

65

MICROFILMED
APR 23 1966

STATE OF OHIO DEPARTMENT OF HIGHWAYS

SEP 5 1963
GROUND PHOTOLAB

LIMITED ACCESS

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	I-271-6(7)251

3/3

CUYAHOGA COUNTY
CUY-1-2.20

CUY-271-6.80

SEP 5 1963
GROUND PHOTOLAB

CUY-1-2.20 CUYAHOGA COUNTY WARRENSVILLE TOWNSHIP VILLAGE OF BEACHWOOD VILLAGE OF PEPPER PIKE VILLAGE OF WOODMERE VILLAGE OF ORANGE

I-271-6(7)251

1959 SPECIFICATIONS

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

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

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

Approved
Date 11-3-60 M. B. Henry
Division Deputy Director

Approved
Date 4-3-61 Ray E. Weaver
Deputy Director of Planning and Programming

Approved
Date 3-22-61 W. L. ...
Engineer of Bridges

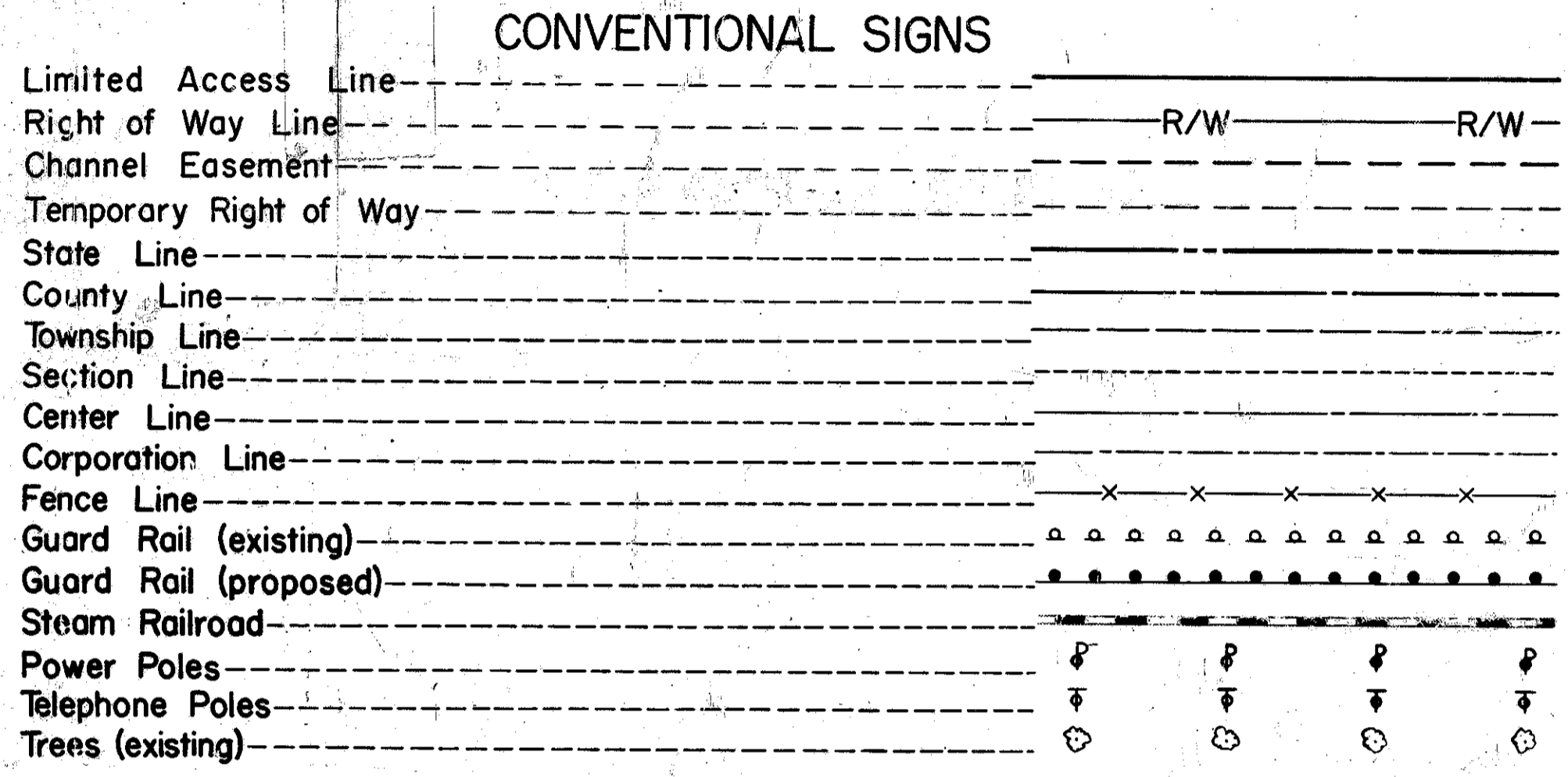
Approved
Date 3-27-61 W. L. ...
Engineer of Location and Design

Approved
Date 3-28-61 C. W. M. ...
Deputy Director of Design and Construction

Approved
Date 3-1-61 W. J. ...
Deputy Director of Right of Way

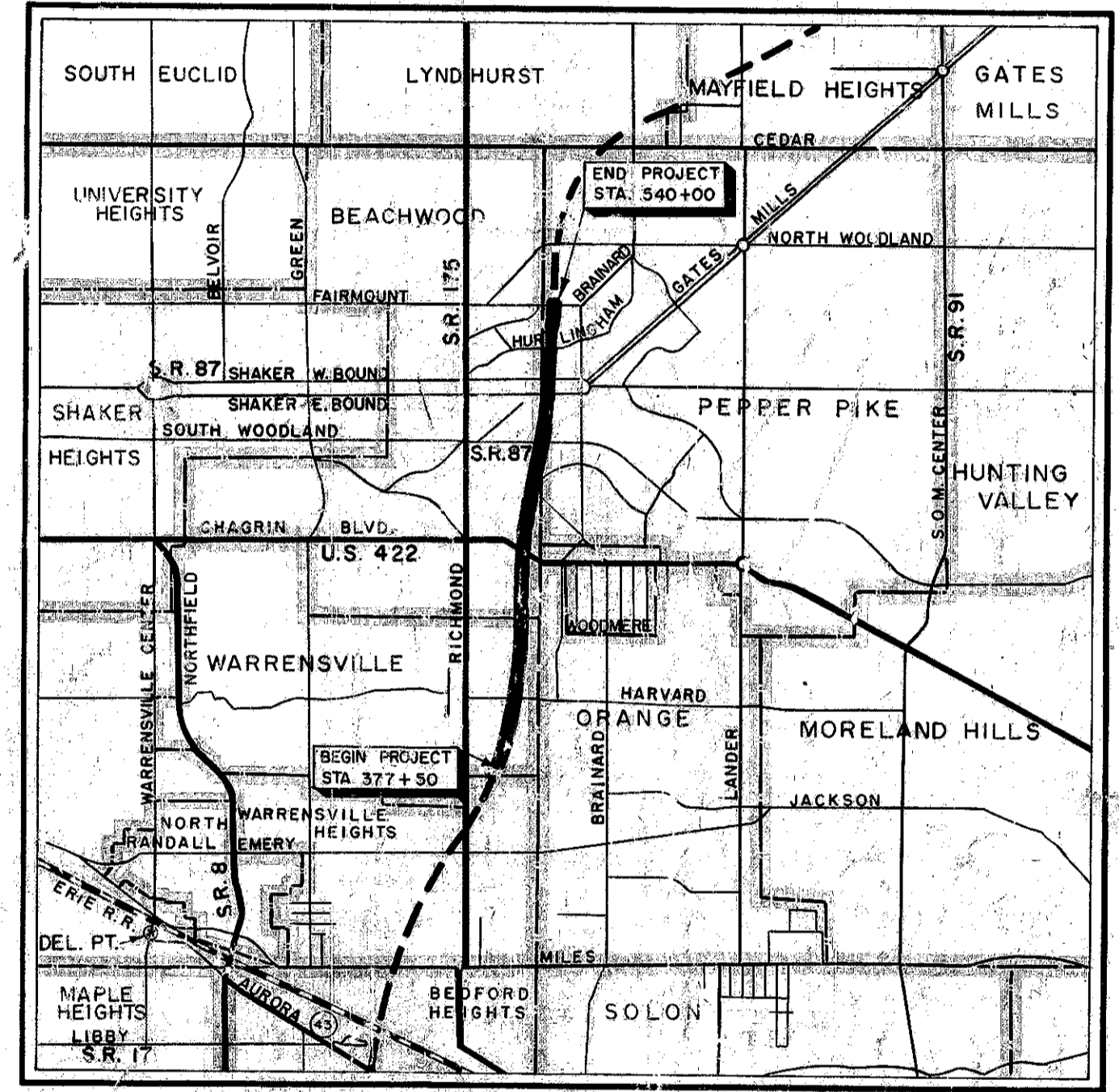
Approved
Date 4-3-61 W. L. ...
First Assistant Director

Approved
Date 4-3-61 E. L. ...
Director of Highways

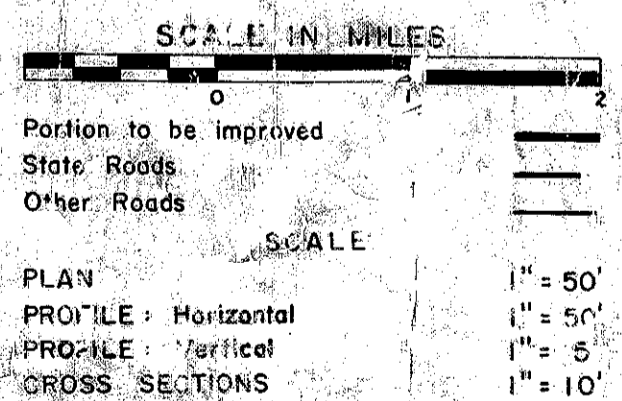


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DELIVERY POINT: ERIE R.R. LOCATION MAP AVERAGE HAUL: 5.76 MILES



LINE DATA

Begin Project - Sta. 377+50.00
End Project - Sta. 540+00.00
No Additions or Deductions
Net Length of Project 16,250.00 L.F. or 3.077 Miles
Add for Approaches:
North and South Tapers 100.00 L.F.
Chagrin Boulevard 3,044.00 L.F.
Fairmount Boulevard 1,440.00 L.F.
Net Length of Work 20,834.00 L.F. or 3.945 Miles

SUPPLEMENTAL SPECIFICATIONS

NUMBER	DATE	NUMBER	DATE
I-125	REV. 9-8-60	18	REV. 6-15-59
I-127	REV. 9-30-59	B-219	REV. 3-12-59
M-206.6(b)	5-25-56	M-107.18	REV. 1-13-60
M-206.14	7-15-49	S-307	8-23-60
S-207	4-28-55	S-101	12-2-59
M-106.6(d)	REV. 4-1-59		

STANDARD DRAWINGS

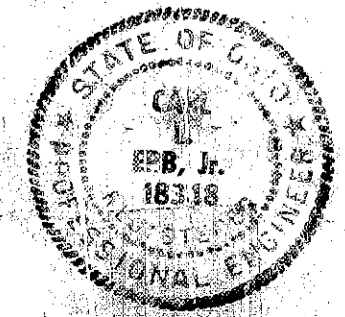
NUMBER	DATE	NUMBER	DATE
RI-1	7-15-58	I-8 C.B. No. 8	3-15-60
L-3	4-1-50	I-9 M.H. No. 1	1-26-59
L-3A	4-1-50	I-9 M.H. No. 1-A	2-1-59
B-T-71R	3-2-53	I-9 M.H. No. 2	1-26-59
B-T-50-70-71E No. 1	10-1-47	I-12	7-1-54
LJ No. 1	7-1-55	I-15 No. 1	5-21-59
TJ	9-12-60	I-15 No. 2-A	8-17-60
S-27-PC.3	2-20-45	I-21-23	8-1-56
S-27-PC.4	1-4-54	G-7.07	6-1-56
HW-A & B	7-15-57	F-1	9-1-59
HW-C	7-15-57	F-2	10-1-58
I-1,2,3,4 & 5	4-24-58	F-3	9-1-59
I-8 C.B. 2-A & B	3-2-55	S-1-54	12-1-54
I-8 C.B. 1-3 & 1-4	1-26-59	RB-1-55	2-2-59
I-8 C.B. No. 3	1-26-59	CS: 2-56 Sh. 3	2-2-59
I-8 C.B. No. 3-A	1-26-59	AR-1-57	2-2-59
I-8 C.B. No. 5	7-1-58		
I-8 C.B. No. 6	1-26-59	L-1	4-1-50
I-8 C.B. No. 8 & 4	1-26-59	T-35	1-2-58

Sheets 279, 280, 281, 288, 289, 290, & 297 revised 5-31-61.
Sheet 297 revised 6-27-61.
Sheet 12, 13, 14, 17, 18, 22, 23, 25, 27, 28, 29, 31, 230A
Revised 9-6-61
Sheet 17 Revised 12-15-61

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

H. G. SOURS
ASSOCIATE
COLUMBUS

FILE NO. CUYAHOGA COUNTY CUY-1-220
DATE OF LETTING
CONTRACT NO.



DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

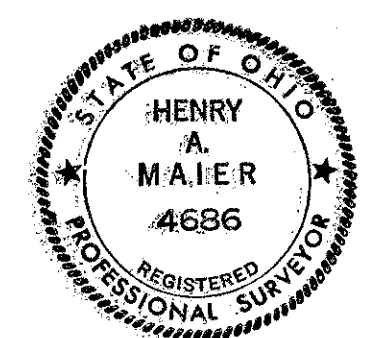
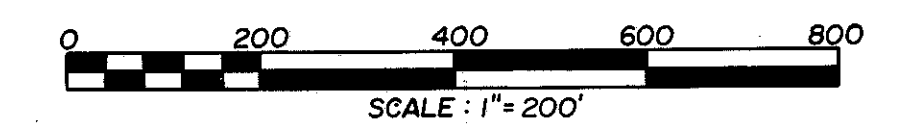
SEP 5 1963
GROUND PHOTOLAB

APPROVED _____ DATE _____

LOCATION PLAN

S.R. 1 CUY. - 1 - 2.20
 CUYAHOGA COUNTY

LIMITED ACCESS



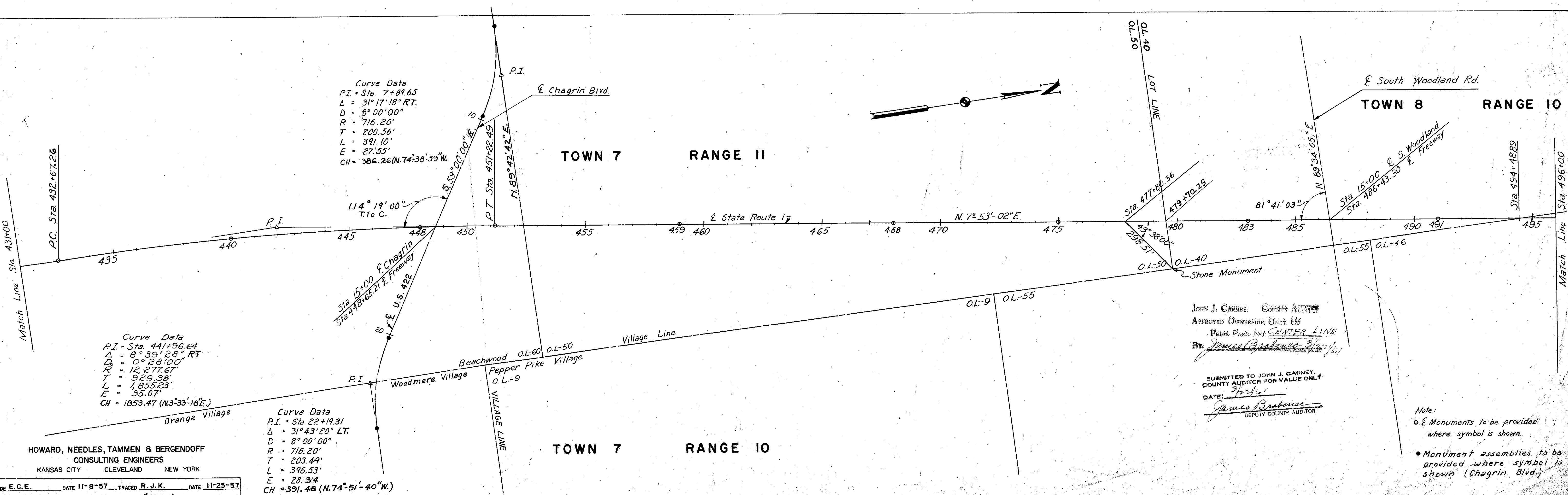
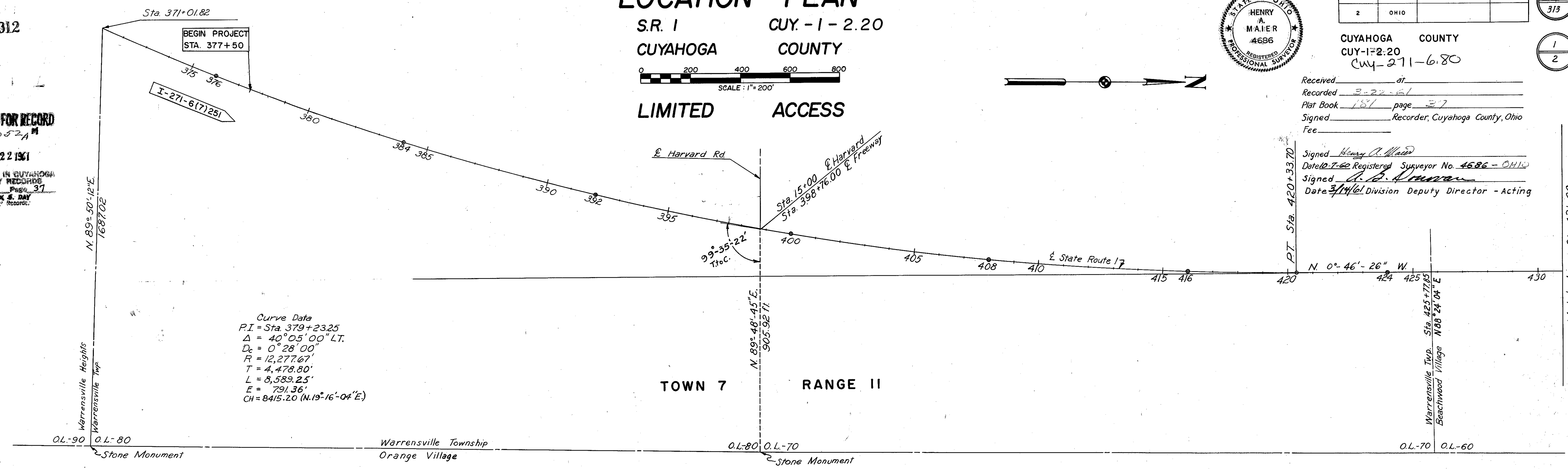
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY
 CUY-1-2.20
 CUY-271-6.80

Received _____ at _____
 Recorded 3-22-61
 Plat Book 181 page 27
 Signed _____ Recorder, Cuyahoga County, Ohio
 Fee _____

Signed Henry A. Maier
 Date 10-7-60 Registered Surveyor No. 4686 - OHIO
 Signed A. B. Johnson
 Date 3/14/61 Division Deputy Director - Acting

487312
 RECEIVED FOR RECORD
 NT 1052A
 MAR 22 1961
 RECORDED IN CUYAHOGA COUNTY RECORDS
 Vol. 181 Page 37
 FRANK S. DAY
 County Recorder



JOHN J. CARNEY, COUNTY AUDITOR
 APPROVED OWNERSHIP, ONLY, OF
 FORM FILE NO. CENTER LINE
 By: James P. Brabner 3/22/61
 SUBMITTED TO JOHN J. CARNEY,
 COUNTY AUDITOR FOR VALUE ONLY.
 DATE: 3/22/61
James P. Brabner
 DEPUTY COUNTY AUDITOR

Note:
 o Stone Monuments to be provided where symbol is shown.
 • Monument assemblies to be provided where symbol is shown (Chagrin Blvd.)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK
 MADE E.C.E. DATE 11-8-57 TRACED R. J. K. DATE 11-25-57
 CHECKED R. A. DATE 11-21-57 SCALE 1"=200'

487313

715

RECEIVED FOR RECORD

AT 10:33 A M

MAR 22 1961

RECORDED IN CUYAHOGA COUNTY RECORDS

Vol. 181 Page 38

FORANK S. DAY COUNTY RECORDS

LOCATION PLAN

S.R. 1 CUY. -1-2.20

CUYAHOGA COUNTY



LIMITED ACCESS

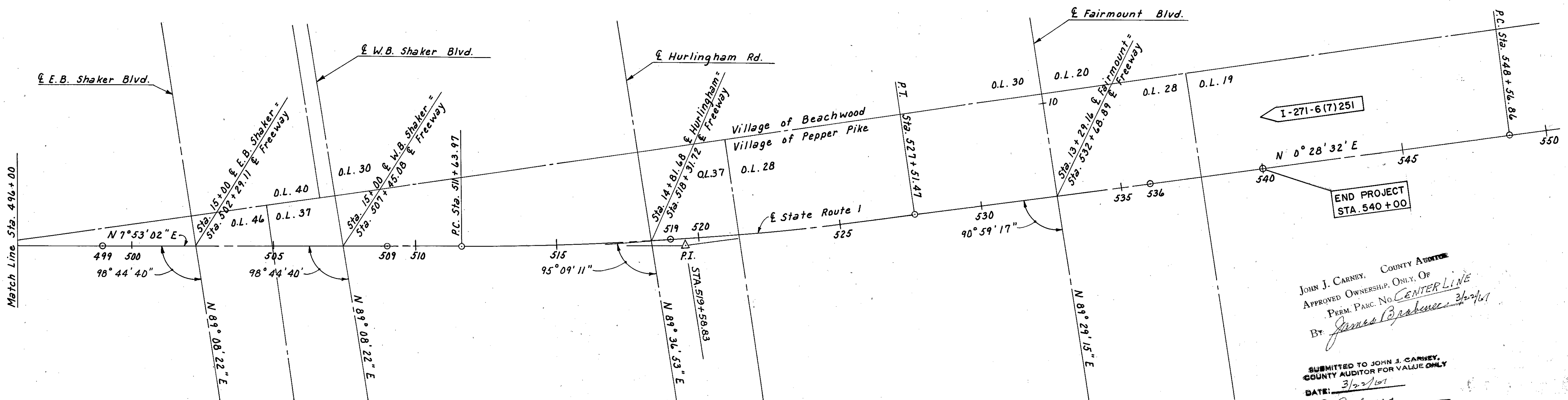
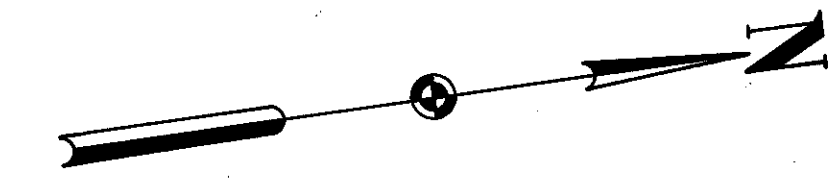
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

3
313

CUYAHOGA COUNTY
CUY-1-2.20

2
2

TOWN 8 RANGE 10



CURVE DATA
 P.I. Sta. 519 + 58.83
 $\Delta = 7^\circ 24' 30''$
 $D = 0^\circ 28' 00''$
 $R = 12,277.67'$
 $T = 794.86'$
 $L = 1,587.50'$
 $E = 25.70'$
 $CH = 1586.39 (N.4^\circ 10' -47'' E.)$

JOHN J. CARNEY, COUNTY AUDITOR
 APPROVED OWNERSHIP, ONLY, OF
 PERM. PARC. NO. CENTER LINE
 BY: *James Brubaker*
 SUBMITTED TO JOHN J. CARNEY,
 COUNTY AUDITOR FOR VALUE ONLY
 DATE: 3/22/61
J. Brubaker
 DEPUTY COUNTY AUDITOR

Note: \odot $\&$ Monuments to be provided where symbol is shown.

TOWN 7 RANGE 10

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

MADE *HJH* DATE *8-25-59* TRACED *AEK* DATE *1-29-60*
 CHECKED *DWK* DATE *8-27-59* SCALE *1" = 200'*

HOWARD NEEDLES TAMMEN & BERGENOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

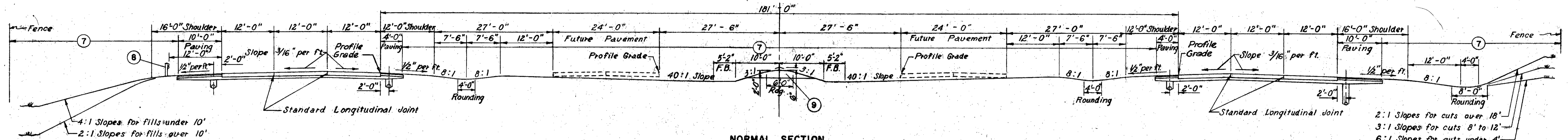
TYPICAL SECTIONS

TYPE T-71

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

4
313

CUYAHOGA COUNTY
CUY-1-2.20

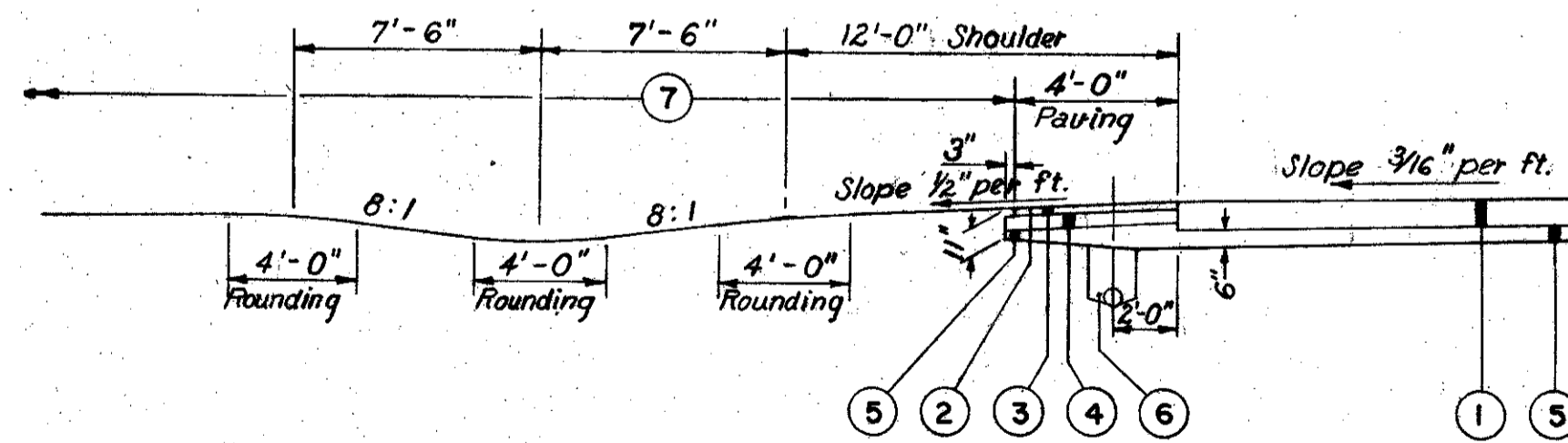


NORMAL SECTION

STA. 377 + 50.00 TO STA. 397 + 74.68
 STA. 399 + 77.24 TO STA. 485 + 35.03
 STA. 487 + 51.57 TO STA. 501 + 35.22
 STA. 508 + 39.78 TO STA. 540 + 00.00

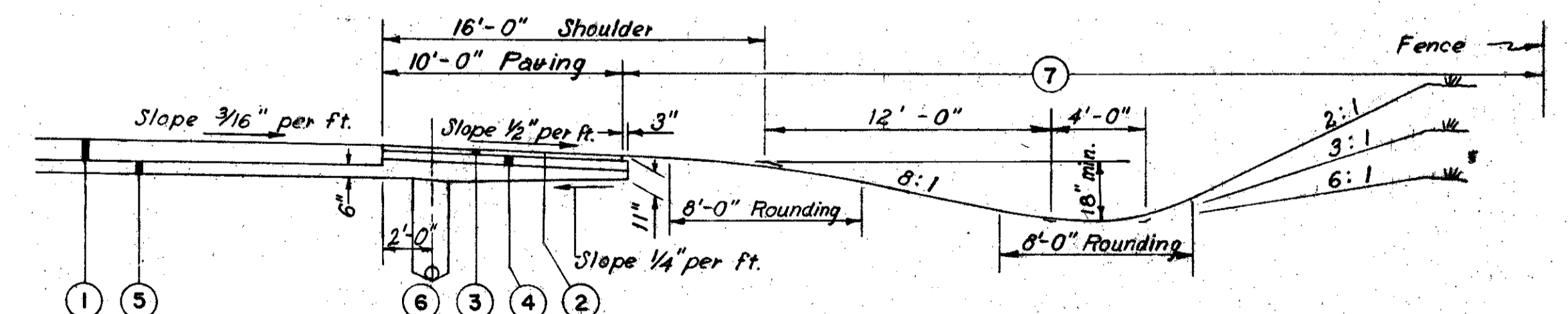
LEGEND

- ① Item T-71 , 10" Reinforced Portland Cement Concrete Pavement
- ② Item T-31 , Bituminous Surface Treatment, as per Plan (See Note in Proposal)
- * ③ Item B-219 , 3" Waterproofed Aggregate Base Course
- ④ Item I-18 , 5" Stabilized Crushed Aggregate Shoulders and Approaches
- ⑤ Item I-22 , Subbase (Variable Depth), grading "A" or "B", as per plan.
- ⑥ Item I-4 , 6" Underdrains
- ⑦ Item L-9 , Seeding and Protecting
- ⑧ Item I-15 , Guard Rail, Steel Beam Standard Type (Deep)
- ⑨ Item L-3 , Placing Stockpiled Topsoil



INSIDE SHOULDER NORMAL SECTION

Scale : 3/16" = 1 ft.



OUTSIDE SHOULDER - NORMAL SECTION

Scale : 3/16" = 1 ft.

Note:

Unless otherwise shown on the plans, underdrains shall be laid parallel to profile grade with 18" cover from bottom of subbase to top of pipe. Where deep underdrains are called for, 4'-3" cover from bottom of subbase to top of pipe shall be provided.

Typical Sections show the general roadway features only - for details see the Plan-Profile, Pavement Detail and Cross Section Sheets.

* Thickness shown is "designed" thickness as described in Section B-219.01.

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

MADE BY E. C. E. DATE 12-13-58 TRACED DATE
 CHECKED BY [Signature] DATE 9-9-59 SCALE 3/16" = 1 ft. or as shown

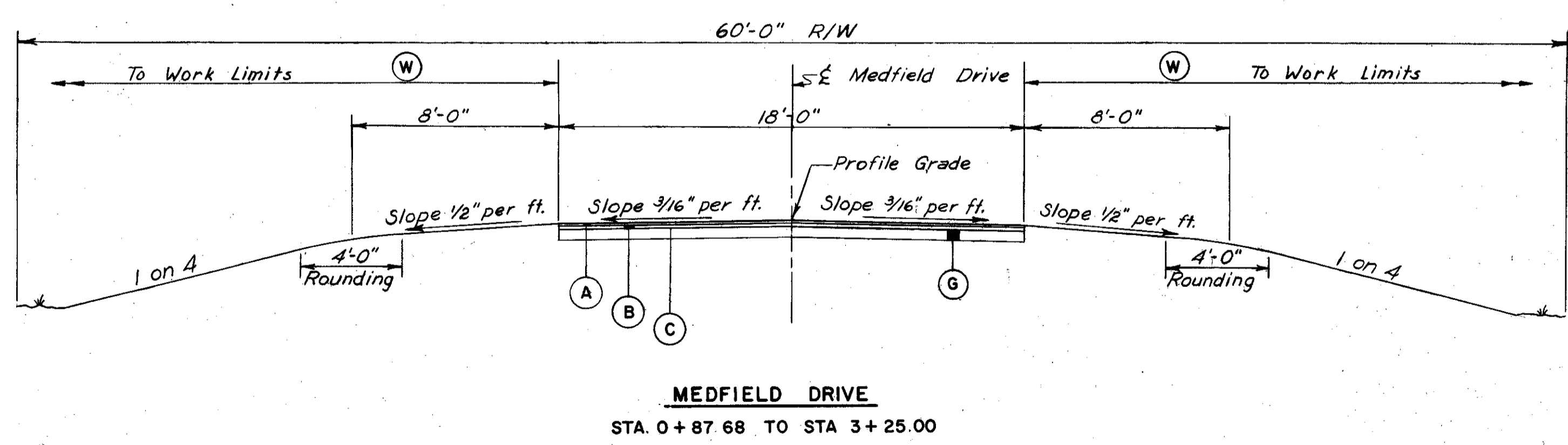
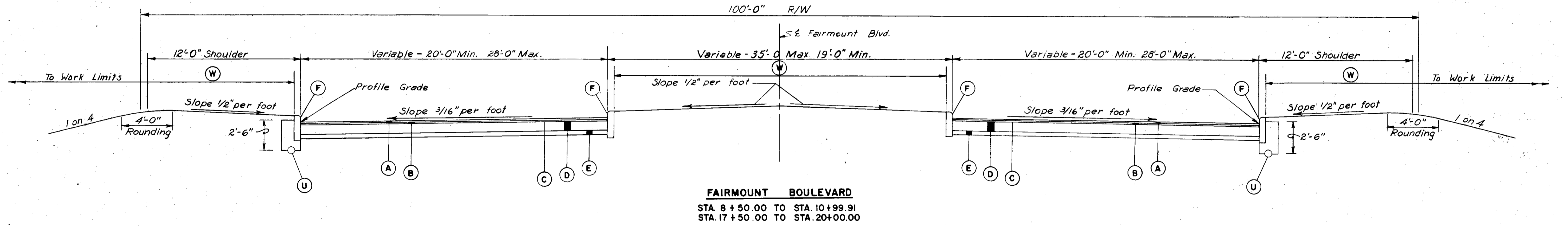
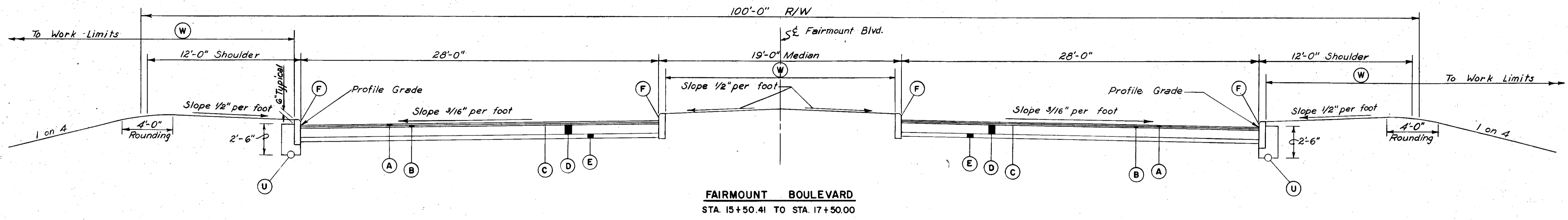
TYPICAL SECTIONS

TYPE T-35 ON B-19

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

5
3/3

CUYAHOGA COUNTY
CUY-I-2.20



LEGEND

- * (A) Item T-35, 1/4" Asphaltic Concrete Surface Course Type C (70-85)
 - * (B) Item B-35, 1 3/4" Asphaltic Concrete Leveling Course (70-85)
 - (C) Item T-30, Prime Coat, Sec. M-5.7, RT-2 or RT-3 applied at 0.4 gal. per sq. yd.
 - (D) Item B-19, 9" Aggregate Base Course
 - (E) Item I-22, 4" Subbase, grading "A" or "B", as per plan.
 - (F) Item I-11, 6"x24" Sandstone Curb Reset
 - (G) Item B-19, 5" Aggregate Base Course
 - (U) Item I-4, 6" Underdrain
 - (W) Item L-9, Seeding and Protecting
- * Thicknesses shown are "designed" thicknesses as described in Section T-35.01 and Section B-35.01.

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

MADE GED	DATE 12-8-58	TRACED	DATE
CHECKED ECE	DATE 5-28-59	SCALE	1/4" = 1'

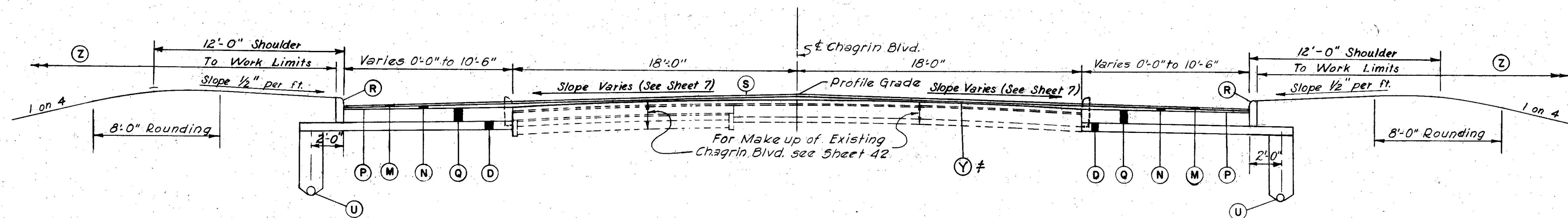
TYPICAL SECTIONS

TYPE T-71 AND TYPE T-35 ON B-19

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

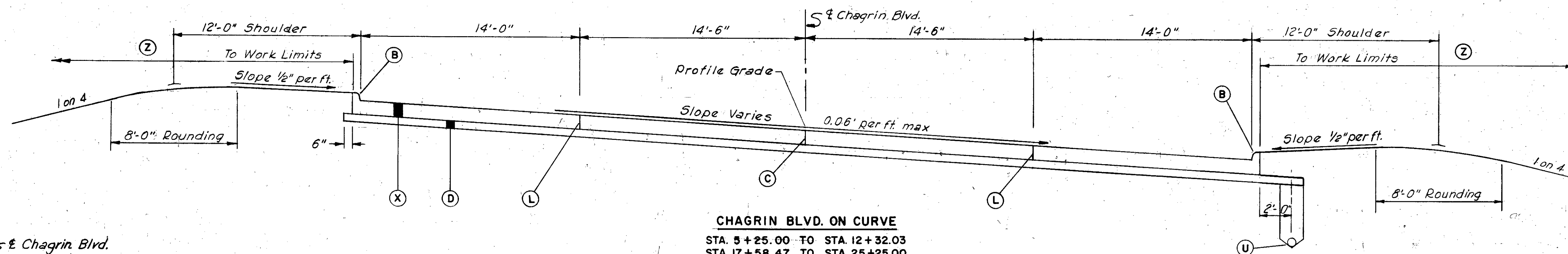
6
3/3

CUYAHOGA COUNTY
CUY-1-2.20

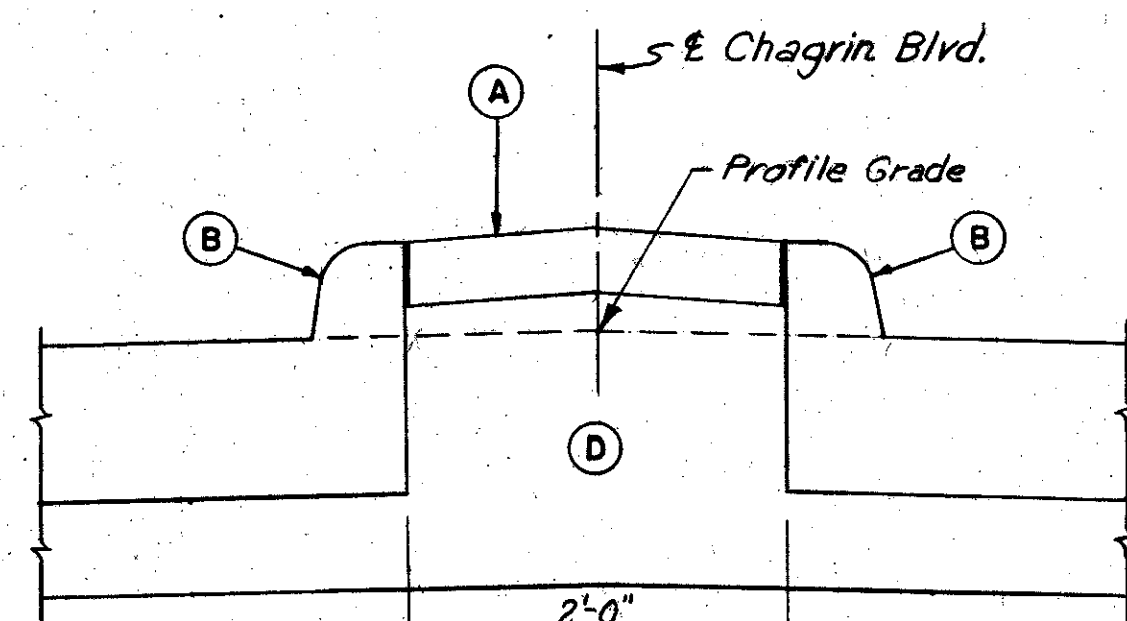


CHAGRIN BLVD. TAPERED SECTION
STA. 2+25.00 TO STA 5+25.00
STA. 25+25.00 TO STA.28+25.00

* Tack Coat to be used only if specifically directed by the Engineer.

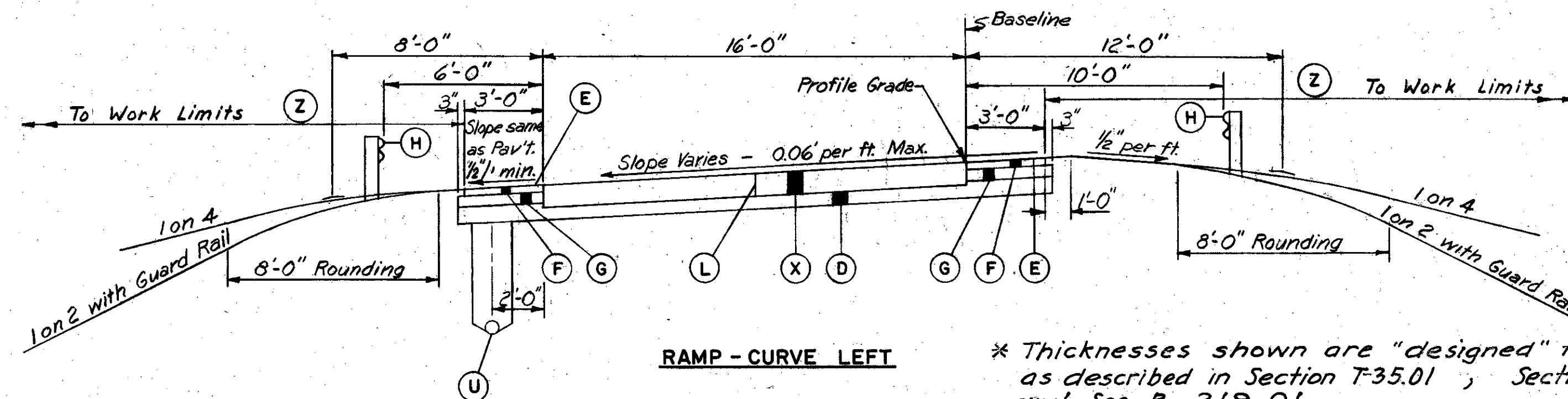


CHAGRIN BLVD. ON CURVE
STA. 5+25.00 TO STA. 12+32.03
STA. 17+58.47 TO STA. 25+25.00



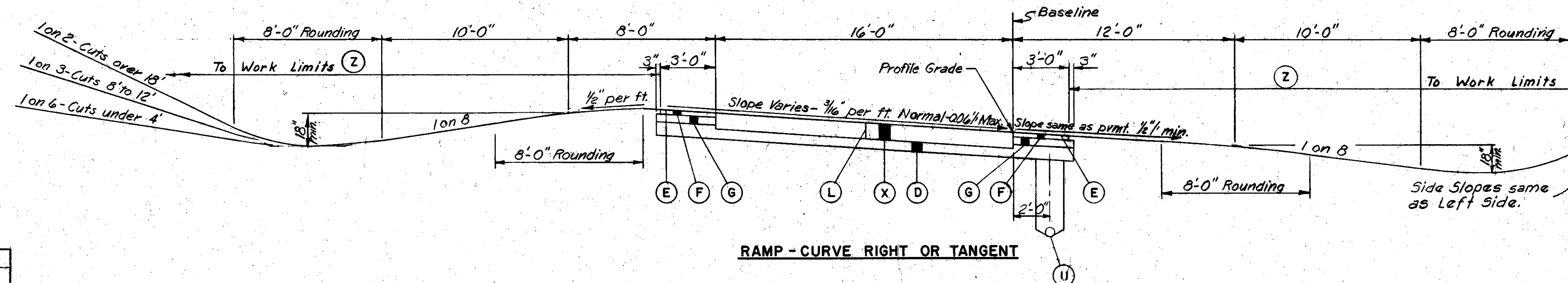
CHAGRIN BLVD. MEDIAN
Scale: 1" = 1'-0"

Note: For Median locations see Chagrin Blvd. Plan-Profile sheets.



RAMP - CURVE LEFT

* Thicknesses shown are "designed" thicknesses as described in Section T-35.01; Section B-35.01, and Sec. B-219.01.



RAMP - CURVE RIGHT OR TANGENT

Note:

Typical Sections show the general roadway features only, for details see the Plan-Profile, Pavement Detail and Cross Section Sheets.

For Underdrain depths see the Plan-Profile and Pavement Detail Sheets and the note on Sheet 4.

The existing surface course of Chagrin Boulevard is to be removed and B-35 leveling course used to bring surface to within 1/4" of grade. Should the finished elevations shown on sheet 7 not provide a 2 1/2" asphaltic concrete thickness at some locations, the Contractor shall adjust the elevations shown on sheet 7, or remove a portion of the base to provide a minimum 2 1/2" new asphaltic concrete thickness as directed by the Engineer.

LEGEND

- (A) Item I-21, Portland Cement Concrete Median Pavement Std. Type 1
- (B) Item I-12, Standard Type 2-A Concrete Curb
- (C) Standard Longitudinal Key Joint Without Tie Bars
- (D) Item I-22, 6" Subbase, grading "A" or "B", as per plan.
- (E) Item T-31, Bituminous Surface Treatment (See Proposal Note)
- * (F) Item B-219, 3" Waterproofed Aggregate Base Course.
- (G) Item I-18, 5" Stabilized Crushed Aggregate Shoulders and Approaches
- (H) Item I-15, Guard Rail, Steel Beam Standard Type (Deep)
- (L) Standard Longitudinal Joint
- * (M) Item T-35, 1/4" Asphaltic Concrete Surface Course Type C (70-85)
- * (N) Item B-35, 1/4" Min. Thickness Asphaltic Concrete Leveling Course (70-85)
- (P) Item T-30, Prime Coat, Sec. M-5.7, RT-2 or RT-3 applied at 0.4 gal. per sq. yd.
- (Q) Item B-19, 10" Aggregate Base Course
- (R) Item I-11, 6"x20" Sandstone Curb Reset
- (S) Item E-8, Removal and Disposal of Existing Wearing Course
- (U) Item I-4, 6" Underdrains
- (X) Item T-71, 9" Reinforced Portland Cement Concrete Pavement
- (Z) Item L-9, Seeding and Protecting.
- (Y) Item T-30, Bituminous Tack Coat, Sec. M-5.5, MS-2 or RS-1; or Sec. M-5.2, RC-1, RC-2 or RC-3 as per Sec. T-30.02 applied at Rate of 0.10 Gal. per Sq. Yd.

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

MADE LUM DATE 5-14-59 TRACED DATE
CHECKED ECE DATE 5-27-59 SCALE 1/4" = 1'-0" or as noted

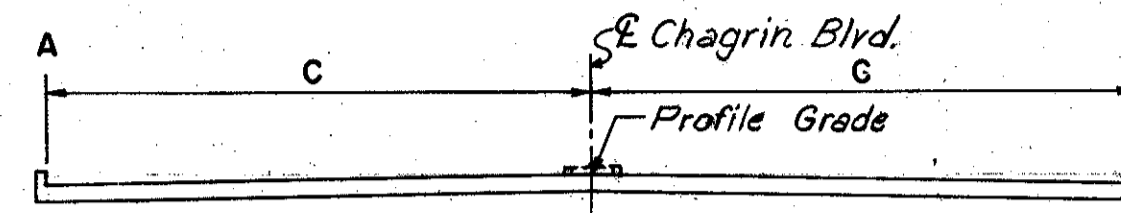
SUPERELEVATION TABLES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

7
313

CUYAHOGA COUNTY
CUY-I-2.20

CHAGRIN BLVD.



STATION	A	PROFILE GRADE	B	C
2+25	1215.11	1215.60	1215.06	18.00'
2+50	1214.70	1215.16	1214.66	18.88'
2+75	1214.30	1214.72	1214.27	19.75'
3+00	1213.90	1214.28	1213.88	20.62'
3+25	1213.50	1213.84	1213.50	21.50'
3+50	1213.11	1213.40	1213.05	22.38'
3+75	1212.73	1212.96	1212.60	23.25'
4+00	1212.35	1212.52	1212.14	24.12'
4+25	1211.98	1212.08	1211.69	25.00'
4+50	1211.61	1211.64	1211.24	25.88'
4+75	1211.23	1211.23	1210.81	26.75'
5+00	1211.12	1210.87	1210.44	27.62'
5+25	1210.99	1210.56	1210.11	28.50'
5+50	1210.89	1210.30	1209.71	28.50'
5+75	1210.85	1210.09	1209.33	28.50'
6+00	1210.86	1209.93	1209.00	28.50'
6+25	1210.91	1209.82	1208.73	28.50'
6+50	1211.02	1209.76	1208.50	28.50'
6+75	1211.17	1209.74	1208.31	28.50'
7+00	1211.37	1209.78	1208.19	28.50'
7+25	1211.56	1209.85	1208.14	28.50'
7+50	1211.70	1209.99	1208.28	28.50'
7+75	1211.88	1210.17	1208.46	28.50'
8+00	1212.11	1210.40	1208.69	28.50'
8+25	1212.39	1210.68	1208.97	28.50'
8+50	1212.72	1211.01	1209.30	28.50'
8+75	1212.91	1211.35	1209.79	28.50'
9+00	1213.09	1211.70	1210.31	28.50'
9+25	1213.26	1212.04	1210.82	28.50'
9+50	1213.45	1212.39	1211.33	28.50'
9+75	1213.62	1212.73	1211.84	28.50'
10+00	1213.80	1213.08	1212.36	28.50'
10+25	1213.98	1213.42	1212.86	28.50'
10+50	1214.16	1213.77	1213.32	28.50'
10+75	1214.33	1214.11	1213.66	28.50'
11+00	1214.52	1214.44	1214.01	28.50'
11+25	1214.75	1214.80	1214.35	28.50'
11+50	1215.01	1215.15	1214.70	28.50'
11+75	1215.27	1215.49	1215.04	28.50'
12+00	1215.54	1215.84	1215.39	28.50'
12+25	1215.80	1216.18	1215.73	28.50'
12+50	1216.08	1216.53	1216.08	28.50'
12+75	1216.42	1216.87	1216.42	28.50'
13+00	1216.77	1217.22	1216.77	28.50'
13+25	1217.11	1217.56	1217.11	28.50'
13+50	1217.46	1217.91	1217.46	28.50'
13+75	1217.79	1218.24	1217.79	28.50'
14+00	1218.09	1218.54	1218.09	28.50'
14+25	1218.34	1218.79	1218.34	28.50'
14+50	1218.58	1219.03	1218.58	28.50'
14+75	1218.76	1219.21	1218.76	28.50'
15+00	1218.93	1219.38	1218.93	28.50'
15+25	1219.06	1219.51	1219.06	28.50'

STATION	A	PROFILE GRADE	B	C
15+25	1219.06	1219.51	1219.06	28.50'
15+50	1219.15	1219.60	1219.15	28.50'
15+75	1219.21	1219.66	1219.21	28.50'
16+00	1219.24	1219.69	1219.24	28.50'
16+25	1219.23	1219.68	1219.23	28.50'
16+50	1219.20	1219.65	1219.20	28.50'
16+75	1219.12	1219.57	1219.12	28.50'
17+00	1219.01	1219.46	1219.01	28.50'
17+25	1218.86	1219.31	1218.86	28.50'
17+50	1218.70	1219.15	1218.70	28.50'
17+75	1218.48	1218.93	1218.56	28.50'
18+00	1218.25	1218.70	1218.41	28.50'
18+25	1217.96	1218.41	1218.20	28.50'
18+50	1217.66	1218.11	1217.99	28.50'
18+75	1217.32	1217.77	1217.73	28.50'
19+00	1216.94	1217.39	1217.47	28.50'
19+25	1216.53	1216.98	1217.23	28.50'
19+50	1216.09	1216.54	1216.96	28.50'
19+75	1215.47	1216.05	1216.63	28.50'
20+00	1214.79	1215.54	1216.29	28.50'
20+25	1214.08	1215.00	1215.92	28.50'
20+50	1213.34	1214.42	1215.50	28.50'
20+75	1212.56	1213.81	1215.06	28.50'
21+00	1211.75	1213.17	1214.59	28.50'
21+25	1210.91	1212.49	1214.07	28.50'
21+50	1210.06	1211.77	1213.48	28.50'
21+75	1209.32	1211.03	1212.74	28.50'
22+00	1208.54	1210.25	1211.96	28.50'
22+25	1207.72	1209.43	1211.14	28.50'
22+50	1206.87	1208.58	1210.29	28.50'
22+75	1206.00	1207.71	1209.42	28.50'
23+00	1205.19	1206.79	1208.39	28.50'
23+25	1204.40	1205.84	1207.28	28.50'
23+50	1203.59	1204.86	1206.13	28.50'
23+75	1202.76	1203.86	1204.96	28.50'
24+00	1201.92	1202.86	1203.80	28.50'
24+25	1201.09	1201.86	1202.63	28.50'
24+50	1200.26	1200.86	1201.46	28.50'
24+75	1199.41	1199.86	1200.30	28.50'
25+00	1198.41	1198.86	1199.13	28.50'
25+25	1197.41	1197.86	1197.96	28.50'
25+50	1196.43	1196.86	1196.83	27.62'
25+75	1195.44	1195.86	1195.75	26.75'
26+00	1194.46	1194.86	1194.68	25.88'
26+25	1193.47	1193.86	1193.62	25.00'
26+50	1192.48	1192.86	1192.55	24.12'
26+75	1191.50	1191.86	1191.50	23.25'
27+00	1190.51	1190.86	1190.51	22.38'
27+25	1189.63	1189.97	1189.63	21.50'
27+50	1188.73	1189.18	1188.80	20.62'
27+75	1187.90	1188.44	1188.01	19.75'
28+00	1187.11	1187.74	1187.27	18.88'
28+25	1186.36	1187.07	1186.57	18.00'

GENERAL NOTES - CONTINUED

ITEM I-8, MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN
This item shall consist of the careful removal of the existing manhole down to the spring line and reconstruction of the manhole to the new grade, conforming as nearly as practicable to the existing dimensions and type of construction and using the salvaged manhole frame and cover.

STOCKPILING TOPSOIL

The material to be stockpiled for placement as item L-3 for raised median on this project shall be obtained under item L-1 within the limits of right-of-way. No borrow item is anticipated for this purpose. This item shall be in addition to the normal requirements of item E-1.03(a).

ITEM L-3 PLACING STOCKPILED TOPSOIL, AS PER PLAN

The method of measurement for this item shall be in cubic yards, compacted in place, in lieu of square yards for topsoil in the raised median for this project.

Furnishing and placing of commercial fertilizer for the area in the raised median on this project has been included for payment in the item L-9 quantities and shall therefore be waived from item L-3, placing stockpiled topsoil.

All other requirements of item L-3 of the Construction and Material Specifications shall be met.

MAINTAINING TRAFFIC (CONT'D)

Two-way traffic shall be maintained at all times on Harvard Road and on both roadways of Shaker Boulevard.

South Woodland Road may be closed to traffic for a period not to exceed thirty (30) calendar days during construction of Bridge No. CUY-1-0425 R. & L. over South Woodland Road. At all other times, two-way traffic shall be maintained on South Woodland Road.

The cul-de-sacs on Hurlingham Road shall be built before construction operations on S. R. 1 necessitate severance of that facility.

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

MADE ECE-DWK DATE 6-18-59 TRACED RK DATE 6-18-59
CHECKED AEK DATE 6-19-59 SCALE

MICROFILMED
APR 23 1986

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

BR
313

CUYAHOGA COUNTY
CUY-1-2.20

CURVE DATA

PI = Sta. 379+23.25
 $\Delta = 40^{\circ}05'00''$
 $D = 0^{\circ}28'00''$
 $R = 12,277.67'$
 $T = 4,478.80'$
 $L = 8,589.25'$
 $E = 791.36'$

CURVE DATA

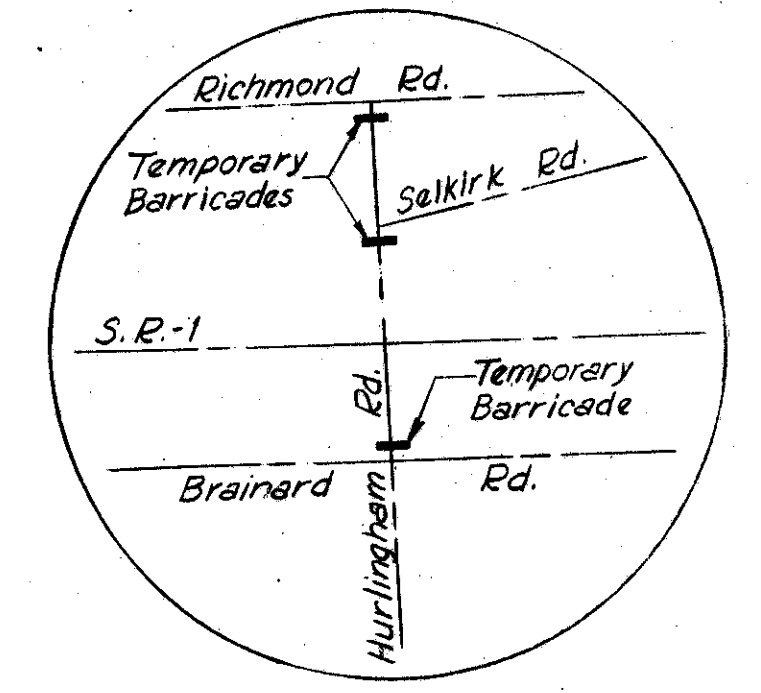
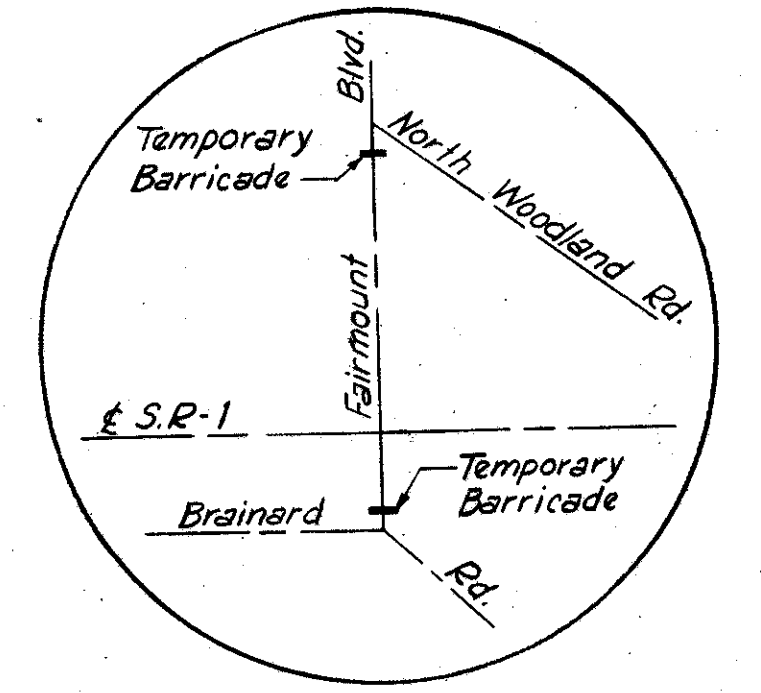
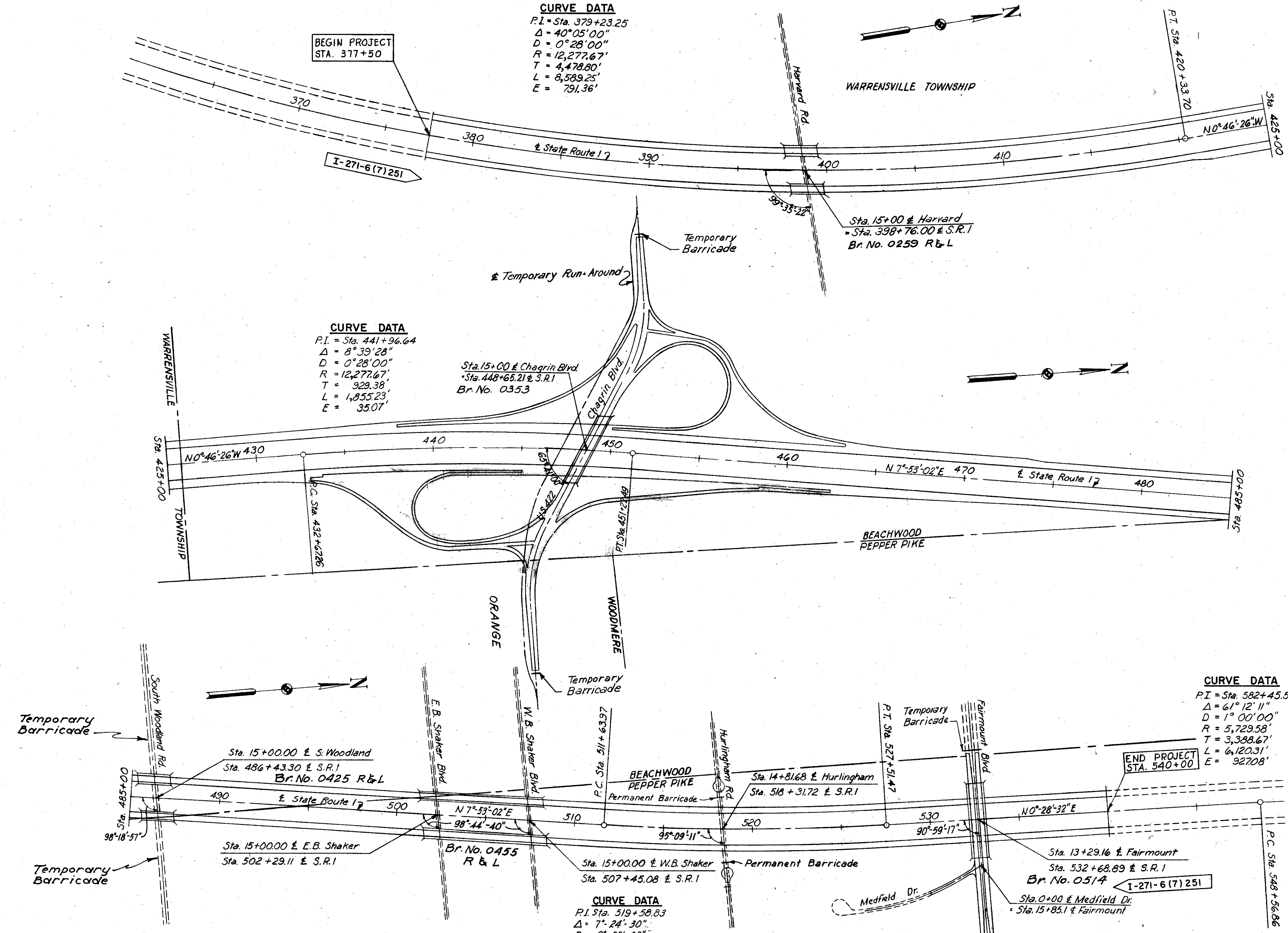
PI = Sta. 441+96.64
 $\Delta = 8^{\circ}39'28''$
 $D = 0^{\circ}28'00''$
 $R = 12,277.67'$
 $T = 929.38'$
 $L = 1,855.23'$
 $E = 35.07'$

CURVE DATA

PI = Sta. 582+45.53
 $\Delta = 61^{\circ}12'11''$
 $D = 1^{\circ}00'00''$
 $R = 5,729.58'$
 $T = 3,338.67'$
 $L = 6,120.31'$
 $E = 927.08'$

CURVE DATA

PI = Sta. 519+58.83
 $\Delta = 7^{\circ}24'30''$
 $D = 0^{\circ}28'00''$
 $R = 12,277.67'$
 $T = 794.86'$
 $L = 1,587.50'$
 $E = 25.70'$



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

MADE LVM DATE 10-8-60 TRACED AEK DATE 5-11-61
 CHECKED RJH DATE 6-13-61 SCALE 1"=300'

GENERAL NOTES

CUYAHOGA COUNTY
CUY-I-2.20

DESIGN SPEED

THE GEOMETRIC DESIGN OF THE WORK TO BE PERFORMED UNDER THIS CONTRACT ON THE ROADWAY AND STRUCTURES TO CARRY INTERSTATE HIGHWAY TRAFFIC HAS BEEN PREPARED FOR A SPEED OF SEVENTY (70) MILES PER HOUR AND A MINIMUM STOPPING SIGHT DISTANCE OF 600' BASED ON 4.0' FOR THE HEIGHT OF EYE AND 0' FOR THE HEIGHT OF OBJECT.

ELEVATION DATUM

ALL ELEVATIONS SHOWN ON THESE PLANS ARE IN FEET ABOVE THE CLEVELAND REGIONAL GEODETIC SURVEY DATUM PLANE.

FIELD OFFICE

THE FIELD OFFICE REQUIRED BY SECTION S-0.01, (b), SHALL PROVIDE A MINIMUM OF 500 SQUARE FEET OF FLOOR SPACE FOR THE EXCLUSIVE USE OF THE ENGINEER UNTIL FINAL ACCEPTANCE OF THE WORK TO BE PERFORMED UNDER THIS CONTRACT. THE CONTRACTOR SHALL INSTALL A TELEPHONE IN THIS FIELD OFFICE AND MAINTAIN IT IN SERVICE FOR THE EXCLUSIVE USE OF THE ENGINEER DURING THE SAME TIME PERIOD. THE CONTRACTOR SHALL INSTALL WIRING AND OUTLETS SUITABLE FOR CONNECTION TO OFFICE EQUIPMENT AND SHALL PROVIDE 110 VOLT ALTERNATING ELECTRIC POWER AS MAY BE REQUIRED BY THE ENGINEER UNTIL FINAL ACCEPTANCE. ALL COSTS FOR THE TELEPHONE AND ELECTRIC POWER INCURRED BY THE ENGINEER, AS REQUIRED BY THE WORK, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR THE VARIOUS ITEMS OF THE WORK.

CENTERLINE REFERENCE MONUMENTS

CENTERLINE REFERENCE MONUMENTS SHALL BE CONSTRUCTED WHERE SHOWN ON THE PLANS USING CLASS C CONCRETE CAST IN PLACE IN A CIRCULAR HOLE EIGHT INCHES IN DIAMETER AND FORTY-FOUR INCHES IN DEPTH. THE TOP OF THIS CONCRETE SHALL BE FINISHED AT A DEPTH OF TWO INCHES BELOW GROUND LEVEL AND THE UPPER SIX INCH PORTION OF THE CONCRETE SHALL BE FORMED. A 1/2" X 1/4" BRASS ROD SHALL BE EMBEDDED IN THE WET CONCRETE AS DIRECTED BY THE ENGINEER TO MARK CENTERLINE AND STATION.

PRIVATE DRIVES

IT MAY BECOME NECESSARY DURING THE PROGRESS OF CONSTRUCTION UNDER THIS CONTRACT FOR THE ENGINEER TO ALTER THE LOCATION OF PRIVATE ENTRANCES TO PROPERTY ADJACENT TO COUNTY OR STATE HIGHWAYS CROSSING OVER OR UNDER THE INTERSTATE HIGHWAY. SHOULD THIS OCCUR, THE CONTRACTOR SHALL ACCOMPLISH THE NECESSARY CHANGES AS DIRECTED BY THE ENGINEER AND WILL BE COMPENSATED FOR ADDITIONAL COSTS INCURRED IN ACCORDANCE WITH SECTION G-4.03, INCREASED OR DECREASED QUANTITIES.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS HAVE BEEN OBTAINED BY DILIGENT FIELD CHECKS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE STATE OF OHIO MAKES NO GUARANTEE AS TO THEIR ACCURACY OR COMPLETENESS.

UTILITY ADJUSTMENT

ANY OR ALL WORK REQUIRED FOR PUBLIC OR PRIVATE UTILITIES WILL BE DONE BY AND AT THE EXPENSE OF THEIR RESPECTIVE OWNERS, UNLESS OTHERWISE NOTED ON THESE PLANS.

CONNECTIONS TO EXISTING PIPE

WHEN THE PLANS PROVIDE FOR PROPOSED DRAINAGE PIPE TO BE CONNECTED TO EXISTING PIPE THE CONTRACTOR SHALL LOCATE THE EXISTING PIPE BOTH AS TO LINE AND GRADE BEFORE LAYING THE PROPOSED PIPE. THE COST OF THIS OPERATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT PIPE ITEM.

REMOVAL OF HEADWALLS

Headwalls, on pipe to be removed under Item E-12, shall be completely removed and disposed of. Cost of such removal and disposal shall be included in the unit price bid for Item E-12, Pipe Removed, as per plan.

PRIVATE SEWER TAPS

THIS PLAN MAKES NO PROVISION FOR CONNECTING, NOR SHALL THE ENGINEER OR CONTRACTOR CONNECT ANY EXISTING OR NEW PRIVATE DRAINAGE TO THE NEW HIGHWAY DRAINAGE SYSTEM WHEN SUCH PRIVATE DRAINS CARRY EFFLUENT OR DRAINAGE FROM LEACHING BED OUTLETS, CELLAR DRAINS, OR SINK DRAINS, OR POLLUTED WATER OF ANY KIND. CONNECTIONS MAY BE MADE TO THE EXISTING OR NEW HIGHWAY DRAINAGE SYSTEM WHEN THE WATER CARRIED TO THE PROJECT DRAINAGE SYSTEM DOES NOT COME WITHIN THE CATEGORY OUTLINED ABOVE. ACCEPTABLE WATER INCLUDES FLOW FROM ROOF DRAINS, FIELD DRAINS, AND ENCLOSED NATURAL DRAINAGE SOURCES WHICH WOULD REACH THE ROAD THROUGH NATURAL CHANNELS IF SUCH WATER WAS NOT CONDUCTED ARTIFICIALLY. EXISTING SEWER TAPS WHICH DO NOT CARRY ACCEPTABLE WATER AS DEFINED ABOVE SHALL BE PLUGGED AT THE RIGHT OF WAY LINE. PLUGGING SPECIFIED SHALL BE BY MEANS OF CLASS "E" CONCRETE AND PAYMENT THEREFOR SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM E-1, ROADWAY EXCAVATION.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY, FOR USE AS DIRECTED BY THE ENGINEER, IN MAKING THE ABOVE DESCRIBED CONNECTIONS:

ITEM I-2 8" CLASS "B" STORM SEWERS 200 LIN. FT.

FIELD DRAINS

ALL FARM TILES WHICH ARE ENCOUNTERED DURING CONSTRUCTION SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS UNDER THE DIRECTION OF THE ENGINEER. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS AND WHICH CROSS THE ROADWAY SHALL BE REPLACED WITHIN THE CONSTRUCTION LIMITS BY ITEM I-2 CLASS "B" STORM SEWERS UNDER PAVEMENT OR APPROACHES.

EXISTING COLLECTORS AND ISOLATED FARM TILES WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF THE ROADWAY DITCHES SHALL BE OUTLETED INTO THE ROADWAY DITCH. THE OPTIMUM OUTLET ELEVATION SHALL BE IF POSSIBLE, ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL TILE FIELDS WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY ITEM I-3 ROADWAY DRAINAGE AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING. THE LOCATION, TYPE, SIZE, AND GRADE OF REQUIRED REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

I-2 8" CLASS B STORM SEWERS UNDER PAVEMENT 300 LIN. FT.
I-3 8" ROADWAY DRAINAGE 300 LIN. FT.
I-3 8" OUTLETS FOR ROADWAY DRAINAGE 50 LIN. FT.

MANHOLE COVERS

THE CONTRACTOR SHALL SET THE FRAMES FOR MANHOLE COVERS AT SUCH AN ELEVATION AND INCLINATION AS TO PLACE THE SURFACE OF THE COVER IN THE PLANE OF THE FINISHED ROADWAY SURFACE.

PIPE CUT-OFFS

WHEN BELL AND SPIGOT PIPE IS USED, ANY NECESSARY PIPE CUT-OFFS WILL BE MADE AT THE SPIGOT END OF THE LENGTH OF PIPE ADJACENT TO THE END LENGTH. WHEN TONGUE AND GROOVE PIPE IS USED, THE LENGTH OF PIPE NEXT TO THE END LENGTH SHALL BE CUT AND BUTT JOINT FORMED, WITH A CLASS "C" CONCRETE COLLAR 12" LARGER THAN THE OUTSIDE DIAMETER AND 12" IN LENGTH. THE COST OF THE JOINT AND COLLAR SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR THE PERTINENT PIPE ITEMS.

ARCHAEOLOGICAL SALVAGE

DURING THE PROGRESS OF CONSTRUCTION UNDER THIS CONTRACT, IF HISTORIC OR PREHISTORIC RUINS OR OBJECTS OF ANTIQUITY ARE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT ONCE AND SHALL TAKE IMMEDIATE AND EFFECTIVE STEPS TO PRESERVE SUCH RUINS OR OBJECTS UNTIL DECISIONS CAN BE REACHED AND INSTRUCTIONS ISSUED BY THE ENGINEER FOR RELOCATION OF THE WORK, IF POSSIBLE. PRESERVATION OF THE RUINS OR OBJECTS, THE RECORDING OF DATA PERTAINING TO THEM AND APPROPRIATE COMPENSATION FOR SUCH ALTERED OR ADDITIONAL WORK AS MAY BE REQUIRED.

PROTECTION OF PAVEMENTS

SELF-PROPELLED, CRAWLER - DRIVEN MACHINERY, EQUIPPED WITH CLEATS, SHALL NOT BE OPERATED ON THE EXISTING PAVEMENT UNLESS PADS ARE FASTENED TO TRACKS BETWEEN CLEATS SUCH THAT CLEATS WILL BE PREVENTED FROM MAKING CONTACT WITH THE PAVEMENT. CRAWLER EQUIPMENT SHALL BE OPERATED IN A MANNER THAT DAMAGE TO EXISTING OR NEW SURFACE WILL NOT OCCUR.

HEAVY EQUIPMENT

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

EXISTING WELLS

DUG WELLS, CISTERNS, AND SEPTIC TANKS ENCOUNTERED WITHIN THE RIGHT-OF-WAY SHALL BE FILLED WITH BROKEN FOUNDATION MASONRY, ROCK OR GRANULAR MATERIAL PLACED AS ROCK EMBANKMENT, IN ACCORDANCE WITH SECTION E-1.08. PAYMENT FOR SUCH WORK SHALL BE INCLUDED IN THE PRICE BID FOR ITEM E-1, ROADWAY EXCAVATION.

DRILLED WELL CASING SHALL BE REMOVED TO AN ELEVATION APPROXIMATELY THREE (3) FEET BELOW THE FINISHED ROADWAY SURFACE AND COVERED WITH A PRECAST CONCRETE SLAB OR A LARGE ROCK. PRIOR TO CONSTRUCTION OF THE EMBANKMENT THE CONTRACTOR SHALL REMOVE ANY MASONRY SURROUNDING A WELL TO THREE (3) FEET BELOW THE FINISHED ROADWAY SURFACE. PUMPS AND OTHER APPURTENANCES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF BY HIM. THE COST OF FILLING OR CAPPING OF WELLS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM E-1, ROADWAY EXCAVATION.

REMOVAL OF TREES AND STUMPS

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, ALL TREES AND STUMPS LYING WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT SHALL BE REMOVED UNDER THE LUMP SUM PRICE BID FOR ITEM E-9, REMOVAL OF TREES AND STUMPS. THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES TO BE REMOVED.

SIZES	NO. TREES	SIZES	NO. TREES
12"-18"	390	30"-36"	5
18"-24"	54	36"-42"	1
24"-30"	4	42"-48"	1

THE ABOVE ESTIMATE IS APPROXIMATE AND THE STATE OF OHIO RESERVES THE RIGHT TO ORDER THE REMOVAL OF ADDITIONAL TREES OR STUMPS OUTSIDE OF THE LIMITS OF CONSTRUCTION BUT WITHIN THE RIGHT-OF-WAY AND/OR EASEMENT LINES. PAYMENT FOR THE REMOVAL OF THESE ADDITIONAL TREES OR STUMPS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM E-9.

NON-RIGID PAVEMENT REMOVAL

REMOVAL AND DISPOSAL OF EXISTING NON-RIGID PAVEMENT, UNLESS OTHERWISE INDICATED ON THESE PLANS, SHALL BE MEASURED AND PAID FOR AS ITEM E-1, ROADWAY EXCAVATION.

FILLING BASEMENTS OUTSIDE NORMAL WORK LIMITS

IN ADDITION TO THE GENERAL REMOVAL REQUIREMENTS OF SEC. E-1.03 (c), ALL BASEMENTS OR PORTIONS THEREOF WITHIN THE RIGHT-OF-WAY ON THIS PROJECT BUT BEYOND THE NORMAL SLOPE LINES SHALL BE FILLED TO SURROUNDING GROUND ELEVATION AS DIRECTED BY THE ENGINEER. PRIOR TO FILLING WITHIN THIS AREA, THE BASEMENT FLOORS AND WALLS SHALL BE BROKEN UP OR REMOVED AS PROVIDED UNDER SEC. E-1.03(c) AND ALL HOUSE DRAINS NOT REMOVED SHALL BE PLUGGED AS PROVIDED ELSEWHERE IN THESE NOTES.

WHERE BASEMENTS EXTEND BEYOND THE RIGHT-OF-WAY LINE, BUT ARE WITHIN SLOPE EASEMENT OR WORK AGREEMENT LINES, THEY SHALL BE FILLED TO THE ELEVATION OF THE SURROUNDING GROUND AS DIRECTED BY THE ENGINEER BUT THE REQUIREMENTS OF SEC. E-1.03(c) FOR REMOVALS BELOW THE PROPOSED FINISHED SURFACE SHALL BE WAIVED FOR THE PORTIONS EXTENDING BEYOND THE RIGHT-OF-WAY LINE.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ROADWAY EXCAVATION, ITEM E-1.

GENERAL NOTES

ROUNDING OF CORNERS ON CROSS SECTIONS

THE ROUNDED CORNERS SHOWN ON STANDARD CONSTRUCTION DRAWING RI-1 AS MODIFIED BY THE TYPICAL SECTIONS APPLY TO ALL CROSS SECTIONS EVEN THOUGH OTHERWISE SHOWN IN THESE PLANS.

SUBGRADE COMPACTION

THE AREA OF COMPACTED SUBGRADE TO BE PAID FOR INCLUDES THE AREA TO BE OCCUPIED BY THE INTERSTATE HIGHWAY PAVEMENTS, PAVED SHOULDERS, APPROACH SLABS, AND HARD SURFACED CROSS ROAD PAVEMENTS.

SUBBASE, ITEM I-22

MATERIAL FOR THIS ITEM SHALL MEET THE REQUIREMENTS FOR ITEM I-22, SUBBASE, GRADING A OR B, EXCEPT THAT FOR BOTH GRADINGS THE PER CENT PASSING THE NO. 200 SIEVE SHALL NOT EXCEED TEN (10).

THE CONTRACTOR SHALL PLACE 6" OF I-22 SUBBASE UNDER ALL BRIDGE APPROACH SLABS AND SHALL BE COMPENSATED THEREFOR AT THE UNIT PRICE BID FOR ITEM I-22, SUBBASE.

CONSTRUCTION LAYOUT STAKES

SEE NOTE IN PROPOSAL DESCRIBING THE WORK INCLUDED IN THIS LUMP SUM PAY ITEM.

GUARDRAIL POST ANCHORS

THE CONTRACTOR SHALL PROVIDE, AND SHALL ANCHOR IN ACCORDANCE WITH THE DETAIL SHOWN ELSEWHERE IN THE PLANS, SHORT POSTS AT LOCATIONS WHERE PIER FOOTINGS INTERFERE WITH INSTALLATION OF FULL LENGTH GUARDRAIL POSTS. THE COST OF PROVIDING AND INSTALLING SUCH SHORT POSTS AND ANCHORS SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT OF GUARDRAIL.

FLARING GUARDRAIL AT BRIDGES

GUARDRAIL ON CROSSROADS SHALL BE FLARED TO MEET THE BRIDGE RAILING IN SUCH A MANNER THAT THE CHANGE IN ALIGNMENT OF THE GUARDRAIL SHALL NOT EXCEED ONE IN TWENTY (1:20).

CONTRACTION AND EXPANSION JOINTS

ALTHOUGH SPECIFIC LOCATIONS OF CERTAIN EXPANSION AND CONTRACTION JOINTS HAVE BEEN DETAILED ON THIS PLAN, NO WAIVER OF THE SPECIFICATIONS IS INTENDED. PROVISION OF EXPANSION JOINTS AT ALL MAJOR STRUCTURES AND THE MAXIMUM SPACING BETWEEN CONTRACTION JOINTS SHALL IN ALL CASES BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING T. J.

ESTIMATED QUANTITIES

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

SUBGRADE COMPACTION

The subgrade for drives and mailbox turnouts paved with B-19 or T-70 Material shall be compacted for a depth of 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.

WATERWORK

WATERWORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE CITY OF CLEVELAND, DEPT. OF PUBLIC UTILITIES, DIVISION OF WATER AND HEAT, ON FILE IN ROOM 624, LINCOLN BUILDING, CLEVELAND, OHIO, AND IN ROOM 510, OHIO DEPARTMENTS BUILDING, COLUMBUS, OHIO.

AGRICULTURAL LIMING MATERIAL

THE LOCATION AND NEED FOR AGRICULTURAL LIMING MATERIAL WILL BE DETERMINED BY THE ENGINEER ON THE BASIS OF LABORATORY TESTS AFTER ROUGH GRADING OPERATIONS HAVE BEEN PERFORMED. THE QUANTITY OF AGRICULTURAL LIMING MATERIAL SHOWN ON THE PLANS IS SUFFICIENT FOR APPLICATION TO THE ENTIRE EXPOSED SOIL AREA OF THE CONTRACT BUT MAY BE PARTIALLY OR COMPLETELY OMITTED, AS MAY BE DIRECTED BY THE ENGINEER IF LABORATORY TESTS INDICATE THE ITEM IS NOT NEEDED. AGRICULTURAL LIMING MATERIAL SHALL BE APPLIED AT THE RATE OF 100 POUNDS PER 1,000 SQUARE FEET OF SURFACE AREA, EXCEPT THAT ON ALL SURFACES OF SHALE IT SHALL BE APPLIED AT THE RATE OF 10 TONS PER ACRE, REGARDLESS OF THE WEIGHT OF APPLICATION, THE PAY WEIGHT SHALL BE 100 POUNDS PER 1,000 SQUARE FEET.

COMMERCIAL FERTILIZER

ALL AREAS TO BE SEEDED UNDER ITEM L-9 OR SODDED UNDER ITEM L-10 SHALL HAVE COMMERCIAL FERTILIZER 12-12-12, APPLIED AT THE RATE OF TWENTY (20) POUNDS PER 1,000 SQUARE FEET.

SEEDING AND PROTECTING

THE QUANTITIES SHOWN FOR SEEDING, FOR THE INTERSTATE HIGHWAY WERE COMPUTED FOR ALL SOIL AREAS BETWEEN THE RIGHT-OF-WAY FENCE LINES EXCEPT THOSE AREAS DESIGNATED FOR ITEM L-6, ROADSIDE CLEANUP. FOR CROSSROADS AND OTHER UNFENCED AREAS, SEEDING WAS COMPUTED FOR ALL SOIL AREAS BETWEEN WORK LIMITS.

SEED SHALL BE SOWN AT THE RATE OF 3 POUNDS PER 1,000 SQUARE FEET, AND SHALL BE A UNIFORM MIXTURE IN THE FOLLOWING PROPORTIONS:

70% KENTUCKY 31 FESCUE
20% KENTUCKY BLUEGRASS
5% RED TOP
5% ALSIKE CLOVER

EROSION CONTROL AT BRIDGES

SODDED CHANNELS SHALL BE PROVIDED AT ENDS OF BRIDGES WHERE REQUIRED BY THE PLANS. THE COST OF ALL WORK NECESSARY TO COMPLETE THIS ITEM SHALL BE INCLUDED IN THE UNIT PRICE BID PER SQUARE YARD FOR ITEM L-10, SODDING FOR SPECIAL BERM AND SLOPE PROTECTION.

SODDING, RIP RAP AND DUMPED ROCK CHANNEL PROTECTION

THESE ITEMS ARE PROVIDED ON THE PLANS FOR EROSION CONTROL. THE ENGINEER WILL CHECK AND MAKE ADJUSTMENTS IN LOCATION AND QUANTITY OF THESE ITEMS AS REQUIRED BY FIELD CONDITIONS DURING CONSTRUCTION.

PLACING SOD IN DITCHES

ALL SOD PLACED IN DITCHES SHALL BE LAID WITH THE LONG EDGES OF THE STRIPS PERPENDICULAR TO THE FLOW LINE OF THE DITCH. SUCCESSIVE STRIPS SHALL BE NEATLY MATCHED AND ALL JOINTS STAGGERED OR BROKEN. THE SOD SHALL BE STAKED SECURELY WITH STAKES PLACED ON MAXIMUM TWO (2) FT. CENTERS IN ROWS NOT MORE THAN TWO (2) FEET APART. STAKES IN ADJACENT ROWS SHALL BE STAGGERED. THE STAKES SHALL BE WOOD FROM 1 1/2" x 3/4" x 12" TO 1" x 1" x 24", AS REQUIRED TO HOLD THE SOD, AND SHALL BE DRIVEN FLUSH WITH THE TOP OF THE SOD.

EROSION CONTROL

THE CONTRACTOR SHALL PLACE AN 18" STRIP OF SOD ALONG THE BACK AND ACROSS EACH END OF EACH HEADWALL AND ALONG EACH EDGE AND FOR THE FULL LENGTH OF ALL I-10, RIPRAP, AND I-10, DUMPED ROCK CHANNEL PROTECTION, AND SHALL BE COMPENSATED THEREFOR IN ACCORDANCE WITH ITEM L-10, SODDING.

T-35 FOR MAINTAINING TRAFFIC

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

LIGHTS, SIGNS, AND BARRICADES

THE CONTRACTOR SHALL, IN ADDITION TO THE GENERAL REQUIREMENTS OF SEC. G-7.07, ON THIS PROJECT PERFORM THE FOLLOWING:

- PROVIDE, ERECT, AND MAINTAIN MOVABLE GATES ON INTERSECTING ROADS CLOSED TO TRAFFIC AT ALL POINTS WHERE LOCAL TRAFFIC MOVEMENT TERMINATES.
- PROVIDE, ERECT, AND MAINTAIN LIGHTS, SIGNS, AND BARRICADES AT THE WORK LIMITS ON ALL INTERSECTING ROADS WHICH REMAIN OPEN TO TRAFFIC.
- PROVIDE, ERECT, AND MAINTAIN STANDARD 40" x 24" SIZE "ROAD CLOSED" SIGNS, SIGN SUPPORTS, AND LIGHTS AT THE FOLLOWING LOCATIONS DURING PERIODS IN WHICH THE AFFECTED ROADS ARE CLOSED TO TRAFFIC.

- FAIRMOUNT BLVD. JUST EAST OF NORTH WOODLAND ROAD AND JUST WEST OF BRAINARD ROAD.
- HURLINGHAM ROAD JUST EAST OF RICHMOND ROAD; JUST EAST OF SELKIRK ROAD AND JUST WEST OF BRAINARD ROAD.
- ON SOUTH WOODLAND ROAD AS DETERMINED BY THE ENGINEER.

LIGHTS, BARRICADES, AND DANGER AND WARNING SIGNS SHALL BE PROVIDED AT LOCATIONS LISTED ABOVE IN ACCORDANCE WITH SEC. G-7.07. BARRICADES AND GATES SHALL BE AS DETAILED ON STANDARD CONSTRUCTION DRAWING NO. G-7.07. SIGN SUPPORTS AND LIGHTS FOR "ROAD CLOSED" SIGNS SHALL BE AS DETAILED IN THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

PAYMENT FOR PROVIDING, ERECTING, MAINTAINING, AND REMOVING BARRICADES, GATES, LIGHTS, SIGNS, AND SIGN SUPPORTS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "MAINTAINING TRAFFIC".

MAINTAINING TRAFFIC

THE PROVISIONS OF SECTION G-4.05, MAINTENANCE OF LOCAL TRAFFIC, SHALL BE IN FORCE DURING THE ENTIRE LIFE OF THIS CONTRACT. THE CONTRACTOR SHALL MAINTAIN AT ALL TIMES DURING PROGRESS OF THE WORK, PROVISION FOR THE MOVEMENT OF LOCAL TRAFFIC, INCLUDING ACCESS TO PROPERTY ADJACENT TO AND AFFECTED BY THE WORK AT CHAGRIN BOULEVARD, FAIRMOUNT BOULEVARD AND MEDFIELD DRIVE.

THE CONTRACTOR SHALL APPLY ITEM T-10, TRAFFIC COMPACTED SURFACE COURSE, AND ITEM M-10, CALCIUM CHLORIDE, IN ACCORDANCE WITH SEC. G-4.05, MAINTENANCE OF LOCAL TRAFFIC, ON TEMPORARY ROADWAYS WHEN, WHERE AND IN THE AMOUNTS AS MAY BE DIRECTED BY THE ENGINEER. THE REQUIREMENTS FOR HARDNESS AND SOUNDNESS FOR T-10 MATERIAL ARE WAIVED. ITEMS T-10 AND M-10 MATERIALS SHALL BE PAID FOR AS PROVIDED BY THE SPECIFICATIONS FOR THESE ITEMS BUT PAYMENT FOR ALL OTHER OPERATIONS REQUIRED BY SECTION G-4.05, MAINTENANCE OF LOCAL TRAFFIC, INCLUDING CONSTRUCTION, MAINTENANCE AND SUBSEQUENT REMOVAL OF TEMPORARY ROADWAYS AND STRUCTURES, SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR MAINTAINING TRAFFIC.

TEMPORARY RUNAROUND ROAD

A TEMPORARY RUNAROUND ROAD SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS FOR CHAGRIN BLVD. TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES.

TEMPORARY CULVERTS

PAYMENT FOR CONSTRUCTION, MAINTENANCE, AND SUBSEQUENT REMOVAL OF TEMPORARY CULVERTS OR EXTENSION OF THE EXISTING CULVERTS REQUIRED FOR CONSTRUCTION OF THE ITEM S-15 RUN-AROUND SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR THE RUN-AROUND.

COOPERATION NOTE

THE CONTRACTOR FOR PROJECT CUY-1-2.20 SHALL COOPERATE WITH THE CONTRACTOR FOR PROJECT CUY-1-5.28 IN CONSTRUCTION OF THE LONGITUDINAL STORM SEWER AT THE JUNCTION OF PROJECTS.

SCARIFICATION OF EXISTING FLEXIBLE PAVEMENT

WITHIN THE LIMITS OF CONSTRUCTION WHERE THE EXISTING FLEXIBLE PAVEMENT WILL HAVE LESS THAN SIX (6) INCHES OF FILL PLACED UPON IT THE PAVEMENT SHALL BE THOROUGHLY SCARIFIED FOR ITS FULL DEPTH, MIXED WITH SUFFICIENT SOIL AND PROPERLY RECOMPACTED TO INSURE THE ELIMINATION OF ANY PLANES OF SEPARATION BETWEEN IT AND THE EMBANKMENT PLACED THEREON. PAYMENT FOR SCARIFICATION AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM E-1, ROADWAY EXCAVATION.

GENERAL NOTES CONTINUED ON SHEETS 7 AND 11.

COMPUTATIONS & SUB-SUMMARIES

EARTHWORK				
Sheet No.	Station		E-1 Roadway Excavation	Embankment +18 %
	From	To	Cu. Yds.	Cu. Yds.
15	377+00	380+00	324	35,971
16	380+00	390+00	478	136,218
17	390+00	400+00	1,135	249,611
18	400+00	410+00	1,458	227,063
19	410+00	420+00	7,031	35,702
20	420+00	430+00	5,114	40,578
21	430+00	440+00	59,542	14,079
22	440+00	450+00	411,170	5,657
23	450+00	460+00	467,973	6,479
24	460+00	470+00	50,003	55,551
25	470+00	480+00	2,527	114,499
26	480+00	490+00	1,066	245,388
27	490+00	500+00	412	346,728
28	500+00	510+00	0	78,145
29	510+00	520+00	166,057	8,308
30	520+00	530+00	247,777	0
31	530+00	540+50	269,058	0
Deduct for L-3			11,800	0
33	Hurlingham Rd.		380	0
34	Hurlingham Rd.		300	0
35	Fairmount Blvd.		292	771
36	Fairmount Blvd.		208	10,612
37	Medfield Drive		429	1,389
41	Chagrin Blvd.		2,522	2,910
42	Chagrin Blvd.		166	3,793
43	Chagrin Blvd.		1,136	1,892
Total			1,684,758	1,623,344

E-1 COMPACTED SUBGRADE		
Area as T-71	=	121,011 Sq. Yds.
Area as B-219	=	47,526 Sq. Yds.
Area as I-7	=	1,830 Sq. Yds.
Total	=	170,367 Sq. Yds.

E-11 WATER		
Embankment- Ret	=	1,375,715 Cu. Yds.
I-22	=	38,707 " "
I-18	=	8,218 " "
B-19	=	1,473 " "
Total	=	1,424,113 " "
1,424,113 x 5 ÷ 1000	=	7,121 M.G.

I-22 SUBBASE	
Total Length as per S.R.1	= 16,250 Lin. Ft.
Deduct for Bridges	= 973.66 Lin. Ft.
Typical Section	= 15,276.34 Lin. Ft.
End Area for 6 Lanes	= 52.1 Sq. Ft.
15,276.34 x 52.1 ÷ 27	= 29,478 Cu. Yds.

T-71 10" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT	
Total Length as per S.R.1	= 16,250 Lin. Ft.
Deduct for Bridges	= 1,123.66 Lin. Ft.
Typical Section	= 15,126.34 Lin. Ft.
Width, 6 Lanes at 12 Ft.	= 72 Ft.
15,126.34 x 72 ÷ 9	= 121,011 Sq. Yds.

4" EDGE LINES	
Length as per S.R.1	= 16,250 Lin. Ft.
Typical Section	= 16,250 Lin. Ft.
4 Edges	= 65,000 Lin. Ft.
16,250 x 4	= 65,000 Lin. Ft.
Add for Ramp Exits	300
Add for Ramp Entr.	1,312
	66,612 Lin. Ft.
66,612 ÷ 5280	= 12.62 Miles

6" LANE LINES	
Length as per S.R.1	= 16,250 Lin. Ft.
Typical Section	= 16,250 Lin. Ft.
4 Lines	= 65,000 Lin. Ft.
15 Ft. Lines @ 25 Ft. Spaces	= 24,375 Lin. Ft.
16,250 x 4 x 15/40	= 24,375 Lin. Ft.
24,375 ÷ 5280	= 4.62 Miles

L-9 SEEDING	
Total R/W Area	= 198.13 Acres = 958,949 Sq. Yds.
Deduct for Special	
Areas = 23.07 Acres	= 111,659 Sq. Yds.
Gross Area	= 847,290 Sq. Yds.
Deduct for Paved Areas	= 225,431 Sq. Yds.
Deduct for Sodded Areas	= 7,654 Sq. Yds.
Net Seeding Area	= 614,205 Sq. Yds.

L-9 COMMERCIAL FERTILIZER (12-12-12)	
Area Seeded	614,205 Sq. Yds.
Area Sodded	7,654 Sq. Yds.
Total Area	621,859 Sq. Yds.
Area x 9 x 20	55.97 Tons
1000 x 2000	

L-9 AGRICULTURAL LIMING MATERIAL	
Area Seeded	614,205 Sq. Yds.
Area Sodded	7,654 Sq. Yds.
Total Area	621,859 Sq. Yds.
Area x 9 x 100	279.84 Tons
1000 x 2000	

I-18 STABILIZED CRUSHED AGGREGATE SHOULDER MATERIAL	
Total Length as per S.R.1	= 16,250 Ft.
Deduct for Bridges	= 973.66 Ft.
Typical Section	= 15,276.34 Ft.
Width, 2 Shoulders @ 10.00 Ft.	= 20.00 Ft.
2 Shoulders @ 4.00 Ft.	= 8.00 Ft.
Width, 4 Shoulders @ 0.25 Ft.	= 1.00 Ft.
Total Width	= 29.00 Ft.
Depth = 5 in.	
(15,276.34 x 29 ÷ 9) 2/36	= 4,837 Cu. Yds.

T-31 BITUMINOUS SURFACE TREATMENT	
Bituminous Material, 1 Seal Operation of 0.25 gal. per Sq. Yd. of B-219.	
Area B-219	= 47,526 Sq. Yds.
(47,526 x 0.25)	= 11,882 Gals.
No. 6 Aggregate	
Applied at 0.008 Cu. Yds per Sq. Yd. of B-219	
47,526 x 0.008	= 381 Cu. Yds.

B-219 3" WATERPROOFED AGGREGATE BASE COURSE	
Total Length as per S.R.1	= 16,250 Ft.
Deduct for Bridges	= 973.66 Ft.
Typical Section	= 15,276.34 Ft.
Width, 2 Shoulders @ 10.00 Ft.	= 20.00 Ft.
Width 2 Shoulders @ 4.00 Ft.	= 8.00 Ft.
Total Width	= 28.00 Ft.
15,276.34 x 28 ÷ 9	= 47,526 Sq. Yds.
47,526 x 3 ÷ 36	= 3,961 Cu. Yds.

L-1 TOPSOIL STOCKPILED	
Total Length as per S.R.1	= 16,250 Ft.
Deduct for Bridges	= 1,083 Ft.
Typical Section	= 15,167 Ft.
End Area	= 21.00 Sq. Ft.
15,167 x 21.00 ÷ 27	= 11,800 Cu. Yds.

L-3 PLACING STOCKPILED TOPSOIL	
Total Length as per S.R.1	= 16,250 Ft.
Deduct for Bridges	= 1,083 Ft.
Typical Section	= 15,167 Ft.
End Area	= 21.00 Sq. Ft.
15,167 x 21.00 ÷ 27	= 11,800 Cu. Yds.

APPROACH SLABS:
Where curbs or median pavement are provided on proposed pavement, they shall be provided on the approach slabs, with necessary curb height transitions effected in the approach slab length, as directed by the Engineer.
Cost of curbs and median pavement shall be included in the unit price bid for Item I-7, Reinforced Concrete Approach Slabs.

SEALING OF PIPE JOINTS:
Where connections are made between rigid and flexible pipe sections or between pipe sections of different kind or type of end fabrication, whether required by the plans, arising from permissible use of optional materials, or encountered in connection to existing facilities, the joint shall be sealed, if sealing is required by the specifications, by means of a Class "E" concrete collar having a minimum thickness of 6 inches and a minimum length of 12 inches. Payment for sealing as described above shall be included in the unit price bid for the pertinent pipe item.

PROTECTION OF TRAFFIC:
this item shall be a 6 inch reinforced concrete slab, reinforced with bars or fabricated reinforcement equivalent to 3/8 inch round bars spaced at two foot centers, two directions, and placed approximately mid way between the top and bottom of the slab. Formed construction joints may be used subject to the approval of the Engineer. Reinforcement shall extend through all construction joints.
The requirements of Sec. I-10.05 for depressed grooves and thickened bottom edges in this item shall be waived. In lieu thereof, cut-off walls as directed by the Engineer shall be provided and payment therefor shall be included in the unit price bid for this item.

Roads by providing platforms, nets, or other suitable protection above the traveled lanes. Payment for this protection shall be included in the lump sum price bid for "Maintaining Traffic."
GUARD RAIL ADJUSTMENT:
The stationing of individual runs of guard rail shall be adjusted, if necessary, by the Engineer at the time of construction to accommodate the standard panel lengths furnished.

RIPRAP, USING 6" REINFORCED CONCRETE SLAB, AS PER PLAN:
In addition to meeting the general requirements of Sections I-10.03 and I-10.05, the riprap furnished for

Tables E-1, Compacted Subgrade, I-22, T-71, I-18, T-31 and B-219 include Main Line work only.

GENERAL SUMMARY

★ City of Cleveland Water
Department Specification Item Numbers.

No Federal Participation
(100% County)

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

14
313

CUYAHOGA COUNTY
CUY - 1-2.20

SHEET	NUMBER		ITEM	QUAN.	UNIT	★	DESCRIPTION
							WATER LINES- TYPE CODE YOGO
			1770	Special	1,770	Lin. Ft.	1 16" A.S.A. Class 25 C.I. Pipe (Cement Lined, Lead or Slip-on Joints) and Fittings
			350	Special	350	Lin. Ft.	12 16" Extra Strong Galvanized Wrought Iron Pipe
			1,080	Special	1,080	Lin. Ft.	1 8" A.S.A. Class 25 C.I. Pipe (Cement Lined, Lead or Slip-on Joints) and Fittings
			270	Special	270	Lin. Ft.	12 8" Extra Strong Galvanized Wrought Iron Pipe
			1	Special	1	Each	2A 6" Fire Hydrant, complete with valve, pipe and fittings
			2	Special	2	Each	4 16" Valves with Valve Boxes Complete
			2	Special	2	Each	4 8" Hub valves with valve boxes complete.
			2	Special	3	Each	4 2" Air Cocks Complete
			2	Special	2	Each	Service Connections to Relocated Main, Complete
			1	Special	1	Each	2A Fire hydrant relocated.
			7	Special	9	Each	10 Fire hydrants and valves removed, as per plan.
			2	Special	2	Each	10 Valves Removed, as per Plan
			1	Special	2	Each	4 2" Drain and Vaults Complete
			340	Special	340	Lin. Ft.	1 12" A.S.A. Class 25 C.I. Pipe (Cement Lined, Lead or Slip-on Joints) and Fittings
							STRUCTURES OVER 20' SPAN
							For Estimated Quantities for:
							CUY-1-0259
							CUY-1-0353
							CUY-1-0425
							CUY-1-0455
							CUY-1-0514
							See Sheet No. 271
							Construction Layout Stakes
							BUILDING REMOVAL TYPE CODE 7221
			S-24	LUMP	LUMP		Removal of One 2 story frame and brick residence, One 2 story frame residence and garage Parcel No. 55- 7 LA
			S-24	LUMP	LUMP		Removal of One 2 story brick residence and brick garage Parcel No. 55- 8 LA.
			S-24	LUMP	LUMP		Removal of One 1 story brick residence, Parcel No. 55-22 LA.
			S-24	LUMP	LUMP		Removal of One 2 story frame residence, One 3 story frame residence, 2 sheds and a barn, Parcel No. 55- 31 LA
			S-24	LUMP	LUMP		Removal of One 2 story frame residence, garage and shed Parcel No. 55- 32 LA.

MADE DWK DATE 10-6-60 TRACED DWK DATE 10-6-60
CHECKED ECE DATE 10-6-60 SCALE

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

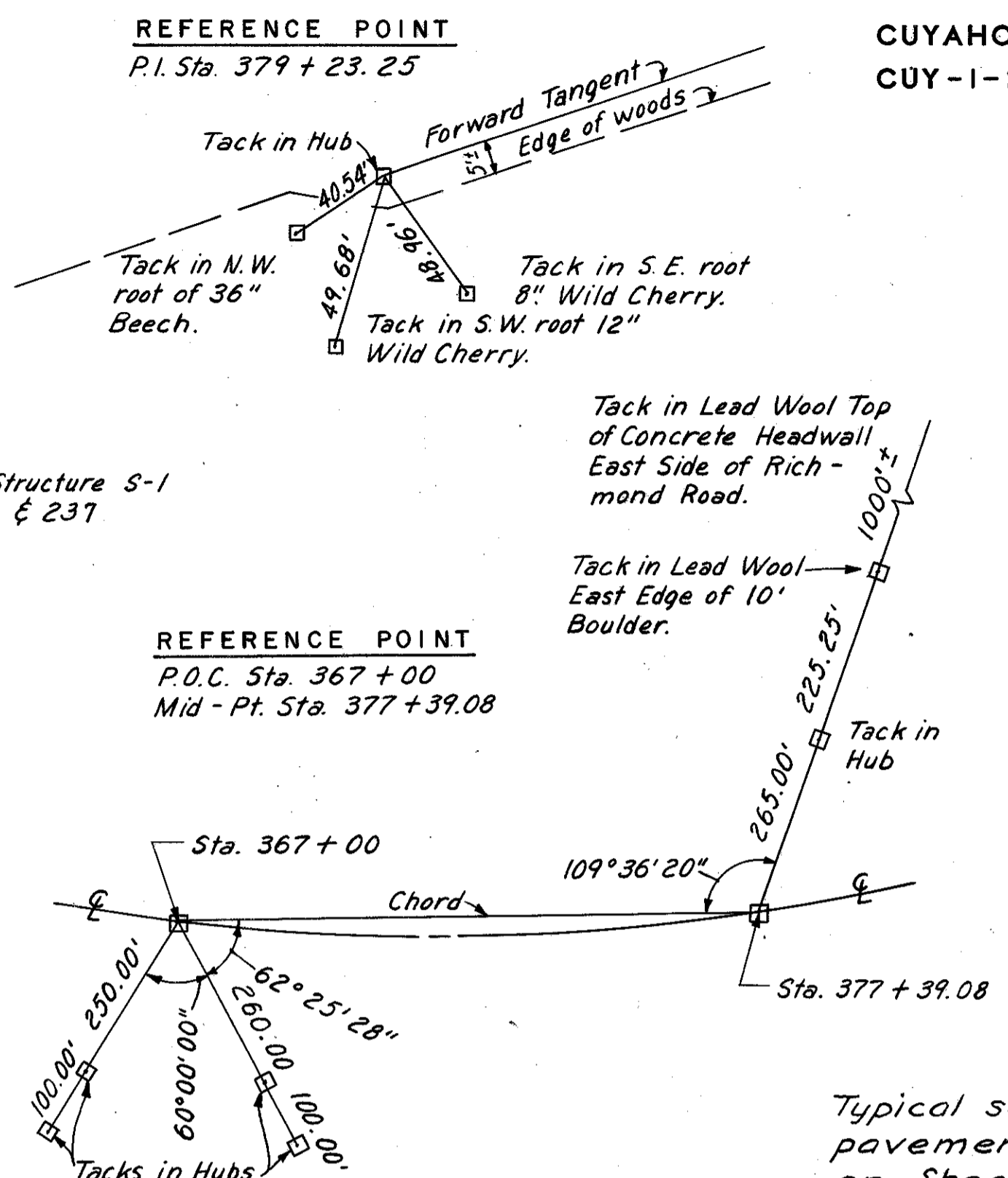
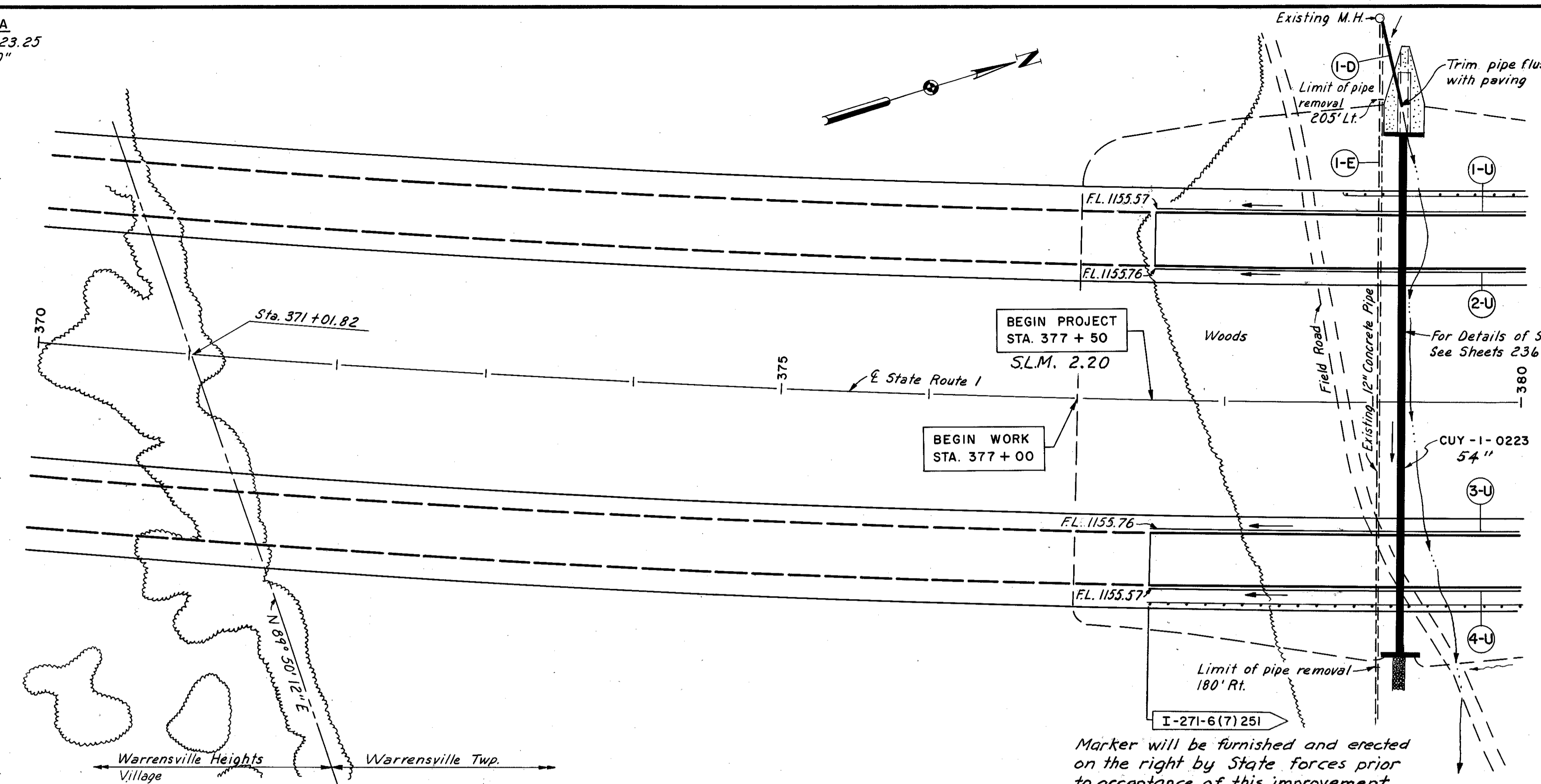
Rev. 12-15-61
Rev. 9-6-61

CURVE DATA
 P.I. Sta. 379 + 23.25
 $\Delta = 40^{\circ} 05' 00''$
 $D = 0^{\circ} 28' 00''$
 $R = 12,277.67'$
 $T = 4478.80'$
 $L = 8589.25'$
 $E = 791.36'$

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

15
313

CUYAHOGA COUNTY
 CUY-1-2.20



BENCH MARK 124
 R.R. Spike 18" Maple
 975' Rt. Sta. 375 + 85
 Elev. 1141.23

BENCH MARK 124-A
 Lag Bolt N. Root 24" Wild Cherry
 226' Rt. Sta. 372 + 12
 Elev. 1153.08

Typical section of adjoining pavement same as shown on Sheet 4.

BEGIN PROJECT
 STA. 377 + 50
 S.L.M. 2.20

BEGIN WORK
 STA. 377 + 00

Marker will be furnished and erected on the right by State forces prior to acceptance of this improvement.

PLAN

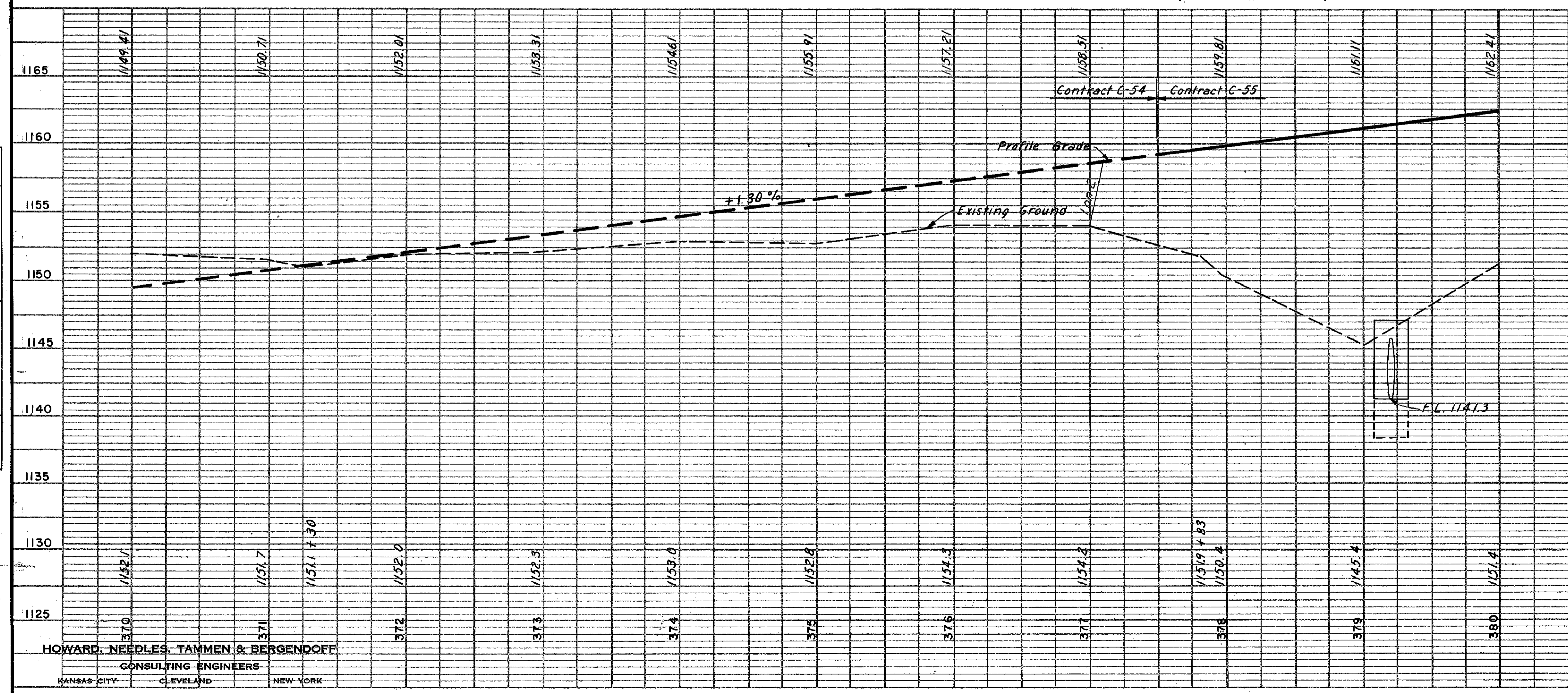
DATE	BY
2-2-37	F.C.H.
2-3-37	F.C.H.

NOTE BOOK NO. _____
 CHECKED BY _____
 RT. OF WAY CHECKED BY _____

PROFILE

DATE	BY
2-2-37	F.C.H.
2-3-37	F.C.H.

NOTE BOOK NO. _____
 CHECKED BY _____
 STRUCTURE NOTATIONS CHKD BY _____



DRAINAGE

REF. NO.	STATION	SIDE	I-2 E-12	
			Cl. "B" Removal of Pipe 15" and Under	Lin. Ft.
I-D	379+05	379+20	Lt.	54
I-E	379+05			385
Total				54 385

UNDERDRAINS

REF. NO.	STATION	SIDE	I-4	
			Pipe Under Drains 6"	Lin. Ft.
1-U	377+50	380+00	Lt.	250
2-U	377+50	380+00	Lt.	250
3-U	377+50	380+00	Rt.	250
4-U	377+50	380+00	Rt.	250
Total				1,000

GUARDRAIL

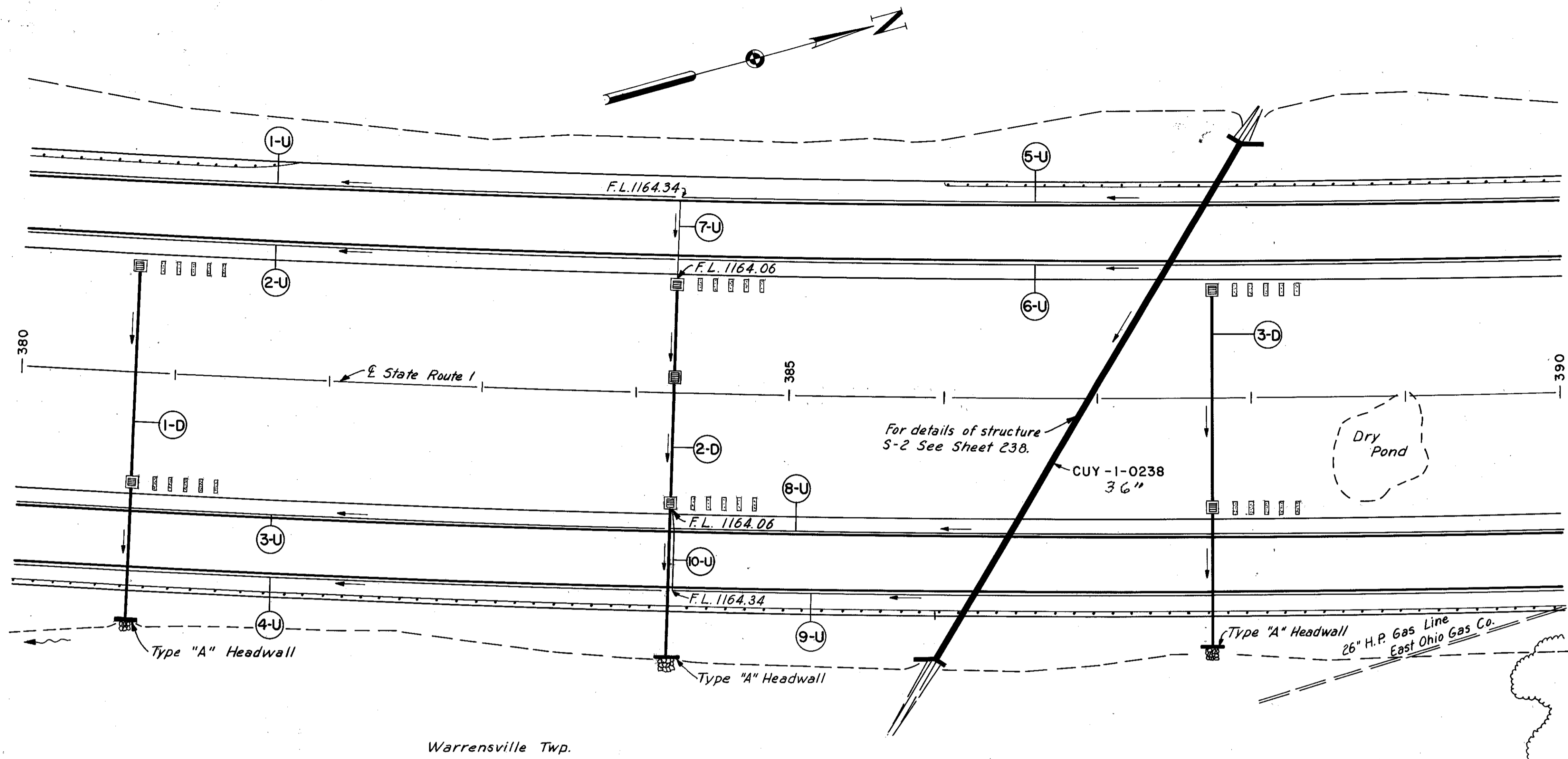
STATION	SIDE	I-15	
		Steel Beam Type (Deep)	Lin. Ft.
From 378+70	To 380+00	Lt.	130
From 377+50	To 380+00	Rt.	250
Total			380

For Profile of Pipe I-D See Sheet 236

Excavation	324	Cu. Yds.
Embankment	30,484	Cu. Yds.
Embankment + 18%	35,971	Cu. Yds.

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

PLAN
DATE: 5-9-57
BY: E.C.E.
CHECKED: H.J.H.
NO. OF WPI CHECKED: 12



CURVE DATA
P.I. Sta. 379+23.25
 $\Delta = 40^{\circ}05'00''$
 $D = 0^{\circ}28'00''$
 $R = 12,277.67'$
 $T = 4478.80'$
 $L = 8589.25'$
 $E = 791.36'$

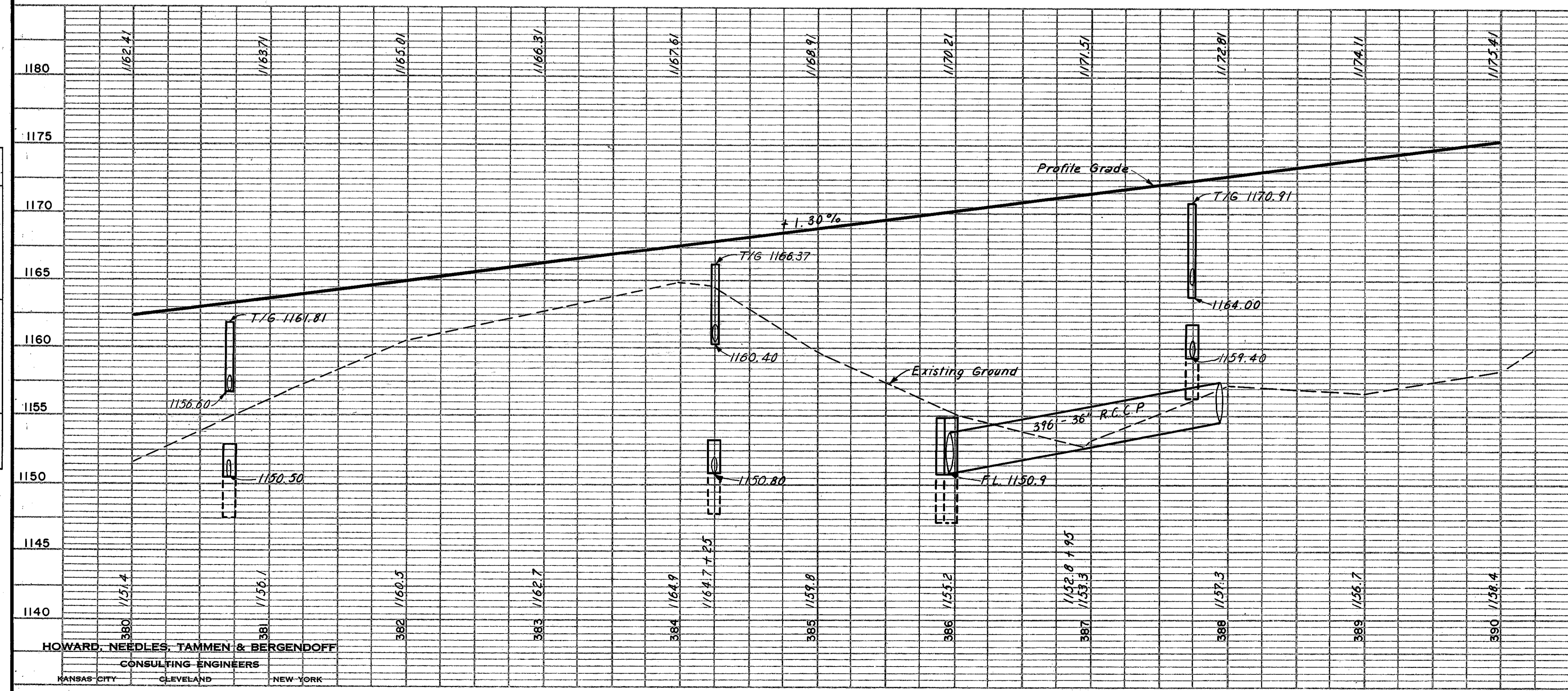
BENCH MARK 125
R.R. Spike 11" Ash Tree
720' Rt. Sta. 385+00
Elev. 1156.017

BENCH MARK 125-A
P.K. Nail Conc. Base Cyclone
Fence Post S.E. Cor. Nike Site
381' Lt. Sta. 384+08
Elev. 1156.445

REF. NO.	STATION	SIDE	DRAINAGE							
			I-2	I-8	I-10	S-1	S-4	E-2	L-10	I-8
			Cl. "B" St. Sew. Und. Pft. 15"	Cl. "B" St. Sew. 18"	Std. No. 5 C.B.	Dumped Rock Prot. Cl. "C"	Conc. for Str. Cl. "C"	Rein. Steel	Exc. for Str.	Sodding
From To		Lin. Ft.	Each	Cu. Yds.	Lbs.	Cu. Yds.	Sq. Yds.	Each		
1-D	380+75		231	2	1.5	3.25	146	11	26	
2-D	384+25		239	2	1.5	3.25	146	11	26	1
3-D	387+75		232	2	1.5	3.25	146	11	26	
Total			702	6	4.5	9.75	438	33	78	1

Use 5 9.8

PROFILE
DATE: 5-9-57
BY: E.C.E.
CHECKED: H.J.H.
NO. OF NOTATIONS OK'D: 12



REF. NO.	STATION	SIDE	UNDERDRAINS				
			I-2	I-3	I-4	I-5	
			Cl. "B" St. Sew. Und. Pft. 8"	Outlet Pipe M6.4(a) 8"	Pipe Under Drains 6"	90° Bend 6"	Tee Increase 8"x8"x6" 6"x8"
From To		Lin. Ft.	Each				
1-U	380+00	384+21	Lt.		421		
2-U	380+00	384+21	Lt.		421		
3-U	380+00	384+21	Rt.		421		
4-U	380+00	384+21	Rt.		421		
5-U	384+25	390+00	Lt.		571	1	
6-U	384+25	390+00	Lt.		575		
7-U	384+25		Lt.	38	10		1 1
8-U	384+25	390+00	Rt.		575		
9-U	384+25	390+00	Rt.		571	1	
10-U	384+25		Rt.	38	10		1 1
Total				76	20	3,976	2 2 2

GUARDRAIL		
STATION	SIDE	I-15 Steel Beam Type (Deep)
From To		Lin. Ft.
380+00	381+70	Lt. 170
380+00	390+00	Rt. 1000
386+00	390+00	Lt. 400
Total 1,570		

For Sewer Profile See Sheet 251

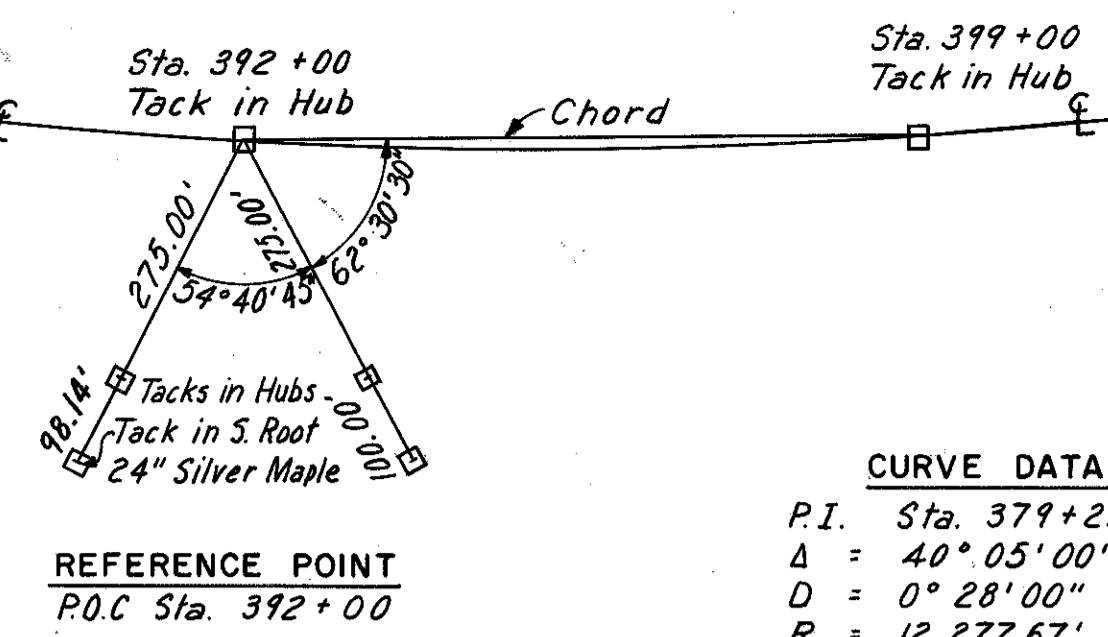
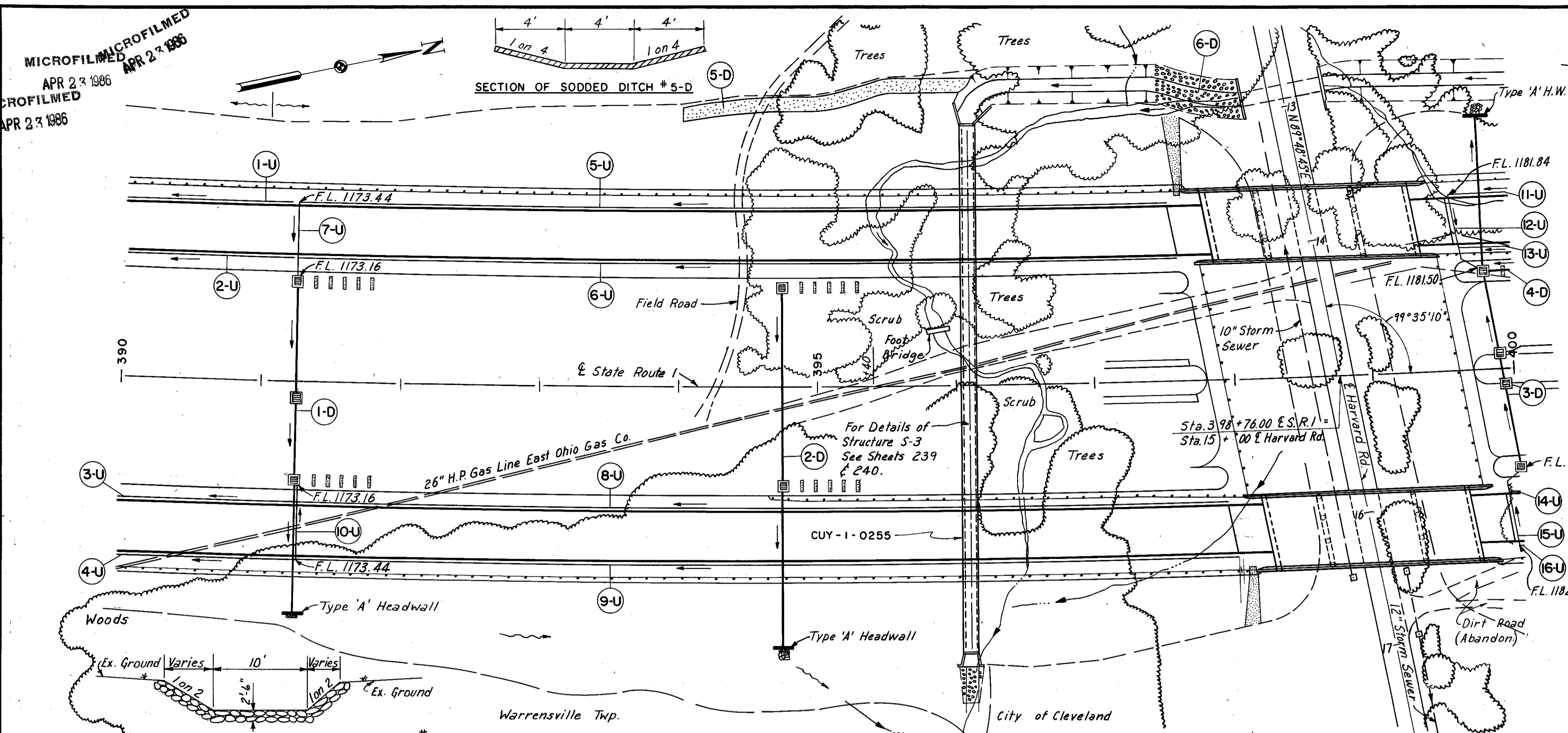
Excavation	47.8	Cu. Yds.
Embankment	115,43.7	Cu. Yds.
Embankment + 10%	136,21.8	Cu. Yds.

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

MICROFILMED
APR 23 1986
APR 23 1986

PLAN
SURVIVED
NOTED
ALIGNED
CHECKED
BY
DATE
3-1-57
3-1-57
3-1-57

PROFILE
SURVIVED
NOTED
GRADES
CHECKED
BY
DATE
3-1-57
3-1-57
3-1-57



FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		17 313

CUYAHOGA COUNTY
CUY-1-2.20

BENCH MARK 126
R.R. Spike 8" Maple
130' Rt. Sta. 394+20
Elev. 1159.611

BENCH MARK 126-A
Lag Bolt W. Roof 18" Oak
236' Rt. Sta. 394+20
Elev. 1161.347

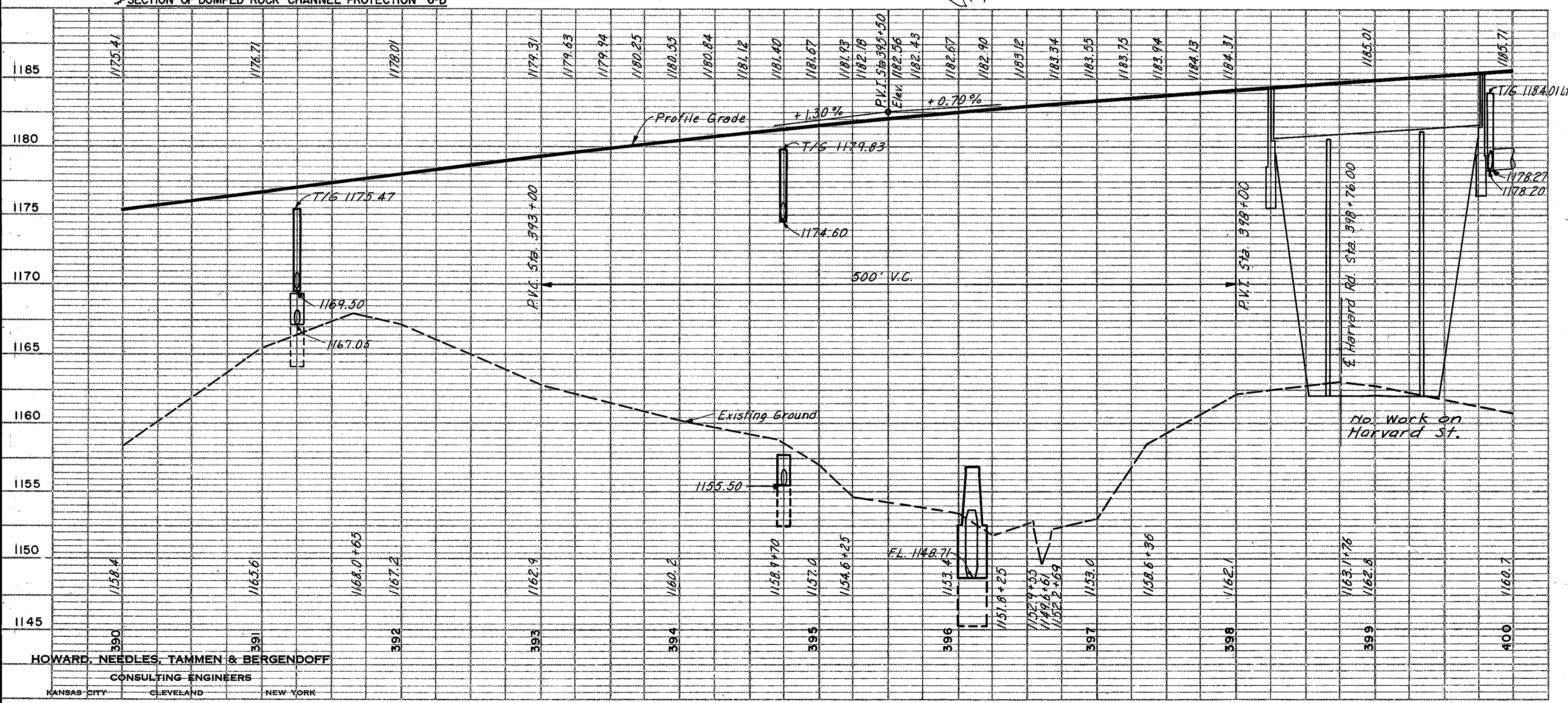
BENCH MARK 127
R.R. Spike 20" Maple Tree
15' Lt. Sta. 398+47
Elev. 1164.614

BENCH MARK 514
Mon. N. Side Harvard Rd.
1700' E. Sta. 398+76
Elev. 1178.693

BENCH MARK 127-A
Lag Bolt N.E. Roof 24" Locust
S. Side of Harvard Road
257' Lt. Sta. 397+96
Elev. 1159.354

CURVE DATA
P.I. Sta. 379+23.25
Δ = 40° 05' 00"
D = 0° 28' 00"
R = 12,277.67'
T = 4478.80'
L = 8589.25'
E = 791.36'

PROPOSED STRUCTURES
TYPE: Continuous steel beam with reinforced concrete deck and sub-structure.
SPANS: 41'-0", 66'-0", 41'-0"
ROADWAY: 2 @ 54'-0" f/f of parapet.
LOAD FREQUENCY: CF 2000 Adequate for A.A.S.H.O. alternate loading.
SKEW: 9° 35' 10" R.F.
WEARING SURFACE: 1" Monolithic concrete.
APPROACH SLAB: AS-1-54(25' long).
ALIGNMENT: 0° 28' 00" Curve left.
See Sheets 272-275



REF. NO.	STATION	SIDE	DRAINAGE													
			Cl. "B" St. Sew. Und. Pnt. 15"	Cl. "B" St. Sew. Und. Pnt. 18"	Cl. "B" St. Sew. Und. Pnt. 18"	Outlet Pipe M6.4(c) 15"	Outlet Pipe M6.4(c) 18"	25° Bend M6.4(c) 15"	25° Bend M6.4(c) 18"	Std. No. 5 C. B.	Std. No. 8 C. B.	Dumped Rock Channel Prof.	Sodding Conc. for Cl. "C"	Reinf. Steel for Str.	Exc. for Str.	
1-D	391+25															
2-D	394+75					40		2		2						
3-D	399+93									2	2	1.5	38	3.25	14.6	11
4-D	399+82	400+00	Lt.			17										
5-D	394+00	396+00	Lt.										274			
6-D	397+50	398+10	Lt.									166				
Total						40	35	2	2	6	3	170.5	364	9.75	438	33

REF. NO.	STATION	SIDE	UNDERDRAINS							
			Cl. "B" St. Sew. Und. Pnt. 8"	Outlet Pipe Under Drains 8"	Pipe Under Drains 6"	90° Bend 6"	60° Bend 8"	Tee Increase 8"x8"x6"x8"		
1-U	390+00	391+21	Lt.			121				
2-U	390+00	391+21	Lt.			121				
3-U	390+00	391+21	Rt.			121				
4-U	390+00	391+21	Rt.			121				
5-U	391+25	397+45	Lt.			616	1			
6-U	391+25	397+50	Lt.			625				
7-U	391+25		Lt.	38	10			1	1	
8-U	391+25	397+90	Rt.			665				
9-U	391+25	397+95	Rt.			666	1			
10-U	391+25		Rt.	38	10			1	1	
11-U	399+80	400+00	Lt.			36	1			
12-U	399+60		Lt.	41	10			1	1	1
13-U	399+65	400+00	Lt.			35				
14-U	399+93	400+00	Rt.			7				
15-U	399+95		Rt.	41	10			1	1	1
16-U	400+00		Rt.							
Total				158	40	3,134	4	2	4	4

STATION	SIDE	GUARDRAIL	
		From	To
390+00	397+65	Lt.	765
397+92			169
399+40	400+00	Lt.	60
399+50	400+00	Lt.	50
390+00	398+10	Rt.	810
384+50	398+00	Rt.	350
399+63			169
399+90	400+00	Rt.	10
Total			2,383

Normal Participation = 1983
No. Fed. Participation = 400
No Federal Participation

Note: See sheet 230 for Approach Slab Erosion Control Detail and Quantities.

Excavation	1135	Cu. Yds.
Embankment	211,535	Cu. Yds.
Embankment + 18%	249,611	Cu. Yds.

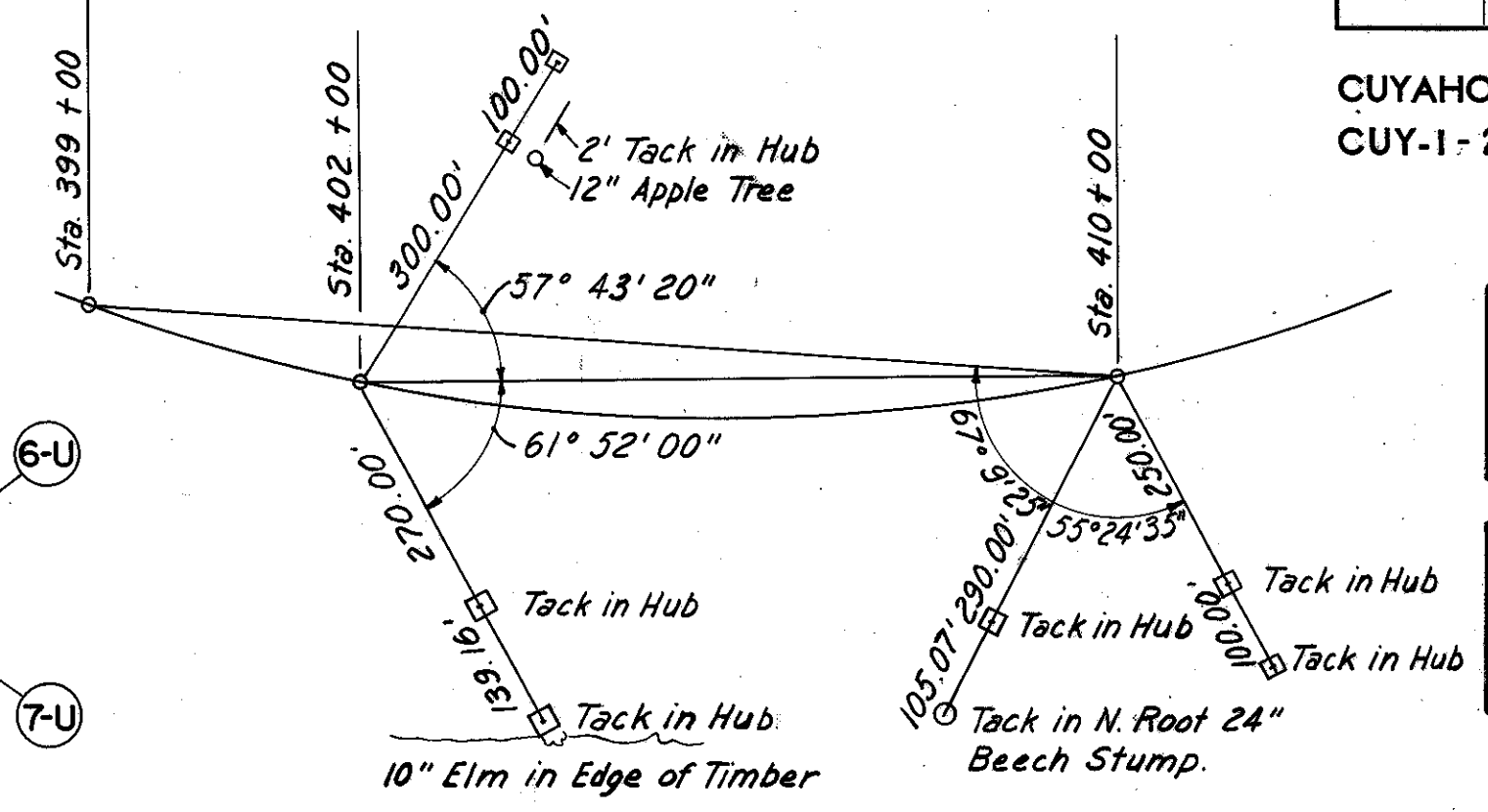
Rev. 9-6-61

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

CURVE DATA
 P.I. Sta 379 + 23.25
 Δ = 40° 05' 00"
 D = 0° 28' 00"
 R = 12,277.67'
 T = 4,478.80'
 L = 8,589.25'
 E = 791.36'

REFERENCE POINT
 P.O.C. Sta. 402 + 00

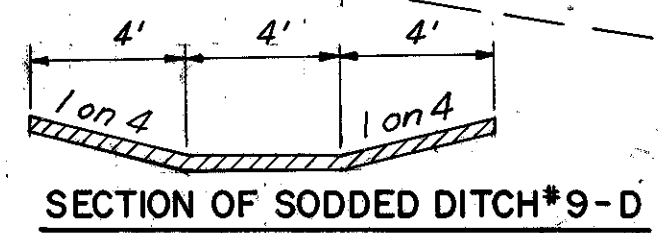
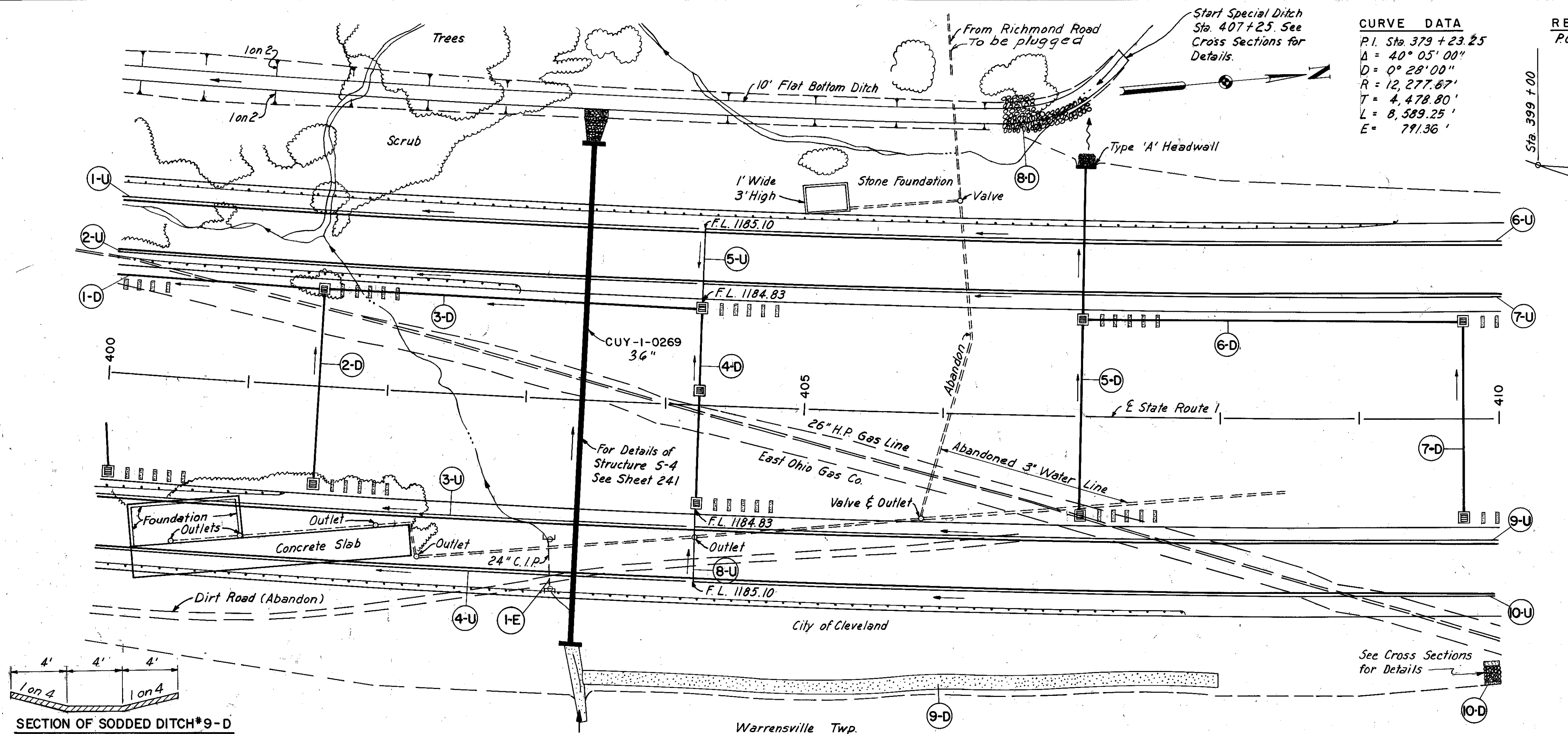
REFERENCE POINT
 P.O.C. Sta. 410 + 00



BENCH MARK 128
 R.R. Spike 20" Maple Tree
 4.5' Lt. Sta. 407 + 75
 Elev. 1181.836

BENCH MARK 128-A
 Lag Bolt W. Root 30" Stump
 350' Rt. Sta. 408 + 50
 Elev. 1183.158

PLAN
 DATE 6-2-59
 BY ECE
 CHECKED HJH
 NO. 1



REF. NO.	STATION	SIDE	DRAINAGE													
			I-2	I-5	I-8	I-8	I-10	S-1	S-4	E-2	E-12	L-10				
From		To	Cl. "B" St. Sew. 15"	Cl. "B" St. Sew. 18"	Outlet Pipe Und.Pvt. 15"	25" Bend M6.4(c) 15"	Std. No. 5 C.B.	Std. No. 8 C.B.	Dumped Conc. Chamel Prot. Cl. "L"	Reinf. Steel	Exc. For Struct.	Removal of Pipe Over 15"	Sodding			
			Lin. Ft.				Each		Cu. Yds.		Lbs.	Cu. Yds.	Lin. Ft.	Sq. Yds.		
1-D	400+00	401+50	Lt.													
2-D	401+50		Lt.		140			2					24			
3-D	401+50	404+25	Lt.		273											
4-D	404+25		Lt.		138			2	1				24			
5-D	407+00		Lt.		215	29	2	2		1.5	3.25	146	11			
6-D	407+00	409+75	Lt.		273								26			
7-D	409+75		Lt.		140			2					24			
8-D	406+40	407+00	Lt.							72						
9-D	403+50	408+00	Rt.										407			
10-D	409+90	410+00	Rt.							10			3.5			
1-E	403+22		Rt.										35			
Total				273	422	633	29	2	8	1	84	3.25	146	11	35	708

•Sec. M-6.5(b) or 6.8(b) Use 3.3

REF. NO.	STATION	SIDE	UNDERDRAINS				
			I-2	I-3	I-4	I-5	
From		To	Cl. "B" St. Sew. Und.Pvt. 8"	Outlet Pipe 6"	Pipe Under Drains 6"	90° Bend Tee	Increase 8"x8"x8" 6"x8"
			Lin. Ft.		Each		
1-U	400+00	404+21	Lt.			421	
2-U	400+00	404+21	Lt.			421	
3-U	400+00	404+21	Rt.			421	
4-U	400+00	404+21	Rt.			421	
5-U	404+25		Lt.	38	10		1 1
6-U	404+25	410+00	Lt.			571	1
7-U	404+25	410+00	Lt.			575	
8-U	404+25		Rt.	38	10		1 1
9-U	404+25	410+00	Rt.			575	
10-U	404+25	410+00	Rt.			571	
Total				76	20	3,976	2 2 2

GUARDRAIL		
STATION	SIDE	I-15 Steel Beam Type (Deep)
From	To	Lin. Ft.
400+00	409+25	Lt. 925
400+00	402+90	Lt. 290
400+00	407+75	Rt. 775
Total		1,990

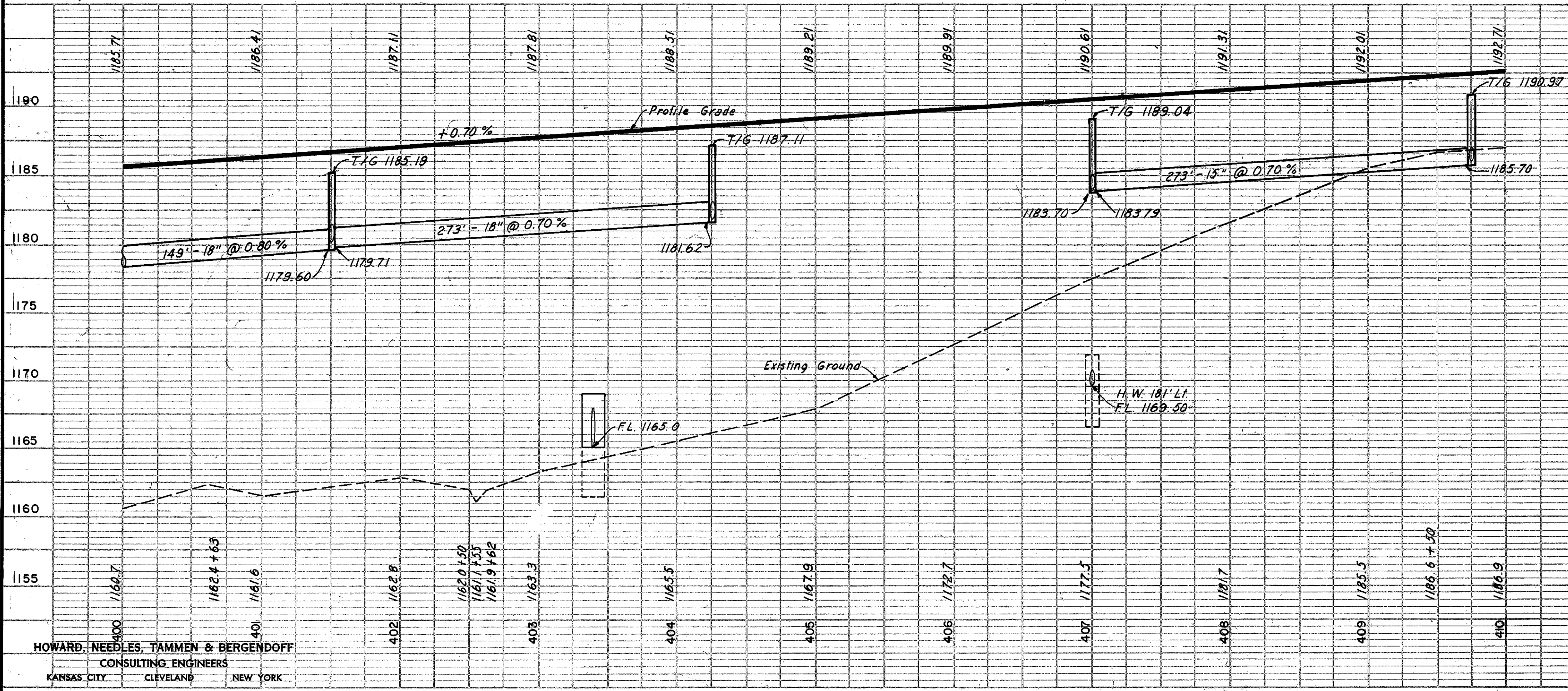
Normal Participation = 1700
 No Fed. Participation = 230

∴ No Federal Participation

Rev. 9-6-61
 For Sewer Profiles See Sheet 253.

Excavation	1458	Cu. Yds.
Embankment	192,426	Cu. Yds.
Embankment + 18%	227,063	Cu. Yds.

PROFILE
 DATE 6-2-59
 BY ECE
 CHECKED HJH
 NO. 1



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 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

CUYAHOGA COUNTY
CUI-1-2.20

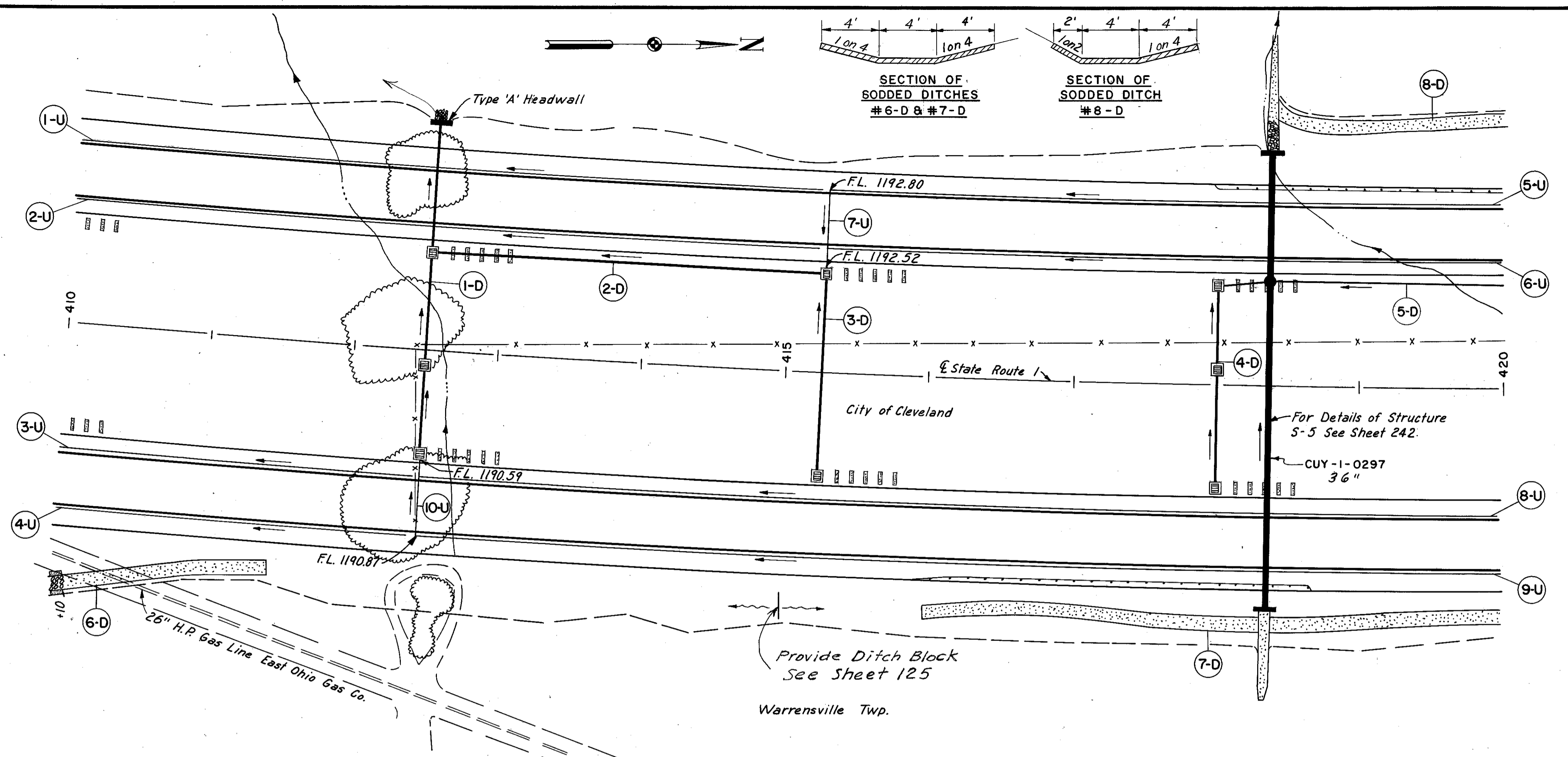
CURVE DATA
 P.I. Sta. 379+23.25
 $\Delta = 40^\circ 05' 00''$
 $D = 0^\circ 28' 00''$
 $R = 12,277.67'$
 $T = 4,478.80'$
 $L = 8,589.25'$
 $E = 791.36'$

BENCH MARK 129
 1/2" Iron Pin
 150' Rt. Sta. 418+10
 Elev. 1195.919

BENCH MARK 129A
 1" Pipe
 250' Rt. Sta. 418+10
 Elev. 1198.723

PLAN
 SURVISED BY: E.C.E.
 PLOTTED BY: H.J.H.
 CHECKED BY: H.J.H.
 DATE: 6/11/57

PROFILE
 SURVISED BY: E.C.E.
 PLOTTED BY: H.J.H.
 CHECKED BY: H.J.H.
 DATE: 6/11/57

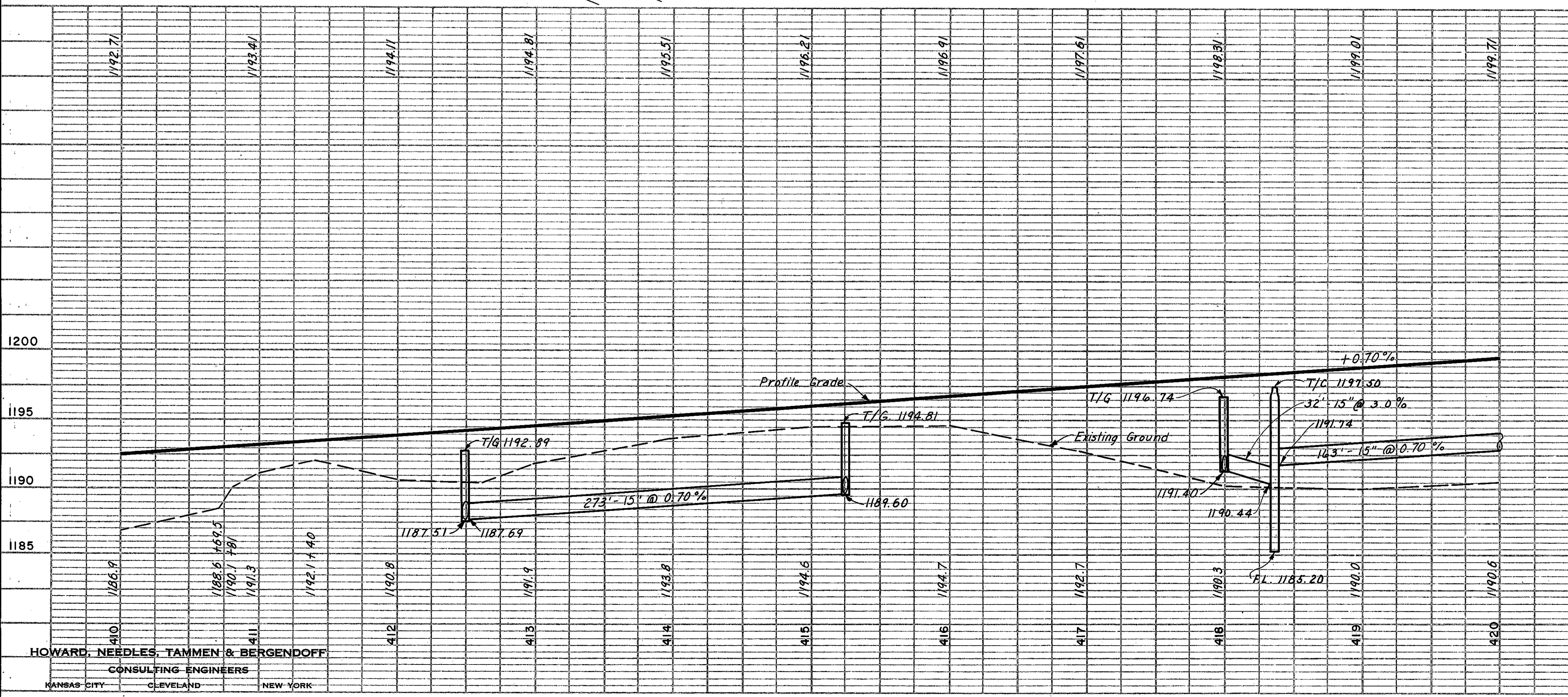


DRAINAGE												
REF. NO.	STATION	SIDE	I-2		I-8	I-8	S-1	S-4	E-2	L-10	I-10	
			Cl. "B" St. Sew. 15"	Cl. "B" St. Sew. Und. Pvt. 18"	Std. No. 5 C. B.	No. 2 M.H. w/o Drop C. B.	Std. No. 8 C. B.	Conc. for Cl. "C"	Reint. Steel	Exc. for Str.	Soaking Rock Channel Prot.	Dumped Rock Channel Prot.
From To		Lin. Ft.		Each		Cu. Yds.	Lbs.	Cu. Yds.	Sq. Yds.	Cu. Yds.		
1-D	412+50		138	90	2	1	3.25	146	11	26	1.5	
2-D	412+50	414+25 Lt.	273									
3-D	415+25		140		2					24		
4-D	418+00		170		2	1				24		
5-D	418+00	420+00 Lt.	163									
6-D	410+00	411+50 Rt.								190	19	
7-D	416+00	420+00 Rt.								534		
8-D	418+35	420+00 Lt.								183		
Total			436	448	6	1	2	3.25	146	11	981	10.5

Use 3.3

UNDERDRAINS								
REF. NO.	STATION	SIDE	I-2	I-3	I-4	I-5		
			Cl. "B" St. Sew. Und. Pvt. 8"	Outlet Pipe Under Drains 8"	Pipe Under Drains 6"	90° Bend Tee 6" x 8" x 6" x 8"	Increase 6" x 8"	
From To		Lin. Ft.		Each				
1-U	410+00	415+21 Lt.			521			
2-U	410+00	415+21 Lt.			521			
3-U	410+00	412+46 Rt.			246			
4-U	410+00	412+46 Rt.			246			
5-U	415+25	420+00 Lt.			471	1		
6-U	415+25	420+00 Lt.			475			
7-U	415+25	420+00 Lt.	38	10		1		
8-U	412+50	420+00 Rt.			550			
9-U	412+50	420+00 Rt.			746	1		
10-U	412+50	420+00 Rt.	38	10		1		
Total			76	20	3,976	2	2	2

GUARDRAIL		
STATION	SIDE	I-15
From	To	Lin. Ft.
415+90	418+65	Rt. 275
418+00	420+00	Lt. 200
Total		475



For Sewer Profiles See Sheet 254.

Excavation	7,031	Cu. Yds.
Embankment	30,256	Cu. Yds.
Embankment + 18%	35,702	Cu. Yds.

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

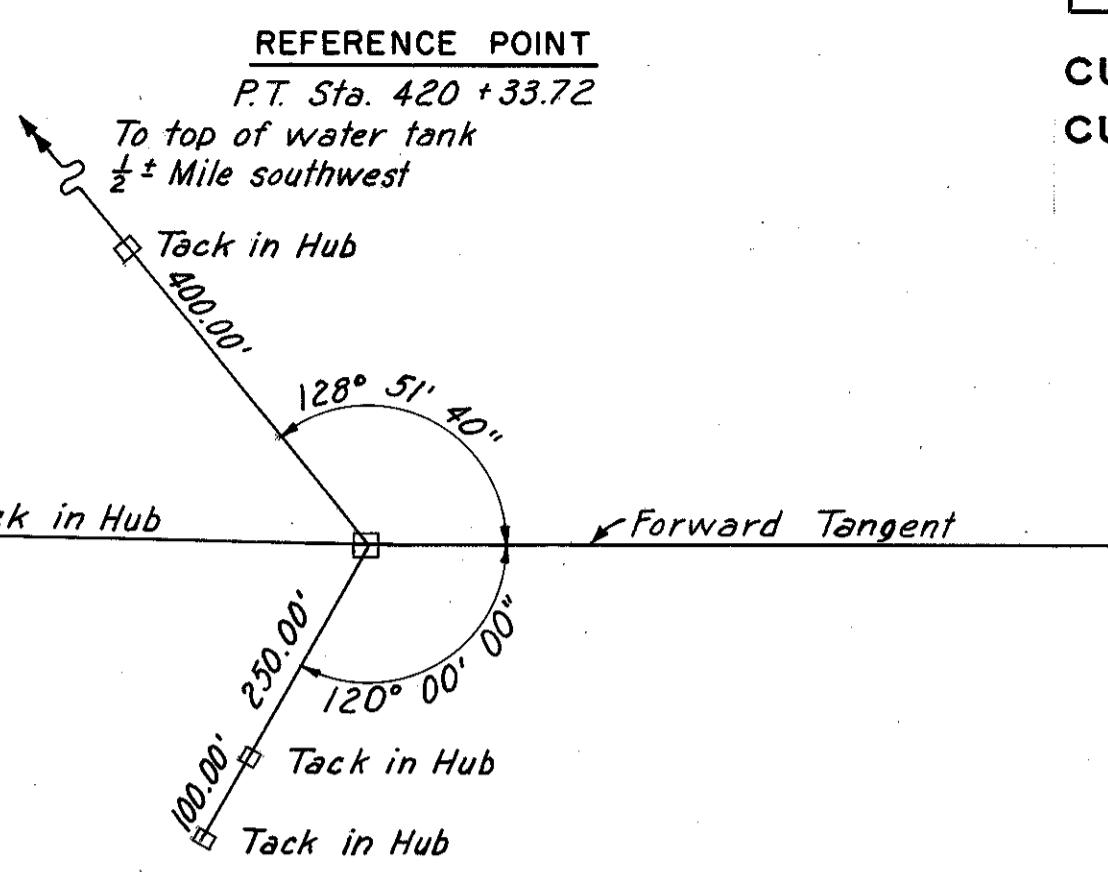
CUYAHOGA COUNTY
CUY-1-2.20

BENCH MARK 130
R.R. Spike 20" Beech Tree
150' Lt. Sta. 428+10
Elev. 1200.774

BENCH MARK 130-A
Lag Bolt N.E. Root 12" Elm
248' Lt. Sta. 428+07
Elev. 1198.490

GUARDRAIL

STATION	SIDE	I-15
		Steel Beam Type (Depth)
From	To	Lin. Ft.
420+00	420+75	Lt. 75
427+75	430+00	Rt. 225
Total		300



CURVE DATA
P.I. Sta. 379+23.25
Δ = 40° 05' 00"
D = 0° 28' 00"
R = 12,277.67'
T = 4478.80'
L = 8589.25'
E = 791.36'

DRAINAGE

REF. NO.	STATION	SIDE	I-2		I-8	I-10	S-1	S-4	E-2	L-10	I-8			
			Cl. "B" St. Sew. 15"	Cl. "B" St. Sew. 18"								Std. Und. Pnt. No. 5	Each	
	From	To	Lin. Ft.		Each	Cu. Yds.	Lbs.	Cu. Yds.	Sq. Yds.	Each				
1-D	420+00	420+75	Lt.	74										
2-D	420+00				140	2				24				
3-D	423+50				140	92	2	3.3	146	11	26			
4-D	423+50	426+25	Lt.	273										
5-D	426+25				138	2				24	1			
6-D	426+25	429+00	Lt.	273										
7-D	429+00				140	2				24				
8-D	420+00	423+50	Lt.							384				
9-D	420+00	423+00	Rt.							400				
Total				347	273	558	92	8	2	3.3	146	11	882	1

* Sec. M-6.5(b) or M-6.8(b) x Sec. M-6.6(b) or M-6.8(b)

UNDERDRAINS

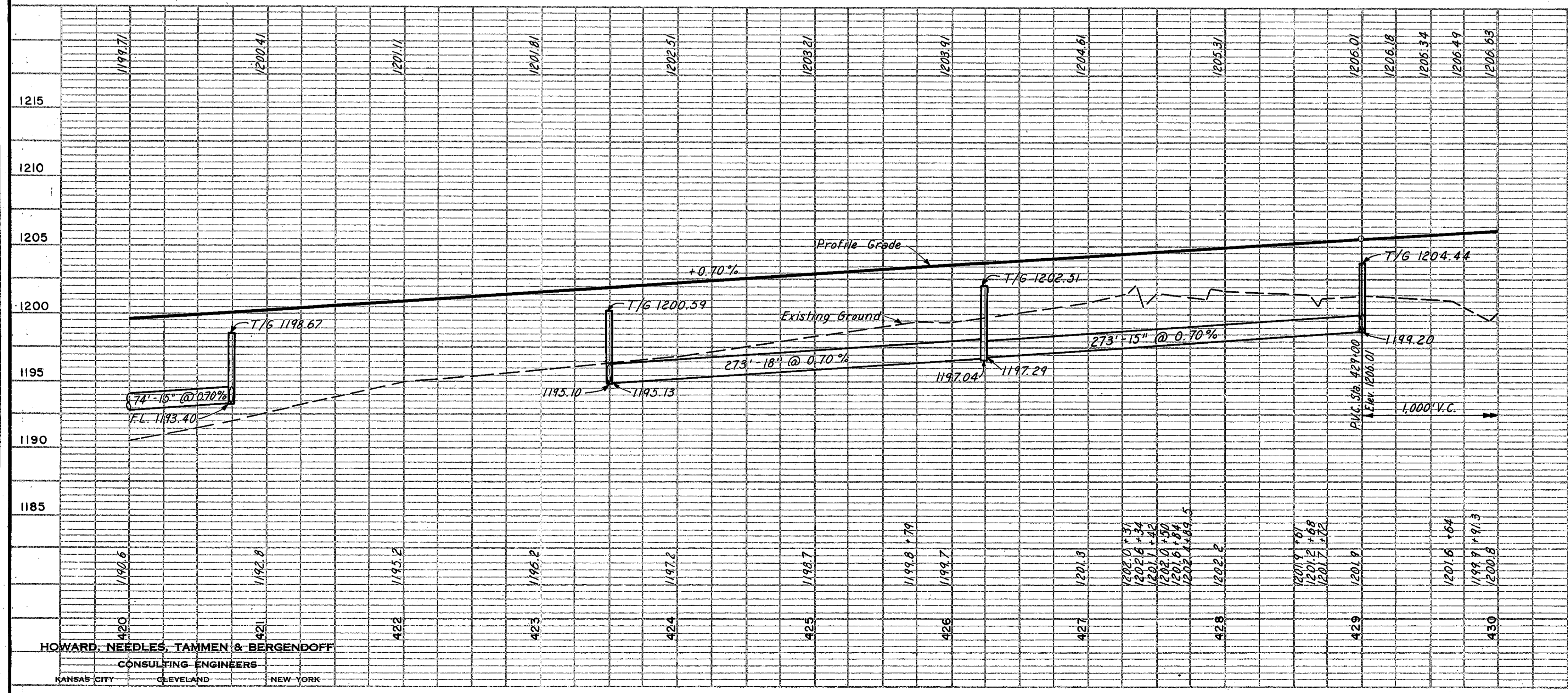
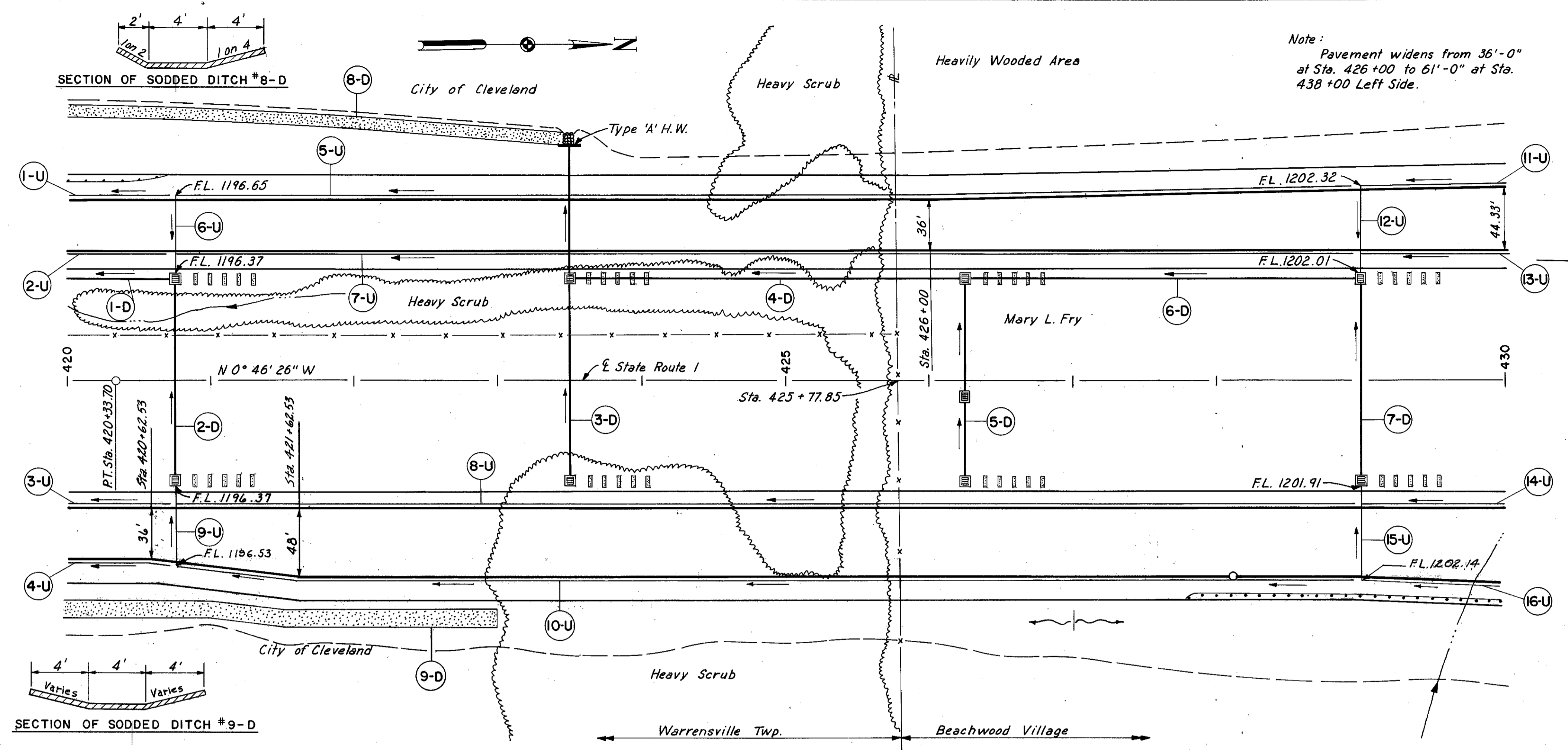
REF. NO.	STATION	SIDE	I-2		I-4		I-5		
			Cl. "B" St. Sew. 8"	Outlet Pipe Und. Pnt. M6.4(a) 8"	Pipe Under Drains 6"	90° Bend 6"	Tees 8"x6" 6"x8"	Increaser 6"x8"	
	From	To	Lin. Ft.		Each				
1-U	420+00	420+71	Lt.		71				
2-U	420+00	420+71	Lt.		71				
3-U	420+00	420+71	Rt.		71				
4-U	420+00	420+71	Rt.		71				
5-U	420+75	428+96	Lt.		817	1			
6-U	420+75		Lt.	38	10		1	1	
7-U	420+75	428+96	Lt.		821				
8-U	420+75	428+96	Rt.		821				
9-U	420+75		Rt.	40	10		1	1	
10-U	420+75	428+96	Rt.		817	1			
11-U	429+00	430+00	Lt.		96	1			
12-U	429+00		Lt.	44	10		1	1	
13-U	429+00	430+00	Lt.		100				
14-U	429+00	430+00	Rt.		100				
15-U	429+00		Rt.	50	10		1	1	
16-U	429+00	430+00	Rt.		96	1			
Total				172	40	3,952	4	4	4

For Sewer Profiles See Sheet 255

Excavation	5,114	Cu. Yds.
Embankment	34,388	Cu. Yds.
Embankment + 18%	40,578	Cu. Yds.

PLAN
DATE: 5-14-59
BY: J.C.F.
CHECKED: J.C.F.
NOTED: J.C.F.
STRUCTURE NOTATIONS CHKD: J.C.F.
NO.:

PROFILE
DATE: 5-14-59
BY: J.C.F.
CHECKED: J.C.F.
NOTED: J.C.F.
STRUCTURE NOTATIONS CHKD: J.C.F.
NO.:



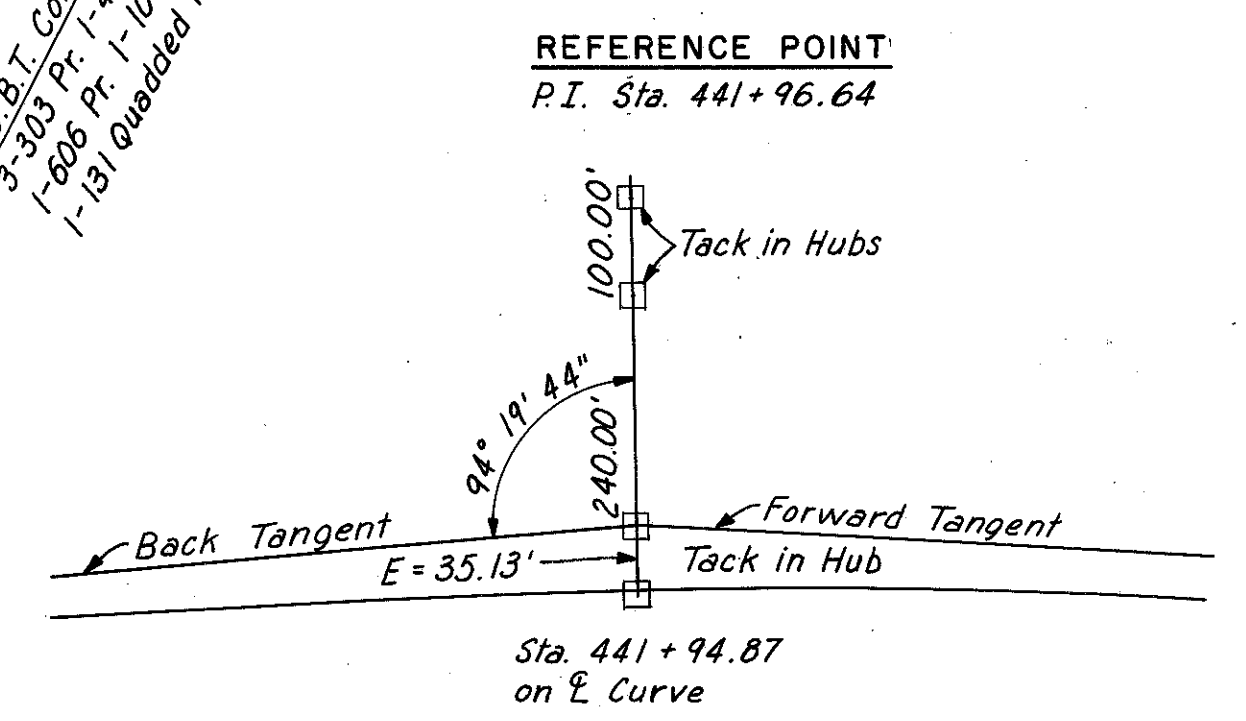
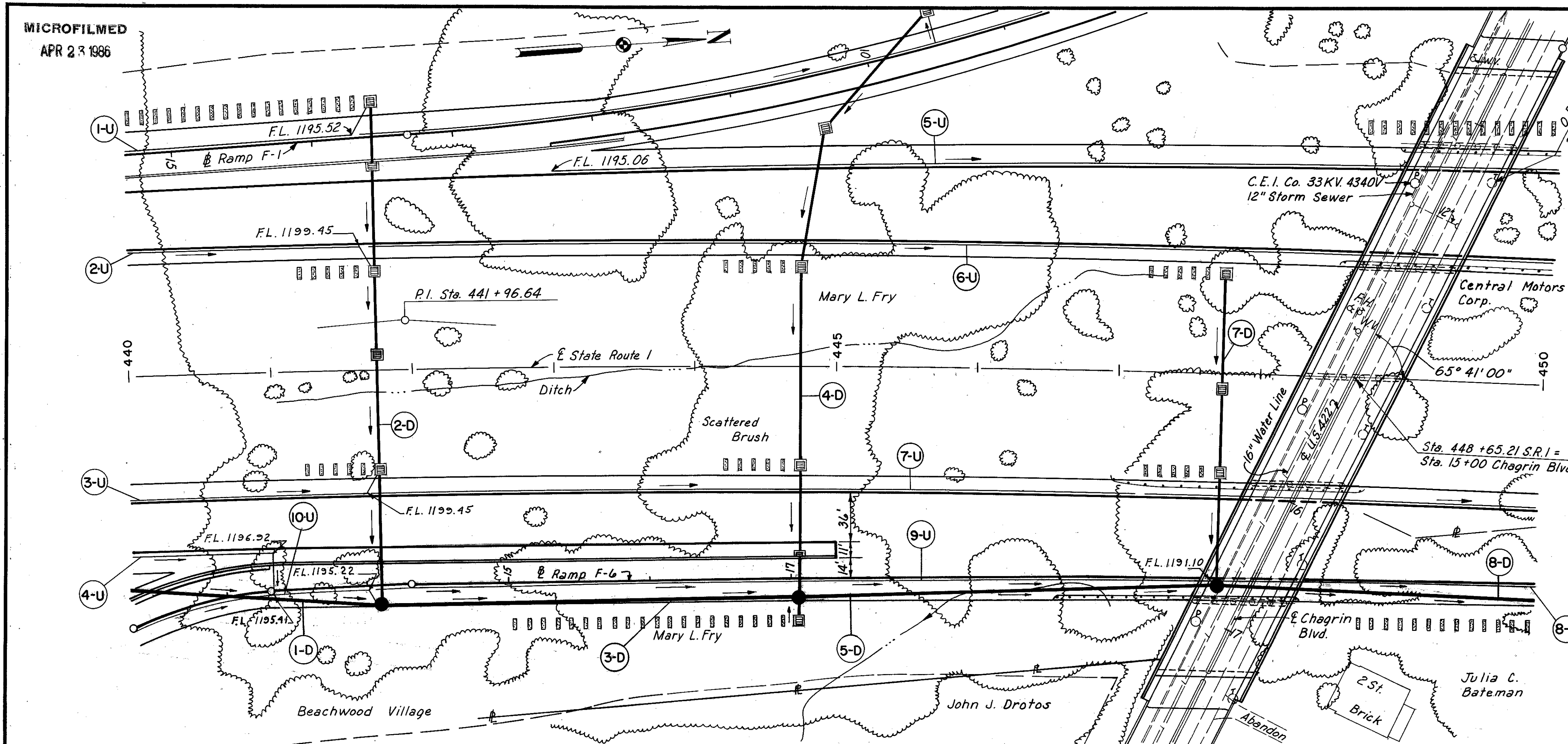
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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

MICROFILMED
APR 23 1986

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY
GUY-1-2.20

PLAN
DATE: 7-2-59
BY: E.E.C.
CHECKED: H.J.H.
NO. 1



BENCH MARK 132
R.R. Spike 15" Catalpa Tree
150' Rt. Sta. 448+50
Elev. 1218.521

BENCH MARK 132-A
Log Bolt N. Root Twin 6" Cherry
345' Lt. Sta. 449+70
28' S. of S. Curb Chagrin Blvd.
Elev. 1213.569

C.R.G.S. BENCH MARK 23
Monument at Chagrin Blvd.
and Richmond Roads
Elev. 1220.48

CURVE DATA
P.I. Sta. 441+96.64
 $\Delta = 8^\circ 39' 28''$
 $D = 0^\circ 28' 00''$
 $R = 12,277.67'$
 $T = 929.38'$
 $L = 1855.23'$
 $E = 35.07'$

REF NO.	STATION	SIDE	DRAINAGE													
			I-2						I-8				L-10			
			Cl. "B" St. Sew. 15"	Cl. "B" St. Sew. 30"	Cl. "B" St. Sew. 15"	Cl. "B" St. Sew. 18"	Cl. "B" St. Sew. 24"	Cl. "B" St. Sew. 36"	Std. No. 1-3 C.B.	Std. No. 5 C.B.	Std. No. 6 C.B.	Std. No. 8 C.B.		Std. No. 1 M.H.	Std. No. 2 M.H.	
From	To	Lin. Ft.	Each				Sq. Yds.									
1-D	440+00 to 441+75	Rt.			118	58	171			3	1	1	1			.57
2-D	441+75															
3-D	441+75 to 444+75	Rt.	294													
4-D	444+75		15		106	324			2	3	1					1 57
5-D	444+75 to 447+75	Rt.						292								
7-D	447+75				213					2		1				1 24
8-D	447+75 to 450+00	Rt.						223								
Total			15	294	*331	*164	*673	*515	2	3	2	2	1	2		138

* Sec. M-6.5(b) or Sec. M-6.8(b)
* Sec. M-6.6(b) or Sec. M-6.8(b)

REF NO.	STATION	SIDE	UNDERDRAINS				
			I-4	I-4	I-5		Tee
			Outlet Pipe 8"	Pipe Under Drains 6"	60° Bend 6"	90° Bend 6"	
From	To	Lin. Ft.	Each				
1-U	440+00 to 441+75	Lt.	10	170	1		
2-U	440+00 to 441+75	Lt.	10	170	1		
3-U	440+00 to 441+75	Rt.	10	170	1		
4-U	440+00 to 441+00	Rt.		131		1	1
5-U	443+00 to 450+00	Lt.		700			
6-U	441+70 to 450+00	Lt.		830			
7-U	441+70 to 450+00	Rt.		830			
8-U	447+78 to 450+00	Rt.		222			
9-U	441+70 to 447+75	Rt.		605			
10-U	13+00' F-6 to 441+75	Rt.	10	98	1		
Total			40	3926	4	1	1

STATION	SIDE	GUARDRAIL	
		I-15	Steel Beam Type (Deep)
		Lin. Ft.	
From	To	Lin. Ft.	
446+55	448+30	Rt.	175
447+00	448+75	Rt.	175
448+55	450+00	Lt.	145
449+00	450+00	Lt.	100
Total			595

* I-4 Underdrains (Deep)

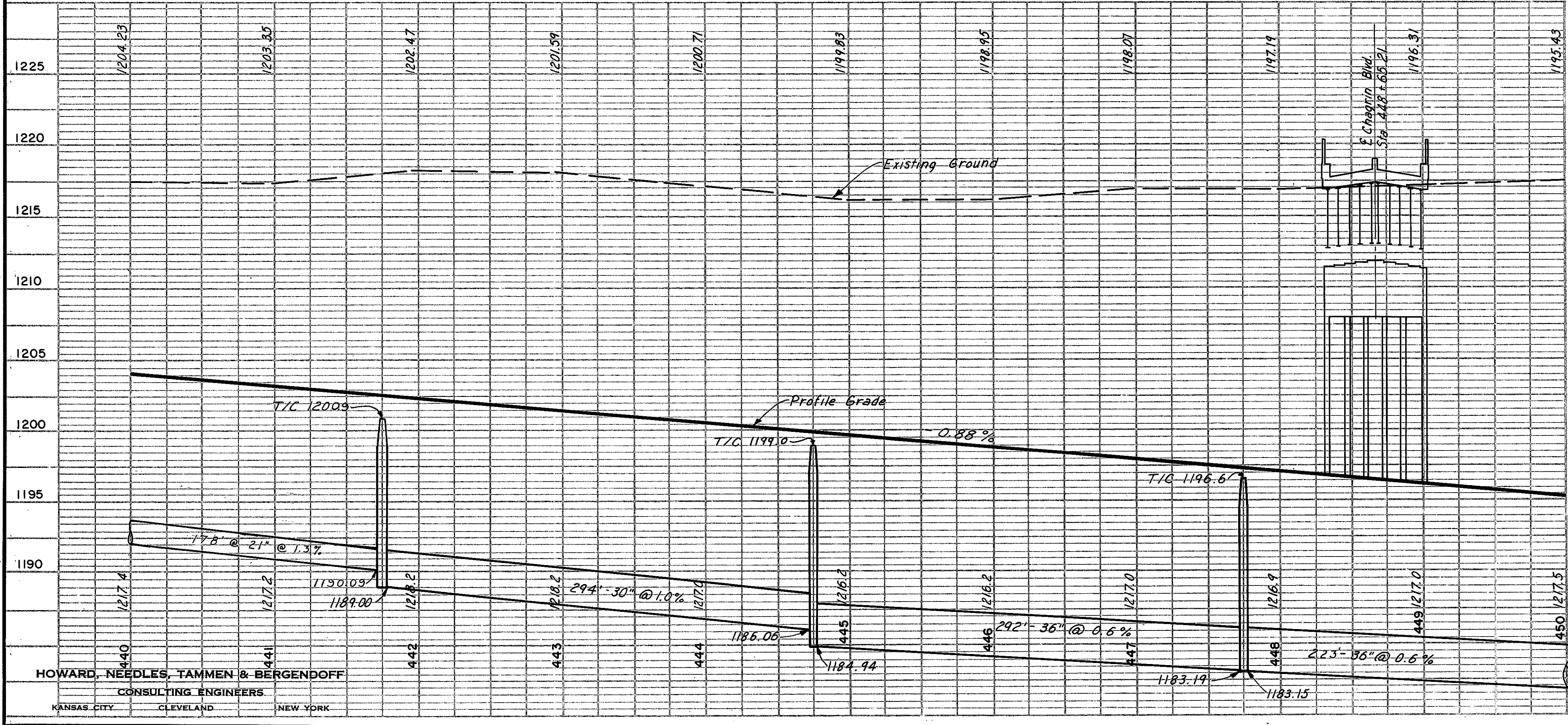
PROPOSED STRUCTURE
TYPE: Continuous welded girders with reinforced concrete deck and substructure.
SPANS: 58'-0", 96'-6", 86'-0", 86'-6", 90'-0" & 54'-6"
ROADWAY: 2 at 27'-0" with 2'-4"-2" sidewalks and 3'-0" raised median.
LOAD FREQUENCY: CF 2000 Adequate for A.A.-S.H.O. Alternate Loading.
SKEW: 24° 19' 00" R.F.
WEARING SURFACE: 1" Monolithic Concrete.
APPROACH SLABS: AS-1-54 (25' long).
ALIGNMENT: Tangent.

See Sheets 276-283

Note:
Earthwork for Ramps F-1, F-4, F-4A, F-6 is included in the totals for this sheet. For Interchange Details See Sheets 45-57. For Sewer Profile See Sheets 257 & 258.

Excavation	4,117.0	Cu. Yds.
Embankment	4,794	Cu. Yds.
Embankment + 18%	5,657	Cu. Yds.

PROFILE
DATE: 7-2-59
BY: E.E.C.
CHECKED: H.J.H.
NO. 1

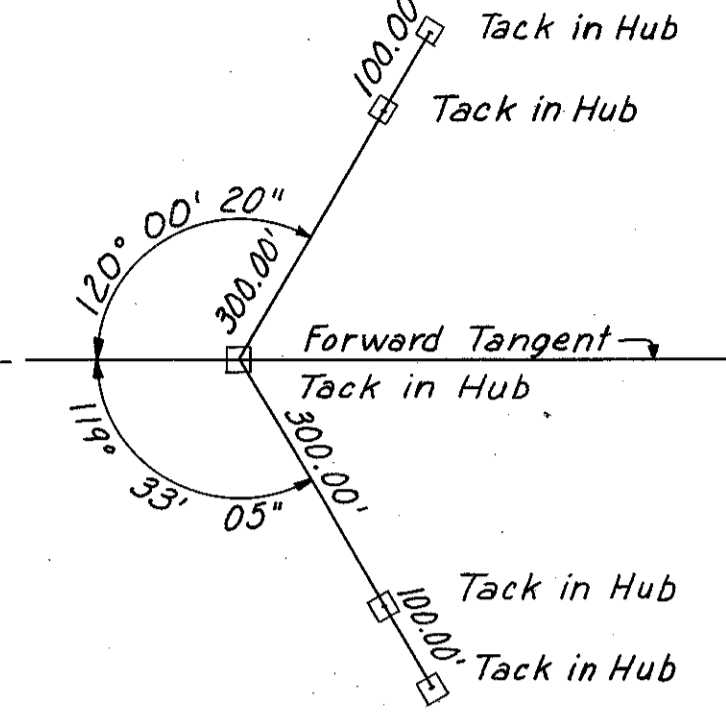


HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CUYAHOGA COUNTY
CUI-1-2.20

CURVE DATA
 P.I. Sta. 441+96.64
 $\Delta = 8^{\circ}39'28''$
 $D = 0^{\circ}28'00''$
 $R = 12,277.67'$
 $T = 929.38'$
 $L = 1855.23'$
 $E = 35.07'$

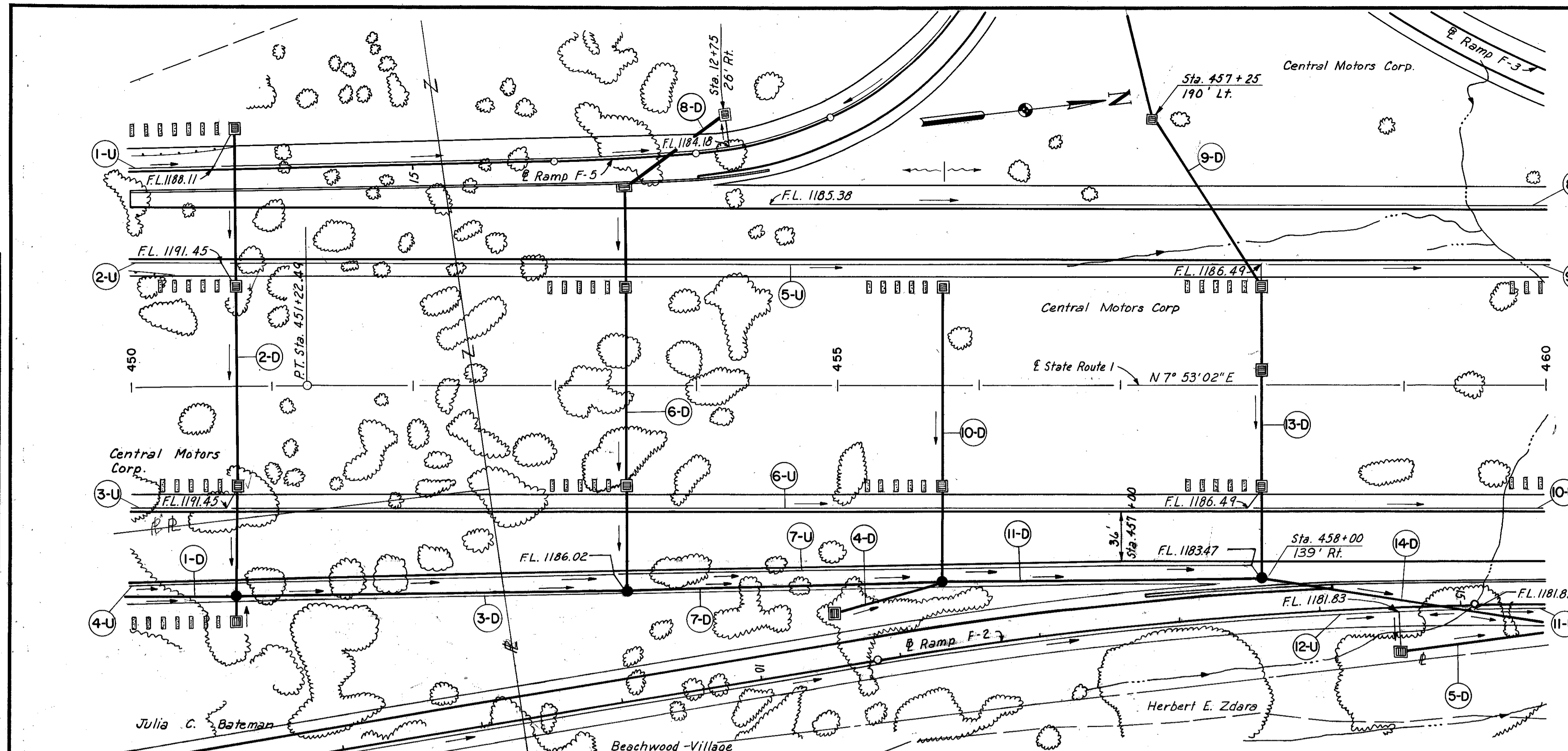
REFERENCE POINT
 RT. Sta. 451+22.49



BENCH MARK 133
 R.R. Spike 10" Hickory Tree
 165' Rt. Sta. 459+38
 Elev. 1202.533

BENCH MARK 133-A
 Lag Bolt W. Root 8" Wild Cherry
 393' Lt. Sta. 459+75
 Elev. 1213.056

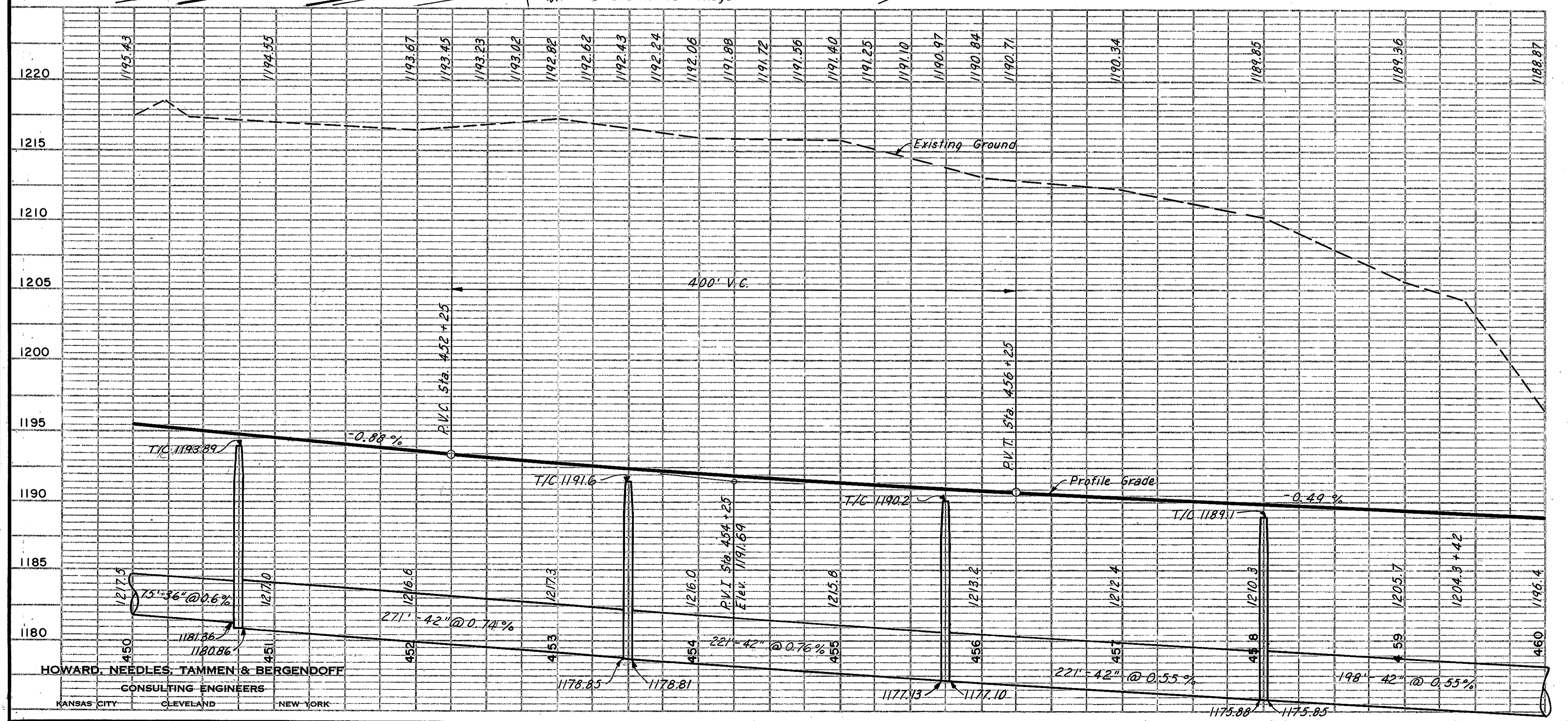
PLAN
 SURVEYED BY: [Name]
 DATE: [Date]
 CHECKED BY: [Name]
 DATE: [Date]
 NO. [Number]



REF. NO.	STATION	SIDE	DRAINAGE													
			I-2		I-8				L-10	I-8						
			Cl. "B" St. Sew. 15"	Cl. "B" St. Sew. 42"	Cl. "B" St. Sew. Und. Pnt. 15"	Cl. "B" St. Sew. Und. Pnt. 18"	Cl. "B" St. Sew. Und. Pnt. 24"	Cl. "B" St. Sew. Und. Pnt. 36"	Cl. "B" St. Sew. Und. Pnt. 48"	Std. No. 1-3 C.B.	Std. No. 5 C.B.	Std. No. 6 C.B.	Std. No. 2 M.H. w/o Drop	Sodding No. 8 C.B.		
	From	To	Lin. Ft.						Each		Sq. Yds.	Each				
1-D	450+00	450+75	Rt.					75								
2-D	450+75	450+75	Rt.	13		110	218				4		1	91		
3-D	450+75	453+50	Rt.		271											
4-D	455+00	455+75	Rt.	74							1					
5-D	458+00	460+00	Rt.	98							1					
6-D	453+50	453+50	Rt.				69	212			2	1	1	24		
7-D	453+50	455+75	Rt.		221											
8-D	453+50	453+50	Lt.				82				1					
9-D	457+25	458+00	Lt.					135			1					
10-D	455+75	458+00	Rt.			207					2		1	24		
11-D	455+75	458+00	Rt.		221											
13-D	458+00	458+00	Rt.				202				2		1	24		
14-D	458+00	460+00	Rt.					198								
Total				*185	*7/3	*317	*369	*549	*75	198	4	10	1	4	163	1

* Sec. M-6.5(b) or Sec. M-6.8(b)
 * Sec. M-6.6(b) or Sec. M-6.8(b)

PROFILE
 SURVEYED BY: [Name]
 DATE: [Date]
 CHECKED BY: [Name]
 DATE: [Date]
 NO. [Number]



REF. NO.	STATION	SIDE	UNDERDRAINS				
			I-4	I-4	I-5	I-5	
			Outlet Pipe 8"	Pipe Under Drains 6"	60° Bend 6"	90° Bend 6"	Tee 6" x 6"
	From	To	Lin. Ft.		Each		
1-U	450+00	450+75	Lt.	10	75	1	
2-U	450+00	450+75	Lt.	10	70	1	
3-U	450+00	450+75	Rt.	10	70	1	
4-U	450+00	453+50	Rt.	10	34.1	1	
5-U	450+70	458+00	Lt.	10	730		1
6-U	450+70	458+00	Rt.	10	725	1	
7-U	453+45	458+00	Rt.	10	443	1	
8-U	454+50	460+00	Lt.		550		
9-U	458+04	460+00	Lt.		196		
10-U	457+95	460+00	Rt.		205		
11-U	457+12	460+00	Rt.		48		
12-U	457+00	458+00	Rt.	10	125		1
Total				80	3,578	6	1

* I-4 Underdrain (Deep)

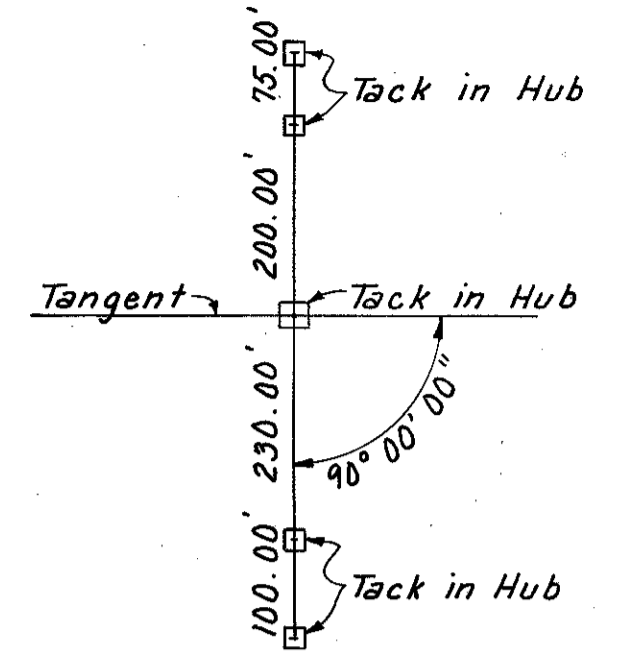
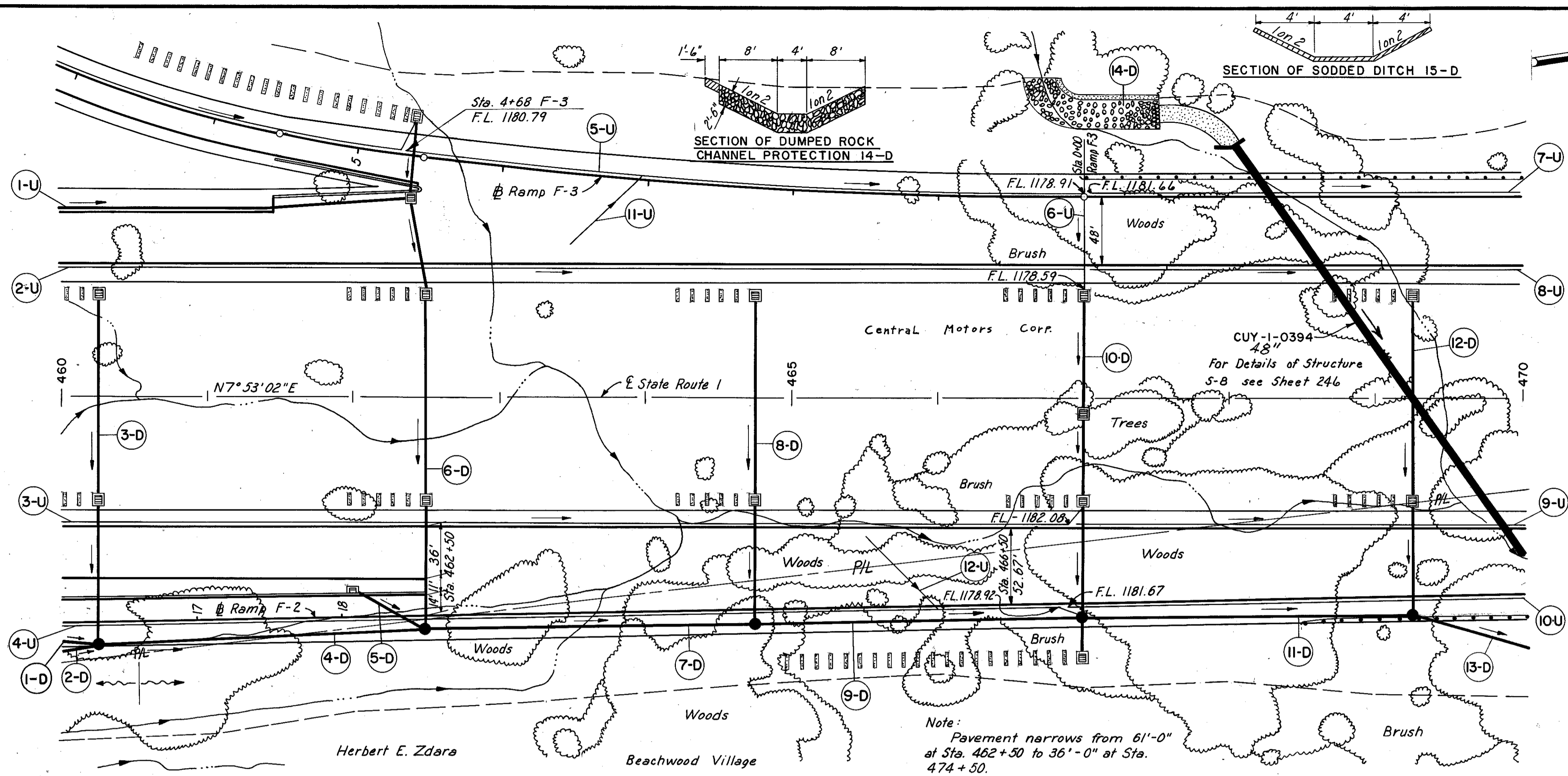
GUARDRAIL		
STATION	SIDE	I-15
		Steel Beam Type (Deep)
		Lin. Ft.
From	To	
450+00	450+75	Lt. 75
450+00	450+30	Lt. 30
Total		105

Note:
 For Interchange Details See Sheets 45-51.
 For Sewer Profiles See Sheets 258, 259 & 262

Note:
 Earthwork for Ramps F-3, F-3A, F-2, F-5 and F-6 is included in the totals for this sheet. 7

Excavation	467,973	Cu. Yds.
Embankment	1,5491	Cu. Yds.
Embankment + 18%	1,6479	Cu. Yds.

CUYAHOGA COUNTY
CUY-1-2.20



GUARDRAIL			
STATION	SIDE	I-15	
		Steel Beam	Type (Deep)
		Lin. Ft.	
From	To	Lt.	Rt.
467+00	470+00	300	
468+50	470+00	150	
Total		450	

BENCH MARK 134
R.R. Spike 20" Twin Elm
150' Lt. Sta. 468+80
Elev. 1174.741

BENCH MARK 134-A
Lag Bolt W. Root 10" Maple
218' Rt. Sta. 469+92
Elev. 1179.157

REFERENCE POINT
P.O.T. Sta. 465+46.47

REF. NO.	STATION	SIDE	DRAINAGE											
			I-2					I-8			I-10	L-10		
			Cl. "B" St. Sew. 15"	Cl. "B" St. Sew. 48"	Cl. "B" St. Sew. 15"	Cl. "B" St. Sew. 18"	Cl. "B" St. Sew. 48"	Std. No. 5 C.B.	Std. No. 6 C.B.	Std. No. 2 M.H. W/o Drop	Dumped Rock Channel Prot.	Sodding		
From	To	Lin. Ft.	Each	Each	Cu. Yds.	Sq. Yds.								
1-D	460+00	460+25	Rt.					24						
2-D	460+00	460+25	Rt.	26										
3-D	460+25					241			2		1	24		
4-D	460+25	462+50	Rt.		221									
5-D	462+00	462+50	Rt.			55				1				
6-D	462+50						350		3	1	1	57		
7-D	462+50	464+75	Rt.		221									
8-D	464+75					227			2		1	24		
9-D	464+75	467+00	Rt.		221									
10-D	467+00					240			1	3	1	57		
11-D	467+00	469+25	Rt.		221									
12-D	469+25					216			2		1	24		
13-D	469+25	470+00	Rt.		78									
14-D	466+70	467+50	Lt.									185 12.5		
Total				26	962	738	591	24	1	12	2	5	185	198

*M-6.5 (S)
or
M-6.8 (S)
x M-6.6 (S)
or
M-6.8 (S)

REF. NO.	STATION	SIDE	UNDERDRAINS										
			I-2	I-4	I-4	I-5							
			Cl. "B" St. Sew. 8"	Outlet Pipe Under 8"	Pipe Under 6"	30° Bend 6"	60° Bend 6"	90° Bend 6"	Tee 6"x6"x6"	Tee 8"x6"x6"	Increaser 6"x8"	60° Wye 6"x6"	
From	To	Lin. Ft.	Each	Each	Each	Each	Each	Each	Each				
1-U*	460+00	462+40	Lt.	96		146				1		1	
2-U	460+00	467+00	Lt.			700							
3-U	460+00	467+00	Rt.		10	696		1					
4-U*	460+00	467+00	Rt.		10	688		1					
5-U*	4+68 F-3	467+00	Lt.			464			1				
6-U	467+00			50	10					1		1	
7-U	467+04	470+00	Lt.			296							
8-U	467+04	470+00	Lt.			296							
9-U	466+95	470+00	Rt.			305							
10-U	466+90	470+00	Rt.			310							
11-U	463+50	464+00	Lt.			70							1
12-U	465+50	466+00	Rt.			70							1
Total				146	30	4,041	1	1	1	1	1	2	2

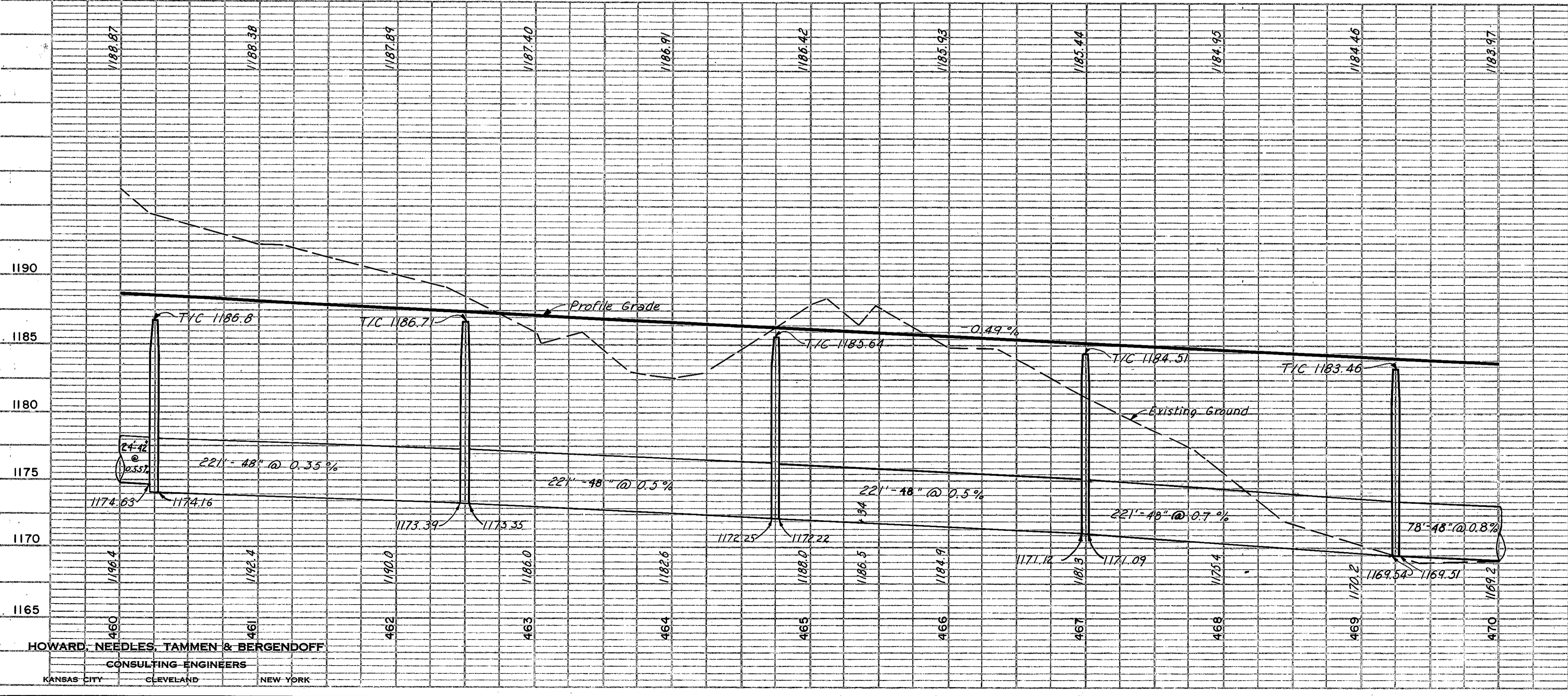
* I-4 Underdrain (Deep)

Note:
For Interchange Details See Sheet 45-5T.
For Sewer Profiles See Sheets 262 & 263

Excavation	50,003	Cu. Yds.
Embankment	47,077	Cu. Yds.
Embankment + 18%	55,551	Cu. Yds.

PLAN SURVEYED BY DATE
NOTED BY DATE
CHECKED BY DATE
RT. OF WAY CHECKED BY DATE

PROFILE SURVEYED BY DATE
NOTED BY DATE
CHECKED BY DATE
STRUCTURE NOTATIONS CHKO

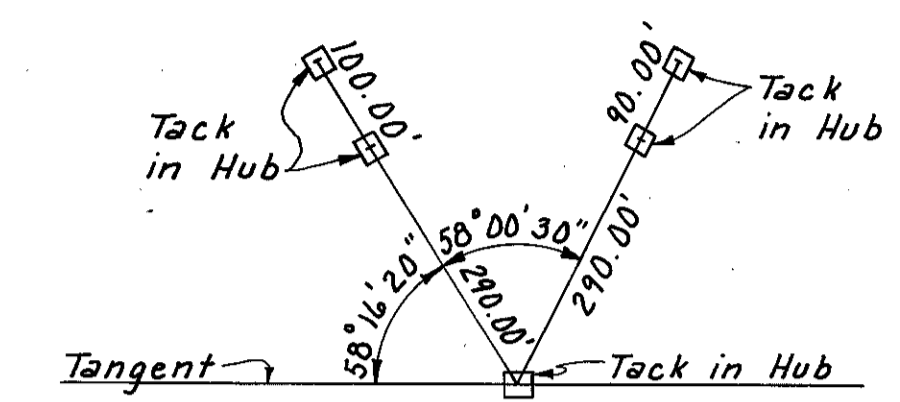


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BENCH MARK 135
R.R. Spike 10" Elm Tree
140' Lt. Sta. 479+00
Elev. 1169.470

BENCH MARK 135-A
Lag Bolt E. Root 14" Ash
240' Lt. Sta. 478+86
Elev. 1169.823

REFERENCE POINT
P.O.T. Sta. 477+80.36



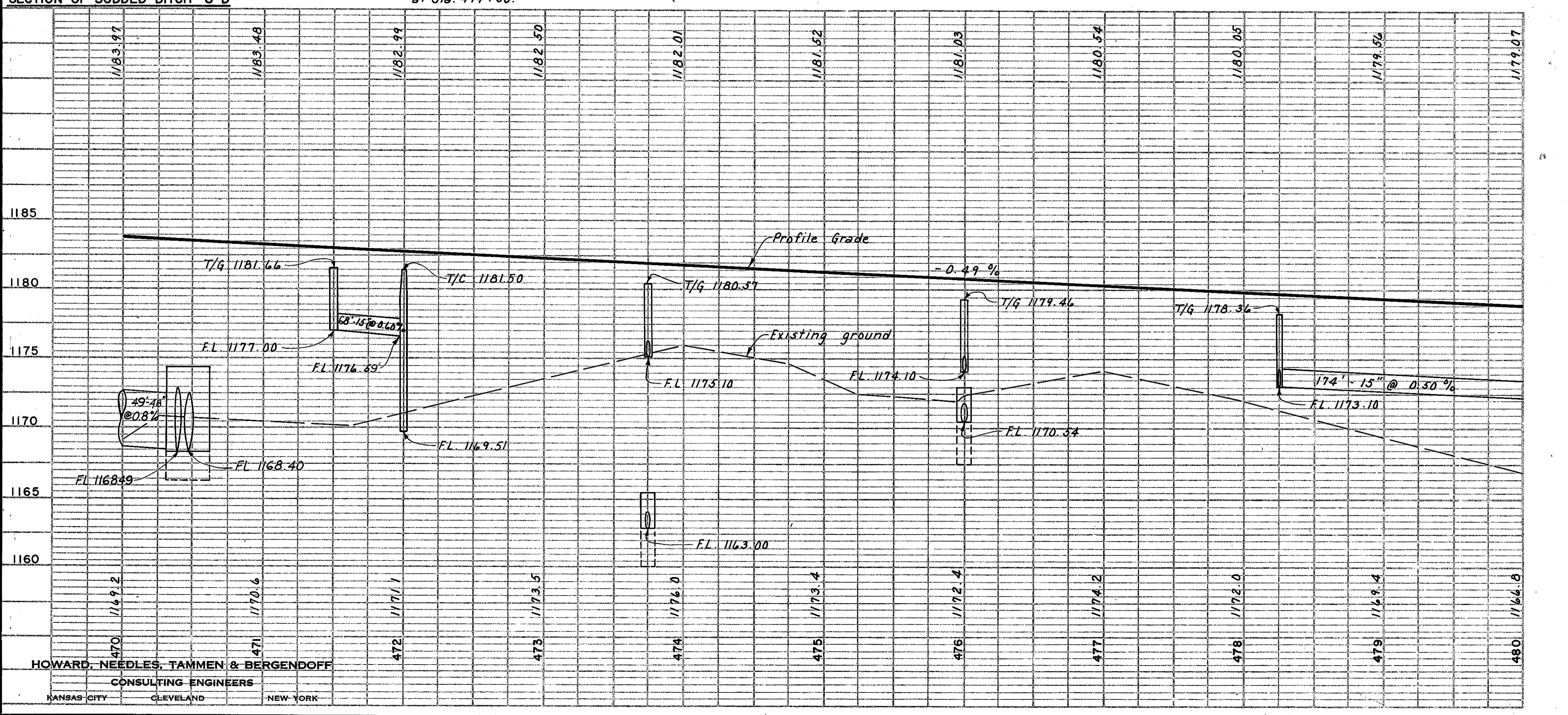
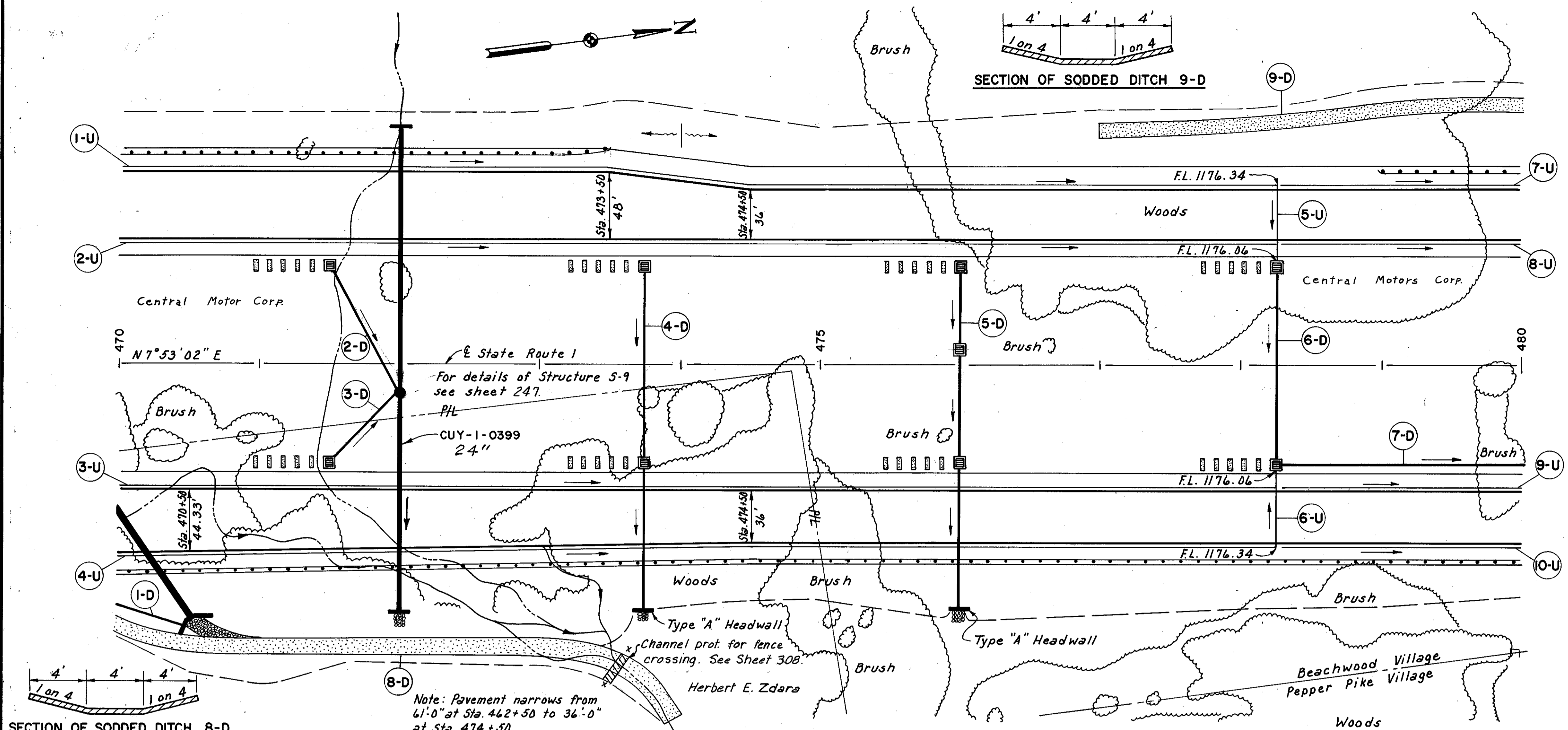
REF. NO.	STATION	SIDE	DRAINAGE												
			I-2		I-5		I-8		I-10		S-1		E-2		I-8
			Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Outlet Pipe	25° Bend	Std. No. 5 C.B.	Std. No. 1 M.H.	Dumped Rock Channel Prot.	Sodding	Conc. for Struct. Cl. "C"	Reinf. Steel for	Exc. for Struct.	Std. No. 8 C.B.
	From	To	Lin. Ft.				Each		Cu. Yds.	Sq. Yds.	Cu. Yds.	Lbs.	Cu. Yds.	Each	
1-D	470+00	470+50	Rt.	49											
2-D	471+50	472+00	Lt.		• 101			1	1						
3-D	471+50	472+00	Rt.		• 68			1							
4-D	473+75				• 218	2.5	2	2		1.5	26	3.25	146	11	
5-D	476+00				• 240		2			1.5	26	3.25	146	11	
6-D	478+25				• 140		2				24				
7-D	478+25	480+00	Rt.	174											
8-D	470+00	473+90	Rt.								611				
9-D	477+00	480+00	Lt.								398				
Total				174	49	• 767	2.5	2	8	1	3.0	1085	6.50	292	22

REF. NO.	STATION	SIDE	UNDERDRAINS					
			I-2		I-4		I-5	
			Cl. "B" St. Sew.	Outlet Pipe	Pipe Under	90° Bend	Tees	Increaser
	From	To	Lin. Ft.				Each	
1-U	470+00	478+25	Lt.		821	1		
2-U	470+00	478+25	Lt.		825			
3-U	470+00	478+25	Rt.		825			
4-U	470+00	478+25	Rt.		821	1		
5-U	478+25		Lt.	38	10		1	1
6-U	478+25		Rt.	38	10		1	1
7-U	478+29	480+00	Lt.			171		
8-U	478+29	480+00	Lt.			171		
9-U	478+29	480+00	Rt.			171		
10-U	478+29	480+00	Rt.			171		
Total				76	20	3976	2	2

GUARDRAIL		
STATION	SIDE	I-15 Steel Beam Type (Deep)
From	To	Lin. Ft.
470+00	473+50	Lt. 350
470+00	480+00	Rt. 1000
479+00	480+00	Lt. 100
Total		1450

For Sewer Profiles See Sheets 263 & 264

Excavation	2,527	Cu. Yds.
Embankment	98,728	Cu. Yds.
Embankment + 18%	116,499	Cu. Yds.



PLAN
DATE: 6-3-59
BY: E.E. H.H.
CHECKED: H.H. H.H.
NO.:

PROFILE
DATE: 6-3-59
BY: E.E. H.H.
CHECKED: H.H. H.H.
NO.:

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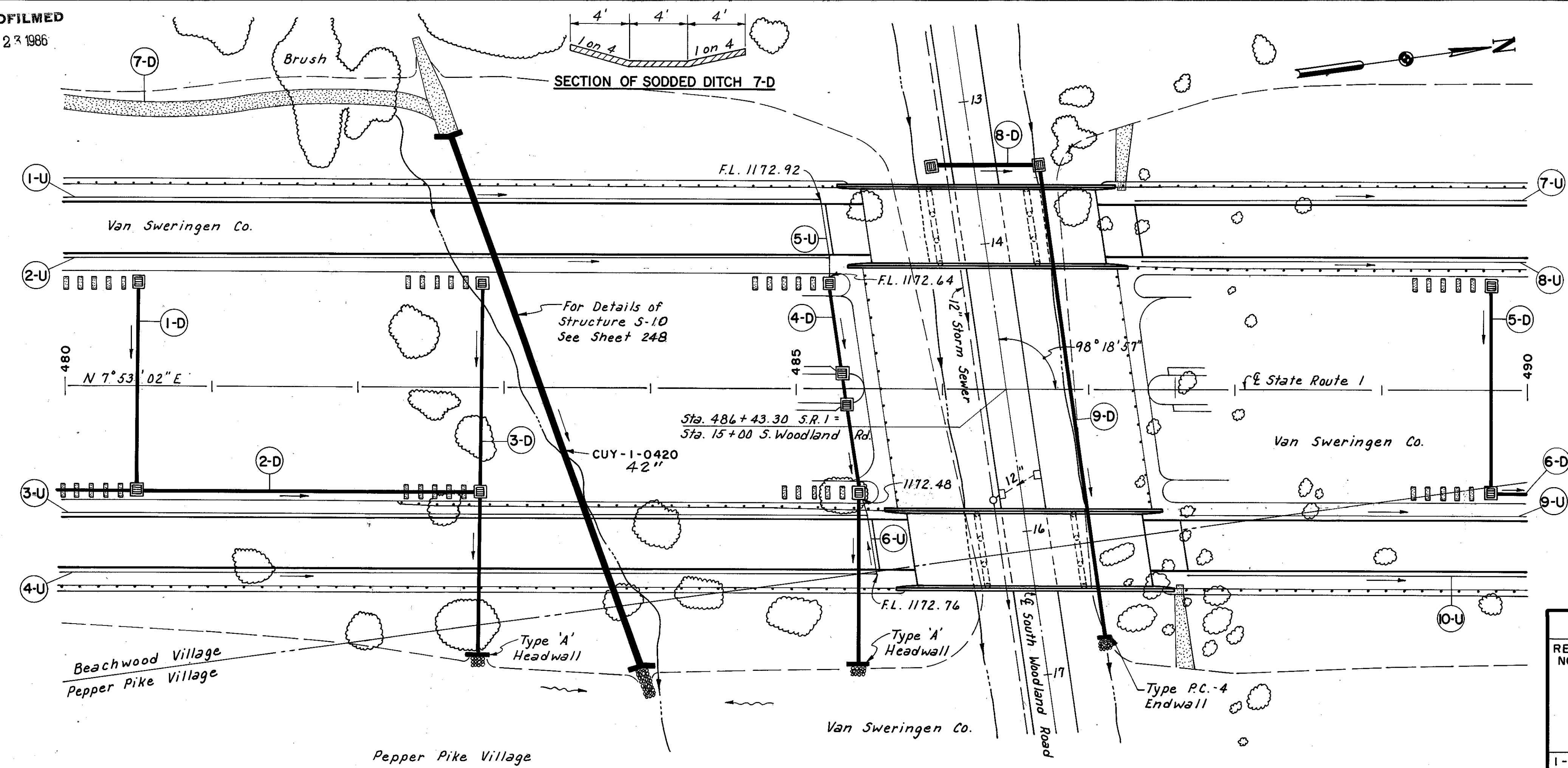
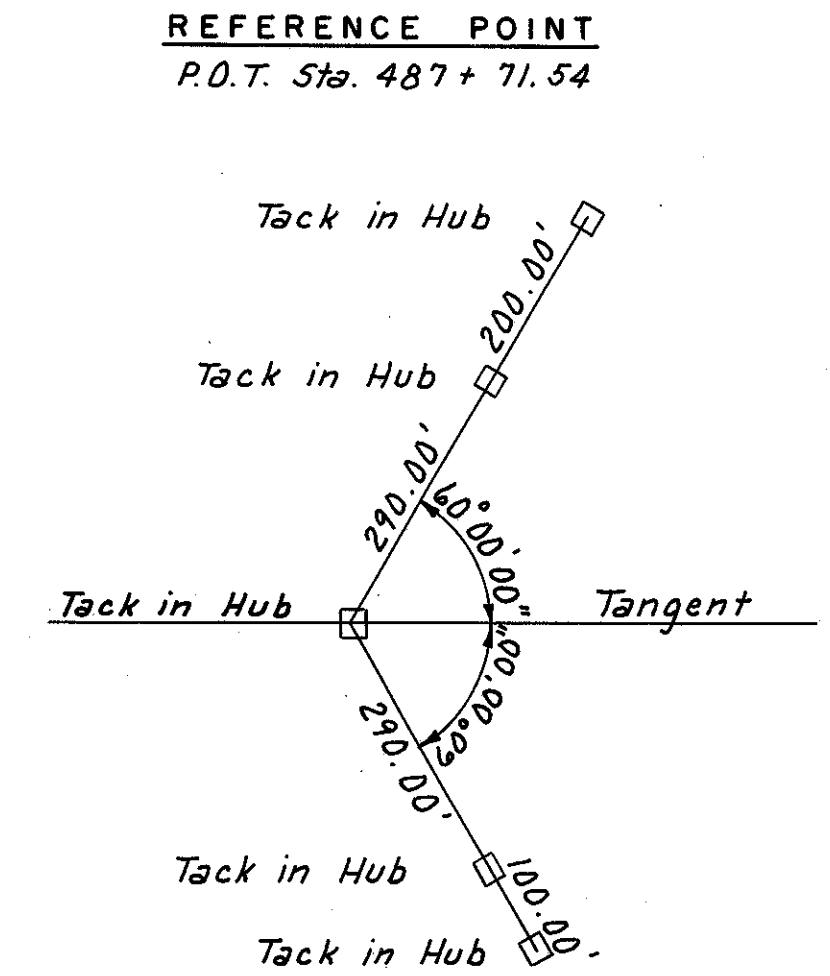
BENCH MARK 136
R.R. Spike 8" Birch Tree
160' Rt. Sta. 487+18
Elev. 1151.053

BENCH MARK 136-A
Lag Bolt 4" Wild Cherry Stump
234' Lt. Sta. 486+86
Elev. 1163.459

PROPOSED STRUCTURES

TYPE: Continuous steel beam with reinforced concrete deck and substructure
 SPANS: 48'-0" L.L.-0" & 48'-0" along E.S.R.1
 ROADWAY: 2 @ 54'-0" f/f of Parapets
 LOAD FREQUENCY: CF-2000 Adequate for AASHO. alternate loading
 SKEW: 8° 19' 00" R.F.
 SURFACE COURSE: 1" Monolithic Concrete
 APPROACH SLABS: AS-1-54 (25' long)
 ALIGNMENT: Tangent

See Sheets 284-287



REF. NO.	STATION	SIDE	DRAINAGE															
			I-2					I-5	I-8		I-10	S-1	S-4	E-2	L-10			
			Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Outlet Pipe Und. Pvt. M 6.4(c)	25° Bend No. 2-3 C.B.	Std. No. 5 C.B.	Std. No. 8 C.B.	Dumped Rock For Channel Prof. Cl. "C"	Conc. Rein. For Struct.	Exc. For Struct.	Sodding			
	From	To	Lin. Ft.					Each			Cu. Yds.	Lbs.	Cu. Yds.	Sq. Yds.				
1-D	480+50													24				
2-D	480+00	482+85	Rt.	49	233													
3-D	482+85																	
4-D	485+33																	
5-D	489+75																	
6-D	489+75	490+00	Rt.	24														
7-D	480+00	482+50	Lt.											334				
8-D	13+40	13+50	Lt. S. Wood															
9-D	13+50	16+81	Lt. S. Wood															
Total				73	233	330	707	784	75	4	2	8	2	4.5	6.91	292	24	434

GUARDRAIL				Normal Partic. No. Federal Funds
STATION	SIDE	I-15		
From	To	Steel Beam Type (Deep)	Lin. Ft.	
480+00	485+28	Lt.	528	528
485+57			168	168
482+35	485+60	Rt.	325	325
480+00	485+70	Rt.	570	570
487+18	490+00	Lt.	282	282
487+28	490+00	Lt.	272	272
487+32			168	168
487+58	490+00	Rt.	242	242
Total			2,555	1,948

UNDERDRAINS								
REF. NO.	STATION	SIDE	I-2	I-3	I-4	I-5		
	From	To	Cl. "B" St. Sew. Und. Pvt. M 6.4(b)	Outlet Pipe Under Drains	Pipe Under Drains	90° Tee	Increase	
			8"	8"	6"	6"	8" x 8" x 6" x 8"	
			Lin. Ft.			Each		
1-U	480+00	485+20	Lt.		516	1		
2-U	480+00	485+23	Lt.		523			
3-U	480+00	485+50	Rt.		550			
4-U	480+00	485+55	Rt.		551	1		
5-U	485+23		Lt.	39	10		1	
6-U	485+55		Rt.	39	10		1	
7-U	487+32	490+00	Lt.		268			
8-U	487+37	490+00	Lt.		263			
9-U	487+63	490+00	Rt.		237			
10-U	487+68	490+00	Rt.		232			
Total				78	20	3,140	2	2

Note:
See sheet 230 for Approach Slab Erosion Control Detail and Quantities.

For Sewer Profiles See Sheets 265 & 270

Excavation	1,066	Cu. Yds.
Embankment	207,956	Cu. Yds.
Embankment + 18%	245,388	Cu. Yds.

Rev. 9-6-61

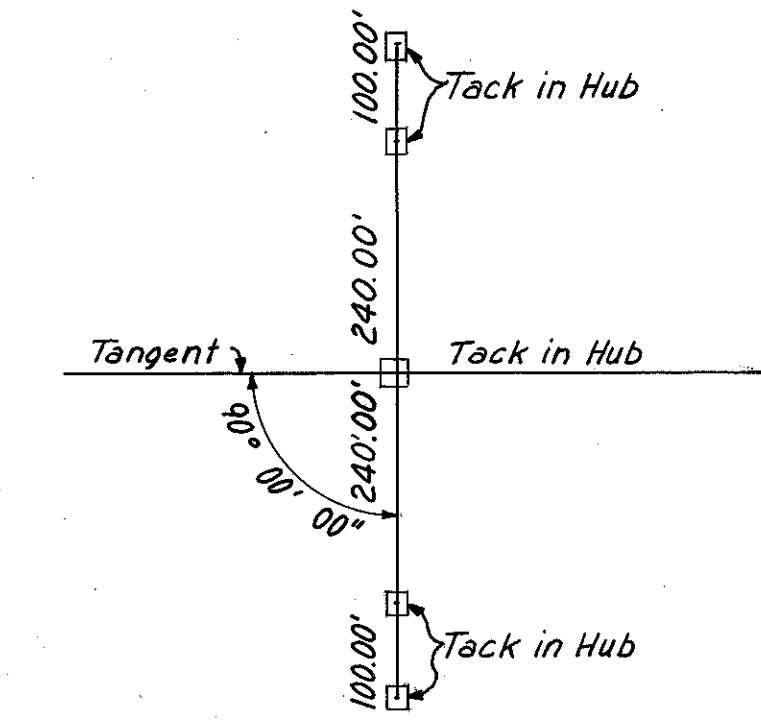
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 CHECKED BY DATE
 NOTE BOOK NO. OF WAY CHECKED

PROFILE SURVEYED BY DATE
 CHECKED BY DATE
 NOTE BOOK NO. OF WAY CHECKED
 STRUCTURE NOTATIONS OHIO

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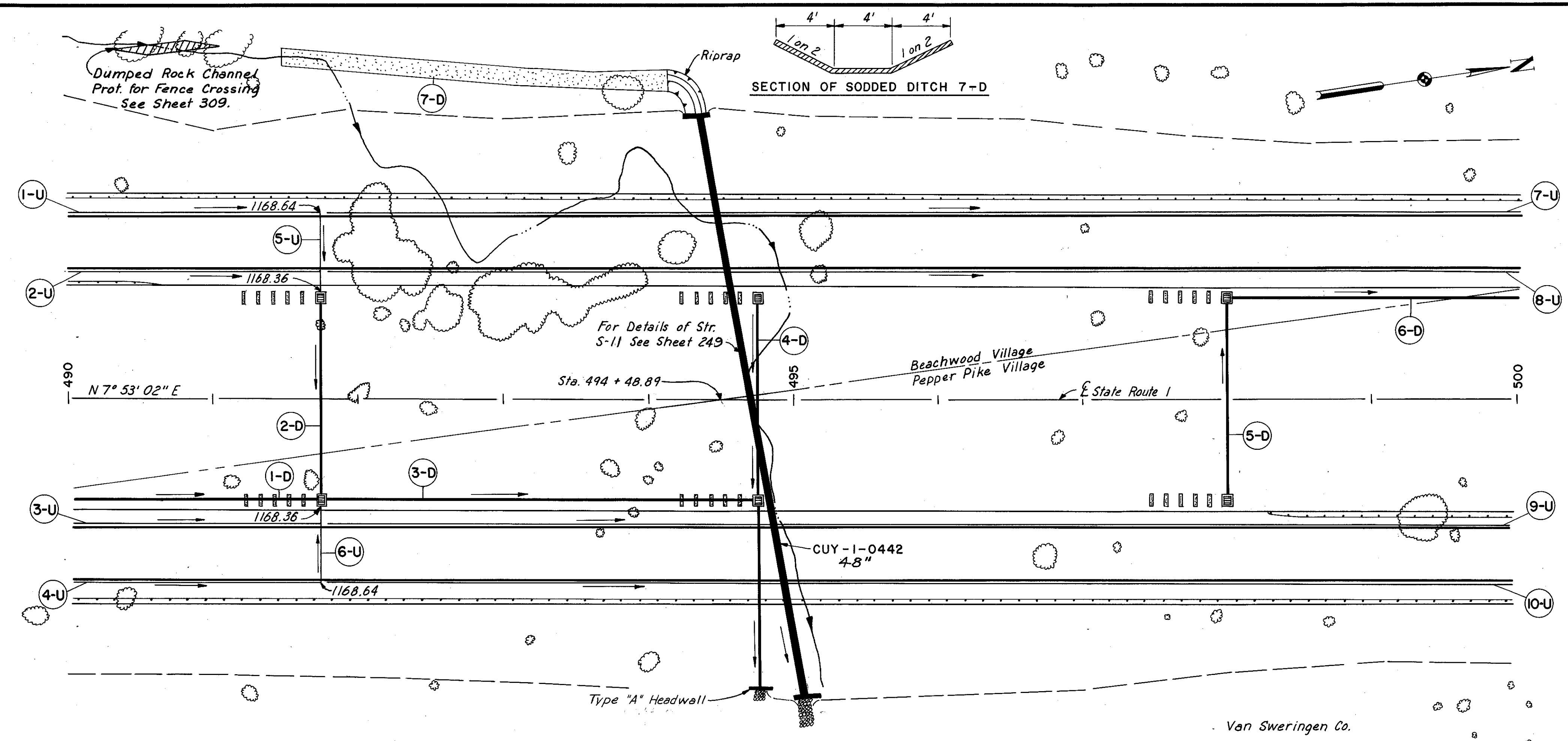
REFERENCE POINT
P.O.T. Sta. 497+90.93



BENCH MARK 137
1/2" Iron Pin
150' Lt. Sta. 497+55
Elev. 1144.001

BENCH MARK 137-A
Lag Bolt 5" Wild Cherry Stump
224' Lt. Sta. 497+53
Elev. 1144.297

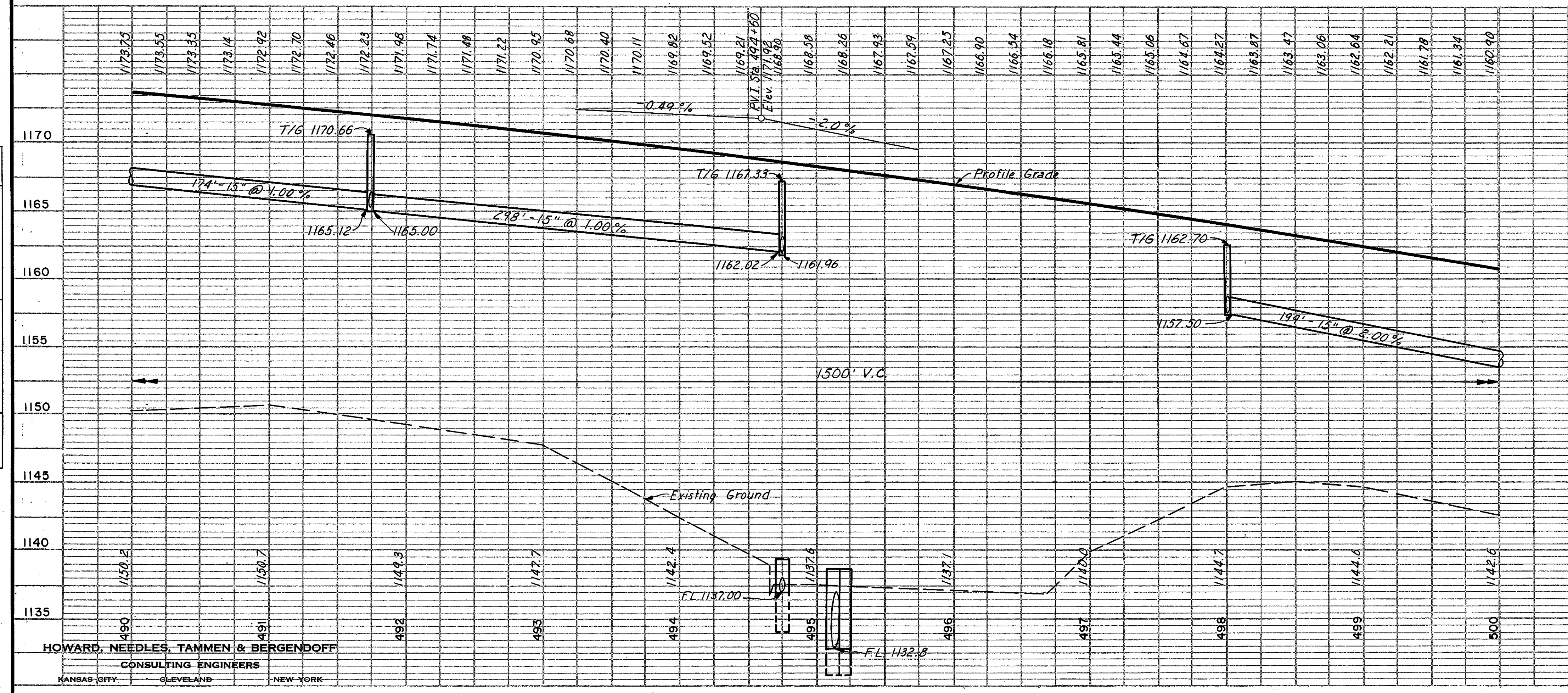
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SURVEYED BY: DATE: 4-19-59
PLOTTED BY: L.V.M. 4/21/59
CHECKED BY: R.W.H. 4/21/59
NOTE BOOK NO. OF WAY CHECKED



REF. NO.	STATION	SIDE	DRAINAGE														
			I-2		I-5		I-8		S-1		S-4		E-2		L-10		
			Cl. "B" St. Sew. 15"	Outlet Pipe Und. Pvt. 15"	25° Bend M6.4(c) 15"	Std. No. 5 C. B.	Dumped Rock Channel Prof. Cl. "C"	Conc. for Struc. Cl. "C"	Reinf. Steel Lbs.	Exc. for Struc. Cu Yds.	Sodding Sq. Yds.						
1-D	490+00	491+75	Rt.	174													
2-D	491+75				140			2									24
3-D	491+75	494+75	Rt.	298													
4-D	494+75				217	48	2	2	1.5	3.25	146	11					26
5-D	498+00				140			2									24
6-D	498+00	500+00	Lt.	199													
7-D	491+50	493+50	Lt.														267
Total				671	497	48	2	6	1.5	3.25	146	11					341

Use 2 3.3

PROFILE
SURV. BY: DATE: 4-19-59
PLOTTED BY: L.V.M. 4/21/59
CHECKED BY: R.W.H. 4/21/59
NOTE BOOK NO. STRUCTURE NOTATIONS CHYKD



REF. NO.	STATION	SIDE	UNDERDRAINS							
			I-2		I-3		I-4	I-5		
			Cl. "B" St. Sew. Und. Pvt. 8"	Outlet Pipe Under Drains 6"	Pipe Under Drains 6"	90° Bend 6"	Tee 8"x8"x6"	Increase 6"x8"		
1-U	490+00	491+75	Lt.			171		1		
2-U	490+00	491+75	Lt.			175				
3-U	490+00	491+75	Rt.			175				
4-U	490+00	491+75	Rt.			171		1		
5-U	491+75		Lt.	38	10			1	1	
6-U	491+75		Rt.	38	10			1	1	
7-U	491+79	500+00	Lt.			821				
8-U	491+79	500+00	Lt.			821				
9-U	491+79	500+00	Rt.			821				
10-U	491+79	500+00	Rt.			821				
Total				76	20	3,976	2	2	2	

GUARDRAIL				Normal portion	No Federal Funds
STATION	SIDE	I-15	Steel Beam Type (Depth)		
From	To		Lin. Ft.		
490+00	500+00	Lt.	1000	1000	
490+00	490+58	Lt.	58		58
498+30	500+00	Rt.	170		170
490+00	500+00	Rt.	1000	1000	
Total				2,228	2,228

For Sewer Profiles See Sheet 266

Excavation	412	Cu. Yds.
Embankment	293,837	Cu. Yds.
Embankment + 18%	346,728	Cu. Yds.

Rev. 9-6-61

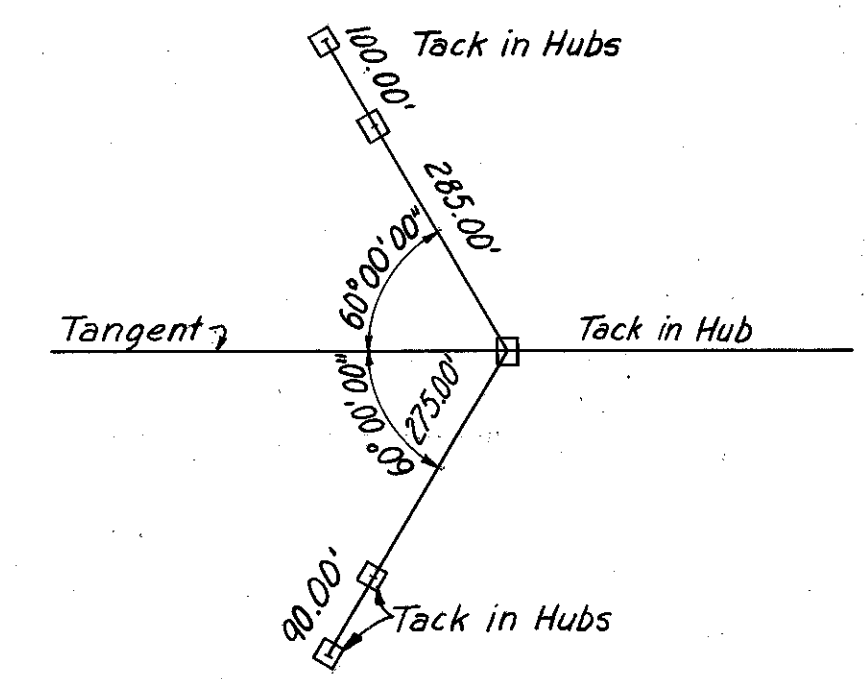
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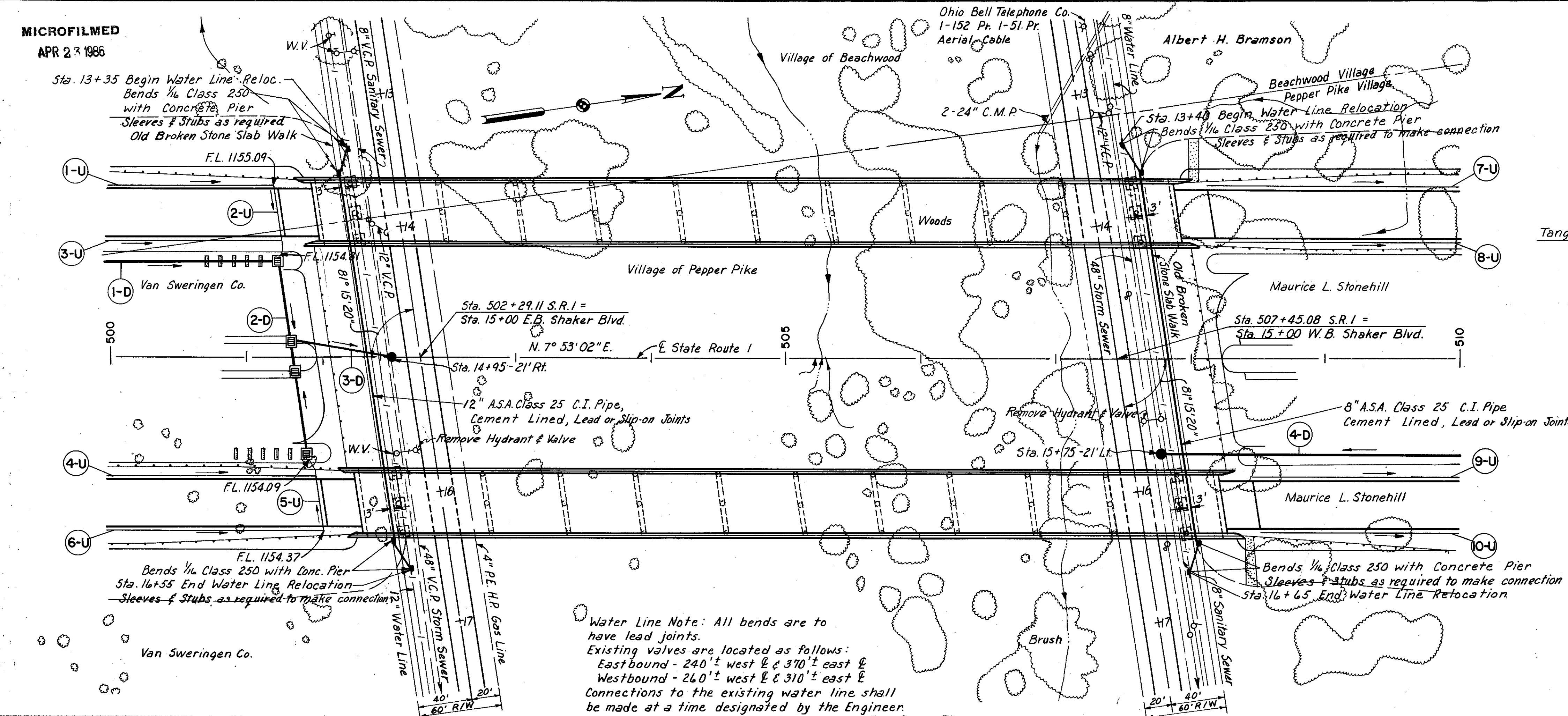
- C.R.G.S. BENCH MARK 553
Mon. S. Side E.B. Shaker Blvd.
112' E. Sta. 502+29
Elev. 1135.62
- BENCH MARK 138
R.R. Spike 10" Ash Tree
170' Lt. Sta. 502+00
Elev. 1140.171
- BENCH MARK 138-A
Lag Bolt S.E. Root 14" Elm
280' Lt. Sta. 501+57
S. Side E.B. Shaker Blvd.
Elev. 1140.557
- BENCH MARK 139
R.R. Spike 20" Elm Tree
200' Lt. Sta. 507+40
Elev. 1130.55

REFERENCE POINT
P.O.T. Sta. 507+23.79



PLAN
DATE: 2-28-86
BY: ECF
CHECKED: ALM
NO. 10-15-83

PROFILE
DATE: 2-28-86
BY: ECF
CHECKED: B.M. NOTED
STRUCTURE NOTATION: CHYG



Water Line Note: All bends are to have lead joints.
Existing valves are located as follows:
Eastbound - 240'± west & 370'± east &
Westbound - 260'± west & 310'± east &
Connections to the existing water line shall be made at a time designated by the Engineer.
Removed Hydrants & Valves are to be delivered to Mill of Pepper Pike

REF NO.	STATION	SIDE	DRAINAGE								
			I-2		I-8		L-10				
			Cl. "B" St. Sew.	Cl. "B" St. Sew.	Outlet Pipe Und. Pvt. M6.4(C)	Std. Sew. M6.6(C)		Std. C.B.	Special No. 1 M.H.	Std. No. 6 C.B.	Sodding
	From	To	Lin. Ft.		Each		Sq. Yds.				
1-D	500+00	501+23	Lt.	122							
2-D	501+35										
3-D	501+35										
4-D	507+78	510+00	Rt.			224					
Total				122	138	72	224	2	2	2	24

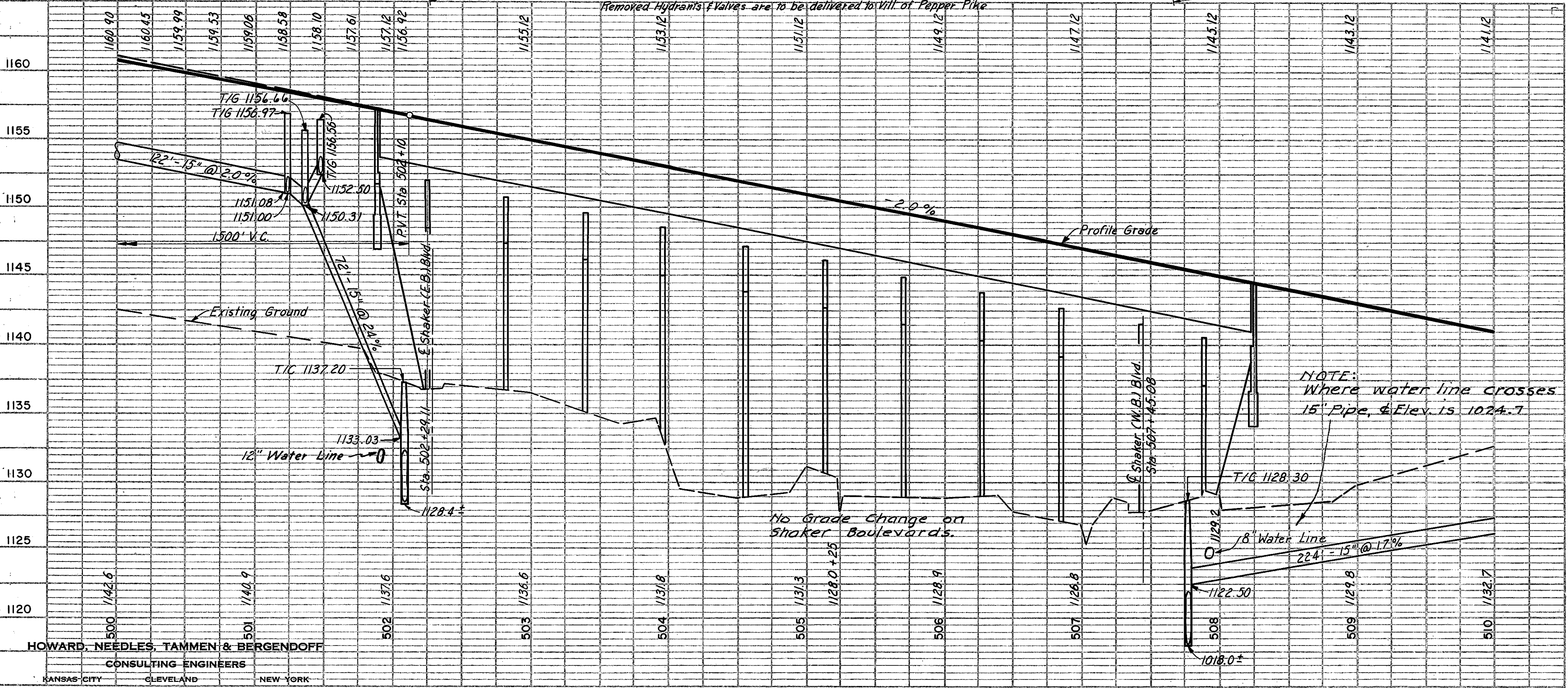
REF NO.	STATION	SIDE	UNDERDRAIN								
			I-2		I-3		I-4		I-5		
			Cl. "B" St. Sew.	Outlet Pipe Und. Pvt. M6.4(A)	Pipe Under Drains	90° Bend	30° Bend	Tea	Increase		
	From	To	Lin. Ft.		Each						
1-U	500+00	501+23	Lt.			119	1				
2-U	501+23		Lt.	39	10			1	1	1	
3-U	500+00	501+27	Lt.			127					
4-U	500+00	501+55	Rt.			155					
5-U	501+50		Rt.	39	10			1	1	1	
6-U	500+00	501+60	Rt.			156	1				
7-U	508+15	510+00	Lt.			185					
8-U	508+20	510+00	Lt.			180					
9-U	508+50	510+00	Rt.			150					
10-U	508+55	510+00	Rt.			145					
Total				78	20	1,217	2	2	2	2	2

GUARDRAIL			
STATION	SIDE	I-15	
		Steel Beam Type (Depth)	
From	To	Lin. Ft.	
500+00	501+35	Lt.	135
501+63			168
500+00	501+70	Rt.	170
500+00	501+80	Rt.	180
508+00	510+00	Lt.	200
508+05	510+00	Lt.	195
508+13			168
508+40	509+90	Rt.	150
Total			1,366

PROPOSED STRUCTURES
TYPE: Continuous steel beam with reinforced concrete deck and substructure.
SPANS: 35'-0", 10@38'-0", 35'-0"
ROADWAY: 2@48'-0" F/F of Parspets.
LOAD FREQUENCY: CF 2000 (S7) Adequate for AASHO alternate loading
SKEW: 8° 44' 40" R.F.
SURFACE COURSE: 1" Monolithic concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: TANGENT
See sheets 288-292

Note:
For Approach Slab Erosion Control detail and quantities, see sheet 230.
For Sewer Profiles See Sheet 267.

Normal Participation = 996
No Federal Funds = 370

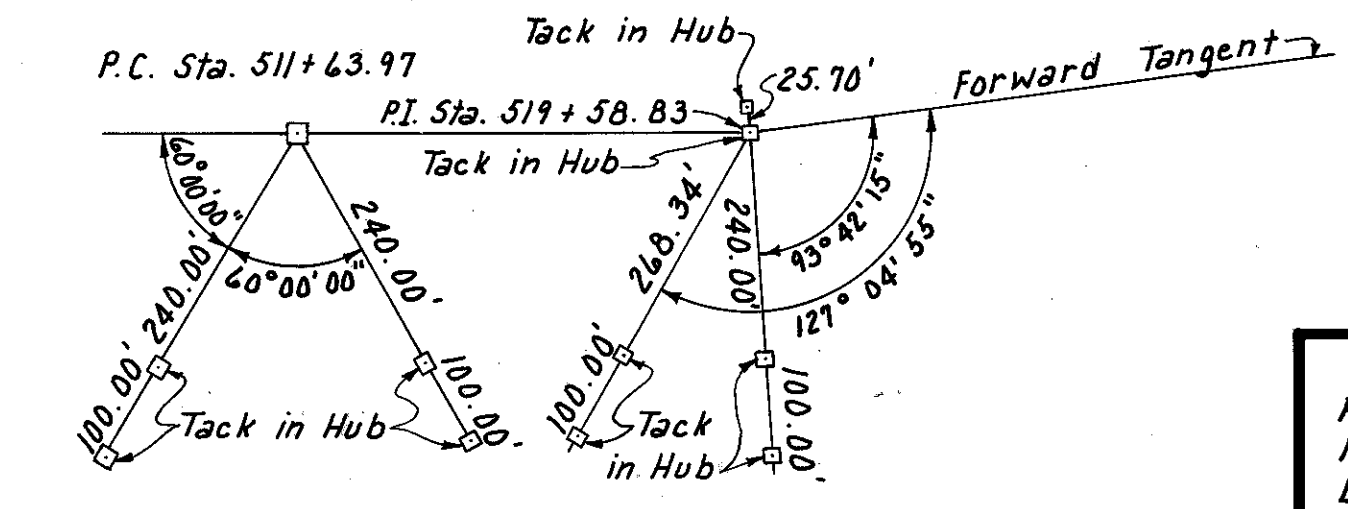


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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

Rev. 9-6-61

CUYAHOGA COUNTY
CUY-1-2.20

REFERENCE POINT
P.I. Sta. 519 + 58.83

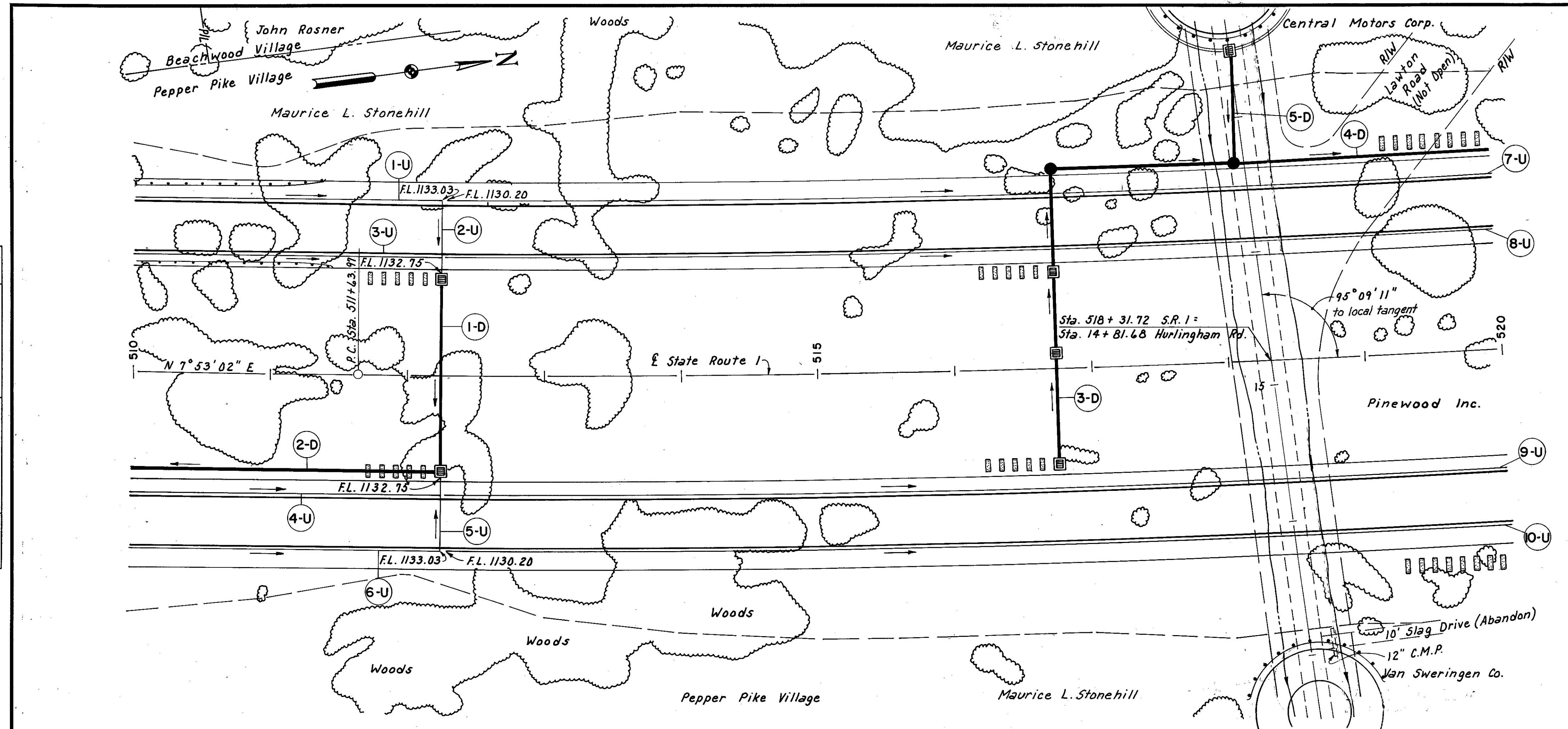


CURVE DATA
 P.I. Sta. 519 + 58.83
 $\Delta = 7^\circ 24' 30''$
 $D = 0^\circ 28' 00''$
 $R = 12,277.67'$
 $T = 794.86'$
 $L = 1587.50'$
 $E = 25.70'$

BENCH MARK 140
R.R. Spike 40" Elm Tree
157' Rt. Sta. 518 + 68
Elev. 1140.15

BENCH MARK 140-A
Lag Bolt E. Root 12" Elm
200' Lt. Sta. 518 + 84
N. Side Hurlingham Road
Elev. 1143.16

PLAN
 DATE: 7/17/59
 BY: [Signature]
 CHECKED: [Signature]
 NO. OF WAY CHECKED: []



REF. NO.	STATION	SIDE	DRAINAGE								
			I-2				I-8				L-10
			St. Sew. M-6.6(k) 15"	Cl. B St. Sew. 18"	Cl. B St. Sew. 24"	Cl. B St. Sew. 18"	Outlet Pipe No. 2-2A 15"	Std. C.B. 15"	Std. C.B. 15"	Std. M.H. 15"	
From	To	Lin. Ft.	Each	Each	Each	Each	Each	Sq. Yds.			
1-D	512 + 25			140		2			24		
2-D	510 + 00	512 + 25 Rt.	223								
3-D	516 + 75			138 x 73		2	1	1	24		
4-D	516 + 75	520 + 00 Lt.		131 188							
5-D	518 + 10				83	1					
Total			223	131 188	278 x 73	83	1	4 2	1 48		

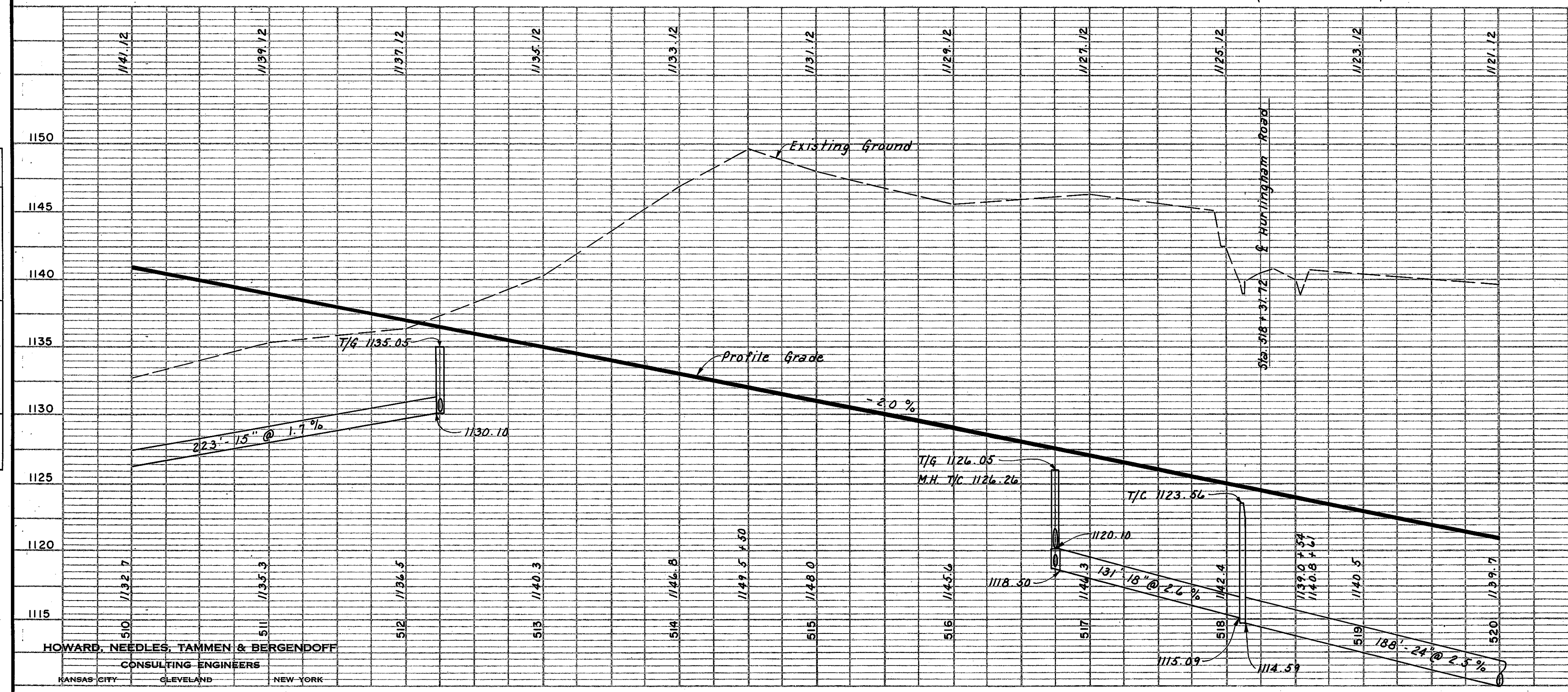
STATION	SIDE	I-15	
		Steel Beam	Type (Deep)
		Lin. Ft.	
From	To		
510 + 00	511 + 40	Lt.	140
510 + 00	511 + 45	Lt.	145
Total			285

Normal Participation = 140
No Federal Funds = 145

* No Federal Funds

REF. NO.	STATION	SIDE	UNDERDRAINS				
			I-2	I-3	I-4	I-5	
			Cl. B St. Sew. 8"	Outlet Pipe 8"	Pipe Under Drains 6"	90° Bend 6"	Tee 6" x 8" x 6"
From	To	Lin. Ft.	Each	Each	Each	Each	
1-U	510 + 00	512 + 25	Lt.	221	1		
2-U	512 + 25		Lt.	38	10		1 1
3-U	510 + 00	512 + 25	Lt.		225		
4-U	510 + 00	512 + 25	Rt.		225		
5-U	512 + 25		Rt.	38	10		1 1
6-U	510 + 00	512 + 25	Rt.		221	1	
7-U	512 + 29	520 + 00	Lt.		771		
8-U	512 + 29	520 + 00	Lt.		771		
9-U	512 + 29	520 + 00	Rt.		771		
10-U	512 + 29	520 + 00	Rt.		771		
Total				76	20 3,976	2	2 2

* I-4 Underdrain (Deep)



PROFILE
 DATE: 7/17/59
 BY: [Signature]
 CHECKED: [Signature]
 NO. OF WAY CHECKED: []

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

For Sewer Profiles See Sheet 267

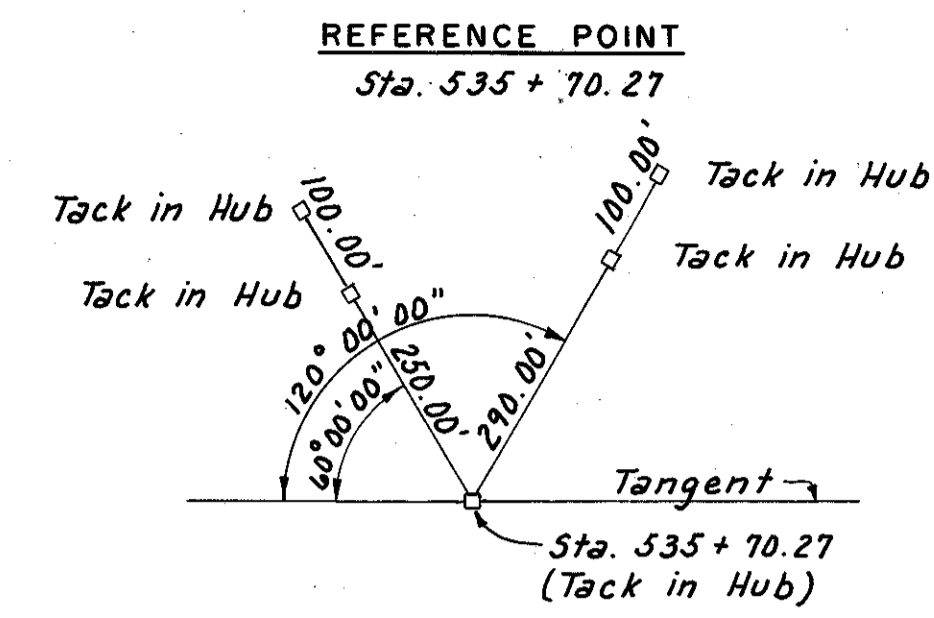
Excavation	166,057	Cu. Yds.
Embankment	7,041	Cu. Yds.
Embankment + 18%	8,308	Cu. Yds.

Rev. 3-G-G/

Note: Proposed typical section of adjoining pavement same as normal pavement section on sheet 4.

BENCH MARK 141-B
Lag bolt and washer in N.E. root 24" Poplar 273' West of Sta. 531+47. 95' South of E. E. B. Fairmount Blvd. Elev. 1126.21

PROPOSED STRUCTURES
TYPE: Continuous steel beam with reinforced concrete deck and substructure.
SPANS: 59'-0", 2@ 72'-0", 2@ 71'-0" & 51'-0"
ROADWAY: Twin 28.0' roadway with one 2'-2" safety curb and one 4'-2" sidewalk.
LOAD FREQUENCY: CF 400
SKEW: None
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: Tangent
See Sheets 293-296



END PROJECT
STA. 540+00
S.L.M. 5.28

Marker will be furnished and erected on the left by State forces prior to acceptance of this improvement.

REF. NO.	STATION	SIDE	DRAINAGE													
			I-2					I-8					L-10			
			Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.	Cl. "B" St. Sew.				
	From	To	15"	30"	42"	54"	18"	36"	30"	Std. No. 2-3 C.B.	Std. No. 5 C.B.	Std. No. 1 M.H.	Std. No. 2 M.H.	Std. No. 8 W/O Drop	Soaking	
			Lin. Ft.										Each	Sq. Yds.		
1-D	530+00	531+25	Lt.			123										
2-D	531+05	531+25	Rt.	21												
3-D	531+25	531+25	Lt.			20			298	80	1	1	1	1		
4-D	531+25	531+40	Rt.				68								12	
5-D	531+25	531+85	Lt.				90								12	
6-D	531+25	535+00	Lt.				371									
7-D	535+00	535+00	Lt.				220				2		1		24	
8-D	535+00	538+00	Lt.				296									
9-D	538+00	538+00	Lt.	7				x296			4		1		91	
10-D	538+00	540+00	Lt.				198									
Total				28	20	123	865	378	x296	298	80	1	8	1	3	139

REF. NO.	STATION	SIDE	UNDERDRAINS			
			I-3	I-4	I-5	
			Outlet Pipe 6"	Pipe Under Drains 6"	60° Bend 6"	
	From	To	Lin. Ft.	Each		
1-U*	530+00	538+00	Lt.	10	794	1
2-U	530+00	538+00	Lt.	10	794	1
3-U	530+00	538+00	Rt.	10	794	1
4-U*	530+00	538+00	Rt.	10	802	1
5-U*	537+95	540+00	Lt.		205	
6-U	537+95	540+00	Lt.		205	
7-U	537+95	540+00	Rt.		205	
8-U*	537+90	540+00	Rt.		210	
Total				40	4,009	4

* I-4 Underdrain (Deep)

STATION	SIDE	GUARDRAIL	
		I-15	
		Steel Beam Type (Deep)	Lin. Ft.
From	To		
531+32.5	533+20	Rt.	187.5
531+32.5	533+20	Rt.	187.5
532+15	534+02.5	Lt.	187.5
532+15	534+02.5	Lt.	187.5
Total			750

Typical section of adjoining pavement same as shown on Sheet 4.

For Sewer Profiles See Sheet 269

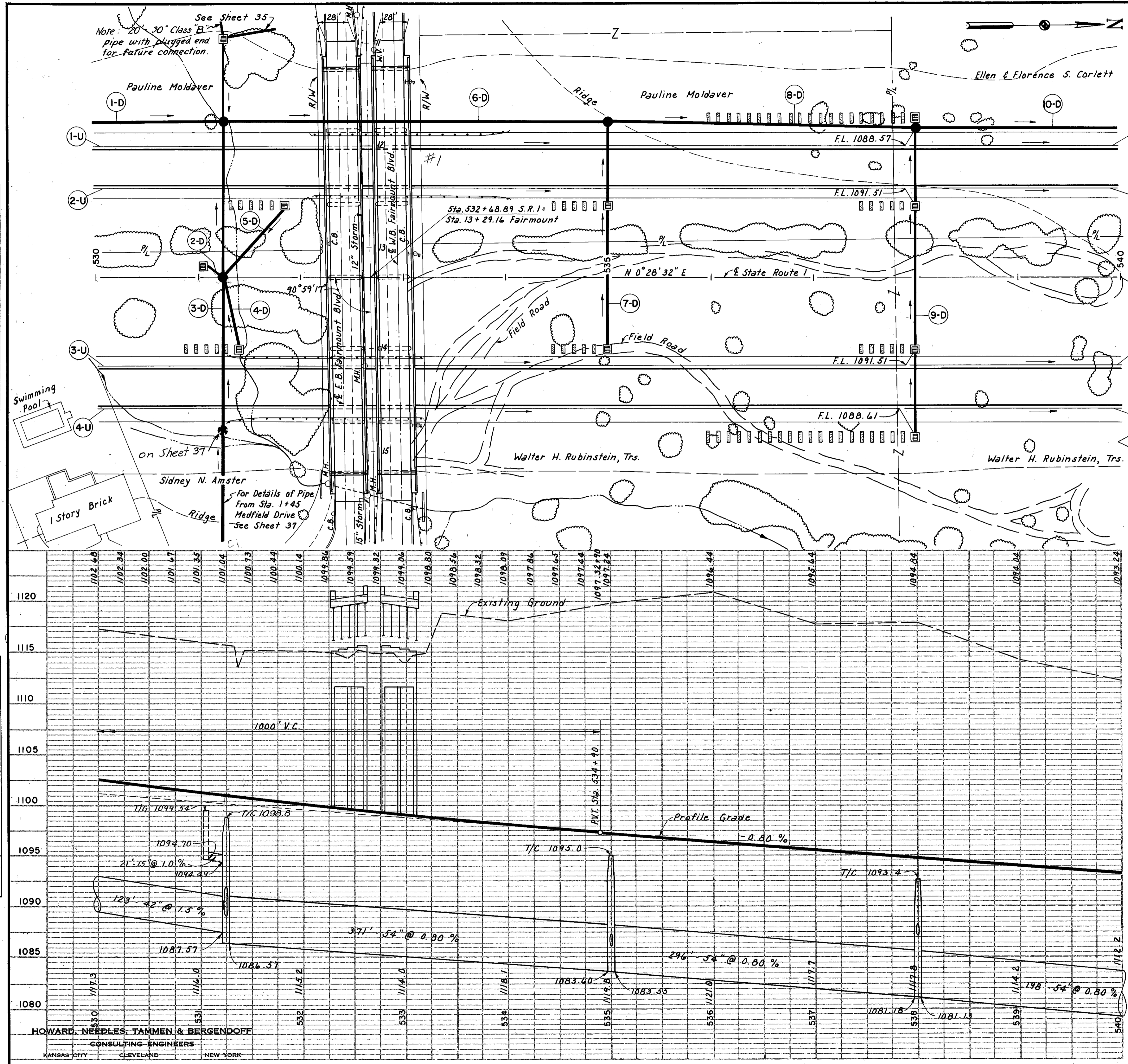
Excavation	269,058	Cu. Yds.
Embankment	0	Cu. Yds.
Embankment + 18%	0	Cu. Yds.

Note: Earthwork includes slope at end of project.

Rev. 2-6-61

DATE: 2/24/59
BY: J.E.F.
SURVEYED: J.E.F.
NOTED: J.E.F.
CHECKED: J.E.F.
RT. OF WAY CHECKED: J.E.F.

DATE: 2/24/59
BY: J.E.F.
SURVEYED: J.E.F.
NOTED: J.E.F.
CHECKED: J.E.F.
STRUCTURE NOTATIONS CHKD: J.E.F.

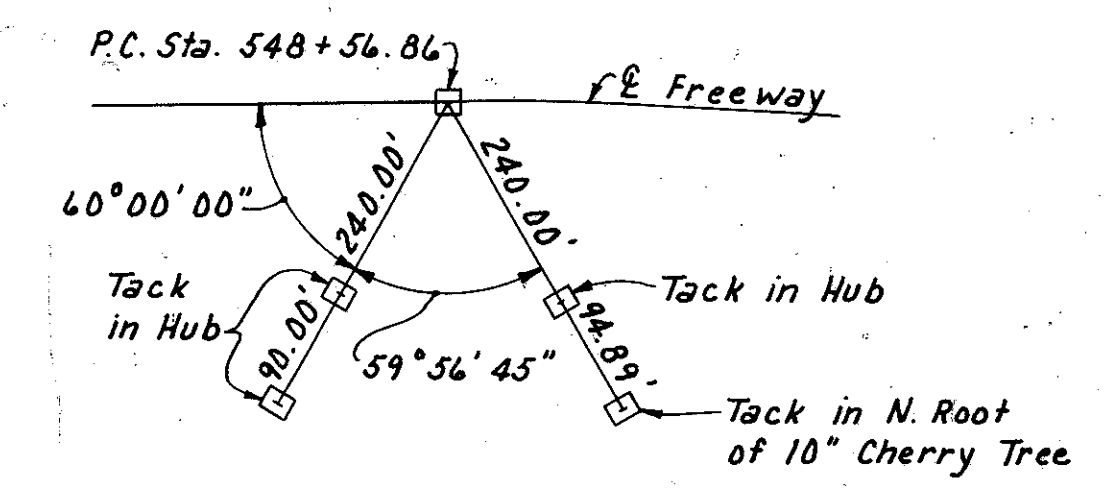


CUYAHOGA COUNTY
CUI-1-2.20

NOTE: THIS SHEET IS NOT A PART OF THE CONSTRUCTION PLANS BUT IS FOR INFORMATION ONLY.

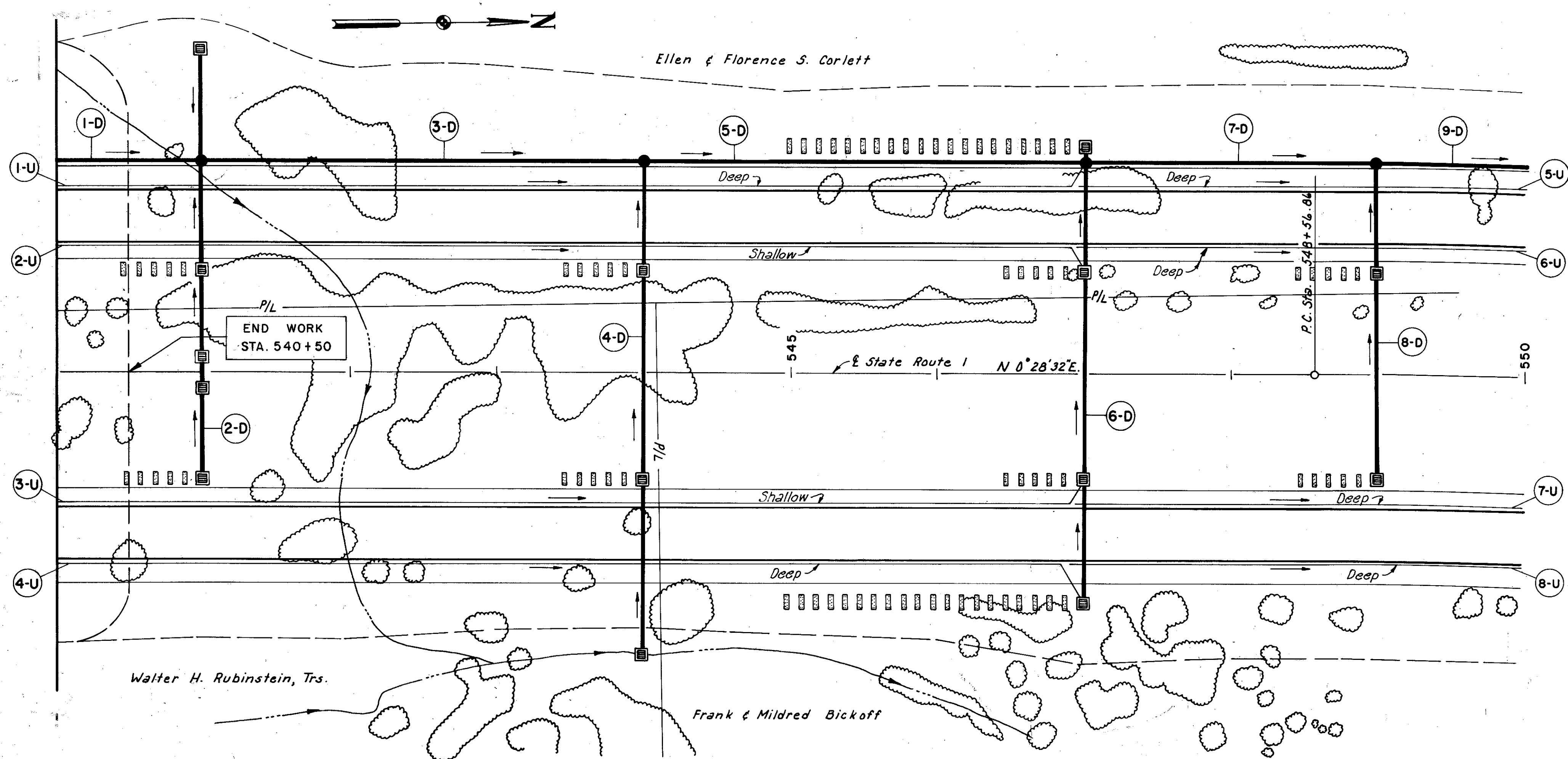
CURVE DATA
 P.I. Sta. 582+45.53
 $\Delta = 61^{\circ} 12' 11''$
 $D = 1^{\circ} 00' 00''$
 $R = 5729.58'$
 $T = 3388.67'$
 $L = 6120.31'$
 $E = 927.08'$

REFERENCE POINT
 P.C. Sta. 548+56.86



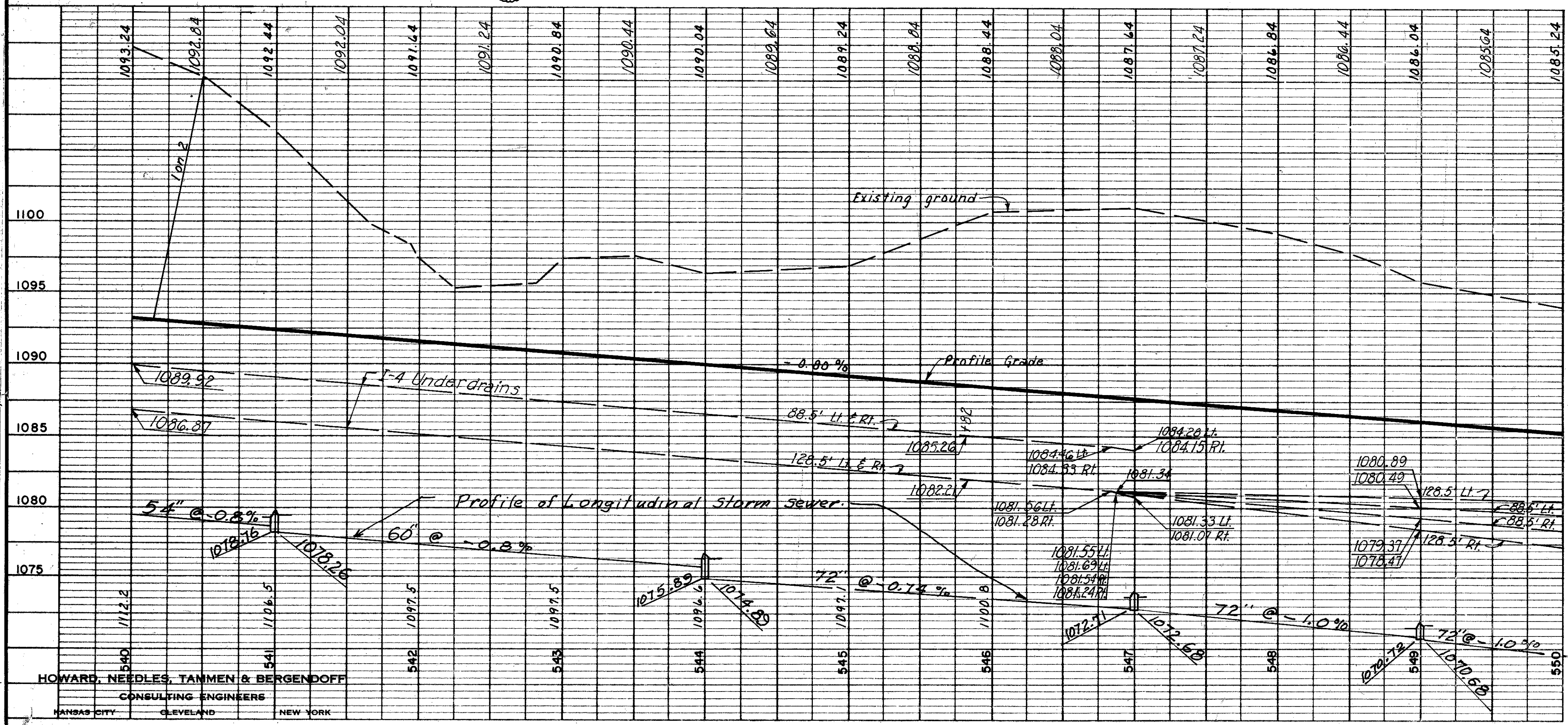
BENCH MARK 142-B
 Lag Bolt W. Root 7" Elm
 250' Rt. Sta. 541+40
 Elev. 1094.381

PLAN
 DATE: 8-15-59
 BY: E.C.F. D.M.V.
 CHECKED: E.C.F. D.M.V.
 NO. 101



Ref. No.	Station	Side of ϵ	DRAINAGE										I-8 Std. No. 8 Catch Basin				
			I-2 Storm Sewer														
			Class "B"					Class "B" Under Pavement									
From	To	15"	18"	24"	54"	60"	72"	15"	18"	24"	24"	24"	Each				
1-D	540+00	541+00	Lt.														
2-U	541+00	544+00	Lt.														
3-D	541+00	544+00	Lt.														
4-U	544+00	547+00	Lt.														
5-D	544+00	547+00	Lt.														
6-U	547+00	549+00	Lt.														
7-D	547+00	549+00	Lt.														
8-U	549+00	550+00	Lt.														
9-D	549+00	550+00	Lt.														
Total				5	20	46	98	296	296	196	353	343	73	213	73	2	

PROFILE
 DATE: 8-15-59
 BY: E.C.F. D.M.V.
 CHECKED: E.C.F. D.M.V.
 NO. 101



Ref. No.	Station	Side of ϵ	UNDERDRAINS							
			I-4		I-5					
			Pipe Outlets Shallow	Pipe Outlets Deep	Pipe Outlets 8"	Pipe Outlets 6" x 60"	Pipe Specials			
1-U	540+00	547+00	Lt.							
2-U	540+00	547+00	Lt.	10	694	694				
3-U	540+00	547+00	Rt.	10	694					
4-U	540+00	547+00	Rt.			702	10			
5-U	546+95	550+00	Lt.			305				
6-U	546+95	550+00	Lt.			305				
7-U	546+95	550+00	Rt.			305				
8-U	546+95	550+00	Rt.			710				
Total				20	1388	3021	20	4		

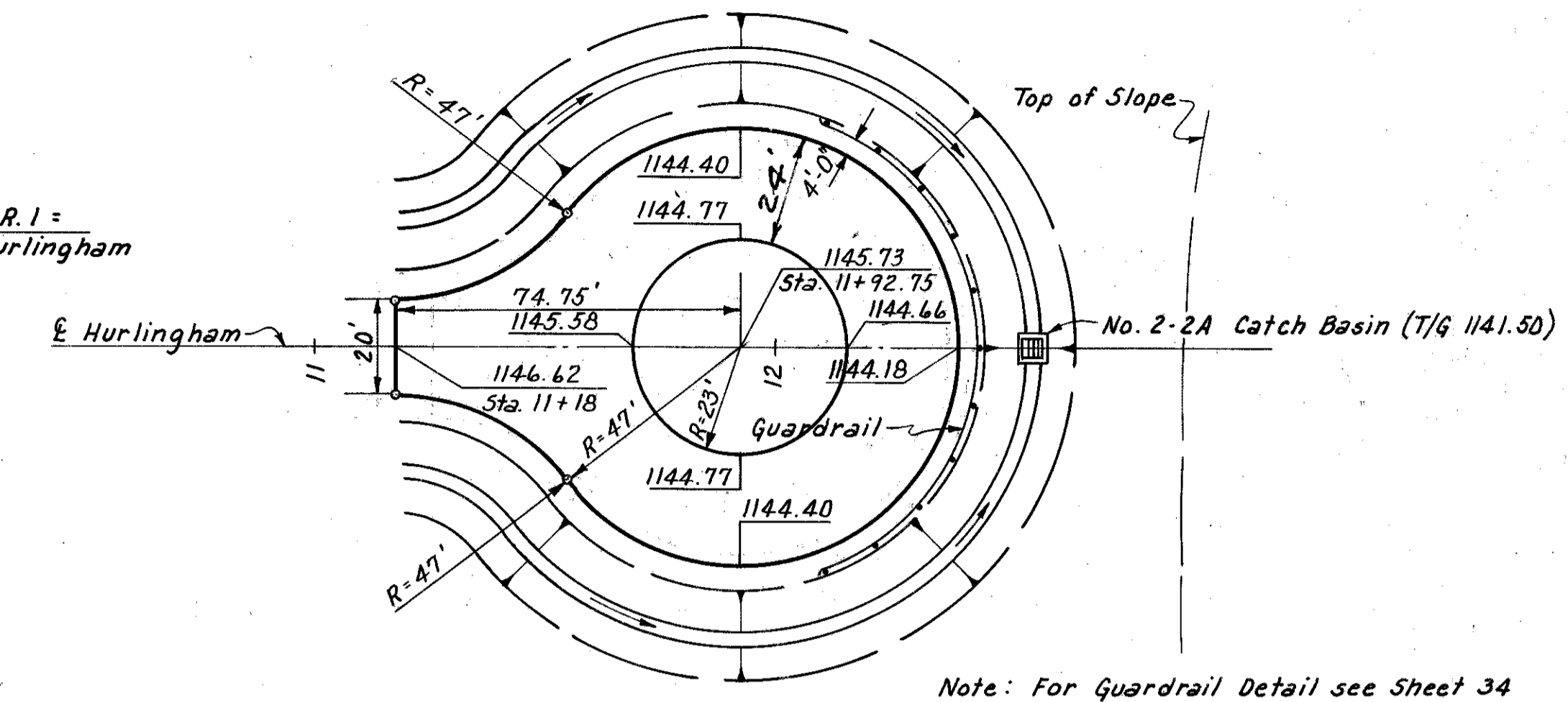
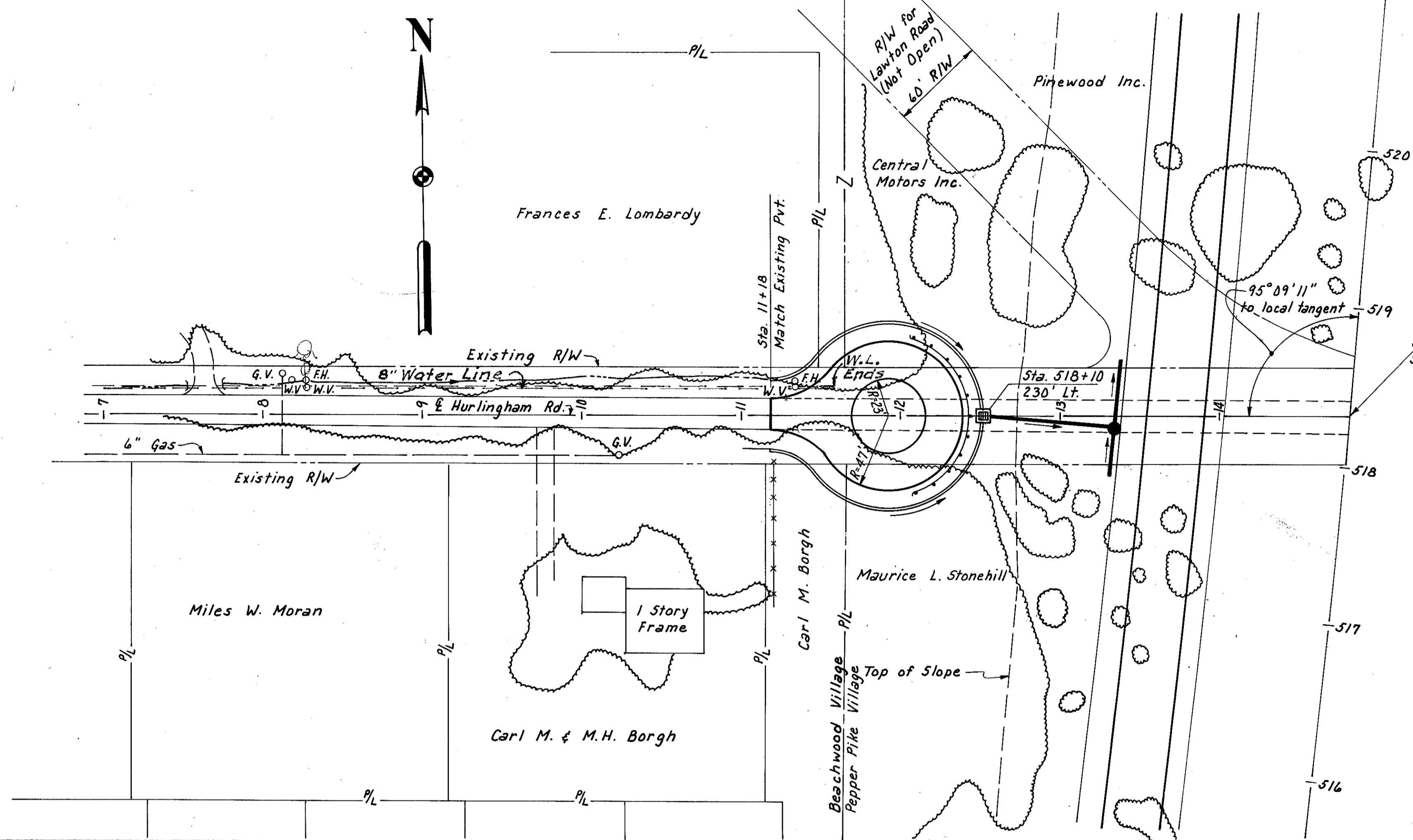
Ref. No.	Station	Side of ϵ	DRAINAGE				
			I-8			L-10	
			Std. No. 2.3 C.B. Mod. II	Std. No. 5 C.B.	Std. No. 2 M.H. W/O Drop		Sodding
2-D	541+00	Lt.	1			1	62
4-D	544+00	Lt.	1	2	1	24	
6-D	547+00	Lt.	4		1	91	
8-D	549+00	Lt.	2		1	24	
Total			2	10	4	201	

Excavation 164,387 Cu. Yds.
 Embankment 0 Cu. Yds.
 Embankment + 18% 0 Cu. Yds.

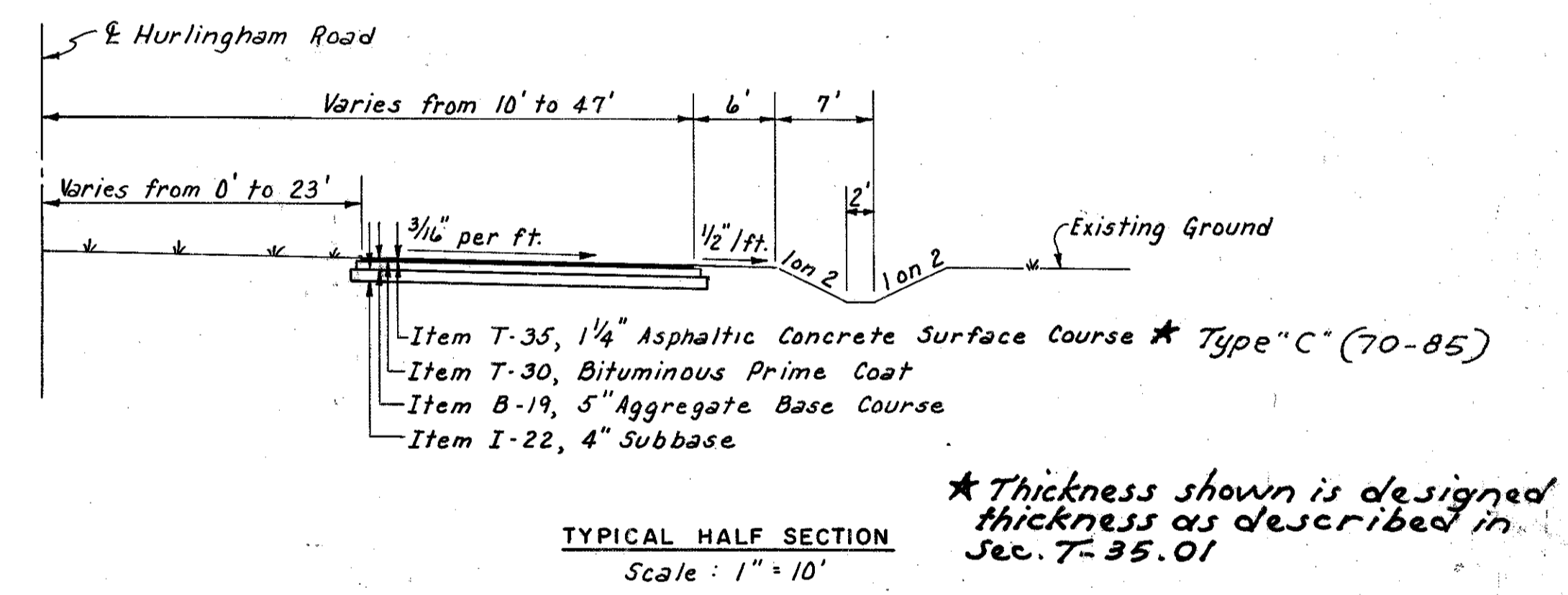
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 KANSAS CITY CLEVELAND NEW YORK

CUYAHOGA COUNTY
CUI-1-2.20

FREEWAY CURVE DATA
 P.I. = Sta. 519 + 58.83
 Δ = 7° 24' 30"
 D = 0° 28' 00"
 R = 12,277.67'
 T = 794.86'
 L = 1,587.50'
 E = 25.70'



PAVEMENT DETAILS
Scale: 1" = 30'



TYPICAL HALF SECTION
Scale: 1" = 10'

* Thickness shown is designed thickness as described in Sec. 7-35.01

GUARD RAIL		
STATION	SIDE	I-15
		Steel Beam Standard Type (Deep)
		Lin. Ft.
12+10.00	Lt.-Rt.	125.0

HURLINGHAM ROAD ESTIMATED QUANTITIES						
STATION	E-1	B-19	I-22	T-30	T-35	
						Roadway Excavation
From	To	Cu. Yds.			Gals.	Cu. Yds.
11+18	12+39.75	380	100	80	230	23

E-1 Compacted Subgrade 662 Sq. Yds.

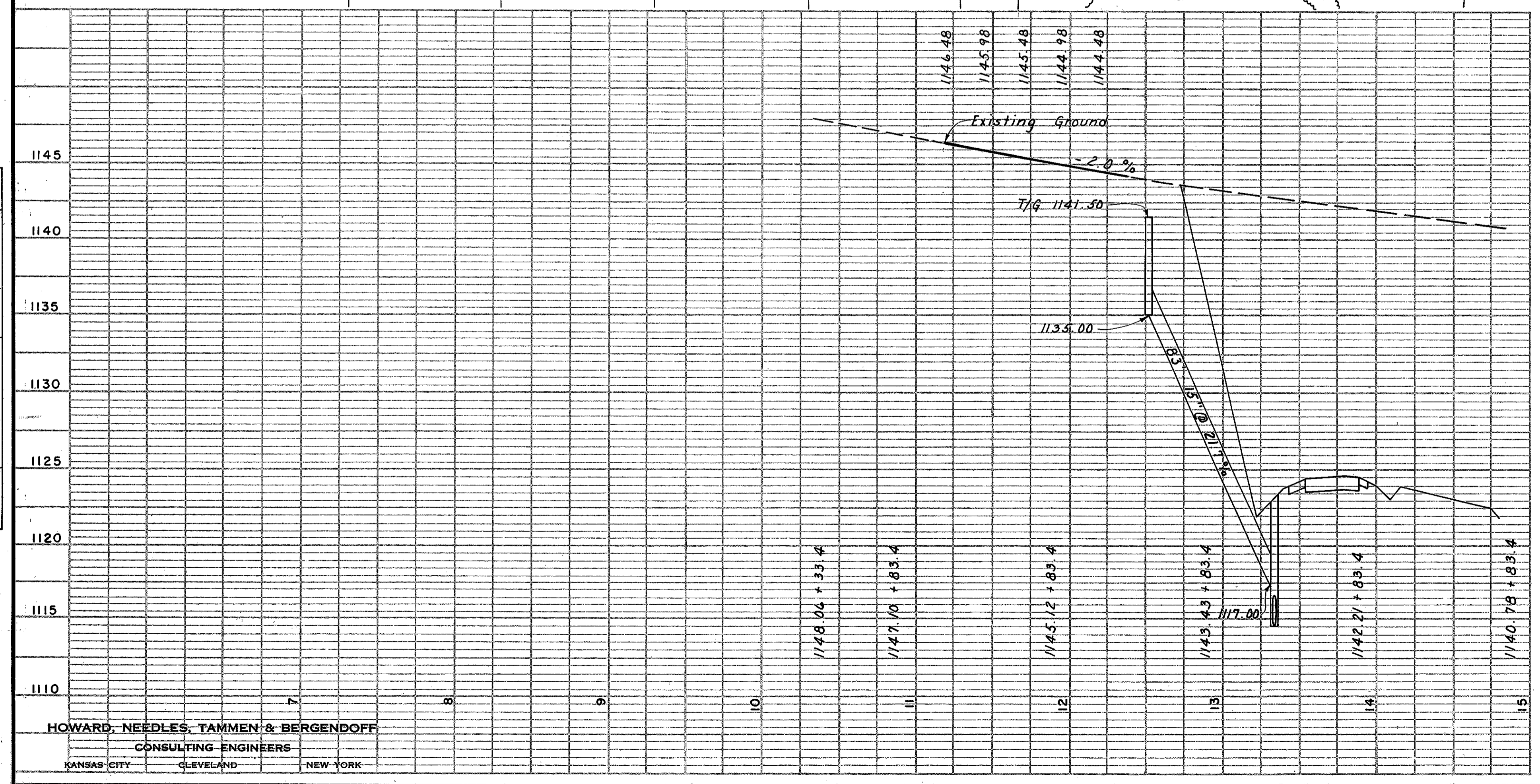
Note: The drainage quantities are shown on Sheet 29.

Note: Turnarounds for Hurlingham Rd. shall be constructed prior to opening the freeway cut.

Excavation		Cu. Yds.
Embankment	See Table	Cu. Yds.
Embankment +		Cu. Yds.

PLAN
 DATE: 5-23-53
 BY: L.V.V./D.R.K.
 CHECKED: D.R.K.
 NOTE: BOARDS FOR WAY CHECKS RT. OF WAY CHECKED

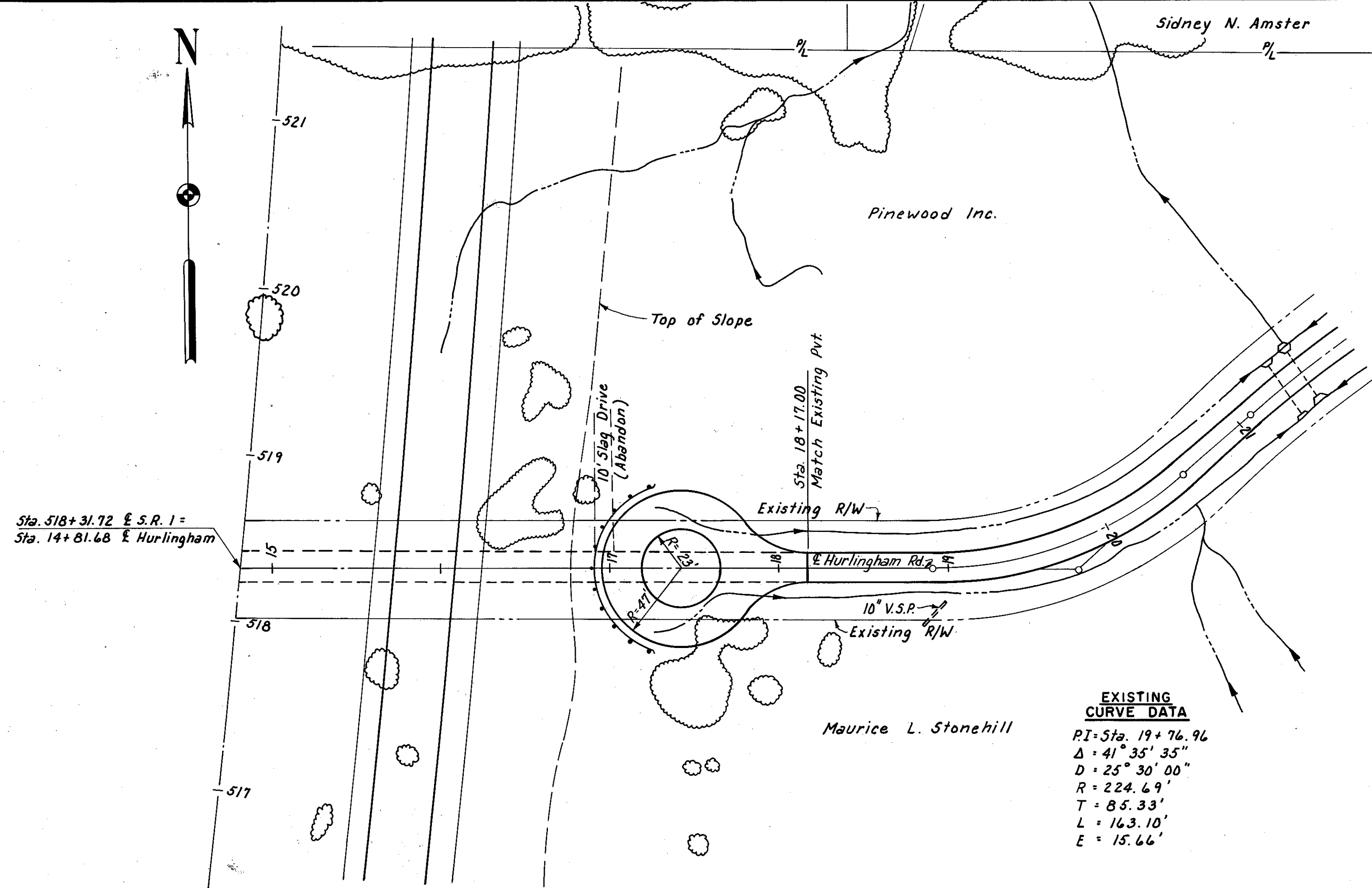
PROFILE
 DATE: 5-23-53
 BY: L.V.V./D.R.K.
 CHECKED: D.R.K.
 NOTE: BOARDS FOR WAY CHECKS STRUCTURE NOTAS OHIO



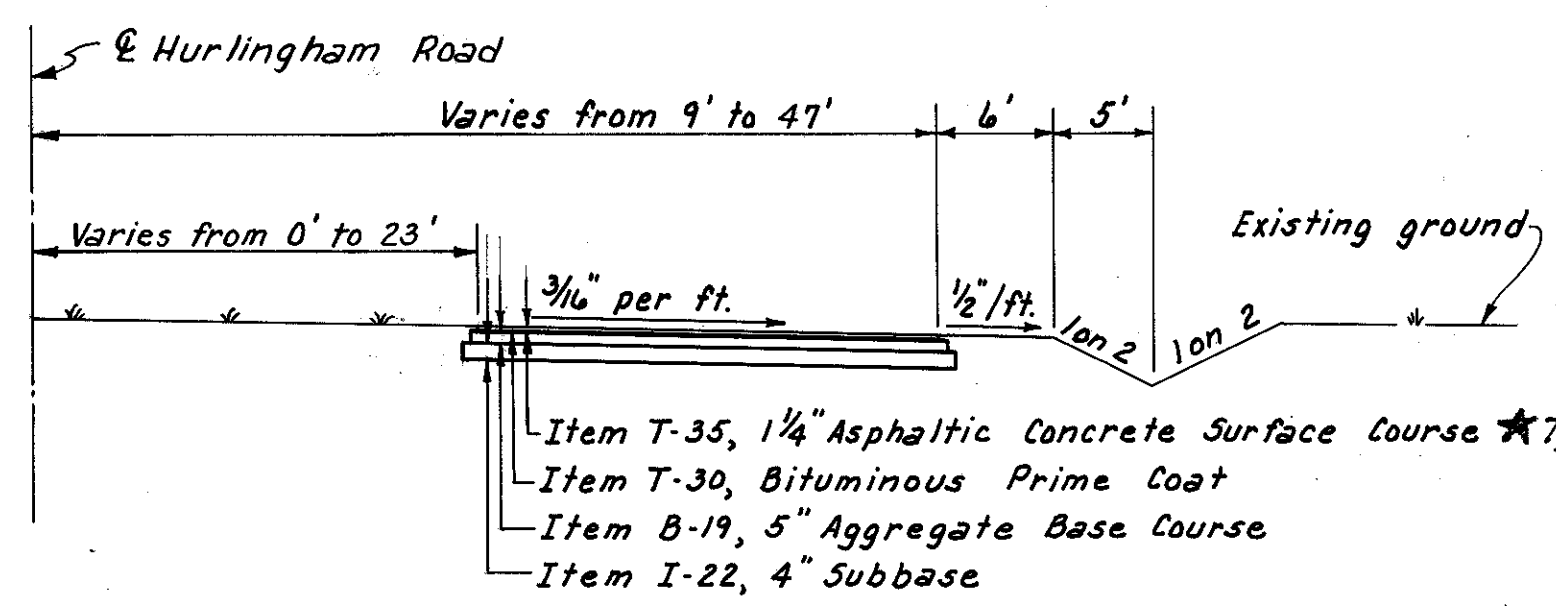
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

PLAN
SURVEYED BY: [Signature]
CHECKED BY: [Signature]
DATE: 11/17/59
NOTE: BOOK NO. [Blank]
DATE CHECKED: [Blank]
BY: [Blank]
NO. OF WAY CHECKED: [Blank]

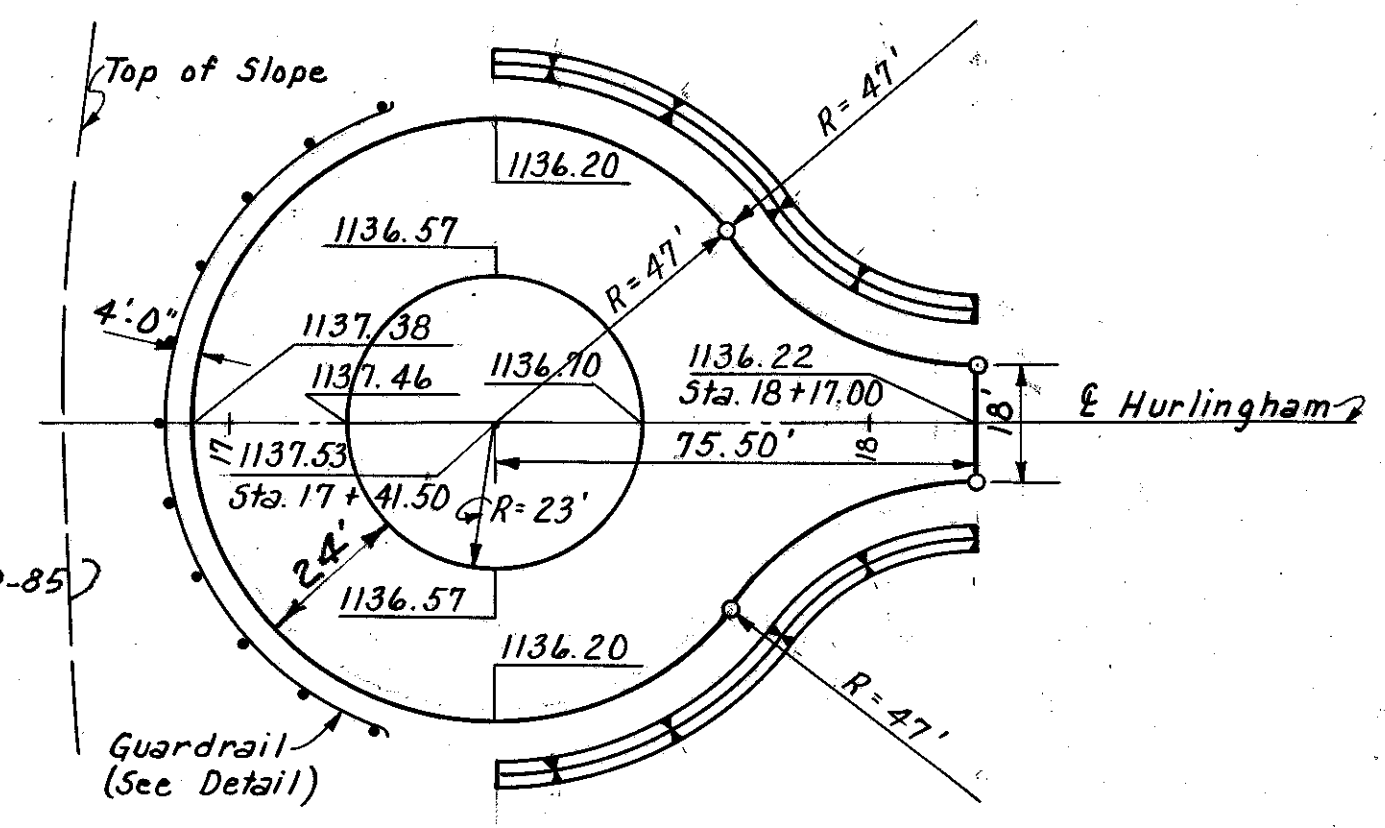
PROFILE
SURVEYED BY: [Signature]
CHECKED BY: [Signature]
DATE: 11/17/59
NOTE: BOOK NO. [Blank]
DATE CHECKED: [Blank]
BY: [Blank]
STRUCTURE NOTATION: OHIO



EXISTING CURVE DATA
 PI = Sta. 19 + 76.96
 $\Delta = 41^\circ 35' 35''$
 $D = 25^\circ 30' 00''$
 $R = 224.69'$
 $T = 85.33'$
 $L = 163.10'$
 $E = 15.66'$

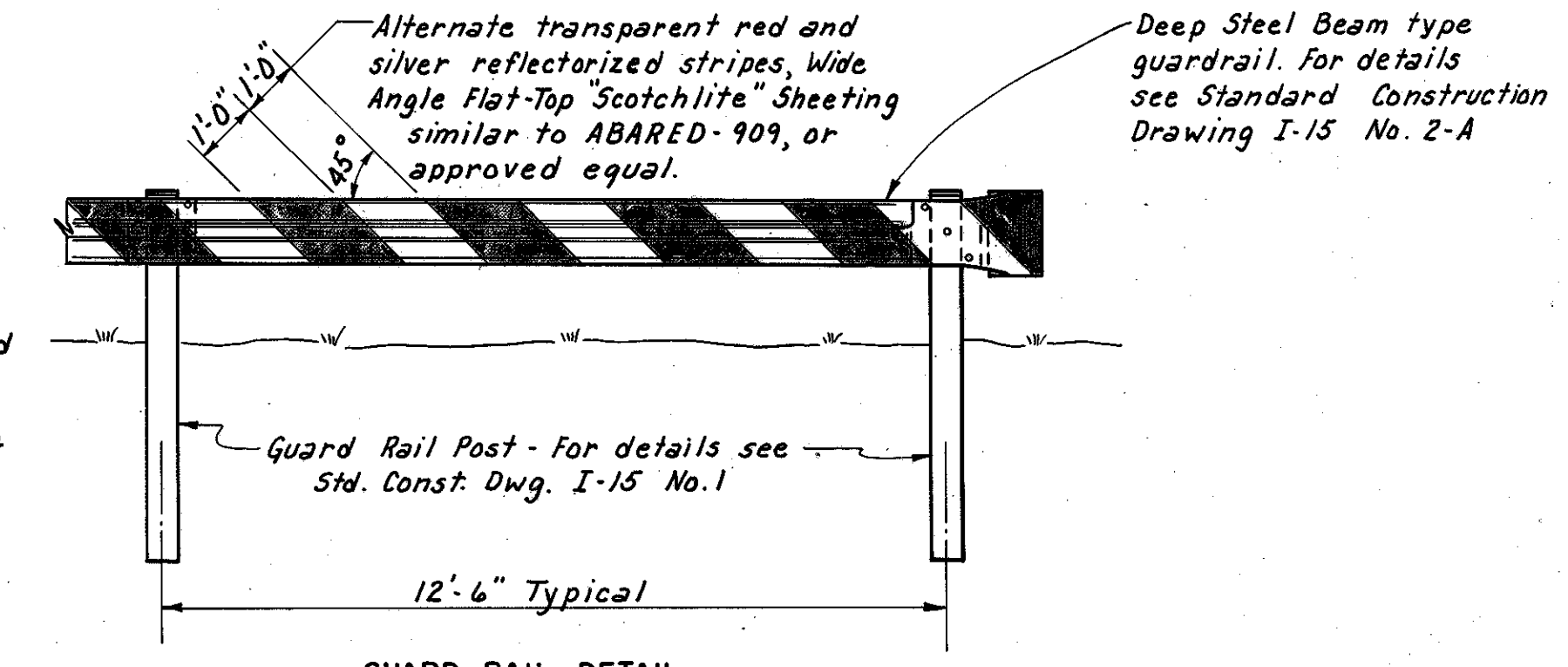


TYPICAL HALF SECTION
Scale: 1" = 10'



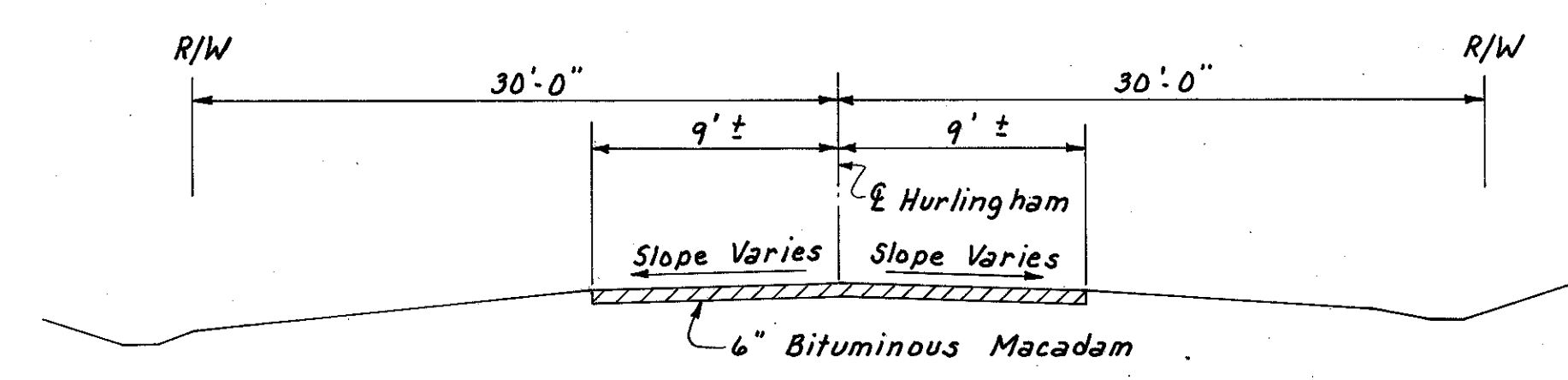
PAVEMENT DETAILS
Scale: 1" = 30'

*Thickness shown is designed thickness as described in sec. 7-35.01.



GUARD RAIL DETAIL
Scale: 3/8" = 1'-0"

Note: Payment for the reflectorized stripes used only on the Hurlingham Road guardrail shall be included in the unit price bid for Item I-15.



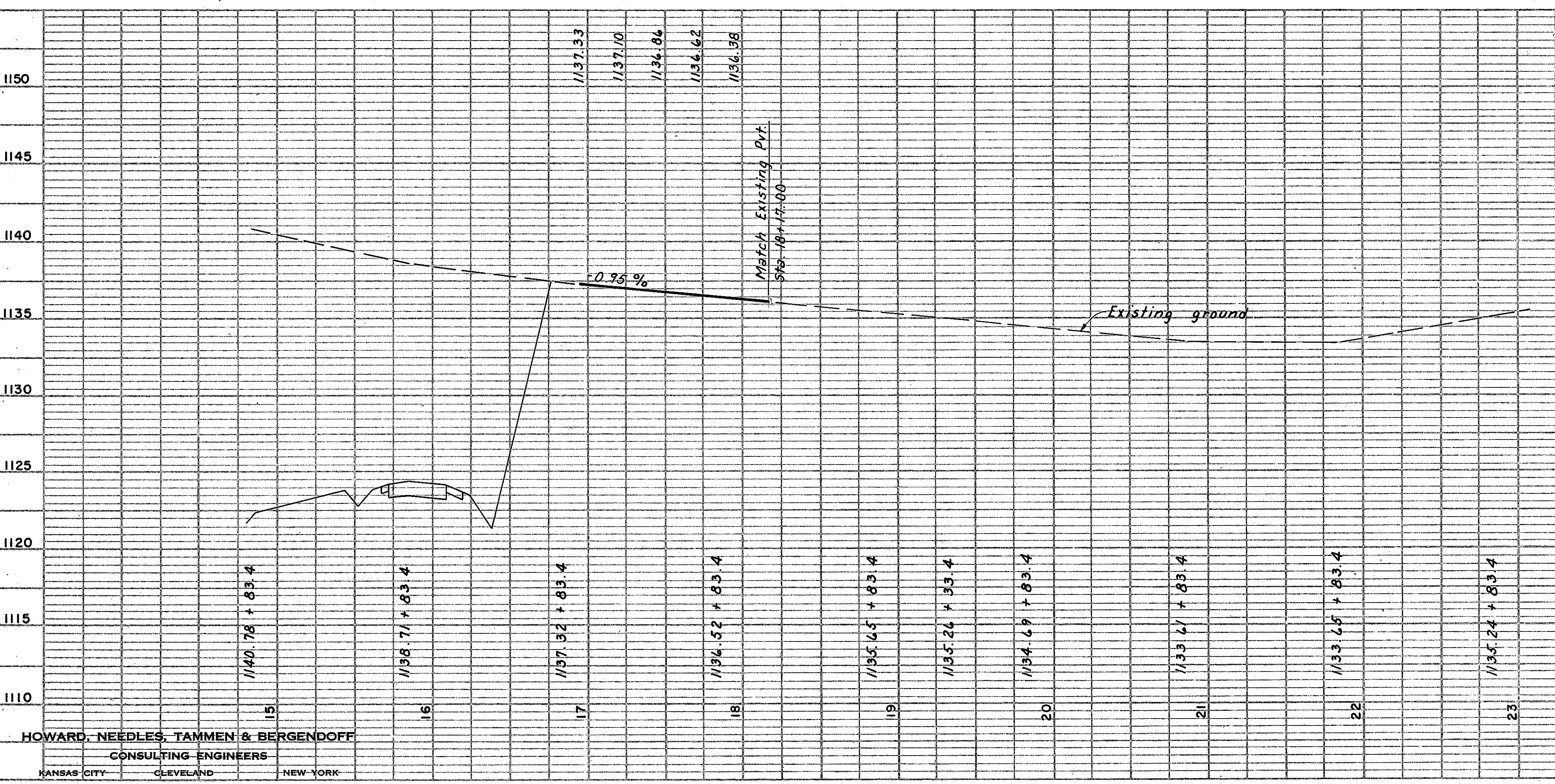
TYPICAL SECTION OF EXISTING HURLINGHAM
Not to Scale

GUARD RAIL	
STATION	SIDE
16 + 90.50	Lt.-Rt.
	125.0

HURLINGHAM ROAD ESTIMATED QUANTITIES					
STATION	E-1	B-19	I-22	T-30	T-35
From					
To					
16 + 94.50	18 + 70	300	100	80	230
					23

E-1 Compacted Subgrade 662 Sq. Yds.

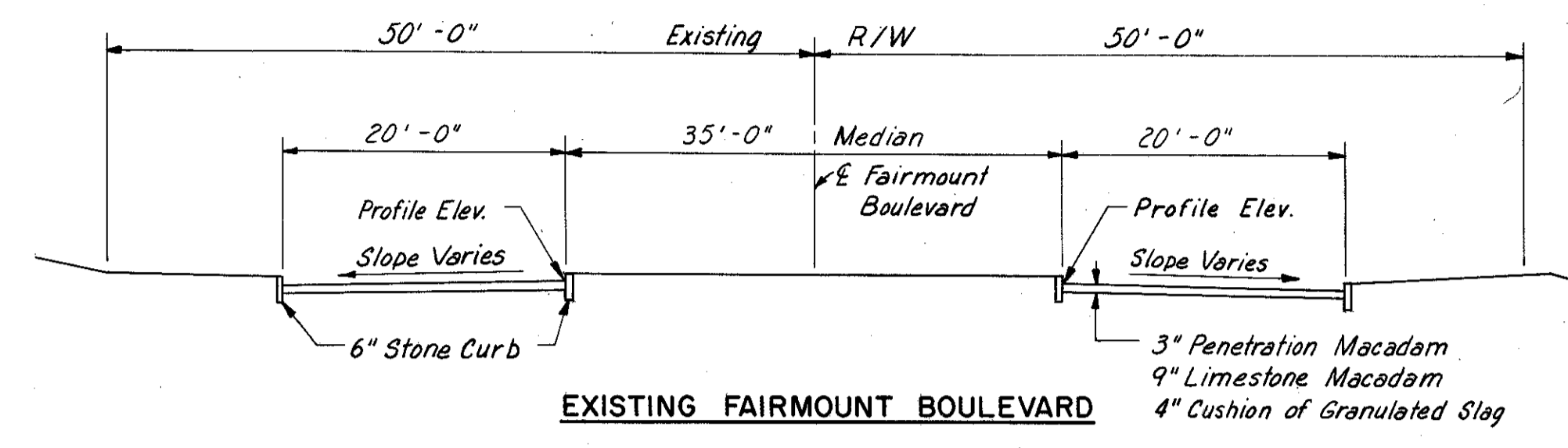
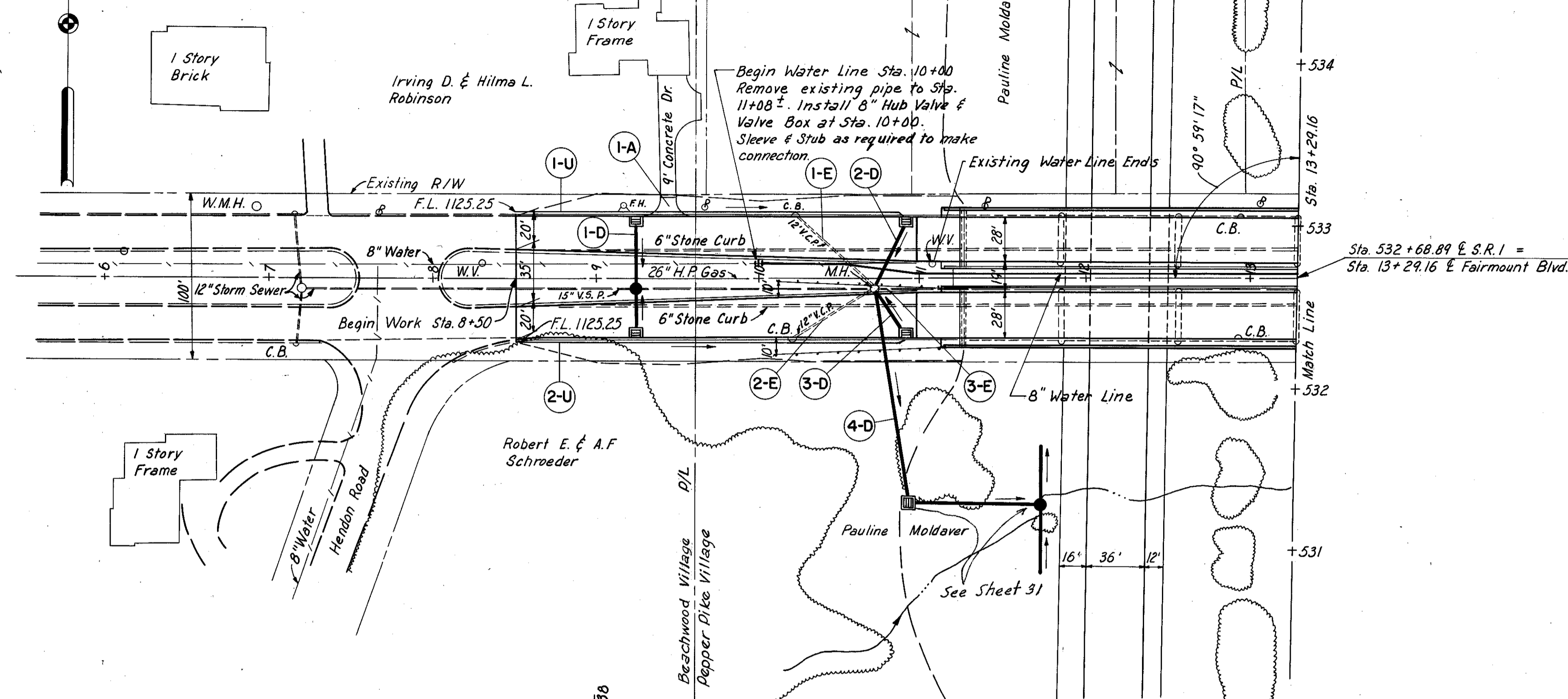
Excavation	Cu. Yds.
Embankment	See Table
Embankment +	Cu. Yds.



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

MICROFILMED
APR 23 1986

Note:
Taper pavement width for Eastbound and Westbound roadways from 20'-0" at Sta. 8+50 to 28'-0" at the beginning of approach slab Sta. 10+99.91.
From Sta. 11+25 to Sta. 15+25 removal of existing drainage shall be included in Item E-1 Roadway Excavation.

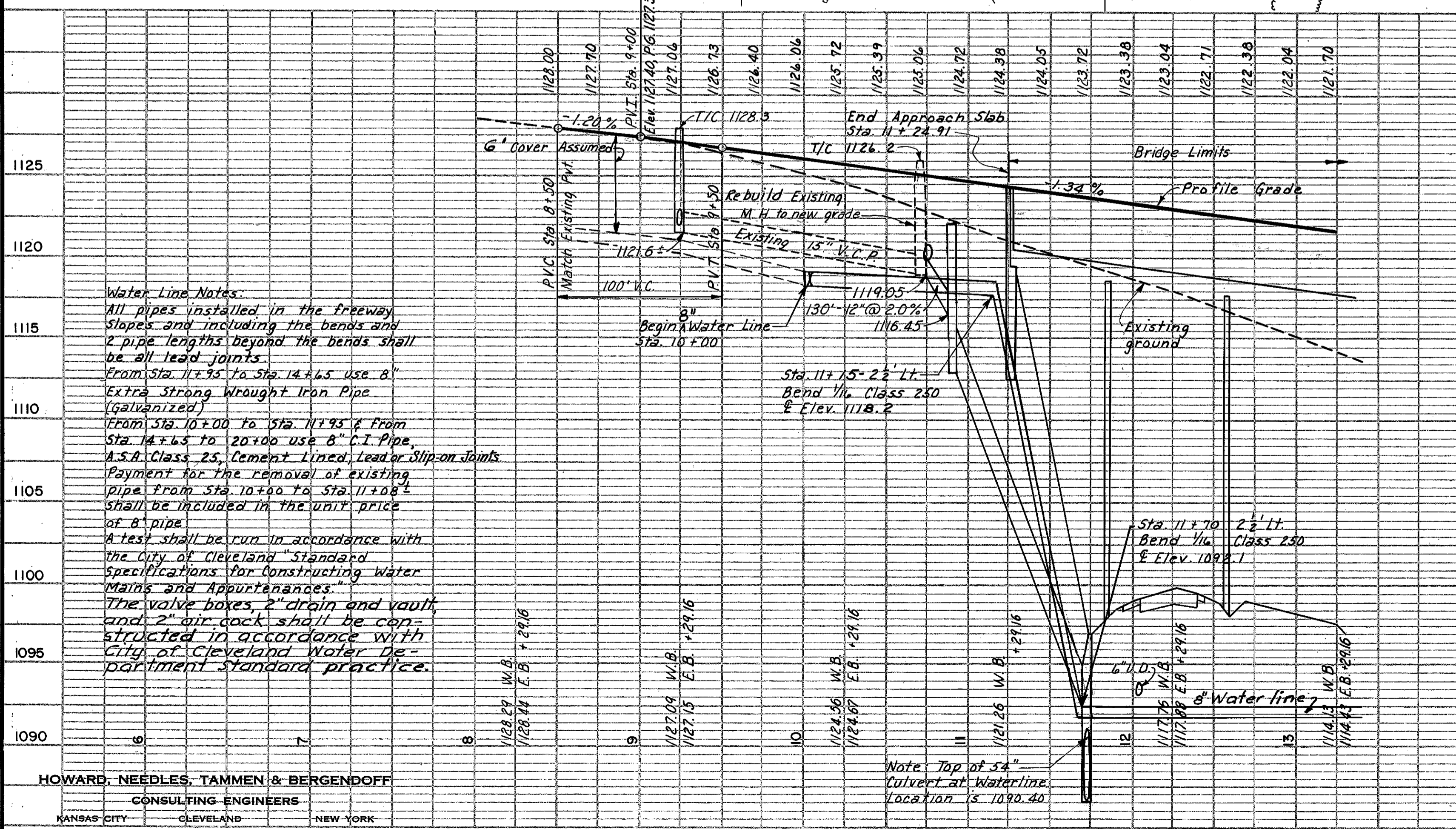


FAIRMOUNT BOULEVARD STA. 8+50 TO STA. 13+29.16 ESTIMATED QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
E-1	Compacted Subgrade Including Approach Slabs	1,490	Sq. Yds.
E-8	Removal and Disposal of Existing Stone Curb	876	Lin. Ft.
E-8	Removal for Re-use of Existing Stone Curb	1,040	Lin. Ft.
I-7	Reinforced Concrete Approach Slab	156	Sq. Yds.
I-11	6" x 20" Sandstone Curb Reset	1,040	Lin. Ft.
I-22	4" Subbase	165	Cu. Yds.
B-19	9" Aggregate Base Course	333	Cu. Yds.
B-35	1 1/2" Asphaltic Concrete Leveling Course (70-85)	65	Cu. Yds.
T-30	Bituminous Prime Coat Sec. M-5.7 (0.4 gal. per s.y.)	533	Gal.
T-35	1 1/2" Asphaltic Concrete Surface Course Type C (70-85)	46	Cu. Yds.

PLAN
DATE: 12-10-58
BY: GED
CHECKED: ECE
NO. 12-10-58

PROFILE
DATE: 12-10-58
BY: GED
CHECKED: ECE
NO. 12-10-58



Water Line Notes:
All pipes installed in the freeway slopes and including the bends and 2 pipe lengths beyond the bends shall be all lead joints.
From Sta. 11+25 to Sta. 14+65 use 8" extra strong wrought iron pipe (galvanized).
From Sta. 10+00 to Sta. 11+95 & From Sta. 14+65 to 20+00 use 8" C.I. Pipe, A.S.A. Class 25, Cement Lined, Lead or Slip on joints.
Payment for the removal of existing pipe from Sta. 10+00 to Sta. 11+08 shall be included in the unit price of 8" pipe.
A test shall be run in accordance with the City of Cleveland Standard specifications for Constructing Water Mains and Appurtenances.
The valve boxes, 2" drain and vault and 2" air cock shall be constructed in accordance with City of Cleveland Water Department standard practice.

REF. NO.	STATION	SIDE	DRAINAGE					
			I-2	I-8	I-16	E-12		
			Cl. "B" St Sew. Und. Pkt. 12"	Special No. 3-C C.B.	Special No. 1 M.H.	M.H. Re-build to Grade	C.B. Aband.	Removal of Pipe 15" and Under
	From	To	Lin. Ft.	Each		Lin. Ft.		
1-D	9+25		68	2	1			
2-D	10+90	10+71	Lt.	44	1			
3-D	10+90	10+71	Rt.	32	1			
4-D	10+71	10+90	Rt.	130		1		
1-E	10+22	10+71	Lt.			1	62	
2-E	10+20	10+71	Rt.			1	58	
3-E	10+71	11+25	Et.				52	
Total			274	4	1	1	2	172

REF. NO.	STATION	SIDE	TYPE	WIDTH	DRIVES AND APPROACHES		
					T-70	I-22	E-1
					6" P.C.C. for Drives	6" Sub-base	Roadway Exc.
	From	To			Sq. Yds.	Cu. Yds.	
1-A	9+45		Lt.	Res.	14	3	5
Total					14	3	5

PROPOSED STRUCTURES
TYPE: Continuous steel beam with reinforced concrete deck and substructure
SPANS: 59'-0", 2@72'-0", 2@71'-0", & 51'-0"
ROADWAY: Twin 28'-0" roadways with one 2'-2" safety curb and one 4'-2" sidewalk each.
LOAD FREQUENCY: C.F. 400
SKEW: None
WEARING SURFACE: 1" Monolithic Concrete.
APPROACH SLABS: AS-1-54 (25' Long)
ALIGNMENT: Tangent
BRIDGE NO: CUY-1-054
See Sheets 293-296

REF. NO.	STATION	SIDE	UNDERDRAINS	
			I-4	I-15
			Pipe Under Drains 6"	Steel Beam Type (Deep)
	From	To	Lin. Ft.	
1-U	8+50	10+90	Lt.	240
2-U	8+50	10+90	Rt.	240
Total				480

STATION	SIDE	GUARDRAIL	
		I-15	I-15
		Steel Beam Type (Deep)	Lin. Ft.
From	To	Rt.	Lin. Ft.
10+08	11+08	Rt.	100
10+08	11+08	Rt.	100
Total			200

Note:
For Sewer Profiles See Sheet 270.

Excavation	292	Cu. Yds.
Embankment	653	Cu. Yds.
Embankment + 18%	771	Cu. Yds.

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

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APR 23 1986

CUYAHOGA COUNTY
CUY-1-2.20

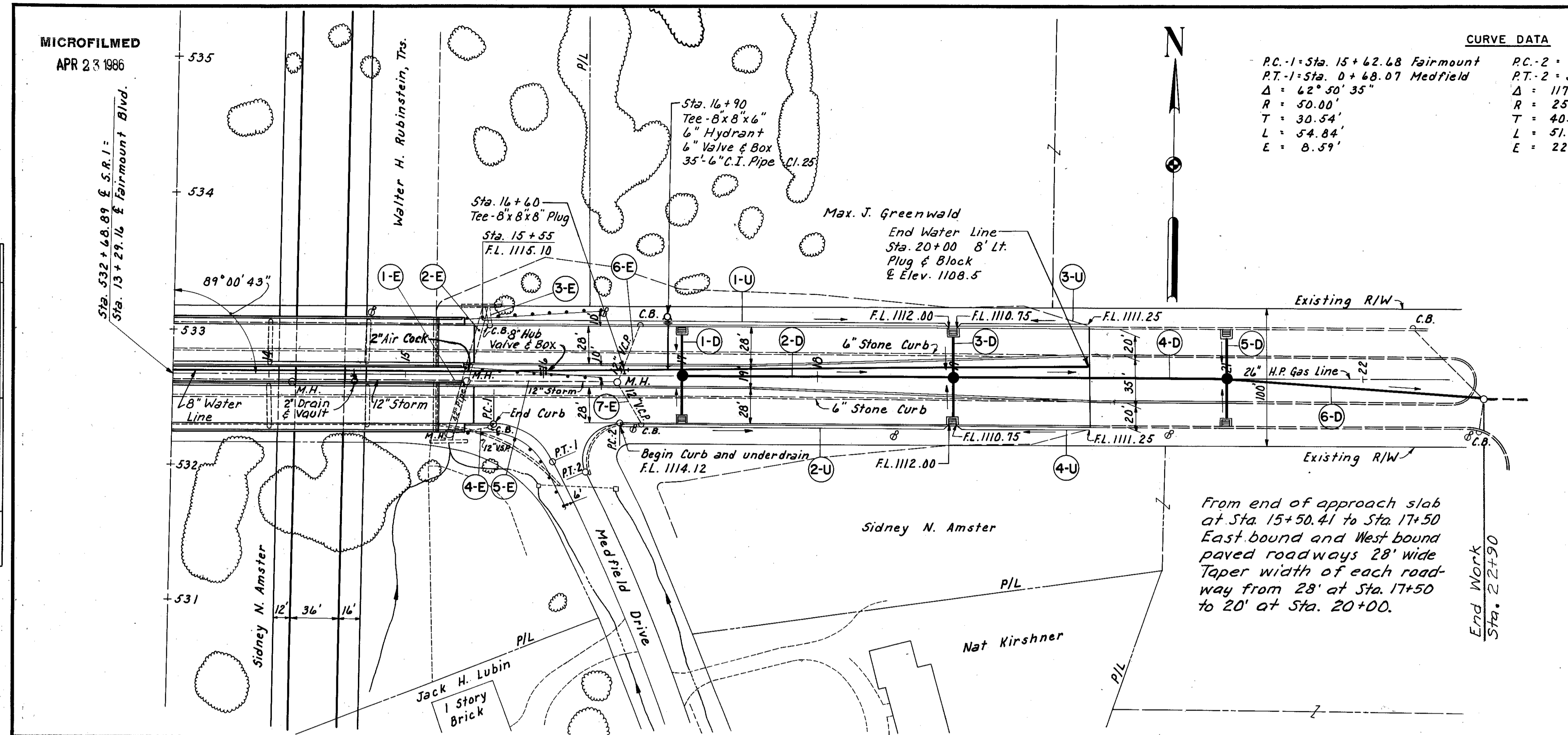
Note: From Sta. 11+25 to Sta. 15+25 removal of existing drainage shall be included in Item E-1 Roadway Excavation.

CURVE DATA

PC-1 - Sta. 15+62.68 Fairmount
PT-1 - Sta. 0+68.07 Medfield
 $\Delta = 62^\circ 50' 35''$
R = 50.00'
T = 30.54'
L = 54.84'
E = 8.59'

PC-2 - Sta. 16+54.37 Fairmount
PT-2 - Sta. 0+87.68 Medfield
 $\Delta = 117^\circ 09' 25''$
R = 25.00'
T = 40.92'
L = 51.12'
E = 22.95'

PLAN
DATE: 8/15/59
BY: GED
CHECKED: EZE
NOTE: BOOK NO. OF WAY CHECKED



From end of approach slab at Sta. 15+50.41 to Sta. 17+50 Eastbound and Westbound paved roadways 28' wide Taper width of each roadway from 28' at Sta. 17+50 to 20' at Sta. 20+00.

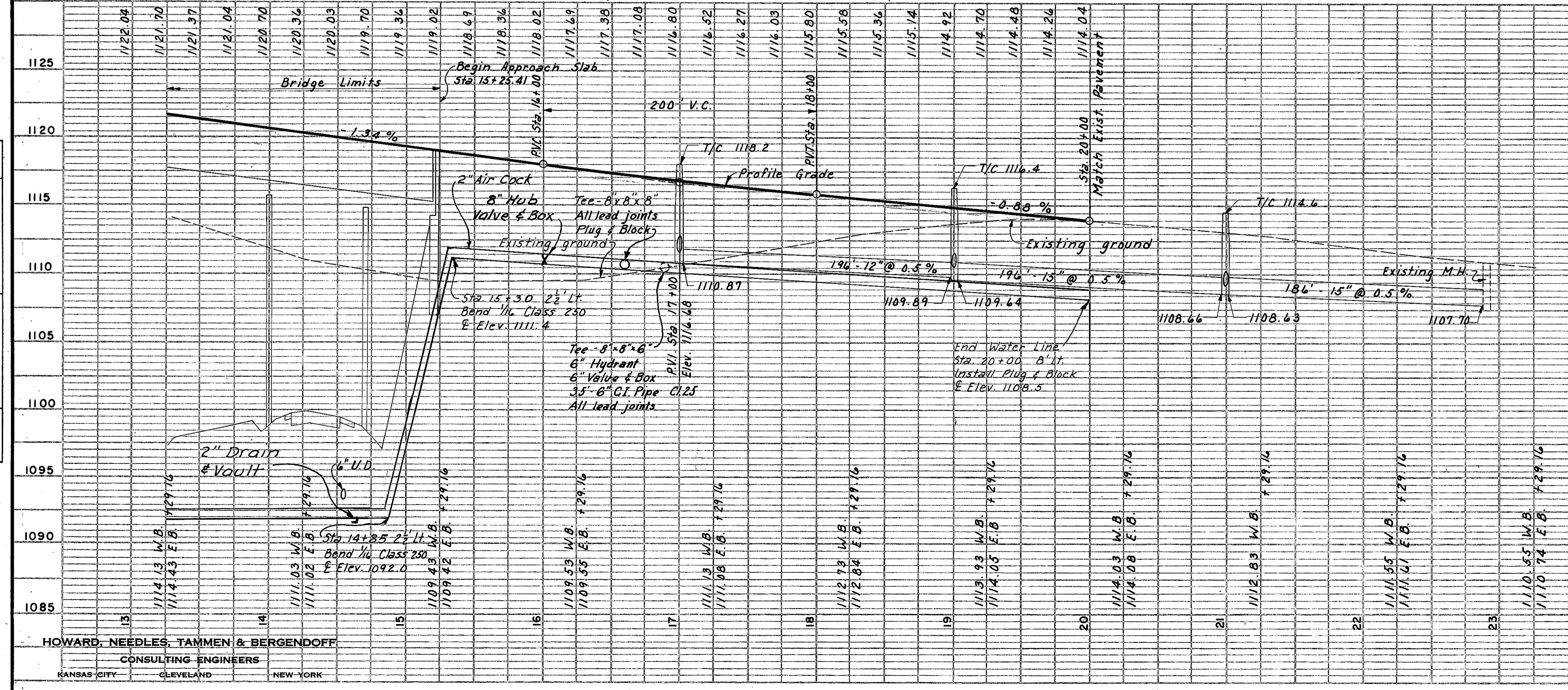
REF. NO.	STATION	SIDE	DRAINAGE								
			I-2		I-8		I-16		E-12		
			Cl. "B" St. Sew.	Cl. "B" St. Sew.	Special No. 3-C C.B.	Special No. 1 M.H.	M.H. Aband.	C.B. Aband.	Removal of Pipe 15" and Over	Removal of Pipe Under 15"	
	From	To	Lin. Ft.		Each		Lin. Ft.				
1-D	17+00			68	2	1					
2-D	17+00	19+00	196								
3-D	19+00			68	2	1					
4-D	19+00	21+00	196								
5-D	21+00			68	2	1					
6-D	21+00	22+90	186								
1-E	15+25	15+45						20			
2-E	15+45						2		105		
3-E	15+60	Lt.						1	15		
4-E	15+35	Rt.						1	30		
5-E	15+45	Lt.					1		110		
6-E	16+55	Lt.						1	45		
7-E	16+55	Rt.						1	35		
Total			196	382	204	6	3	3	4	255	105

Sec. M-6.5 (b)
Sec. M-6.8 (b)

FAIRMOUNT BOULEVARD STA. 13+29.16 TO STA. 22+00 ESTIMATED QUANTITIES

Item	Description	Quantity	Unit
E-1	Compacted Subgrade, Including Approach Slabs	2,756	Sq. Yds.
E-8	Removal for Re-use of Existing Stone Curb	1,760	Lin. Ft.
E-8	Removal and Disposal of Existing Stone Curb	990	Lin. Ft.
I-7	Reinforced Concrete Approach Slab	156	Sq. Yds.
I-11	6" x 20" Sandstone Curb Reset	1,760	Lin. Ft.
I-22	4" Subbase	306	Cu. Yds.
T-35	1 1/4" Asphaltic Concrete Surface Course Type C (70-85)	90	Cu. Yds.
B-19	9" Aggregate Base Course	649	Cu. Yds.
B-35	1 3/4" Asphaltic Concrete Leveling Course (70-85)	126	Cu. Yds.
T-30	Bituminous Prime Coat Sec. M-5.7 (0.4 gal. per sq. yd.)	1038	Gal.

PROFILE
DATE: 8/15/59
BY: GED
CHECKED: EZE
NOTE: BOOK NO. OF WAY CHECKED



UNDERDRAINS

REF. NO.	STATION	SIDE	I-4	
			Pipe Under Drains	6"
	From	To	Lin. Ft.	
1-U	15+55	19+00	Lt.	345
2-U	16+54	19+00	Rt.	246
3-U	19+00	20+00	Lt.	100
4-U	19+00	20+00	Rt.	100
Total				791

GUARDRAIL

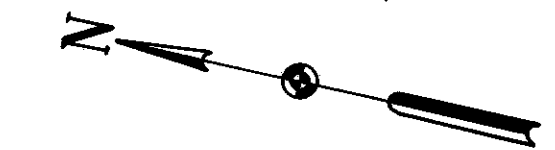
STATION	SIDE	I-15	
		Steel Beam Under Drains	Type (Deep)
	From	To	Lin. Ft.
15+40	16+40	Lt.	100
15+40	16+40	Lt.	100
15+40	1+00 Med	Rt.	100
Total			300

Note: Existing ground elevations shown are located along the inside edges of the Eastbound and Westbound roadways.

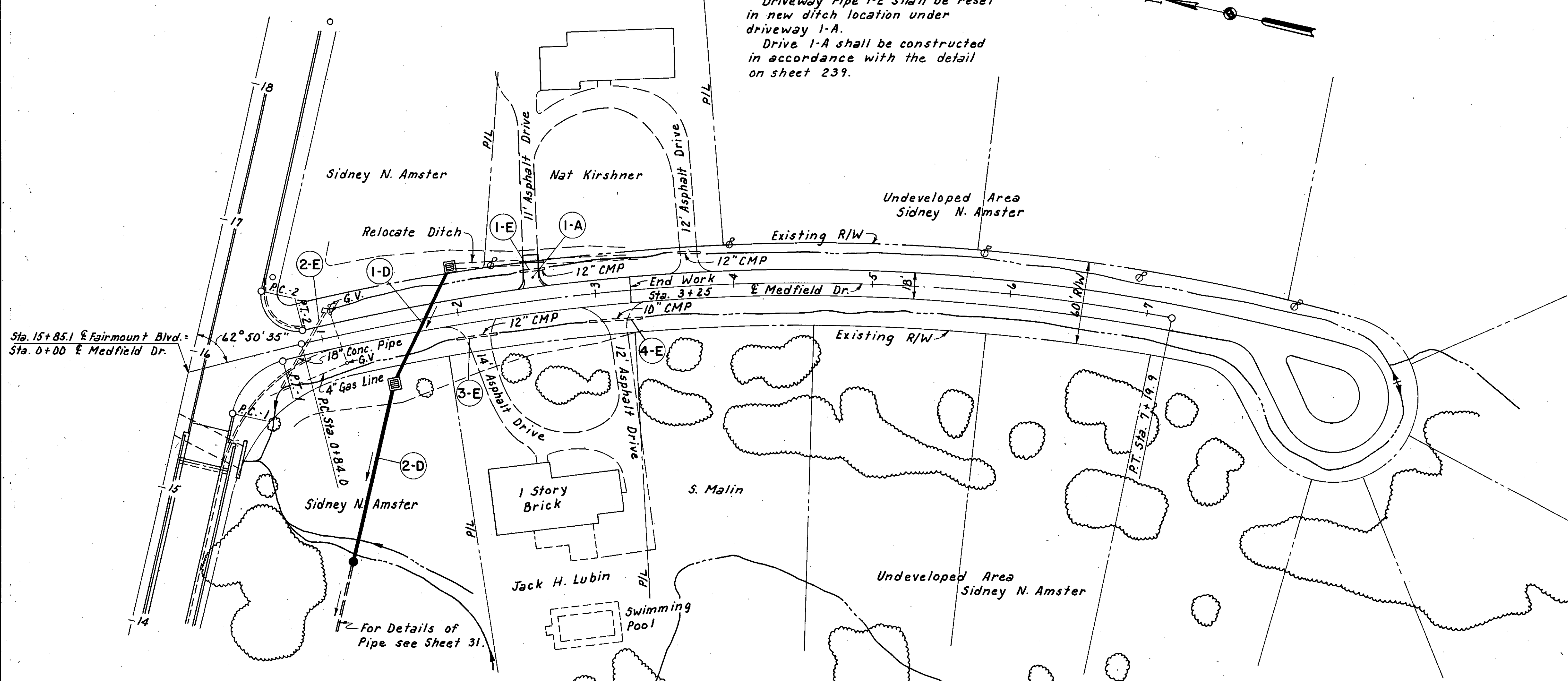
Note: For Sewer Profiles see Sheet 270.

Excavation	208	Cu. Yds.
Embankment	8,993	Cu. Yds.
Embankment +18%	10,612	Cu. Yds.

Note:
Driveway Pipe I-E shall be reset in new ditch location under driveway I-A.
Drive I-A shall be constructed in accordance with the detail on sheet 239.

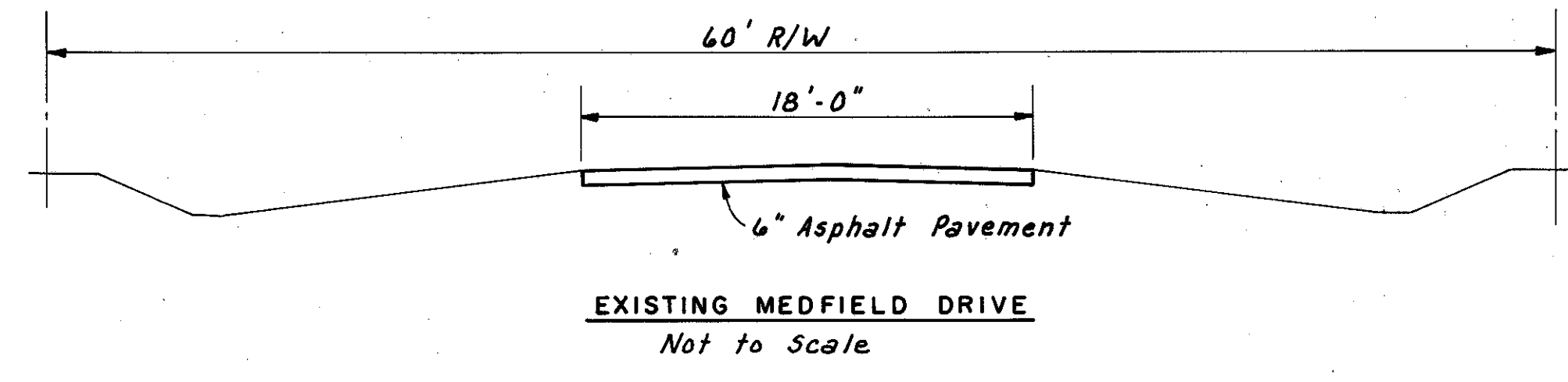


PLAN
DATE 12-16-58
BY G.L.D. DWY
CHECKED G.L.D. DWY
NO. 101

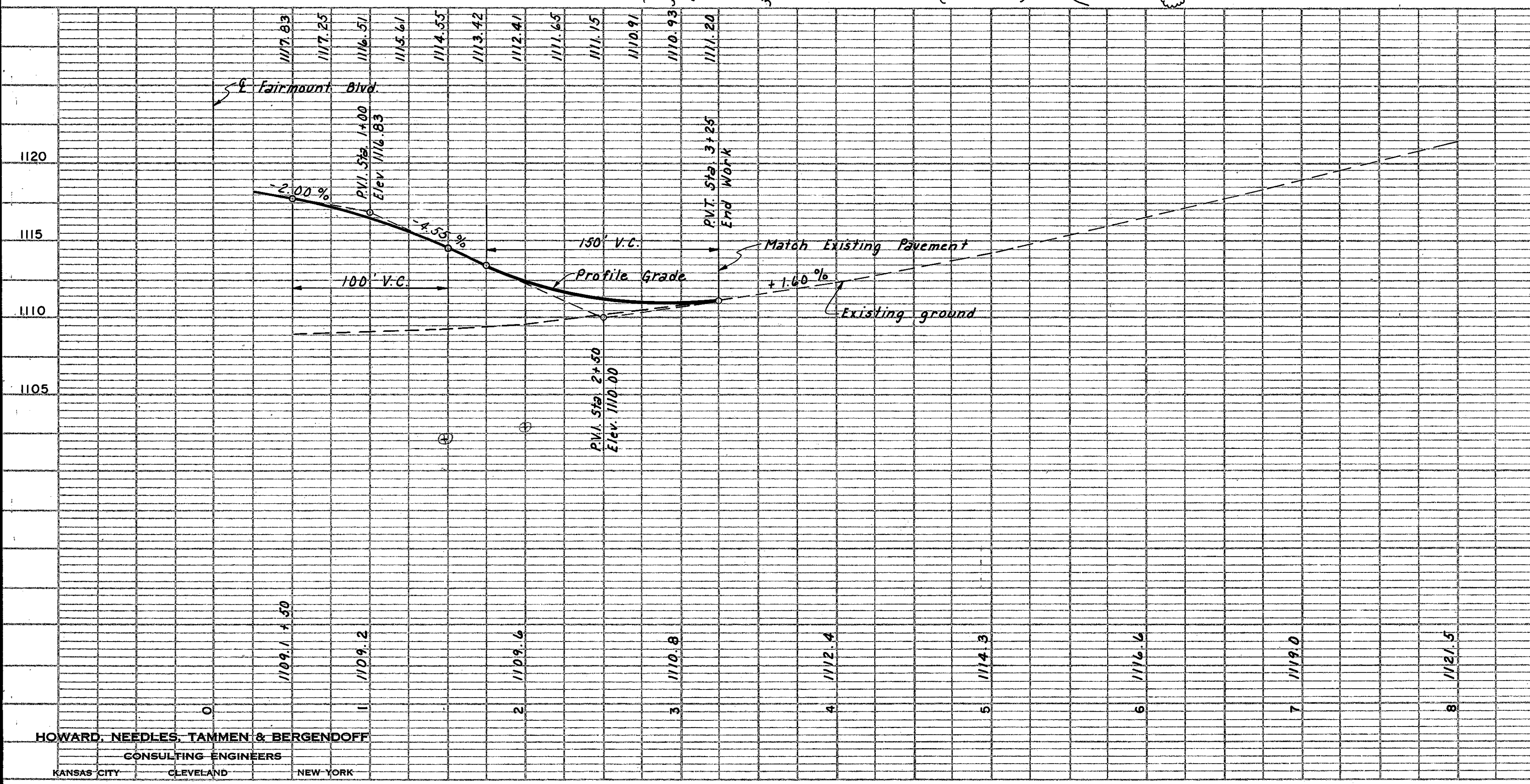


CURVE DATA

P.I. Sta. 4+07.3 Δ = 25° 26' 20" D = 4° 00' 00" R = 1432.4' T = 323.3' L = 635.9' E = 36.0'	P.C. - 1 = Sta. 15+62.68 Fairmount P.T. - 1 = Sta. 0+48.07 Medfield Δ = 42° 50' 35" R = 50.00' T = 30.54' L = 54.84' E = 8.59'	P.C. - 2 = Sta. 16+54.37 Fairmount P.T. - 2 = Sta. 0+87.68 Medfield Δ = 117° 09' 25" R = 25.00' T = 40.92' L = 51.12' E = 22.95'
---	--	--



PROFILE
DATE 12-16-58
BY G.L.D. DWY
CHECKED G.L.D. DWY
NO. 101



ESTIMATED QUANTITIES

Item	Description	Quantity	Unit
B-19	5" Aggregate Base Course	86	Cu. Yds.
B-35	1 3/4" Asphaltic Concrete Leveling Course (70-85)	30	Cu. Yds.
E-1	Compacted Subgrade	620	Sq. Yds.
T-30	Bituminous Prime Coat Sec. M-5.7 (0.4 gal. per s.y.)	250	Gal.
T-35	1 1/4" Asphaltic Concrete Surface Course Type "C" (70-85)	22	Cu. Yds.

DRIVES AND APPROACHES

REF. NO.	STATION	SIDE	TYPE	WIDTH	E-1	I-18	T-35
1-A	2+50	Lt.	Res.	11'	5	5	1.2
Total					5	5	1.2

Use 2

DRAINAGE

REF. NO.	STATION	SIDE	I-2		I-8		I-16		E-12	
			St. Sew. No. 1-3 M.6.4(c) 30"	Std. C.B.	Std. No. 1 M.H.	C.B. Aband.	Removal of Pipe of Pipe Under 15"	Removal of Pipe of Pipe Under 15"		
1-D	2+00	1+45	88	2						
2-D	1+45	Rt.	132		1					
1-E	2+50	2+67						17		
2-E	0+85						1			65
3-E	1+95	2+25								30
4-E	2+95	3+33								38
Total			132	2	1	1		17		65

Item I-6 Relaying Pipe - 17' of 12"
• 88 Lin. Ft. 30" Storm Sewer under pavement - Sec. M-6.6 (b) or M-6.8 (b)

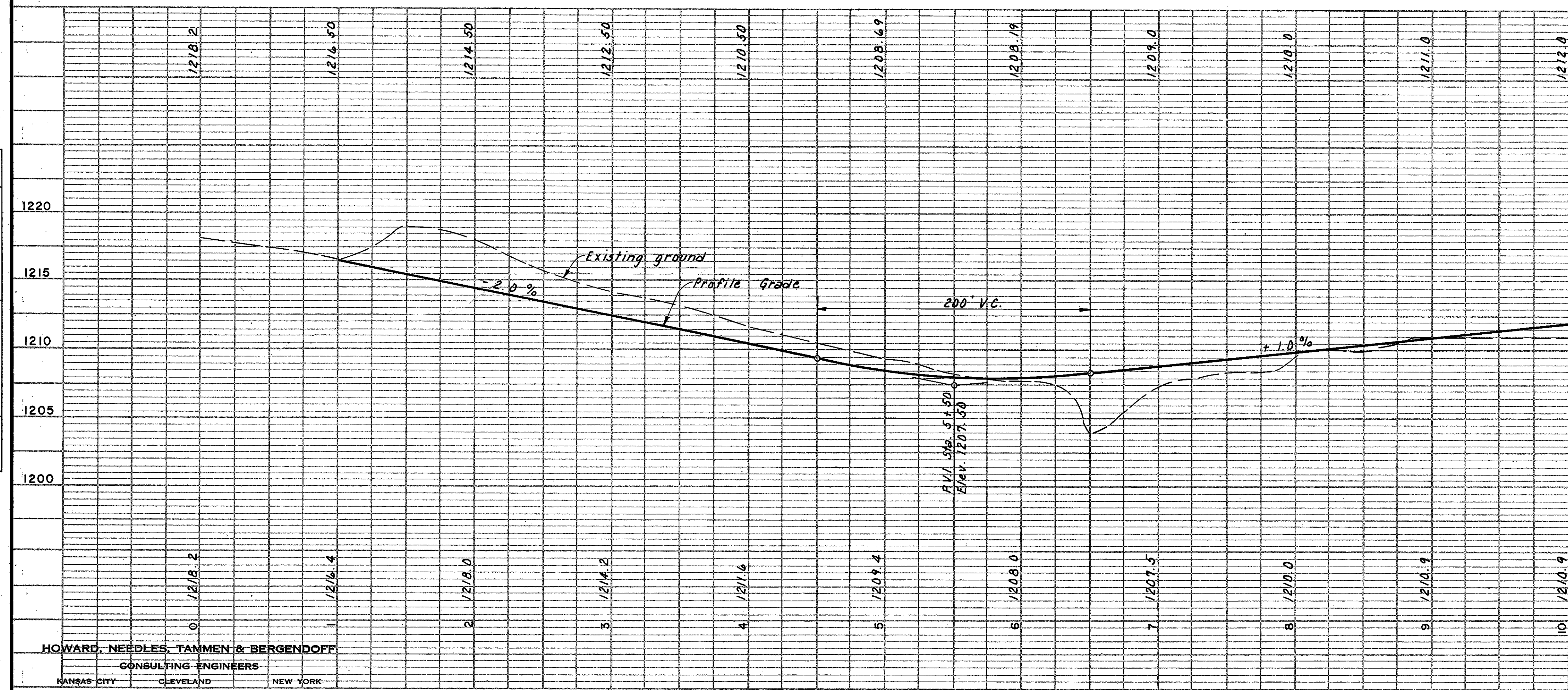
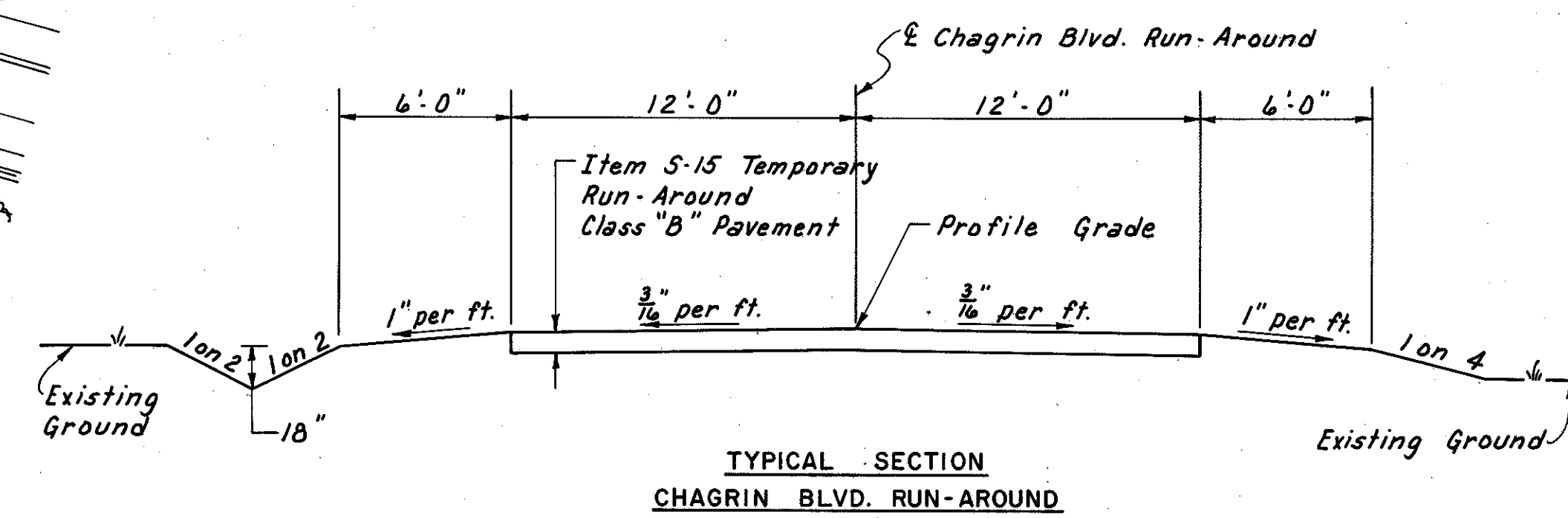
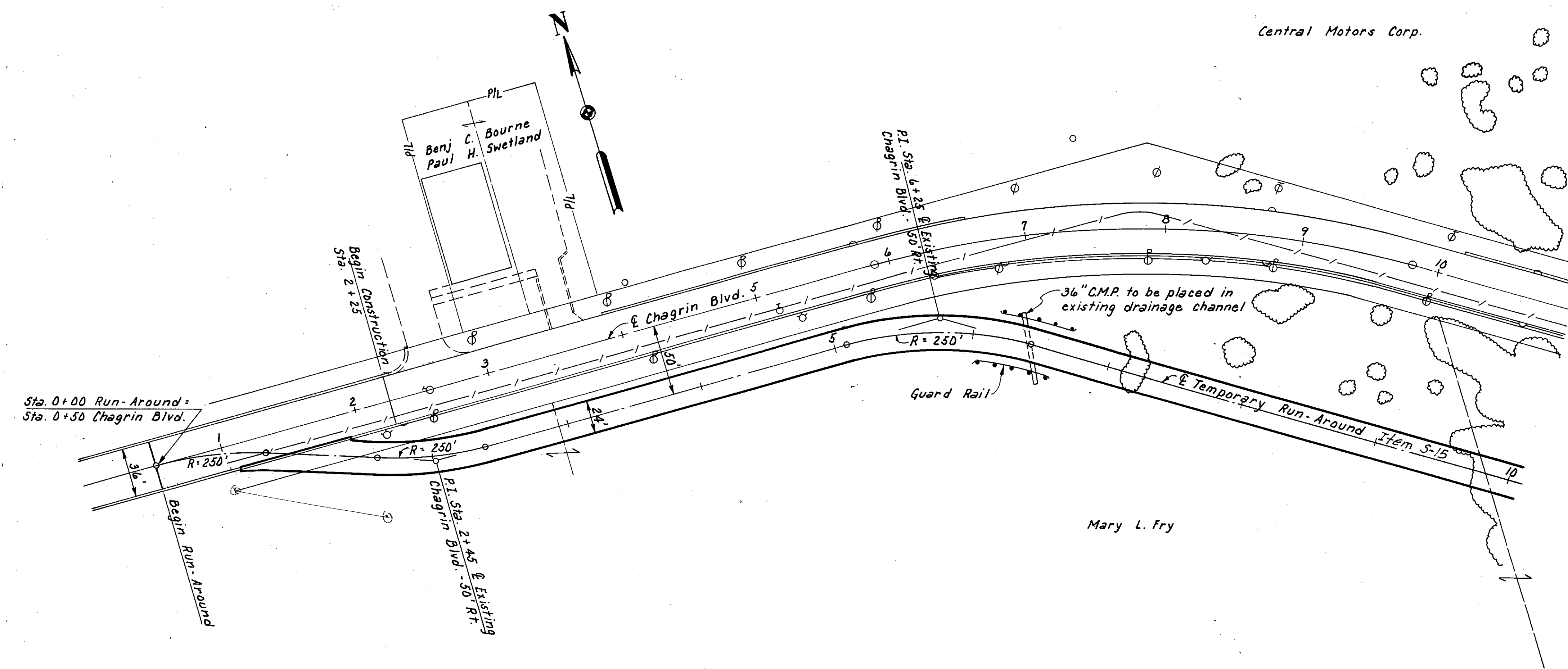
Note:
For Sewer Profiles see Sheet 270.

Excavation	429	Cu. Yds.
Embankment	1177	Cu. Yds.
Embankment + 18%	1389	Cu. Yds.

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

PLAN SURVEYED BY DATE
P.L.O.T.T.E.D. BY DATE
NOTE BOOK NO. OF PAGES CHECKED BY NO. OF PAGES CHECKED

PROFILE SURVEYED BY DATE
P.L.O.T.T.E.D. BY DATE
NOTE BOOK NO. OF PAGES CHECKED BY NO. OF PAGES CHECKED
STRUCTURE NOTATIONS CHECKED



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

Excavation	Cu. Yds.
Embankment	Cu. Yds.
Embankment +	Cu. Yds.

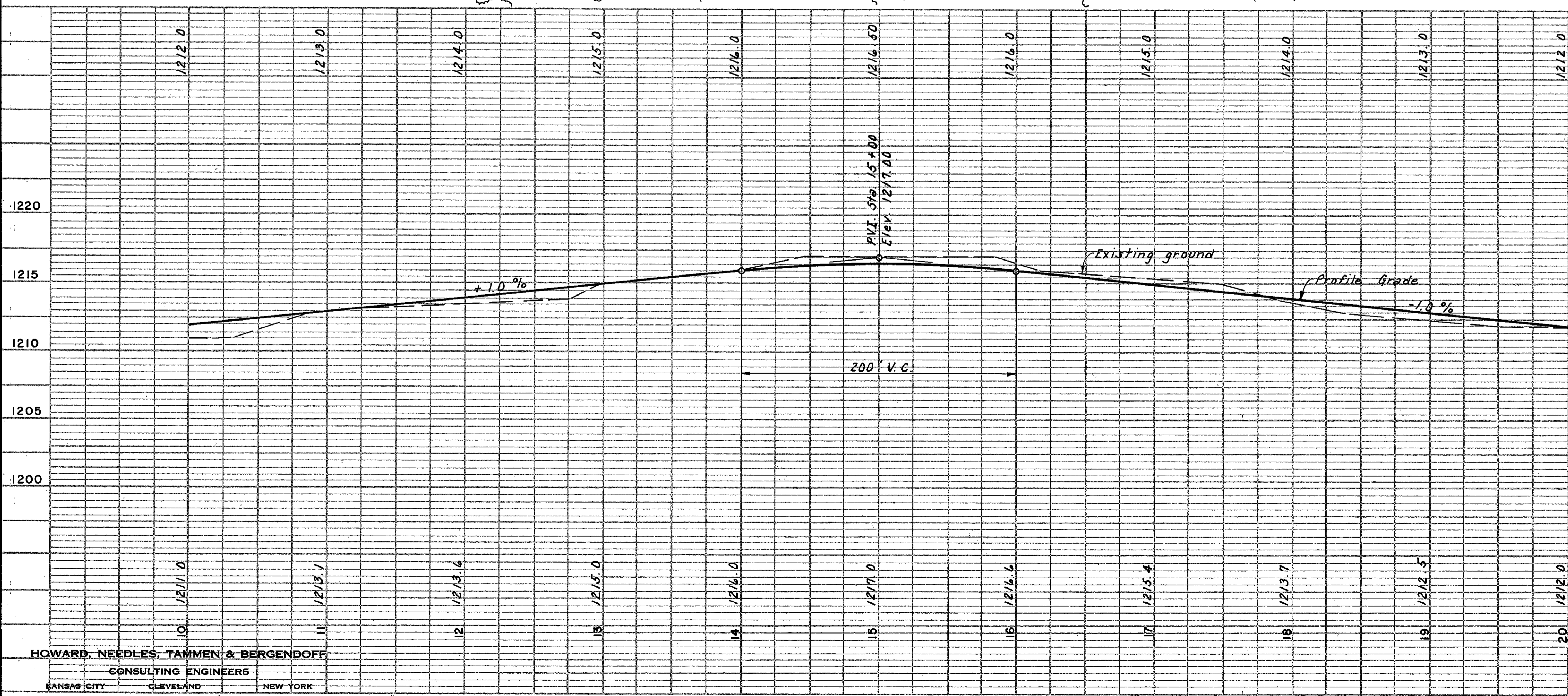
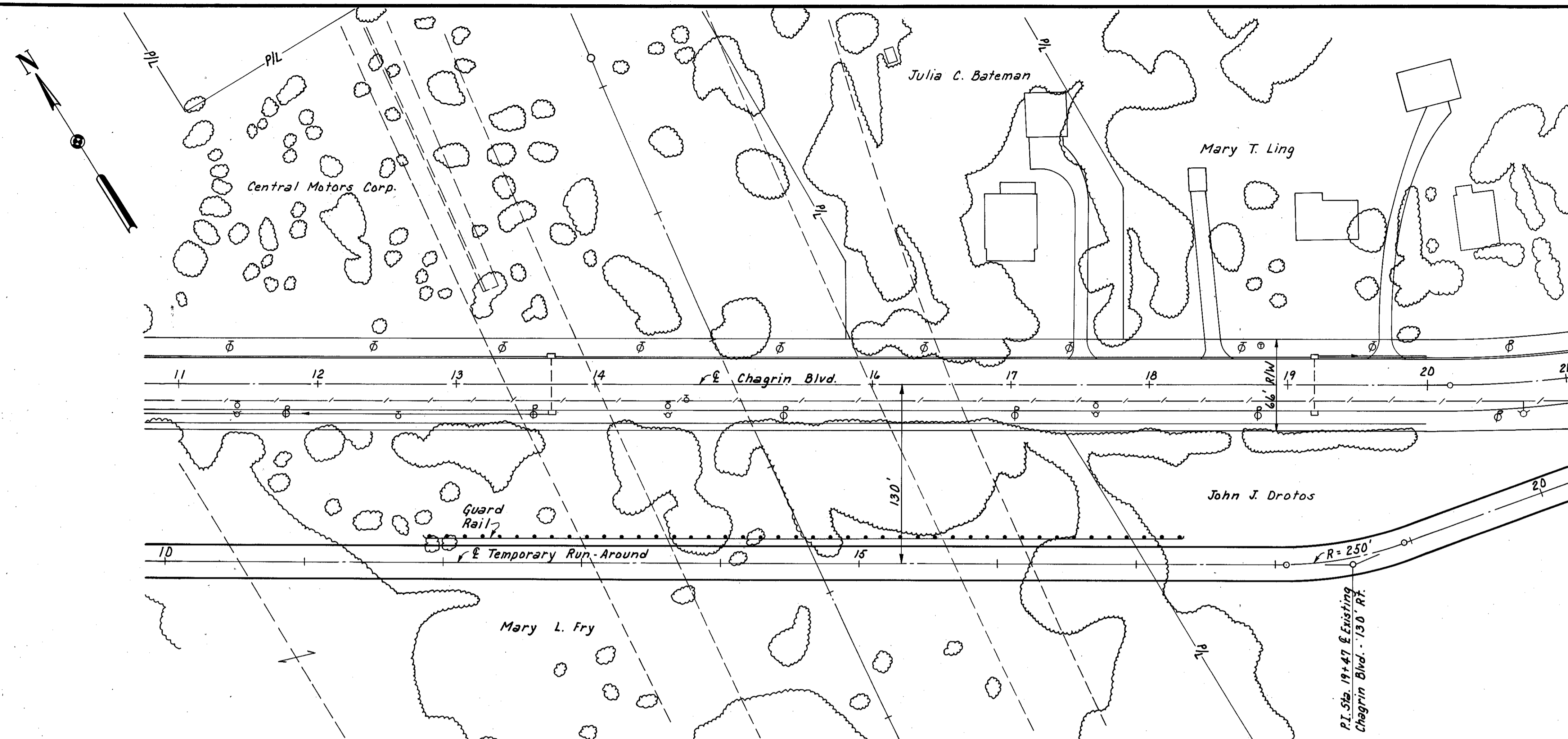
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

39
313

CUYAHOGA COUNTY
CUY-1-2.20

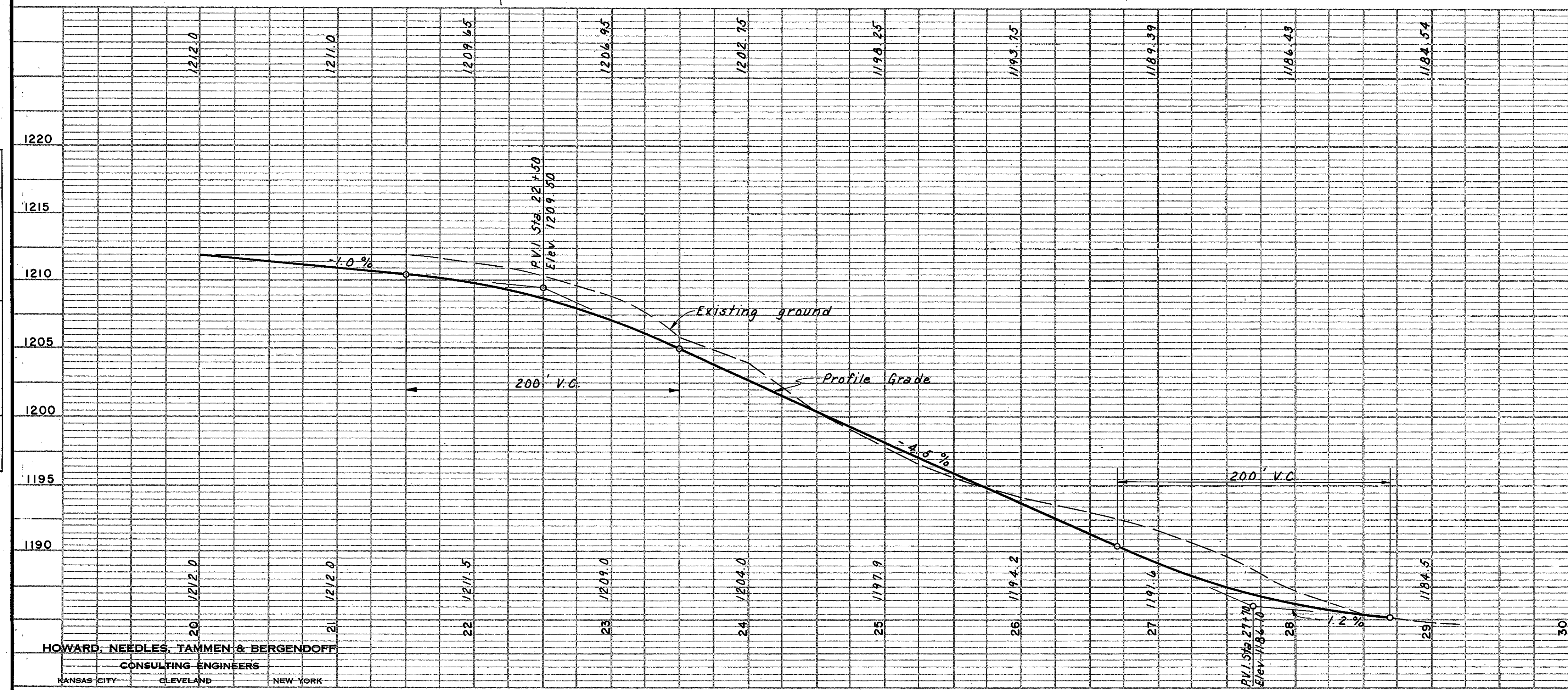
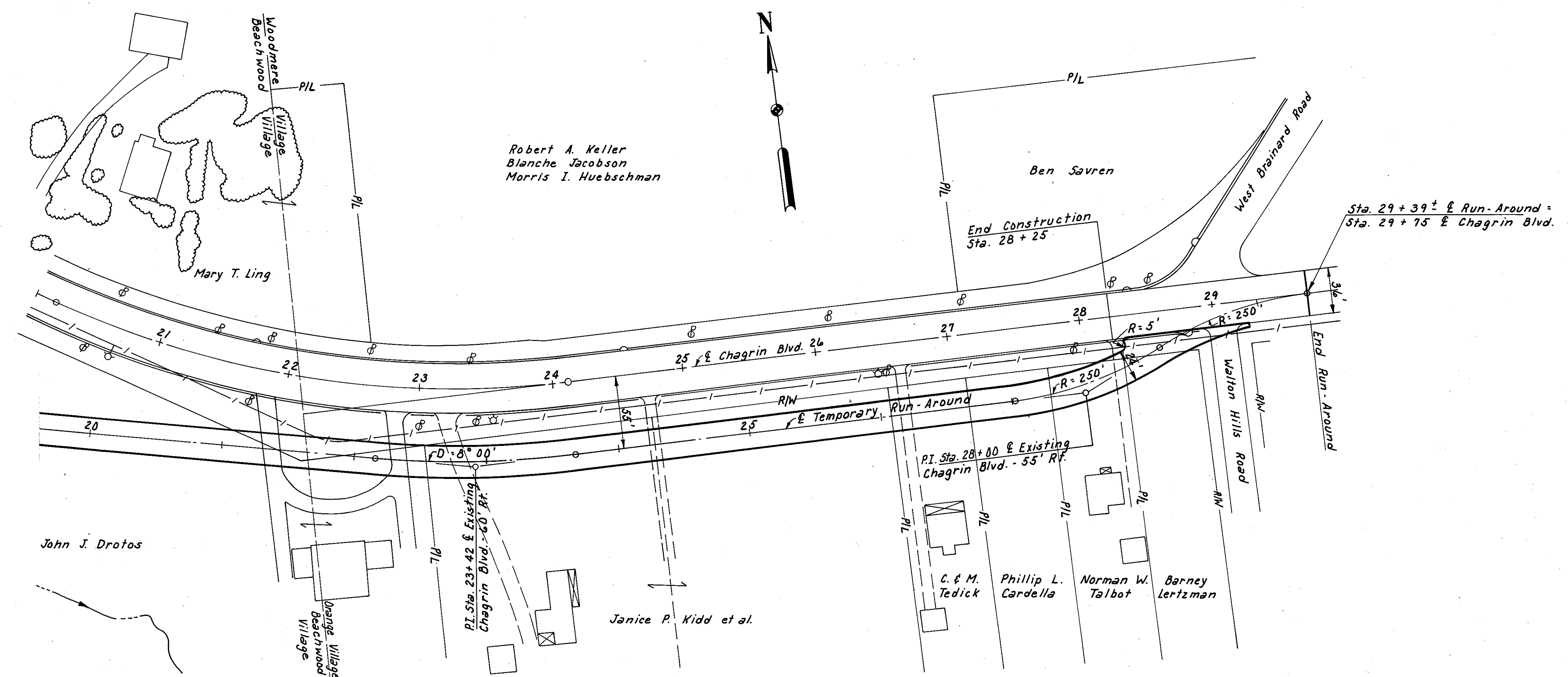
PLAN
SURVEYED, PLOTTED, ALIGNED, CHECKED, RT. OF WAY CHECKED.
NOTE BOOK NO. _____

PROFILE
SURVEYED, GRADES CHECKED, STRUCTURE NOTATIONS CHECKED.
NOTE BOOK NO. _____



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

Excavation	Cu. Yds.
Embankment	Cu. Yds.
Embankment +	Cu. Yds.



Excavation	Cu. Yds.
Embankment	Cu. Yds.
Embankment +	Cu. Yds.

PLAN
DATE
BY
NO.
DRAWN
CHECKED
BY
DATE

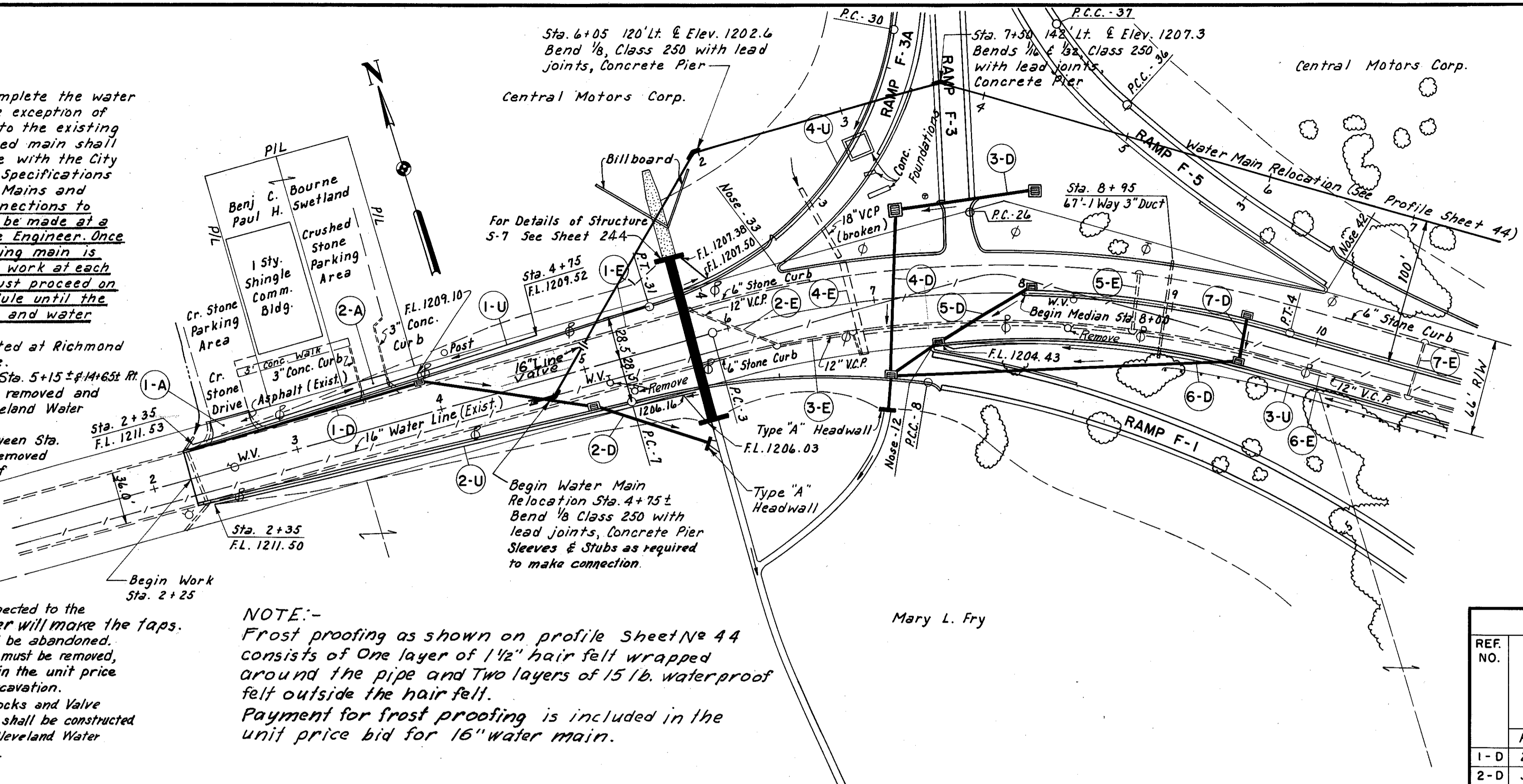
PROFILE
DATE
BY
NO.
SURF
GRADING
STRUCTURE NOTATIONS
CHECKED
BY
DATE

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

Water Main Note:
The Contractor shall complete the water main relocation with the exception of making the connections to the existing water main. The relocated main shall be tested in accordance with the City of Cleveland "Standard Specifications for Constructing Water Mains and Appurtenances". The connections to the existing main shall be made at a time designated by the Engineer. Once the service on the existing main is stopped, the connection work at each end of the relocation must proceed on a 24 hour per day schedule until the connections are complete and water service is restored.
Existing valves are located at Richmond Road and Maplecrest Ave. The existing water valves at Sta. 5+15 ± & 14+65 ± R.R. of E Chagrin Blvd. shall be removed and stored for the City of Cleveland Water Department, Harvard Yard. All hydrants and valves between Sta. 2+25 and 22+00 shall be removed and stored for the Village of Beachwood. The hydrant and valve at Sta. 23+50 ± shall be removed and stored for the Village of Orange. Service connections to the 2 properties in the Village of Orange south of Chagrin Blvd. shall be connected to the new water line. Div. of Water will make the taps. The existing water line shall be abandoned. In cut where the existing line must be removed, the cost shall be included in the unit price bid for Item E-1 Roadway Excavation. The 2" Drain and Vault, air cocks and Valve Boxes required by the plans shall be constructed in accordance with City of Cleveland Water Department standard practice.

DATE: 9-8-59
BY: F.C.C. / R.Z.H.
PLANNED, SURVEYED, PLOTTED, ALIGNED, CHECKED, NOTE BOOK, RT. OF WAY, CHECKED, NO.

DATE: 9-8-59
BY: F.C.C. / R.Z.H.
PROFILE, GRADES CHECKED, STRUCTURE NOTATIONS, CHECKED, NO.



NOTE:-
Frost proofing as shown on profile Sheet No 44 consists of One layer of 1/2" hair felt wrapped around the pipe and Two layers of 15 lb. waterproof felt outside the hair felt.
Payment for frost proofing is included in the unit price bid for 16" water main.

CHAGRIN BLVD. STA. 2+25 TO STA. 11+00 ESTIMATED QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
T-30	Prime Coat	620	Gal.
T-35	1 1/4" Asphaltic Concrete Surface Course	52	Cu. Yds.
T-71	9" Reinforced Portland Cement Concrete Pavement	3,622	Sq. Yds.
B-19	10" Aggregate Base Course	103	Cu. Yds.
B-35	Var. Asphaltic Concrete Leveling Course	140	Cu. Yds.
I-11	6"x20" Sandstone Curb Reset	600	Lin. Ft.
I-12	Standard Type 2-A Concrete Curb	1,117	Lin. Ft.
I-21	Portland Cement Concrete Median Pavement Type 1	67	Sq. Yds.
I-22	6" Subbase	721	Cu. Yds.
E-1	Compacted Subgrade	4,199	Sq. Yds.
E-8	Removal and Disposal of Existing Wearing Course	1,200	Sq. Yds.
E-8	Removal and Disposal of Existing Pavement and Base	2,321	Sq. Yds.
E-8	Removal and Disposal of Existing Stone Curb	795	Lin. Ft.
E-8	Removal for Re-use of Existing Stone Curb	600	Lin. Ft.
S-25	3" Asbestos-Cement Conduit, Sec. M-206.14, as per plan	67	Lin. Ft.

DRAINAGE

REF. NO.	STATION	SIDE	I-2		I-8		I-16	E-2	E-12	S-1	S-4				
			Cl. "B" St. Sew.	Cl. "B" St. Sew.	Std. No. 1-3	Std. No. 3	Std. C.B. No. 3-A	Exc. Struct.	Removal of Pipe 15" and Over	Conc. for "c"	Reinf. Steel				
			12" Und. Pnt.	18" Und. Pnt.	C.B.	C.B.	C.B.	Cu. Yds.	Lin. Ft.	Cu. Yds.	Lbs.				
			Lin. Ft.		Each.										
1-D	2+25	3+90	Lt.		•163										
2-D	3+90	5+67	Lt.	74	•116		2	11		3.30	146				
3-D	7+20	8+05	Lt.		•90	1									
4-D	7+20		Rt.		•108	1	1	11		3.20	146				
5-D	8+05	1+75 F-1	Rt.		•102		2								
6-D	9+50	1+75 F-1	Rt.		•226										
7-D	9+50		Rt.		•27		2								
1-E	2+25	5+78	Lt.						350						
2-E	6+05		Rt.					2	62						
3-E	6+30	6+85	Rt.				1		65						
4-E	6+85		Rt.						124						
5-E	8+75		Rt.				2		36						
6-E	6+90	11+00	Rt.						300						
7-E	10+70		Rt.				2		36						
Total				74	18	•832	2	1	6	7	22	849	124	6.50	292

UNDERDRAINS

REF. NO.	STATION	SIDE	I-3	I-4	I-5		
			Outlet Pipe 8"	Pipe Under 6"	60° Tee 6"x6"x6"	60° Tee 6"x6"x6"	
			Lin. Ft.		Each		
1-U	2+35	4+75	Lt.		238	1	
2-U	2+35	5+70	Rt.	10	347	1	
3-U	7+40	11+00	Rt.		260		
4-U	1+25 F-3A	4+05 F-3A	Rt.	10	295	1	
Total				20	1140	2	1

DRIVES AND APPROACHES

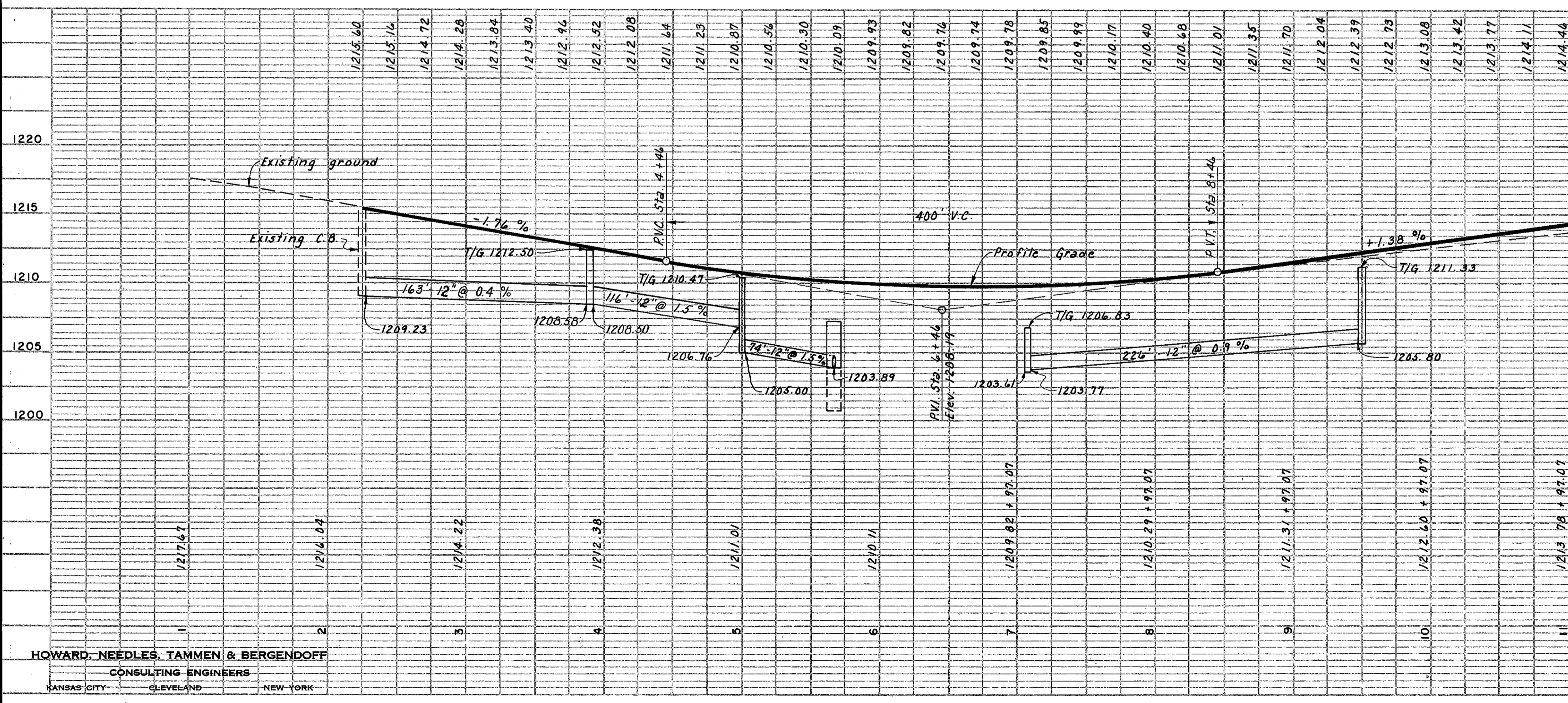
REF. NO.	STATION	SIDE	TYPE	WIDTH	E-1	I-22	T-70
					Roadway Subbase 8" FCC, Exc.	6" Drives	6" Drives
					Cu. Yds.	Sq. Yds.	Sq. Yds.
1-A	2+60	Lt.	Comm.	27'	20	8	50
2-A	3+60	Lt.	Comm.	17'	9	4	22
Total					29	12	72

GUARDRAIL

STATION	SIDE	I-15	
		Steel Beam Type (Deep)	
		Lin. Ft.	
9+00	11+00	Rt.	200
Total			200

Note:
For Curve data see Sheet 56.
For Sewer Profiles see Sheet 261.

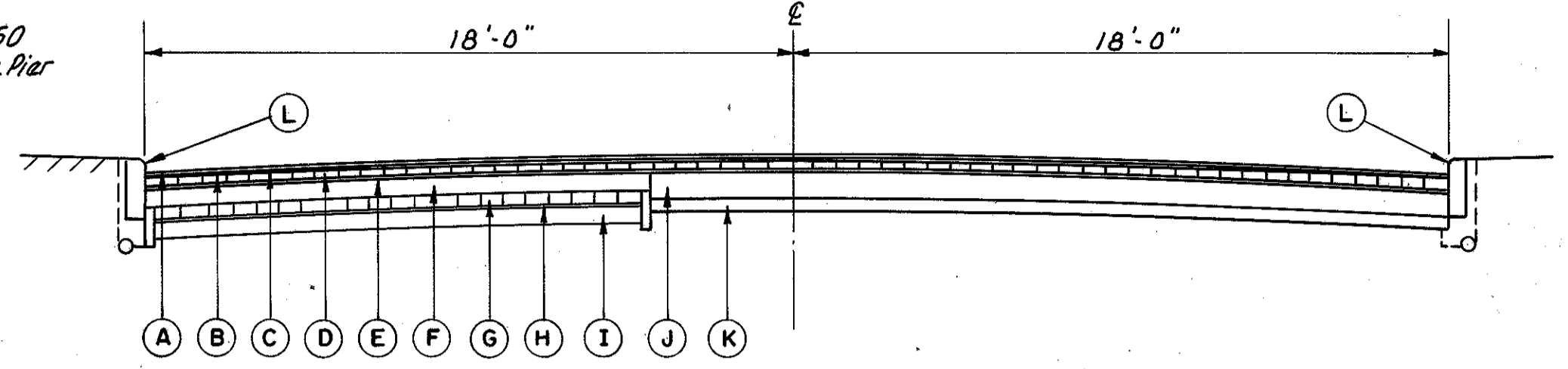
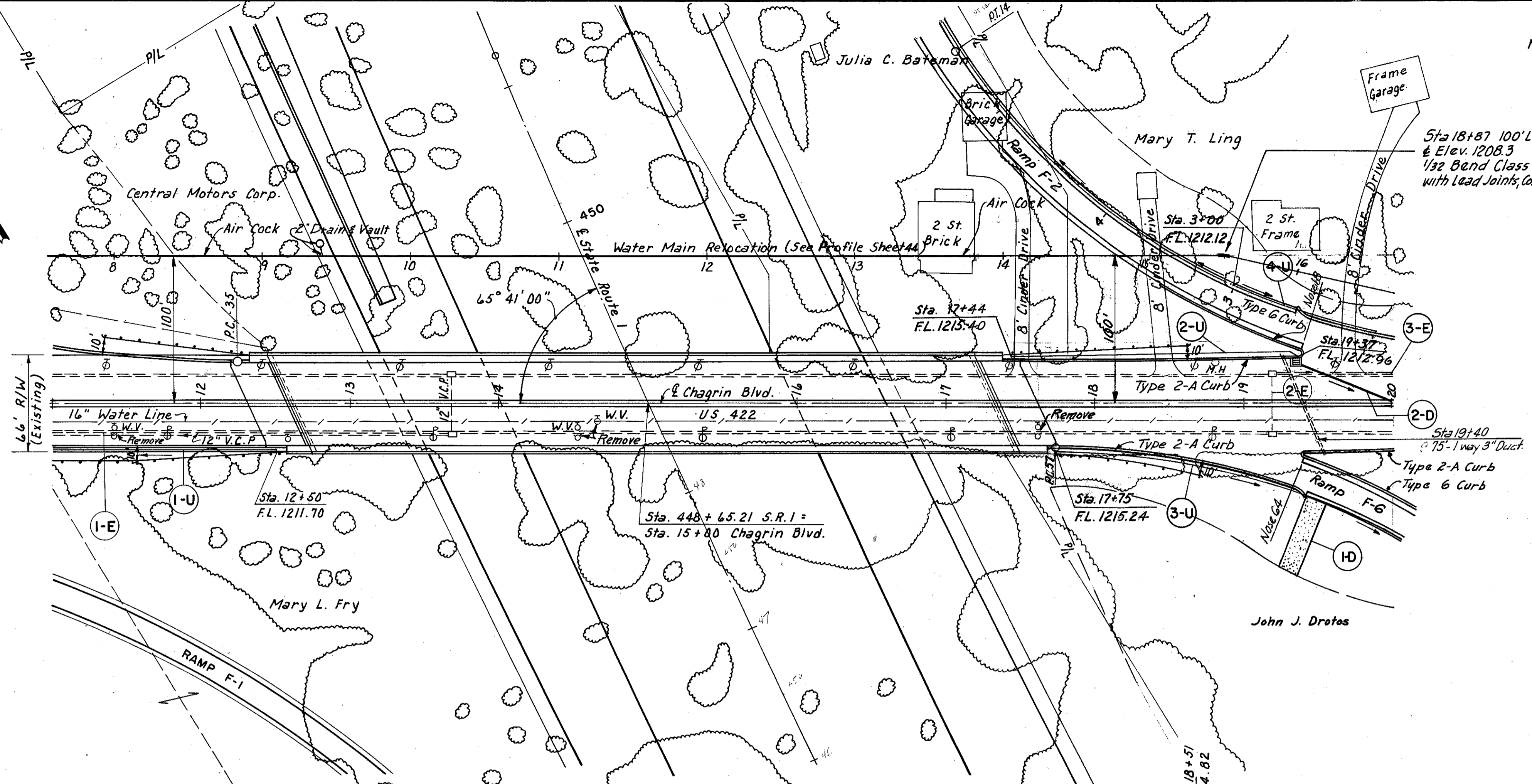
Excavation	2,522	Cu. Yds.
Embankment	2,466	Cu. Yds.
Embankment + 18%	2,910	Cu. Yds.



Note: From Sta. 13+00 to Sta. 17+00 removal of existing drainage shall be included in Item E-1 Roadway Excavation.

PLAN
SURVEYED BY: [Name]
DATE: APR 23 1966
NOTE: BOOK NO. [Number]
ALIGNMENT CHECKED BY: [Name]
RT. OF WAY CHECKED BY: [Name]

MICROFILMED
APR 23 1966



- (A) 1" Asphaltic Concrete Surface Course
- (B) 1 1/2" Asphaltic Concrete Leveling Course
- (C) Bituminous Tack Coat
- (D) 3" Brick (Asphalt Filler)
- (E) 3/4" Sand Cushion
- (F) 6" Concrete Base
- (G) 4" Brick Surface
- (H) 3/4" Sand Cushion
- (I) 6" Concrete Base
- (J) 9" Concrete Base
- (K) 4" Granulated Slag Cushion
- (L) 6"x20" Sandstone Curb

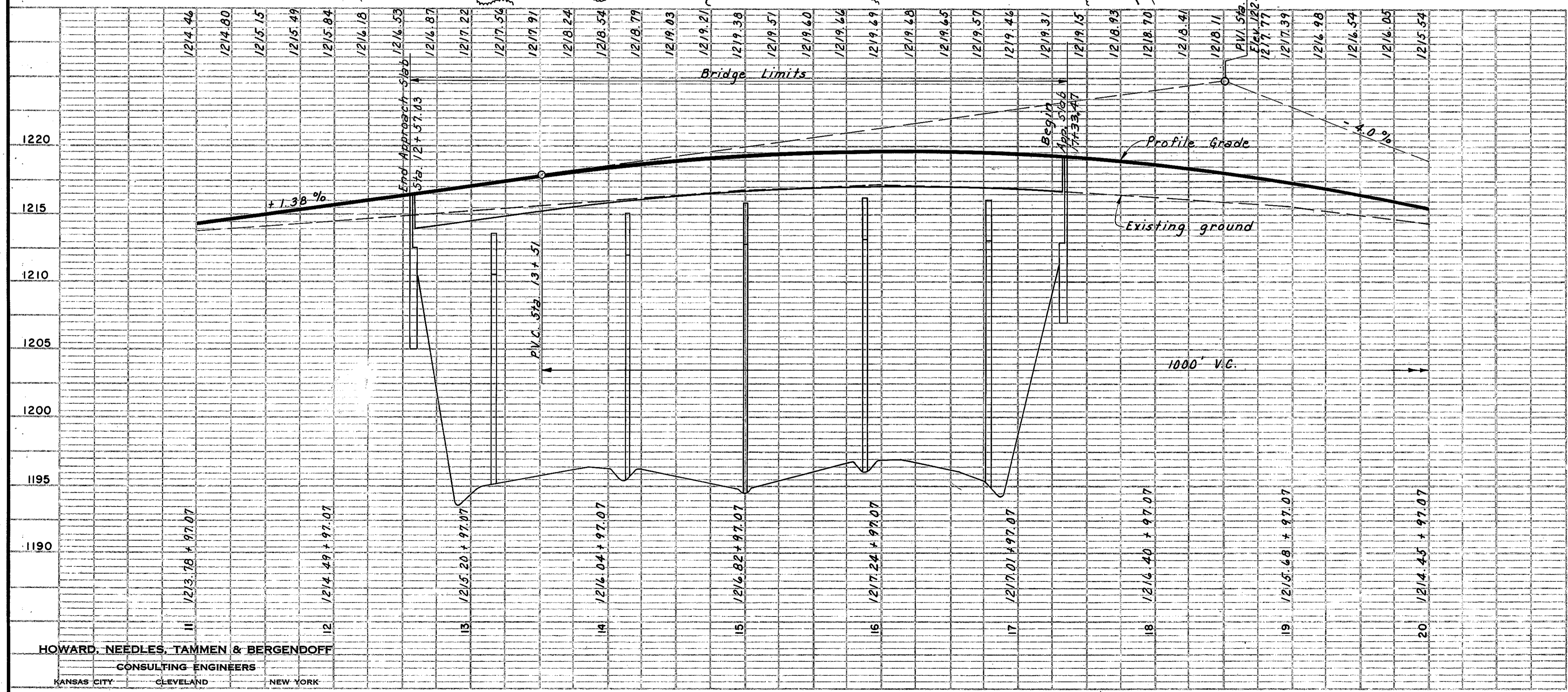
TYPICAL SECTION OF EXISTING CHAGRIN BLVD.

PROPOSED STRUCTURE
 TYPE: Continuous welded girders with reinforced concrete deck and substructure
 SPANS: 58'-0", 96'-6", 86'-0", 86'-6", 90'-0" & 54'-6"
 ROADWAY: 2 at 27'-0" with 2-4'-2" sidewalks and 3'-0" raised median
 LOAD FREQUENCY: CF 2000 Adequate for A.A.S.H.O. Alternate Loading
 SKEW: 24° 19' 00" R.F.
 WEARING SURFACE: 1" Monolithic Concrete
 APPROACH SLABS: AS-1-54 (25' long)
 ALIGNMENT: Tangent
 BRIDGE NO. CUY-1-0353

GUARDRAIL			
STATION	SIDE	I-15	
		Steel Beam Type (Deep)	
		Lin. Ft.	
From	To		
11+00	12+57	Rt.	157
11+32	12+32	Lt.	100
17+38	18+63	Lt.	125
17+68	18+68	Rt.	100
Total			482

See Sheets 276-283

PROFILE
SURVEYED BY: [Name]
DATE: [Date]
NOTE: BOOK NO. [Number]
GRADES CHECKED BY: [Name]
B.M. NOTED BY: [Name]
STRUCTURE NOTATIONS CHYD



DRAINAGE					
REF. NO.	STATION	SIDE	I-16	E-12	L-10
			C.B. Removal of Pipe 15' and Under	Removal of Siding 15' and Under	
	From	To	Each	Lin. Ft.	Sq. Yds.
1-E	11+00	13+00	Rt.	2	200
2-E	19+15	20+00	Lt.	2	36
3-E	19+15	20+00	Lt.		84
1-D	1+80	F-6	Rt.		66
Total				2	320

UNDERDRAINS				
REF. NO.	STATION	SIDE	I-4	
			Pipe Under-drains 6"	Lin. Ft.
	From	To		
1-U	11+00	12+50	Rt.	150
2-U	17+44	19+37	Lt.	194
3-U	17+75	2+35 F-6	Rt.	235
4-U	3+00 F-2	20+00	Lt.	110
Total				689

Note: For Drainage Quantity 2-D see Sheet 43.

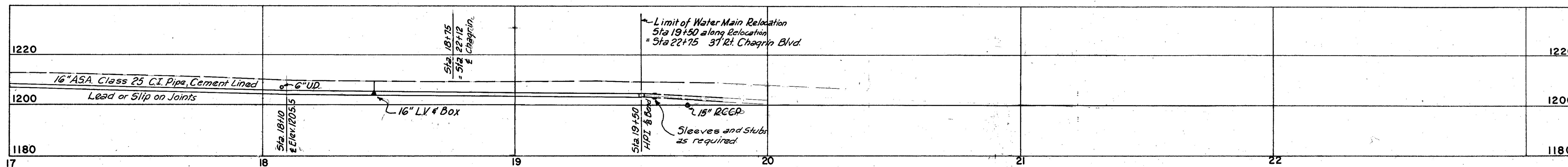
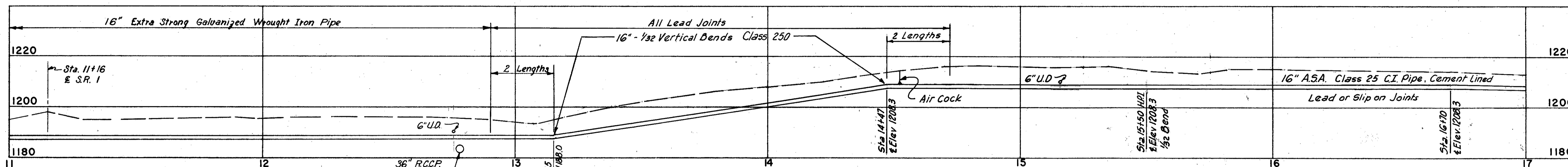
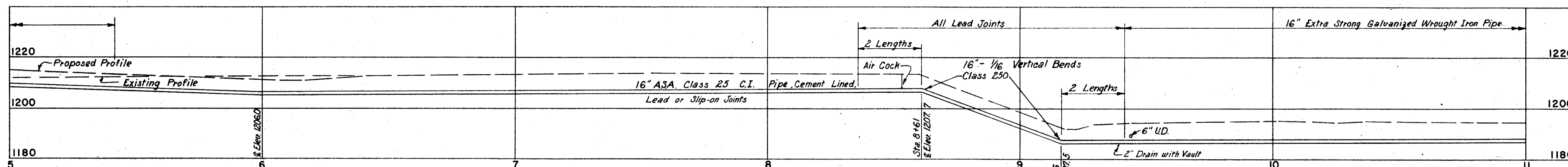
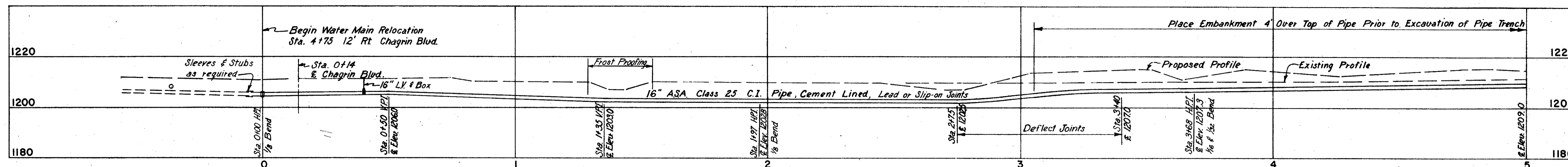
CHAGRIN BLVD. STA. 11+00 TO STA. 20+00 ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-1	Compacted Subgrade, including Approach Slabs	2,757	Sq. Yds.
E-8	Removal and Disposal of Existing Pavement and Base	3,600	Sq. Yds.
E-8	Removal and Disposal of Existing Stone Curb	1,800	Lin. Ft.
I-7	Reinforced Concrete Approach Slabs	318	Sq. Yds.
I-12	Standard Type 2-A Concrete Curb	982	Lin. Ft.
I-21	Portland Cement Concrete Median Pavement Type 1	83	Sq. Yds.
I-22	6" Subbase	489	Cu. Yds.
T-11	9" Reinforced Portland Cement Concrete Pavement	2,295	Sq. Yds.
S-25	3" Asbestos Cement Conduit, Sec. M-206.14, as per plan.	75	Lin. Ft.

Note: For Curve data see Sheet 56

Excavation	166	Cu. Yds.
Embankment	3,214	Cu. Yds.
Embankment + 18%	3,793	Cu. Yds.

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CUYAHOGA COUNTY
CUY-1-2.20



MADE E.R.H. DATE 5-12-61 TRACED DATE
CHECKED E.C.E. DATE 5-12-61 SCALE 1" = 20'

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CONSULTING ENGINEERS
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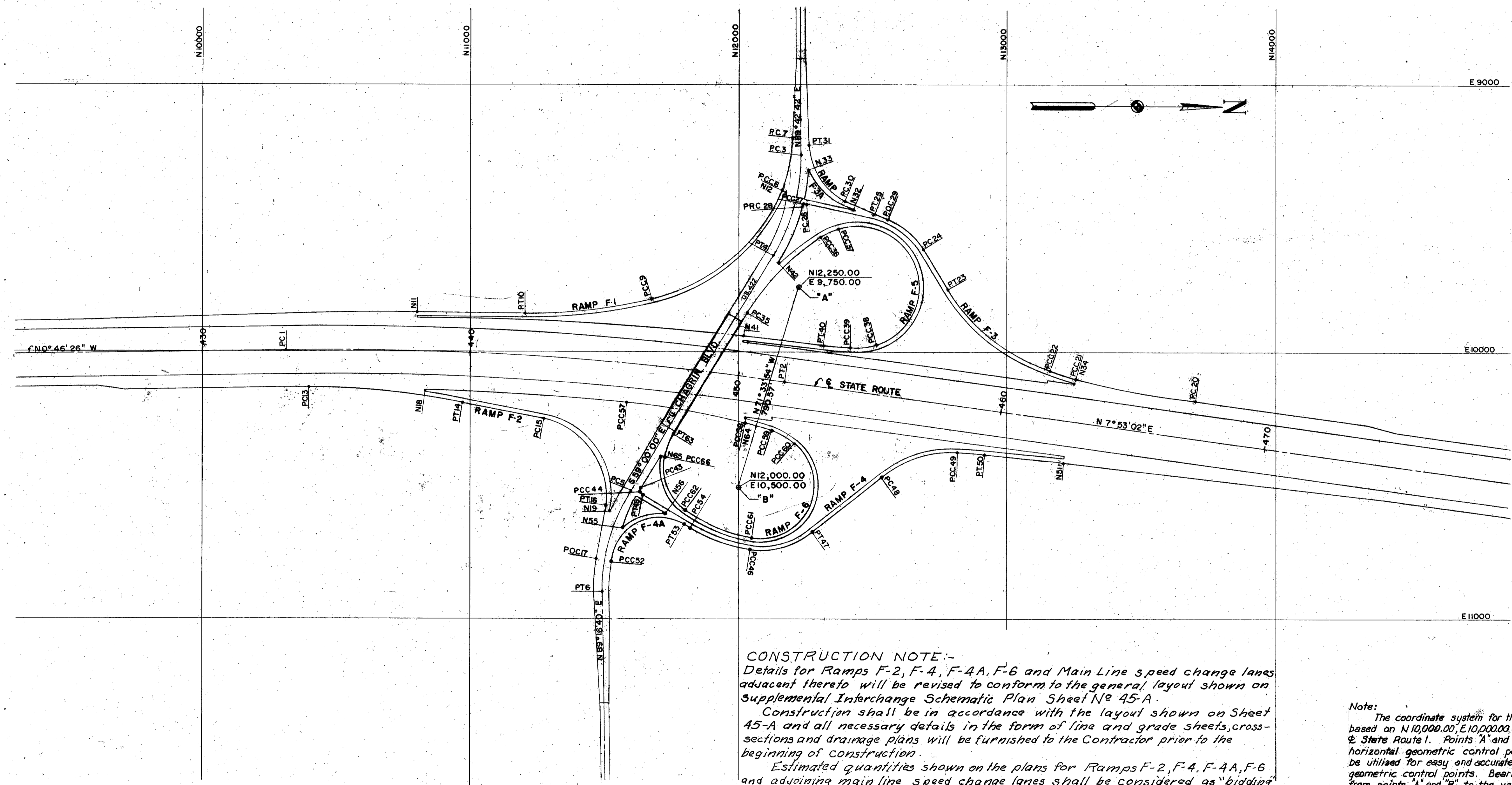
For Water Main Relocation Plan See Sheets 41-43.

PRELIMINARY LAYOUT
 SEE SHEET NO. 45-A FOR LAYOUT TO BE USED
 IN CONSTRUCTION OF THIS INTERCHANGE

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

45
373

CUYAHOGA COUNTY
 CUY-1-2.20



CONSTRUCTION NOTE:-
 Details for Ramps F-2, F-4, F-4A, F-6 and Main Line speed change lanes adjacent thereto will be revised to conform to the general layout shown on Supplemental Interchange Schematic Plan Sheet No 45-A.
 Construction shall be in accordance with the layout shown on Sheet 45-A and all necessary details in the form of line and grade sheets, cross-sections and drainage plans will be furnished to the Contractor prior to the beginning of construction.
 Estimated quantities shown on the plans for Ramps F-2, F-4, F-4A, F-6 and adjoining main line speed change lanes shall be considered as "bidding" quantities and necessary adjustment in pay quantities for the affected items of work will be done by Change Order or by Final Measurement.

Note:
 The coordinate system for this interchange is based on N 10,000.00, E 10,000.00 at Sta. 430+00.00 @ State Route 1. Points "A" and "B" are master horizontal geometric control points which may be utilized for easy and accurate location of Ramp geometric control points. Bearings and distances from points "A" and "B" to the various control points, coordinates of the control points and curve data are shown on sheet 56.

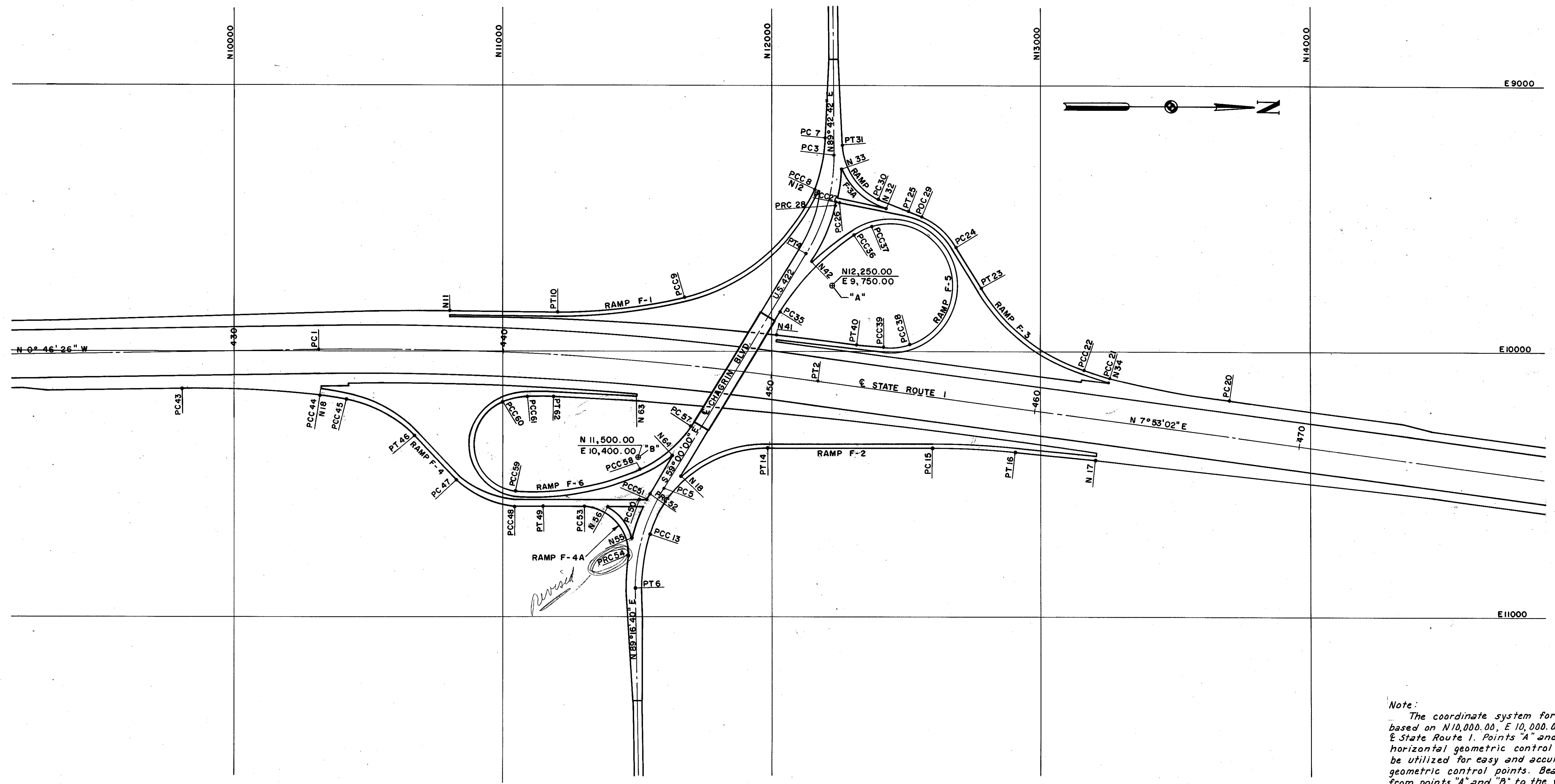
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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MADE	DATE	TRACED	DATE
DJK	7-6-59		
CHECKED	DATE	SCALE	
HJH	9-11-59	1" = 200'	

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

45A
313

CUYAHOGA COUNTY
CUY-1-2.20



Note:
The coordinate system for this interchange is based on N 10,000.00, E 10,000.00 at Sta. 430+00.00 of State Route 1. Points "A" and "B" are master horizontal geometric control points which may be utilized for easy and accurate location of Ramp geometric control points. Bearings and distances from points "A" and "B" to the various control points, coordinates of the control points and curve data are shown on sheet 56.
The bearing from Point "A" to Point "B" is 54° 34' 52" E and the distance between Point "A" and Point "B" is 992.47'.

MADE DWK DATE 3-27-61 TRACED AEK DATE 3-29-61
CHECKED HJH DATE 3-29-61 SCALE 1" = 200'

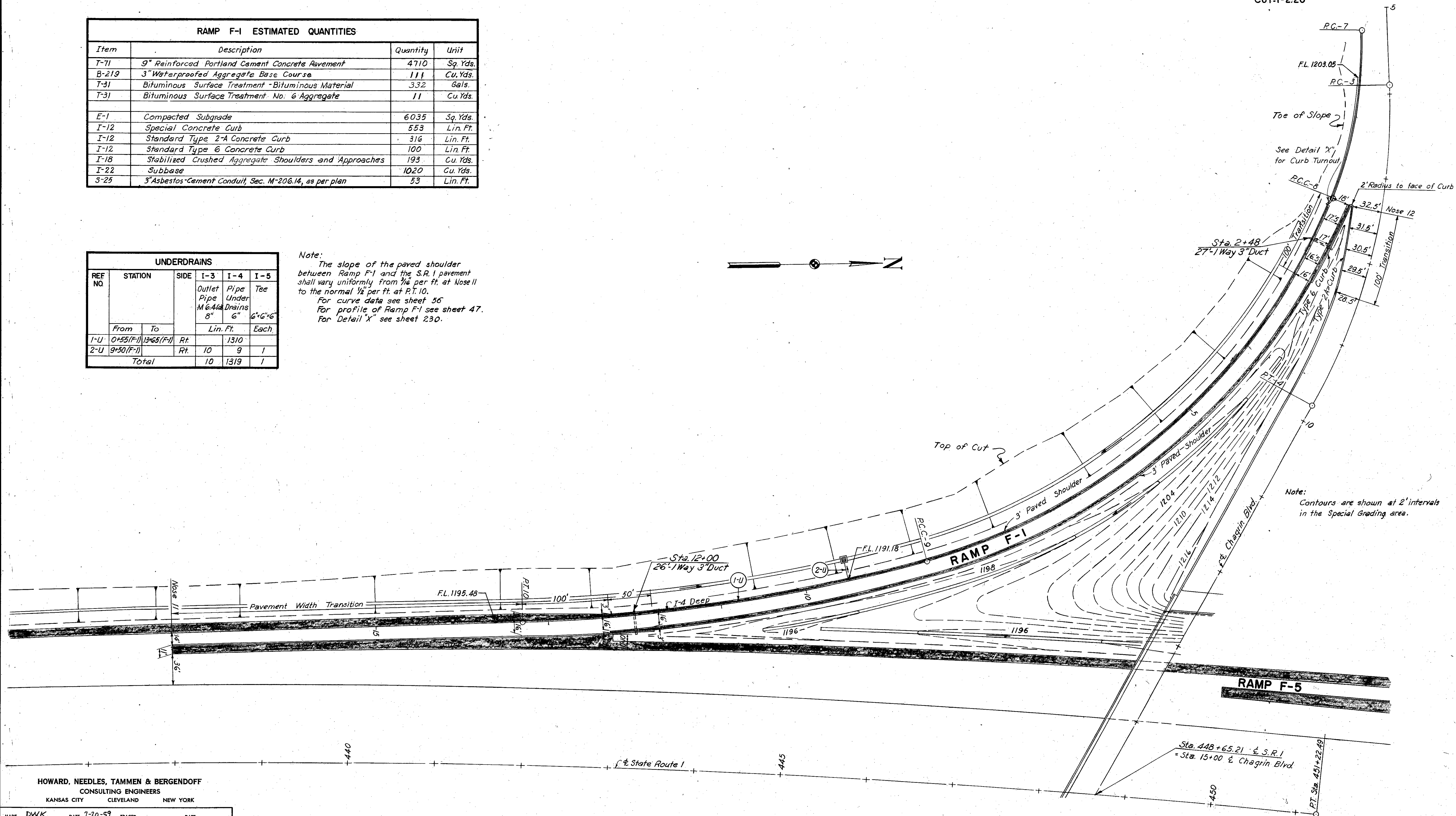
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Rev. 4-11-61

RAMP F-1 ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
T-71	9" Reinforced Portland Cement Concrete Pavement	4710	Sq. Yds.
B-219	3" Waterproofed Aggregate Base Course	111	Cu. Yds.
T-31	Bituminous Surface Treatment - Bituminous Material	332	Gals.
T-31	Bituminous Surface Treatment No. 6 Aggregate	11	Cu. Yds.
E-1	Compacted Subgrade	6035	Sq. Yds.
I-12	Special Concrete Curb	553	Lin. Ft.
I-12	Standard Type 2-A Concrete Curb	316	Lin. Ft.
I-12	Standard Type 6 Concrete Curb	100	Lin. Ft.
I-18	Stabilized Crushed Aggregate Shoulders and Approaches	193	Cu. Yds.
I-22	Subbase	1020	Cu. Yds.
I-25	3" Asbestos-Cement Conduit, Sec. M-206.14, as per plan	53	Lin. Ft.

UNDERDRAINS						
REF. NO.	STATION		SIDE	I-3	I-4	I-5
	From	To		Outlet Pipe M. & A. Drains 8"	Pipe Under Drains 6"	Tee Pipe Under Drains 6" x 6" x 6"
			Lin. Ft.	Each	Each	
1-U	0+55(F-1)	13+65(F-1)	Rt.		1310	
2-U	9+50(F-1)		Rt.	10	9	1
Total				10	1319	1

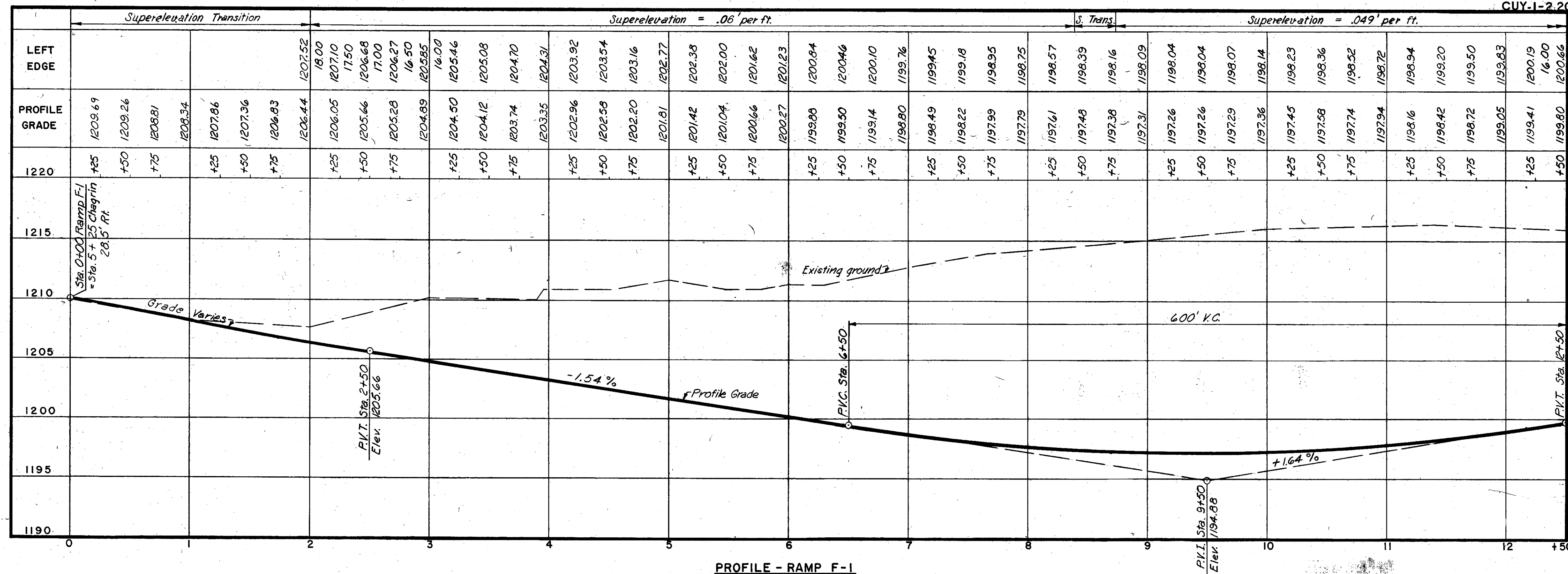
Note:
The slope of the paved shoulder between Ramp F-1 and the S.R. 1 pavement shall vary uniformly from 1/8" per ft. at Nose II to the normal 1/2" per ft. at R.T. 10.
For curve data see sheet 56
For profile of Ramp F-1 see sheet 47.
For Detail 'X' see sheet 230.



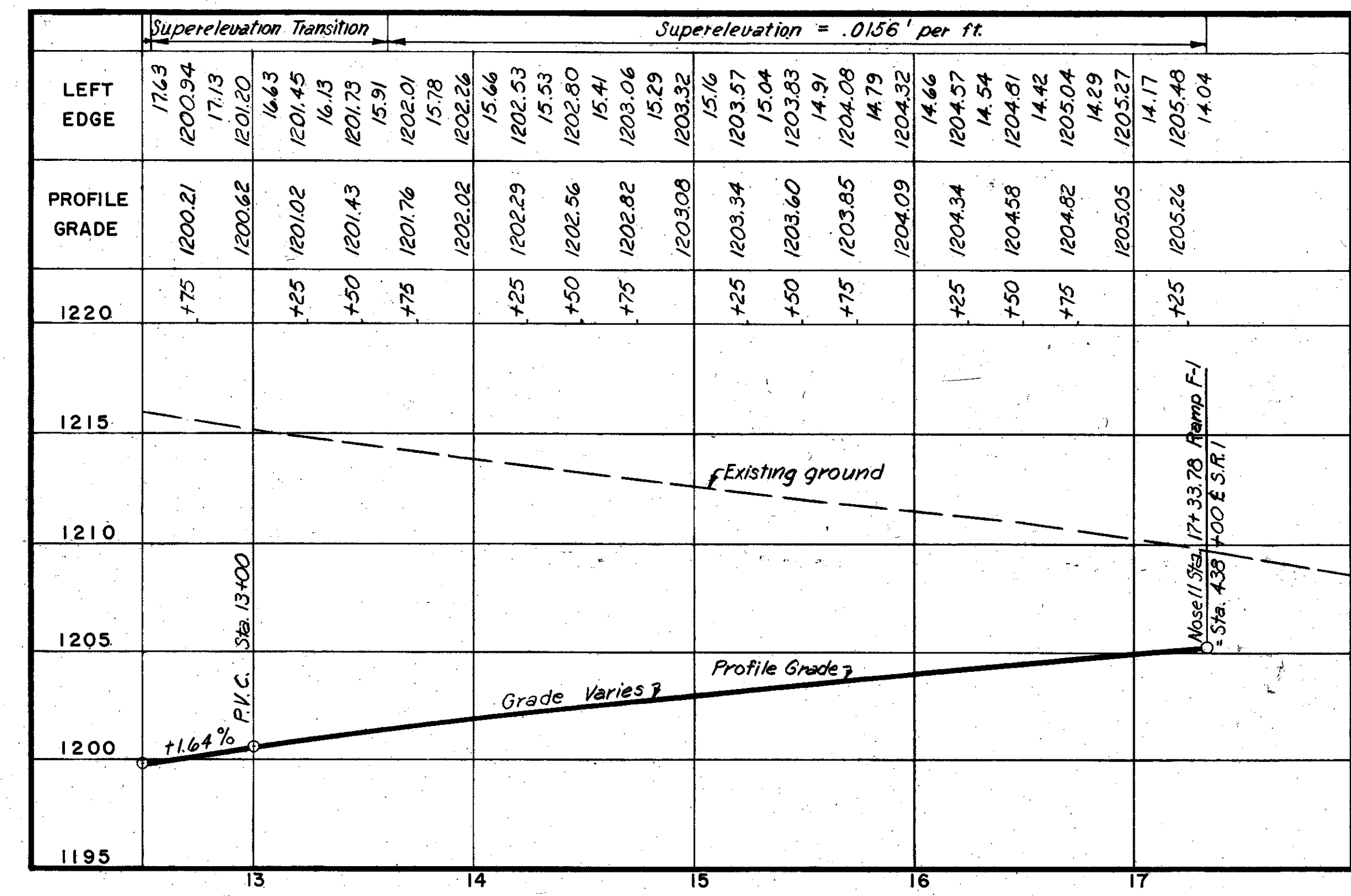
Note:
Contours are shown at 2' intervals in the Special Grading area.

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KANSAS CITY CLEVELAND NEW YORK

MADE DWK DATE 7-20-59 TRACED DATE
CHECKED ECE DATE 9-30-59 SCALE



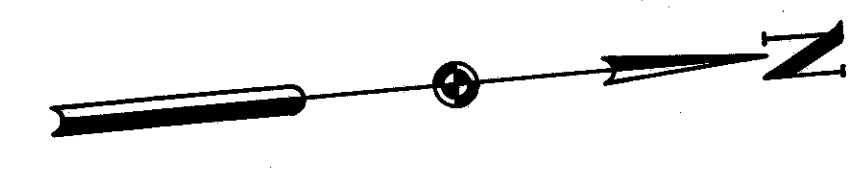
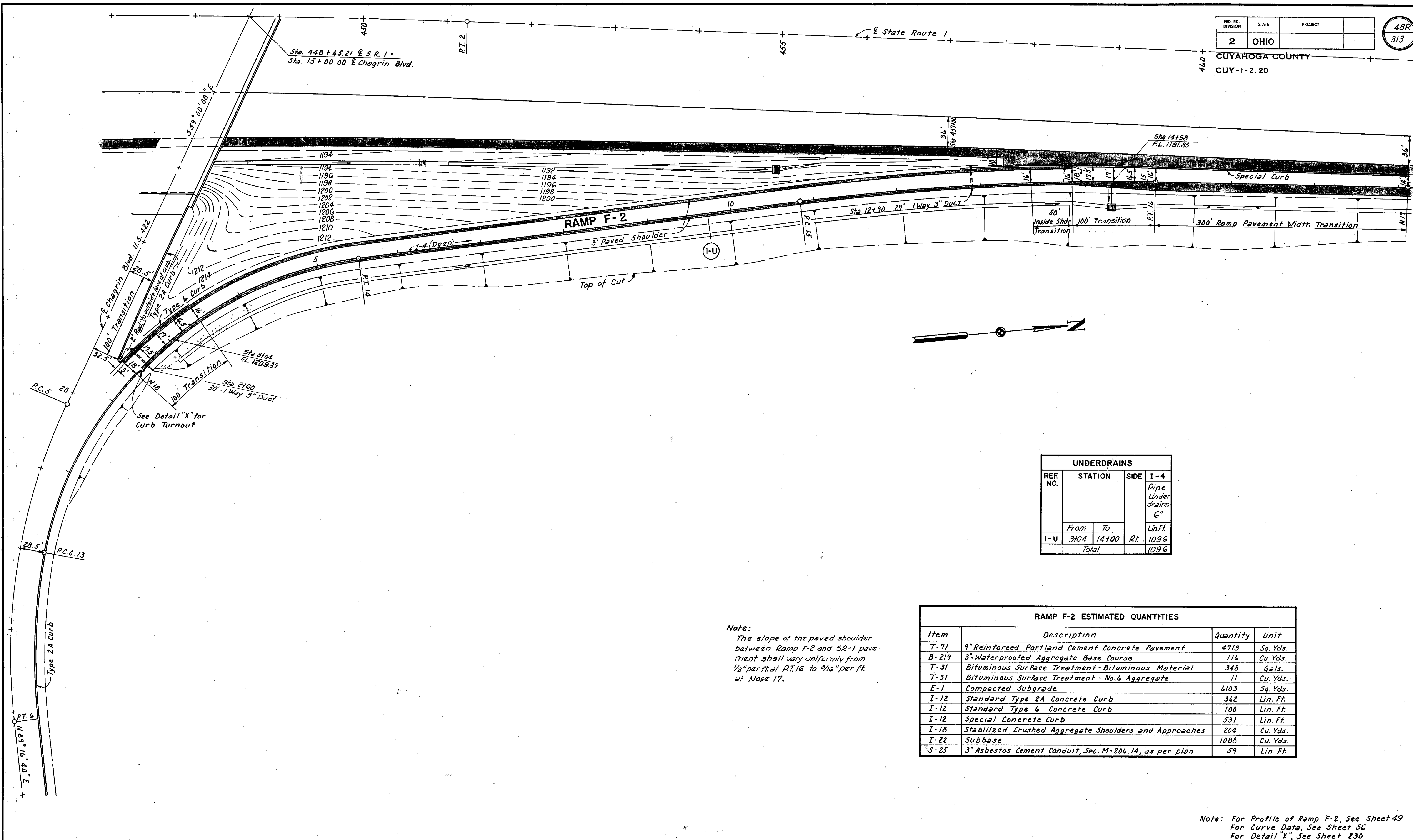
PROFILE - RAMP F-1



PROFILE - RAMP F-1

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MADE LVM DATE 5-20-59 TRACED DATE
CHECKED D.W.K. DATE 7-8-59 SCALE Hor: 1"=50' Vert: 1"=5'

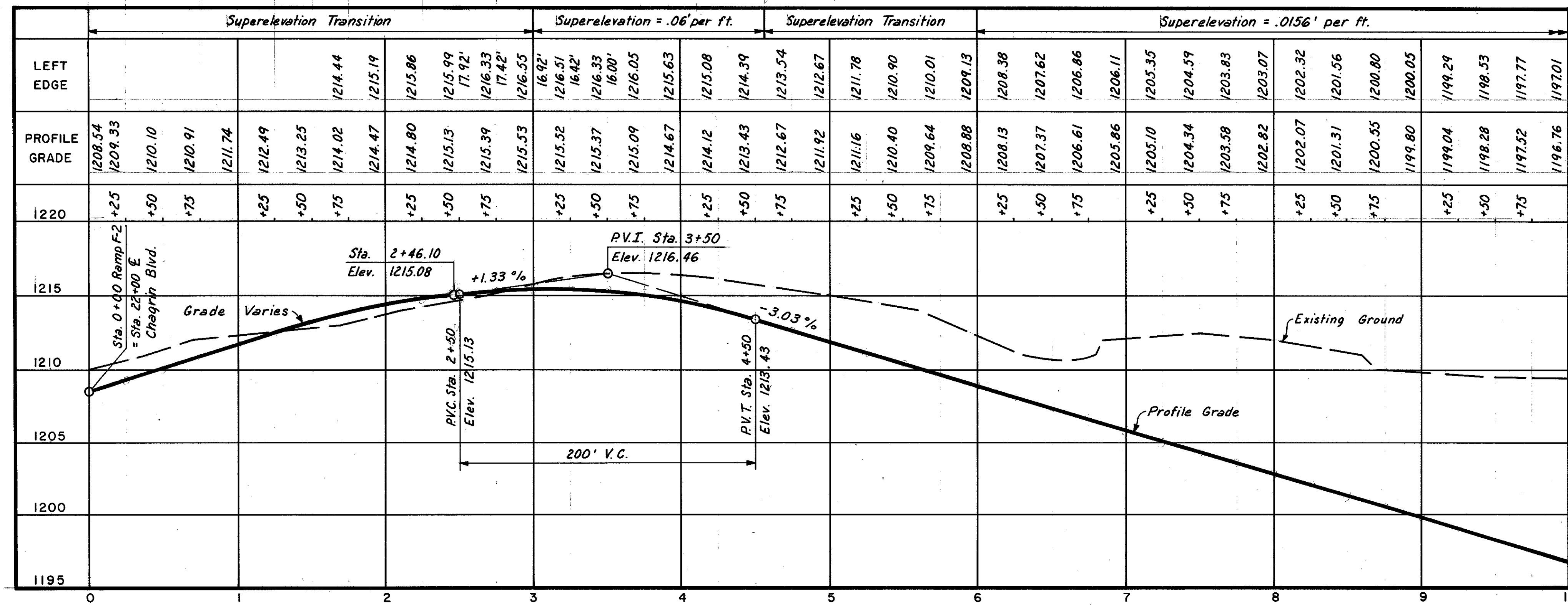


UNDERDRAINS				
REF NO.	STATION		SIDE	I-4 Pipe Under drains 6"
	From	To		
I-U	3104	14+00	Rt.	1096
	Total			1096

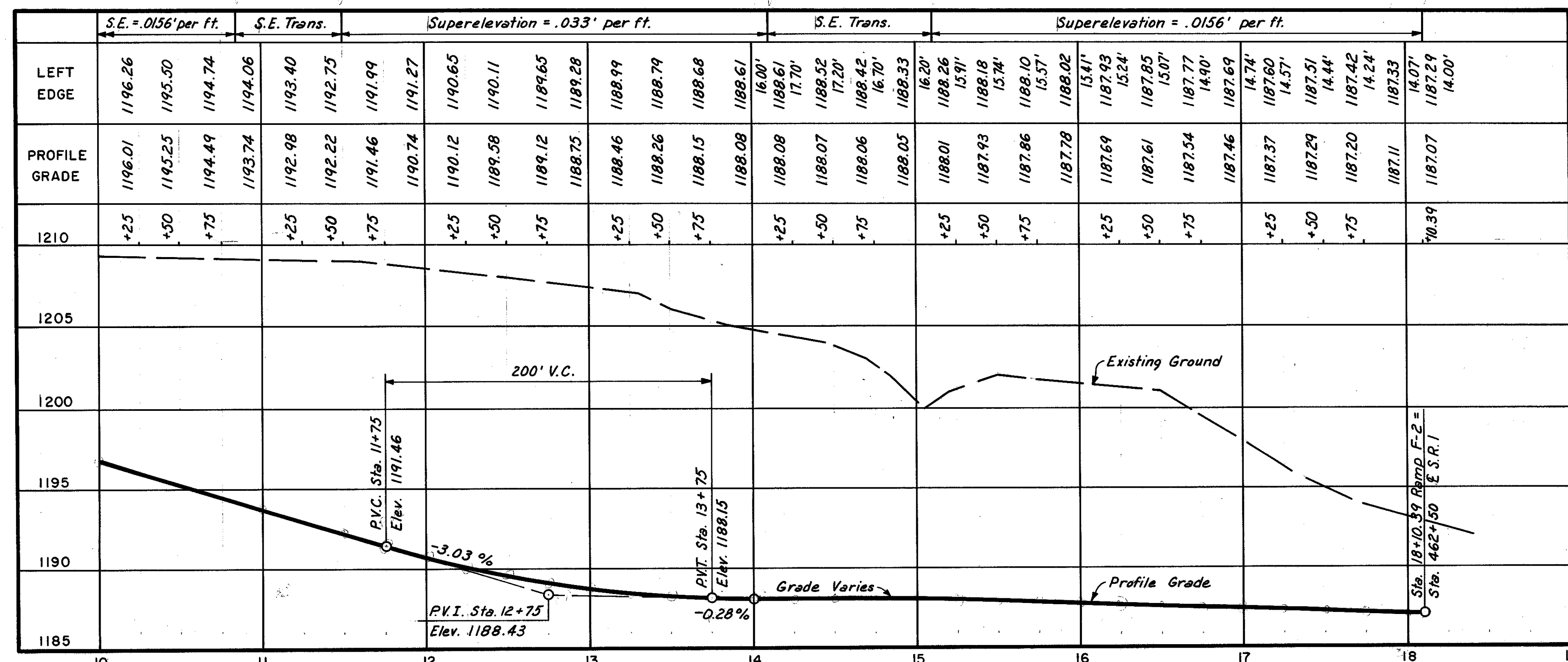
RAMP F-2 ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
T-71	9" Reinforced Portland Cement Concrete Pavement	4713	Sq. Yds.
B-219	3" Waterproofed Aggregate Base Course	116	Cu. Yds.
T-31	Bituminous Surface Treatment - Bituminous Material	348	Gals.
T-31	Bituminous Surface Treatment - No. 6 Aggregate	11	Cu. Yds.
E-1	Compacted Subgrade	4103	Sq. Yds.
I-12	Standard Type 2A Concrete Curb	342	Lin. Ft.
I-12	Standard Type 6 Concrete Curb	100	Lin. Ft.
I-12	Special Concrete Curb	531	Lin. Ft.
I-18	Stabilized Crushed Aggregate Shoulders and Approaches	204	Cu. Yds.
I-22	Subbase	1088	Cu. Yds.
S-25	3" Asbestos Cement Conduit, Sec. M-206.14, as per plan	59	Lin. Ft.

Note:
The slope of the paved shoulder between Ramp F-2 and SR-1 pavement shall vary uniformly from 1/2" per ft. at P.T. 16 to 3/16" per ft. at Nose 17.

Note: For Profile of Ramp F-2, See Sheet 49
For Curve Data, See Sheet 56
For Detail "X", See Sheet 230



PROFILE - RAMP F-2



PROFILE - RAMP F-2

RAMPS F-3, F-3A AND F-5 ESTIMATED QUANTITIES

Item	Description	Ramp F-3 Quantity	Ramp F-3A Quantity	Ramp F-5 Quantity	Total Quantity	Unit
T-71	9" Reinforced Portland Cement Concrete Pavement	4418	590	4564	9572	Sq. Yds.
B-219	3" Waterproofed Aggregate Base Course	60	12	106	178	Cu. Yds.
T-31	Bituminous Surface Treatment - Bituminous Material	179	37	319	535	Gals.
T-31	Bituminous Surface Treatment - No. 6 Aggregate	5.7	1.2	10.1	17	Cu. Yds.
L-6	Roadside Cleanup			104	104	Units
E-1	Compacted Subgrade	5132	738	5840	11,710	Sq. Yds.
I-12	Special Concrete Curb			461	461	Lin. Ft.
I-12	Standard Type 2-A Concrete Curb	71	207	339	617	Lin. Ft.
I-12	Standard Type G Concrete Curb	590	50	506	1146	Lin. Ft.
I-18	Stabilized Crushed Aggregate Shoulders and Approaches	108	23	186	317	Cu. Yds.
I-21	Standard Type I Portland Cement Concrete Median Pavement	29			29	Sq. Yds.
I-22	Subbase	875	132	990	1997	Cu. Yds.
S-25	3" Asbestos-Cement Conduit, Sec. M-206.14, as per plan	79	52	133	264	Lin. Ft.

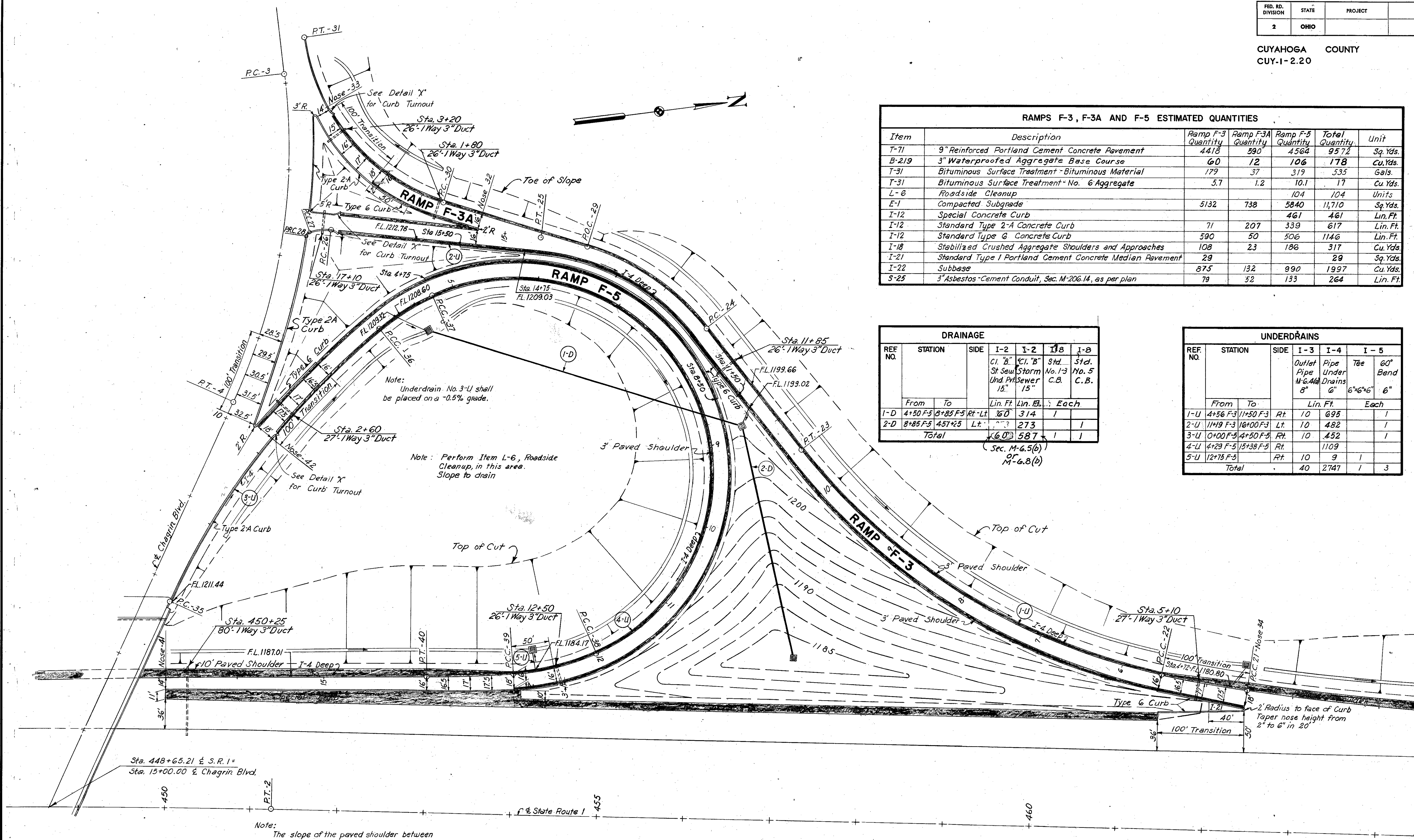
DRAINAGE

REF. NO.	STATION	SIDE	I-2	I-2	I-8	I-8
			Cl. B" St Sew Und. 15"	Cl. B" Storm Sewer 15"	No. 13 C.B.	No. 5 C.B.
			Lin. Ft.	Lin. Ft.	Each	Each
1-D	4+50 F-5	Rt.	260	314	1	
2-D	8+85 F-5	Lt.	273			
Total			533	314	1	1

(Sec. M-6.5(b)
M-6.8(b))

UNDERDRAINS

REF. NO.	STATION	SIDE	I-3	I-4	I-5
			Outlet Pipe 8" 6'x6'x6"	Pipe Under Drains 6"	Tee Bend 6"
			Lin. Ft.	Each	Each
1-U	4+56 F-3	Rt.	10	695	1
2-U	11+19 F-3	Lt.	10	482	1
3-U	0+00 F-5	Rt.	10	452	1
4-U	4+29 F-5	Rt.	10	1109	
5-U	12+75 F-5	Rt.	10	9	1
Total			40	2747	3

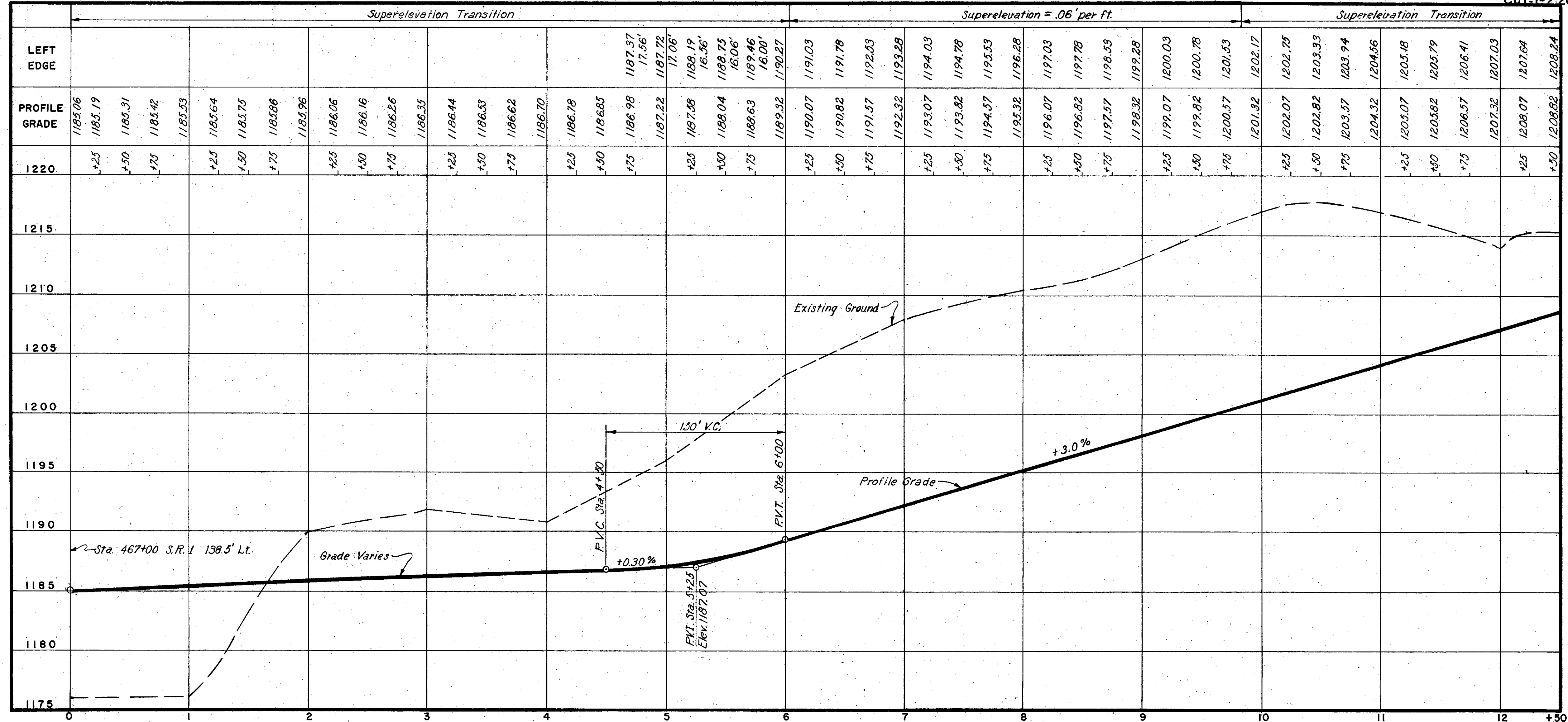


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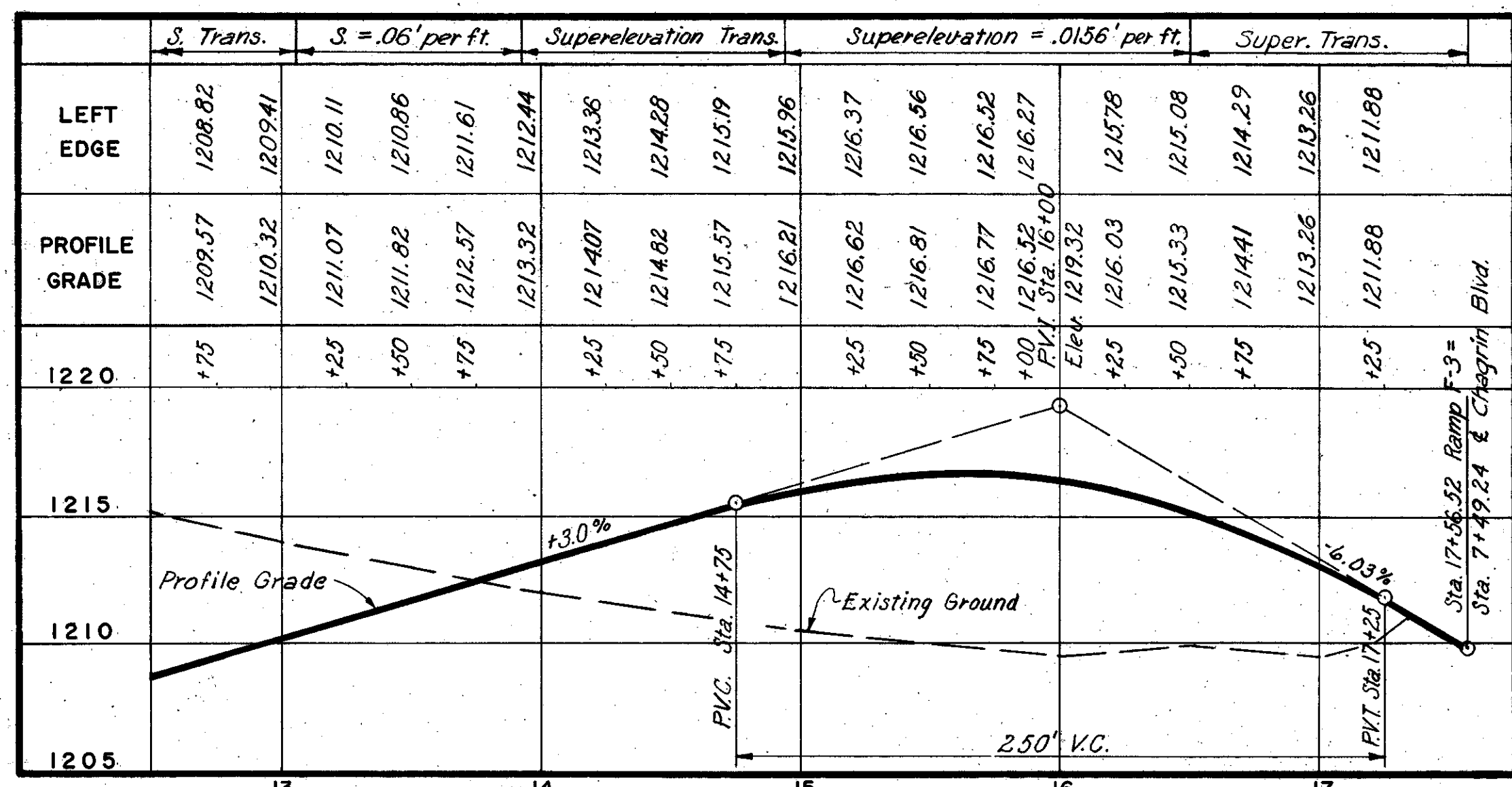
MADE DWK DATE 7-28-59 TRACED DATE
CHECKED ECE DATE 10-7-59 SCALE 1"=50'

Note:
The slope of the paved shoulder between Ramp F-5 and the S.R.1 pavement shall vary uniformly from 1/16" per ft. at Nose 41 to the normal 1/8" per ft. at P.T.40.
For curve data see sheet 56.
For profiles of Ramps F-3, F-3A and F-5 see sheets 51 & 52.

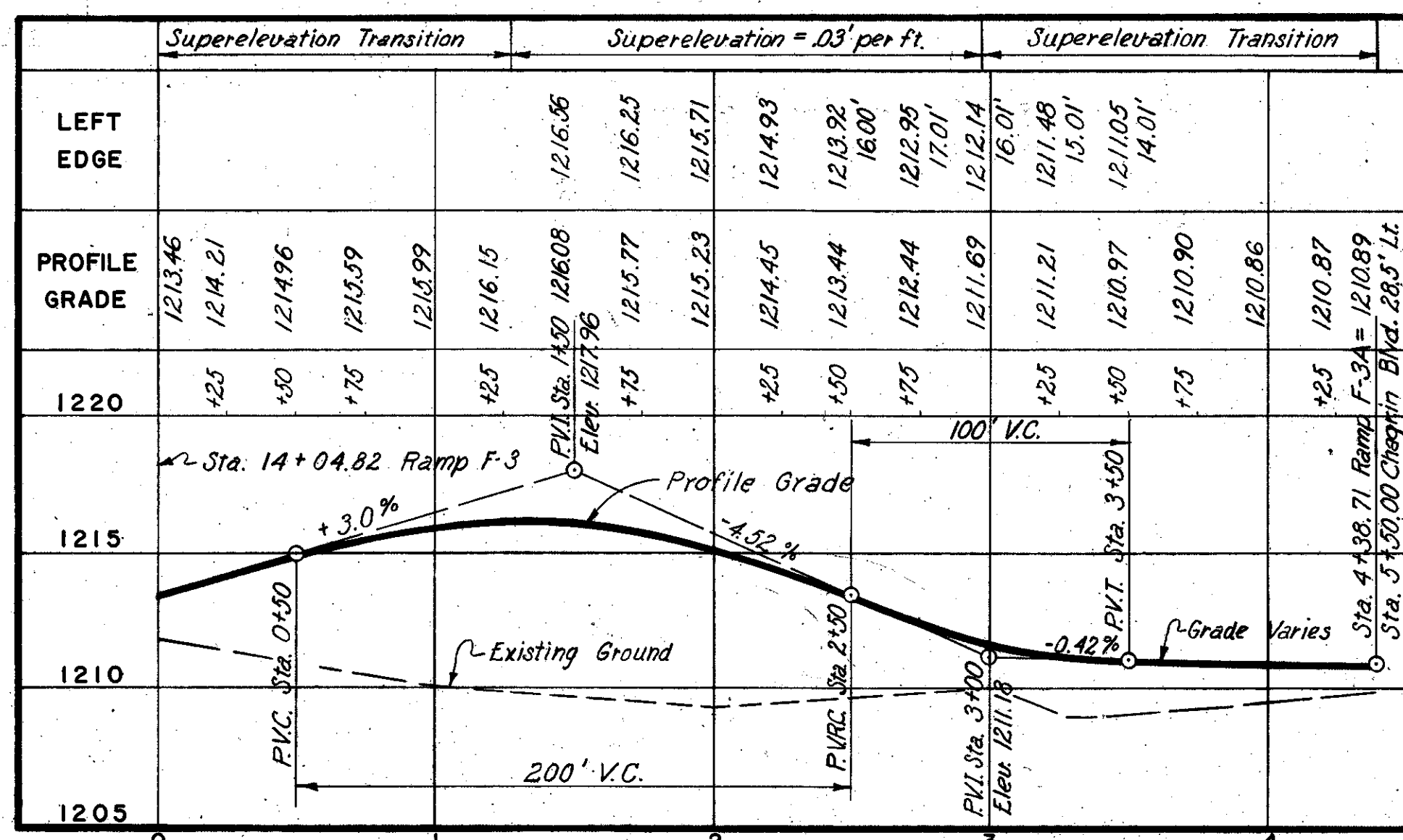
Note:
For Detail 'X' see sheet 230.



PROFILE - RAMP F-3



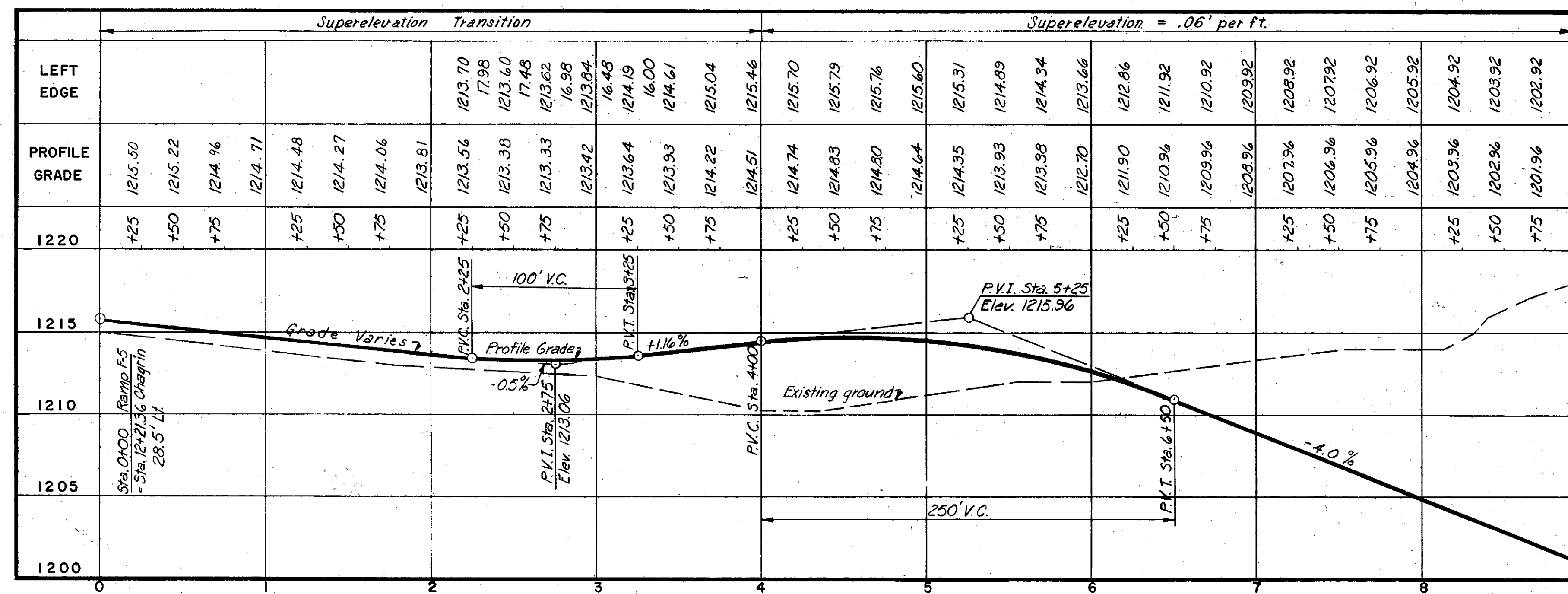
PROFILE - RAMP F-3



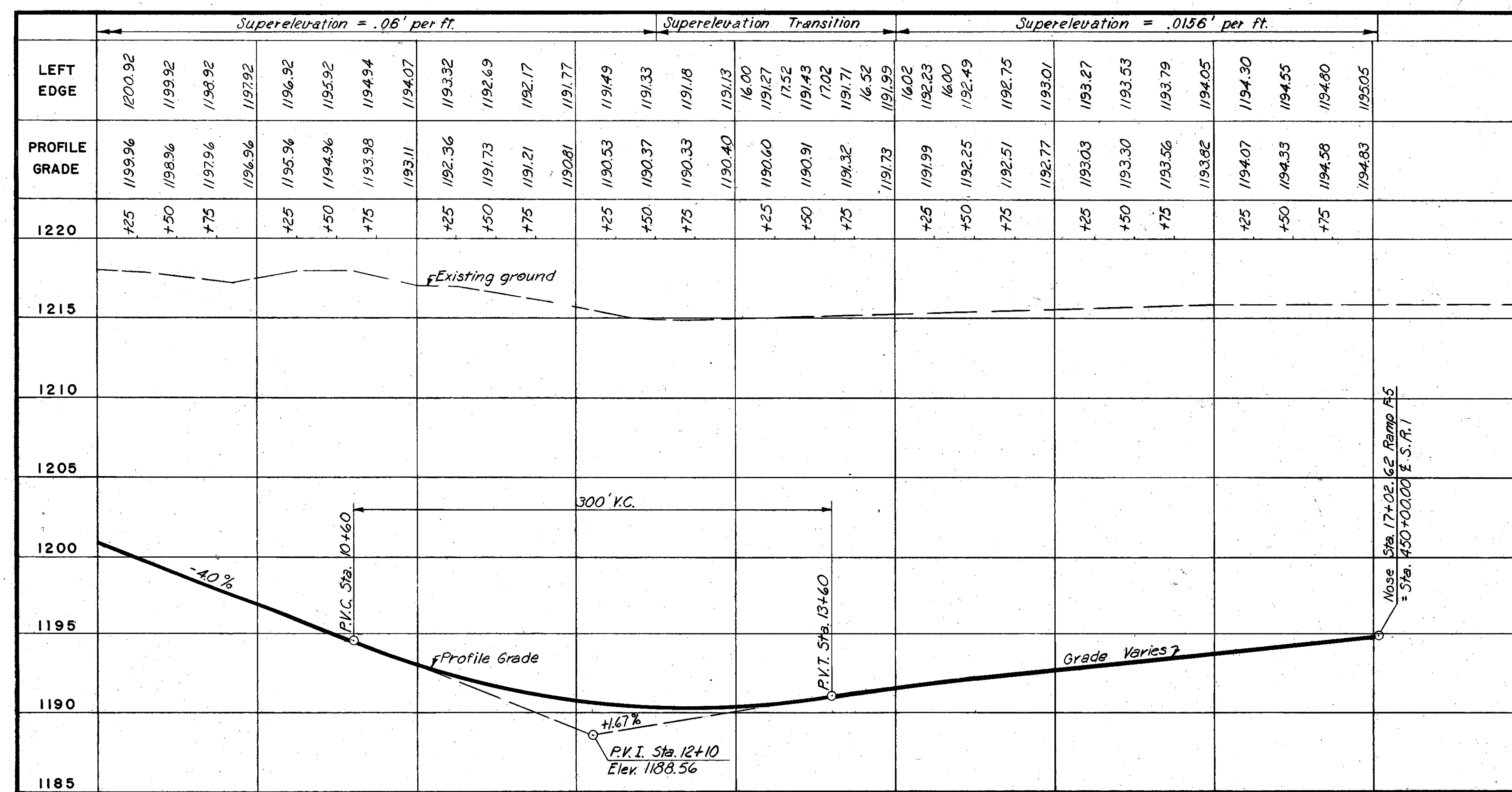
PROFILE - RAMP F-3A

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MADE E.C.E. DATE 5/22/59 TRACED DATE
CHECKED D.W.K. DATE 7-8-59 SCALE Hor. 1"=50'; Vert. 1"=5'



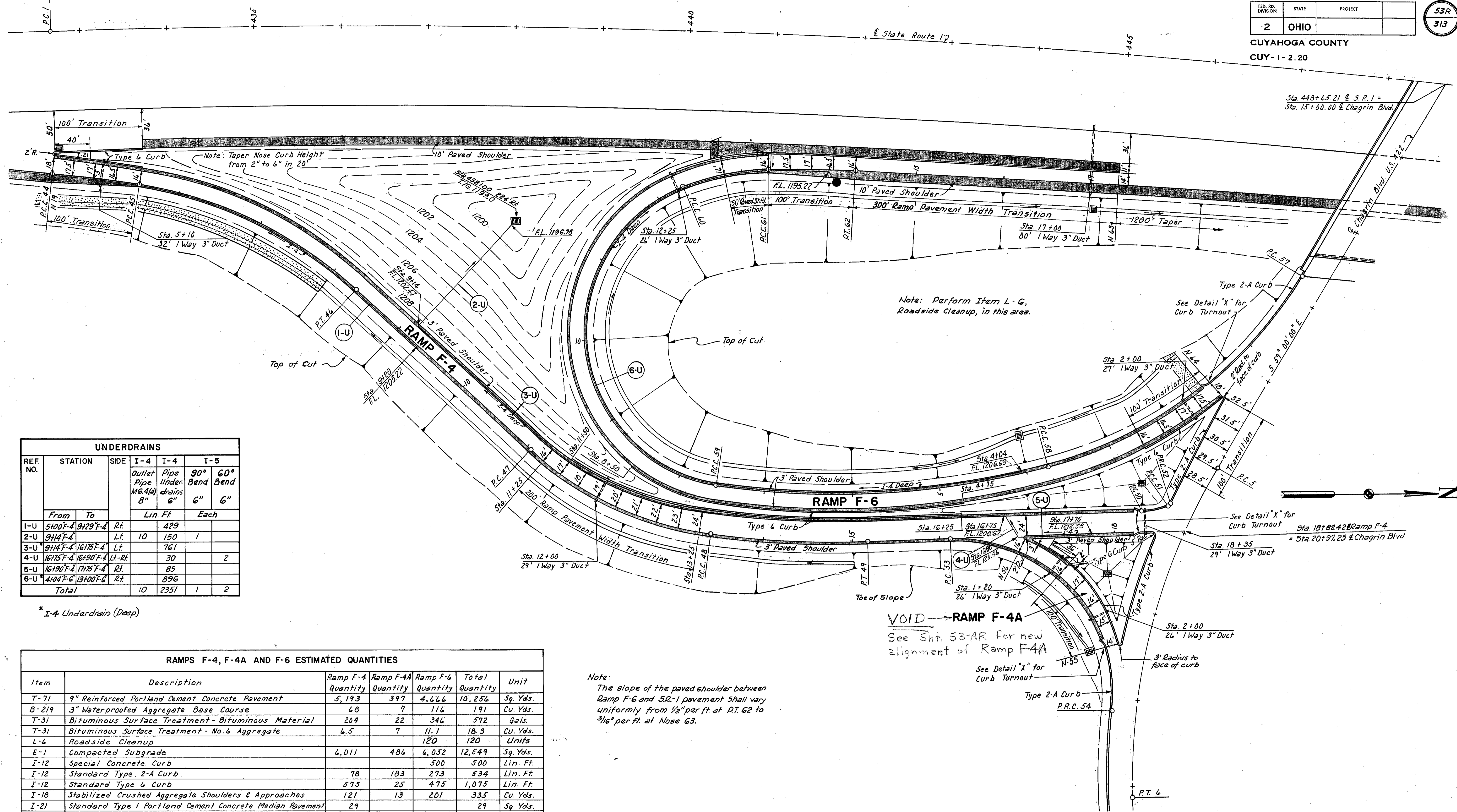
PROFILE - RAMP F-5



PROFILE - RAMP F-5

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MADE LVM DATE 5-25-59 TRACED DATE
CHECKED D.W.K. DATE 7-8-59 SCALE Hor. 1"=50' Ver. 1"=5'



REF. NO.	STATION	SIDE	I-4		I-5	
			Outlet Pipe (M.G.A.)	Pipe Underdrains	90° Bend	60° Bend
	From	To	8"	6"	6"	6"
1-U	5+10	Rt.	429			
2-U	9+14	Lt.	150	1		
3-U	9+14	Lt.	761			
4-U	16+75	Lt.-Rt.	30		2	
5-U	16+90	Rt.	85			
6-U	4+04	Rt.	896			
	Total		10	2351	1	2

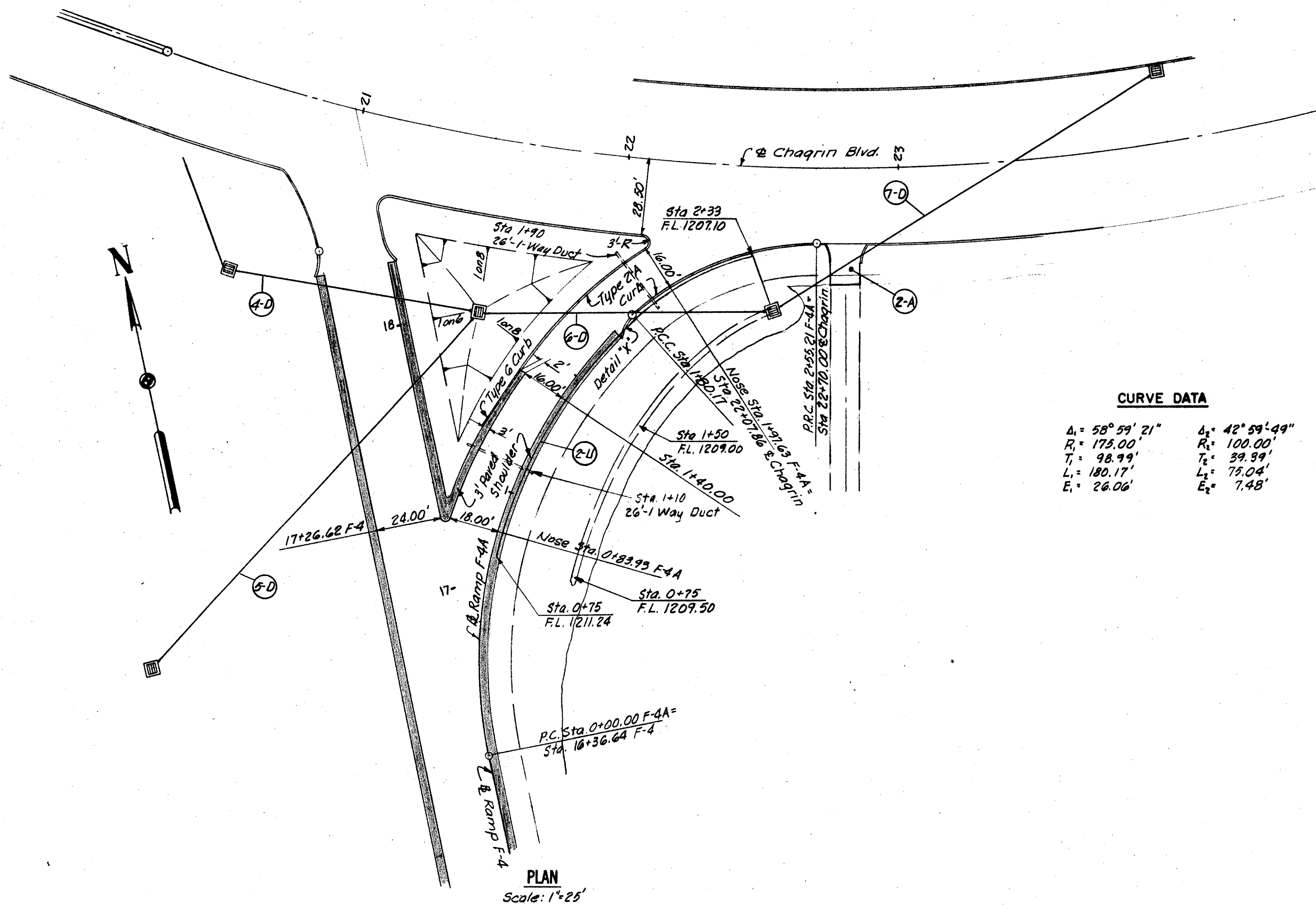
* I-4 Underdrain (Deep)

Item	Description	Ramp F-4 Quantity	Ramp F-4A Quantity	Ramp F-6 Quantity	Total Quantity	Unit
T-71	9" Reinforced Portland Cement Concrete Pavement	5,193	397	4,666	10,256	Sq. Yds.
B-219	3" Waterproofed Aggregate Base Course	68	7	116	191	Cu. Yds.
T-31	Bituminous Surface Treatment - Bituminous Material	204	22	346	572	Gals.
T-31	Bituminous Surface Treatment - No. 6 Aggregate	6.5	.7	11.1	18.3	Cu. Yds.
L-6	Roadside Cleanup			120	120	Units
E-1	Compacted Subgrade	6,011	486	6,052	12,549	Sq. Yds.
I-12	Special Concrete Curb			500	500	Lin. Ft.
I-12	Standard Type 2-A Curb	78	183	273	534	Lin. Ft.
I-12	Standard Type 4 Curb	575	25	475	1,075	Lin. Ft.
I-18	Stabilized Crushed Aggregate Shoulders & Approaches	121	13	201	335	Cu. Yds.
I-21	Standard Type 1 Portland Cement Concrete Median Pavement	29			29	Sq. Yds.
I-22	Subbase	1,016	87	1,083	2,186	Cu. Yds.
S-25	3" Asbestos Cement Conduit, Sec. M-206.14, as per plan	90	52	133	275	Lin. Ft.

Note:
The slope of the paved shoulder between Ramp F-6 and S.R. 1 pavement shall vary uniformly from 1/2" per ft. at P.T. 62 to 3/16" per ft. at Nose 63.

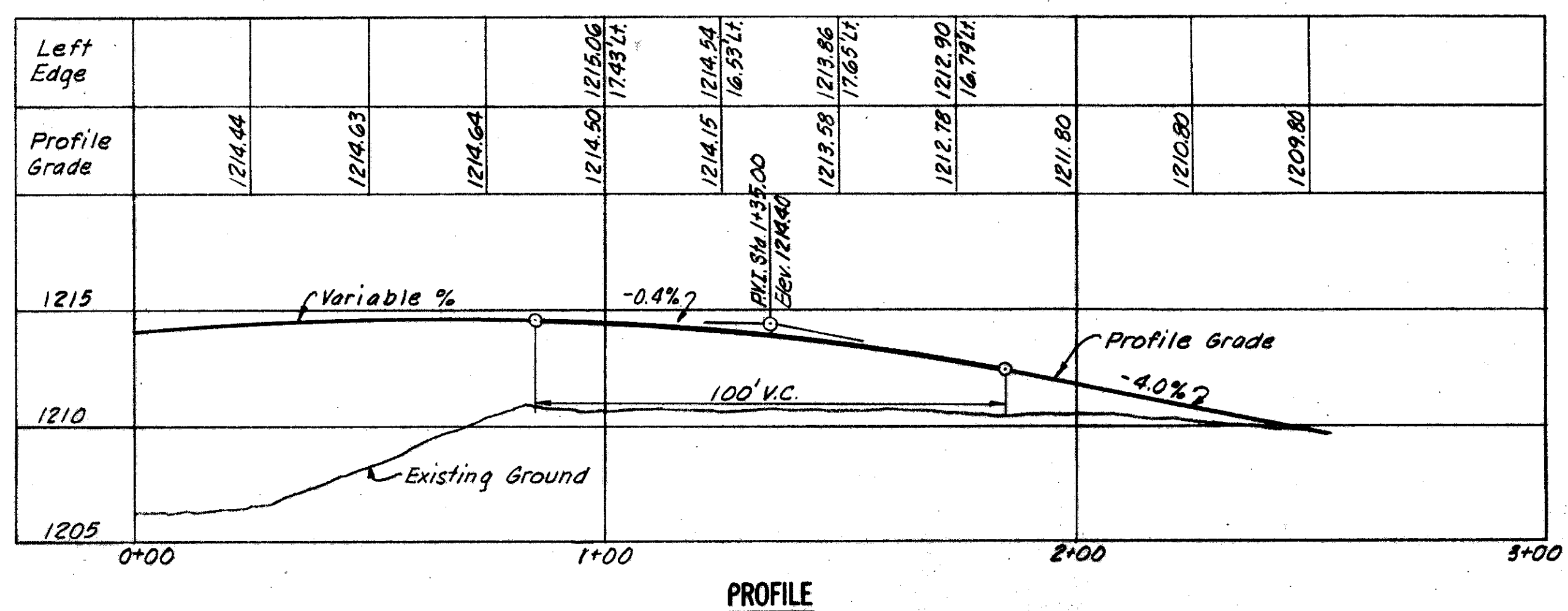
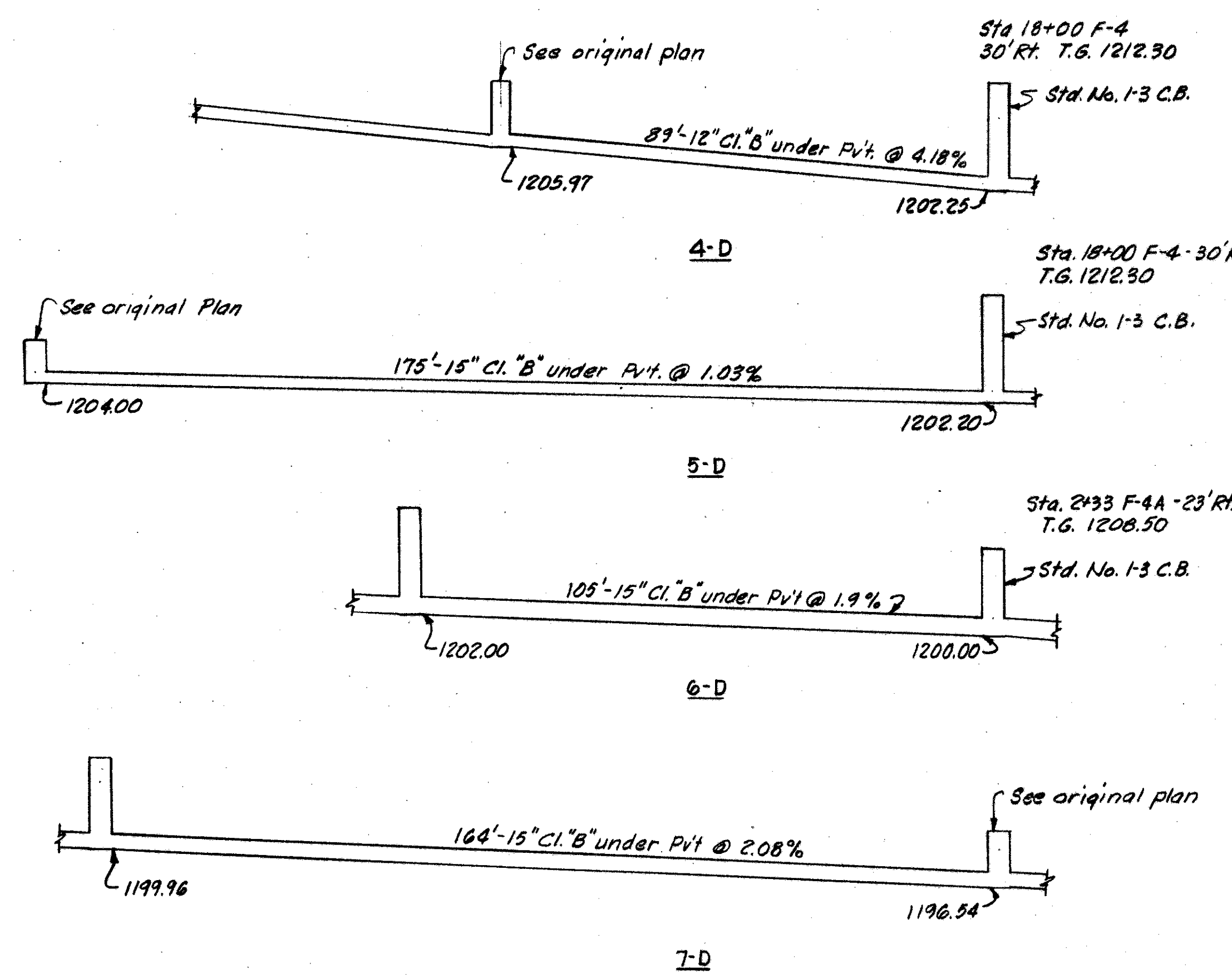
VOID → RAMP F-4A
See Sht. 53-AR for new alignment of Ramp F-4A

Note: For profile of Ramps F-4 & F-4A, see sheet 54.
For profile of Ramp F-6, see sheet 55.
For curve data, see sheet 56.
For Detail "X", see sheet 230



CURVE DATA

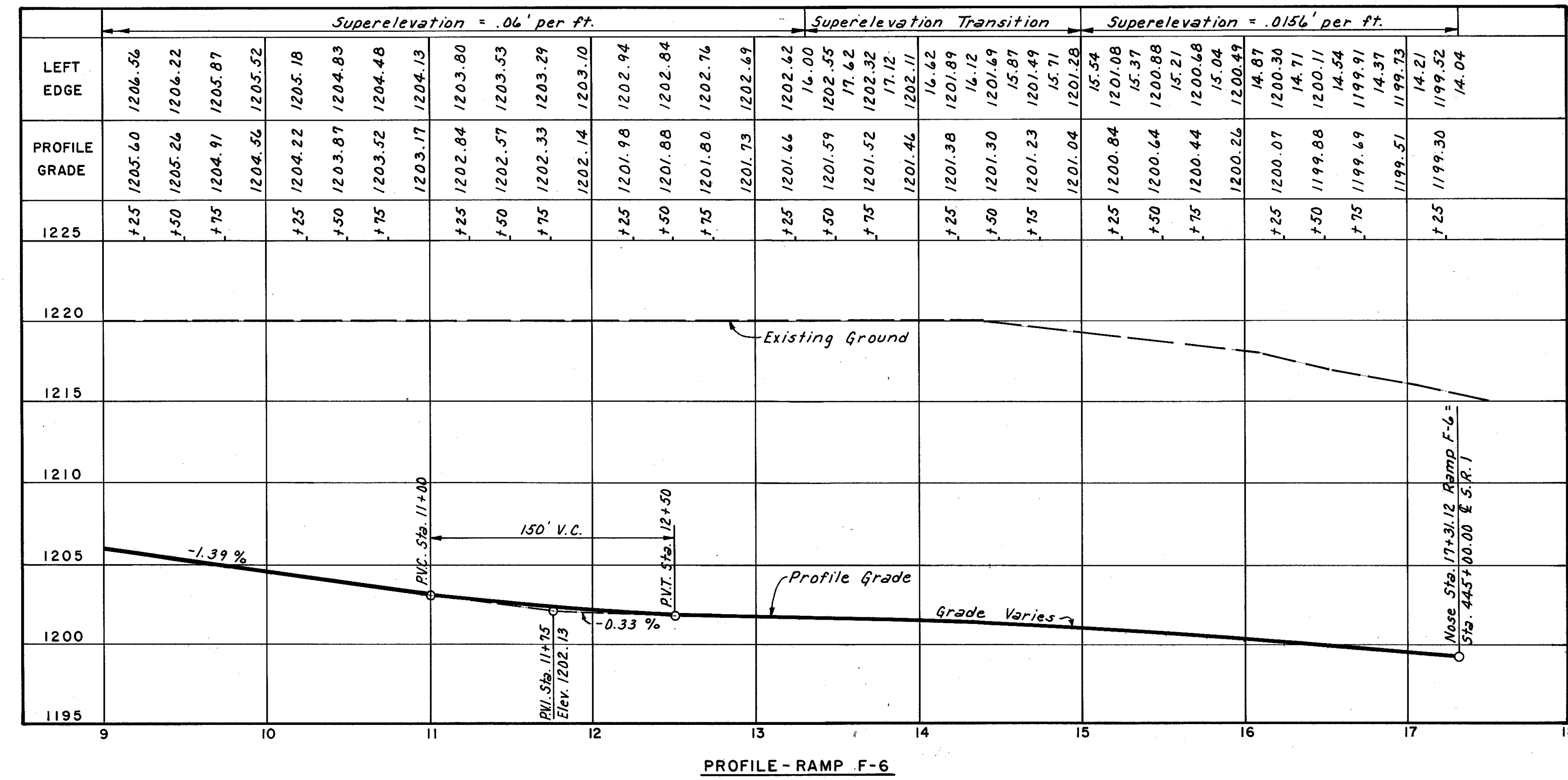
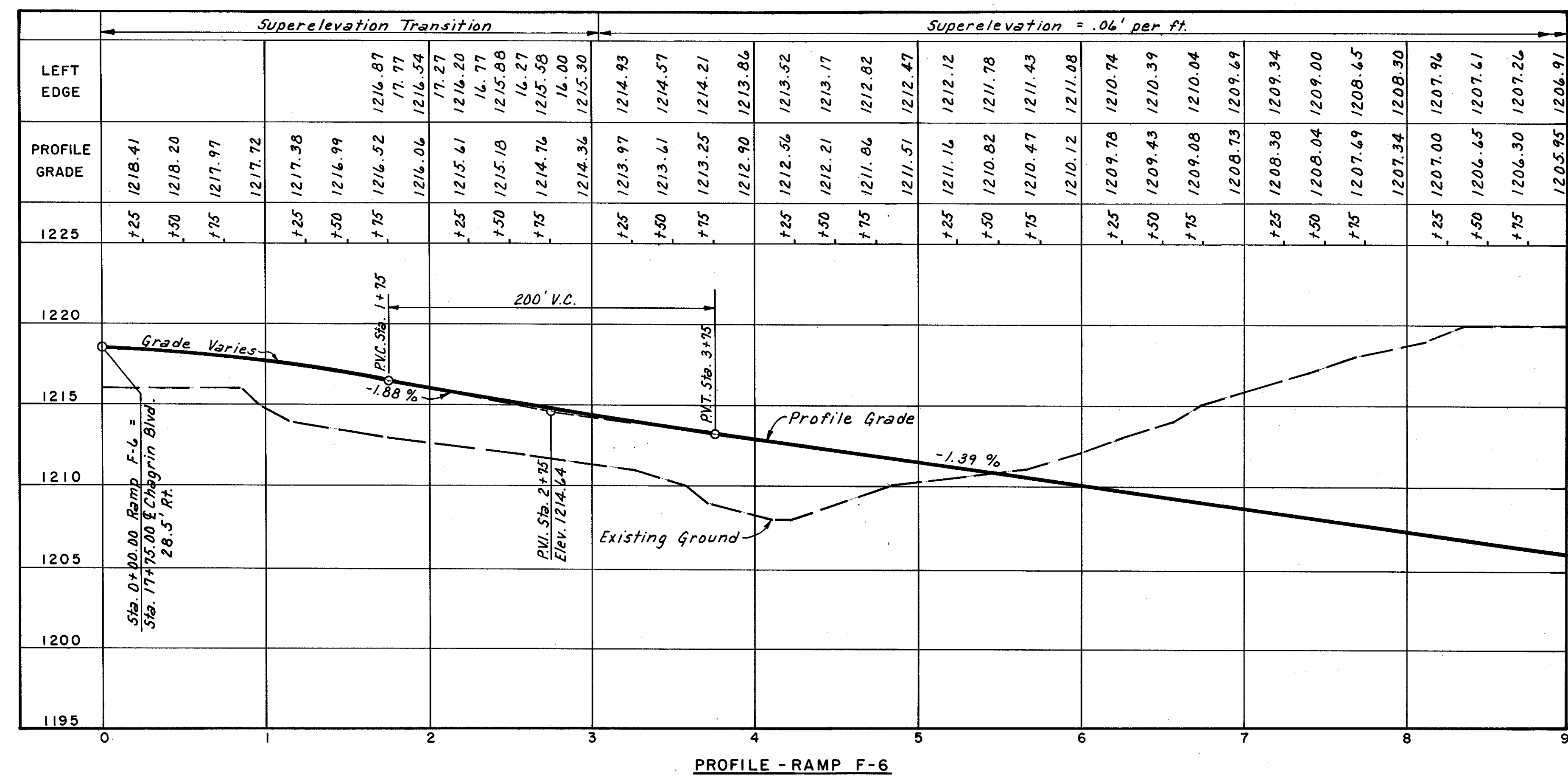
$\Delta_1 = 58^\circ 59' 21''$	$\Delta_2 = 42^\circ 59' 49''$
$R_1 = 173.00'$	$R_2 = 100.00'$
$T_1 = 98.99'$	$T_2 = 39.39'$
$L_1 = 180.17'$	$L_2 = 75.04'$
$E_1 = 26.06'$	$E_2 = 7.48'$



QUANTITY REVISIONS

Item	Description	Orig. Quant.	New Quant.	Quant. Change	Unit
T-71	9" Reinforced Portland Cement Concrete Pavement	397	358	-39	Sq. Yds.
B-219	9" Waterproofed Aggregate Base Course	7	6	-1	Cu. Yds.
T-31	Bituminous Surface Treatment - Bituminous Material	22	19	-3	Gals.
T-31	Bituminous Surface Treatment - No. 6 Aggregate	0.7	0.6	-0.1	Cu. Yds.
E-1	Compacted Subgrade	486	432	-54	Sq. Yds.
I-12	Standard Type 2-A Curb	183	* 175	-8	Lin. Ft.
I-12	Standard Type 6 Curb	25	25	-	Lin. Ft.
I-18	Stabilized Crushed Aggregate Shoulders & Approaches	13	11	-2	Cu. Yds.
I-22	Subbase	87	78	-9	Cu. Yds.
S-25	3" Asbestos Cement Conduit, Sec. M-206.14, as per plan	52	52	-	Lin. Ft.
I-2	12" Class B Storm Sewers under Pavement or Approaches, Sec. M.6.5(b) or Sec. M.6.8(b)	98	89	-9	Lin. Ft.
I-2	15" Class B Storm Sewers under Pavement or Approaches, Sec. M.6.5(b) or Sec. M.6.8(b)	451	444	-7	Lin. Ft.
I-4	6" Underdrains	180	164	-16	Lin. Ft.
I-4	8" Pipe Outlets for Underdrains, Sec. M.6.4(a)	10	10	-	Lin. Ft.
I-5	6" Pipe Specials for Underdrains (90° Bend)	1	1	-	Each
I-8	Standard No. 1-3 Catch Basins	3	3	-	Each
I-8	Standard No. 3-A Catch Basins	1	1	-	Each

* Includes 10' additional on Chagrin Blvd.



MADE AEK DATE 4-27-61 TRACED AEK DATE 4-28-61
CHECKED R.J.H. DATE 4-28-61 SCALE Hor: 1"=50', Ver: 1"=5'

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PROFILE - RAMP F-6

REF. NO.	STATION	EQUIVALENT STATION	NORTH COORD.	EAST COORD.	BEARING FROM PT. "A"	DIST. TO PT. "A"	BEARING FROM PT. "B"	DIST. TO PT. "B"
PC.1	432+67.26 E.S.R.1		10267.23	9994.38	S 7° 04' 40" E	1998.02'	S 18° 07' 44" W	1297.16'
PT.2	451+22.49 E.S.R.1		12117.13	10111.32	S 69° 48' 34" E	384.98'	N 25° 04' 09" W	681.31'
PC.3	5+89.09 E Chagrin		12231.94	9260.65	S 87° 53' 12" W	489.68'	N 57° 16' 57" W	1354.20'
PT.4	9+80.19 E Chagrin		12129.64	9633.13	S 44° 09' 43" W	147.74'	N 50° 36' 41" W	992.25'
PC.5	20+15.82 E Chagrin		11596.27	10520.84	S 49° 41' 57" E	1010.72'	N 51° 27' 24" E	154.50'
PT.6	24+12.35 E Chagrin		11494.03	10898.73	S 56° 39' 05" E	1375.76'	S 89° 18' 51" E	498.77'
PC.7	0+00.00 F-1	5+25.00 E Chagrin-28.50' Rt.	12203.12	9196.71	S 85° 09' 25" W	555.27'	N 59° 42' 03" W	1393.66'
PC.C.8	2+00.67 F-1		12162.55	9391.73	S 76° 16' 57" W	368.78'	N 36° 41' 26" W	1206.48'
PC.C.9	8+56.84 F-1		11677.01	9798.58	S 4° 50' 47" E	575.04'	N 73° 35' 59" W	626.93'
PT.10	13+31.27 F-1		11206.93	9852.95	S 5° 38' 13" E	1048.14'	S 61° 49' 15" W	620.61'
Nose 11	17+33.78 F-1	438+00.00 E.S.R.1-151.50' Lt.	10804.44	9849.31	S 3° 55' 48" E	1448.96'	S 38° 22' 10" W	887.17'
Nose 12	2+00.67 F-1-23.00' Lt.	7+37.35 E Chagrin-34.50' Rt.	12183.59	9401.01	S 79° 13' 35" W	355.25'	N 55° 37' 01" W	1210.49'
PC.C.13	0+00.00 F-2	22+00.00 E Chagrin-28.50' Lt.	11550.00	10697.08	S 53° 31' 53" E	1177.70'	N 80° 26' 48" E	301.26'
PT.14	5+53.09 F-2		11959.00	10380.02	S 65° 12' 30" E	693.98'	N 2° 29' 33" W	459.44'
PC.15	10+84.15 F-2		12489.79	10363.04	N 68° 38' 14" E	658.27'	N 2° 08' 19" W	990.48'
PT.16	15+10.32 F-2		12915.18	10381.08	N 43° 29' 35" E	916.92'	N 0° 45' 57" W	1415.31'
Nose 17	18+10.32 F-2-14.00' Lt.	442+50.00 E.S.R.1-151.50' Lt.	13213.20	10416.04	N 34° 39' 48" E	1171.06'	N 0° 32' 12" E	1713.28'
Nose 18	2+46.10 F-2-23.00' Lt.	19+41.05 E Chagrin-34.50' Lt.	11664.35	10474.51	S 51° 03' 00" E	931.61'	N 24° 23' 19" E	180.45'
Nose 19	4+53.07 F-4-20.00' Rt.	432+67.26 E.S.R.1-142.50' Rt.	10269.16	10138.88	S 11° 06' 25" E	2018.65'	S 11° 58' 40" W	1238.23'
PC.20	0+00.00 F-3	467+00.00 E.S.R.1-138.50' Lt.	13698.72	10190.51	N 16° 54' 46" E	1514.22'	N 5° 26' 33" W	2208.68'
PC.C.21	4+53.07 F-3		13254.67	10101.92	N 19° 18' 17" E	1064.52'	N 9° 38' 28" W	1779.81'
PC.C.22	5+53.07 F-3		13158.90	10073.23	N 19° 34' 36" E	964.67'	N 11° 08' 36" W	1690.78'
PT.23	10+55.05 F-3		12775.43	9765.36	N 1° 40' 26" E	525.66'	N 26° 27' 16" W	1424.60'
PC.24	12+34.86 F-3		12682.39	9611.49	N 17° 45' 44" W	454.03'	N 33° 41' 54" W	1421.20'
PT.25	14+59.58 F-3		12504.78	9483.96	N 46° 14' 19" W	368.37'	N 42° 21' 18" W	1359.67'
PC.26	16+98.02 F-3 Lt. Edge		12264.90	9447.06	N 87° 11' 04" W	303.31'	N 51° 14' 49" W	1221.95'
PC.C.27	17+22.35 F-3 Lt. Edge		12240.74	9446.68	S 88° 15' 04" W	303.46'	N 52° 09' 09" W	1207.28'
PC.C.28	17+28.01 F-3 Lt. Edge	7+73.57 E Chagrin-28.50' Lt.	12236.83	9450.34	S 87° 28' 58" W	299.95'	N 52° 11' 33" W	1201.99'
PC.C.29	0+00.00 F-3A	14+04.82 F-3	12556.73	9501.00	N 39° 04' 07" W	395.08'	N 40° 23' 21" W	1387.40'
PT.30	1+74.17 F-3A		12397.39	9430.49	N 65° 13' 24" W	351.69'	N 47° 12' 23" W	1320.94'
PC.31	4+38.71 F-3A	5+50.00 E Chagrin-28.50' Lt.	12260.24	9221.42	N 88° 53' 23" W	528.68'	N 57° 10' 34" W	1402.50'
Nose 32	1+27.88 F-3A-18.00' Lt.	15+34.10 F-3-18.00' Rt.	12432.47	9465.84	N 57° 17' 35" W	337.70'	N 45° 03' 07" W	1319.91'
Nose 33	3+50.18 F-3A-17.00' Lt.	6+40.52 E Chagrin-31.50' Lt.	12261.78	9314.16	N 88° 27' 04" W	436.00'	N 54° 56' 53" W	1326.41'
Nose 34	4+53.07 F-3A-23.00' Lt.	462+45.27 E.S.R.1-142.50' Lt.	13248.85	10124.17	N 20° 32' 10" E	1066.63'	N 8° 57' 46" W	1770.47'
PC.35	0+00.00 F-5	12+21.36 E Chagrin-28.50' Lt.	12029.87	9854.53	S 25° 24' 04" E	243.69'	N 45° 49' 52" W	760.46'
PC.C.36	4+01.52 F-5		12306.63	9568.43	N 72° 40' 41" W	190.19'	N 45° 52' 20" W	1158.52'
PC.C.37	4+74.47 F-5		12372.24	9536.99	N 60° 09' 01" W	245.59'	N 44° 41' 43" W	1227.02'
PC.C.38	12+01.06 F-5		12512.93	9974.92	N 40° 32' 43" E	346.01'	N 22° 45' 56" W	1098.51'
PC.C.39	13+01.06 F-5		12414.25	9987.58	N 55° 20' 35" E	288.83'	N 24° 16' 49" W	1002.97'
PT.40	14+01.06 F-5		12314.40	9979.41	N 74° 16' 21" E	238.33'	N 27° 18' 29" W	916.77'
Nose 41	17+02.62 F-5	450+00.00 E.S.R.1-151.50' Lt.	12015.01	9944.80	S 39° 39' 26" E	305.23'	N 41° 28' 21" W	687.34'
Nose 42	2+23.82 F-5-23.00' Lt.	9+94.17 E Chagrin-34.50' Lt.	12152.03	9662.87	S 41° 38' 51" W	131.11'	N 48° 30' 20" W	984.13'
PC.43	0+00.00 F-4	428+12.53 E.S.R.1-138.50' Lt.	9814.42	10141.02	S 9° 07' 14" E	2466.77'	S 8° 44' 06" W	1705.36'
PC.C.44	4+53.07 F-4		10266.75	10161.75	S 11° 43' 44" E	2025.54'	S 10° 36' 03" W	1256.05'
PC.C.45	5+53.07 F-4		10365.75	10175.70	S 12° 43' 51" E	1931.74'	S 11° 11' 09" W	1156.22'
PT.46	8+32.71 F-4		10611.80	10299.99	S 18° 33' 30" E	1728.06'	S 6° 25' 27" W	893.81'
PC.47	11+06.42 F-4		10810.08	10488.68	S 27° 09' 28" E	1618.33'	S 7° 19' 27" E	695.59'
PC.C.48	13+37.52 F-4		11014.21	10589.32	S 34° 11' 01" E	1493.86'	S 21° 17' 32" E	521.38'
PT.49	15+18.09 F-4		11194.14	10601.26	S 38° 52' 36" E	1356.28'	S 33° 20' 46" E	366.14'
PC.50	18+32.95 F-4-24.00' Lt.		11508.37	10570.01	S 47° 52' 24" E	1105.64'	N 87° 10' 52" E	170.22'
PC.C.51	18+63.24 F-4 Lt. Edge		11538.54	10564.62	S 48° 52' 02" E	1081.56'	N 76° 49' 23" E	169.07'
PC.C.52	18+66.17 F-4 Lt. Edge	20+79.52 E Chagrin-28.50' Rt.	11541.41	10562.09	S 48° 53' 37" E	1077.77'	N 75° 40' 12" E	167.30'
PC.53	0+00.00 F-4A	16+11.94 E Ramp F-4	11287.97	10599.10	S 41° 25' 55" E	1283.15'	S 43° 11' 53" E	290.86'
PC.C.54	3+08.48 F-4A	23+17.41 E Chagrin-28.50' Rt.	11470.82	10800.59	S 53° 26' 14" E	1308.00'	S 85° 50' 03" E	401.65'
Nose 55	2+35.54 F-4A-16.00' Lt.	22+42.88 E Chagrin-31.50' Rt.	11481.15	10723.61	S 51° 42' 08" E	1240.58'	S 86° 40' 01" E	324.16'
Nose 56	0+81.60 F-4A-18.00' Lt.	16+98.66 E Ramp F-4-2.00' Rt.	11374.71	10599.10	S 44° 07' 47" E	1219.47'	S 57° 49' 06" E	235.24'
PC.57	0+00.00 F-6	17+75.00 E Chagrin-28.50' Lt.	11695.87	10299.73	S 44° 46' 19" E	780.55'	N 27° 06' 29" W	220.04'
PC.C.58	3+74.74 F-6		11402.36	10517.04	S 42° 08' 33" E	1143.17'	S 50° 09' 53" E	152.42'
PC.C.59	7+57.14 F-6		11022.89	10534.00	S 32° 34' 28" E	1456.18'	S 51° 41' 16" E	495.57'
PC.C.60	12+31.12 F-6		10988.58	10187.26	S 19° 07' 06" E	1335.06'	S 22° 35' 11" W	553.90'
PC.C.61	13+31.12 F-6		11086.50	10169.42	S 19° 49' 54" E	1236.86'	S 29° 07' 27" W	473.35'
PT.62	14+31.12 F-6		11186.43	10172.73	S 21° 40' 34" E	1144.50'	S 35° 56' 00" W	387.27'
Nose 63	17+31.12 F-6-14.00' Lt.	445+00.00 E.S.R.1-151.50' Rt.	11485.77	10192.54	S 30° 04' 25" E	883.11'	S 86° 04' 36" W	207.95'
Nose 64	1+63.33 F-6-20.00' Lt.	19+42.88 E Chagrin-34.50' Rt.	11604.26	10440.55	S 46° 55' 14" E	945.43'	N 21° 15' 08" E	111.87'

CURVE NO.	BEGINNING OF CURVE	P.I. OF CURVE	ENDING OF CURVE	Δ	D	R	T	L	E
1-2	PC.432+67.26 E.S.R.1	441+96.64	PT.451+22.49	8° 39' 28"	0° 28' 00"	12,277.67'	929.38'	1,855.23'	35.07'
3-4	PC.5+89.09 E	7+89.65	PT.9+80.19	31° 17' 18"	8° 00' 00"	716.20'	200.56'	391.10'	27.55'
5-6	PC.20+15.82 E	22+19.31	PT.24+12.35	31° 43' 20"	8° 00' 00"	716.20'	203.49'	396.53'	28.34'
7-8	PC.0+00.00 F-1	1+01.84	PC.C.2+00.67	24° 04' 51"	12° 00' 00"	477.46'	101.84'	200.67'	10.74'
8-9	PC.C.2+00.67 F-1	5+53.81	PC.C.8+56.84	52° 29' 36"	8° 00' 00"	716.20'	353.14'	656.17'	82.33'
9-10	PC.C.8+56.84 F-1	10+95.28	PT.13+31.27	14° 13' 59"	3° 00' 00"	1,909.86'	238.44'	474.43'	14.83'
13-14	PC.C.0+00.00 F-2	3+19.44	PT.5+53.09	71° 54' 06"	13° 00' 00"	440.74'	319.64'	553.09'	103.70'
15-16	PC.10+84.15 F-2	12+97.63	PT.15+10.32	8° 31' 24"	2° 00' 00"	2,864.79'	213.48'	426.17'	7.94'
20-21	PC.0+00.00 F-3	2+26.80	PC.C.4+53.07	6° 47' 46"	1° 30' 00"	3,819.72'	226.80'	453.07'	6.73'
21-22	PC.C.4+53.07 F-3	5+03.09	PC.C.5+53.07	4° 00' 00"	4° 00' 00"	1,432.39'	50.02'	100.00'	0.87'
22-23	PC.C.5+53.07 F-3	8+14.87	PT.10+55.05	40° 09' 30"	8° 00' 00"	716.20'	261.80'	501.98'	46.35'
24-25	PC.C.12+34.86 F-3	13+53.76	PT.14+59.58	46° 18' 52"	20° 36' 36"	278.00'	118.90'	224.72'	24.36'
26-27	PC.16+98.02 F-3 Lt.	17+10.35	PC.C.17+22.35	23° 13' 59"		60.00'	12.33'	24.33'	1.26'
27-28	PC.C.17+22.35 F-3 Lt.	17+25.52	PRC.17+28.01	64° 49' 15"		5.00'	3.17'	5.66'	0.92'
30-31	PC.1+74.17 F-3A	3+23.25	PT.4+38.71	65° 54' 02"	24° 54' 40"	230.00'	149.08'	264.54'	44.09'
35-36	PC.0+00.00 F-5	2+04.30	PC.C.4+01.52	26° 05' 54"	6° 30' 00"	881.47'	204.30'	401.52'	23.37'
36-37	PC.C.4+01.52 F-5	4+38.20	PC.C.4+74.47	14° 35' 28"	20° 00' 00"	286.48'	36.68'	72.95'	2.34'
37-38	PC.C.4+74.47 F-5		PC.C.12+01.06	181° 00' 04"	24° 54' 40"	230.00'		726.59'	
38-39	PC.C.12+01.06 F-5	12+51.57	PC.C.13+01.06	20° 00' 00"	20° 00' 00"	286.48'	50.51'	100.00'	4.42'
39-40	PC.C.13+01.06 F-5	13+51.08	PT.14+01.06	4° 00' 00"	4° 00' 00"	1,432.39'	50.02'	100.00'	0.87'
43-44	PC.0+00.00 F-4	2+26.80	PC.C.4+53.07	6° 47' 46"	1° 30' 00"	3,819.72'	226.80'		

S-9

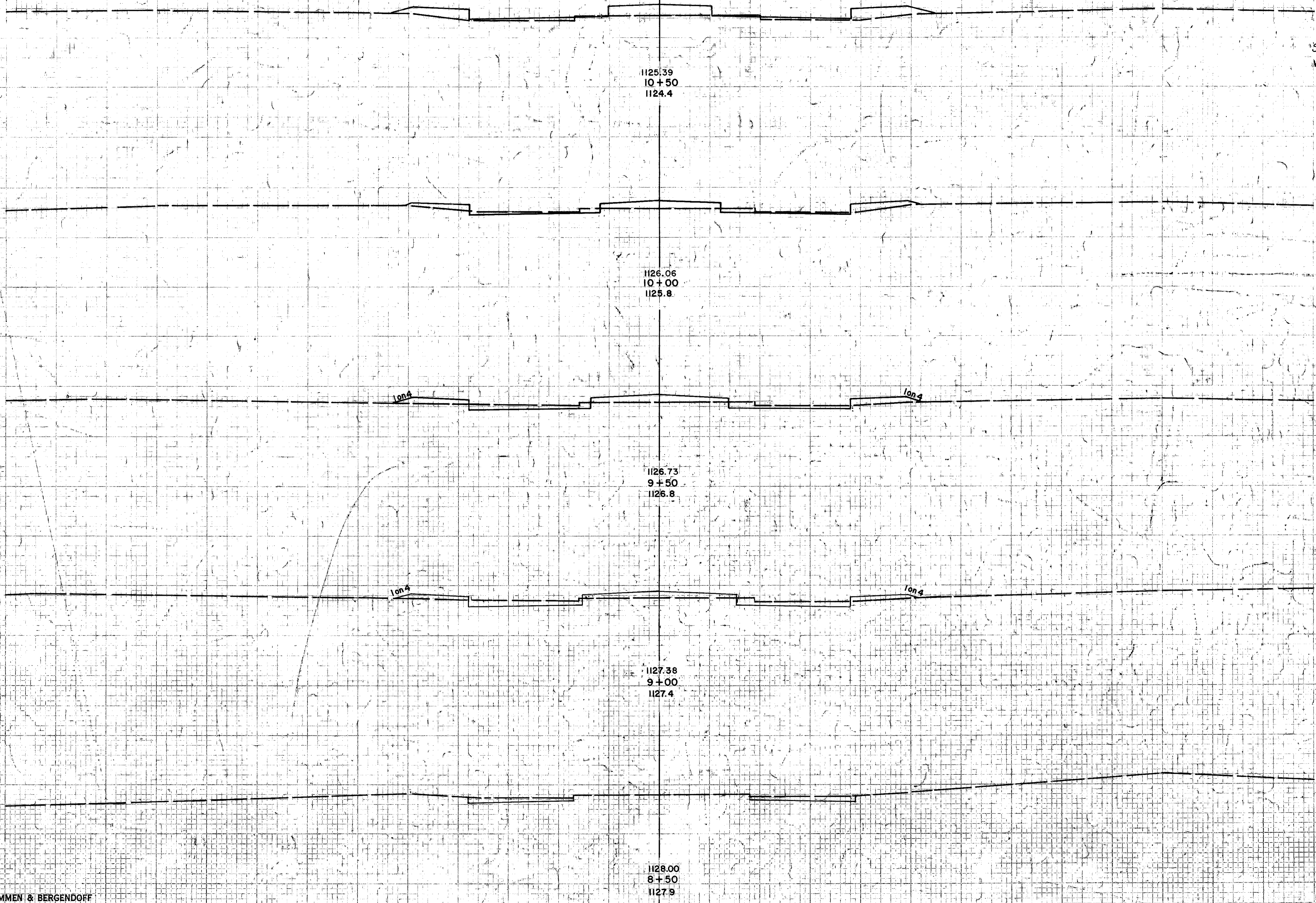
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CUY-271-6.80

FED. RD. DIVISION	STATE	PROJECT	58 3/3
2	OHIO		

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	END AREA SQ.YD.	CU. YDS.	
		CUT	FILL
		0	266
	0	98	
		30	145
	32	59	
		80	104
	54	53	
		96	94
	50	48	
		81	44
	37	0	



DATE: 10-6-57
 SURVEY PLOTTED
 NOTE BOOK: 10/1/57

DATE: 10-6-57
 RAB: V W/MH
 DOS: JRG
 JRG

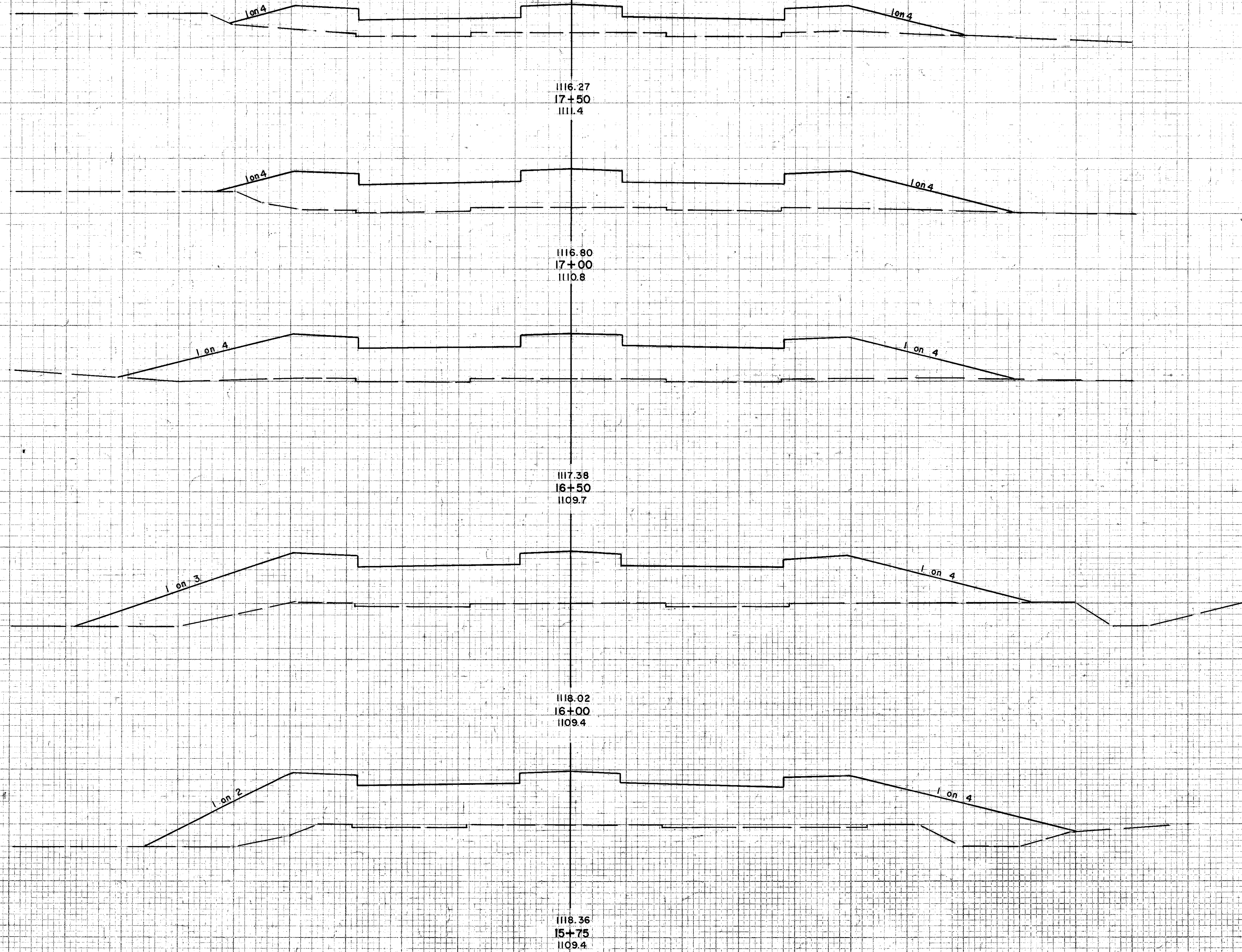
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

PLATE 3 - CROSS SECTION

FAIRMOUNT BLVD. STA. 8+50 TO STA. 10+50

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL



1110

1110

1100

1100

1100

SEEDING	WIDTH	SQ. YD.	CUT	FILL	CU. YDS.
			0	408	
			0	1026	
			0	700	
			0	1470	
			0	890	
			0	1260	
			0	1116	
			0	1089	
			0	1236	
			0	2230	

Spill Quantity
East Abutment

FINAL SURVEY CHECKED BY DATE
 SURVEY PLOTTED BY DATE
 NOTE BOOK RECORDED BY DATE
 AREA CHECKED BY DATE

ORIGINAL SURVEY CHECKED BY DATE
 SURVEY PLOTTED BY DATE
 NOTE BOOK RECORDED BY DATE
 AREA CHECKED BY DATE

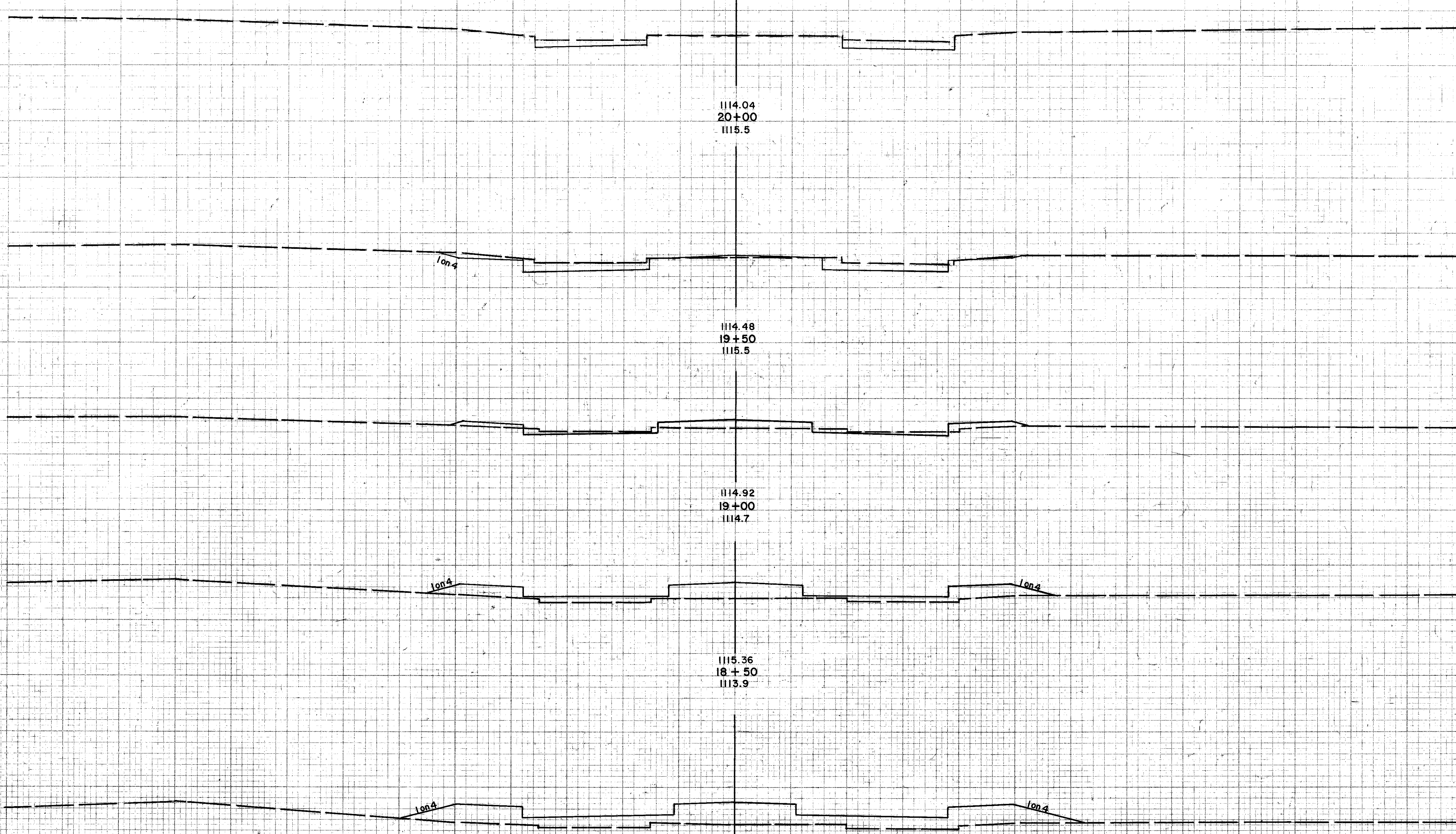
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

60
3/3

CUYAHOGA COUNTY
CUY.1-2:20

SEEDING WIDTH	END AREA		CU. YDS.	
	SQ. YD.	CUT	FILL	CUT



1110

1114.04
20+00
1115.5

55 0

1110

1114.48
19+50
1115.5

110 4

64 4

1110

1114.92
19+00
1114.7

79 60

21 61

1110

1115.36
18+50
1113.9

19 197

0 145

1110

1115.80
18+00
1113.2

0 410

0 298

0 653

Sta 17+50

0 408

FINAL SURVEY BY DATE
SURVEYED BY
PLOTTED BY
NOTE BOOK NO.
TEMPERATURE
AREAS CHECKED
JRG

ORIGINAL SURVEY BY DATE
SURVEYED BY
PLOTTED BY
NOTE BOOK NO.
TEMPERATURE
AREAS CHECKED
JRG

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

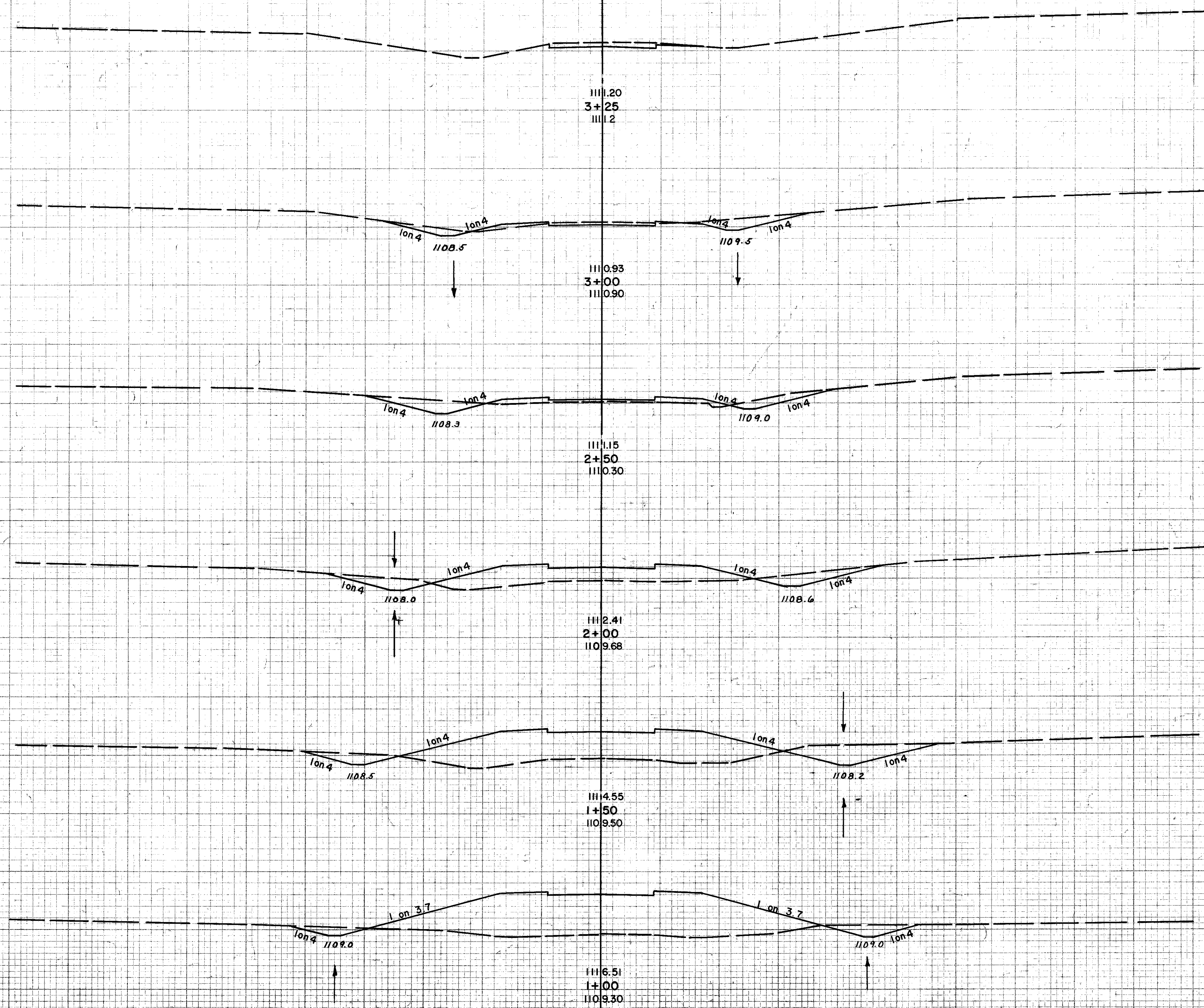
PLATE 3-CROSS SECTION OF P.L. & R.R.
CHARLES PRINTING COMPANY, INC.

FAIRMOUNT BLVD. STA. 18+00 TO STA. 20+00

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

61
3/3

CUYAHOGA COUNTY
CUY-1-2.20



STATION	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1110			15	0		
1110			40	6	25	3
1110			49	25	82	29
1110			50	131	92	194
1110			77	277	118	378
1110			38	398	107	623

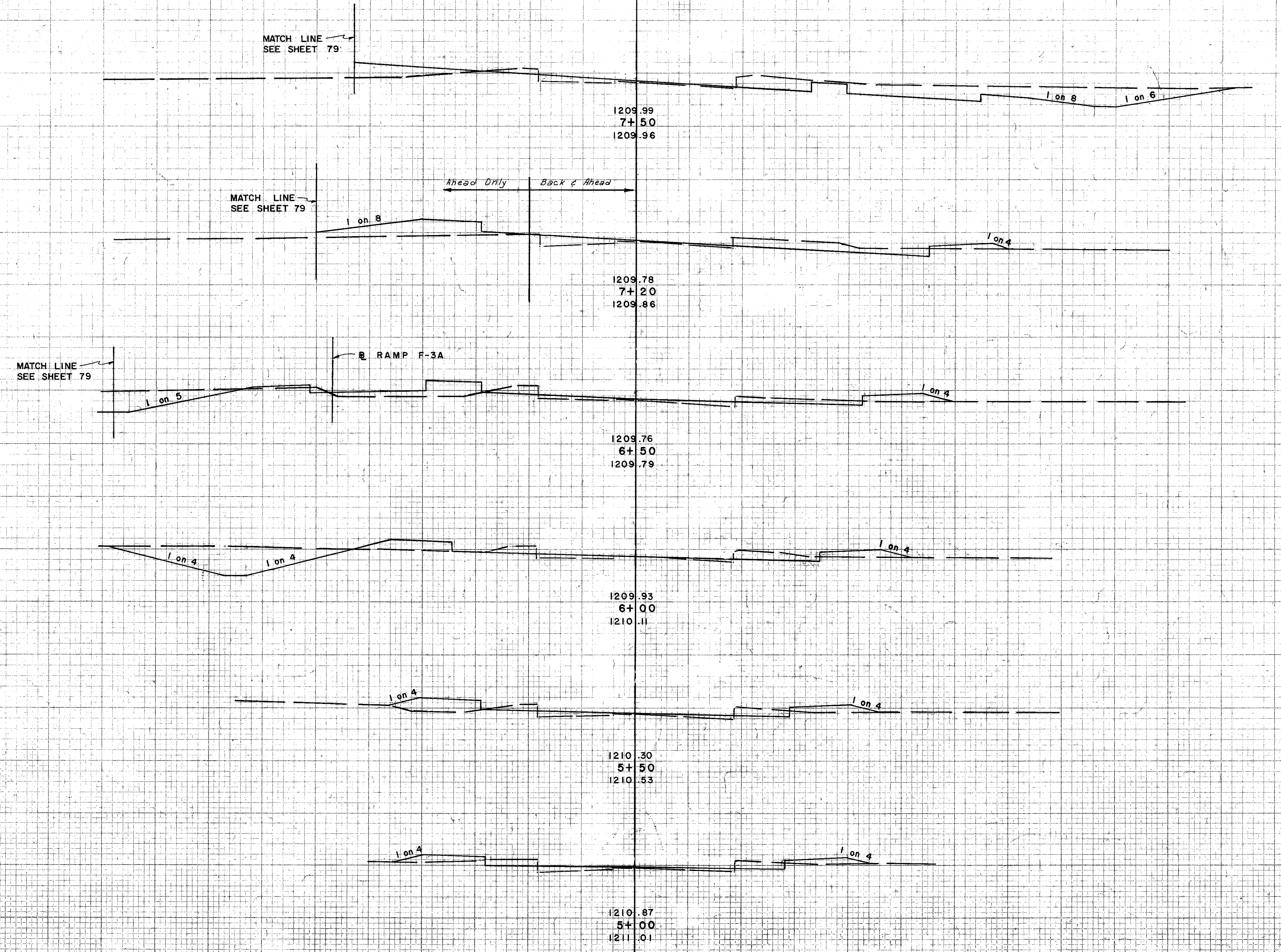
FINAL SURVEY PLOTTED
NOTE BOOK AREAS CHECKED

ORIGINAL SURVEY PLOTTED
NOTE BOOK AREAS CHECKED

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

CUYAHOGA COUNTY
CUY-I-2.20

SEEDING WIDTH	END AREA SQ. YD.	CU. YDS.	
		CUT	FILL
1210		200	64
1210			141
	Sta. 7+20 Ahead	53	125
	Sta. 7+20 Back		35
1210			211
		110	95
1210			255
		165	47
1210			174
		23	73
1210			42
		22	53
			44
	Sta. 4+50	25	45



FINAL SURVEY PLOTTED DATE: 5-17-59
NOTE BOOK NO. 100

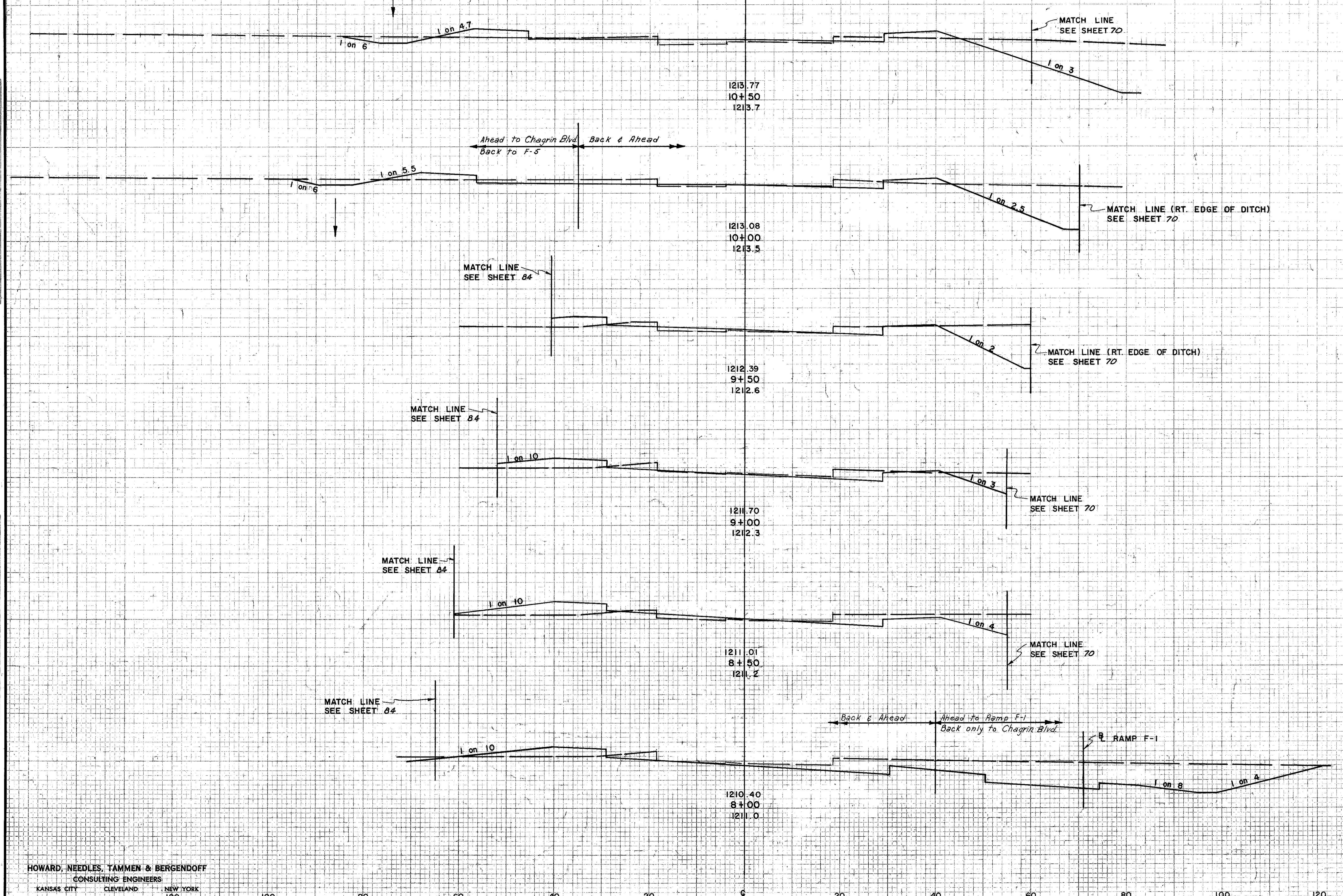
ORIGINAL SURVEY PLOTTED DATE: 5-17-59
BY: V.D.S., V.D.S., R.H.K., J.H.G.

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

PLATE 3-CROSS SECTION & P.R.A.R.E.
CHARLES GUNNING COMPANY, INC.

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING END AREA CU. YDS.	WIDTH SQ. YD.		CUT		FILL	
1210					65	47
1210					262	75
1210			218	34	65	12
1210						171
1210			120	34		
1210					61	39
1210						135
1210			85	42		
1210					148	96
1210			75	42	409	42
1210						564
1210			200	64		



FINAL SURVEY PLOTTED
NOTE BOOK AREAS CHECKED

DATE 5-22-39
BY JAG Y DCS
JAG Y DCS
JAG Y DCS
RELK

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

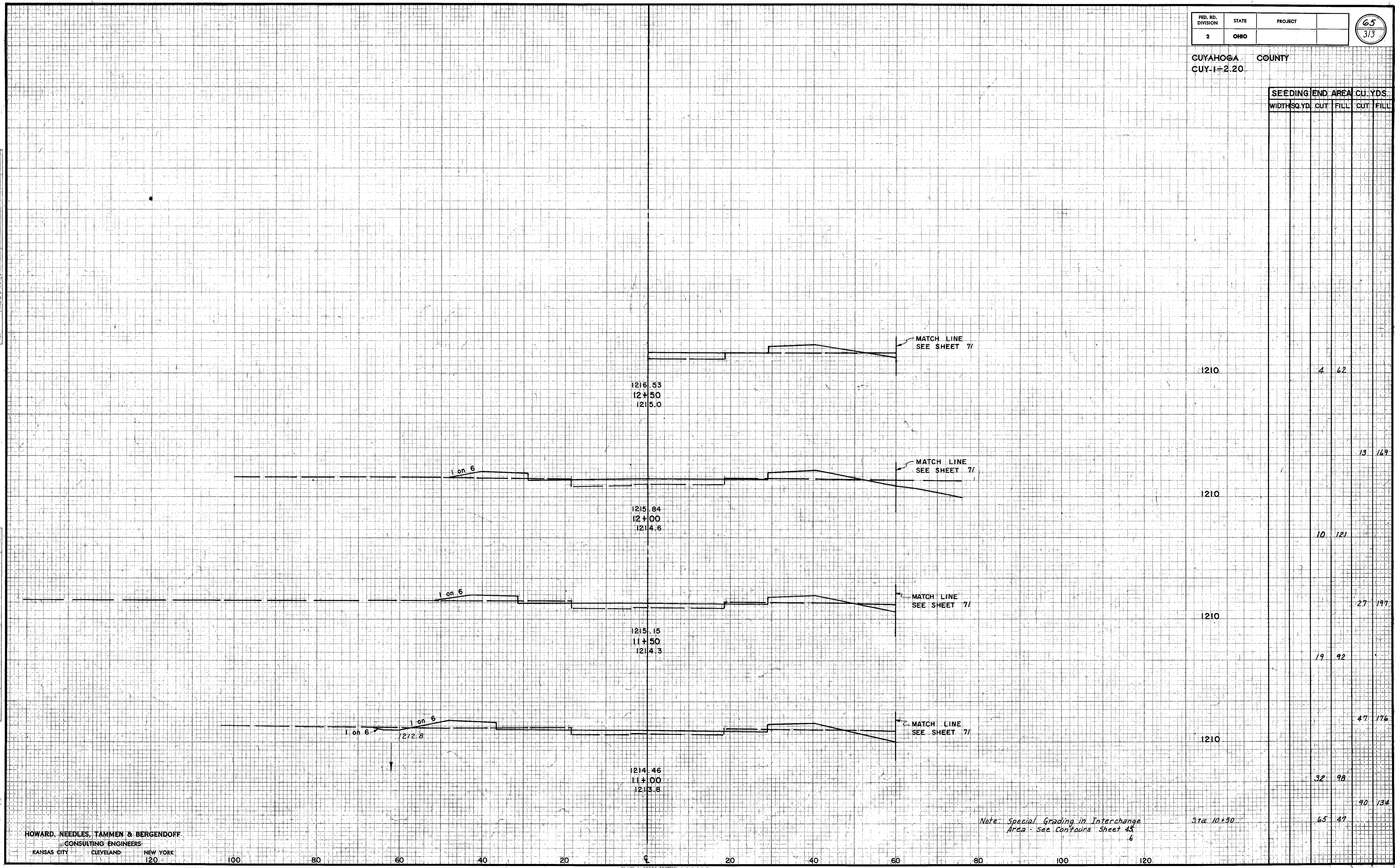
65
313

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY	SURVEYED	DATE
SURVEY	PLOTTED	
NOTE BOOK	TEMP. PLATE	
NO.	AREAS CHECKED	

ORIGINAL SURVEY	SURVEYED	DATE
SURVEY	PLOTTED	5-22-59
NOTE BOOK	TEMP. PLATE	2-22-59
NO.	AREAS CHECKED	2-16-59

SEEDING WIDTH	END AREA		CU. YDS.	
	SQ. YD.	CUT	FILL	CUT FILL
		4	62	
		13	149	
	10	121		
		27	197	
	19	92		
		47	176	
	32	98		
		90	134	
		65	47	



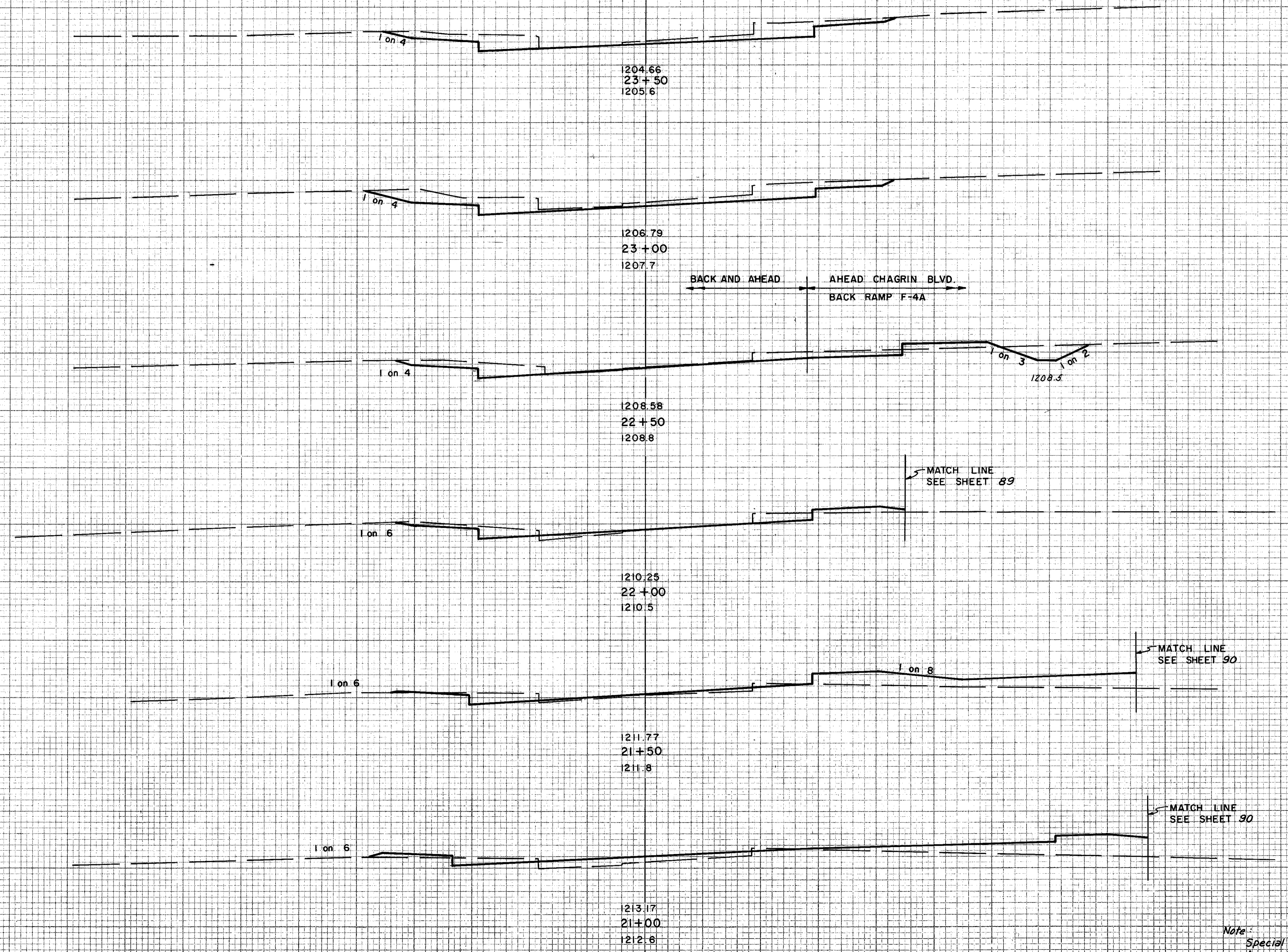
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Note: Special Grading in Interchange Area - see Contours Sheet 45
Sta 10+50

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY SURVEYED BY DATE
NO. SURVEY PLOTTED BY DATE
NOTE BOOK NO. TEMPLATE NO. DATE
AREAS CHECKED: W.C.S.

ORIGINAL SURVEY SURVEYED BY DATE
NO. SURVEY PLOTTED BY DATE
NOTE BOOK NO. TEMPLATE NO. DATE
AREAS CHECKED: W.C.S.



END	AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1210	90	0		
			199	0
1210	125	0		
			194	14
1210	Ahead 84	Back 50	15	0
			82	24
1210	38	26		
			54	139
1210	20	124		
			31	268
1210	13	166		
			17	344
			Sta 20+50	5 206

Note: Special Grading in Interchange Area - See Contours Sheet 83.

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

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

68
3/3

CUYAHOGA COUNTY
CUY-1+2.20

1200

SEEDING WIDTH	END SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL

13 37

1200

31 69

20 38

1200

60 60

45 27

1200

79 46

40 23

1200

73 44

39 24

1200

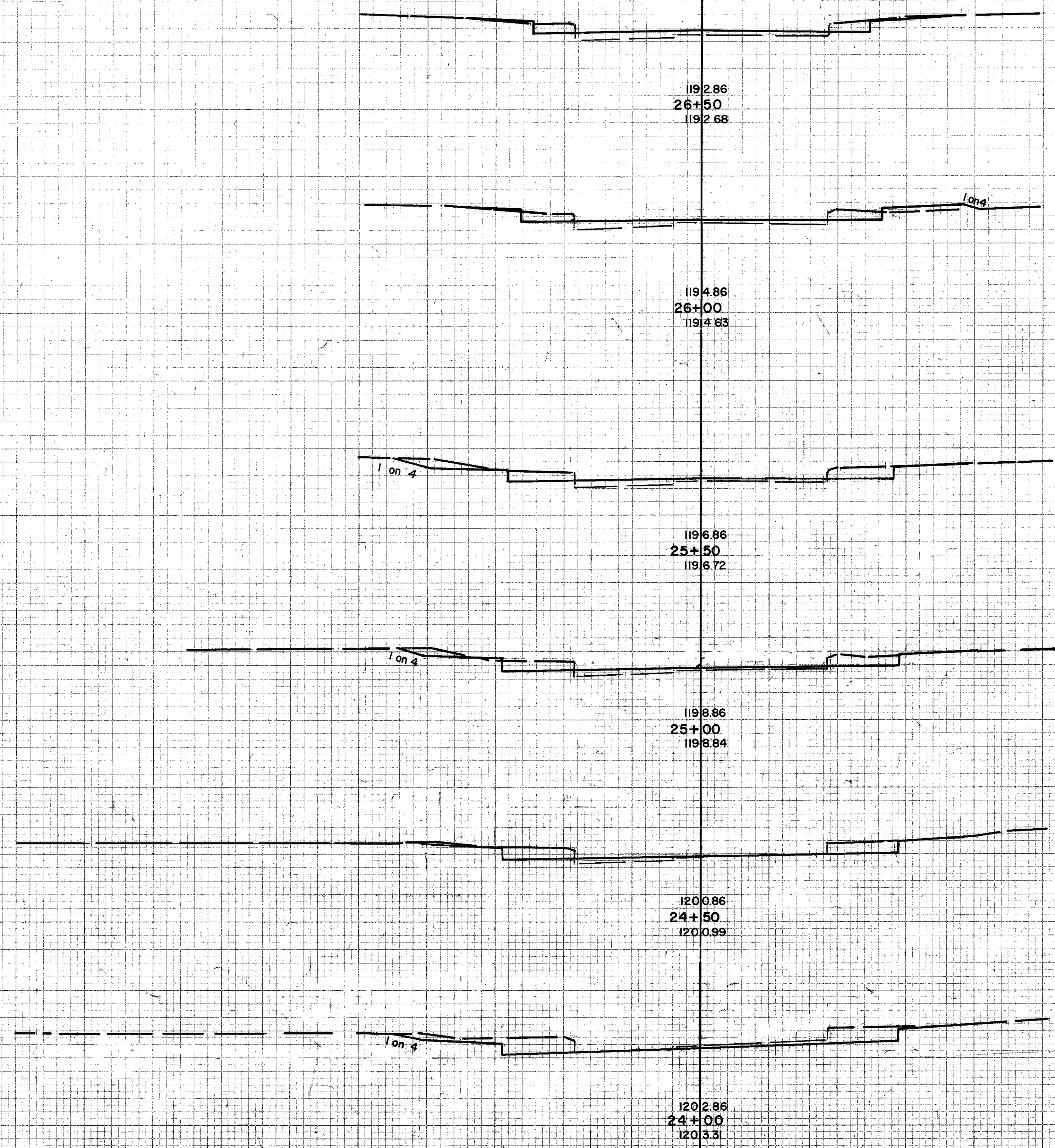
94 22

63 0

142 0

Sta. 23+50

90 0



FINAL SURVEY PLOTTED
NOTE BOOK AREAS CHECKED

DATE 12-1-59
DDJ
JFB
RJK

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

80 60 40 20 20 40 60 80

PLATE 3-CROSS SECTION O. P. R. & W. E.
CHARLES BRIDGE COMPANY, INC.

CHAGRIN BLVD. STA. 24+00 TO STA. 26+50

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

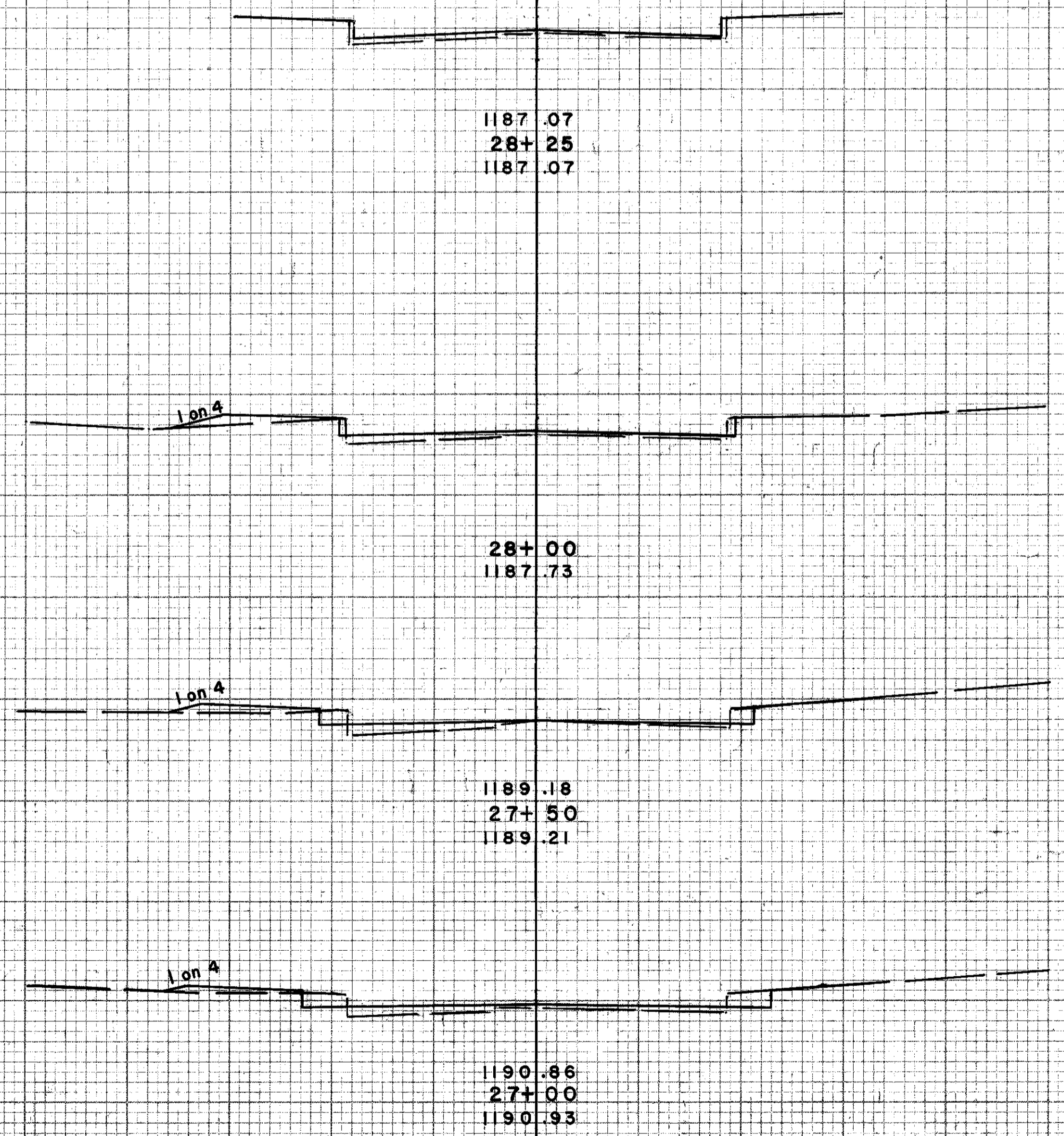
69
313

GUYAHOGA COUNTY
CUY-I-2.20

FINAL SURVEY	SURVEYED	DATE
NOTE BOOK NO.	PLOTTED	
	TEMPLATE	
	AREAS CHECKED	

ORIGINAL SURVEY	SURVEYED	DATE
NOTE BOOK NO.	PLOTTED	5-20-59
	TEMPLATE	9-20-59
	AREAS CHECKED	7-15-59

SEEDING WIDTH	END AREA SQYD	CU. YDS.	
		CUT	FILL
		0	17
			1 22
		2	30
		7	56
		6	30
			18 57
		13	32
			24 64
		13	37



1180

1180

1190

1190

Sta 26+50

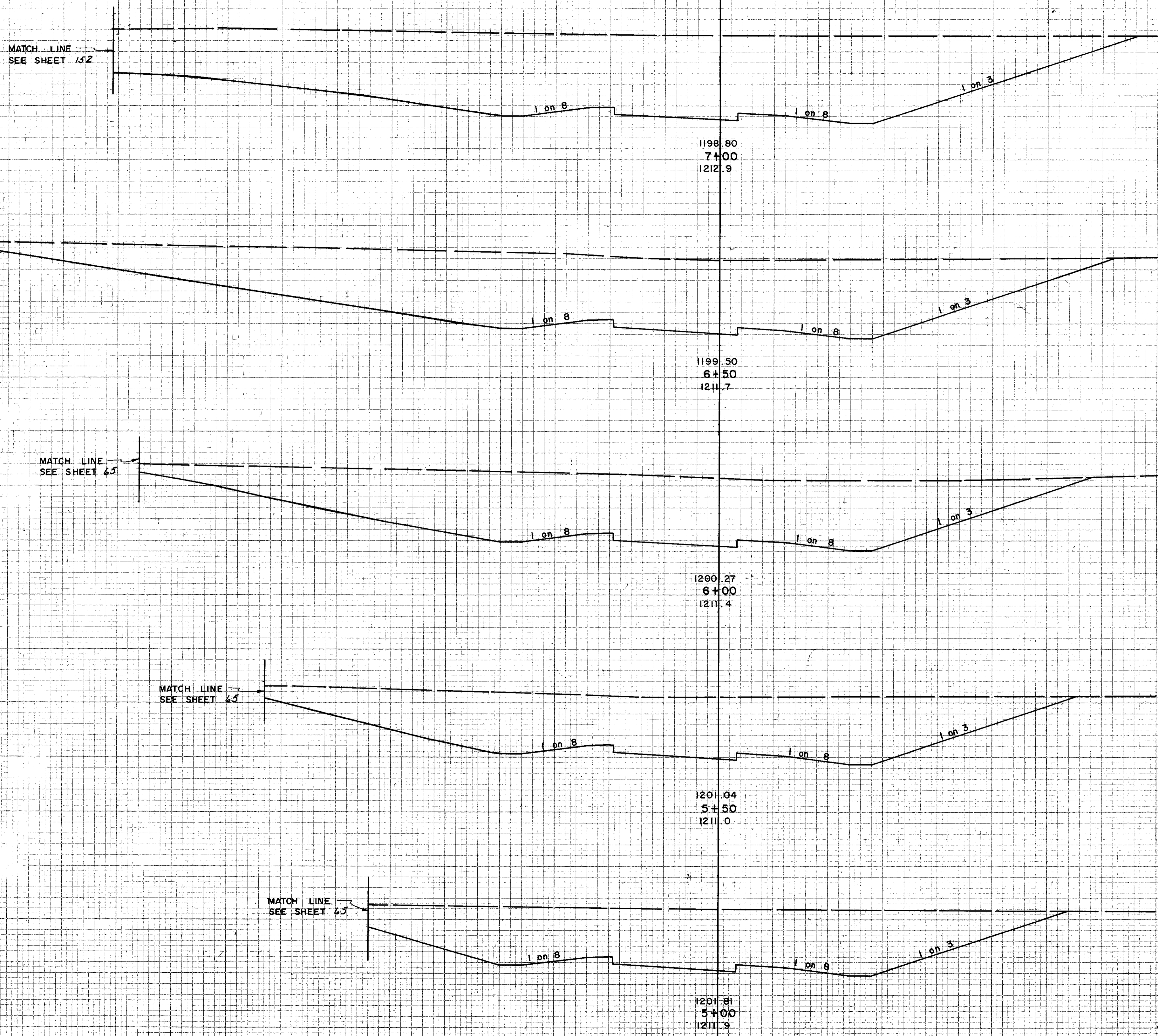
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

80 60 40 20 0 20 40 60 80

PLATE 5-CROSS SECTION OF P.R. & C.
CHARLES BRUSH COMPANY, INC.

CHAGRIN BLVD. STA. 27+00 TO STA. 28+25

CUYAHOGA COUNTY
CUY-I-2:20



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			2200	0
				3832 0
			1939	0
				3220 0
			1537	0
				2585 0
			1257	0
				2216 0
			1131	0
				1742 0
			746	0

FINAL SURVEYED BY DATE
 SURVEY PLOTTED BY DATE
 NOTE BOOK NO. DATE
 AREAS CHECKED

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

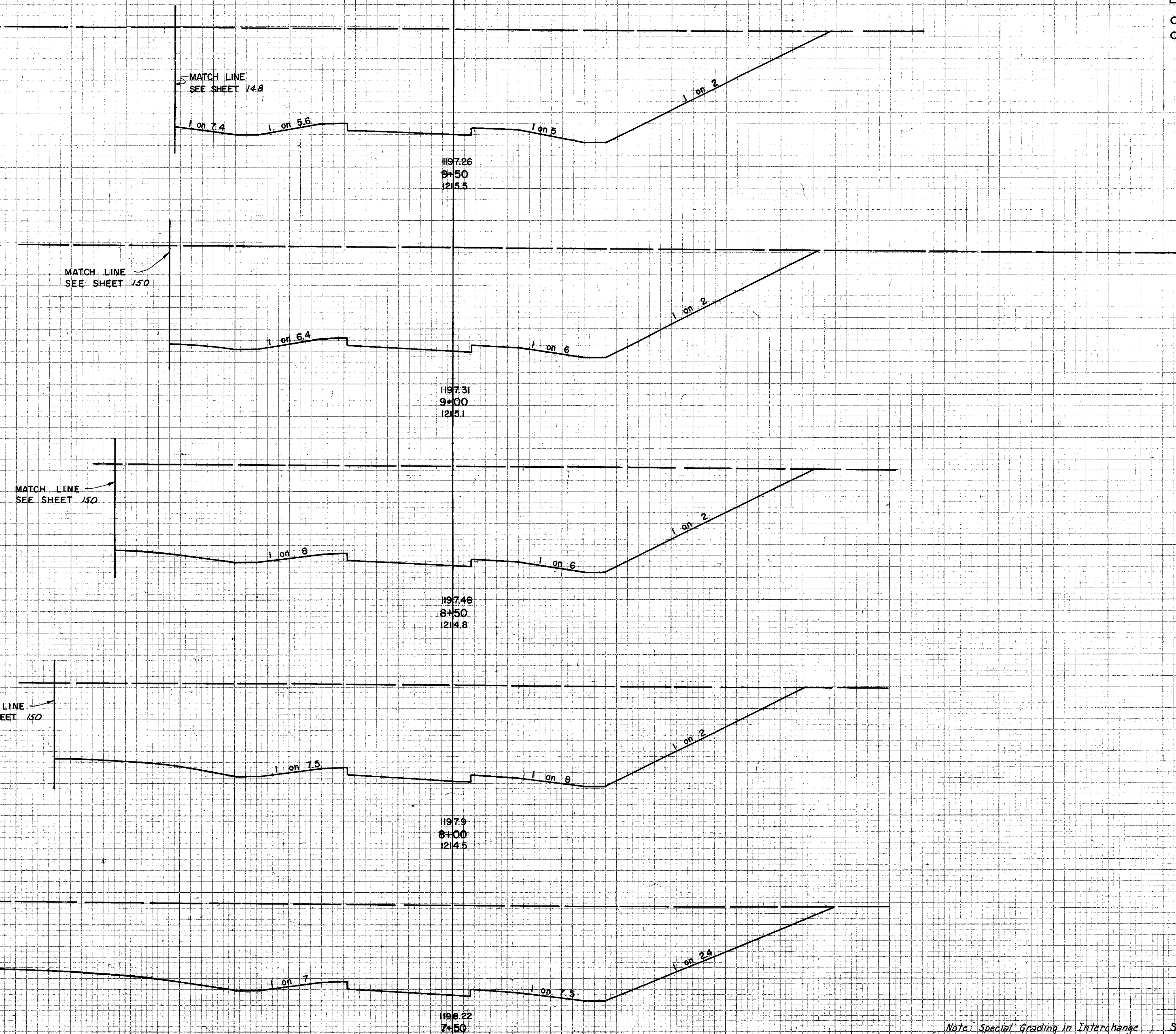
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

Note Special Grading in Interchange Area - See Contours Sheet 46

Sta 4+50

CUYAHOGA COUNTY
CUY-1-2,20
1210

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
		1926	0	
		1851	0	3500
		1960	0	3330
		2000	0	3668
		2141	0	3835
		2200	0	4020



FINAL SURVEY PLOTTED. DATE: _____ BY: _____
 SURVEY PLOTTED. DATE: _____ BY: _____
 NOTE BOOK NO. _____
 TEMPLATE NO. _____
 AREAS CHECKED: _____

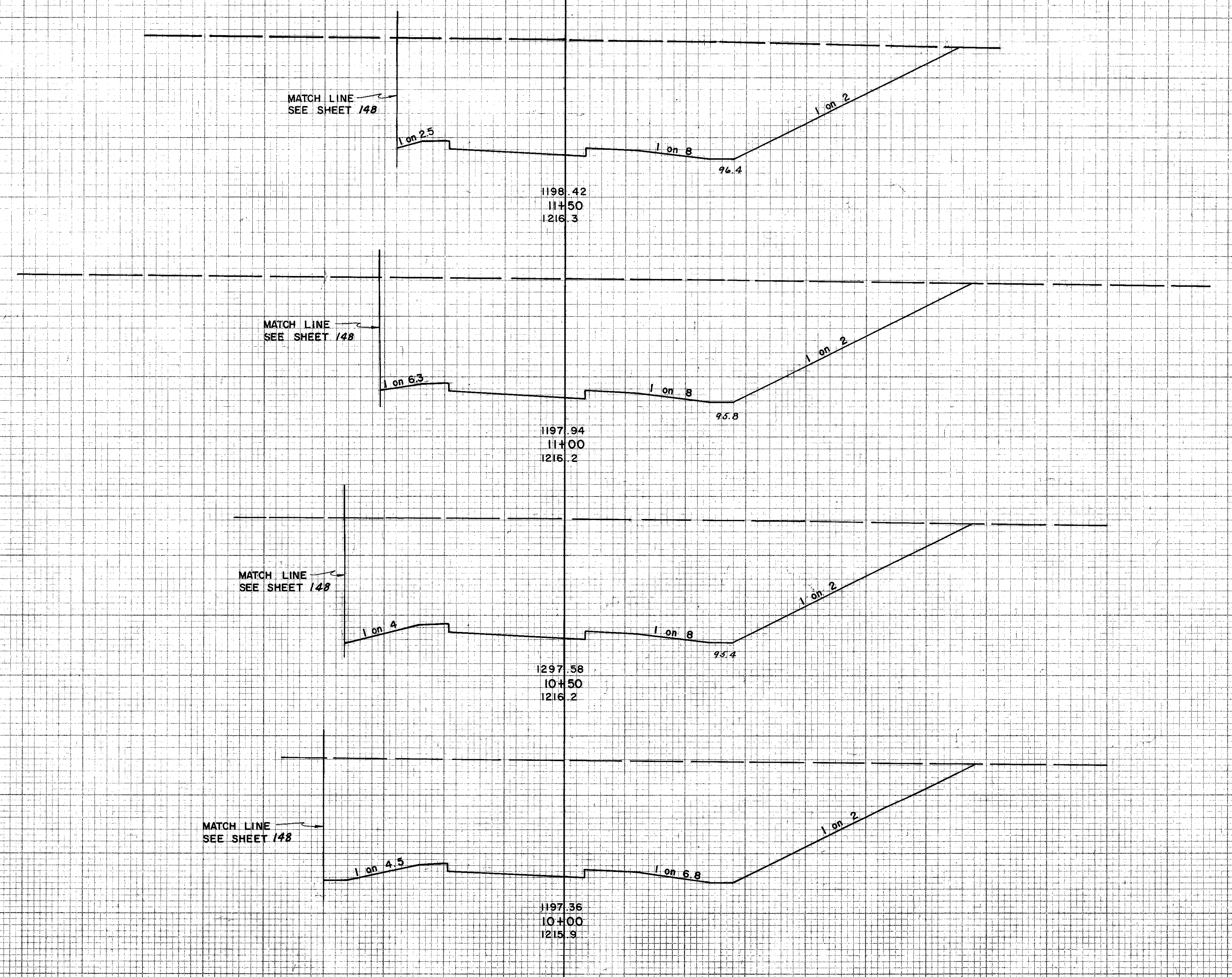
ORIGINAL SURVEY PLOTTED. DATE: 6-28-59 BY: JRG
 SURVEY PLOTTED. DATE: 7-17-59 BY: JRG
 NOTE BOOK NO. _____
 TEMPLATE NO. _____
 AREAS CHECKED: _____

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

Note: Special Grading in Interchange Area. See Contours Sheet 46 Sta. 7+00

CUYAHOGA COUNTY
 CUY-1-2:20

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
		1125	0	
		1395	0	3570
		1511	0	2696
		1664	0	2940
		1720	0	3130
		1926	0	3380



FINAL SURVEYED BY DATE
 SURVEY PLOTTED
 NOTE BOOK TEMPLATE
 AREA CHECKED

ORIGINAL SURVEYED BY DATE
 SURVEY PLOTTED
 NOTE BOOK TEMPLATE
 AREA CHECKED

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

MICROFILMED
JUN 6 1984

POURED-IN-PLACE ASPHALT MASTIC WATERPROOFING
ON BRIDGE DECKS

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

73A
81

CUYAHOGA COUNTY
CUY-254-18.88

1. GENERAL

UNDER THIS ITEM THE CONTRACTOR SHALL FURNISH AND APPLY A LAYER OF POURED-IN-PLACE ASPHALT MASTIC NOT LESS THAN ONE AND ONE-HALF (1 1/2) INCHES THICK ON THE BRIDGE DECK AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

f. EXPANSION JOINT MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT A.S.T.M. STANDARD SPECIFICATIONS FOR CONCRETE JOINT SEALER, HOT-POURED ELASTIC TYPE, DESIGNATION D-1190.

2. MATERIALS

THE POURED-IN-PLACE MASTIC SHALL CONSIST OF ASPHALT, COARSE MINERAL AGGREGATE, FINE MINERAL AGGREGATE AND MINERAL FILLER CONFORMING TO THE FOLLOWING REQUIREMENTS:

a. ASPHALT FOR MASTIC SHALL BE HOMOGENEOUS AND FREE FROM WATER AND SHALL MEET THE FOLLOWING REQUIREMENTS:

PENETRATION: AT 77°F (25°C), 100 g. 5 SEC.	25 TO 30
SOFTENING POINT	145° TO 160°F
FLASH POINT (OPEN CUP)	NOT LESS THAN 347°F (175°C)
LOSS ON HEATING AT 325°F (163°C), 50 g. 5 HR.	NOT MORE THAN 2 PERCENT
PENETRATION AT 77°F (25°C) 100 g. 5 SEC. OF RESIDUE AFTER HEATING AT 325°F (163°C), AS COMPARED WITH PENETRATION OF ASPHALT BEFORE HEATING	NOT LESS THAN 60 PERCENT
DUCTILITY AT 77°F (25°C)	NOT LESS THAN 15 CM.
PROPORTION OF BITUMEN SOLUBLE IN CARBON TETRA-CHLORIDE	NOT LESS THAN 99 PERCENT

b. COARSE MINERAL AGGREGATE SHALL BE UNIFORMLY GRADED CRUSHED STONE OR WASHED GRAVEL THAT WILL PASS A 3/8 IN. SIEVE AND BE RETAINED ON A NO 10 SIEVE. IT SHALL BE FREE FROM SOFT PARTICLES AND ORGANIC MATTER.

c. FINE MINERAL AGGREGATE SHALL BE UNIFORMLY GRADED WASHED SAND OR CRUSHED STONE THAT WILL MEET THE FOLLOWING REQUIREMENTS:

PASSING A NO 100 SIEVE	NOT MORE THAN 6 PERCENT
PASSING A NO 40 SIEVE	40-80 PERCENT
PASSING A NO 10 SIEVE	NOT LESS THAN 90 PERCENT

d. MINERAL FILLER SHALL BE PORTLAND CEMENT CONFORMING TO THE REQUIREMENTS OF THE CURRENT A.S.T.M. STANDARD SPECIFICATIONS FOR PORTLAND CEMENT, DESIGNATION C-150, OR FINELY GROUND LIMESTONE OR SILICA MEETING THE FOLLOWING REQUIREMENTS:

PASSING A NO 200 SIEVE	NOT LESS THAN 75 PERCENT
PASSING A NO 30 SIEVE	NOT LESS THAN 100 PERCENT

e. ASPHALT PRIMER SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT A.S.T.M. STANDARD SPECIFICATIONS FOR PRIMER FOR USE WITH ASPHALT IN DAMPROOFING AND WATERPROOFING, DESIGNATION D-41, FOR STEEL.

3. CONSTRUCTION METHODS

THE ASPHALT AND MINERAL AGGREGATES SHALL BE MIXED IN THE FOLLOWING PROPORTIONS BY WEIGHT, VARIED WITHIN THE SPECIFIED LIMITS, TO GIVE A MASTIC OF THE GREATEST DENSITY AND STABILITY:

ASPHALT	9 PERCENT TO 12 PERCENT
COARSE MINERAL AGGREGATE	33 PERCENT TO 40 PERCENT
FINE MINERAL AGGREGATE	33 PERCENT TO 37 PERCENT
MINERAL FILLER	15 PERCENT TO 19 PERCENT

THE ASPHALT MASTIC SHALL BE MIXED AT THE SITE OF THE WORK IN EITHER SUITABLE MECHANICALLY OPERATED HEATERS AND MIXERS, OR BY MANUAL STIRRING IN OPEN PANS OR KETTLES. THE ASPHALT SHALL BE MELTED AND HEATED TO 350°F. THE AGGREGATE SHALL BE MIXED AND HEATED TO 212° - 275°F AND THEN PLACED IN THE MELTED BITUMEN. THESE INGREDIENTS SHALL BE WELL MIXED UNTIL ALL PIECES OF THE AGGREGATE ARE COVERED WITH BITUMEN, AND THE AGGREGATES ARE DISTRIBUTED UNIFORMLY THROUGHOUT THE MIXTURE. THE MINERAL FILLER SHALL THEN BE UNIFORMLY INCORPORATED IN THE MIXTURE. DURING THE MIXING PROCESS CARE SHALL BE TAKEN TO AVOID LOCAL OVERHEATING OF THE MIXTURE, THE TEMPERATURE OF WHICH SHALL BE MAINTAINED BETWEEN 300°F AND 375°F.

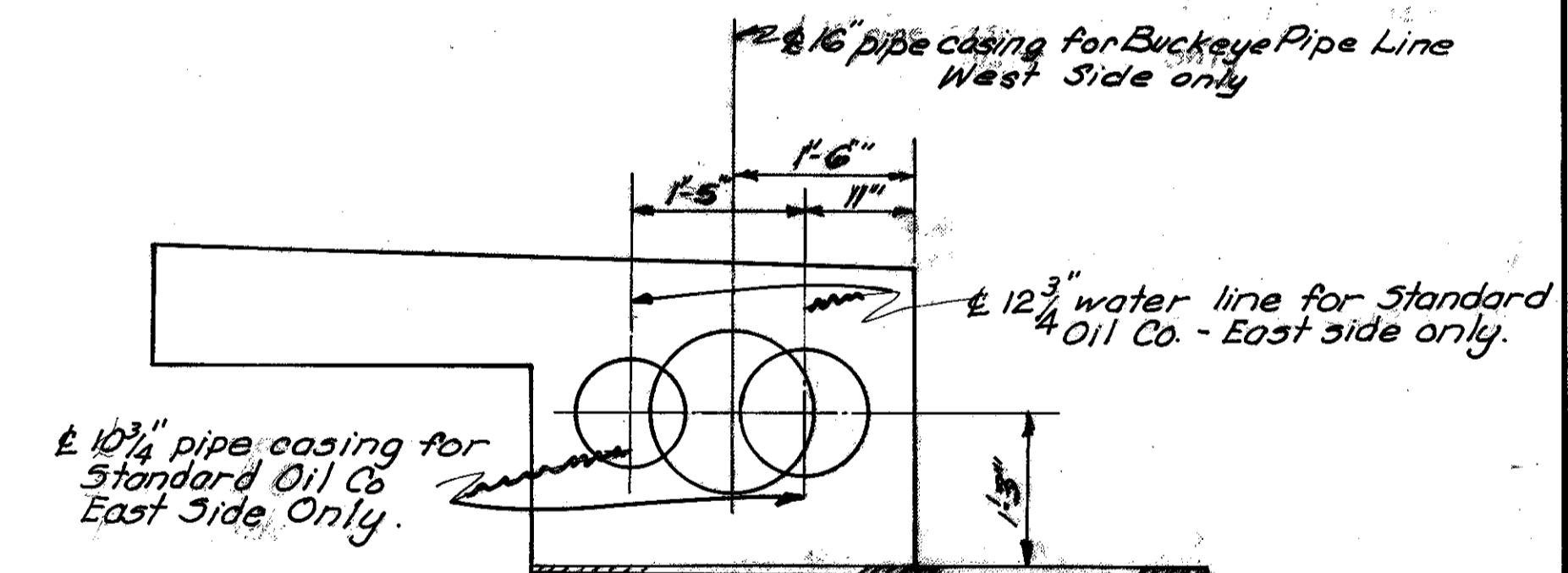
AFTER THE MASTIC HAS BEEN MIXED IT SHALL BE POURED INTO PLACE WHILE HOT. IT SHALL BE PLACED IN LAYERS NOT MORE THAN 3/4 IN. THICK. THE THICKNESS SHALL BE GAUGED BY WOODEN STRIPS HELD IN POSITION BY SUITABLE WEIGHTS. THE LAYERS SHALL BE BROUGHT TO THE REQUIRED THICKNESS WITH WOODEN SPREADERS AND FLOATS, AND SHALL LAP JOINTS NOT LESS THAN 6 IN. THE TOP LAYER SHALL BE FINISHED TO THE REQUIRED GRADE AND TO A SMOOTH SURFACE. AS SOON AS THE TOP LAYER OF THE MASTIC IS FINISHED, IT SHALL BE GIVEN A MOPPING OF HOT BITUMEN OF THE SAME KIND AS USED IN THE MASTIC, SANDED TO A WALKING SURFACE WHILE HOT.

BEFORE APPLYING THE ASPHALT MASTIC, THE BRIDGE DECK SHALL BE DRY AND FREE OF ALL OIL, GREASE, RUST, SCALE, LOOSE PAINT AND DIRT, TO THE SATISFACTION OF THE ENGINEER, AND SHALL THEN BE GIVEN A MOPPING OF ASPHALT PRIMER APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS OR AS DIRECTED BY THE ENGINEER.

EXPANSION JOINTS SHALL BE PROVIDED BETWEEN THE ASPHALT MASTIC AND THE STEEL GIRDERS OR CONCRETE CURBS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER BY INSERTING A WOOD STRIP 5/8" THICK AGAINST THE STEEL OR CURB, AND AFTER THE MASTIC HAS SET, THE STRIP REMOVED AND THE SPACE FILLED WITH EXPANSION JOINT MATERIAL, MELTED AND POURED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS.

4. HOW MEASURED

THE QUANTITY UNDER THIS ITEM WILL BE MEASURED BY THE NUMBER OF SQUARE YARDS OF PROTECTION COURSE PLACED IN THE COMPLETED WORK.



ENCASED PIPE DETAILS

COUNT 58019-30 SHEET NO. 1937

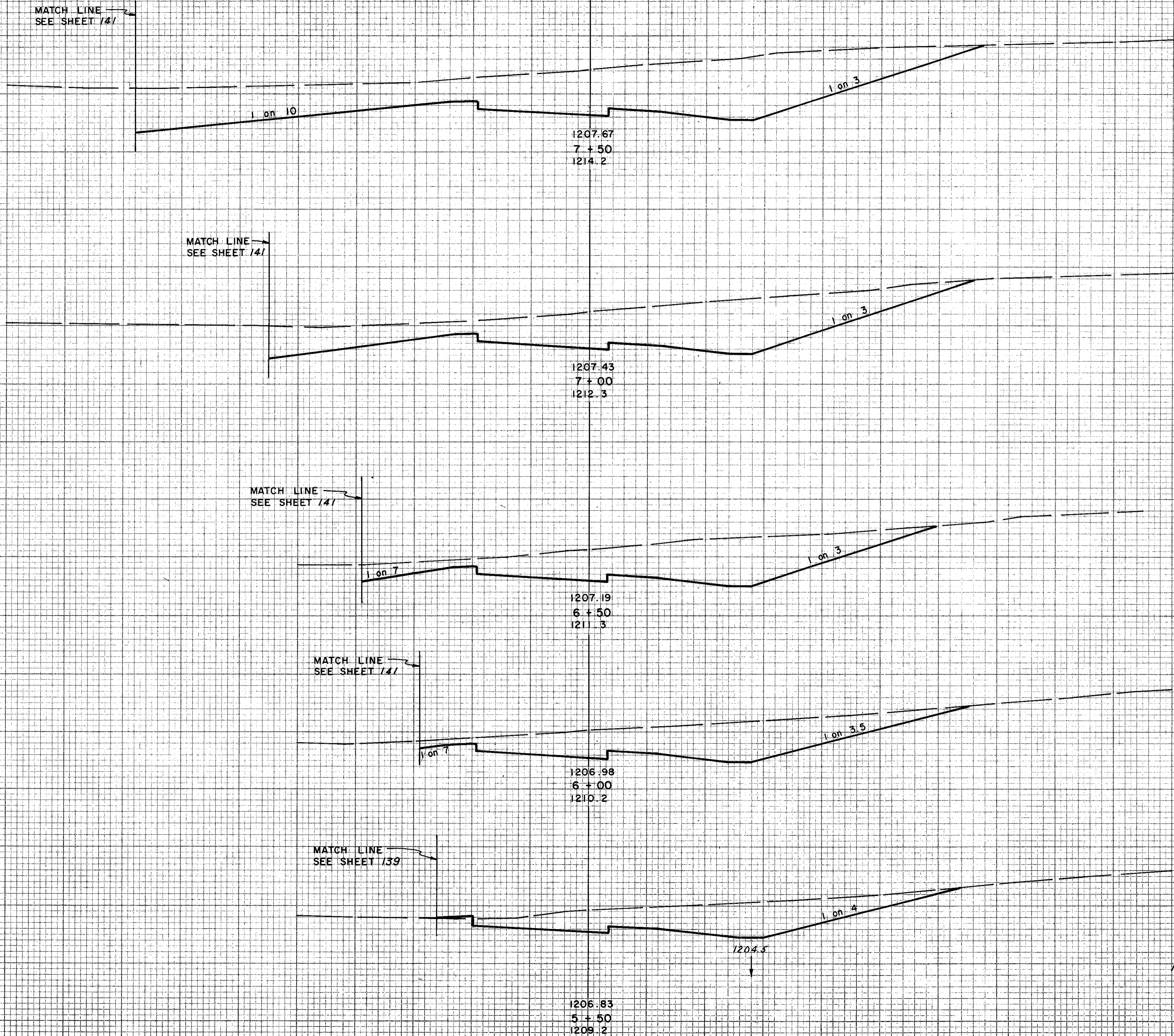
TRYGVE HOFF & ASSOCIATES
ENGINEERS
1922 EAST 107TH STREET CLEVELAND, OHIO

DECK WATERPROOFING NOTES
BRIDGE NO CUY-254-1893
CLARK FREEWAY UNDER E.L. RAILROAD
CUYAHOGA COUNTY

SCALE	DATE
DESIGNED	DRAWN
TRACED	CHECKED
REVIEWED	DATE
REVISED	

W.P.H. D.W.M. D.W.M. 2-21-64 7-9-64

CUYAHOGA COUNTY
CUY-1-2.20



END	AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
210	928	0		
210			1414	0
210	600	0		
210			949	0
210	426	0		
210			723	0
210	354	0		
210			584	2
	276	2		513
Sta. 433+00 S.R. 1	186	0		

Note:
Special Grading in Interchange
Area - See Contours Sheet 53.

FINAL SURVEY
SURVEY PLOTTED
NOTE BOOK NO. _____
AREAS CHECKED _____

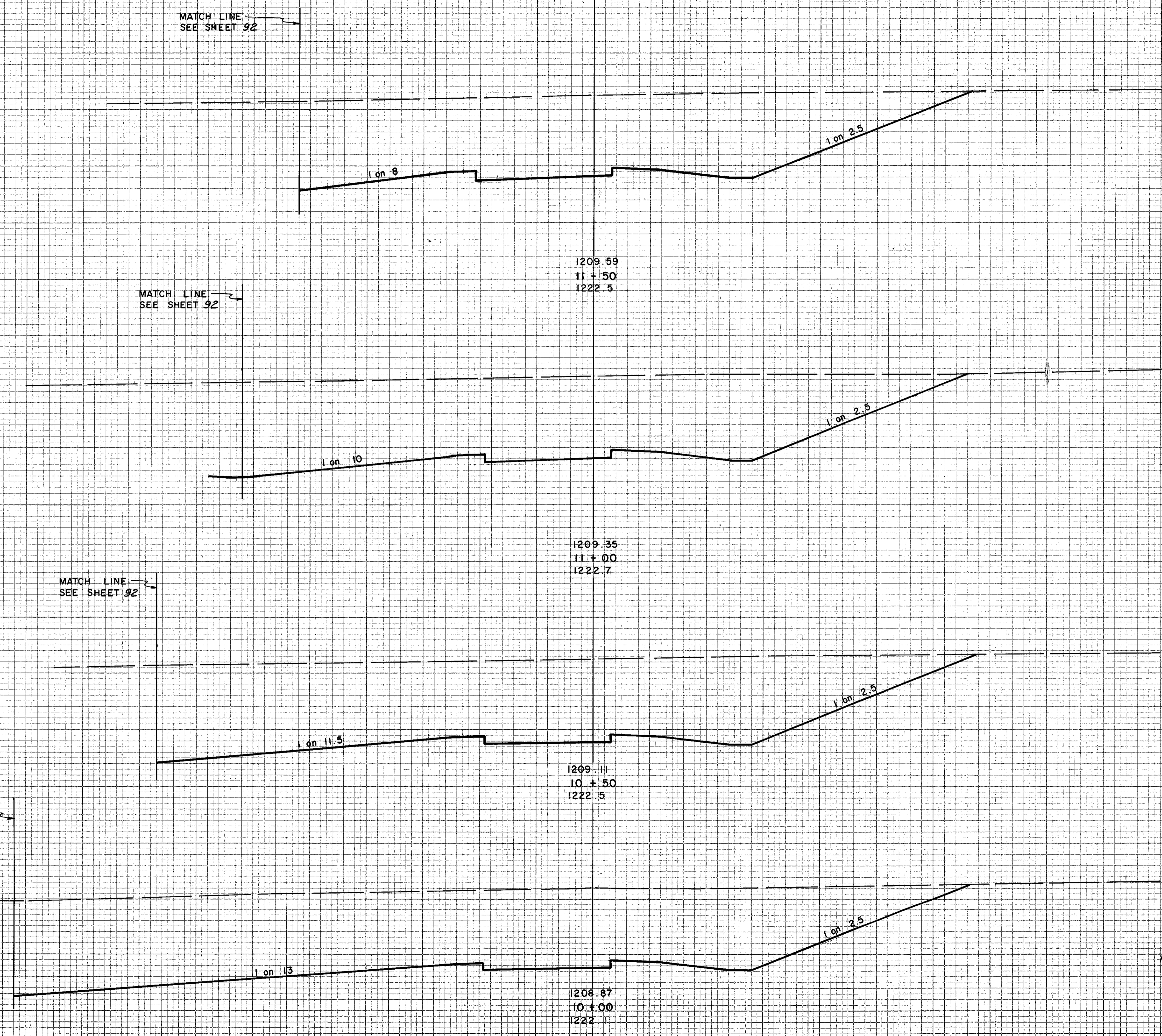
ORIGINAL SURVEY
SURVEY PLOTTED
NOTE BOOK NO. _____
AREAS CHECKED _____

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

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY NO. _____
 SURVEYED BY _____
 PLOTTED BY _____
 AREAS CHECKED BY _____

ORIGINAL SURVEY NO. _____
 SURVEYED BY _____
 PLOTTED BY _____
 AREAS CHECKED BY _____



END STA.	AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
Sta. 8+50 Ramp F-6	1104	0		
1210				2707 0
	1816	0		
1210				2808 0
	1616	0		
1210				3229 0
	1871	0		
1210				3774 0
	2204	0		
1210				4538 0
Sta. 9+50	2697	0		

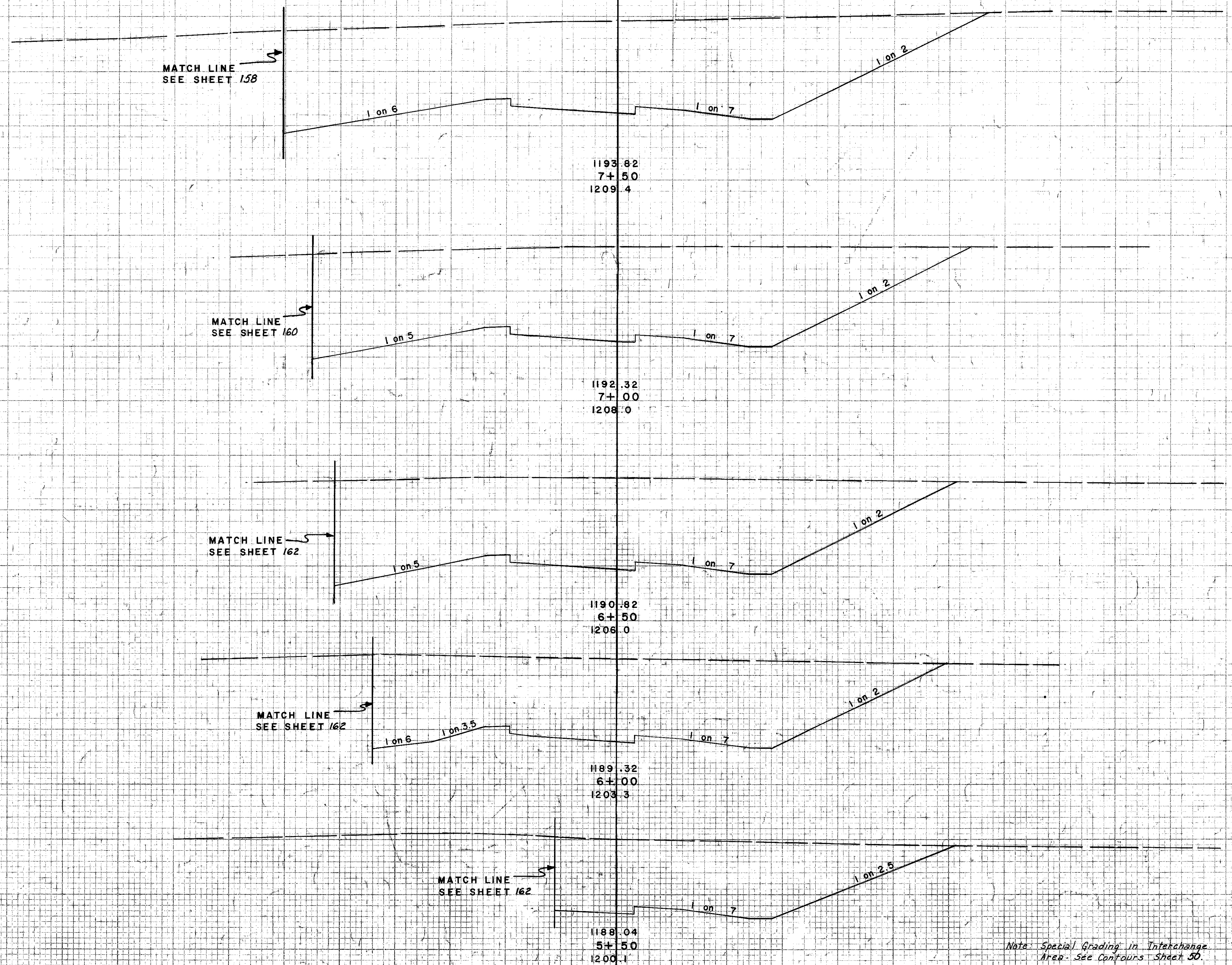
Note:
Special Grading in Interchange Area - See Contours Sheet 53

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

CUYAHOGA COUNTY
CUY-1-2.20

DATE
NO.
FINAL SURVEY
NO. BOOK
NO. SHEETS
NO. AREAS CHECKED

DATE
NO.
ORIGINAL SURVEY
NO. BOOK
NO. SHEETS
NO. AREAS CHECKED



WIDTH	SEEDING END AREA		CU. YDS.	
	sq. yd.	CUT	FILL	CUT FILL
1805	0			
1691	0			3237
1533	0			3064
1330	0			2670
1198	0			1918
798	0			1165
500	0			

Note: Special Grading in Interchange Area - See Contours Sheet 50. Sta 462+00 S.R.1

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

CUYAHOGA COUNTY
 CUY-1-2.20

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			558	0
			1288	0
			833	0
			1212	0
			1784	0
			1212	0
			2770	0
			1780	0
			4153	0
			2705	0
			6073	0
			3854	0

Sta. 8+00 Ramp F-5

1210

MATCH LINE
SEE SHEET 86

120582
11+50
12154

1 on 3

MATCH LINE
SEE SHEET 86

120432
11+00
12169

1 on 2.5

MATCH LINE
SEE SHEET 87

120282
10+50
12177

1 on 2

MATCH LINE
SEE SHEET 87

120132
10+00
12171

1 on 2

Note: Special Grading in Interchange Area - See Contours Sheet 50

Sta. 9+50

1210

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

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

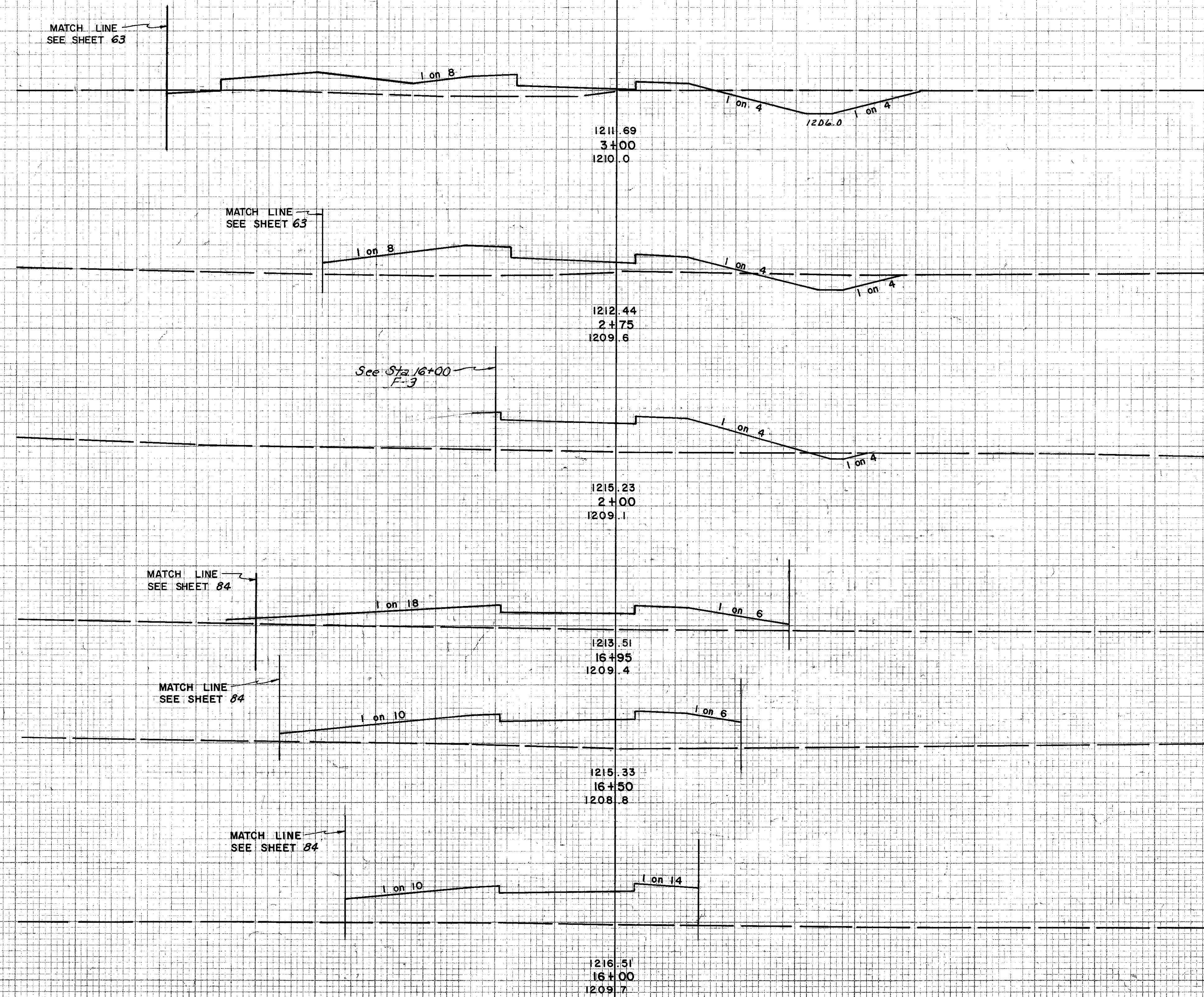
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 DATE: 6/17/39
 BY: JLV
 CHECKED: JLV
 AREA CHECKED: JLV

ORIGINAL SURVEY PLOTTED
 DATE: 6/17/39
 BY: JLV
 CHECKED: JLV
 AREA CHECKED: JLV

CUYAHOGA COUNTY
CUY-1-2.20

DATE: _____
NO. _____
FINAL SURVEY SCHEMATIC PLOTTED NOTE BOOK AREAS CHECKED

DATE: 7-1-59
NO. 100
ORIGINAL SURVEY SCHEMATIC PLOTTED NOTE BOOK AREAS CHECKED
RC V JRG
RFZ JRG



SEEDING WIDTH	END AREA SQ.YD.	CUT		FILL		CU. YDS.
		CUT	FILL	CUT	FILL	
				79	174	
						35 176
		39	207			
						63 610
		6	232			
						15 650
		4	207			
		0	238			
						0 473
		0	330			
						0 611
		0	330			
						0 675
		0	125			

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

100 80 60 40 20 0 20 40 60 80 100

PLATE 3-CROSS SECTION C.P.R. & R.E.
CHARLES OF BERG COMPANY, INC.

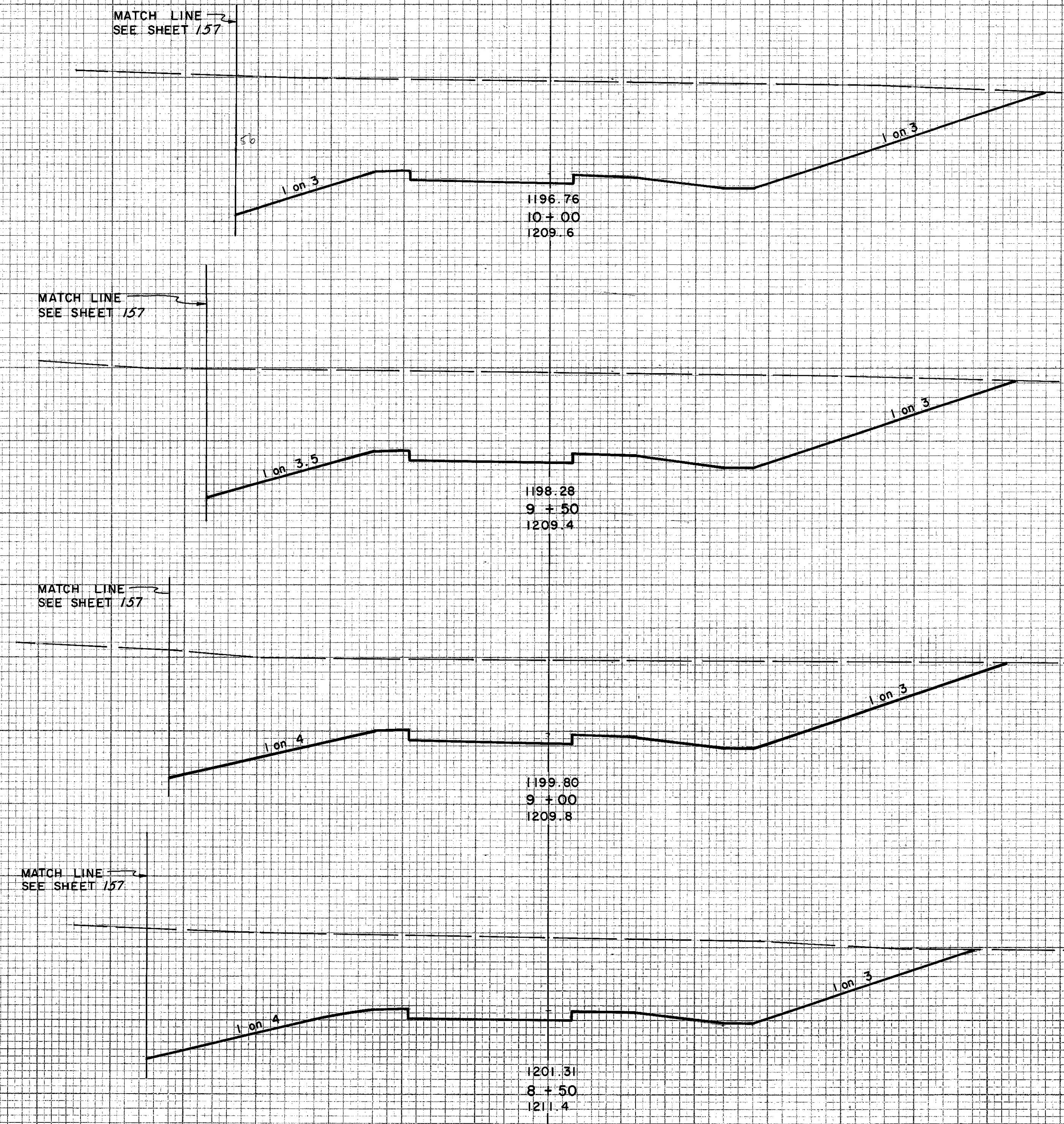
RAMP F-3 STA. 16+00 TO STA. 16+95
RAMP F-3A STA. 2+00 TO STA. 3+00

CUYAHOGA COUNTY
CUY-11-2.20

FINAL SURVEY NOTE BOOK NO. _____
 SURVEYED BY _____
 PLOTTED BY _____
 CHECKED BY _____
 DATE 5-11-61

ORIGINAL SURVEY NOTE BOOK NO. _____
 SURVEYED BY _____
 PLOTTED BY _____
 CHECKED BY _____
 DATE 5-11-61

EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
1310	0		
1210		2308	0
1182	0		
1210		2154	0
1144	0		
1210		2126	0
1152	0		
1148	0	2150	0



Note:
Special Grading in Interchange Area - See Contours Sheet 48.

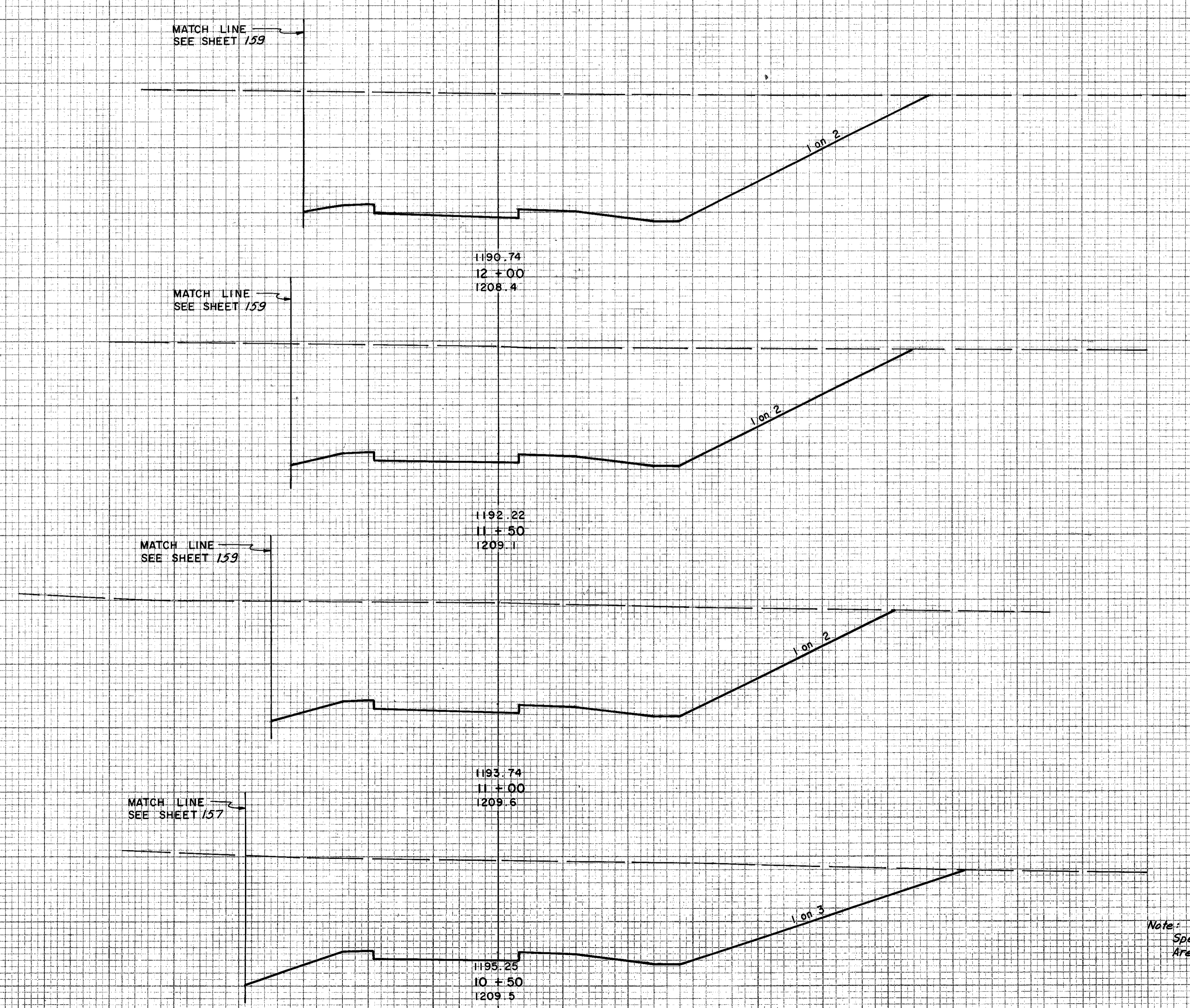
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY NO. _____
 SURVEYED BY _____ DATE _____
 PLOTTED BY _____
 NOTE BOOK NO. _____
 AREAS CHECKED _____

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

EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.



Sta. 457+00 S.R. 1

1210

3222 0

1190.74
12+00
1208.4

1435 0

1210

2608 0

1192.22
11+50
1209.1

1381 0

1210

2514 0

1193.74
11+00
1209.6

1334 0

1210

2524 0

1195.25
10+50
1209.5

1392 0

Sta. 10+00

1310 0

2502 0

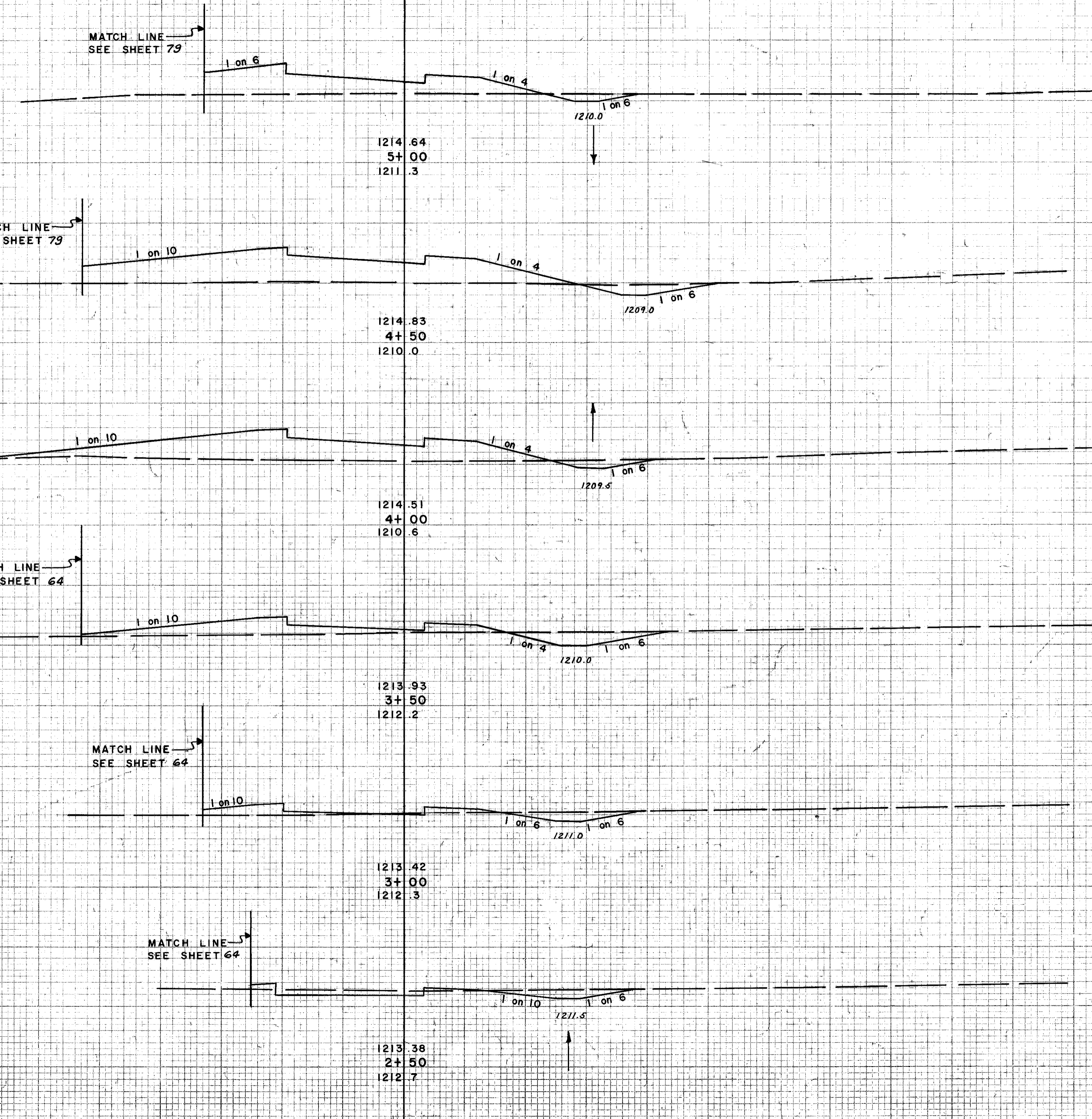
Note:
Special Grading in Interchange
Area - See Contours Sheet 48.

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

CUYAHOGA COUNTY
CUY-I-2.20

FINAL SURVEY PLOTTED
NOTE BOOK NO. AREAS CHECKED

ORIGINAL SURVEY PLOTTED
NOTE BOOK NO. AREAS CHECKED



SEEDING WIDTH	END AREA SQYD	CUT		FILL		CU. YDS.
		CUT	FILL	CUT	FILL	
				12	162	
				33	438	
				24	311	
				37	527	
				16	258	
				48	333	
				36	102	
				55	125	
				23	33	
				61	36	
				43	6	
				37	16	
				23	22	

Sta 10+00 Chagrin Blvd.

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
				520	0
				643	19
				173	21
				210	176
				54	169
				70	530
				21	403
				14	83
				12	162



DATE: 7-1-59
BY: LVM, JRB, REK
FINAL SURVEY PLOTTED: 7-1-59
NOTE BOOK NO.:
AREAS CHECKED:
ORIGINAL SURVEY PLOTTED: 7-1-59
NOTE BOOK NO.:
AREAS CHECKED:

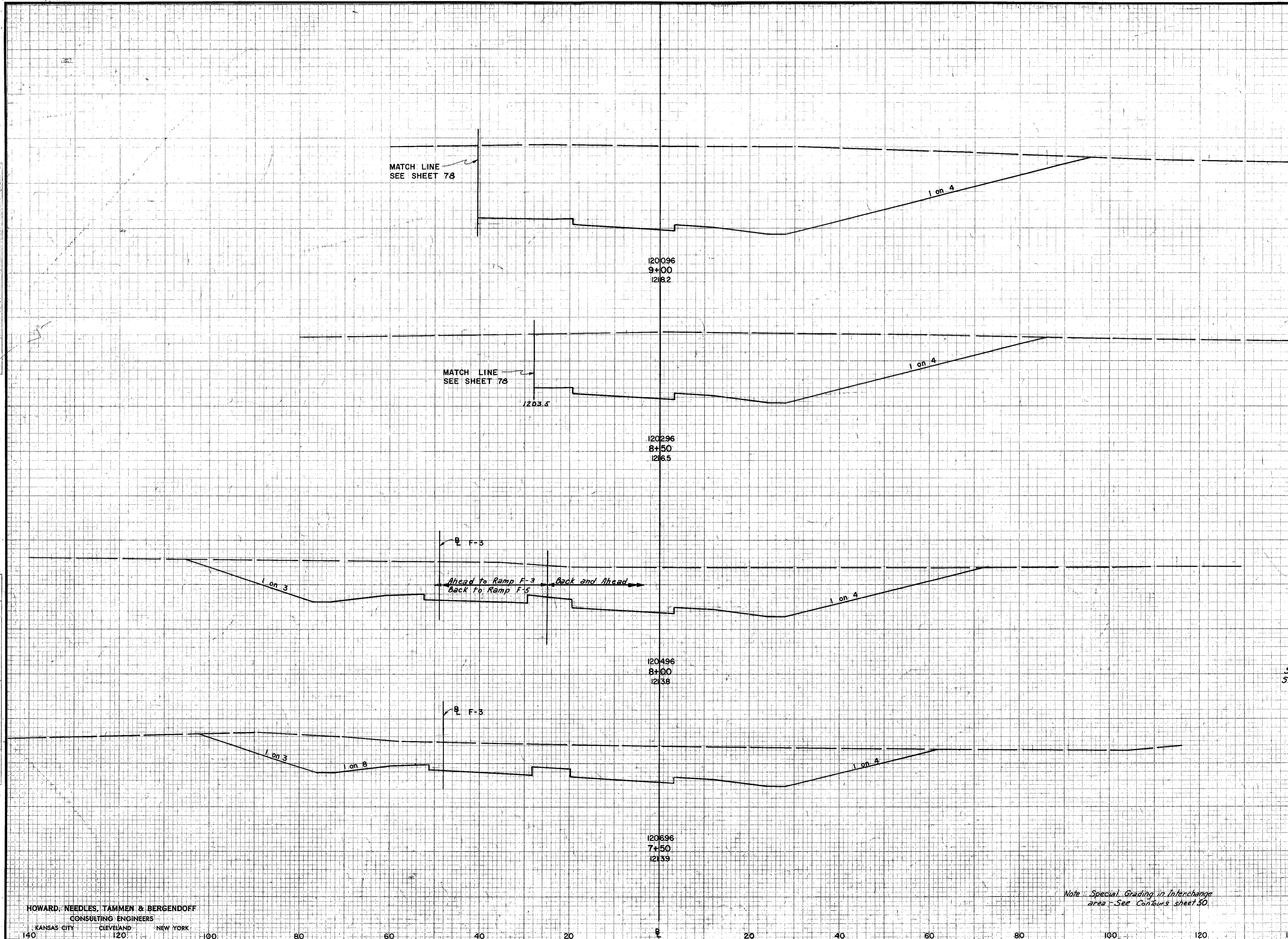
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CUYAHOGA COUNTY
CUY-1-2-20

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL

FINAL SURVEY DATE
SURVEY NO. 6/18/59
PLOTS 6/18/59
NOTE BOOK 6/18/59
NO. 12033

ORIGINAL SURVEY DATE
SURVEY NO. 6/18/59
PLOTS 6/18/59
NOTE BOOK 6/18/59
NO. 12033



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			1863	0
			2672	0
			1239	0
			1830	0
			740	0
			1298	0
			2130	0
			999	0
			1405	0
			520	0

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

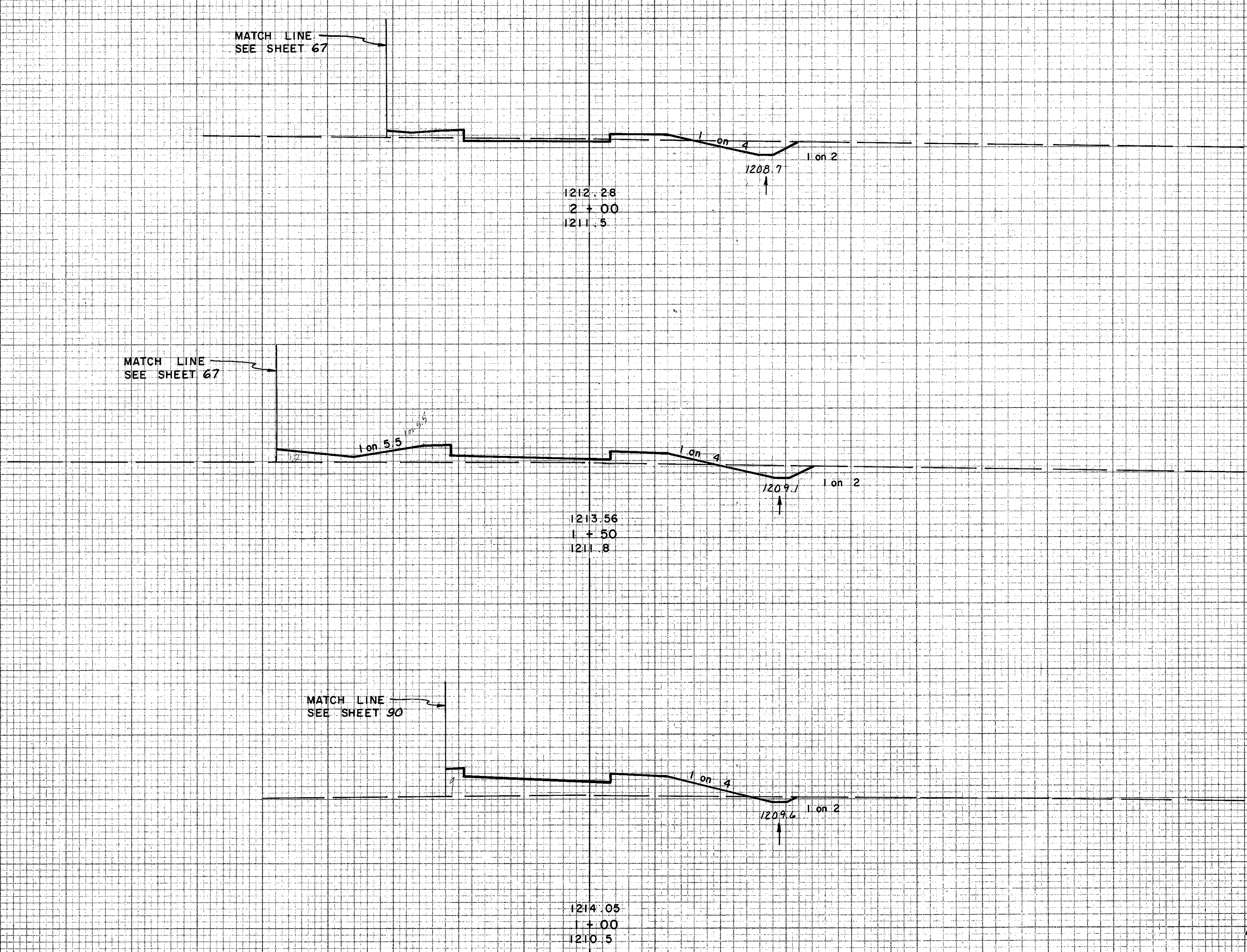
KANSAS CITY CLEVELAND NEW YORK

CUYAHOGA COUNTY
CUY-1-2-20

EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.

FINAL SURVEY BY DATE
 SURVEYED PLOTTED
 NOTE BOOK TEMPLATE
 AREAS CHECKED

ORIGINAL SURVEY BY DATE
 SURVEYED PLOTTED
 NOTE BOOK TEMPLATE
 AREAS CHECKED



Sta 22+50 Chagrin Blvd

34 15

49 27

32 22

48 108

20 95

23 199

5 120

5 259

Sta 4+50 Ramp F-6

0 160

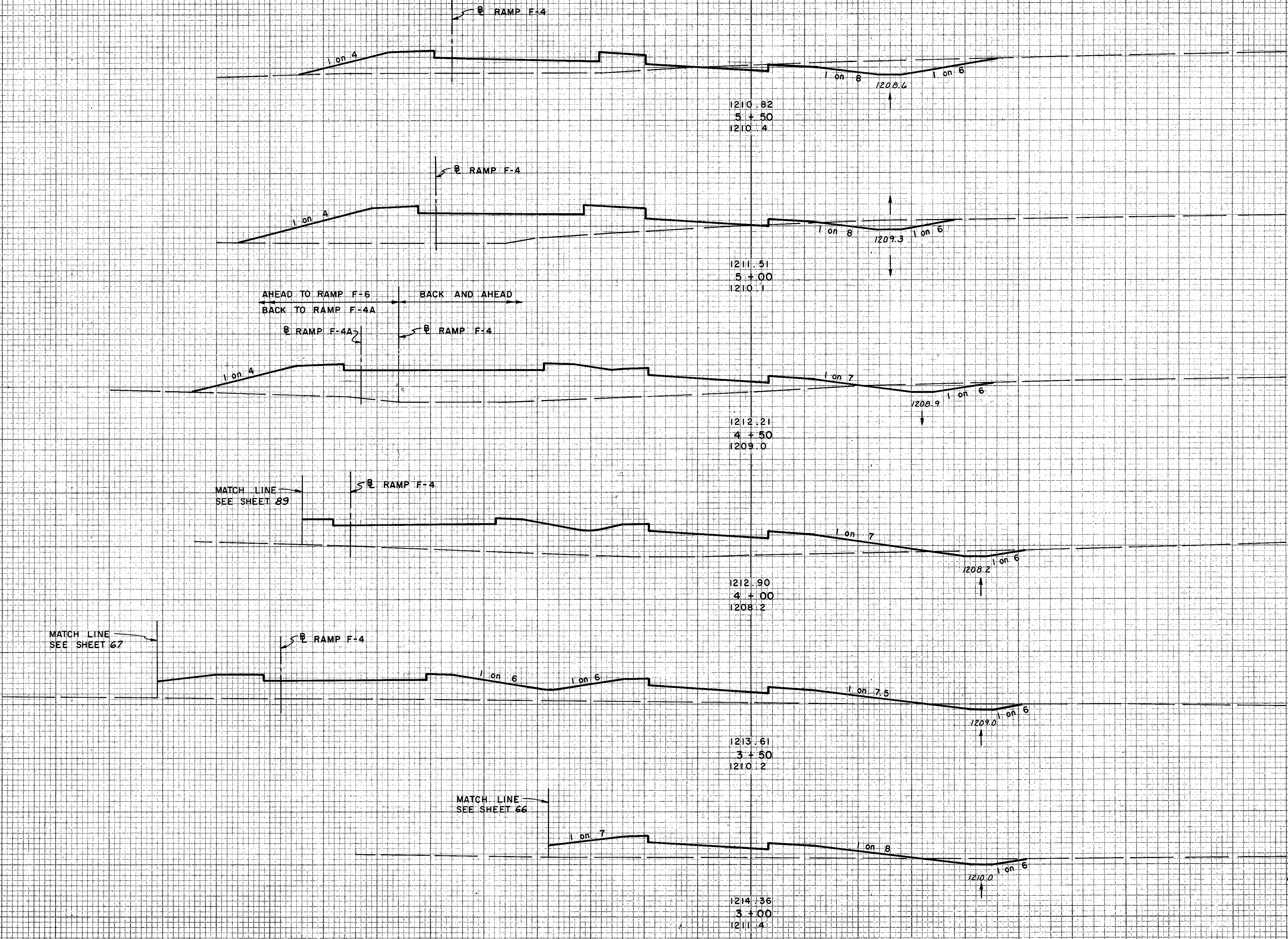
Note:
Special Grading in Interchange
Area - See Contours Sheet 33.

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

CUYAHOGA COUNTY
CUY-1-2-20

FINAL SURVEYED SURVEY PLOTTED TEMPLATE NOTE BOOK NO. AREAS CHECKED

ORIGINAL SURVEYED SURVEY PLOTTED TEMPLATE NOTE BOOK NO. AREAS CHECKED



EARTHWORK				
END	AREA	VOLUME		
EXC	EMB	EXC	EMB	
68	182			1210
			89	522
28	382			1210
			46	853
Ahead	22	539		1210
Back	22	379		1210
			32	809
12	495			1210
			25	868
15	442			1210
			30	558
17	161			1210
			33	398
10	165			1210

Note: Special Grading in Interchange Area - See Contours Sheet 53.

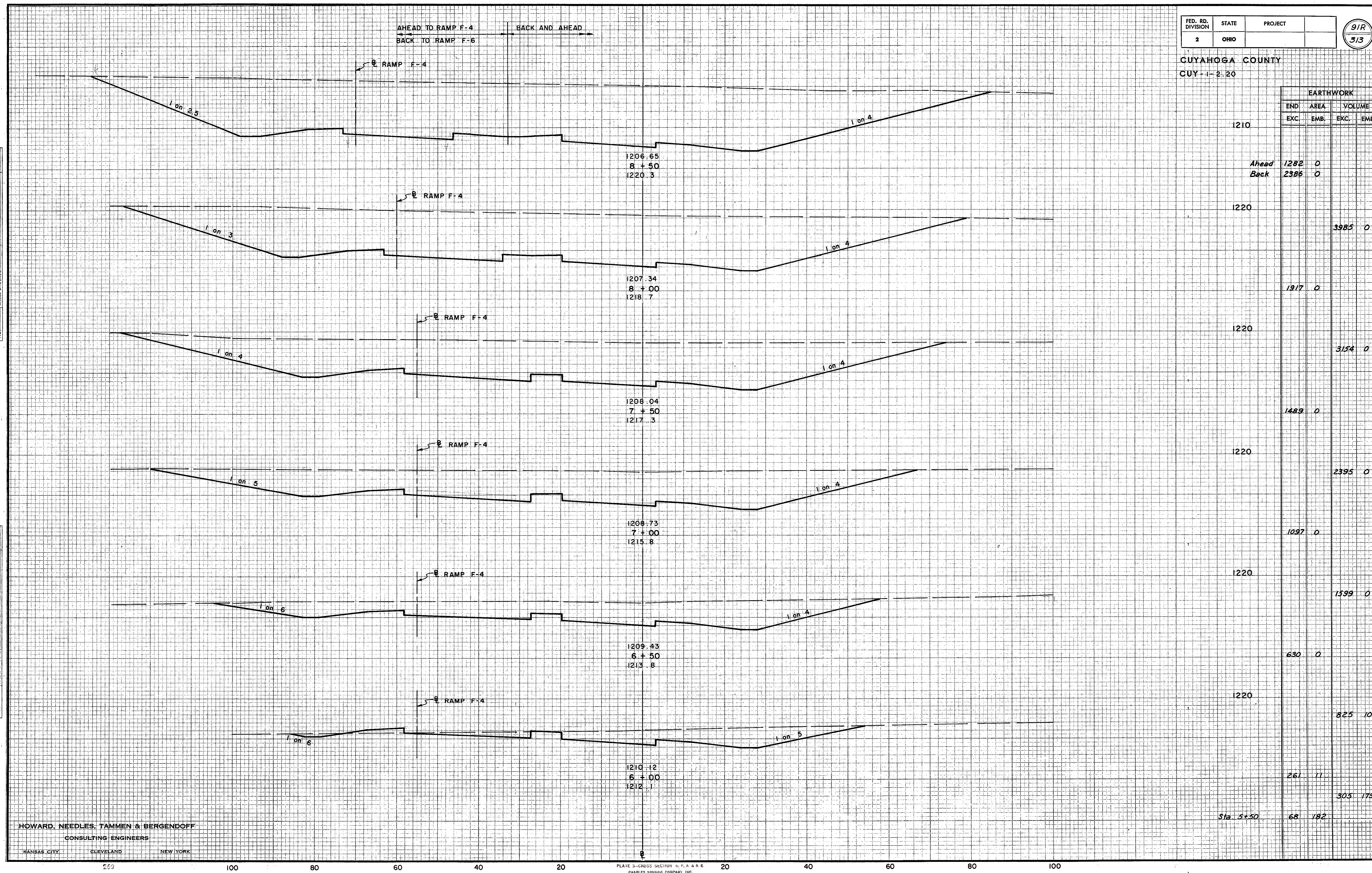
Sta. 20+00 Chagrin Blvd

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

CUYAHOGA COUNTY
CUY-1-2-20

FINAL SURVEYED BY DATE
SURVEY PLOTTED
NOTE BOOK NO.
AREAS CHECKED

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



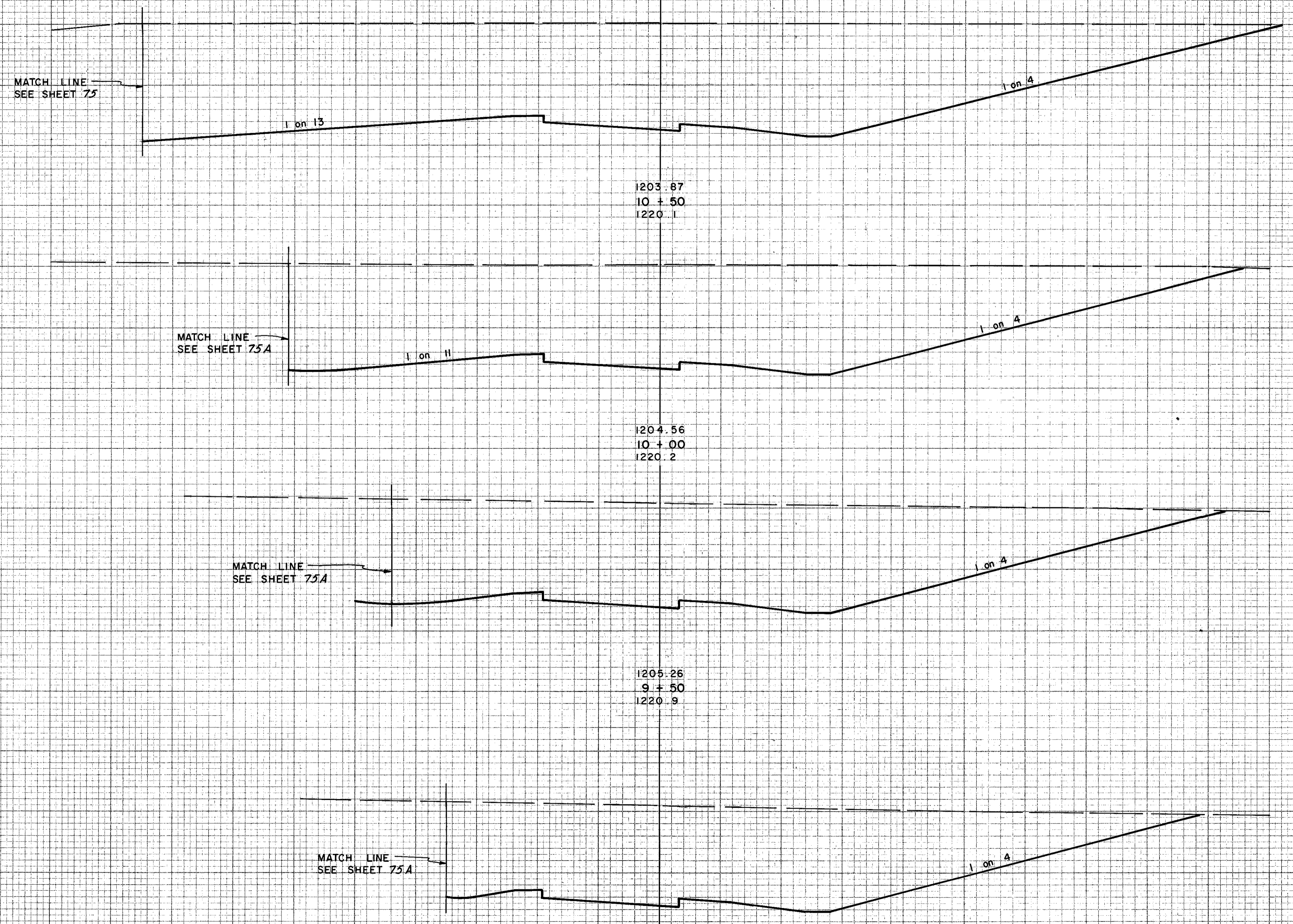
END	AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1210				
Ahead	1282	0		
Back	2386	0		
1220			3985	0
	1217	0		
1220			3154	0
	1489	0		
1220			2395	0
	1097	0		
1220			1599	0
	630	0		
1220			825	10
	261	11		
			303	179
Sta 5+50	68	182		

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

CUYAHOGA COUNTY
CUY-1-2-20

FINAL SURVEY NO. _____
 SURVEYED BY _____ DATE _____
 PLOTTED BY _____
 AREAS CHECKED _____

ORIGINAL SURVEY NO. _____
 SURVEYED BY _____ DATE _____
 PLOTTED BY _____
 AREAS CHECKED _____



END	AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1210				
	2632	0		
1210			4351	0
	2067	0		
1210			3544	0
	1760	0		
1210			3013	0
	1494	0		
			2571	0
			1282	0

Note:
Special Grading in Interchange Area - See Contours Sheet 53

Sta. 8+50 Ahead

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

CUYAHOGA COUNTY
CUY-1-2.20

EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
Sta. 441+00 S.R. 1	1896	0	
1210			6046
		1946	0
1210			3672
		2020	0
1210			4091
		2399	0
1210			5324
		3351	0
			5540
Sta. 10+50	2632	0	

MATCH LINE
SEE SHEET 145

MATCH LINE
SEE SHEET 145

MATCH LINE
SEE SHEET 143

MATCH LINE
SEE SHEET 143

1201.88
12+50
1220.3

1202.14
12+00
1220.3

1202.57
11+50
1220.2

1203.17
11+00
1220.2

1 on 4

1 on 4

1 on 13

1 on 4

1 on 13

1 on 4

1 on 13

Note:
Special Grading in Interchange
Area - See Contours Sheet 53.

FINAL SURVEYED
SURVEY PLOTTED
NOTE BOOK
AREAS CHECKED

ORIGINAL SURVEYED
SURVEY PLOTTED
NOTE BOOK
AREAS CHECKED

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

6-5

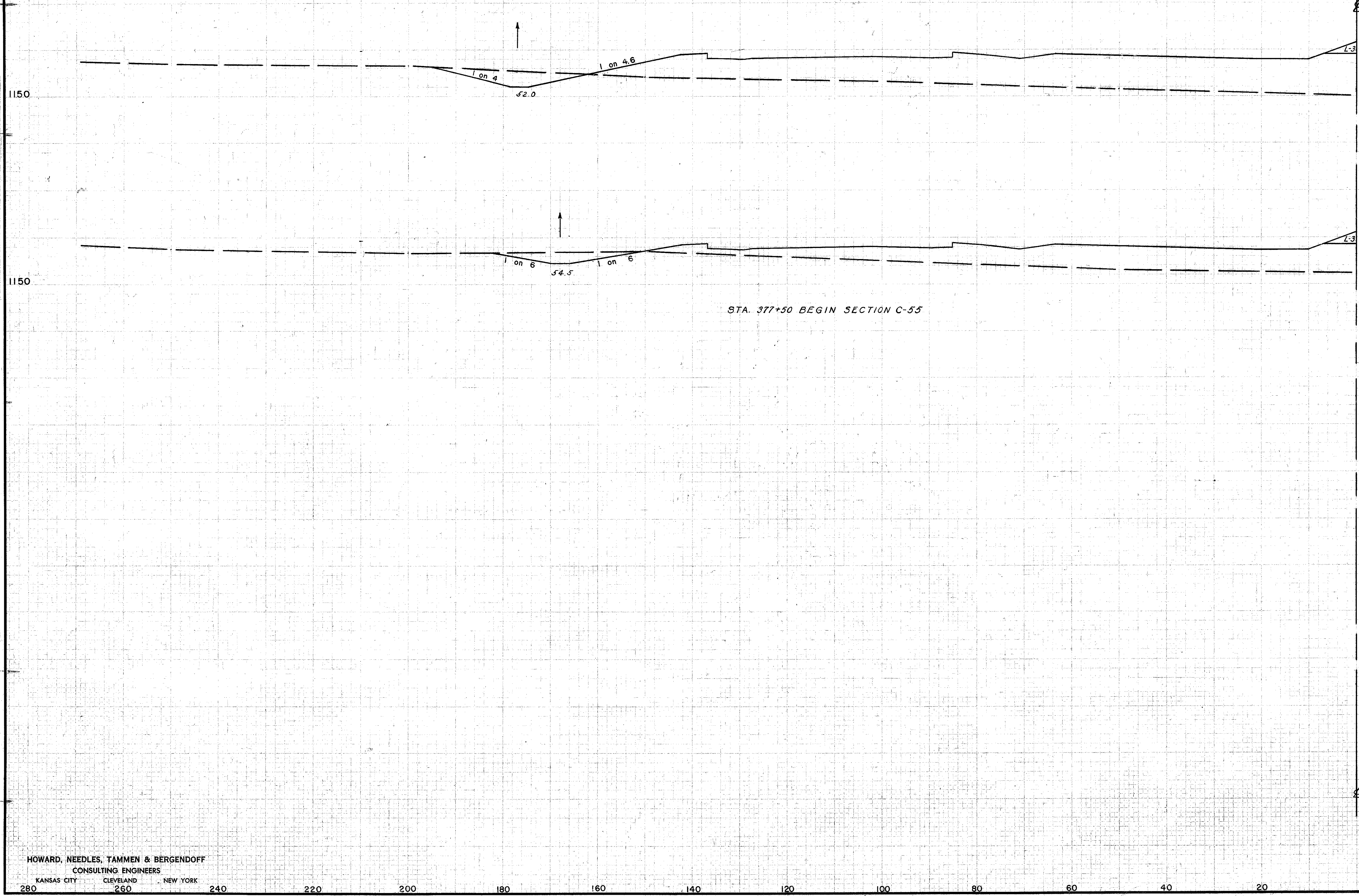
S-9

CUY-270-6.80

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

94
313

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		60	956		
		45	565	97	1408

FINAL SURVEY NOTES
DATE: 10-1-57
BY: JRG
CHK: HEK

SCALE: 1" = 100'
DATE: 10-1-57
BY: JRG
CHK: HEK

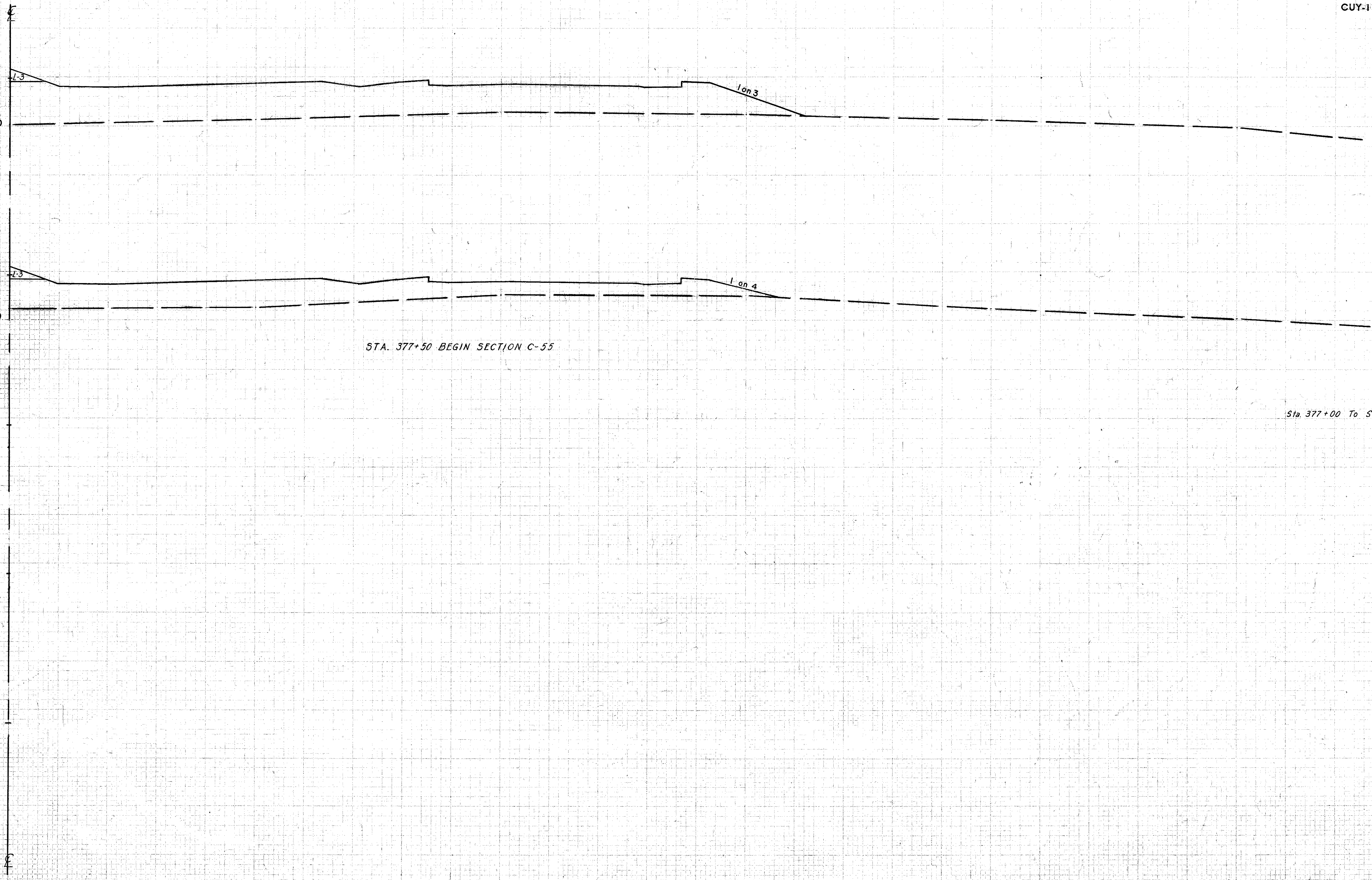
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

280 260 240 220 200 180 160 140 120 100 80 60 40 20

LEFT HALF STA. 377+50 TO STA. 378+00

CUYAHOGA COUNTY
CUY-1-2.20

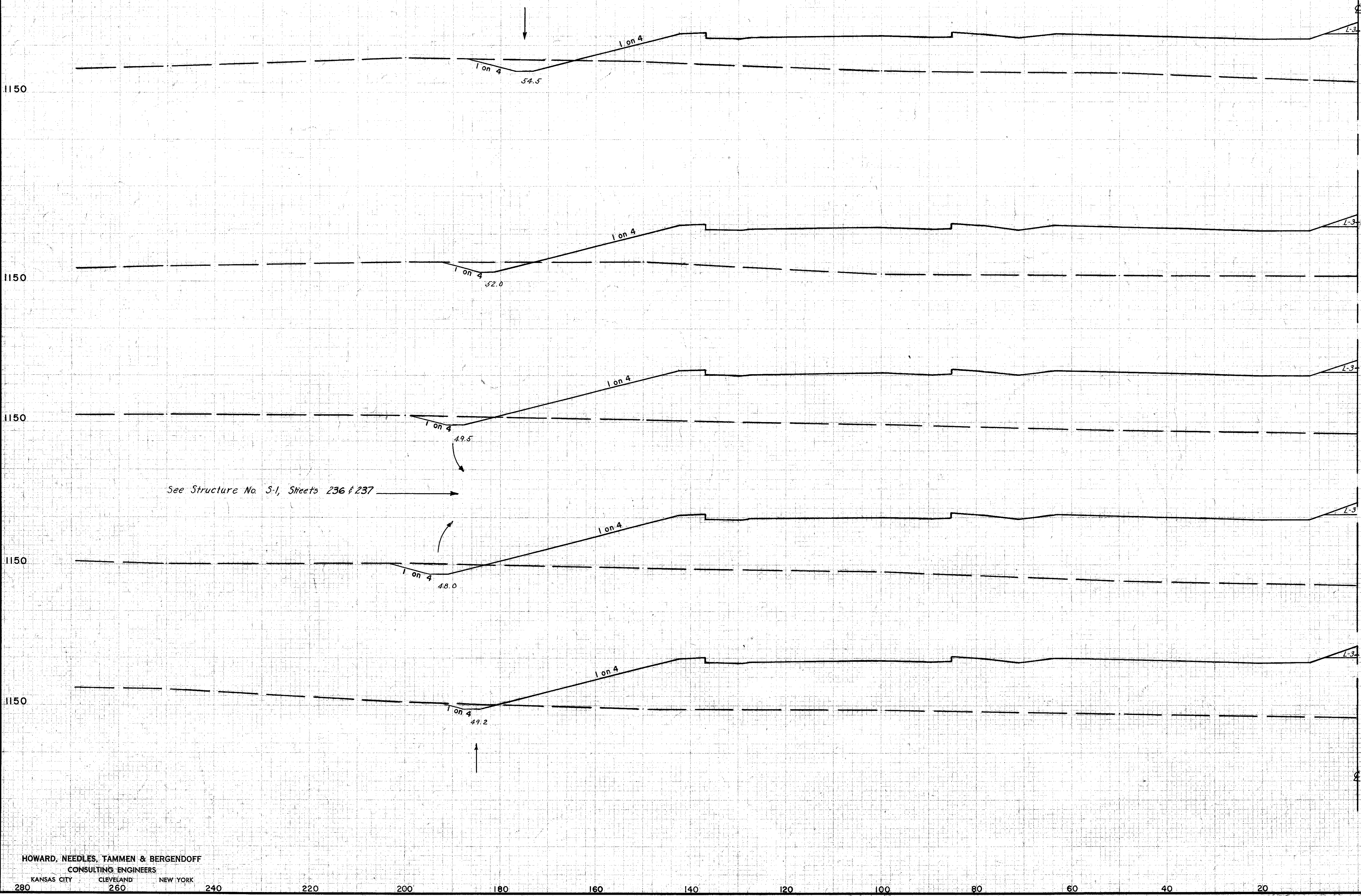
SEEDING		END AREA		CU. YDS.	
WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
		0	1023		
				0	1330
		0	628		
				0	1020



GENERAL SURVEY
11537
12-30-58
12-30-58

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

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		30	1171		
				50	2463
		24	1489		
				39	3108
		18	1868		
				41	3623
		27	2043		
				34	3513
		10	1752		
				65	2508
		60	956		

ORIGINAL SURVEYED 11-6-31
 SURVEY PLOTTED 6-3-50
 REVISIONS 3/8/8
 RHB Y DMH
 JRB
 RER
 8-7-59

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

Sta 378+00

LEFT HALF STA. 378+50 TO STA. 380+50

CUYAHOGA COUNTY
CUY-1-2.20

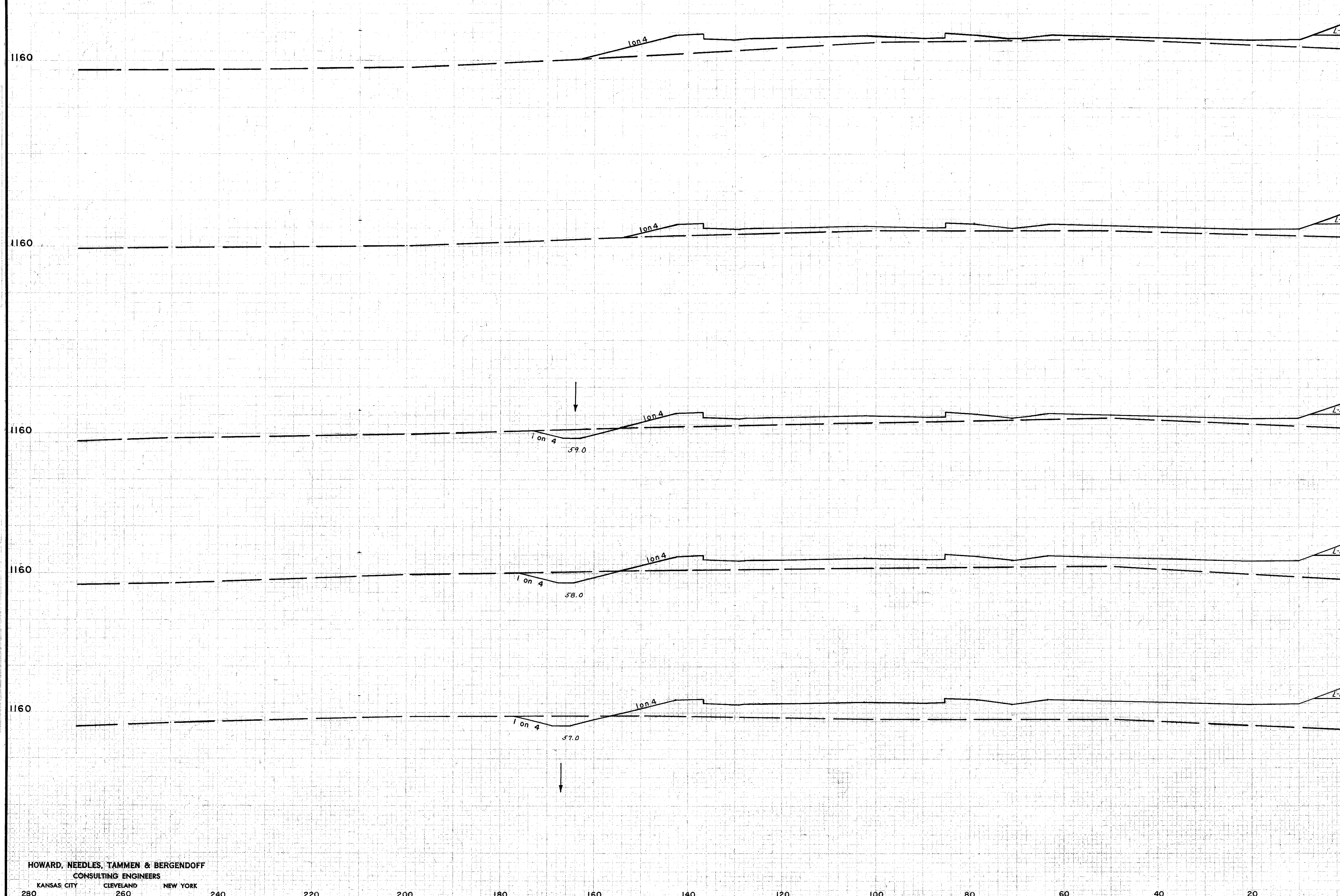


SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		15	1613		
				21	3373
		8	2028		
				30	4023
		25	2313		
				18	4320
		25	2353		
				0	3843
		0	1793		
				0	2608
		0	1023		

PLATE SECTION
 SURVEY
 DATE
 BY
 CHECKED
 APPROVED

1-1-57
 1-1-57
 12-30-58
 12-30-58
 Y BMM
 Y DMS
 R C
 M W

CUYAHOGA COUNTY
CUY-1-2.20



STATIONING	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1166.31 383+00 1162.7			0	261		
					0	436
1165.66 382+50 1162.2			0	209		
					19	406
1165.01 382+00 1161.4			20	229		
					44	556
1164.36 381+50 1158.7			28	370		
					52	926
1163.71 381+00 1156.2			28	629		
					54	1666
Sta 380+50			30	1171		

ORIGINAL SURVEY
SURVEY PLANS
PROVISION REFS.
DATE: 1-1-55

1-6-57
1-3-58
8-7-59

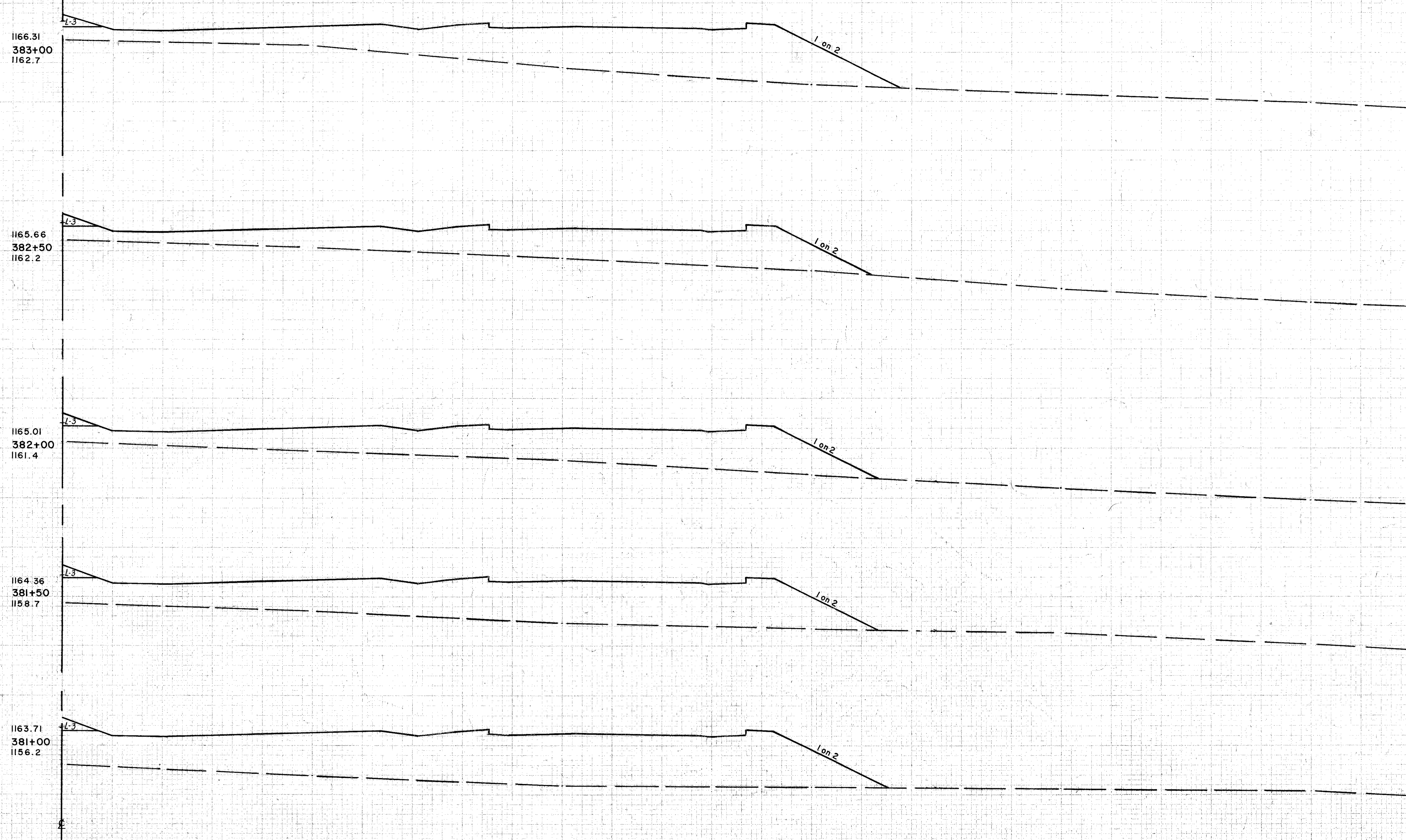
MMH
DBS
JRG
REK

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

280 260 240 220 200 180 160 140 120 100 80 60 40 20

LEFT HALF STA. 381+00 TO STA. 383+00

CUYAHOGA COUNTY
CUY-1+2:20



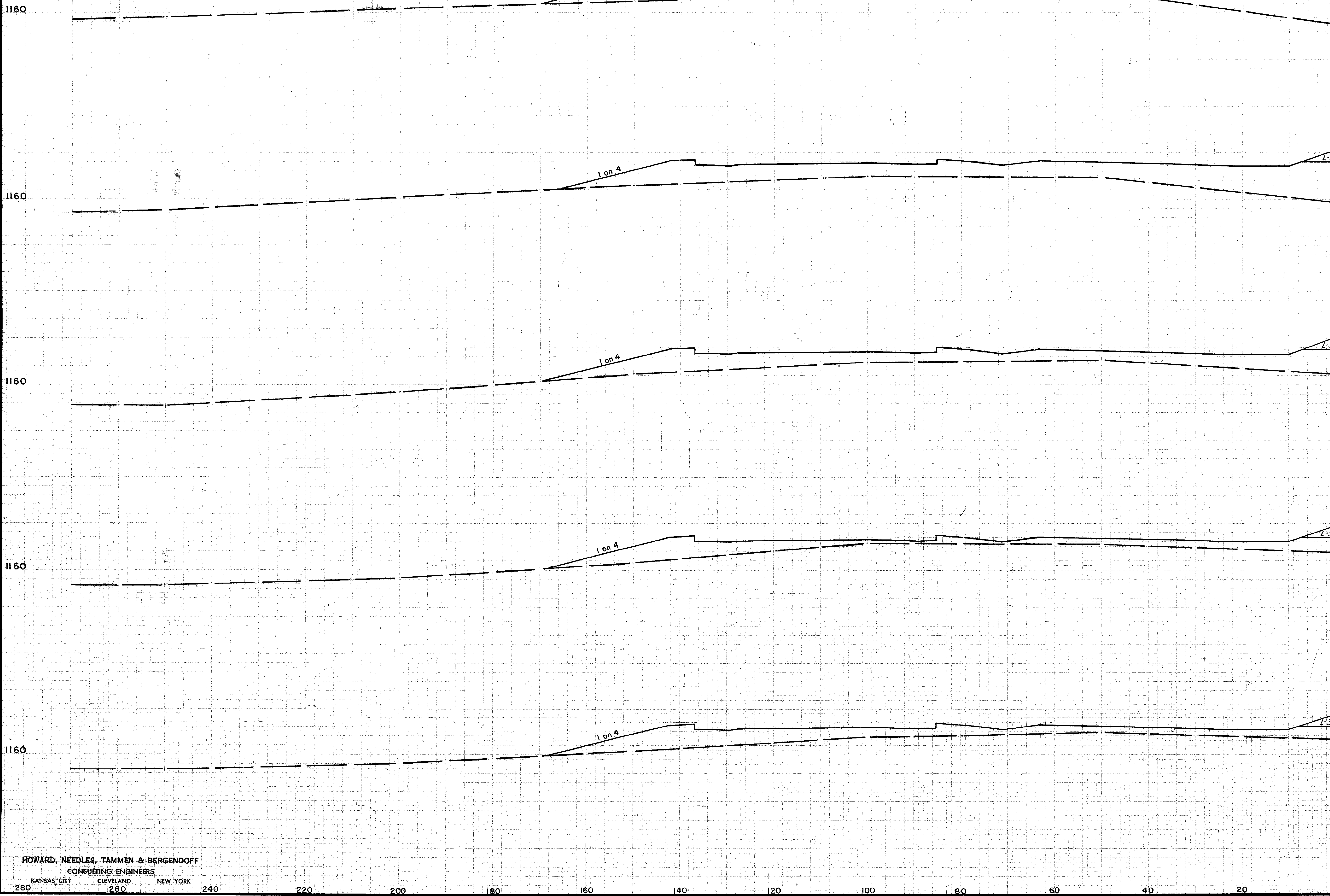
SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
		0	1019	
				0 1671
		0	785	
				0 1526
		0	863	
				0 1773
		0	1073	
				0 2333
		0	1445	
		40		25 2833
		15	1613	

Sta. 380+75
Back Only

Sta. 380+50

FINAL SURVEY PLOTTED
 DATE 11-16-27
 11-16-27
 12-30-28
 12-30-28
 RLB
 AC
 NCS

CUYAHOGA COUNTY
CUY-1-2.20



STATION	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
385+50			0	888		
385+00					0	1410
384+50			0	655		
384+00					0	1062
383+50			0	491		
383+00					0	763
Sta. 383+00			0	333		
					0	680
			0	401		
					0	613
			0	261		

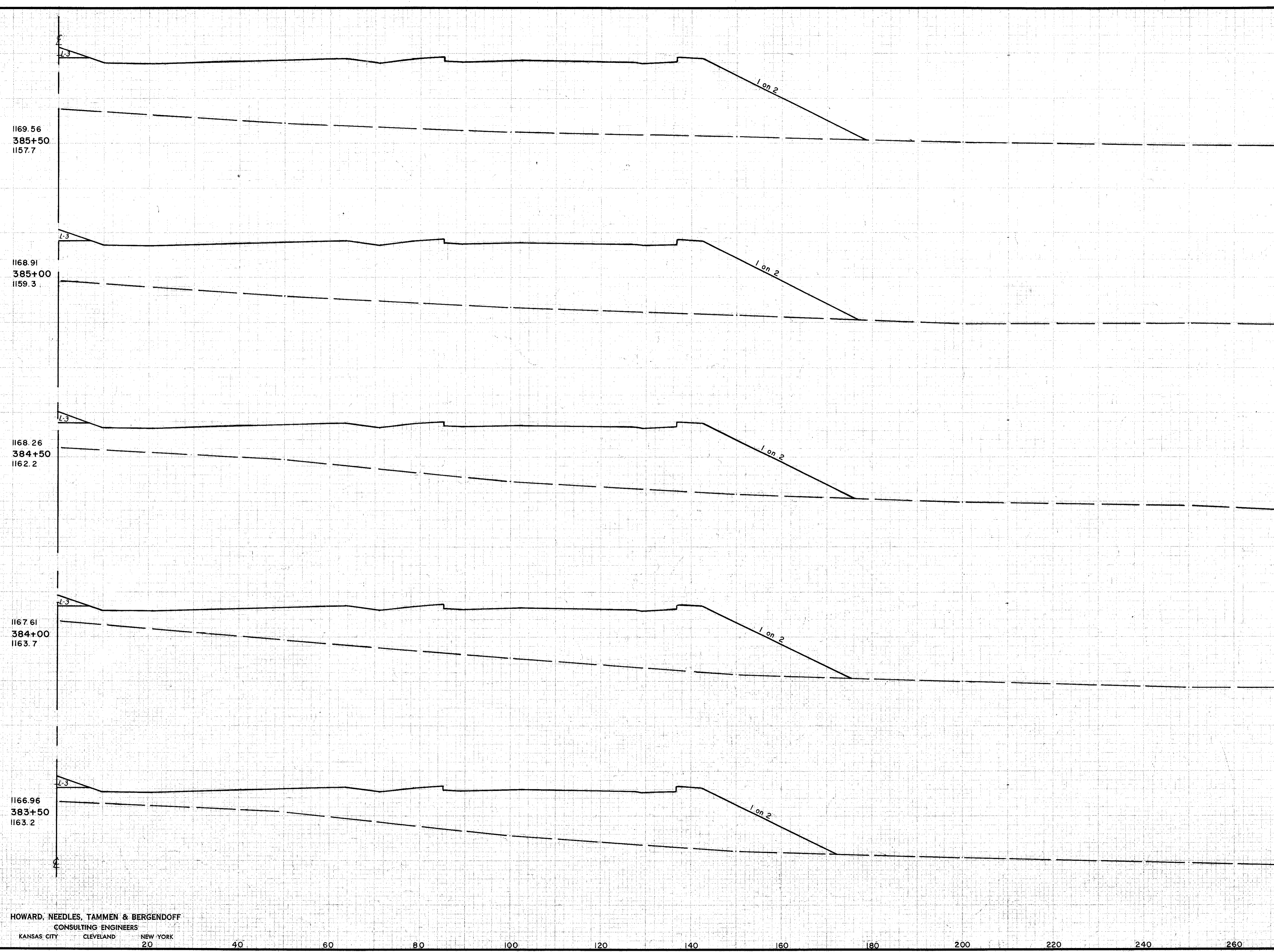
ORIGINAL SURVEY
DATE: 1-3-59
BY: RHB
CHECKED: AC
DATE: 1-3-59
BY: MES

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

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

101
313

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING	END AREA		CU.YDS.	
	WIDTH	SQ.YD.	CUT	FILL
		0	2373	
				0
		0	4133	
				0
		0	2088	
				0
		0	3503	
				0
		0	1693	
				0
		0	2963	
				0
		0	1503	
				0
		0	2583	
				0
		0	1283	
				0
		0	2133	
				0
		0	1019	

FINAL SURVEY
SURVEY ADJUSTED
NOTES RECORDED
DATE: 12-30-28
AREA CHANGED

DATE: 11-29-27
12-30-28
12-30-28
Y.M.H.H.
V.D.D.S.
P.L.B.
J.H.G.
R.C.

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

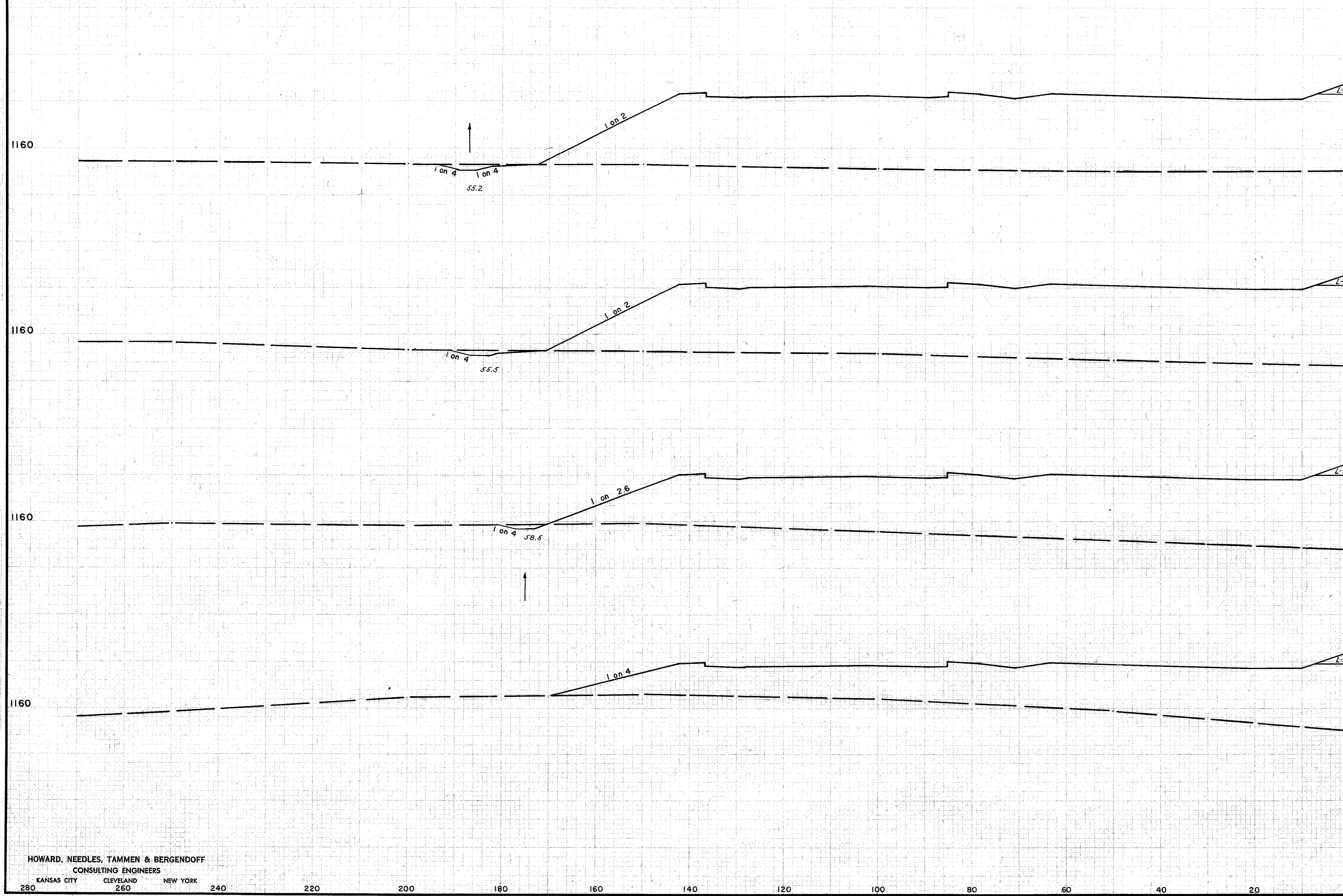
Sta. 383+00

RIGHT HALF STA. 383+50 TO STA. 385+50

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

102
313

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
			13	2453	
					22
			11	2397	
					18
			9	2003	
					8
			0	1408	
					0
			0	888	

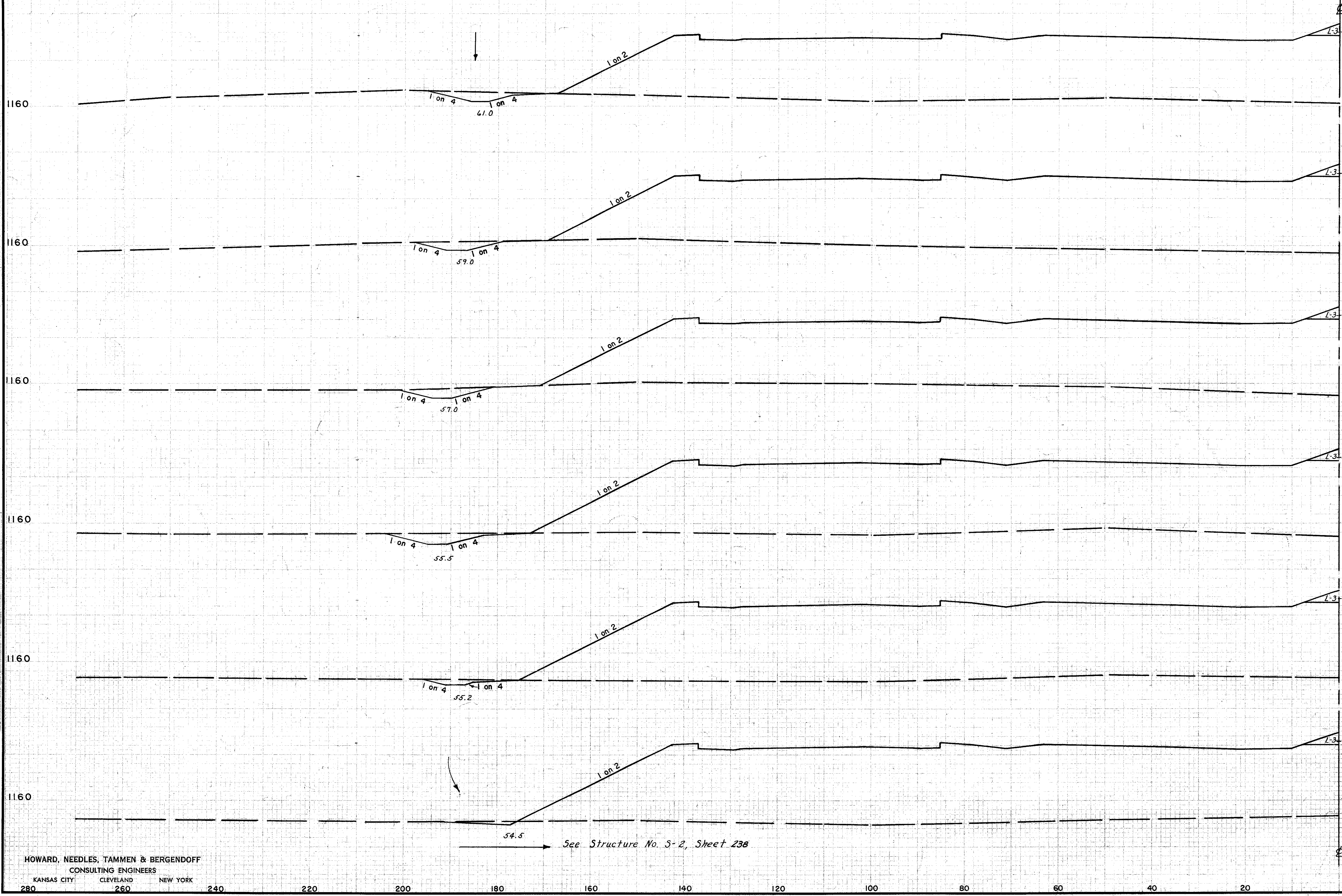
ORIGINAL SURVEY PLANS
 SURVEY PLANS
 DATE: 1/5/59
 BY: WWH
 CHECKED: DDS
 APPROVED: RRB
 RC

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

280 260 240 220 200 180 160 140 120 100 80 60 40 20

LEFT HALF STA. 386 + 00 TO STA. 387 + 50

CUYAHOGA COUNTY
CUY-1-2.20



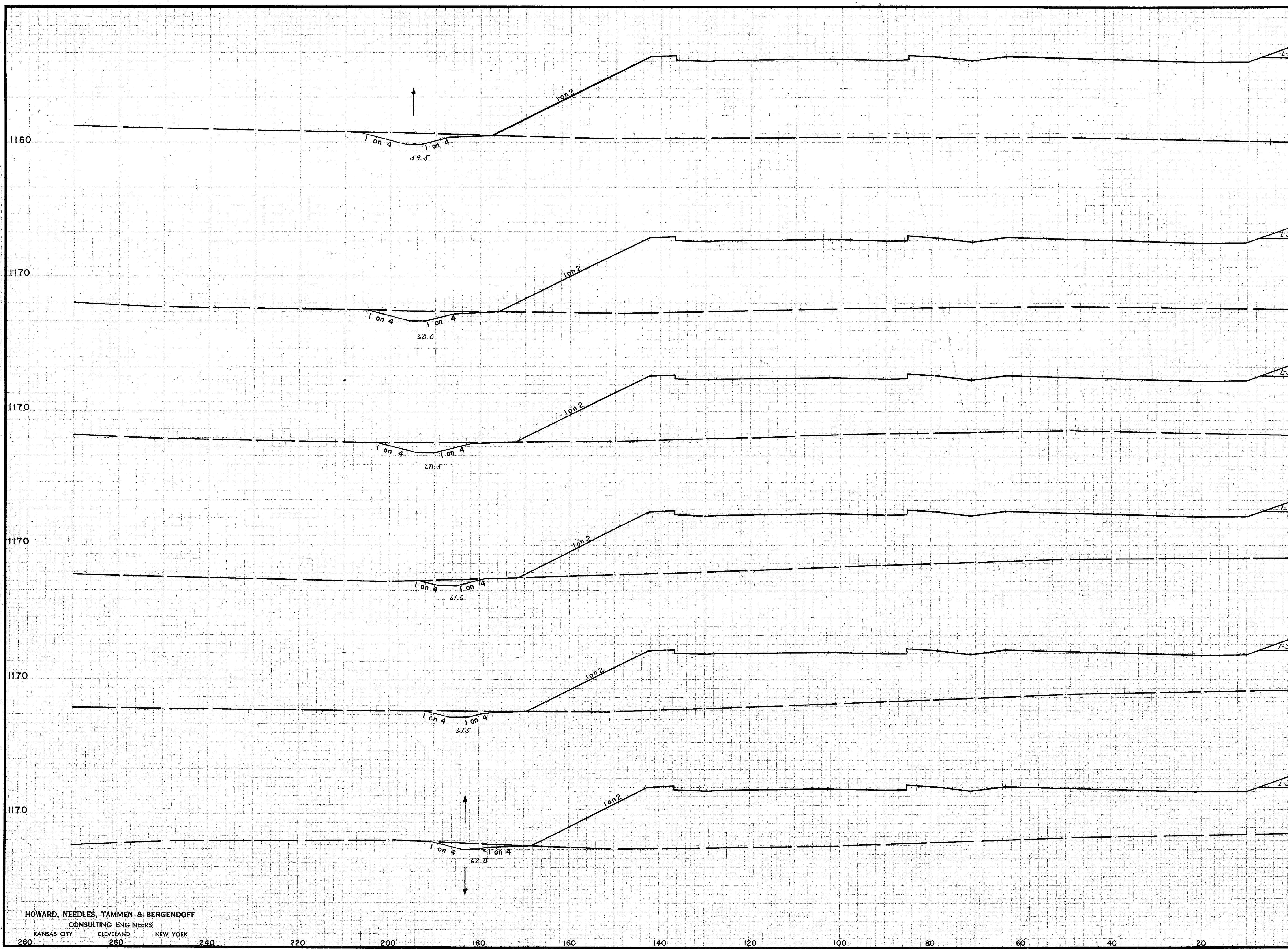
ELEVATION	STATION	SEEDING		END AREA		CU. YDS.	
		WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1176.06 390+50 1160.7				27	20%		
						44	4023
1175.41 390+00 1158.3				20	2256		
						40	4153
1174.76 389+50 1157.5				23	2232		
						54	4273
1174.11 389+00 1157.1				34	2384		
						41	4553
1173.46 388+50 1156.5				11	2535		
						14	4743
1172.81 388+00 1156.7				4	2588		
						16	4668
	Sta. 387+50			13	2453		

ORIGINAL SURVEY
 SURVEY PLOTTED
 NOTE BOOK AREA
 DATE 1/5-59
 RHB
 MMS
 VES
 RC

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

54.5 → See Structure No. S-2, Sheet 238

CUYAHOGA COUNTY
CUY-1-2.20



STATION	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1179.94 393+50 1160.3			35	2834		
					58	4923
1179.31 393+00 1162.9			28	2472		
					55	4153
1178.66 392+50 1164.9			32	2011		
					43	3483
1178.01 392+00 1167.4			15	1759		
					26	3203
1177.36 391+50 1167.7			13	1692		
					28	3283
1176.71 391+00 1165.6			18	1851		
					41	3653
Sta. 390+50			27	2086		

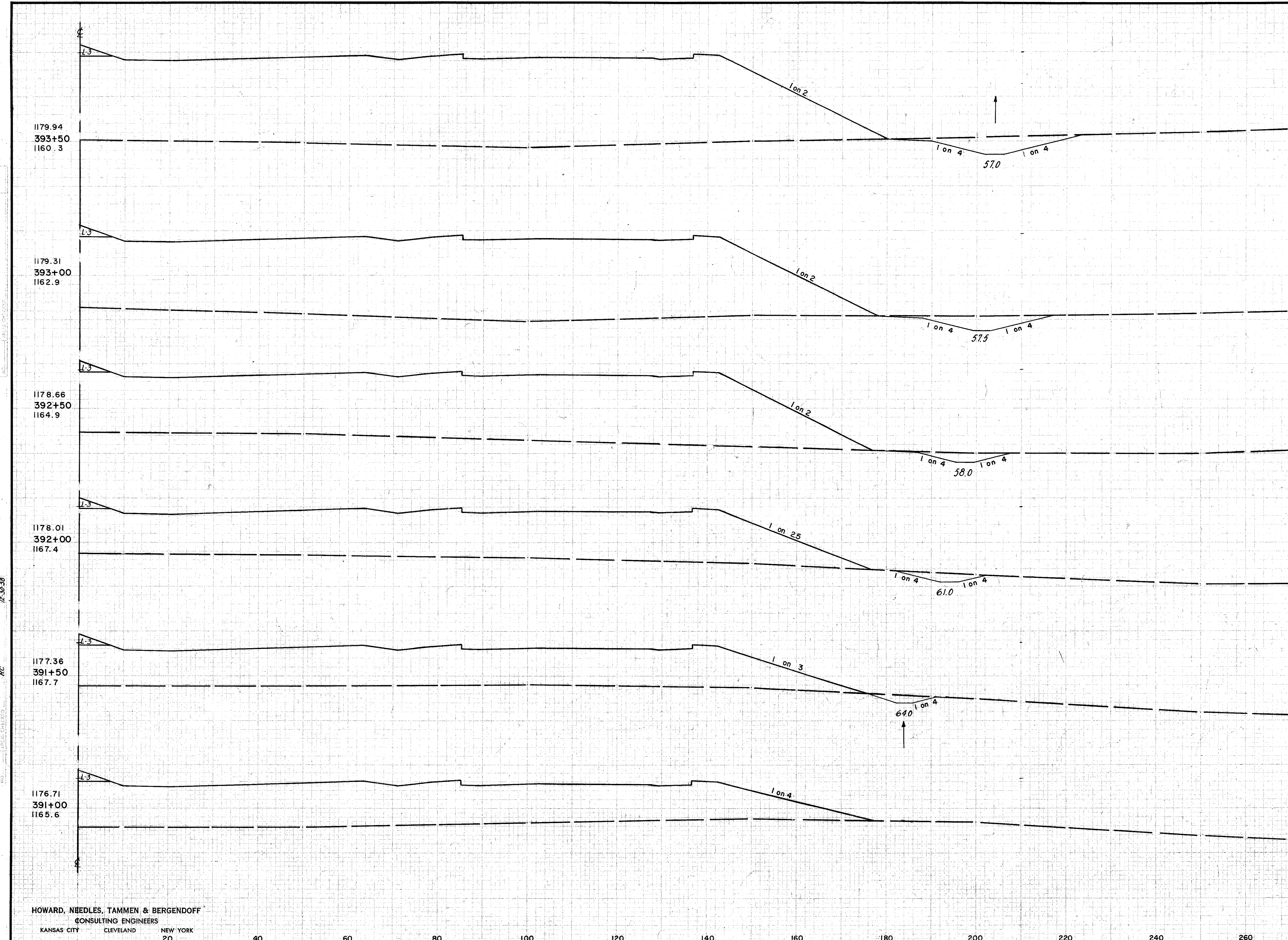
APPROVED FOR THE PROJECT
 DATE 10/24/59
 BY JAG
 CHECKED BY Y RHB
 DATE 11-1-59
 BY JAG
 DESIGNED BY WWH
 DATE 6-4-59
 BY JAG
 DRAWN BY V RHB
 DATE 6-4-59
 BY JAG
 CHECKED BY Y RHB
 DATE 6-4-59
 BY JAG

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

LEFT HALF STA. 391 + 00 TO STA. 393 + 50

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		6.8	3121		
				110	5443
		51	2763		
				70	4653
		24	2261		
				44	3643
		24	1673		
				36	2803
		15	1351		
				11	2608
		10			
		0	1463		
				0	3093
		0	1875		



ORIGINAL SURVEY
 11-1-57
 12-10-58
 12-30-58
 12-30-58
 WNH
 RC
 AM
 RC

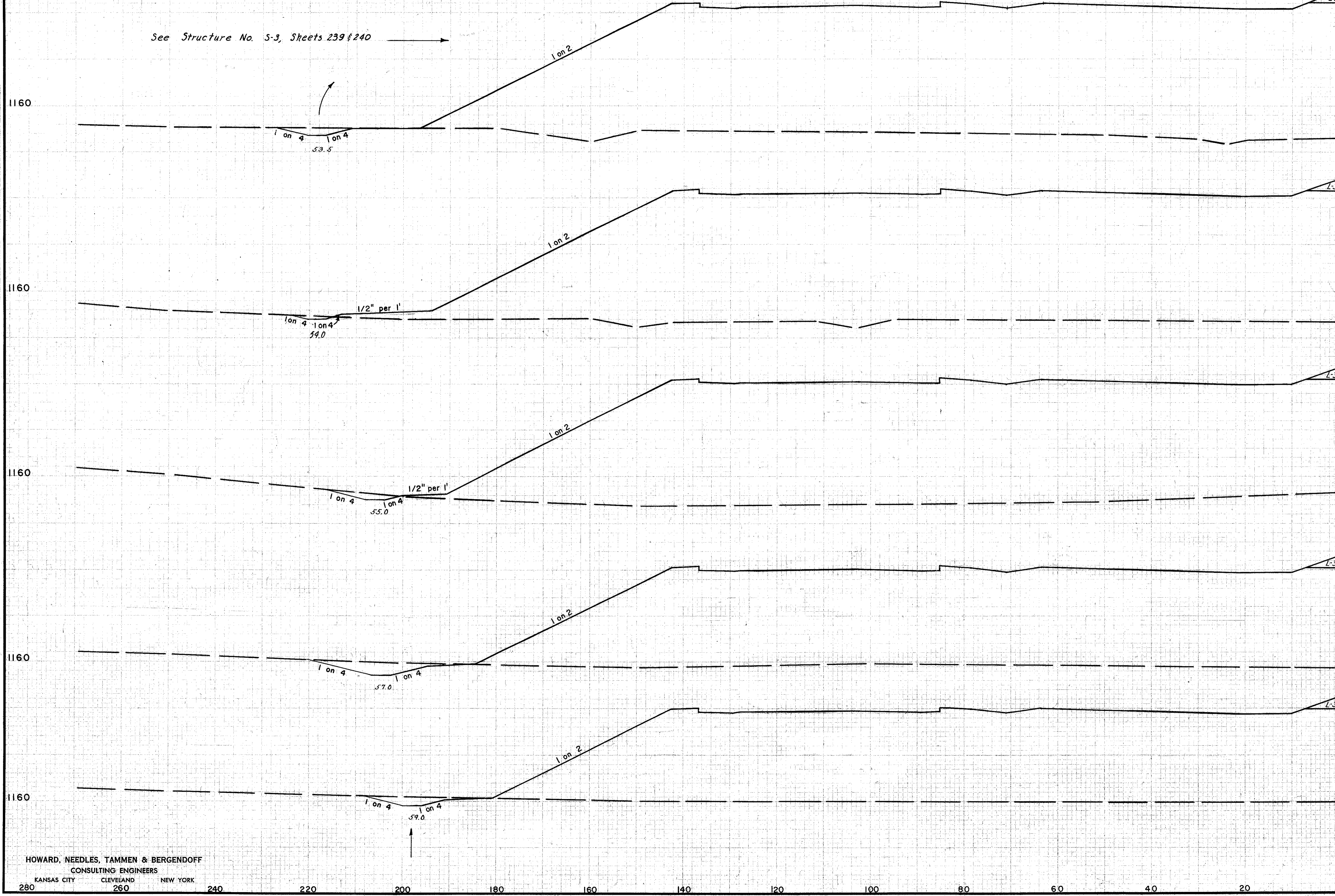
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

Sta. 391+25
Ahead Only

Sta. 390+50

CUYAHOGA COUNTY
CUY-1-2.20

See Structure No. S-3, Sheets 239 & 240 →

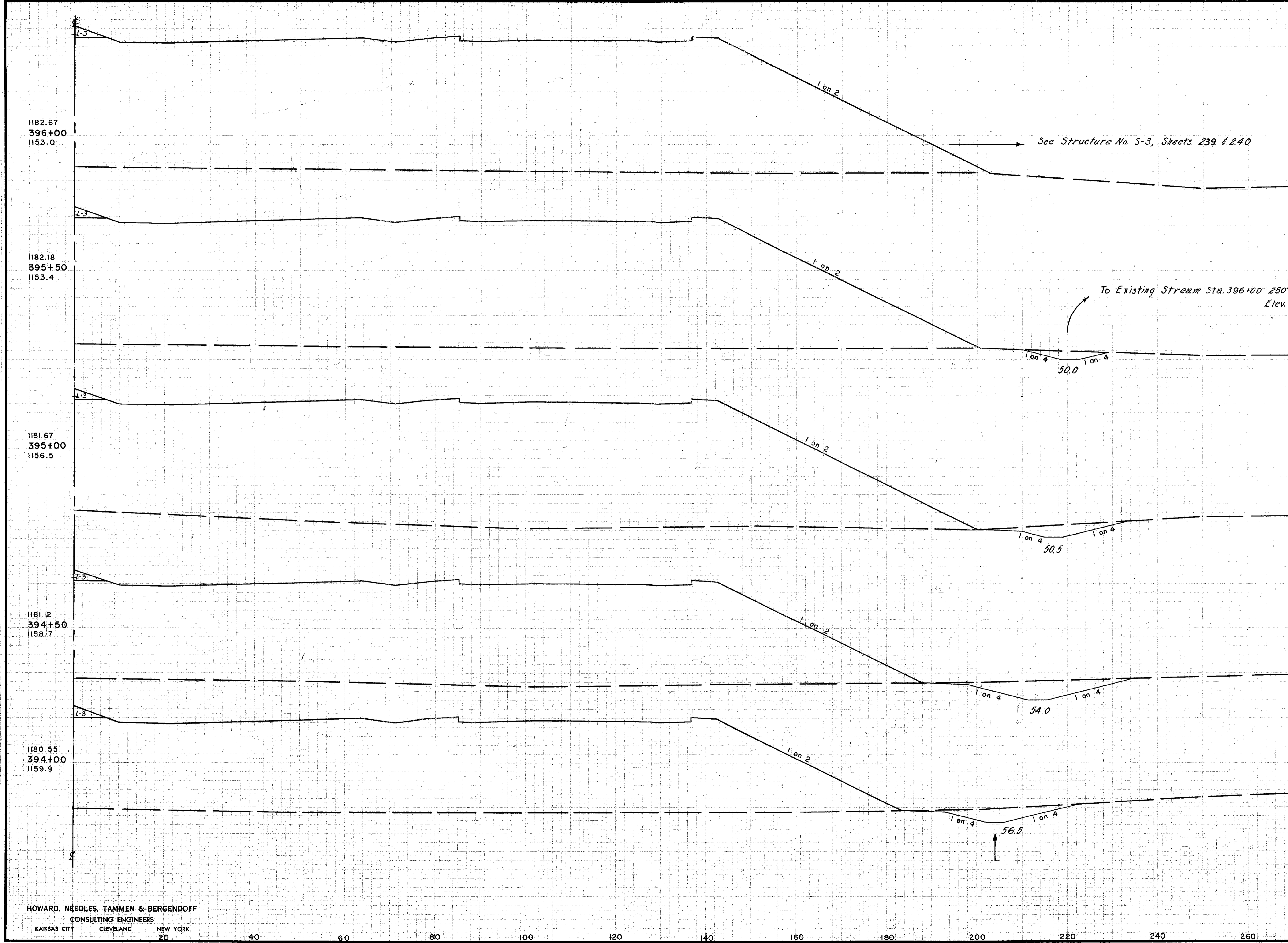


SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
1182.67 396+00 1153.0			17	4724
				19 8713
1182.18 395+50 1153.4			4	4682
				15 8383
1181.67 395+00 1156.5			12	4361
				51 7223
1181.12 394+50 1158.7			43	3433
				60 6093
1180.55 394+00 1159.9			22	3156
				53 5543
Sta. 393+50			35	2834

ORIGINAL SURVEYED
 SUPPLY PLACES
 NOTES SURV. REB.
 DATE
 11-15-57
 12-09-58
 6-4-59
 8-7-59
 W.M.H.
 J.F.G.
 R.E.K.
 Y.D.S.

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
	0	5030			
	22				9143
	24	4842			
	52				8733
	32	4594			
	44				7673
	70	3687			
	115				6513
	55	3348			
	113				5993
	68	3121			



REVISIONS
DATE
BY
CHECKED
DATE
BY

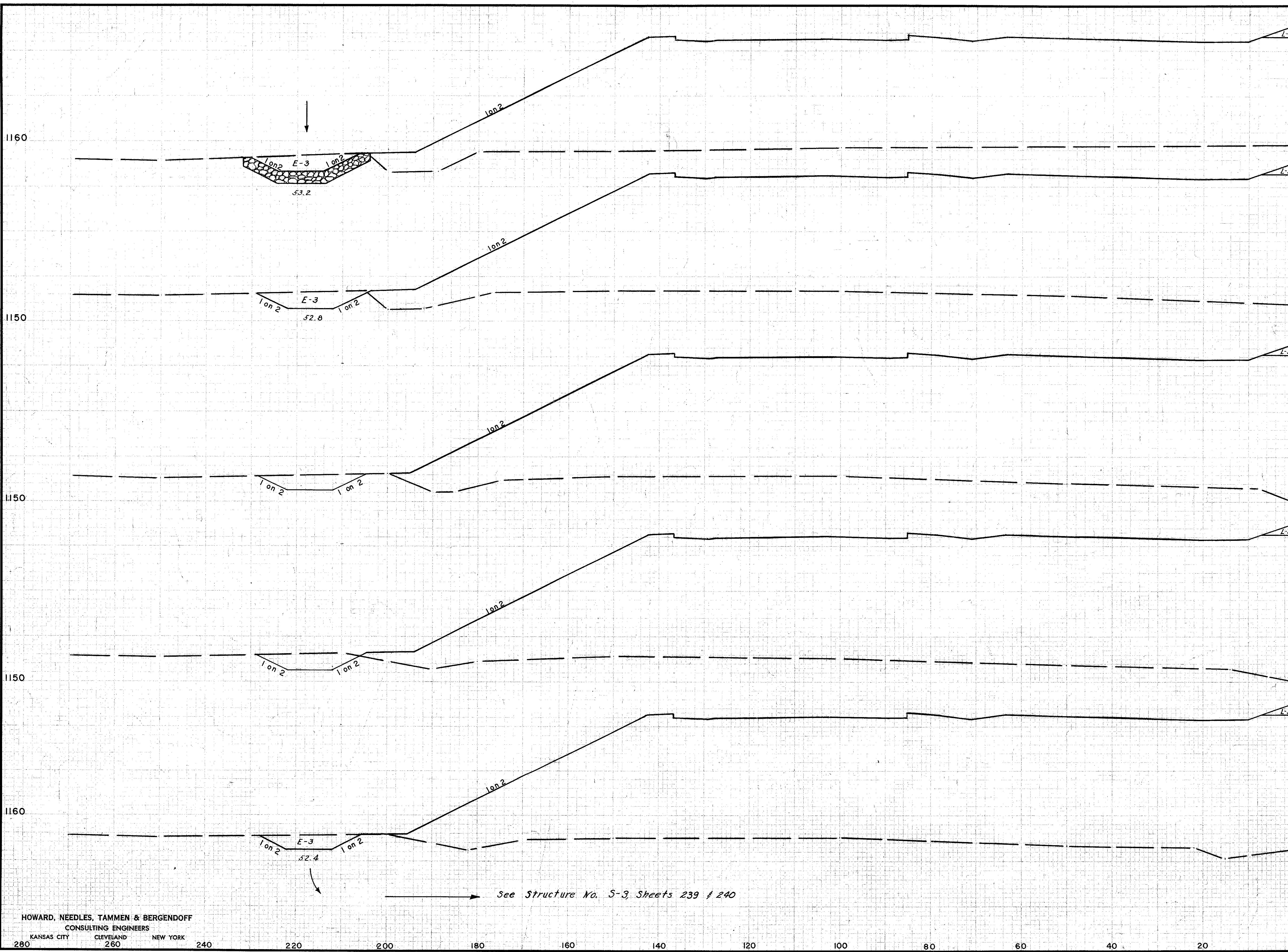
WACH
V. RRB
V. DDS
M. ES
R. C.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
20 40 60 80 100 120 140 160 180 200 220 240 260 280

Sta. 393+50

RIGHT HALF STA. 394+00 TO STA. 396+00

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END AREA SQ. YD.	CU. YDS.	
		CUT	FILL
	1183.94 397+50 1159.3	0	421.8
	1183.55 397+00 1154.0	0	451.3
	Spill Quantity Harvard Rd. South West Abut.		0
			5907
			6302
	1183.24 396+63 1150.1	0	4685
			6399
	1183.20 396+59 1150.1	0	4753
			1596
	1183.12 396+50 1152.5	0	4824
			8843
	Sta. 396+00	17	4724

E-3 Channel Exc. = 320 cu. yds.

APPROVED
 SURVEY PLATTER
 11-2-57
 11-2-57
 8-7-59

W.M.H.
 J.R.B.
 J.D.S.
 J.H.G.
 R.E.K.

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

280 260 240 220 200 180 160 140 120 100 80 60 40 20

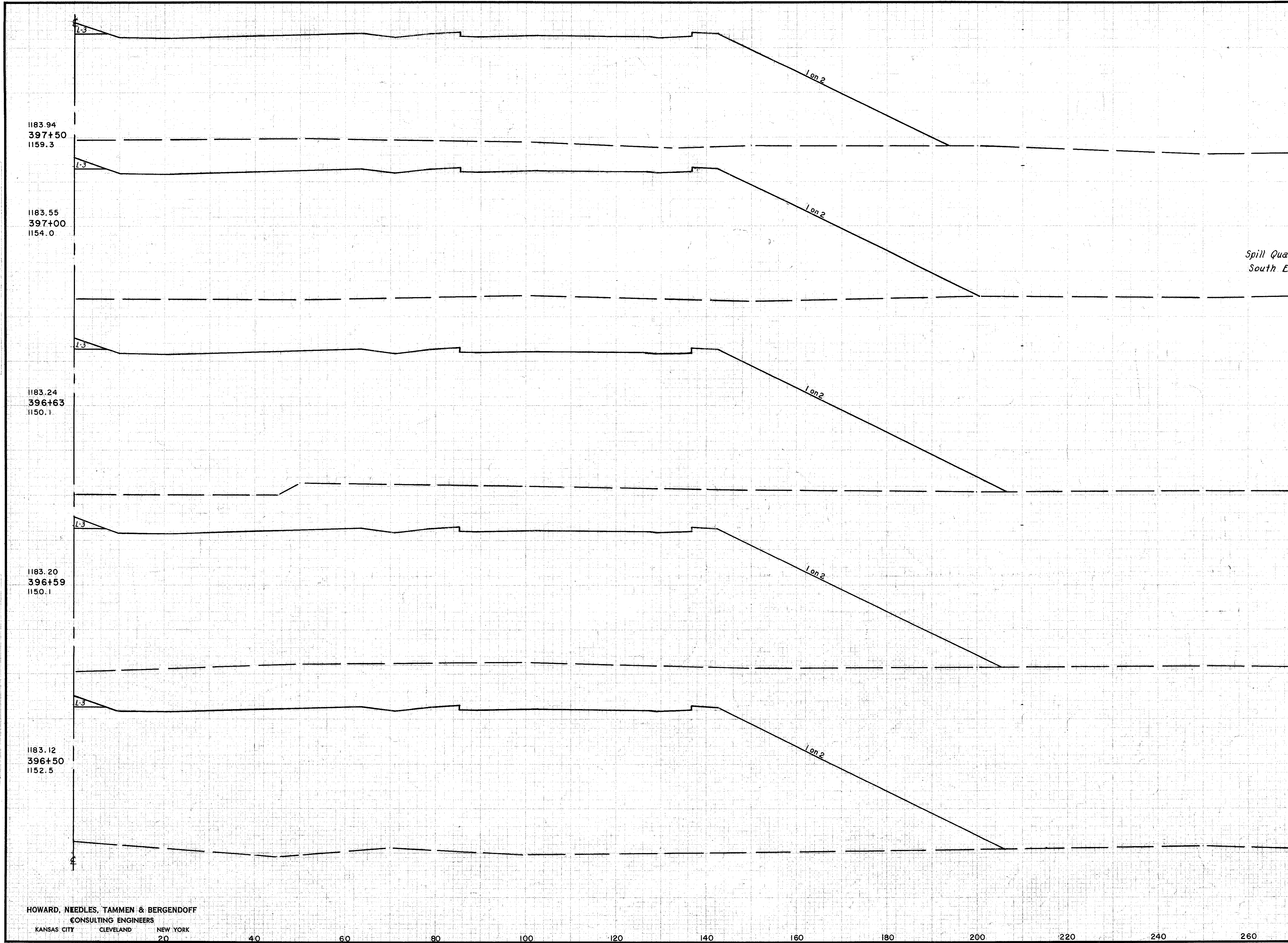
See Structure No. S-3, Sheets 239 & 240

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
	1160	0	4032		
				0	8264
		0	4893		
				0	11593
	1150			0	7052
				0	5396
	1150			0	790
				0	5262
	1150			0	1806
				0	5581
	1160			0	9823
				0	5030

Spill Quantity Harvard Rd.
South East Abutment

Sta. 396+00



ORIGINAL POINTS
 SUPPLY PLOTS
 VERTICAL CURVES
 V.M.H. V.A.R.B. V.D.D.S. P.V. P.C.
 11-2-57
 12-30-58
 12-30-58

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			27	2640
				29 4683
		9	2420	
				16 4623
		12	2573	
				9 0
		0	0	
				0 5465

For Computations Back
Take Sta 399+50 as Zero

Spill Quantity Harvard Rd.
North East Abutment

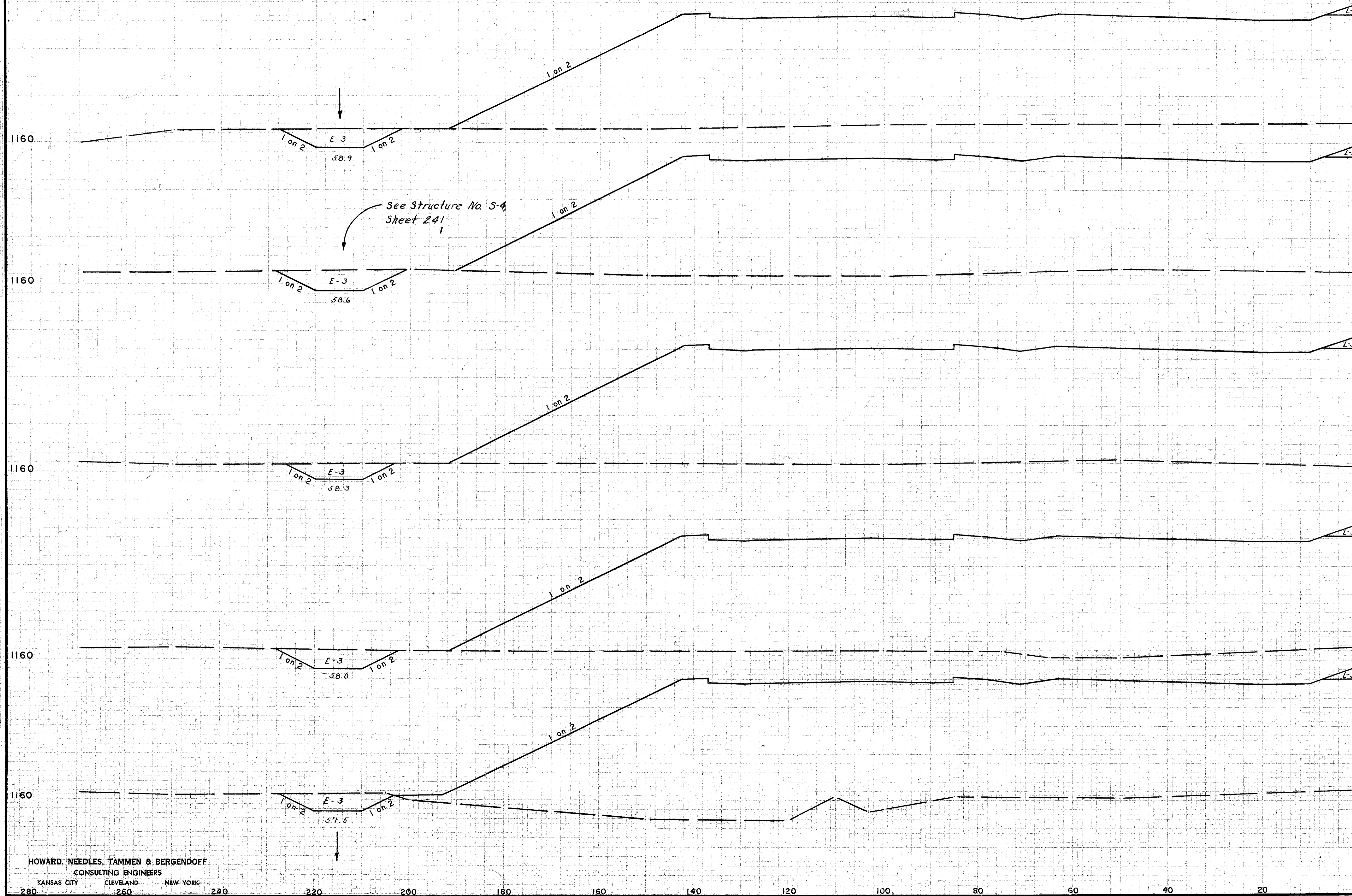
1186.41
401+00
1161.6

1186.06
400+50
1163.0

1185.71
400+00
1161.3

APPROVAL: [Signature] DATE: 11-8-57
 SURVEY: [Signature] DATE: 6-9-59
 NOTE BOOK: [Signature] DATE: 7-20-59
 REVISIONS: [Signature] DATE: [Blank] BY: [Blank]

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	SQ.YD.	END AREA		CU.YDS.	
		CUT	FILL	CUT	FILL
		0	3907		
				0	7363
		0	4034		
				0	7483
		0	4053		
				0	7523
		0	4076		
				0	7943
		0	4507		
				0	7943
		0	4125		

F-3 Channel Excavation = 660 Cu. Yds.

W.M.H. V.R.H. V.D.S. W.J.G. R.E.K.
 11-5-57 11-5-57 11-5-57 11-5-57 11-5-57
 11-5-57 11-5-57 11-5-57 11-5-57 11-5-57

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

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		30	3228		
				75	5973
		57	3223		
				131	5953
		90	3217		
				146	5583
		68	2807		
				92	5113
		31	2711		
				54	4953
		27	2640		



APPROVED FOR CONSTRUCTION
DATE: 11-4-37
BY: RHB
CHK: JRG
REL: RLK

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

Sta. 401+00

CUYAHOGA COUNTY
CUY-1-2.20



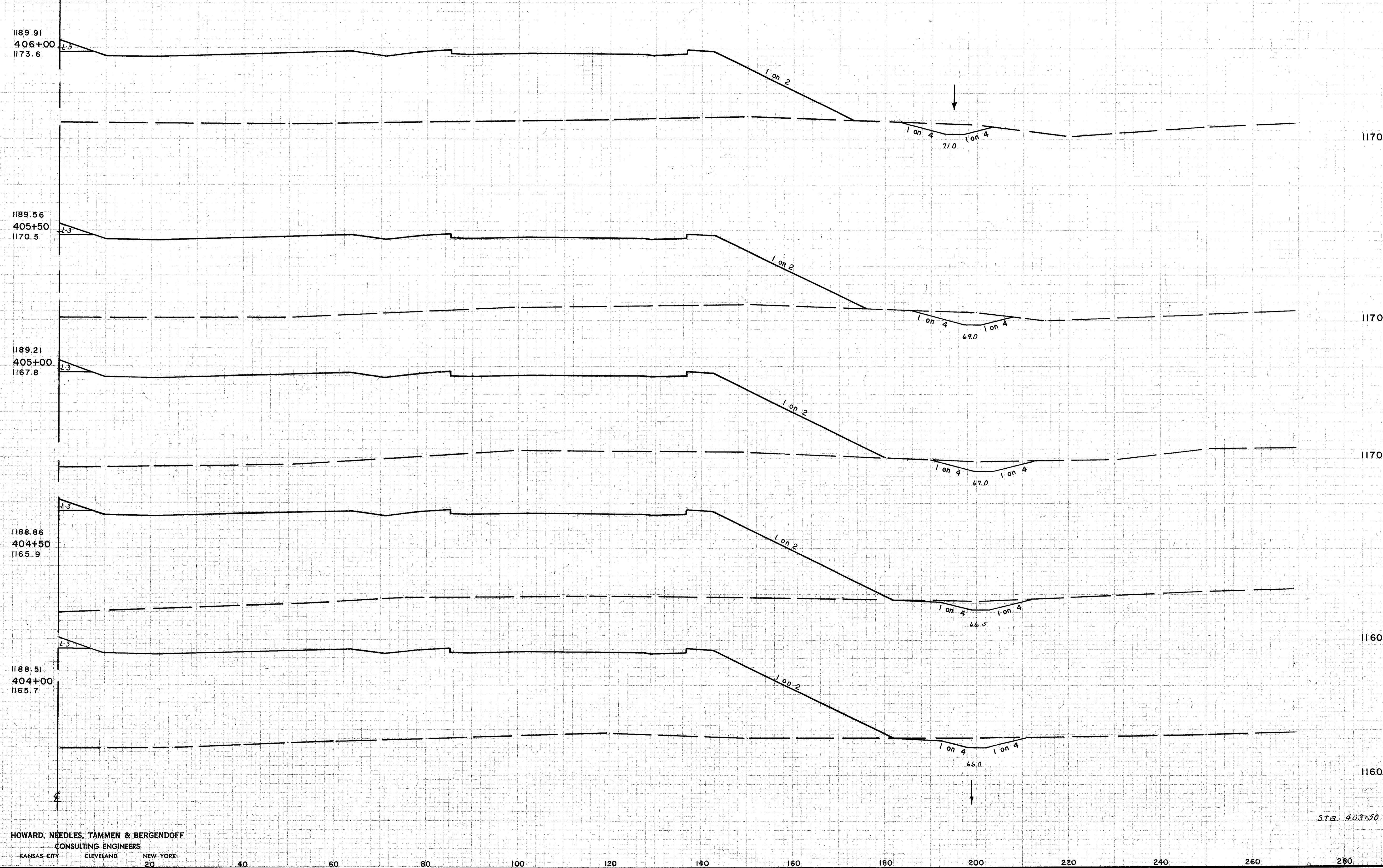
SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			0	2957
				0 5723
			0	3224
				0 6403
			0	3688
				0 7043
			0	3913
				0 7343
			0	4009
				0 7333
			0	3907

E-3 Channel Excavation = 510 Cu. Yds.

ORIGINAL SURVEY PLOTTED 6-4-39
 REVISIONS 11-3-37
 WMH YRHO
 JRG
 BEK
 8-6-39

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

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END AREA SQ.YD.	END AREA		CU.YDS.	
		CUT	FILL	CUT	FILL
		30	2347		
				59	4603
		34	2627		
				59	5143
		30	2927		
				53	5593
		28	3109		
				53	5843
		30	3213		
				55	5964
		30	3228		

ORIGINAL SURVEY
 DATE: 11-9-37
 BY: YRH, VDD, JRG, REX
 CHECKED: JRG, REX
 DATE: 6-20-50
 7-2-55

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

Sta. 403+50

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END AREA SQYD	CU. YDS.	
		CUT	FILL
		0	978
			0 2193
		0	1383
			0 2773
		0	1611
			0 3393
		0	2051
			0 4303
		0	2593
			0 5143
		0	2957

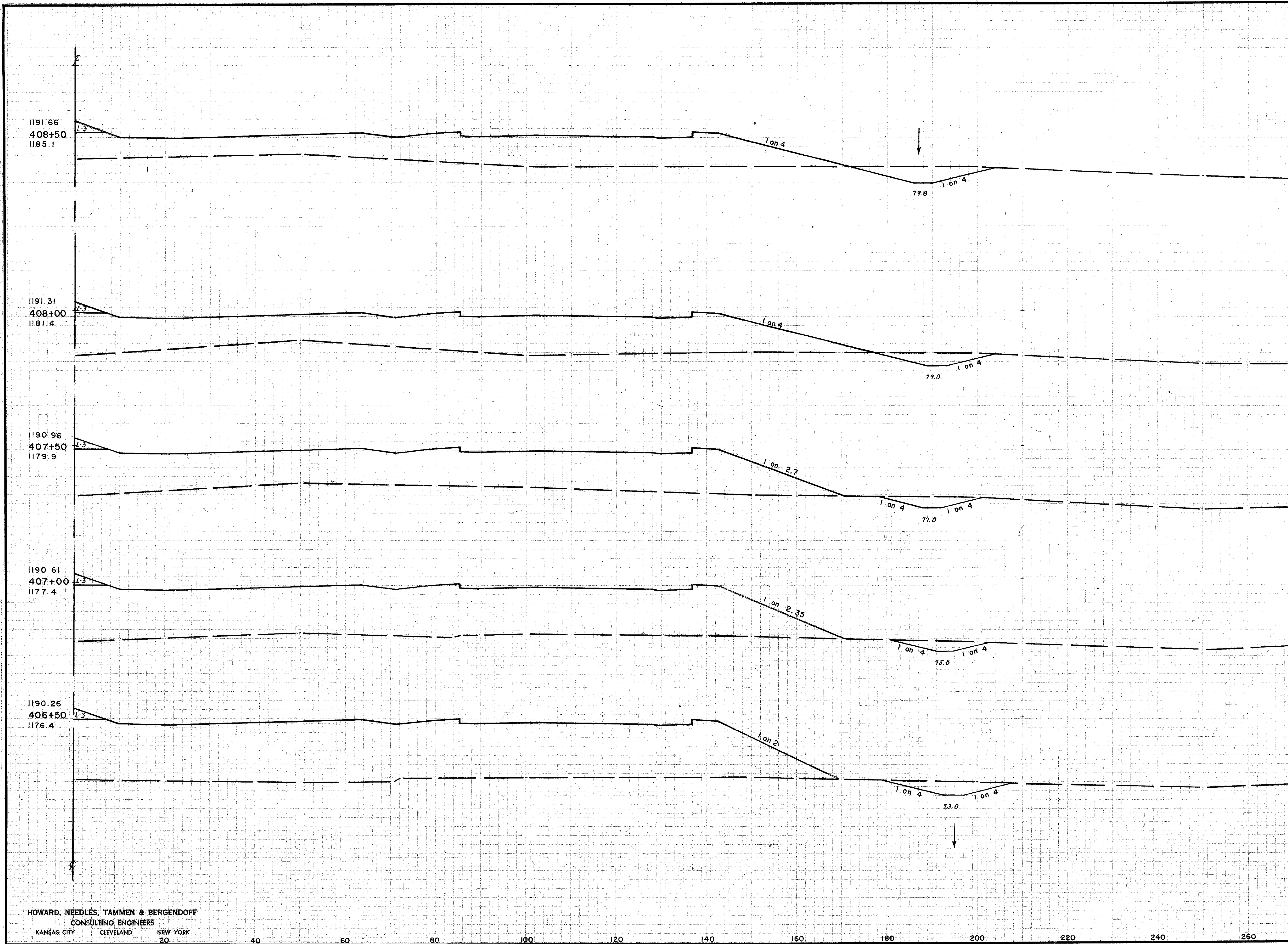
E-3 Channel Excavation = 165 cu. yds.

Note: Dumped rock channel protection to be placed on inside slope of ditch between Sta. 406+40 and Sta. 407+00

Note: Dumped rock channel protection to be placed as shown between Sta. 406+40 and Sta. 406+60

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	END AREA SQ.YD.	CU.YDS.	
		CUT	FILL
	69	926	
			104
			2001
	43	1236	
			81
			2378
	35	1330	
			62
			2823
	32	1716	
			79
			3433
	53	1990	
			77
			4013
	30	2397	

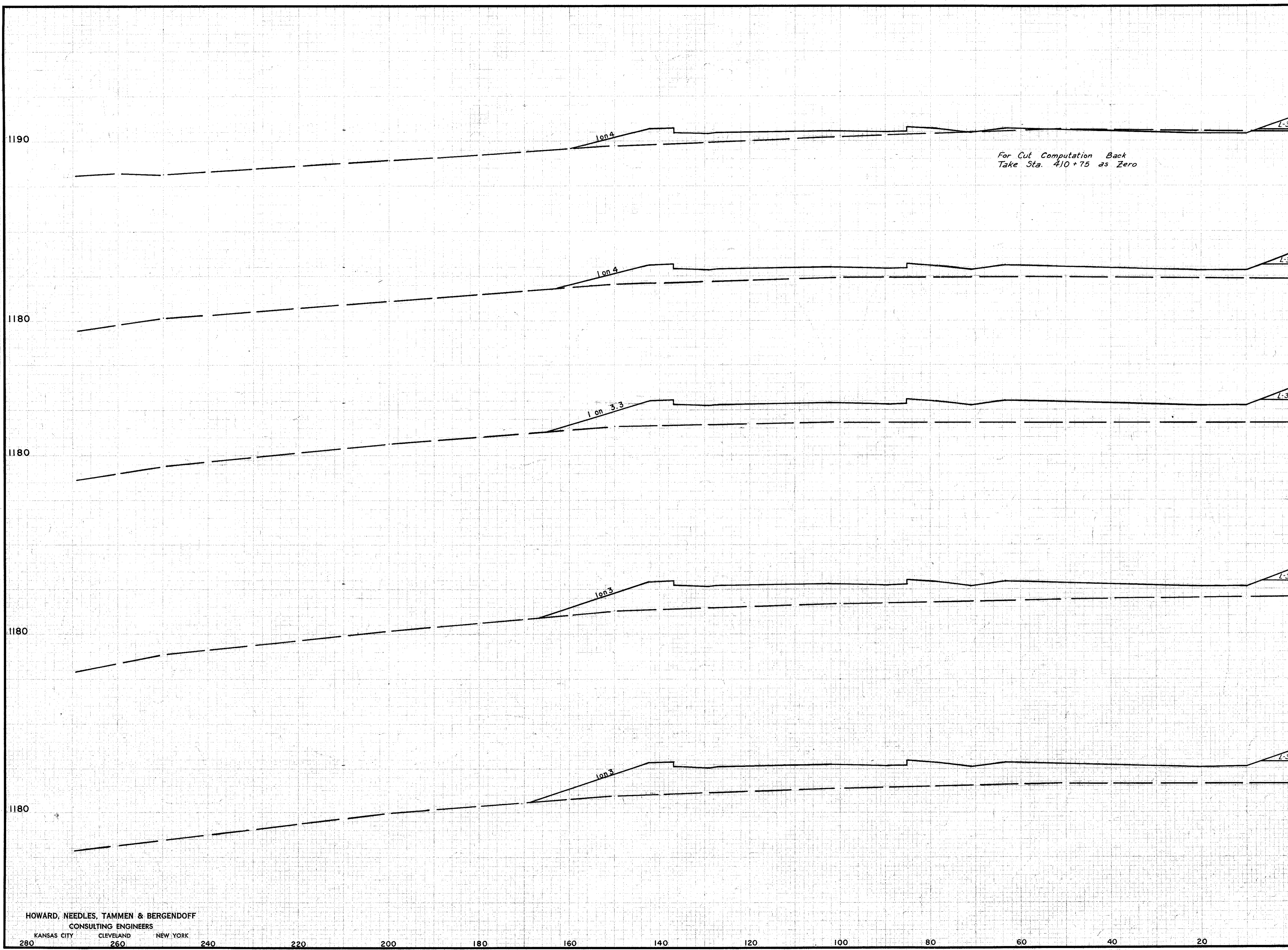


SURVEYED BY: RHB
 CHECKED BY: JGG
 DATE: 11-19-37
 SCALE: 1" = 20'-0"

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

Sta. 406+00

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			21	184
				18
			0	396
				0
			0	691
				0
			0	660
				0
			0	823
				0
			10	978
				0

1193.41
411+00
1192.1

1193.06
410+50
1189.4

1192.71
410+00
1187.0

1192.36
409+50
1188.3

1192.01
409+00
1186.4

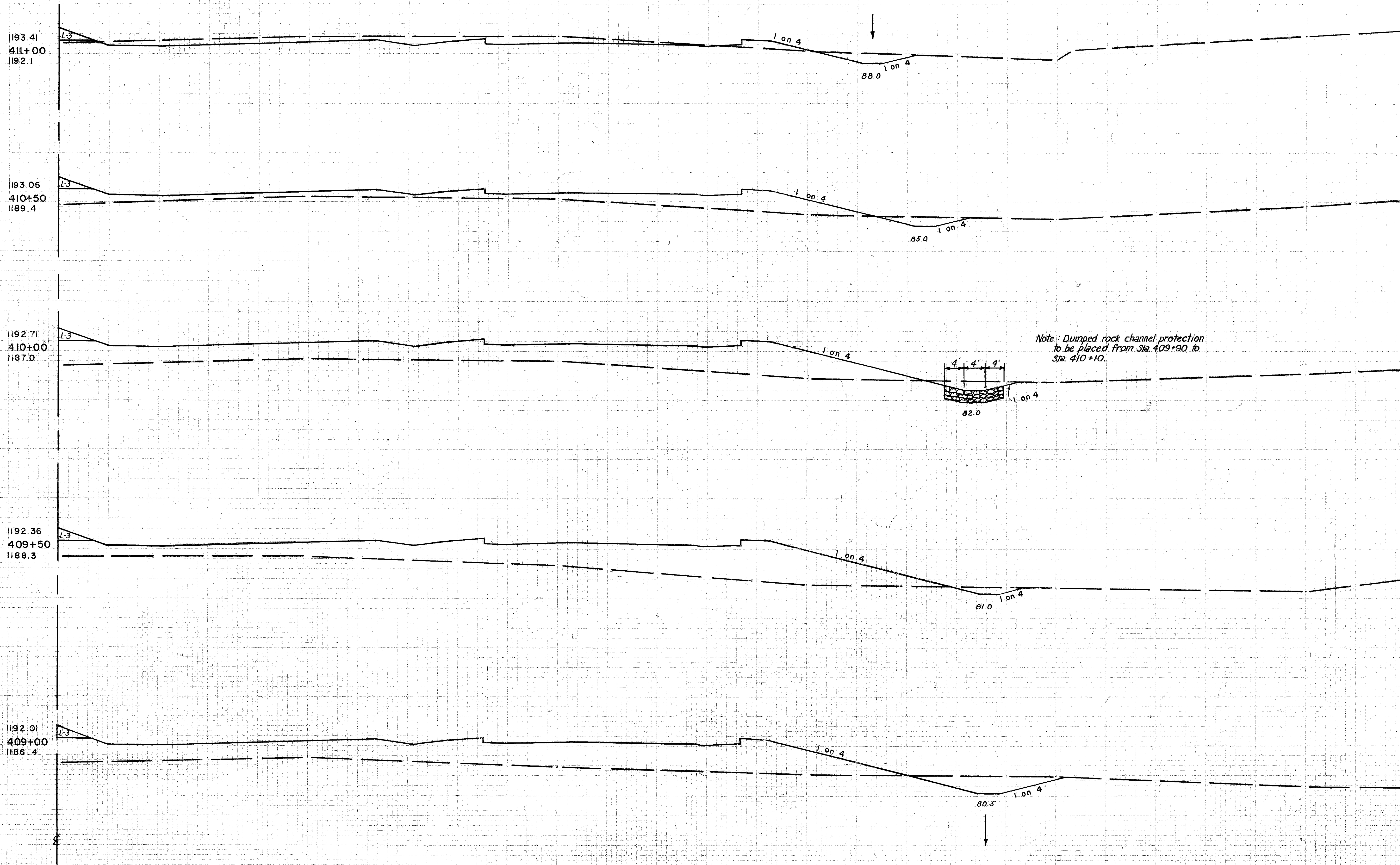
Sta. 408+50

For Cut Computation Back
Take Sta. 410+75 as Zero

PKWA
SURVEY
REVISIONS
DATE
BY

11-29-59
12-1-59
1-3-59
1-6-59
RHP
RC
NES

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END AREA SQ.YD.	CUT		FILL		C.U.YDS.	
		CUT	FILL	CUT	FILL	CUT	FILL
	1190	151	28				
				160	264		
	1180	22	257				
				45	917		
	1180	27	687				
				39	1327		
	1180	15	745				
				72	1371		
	1180	63	735				
				122	1538		
	1180	69	926				

SURVEYOR'S REPORT
 DATE: 11-19-37
 BY: W.M.H.
 CHECKED: J.F.G.
 DATE: 6-20-38
 7-20-39
 RIG
 J.F.G.
 R.E.K.

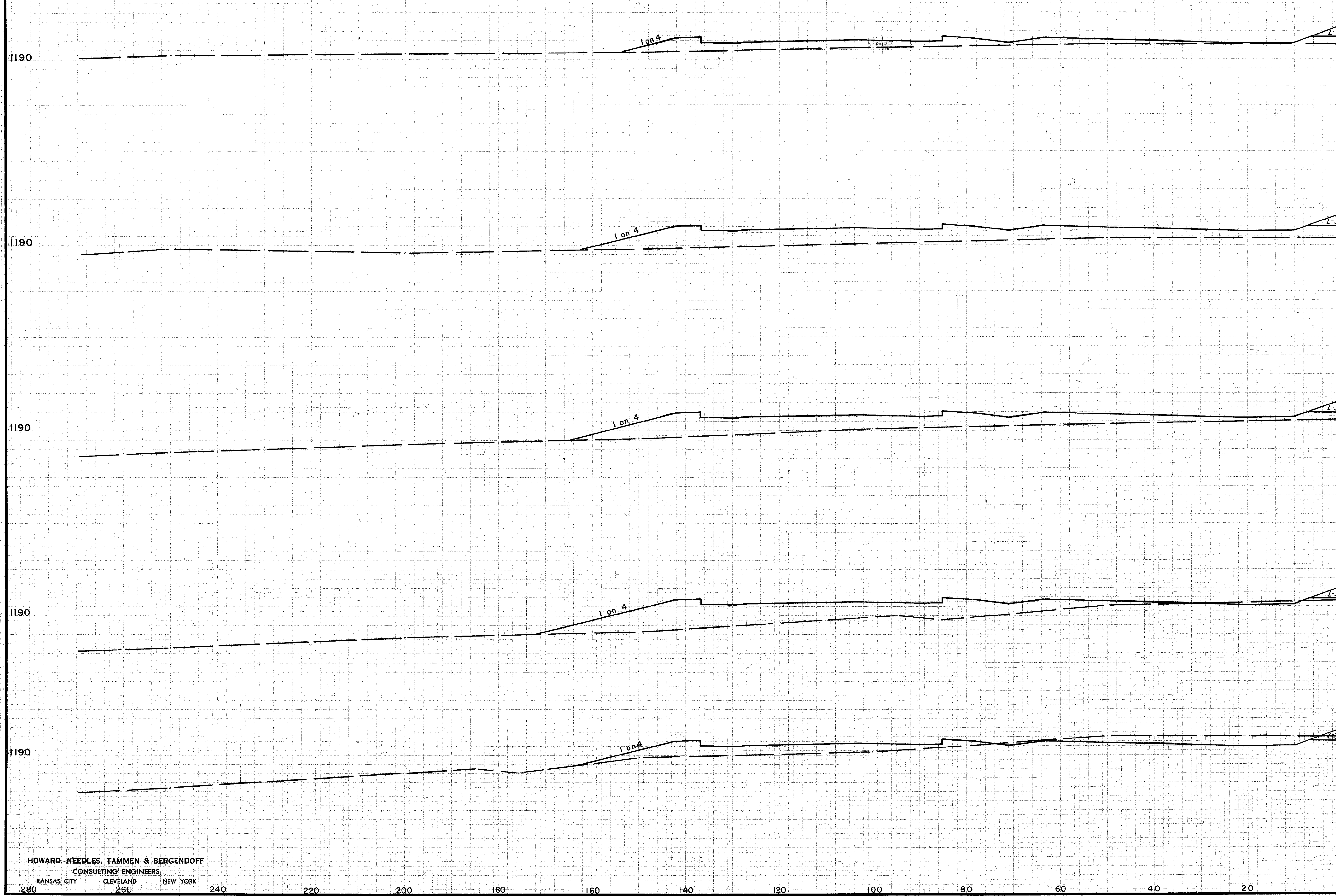
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

Sta. 408+50

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

122
313

CUYAHOGA COUNTY
CUY-1-2.20

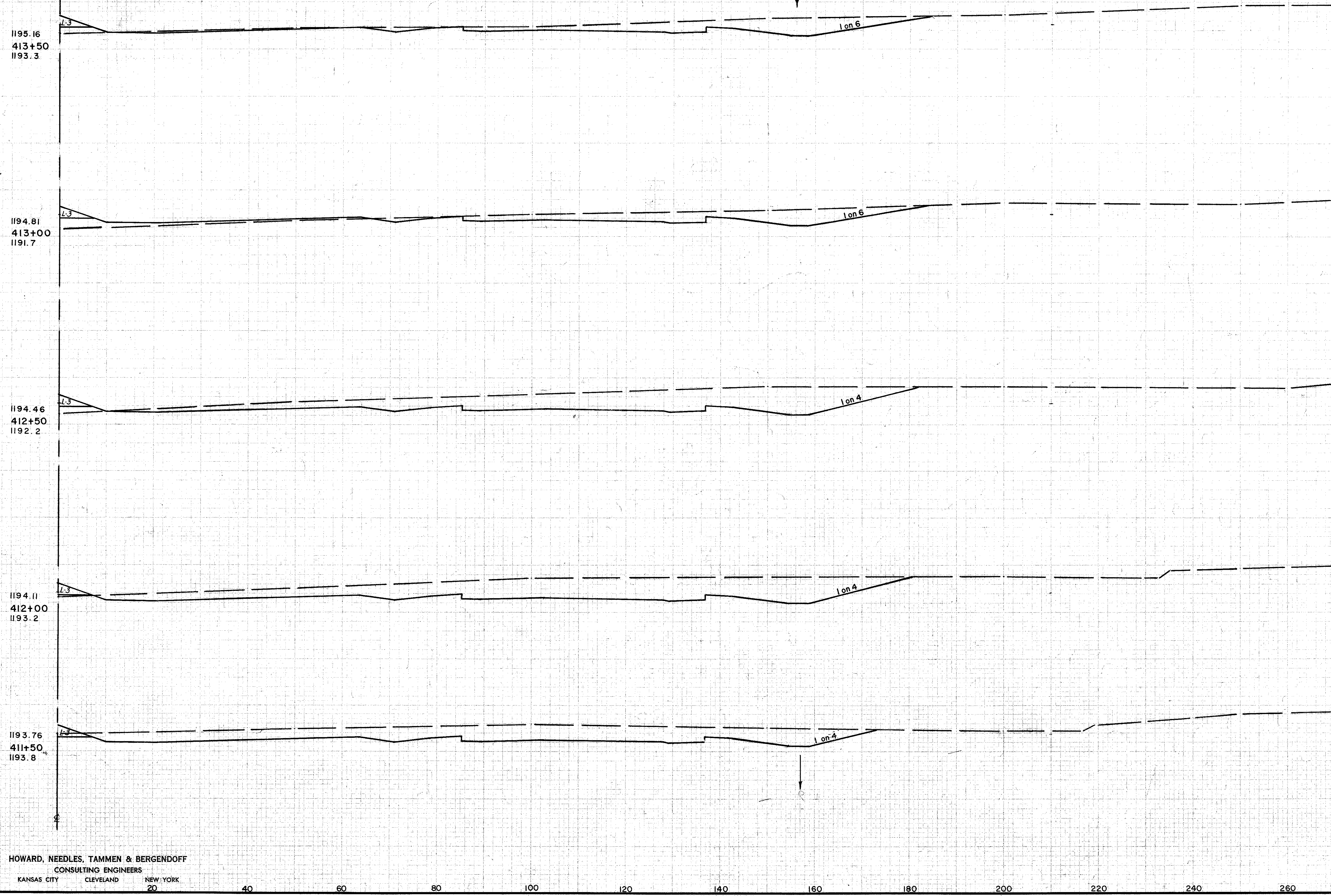


STATION <th colspan="2">SEEDING</th> <th colspan="2">END AREA</th> <th colspan="2">CU. YDS.</th>	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1195.16 413+50 1193.3			0	196		
					0	595
1194.81 413+00 1191.7			0	446		
					0	791
1194.46 412+50 1192.2			0	408		
					8	797
1194.11 412+00 1193.2			10	453		
					100	567
1193.76 411+50 1193.8			98	159		
					110	318
Sta. 411+00			21	184		

ORIGINAL SURVEY PLANS
 FILE NO. 11937
 DATE 1-6-59
 RHB
 YMMH
 R/C
 V DDS
 M/S

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

CUYAHOGA COUNTY
CUY-1-2.20



STATION	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
413+50			204	17		
413+00			190	58	365	70
412+50			482	20	622	72
412+00			541	11	948	29
411+50			456	4	924	22
Sta. 411+00			151	28	562	30

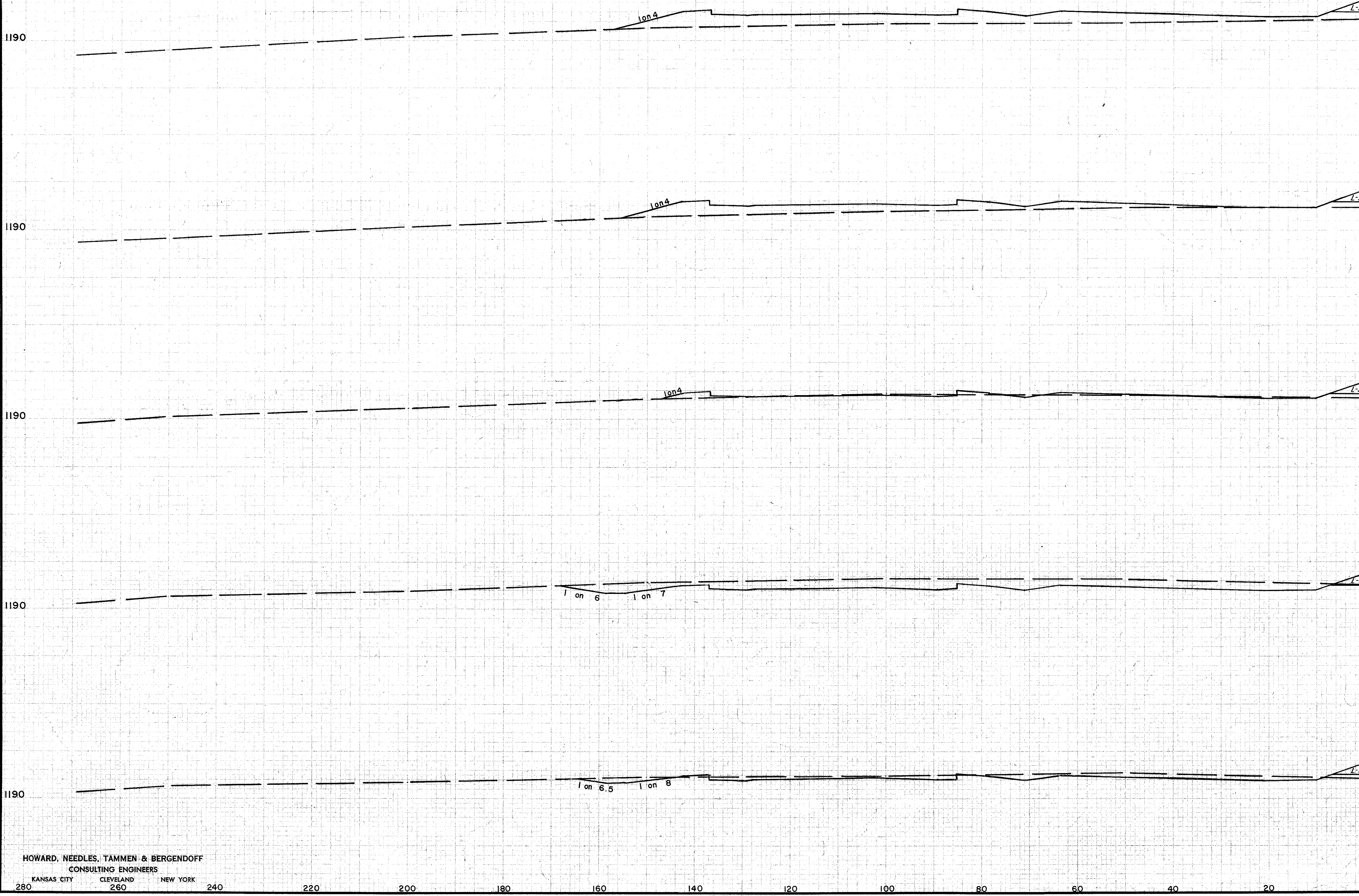
21
4.20
20
40

11-25-56
12-31-58
11-25-56
12-31-58
11-25-56
12-31-58
11-25-56
12-31-58

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

124
313

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			0	317
				0 475
			0	195
				15 219
			16	41
				258 45
			26.3	8
				336 23
			100	17
				91 197
			0	196

FINAL GRADED SURVEY PLANNED WITH POINTS

ORIGINAL SURVEY PLANNED WITH POINTS
 REVISIONS:
 RHD 11/20/07
 VDD 1-2-09
 RC 1-5-09
 REK

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 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

Sta. 413+50

LEFT HALF STA. 414+00 TO STA. 416+00

PLATE 2 - CROSS SECTION 2, F & R R.
 CHANGE PUBLIC COPY 100.

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
1190			46	97
				66 194
1190			25	112
				111 139
1190			95	38
				302 44
1190			231	9
				327 26
1190			122	19
				302 33
			204	17

Sta 413+50

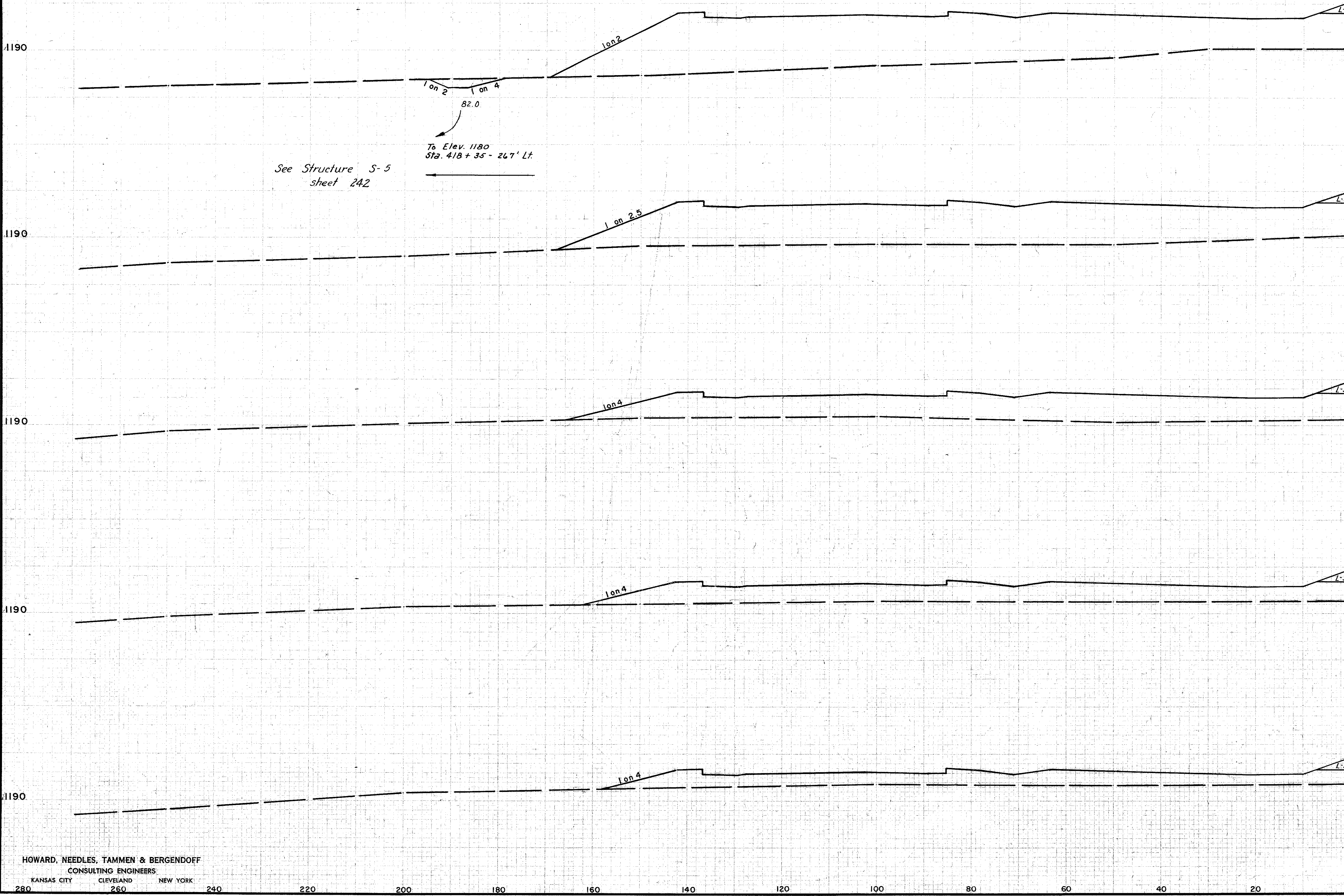
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

20 40 60 80 100 120 140 160 180 200 220 240 260 280

RIGHT HALF STA. 414+00 TO STA. 416+00

GENERAL NOTES:
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND RIGHTS OF WAY.
3. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES.
5. THE CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE THROUGHOUT THE PROJECT.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL ENVIRONMENTAL FEATURES.
7. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL WORK DONE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL ADJACENT PROPERTIES.
9. THE CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE THROUGHOUT THE PROJECT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL ENVIRONMENTAL FEATURES.

CUYAHOGA COUNTY
CUY-1-2.20

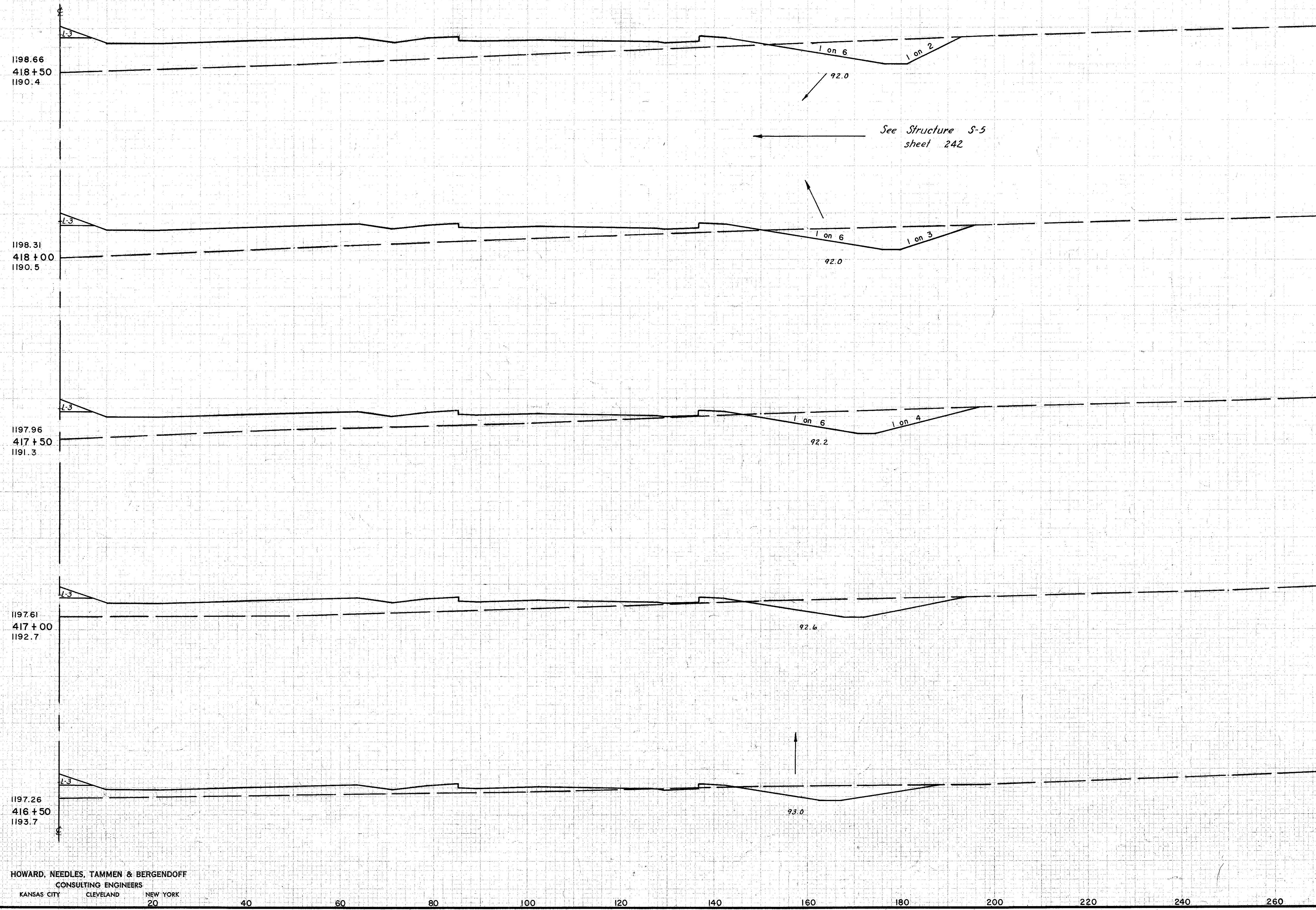


See Structure S-5
sheet 242

SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		18	1549		
					16
		0	1302		
					0
		0	831		
					0
		0	401		
					0
		0	433		
					1
		0	317		

ORIGINAL SURVEY 11-20-39
 REVISIONS 1-2-39
 1-5-39
 RHB YMMH
 MVB YDDS
 RC

CUYAHOGA COUNTY
CUY-1-2.20

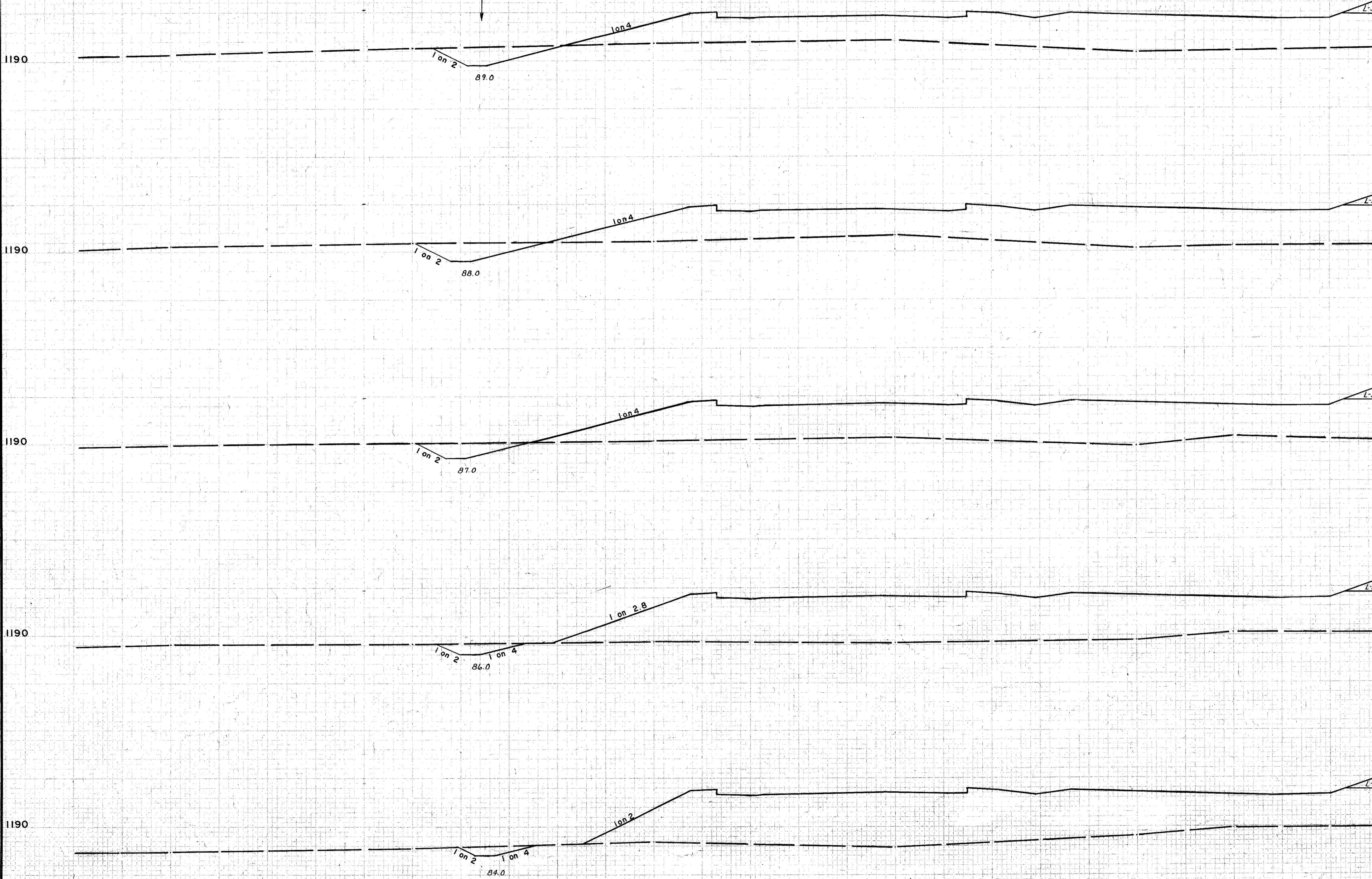


STATION	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
418+50			83	615		
418+00			97	548	167	1078
417+50			115	407	196	885
417+00			86	355	186	707
416+50			70	207	144	521
Sta. 416+00			46	97	107	282

ORIGINAL
 SECURITY
 DATE RECD
 FILE NO.
 11-20-57
 11-20-57
 6-10-59
 7-27-59
 RLB
 JFG
 HFK
 V MAM
 V DDS

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

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		62	992		
				115	1943
		62	1123		
				95	2193
		45	1241		
				62	2483
		22	1433		
				37	2883
		18	1461		
				33	2783
		18	1549		

ORIGINAL SUBMITTED 11-20-37
 SURV. PLOTTED 1-2-38
 NOTES REV. 1-5-38
 RHB VMMH
 AVV
 RC

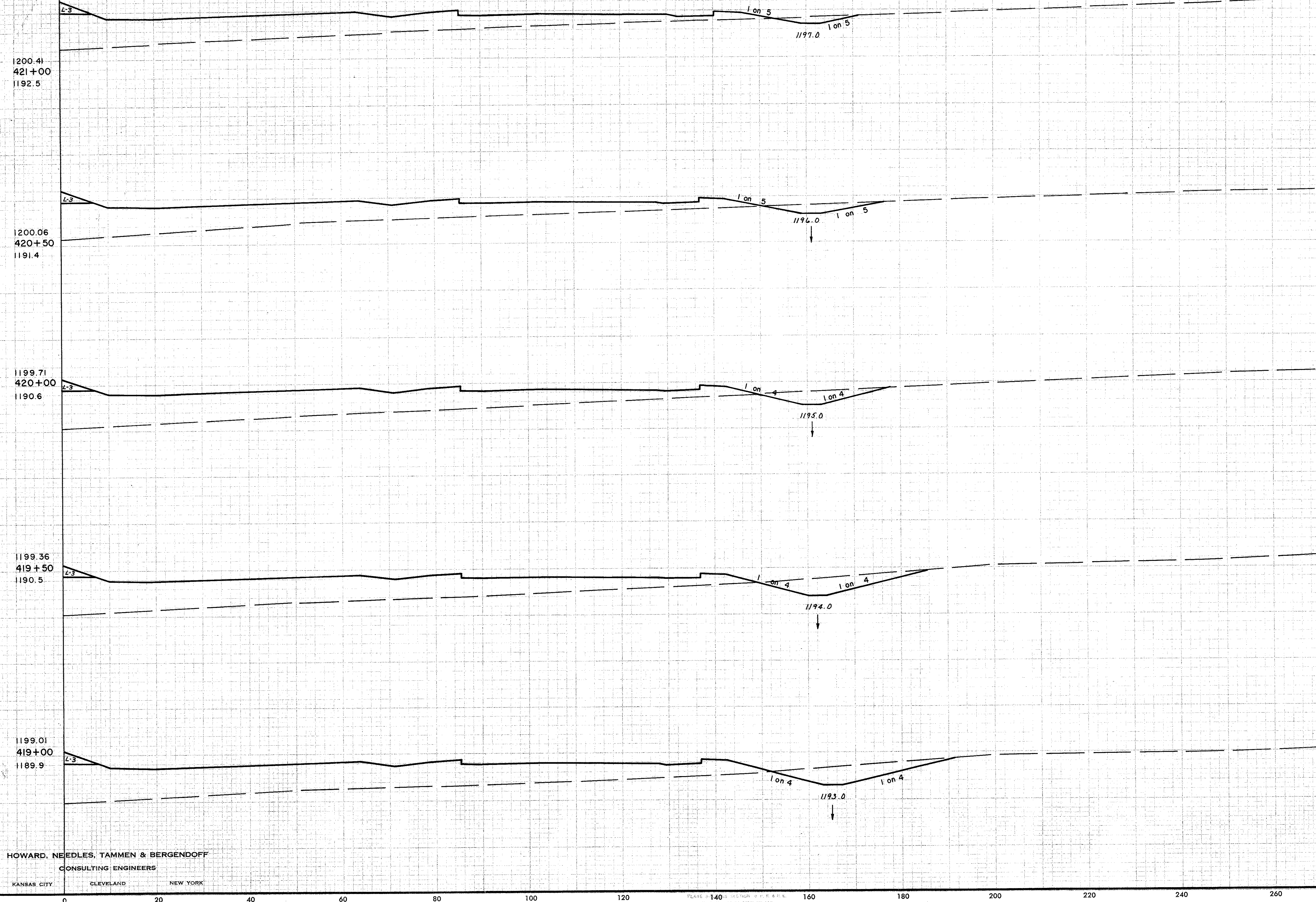
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

280 260 240 220 200 180 160 140 120 100 80 60 40 20

Sta. 418+50

CUYAHOGA COUNTY
CUY-1-2.20

EARTHWORK			
END	AREA	VOLUME	
		EXC.	EMB.
1190	18	559	
			48 1049
1190	34	574	
			75 1155
1190	47	673	
			112 1244
1190	74	671	
			145 1312
1190	83	746	
			154 1261
Sta. 418+50	83	615	



FINAL SURVEY PLANNED FOR 1953

ORIGIN: SURVEY PLANNED FOR 1953
 DATE: 4-28-54, 5-15-54
 DATE: 4-28-54, 5-15-54
 DATE: 4-28-54, 5-15-54
 DATE: 4-28-54, 5-15-54

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

6-5

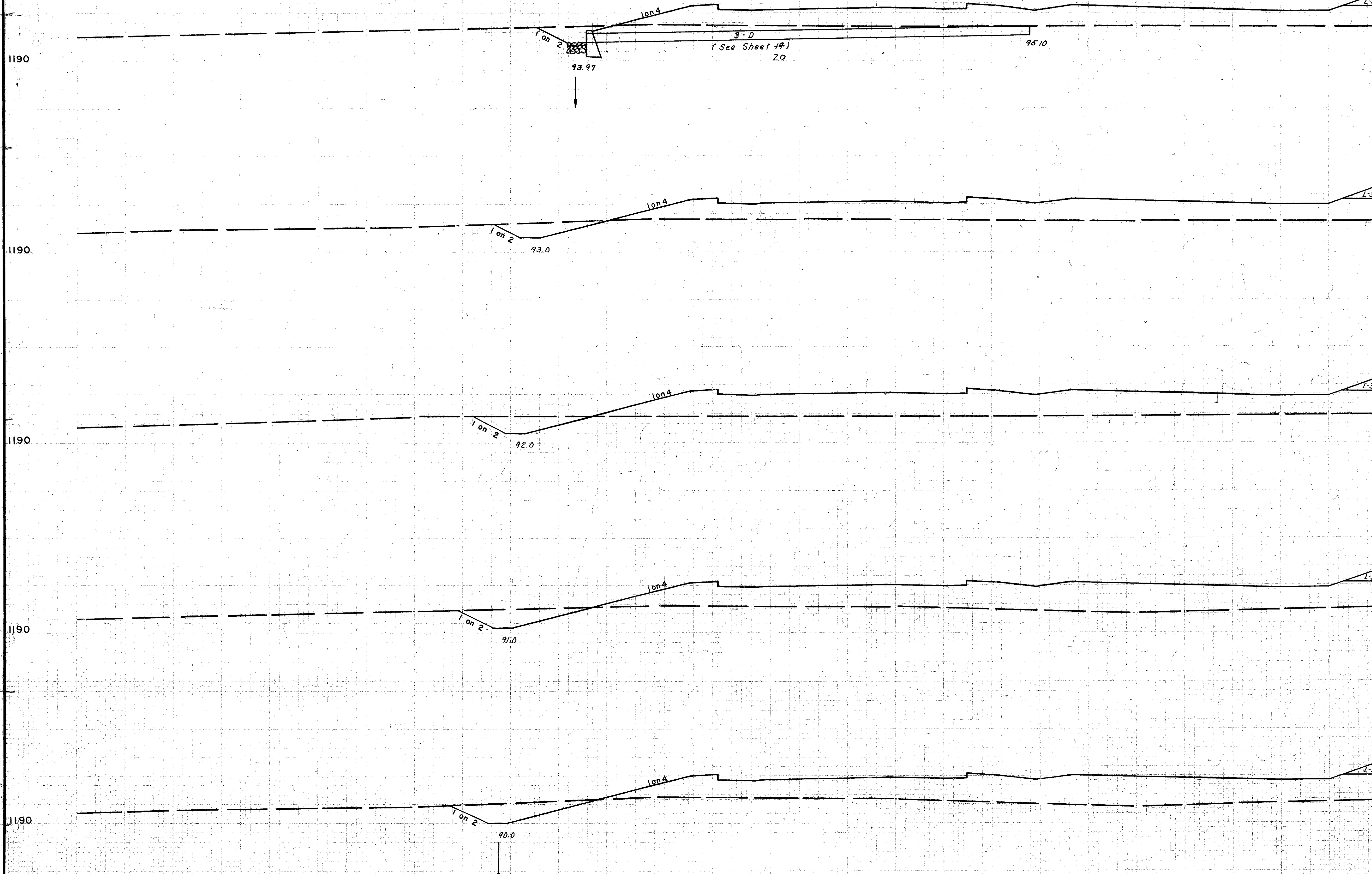
S-9

CUY-270-6.80

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

130
313

CUYAHOGA COUNTY
CUY-1+2.20



STATION <th colspan="2">SEEDING</th> <th colspan="2">END AREA</th> <th colspan="2">CU. YDS.</th>	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1202.16 423+50 1197.3			17	577		
					60	1096
1201.81 423+00 1196.6			48	606		
					88	1233
1201.46 422+50 1195.9			47	727		
					102	1398
1201.11 422+00 1195.2			63	783		
					128	1448
1200.76 421+50 1194.6			75	779		
					127	1643
Sta. 421+00			62	992		

RUS
 V. J. R.
 J. R. K.
 1-20-59
 1-22-59
 6-4-59
 8-6-59

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

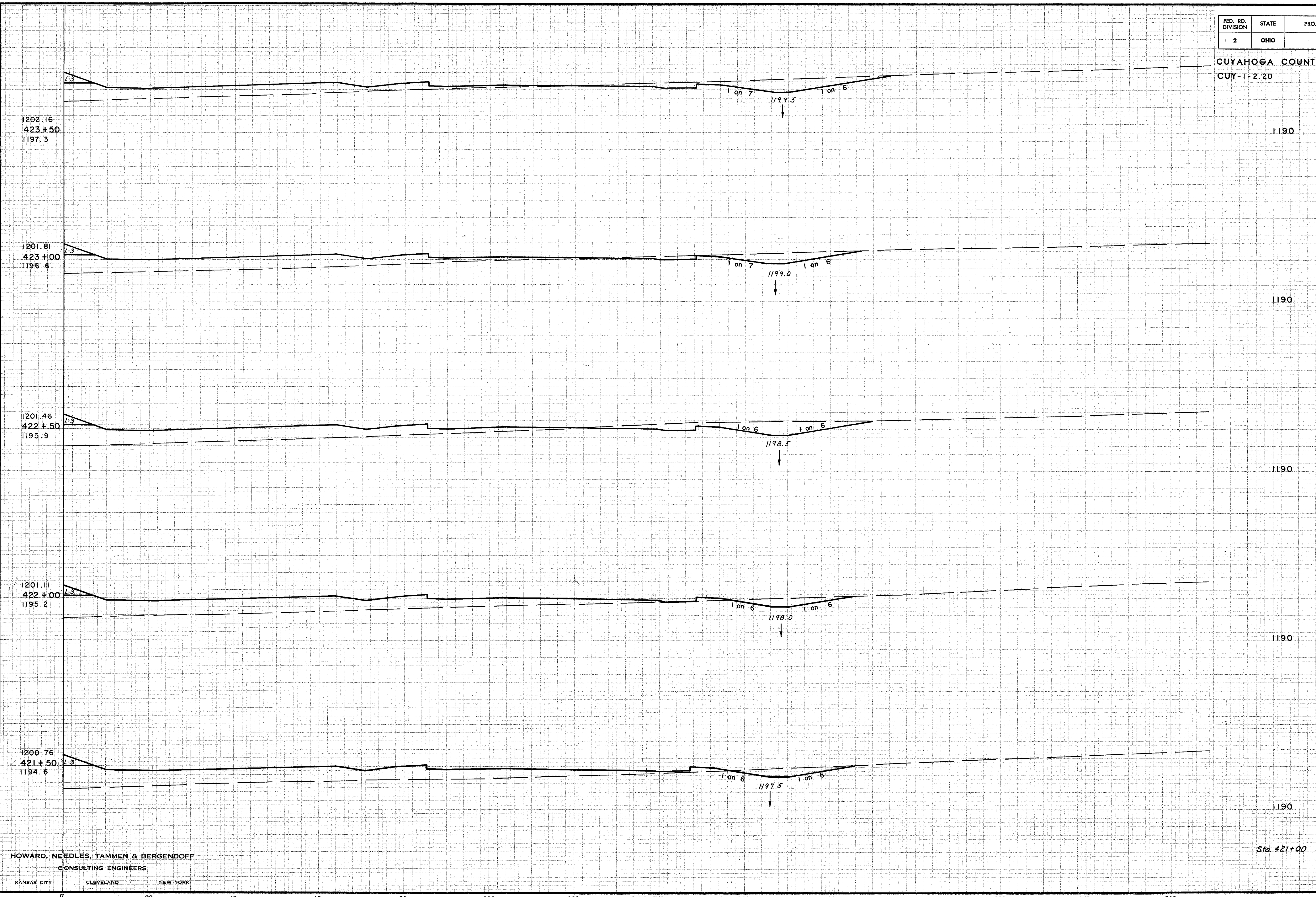
280 260 240 220 200 180 160 140 120 100 80 60 40 20

LEFT HALF STA. 421+50 TO STA. 423+50

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY
EARTHWORK
NOTE BOOK
NO. 116

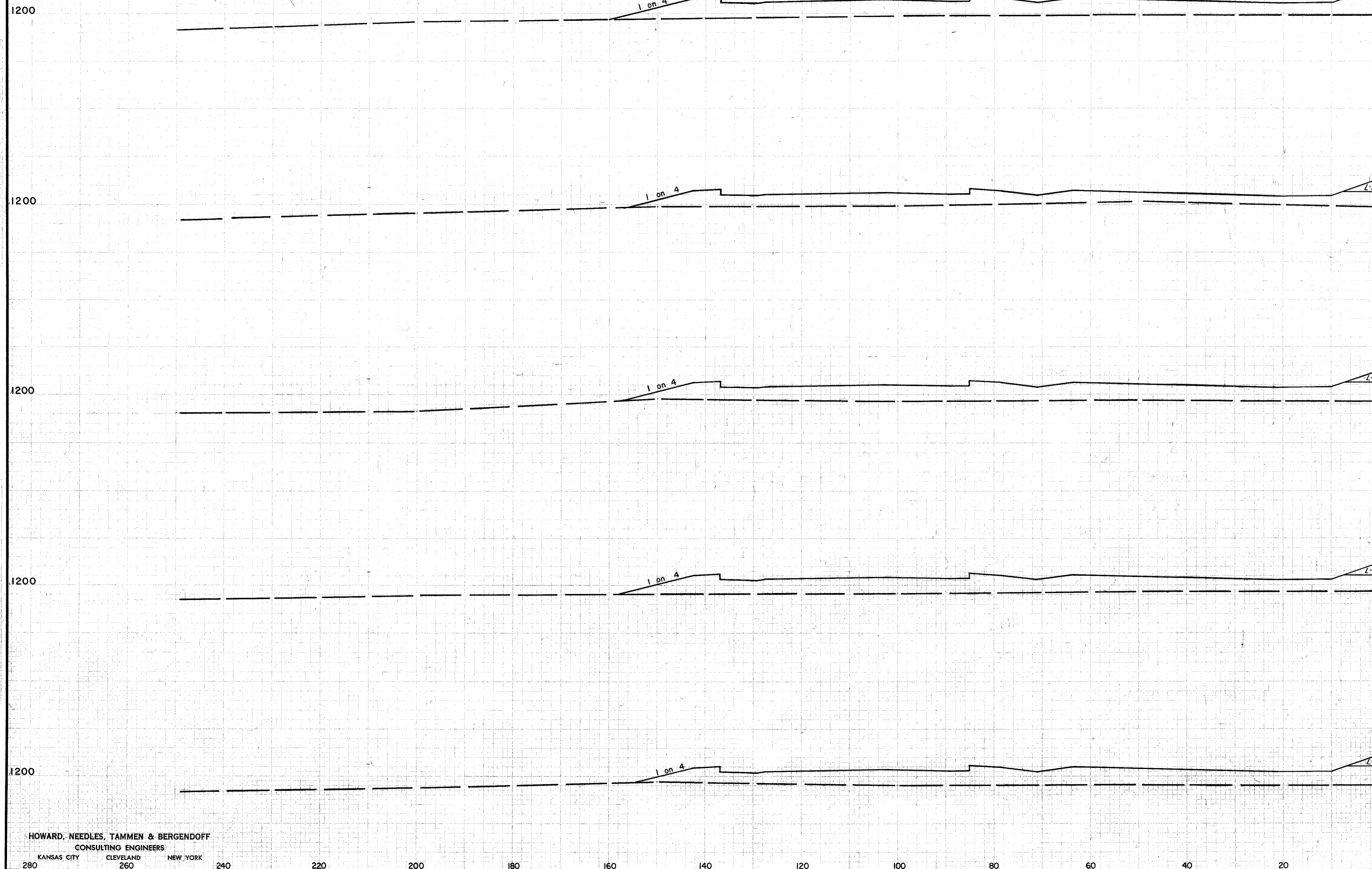
ORIGINAL SURVEY
EARTHWORK
NOTE BOOK
NO. 116



END STA.	EARTHWORK	
	AREA	VOLUME
EXC.	EMB.	EXC. EMB.
99	230	153 475
66	283	163 544
110	304	134 651
35	339	66 757
36	418	50 904
18	559	

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

CUYAHOGA COUNTY
CUY-1-2.20



1203.91
426+00
1199.7

1203.56
425+50
1199.6

1203.21
425+00
1198.7

1202.86
424+50
1198.6

1202.51
424+00
1198.0

SEEDING WIDTH	SQ.YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		0	.508		
				0	.816
		0	.373		
				0	.810
		0	.501		
				0	.926
		0	.499		
				0	.916
		0	.489		
				0	.987
		17	.577		

Sta. 423+50

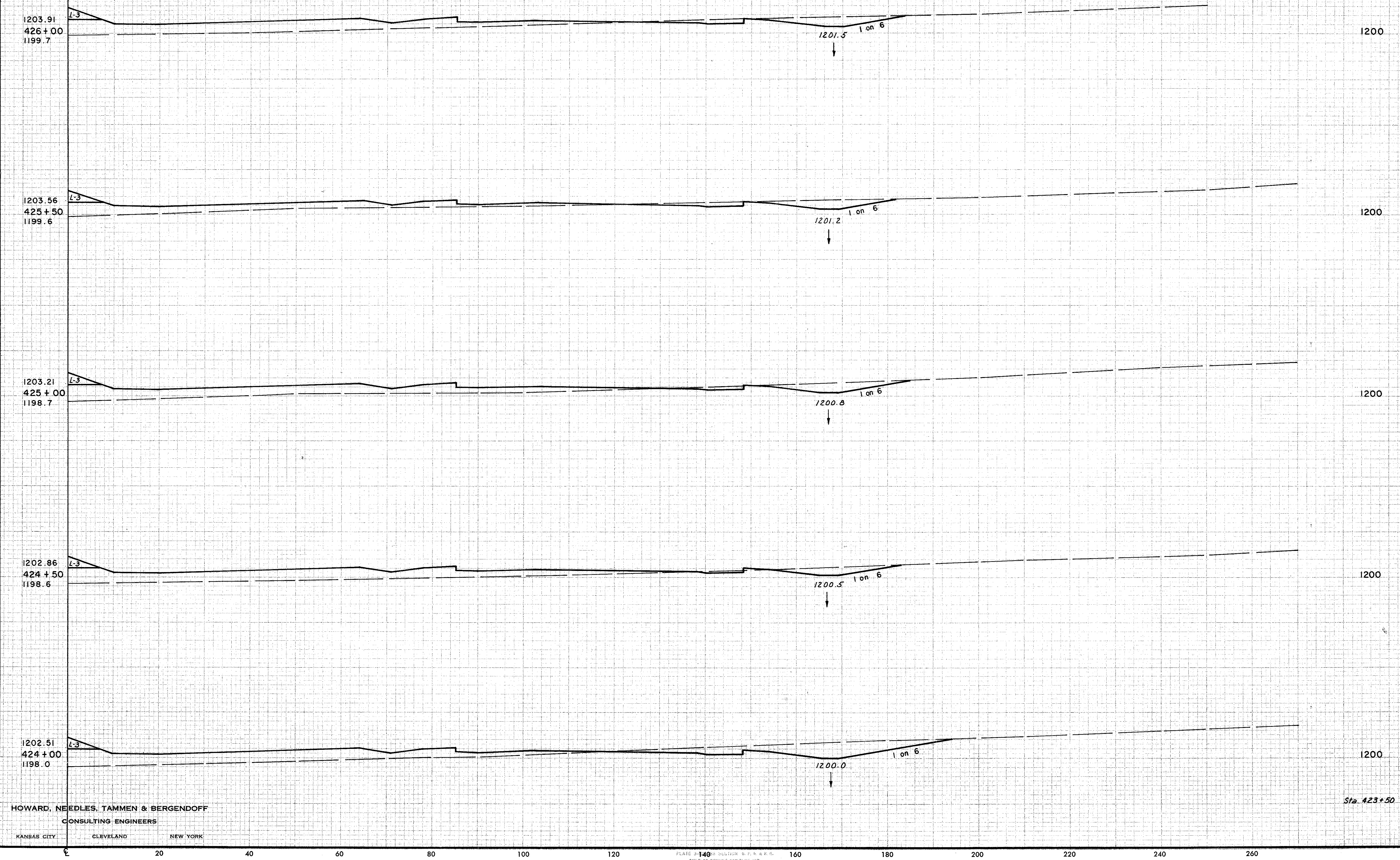
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

LEFT HALF STA. 424+00 TO STA. 426+00

CUYAHOGA COUNTY
CUY-1-2.20

FINAL
SURVEY
NOTE BOOK

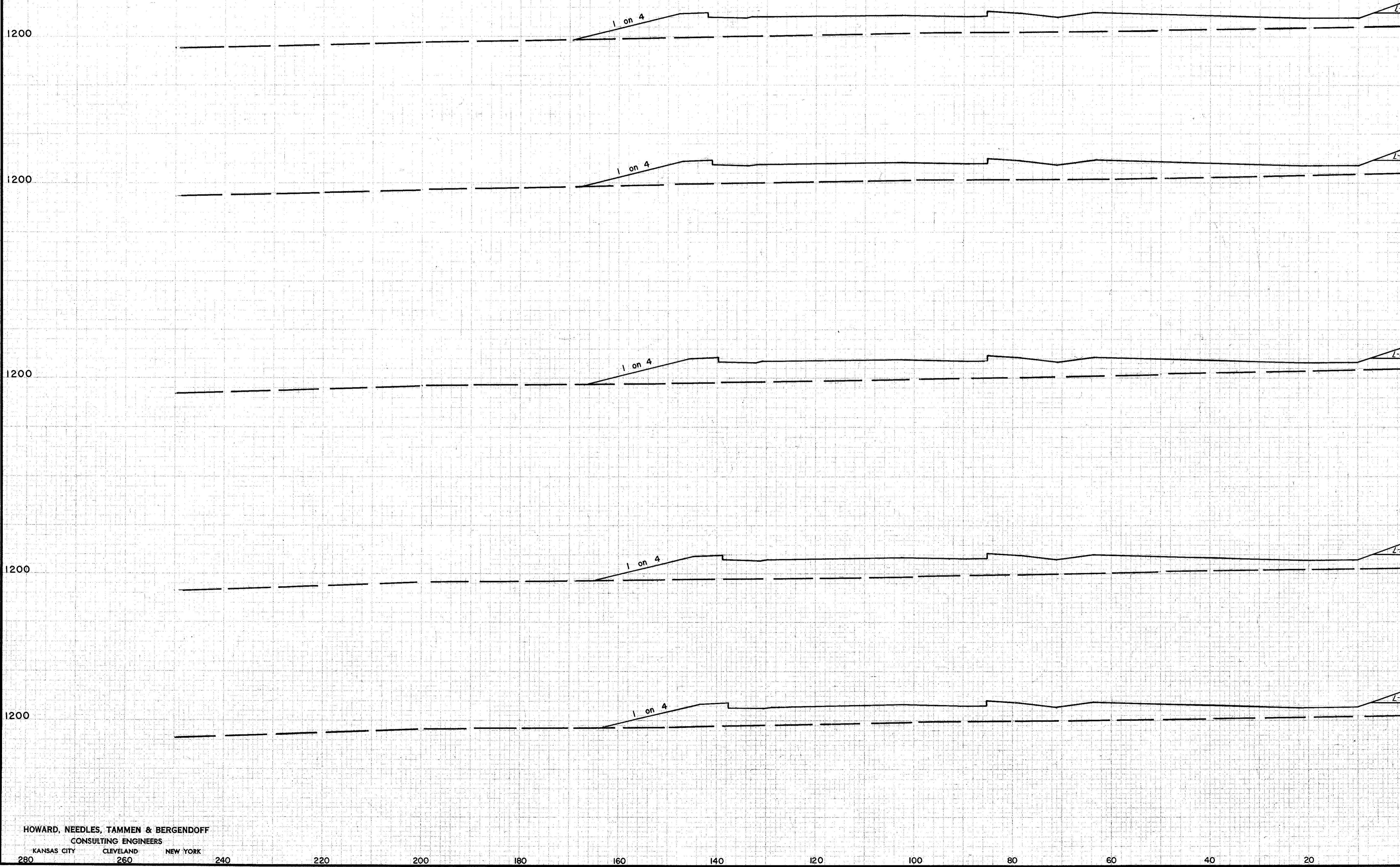
ORIGINAL
SURVEY
NOTE BOOK



EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
1200	55	231	
		101	365
1200	54	163	
		94	367
1200	47	233	
		76	464
1200	35	269	
		143	468
1200	119	236	
		202	431
Sta. 423+50	99	230	

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

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		0	562	0	1026
		0	546	0	1022
		0	557	0	1025
		0	550	0	983
		0	511	0	943
		0	508		

Sta. 426+00

LEFT HALF STA. 426+50 TO STA. 428+50

ORIGINAL SURVEY
 SURVEY PLANS
 NOTES BOOK 1
 12-28-37
 12-19-38
 1-6-39
 W.H.H.
 V.B.D.
 J.B.G.
 H.E.K.

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

280 260 240 220 200 180 160 140 120 100 80 60 40 20

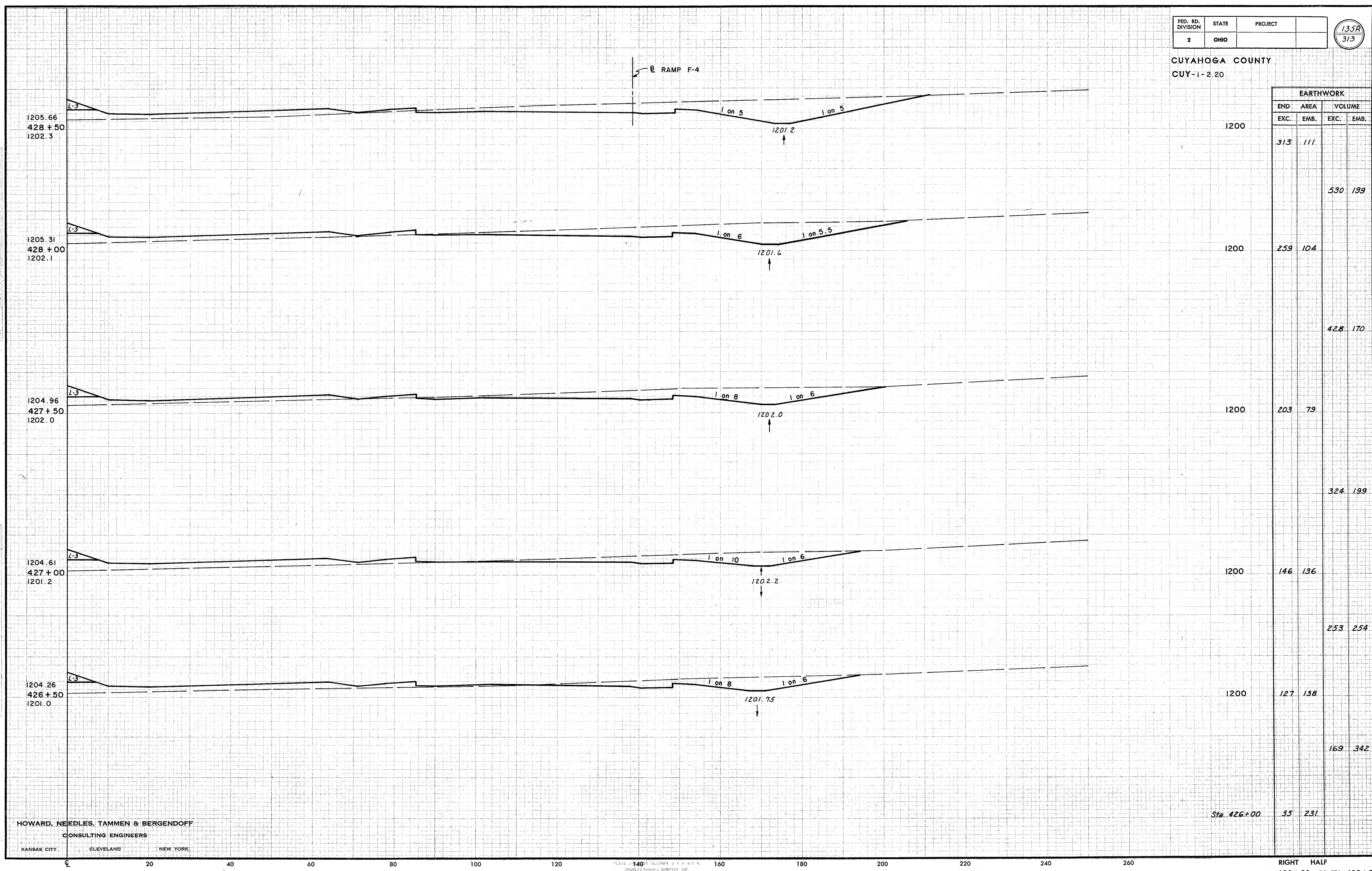
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

135R
313

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEYED BY
SURVEY PLOTTED BY
NOTE BOOK TEMP. BY
REAS. CHECKED BY

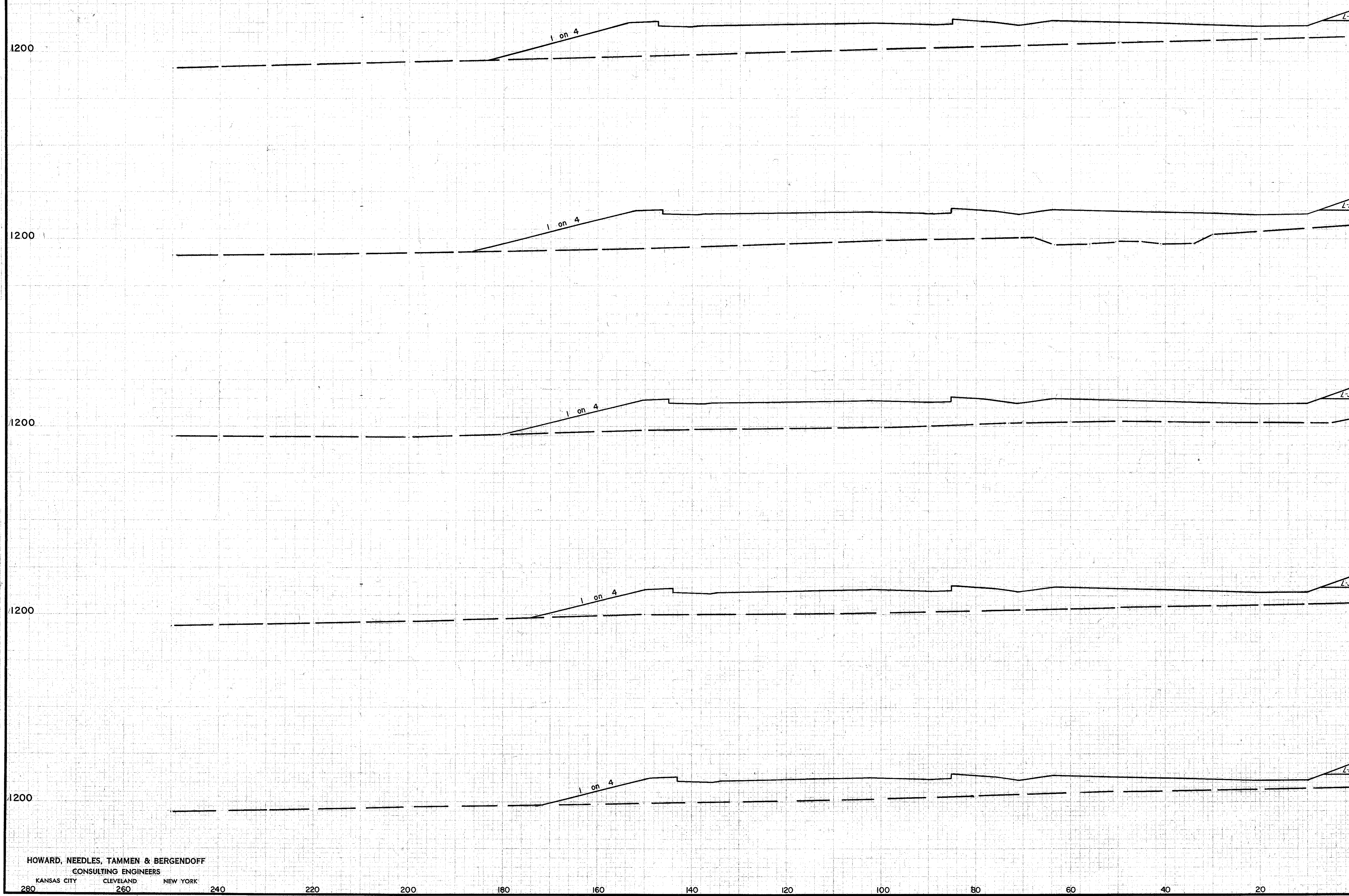
ORIGINAL SURVEYED BY
SURVEY PLOTTED BY
NOTE BOOK TEMP. BY
REAS. CHECKED BY



EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
1200	313	111	
			530 139
1200	259	104	
			428 170
1200	203	79	
			324 199
1200	146	136	
			253 254
1200	127	138	
			169 342
Sta. 426+00	55	231	

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

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		0	850		
				0	1853
		0	1146		
				0	1873
		0	880		
				0	1473
		0	712		
				0	1593
		0	607		
				0	1083
		0	562		

1207.10
431+00
1203.3

1206.88
430+50
1202.9

1206.63
430+00
1201.8

1206.34
429+50
1202.5

1206.01
429+00
1202.9

Sta. 428+50

FINAL
SURVEY
NOTE BOOK

11-21-54
6-5-55
8-6-59
JRB
DBS
JAG
REK

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
280 260 240 220 200 180 160 140 120 100 80 60 40 20

LEFT HALF STA. 429+00 TO STA. 431+00

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

137R
313

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY PLOTTED
DATE: 5-23-61
BY: JAG

ORIGINAL SURVEY PLOTTED
DATE: 5-23-61
BY: JAG



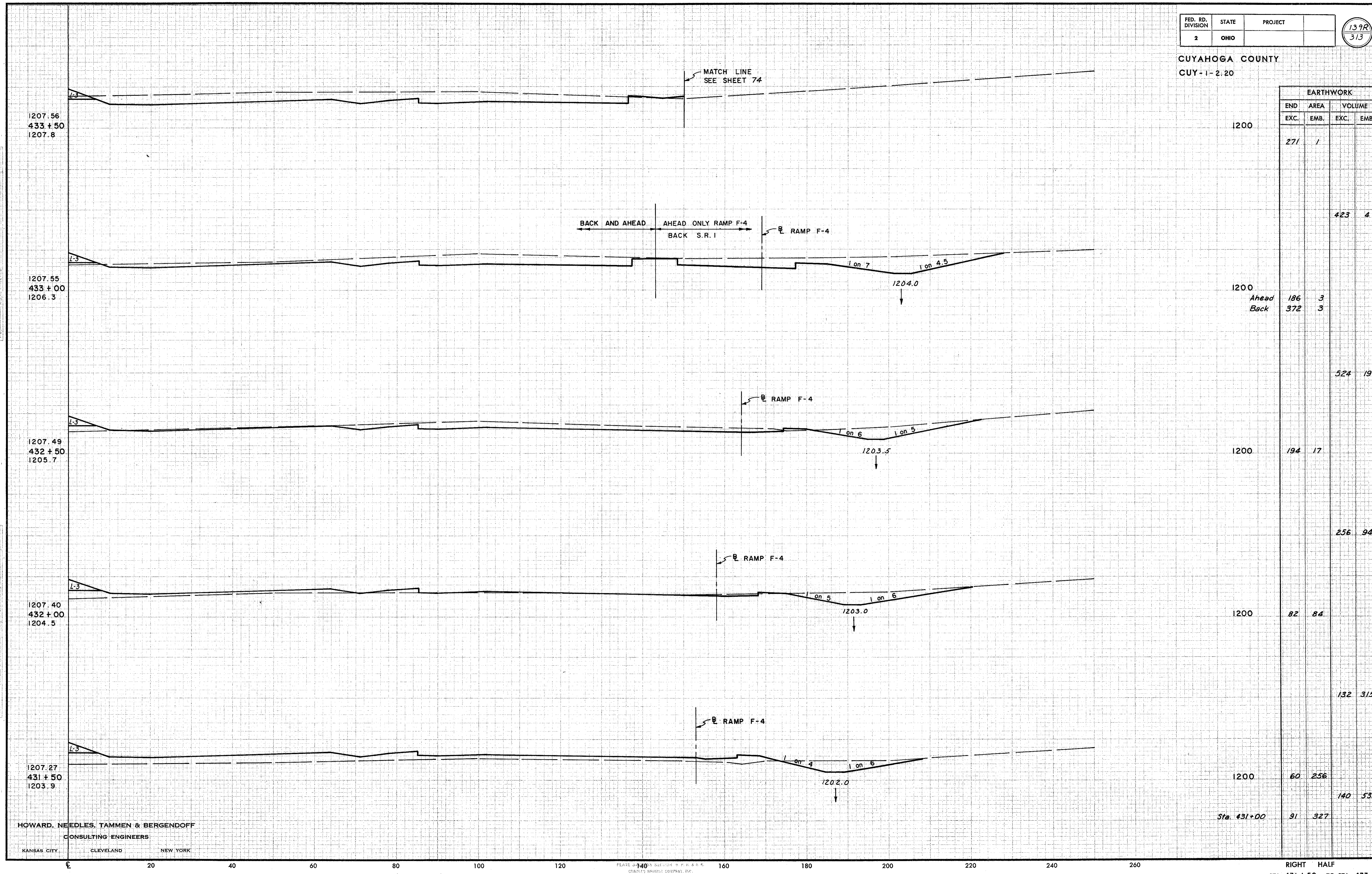
EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
1200	91	327	
		229	658
1200	156	383	
		313	784
1200	182	463	
		355	600
1200	201	185	
		466	243
1200	302	77	
		569	174
Sta. 428+50	313	171	

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

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY PLOTTED
DATE: 5-24-41

ORIGINAL SURVEY PLOTTED
DATE: 5-24-41



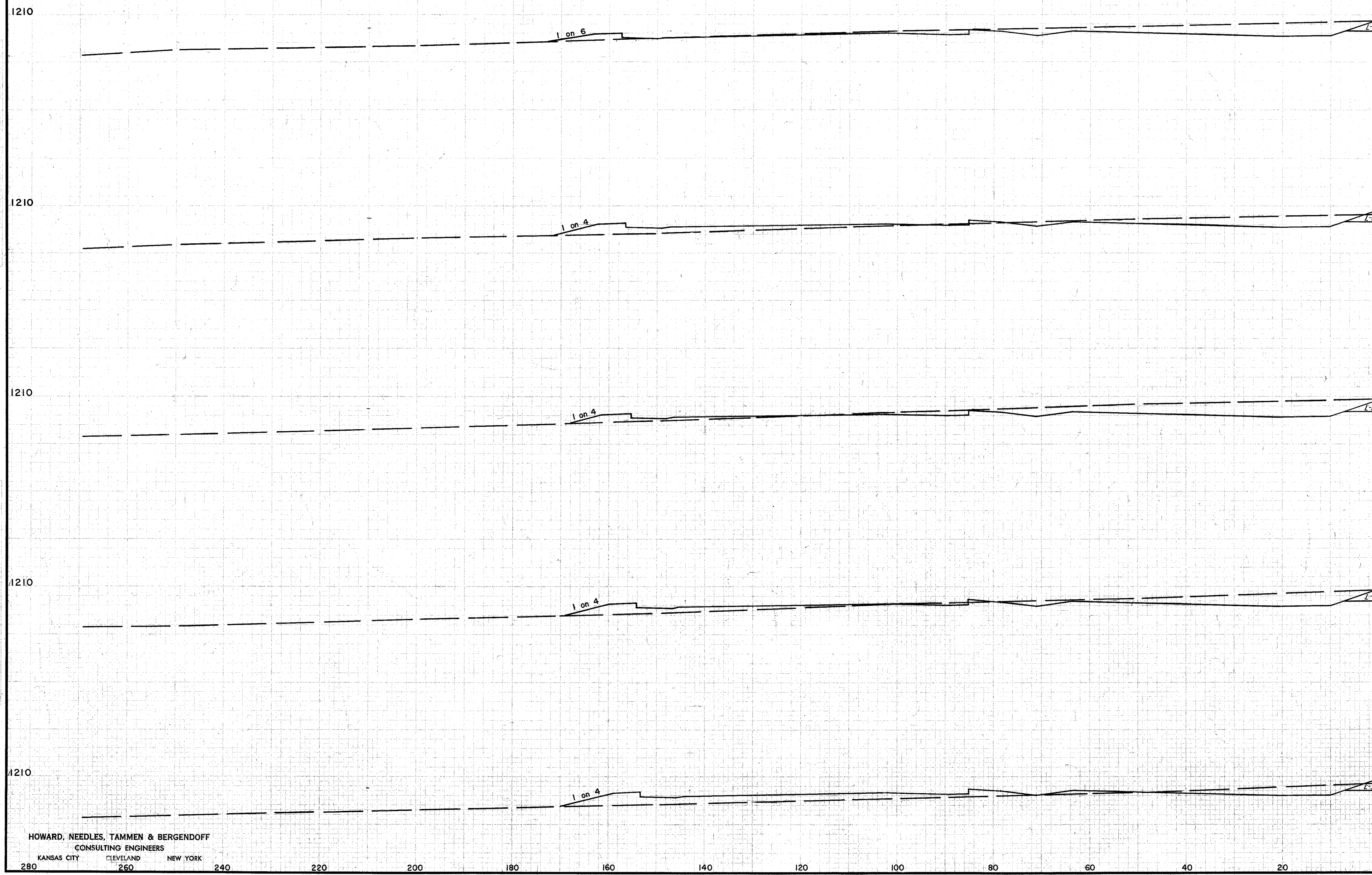
EARTHWORK				
END	AREA	VOLUME		
EXC.	EMB.	EXC.	EMB.	
1200	271	1		
			423	4
1200	Ahead 186	3		
	Back 372		3	
			524	19
1200	194	17		
			256	94
1200	82	84		
			132	315
1200	60	256		
			140	539
Sta. 431+00	31	327		

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

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

140
313

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			160	11
				236 76
			97	71
				267 92
			192	29
				284 90
			115	68
				158 207
			56	155
				82 352
			33	224

1207.04
436+00
1208.9

1207.22
435+50
1208.3

1207.37
435+00
1209.5

1207.47
434+50
1209.4

1207.54
434+00
1208.6

Sta. 433 +50

CHAS. W. ...
 RHB / MMH 11-21-57
 JRG
 REX
 6-2-59
 8-6-59

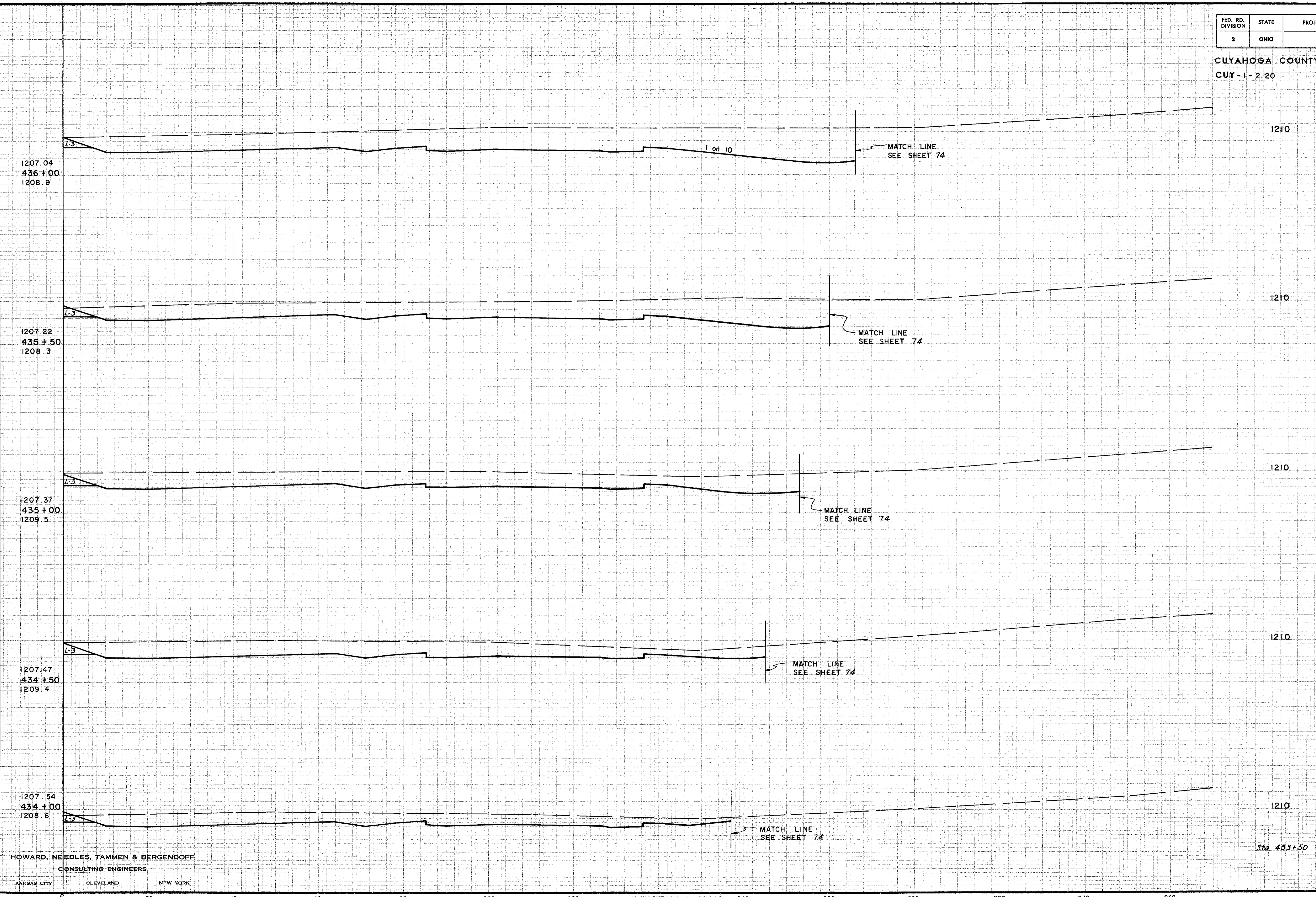
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

LEFT HALF STA. 434 + 00 TO STA. 436 + 00

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY APPROVED
NOTED
DATE

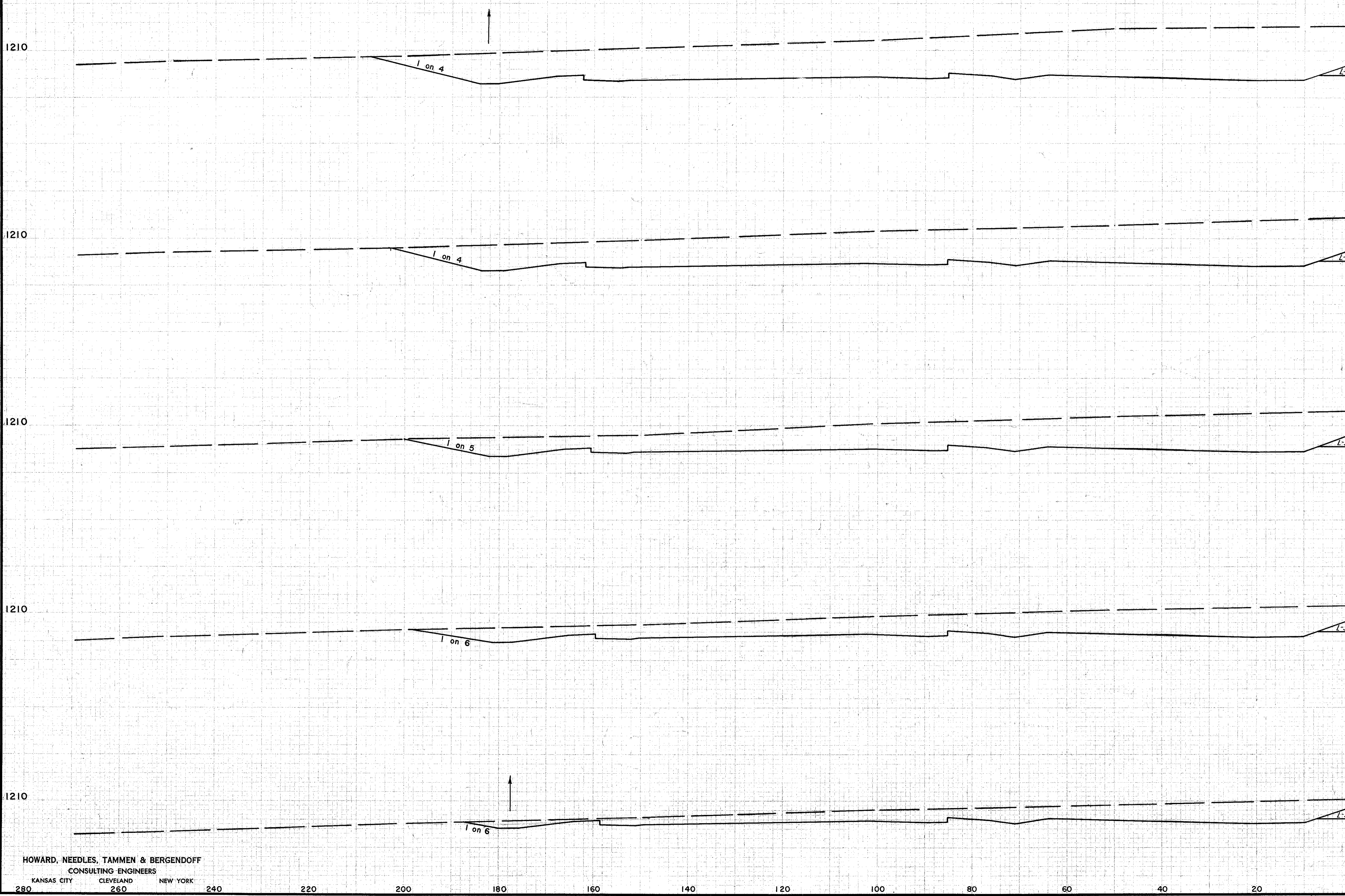
ORIGINAL SURVEY APPROVED
NOTED
DATE



EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
1210	926	0	
1210	715	0	
1210	590	0	
1210	505	0	
1210	371	0	
Sta. 433+50	271	1	
			1520
			1208
			811
			594

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

CUYAHOGA COUNTY
CUY-1-2.20



STATION <th colspan="2">SEEDING</th> <th colspan="2">END AREA</th> <th colspan="2">CU. YDS.</th>	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1205.53 438+50 1215.4			1618	0		
					2777	0
1205.91 438+00 1214.6			1317	0		
					2167	0
1206.26 437+50 1213.1			1019	0		
					1847	0
1206.56 437+00 1211.7			762	0		
					1147	0
1206.82 436+50 1210.3			474	0		
					587	10
Sta 436+00			160	11		

FINAL SURVEY REPORT
DATE: 11-25-37
BY: JRG
CHECKED: RHB
DATE: 12-28-39
BY: JRG
DATE: 8-6-39
BY: RFB

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

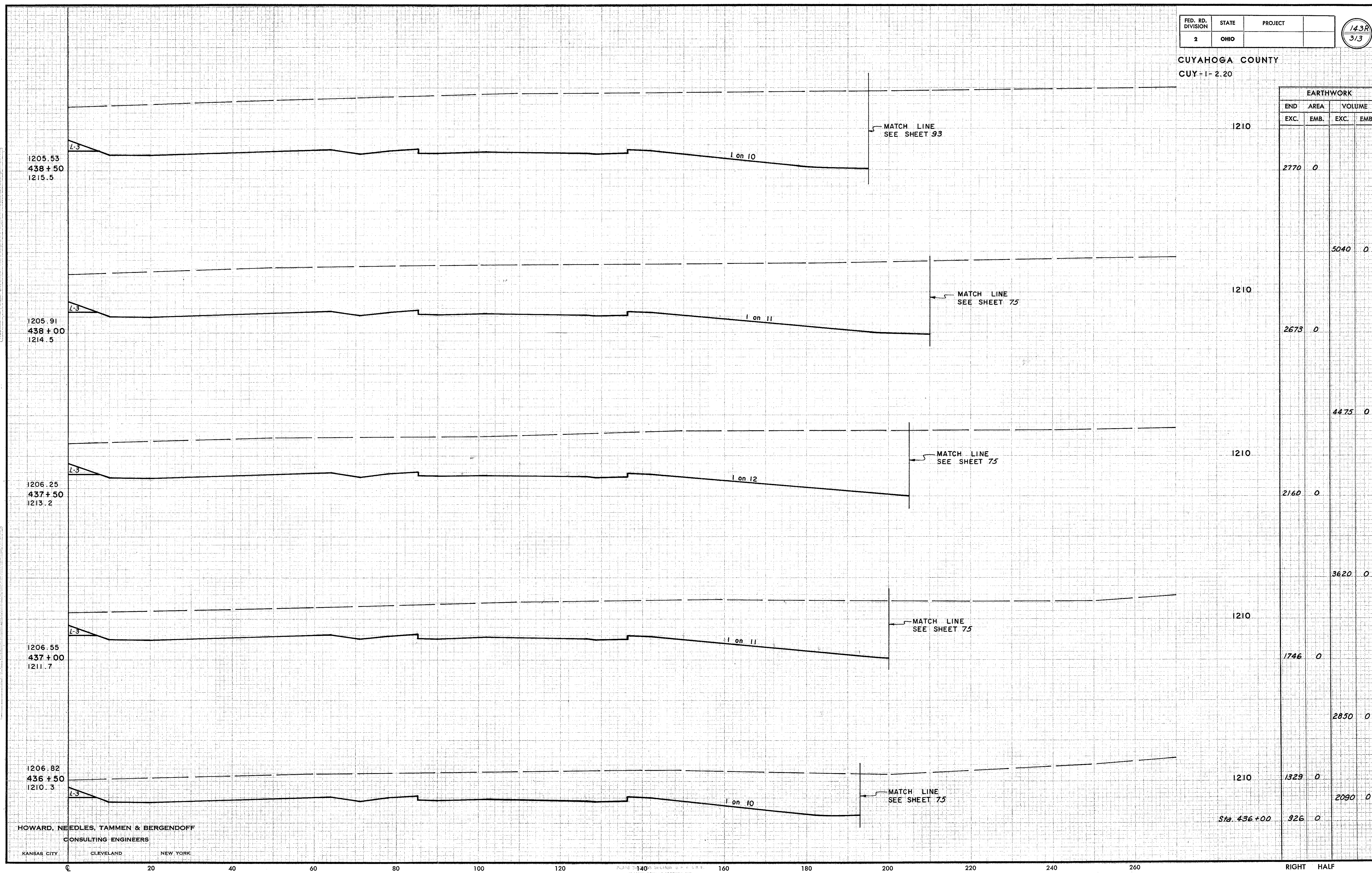
280 260 240 220 200 180 160 140 120 100 80 60 40 20

LEFT HALF STA. 436 + 50 TO STA. 438 + 50

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY TO SURVEY PLOTTED TO NOTE BOOK TEMPLATE NO. 5-24-41

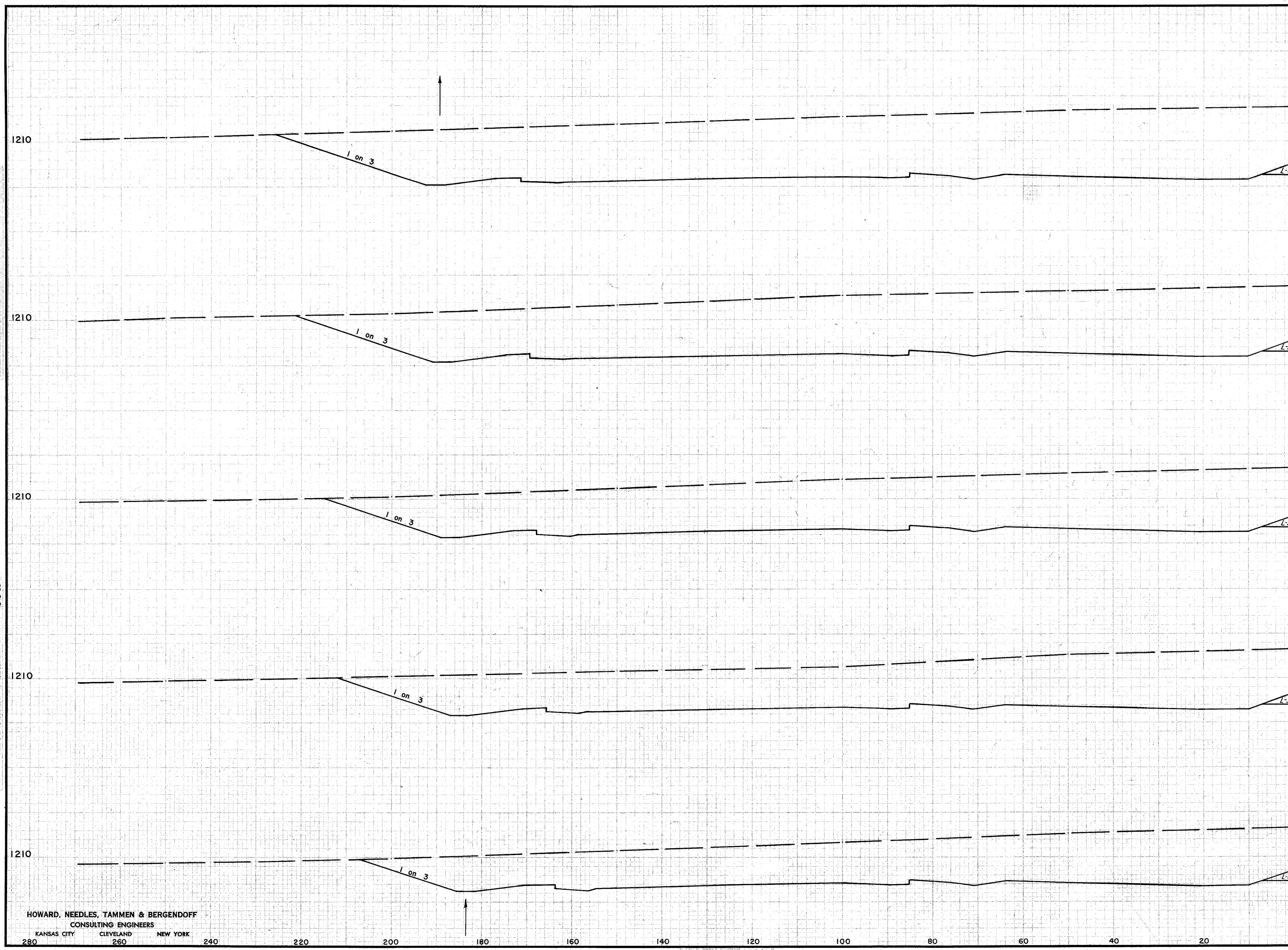
ORIGINAL SURVEY TO SURVEY PLOTTED TO NOTE BOOK TEMPLATE NO. 5-24-41
 PER 5-24-41, JAG 5-12-41
 PER 5-24-41, JAG 5-12-41
 PER 5-24-41, JAG 5-12-41
 JAG



EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
1210			
		2770	0
			5040
1210			
		2673	0
			4475
1210			
		2160	0
			3620
1210			
		1746	0
			2850
1210			
		1329	0
			2090
Sta. 436+00		326	0

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

CUYAHOGA COUNTY
CUY-1-2.20



STATION	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1203.35 441+00 1217.8			2778	0		
					4977	0
1203.79 440+50 1217.6			2593	0		
					4497	0
1204.23 440+00 1217.2			2263	0		
					3957	0
1204.67 439+50 1216.6			2015	0		
					3607	0
1205.11 439+00 1216.6			1877	0		
					3237	0
Sta 438+50			1618	0		

FINAL SURVEY PLOTTED
NOV 28 1958
REL

ORIGINAL SURVEY PLOTTED
NOV 28 1958
REL

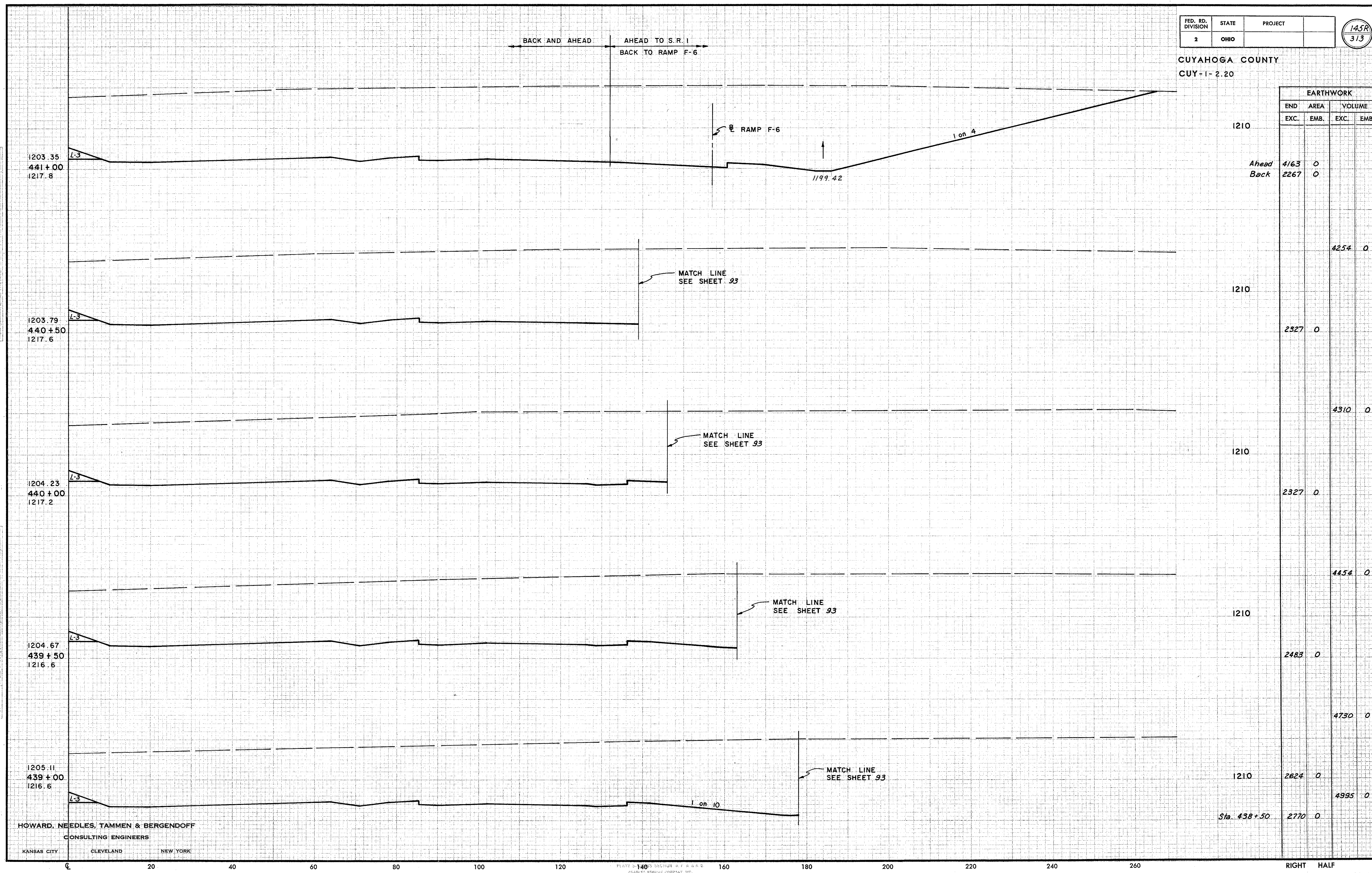
11/21/57
V. DD5
J. G. G.
REL

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

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY SUPERVISED BY DATE
 SURVEY PLOTTED BY
 CHECKED BY
 DATE

ORIGINAL SURVEY SUPERVISED BY DATE
 SURVEY PLOTTED BY
 CHECKED BY
 DATE



END STA.	AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1210				
Ahead	4163	0		
Back	2267	0		
			4254	0
1210				
	2327	0		
			4310	0
1210				
	2327	0		
			4454	0
1210				
	2483	0		
			4730	0
1210				
	2624	0		
			4995	0
Sta. 438+50	2770	0		

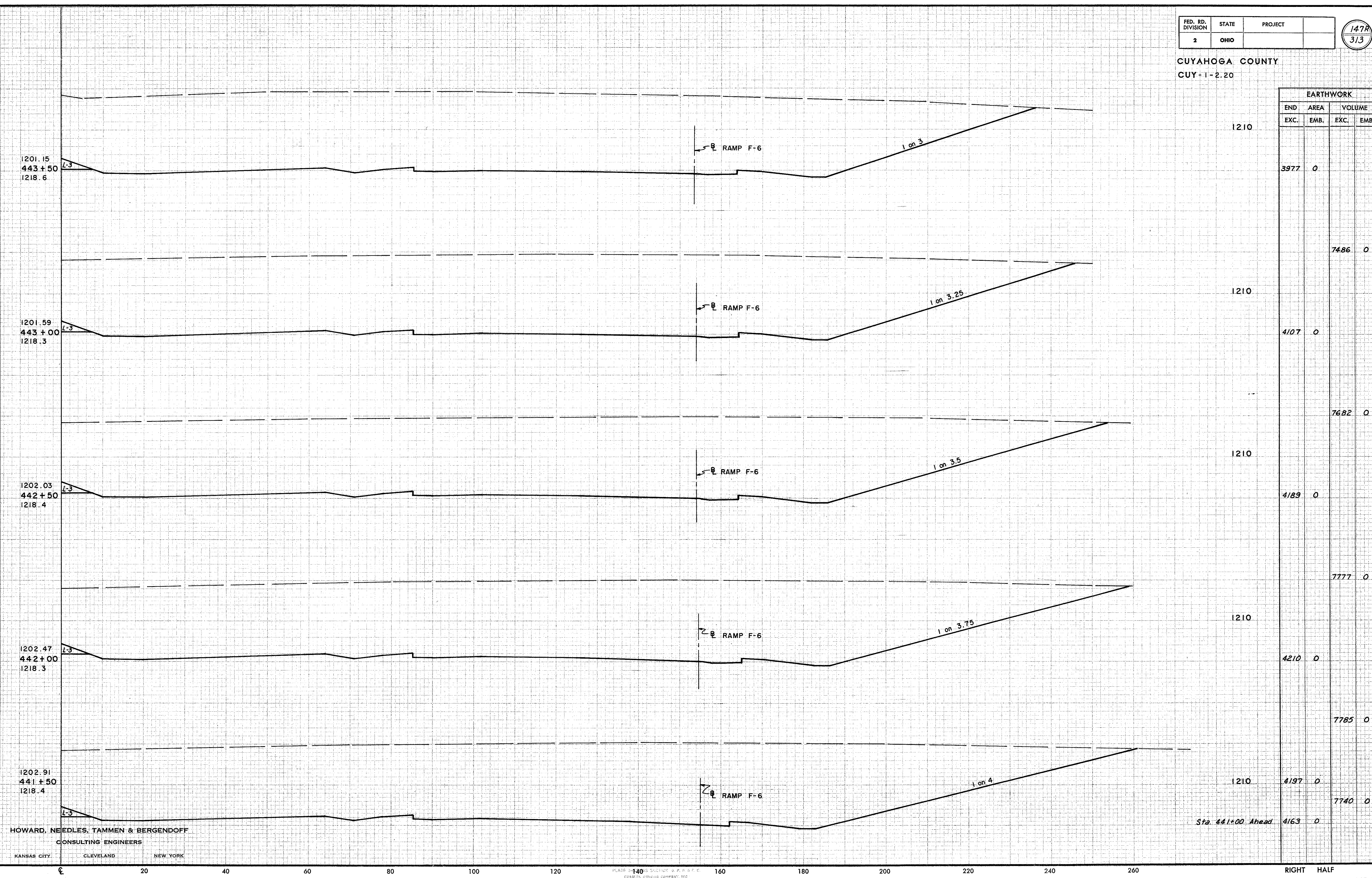
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

RIGHT HALF
STA. 439+00 TO STA. 441+00

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY PLOTTED
NO. 1201.15
DATE 5-22-61

ORIGINAL SURVEY PLOTTED
NO. 1202.91
DATE 5-22-61



EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
1210	3977	0	
		7486	0
1210	4107	0	
		7682	0
1210	4189	0	
		7777	0
1210	4210	0	
		7785	0
1210	4197	0	
		7740	0
Sta. 441+00 Ahead	4163	0	

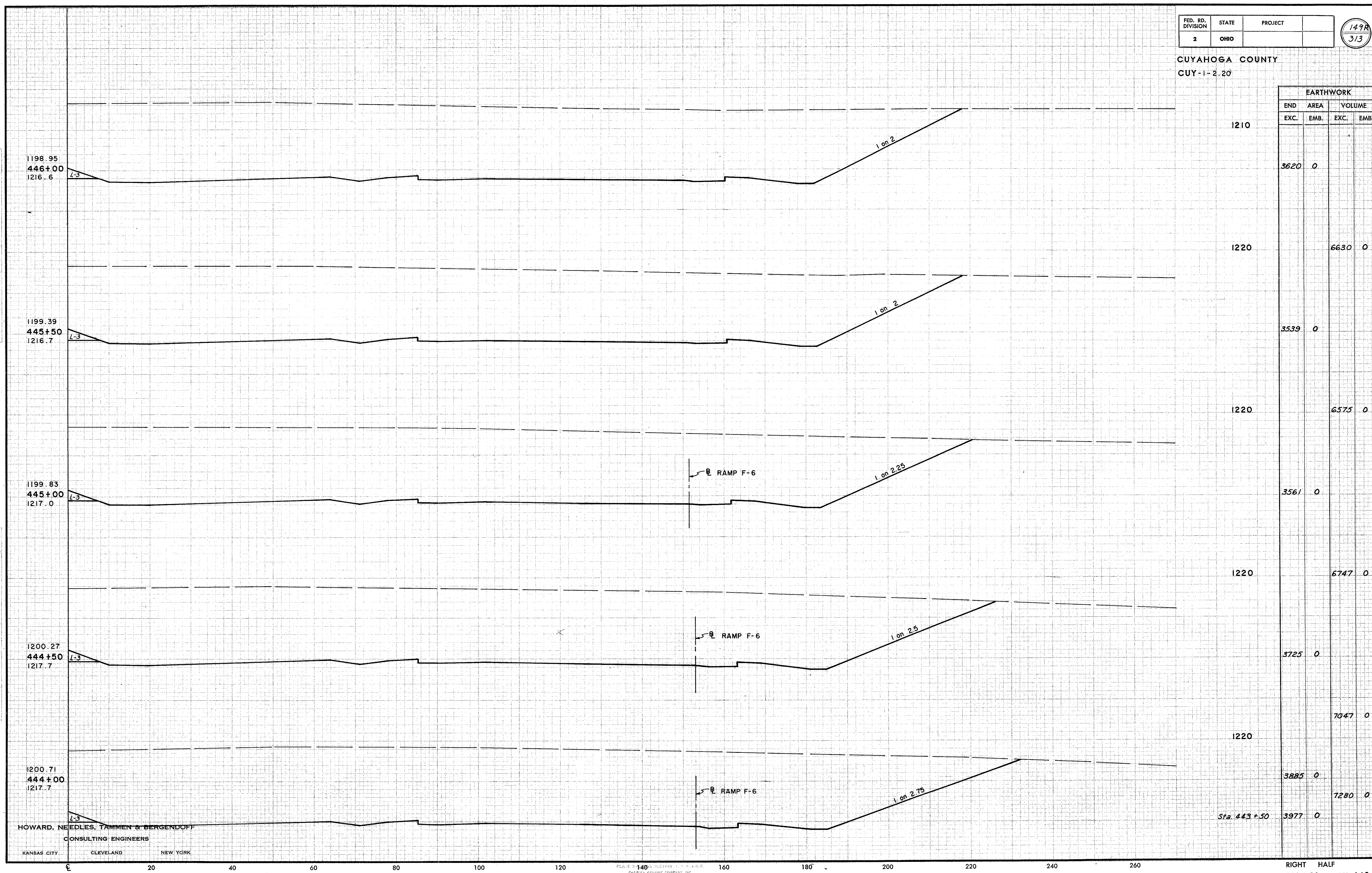
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY PLOTTED
NOTE BOOK NO. 1216.6

ORIGINAL SURVEY PLOTTED
NOTE BOOK NO. 1217.7

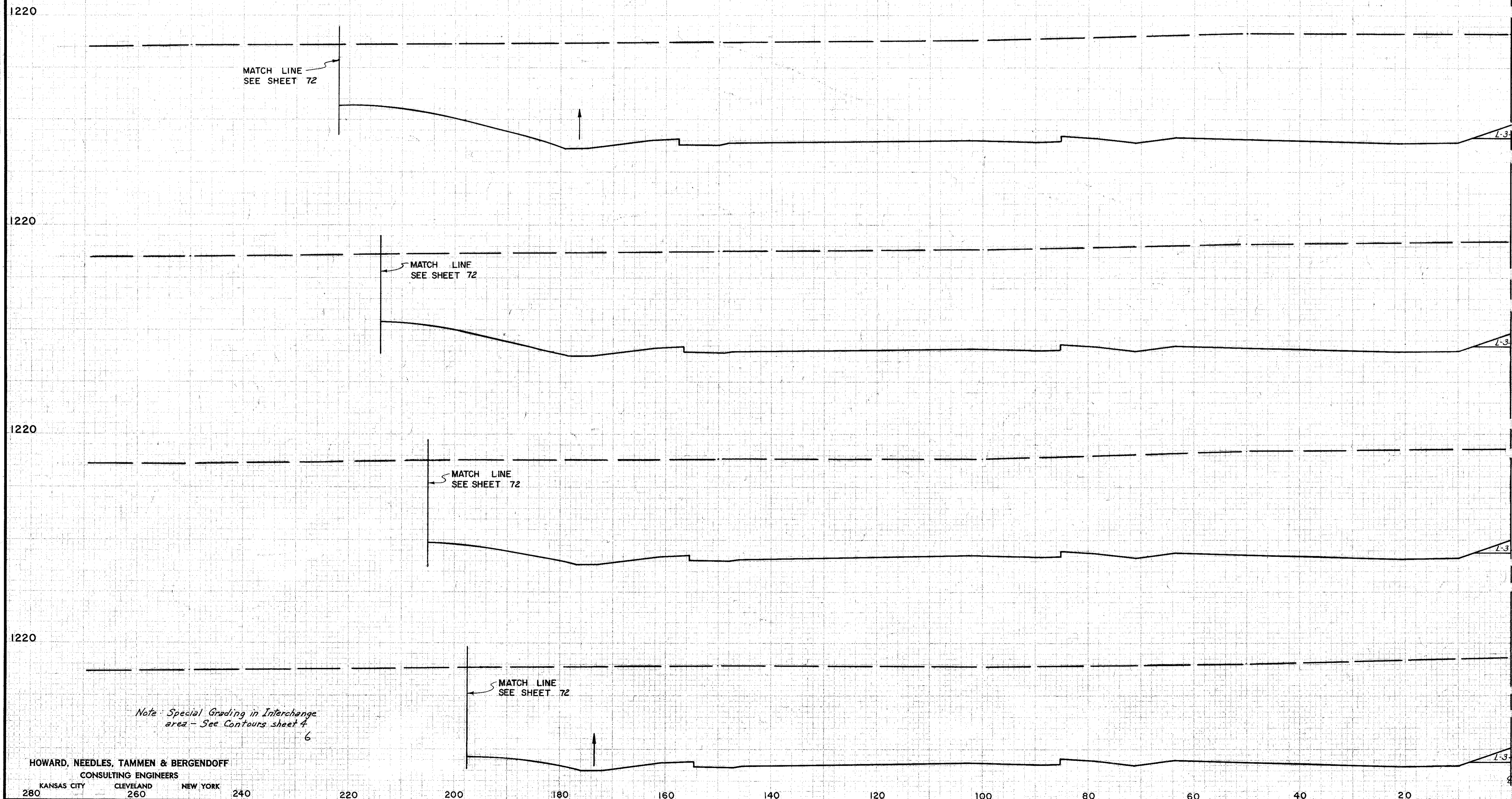
HOWARD, NEEDLES, TAMMEN & BERGENOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK



END STA.	AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1210	3620	0		
1220			6630	0
1220	3539	0		
1220			6575	0
1220	3561	0		
1220			6747	0
1220	3725	0		
1220			7047	0
1220	3885	0		
1220			7280	0
Sta. 443+50	3977	0		

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING		END AREA		CU. YDS.	
WIDTH	SQYD.	CUT	FILL	CUT	FILL



1197.19
448+00
1216.6

4172 0

1197.63
447+50
1217.0

4014 0

1198.07
447+00
1217.3

3867 0

1198.51
446+50
1217.5

3653 0

Sta. 446+00

3423 0

7577 0

7297 0

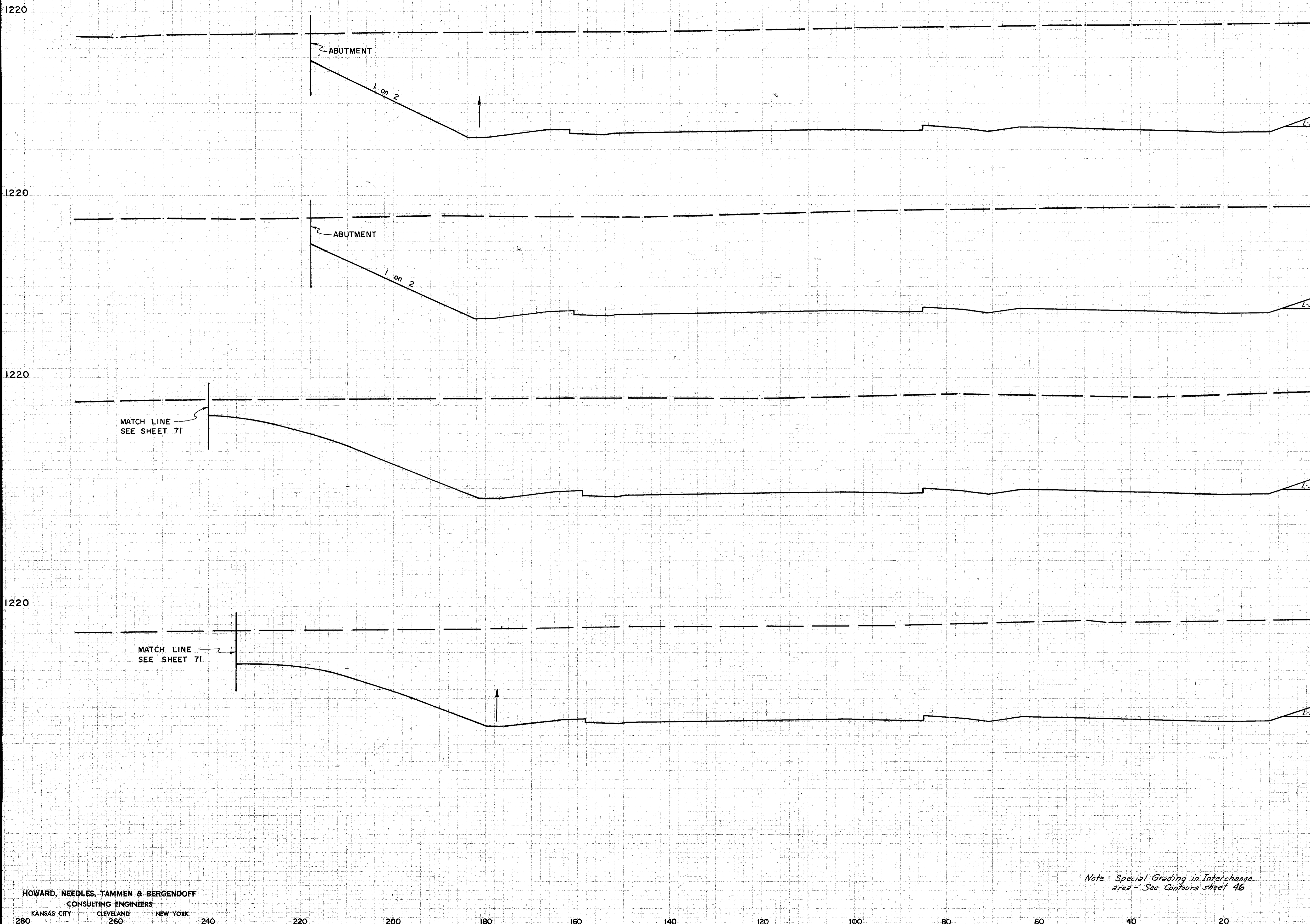
6537 0

PLAN
 SURVEY
 NOTES
 1-2-57
 2-10-58
 8-3-59

RHB
 WMM
 DUS
 JFG
 MK

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

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END AREA SQYD	CU. YDS.	
		CUT	FILL
		4590	0
			8417
		4506	0
			8277
		4442	0
			5665
		4352	0
			10293
		4172	0

1195.43
450+00
1217.6

1195.87
449+50
1217.8

1196.31
449+00
1217.0

1196.62
448+65.21
1216.8

Sta. 448+00

Note: Special Grading in Interchange area - See Contours sheet 46

CUYAHOGA COUNTY
CUY-1-2.20

EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.

FINAL SURVEY PLOTTED
NOTE BOOK NO. 1217.6

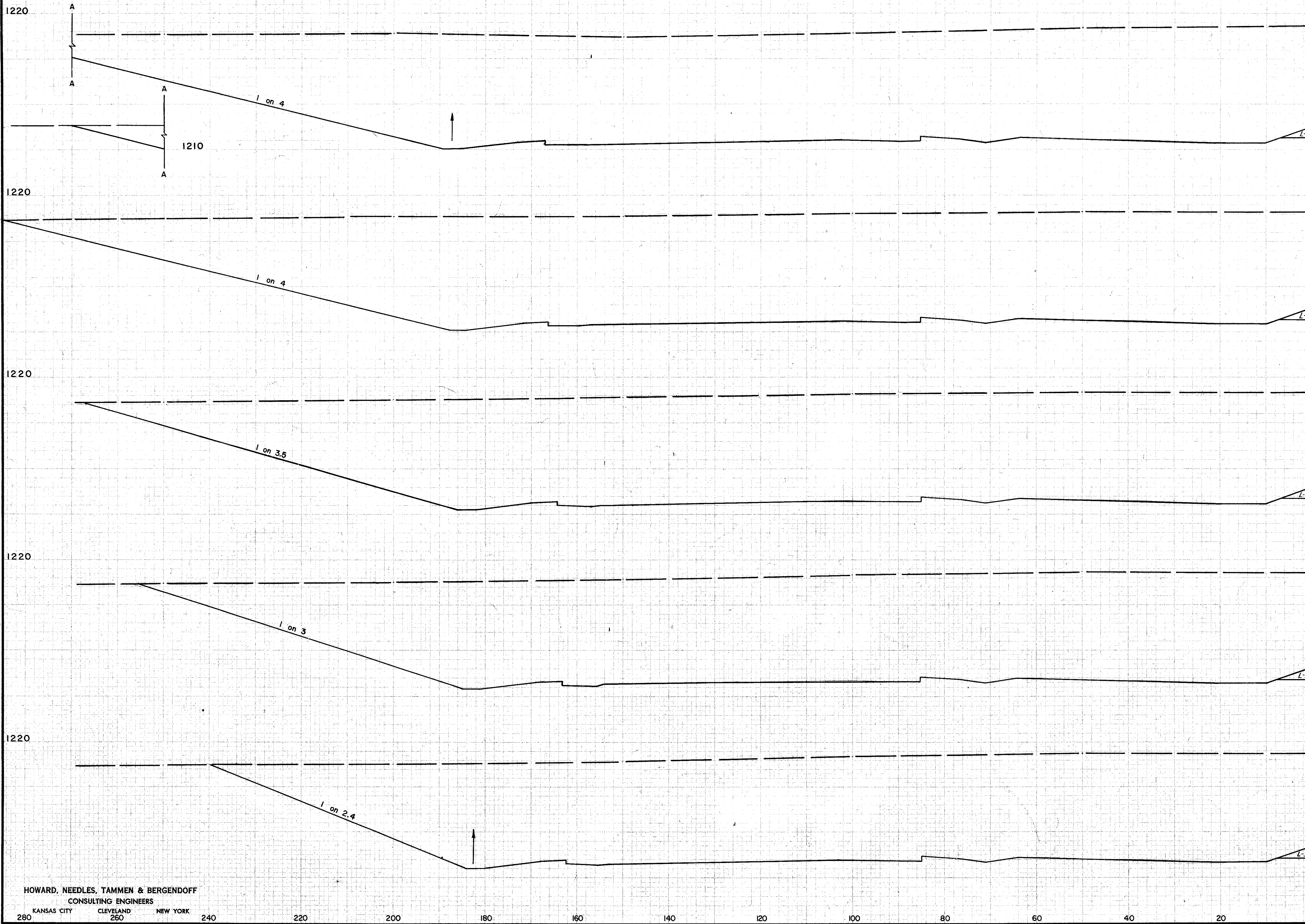
ORIGINAL SURVEY PLOTTED
NOTE BOOK NO. 1217.0



END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
1210	4792	0	
1220	4783	0	8866
1220	4627	0	8714
1220	4664	0	5986
Sta. 448+00	4105	0	10,589

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

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END AREA SQ.YD.	C.U.YDS.	
		CUT	FILL
	5822	0	0
	5685	0	10657
	5326	0	10195
	5112	0	9667
	4877	0	9247
	4590	0	8767

1193.23
452+50
1217.4

1193.67
452+00
1216.5

1194.11
451+50
1216.8

1194.55
451+00
1217.1

1194.99
450+50
1217.4

Sta 450+00

ORIGINAL SURVEY PLOTTED 11-22-57
SURVEY PLOTTED 12-04-58
PROJECTED 8-4-59

RHB
JCG
RFR

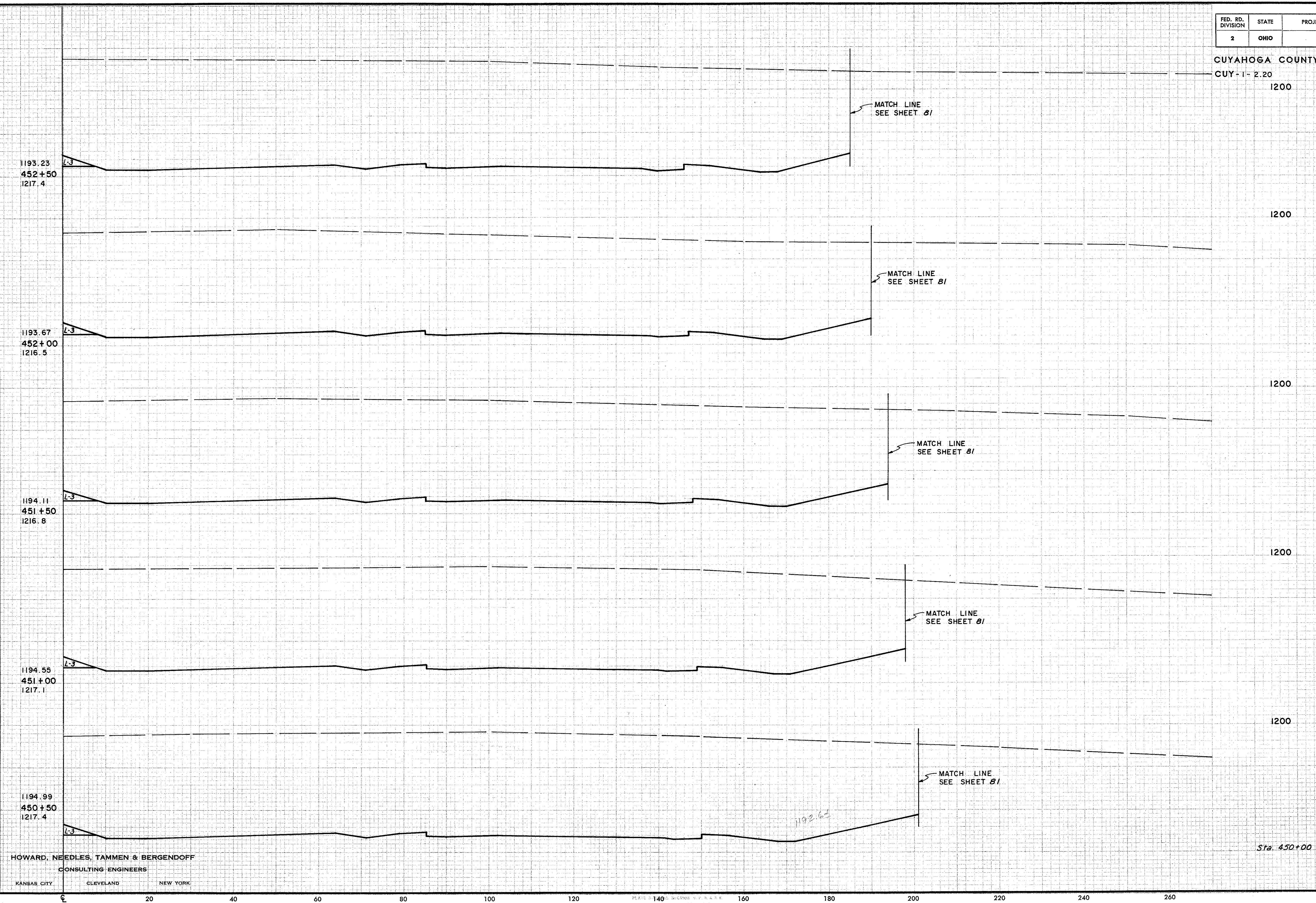
V WWH
V DDS

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

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY PLOTTING TEMPLATE
DATE: 5-28-61
BY: JAG

ORIGINAL SURVEY PLOTTING TEMPLATE
DATE: 5-28-61
BY: JAG



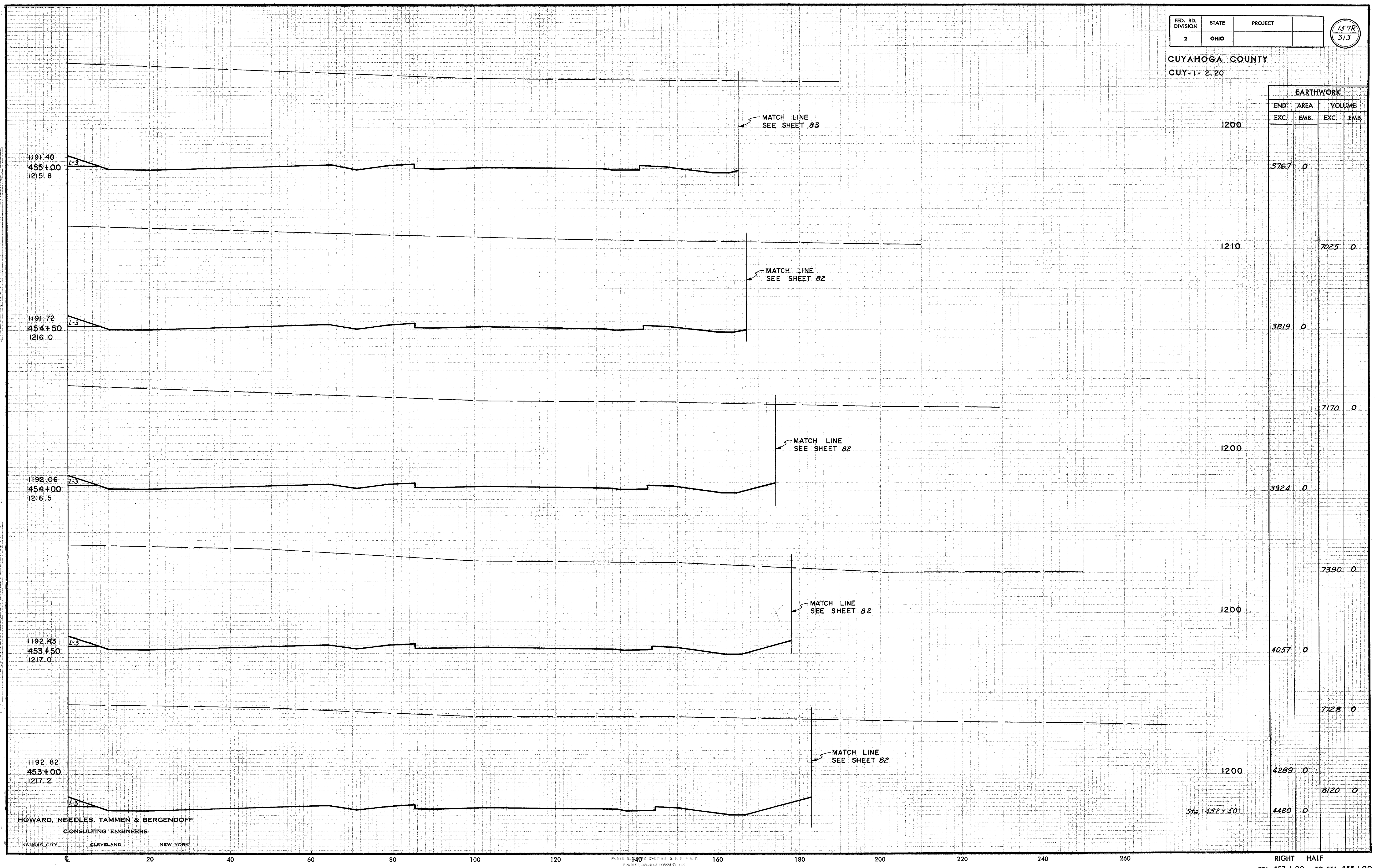
EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
		4480	0
		8220	0
		4399	0
		8240	0
		4499	0
		8438	0
		4613	0
		8632	0
		4709	0
		8798	0
Sta. 450+00		4792	0

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

CUYAHOGA COUNTY
CUY-1-2.20

DATE: _____
NO.: _____
FINAL SURVEY PLOTTED: _____
NOTE BOOK: _____
AREAS CHECKED: _____

DATE: _____
NO.: _____
ORIGINAL SURVEY PLOTTED: _____
NOTE BOOK: _____
AREAS CHECKED: _____

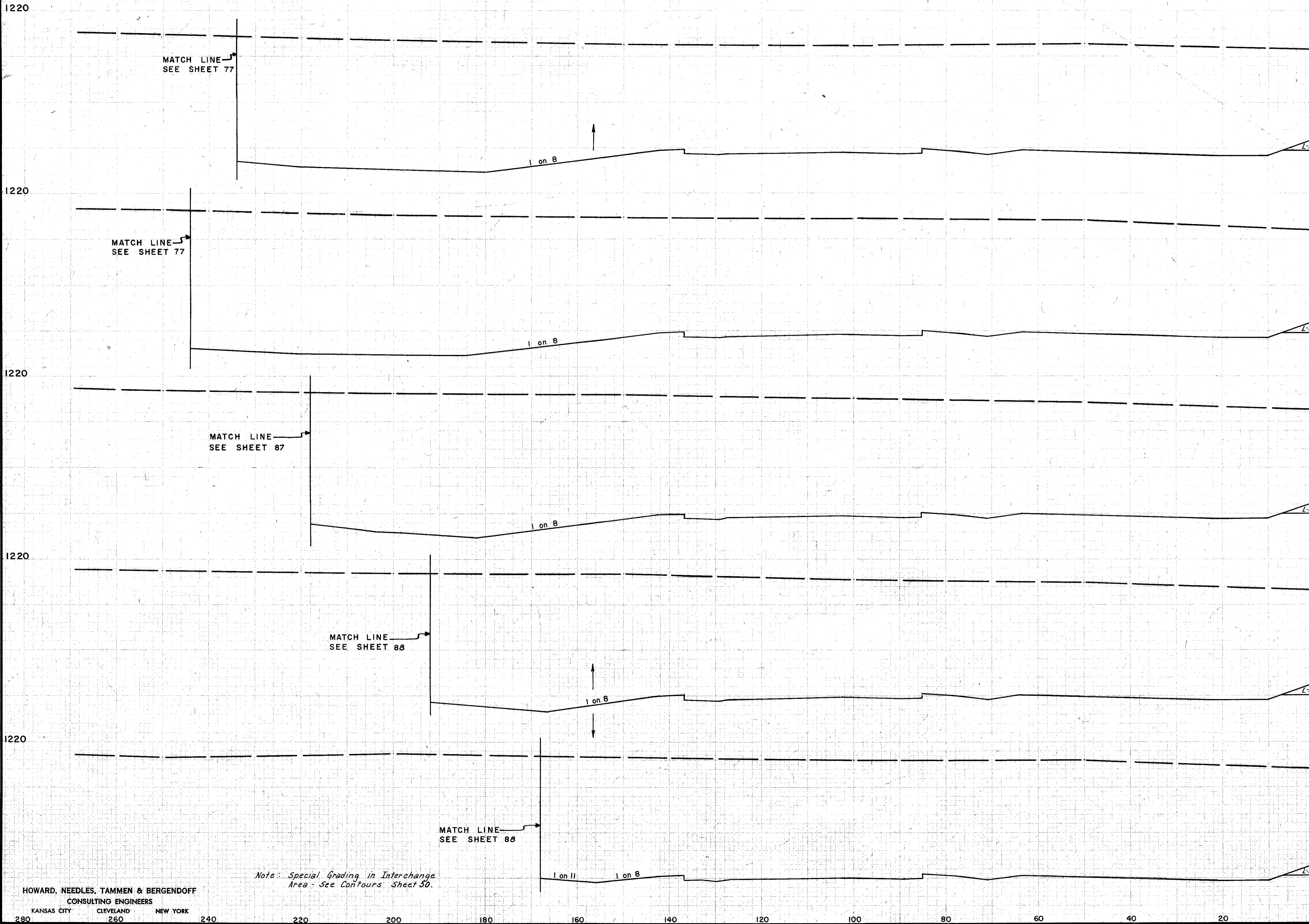


END	AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1200	3767	0		
1210			7025	0
	3819	0		
			7170	0
1200	3924	0		
			7390	0
1200	4057	0		
			7728	0
1200	4289	0		
			8120	0
Sta. 452+50	4480	0		

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

RIGHT HALF
STA. 453+00 TO STA. 455+00

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING		END AREA		CU. YDS.	
WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
			5861	0	
					11457
			6514	0	
					11365
			5761	0	
					9975
			5013	0	
					8661
			4341	0	
					7504
			3764	0	

1190.10
457+50
1211.6

1190.34
457+00
1212.0

1190.59
456+50
1212.6

1190.84
456+00
1213.2

1191.10
455+50
1214.1

Sta. 455+00

OFFICIAL
SURVEY
DATE
BY
CHK

11-26-37
11-26-37
11-26-37
11-26-37

RHB
VDD
JLG
RLK

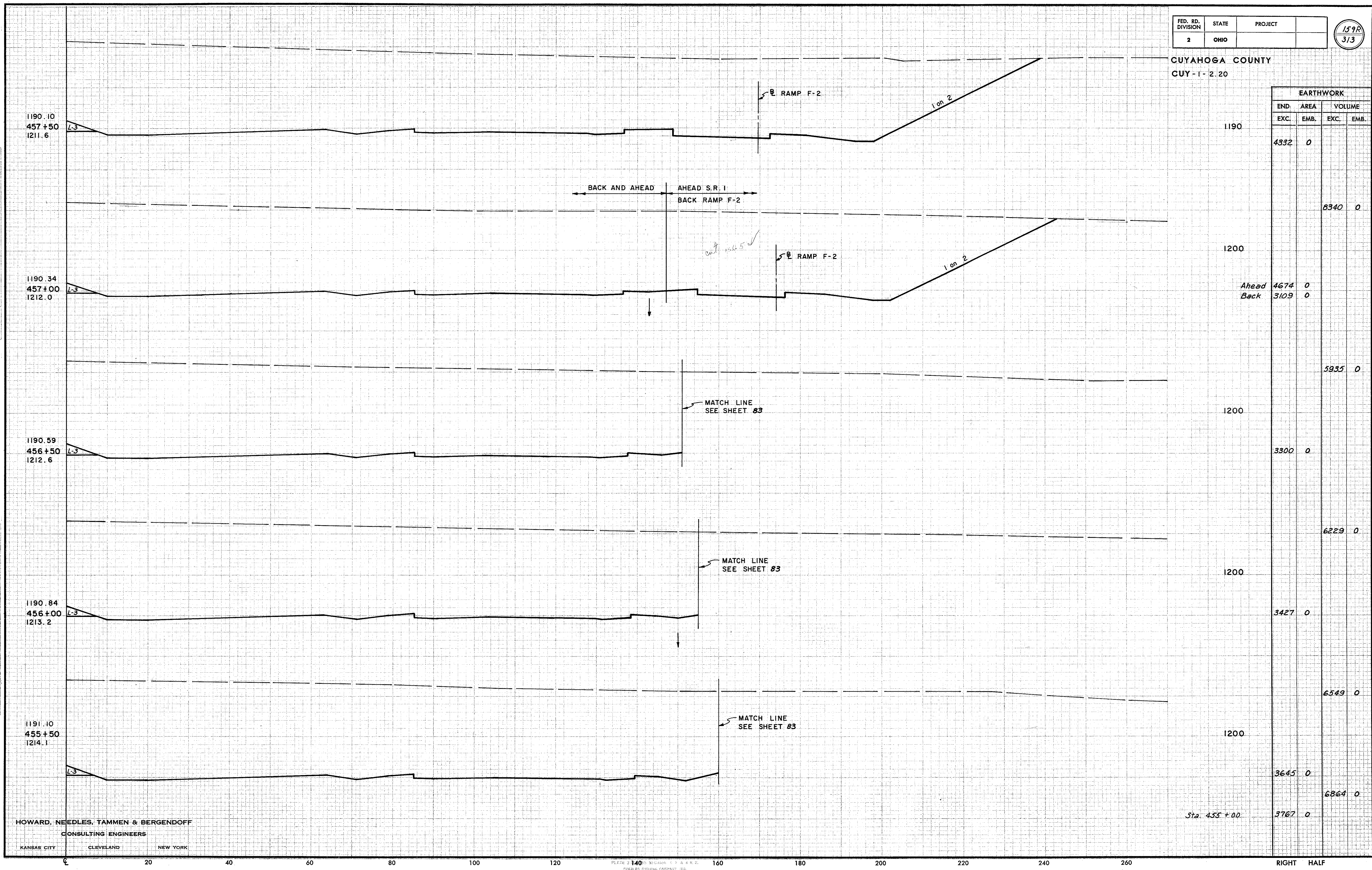
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

Note: Special Grading in Interchange Area - See Contours Sheet 50.

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY PLOTTED
NOTE BOOK AREAS CHECKED

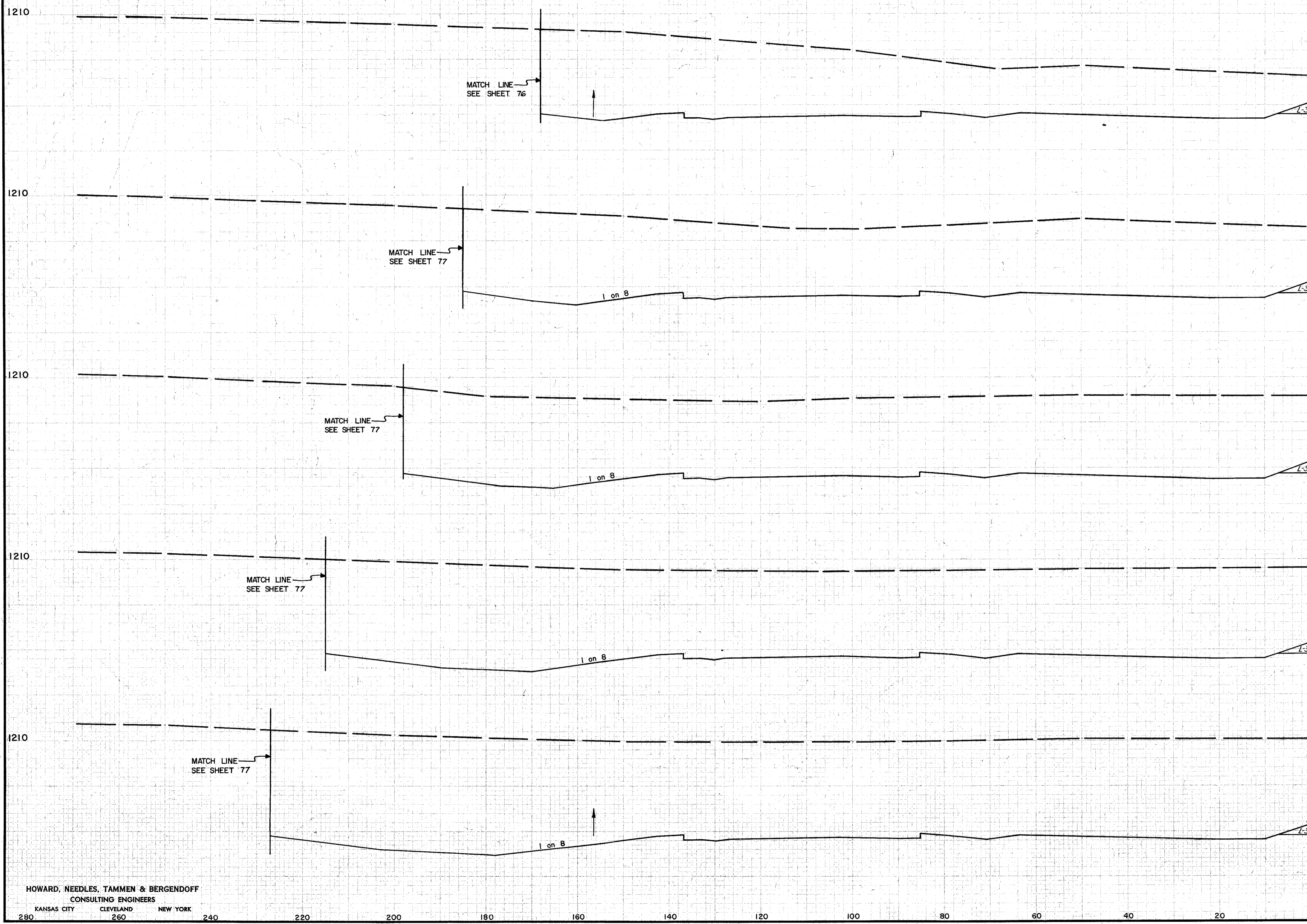
ORIGINAL SURVEY PLOTTED
NOTE BOOK AREAS CHECKED



END	AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1190	4332	0		
1200			8340	0
1200	Ahead 4674	0		
1200	Back 3109	0		
1200			5935	0
1200			6229	0
1200			6549	0
1200			6864	0
Sta 455+00			3767	0

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

CUYAHOGA COUNTY
CUY-1-2 20



SEEDING WIDTH	END SQYD	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		2247	0		
				4865	0
		3008	0		
				6037	0
		3512	0		
				7247	0
		4316	0		
				8735	0
		5118	0		
				10165	0
		5861	0		

1188.87
460+00
1196.4

1189.12
459+50
1203.0

1189.36
459+00
1205.9

1189.61
458+50
1208.3

1189.85
458+00
1210.3

Sta. 457+50

1188.87
1189.12
1189.36
1189.61
1189.85
 1228-97
1228-98
7-23-59
8-5-59
 P.H.B.
W.M.H.
D.O.S.
J.R.G.
H.E.K.

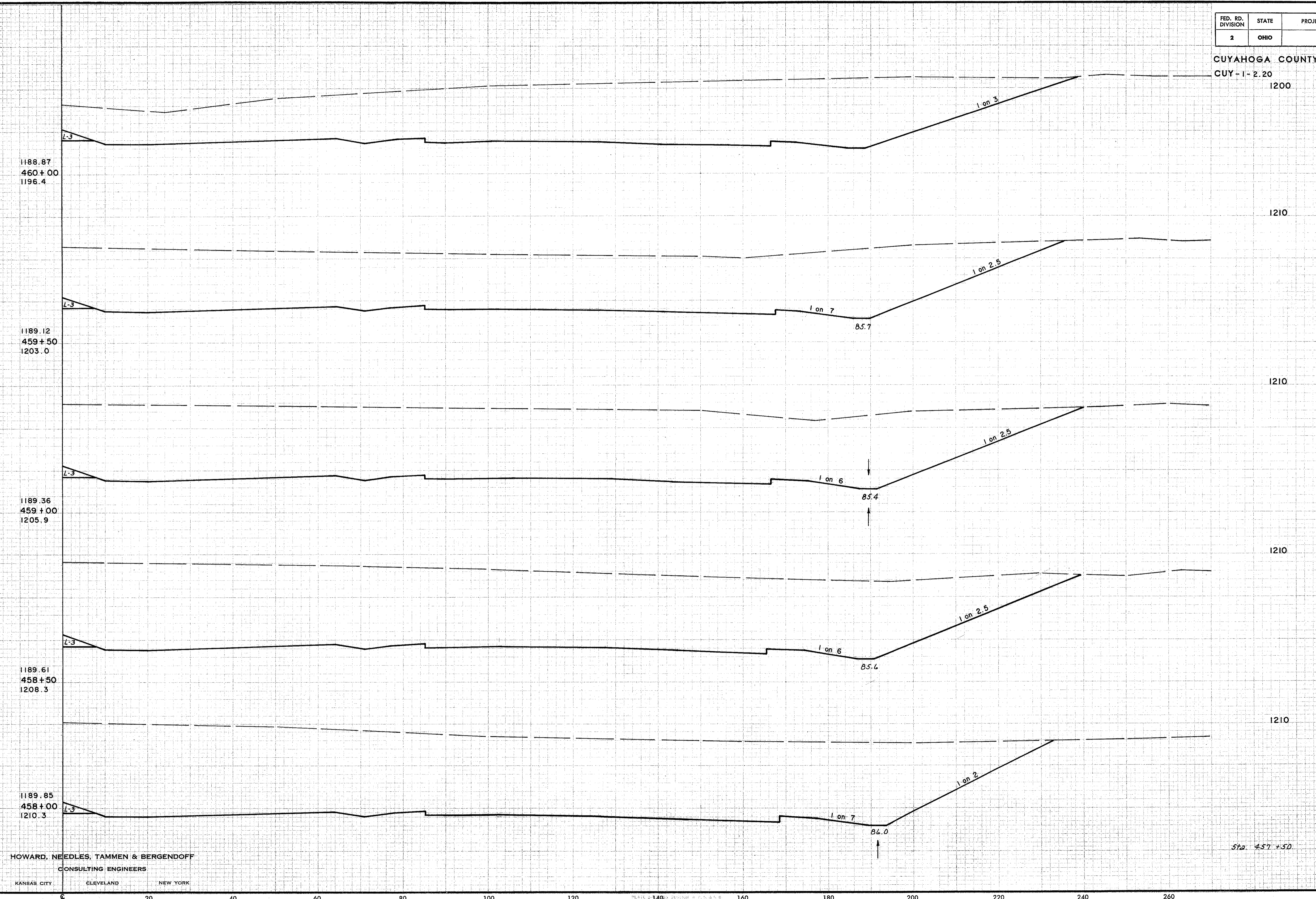
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

161R
313

CUYAHOGA COUNTY
CUY-1-2.20

DATE: _____
BY: _____
CHECKED: _____
SURVEY: _____
NOTE BOOK: _____
AREA SHEETS: _____

DATE: _____
BY: _____
CHECKED: _____
SURVEY: _____
NOTE BOOK: _____
AREA SHEETS: _____

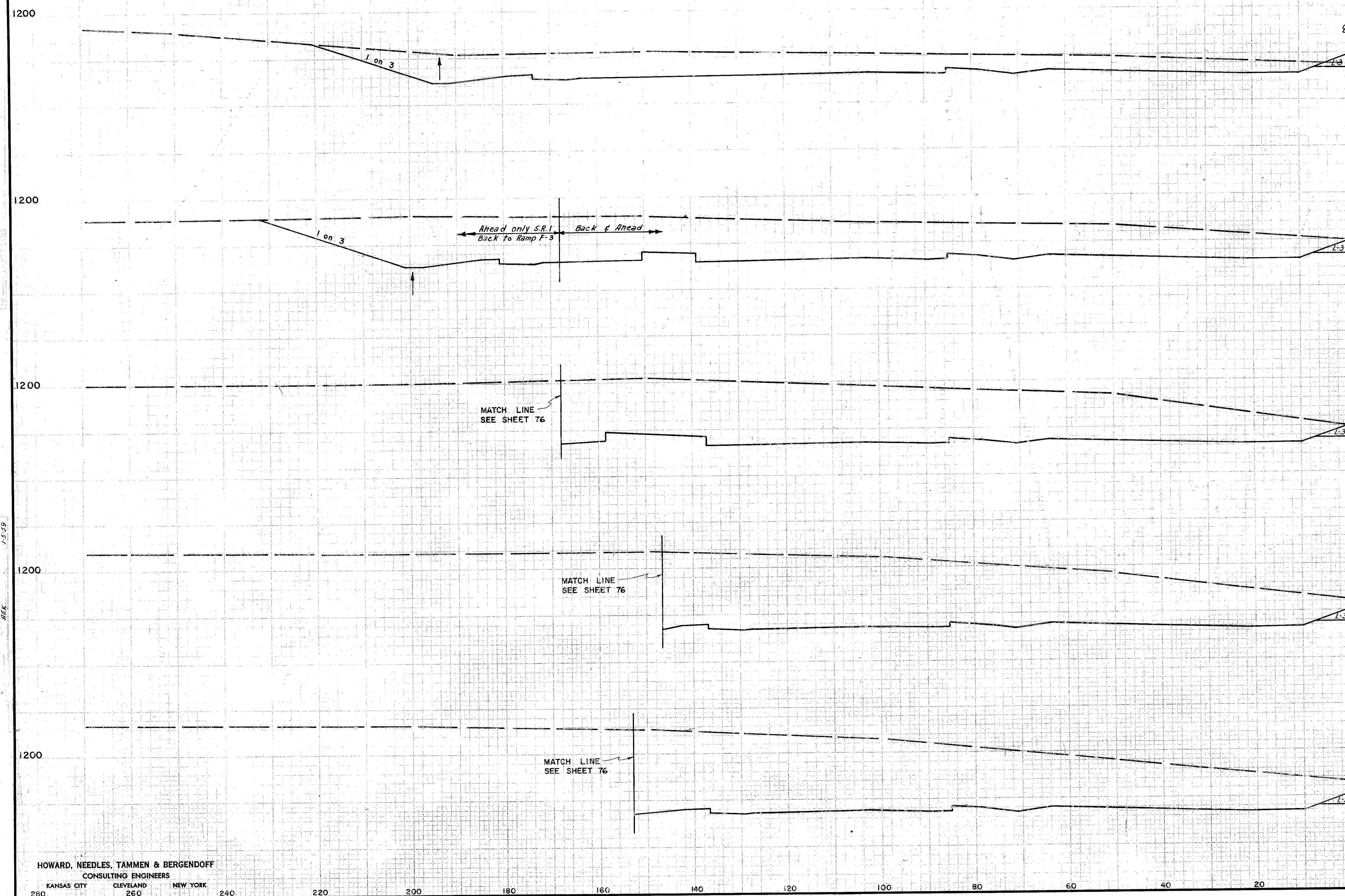


EARTHWORK			
END	AREA	VOLUME	
EXC.	EMB.	EXC.	EMB.
458+00	4332.0		
458+50	3942.0		
459+00	3631.0		
459+50	3001.0		
460+00	2702.0		
		7841.0	
		7480.0	
		6141.0	
		5281.0	
		4136.0	
		7013.0	
		3631.0	
		6141.0	
		3001.0	
		5281.0	
		2702.0	

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

RIGHT HALF
STA. 458+00 TO STA. 460+00

CUYAHOGA COUNTY
 CUY-1-2.20



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			621	4
				2136
			1717	0
			1217	
				2867
			1877	0
				3837
			2267	0
				4337
			2417	0
				4318
			2247	0

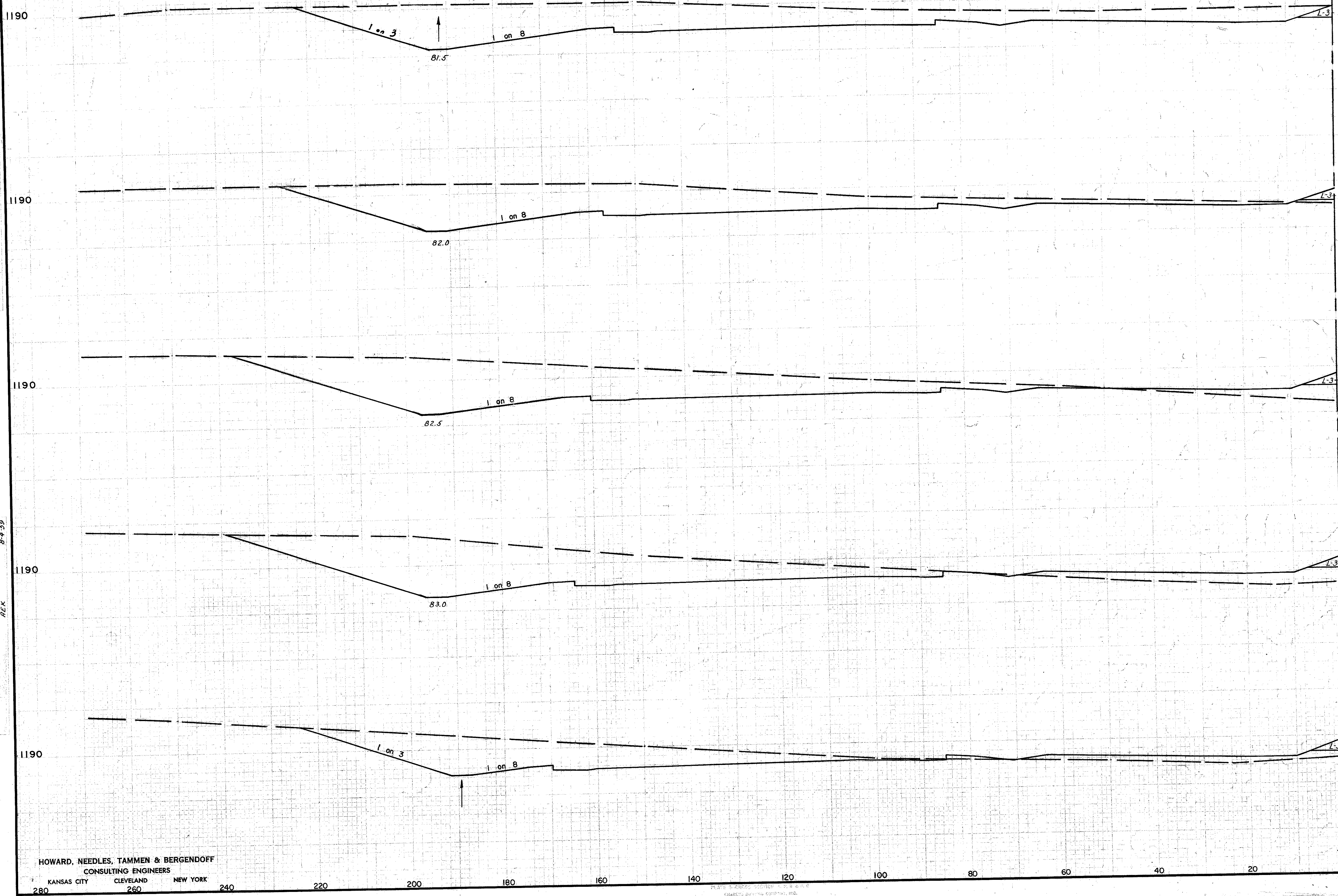
RCB
 V.M.H.
 V.D.S.
 R.C.
 R.E.K.

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

280 260 240 220 200 180 160 140 120 100 80 60 40 20

LEFT HALF STA. 460 +50 TO STA. 462 +50

CUYAHOGA COUNTY
CUY-1-2.2.0



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			886	0
				1584 17.3
			820	13
				1584 85
			891	80
				1605 209
			841	14.5
				1250 223
			509	96
				1044 92
			621	4

1186.42
465+00
1188.0

1186.67
464+50
1185.2

1186.91
464+00
1182.4

1187.16
463+50
1183.3

1187.40
463+00
1185.5

Sta. 462+50

1/27/57
12-5-58
7-23-59
8-4-59
RUB
V. W. M. H.
R. C. D. S.
J. R. G.
R. E. K.

01-5

S-10

CUY-274-6.80

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

165
313

CUYAHOGA COUNTY
CUY-1-2.20

1186.42
465+00
1188.0

1186.67
464+50
1185.2

1186.91
464+00
1182.4

1187.16
463+50
1183.3

1187.40
463+00
1185.5

1190

1190

1190

1190

1190

SEEDING WIDTH	END AREA SQYD.	CU. YDS.	
		CUT	FILL
	167	484	
		309	800
	165	378	
		326	762
	187	444	
		465	498
	315	91	
		905	106
	661	22	
		1450	24
	904	4	

83.76

1 on 4

1 on 4

1 on 4

84.5

84.75

1 on 4

Sta. 462+50

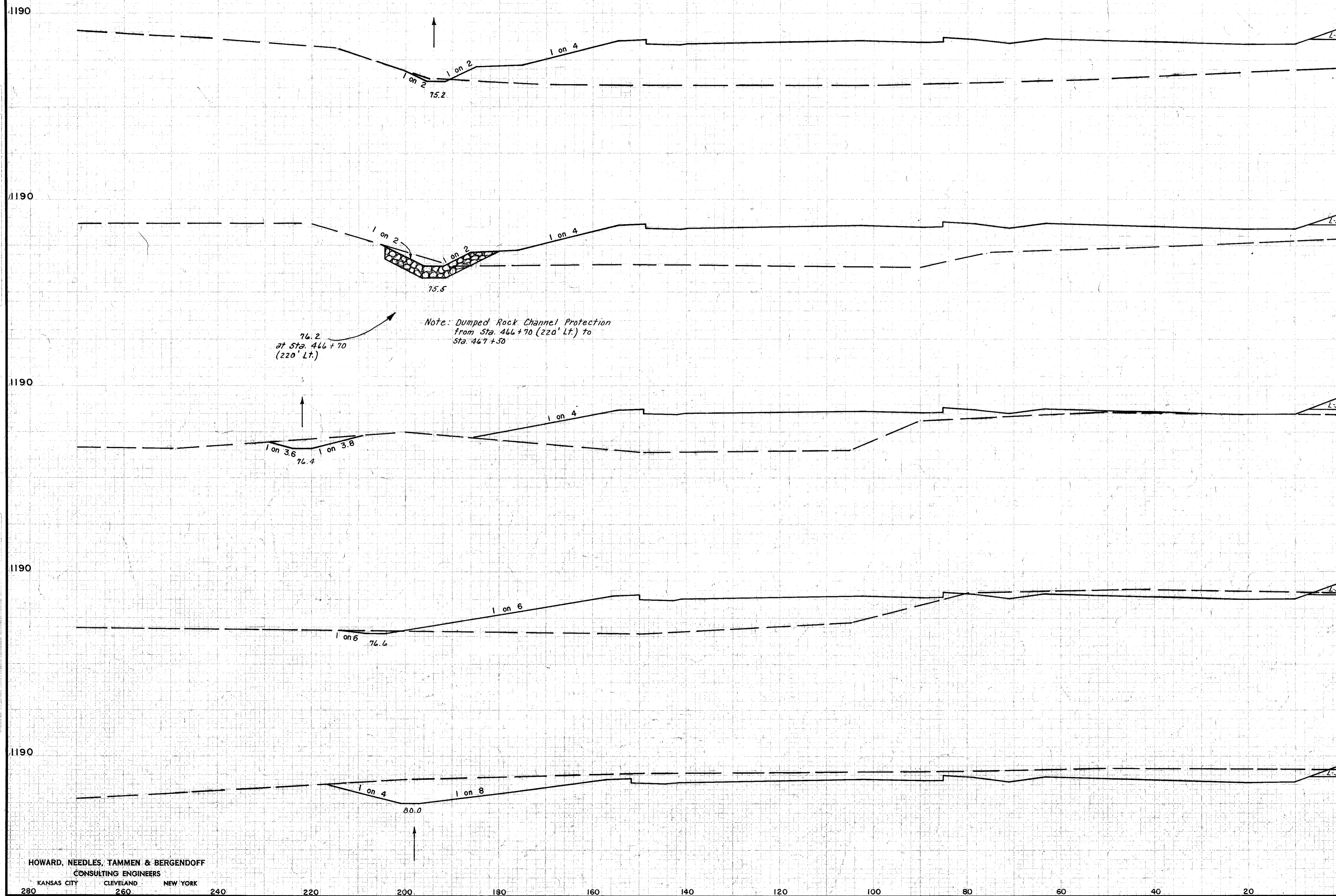
REVISIONS
DATE
BY
CHK
APP
11-27-57
MWH
5-29-58
JHG
7-29-59
MEK

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

40 60 80 100 120 140 160 180 200 220 240 260 280

RIGHT HALF STA. 463+00 TO STA. 465+00

CUYAHOGA COUNTY
CUY-1-2.20



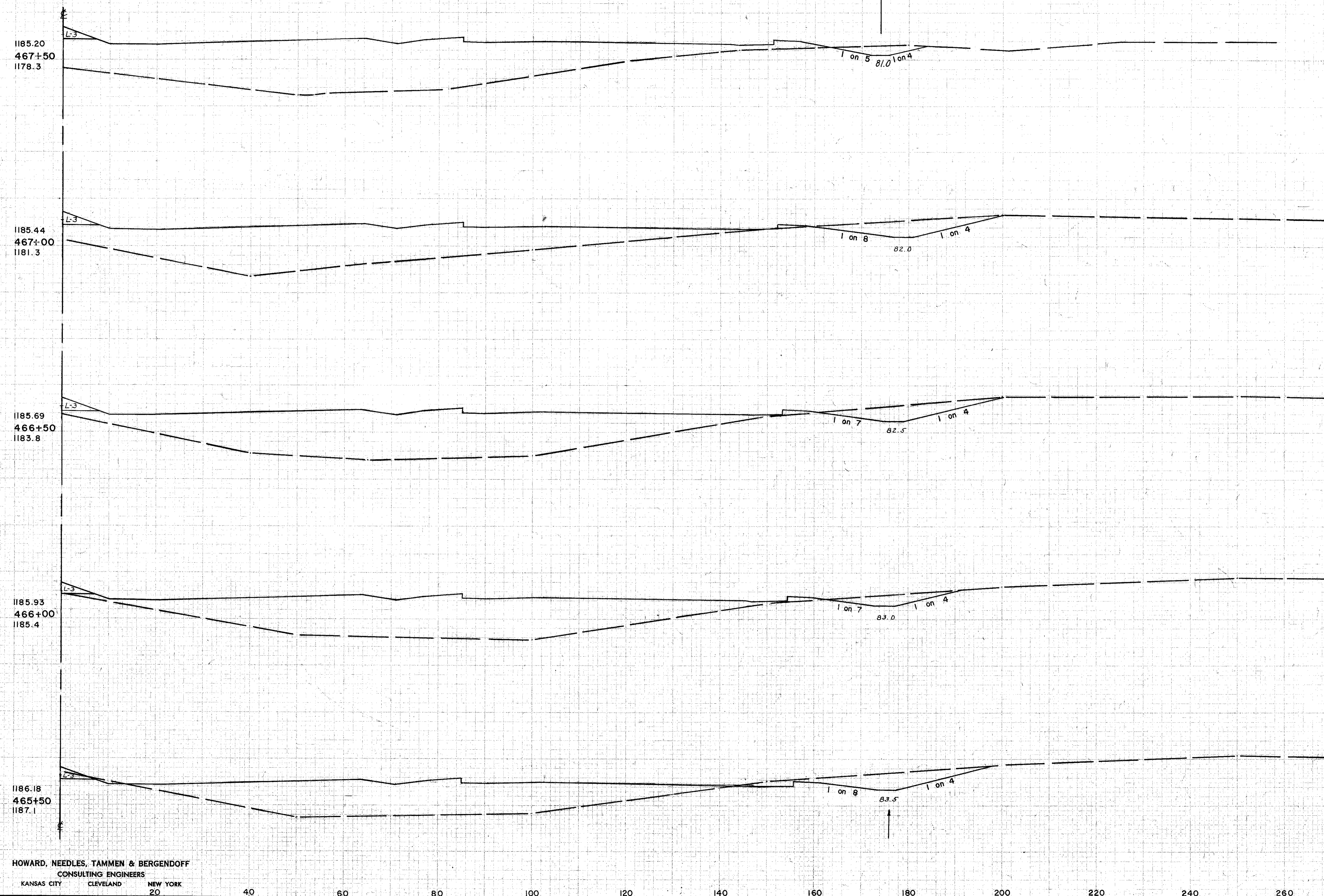
Note: Dumped Rock Channel Protection
from Sta. 466+70 (220' Lt.) to
Sta. 467+30

76.2
at Sta. 466+70
(220' Lt.)

SEEDING WIDTH	END AREA SQ.YD.	CUT		FILL		CU.YDS.
		CUT	FILL	CUT	FILL	
	1185.20 467+50 1178.3		5	1487		18 2433
	1185.44 467+00 1181.3		14	1143		48 1730
	1185.69 466+50 1183.8		38	724		126 1237
	1185.93 466+00 1185.4		101	614		541 569
	1186.18 465+50 1187.1		484	1		1268 1
	Sta 465+00		886	0		

11-27-57
 6-2-58
 8-2-59
 RHB
 YMMH
 VODS
 JHG
 REK

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	SQYD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		27	1236		
				102	1943
		83	861		
				145	1740
		74	1019		
				107	1760
		41	880		
				135	1418
		102	651		
				249	1051
		167	484		

ORIGINAL SURVEY PLANS
 11-27-37
 1-13-38
 8-1-39
 8-1-39

RHB
 VMMH
 JCG
 JEK

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

Sta. 465+00

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

169
313

CUYAHOGA COUNTY
CUY-1-2.20

1180

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
		22	2351	
				44 3943
		25	1899	
				44 3475
		23	1854	
				68 3153
		50	1444	
				58 2763
		13	1538	
				37 2573
		27	1236	

1183.97
470+00
1169.8

1184.22
469+50
1169.5

1184.46
469+00
1170.3

1184.71
468+50
1171.3

1184.95
468+00
1175.4

1 on 4
75.0 1 on 4

1 on 4
76.5 1 on 4

1 on 4
77.5 1 on 4

1 on 4
79.0 1 on 3

1 on 4
79.5 1 on 4

FINAL SURVEY
SURVEY
NOTES
DATE
BY

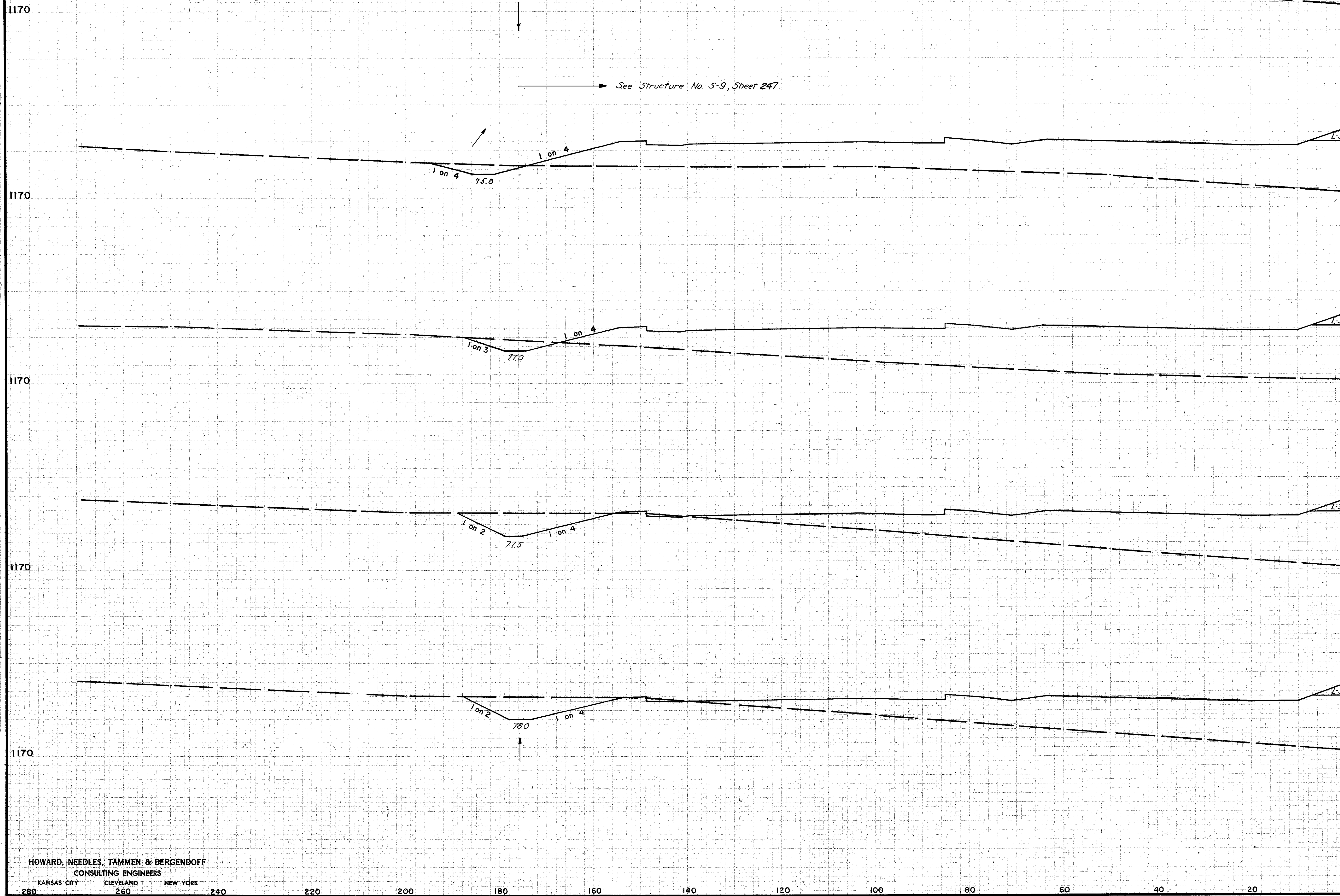
ORIGINAL
SURVEY
NOTES
DATE
BY

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

Sta. 467+00

RIGHT HALF STA. 468+00 TO STA. 470+00.

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		57	875	76	1816
		25	1085	49	2208
		28	1305	113	2008
		94	861	173	1568
		93	830	149	1853
		68	1167		

DATE: 11-27-50
BY: J.W.H.
CHECKED: J.W.H.
DATE: 6-2-50
BY: J.W.H.
CHECKED: J.W.H.

DATE: 11-27-50
BY: J.W.H.
CHECKED: J.W.H.
DATE: 6-2-50
BY: J.W.H.
CHECKED: J.W.H.

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

280 260 240 220 200 180 160 140 120 100 80 60 40 20

LEFT HALF STA. 470 + 50 TO STA. 472 + 50

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

171
313

CUYAHOGA COUNTY
CUY-1-2.20

1170

SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		22	2465		
				44	4563
		26	2459		
				43	4620
		20	2531		
				87	4670
		74	2510		
				174	4573
		14	2425		
				161	4423
		60	2351		

1182.75
472+50
1171.8

1182.99
472+00
1171.3

1183.24
471+50
1170.7

1183.48
471+00
1170.6

1183.73
470+50
1171.2

See Structure No S-9, Sheet 247.

See Structure No S-8, Sheet 246.

Sta. 470+00

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

40 60 80 100 120 140 160 180 200 220 240 260 280

RIGHT HALF STA. 470 + 50 TO STA. 472 + 50

ORIGINAL SURVEY
 SURVEY PLOTTED
 DATE 7-12-50
 BY RHB YMMH VDD
 CHECKED JFB REK
 1183.73
 470+50
 1171.2

CUYAHOGA COUNTY
CUY-1-2.20

1170

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
	0	1573		
			0	2928
	0	1588		
			0	2833
	0	1463		
			9	2973
	10	1748		
			26	3740
	18	2287		
			37	4400
	22	2465		

1181.52
475+00
1173.6

1181.77
474+50
1175.4

1182.01
474+00
1176.0

1182.26
473+50
1175.0

1182.50
473+00
1173.5

1 on 2

1 on 2

1 on 2

1 on 2

1 on 2

59.8

60.5

To Existing Channel
Sta. 473+90
275' Rt.
Elev. 1159.2

Sta. 472+50

ORIGINAL SURVEY
SURVEY PLANS
NOTED ON
DATE
BY
RC

ORIGINAL SURVEY
SURVEY PLANS
NOTED ON
DATE
BY
RC

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

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
	477+50 1172.8	42	789		
				84	1427
	477+00 1174.2	49	751		
				92	1401
	476+50 1173.2	51	760		
				83	1456
	476+00 1172.4	39	810		
				55	1493
	475+50 1172.4	21	802		
				36	1313
	Sta. 475+00	18	616		

FINAL
 10-20-38
 10-20-38
 6-8-39
 8-5-39
 RLB
 JTB
 HEK

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

175
313

CUYAHOGA COUNTY
CUY-1-2.20

1180.30
477+50
1172.8

1180.54
477+00
1174.2

1180.79
476+50
1173.2

1181.03
476+00
1172.4

1181.28
475+50
1172.4

1170

1170

1170

1170

1170

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
0	0	1059		
			0	2063
0	0	1165		
			0	2283
0	0	1296		
			0	2443
0	0	1344		
			0	2588
0	0	1453		
			0	2803
0	0	1513		

Sta. 475+00

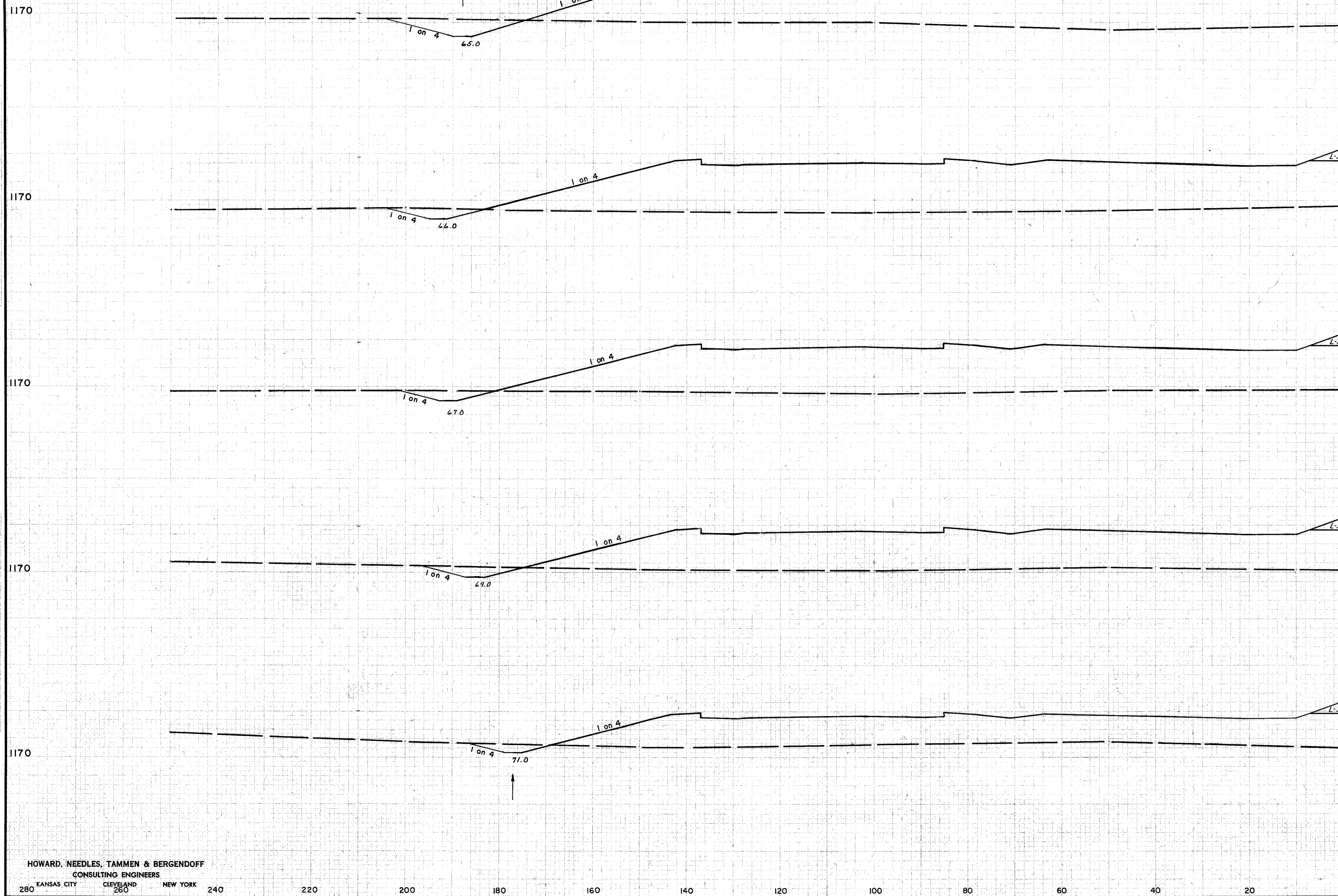
APPROVAL: [Signature] DATE: 11-29-51
 SURVEY: [Signature] DATE: 12-31-50
 CHECKED: [Signature] DATE: 12-31-50
 RHB, VMMH, VDDS, VES, RC

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

40 60 80 100 120 140 160 180 200 220 240 260 280

RIGHT HALF STA. 475+50 TO STA. 477+50

CUYAHOGA COUNTY
CUY-1-2 20



SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		63	1650		
				84	3093
		28	1688		
				50	2988
		26	1541		
				49	2623
		27	1295		
				46	2118
		23	995		
				60	1653
		42	789		

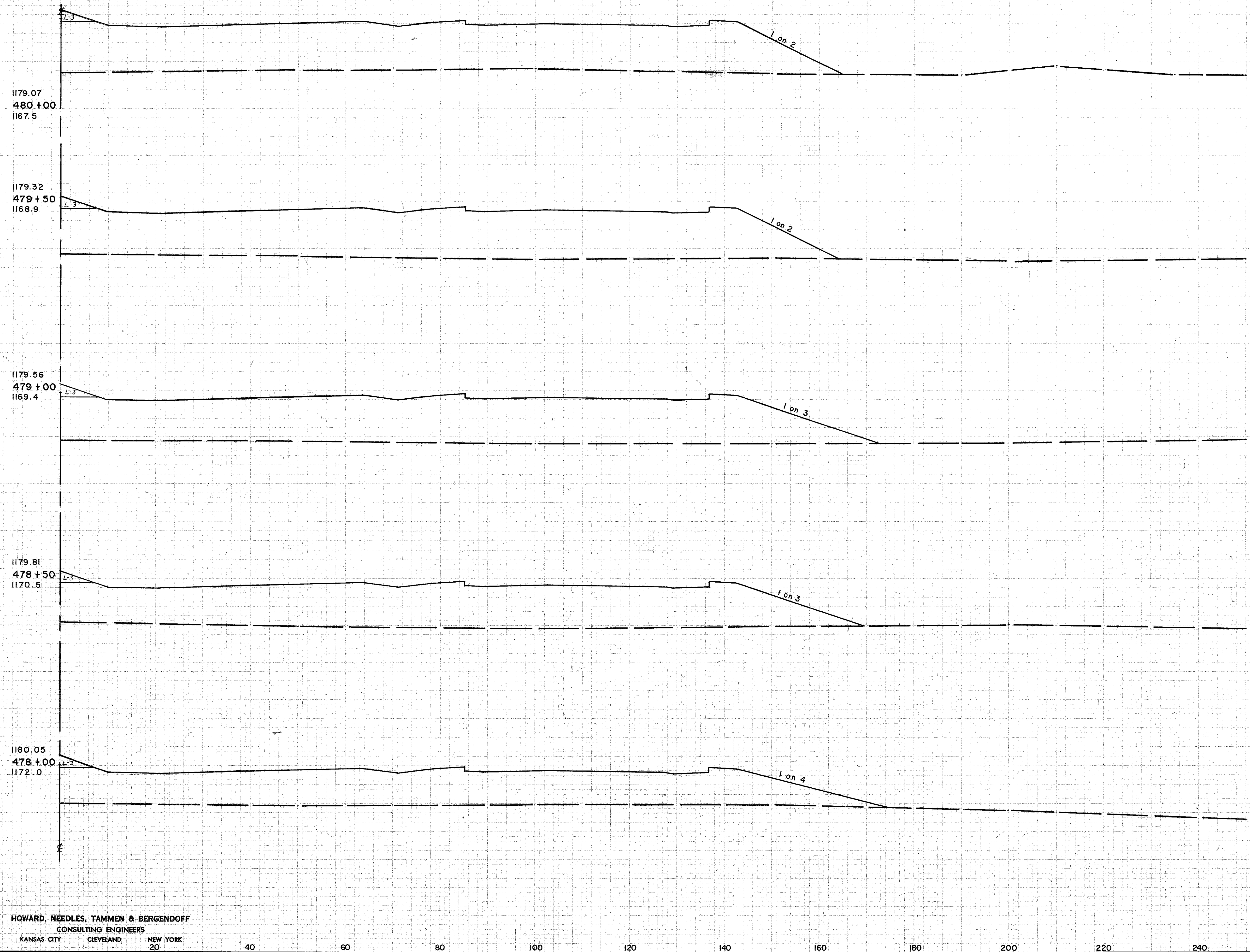
CORRECTION SURVEYED
 SURVEY MAPS
 DATE 8/1/59
 10-29-59
 6-8-59
 8-2-59
 RLB
 JWG
 MEK

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

Sta. 477+50

CUYAHOGA COUNTY
CUY-1-2.20

GENERAL NOTES:
 1. ALL DIMENSIONS ARE IN FEET AND DECIMALS THEREOF.
 2. THE PROPOSED GRADE IS SHOWN BY A SOLID LINE.
 3. THE EXISTING GRADE IS SHOWN BY A DASHED LINE.
 4. THE FINISH GRADE IS SHOWN BY A DOTTED LINE.
 5. THE PROPOSED GRADE IS TO BE CONFORMED TO THE SURVEY DATA.
 6. THE PROPOSED GRADE IS TO BE CONFORMED TO THE SURVEY DATA.
 7. THE PROPOSED GRADE IS TO BE CONFORMED TO THE SURVEY DATA.
 8. THE PROPOSED GRADE IS TO BE CONFORMED TO THE SURVEY DATA.
 9. THE PROPOSED GRADE IS TO BE CONFORMED TO THE SURVEY DATA.
 10. THE PROPOSED GRADE IS TO BE CONFORMED TO THE SURVEY DATA.



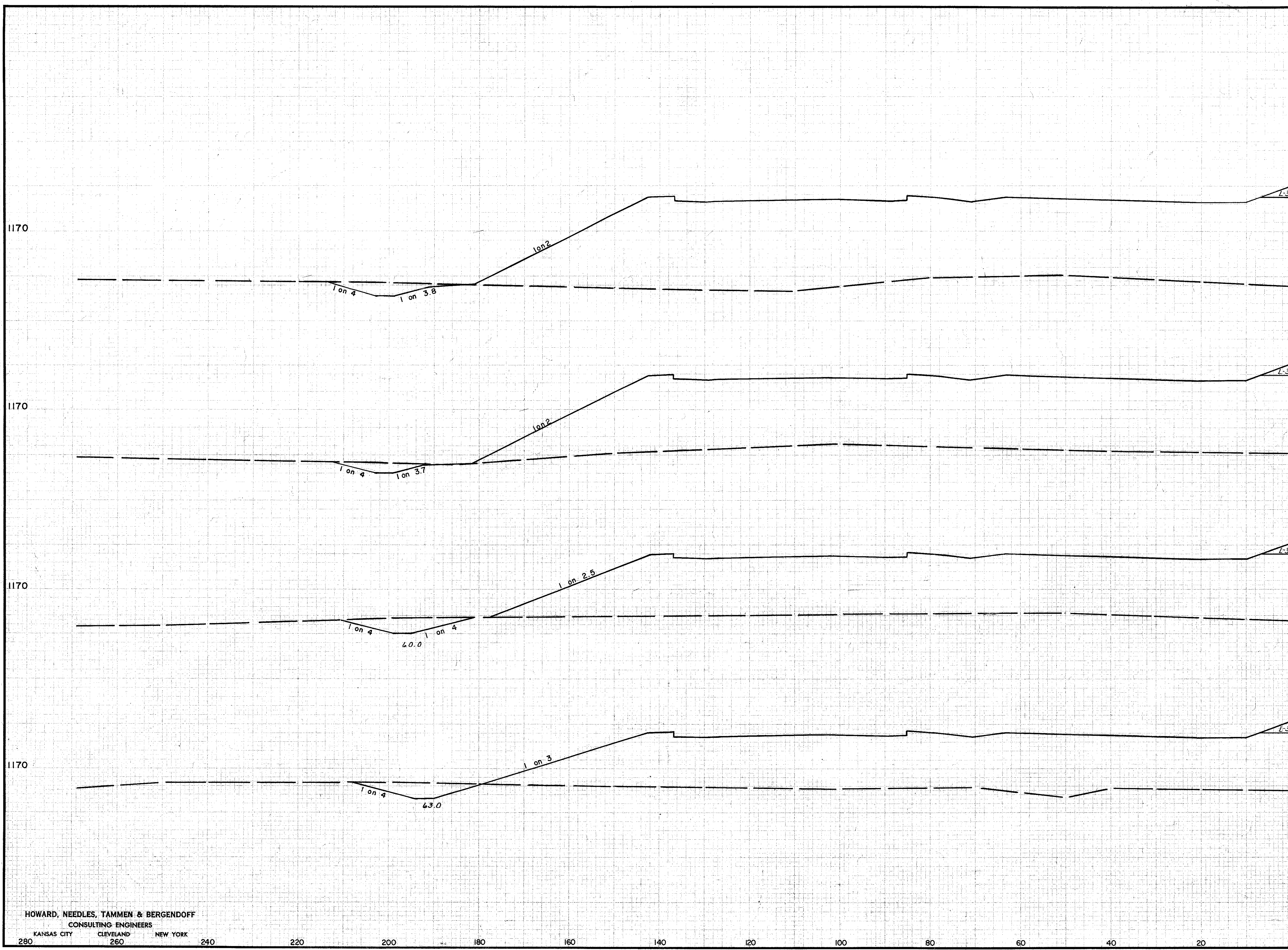
STATION	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
478+00			0	1551		
478+50			0	1548		2848
479+00			0	1530		2703
479+50			0	1385		2348
480+00			0	1151		2048
Sta. 477+50			0	1059		

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

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

178
313

CUYAHOGA COUNTY
CUY-1-2 20



SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		46	3010		
				68	5183
		28	2583		
				82	4383
		61	2142		
				115	3823
		64	1985		
				117	3363
		63	1650		

FINA SURVEY
 SURVEY POINTS
 WHITE BUCK

PUB ✓ MMH
 ✓ DGS
 ✓ JRG
 ✓ REK

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

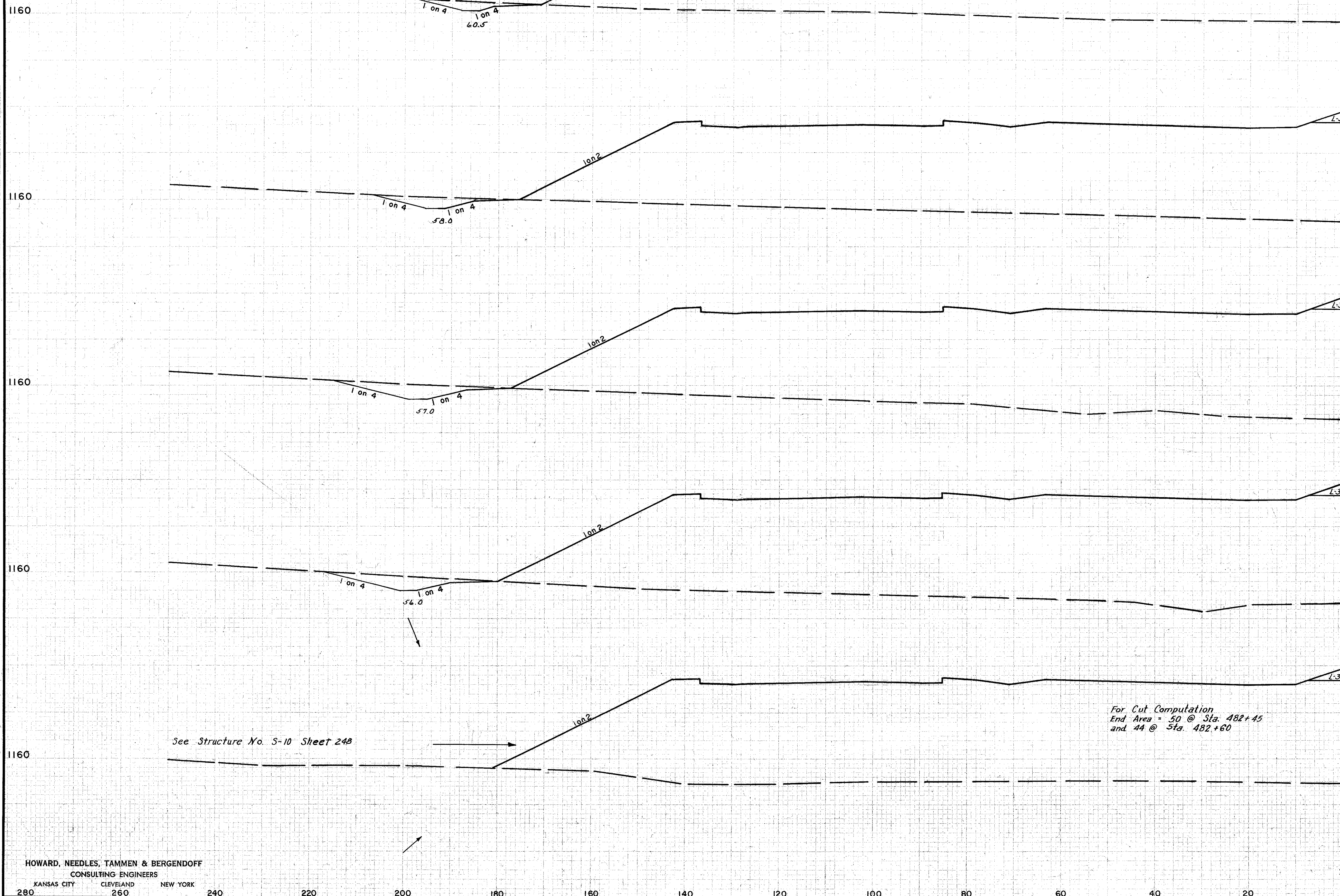
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

280 260 240 220 200 180 160 140 120 100 80 60 40 20

Sta. 480+00

LEFT HALF STA. 480+50 TO STA. 482+00

CUYAHOGA COUNTY
CUY-1-2 20



STATION <th colspan="2">SEEDING</th> <th colspan="2">END AREA</th> <th colspan="2">CU. YDS.</th>	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1176.87 484 + 50 1158.4			30	2519		
					59	5073
1177.11 484 + 00 1155.5			34	2960		
					85	5793
1177.36 483 + 50 1152.9			58	3283		
					107	6303
1177.60 483 + 00 1153.3			58	3521		
					94	6483
1177.85 482 + 50 1154.5			44	3489		
			50			
					88	4023
Sta. 482+00			46	3010		

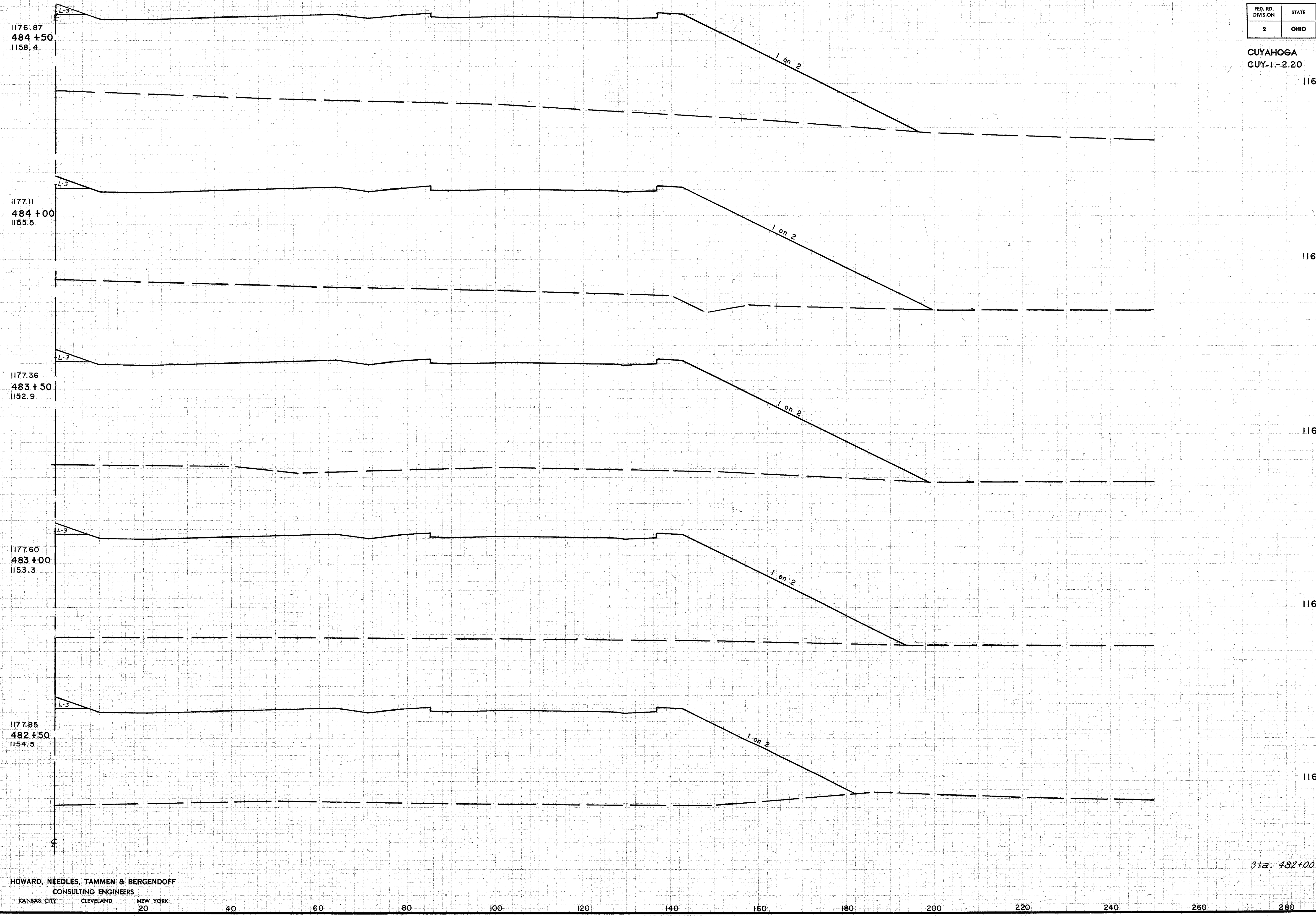
For Cut Computation
End Area = 50 @ Sta. 482+45
and 44 @ Sta. 482+60

See Structure No. S-10 Sheet 24B

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

181
313

CUYAHOGA COUNTY
CUY-1-2.20
1160



SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		0	3401		
		0	3990	0	5843
				0	7533
		0	4144		
				0	7483
		0	3939		
				0	6923
		0	3541		
				0	6103
		0	3043		

ORIGINAL SURVEY
 SURVEYED BY
 DATE
 CHECKED BY
 DATE
 APPROVED BY
 DATE
 DRAWN BY
 DATE
 P.P.P. V.M.M.H.
 P.V.D.B.S.
 M.E.S.
 R.C.

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

Sta. 482+00

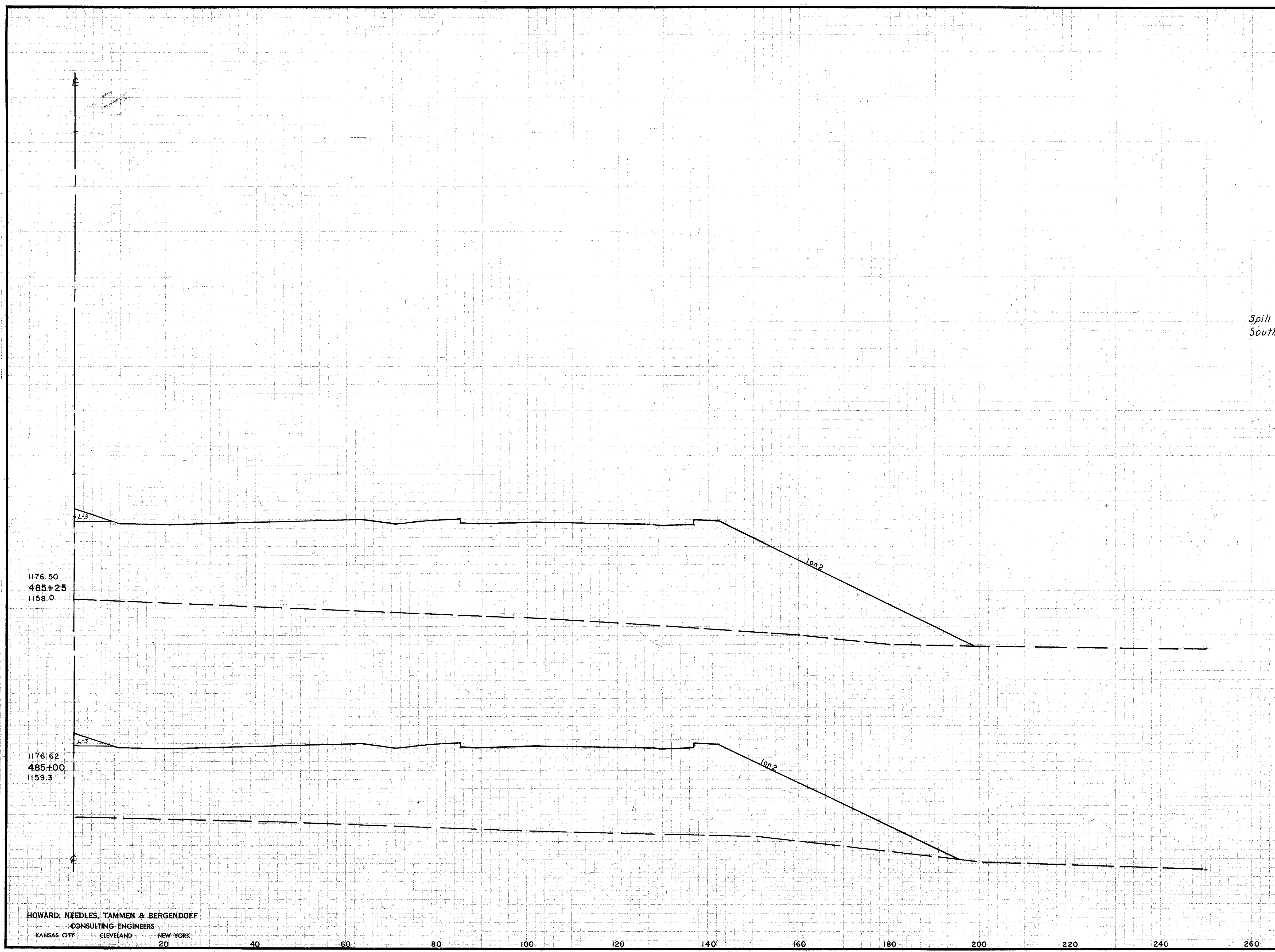
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

183
313

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING		END AREA		CU. YDS.	
WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
				0	7834
				0	3600
				0	3111
				0	3103
				0	6023
				0	3401

Spill Quantity S. Woodland
South East Abutment



ORIGINAL SURVEY
SURVEY PLATS
NOTED BOOK
DATE

DATE
BY
CHECKED
DATE

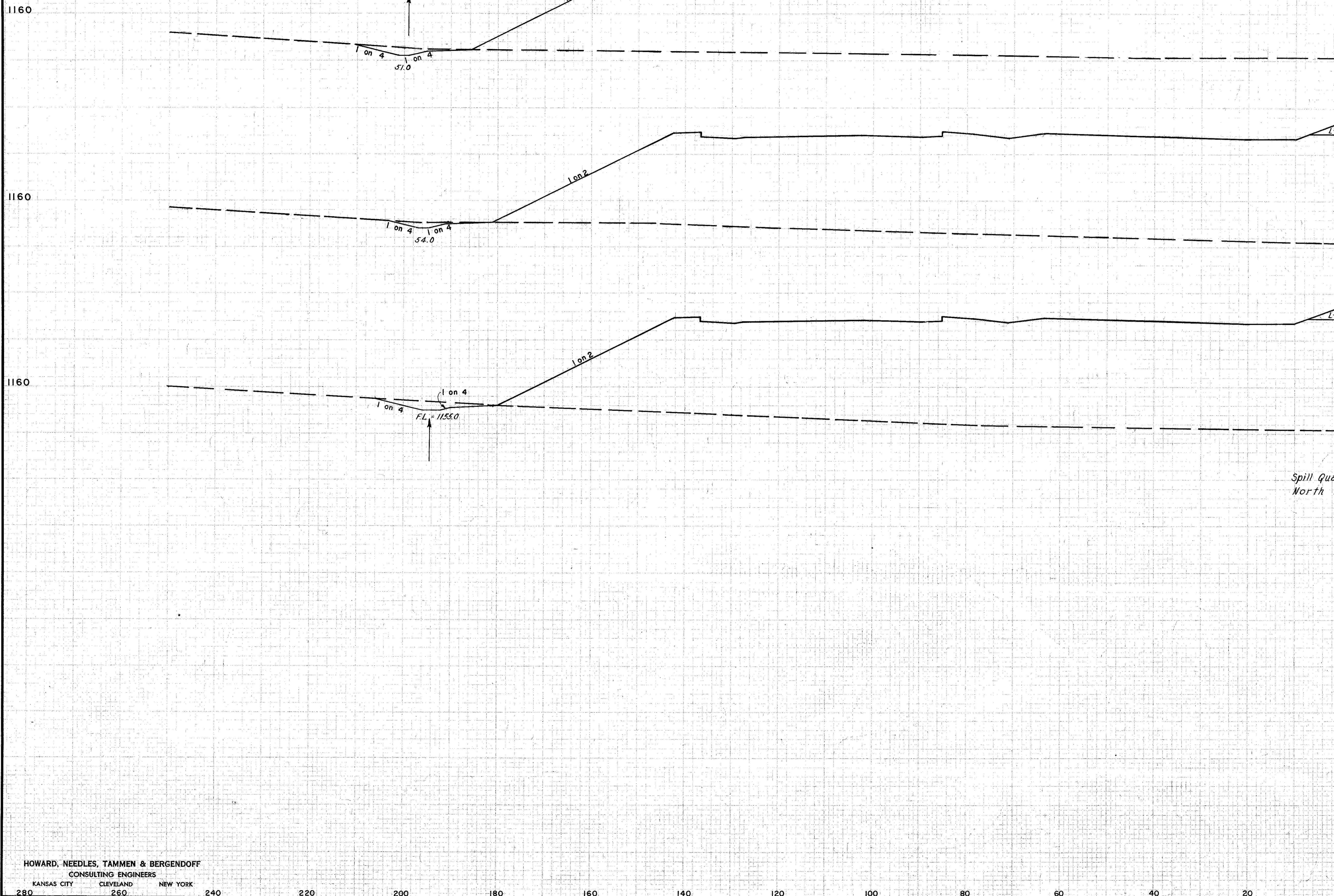
DATE
BY
CHECKED
DATE

DATE
BY
CHECKED
DATE

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

RIGHT HALF STA. 485+00 TO STA. 485+25

CUYAHOGA COUNTY
CUY-1-2.20

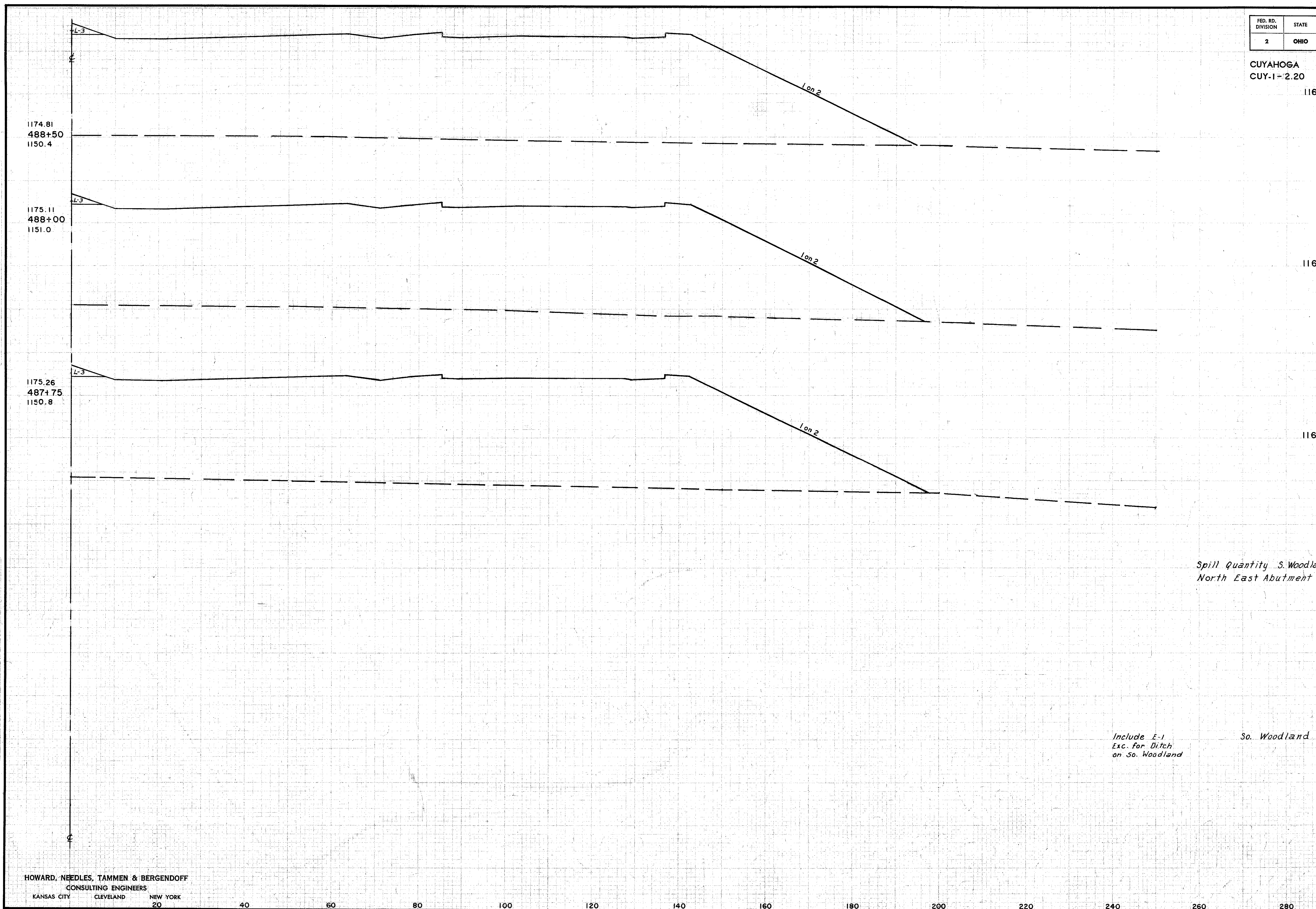


SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		17	3657		
				28	6543
		14	3406		
				18	3206
		26	3520		
				9	9269

Spill Quantity S. Woodland
North West Abutment

ORIGINAL DRAWING
 SUPPLIED BY OWNER
 PROJECT NO. 10-1457
 DATE 12-05-58
 PMP V. W.M.H.
 D.C.
 H.E.K.
 No. 10-1457
 12-05-58
 8-5-59

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		0	4048	0	7533
		0	4104	0	3851
		0	4223	0	8132
		26	0		

Spill Quantity S. Woodland
North East Abutment

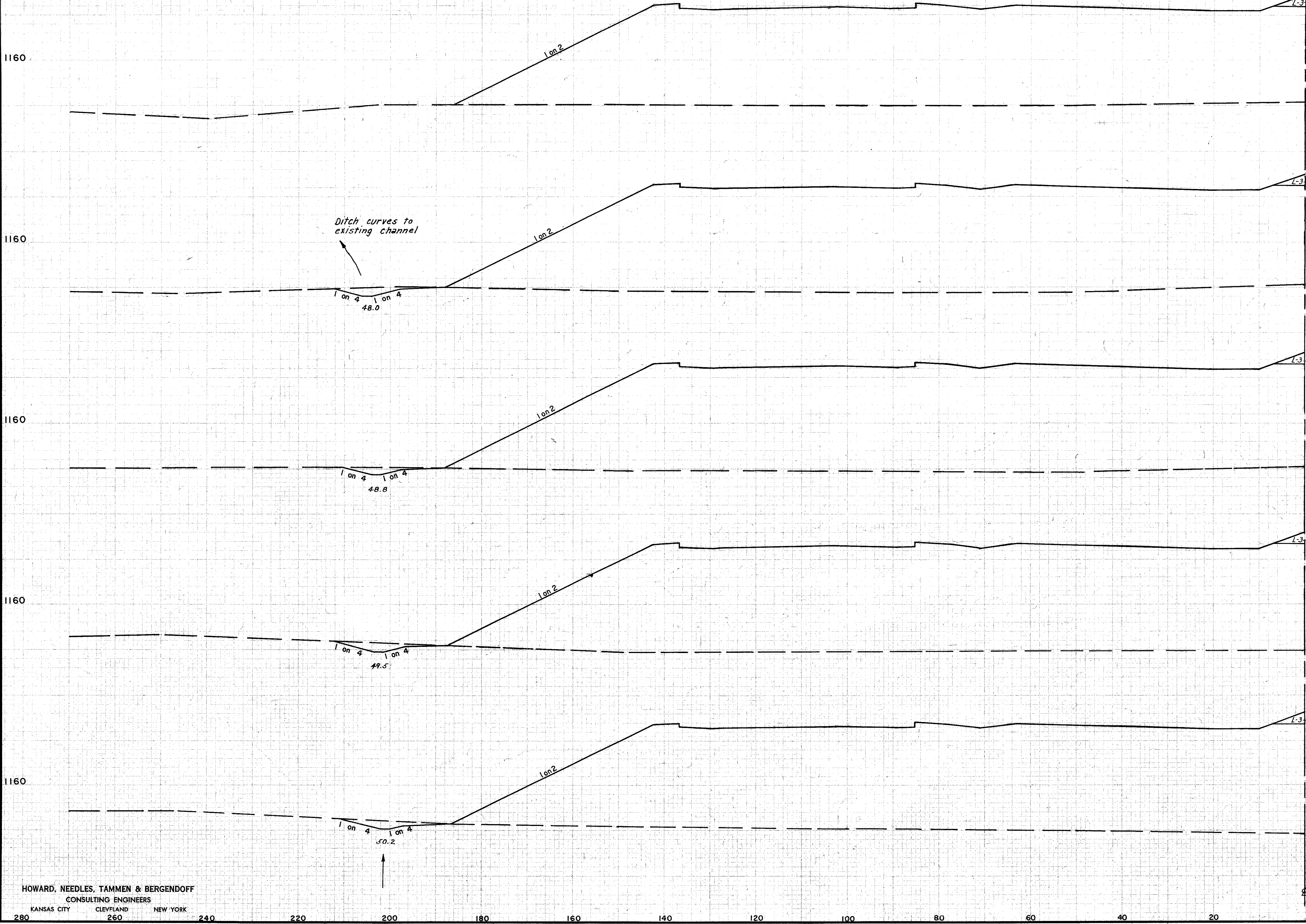
Include E-1
Exc. for Ditch
on So. Woodland

So. Woodland

TRIAL SURVEY
SURVEY POINTS
487+75 TO 488+50
1/23/58
M.P. 1150.8

PMP
VMMH
VDDS
M.P.
RC

CUYAHOGA COUNTY
CUY-1-2.20



STATION <th colspan="2">SEEDING</th> <th colspan="2">END AREA</th> <th colspan="2">CU. YDS.</th>	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1172.92 491+00 1150.7			0	3547		
1173.35 490+50 1150.4			23	3806	21	6813
1173.75 490+00 1150.2			17	3806	37	7053
1174.13 489+50 1149.7			23	3871	37	7113
1174.48 489+00 1149.1			22	3817	42	7118
Sta. 488+50			17	3637	36	6918

DRAWN BY: J. W. ...
 CHECKED BY: ...
 DATE: ...

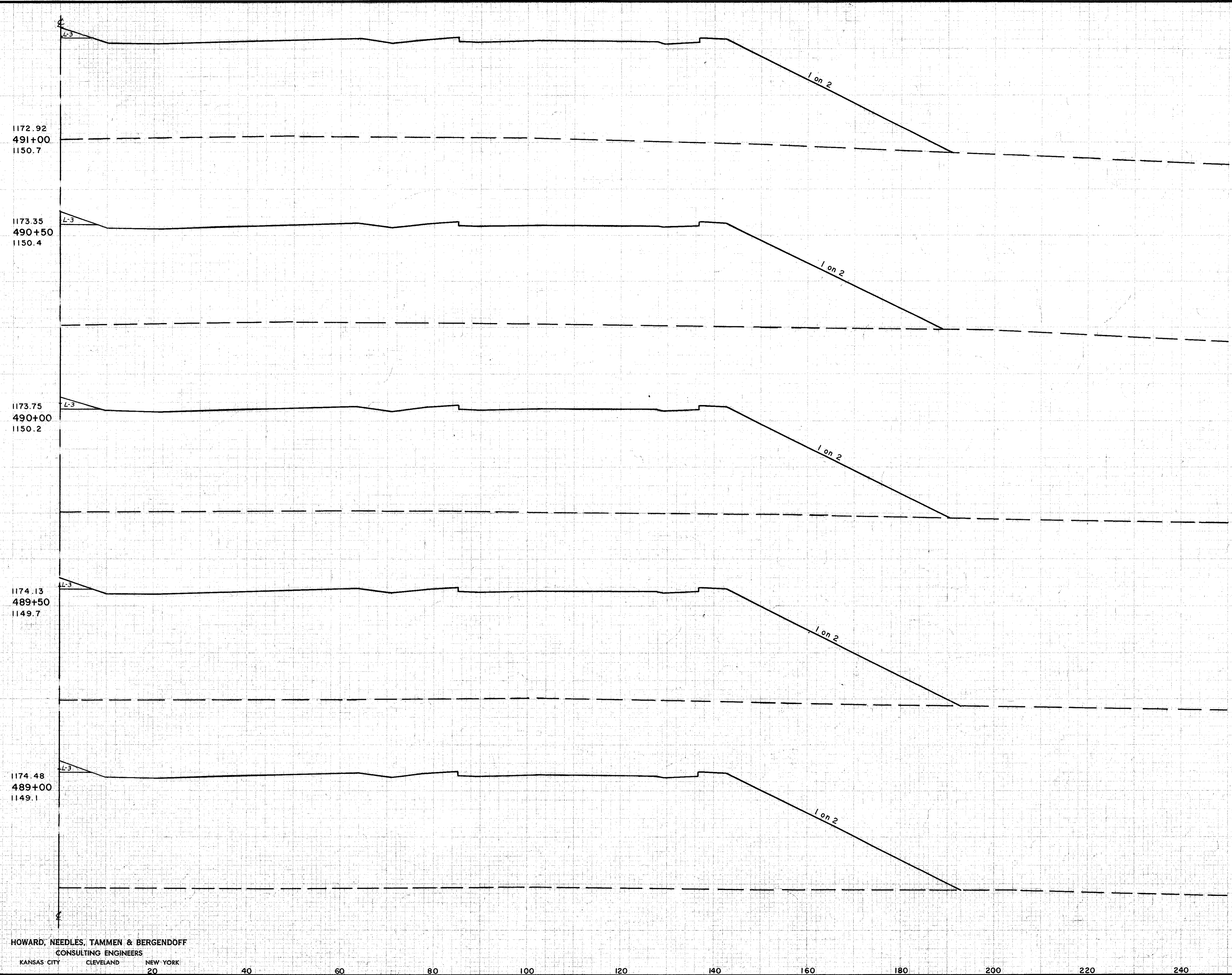
PMP V. MMH 8/25/54
 JWG 8-23-59
 REK 8-5-59

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

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

187
313

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	SQ. YD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		0	3511		
				0	6533
		0	3568		
				0	6233
		0	3728		
				0	7103
		0	3933		
				0	7433
		0	4088		
				0	7543
		0	4048		

CHECKED BY: J. W. B. DATE: 12-31-58
 DESIGNED BY: J. W. B. DATE: 12-31-58
 DRAWN BY: J. W. B. DATE: 12-31-58
 IN CHARGE: J. W. B. DATE: 12-31-58
 PROJECT: CUYAHOGA COUNTY
 SHEET: 187 OF 313

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

Sta. 488+50

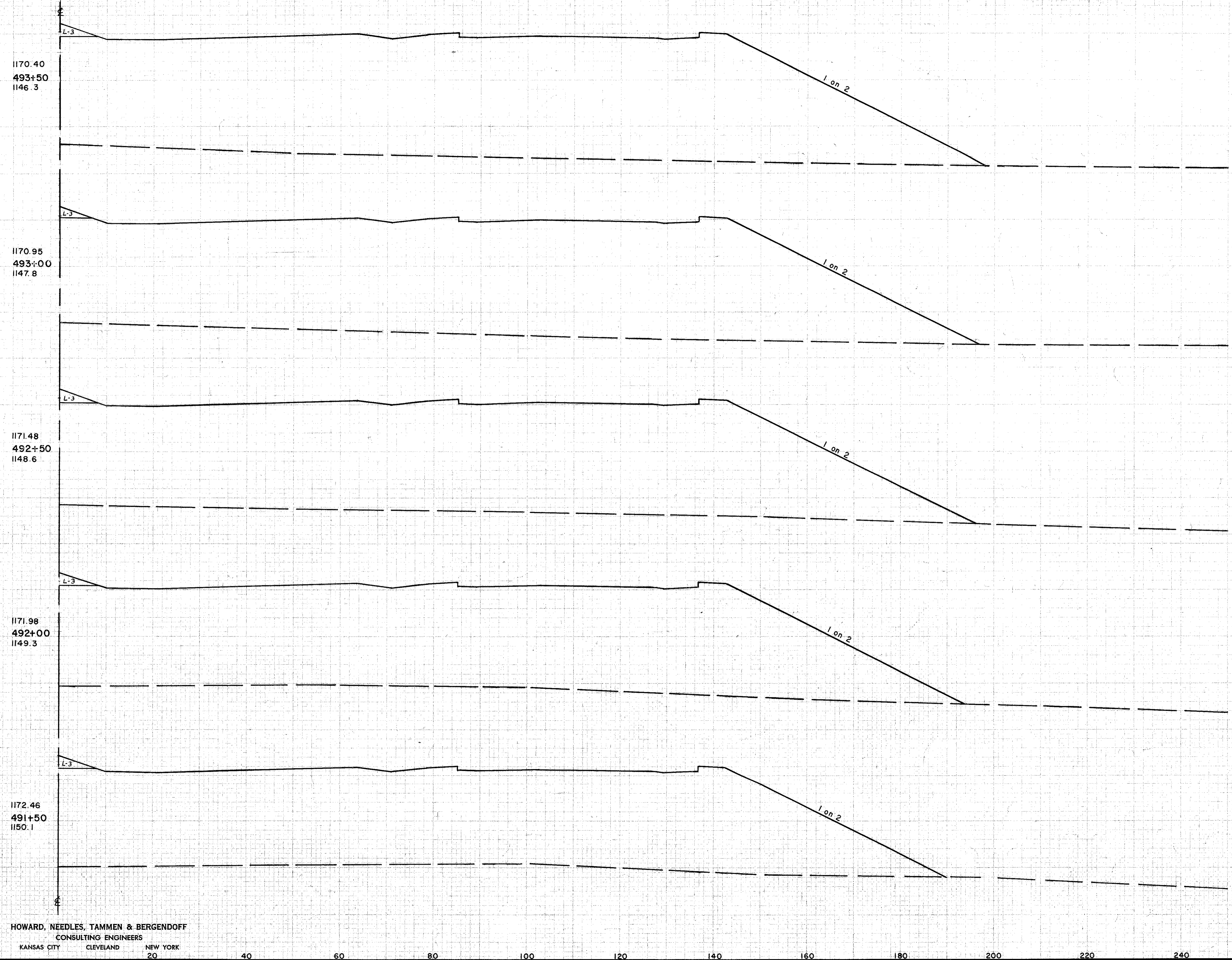
RIGHT HALF STA. 489 + 00 TO STA. 491 + 00

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

189
313

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
1150		0	4363	
				0 7843
		0	4163	
1150				0 7523
		0	3958	
1150				0 7103
		0	3713	
1150				0 6713
		0	3533	
				0 6533
		0	3511	

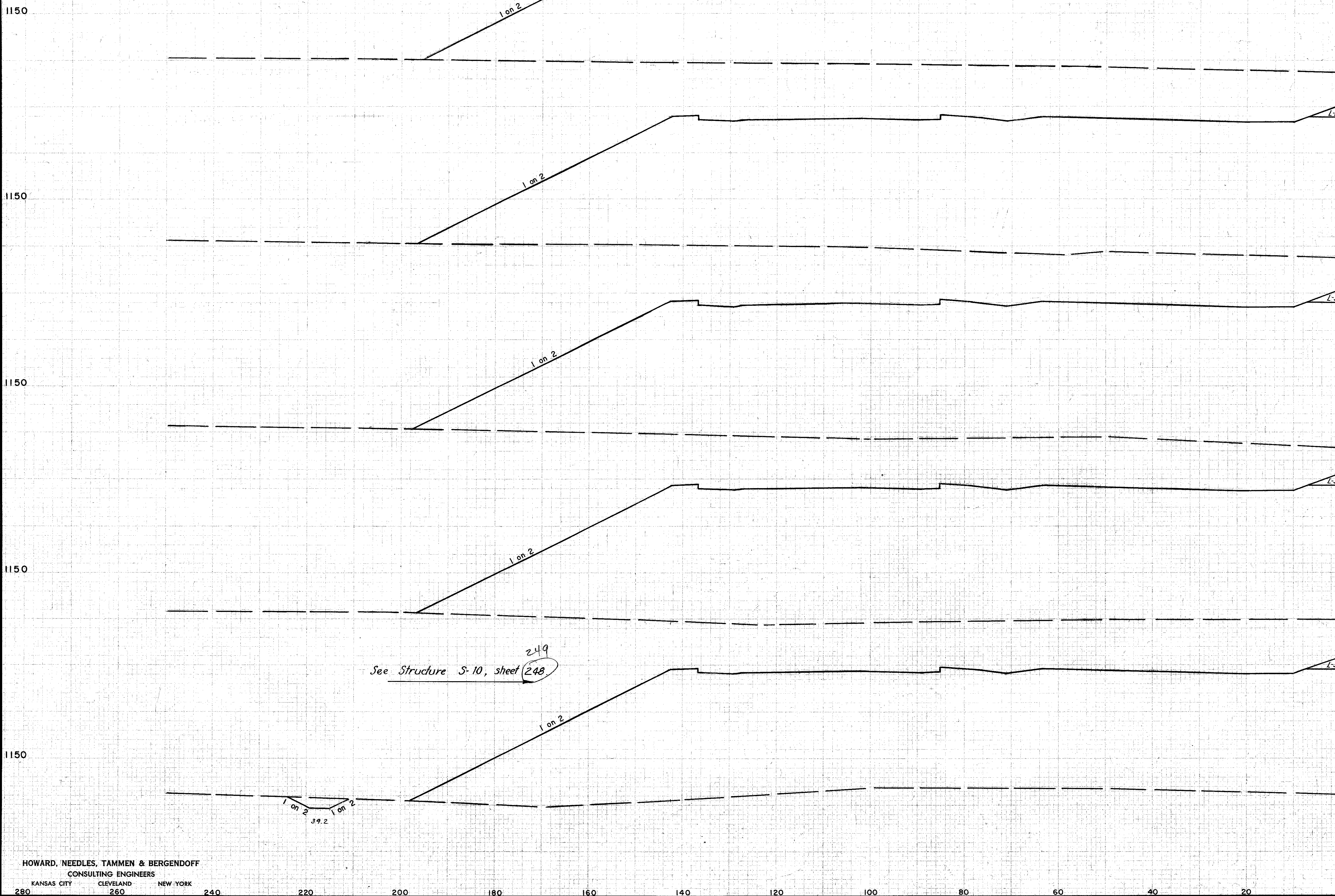


ORIGINAL SURVEY
 SURVEY
 DATE BOOK
 10557
 1-2-58
 1-2-58
 PMP V MMH
 V DDS
 M W
 R C

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

Sta. 491+00

CUYAHOGA COUNTY
CUY-1 - 2.20



STATION <th colspan="2">SEEDING</th> <th colspan="2">END AREA</th> <th colspan="2">CU. YDS.</th>	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1167.93 495+50 1137.5			0	4707	0	8793
1168.58 495+00 1137.6			0	4793	0	5416
1168.96 494+70 1136.9			0	4958	0	3637
1169.21 494+50 1139.9			0	4868	19	8653
1169.82 494+00 1142.4			21	4182		36 8153
Sta. 493+50			20	4217		

P.M.F. V.M.M.H. 10-5-59
 V.D.D.S. 1-6-59
 J.H.G. 1-6-59
 R.E.K.
 HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

191
313

CUYAHOGA COUNTY
CUY-1-2.20

1150

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
		0	5358	
				0 10015
		0	5458	
				0 5936
		0	5213	
				0 3787
		0	5016	
				0 8983
		0	4681	
				0 8383
		0	4363	

Sta. 493+50

1167.93
495 + 50
1137.5

1168.58
495 + 00
1137.6

1168.96
494 + 70
1136.9

1169.21
494 + 50
1139.9

1169.82
494 + 00
1142.4

1 on 2

1 on 2

1 on 2

1 on 2

1 on 2

REGIONAL
SURVEY
NEW YORK

PLP
VMMH
VDBS
JTG
RC

REGIONAL
SURVEY
NEW YORK

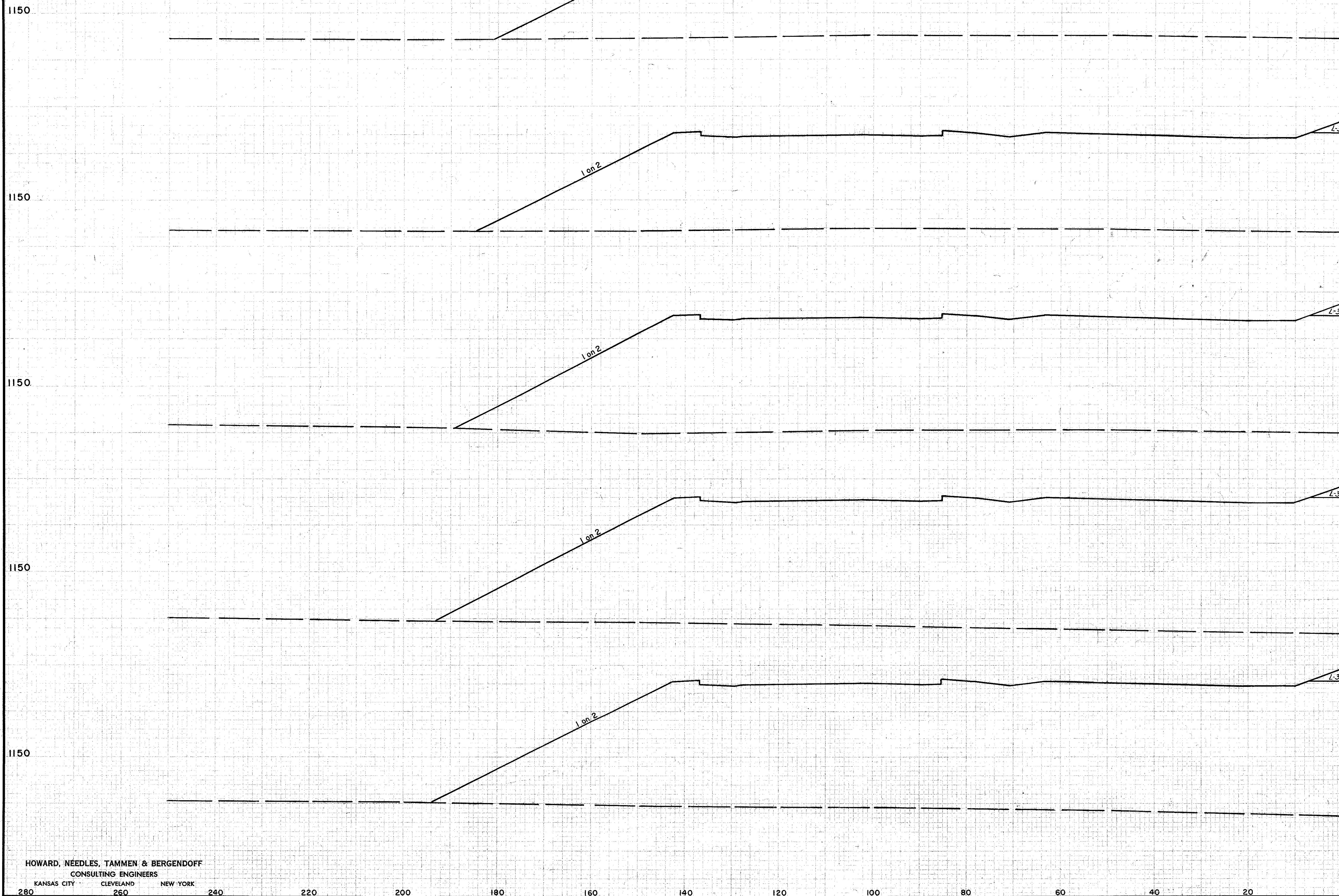
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

40 60 80 100 120 140 160 180 200 220 240 260 280

PLATE C-200005 SECTION 10.2, A & B

RIGHT HALF STA. 494 + 00 TO STA. 495 + 50

CUYAHOGA COUNTY
CUY-1-2.20



STATION <th colspan="2">SEEDING</th> <th colspan="2">END AREA</th> <th colspan="2">CU. YDS.</th>	SEEDING		END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
1164.27 498+00 1144.7			0	2941		0 5813
1165.06 497+50 1143.1			0	3338		0 6633
1165.81 497+00 1140.0			0	4038		0 7993
1166.54 496+50 1136.8			0	4593		0 8543
1167.25 496+00 1137.2			0	4619		0 8643
Sta. 495+50			0	4707		

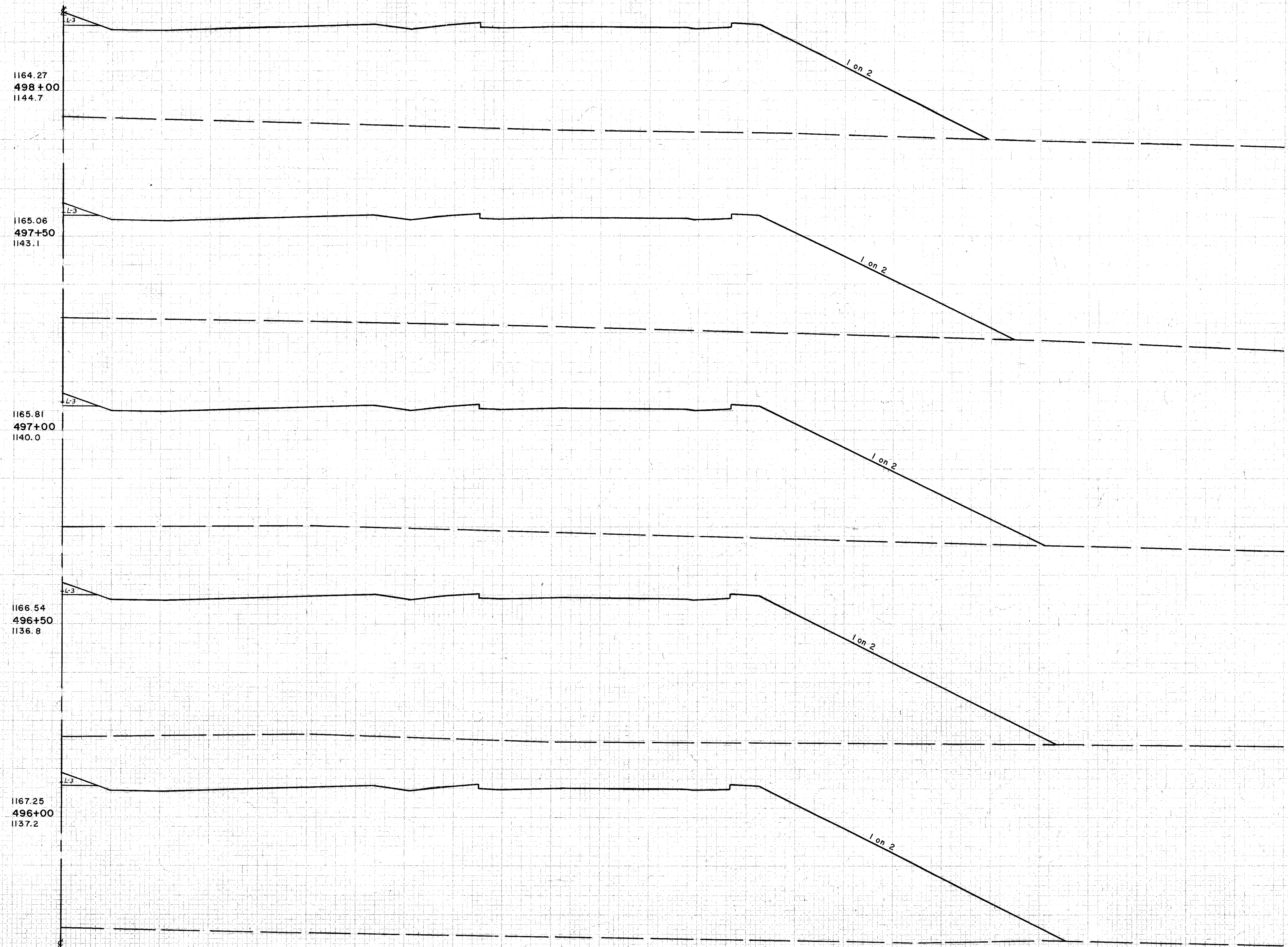
GENERAL SURVEY
 12-15-58
 1-6-59
 7-6-59
 PMP
 JRG
 KCC

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

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313

CUYAHOGA COUNTY
CUY-1-2.20

ORIGINAL SURVEY
 PMP ✓ WCH ✓ DDS ✓ MES ✓ RC ✓
 10/5/57
 1-2-59
 1-2-59



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
		0	3403	
				0
		0	3788	
				0
		0	4402	
				0
		0	5063	
				0
		0	5293	
				0
		0	5358	

Sta. 495+50

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

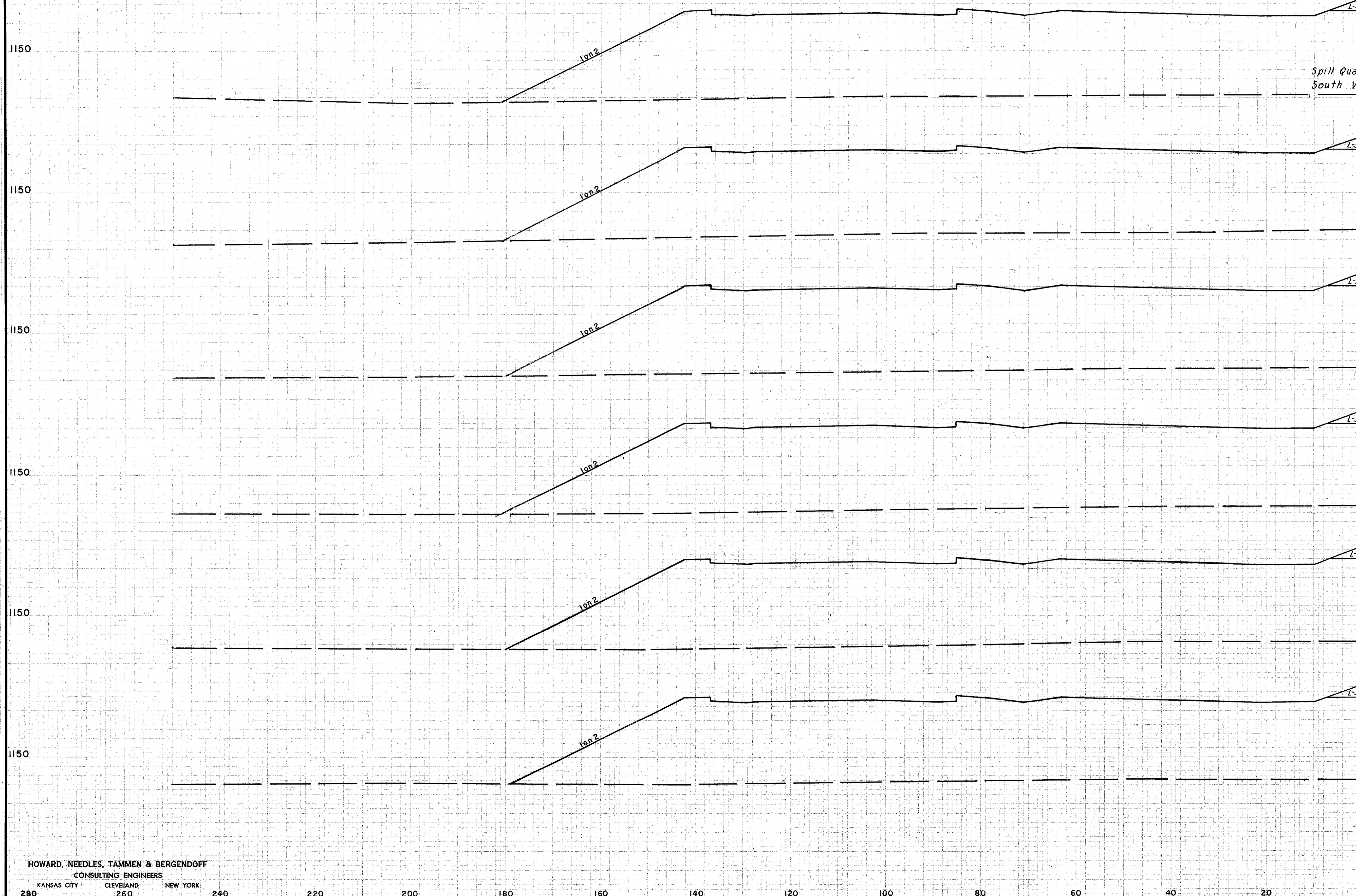
40 60 80 100 120 140 160 180 200 220 240 260 280

RIGHT HALF STA. 496+00 TO STA. 498+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

194
313

CUYAHOGA COUNTY
CUY-1-2.20



1159.06
501+00
1140.9
Spill Quantity Shaker Blvd.
South West Abutment

1159.99
500+50
1142.2

1160.90
500+00
1142.6

1161.78
499+50
1143.6

1162.64
499+00
1144.6

1163.47
498+50
1145.1

Sta. 498+00

SEEDING	END AREA		CU YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			0	2887
			0	6633
			0	5313
			0	2846
			0	5293
			0	2873
			0	5333
			0	2883
			0	5303
			0	2842
			0	5263
			0	2841
			0	5353
			0	2941

FINAL
SURVEY
NOTE BOOK

PP
VMM
VDBS
RUC
NES

ORIGINAL
SURVEY
NOTE BOOK

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

280 260 240 220 200 180 160 140 120 100 80 60 40 20

LEFT HALF STA. 498+50 TO STA. 501+00

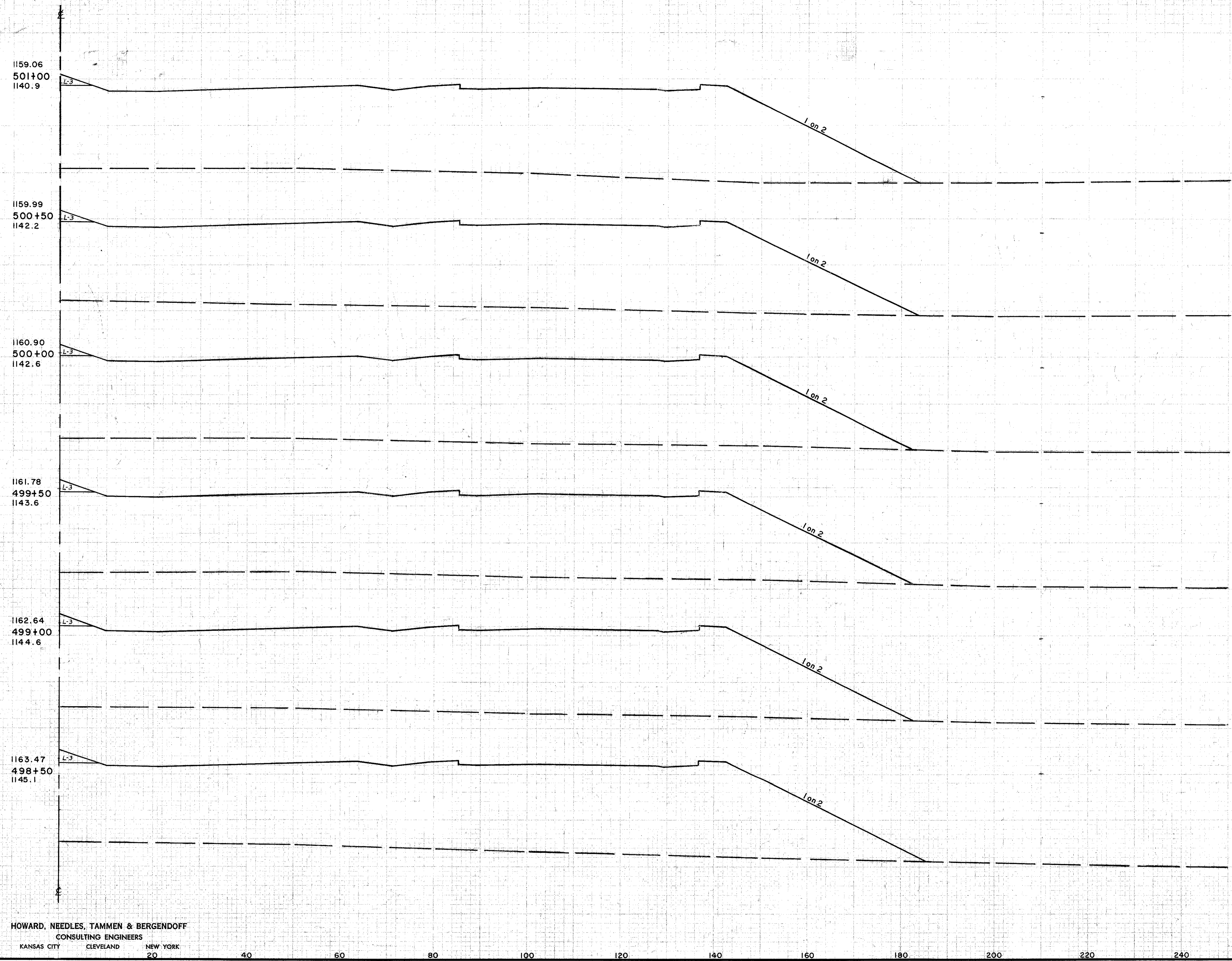
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

195
313

CUYAHOGA COUNTY
CUY-1-2.20

Spill Quantity Shaker Blvd.
South East Abutment

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			0	296.9
			0	1019.0
			0	546.3
			0	293.2
			0	539.3
			0	288.8
			0	532.3
			0	286.5
			0	534.3
			0	290.7
			0	553.3
			0	306.4
			0	598.3
			0	340.3



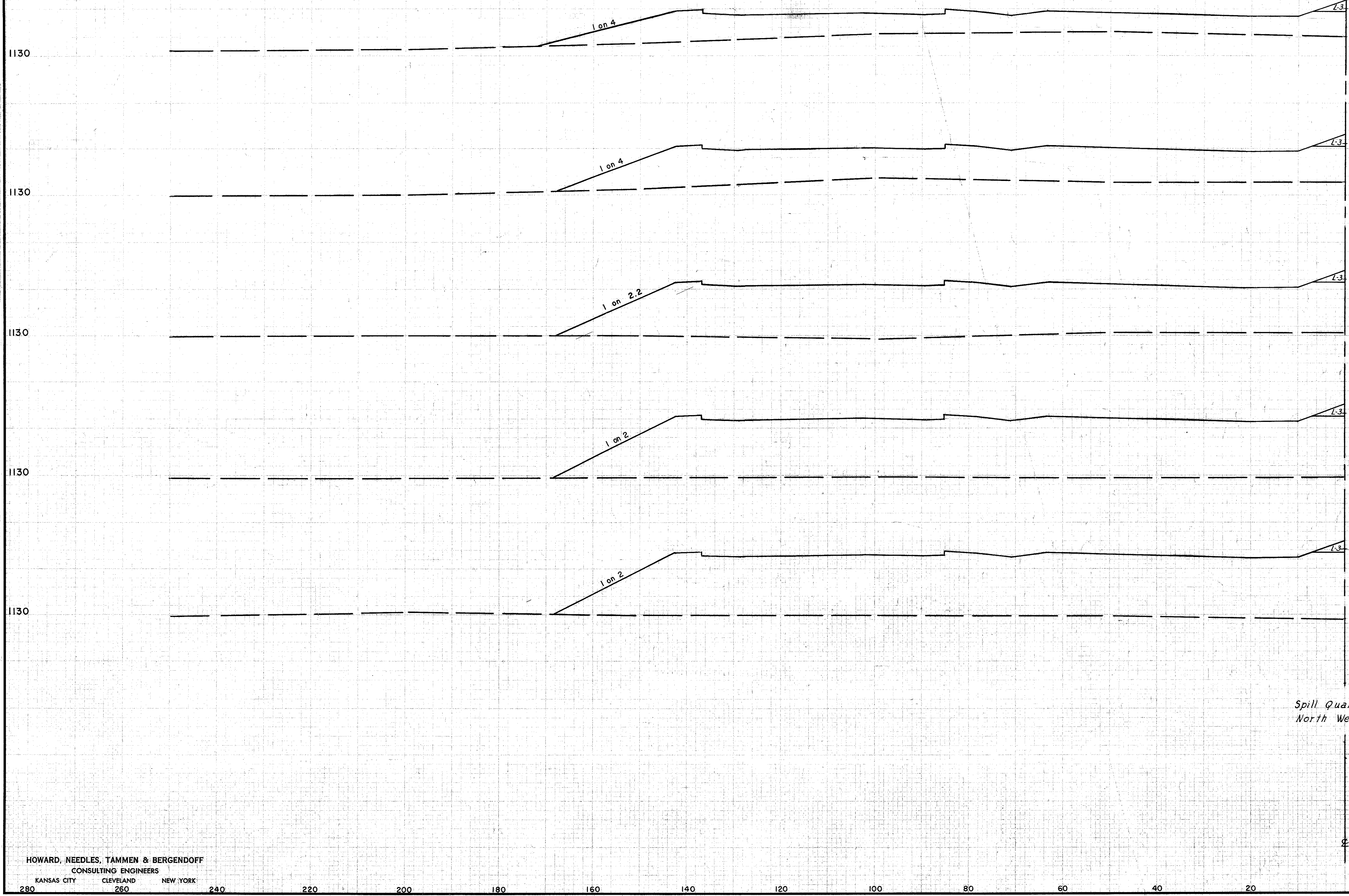
P.M.P. V.M.M. 10/6/57
 R.C. 12-9-58
 N.E.S. 1-2-59
 ORIGINAL SURVEY 10/6/57
 SURVEY 12-9-58
 REVISION 1-2-59
 N.E.S.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK
 20 40 60 80 100 120 140 160 180 200 220 240 260 280

Sta. 498+00

RIGHT HALF STA. 498+50 TO STA. 501+00

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END AREA SQ. YD.	CU YDS.	
		CUT	FILL
		0	763
		0	1773
		0	2643
		0	3393
		0	1956
		0	3743
		0	2087
		0	5149

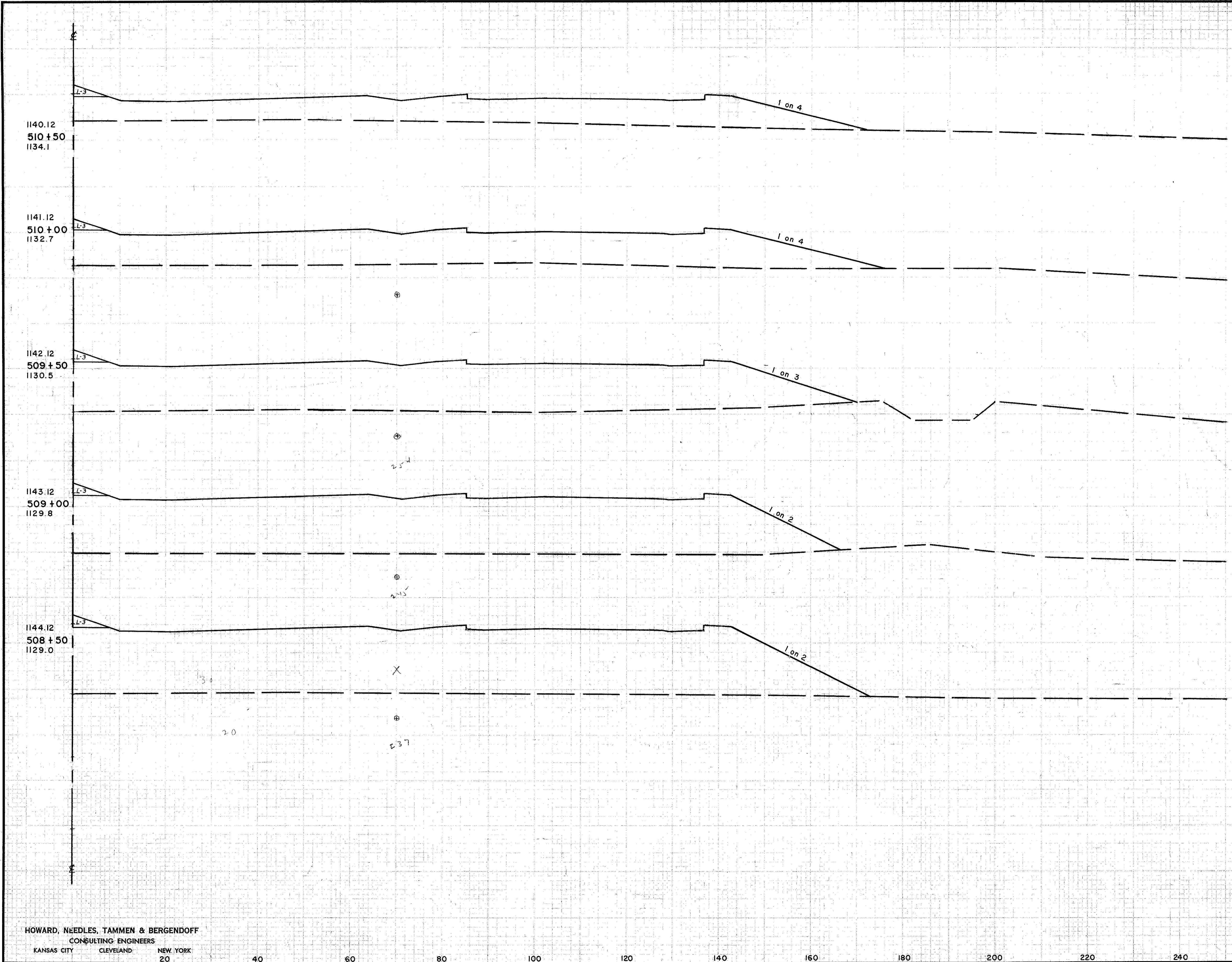
Spill Quantity Shaker Blvd.
North West Abutment

1130
 1130
 1130
 1130
 1130

10-2-59
 10-2-59
 1-8-59
 1-8-59
 PMP
 JHB
 RC

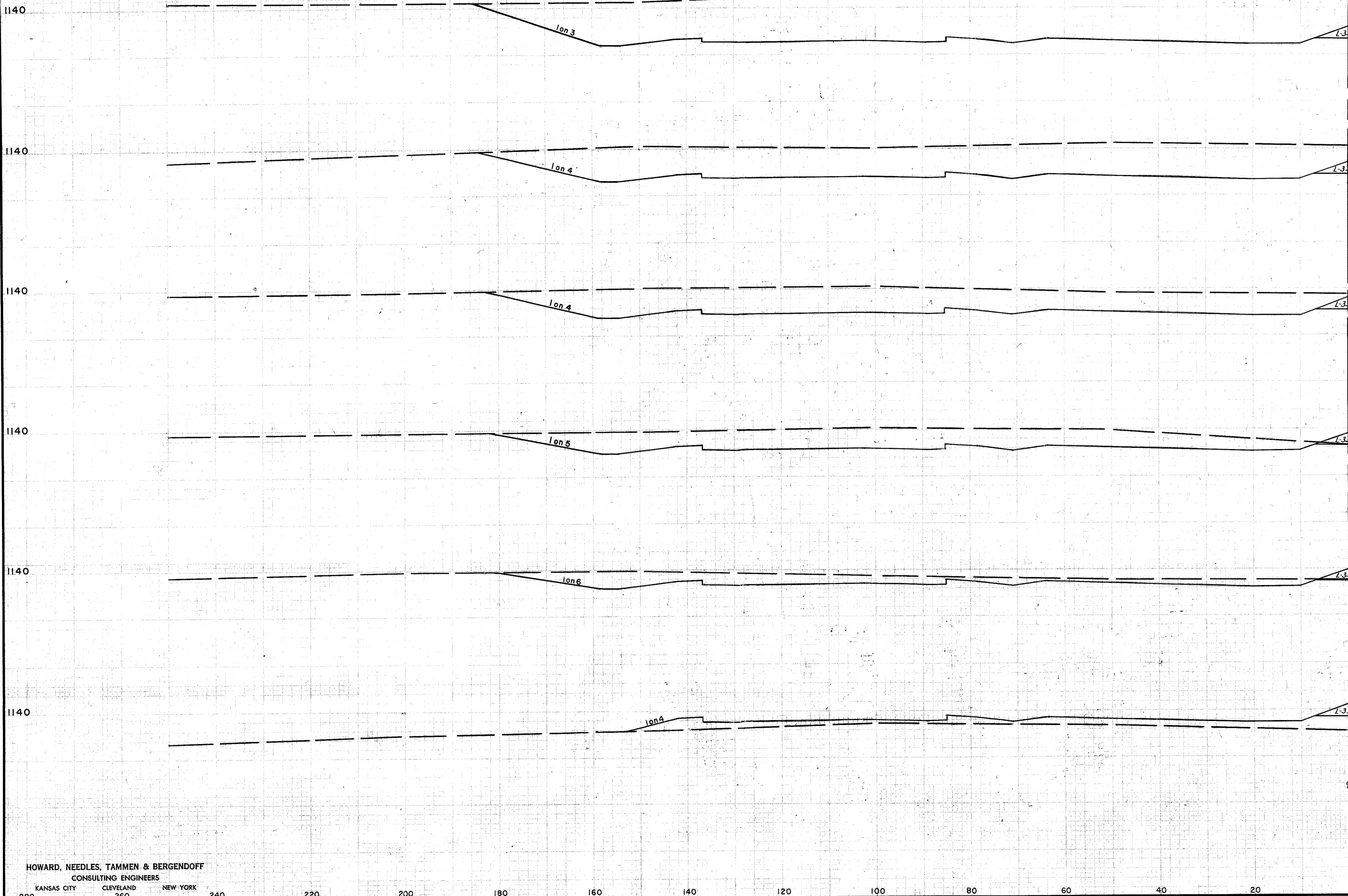
CUYAHOGA COUNTY
CUY-1-2.20

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			0	850
				0 1888
			0	1187
				0 2598
			0	1616
				0 3293
			0	1938
				0 3838
			0	2207
				0 3261



PMP V. W. W. H.
 RC V. D. D. S.
 RC
 RES
 10/28/58
 12/9/58
 12/31/58
 1-2-59

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END AREA SQ. YD.	CU. YDS.	
		CUT	FILL
		1767	0
			2707
		1155	0
			1957
		849	0
			1344
		603	6
			837
		301	6
			278
		0	226
			0
		0	763

DD3 V HJH 11-3-58
 RC V DDS 12-9-58
 RC 1-8-59

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

Sta. 510+50

01-S

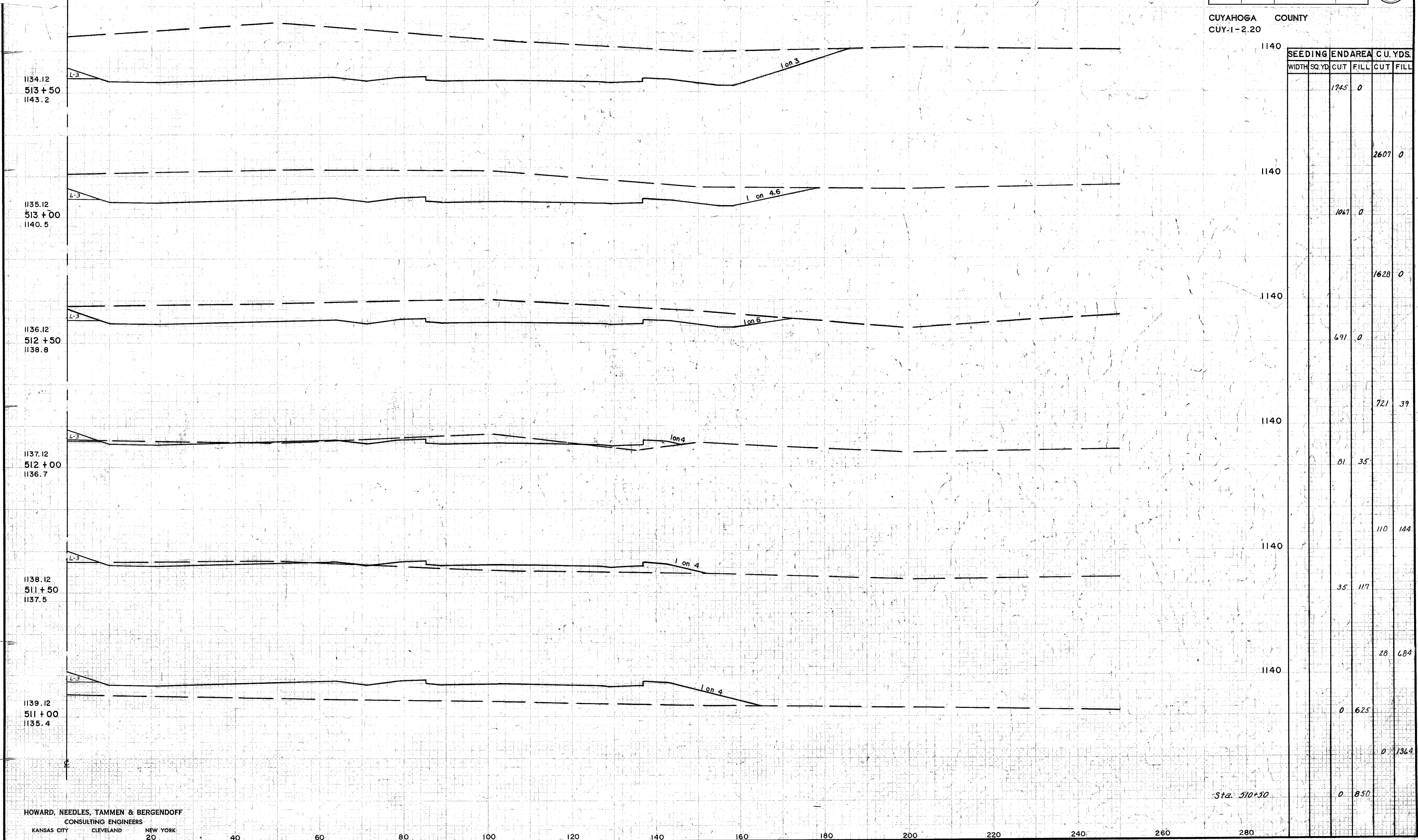
CUY-271-6.80

FED. RD. DIVISION	STATE	PROJECT	199 313
2	OHIO		

CUYAHOGA COUNTY
CUY-1-2.20

SURVEY
 PLAN
 DATE
 11-3-58
 11-3-58
 1-2-59
 1-2-59

D.D.S.
 V.L.H.
 1-2-59
 1-2-59
 1-2-59
 1-2-59



SEEDING	END AREA		C.U. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			1745	0
				2607
			1067	0
				1628
			691	0
				721
			81	35
				110
			35	117
				28
			0	625
				0
				1364
			0	850

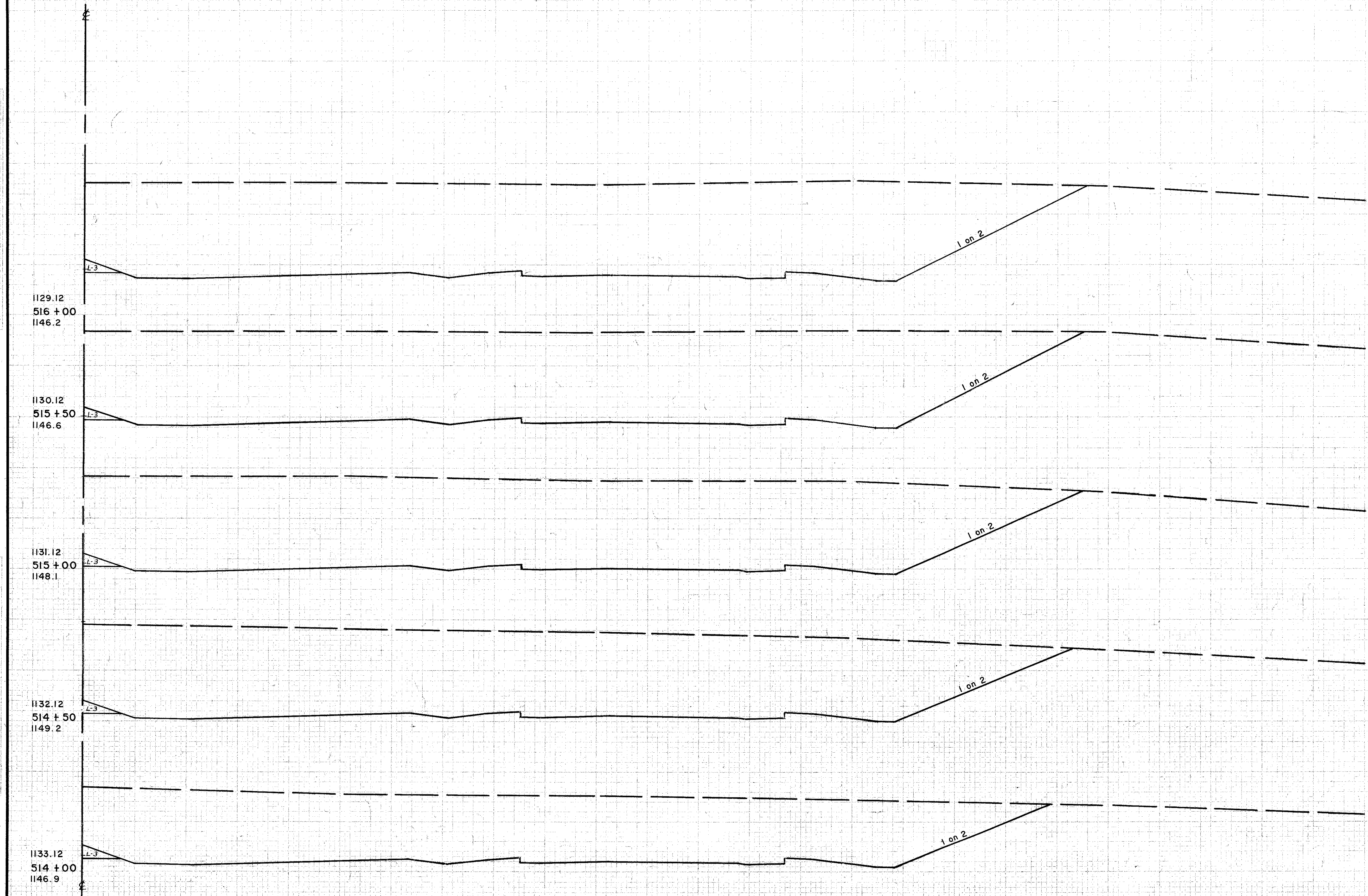
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK
 20

Sta. 510+50

CUYAHOGA COUNTY
CUY-1-2.20

ORIGINAL SURVEY PLAT
SURVEY PLAT NO. 11-3-58
DATE 11-3-58
BY V. R. H. J. & D. B. S.
CHECKED BY A. C. & A. E. S.
NO. 11-3-58

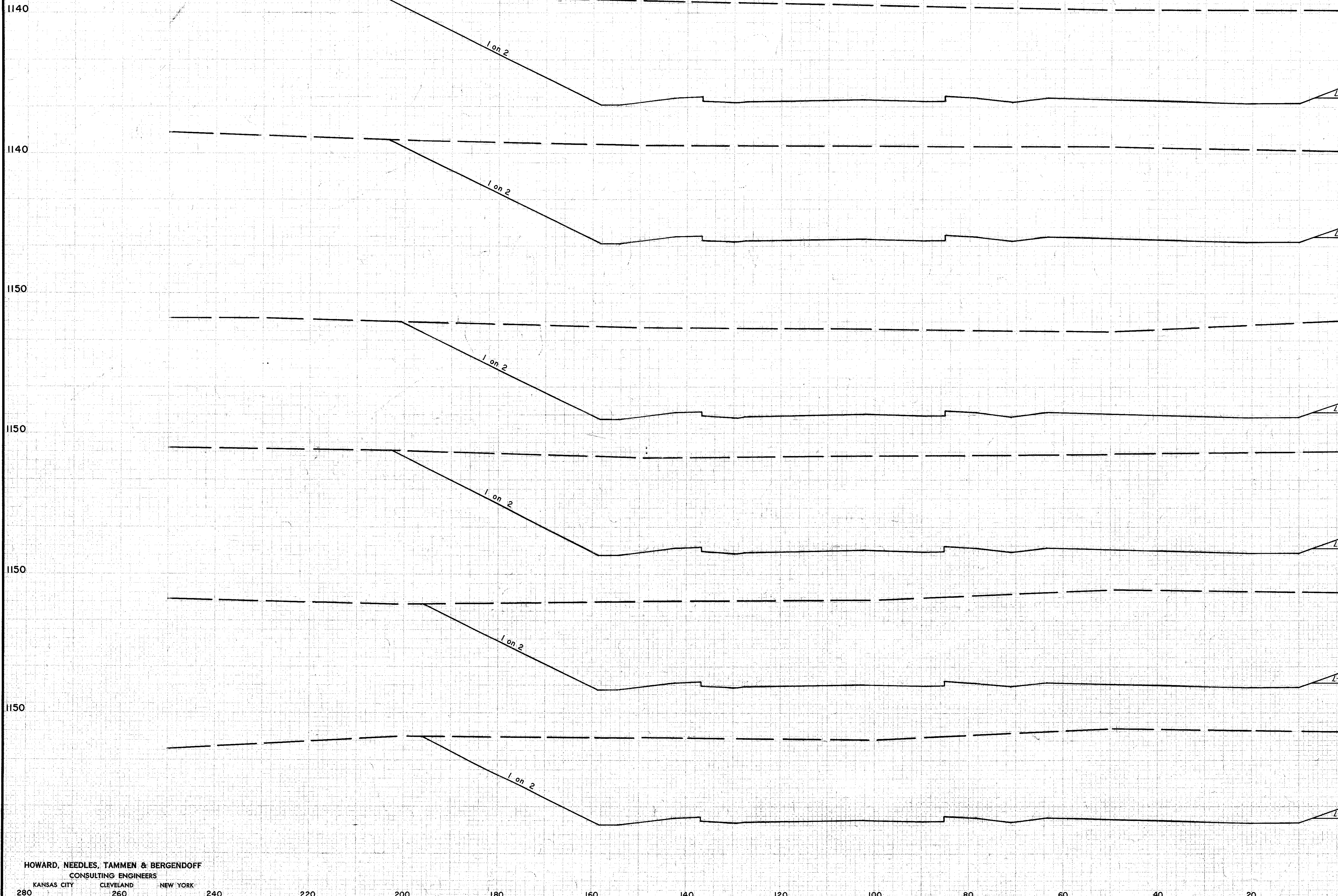
SEEDING WIDTH	END AREA SQ. YD.	CU. YDS.	
		CUT	FILL
1140	3253	0	0
1140	5928	0	0
1140	3150	0	0
1140	5837	0	0
1140	3153	0	0
1140	5617	0	0
1140	2915	0	0
1140	4877	0	0
1140	2343	0	0
1140	3777	0	0
1140	1745	0	0



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

Sta. 513+50

CUYAHOGA COUNTY
CUY-1-2.20



STATION	ELEVATION	SEEDING		END AREA		CU. YDS.	
		WIDTH	SQ. YD.	CUT	FILL	CUT	FILL
518 + 31.72	1122.60 1140.6			3683	0		
518 + 24	1122.68 1140.3			3632	0	1045	0
518 + 00	1125.12 1146.2			3369	0	3111	0
517 + 50	1126.12 1146.2			3687	0	6532	0
517 + 00	1127.12 1146.0			3417	0	6577	0
516 + 50	1128.12 1145.7			3237	0	6157	0
Sta. 516 + 00				3109	0	5877	0

ORIGINAL SURVEY 11-4-58
 DD5 ✓ HUH
 RC ✓ DDS
 RC
 RC
 11-4-58
 12-9-58
 1-7-59

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

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

207
313

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	END AREA		CU. YDS.	
	SQ. YD.	CUT	FILL	
		3602	0	
		6457	0	
		3594	0	
		6707	0	
		3647	0	
		6707	0	
		3592	0	
		6447	0	
		3357	0	



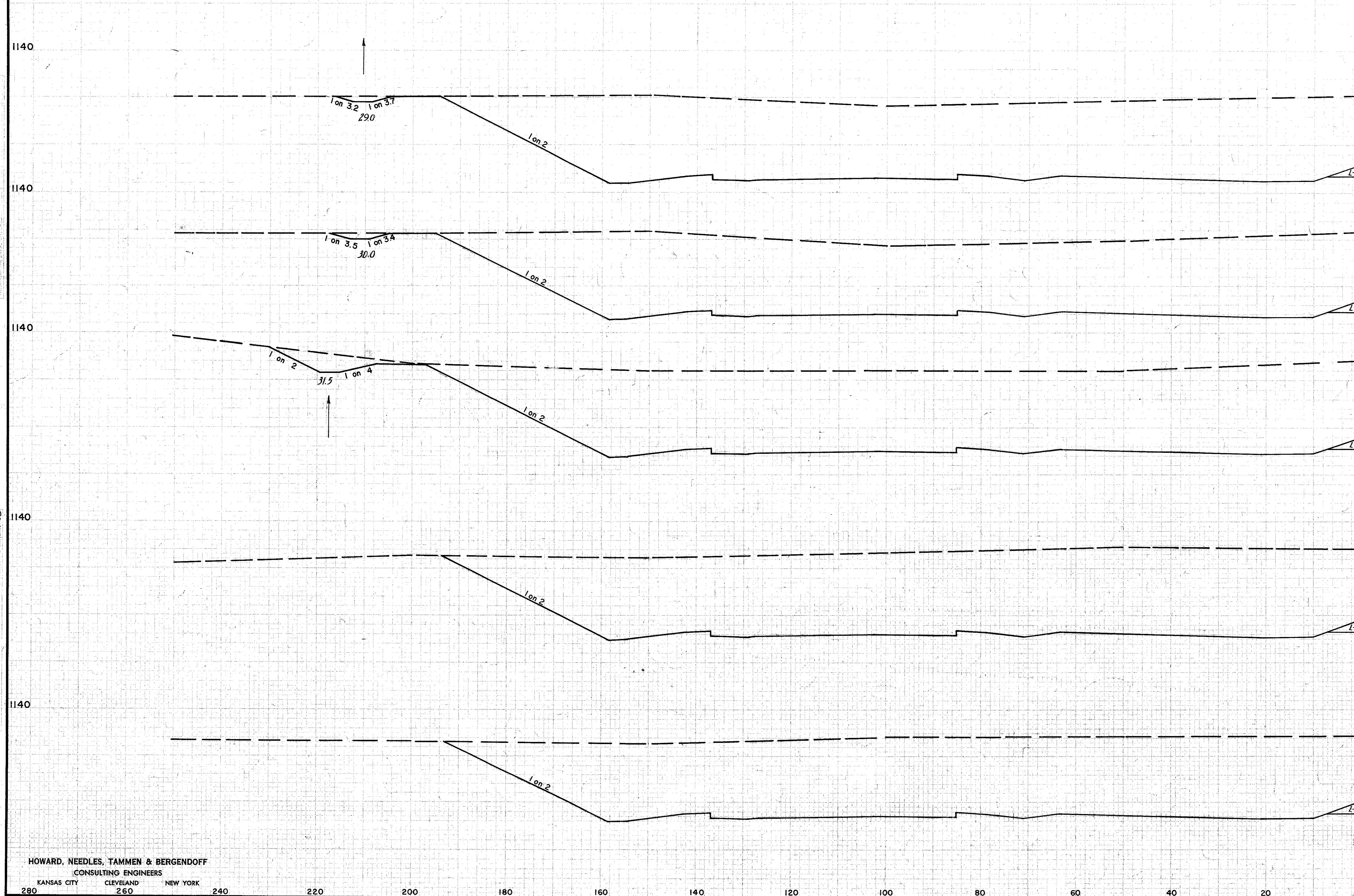
GENERAL NOTES:
 1. ALL SURVEY DATA IS TO BE USED AS SHOWN.
 2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
 3. ALL ELEVATIONS ARE TO THE CENTERLINE OF THE ROAD.
 4. ALL CUTS ARE TO BE PROTECTED WITH CURBS AND GUTTERS.
 5. ALL FILLS ARE TO BE PROTECTED WITH EROSION CONTROL MEASURES.
 6. ALL UTILITIES TO BE DEEPENED TO CLEARANCE.
 7. ALL STRUCTURES TO BE CONSTRUCTED TO MEET THE REQUIREMENTS OF THE DESIGN.
 8. ALL MATERIALS TO BE USED SHALL BE OF THE BEST QUALITY AVAILABLE.
 9. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS.
 10. ALL CHANGES SHALL BE APPROVED BY THE ENGINEER.

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

Sta. 519+00

RIGHT HALF STA. 519 + 50 TO STA. 521 + 00

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			2920	0
				5397
			2910	0
				5627
			3167	0
				5811
			3109	0
				5637
			2977	0
				5867
			3358	0

ORIGINAL SURVEY
 SURVEY
 DATE
 NO.

DD5
 PC
 NLS

11-4-58
 12-9-58
 1-2-59

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

Sta. 521+00 3358 0

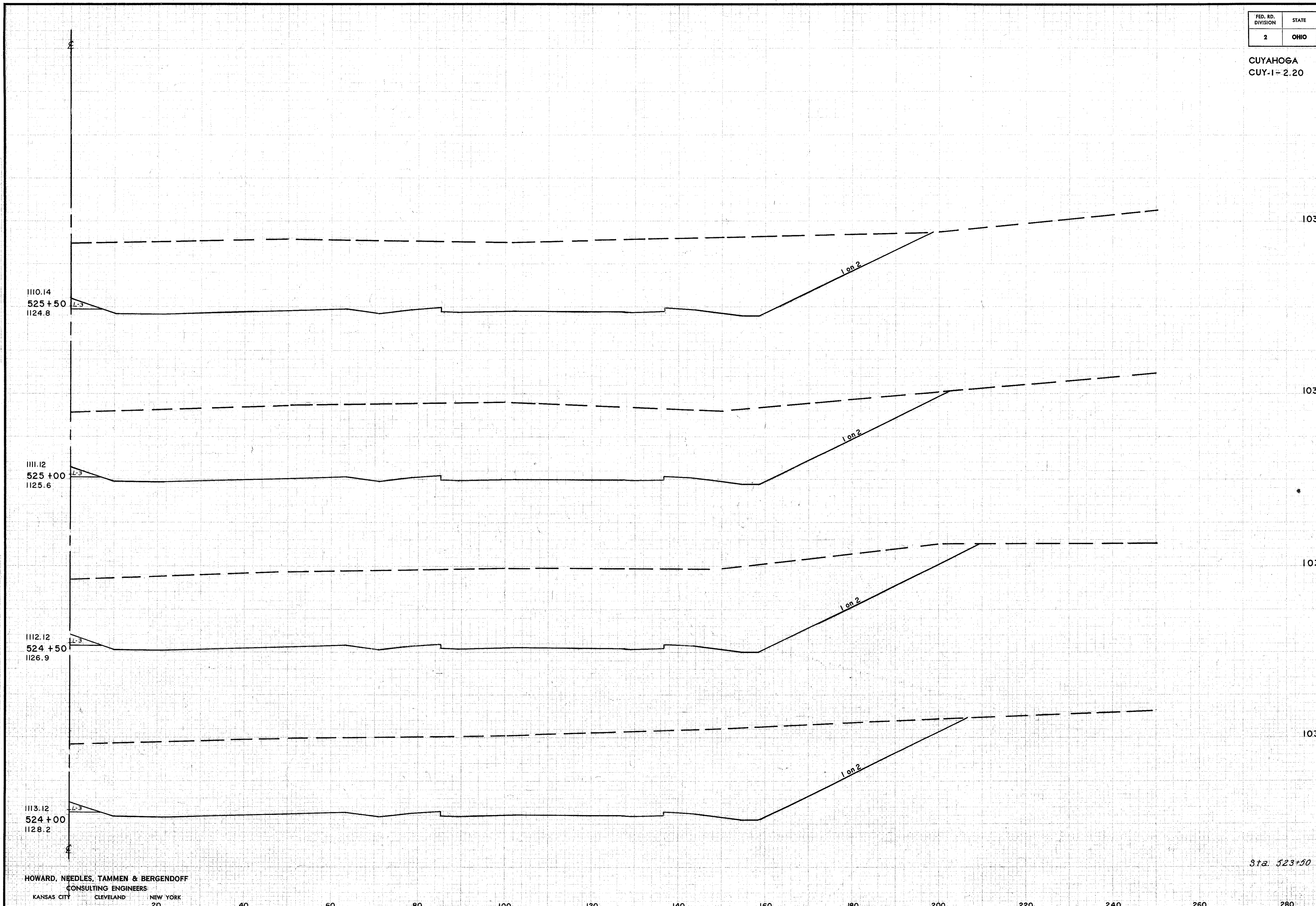
LEFT HALF STA. 521 + 50 TO STA. 523 + 50

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

211
313

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	END AREA		CU. YDS.	
	SQ. YD.	CUT	FILL	CUT
		2977	0	
		3092	0	
		3347	0	
		3397	0	
		3533	0	
				6417
				5957
				5617



DD-5 V KUH 1/4-58
 V DDS 4-2-58
 W W 1-2-59
 RC
 HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

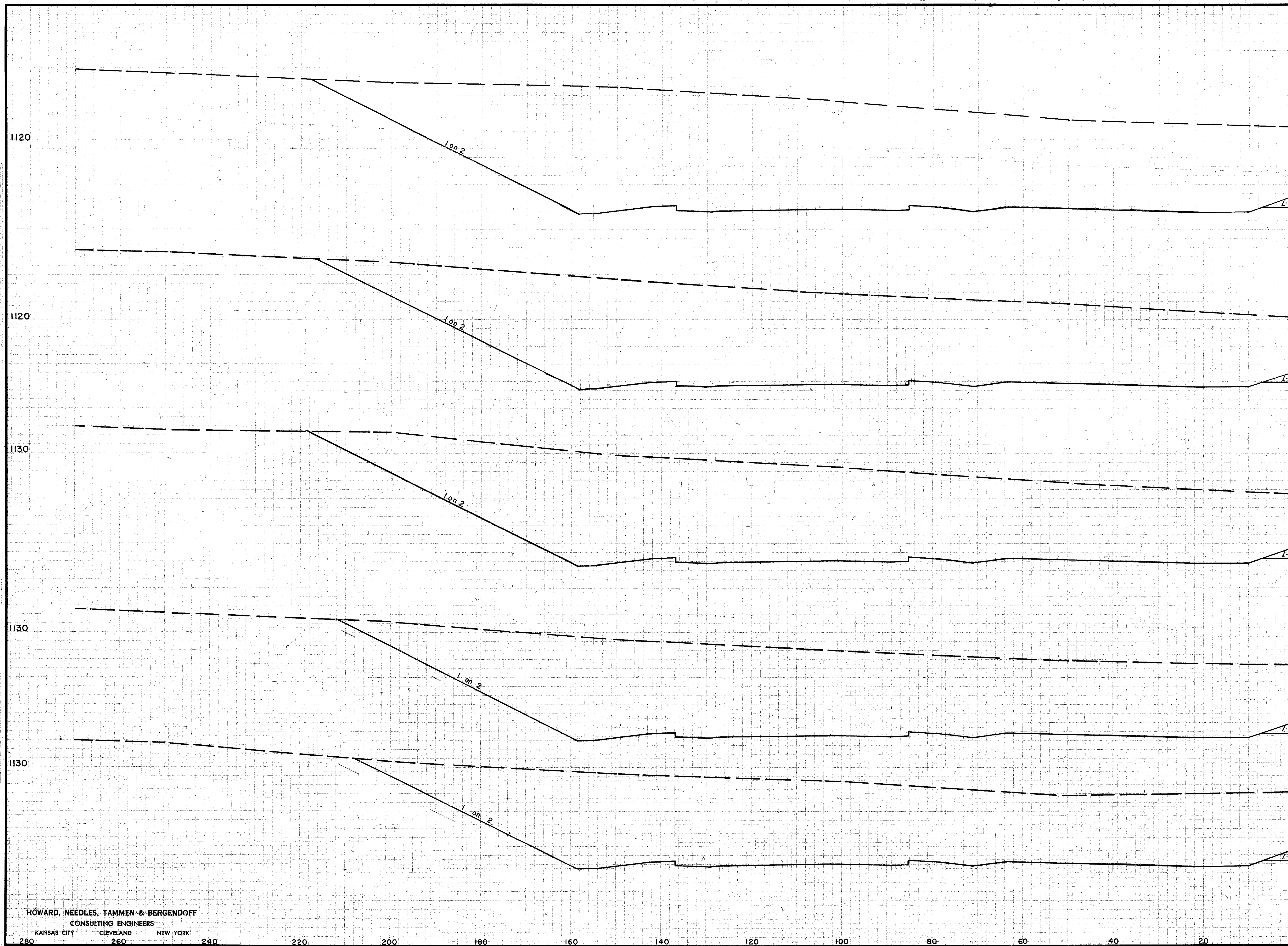
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

Sta. 523+50

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

212
313

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING	END AREA		CU. YDS.	
	WIDTH	SOYD.	CUT	FILL
			4447	0
				7667
			3831	0
				7127
			3866	0
				6815
			3495	0
				6344
			3357	0
				6237
			3379	0

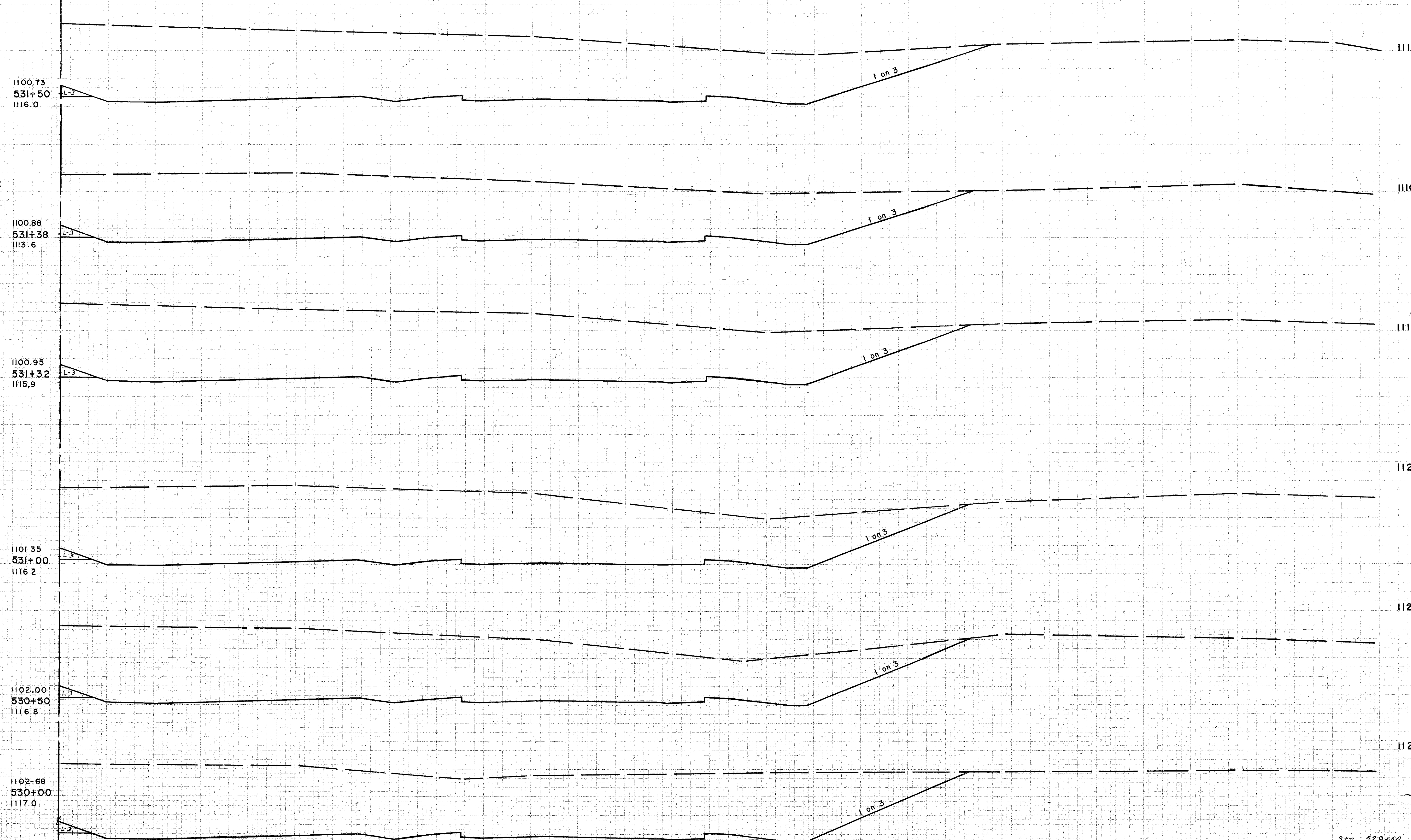
ORIGINAL
DATE
BY
CHECKED
DATE
BY
APPROVED
DATE
BY
DATE
BY
DATE
BY

DDO V HJH 11-8-58
JRG V ODS 1-2-59
MES 1-2-59

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

LEFT HALF STA. 526 + 00 TO STA. 528 + 00

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
			2357	0
				1014
			2213	0
				511
			2381	0
				2893
			2502	0
				4447
			2291	0
				4447
			2502	0
				4657
			2523	0

ORIGINAL SURVEY PLACED IN PLACE
NOT FOR CONSTRUCTION
DATE: 11/15/58
BY: V. J. H. / V. J. H. / V. J. H.
RC

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

Sta. 529+50

CUYAHOGA COUNTY
CUY-1-2.20

1099.40
532+69
1114.7

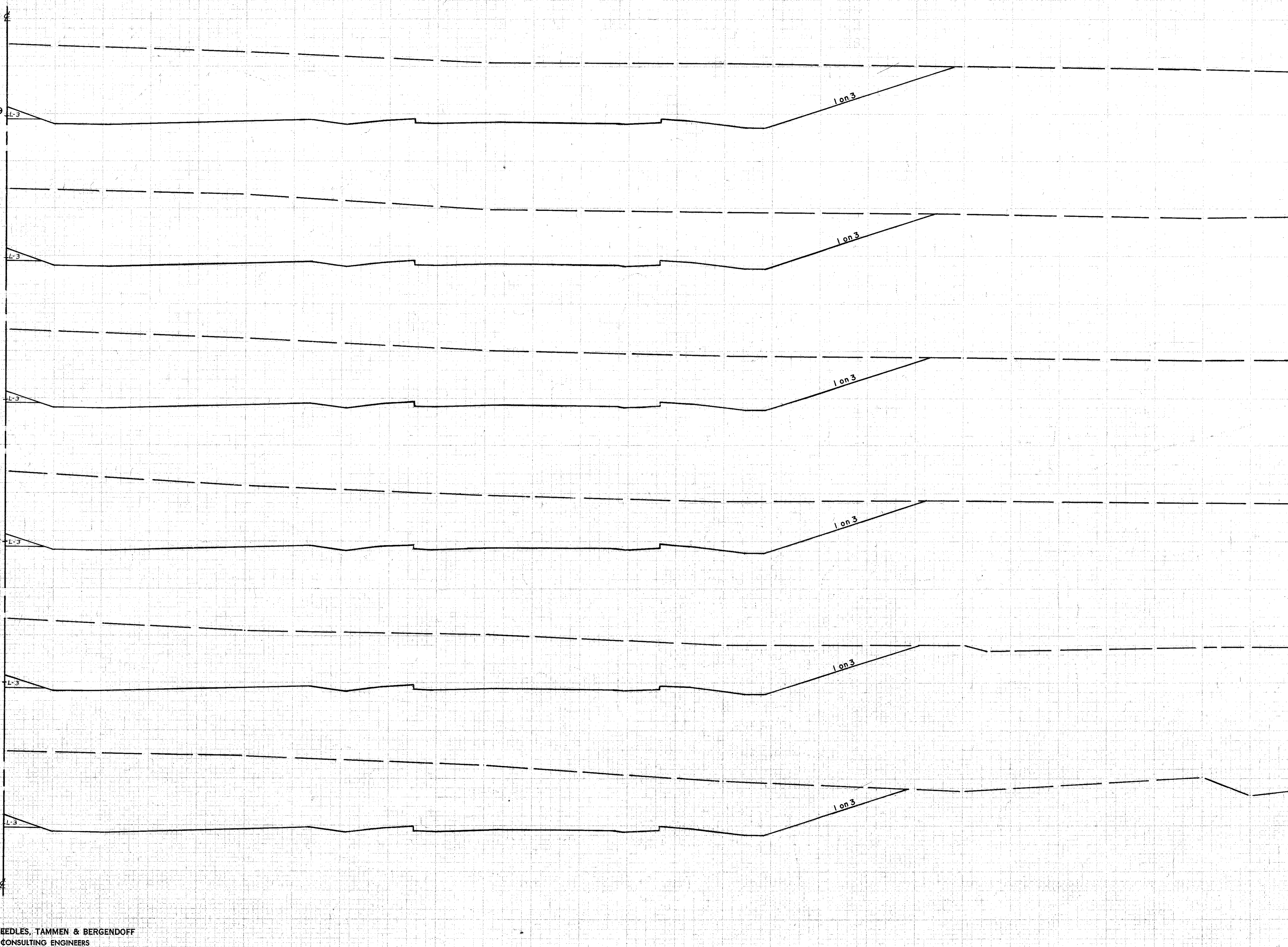
1099.59
532+50
1114.0

1099.68
532+42
1114.5

1099.73
532+32
1114.4

1099.81
532+17
1113.4

1100.14
532+00
1115.5

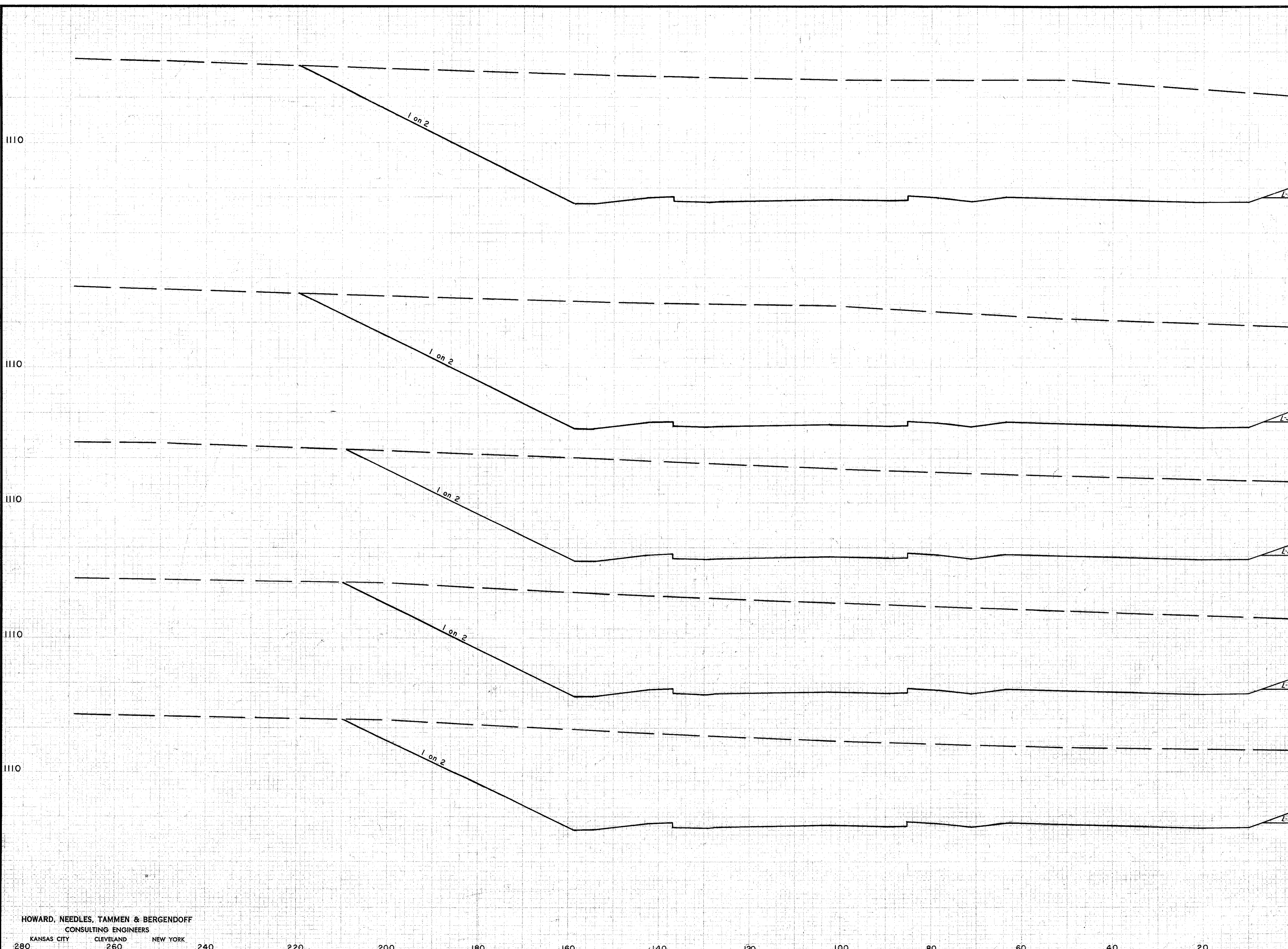


SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		2458	0		
				1657	0
		2257	0		
				669	0
		2247	0		
				806	0
		2097	0		
				1149	0
		2037	0		
				1391	0
		2387	0		
				4397	0
		2357	0		

Sta. 531+50

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

CUYAHOGA COUNTY
CUY-1-2.20



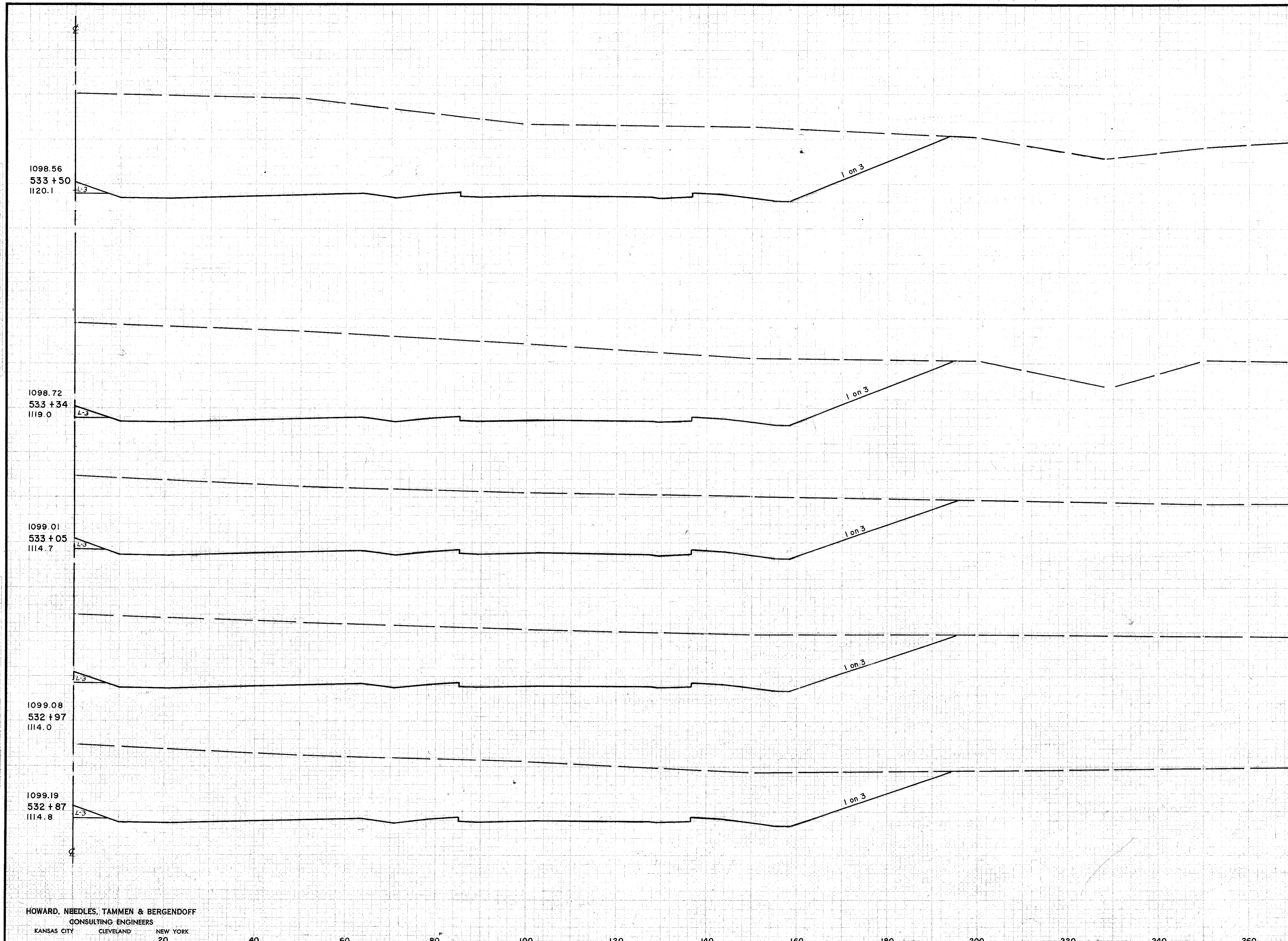
SEEDING WIDTH	END SQYD.	END AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
	1098.56 533 + 50 1120.1		499	0	
					2900
	1098.72 533 + 34 1119.0		4799	0	
					4520
	1099.01 533 + 05 1114.7		3619	0	
					1067
	1099.08 532 + 97 1114.0		3587	0	
					1321
	1099.19 532 + 87 1114.8		3549	0	
					2336
	Sta. 532 + 69		3457	0	

CHECKED: []
 SURVEY: []
 DATE: 11-3-58
 BY: []
 1-2-59

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

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
1110			3242	0
				1879
1110			3104	0
				3001
1110			2484	0
				719
1110			2370	0
				880
1110			2381	0
				1613
			2458	0



GENERAL NOTES:
1. SURVEY PLANT IS TO BE USED.
2. ALL DIMENSIONS ARE IN FEET AND INCHES.
3. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.
5. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.

GENERAL NOTES:
1. SURVEY PLANT IS TO BE USED.
2. ALL DIMENSIONS ARE IN FEET AND INCHES.
3. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.
5. ALL DIMENSIONS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.

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

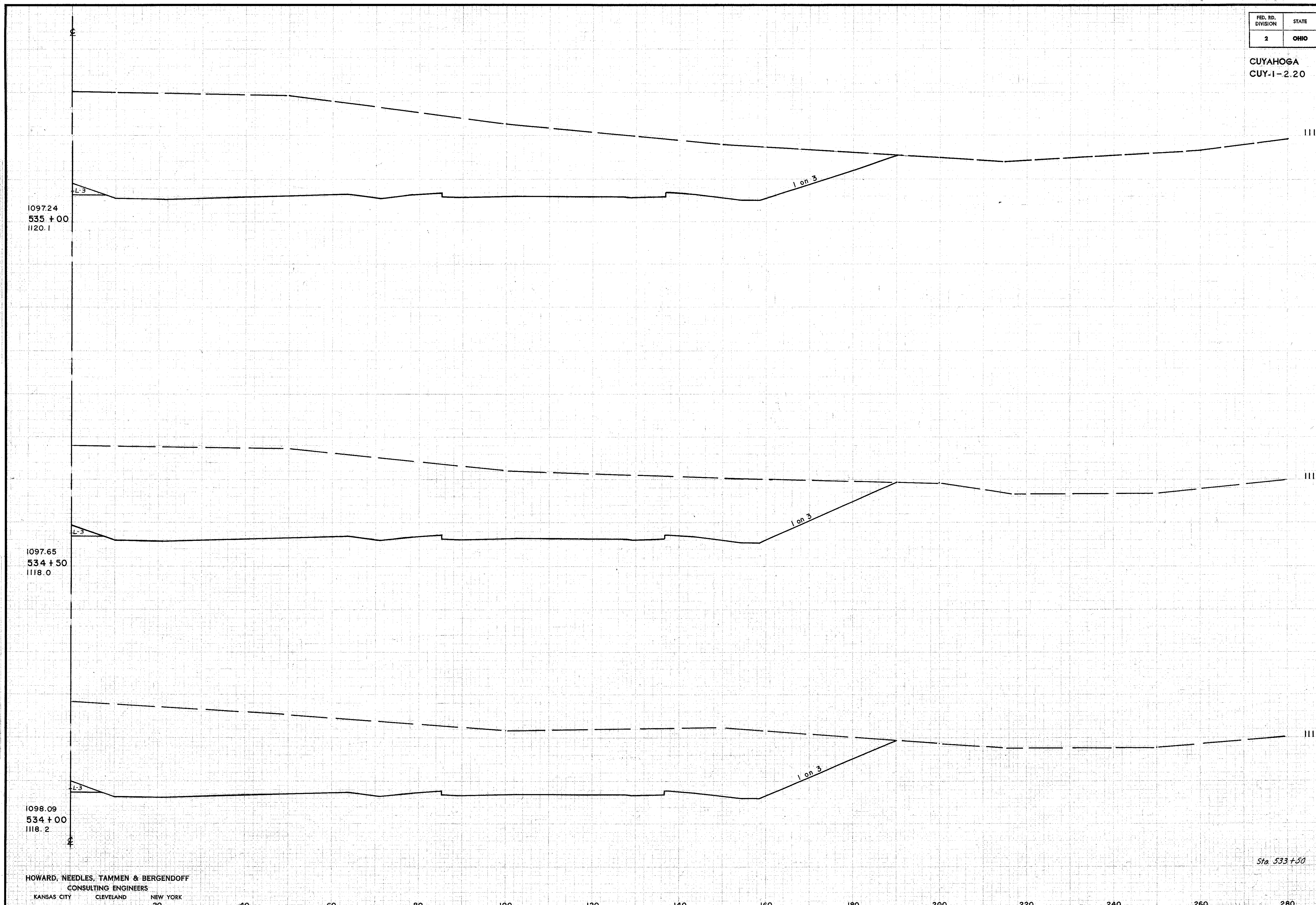
Sta. 532+69

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

223
313

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		3189	0		
				5807	0
		3073	0		
				5582	0
		2957	0		
				5747	0
		3242	0		



FRONT
SURVEY
CORRECTION
NOTES

DATE
11-4-59
1-3-59
1-3-59
1-3-59

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

Sta. 533+50

RIGHT HALF STA. 534 + 00 TO STA. 535 + 00

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

225
313

CUYAHOGA COUNTY
CUY-1-2.20

1110

SEEDING	END AREA		CU. YDS.	
	WIDTH	SQ. YD.	CUT	FILL
		3715	0	
				6982
		3821	0	
				6847
		3577	0	
				6267
		3189	0	

1196.04
536 + 50
1118.6

1096.44
536 + 00
1121.4

1096.84
535 + 50
1121.4

FINAL SURVEY PLANS
NOT TO SCALE
DATE: 11-1-58
BY: GED, VDD, MC, RC

ORIGINAL SURVEY PLANS
DATE: 11-1-58
BY: GED, VDD, MC, RC

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

40 60 80 100 120 140 160 180 200 220 240 260 280

Sta. 535+00

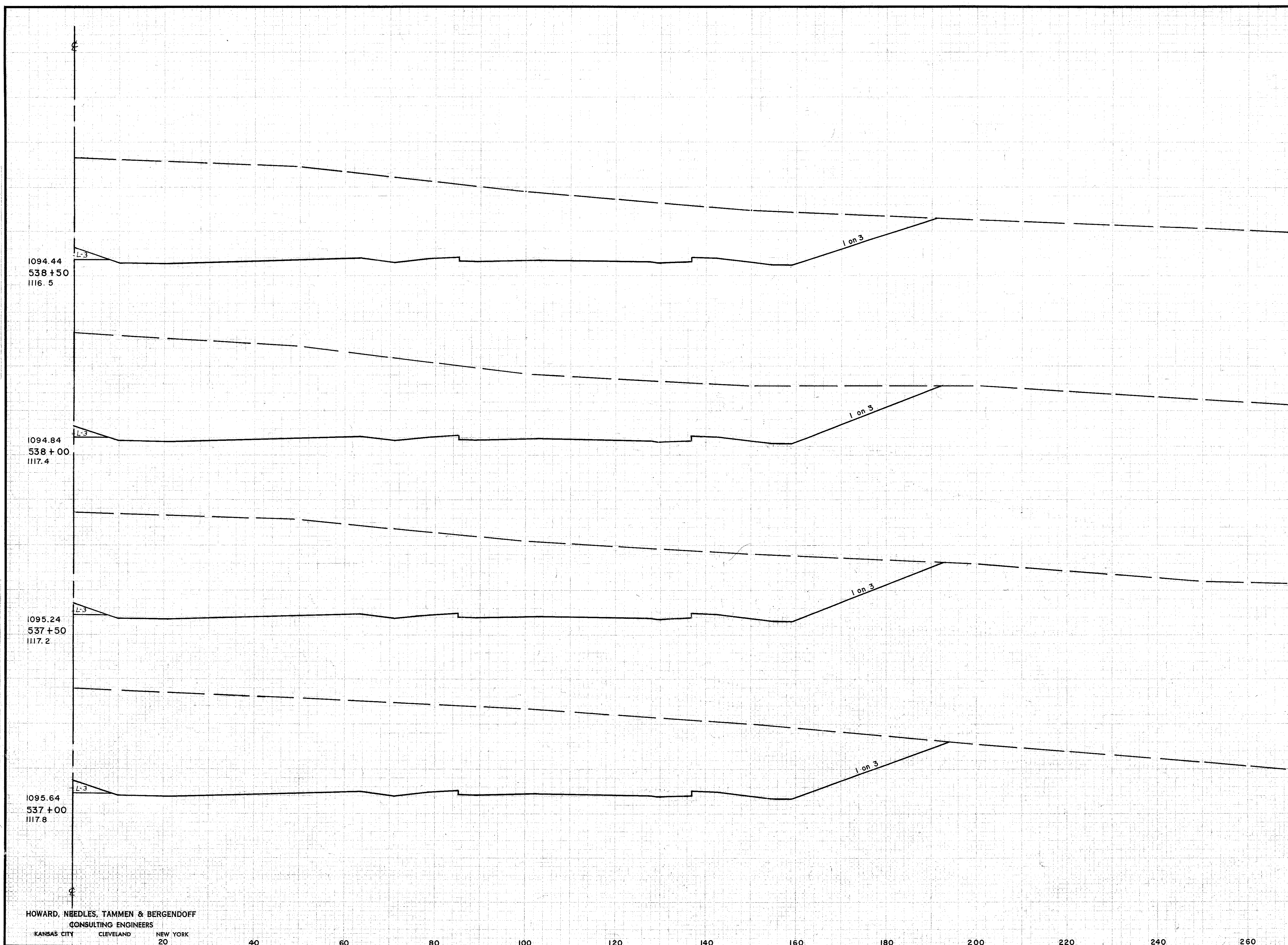
RIGHT HALF STA. 535 + 50 TO STA. 536 + 50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

227
313

CUYAHOGA COUNTY
CUY-1-2.20

SEEDING END AREA	CU. YDS.	
	CUT	FILL
1110	2984	0
1110	2980	0
1110	5732	0
1110	3205	0
1110	6127	0
	3404	0
	6597	0
Sta. 536 + 50	3715	0



GENERAL NOTES:
1. SURVEY PLOTTED
2. ALL DIMENSIONS IN FEET
3. SEE SHEET CUY-1-2.20 FOR
4. ALL DIMENSIONS IN FEET

11-4-58
1-9-59
1-3-59
GEO. / DGS
M/S
R/C

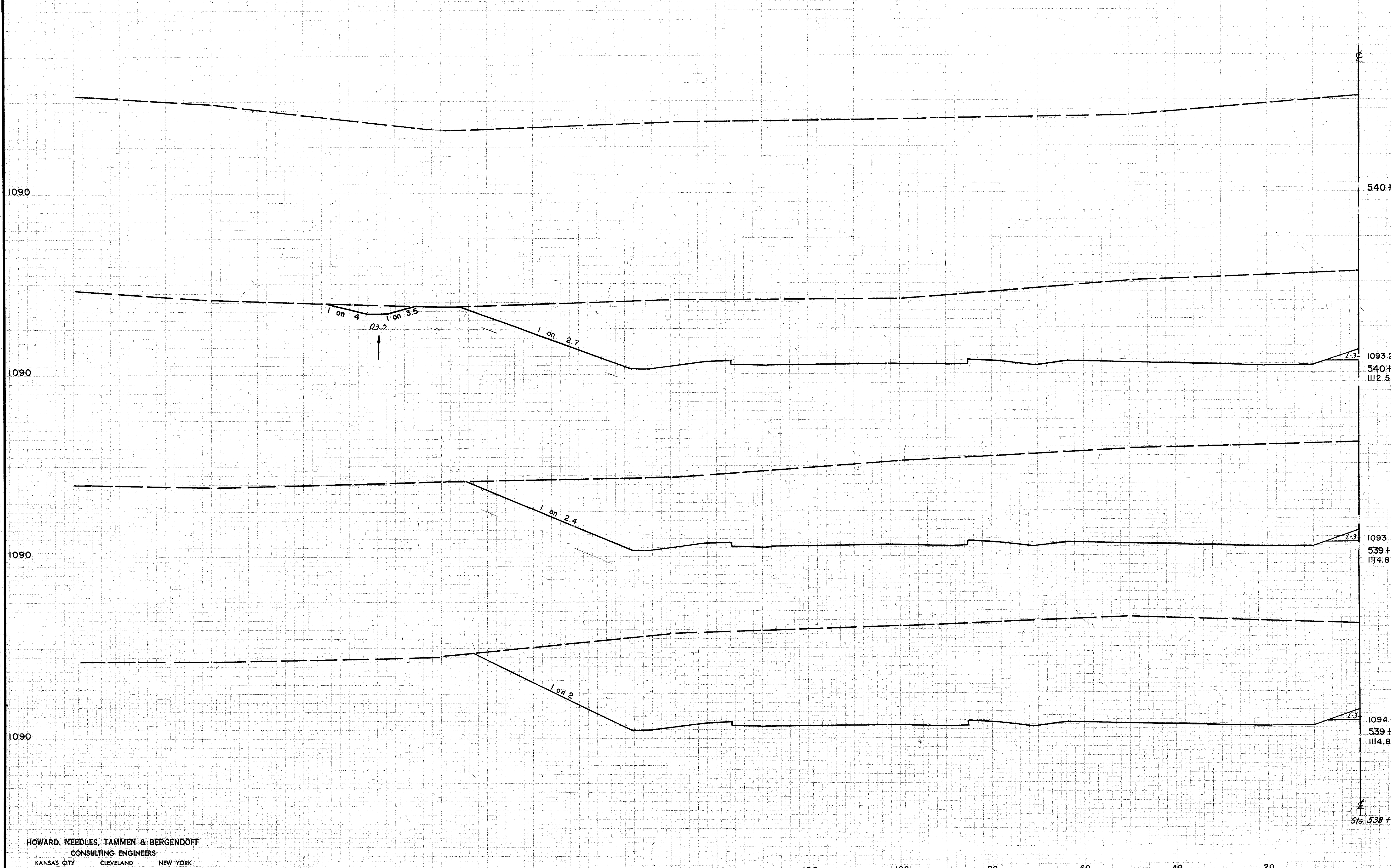
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
20

RIGHT HALF STA. 537 + 00 TO STA. 538 + 50

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

228
313

CUYAHOGA COUNTY
CUY-1-2.20



SEEDING WIDTH	END AREA SQ.YD.	CU. YDS.	
		CUT	FILL
		0	0
			2880
	1093.24 540+00 1112.5	2895	0
			5750
	1093.64 539+50 1114.8	3315	0
			6607
	1094.04 539+00 1114.8	3828	0
			7487
	Sta. 538+50	4251	0

ORIGINAL DRAWING
DATE: 1-2-20
BY: [Signature]
CHECKED: [Signature]
DATE: 1-2-20

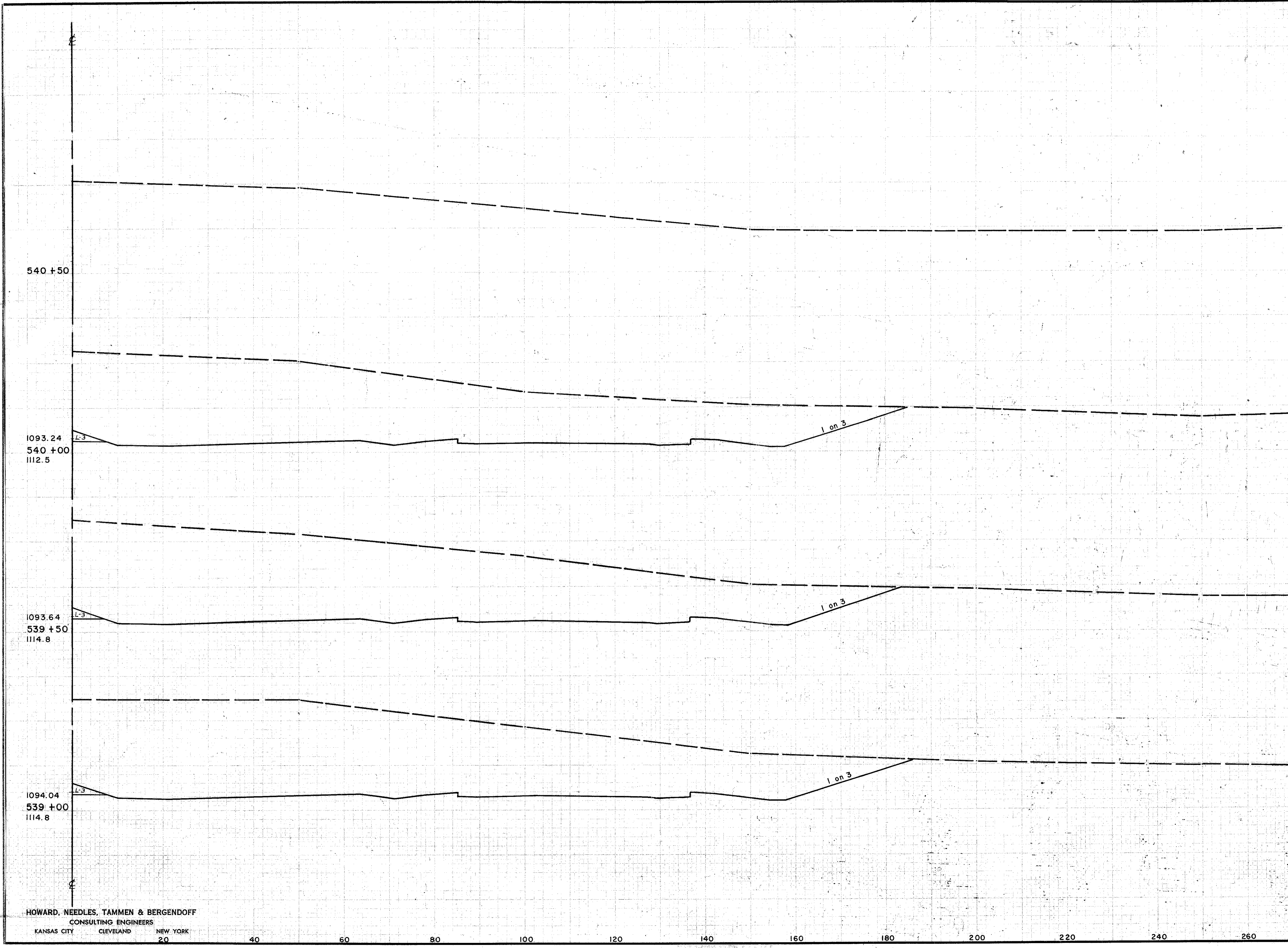
DESIGNED BY: GED
CHECKED BY: DDB
DATE: 1-2-20

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY 280 CLEVELAND NEW YORK 260

LEFT HALF STA. 539 + 00 TO STA. 540 + 50

CUYAHOGA COUNTY
CUY-I-2.20

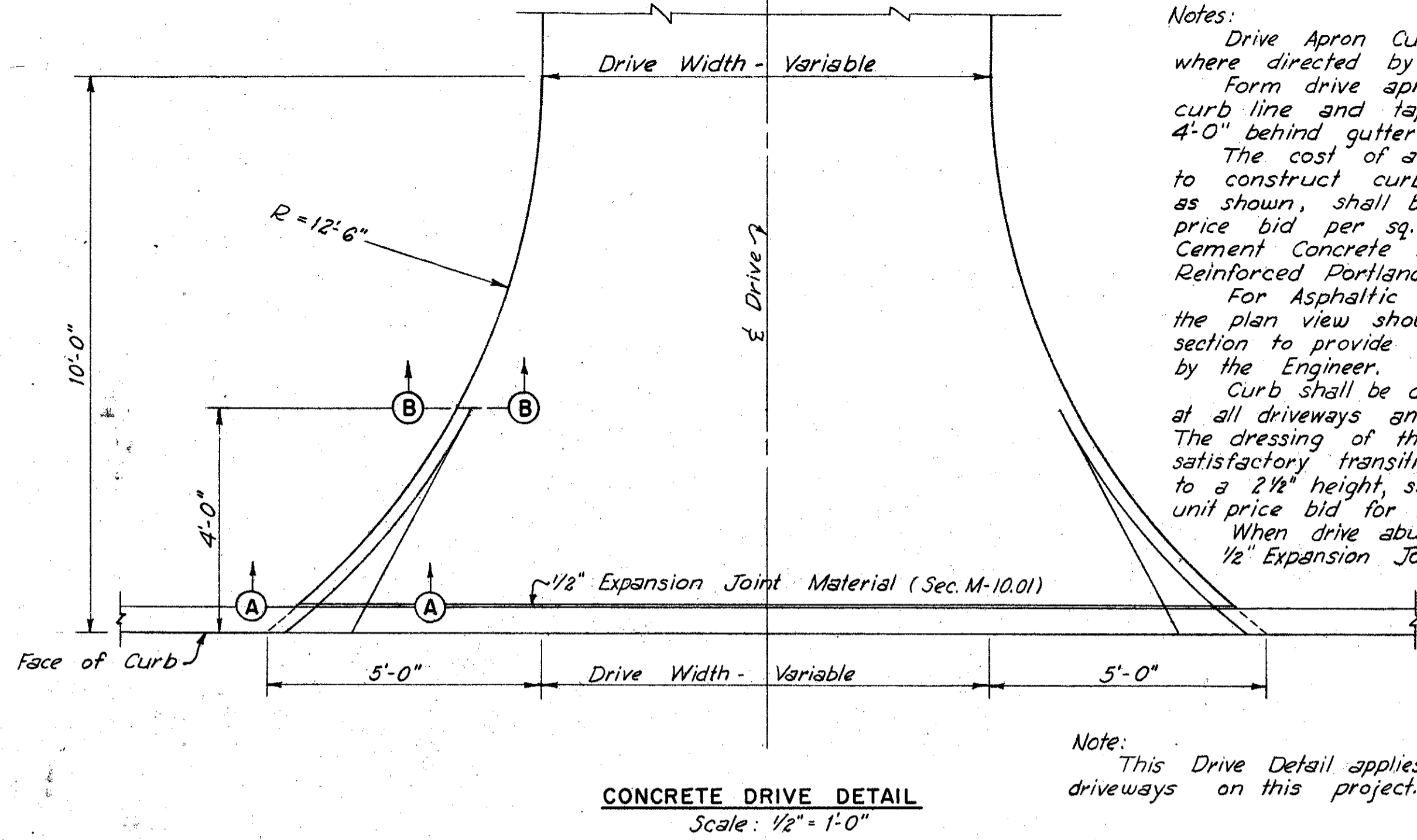
SEEDING WIDTH	END SQ. YD.	AREA		CU. YDS.	
		CUT	FILL	CUT	FILL
		0	0		
				2216	0
		2393	0		
				4637	0
		2613	0		
				5057	0
		2847	0		
				5397	0
		2984	0		



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

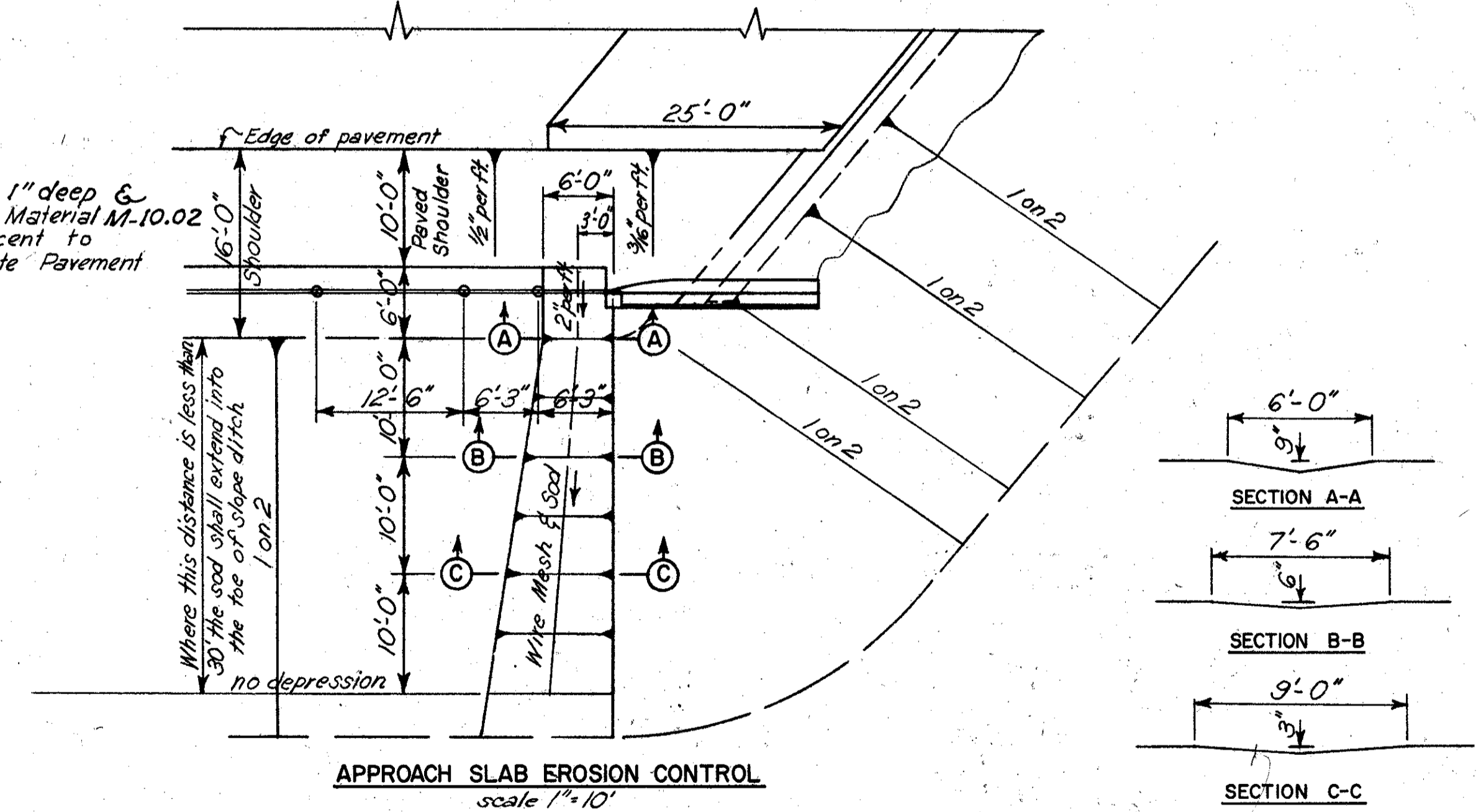
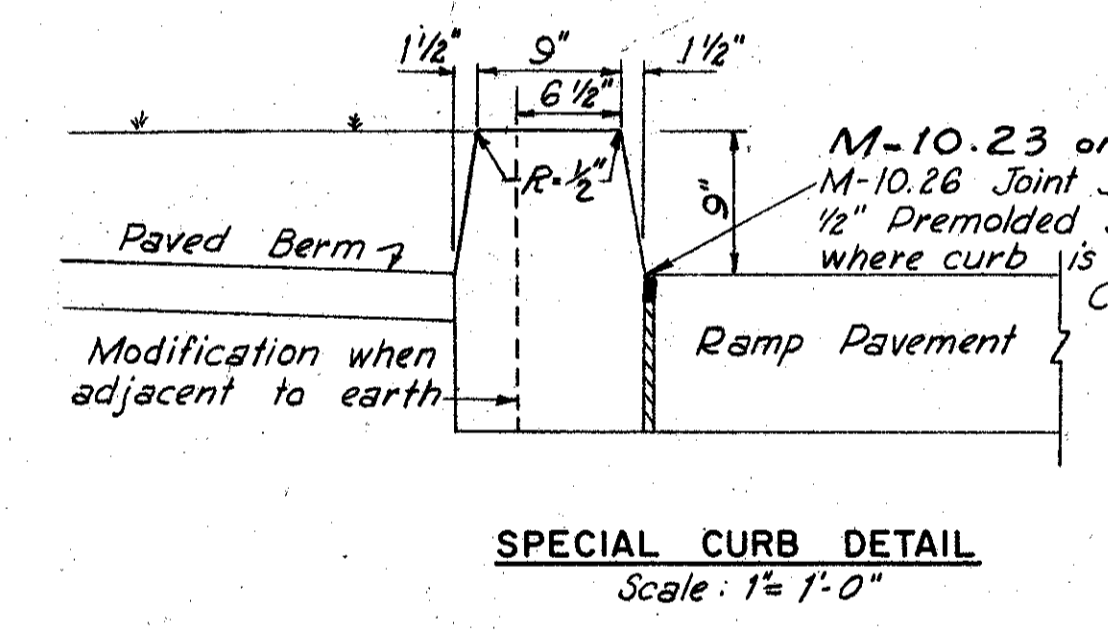
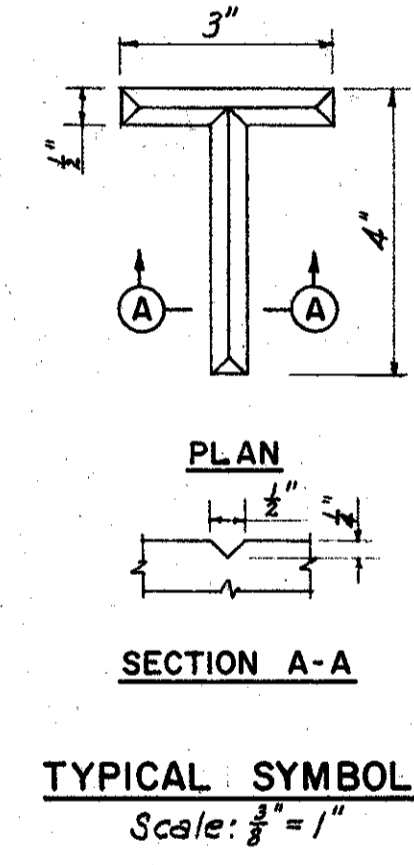
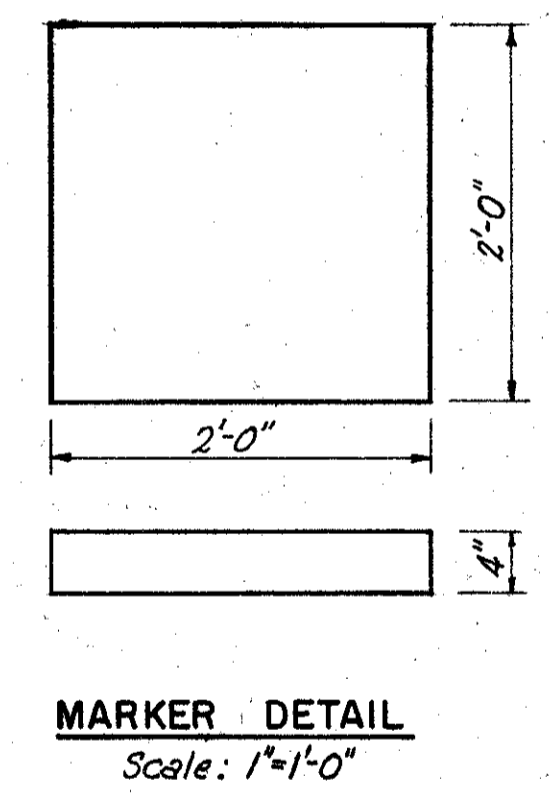
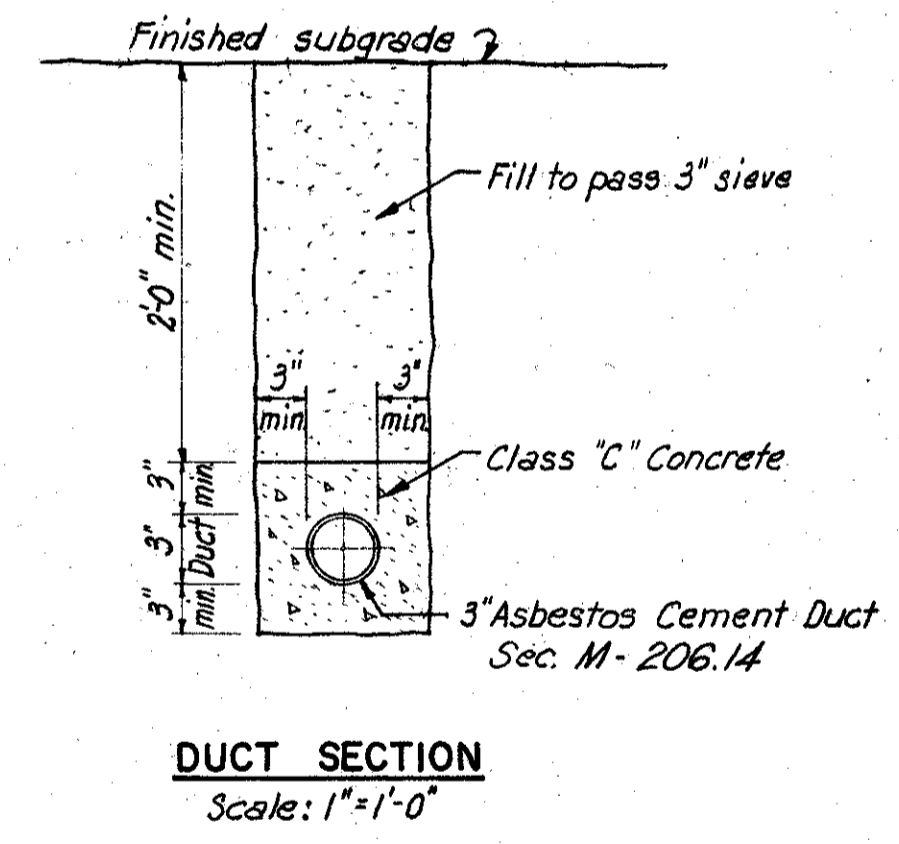
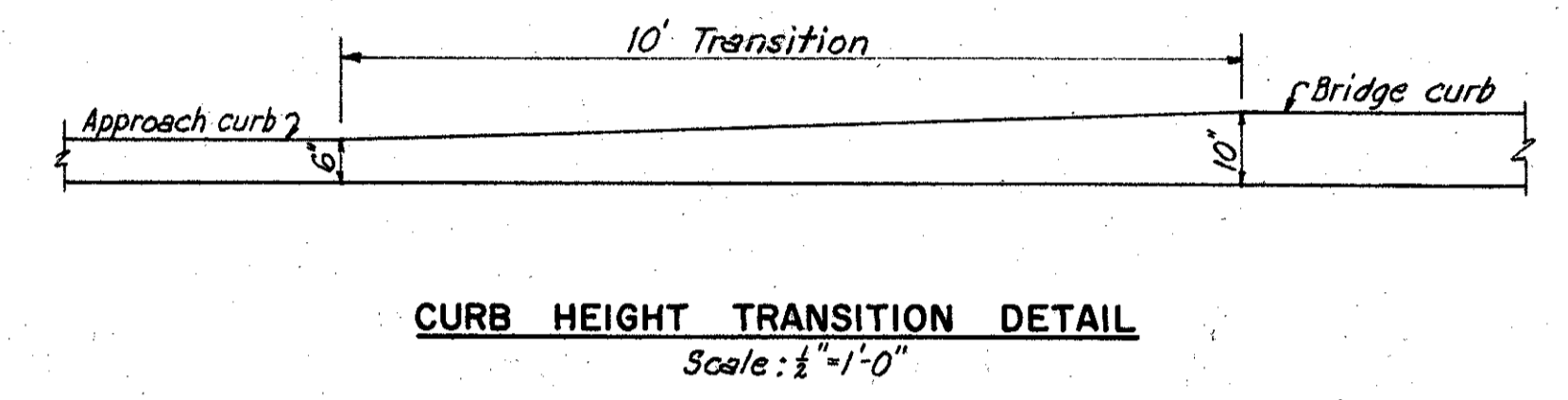
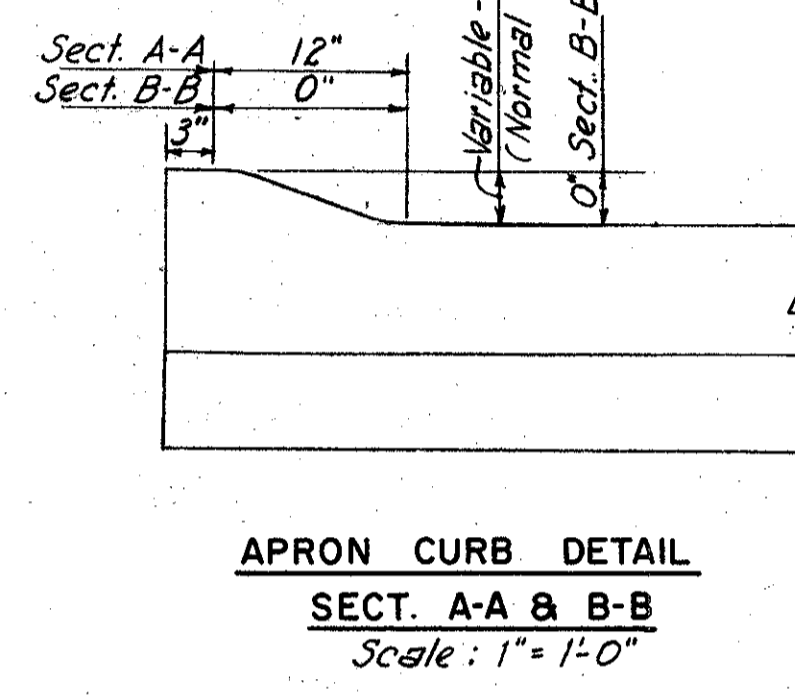
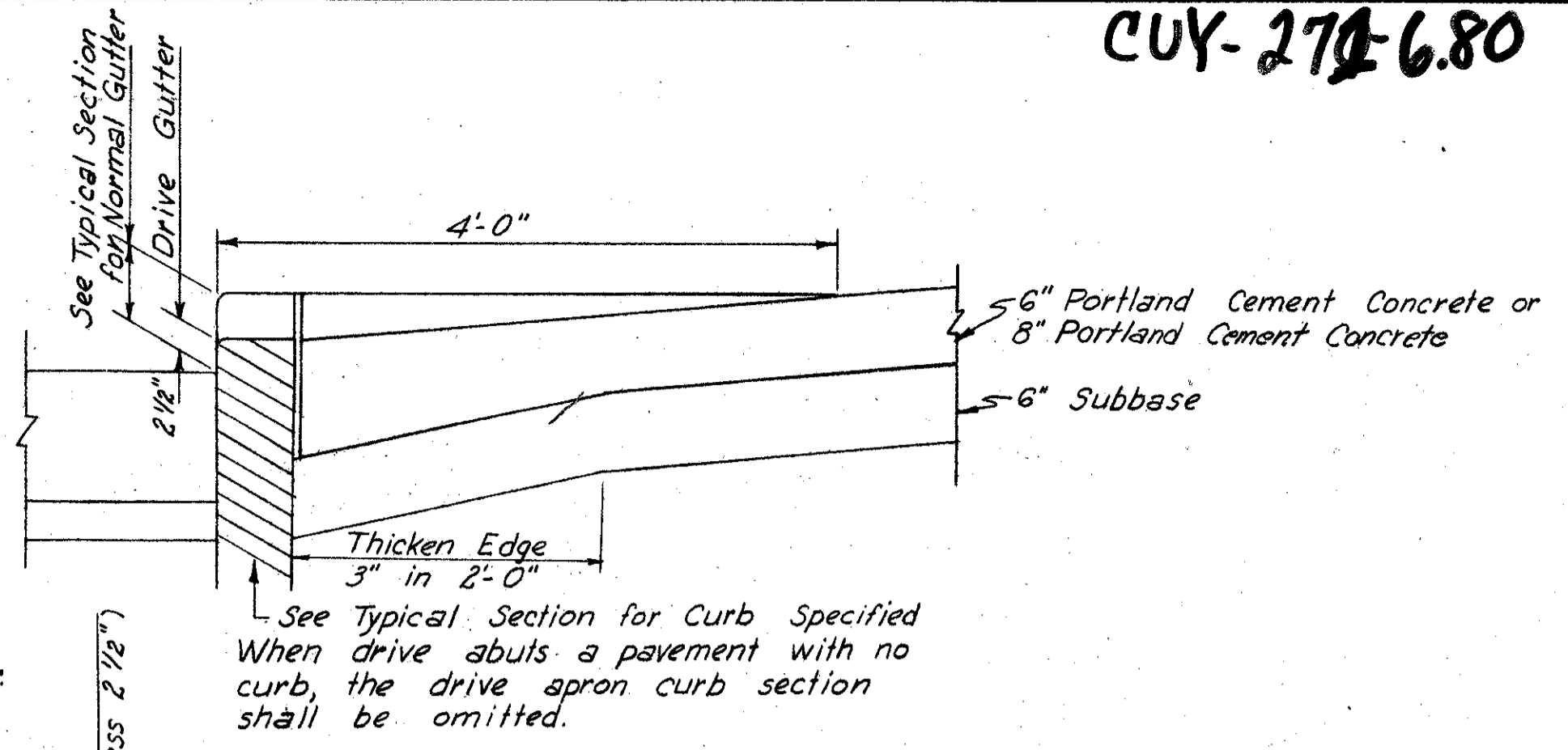
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY
CUY-1-2.20



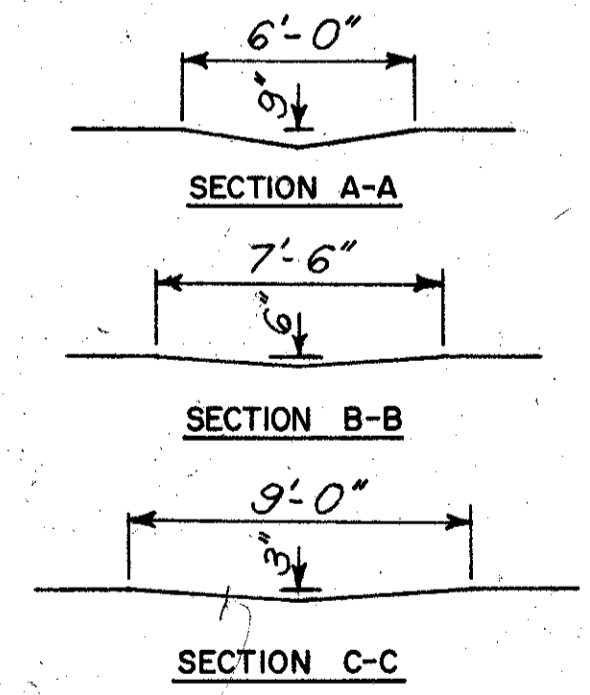
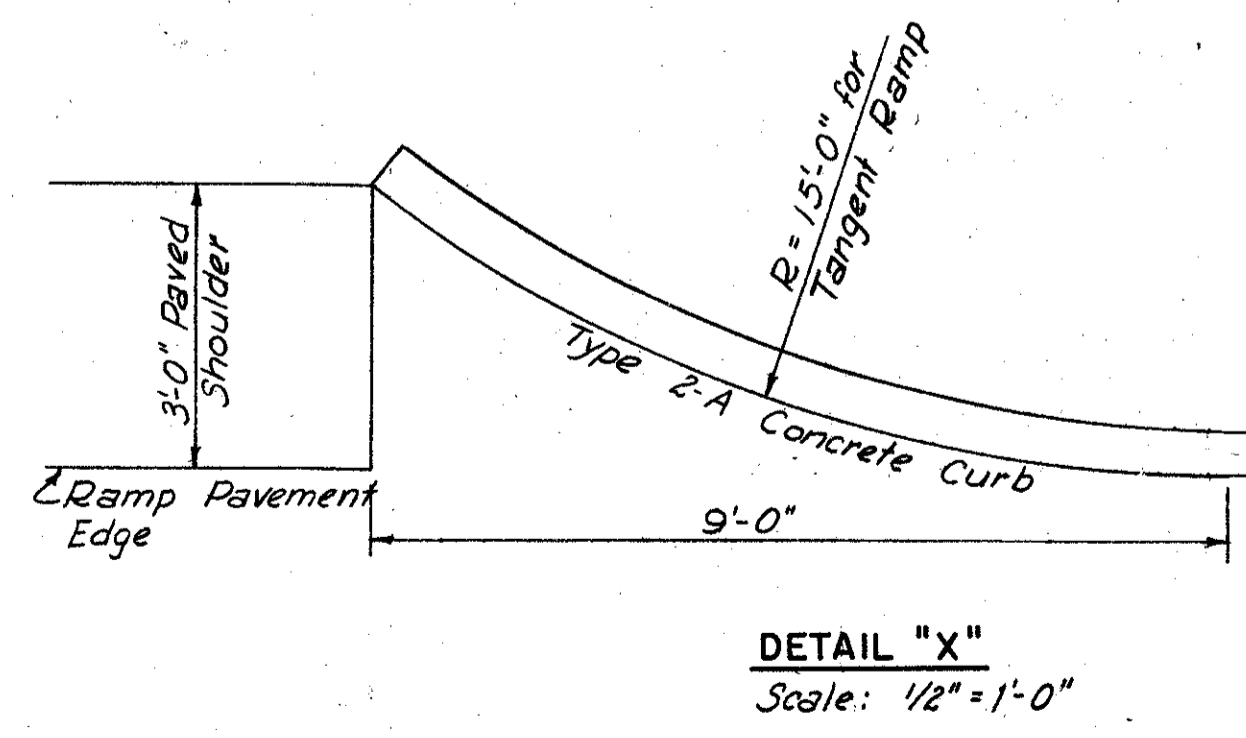
Notes:
Drive Apron Curb Section is to be placed where directed by the Engineer.
Form drive apron curb Sect. "A-A" behind curb line and taper out uniformly to no curb 4'-0" behind gutter line, as shown.
The cost of all labor and material necessary to construct curb section and thickened edge as shown, shall be included in the contract unit price bid per sq. yd. for "Item T-70, 6" Portland Cement Concrete for drives" or "Item T-71, 8" Reinforced Portland Cement Concrete for drives."
For Asphaltic Concrete and Slag drives, the plan view shown, shall be used. Shape drive section to provide for proper drainage, as directed by the Engineer.
Curb shall be dropped to provide a 2 1/2" gutter at all driveways and wherever directed by the Engineer.
The dressing of the Curb, necessary to effect a satisfactory transition from the normal curb height to a 2 1/2" height, shall be included in the contract unit price bid for the pertinent curb specified.
When drive abuts new or existing concrete sidewalk, 1/2" Expansion Joint Material (Sec. M-10.01) shall be provided.

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



Note: Prior to placement of sod in the berm and slope, galvanized poultry fence shall be placed on the finished grade in strands which shall be at right angles to the direction of flow. Each strand shall be staked securely on top and bottom with stakes spaced at four foot intervals and alternated in rows four 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. The strands of fencing shall be fastened together at twelve inch intervals by means of hog rings. The fence shall be secured to the stakes by metal staples. Sod shall be laid in accordance with Construction and Materials Specifications Section L-10.07.

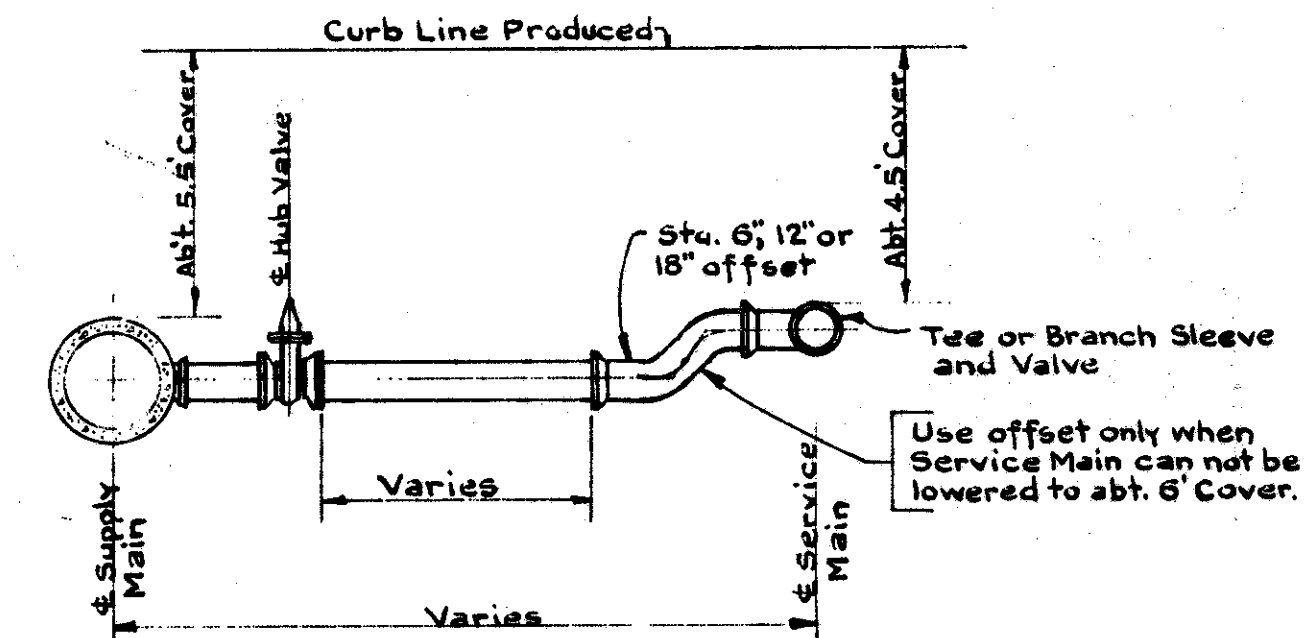
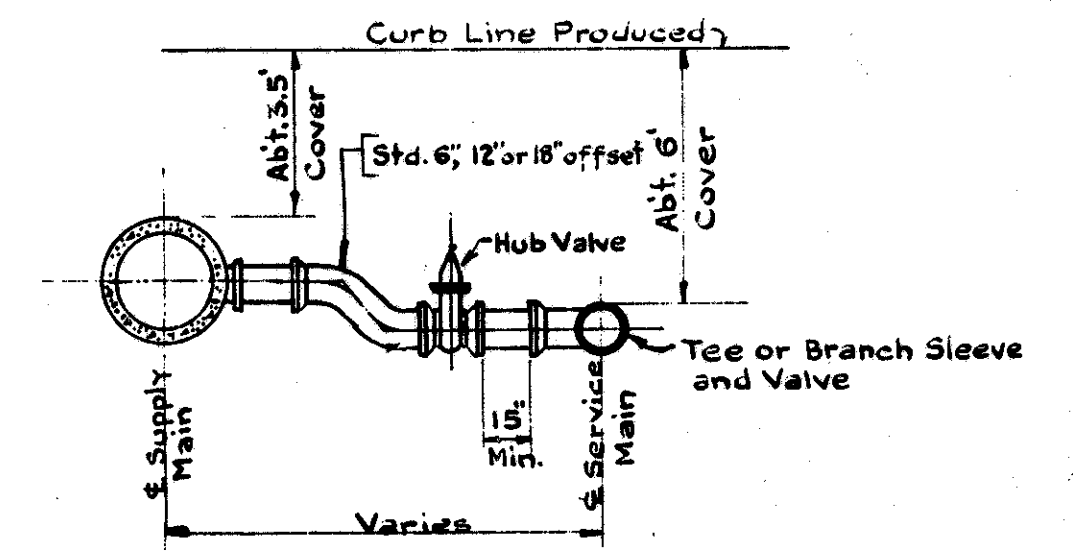
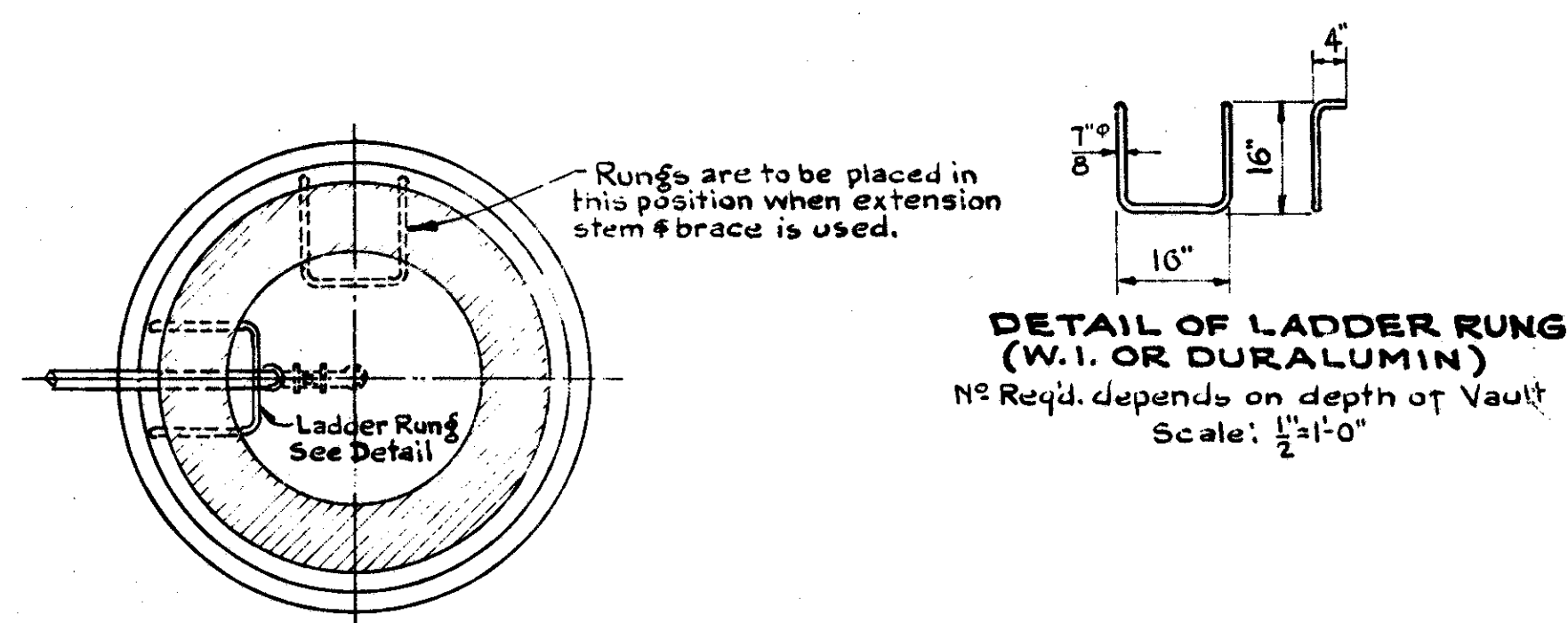
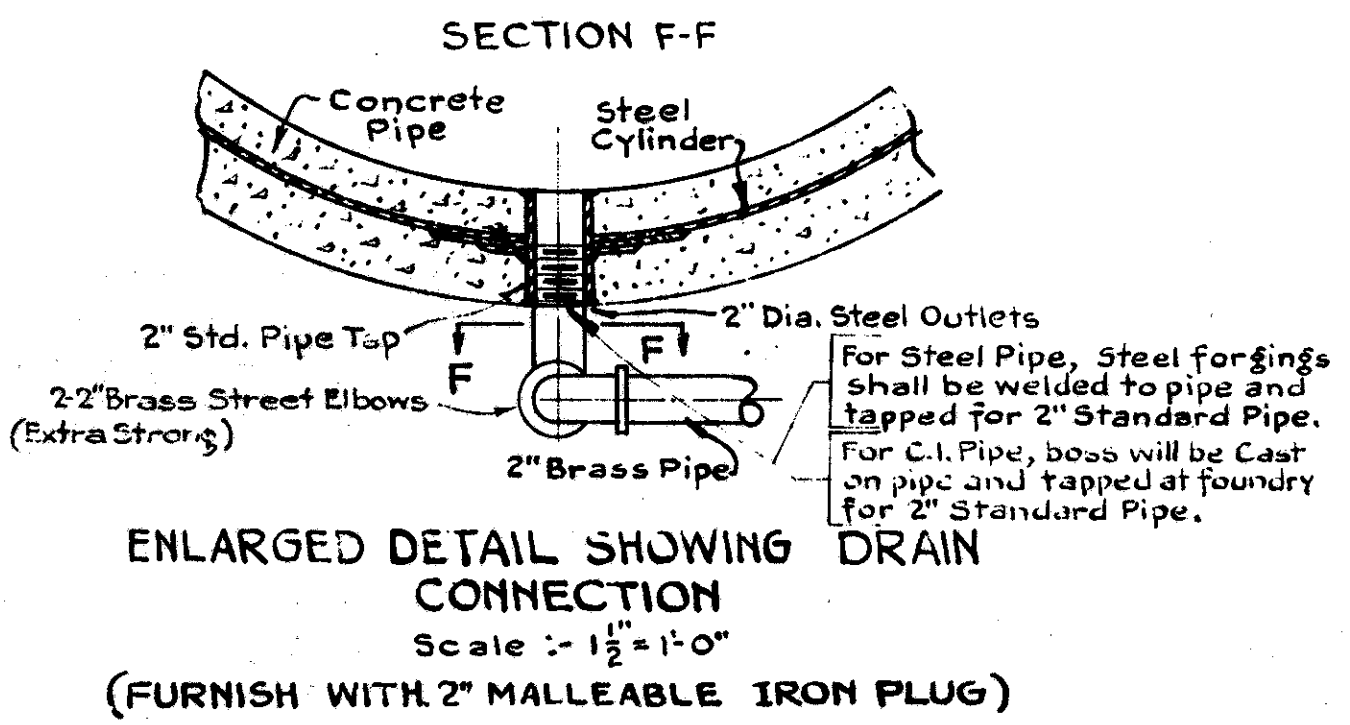
Notes:
Underground Electrical Ducts shall be encased in Class "C" concrete having a minimum thickness of 3", shall have a minimum of 2'-0" cover below subgrade and shall be pitched to drain. Ends of ducts shall extend 2' beyond the edge of paved berm or back of curb. One No. 10 AWG galvanized steel drag wire shall be left in each duct and ends of ducts shall be closed with capped bushings.
Excavation and backfill shall conform with the applicable provisions of Item E-2.
Concrete duct markers manufactured in accordance with the details shown above shall be placed over each end of each underground duct. Markers shall be installed flat on the ground, projecting 1" above the finished grade. The word "DUCT" shall be impressed in the top of the concrete markers using letters of the type and dimensions shown above. Cost of furnishing and placing markers shall be included in the unit price bid for Item S-25 3" Asbestos-Cement Conduit. For duct locations see sheets 41, 43, 46, 48, 50 and 53.



ESTIMATED QUANTITIES	
BRIDGE LOCATION	L-10
Sodding	
Harvard Rd.	76 Sq. Yd.
South Woodland Rd.	85 Sq. Yd.
Shaker Blvd.	64 Sq. Yd.
Total	225 Sq. Yd.

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

MADE	DWK	DATE	8-18-59	TRACED	DATE
CHECKED	BC	DATE	11-13-59	SCALE	As Shown



TYPICAL OFFSET CONNECTIONS
Scale: 1/4" = 1'-0"

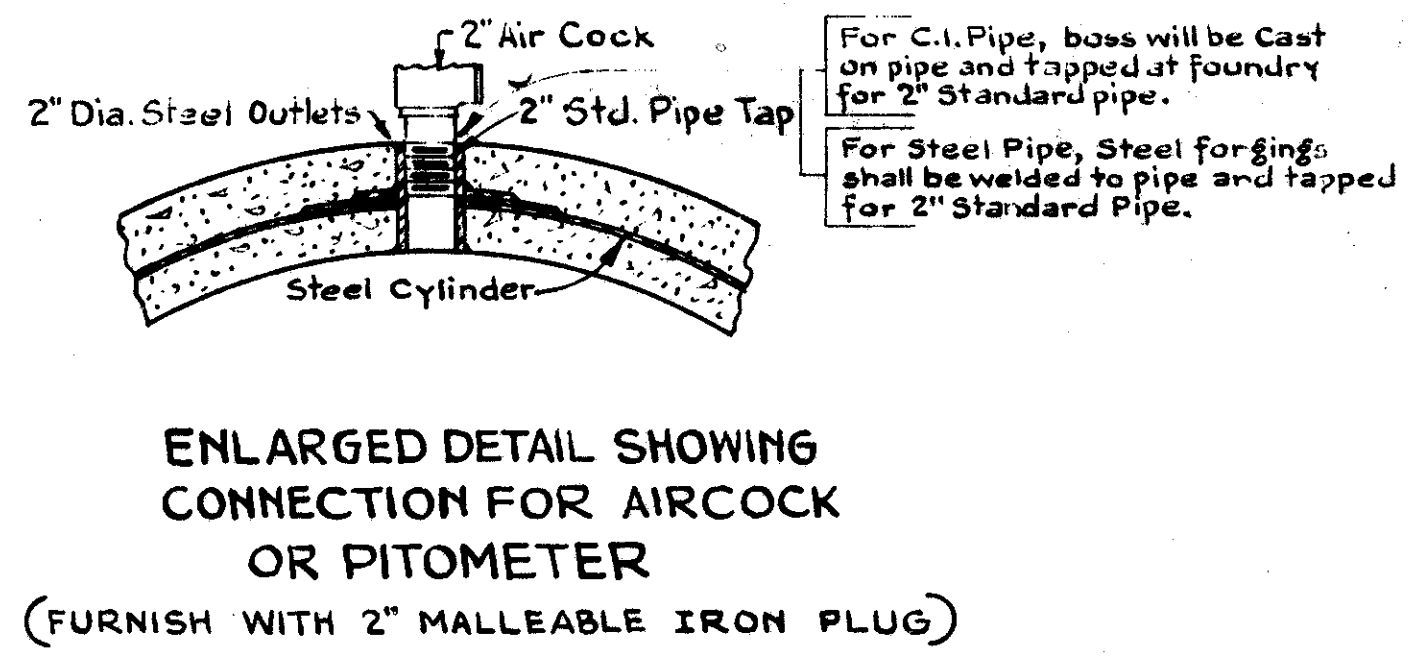
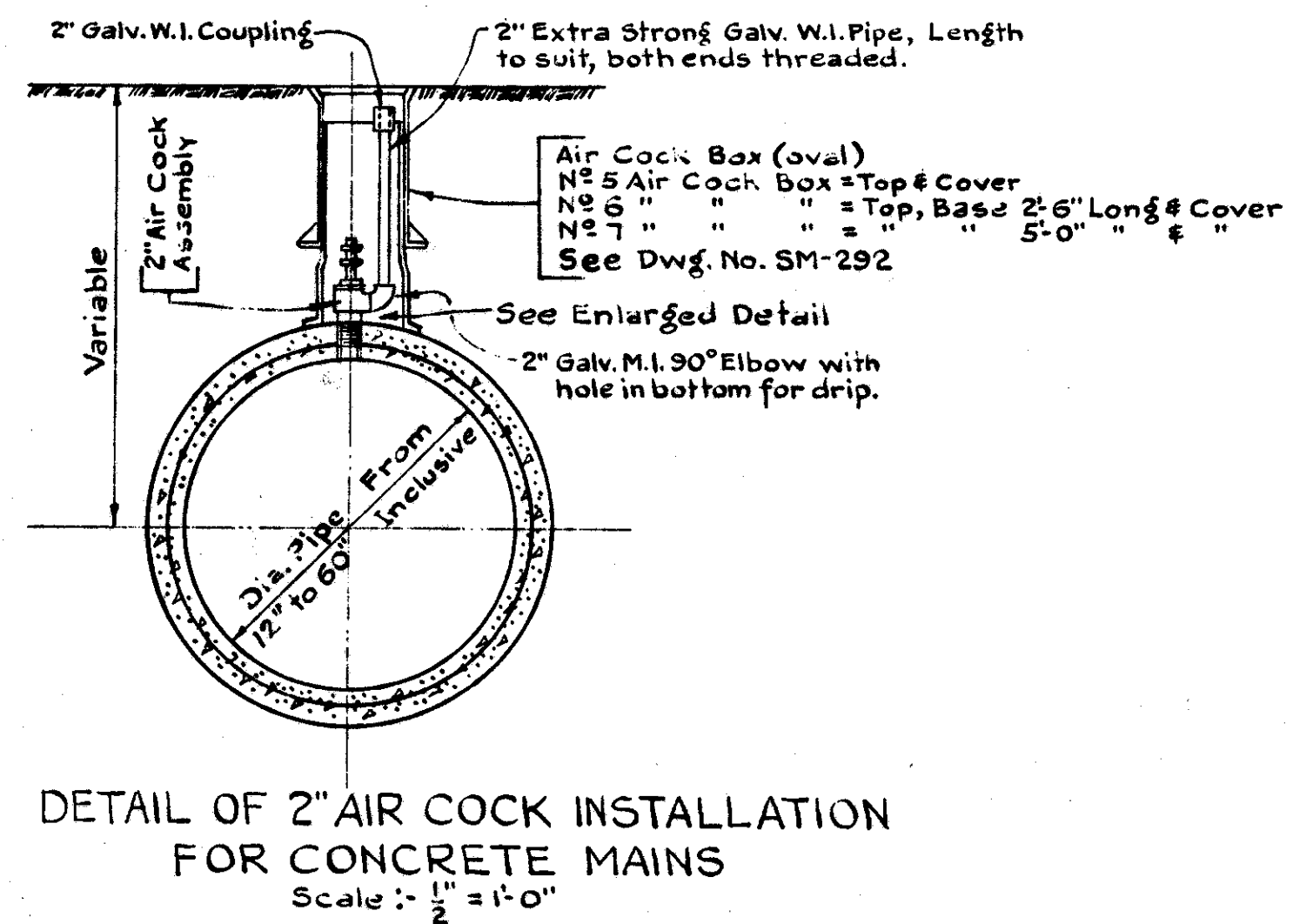
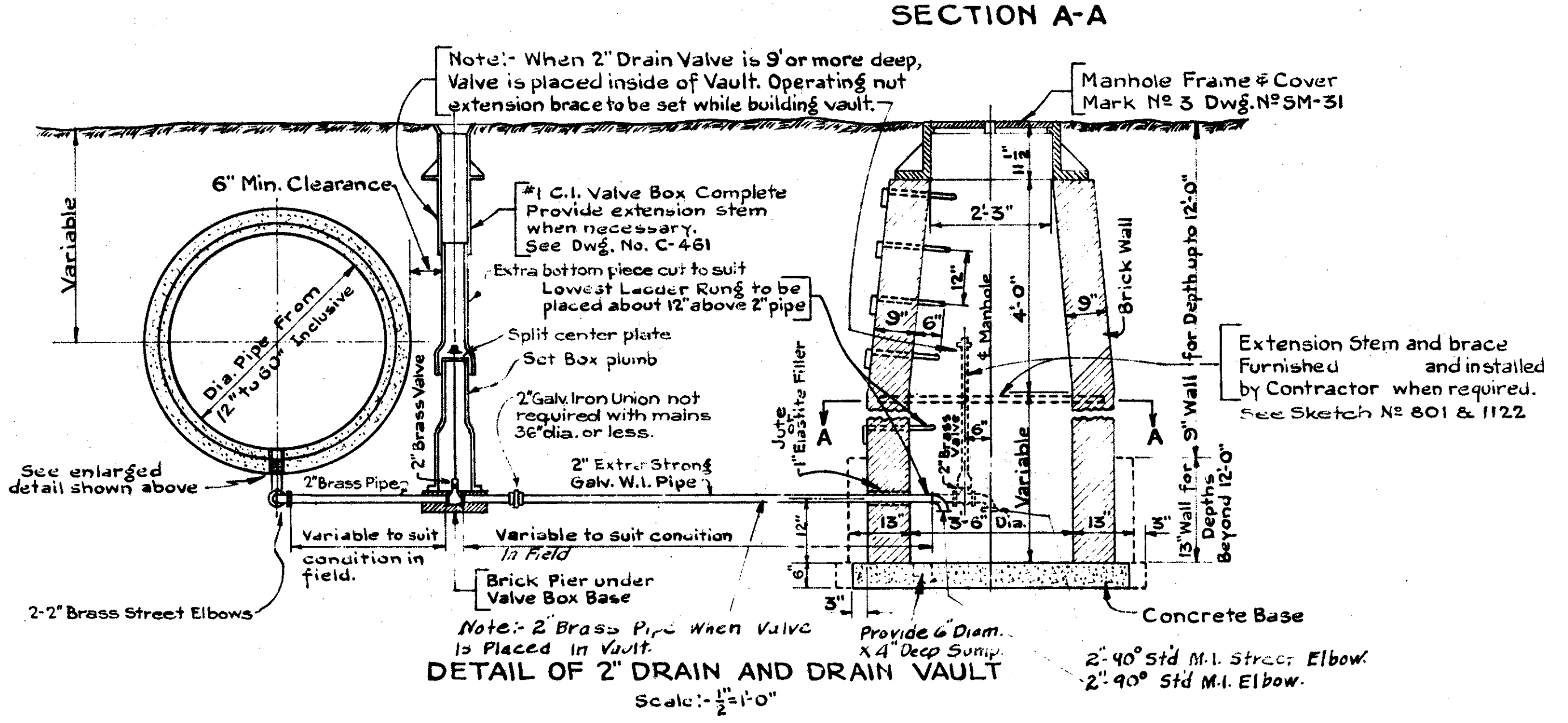
Note: The City will tap and cut existing water mains. City will furnish and install all such portions of cross connections where indicated or called for on the various contract drawings or specifications. Pipe for cross connections to be same class as that of service mains. Contractor to do all excavating and backfill for this work.

-NOTE-

Concrete: 1-2-4 Mix, 1 1/2 coarse aggregates.
Brick: Shale Brick.
Mortar: 1-3 Cement Mortar.
Plaster outside brick masonry with not less than 2 cement mortar 1-3 mixture.
All manhole frames to be set in mortar.

NOTE

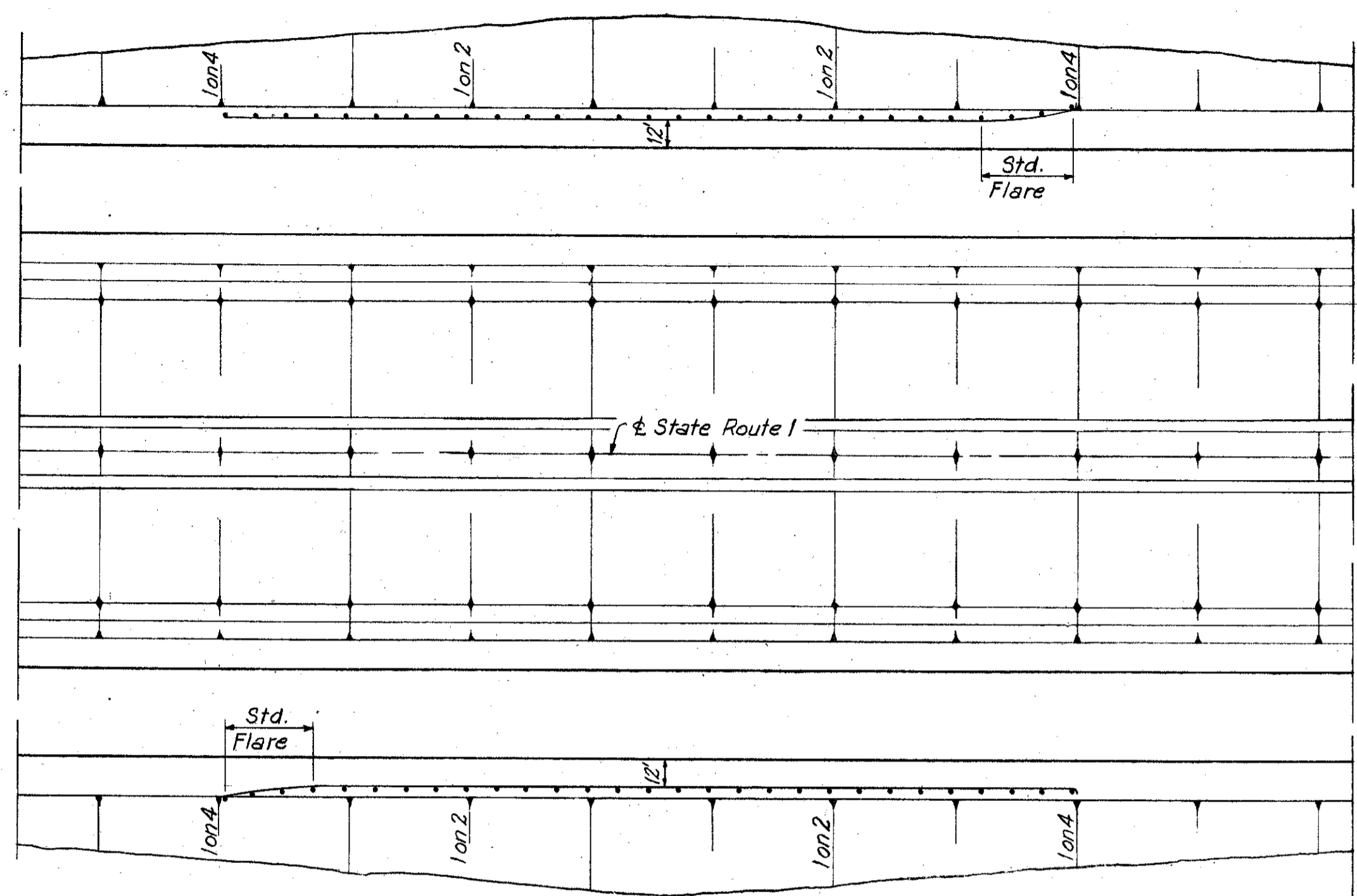
See specifications for definite information for work to be done and material to be furnished by the City. Details of 2" outlets for C.I. pipe and steel pipe shall be fabricated so that the drain and air cock connections can be made as shown for concrete pipe. Details as drawn are for Concrete Pipe.



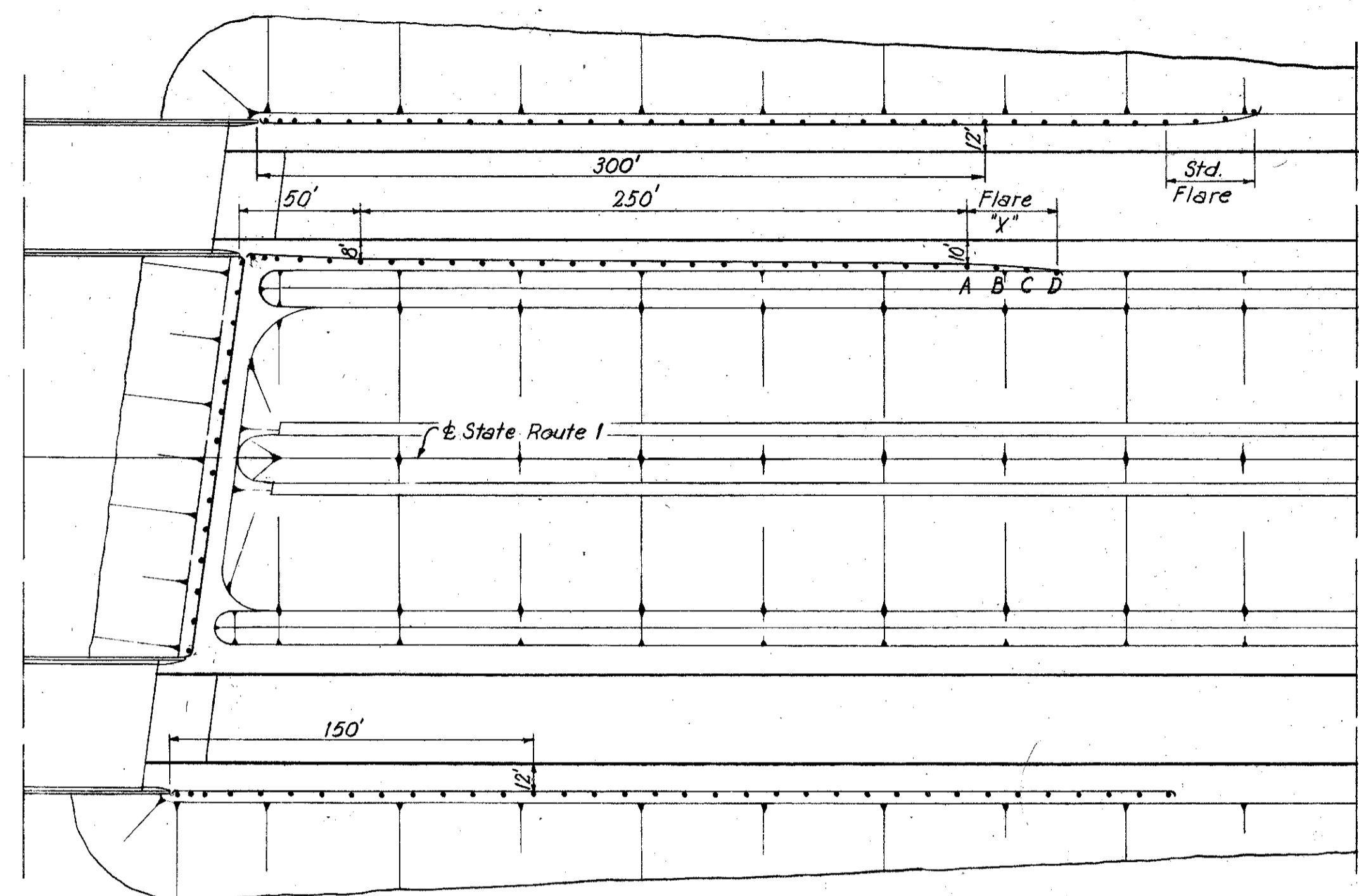
REVISIONS		DEPARTMENT OF PUBLIC UTILITIES CLEVELAND, OHIO	
3-16-43	Pipe Laying Contract	DIVISION OF WATER AND HEAT	CONTRACT NO.
6-26-44	BRASS PIPE	SUBJECT STANDARD DETAILS	
9-27-44	Notes		
1-19-45	Drain Conn.	Drain Vault, Air Cock and Connections For Various Pipe.	
10-9-47	AIR COCK ASSEMBLY		
5-29-51	ADDED 1 1/2" PIPE	SCALE: As Shown	
11-22-54	12" PIPE	DRAWN BY P.C.	
12-12-55	DURALUMIN	CHECKED BY F.T.P. DATE 10-14-48	

APPROVED May 1 1943
Chief Engineer DIRECTOR OF PUBLIC UTILITIES
H. H. Damm ACTING COMMISSIONER OF WATER AND HEAT
W. H. Wanderslagh ASSISTANT ENGINEER OF CONSTRUCTION & SURVEYS
ENGINEER OF DESIGN

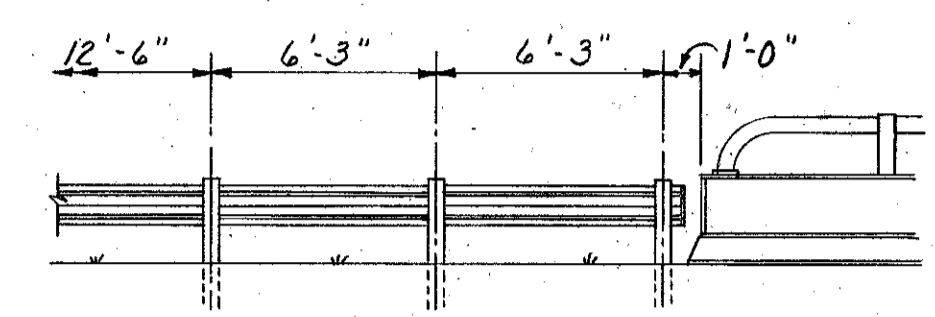
CUYAHOGA COUNTY
CUY-1-2.20



GUARDRAIL FOR FILLS



GUARDRAIL FOR BRIDGE APPROACHES



GUARD RAIL TERMINAL AT WINGWALLS

Note:
The cost of providing the additional post in the first span of the guardrail at bridge wingwalls shall be included in the unit price bid for Item I-15.

STANDARD FLARE

Post	Offset from Pavement Edge
A	12.00'
B	12.45'
C	13.78'
D	16.00'

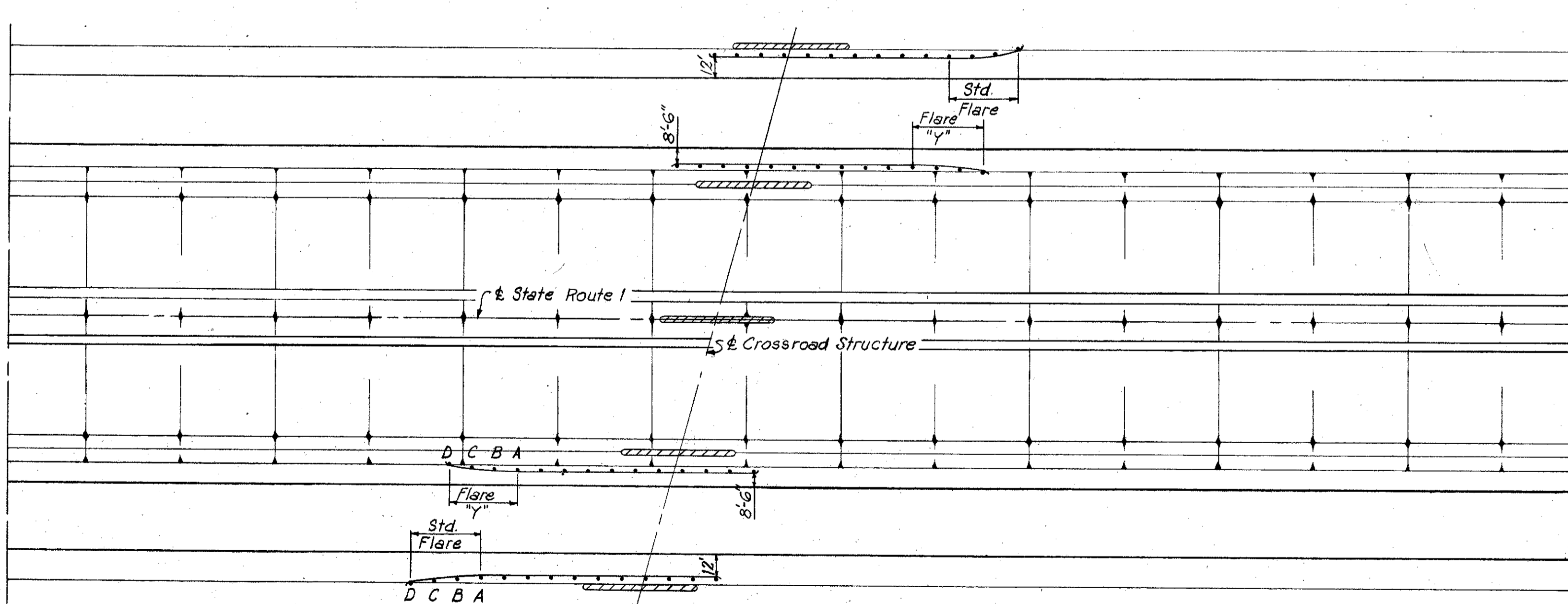
FLARE "x"

Post	Offset from Pavement Edge
A	10.00'
B	10.23'
C	10.89'
D	12.00'

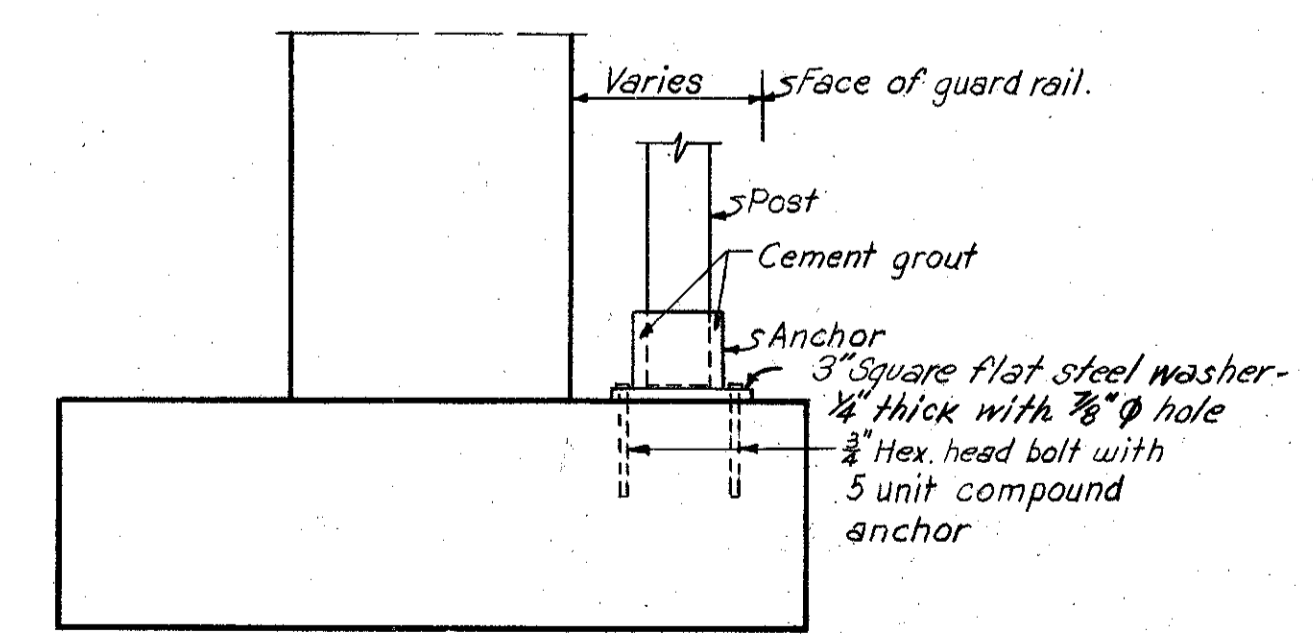
FLARE "y"

Post	Offset from Pavement Edge
A	8.50'
B	8.95'
C	10.28'
D	12.50'

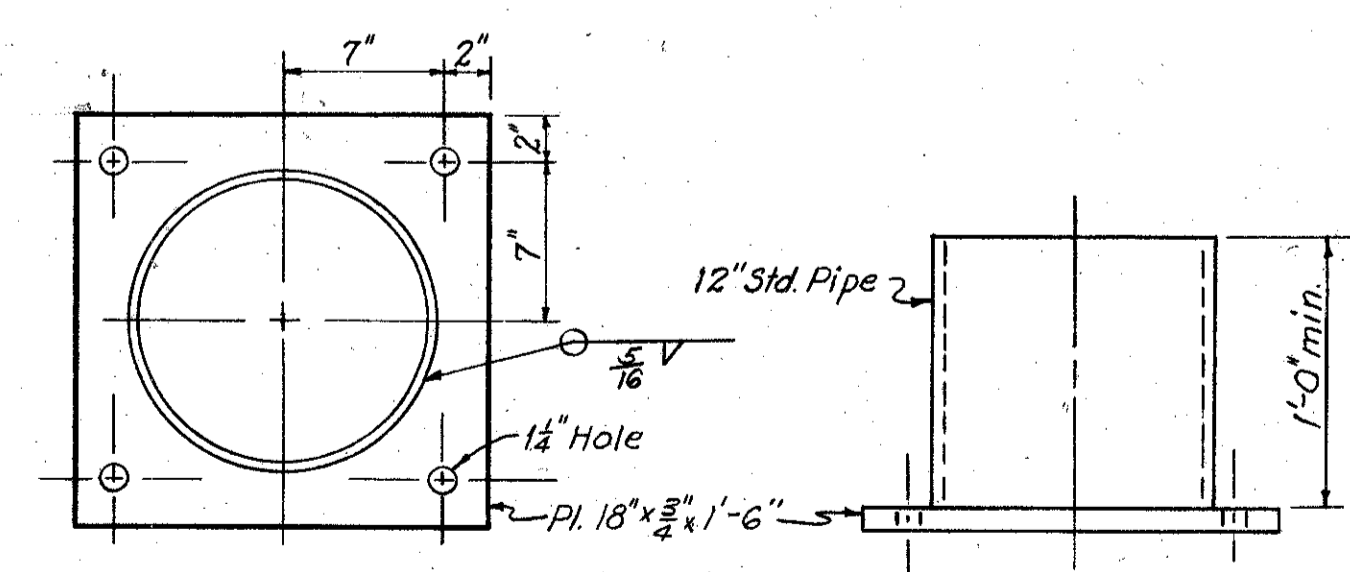
FLARE POST LOCATIONS



GUARDRAIL FOR BRIDGE PIERS



END VIEW



PLAN

ELEVATION

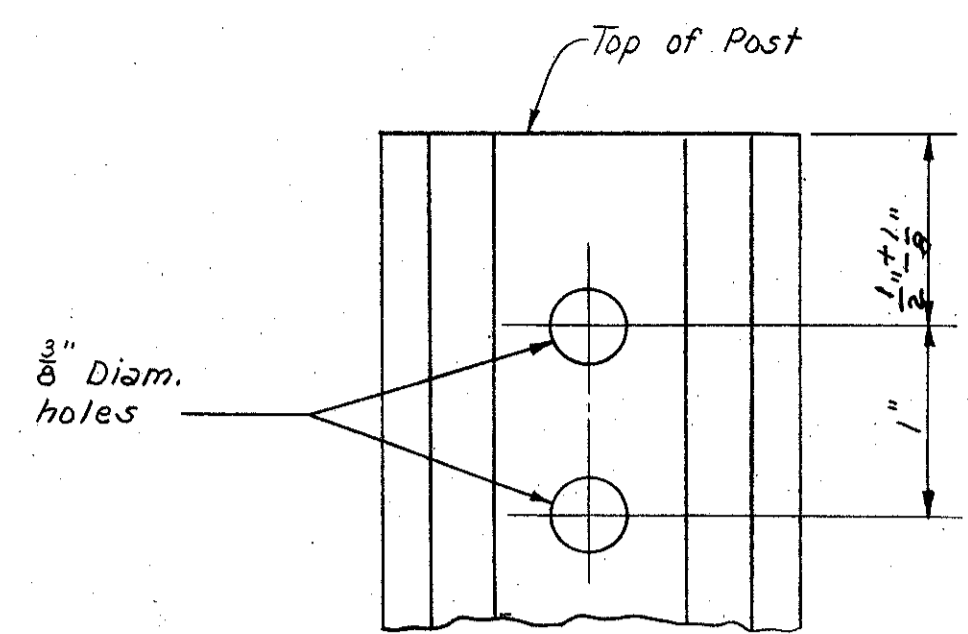
GUARDRAIL POST ANCHOR

Note: Where posts fall over footings and less than 3'-0" of earth is provided above the top of footing, the above detail shall be used.

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

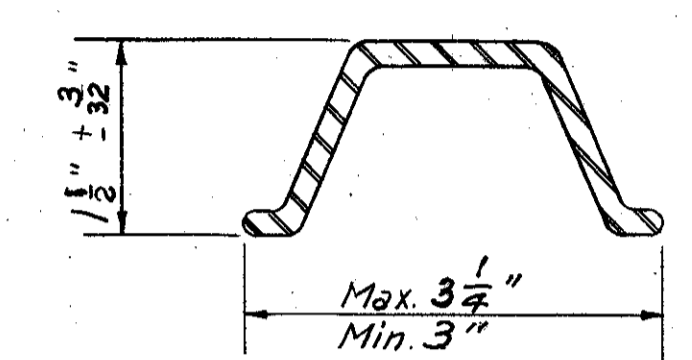
MADE DWK DATE 6-18-59 TRACED DATE
CHECKED AJS DATE 7-7-59 SCALE 1"=50' and Not to scale

CUYAHOGA COUNTY
CUY-1-2.20



Note:
Holes to be punched for a distance of 12"

Length of Post... 7'-6" ± 1/4"
No. Holes... 12 per post
Weight... 2.00 lbs. per foot

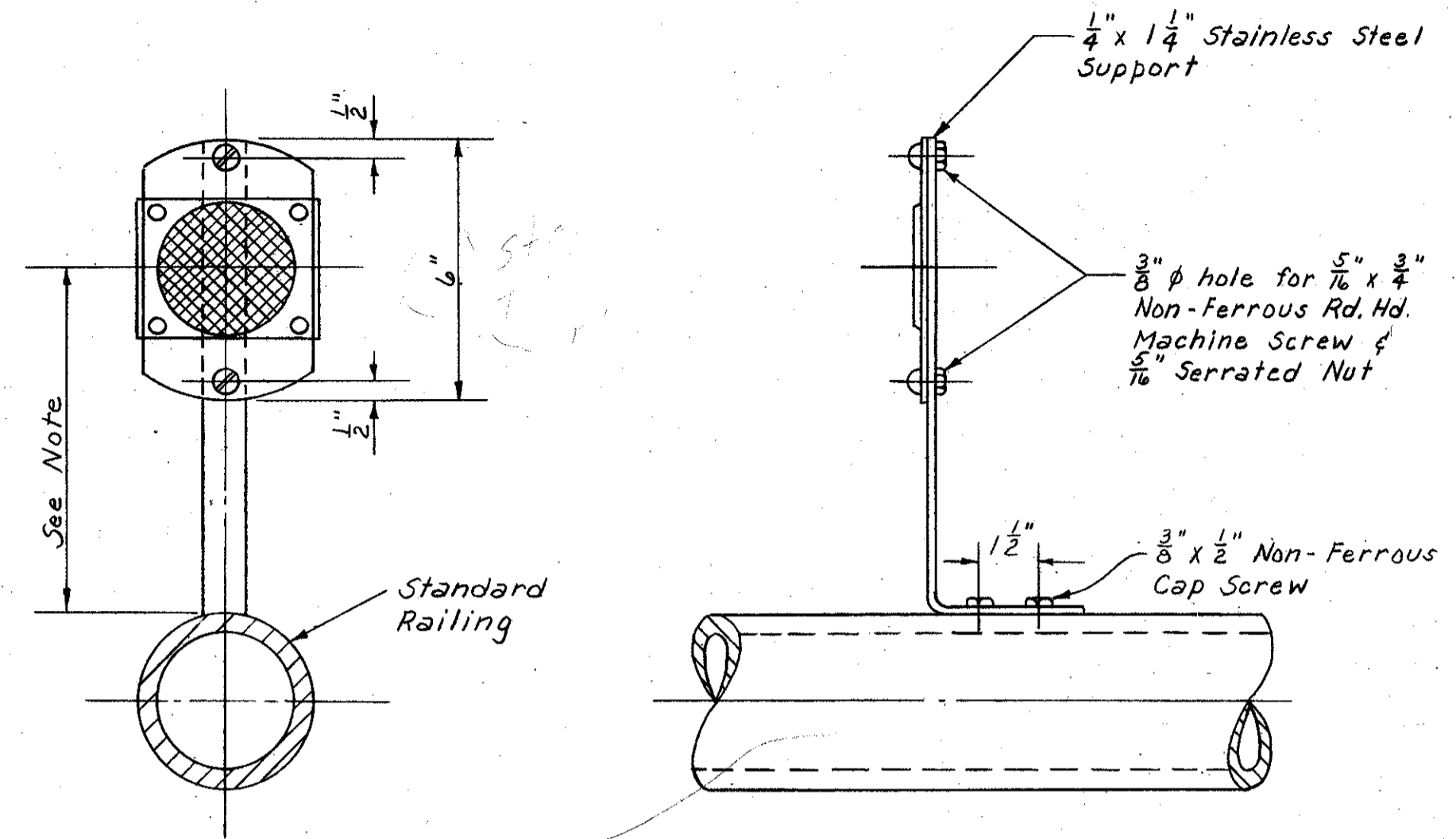


SECTION VIEW

DETAIL OF STEEL DRIVE POST FOR DELINEATOR

Scale:

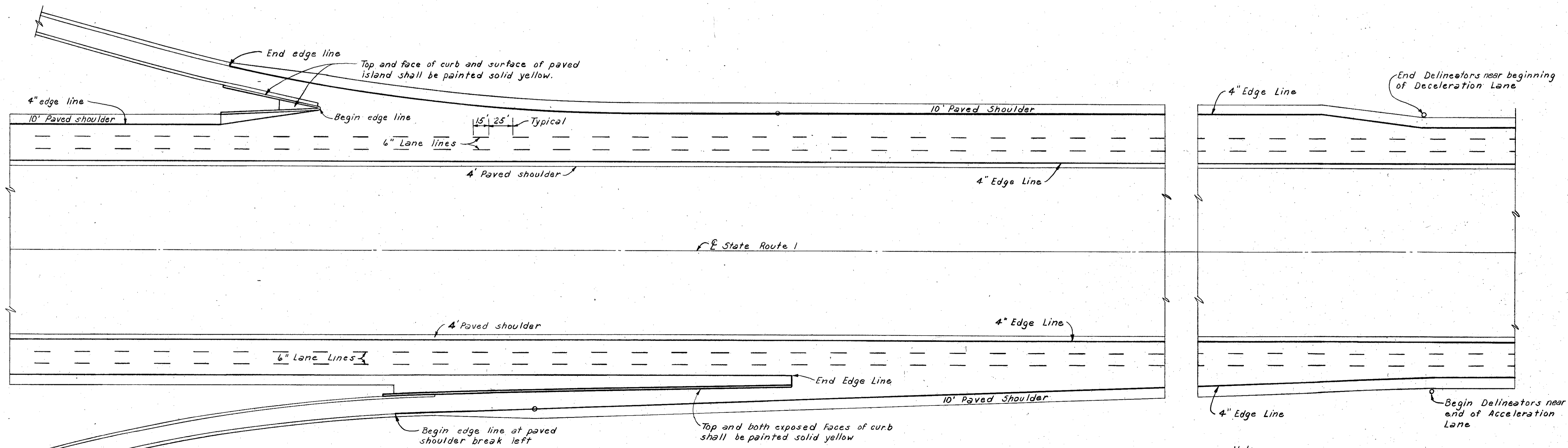
Note:
Items I-127 - The weight of steel drive posts furnished for these items shall be 2.00 lbs. per ft. in lieu of 1.12 lbs. per ft. called for in Supplemental Specifications No. I-127.



DELINEATOR AND BRIDGE RAIL BRACKET

Scale: 3" = 1'-0"

Note:
Length of steel support shall be such that the center of the delineator will be 48" above the elevation of a point in the bridge deck located 12' from the face of the parapet.



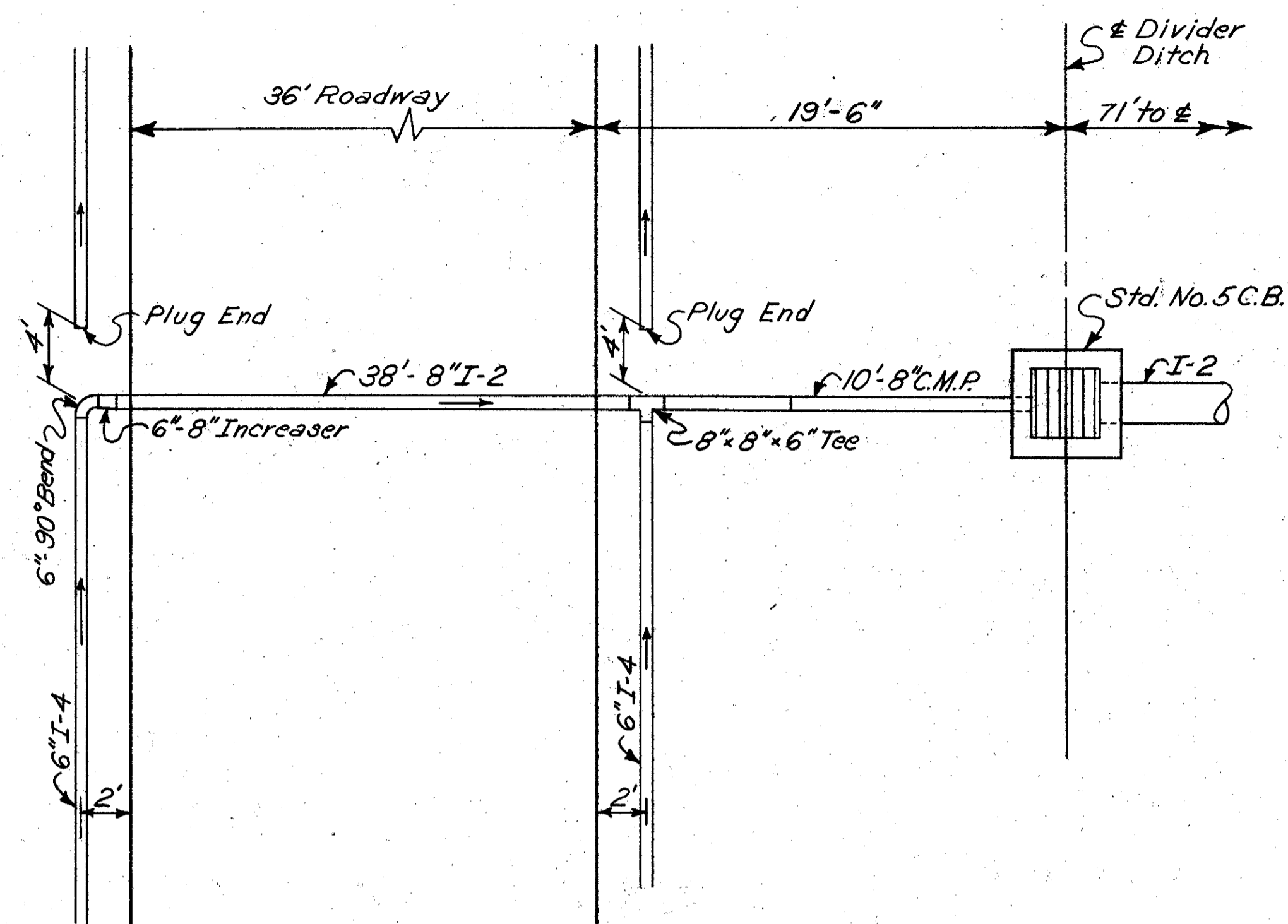
TYPICAL DRAWING

Edge Line Striping
Lane Line Striping
Curb and Island Painting
Scale: 1" = 50'

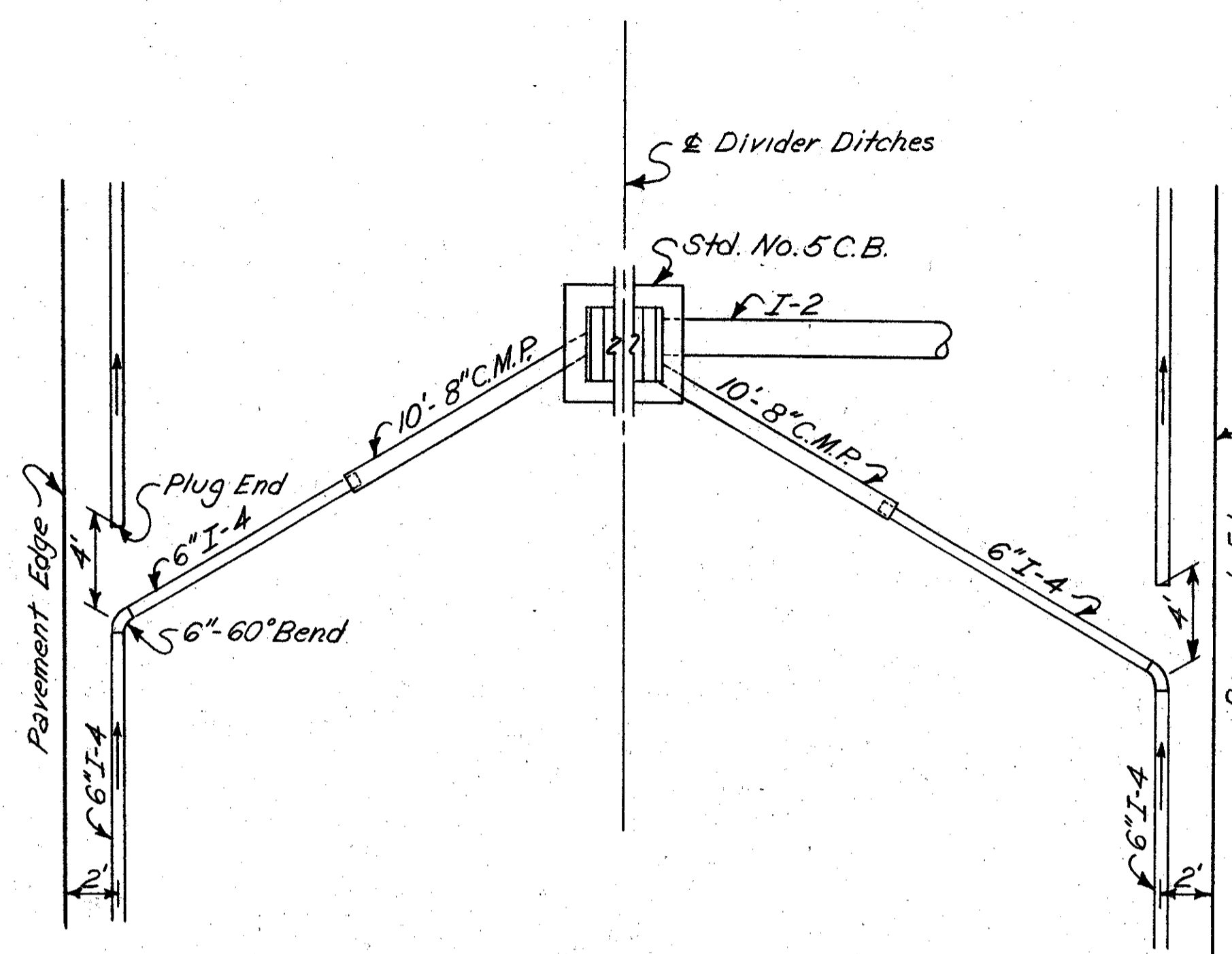
Note:
Delineators are to be placed 12'-6" from the pavement edge and at 200' intervals from Sta. 378+00 to Sta. 426+00 and from Sta. 476+00 to Sta. 540+00.

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

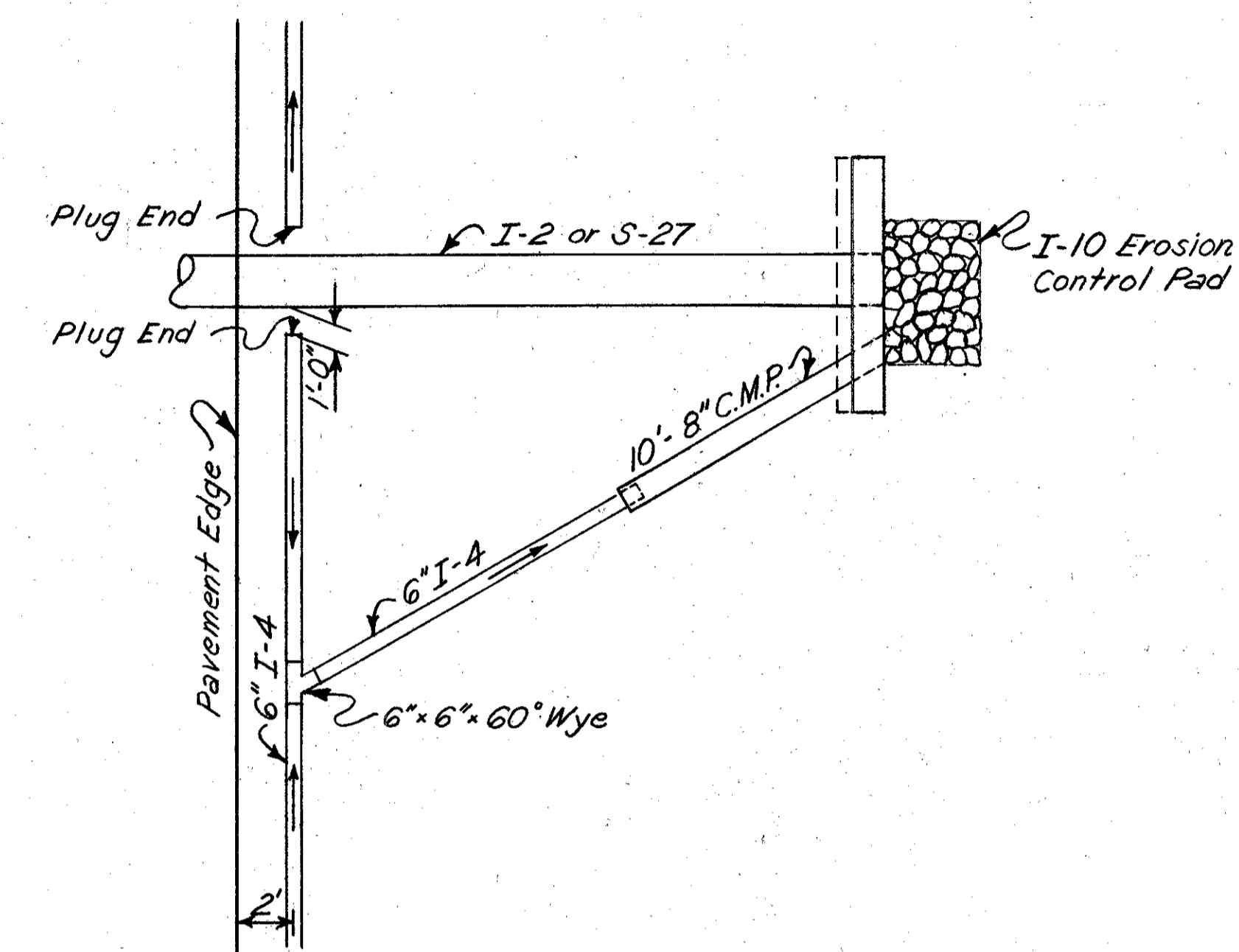
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CHECKED A.V.S. DATE 7-7-59 SCALE As Noted



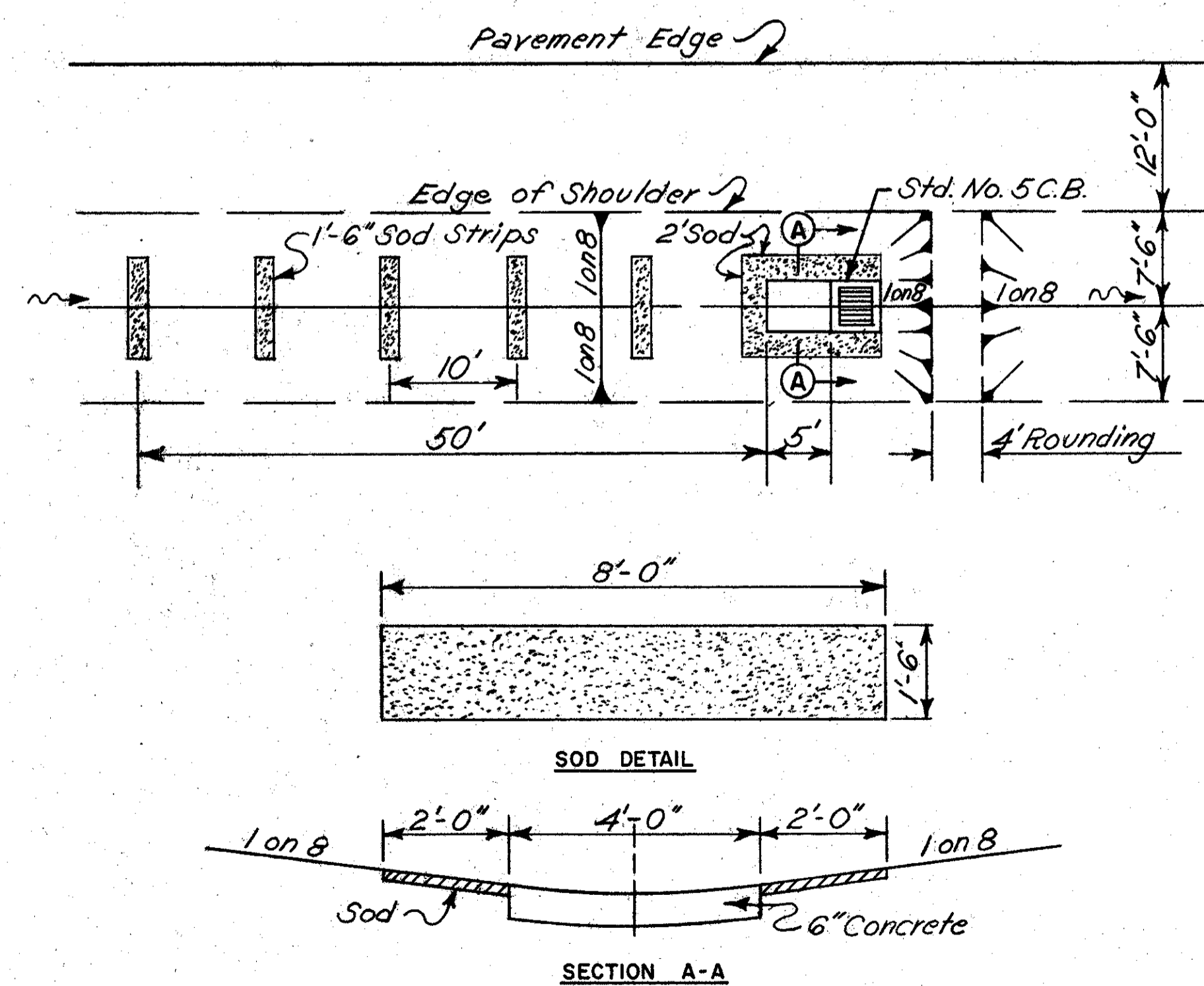
UNDERDRAIN OUTLET DETAIL "A"



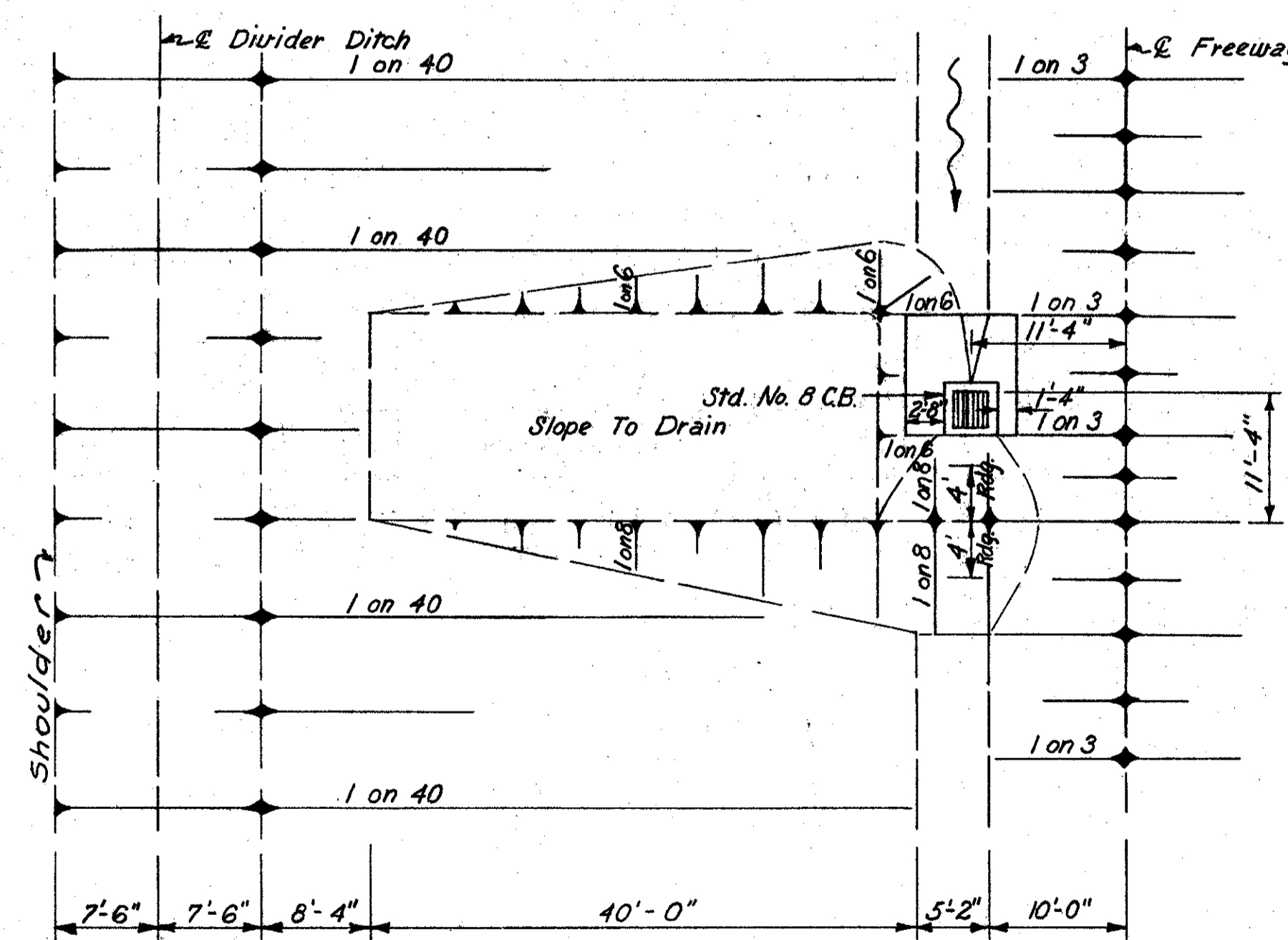
UNDERDRAIN OUTLET DETAIL "B"



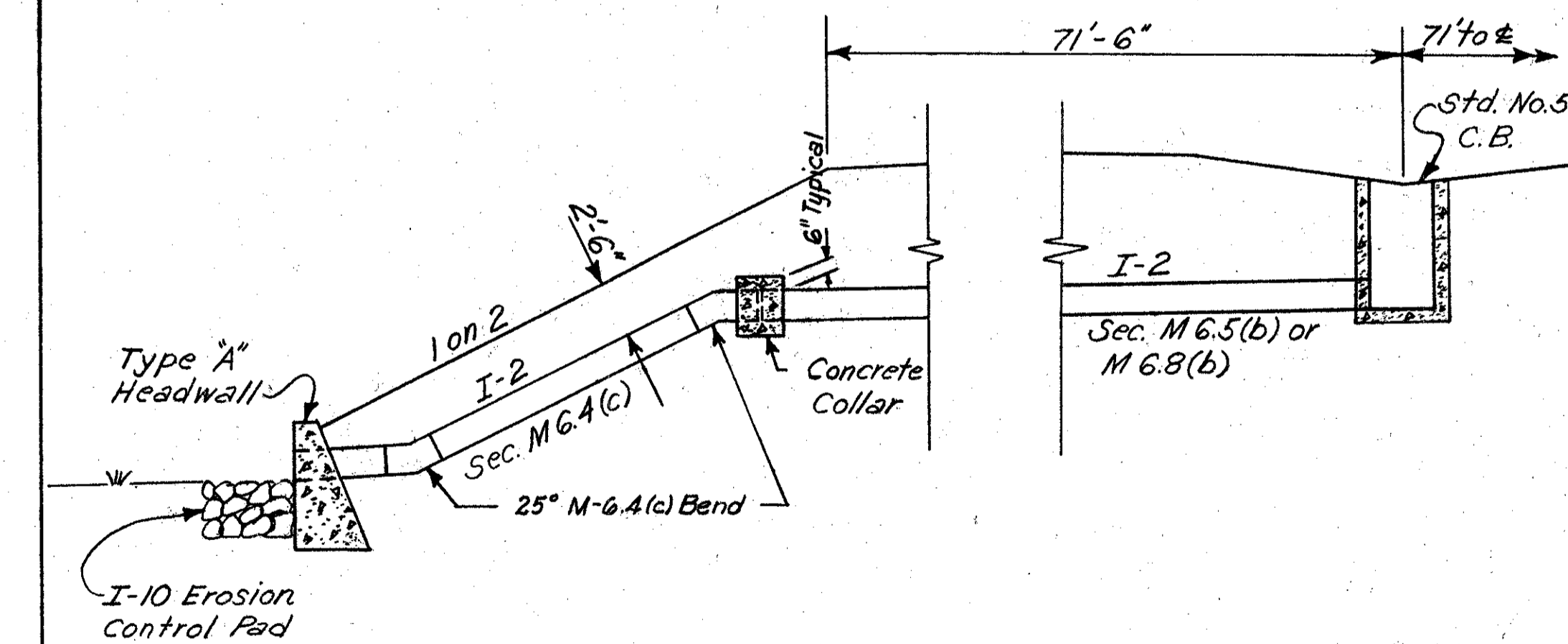
UNDERDRAIN OUTLET DETAIL "C"



DIVIDER DITCH DRAINAGE DETAIL



MEDIAN DITCH DRAINAGE DETAIL



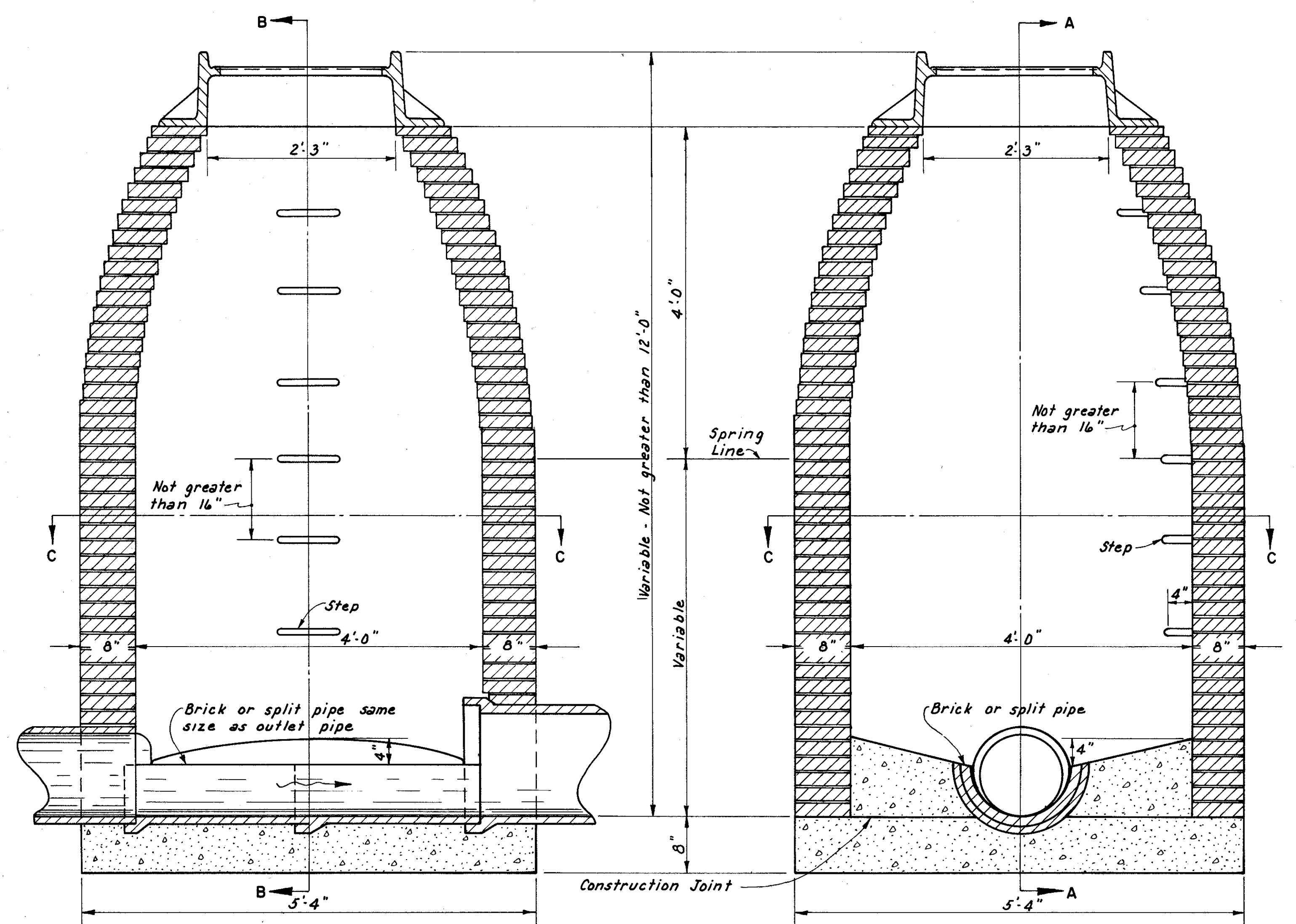
Note: Concrete Collar to be included in bid price for I-2 pipe.

I-2 OUTLET DETAIL IN HIGH FILL

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

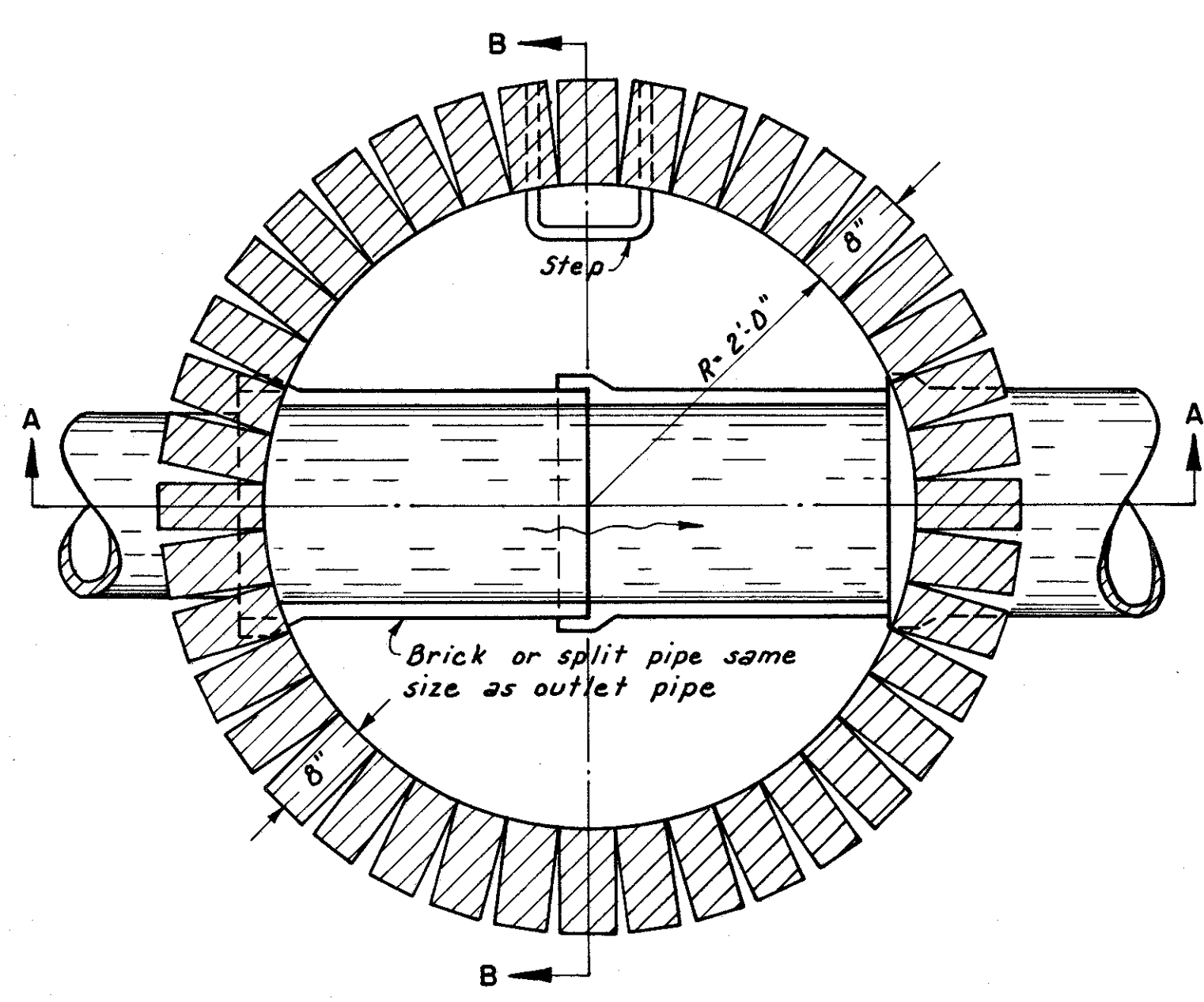
MADE H.J.H. DATE 7-31-59 TRACED DATE
CHECKED DWK DATE 8-2-59 SCALE None

CUYAHOGA COUNTY
CUY-I-2.20

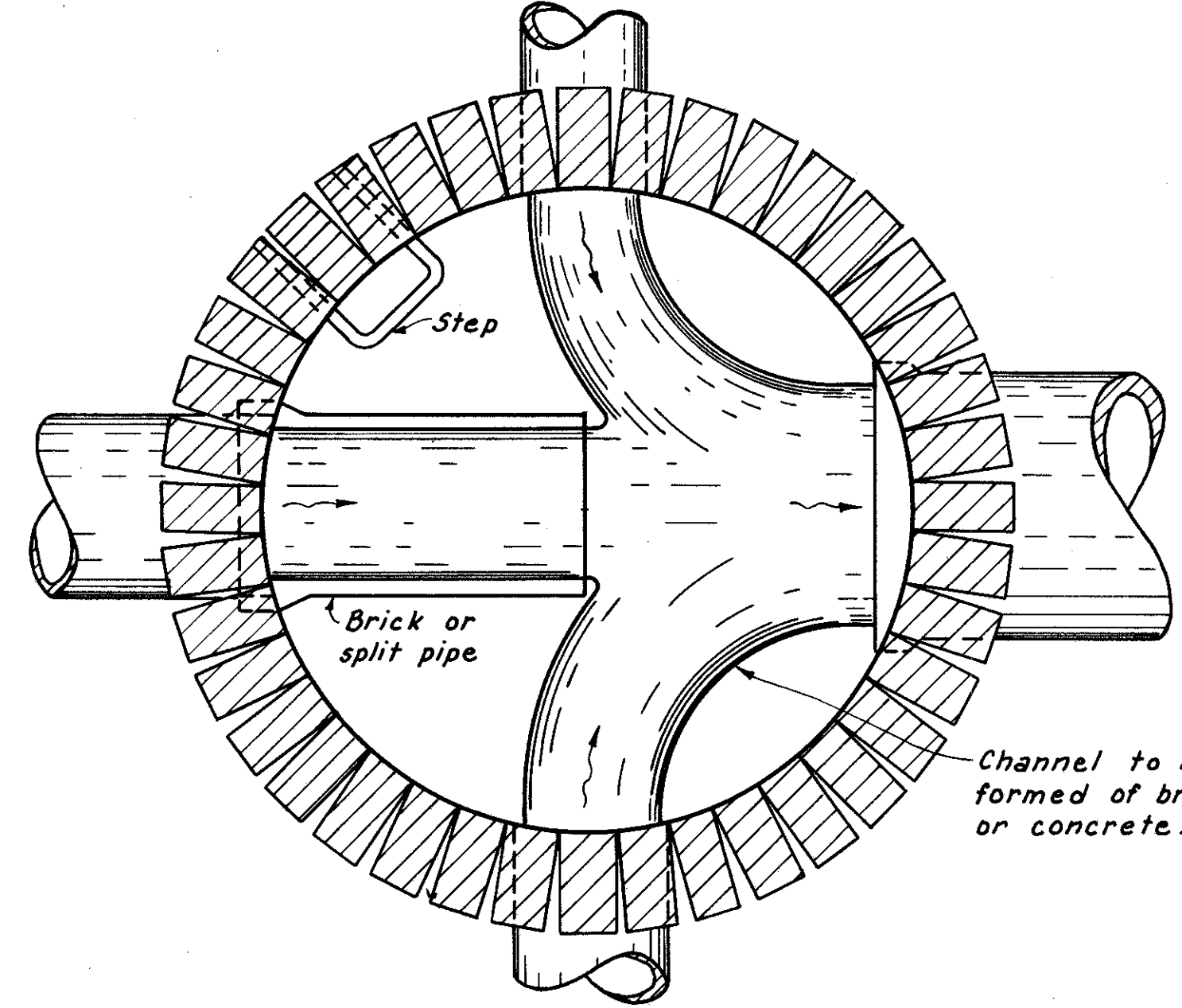


SECTION A-A
Scale: 1" = 1'-0"

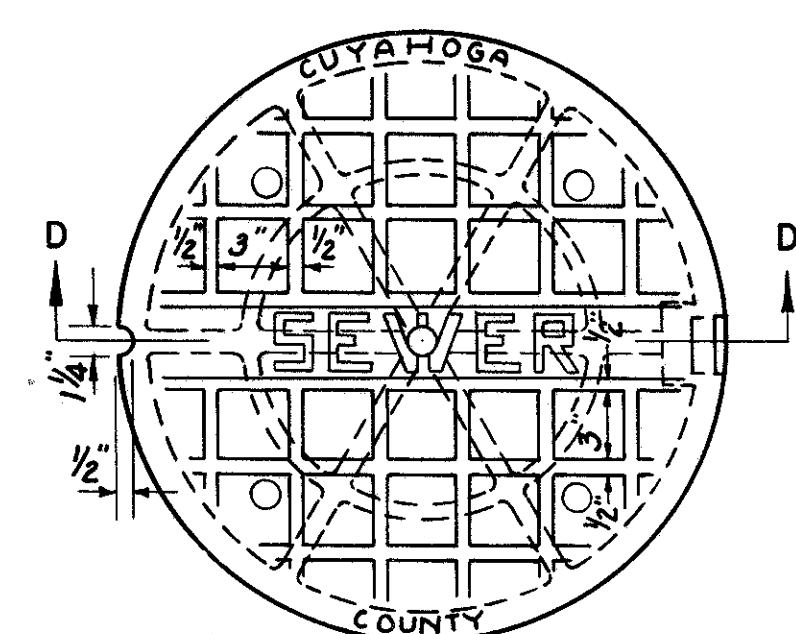
SECTION B-B
Scale: 1" = 1'-0"



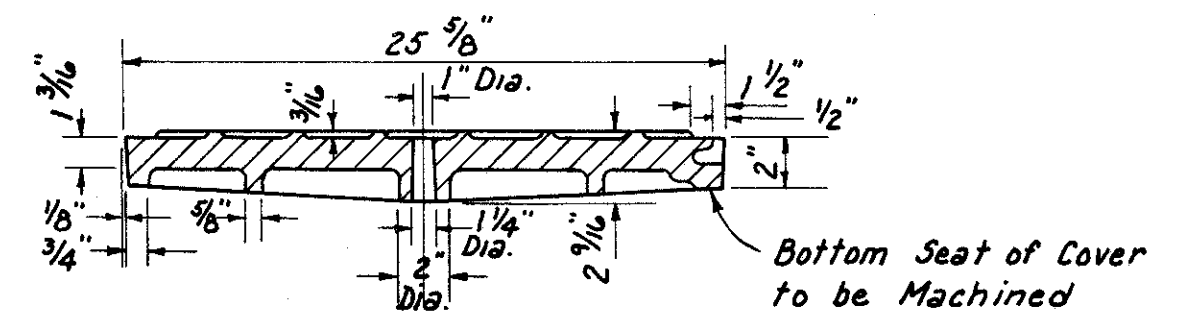
SECTION C-C



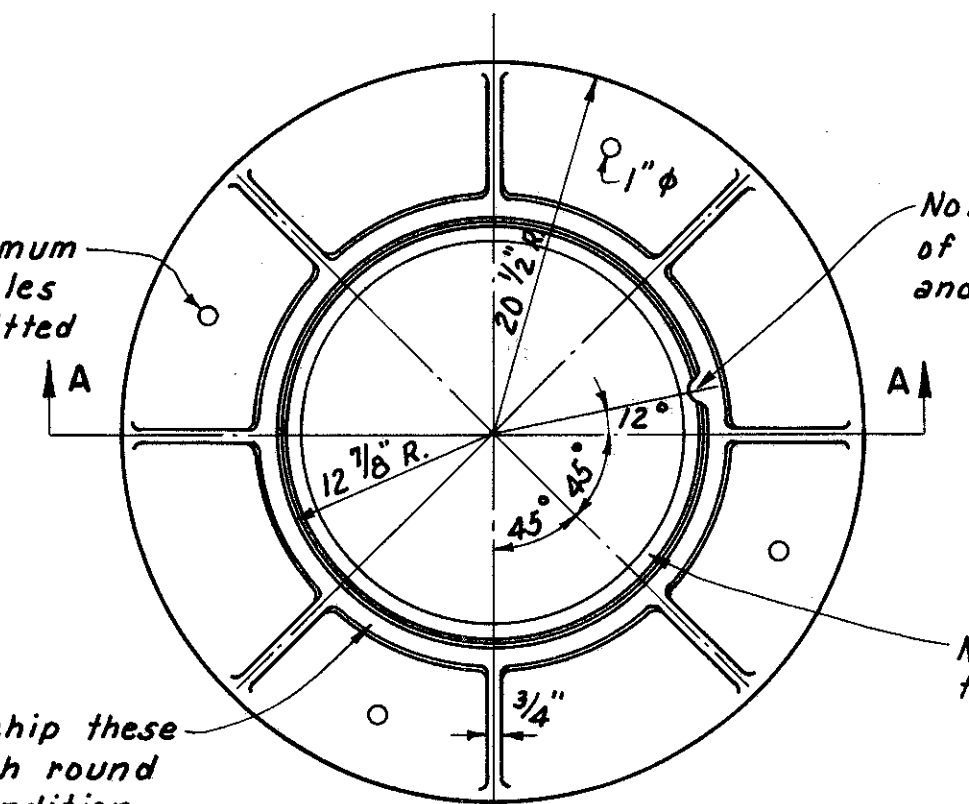
SECTION BELOW SPRING LINE SHOWING
METHOD OF TURNING SIDE DRAINS



PLAN OF COVER



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



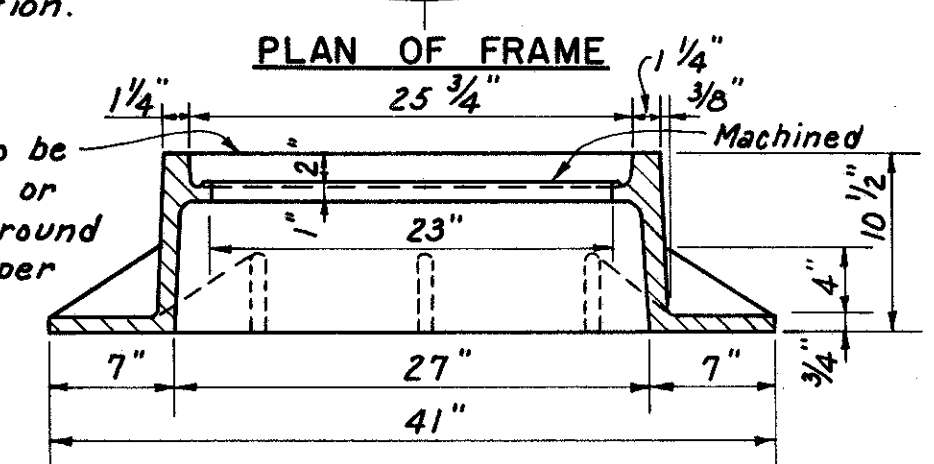
Note: A maximum of 4-1" holes will be permitted in the flange as shown.

Note: This lug to be between top of frame & top of cover seat only and shall be cast without batter. Lug may be under cut or omitted to permit proper machining of cover seat.

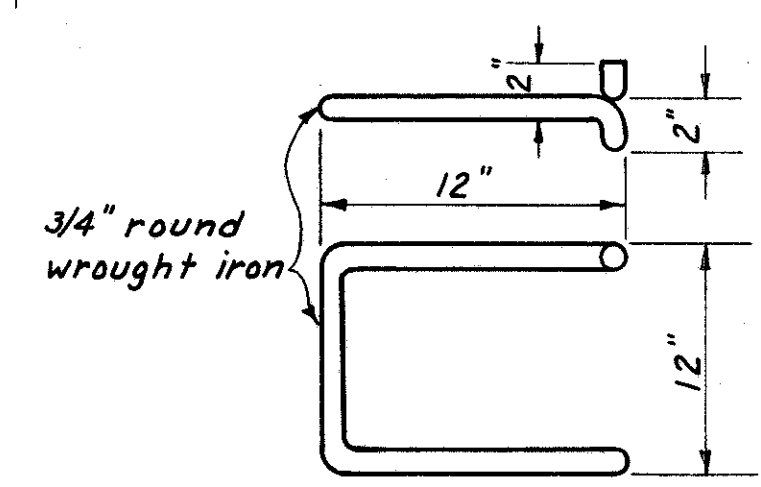
Note: This plane to be machined to a true surface.

Note: Grind or chip these edges to smooth round and regular condition.

Note: This surface to be chilled and chipped or ground to smooth round regular edges as per specifications.



SECTION A-A
Scale: 3/32" = 1'-0"



DETAIL OF MANHOLE STEP
Scale: 1/2" = 1'-0"

- NOTES -

GENERAL-The design shown hereon is for brick construction. If precast solid concrete blocks, precast concrete rings or cast-in-place concrete is used the design shall be modified to fit the dimensions of the material used except that the thickness of the wall shall not be less than 6 inches for precast solid concrete blocks or cast in place concrete construction.

BEARING AREAS of frame and cover shall be so fitted and finished as to provide a firm and even seat for all portions of the cover in the frame. No projections shall exist on bearing areas of either casting, and each cover shall seat in its frame without rocking. Frames and covers shall be fitted, matched and marked before delivery to the project.

SETTING OF CASTING-The base of the frame shall be set in a full bed of Portland cement mortar, and so adjusted to conform to the finished pavement grade.

CASTING-Minimum weight of frame and cover 550 pounds.

Castings shall meet the requirements of Item I-B. The design shall be essentially the same and equally as strong as those shown hereon, and shall be given one coat of paint as per specifications.

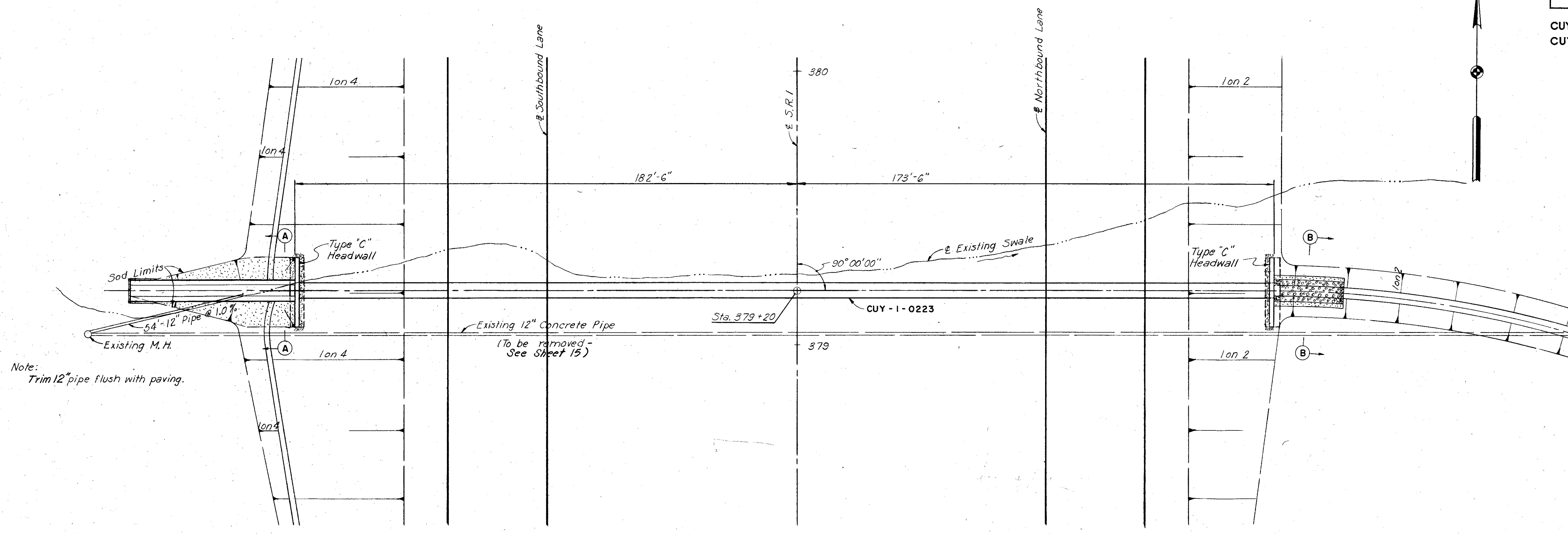
STEPS shall be wrought iron or nodular iron meeting the requirements of Item I-B and shall be given one coat of paint Sec. M-9.18 or Sec. M-9.19.

CONSTRUCTION-Manholes shall be built of brick, precast solid concrete blocks, precast concrete rings, or cast in place concrete. When manholes are constructed of brick, every sixth course shall be a stretcher course.

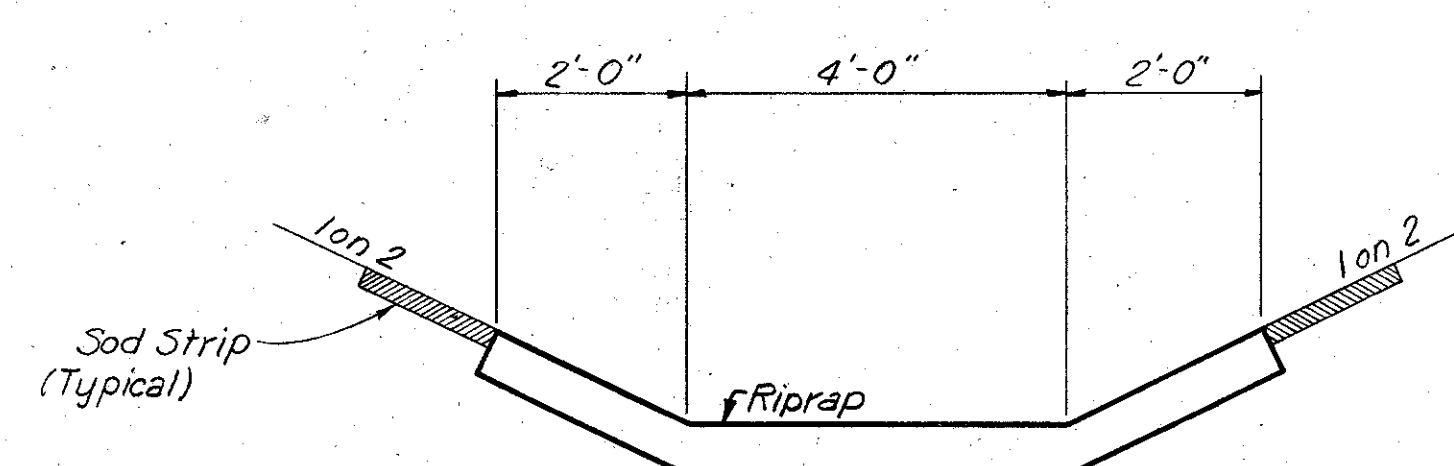
Bottom of manhole shall be Class "C" concrete.

Channel sections in the manhole shall be constructed of split pipe or brick except curved sections which may be built by forming a channel in the concrete.

Note: This manhole is identical to Cuyahoga County Standard No. 1 Manhole.

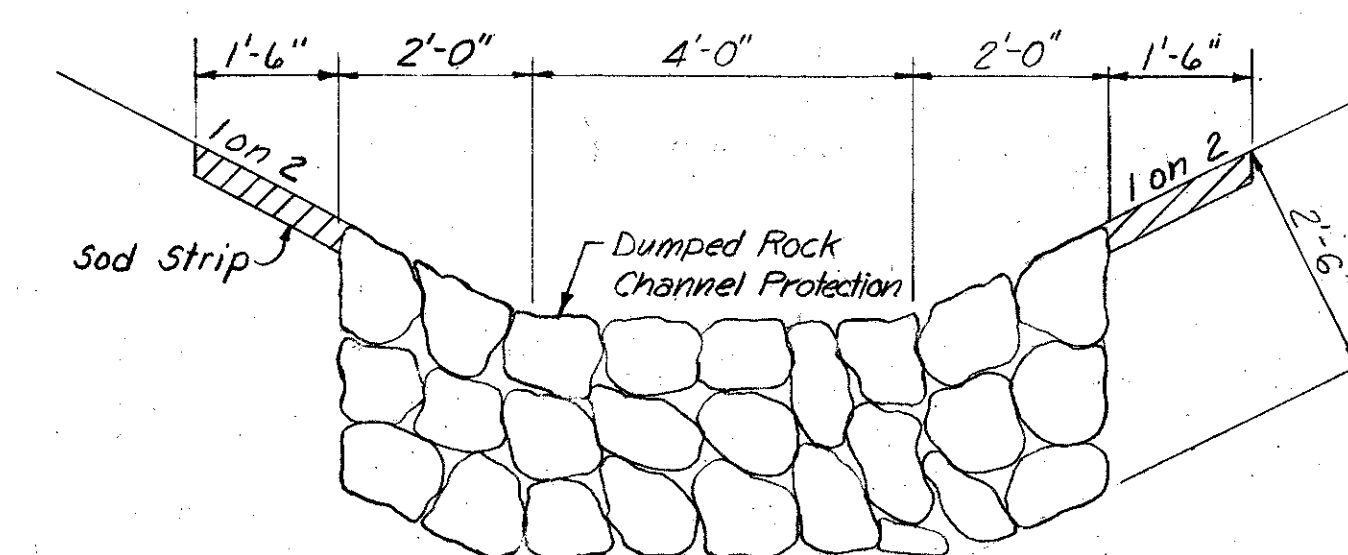


PLAN

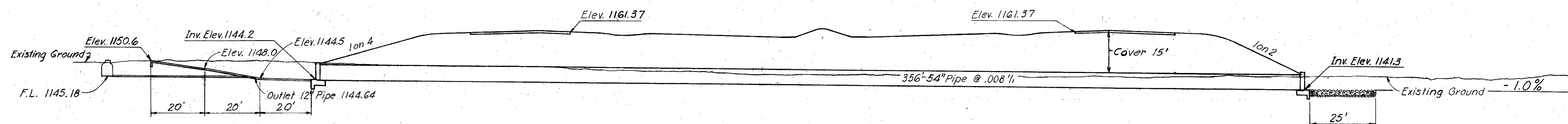


SECTION A-A

ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	165	Cu. Yd.
E-3	Channel Excavation	528	Cu. Yd.
I-10	Dumped Rock Channel Protection	19	Cu. Yd.
I-10	Riprap	56	Sq. Yd.
L-10	Sodding	95	Sq. Yd.
S-1	Concrete for Structures Class "C"	34	Cu. Yd.
S-4	Reinforcing Steel	1376	Lbs.
S-27	54" Pipe for Roadway Culverts Sec. M-6.6(c)	356	Lin. Ft.



SECTION B-B



ELEVATION

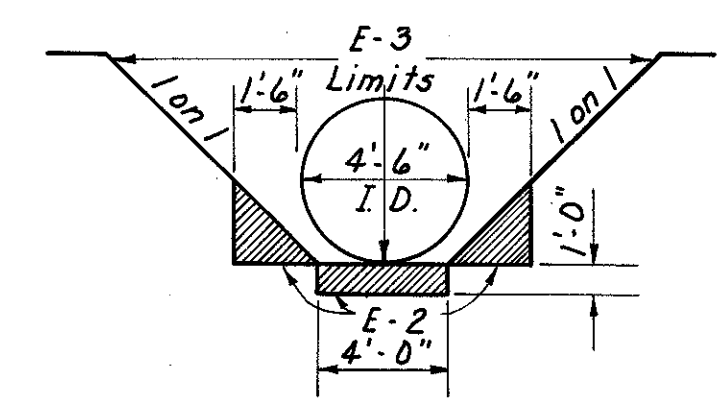
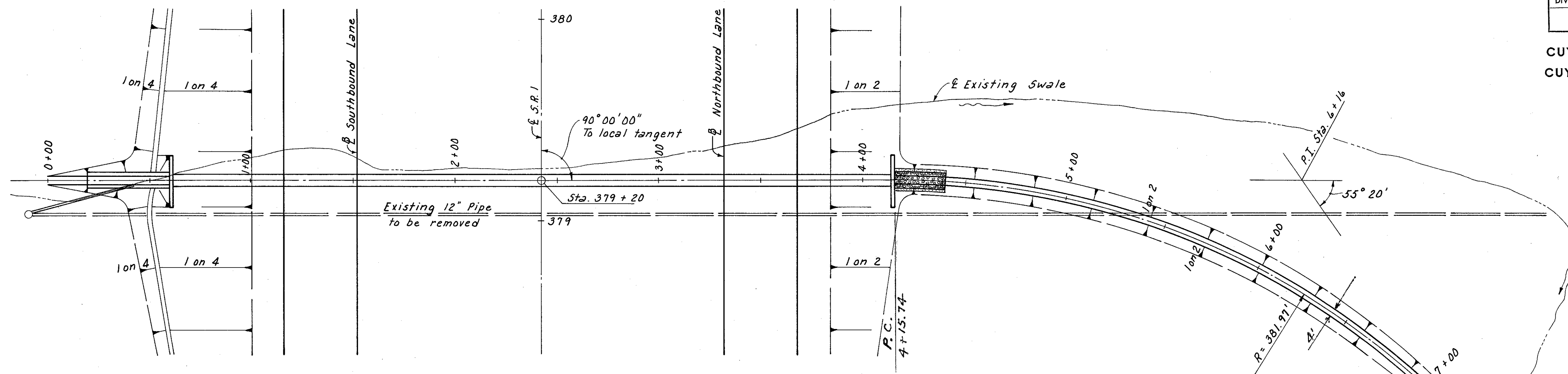
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

MADE *AJS* DATE *4-21-59* TRACED DATE
CHECKED *HJH* DATE *5-8-59* SCALE *1"=20'; 1/2"=1'-0"*

Note: For Headwall details see Standard Construction Drawing HW-C.
For channel details and cross sections see sheet 237.

D.A. = 101 Ac.
Q 50 = 142 c.f.s.
OUTLET V = 11 f.p.s.
H.W. ELEV. = 1149.8

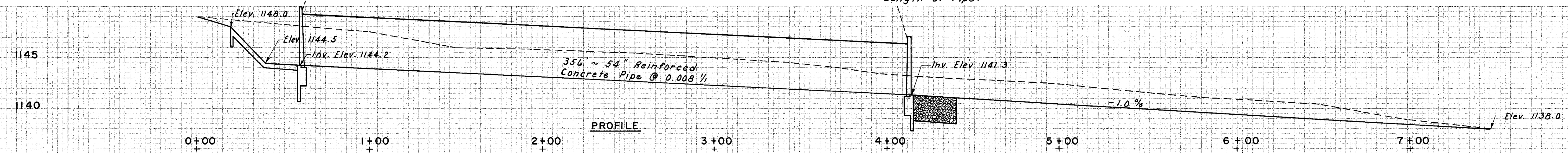
CUYAHOGA COUNTY
CUI-1-2.20



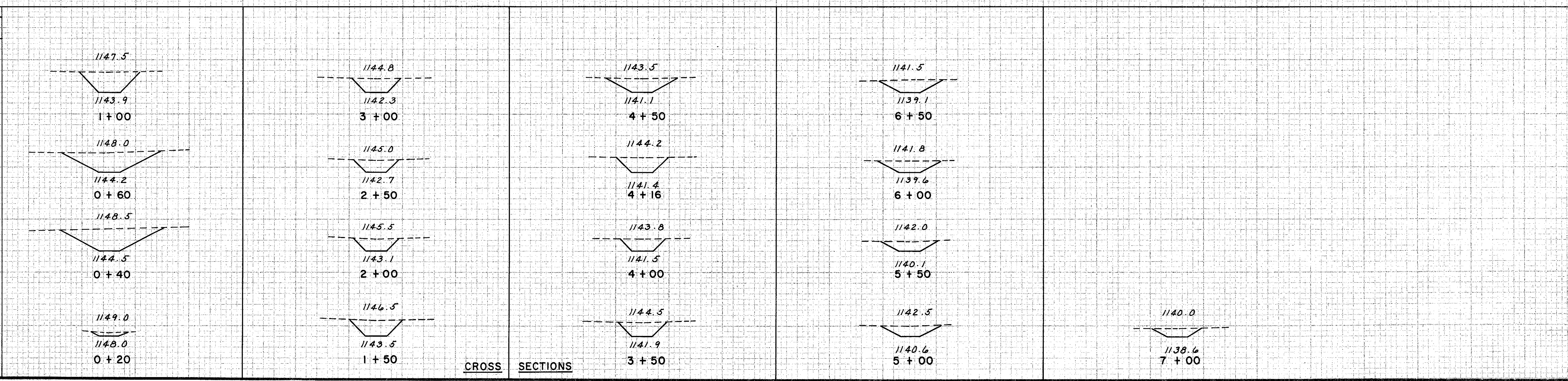
CURVE DATA

$\Delta = 55^\circ 20'$
$D = 15^\circ 00'$
$R = 381.97'$
$T = 200.26'$
$L = 368.89'$

Channel Excavation & Structure
Excavation across Roadway for
Length of Pipe.

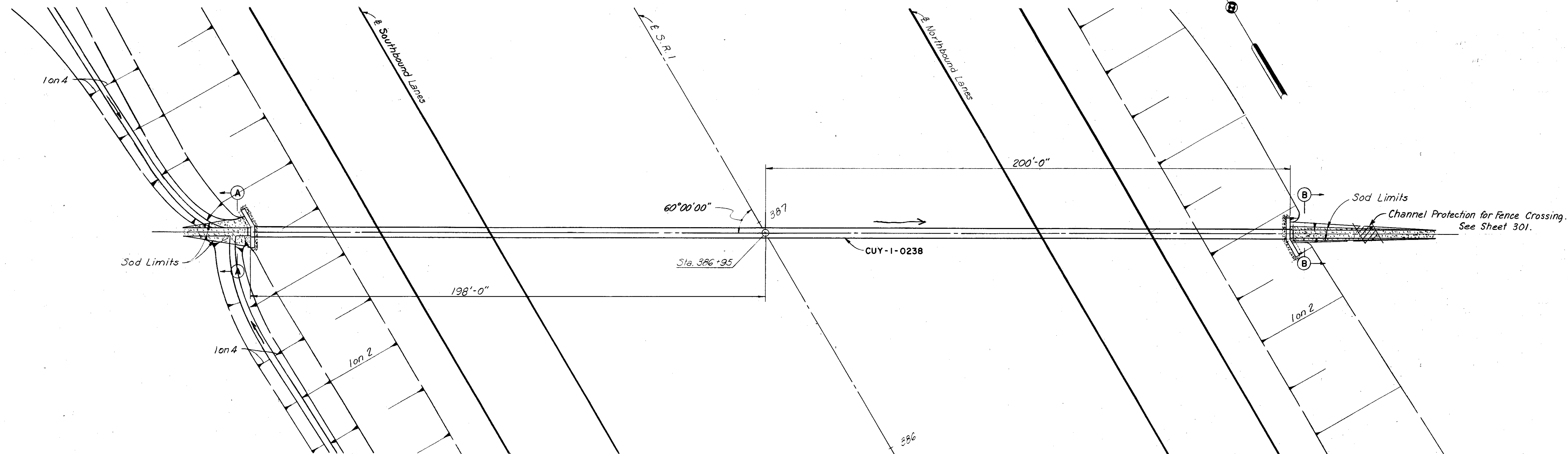


CHANNEL EXCAVATION					
STATION	END AREA	CU. YD.	STATION	END AREA	CU. YD.
0+00	0		6+50	19	29
0+20	7	3	7+00	12	10
0+40	48		7+46	0	
0+60	46				
1+00	27	54			Total 528
1+50	21	44			
2+00	15	34			
2+50	15	28			
3+00	16	29			
3+50	17	30			
4+00	15	30			
4+16	19	30			
4+50	29	46			
5+00	21	32			
5+50	14	30			
6+00	18	34			

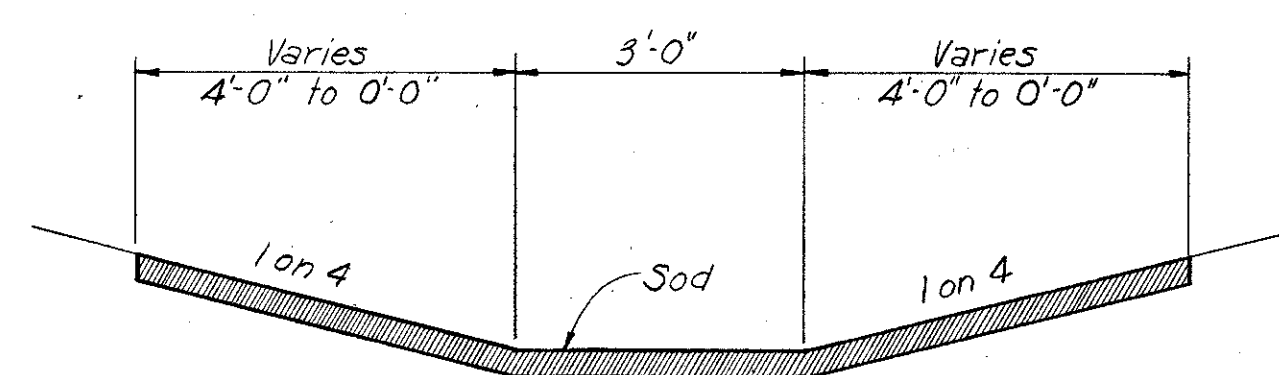


FINAL SURVEY
DATE: 4-23-59
BY: AJ5
CHECKED: RJH

ORIGINAL SURVEY
DATE: 4-23-59
BY: AJ5
CHECKED: RJH

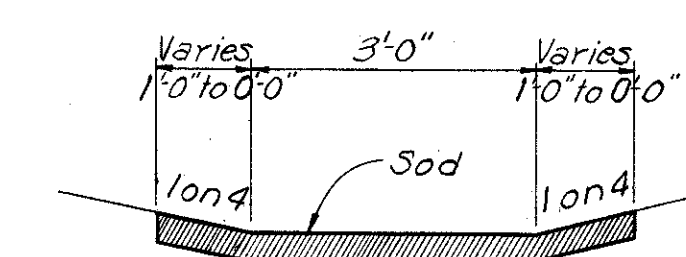


PLAN

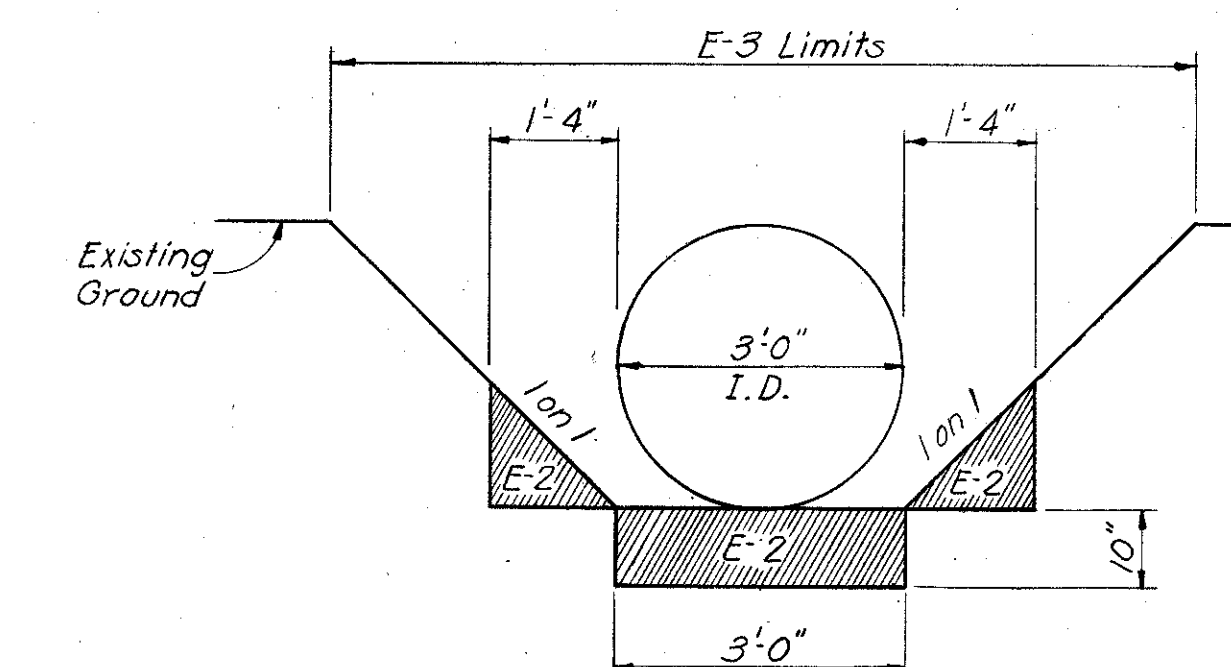


SECTION A-A

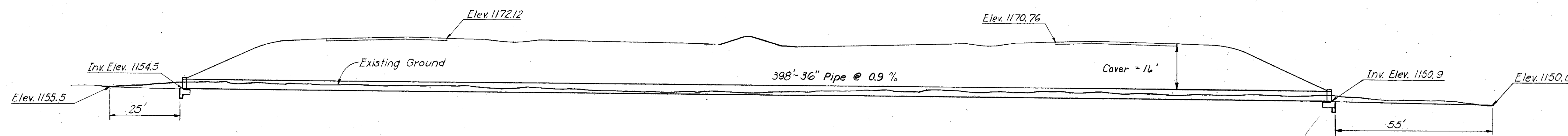
ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	88	Cu. Yd.
E-3	Channel Excavation	232	Cu. Yd.
L-10	Sodding	47	Sq. Yd.
S-1	Concrete for Structures, Class "C"	15	Cu. Yd.
S-4	Reinforcing Steel	794	Lbs.
S-27	36" Pipe for Roadway Culverts Sec. M-6.6 (c)	398	Lin. Ft.



SECTION B-B



Channel excavation (E-3) and structure excavation (E-2) across roadway for length of pipe.



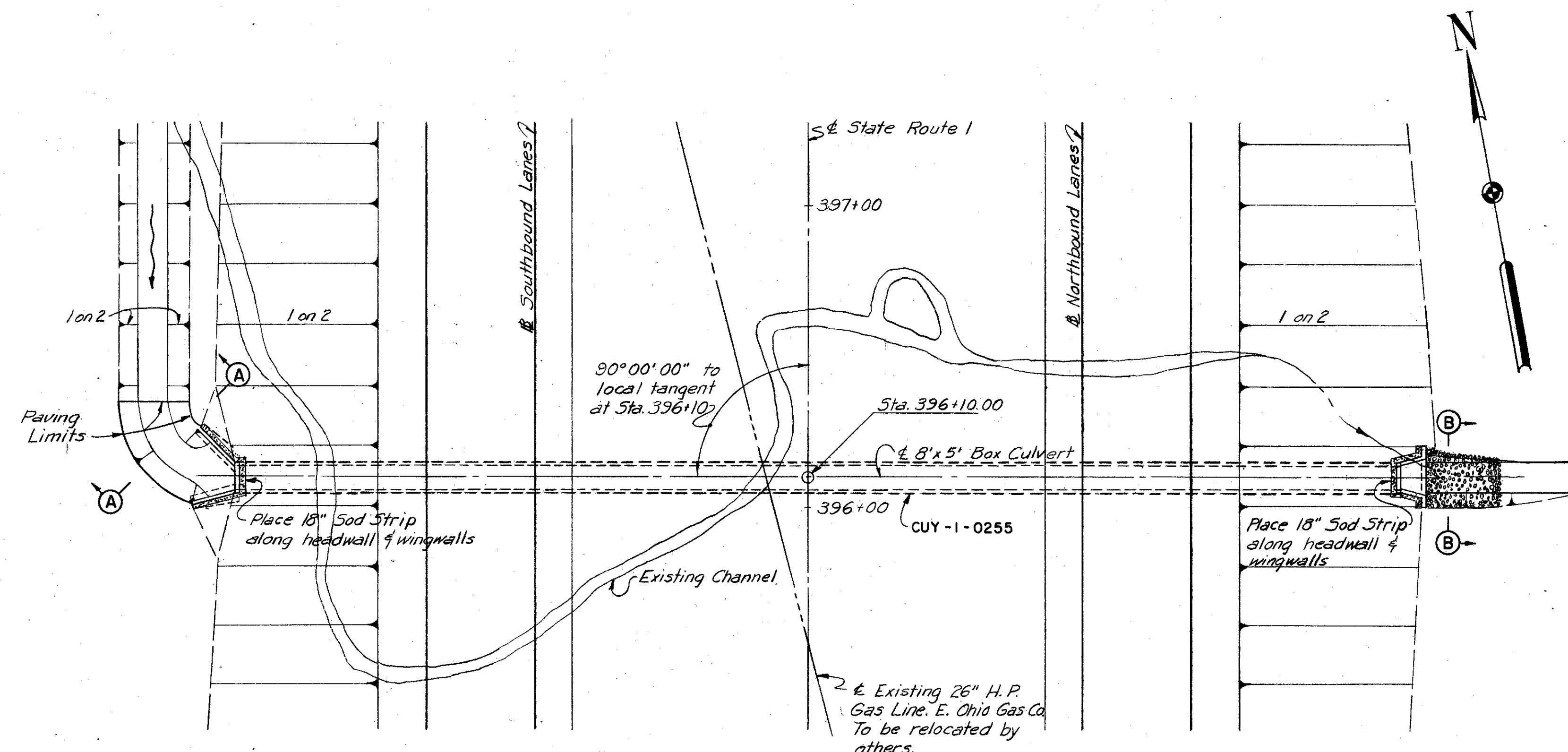
ELEVATION

Note: For Headwall details see sheet 250.

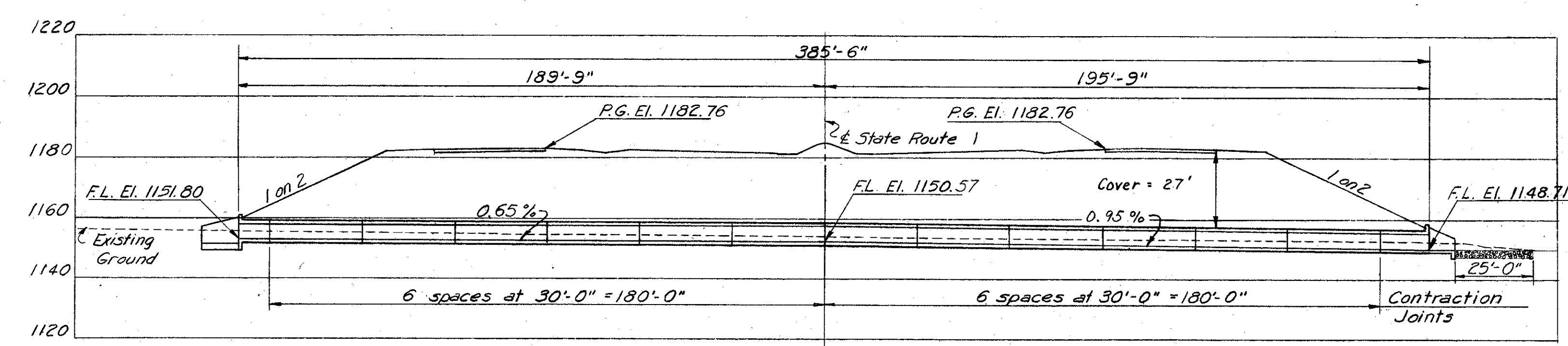
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

MADE *AJS* DATE *4-26-59* TRACED _____ DATE _____
CHECKED *HJH* DATE *5-18-59* SCALE *1" = 20'*

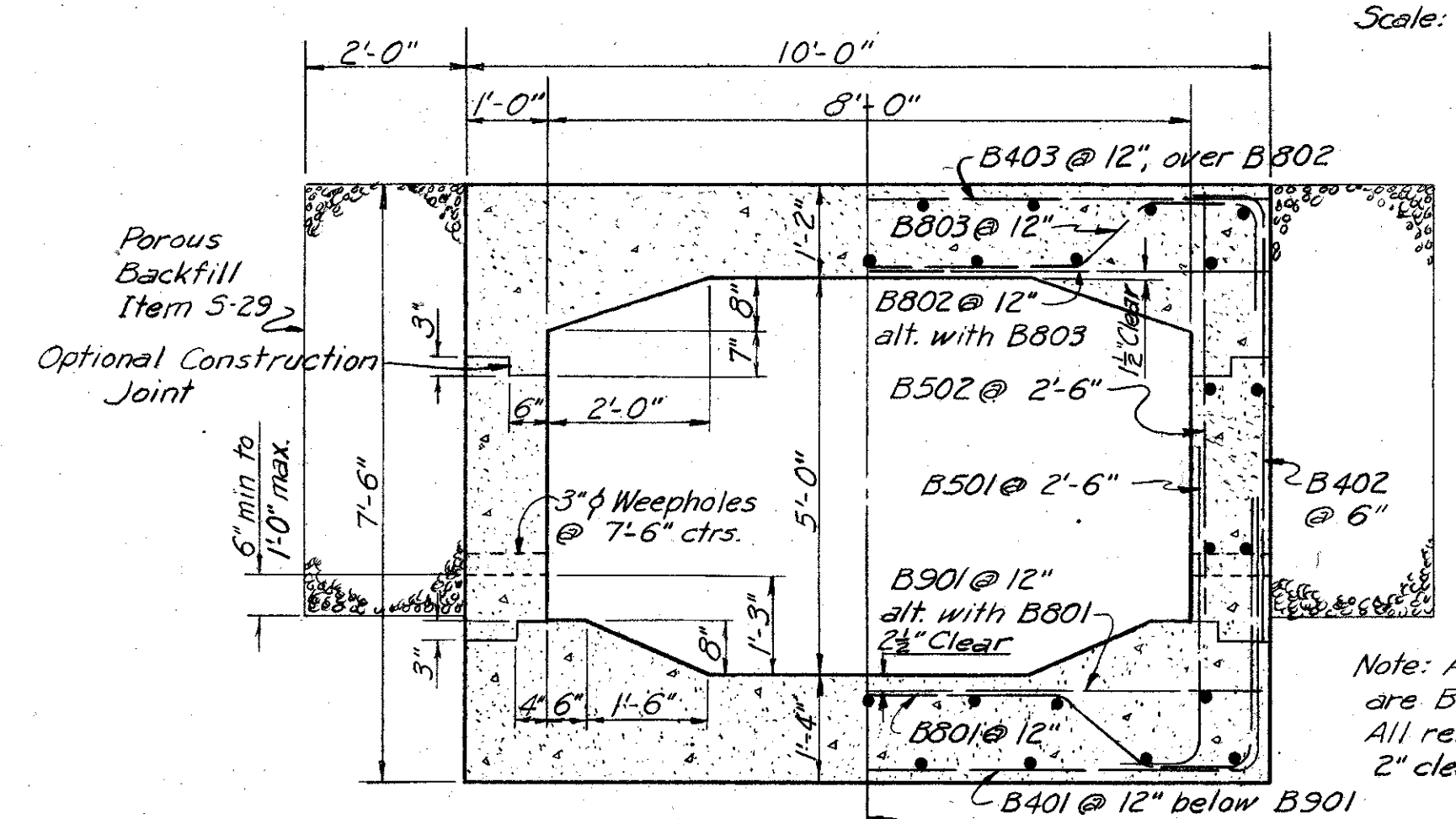
D.A. = 18 Ac.
Q 50 = 44 c.f.s.
OUTLET V = 8.7 f.p.s.
H.W. ELEV. = 1157.8



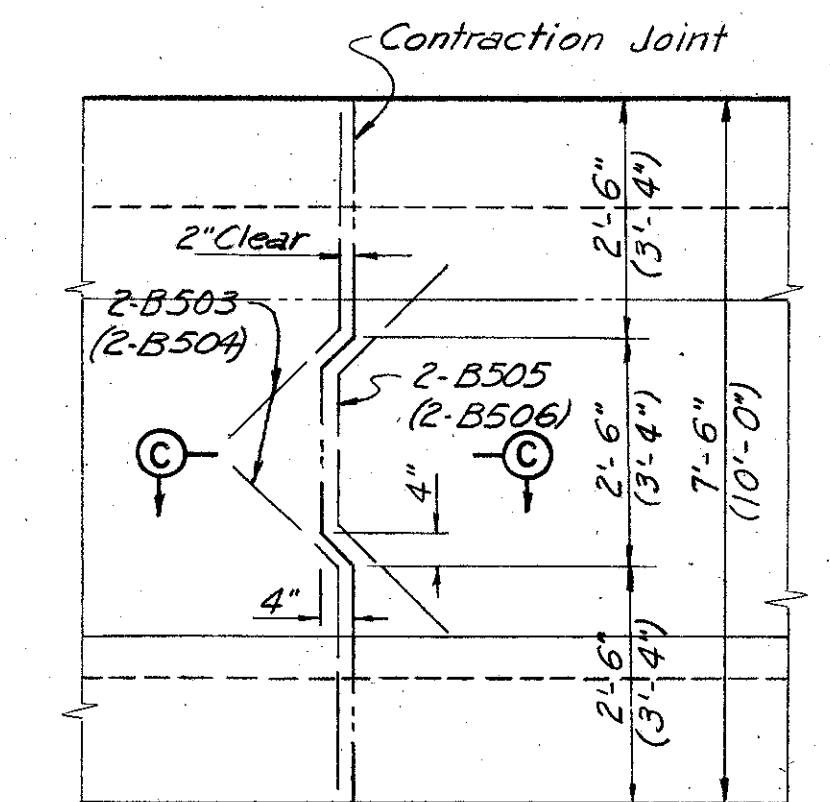
PLAN
Scale: 1"=30'



ELEVATION
Scale: 1"=30'

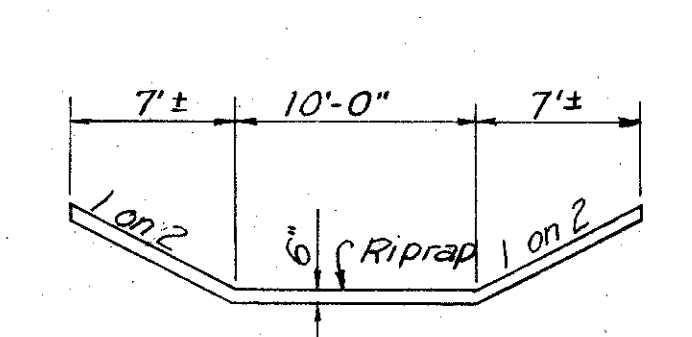


TYPICAL SECTION THRU BOX
Scale: 1/2"=1'

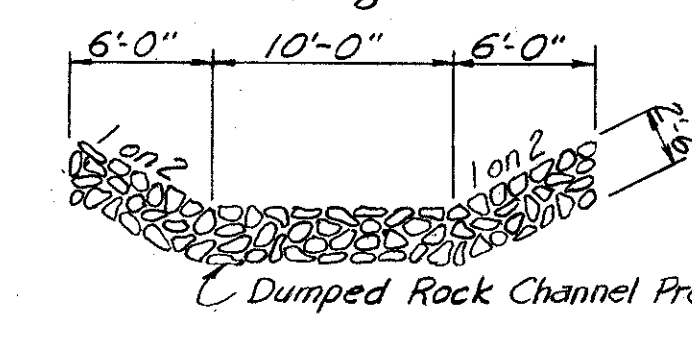


CONTRACTION JOINT DETAILS
Scale: 1/2"=1'

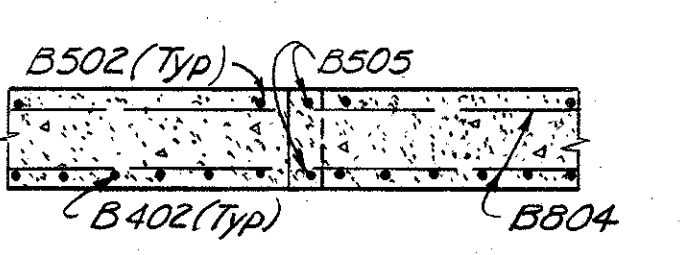
REINFORCEMENT SCHEDULE													
Mark	No.	Length	Ser. Inc.	Total Weight	Shape	Bending Diagrams	Mark	No.	Length	Ser. Inc.	Total Weight	Shape	Bending Diagrams
B401	386	16'-3"		4,190	B		B528	4	10'-8"		45	B	
B402	1516	6'-2"		6,245	B		B529	2 ser 3	3'-4" to 5'-10"	15"	29	S	
B403	386	9'-6"		2,450	S		B530	2	20'-0"		42	S	
B404	1 ser 9	16'-3" to 20'-9"	6 3/8"	111	B		B531	4	10'-9"		45	S	
B405	2 ser 15	3'-2" to 6'-11"	3 1/8"	101	S		B532	4	13'-3"		55	B	
B406	10	6'-9"		45	S								
B501	332	4'-8"		1,616	B		B601	1 ser 15	4'-4" to 6'-4"	1 1/16"	120	B	
B502	326	5'-3"		1,785	S		B602	1 ser 3	3'-8" to 5'-8"	12"	21	B	
B503	104	3'-10"		416	B		B603	1 ser 16	4'-4" to 6'-4"	1 5/8"	128	B	
B504	106	4'-8"		516	B		B604	32	6'-6"		312	B	
B505	52	4'-9"		258	B		B605	2	8'-3"		25	B	
B506	52	5'-7"		303	B		B606	2	7'-0"		21	S	
B507	1 ser 4	14'-6" to 16'-0"	6"	64	S		B607	1 ser 17	5'-9" to 8'-9"	2 1/4"	185	S	
B508	1 ser 4	14'-2" to 19'-8"	22"	71	S		B608	1 ser 15	5'-9" to 8'-9"	2 1/8"	163	S	
B509	2	17'-3"		36	S								
B510	2	7'-9"		16	S		B801	372	16'-9"		16,637	B	
B511	1	17'-9"		19	S		B802	386	9'-6"		9,791	S	
B512	1	19'-3"		20	S		B803	372	12'-8"		12,581	B	
B513	1	15'-6"		16	S		B804	456	29'-6"		35,917	S	
B514	1	16'-0"		17	S		B805	38	9'-3"		939	S	
B515	1 ser 9	5'-6" to 8'-6"	4 1/2"	66	S		B806	38	15'-3"		1,547	S	
B516	1 ser 8	5'-6" to 8'-6"	5 1/8"	58	S		B807	1 ser 8	16'-9" to 20'-11"	7 1/8"	402	B	
B517	2	15'-9"		33	S		B808	15	11'-0"		441	S	
B518	2	16'-3"		34	S								
B519	4	18'-11"		79	B								
B520	2	15'-10"		33	B								
B521	2	18'-6"		39	S								
B522	2	13'-9"		29	S								
B523	2	4'-8"		10	B								
B524	4	16'-5"		68	B								
B525	2	14'-1"		29	B								
B526	48	3'-4"		167	B								
B527	4	9'-6"		40	S								
						Total						111,254	
										Replacement Bars			
		RE 4	1	5'-3"		5							
		RE 5	1	5'-7"		5							
		RE 6	1	5'-11"		5							
		RE 8	4	6'-6"		5							
		RE 9	1	6'-10"		5							



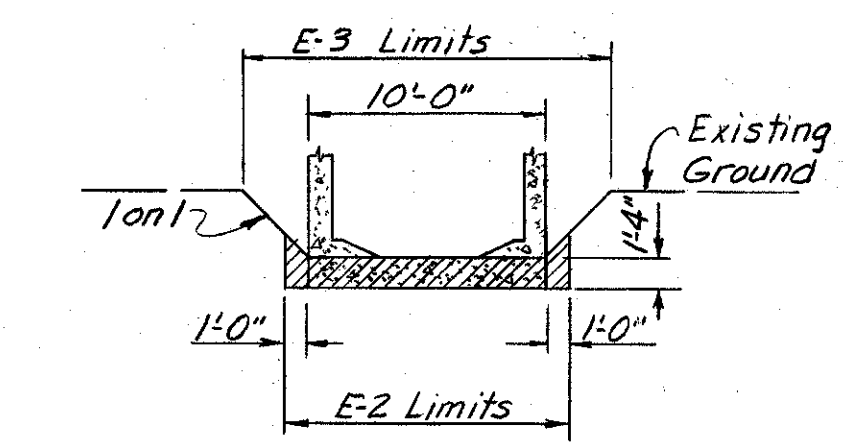
SECTION A-A
Scale: 3/8"=1'



SECTION B-B
Scale: 3/8"=1'



SECTION C-C
Scale: 1/2"=1'



Channel Excavation (E-3) and Excavation for Structures (E-2) across roadway for entire length of box culvert.

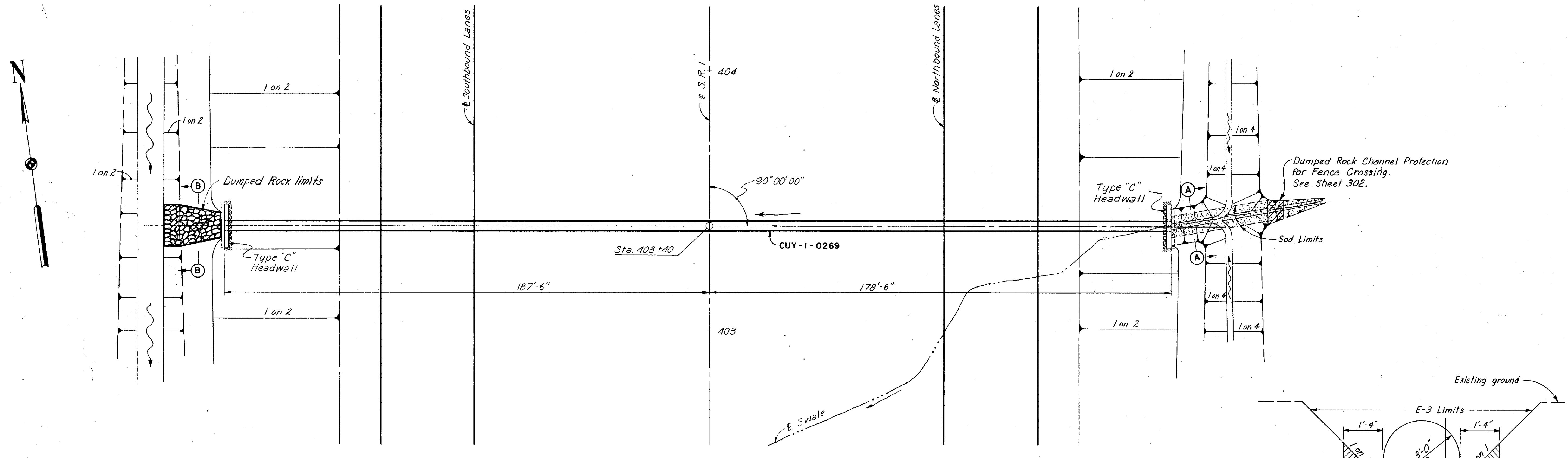
NOTES:
Bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
If reinforcing bars are fabricated from stock which has previously been tested and approved by the Ohio Highway Testing Laboratories, test samples as provided in Sec. 5-4.02 need not be furnished and replacement bars will not be furnished.
Bar size is indicated in the bar mark by the first digit. For example; B401 is a number 4 bar.
For additional notes and details of culvert see sheet 240.

ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	311	Cu. Yd.
E-3	Channel Excavation	590	Cu. Yd.
I-10	Dumped Rock Channel Protection	51	Cu. Yd.
I-10	Riprap	92	Sq. Yd.
L-10	Sodding	12	Sq. Yd.
S-1	Concrete for Structures, Class "C"	579	Cu. Yd.
S-4	Reinforcing Steel	111,254	Lbs.
S-29	Porous Backfill	324	Cu. Yd.

D.A. = 495 Ac.
Q 50 = 302 c.f.s.
OUTLET V = 13 f.p.s.
H.W. ELEV. = 1157.3

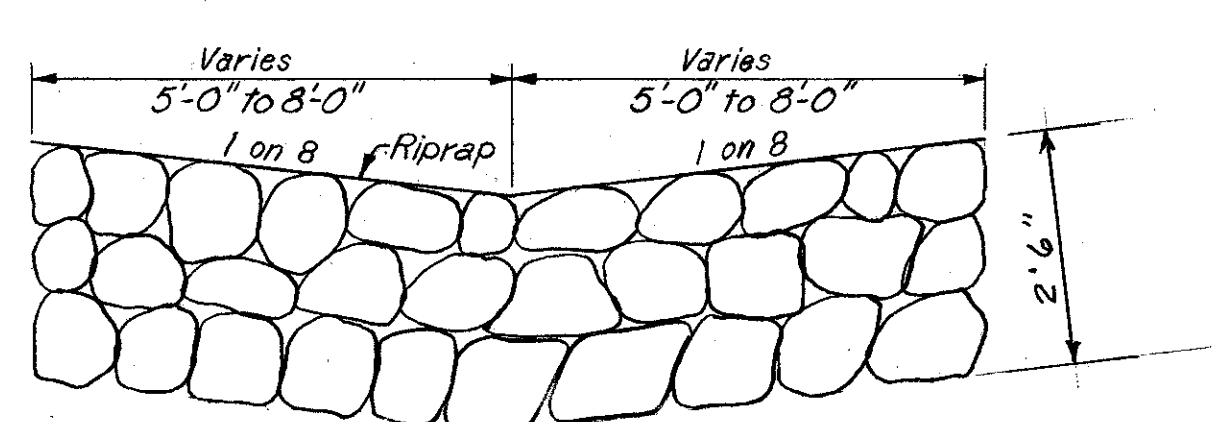
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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

MADE *DEL* DATE 5-14-59 TRACED DATE
CHECKED *ARL* DATE 5-26-59 SCALE *As shown*

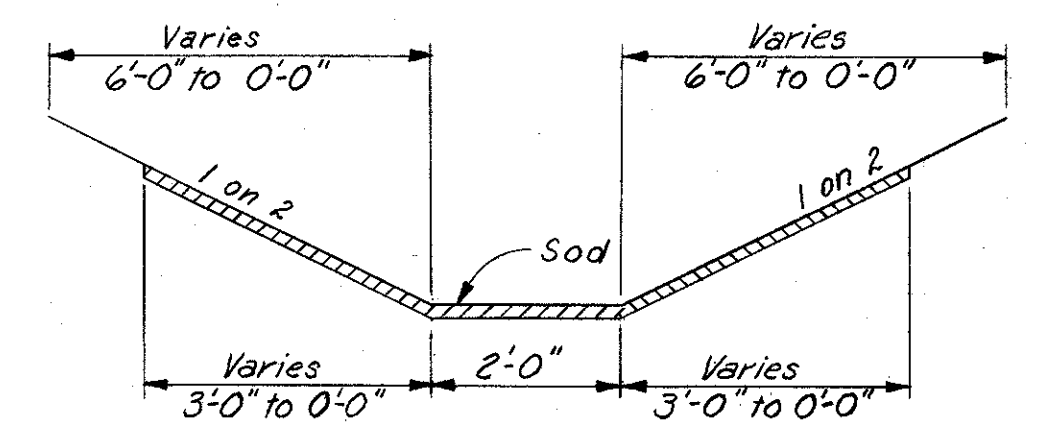


PLAN

ESTIMATED QUANTITIES			
Item	Description	Quantity	Units
E-2	Excavation for Structures	70	Cu. Yd.
E-3	Channel Excavation	127	Cu. Yd.
I-10	Dumped Rock Channel Protection	30	Cu. Yd.
L-10	Sodding	52	Sq. Yd.
S-1	Concrete for Structures, Class "C"	16	Cu. Yd.
S-4	Reinforcing Steel	838	Lbs.
S-27	36" Pipe for Roadway Culverts Sec. M G. 6(d)	366	Lin. Ft.

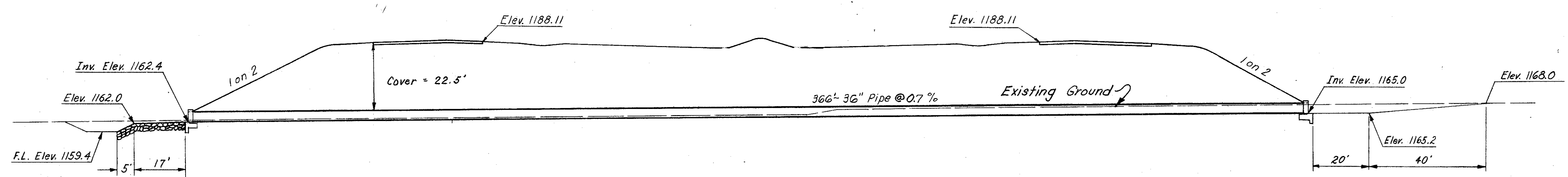


SECTION B-B



SECTION A-A

Channel excavation (E-3) and structure excavation (E-2) across roadway for length of pipe.



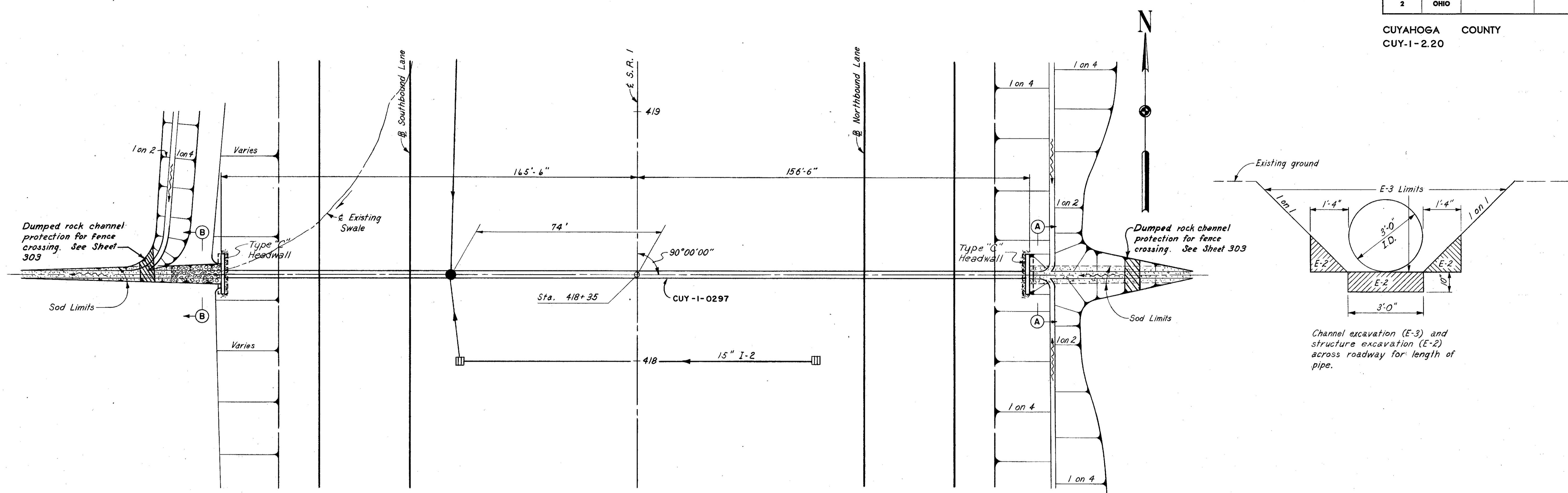
ELEVATION

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KANSAS CITY CLEVELAND NEW YORK

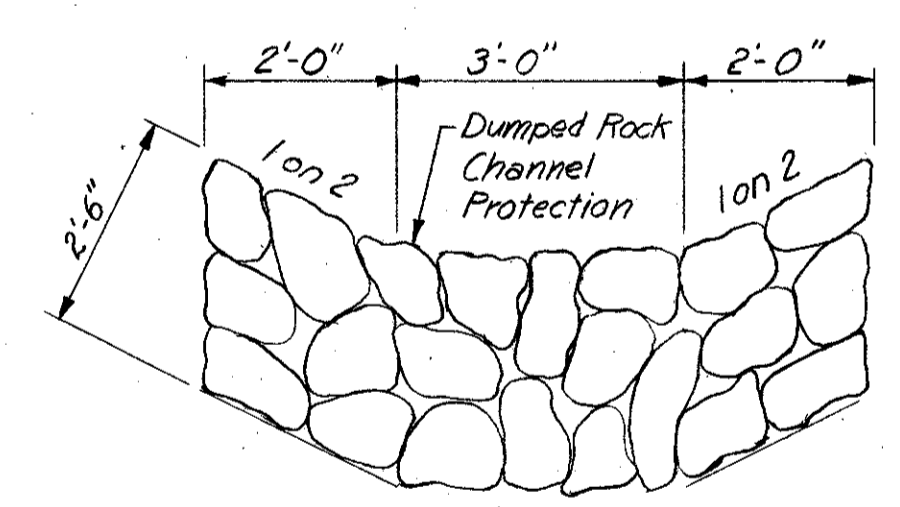
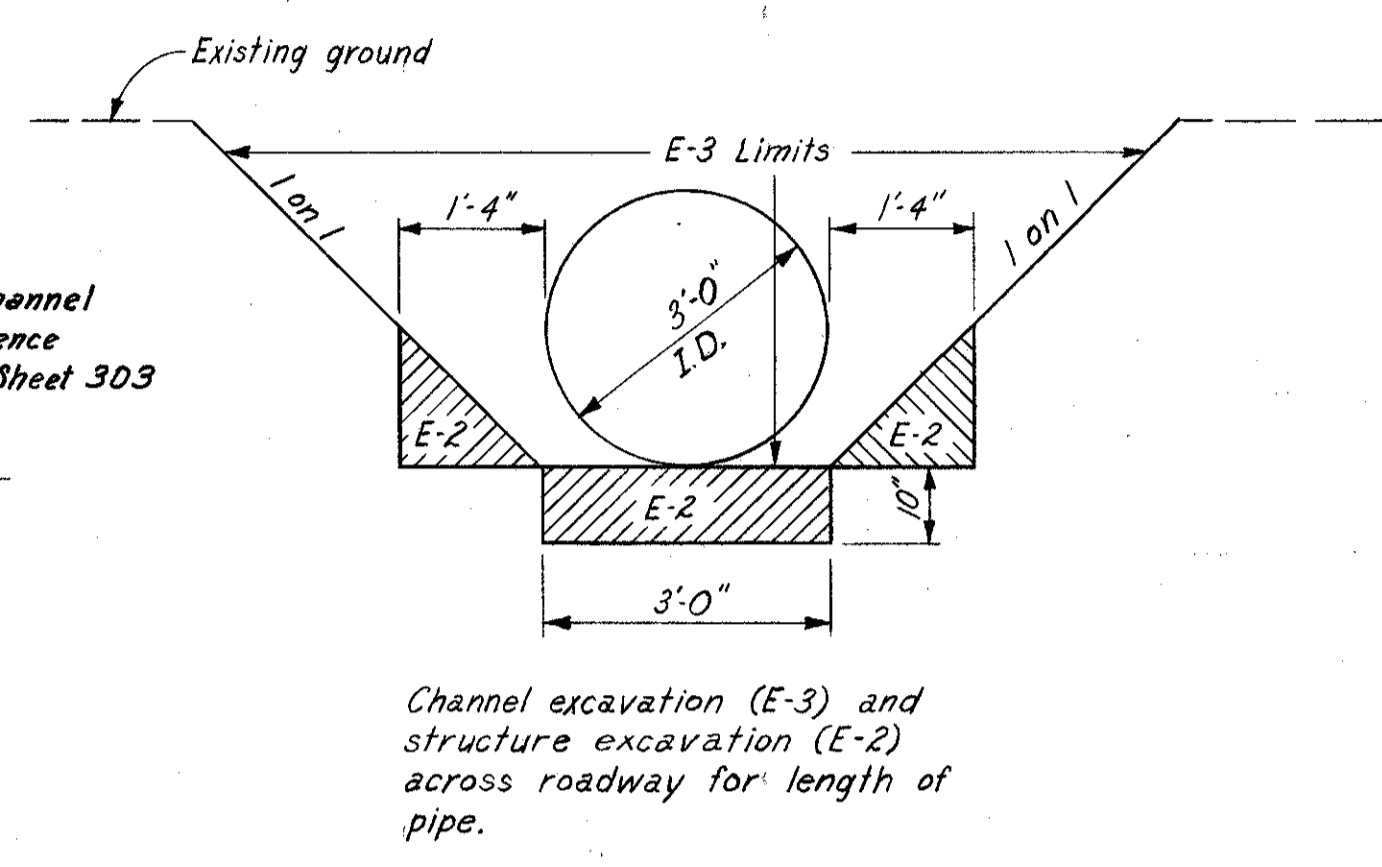
MADE *AJS-CLM* DATE *4-29-59* TRACED _____ DATE _____
CHECKED *DDS* DATE *5-7-59* SCALE *1"=20' ; 1/2"=1'-0"*

Note: For Headwall details see Standard Construction Drawing, HW-C.

DA = 17 Ac.
Q 50 = 42 c.f.s.
OUTLET v = 7.7 f.p.s.
H.W. ELEV. = 1168.2

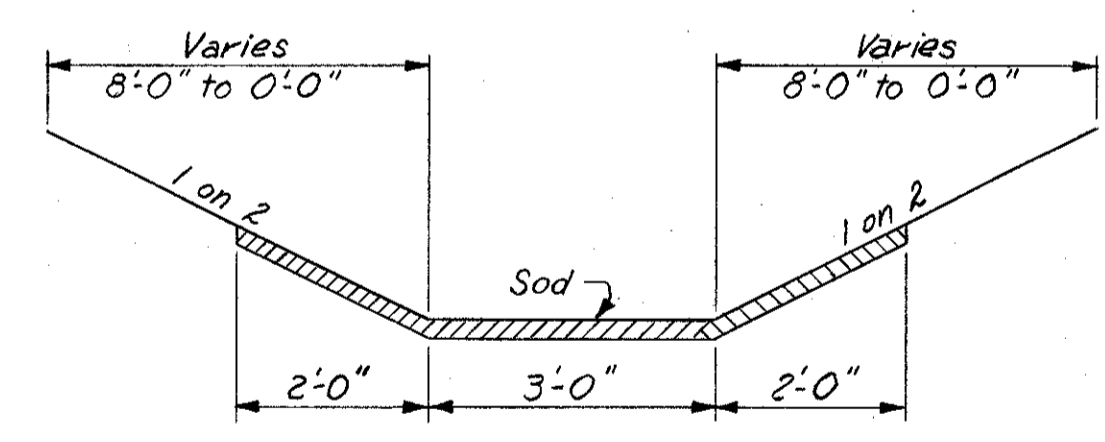


PLAN

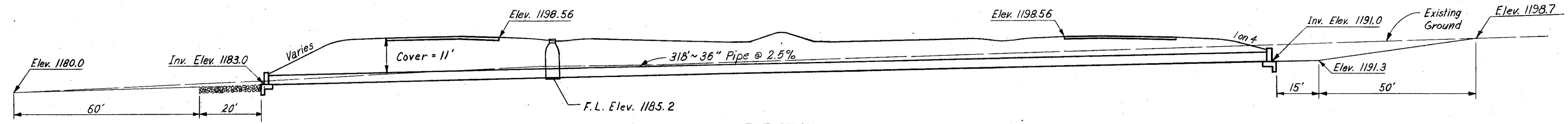


SECTION B-B

ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	80	Cu. Yd.
E-3	Channel Excavation	489	Cu. Yd.
I-10	Dumped Rock Channel Protection	13	Cu. Yd.
L-10	Sodding	85	Sq. Yd.
S-1	Concrete for Structures, Class "C"	16	Cu. Yd.
S-4	Reinforcing Steel	838	Lbs.
S-27	36" Pipe for Roadway Culverts	318	Lin. Ft.



SECTION A-A



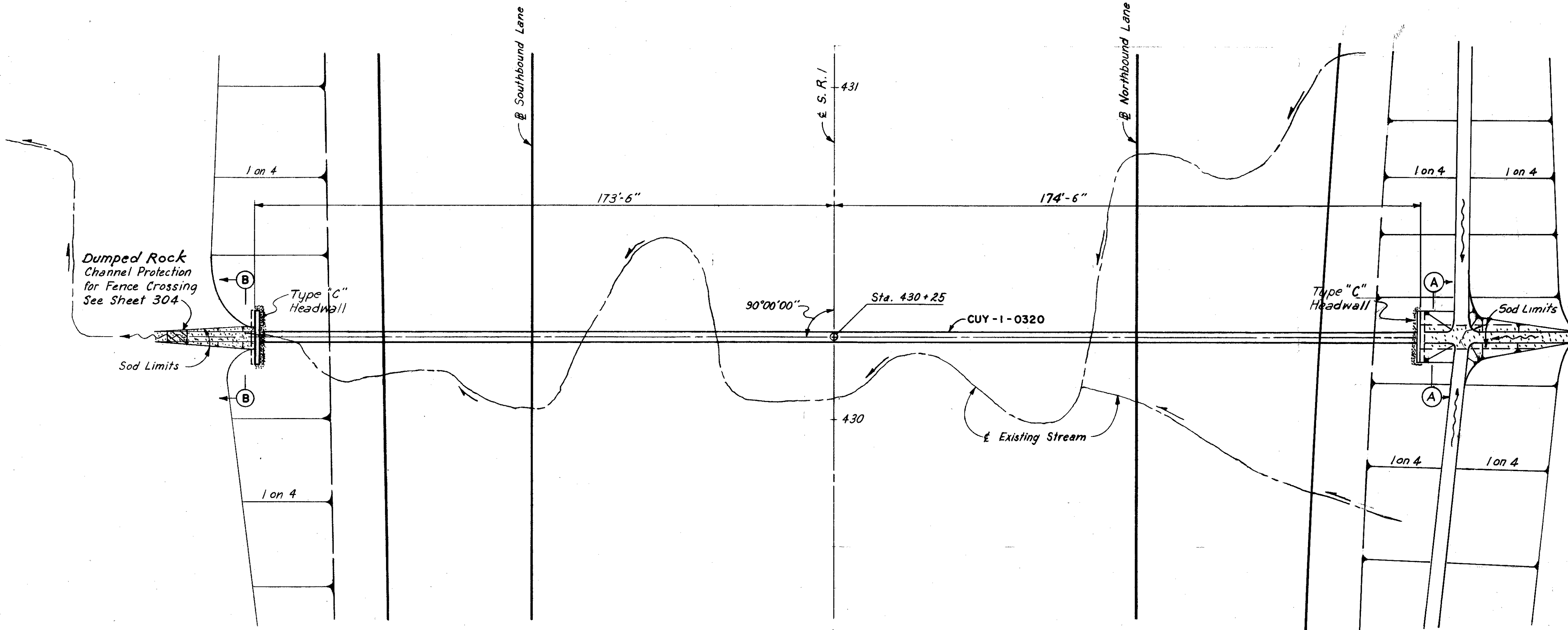
ELEVATION

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

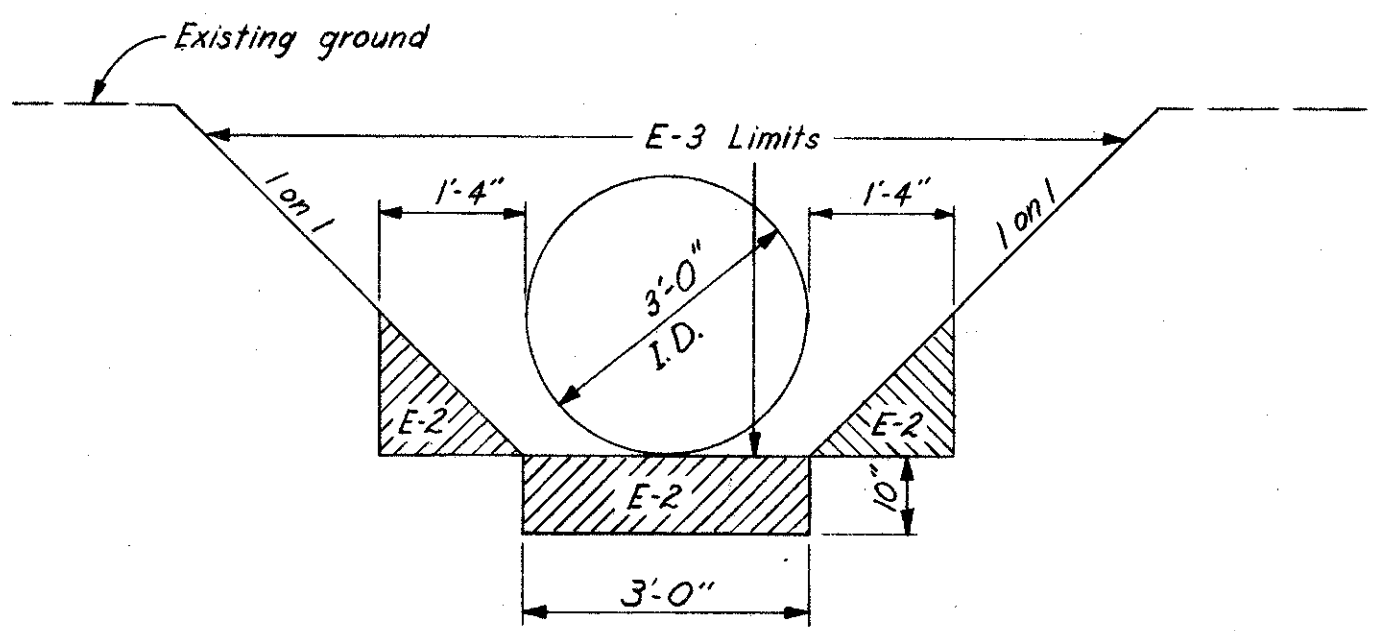
MADE C.L.M. DATE 4-23-59 TRACED DATE
CHECKED H.J.H. DATE 5-4-59 SCALE 1"=20' 1/2"=1'-0"

Note: For headwall details see Standard Construction Drawing HW-C.
For manhole and storm sewer see sheet 19.

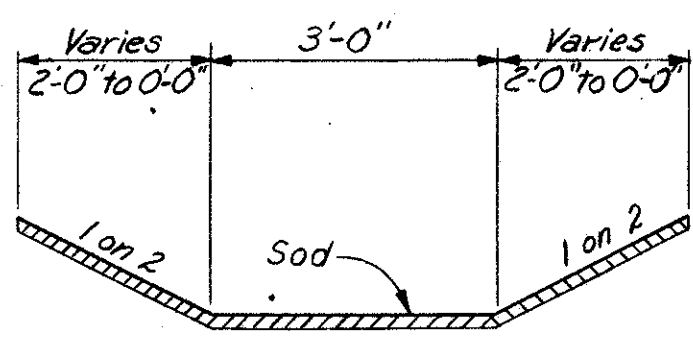
D.A. = 25 Ac.
Q 50 = 54 c.f.s.
OUTLET V = 13 f.p.s.
H.W. ELEV. = 1194.9



PLAN

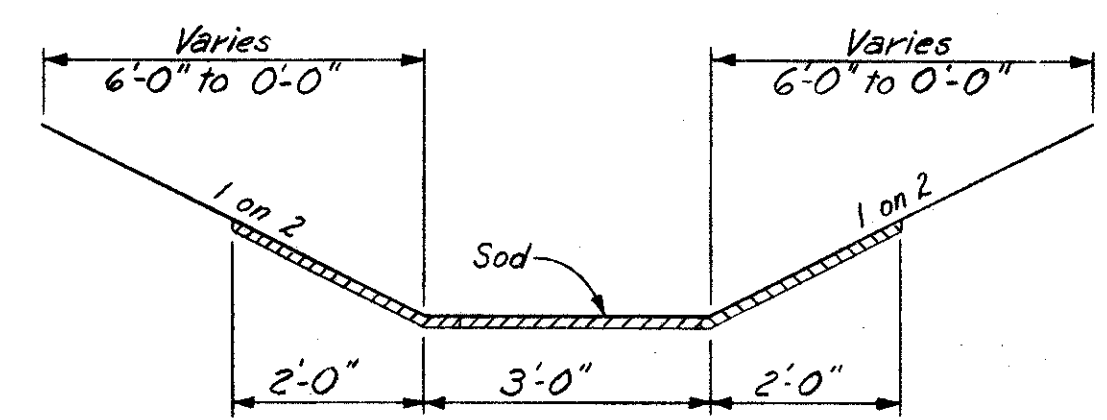


Channel excavation (E-3) and structure excavation (E-2) across roadway for length of pipe.

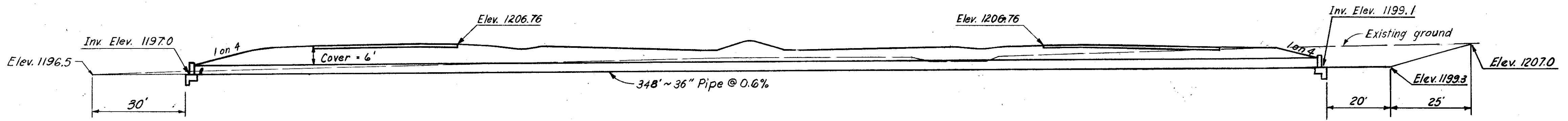


SECTION B-B

ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	95	Cu. Yd.
E-3	Channel Excavation	520	Cu. Yd.
L-10	Sodding	55	Sq. Yd.
S-1	Concrete for Structures, Class "C"	16	Cu. Yd.
S-4	Reinforcing Steel	838	Lbs.
S-27	36" Pipe for Roadway Culverts	348	Lin. Ft.



SECTION A-A



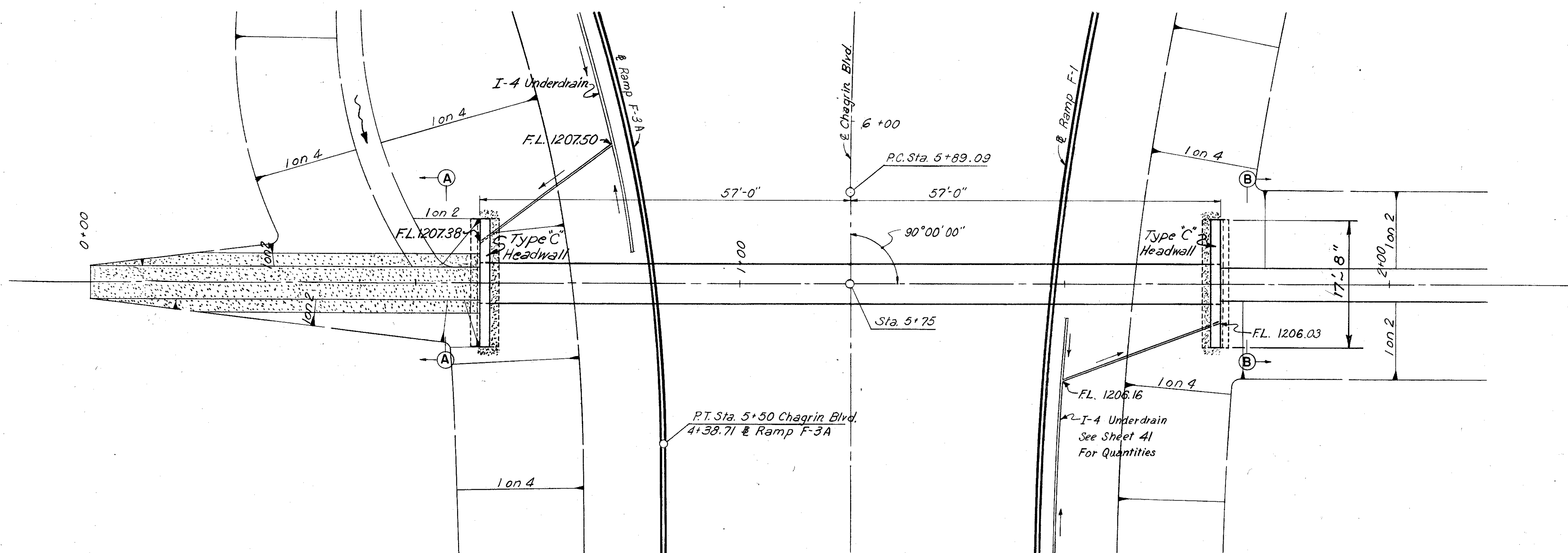
ELEVATION

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KANSAS CITY CLEVELAND NEW YORK

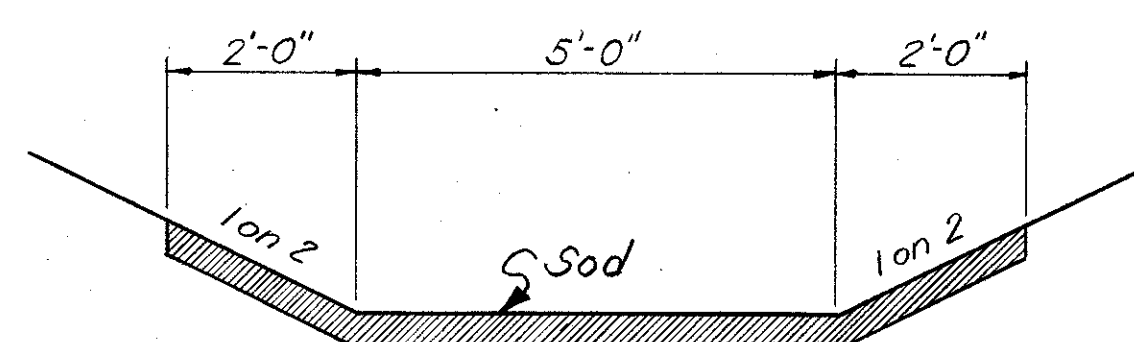
MADE ERH DATE 5-18-61 TRACED DATE
CHECKED RJH DATE 5-22-61 SCALE 1"=20'; 1/8"=1'-0"

Note: For Headwall details see Standard Construction Drawing HW-C.

D.A. = 18 Ac.
Q50 = 35 c.f.s.
OUTLET V = 7.0
H.W. ELEV. = 1202.0

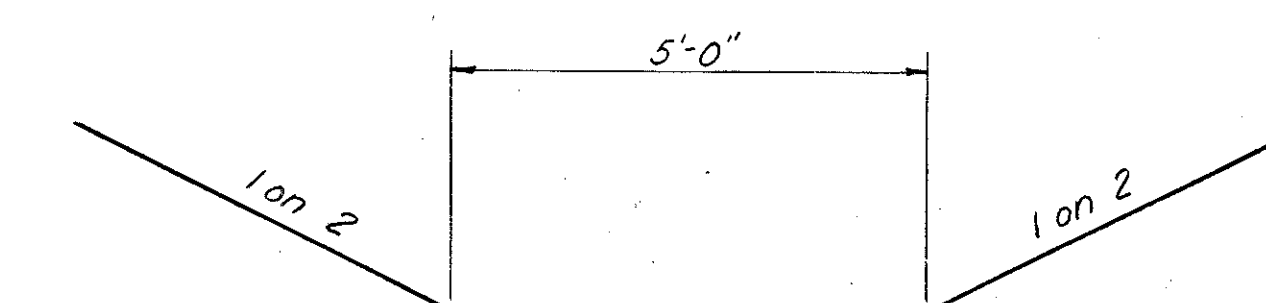


PLAN
1" = 10'

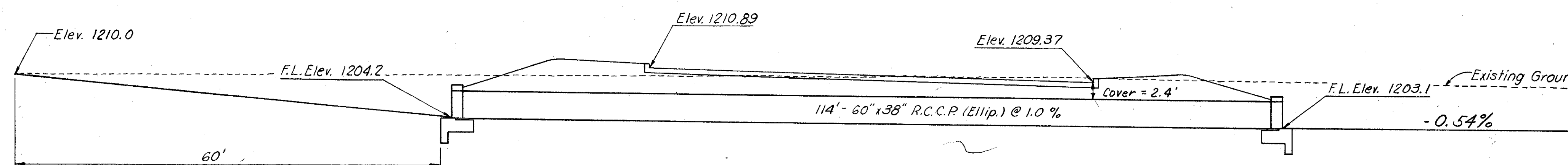


SECTION A-A

ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	94	Cu. Yd.
E-3	Channel Excavation	1854	Cu. Yd.
L-10	Sodding	62	Sq. Yd.
S-1	Concrete for Structures, Class "C"	22	Cu. Yd.
S-4	Reinforcing Steel	940	Lbs.
S-27	60" x 38" Pipe for Roadway Culverts Sec. M 206.6 (b)	114	Lin. Ft.



SECTION B-B



ELEVATION

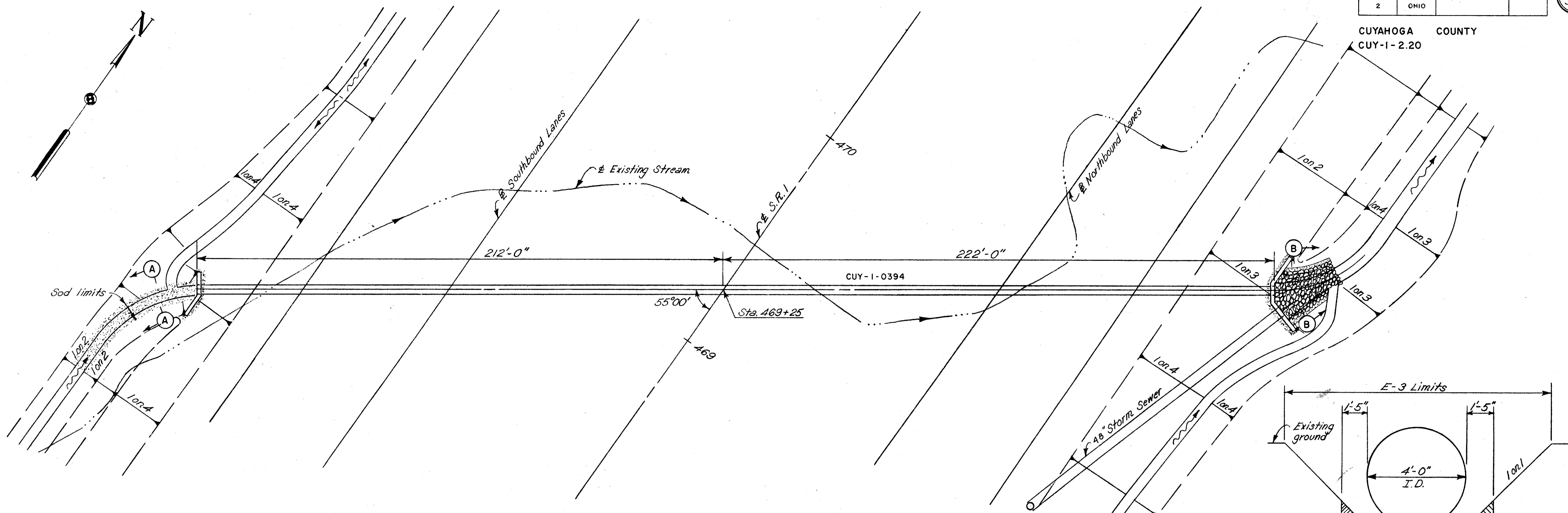
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KANSAS CITY CLEVELAND NEW YORK

MADE AJS DATE 5-25-59 TRACED _____ DATE _____
CHECKED HJH DATE 6-2-59 SCALE 1" = 10'

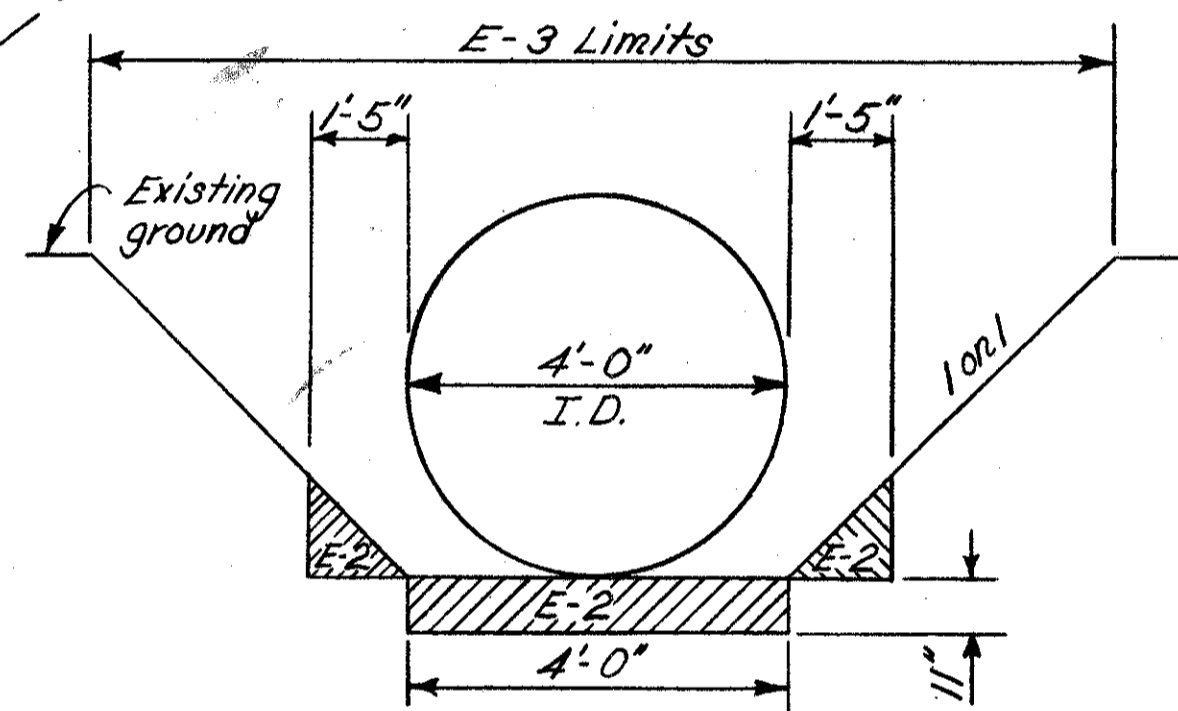
Note: For Headwall details see Standard Construction Drawing HW-C. For channel change details and cross sections see sheet 245.

D.A. = 45 Ac.
Q25 = 90 c.f.s.
OUTLET V = 9 f.p.s.
H.W. ELEV. = 1207.8

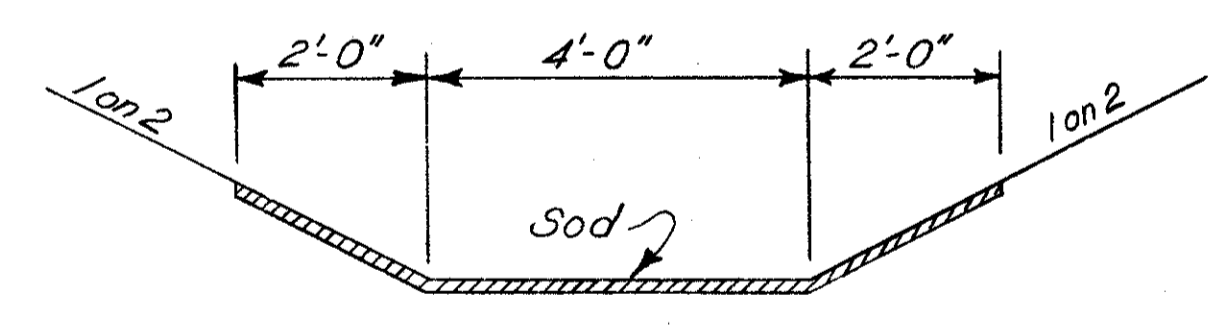
CUYAHOGA COUNTY
CUY-1-2.20



PLAN

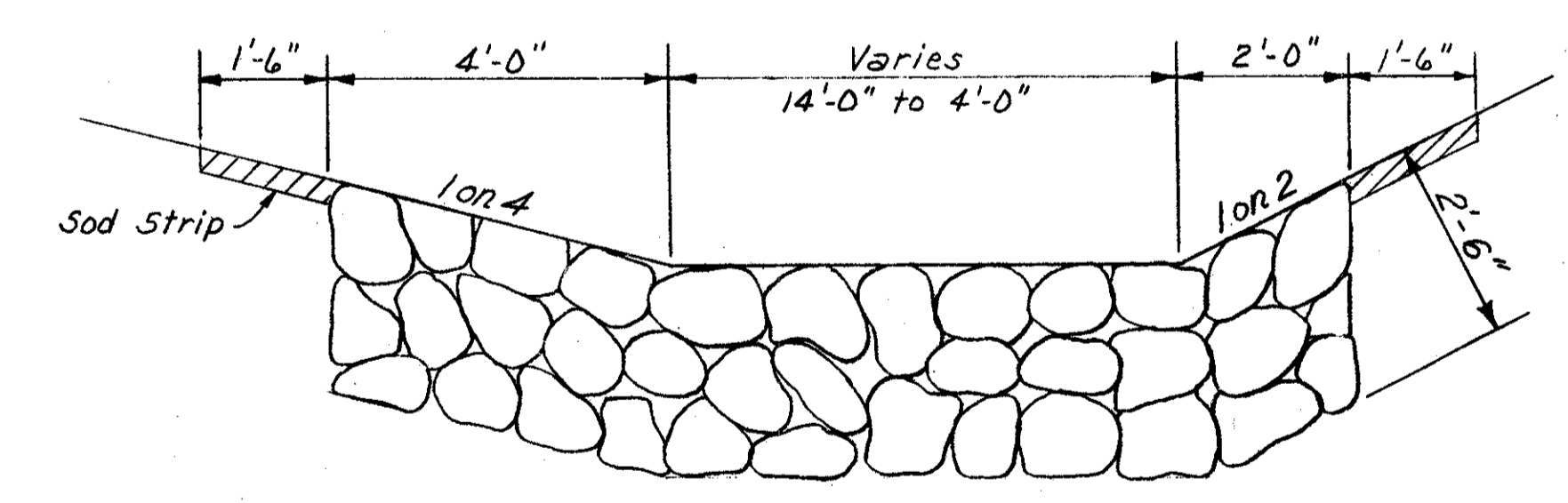


Channel Excavation (E-3) and Structure Excavation (E-2) across roadway for length of pipe.

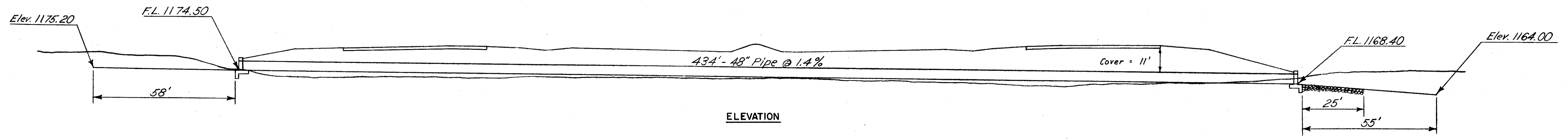


SECTION A-A

ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	116	Cu. Yd.
E-3	Channel Excavation	225	Cu. Yd.
I-10	Dumped Rock Channel Protection	30	Cu. Yd.
S-1	Concrete for Structures, Class C	38	Cu. Yd.
S-4	Reinforcing Steel	1641	Lbs.
S-27	48" Pipe for Roadway Culverts, Sec. M 6.6(b)	434	Lin. Ft.
L-10	Sodding	73	Sq. Yd.



SECTION B-B



ELEVATION

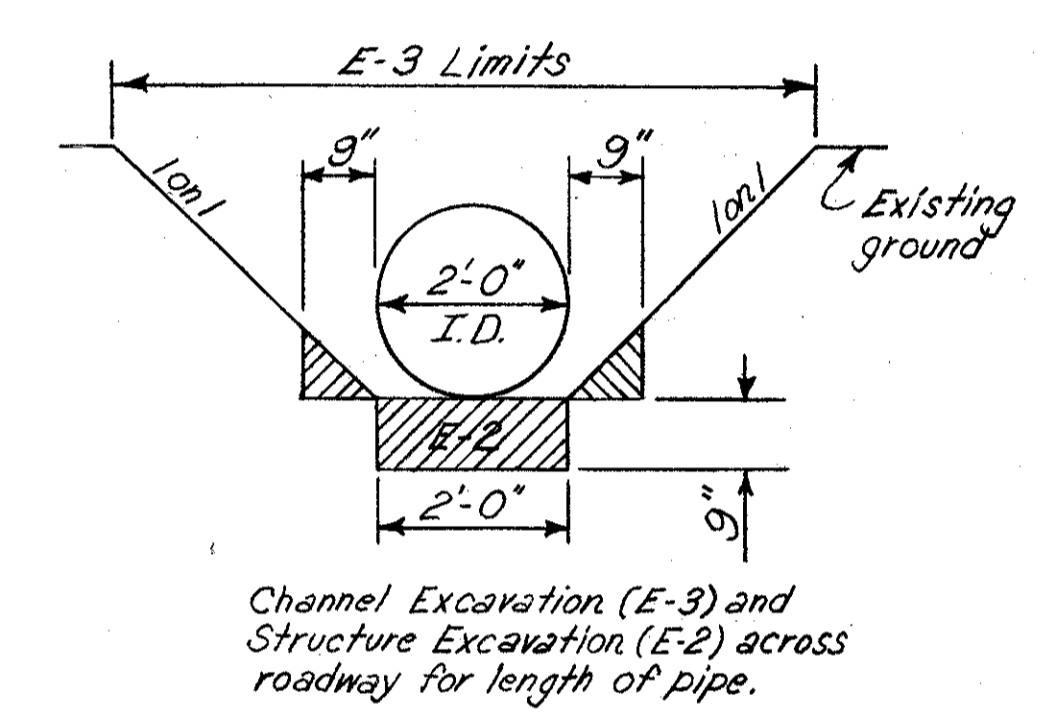
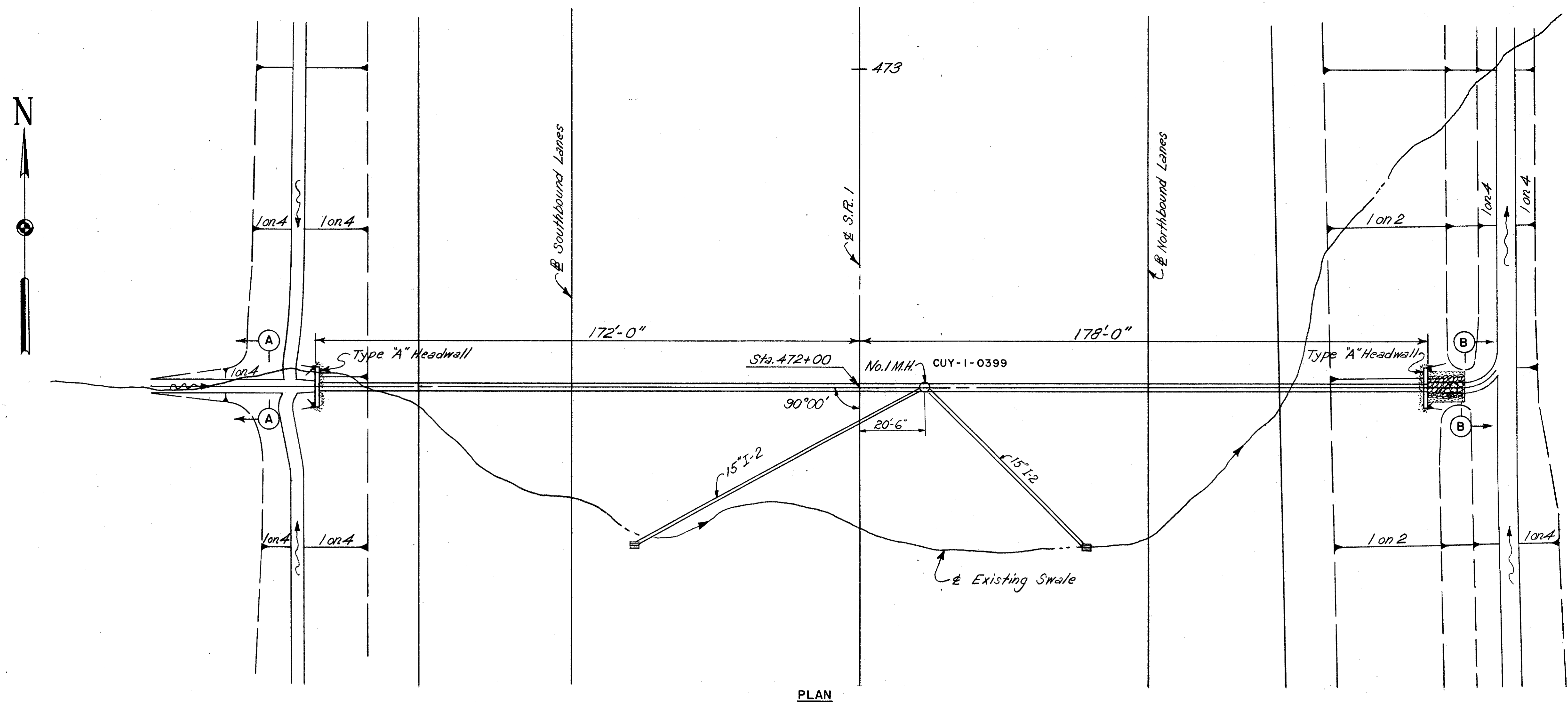
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MADE HJH DATE 2-4-60 TRACED DATE
CHECKED E.C.E. DATE 2-11-60 SCALE 1" = 20'
REV. E.R.H. 6-7-61 CHECK R.J.H. 6-8-61

Note: For headwall details see sheet 250.

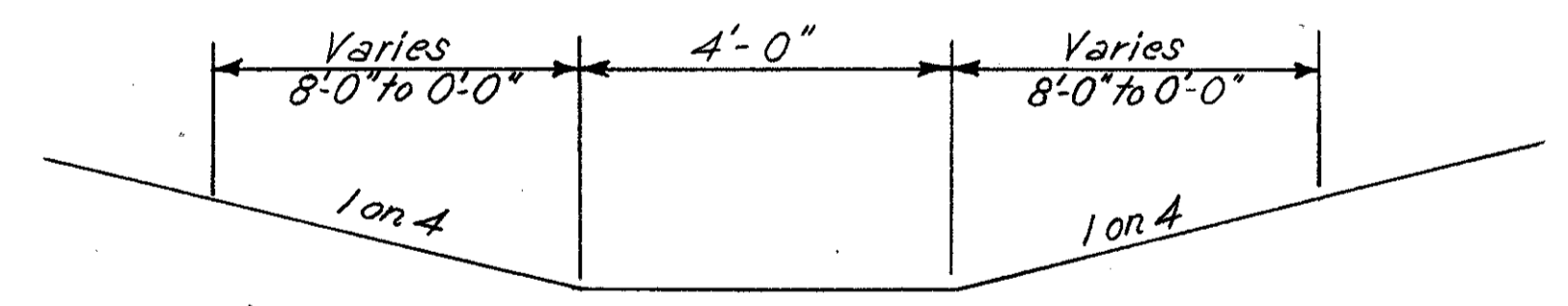
D.A = 61 Ac.
Q 50 = 102 c.f.s.
OUTLET V = 13 f.p.s.
H. W. ELEV = 1179.4

CUYAHOGA COUNTY
CUY-I- 2.20

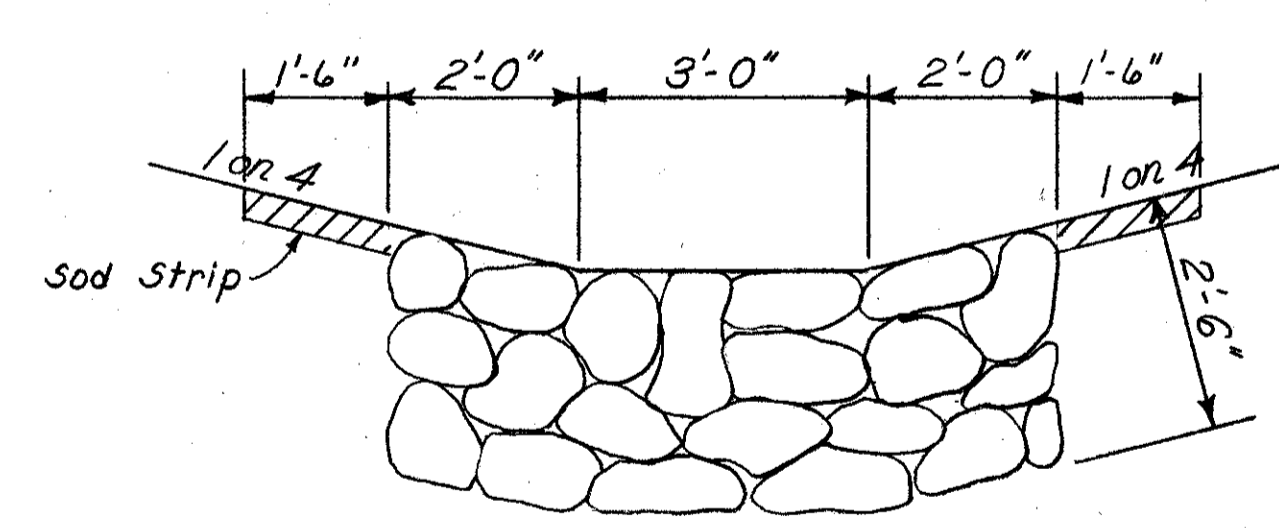


Channel Excavation (E-3) and Structure Excavation (E-2) across roadway for length of pipe.

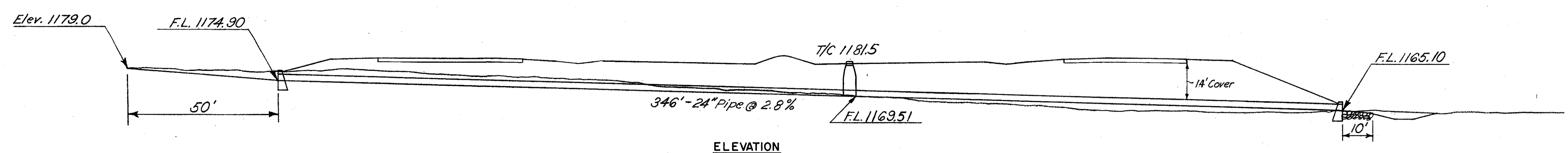
ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	54	Cu. Yd.
E-3	Channel Excavation	152	Cu. Yd.
I-10	Dumped Rock Channel Protection	7	Cu. Yd.
S-1	Concrete for Structures, Class "C"	10.2	Cu. Yd.
S-4	Reinforcing Steel	436	Lbs.
S-27	24" Pipe For Roadway Culverts, Sec. M.G.6(b)	346	Lin. Ft.
L-10	Sodding	8	Sq. Yd.



SECTION A-A



SECTION B-B



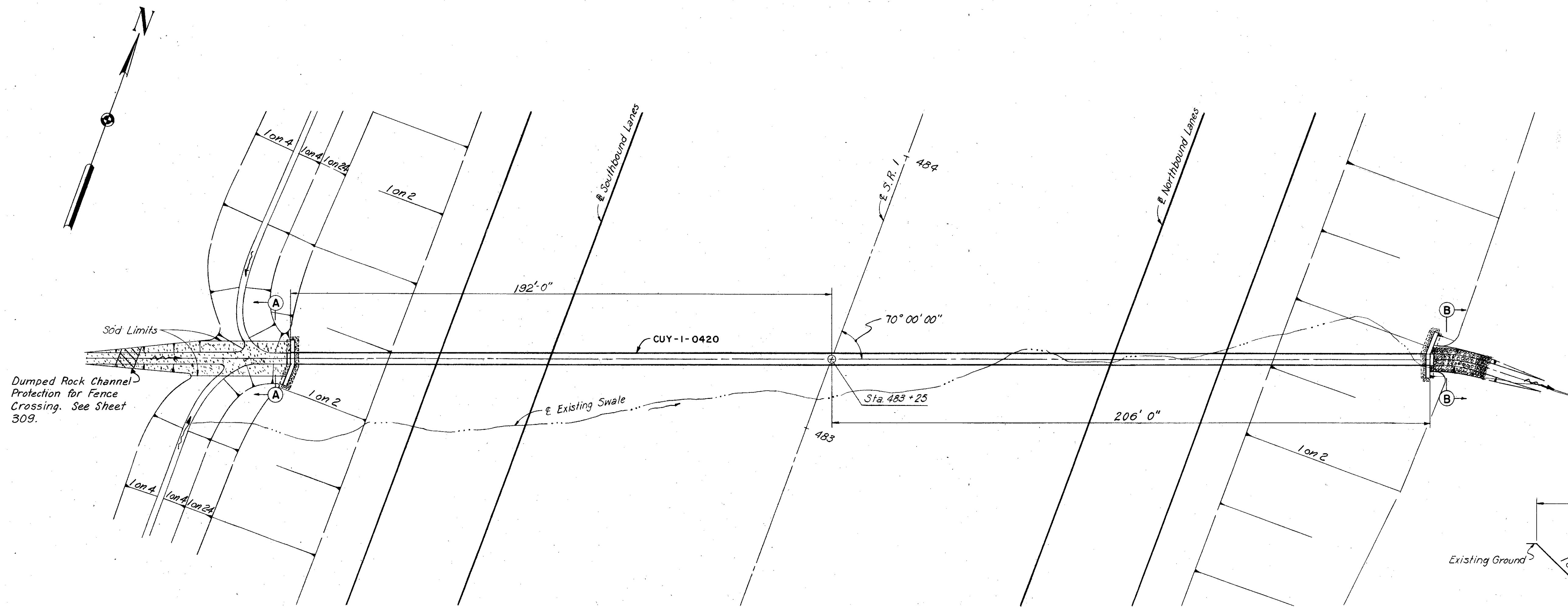
ELEVATION

Note: For Headwall details see Standard Construction Drawing HW-A.
For Storm Sewers and Manhole see Sheet 25

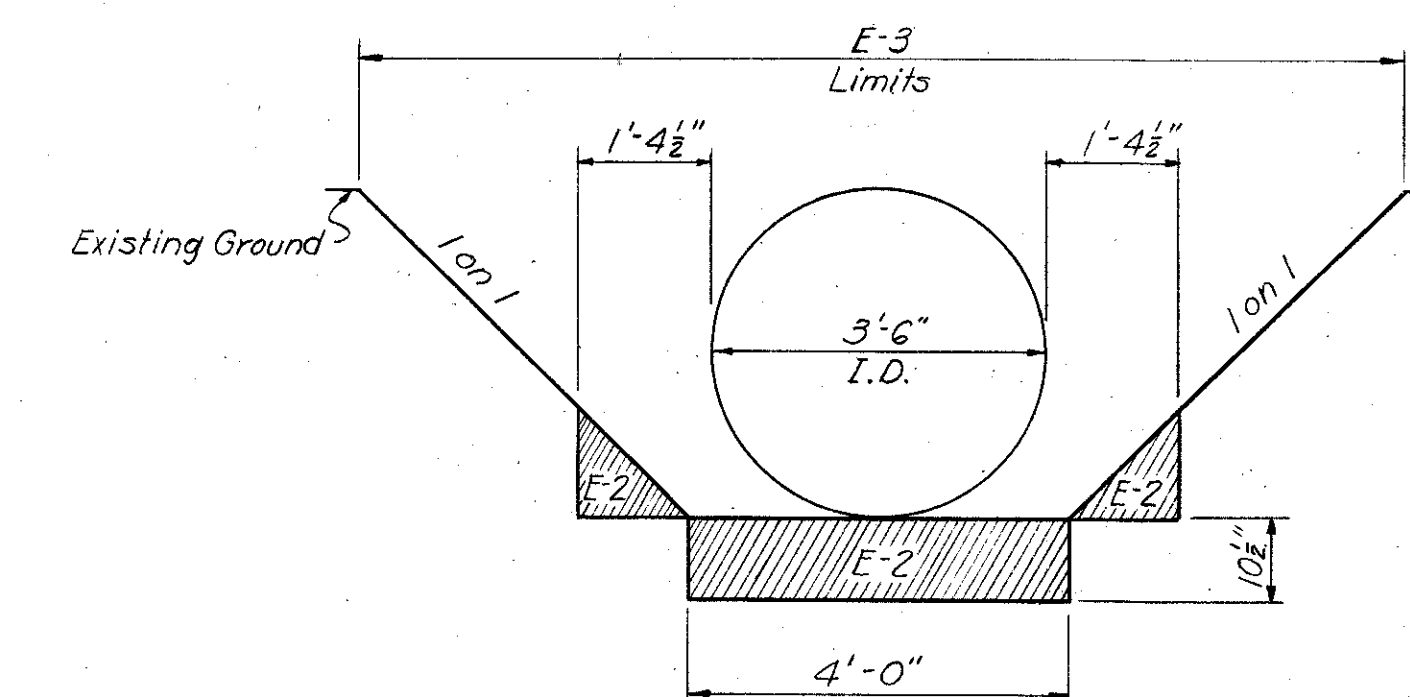
D.A. = 9 Ac.
Q 50 = 28 c.f.s.
OUTLET V = 12 f.p.s.
H.W. ELEV = 1178.6

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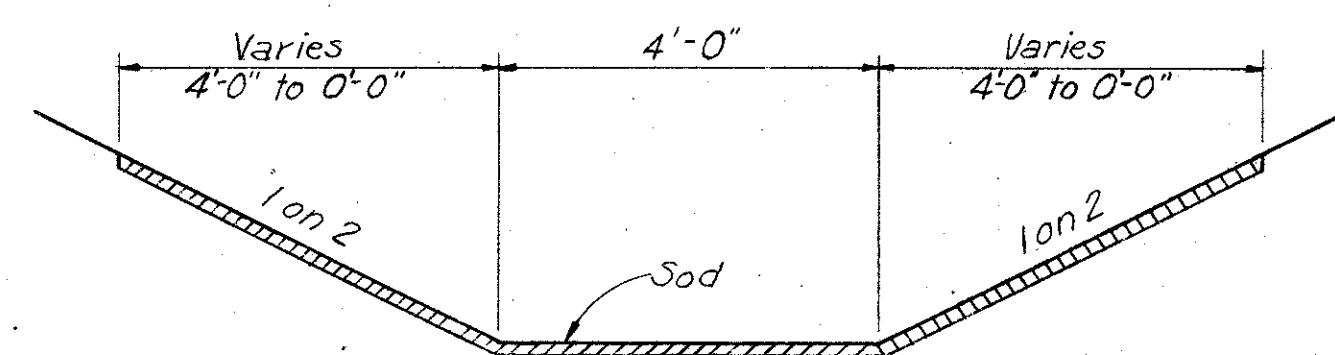
MADE HJH DATE 2-8-60 TRACED DATE
CHECKED ECF DATE 2-16-60 SCALE 1" = 20'



PLAN

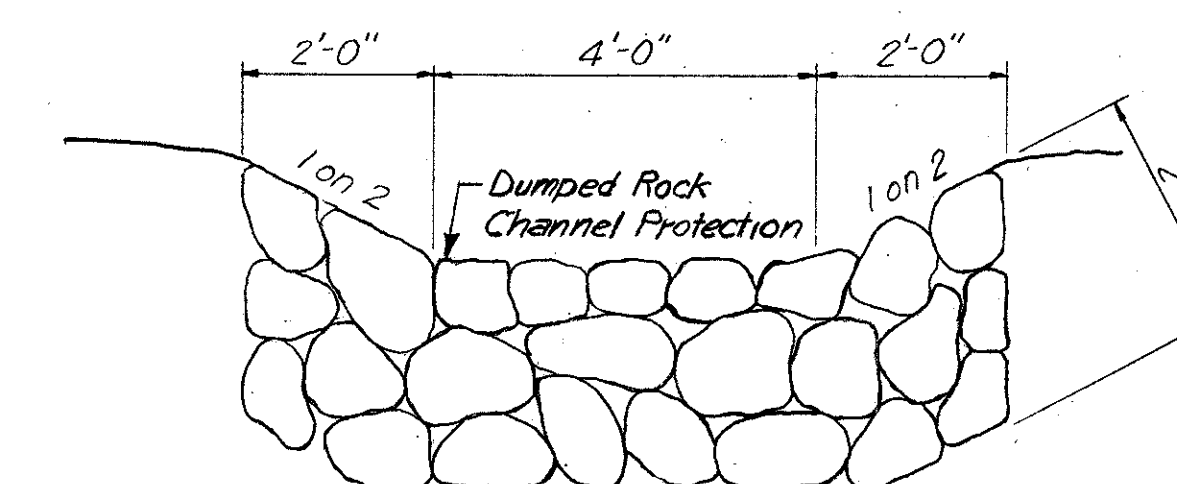


Channel excavation (E-3) and structure excavation (E-2) across roadway for length of pipe.

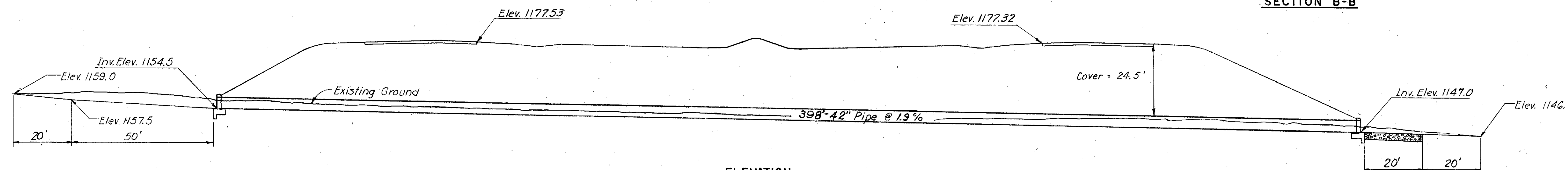


SECTION A-A

ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	93	Cu. Yd.
E-3	Channel Excavation	361	Cu. Yd.
L-10	Sodding	84	Sq. Yd.
S-1	Concrete for Structures, Class "C"	21	Cu. Yd.
S-4	Reinforcing Steel	984	Lbs.
S-27	42" Pipe for Roadway Culverts Sec. M.6.6(d)	398	Lin. Ft.
I-10	Dumped Rock Channel Protection	16	Cu. Yd.



SECTION B-B



ELEVATION

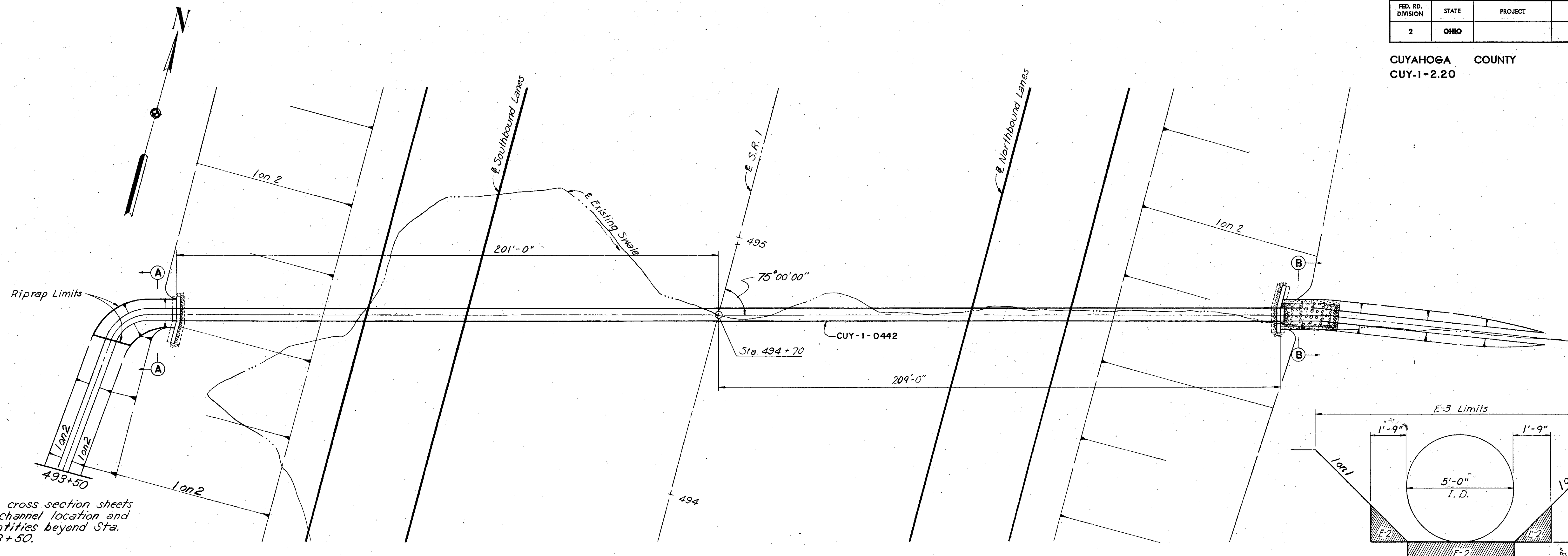
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE AJS DATE 4-16-59 TRACED DATE
CHECKED DDS DATE 5-7-59 SCALE 1"=20' 1/2"=1'-0"

Note: For Headwall details see sheet 250

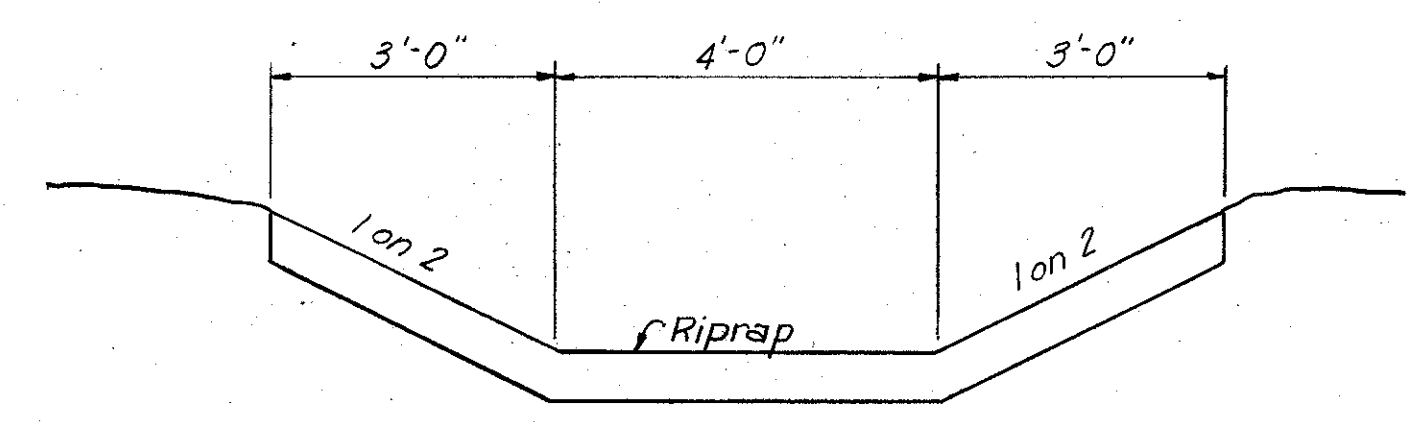
D.A. = 57 AC.
Q50 = 95 c.f.s.
OUTLET V = 14 f.p.s.
H.W. ELEV. = 1159.8

CUYAHOGA COUNTY
CUY-1-2.20



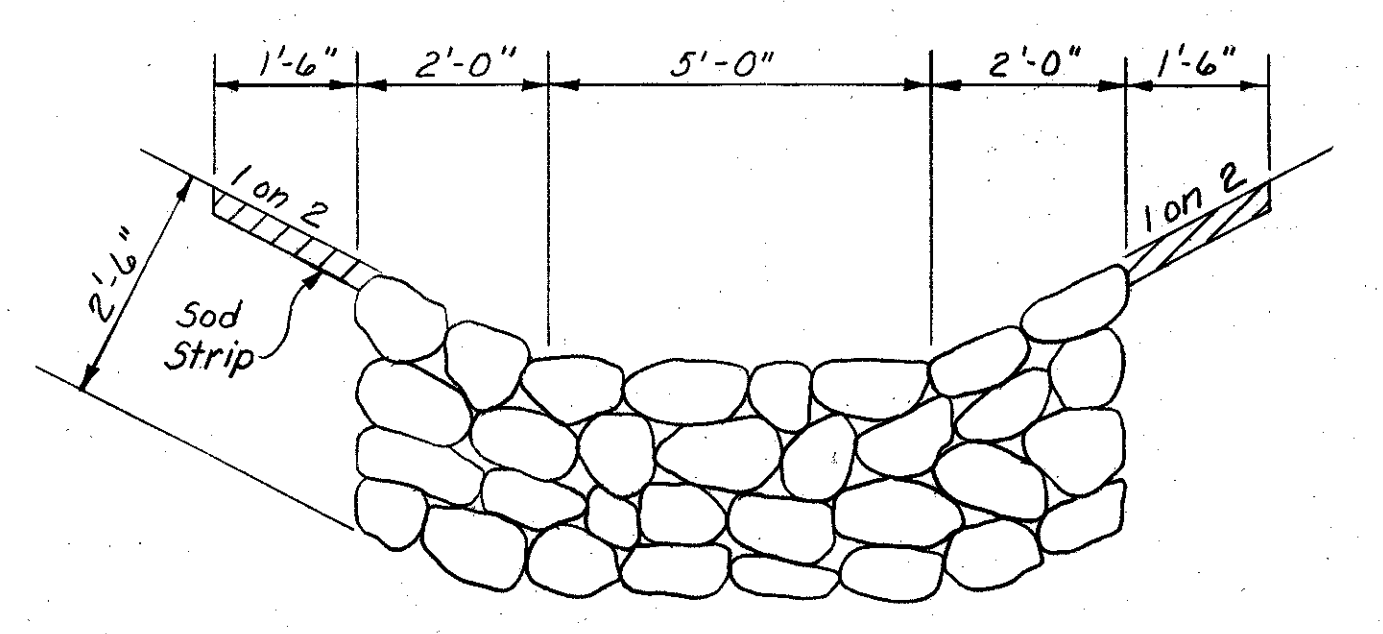
Note: See cross section sheets for channel location and quantities beyond Sta. 493+50.

PLAN



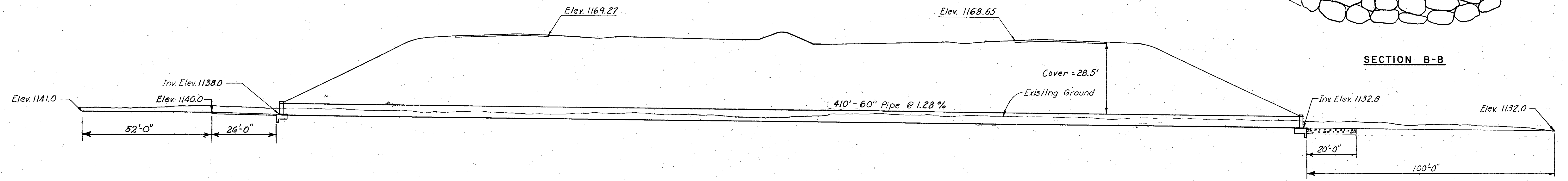
SECTION A-A

ESTIMATED QUANTITIES			
Item	Description	Quantity	Unit
E-2	Excavation for Structures	129	Cu. Yd.
E-3	Channel Excavation	609	Cu. Yd.
I-10	Riprap	33	Sq. Yd.
S-1	Concrete for Structures, Class "C"	39	Cu. Yd.
S-4	Reinforcing Steel	1402	Lbs.
S-27	60" Pipe for Roadway Culverts Sec. M ² 106.6 (d)	410	Lin. Ft.
I-10	Dumped Rock Channel Protection	17	Cu. Yd.
L-10	Sodding	13	Sq. Yd.



Channel excavation (E-3) and structure excavation (E-2) across roadway for length of pipe.

SECTION B-B



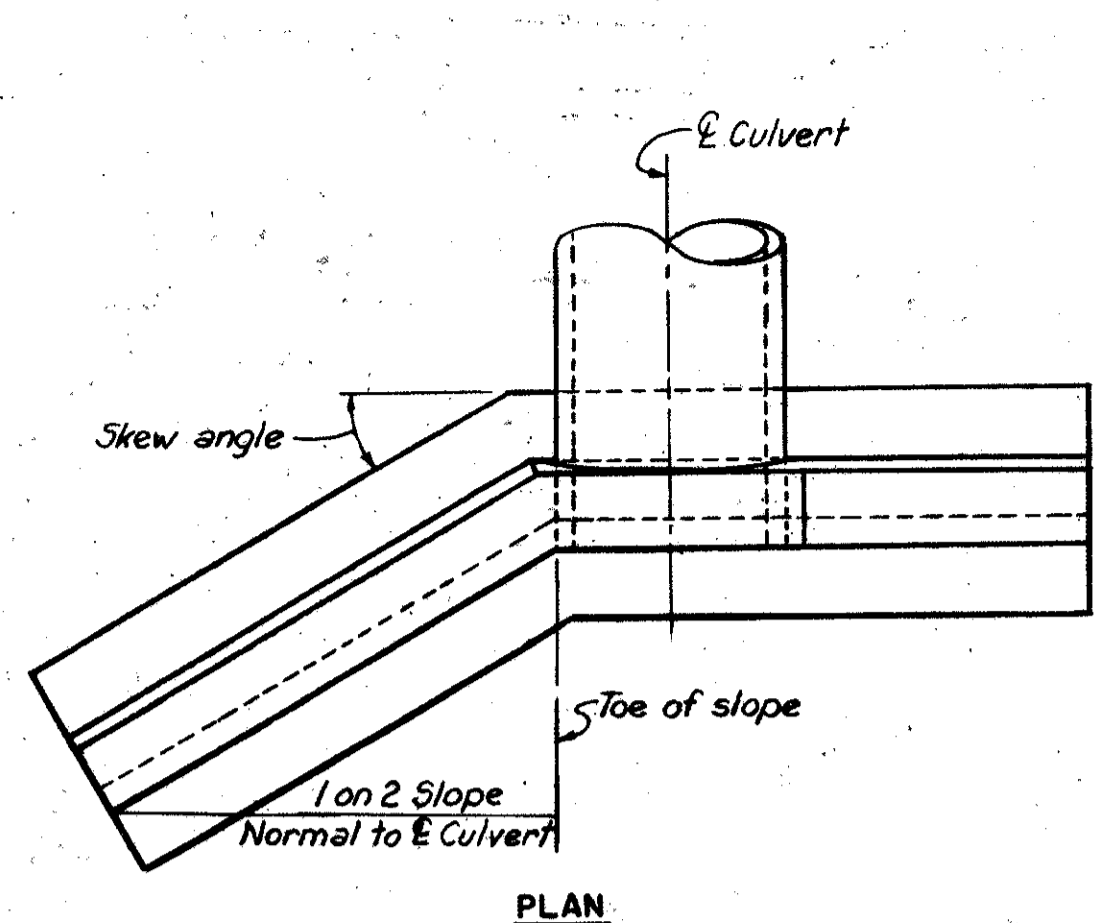
ELEVATION

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

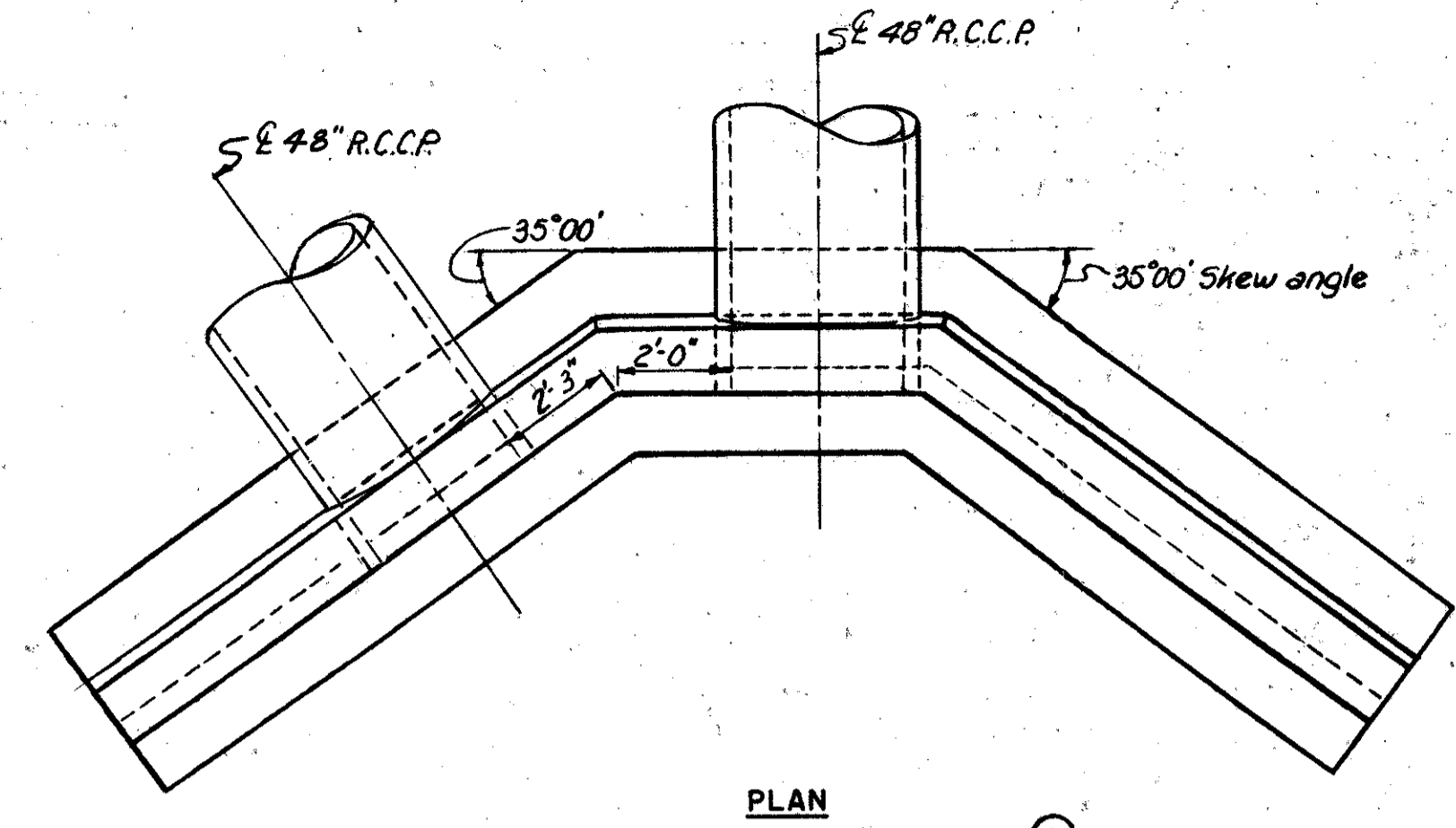
MADE AVS DATE 5-5-59 TRACED _____ DATE _____
CHECKED HJH DATE 6-5-59 SCALE 1" = 20'

Note: For Headwall details see sheet 250

D.A. = 118 AC.
Q 50 = 156 C.F.S.
OUTLET V = 13 f.p.s.
H.W. ELEV. = 1144.2



PLAN

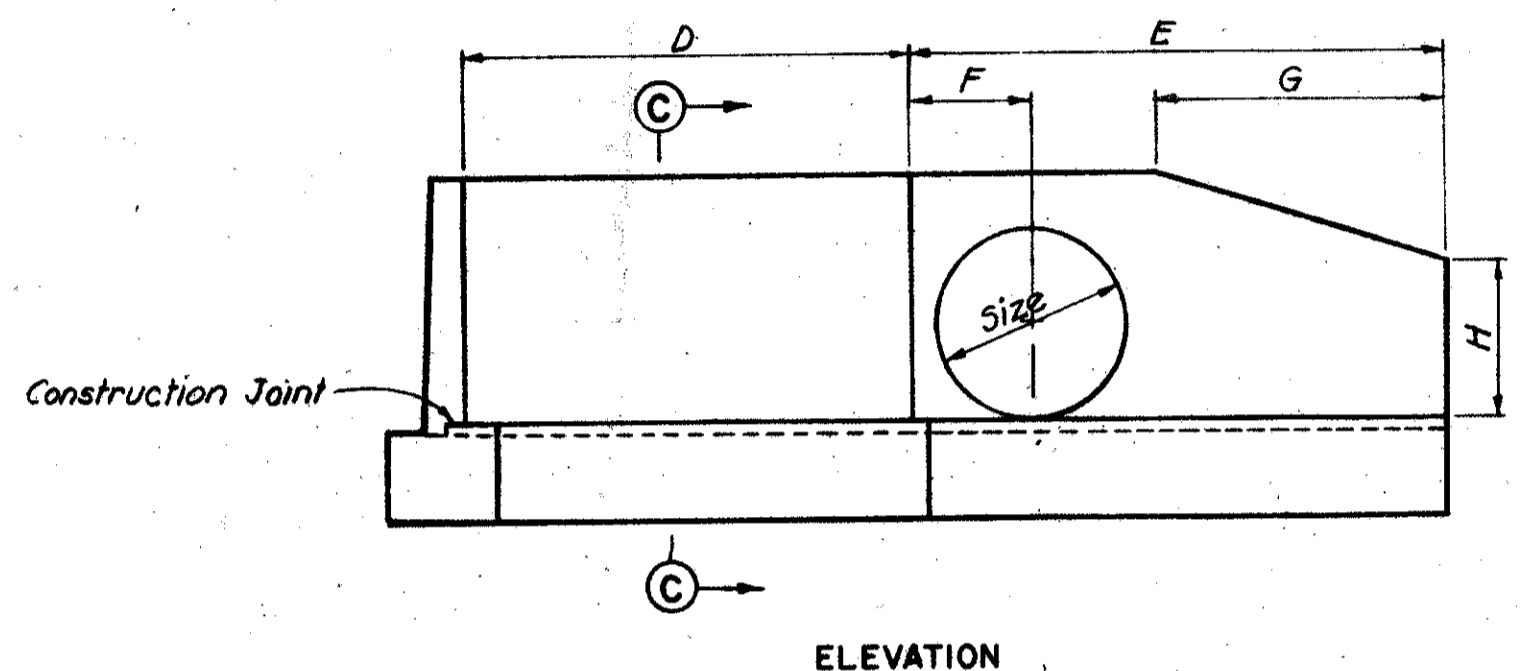


PLAN

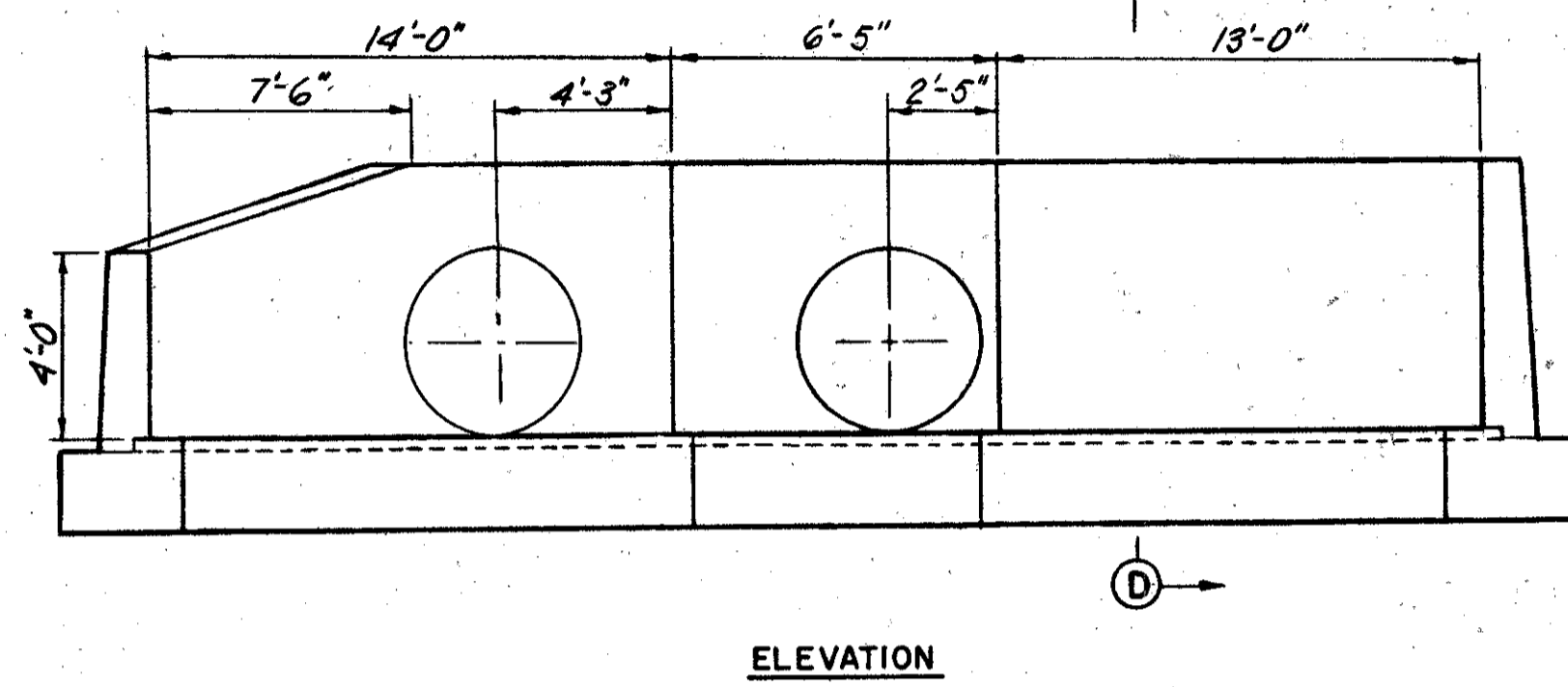
HEADWALL DIMENSIONS											CONCRETE QUANTITIES in Cu. Yd.	
No.	Location	Size	Skew	A	B	C	D	E	F	G	H	
2	Sta. 386+95	36"	30°00'	1'-0"	3'-9"	4'-0"	7'-6"	8'-0"	1'-10"	4'-0"	3'-0"	15
#8	Sta. 469+25	48"	35°00'	1'-5"	4'-9"	5'-3"	10'-6"	13'-0"	2'-5"	8'-0"	4'-3"	38
10	Sta. 483+25	42"	20°00'	1'-3"	4'-3"	4'-9"	8'-0"	10'-6"	2'-2"	6'-0"	3'-9"	21
11	Sta. 494+70	60"	15°00'	1'-10"	5'-9"	6'-4"	12'-0"	14'-6"	3'-0"	8'-6"	5'-3"	39

* - Dimensions are for headwall at Sta. 469+25, Lt.

Note: Concrete quantities are for the entire structure. Reinforcing steel quantities are for one headwall

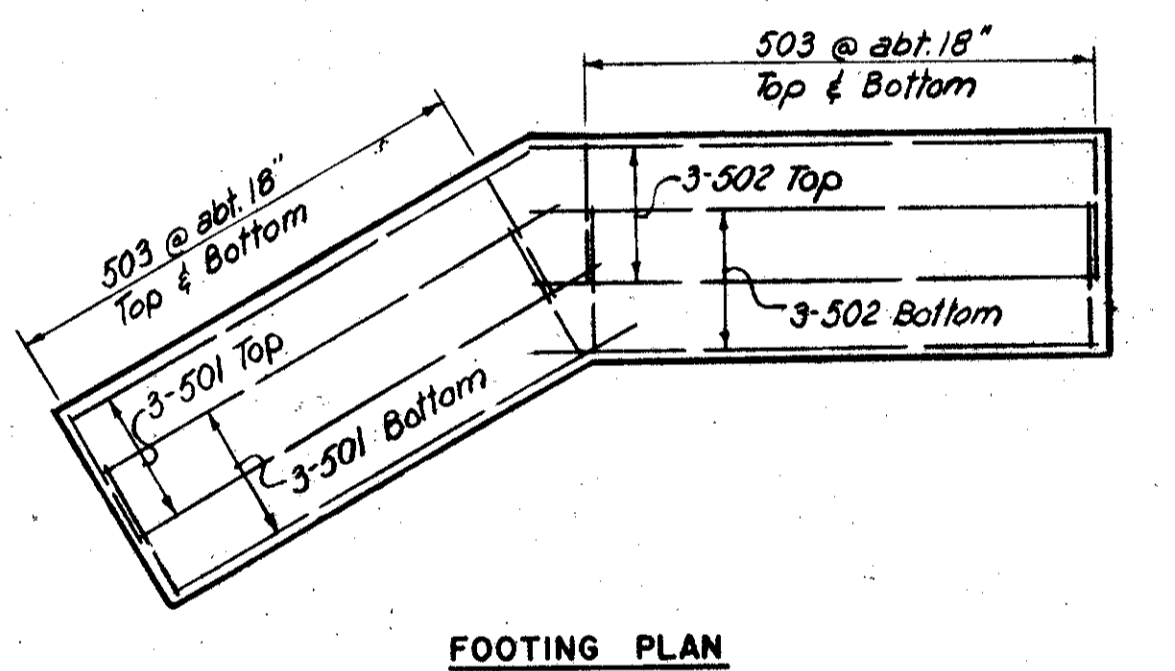
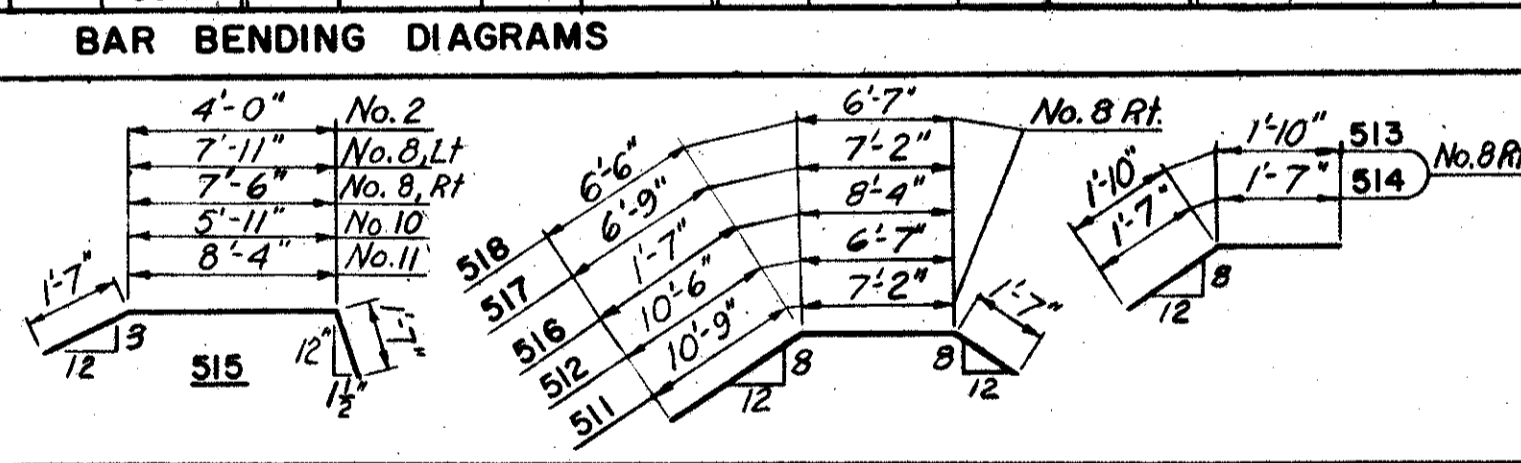


ELEVATION

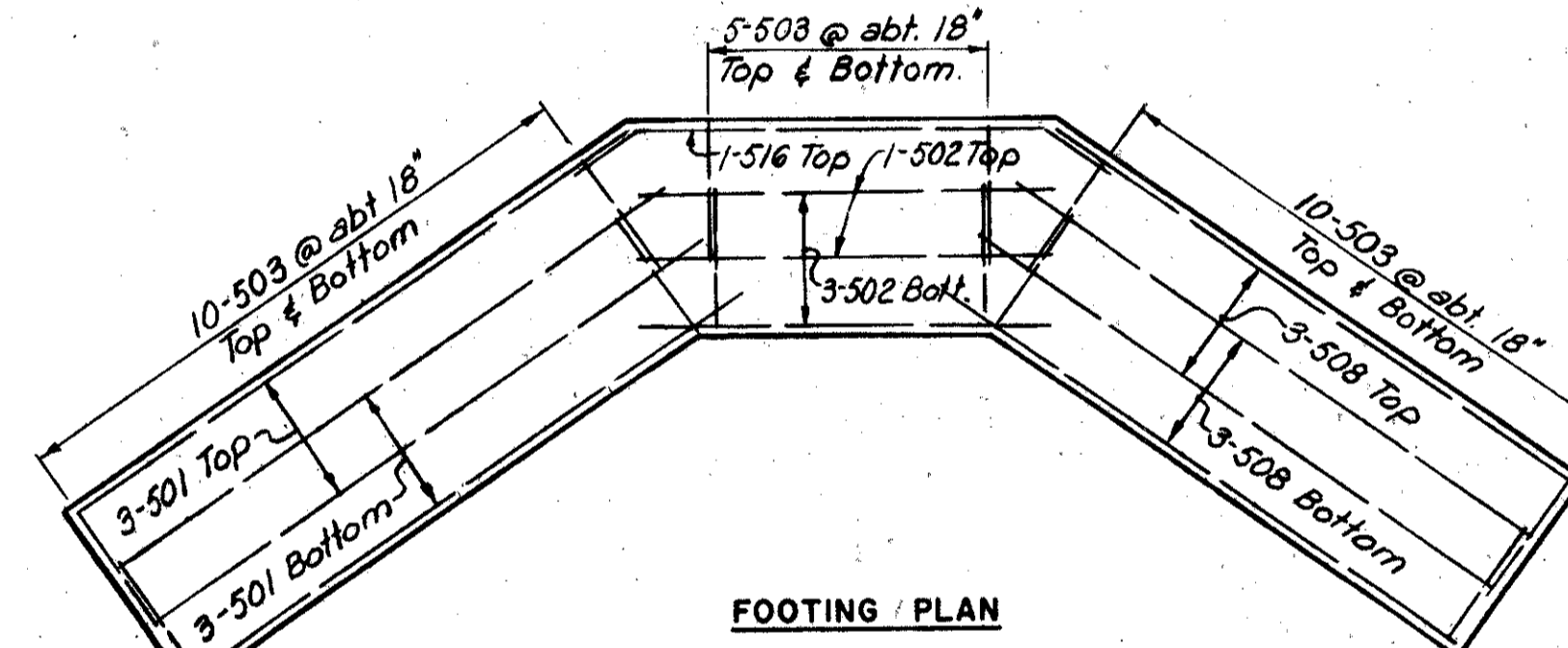


ELEVATION

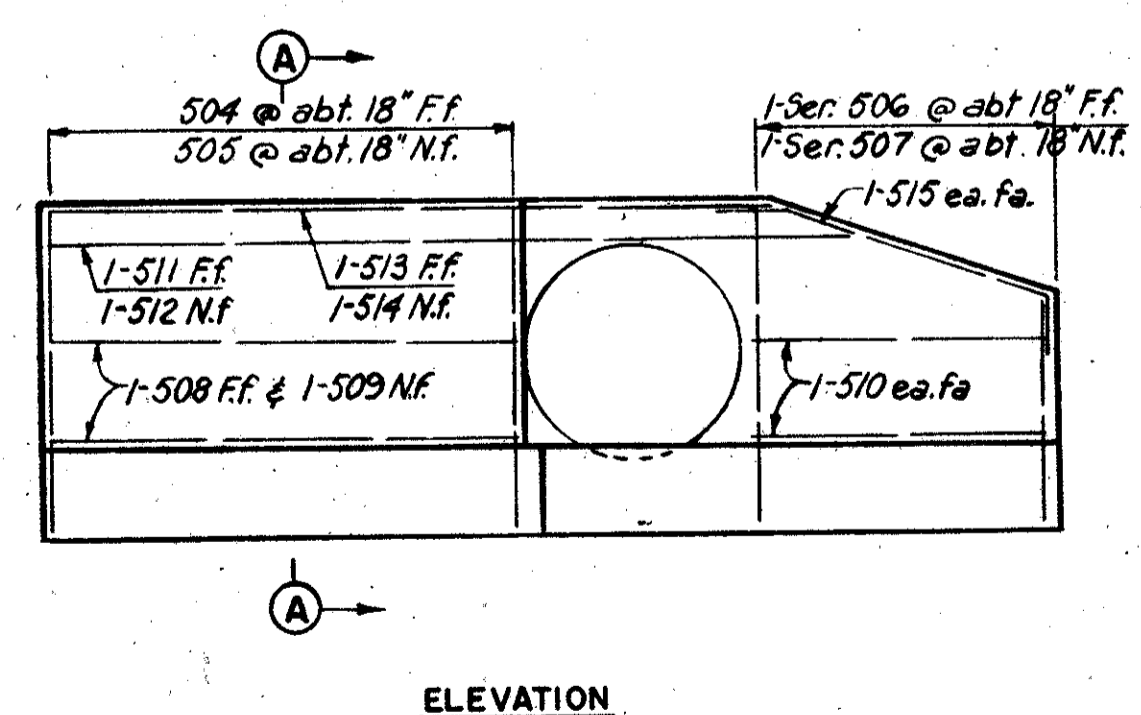
REINFORCEMENT SCHEDULE																						
		No. 2				No. 8 Inlet Lt.				No. 8 Outlet Rt.				No. 10				No. 11			SHAPE	
Mark	No.	Length	Ser. Inc.	Weight	No.	Length	Ser. Inc.	Weight	No.	Length	Ser. Inc.	Weight	No.	Length	Ser. Inc.	Weight	No.	Length	Ser. Inc.	Weight		
501	6	8'-0"		50	6	11'-0"		69	6	14'-9"		92	6	8'-0"		50	6	12'-6"		78	S	
502	6	8'-6"		53	6	13'-6"		84	5	9'-0"		47	6	10'-6"		66	6	14'-6"		91	S	
503	26	3'-3"		88	36	4'-1"		154	50	4'-1"		213	30	3'-7"		112	40	4'-3"		77	B	
504	6	5'-6"		34	8	6'-9"		56	14	7'-6"		110	7	6'-3"		46	9	7'-9"		73	S	
505	6	3'-9"		23	8	5'-0"		42	14	5'-6"		80	7	4'-6"		33	9	6'-0"		56	S	
506	1-Ser. of 4	4'-6" to 5'-6"	4"	21	1-Ser. of 6	5'-9" to 6'-9"	2 1/2"	39	1-Ser. of 6	5'-6" to 7'-6"	2 1/2"	41	1-Ser. of 5	5'-3" to 6'-3"	3"	30	1-Ser. of 7	6'-9" to 7'-9"	2"	53	S	
507	1-Ser. of 4	2'-9" to 3'-9"	4"	14	1-Ser. of 6	4'-0" to 5'-0"	2 1/2"	28	1-Ser. of 6	3'-9" to 5'-6"	2 1/2"	29	1-Ser. of 5	5'-6" to 4'-6"	3"	21	1-Ser. of 7	5'-0" to 6'-0"	2"	40	S	
508	2	7'-9"		16	2	10'-9"		22	11	13'-3"		152	2	8'-0"		17	3	12'-0"		38	S	
509	2	7'-3"		15	2	10'-3"		21	5	13'-0"		68	2	7'-9"		16	3	11'-9"		37	S	
510	4	4'-0"		17	4	7'-9"		32	6	6'-9"		42	4	5'-9"		24	6	8'-3"		52	S	
511	1 *	13'-6"		14	1 *	19'-6"		20	1	13'-5"		20	1 *	15'-6"		16	1 *	22'-0"		23	B	
512	1 *	13'-0"		14	1 *	19'-0"		20	1	18'-7"		19	1 *	15'-0"		16	1 *	21'-6"		22	B	
513	1 *	11'-6"		12	1 *	15'-6"		16	3	3'-7"		11	1 *	12'-6"		13	1 *	18'-0"		19	B	
514	1 *	11'-0"		11	1 *	15'-0"		16	3	3'-1"		10	1 *	12'-0"		13	1 *	17'-6"		18	B	
515	2	7'-0"		15	2	10'-11"		23	2	10'-6"		22	2	8'-11"		19	2	11'-4"		24	B	
516									1	11'-6"		12										B
517									1	15'-5"		16										B
518									1	14'-7"		15										B
				397				642				399				492						701



FOOTING PLAN

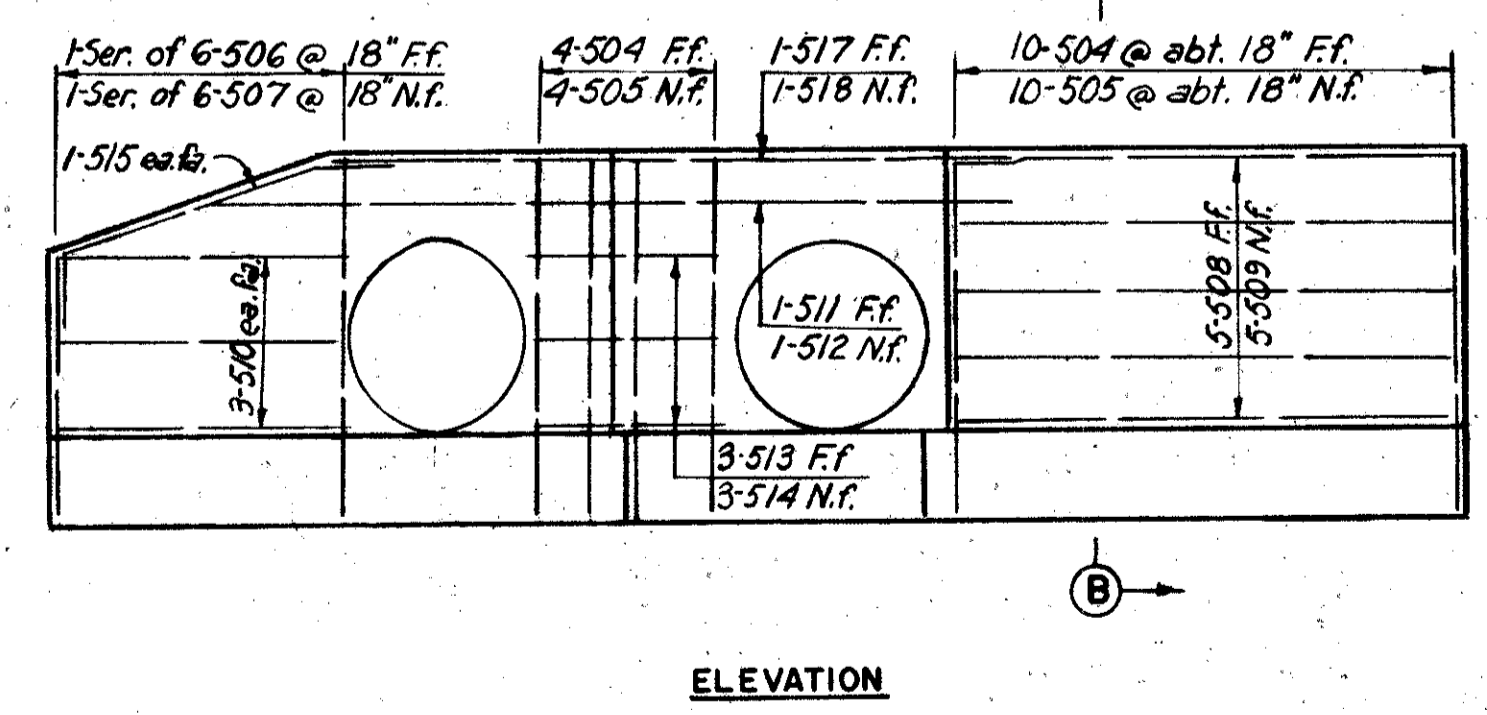


FOOTING PLAN



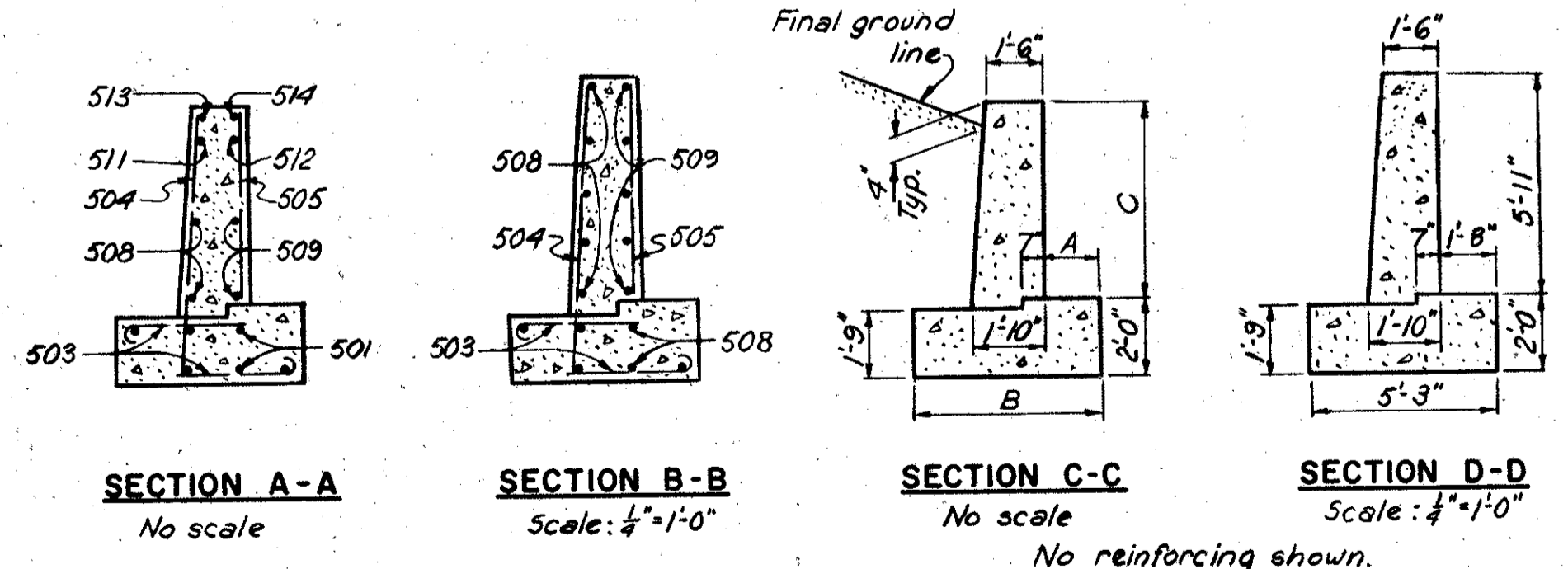
ELEVATION

TYPICAL SKEWED HEADWALL
No scale



ELEVATION

SPECIAL HEADWALL AT STA. 469+25 RT.
Scale: 1/4" = 1'-0"



NOTES:
* Denotes bars to be bent to fit in the field. Bars of a series shall vary in length by a constant increment. Reinforcement bars shall be 3 inches clear from bottom of concrete in footing 2 inches elsewhere. N.F. = Near face, F.F. = Far face, ea. fa. = each face.

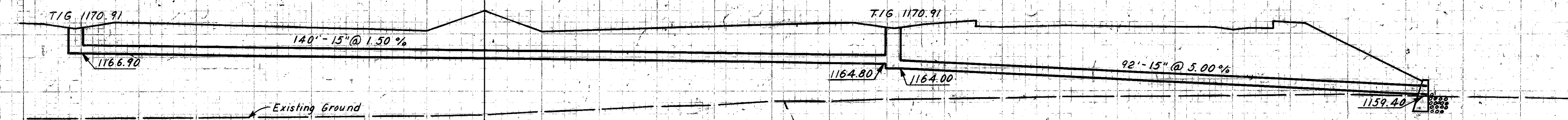
01-5

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

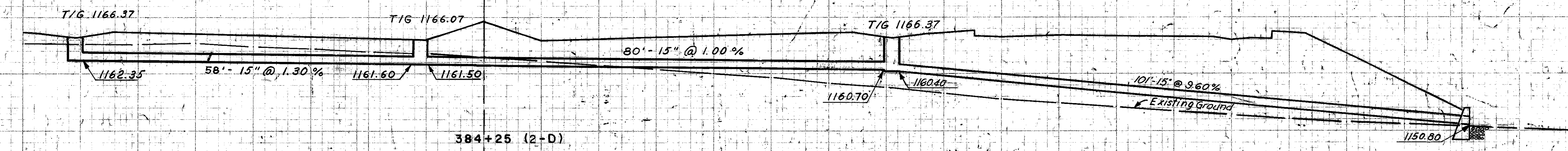
251
313

CUYAHOGA COUNTY
CUY-1-2-20
CUY-271-6.80

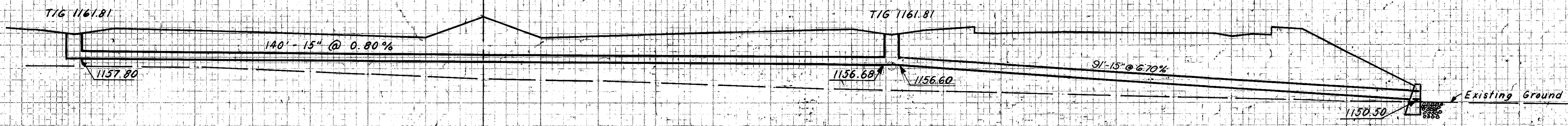
80 60 40 20 0 20 40 60 80 100 120 140 160 180



387+75 (3-D)



384+25 (2-D)



380+75 (1-D)

DATE
SCALE
SURVEY PLOTTED
PROF. BOOK TEMPLATE
L.P.O. AREA CHECKED

DATE
SCALE
SURVEY PLOTTED
PROF. BOOK TEMPLATE
L.P.O. AREA CHECKED

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

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

220 210 200 180 160 140 120 100 80 60 40 20 0 20

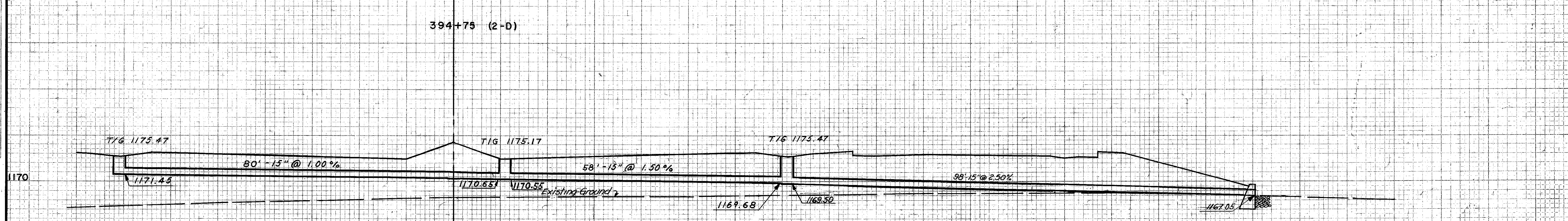
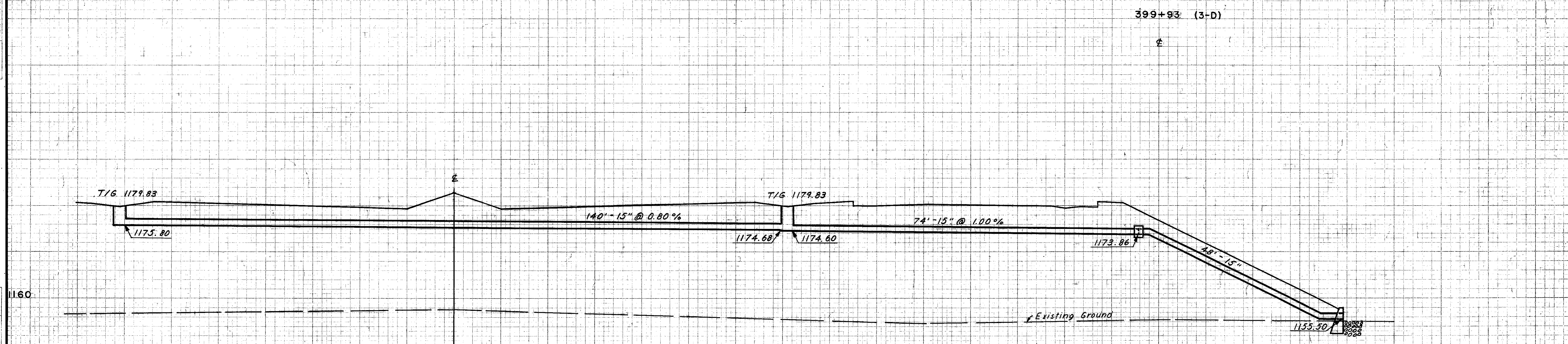
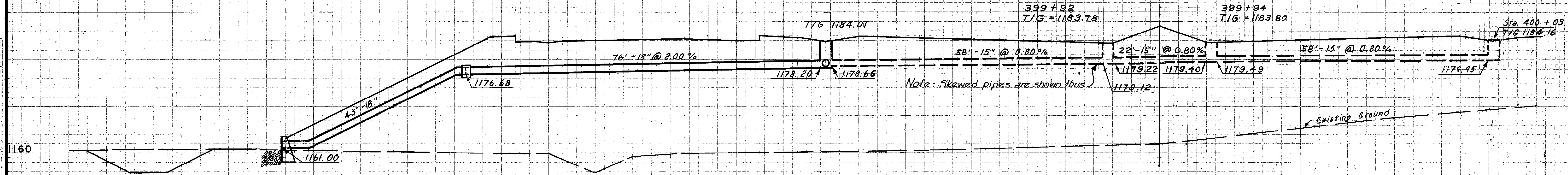
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

252
313

CUYAHOGA COUNTY
CUY-1-2.20

DATE
BY
L.K.M.
G.F.D.
NO.

DATE
BY
L.K.M.
G.F.D.
NO.



80 60
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

PLATE 3-CROSS SECTION D.P.R. & R.E.
CHARLES BIRNING COMPANY, INC.

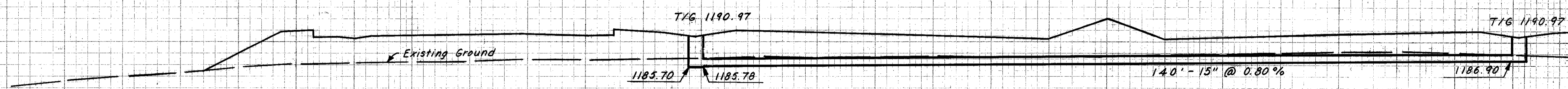
STA. 390+00 TO STA. 400+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

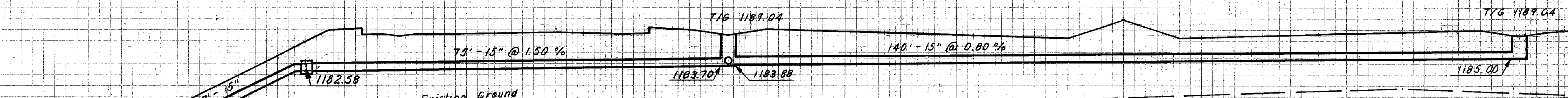
253
313

CUYAHOGA COUNTY
CUY-1-2.20

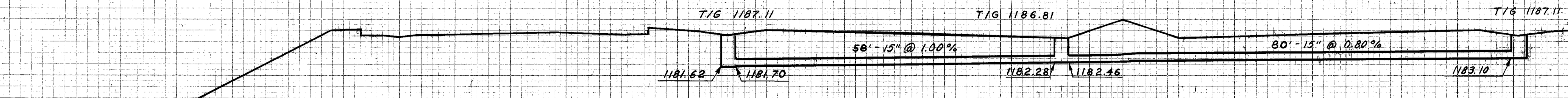
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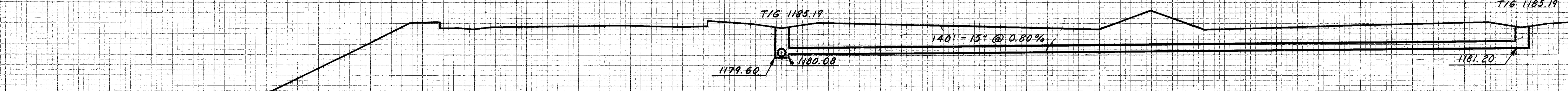
409+75 (7-D)



407+00 (5-D)



404+25 (4-D)



401+50 (2-D)

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

FINAL SURVEYED SURVEY PLOTTED NOTE BOOK TEMPLATE AREAS CHECKED

ORIGINAL SURVEYED SURVEY PLOTTED NOTE BOOK TEMPLATE AREAS CHECKED
DATE 4-8-57
L.M. G.F.D.

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

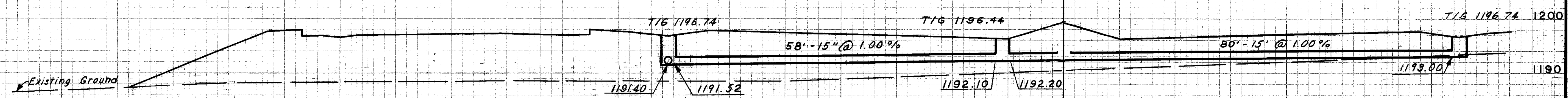
PLATE 3-CROSS SECTION O.P.R. & R.E.
CHARLES BRUNING COMPANY, INC.

STA. 400+00 TO STA. 410+00

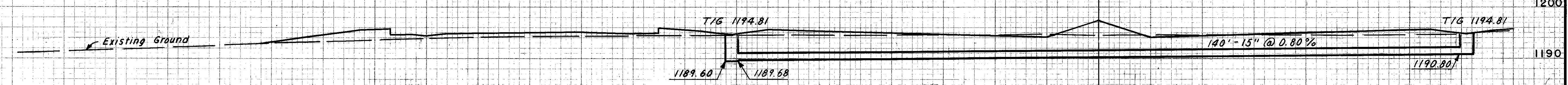
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

254
313

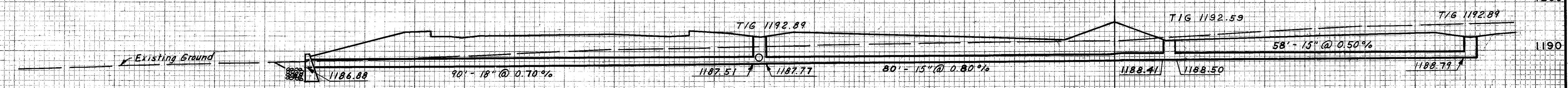
CUYAHOGA COUNTY
CUY-1-2.20



418+00 (4-D)



415+25 (3-D)



412+50 (1-D)

DATE	
NO.	
AREAS CHECKED	
PLATE	
NOTE BOOK	
SURVEY	
FINAL	

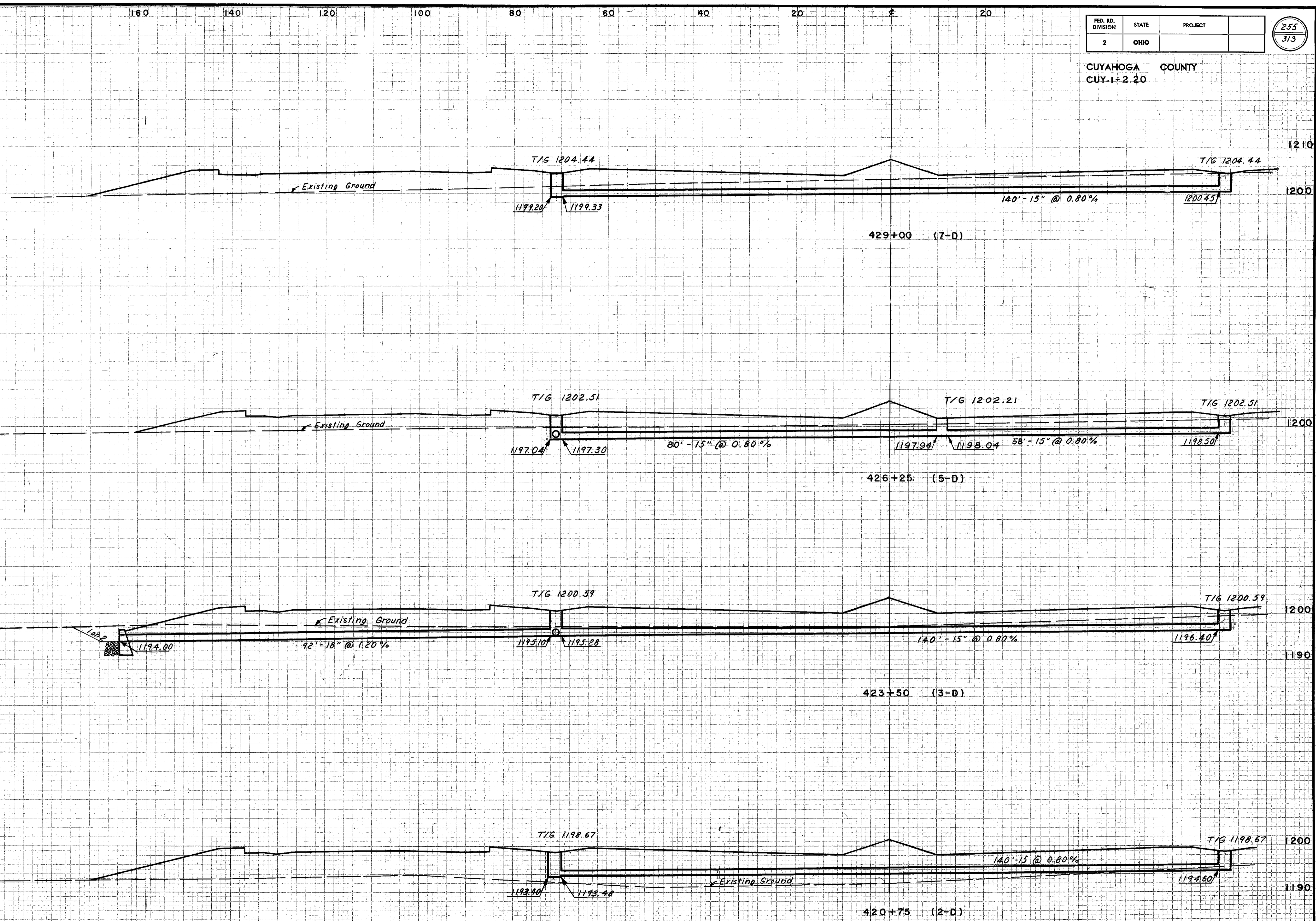
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NO.	7-28-59
AREAS CHECKED	
PLATE	
NOTE BOOK	
SURVEY	
ORIGINAL	

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

255
3/3

CUYAHOGA COUNTY
CUY-1+2.20



FINAL SURVEYED
SURVEY PLOTTED
NOTE BOOK TEMPLATE
AREAS CHECKED

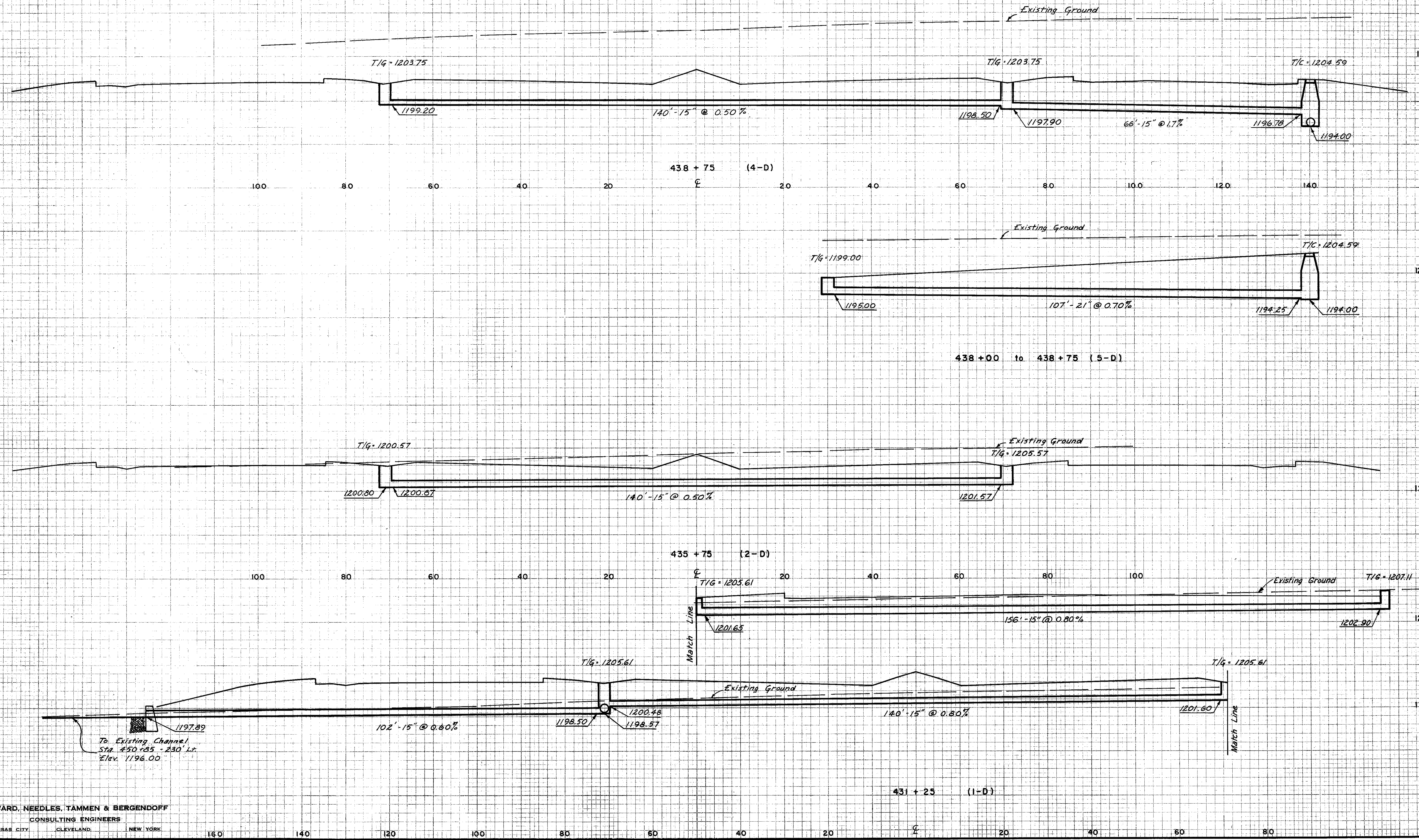
ORIGINAL SURVEYED
SURVEY PLOTTED
NOTE BOOK TEMPLATE
AREAS CHECKED

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

CUYAHOGA COUNTY
CUY. 1-220

DATE: 6-12-61
BY: M.C. W.C.I.
CHECKED: C.V.R. 6-18-61

DATE: 6-16-59
BY: A.C.
CHECKED: F.H.



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

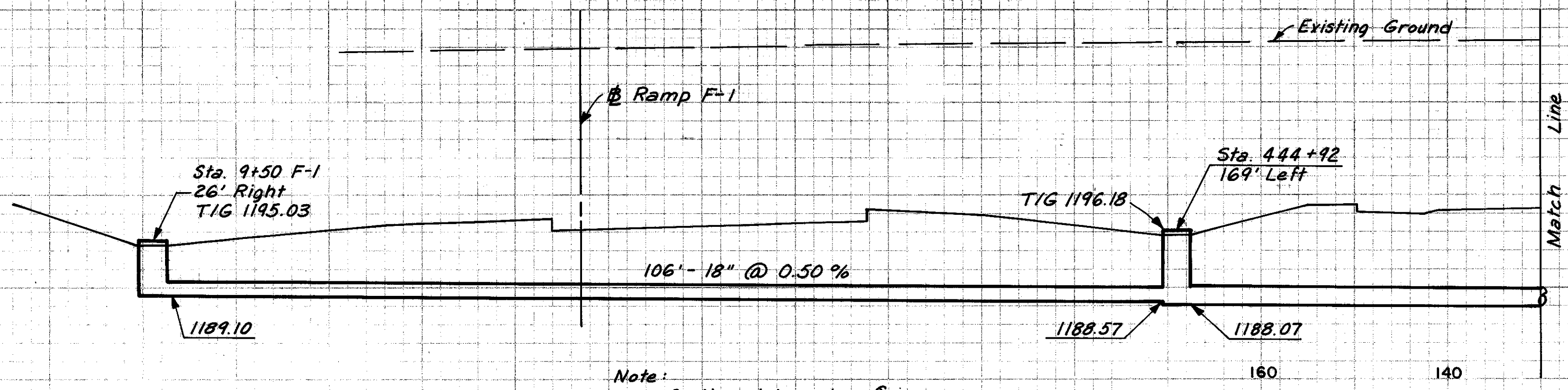
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

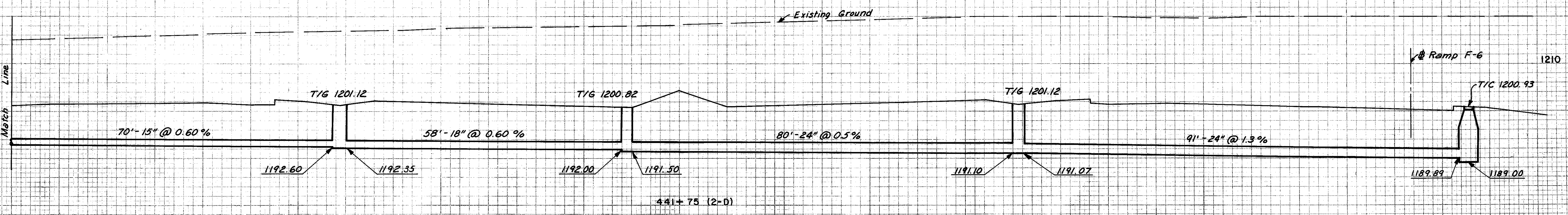
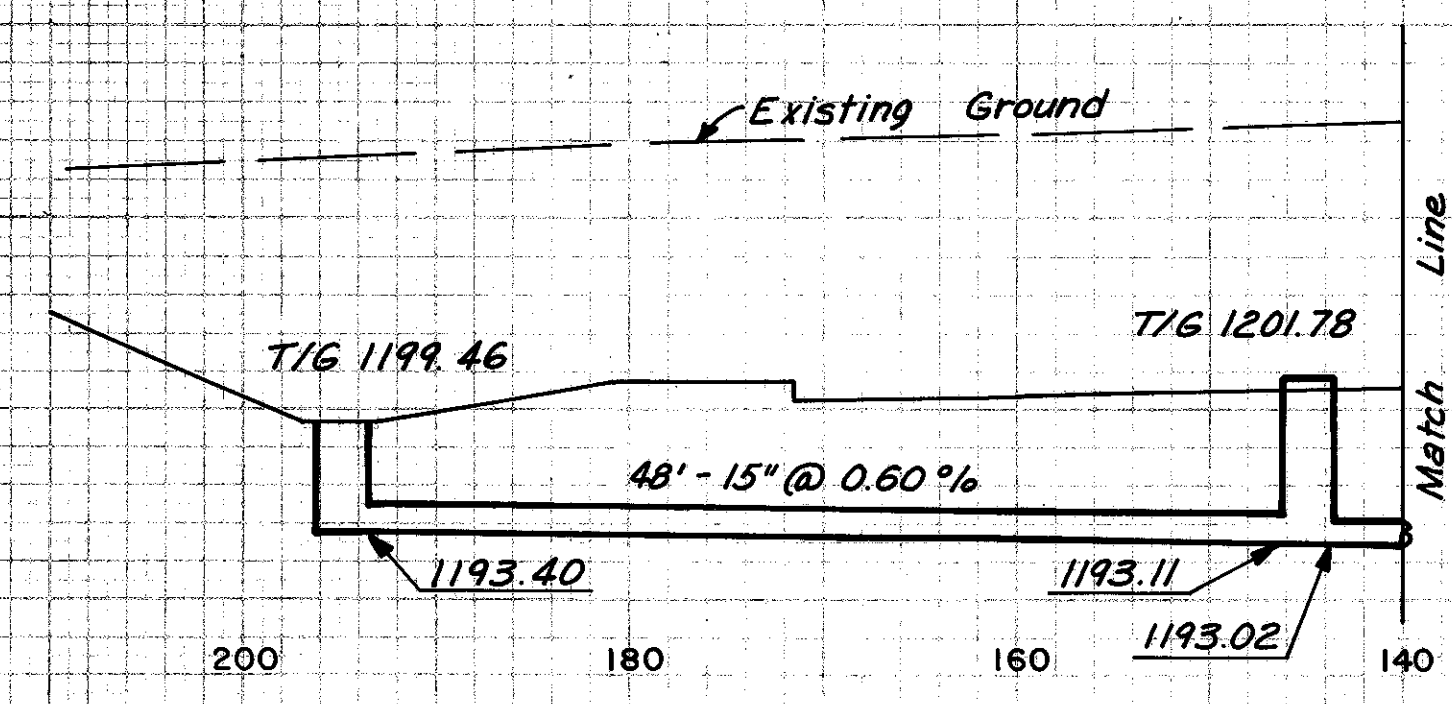
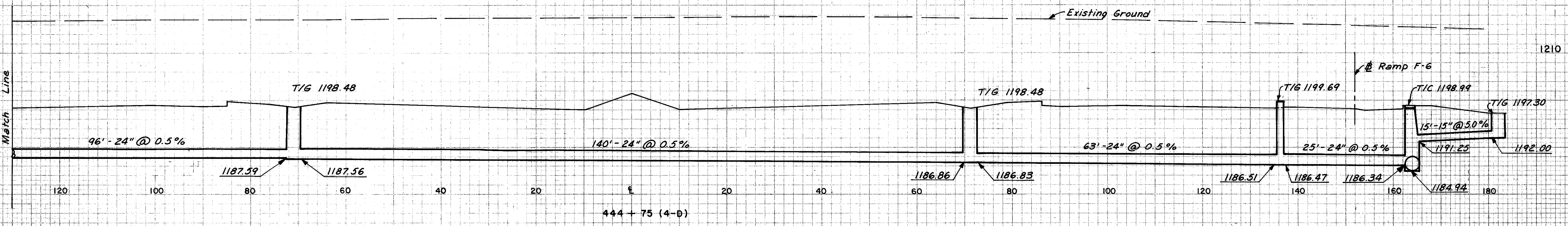
257R
313

CUYAHOGA COUNTY
CUY-1-2.20

1210



Note: Sections taken along E of each pipe.



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

KANSAS CITY 140 CLEVELAND 120 NEW YORK 100

DATE: 6-12-61
BY: JAG
SHEET: 6-12-61
NO. 1

DATE: 7-10-59
BY: JAG
SHEET: 7-10-59
NO. 1

TYPE 3 CROSS SECTION AT F R STATION
ELEVATION OF 1.00 EXPOSED LOW 10.00

STA. 440+00 TO STA. 445+00

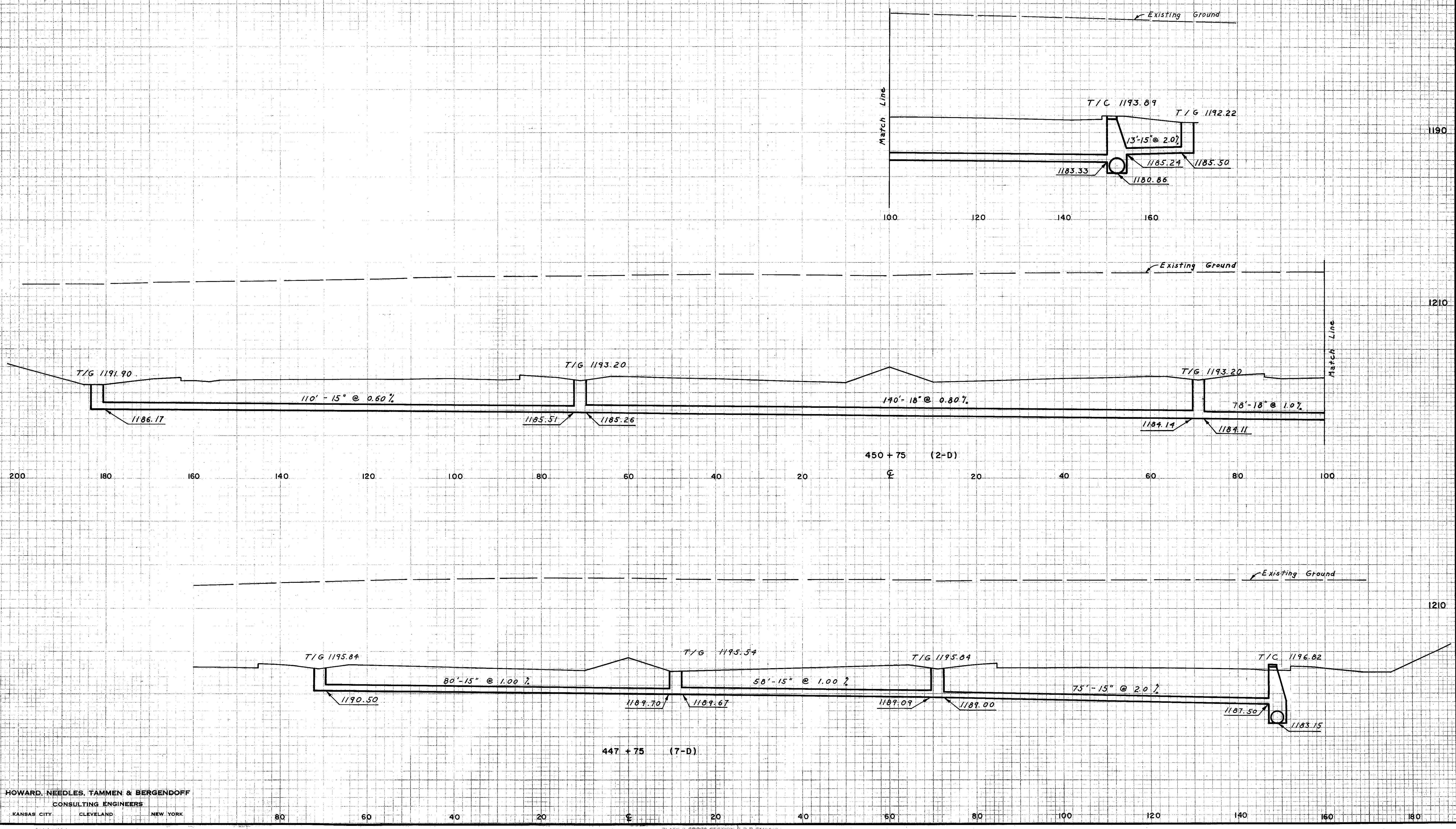
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

258A
3/3

CUYAHOGA COUNTY
CUY. 1-220

DATE	6-29-57
BY	M.C.E.
PROJECT	W.P.A.
REVISIONS	

DATE	6-29-57
BY	M.C.E.
PROJECT	W.P.A.
REVISIONS	



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

PLATE 3 CROSS SECTION 6 P R STANDARD
(UNLESS OTHERWISE NOTED)

STA. 445+00 TO STA. 452+00

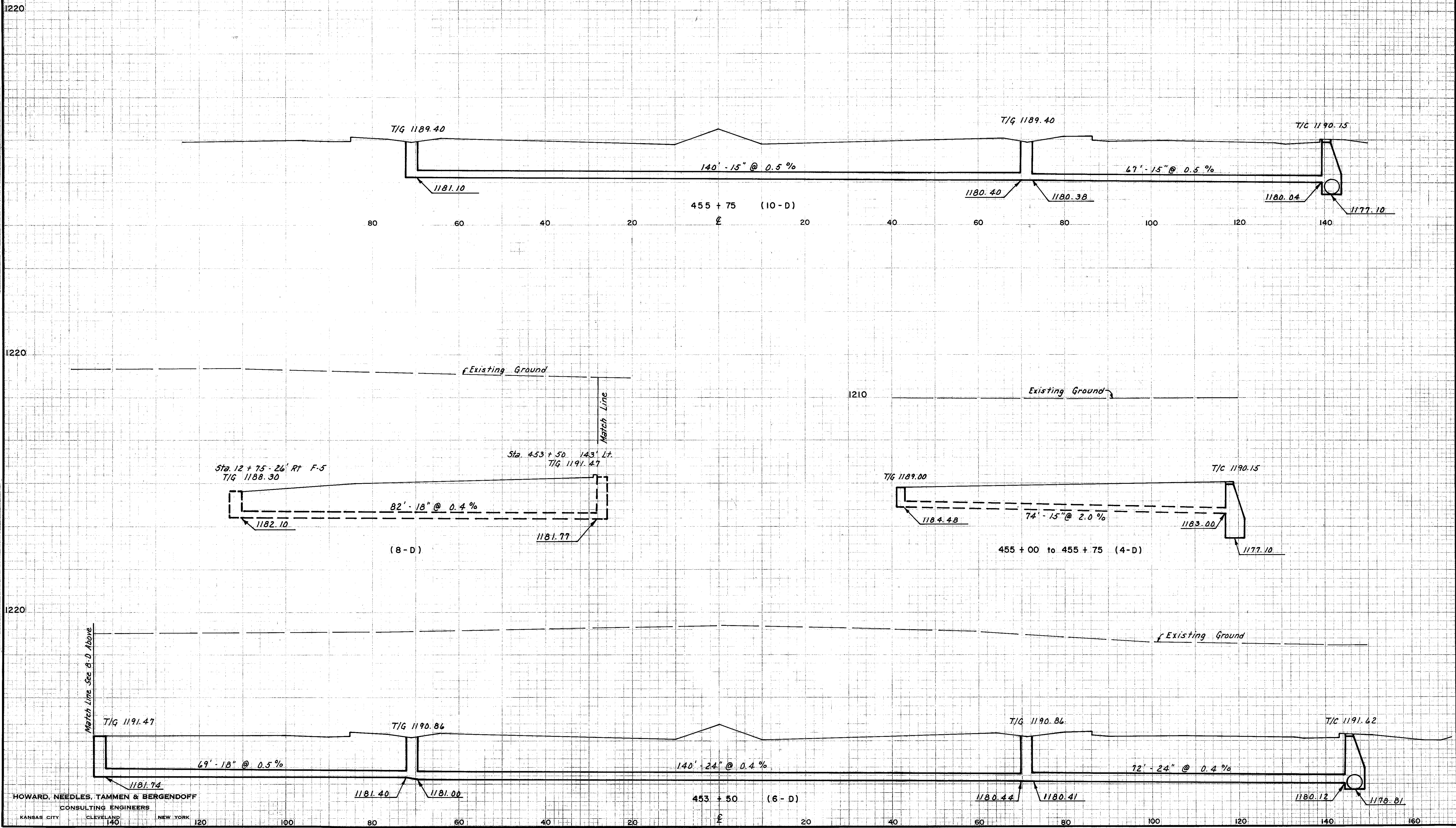
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

259A
3/3

CUYAHOGA COUNTY
CUY-1-2-20

DATE	BY
6-19-61	W.P.
6-19-61	W.P.
6-19-61	W.P.

DATE	BY

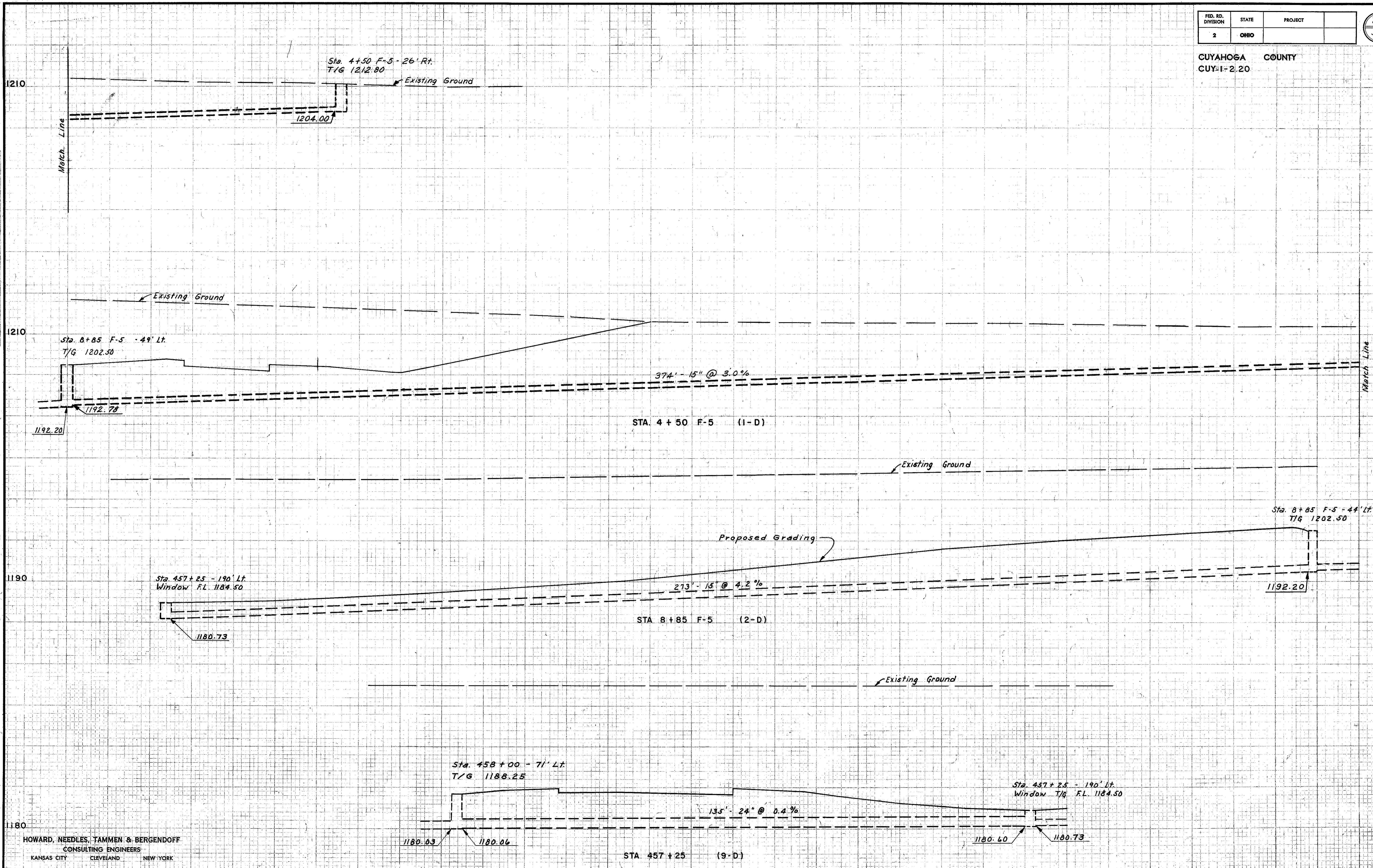


HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

260
313

CUYAHOGA COUNTY
CUY-1-2-20



FINAL SURVEY PLOTTED
DATE: 7-15-07
BY: R.M.S.
CHECKED: H.H.

ORIGINAL SURVEY PLOTTED
DATE: 7-15-07
BY: R.M.S.
CHECKED: H.H.

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

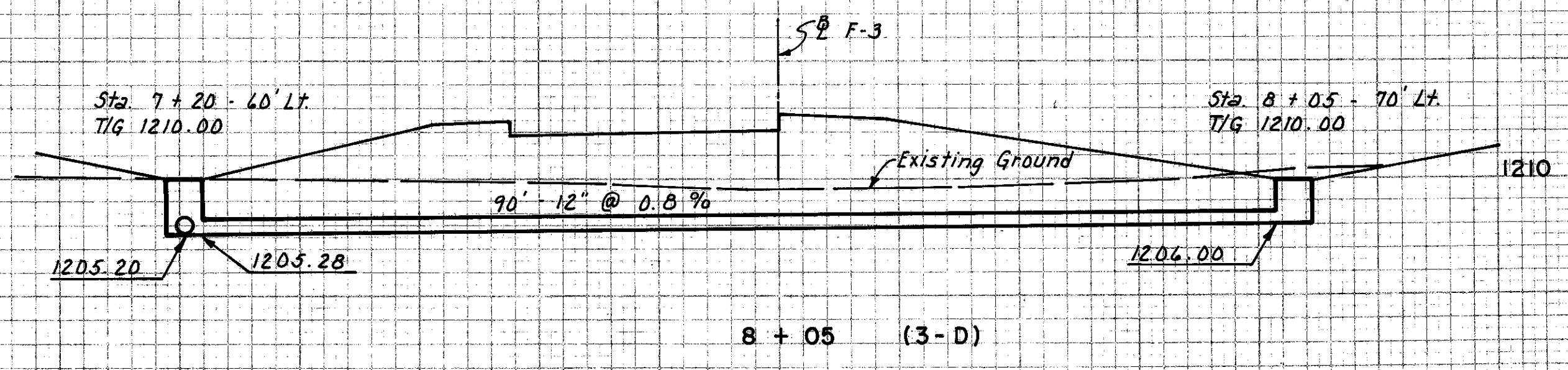
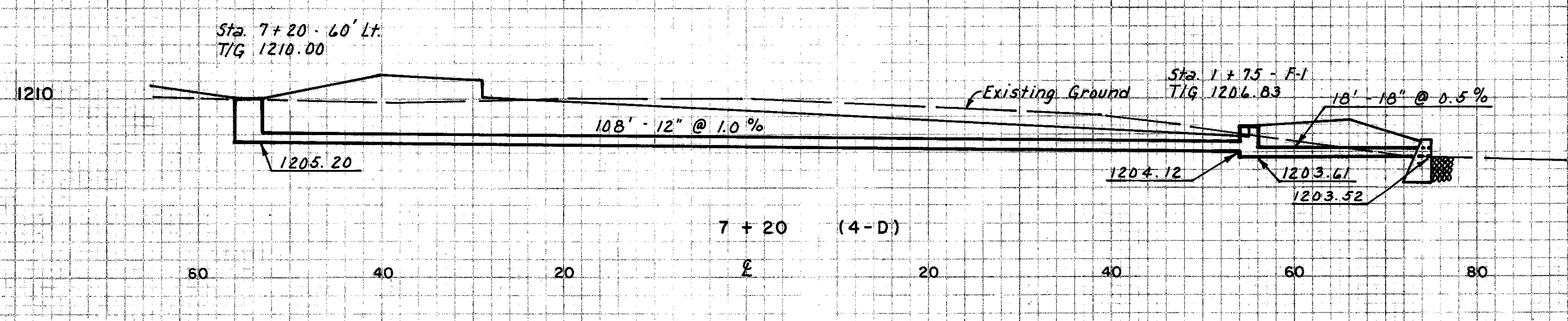
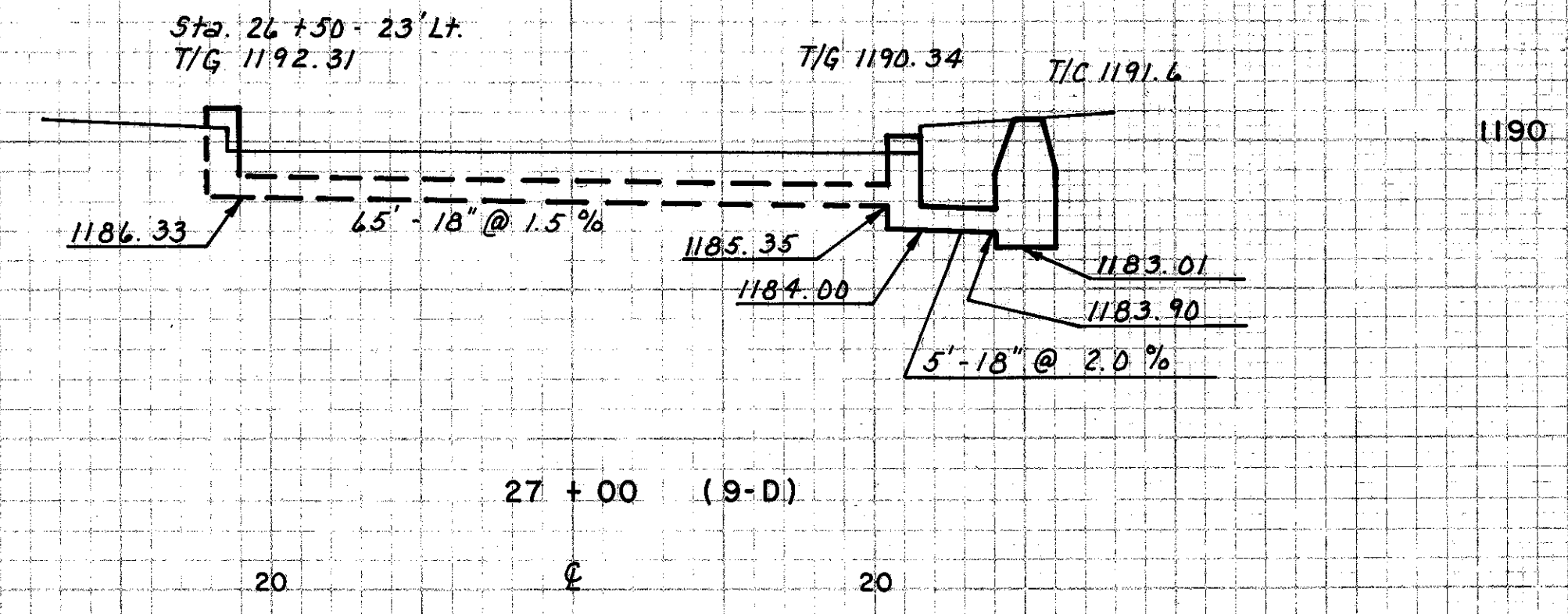
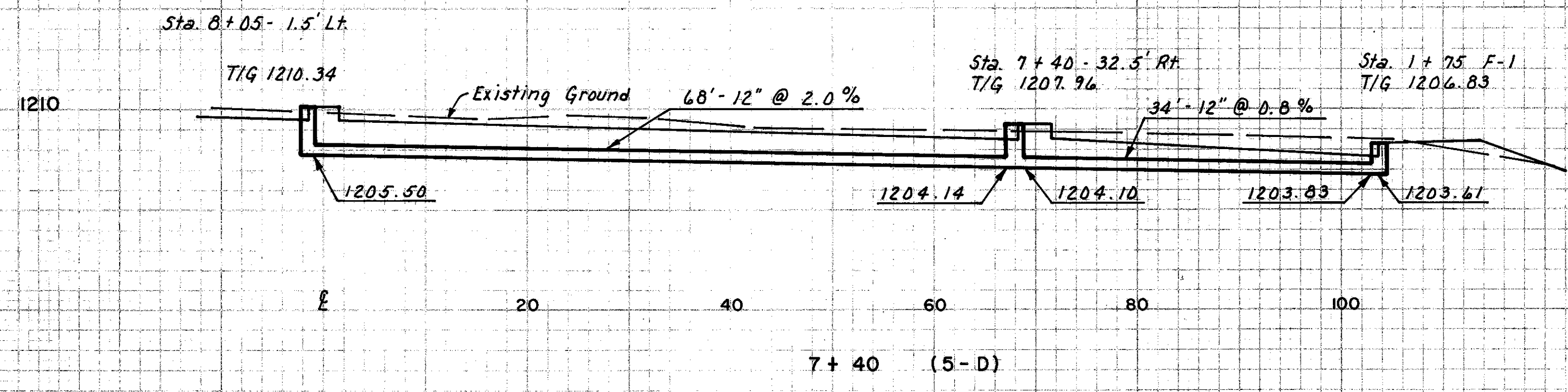
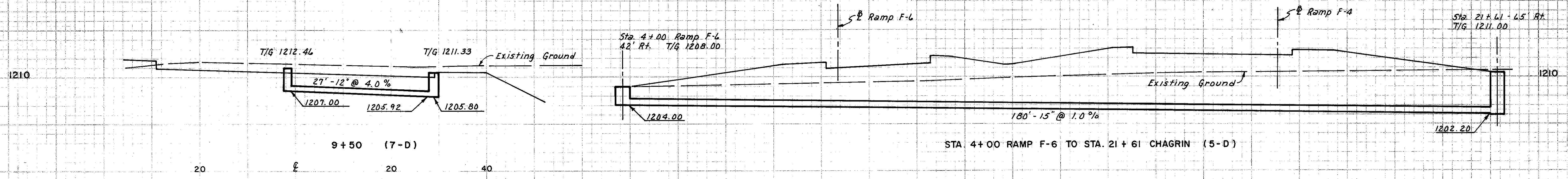
PLATE C - CROSS SECTION OF P.R.C.B.E.
CHARLES BRIDGING COMPANY, INC.

STA. 4 + 50 F-5 TO STA. 455 + 15

CUYAHOGA COUNTY
CUY - 1 - 2.20

DATE: APR 5 1961
BY: R.T.H.
PROJECT: 533-61
SHEET: 533-61

ORIGINAL SURVEY: STATIONED, PLOTTED, RECORDED
NO. 10000
DATE: 6-20-59

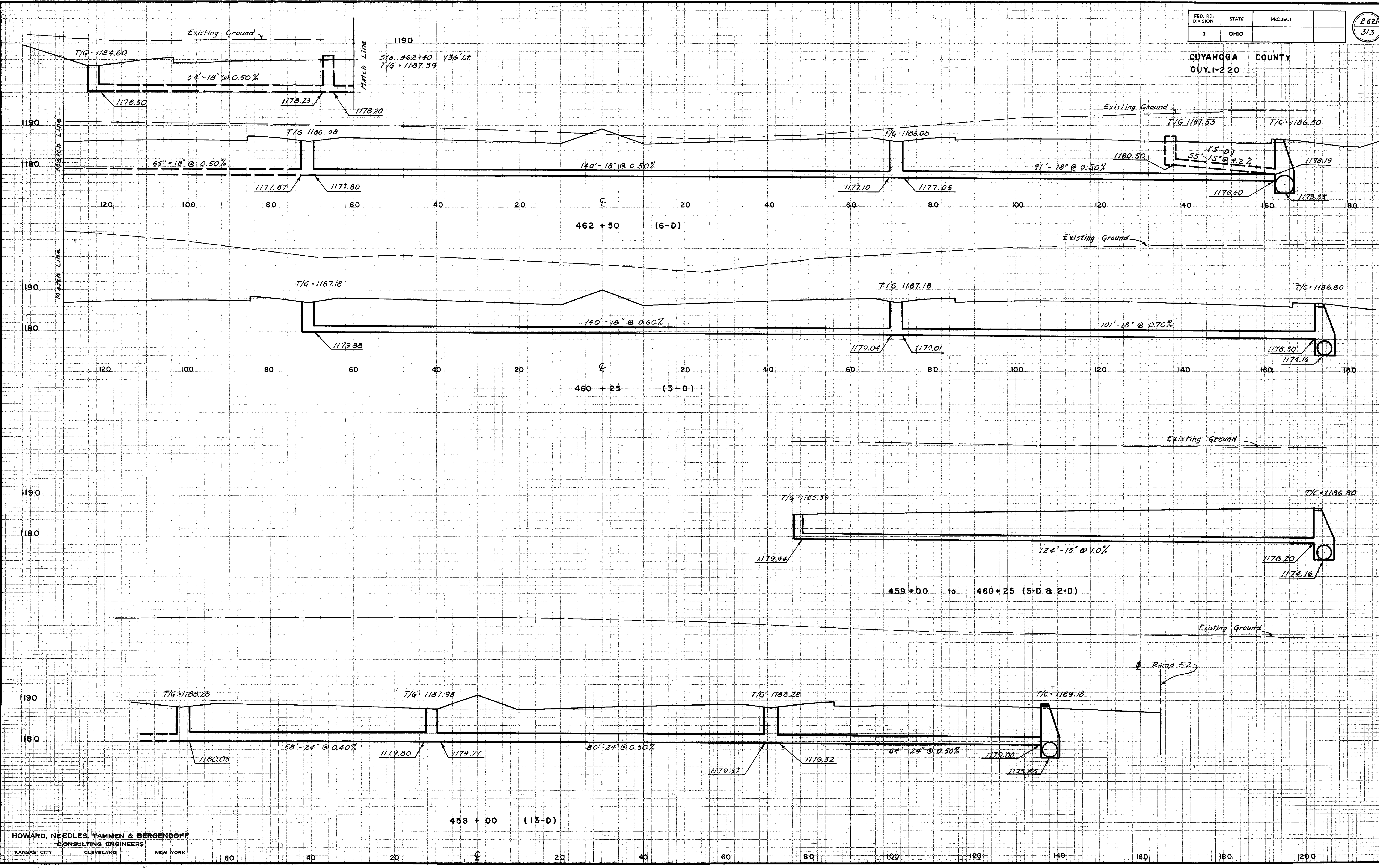


HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CUYAHOGA COUNTY
CUY.1-220

DATE: 8-17-61
BY: [Signature]
CHECKED: [Signature]
NO. 1180

DATE: 8-17-61
BY: [Signature]
CHECKED: [Signature]
NO. 1180

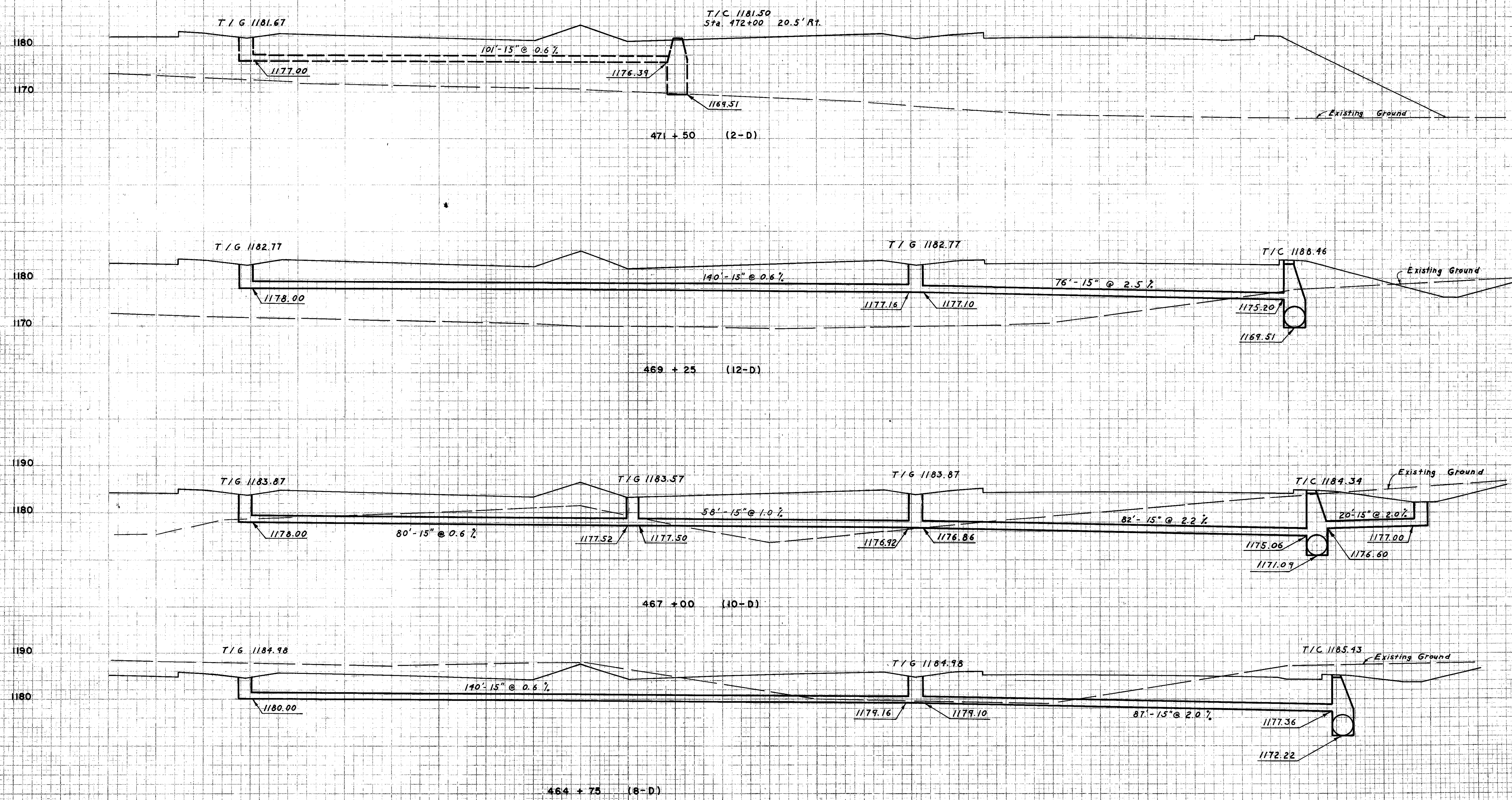


HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CUYAHOGA COUNTY
CUY. 1-220

DATE: 6-13-51
W.C.E.
SURVEYING
PLOTTER
NOTE BOOK
NO.

DATE: 8-15-58
H.H.
SURVEYING
PLOTTER
NOTE BOOK
NO.



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

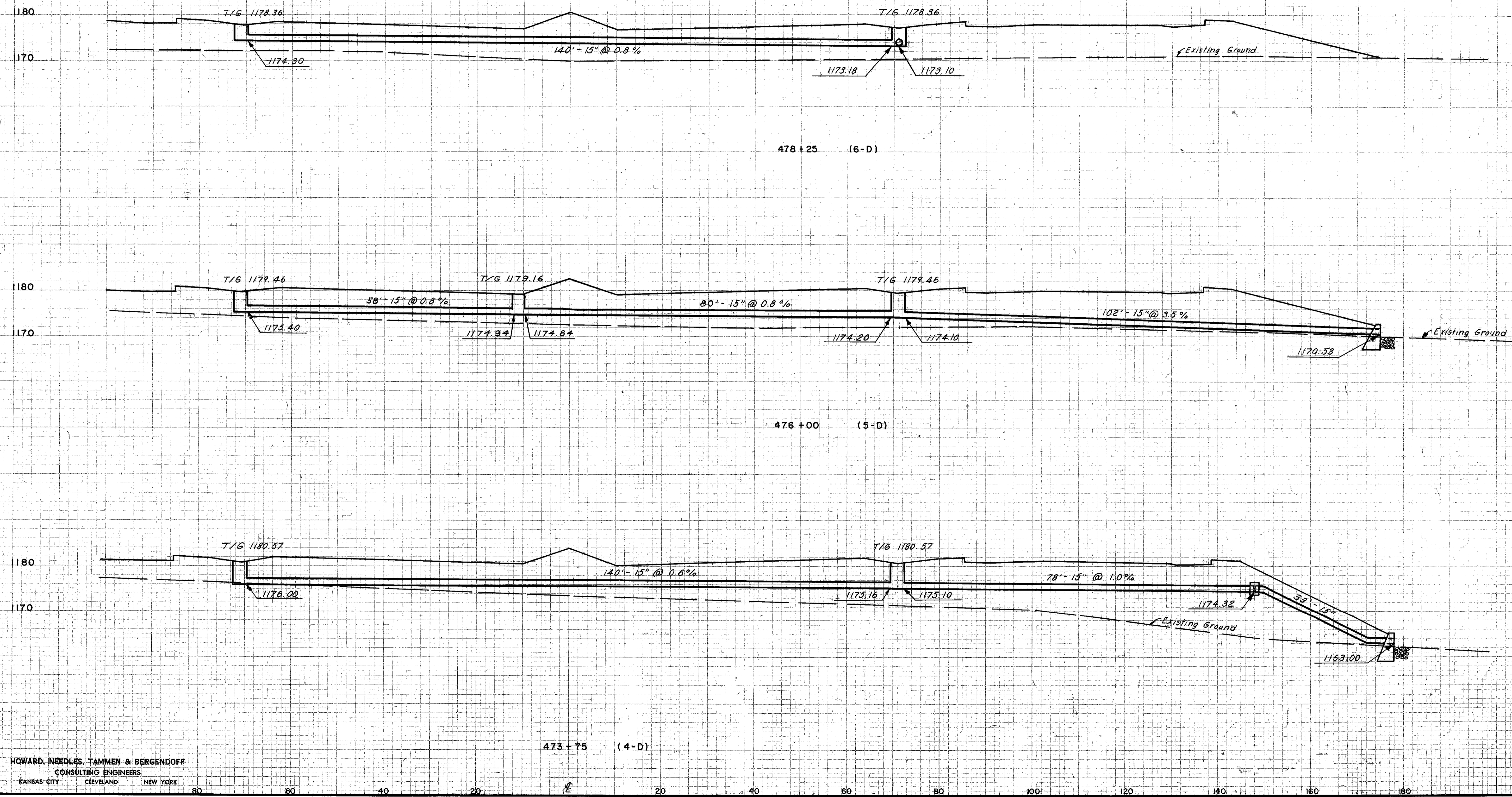
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

264
313

CUYAHOGA COUNTY
CUY-1+2.20

DATE: _____
 ORIGINAL SURVEY PLOTTED: _____
 NOTE BOOK AREAS: _____
 RELEASED: _____

DATE: 6-19-59
 H. H. G.E.D.
 ORIGINAL SURVEY PLOTTED: _____
 NOTE BOOK AREAS: _____
 RELEASED: _____



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

PLATE 3-CROSS SECTION OF R.R. & R.E.
 CHARLES GERRING COMPANY, INC.

STA. 473+00 TO STA. 480+00

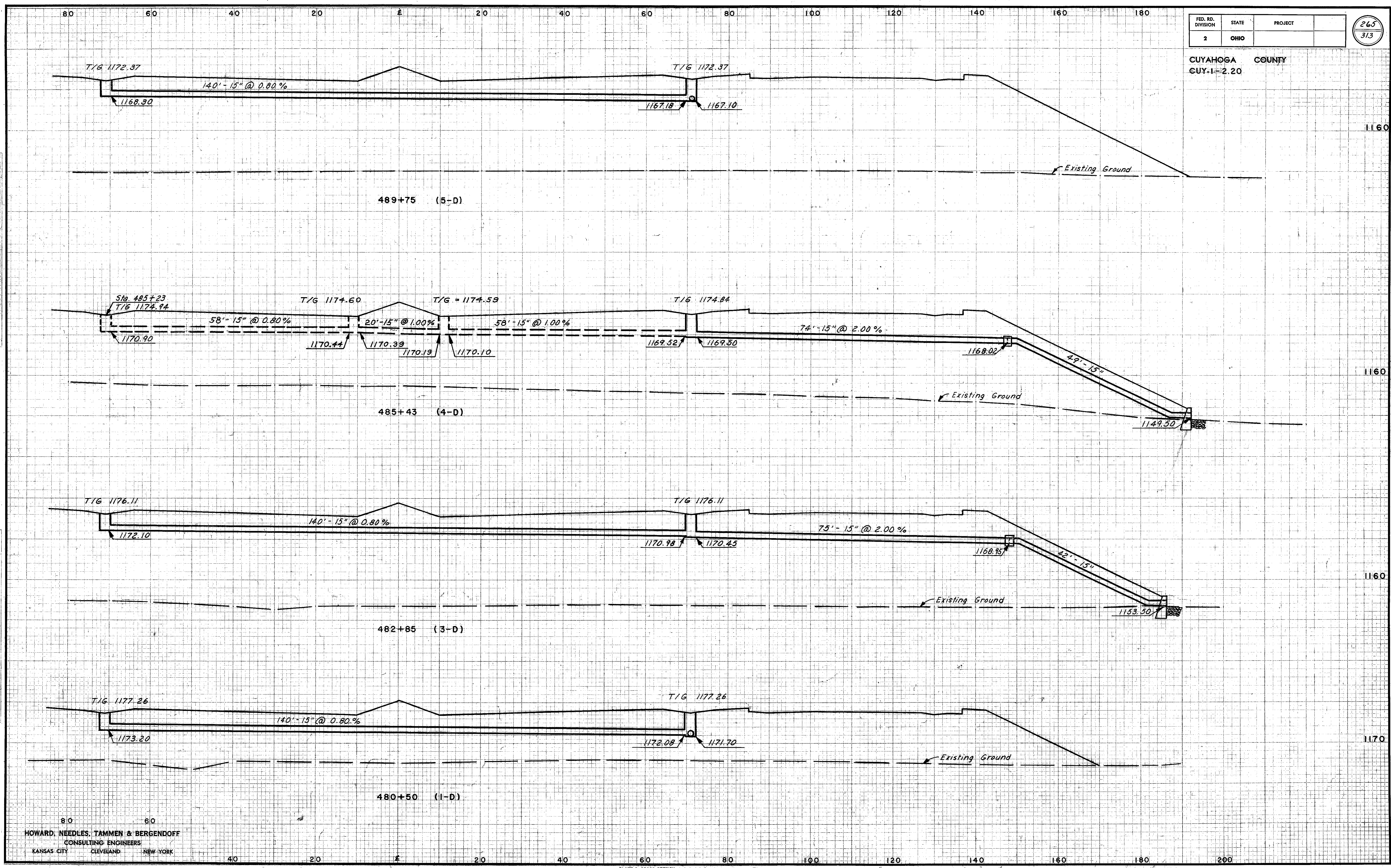
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

265
313

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEYED SURVEY PLOTTED NOTE BOOK AREAS CHECKED

ORIGINAL SURVEYED SURVEY PLOTTED NOTE BOOK AREAS CHECKED
L.V.M.
G.E.P.



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

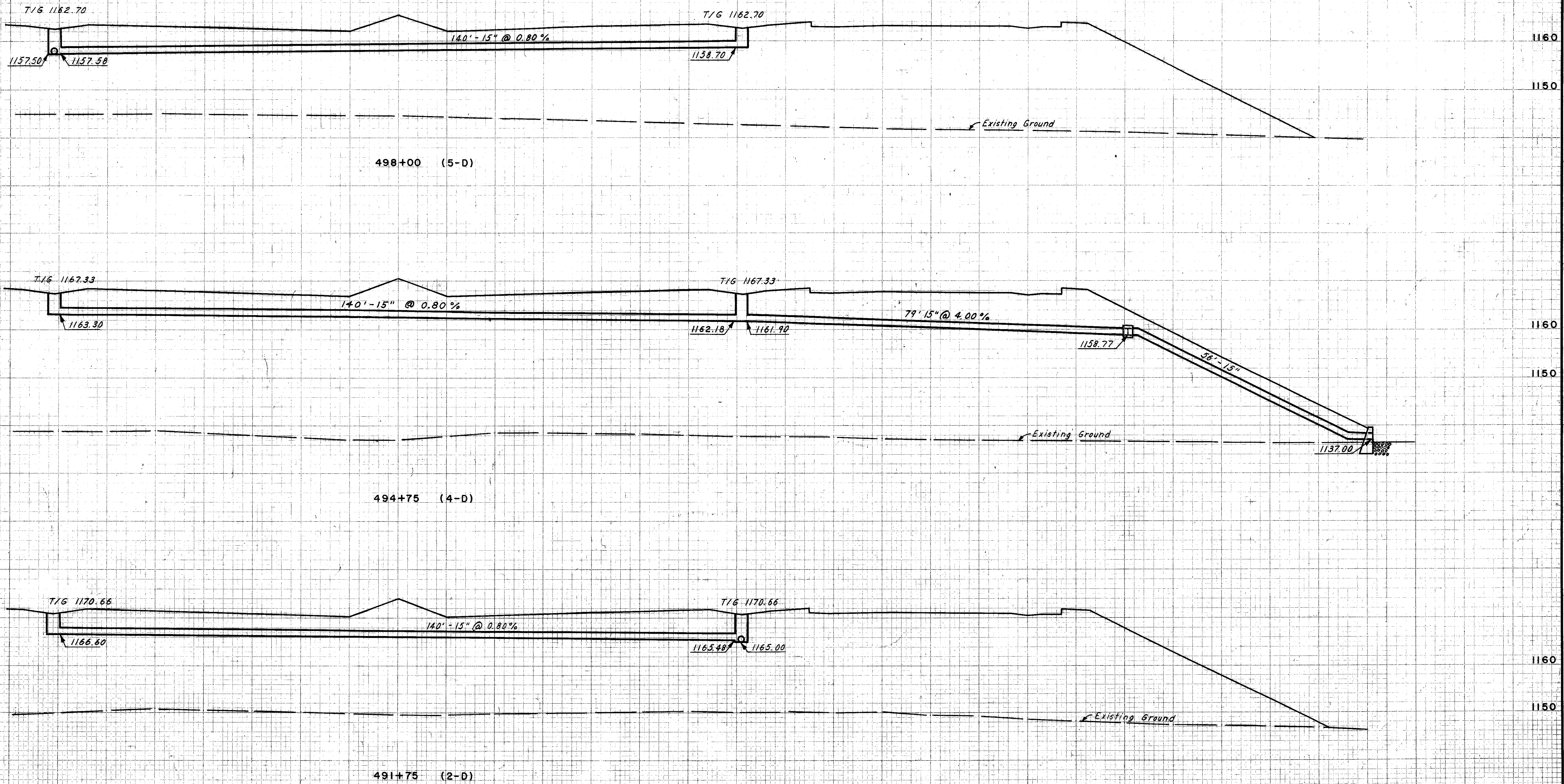
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

266
313

CUYAHOGA COUNTY
CUY-1-2.20

DATE	BY
FINAL SURVEY PLOTTED	NOTE BOOK
SURVEY	AREAS CHECKED
PLATE	
NO.	

DATE	BY
4-5-57	
ORIGINAL SURVEY PLOTTED	NOTE BOOK
L.V.M.	G.E.D.
SURVEY	AREAS CHECKED
PLATE	
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HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

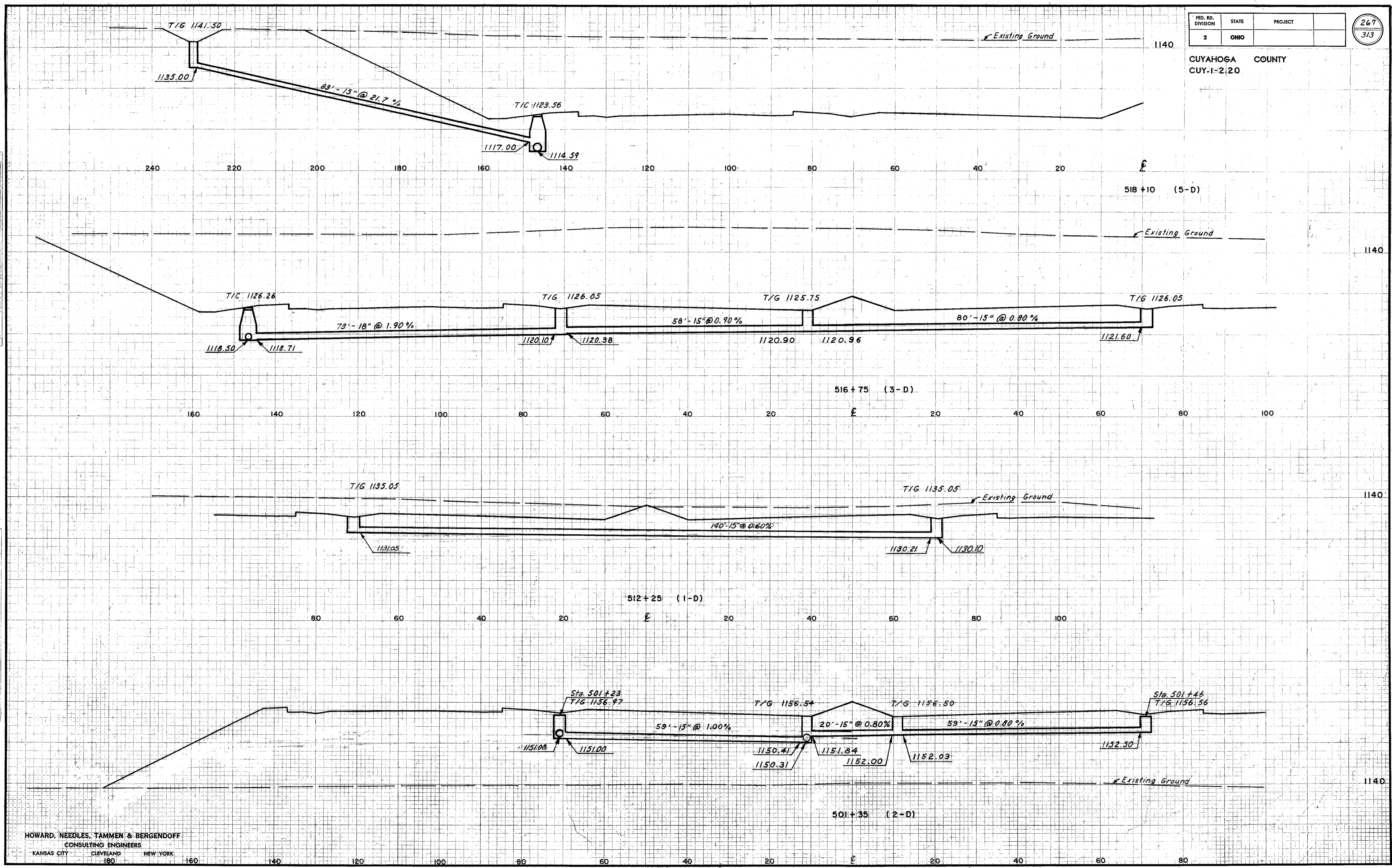
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

267
313

CUYAHOGA COUNTY
CUY-1-2.20

ORIGINAL SURVEY PLOTTED
DATE: 6-17-51
BY: R.C.
CHECKED: H.M.
DATE: 8-29-53

ORIGINAL SURVEY PLOTTED
DATE: 6-17-51
BY: R.C.
CHECKED: H.M.
DATE: 8-29-53



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

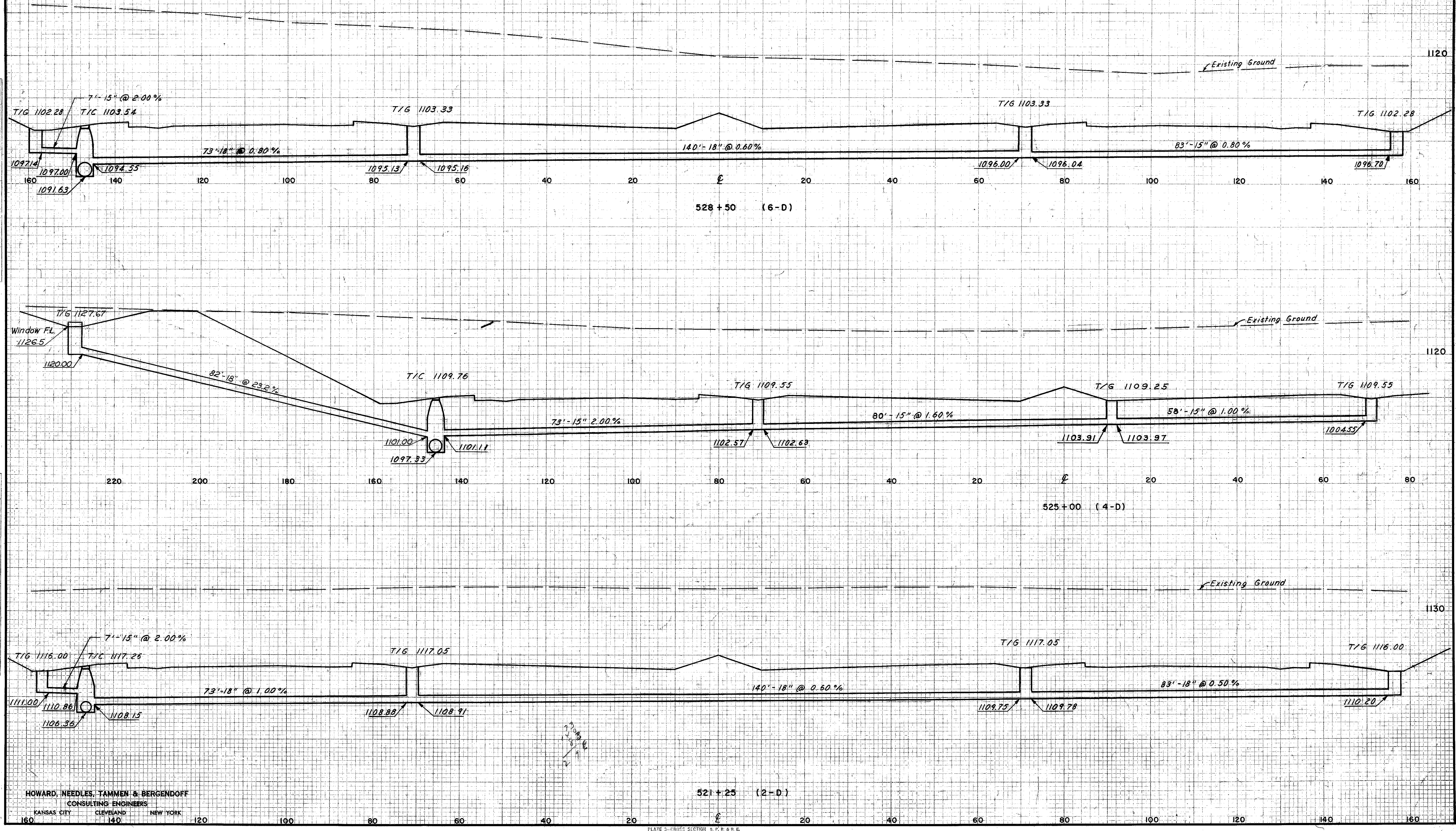
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

268
313

CUYAHOGA COUNTY
CUY-1-2.20

DATE
NO.
FINAL SURVEY PLOTTED TEMPLATE AREAS CHECKED

DATE
BY
ORIGINAL SURVEY PLOTTED TEMPLATE AREAS CHECKED



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

PLATE 3 - CROSS SECTION OF P.R. & R.E.
CHARLES BRIDG COMPANY, INC.

STA. 520 + 00 TO STA. 530 + 00

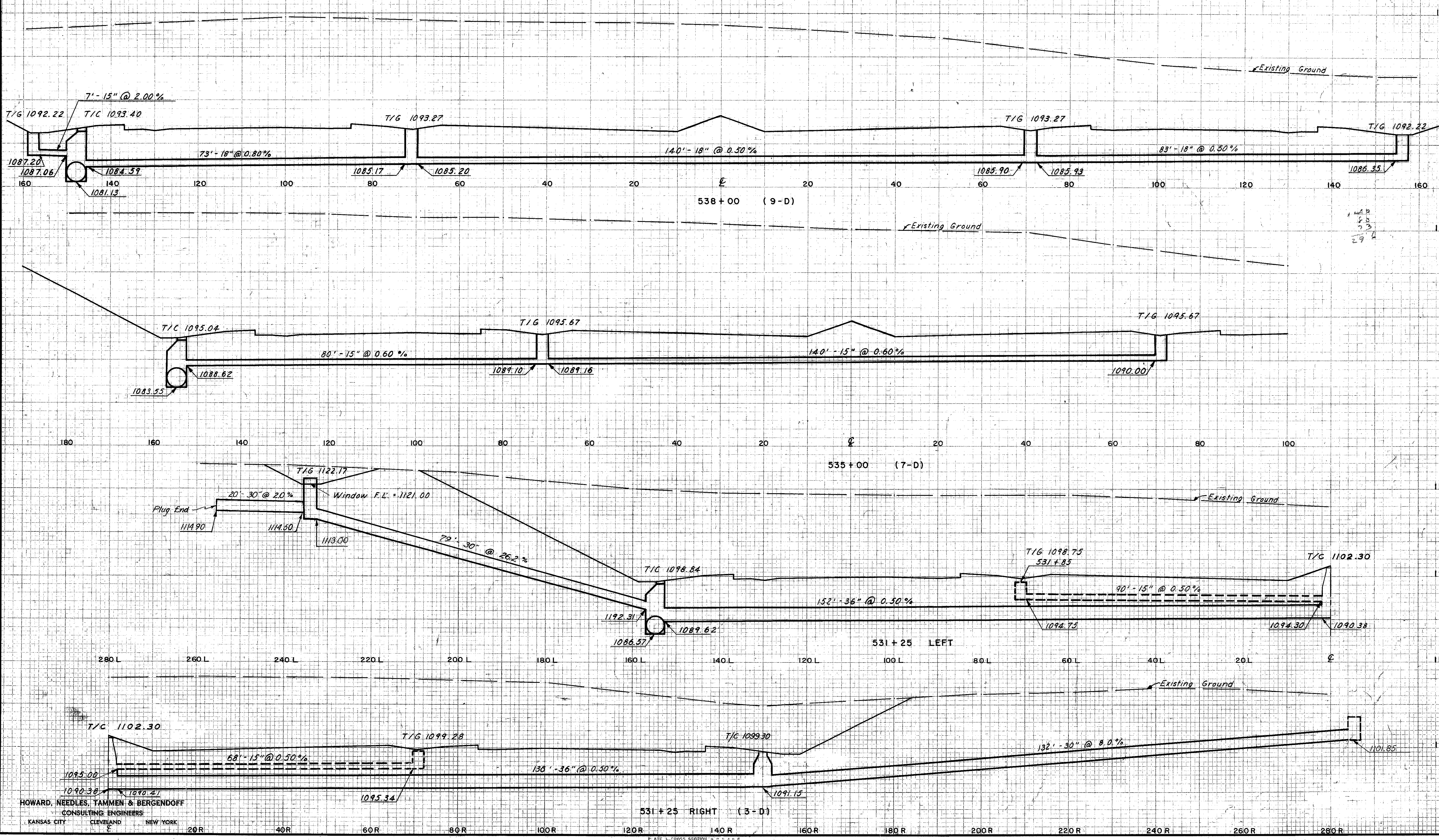
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

267
313

CUYAHOGA COUNTY
CUY-1-2.20

FINAL SURVEY PLOTTED
NOTE BOOK AREAS CHECKED

DATE: 8-22-51
R. C. H. H.

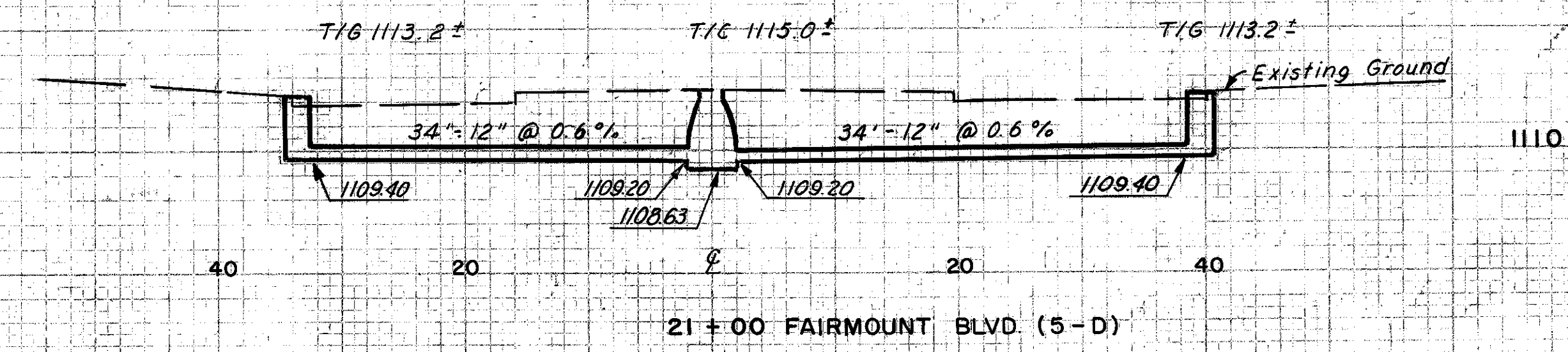
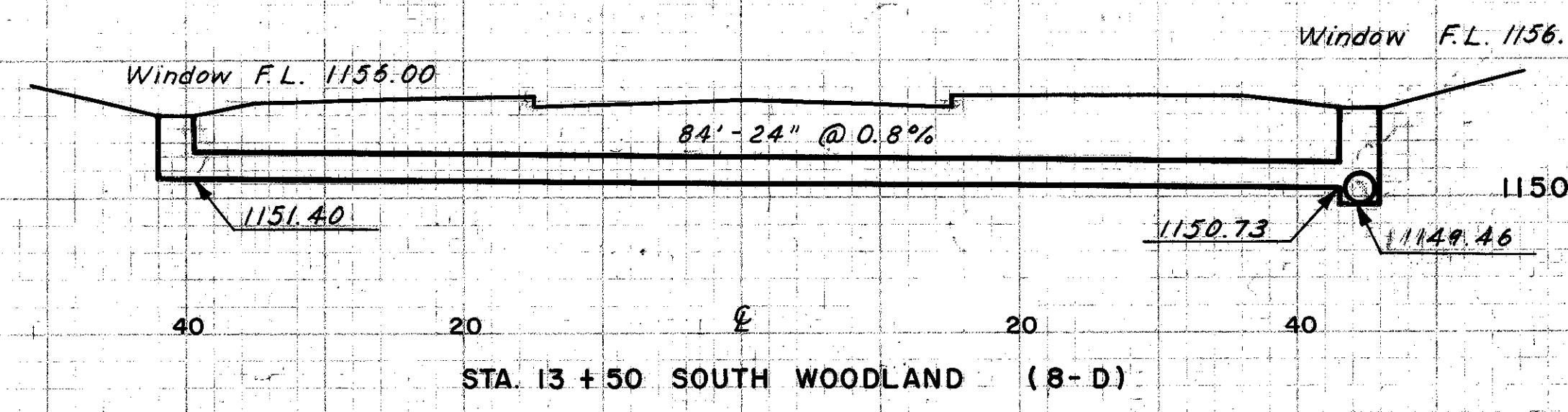
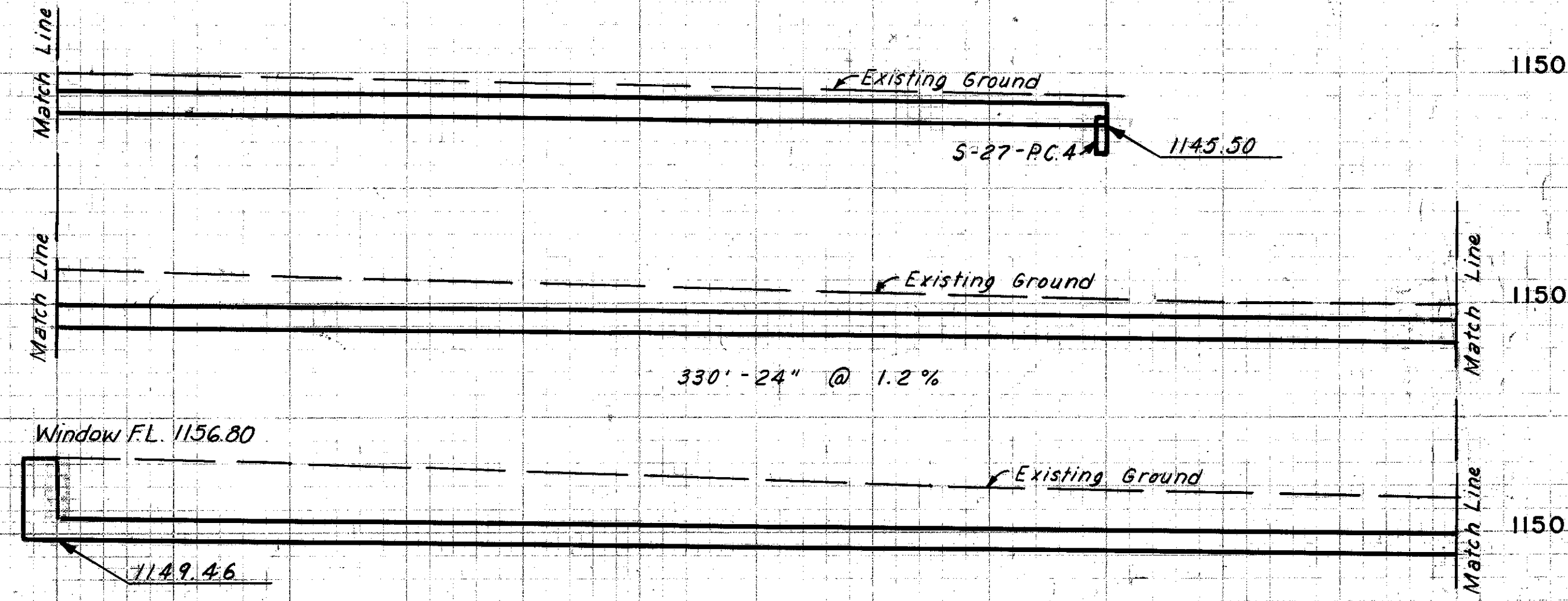
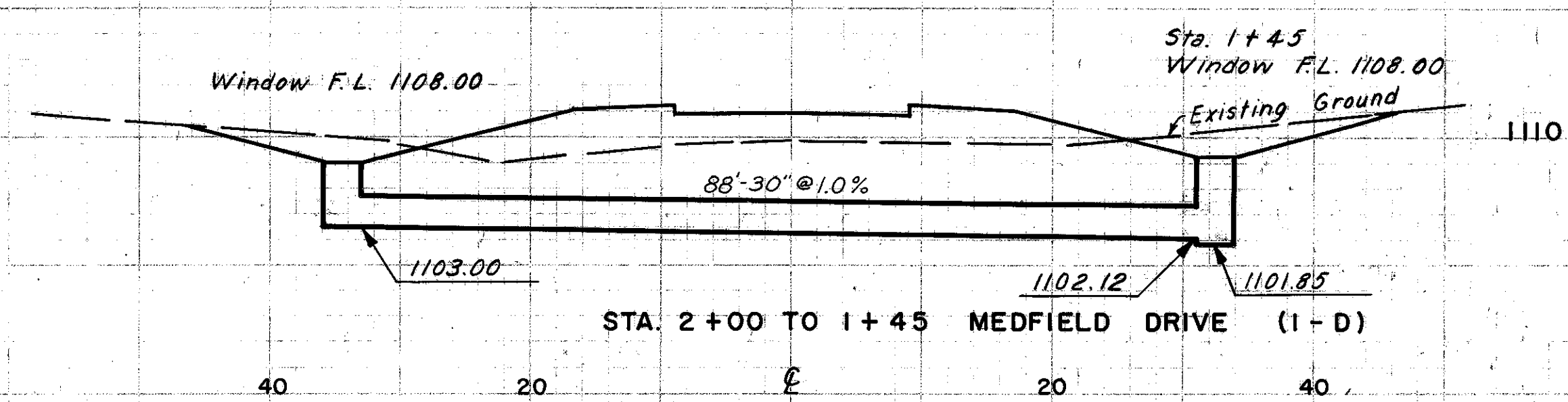
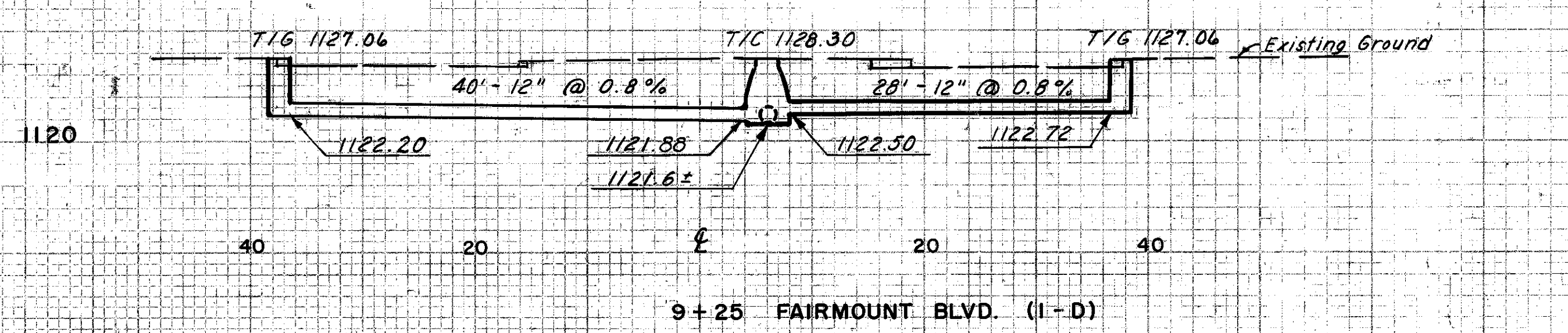
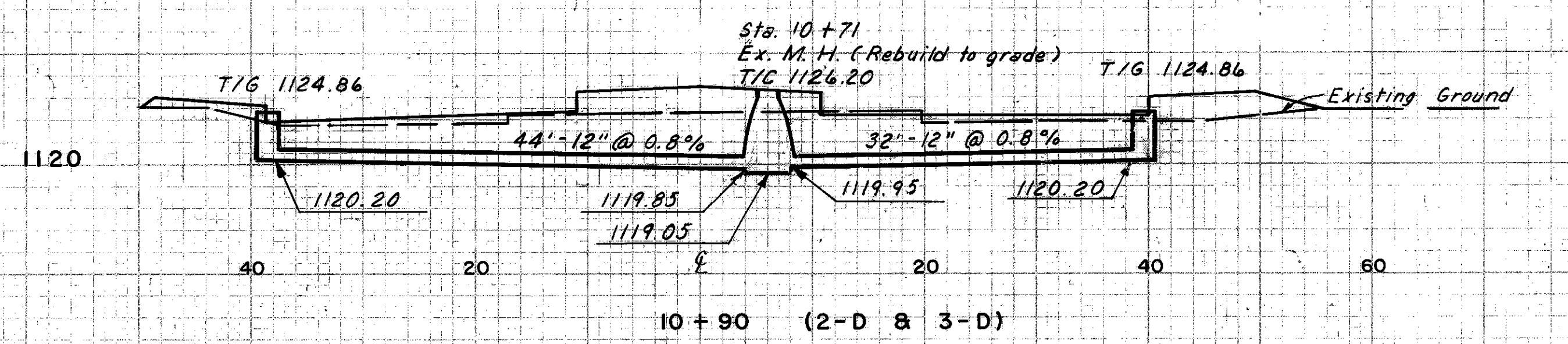
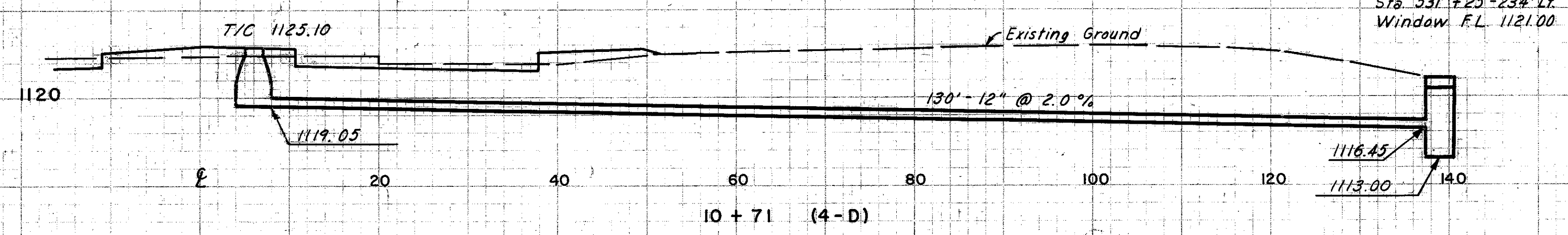
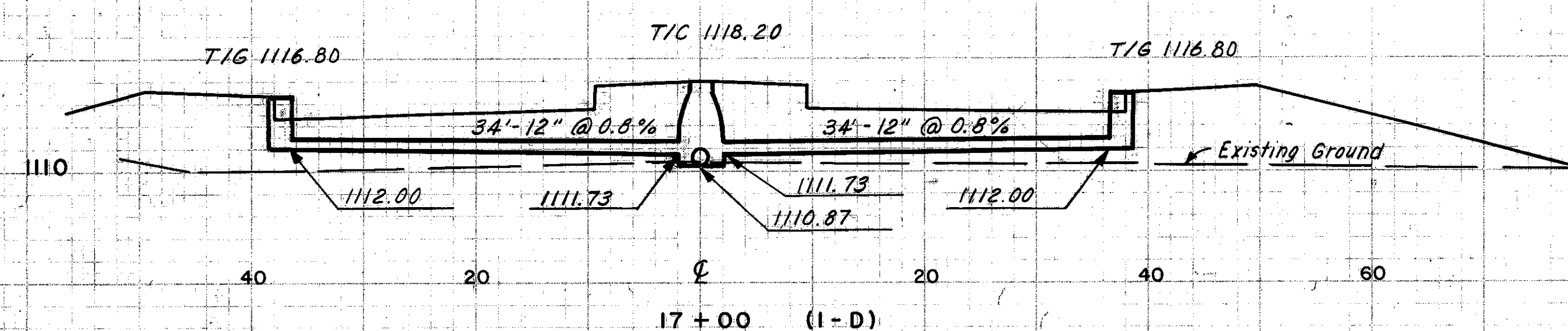
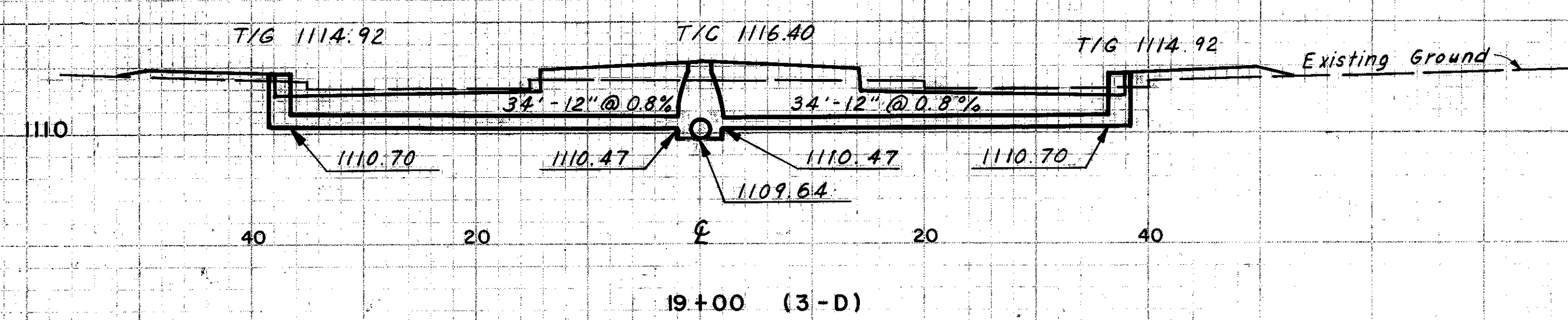


HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

531+25 RIGHT (3-D)

PLATE 3-CROSS SECTION OF PIPES
CHARLES BRIDGEMAN COMPANY, INC.

CUYAHOGA COUNTY
CUY-1-2.20



FINAL SURVEY PLOTTED
NOTE BOOK TEMPLATE
DATE: 11-7-57
BY: R.H.B. - WMH
CHECKED: H.H.

11-7-57
R.H.B. - WMH
H.H.

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

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MICROFILMED
APR 23 1986

GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	271 313
2	OHIO		

CUYAHOGA COUNTY
CUY-1-2.20
CUY-271-6.80

V. 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 4-28-55; TO NO. I-127, DELINEATORS, REVISED 9-30-59; TO NO. S-307, RADIOGRAPHIC EXAMINATION OF WELDS, DATED 8-23-60; AND TO NO. S-101, CONCRETE FOR STRUCTURES, 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; CSB-2-56, SHEETS 2 AND 3 OF 6, REVISED 2-2-59; AS-1-54 REVISED 12-1-54.

DIMENSIONS
DIMENSIONS GIVEN ARE MEASURED HORIZONTALLY AND AT 60° F. UNLESS OTHERWISE NOTED.

UTILITIES
ANY EXISTING PRIVATELY OWNED UTILITY FACILITIES ENCOUNTERED AT THE SITE OF THE WORK WHICH WILL INTERFERE WITH PORTIONS OF THE FINISHED ROADWAYS OR STRUCTURES WILL BE REMOVED OR RELOCATED BY OTHERS. 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.

EXCAVATION AND BACKFILL
AT THE PIERS THE METHOD OF MEASUREMENT FOR EXCAVATION SHALL BE AS SET FORTH IN SEC. E-2.09, EXCEPT AT PIERS 15 AND 14, BR. NO. 54, THE EXCAVATION QUANTITY ASSUMES THAT ALL EMBANKMENT AT THE SOUTH ABUTMENTS SHALL BE IN PLACE.

AT THE ABUTMENTS THE EMBANKMENTS SHALL BE PLACED AND COMPACTED TO THE FINISHED SPILL-THRU SLOPE AND TO THE LEVEL OF THE SUBGRADE (FOR A DISTANCE OF 200 FEET BACK OF THE ABUTMENTS AT BR. NO. 51, 53 AND 54), AFTER WHICH THE EXCAVATION SHALL BE MADE. THE EXCAVATION QUANTITY INCLUDES THE REMOVAL OF FILL MATERIAL BETWEEN THE SURFACE OF PROPOSED EMBANKMENT AND THE BOTTOM OF FOOTING.

POROUS BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE PLACED AS SHOWN ON THE PLANS AND TRANSVERSELY TO THE INSIDE FACE OF THE WINGWALLS.

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.

SPREAD FOOTINGS ARE DESIGNED FOR A MAXIMUM BEARING PRESSURE OF 6 TONS PER SQUARE FOOT FOR THE PIERS AND ABUTMENTS OF BR. NO. 52 AND THE PIERS OF BR. NO. 55, AND FOR 2.5 TONS FOR THE ABUTMENTS OF BR. NO. 51.

STEEL BEARING PILES
AT BR. NOS. 53 AND 54 AND AT THE ABUTMENTS OF BR. NO. 55 THE PILES SHALL BE DRIVEN TO FIRM CONTACT WITH ROCK. AT BR. NO. 51 PILES ENCOUNTERING BOULDERS (AS INDICATED ON THE BORING LOGS) SHALL BE DRIVEN TO FIRM CONTACT; THOSE NOT ENCOUNTERING BOULDERS SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 40 TONS.

IF THE LENGTH OF PENETRATION IS APPROXIMATELY EQUAL TO THE DEPTH TO ROCK OR BOULDERS, ACCORDING TO THE BRIDGE FOUNDATION INVESTIGATION REPORT, THE FIRM CONTACT SHALL BE CONSIDERED AS ATTAINED WHEN THE CAPACITY ACCORDING TO THE FORMULA IN SEC. 19.05 IS NOT LESS THAN THE FOLLOWING VALUE FOR A PILE HAMMER OF THE INDICATED ENERGY RATING:

FOR ALL PILES -
55 TONS PER PILE USING AN 11,000 FOOT-POUND HAMMER,
45 TONS PER PILE USING A 15,000 FOOT-POUND HAMMER,
EXCEPT 65 AND 55 TONS RESPECTIVELY FOR BR. NO. 54.

IF THE ENERGY RATING OF THE HAMMER IS BETWEEN THE RATINGS, AS SHOWN ABOVE, THE REQUIRED FORMULA CAPACITY SHALL BE DETERMINED BY INTERPOLATION THE DESIGN LOAD FOR THE STEEL BEARING PILES IS 40 TONS PER PILE FOR ALL PILES, EXCEPT 35 TONS FOR BR. NO. 54.

THE ESTIMATED LENGTH OF PILES SHOWN ON THE PLANS IS BASED ON THE BORINGS AND IS APPROXIMATE ONLY. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR LENGTHS OF PILES RELOCATED FOR DRIVING.

CONCRETE DECK
THE STEEL GIRDERS SHALL BE FABRICATED WITH 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.

THE FINAL SURFACE OF THE ROADWAY SHALL CONFORM AS NEARLY AS PRACTICABLE TO THE ELEVATIONS SHOWN ON THE PLANS. TO COMPENSATE FOR DEFLECTIONS DUE TO DEAD LOAD OF THE CONCRETE THE SCREEDS USED TO STRIKE OFF THE SURFACE OF THE CONCRETE TO THE FINAL DESIRED GRADE LINE SHALL BE ADJUSTED BY AMOUNTS EQUAL TO DEFLECTIONS SHOWN FOR THIS DEAD LOAD. SCREEDS MAY REQUIRE FURTHER ADJUSTMENTS DUE TO IRREGULARITIES IN THE FABRICATED STEEL.

THE DEPTH OF CONCRETE 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 CONCRETE SLAB SHALL BE OF UNIFORM THICKNESS BETWEEN BEAMS OR GIRDERS, WITH ADJUSTMENTS OBTAINED BY VARYING THE THICKNESS OF THE HAUNCHES OVER THE BEAMS OR GIRDERS.

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 AT 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 SECTION 3-4.02 NEED NOT BE FURNISHED, AND REPLACEMENT BARS AS SHOWN IN THE REPLACEMENT SCHEDULE ON SHEET 280 OF THE PLANS, WILL NOT BE REQUIRED.

WATERPROOFING
ALL CONTRACTION AND EXPANSION JOINTS IN BACK FACE OF SUBSTRUCTURE, AGAINST WHICH EARTH IS TO BE PLACED, SHALL BE WATERPROOFED WITH A PRE-MOLDED SEALING STRIP AS SHOWN ON THE PLANS.

WELDING
WELDS SHOWN AS FIELD WELDS MAY, AT THE OPTION OF THE CONTRACTOR, BE MADE IN THE SHOP. ALL WELDS SHALL BE CLASS "A" EXCEPT AS OTHERWISE SHOWN. CLASS "B" WELDS ARE SHOWN THUS:

STEEL: See Proposal regarding A-373 steel.

MACHINE FINISH: The top of the bridge deck slabs shall be machine finished in accordance with the Proposal Note "Machine Finishing of Bridge Deck Slabs".

CONSTRUCTION CLEARANCES: While maintaining traffic on Harvard Road and South Woodland Road the Contractor shall provide minimum clearances of 12'-6" vertically and two lanes (unobstructed) in width horizontally. For maintaining traffic on Shaker Blvd. these clearances shall be provided for both eastbound and westbound roadways.

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	BRIDGE NO. 51 (2 Bridges)					BRIDGE NO. 52					BRIDGE NO. 53 (2 Bridges)				
			ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL	ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL	ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL
E-2	Cofferdams, cribs & sheeting	Lump Sum															
E-2	Excavation for structures (rock or shale)	Cu. Yd.						6	349			355					
E-2	Excavation for structures (unclassified)	Cu. Yd.	575	355			930	765	50			815	480	445			925
S-1	Class "C" concrete, superstructure	Cu. Yd.			525		525			1095		1095			575		575
S-1	Class "C" concrete, pier caps & columns	Cu. Yd.		150			150		280			280		160			160
S-1	Class "C" concrete, abutments & walls (above footings)	Cu. Yd.						265				265					
S-1	Class "E" concrete, stub abutments (above footings)	Cu. Yd.	305				305						230				230
S-1	Class "E" concrete, footings	Cu. Yd.	120	145			265	76	199			275	175	160			335
S-3	Waterproofing-premolded sealing strip	Lin. Ft.	37				37	24				24	29				29
S-4	Reinforcing steel	Lbs.	30,780	43,230	148,190		222,200	28,180	84,960	287,960		401,100	29,700	44,920	162,680		239,300
S-7	Structural steel	Lbs.			463,500		463,500			1,011,800		1,011,800			490,700		490,700
S-8	Field painting of structural steel, as per plan	Lbs.			463,500		463,500			1,011,800		1,011,800			490,700		490,700
S-9	1" Gray rubber preformed expansion joint filler	Sq. Ft.						66				66					
S-14	Type "A" aluminum railing (including parapet)	Lin. Ft.	114		599		713						114		655		769
S-14	Type "C" aluminum railing (including parapet & terminal posts)	Lin. Ft.						75		947		1,022					
S-16	First test pile	Lump Sum															
S-18	Steel piles, 12 BP 53	Lin. Ft.											3920	2520			6440
S-29	Scuppers, Type A	Ea.			14		14								14		14
S-29	Scuppers, Type B	Ea.								20		20					
S-29	Porous backfill	Cu. Yd.	80				80	65				65	75				75
I-10	Crushed aggregate slope protection	Sq. Yd.				965	965				770	770			1020		1020
I-127	Bridge delineators TYPE B-1 Bracket Mounted	Ea.			1		1								2		3

ITEM	DESCRIPTION	UNIT	BRIDGE NO. 54 (2 Bridges)					BRIDGE NO. 55 (2 Bridges)				
			ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL	ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL
E-2	Cofferdams, cribs & sheeting	Lump Sum										
E-2	Excavation for structures (rock or shale)	Cu. Yd.										20
E-2	Excavation for structures (unclassified)	Cu. Yd.	485	1795			2280	340	1830			2170
S-1	Class "C" concrete, superstructure	Cu. Yd.			2110		2110			1035		1035
S-1	Class "C" concrete, pier caps & columns	Cu. Yd.		715			715		375			375
S-1	Class "E" concrete, stub abutment (above footings)	Cu. Yd.	225				225	180				180
S-1	Class "E" concrete, footings	Cu. Yd.	160	665			825	125	225			350
S-4	Reinforcing steel	Lbs.	28,680	269,780	586,640		885,100	22,960	103,160	224,780		350,900
S-7	Structural steel	Lbs.			1,564,900		1,564,900			826,400		826,400
S-8	Field painting of structural steel, as per plan	Lbs.			1,564,900		1,564,900			826,400		826,400
S-14	Type "A" aluminum railing (including parapet)	Lin. Ft.	109		2607		2716					
S-14	Type "C" aluminum railing (including parapet & terminal posts)	Lin. Ft.						126		1591		1717
S-16	First test pile	Lump Sum										
S-18	Steel piles, 12 BP 53	Lin. Ft.	1855	4025			7880	1630				1630
S-29	Porous backfill	Cu. Yds.	70				70	55				55
S-29	Scuppers, Type A	Ea.			24		24					
S-29	Scuppers, Type B	Ea.								14		14
I-10	Crushed aggregate slope protection	Sq. Yds.				765	765			910		910
I-127	Bridge Delineators TYPE B-1 Bracket Mounted	Ea.	1		7		8					

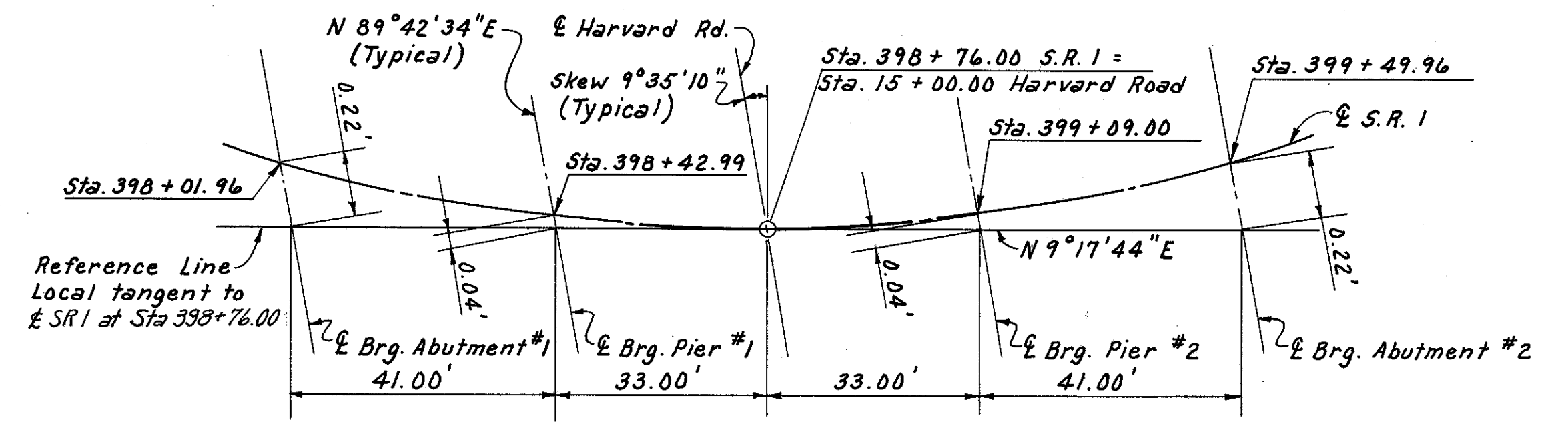
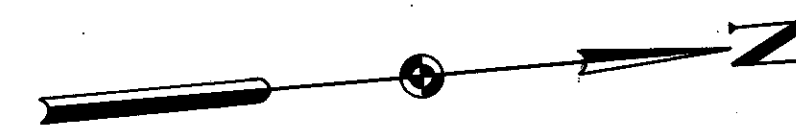
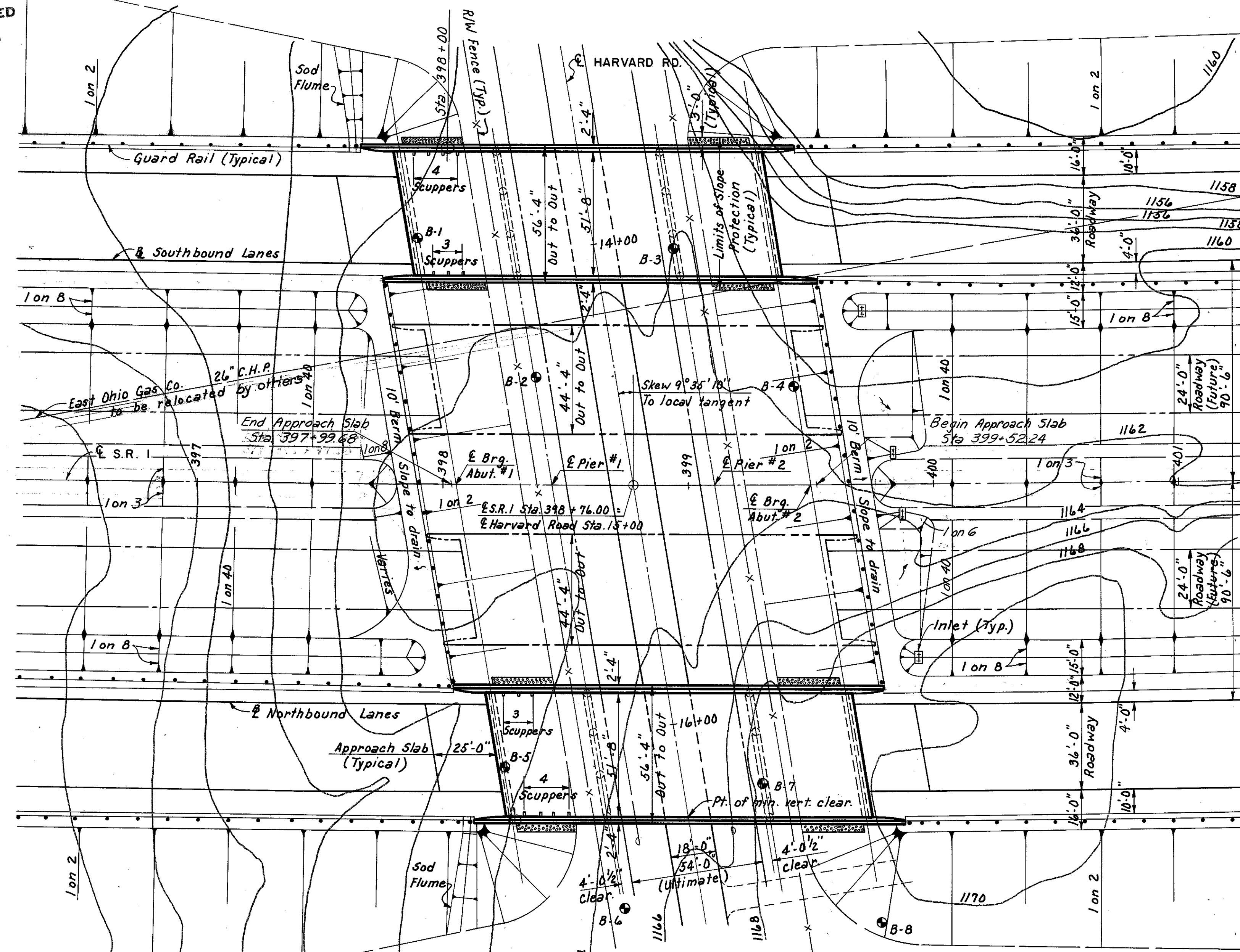
H.N.T.B. BR. NO.	STATE BR. NO.	DESCRIPTION
51	CUY-1-0259 R&L	S.R.I. over Harvard Road
52	CUY-1-0353	S.R.I. under Chagrin Blvd. (U.S. 422)
53	CUY-1-0425 R&L	S.R.I. over South Woodland Road
54	CUY-1-0455 R&L	S.R.I. over Shaker Blvd.
55	CUY-1-0514	S.R.I. under Fairmount Blvd.

NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
GENERAL NOTES AND ESTIMATED QUANTITIES S.R.I. CONSTRUCTION SECTION C-55			
CUYAHOGA CO.		OHIO	
SCALE	NOTE	CHECKED	DATE
MADE CKB	DATE 9-14-60	F.S.J.	10-3-60
TRACED	DATE	REVIEWED	DATE
		BC	10-4-60
1040 SHEET 271			

MICROFILMED
APR 23 1986

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY
CUY-1-2.20
-2.20



CURVE DATA (S.R. 1)
 P.I. Sta. 379 + 23.25
 D = 0° 28' 00" Left
 Δ = 40° 05' 00"
 L = 8689.29'
 T = 4478.82'
 E = 791.42'
 R = 12277.67

BORING LOCATIONS

B-1	Sta. 397 + 88	99' Lt.
B-2	Sta. 398 + 37	42' Lt.
B-3	Sta. 398 + 93	96' Lt.
B-4	Sta. 399 + 42	39' Lt.
B-5	Sta. 398 + 24	117' Rt.
B-6	Sta. 398 + 73	174' Rt.
B-7	Sta. 399 + 29	120' Rt.
B-8	Sta. 399 + 78	177' Rt.

Note: Drive Sample Borings were made at locations B-2, B-3, B-6 and B-7. Rod soundings only were taken at other locations.

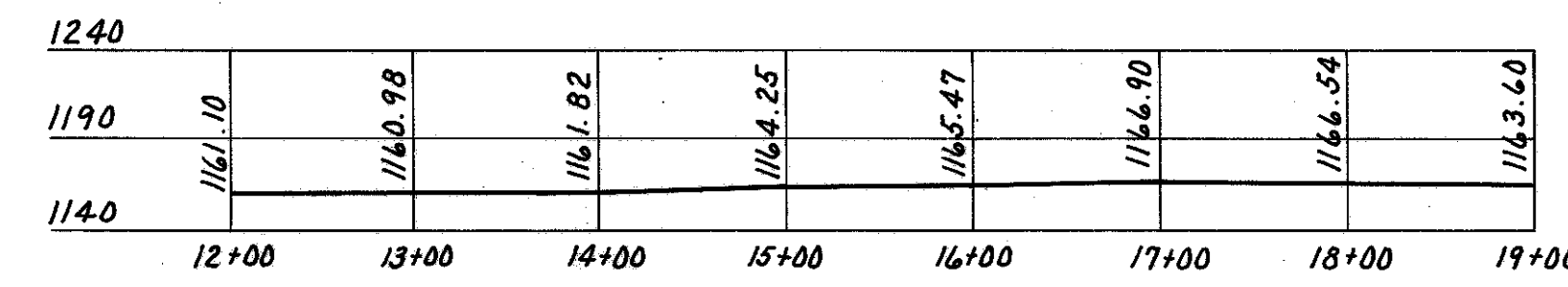
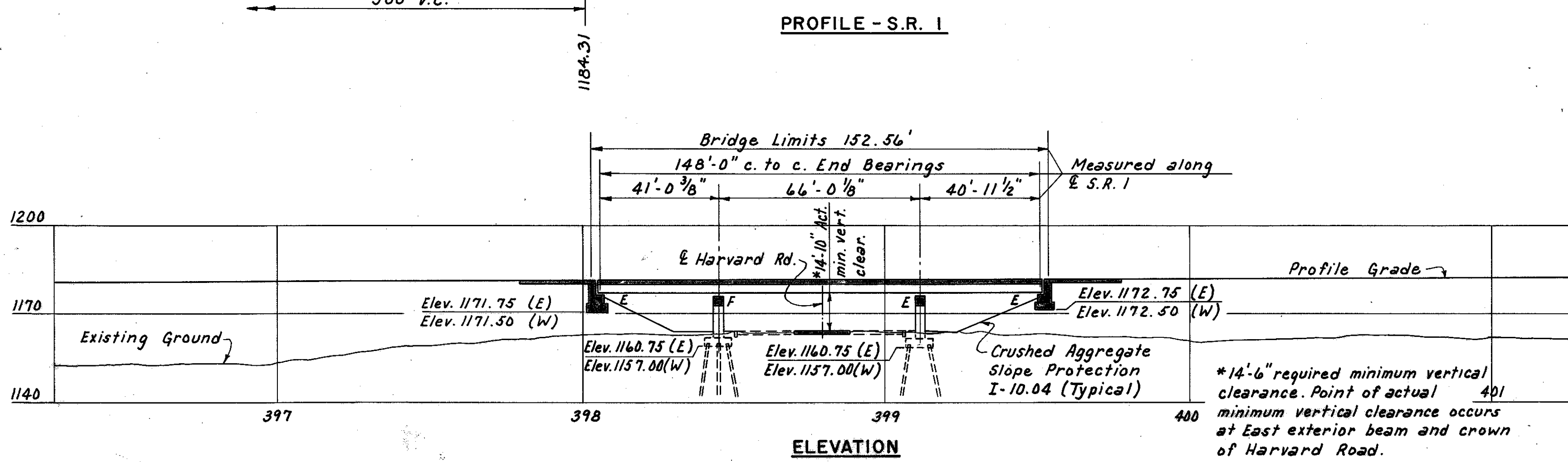
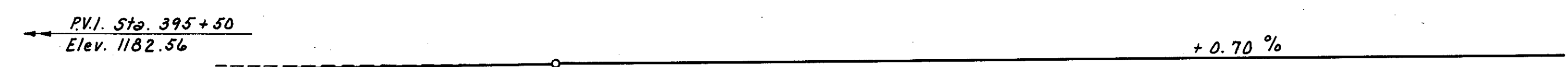
SCUPPER SPACING
 (Along Gutter Line)
 5'-0" from E. Brg. Abutment #1 to center of 1st scupper. Scuppers are Type A spaced at 6'-0" centers. See sheet 297 for details.

PROPOSED STRUCTURES

TYPE: Continuous steel beam with reinforced concrete deck and substructure.
 SPANS: 41'-0 3/8", 66'-0 1/8" and 40'-11 1/2"
 ROADWAY: 2 @ 54'-0" f/f of parapet
 LOAD FREQUENCY: CF 2000 (S7) Adequate for A.A.S.H.O. alternate loading.
 SKEW: 9° 35' 10" R.F.
 WEARING SURFACE: 1" Monolithic concrete
 APPROACH SLAB: AS-1-54 (25' long)
 ALIGNMENT: 0° 28' 00" Curve Left

NOTES:

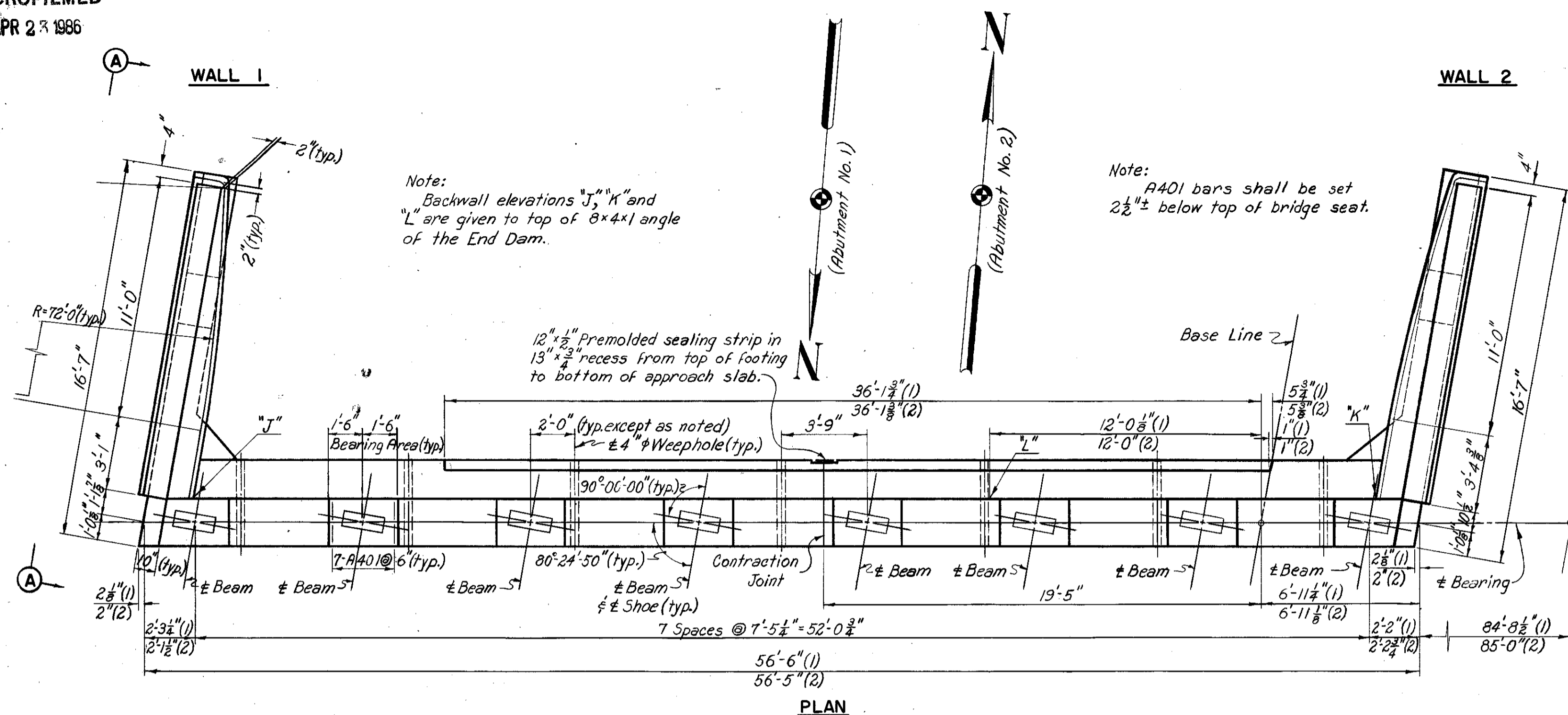
- The following items are not included in the Bridge Plans: (See Roadway Plans for details)
 - Approach grading, pavement and slab.
 - Roadway Guard Rail and Sod Flumes.
 - Relocation or removal of existing utilities.
- All piles to be 12 BP 53 with an estimated average vertical length of 47 feet.
- Bridge Delineators, Item I-127, shall be placed as shown thus ⊕. For details see sheet 232 of the Roadway Plans.



NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
SITE PLAN			
BR. NO. CUY-1-0259-R & L S.R. 1 OVER HARVARD ROAD STA. 397 + 99.68 399 + 52.24			
CUYAHOGA CO.		OHIO	
SCALE 1" = 30' except as noted		CHECKED: PRL DATE 10-13-59	
MADE: AJS DATE 5-4-59		REVIEWED: BC DATE 10-4-59	
TRACED: A.E.K. DATE 10-8-59		1040 SHEET 272	

H.N.T.B. BR. NO. 51

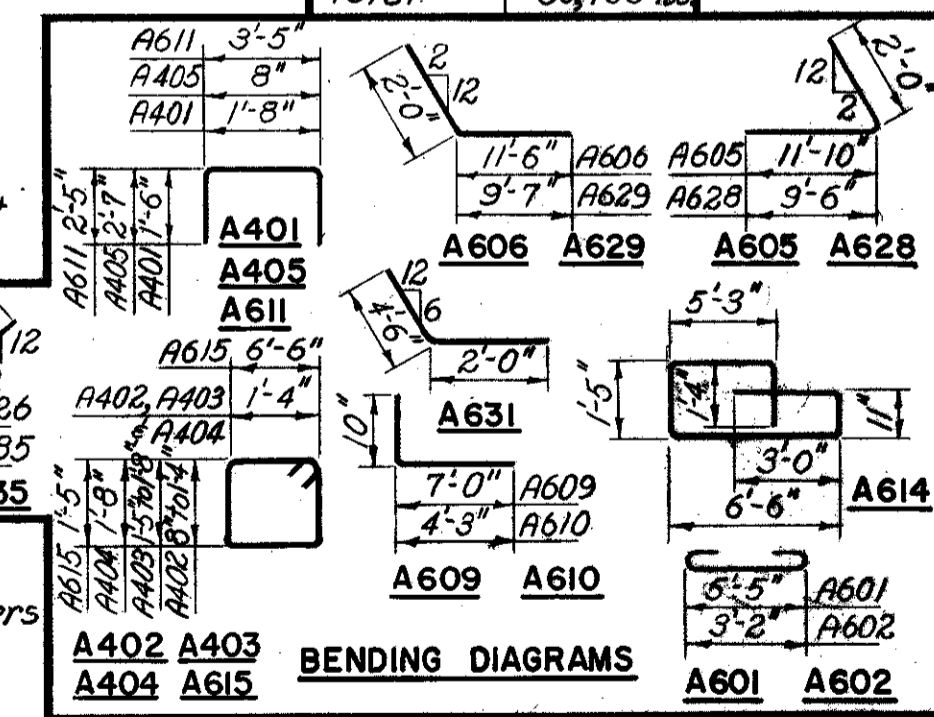
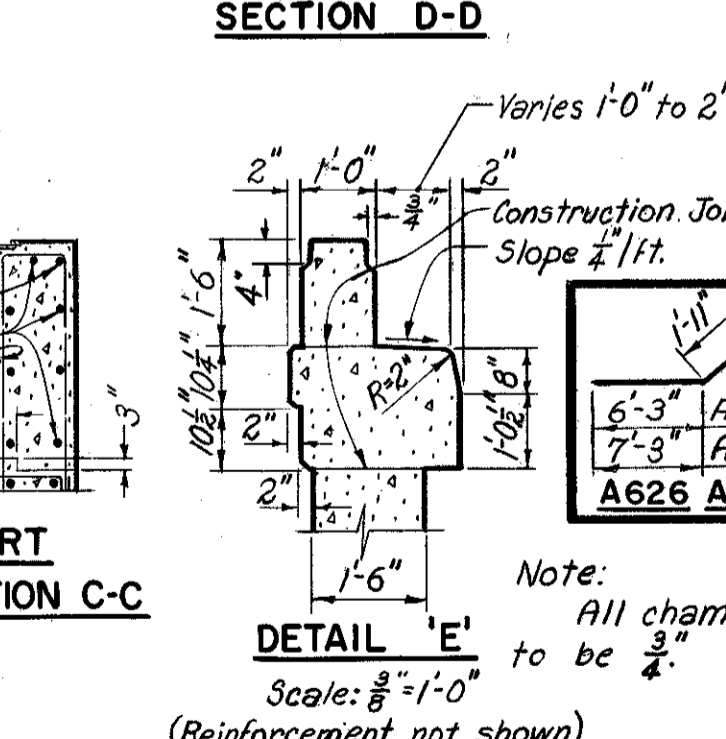
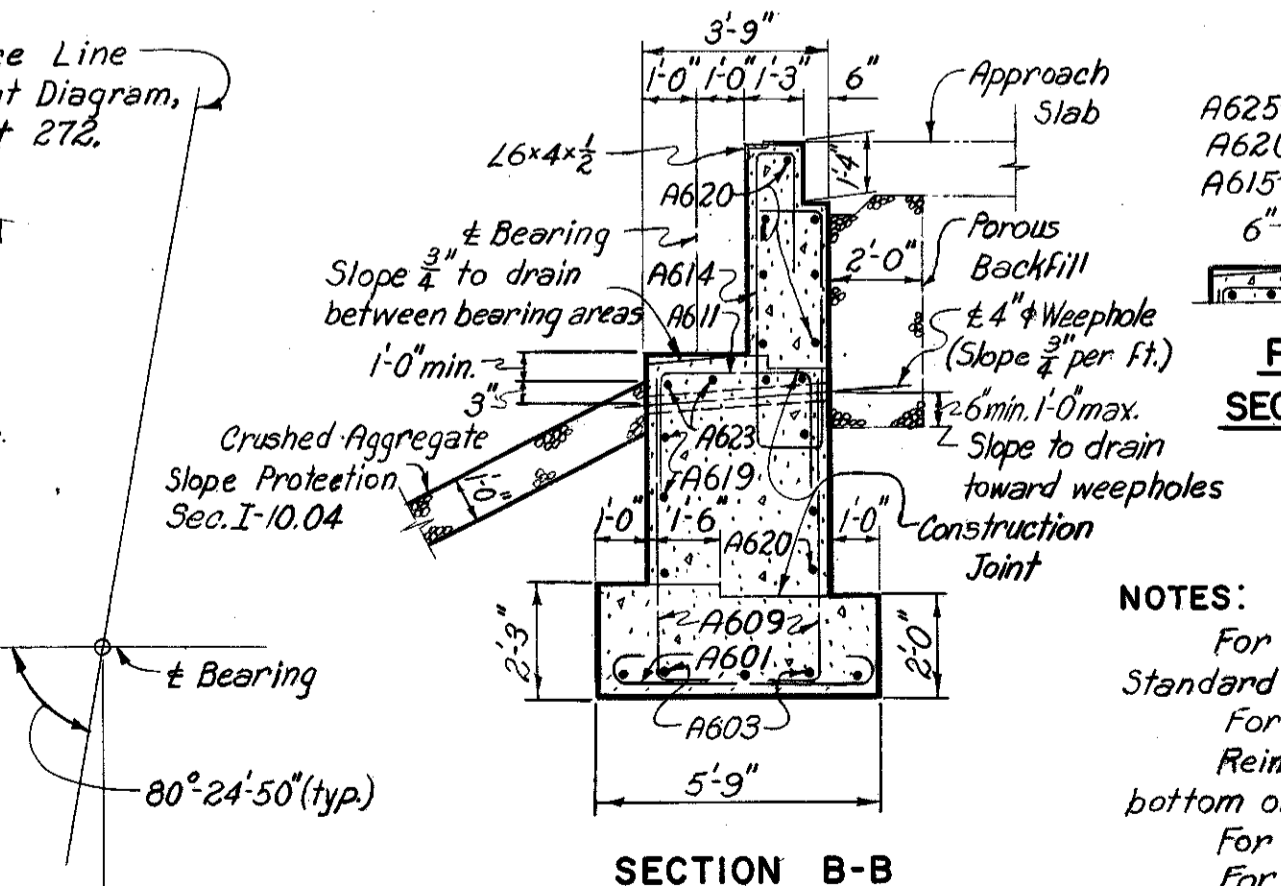
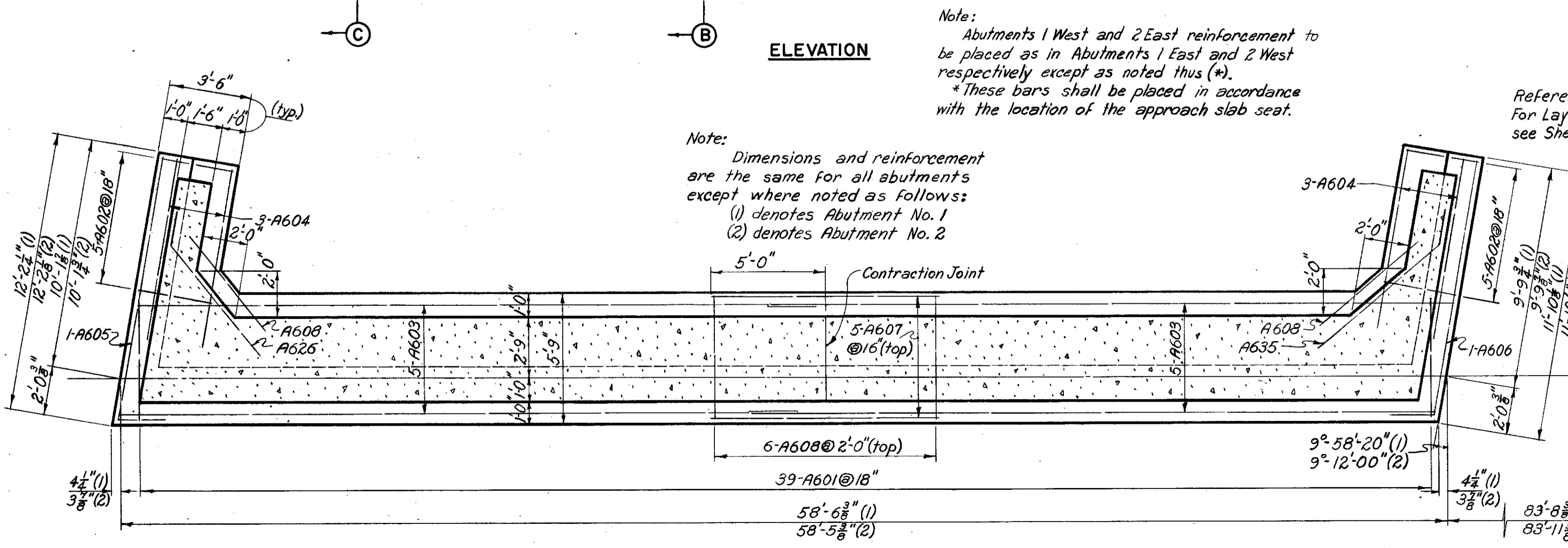
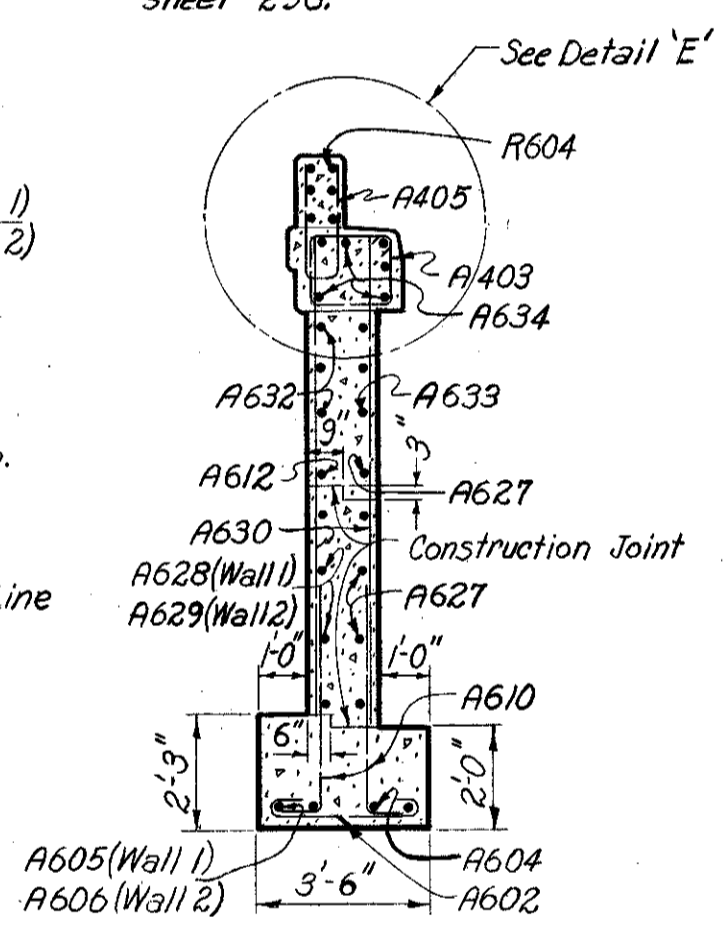
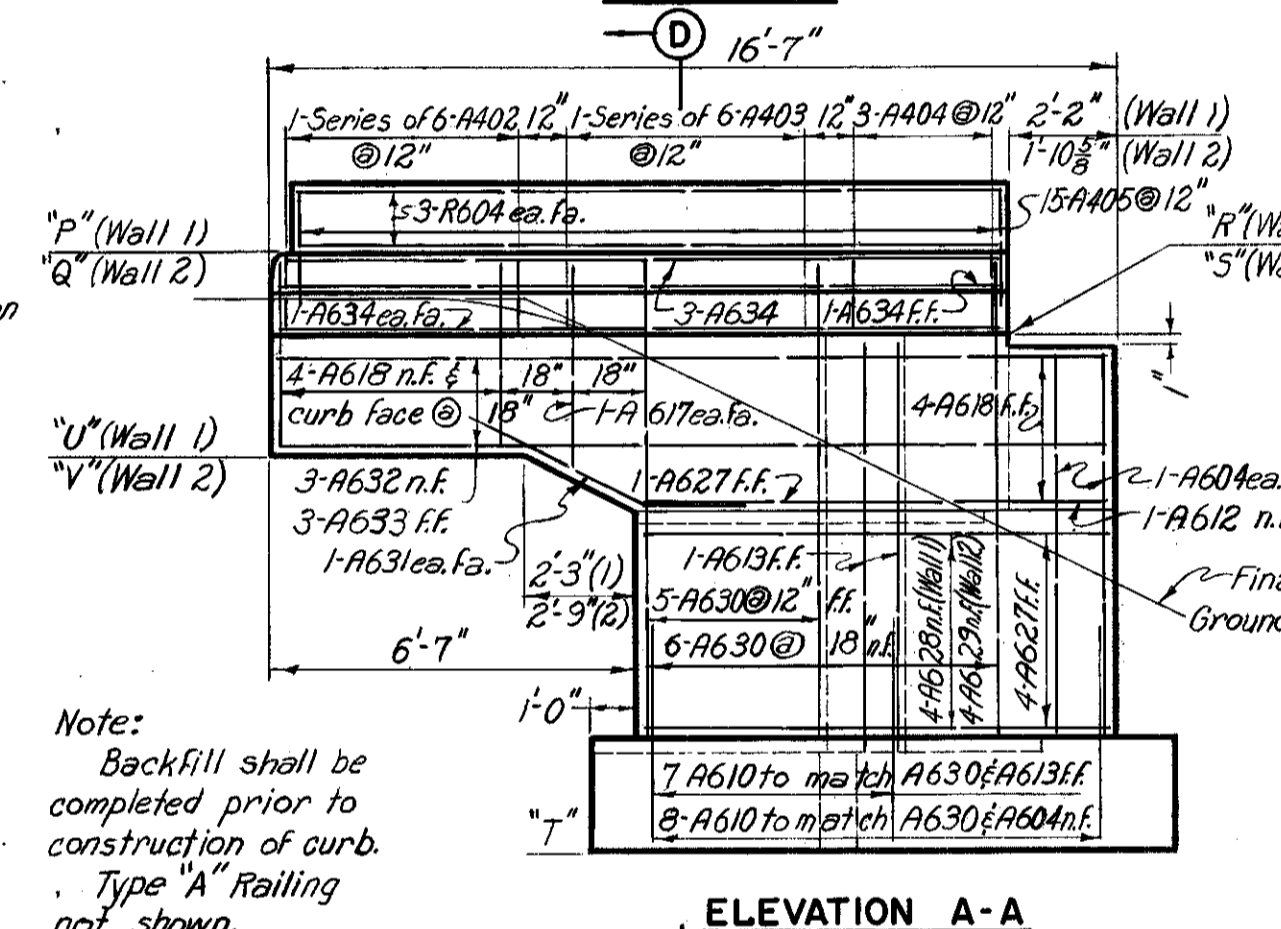
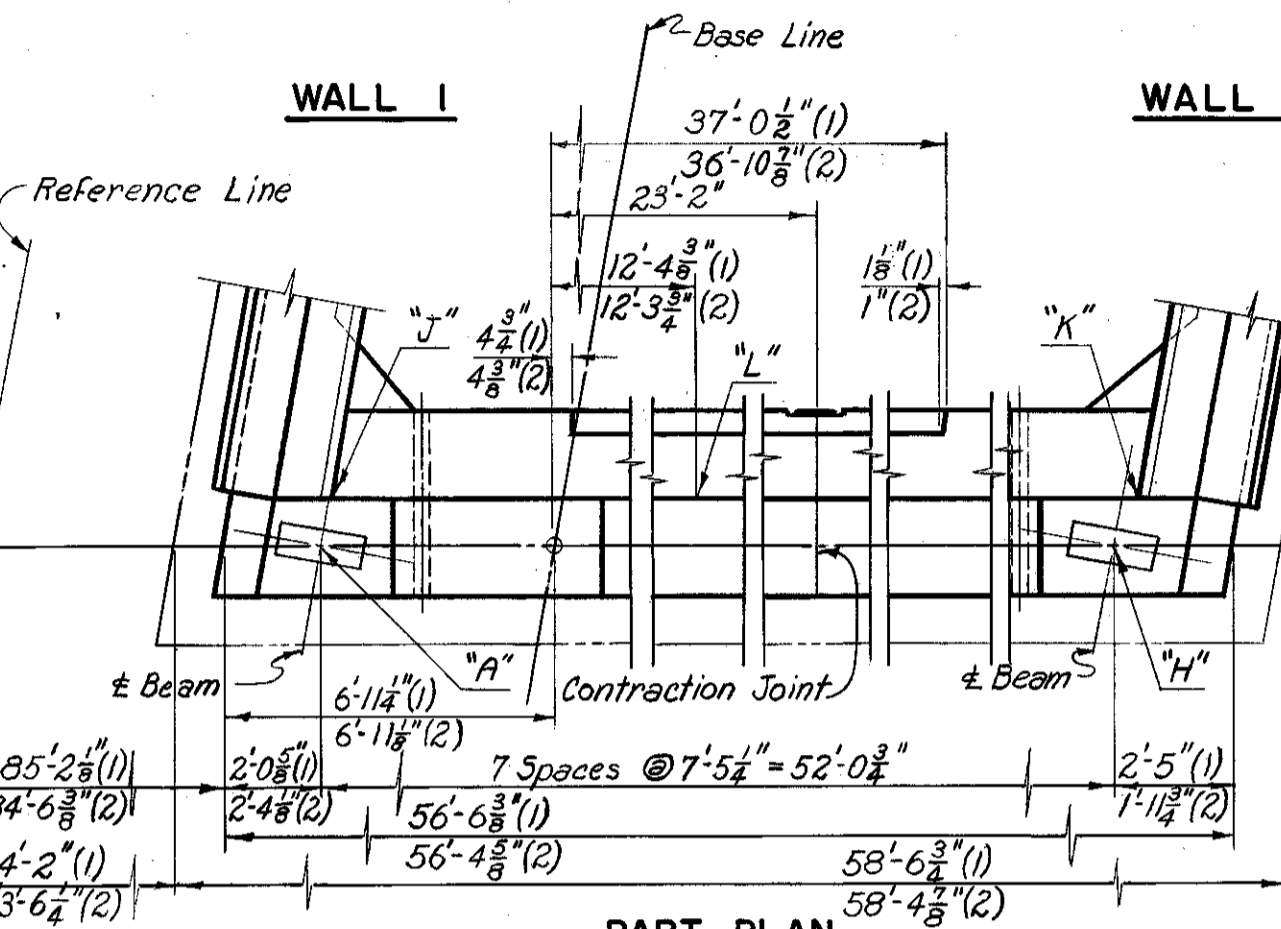
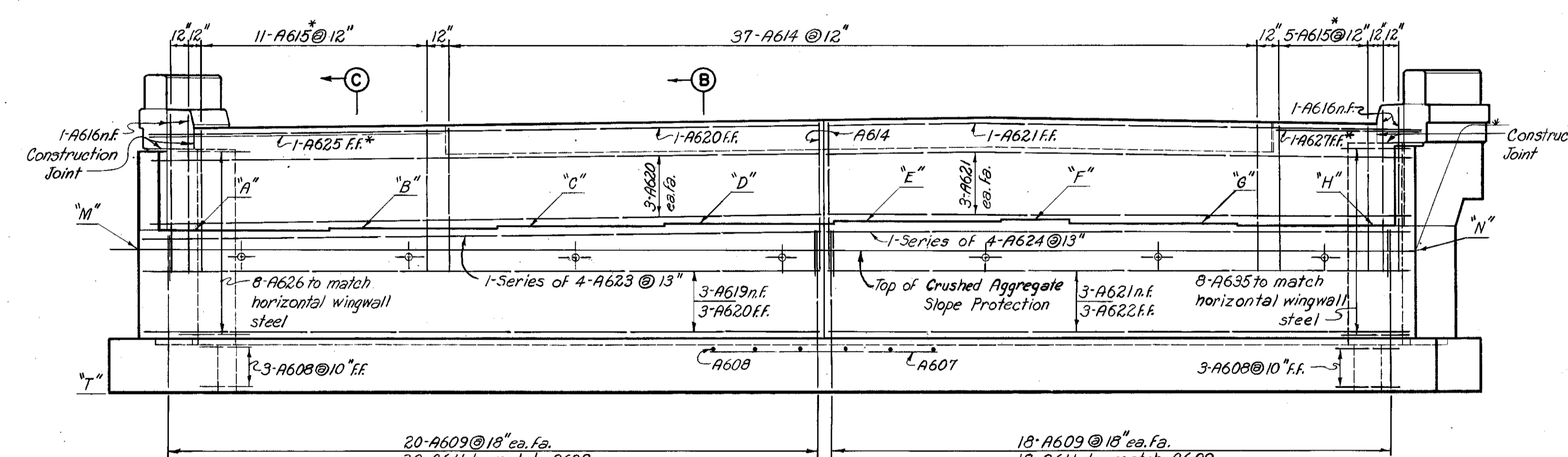
CUYAHOGA COUNTY
CUY-1-2.20



PROCEDURE:
The embankment shall be placed and compacted up to the finished spill-thru slope and to the level of the subgrade for a distance of 200 feet back of the abutments, after which excavation shall be made for the abutments.

Mark	Abutment			
	1E	1W	2E	2W
"A"	1179.54	1179.55	1180.80	1180.26
"B"	1179.65	1179.66	1180.92	1180.38
"C"	1179.76	1179.76	1181.04	1180.50
"D"	1179.86	1179.70	1180.99	1180.62
"E"	1179.97	1179.58	1180.88	1180.75
"F"	1180.01	1179.46	1180.78	1180.81
"G"	1179.89	1179.33	1180.67	1180.70
"H"	1179.76	1179.21	1180.56	1180.60
"J"	1184.13	1184.14	1185.39	1184.85
"K"	1184.35	1183.79	1185.16	1185.19
"L"	1184.63	1184.38	1185.67	1185.44
"M"	1178.5	1178.3	1179.5	1179.3
"N"	1178.5	1178.2	1179.6	1179.3
"P"	1184.89	1184.89	1186.34	1185.80
"Q"	1185.10	1184.53	1186.12	1186.15
"R"	1183.25	1183.26	1184.51	1183.98
"S"	1183.47	1182.91	1184.29	1184.32
"T"	1171.75	1171.50	1172.75	1172.50
"U"	1180.64	1180.64	1182.09	1181.55
"V"	1180.85	1180.28	1181.87	1181.90

Mark	Number	Length	Weight	Shape	Series Increment
A401	224	4'-5"	662	B	
A402	8-Ser. 6	4'-5" to 5'-9"	163	B	3/8"
A403	8-Ser. 6	5'-11" to 6'-5"	198	B	1/2"
A404	24	6'-5"	103	B	
A405	120	5'-7"	448	B	
A601	156	6'-9"	1582	B	
A602	40	4'-6"	270	B	
A603	40	30'-0"	1802	S	
A604	56	9'-0"	757	S	
A605	4	13'-8"	82	B	
A606	4	13'-4"	80	B	
A607	20	10'-0"	300	S	
A608	48	5'-3"	379	S	
A609	304	7'-8"	3501	B	
A610	120	4'-11"	886	B	
A611	152	7'-11"	1807	B	
A612	8	9'-6"	114	S	
A613	16	9'-3"	222	S	
A614	148	17'-7"	3909	B	
A615	64	16'-7"	1594	B	
A616	16	7'-0"	168	S	
A617	16	4'-3"	102	S	
A618	96	3'-9"	541	S	
A619	12	29'-9"	536	S	
A620	40	29'-3"	1757	S	
A621	40	25'-9"	1547	S	
A622	12	26'-3"	473	S	
A623	4 Ser. 4	29'-3" to 29'-9"	709	S	2"
A624	4 Ser. 4	25'-9" to 26'-3"	625	S	2"
A625	4	12'-3"	74	S	
A626	32	8'-1"	389	B	
A627	44	6'-0"	397	S	
A628	16	11'-4"	272	B	
A629	16	11'-5"	274	B	
A630	88	10'-6"	1388	S	
A631	16	6'-4"	152	B	
A632	24	16'-3"	586	S	
A633	24	12'-9"	460	S	
A634	48	14'-0"	1009	S	
A635	32	9'-1"	497	B	
Total			30,755 lbs		



NOTES:
For details of roadway end dam, see Ohio Standard Drawing CSB-2-56, Sheet 2 of 6.
For Railing Post Spacing, see Sheet 292.
Reinforcement bars shall be 3 inches clear from bottom of Footings and 2 inches elsewhere.
For Replacement Schedule, see Sheet 280.
For curb plate details, see Ohio Standard Drawing CSB-2-56, Sheet 3 of 6.
n.f. = near face; f.f. = far face; ea. fa. = each face.
Bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
For Railing details, see Ohio Standard Drawing AR-1-57.

NO.	DATE	REVISION	BY

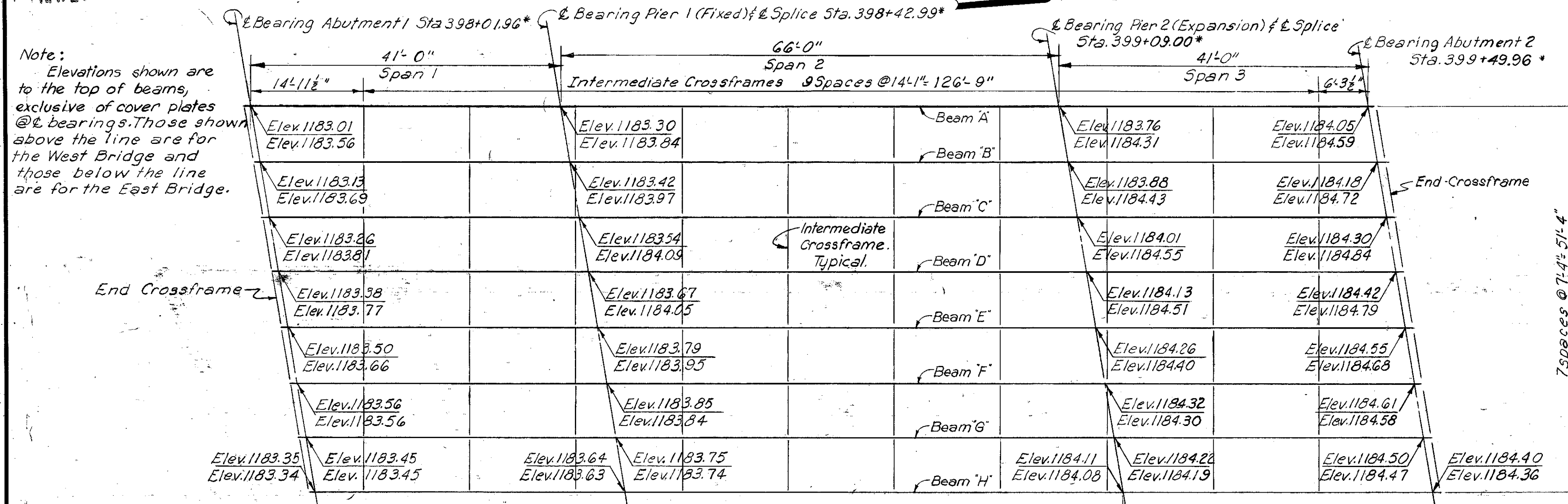
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

ABUTMENTS
BR. NO. CUY-1-0259 R & L
S.R. I OVER HARVARD ROAD
STA. 397 + 99.68
399 + 52.24

GUYAHOGA CO. OHIO

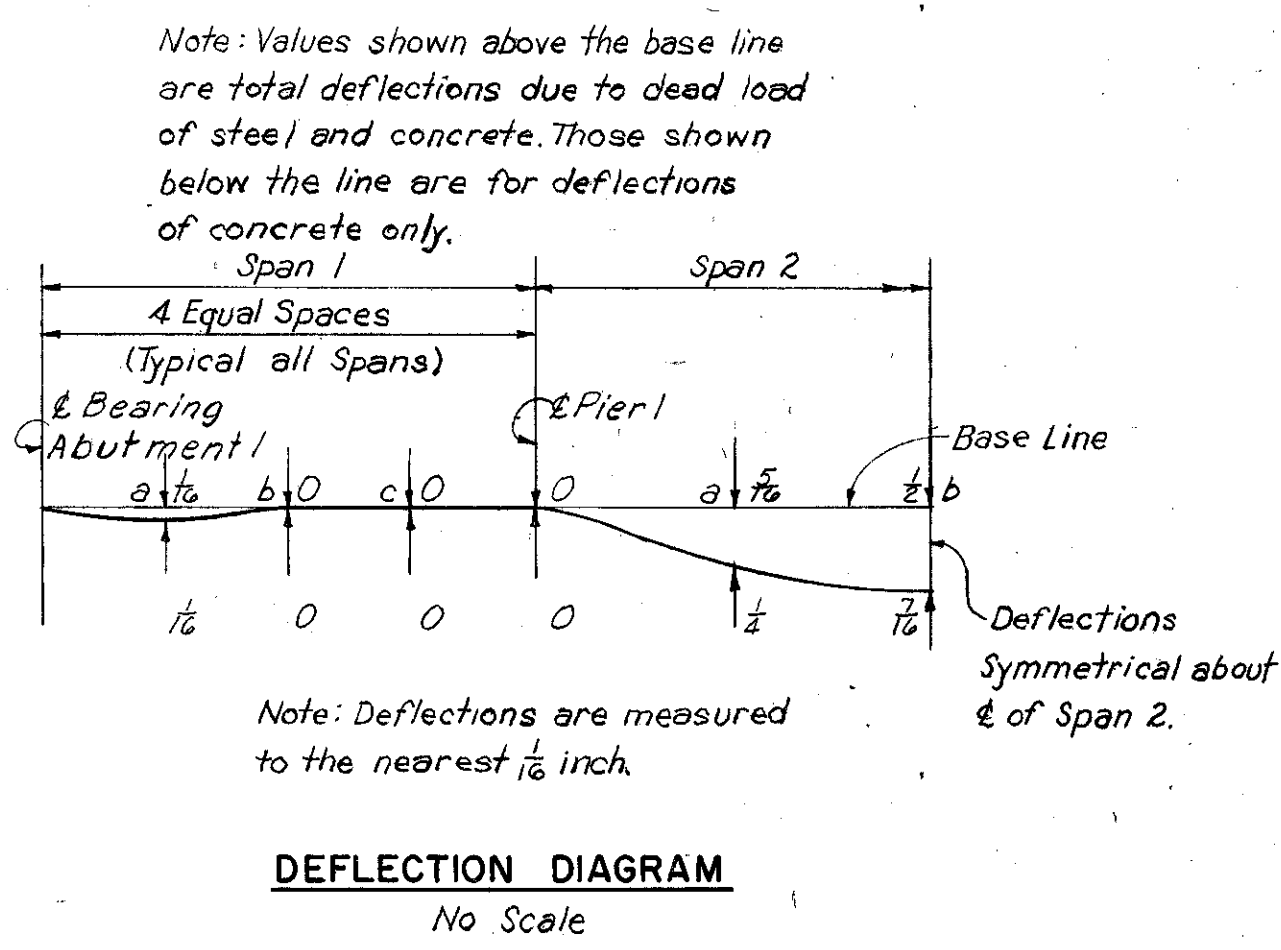
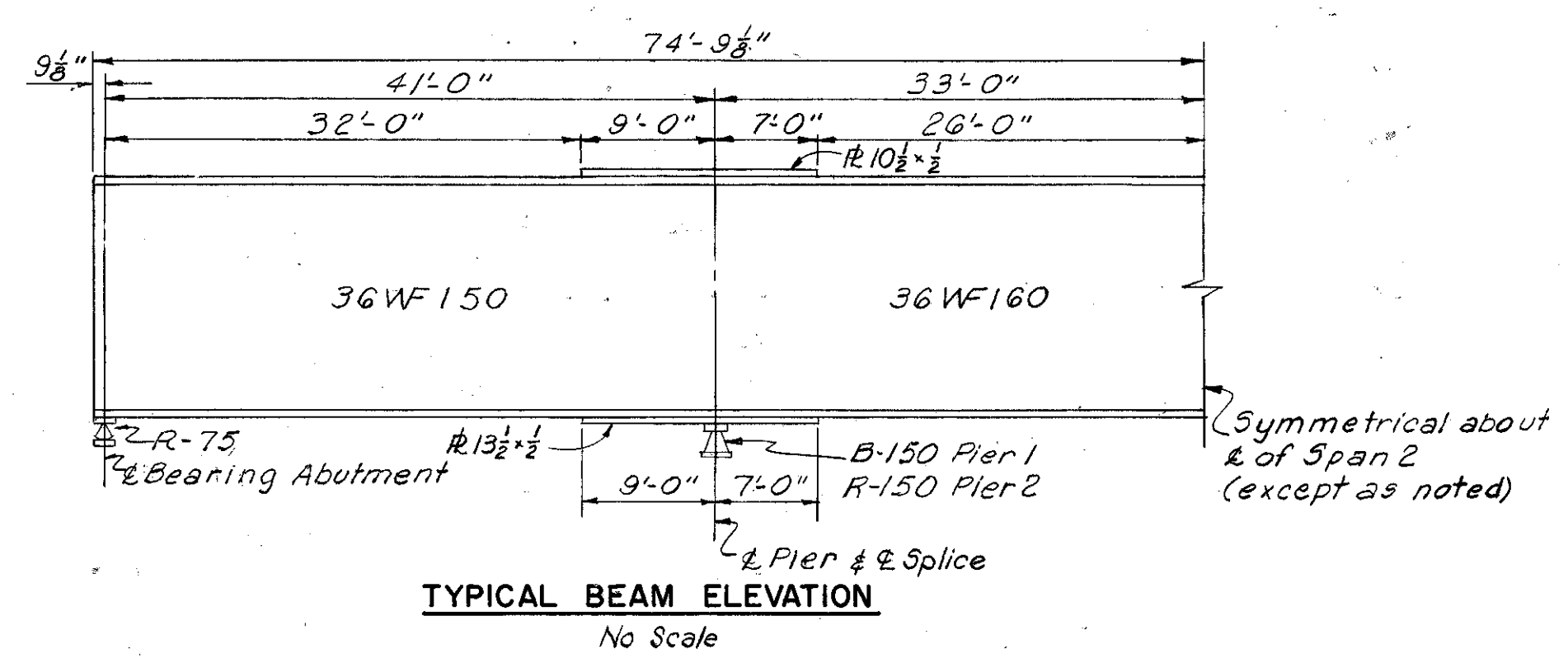
SCALE: 1/4" = 1'-0" except as noted
CHECKED: A.R.L. DATE: 7-24-59
MADE: F.S.J. DATE: 4-17-59
REVIEWED: B.C. DATE: 10-4-60

H.N.T.B. BR. NO. 51
1040 SHEET 274

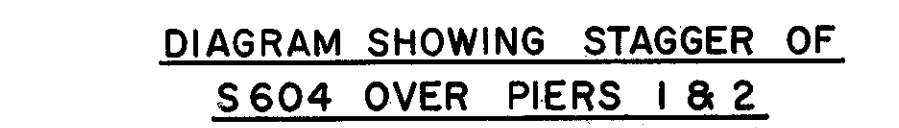
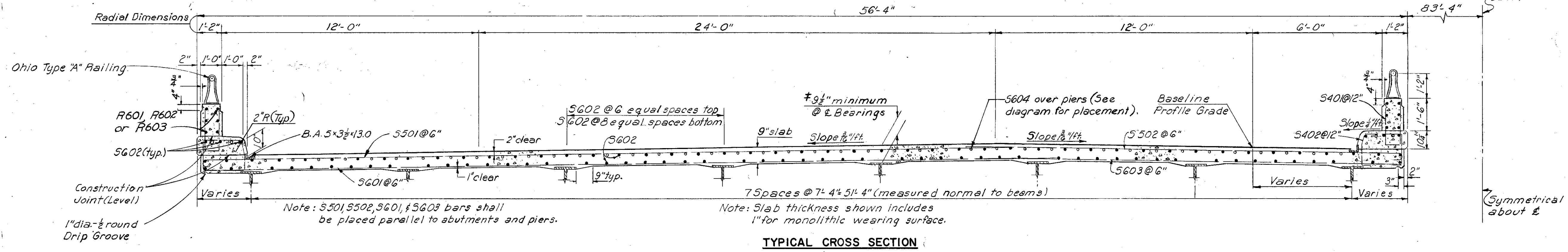


REINFORCEMENT SCHEDULE					BENDING DIAGRAMS	
Mark	No.	Length	Weight	S		
S401	624	4'-5"	1841	B		
S402	600	5'-0"	2004	B		
S501	600	37'-7"	23520	B		
S502	600	20'-10"	13037	B		
S601	600	40'-0"	36048	S		
S602	848	38'-9"	49356	S		
S603	600	17'-9"	15996	S		
S604	184	23'-0"	6356	S		
Total			148,158 Lbs.			

NOTES:
For Replacement bar schedule see Sheet 280
All bar dimensions are given out to out.
Longitudinal steel in the parapets, (bars R601, R602, R603) is not shown in this schedule. It is included for payment with Item S-14, Type "A" Railing, and is shown on sheet 298.



Location	Beams - West Bridge								Beams - East Bridge								
	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H	
Span 1	Brig. Abut 1	1183.80	1183.92	1184.05	1184.17	1184.30	1184.35	1184.25	1184.14	1184.35	1184.48	1184.60	1184.56	1184.45	1184.35	1184.24	1184.14
	a	1183.87	1184.00	1184.12	1184.24	1184.37	1184.43	1184.32	1184.22	1184.42	1184.55	1184.67	1184.63	1184.52	1184.42	1184.31	1184.21
	b	1183.94	1184.07	1184.19	1184.32	1184.44	1184.50	1184.39	1184.29	1184.50	1184.62	1184.74	1184.70	1184.60	1184.49	1184.38	1184.28
Span 2	Brig. Pier 1	1184.02	1184.14	1184.26	1184.39	1184.51	1184.57	1184.47	1184.36	1184.57	1184.69	1184.81	1184.77	1184.67	1184.56	1184.46	1184.35
	a	1184.09	1184.21	1184.34	1184.46	1184.58	1184.65	1184.54	1184.44	1184.64	1184.76	1184.88	1184.84	1184.74	1184.63	1184.53	1184.42
	b	1184.20	1184.33	1184.45	1184.58	1184.70	1184.76	1184.66	1184.55	1184.75	1184.88	1185.00	1184.96	1184.85	1184.75	1184.64	1184.54
Span 3	Brig. Pier 2	1184.32	1184.44	1184.57	1184.69	1184.81	1184.88	1184.76	1184.67	1184.87	1184.99	1185.11	1185.07	1184.97	1184.86	1184.76	1184.65
	a	1184.44	1184.56	1184.68	1184.81	1184.93	1185.00	1184.89	1184.78	1184.98	1185.10	1185.23	1185.19	1185.08	1184.98	1184.87	1184.76
	b	1184.55	1184.68	1184.80	1184.92	1185.05	1185.11	1185.01	1184.90	1185.10	1185.22	1185.34	1185.30	1185.20	1185.09	1184.98	1184.88
Span 3	Brig. Abut 2	1184.63	1184.75	1184.87	1185.00	1185.12	1185.18	1185.08	1184.97	1185.17	1185.29	1185.42	1185.37	1185.27	1185.16	1185.05	1184.95
	a	1184.70	1184.82	1184.95	1185.07	1185.19	1185.26	1185.15	1185.04	1185.24	1185.36	1185.49	1185.44	1185.34	1185.23	1185.12	1185.02
	b	1184.77	1184.90	1185.02	1185.14	1185.26	1185.33	1185.22	1185.12	1185.31	1185.44	1185.56	1185.51	1185.41	1185.30	1185.19	1185.09



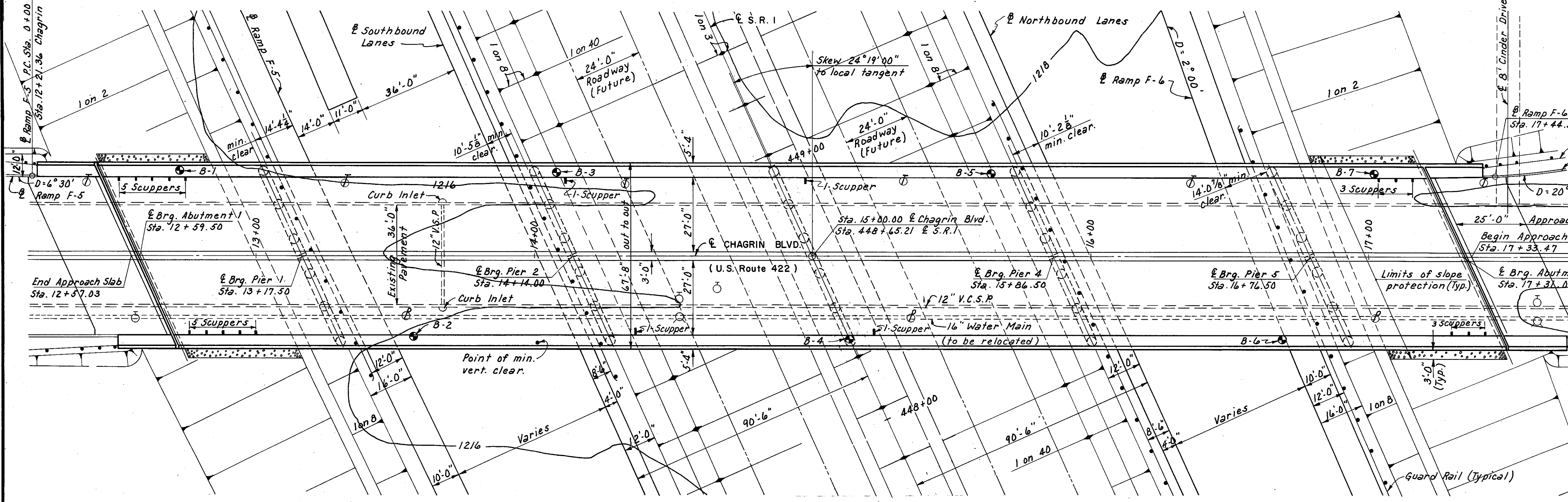
BEAM SPLICE WELDING PROCEDURE
1. With the beams in their final position butt-weld the beam flanges and web using the following sequence: make two passes on each flange, then two on the web; repeat using one pass at each location, until welds are completed.
2. Weld the bottom and top cover plates.

NOTES:
For details of beam splices, intermediate crossframes, see sheet 297.
For location of scuppers, see sheet 272.
For details of end crossframes and roadway end dams, see Ohio Standard Drawing CSB-2-56, sheet 2 of 6.
For details of Rockers and Bolsters, see Ohio Standard Drawing RB-1-55.
For railing post and parapet joint spacing, see sheet 298.
For placement of 2" Std. Pipe Drain @ end of B.A. gutter at Abutment No. 1 see Ohio Standard Drawing C.S.B.-2-56, Sheet 2 of 6.
Beams shall not be cambered but shall be fabricated so that any curved beam will be placed with the convex flange up.
For details of scuppers and bulb angle gutter support, see sheet 297.
For details of curb plates at end dams, see Ohio Standard Drawing CSB-2-56, sheet 3 of 6.

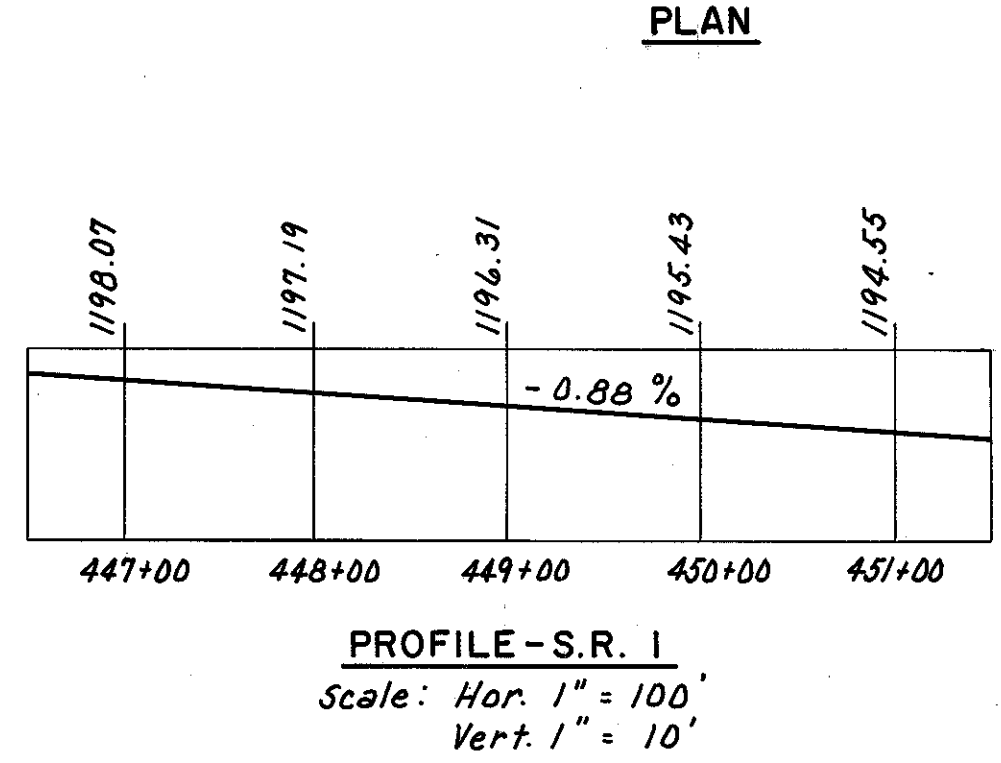
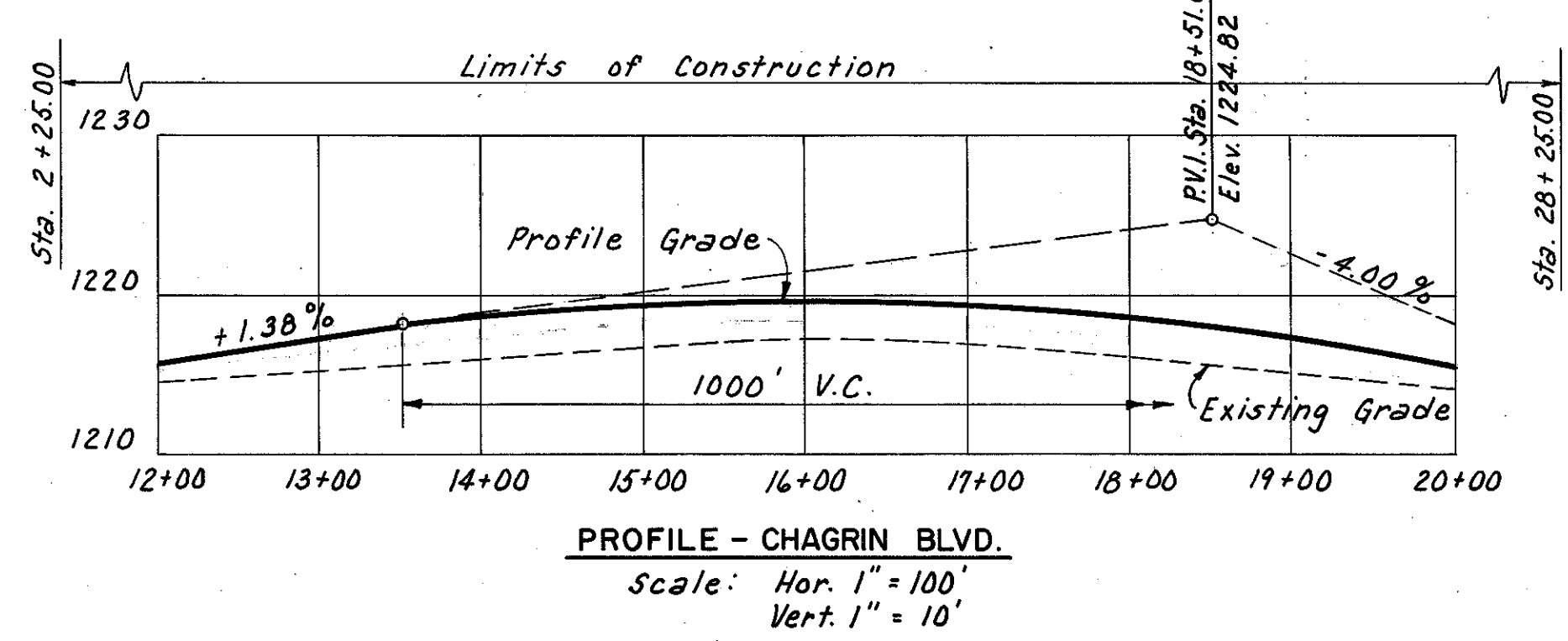
NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
SUPERSTRUCTURE			
BR. NO. CUY-1-0259 R & L			
S.R.1 OVER HARVARD ROAD			
STA. 397 + 99.68			
399 + 52.24			
CUYAHOGA CO.			OHIO
SCALE	As Shown	CHECKED	TJP DATE 7-27-59
MADE	R.A.	DATE	2-11-59
TRACED		DATE	10-4-60
			1040 SHEET 275

CUYAHOGA COUNTY
CUY-1-2.20

MICROFILMED
APR 23 1986



Note "A":
An 8'x8'x1'-0" protective cover of crushed aggregate shall be centered directly under each scupper downspout at piers and shall be so placed as to blend in with the contours of the final construction cross sections and shall be included with "Item I-10, crushed aggregate slope protection" for payment.



BORING LOCATIONS

B-1	Sta. 12+71	30' Lt.
B-2	Sta. 13+54	30' Rt.
B-3	Sta. 14+06	30' Lt.
B-4	Sta. 15+10	30' Rt.
B-5	Sta. 15+62	30' Lt.
B-6	Sta. 16+66	30' Rt.
B-7	Sta. 16+97	30' Lt.

Note: Drive Sample Borings were made at locations B-2 & B-5. Rod soundings only were taken at other locations.

SCUPPER SPACING

(Along Gutter Line)
3'-6" from Brg. Abutments to 1st scupper. Scuppers are Type B spaced at 5'-6" centers. Location of Type B scuppers at Piers 2 & 3 shall be 9'-0" from E Bearing in the direction shown. See sheet 297 for details.

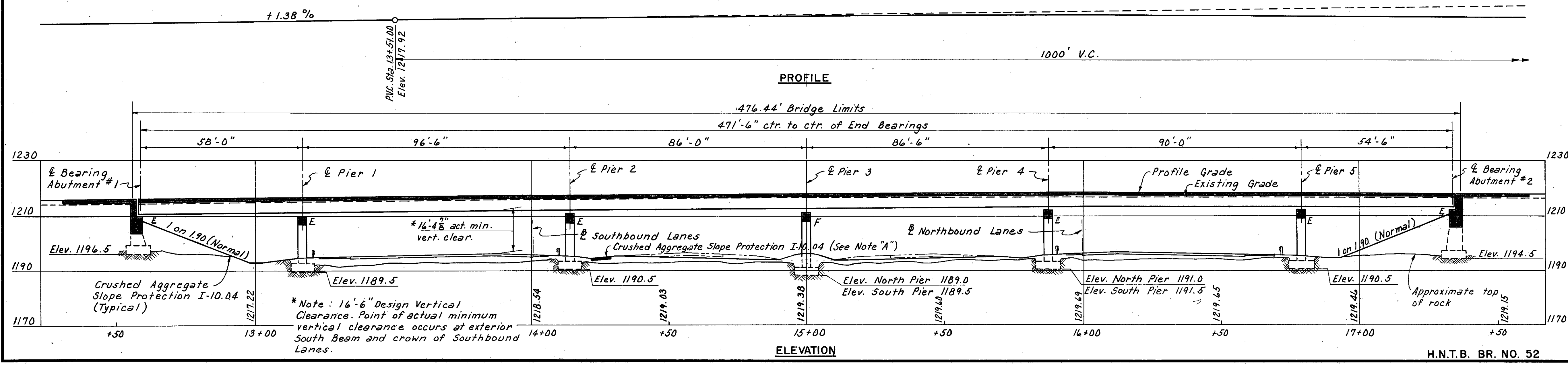
CURVE DATA (S.R. 1)

P.I. Sta. 441+96.64
D = 0° 28' 00" Rt.
Δ = 8° 39' 28"
L = 1855.24'
T = 929.39'
E = 35.13'
R = 12277.67'

Temporary runaround road 130' Rt. of E Chagrin. SEE Sheets 38-40

PROPOSED STRUCTURE	
TYPE: Continuous welded girders with reinforced concrete deck and substructure.	
SPANS: 58'-0", 96'-6", 86'-0", 86'-6", 90'-0" & 54'-6"	
ROADWAY: 2 at 27'-0" with 2'-4" sidewalks and 3'-0" raised median.	
LOAD FREQUENCY: CF 2000 (57)	
SKEW: 24° 19' 00" R.F.	
WEARING SURFACE: 1" Monolithic concrete	
APPROACH SLABS: AS-1-54 (25' long)	
ALIGNMENT: Tangent	

- NOTES:
- The following items are not included in the Bridge Plans (See Roadway Plans for details):
 - a. Approach grading, pavement and slab.
 - b. Roadway Guard Rail.
 - c. Relocation or removal of existing utilities
 - Footings shall extend a minimum of 3" into solid rock (or firm shale) or to the elevation shown, whichever is lower. Final bottom of footing elevation shall be determined by the Engineer.
 - Top of rock shown in "Elevation" is determined by interpolation and is approximate only.



NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
SITE PLAN			
BR. NO. CUY-1-0353 S.R. 1 UNDER CHAGRIN BLVD. STA. 448 + 65.21			
CUYAHOGA CO.		OHIO	
SCALE 1" = 20' Except as noted		CHECKED ARL DATE 3-18-60	
MADE D.R.K. DATE 5-20-59		REVIEWED BC DATE 10-4-60	
TRACED A.E.K. DATE 10-12-59		1040 SHEET 276	

H.N.T.B. BR. NO. 52

MICROFILMED
APR 23 1986

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

277
313

CUYAHOGA COUNTY
CUY-1-2.20

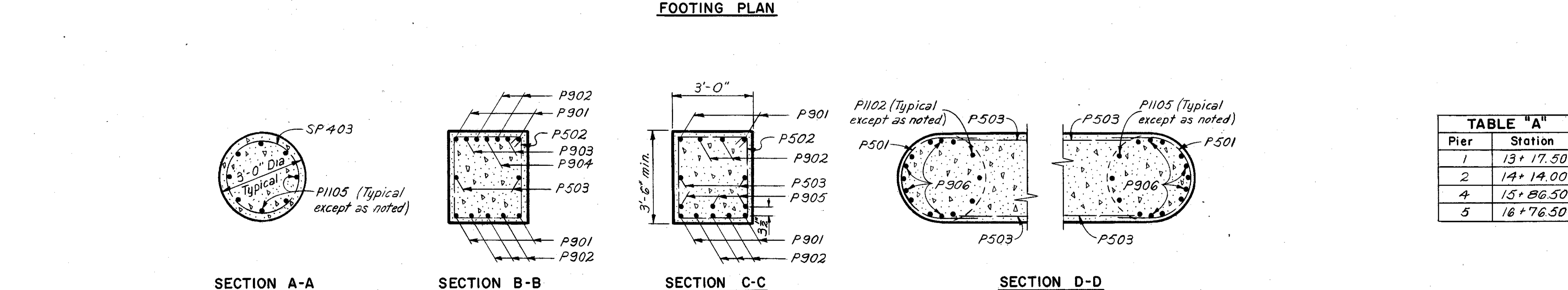
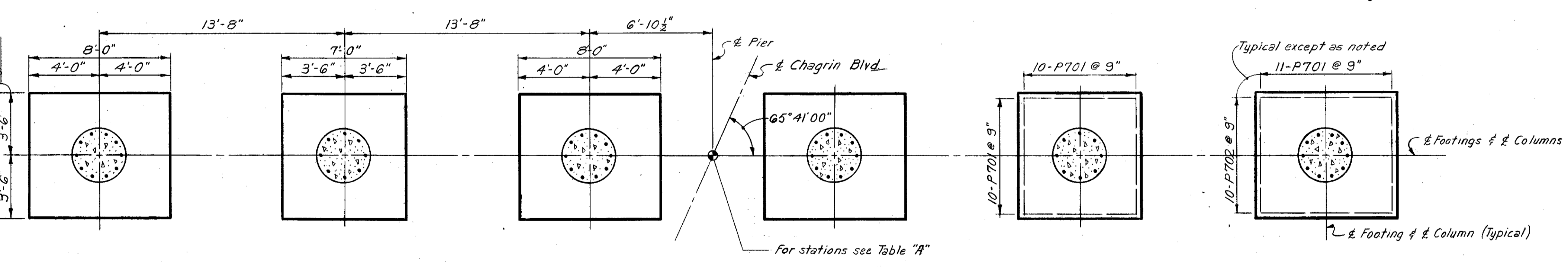
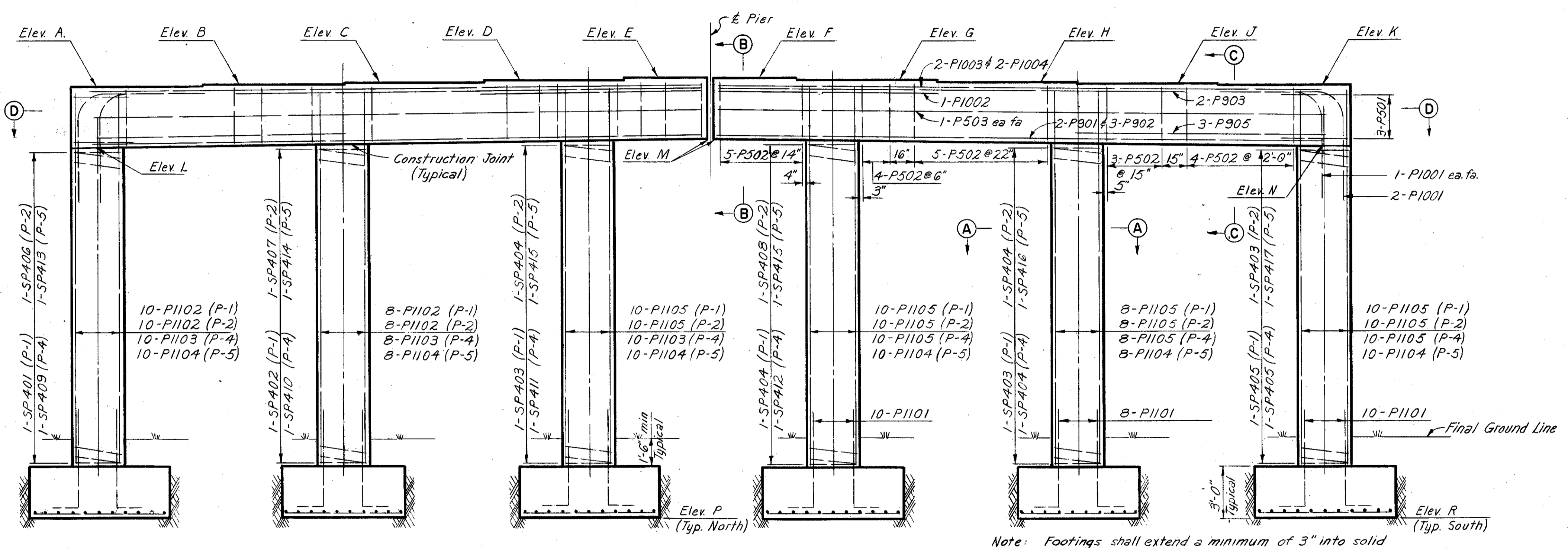
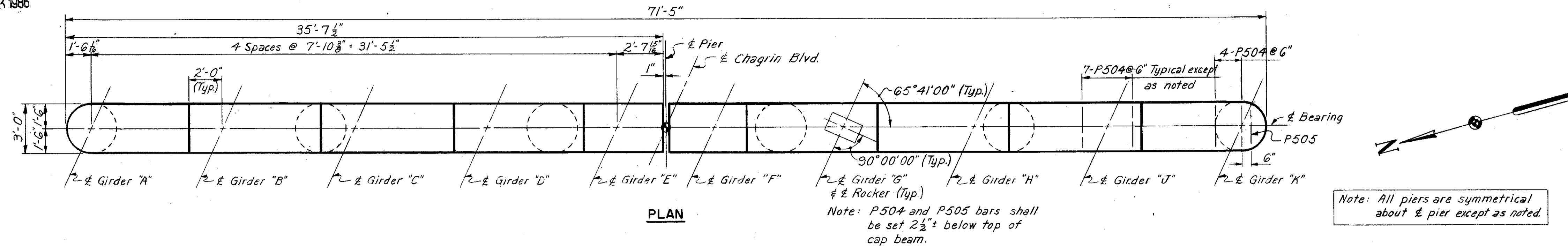


TABLE "A"

Pier	Station
1	13+17.50
2	14+14.00
4	15+86.50
5	16+76.50

ELEVATIONS

	A	B	C	D	E	F	G	H
Pier 1	1210.44	1210.60	1210.76	1210.91	1211.07	1211.10	1211.03	1210.97
Pier 2	1211.71	1211.86	1212.01	1212.15	1212.30	1212.32	1212.24	1212.16
Pier 4	1212.84	1212.95	1213.07	1213.19	1213.30	1213.31	1213.20	1213.09
Pier 5	1212.89	1212.99	1213.10	1213.20	1213.30	1213.29	1213.17	1213.04

	J	K	L	M	N	P	R
Pier 1	1210.90	1210.83	1206.84	1207.51	1207.28	1189.5	1189.5
Pier 2	1212.08	1212.00	1207.10	1208.73	1208.45	1190.5	1190.5
Pier 4	1212.98	1212.87	1209.25	1209.75	1209.29	1191.0	1191.5
Pier 5	1212.91	1212.79	1209.32	1209.76	1209.20	1190.5	1190.5

SPIRAL REINFORCEMENT SCHEDULE *

Mark	No.	Core Dia.	% Spiral	Length	Pitch	No. of Turns	Weight
SP401	1	2'-8"		14'-4"	4 1/2"	41	265
SP402	1			14'-7"		42	271
SP403	3			14'-10"		43	831
SP404	4			14'-11"		43	1112
SP405	2			14'-9"		42	542
SP406	1			14'-6"		42	270
SP407	1			14'-8"		42	271
SP408	1			15'-1"		43	278
SP409	1			15'-3"		44	283
SP410	1			15'-5"		44	284
SP411	1			15'-8"		45	291
SP412	1			15'-2"		43	278
SP413	1			15'-10"		45	291
SP414	1			16'-0"		46	297
SP415	2			16'-2"		46	594
SP416	1			15'-11"		46	296
SP417	1	2'-8"		15'-9"	4 1/2"	45	291
SP418	2	3'-2"		16'-10"	4"	54	800
SP419	1			17'-1"		54	400
SP420	1			17'-4"		55	408
SP421	1			16'-8"		53	393
SP422	1	3'-2"		16'-7"	4"	53	393
							Total Weight = 9,139 lbs.

* For Pier Nos. 1 through 5

NOTES:
Reinforcement bars shall be 3 inches clear from face of concrete at bottom of footing and 2 inches elsewhere, except as noted.
For Spiral Reinforcement Note see sheet 273.
For Reinforcement Schedule see sheet 278.
For Rocker details see Ohio Standard Drawing RB-1-55

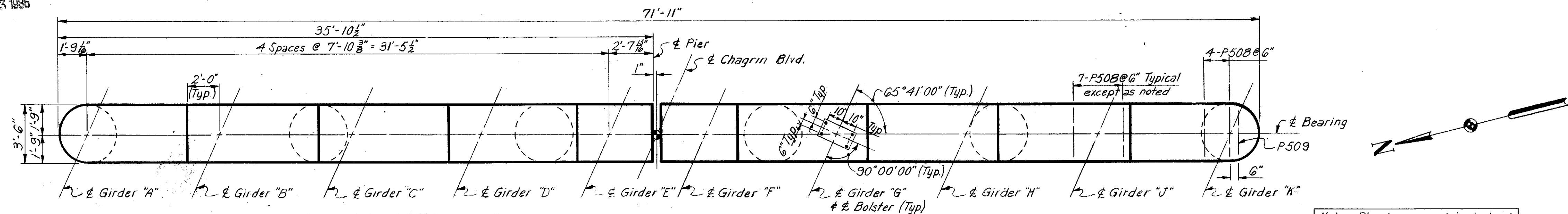
NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
PIERS 1, 2, 4 & 5 BR. NO. CUY-1-0353 S.R. 1 UNDER CHAGRIN BLVD. STA. 448 + 65.21			
CUYAHOGA CO. OHIO			
SCALE 1/4" = 1'-0" & 3/8" = 1'-0"		CHECKED R.J.	DATE 9-3-59
MADE CMB	DATE 5-4-59	REVIEWED BC	DATE 10-4-60
TRACED	DATE	1040 SHEET 277	

H.N.T.B. BR. NO. 52

MICROFILMED
APR 23 1986

FED. RD. DIVISION	STATE	PROJECT	278 313
2	OHIO		

CUYAHOGA COUNTY
CUY-1-2.20

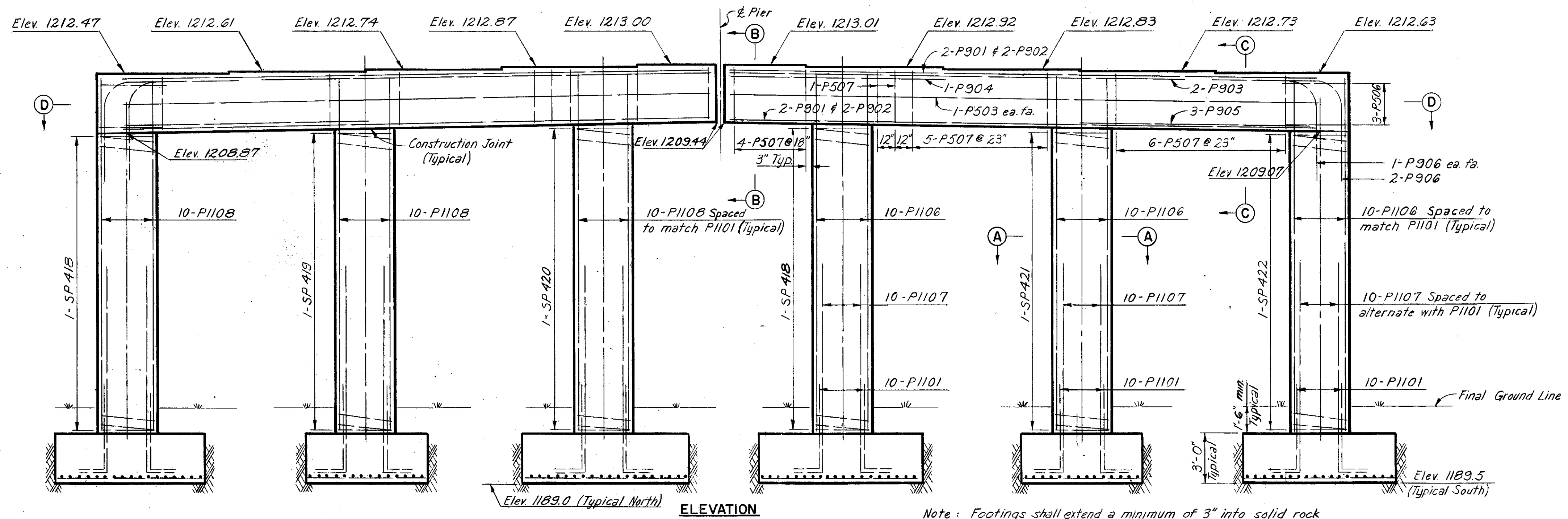


Note: P508 and P509 bars shall be set 2 1/2" below top of cap beam.

PLAN

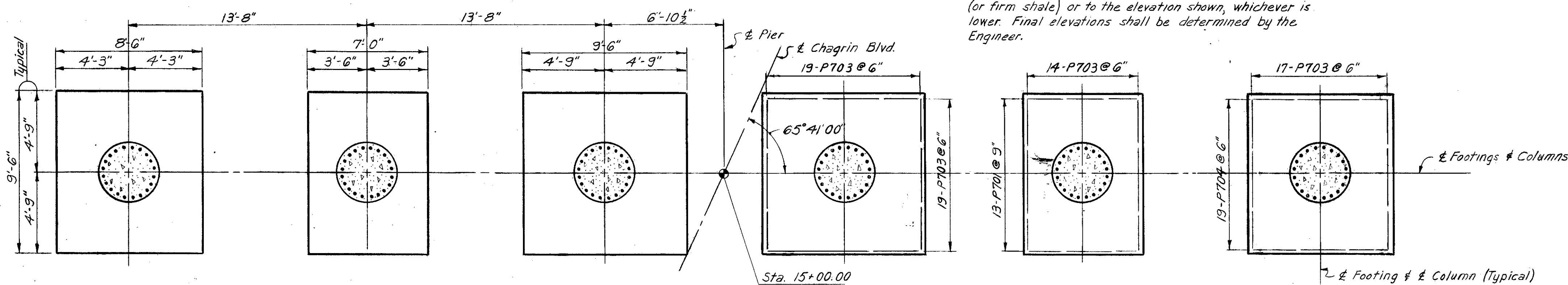
Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bolt setting.

Note: Pier is symmetrical about centerline except as noted.

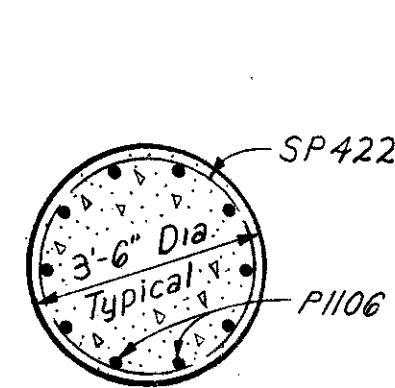


ELEVATION

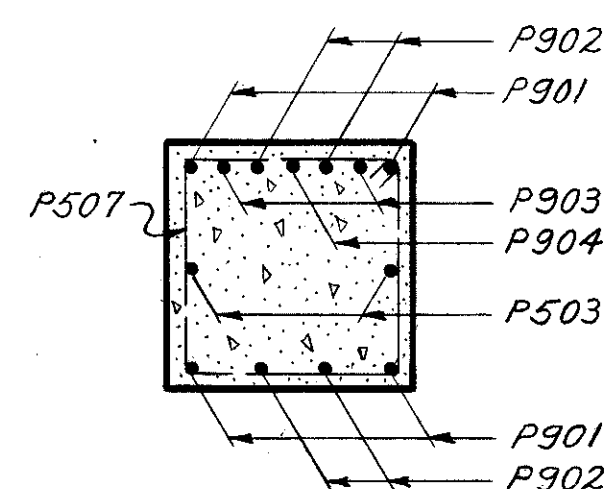
Note: Footings shall extend a minimum of 3" into solid rock (or firm shale) or to the elevation shown, whichever is lower. Final elevations shall be determined by the Engineer.



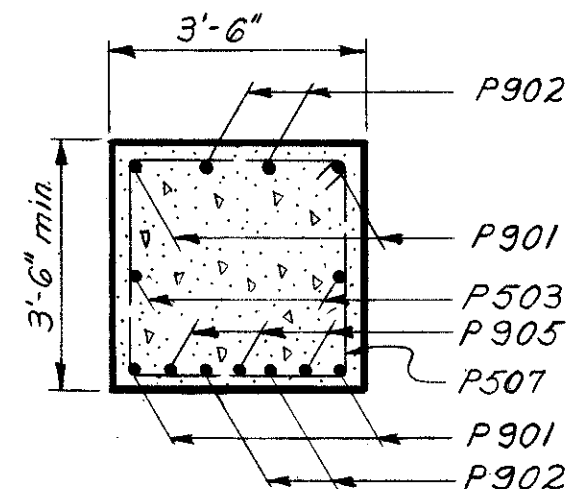
FOOTING PLAN



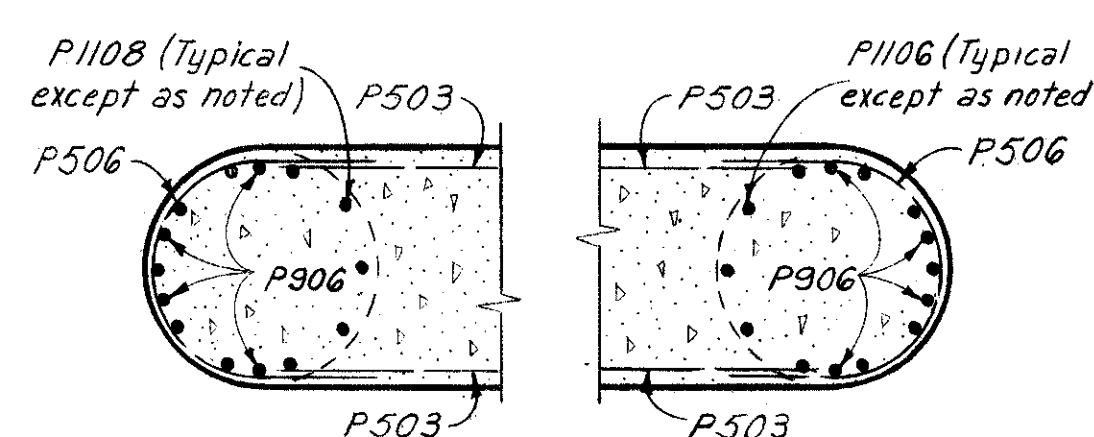
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

REINFORCEMENT SCHEDULE *					BENDING DIAGRAMS
Mark	No.	Length	Weight	Shape	
P501	24	7'-4"	183	B	
P502	160	12'-1"	2117	B	
P503	20	34'-0"	709	S	
P504	256	5'-7"	1490	B	
P505	8	5'-5"	45	B	
P506	6	8'-0"	51	B	
P507	34	13'-1"	464	B	
P508	64	6'-1"	406	B	
P509	2	5'-11"	12	B	
P701	362	6'-6"	4810	S	
P702	160	7'-6"	2453	S	
P703	138	9'-0"	2539	S	
P704	38	8'-0"	621	S	
P901	24	34'-0"	2774	S	
P902	32	34'-9"	3781	S	
P903	20	26'-3"	1785	S	
P904	2	12'-6"	85	S	
P905	30	13'-9"	1403	S	
P906	8	10'-11"	297	B	
P1101	284	7'-4"	11065	B	
P1102	36	17'-9"	3395	S	
P1103	28	18'-6"	2752	S	
P1104	56	19'-0"	5653	S	
P1105	104	18'-0"	9946	S	
P1106	30	19'-9"	3148	S	
P1107	60	12'-4"	3932	B	
P1108	30	20'-3"	3228	B	
P1001	32	10'-11"	1504	B	
P1002	8	12'-6"	430	S	
P1003	16	34'-0"	2341	S	
P1004	16	34'-9"	2392	S	
Total Weight =				75,811 lbs.	

* For Pier Nos. 1 through 5

NOTES:
Reinforcement bars shall be 3 inches clear from face of concrete at bottom of footing and 2 inches elsewhere, except as noted.
All bar dimensions are given out to out.
For Spiral Reinforcement Schedule see sheet 277
For Replacement Schedule see sheet 280
For Bolster details see Ohio Standard Drawing RB-1-55
For Spiral Reinforcement Note see sheet 273

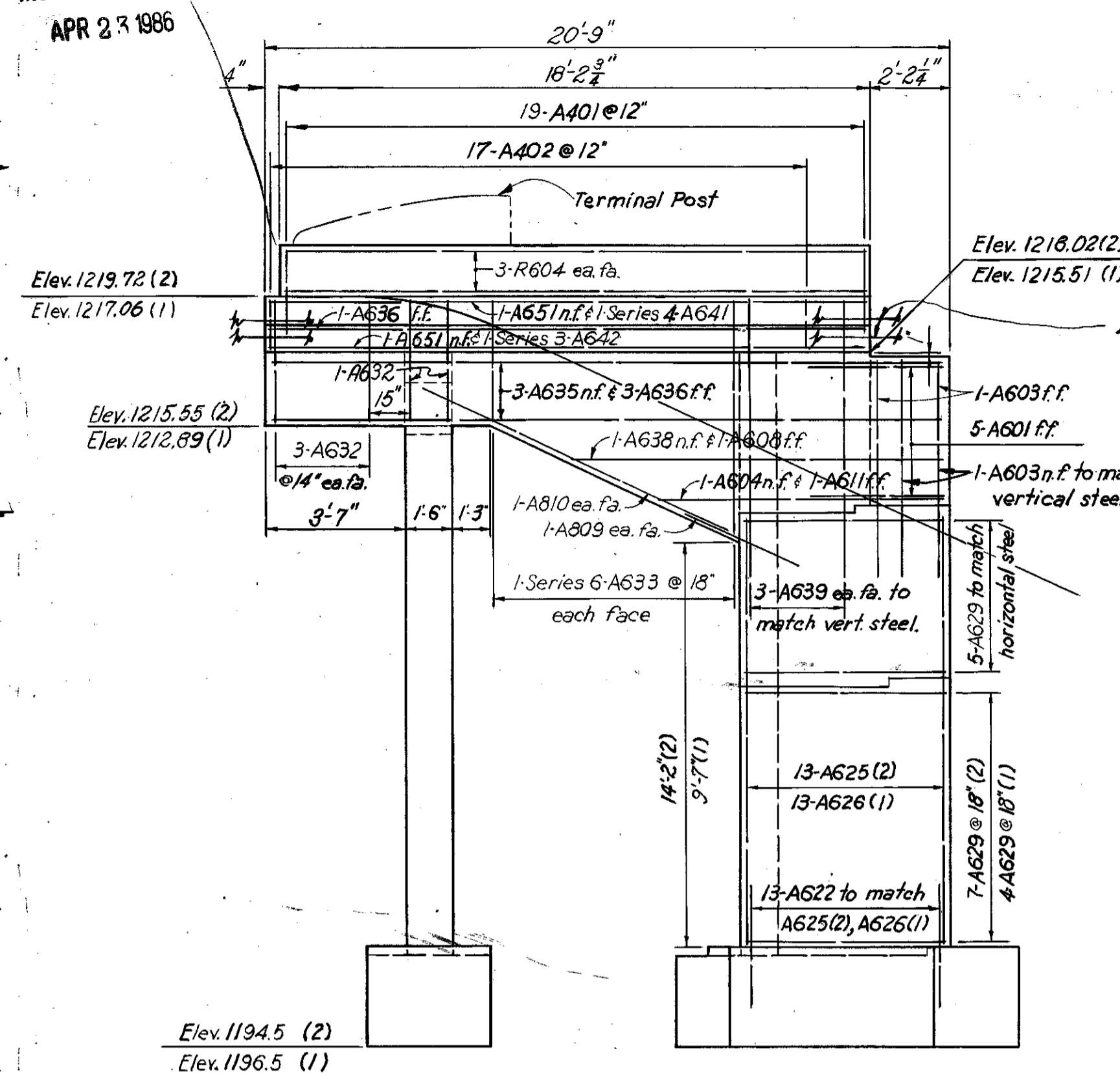
NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
PIER 3			
BR. NO. CUY-1-0353 S.R. 1 UNDER CHAGRIN BLVD. STA. 448 + 65.21			
CUYAHOGA CO.			
SCALE 1/4" = 1'-0" & 3/8" = 1'-0"	CHECKED	DATE	
MADE CKB	DATE 5-11-59	REVIEWED BC	DATE 10-4-60
TRACED	DATE	1040	278

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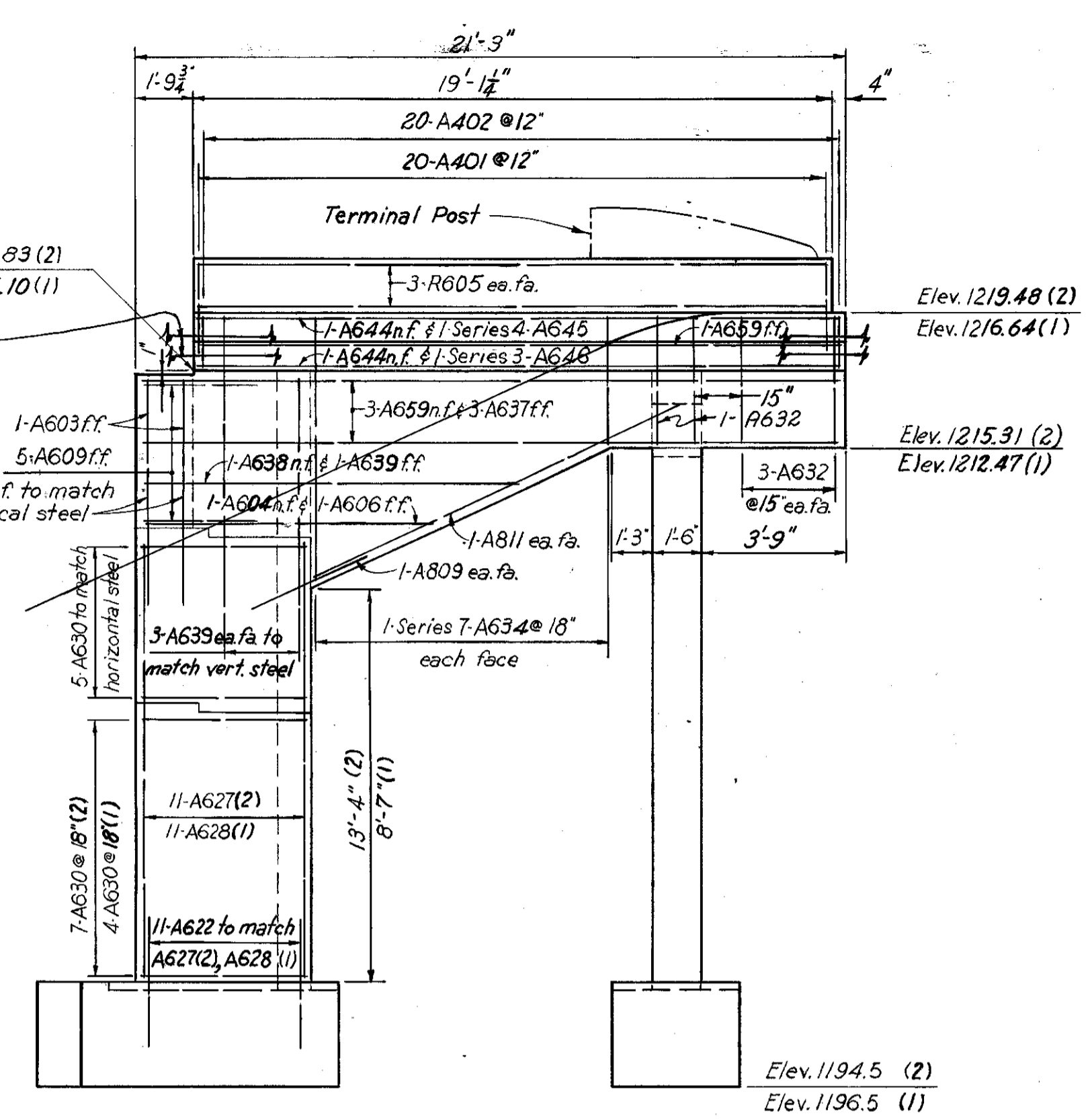


ELEVATION A-A

Note:
Backfill shall be completed
prior to construction of sidewalk.
Type 'C' Railing not shown.

Expansion coupling for
O.B.T. conduit.

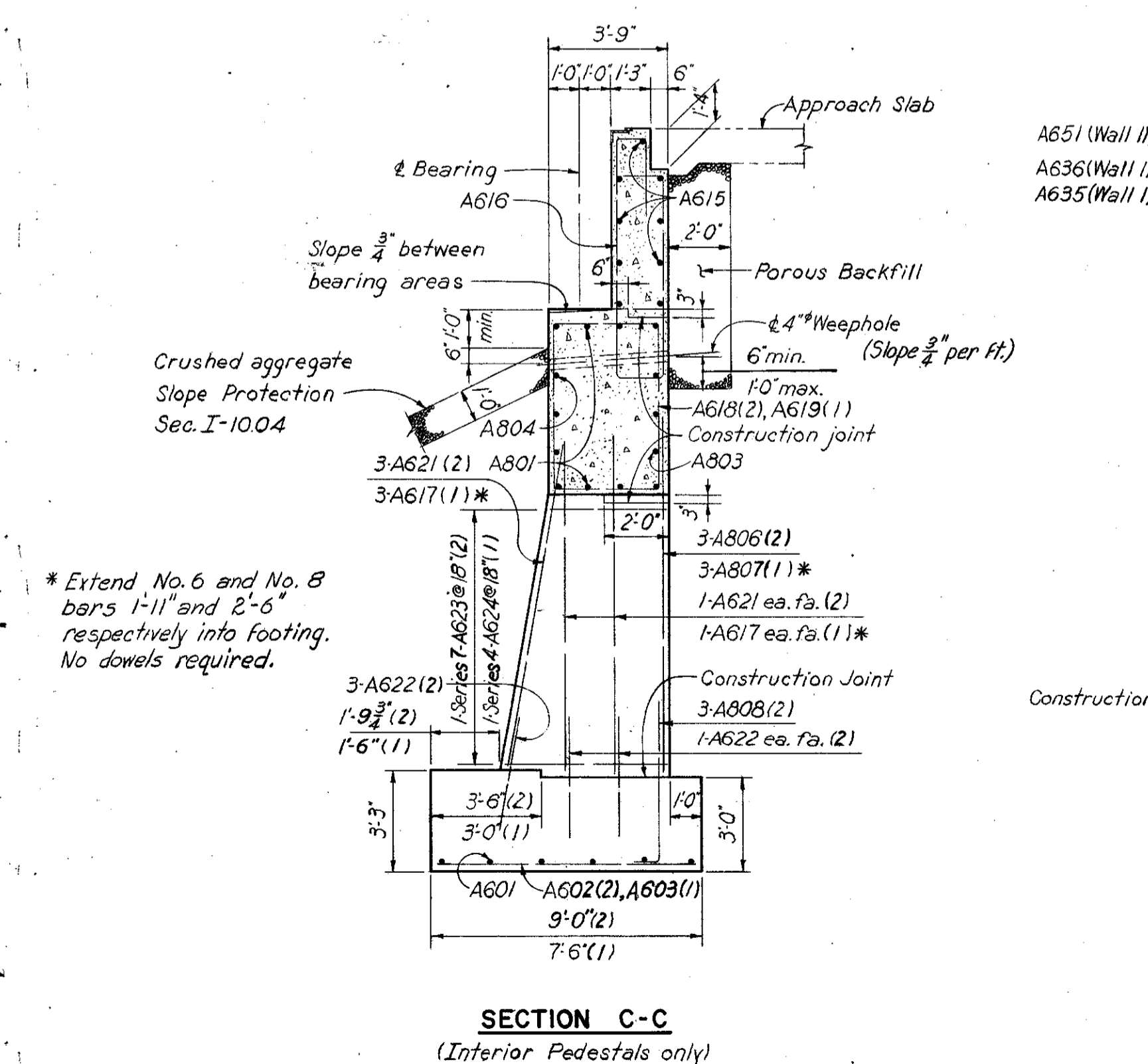
Note:
For Wingwall Counterfort
reinforcement, see Section D-D.



ELEVATION B-B

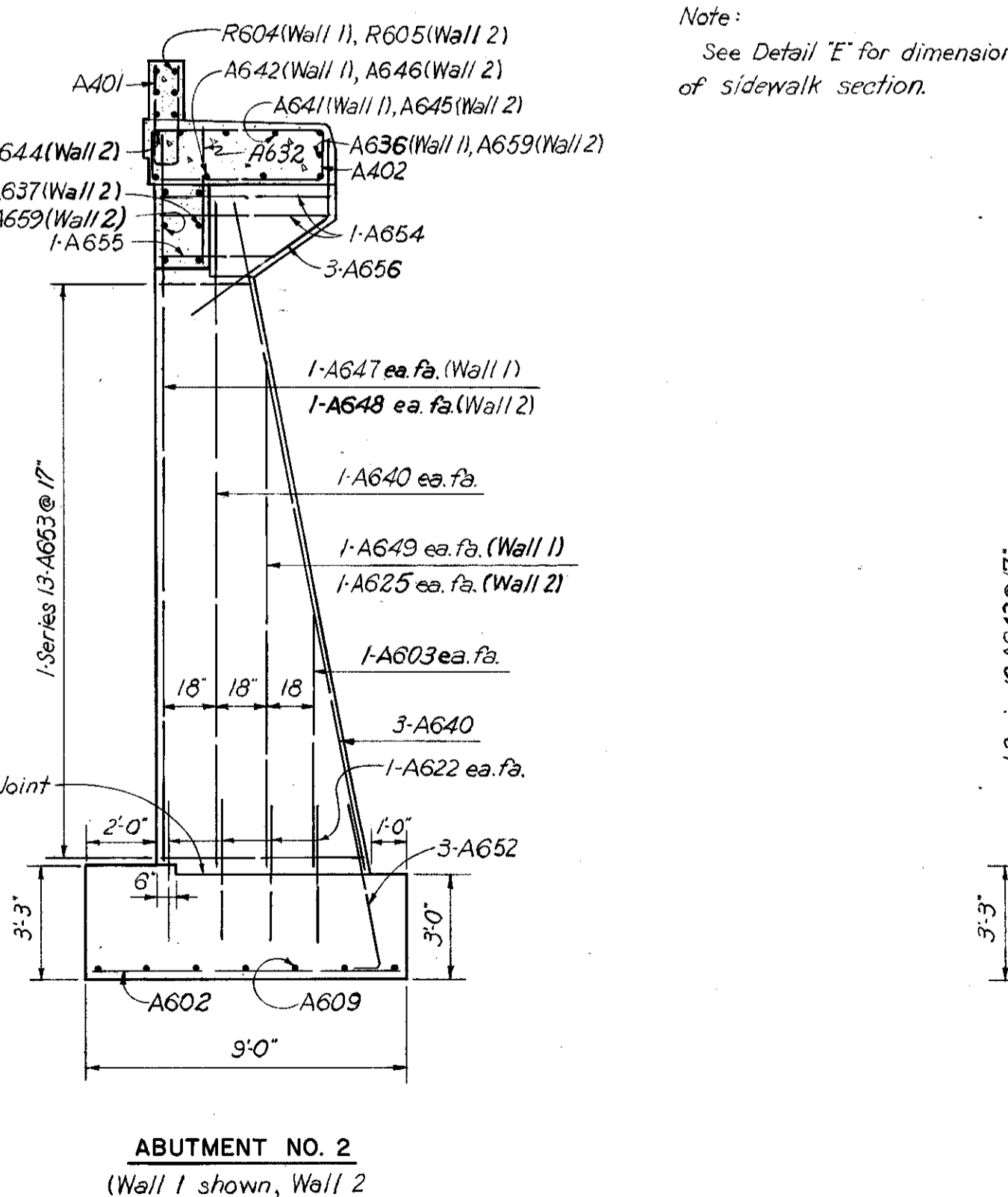
REPLACEMENT REINFORCEMENT SCHEDULE			
Size	No.	Length	Shape
4	3	5'-3"	S
5	19	5'-9"	S
6	58	6'-0"	S
7	2	6'-3"	S
8	2	6'-6"	S
9	1	7'-0"	S
10	6	7'-3"	S
11	14	7'-6"	S

Replacement bars are listed for
the entire contract.



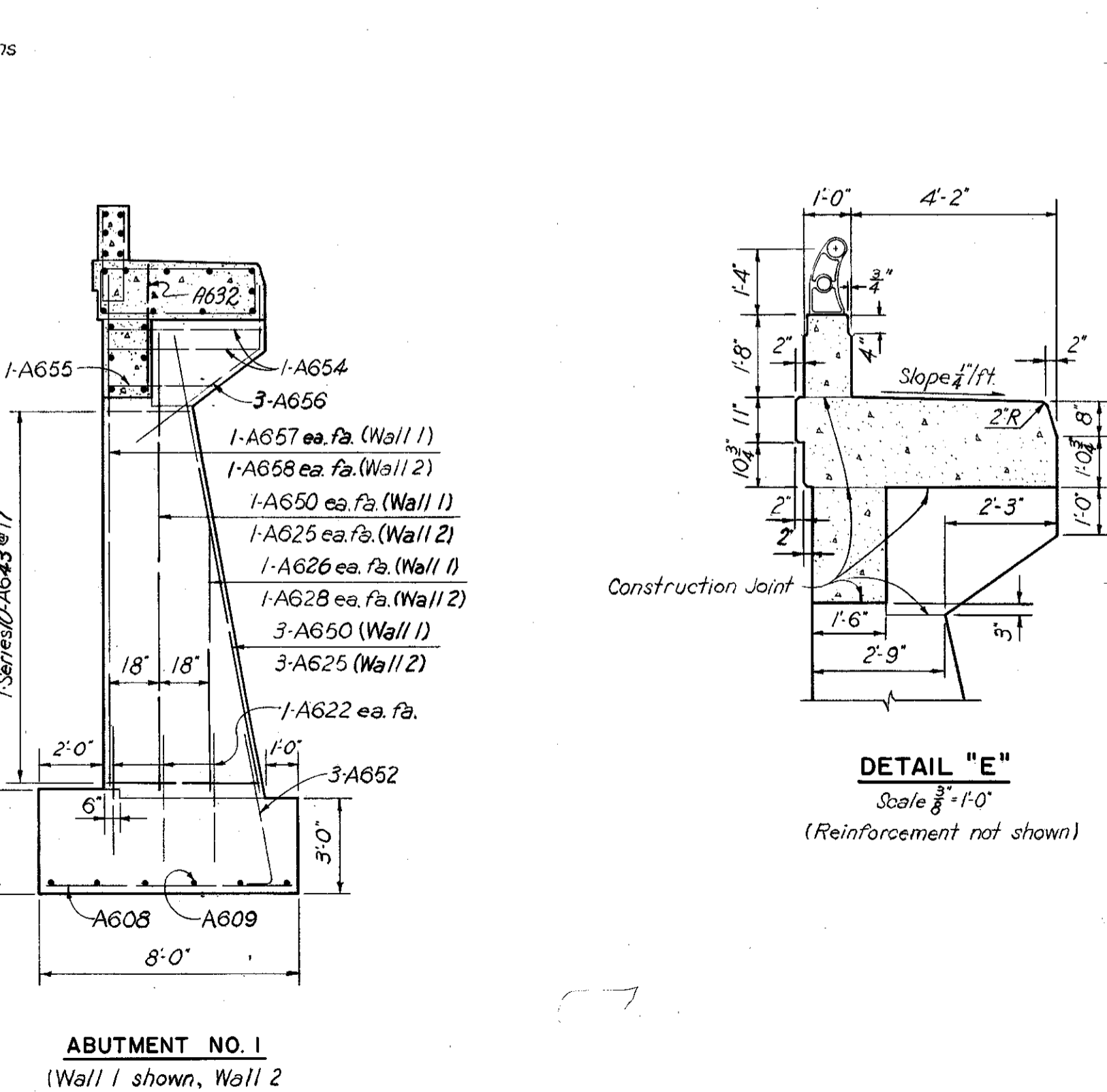
SECTION C-C
(Interior Pedestals only)

* Extend No. 6 and No. 8
bars 1'-11" and 2'-6"
respectively into footing.
No dowels required.

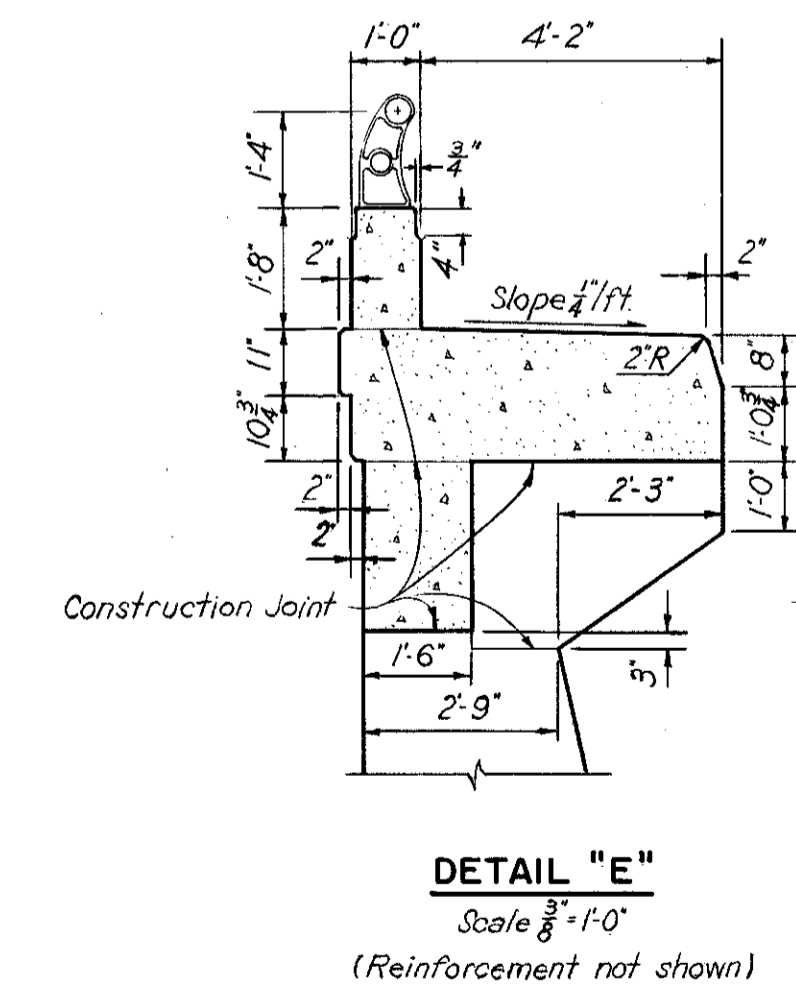


SECTION D-D

Note:
See Detail 'E' for dimensions
of sidewalk section.



ABUTMENT NO. 1
(Wall 1 shown, Wall 2
similar except as noted)



DETAIL "E"
Scale 3/8" = 1'-0"
(Reinforcement not shown)

Note: All chamfers
to be 3/8"

NOTES:
For additional notes see sheet 279.

Revised 5-31-61.

NO.	DATE	REVISION	BY

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

ABUTMENT DETAILS
BR. NO. CUY-1-0353
S.R. 1 UNDER CHAGRIN BLVD.
STA. 448 + 65.21

CUYAHOGA CO. OHIO

SCALE 3/8" = 1'-0" Except as noted
MADE TJP DATE 5-20-59
TRACED DATE

CHECKED F.S.J. DATE 6-15-59
REVIEWED BC DATE 10-4-60

H.N.T.B. BR. NO. 52 1040 SHEET 280

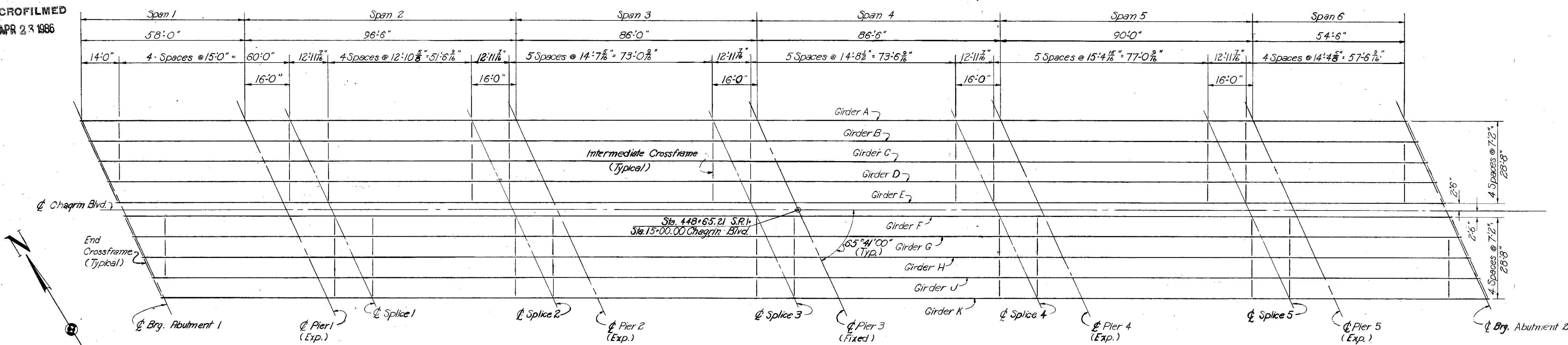
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APR 23 1986

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

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313

CUYAHOGA COUNTY
CUY-1-2.20

REINFORCEMENT SCHEDULE					
Mark	No.	Length	Ser. Inc.	Total Weight	Shape
S401	942	8'-2"		3,147	B
S402	946	3'-11"		2,479	B
S403	996	4'-11"		3,276	B
S404	4	8'-7"		23	B
S501	1832	34'-5"		65,763	B
S502	2 Series of 26	5'-7 1/2 to 33'-4"	1'-1 1/2"	1,055	B
S503	2 Series of 25	5'-7 1/2 to 32'	1'-1 1/2"	989	B
S504	12	5'-7"		70	B
S505	4	37'-5"		156	B
S601	1832	33'-3"		91,493	Str.
S602	2 Series of 26	5'-0 to 32'-9"	1'-1 1/2"	1,474	Str.
S603	2 Series of 25	5'-0 to 31'-5"	1'-1 1/2"	1,380	Str.
S604	1768	38'-3"		101,574	Str.
S605	270	32'-0"		12,977	Str.
S606	12	5'-0"		90	Str.
Total				287,948	LBS.

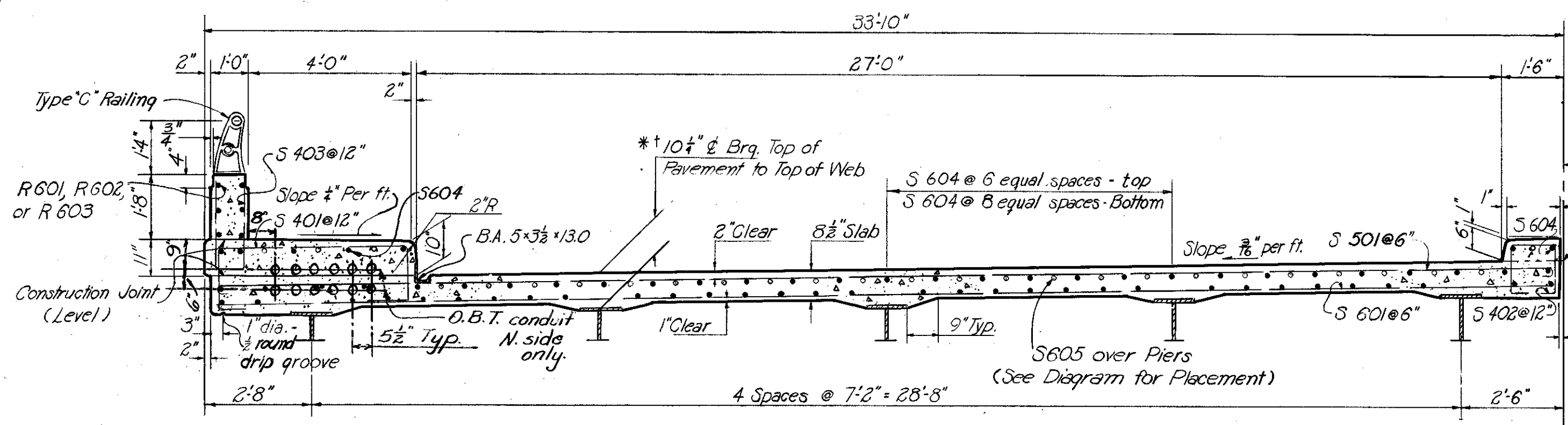


Note:
Crossframe spacing is shown for North Roadway, South Roadway similar.

FRAMING PLAN
No Scale

Note:
Longitudinal steel in the parapet, (bars R601, R602, and R603) is not shown in this schedule. It is included for payment with Item S-14, Type C Railing and is shown on sheet 298.

† This is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the top flange of the girder may not have the exact camber or conformation required to place it parallel to the finished grade.

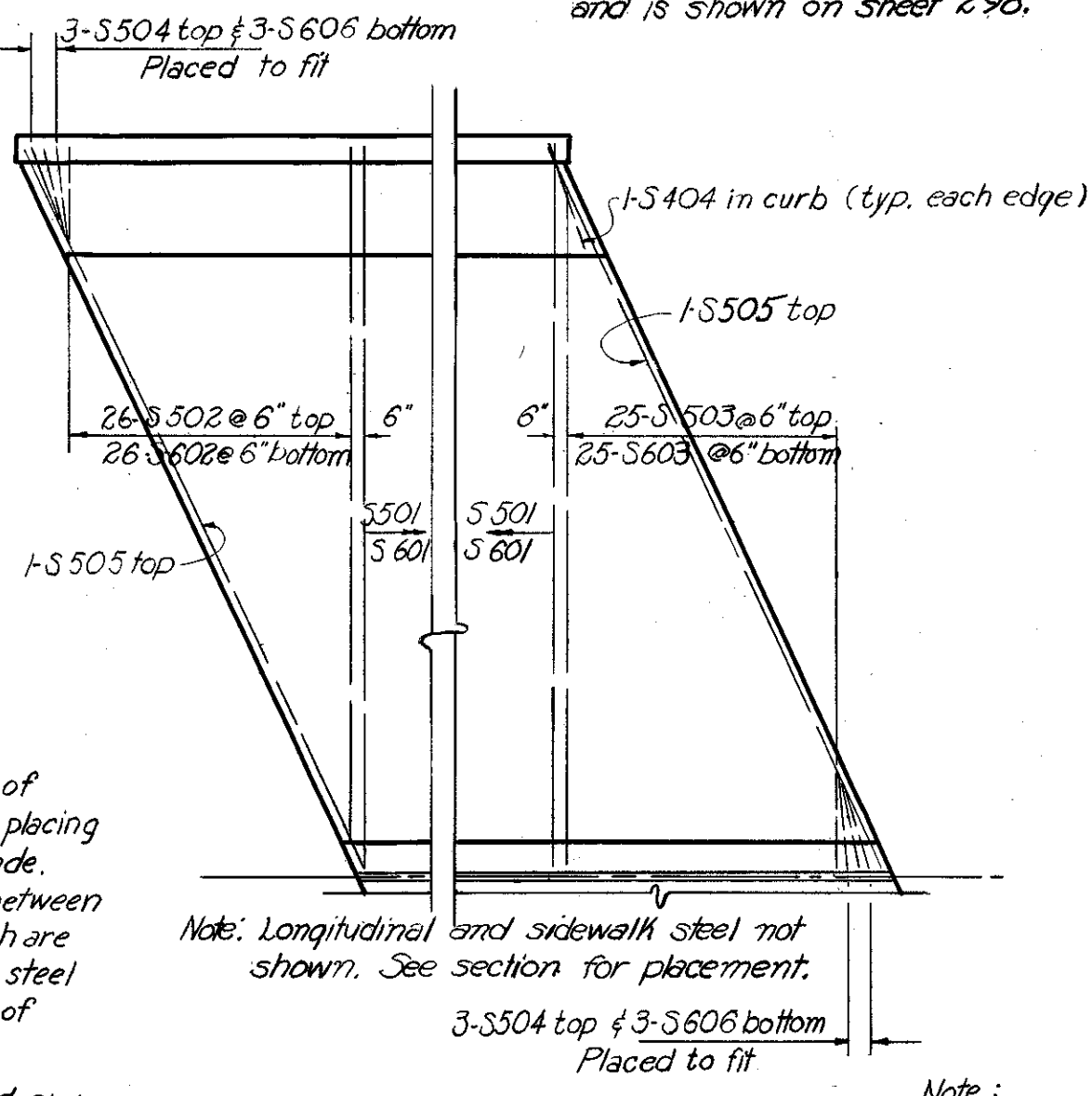


*Note:
At girders A and K this distance at Bearing is measured from extended top of pavement to top of Web.

TYPICAL CROSS SECTION
Scale: 3/8" = 1'-0"

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

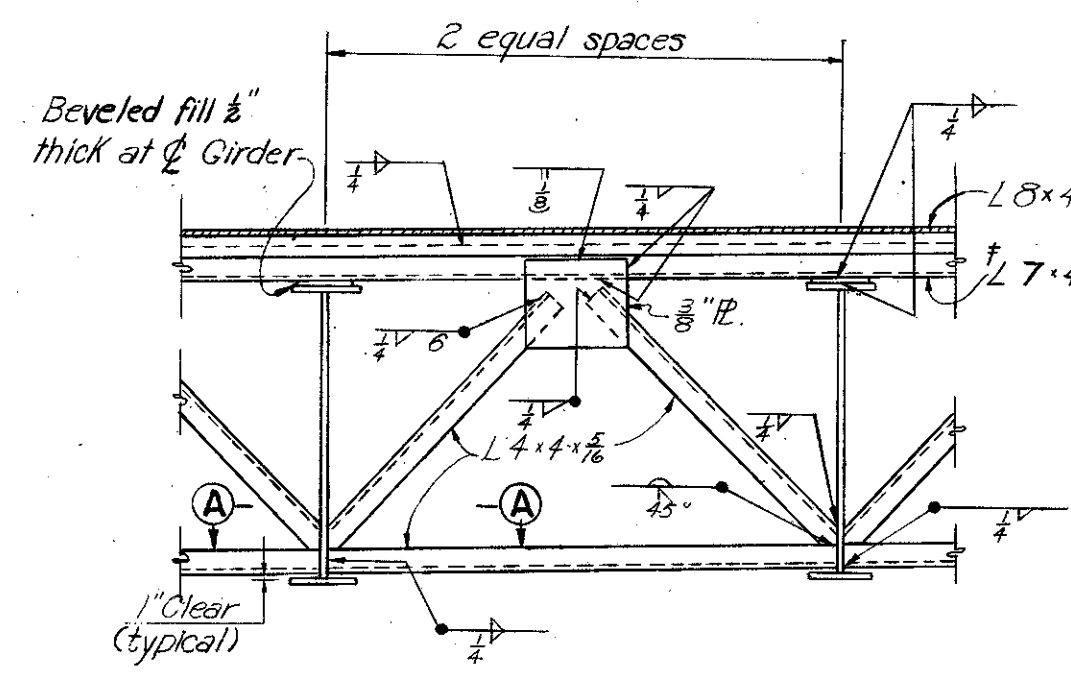
Note:
In order to facilitate water curing of the concrete of the deck slab, the placing of concrete shall progress up grade. The slab may be placed in sections, between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.



PART SLAB PLAN
No Scale

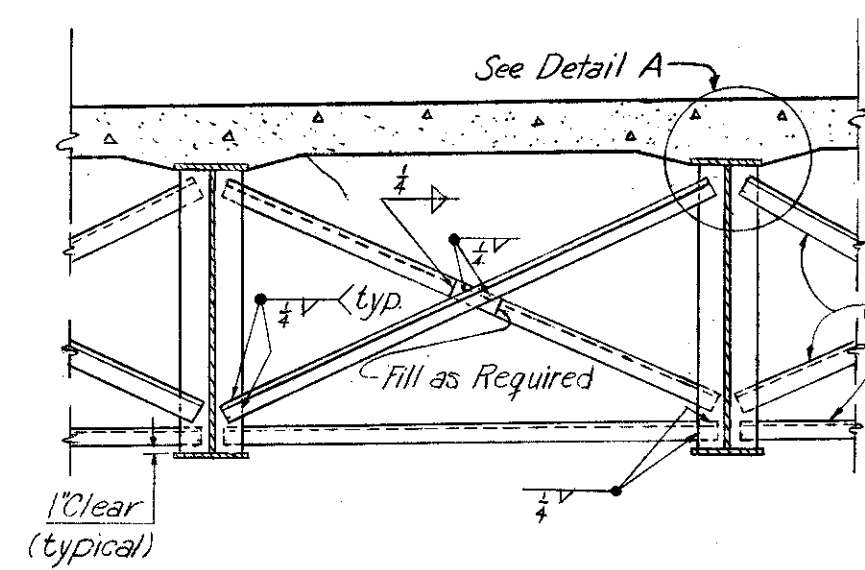
Note:
After erection and after the shop coat has been cleaned and, where necessary, repainted in accordance with Sec. 8.04, an additional coat of the same paint as used in the shop shall be applied over the outside face of the outside steel girders as well as all sides of the bottom flange.

NOTES:
 For top of pavement elevations and deflections see sheet 283
 For girder details see sheet 282
 For railing post and parapet joint spacing see sheet 298
 For placement of 2" std. pipe drain at end of B.A. gutter at the Abutments. see Ohio Standard Drawing C.S.B.-2-56, sheet 2 of 6.
 For details of scuppers and bulb angle gutter support, see sheet 297
 For location of Scuppers see sheet 276
 For details of Railing see Ohio Standard Drawing AR-1-57.
 For details of end dams at sidewalks and median see sheet 297
 For details of roadway end dam see Ohio Standard Drawing CSB-2-56, sheet 2 of 6.
 Revised 5-31-61.

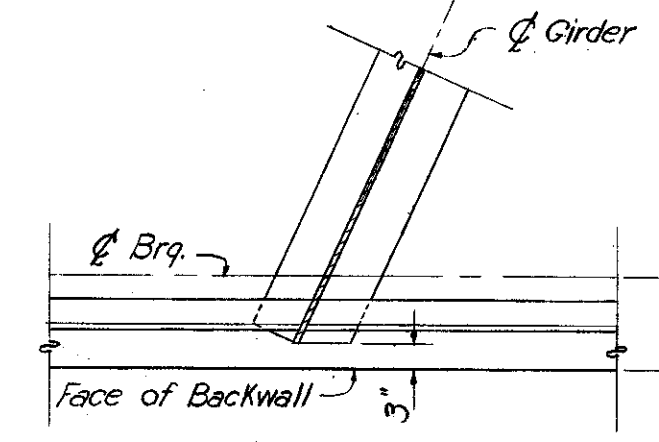


TYPICAL END CROSSFRAME
Scale: 3/8" = 1'-0"

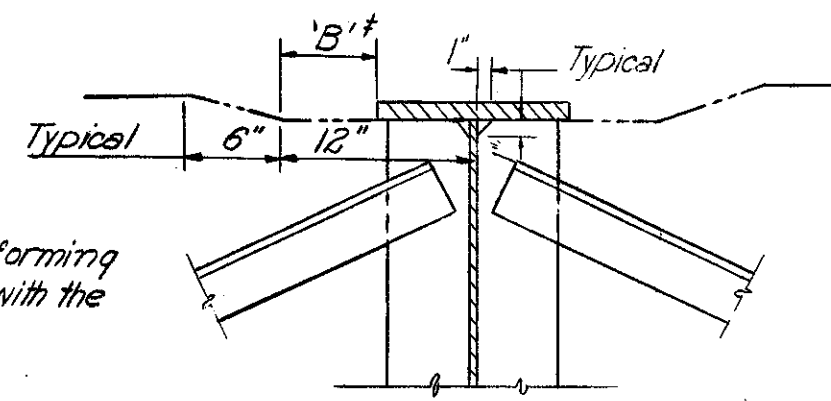
†Note:
The supporting angle shown in the Roadway End Dam Data Table on Sbl. Drwg. CSB-2-56, sheet 2 of 6 shall be increased from 6x4x3/8 to 7x4x3/8.



TYPICAL INTERMEDIATE CROSSFRAME
Scale: 3/8" = 1'-0"



SECTION A-A
No Scale



DETAIL A
Scale: 1" = 1'-0"

Note:
To facilitate forming 'B' shall vary with the flange width.

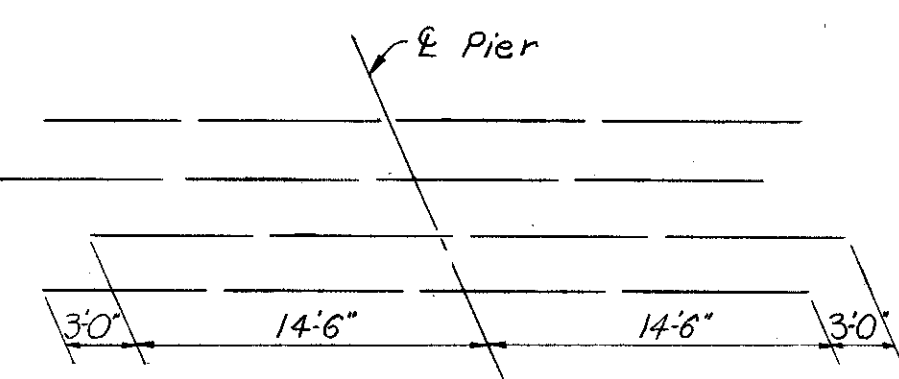
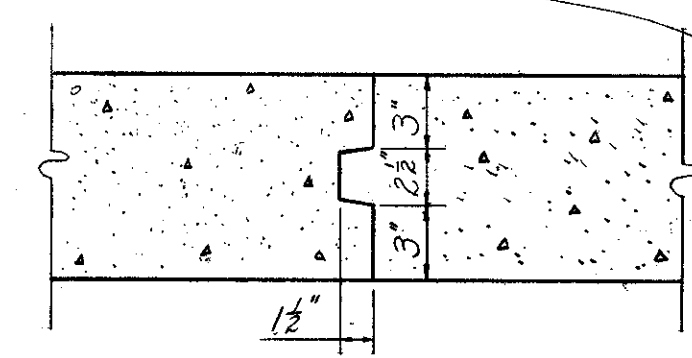
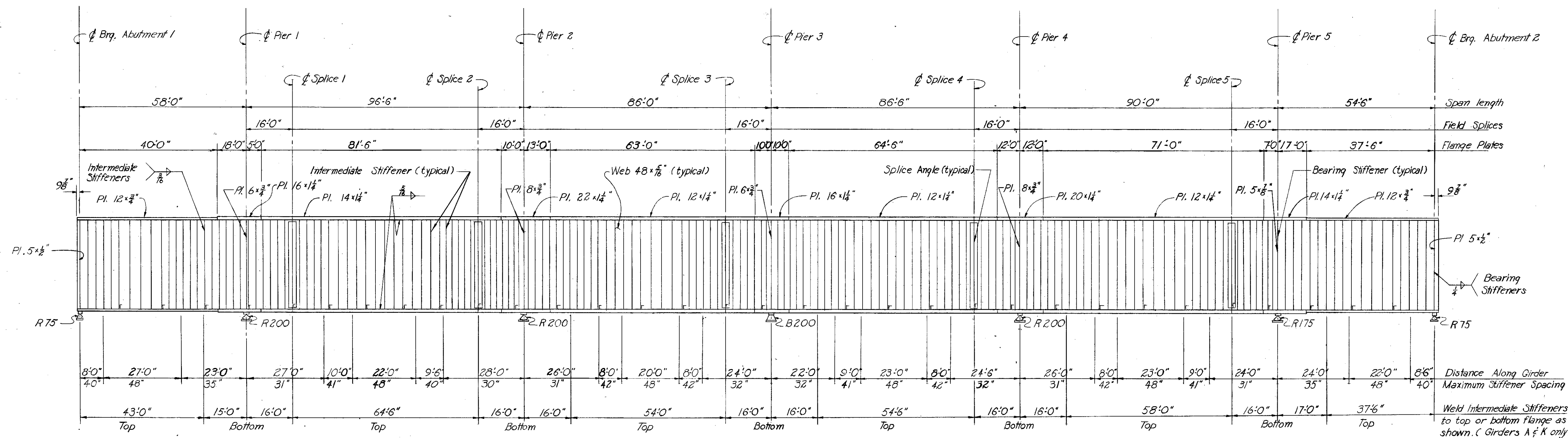


DIAGRAM SHOWING STAGGER OF S605 OVER PIERS.
No Scale



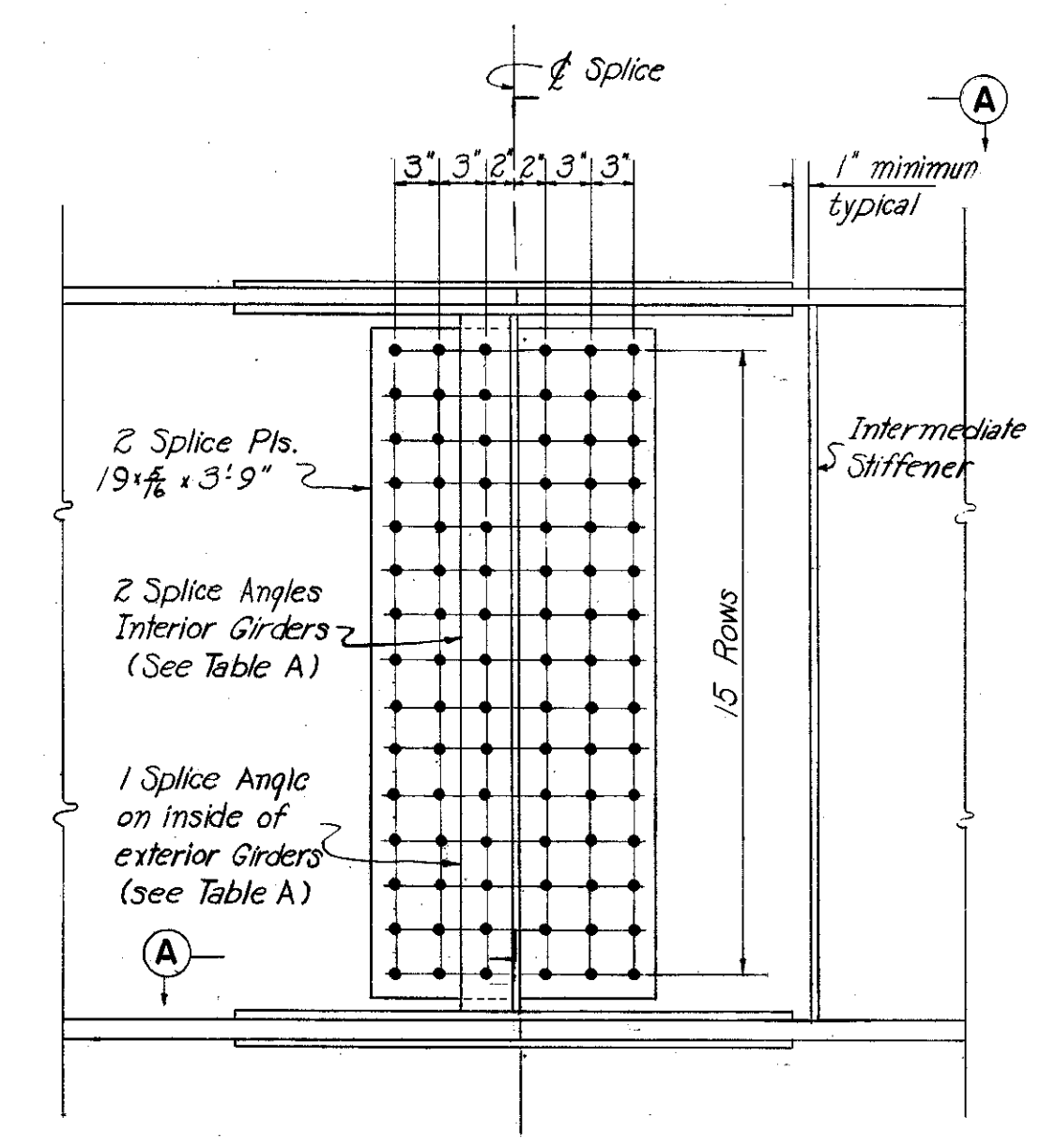
OPTIONAL CONSTRUCTION JOINT
Scale: 1 1/2" = 1'-0"

NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
SUPERSTRUCTURE			
BR. NO. CUY - 1 - 0353 S.R. 1 UNDER CHAGRIN BLVD. STA. 448 + 65.21			
CUYAHOGA CO. OHIO			
SCALE As Noted	DATE 5-13-59	CHECKED T.U.P.	DATE 7-30-59
MADE C.A.B.	DATE 5-13-59	REVIEWED BC	DATE 7-30-59
TRACED	DATE	DATE	DATE

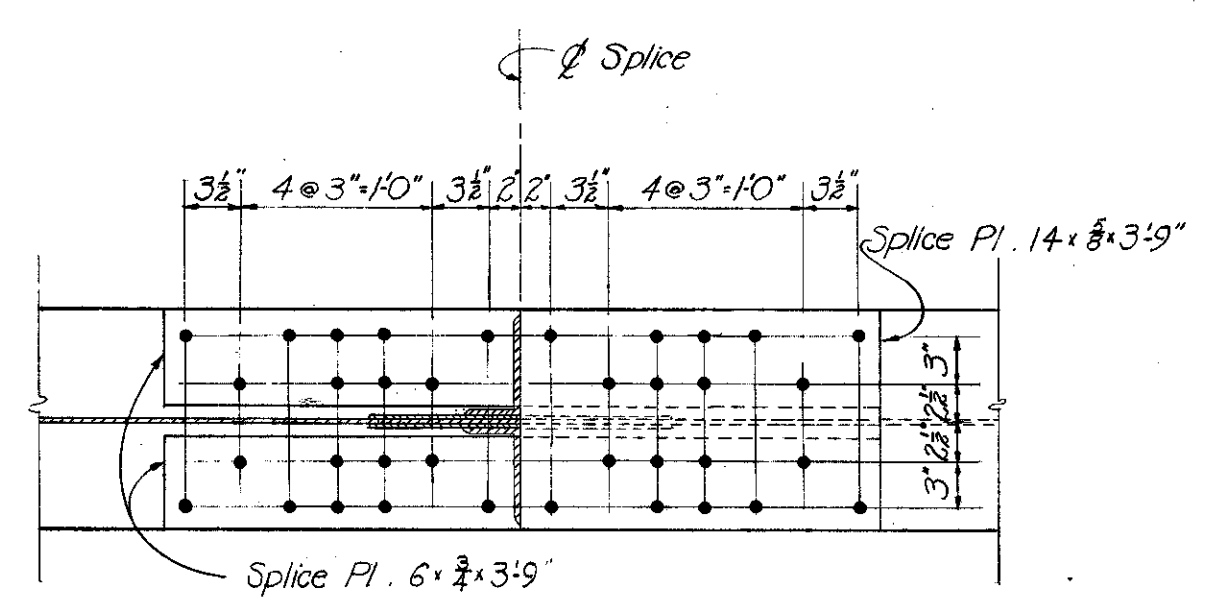


TYPICAL GIRDER ELEVATION
No scale

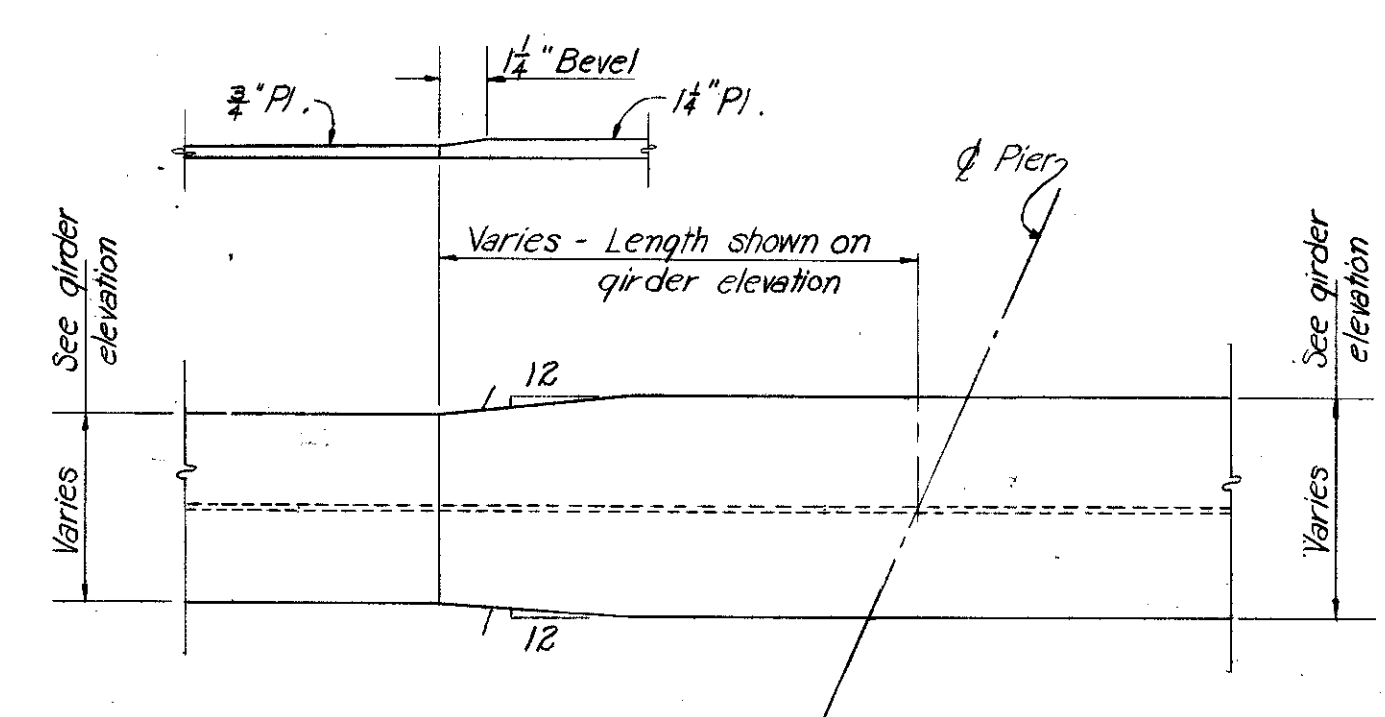
GIRDER NOTES:
The girders shall be fabricated to lines parallel to profiles formed by top of pavement elevations directly over the girders, plus the camber required to compensate for dead load deflections.
Top and bottom flange plates are to be the same and shall be spliced at the points shown in the girder elevation.
The web plate may be spliced as required by available plate lengths.
Welding shall be done in accordance with Sec. 5-7.22 of the Specifications.
Intermediate stiffeners shall be equally spaced between splices, and/or crossframe stiffeners in accordance with the maximum stiffener spacing shown on the girder elevation. Intermediate stiffeners shall be as shown in Table 'A'. These stiffeners shall be placed in pairs on all interior girders and on the inside face only of the exterior girders. Stiffeners placed in pairs shall not be welded to the flanges, but shall be fitted to close enough contact that the shop coat when applied, will fill and close the openings. Stiffeners placed singly shall be welded to top or bottom flanges within the limits shown on the girder elevation with a 1/8" fillet weld on both sides of the joint for a distance of 2" from the outside edge of the stiffener. The other end shall have a tight fit with the flange.
Bearing stiffeners at abutments and piers shall be as shown in the girder elevation and shall be placed in pairs on all girders. They shall be grooved and fully butt welded to the lower flange and fitted to close contact, without welding, at the upper flange.
All girder field splices shall be made with 5/8" high strength bolts conforming to Supplemental spec. 5-207. The bolts shall be placed with their heads on the outside face of exterior girders and on the bottom of all girder flanges.
Radiographic examination of welds shall be performed in accordance with Supplemental Specification 5-307, dated 8-23-60.



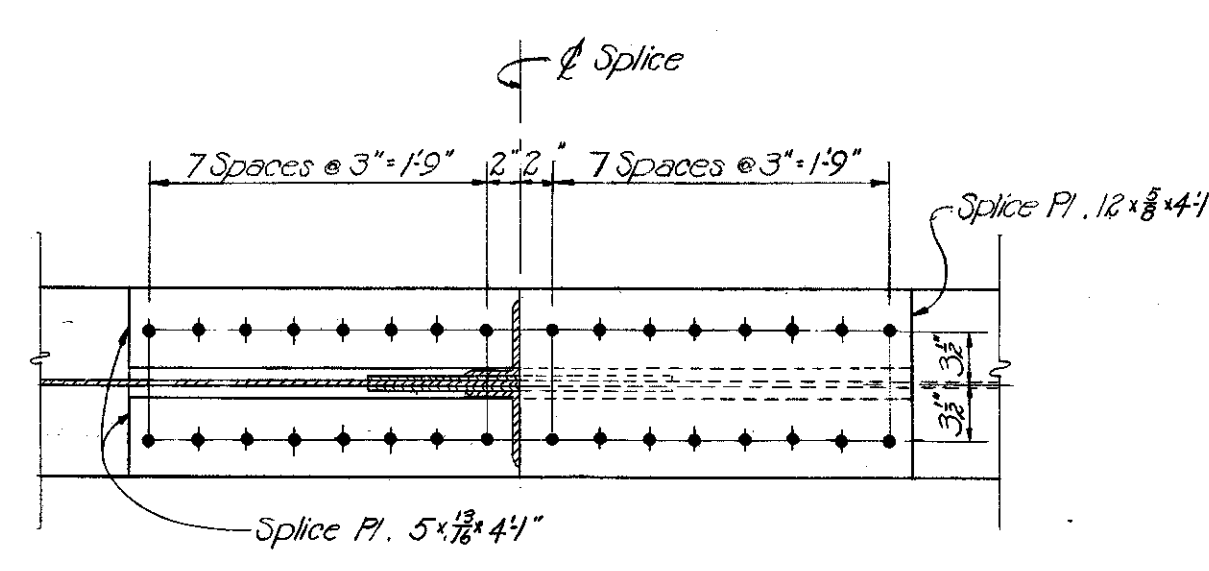
TYPICAL FIELD WEB SPLICE
Scale: 1"=1'-0"



SECTION A-A AT FIELD FLANGE SPLICES 1 AND 2
Scale: 1"=1'-0"



FLANGE PLATE TAPER DETAIL
No Scale



SECTION A-A AT FIELD FLANGE SPLICES 3, 4 AND 5
Scale: 1"=1'-0"

GIRDER FLANGE WIDTH	INTERMEDIATE STIFFENER	SPLICE ANGLE
12"	Pl 5 x 3/8"	5 x 3 1/2 x 3/8"
14" x 16"	Pl 6 x 3/8"	6 x 3 1/2 x 3/8"
18" & up	Pl 8 x 1/2"	

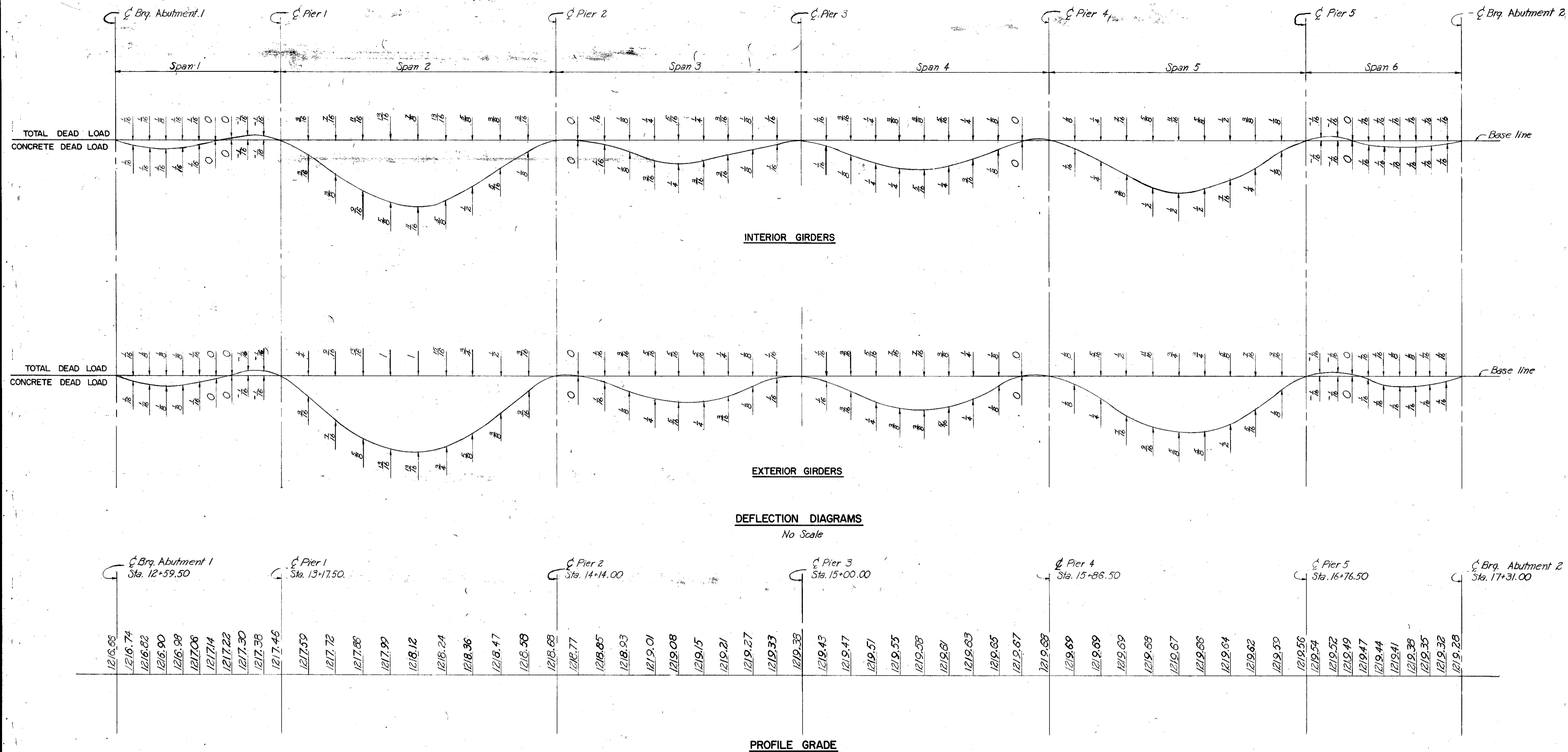
SHOP DRAWING AND ASSEMBLY NOTES:
SHOP DRAWINGS for the girders shall include an overall layout with dimensions showing the relative unloaded vertical position of each girder or girder segment with respect to the others in the same girder line and with respect to a full length base or work line taking 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 above 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.

GENERAL NOTES:
For top of pavement elevations and girder deflections see sheet 283.
For cross section through deck and other superstructure details see sheet 281.
For details of Rockers and Bolsters see Ohio Standard Drawing RB-1-55.

NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
GIRDER DETAILS BR. NO. CUY-1-0353 S.R. 1 UNDER CHAGRIN BLVD. STA. 448 + 65.21			
CUYAHOGA CO. OHIO			
SCALE	As Noted	CHECKED	T.U.P. DATE 5-27-59
MADE	C.A.B. DATE 5-13-59	REVIEWED	BC DATE 12-1-59
TRACED			1040 SHEET 282

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APR 23 1986

CUYAHOGA COUNTY
CUY-1-2.20



NOTES:
 Values shown above the base line, in the deflection diagrams, are total deflections due to dead load of steel and concrete. Those below the base line are for deflections of concrete only. Deflections are measured to the nearest 1/16 inch.
 Elevations shown along profile grade are given at \mathcal{L} Bearings and at tenth span points between \mathcal{L} Bearings. Profiles formed by top of pavement elevations along \mathcal{L} of each girder are parallel to profile grade within their respective station limits.
 Elevations in table are given along \mathcal{L} of girders at \mathcal{L} Bearings and at quarter span points between \mathcal{L} Bearings.

TOP OF PAVEMENT ELEVATIONS

Girder	Span 1				Span 2				Span 3				Span 4				Span 5				Span 6				
	\mathcal{L} Bearing Abut. 1	$\frac{1}{4}$ Pt.	$\frac{1}{2}$ Pt.	$\frac{3}{4}$ Pt.	\mathcal{L} Pier 1	$\frac{1}{4}$ Pt.	$\frac{1}{2}$ Pt.	$\frac{3}{4}$ Pt.	\mathcal{L} Pier 2	$\frac{1}{4}$ Pt.	$\frac{1}{2}$ Pt.	$\frac{3}{4}$ Pt.	\mathcal{L} Pier 3	$\frac{1}{4}$ Pt.	$\frac{1}{2}$ Pt.	$\frac{3}{4}$ Pt.	\mathcal{L} Pier 4	$\frac{1}{4}$ Pt.	$\frac{1}{2}$ Pt.	$\frac{3}{4}$ Pt.	\mathcal{L} Pier 5	$\frac{1}{4}$ Pt.	$\frac{1}{2}$ Pt.	$\frac{3}{4}$ Pt.	\mathcal{L} Bearing Abut. 2
A	1215.98	1216.18	1216.38	1216.58	1216.76	1217.11	1217.44	1217.76	1218.04	1218.27	1218.47	1218.65	1218.81	1218.93	1219.04	1219.12	1219.17	1219.20	1219.20	1219.17	1219.12	1219.08	1219.02	1218.96	1218.88
B	1216.13	1216.33	1216.53	1216.73	1216.93	1217.27	1217.60	1217.91	1218.19	1218.42	1218.61	1218.79	1218.94	1219.08	1219.16	1219.24	1219.29	1219.31	1219.31	1219.28	1219.22	1219.18	1219.12	1219.05	1218.97
C	1216.29	1216.49	1216.69	1216.89	1217.09	1217.42	1217.75	1218.06	1218.34	1218.56	1218.75	1218.92	1219.07	1219.19	1219.29	1219.36	1219.40	1219.43	1219.42	1219.39	1219.33	1219.28	1219.22	1219.15	1219.07
D	1216.45	1216.65	1216.85	1217.05	1217.25	1217.58	1217.91	1218.21	1218.49	1218.70	1218.89	1219.06	1219.20	1219.32	1219.41	1219.48	1219.52	1219.54	1219.53	1219.49	1219.43	1219.37	1219.31	1219.24	1219.16
E	1216.60	1216.80	1217.00	1217.20	1217.40	1217.74	1218.06	1218.36	1218.63	1218.84	1219.03	1219.20	1219.33	1219.45	1219.54	1219.60	1219.64	1219.65	1219.64	1219.60	1219.53	1219.47	1219.41	1219.33	1219.25
F	1216.63	1216.83	1217.03	1217.23	1217.43	1217.77	1218.09	1218.39	1218.66	1218.87	1219.05	1219.21	1219.35	1219.46	1219.54	1219.60	1219.64	1219.65	1219.63	1219.59	1219.52	1219.46	1219.40	1219.32	1219.23
G	1216.57	1216.77	1216.97	1217.17	1217.37	1217.70	1218.02	1218.32	1218.58	1218.78	1218.96	1219.12	1219.25	1219.36	1219.44	1219.50	1219.53	1219.54	1219.52	1219.47	1219.39	1219.34	1219.27	1219.19	1219.10
H	1216.50	1216.70	1216.90	1217.10	1217.30	1217.63	1217.95	1218.24	1218.50	1218.70	1218.88	1219.03	1219.16	1219.26	1219.34	1219.39	1219.42	1219.42	1219.40	1219.35	1219.27	1219.21	1219.14	1219.06	1218.96
J	1216.43	1216.63	1216.83	1217.03	1217.23	1217.57	1217.88	1218.16	1218.42	1218.62	1218.79	1218.94	1219.08	1219.18	1219.24	1219.29	1219.31	1219.31	1219.28	1219.23	1219.14	1219.09	1219.01	1218.92	1218.83
K	1216.36	1216.56	1216.76	1216.96	1217.17	1217.50	1217.81	1218.09	1218.34	1218.53	1218.70	1218.85	1218.97	1219.06	1219.14	1219.18	1219.20	1219.20	1219.16	1219.10	1219.02	1218.95	1218.88	1218.79	1218.69

NO.	DATE	REVISION	BY

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

DEFLECTIONS AND ELEVATIONS
BR. NO. CUY - 1 - 0353
S.R. 1 UNDER CHAGRIN BLVD.
STA. 448 + 65.21

CUYAHOGA CO. OHIO

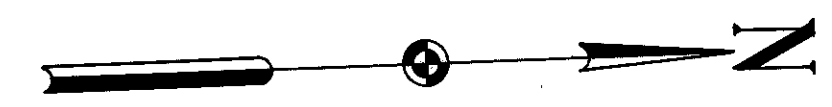
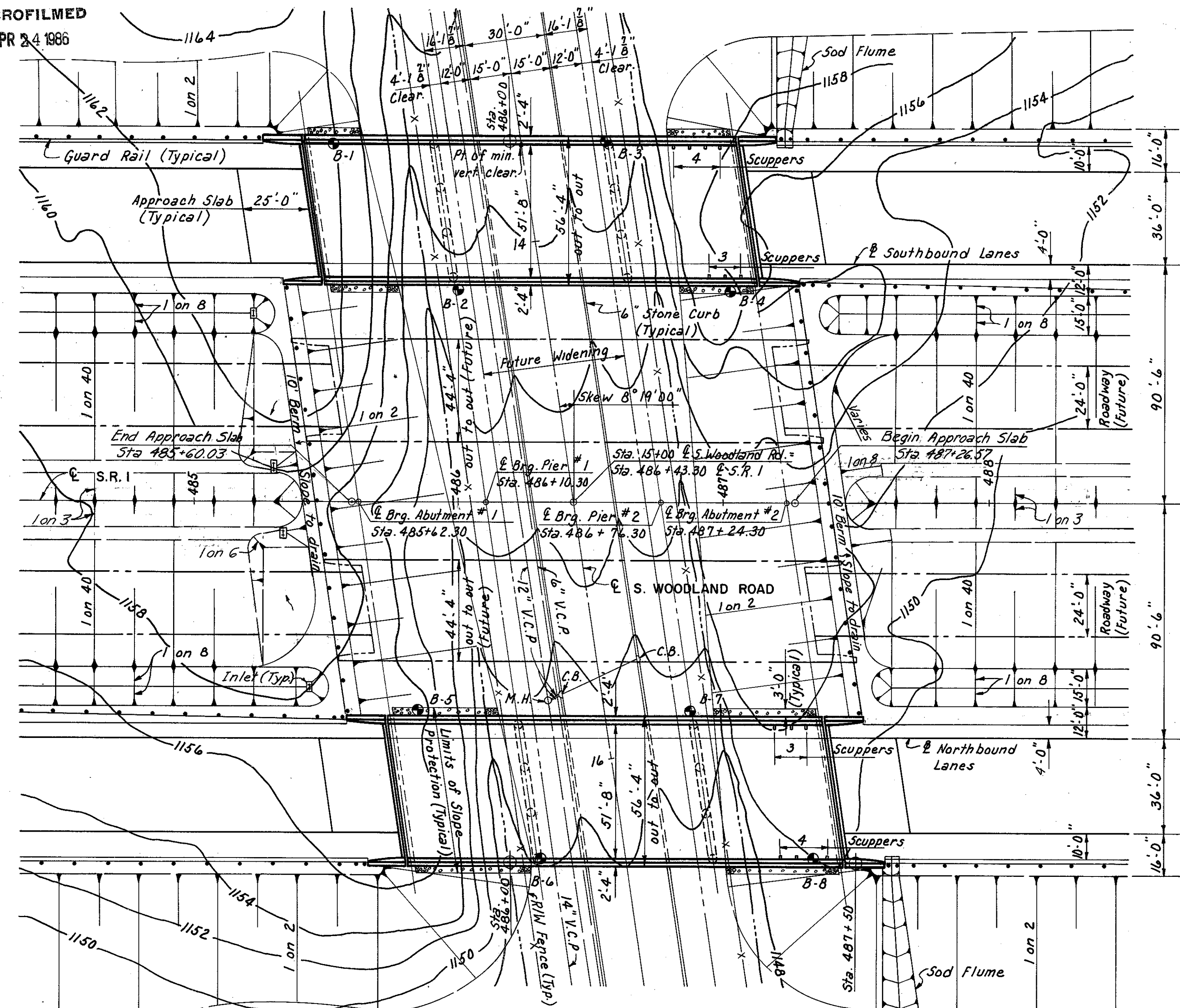
SCALE: As Noted CHECKED: TJP DATE: 5-23-59
MADE: C.A.B. DATE: 5-13-59 REVIEWED: B.C. DATE: 10-4-60
TRACED: DATE: 1040 SHEET 283

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FED. RD. DIVISION	STATE	PROJECT
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CUYAHOGA COUNTY
CUY-1-2.20



PROPOSED STRUCTURES
 TYPE: Continuous steel beam with reinforced concrete deck and substructure.
 SPANS: 48'-0" 46'-0" & 48'-0"
 ROADWAY: 2 @ 54'-0" f/f of Parapets
 LOAD FREQUENCY: CF-2000 (S1) Adequate for A.A.S.H.O. alternate loading
 SKEW: 8° 19' 00" R.F.
 SURFACE COURSE: 1" Monolithic concrete
 APPROACH SLABS: AS-1-54 (25' long)
 ALIGNMENT: Tangent

PILE INFORMATION			
Location	Type	Number	Estimated Ave. Length
Abutment 1	12 BP 53	40	49'
Abutment 2	12 BP 53	40	49'
Piers 1-E & 2-E	12 BP 53	42	28'
Piers 1-W & 2-W	12 BP 53	42	34'

*Vertical

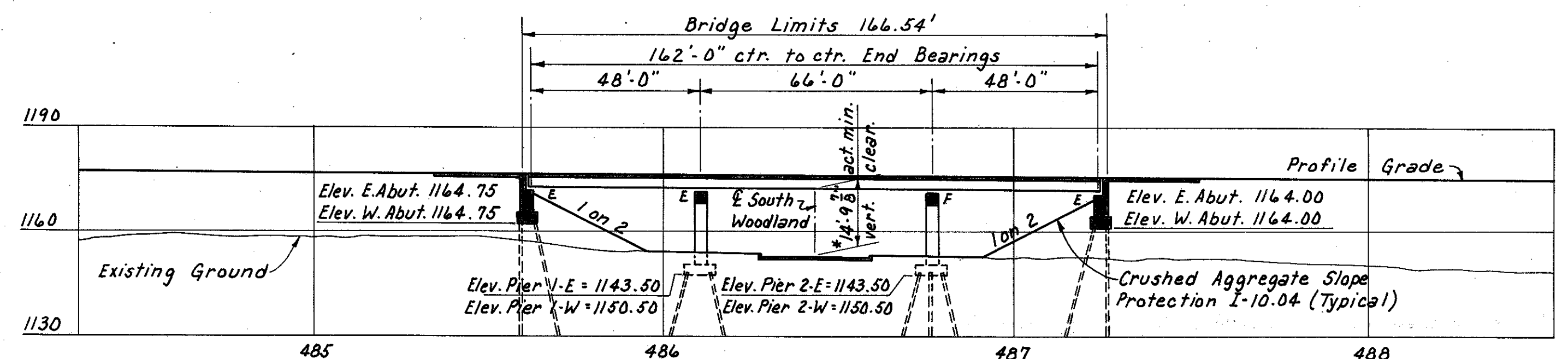
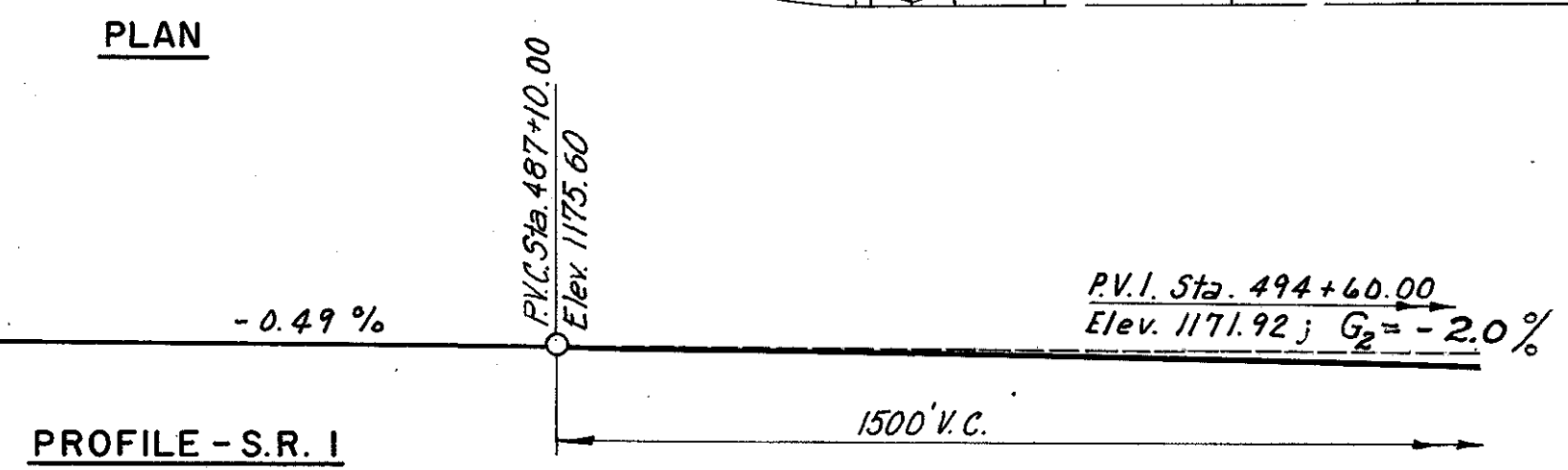
LOCATION OF BORINGS

B-1	Sta. 485+53	136' Lt.
B-2	Sta. 485+99	80' Lt.
B-3	Sta. 486+56	136' Lt.
B-4	Sta. 487+02	80' Lt.
B-5	Sta. 485+84	80' Rt.
B-6	Sta. 486+31	136' Rt.
B-7	Sta. 486+87	80' Rt.
B-8	Sta. 487+34	136' Rt.

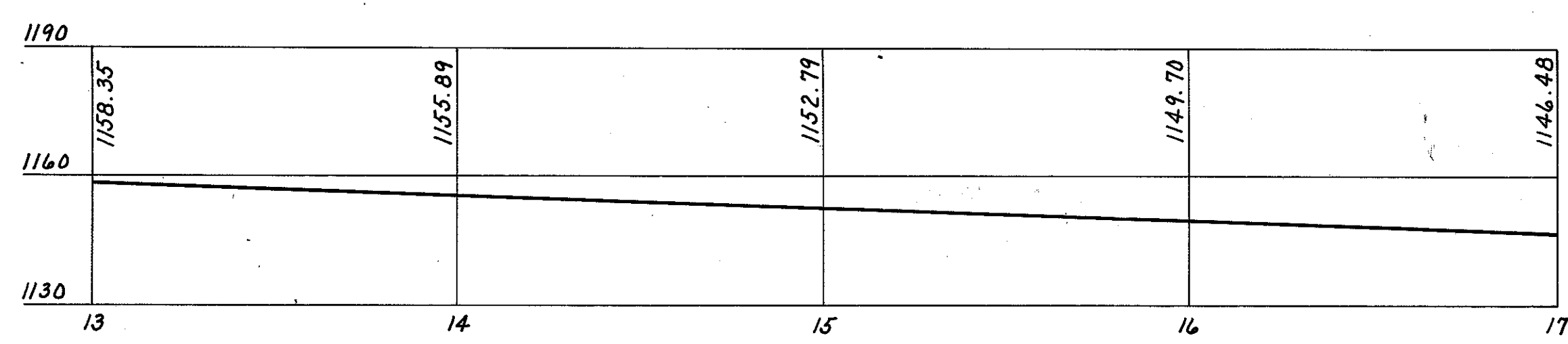
SCUPPER SPACING
 (Along Gutter Line)
 5'-0" from E. Brg. Abutment #2 to center of 1st scupper.
 Scuppers are Type "A" spaced at 6'-0" centers. See sheet 297 for details.

- NOTES:**
- The following items are not included in the Bridge Plans (See Roadway Plans for details)
 - a. Approach grading, pavement and slab.
 - b. Roadway Guard Rail & Sod Flumes.
 - c. Relocation or removal of existing utilities.
 - Bridge Delineators, Item I-127, shall be placed as shown thus \odot . For details see sheet 232 of the Roadway Plans.

Note: Drive Sample Borings were made at locations B-2, B-3, B-6 & B-7. Rod soundings only were taken at other locations.



*14'-6" Required minimum vertical clearance. Point of actual minimum vertical clearance occurs at West Beam of West Bridge and E. of South Woodland Road.



PROFILE-SOUTH WOODLAND ROAD
 (Existing Profile maintained)
 No Scale

NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
SITE PLAN			
BR. NO. CUY-1-0425 R & L S.R. 1 OVER SOUTH WOODLAND ROAD STA. 485 + 60.03 487 + 26.57			
CUYAHOGA CO.			OHIO
SCALE 1" = 30'	CHECKED: B.L.	DATE 10-16-59	
MADE: A.J.S.	DATE 3-26-59	REVIEWED: B.C.	DATE 10-4-60
TRACED: A.E.K.	DATE 10-14-59	1040 SHEET	284

H.N.T.B. BR. NO. 53

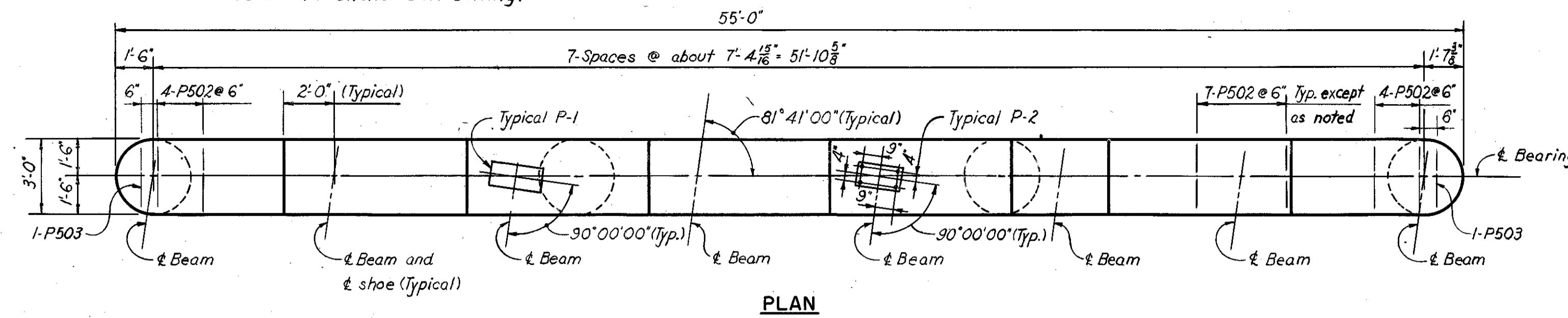
MICROFILMED
APR 24 1986

Note:
Special care shall be taken when placing reinforcing steel for Pier 1 so as not to interfere with anchor bolt setting.

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

285
313

CUYAHOGA COUNTY
CUY-I-2.20

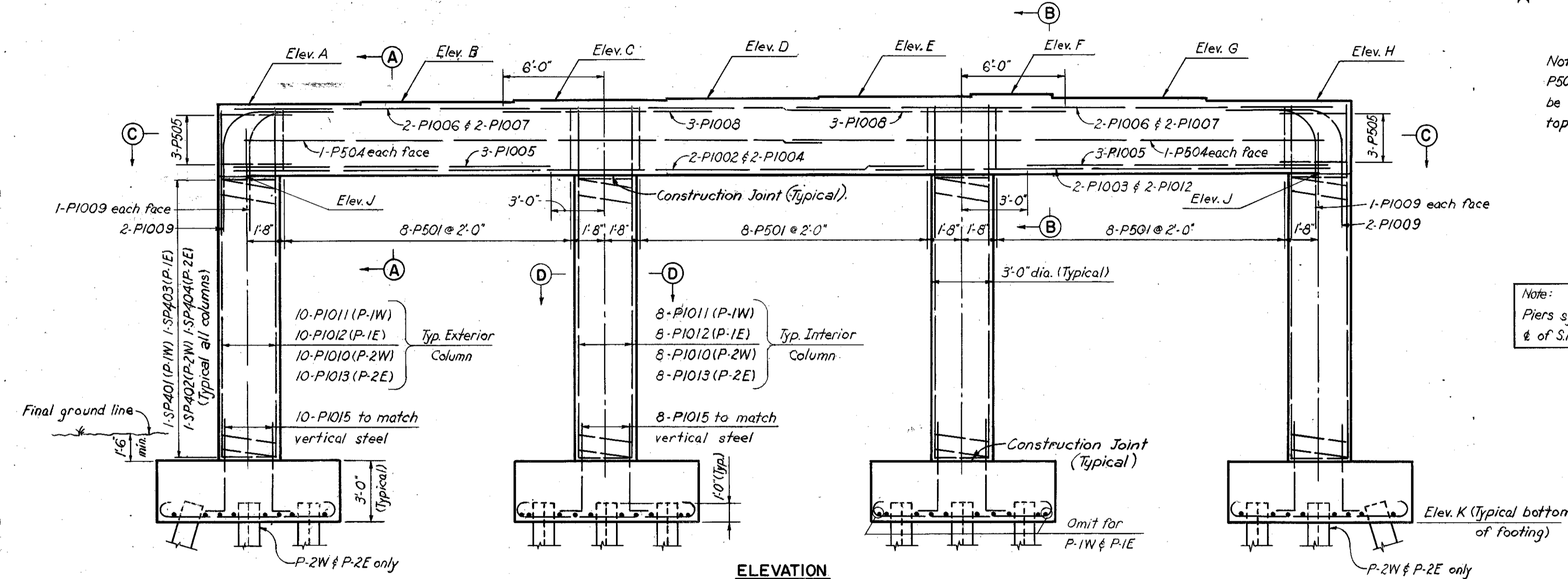


PLAN

ELEVATIONS										
PIERS	A	B	C	D	E	F	G	H	J	K
P-1W	1170.88	1170.99	1171.10	1171.21	1171.32	1171.36	1171.24	1171.13	1167.38	1150.50
P-2W	1170.56	1170.67	1170.78	1170.89	1171.00	1171.04	1170.92	1170.80	1167.06	1150.50
P-1E	1170.63	1170.81	1170.92	1171.04	1171.17	1171.22	1171.11	1171.00	1167.18	1143.50
P-2E	1170.36	1170.48	1170.60	1170.72	1170.84	1170.90	1170.79	1170.68	1166.86	1143.50

SPIRAL REINFORCEMENT SCHEDULE						
Mark	No.	Core Dia.	Length	Pitch	No of Turns	Weight
SP401	4	2'-8"	13'-10"	4 1/2"	37	1035
SP402	4	2'-8"	13'-6"	4 1/2"	36	1008
SP403	4	2'-8"	20'-8"	4 1/2"	55	1506
SP404	4	2'-8"	20'-4"	4 1/2"	54	1480
Total						5029

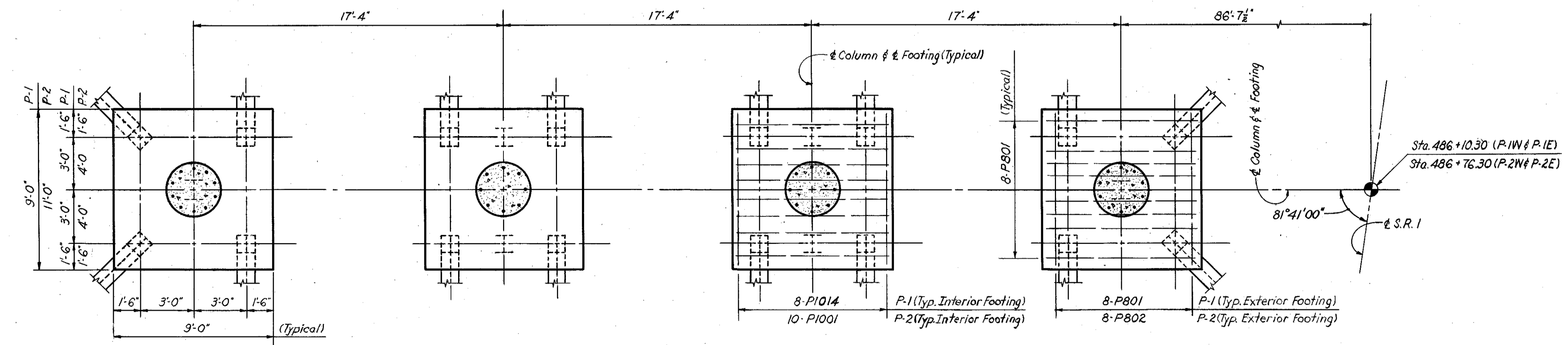
REINFORCEMENT SCHEDULE						BENDING DIAGRAMS	
Mark	No.	Length	Weight	Shape			
P501	96	12'-2"	1219	B			
P502	200	5'-7"	1165	B			
P503	8	5'-5"	45	B			
P504	16	27'-0"	451	S			
P505	24	7'-4"	184	B			
Total						41,873	Lbs.



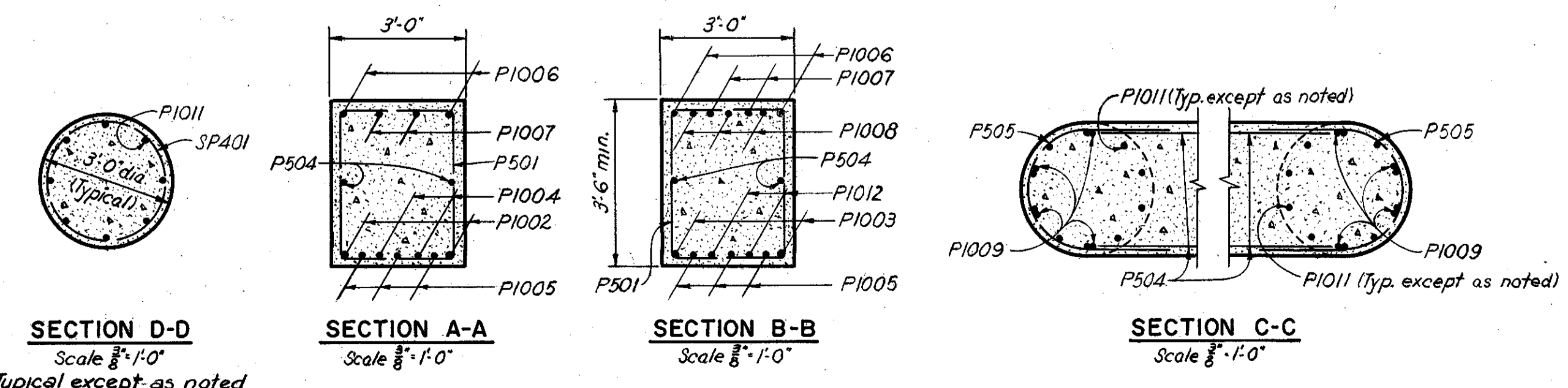
ELEVATION

Note:
P502 & P503 bars shall be set 2 1/2" below the top of cap beam.

Note:
Piers symmetrical about & of S.R.I except as noted



FOOTING PLAN



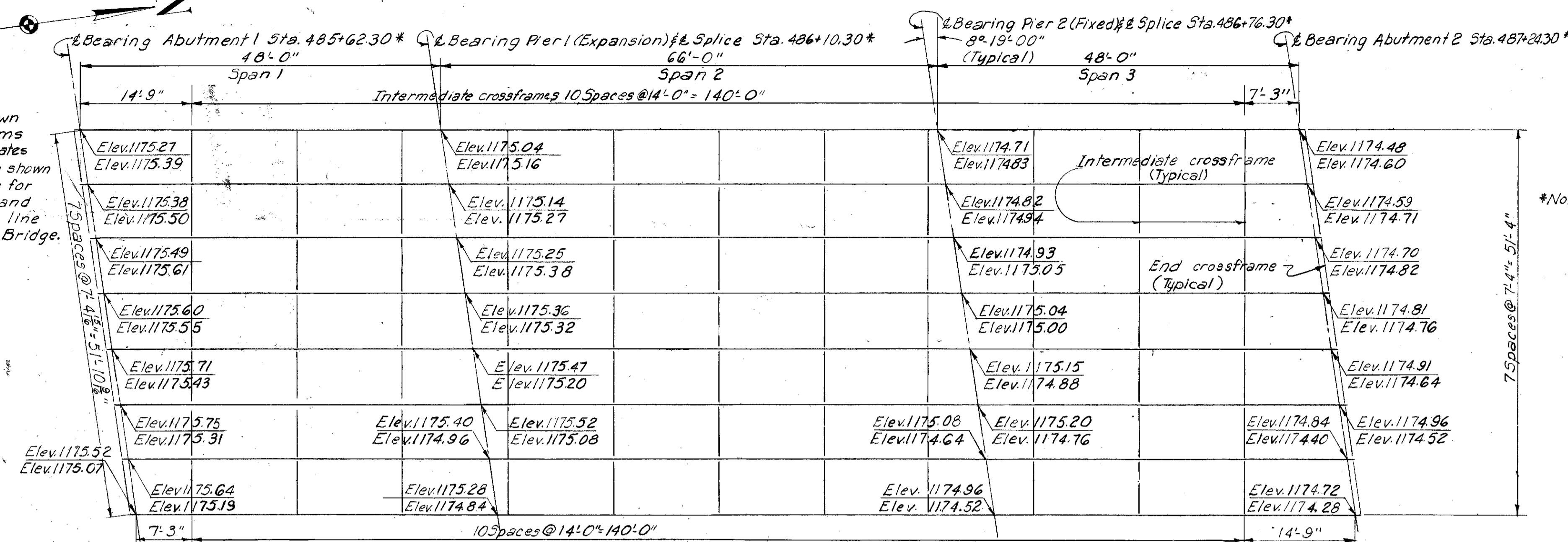
Note:
Transverse bars in footing are spaced as shown in Elevation. Longitudinal bars in footing are spaced as shown.

NOTES:
All piles shall be 12BP53.
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 footing and 2 inches elsewhere.
All bar dimensions are given out to out.
For Spiral Reinforcement notes, see sheet 273
For Replacement Schedule, see sheet 280
P-1W denotes Pier 1-West; P-2W denotes Pier 2-West;
P-1E denotes Pier 1-East; P-2E denotes Pier 2-East.
For details of Bolsters and Rockers see Ohio Standard Drawing RB-1-55.

NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
PIERS BR. NO. CUY-I-0425 R & L S.R. I OVER SOUTH WOODLAND ROAD STA. 485 + 60.03 487 + 26.57			
CUYAHOGA CO. OHIO			
SCALE	1"=10' Except as noted	CHECKED	ELC
MADE	TJP	DATE	1-28-59
TRACED		DATE	
			1040 SHEET 285

H.N.T.B. BR. NO. 53

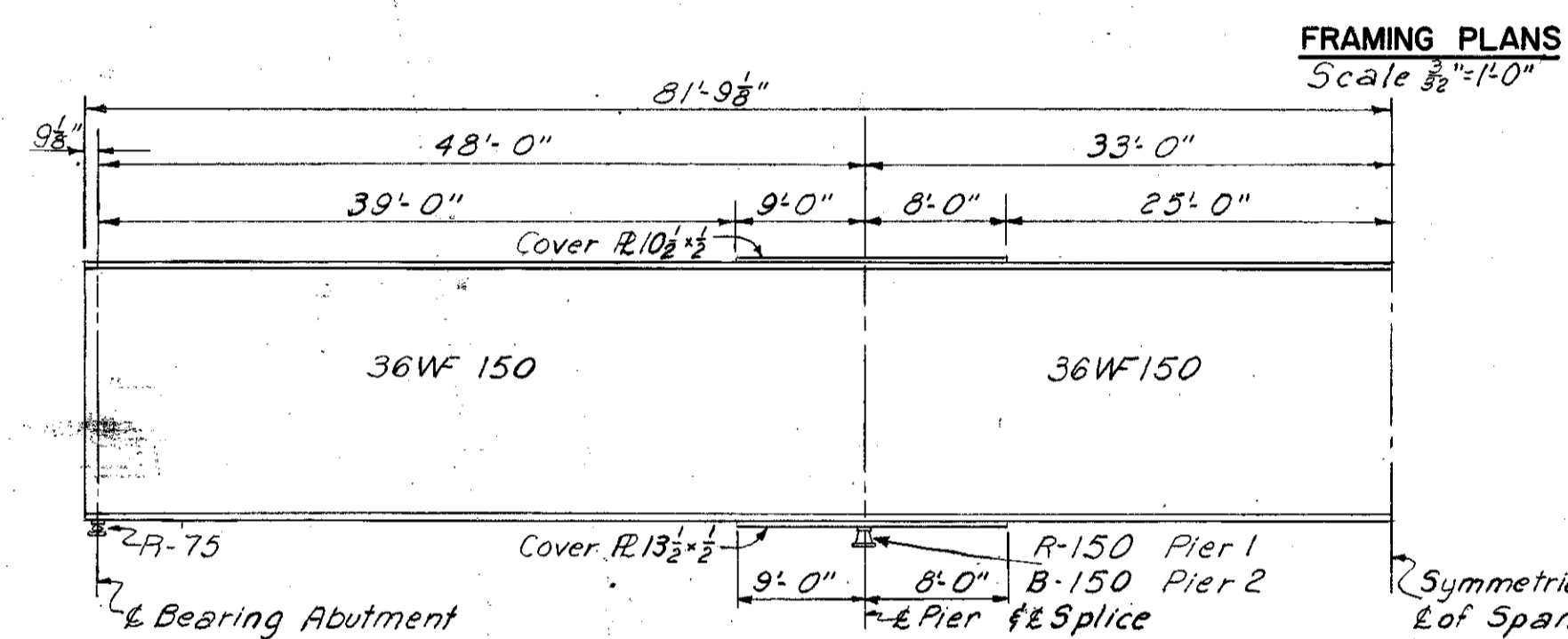
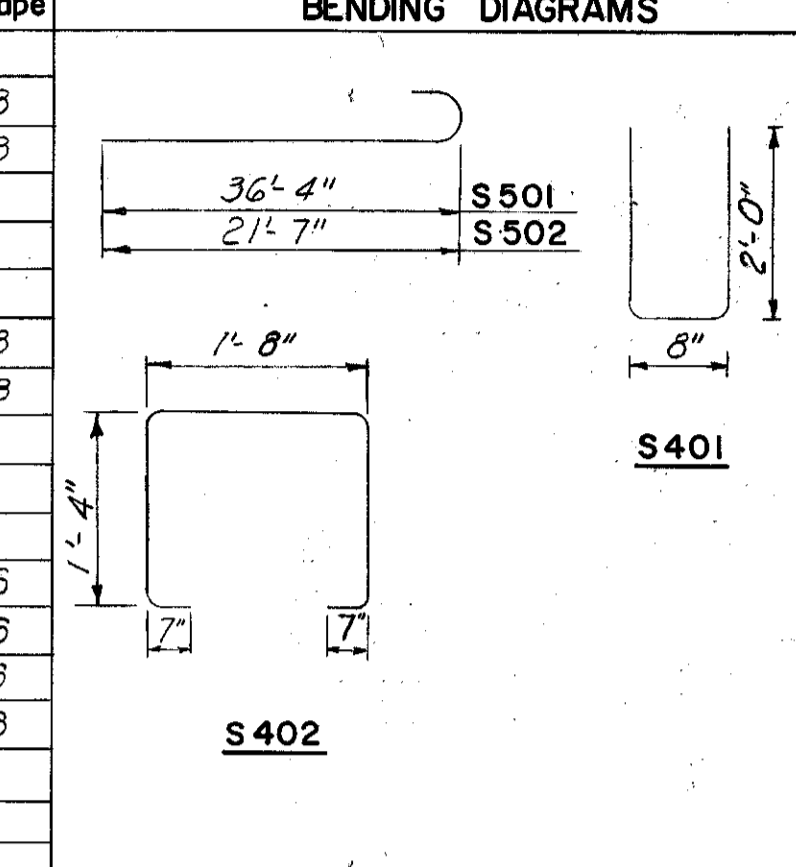
Note: Elevations shown are to top of beams exclusive of cover plates @ \pm bearings. Those shown above the line are for the West Bridge and those below the line are for the East Bridge.



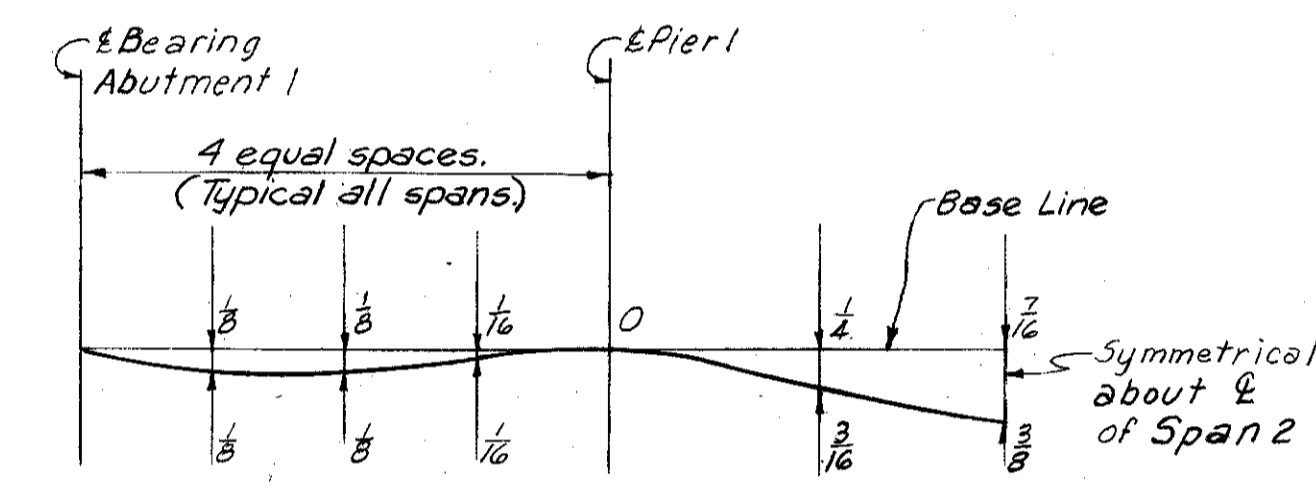
*Note: Stations shown apply at \pm S.R. 1.

Note: To obtain top of pavement elevations, add 0.79 to top of beam elevations shown.

DECK REINFORCEMENT SCHEDULE				
Mark	No.	Length	Weight	Shape
5401	700	4'-5"	2,065	B
5402	656	5'-0"	2,191	B
5501	654	36'-11"	2,5182	B
5502	654	22'-2"	15,120	B
5601	654	40'-0"	3,9292	S
5602	1,060	34'-3"	54,530	S
5603	654	18'-3"	17,927	S
5604	184	23'-0"	6,356	S
Total			162,663 Lbs.	

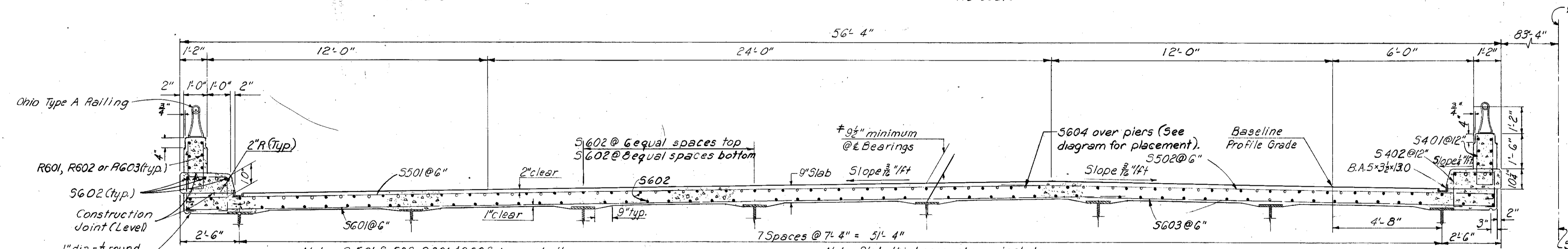


TYPICAL BEAM ELEVATION
No Scale



DEFLECTION DIAGRAM
No Scale

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

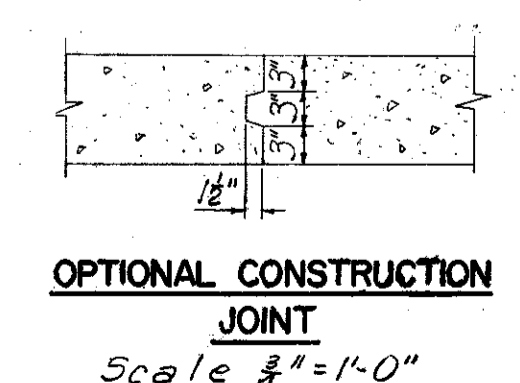


TYPICAL CROSS SECTION
(LOOKING NORTH)
Scale 3/8" = 1'-0"

Note: After erection and after the shop coat has been cleaned and, where necessary, repainted in accordance with Sec. 8.04, an additional coat of the same paint as used in the shop shall be applied over the outside face of the outside steel beams and all sides of bottom flange.

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 transverse reinforcing steel and are located near the center of any span.

*Note: This is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.



OPTIONAL CONSTRUCTION JOINT
Scale 3/8" = 1'-0"

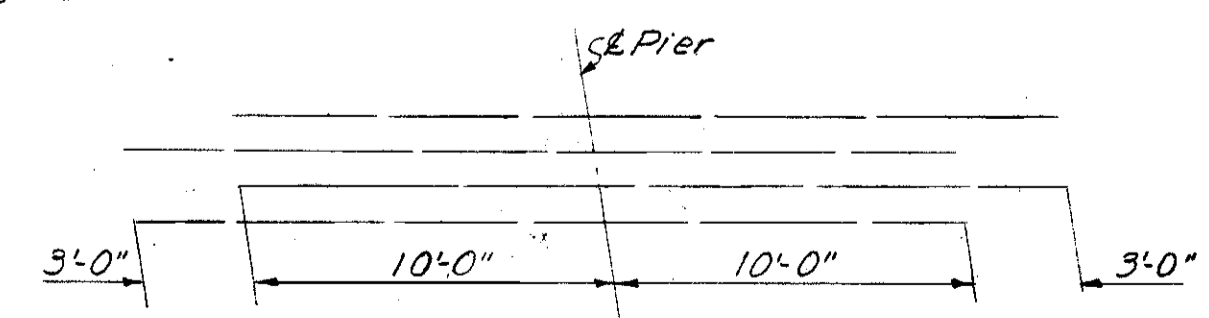


DIAGRAM SHOWING STAGGER OF S-604 OVER PIERS 1&2
No Scale

BEAM SPLICE WELDING PROCEDURE

- 1.-Raise the abutment ends of beams 1/16"
- 2.-Butt-weld the beam flanges and web using the following sequence: make two passes on each flange, then two on the web; repeat, using one pass at each location, until welds are completed.
- 3.-Weld the bottom and top cover plates.
- 4.-Lower the beam ends to final position.

Note: For replacement bar schedule see sheet 280. All bar dimensions are given out to out. Longitudinal steel in the parapets (bars R601, R602, R603) is not shown in this schedule. It is included for payment with "Item S-14 Type 'A' Railing" and is shown on sheet 298.

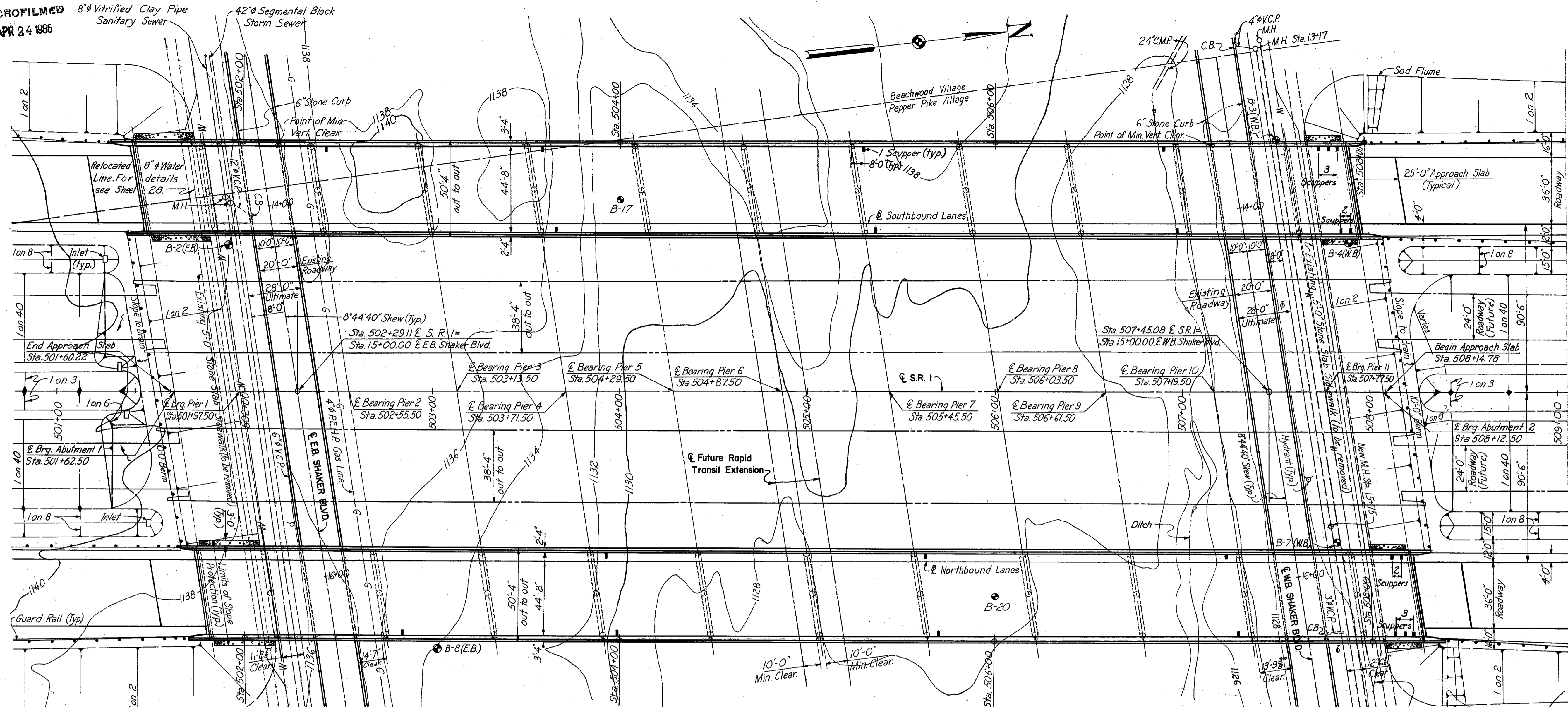
NOTES:
For details of beam splices, and intermediate crossframes, see sheet 297.
For location of scuppers, see sheet 284
For details of end crossframes and roadway end dams, see Ohio Standard Drawing CSB-2-56, sheet 2 of 6
For details of Rockers and Bolsters, see Ohio Standard Drawing RB-1-55
For railing post and parapet joint spacing, see sheet 298
For placement of 2" dia. Std. Pipe Drain @ end of B.A. gutter at Abutment No 2 see Ohio Standard Drawing C.S.B-2-56, sheet 2 of 6.
Beams shall not be cambered but shall be fabricated so that any curved beam will be placed with the convex flange up.
For details of scuppers and bulb angle gutter support see sheet 297
For details of curb plates at end dams see Ohio Standard Drawing CSB-2-56, sheet 3 of 6.

NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
SUPERSTRUCTURE			
BR. NO. GUY-1-0425 R & L S.R. 1 OVER SOUTH WOODLAND ROAD STA. 485 + 60.03 487 + 26.57			
CUYAHOGA CO. OHIO			
SCALE: As Shown	CHECKED: TJP	DATE: 7-31-59	
MADE: R.A.	DATE: 1-28-59	REVIEWED: BC	DATE: 10-4-59
TRACED: _____	DATE: _____	1040	287

MICROFILMED
APR 24 1986

FED. RD. DIVISION	STATE	PROJECT	288 313
2	OHIO		

CUYAHOGA COUNTY
CUY-1-2.20



PROPOSED STRUCTURES
 TYPE: Continuous steel beam with reinforced concrete deck and substructure.
 SPANS: 35'-0", 10 @ 58'-0", 35'-0".
 ROADWAY: 2 @ 48'-0" / 11' of Parapets.
 LOAD FREQUENCY: CF 2000 (57) Adequate for AASHTO alternate loading.
 SKEW: 8° 44' 40". R.F.
 WEARING SURFACE: 1" Monolithic Concrete.
 APPROACH SLABS: AS-1-54 (25' Long).
 ALIGNMENT: Tangent

CORE BORING LOCATIONS

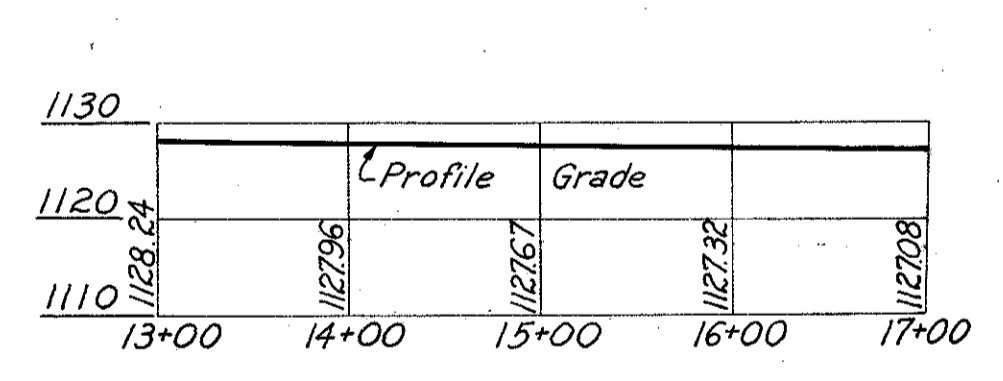
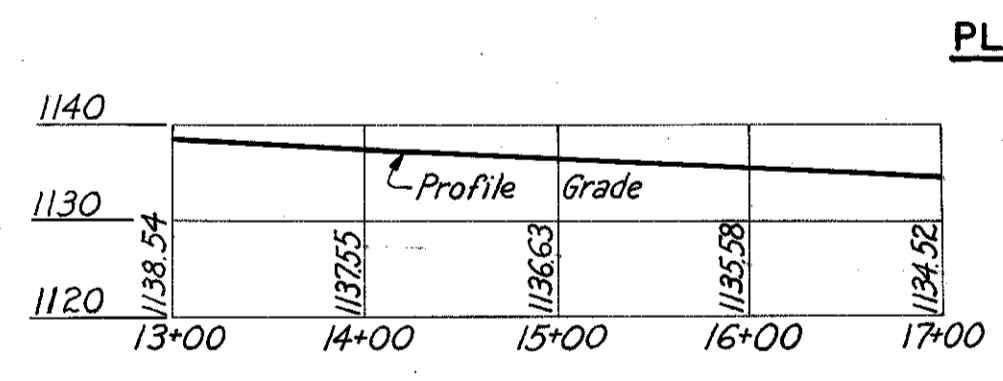
B-2 (E.B.)	Sta. 501+92	80' Lt.
B-3 (W.B.)	Sta. 507+52	137' Lt.
B-4 (W.B.)	Sta. 507+92	81' Lt.
B-7 (W.B.)	Sta. 507+85	80' Rt.
B-8 (E.B.)	Sta. 503+06	136' Rt.
B-17	Sta. 504+00	103' Lt.
B-20	Sta. 506+00	109' Rt.

Note: Rod Soundings were taken at 21 locations throughout the site. See Boring Logs.

SCUPPER SPACING
 (Along Gutter Line)
 Location of E 1st Scupper from E Brg. Abutment 2 is 7'-0". Scuppers are Type A spaced at 5'-0" centers. Location of Type A Scuppers at Piers 2, 4, 7 & 10 shall be 8'-0" from E. Brg. in the direction shown. See sheet 297 for details of scuppers.
 (24 Required)

- NOTES:**
- The following items are not included in the Bridge Plans. (See Roadway Plans for details).
 a. Approach grading, pavement and slab.
 b. Roadway Guard Rail & Sod Flumes.
 c. Relocation or removal of existing utilities.
 - Bridge Delineators Item I-127, shall be placed as shown thus Φ . For details, see sheet 232 of Roadway Plans.
 - All piles are to be 12 BP 53 with the following estimated average vertical lengths:
 Abutments 1 & 2 --- 29'
 Piers 1, 2, 3, 10, 11, 15 --- 15'
 Piers 4 thru 9 --- 11'
 - The roadway embankment shall be placed and compacted up to the finished spill-thru slope and to the level of the subgrade for a distance of 200 feet back of Abutments 1 and 2, after which excavation shall be made for the abutments and for Pier 1.
 5. Top of rock as shown in "Elevation" is determined by interpolation and is approximate only.

Protection for storm sewers, sanitary sewers and water lines to be included in Item "E-2", "Cofferdams, cribs and sheeting", for payment.



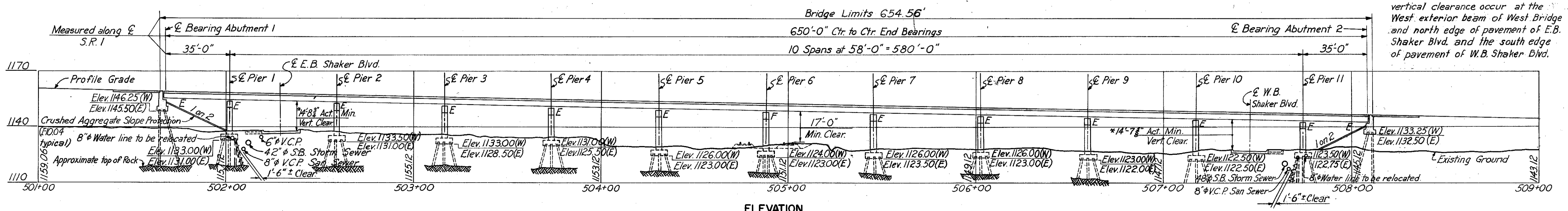
E PROFILE - EASTBOUND SHAKER BLVD.
 (Existing Profile Maintained)
 Vert. Scale 1" = 20' Horiz. Scale 1" = 100'

E PROFILE - WESTBOUND SHAKER BLVD.
 (Existing Profile Maintained)
 Vert. Scale 1" = 20' Horiz. Scale 1" = 100'

P.V.I. Sta. 494+60.00
Elev. 1171.92
 1500' V.C.
G₁ = -0.49%

P.V.I. Sta. 502+10.00
Elev. 1156.92

PROFILE



ELEVATION

*14'-6" Required minimum vertical clearance. Points of actual minimum vertical clearance occur at the West exterior beam of West Bridge and north edge of pavement of E.B. Shaker Blvd. and the south edge of pavement of W.B. Shaker Blvd.

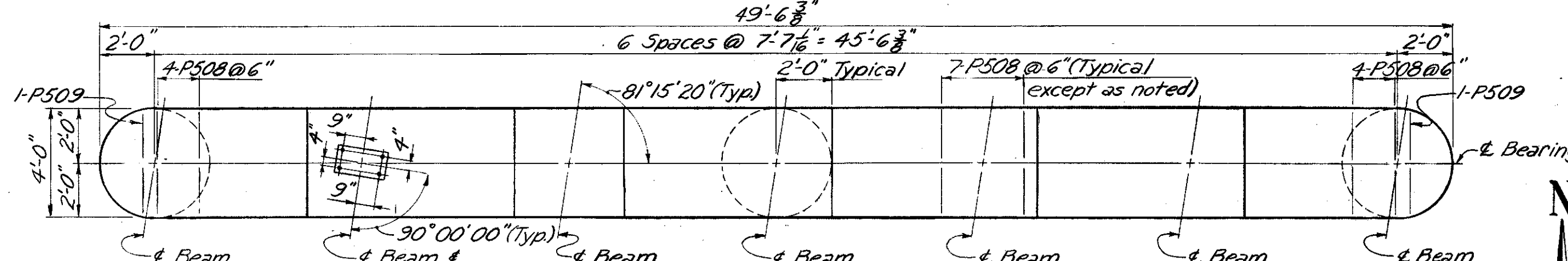
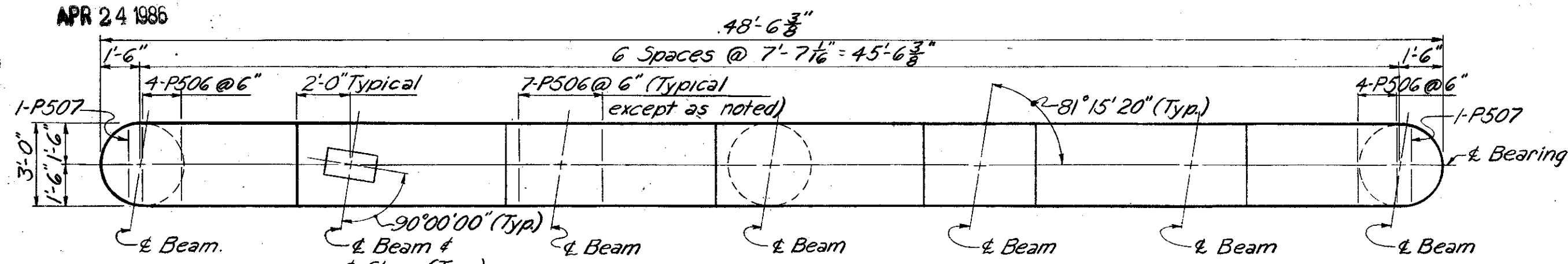
Revised 5-31-61

NO.	DATE	REVISION	BY

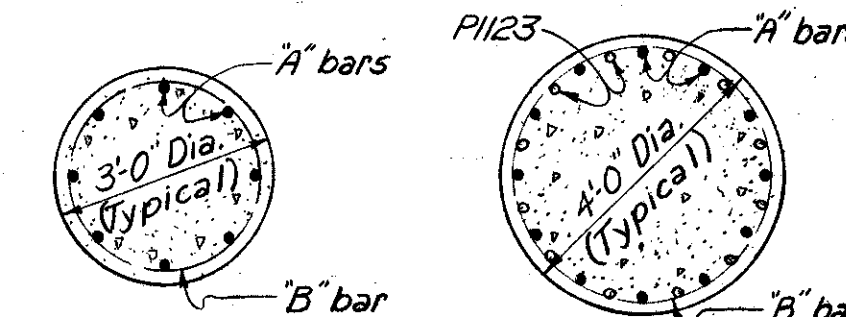
SITE PLAN
 BR. NO. CUY-1-0455 R&L
 S.R.1 OVER SHAKER BLVD.
 STA. 501+60.22
 508+14.78

CUYAHOGA CO.	OHIO
SCALE: 1" = 30' except as noted	CHECKED: ARL DATE: 7-19-60
MADE: F.S.J. DATE: 6-23-60	REVIEWED: BC DATE: 10-4-60
TRACED: R.J.K. DATE: 7-8-60	1040 SHEET 288

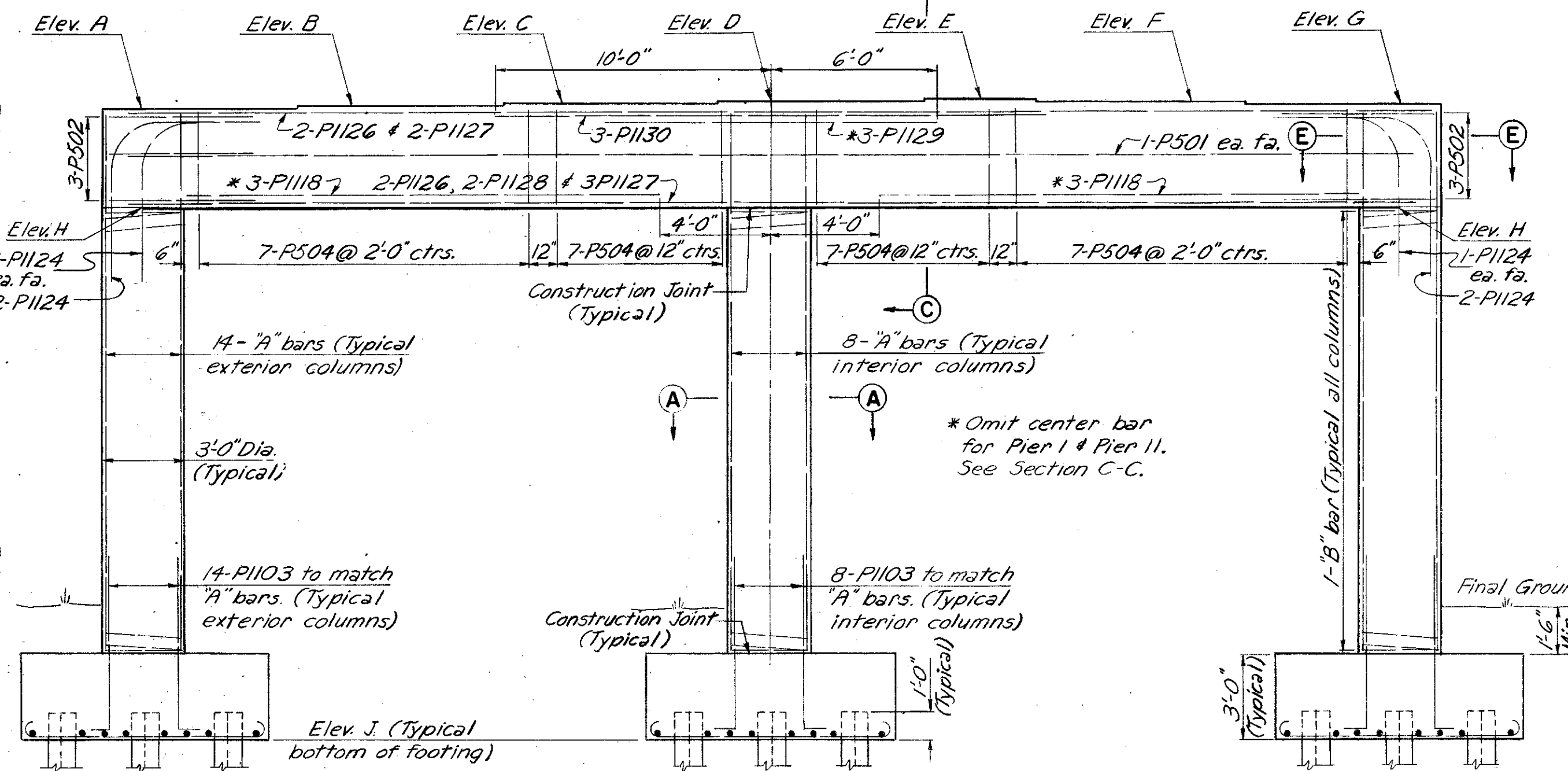
H.N.T.B. BR. NO. 54



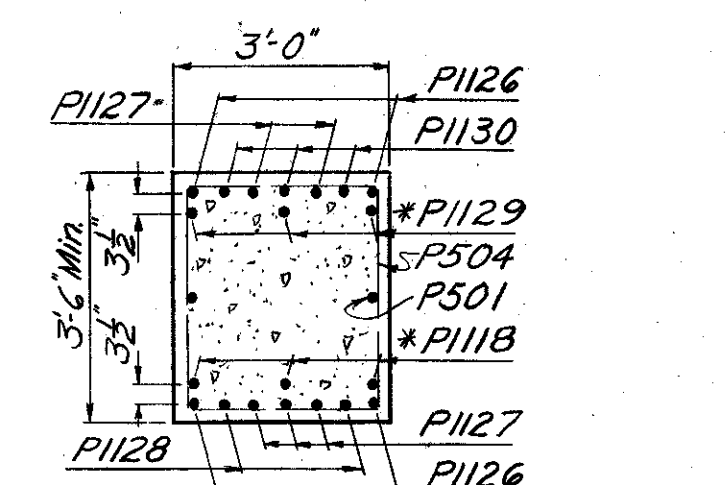
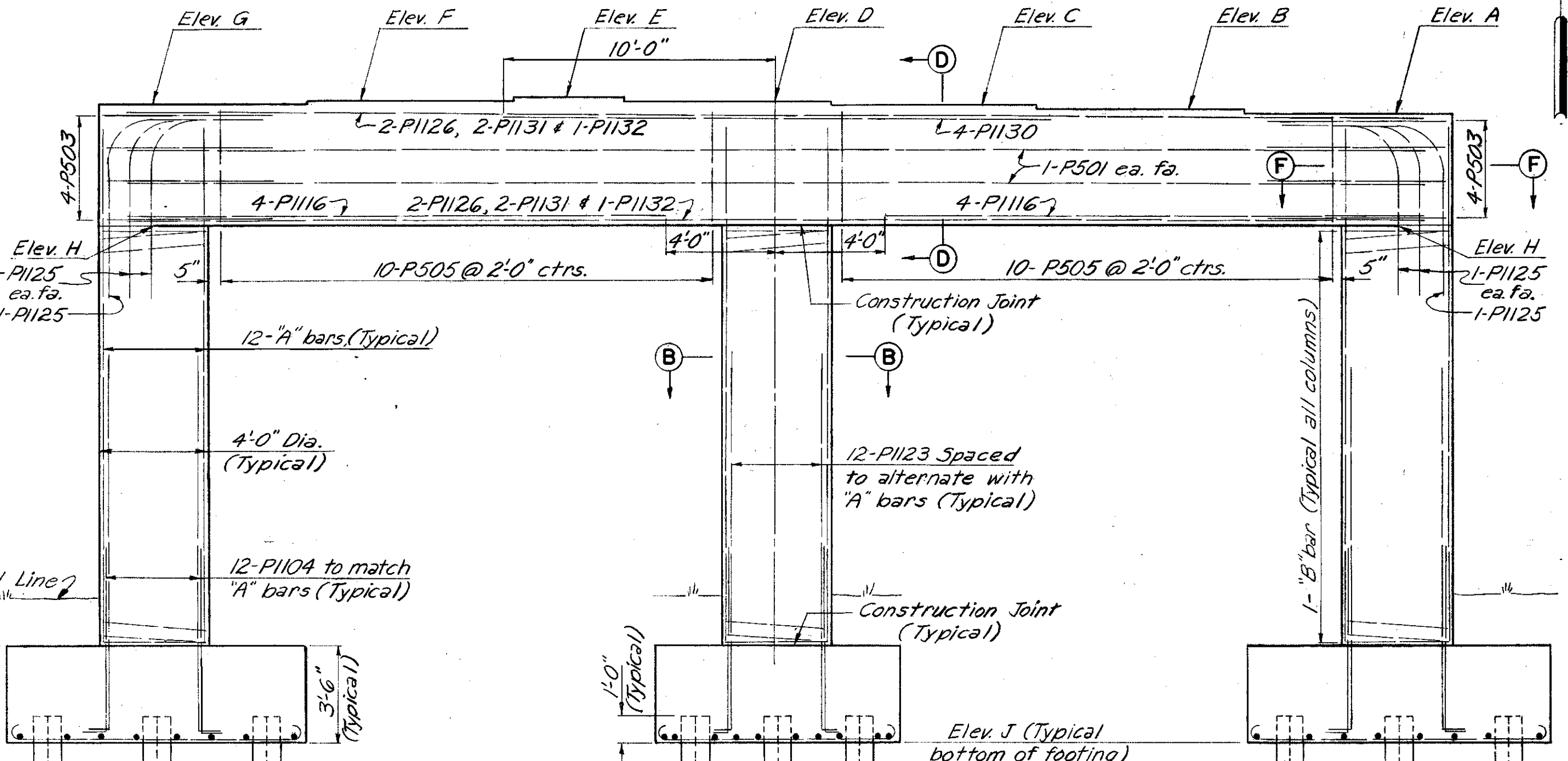
PLAN



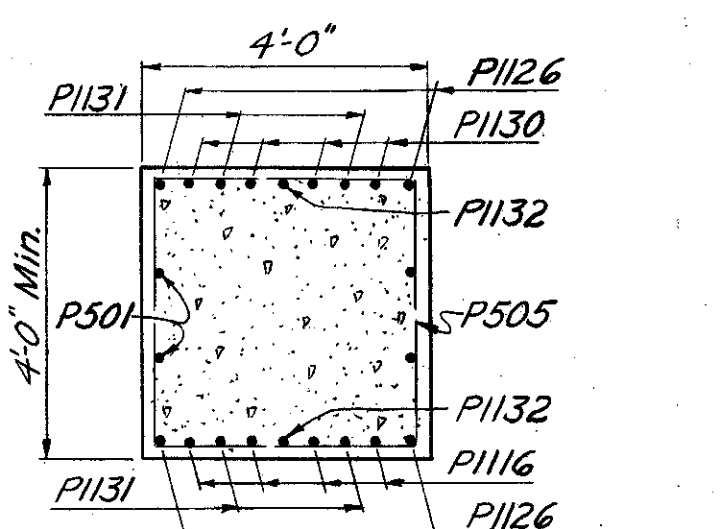
SECTION A-A SECTION B-B



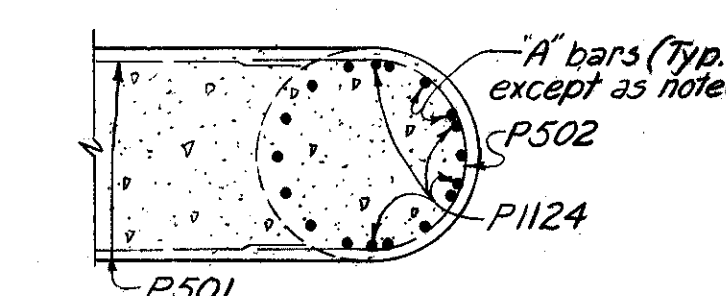
ELEVATION



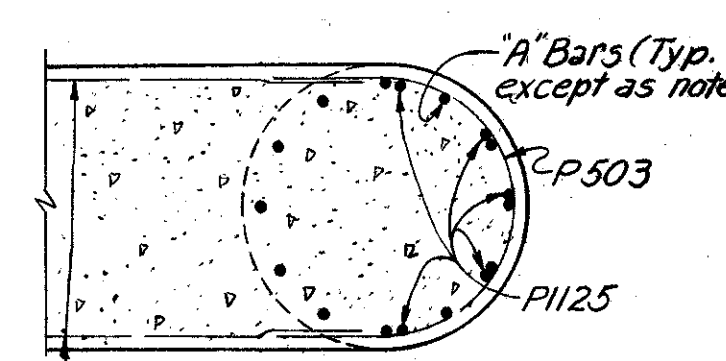
SECTION C-C
* See Elevation



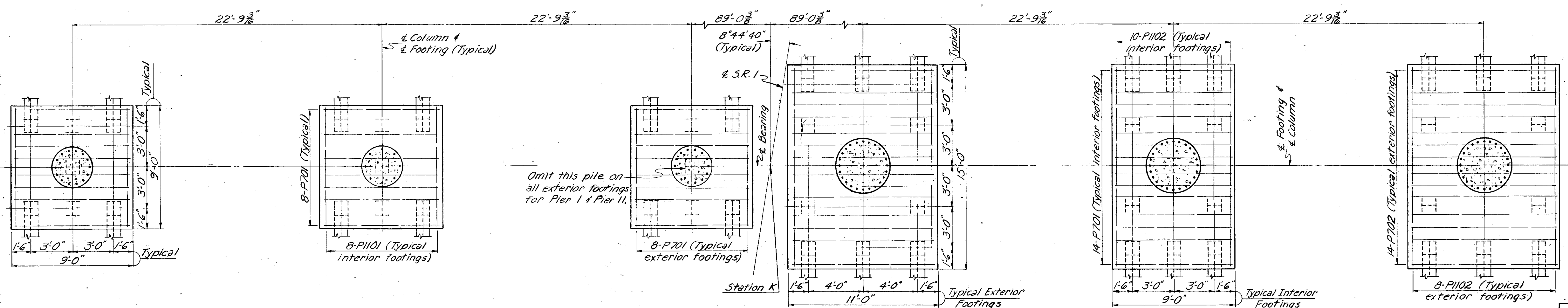
SECTION D-D



SECTION E-E



SECTION F-F
Scale for sections: 3/8" = 1'-0"
Revised 5-31-61



FOOTING PLAN

PIER 6

PIERS 1 THRU 5 AND 7 THRU 11

For pile details at Piers 1 & 11 see note on sheet 290.

Note:
Piers are symmetrical about S.R. 1.

Note:
Longitudinal bars in footings are spaced as shown in Elevation. Transverse bars in footings are spaced as shown.

Mark	PIER DATA TABLE																					
	PIER	1E	1W	2E	2W	3E	3W	4E	4W	6E	6W	7E	7W	8E	8W	9E	9W	10E	10W	11E	11W	
"A" Bars	P1105	P1106	P1107	P1108	P1109	P1110	P1111	P1112	P1113	P1114	P1115	P1116	P1117	P1118	P1119	P1120	P1121	P1122	P1123	P1124	P1125	P1126
"B" Bars	SP401	SP402	SP403	SP404	SP405	SP406	SP407	SP408	SP409	SP410	SP411	SP412	SP413	SP414	SP415	SP416	SP417	SP418	SP419	SP420	SP421	SP422
Station K	501+97.50	502+55.50	503+13.50	503+71.50	504+29.50	504+87.50	505+45.50	506+03.50	506+61.50	507+19.50	507+77.50											

Note:
For reinforcement schedule, bar bending diagrams, elevations and additional notes see sheet 290.

NO.	DATE	REVISION	BY

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

PIERS
BR. NO. CUY-1-0455 R & L
S.R. 1 OVER SHAKER BLVD.
STA. 501+60.22
508+14.78

CUYAHOGA CO. OHIO

SCALE: 3/8" = 1'-0" except as noted
MADE: A.R.L. DATE: 7-8-60
TRACED: DATE: 7-8-60

CHECKED: F.S.J. DATE: 7-12-60
REVIEWED: B.C. DATE: 10-4-60

1040 SHEET 289

REINFORCEMENT SCHEDULE

Bar Mark	NUMBER OF BARS IN EACH PIER																		Total Number	Length	Shape	Weight (Lbs.)	Bar Mark				
	1-E	1-W	2-E	2-W	3-E	3-W	4-E	4-W	5-E	5-W	6-E	6-W	7-E	7-W	8-E	8-W	9-E	9-W						10-E	10-W	11-E	11-W
P 501	2	2	2	2	2	2	2	2	2	2	4	4	2	2	2	2	2	2	2	2	2	2	48	45'-6"	S	2,278	P 501
P 502	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	120	7'-3"	B	907	P 502
P 503											8	8											16	8'-10"	B	147	P 503
P 504	28	28	28	28	28	28	28	28	28	28			28	28	28	28	28	28	28	28	28	28	560	12'-2"	B	7,106	P 504
P 505											20	20											40	15'-2"	B	633	P 505
P 506	43	43	43	43	43	43	43	43	43	43			43	43	43	43	43	43	43	43	43	43	860	5'-7"	B	5,008	P 506
P 507	2	2	2	2	2	2	2	2	2	2			2	2	2	2	2	2	2	2	2	2	40	5'-5"	B	226	P 507
P 508											43	43											86	6'-7"	B	591	P 508
P 509											2	2											4	6'-5"	B	27	P 509
P 701	40	40	40	40	40	40	40	40	40	40	14	14	40	40	40	40	40	40	40	40	40	40	828	10'-4"	B	17,488	P 701
P 702											28	28											56	12'-4"	B	1,412	P 702
P 1101	8	8	8	8	8	8	8	8	8	8			8	8	8	8	8	8	8	8	8	8	160	11'-10"	B	10,059	P 1101
P 1102											26	26											52	17'-10"	B	4,927	P 1102
P 1103	36	36	36	36	36	36	36	36	36	36			36	36	36	36	36	36	36	36	36	36	720	7'-5"	B	28,371	P 1103
P 1104											36	36											72	7'-11"	B	3,028	P 1104
P 1105	36																						36	17'-6"	S	3,347	P 1105
P 1106		36																					36	16'-6"	S	3,156	P 1106
P 1107			36										36										108	16'-3"	S	9,324	P 1107
P 1108				36																			36	14'-6"	S	2,773	P 1108
P 1109					36																		36	17'-9"	S	3,395	P 1109
P 1110						36																	36	14'-0"	S	2,678	P 1110
P 1111							36																36	19'-6"	S	3,730	P 1111
P 1112								36															36	14'-9"	S	2,821	P 1112
P 1113									36														36	20'-9"	S	3,969	P 1113
P 1114										36													36	18'-6"	S	3,538	P 1114
P 1115											36												36	19'-0"	S	3,634	P 1115
P 1116											8	44											52	18'-9"	S	5,180	P 1116
P 1117													36										36	18'-0"	S	3,443	P 1117
P 1118	4	4	6	6	6	6	6	6	6	6			6	6	42	6	42	6	6	6	4	4	184	17'-3"	S	16,863	P 1118
P 1119															36								36	15'-3"	S	2,917	P 1119
P 1120																		36					36	17'-0"	S	3,252	P 1120
P 1121																			36				36	15'-6"	S	2,965	P 1121
P 1122																					36	36	72	14'-3"	S	5,451	P 1122
P 1123											36	36											72	14'-5"	B	5,515	P 1123
P 1124	8	8	8	8	8	8	8	8	8	8			8	8	8	8	8	8	8	8	8	8	160	11'-10"	B	10,059	P 1124
P 1125											10	10											20	12'-10"	B	1,364	P 1125
P 1126	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	88	45'-6"	S	21,273	P 1126
P 1127	5	5	5	5	5	5	5	5	5	5			5	5	5	5	5	5	5	5	5	5	100	48'-0"	S	25,502	P 1127
P 1128	2	2	2	2	2	2	2	2	2	2			2	2	2	2	2	2	2	2	2	2	40	4'-6"	S	10,095	P 1128
P 1129	2	2	3	3	3	3	3	3	3	3			3	3	3	3	3	3	3	3	3	3	56	12'-0"	S	3,570	P 1129
P 1130	3	3	3	3	3	3	3	3	3	3	4	4	3	3	3	3	3	3	3	3	3	3	68	20'-0"	S	7,226	P 1130
P 1131											4	4											8	48'-9"	S	2,072	P 1131
P 1132											2	2											4	49'-0"	S	1,041	P 1132
																							Total	Weight=252,361*			

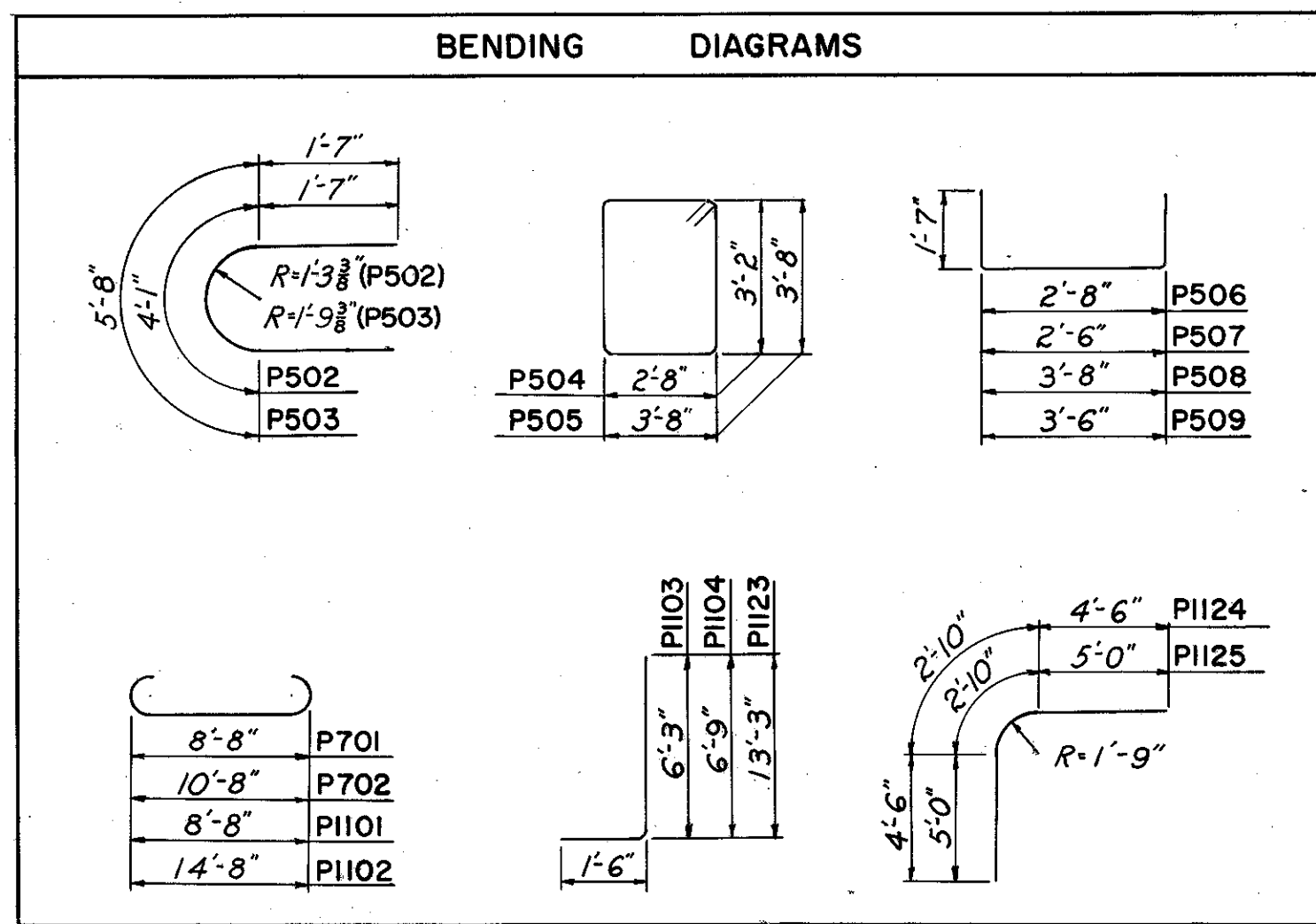
ELEVATIONS											
EAST BRIDGE											
PIERS											
Elevation	1-E	2-E	3-E	4-E	5-E	6-E	7-E	8-E	9-E	10-E	11-E
A	1151.86	1150.56	1149.40	1148.24	1147.08	1145.92	1144.76	1143.60	1142.44	1141.28	1140.26
B	1152.00	1150.70	1149.54	1148.38	1147.22	1146.06	1144.90	1143.74	1142.58	1141.42	1140.40
C	1152.14	1150.84	1149.68	1148.52	1147.36	1146.20	1145.04	1143.88	1142.72	1141.56	1140.54
D	1152.28	1150.98	1149.82	1148.66	1147.50	1146.34	1145.18	1144.02	1142.86	1141.70	1140.68
E	1152.42	1151.12	1149.96	1148.80	1147.64	1146.48	1145.32	1144.16	1143.00	1141.84	1140.82
F	1152.34	1151.04	1149.88	1148.72	1147.56	1146.40	1145.24	1144.08	1142.92	1141.76	1140.74
G	1152.25	1150.94	1149.78	1148.62	1147.46	1146.30	1145.14	1143.98	1142.82	1141.66	1140.65
H	1148.36	1147.06	1145.90	1144.74	1143.58	1142.42	1141.26	1140.10	1138.94	1137.78	1136.76
J	1131.00	1131.00	1128.50	1125.50	1123.00	1123.00	1123.50	1123.00	1122.00	1122.50	1122.75

WEST BRIDGE											
PIERS											
Elevation	1-W	2-W	3-W	4-W	5-W	6-W	7-W	8-W	9-W	10-W	11-W
A	1152.68	1151.37	1150.21	1149.05	1147.89	1146.73	1145.57	1144.41	1143.25	1142.09	1141.08
B	1152.77	1151.47	1150.31	1149.15	1147.99	1146.83	1145.67	1144.51	1143.35	1142.19	1141.17
C	1152.85	1151.56	1150.40	1149.24	1148.08	1146.92	1145.76	1144.60	1143.44	1142.28	1141.27
D	1152.96	1151.66	1150.50	1149.34	1148.18	1147.02	1145.86	1144.70	1143.54	1142.38	1141.36
E	1153.05	1151.75	1150.59	1149.43	1148.27	1147.11	1145.95	1144.79	1143.63	1142.47	1141.46
F	1152.93	1151.63	1150.47	1149.31	1148.15	1146.99	1145.83	1144.67	1143.51	1142.35	1141.33
G	1152.79	1151.49	1150.33	1149.17	1148.01	1146.85	1145.69	1144.53	1143.37	1142.21	1141.19
H	1149.18	1147.87	1146.71	1145.55	1144.39	1143.23	1142.07	1140.91	1139.75	1138.59	1137.58
J	1133.00	1133.50	1133.00	1131.00	1126.00	1124.00	1126.00	1126.00	1123.00	1122.50	1123.50

At PIERS 1 and 11, the piles in the row adjacent to the sewer lines shall be driven vertical.
 At these piers the piles in the row adjacent to the sewer lines and the piles in the row on centerline of pier shall be driven in 14 in diameter pre-bored holes. The preboring shall preferably extend to 4 ft below the flow line of the lower sewer but not lower than elevation 1122.0 at pier No. 1 and elevation 1112.0 at pier No. 11.
 After the holes are pre-bored the piles shall be set and the holes backfilled with sand after which the piles shall be driven to the capacities specified on sheet 271.
 Payment for pre-boring and backfilling shall be included in price bid per lin ft. for Item 5-18 Steel Piles, 12BP53.

NOTES:
 All piles shall be 12 BP 53.
 All battered piles to be 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 concrete in footing and 2 inches elsewhere.
 All bar dimensions are given out to out.
 For spiral reinforcement notes, see sheet 273.
 For replacement schedule, see sheet 280.
 For details of Bolsters and Rockers see Ohio Standard Drawing RB-1-55.

SPIRAL REINFORCEMENT SCHEDULE							
Mark	Location	No.	Core Dia. % Spiral	Length	Pitch	Weight (lbs.)	
SP401	1E, 3E	6	2'-8"	14'-4"	4 1/2"	41	1,590
SP402	1W, 2E, 7W, 10W	12	2'-8"	13'-0"	4 1/2"	38	2,939
SP403	2W	3	2'-8"	11'-4"	4 1/2"	33	638
SP404	3W	3	2'-8"	10'-8"	4 1/2"	31	600
SP405	4E	3	2'-8"	16'-2"	4 1/2"	46	893
SP406	4W	3	2'-8"	11'-6"	4 1/2"	34	656
SP407	5E	3	2'-8"	17'-7"	4 1/2"	50	971
SP408	5W	3	2'-8"	15'-4"	4 1/2"	44	853
SP409	6E	3	3'-8"	15'-5"	4"	49	1,245
SP410	6W	3	3'-8"	15'-2"	4"	49	1,242
SP411	7E	3	2'-8"	14'-9"	4 1/2"	42	815
SP412	8E	3	2'-8"	14'-1"	4 1/2"	41	793
SP413	8W	3	2'-8"	11'-10"	4 1/2"	35	676
SP414	9E & 9W	6	2'-8"	13'-9"	4 1/2"	40	1,548
SP415	10E	3	2'-8"	12'-3"	4 1/2"	36	695
SP416	11E & 11W	6	2'-8"	11'-0"	4 1/2"	32	1,238
Total Weight=17,392*							



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ELEVATIONS

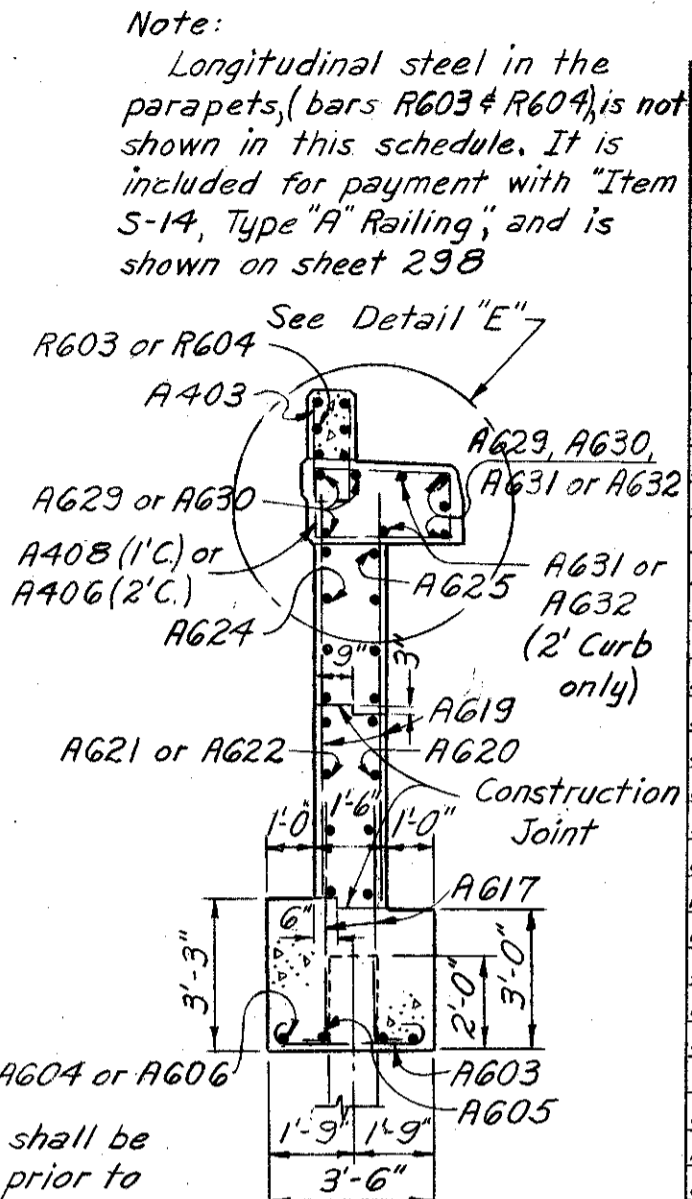
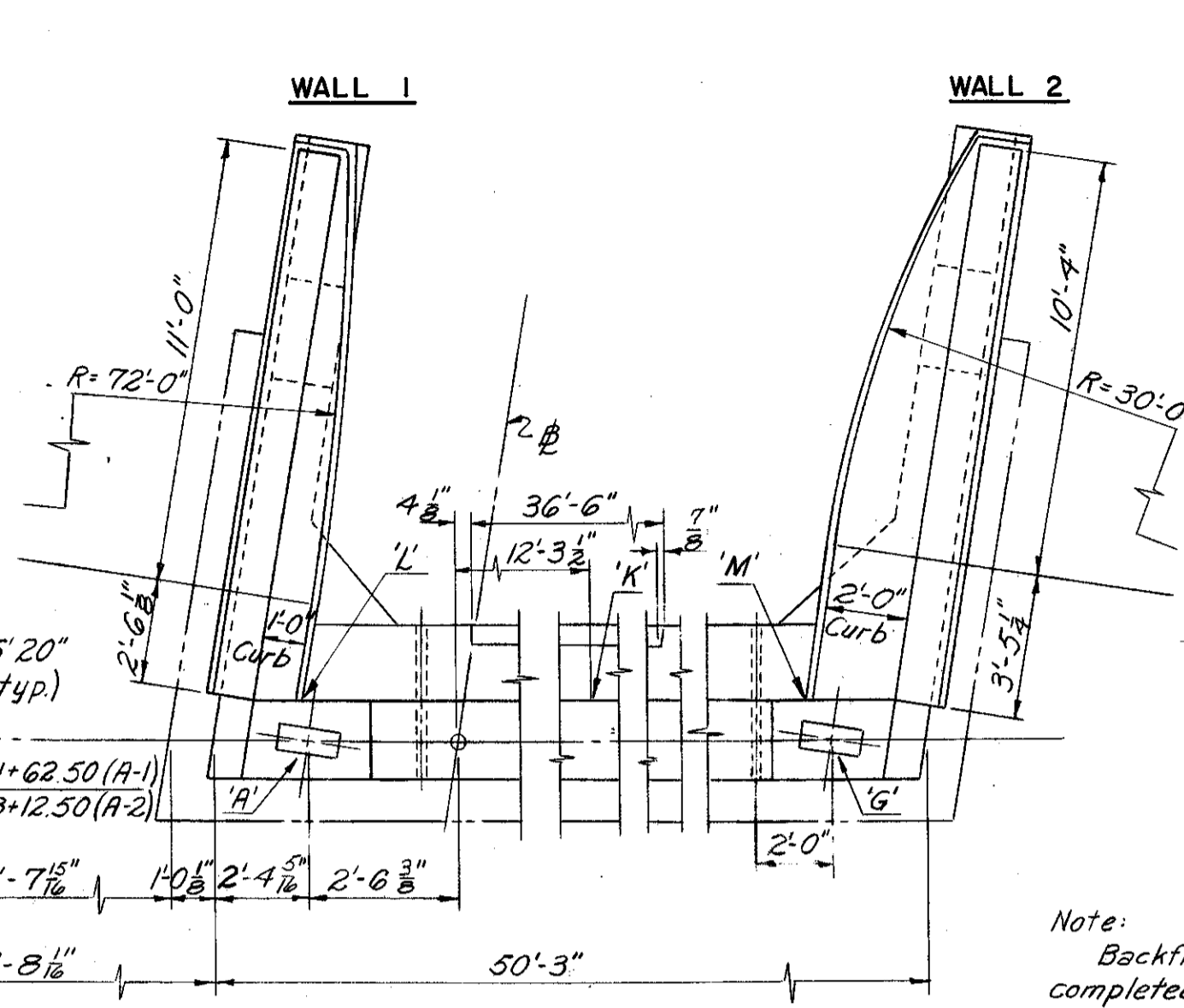
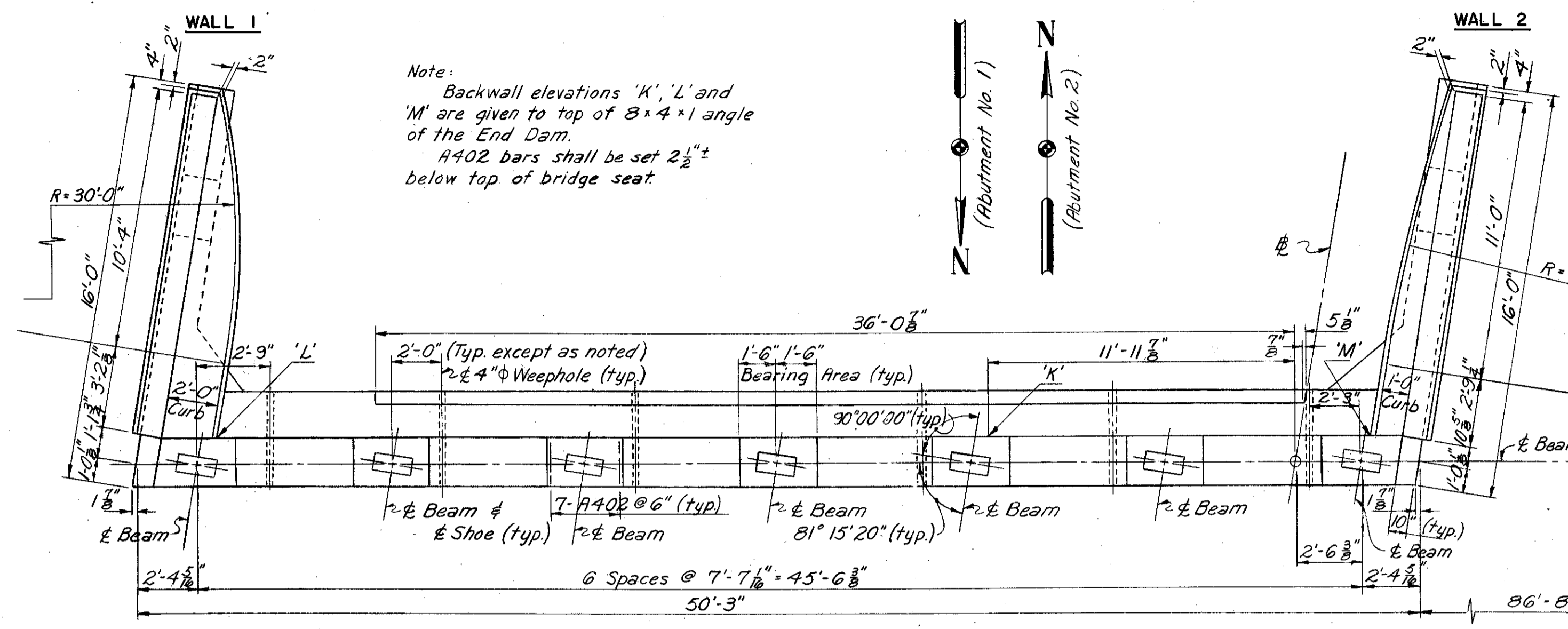
Abut.	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'L'	'M'	'N'	'P'	'R'	'S'	'T'	'U'	'V'
1-E	1152.77	1152.91	1153.05	1153.19	1153.33	1153.25	1153.15	1151.7	1151.9	1157.76	1157.20	1157.57	1145.50	1156.29	1156.69	1158.33	1158.70	1154.09	1154.46
1-W	1153.68	1153.82	1153.95	1153.85	1153.76	1153.66	1153.57	1152.4	1152.6	1158.37	1158.10	1157.99	1146.23	1157.21	1157.03	1159.21	1159.14	1154.97	1154.90
2-E	1140.16	1140.25	1140.33	1140.19	1140.05	1139.91	1139.77	1138.9	1138.7	1144.72	1144.34	1144.16	1132.50	1143.66	1143.25	1145.13	1144.76	1140.87	1140.50
2-W	1140.59	1140.63	1140.78	1140.87	1140.96	1140.84	1140.70	1139.6	1139.4	1145.35	1144.96	1145.08	1133.25	1144.08	1144.19	1145.59	1143.65	1141.34	1141.40

Note A: Horizontal dimensions for all abutments are identical except as shown in Part Plan.
Abutments 1-W and 2-E reinforcement shall be placed as in Abutments 1-E and 2-W except as noted thus * in the Elevation View.
* These bars shall be placed in accordance with the location of the approach slab seat.
Wall designations are independent of curb sections.

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

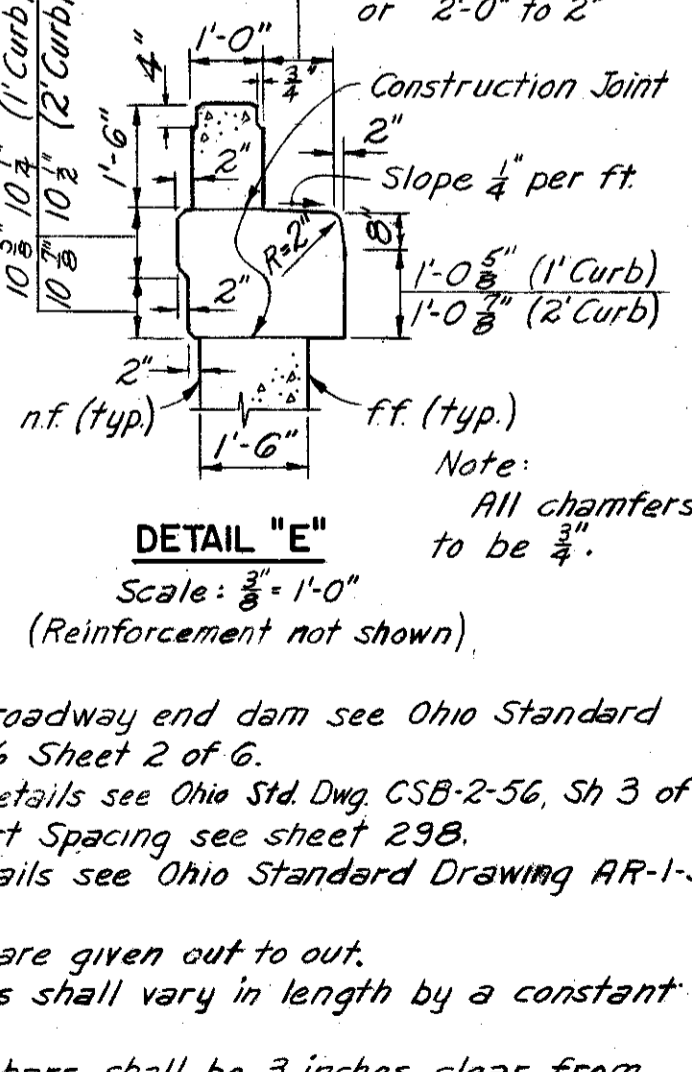
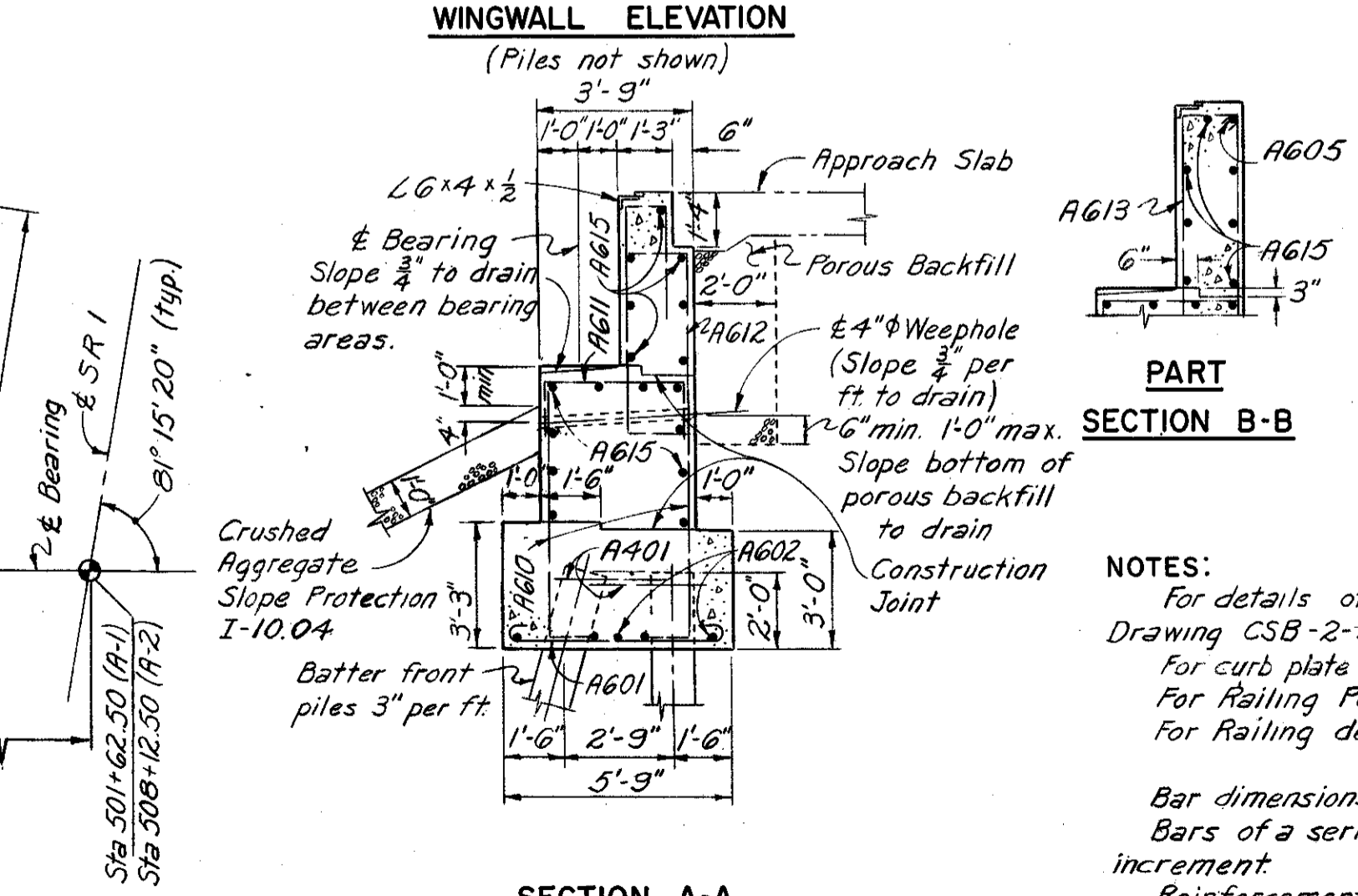
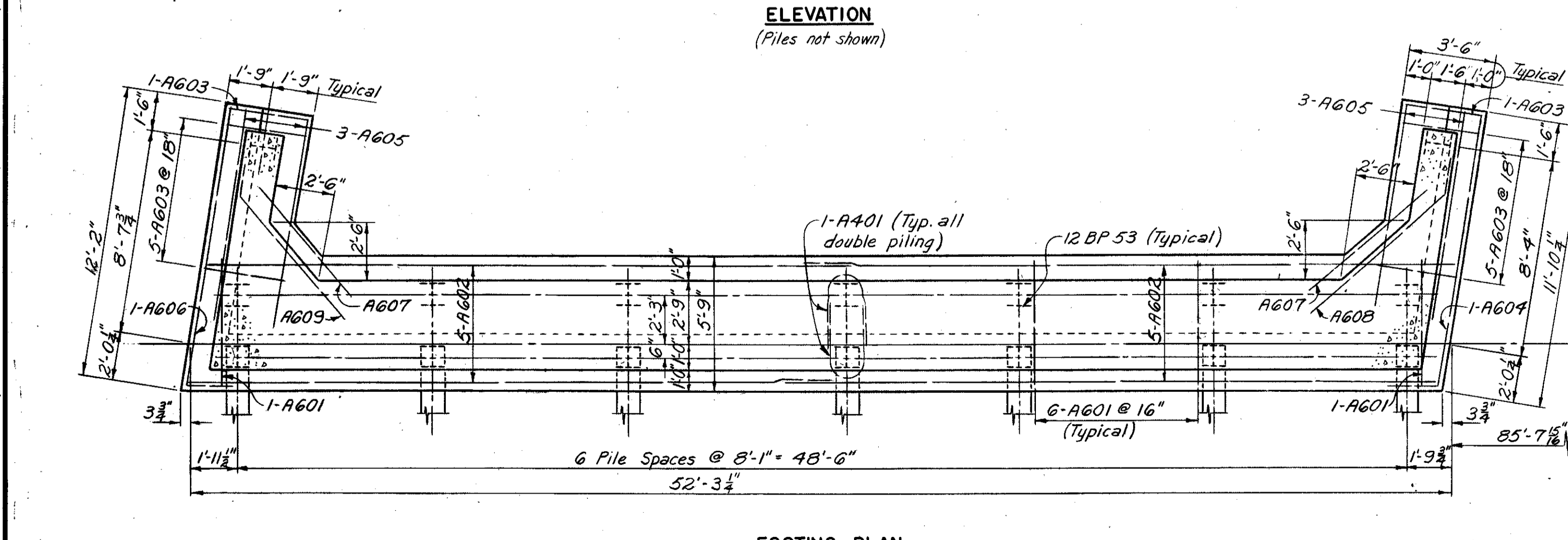
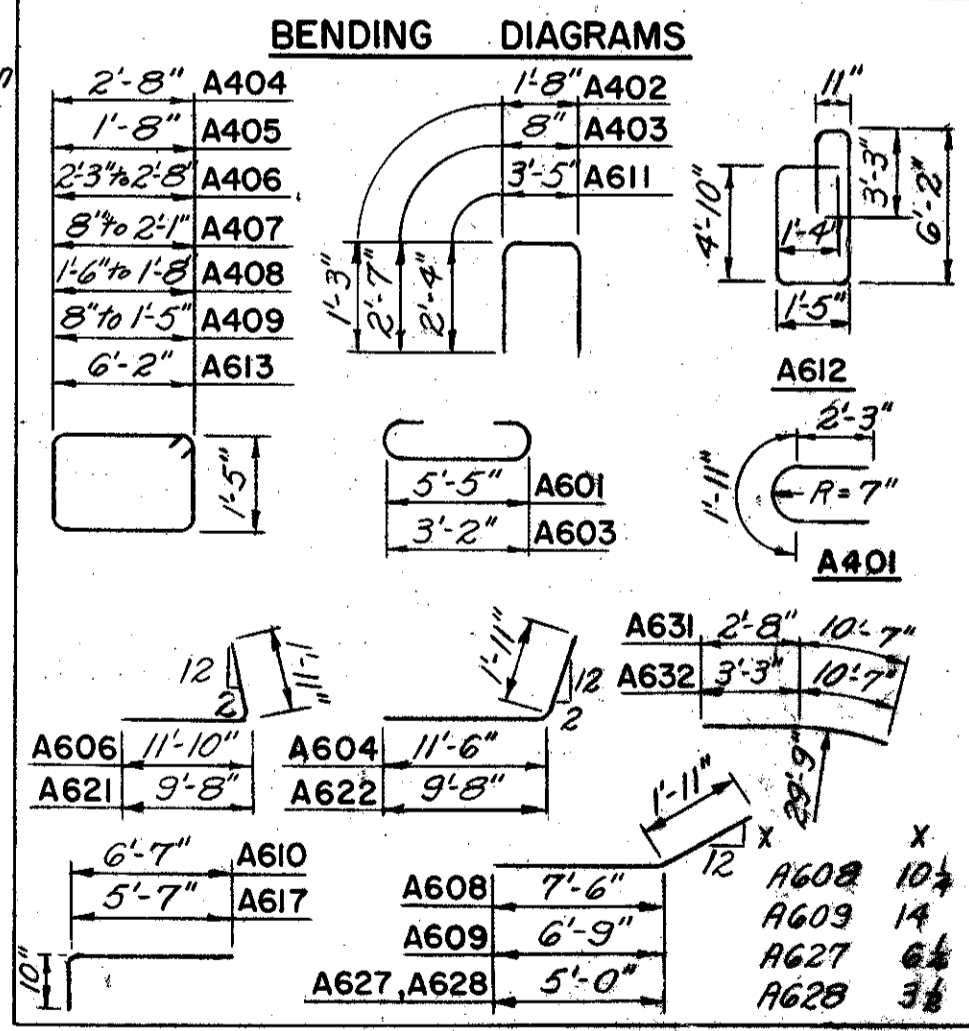
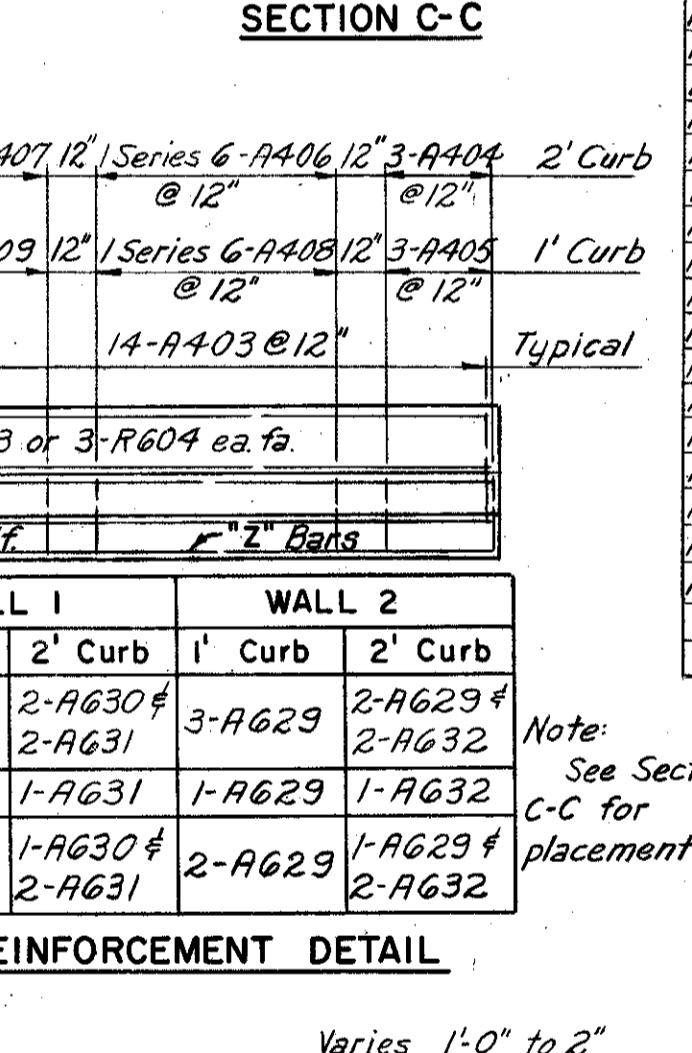
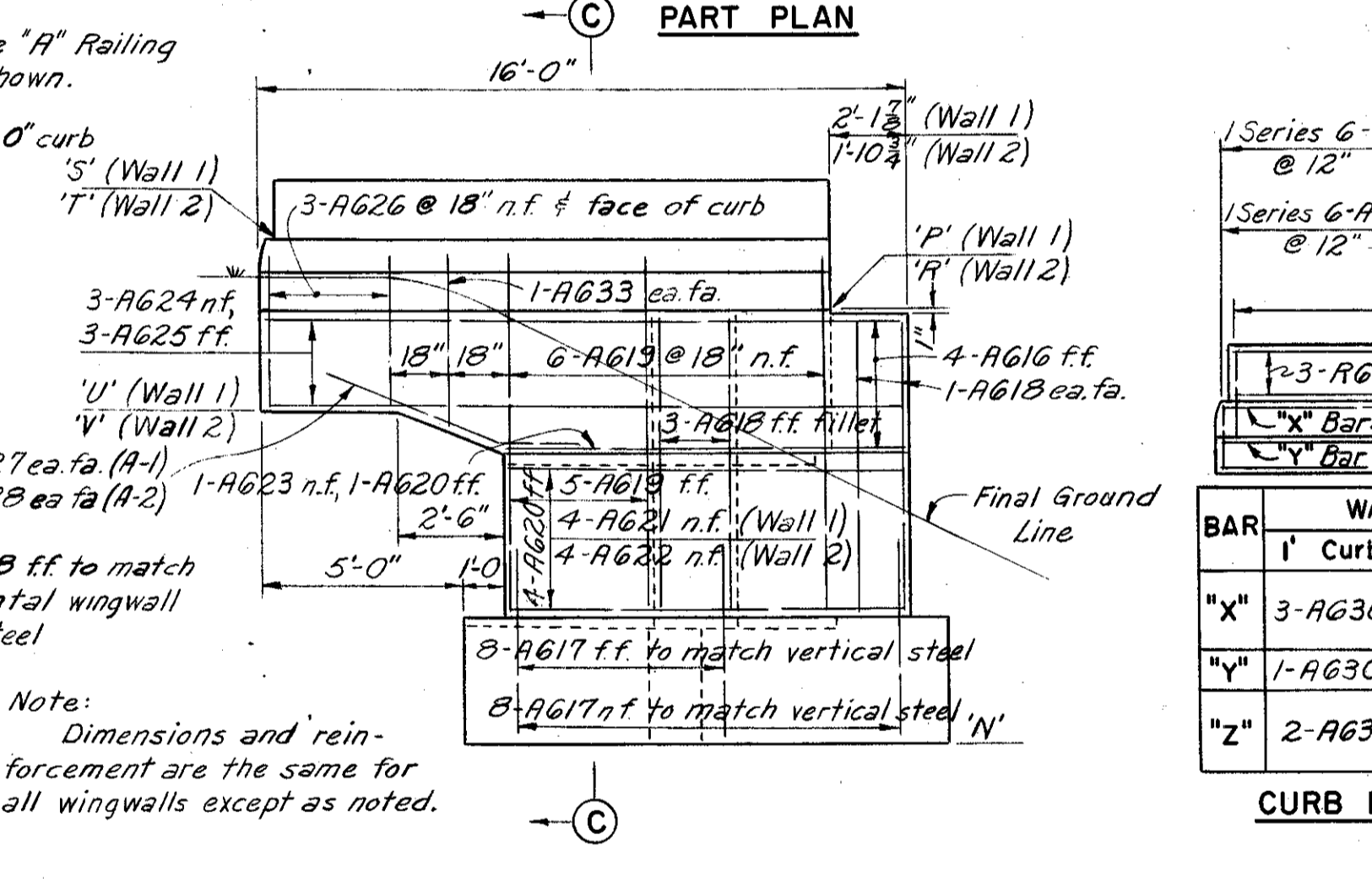
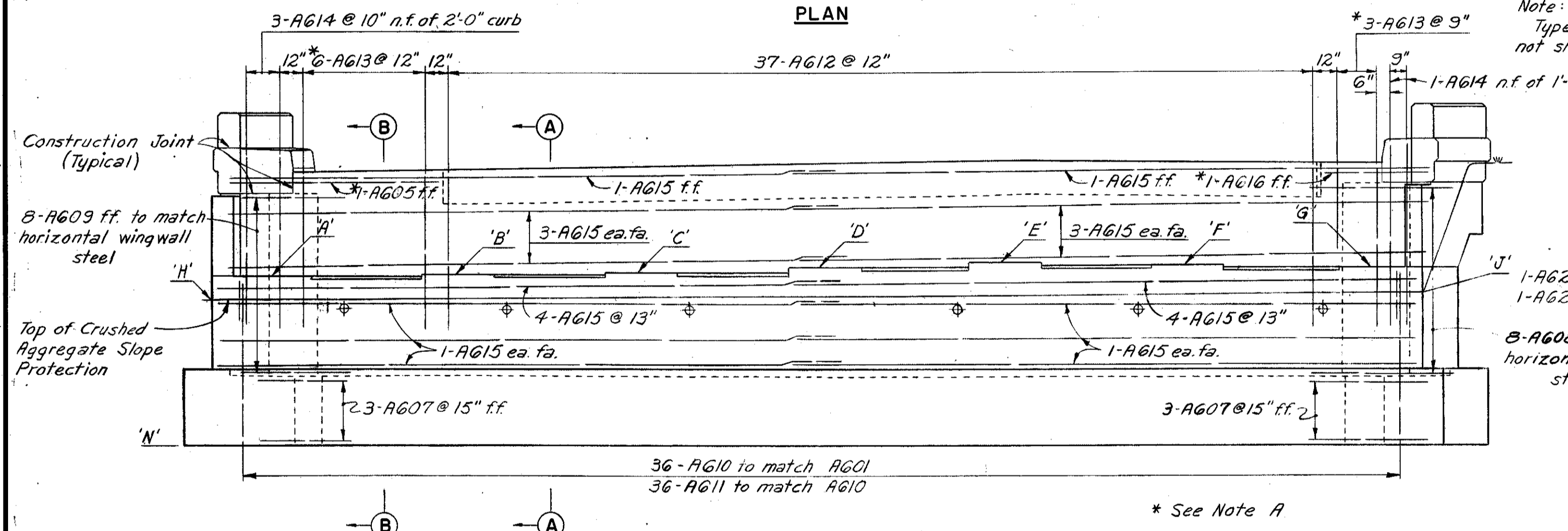
291
313

CUYAHOGA COUNTY
CUY-1-2.20



REINFORCEMENT SCHEDULE

Mark	Number				Length	Weight (Lbs.)	Shape	Series Incr.
	1-E	1-W	2-E	2-W				
A401	14	14	14	14	6'-5"	240	B	
A402	49	49	49	49	3'-11"	513	B	
A403	28	28	28	28	5'-7"	418	B	
A404	3	3	3	3	8'-7"	69	B	
A405	3	3	3	3	6'-7"	53	B	
A406	1 Ser 6	1 Ser 6	1 Ser 6	1 Ser 6	7'-9" to 8'-7"	131	B	2"
A407	1 Ser 6	1 Ser 6	1 Ser 6	1 Ser 6	4'-7" to 7'-5"	96	B	6 1/2"
A408	1 Ser 6	1 Ser 6	1 Ser 6	1 Ser 6	6'-3" to 6'-7"	103	B	4"
A409	1 Ser 6	1 Ser 6	1 Ser 6	1 Ser 6	4'-7" to 6'-1"	86	B	3 1/2"
A601	38	38	38	38	6'-9"	1541	B	
A602	10	10	10	10	27'-0"	1622	S	
A603	12	12	12	12	4'-6"	324	B	
A604	1	1	1	1	13'-3"	80	B	
A605	7	7	7	7	8'-6"	357	S	
A606	1	1	1	1	13'-7"	82	B	
A607	6	6	6	6	6'-6"	234	S	
A608	8	8	8	8	9'-3"	443	B	
A609	8	8	8	8	8'-6"	409	B	
A610	72	72	72	72	7'-3"	3136	B	
A611	36	36	36	36	7'-9"	1676	B	
A612	37	37	37	37	17'-1"	3798	B	
A613	9	9	9	9	15'-11"	861	B	
A614	5	5	5	5	7'-0"	210	S	
A615	34	34	34	34	26'-0"	5311	S	
A616	9	9	9	9	4'-3"	230	S	
A617	32	32	32	32	6'-3"	1202	B	
A618	14	14	14	14	7'-3"	610	S	
A619	22	22	22	22	8'-9"	1157	S	
A620	10	10	10	10	6'-0"	360	S	
A621	4	4	4	4	11'-5"	274	B	
A622	4	4	4	4	11'-5"	274	B	
A623	2	2	2	2	9'-6"	114	S	
A624	6	6	6	6	15'-6"	559	S	
A625	6	6	6	6	12'-0"	433	S	
A626	12	12	12	12	3'-9"	270	S	
A627	4	4	4	4	6'-9"	81	B	
A628	4	4	4	4	6'-9"	81	B	
A629	6	6	6	6	13'-6"	365	S	
A630	3	3	3	3	13'-3"	358	S	
A631	5	5	5	5	13'-3"	199	B	
A632	5	5	5	5	13'-10"	208	B	
A633	4	4	4	4	4'-0"	96	S	
					Total Weight	28666		



NOTES:

- For details of roadway end dam see Ohio Standard Drawing CSB-2-56 Sheet 2 of 6.
- For curb plate details see Ohio Std. Dwg. CSB-2-56, Sh 3 of 6.
- For Railing Post Spacing see sheet 29B.
- For Railing details see Ohio Standard Drawing AR-1-57.

Bar dimensions are given out to out.
Bars of a series shall vary in length by a constant increment.
Reinforcement bars shall be 3 inches clear from the bottom of footings and 2 inches elsewhere.
For Replacement Schedule see sheet 28B.
Pile spacings are given along bottom of footing.
n.f. = near face, ff. = far face, ea. fa. = each face, A-1 = Abutment 1, A-2 = Abutment 2, 1'C = 1' Curb, 2'C = 2' Curb

NO.	DATE	REVISION	BY

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

ABUTMENTS
BR. NO. GUY-1-0455 R 8 L
S.R.I. OVER SHAKER BLVD.
STA. 501 + 60.22
508 + 14.78

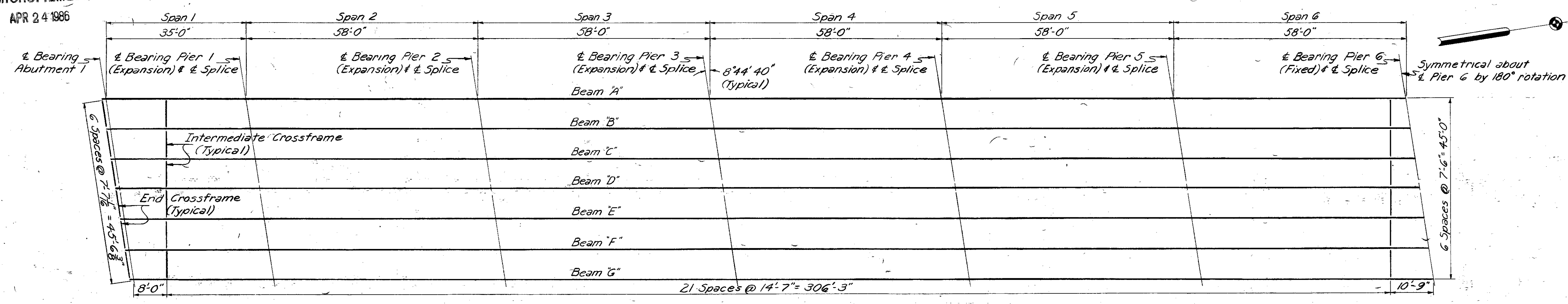
CUYAHOGA CO.

SCALE: 1/4" = 1'-0" except as noted
MADE: C.K.B. DATE: 6-13-60
TRACED: DATE: 10-4-60

H.N.T.B. BR. NO. 54
1040 291

MICROFILMED
APR 24 1986

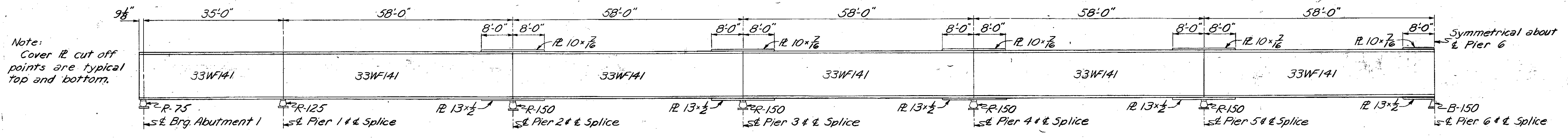
CUYAHOGA COUNTY
CUY-1-2.20



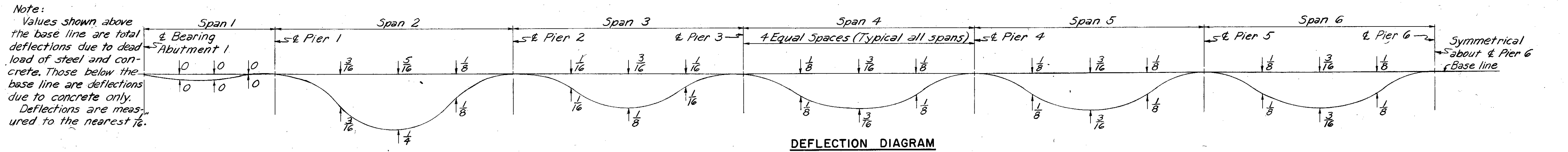
PART FRAMING PLANS

REINFORCEMENT SCHEDULE					BENDING DIAGRAMS	
Mark	No.	Length	Weight (lbs.)	Shape		
S401	2760	4'-5"	8143	B		
S402	1304	5'-0"	4355	B		
S403	1304	6'-0"	5226	B		
S601	3384	38'-0"	193,145	S		
S602	5204	26'-0"	203,227	S		
S603	924	20'-6"	28,451	S		
Total			586,604			

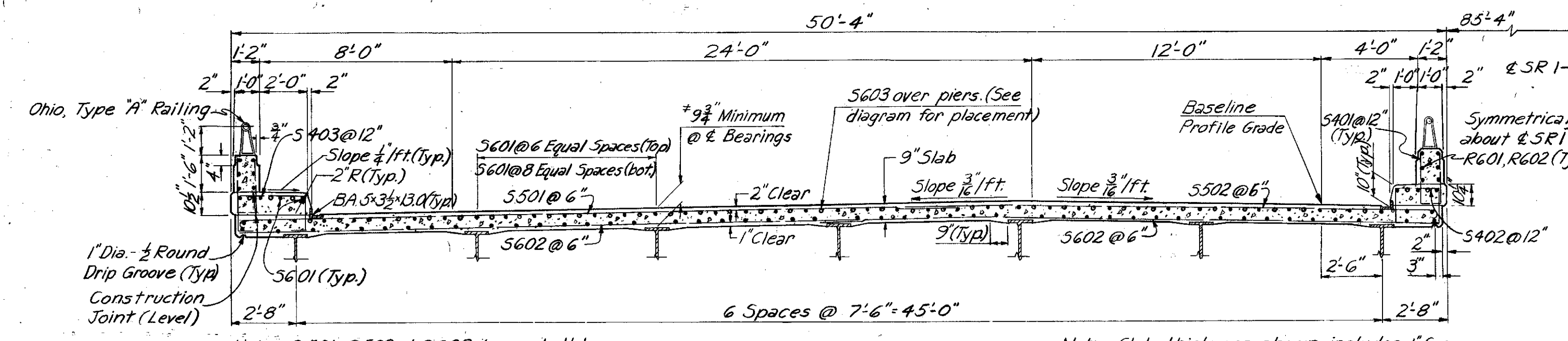
Notes: For replacement bar schedule, see sheet 280. All bar dimensions are given out to out. Longitudinal steel in the parapet, (bars R601, R602 and R603), is not shown in this schedule. It is included for payment with "Item 5-14, Type A Railing" and is shown on sheet 298.



TYPICAL BEAM ELEVATION



DEFLECTION DIAGRAM



TYPICAL CROSS SECTION (LOOKING NORTH)

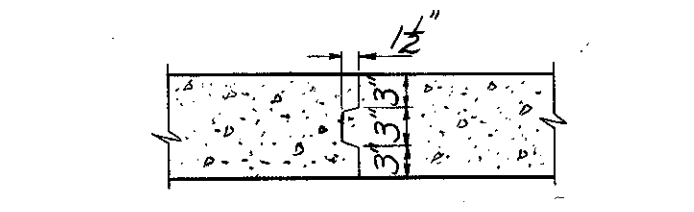
Note: After erection and after the shop coat has been cleaned and, where necessary, repainted in accordance with Sec. 8.04, an additional coat of the same paint as used in the shop shall be applied over the outside face of the outside steel beams and all sides of bottom flange.

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 transverse reinforcing steel and are located near the center of any span.

Note: This is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

BEAM SPLICE WELDING PROCEDURE

1. Raise beam ends at Pier 5 or Pier 7, 1".
2. Butt-weld beam flanges and web at Pier 6 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 at Pier 6.
4. Lower beam ends to final position.
5. Raise beam ends at Pier 4 & Pier 8, 3/8".
6. Follow steps 2, 3 and 4 at Piers 5 & 7.
7. Raise beam ends at Pier 3 & Pier 9, 3/8".
8. Follow steps 2, 3 and 4 at Piers 4 & 8.
9. Raise beam ends at Pier 1 & Pier 11, 3/8".
10. Follow steps 2, 3 and 4 at Piers 2 & 10.
11. With beam ends in final position at Abut. 1 & Abut. 2, splice beams at Pier 1 & Pier 11 as indicated in step 2 only.



OPTIONAL CONSTRUCTION JOINT

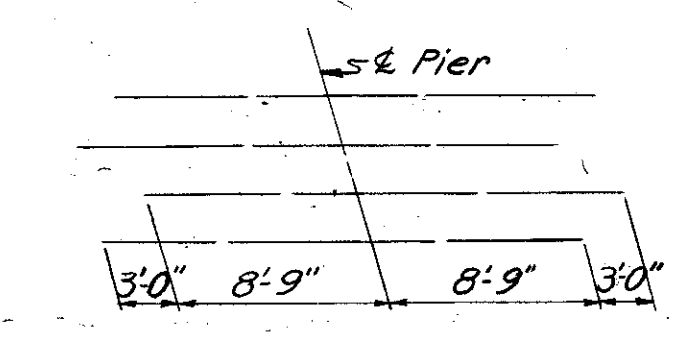
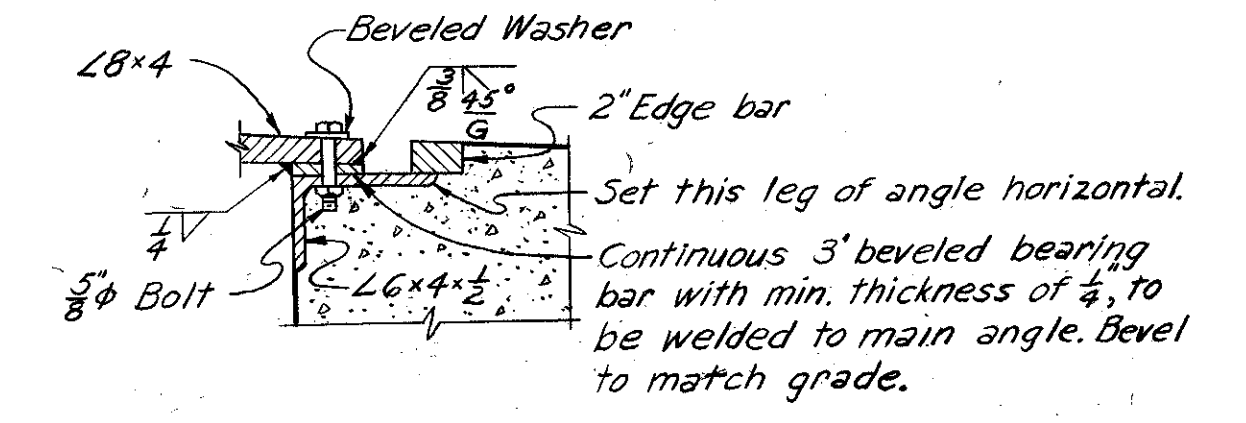


DIAGRAM SHOWING STAGGER OF S603 OVER PIERS



DETAIL OF BEVELED BEARING BAR (Abut. 2 shown, Abut. 1 similar)

Location	Station at C.S.R. 1	BEAMS - WEST BRIDGE						BEAMS - EAST BRIDGE							
		A*	B	C	D	E	F	G	A	B	C	D	E	F	G*
& Brg. Abut. 1	501+62.50	1157.97	1158.06	1158.16	1158.25	1158.35	1158.22	1158.08	1157.55	1157.73	1157.59	1157.45	1157.31	1157.17	
& Brg. Pier 1	501+97.50	1157.29	1157.38	1157.47	1157.57	1157.66	1157.54	1157.40	1156.86	1156.95	1157.03	1156.89	1156.75	1156.61	1156.47
& Brg. Pier 2	502+55.50	1156.13	1156.22	1156.32	1156.41	1156.51	1156.38	1156.24	1155.70	1155.79	1155.87	1155.73	1155.59	1155.45	1155.31
& Brg. Pier 3	503+13.50	1154.97	1155.06	1155.16	1155.25	1155.35	1155.22	1155.08	1154.54	1154.63	1154.71	1154.57	1154.43	1154.29	1154.15
& Brg. Pier 4	503+71.50	1153.81	1153.90	1154.00	1154.09	1154.19	1154.06	1153.92	1153.38	1153.47	1153.55	1153.41	1153.27	1153.13	1152.99
& Brg. Pier 5	504+29.50	1152.65	1152.74	1152.84	1152.93	1153.03	1152.90	1152.76	1152.22	1152.31	1152.39	1152.25	1152.11	1151.97	1151.83
& Brg. Pier 6	504+87.50	1151.49	1151.58	1151.68	1151.77	1151.87	1151.74	1151.60	1151.06	1151.15	1151.23	1151.09	1150.95	1150.81	1150.67
& Brg. Pier 7	505+45.50	1150.33	1150.42	1150.52	1150.61	1150.71	1150.58	1150.44	1149.90	1149.99	1150.07	1149.93	1149.79	1149.65	1149.51
& Brg. Pier 8	506+03.50	1149.17	1149.26	1149.36	1149.45	1149.55	1149.42	1149.28	1148.74	1148.83	1148.91	1148.77	1148.63	1148.49	1148.35
& Brg. Pier 9	506+61.50	1148.01	1148.10	1148.20	1148.29	1148.39	1148.26	1148.12	1147.58	1147.67	1147.75	1147.61	1147.47	1147.33	1147.19
& Brg. Pier 10	507+19.50	1146.85	1146.94	1147.04	1147.13	1147.23	1147.10	1146.96	1146.42	1146.51	1146.59	1146.45	1146.31	1146.17	1146.03
& Brg. Pier 11	507+77.50	1145.69	1145.78	1145.88	1145.97	1146.07	1145.94	1145.80	1145.26	1145.35	1145.43	1145.29	1145.15	1145.01	1144.87
& Brg. Abut. 2	508+12.50	1144.53	1144.62	1144.72	1144.81	1144.91	1144.78	1144.64	1144.10	1144.19	1144.27	1144.13	1143.99	1143.85	1143.71

Note: To obtain top of beam elevations at supports, exclusive of cover plates, deduct 0.81' from respective top of pavement elevations.

Note: * Elevations given to extended top of pavement.

NO.	DATE	REVISION	BY

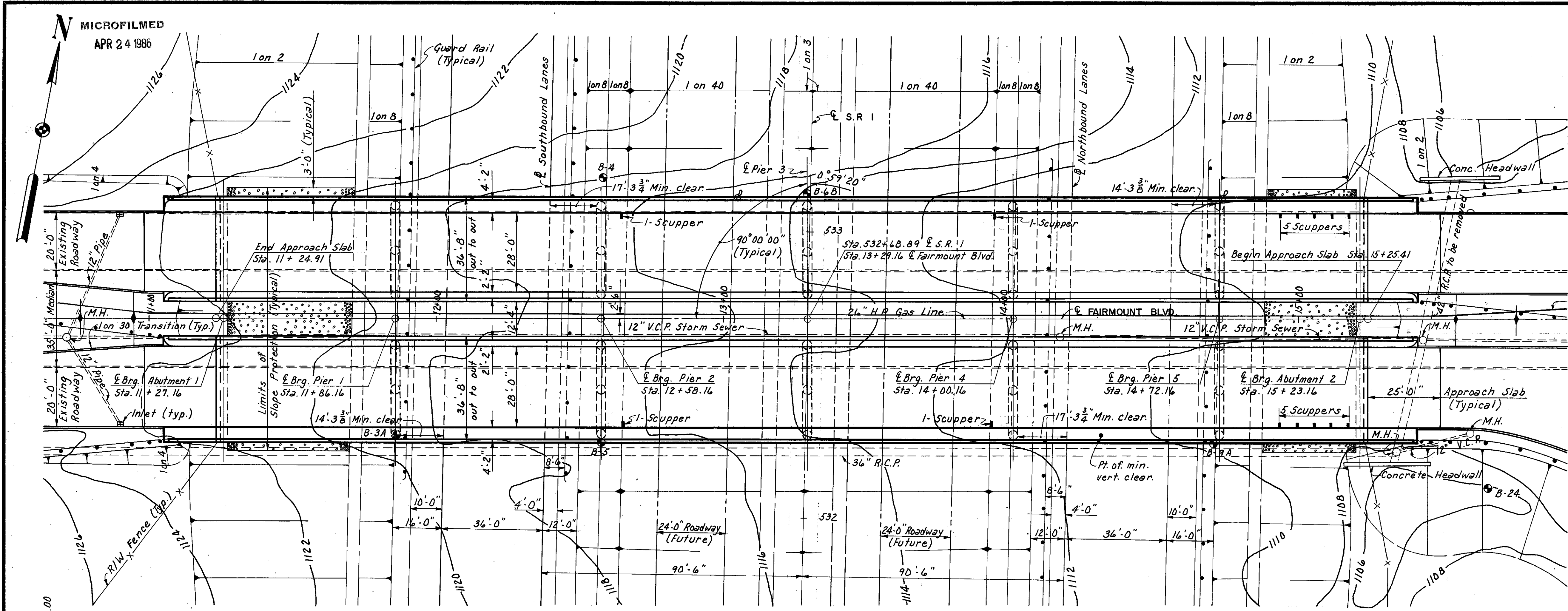
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SUPERSTRUCTURE
BR. NO. CUY-1-0455 R & L
S.R. I OVER SHAKER BLVD.
STA. 501 + 60.22
508 + 14.78

CUYAHOGA CO. OHIO

SCALE: No Scale CHECKED: F.S.J. DATE: 7-12-60
MADE: ARL DATE: 7-7-60 REVIEWED: B.C. DATE: 10-4-60
TRACED: DATE: 1040 SHEET 292

CUYAHOGA COUNTY
CÚY-1-2.20



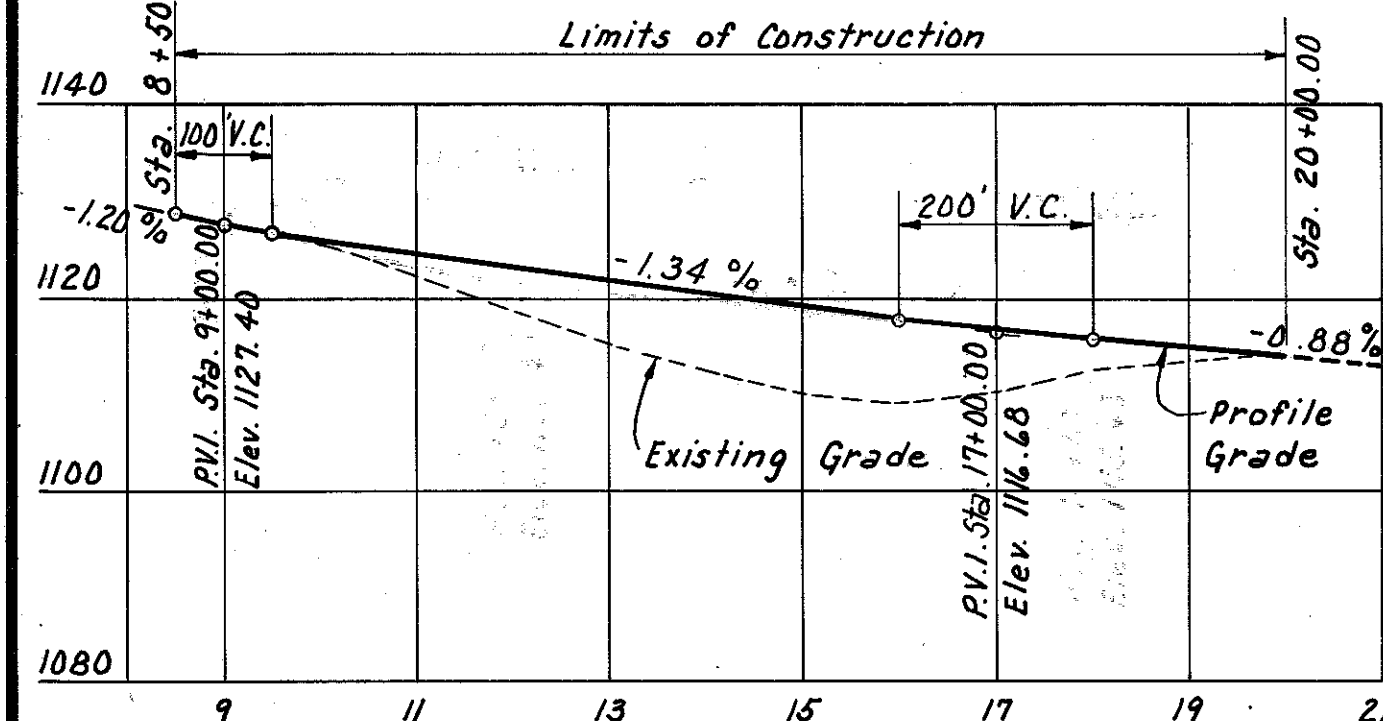
PROPOSED STRUCTURES

TYPE: Continuous steel beam with reinforced concrete deck and substructure.
SPANS: 59'-0", 72'-0", 2 @ 71'-0", 72'-0" & 51'-0"
ROADWAY: Twin 28'-0" roadway with one 2'-2" safety curb and one 4'-2" sidewalk
LOAD FREQUENCY: CF 400
SKEW: None
WEARING SURFACE: 1" Monolithic concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: Tangent

NOTES:

- The following items are not included in the Bridge Plans. (See Roadway Plans for details)
 - Approach grading, pavement and slab.
 - Roadway Guard Rail.
 - Relocation or removal of existing utilities.
- All piles are to be 12 BP53 with estimated average vertical lengths of 33 feet at Abutment No. 1 and 25 feet at Abutment No. 2
- Pier Footings shall extend a minimum of 3' into solid rock (or firm shale) or to the elevation shown, whichever is lower. Final bottom of footing elevation shall be determined by the Engineer.
- Top of rock shown in "Elevation" is determined by interpolation and is approximate only.

PLAN



PROFILE - FAIRMOUNT
Scale: Horiz. 1" = 200'
Vert. 1" = 20'

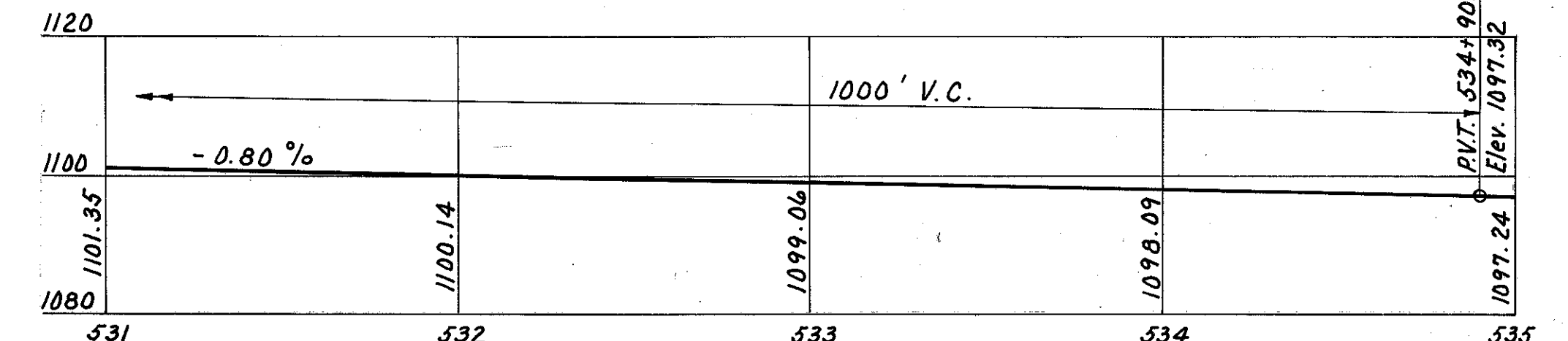
DRIVE SAMPLE BORING LOCATIONS

B-3A	Sta. 11+87	40' Rt.
B-4	Sta. 12+58	50' Lt.
B-5	Sta. 12+58	43'-6" Rt.
B-6B	Sta. 13+29	43' Lt.
B-9A	Sta. 14+70	43' Rt.
B-24	Sta. 15+67	58'-6" Rt.

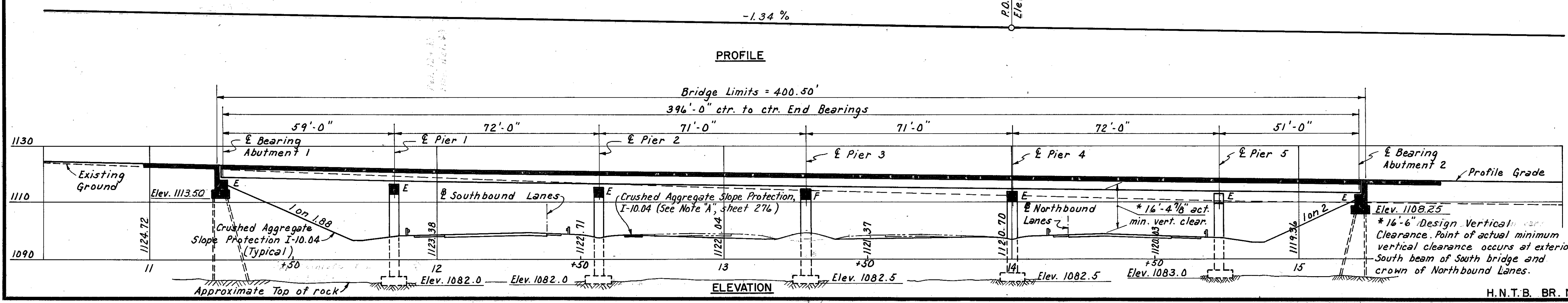
ROD SOUNDING LOCATIONS

B-1	Sta. 11+35	50' Lt.
B-2	Sta. 11+35	43'-6" Rt.
B-3	Sta. 11+87	£
B-6	Sta. 13+29	£
B-7	Sta. 14+00	50' Lt.
B-8	Sta. 14+00	43'-6" Rt.
B-9	Sta. 14+71	£
B-10	Sta. 15+23	50' Lt.
B-11	Sta. 15+23	43'-6" Rt.

SCUPPER SPACING
(Along Gutter Line)
4'-0" from E. Brg. Abutment # 2 to 1st scupper. Scuppers are Type B spaced at 6'-0" ctrs. Location of Type B scuppers at Piers 2 and 4 shall be 7'-0" from E. Bearing in the direction shown. See sheet 291 for details.

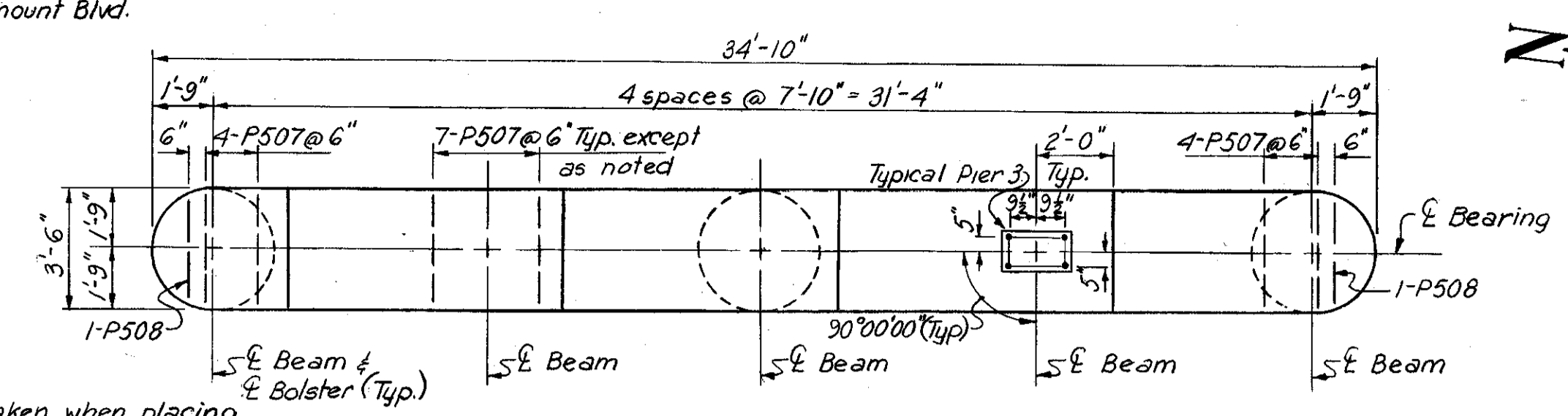
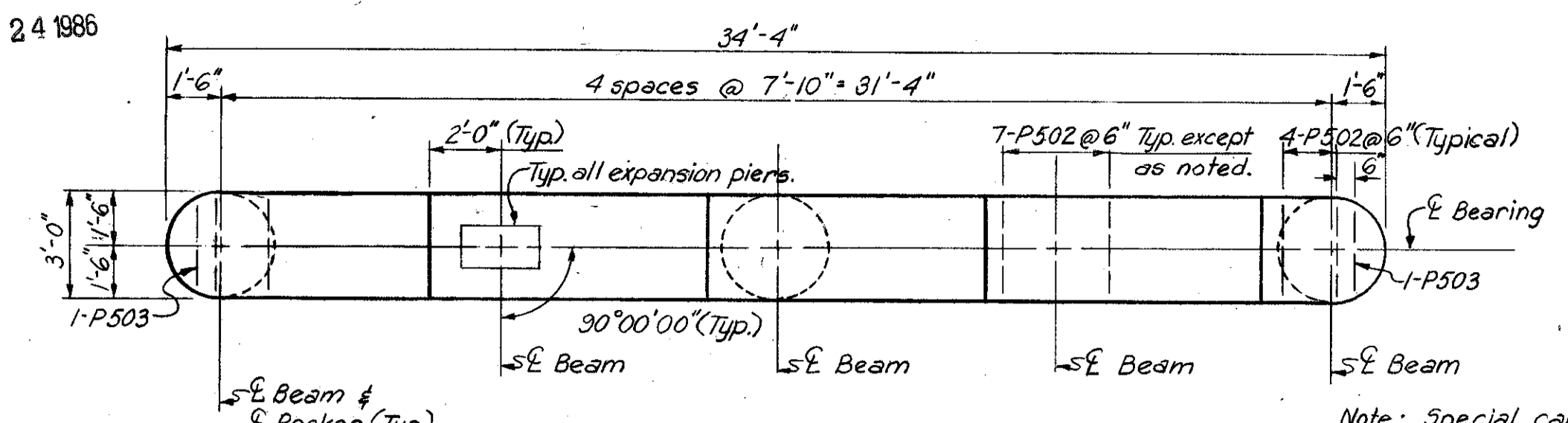
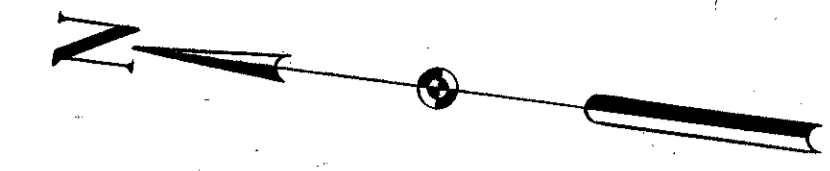


PROFILE - S.R. 1
Scale: Horiz. 1" = 40', Vert. 1" = 20'

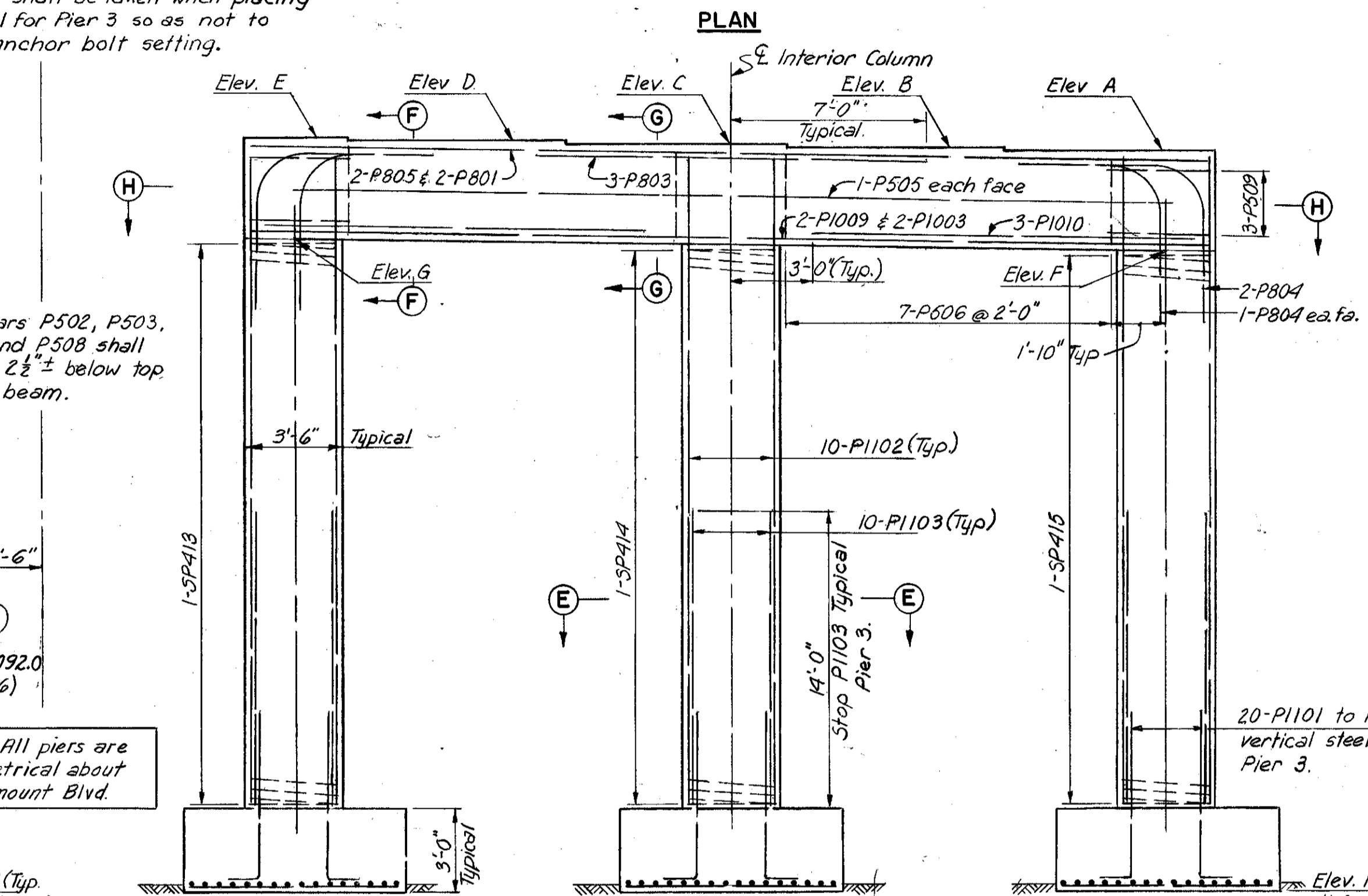
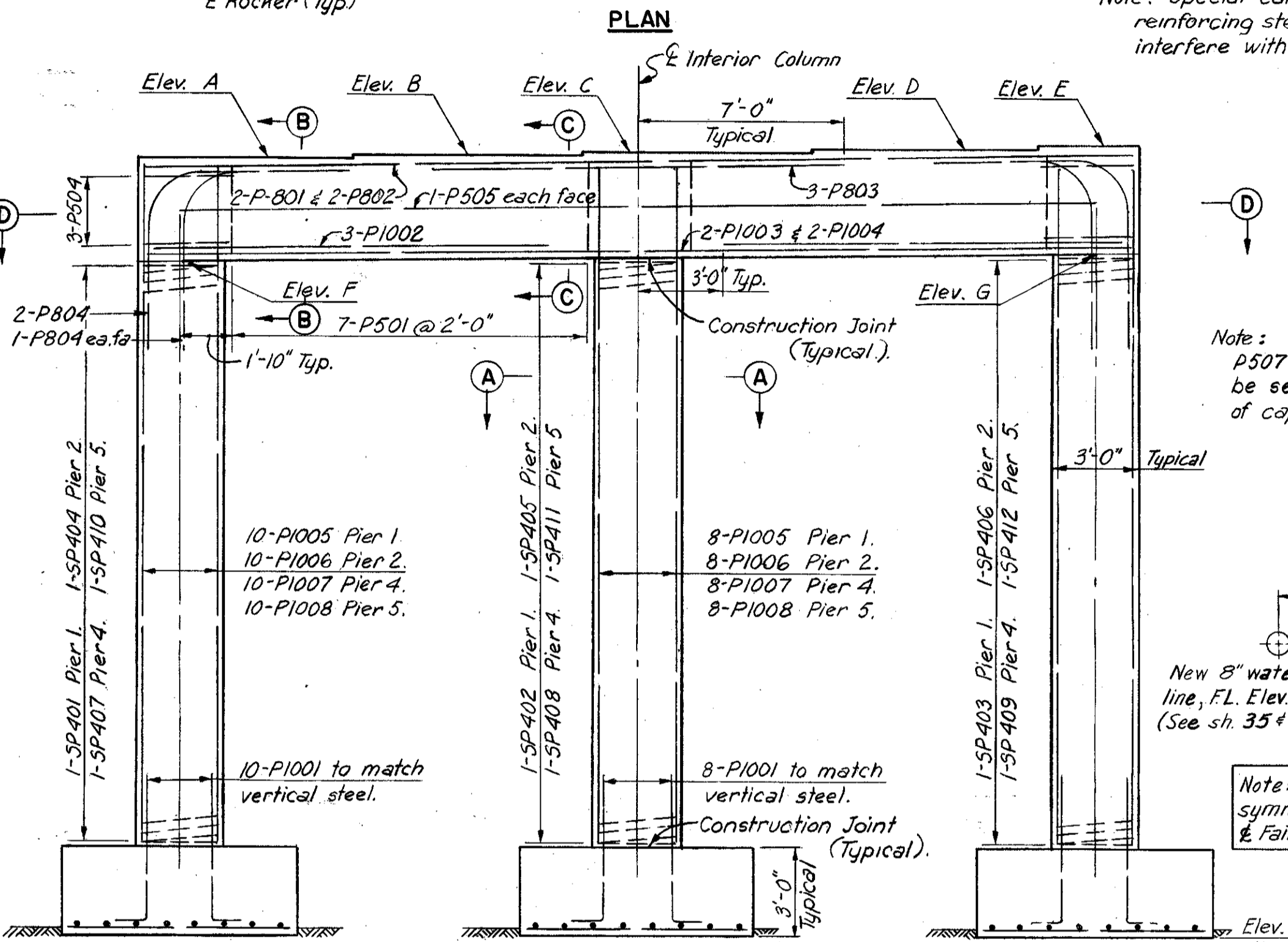


PROFILE

NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
SITE PLAN			
BR. NO. CUY-1-0514 S.R. 1 UNDER FAIRMOUNT BLVD. STA. 532 + 68.89			
CUYAHOGA CO.		OHIO	
SCALE 1" = 20' Except as noted			
MADE BY	DATE	CHECKED BY	DATE
AJS	5-18-59	BC	5-17-60
TRACED BY	DATE	REVIEWED BY	DATE
AEK	10-19-59		10-4-60
H.N.T.B. BR. NO. 55		1040 SHEET 293	

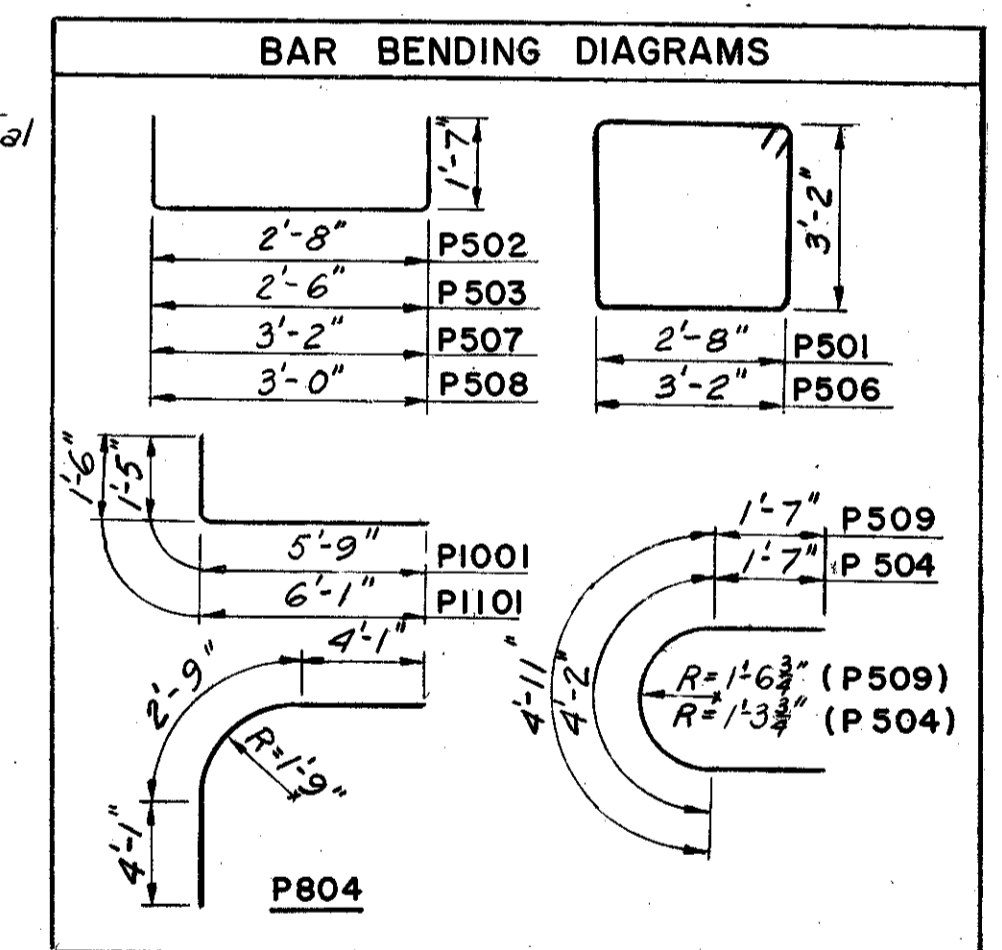


Pier	A	B	C	D	E	F	G	H
1	1118.37	1118.49	1118.61	1118.73	1118.86	1114.78	1115.26	1082.0
2	1117.39	1117.52	1117.64	1117.76	1117.88	1113.80	1114.29	1082.0
3	1116.46	1116.58	1116.71	1116.83	1116.95	1112.87	1113.36	1082.5
4	1115.49	1115.61	1115.73	1115.86	1115.98	1111.90	1112.39	1082.5
5	1114.52	1114.65	1114.77	1114.89	1115.01	1110.93	1111.42	1083.0



Mark	No.	Core Dia.	% Spiral	Length	Pitch	No. of Turns	Weight
SP401	2	2'-8"		29'-8"	4 1/2"	82	1066
SP402	2			29'-11"		83	1078
SP403	2			30'-2"		83	1080
SP404	2			28'-9"		80	1038
SP405	2			29'-0"		80	1040
SP406	2			29'-3"		81	1054
SP407	2			26'-4"		73	948
SP408	2			26'-7"		74	960
SP409	2			26'-10"		75	974
SP410	2			24'-11"		69	898
SP411	2			25'-2"		70	908
SP412	2	2'-8"	4 1/2"	25'-5"		71	922
SP413	2	3'-2"	4"	27'-4"		85	1262
SP414	2			27'-7"		86	1278
SP415	2	3'-2"	4"	27'-10"		87	1294
Total							15,800

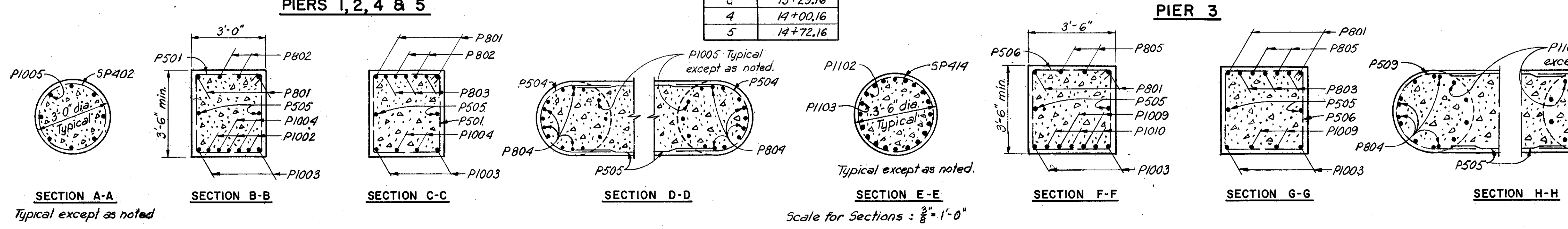
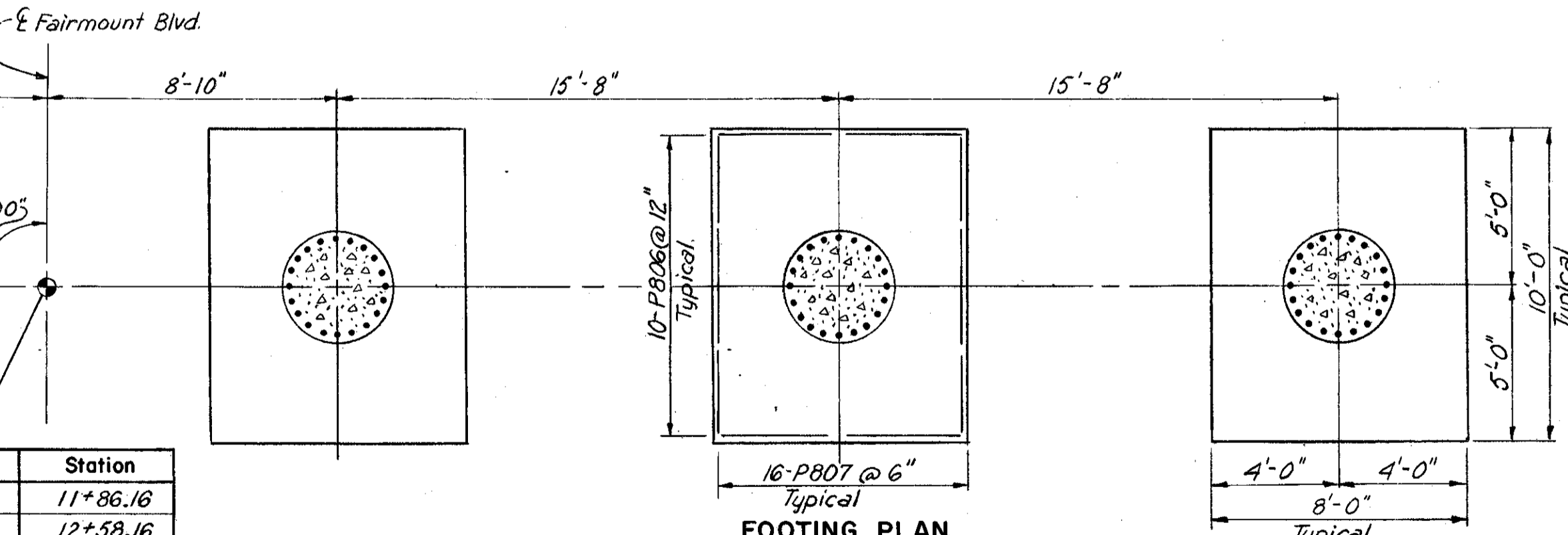
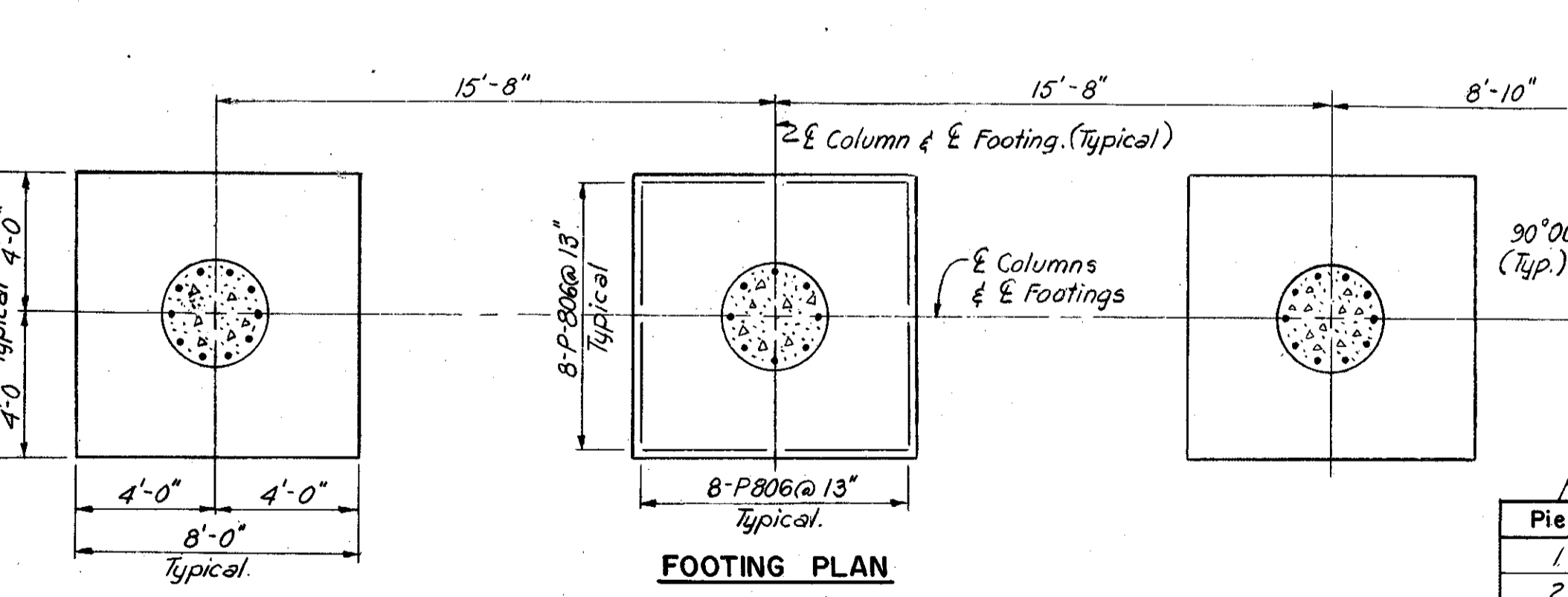
Mark	No.	Length	Weight	Shape
P501	112	12'-1"	1411	B
P502	232	5'-7"	1351	B
P503	16	5'-5"	90	B
P504	48	7'-4"	367	B
P505	20	3'-3"	652	S
P506	28	13'-1"	382	B
P507	58	6'-1"	368	B
P508	4	5'-11"	25	B
P509	12	8'-1"	101	B
P801	20	3'-3"	1663	S
P802	16	33'-6"	1431	S
P803	30	14'-0"	1121	S
P804	80	10'-11"	2332	S
P805	4	34'-0"	363	S
P806	444	7'-6"	8891	S
P807	96	9'-6"	2435	S
P1001	224	7'-0"	6747	B
P1002	48	13'-6"	2788	S
P1003	20	31'-3"	2689	S
P1004	16	33'-6"	2306	S
P1005	56	33'-0"	7952	S
P1006	56	32'-0"	7711	S
P1007	56	29'-9"	7169	S
P1008	56	28'-3"	6807	S
P1009	4	34'-0"	585	S
P1010	12	13'-9"	710	S
P1101	120	7'-3"	4622	B
P1102	60	30'-9"	9802	S
P1103	60	14'-0"	4463	S
Total				87,340 Lbs.



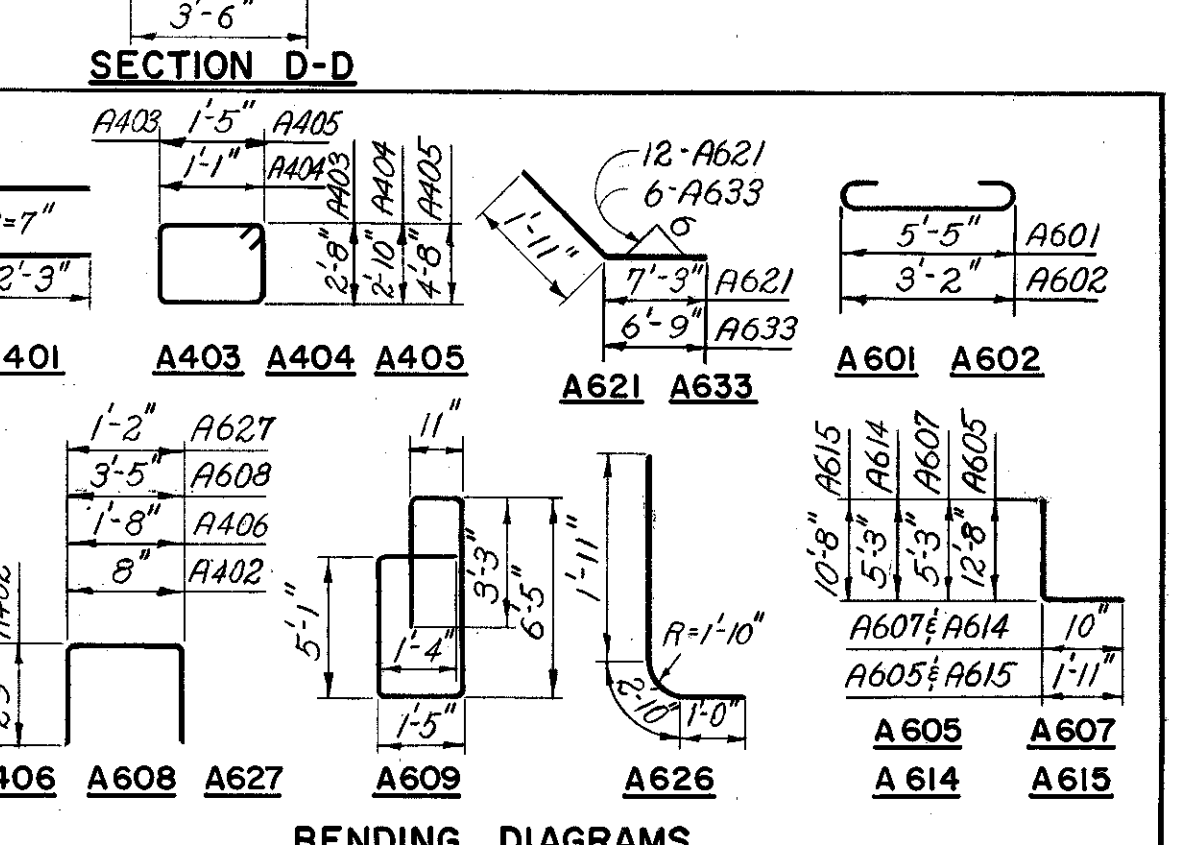
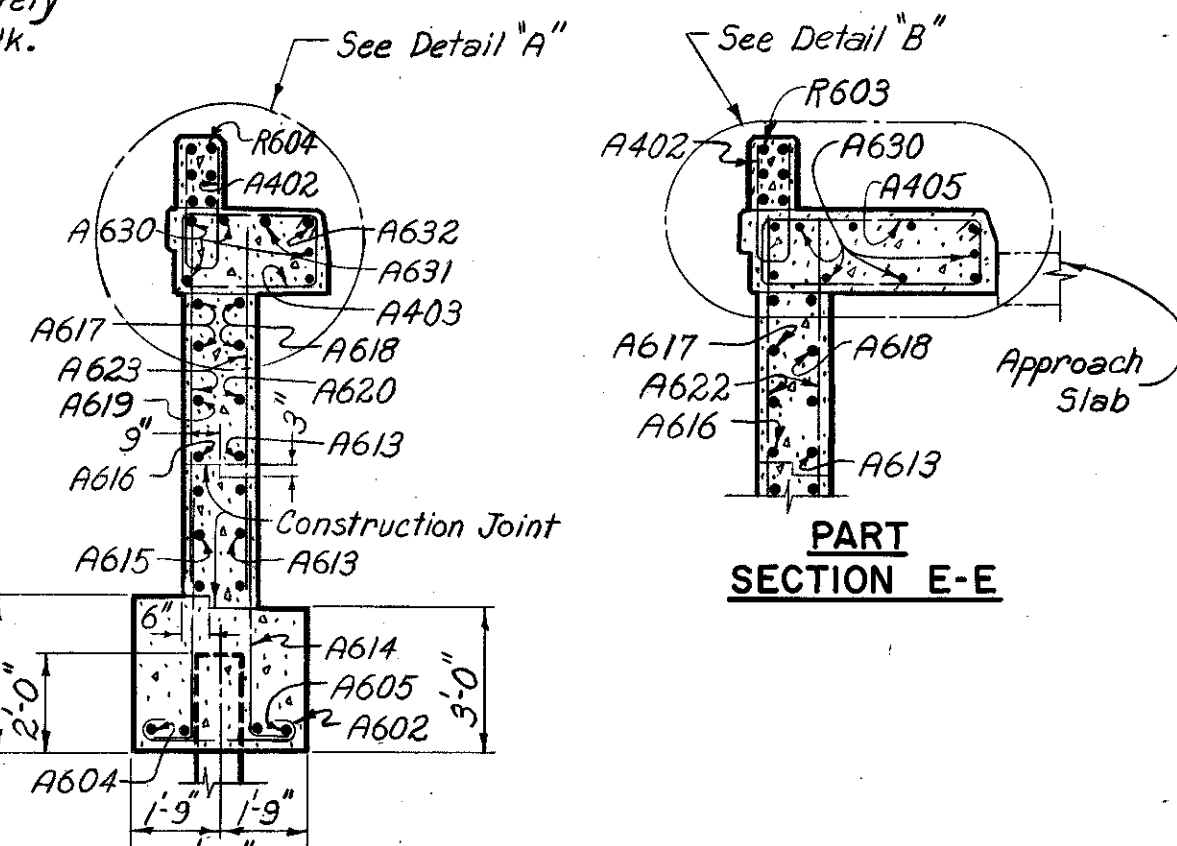
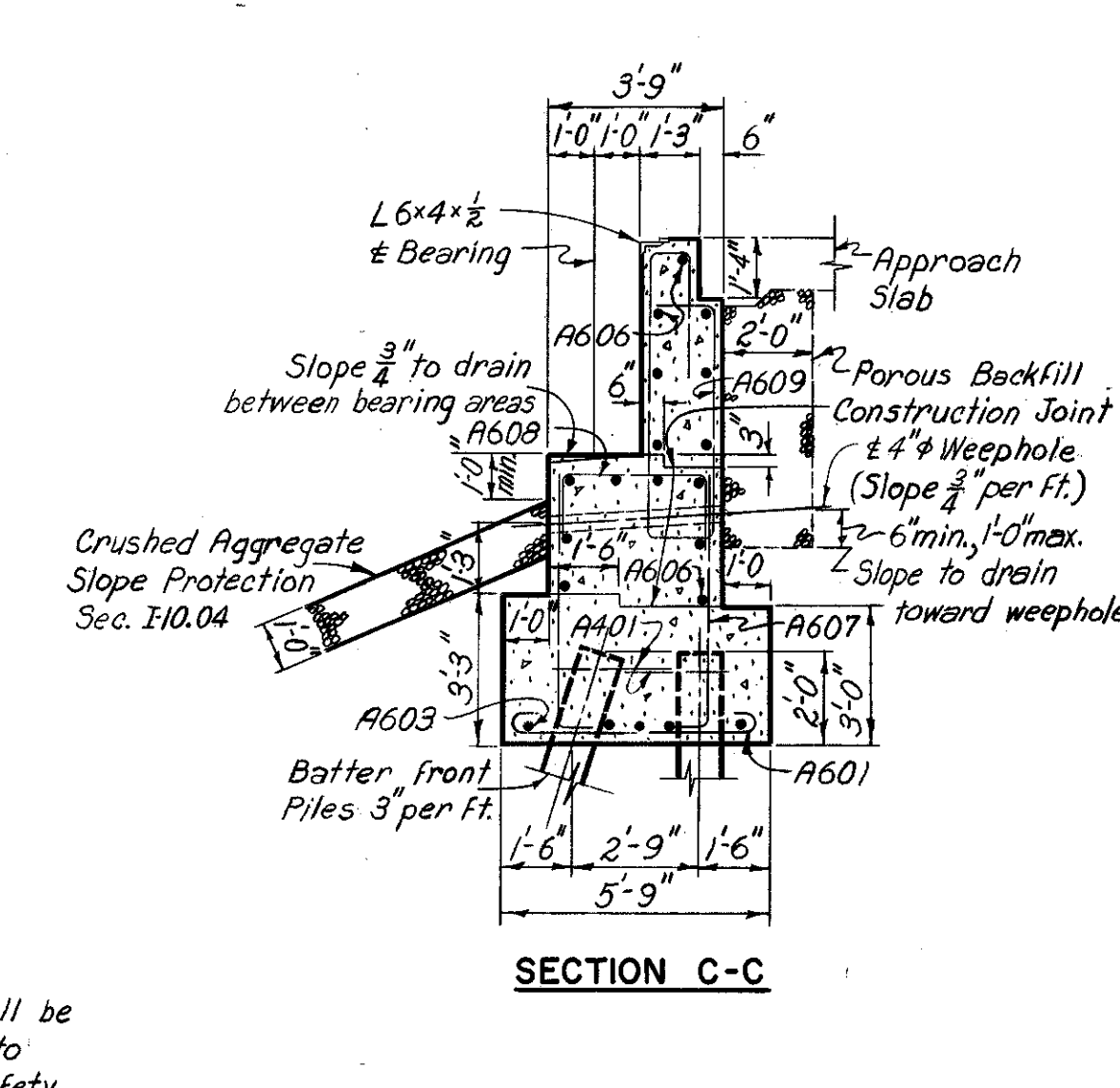
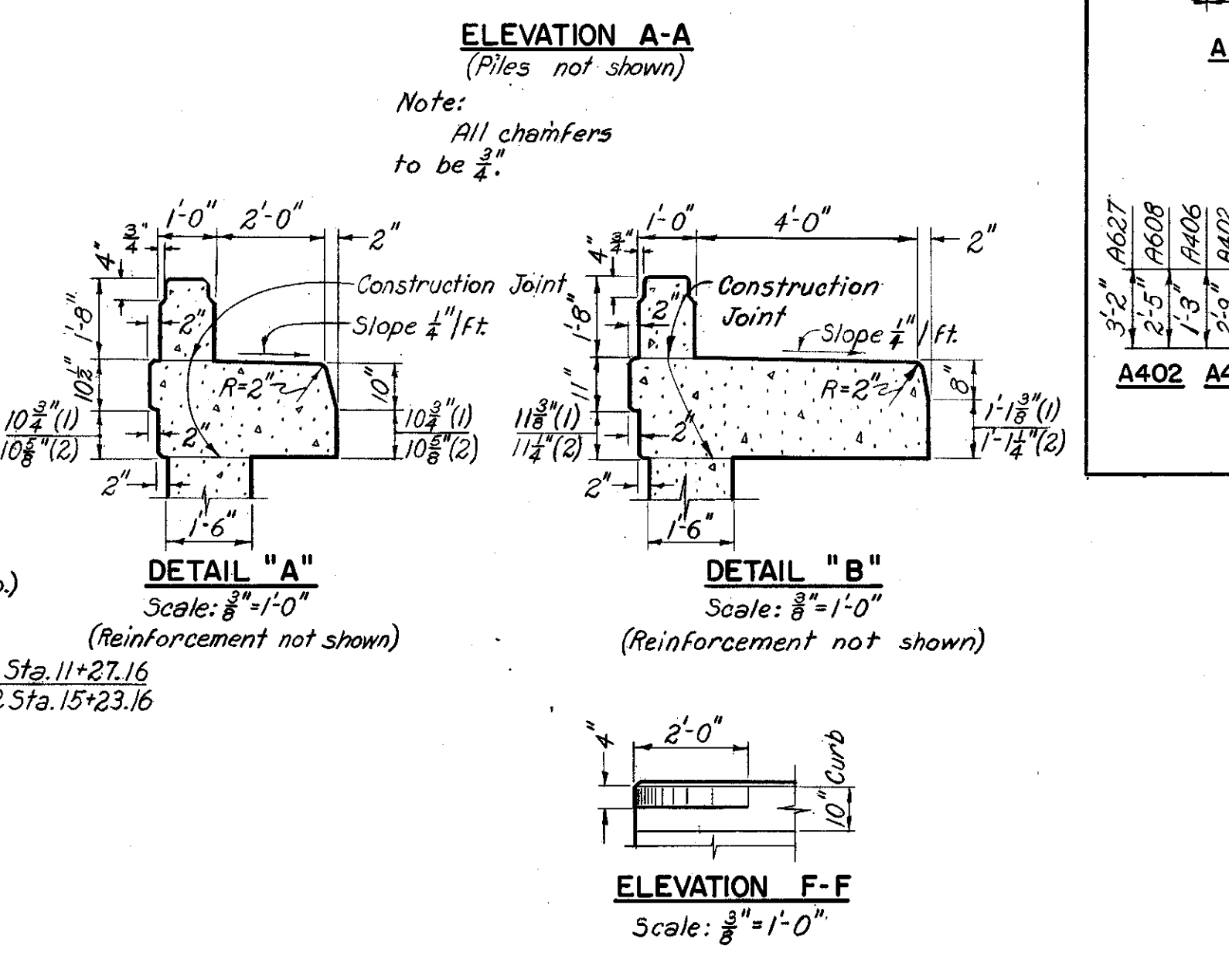
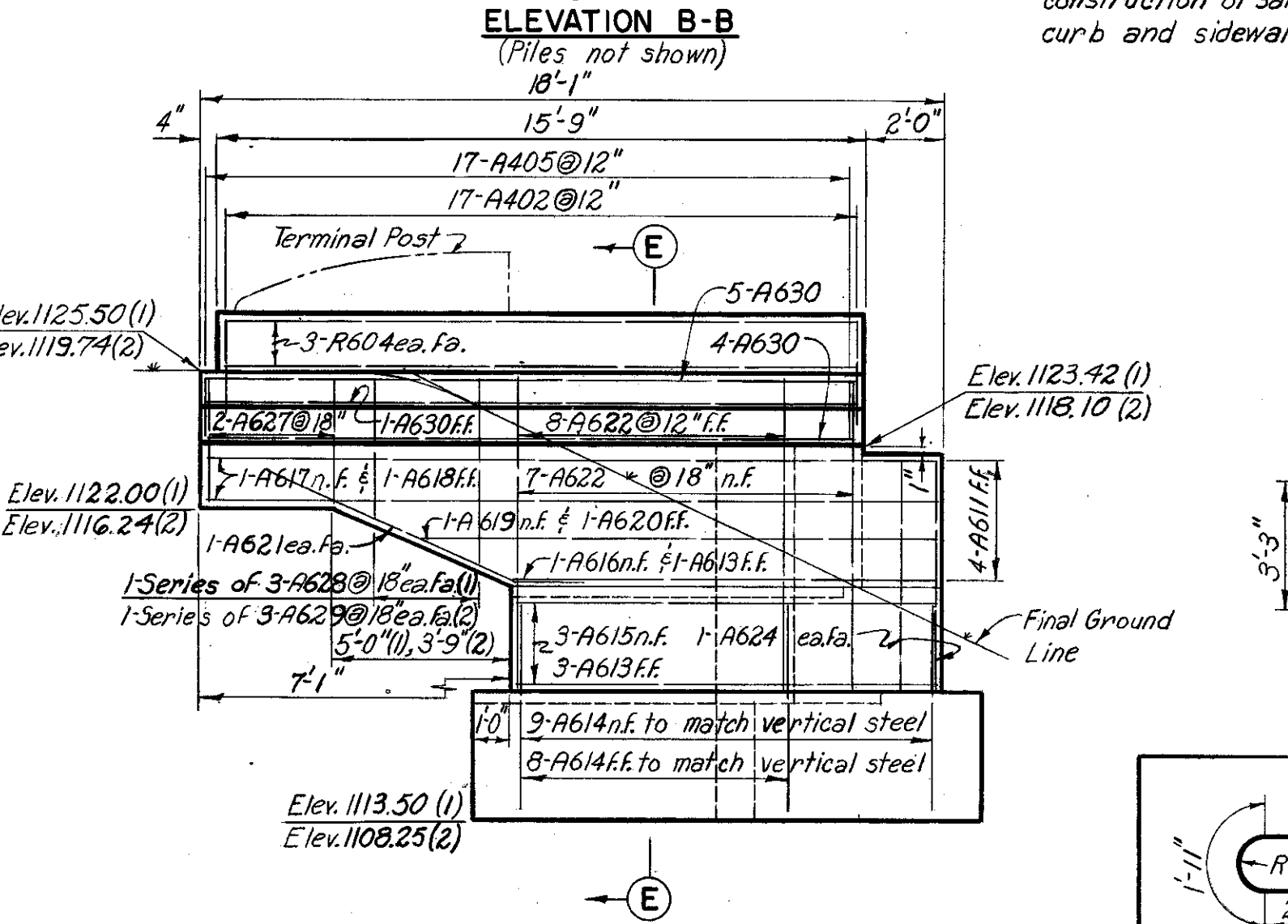
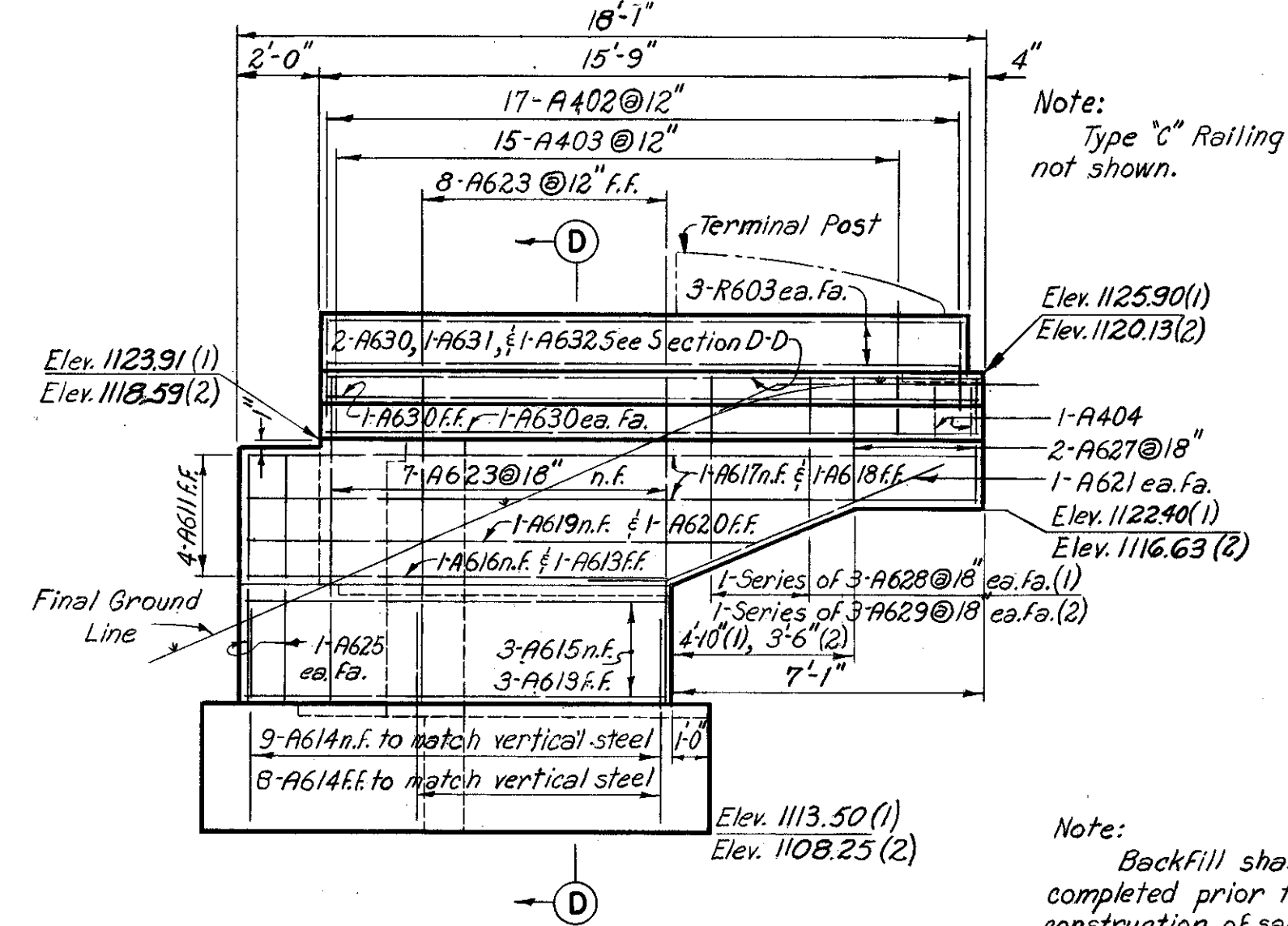
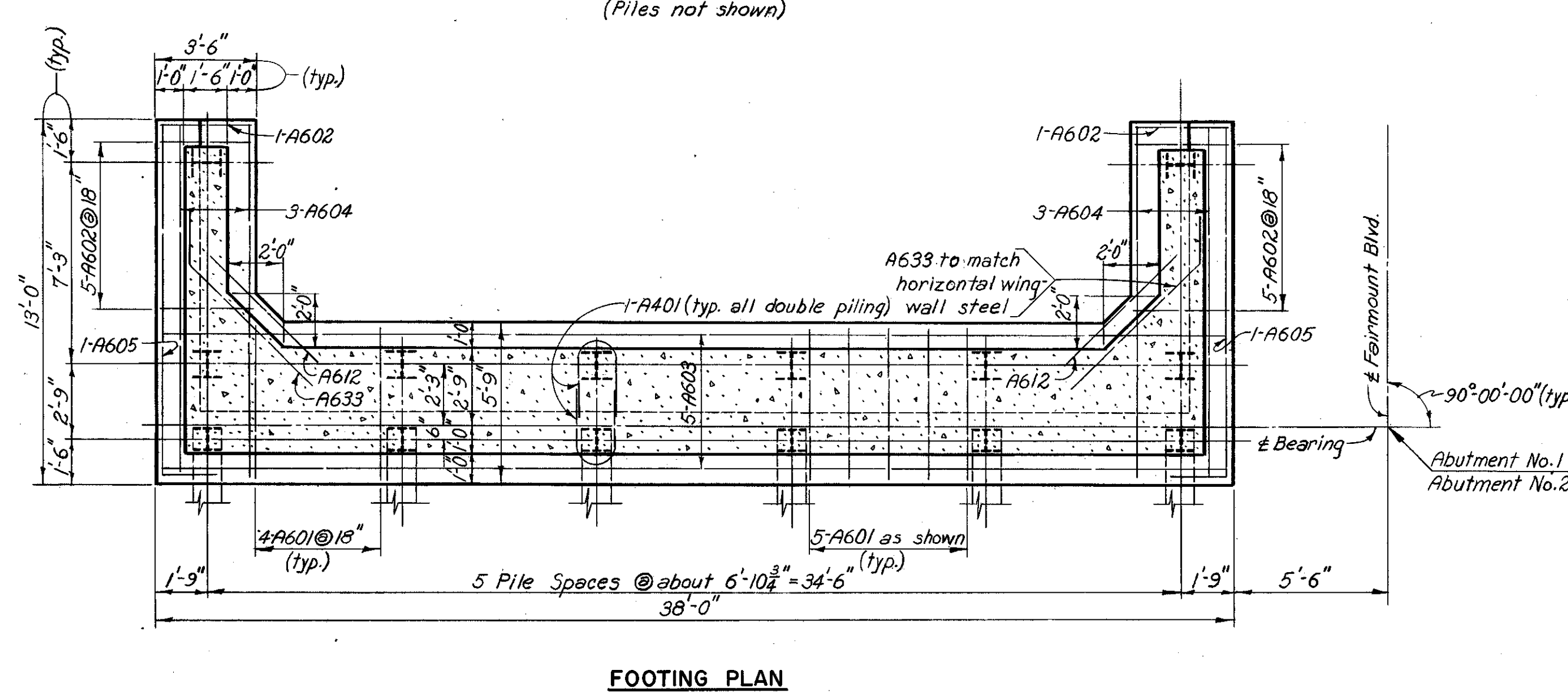
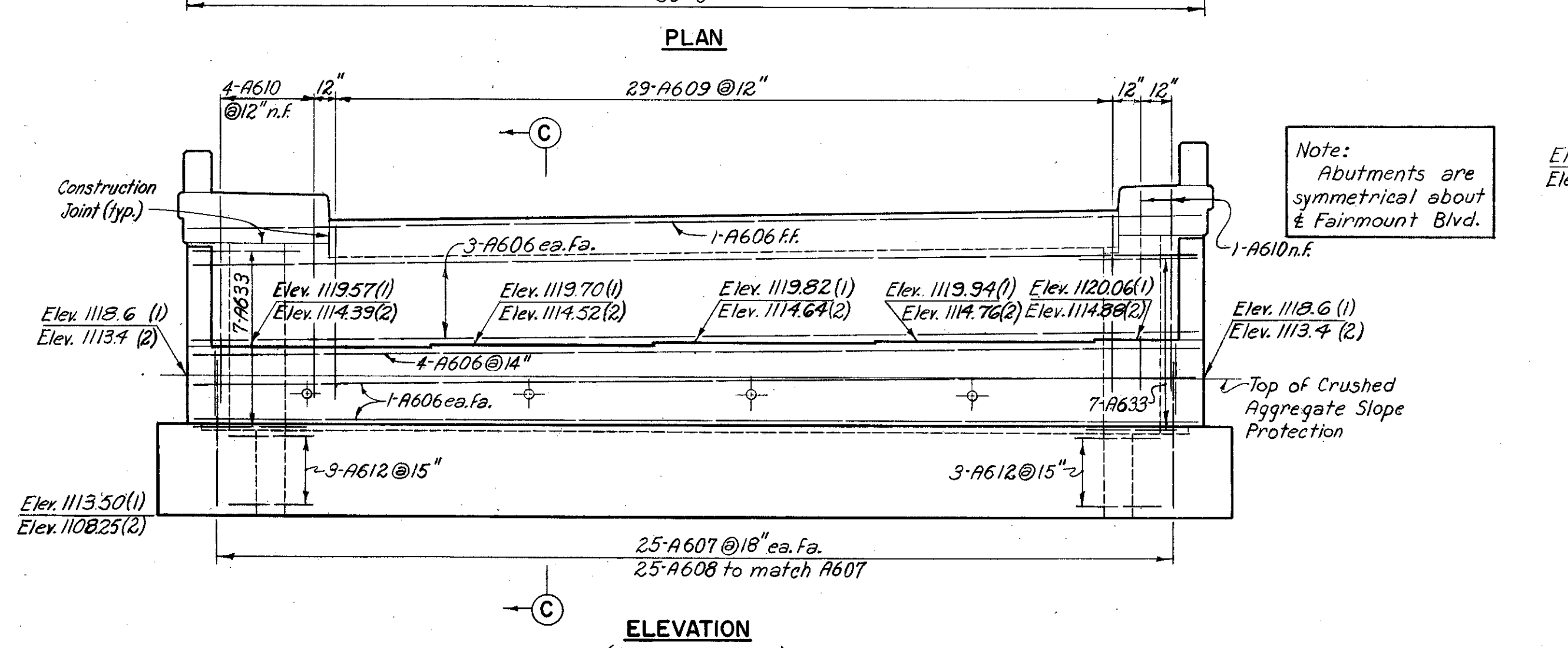
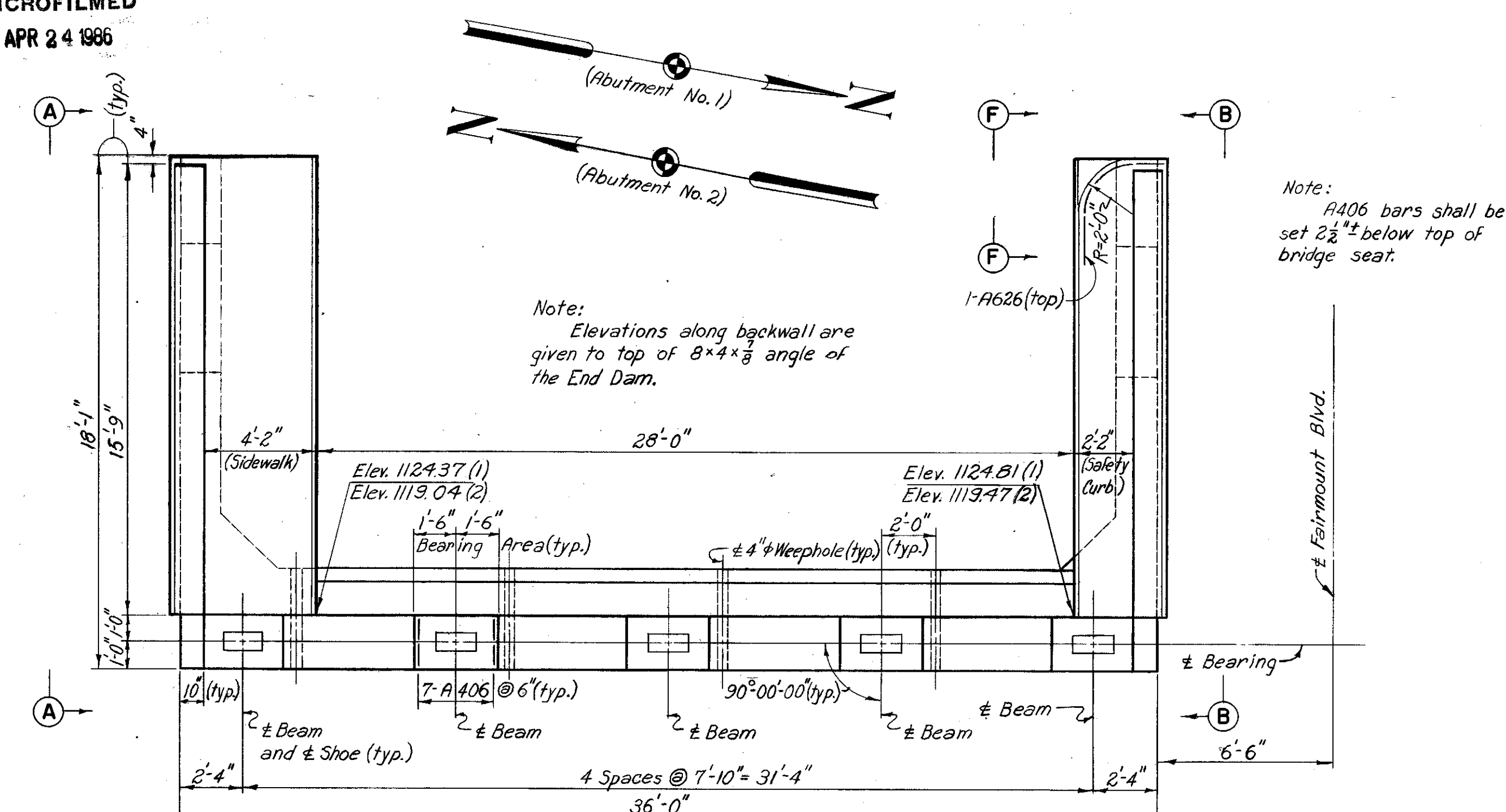
NOTES:
Reinforcement bars shall be 3 inches clear from face of concrete at bottom of footing and 2 inches elsewhere.
All bar dimensions are given out to out.
For Spiral Reinforcement notes, see 5h. 273
For Replacement Schedule, see 5h. 280
For details of bolsters and rockers, see Ohio Standard Drawing RB-1-55.

Note: Reinforcement steel is symmetrical about the interior column, except as noted.

Note: Footings shall extend a minimum of 3" into solid rock (or firm shale) or to Elev. H, whichever is lower. Final bottom of footing elevations shall be determined by the Engineer.



CUYAHOGA COUNTY
CUY-1-2.20



NOTES:

- All piles shall be 12 BP 53.
- All battered piles shall be battered 3 in 12 in direction shown.
- Pile spacings given along bottom of footing.
- For detail of roadway end dam, see Ohio Standard Drawing CSB-2-56, Sheet 2 of 6.
- For Railing details, see Ohio Standard Drawing AR-1-57.
- Reinforcement bars shall be 3 inches clear from bottom of footings and 2 inches elsewhere.
- For Replacement Schedule, see Sheet 280.
- For Railing Post Spacing and Terminal Post detail, see Sheet 298.
- For end dam details at sidewalk and safety curb, see Sheet 297.
- Bar dimensions are given out to out.
- Bars of a series shall vary in length by a constant increment.
- n.f. = near face; f.f. = far face; ea. fa. = each face;
- (1) denotes Abutment No. 1 only; (2) denotes Abutment No. 2 only.

Mark	Number	Length	Weight (lbs.)	Shape	Series Increment
A401	48	6'-5"	206	B	
A402	136	5'-11"	538	B	
A403	60	8'-7"	344	B	
A404	8	8'-3"	44	B	
A405	68	12'-7"	572	B	
A406	140	3'-11"	367	B	
A601	92	6'-9"	333	B	
A602	48	4'-6"	324	B	
A603	20	37'-6"	1127	S	
A604	24	12'-6"	451	S	
A605	8	14'-5"	173	B	
A606	60	35'-6"	3199	S	
A607	200	5'-11"	1777	B	
A608	100	7'-11"	1189	B	
A609	116	17'-7"	3064	B	
A610	24	7'-6"	270	S	
A611	32	4'-0"	192	S	
A612	24	5'-3"	189	S	
A613	32	7'-3"	348	S	
A614	136	5'-11"	1209	B	
A615	24	12'-5"	448	B	
A616	8	10'-6"	126	S	
A617	16	17'-9"	427	S	
A618	16	14'-3"	342	S	
A619	8	13'-0"	156	S	
A620	8	9'-6"	114	S	
A621	16	9'-1"	218	B	
A622	60	8'-0"	721	S	
A623	60	8'-3"	743	S	
A624	16	6'-3"	150	S	
A625	16	6'-9"	162	S	
A626	4	5'-9"	35	B	
A627	16	7'-2"	172	B	
A628	8-Series 3	3'-9" to 5'-0"	158	S	7 1/2"
A629	8-Series 3	3'-3" to 4'-6"	140	S	7 1/2"
A630	60	15'-9"	1419	S	
A631	4	15'-3"	92	S	
A632	4	13'-9"	83	S	
A633	56	8'-7"	722	B	
Total			22,944	lbs	

Note: Longitudinal steel in the parapet (bars R603 and R604) is not shown in this schedule. It is included for payment with "Item 5-14, Type 'C' Railing," and is shown on sheet 298.

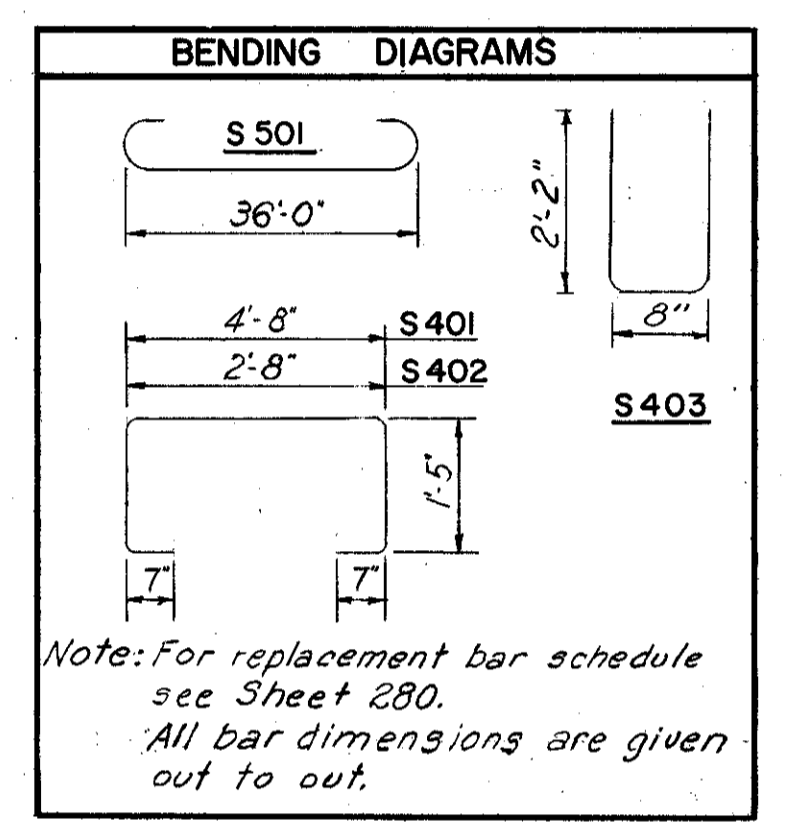
NO.	DATE	REVISION	BY

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

ABUTMENTS
BR. NO. CUY-1-0514
S.R. 1 UNDER FAIRMOUNT BLVD.
STA. 532 + 68.89

CUYAHOGA COUNTY
CUY-1-2.20

REINFORCEMENT SCHEDULE				
Mark	Number	Length	Weight	Shops
S401	682	8'-2"	3721	B
S402	682	6'-2"	2809	B
S403	1612	4'-9"	5115	B
S501	1364	37'-2"	52875	B
S601	1364	36'-0"	73754	S
S602	1364	38'-0"	77852	S
S603	230	25'-0"	8637	S
Total			224,763 Lbs.	



Note: For replacement bar schedule see Sheet 280. All bar dimensions are given out to out.

Note: Longitudinal steel in the parapet, (bars R601 and R602), is not shown in the above schedule. It is included for payment with Item 5-14, Type C Railing, and is shown on sheet 298.

NOTES:

For location of scuppers, see sheet 293.
 For details of end crossframes and roadway end dams, see Ohio Standard Drawing CSB-2-56, Sheet 2 of 6.
 For details of Flockers and Bolsters see Ohio Standard Drawing RB-1-55.
 For details of scuppers and bulb angle gutter support see sheet 297.
 For railing and parapet joint spacing see sheet 298.
 For details of intermediate crossframes, beam splices, end dams at sidewalks and safety curbs, see sheet 297.
 For placement of 2" Std. Pipe Drain @ end of B.A. at Abutment No. 2 see Ohio Standard Drawing CSB-2-56.
 Beams shall not be cambered but shall be fabricated so that any curved beam will be placed with the convex flange up.
 For railing details, see sheet 298.

NO.	DATE	REVISION	BY

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

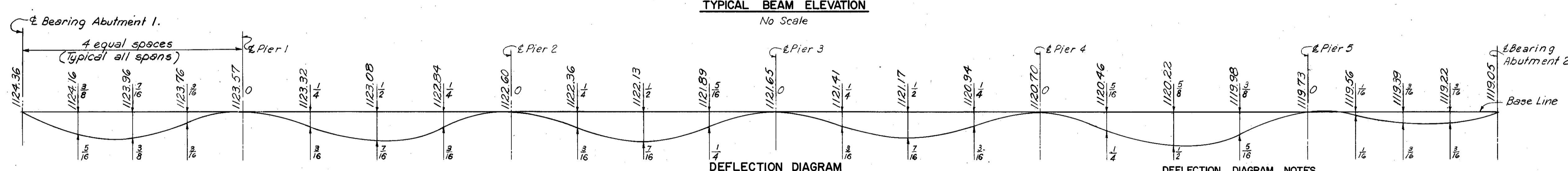
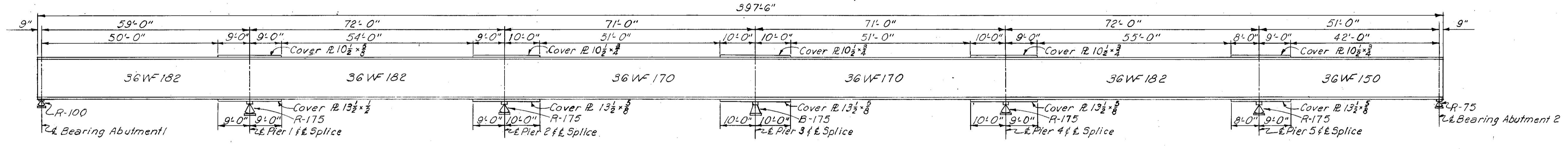
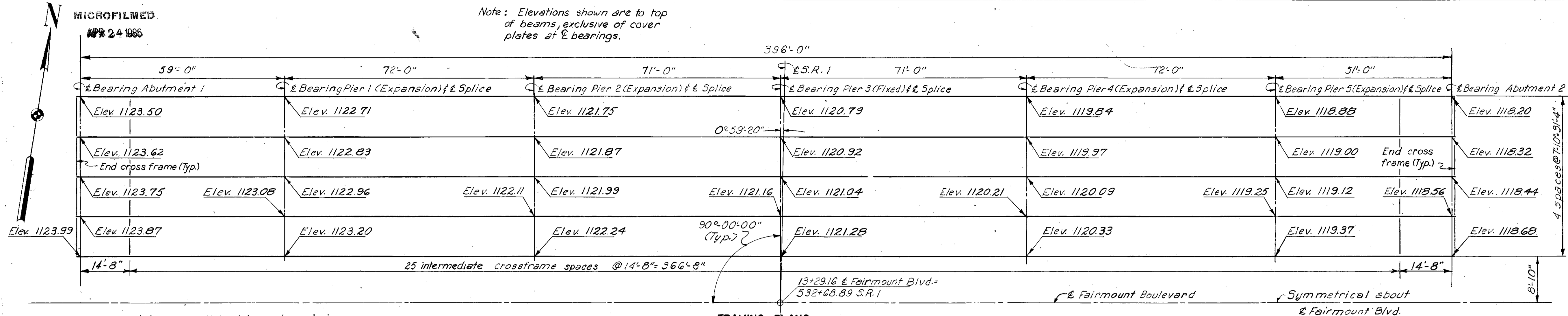
SUPERSTRUCTURE
BR. NO. CUY-1-0514
S.R. 1 UNDER FAIRMOUNT BLVD.
STA. 532 + 68.89

CUYAHOGA CO. OHIO

SCALE: As noted
MADE: R.A. DATE: 1-26-59
TRACED: DATE:

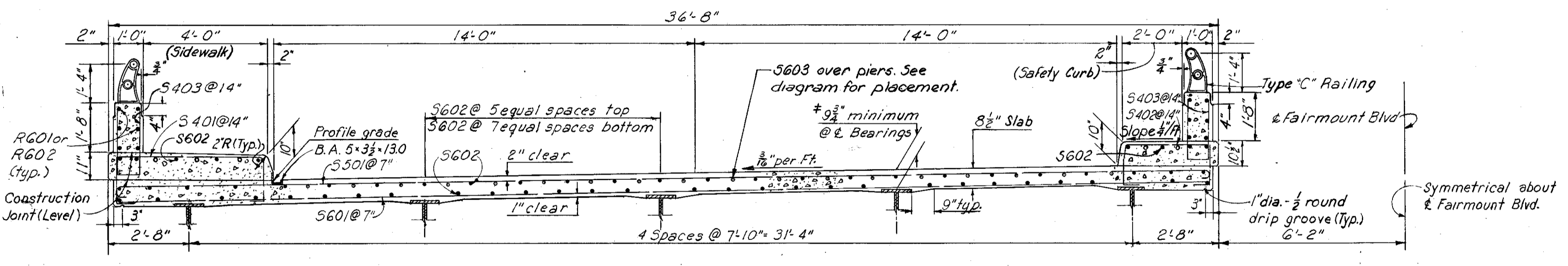
CHECKED: I.J.P. DATE: 7-31-59
REVIEWED: B.C. DATE: 10-4-60

1040 SHEET 296



DEFLECTION DIAGRAM NOTES

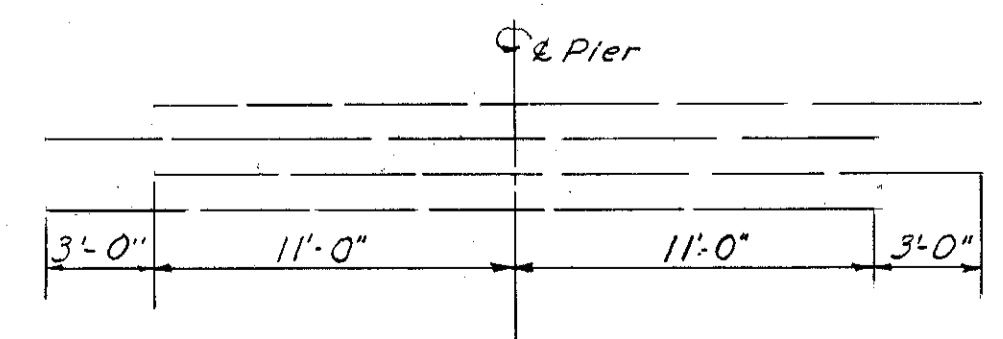
Elevations shown at 1/4 pts. are to top of pavement along Profile Grade.
 Values shown above the base line are total deflections due to dead load of steel and concrete. Those shown below the line are deflections of concrete only. Deflections are measured to the nearest 1/16 inch.



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

* Note: This is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

Note: After erection and after the shop coat has been cleaned and, where necessary, repainted in accordance with Sec. 8.04, an additional coat of the same paint as used in the shop shall be applied over the outside face of the outside steel beams and all sides of bottom flange.



OPTIONAL CONSTRUCTION JOINT
Scale 3/4" = 1'-0"

BEAM SPLICE WELDING PROCEDURE

1. Raise end of beams at Pier 4, 2'.
2. Butt-weld beam flanges and web at Pier 3 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 at Pier 3.
4. Lower ends of beams at Pier 4.
5. Repeat procedure for splices at Piers 2 & 4, raising beams at Piers 1 & 5 1 1/2', and again for splices at Piers 1 & 5, raising beam ends at Abutments 1 & 2, 1' & 3/4" respectively.

Note: 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 transverse reinforcing steel and are located near the center of any span.

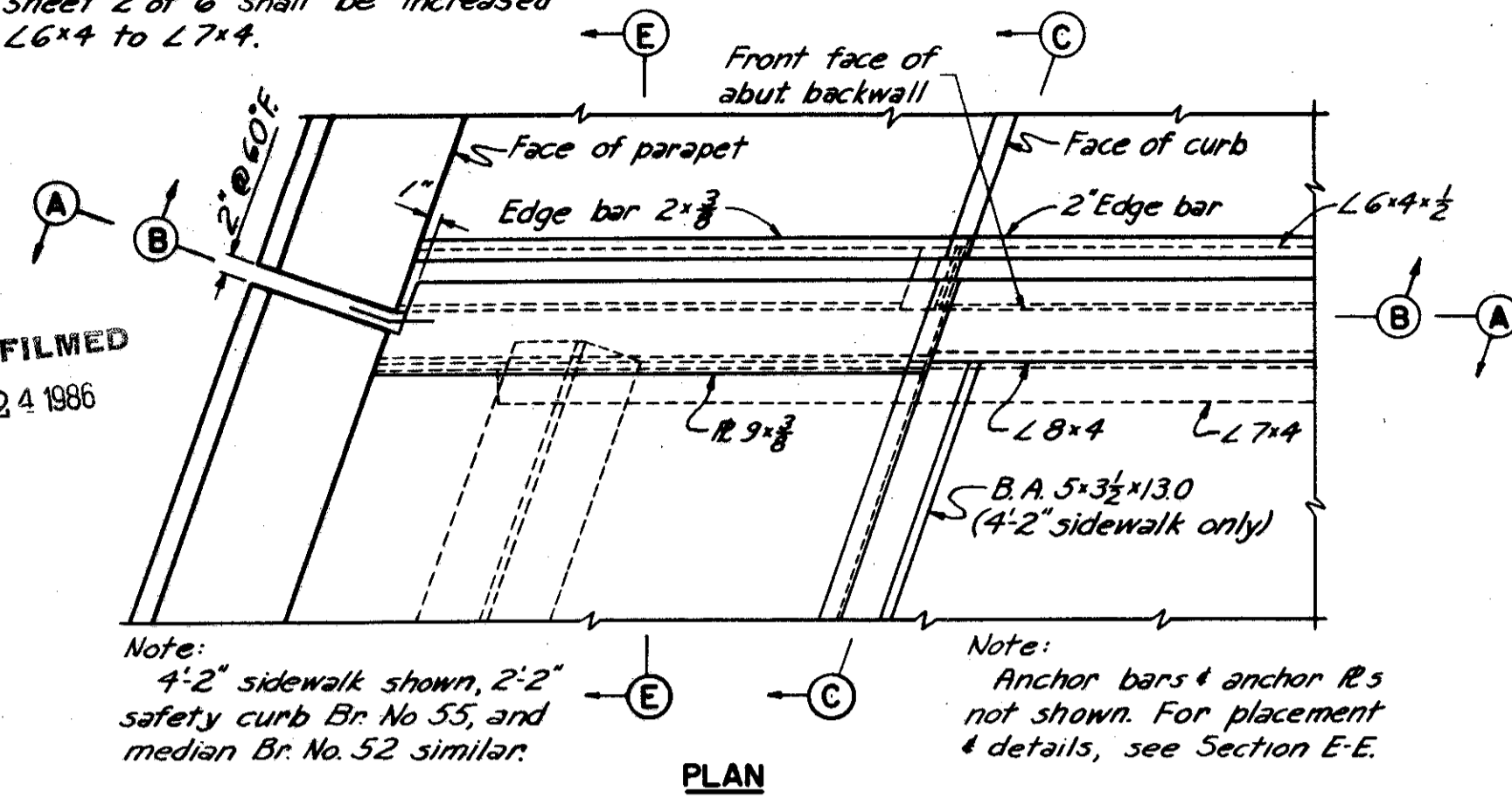
Note:
The supporting angle in the End Dam
Data Table, Ohio Standard Drawing C5B-
2-56, sheet 2 of 6 shall be increased
from L6x4 to L7x4.

MICROFILMED
APR 24 1986

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

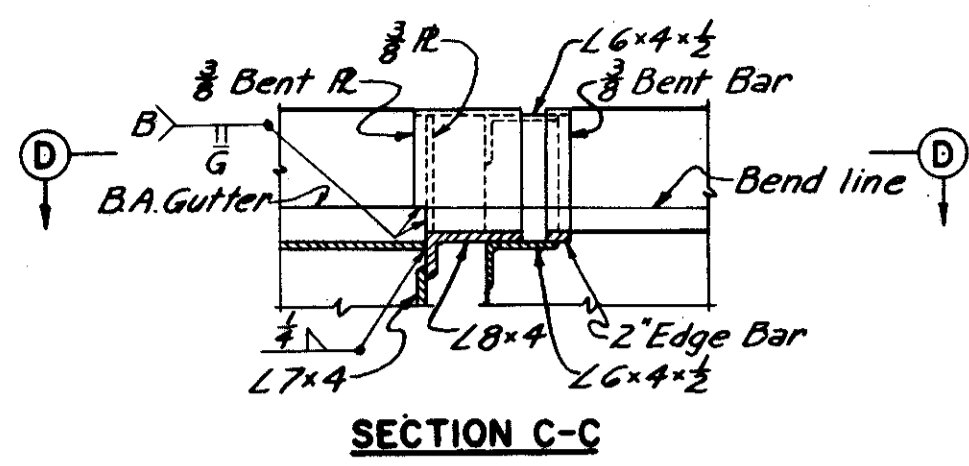
297
313

CUYAHOGA COUNTY
CUY-1-2.20

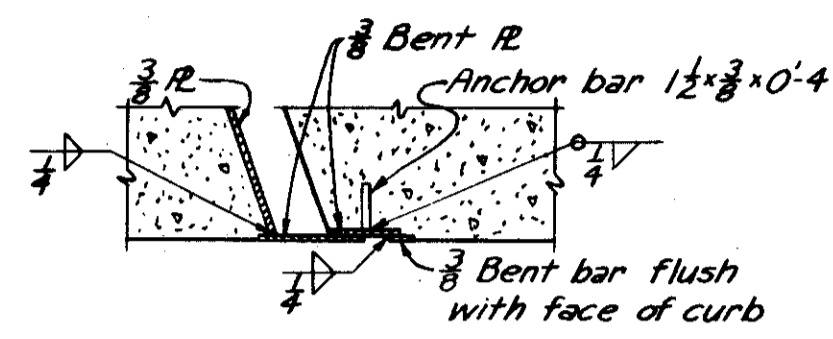


Note:
4'-2" sidewalk shown, 2'-2"
safety curb Br. No. 55, and
median Br. No. 52 similar.

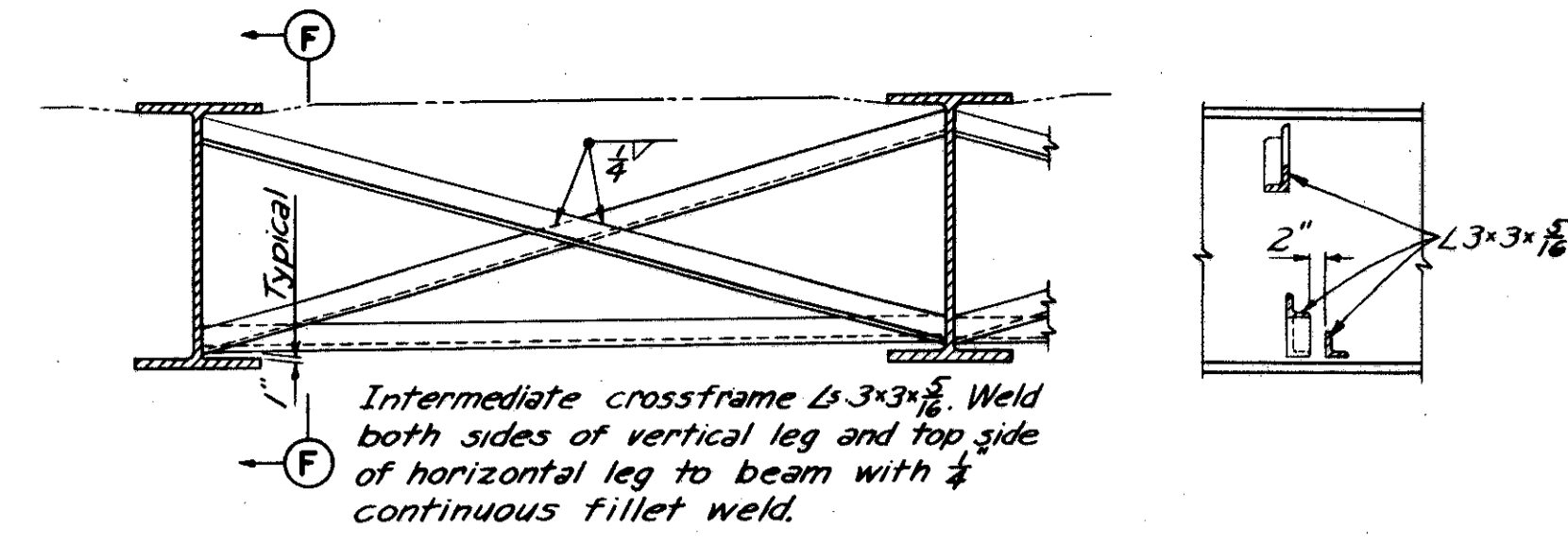
Note:
Anchor bars & anchor R's
not shown. For placement
& details, see Section E-E.



SECTION C-C

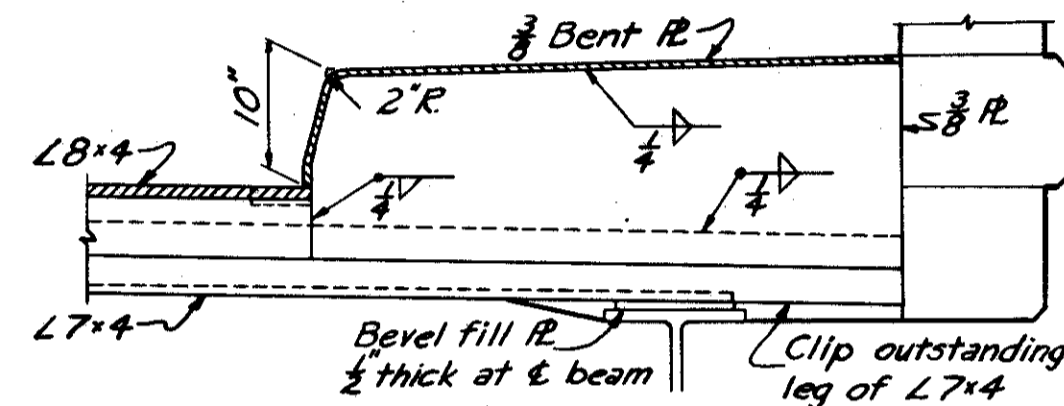


SECTION D-D

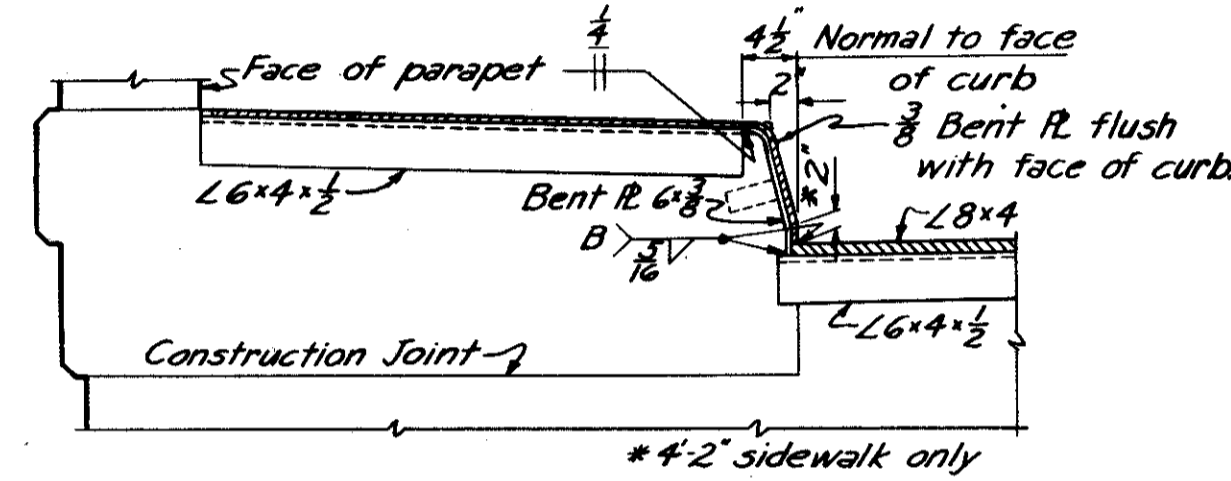


INTERMEDIATE CROSSFRAME
No Scale

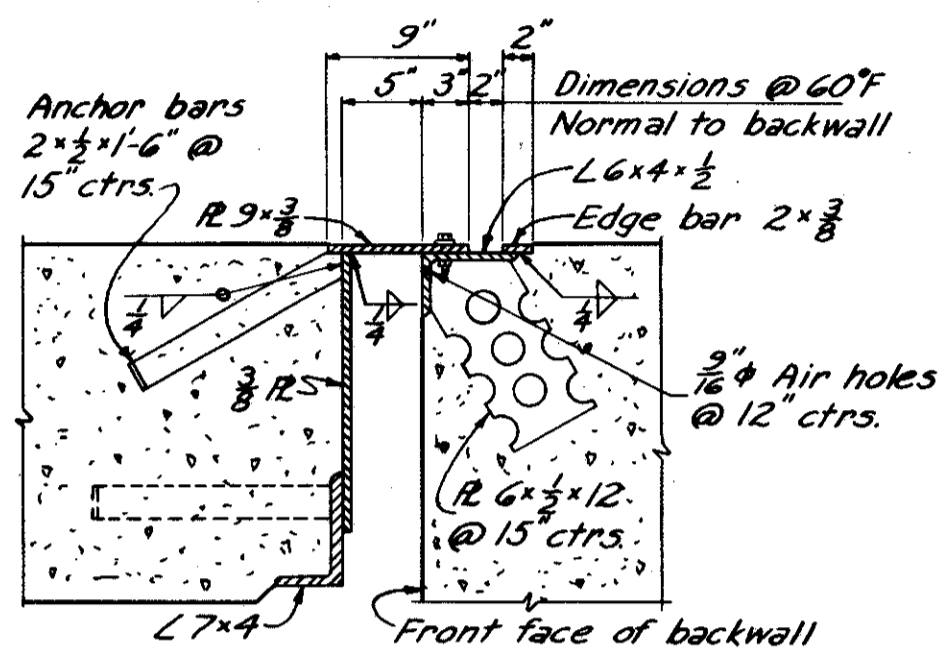
SECTION F-F



SECTION A-A

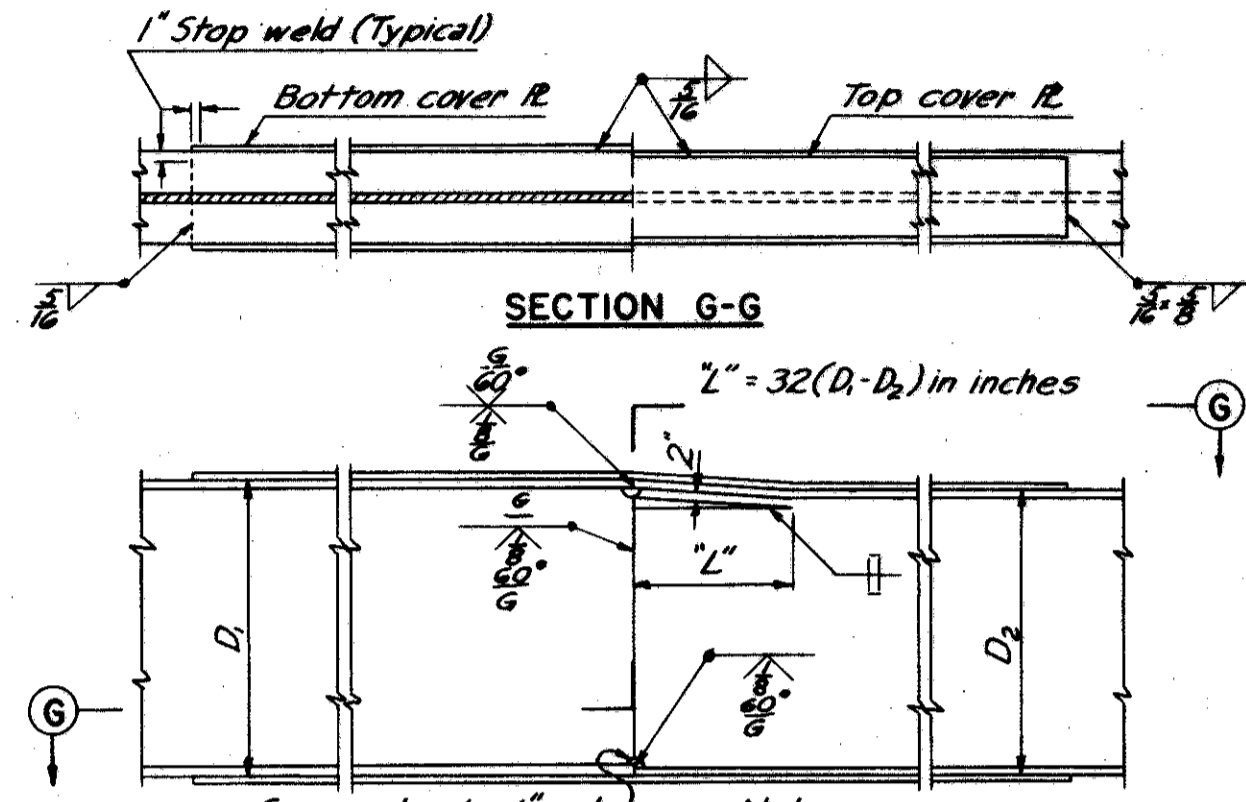


SECTION B-B



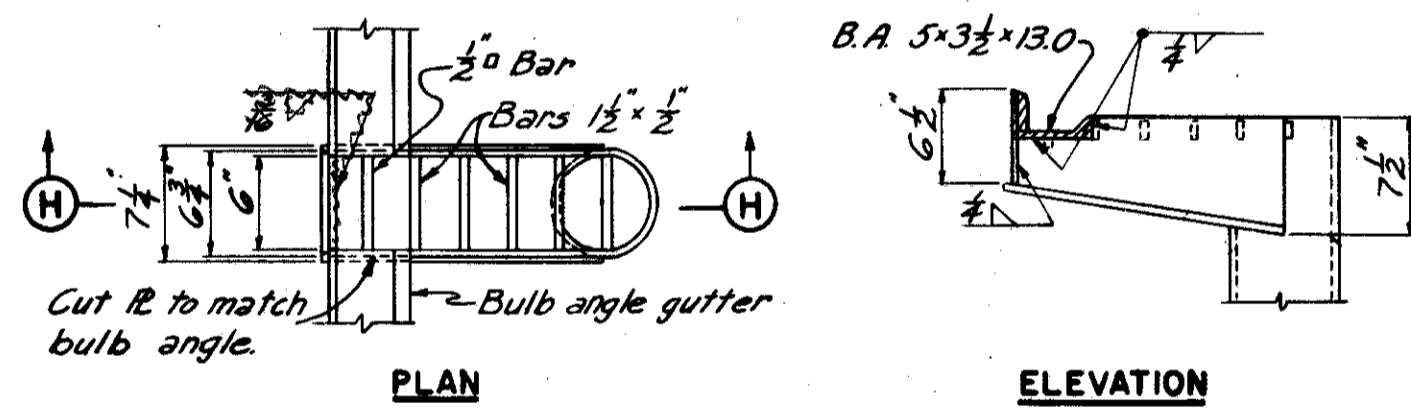
Note:
For details and notes not shown
see Section C-C, Ohio Standard
Drawing C5B-2-56, sheet 2 of 6.

SECTION E-E
Scale: 1"=1'-0"



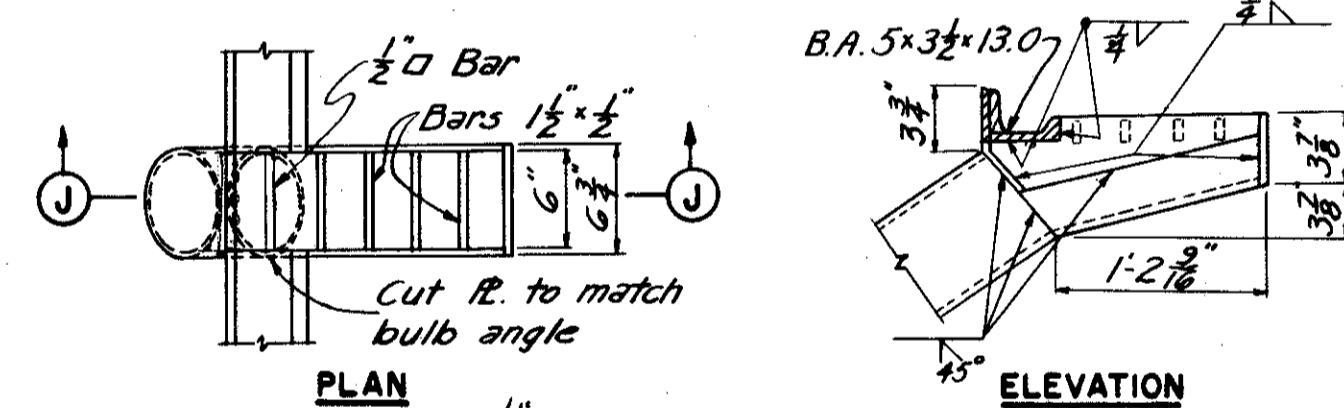
BEAM SPLICE DETAILS
No Scale

END DAM DETAILS
For details of roadway end dam see Ohio Standard
Drawing C5B-2-56, sheet 2 of 6.
For curb plate details on Bridges No. 51, 53 and 54,
see Ohio Standard Drawing C5B-2-56, sheet 3 of 6.



PLAN

ELEVATION

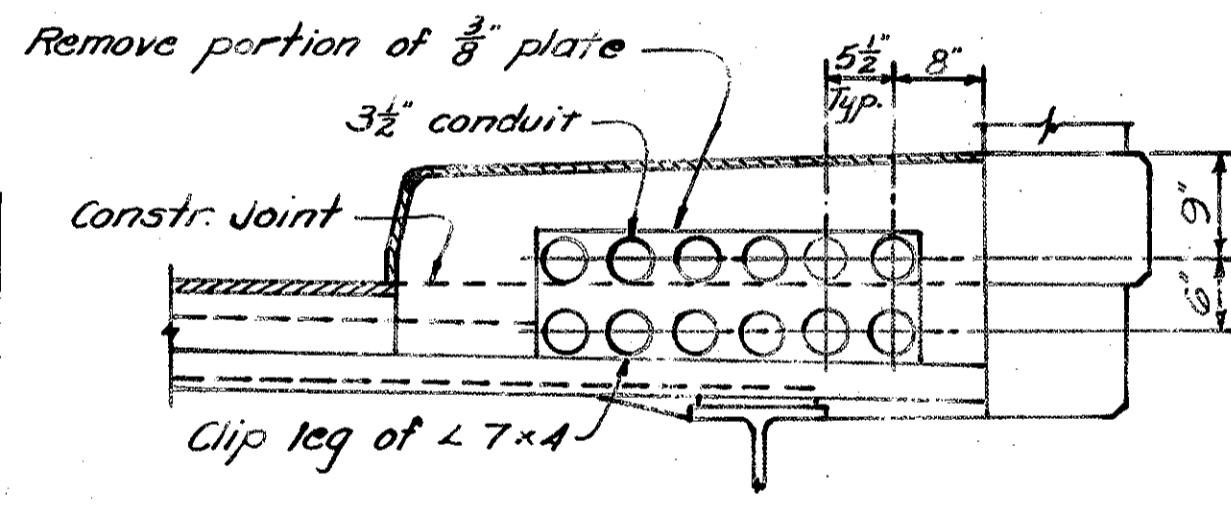


PLAN

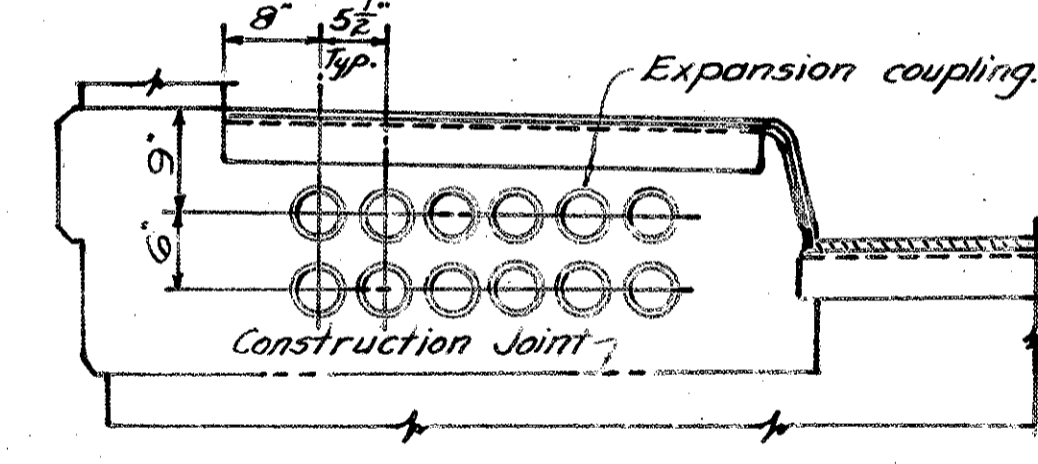
ELEVATION

BRIDGE NO.	SCUPPER TYPE	NO. REQUIRED
51	A	14
52	B	20
53	A	14
54	A	24
55	B	14

Note: For scupper locations
see Site Plans.



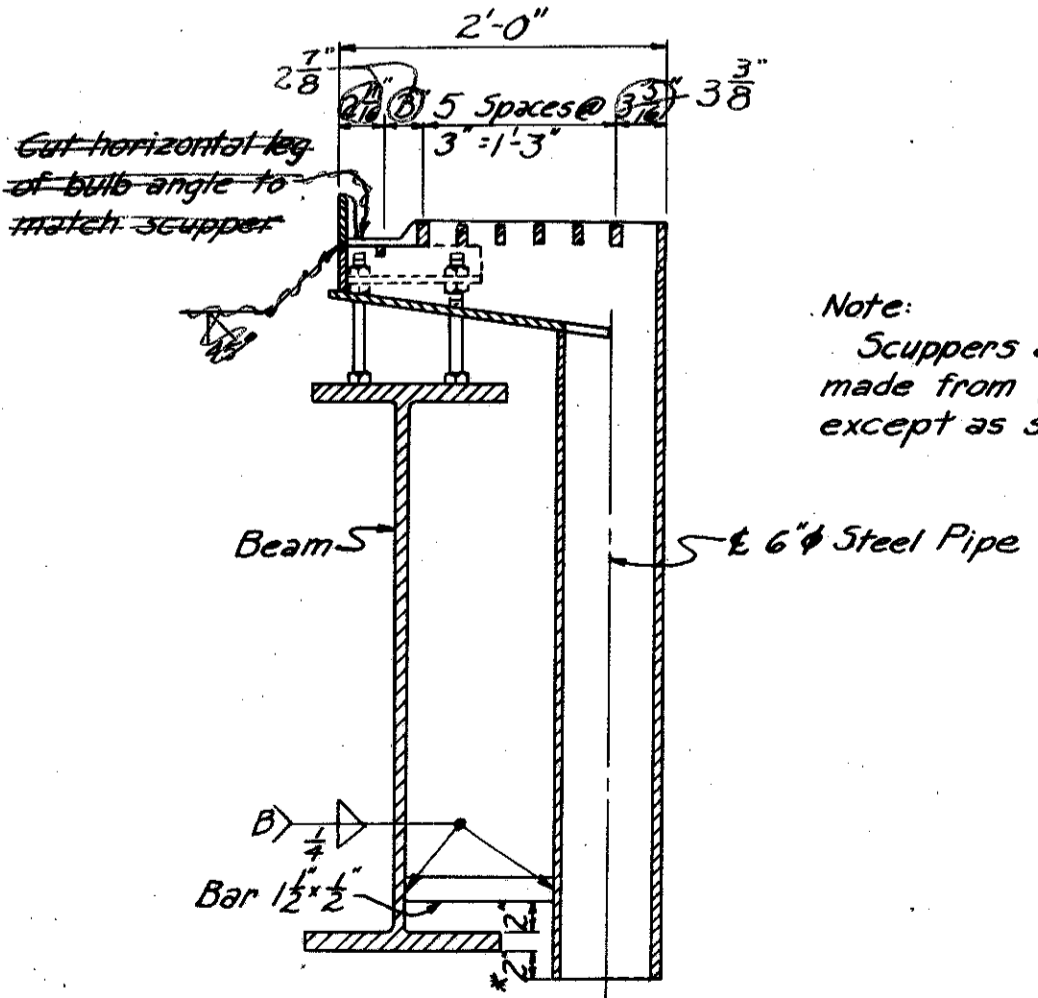
SECTION A-A



SECTION B-B

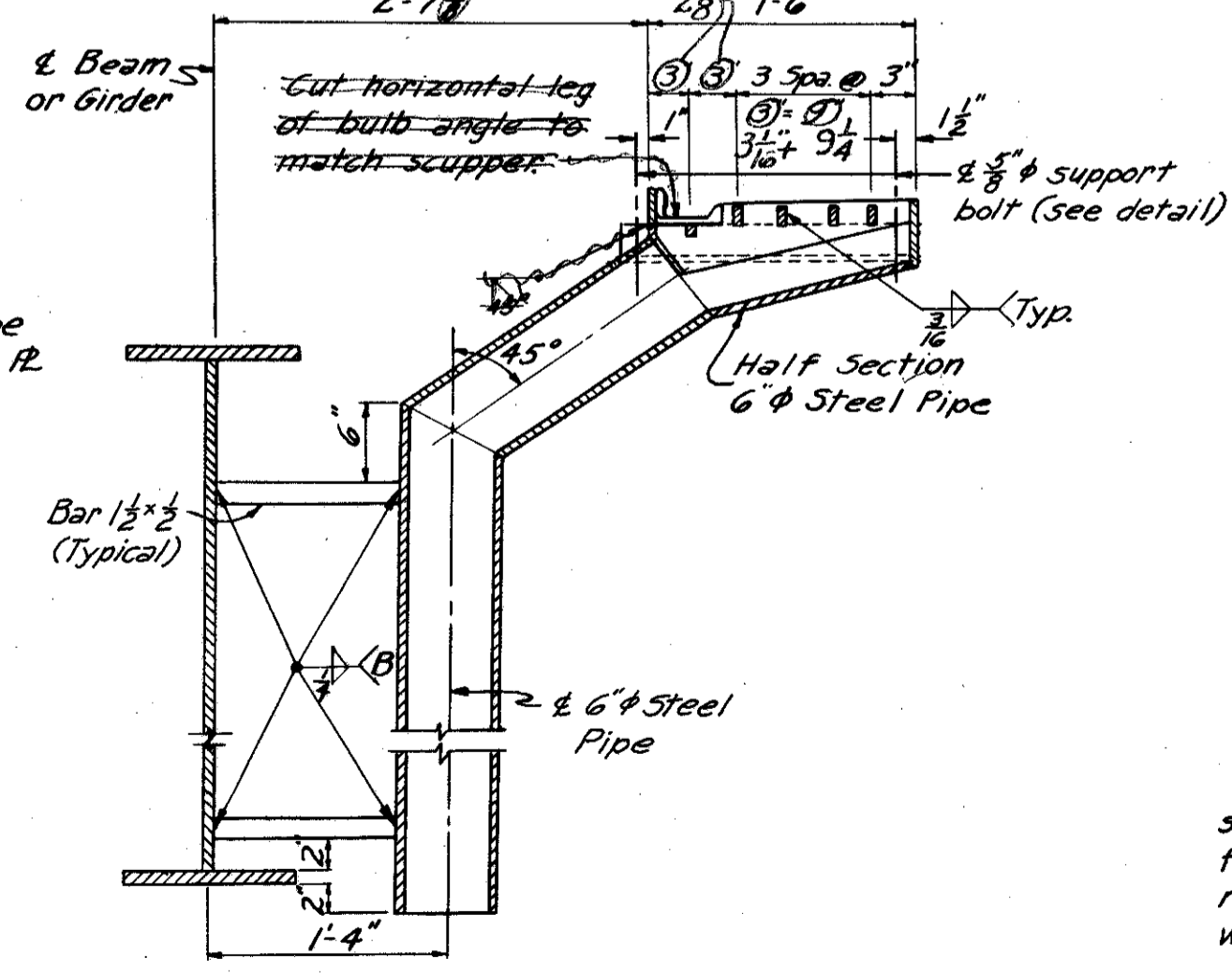
FOR BRIDGE NO. CUY-1-0353
H.N.T.B. NO. 52

12-3/4" conduits to be installed by the Ohio Bell
Telephone Company at no expense to the State or
Federal Government. The Contractor is requested
to cooperate with the Company during the installation
of the conduits.



SECTION H-H
TYPE A

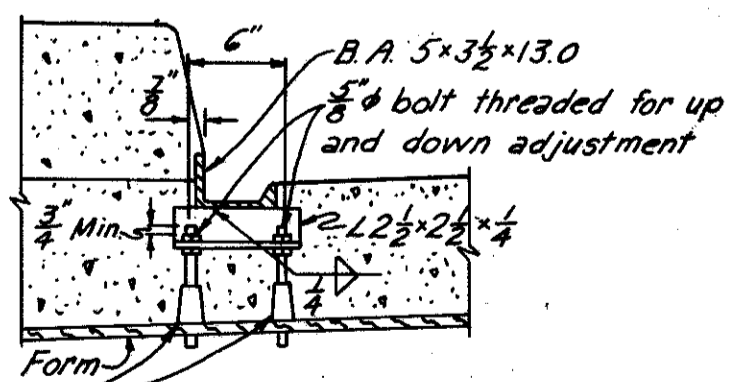
* Typical except at
pipe troughs.



SECTION J-J
TYPE B

SCUPPER DETAILS
Scale: 1"=1'-0"

For details not shown, see Ohio
Standard Drawing C5B-2-56, sheet 3 of 6



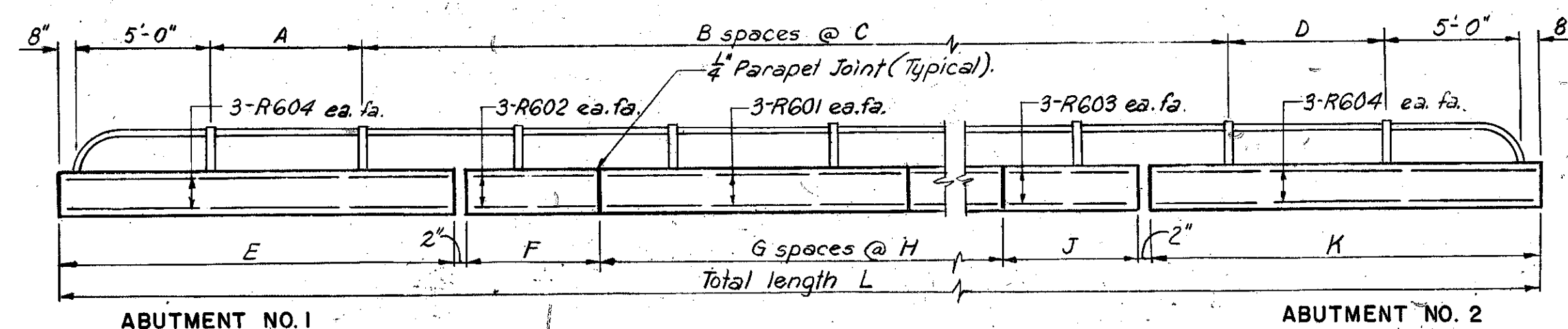
GUTTER SUPPORT DETAIL

Br. No. 52 and Br. No. 55 only

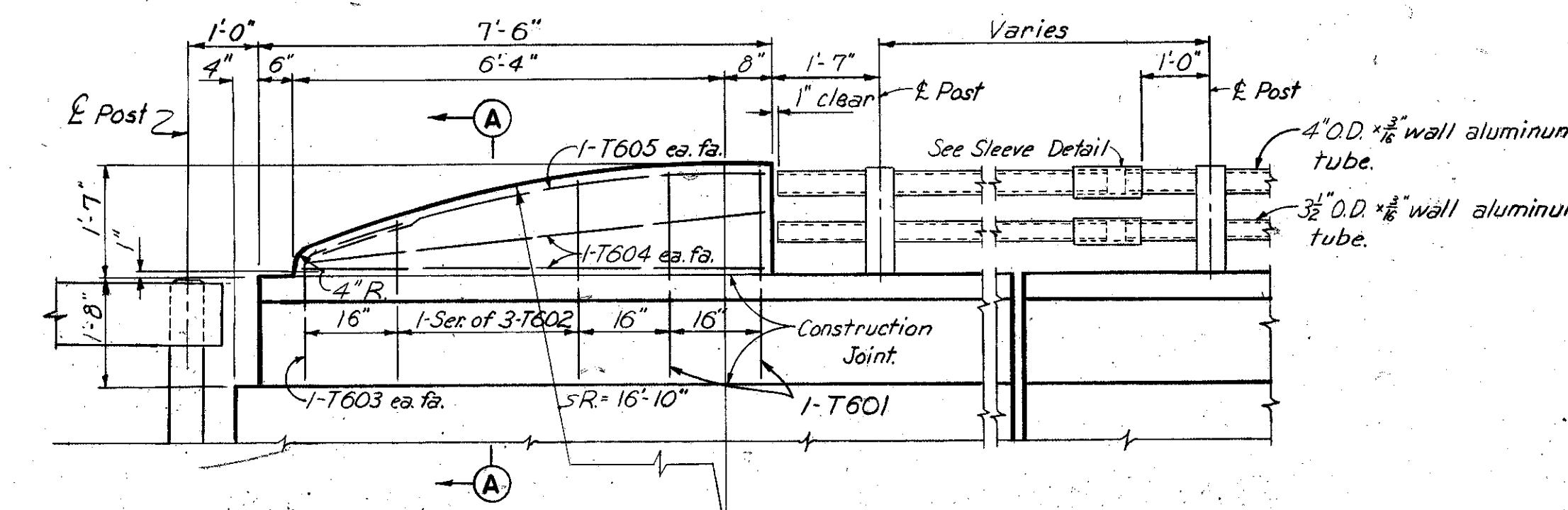
Indent form at base of cone and
set cone perpendicular. Clamp cone
firmly to form. Remove cone with
removal of form and fill hole
with grout.

Revised 6-27-61.
Revised 5-31-61.

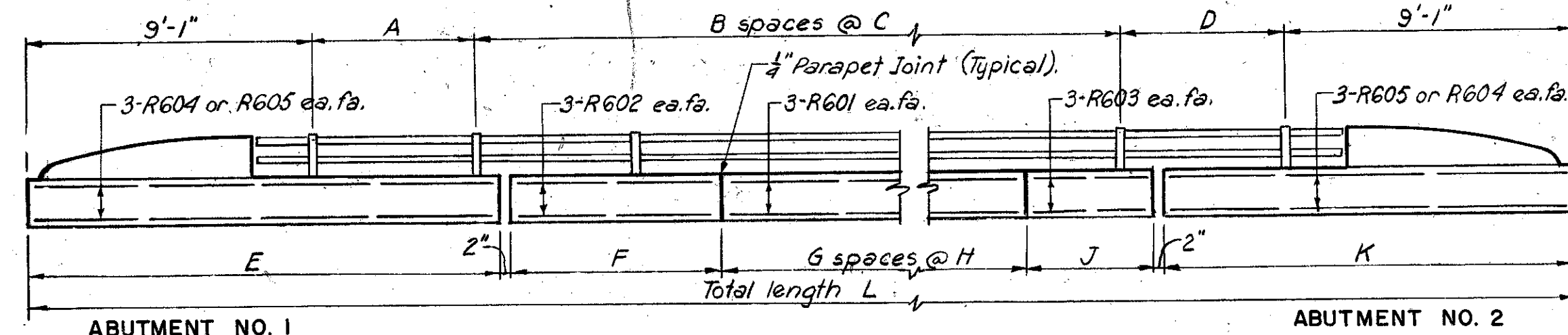
NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
SUPERSTRUCTURE & DRAINAGE DETAILS			
S.R. I			
CONSTRUCTION SECTION C-55			
CUYAHOGA CO.		OHIO	
SCALE: 3/4"=1'-0" Except as noted	CHECKED: C.A.B.	DATE: 2-1-60	
MADE: ARL	DATE: 3-16-60	REVIEWED: BC	DATE: 10-4-60
TRACED: _____	DATE: _____	1040 SHEET 297	



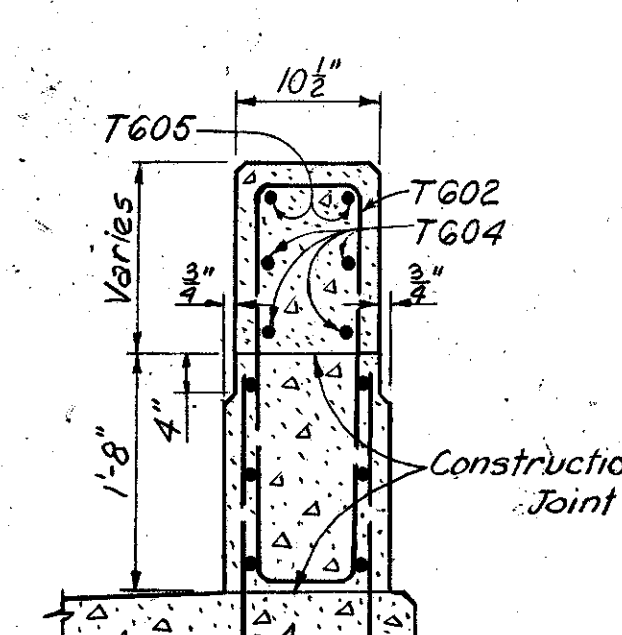
S.R. 1 OVER CROSS ROAD
TYPE "A" RAILING - BRIDGE NOS. 51, 53 & 54
No scale.



TYPE "C" RAILING AND TERMINAL POST
Scale: 3/4" = 1'-0"



S.R. 1 UNDER CROSS ROAD STRUCTURE
TYPE "C" RAILING - BRIDGE NOS. 52 & 55
No scale.



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

Mark	No.	Length	Ser. Inc.	Shape
T601	2	7'-10"		B
T602	1 Ser. 3	6'-6" to 7'-8"	7	B
T603	2	3'-11"		B
T604	4	6'-9"		S
T605	2	6'-7"		B

† B Required

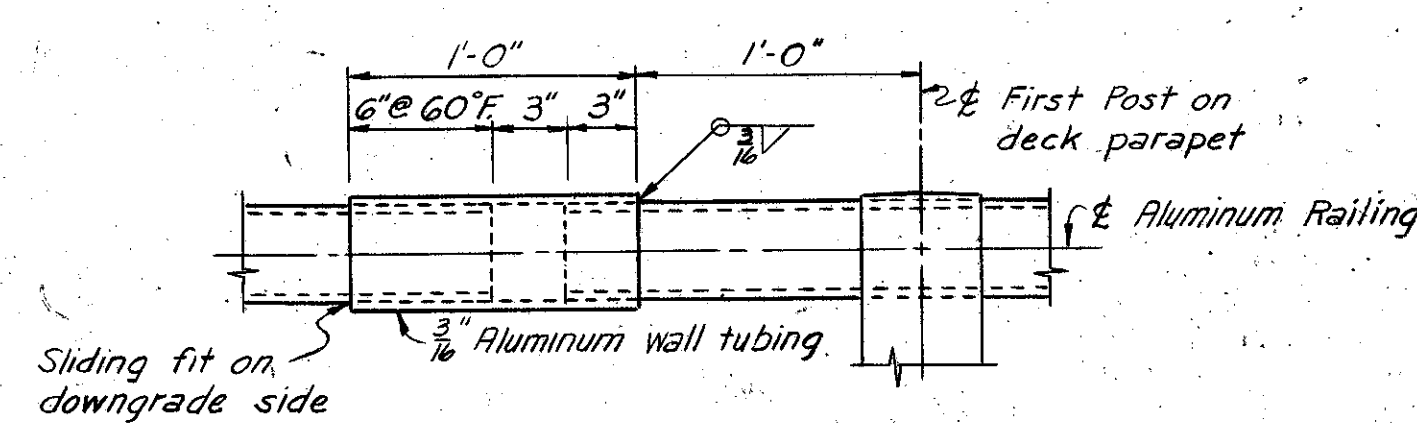
NOTES:

Railing shall be fabricated in lengths not less than three panels each and finished railing shall be free of burrs, sharp corners and rough surfaces.
Railing surfaces shall be normal to grade and the final adjustment of the railing shall be such that the top rail shall not depart more than 3/8" from correct line and grade.
Payment for Railing shall be made at the contract unit price bid for "Item S-14, Aluminum Railing (including parapet)". Pay length shall be the overall length of the parapets and shall include cost of anchor bolts, set screws, nuts, shims, etc. necessary to complete the installation of railing. Concrete and longitudinal reinforcing steel in the parapet and all reinforcing steel and concrete in the terminal posts shall be included in "Item S-14, Aluminum Railing (including parapet)" for payment. All other reinforcing steel in parapet shall be included in "Item S-4" for payment.
For additional details and notes regarding railing, see Ohio Standard Drawing RR-1-57.

DIMENSIONS	BRIDGE NO. 51				BRIDGE NO. 52		BRIDGE NO. 53		BRIDGE NO. 54		BRIDGE NO. 55	
	WEST ROADWAY		EAST ROADWAY		North Parapet	South Parapet	W. & E. ROADWAY		W. & E. ROADWAY		N. & S. ROADWAY	
	West Parapet	East Parapet	West Parapet	East Parapet			West Parapet	East Parapet	West Parapet	East Parapet	North Parapet	South Parapet
A	7'-6 1/2"	7'-5 1/2"	7'-5 1/2"	7'-5 1/2"	8'-0 1/2"	7'-10 1/2"	7'-5 3/8"	7'-5 3/8"	6'-10 3/8"	6'-7 1/4"	7'-10 1/2"	7'-10 1/2"
B	21	21	21	21	59	59	21	21	77	77	47	47
C	7'-3"	7'-3"	7'-3"	7'-3"	8'-1"	8'-1"	7'-11"	7'-11"	8'-6"	8'-6"	8'-5"	8'-5"
D	7'-5 1/2"	7'-6 1/2"	7'-5 1/2"	7'-5 1/2"	7'-10 1/2"	8'-0 1/2"	7'-5 3/8"	7'-5 3/8"	6'-7 1/4"	6'-10 3/8"	7'-10 1/2"	7'-10 1/2"
E	14'-4 3/8"	14'-1"	14'-4 3/8"	14'-1"	19'-1 1/4"	18'-2 3/4"	14'-4 1/4"	14'-1 1/4"	13'-9 1/4"	13'-6 1/8"	15'-9"	15'-9"
F	9'-6 1/4"	9'-8 3/8"	9'-5 1/4"	9'-8 3/8"	10'-0 1/2"	10'-8 1/4"	10'-5 5/8"	10'-8 1/4"	19'-10 1/2"	19'-10 1/2"	5'-3"	5'-3"
G	9	9	9	9	28	28	9	9	36	36	23	23
H	14'-6"	14'-6"	14'-6"	14'-6"	16'-2"	16'-2"	15'-10"	15'-10"	17'-0"	17'-0"	16'-10"	16'-10"
J	9'-8 3/8"	9'-6 1/4"	9'-8 3/8"	9'-5 1/4"	10'-8 1/4"	10'-0 1/2"	10'-8 3/8"	10'-5 5/8"	19'-10 1/2"	19'-10 1/2"	5'-3"	5'-3"
K	14'-1"	14'-4 3/8"	14'-1"	14'-4 3/8"	18'-2 3/4"	19'-1 1/4"	14'-1 1/4"	14'-4 1/4"	13'-9 1/4"	13'-9 1/4"	15'-9"	15'-9"
L	178'-6 1/4"	178'-6 1/4"	178'-5 1/4"	178'-5 1/4"	511'-0 1/8"	511'-0 1/8"	192'-5 3/4"	192'-5 3/4"	679'-3 3/8"	679'-3 3/8"	429'-6"	429'-6"

REINFORCEMENT SCHEDULE

Mark	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length
R601	108	14'-0"	108	14'-0"	336	15'-9"	216	15'-6"	864	16'-9"	552	16'-6"
R602	12	9'-0"	12	9'-0"	12	10'-8"	24	10'-3"	48	19'-6"	48	4'-9"
R603	12	9'-3"	12	9'-3"	12	9'-6"	24	10'-0"	48	13'-3"		
R604	24	13'-9"	24	13'-9"	12	17'-9"	48	13'-9"	24	13'-0"	48	15'-6"
R605					12	18'-9"						



SLEEVE DETAIL
Scale: 1 1/2" = 1'-0"

NO.	DATE	REVISION	BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
RAILING DETAILS S. R. 1 CONSTRUCTION SECTION C-55			
CUYAHOGA CO. OHIO			
SCALE: <i>As noted</i>	DATE: <i>7-23-59</i>	CHECKED: <i>CKB</i>	DATE: <i>6-20-60</i>
MADE: <i>A.L.</i>	DATE: <i>7-23-59</i>	REVIEWED: <i>BC</i>	DATE: <i>10-4-60</i>
1040 SHEET 298			

E-00

FF-3

SUMMARY OF ADDITIONAL R/W REQUIRED

FED. RD. DIVISION	STATE	PROJECT	299
2	OHIO		313
CUYAHOGA COUNTY			1
CUY-1-2.20			15

CUY-271-6.80

PARCEL NO.	OWNER OF RECORD	AREA (ACRES)	EXIST. BLDGS.	SHEET NO.	REMARKS	RESIDUE	
						RIGHT	LEFT
55-1-LA	City of Cleveland	52.10		2,3,4&5		122.11	151.61
55-1-X	"	0.61		2&3			
55-1-X1	"	0.06		3			
55-1-X2	"	0.05		3			
55-1-X3	"	0.04		3			
55-1-X4	"	0.05		4			
55-1-X5	"	0.03		4			
55-1-X6	"	0.06		4			
55-1-X7	"	0.05		5			
55-1-X8	"	0.06		5			
55-2-T	Mary L. Fry	0.34		9			
55-2-LA	"	26.65		5,6,7&9	Right Residue landlocked	0.85	73.29
55-2	"	0.09		9			
55-2-X	"	0.01		6			
55-2-X1	"	0.92		9			
55-3-T	John J. Drotos	0.04		8			
55-3	"	0.01		8			
55-3-LA	"	8.23		6,7&8		16.44	
55-4-T	Edward M. & Janice P. Kidd, Rachel Miller	0.29		8			
55-4	"	0.14		8		19.44	
55-4A-T	C. E. M. Tedick	0.07		8			
55-4B-T	Phillip L. Cardella	0.07		8			
55-4C-T	Norman W. Talbot	0.06		8			
55-4D-T	Barney Lertzmann	0.04		8			
55-5-S	George Sr. & Gertrude Kellon	0.01		8		0.82	
55-5A-S	Emmett Meade	0.02		8		0.39	
55-6-LA	Village Square Shopping Center, Inc.			8	Not Required		
55-6	"			8	"	8.46	
55-7-LA	Mary T. Ling	0.83	Yes	7&8	Right Residue Landlocked	1.45	
55-7A-L	Gayland Inc.			8	Not Required See 55-7A		
55-8-LA	Julia C. Bateman	2.08	Yes	7			
55-9-LA	Central Motors Corporation			7&9			24.14
55-9	"	0.09		9			
55-6 WA	Village Square Shopping Center Inc.	0.03		8			
55-7A	Gayland Inc.	0.03		8		0.23	0.251
55-13-X	Central Motors Corporation	0.08		10			
55-13-LA	"	38.68		7,10,11&9,8		36.48	26.51
55-13A-LA	National City Bank of Cleveland, Trustee	20.68		11&12		52.39	37.73
55-13A-X1	"	0.03		11			
55-13A-X2	"	0.04		11			
55-13A-X3	"	0.12		12			

PARCEL NO.	OWNER OF RECORD	AREA (ACRES)	EXIST. BLDGS.	SHEET NO.	REMARKS	RESIDUE	
						RIGHT	LEFT
55-14-LA	The Village of Pepper Pike	2.99		12&13		11.96	0.11
55-15-LA	The Village of Beachwood	0.07		12			5.10
55-16-LA	Maurice L. Stonehill	9.45		13		21.33	1.11
55-16	"	0.09		13			
55-16A	"	0.06		13			
55-16B	Carl M. Borgh	0.02					0.41
55-17-LA	Sarah G. Blachman	2.46		13	Left Residue landlocked	2.74	0.20
55-17	"	0.06		13			
55-18-LA	Central Motors Corporation	0.10		13	See 55-9-LA		0.99
55-18	"	0.09		13			
55-18A	Frances E. Lombardy	0.01					0.91
55-19-LA	Sidney N. Amster	3.20		13&14		12.37	
55-20-LA	Pauline Moldaver	5.36		13&14			1.37
55-20	"	0.02		14			
55-21-LA	S. Malin	0.55		14			0.45
55-22-LA	Jack H. Lubin	0.63	Yes	14			0.36
55-22	"	0.05		14			
55-23-LA	Sidney N. Amster	1.17		14	See 55-19-LA		0.13
55-23	"	0.14		14			
55-24	Nat Kirshner	0.03		14			0.97
55-25	Sidney N. Amster	0.23		14	See 55-23-LA		0.77
55-26	Robert E. & A.F. Schroeder			14	Not Required		1.27
55-27	Sidney N. Amster	0.16		14	See 55-19-LA		6.89
55-28-LA	Walter H. Rubinstein Trs.	6.07		14&15			2.19
55-28	"	0.14		14			
55-29-LA	Pauline Moldaver	2.00		14	See 55-20-LA		1.37
55-29	"	0.03		14			
55-30	Irving D. & Milma L. Robinson			14	Not Required		1.70
55-31-LA	Crover E. Corlett et al.	5.78	Yes	14&15			6.09
55-31-X	"	0.07		15			
55-32-LA	Frank & Mildred Bickoff	5.82	Yes	15			1.59
55-33-WA	Walter R. Corlett			15			

A.M.	Parcel 55-11-X changed to 55-13-X	6-19-61
A.M.	Parcel 55-11-LA & 55-13-LA ADDED to Parcel 55-13-LA	6-19-61

WCI	Revised 55-1-LA, 55-2-LA, 55-3-LA, 55-3-T, 55-6-LA, 55-6, 55-7-LA, 55-7A-LA, 55-7A, 55-11-LA, & 55-12-LA	5-29-61
	Added 55-7A; Eliminated 55-26, 30	2-24-61
	Revised 55-6; Added 55-6-WA; Revised 55-7A-LA	
	added; New owners on 55-17, 27 and 31	2-24-61
	Parcels 55-9, 9LA, 12LA, all 55-13's; 55-13A-LA	
LVM	55-10 Eliminated; Acreage and residue changed for	
RJH	Revised Hurlingham Parcels	10-7-60
LVM	Parcel 55-33-WA added	10-6-60
LVM	Chagrin Blvd. Interchange revision made	10-4-60
LVM	55-13-X removed; Fence quantities revised	4-1-60
RJH	Residue areas added; WA changed to X, areas added	2-12-60
LVM	Changed Limits on Temporary R/W Parcels	12-31-59
NAME	REVISION	DATE

FENCE SUMMARY

R/W SHEET NO.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
TYPE "D" FENCE	300	3,185	1,790	3,200	1,710				1,603	1,664	1,405		602	203	15,192 Lin Ft.
TYPE "C" FENCE			2,070		1,515	1,717	1,019	1,538	1,465	2,206	1,188	2,935	2,454		18,104 Lin Ft.

Note: Unless otherwise shown on the plans, all fence to be Type "D"

FENCE LEGEND

- (E) End Post
- (I) Intermediate Post
- (C) Corner Post

Note: Where Type "D" and Type "C" Fence adjoin, the Type "D" Fence shall be connected to the Type "C" Fence end post.

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

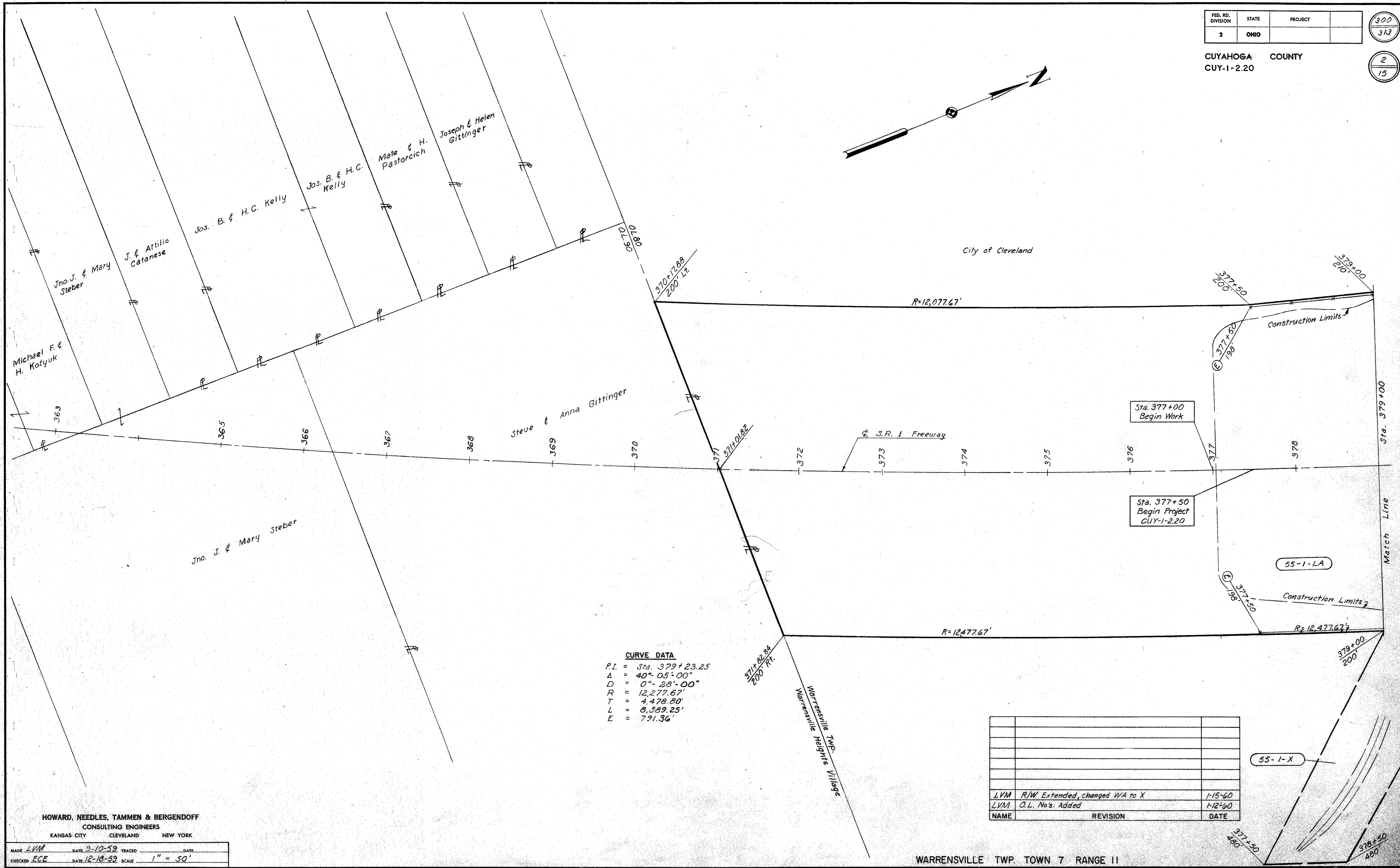
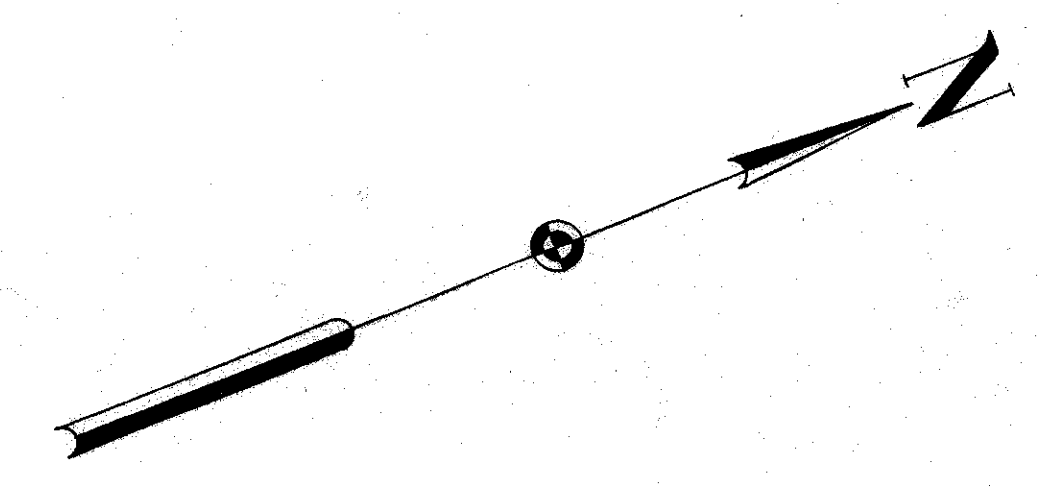
MADE WCI DATE 5-29-61 TRACED DATE
CHECKED ERH DATE 5-29-61 SCALE

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

300
313

CUYAHOGA COUNTY
CUY-1-2.20

2
15



CURVE DATA
 P.I. = Sta. 379+23.25
 Δ = 40°-05'-00"
 D = 0°-28'-00"
 R = 12,277.67'
 T = 4,478.80'
 L = 8,589.25'
 E = 791.36'

NAME	REVISION	DATE
LVM	R/W. Extended, Changed WA to X	1-15-60
LVM	O.L. No's. Added	1-12-60

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

MADE LVM DATE 3-10-59 TRACED DATE
 CHECKED ECE DATE 12-18-59 SCALE 1" = 50'

WARRENSVILLE TWP. TOWN 7 RANGE 11

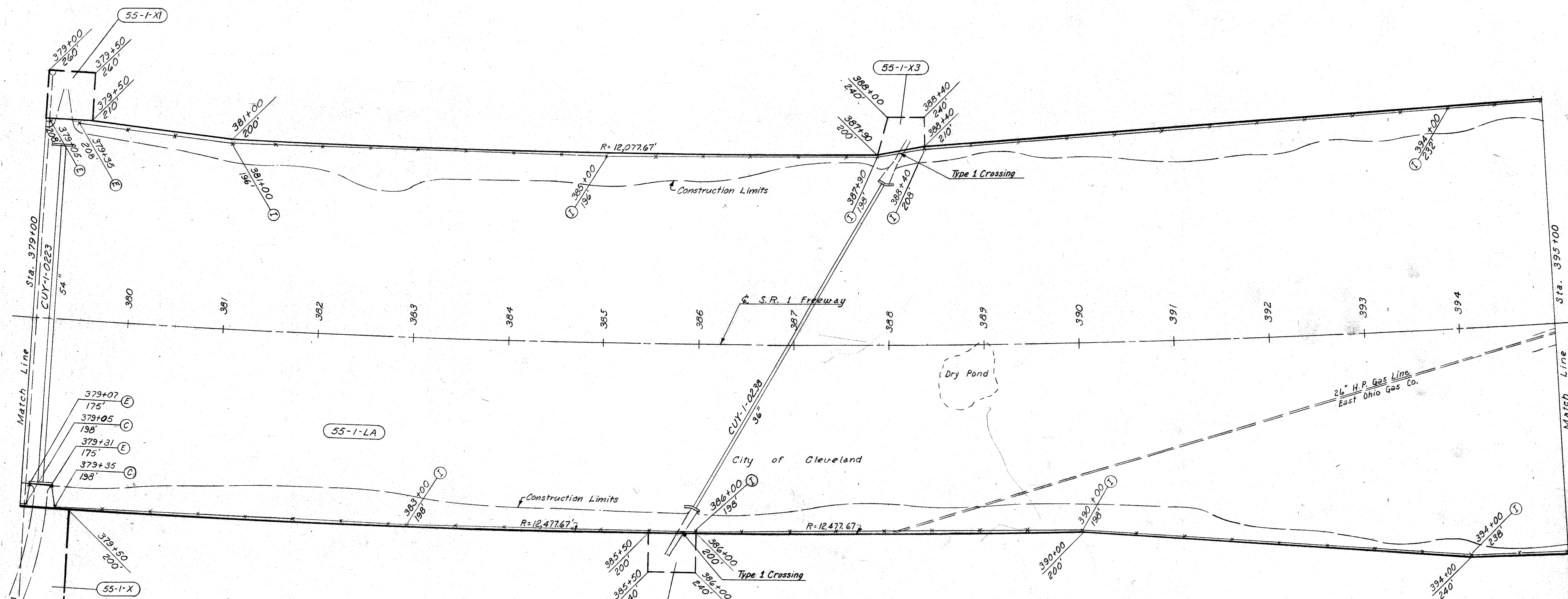
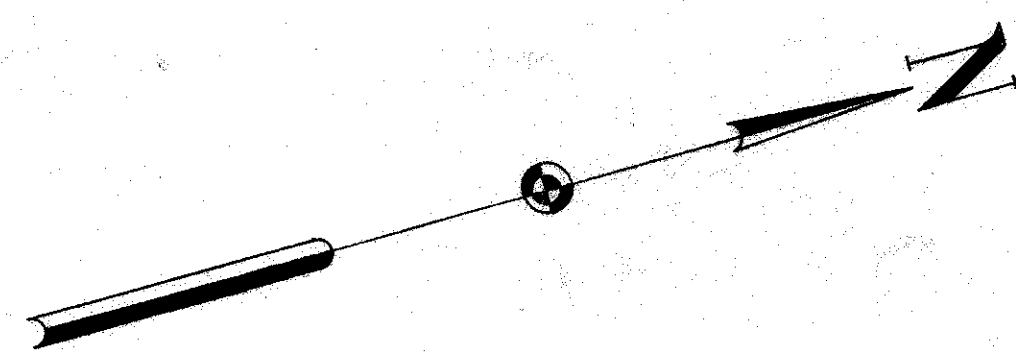
RIGHT-OF-WAY STA 371+00 TO STA 379+00

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

301
313

CUYAHOGA COUNTY
CUY-1-2.20

3
15



CURVE DATA
 P.I. Sta. 379+23.25
 Δ = 40° 05' 00"
 D = 0° 28' 00"
 R = 12,277.67'
 T = 4478.80'
 L = 8,589.25'
 E = 791.36'

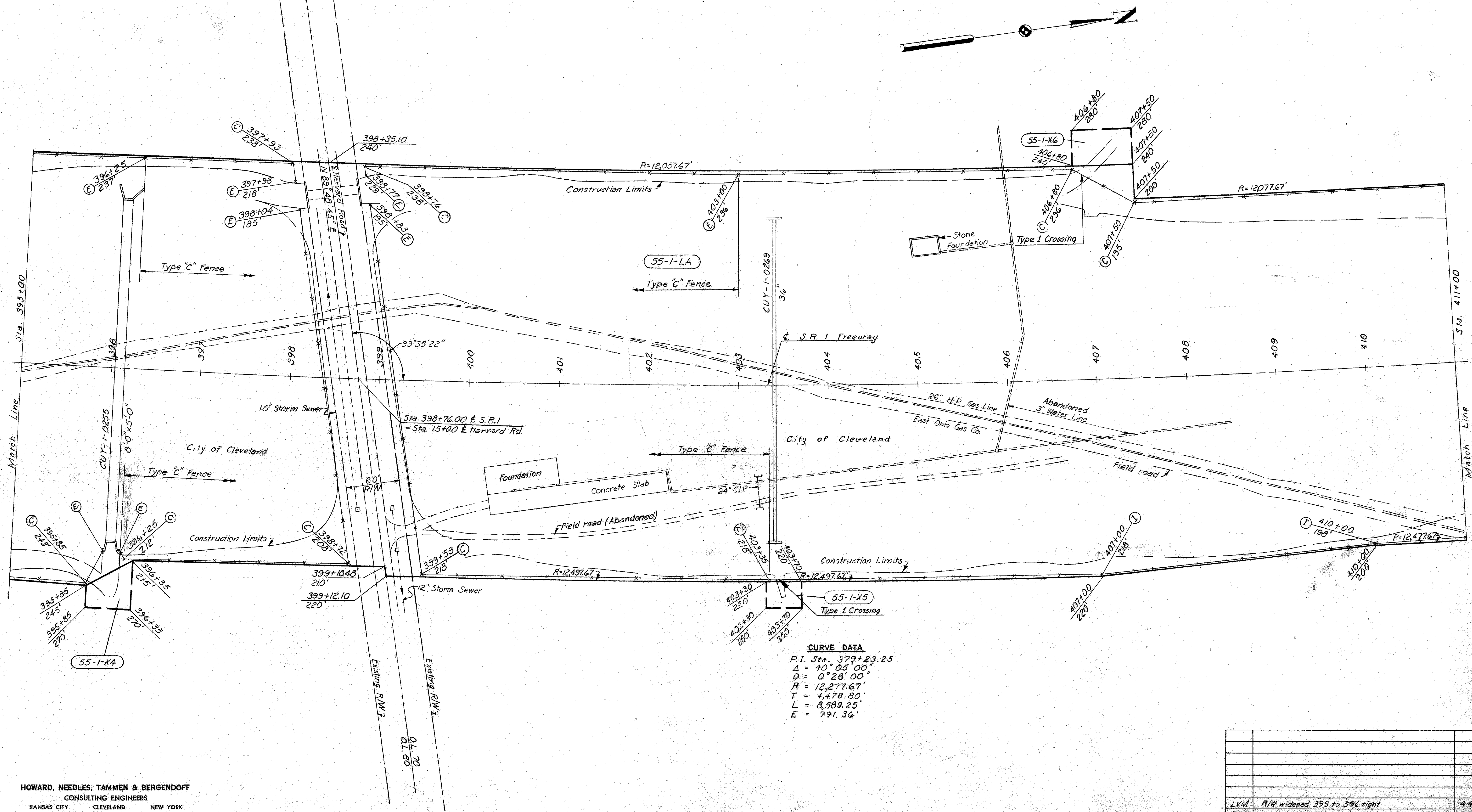
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

MADE LVM DATE 4-28-59 TRACED DATE
 CHECKED ECE DATE 12-18-59 SCALE 1" = 50'

WARRENSVILLE TWP. TOWN 7 RANGE 11

NAME	REVISION	DATE
LVM	Fence tied to structure - Sta 379 right	4-4-60
LVM	Changed WA to X	1-18-60
LVM	RIW Limits moved	1-12-60

RIGHT-OF-WAY STA. 379+00 TO STA. 395+00



CURVE DATA
 P.I. Sta. 379+23.25
 $\Delta = 40^{\circ} 05' 00''$
 $D = 0^{\circ} 28' 00''$
 $R = 12,277.67'$
 $T = 4,478.80'$
 $L = 8,589.25'$
 $E = 791.36'$

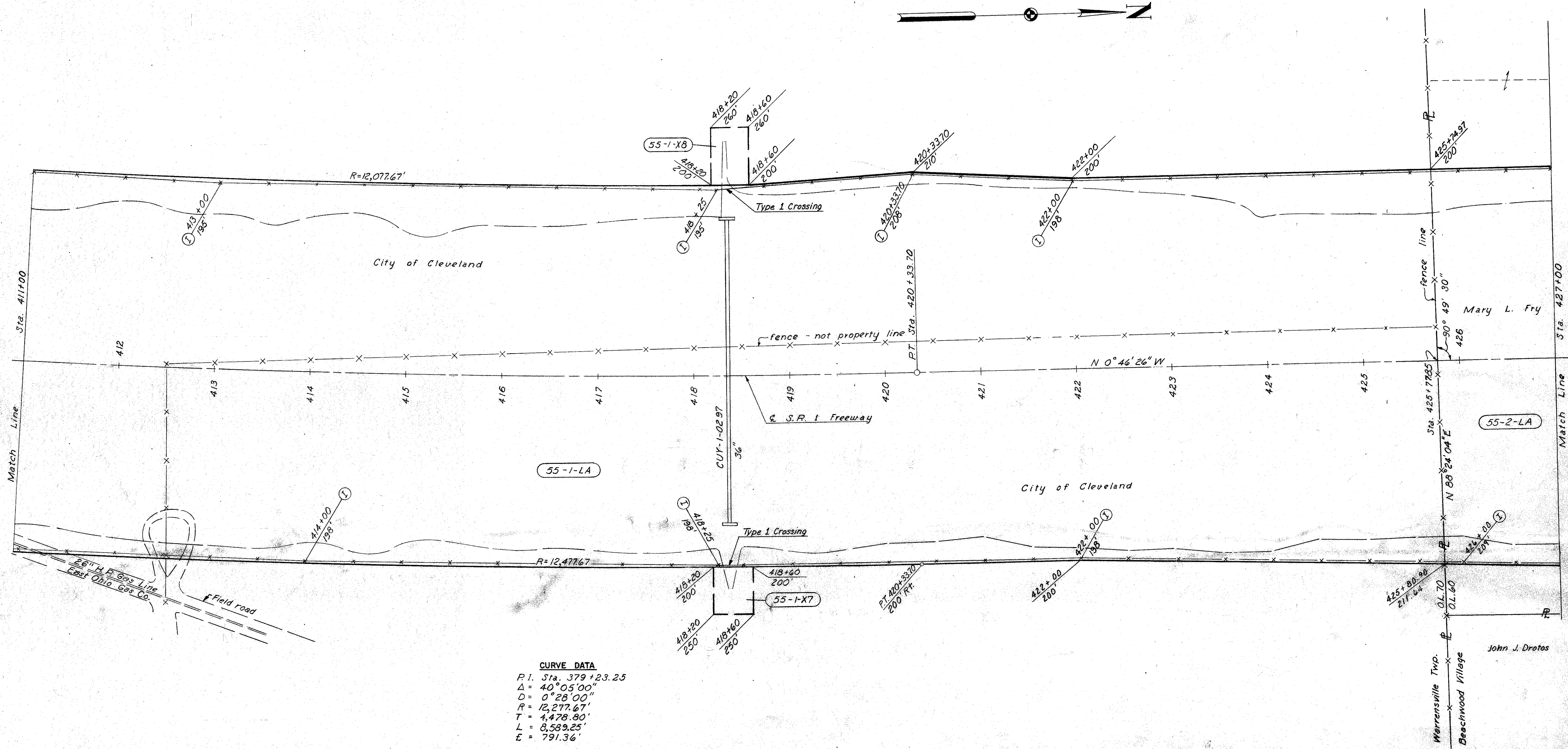
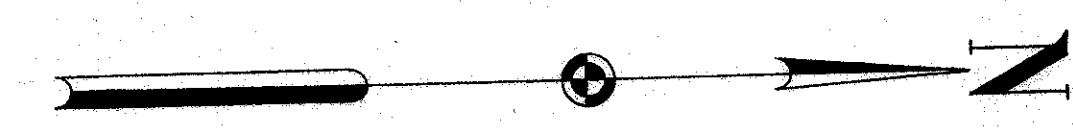
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

MADE LVM DATE 4-29-59 TRACED DATE
 CHECKED ECF DATE 12-21-59 SCALE 1"=50'

WARRENSVILLE TWP. TOWN 7 RANGE 11

NAME	REVISION	DATE
LVM	R/W widened 395 to 396 right	4-4-60
LVM	Skew angle at Harvard added, changed WA to X	1-18-60
LVM	O.L. No's. added and R/W limits moved	1-12-60

RIGHT-OF-WAY STA. 395+00 TO STA. 411+00



CURVE DATA
 P.I. Sta. 379+23.25
 $\Delta = 40^{\circ}05'00''$
 $D = 0^{\circ}28'00''$
 $R = 12,277.67'$
 $T = 4,478.80'$
 $L = 8,589.25'$
 $E = 791.36'$

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

MADE WCI DATE 5-22-61 TRACED AEK DATE 5-23-61
 CHECKED ERH DATE 5-23-61 SCALE 1"=50'

WARRENSVILLE TWP. TOWN 7 RANGE 11

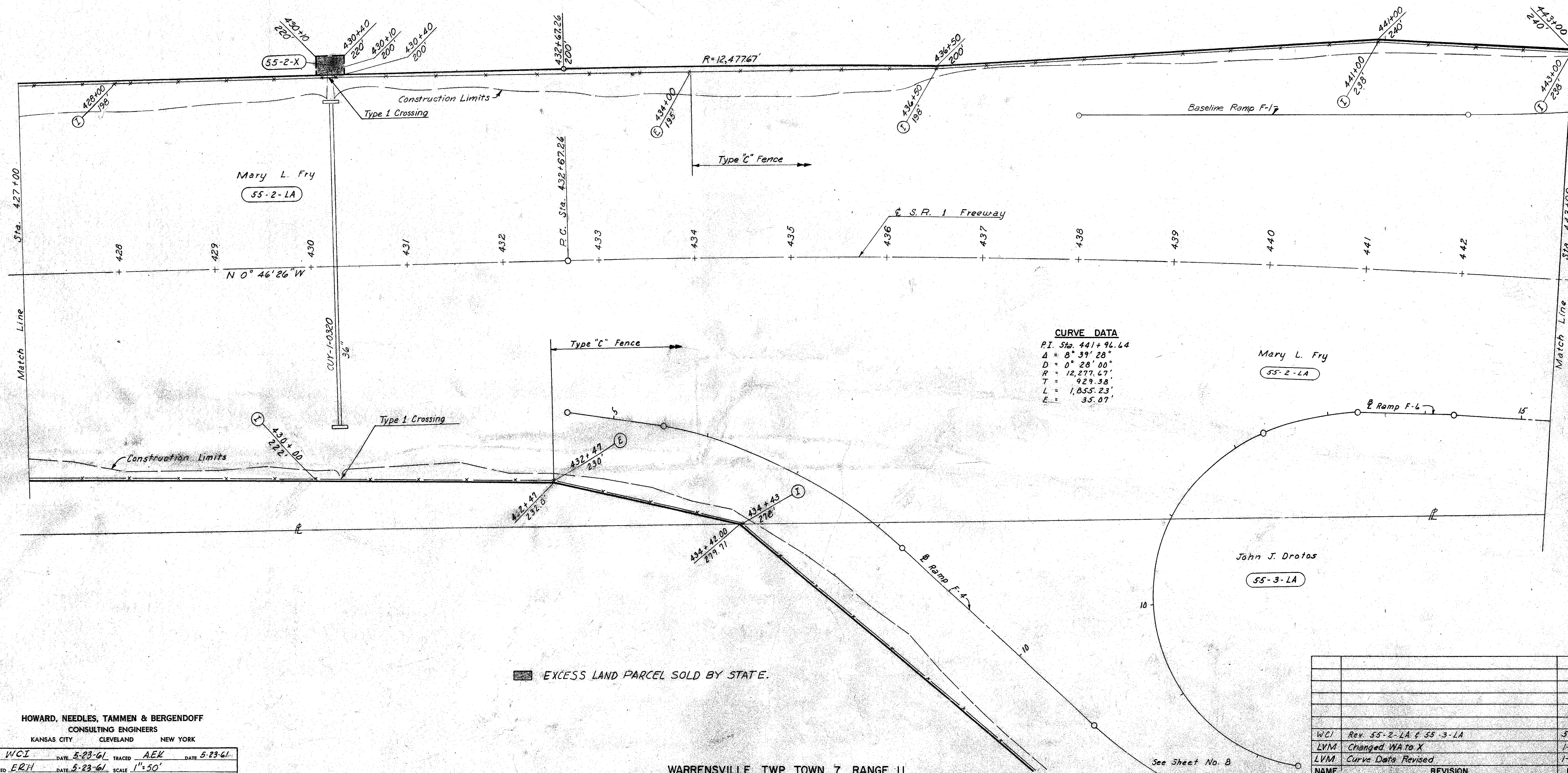
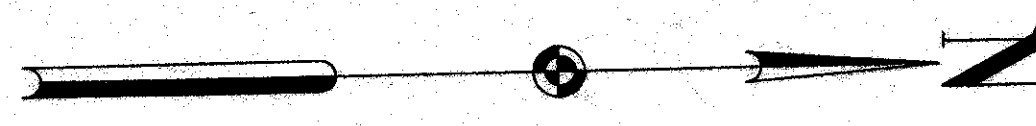
NAME	REVISION	DATE
WCI	Rev. 55-1-LA & 55-2-LA	5-23-61
LVM	Changed WA to X	1-18-60
LVM	O.L. No's. added and R/W limit moved to P.T.	1-12-60

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

304
313

CUYAHOGA COUNTY
CUY-1-2.20

6
15



CURVE DATA

P.I. Sta. 441+96.64
 $\Delta = 8^{\circ} 39' 28''$
 $D = 0^{\circ} 28' 00''$
 $R = 12,277.67'$
 $T = 929.38'$
 $L = 1,855.23'$
 $E = 35.07'$

EXCESS LAND PARCEL SOLD BY STATE.

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

MADE WCI DATE 5-23-61 TRACED AEK DATE 5-23-61
CHECKED ERH DATE 5-23-61 SCALE 1"=50'

WARRENSVILLE TWP TOWN 7 RANGE 11

NAME	REVISION	DATE
WCI	Rev. 55-2-LA & 55-3-LA	5-23-61
LVM	Changed WA to X	1-18-60
LVM	Curve Data Revised	1-12-60

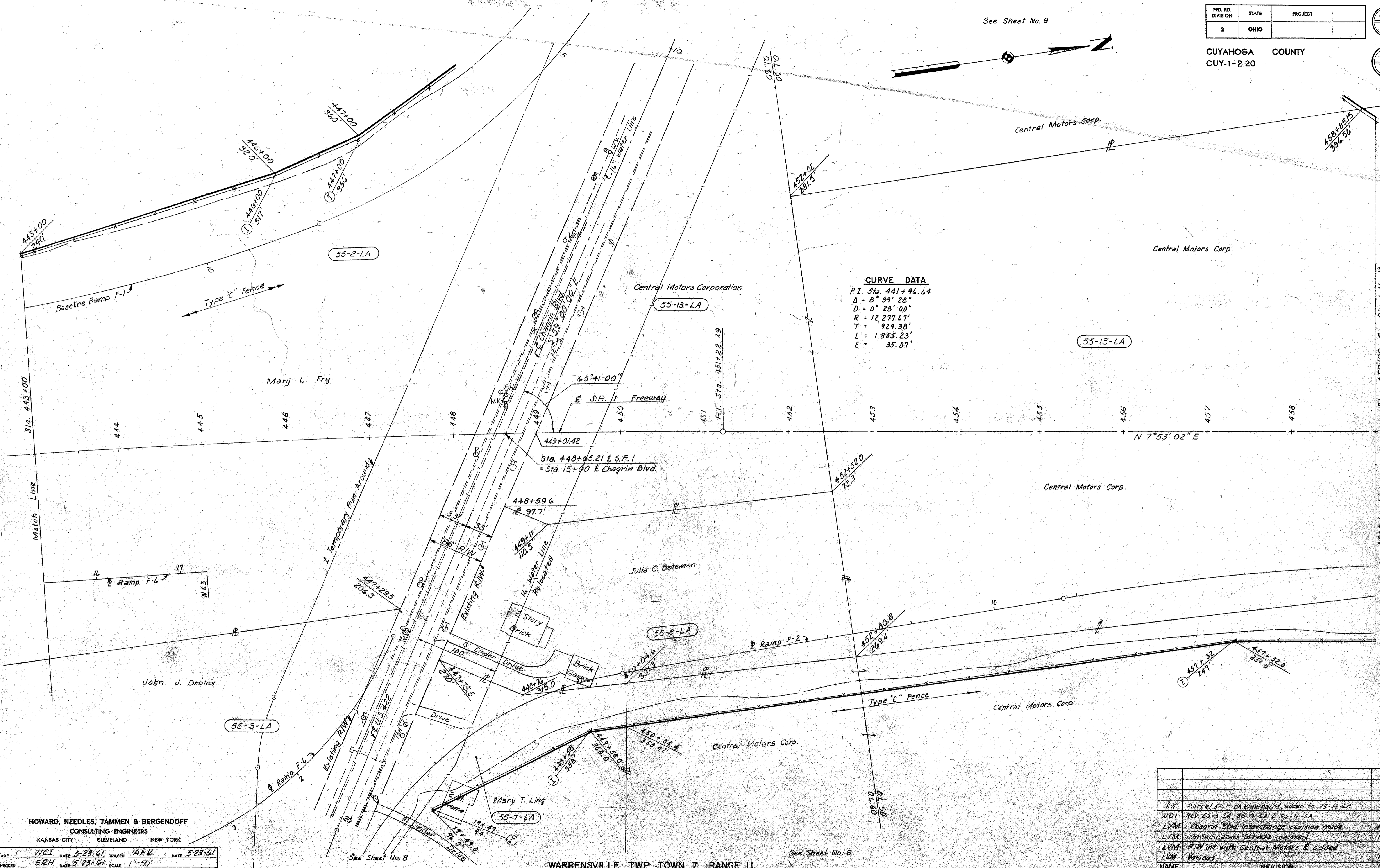
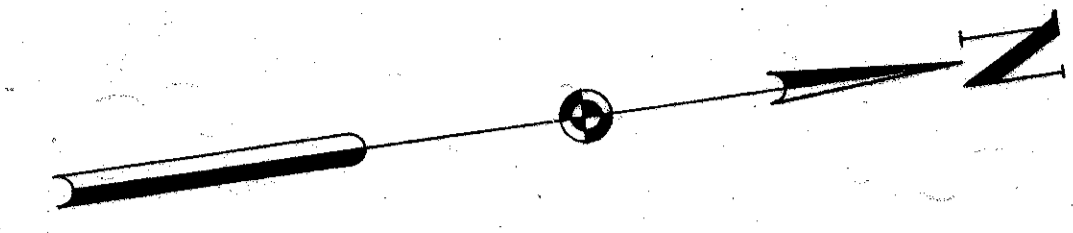
RIGHT-OF-WAY STA. 427+00 TO STA. 443+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

305
313
7
15

CUYAHOGA COUNTY
CUY-1-2.20

See Sheet No. 9



CURVE DATA
 P.I. Sta. 441+96.64
 $\Delta = 8^{\circ} 39' 28''$
 $D = 0^{\circ} 28' 00''$
 $R = 12,277.67'$
 $T = 929.38'$
 $L = 1,853.23'$
 $E = 35.07'$

WARRENSVILLE TWP TOWN 7 RANGE 11

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

MADE WCI DATE 5-23-61 TRACED AER DATE 5-23-61
 CHECKED ERH DATE 5-23-61 SCALE 1"=50'

NAME	REVISION	DATE
R.N.	Parcel 55-11 LA eliminated, added to 55-13-LA	6-13-61
WCI	Rev. 55-3-LA, 55-7-LA & 55-11-LA	5-23-61
LVM	Chagrin Blvd. Interchange revision made	10-3-60
LVM	Undedicated Streets removed	1-18-60
LVM	R/W int. with Central Motors R. added	1-13-60
LVM	Various	12-31-59

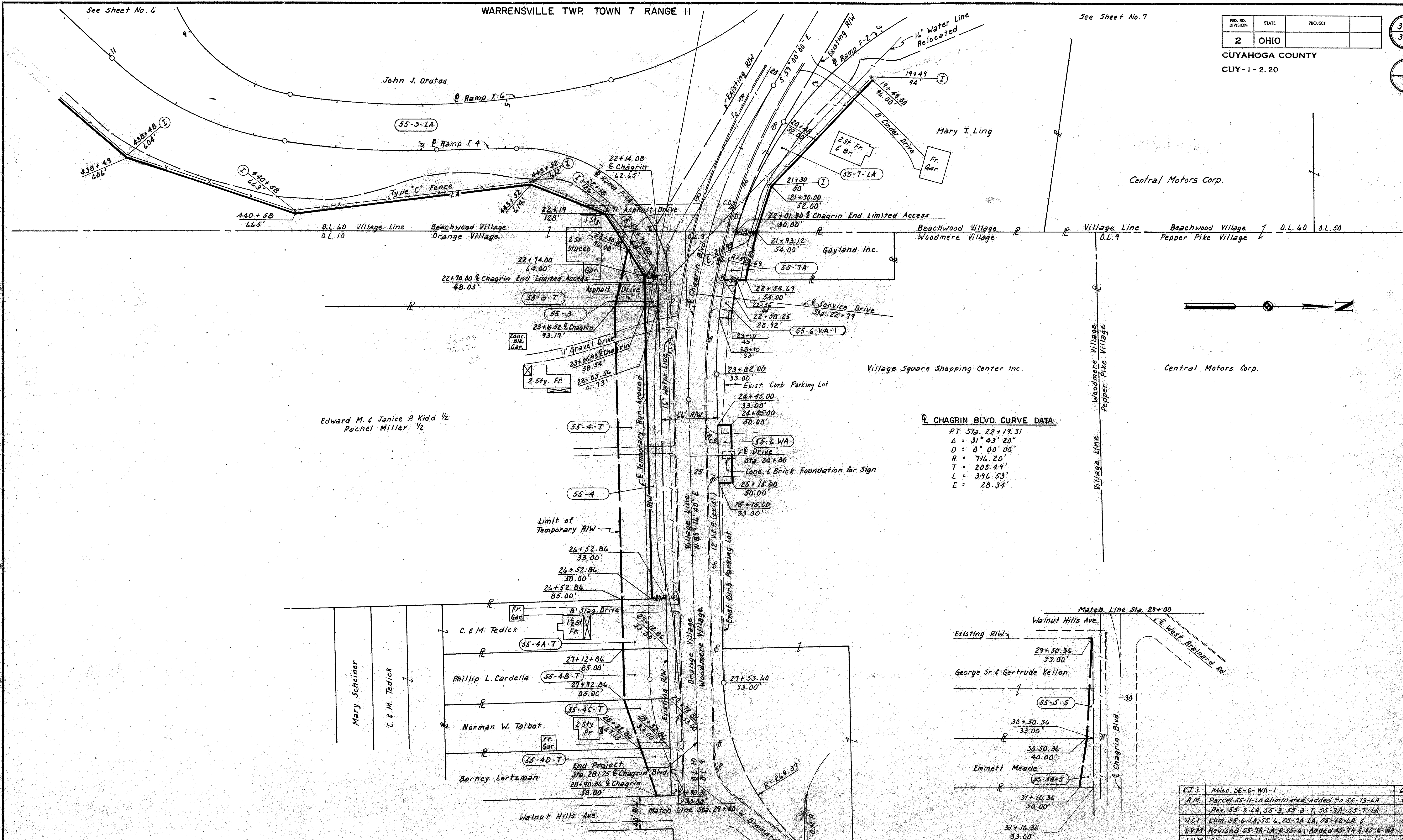
RIGHT-OF-WAY STA 443+00 TO STA 459+00

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

306
313

CUYAHOGA COUNTY
CUY-1-2.20

8
15



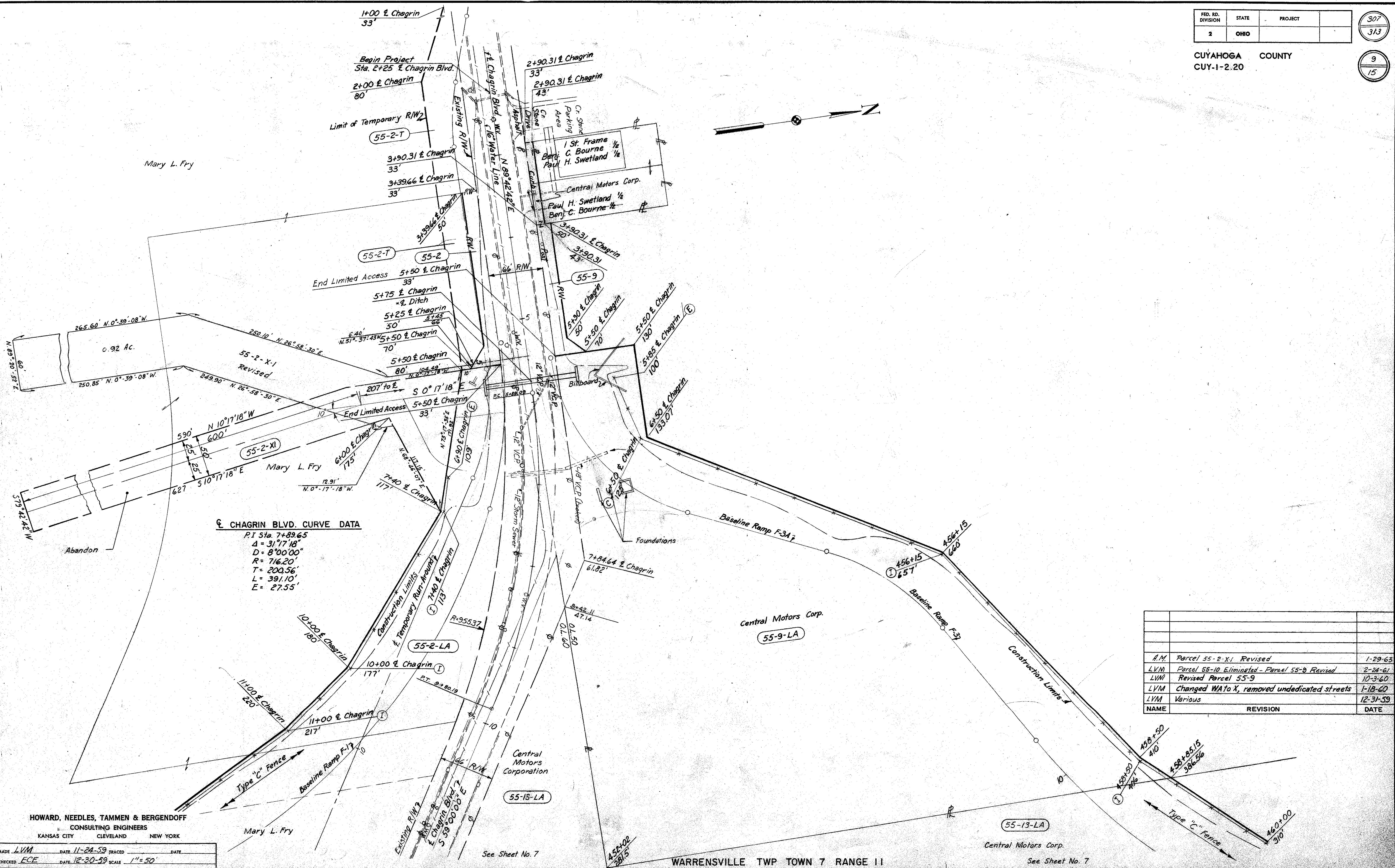
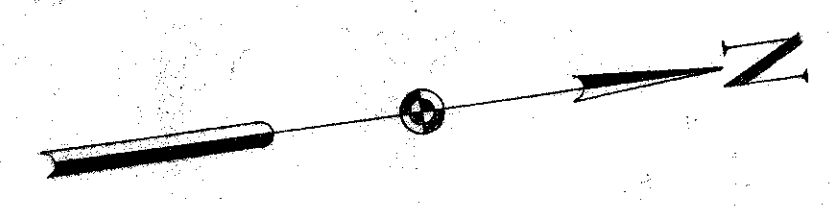
CHAGRIN BLVD. CURVE DATA

P.I. Sta.	22+19.31
Δ	$31^{\circ} 43' 20''$
D	$8^{\circ} 00' 00''$
R	716.20'
T	203.49'
L	396.53'
E	28.34'

NAME	REVISION	DATE
K.T.S.	Added 55-6-WA-1	6-5-62
A.M.	Parcel 55-11-LA eliminated, added to 55-13-LA	6-19-61
	Rev. 55-3-LA, 55-3-T, 55-7A, 55-7-LA	
W.C.I.	Elim. 55-6-LA, 55-6, 55-7A-LA, 55-12-LA &	5-22-61
L.V.M.	Revised 55-7A-LA & 55-6; Added 55-7A & 55-6-WA	2-24-61
L.V.M.	Chagrin Blvd. Interchange revision made	10-4-60
L.V.M.	Undedicated Streets Removed	1-18-60
L.V.M.	Various	12-31-59

MADE W.C.I. DATE 5-22-61 TRACED A.E.K. DATE 5-22-61
CHECKED E.R.H. DATE 5-22-61 SCALE 1" = 50'

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



CHAGRIN BLVD. CURVE DATA
 P.I. Sta. 7+89.65
 $\Delta = 31^{\circ}17'18''$
 $D = 8^{\circ}00'00''$
 $R = 716.20'$
 $T = 200.56'$
 $L = 391.10'$
 $E = 27.55'$

NAME	REVISION	DATE
A.M.	Parcel 55-2-X1 Revised	1-29-65
LVM	Parcel 55-10 Eliminated - Parcel 55-9 Revised	2-24-61
LVM	Revised Parcel 55-9	10-3-60
LVM	Changed WA to X, removed undedicated streets	1-18-60
LVM	Various	12-31-59

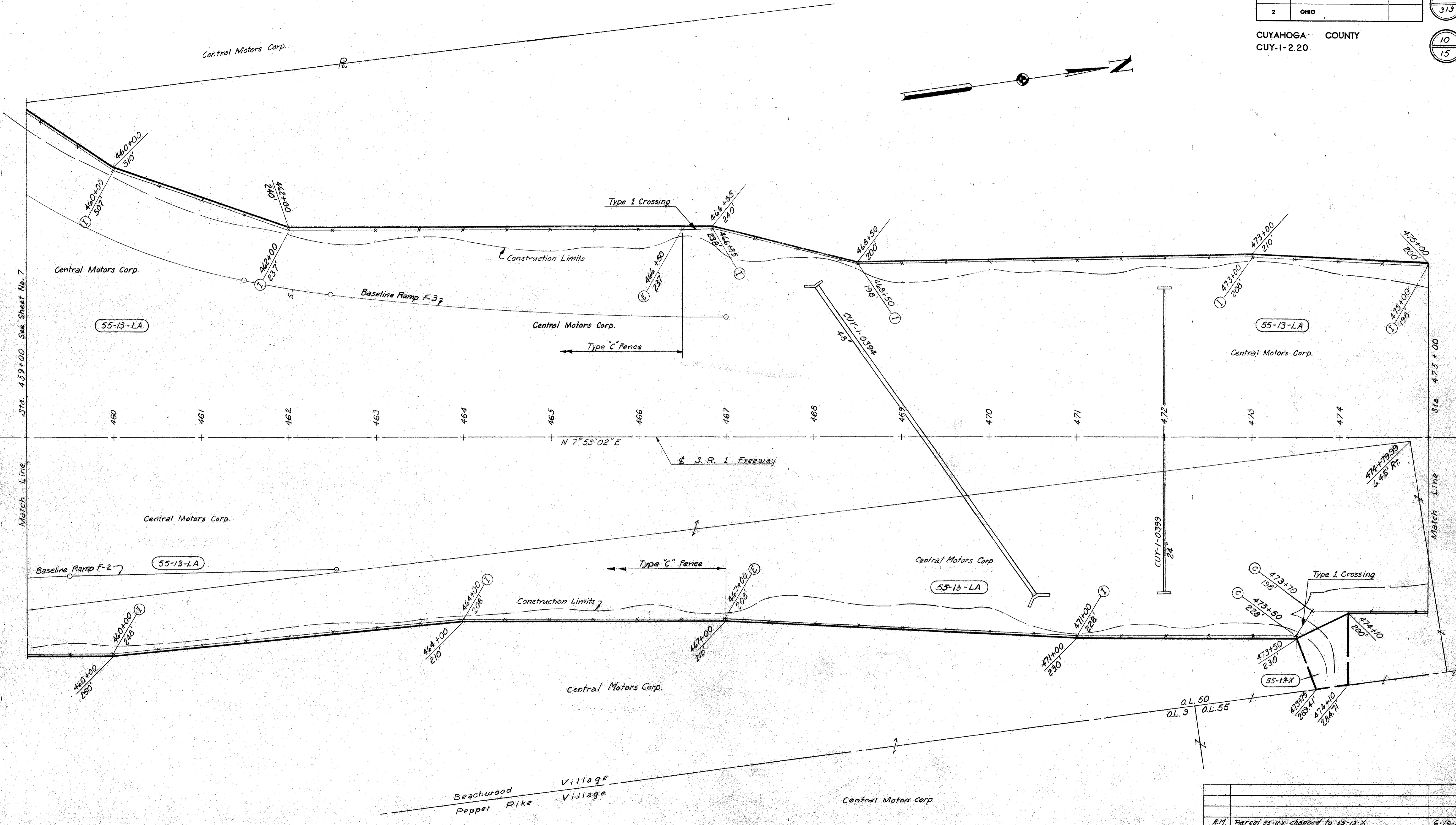
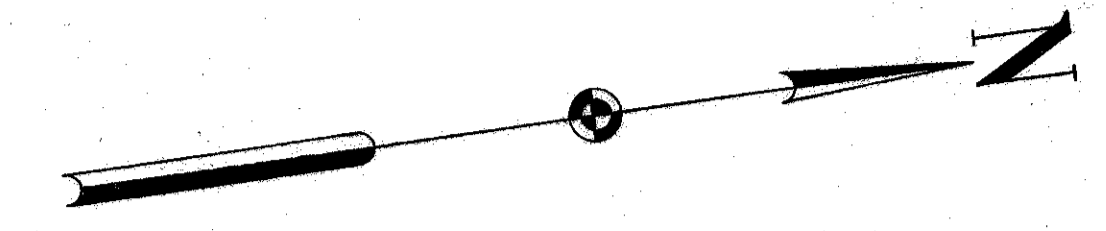
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

MADE LVM DATE 11-24-59 TRACED DATE
 CHECKED FCE DATE 12-30-59 SCALE 1"=50'

See Sheet No. 7

See Sheet No. 7

WARRENSVILLE TWP TOWN 7 RANGE 11

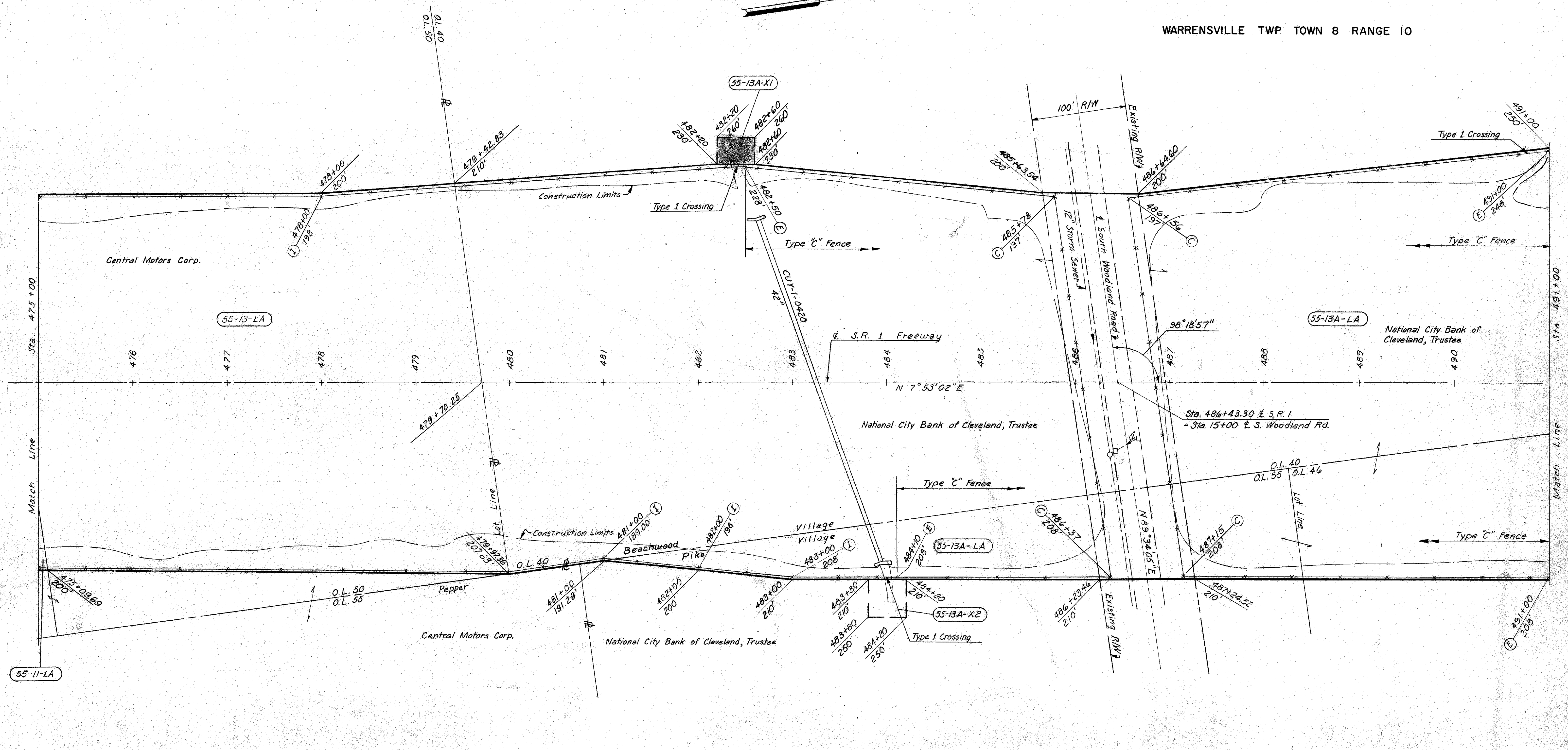
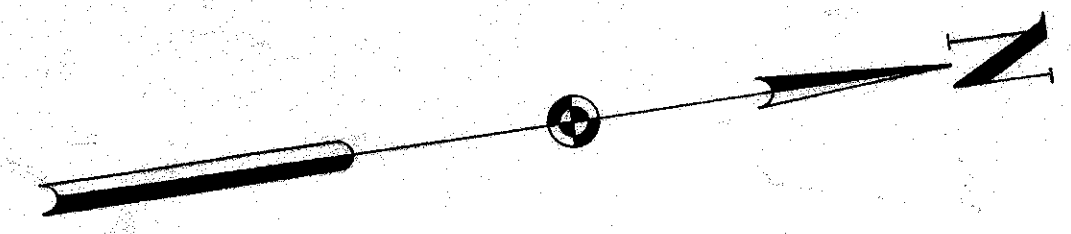


HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY CLEVELAND NEW YORK

MADE LVM DATE 5-5-61 TRACED DATE
CHECKED ECE DATE 5-5-61 SCALE 1" = 50'

ORANGE TWP. TOWN 7 RANGE 10

NAME	REVISION	DATE
A.M.	Parcel 55-11-X changed to 55-13-X	6-19-61
A.M.	Parcel 55-11-LA eliminated, added to 55-13-LA	6-19-61
WCI	Changed Ramp F-4 to F-2; Rev Constr Limits, RT	6-5-61
LVM	Added culvert change, 55-13-X eliminated	3-30-60
LVM	Changed WA to X, undedicated streets removed	1-18-60
LVM	O.L. No's added	1-13-60



EXCESS LAND PARCEL SOLD BY STATE

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

MADE LVM DATE 9-21-59 TRACED DATE
CHECKED ECE DATE 1-4-60 SCALE 1"=50'

ORANGE TWP. TOWN 7 RANGE 10

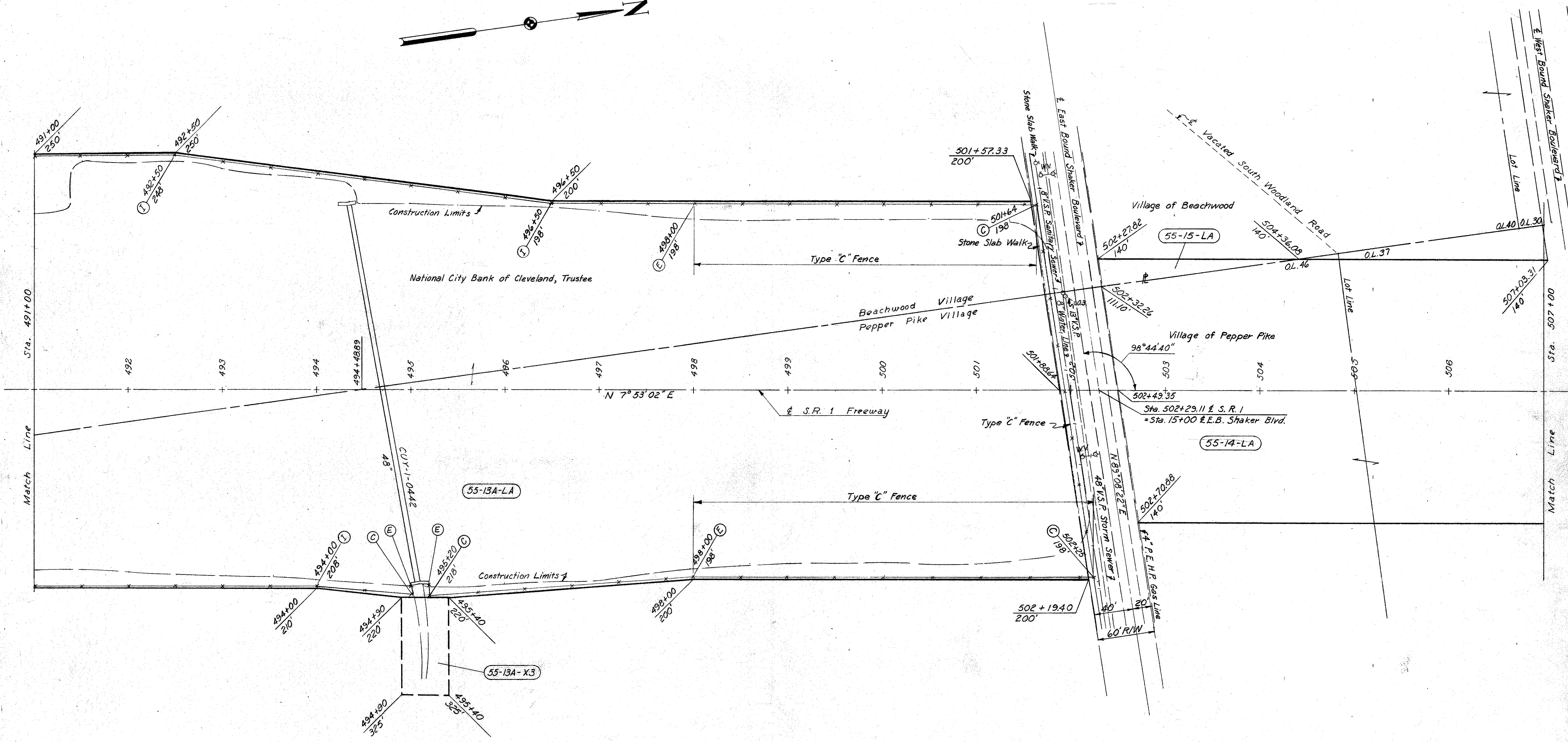
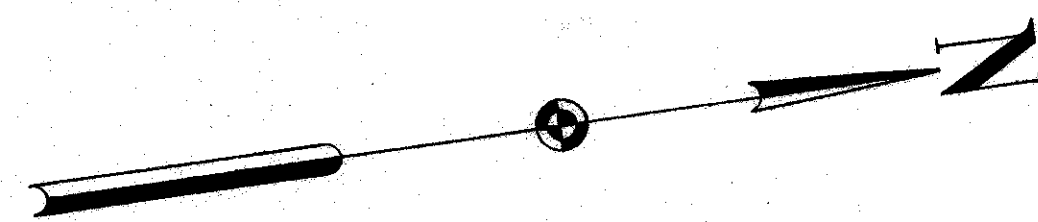
NAME	REVISION	DATE
LVM	Parcel No. 55-13A-LA Added	2-24-61
LVM	Changed WA to X, undedicated streets removed	3-30-60
LVM	O.L. No's. added and Range 11, Orange corrected	1-13-60

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

310
313

CUYAHOGA COUNTY
CUY-I-2.20

12
15



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

MADE LVM DATE 11-27-59 TRACED DATE
CHECKED ECF DATE 1-5-60 SCALE 1"=50'

ORANGE TWP TOWN 7 RANGE 10

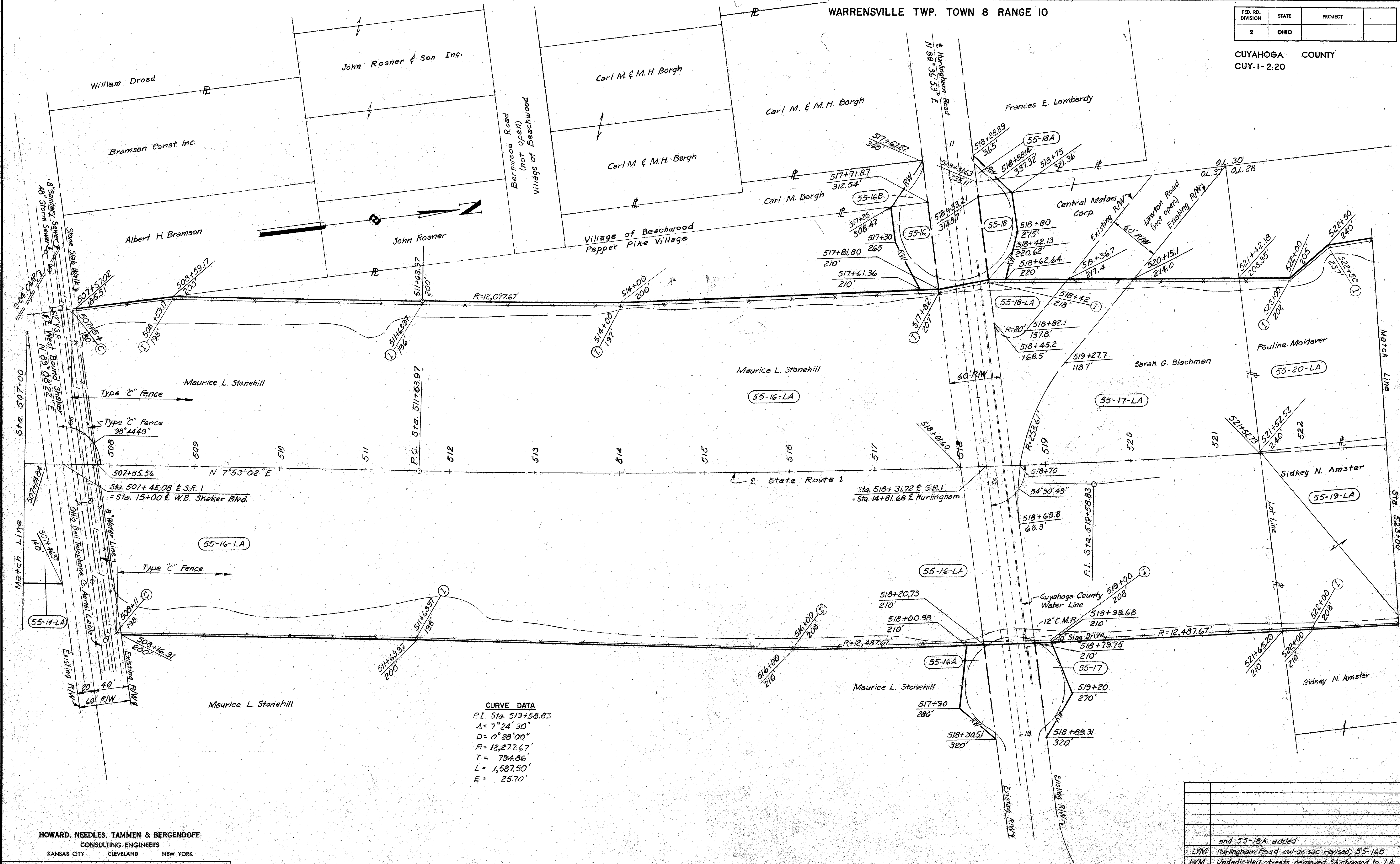
NAME	REVISION	DATE
LVM	Parcel No. 55-13A-LA Added	2-24-61
LVM	WA and SA Parcel Nos. revised	3-30-60
LVM	O.L. Nos. added, Shaker R/W limits changed	1-18-60

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY
CUY-I-2.20

311
313

13
15



CURVE DATA
 P.I. Sta. 519+58.83
 Δ = 7°24'30"
 D = 0°28'00"
 R = 12,277.67'
 T = 794.86'
 L = 1,587.50'
 E = 25.70'

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

MADE P.D.S. DATE 10-12-58 TRACED DATE
 CHECKED E.C.F. DATE 1-6-60 SCALE 1" = 50'

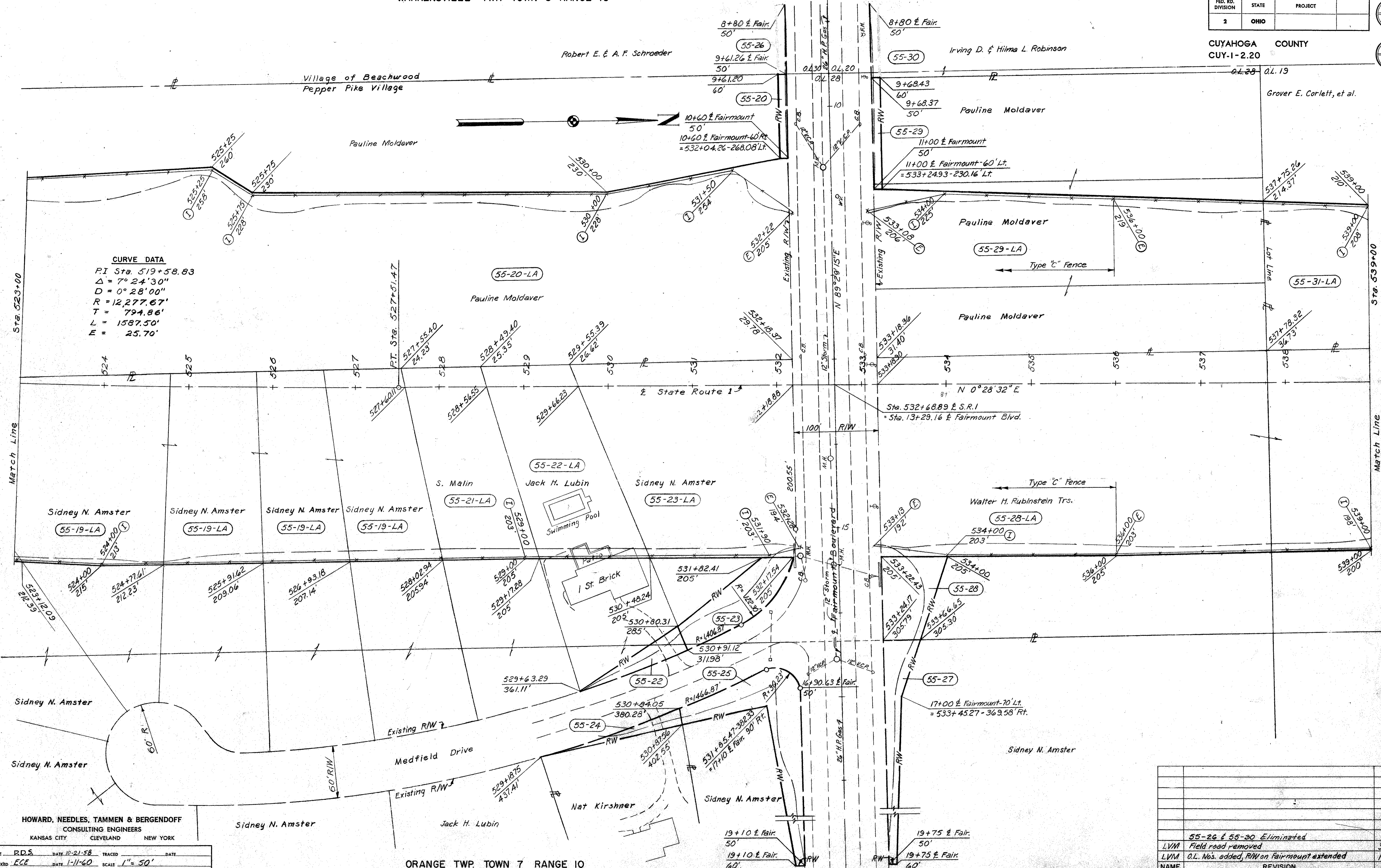
NAME	REVISION	DATE
	and 55-18A added	10-7-60
LVM	Hurlingham Road cul-de-sac revised; 55-16B	
LVM	Undedicated streets removed, SA changed to LA	3-30-60
LVM	Utilities at Shaker, O.L. No's, and slope lines added	1-13-60

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

3/2
3/3

CUYAHOGA COUNTY
CUY-1-2.20

14
15



CURVE DATA
 P.I. Sta. 519+58.83
 $\Delta = 7^{\circ} 24' 30''$
 $D = 0^{\circ} 28' 00''$
 $R = 12,277.67'$
 $T = 794.86'$
 $L = 1587.50'$
 $E = 25.70'$

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

MADE P.D.S. DATE 10-21-58 TRACED DATE
 CHECKED ECE DATE 1-11-60 SCALE 1" = 50'

ORANGE TWP. TOWN 7 RANGE 10

NAME	REVISION	DATE
	55-26 & 55-30 Eliminated	2-24-61
LVM	Field road removed	3-30-60
LVM	O.L. Nos. added, R/W on Fairmount extended	1-13-60

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

313
313

CUYAHOGA COUNTY
CUY-1-2.20

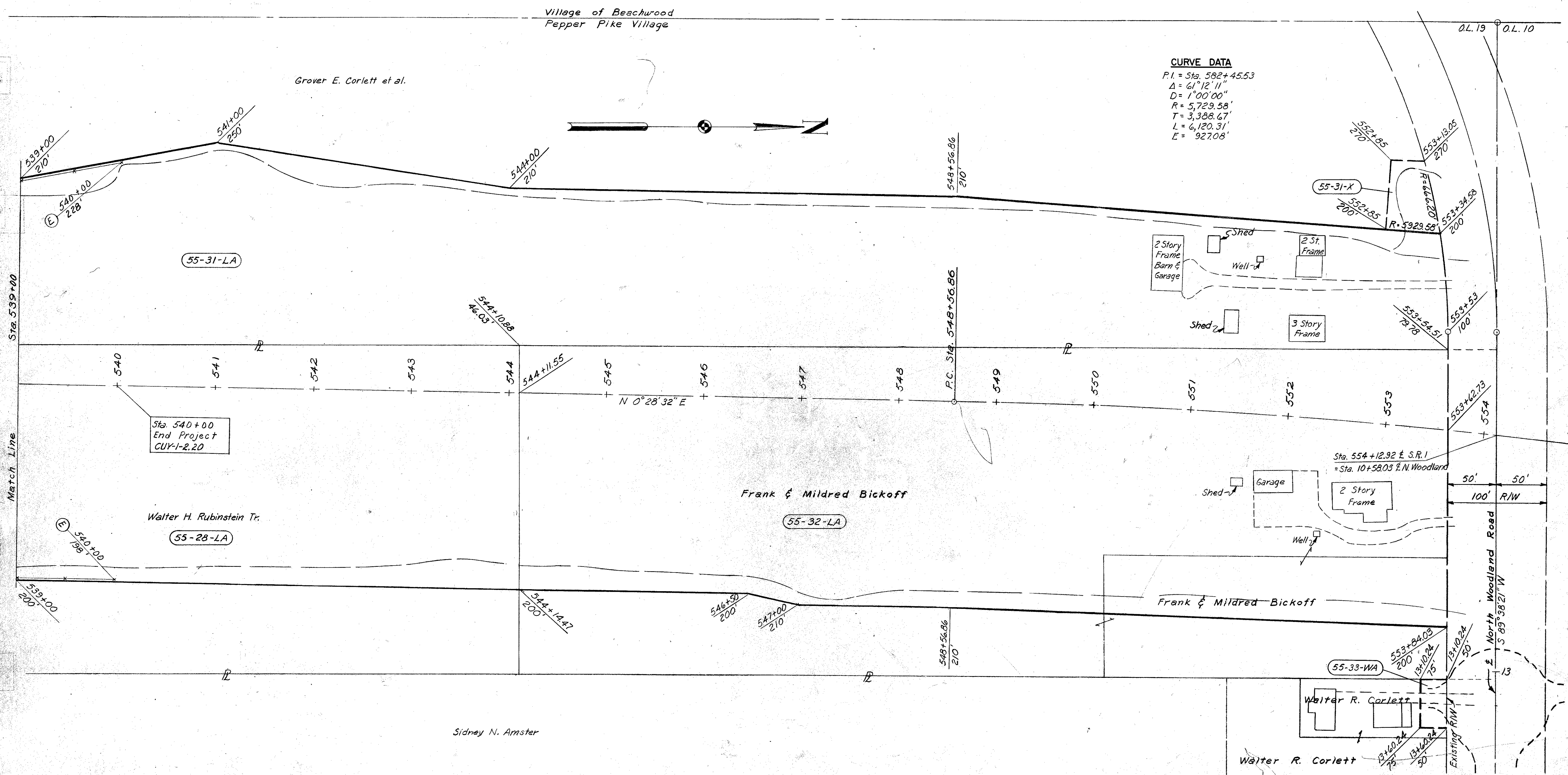
15
15

CURVE DATA (E NORTH WOODLAND)

P.I. at O.L. 19 & 10 Int.
 $\Delta = 47^{\circ}47'10''$
 $D = 8^{\circ}00'00''$
 $R = 716.20'$
 $T = 317.27'$
 $L = 597.33'$
 $E = 671.3'$

CURVE DATA

P.I. = Sta. 582+45.53
 $\Delta = 61^{\circ}12'11''$
 $D = 1^{\circ}00'00''$
 $R = 5,729.58'$
 $T = 3,388.67'$
 $L = 6,120.31'$
 $E = 927.08'$



NAME	REVISION	DATE
LVM	Project Limit Moved to 540+00; 55-33-WA added	10-6-60
LVM	R/W extended to N. Woodland	4-1-60
LVM	O.L. No's. added	1-13-60

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KANSAS CITY CLEVELAND NEW YORK

MADE D.D.S. DATE 10-21-58 TRACED DATE
CHECKED ECE DATE 1-11-60 SCALE 1" = 50'

Note: All R/W south of N. Woodland Road has been included in this contract.

ORANGE TWP TOWN 7 RANGE 10

RIGHT-OF-WAY STA. 539+00 TO STA. 554+00