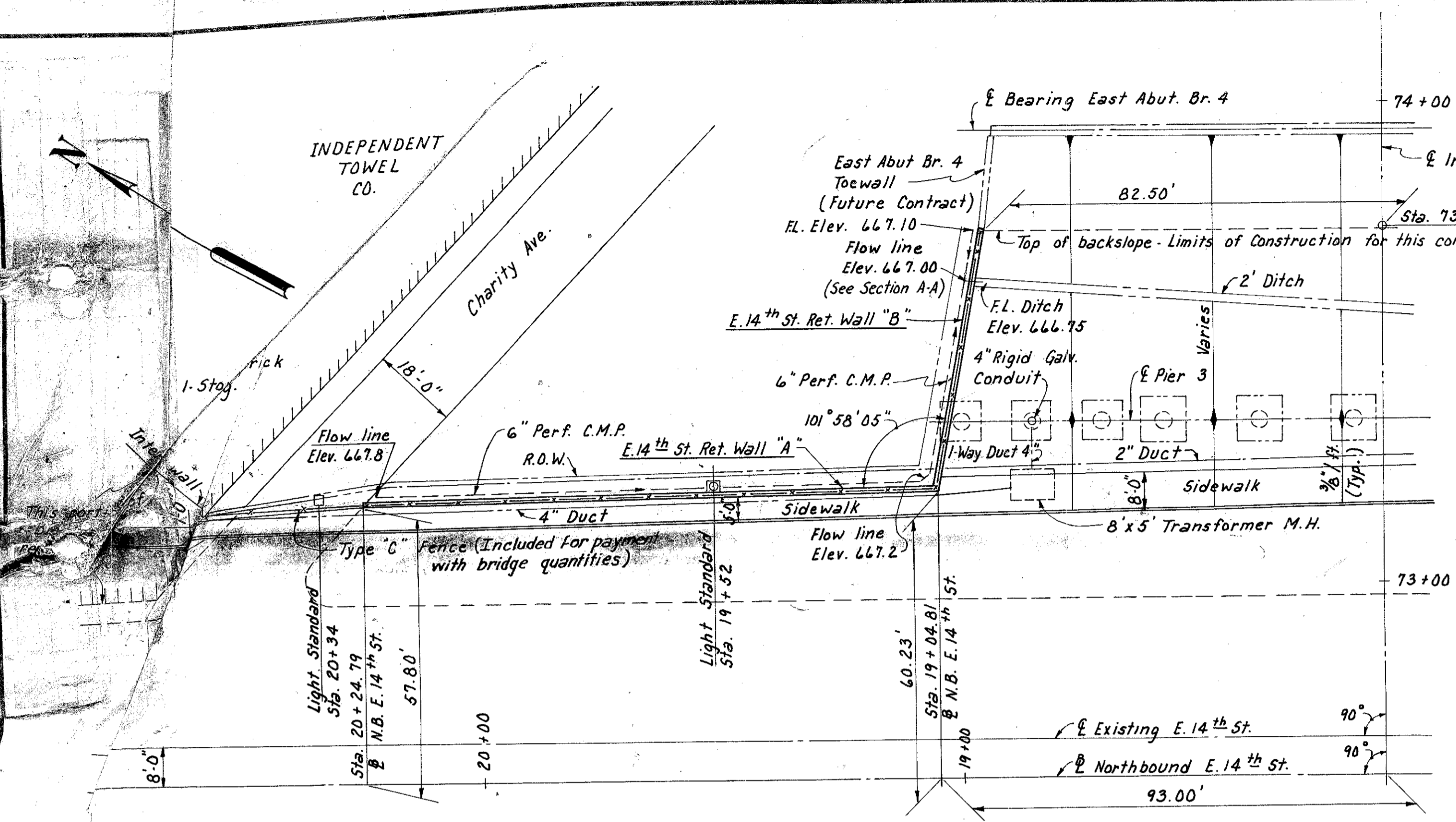
SHEET 160

Note: Prefix "W" shall be assigned all bar marks.

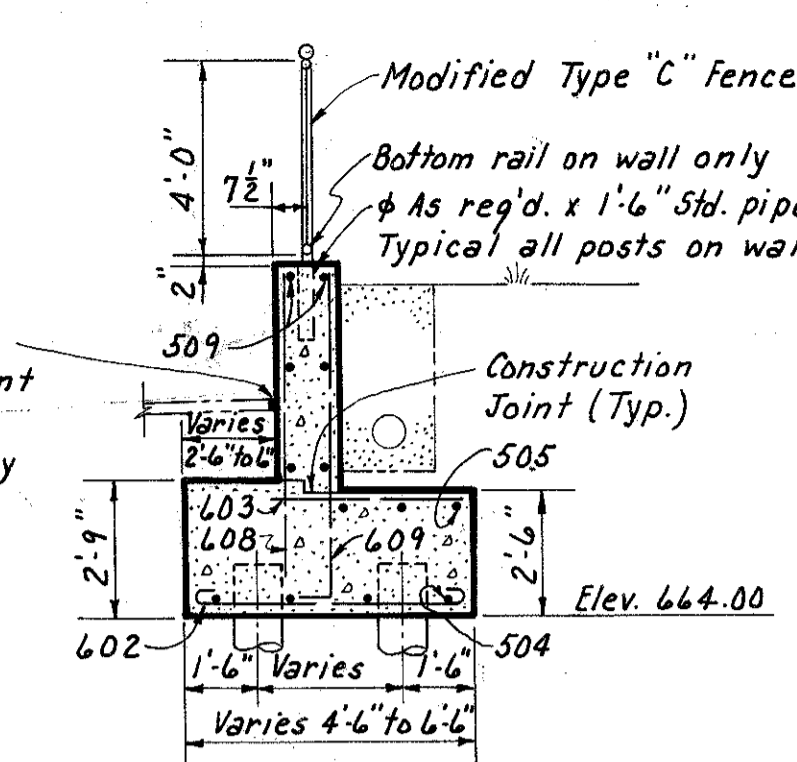
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.
2	OHIO	

161  
175

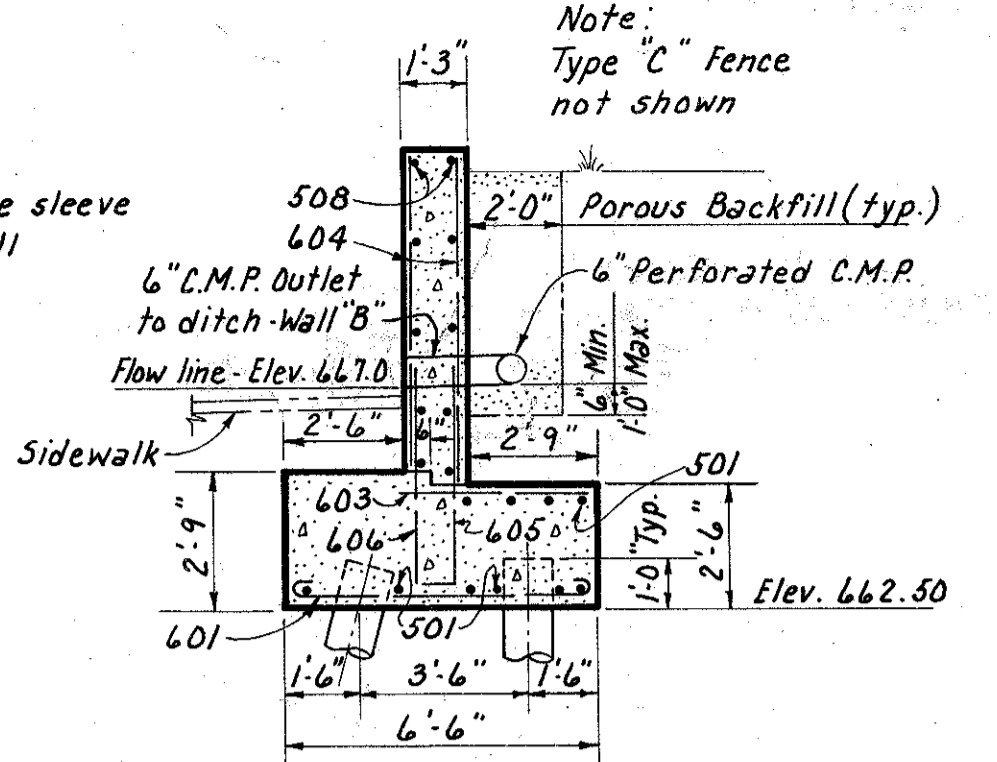
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18-29 SYSTEM



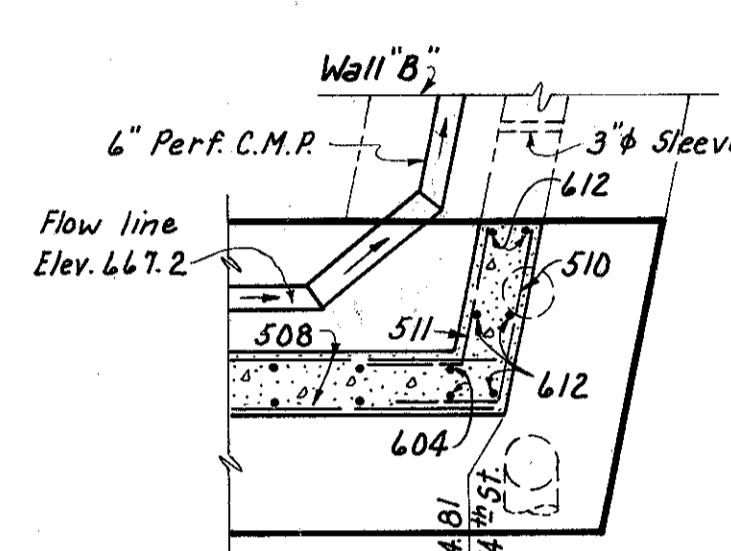
**LOCATION PLAN**  
Scale: 1" = 20'-0"



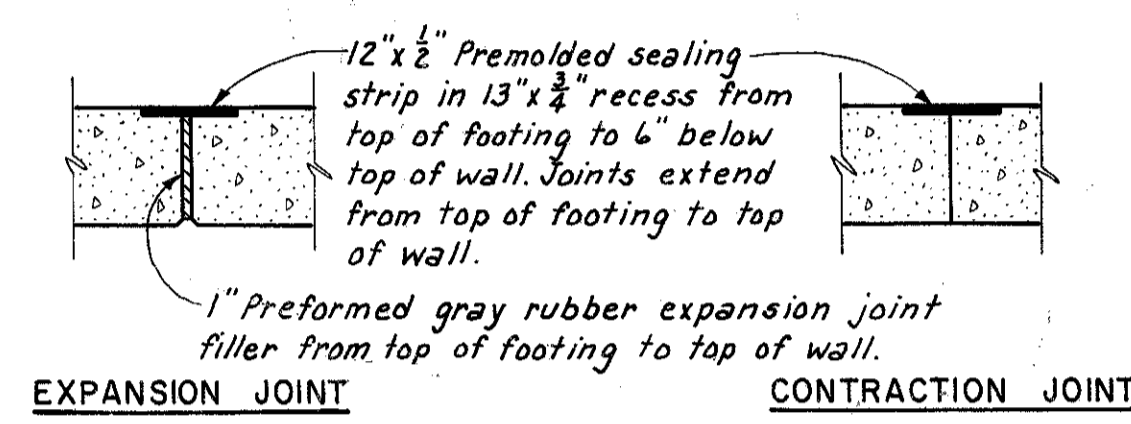
**SECTION B-B**  
Scale: 1/4" = 1'-0"  
For details not shown see Section A-A



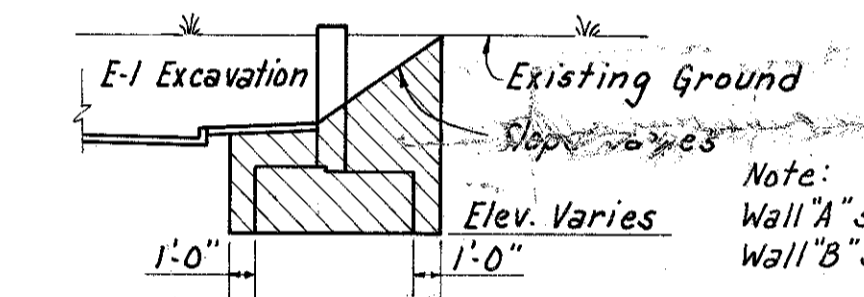
**SECTION A-A**  
Scale: 1/4" = 1'-0"  
(Wall "A" shown, Wall "B" similar except for sidewalk and bar marks.)



**SECTION C-C**  
Scale: 1/4" = 1'-0"



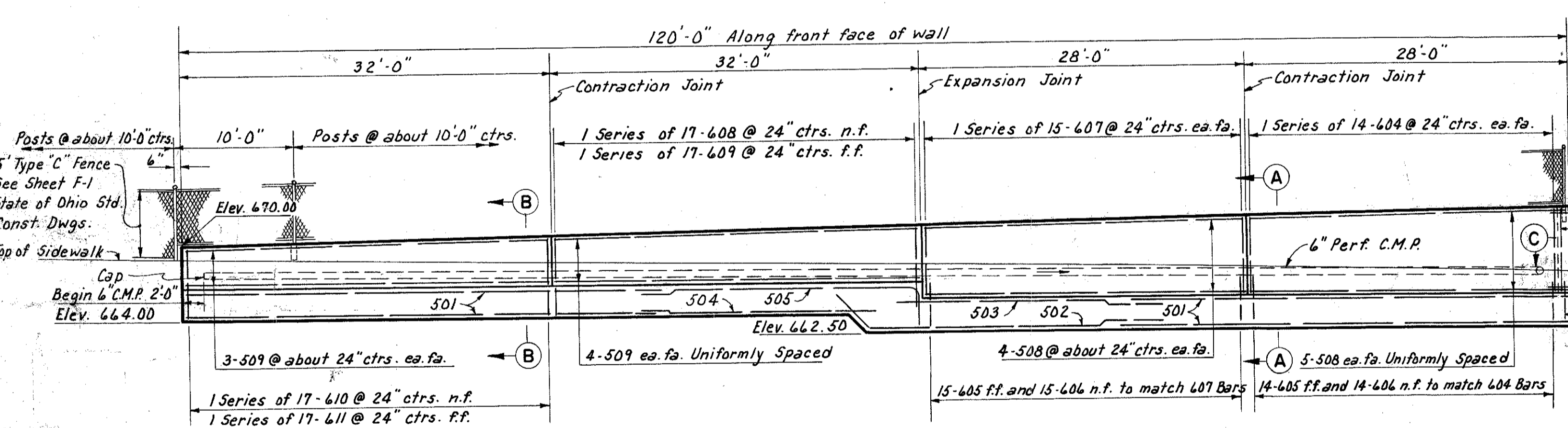
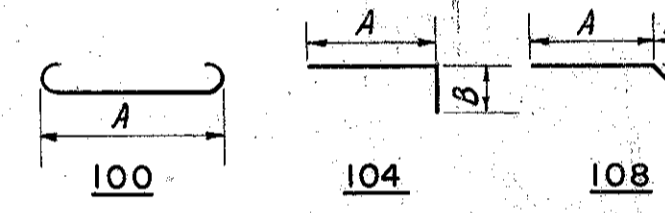
**JOINT DETAILS**  
Scale: 1/2" = 1'-0"



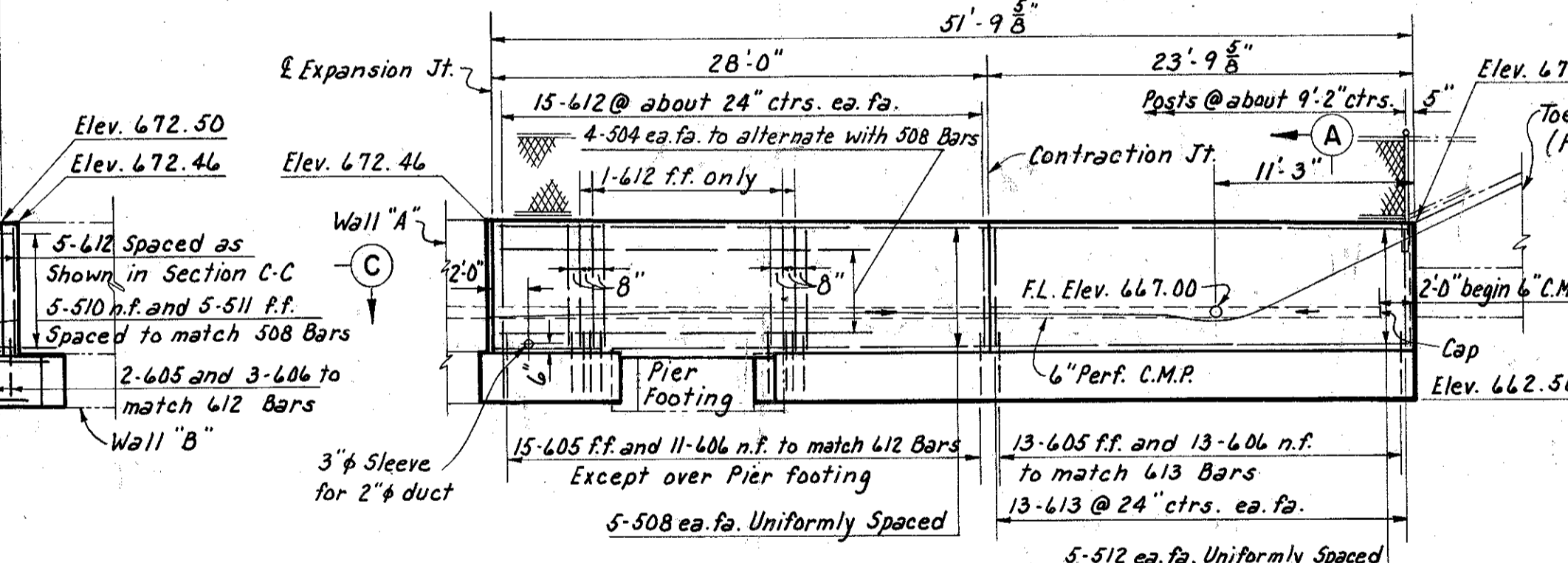
**E-2, EXCAVATION FOR STRUCTURES (UNCLASSIFIED)**  
Not to scale

REINFORCEMENT SCHEDULE								
MARK	NO.	LENGTH	TYPE	DIMENSIONS			SERIES INCREMENT	WEIGHT (LBS.)
				A	B	C		
501	17	40'-0"	Str.					709
502	6	30'-3"	10B	26'-0"	3'-0"	3'-0"		189
503	4	23'-0"	Str.					96
504	12	20'-6"	Str.					257
505	3	27'-4"	104	24'-0"	3'-6"			86
506	10	6'-6"	Str.					68
507	10	35'-6"	Str.					370
508	28	27'-6"	Str.					803
509	14	31'-6"	Str.					440
510	5	5'-3"	10B	1'-8"	0'-10"	3'-8"		27
511	5	4'-0"	10B	1'-8"	0'-7"	2'-5"		21
512	10	23'-6"	Str.					245
601	57	7'-6"	100	6'-2"				642
602	1367	5'-6" to 7'-6"	100	4'-2" to 4'-2" to 4'-2" to 4'-2"			3/8"	283
603	85	4'-0"	Str.				1/16"	511
604	2967	6'-6" to 7'-0"	Str.				1/16"	284
605	59	4'-11"	104	4'-3"	0'-10"			436
606	56	4'-6"	Str.					379
607	2967	6'-0" to 6'-9"	Str.				1/16"	282
608	177	6'-3" to 6'-9"	Str.				3/8"	166
609	1367	6'-11" to 7'-5"	104	6'-3" to 6'-3"	0'-10"		3/8"	183
610	1367	5'-6" to 6'-3"	Str.				3/8"	150
611	1367	6'-2" to 6'-11"	104	5'-6" to 5'-6"	0'-10"		1/16"	167
612	39	6'-9"	Str.					395
613	26	6'-6"	Str.					254
<b>Total</b>								<b>7,463</b>

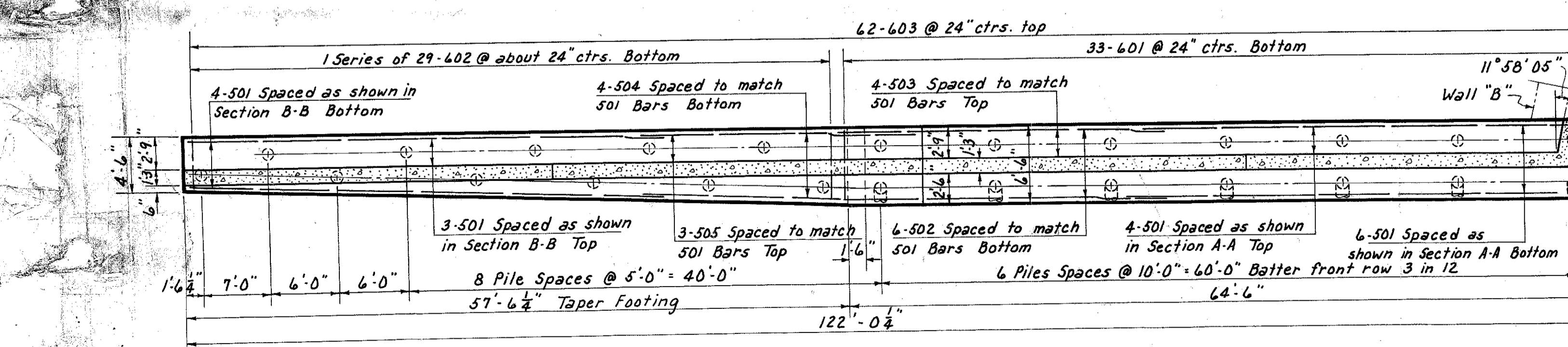
**BAR BENDING DIAGRAMS**



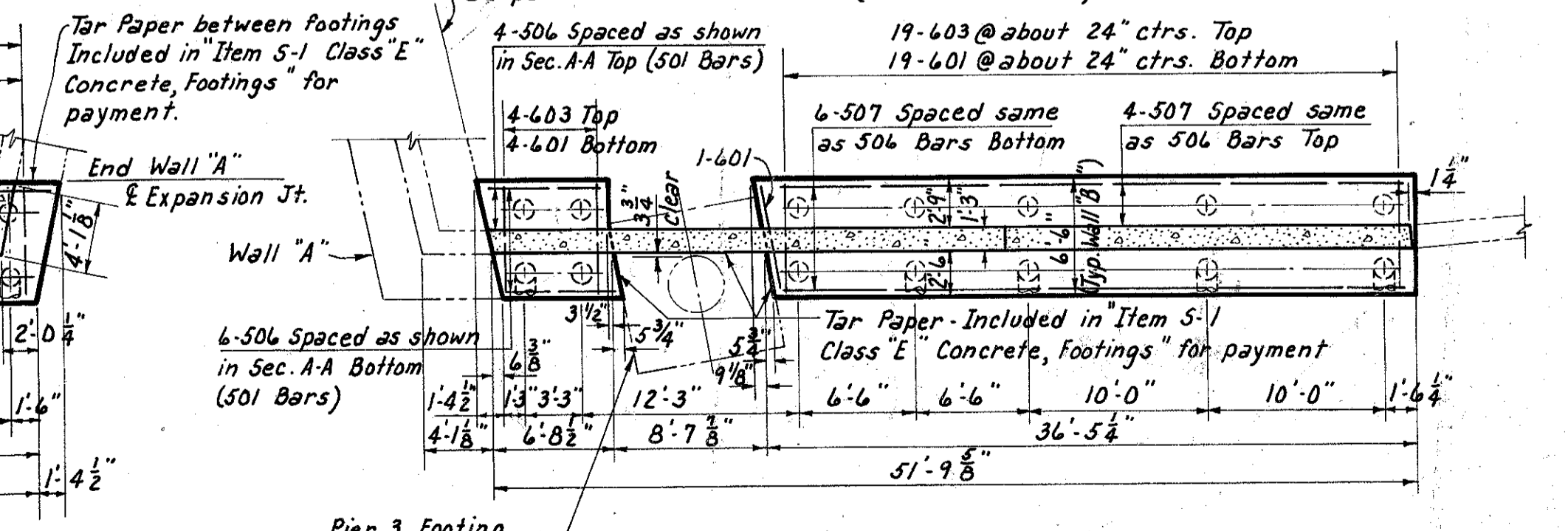
**ELEVATION**  
Scale: 5/8" = 1'-0"  
(Piles not shown)



**ELEVATION**  
Scale: 5/8" = 1'-0"  
(Piles not shown)



**FOOTING PLAN**  
Scale: 5/8" = 1'-0"  
**WALL "A"**



**FOOTING PLAN**  
Scale: 5/8" = 1'-0"  
**WALL "B"**

**NOTES:**  
All piles shall be 12" cast-in-place reinforced concrete. Batter piles shown battered 3 in 12 in the 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.  
n.f. = near face; ff. = far face; ea. fa. = each face  
All 6" C.M.P. to be perforated bituminous coated pipe.  
Type "C" Fence shall conform to Supp. Spec. 55-18, Fence and Gates, except as otherwise noted. All posts and rails shall be round. Rails shall closely parallel top of wall and/or existing grade, with all posts set vertical. Knuckle finish to be provided at top rail. Standard pipe sleeves, 18" long are to be included for payment with "Item 55-18, Fence, Type "C" as per plan."

**PART 6**

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

**E. 14th ST. RETAINING WALLS**  
Scale: As noted

**WILLOW-INNER BELT FREEWAY**  
CLEVELAND CUYAHOGA COUNTY

DRAWN BY: [ ] TRACED BY: [ ] CHECKED BY: [ ] REVIEWED BY: [ ]  
DATE: 11-9-59 DATE: 11-12-59 DATE: 11-12-59 DATE: 11-12-59

EE-9

EE-7





CUY-90-16.24

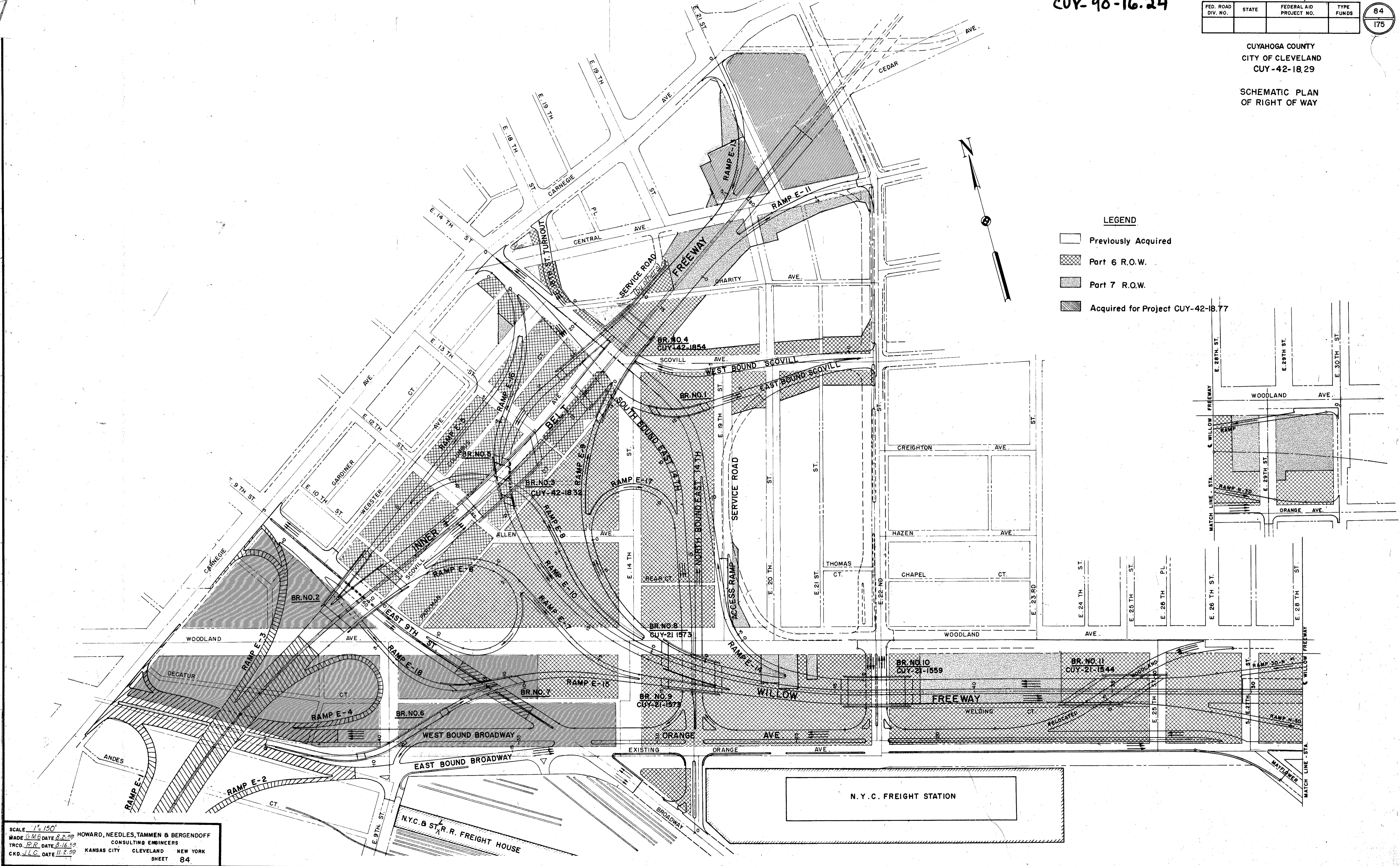
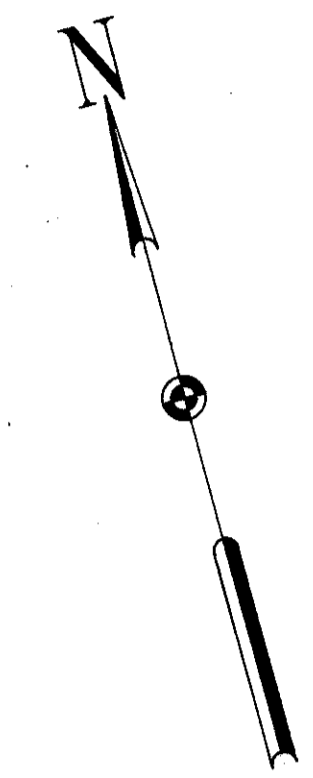
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	84
				175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

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 G.M. DATE 8-2-59  
TRCD. P.R. DATE 8-16-59  
CKD. J.L.C. DATE 11-2-59  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
SHEET 84



CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29  
RIGHT OF WAY  
SUMMARY

RIGHT OF WAY SUMMARY					
SHEET NO.	PARCEL NO.	OWNER	AREA	BLDGs	REMARKS
85	97	STANDARD OIL CO.	ALL	YES	100% CITY FUNDS
"	98	NEW YORK CENTRAL RAILROAD	ALL	NO	100% CITY FUNDS
85	110LA	JOS. J., STEPHEN, & I. W. SANSON	ALL	YES	
"	111LA	WOODLAND - 12TH BLDG. INC.	ALL	YES	
"	112LA	NICOLA & V. RINI	ALL	YES	
"	113LA	DOROTHY V. COMELLA	ALL	YES	
"	114LA	NICOLA & V. RINI	ALL	YES	
"	115LA	MARTIN L. RINI, ET AL.	ALL	YES	
"	116LA	SANTINA GERACI, ET AL.	ALL	YES	
"	117LA	HILLSON NUT COMPANY	ALL	YES	
86	151LA	MYRTLE KELLER	ALL	YES	
"	152LA	JOHN TILDEN	ALL	YES	
"	153LA	CLEVELAND TRUST COMPANY, TR.	ALL	NO	
86	155LA	JOSEPH SHAIJA	ALL	NO	
"	156LA	MICHAEL W. HELLER	ALL	YES	
"	157LA	MILK PRODUCERS FED. OF CLEVELAND	ALL	YES	
"	158LA	DOMINIC BUZZELLI	ALL	YES	
"	159LA	ARTHUR & H. BERCHAK	ALL	YES	
"	160LA	THE LEE H. GOULD CO.	ALL	YES	
"	161LA	OHIO IGNITION COMPANY	ALL	YES	
"	163LA	J.B. PEARCE CO.	ALL	YES	
86	166LA	ANGELO MAROTTA	ALL	YES	
86	169LA	J.H. GREEN	ALL	NO	
"	170LA	SCOVILL-NINTH CO.	ALL	YES	
"	171LA	EMMA WOLKOFF & ELEANOR L. SCHNAEDER	ALL	YES	
"	172LA	W. F. HYDE	ALL	YES	
"	173LA	THE PARLA CORP.	ALL	NO	
"	174LA	HAROLD B. MC MULLEN	ALL	NO	
"	175LA	MICHAEL COHEN, ET AL.	ALL	NO	
"	176LA	JOHN H. BRAMLEY	ALL	NO	
"	178LA	A.C. BLAIR CO.	ALL	NO	
"	179LA	MARIE MANCUSO	ALL	YES	
"	180LA	PARKMAN COURT INC.	ALL	YES	
"	181LA	EUGENE & A. DUBICK	ALL	YES	
"	182LA	F. A. & MARY DINDIA	ALL	YES	
"	183LA	JULIUS B. GARSON, ET AL.	ALL	YES	
"	184LA	CLEVELAND GROWERS MARKETING CO.	ALL	YES	
"	185LA	NATIONAL CITY BANK OF CLEVELAND	ALL	YES	
"	186LA	W.E. & H.V. BING & L.H. ENSTEN, JR.	ALL	NO	
"	187LA	CECILIA SPANO, ET AL.	ALL	YES	
"	188LA	SALVATORE ARTINO, ET AL.	ALL	NO	
"	189LA	CECILIA SPANO, ET AL.	ALL	NO	
"	190LA	FRANK ANTONY & MARY DINDIA	ALL	YES	
"	191LA	PAULINE KLANN	ALL	NO	
"	192LA	MARY PEPPEREL, TR.	ALL	YES	
"	193LA	JEAN WEISER, ET AL.	ALL	NO	
"	194LA	CITY OF CLEVELAND	ALL	NO	
"	195LA	CITY OF CLEVELAND	ALL	NO	
"	196LA	SAYDE M. KAPLAN	ALL	NO	
87	198LA	MATTEO & HARTHA RINI	ALL	NO	
"	199LA	WM. M. BASSICHIS	ALL	NO	
"	200LA	JACOB & WM. BASSICHIS	ALL	NO	
87	202LA	CITY OF CLEVELAND	ALL	YES	
"	203LA	F. & B. INC.	ALL	YES	
"	204LA	JOSEPH M. SWEENEY (SHERIFF)	ALL	NO	
"	205LA	ZELVY BROS.	ALL	YES	
87	208LA	ASHER & BESSIE HOFFMAN	ALL	YES	
87	210LA	THE M-SH REALTY CO.	ALL	YES	
"	211LA	ZELVY BROS.	ALL	NO	
"	212LA	JOSEPHINE ZINGALE	ALL	YES	
"	213LA	STRATIS CALOGERAS	ALL	YES	
"	214LA	LOUIE OLIVER	ALL	YES	
87	218LA	RAY L. EHRLICH	ALL	YES	
"	219LA	E. F. ROMANO & F. LITTLE	ALL	YES	
87	227LA	JAS. BARBERA	ALL	YES	
"	228LA	CAESAR W. PUCCI	ALL	YES	
"	229LA	SAYDE M. KAPLAN	ALL	YES	
"	232LA	VIOLA F. DEERING, ET AL.	ALL	YES	
"	233LA	MORRIS UDELF, ET AL.	ALL	YES	
"	234LA	ED. A. ZINGALE	ALL	YES	
"	235LA	GRAZIA COSENZA	ALL	YES	
"	236LA	SALVATORE SALUPO	ALL	YES	
"	237LA	SALVATORE & C. SALUPO	ALL	YES	
"	238LA	ANDREAS CONIGLIO	ALL	YES	
"	239LA	MICHAEL GANCI, JR.	ALL	YES	
"	240LA	HARRY KERTZ	ALL	YES	
"	241LA	GUISEPPINA PORELLO	ALL	YES	
"	242LA	FRANK ANTHONY & M. DINDIA	ALL	YES	
"	244LA	AMERICA & CONCETTA GIOVANETTI	ALL	YES	
"	245LA	PAUL A. RINI	ALL	YES	
"	246LA	MEDA RINI	ALL	YES	
"	247LA	THE MITTLEMAN CO.	ALL	YES	
"	248LA	LOUIS CULOTTA	ALL	YES	
"	249LA	ANNA J. GREGG	ALL	NO	
"	250LA	JOSEPH MOLDAVER	ALL	NO	
"	251LA	THE MITTLEMAN CO.	ALL	YES	
"	253LA	JOSEPHINE LO PRESTI, ET AL.	ALL	YES	

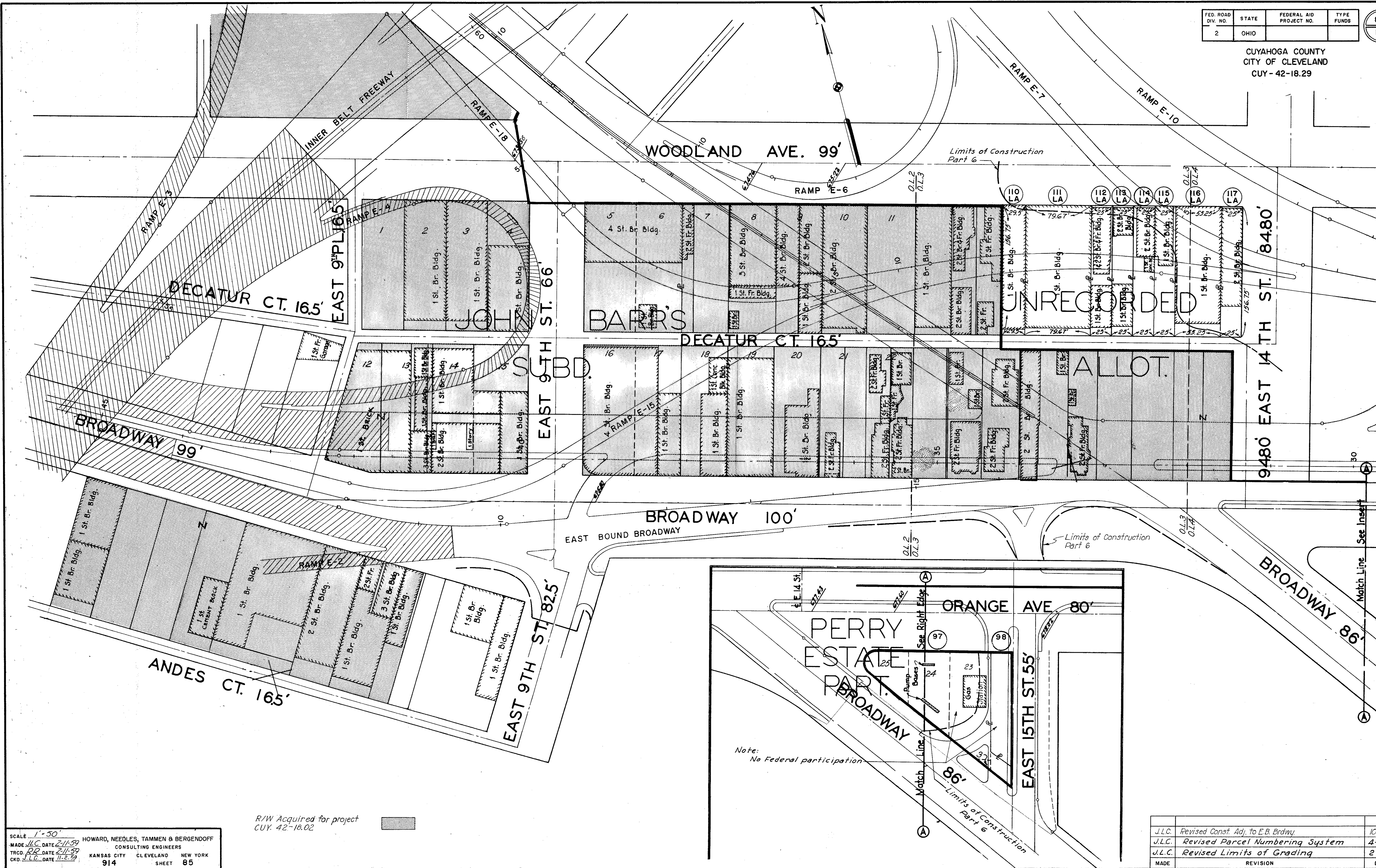
RIGHT OF WAY SUMMARY					
SHEET NO.	PARCEL NO.	OWNER	AREA	BLDGs	REMARKS
87	254LA	THE MITTLEMAN CO.	ALL	YES	
"	255LA	JACOB & M. BISHKO	ALL	YES	
"	256LA	R.F. CARBONE	ALL	YES	
"	257LA	M.C. & I. N. STONE CO.	ALL	YES	
"	258LA	MARIE J. KOCH	ALL	YES	
"	259LA	LAKEWOOD CENTER CO.	ALL	NO	
"	260LA	EDITH B. COOPER	ALL	YES	
"	261LA	JOSEPHINE LOMBARDO, ET AL.	ALL	YES	
"	262LA	ELEUTERIO AND R. FLORES	ALL	YES	
"	263LA	GAETANO ZINGALES	ALL	YES	
"	264LA	MARIA CIRESI	ALL	YES	
"	265LA	FRANCES RINI, ET AL.	ALL	YES	
"	266LA	ANTHONY BLANDINO	ALL	YES	
"	267LA	ANTONIO CRIMALDI	ALL	YES	
"	268LA	ROSE RINI	ALL	YES	
"	269LA	MATTEO RINI DI GIOVANNI	ALL	YES	
"	271LA	ANTHONY M. LOMBARDO, ET AL.	ALL	YES	
"	272LA	MARIA MERCURIO	ALL	YES	
"	273LA	MARIA MERCURIO	ALL	YES	
"	274LA	DOMENICO & ANTONIA SURACE	ALL	YES	
"	275LA	G. GAGLIONE & ROSE PLATAMONE, ET AL.	ALL	NO	
"	276LA	MICHELENA DEMMA	ALL	YES	
"	277LA	ANNA C. DOTTORE	ALL	YES	
"	278LA	CLEVELAND TRUST CO.	ALL	NO	
"	279LA	CLEVELAND TRUST CO.	ALL	NO	
"	280LA	JOHN & M.J. GREEN	ALL	YES	
"	281LA	SHIRLEE BLONDER	ALL	YES	
87	286	NOT USED			
"	287	NOT USED			
"	288	" "			
"	289	" "			
"	290	" "			
"	291	" "			
"	292	" "			
"	293	" "			
"	294	" "			
"	295	" "			
"	296	" "			
"	297LA	JIMMIE RICHARDSON	851	YES	
"	298LA	EDITH B. COOPER	ALL	YES	
87	300LA	HACK & ROSE STEVENS	ALL	YES	
"	301LA	JAMES & J. L. HOWER	ALL	YES	
87	307LA	J. & M. MASON	ALL	YES	
87	317	IDEAL MACARONI CO.	8977	YES	
87	319	SALVATORE A. PRECARIO	2511	YES	
87	334	GREEK CATHOLIC CONGREGATION	8800	YES	
88	359LA	OUTDOOR INVESTMENT CO. (BILLBOARD)	ALL	NO	
"	360	NOT USED			
"	361	" "			
"	362	" "			
"	363	" "			
"	364	" "			
88	368LA	J. LOMBARDO	3342	NO	
"	369LA	M. GOTTLIEB	ALL	YES	
"	370LA	LAWRENCE A. WHITMAN	ALL	NO	
"	371LA	E. B. CULLEN	ALL	YES	
88	375LA	WM., E.D., & ESTHER BASSICHIS	ALL	YES	
"	376LA	F. MERCURIO & F. MINNITI	ALL	YES	
88	378LA	D. KOSLIN	ALL	YES	
"	380LA	J. DIMETRO, ET AL.	ALL	YES	
"	381LA	S. RINI	ALL	YES	
"	382LA	J. GERACI	ALL	YES	
"	383LA	LOUANNA CABBIL	ALL	YES	
"	384LA	EVA ALTMAN	ALL	YES	
"	385LA	H. J. & F. D. JOHANEK	ALL	YES	
"	387LA	R. ROMANO, ET AL.	ALL	NO	
"	388LA	N. Z. FISHER	ALL	NO	
"	389LA	THOS. & ELSIE SNEED	ALL	YES	
"	390LA	DELIA MC MYLER	ALL	YES	
"	391LA	PROSPECT RADIATOR CO.	ALL	YES	
"	392LA	OUTDOOR INVESTMENT CO.	ALL	NO	
"	393LA	CITY OF CLEVELAND	ALL	NO	
"	394LA	NICK H. LO CONTI	ALL	YES	
"	395LA	E. MASTERTSON	ALL	NO	
"	396LA	JEANETTE K. REDMOND, TR.	ALL	YES	
"	397LA	ROSE MORELLI	ALL	YES	
"	398LA	M. KOCH	ALL	NO	
"	399LA	ANTHONY SANSON, TR.	ALL	NO	
88	403LA	GUND REALTY CO.	ALL	YES	
"	404LA	M. RINI	ALL	YES	
"	405LA	THE STRATHMORE CLEVELAND HOMES CO.	ALL	YES	
"	406LA	WM. & O. BONDI	ALL	YES	
"	407LA	J. BONDI	ALL	YES	
"	408LA	ARTHUR KRAUSE	ALL	YES	
"	409LA	WM. H. HAZLETT, ET AL.	ALL	NO	
"	410LA	W. SPOONER	ALL	YES	
"	411LA	SAMUEL R. OLIVO	ALL	NO	
"	412LA	I. C. GRIMM & C. PHILLIPS	ALL	YES	
"	413LA	MARIE J. KOCH	ALL	YES	

RIGHT OF WAY SUMMARY					
SHEET NO.	PARCEL NO.	OWNER	AREA	BLDGs	REMARKS
88	414LA	M. & M. RINI	ALL	YES	
"	415LA	ALBERT A. LEVIN	ALL	NO	
"	416LA	D. L. CORSO	ALL	NO	
"	417LA	M. A. LONG	ALL	YES	
"	418LA	A. MARRALE	ALL	NO	
"	419LA	H. B. MC GUIRE	ALL	NO	
"	420LA	M. C. DI CORPO & AUGUSTINE C. DIASIO	ALL	YES	
"	421LA	ESTATE OF J. ANTENNA	ALL	YES	
"	422LA	C. CONTI	ALL	YES	
"	423LA	MAZEL REALTY CO.	ALL	YES	
"	424LA	T. & R. LOCOCO	ALL	YES	
"	425LA	CITY OF CLEVELAND	ALL	NO	
"	426LA	SUN OIL CO.	1722	YES	
"	437LA	MILLER BROS. REALTY		YES	
"	438LA	MILLER BROS REALTY		YES	
88	452LA	MILLER BROS. REALTY		NO	
88	454LA	INDEPENDENT TOWEL CO.		NO	
"	455LA	CHRISTOPHER C. FLIEDNER, ET AL.	ALL	YES	
"	456LA	C. C. & BENJ. FLIEDNER	ALL	NO	
"	457LA	DAVID L. SUID	ALL	NO	
"	458LA	HELEN E. ABOID	ALL	NO	
"	459LA	MIKE & L. ABRAHAM	ALL	YES	
"	460LA	PEARL G. SUID	ALL	YES	
88 & 89	461LA	LAUB BAKING CO. (FRENCH BAKERY CO.)		YES	
88 & 89	461LA	LAUB BAKING CO. (FRENCH BAKERY CO.)	12528		
88	467LA	CENTRAL NATIONAL BANK 1/3			
"	467LA	DOROTHY B. LEHMAN, ET AL.			
"	468LA	RUTH WRIGHT	3604	YES	
"	469LA	PATRINA PIAZZA, ET AL.	2600	YES	
"	470	ANNA WHITE	1213	YES	
"	471	MARY SIMONELLI, ET AL.	1583	YES	
"	472	NOT USED			
"	473	NOT USED			
"	474	NOT USED			
88	476	FREDA ABRAHAM	ALL	YES	
"	477	HELEN & A. KACMARIK	ALL	YES	
"	478	JAS. A. LIA	ALL	YES	
"	479	JOE CREA	910	YES	

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

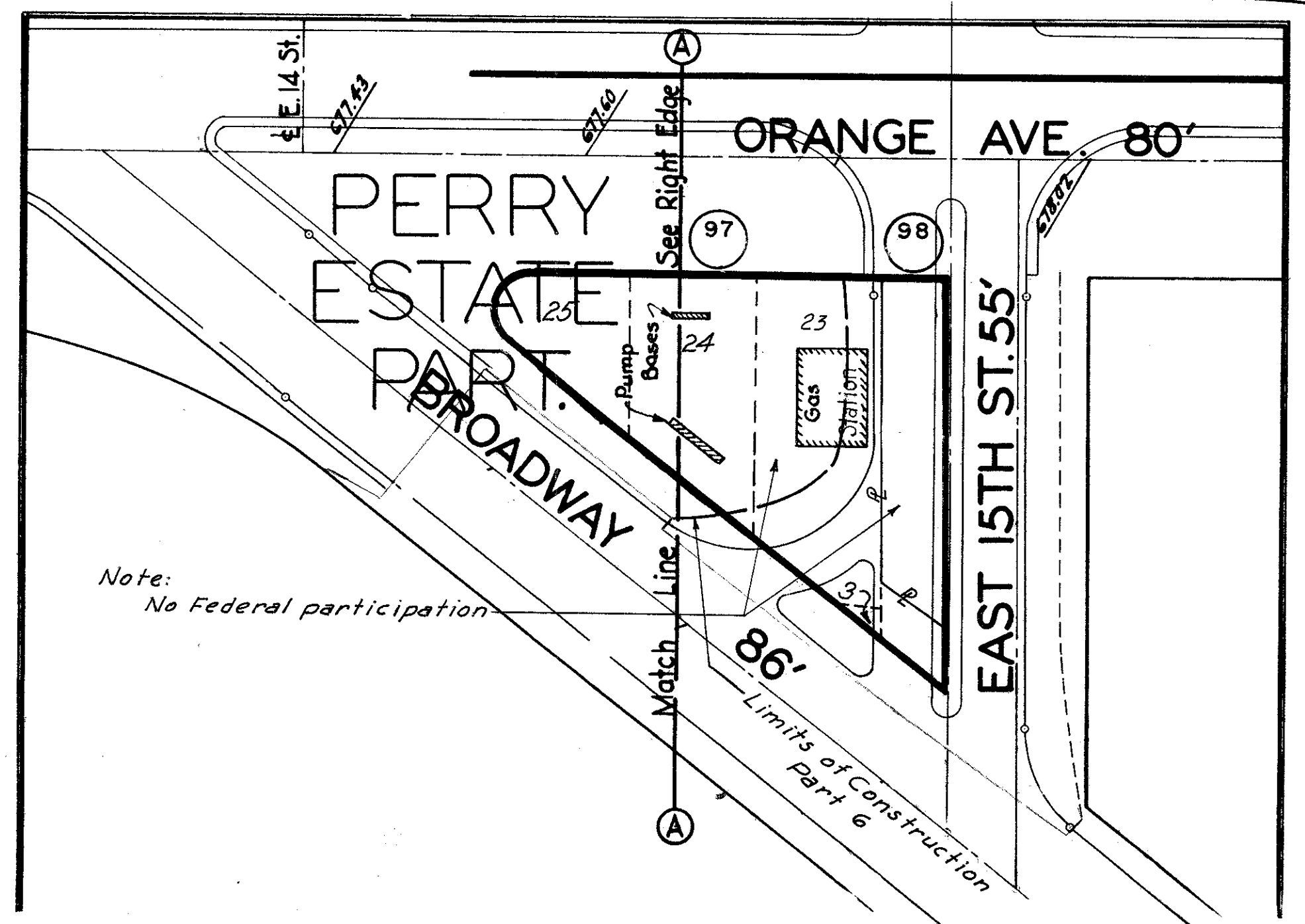
85  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



SCALE 1" = 50'  
MADE J.L.C. DATE 2-11-59 HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS  
TRCD J.L.C. DATE 2-11-59 KANSAS CITY CLEVELAND NEW YORK  
CKD J.L.C. DATE 11-2-59 914 SHEET 85

R/W Acquired for project  
CUY. 42-18.02

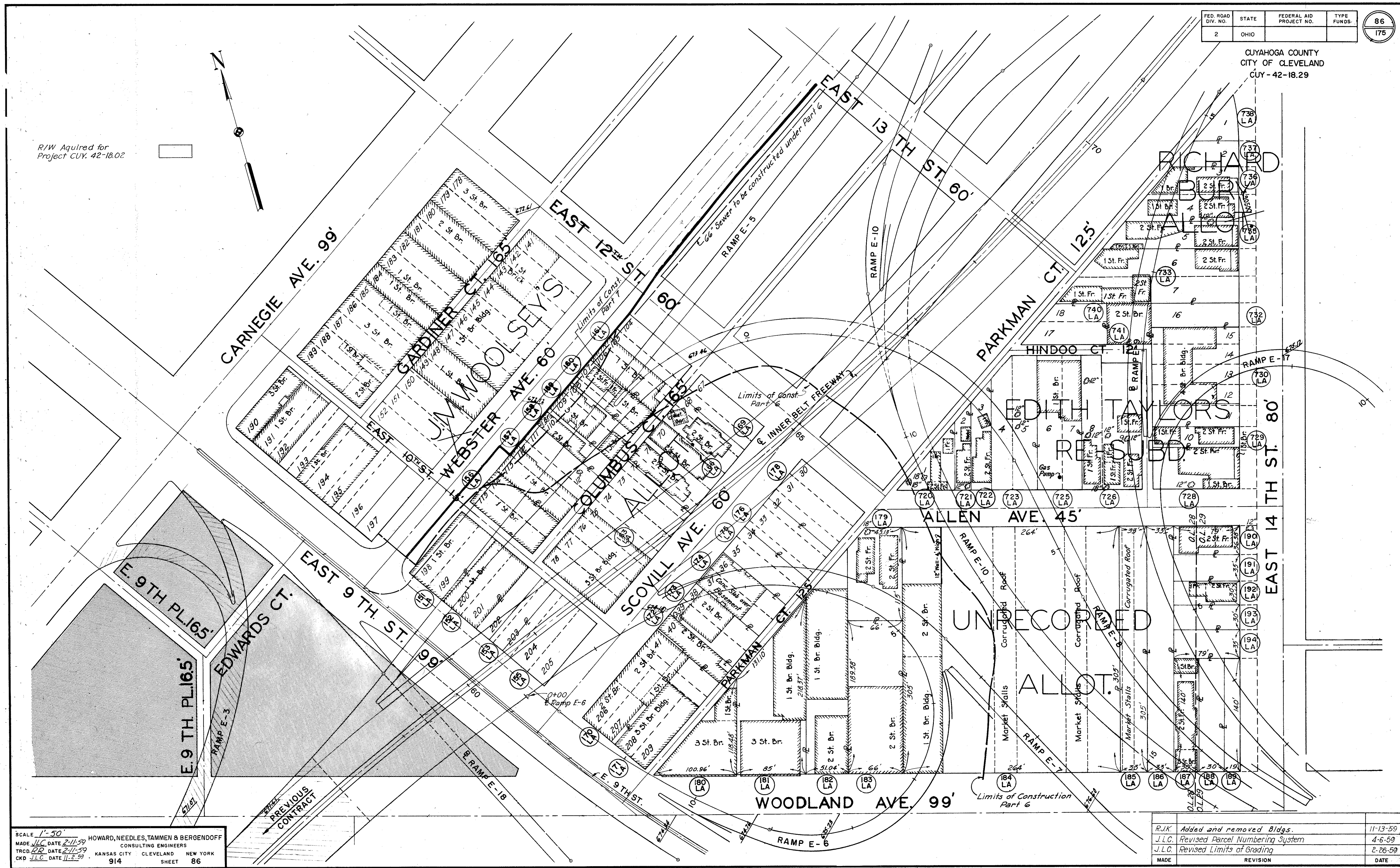
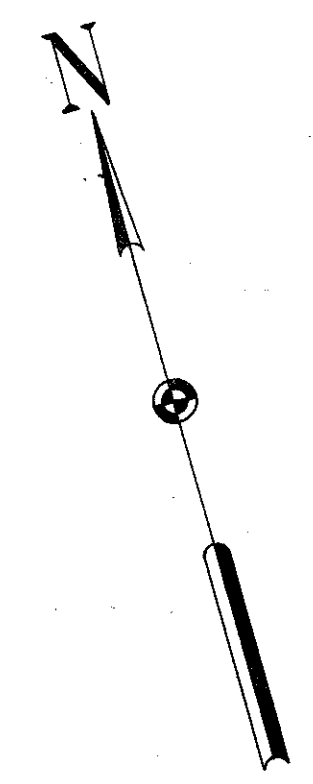


MADE	REVISION	DATE
J.L.C.	Revised Const. Adj. to E.B. Bldg.	10-30-59
J.L.C.	Revised Parcel Numbering System	4-6-59
J.L.C.	Revised Limits of Grading	2-26-59

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS.	86
2	OHIO			175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29

R/W Acquired for  
Project CUY. 42-18.02

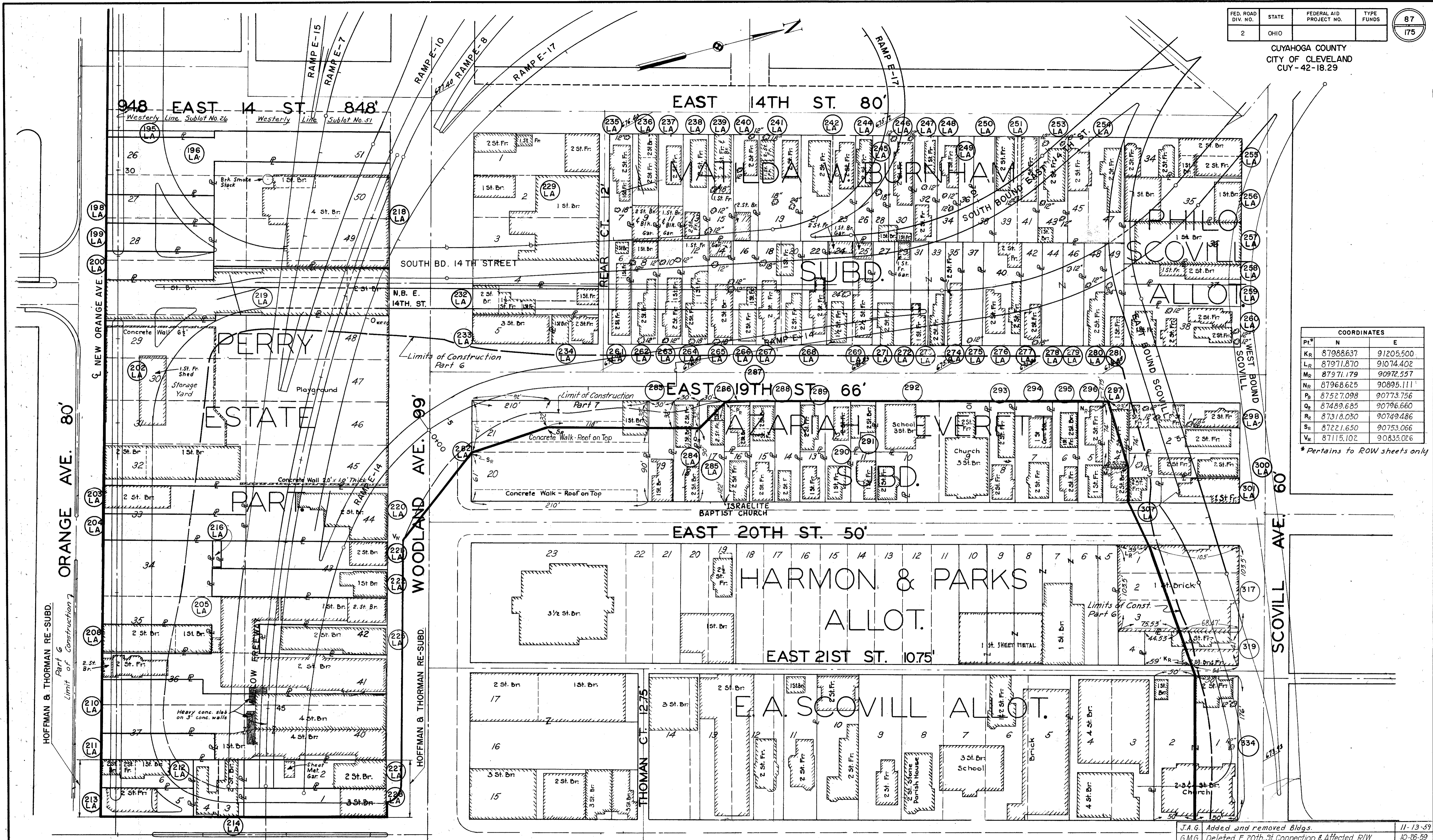


SCALE 1"=50'  
MADE J.L.C. DATE 2-11-59  
TRCD. R.R. DATE 2-11-59  
CKD J.L.C. DATE 11-2-59

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

914 SHEET 86

J.R.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



COORDINATES		
Pt.	N	E
Kr	87988.637	91205.500
Lr	87971.870	91074.402
Mr	87971.179	90972.557
Nr	87968.625	90895.111
Pr	87527.098	90773.756
Qr	87489.685	90796.660
Rr	87318.050	90749.486
Sr	87221.650	90753.066
Ur	87115.102	90835.026

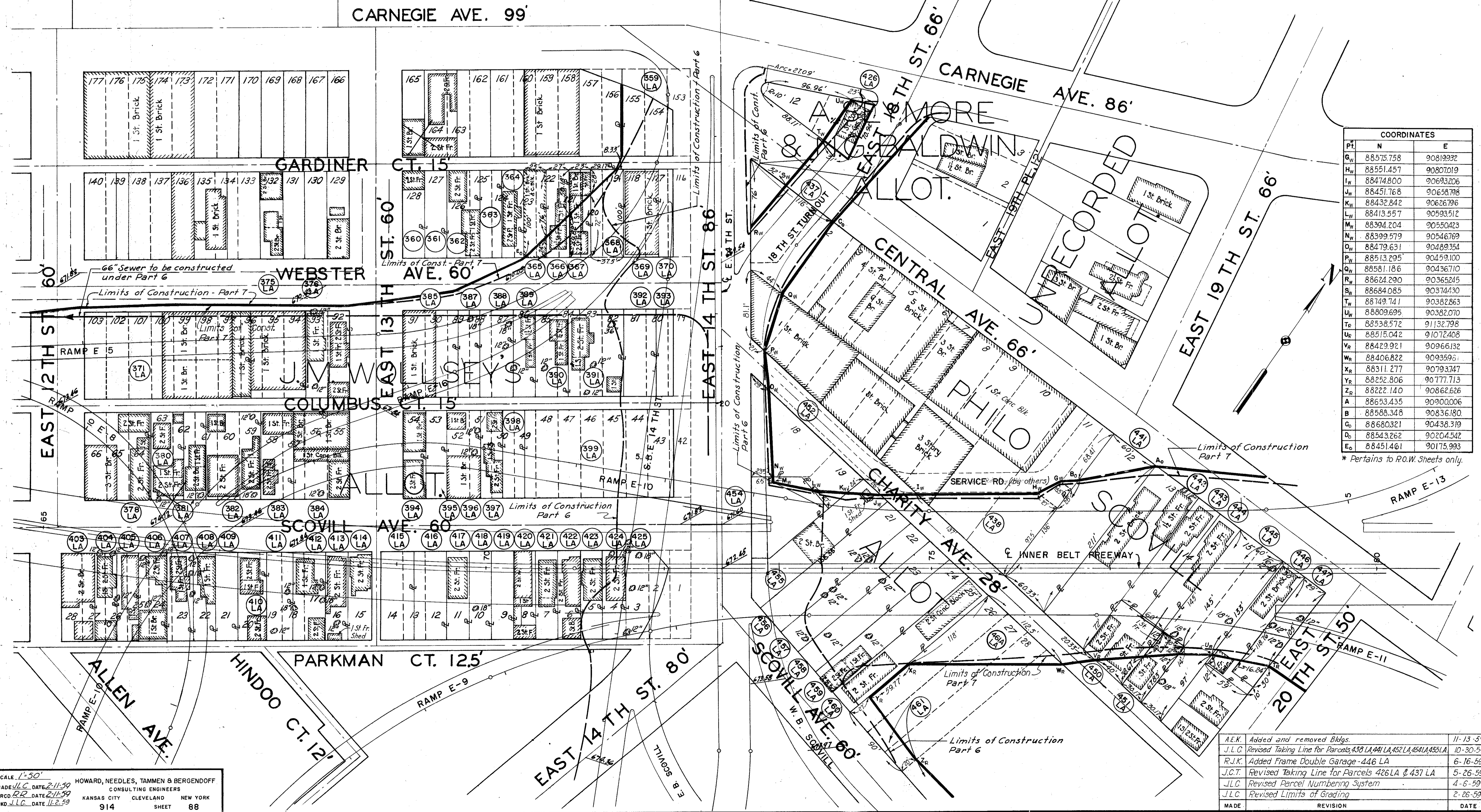
\* Pertains to ROW sheets only

SCALE 1"=50'  
MADE J.L.C. DATE 2-11-59  
TRCD. R.R. DATE 2-11-59  
CKD. J.L.C. DATE 11-2-59

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

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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



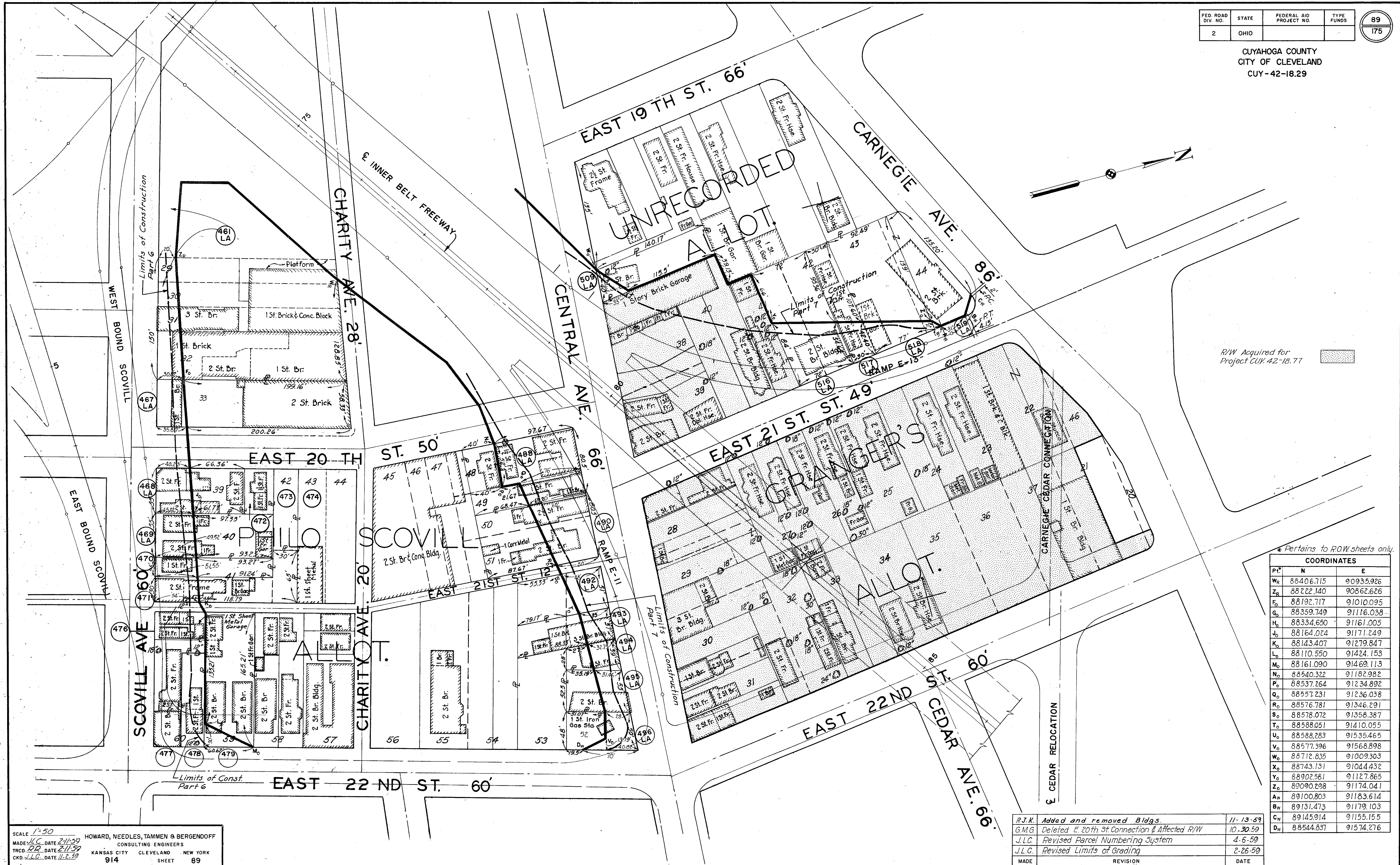
COORDINATES		
Pt.	N	E
G <sub>w</sub>	88575.758	90819932
H <sub>w</sub>	88551.457	90807019
I <sub>w</sub>	88474.800	90693206
J <sub>w</sub>	88451.768	90658798
K <sub>w</sub>	88432.842	90626796
L <sub>w</sub>	88413.557	90593512
M <sub>w</sub>	88394.204	90550423
N <sub>w</sub>	88399.579	90546769
O <sub>w</sub>	88479.631	90489354
P <sub>w</sub>	88513.295	90459100
Q <sub>w</sub>	88581.186	90436710
R <sub>w</sub>	88624.290	90365245
S <sub>w</sub>	88684.085	90374430
T <sub>w</sub>	88749.741	90382863
U <sub>w</sub>	88809.695	90382070
V <sub>w</sub>	88538.572	91132798
W <sub>w</sub>	88515.042	91072408
X <sub>w</sub>	88429.921	90966132
Y <sub>w</sub>	88406.822	90935961
Z <sub>w</sub>	88311.277	90793747
A	88252.806	90777713
B	88222.140	90862626
C <sub>o</sub>	88653.435	90900006
D <sub>o</sub>	88588.348	90836180
E <sub>o</sub>	88680.321	90438319
F <sub>o</sub>	88543.262	90204542
G <sub>o</sub>	88451.461	90175993

\* Pertains to R.O.W. Sheets only.

SCALE: 1"=50'  
MADE BY J.L.C. DATE: 2-11-59  
TRCD BY J.L.C. DATE: 2-11-59  
CKD BY J.L.C. DATE: 11-2-59  
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
114 SHEET 88

MADE	REVISION	DATE
A.E.K.	Added and removed Bldgs.	11-13-59
J.L.C.	Revised Taking Line for Parcels 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

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-18.29



R/W Acquired for Project CUY-42-18.77

\* Pertains to R/W sheets only.

COORDINATES		
PT.	N	E
W <sub>R</sub>	88406.715	90935.926
Z <sub>R</sub>	88222.140	90862.626
F <sub>0</sub>	88192.717	91010.095
G <sub>0</sub>	88359.749	91116.038
H <sub>0</sub>	88334.650	91161.005
J <sub>0</sub>	88164.024	91171.249
K <sub>0</sub>	88143.407	91279.847
L <sub>0</sub>	88110.550	91424.153
M <sub>0</sub>	88161.090	91469.113
N <sub>0</sub>	88540.322	91182.982
P <sub>0</sub>	88537.264	91234.892
Q <sub>0</sub>	88557.231	91236.038
R <sub>0</sub>	88576.781	91346.291
S <sub>0</sub>	88578.072	91358.387
T <sub>0</sub>	88588.051	91410.055
U <sub>0</sub>	88588.283	91535.465
V <sub>0</sub>	88577.396	91568.898
W <sub>0</sub>	88712.835	91009.303
X <sub>0</sub>	88743.131	91044.432
Y <sub>0</sub>	88902.581	91127.865
Z <sub>0</sub>	89090.298	91174.041
A <sub>W</sub>	89100.803	91183.614
B <sub>W</sub>	89131.473	91179.103
C <sub>W</sub>	89145.914	91155.155
D <sub>W</sub>	88544.837	91574.276

R.J.K.	Added and removed 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
MADE	REVISION	DATE

SCALE 1"=50'  
MADE J.L.C. DATE 2-11-59  
TRCD R.R. DATE 2-11-59  
CKD J.L.C. DATE 11-2-59

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914 SHEET 89



01-0 Q-16

CUY-90-16.24

MICROFILMED  
JUL 8 1985

FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

91  
175

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
CUY-42-1829

**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, NO. M-206, 14 ASBESTOS CEMENT CONDUIT DATED JULY 15, 1949, AND NO. SS-18, FENCE AND GATES, DATED JUNE 15, 1959. AND 5-101 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 PEDESTALS OF BRIDGE NO. 6 AND THE PIERS OF ALL OTHER BRIDGES 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. 1-22 AND SHALL BE COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS FOR EMBANKMENT COMPACTION. THE PAYMENT FOR THIS 1-22 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 SUB-STRUCTURE AGAINST WHICH EARTH IS TO BE PLACED SHALL BE WATERPROOFED WITH A PRE-MOLDED SEALING STRIP AS SHOWN IN THE PLANS.

**WELDING**

ALL WELDING SHALL BE CLASS "A" EXCEPT AS NOTED IN THE TAIL OF THE WELDING SYMBOL.

**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 <sup>at least</sup> 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.

**(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 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 6**

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 H.C.T.	REVIEWED V.C.T.	REVISED
DATE 10-4-59	DATE 11-10-59	DATE 11-10-59	SHEET 91