S-8

MICROFILMED
MAR 30 1990

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-271-6(22)243 SU-274(2)	

256

CUYAHOGA COUNTY
CUY-I-0.11

CUY-271-4.85

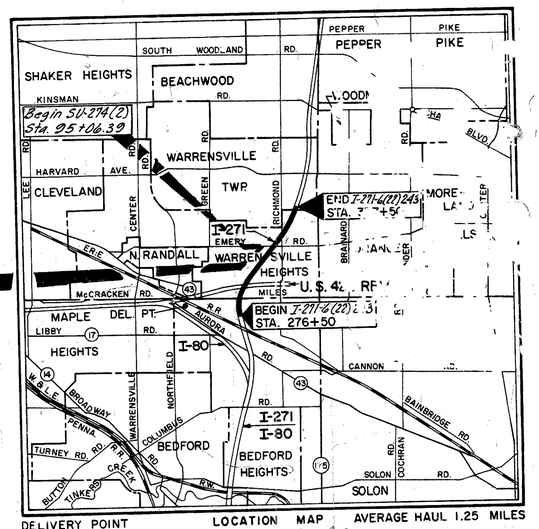
STATE OF OHIO
DEPARTMENT OF HIGHWAYS

CUY-I-0.11
(I-271)
CUYAHOGA COUNTY
CITY OF BEDFORD HEIGHTS
CITY OF WARRENSVILLE HEIGHTS
WARRENSVILLE TOWNSHIP

CONVENTIONAL SIGNS

Channel Easement Line
Temporary Right of Way Line
Limited Access Right of Way Line
Sewer Easement Line
Slope Easement Line
Property Line
Existing Right of Way
Limited Access Line
Right of Way Line
Temporary Right of Way
Center Line
Corporation Line
Fence Line
Guard Rail (Existing)
Guard Rail (Proposed)
Railroad
Power Poles
Telephone Poles
Power & Telephone Poles
Light Poles
Trees (Existing)
Water Line
Gas Line
Telephone Conduit

INDEX OF SHEETS



SCALE IN MILES
0 1 2

Portion to be improved
State Roads
Other Roads

SCALE

PLAN	1" = 50'
PROFILE: Horizontal	1" = 50'
PROFILE: Vertical	1" = 5'
CROSS SECTIONS	1" = 10'
SEWER PROFILES	1" = 10'

LINE DATA SU-274(2)

Begin Project	95+06.39
End Project	108+50.00
Net Length of Project	= 1,343.61 L.F. or 0.254 Mile
Add for Work	356.39 L.F.
Net Length of Work	= 1700.00 L.F. or 0.321 Mile

LINE DATA Totals I-271-6(22)243 & SU-274(2)
Total Length of Project = 11,443.61 L.F. or 2.167 Miles
Total Length of Work = 17,060.93 L.F. or 3.231 Miles

LINE DATA I-271-6(22)243

BEGIN PROJECT	STA. 276+50.00
END PROJECT	STA. 377+50.00
NET LENGTH OF PROJECT	=10,100.00 L.F.
OR	1.912 MILES

ADD FOR APPROACHES
STA. 276+50 TO 278+25 = 75.00 L.F
EMERY ROAD STA. 108+50 TO 120+92.35
121+32.35 TO 128+27.53 = 1,937.53 L.F.
RICHMOND ROAD STA. 5+65.00 TO
STA. 29+75.00 = 2,410.00 L.F.
CORBIN DRIVE STA. 0+11.60 TO
STA. 8+50.00 = 838.40 L.F.
Net LENGTH OF WORK = 15,360.93 L.F.
OR 2.909 MILES

SUPPLEMENTAL SPECIFICATIONS

NUMBER	DATE	NUMBER	DATE
L-120	REV 1-2-62 REV 6-26-61	B-112	8-21-61 REV 6-23-61
I-125	REV 1-15-62	I-212	5-22-56
I-127		C.E.-101, 04	
S-307	8-23-60	S-101	7-12-62
T-335	10-28-63		

STANDARD DRAWINGS

NUMBER	DATE	NUMBER	DATE
H.W. No. 2	8-1-63	H.W. No. 3	8-1-63
B-T-71R	3-2-53	I-8 M.H. No. 2	2-1-63
B-T-70-71	11-15-60	I-12	2-1-63
F-1	2-1-63	I-15 No. 1	11-15-60
F-2	2-1-63	I-15 No. 2-A	8-17-60
F-3	2-1-63	I-15 No. 6	2-1-63
FACI-1	2-25-64	I-8 M.H. No. 1-A	2-1-63
FACI-2	2-25-64	L-1	4-1-50
G-7.07	4-1-64	L-3	4-1-50
HW-A & B	7-15-57	L-3-A	4-1-50
HW-C	7-15-57	L.J. No. 1	7-1-55
HW-E	2-1-63	RI-1	7-15-58
I-1	11-15-60	T-35	1-2-56
I-8C.B. 1-2-A&B	2-1-63	T.J.	9-12-60
I-8C.B. 2-3 2-4	2-1-63	AS-1-54	7-5-62
I-8C.B. No. 3	2-1-63	CSB-256, 2 & 3 of 8	2-2-59
I-8 I No. 2-A	2-1-63	AR-1-57	4-2-62
I-8C.B. 2-2A&B	2-1-63	RB-1-55	2-2-59
I-8C.B. No. 3-A	2-1-63	I-8C.B. No. 8	2-1-63
I-8C.B. No. 5	2-1-63	I-8M.H. No. 1	2-1-63
I-8C.B. No. 6	2-1-63	I-21-23	8-1-56
ESB-1-62	1-15-63		

Sheet Nos. 193, 206, 207, and 213 revised 8-19-64
Sheet No. 214A added 8-19-64
Sheet Nos. 217, 219, 221 and 223 revised 8-31-64
Sheets Nos. 27 and 183 revised 2-1-65 C.E.H.

PREPARED AND RECOMMENDED BY

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

Carl L. Erb

H. G. SOURS
ASSOCIATE
COLUMBUS

STATE OF OHIO
CARL L. ERB, Jr.
19348
REGISTERED PROFESSIONAL ENGINEER

00138

FILE NO. CUYAHOGA COUNTY CUY-I-0.11
DATE OF LETTING _____, 196__
CONTRACT NO. _____

LIMITED ACCESS

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

I-271-6(22)243
SU-274(2)

1963 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 these plans and estimates.

Approved 4-17-64 — Division Deputy Director

Approved 4-29-64 — Engineer of Bridges

Approved Date 5-15-64 — Engineer of Location and Design

Approved Date 5-15-64 — Director of Design and Construction

Approved Date 4-24-64 — Deputy Director of Right of Way

Approved Date 6-8-64 — Deputy Director of Planning and Programming

Approved Date _____ — First Assistant Director

Approved Date 6/8/64 — Director of Highways

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

DIVISION ENGINEER — DATE

Rev. 6-4-64
Rev. 6-17-64

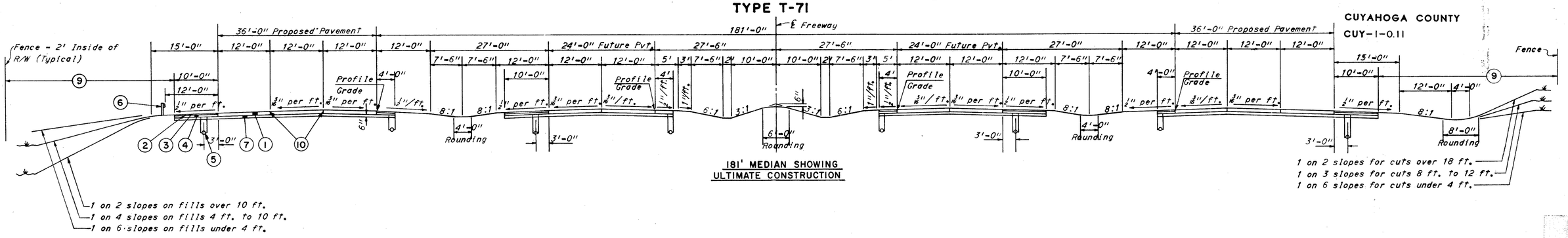
TYPICAL SECTIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

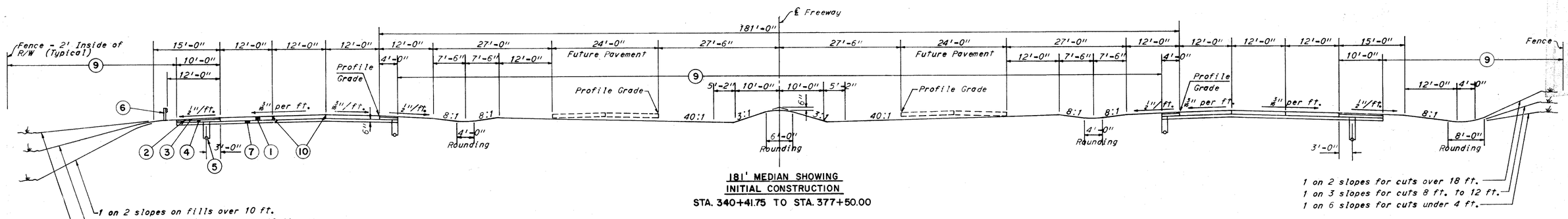
2 / 256

TYPE T-71

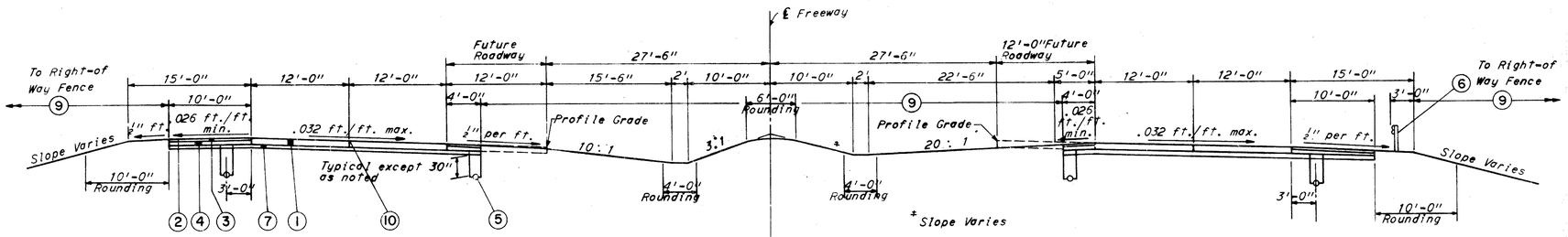
CUYAHOGA COUNTY
CUY-I-0.11



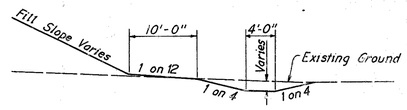
181' MEDIAN SHOWING
ULTIMATE CONSTRUCTION



181' MEDIAN SHOWING
INITIAL CONSTRUCTION
STA. 340+41.75 TO STA. 377+50.00



79' MEDIAN SHOWING
INITIAL CONSTRUCTION
SUPRELEVATED SECTION
STA. 276+50.00 TO STA. 320+77.28



TYPICAL TOE OF SLOPE DITCH

Note

Unless otherwise shown on the plans, underdrains shall be laid parallel to profile grade with 30" cover from bottom of subbase to crown of pipe. Where deep underdrains are called for, 4'-2" cover from bottom of subbase to crown of pipe shall be provided.

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

LEGEND

1. *Item T-71* 10" Reinforced Portland Cement Concrete Pavement
2. *Item T-31* Bituminous Surface Treatment using 0.008 Cu. Yds. No. 6 aggregate per Sq. Yd. and 0.25 Gal. bituminous material per Sq. Yd. (See note in proposal)
3. *Item B-21* 3" Waterproofed Aggregate Base Course (Type "A", T-35 or T-335 material may be used in construction of this course - see note in proposal) Thickness shown is "designed" thickness as described in Sec. B-21.01
4. *Item B-112* Porous Base Course
5. *Item I-1* 6" Pipe, Class I-3
6. *Item I-15* Guard Rail, Steel Beam Standard Type (Deep)
7. *Item I-22* Subbase, Grading "A" or "B", modified as per General Note
9. *Item L-9* Seeding and Protecting, as per plan
10. *Standard Longitudinal Joint*

MADE D.R.F. DATE 3-20-62 TRACED A.E.K. DATE 3-21-62
CHECKED D.R.K. DATE 5-21-62 SCALE 3/32" = 1'-0"

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

FREEWAY TYPICAL SECTIONS

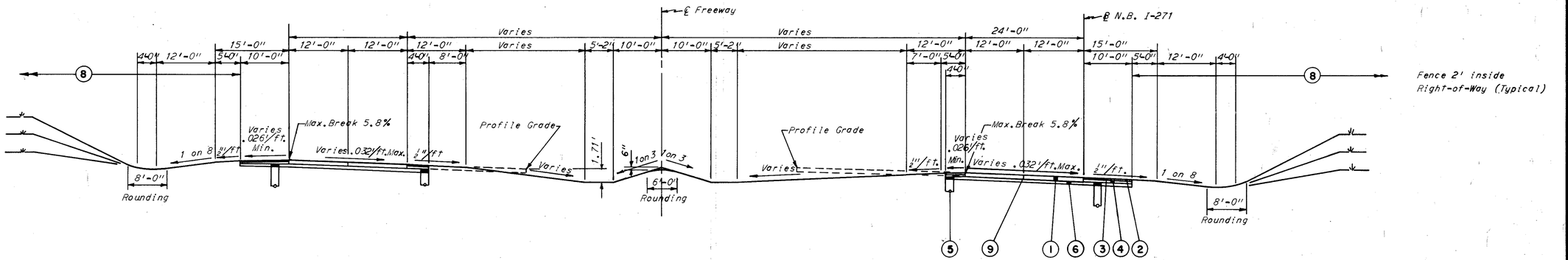
TYPICAL SECTIONS

TYPE T-71

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

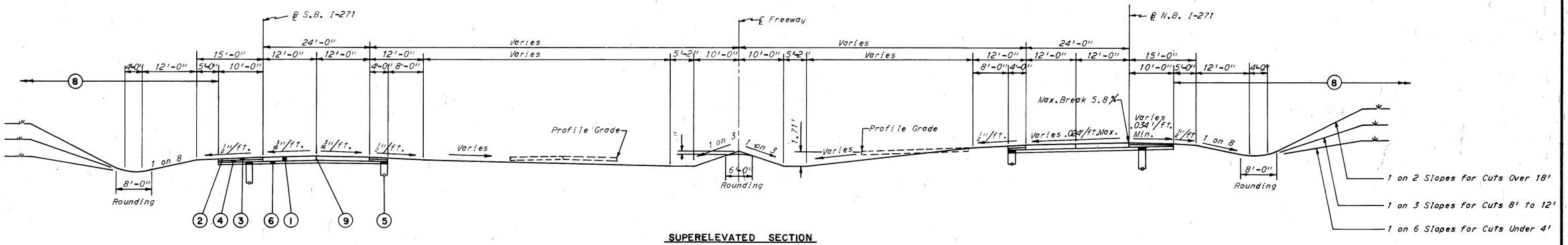
3
256

CUYAHOGA COUNTY
CUY. I-0.11



SUPERELEVATED SECTION

I-271 STA. 320+77.28 to STA. 333+70.83 NB



SUPERELEVATED SECTION

I-271 STA. 333+70.83 NB to STA. 340+41.75

Note:

For Paved Shoulder Details see sheet 4

Unless otherwise shown on the plans, underdrains shall be laid parallel to profile grade with 30" cover from bottom of subbase to crown of pipe. Where deep underdrains are called for, 4'-2" cover from bottom of subbase to crown of pipe shall be provided.

Typical Sections show the general roadway features only - for details see the Plan-Profile, Paved Shoulder-Typical Sections, Cross Section Sheets, and Superelevation Tables.

LEGEND

(1) Item T-71 10" Reinforced Portland Cement Concrete Pavement.

(2) Item T-31 Bituminous Surface Treatment using 0.008 Cu. Yds. No. 6 aggregate per Sq. Yd. and 0.25 Gal. bituminous material per Sq. Yd. (See note in proposal)

(3) Item B-21 3" Waterproofed Aggregate Base Course (Type "A" T-35 or T-335 material may be used in construction of this course - see note in proposal) Thickness shown is "designed" thickness as described in Sec. 821.01.

(4) Item B-112 Porous Base Course

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

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

(8) Item L-9 Seeding and Protecting, as per plan

(9) Standard Longitudinal Joint

MADE E.C.E.	DATE 1-29-63	TRACED	DATE
CHECKED L.A.Z.	DATE 1-29-63	SCALE 3/32"-1'-0"	

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

TYPICAL SECTIONS

PAVED SHOULDERS

NOTE: Unless otherwise noted, callouts shown on Top section shall apply to all sections on this sheet.

LEGEND

- (A) Item T-71, 10" Reinforced Portland Cement Concrete Pavement
- (B) Item I-22, Subbase, Grading "A" or "B", modified, as per General Note
- (C) Item T-31, Bituminous Surface Treatment, using 0.008 Cu. Yd. No. 6 aggregate and 0.25 Gal. bituminous material per Sq. Yd. (See note in proposal)
- (D) Item B-112, Porous Base Course
- (E) Item B-21, 3" Waterproofed Aggregate Base Course (Type "A" T-35 material may be used in construction of this course - see note in proposal) Thickness shown is "designed" thickness as described in Sec. B-21.01.
- (F) Item I-1, 6" Pipe, Class I-3

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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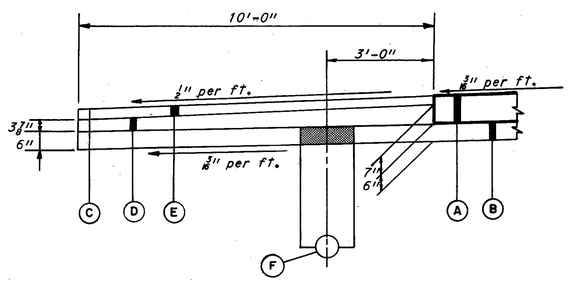
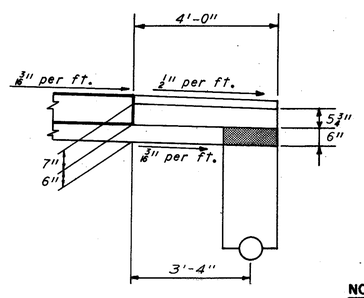
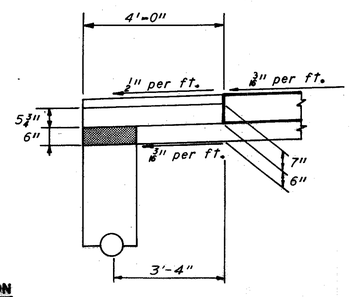
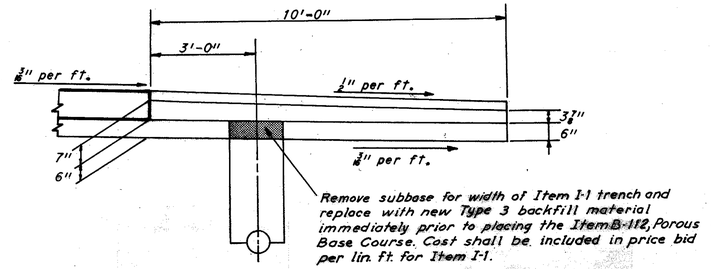
CUYAHOGA COUNTY
CUY-I-0.11



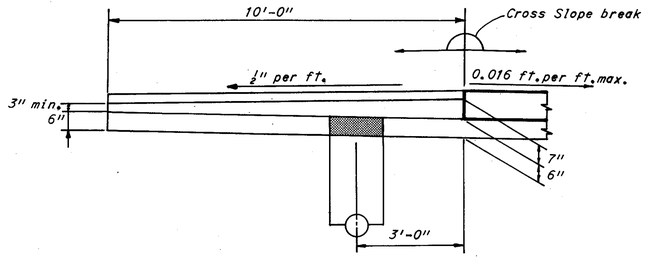


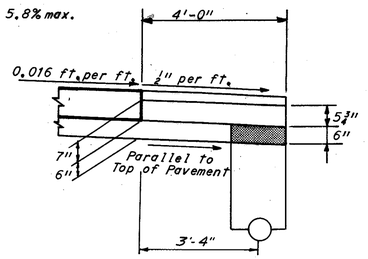


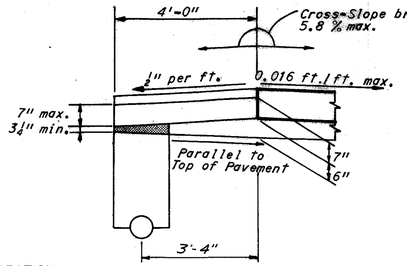


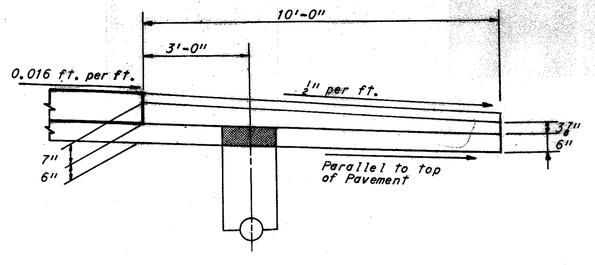
Remove subbase for width of Item I-1 trench and replace with new Type 3 backfill material immediately prior to placing the Item B-112, Porous Base Course. Cost shall be included in price bid per lin. ft. for Item I-1.

NORMAL SECTION

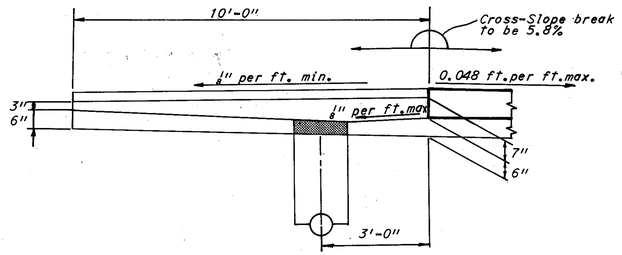


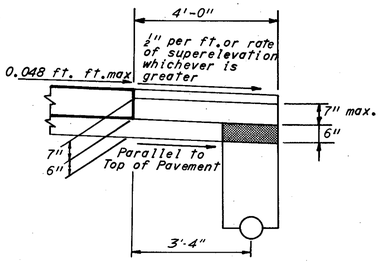


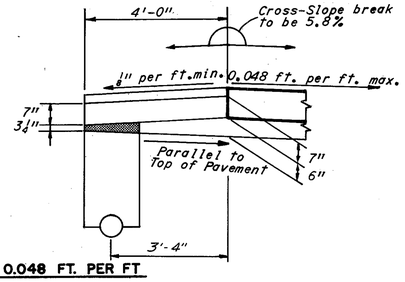


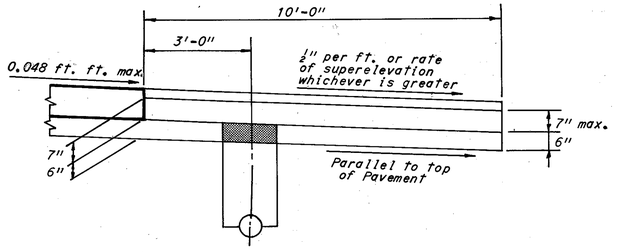


TRANSITION SECTION









SUPERELEVATION NOT MORE THAN 0.048 FT. PER FT

MADE DRF	DATE 3-12-62	TRACED	DATE
CHECKED RJH	DATE 3-18-62	SCALE 1"=1'-0"	

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

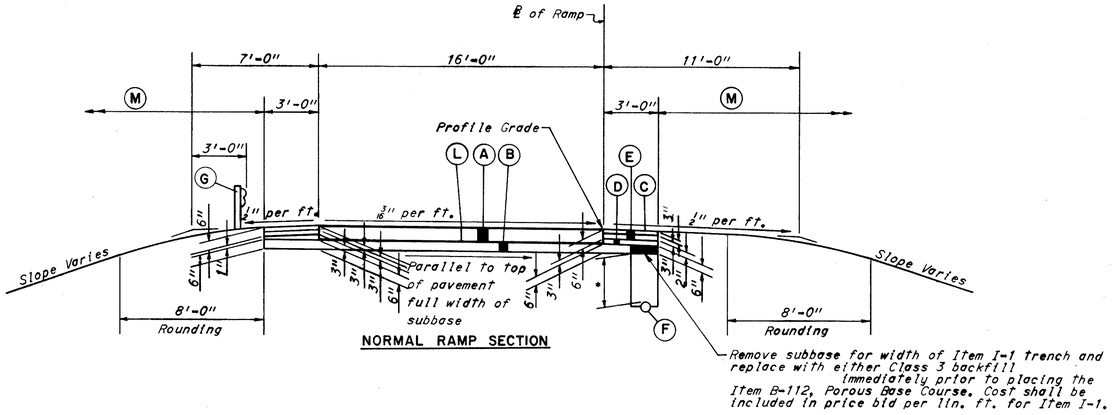
TYPICAL SECTIONS

TYPE T-71

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

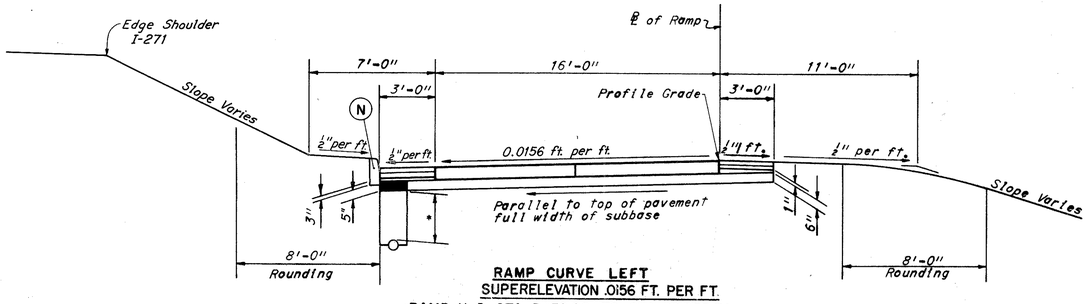
5/256

CUYAHOGA COUNTY
CUY-I-0.11

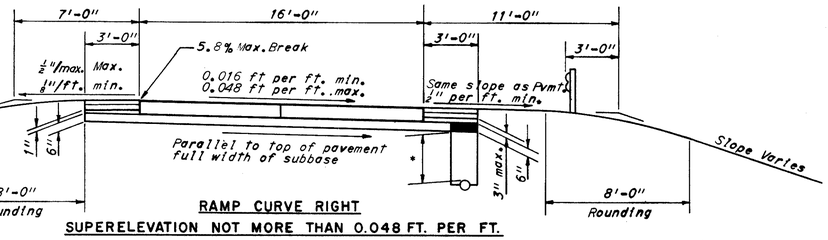


NORMAL RAMP SECTION

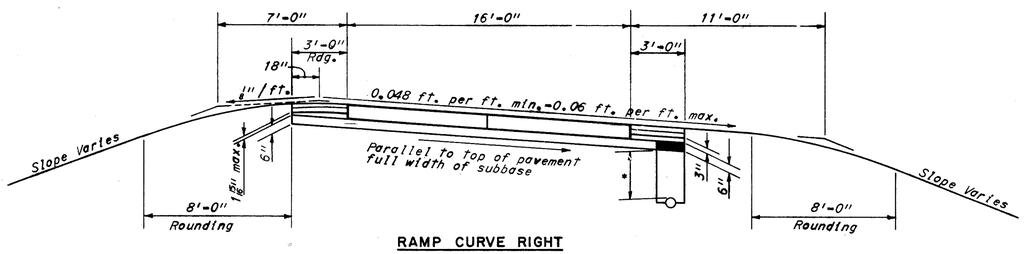
Remove subbase for width of Item I-1 trench and replace with either Class 3 backfill immediately prior to placing the Item B-112, Porous Base Course. Cost shall be included in price bid per lin. ft. for Item I-1.



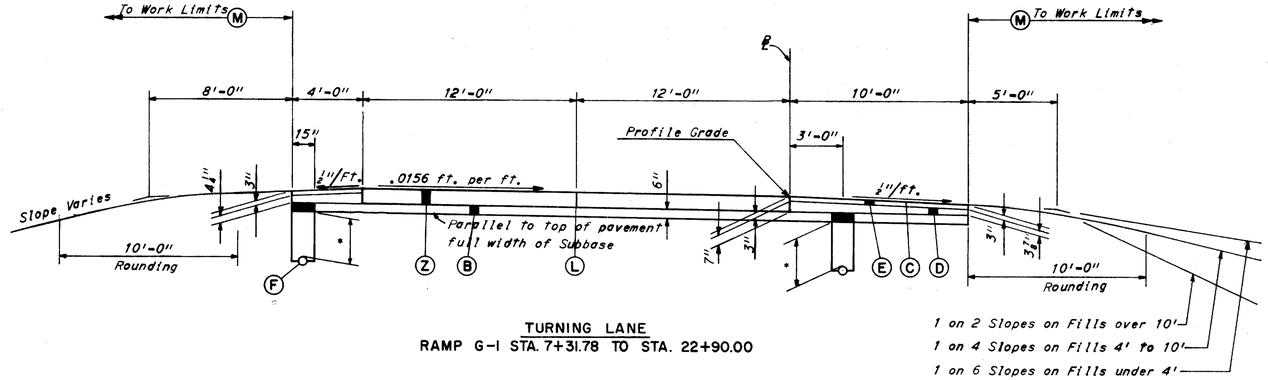
RAMP CURVE LEFT
SUPERELEVATION .0156 FT. PER FT.
RAMP H-2 STA. 3+70.00 TO STA. 12+57.76



RAMP CURVE RIGHT
SUPERELEVATION NOT MORE THAN 0.048 FT. PER FT.



RAMP CURVE RIGHT
SUPERELEVATION MORE THAN 0.048 FT. PER FT.



TURNING LANE
RAMP G-I STA. 7+31.78 TO STA. 22+90.00

Note
*Unless otherwise shown on the plans, underdrains shall be laid parallel to profile grade with 30" cover from bottom of subbase to crown of pipe. Where deep underdrains are called for, 4'-2" cover from bottom of subbase to crown of pipe shall be provided.
The B-21 course shall be constructed of 2-3" courses on shoulders of ramps and adjacent to speed change lanes.
Unless otherwise noted, dimensions and or callouts shown on Top left section shall apply to all sections on this sheet.

LEGEND

- (A) Item T-71, 9" Reinforced Portland Cement Concrete Pavement
- (B) Item I-22, Subbase, Grading "A" or "B", modified as per general note
- (C) Item T-31, Bituminous Surface Treatment, using 0.008 Cu. Yd. No. 6 aggregate per Sq. Yd. and 0.25 Gal. Bituminous Material per Sq. Yd. (See note in proposal)
- (D) Item B-112, Porous Base Course
- (E) Item B-21, Waterproofed Aggregate Base Course (Type "A" T-35 or T-335 Material may be used in construction of this course - see note in proposal) Thickness as shown is "designed" thickness as described in Sec. B-21.01
- (F) Item I-1, 6" pipe, Class I-3
- (G) Item I-15, Guard Rail, Steel Beam Standard Type (Deep)
- (L) Standard Longitudinal Joint
- (M) Item L-9, Seeding and Protecting, as per plan
- (Z) Item T-71, 10" Reinforced Portland Cement Concrete Pavement
- (N) Item I-12, Standard Type 6 Concrete Curb

MADE DDS DATE 5-14-62 TRACED ____ DATE ____
CHECKED DWK DATE 5-15-62 SCALE 1/4" = 1'-0"

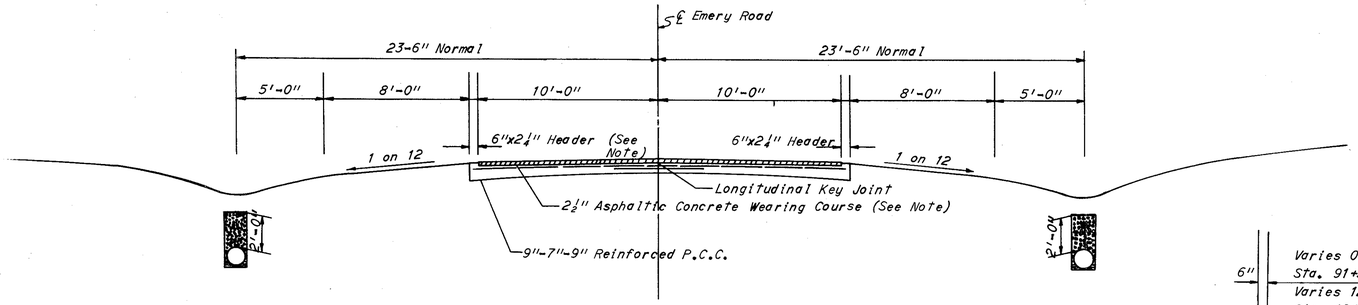
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

RAMP TYPICAL SECTIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

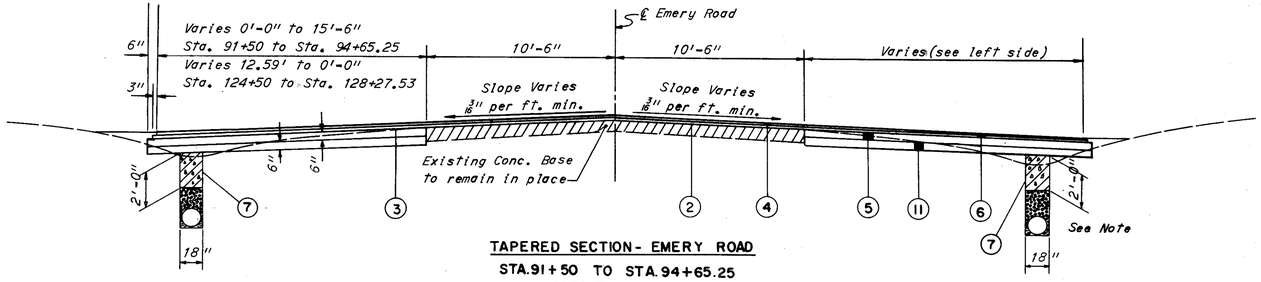
6
256

CUYAHOGA COUNTY
CUY - I - 0.11

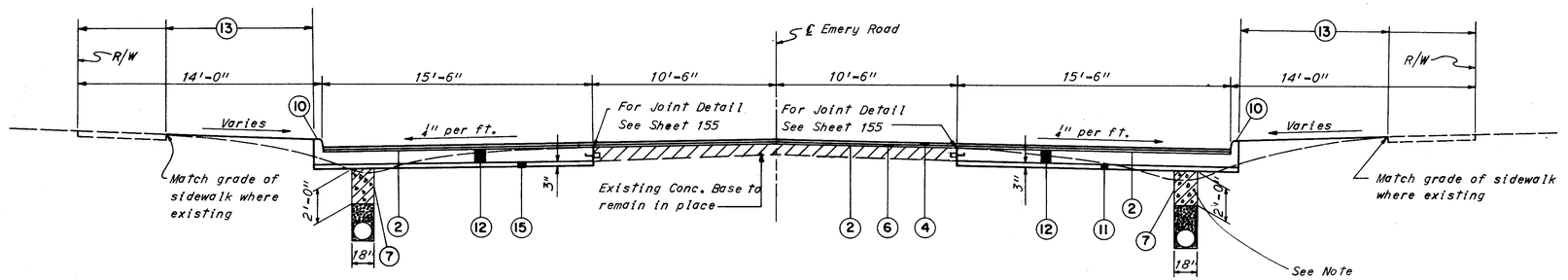


Note.* 6" x 2¼" Header Curb is to be chipped off and 2½" Asphaltic Concrete wearing course to be removed between Station 91+50 to Station 108+50 and Station 124+50 to Station 128+27.53

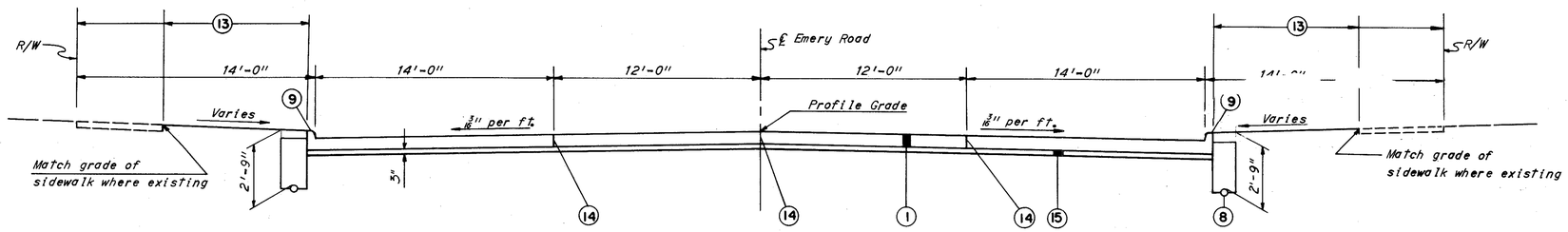
EXISTING EMERY ROAD
Scale ¼" = 1'-0"



TAPERED SECTION- EMERY ROAD
STA. 91+50 TO STA. 94+65.25
STA. 124+50 TO STA. 128+27.53
Scale ¼" = 1'-0"



WIDENED SECTION WITH ASPHALT RESURFACING
STA. 94+65.25 TO STA. 108+50
Scale ¼"=1'-0"



9" T-71 REINFORCED P.C.C. PAVEMENT
STA. 108+50 TO STA. 111+26.36
Scale ¼" = 1'-0"

LEGEND

(1)	Item T-71	9" Reinforced Portland Cement Concrete Pavement
(2)	Item T-30	Bituminous Tack Coat Sec. M-5.5, MS-2 or RS-1, or Sec. M-5.2, RC-1 or RC-2, as per Sec. T-30.02, applied at the rate of 0.10 Gal. per Sq. Yd.
(3)	Item T-30	Bituminous Prime Coat Sec. M-5.7, RT-2 or RT-3 applied at the rate of 0.4 Gal. per Sq. Yd.
(4)	Item T-35	1½" Asphaltic Concrete Surface Course, Type "C"(70-85). Thickness shown is "designed" thickness as described in Sec. T-35.01
(5)	Item B-19	Aggregate Base Course
(6)	Item B-35	1½" Asphaltic Concrete Leveling Course (70-85). Thickness shown is "designed" thickness as described in Sec. B-35.01
‡ (7)	Item I-1	Type 3 Backfill, Using No. 6 or 6A Aggregate, As Per Plan
(8)	Item I-1	6" Pipe, Class I-3 use Sec. M-6.8(a) pipe with No. 6 or 6A Agg.
(9)	Item I-12	Standard Type 2-A Concrete Curb
(10)	Item I-12	Standard Type 2-B Concrete Curb
(11)	Item I-22	Subbase, Grading "A" or "B", modified as per General Note
(12)	Item B-71	9" Reinforced Portland Cement Concrete Base Course
(13)	Item L-9	Seeding and Protecting, as per plan
		Standard Longitudinal Joint
	Item I-19	3" Insulation Course and Subbase Course

‡ Note: From Station 91+50 to Station 108+50 and from Station 124+50 to Station 128+27.53 the following work shall be performed. Remove the overburden of the existing pipe underdrain to a width of 18" and depth of 2'-0" below proposed subgrade elevation and replace with Type 3 Backfill (No. 6 or 6A Aggregate). Care should be taken in the performance of this work so that the existing pipe is not damaged. If the pipe is damaged in performing the work, it shall be replaced by the Contractor without additional compensation. Payment for the excavation and Type 3 Backfill shall be by Linear Foot of Item I-1, Type 3 Backfill, Using No. 6 or 6A Aggregate", As Per Plan

MADE R.J.Z. DATE 10-30-63 TRACED DATE
CHECKED E.C.E. DATE 11-14-63 SCALE ¼" = 1'-0"

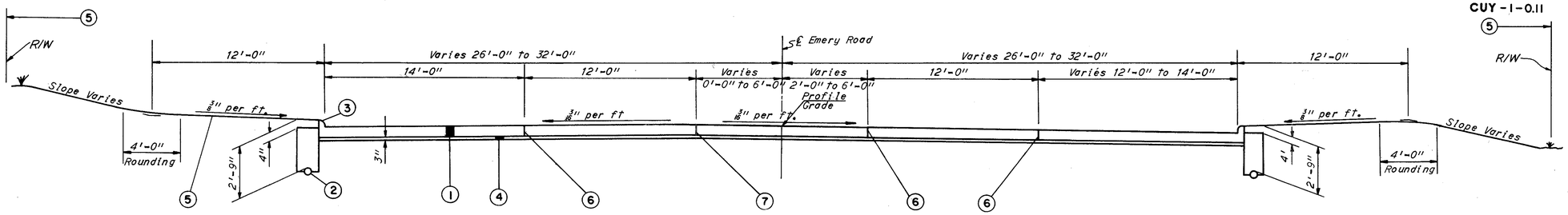
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

EMERY ROAD -TYPICAL SECTIONS

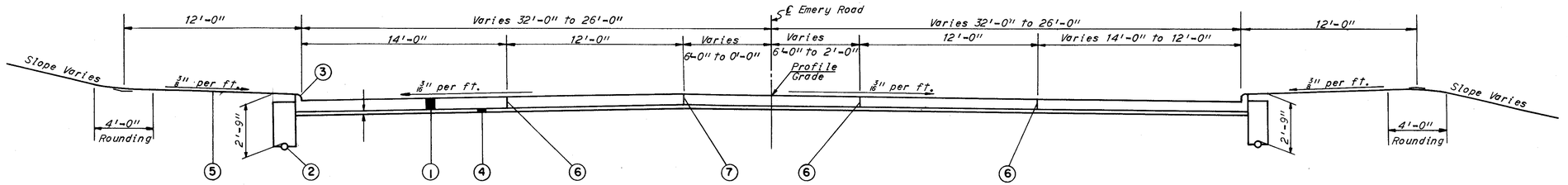
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

7
256

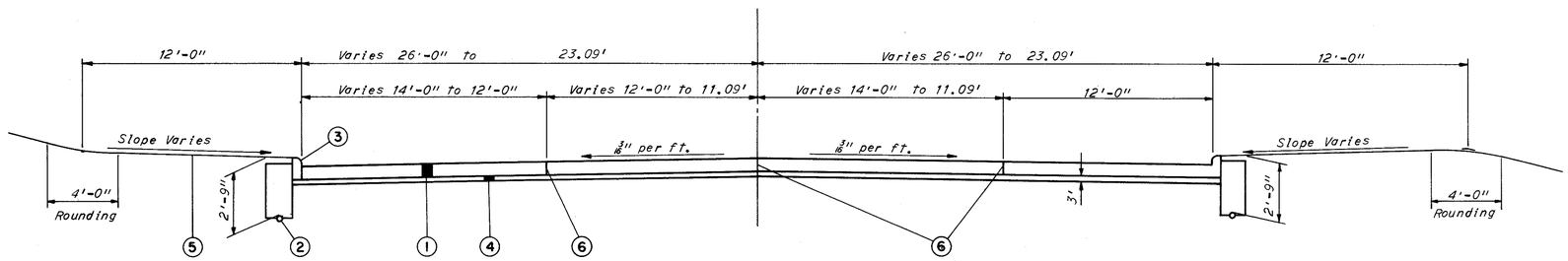
CUYAHOGA COUNTY
CUY - 1 - 0.11



NORMAL SECTION WITH TURNING LANES - EMERY ROAD
118 + 29.54 TO RICHMOND ROAD
Scale 1" = 1'-0"



NORMAL SECTION WITH TURNING LANES - EMERY ROAD
STA. 121 + 82.53 TO STA. 123 + 62.53
Scale 1" = 1'-0"



TAPERED SECTION - EMERY ROAD
STA. 123 + 6253 TO STA. 124 + 50
Scale 1" = 1'-0"

LEDGEND

1. Item T-71 9" Reinforced Portland Cement Concrete Pavement
2. Item I-1 6" Pipe, Class I-3
3. Item I-12 Standard Type 2-A Concrete Curb
4. Item I-19 3" Insulation Course and Subbase Course
5. Item L-9 Seeding and Protecting, as per plan
6. Standard Longitudinal Joint
7. Standard Longitudinal Key Joint without Tie Bars

MADE R.J.Z.	DATE 10-29-63	TRACED	DATE
CHECKED E.C.E.	DATE 11-14-63	SCALE 1/4" = 1'-0"	

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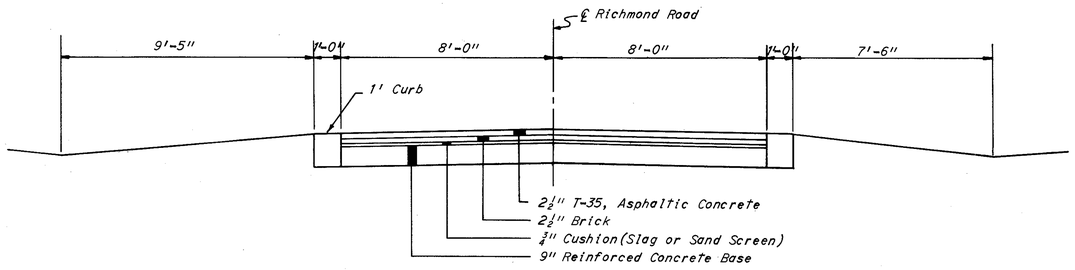
KANSAS CITY CLEVELAND NEW YORK

EMERY ROAD - TYPICAL SECTIONS

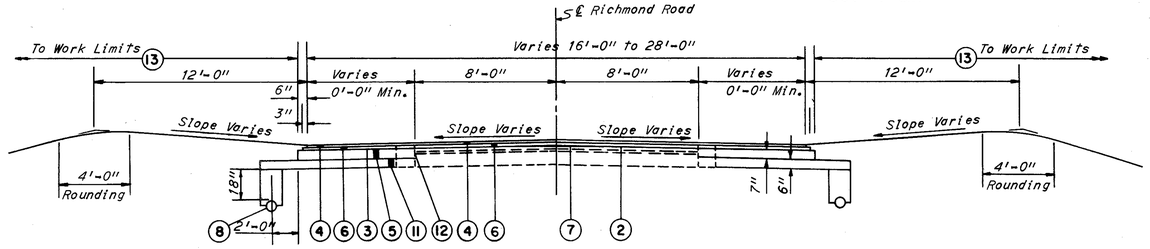
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

8
236

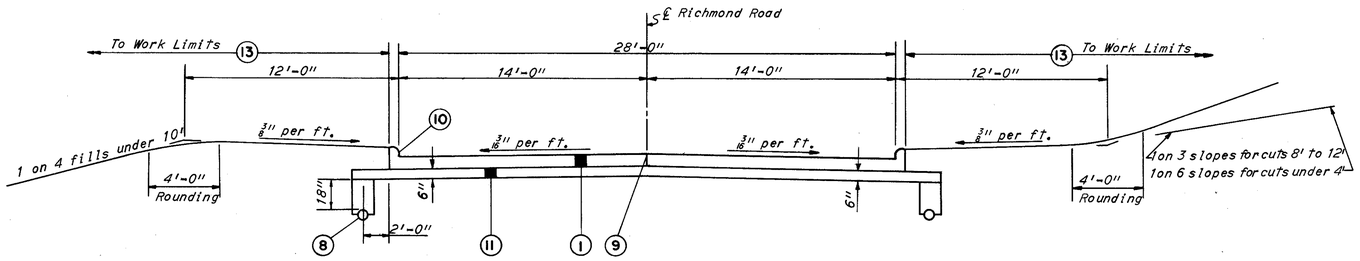
CUYAHOGA COUNTY
CUY -I- 0.11



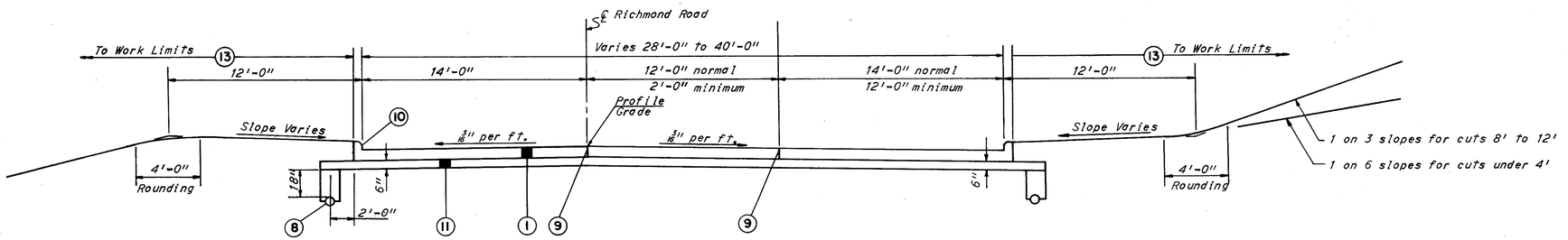
EXISTING RICHMOND ROAD
Scale ⅜" = 1'-0"



RICHMOND ROAD - TAPERED SECTION
STA. 5+65 TO STA. 8+00
STA. 28+50 TO STA. 29+75
Scale 1" = 1'-0"



RICHMOND ROAD
STA. 8+00 TO STA. 10+99.73
Scale 1" = 1'-0"



RICHMOND ROAD - TAPERED SECTION
STA. 19+69 TO STA. 28+50
Scale 1" = 1'-0"

LEGEND

1. Item T-71 9" Reinforced Portland Cement Concrete Pavement
2. Item T-30 Bituminous Tack Coat Sec. M-5.5, MS-2 or RS-1, or Sec. M-5.2, RC-1 or RC-2, as per Sec. T-30.02, applied at the rate of 0.10 Gal. per Sq. Yd.
3. Item T-30 Bituminous Prime Coat Sec. M-5.7, RT-2 or RT-3 applied at the rate of 0.4 Gal. per Sq. Yd.
4. Item T-35 1½" Asphaltic Concrete Surface Course, Type A(70-85). Thickness shown is "designed" thickness as described in Sec. T-35.01
5. Item B-19 Aggregate Base Course
6. Item B-35 1½" Asphaltic Concrete Leveling Course (70-85). Thickness shown is "designed" thickness as described in Sec. B-35.01
7. Item B-35 Variable thickness Asphaltic Concrete Pre-Leveling Course (70-85), 0" Min.
8. Item I-1 6" Pipe, Class I-3
9. Standard Longitudinal Joint
10. Item I-12 Standard Type 2-A Concrete Curb
11. Item I-22 Subbase, ading "A" or "B", modified as per General Note
12. Item E-8 Removal and Disposal of Existing Curb
13. Item L-9 Seeding and Protecting, as per plan

MADE	R.J.Z.	DATE 10-31-63	TRACED
CHECKED	E.C.E.	DATE 11-14-63	SCALE As Noted

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

RICHMOND ROAD - TYPICAL SECTIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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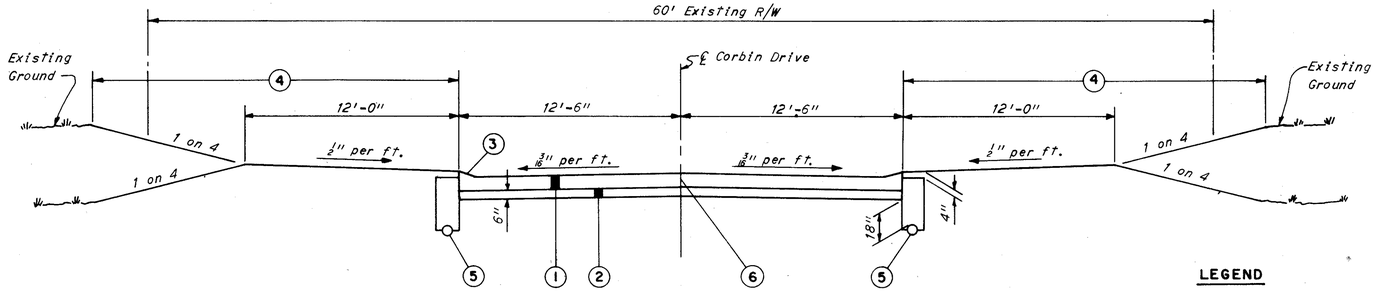
256

CUYAHOGA COUNTY
CUY-I-0.11

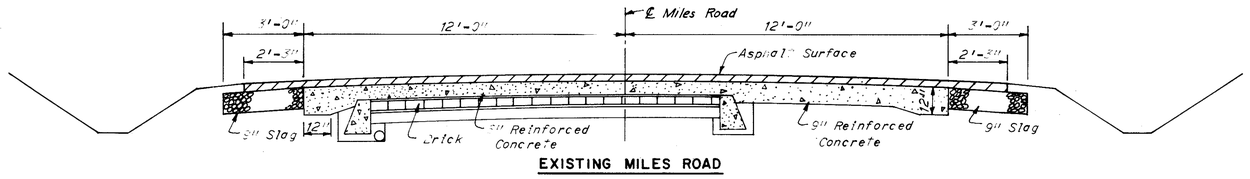


TYPICAL SECTION-CORBIN DRIVE
STA. 0+43.65 TO STA. 8+25.00

Scale 1/4" = 1'-0"

LEGEND

1. Item T-71 9" Reinforced Portland Cement Concrete Pavement
2. Item I-22 Subbase, Grading "A" or "B", modified as per General Note
3. Item I-12 Standard Type 3-A Concrete Curb
4. Item L-9 Seeding and Protecting, as per plan
5. Item I-1 5" Pipe, Class I-3
6. Standard Longitudinal Joint



EXISTING MILES ROAD

CURVE DATA

LINE NAME	Curve No.	BEGINNING OF CURVE (P.C.) Station	N. Coord.	E. Coord.	END OF CURVE (P.T.) Station	N. Coord.	E. Coord.	P.I. OF CURVE N. Coord.	E. Coord.	Δ	D	R	T	L	E
℄ I-271	1	272+24.72	639,749.892	271,857.039	322+74.72	644,491.580	273,044.502	642,400.758	271,332.608	50°30'00"	1°00'00"	5,729.578'	2,702.243'	5,050.000'	605.26'
℄ I-271	2	334+44.43	645,396.624	273,785.533	420+33.72	653,340.457	276,562.400	648,862.050	276,622.893	40°05'00"	0°28'00"	12,277.667'	4,478.816'	8,589.286'	791.41'
I-271 (Rt. Edge)	3	322+74.72	644,451.354	273,093.632	325+01.27	644,623.730	273,240.620	644,539.012	273,165.403	2°17'27.3"	1°00'40.3"	5,666.078'	113.291'	226.552'	1.13'
I-271 (Rt. Edge)	4	333+70.83	645,273.983	273,817.950	340+47.77	645,799.430	274,244.388	645,527.254	274,042.816	5°04'37.3"	0°45'00"	7,639.437'	338.690'	676.936'	7.50'
℄ Ramp G-1	5	0+00	646,584.500	274,494.734	6+80.00	646,048.947	274,077.165	646,298.090	274,309.848	10°12'00"	1°30'00"	3,819.719'	340.901'	680.000'	15.18'
℄ Ramp G-1	6	22+90.00	644,872.301	272,978.255	29+16.58	644,451.425	272,515.024	644,642.823	272,763.939	9°23'55.3"	1°30'00"	3,819.719'	313.993'	626.580'	12.88'
℄ Ramp G-1	7	29+16.58	644,451.425	272,515.024	34+27.15	644,632.278	272,144.830	644,169.057	272,147.803	127°11'24.3"	24°54'40.3"	230.000'	463.231'	510.574'	287.19'
℄ Ramp G-2	8	0+00	646,013.932	274,761.673	1+33.72	646,144.758	274,785.295	646,081.576	274,761.127	21°23'40.8"	16°00'00"	358.099'	67.646'	133.717'	6.35'
℄ Ramp G-2	9	5+56.53	646,539.664	274,936.351	16+18.13	647,513.581	275,357.995	647,035.743	275,126.107	4°57'15.0"	0°28'00"	12,277.667'	531.132'	1,061.603'	11.48'
℄ Ramp G-2A	10	0+00	646,354.266	274,744.927	1+38.41	646,336.807	274,841.625	646,089.590	274,747.063	158°36'19.2"	114°35'29.6"	50.000'	264.685'	138.409'	219.37'
℄ Ramp H-1	11	0+00	641,946.725	271,928.660	9+70.00	642,831.731	272,307.741	642,429.949	272,023.134	24°15'00.0"	2°30'00.0"	2,291.831'	492.372'	970.000'	52.29'
℄ Ramp H-1	12	9+70.00	642,831.731	272,307.741	18+02.04	643,337.342	272,953.801	643,181.086	272,555.210	33°16'53.4"	4°00'00.0"	1,432.393'	428.124'	832.037'	62.61'
℄ Ramp H-1	13	18+02.04	643,337.342	272,953.801	22+45.40	643,127.054	273,267.713	643,458.231	273,262.175	110°26'53.5"	24°54'40.3"	230.000'	331.224'	443.367'	173.25'
℄ Ramp H-2	14	3+70.00	641,470.778	271,618.573	8+11.59	641,029.493	271,631.732	641,249.882	271,616.645	4°24'57.3"	1°00'00"	5,729.578'	220.905'	441.591'	4.26'
℄ Ramp H-2	15	12+57.76	640,584.369	271,662.201	14+51.41	640,391.422	271,678.653	640,487.758	271,668.814	1°54'55.2"	0°59'20.5"	5,793.078'	96.837'	193.656'	0.81'

Note: Add 2,000,000 to E. Coord.

MADE L.V.M. DATE 2-1-63 TRACED ____ DATE ____
CHECKED E.C.E DATE 2-2-63 SCALE ____

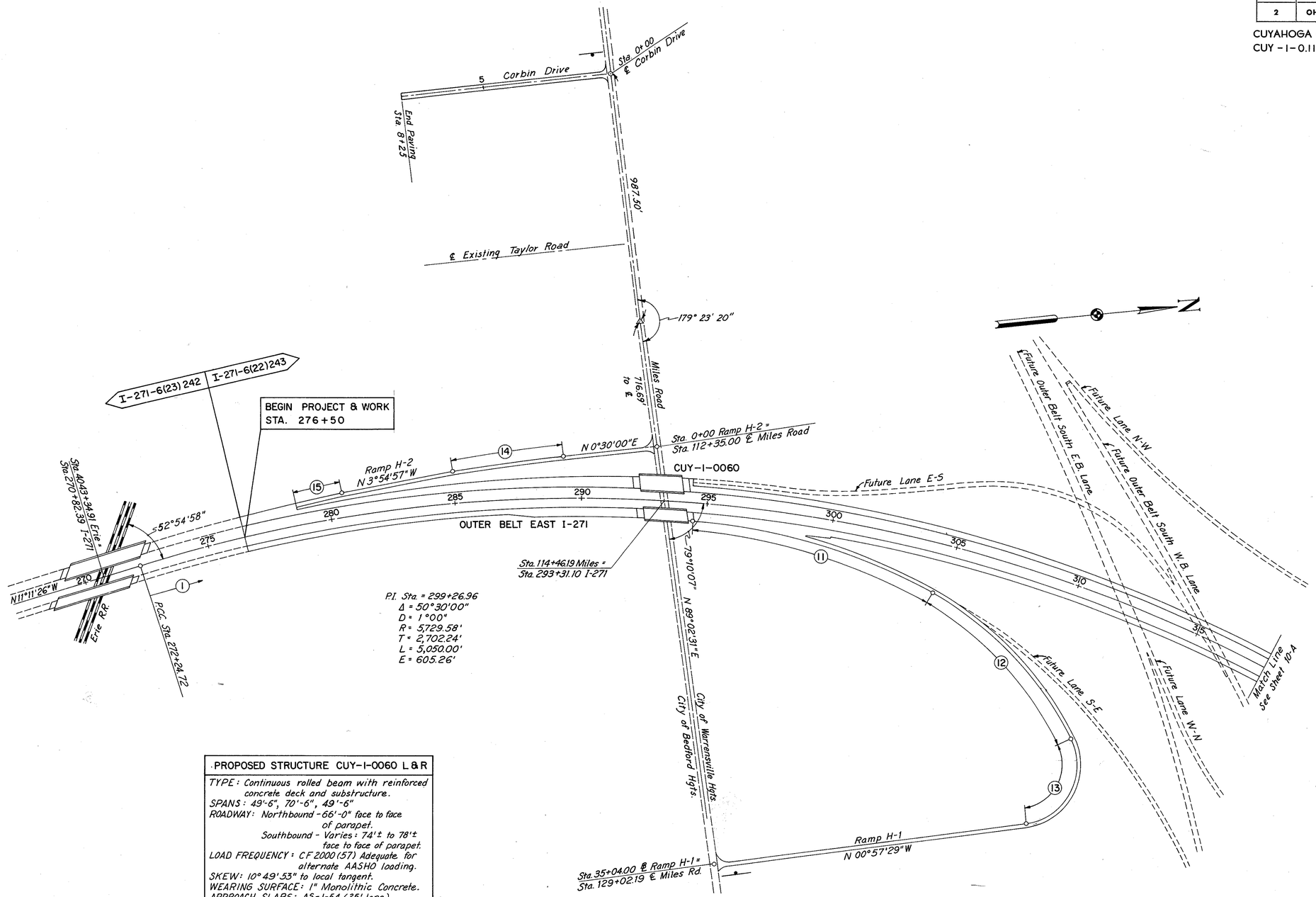
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

TYPICAL SECTIONS EXISTING MILES ROAD & PROPOSED CORBIN DRIVE & CURVE DATA

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

10
256

CUYAHOGA COUNTY
CUY - I - 0.11



PROPOSED STRUCTURE CUY-I-0060 L&R
TYPE: Continuous rolled beam with reinforced concrete deck and substructure.
SPANS: 49'-6", 70'-6", 49'-6"
ROADWAY: Northbound - 66'-0" face to face of parapet.
Southbound - Varies: 74'± to 78'± face to face of parapet.
LOAD FREQUENCY: CF 2000 (57) Adequate for alternate AASHO loading.
SKEW: 10° 49' 53" to local tangent.
WEARING SURFACE: 1" Monolitnic Concrete.
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: 1°00'00" Right

Note:
For Curve Data see sheet 9.
Future Ramps are shown =====
—•— F.A.C.I. Signs

MADE	A.M.R.	DATE	10-30-62	TRACED	R.J.K.	DATE	1-29-64
CHECKED	E.C.E.	DATE	7-26-63	SCALE	1" = 200'		

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

SCHEMATIC PLAN

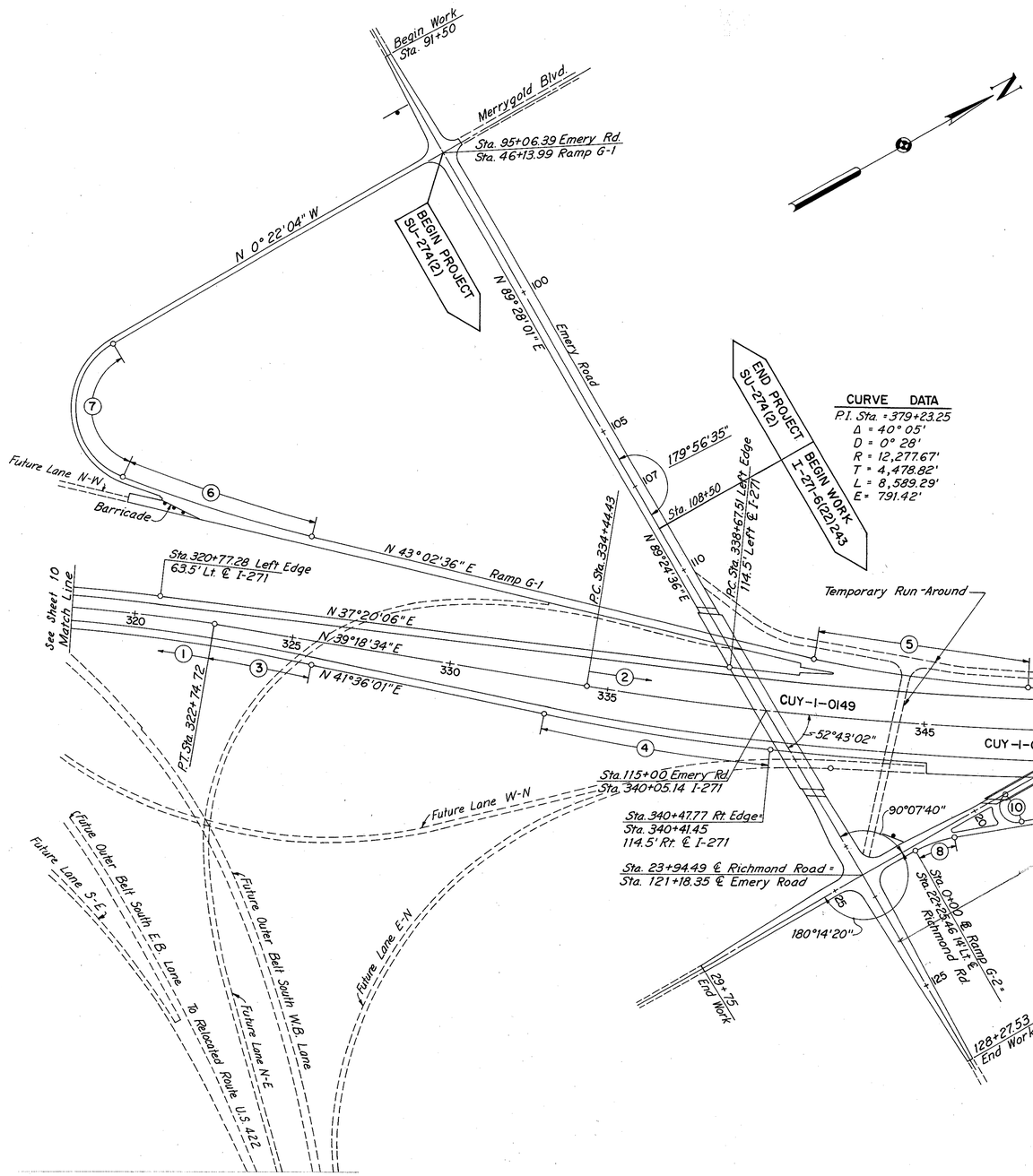
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

10-A
256

CUYAHOGA COUNTY
CUY-I-0.11

PROPOSED STRUCTURE CUY-I-0170
TYPE: Continuous Welded girders with reinforced concrete deck and substructure.
SPANS: 97.0'-136.625'-136.625'-149.875'-150.875'-105.25'
ROADWAY: 28'-0" curb to curb with two 4'-2" walks.
LOAD FREQUENCY: CF400(57)
SKEW: 57°54'33.6"
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54(25' long)
ALIGNMENT: Tangent

PROPOSED STRUCTURE CUY-I-0149
TYPE: Continuous Welded girders with reinforced concrete deck and substructure.
SPANS: 65'-0", 3 at 93'-6", 86'-0", 2 at 77'-2 3/8", 61'-0"
ROADWAY: 52'-0" curb to curb with two 4'-2" walks.
LOAD FREQUENCY: CF400(57)
SKEW: 37°16'58"
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54(25' long)
ALIGNMENT: TANGENT



CURVE DATA
P.I. Sta. = 379+23.25
Δ = 40° 05'
D = 0° 28'
R = 12,277.67'
T = 4,478.82'
L = 8,589.29'
E = 791.42'

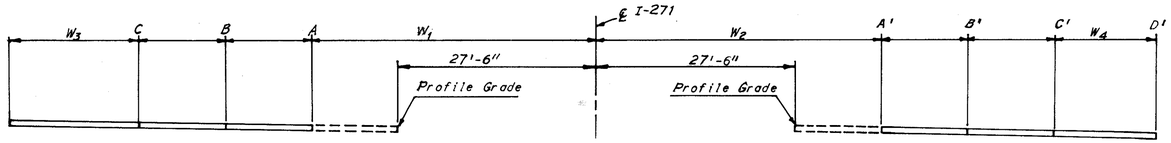
Note:
For Curve Data see sheet 9.
Future Ramps are shown ====
—•— F.A.C.I Signs

MADE A.M.R.	DATE 10-30-62	TRACED R.J.K.	DATE 1-27-64
CHECKED E.C.E.	DATE 7-26-63	SCALE 1" = 200'	

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

SCHEMATIC PLAN

SUPERELEVATION TABLES



FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

11
256

CUYAHOGA COUNTY
CUY-I-0.11

STATION	W_3	ELEV. D	ELEV. C	ELEV. B	ELEV. A	W_1	PROFILE GRADE	W_2	ELEV. A'	ELEV. B'	ELEV. C'	ELEV. D'	W_4
276+50	20.21	1094.70	1094.05	1093.67	1093.28	39.50	1092.90	39.50	1092.52	1092.13	1091.75		
276+75	20.73	1094.58	1093.92	1093.54	1093.15	39.50	1092.77	39.50	1092.39	1092.00	1091.62		
277+00	21.25	1094.47	1093.79	1093.41	1093.02	39.50	1092.64	39.50	1092.26	1091.87	1091.48		
277+25	21.77	1094.35	1093.65	1093.27	1092.88	39.50	1092.50	39.50	1092.12	1091.73	1091.35		
277+50	22.29	1094.23	1093.52	1093.14	1092.75	39.50	1092.37	39.50	1091.99	1091.60	1091.22		
277+75	22.81	1094.12	1093.39	1093.01	1093.62	39.50	1092.24	39.50	1091.86	1091.47	1091.09		
278+00	23.33	1094.01	1093.26	1092.88	1092.49	39.50	1092.10	39.50	1091.73	1091.34	1090.95		
278+25	23.85	1093.88	1093.12	1092.74	1092.35	39.50	1091.97	39.50	1091.59	1091.20	1090.82		
278+50	24.37	1093.77	1092.99	1092.61	1092.22	39.50	1091.84	39.50	1091.46	1091.07	1090.69		
278+75	24.89	1093.66	1092.86	1092.48	1092.09	39.50	1091.71	39.50	1091.33	1090.94	1090.56		
279+00			1092.73	1092.35	1091.96	39.50	1091.58	39.50	1091.20	1090.81	1090.42		
279+25			1092.59	1092.21	1091.82	39.50	1091.44	39.50	1091.06	1090.67	1090.29		
279+50			1092.46	1092.08	1091.69	39.50	1091.31	39.50	1090.93	1090.54	1090.16		
279+75			1092.33	1091.95	1091.56	39.50	1091.18	39.50	1090.80	1090.41	1090.03		
280+00			1092.20	1091.82	1091.42	39.50	1091.04	39.50	1090.67	1090.28	1089.89		
280+25			1092.06	1091.68	1091.29	39.50	1090.91	39.50	1090.53	1090.14	1089.76		
280+50			1091.93	1091.55	1091.16	39.50	1090.78	39.50	1090.40	1090.01	1089.63		
280+75			1091.80	1091.42	1091.03	39.50	1090.65	39.50	1090.27	1089.88	1089.50		
281+00			1091.67	1091.29	1090.90	39.50	1090.52	39.50	1091.14	1089.75	1089.36		
281+25			1091.53	1091.15	1090.76	39.50	1090.38	39.50	1090.00	1089.61	1089.23		
281+50			1091.40	1091.02	1090.63	39.50	1090.25	39.50	1089.87	1089.48	1089.10		
281+75			1091.27	1090.89	1090.50	39.50	1090.12	39.50	1089.74	1089.35	1088.97		
282+00			1091.14	1090.76	1090.36	39.50	1089.98	39.50	1089.61	1089.22	1088.83		
282+25			1091.00	1090.62	1090.23	39.50	1089.85	39.50	1089.47	1089.08	1088.70		
282+50			1090.87	1090.49	1090.10	39.50	1089.72	39.50	1089.34	1088.95	1088.57		
282+75	0.52	1090.76	1090.74	1090.36	1089.97	39.50	1089.59	39.50	1089.21	1088.82	1088.44		
283+00	1.04	1090.64	1090.61	1090.23	1089.84	39.50	1089.46	39.50	1089.08	1088.69	1088.30		
283+25	1.56	1090.52	1090.47	1090.09	1089.70	39.50	1089.32	39.50	1088.94	1088.56	1088.17		
283+50	2.08	1090.47	1090.34	1089.96	1089.57	39.50	1089.19	39.50	1088.81	1088.42	1088.04		
283+75	2.60	1090.29	1090.21	1089.83	1089.44	39.50	1089.06	39.50	1088.68	1088.29	1087.91		
284+00	3.12	1090.18	1090.08	1089.70	1089.30	39.50	1088.92	39.50	1088.55	1088.16	1087.77		
284+25	3.65	1090.06	1089.94	1089.56	1089.17	39.50	1088.79	39.50	1088.41	1088.02	1087.64		
284+50	4.17	1089.94	1089.81	1089.43	1089.04	39.50	1088.66	39.50	1088.28	1087.89	1087.51		
284+75	4.69	1089.83	1089.68	1089.30	1088.91	39.50	1088.53	39.50	1088.15	1087.76	1087.38		
285+00	5.21	1089.72	1089.55	1089.17	1088.78	39.50	1088.40	39.50	1088.02	1087.63	1087.24		
285+25	5.73	1089.59	1089.41	1089.03	1088.64	39.50	1088.26	39.50	1087.88	1087.49	1087.11		
285+50	6.25	1089.48	1089.28	1088.90	1088.51	39.50	1088.13	39.50	1087.75	1087.36	1086.98		
285+75	6.77	1089.37	1089.15	1088.77	1088.38	39.50	1088.00	39.50	1087.62	1087.23	1086.85		
286+00	7.29	1089.25	1089.02	1088.64	1088.24	39.50	1087.86	39.50	1087.49	1087.10	1086.71		
286+25	7.81	1089.13	1088.88	1088.50	1088.11	39.50	1087.73	39.50	1087.35	1086.96	1086.58		
286+50	8.33	1089.02	1088.75	1088.37	1087.98	39.50	1087.60	39.50	1087.22	1086.83	1086.45		
286+75	8.85	1088.90	1088.62	1088.24	1087.85	39.50	1087.47	39.50	1087.09	1086.70	1086.32		
287+00	9.37	1088.79	1088.49	1088.11	1087.72	39.50	1087.34	39.50	1086.96	1086.57	1086.18		
287+25	9.90	1088.67	1088.35	1087.97	1087.58	39.50	1087.20	39.50	1086.82	1086.43	1086.05	1085.95	3.00'
287+50	10.42	1088.55	1088.22	1087.84	1087.45	39.50	1087.07	39.50	1086.69	1086.30	1085.92	1085.73	6.00'
287+75	10.94	1088.44	1088.09	1087.71	1087.32	39.50	1086.94	39.50	1086.56	1086.17	1085.79	1085.50	9.00'
288+00	11.46	1088.33	1087.96	1087.58	1087.18	39.50	1086.80	39.50	1086.43	1086.04	1085.66	1085.27	12.00'
288+25	11.98	1088.20	1087.82	1087.44	1087.05	39.50	1086.67	39.50	1086.29	1085.90	1085.52	1085.14	12.00'
288+50	12.50	1088.09	1087.69	1087.31	1086.92	39.50	1086.54	39.50	1086.16	1085.77	1085.39	1085.01	12.00'
288+75	13.02	1087.98	1087.56	1087.18	1086.79	39.50	1086.41	39.50	1086.03	1085.64	1085.26	1084.88	12.00'
289+00	13.54	1087.86	1087.43	1087.05	1086.66	39.50	1086.28	39.50	1085.90	1085.51	1085.12	1084.74	12.00'
289+25	14.06	1087.74	1087.29	1086.91	1086.52	39.50	1086.14	39.50	1085.76	1085.37	1084.99	1084.61	12.00'
289+50	14.58	1087.63	1087.16	1086.78	1086.39	39.50	1086.01	39.50	1085.63	1085.24	1084.86	1084.48	12.00'
289+75	15.10	1087.51	1087.03	1086.65	1086.26	39.50	1085.88	39.50	1085.50	1085.11	1084.73	1084.34	12.00'
290+00	15.62	1087.39	1086.89	1086.51	1086.12	39.50	1085.74	39.50	1085.36	1084.97	1084.59	1084.20	12.00'
290+25	16.15	1087.26	1086.74	1086.36	1085.97	39.50	1085.59	39.50	1085.21	1084.82	1084.44	1084.05	12.00'
290+50	16.67	1087.12	1086.59	1086.21	1085.82	39.50	1085.44	39.50	1085.06	1084.67	1084.29	1083.90	12.00'
290+75	17.19	1086.98	1086.43	1086.05	1085.66	39.50	1085.28	39.50	1084.90	1084.51	1084.13	1083.74	12.00'
291+00	17.71	1086.84	1086.27	1085.89	1085.50	39.50	1085.12	39.50	1084.74	1084.35	1083.97	1083.58	12.00'
291+25	18.23	1086.69	1086.11	1085.73	1085.34	39.50	1084.96	39.50	1084.58	1084.19	1083.81	1083.42	12.00'
291+50	18.75	1086.54	1085.94	1085.56	1085.17	39.50	1084.79	39.50	1084.41	1084.02	1083.64	1083.25	12.00'
291+75	19.27	1086.39	1085.77	1085.39	1085.00	39.50	1084.62	39.50	1084.24	1083.85	1083.47	1083.08	12.00'
292+00	19.79	1086.22	1085.59	1085.21	1084.82	39.50	1084.44	39.50	1084.06	1083.67	1083.29	1082.90	12.00'
292+25	20.31	1086.04	1085.40	1085.02	1084.63	39.50	1084.25	39.50	1083.87	1083.48	1083.10	1082.71	12.00'
292+50	20.83	1085.88	1085.21	1084.83	1084.44	39.50	1084.06	39.50	1083.68	1083.29	1082.91	1082.52	12.00'
292+75	21.35	1085.69	1085.01	1084.63	1084.24	39.50	1083.86	39.50	1083.48	1083.09	1082.72	1082.34	12.00'
293+00	21.87	1085.51	1084.81	1084.43	1084.04	39.50	1083.66	39.50	1083.28	1083.89	1082.51	1082.12	12.00'

STATION	W_3	ELEV. D	ELEV. C	ELEV. B	ELEV. A	W_1	PROFILE GRADE	W_2	ELEV. A'	ELEV. B'	ELEV. C'	ELEV. D'	W_4
293+25	22.40	1085.33	1084.61	1084.23	1083.84	39.50	1083.46	39.50	1083.08	1083.69	1082.31	1081.92	12.00'
293+50	22.92	1085.13	1084.40	1084.02	1083.63	39.50	1083.25	39.50	1082.87	1082.48	1082.10	1081.71	12.00'
293+75	23.44	1084.94	1084.19	1083.81	1083.42	39.50	1083.04	39.50	1082.66	1082.27	1081.89	1081.50	12.00'
294+00	23.96	1084.75	1083.98	1083.60	1083.20	39.50	1082.82	39.50	1082.44	1082.06	1081.68	1081.28	12.00'
294+25	24.48	1084.54	1083.76	1083.38	1082.99	39.50	1082.61	39.50	1082.23	1081.84	1081.46	1081.07	12.00'
294+50	25.00	1084.35	1083.55	1083.17	1082.78	39.50	1082.40	39.50	1082.02	1081.63	1081.25	1080.86	12.00'
294+75			1083.34	1082.96	1082.57	39.50	1082.19	39.50	1081.81	1081.42	1081.04	1080.65	12.08'
295+00			1083.12	1082.74	1082.36	39.50	1081.98	39.50	1081.60	1081.20	1080.82	1080.43	12.32'
295+25			1082.91	1082.53	1082.14	39.50	1081.76	39.50	1081.38	1080.99	1080.61	1080.20	12.71'
295+50			1082.70	1082.32	1081.93	39.50	1081.55	39.50	1081.17	1080.78	1080.40	1079.98	13.26'
295+75			1082.49	1082.11	1081.72	39.50	1081.34	39.50	1080.96	1080.57	1080.19	1079.74	13.97'
296+00			1082.28	1081.90	1081.50	39.50	1081.12	39.50	1080.74	1080.36	1079.98	1079.51	14.84'
296+25			1082.06	1081.68	1081.29	39.50	1080.91	39.50	1080.53	1080.14	1079.76	1079.25	15.87'
296+50			1081.85	1081.47	1081.08	39.50	1080.70	39.50	1080.32	1079.93	1079.55	1079.00	17.05'
296+75			1081.64	1081.26	1080.87	39.50	1080.49	39.50	1080.11	1079.72	1079.34	1078.75	18.40'
297+00			1081.42	1081.04	1080.66	39.50	1080.28	39.50	1079.90	1079.50	1079.12	1078.48	19.90'
297+25			1081.21	1080.83	1080.44	39.50	1080.06	39.50	1079.68	1079.29	1078.91	1078.22	21.56'
297+50			1081.00	1080.62	1080.23	39.50	1079.85	39.50	1079.47	1079.08	1078.70	1077.95	23.36'
297+75			1080.79	1080.41	1080.02	39.50	1079.64	39.50	1079.26	1078.87	1078.49	1077.68	25.35'
298+00			1080.58	1080.20	1079.80	39.50	1079.42	39.50	1079.04	1078.66	1078.28	1077.40	27.48'
298+25			1080.36	1079.98	1079.59	39.50	1079.21	39.50	1078.83	1078.44	1078.06	1077.11	29.77'
298+50			1080.15	1079.77	1079.38	39.50	1079.00	39.50	1078.62	1078.23	1077.85	1076.82	32.22'
298+75			1079.94	1079.56	1079.17	39.50	1078.79	39.50	1078.41	1078.02	1077.64	1076.55	34.83'
299+00			1079.72	1079.34	1078.96	39.50	1078.58	39.50	1078.20	1077.80	1077.42	1076.22	37.60'
299+25			1079.51	1079.13	1078.74	39.50	1078.36	39.50	1077.98	1077.59	1077.21		
299+50			1079.30	1078.92	1078.53	39.50	1078.15	39.50	1077.77	1077.38	1077.00		
299+75			1079.09	1078.71	1078.32	39.50	1077.94	39.50	1077.56	1077.17	1076.79		
300+00			1078.88	1078.50	1078.10	39.50	1077.72	39.50	1077.34	1076.96	1076.58		
300+25			1078.66	1078.28	1077.89	39.50	1077.51	39.50	1077.13	1076.74	1076.36		
300+50			1078.45	1078.07	1077.68	39.50	1077.30	39.50	1076.92	1076.53	1076.15		
300+75			1078.24	1077.86	1077.47	39.50	1077.09	39.50	1076.71	1076.32	1075.94		
301+00			1078.02	1077.64	1077.26	39.50	1076.88	39.50	1076.50	1076.10	1075.72		
301+25			1077.81	1077.43	1077.04	39.50	1076.66	39.50	1076.28	1075.89	1075.51		
301+50			1077.60	1077.22	1076.83	39.50	1076.45	39.50	1076.07	1075.68	1075.30		
301+75			1077.39	1077.01	1076.62	39.50	1076.24	39.50	1075.86	1075.47	1075.09		
302+00			1077.18	1076.80	1076.40	39.50	1076.02	39.50	1075.64	1075.26	1074.88		
302+25			1076.96	1076.58	1076.19	39.50	1075.81	39.50	1075.43	1075.04	1074.66		
302+50			1076.75	1076.37	1075.98	39.50	1075.60	39.50	1075.22	1074.83	1074.45		
302+75			1076.54	1076.16	1075.77	39.50	1075.39	39.50	1075.01	1074.62	1074.24		
303+00			1076.32	1075.94	1075.56	39.50	1075.18	39.50	1074.80	1074.40	1074.02		
303+25			1076.11	1075.73	1075.34	39.50	1074.96	39.50	1074.58	1074.19	1073.81		
303+50			1075.90	1075.52	1075.13	39.50	1074.75	39.50	1074.37	1073.98	1073.60		
303+75			1075.69	1075.31	1074.92	39.50	1074.54	39.50	1074.16	1073.77	1073.39		
304+00			1075.48	1075.10	1074.70	39.50	1074.32	39.50	1073.94	1073.56	1073.18		
304+25			1079.26	1074.88	1074.49	39.50	1074.11	39.50	1073.73	1073.34	1072.96		
304+50			1075.05	1074.67	1074.28	39.50	1073.90	39.50	1073.52	1073.13	1072.75		
304+75			1074.84	1074.46	1074.07	39.50	1073.69	39.50	1073.31	1072.92	1072.54		
305+00			1074.62	1074.24	1073.86	39.50	1073.48	39.50	1073.10	1072.70	1072.32		
305+25			1074.41	1074.03	1073.64	39.50	1073.26	39.50	1072.88	1072.49	1072.11		
305+50			1074.20	1073.82	1073.43	39.50	1073.05	39.50	1072.67	1072.28	1071.90		
305+75			1073.99	1073.61	1073.22	39.50	1072.84	39.50	1072.46	1072.07	1071.69		
306+00			1073.78	1073.40	1073.00	39.50	1072.62	39.50	1072.24	1071.86	1071.48		
306+25			1073.56	1073.18	1072.79	39.50	1072.41	39.50	1072.03	1071.64	1071.26		
306+50			1073.35	1072.97	1072.58	39.50	1072.20	39.50	1071.82	1071.43	1071.05		
306+75			1073.14	1072.76	1072.37	39.50	1071.99	39.50	1071.61	1071.22	1070.84		
307+00			1072.92	1072.54	1072.16	39.50	1071.78	39.50	1071.40	1071.00	1070.62		
307+25			1072.71	1072.33	1071.94	39.50	1071.56	39.50	1071.18	1070.79	1070.14		
307+50			1072.50	1072.12	1071.73	39.50	1071.35	39.50	1070.97	1070.58	1070.20		
307+75			1072.29	1071.91	1071.52	39.50	1071.14	39.50	1070.76	1070.37	1069.99		
308+00			1072.08	1071.70	1071.30	39.50	1070.92	39.50	1070.54	1070.16	1069.78		
308+25			1071.86	1071.48	1071.09	39.50	1070.71	39.50	1070.33	1069.94	1069.56		
308+50			1071.65	1071.27	1070.88	39.50	1070.50	39.50	1070.12	1069.73	1069.35		
308+75			1071.44	1071.06	1070.67	39.50	1070.29	39.50	1069.90	1069.52	1069.14		
309+00			1071.22	1070.84	1070.46	39.50	1070.08	39.50	1069.69	1069.30	1068.92		
309+25			1071.01	1070.63	1070.24	39.50	1069.86	39.50	1069.48	1069.09	1068.71		
309+50			1070.80	1070.42	1070.03	39.50	1069.65	39.50	1069.27	1068.88	1068.50		
309+75			1070.59	1070.21	1069.82	39.50	1069.44	39.50	1069.06	1068.67	1068.29		

MADE R.J.Z. DATE 4-13-64 TRACED J.E.N. DATE 4-14-64
CHECKED E.C.E. DATE 4-14-64 SCALE

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

SUPERELEVATION TABLES

CUYAHOGA COUNTY
CUY - I - 0.11

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

11-A
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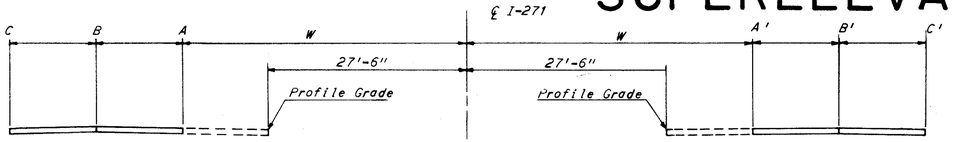
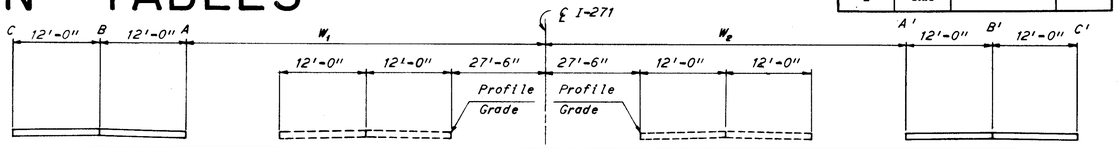


STATION	ELEV. C	ELEV. B	ELEV. A	W_1	PROFILE GRADE	W_2	ELEV. A'	ELEV. B'	ELEV. C'	REMARKS
310+00	1070.37	1069.99	1069.60	39.50'	1069.22	39.50'	1068.84	1068.45	1068.07	
310+25	1070.16	1069.78	1069.39	39.50'	1069.01	39.50'	1068.63	1068.24	1067.86	
310+50	1069.95	1069.57	1069.18	39.50'	1068.80	39.50'	1068.42	1068.03	1067.65	
310+75	1069.76	1069.38	1068.99	39.50'	1068.61	39.50'	1068.23	1067.84	1067.46	
311+00	1069.61	1069.23	1068.84	39.50'	1068.46	39.50'	1068.08	1067.69	1067.31	
311+25	1069.50	1069.12	1068.73	39.50'	1068.35	39.50'	1067.97	1067.58	1067.20	
311+50	1069.43	1069.05	1068.66	39.50'	1068.28	39.50'	1067.90	1067.51	1067.13	
311+75	1069.41	1069.03	1068.64	39.50'	1068.26	39.50'	1067.88	1067.49	1067.11	
312+00	1069.42	1069.04	1068.65	39.50'	1068.27	39.50'	1067.89	1067.50	1067.12	
312+25	1069.48	1069.10	1068.71	39.50'	1068.33	39.50'	1067.95	1067.56	1067.18	
312+50	1069.57	1069.19	1068.80	39.50'	1068.42	39.50'	1068.04	1067.65	1067.27	
312+75	1069.71	1069.33	1068.94	39.50'	1068.56	39.50'	1068.18	1067.79	1067.41	
313+00	1069.89	1069.51	1069.12	39.50'	1068.74	39.50'	1068.36	1067.97	1067.59	
313+25	1070.12	1069.74	1069.35	39.50'	1068.97	39.50'	1068.59	1068.20	1067.82	
313+50	1070.38	1070.00	1069.61	39.50'	1069.23	39.50'	1068.85	1068.46	1068.08	
313+75	1070.69	1070.31	1069.92	39.50'	1069.54	39.50'	1069.16	1068.77	1068.39	
314+00	1071.03	1070.65	1070.26	39.50'	1069.88	39.50'	1069.50	1069.11	1068.73	
314+25	1071.42	1071.04	1070.65	39.50'	1070.27	39.50'	1069.89	1069.50	1069.12	
314+50	1071.85	1071.47	1071.08	39.50'	1070.70	39.50'	1070.32	1069.93	1069.55	
314+75	1072.30	1071.92	1071.53	39.50'	1071.15	39.50'	1070.77	1070.38	1070.00	
315+00	1072.75	1072.37	1071.98	39.50'	1071.60	39.50'	1071.22	1070.83	1070.45	
315+25	1073.20	1072.82	1072.43	39.50'	1072.05	39.50'	1071.67	1071.28	1070.90	
315+50	1073.65	1073.27	1072.88	39.50'	1072.50	39.50'	1072.12	1071.73	1071.35	
315+75	1074.10	1073.72	1073.33	39.50'	1072.95	39.50'	1072.57	1072.18	1071.80	
316+00	1074.55	1074.17	1073.78	39.50'	1073.40	39.50'	1073.02	1072.63	1072.25	
316+25	1075.00	1074.62	1074.23	39.50'	1073.85	39.50'	1073.47	1073.08	1072.70	
316+50	1075.45	1075.07	1074.68	39.50'	1074.30	39.50'	1073.92	1073.53	1073.15	
316+75	1075.90	1075.52	1075.13	39.50'	1074.75	39.50'	1074.37	1073.98	1073.60	
317+00	1076.35	1075.97	1075.58	39.50'	1075.20	39.50'	1074.82	1074.43	1074.05	
317+25	1076.80	1076.42	1076.03	39.50'	1075.65	39.50'	1075.27	1074.88	1074.50	
317+50	1077.25	1076.87	1076.48	39.50'	1076.10	39.50'	1075.72	1075.33	1074.95	
317+75	1077.70	1077.32	1076.93	39.50'	1076.55	39.50'	1076.17	1075.78	1075.40	
318+00	1078.15	1077.77	1077.38	39.50'	1077.00	39.50'	1076.62	1076.23	1075.85	
318+25	1078.60	1078.22	1077.83	39.50'	1077.45	39.50'	1077.07	1076.68	1075.30	
318+50	1079.05	1078.67	1078.28	39.50'	1077.90	39.50'	1077.52	1077.13	1076.75	
318+75	1079.50	1079.12	1078.73	39.50'	1078.35	39.50'	1077.97	1077.58	1077.20	
319+00	1079.95	1079.57	1079.18	39.50'	1078.80	39.50'	1078.42	1078.03	1077.65	
319+25	1080.40	1080.02	1079.63	39.50'	1079.25	39.50'	1078.87	1078.48	1078.10	
319+50	1080.85	1080.47	1080.08	39.50'	1079.70	39.50'	1079.32	1078.93	1078.55	
319+75	1081.24	1080.88	1080.51	39.50'	1080.15	39.50'	1079.77	1079.38	1079.00	
320+00	1081.56	1081.24	1080.92	39.50'	1080.60	39.50'	1080.22	1079.83	1079.45	
320+25	1081.89	1081.61	1081.33	39.50'	1081.05	39.50'	1080.67	1080.28	1079.90	
320+50	1082.21	1081.98	1081.74	39.50'	1081.50	39.50'	1081.12	1080.73	1080.35	
320+75	1082.54	1082.34	1082.15	39.50'	1081.95	39.50'	1081.57	1081.18	1080.80	
320+77.28	1082.57	1082.38	1082.18	39.50'	1081.99	39.50'				P.T. 1°00'00" Curve-Left
321+00	1082.86	1082.72	1082.59	39.54'	1082.40	39.50'	1082.02	1081.63	1081.25	
321+25	1083.19	1083.11	1083.04	39.70'	1082.85	39.50'	1082.47	1082.08	1081.70	
321+50	1083.51	1083.50	1083.49	39.97'	1083.30	39.50'	1082.92	1082.53	1082.15	
321+75	1083.89	1083.91	1083.94	40.34'	1083.75	39.50'	1083.37	1082.98	1082.60	
322+00	1084.27	1084.33	1084.38	40.83'	1084.20	39.50'	1083.82	1083.43	1083.05	
322+25	1084.65	1084.74	1084.82	41.42'	1084.65	39.50'	1084.27	1083.88	1083.50	
322+50	1085.02	1085.14	1085.26	42.13'	1085.10	39.50'	1084.78	1084.40	1084.02	
322+74.72	1085.39	1085.54	1085.69	42.94'	1085.54	39.50'	1085.35	1084.97	1084.58	P.T. 1°00'00" Curve-Centerline
322+75	1085.40	1085.54	1085.70	42.95'	1085.55	39.50'	1085.36	1084.97	1084.59	
323+00	1085.76	1085.94	1086.12	43.81'	1086.00	39.55'	1085.81	1085.42	1085.04	
323+25	1086.18	1086.37	1086.56	44.68'	1086.45	39.72'	1086.25	1085.87	1085.49	
323+50	1086.62	1086.81	1086.99	45.54'	1086.90	40.00'	1086.70	1086.32	1085.93	
323+75	1087.05	1087.24	1087.43	46.40'	1087.35	40.38'	1087.14	1086.76	1086.38	
324+00	1087.49	1087.68	1087.87	47.26'	1087.80	40.88'	1087.59	1087.20	1086.82	
324+25	1087.93	1088.12	1088.30	48.12'	1088.25	41.49'	1088.03	1087.64	1087.26	
324+50	1088.36	1088.55	1088.74	48.98'	1088.70	42.21'	1088.46	1088.14	1087.82	
324+75	1088.80	1088.99	1089.18	49.85'	1089.15	43.04'	1088.90	1088.64	1088.39	
325+00	1089.24	1089.42	1089.61	50.71'	1089.60	43.98'	1089.34	1089.14	1088.95	
325+01.21					1089.62	44.03'	1089.36	1089.17	1088.97	P.T. 1°00'00" Curve-Right
325+25	1089.67	1089.86	1090.05	51.57'	1090.05	44.98'	1089.84	1089.69	1089.50	
325+50	1090.11	1090.30	1090.49	52.43'	1090.50	45.98'	1090.35	1090.25	1090.06	
325+75	1090.55	1090.74	1090.92	53.29'	1090.95	46.98'	1090.87	1090.81	1090.63	



STATION	ELEV. C	ELEV. B	ELEV. A	W_1	PROFILE GRADE	W_2	ELEV. A'	ELEV. B'	ELEV. C'	REMARKS
326+00	1090.98	1091.17	1091.36	54.16'	1091.40	47.98'	1091.40	1091.39	1091.21	
326+25	1091.42	1091.61	1091.80	55.02'	1091.85	48.98'	1091.89	1091.91	1091.72	
326+50	1091.86	1092.04	1092.23	55.88'	1092.30	49.98'	1092.39	1092.43	1092.24	
326+75	1092.29	1092.48	1092.67	56.74'	1092.75	50.98'	1092.88	1092.95	1092.77	
327+00	1092.73	1092.92	1093.10	57.60'	1093.20	51.98'	1093.39	1093.48	1093.29	
327+25	1093.17	1093.35	1093.54	58.46'	1093.65	52.98'	1093.90	1094.01	1093.82	
327+50	1093.60	1093.79	1093.98	59.33'	1094.10	53.98'	1094.41	1094.55	1094.36	
327+75	1094.04	1094.23	1094.42	60.19'	1094.55	54.98'	1094.92	1095.09	1094.90	
328+00	1094.48	1094.66	1094.85	61.05'	1095.00	55.98'	1095.44	1095.63	1095.44	
328+25	1094.91	1095.10	1095.29	61.91'	1095.45	56.98'	1095.91	1096.10	1095.91	
328+50	1095.35	1095.54	1095.72	62.77'	1095.90	57.98'	1096.38	1096.56	1096.38	
328+75	1095.79	1095.97	1096.16	63.64'	1096.35	58.98'	1096.84	1097.03	1096.84	
329+00	1096.22	1096.41	1096.60	64.50'	1096.80	59.98'	1097.31	1097.50	1097.31	
329+25	1096.66	1096.85	1097.03	65.36'	1097.25	60.98'	1097.77	1097.96	1097.77	
329+50	1097.10	1097.28	1097.47	66.22'	1097.70	61.98'	1098.24	1098.43	1098.24	
329+75	1097.53	1097.72	1097.91	67.08'	1098.15	62.98'	1098.70	1098.89	1098.70	
330+00	1097.99	1098.18	1098.30	67.94'	1098.60	63.98'	1099.17	1099.36	1099.17	
330+25	1098.53	1098.72	1098.72	68.81'	1099.05	64.98'	1099.64	1099.82	1099.64	
330+50	1098.99	1099.18	1099.12	69.67'	1099.50	65.98'	1100.10	1100.29	1100.10	
330+75	1099.47	1099.66	1099.53	70.53'	1099.95	66.98'	1100.57	1100.75	1100.57	
331+00	1099.95	1100.13	1099.95	71.39'	1100.40	67.98'	1101.03	1101.22	1101.03	
331+25	1100.36	1100.55	1100.36	72.25'	1100.85	68.98'	1101.50	1101.69	1101.50	
331+50	1100.77	1100.96	1100.77	73.12'	1101.30	69.98'	1101.96	1102.15	1101.96	
331+75	1101.19	1101.38	1101.19	73.98'	1101.75	70.98'	1102.43	1102.62	1102.43	
332+00	1101.60	1101.79	1101.60	74.84'	1102.20	71.98'	1102.90	1103.08	1102.90	
332+25	1102.02	1102.20	1102.02	75.70'	1102.65	72.98'	1103.36	1103.55	1103.36	
332+50	1102.43	1102.62	1102.43	76.56'	1103.10	73.98'	1103.83	1104.01	1103.83	
332+75	1102.88	1103.07	1102.88	77.42'	1103.55	74.98'	1104.29	1104.48	1104.31	
333+00	1103.35	1103.54	1103.35	78.29'	1104.00	75.98'	1104.76	1104.95	1104.84	
333+25	1103.84	1104.03	1103.84	79.15'	1104.45	76.98'	1105.22	1105.41	1105.37	
333+50	1104.36	1104.55	1104.36	80.01'	1104.90	77.98'	1105.68	1105.87	1105.91	
333+70.08					1105.26	78.78'	1106.02	1106.20	1106.35	P.C. 0°45'00" Curve - Right
333+75	1104.92	1105.11	1104.92	80.87'	1105.35	78.98'	1106.10	1106.29	1106.46	
334+00	1105.50	1105.69	1105.50	81.73'	1105.80	79.92'	1106.52	1106.76	1107.00	
334+25	1106.06	1106.25	1106.06	82.60'	1106.25	80.78'	1106.94	1107.23	1107.52	
334+50	1106.60	1106.79	1106.60	83.46'	1106.70	81.56'	1107.36	1107.65	1107.94	
334+75	1107.12	1107.31	1107.12	84.28'	1107.15	82.30'	1107.78	1108.07	1108.36	
335+00	1107.60	1107.79	1107.60	85.05'	1107.60	83.00'	1108.20	1108.49	1108.78	
335+25	1108.05	1108.24	1108.05	85.76'	1108.05	83.68'	1108.62	1108.91	1109.20	
335+50	1108.50	1108.69	1108.50	86.43'	1108.50	84.32'	1109.04	1109.33	1109.62	
335+75	1108.95	1109.14	1108.95	87.05'	1108.95	84.94'	1109.46	1109.75	1110.04	
336+00	1109.40	1109.59	1109.40	87.61'	1109.40	85.52'	1109.88	1110.17	1110.46	
336+25	1109.85	1110.04	1109.85	88.13'	1109.85	86.06'	1110.30	1110.59	1110.88	
336+50	1110.30	1110.49	1110.30	88.59'	1110.30	86.58'	1110.72	1111.01	1111.30	
336+75	1110.75	1110.94	1110.75	89.00'	1110.75	87.06'	1111.14	1111.43	1111.72	
337+00	1111.20	1111.39	1111.20	89.37'	1111.20	87.52'	1111.56	1111.85	1112.14	
337+25	1111.65	1111.84	1111.65	89.68'	1111.65	87.94'	1111.98	1112.27	1112.56	
337+50	1112.10	1112.29	1112.10	89.94'	1112.10	88.33'	1112.40	1112.69	1112.98	
337+75	1112.55	1112.74	1112.55	90.15'	1112.55	88.68'	1112.82	1113.11	1113.40	
338+00	1113.00	1113.19	1113.00	90.32'	1113.00	89.01'	1113.24	1113.53	1113.82	
338+25	1113.45	1113.64	1113.45	90.43'	1113.45	89.30'	1113.66	1113.95	1114.24	
338+50	1113.90	1114.09	1113.90	90.49'	1113.90	89.56'	1114.08	1114.37	1114.66	
338+67.51	1114.22	1114.40	1114.22	90.50'	1114.22					P.C. 0°28'00" Curve - Left
338+75	1114.35	1114.54	1114.35	90.50'	1114.35	89.79'	1114.50	1114.79	1115.08	
339+00	1114.80	1114.99	1114.80	90.50'	1114.80	89.99'	1114.92	1115.21	1115.50	
339+25	1115.25	1115.44	1115.25	90.50'	1115.25	90.15'	1115.34	1115.63	1115.92	
339+50	1115.70	1115.89	1115.70	90.50'	1115.70	90.28'	1115.76	1116.05	1116.34	
339+75	1116.15	1116.34	1116.15	90.50'	1116.15	90.39'	1116.18	1116.47	1116.76	
340+00	1116.60	1116.79	1116.60	90.50'	1116.60	90.46'	1116.60	1116.89	1117.18	
340+25	1117.05	1117.24	1117.05	90.50'	1117.05	90.49'	1117.05	1117.28	1117.51	
340+41.45					1117.35	90.50'	1117.35	1117.53	1117.72	
340+50	1117.50	1117.69	1117.50	90.50'	1117.50	90.50'	1117.50	1117.69	1117.83	
340+75	1117.95	1118.14	1117.95	90.50'	1117.95	90.50'	1117.95	1118.14	1118.16	
341+00	1118.40	1118.59	1118.40	90.50'	1118.40	90.50'	1118.40	1118.59	1118.54	
341+25	1118.85	1119.04	1118.85	90.50'	1118.85	90.50'	1118.85	1119.04	1118.92	
341+50	1119.30	1119.49	1119.30	90.50'	1119.30	90.50'	1119.30	1119.49	1119.31	

MADE L.V.M. DATE 2-13-63 TRACED H.L.D. DATE 3-18-63
CHECKED E.C.E. DATE 7-26-63 SCALE

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

GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY-I-0.11

GENERAL

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 feet based on 4.0 feet for the height of eye and 0 feet 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 the field office and maintain it in service for the exclusive use of the Engineer during the same time period. The Contractor shall install wiring and outlets suitable for connection to office equipment and shall provide 110 bolt 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 and required by the work shall be included in the contract unit price bid for the various items of the work.

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

CENTERLINE REFERENCE MONUMENTS

Monuments shall be constructed of Class "C" concrete, cast-in-place in a circular hole eight (8) inches in diameter and fourty-four (44) inches in depth. Top of concrete shall be finished at a depth of two (2) inches below ground level and the upper six (6) inch portion of the concrete shall be formed. One-half ($\frac{1}{2}$) inch steel rods six (6) inches long shall be embedded in the wet concrete as directed by the Engineer to mark the 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 Highways. 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.

UTILITIES

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

East Ohio Gas Company, 1717 E. 9th St., Cleveland, Ohio
Cleveland Electric Illuminating Company, 55 Public Sq., Cleveland, Ohio
Ohio Bell Telephone Company, 750 Huron Rd., Cleveland, Ohio
City of Warrensville Heights Water Department, 4301 Warrensville Center Rd.
City of Cleveland Water Department, City Hall, Cleveland, Ohio
Buckeye Pipe Line Company, Dixie Highway and Buckeye Rd., Lima, Ohio

ADJACENT CONTRACT

The Contractor for this project shall coordinate his operations with that of the Contractor for the adjacent project so as to complete both projects without undue delay or interference to the other Contractor.

GENERAL

FEDERAL AID CONSTRUCTION IDENTIFICATION SIGNS

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

1. Miles Road, east of Ramp H-1 facing westbound traffic.
2. Miles Road, west of Corbin Drive facing eastbound traffic.
3. Emery Road, west of Ramp G-1 facing eastbound traffic.
4. Richmond Road, Station 5+75 facing southbound traffic.
5. Richmond-Emery Intersection, facing intersection on north side of Temporary Runaround

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

ESTIMATED QUANTITIES

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

MAINTENANCE OF TRAFFIC

Where any of the work called for under this contract involves the closing of existing streets and or the re-routing of traffic, the Contractor for this project shall prosecute to the fullest extent the work involved so as to reduce to a minimum the length of time that the roadway will be closed to traffic. No street or alley will be closed until necessary for construction as determined by the Project Engineer.

Two-way traffic on Miles Road shall be maintained at all times. The Contractor shall safeguard the traveling public on Miles Road by providing platforms, nets, or other suitable protection above the traveled lanes.

Two-way traffic on Emery and Richmond Roads shall be maintained during construction. The work on the intersection shall be performed in such a manner, by stages, that traffic can travel between the temporary runaround and Emery and Richmond Roads at all times.

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

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

All of the above are included in the lump sum price bid for "Maintaining Traffic".

ROADWAY

SEEDING AND PROTECTING

Quantities for seeding are calculated for the soil areas between the right-of-way fence lines, between the work limit lines in unfenced areas, and within the work limits for areas outside the right-of-way lines covered by easement.

Seed shall be sown at the rate of three (3) pounds per 1,000 square feet, and shall be a uniform mixture in the following proportions in lieu of the mixture listed in Section L-9.11:

70 % Kentucky 31 Fescue
20 % Kentucky Bluegrass
5 % Red Top
5 % Alsike Clover

REMOVAL OF TREES AND STUMPS

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

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

Sizes	No. of Trees - Project I-271-6(22)243
12"-18"	459
18"-24"	98
24"-30"	41
30"-36"	8

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

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

"An estimated quantity for this item has been provided in the General Summary for use in proof rolling of subgrade on the mainline and ramp pavements as directed by the Engineer. Proof rolling will not be required where rock or shale occurs in subgrade and in areas where subbase will be thickened to replace frost susceptible silts. In lieu of the requirements of CE-101.04, a minimum of one coverage will be required to check the subgrade. Moisture content of the top 12" of subgrade shall not exceed optimum at the time of proof rolling. Tire pressure and total load shall be varied as directed by the Engineer within the limits provided in CE-101.04.

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.

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.

ROUNDING OF CORNERS ON CROSS SECTIONS

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

CONSTRUCTION LAYOUT STAKES

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

MADE E.C.E. DATE 4-10-64 TRACED ____ DATE ____
CHECKED D.W.K. DATE 4-13-64 SCALE ____

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GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
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ROADWAY

GUARD RAIL FLARES

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

AGRICULTURAL LIMING MATERIAL

The location and need for agricultural liming materials will be determined by the Engineer on the basis of laboratory tests after rough grading operations have been performed. The quantity of agricultural liming materials shown on the plans is sufficient for application to the entire exposed soil area of the contract but may be partially or completely omitted, as may be directed by the Engineer if laboratory tests indicate the item is not needed. Agricultural liming material shall be applied at the rate of 100 pounds per 1,000 square feet of surface area, except that on all surfaces of shale it shall be applied at the rate of 10 tons per acre.

The quantity of agricultural liming material is estimated and is included for use only when and in amounts as directed by the Engineer. The amount of this item and its location shall be recorded as used, and payment will be included in the final payment estimate.

FLARING GUARD RAIL AT BRIDGES

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

SCARIFICATION OF EXISTING FLEXIBLE PAVEMENT

Within the limits of construction where the existing flexible pavement will have less than six (6) inches of fill placed upon it the pavement shall be thoroughly scarified for its full depth, mixed with sufficient soil and properly recompacted to insure the elimination of any planes or 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.

FENCING

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

REMOVAL OF EXISTING RIGID PAVEMENT

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

NON-RIGID PAVEMENT REMOVAL

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

T-35 FOR MAINTAINING TRAFFIC

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

ESTIMATED QUANTITIES

Quantities of the following items are estimated and are included for use only when and in amounts as directed by the Engineer. The provisions of Section G-4.03 do not apply to these items. The amounts of these items and their location shall be recorded as used, and payment will be included in the Final Payment Estimate.

Item T-10,	Traffic Compacted Surface Course	100 Cu. Yd.
Item I-4,	Calcium Cholride, for Dust Control	2 Tons
Item I-4,	Water, for Dust Control	100 M. Gal.

PAVEMENT

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.

SEQUENCE OF CONSTRUCTION OPERATIONS

Underdrains shall be installed and backfilled to subgrade elevation, immediately prior to construction of the subbase, except that, where subsurface conditions are such that improvement of an unstable subgrade can be accomplished through the drying action of deep underdrains, the Project Engineer may authorize or require the Contractor to delay the construction of the subbase as necessary.

The subbase shall then be constructed under the concrete pavement area and extended out to cover the porous backfill for the underdrain. Pavement shall then be constructed.

After the subbase in the shoulder area is in place and compacted as specified, and immediately prior to placing the porous base course, the material located above and within the underdrain trench shall be removed to the depth necessary to expose clean Type 3 Backfill. The trench so excavated shall be backfilled with new Type 3 Backfill material.

If, after testing the subbase material for composition in the shoulder area, it is found that removal of contaminated material from the surface is necessary, such material shall be replaced with material meeting the requirements of Item B-112, Porous Base Course, at the expense of the Contractor.

Porous Base Course shall then be constructed and construction of the Waterproofed Aggregate Base Course shall follow immediately. Payment for all the above shall be included in the pertinent items affected.

APPROACH SLABS

The approach slabs for the bridge shall be built according to the details shown on Standard Drawing AS-1-54 and Specification I-7, with the following addition. Longitudinal joints shall be sawed or impressed in the approach slab to aline with the normal pavement joints. If the sawed joint is used it shall have a depth of T/4 inches and a minimum width of $\frac{1}{8}$ inch. The impressed joint shall be made according to the detail shown on Standard Drawing LJ-1. The cost of providing the joints shall be included in the unit price bid for Item I-7, Reinforced Concrete Approach Slabs, T=13".

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

SUBBASE, ITEM I-22

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

The Contractor shall place 6 inches of I-22 Subbase under all bridge approach slabs and shall be compensated therefor at the unit price bid for Item I-22, Subbase.

DRAINAGE

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.

SEALING OF PIPE JOINTS

Where connections are made between rigid and flexible pipe sections or between pipe sections of different kind or type of end fabrication, whether required by the plans, arising from permissible use of optional materials, or encountered in connection to existing facilities, the joint shall be sealed, if sealing is required by the Specifications, by means of a concrete collar in accordance with Standard Construction Drawing I-1.

PLUGGING PIPE

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

PIPE CUT-OFFS

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

EROSION CONTROL

The Contractor shall place an 18 inch strip of sod along the back and across each end of each headwall and along each side of each paved gutter and shall be compensated therefor in accordance with Item L-10, Sodding.

STREAM CROSSINGS

A quantity of 70 cubic yards of Item I-10, Dumped Rock Channel Protection, has been estimated and included in the General Summary for use in constructing stream crossings at the right-of-way fence. The Dumped Rock Channel Protection may not be necessary at all locations shown on the plans and shall be provided only where and as directed by the Engineer.

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 this item shall be a 6 inch reinforced concrete slab, reinforced with bars or fabricated reinforcement equivalent to $\frac{3}{8}$ inch round bars spaced at two foot centers, two directions, and placed approximately midway 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 Section I-10.05 for depressed grooves and thickened bottom edges in this item shall be waived. In lieu thereof, cut-off walls, as per plan, shall be provided and payment, therefore, shall be included in the unit price bid for this item.

SODDING FOR SPECIAL BERM AND SLOPE PROTECTION

The work for the Special Berm and Slope Protection shall be performed as outlined under the "Approach Slab Erosion Control" detail shown in the Miscellaneous Details.

REINFORCED ENDS ON CORRUGATED METAL PIPE

Reinforced ends will be required for the exposed ends of all corrugated metal Class F-4 Pipe used for all Driveways and Underdrain Outlets if the exposed pipe ends are unprotected by Headwalls, Catch Basins or Manholes.

MADE E.C.E. DATE 4-10-64 TRACED DATE
CHECKED D.W.K. DATE 4-13-64 SCALE

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

GENERAL NOTES

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2	OHIO		

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DRAINAGE

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-1, Class J-1 Pipe.

Existing collectors and isolated farm tiles which are encountered above the elevation of the roadway ditches shall be outletted 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 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. The materials shall not be ordered by the Contractor unless prior approval is received from the Project Engineer.

Item I-1 6" Pipe, Class J-1 - 500 ft. Sec. M-6.6(b), M-6.8(b) or M-6.5(b)
Item I-1 8" Pipe, Class F-4 - 200 ft. Sec. M-6.4(c)
Item I-1 6" Pipe, Class H-2 - 500 ft.

MANHOLES, CATCH BASINS AND INLETS

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

CONNECTIONS TO EXISTING SEWERS

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

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

This item shall consist of the careful removal of the existing manhole to an elevation below the new grade, as required by the Engineer, and reconstruction of the manhole to the new grade, conforming as nearly as practicable to the existing dimensions and type of construction and using the salvaged manhole frame and cover.

EXISTING UNDERDRAINS

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

DRAINAGE STRUCTURE ELEVATIONS

Normal grade for all pavement inlets and catch basins is the normal gutter elevation at the intersection of the center of structure and the curb face. Normal grade for all ditch catch basins is the normal ditch elevation at the center of the structure.

UNINTERRUPTED FLOW

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

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

MODIFIED MANHOLE

The sanitary sewer manholes at Sta. 20+05 ℄ Richmond Road - 140' Lt., Sta. 22+86 ℄ Richmond - 22' Lt., Sta. 24+07 ℄ Richmond - 22' Lt., Sta. 26+07 ℄ Richmond - 22' Lt., shall be built in accordance with Standard Construction Drawing "I-8 Manhole No. 2" except that No. 4 reinforcing bars shall be placed at about mid-depth of the base slab and at 8 inch centers in each direction and a 17" wall thickness shall be provided for that portion of the manholes below 23' depth. The cost of this work shall be included in the unit price bid for "Item I-8, Standard No. 2 Manhole, Modified".

DRAINAGE

SANITARY SEWER CONNECTIONS

Extra quantities of 5-6" and 5-18" Pipe Specials and 100 L.F. of 6" Pipe are included in the General Summary (under Sanitary Sewers) to be used as directed by the Engineer. The Contractor shall not order these items until given notice by the Engineer.

TEMPORARY CULVERTS

Payment for construction, maintenance, and subsequent removal of temporary culverts or extension of the existing culverts required for construction of the Temporary Run-Around shall be included in the lump sum price bid for the Item S-15, Temporary Run-Around.

PLASTERING SANITARY MANHOLES

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

ITEM I-1 CLASS I-3 PIPE UNDERDRAINS

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

MADE E.C.E. DATE 4-10-64 TRACED DATE
CHECKED D.W.K. DATE 4-13-64 SCALE

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KANSAS CITY CLEVELAND NEW YORK

The waterlines within the area of this project are owned by the City of Warrensville Heights. The City of Cleveland will supervise waterline construction.

WATERWORK NOTES

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GENERAL

SCOPE OF WORK

The work contemplated under this contract comprises the furnishing and installing of 12" cast iron and ductile iron pipe south of Emery Road from 1572.75 feet east of Merrygold Blvd. to 216.65 feet east of Richmond Road, the furnishing and installing of 12" cast iron and ductile iron pipe west of Richmond Road from 1504.49 feet north of Emery Road to 255.51 feet south of Emery Road, the relocation and reconnection of service connections, the removal of existing valves, pipe and hydrants, and the furnishing and installing of various hydrants, valves and appurtenances all as indicated on the contract drawings.

The Contractor shall do all the work and furnish all the labor and material necessary for the final completion of this contract in the manner and under the conditions herein specified and provided and in accordance with the contract drawings. In the case of any item not specifically mentioned in the "Waterwork Notes", the State of Ohio Department of Highways "Construction and Material Specifications - Jan. 1, 1963" shall govern.

DEFINITIONS

Whenever in these specifications or in any documents or instructions in construction where these specifications govern, the following terms are used, (or pronouns in place of them). The intent and meaning shall be interpreted as follows:

THE STATE

The State is the State of Ohio acting through its authorized representative.

ENGINEER

The Engineer is Division Deputy Director or Division Engineer, the Division Construction Engineer or the Division Maintenance Engineer, the Project Engineer assigned to administer the contract, or their duly designated deputies, agents, or representatives.

THE CITY, OR THE CITY OF CLEVELAND

The City, or the City of Cleveland, is the Director, Department of Public Utilities, of the City of Cleveland.

STATUS OF CITY INSPECTOR

Inspectors as designated by the Director of Public Utilities shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the waterworks, and to the preparation or manufacture of the materials to be used in the waterworks. The city inspector as designated by the Director of Public Utilities shall make work instructions through the Project Engineer.

ACCESS TO WORK AND PLACE OF MANUFACTURE

The Contractor shall notify the Engineer and Director of Public Utilities, at least seven (7) days previous to the commencement of the manufacture of any materials, of the time and place where the manufacture is to commence, in order that a representative of the Engineer and Director may be present to inspect the manufacture. The Contractor shall provide, without charge or expense to the State and City, all necessary assistance to the Engineer and Director when required for inspection or verification of work done.

DIMENSIONS, DETAILED DRAWINGS AND ELEVATIONS

(A) - Figured dimensions on drawings shall take precedence over measurements by scale, and detailed drawings are to take precedence over general drawings and shall be considered as explanatory of them and not as indicating extra work. If, however, any of the detailed drawings show more elaborate or expensive work than is specified and indicated by the contract drawings, notice thereof must be given to the Engineer by the Contractor within ten (10) days after the receipt of such detailed drawings in order that the drawings may be amended or the additional expense on account of such work may be adjusted and authorized. If the Engineer does not receive such notice from the Contractor within ten (10) days after detailed drawings have been received by him, it is hereby agreed that the Contractor accepts the drawings and will execute them without claim for extra compensation.

FLOODS AND FREEZING WEATHER

Proper facilities shall be provided for protecting the work from damage by flood, rain or frost, and work done in freezing weather shall be done in such manner as the Engineer may approve. Valves shall be protected from freezing until backfilled in the completed work.

ADDITIONAL WORK

(A) - Attention is called to the fact that the work of this contract includes certain performances as incidental to the itemized requirements hereof, though not exclusive as follows: To perform all excavation, backfilling, sheeting, shoring, temporary and final repaving and to test the installation. Sand backfill shall be placed under existing and proposed pavement. For the performances herein described and for other incidental performances of like nature, the State will make no specific or separate payment or allowance, but the cost thereof shall be included in the prices stipulated to be paid for the various items of the work to be done under this contract.

(B) - Preliminary flushing: Before being placed in service all dirt and foreign matter shall be removed from the new water main or extensions to existing mains by a thorough flushing through the hydrants or by other approved means. Each valved section of newly laid pipe shall be flushed independently. This shall be done after the pressure test and may be done before or after the trench shall have been backfilled.

(C) - Chlorination: Following the preliminary flushing, the newly laid water pipe shall be chlorinated. The process of chlorinating, the method of procedure, the chlorinating agent, and the rate of application shall be determined by the Engineer. The City of Cleveland will furnish the necessary labor and material required for such chlorination and install the necessary taps at the ends of the water main sections to be chlorinated. The Contractor shall pay for chlorination or sampling of the water at the rate of ten cents (10¢) per linear foot for the first thousand feet, and five cents (5¢) per foot thereafter of the water main proper, with a minimum charge of one hundred dollars ($100.00). The Contractor shall furnish the necessary labor for excavating and backfilling which will be required for the installation of taps for injecting the chlorine solution, operating pumps and flushing mains. In cases where the water main installation does not exceed 350 feet in length, the Contractor shall pay a minimum charge of thirty-five dollars ($35.00) for flushing and sampling water.

(D) - Final flushing and test: Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremities until the replacement water throughout its length shall, upon test, both chemically and bacteriologically, be proven equal to the water quality served the public from the existing water supply system.

(E) - For the performances described in paragraphs B, C and D, the State will make no specific or separate payment or allowances, but the cost thereof shall be included in the prices stipulated to be paid for each linear foot of pipe furnished and installed.

MAINTENANCE OF SERVICE AND CONNECTING RELOCATED MAINS

The Contractor shall follow strictly the sequence of construction shown on the plans. All existing fire hydrant leads and house services shall be hand tunneled using special care to avoid any damage which might require shutting down the existing main until the new main is ready to be placed in service.

When the new mains have been tested and chlorinated and are ready to be connected to the old main, the Contractor shall make such connections at a time designated by the City. Prior to shutting down the existing mains, the Contractor shall take suitable precautions to assure a minimum interruption to service, including the following:

1. Perform all necessary excavation, including bell holes exposing the existing main sufficiently for the operation of the pipe saw by the City.
2. Remove the cap or plug from the end of the new main.
3. Swab the inside of all pipes, bends and sleeves to be used in connection thoroughly with a chlorine solution of at least 100 p.p.m.
4. Make-up as much of the connection as possible outside the ditch to eliminate the need for caulking most of the necessary joints during the shutdown. By careful measurement all pipe cuts can be made by the Contractor prior to shutting down.
5. Have sufficient manpower and equipment on the site to perform the operation in a minimum of time.

PAINTING

(A) - It is the intention of these specifications to provide that all metal work subject to corrosion shall be satisfactorily protected by a durable coating of paint or other approved material and that all metal surfaces not buried in earth, or in concrete, shall be left clean and well painted at the completion of the contract. Unless otherwise specified, the protection shall be at least that given by three (3) coats of approved paint. The first coat is to be applied at the shop before the metal has rusted and after all grease, dirt and scale has been removed. Bolts and nuts shall not be shop coated, but shall receive three (3) coats of approved paint after installation.

(B) - All metal work which has not been coated before the arrival on the job shall be given a temporary protective coating of such a nature as to permit the ready adherence of future coatings. The temporary coating shall be a good grade asphaltic paint or other approved material. This temporary protection shall apply particularly to the valve boxes and covers, and elsewhere when in the opinion of the Engineer, such protection is necessary.

(C) - All surfaces of metal which will be in contact after assembling shall be painted, at least one coat, before assembling. The final coat of paint on all exposed work shall be given shortly before the completion of the contract.

(D) - Where painting clauses appear hereinafter, they shall take precedence over this section, except that temporary protection herein described may be required.

TESTS, INSPECTION AND REPORTS

Notwithstanding the requirements of any other provisions of these specifications, the Contractor shall arrange for and pay all costs involved for shop inspection of all materials furnished, manufacture of all pipe, valves, fittings, etc., field and shop welds and welding, and furnish to the State and the City of Cleveland copies of all shop, fabrication, manufacture and other related inspection reports of materials furnished. This inspection shall be done by a recognized inspection laboratory approved by the City of Cleveland.

HANDLING PIPE AND ACCESSORIES

(A) - Unloading: Cast iron pipe, fittings, valves, hydrants, and other accessories shall, unless otherwise directed, be unloaded at the point of delivery, hauled to and distributed at the site of the project by the Contractor. They shall at all times be handled with care to avoid damage. In loading and unloading they shall be lifted by hoists or slid, or rolled on skidways in such manner as to avoid shock. Under no circumstances shall they be dropped. Pipe handled on skidways must not be skidded or rolled against pipe already on the ground.

(B) - At site of work: In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench.

(C) - Protection of pipe coating: Pipe shall be handled in such manner that a minimum amount of damage to the coating will result. Any cast iron pipe or fitting, the coat of which has been damaged in shipping or handling, shall have the damaged portion well cleaned and covered with an asphalt paint, approved by the Engineer, before being placed in the work. The Contractor shall thoroughly coat all exposed parts of bolts and nuts with an approved asphalt paint, after all pipe has been laid and before backfilling has been placed. All field coating shall be furnished by the Contractor.

(D) - Pipe kept clean: The interior of the pipe, fittings, and other accessories shall be kept free from dirt and foreign matter at all times.

(E) - Frost protection: Valves and hydrants before installation shall be drained and stored in a manner that will protect them from damage by freezing.

CHANGES IN WATER PIPES

(A) - Wherever it becomes necessary in the opinion of the Engineer to change the location of house connections, such changes will be made as work to be done by the City. The Contractor shall notify the City in ample time to permit the City to make such changes and avoid unnecessary delay in the completion of the work. The Contractor shall also cooperate with the City in making these changes and shall do all excavating, backfilling and repaving as may be required. The City will furnish the piping material for and make all changes required, including tapping, in the location of existing house service connections and meters. The City will charge the Contractor for materials and labor furnished in making these service connections and alterations and costs thereof shall be included in the unit price bid for "Service Connections" or "Water Meters Relocated".

(B) - Wherever it becomes necessary, in the opinion of the Engineer, to change the location or elevation of water mains and hydrants, and where connections are to be made between existing distribution mains and water mains under this contract, the Contractor shall remove and dispose of all existing water line materials required to make the connection, and shall furnish and install complete, all the cast iron or ductile iron pipe, fittings and valves to make the connections indicated. The Contractor shall also furnish all necessary labor, materials, tools and equipment and make the excavation, backfill and repaving for such connections. Payment for this will be included in price bid under appropriate item for size of water main or connection to be installed. All pipes, valves, hydrants and appurtenances removed shall become the property of the Contractor.

APPROVED
ONLY FOR GENERAL DESIGN
TERMS OF CONTRACT AND SPECIFICATIONS
C. E. DeMuth, Director of Public Utilities
by William J. Lhotsky DESIGN
4/28/64

APPROVED
Harold Ford
COMMISSIONER UTILITIES ENGINEERING
Ofer Earl J. Ford
DATE Apr. 28 1964

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR EMERY AND RICHMOND RDS IN WARRENSVILLE HEIGHTS, OHIO.

MADE E.C.E. DATE 3-2-64 TRACED DATE
CHECKED DWK DATE 4-10-64 SCALE

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

WATERWORK NOTES

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(C) - In locations shown on the plans the Contractor will be required to sleeve-in to the existing mains. To speed up this operation, it is called to the Contractor's attention that the Water Department has on hand at Harvard Yards motor operated pipe cutters which are available for cutting pipe by city forces at the following rates. The prices include cost of labor, use of pipe cutting machine, and truck. The Contractor shall do all necessary excavation, backfilling and repaving and all air compressor equipment shall be furnished by the Contractor.

Size of Pipe	Cost Per Cut
12"	30.00

EXCAVATION

(A) - The Contractor shall remove all existing structures, roadways, driveways and other similar materials and make to the lines and grades given, all excavation necessary for the proper construction of the water main, pipe connections and appurtenant structures, including tunnel and shaft excavation. The excavation shall include the removal, handling, rehandling and disposal of materials encountered in the work and shall include all pumping, bailing, draining, sheeting and bracing. Moreover, the Contractor must assume all responsibility for any added expense or other liability which may arise by means of quicksand, obstacles or conditions foreseen or unforeseen and encountered in the work of this contract.

(B) - Trenches shall in every case be of sufficient width to permit solid packing of refill under and around pipes, and satisfactory construction of all appurtenances and for such sheeting and shoring, pumping and draining as may be necessary.

(C) - The trench shall be dug to the alignment and depth required and only so far in advance of pipe laying as the Engineer shall permit. The trench shall be so braced and drained that workmen may work therein safely and efficiently. It is essential that the discharge from pumps be led to natural drainage channels, to drains, or to sewers.

(D) - The trench width may vary with and depend upon the depth of trench and the nature of the excavated material encountered, but in any case shall be of ample width to permit the pipe to be laid and jointed properly and of the backfill to be placed and compacted properly. The minimum width of unsheeted trench shall be eighteen (18) inches and for pipe ten (10) inches or larger, at least twelve (12) inches larger than the outside diameter of the pipe for concrete pipe and eighteen (18) inches larger than the outside diameter of the pipe for cast iron and steel pipe, except by consent of the Engineer, The maximum clear width of trench shall be not more than two (2) feet greater than the outside pipe diameter. When sheeting and bracing is used, the trench width shall be increased accordingly.

(E) - The trench, unless otherwise specified, shall have a flat bottom conforming to the grade to which the pipe is to be laid. The pipe shall be laid upon sound soil cut true and even, so that the barrel of the pipe will have a bearing for its full length.

(F) - Any part of the trench excavated below grade shall be corrected with approved material, thoroughly compacted.

(G) - When the uncovered trench bottom at subgrade is soft and in the opinion of the Engineer cannot support the pipe, a further depth and/or width shall be excavated and refilled to pipe foundation grade as required under (F), or other approved means shall be adopted to assure a firm foundation for the pipe.

(H) - Ledge rock, boulders, large stones, and shale shall be removed to provide a clearance of at least six (6) inches below all parts of the pipe, valves, or fittings, and to a clear width of six (6) inches on each side of all concrete pipe and nine (9) inches on each side of all cast iron and steel pipe shall be provided.

(I) - Excavation below subgrade in rock, shale or in boulders shall be refilled to subgrade with approved material, thoroughly compacted.

(J) - Bell holes of ample dimensions shall be dug in earth trenches at each joint to permit the jointing to be made properly. Adequate clearance for properly jointing pipe laid in rock shall be provided at bell holes.

(K) - The use of excavating machinery will be permitted except in places where operation of same will cause damage to trees, buildings, or existing structures above or below ground, in which case hand methods shall be employed.

(L) - Trees, fences, poles and all other property shall be protected unless their removal is authorized. Any property damaged shall be satisfactorily restored by the Contractor.

(M) - Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire or police call boxes, or other utility controls shall be left unobstructed and accessible during the construction period.

(N) - The Contractor shall maintain all excavations in good order during the construction, so as not to hinder or injure the pipe laying, masonry or other work. He shall take all reasonable precautions to prevent movement of the sides of such excavation, and shall remove at his own expense any material sliding into the excavation.

SHEETING AND BRACING

(A) - The Contractor shall furnish and put in place such sheeting and bracing as may be required to support the sides of trenches or other excavation and shall remove such sheetings and bracings, as the trench or excavation is filled up, unless the Engineer shall order it left in place, in which case the Contractor shall cut the plank off at a height as ordered by the Engineer, or as called for on the contract drawings. That portion of the timber ordered to be left in place will be paid for at the rate of eighty dollars ($80.00) per thousand feet board measure. No payment will be made for wasted ends.

(B) - Whenever the excavations for the work herein to be done are immediately adjacent to other subsurface structures, the Contractor shall furnish and place sheeting and bracing where noted on contract drawings and as may be necessary so as to reduce to a minimum the possibility of injuring or damaging the same.

(C) - If the Engineer is of the opinion that at any point sufficient or proper supports, sheeting, or bracings have not been provided, he may order additional supports, sheeting or bracing, at the expense of the Contractor, and the compliance with such orders by the Contractor shall not relieve or release him from his responsibility for sufficiency of such supports.

REMOVAL OF EXCAVATED MATERIAL

This item shall be as specified in section E-1.06 of the State Highway Specifications.

LAYING PIPE

(A) - Proper implements, tools, and facilities, satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work. All pipe, fittings, and valves shall be carefully lowered into the trench piece by piece by means of derrick, proper slings, and other suitable tools or equipment, in such manner as to prevent damage to pipe or coating, under no circumstances shall pipe or accessories be dropped or dumped into the trench. If any defective piece be discovered while pipe is suspended or after being laid, a new piece shall be furnished and installed by the Contractor at the site of the work.

(B) - All foreign matter or dirt shall be removed from the inside of the pipe before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying.

(C) - At times when pipe laying is not in progress, the open ends of pipe shall be closed by approved means, and no trench water shall be permitted to enter the pipe. No pipe shall be laid in water, or when the trench conditions or the weather is unsuitable for such work, except by permission of the Engineer.

(D) - Wherever necessary to deflect pipe from a straight line, either in the vertical or horizontal plane to avoid obstructions, to plumb stems, or for other reasons, the degree of deflection shall be approved by the Engineer.

(E) - Before laying cast iron or ductile iron pipe, all lumps, blisters and excess coal tar coating shall be removed from the bell and spigot ends of each pipe, the pipe ends shall then be kept clean until joints are made.

FLOATING

The Contractor shall take every precaution against the floating of the pipe due to water coming into the trench, or through caving in, flushing or puddling. In case of such floating the Contractor shall replace the pipe at his own expense, and make wholly good any injury or damage which may have resulted.

TESTING MAINS

(A) - All pipes, valves, fittings, etc., shall be laid in such a manner as to leave all joints watertight. After the pipe is laid, and before backfilling is placed around the joints, such lengths of the water main as the Engineer may determine, shall be tested under a hydrostatic pressure of seventy-five (75) pounds per square inch above the static pressure, but nowhere less than 100 pounds per square inch.

(B) - The test shall be under the direction of the Engineer and Director of Public Utilities or his designate. The Contractor may obtain water for testing by observing the rules and regulations enforced in the municipalities or townships in which the work is being done. The City will furnish a pressure gage for measuring the pressure on the water main, but the Contractor shall furnish a suitable pump, pipes, test heads and all appliances , labor, fuel and other appurtenances necessary to make these tests.

(C) - The test pressure shall be maintained for a sufficient length of time to allow for a thorough examination of joints and elimination of leakage where necessary. The pipe lines shall be made absolutely tight under the test pressure.

(D) - After a section of the water main has been tested, the Contractor shall drain same.

(E) - In cold weather immediately after testing a section of the water main, the Contractor is to open all valves, air cocks, by-passes and drains and properly drain bonnets of all valves in the section of the water main, and take all other precautions necessary to prevent injury to water main and appurtenances due to freezing.

CLOSING VALVES

The closing of all gate valves on existing mains for making connections, tests, or for any other cause, shall be done by the City of Cleveland and sufficient notice shall be given to the City, by the Contractor, so that the work may be done with a minimum of inconvenience to the public and delay to the Contractor.

PLUGGING DEAD ENDS

Standard plugs with clamps shall be inserted into the bells of all dead ends of pipes, tees, or crosses, and spigot ends capped and clamped by the Contractors, on all mains constructed by him. Concrete piers shall be placed when called for on the contract drawings, or ordered by the Engineer. The cost of furnishing the plugs shall be included in the per linear foot price bid for the various sizes of new water mains.

BACKFILLING

(A) - This work includes all backfilling, together with ramming, puddling, and rolling, as required, The regrading of grounds, The replacing of surface and subsurface structures, The placing and maintaining of temporary sidewalks, and driveways, The furnishing of suitable material for backfill, reseeding lawns and replacing trees and shrubbery damaged by the Contractor, and all appurtenant work incidental thereto. Pavements, curbs, sidewalk and driveways within the limits of the work shall be temporarily surfaced, maintained and finally replaced or repaved as set forth under roads, surfaces, sidewalks driveways and curbing.

(B) - Backfill, unless otherwise specified, may be made with material excavated from the trenches, providing same is satisfactory to the Engineer. If, in the opinion of the Engineer, the material excavated is unsatisfactory, then the Contractor shall furnish at his own expense other material suitable for backfill. All backfill shall be free from slag, cinders, rubbish and other objectionable material.

(C) - Before laying the pipe, the bottom of the trench shall be brought to the grade of the bottom of the pipe, except of field joints. Wherever the bottom of the trench has been excavated below the bottom of the pipe, the Contractor shall place sand, or other material satisfactory to the Engineer to bring the bottom of the trench to the grade of the bottom of the pipe. This bed shall be thoroughly tamped before the pipe is laid.

(D) - Unless otherwise specified, the backfill under, around and to a depth of one (1) foot above the top of all pipe, shall be made with material satisfactory to the Engineer, which material shall be free from stone and other objectionable material noted above. The Contractor must use special care in placing this portion of the backfill, so as to avoid injuring, distorting or moving the pipe when compacting same. Above this level the backfill shall be made with material satisfactory to the Engineer. However, where specified, sand shall be used for the entire portion of the backfill. See below.

(E) - Backfilling as noted in paragraph (D) shall be tamped in thin layers, simultaneously on each side of the pipe, and thoroughly compacted so as to provide a solid backing against the external surface of the pipe.

(F) - Only after the backfill previously mentioned has been satisfactorily compacted, may work proceed in placing the remaining backfill which must be carefully placed and compacted by tamping, puddling, or rolling. All precautions must be taken to eliminate future settlement. The number of men tamping shall be not less than the number backfilling, and additional men shall be kept in the trench to spread the material

(G) - Backfilling shall not be done in freezing weather, except by permission of the Engineer, and it shall not be made with frozen material, nor shall any fill be made where the material already in the ditch is frozen.

(H) - The entire backfill shall be made with sand where permanent pavements, curbs, driveways, or sidewalks, have been opened for or undercut by the excavation.

APPROVED

APPROVED FOR GENERAL DESIGN
TERMS OF CONTRACT AND SPECIFICATIONS
Director of Public Utilities
OF DESIGN
4/22/64

APPROVED
Arnold Tankel
COMMISSIONER (UTILITIES) ENGINEERING
for Edw. J. Vetter
DATE April 24, 1964

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR EMERY, AND RICHMOND RDS. IN WARRENSVILLE HEIGHTS, OHIO.

MADE E.C.E. DATE 3-2-64 TRACED DATE
CHECKED DWK DATE 4-10-64 SCALE

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

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(I) - All sand to be used for backfill shall be a natural bank sand, graded from fine to coarse, not lumpy or frozen, and free from slag, cinders, ashes, rubbish, or other deleterious or objectionable material. It shall not contain a total of more than 10 per cent by weight of loam and clay, and all material must be capable of being passed through a ¼ inch sieve. Not more than 5 per cent shall remain on a No. 4 sieve.

ROAD SURFACES, SIDEWALKS, DRIVEWAYS, AND CURBING

(A) - The Contractor shall remove all pavements and road surfaces within the lanes of excavation. After the pipe has been laid, all appurtenant work constructed and backfill completed, he shall furnish, place and maintain, wherever the pavement or road surface has been removed or damaged by him, a temporary pavement in the paved portion of streets, or a temporary road surface in the unpaved portion of streets, so as to provide a safe and passable roadway until such time as the final pavement or road surface is completed.

(B) - All pavements, road surfaces, sidewalks, driveways, or curbs, which the Contractor is required to replace or to have replaced, shall, at the expiration of this contract, be in at least as goodcondition as at the time of awarding the contract.

(C) - Tunneling will not be permitted without permission of the Engineer. In backfilling tunnels, sand shall be used as far as possible and balance of backfilling made with Class E concrete, rammed in place.

(D) - No specific or separate payment will be made for all of this work, but the cost thereof shall be included in the prices bid for the various items of the work to be done under this contract. Restoration as noted above will only be required in areas where the plans do not otherwise propose new construction of pavement, sidewalks, and curbs, except that temporary restoration in such areas may be required by the Engineer in order to maintain traffic or local access.

LIST AND INVOICES

(A) - The Contractor shall furnish the Engineer with the list in duplicate of pieces in each shipment of pipe and specials, giving the serial number and designation of each pipe and special sent at that time.

(B) - The material shall be shipped in such sections as the Engineer may order.

CAST IRON AND DUCTILE IRON PIPE AND FITTINGS

WORK INCLUDED

The Contractor shall furnish, all the materials for and shall property construct and connect in place, at the locations shown on the drawings or as directed, all cast iron or ductile iron pipe and fittings, including all excavation work, the cutting into and removal of existing pipe, backfilling, sand backfill, and repaving, all as required for the proper completion of the work included under this contract.

CAST IRON PIPE AND FITTINGS

(A) - All pit cast pipe shall be manufactured in all respects in accordance with, and shall meet the requirements of the latest "Standard Specifications for Cast Iron Pipe and Special Fittings" as adopted by the American Water Works Association which specifications except as herein modified are made a part of these specifications.

(B) - All pit cast pipe and fittings shall be cement lined and of the size and classes noted on the respective contract drawings.

(C) - In lieu of pit cast pipe above the Contractor will be permitted to furnish either centrifugal or high strength cement lined pipe. The metal shall have a modulus of rupture of not less than 40,000 pounds and a tensile strength of not less than 18,000 pounds and shall be for class noted on the contract drawings. Pipe may be furnished in 12, 16, or 18 foot lengths. The centrifugally cast pipe shall conform to the American Standard Specification A21.6-1952 and all subsequent amendments thereto.

When noted on the contract drawings ductile iron pipe shall be supplied. All ductile iron pipe shall be manufactured in accordance with A.S.A. A21.6 or federal specification WWP-421B. All ductile iron fittings shall be manufactured in accordance with A.S.A. A21.10 or AWWA C 100-08. Ductile iron shall have a minimum of 60,000 psi. Ultimate tensile strength, 40,000 psi yield point and 10% elongation. The chemical analysis shall be as follows: Carbon 3% minimum, Phosphorus .08% maximum and Silicon 2.75% maximum.

(1) - The thickness of the centrifugally cast iron pipe shall conform to the following table:

STANDARD THICKNESS OF CENTRIFUGALLY CAST IRON PIPE AND DUCTILE IRON PIPE

SIZE	WORKING PRESSURE	STANDARD THICKNESS	CLASS
6"	250	.48	25
12"	200	.56	24
12"	250	.60	25

(2) - All fittings, such as bends, tees, crosses, offsets, hydrant branches, etc., shall have bell and bell or bell and spigot ends with cast lead joints, pipe between offsets or bends and on hydrant branches, shall also be of bell and spigot type with lead joints.

(D) - All pipe shall have bell and spigot ends for cast lead joints or a slip-on type joint with compressed rubber ring inserts. All pipe and fittings shall be cement lined.

(E) - Gaskets shall be of rubber or other equally effective protection against uneven distortion of the gasket.

(F) - Where fittings are shown which are not covered by the above specifications, they in such particulars as are lacking thereon, shall conform to the dimensions and otherwise meet the specifications for the respective type which are carried in the latest revisions to the current edition of the "Handbook of Cast Iron Pipe" by the Cast Iron Pipe Research Association or which are otherwise shown on the contract drawings.

(G) - Wherever changes in line and grades of the main as shown on the drawings are not standard fitting deflections, the Contractor will be permitted to submit details using combinations of standard fittings and small deflections (not to exceed a maximum of one half (½) inch joint opening) in the adjoining lengths of pipe.

(H) - Plugs for bell and spigot pipe and caps for lugged pipe shall be furnished with two (2) plugged two (2") inch taps for drain and air cock connections.

(I) - Closure pieces shall be accurately measured and cut in the field and installed using solid type pattern sleeves as shown or as required.

(J) - Tests, inspection, reports and analyses of tests of samples for all materials shall be furnished as set forth elsewhere in these notes.

(K) - Bitumastic coating shall be applied on the exterior of all cast iron pipe and fittings in accordance with AWWA specifications.

CEMENT LINING

All cast iron or ductile iron pipe and fittings shall be given a cement mortar lining at the point or manufacture. The lining shall conform to the American Standard Specification A 21.4-1952 and all subsequent amendments thereto.

MARKING

All cast iron or ductile iron pipe and fittings shall be suitably marked to denote the manufacturer, class, date, weight and other elements of identification.

LAYING

(A) - Proper and suitable tools and appliances for the safe and convenient handling and laying of the pipes and fittings shall be used. Great care shall be taken to prevent the pipe coating from being damaged, particularly on the inside of pipes and fittings and any such damage shall be remedied as directed. All pipes and fittings shall be carefully examined by the Contractor for defects just before laying and no pipe or fitting shall be laid which is known to be defective.

(B) - If any defective pipe is discovered after having been laid, it shall be removed and replaced with a sound pipe or fitting in a satisfactory manner, by the Contractor at his own expense. All pipes and fittings shall be thoroughly cleaned before they are laid, shall be kept clean until they are used in the completed work, and, when laid, shall conform to the lines and grades given by the Engineer. Open ends of pipes shall be kept plugged with a bulkhead during construction. In no event shall any portion of the damaged pipe be permitted to remain in the line. Any approval stamps found on the pipe shall be removed or the pipe broken up for scrap.

(C) - Pipe laid in trench shall be laid to a firm and even bearing for its full length. Precautions shall be taken against floating.

(D) - It is the intention of these specifications to secure first class workmanship in the placing of pipe and accessories. In such details as are not specifically mentioned herein or called for on the drawings, the Contractor will be required to conform with the applicable sections of the latest "Standard Specifications for Laying Cast Iron Pipe" as adopted by the American Water Works Association.

CUTTING PIPE

Whenever the pipes require cutting to fit into the lines, the work shall be done in a satisfactory manner so as to leave a smooth end at right angles to the axis of the pipe. In no event shall flame cutting be used. When a piece of pipe is cut to fit into the line, no payment will be made for the portion cut off and not used in the line.

JOINTS

(A) - Lead joints: In jointing all bell and spigot pipe and fittings having lead joints, the spigot of each pipe shall be properly seated in the bell of the next adjacent piece and adjusted so as to give a uniform annular space. The joint shall be made with twisted hard jute and soft pig lead. Before placing the jute, it shall be sterilized either by boiling or by dipping in a concentrated solution of "HTH". The jute shall be twisted and thoroughly driven into the bell, so that the lead, after having been caulked, shall have a depth of 2½ inches.

The furnace and melting pot shall be kept near the joint to be poured and each joint shall be made with one pouring. Dross shall not be allowed to accumulate in the melting pot. The joints shall be thoroughly caulked by competent pipe joiners and in such manner as will secure a tight joint without overstraining the iron of the bell.

PAINTING

After erection, all exposed or damaged coatings and all bolts for lugged joints shall be cleaned and painted with three (3) field coats of Inertol 50 or Bitumastic 50 or equivalent.

DRAWINGS

(A) - The Contractor shall submit to the Engineer for approval duplicate prints of all shop drawings for pit cast iron pipe and fittings and miscellaneous details which are not standard construction, and are not mentioned in the regular catalogue of the company furnishing the pipe. No work shall be done in the shop until after the drawings have been approved.

(B) - The approval of the drawings by the Engineer shall not relieve the Contractor of any of his obligations in connection with this contract.

MEASUREMENT

The number of lineal feet of cast iron pipe and ductile iron pipe line and connections to be paid for shall be the actual number of lineal feet furnished and placed in accordance with these specifications as measured along the axis of the piping including fittings and valves connected up in place. For connections between new and existing mains, measurement shall be the distance from centerline to centerline of mains and the actual length of existing main ordered to be removed to make the connection.

FURNISHING AND SETTING 6" HYDRANTS

WORK INCLUDED

The Contractor shall furnish all hydrants, caulking material, labor, tools and equipment for and shall properly connect at the location shown on the Contract Drawings, 6" hydrants, complete, as required for the proper completion of the work included under this contract.

HYDRANTS

The 6" hydrants shall be City of Cleveland Standard and shall conform to the City's specifications on file in Room 624 Lincoln Building, Cleveland 14, Ohio.

SETTING

(A) - General Location: Hydrant shall be located in a manner to provide complete accessibility, and in such manner that the possibility of damage from vehicles or injury to pedestrians will be minimized. Unless otherwise directed, the setting of any hydrant shall conform to the following:

(B) - Location Regarding Curb Lines: When placed behind curb the hydrant barrel shall be set so that center of barrel will be no less than 3 feet from the gutter face of the curb, or deviate from location indicated on contract drawings, except by consent of the Engineer.

(C) - Location Regarding Sidewalk: When set in the lawn space between the curb and the sidewalk, or between the sidewalk and the property line, no portion of the hydrant or nozzle cap shall be within 6 inches of the sidewalk.

FIRE HYDRANTS RELOCATED

WORK INCLUDED

The Contractor shall remove the hydrants and properly set in place and connect at the locations shown on the drawings or as directed by the Engineer. This shall include all excavating, backfilling, seeding and sodding, and repaving required for the proper completion of the work included under this contract.

MATERIALS

All hydrants to be relocated must be in good condition. All other materials and appurtenances necessary for the proper completion of this Item shall be of the kind and grade called for in these notes for the particular kind of construction in which the materials are to be used.

CONSTRUCTION METHODS

The construction methods shall conform to the requirements of the Item "6" Hydrants" as set forth elsewhere in these notes.

APPROVED
Arnold Tenbel
COMMISSIONER UTILITIES ENGINEERING
Per Edw. J Vetter
4/28/1964

APPROVED
ONLY FOR GENERAL DESIGN DATE 4/28/1964
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
V. M. DeMELTO, Director of Public Utilities
By Milton Johnson 4-28-64

MADE E.C.E. DATE 3-2-64 TRACED ____ DATE ____
CHECKED DWK DATE 4-10-64 SCALE ____

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

3RD HIGH SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR EMERY, AND RICHMOND RDS IN WARRENSVILLE HEIGHTS, OHIO.

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(D) - Position of Nozzles: The hydrant shall stand plumb, with the nozzles pointing toward the road and at an angle of forty-five degrees therefrom. Where hydrant branch piping is parallel with, or not at right-angles to the curb, the Contractor shall release swivel head bolts and adjust the hydrant nozzles to face the road at the proper angle. A hydrant without swivel heads will be adjusted by the City where necessary to correct the angle on nozzles. The elevation shall conform to the established grade with tops of frost casing at least four (4) inches above grade.

(E) - Connection to Main: The hydrant shall be connected to the main pipe with a cast iron branch controlled by the independent gate valve of the same size as hydrant, except as otherwise directed.

(F) - Drainage at Hydrant: Drainage shall be provided at the base of the hydrant by filling around the elbow with coarse gravel or crushed stone to at least six (6) inches above the waste opening. Wherever a hydrant is set in rock, clay or other impervious soil, the trench shall be widened and deepened on each side of the hydrant base, which space shall be filled compactly with coarse gravel or broken stone mixed with coarse sand of sufficient quantity to absorb all water to be drained from the hydrant when the valve is closed.

(G) - Anchorage for Hydrant: The hydrant shall be set on a stone slab or similar foundation and base of hydrant and hydrant tee well braced against unexcavated earth at the end of the trench with concrete backing, or it shall be tied to the pipe with suitable rods or clamps as directed by the Engineer.

(H) - Cleaning: The hydrant shall be thoroughly cleaned of dirt or foreign matter before setting.

2-INCH GALVANIZED WROUGHT IRON AND BRASS PIPE FOR FLUSHING CONNECTIONS

WORK INCLUDED

The Contractor shall furnish all the materials for and shall properly connect in place at the locations shown on the drawings or as ordered, all 2-inch extra strong brass pipe and fittings, and all 2-inch extra heavy galvanized wrought iron pipe and fittings respectively, which are necessary for the proper completion of the work included under this contract.

BRASS PIPE AND FITTINGS

All brass pipe and fittings shall be extra strong, 2-inch pipe size and the pipe shall conform to A.S.T.M. Specifications B 43-42. Fittings shall be extra strong weight and shall have sound, well fitting threads.

GALVANIZED WROUGHT IRON PIPE AND FITTINGS

All galvanized wrought iron pipe, nipples and fittings shall be extra heavy genuine wrought iron pipe A.S.T.M. Designation A 72-59 T. The fittings shall be beaded, of malleable iron, extra heavy weight. All pipe and fittings shall be hot galvanized inside and outside, and shall have sound, well-fitting threads.

ERECTION

All pipe shall be carefully placed to the proper lines and grades, and shall be connected up, unless otherwise shown, with screw fittings. Screw joints shall be made tight with a graphite paste and screwed home. A liberal number of unions shall be used, to permit the ready removal of any section.

VALVES

WORK INCLUDED

The Contractor shall furnish all the materials for and shall properly set in place and connect at the locations shown on the drawings, or as directed, all gate valves of the various sizes and types specified or ordered, all as required for the proper completion of the work included under this contract.

GATE VALVES

(A) - Type of Valves: The gate valves shall be manufactured in full compliance with the Standard Specifications for Gate Valves for Ordinary Water Works Service of the American Water Works Association A.W.W.A. C 500-52 T or latest revision thereof, and, in addition, shall comply with the following supplementary requirements. All gate valves 16 inches and under in size shall be double disc parallel or tapered seat bottom wedge or side wedge type.

(B) - Valves with Stationary Stems: All gate valves, unless otherwise ordered, shall be made with single, non-rising stems.

(C) - Hub Ends: The dimensions of the bells on valves up to and including 24 inches in diameter shall conform to those for Class D pressure fittings, as required by A.W.W.A. C 100.

(D) - Marking: All gate valves 3 inches and over shall have the identity of maker, size and the year when made, and also the letters "C.W.D." cast upon its body or dome in raised letters.

(E) - Stuffing Boxes: The stuffing box on each gate valve 3 inches or over, must be separate from the dome and fastened to it by bolts. For 2 inch valves and under, the stuffing boxes may be formed in the dome of the valve. When required by the Engineer, valves 16 inches and smaller shall be furnished with "O" ring type seal plate. The seal plate shall be fitted with at least two "O" rings, the lower "O" ring serving as the pressure seal and the upper "O" ring as a combined dirt and moisture seal. The "O" rings shall be Precision Rubber Corporation Quality Compound No. 122-70, or approved equal.

(F) - Seat and Gate Rings: Dimensions of the bronze seat and gate rings shall be proportioned to fit the test pressure required, and shall meet the approval of the Engineer. The rings shall be firmly secured in place by an approved device which will prevent them from working loose, particularly when the valve is left partly open. Dimensions of the bronze seat and gate rings for gate valves shall be not less than that specified in the following tables. Body seat rings shall be made of Grade One bronze. Gate seat rings shall be made of grade five bronze.

BODY AND GATE RINGS
BOTTOM WEDGE

VALVE SIZE	BODY RINGS FACE	BODY RINGS DEPTH	THICKNESS AT BASE OF THREADS	FACE THICKNESS	GATE RINGS FACE	GATE RINGS FACE THICKNESS	GATE RINGS DEPTH
6"	11/16	9/16	3/16	5/32	11/16	5/32	5/16
12"	7/8	5/8	7/32	7/32	1	5/32	11/32

SIDE WEDGE

6"	1/2	11/16	9/32	1/4	5/8	5/32	21/64
12"	5/8	13/16	3/8	5/16	13/16	5/32	21/64

DIMENSIONS IN INCHES

(G) - Valve Stem: All gate valves shall be of the single screw type. The stems shall be of Grade Three bronze. The threads of stems and stem nuts shall be of Acme, modified Acme, or one-half V type. If requested, a manufacturer's certificate of test shall be furnished with all bronze stems. All stem collars shall be cast integral with stems. The diameters of stems at the base of the thread shall not be less than those shown below. The stem opening and thrust-bearing recess shall be Grade One, bronze bushed. The number of threads per inch shall be as given below.

SIZE OF VALVE INCHES	DIAMETER OF STEM AT BASE OF THREAD - INCHES	NO. OF THREADS PER INCH
2	0.469	4
6	1.000	3
12	1.188	3

(H) - Wrench Caps: The wrench caps and retaining nuts on heads of valve stems and pinion shafts shall be of Grade Three bronze. On valves 4 inches to 20 inches inclusive, they shall be 1-$\frac{3}{4}$ inches square on top, 1-$\frac{7}{8}$ inches square at base, and 1-$\frac{3}{4}$ inches deep. On 3 inch valves and under, they shall be 1-$\frac{1}{4}$ inches square on top, 1-$\frac{3}{8}$ inches square at base, and 1-$\frac{1}{4}$ inches deep. Machined wrench caps for valves 3 inches to 48 inches inclusive shall be fitted to a machined square stem or pinion shaft and held in place by a retaining nut. Wrench caps shall have a cut-away skirt to permit easy access to gland belts.

(I) - Valves are to open clockwise, except 2 inch and under. All gate valves 3 inches and over shall be made to open by turning in a clockwise direction. Valves 2 inches and under shall be made to open by turning in a counter-clockwise direction. All valves are to be so made that they can be easily operated.

(J) - Facing of Gates: All discs or gates and threads for seat rings in the body shall be machined true and a groove or grooves shall be machined in each disc or gate for the reception of the face ring. The disc and seat rings shall be securely and rigidly attached to the discs or body seats in a manner approved by the Engineer, and the rings are to be finished to a true surface.

(K) - Bronze Parts: The stems, stem nuts, operating nuts, retaining nuts, disc and seat rings, shall be of solid bronze. Other parts, such as wedges, glands, thrust-bearings, and all other parts coming together in operation, shall be of bronze, or substantially lined with bronze or stainless steel of a thickness not less than $\frac{1}{4}$ of an inch and as shown on drawings submitted and approved. All 2" valves and under shall be made entirely of bronze, except hand-wheels, which shall be made of malleable iron.

(L) - Cast Iron Parts: The bodies, covers, disc frames, etc., of all gate valves 3 inches and over, shall be of cast iron.

MATERIAL SPECIFICATIONS

(A) - Strength of Valves: The gate valve shall be designed for 150 lb. working pressure and shall withstand an internally applied hydrostatic pressure at all points of at least 300 lbs. per square inch. A factor of safety of not less than 10 shall be used on the design. Should tests develop any weakness, the valves from that design shall be rejected and a new design made.

(B) - Reinforcement at Flanges: All valve flanges shall be reinforced by fillets in accordance with the manufacturer's practice proven satisfactory in actual service.

(C) - Joints: All joints of the valves shall be faced true in a lathe or planer, and put together with a gasket of some material acceptable to the Engineer.

(D) - Bolt Holes: All bolt holes shall be accurately drilled from templates and spaced equal distances apart.

(E) - Bolts and Nuts: All bolts and nuts shall be made of silicone bronze (A.S.T.M. B 98-55, Alloy A) or stainless steel (A.S.T.M. A 276-55, Type 302).

(F) - Parts to be Interchangeable: All parts of valves of the same size and make must be perfectly interchangeable and all work done in a thorough and workmanlike manner.

(G) - Castings: All castings, whether of bronze, iron or steel, shall be sound and smooth without cold shuts, swells, lumps, scabs, blisters, sand holes or other imperfections, and shall be made in accordance with the best modern foundry practice to obtain castings of the best quality and of uniform thickness. No welding, plugging, or filling of holes or other defects will be permitted. For parts whose thickness is less than one (1) inch, casting being thinner than the specified thickness by .06 of an inch or more shall be rejected, and for parts whose thickness is one (1) inch or more, castings being thinner than specified by .08 of an inch or more shall be rejected.

(H) - Bronze Parts: (1) Bronze for parts, other than those listed below, shall be Grade One. (2) Valve stems, pinion shafts, stem nuts, wrench caps and retaining nuts shall be made of Grade Three bronze. (3) Disc rings shall be made of Grade Five bronze.

(I) - Tests of Bronze: (1) If demanded, a manufacturer's certificate of test shall be furnished with all bronze stems. (2) For all stems of gate valves, smaller than 16 inches, not less than two test pieces shall be cast from the molten metal of each heat from which valve stems are being made. (3) All stems made from bronze showing less strength, elongation and/or ductility than required above shall be rejected. (4) Tests of valve stems, or the various parts of any valve, may be made at any time before or after delivery, and if found to be deficient in strength or unsatisfactory to the Engineer, the whole lot or shipment may be rejected.

(J) - Cast Iron: (1) Quality: Cast iron shall conform to A.S.T.M. Specifications A 126, Class B, or latest revision thereof. All iron castings shall be tough and without brittleness such as may be cut, drilled and shipped by hand with due ease. A blow from a hammer shall produce an indention on the edge of the casting without flaking the metal.

(2) - Tests: Bars from the molten metal from which the valves are being made shall be tested at such time and in such manner as the Engineer may require. The requirements of A.S.T.M. Specifications A 126 shall govern testing procedures to determine the physical and chemical characteristics of the iron castings. Should the result obtained from the bar tested fail to show that the cast iron meets the requirements herein specified, the entire melt will be rejected. Test bars, however, whose failure is due to inherent defects shall not be considered. All valves made from iron showing less strength than called for in the A.S.T.M. Specifications shall be rejected.

(K) - Quality of Wrought Iron: All wrought iron shall be tough, fibrous, and uniform in character. Specimens cut from bars and broken in a testing machine shall show a tensile strength of not less than 45,000 PSI, with an elongation of 18 per cent in eight diameters.

APPROVED
ONLY FOR GENERAL DESIGN
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
V. M. DeMELTO, Director of Public Utilities
By William J. Secord ENGINEER OF DESIGN
4/28/64

APPROVED
Arnold Tuttle
COMMISSIONER of UTILITIES / ENGINEERING
per Edw J. Cotter
DATE 4/28/1964

3RD HIGH SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR EMERY AND RICHMOND RDS IN WARRENSVILLE HEIGHTS, OHIO.

MADE E.C.E. DATE 3-3-64 TRACED DATE
CHECKED DWK DATE 4-10-64 SCALE

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

WATERWORK NOTES

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(L) - Quality of Materials: Grade One cast bronze shall conform to the properties of A.S.T.M. B 62.

Grade Two cast bronze shall conform to the properties of A.S.T.M. B 132, Alloy A.

Grade Three cast bronze shall conform to the properties of A.S.T.M. B 132, Alloy B.

Grade Four rolled bronze shall conform to the properties of A.S.T.M. B 21, Alloy A(one-half hard).

Grade Five bronze shall be sufficiently malleable to conform to dovetailed grooves when peened or rolled, and shall have a minimum compressive strength, without deformation, of 4,000 PSI., and shall have the following chemical composition:

Copper, per cent	91.0
Tin, per cent	0.0
Zinc, per cent	5.0
Lead, per cent	4.0

Silicon Bronze - This bronze shall conform to A.S.T.M. Specification B-98, Alloy A.

Stainless Steel - The stainless steel shall conform to A.S.T.M. Specifications A-276, Type 302.

Cast Iron - The cast iron shall conform to A.S.T.M. Specification A 126, Class B.

(M) - Other Materials: All other materials used in the manufacture of these valves and not specified in the specifications shall be of the best quality of their respective kinds, and subject to inspection, tests, and approval by the Engineer.

(N) - Chemical Analysis: Chemical analysis of the material used shall be furnished by the Contractor whenever required by the Engineer.

(O) - Cleaning of Castings: All iron castings shall be thoroughly cleaned on the outside and inside surfaces, and protected from rain or moisture until they are painted.

PLACING AND TESTING

(A) - All valves shall be set accurately and carefully to the lines and grades given. All connections to pipe shall have the necessary lead or screwed ends as required under the following items: Cast iron pipe and fittings, furnishing and setting 6" (six inch) hydrants, and 2-inch galvanized wrought iron pipe and brass pipe and as shown on the valve schedule.

(B) After the valves are set in place and ready to operate, the Contractor shall test them under working pressure and conditions herein specified under the Specification "Testing Mains", and any valve found to leak shall be made water-tight and, if found to be of faulty design, shall be satisfactorily repaired or replaced by the Contractor.

PAINTING

(A) - Iron body valves shall either be dipped in asphalt paint and all bronze parts cleaned, or all iron castings shall be painted inside before assmebling with two (2) coats of an approved paint and, after passing the hydraulic test, shall be given at least two (2) coats of approved paint outside.

(B) - After erection, all exposed metal surfaces of valves except brass or bronze shall be painted with (2) field coats of coal tar pitch paint equal to Inertol 66 or Koppers Bitumastic 50.

INSPECTION

The Engineer or his authorized designate will inspect the material and work done, as the interests of the respective Cities or State may require. Such officer shall have unrestricted access to the Contractor's plant, and to all parts of the work, and other places at which the preparation of the material and the construction of the different parts of the work to be done under these specifications are carried on, and he shall receive all facilities and assistence to carry out his work of inspection and testing in a manner satisfactory to the Engineer. Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the specifications, or any modifications thereof as herein provided, and work not so constructed shall be removed and made good by the Contractor at his own expense.

PLAIN CONCRETE MASONRY

The Contractor shall furnish all necessary labor, materials, tools and equipment for the construction, complete, of all miscellaneous masonry structures, and including all anchors, piers at pipe bends and under line valves, and other appurtenant work together with the hauling, mixing, placing, forms, scaffolding, sheeting and bracing, grouting, plastering, curing, etc., all as specified, required or shown on the contract drawings. The material furnished by the Contractor for this work shall conform to the Ohio State Highway Department Specification S-1.07 for Class "D" concrete. Payment for this work shall be included in the price of 12" cast iron or ductile iron pipe.

MISCELLANEOUS METAL WORK

WORK INCLUDED

(A) - The Contractor shall furnish and install all miscellaneous metal work which is required for the proper completion of the work included under this contract and is not specifically included under the other items of these specifications.

(B) - In general, the work shall include the furnishing and installing of valve boxes, extension stems and brace, structural members, bronze bolts, and other similar items required for the proper completion of the work.

MATERIALS

All castings shall conform to the requirements of Section 0-7.81 of the "Standard Specifications for Construction of Pavements, Sidewalks, and Sewers" or the City of Cleveland dated January, 1950, except that the cast iron shall be Class No. 30. Wrought iron shall meet the requirements of the A.S.T.M. Specifications A 207-39. All structural steel shall meet the requirements of the A.S.T.M. Specifications A 7-46. All bronze bolts and nuts shall conform to U.S. Standard sizes, and shall be clean cut and have well fitted threads. All bronze bolts and nuts shall be of Tobin or Manganese Bronze, or of similar approved materials.

CLEANING AND TESTING

All castings shall be thoroughly cleaned and subjected to a careful hammer test. No castings shall be coated unless clean and free from rust, and approved in these respects by the Engineer or his authorized inspector immediately before being dipped.

COATING

Each casting shall be sprayed or brushed inside and out with one coat of asphaltic compound varnish. The varnish shall be made of high grade asphalt fluxed and blended with properly treated drying oils and thinned to a proper consistency with a volatile solvent. The varnish shall be Black Asphalt Varnish as manufactured by the Excelsior Varnish Works, Inc., Cleveland 2, Ohio, Koppers Asphalt Varnish or approved equal. Other methods of coating and types of coating materials shall be subject to the approval of the Engineer, in addition to the shop coat the castings shall receive two (2) coats of approved paint.

INSPECTION

The Engineer or his authorized assistant, shall have the right to inspect the material and work done, as the interests of the City or State may require. Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the specifications, or any modification thereof, as herein provided, and work not so constructed shall be removed and made good by the Contractor, at his own expense. All manhole rings and covers must be sound and shall conform to these specifications, and any defective castings which may have passed the inspector at the works, or elsewhere, shall be at all times liable to rejection when discovered, until the date of final payment under this contract.

VALVE BOXES AND COVERS

The Contractor shall furnish and install, over each vertically set valve of the locations shown on the drawings, or as required, valve boxes and covers of the types and sizes indicated on the contract plans. These shall be carefully located over the valve nuts, and shall be set plumb and true to elevation as required.

DETAILED DRAWINGS

Complete detailed drawings of miscellaneous metal work shall be submitted to the Engineer for approval, prior to the manufacture of any work to be furnished under this item, in accordance with these specifications.

PAINTING

All miscellaneous metal work not galvanized shall be thoroughly cleaned and given three (3) field coats of coal tar pitch equal to Inertol 50 or Bitumastic 50.

VALVE BOXES

Materials and specifications shall conform to State of Ohio Specification I-8.

SPECIAL NOTES - VALVES

DRAWINGS

(A) - Prior to the manufacture of any valves, the Contractor shall submit for the approval of the Engineer and Director of Public Utilities of the City of Cleveland, complete working, detail, and dimension drawings showing thicknesses and kinds of material, and similar information.

(B) - One print of each of the drawings submitted will be returned with the criticisms or approval of the Engineer. In case the drawings are not approved, the Contractor shall again send for approval duplicate revised prints of the drawings to take care of the criticisms noted, and after the drawings have been finally approved, the Contractor shall again furnish to the Engineer fourteen additional prints, six of which shall be furnished to the Director of Public Utilities of the City of Cleveland, of each drawing. No work shall be done in the shop until after the drawings have been finally approved.

PAYMENT

ITEM SPECIAL - 1" SERVICE CONNECTION RELOCATION

The City will furnish the piping material for and make all changes required in the location of existing house connections and meters, but the Contractor shall do all the necessary excavation, backfilling and repaving required. The City will charge the Contractor for the materials and labor furnished in making these service connections and alterations. Materials to be furnished by the City include piping, corporation cock, curb cock, water meter and vault. Payment for all the above will be made at the contract unit price bid for each for "1" Service Connection Relocation".

ITEM SPECIAL - 2" SERVICE CONNECTION

The Contractor shall arrange with the Division of Water and Heat of the City of Cleveland and the City of Warrensville Heights for release for the property owner on restricted water main in Richmond Road for necessary 2" connection. The City of Cleveland will make the tap, furnish the material including piping, corporation cock, curb cock, water meter and vault complete. The Contractor shall pay the City of Cleveland for this work. The Contractor shall do all the necessary excavation and backfilling required and will furnish and place the necessary pipe and fittings from the vault to the end of the service line as shown on the plans. Payment for all the above will be made at the contract unit price bid for each for "2" Service Connection".

ITEM SPECIAL - WATER MAIN

The footage measured as provided above shall be paid for at the contract price bid per linear foot for "Item Special - Water Main" classified as to size and type, which price and payment shall constitute full compensation for excavating and for furnishing, hauling, and placing the pipe, pipe bends, concrete piers, sheeting and bracing, backfill, water used for compaction, incidental concrete, the removal of all surplus excavation and discarded material, repaving, and for all labor, equipment, tools and incidentals necessary to complete this item, except for the items specifically listed as separate pay items.

ITEM SPECIAL - VALVES

The work included in this item shall be paid for at the contract unit price bid for each "Item Special - Valves", classified as to size and type, which price and payment shall constitute full compensation for all excavation and backfill, and for furnishing, hauling, and placing the valves, roadway boxes, connections and other material, and for all labor, equipment, tools and incidentals necessary to complete this item.

APPROVED
FOR GENERAL DESIGN
TERMS OF CONTRACT AND SPECIFICATIONS
E. M. DeMELTO, Director of Public Utilities
ENGINEER OF DESIGN
4/28/64

APPROVED
Arnold Tankel
COMMISSIONER UTILITIES, ENGINEERING
Per Edw J Velles
DATE 4/28/1964

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR EMERY AND RICHMOND RDS IN WARRENSVILLE HEIGHTS, OHIO.

MADE E.C.E. DATE 3-3-64 TRACED DATE
CHECKED DWK DATE 4-10-64 SCALE

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

WATERWORK NOTES

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PAYMENT

ITEM SPECIAL - 6" FIRE HYDRANTS

The work included in this item shall be paid for at the contract unit price bid for each "Item Special - 6" Fire Hydrants", which price and payment shall constitute full compensation for excavating and for furnishing, hauling and placing the 6" fire hydrants and appurtenances, sheeting and bracing, backfill, water used for compaction, the removal of all surplus excavation, repaving, and for all labor, equipment, tools and incidentals necessary to complete this item.

ITEM SPECIAL - FIRE HYDRANTS REMOVED

The work included in this item shall be paid for at the contract unit price bid for each "Item Special - Fire Hydrants Removed", which price and payment shall constitute full compensation for excavating, removal of fire hydrant and appurtenances, furnishing, hauling and placing plugs, clamps and blocking, sheeting and bracing, backfill, water used for compaction, incidental concrete, the removal of all surplus excavation and discarded material, repaving, and for all labor, equipment, tools and incidentals necessary to complete this item. All materials shall become the property of the Contractor.

ITEM SPECIAL - FIRE HYDRANTS RELOCATED

The work included in this item shall be paid for at the contract unit price bid for each "Item Special - Fire Hydrants Relocated", which price and payment shall constitute removing and reconnection according to the provisions of these specifications for the particular type of construction called for on the Plans, and for all excavation, backfilling, seeding and sodding and repaving, and the furnishing of all material, labor, equipment, tools and appliances necessary to complete the work as specified or as shown.

ITEM SPECIAL - SHEETING AND BRACING LEFT IN PLACE

The number of board feet of sheeting and bracing left in place when ordered by the Engineer, shall be paid for at the unit price of eighty dollars ($80.00) per thousand board. feet of "Item Special - Sheeting and Bracing Left in Place", which price and payment shall include full compensation for all labor, equipment, tools and incidentals necessary to complete this item.

CHARGES BY THE CITY OF CLEVELAND WATER DEPARTMENT

Certain items of work will be performed by the City of Cleveland Water Department as indicated elsewhere in these plans and notes. Following is a list of items and charges for the work to be performed by the City of Cleveland forces.

Item	Charge
Furnish and install new curb cock and boxes	$ 30.00 Each
Service connection plugged at main	$ 35.00 Each
1" service connection relocation	$ 75.00 Each
Flushing temporary connections	$ 35.00 Each
2" service connection	$ 570.00 Each
Chlorination of Richmond Road water main	$ 141.25 Lump
Chlorination of Emery Road water main	$ 118.30 Lump

APPROVED
ONLY FOR GENERAL DESIGN
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
V. M. DeMELITO, Director of Public Utilities
by William J. Lowry ENGINEER OF DESIGN
4/28/64

APPROVED
Arnold Fenkell
COMMISSIONER UTILITIES ENGINEERING
Edw J Keller
DATE 4/28/1964

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR EMERY AND RICHMOND RDS IN WARRENSVILLE HEIGHTS, OHIO.

MADE E.C.E. DATE 3-3-64 TRACED _____ DATE _____
CHECKED D.W.K. DATE 4-17-64 SCALE _____

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

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CUYAHOGA COUNTY
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COMPUTATIONS & SUB-SUMMARIES

I-271-6(22)243

B-21 WATERPROOFED AGGREGATE BASE COURSE

Station From	Station To	Side	Calculations	Quantity Cu. Yd.
I-271 Northbound				
276+50	292+44.17	Right	1594.17x10x.25÷27	147.6
276+50	292+19.17	Left	1569.17x4x.25÷27	58.1
294+18.26	299+13.52	Right	495.26x10x.25÷27	45.9
300+13.52	320+77.28	Right	2063.76x10x.25÷27	191.1
294+44.26	320+77.28	Left	2633.02x4x.25÷27	97.5
320+77.23	322+74.72	Right	197.44x10x.25x5661.08÷5729.58x27	18.1
320+77.23	322+74.72	Left	197.44x4x.25x5692.08÷5729.58x27	7.3
322+74.72	325+01.27	Right	226.55x10x.25x5661.08÷5666.08x27	21.0
322+74.72	325+01.27	Left	226.55x4x.25x5692.08÷5666.08x27	8.4
325+01.27	333+70.83	Rt. Lt.	869.56x14x.25÷27	112.7
333+70.83	340+41.45	Right	670.94x10x.25x7644.44÷7639.44x27	62.1
333+70.83	340+41.45	Left	670.94x4x.25x7613.44÷7639.44x27	25.0
340+41.45	363+65	Right	2323.55x10x2.5x2397.17÷2277.67x27	226.4
358+30	363+65	Right	By Planimeter 1800x.25÷27	16.7
375+65	377+50	Right	185x10x.25x12, 397.17÷12,277.67x27	17.3
340+41.45	377+50	Left	3708.55x4x.25÷27	137.4
I-271 Southbound				
276+50	292+19.17	Right	1569.17x4x.25÷27	58.1
278+80	283+65	Left	485x20÷18x.25÷27	69.6
283+65	292+44.17	Left	879.17x10x.25÷27	81.4
294+44.26	320+77.28	Right	2623.02x4x.25÷27	97.1
294+18.26	320+77.28	Left	2959.02x10x.25÷27	246.2
320+77.28	322+74.72	Right	197.44x4x.25x5767.08÷5729.58x27	7.4
322+74.72	338+67.51	Right	1592.79x4x.25÷27	59.0
320+77.28	322+74.72	Left	197.44x10x.25x5798.08÷5729.58x27	18.5
322+74.72	338+67.51	Left	1592.79x10x.25÷27	147.5
338+67.51	340+88.73	Left	221.22x10x.25x12, 167.97÷12,277.67x27	20.3
341+88.73	348+30	Left	641.27x10x.25x12, 167.97÷27x12,277.67	58.8
348+30	377+50	Left	2920x10x.25x12, 158.17÷12,277.67x27	267.7
338+67.51	377+50	Right	3882.49x4x.25x12, 189.17÷12,277.67x27	142.8
Ramp H-1				
4+55.04	5+55.04	Left	100.0x3.5x.25÷27	3.2
4+55.04	9+70	Right	514.96x10x.25÷27	47.7
5+55.04	9+70	Left	414.96x4x.25÷27	15.4
9+70	11+50	Right	180x6.5x.25÷27	10.8
9+70	11+50	Left	180x3.5x.25÷27	5.8
11+50	18+02.04	Rt. Lt.	652.04x6x.5÷27	72.4
18+02.04	22+45.4	Right	443.36x3x.5x228.50÷230.00x27	24.5
18+02.04	22+45.4	Left	443.36x3x.5x247.5÷230x27	26.5
22+45.4	34+88	Right	(1243+80-50)x3x.5÷27	70.7
22+45.4	34+88	Left	(1243+38-35)x3x.5÷27	69.2
Ramp H-2				
Miles Rd.	0+48.34	Left	44x3x.5÷27	2.4
111+83.36	0+65.29	Right	79.81x3x.5÷27	4.4
0+48.38	10+01.41	Left	953.03x3x.5÷27	52.9
0+65.29	12+51.41	Right	1186.12x3x.5÷27	65.9
10+01.41	10+51.41	Left	50x2.5x.5÷27	2.3
12+51.41	14+51.41	Right	200x5.5x.5÷27	20.4
276+50	278+80	Left	230x8x.5÷27	34.1

B-21 WATERPROOFED AGGREGATE BASE COURSE

Station From	Station To	Side	Calculations	Quantity Cu. Yd.
Ramp G-1				
6+31.78	22+90	Right	1658.22x10x.25÷27	153.5
6+31.78	28+77.08	Left	2245.30x4x.25÷27	83.2
22+90	25+00	Right	210x6.5x.25÷27	12.6
25+00	27+75.47	Right	275.47x3x.25÷27	7.6
27+75.47	29+16.58	Rt. Lt.	141.11x6x.5÷27	15.7
29+16.58	34+27.15	Left	510.57x3x.5x247.5÷230x27	30.5
29+16.58	34+27.15	Right	510.57x3x.5x228.5÷230x27	28.2
34+27.15	45+62.54	Left	1135.39x3x.5÷27	63.1
34+27.15	45+52.54	Right	1125.34x3x.5÷27	62.5
45+62.54	Emery	Left	46x3x.5÷27	2.6
45+52.54	Emery	Right	70.7x3x.5÷27	3.9
Ramp G-2				
1+42	17+21.22	Right	1579.22x3x.5÷27	87.7
1+30.78	2+74	Left	143.22x3x.5÷27	8.0
3+33.22	14+71.22	Left	1138.00x3x.5÷27	63.2
14+71.22	15+21.22	Left	50x2.5x.5÷27	2.3
17+21.22	19+21.22	Right	200x5.5x.5÷27	20.3
19+21.22	30+25.22	Right	1104x8x.5÷27	163.6
30+25.22	31+21.22	Right	96x9x.5÷27	16.0
Ramp G-2A				
0+69	1+38.41	Left	69.41x3x.5÷27	3.9
0+51	0+95	Right	44x3x.5x74÷50x27	3.6
			Total =	3,828.2

B-19 AGGREGATE BASE COURSE

Station From	Station To	Side	Calculations	Quantity Cu. Yd.
Emery Road				
124+50	128+27.53	Rt. Lt.	26.18x377.53x5÷2x27	91.5
Richmond Road				
5+65	8+00	Left	(1+8.9)x235x.583÷2x27	25.1
7+15	8+00	Right	(1+4.2)x85x.583÷2x27	4.8
28+59	29+75	Rt. Lt.	2(1+5.5)x125x.583÷2x27	17.5
			Total =	138.9

B-112 POROUS BASE COURSE

Station From	Station To	Side	Calculations	Quantity Cu. Yd.
I-271 Northbound				
276+50	292+19.17	Left	1569.17x2.33÷27	135.4
294+44.26	322+74.72	Left	2830.46x2.33÷27	244.3
322+74.72	325+01.21	Left	226.5x2.33÷27	19.5
325+01.21	328+01.22	Left	300.01x2.32÷27	25.8
328+01.22	377+50	Left	4948.78x2.31÷27	423.4
276+50	292+44.17	Right	1594.17x5.33÷27	314.7
294+18.26	299+13.52	Right	495.26x5.33÷27	98.8
300+13.52	324+24.41	Right	2410.89x5.33÷27	475.9
324+24.41	325+03.55	Right	79.14x4.93÷27	14.5
325+03.55	363+64	Right	3860.45x4.53÷27	724.9
375+65	377+50	Right	185.0x4.53÷27	31.9
I-271 Southbound				
276+50	292+19.17	Right	1569.17x2.31÷27	134.3
294+44.26	319+62.08	Right	2517.82x2.31÷27	215.4
319+62.08	320+79.98	Right	117.90x2.22÷27	9.7
320+79.98	377+50	Right	5670.02x2.125÷27	446.3
278+80	283+68	Left	4880x15.5x5.7÷12x27	133.3
283+68	292+44.17	Left	876.17x4.54÷27	147.3
294+18.26	319+62.08	Left	2543.82x4.54÷27	427.7
319+62.08	320+79.98	Left	117.90x4.35÷27	19.0
320+79.98	323+04.98	Left	225.00x4.44÷27	37.0
323+04.98	340+88.73	Left	1783.75x4.53÷27	299.3
341+88.73	377+50	Left	3561.27x4.53÷27	597.5

B-112 POROUS BASE COURSE

Station From	Station To	Side	Calculations	Quantity Cu. Yd.
Ramp H-1				
4+55.04	5+55.04	Left	100x3.5x.467÷27	6.1
4+55.04	9+70.00	Right	514.96x10x.452÷27	86.2
5+55.04	9+70.00	Left	414.96x4x.467÷27	28.7
9+70	11+50	Right	180x6.5x.452÷27	19.6
9+70	11+50	Left	180x3.5x.467÷27	9.0
11+50	18+02.04	Right	652.04x3x.25÷27	18.1
11+50	18+02.04	Left	652.04x3x.20÷27	14.5
18+02.04	22+45.40	Right	443.36x3x.25÷27	12.3
18+02.04	22+45.40	Left	443.36x3x.20÷27	9.0
22+45.40	34+88.0	Right	(1243+80-50)x3x.21÷27	29.7
22+45.40	34+88.0	Left	(1243+38-35)x3x.25÷27	34.6
Ramp H-2				
Miles Road	0+48.34	Left	44x3x2÷27x12	0.8
111+83.36	0+65.29	Right	79.81x3x2.5÷27x12	1.8
0+48.38	10+01.41	Left	953x3x2.25÷27x12	19.8
0+65.29	12+51.41	Right	1186.12x3x2.5÷27x12	27.4
10+01.41	10+51.41	Left	50x2.5x2.0÷27x12	1.0
12+51.41	14+51.41	Right	200x5.5x2.5÷27x12	8.4
276+50	278+80	Left	230x8x2÷27x12	11.4
Ramp G-1				
6+31.78	22+90	Right	1658.22x10x5.44÷27x12	278.4
6+31.78	28+77 08	Left	2245.30x4x5.625÷27x12	155.6
22+90	25+00	Right	210x6.5x5.44÷27x12	22.9
25+00	27+75.47	Right	275.47x3x2.5÷27x12	6.4
27+75.47	29+16.58	Right	141.11x3x2.7÷27x12	3.5
27+75.47	29+16.58	Left	141.11x3x2.00÷27x12	2.6
29+16.58	30+12.58	Right	96.0x3x3.00÷27x12	2.8
29+16.58	30+12.58	Left	96.0x3x2.00÷27x12	1.7
30+12.58	33+31.15	Right	318.57x3x3÷27x12	8.8
30+12.58	33+31.15	Left	318.57x3x2.47÷27x12	7.3
33+31.15	34+73.15	Right	142x3x2.9÷27x12	3.8
33+31.15	34+73.15	Left	142x3x2.00÷27x12	2.7
34+73.15	45+52.54	Right	1079.39x3x2.5÷27x12	25.0
34+73.15	45+62.54	Left	1089.39x3x2.0÷27x12	20.2
45+62.54	Emery	Left	46x3x2.0÷27x12	1.0
45+52.54	Emery	Right	70.7x3x2.5÷27x12	1.6
Ramp G-2				
1+30.78	2+74	Left	143.22x3x2÷27x12	2.6
1+42	17+21.22	Right	1579.22x3x2.5÷27x12	36.6
3+33.22	15+21.22	Left	1188x3x2÷27x12	22.0
17+21.22	19+21.22	Right	200x5.5x2.3÷27x12	7.8
19+21.22	30+25.22	Right	1104x8x5.4÷27+12	147.0
30+25.22	31+21.22	Right	96x9x5.4÷27x12	14.5
Ramp G-2A				
0+51	0+95	Right	44x3x.43x74÷50x27	3.0
0+69	1+38.41	Left	69.4x3x.43÷27	3.0
			Total =	6,031.3

B-35 ASPHALTIC CONCRETE LEVELING COURSE

Station From	Station To	Side	Calculations	Quantity Cu. Yds.
Richmond Road				
5+65	8+00	Left	(9.25+16.65)x235x.125÷2x29	14.1
7+15	8+00	Right	(9.25+11.95)x85x.125÷2x27	4.2
5+65	7+15	Right	(9.25x150x.125÷27	6.4
28+50	29+75	Rt. Lt.	(28.5+18.5)x125x.125÷2x27	13.6
Emery Road				
124+50	128+27.53	(46.68+21)x377.53x.125÷2x27		59.1
			Total =	97.4

B-35 VARIABLE THICKNESS ASPHALTIC LEVELING COURSE

Station From	Station To	Calculation	Quantity Cu. Yds.
Richmond Road			
5+65	8+00	235x16x.083÷27	11.6
28+50	29+75	125x16x.10÷27	7.4
		Total =	19.0

E-1 COMPACTED SUBGRADE

Under T-71 10" Reinforced P.C.C. Pavement	78,145.2	Sq. Yds.
Under T-71 9" Reinforced P.C.C. Pvm't. (Project)	24,335.5	Sq. Yds.
Under T-71 9" Reinforced P.C.C. Pvm't. (F SPEC. PARTIC.)	2,321.7	Sq. Yds.
Under T-31 Shoulders	36,261.0	Sq. Yds.
Under Std. Type 6 Curb	87.8	Sq. Yds.
Under Std. Type 1 Traffic Divider	73.2	Sq. Yds.
Under I-7 Approach Slabs	1,036.5	Sq. Yds.
Under B-19 Tapered Sections	1,271.6	Sq. Yds.
18" Additional Shoulder Width	10,529.0	Sq. Yds.
Project Total =	151,740	Sq. Yds.
F Special Participation Total =	2,322	Sq. Yds.

F - See note on Sh. 61

EARTHWORK SUMMARY

	CU.YDS.
E-1 Roadway Excavation (From Sh. 24)	3,741
E-1 Roadway Excavation	1,038,359
E-1 Roadway Excavation (F Special Partic.)	1,085
E-3 Channel Excavation	15,715
Less Embankment + 18% (From Sh. 24)	375
Less Embankment + 18%	956,184
Less Embankment + 18% (F Special Partic.)	896
Less E-3 Channel Embankment + 18%	67
Waste =	101,378

F See Note on Sh. 61

E-1 EARTHWORK

Sheet	Station From	Station To	Excavation Cu. Yds.	Embankment Cu. Yds. +18%
Mainline I-271				
28	275+00	285+00	2,452	231,479
29	285+00	295+00	635	220,653
30	295+00	305+00	11,115	188,925
31	305+00	315+00	5,371	39,698
32	315+00	325+00	14,241	3,205
33	325+00	335+00	140,156	54
34	335+00	345+00	496,038	199,132
35	345+00	355+00	286,098	11,101
36	355+00	365+00	33,283	46,630
37	365+00	375+00	37,925	2,747
38	375+00	385+00	548	6,982
Emery Road				
41	108+50	115+00	1,738	104
42	115+00	125+00	2,415	244
43	125+00	128+27.5	93	319
Richmond Road				
44	5+65	15+00	202	3,483
45	15+00	25+00	4,314	291
46	25+00	32+19	442	1,021
Drive and Approach G-A				
67	1+00	4+00	1,293	116
Corbin Drive F Special Participation				
61	0+00	8+58	1,085	896
Project Total =			1,038,359	956,184
F Spec. Participation Total =			1,085	896

F See note on Sh. 61

MADE LAZ DATE 4-14-64 TRACED ____ DATE ____
CHECKED E.C.E. DATE 4-14-64 SCALE ____

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

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COMPUTATIONS & SUB-SUMMARIES

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E-8 REMOVAL AND DISPOSAL OF EXISTING PAVEMENT

Station From	Station To	Calculations	Area Sq.Yds.
Richmond Road			
8+00	23+84	16x1584 ÷ 9	2816.0
24+05	28+50	16x445 ÷ 9	791.0
Emery Road			
108+50	124+50	21x1600 ÷ 9	3733.3
		Total =	7340.3

E-8 REMOVAL AND DISPOSAL OF EXISTING CONCRETE SIDEWALK

Station From	Station To	Side	Calculations	Area Sq.Ft.
288+75	292+95	Rt.	420 x 5	2,100
Ramp G-1				
42+90	45+50	Lt.	260 x 5	1,300
44+60	45+90	Rt.	130 x 5	650
Emery Road				
110+00	111+00	Rt.	100 x 5	500
			Total =	4,550

E-8 REMOVAL AND DISPOSAL OF EXISTING CURB

Station From	Station To	Side	Lin. Ft.
Richmond Road			
5+65	10+85	Left	520
7+15	11+25	Right	410
19+23	29+75	Left	1,052
19+60	29+75	Right	1,015
		Total =	2,997

E-8 REMOVAL AND DISPOSAL OF EXISTING (2½") WEARING COURSE

Station From	Station To	Calculations	Area Sq.Yd.
Emery Road			
124+80	128+27.5	427.5 x 20 ÷ 9	950
		Total =	950

E-8 REMOVAL AND DISPOSAL OF EXISTING (6"x2½") HEADER CURB

Station From	Station To	Side	Calculation	Length Lin. Ft.
Emery Road				
124+50	128+27.5	Rt.℄Lt.	2 x 427.5	855
			Total=	855

E-11 WATER

E-1 Embankment	810,275	Cu.Yds.
B-112 Porous Base Course	6,031	Cu.Yds.
I-22 Subbase	23,204	Cu.Yds.
B-19 Aggregate Base Course	218	Cu.Yds.
Total =	839,733	Cu.Yds.
Water = 839,733 Yd.^{3} x 5 Gal/Yd.^{3} ÷ 1000 =	4,198.6 M. Gal.	

I-1 (1'-6" x 2'-0") TYPE 3 BACKFILL

Station From	Station To	Side	Calculation	Quantity Lin. Ft.
Emery Road				
124+50	128+27.53	Rt.℄Lt.	2 x 377.53	755.1
			Total =	755.1

I-7 REINFORCED CONCRETE(APPROACH SLABS)(T-13")

Station From	Station To	Calculations	Area Sq.Yd.
I-271 Southbound			
292+19.17	292+44.17	25x56.2 ÷ 9	156.1
294+19.26	292+44.26	25x61 ÷ 9	169.4
I-271 Northbound			
292+19.17	292+44.17	25x48 ÷ 9	133.3
294+19.26	292+44.26	25x48 ÷ 9	133.3
Emery Road			
111+26.4	111+51.4	25x52 ÷ 9	144.4
118+04.5	118+29.5	25x52 ÷ 9	144.4
Richmond Road			
10+99.73	11+24.73	25x28 ÷ 9	77.8
19+11.02	19+36.02	25x28 ÷ 9	77.8
		Total =	1,036.5

I-13 4" CONCRETE SIDEWALK

Station From	Station To	Side	Calculations	Quantity Sq.Ft.
Emery Road				
110+00	111+00	Right	100x5	500
110+80	111+51	Left	71x5	355
			Total =	855

I-19 3" INSULATION COURSE AND SUBBASE COURSE

Emery Road	Sq.Yd.
Under T-71 9" Pavement	5876.1
Total =	5876.1 Sq.Yd.

I-21 4" STANDARD TYPE 1 PORTLAND CEMENT CONCRETE MEDIAN PAVEMENT

Station From	Station To	Calculations	Quantity Sq.Yd.
I-271 Northbound, Nose Pavement			
299+13.52	299+53.52	220 ÷ 9	24.4
I-271 Southbound, Nose Pavement			
341+48.73	341+88.73	220 ÷ 9	24.4
Ramp G-1, Nose Pavement			
27+75.47	28+15.47	220 ÷ 9	24.4
		Total =	73.2

I-12 CONCRETE CURB

Station From	Station To	Side	Std. Type 6 Lin.Ft.	Std. Type 7 Lin.Ft.	Std. Type 8 Lin.Ft.	Std. Type 2-A Lin.Ft.	Std. Type 3-A Lin.Ft.
Mainline I-271 Northbound							
299+13.52	300+13.52	Right				107	
Mainline I-271 Southbound							
340+88.73	341+88.73	Left				107	
Ramp H-1							
4+55	5+55	Left	100				
Ramp H-2							
0+90	10+00	Left	910				
10+00	10+60	Left		60			
10+60	14+51	Left			391		
Ramp G-1							
6+31.78	7+31.78	Left	100				
27+75.5	28+75.5	Left	100				
Lane W.W.		Right				107	
45+38	Emery	Right				75	
45+64	Emery	Left				30	
Ramp G-2							
0+00	1+42.7	Right				142.7	
1+30.8	2+68.3	Left	137.5				
14+71.2	15+21.2	Left		50.0			
15+21	19+21.2	Left			400		
Ramp G-2A							
0+30	0+70	Left				40	
0+45	0+90	Right	56				
Richmond Road							
8+00	10+67	Left				267.0	
8+00	11+27.5	Right				327.0	
19+60.91	20+90.07	Left				135.0	
22+25.4	23+00	Left				74.5	
19+68.5	23+00	Right				331.5	
25+00	28+50	Rt. Lt.				700.0	
Corbin Drive ₣ Special Participation							
0+14	8+25						1613
Emery Road							
108+50	111+60.4	Left				310.4	
108+50	111+10.0	Right				270.0	
118+45	120+42.5	Left				197.5	
118+00	120+41.8	Right				241.8	
121+82.5	123+62.53	Rt. Lt.				360.0	
123+62.53	124+50	Rt. Lt.				176.0	
Emery-Richmond Intersection							
Intersection						386.6	
Normal Partic. Project Total = 1,403.5			110.0	791.0	4387.0		
₣ Special Participation=							1613

₣-See note on Sh. 61

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

			Quantity Cu.Yds.
Under T-71 10" Pavement	78,145.2	Sq.Yds. x ⅓ ÷ 3	13,024.2
Under T-71 9" Pavement Less Emery Road Less Corbin Drive	18,359.4	Sq.Yds. x ⅓ ÷ 3	3,059.9
Under T-71 9" Pavement Corbin Drive (100% State)	2,321.7	Sq.Yds. x ⅓ ÷ 3	386.9
Under T-31 Shoulders	36,261.0	Sq.Yds. x ⅓ ÷ 3	6,543.5
Under Std. Type 6 Curb	1,403.5	Ft. x ⅓ x ⅓ ÷ 27	13.0
Under Std. Type 1 Traffic Divider	73.2	Sq.Yds. x ⅓ ÷ 3	14.7
Under I-7 Approach Slabs	1,036.5	Sq.Yds. x ⅓ ÷ 3	172.8
Under B-19 Tapered Sections	1,271.6	Sq.Yds. x ⅓ ÷ 3	211.9
Outside Paved Areas on Richmond Road	846	Sq.Yds. x ⅓ ÷ 3	141.0
		Normal Participation Project Total =	22,952.0
(Center Lane + Tapers - Emery Road)		100% County Total =	84.0
(Center Lane + Tapers - Richmond Road)		100% State Total =	145.0
		₣ Special Participation Total =	386.9

₣-See note on Sh. 61

MADE LAZ DATE 4-14-64 TRACED ____ DATE ____
CHECKED E.C.E DATE 4-14-64 SCALE ____

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

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I-125 6" LANE LINES

Station From	Station To	Number of Lane Lines	Calculations	Lin. Ft. of Lane Lines
I-271 Northbound				
276+50	292+19	1	1569x15÷40	588.4
294+44	345+05	1	5061x15÷40	1,897.9
345+05	377+50	2	2(3245x15÷40)	2,433.8
I-271 Southbound				
276+50	278+80	2	2(230x15÷40)	172.5
278+80	292+19	1	1339x15÷40	502.1
294+44	341+88	1	4744x15÷40	1,779.0
341+88	348+30	2	2(642x15÷40)	481.5
348+30	377+50	2	2(2920x15÷40)	2,190.0
Ramp G-1				
6+31	28+77	1	2246x15÷40	842.0
			Total =	10,887.2

I-125 6" Lines = 10887.2÷5,280 = 2.06 Miles

I-125 4" LANE LINES

Station From	Station To	Number Lane Lines	Calculations	Lin. Ft. or Lane Lines
I-271 Northbound				
292+38	296+80	1	442 x 15÷40	165
I-271 Southbound				
266+65	269+65	1	300 x 15÷40	112
			Total =	277

I-125 4" Lines = 277÷5280 = 0.05 Mile

I-125 CHANNELIZING LINES

Station From	Station To	Side	Lin. Ft.
I-271 Southbound			
340+89	344+69	Lt.	380
I-271 Northbound			
296+80	300+14	Rt.	334
363+65	366+00	Rt.	235
Ramp G-1			
3+52	6+32	Lt.	280
Ramp H-1			
2+20	4+55	Lt.	235
		Total =	1,464

I-125 Chan. Lines = 1464÷5280 = 0.28 Mile.

I-125 4" EDGE LINES

Station From	Station To	Edge	Lin. Ft.
I-271 Northbound			
276+50	292+19	Rt. Lt.	3,138
294+44	377+50	Rt. Lt.	16,612
I-271 Southbound			
276+50	292+19	Rt. Lt.	3,138
294+44	377+50	Rt. Lt.	16,612
Ramp H-2			
10+01	14+51	Right	450
Ramp G-1			
6+31	28+75	Right	2,244
7+31	28+77	Left	2,146
Ramp G-2			
14+71	19+21	Right	450
		Total =	44,790

I-125 4" Edge Lines = 44,790÷5,280 = 8.48 Miles

I-125 CURB AND ISLAND MARKING

Curb and Island Marking = Lump Sum

I-125 DIAGONAL STRIPING

Diagonal Striping = Lump Sum

L-9 AGRICULTURAL LIMING MATERIAL

	Sq. Yds.
L-9 Seeding and Protection	409,136
Add for Sodded Areas	1,916
Total =	411,052

Tons of Lime = 9 x 411,052 x 100 ÷ (1000x2000) = 184.97 Tons

L-9 COMMERCIAL FERTILIZER

	Sq. Yds.
L-9 Seeding and Protecting	409,136
Add for Sodded Areas	1,916
Total =	411,052

Tons of Commercial Fertilizer = 9 x 411,052 x 20 ÷ (1000x2000) = 36.99 Tons

L-9 SEEDING AND PROTECTING

Total Areas of New Parcels and Existing Right of Way	566,551	Sq. Yds.
Deduct for Paved Areas	-155,499	Sq. Yds.
Deduct for Sodded Areas	-1,916	Sq. Yds.
Total =	409,136	Sq. Yds.

T-30 BITUMINOUS PRIME COAT

Emery Road

B-19 Aggregate Base Course = 549.0 Sq. Yds.

Volume = 549.0 Sq. Yds. x 0.40 Gal./Sq. Yds. = 219.6 Gal.

Richmond Road

B-19 Aggregate Base Course = 243.9 Sq. Yds.

Volume = 243.9 Sq. Yds. x 0.40 Gal./Sq. Yd. = 97.6 Gal.

Total Vol. = 508.2 Gal.

T-30 BITUMINOUS TACK COAT

Station From	Station To	Length Ft.	Width Ft.	Area Sq. Yds.
Emery Road				
124+50	128+27.5	377.5	21	880.0
Volume = 880.0 Sq. Yds. = 0.10 Gal/Sq. Yd. = 88Gal.				
Richmond Road				
5+65	8+00	235	16	418.0
28+50	29+75	125	16	221.0
Volume = 639.0 Sq. Yds. x 0.10 Gal./Sq. Yd. = 63.9Gal.				
Total Vol. = 151.9 Gal.				

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

Station From	Station To	Side	Calculations	Area Sq. Yds.
Ramp H-1				
11+50	18+02.04		652.04x16x1440.393 ÷ 9x1432.393	1,165.7
18+02.04	22+45.40		443.36x16x238.0 ÷ 9x230.0	815.6
22+45.40	34+88.00		1242.60x16 ÷ 9+.215x(50)² ÷ 9+35 x13÷ 9+2x80 ÷ 9	2,303.5
Ramp H-2				
0+00	0+65.3		Planimeter 1532 ÷ 9	170.2
0+65.3	3+70		16x304.7 ÷ 9	541.7
3+70	8+11.59		16x441.59x5, 721.58 ÷ 9x5, 729.58	783.9
8+11.59	10+51.41		16x239.82 ÷ 9	426.3
10+51.41	11+51.41		(18+16)x100 ÷ 2x9	188.9
11+51.41	12+51.41		(16+15.3)x100 ÷ 2x9	174.4
12+51.41	14+51.41		15x200x5, 778.08 ÷ 9x5, 793.08	332.5
Ramp G-1				
27+77.08	28+75.47		17x101.61x3, 828.22 ÷ 9x3, 819.22	192.4
28+75.47	29+16.58		16x41.11x3, 827.72 ÷ 9x3, 819.72	73.2
29+16.58	34+27.15		16x510.57x238.0 ÷ 9x230.0	939.2
34+27.15	45+37.99		(16x1, 174.85+2x88+536+228) ÷ 9	1,974.8
45+37.99	45+87.99		Planimeter 1389 ÷ 9	154.4
Ramp G-2				
0+00	1+30.78		Planimeter 42x25 ÷ 9	116.7
1+30.78	15+21.22		16x1390.44 ÷ 9	2,471.9
15+21.22	16+21.22		(18+16)x100 ÷ 2x9	188.9
16+21.22	19+21.22		(16+14)x300 ÷ 2x9	500.0
Ramp G-2A				
			Planimeter 440x4 ÷ 9	195.6
Richmond Road				
8+00	11+05.81		2.5+(29x305.81 ÷ 9)	987.9
19+29.52	19+60.91		29x31.39 ÷ 9	101.1
19+60.91	20+90.07	Left	(14.5+16.5)x129.16 ÷ 2x9	222.2
19+60.91	22+50	Right	(14.5+26.5)x289.09 ÷ 2x9	658.5
20+90.07	22+25.46	Left	15x135.39 ÷ 9	225.6
22+50	23+00	Right	26.5x50 ÷ 9	147.2
22+25.46	23+00	Left	14.5x74.54 ÷ 9	120.1
25+00	25+50		41x50 ÷ 9	227.8
25+50	28+50		2.5+((41+29)x300 ÷ 2x9)	1,169.2
Emery Road				
108+50	111+26.4		53x276.4 ÷ 9	1,627.9
109+10	Turnout	Right	1320 ÷ 9	146.7
118+29.54	119+70	Left	(32.5+26.5)x140.46 ÷ 2x9	460.4
118+29.54	119+50	Right	(32.5+26.5)x120.46 ÷ 2x9	394.8
119+70	120+40	Left	32x70 ÷ 9	252.8
119+50	120+40	Right	32.5x90 ÷ 9	325.0
121+82.53	123+62.53		(65+53)x180 ÷ 2x9	1,180.0
123+62.53	124+50		(53+47.18)x87.77 ÷ 2x9	488.5
Richmond and Emery Intersection				
			By Planimeter 17,010 ÷ 9	1,890.0
Corbin Drive F Special Participation				
0+12	0+42		By Planimeter 1320÷9	146.7
0+42	8+25		25x783 ÷ 9	2,175.0
			Normal Participation Project Total =	22,963.8 Sq. Yds.
(Center Lane & Tapers - Emery Road)			100% County	501.0 Sq. Yds.
(Center Lane & Tapers - Richmond Road)			100% State Total =	870.7 Sq. Yds.
			F Special Participation =	2,321.7 Sq. Yds.

F - See note on Sh. 61

T-71, 10" REINFORCED P.C.C. PAVEMENT

Station From	Station To	Calculations	Area Sq. Yd.
I-271 Northbound			
276+50	292+19.17	1569.17x24 ÷ 9	4,184.4
287+00	288+00	100x12x5662.08 ÷ 5729.58x9x2	65.9
288+00	292+29	429x12x5660.08 ÷ 5729.58x9	565.1
294+44.26	320+77.28	2633.02x24 ÷ 9	7,021.4
294+57.5	299+13.52	456x12x5660.08 ÷ 5729.58x9	600.6
294+57.5	299+13.52	By Planimeter 156x25 ÷ 9	433.3
320+77.28	322+74.72	197.44x24x5678.08 ÷ 5729.58x9	521.8
322+74.72	325+01.87	226.55x24x5678.08 ÷ 5666.08x9	605.4
325+01.87	333+70.83	869.56x24 ÷ 9	2,318.8
333+70.83	340+41.45	676.94x24x7627.44 ÷ 7639.44x9	1,802.3
340+41.45	377+50	3708.55x24 ÷ 9	9,889.5
345+20	357+20	1200x12x12, 398.17 ÷ 12, 277.67x9	1,615.7
345+20	357+20	1200x13.5x12, 413.17 ÷ 12, 277.67x9	1,819.9
357+20	363+65	645x12x12, 413.17 ÷ 12, 277.67x9	869.5
363+65	377+50	1385x12x12, 398.17 ÷ 12, 277.67x9	1,864.8
I-271 Southbound			
276+50	278+80 Lt.	(20.21+25)x230 ÷ 2x9	585.3
276+50	292+19.17	1569.17x24 ÷ 9	4,184.4
282+50	292+08	958x5792.08 ÷ 5729.58=968.5' 968.5x19.96 ÷ 2x9	1,074.0
294+29	294+50	By Planimeter 546 ÷ 9	60.7
294+44.26	320+77.28	2633.62 x24 ÷ 9	7,022.7
320+77.28	338+67.51	1789.41x24 ÷ 9	4,771.8
338+67.51	340+41.45	173.94x24x12, 175.17 ÷ 12, 277.67x9	460.0
340+41.45	377+50	3708.55x24 ÷ 9	9,889.5
341+88.73	377+50	3561.27x12x12, 398.17 ÷ 12277.67x9	4,795.0
341+88.73	348+30	By Planimeter 320x25 ÷ 9	888.9
Ramp H-1			
Deceleration Lane			450.0
4+55.04	9+70.00	100x17x2300.331 ÷ 9x2291.831	189.6
		414.96x16x2299.831 ÷ 9x2291.83	740.3
9+70.00	11+50.00	180x16x1440.39 ÷ 9x1432.39	321.8
Nose Recovery		100x12.5 ÷ 9	138.9
Ramp G-1			
6+31.78	6+80	24x48.22x3831.72 ÷ 9x3819.72	129.0
6+80	22+90	24x1610 ÷ 9	4,293.3
22+90	27+77.08	16x487.08 ÷ 9	865.9
27+77.08	28+77.08	28x100 ÷ 9	311.1
22+90	27+77.08	8x487.08x3823.72 ÷ 9x3819.72	433.4
		Planimeter 5000 ÷ 9	555.6
Nose Recovery		100x12.5 ÷ 9	138.9
Ramp G-2			
19+21.22	31+21.22	(25+0)x1200 ÷ 2x9	1,666.7
		Total =	78,145.2

T-31, BITUMINOUS SURFACE TREATMENT

B-21 Waterproofed Aggregate Base Course = 36,261 Sq. Yds.

Bituminous Material = 36,261 Sq. Yds. x 0.25 Gal./Sq. Yd. = 9,065.2 Gal.

No. 6 Aggregate = 36,261 Sq. Yd. x 0.008 Yd.^{3}/Yd.^{2} = 290 Cu. Yds.

T-35 ASPHALTIC CONCRETE SURFACE COURSE TYPE "C"

Station From	Station To	Side	Calculations	Quantity Cu. Yd.
Richmond Road				
5+65	8+00	Left	(9+16.4)x235x.125 ÷ 2x27	13.8
5+65	7+15	Right	9x150x.125 ÷ 27	6.3
7+15	8+00	Right	(9+11.7)x85x.125 ÷ 2x27	4.1
28+50	29+75	Rt. Lt.	(28+18)x125x.125 ÷ 2x27	13.3
Emery Road				
124+50	128+27.53		(46.18+21)x377.53x.125 ÷ 2x27	58.7
			Total =	96.2

MADE LAZ DATE 4-14-64 TRACED ____ DATE ____
CHECKED E.C.E DATE 4-14-64 SCALE ____

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

24
256

CUYAHOGA COUNTY
CUY-1-0.11

COMPUTATIONS & SUB-SUMMARIES

SU-274-(2)

EMERY ROAD

Station From	Station To	Side	Calculations	Quantity Cu. Yd.
B-19 AGGREGATE BASE COURSE				
91+50	94+65.25	Lt. Rt.	(16+16)x315.25x.5÷2x27	93.4
			Total =	93.4
B-35 1½" ASPHALTIC CONCRETE LEVELING COURSE (70-85)				Cu. Yd.
91+50	94+65.25	Rt. Lt.	(21.5+53.5)x1.5x315.25÷12x2x27	54.0
94+65.25	108+50	Rt. Lt.	52x1,384.25x1.5÷12x27	333.4
Merrygold Boulevard Intersection			130.2x1.5÷3x12	5.4
			Total =	392.8
B-71 9" REINFORCED P.C.C. BASE COURSE				Sq. Yd.
94+65.25	108+50	Rt. Lt.	(16+16)x1,384.75÷9	4,923.5
Merrygold Boulevard Intersection			By Planimeter	130.2
			Total =	5,053.7
I-19 3" INSULATION COURSE AND SUBBASE COURSE				Sq. Yd.
Under B-71 9" Reinforced P.C.C. Base Course				5,053.7
			Total=	5,053.7
I-22 SUBBASE GRADING "A" OR "B"				Cu. Yd.
Under B-19 Aggregate Base Course				93.4
			Total =	93.4
T-35 1½" ASPHALTIC CONCRETE SURFACE COURSE TYPE "C"				Cu. Yd.
91+50	94+65.25	Rt. Lt.	(2½+52)x1.5x315.25÷12x2x27	53.3
94+65.25	108+50	Rt. Lt.	52x1,384.75x1.5÷12x27	333.4
Merrygold Boulevard Intersection			130.2x1.5÷3x12	5.4
			Total =	392.1

E-8 REMOVAL AND DISPOSAL OF EXISTING PAVEMENT

Station From	Station To	Side	Calculations	Area Sq. Yd.
Emery Road				
Merrygold Boulevard Intersection			By Planimeter	205
			Total =	205

E-8 REMOVAL AND DISPOSAL OF EXISTING (2½") WEARING COURSE

Station From	Station To	Calculations	Area Sq. Yds.
Emery Road			
91+50	108+50	1700 x 20÷9	3778
		Total =	3778

E-8 REMOVAL AND DISPOSAL OF EXISTING (6" x 2½") HEADER CURB

Station From	Station To	Side	Calculations	Length Lin. Ft.
Emery Road				
91+50	108+50	Rt. & Lt.	2 x 1700	3400
			Total=	3400

E-11 WATER

Emery Road	
E-1 Embankment	375.0 Cu. Yd.
I-22 Subbase	93.4 Cu. Yd.
B-19 Aggregate Base Course	93.4 Cu. Yd.
Total =	561.8 Cu. Yd.
Water = 561.8 Yd.³ x 5 Gal./Yd.³ ÷ 1000 = 2.81 M. Gal.	

E-1 COMPACTED SUBGRADE

Emery Road		
Under B-71 9" Reinforced P.C.C. Pavement	5,053.7	Sq. Yd.
Under B-19 Aggregate Base Course	560.4	Sq. Yd.
Under Std. Type 6 Curb	6.0	Sq. Yd.
18" Additional Shoulder Width	566.7	Sq. Yd.
Total =	6,186.8	Sq. Yd.

I-1 (1'-6" x 2'-0") TYPE 3 BACKFILL

Station From	Station To	Side	Calculations	Quantity Lin. Ft.
Emery Road				
91+50	108+50	Rt. & Lt.	2 x 1700	3400
			Total=	3400

I-12 CONCRETE CURB

Station From	Station To	Side	Std. Type 2-8 Lin.Ft.	Std. Type 6 Lin.Ft.
Merrygold Boulevard Intersection			95	
Emery Road				
94+55	94+65	Right		10
94+65	94+85		20	
95+46	108+50	Right	1304	
95+39	108+50	Left	1311	
		Total =	2730	10

E-1 EARTHWORK

Station From	Station To	Excavation Cu. Yd.	Embankment Cu. Yd. +18%
Emery Road			
89+00	97+00	569	78
97+00	105+00	1,841	21
105+00	108+50	1,331	231
	Total	3,741	375

ITEM SPECIAL, EXPAN. ANCHOR BOLTS & ITEM S-23 DOWEL HOLES.

Sta. 94+65.25 to Sta. 108+50 = 1384.75 x 2 = 2769.5 Lin.Ft.
2769.5 ÷ 2.5 { = 1108 Expan Anchor Bolts
= 1108 Dowel Holes.

(See Detail on Sheet 155)

L-9, SEEDING AND PROTECTING

	Sq. Yd.
Total Quantity for New Right of Way Parcels	1,285
Add Existing Right of Way within Construction Limits	15,111
Deduct For Paved Areas	-11,093
Total =	5,303 S.Y.

L-9, COMMERCIAL FERTILIZER

L-9, Seeding and Protection = 5,303 Sq. Yd.
Tons of Commercial Fertilizer = 9x5,303x20÷(1000x2000) = 0.48 Tons

L-9, AGRICULTURAL LIMING MATERIAL

L-9, Seeding and Protection = 5,303 Sq. Yd.
Tons of Lime = 9x5,303x100÷(1000x2000) = 2.39 Tons

T-30, BITUMINOUS PRIME COAT

Emery Road

B-19 Aggregate Base Course 560.4 Sq. Yds.

Volume = 560.4 Sq. Yds. x 0.40 Gal./Yds.² = 224.4 Gal.

T-30 BITUMINOUS TACK COAT

Station From	Station To	Length Ft.	Width Ft.	Area Sq. Yds.
Emery Road				
91+50	94+65	315	21	735
94+65	108+50	1385	52	8002
			Total =	8737

Volume = 8,737 Sq. Yd. x 0.10 Gal Yd.² = 873.7 Gal.

MADE L.A.Z. DATE 4-14-64 TRACED _____ DATE _____
CHECKED E.C.E. DATE 4-14-64 SCALE _____

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

CUYAHOGA COUNTY
CUY-1-0.11

GENERAL SUMMARY

TYPE CODE 7221

DESCRIPTION	SHEET NUMBER															
	24✱	39✱	40✱	41✱	☆ 22,23	21Ŧ	22Ŧ	23Ŧ	61Ŧ	12	13	θ 22	21	22	23	θ 23
ROADWAY																
Raodway Excavation, Method "B", as per plan	3,741	49	64	29		1,085			5				1,038,359			
Compacted Subgrade	6,187					2,322							151,740			
Removal and Disposal of Existing Header Curb, as per Plan	3,400													855		
Removal and Disposal of Existing Pavement	205													7,340		
Removal and Disposal of Existing Sidewalk														4,550		
Removal and Disposal of Existing Curb														2,997		
Removal and Disposal of 2½" Wearing Course	3,778													950		
Removal of Trees and Stumps										Lump						
Water	3													4,199		
Pipe Removed 15" and Under		31	69						44							
Type 3 Backfill, Using № 6 or № 6A Aggregate, As Per Plan	3400													755		
Calcium Chloride For Dust Control											2					
Water For Dust Control											100					
Centerline Reference Monuments, as per plan																
Monument Boxes Adjusted to Grade																
4" Portland Cement Concrete Sidewalk														855		
Guard Rail, Steel Beam Standard Type (Deep)																
Type 47 Fence, Woven Wire																
Chain Link Fence																
4" Edge Lines															8.48	
6" Lane Lines															2.06	
4" Lane Lines															0.05	
Channelizing Lines															0.28	
Diagonal Striping															Lump	
Curb and Island Marking															Lump	
Delineators, Post Mounted, Type A-1																
Delineators, Post Mounted, Type C-2																
Delineators, Post Mounted, Type C-3																
Seeding and Protecting, as per Plan	5,303														409,136	
Commercial Fertilizer (12-12-12)	0.48														36.99	
Agricultural Liming Material, as per plan	2.39														184.97	
Sodding																
Jute Matting																
Traffic Compacted Surface Course for Maintaining Traffic											100					
Asphaltic Concrete Surface Course or an Approved Bituminous Premixed Surface Course for Maintaining Traffic											100					
Sodding for Special Berm and Slope Protection, As Per plan																
Temporary Run-Around Road, Cl. "B" Pavement, as per plan																
Compaction Using Heavy Pneumatic-Tired Roller										60						
PAVEMENT																
Porous Base Course													6,031			
Aggregate Base Course	93	18		8					3				139			
Waterproofed Aggregate Base Course, as per plan													3,828			
Asphaltic Concrete Leveling Course (70-85)	393												116			
9" Reinforced Portland Cement Concrete Base Course	5,054															
Reinforced Concrete Approach Slab (T=13"), as per plan														1,036		
Standard Type 3-A Concrete Curb							1,613									
Standard Type 2-A Concrete Curb														4,387		
Standard Type 6 Concrete Curb	10													1,404		
Standard Type 7 Concrete Curb														110		
Standard Type 8 Concrete Curb														791		
Standard Type 2-B Concrete Curb	2,730															
3" Insulation Course and Subbase Course	5,054													5,876		
4" Standard Type 1 Portland Cement Concrete Median Pavement														73		
Subbase, Grading "A" or "B", as per plan	93				84		387					145		22,952		
Bituminous Prime Coat, Sec. M-5.7, RT-2 or RT-3	224														508	
Bituminous Tack Coat, Sec. M-5.5, MS-2 or RS-1, or Sec. M-5.2, RC-1 or RC-2, as per T-30.02	874														152	
Bituminous Surface Treatment - Bituminous Material, as per plan															9,065	
Bituminous Surface Treatment - No. 6 Aggregate															290	
Asphaltic Concrete Surface Course Type "C" (70-85)	392	5.9		3.2											96.2	
7" Portland Cement Concrete Pavement		24	296	127												
8" Portland Cement Concrete Pavement																
9" Reinforced Portland Cement Concrete Pavement					501			2,322							22,964	871
10" Reinforced Portland Cement Concrete Pavement															78,145	
Expansion Anchor Bolts	1108															
Dowel Holes.	1108															

DESCRIPTION	SHEET NUMBER																								
	28	29	30	31	32	33	34	35	36	37	38	39	42θ	41	42	44	45	46	48	49	52	54	55	59	
ROADWAY																									
Raodway Excavation, Method "B", as per plan													702	22	3	8		6							
Compacted Subgrade																									
Removal and Disposal of Existing Header Curb, as per Plan																									
Removal and Disposal of Existing Pavement																									
Removal and Disposal of Existing Sidewalk																									
Removal and Disposal of Existing Curb																									
Removal and Disposal of 2½" Wearing Course																									
Removal of Trees and Stumps																									
Water																									
Pipe Removed 15" and Under															943	20	110								
Type 3 Backfill, Using № 6 or № 6A Aggregate, As Per Plan																									
Calcium Chloride For Dust Control																									
Water For Dust Control																									
Centerline Reference Monuments, as per plan																									
Monument Boxes Adjusted to Grade												1				1	1								
4" Portland Cement Concrete Sidewalk																									
Guard Rail, Steel Beam Standard Type (Deep)	1,080	1796.5	1,496	494			525	500	87.5		37.5			175	312.5	300	150			878.5	1282.5	2337.5	1,300	1237.5	
Type 47 Fence, Woven Wire																									
Chain Link Fence																									
4" Edge Lines																									
6" Lane Lines																									
4" Lane Lines																									
Channelizing Lines																									
Diagonal Striping																									
Curb and Island Marking																									
Delineators, Post Mounted, Type A-1																									
Delineators, Post Mounted, Type C-2																									
Delineators, Post Mounted, Type C-3																									
Seeding and Protecting, as per Plan																									
Commercial Fertilizer (12-12-12)																									
Agricultural Liming Material, as per plan																									
Sodding				5	112			78	192							294					9		1,226		
Jute Matting	250	250	250	1,000	747	1,612	1,429	1,495	846	625	416									1650	67	625	338		
Traffic Compacted Surface Course for Maintaining Traffic																									
Asphaltic Concrete Surface Course or an Approved Bituminous Premixed Surface Course for Maintaining Traffic																									
Sodding for Special Berm and Slope Protection, As Per plan																									
Temporary Run-Around Road, Cl. "B" Pavement, as per plan																			Lump						
Compaction Using Heavy Pneumatic-Tired Roller																									
PAVEMENT																									
Porous Base Course																									
Aggregate Base Course													458	12		145		2							
Waterproofed Aggregate Base Course, as per plan																									
Asphaltic Concrete Leveling Course (70-85)													127												
9" Reinforced Portland Cement Concrete Base Course																									
Reinforced Concrete Approach Slab (T=13"), as per plan																									
Standard Type 3-A Concrete Curb																									
Standard Type 2-A Concrete Curb																									
Standard Type 6 Concrete Curb																									
Standard Type 7 Concrete Curb																									
Standard Type 8 Concrete Curb																									
Standard Type 2-B Concrete Curb																									
3" Insulation Course and Subbase Course																									
4" Standard Type 1 Portland Cement Concrete Median Pavement																									
Subbase, Grading "A" or "B", as per plan																114									
Bituminous Prime Coat, Sec. M-5.7, RT-2 or RT-3													46			410									
Bituminous Tack Coat, Sec. M-5.5, MS-2 or RS-1, or Sec. M-5.2, RC-1 or RC-2, as per T-30.02																									
Bituminous Surface Treatment - Bituminous Material, as per plan																									
Bituminous Surface Treatment - No. 6 Aggregate																									
Asphaltic Concrete Surface Course Type "C" (70-85)													127	4.6		43									
7" Portland Cement Concrete Pavement														42											
8" Portland Cement Concrete Pavement															15	21		17							
9" Reinforced Portland Cement Concrete Pavement																									
10" Reinforced Portland Cement Concrete Pavement																									
Expansion Anchor Bolts																									
Dowel Holes.																									

DESCRIPTION	SHEET NUMBER										COST PARTICIPATION				GRAND TOTAL QUAN.	UNIT	ITEM
	155	156	166	167	168	169	170	171	231	236	Ŧ Spec. Partic.	θ 100% STATE	SU-274(2)	I-271-6(22)243			
ROADWAY																	
Raodway Excavation, Method "B", as per plan											1,090	702	3,883	1,038,398	1,044,073	Cu. Yds.	E-1
Compacted Subgrade											2,322		6,187	151,740	160,249	Sq. Yds.	E-1
Removal and Disposal of Existing Header Curb, as per Plan													3,400	855	4255	Lin. Ft.	E-8
Removal and Disposal of Existing Pavement													205	7,340	7,545	Sq. Yds.	E-8
Removal and Disposal of Existing Sidewalk														4,550	4,550	Sq. Ft.	E-8
Removal and Disposal of Existing Curb														2,997	2,997	Lin. Ft.	E-8
Removal and Disposal of 2½" Wearing Course													3778	950	4,728	Sq. Yds.	E-8
Removal of Trees and Stumps														Lump	Lump	Lump	E-9
Water													3	4,199	4,202	M. Gal.	E-11
Pipe Removed 15" and Under											44		100	1,073	1,217	Lin. Ft.	E-12
Type 3 Backfill, Using № 6 or № 6A Aggregate, As Per Plan													3400	755	4155	Lin. Ft.	I-1
Calcium Chloride For Dust Control														2	2	Tons	I-4
Water For Dust Control														100	100	M. Gal.	I-4
Centerline Reference Monuments, as per plan									13					13	13	Each	I-8
Monument Boxes Adjusted to Grade														3	3	Each	I-8
4" Portland Cement Concrete Sidewalk														855	855	Sq. Ft.	I-13
Guard Rail, Steel Beam Standard Type (Deep)														13,990	13,990	Lin. Ft.	I-15
Type 47 Fence, Woven Wire										3,884				3,884	3,884	Lin. Ft.	I-25
Chain Link Fence										19,605				19,605	19,605	Lin. Ft.	I-26
4" Edge Lines														8.48	8.48	Miles	I-125
6" Lane Lines														2.06	2.06	Miles	I-125
4" Lane Lines														0.05	0.05	Mile	I-125
Channelizing Lines														0.28	0.28	Mile	I-125
Diagonal Striping														Lump	Lump	Lump	I-125
Curb and Island Marking														Lump	Lump	Lump	I-125
Delineators, Post Mounted, Type A-1	65													65	65	Each	I-127
Delineators, Post Mounted, Type C-2	117													117	117	Each	I-127
Delineators, Post Mounted, Type C-3	3													3	3	Each	I-127
Seeding and Protecting, as per Plan													5,303	409,136	414,439	Sq. Yds.	L-9
Commercial Fertilizer (12-12-12)													0.48	36.99	37.47	Tons	L-9
Agricultural Liming Material, as per plan													2.39	184.97	187.36	Tons	L-9
Sodding			8	8	26	9	12	9						1,988	1,988	Sq. Yds.	L-10
Jute Matting														11,600	11,600	Sq. Yds.	L-120
Traffic Compacted Surface Course for Maintaining Traffic														100	100	Cu. Yds.	T-10
Asphaltic Concrete Surface Course or an Approved Bituminous Premixed Surface Course for Maintaining Traffic														100	100	Cu. Yds.	T-35
Sodding for Special Berm and Slope Protection, As Per plan		185												185	185	Sq. Yds	L-10
Temporary Run-Around Road, Cl. "B" Pavement, as per plan														Lump	Lump	Lump	S-15
Compaction Using Heavy Pneumatic-Tired Roller														60	60	Hours	S.S. CE-101.04
PAVEMENT										100 % County ☆							
Porous Base Course														6,031	6,031	Cu. Yds.	B-112
Aggregate Base Course											3	458	119	298	878	Cu. Yds.	B-19
Waterproofed Aggregate Base Course, as per plan														3,828	3,828	Cu. Yds.	B-21
Asphaltic Concrete Leveling Course (70-85)												127	393	116	636	Cu. Yds.	B-35
9" Reinforced Portland Cement Concrete Base Course													5,054		5,054	Sq. Yds.	B-71
Reinforced Concrete Approach Slab (T=13"), as per plan														1,036	1,036	Sq. Yds.	I-7
Standard Type 3-A Concrete Curb											1,613				1,613	Lin. Ft.	I-12
Standard Type 2-A Concrete Curb														4,387	4,387	Lin. Ft.	I-12
Standard Type 6 Concrete Curb													10	1,404	1,414	Lin. Ft.	I-12
Standard Type 7 Concrete Curb														110	110	Lin. Ft.	I-12
Standard Type 8 Concrete Curb														791	791	Lin. Ft.	I-12
Standard Type 2-B Concrete Curb													2,730		2,730	Lin. Ft.	I-12
3" Insulation Course and Subbase Course													5,054	5,876	10,930	Sq. Yds.	I-19
4" Standard Type 1 Portland Cement Concrete Median Pavement														73	73	Sq. Yds.	I-21
Subbase, Grading "A" or "B", as per plan										84	387	145	93	23,066	23,775	Cu. Yds.	I-22
Bituminous Prime Coat, Sec. M-5.7, RT-2 or RT-3												46	224	918	1,188	Gals.	T-30
Bituminous Tack Coat, Sec. M-5.5, MS-2 or RS-1, or Sec. M-5.2, RC-1 or RC-2, as per T-30.02													874	152	1,026	Gals.	T-30
Bituminous Surface Treatment - Bituminous Material, as per plan														9,065	9,065	Gals.	T-31
Bituminous Surface Treatment - No. 6 Aggregate														290	290	Cu. Yds.	T-31
Asphaltic Concrete Surface Course Type "C" (70-85)												127	401	144	672	Cu. Yds.	T-35
7" Portland Cement Concrete Pavement													447	42	489	Sq. Yds.	T-70
8" Portland Cement Concrete Pavement														53	53	Sq. Yds.	T-70
9" Reinforced Portland Cement Concrete Pavement										501	2,322	871		22,964	26,658	Sq. Yds.	T-71
10" Reinforced Portland Cement Concrete Pavement														78,145	78,145	Sq. Yds.	T-71
Expansion Anchor Bolts													1108		1108	Each	Special
Dowel Holes.													1108		1108	Each	S-23

✱ SU-274(2)   θ 100% STATE (I-271)   Ŧ Special Participation See note on Sh. 61 (I-271)   ☆ 100 % County (I-271)

MADE E.C.E DATE 4-14-64 TRACED ______ DATE ______
CHECKED LAZ DATE 4-14-64 SCALE ______

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

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

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256

GENERAL SUMMARY

TYPE CODE 7221

CUYAHOGA COUNTY
CUY-1-0.11

SHEET NUMBER																																						COST PARTICIPATION			TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
61Ŧ	39*	40*	41*	13	14	28	29	30	31	32	33	34	35	36	37	38	41	42	43	44	45	46	49	52	54	55	59	166	167	168	169	170	171	181	182	184	187	Ŧ Special Participation	SU-274(2)	I-271-6(22)243				
																																												DRAINAGE
									370																394	77		5	49	86	2			2,406	918		11,408			15,715	15,715	Cu. Yds.	E-3	Channel Excavation
						30	40	20	120	70	40	100	110	90	30	20		60		40	30	10	10	30	55		40													945	945	Lin. Ft.	I-1	6" Pipe, Class F-4
1,534					300	3,430	3,224	3,954	4,130	4,091	3,994	4,872	4,006	3,990	4,026	1,037	740	1,030		540	733	675	3,046	1,426	4,750	1,709	2,036											1,534		57,739	59,273	Lin. Ft.	I-1	6" Pipe, Class I-3, As Per Plan
					500							31								20		36	44	32		22	22													707	707	Lin. Ft.	I-1	6" Pipe, Class J-1, Sec. M-6.6(b) or M-6.8(b)
					500																																			500	500	Lin. Ft.	I-1	6" Pipe, Class H-2
					200	10	20									10							40	10	20	20														330	330	Lin. Ft.	I-1	8" Pipe, Class F-4, Sec. M-6.4(c)
																				325																				325	325	Lin. Ft.	I-1	12" Pipe, Class B-1, Sec. M-6.5(b) or M-6.6(b) or M-6.8(b)
30	44		22															10			297			27														30	66	334	430	Lin. Ft.	I-1	12" Pipe, Class E-1
												216																												216	216	Lin. Ft.	I-1	12" Pipe, Class F-4
69	52	23												38						28	280																	69	75	346	490	Lin. Ft.	I-1	12" Pipe, Class J-1
														22				38																						60	60	Lin. Ft.	I-1	15" Pipe, Class B-1
						22	142	22	60	49	14		56	10		22																								397	397	Lin. Ft.	I-1	15" Pipe, Class E-1
						60	44																	65																169	169	Lin. Ft.	I-1	15" Pipe, Class F-4
185						102	84			69	114		60	253	236	60		34					41	109														185		1,162	1,347	Lin. Ft.	I-1	15" Pipe, Class J-1
																									119															119	119	Lin. Ft.	I-1	15" Pipe, Class J-1, Sec. M-6.6(b) or M-6.8(b)
										22																														22	22	Lin. Ft.	I-1	18" Pipe, Class B-1
58								22	22				22		22																							58		88	146	Lin. Ft.	I-1	18" Pipe, Class E-1
300									82	83			133	50	145	165																						300		658	958	Lin. Ft.	I-1	18" Pipe, Class J-1
											22																													22	22	Lin. Ft.	I-1	21" Pipe, Class E-1
													87							89																				176	176	Lin. Ft.	I-1	21" Pipe, Class F-1
										74				250	450																									774	774	Lin. Ft.	I-1	21" Pipe, Class J-1
												28																												28	28	Lin. Ft.	I-1	24" Pipe, Class E-1
									69		102	969	121																											1,261	1,261	Lin. Ft.	I-1	24" Pipe, Class J-1
												72		350																										422	422	Lin. Ft.	I-1	27" Pipe, Class J-1
100																																						100			100	Lin. Ft.	I-1	30" Pipe, Class A-1
											300	453																												753	753	Lin. Ft.	I-1	30" Pipe, Class J-1
													22																											22	22	Lin. Ft.	I-1	36" Pipe, Class E-1, Sec. M-6.6(a) or M-6.8(a)
																															124									124	124	Lin. Ft.	I-1	36" Pipe, Class A-1, Sec. M-6.6(a) or M-6.8(b)
										909			100	327																										1,336	1,336	Lin. Ft.	I-1	36" Pipe, Class J-1, Sec. M-6.6(b) or M-6.8(b)
																													562											562	562	Lin. Ft.	I-1	36" Pipe, Class A-1, Sec. M-6.6(c)
											700		266																											966	966	Lin. Ft.	I-1	36" Pipe, Class J-1
																												305												305	305	Lin. Ft.	I-1	42" Pipe, Class A-1, Sec. M-6.4(d) 10 Gage
																																				86				86	86	Lin. Ft.	I-1	42" Pipe, Class B-1
																																				175				175	175	Lin. Ft.	I-1	42" Pipe, Class E-1
																														464										464	464	Lin. Ft.	I-1	48" Pipe, Class A-1, Sec. M-6.6(b)
																																	96							96	96	Lin. Ft.	I-1	48" Pipe, Class A-1, Sec. M-6.6(c)
									330	100																														430	430	Lin. Ft.	I-1	48" Pipe, Class J-1, Sec. M-6.6(b)
									370																															370	370	Lin. Ft.	I-1	54" Pipe, Class E-1, Sec. M-6.6(a)
																																207								207	207	Lin. Ft.	I-1	60" Pipe, Class A-1, Sec. M-6.6(b)
5.50						0.26	0.26		17.00							0.30								2.03				22.00	11.70	31.70	21.00	44.00	21.40			36.20		5.50		207.85	213.35	Cu. Yds.	I-2	Masonry
																							1																	1	1	Each	I-5	6" Pipe Specials, Class F-4
						3	4	2	12	7	2	5	9	4	3	3		5		4	3	3	4	2	4	4	4													87	87	Each	I-5	6" Pipe Specials, Class I-3
						2																																		2	2	Each	I-5	15" Pipe Specials, Class F-4
			1																																				1		1	Each	I-8	Standard No. 1-2-A Catch Basin
												1								1	1		1	1																5	5	Each	I-8	Standard No. 2-2-A Catch Basin
																								1																1	1	Each	I-8	Standard No. 2-A-14 Paved Shoulder Inlet
																				1																				1	1	Each	I-8	Std. Modified No. 2-3 Catch Basins, as per Plan
																					1																			1	1	Each	I-8	Standard No. 3 Catch Basins
																				2	2																			4	4	Each	I-8	Standard No. 3-A Catch Basins
									2	3	2	2	2	2	1										1															15	15	Each	I-8	Standard No. 5 Catch Basins
6																																						6			6	Each	I-8	Standard No. 6 Catch Basins
						2	2	2	4	4	2	4	8	5	4	4								1																42	42	Each	I-8	Standard No. 8 Catch Basins
1		2								2	2	5	3	1	1									1														1	2	15	18	Each	I-8	Standard No. 1 Manholes
									1	1				1															1	1		1								6	6	Each	I-8	Standard No. 2 Manholes (Without Drop Pipe)
	3	4																				1																	7	1	8	Each	I-8	Manholes Adjusted to Grade, as per plan
																			1																					1	1	Each	I-8	Catch Basins Adjusted to Grade, as per plan
	3	3																2																					6	2	8	Each	I-8	Special No. 3-C Catch Basin
	2	8	2														1	2																					12	3	15	Each	I-8	Special No. 3-C Catch Basin Modified
				70		5	5									5								5						32		32								154	154	Cu. Yds.	I-10	Dumped Rock Channel Protection
																													60	77		32	36							205	205	Sq. Yds.	I-10	Riprap, Using 6" Reinforced Concrete Slab, as per plan
1	5	10	5														4	9	1	2	1	2	1															1	20	20	41	Each	I-16	Catch Basins Abandoned

* SU-274(2)   Ŧ Special Participation See note on Sh. 61

MADE E.C.E. DATE 4-14-64 TRACED ______ DATE ______
CHECKED L.A.Z. DATE 4-14-64 SCALE ______

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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GENERAL SUMMARY

TYPE CODE 7221

CUYAHOGA COUNTY
CUY-1-0.11

⊛ 100% State Partition

39*	40*	41*	160*	161*	R/W	12	13	14	41	42	44	45	46	55	161	162	163	164	188	COST PARTICIPATION SU-274(2)	COST PARTICIPATION I-271-6(22)243	TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
																									SANITARY SEWERS (CODE Y060)
																			⊛ 625		~~625~~	⊛ 625	Lin. Ft.	I-1	6" Pipe, Class B-1, Sec. M-6.8(b)
								100													100	100	Lin. Ft.	I-1	6" Pipe, Class J-1, Sec. M-6.8(b)
														153							153	153	Lin. Ft.	I-1	8" Pipe, Class A-1, Sec. M-6.8(b)
								200											187		387	387	Lin. Ft.	I-1	8" Pipe, Class J-1, Sec. M-6.8(b)
																			68		68	68	Lin. Ft.	I-1	15" Pipe, Class B-1, Sec. M-6.8(b)
																			77		77	77	Lin. Ft.	I-1	15" Pipe, Class J-1, Sec. M-6.8(a) Encased, as per Plan
																			553		553	553	Lin. Ft.	I-1	18" Pipe, Class B-1, Sec. M-6.8(a) Encased, as per Plan
																			685		685	685	Lin. Ft.	I-1	18" Pipe, Class B-1, Sec. M-6.8(b)
																			562		562	562	Lin. Ft.	I-1	18" Pipe, Class J-1, Sec. M-6.8(b)
																			420		420	420	Lin. Ft.	I-1	18" Pipe, Class J-1, Sec. M-6.8(a) Encased, as per Plan
																			⊛ 2		~~2~~	⊛ 2	Each	I-5	6" Pipe Specials, Class B-1, Sec. M-6.8(b)
								5													5	5	Each	I-5	6" Pipe Specials, Class J-1, Sec. M-6.8(b)
								5													5	5	Each	I-5	18" Pipe Specials, Class J-1, Sec. M-6.8(b)
									1										5		6	6	Each	I-8	Standard No. 1 Manhole
																			1		1	1	Each	I-8	Standard No. 2 Manhole
																			1		1	1	Each	I-8	Standard No. 2 Manhole without Drop Pipe
																			1		1	1	Each	I-8	Std. Modified No. 2 Manhole, as per Plan
																			3		3	3	Each	I-8	Std. Modified No. 2 Manhole without Drop Pipe, as per Plan
1	2	2								2			1							5	3	8	Each	I-8	Manhole Adjusted to Grade, as per plan
	1									1										1	1	2	Each	I-8	Manhole Reconstructed to Grade, as per plan
											Lump										Lump	Lump	Lump	S-24	Remove Existing Structure
									1			3									4	4	Each	I-16	Manholes Abandoned
																									WATER MAIN (CODE Y060)
															326	515	481	745			2,067	2,067	Lin. Ft.	Special	12" Water Main A.S.A. Class 25 C.I. Pipe (Cement Lined, Lead or Slip-on Joint) and Fittings
															525		599				1,124	1,124	Lin. Ft.	Special	12" Water Main A.S.A. Class 25 Ductile Iron Pipe and Ductile Iron Fittings
															1						1	1	Each	Special	12" Plug with Clamps and Concrete Pier (Including Pipe Cuts)
																2	1	2			5	5	Each	Special	12" Hub Valve
																1	1	1			3	3	Each	Special	12" Inserting Valve
															1						1	1	Each	Special	12" Tapping Sleeve and 12" Tapping Valve
															1	2		3			6	6	Each	Special	1" Service Connection Relocation
																	⊛ 1				~~1~~	⊛ 1	Each	Special	2" Service Connection, Pipe and Fittings
				155											70					155	70	225	Lin. Ft.	Special	Lower Existing Service Connection
															2						2	2	Each	Special	Service Connection Plugged at Main
			35	14											7	2		3		49	12	61	Each	Special	Remove Existing Curb Cock Box
			35	14											5	2		3		49	10	59	Each	Special	Furnish and Install New Curb Cock and Box
																1		2			3	3	Each	Special	6" Valves
			45	30											15	50		20		75	85	160	Lin. Ft.	Special	6" Water Main A.S.A. Class 25 C.I. Pipe, Cement Lined
																1		2			3	3	Each	Special	6" Fire Hydrants
			3	2											1	2				5	3	8	Each	Special	Fire Hydrants Relocated
																1		2			3	3	Each	Special	Fire Hydrants Removed
																	1				1	1	Each	Special	Reset Hydrant to Grade
			3	2											2	2				5	4	9	Each	Special	Adjust Existing Valve Box to Grade
																1					1	1	Each	Special	8" Water Main Temporary Connection Complete with Valves, Pipe and Fittings
																	1	1			2	2	Each	Special	12" Water Main Temporary Connection Complete with Valves, Pipe and Fittings
																1		1			2	2	Each	Special	Test Main
																		300			300	300	Lin. Ft.	E-12	Pipe Removal, 15" and Under
																									BUILDING REMOVAL
					Lump																Lump	Lump	Lump	E-10	Removal of 1-Story Brick Residence with 2-Car Attached Garage, Parcel 54-96WL
					Lump																Lump	Lump	Lump	E-10	Removal of 1½-story Brick Residence and 1½-Story Frame 2-Car Garage, Parcel 54-97WL
					Lump																Lump	Lump	Lump	E-10	Removal of 1½-story Frame Residence, 1½-Story Frame 2-Car Garage and Quonset-Type Shed, Parcel 54-99WL
					Lump																Lump	Lump	Lump	E-10	Removal of 1½-Story Frame Residence, Frame Barn, Frame Garage and Shed, Parcel 54-104WL
					Lump																Lump	Lump	Lump	E-10	Removal of 2½-Story Frame Residence and Greenhouses including Garage and Office, Parcel 54-105WL
					Lump																Lump	Lump	Lump	E-10	Removal of 1-Story Frame Residence and 2-Car Frame Garage, Parcel 54-152WL
							Lump													Lump	Lump	Lump	Lump		Construction Layout Stakes
						Lump														Lump	Lump	Lump	Lump	I-3	Maintaining Traffic
																									Structures CUY-1-0060; CUY-1-0149; CUY-1-0170 See Sheet 193

MADE	E.C.E.	DATE	3-11-64	TRACED	DATE
CHECKED	R.J.Z.	DATE	4-14-64	SCALE	

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

* SU-274(2)

Revised C.E.H. 2-1-65
REV. 6-4-64

GENERAL SUMMARY

S-8

8-S

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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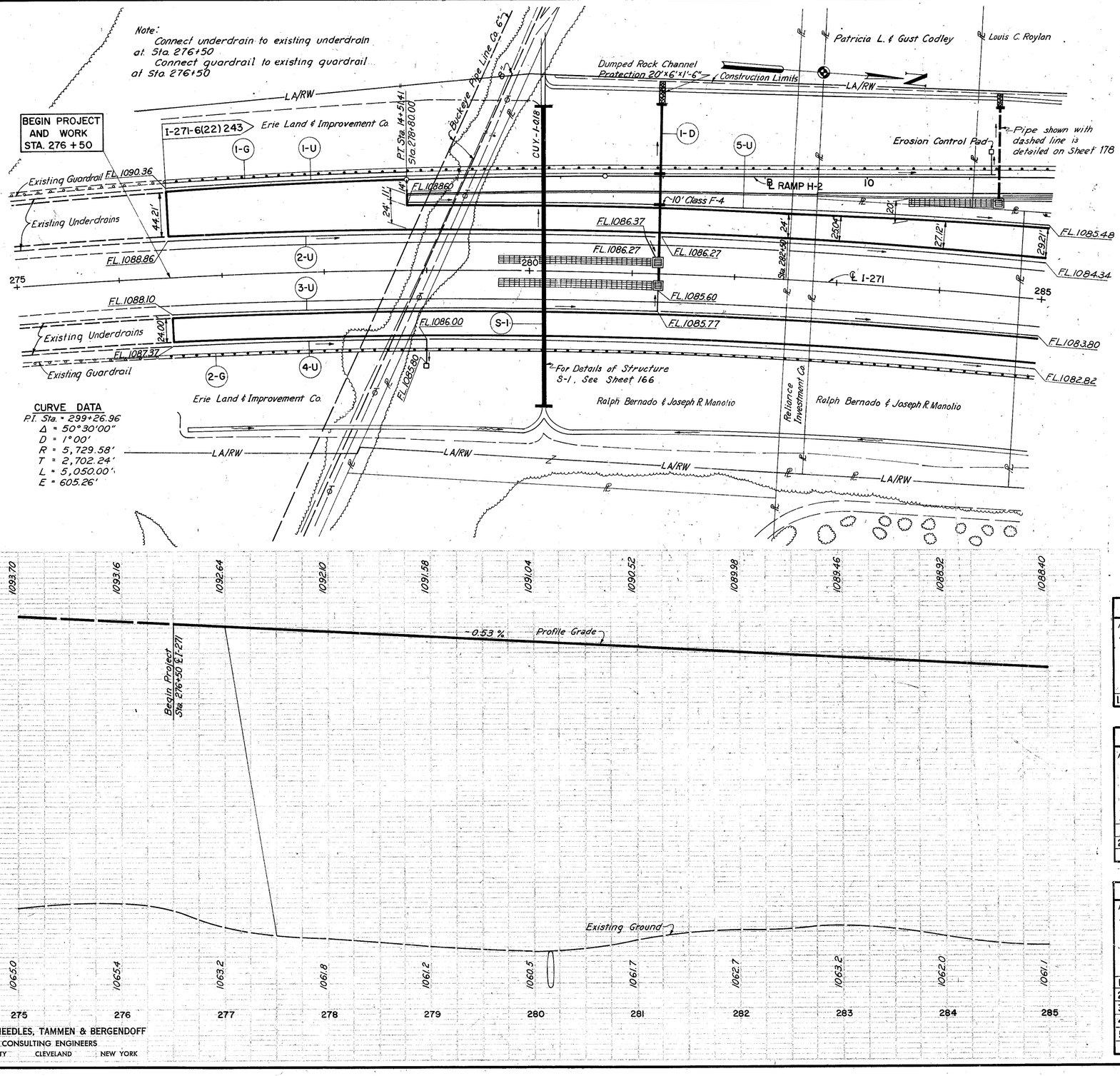
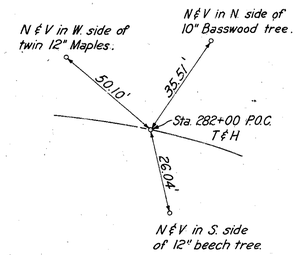
CUYAHOGA COUNTY
CUY-1-0.11
CUY-271-4.85





BENCH MARK 115
R.R. spike in W. side of 15" maple 225' Left of Sta. 280+85
Elev. 1059.14

BENCH MARK 115-A
Lag Bolt & washer in E. root of 16" maple 340' Lt. of Sta. 283+50
Elev. 1059.46

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class E-1 15"	I-1 Class F-4 15"	I-1 Class J-1 15"	I-2 Masonry	I-5 Class F-4 25° Bend 15"	I-8 Std. No. 8 C.B.	I-10 Dumped Rock Channel Protection	L-120 Jute Matting
				Lin. Ft.			Cu. Yds.	Each	Each	Cu. Yds.	Sq. Yds.
1-D	281+25		Rt. & Lt.	22	60	102	0.26	2	2	7	250

GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std. Type (Deep)
				Lin. Ft.
1-G	276+50	278+80	Lt.	230
2-G	276+50	285+00	Rt.	850
	Total			1080

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class F-4 M64 (c) 8"	I-1 Class I-3 Shallow 6"	I-5 Class I-3 60° Y 6"x6"x6"	I-5 Class I-3 90° Bend 6"
				Lin. Ft.			Each	
1-U	276+50	278+80	Lt.			230		
2-U	276+50	285+00	Lt.	10		865	1	
3-U	276+50	285+00	Rt.	10		863		1
4-U	276+50	285+00	Rt.		10	862		1
5-U	278+80	285+00	Lt.	10		610		
	Total			30	10	3,430	1	2

Notes:
Typical Section of adjoining pavement same as shown on sheet 2.
For details of Entrance Terminal at Ramp H-2 see sheet 153.
For Ramp H-2 details and quantities see sheet 52.
For Ramp H-2 curve data see sheet 9.
All Underdrains are shallow unless labeled otherwise.
For Sewer profiles see sheet 173.
For Underdrain outlet detail see sheet 157.
The contractor shall cooperate with contractors on the adjoining sections in construction of the drainage facilities at the ends of the project.

Excavation	2,452	Cu. Yds.
Embankment	196,169	Cu. Yds.
Embankment + 18 %	231,479	Cu. Yds.

STA. 275+00 TO STA. 285+00

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

PLAN	BY	DATE
SURVEYED	R.J.K.	4-4-63
PLOTTED	E.C.E.	4-5-63
NOTE BOOK ALIGNMENT CHECKED.		
NO. RT. OF WAY CHECKED.		

PROFILE	BY	DATE
SURVEYED	R.J.K.	4-4-63
PLOTTED	E.C.E.	4-5-63
NOTE BOOK CROSS SECTIONS CHECKED.		
B. M.'s NOTED.		
NO. STRUCTURE NOTATIONS CHKD.		

MICROFILMED
MAR 30 1990

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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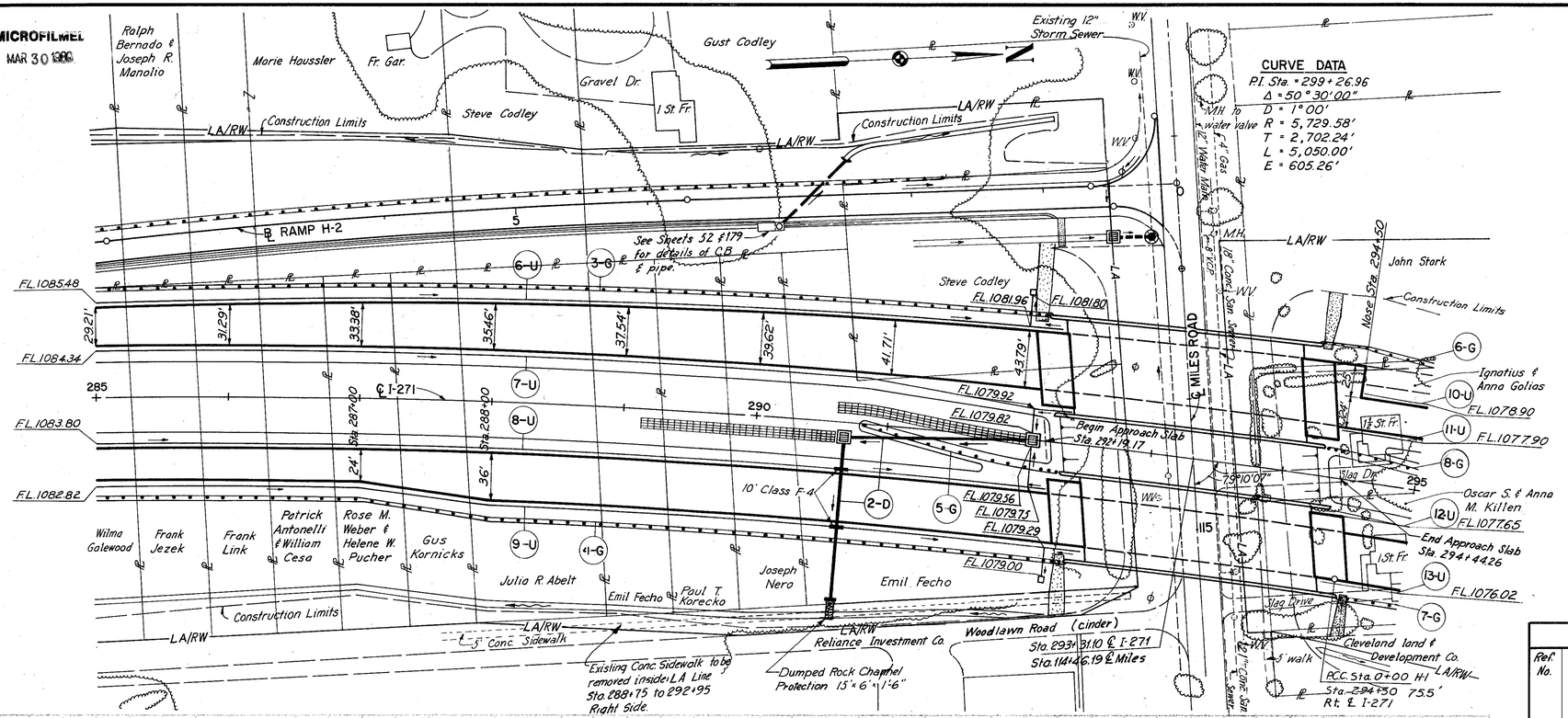
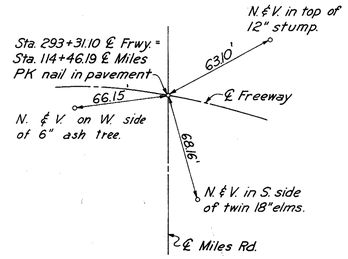
CUYAHOGA COUNTY
CUY-I-0.11



CURVE DATA

P.I. Sta. = 299+26.96
Δ = 50°30'00"
D = 1°00'
R = 5,729.58'
T = 2,702.24'
L = 5,050.00'
E = 605.26'

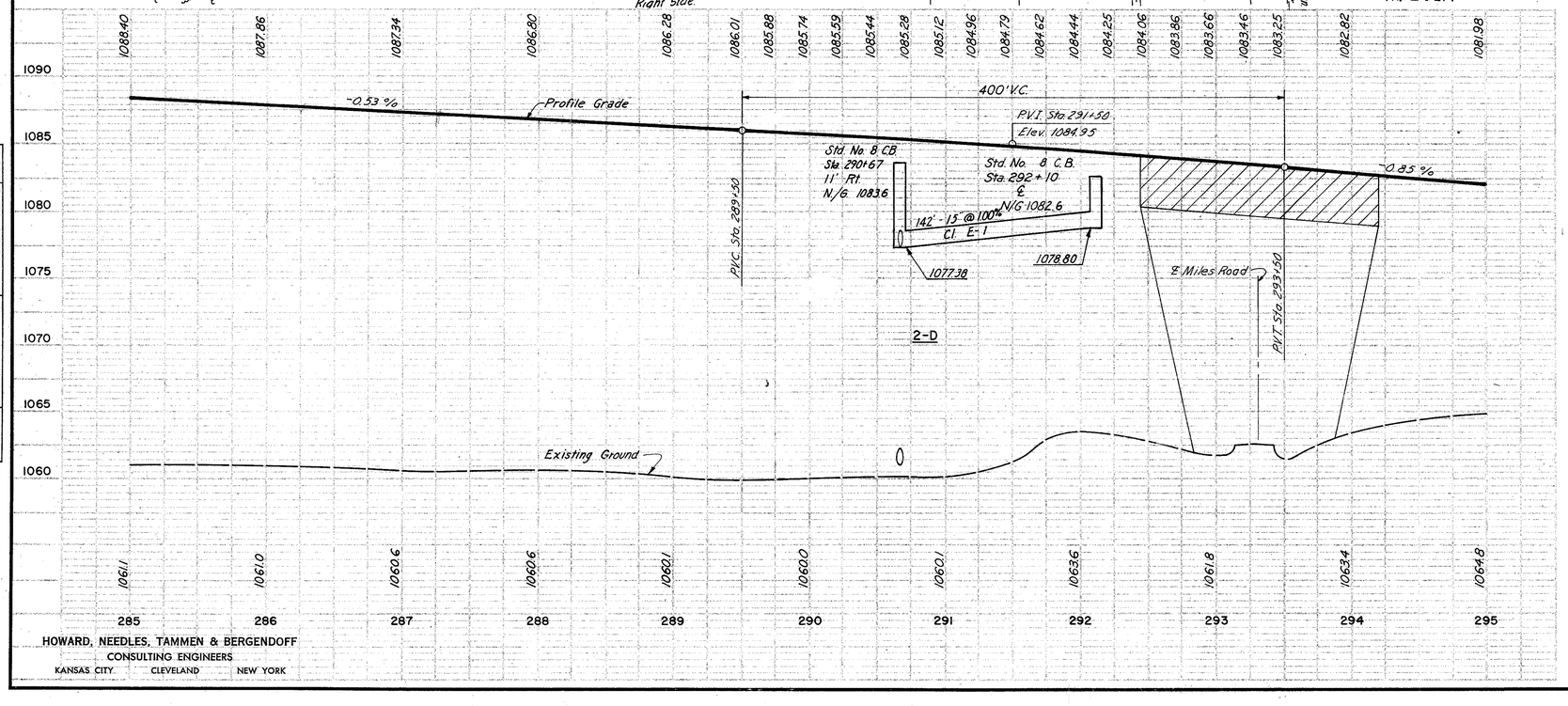


BENCH MARK 116
R.R. spike in W. side of 12" maple 170' Rt. of Sta. 293+40 S. side of Miles Rd.
Elev. 1065.96

BENCH MARK 116-A
Lag bolt & washer in W. root of 24" elm stump 350' Rt. of Sta. 294+25 N. side of Miles Rd.
Elev. 1066.38

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class E-1 15"	I-1 Class F-4 15"	I-1 Class J-1 15"	I-2 Masonry	I-8 Std. No. 8 C.B.	I-10 Dumped Rock Channel Protection	L-120 Jute Matting
				Lin. Ft.			Cu. Yds.	Each	Cu. Yds	Sq. Yds.
2-D	289+79	292+10	Lt & Rt.	142	44	84	26	2	5	250



GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std Type Deep
				Lin. Ft.
3-G	284+99.5	292+12	Lt.	712.5
4-G	285+00	292+40	Rt.	740
5-G	290+84	292+32	Lt & Rt.	150
6-G	294+19	295+00	Lt.	81
7-G	294+55	295+00	Rt.	45
8-G	294+32	295+00	Lt.	68
	Total			1796.5

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class F-4 MG.4(C) 8	I-1 Class I-3 Shallow 6"	I-5 Class I-3 Tee 6"x6"x6"
				Lin. Ft.			
6-U	285+00	292+25	Lt.		10	740	1
7-U	285+00	292+37	Lt.	10		750	1
8-U	285+00	292+23	Rt.	20		738	1
9-U	285+00	292+55	Rt.	10	10	766	1
10-U	294+50	295+00	Lt.			50	
11-U	294+38	295+00	Lt.			62	
12-U	294+42	295+00	Rt.			58	
13-U	294+40	295+00	Rt.			60	
	Total			40	20	3224	4

PROPOSED STRUCTURE CUY-I-0060 L & R

Type: Continuous rolled beam with reinforced concrete deck and substructure.
Spans: 49'-6", 70'-6", 49'-6"
Roadway: Northbound - 66'-0" face to face of parapet
Southbound - Varies - 74'-1 to 78'-1 face to face of parapet.
Load Frequency: C.F. 2000 (57) Adequate for alternate AASHO loading.
Skew: 10°49'53" to local tangent.
Wearing Surface: 1" Monolithic Concrete.
Approach Slabs: AS-1-54 (25' long)
Alignment: 1°00'00" Right

Notes:
For Ramp H-1 Details and quantities see sheet 49.
For Ramp H-2 Details and quantities see sheet 52.
All Underdrains are shallow unless labeled otherwise.
For Guard Rail treatment at bridge see sheet 155.
For proposed structure see sheet 194
For Detail of Sodded Flumes at bridge wingwall see sheet 156.
For underdrain outlet detail see sheet 157.
For Sewer Profiles see sheet 173.

Excavation	635	Cu. Yds.
Embankment	186,994	Cu. Yds.
Embankment + 18%	220,653	Cu. Yds.

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

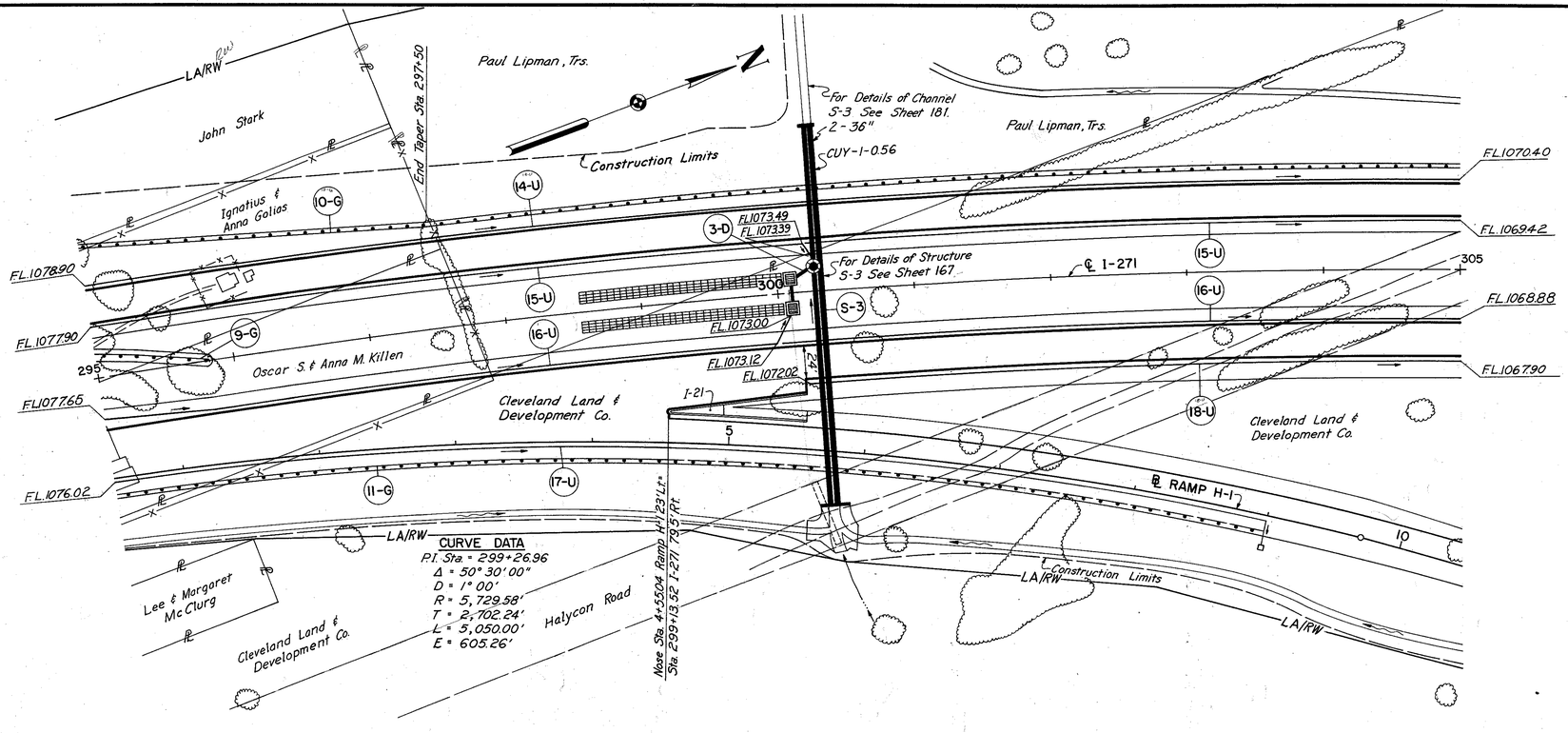
STA. 285+00 TO STA. 295+00

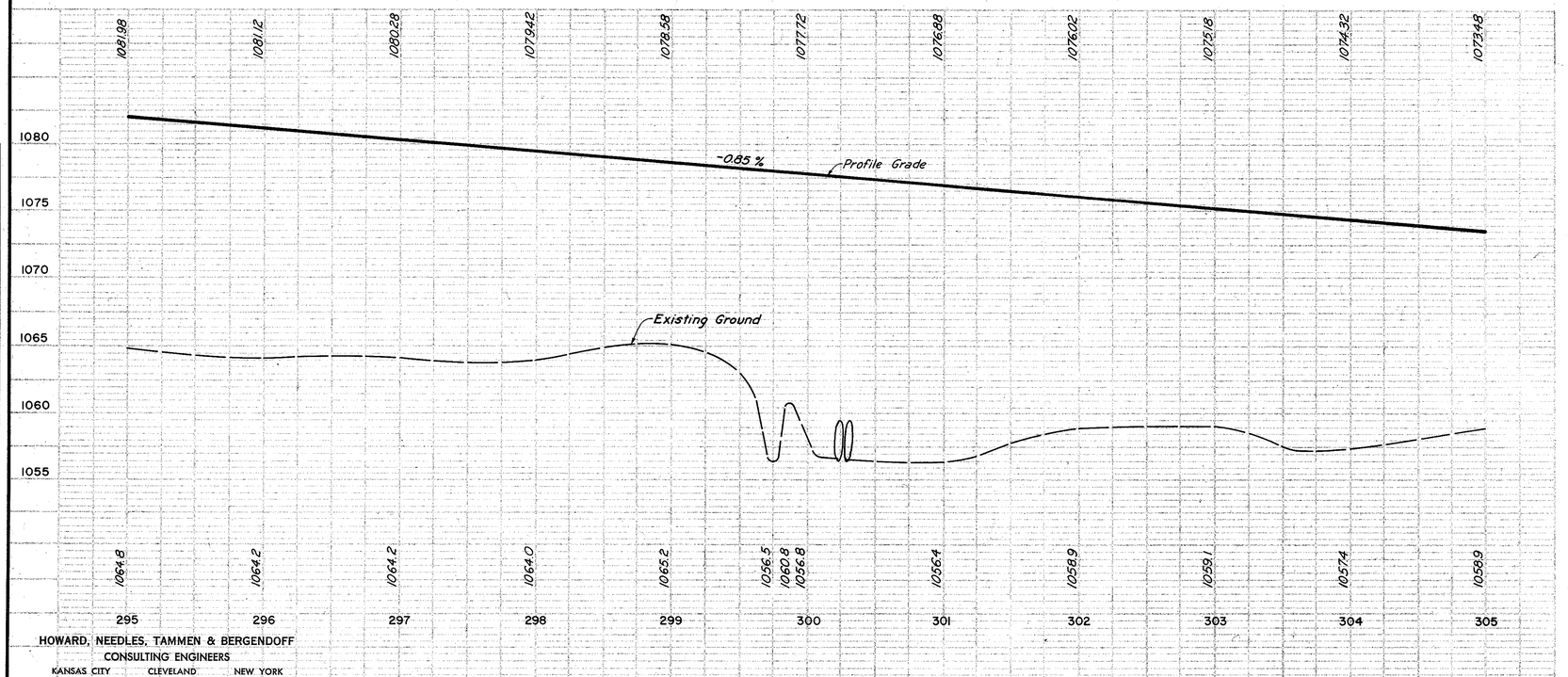
PLAN
NOTE BOOK
NO.
SURVEYED
PLOTTED
GRADES CHECKED
B. M. NOTED
STRUCTURE NOTATIONS CHKD
ALIGNMENT CHECKED
RT. OF WAY CHECKED
BY
DATE
5-28-63
6-24-63
R.J.K.
E.C.E.

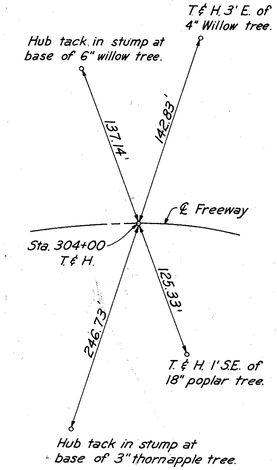
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

30
256

CUYAHOGA COUNTY
CUY-I-0.11







BENCH MARK 117
R.R. spike in E. side of 15" poplar
105' Rt. of Sta. 304+70
Elev. 1062.42

GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std. Type (Deep) Lin. Ft.
9-G	295+00	295+78	Lt.	82 ✓
10-G	295+00	305+00	Lt.	1,000 ✓
11-G	295+00	299+14	Rt.	414 ✓
Total				1,496

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6" Lin. Ft.	I-1 Class I-3 Shallow 6" Lin. Ft.	I-5 Class I-3 60° Bend 6" Each
14-U	295+00	305+00	Lt.		1,000	
15-U	295+00	305+00	Lt.	10	1,006	1
16-U	295+00	305+00	Rt.	10	1,016	1
17-U	295+00	299+14	Rt.		414	
18-U	300+18	305+00	Rt.		518	
Total				20	3,954	2

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class E-1 15" Lin. Ft.	I-1 Class E-1 18" Lin. Ft.	I-8 Std. No. 8 C.B. Each	L-120 Jute Matting Sq. Yds.
3-D	300+10	300+30	Rt.-Lt.	22	22	2	250
Total				22	22	2	250

Notes :
For Ramp H-1 details and quantities see sheet 49.
For details of Exit Terminal at Ramp H-1 see sheet 153.
All Underdrains are shallow Unless labeled otherwise.
For Sewer Profiles see sheet 173.
Ramp H-1 Earthwork included in the totals for this sheet.

Excavation	11,523	Cu. Yds.
Embankment	160,106	Cu. Yds.
Embankment + 18 %	188,925	Cu. Yds.

PLAN
SURVEYED.
PLOTTED.
NOTE BOOK
ALIGNMENT CHECKED.
RT. OF WAY CHECKED.
NO.
BY: R.L.K. E.C.E.
DATE: 4-26-63 4-27-63

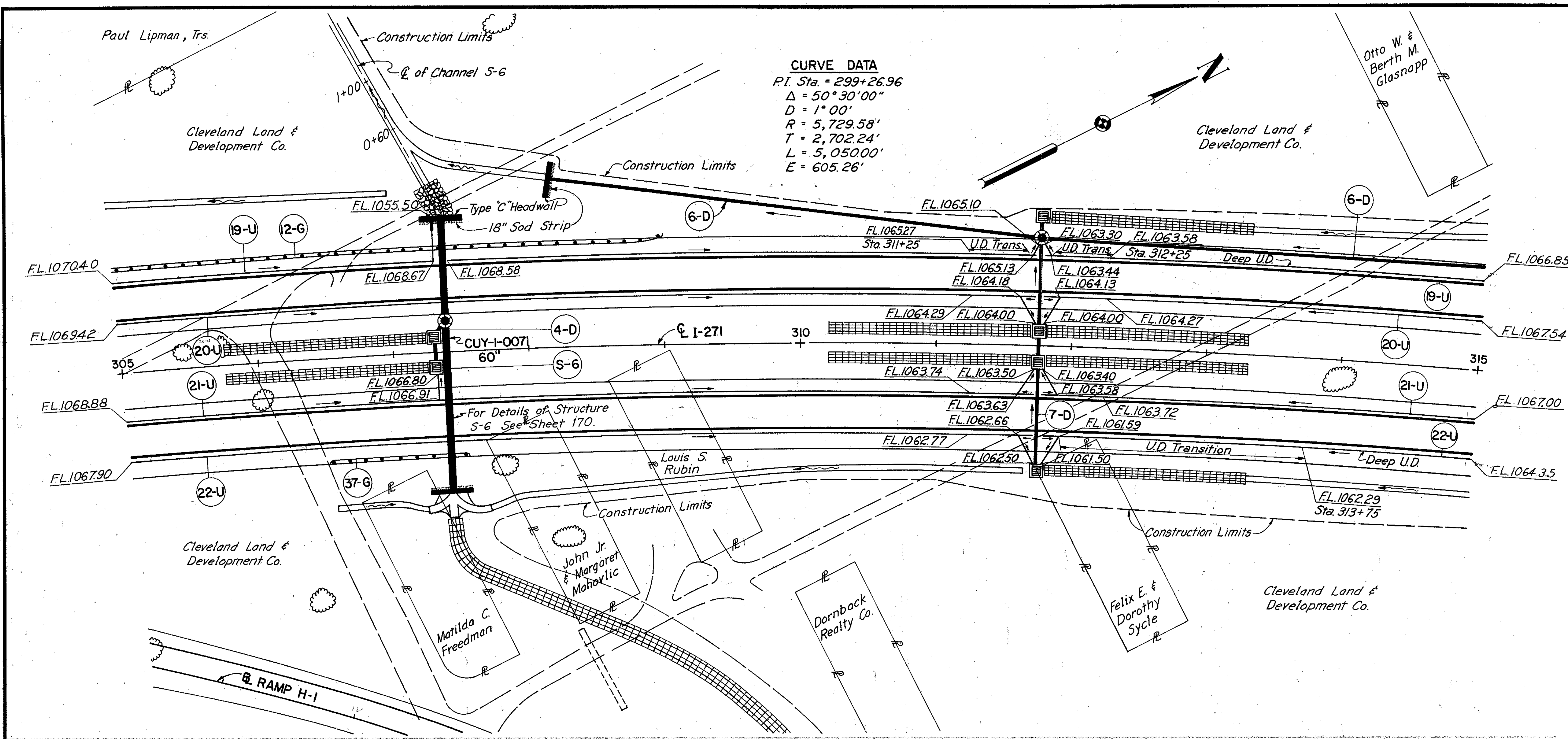
PROF.
SURVEYED.
PLOTTED.
NOTE BOOK
GRADES CHECKED.
B. M. NOTED.
STRUCTURE NOTATIONS CHKD.
NO.
BY:
DATE: 4-26-63 4-27-63

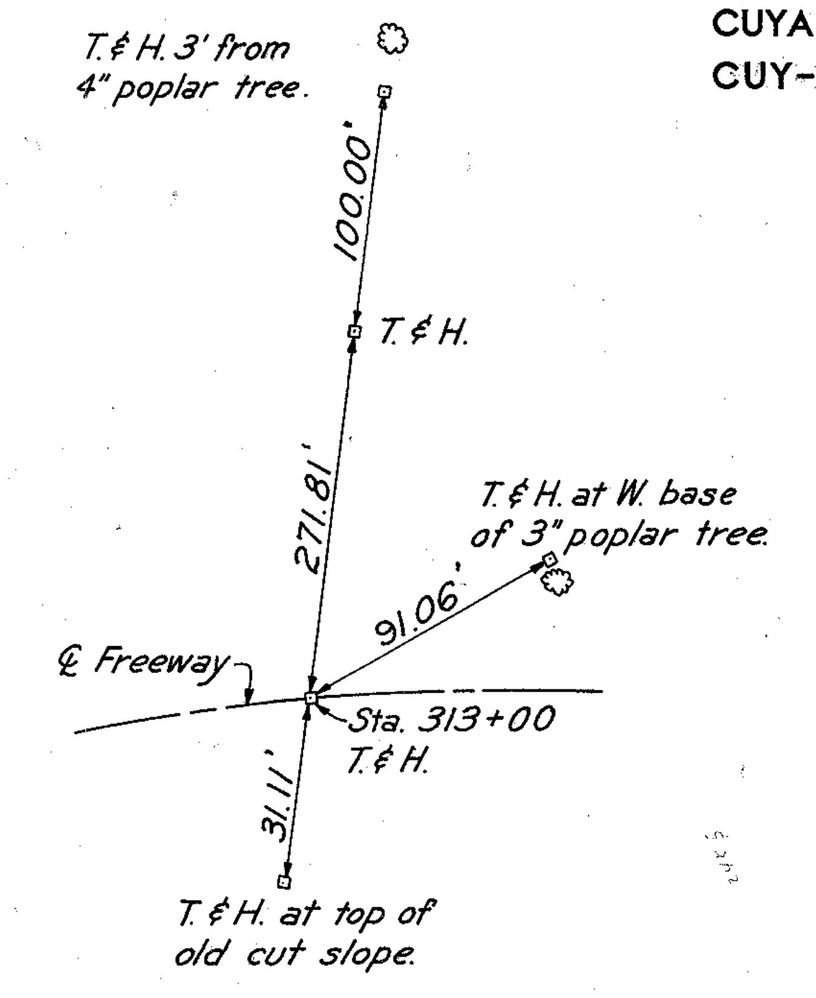
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

STA. 295+00 TO STA. 305+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-1-0.11





GUARD RAIL

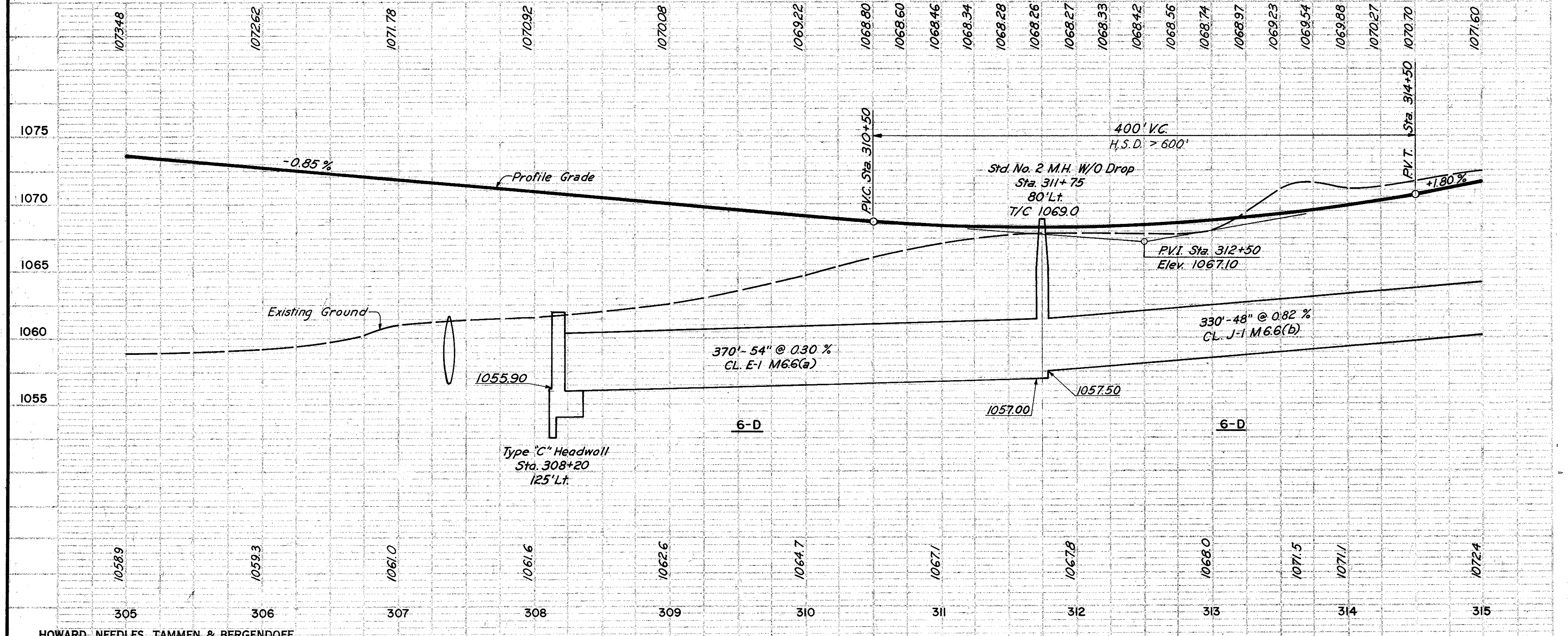
Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std. Type (Deep) Lin. Ft.
12-G	305+00	308+94	Lt.	394 ✓
37-G	305+50	307+50	Rt.	100 ✓
Total				494

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6" Lin. Ft.	I-1 Class I-3 Shallow 6" Lin. Ft.	I-1 Class I-3 Deep 6" Lin. Ft.	I-5 Class I-3 60° Y 6"x6"x6" Each	I-5 Class I-3 Tee 6"x6"x6" Each
19-U	305+00	315+00	Lt.	30	681	328	3	
20-U	305+00	315+00	Lt.	30	1,042		3	
21-U	305+00	315+00	Rt.	30	1,044		2	1
22-U	305+00	315+00	Rt.	30	730	305	3	
Total				120	3,497	633	11	1

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class E-1 15" Lin. Ft.	I-1 Class E-1 18" Lin. Ft.	I-1 Class E-1 M6.6(a) 54" Lin. Ft.	I-1 Class J-1 18" Lin. Ft.	I-1 Class J-1 24" Lin. Ft.	I-1 Class J-1 M6.6(b) 48" Lin. Ft.	I-2 Masonry Cu. Yds.	E-3 Channel Exc. Cu. Yds.	I-8 Std. No. 5 C.B. Each	I-8 Std. No. 8 C.B. Each	I-8 Std. No. 2 M.H. W/O Drop Each	L-10 Sodding Sq. Yds.	L-120 Jute Matting Sq. Yds.
4-D	307+30	307+50	Rt.-Lt.	44									2			250
6-D	307+50	315+00	Lt.			370			330	17	370					
7-D	311+75		Rt.-Lt.	16	22		82	69				2	2	1	5	750
Total				60	22	370	82	69	330	17	370	2	4	1	5	1,000



Notes:
For Channel S-6 Profile see sheet 182.
For Sewer profiles see sheet 173.
All Underdrains are shallow unless labeled otherwise.
For Channel Excavation 6-D See Sheet 85.

Excavation	5,371	Cu. Yds.
Embankment	33,642	Cu. Yds.
Embankment + 18%	39,698	Cu. Yds.

PLAN	BY	DATE
SURVEYED		
PLOTTED	R.J.K.	4-18-63
ALIGNMENT CHECKED	E.C.E.	4-19-63
RT. OF WAY CHECKED		
NOTE BOOK NO.		

PROFILE	BY	DATE
SURVEYED		
PLOTTED	R.J.K.	4-18-63
GRADES CHECKED	E.C.E.	4-19-63
B.M.'s NOTED		
STRUCTURE NOTATIONS CHK'D		
NOTE BOOK NO.		

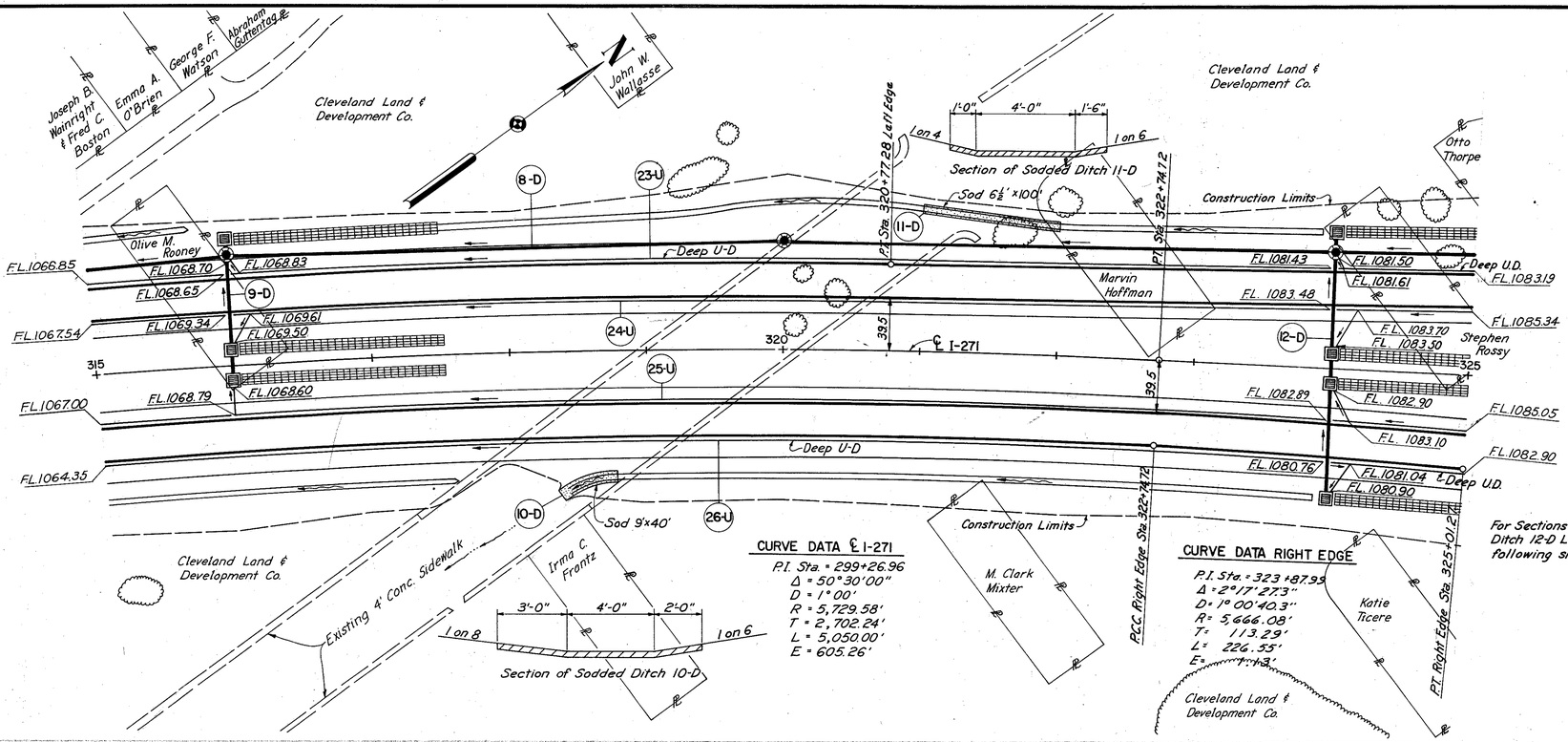
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

STA. 305+00 TO STA. 315+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

32
256

CUYAHOGA COUNTY
CUY-I-0.11



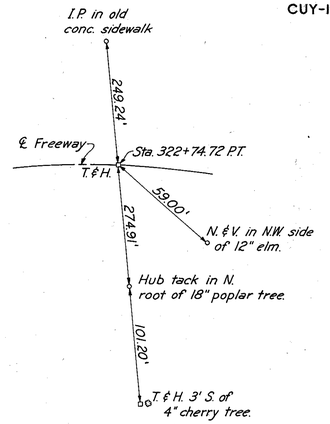
CURVE DATA ℄ I-271

P.I. Sta. = 299+26.96
Δ = 50°30'00"
D = 1°00'
R = 5,729.58'
T = 2,702.24'
L = 5,050.00'
E = 605.26'

CURVE DATA RIGHT EDGE

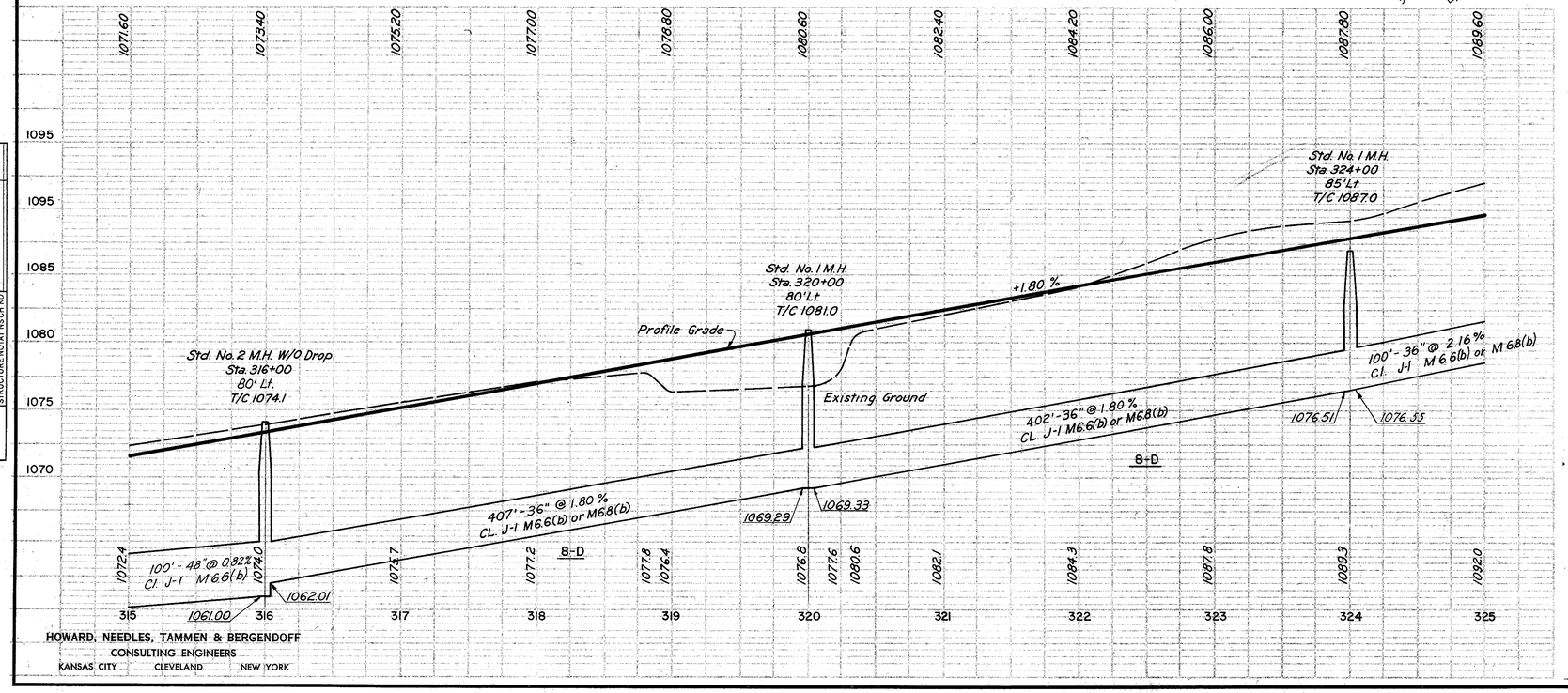
P.I. Sta. = 323+87.93
Δ = 2°17'27.3"
D = 1°00'40.3"
R = 5,666.08'
T = 113.29'
L = 226.55'
E = 1.13'

For Sections of Ditch 12-D Lt. & Rt. See following sheet.



BENCH MARK 118-B
Lag bolt & washer in top of 9" stump in clump of maple trees 245' Rt. of Sta. 315+45
Elev. 1072.46

BENCH MARK 119-B
Lag bolt & washer in S.W. root of 18" poplar tree 270' Rt of Sta. 324+46
Elev. 1093.05



DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class I-3 Shallow 6"	I-1 Class I-3 Deep 6"	I-5 Class I-3 90° Bend 6"	I-5 Class I-3 60° Y 6"x6"x6"
				Lin. Ft.				Each
23-U	315+00	325+00	Lt.	20		1004		2
24-U	315+00	325+00	Lt.	20	1037			2
25-U	315+00	325+00	Rt.	20	1032		1	1
26-U	315+00	325+00	Rt.	10		1018		1
Total				70	2069	2022	1	6

Ref. No.	Station From	Station To	Side	I-1 Class B-1 18"	I-1 Class E-1 15"	I-1 Class J-1 15"	I-1 Class J-1 18"	T-8 L-10 Std. No. 1 M.H. W/O Drop Each	T-8 L-10 Std. No. 2 M.H. W/O Drop Each	T-8 L-10 Std. No. 1 M.H. Each	T-8 L-10 Std. No. 2 M.H. Each	T-8 L-10 Std. No. 1 C.B. Each	T-8 L-10 Std. No. 2 C.B. Each	T-8 L-120 Sodding Jute Matting Sq. Yds.	T-8 L-10 Sq. Yds.	T-8 L-120 Sq. Yds.
				Lin. Ft.												
8-D	315+00	325+00	Lt.				909					1	2		375	
9-D	316+00	318+35	Rt.-Lt.		34	69			1						40	72
10-D	318+78	322+00	Rt.													
11-D	321+00	324+00	Lt.							1	2	1	2			
12-D	322+00	324+00	Rt.-Lt.	22	15							2	4			
Total				22	49	69	909	74	1	1	2	3	6	100	375	372
							83	74								747

Notes :
All Underdrains are shallow Unless labeled otherwise.
For Sewer profiles see sheet 173.

Excavation	14,241	Cu. Yds.
Embankment	2,716	Cu. Yds.
Embankment + 18%	3,205	Cu. Yds.

STA. 315+00 TO STA. 325+00

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

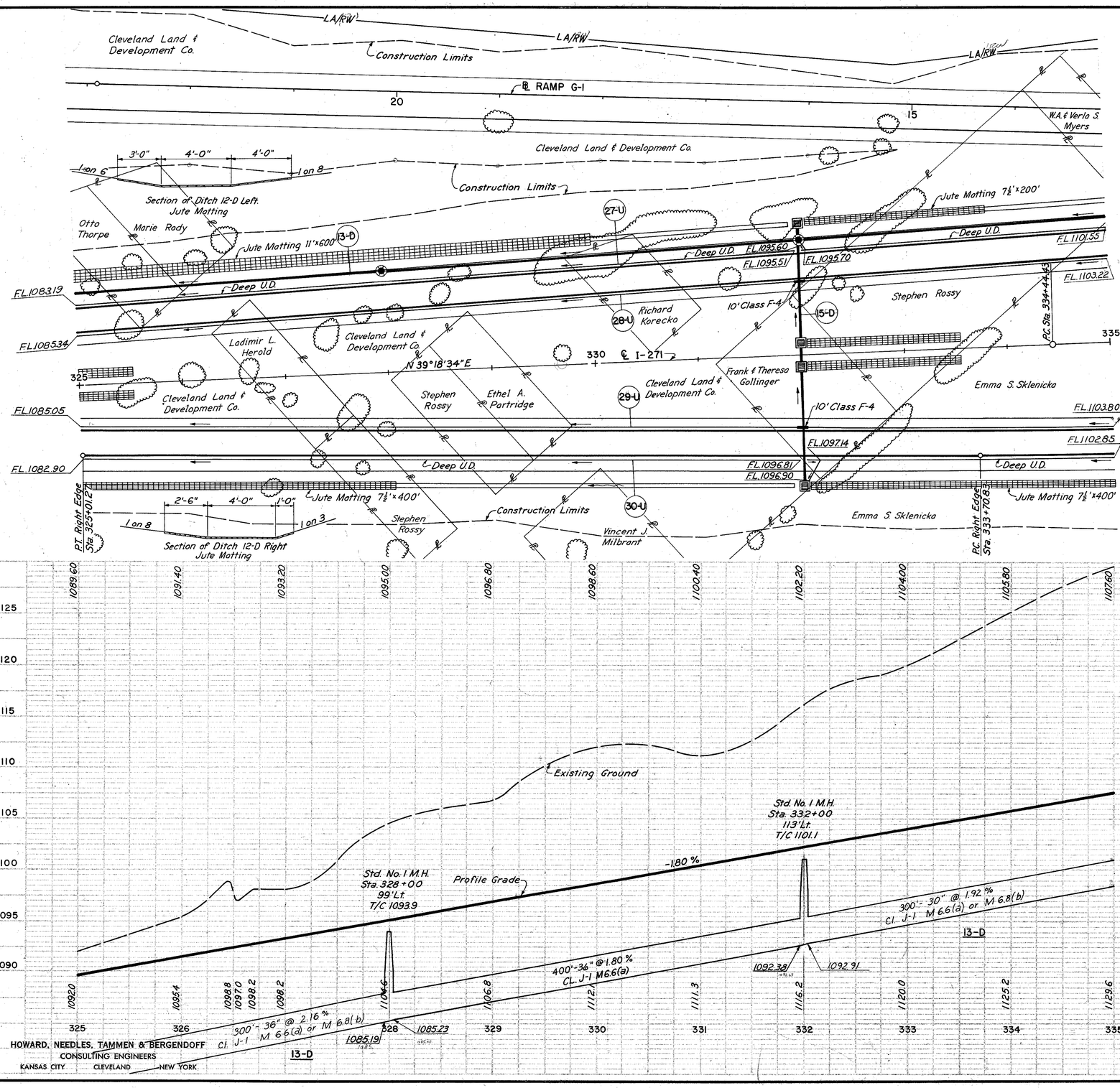
PLAN
NOTE BOOK
NO.
SURVEYED
PLOTTED
CURVE CHECKED
GRADES CHECKED
R. OF W. CHECKED
STRUCTURE NOTATIONS CHKD
B. M. NOTED
QUANTITIES
PROFILE
BY
DATE
4-27-63
4-23-63

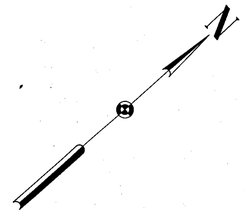
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

33
256

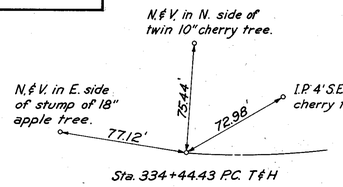
CUYAHOGA COUNTY
CUY-I-0.11

BENCH MARK 120-A
Lag bolt & washer in W. root of twin 6" cherry trees 240' right of Sta. 330+70
Elev. 1116.03





CURVE DATA ℄ I-271
P.I. Sta. = 379+23.25
Δ = 40°05'00"
D = 0°28'00"
R = 12,277.67'
T = 4,478.816'
L = 8,589.286'
E = 791.41'



CURVE DATA RIGHT EDGE
P.I. Sta. = 337+09.52
Δ = 5°04'37"
D = 0°45'00"
R = 7,639.437'
T = 338.690'
L = 676.936'
E = 7.50'

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class I-3 Shallow 6"	I-1 Class I-3 Deep 6"	I-5 Class I-3 60-Y 6"x6"x6"
				Lin. Ft.			Each
27-U	325+00	335+00	Lt.	10		998	1
28-U	325+00	335+00	Lt.	10	990		
29-U	325+00	335+00	Rt.	10	990		
30-U	325+00	335+00	Rt.	10		1,016	1
Total				40	1,980	2,014	2

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class E-1 15"	I-1 Class E-1 21"	I-1 Class J-1 15"	I-1 Class J-1 24"	I-1 Class J-1 30"	I-1 Class J-1 36"	I-8 Std. No.5 C.B.	I-8 Std. No. 8 C.B.	I-8 Std. No. 1 M.H.	L-120 Jute Matting
				Lin. Ft.						Each			Sq. Yd.
12-D	325+00	330+00	Lt.-Rt.										945
13-D	325+00	335+00	Lt.					300	700			1	
15-D	332+00		Rt.-Lt.	14	22	114	102			2	2	1	667
Total				14	22	114	102	300	700	2	2	2	1,612

Notes :
For Ramp G-1 Details and quantities see sheet 54.
All Underdrains are shallow unless labeled otherwise.
For Sewer profiles see sheet 174.

Excavation	140,156	Cu. Yds.
Embankment	46	Cu. Yds.
Embankment + 18 %	54	Cu. Yds.

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

STA. 325+00 TO STA. 335+00

PLAN
SURVEYED BY: BJK
PLOTTED BY: EC.E
NOTE BOOK
ALIGNMENT CHECKED.
RT. OF WAY CHECKED.
NO.
DATE: 4-23-63, 4-24-63

PROF. LE
SURV
PLOTTED
GRADES CHECKED.
B. M + NOTED
STRUCTURE NO'S ATTN'S CK'D

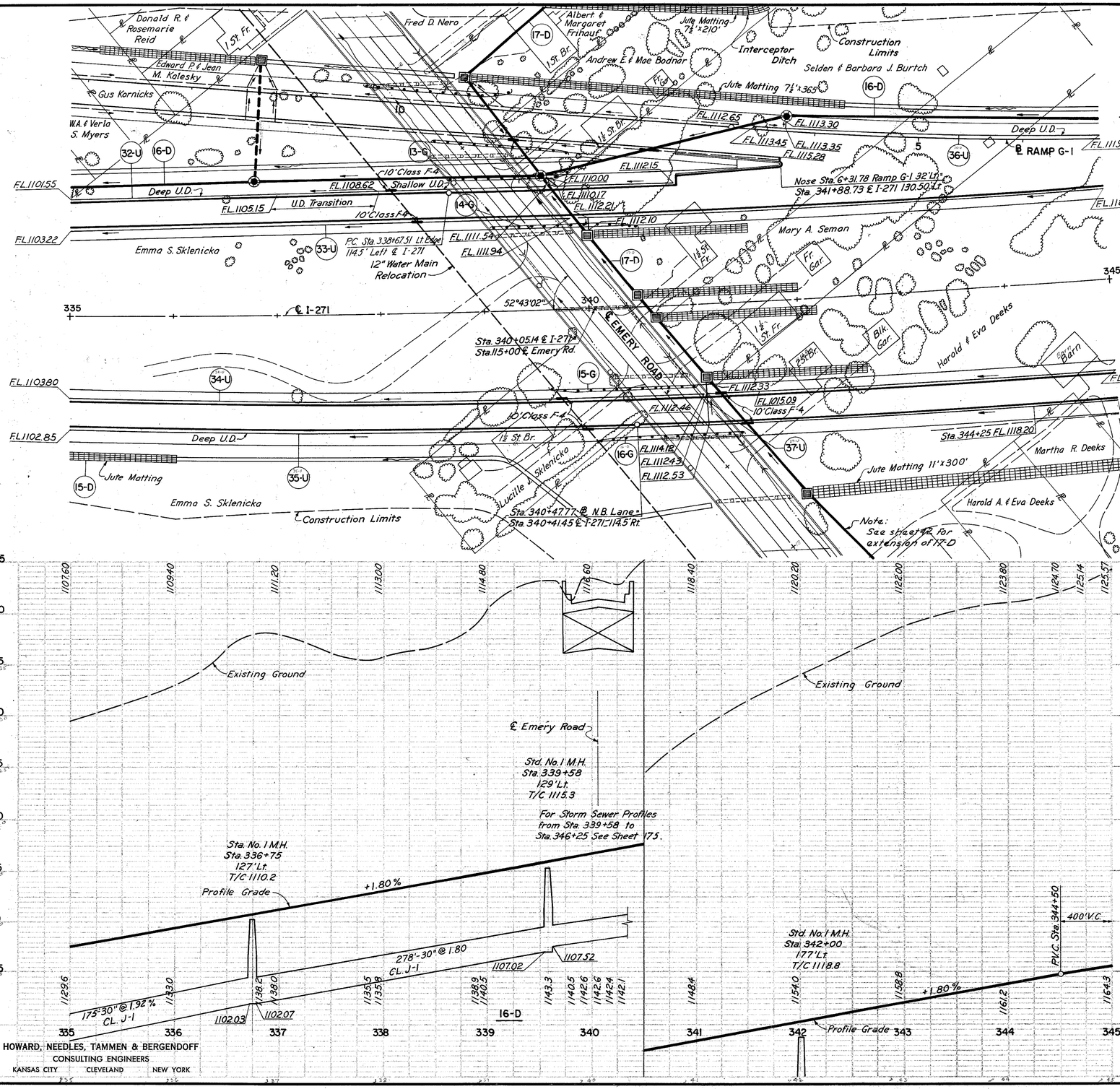
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

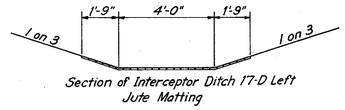
34
256

CUYAHOGA COUNTY
CUY-I-0.11

PLAN	DATE	BY	
SURVEYED	4-4-63	RJK	
ALIGNMENT CHECKED	4-5-63	ECG	
RT. OF WAY CHECKED		ECG	
NOTE BOOK			
NO.			

PROF. E	DATE	BY	
SURVEYED	4-4-63	RJK	
GRADES CHECKED	4-5-63	ECG	
B. M.'s NOTED			
STRUCTURE NOTATNS CHKD			
NO.			

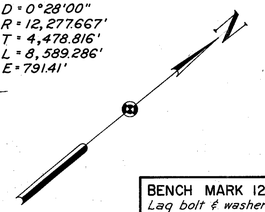




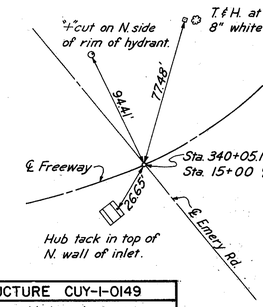
Section of Interceptor Ditch 17-D Left
Jute Matting

CURVE DATA ℄ I-271

P.I. Sta. = 379+23.25
Δ = 40°05'00"
D = 0°28'00"
R = 12,277.667'
T = 4,478.816'
L = 8,589.286'
E = 791.41'



BENCH MARK 121-A
Lag bolt & washer in W. root of 16" apple tree 21.7' right of Sta. 342+00 North side of Emery Road.
Elev. 1147.85



CURVE DATA RIGHT EDGE

P.I. Sta. = 337+09.52
Δ = 5° 04' 37"
D = 0° 45' 00"
R = 7,639.437'
T = 338.690'
L = 676.936'
E = 7.30'

PROPOSED STRUCTURE CUY-I-0149

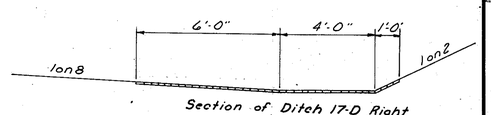
TYPE: Continuous welded girders with reinforced concrete deck and substructure.
SPANS: 65'-0", 3@ 93'-6", 86'-0", 2@ 77'-2⅜", 61'-0"
ROADWAY: 52'-0" curb/curb with two 4'-2" sidewalks
LOAD FREQUENCY: CF400(57)
SKEW: 37°16'58"
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: Tangent

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 12"	I-1 Class E-1 24"	I-1 Class J-1 24"	I-1 Class J-1 27"	I-1 Class J-1 30"	I-8 Std. No. 2.2A C.B.	I-8 Std. No. 5 C.B.	I-8 Std. No. 8 C.B.	I-8 Std. No. 1 M.H.	L-120 Jute Matting
				Lin. Ft.					Each				Sq. Yds.
15-D	335+00	336+00	Rt.										83
16-D	335+00	345+00	Lt.			545		453				3	
17-D	339+75	342+65	Rt. & Lt.	216	28	424	72		1	2	4	2	1346
	Total			216	28	969	72	453	1	2	4	5	1429

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class I-3 Shallow 6"	I-1 Class I-3 Deep 6"	I-1 Class J-1 6"	I-5 Class I-3 Gore-Y 6"x6"x6"	I-5 Class I-3 Tee 6"	I-5 Class I-3 90° Bend 6"	
				Lin. Ft.							
32-U	335+00	340+85	Lt.	20	279	300		1			
33-U	335+00	345+00	Lt.	20	1994				1		
34-U	335+00	345+00	Rt.	30	983				1	1	
35-U	335+00	345+00	Rt.	20		976					
36-U	341+67	345+00	Lt.	10		340	31				
37-U	341+10		Rt.	100	3,256	1616	31	1	3	1	
		Total									



Section of Ditch 17-D Right
Jute Matting

Notes:
For Details of Exit Terminal at Ramp G-1 see sheet 153.
For Ramp G-1 Details and quantities see sheet 54.
For Ramp G-1 Curve Data see sheet 9.
For Sewer profiles see sheets 174 and 175.
All Underdrains are shallow unless labeled otherwise.
For Proposed Structure see sheet 206.
For Emery Road Details see sheets 39 - 43.
For Water Line Relocation see sheets 160, 161 & 162.
Ramp G-1 Earthwork included in the totals for this sheet.

GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std. Type (Deep) Lin. Ft.
13-G	338+70	339+82.5	Lt.	112.5
14-G	339+11	340+48.5	Lt.	137.5
15-G	339+63	341+00.5	Rt.	137.5
16-G	340+07	341+44.5	Rt.	137.5
	Total			525.0

Excavation	496,038	Cu. Yds.
Embankment	168,756	Cu. Yds.
Embankment + 18%	199,132	Cu. Yds.

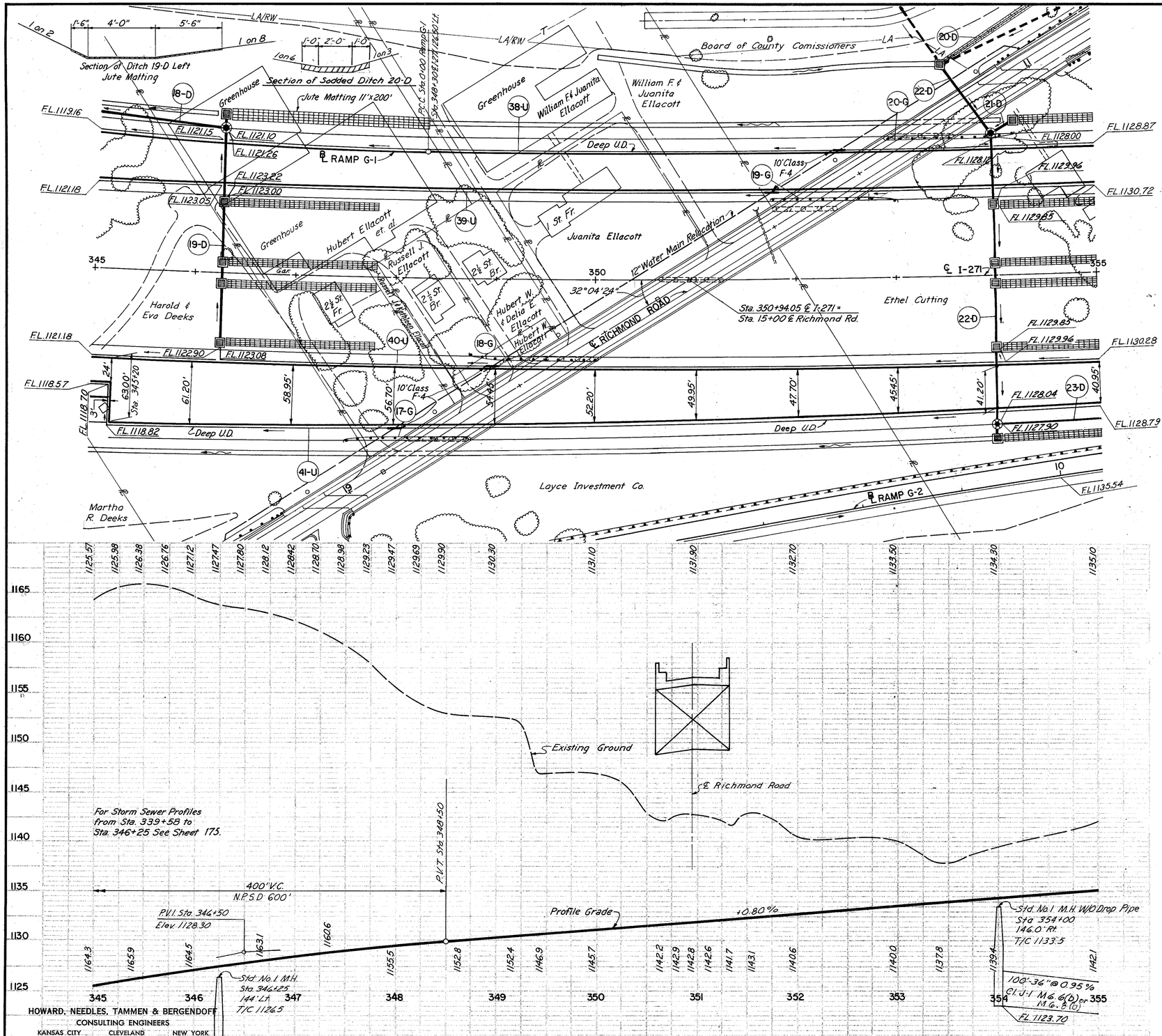
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

STA. 335+00 TO STA. 345+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

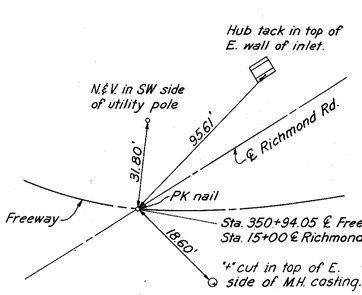
35/256

CUYAHOGA COUNTY
CUY-I-0.11



CURVE DATA ℄ I-271

P.I. Sta. = 379+23.25
Δ = 40°05'00"
D = 0°28'00"
R = 12,277.67'
T = 4,478.82'
L = 8,589.29'
E = 791.41'



PROPOSED STRUCTURE CUY-I-0170

Type: Continuous Welded girder with reinforced concrete deck and substructure
Spans: 90.917'-136.625'-136.625'-149.875'-150.875'-98.750'
Roadway: 28'-0" curb to curb with two 4'-2" walks
Load Frequency: CF 400(57)
Skew: 57°54'33.6"
Wearing Surface: 1" Monolithic Concrete
Approach Slabs: AS-1-54 (25' long)
Alignment: Tangent

GUARD RAIL

Ref No.	Station From	Station To	Side	I-15 Steel Beam Std. Type (Deep) Lin Ft.
17-G	347+52	348+77	Rt.	125
18-G	348+75	350+00	Rt.	125
19-G	351+72	352+97	Lt.	125
20-G	352+94	354+19	Lt.	125
	Total			500

DRAINAGE

Ref No.	Station From	Station To	Side	I-1 Class F-4 6" Lin Ft	I-1 Class I-3 Shallow 6" Lin Ft	I-1 Class I-3 Deep 6" Lin Ft	I-5 Class I-3 90° Bend 6" Each	I-5 Class I-3 60° Y 6" Each
38-U	345+00	355+00	Lt.	30		992		2
39-U	345+00	355+00	Lt.	30	992			2
40-U	345+00	355+00	Rt.	30	992		1	1
41-U	345+00	355+00	Rt.	20		1030	2	1
	Total			110	1984	2022	3	6

Notes:
For Ramp G-1 and G-2 curve data see sheet 9
For sewer profiles see sheet 176.
All underdrains are shallow, unless labeled otherwise.
For proposed Structure see sheet 216
For Richmond Road details see sheets 44, 45 & 46.
For Water Line Relocation see sheets 163 and 164.

DRAINAGE

I-1

Ref No.	Station From	Station To	Side	Class E-1 15" Lin Ft.	Class E-1 18" Lin Ft.	Class F-1 21" Lin Ft.	Class J-1 M6.6(a) M6.8(a) 36" Lin Ft.	Class J-1 18" Lin Ft.	Class J-1 24" Lin Ft.	Class J-1 36" Lin Ft.	Cl. J-1 M6.6(b) M6.8(b) 36" Lin Ft.	L:10 Sodding Sq. Yds.	L:10 Std. No.1 M.H. Each	L:10 Std. No.8 C.B. Each	L:10 Std. No.5 C.B. Each	L:120 Jute Matting Sq. Yds.
18-D	345+00	346+25	Lt.	15	22			133	121			78	1	4	1	745
19-D	346+25	359+50	Lt.	15		60										
20-D	359+50	355+00	Lt.													
21-D	354+00	354+22	Lt.		26					266						125
22-D	353+50	354+00	Lt.&Rt.	15		87	22					625	2	4	1	
23-D	354+00	355+00	Rt.								100	78	3	8	2	1495
	Total			56	22	87	22	133	121	266	100					

Excavation	286,098	Cu. Yds.
Embankment	9408	Cu. Yds.
Embankment + 18%	11,101	Cu. Yds.

STA. 345+00 TO STA. 355+00

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

1165

PLAN
NO. | NOTE BOOK | SURVEYED | PLOTTED | QUANTITIES CHECKED | RT. OF WAY CHECKED | BY | DATE
PROFILE
NO. | NOTE BOOK | SURVEYED | PLOTTED | GRADES CHECKED | R, M + NOTED | STRUCTURE NOTATIONS CHKD | BY | DATE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

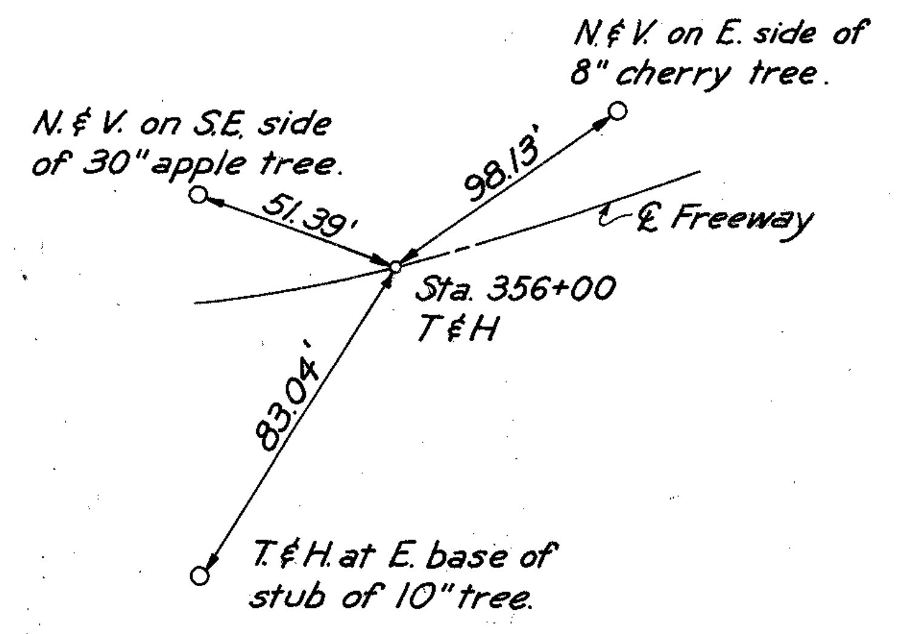
36
256

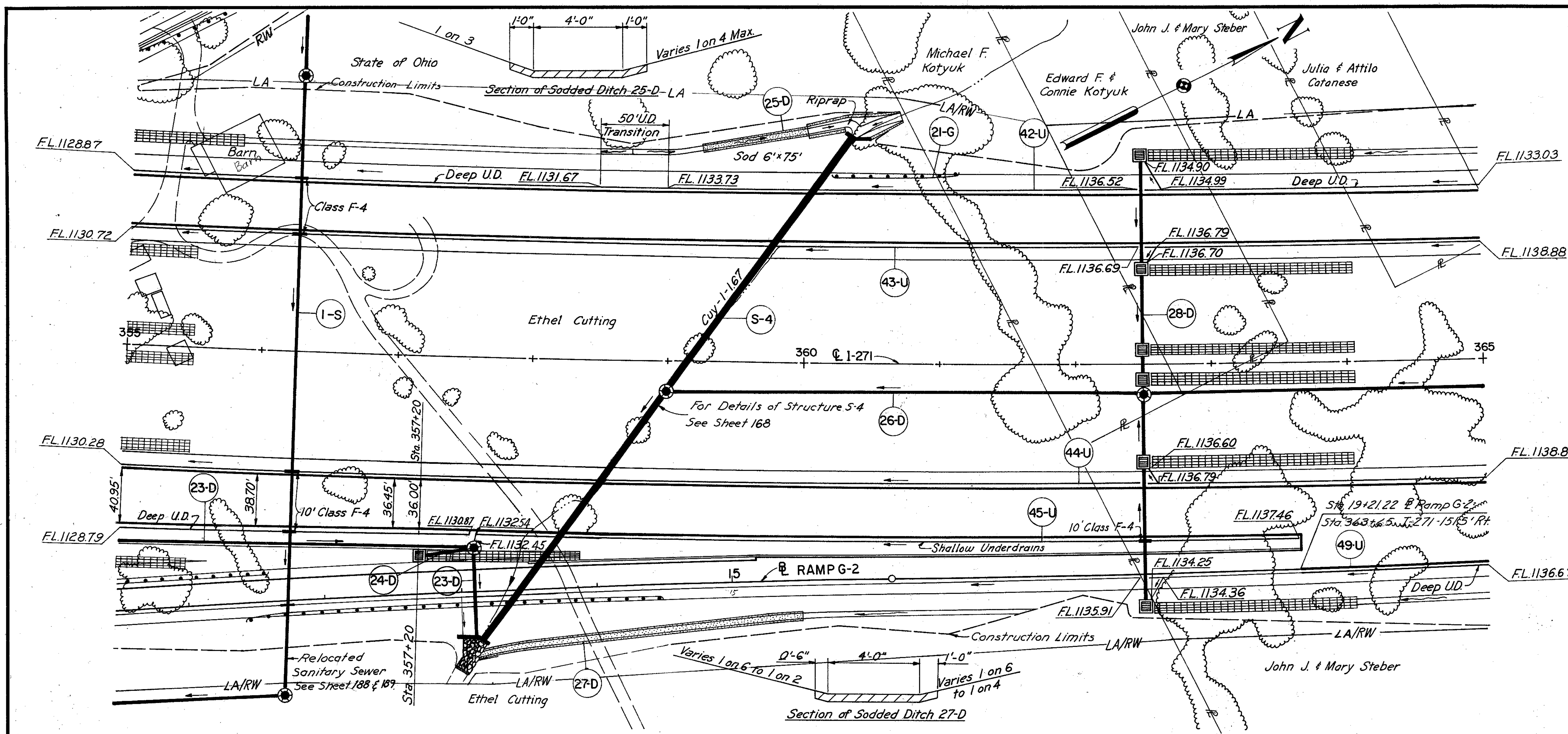
CUYAHOGA COUNTY
CUY-I-0.11

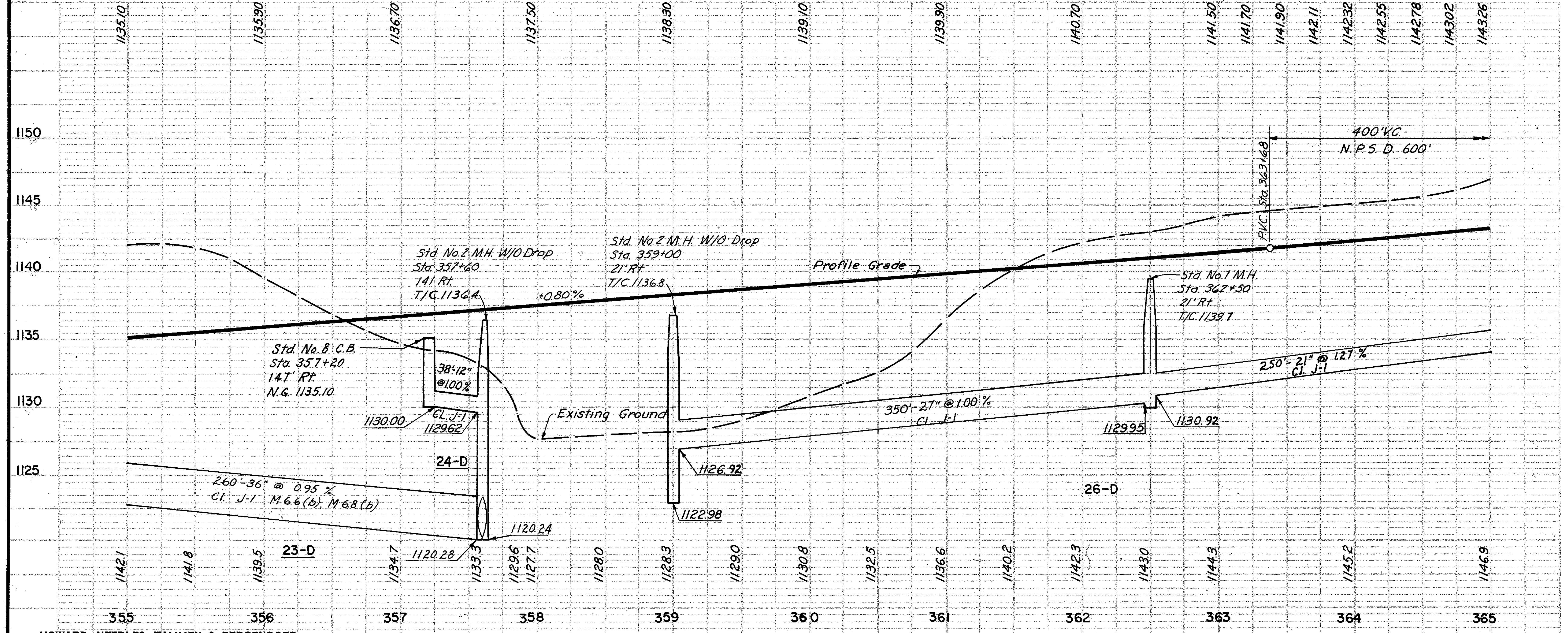
BENCH MARK 122-B
Lag bolt & washer on S.E. side of 24" pine tree 200' Left of Sta. 355+15 E. side of Richmond Rd.
Elev. 1149.48

BENCH MARK 123-A
Lag bolt & washer in N. root of 24" wild cherry tree 263' right of Sta. 363+00
Elev. 1139.88

CURVE DATA ℄ I-271
P.I. Sta. = 379+23.25
Δ = 40°05'00"
D = 0°28'00"
R = 12,277.67'
T = 4,478.82'
L = 8,589.29'
E = 791.41'







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

PLAN		BY	DATE
NOTE BOOK	SURVEYED		
	PLOTTED	RJK	5-6-63
NO.	ALIGNMENT CHECKED	ECE	5-7-63
	RT. OF WAY CHECKED		

PROF		BY	DATE
NOTE BOOK	SURVE		
	PLOTTED	R.J.K.	5-6-63
NO.	GRADES CHECKED	ECE	5-7-63
	B. M.s NOTED		
	STRUCTURE NOTAT'NS CH'KD		

DRAINAGE

Ref No.	Station From	Station To	Side	I-1 Class B-1 15"	I-1 Class E-1 15"	I-1 Class J-1 12"	I-1 Class J-1 15"	I-1 Class J-1 18"	I-1 Class J-1 21"	I-1 Class J-1 27"	I-1 Class J-1 M6.6(b) M6.8(b) 36"	I-8 Std. No. 5 C.B.	I-8 Std. No. 8 C.B.	I-8 Std. No. 1 M.H.	I-8 Std. No. 2 M.H. w/o drop	L-10 Sodding	L-120 Jute Matting
				Lin. Ft.								Each					
23-D	355+00	357+60	Rt.			38					327				1		
24-D	357+20	357+60	Rt.										1				96
25-D	359+20	360+00	Lt.													50	
26-D	359+00	365+00	Rt.						250	350							
27-D	357+70	360+02	Rt													142	
28-D	362+50		Lt&Rt	22	10		253	50				2	4	1			750
Total				22	10	38	253	50	250	350	327	2	5	1	1	192	846

GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std. Type (Deep) Lin. Ft.
21-G	360+22	361+10	Lt.	87.5

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class I-3 Shallow 6"	I-1 Class I-3 Deep 6"	I-5 Class I-3 90° Bend 6"	I-5 Class I-3 60° Y 6"×6"×6"
				Lin. Ft.			Each	
42-U	355+00	365+00	Lt.	20	340	663		1
43-U	355+00	365+00	Lt	20	996			1
44-U	355+00	365+00	Rt.	20	996			1
45-U	355+00	363+65	Rt	30	610	250	1	
49-U	363+65	365+00	Rt.			135		
Total				90	2,942	1,048	1	3

Notes:
For details of Entrance Terminal at Ramp G-2 see sheet 153.
For Ramp G-2 curve data see sheet 9.
For Ramp G-2 details and quantites see sheet 59.
All Underdrains are shallow unless labeled otherwise.
For sewer profiles see sheet 177.
Ramp G-2 Earthwork included in the totals for this sheet.

Excavation	33,283	Cu. Yds.
Embankment	39,517	Cu. Yds.
Embankment + 18%	46,630	Cu. Yds.

STA. 355+00 TO STA. 365+00

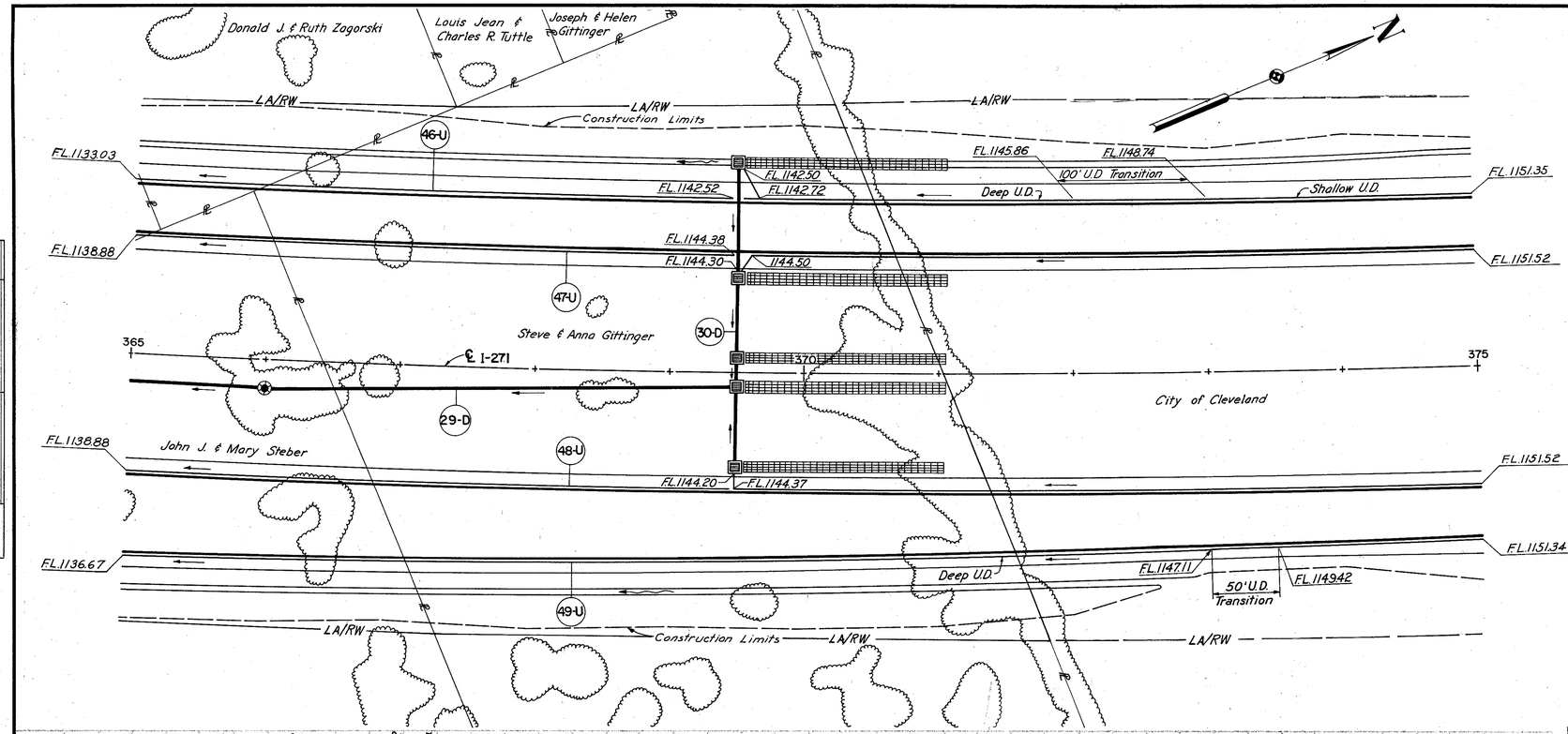
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

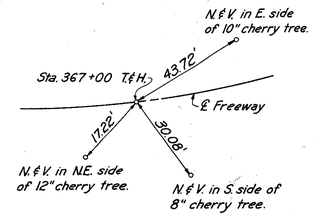
37
256

CUYAHOGA COUNTY
CUY-I-0.11

PLAN	DATE	BY
SURVEYED	4-23-63	R.J.K.
PLOTTED	4-24-63	E.C.E.
NOTE BOOK ALIGNMENT CHECKED.		
NO. RT. OF WAY CHECKED.		

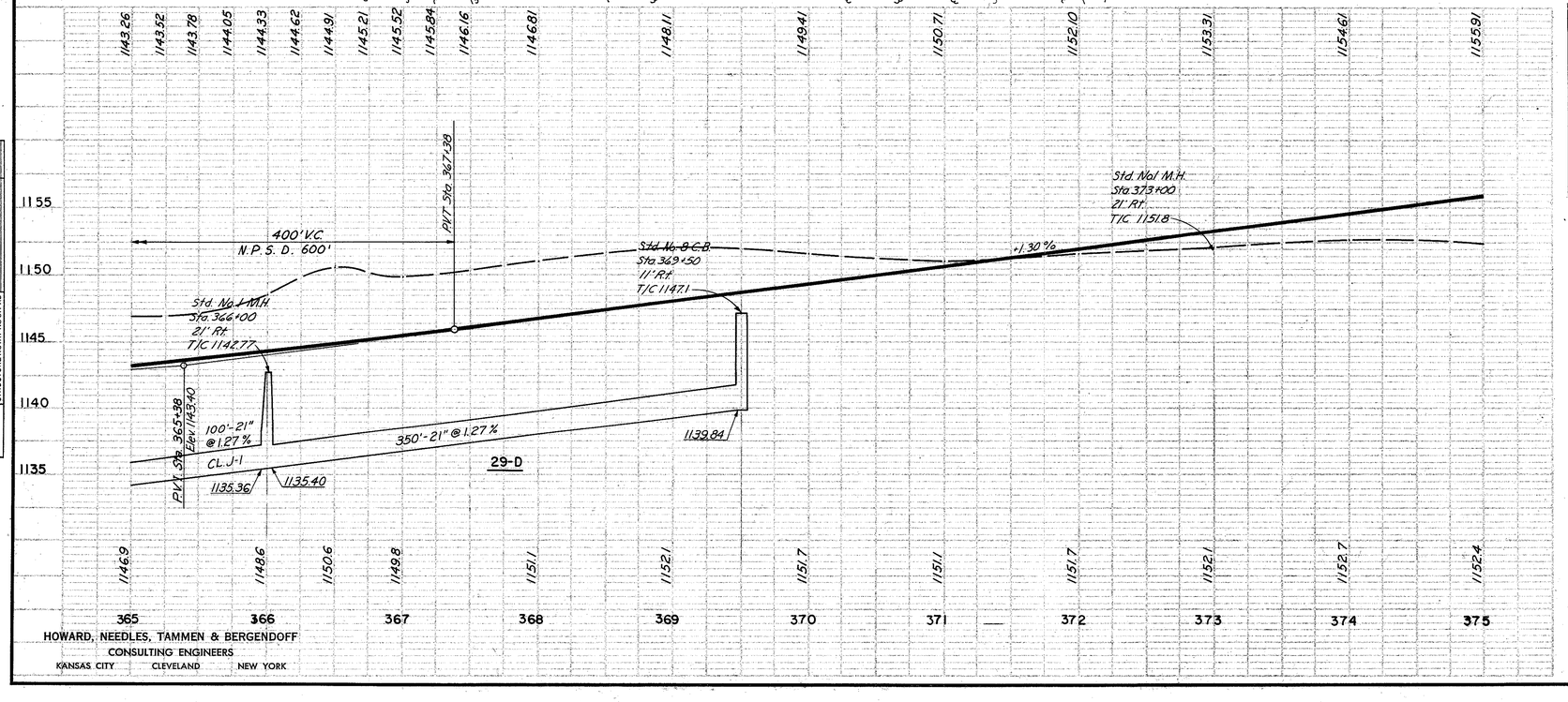
PROFILE	DATE	BY
SURVEYED	4-23-63	R.J.K.
PLOTTED	4-24-63	E.C.E.
NOTE BOOK GRADES CHECKED.		
NO. B. M. NOTED.		
STRUCTURE NOTATIONS CHKD.		





BENCH MARK 124-A
Lag bolt & washer in N. root of 24" wild cherry tree 266' right of Sta. 372+12
Elev. 1153.08

CURVE DATA ℄ I-271
P.I. Sta = 379+23.25
Δ = 40°05'00"
D = 0°28'00"
R = 12,277.67'
T = 4,478.82'
L = 8,589.29'
E = 791.41'



DRAINAGE											
Ref. No.	Station		Side	I-1						I-8	L-120
				Class E-1 18"	Class J-1 15"	Class J-1 18"	Class J-1 21"	Std. No.5 C.B.	Std. No.8 C.B.	Std. No.1 M.H.	Jute Matting
	From	To		Lin. Ft.				Each			Sq. Yds.
29-D	365+00	369+50	Rt.				450			1	
30-D	369+50		Lt&Rt.	22	60	145		1	4		625
31-D	373+50		Lt&Rt.		176						
	Total			22	236	145	450	1	4	1	625

DRAINAGE								
Ref. No.	Station		Side	I-1			I-5	
				Class F-4 6"	Class I-3 Shallow 6"	Class I-3 Deep 6"	Class I-3 90°Bend 6"	Class I-3 60°-Y
	From	To		Lin. Ft.			Each	
46-U	365+00	375+00	Lt.	10	200	816		1
47-U	365+00	375+00	Lt.	10	1006			1
48-U	365+00	375+00	Rt.	10	1004		1	
49-U	365+00	375+00	Rt.		150	850		
				30	2360	1666	1	2

Notes:
- See sheet 153 for Ramp G-2 Terminal details.
Unless labeled otherwise, all underdrains are shallow.
For sewer profiles see sheet 177.

Excavation	37,925	Cu. Yds.
Embankment	2,318	Cu. Yds.
Embankment +/-8%	2,747	Cu. Yds.

STA. 365+00 TO STA. 375+00

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

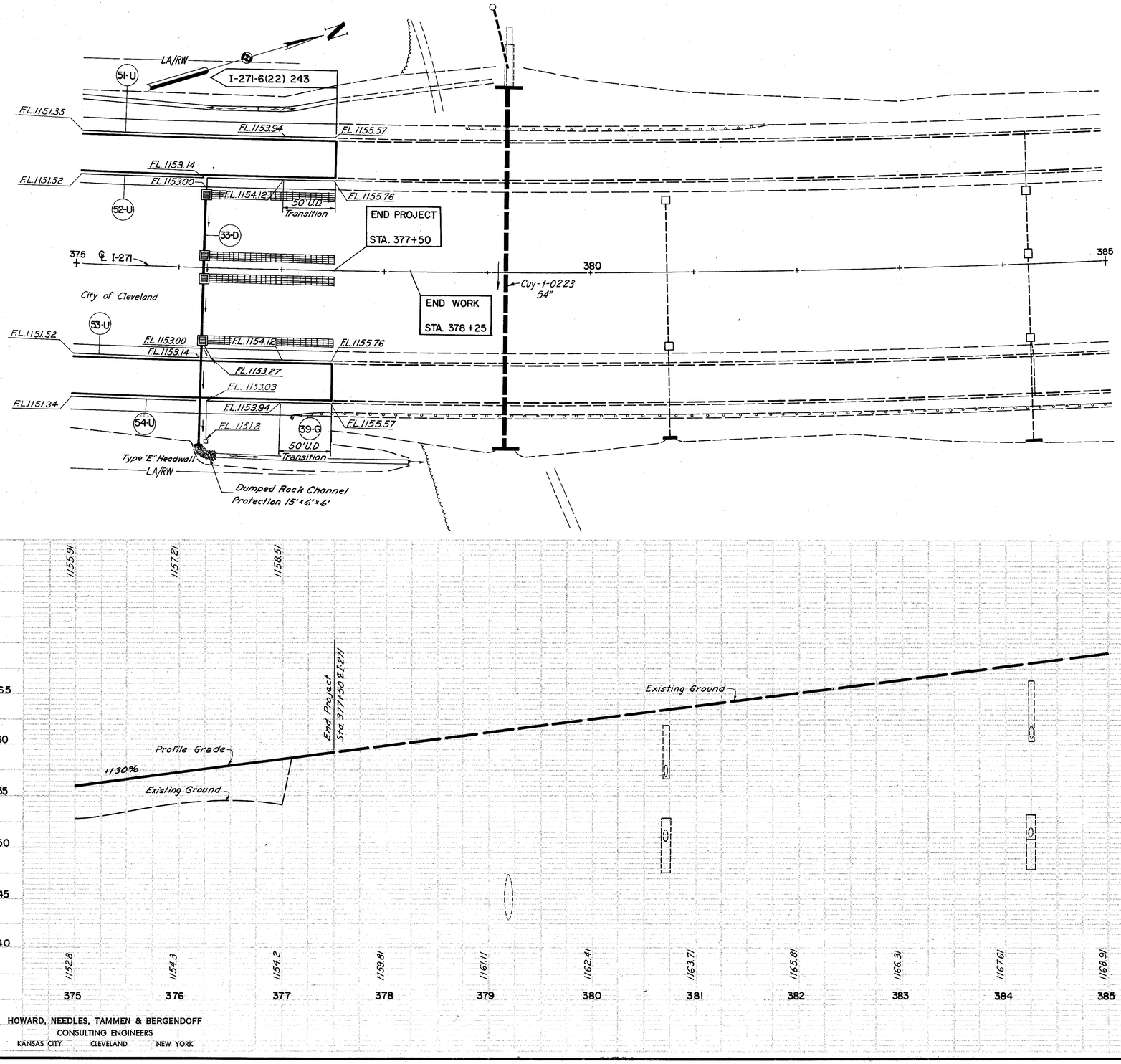
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

38
256

CUYAHOGA COUNTY
CUY-1-0.11

PLAN

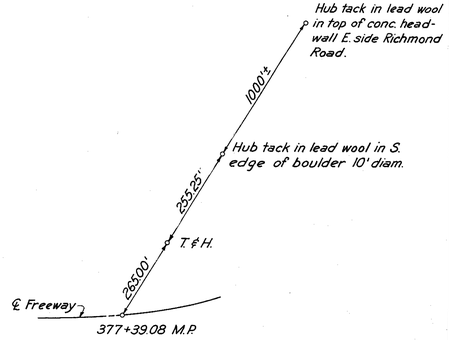
NO.	NOTE BOOK	BY	DATE
	SURVEYED		
	PLOTTED	RJK	4-22-63
	ALIGNMENT CHECKED	ECE	4-24-63
	RT. OF WAY CHECKED		



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

CURVE DATA ℄ I-271

P.I. Sta. 379+23.25
Δ = 40°05'00"
D = 0°28'00"
R = 12,277.67'
T = 4,478.82'
L = 8,589.29'
E = 791.41'



GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std. Type Deep Lin. Ft.
39-G	377+12.5	377+50	Rt.	37.5
	Total			37.5

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class E-1 15"	I-1 Class J-1 15"	I-1 Class J-1 18"	I-2 Masonry Cu. Yds.	I-8 Std. No. 8 C.B. Each	I-10 Dumped Rock Channel Protection Cu. Yds.	L-120 Jute Matting Sq. Yds.
33-D	376+25		Lt. & Rt.	22	60	165	.30	4	5	416
	Total			22	60	165	.30	4	5	416

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6" Lin. Ft.	I-1 Class F-4 M6.4 (c) 8" Lin. Ft.	I-1 Class I-3 Shallow 6" Lin. Ft.	I-5 Class I-3 90° Bend 6" Each	I-5 Class I-3 60° Y 6" Each
51-U	375+00	377+50	Lt.			250		
52-U	375+00	377+50	Lt.	10		256	1	1
53-U	375+00	377+50	Rt.	10		256		
54-U	375+00	377+50	Rt.		10	275		1
				20	10	1,037	1	2

Notes:
For sewer profiles see sheet 177.
Underdrains are shallow, unless labeled otherwise.
Underdrains shall be connected with those of the adjoining section.

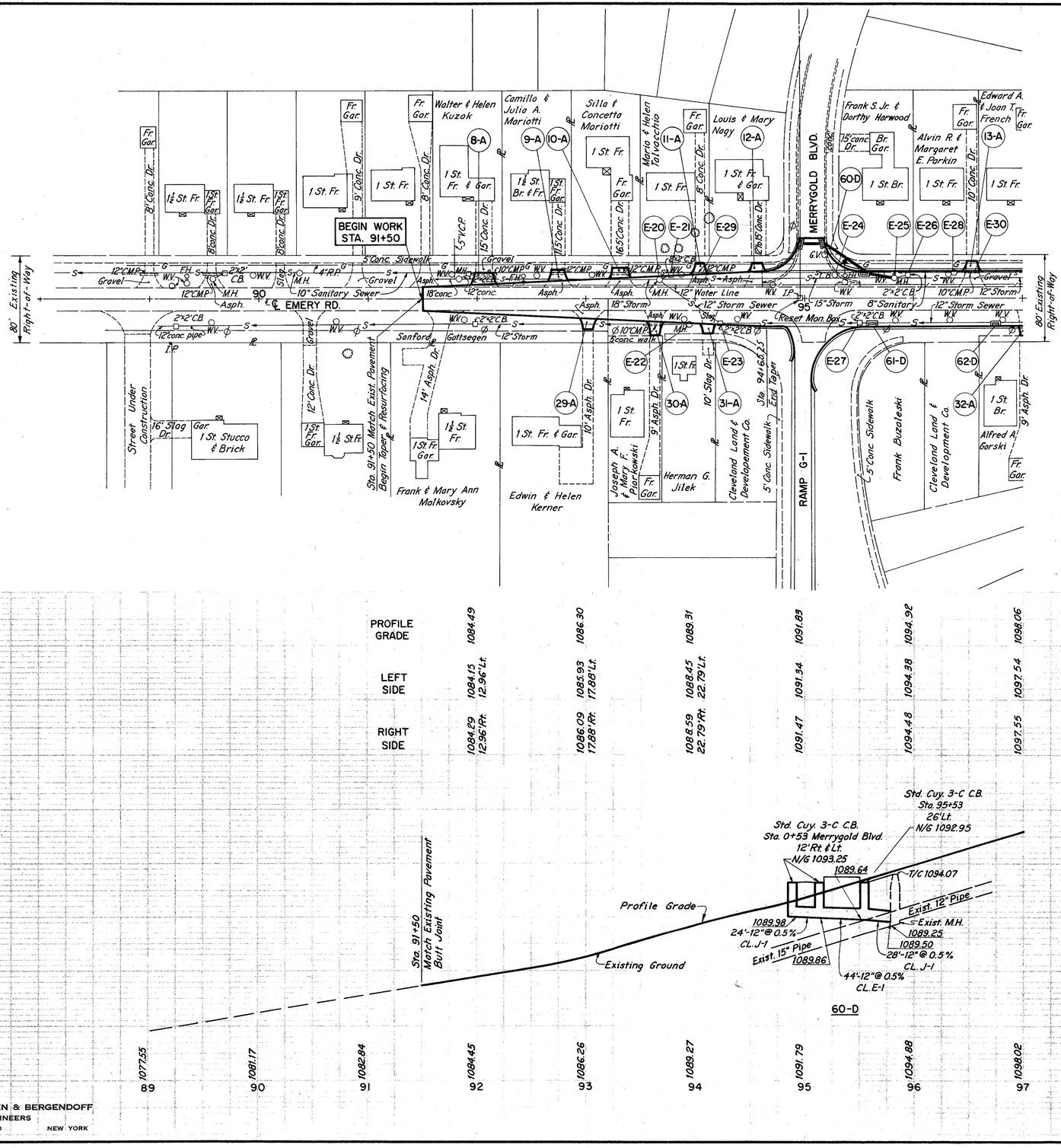
Excavation	548	Cu. Yds.
Embankment	5,917	Cu. Yds.
Embankment + 18%	6,982	Cu. Yds.

STA. 375+00 TO STA. 385+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

39
256

CUYAHOGA COUNTY
CUY-I-0.11



DRAINAGE SU-274(2)

Ref. No.	Station From	Station To	Side	I-8 Adjust M.H. to Grade (Storm) Each	I-8 Adjust M.H. to Grade (Sanitary) Each	E-12 Pipe Removed 15" and under Lin. Ft.	I-16 Aband. C.B. Each	Exist. M.H. Cover Elev.	Adjust. M.H. Cover Elev.
E-20	93+68		Lt.	1				1087.03	1087.73
E-21	93+78		Lt.				1		
E-22	93+95		Rt.	1				1087.34	1088.41
* E-23	94+23		Rt.				1		
E-24	95+28		Lt.				1		
E-25	95+82		Lt.	1				1093.9±	1093.95
E-26	95+95		Lt.				1		
* E-27	95+50		Rt.				1		
E-28	96+38		Lt.		1			1094.28	1095.58
E-29	94+05		Lt.			16			
E-30	96+55		Lt.			15			
	Total			3	1	31	5		

DRIVES AND APPROACHES SU-274(2)

Ref. No.	Station	Side	Type	Width	E-1 Roadway Exc.	B-19 Subbase	T-35 Asphalt Type "C"	T-70 PCC. for Drives 7"
				Feet	Cu. Yds.	Cu. Yds.	Cu. Yds.	Sq. Yds.
8-A	92+07	Lt.	Res.	15	7	2.8	1.0	
9-A	92+76	Lt.	Res.	11.5	5	2.3	0.7	
10-A	93+31	Lt.	Res.	16.5	8	3.0	1.0	
11-A	94+05	Lt.	Res.	8	4	1.8	0.5	
12-A	94+57	Lt.	Res.	12	6	2.0	0.6	
13-A	96+55	Lt.	Res.	10	3			11
29-A	93+00	Rt.	Res.	10	5	1.9	0.6	
30-A	93+63	Rt.	Res.	9	4	2.7	0.9	
31-A	94+12	Rt.	Res.	10	5	1.9	0.6	
32-A	97+02	Rt.	Res.	9	2			13
Total					49	18.4	5.9	24

DRAINAGE SU-274(2)

Ref. No.	Station From	Station To	Side	I-1 Class E-1 12" Lin. Ft.	I-1 Class J-1 12" Lin. Ft.	I-8 Special No. 3-C C.B. Each	I-8 Special No. 3-C Modified C.B. Each
60-D	Merrygold	95+82	Lt.	44	52	3	
61-D	95+60		Rt.				1
62-D	96+75		Rt.				1
Total				44	52	3	2

Note:
For the relocation or adjustment of Water Facilities, see sheets No. 160-162.

* The Storm Sewer is to remain in Service. Connect pipe through abandoned catch basins E-23 and E-27.
For Details of Intersection with Ramp G-1 and Merrygold Blvd., see sheet 53.
For Driveway Profiles see sheets 62 & 64.
For Drainage Profiles see sheet 137.

Excavation	665	Cu. Yds.
Embankment	66	Cu. Yds.
Embankment + 18%	78	Cu. Yds.

EMERY ROAD STA. 89+00 TO STA. 97+00

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

PLAN
SURVEYED BY: R.J.
PLOTTED: 9-23-63
DRAWING CHECKED: E.C.E. 9-24-63
ALIGNMENT & RT OF WAY CHECKED:
NOTE BOOK NO.

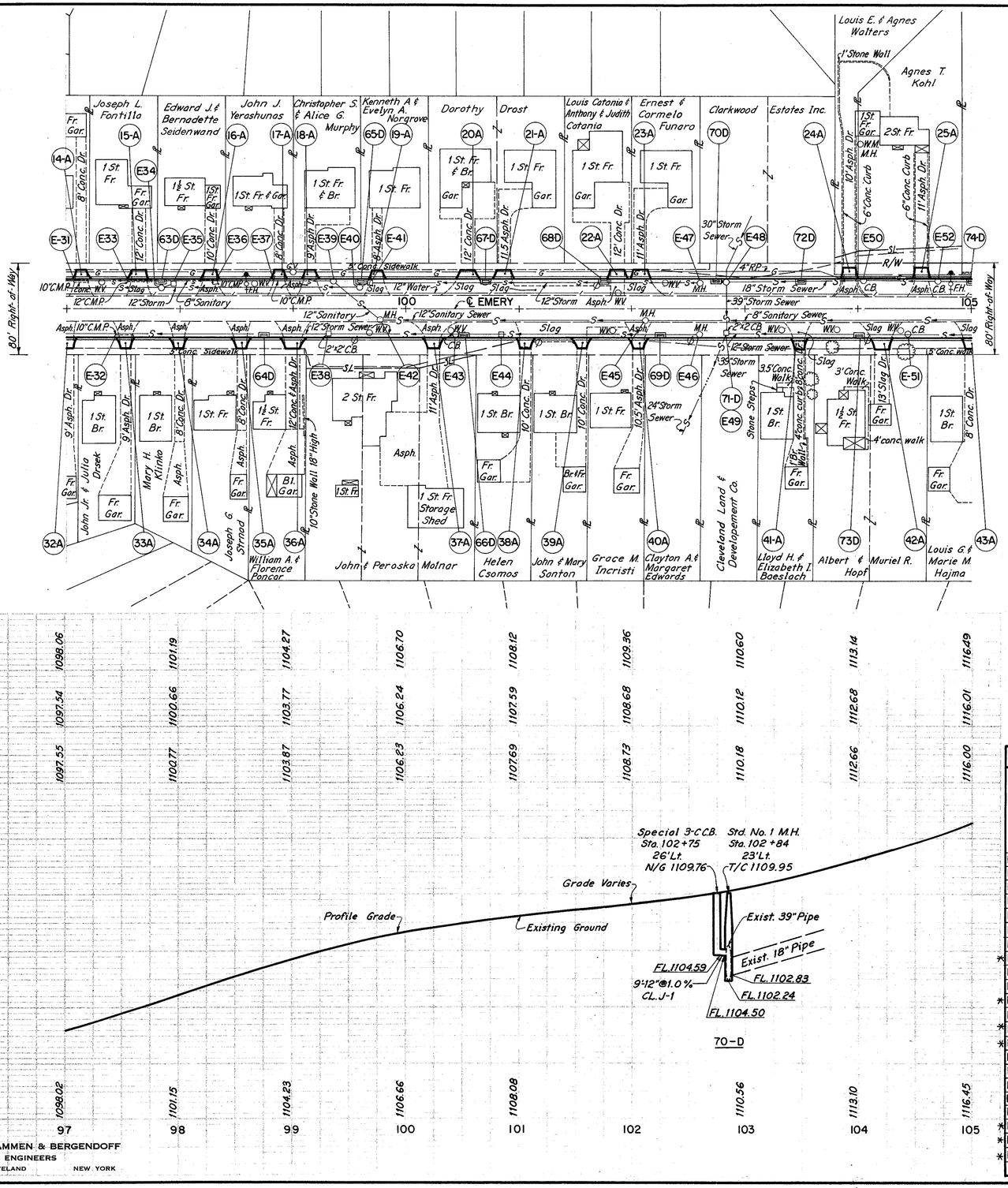
PROFILE
SURVEYED BY: R.J.
PLOTTED: 9-23-63
GRADES CHECKED: E.C.E. 9-24-63
B. M. + NOTED:
STRUCTURE NOTATIONS CHKD

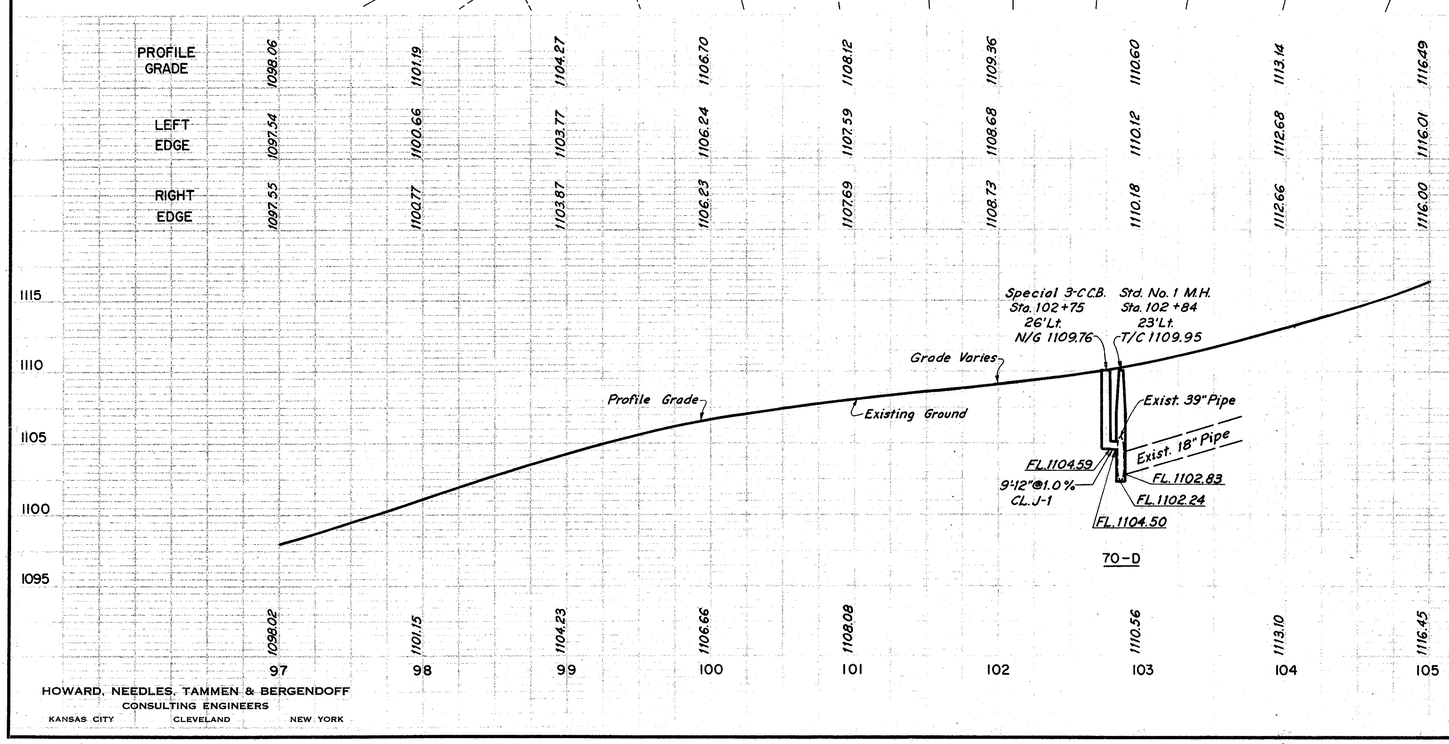
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

40
256

CUYAHOGA COUNTY
CUY -I-0.11

PLAN	BY	DATE
SURVEYED	R.J.K.	5-16-63
PLOTTED	E.C.E.	4-17-63
NOTE BOOK ALIGNMENT CHECKED		
RT OF WAY CHECKED		
NO.		





DRAINAGE SU-274(2)							
Ref. No.	Station		Side	I-1	I-8		
				Class J-1 12"	Special No. 3-C C.B.	Special No. 3-C Modified C.B.	Std. No. 1 M.H.
	From	To		Lin. Ft.	Each		
63-D	97+85		Lt.	7	1		
64-D	98+75		Rt.			1	
65-D	99+60		Lt.	7	1		
66-D	100+50		Rt.			1	
67-D	100+70		Lt.			1	
68-D	101+75		Lt.			1	
69-D	102+25		Rt.			1	
70-D	102+75		Lt.	9	1		1
71-D	102+84		Rt.				1
72-D	103+50		Lt.			1	
73-D	104+00		Rt.			1	
74-D	105+00		Lt.			1	
	Total			23	3	8	2

DRAINAGE SU-274(2)										
Ref. No.	Station		Side	I-8			E-12	I-16		
				Adjust M.H. to Grade (Storm)	Adjust M.H. to Grade (Sanitary)	Rebuild M.H. to Grade (Sanitary)	Pipe Removed 15" and under	C.B. Abandon	Exist. M.H. Cover Elev.	Adjust M.H. Cover Elev
	From	To		Each			Lin. Ft.	Each		
E-31	97+06	97+19	Lt.				13			
E-32	97+44	97+57	Rt.				15			
E-33	97+54	97+70	Lt.				16			
E-34	97+85		Lt.	1					1100.1±	1100.31
E-35	97+95		Lt.					1		
E-36	98+21	98+34	Lt.				13			
E-37	98+83	98+95	Lt.				12			
*E-38	99+30		Rt.					1		
E-39	99+37		Lt.			1			1103.21	1104.68
E-40	99+60		Lt.	1					1105.2±	1105.37
*E-41	99+68		Lt.					1		
E-42	99+78		Rt.		1				1106.13	1105.96
*E-43	100+44		Rt.					1		
*E-44	100+85		Rt.					1		
E-45	102+12		Rt.		1				1109.14	1109.39
E-46	102+60		Rt.	1					1108.71	1109.66
E-47	102+60		Lt.	1					1108.0±	1109.60
E-48	102+84		Lt.					1		
E-49	102+84		Rt.					1		
*E-50	104+05		Lt.					1		
*E-51	104+45		Rt.					1		
*E-52	104+71		Lt.					1		
	Total			4	2	1	69	10		

DRIVES AND APPROACHES SU-274(2)						
Ref. No	Station	Side	Type	Width	E-1	T-70
					Roadway Exc.	PCC for Drives 7"
				Ft.	Cu. Yds.	Sq. Yds.
14-A	97+14	Lt.	Res.	8	2	11
15-A	97+64	Lt.	"	12	4	15
16-A	98+28	Lt.	"	10	3	12
17-A	98+88	Lt.	"	8	2	11
18-A	99+16	Lt.	"	9	2	11.5
19-A	99+75	Lt.	"	8	2	11
20-A	100+55	Lt.	"	12	4	15
21-A	100+86	Lt.	"	11.5	4	15
22-A	101+88	Lt.	"	12	4	15
23-A	102+08	Lt.	"	11	3	14
24-A	103+93	Lt.	"	10	3	14
25-A	104+56	Lt.	"	11	3	15
33-A	97+52.5	Rt.	"	9	2	13
34-A	97+99	Rt.	"	8	2	12
35-A	98+54.3	Rt.	"	8	2	12
36-A	99+00	Rt.	"	12	4	15
37-A	100+25	Rt.	"	11	3	15
38-A	101+05	Rt.	"	10	3	14
39-A	101+56	Rt.	"	10	3	14
40-A	102+07	Rt.	"	105	3	14
41-A	103+49	Rt.	"	8	2	12
42-A	104+21	Rt.	"	13	4	15
	Total				64	295.5

Note:
* The Storm sewer is to remain in service. Connect the pipe through the abandoned C.B. E-38, E-41, E-43, E-44, E-50, E-51 & E-52.
For the relocation or adjustment of Water Facilities, see sheets No. 160 - 162
For Driveway Profiles, See sheets 62 - 65.
Drainage Profiles are on sheets 138 & 139.

Excavation	1,841	Cu. Yds.
Embankment	18	Cu. Yds.
Embankment + 18%	21	Cu. Yds.

PROFILE	BY	DATE
SURVEYED	R.J.K.	5-16-63
PLOTTED	E.C.E.	4-17-63
GRADES CHECKED		
B. M. + NOTED		
STRUCTURE NOTATIONS CHKD		
NO.		

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

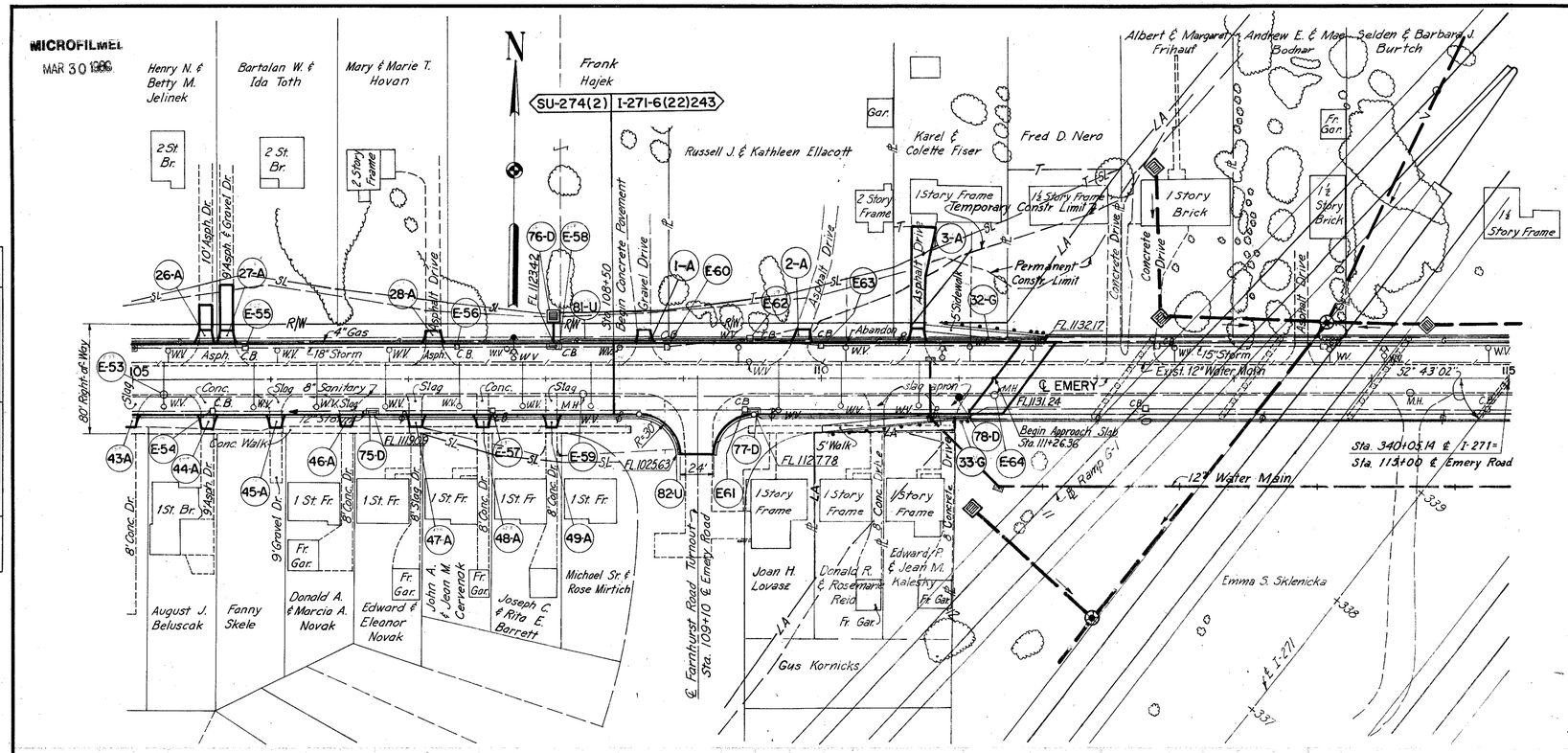
EMERY ROAD STA. 97+00 TO STA. 105+00

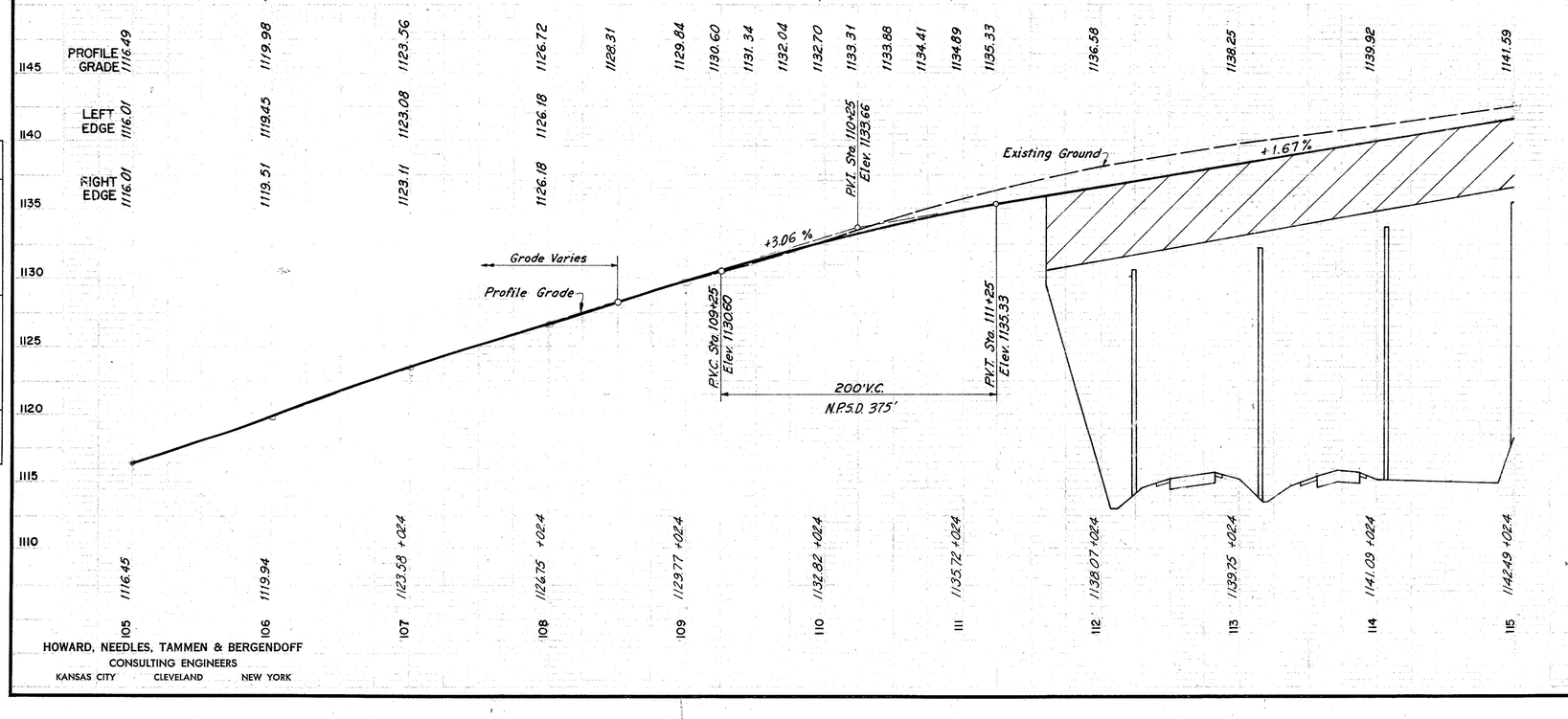
MICROFILMED
MAR 30 1990

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

41/256

CUYAHOGA COUNTY
CUY-I-0.11





PROFILE	BY	DATE
SURVEYED		
PLOTTED		
NOTE BOOK ALIGNMENT CHECKED		
NO. RT. OF WAY CHECKED		
GRADES CHECKED	E.C.E.	3-7-63
B. M.'s NOTED		
STRUCTURE NOTATIONS CHKD		

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

PROPOSED STRUCTURE CUY-I-0149

TYPE: Continuous Welded girders with reinforced concrete deck and substructure
SPANS: 65'-0", 3@ 93'-6", 86'-0", 2@ 77'-2⅜", 61'-0"
ROADWAY: 52'-0" curb/curb with two 4'-2" sidewalks
LOAD FREQUENCY: CF 400(57)
SKEW: 37°16'58"
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54(25' Long),
ALIGNMENT: Tangent

DRAINAGE I-271-6(22)243

Ref. No.	Station From	Station To	Side	I-1 Class I-3 6" Lin. Ft.
81-U	108+10	111+60	Lt.	350
82-U	106+75	111+05	Rt.	390
Total				740

DRAINAGE I-271-6(22) 243

Ref. No.	Station From	Station To	Side	I-16 C.B. Abandon Each	I-16 M.H. (Sanitary) Abandon Each
‡ E-60	108+90		Lt.	1	
‡ E-61	109+45		Rt.	1	
‡ E-62	109+50		Lt.	1	
‡ E-63	110+00		Lt.	1	
E-64	111+27		Rt.		1
Total				4	1

DRAINAGE I-271-6(22)243

Ref. No.	Station From	Station To	Side	I-8 Special No. 3-C Mod. C.B. Each	I-8 Std. No. 1 M.H. (Sanitary) Each
77-D	109+50		Rt.	1	
78-D	111+00		Rt.		1
Total				1	1

DRAINAGE SU-274(2)

Ref. No.	Station From	Station To	Side	I-8 Adjust M.H. to Grade (Sanitary) Each	I-16 C.B. Abandon Each	Exist. M.H. Cover Elev.	Adjust. M.H. Cover Elev.
E-53	105+27		Rt.	1		1117.19	1117.22
‡ E-54	105+58		Rt		1		
‡ E-55	105+82		Lt		1		
‡ E-56	107+35		Lt.		1		
‡ E-57	107+60		Rt.		1		
E-58	108+10		Lt.		1		
E-59	108+27		Rt.	1		1127.40	1127.35
Total				2	5		

DRAINAGE SU-274(2)

Ref. No.	Station From	Station To	Side	I-1 Class E-1 12" Lin. Ft. Each	I-8 Std. No. 1-2A C.B. Each	I-8 Special No. 3-C Mod C.B. Each
75-D	106+75		Rt.			1
76-D	108+10		Lt.	22	1	1
Total				22	1	2

GUARD RAIL I-271-6(22)243

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Type Deep Lin. Ft.
33-G	110+07	111+07	Rt.	100
32-G	110+80	111+55	Lt.	75
Total				175

DRIVES AND APPROACHES

Ref. No.	Station	Side	Type	Width Feet	E-1 Roadway Exc. Cu. Yds.	B-19 Subbase Cu. Yds.	T-35 Asphalt Type "C" Cu. Yds.	T-70 P.C.C. for Drives 7" Sq. Yds.
26-A	105+53	Lt.	Res.	10	5	3.1	1.3	14
27-A	105+67	Lt.	Res.	9	7	4.7	1.9	13
28-A	107+19	Lt.	Res	10	3			14
43-A	104+99	Rt.	Res	8	2			12
44-A	105+50	Rt.	Res	9	2			13
45-A	106+04	Rt.	Res	9	2			13
46-A	106+55	Rt.	Res	8	2			12
47-A	107+05	Rt.	Res	8	2			12
48-A	107+56	Rt.	Res	8	2			12
49-A	108+04	Rt.	Res	8	2			12
Total SU-274(2)					29	7.8	3.2	127
1-A	108+70	Lt.	Res.	10	3			14
2-A	109+86	Lt.	Res.	10	3			14
3-A	110+70	Lt.	Res.	10	16	11.5	4.6	14
Total I-271-6(22)243					22	11.5	4.6	42

Notes:
Driveway Profiles are on sheets 63 & 65.
See sheet 34 for Plan-Profiles I-271.
For the relocation or adjustment of Water facilities, see sheets 160-162.
See sheet 206 for Proposed Structure.
‡ The storm sewer is to remain in service. Connect the pipe through the abandoned C.B.'s E-54, E55, E-56, E-57, E-60, E-61, E-62 & E-63.
See sheet 66 for profile of Farnhurst Road Turnout.
Drainage Profiles are on sheets 139-140

Excavation	3,091	Cu. Yds.
Embankment	182	Cu. Yds.
Embankment + 18 %	215	Cu. Yds.

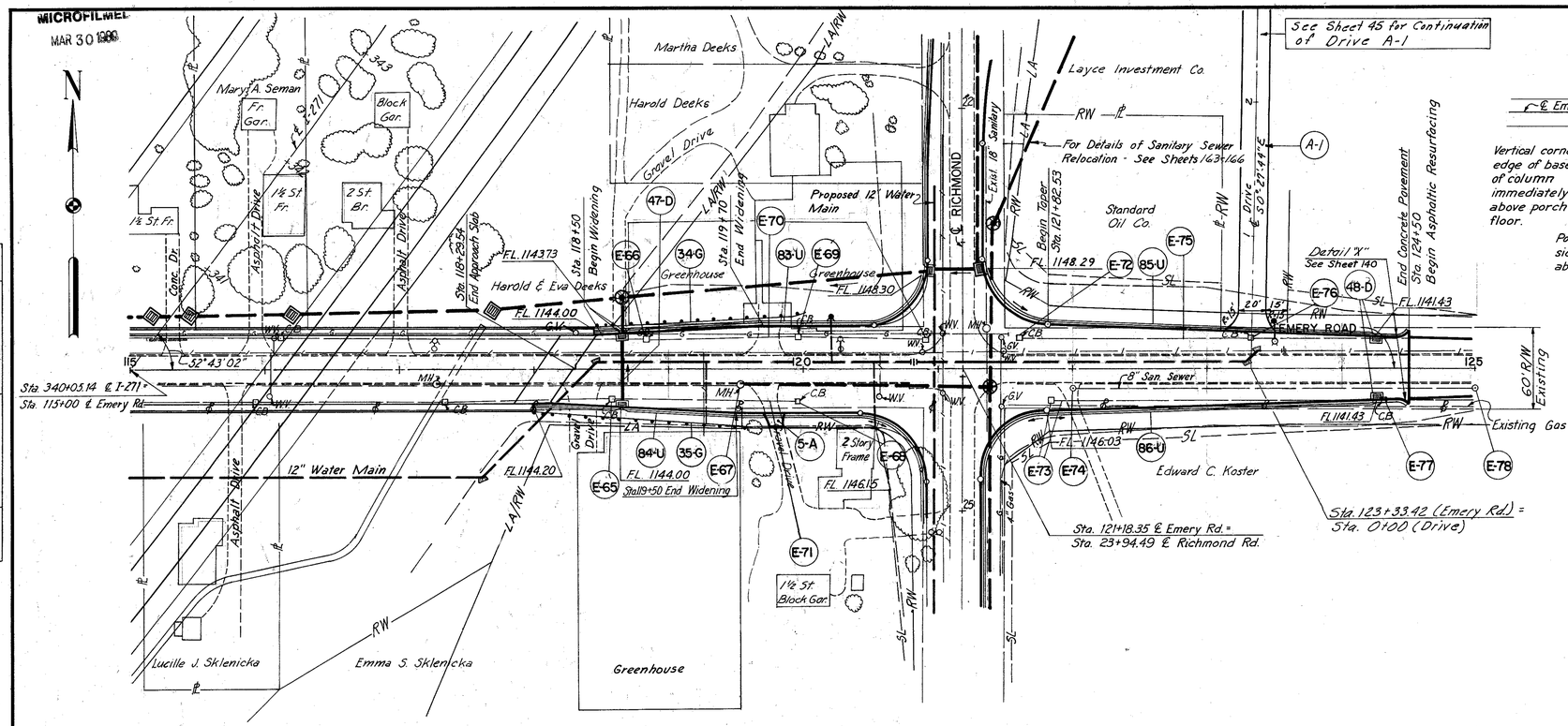
EMERY ROAD STA. 105+00 TO STA. 115+00

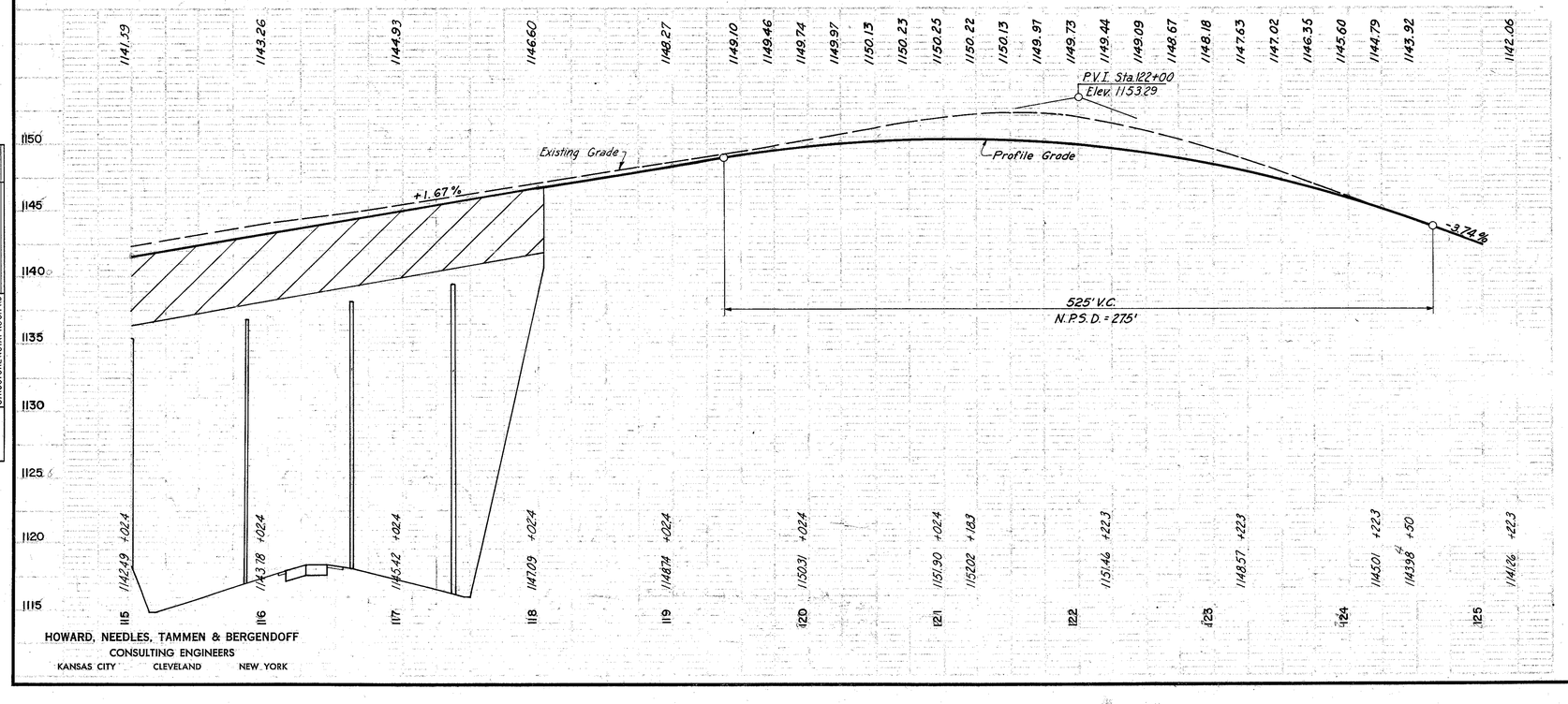
MICROFILMED
MAR 30 1990

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

42
256

CUYAHOGA COUNTY
CUY-1-0.11





DRAINAGE

Ref. No.	Station From	Station To	Side	E-12 Pipe Removed 15" & Under	I-8 Adjust M.H. to Grade (Sanitary)	I-8 Reconstruct M.H. to Grade (Sanitary)	I-16 Abandon C.B.'s
				Lin. Ft.	Each		Each
E-65	118+57		Rt.				1
E-66	118+83		Lt.				1
E-67	119+53		Rt.		1*		
E-68	119+96		Rt.				1
E-69	119+95		Lt.				1
E-70	118+38	120+92	Lt.	254			1
E-71	118+12	119+96	Rt.	184			
E-72	121+60		Lt.				1
E-73	121+85	124+25	Rt.	240			1
E-74	122+00		Rt.			1*	
E-75	121+60	124+25	Lt.	265			1
E-76	123+30		Lt.				1
* E-77	124+31		Rt.				1
E-78	125+00		Rt.		1*		
Total				943	2*	1*	9

GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Type (Deep)
				Lin. Ft.
34-G	118+00	119+62.5	Rt.	162.5
35-G	118+45	119+95	Lt.	150.0
Total				312.5

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class B-1 15"	I-1 Class J-1 15"	I-8 Special No.3-C C.B.	I-8 Special No.3-C Modified C.B.
				Lin. Ft.		Each	
47-D	118+65		Rt-Lt.	38	34	2	
48-D	124+25		Lt-Rt.				2
Total				38	34	2	2

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class I-3 Shallow 6"	I-5 Class I-3 60° Bend 6"
				Lin. Ft.		Each
83-U	118+35	121+00	Lt.	20	268	2
84-U	118+11	120+54	Rt.	20	222	2
85-U	121+38	124+25	Lt.	10	300	
86-U	121+80	124+25	Rt.	10	240	1
Total				60	1,030	5

DRAINAGE

Ref. No.	Station From	Station To	Side	T/C or T/G Elev. Exist. Elev. M.H. Cover	T/C or T/G Elev. Adjusted Elev. M.H. Cover	T/C or T/G Elev. Reconstruct Elev. M.H. Cover
E-67	119+53		Rt.	1149.51	1148.83	
E-74	122+00		Rt.	1151.5		1149.50
E-78	125+00		Rt.	1141.4	1141.84	

DRIVES AND APPROACHES

Ref. No.	Station	Side	Type	Width	E-1 Roadway Exc.	T-70 P.C.C. for Drives 8"
				Ft.	Cu. Yds.	Sq. Yds.
5-A	119+75	Rt.	Comm.	10'	3	15
Total					3	15

DRIVE A-1 ** 0100 to 10132 (100% State)

Station (Left)	E-1 Excavation	B-19 7" Aggregate Base Course	T-30 Bit. Prime Coat 0.4 Gal/S.Y.	B-35 2" Asp. Conc. Leveling Course	T-35 2" Asp. Conc. Surface Course
	Cu. Yds.	Cu. Yds.	Gal.	Cu. Yds.	Cu. Yds.
123+33.42	702	458	46	127	127
Total	702	458	46	127	127

** 6' Earth Shoulder Each Side of 20' Drive

Notes:
See sheet 34 for Plan - Profile I-271.
For the relocation or adjustment of Water Facilities see sheets 160-162.
See sheet 206 for Proposed Structure.
See sheet 47 for details of Richmond & Emery Road Intersection.
*The Storm Sewer is to remain in Service. Connect the Pipe through the abandoned C.B. E-77
Driveway Profile 5-A is on sheet 66.
Drainage Profiles are on sheet 178.

Excavation	2,415	Cu. Yds.
Embankment	207	Cu. Yds.
Embankment + 18%	244	Cu. Yds.

PLAN
SURVEYED BY: L.J.M., S.J.F., E.C.E.
DRAWN BY:
QUANTITIES CHECKED:
ALIGNMENT CHECKED: E.C.E.
RT. OF WAY CHECKED:
NOTE BOOK:
NO.
DATE: 3-7-63

PROFILE
SURVEYED BY:
DRAWN BY: L.J.M. 3-16-63
QUANTITIES CHECKED: E.C.E.
B. M.'s NOTED:
STRUCTURE NOTATIONS CHKD:
DATE: 3-12-63

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

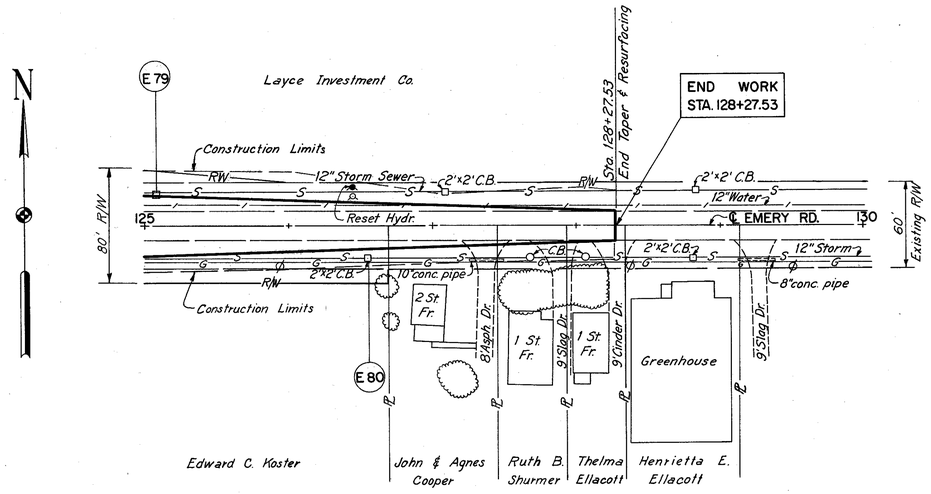
EMERY ROAD STA. 115+00 TO STA. 125+00

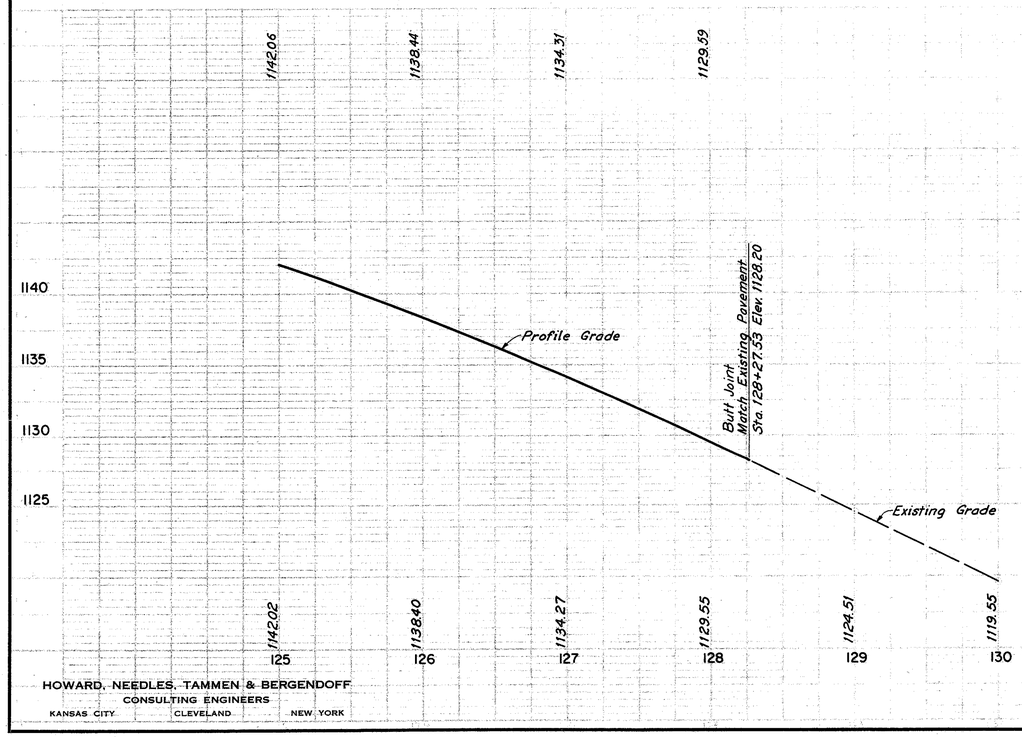
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

43
256

CUYAHOGA COUNTY
CUY -I-0.11

PLAN	DATE
SURVEYED	
PLOTTED	
ALIGNMENT CHECKED	11-4-63
GRADES CHECKED	11-5-63
NOTE BOOK	BY
B. M.'s NOTED	RJK
RT OF WAY CHECKED	ECE
NO.	
STRUCTURE NOTATIONS CHKD	





PROFILE	DATE
SURVEYED	
PLOTTED	
GRADES CHECKED	11-4-63
B. M.'s NOTED	11-5-63
STRUCTURE NOTATIONS CHKD	
NOTE BOOK	BY
NO.	RJK
	ECE

DRAINAGE

Ref. No.	Station From	Station To	Side	I-8 Adjust C.B. to Grade	I-16 Abandon C.B.	T/C Elevation Exist. Elev. of C.B. Grate	T/C Elevation Adjust. Elev. of C.B. Grate
				Each	Each		
*E-79	125+09		Lt.	1			
E-80	126+55		Rt.		1	1134.3	1135.5
Total				1	1		

Notes:
*The storm sewer is to remain in service. Connect the pipe through the abandoned C.B. E 79.
For the relocation or adjustment of Water Facilities, see sheets 160 - 162.

EXCAVATION	93	CU. YDS.
EMBANKMENT	270	CU. YDS.
EMBANKMENT + 18%	319	CU. YDS.

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

EMERY ROAD STA. 125+00 TO STA. 128 +27.53

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

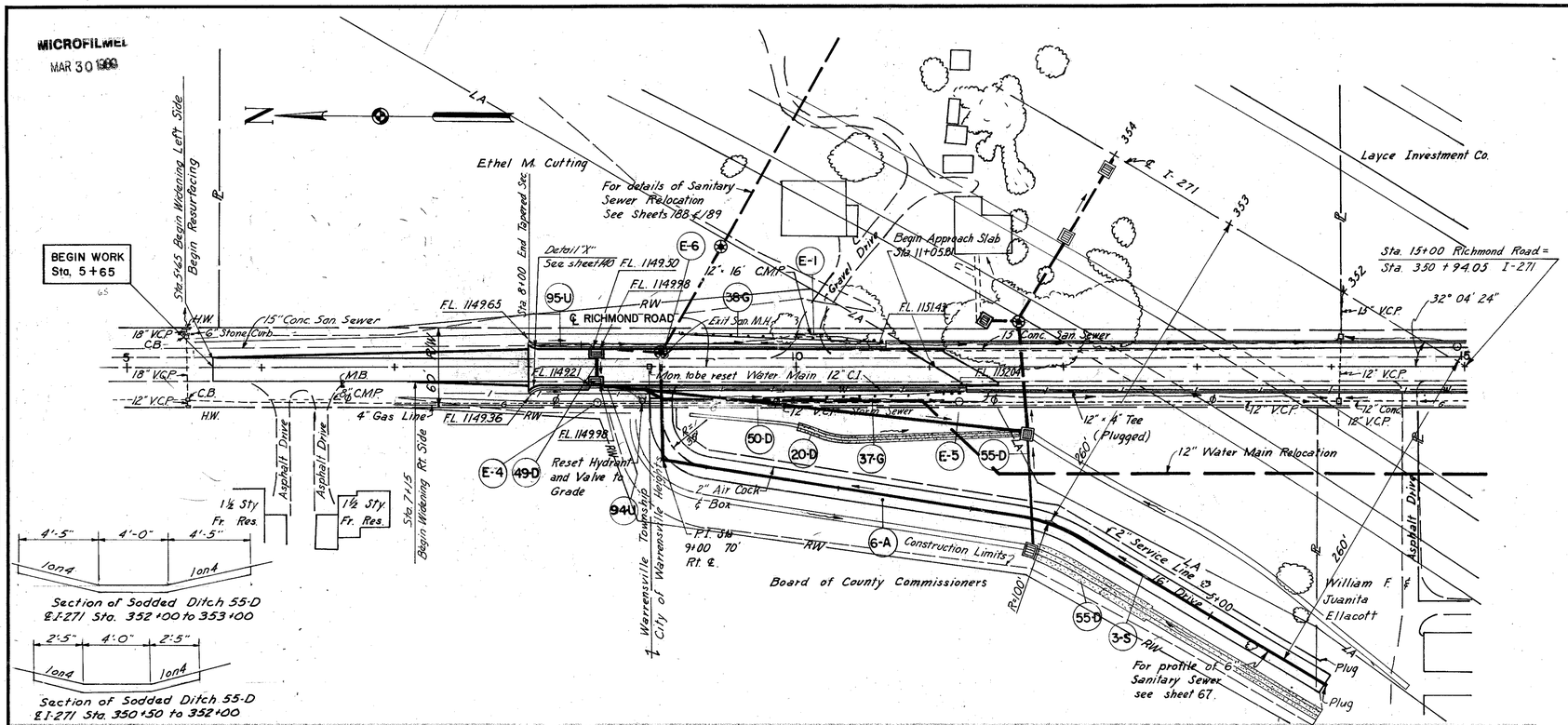
44
256

CUYAHOGA COUNTY
CUY-1-0.11

T. & H. at SW. base of 4" cherry tree.
T. & Hub at NW. base of 4" cherry tree.
46.18'
73.38'
℄ Richmond Rd.
89.76'
Sta. 8+00 P.K. Nail.
T. & H. 6" W. of hydrant.

PROPOSED STRUCTURE CUY-1-0170

TYPE: Continuous Welded girders with reinforced concrete deck and substructure.
SPANS: 97.0' - 136.625' - 136.625' - 149.875' - 150.875' - 105.25'
ROADWAY: 28'-0" curb to curb with two 4'-2" walks
LOAD FREQUENCY: CF400(57)
SKEW: 57° 54' 33.6"
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: Tangent



GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std. Type (Deep) Lin. Ft.
37-G	9+75	11+25	Rt.	150
38-G	9+15	10+65	Lt.	150
Total				300

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class I-3 Shallow 6"	I-1 Class J-1 6"	I-5 Class I-3 60° Bend 6" Each
				Lin. Ft.			
94-U	8+00	11+25	Rt.	20	285	20	2
95-U	8+00	10+65	Lt.	20	255		2
Total				40	540	20	4

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Cl. B-1 M6.5(b) or M6.6(b) or M6.8(b) 12"	I-1 Class F-1 21"	I-1 Class J-1 12"	I-8 Modified No. 2-3 C.B.	I-8 Std. No. 2-2-A C.B.	I-8 Std. No. 3-A C.B.	L-10 Sodding
				Lin. Ft.			Each			Sq. Yds.
49-D	8+50		Lt.-Rt.			28			2	
50-D	8+50	11+75	Rt.	325				1		
55-D	11+75	11+78	Rt.		89		1			294
Total				325	89	28	1	1	2	294

DRIVES AND APPROACHES

Ref. No.	Station	Side	Type	Width	B-19 Subbase .5"	T-30 Bit. Prime Coat	T-35 1½" As. Conc. Type "C"	T-70 P.C.C. for Drives 8"	I-22 Subbase 4"
				Ft.	Cu. Yds.	Gal.	Cu. Yds.	Sq. Yds.	Cu. Yds.
6-A	9+00	Rt.	Comm.	16'	145	410	43	21	114
Total					145	410	43	21	114

DRAINAGE

Ref. No.	Station From	Station To	Side	E-12 Pipe Removal 15" & Under	I-16 Abandon C. B.	S-24 Removal of Structure (Sanitary M.H.)
				Lin. Ft.	Each	Lump
E-1	10+00	10+20	Lt.	20		
E-4	8+50		Rt.		1	
E-5	10+22		Rt.		1	
E-6	9+00		Lt.			Lump
Total				20	2	Lump

Notes:
See sheet 188 for 3-5 pipe quantity.
See sheet 35 for Plan-Profile I-271.
See sheet 67 for Drive 6-A Profile.
See sheets 178 and 179 for Sewer Profiles.
See sheet 216 for Proposed Structure.
The 2-3 Catch Basin 287' Left of station 353+00 shall be modified by having 4 windows each 3'-0" wide. The 6" spacing of bars in the windows shall be maintained.
See Sheets 67 & 188 for 6" Sanitary Service Line under drive 6-A.
For the relocation or adjustment of Water facilities, see sheets 163 & 164.

Excavation	202	Cu. Yds.
Embankment	2,952	Cu. Yds.
Embankment + 18%	3,483	Cu. Yds.

PLAN
NOTE BOOK
NO.
SURVEYED
PLOTTED
ALIGNMENT CHECKED.
RT. OF WAY CHECKED.
BY E.C.E. L.A.E.
DATE 3-13-63 3-14-63

PROF. E
SURVEY
PLOTTED
GRADES CHECKED.
B. M. NOTED
STRUCTURE NOTATNS CHKD
NOTE BOOK
NO.
BY E.C.E. L.A.E.
DATE 3-13-63 3-14-63

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

MICROFILMED
MAR 30 1966

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

45/256

CUYAHOGA COUNTY
CUY-I-0.11

Drive ℄
Curve Data
D = 11°-52'-06"
Δ = 23°-24'-19"
R = 482.76'
T = 100.00'
L = 197.21'

P.C. Sta. 4+29.00
P.T. Sta. 6+26.21
For Details of Sanitary Sewer Relocation See Sheets 188-191.
See Sheet 42 & 59 for Continuation of Drive A-1
S 0°-27'-44" E
℄ Drive
Shed
Gar.
Layce Investment Co.
Standard Oil Co.
Edward C. Koster
℄ EMERY ROAD
℄ RAMP G-2
End Approach Slab Sta. 19+29.52
1½ Sty. Fr. Res.
2 Sty. Fr. Res.
Sta. 23+12.35
Sta. 24+76.35
Sta. 23+94.49 ℄ Richmond Road = Sta. 121+18.35 ℄ Emery Road Reset Mon. to Grade
FL. 1146.03
FL. 1143.43
FL. 1148.26
0.3% Rise
Sta. 10+00 Ramp G-2
Sta. 22+23.46 14° LT =
Sta. 15+00 Richmond Road = Sta. 350+94.05 I-271
18" Conc. Sanitary Sewer
12" C.I. Water Main Existing
8" Conc. Pipe
Plugged
18" Conc. Pipe
Abandon
℄ RICHMOND ROAD
FL. 1130.88
FL. 1130.17
FL. 1148.56
FL. 1143.24
32° 04' 24"
S 0°-27'-44" E
60' R/W
Mon.
4 Gas
3 Gas
12" V.C.P.
12" V.C.P.
3° R.P.
Sta. 19+69 Begin Taper
FL. 1130.79
22+50 End Taper
FL. 1148.08
Sta. 23+42.86
90° 07' 40"
FL. 1146.13
2 Sty. Fr. Res.
℄ I-271
Hubert W. Ellacott Et al
Hubert W. & Delia E. Ellacott
Russell J. Ellacott
Juanita Ellacott
1 Sty. Fr. Res.
2½ Sty. Br. Res.
Asphalt Drive
Gravel Drive
Harold & Eva Deeks
Martha Deeks
Harold Deeks
Greenhouse
Emma S. Sklenicka
William F. & Juanita Ellacott
Russell J. & Kathleen Ellacott
Garage
Hubert W. & Russell J. Ellacott
E-7
E-8
E-9
E-35
E-36
52-D
53-D
89-U
90-U
91-U
92-U
93-U
36-G

I.P. 6" from block of conc. at end of tree line.
127.33
I.P. 6' N. of pile of broken tile.
179.64
℄ Richmond Rd.
98.45'
92.52'
℄ Emery Rd.
Point of 9th metal siding corner above foundation.
Vert. cor. edge of base of column immediately above porch floor.

BENCH MARK C.R.G.S. 148
Monument at Emery & Richmond. 29' S.W. of I.P. in Mon. Box at Intersection.
Elev. 1151.47

GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Type (Deep) Lin. Ft.
36-G	19+70	21+20	Rt.	150
Total				150

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6" Lin. Ft.	I-1 Class I-3 Shallow 6" Lin. Ft.	I-5 Class I-3 60° Bend 6" Each
89-U	24+30	25+00	Rt.		90	
90-U	24+16	25+00	Lt.		108	
91-U	19+70	23+20	Rt.	10	340	1
92-U	22+25	23+20	Lt.	10	85	1
93-U	19+60	20+80	Lt.	10	110	1
Total				30	733	3

DRAINAGE

Ref. No.	Station From	Station To	Side	E-12 Pipe Removed 15" & Under Lin. Ft.	I-16 Abandon C.B. Each	I-16 Abandon M.H. (Sanitary) Each
E-7	20+50	21+60	Rt.	110		
E-8	21+60		Rt.		1	
E-9	23+65		Lt.			1
E-35	21+01		Lt.			1
E-36	21+01		Rt.			1
Total				110	1	3

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class E-1 12" Lin. Ft.	I-1 Class J-1 12" Lin. Ft.	I-8 Std. No. 2-2A C.B. Each	I-8 Std. No. 3-A C.B. Each	I-8 Std. No. 3 C.B. Each
52-D	20+80	23+20	Lt.	68	240	1	1	
53-D	23+20	-	℄	229	40		1	1
Total				297	280	1	2	1

1160 1155 1150 1145 1140 1135 1130 1125

1136.57 1136.07 1135.57 1135.07 1134.57 1134.07 1133.57 1133.07 1132.92 1132.73 1132.46 1132.12 1131.71 1131.25 1130.72 1130.11 1129.44 1128.70 1147.90 1147.04

Existing Grade
Profile Grade
-0.50%
PVI. Sta. 24+58.00 Elev. 1151.78
-3.82%
500' V.C.
N.P.S.D. = 275'

15+00 1143.12
16+00 1143.69
17+00 1145.05
18+00 1147.09
19+00 1149.91
20+00 1153.03
21+00 1155.88
22+00 1158.43
23+00 1159.53
24+00 1162.19
25+00 1168.45

For proposed structure see sheets
for the relocation or adjustment of Water Facilities, see sheets 163 & 164
For details of Ramps G-2 & G-2A see sheets 59 & 60 For details of Richmond-Emery intersection see sheet 47.
For sanitary sewers see sheets 188-191.
For storm sewer profiles see sheet 179.

Excavation	4,314	Cu. Yds.
Embankment	247	Cu. Yds.
Embankment + 18%	291	Cu. Yds.

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

RICHMOND ROAD STA. 15+00 TO STA. 25+00

PLAN
NOTE BOOK
NO.
SURVEYED
ALIGNMENT CHECKED.
RT. OF WAY CHECKED.
BY E.C.E. E.A.Z.
DATE 3/16/65 3-16-65

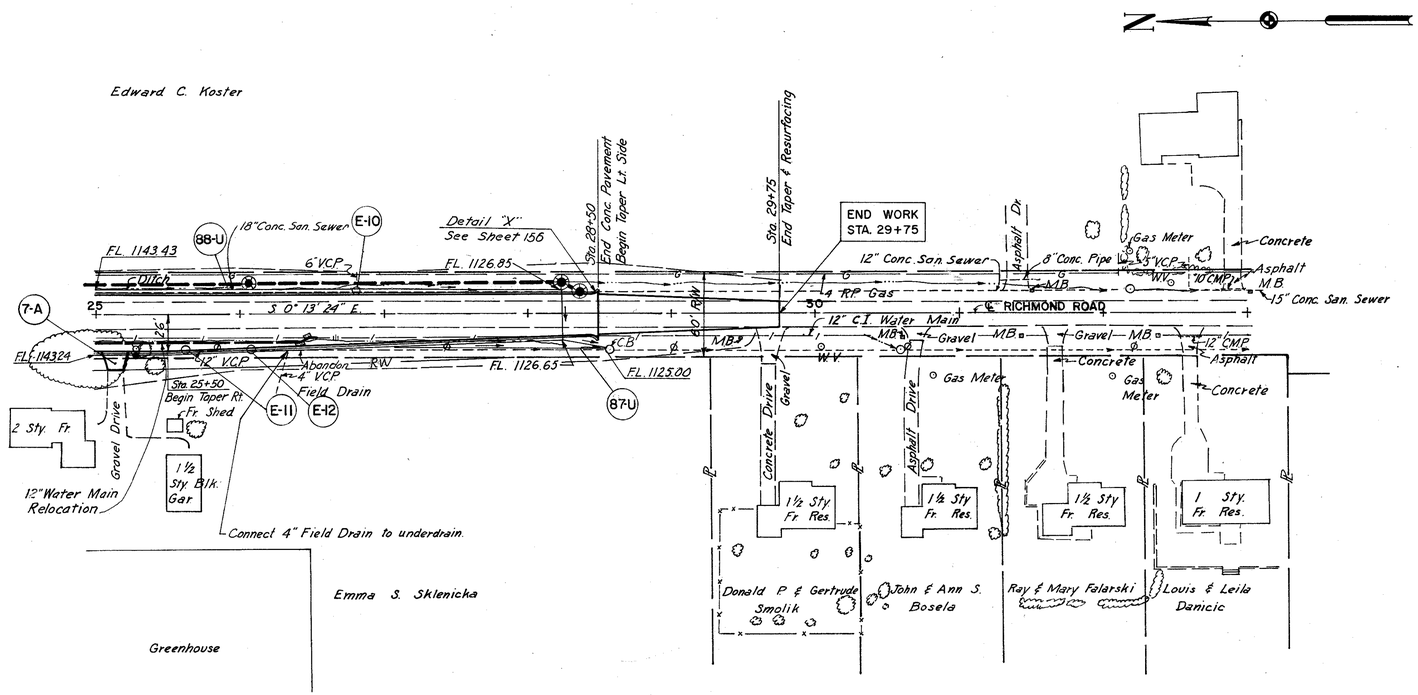
PROFILE
SURVEY
GRADES CHECKED.
B. M. NOTED.
STRUCTURE NOTATIONS CHKD
BY E.C.E. E.A.Z.
DATE 3/16/65 3-16-65

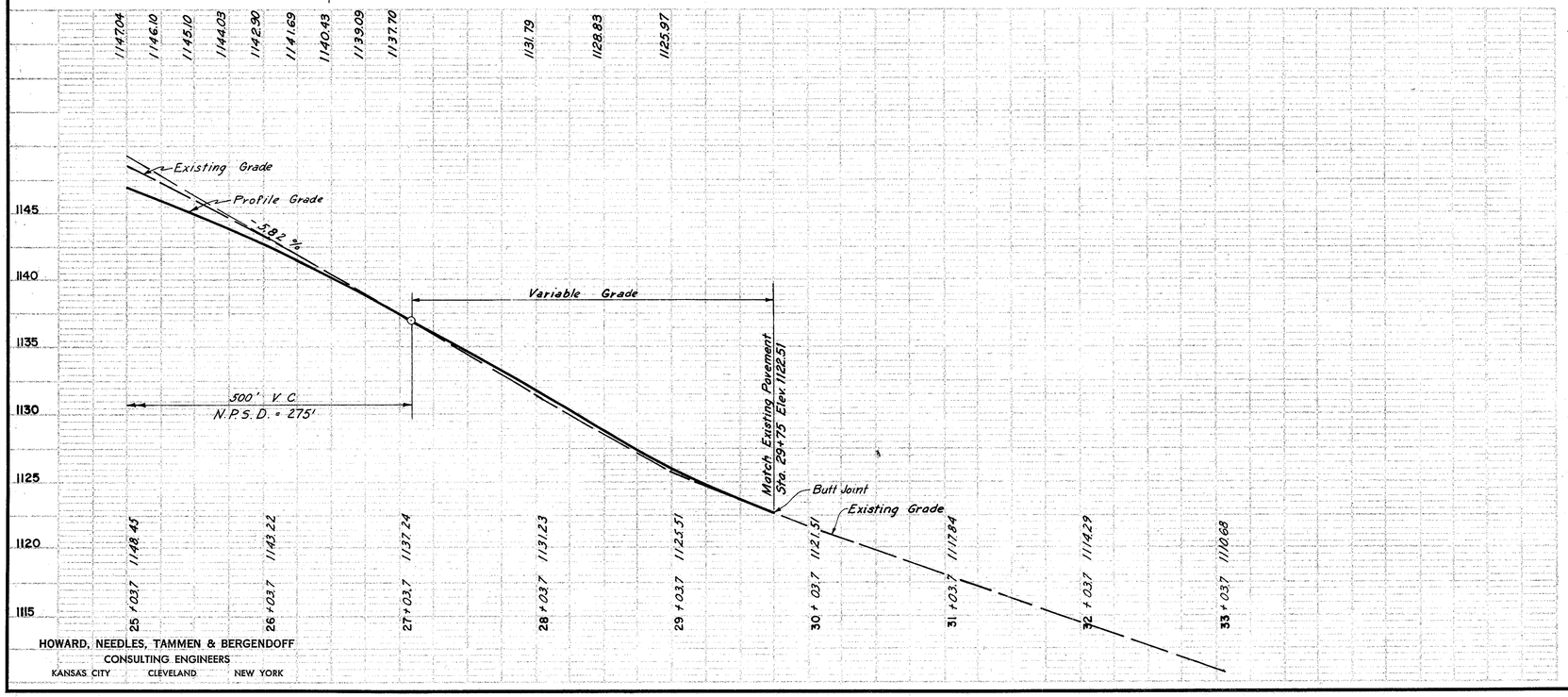
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

46
256

CUYAHOGA COUNTY
CUY-1-0.11

PLAN	BY	DATE
SURVEYED	E.C.E.	2-18-83
DRAWN	L.H.Z.	3-20-83
NOTE BOOK ALIGNMENT CHECKED		
NO. RT. OF WAY CHECKED		





PROF.	BY	DATE
SURVEYED	E.C.E.	2-18-83
DRAWN	L.H.Z.	3-20-83
NOTE BOOK GRADES CHECKED		
NO. B. M. + NOTED STRUCTURE NOTATIONS CHKD		

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

DRIVES AND APPROACHES

Ref. No.	Station	Side	Type	Width	E-1 Roadway Exc.	T-70 P.C.C. for drives 8"
				Ft.	Cu. Yds.	Sq. Yds.
7-A	25+10	Right	Comm.	12	6	17
	Total				6	17

DRAINAGE

Ref. No.	Station From	Station To	Side	I-8 Adjust M.H. to Grade (Sanitary)	T/C Elev. Exist. M.H. Elev.	T/C Elev. Adjusted M.H. Elev.	I-16 Abandon C.B.
				Each			Each
E-10	26+78		17' Lt.	1	1137.92	1139.05	
E-11	25+58		25' Rt.				1
E-12	26+04		25' Rt.				1
	Total			1			2

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class I-3 Shallow 6"	I-1 Class J-1 6"	I-5 Class I-3 90° Bend 6"	I-5 Class I-3 Tee 6"x6"x6"	I-5 Class I-3 60° Y 6"x6"x6"
				Lin. Ft.			Each		
87-U	25+00	28+57	Rt.	10	350			1	1
88-U	25+00	28+25	Lt.		325	36	1		
	Total			10	675	36	1	1	1

For the relocation or adjustment of Water facilities, see sheet 163 & 164.
See sheets 188-191 for details of Sanitary Sewer Relocation.
See sheet 66 for Drive Profile 7-A.

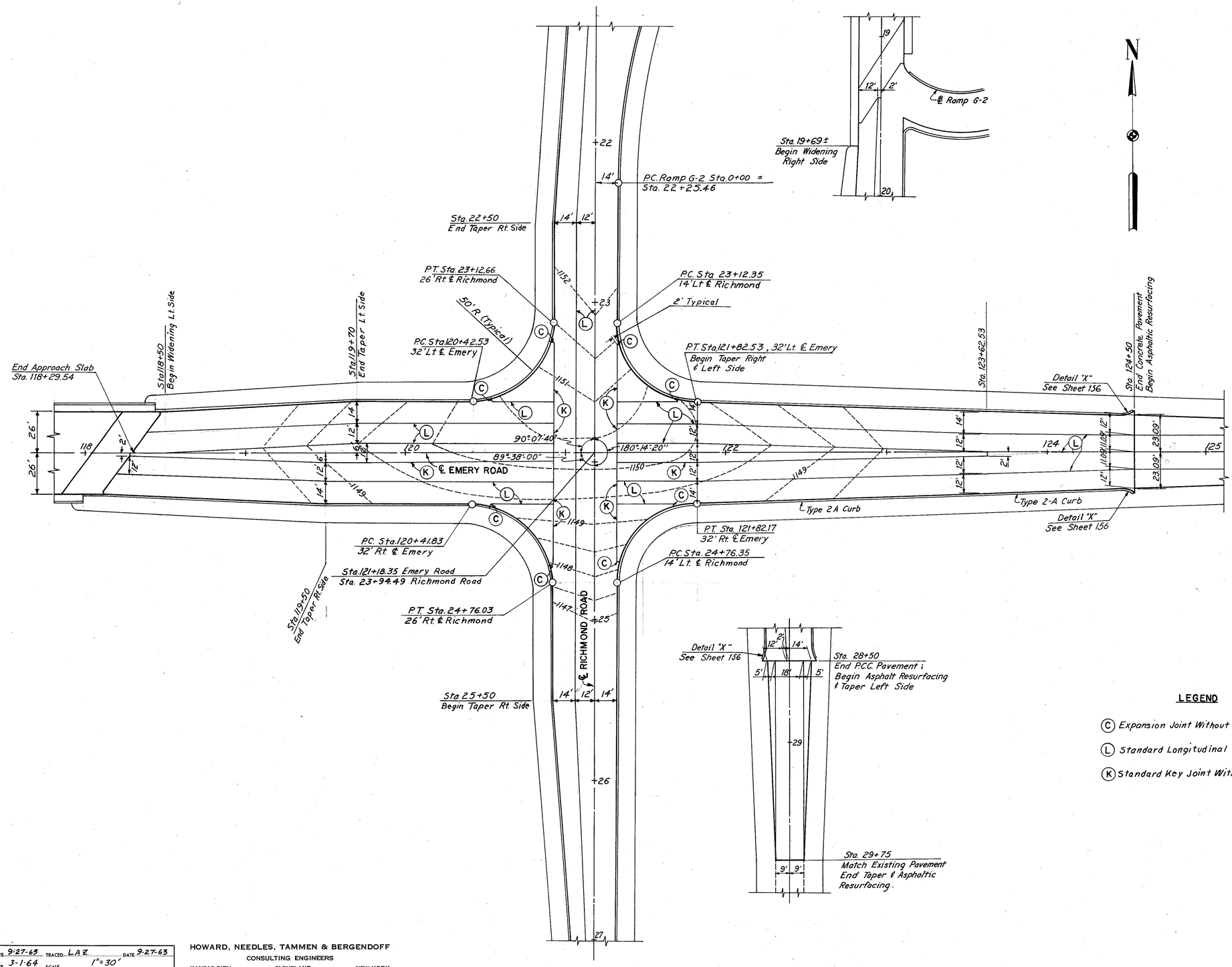
Excavation	442	Cu. Yds.
Embankment	865	Cu. Yds.
Embankment + 18%	1021	Cu. Yds.

RICHMOND ROAD STA. 25+00 TO STA. 32+19

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

47
256

CUYAHOGA COUNTY
CUY 1-0.11



LEGEND

- (C) Expansion Joint Without Dowels
- (L) Standard Longitudinal Joint
- (K) Standard Key Joint Without Tie Bars

MADE	LAZ	DATE	9-27-63	TRACED	LAZ
CHECKED	ECE	DATE	3-1-64	SCALE	1"=30'

DATE 9-27-63

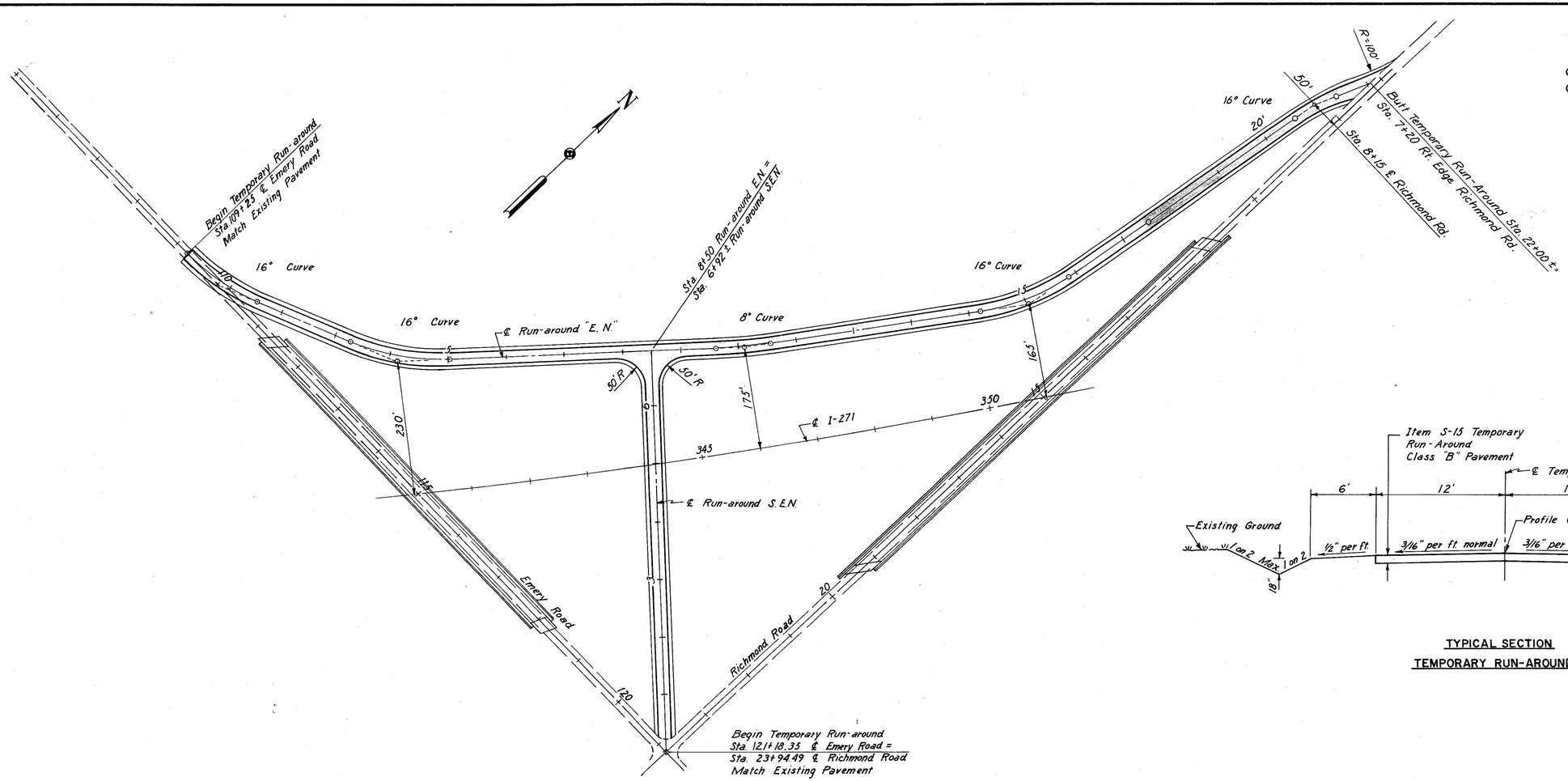
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

RICHMOND-EMERY INTERSECTION

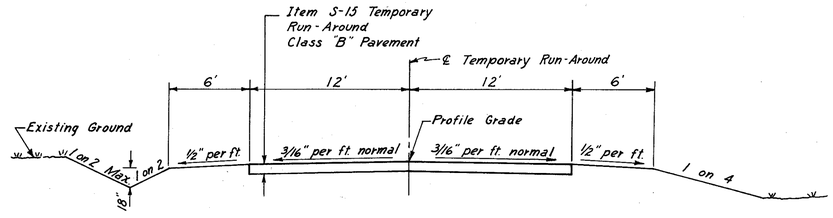
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

48
256

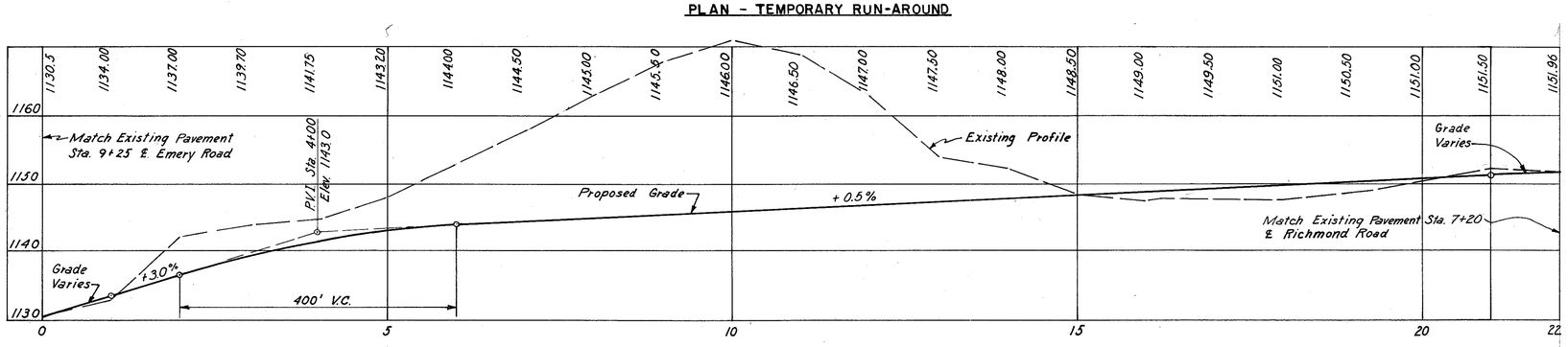
CUYAHOGA COUNTY
CUY-I-0.11



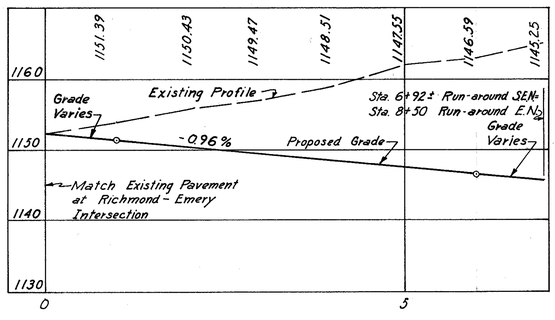
PLAN - TEMPORARY RUN-AROUND



TYPICAL SECTION
TEMPORARY RUN-AROUND



PROFILE - TEMPORARY RUN-AROUND E. N.



PROFILE - TEMPORARY RUN-AROUND S.E.N.

MADE E.C.E DATE 4-8-63 TRACED DATE
CHECKED L.A.Z. DATE 4-11-63 SCALE 1"= 100' Hor. ; 1"= 10' Vert.

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-I-0.11

49
256

C.B.
+115
LA
+295
℄ I-271
36"
Sta. 0+00 Ramp H-1 ℄ I-271
Sta. 294+50 I-271 ℄ Ramp H-1
10' Paved Shoulder
℄ RAMP H-1
12" V.S.P.
12" V.S.P.
C.B.
C.B.
10" V.S.P.
S 89°02'31" W
℄ MILES ROAD
+118
22-G
LA
+300
S-3
3'
58'
100' Transition
I-21
24'
18'
Nose Sta. 4+55.04 Ramp H-1 ℄ I-271
Sta. 299+13.32 I-271 ℄ Ramp H-1
5'
5+55.04
10' Paved Shoulder
100' Transition
For Terminal Details
see sheet 173
59-U
4' Paved Shoulder
LA
F.L. 1068.64
Sta. 8+50
Transition
F.L. 1067.30
Sta. 9+00
F.L. 1067.00
E.C.P.*
Culvert entrance details
see sheet 167
LA
11:12
Shoulder Transition
Shoulder Transition
Sta 11+50
11:12
10" Pavement Sta 11+50
9" Pavement
11:16.7
March Line
59-U
0.30%
LA
F.L. 1068.44
Sta. 12+75
60-U
0.30%
F.L. 1067.00
E.C.P.*
F.L. 1067.44
Sta. 17+00
F.L. 1067.14
LA
LA
P.C.C. 12-13
37-D
61-U
31-G
11:16.7
R=20
LA
LA

Punch mark in lag bolt
S. side of 16" elm.

℄ Miles Rd.
57.29'
53.33'
43.12'
N. ℄ V. in E. side of 6" oak tree.
Sta. 129+18.14
Masonry Nail.
"X" cut on N.E. side of corner fence post.

Nail in hub 1' S.E. of 24" Poplar tree.
317.32'
144.33°
Nail in hub 5.2' S. of 12" poplar tree.
℄ Ramp H-1
P.T. Sta. 22+45.40
61.57' N. ℄ V. in E. side 18" poplar tree.
329.15'
317.37'
N. ℄ V. in top of bend N. side of 24" poplar.
Nail in hub 1.5' S.W. of twin 36" poplar.

CUYAHOGA CO. MON. R-6
Monument on S. side of Miles Rd. at Air Maze Corp. 31.5' Rt. of Sta. 134+17 ℄ Miles.
Elev. 1065.59

GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std. Type (Deep) Lin. Ft.
22-G	4+55 H-1	9+00 H-1	Rt.	441
31-G	17+00 H-1	21+00 H-1	Lt.	437.5
Total				878.5

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	Class F-4 M6.4(c) 8"	Class I-3 Shallow 6"	Class J-1 6"	Class J-1 15"	I-5 Class F-4 90° Bend 6"	Class I-3 90° Bend 6"	Class I-3 Tee 6"x6"x6"	I-8 Std. No. 2-2-A C.B.	I-16 Catch Basins Abandoned	L-120 Jute Matting
				Lin. Ft.					Each			Each	Each	Sq. Yds.
59-U	4+55	12+75	Rt.		10	830					1			
60-U	12+75	16+80	Rt.		10	420				1				
61-U	16+84	23+00	Rt.		10	616	44			1				
62-U	23+03	31+28	Rt.		10	840					1			
63-U	31+40	128+45 Miles	Rt.	40		340			1					
37-D	12+30	26+00	Rt.											1650
40-D	128+45 Miles	128+86 Miles	Lt.					41				1		
6-E	128+86	Miles	Lt.										1	
Total				40	40	3046	44	41	1	2	2	1	1	1650

2'-6" on Slope
6'-0"
2'-6" on Slope
1 on 2
1 on 2
Section of Ditch 37-D
Jute Matting

Pesco Products Parking Area
12" V.S.P.
W.V.
21" V.S.P.
℄ MILES ROAD
W.V.
+128
F.L. 1061.40
Sta. 35+04.00 ℄ Ramp H-1 = Sta. 129+02.19 ℄ Miles Road
S 89°02'31" W
LA
63-U
R=50'
San. M.H.
F.L. 1063.37
S-5
F.L. 1064.48
Sta. 30+50
LA
LA
LA
F.L. 1065.51
Sta. 23+00
P.T. 18
LA
63-U
F.L. 1062.82
Sta. 31+85
F.L. 1063.28
62-U
0.30%
0.30%
0.30%
40-D
N 0°57'29" W
30
3' Paved Shoulder
℄ RAMP H-1
25
Asphalt Drive (Pesco Products)
6-E
Match Existing Pavement
Sta. 34+88.00
45° V.S.P.
21" V.S.P.
12" V.S.P.
LA
LA
LA
LA
LA
F.L. 1065.30

Notes:
For Curve Data see sheet 9
Catch Basin left of Sta. 128+45 Miles to be constructed over existing 12" V.S.P. Remove existing pipe between Sta 128+45 and 128+82.

* Erosion Control Pad (See Miscellaneous Drainage Details)
For Culvert Details see sheets 167 & 169. Unless labeled otherwise, all underdrains are shallow.
For Ramp H-1 ℄ Miles Road intersection detail, see sheet 51.

MADE	LVM	DATE	3-19-63	TRACED		DATE	
CHECKED	ECE	DATE	3-20-63	SCALE	1"=50'		

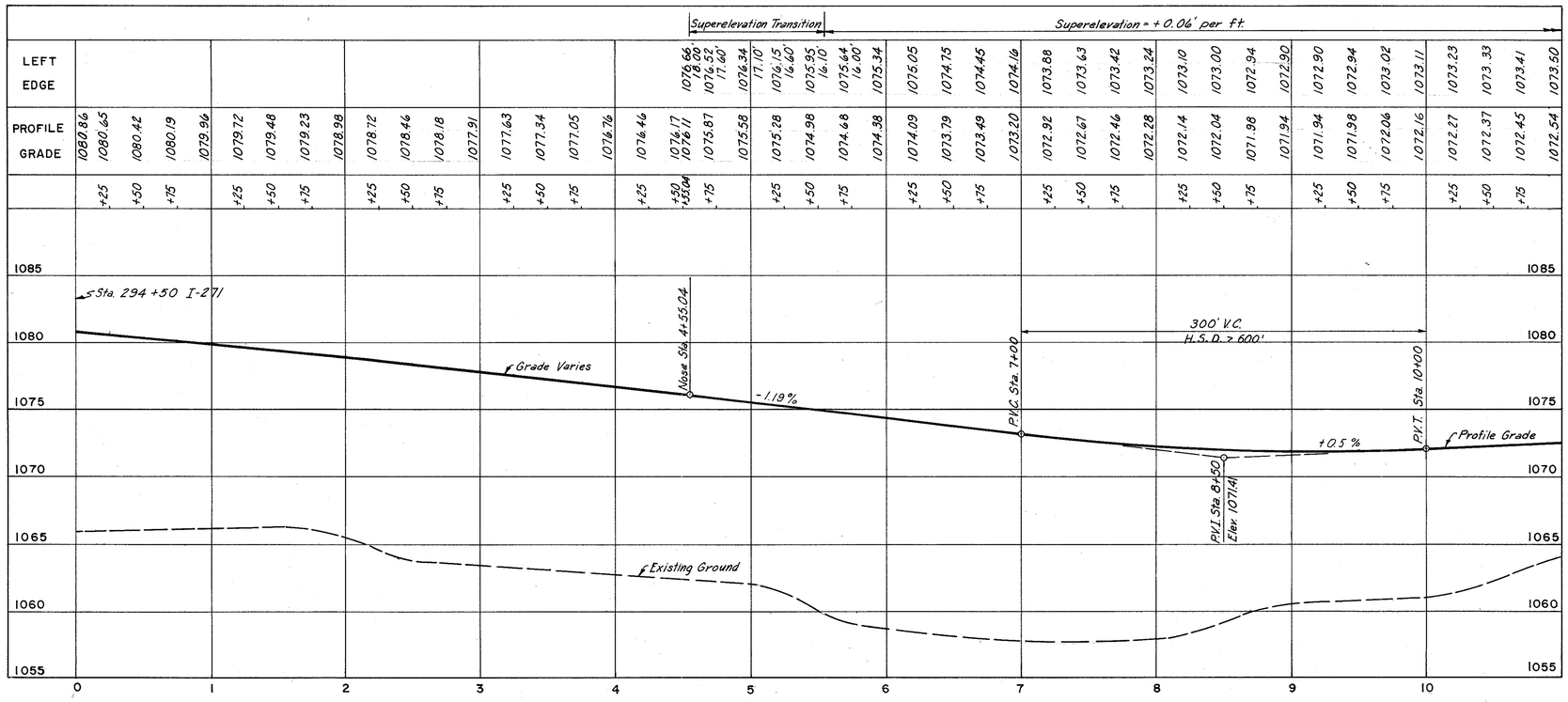
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

PLAN RAMP H-1

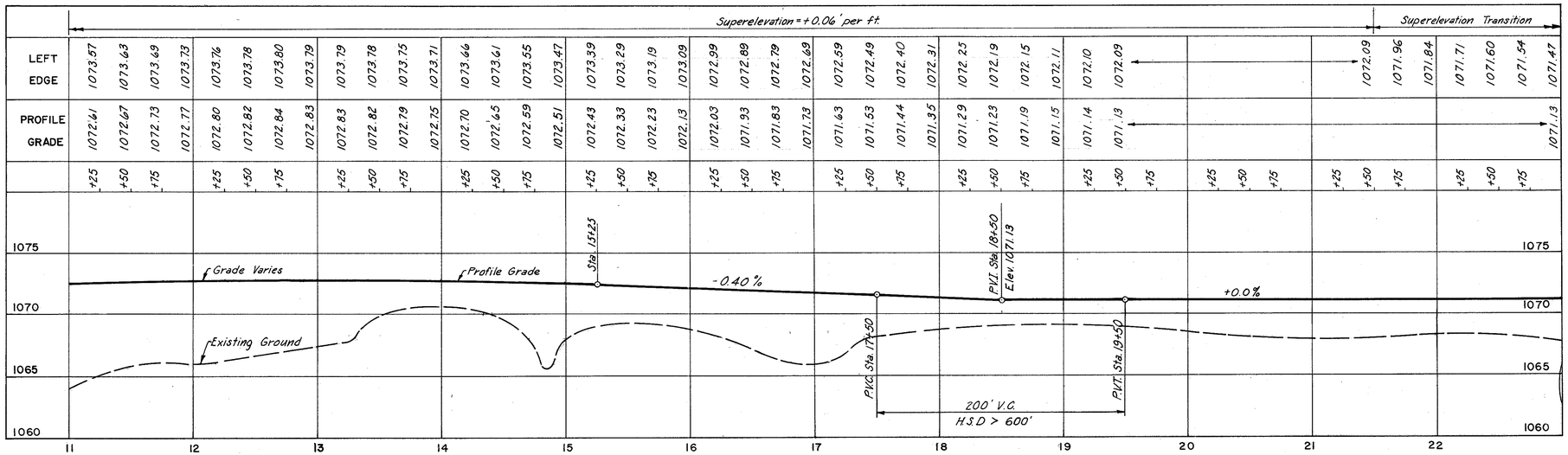
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

50
256

CUYAHOGA COUNTY
CUY-I-0.11



PROFILE RAMP H-1



PROFILE RAMP H-1

MADE L.V.M. DATE 2-21-63 TRACED DATE
CHECKED E.C.E. DATE 7-25-63 SCALE 1"=50' Hor. 1"=5' Vert.

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

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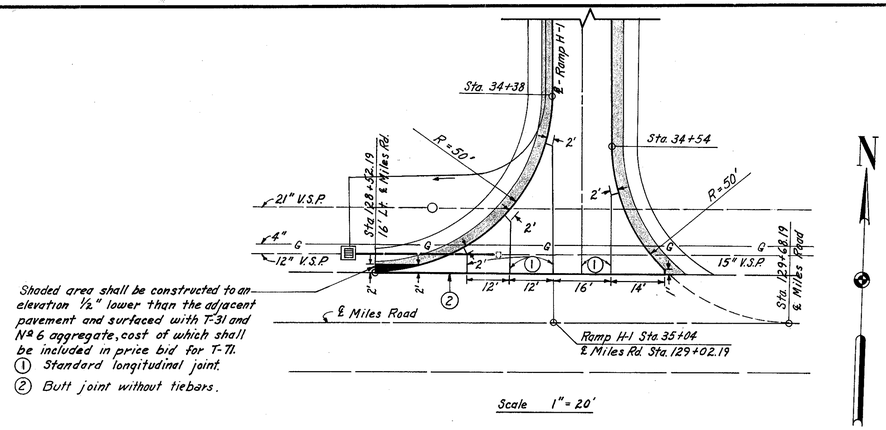
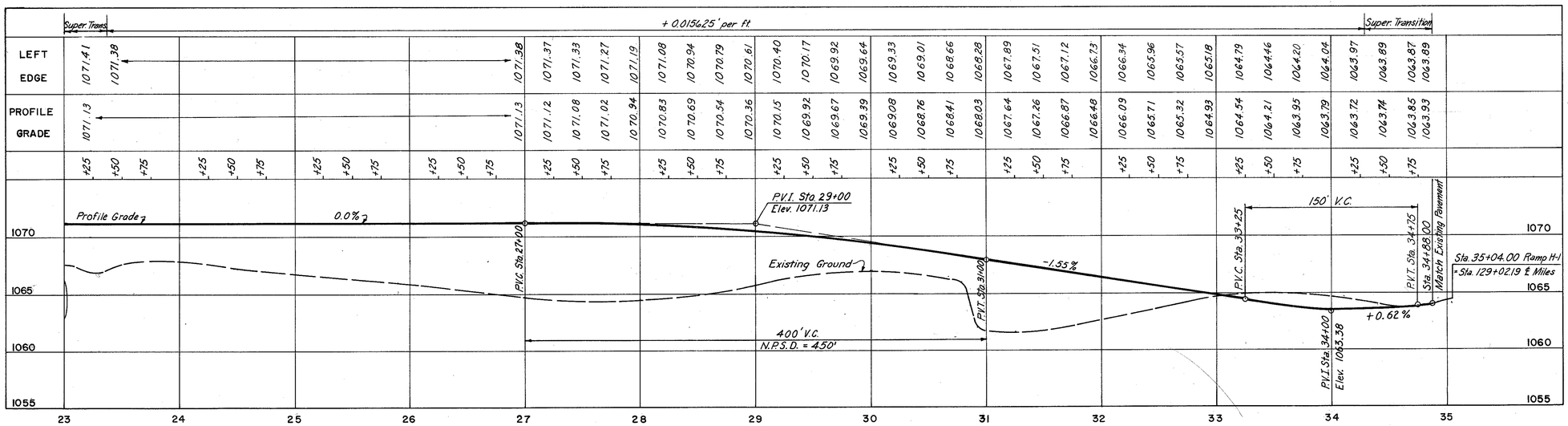
PROFILE RAMP H-1

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

51
256

CUYAHOGA COUNTY
CUY-I-0.11





PROFILE RAMP H-1

MADE LVM	DATE 2-22-63	TRACED	DATE
CHECKED E.C.E.	DATE 7-25-63	SCALE 1"=50' Hor. 1"=5' Vert.	

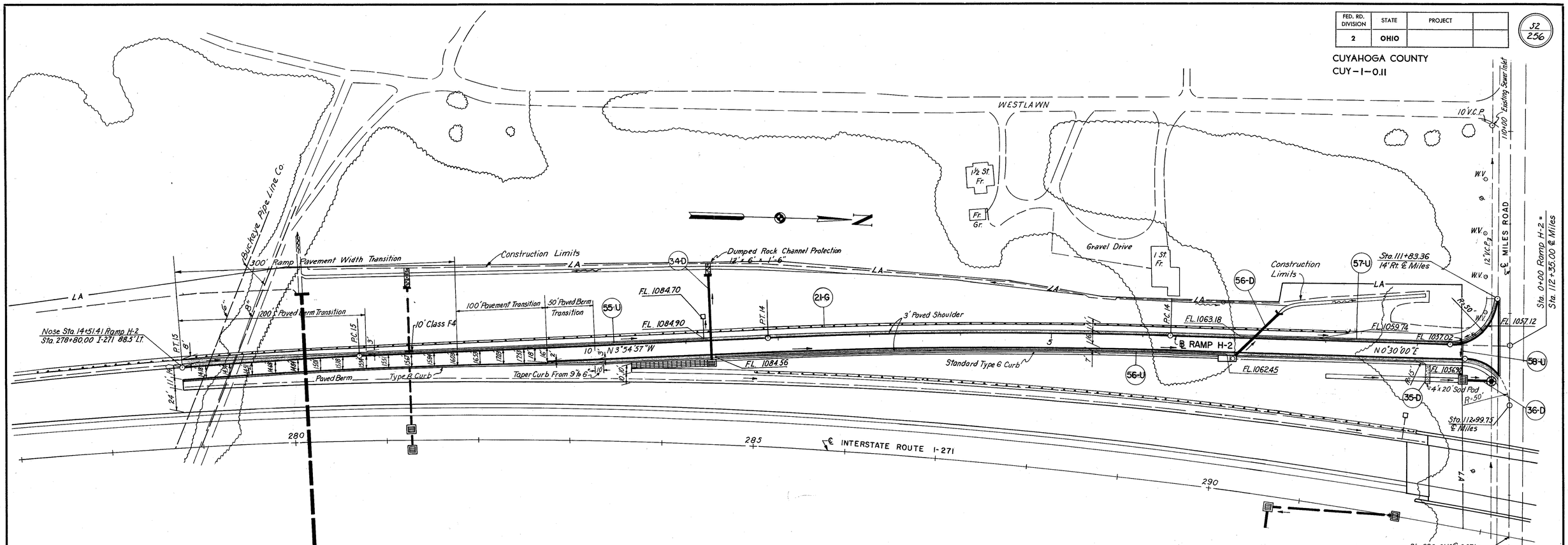
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

PROFILE RAMP H-1

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

52
256

CUYAHOGA COUNTY
CUY-I-0.11



Shaded area shall be constructed to an elevation ½" lower than the adjacent pavement and surfaced with T-31 and No. 6 aggregate, cost of which shall be included in price bid for T-71.

① Standard Longitudinal Joint

② Butt Joint Without Tiebars

Scale 1"=20'

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class E-1 12"	I-1 Class F-4 15"	I-1 Class J-1 15"	I-2 Masonry	I-8 Std. No. 2-2-A C.B.	I-8 Std. No. 8 C.B.	I-8 Std. No. 1 M.H.	I-8 Std. No. 2A-14 Paved Shoulder Inlet	I-10 Dump Rock Channel Protection	L-10 Sodding	L-120 Jute Matting
				Lin. Ft.			Cu. Yds.	Each				Cu. Yds.	Sq. Yds.	Sq. Yds.
34-D	284+50	(8+15 H-2)	Lt.		65	39	.23		1			5		67
35-D	0+90		Lt.										9	
36-D	0+50		Lt.	27				1		1				
56-D	2+50	3+00	Lt.-Rt.			70	1.80				1			
Total				27	65	109	2.03	1	1	1	1	5	9	67

DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class F-4 M6.4(c) 8"	I-1 Class I-3 Shallow 6"	I-1 Class J-1 6"	I-5 Class I-3 Tee 6"x6"x6"
				Lin. Ft.				Each
55-U	8+75	14+51	Rt.	10	10	576		1
56-U	3+05	8+70	Lt.			565		
57-U	0+15	3+00	Rt.	10		285		
58-U	0+50		℄	10			32	1
Total				30	10	1,426	32	2

GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Std. Type (Deep)
				Lin. Ft.
21-G	1+75	14+52.5	Rt.	1,282.5
Total				1,282.5

Note:
Unless labeled otherwise, all underdrains are shallow
For sewer profiles see sheets 178 & 179
For underdrain outlets, see sheet 157.

MADE K.A.T. DATE 3-19-63 TRACED DATE
CHECKED ECE DATE 3-20-63 SCALE 1"=50'

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

PLAN RAMP H-2

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

53
256

CUYAHOGA COUNTY
CUY-I-0.11

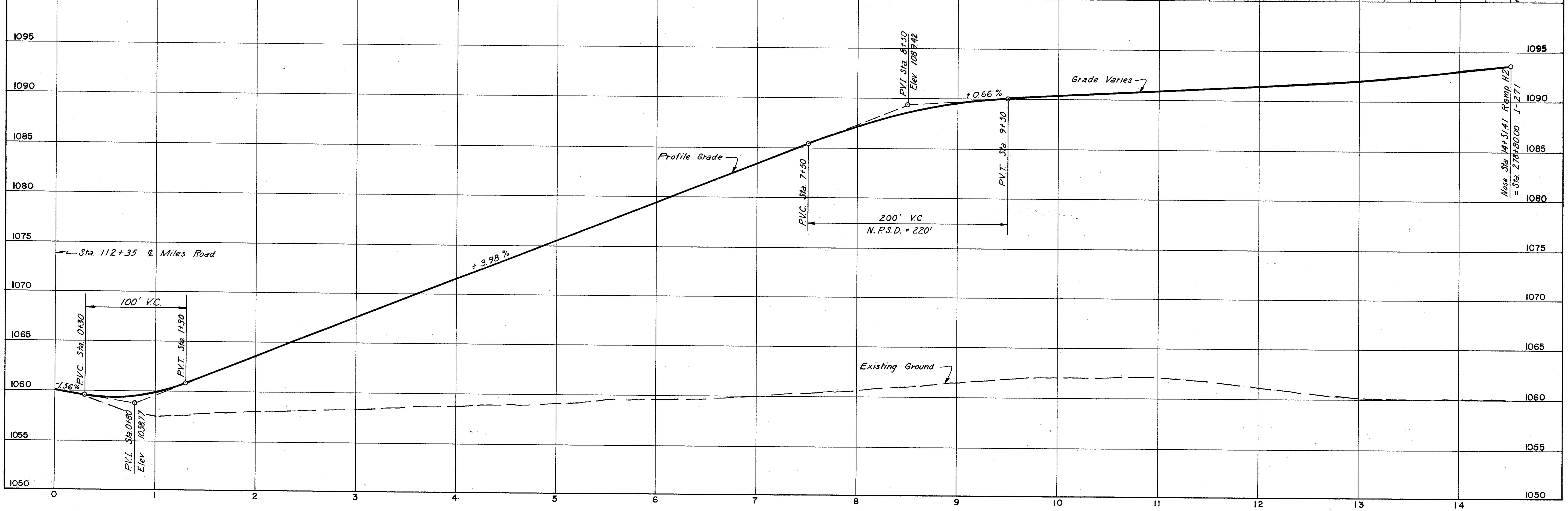
Superelevation = +.0156 'per ft. — Superelevation Transition — Superelevation = -.0156 'per ft. — Super Trans. — Superelevation = -.017 'per ft. — Super. Trans.

PAVEMENT WIDTH		16.00'											
LEFT EDGE		1059.88	1059.60	1059.66	1060.07	1060.82	1061.81	1062.79	1063.72	1064.65	1065.59	1066.52	1067.45
PROFILE GRADE	1060.02	1059.63	1059.35	1059.41	1059.82	1060.57	1061.56	1062.55	1063.55	1064.54	1065.54	1066.53	1067.53
		+25	+50	+75		+25	+50	+75		+25	+50	+75	

PAVEMENT WIDTH																
LEFT EDGE	1068.38	1069.32	1070.26	1071.26	1072.25	1073.25	1074.24	1075.24	1076.23	1077.23	1078.22	1079.22	1080.21	1081.21	1082.20	1083.20
PROFILE GRADE	1068.52	1069.52	1070.51	1071.51	1072.50	1073.50	1074.49	1075.49	1076.48	1077.48	1078.47	1079.47	1080.46	1081.46	1082.45	1083.45
	+25	+50	+75		+25	+50	+75		+25	+50	+75		+25	+50	+75	

PAVEMENT WIDTH														16.00' 18.00'	17.53'	17.03'
LEFT EDGE	1084.19	1085.19	1086.13	1086.97	1087.70	1088.34	1088.86	1089.29	1089.62	1089.83	1089.99	1090.12	1090.24	1090.37 1090.34	1090.48	1090.60
PROFILE GRADE	1084.44	1085.44	1086.38	1087.22	1087.95	1088.59	1089.11	1089.54	1089.87	1090.08	1090.24	1090.37	1090.49	1090.62	1090.75	1090.87
	+25	+50	+75		+25	+50	+75		+25	+50	+75		+25	+50	+75	

PAVEMENT WIDTH	16.53'	16.03'	15.84'	15.67'	15.51'	15.34'	15.18'	15.01'	14.84'	14.68'	14.51'	14.34'	14.18'	14.01'	14.00'
LEFT EDGE	1090.74	1090.89	1091.03	1091.16	1091.30	1091.44	1091.56	1091.73	1091.98	1092.22	1092.45	1092.70	1092.92	1093.13	1093.15
PROFILE GRADE	1091.00	1091.14	1091.28	1091.40	1091.54	1091.68	1091.82	1091.99	1092.23	1092.47	1092.70	1092.94	1093.25	1093.57	1093.60
	+25	+50	+75		+25	+50	+75		+25	+50	+75		+25	+50	+51.41



PROFILE RAMP H-2

MADE E.C.E. DATE 2-20-63 TRACED DATE
CHECKED LAZ DATE 7-25-63 SCALE 1"= 50' Hor. 1"= 5' Vert.

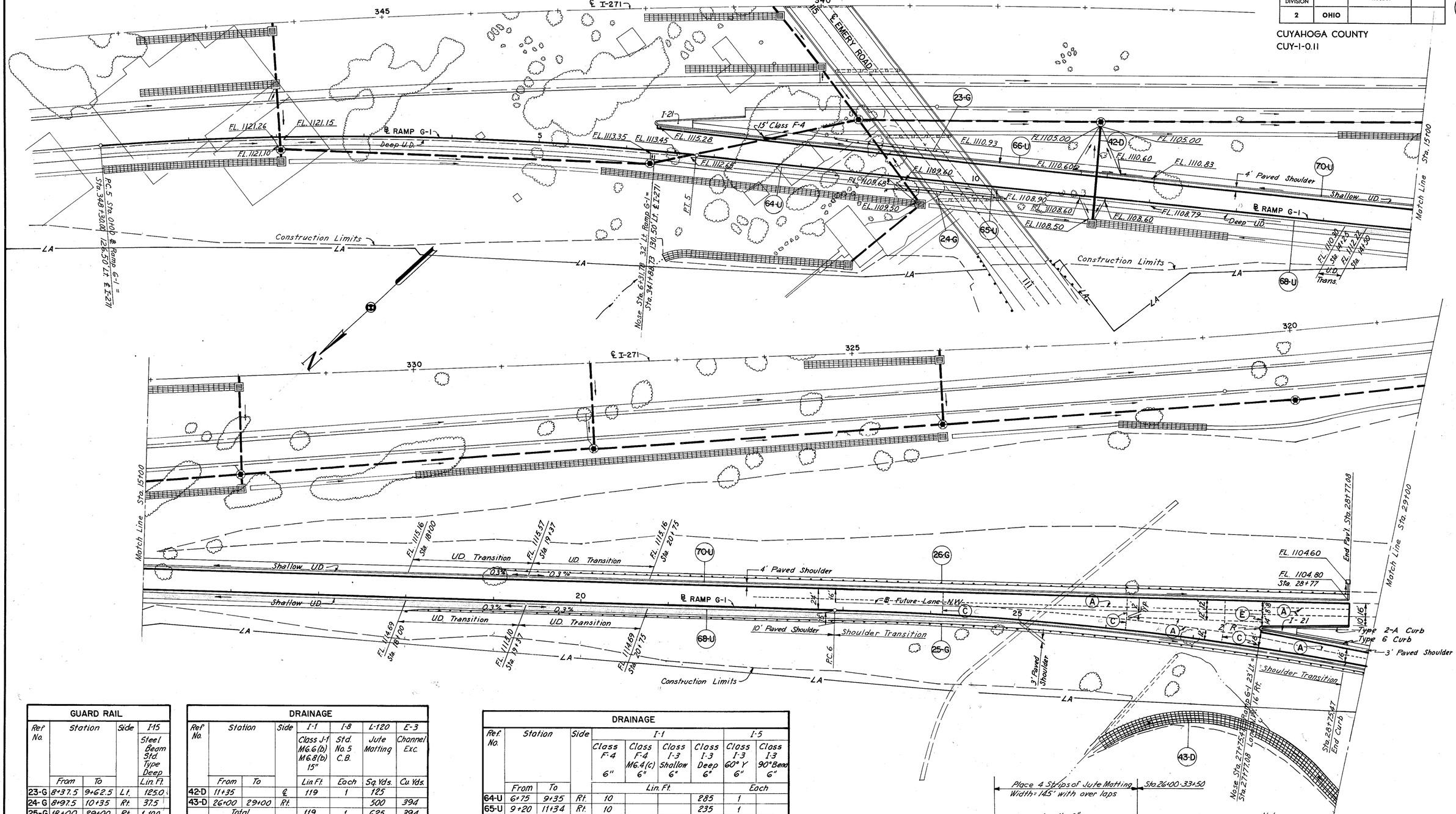
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

PROFILE RAMP H-2

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

54
256

CUYAHOGA COUNTY
CUY-I-0.11



GUARD RAIL				
Ref No.	Station		Side	I-15
				Steel Beam Std. Type Deep
	From	To		Lin. Ft.
23-G	8+37.5	9+62.5	Lt.	125.0
24-G	8+97.5	10+35	Rt.	37.5
25-G	18+00	29+00	Rt.	1,100
26-G	19+00	28+75	Lt.	975
	Total			2337.5

DRAINAGE							
Ref No.	Station		Side	I-1	I-8	L-120	E-3
				Class J-1 M6.6(b) M6.8(b) 15"	Std. No. 5 C.B.	Jute Matting	Channel Exc.
	From	To		Lin. Ft.	Each	Sq. Yds.	Cu. Yds.
42-D	11+35		℄	119	1	125	
43-D	26+00	29+00	Rt.			500	394
	Total			119	1	625	394

DRAINAGE									
Ref. No.	Station		Side	I-1				I-5	
				Class F-4 6"	Class F-4 M6.4(c) 6"	Class I-3 Shallow 6"	Class I-3 Deep 6"	Class I-3 60° Y 6"	Class I-3 90° Bend 6"
	From	To		Lin. Ft.				Each	
64-U	6+75	9+35	Rt.	10			285	1	
65-U	9+20	11+34	Rt.	10			235	1	
66-U	6+35	11+34	Lt.	25		540		1	
68-U	11+40	29+00	Rt.	10		1450	340		
70-U	11+40	28+77	Lt.		20	1800			1
	Total			55	20	3790	960	3	1

Notes:
For Curve Data see sheet 9.
For details of exit terminal see sheet 153.
For sewer profiles see sheet 178.
All underdrains are shallow, unless labeled otherwise.
For Proposed Structure at Emery Road see sheet 206.
For Pavement Joint Legend see sheet 153.

MADE E.C.E. DATE 6-8-63 TRACED DATE
CHECKED DATE SCALE 1" = 50'

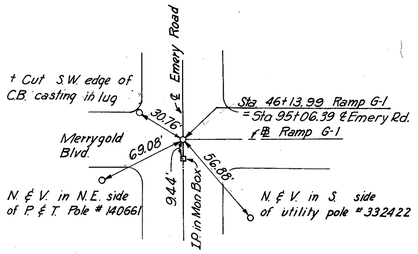
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

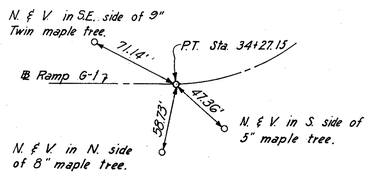
PLAN RAMP G-1 STA. 0+00 TO STA. 29+00

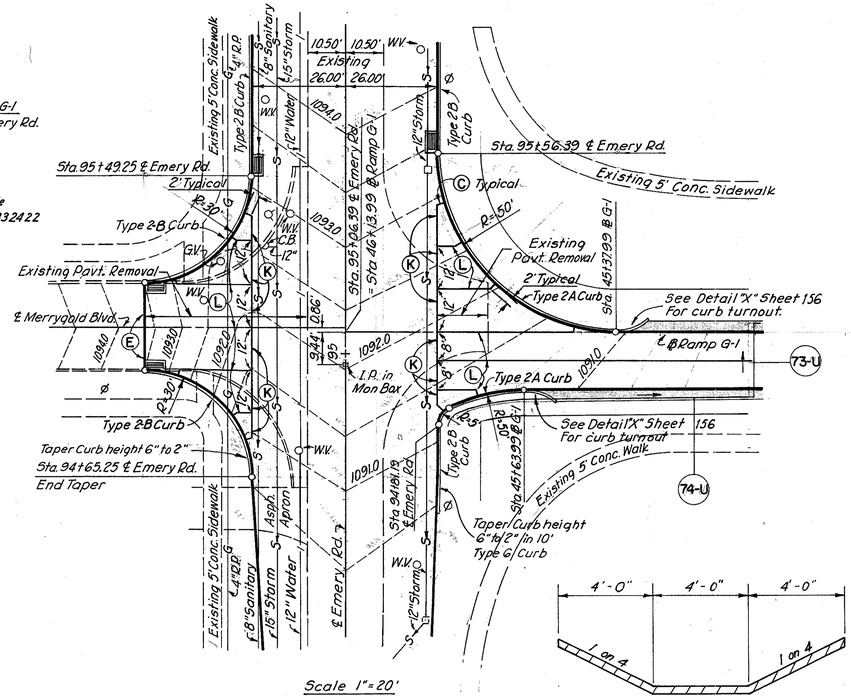
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

55
256

CUYAHOGA COUNTY
CUY-1-0.11

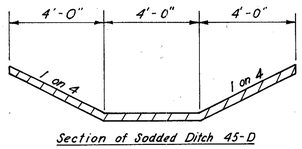




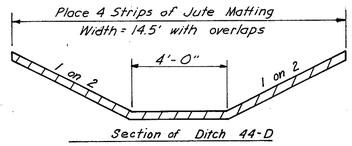


LEGEND

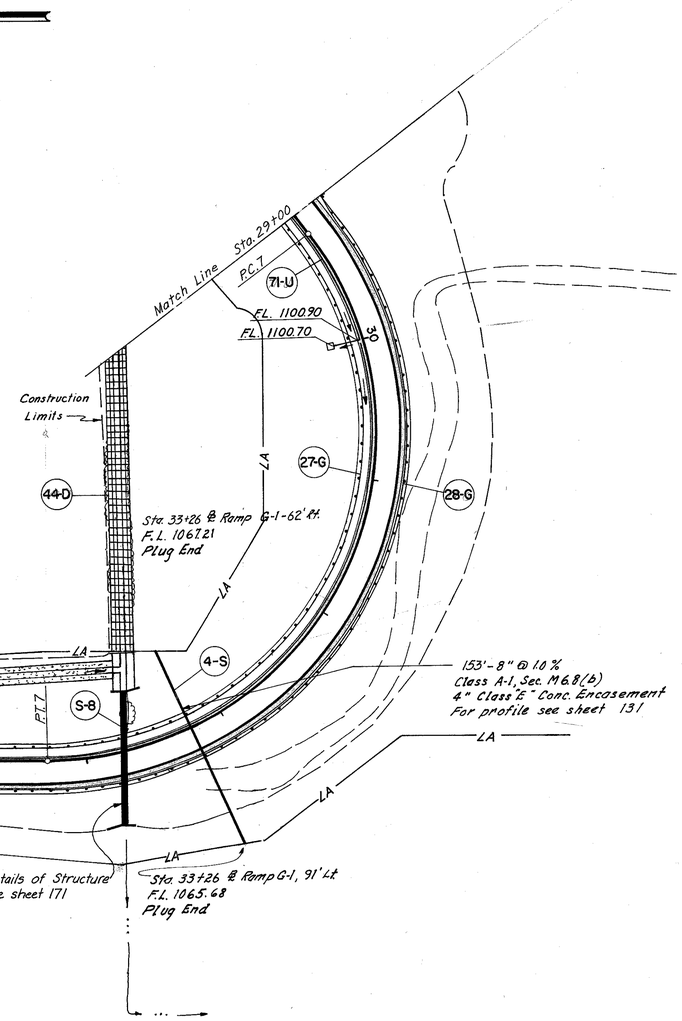
Ⓒ Expansion Joint Without Tiebars
Ⓔ Standard Expansion Joint
Ⓚ Key Joint Without Tiebars
Ⓛ Standard Longitudinal Joint

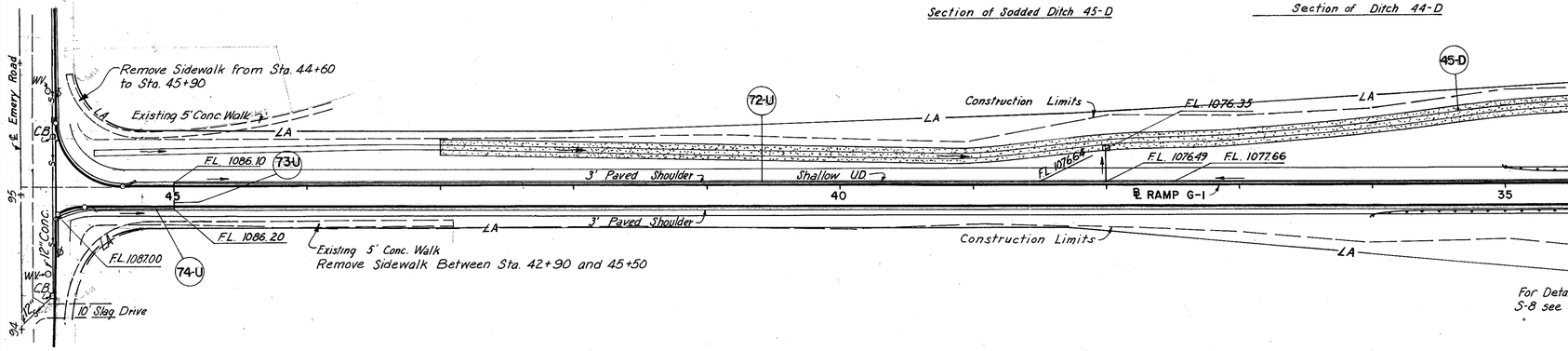


Section of Sodded Ditch 45-D



Section of Ditch 44-D





DRAINAGE									
Ref. No.	Station		Side	I-1			I-5		I-1
				Class F-4 M6.4(c) 8"	Class I-3 Shallow 6"	Class J-1 6"	Class I-3 Tee 6"x6"x6"	Class I-3 90° Bend 6"	Class A-1 Sec. M6.8(b) Sanitary 8"
	From	To		Lin. Ft.			Each		Lin. Ft.
71-U	29+00	30+00	Rt.	10	110			1	
72-U	30+04	45+00	Rt.	10	1,511		1		
73-U	45+00		℄			22		2	
74-U	45+00	94+81.13	Lt.		88				
4-S	33+26		Rt-Lt.						153
Total				20	1,709	22	1	3	153

DRAINAGE						
Ref. No.	Station		Side	L-10	E-3	L-120
				Sodding	Channel Exc.	Jutt Matting
	From	To		Sq. Yds.	Cu. Yds.	Sq. Yds.
44-D	29+00	33+50	Rt.		77	338
45-D	33+80	43+00	Rt.	1,226		
Total				1,226	77	338

GUARD RAIL				
Ref. No.	Station		Side	I-15
				Steel Beam Std. Type (Deep)
	From	To		Lin. Ft.
27-G	29+00	35+00	Rt.	600 ✓
28-G	29+00	36+00	Lt.	700 ✓
Total				1,300 ✓

Notes:
For Curve Data see sheet 9.
All underdrains are shallow, unless labeled otherwise.
For underdrain outlet detail see sheet 157.

MADE E.C.E. DATE 6-8-63 TRACED E.R.H. DATE 26 Sept 63
CHECKED L.A.Z. DATE 6-10-63 SCALE 1"=50' or as noted.

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

PLAN RAMP G-1 STA. 29+00 TO STA. 46+13.99

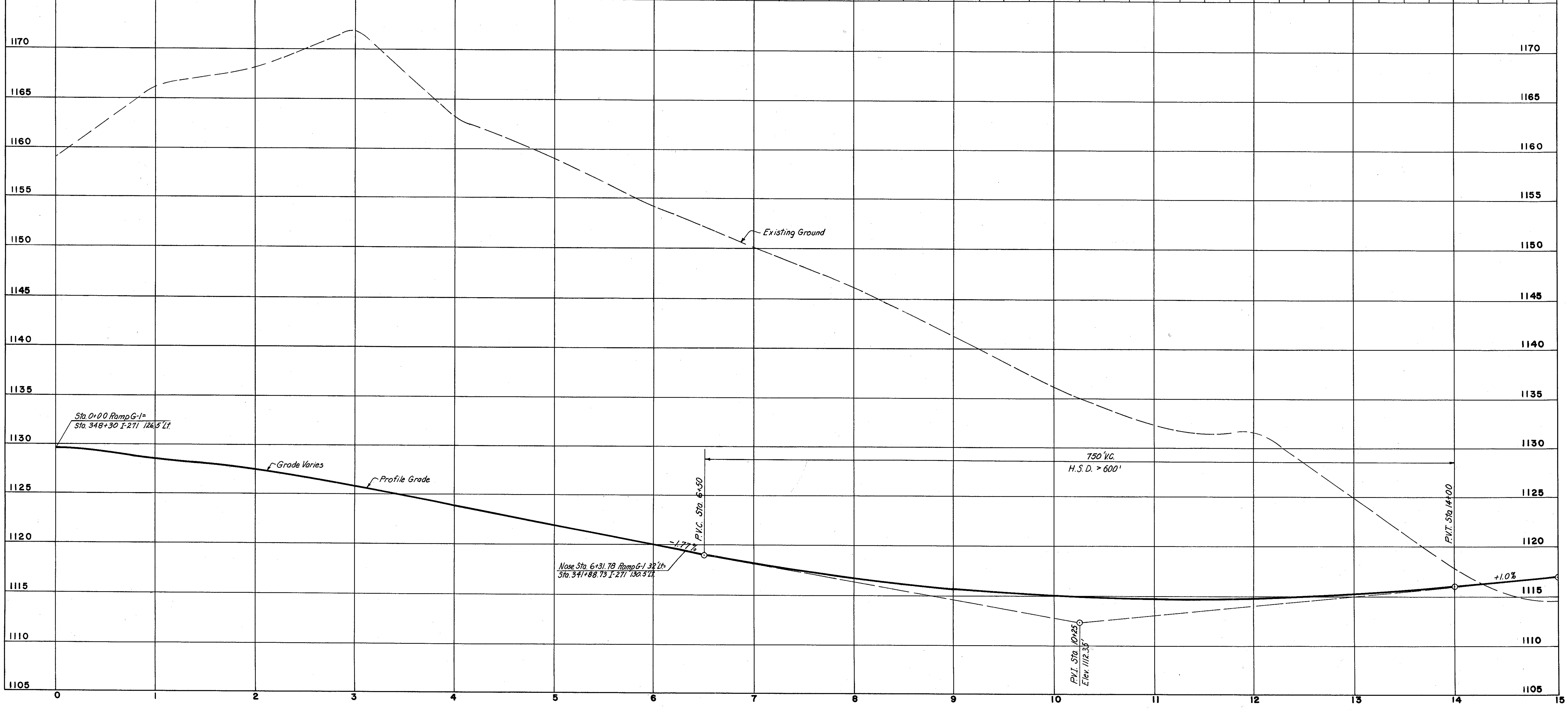
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-1-0.11

Superelevation = +.015625' per ft.

LEFT EDGE: *Match Interstate Route 271* (0 to 6+50)

	PAVEMENT WIDTH	LEFT EDGE	PROFILE GRADE
0			1129.55
+25			1129.31
+50			1129.07
+75			1128.81
1			1128.52
+25			1128.23
+50			1127.92
+75			1127.59
2			1127.24
+25			1126.87
+50			1126.50
+75			1126.11
3			1125.69
+25			1125.24
+50			1124.78
+75			1124.31
4			1123.84
+25			1123.36
+50			1122.87
+75			1122.39
5			1121.91
+25			1121.42
+50			1120.93
+75			1120.44
6			1119.95
+25			1119.43
+31.78	26.00'		
+50	25.64'	1119.39	1118.99
+75	25.14'	1118.94	1118.55
7	24.64'	1118.54	1118.15
+25	24.14'	1118.14	1117.76
+50	24.00'	1117.78	1117.40
+75		1117.44	1117.07
8		1117.12	1116.75
+25		1116.84	1116.46
+50		1116.56	1116.19
+75		1116.30	1115.93
9		1116.08	1115.71
+25		1115.90	1115.52
+50		1115.72	1115.34
+75		1115.56	1115.19
10		1115.42	1115.05
+25		1115.32	1114.95
+50		1115.24	1114.86
+75		1115.18	1114.80
11		1115.14	1114.76
+25		1115.12	1114.75
+50		1115.12	1114.75
+75		1115.16	1114.78
12		1115.22	1114.84
+25		1115.30	1114.92
+50		1115.40	1115.02
+75		1115.52	1115.14
13		1115.66	1115.28
+25		1115.82	1115.45
+50		1116.02	1115.65
+75		1116.24	1115.86
14		1116.48	1116.10
+25		1116.72	1116.35
+50		1116.98	1116.60
+75		1117.22	1116.85
15	24.00'	1117.48	1117.10



PROFILE RAMP G-1

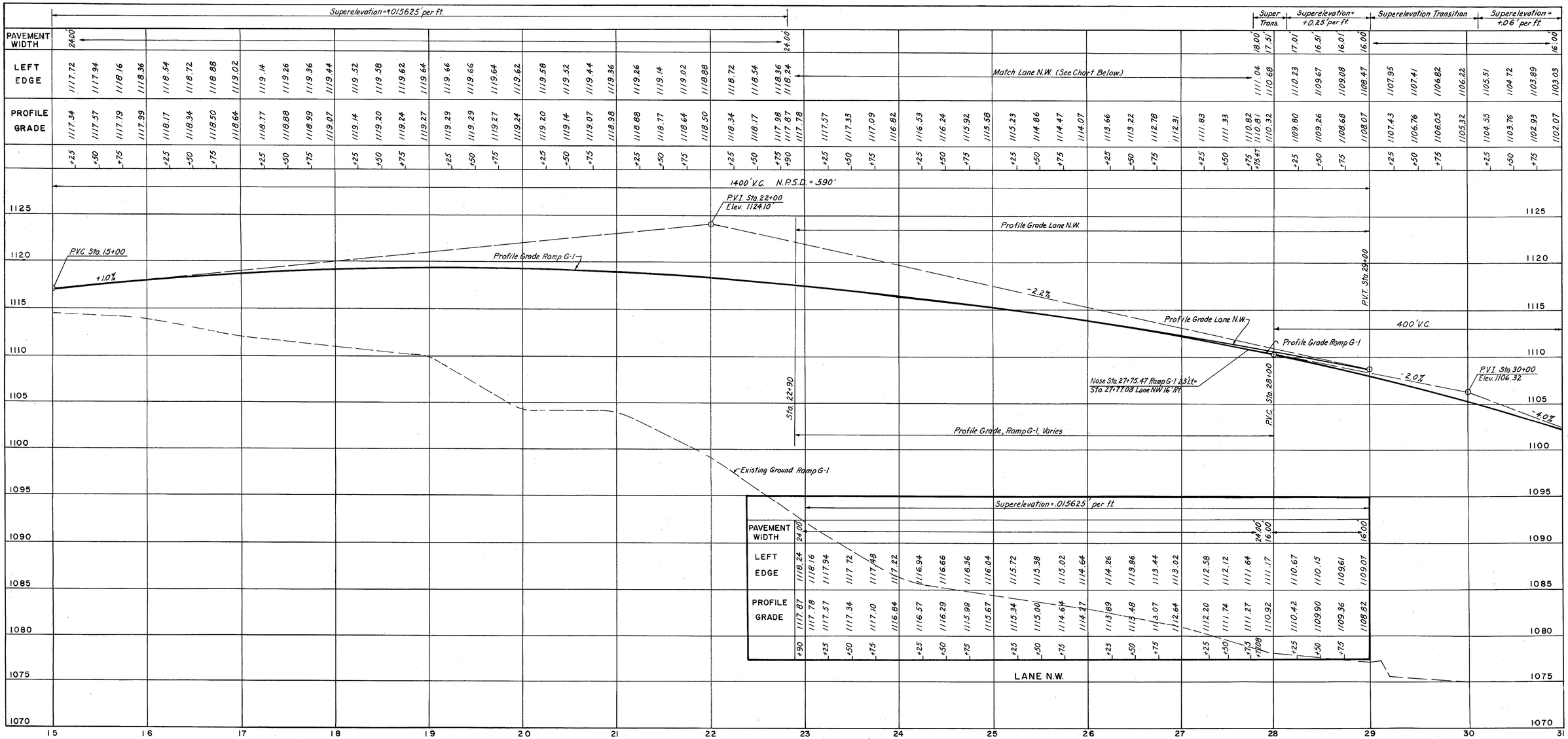
MADE K.A.T.	DATE 3-12-63	TRACED	DATE
CHECKED E.C.E.	DATE 7-25-63	SCALE 1"=50' Hor. 1"=5' Vert.	

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

57
256

CUYAHOGA COUNTY
CUY-I-0.11



PROFILE RAMP G-1

MADE K.A.T. DATE 3-13-63 TRACED DATE
CHECKED E. C. E. DATE 7-25-63 SCALE 1"=50' Hor. 1"=5' Vert.

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-1-0.11

Superelevation = +.06′ per ft. · *Superelevation Transition* · *Superelevation = +.015625′ per ft.* · *Superelevation Transition*

Station		Pavement Width	Left Edge	Profile Grade
31	+25	16.00′	1102.14	1101.18
	+50		1101.22	1100.26
	+75		1100.26	1099.30
32			1099.28	1098.32
	+25		1098.28	1097.32
	+50		1097.28	1096.32
	+75		1096.28	1095.32
33			1095.28	1094.32
	+25		1094.28	1093.32
	+50		1093.19	1092.32
	+75		1092.06	1091.32
34			1090.94	1090.32
	+25		1089.81	1089.32
	+50		1088.69	1088.32
	+75		1087.57	1087.32
35			1086.61	1086.36
	+25		1085.72	1085.47
	+50		1084.91	1084.66
	+75		1084.18	1083.93
36			1083.53	1083.28
	+25		1082.95	1082.70
	+50		1082.45	1082.20
	+75		1082.02	1081.77
37			1081.67	1081.42
	+25		1081.40	1081.15
	+50		1081.21	1080.96
	+75		1081.08	1080.83
38			1081.04	1080.79
	+25		1081.07	1080.82
	+50		1081.18	1080.93
	+75		1081.36	1081.11
39			1081.63	1081.38
	+25		1081.97	1081.72
	+50		1082.35	1082.10
	+75		1082.72	1082.47
40			1083.10	1082.85
	+25		1083.48	1083.23
	+50		1083.86	1083.61
	+75		1084.23	1083.98
41			1084.61	1084.36
	+25		1084.99	1084.74
	+50		1085.37	1085.12
	+75		1085.74	1085.49
42			1086.12	1085.87
	+25		1086.50	1086.25
	+50		1086.88	1086.63
	+75		1087.25	1087.00
43			1087.63	1087.38
	+25		1088.01	1087.76
	+50		1088.39	1088.14
	+75		1088.76	1088.51
44			1089.14	1088.89
	+25		1089.52	1089.27
	+50		1089.90	1089.65
	+75		1090.15	1090.02
45			1090.41	1090.40
	+25		1090.67	1090.78
	+50	16.00	1091.00	1091.23
	+75			1091.68
	+87.99			1091.93

PROFILE RAMP G-1

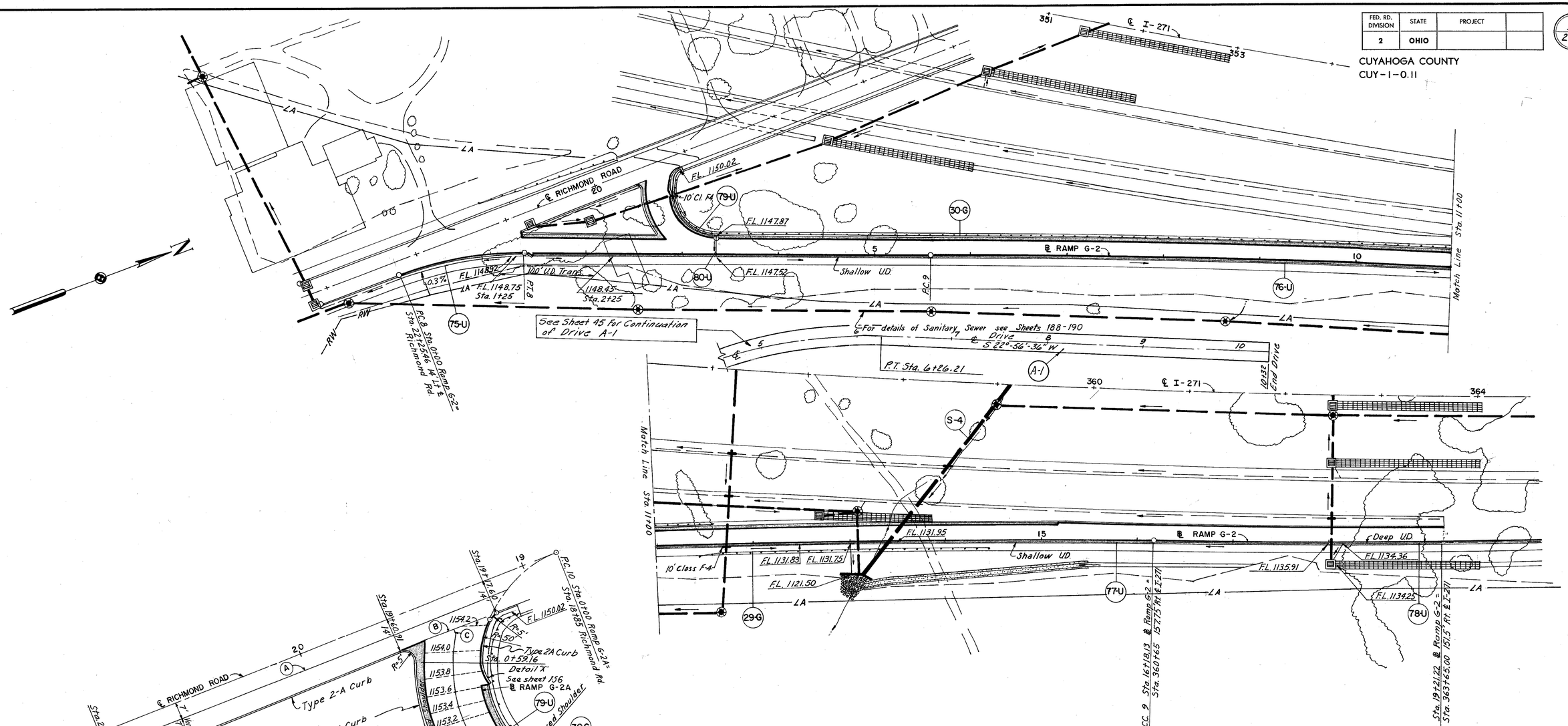
MADE K.A.T. DATE 3-15-63 TRACED DATE
CHECKED E.C.E. DATE 7-25-63 SCALE 1″=50′ Hor. 1″=5′ Vert.

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

59
256

CUYAHOGA COUNTY
CUY-I-0.11



DRAINAGE

Ref. No.	Station From	Station To	Side	I-1 Class F-4 6"	I-1 Class I-3 Shallow 6"	I-1 Class I-3 Deep 6"	I-1 Class J-1 6"	I-5 Class I-3 60° Y 6"	I-5 Class I-3 90° Bend 6"	I-5 Class I-3 Tee 6"x6"x6"
				Lin. Ft.				Each		
75-U	0+00	1+22	Rt.		122					
76-U	1+25	13+00	Rt.	20	1,190					1
77-U	13+00	18+00	Rt.		500					
78-U	18+05	19+21	Rt.	10		126		1		
79-U	0+30	1+38	Lt.	10	98					
80-U	3+33		℄				22		1	1
Total				40	1,910	126	22	1	1	2

GUARD RAIL

Ref. No.	Station From	Station To	Side	I-15 Steel Beam Type (Deep)
				Lin.Ft.
29-G	11+45	14+45	Rt.	300
30-G	0+30 G-2A	11+62.5	Lt.	937.5
Total				1,237.5

For Pavement Joint Legend see sheet 153
For Culvert Details see sheet 168
For details of Entrance Terminal see Sheet 153

MADE S.O.H. DATE 5-13-63 TRACED DATE
CHECKED E.C.E DATE 5-14-63 SCALE 1"=50' Except as noted

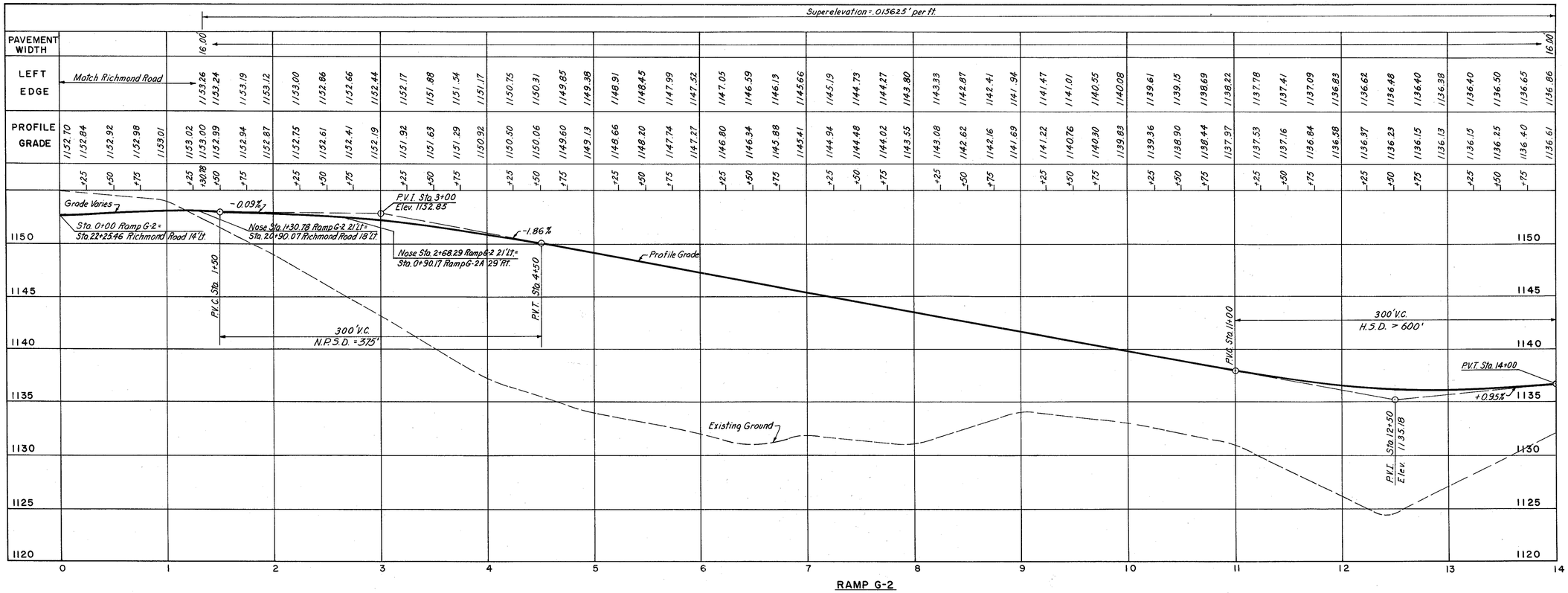
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

PLAN RAMP G-2 & G-2A

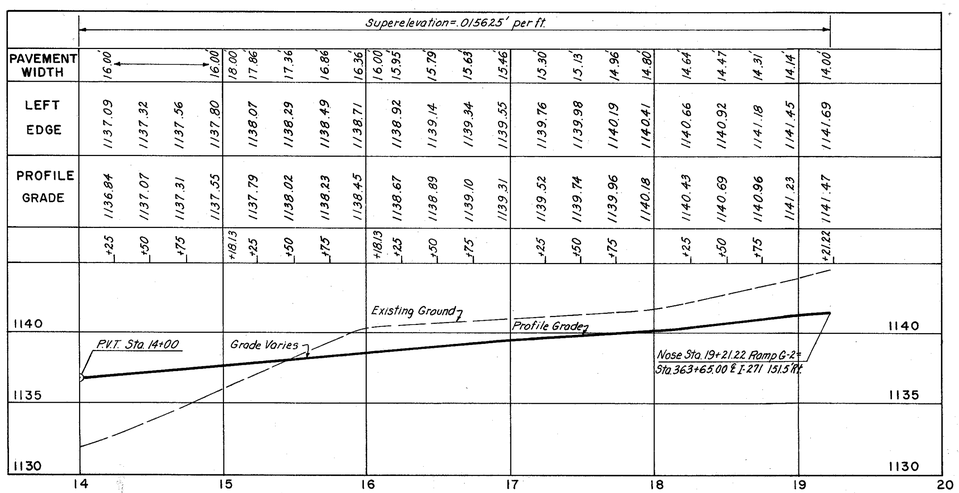
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

60
256

CUYAHOGA COUNTY
CUY-1-0.11



RAMP G-2



RAMP G-2

MADE K.A.T. DATE 3-19-63 TRACED DATE
CHECKED E.C.E DATE 7-25-63 SCALE 1"=50' Hor. 1"=5' Vert.

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

PROFILE RAMP G-2

S-8

8-5

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

61
256

CUYAHOGA COUNTY

CUY-I-0.11

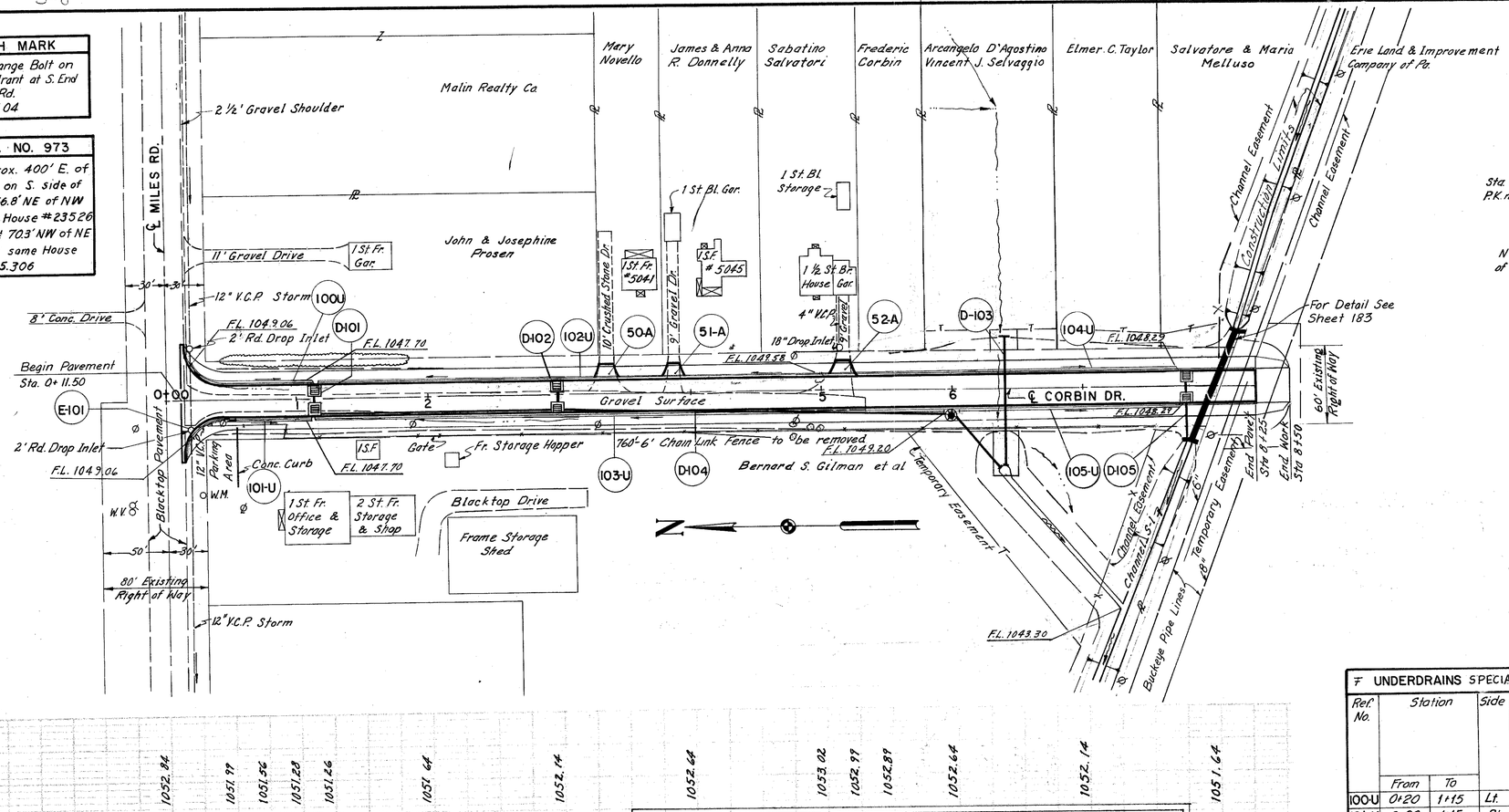
CUY-271-4.85

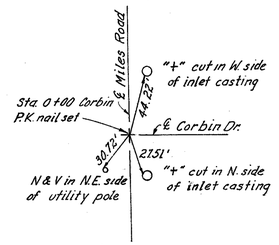
BENCH MARK

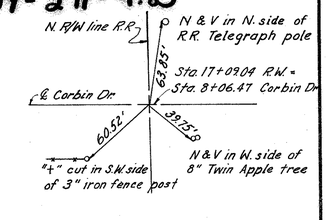
Top of E. Flange Bolt on top of Hydrant at S. End of Taylor Rd.
Elev. 1057.04

C.R.G.S. NO. 973

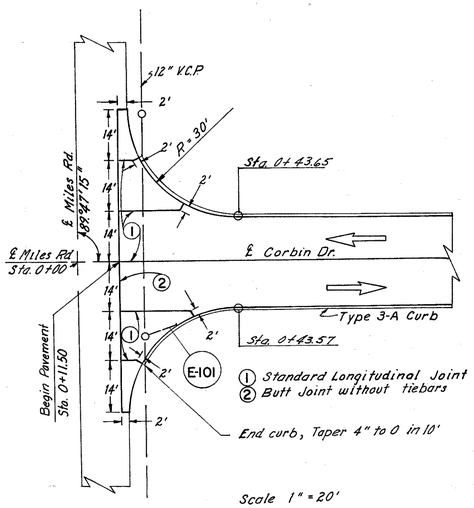
Mon. approx. 400' E. of Corbin Dr. on S. side of Miles Rd. 66.8' NE of NW Corner of House #23526 Miles Rd. & 703' NW of NE Corner of same House
Elev. 1055.306







REFERENCE POINTS



Scale 1" = 20'

INTERSECTION DETAIL

F SPECIAL PARTICIPATION

Federal Participation in the cost of the items for the construction of Corbin Drive will be limited to the normal participation of the total cost up to $ 21,990.00

F UNDERDRAINS SPECIAL PARTICIPATION

Ref. No.	Station From	Station To	Side	I-1 Class I-3 6" Lin. Ft.
100-U	0+20	1+15	Lt.	100
101-U	0+20	1+15	Rt.	100
102-U	5+00	1+15	Lt.	385
103-U	6+00	1+15	Rt.	485
104-U	5+00	7+82	Lt.	282
105-U	6+00	7+82	Rt.	182
	Total			1534

F DRAINAGE SPECIAL PARTICIPATION

Ref. No.	Station From	Station To	Side	I-1 Class A-1 30" Lin. Ft.	I-1 Class E-1 12" Lin. Ft.	I-1 Class E-1 18" Lin. Ft.	I-1 Class J-1 12" Lin. Ft.	I-1 Class J-1 15" Lin. Ft.	I-1 Class J-1 18" Lin. Ft.	I-2 Masonry Cu. Yds.	I-8 Std. No. 6 C.B. Each	I-8 Std. No. 1 M.H. Each	E-12 Pipe Removal 15" and under Lin. Ft.	I-16 Catch Basin Abandon Each
D-101	1+15		℄				23				2			
D-102	3+00		℄				23				2			
D-103	6+40		℄	100						5.2				
D-104	1+05	6+35	Lt.			58		185	300	0.3		1		
D-105	7+82		℄		30		23				2			
E-101	0+18.5		Rt.										44	1
	Total			100	30	58	69	185	300	5.5	6	1	44	1

F DRIVES AND APPROACHES SPECIAL PARTICIPATION

Ref. No.	Station	Side	Type	Width Ft.	E-1 Roadway Exc. Cu. Yds.	B-19 Surface Course Cu. Yds.
50-A	3+35	Lt.	Res.	10	3	1
51-A	3+87	Lt.	Res.	9	2	1
52-A	5+16	Lt.	Res.	9		1
Total					5	3

Note:
For Driveway Profiles See Sheet 66
For Channel S-1 Details See Sheets 183, 184.
For Pipe Profiles See Sheets 151 & 152

Excavation	1085	Cu. Yds.
Embankment	759	Cu. Yds.
Embankment + 18%	896	Cu. Yds.

PLAN — SURVEYED: RLE; PLOTTED: RLE; GRADES CHECKED: RLE; NOTE BOOK: ALIGNMENT CHECKED; NO.: RT OF WAY CHECKED; STRUCTURE NOTATNS CHKD

PROF — SURVEYED: RLE; PLOTTED: RLE; GRADES CHECKED: RLE; NOTE BOOK: ALIGNMENT CHECKED; NO.: STRUCTURE NOTATNS CHKD

DATE	BY
5-6-64	RLE
3-8-65	RLE

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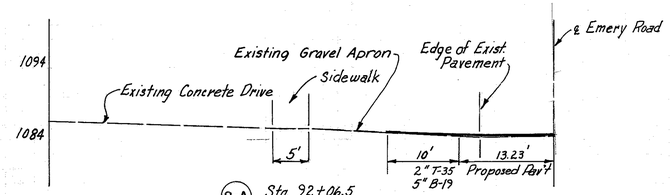
KANSAS CITY CLEVELAND NEW YORK

CORBIN DR. STA. 0+00 TO STA. 8+58

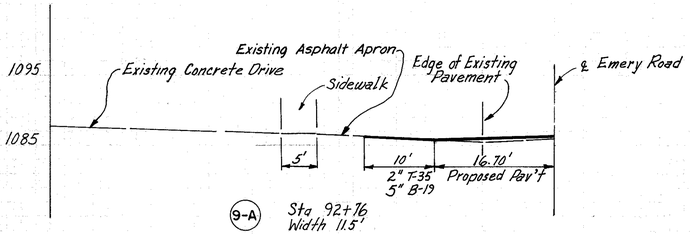
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-1-0.11

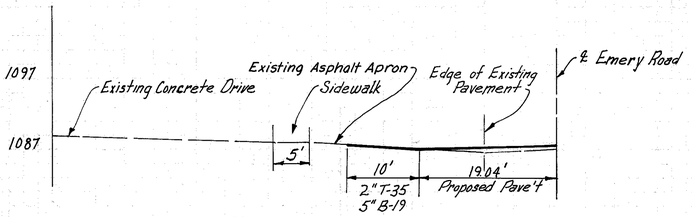
62
256



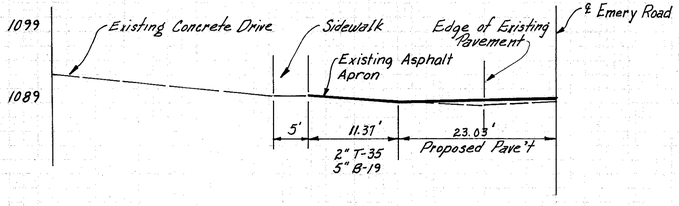
8-A Sta. 92+06.5
Width 15'



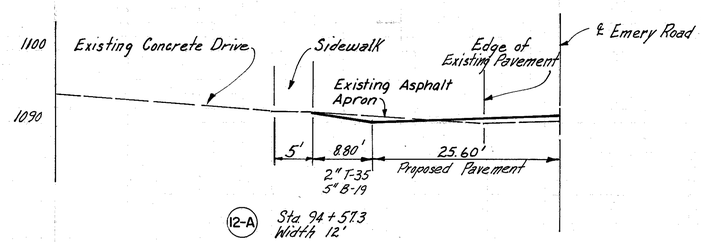
9-A Sta. 92+76
Width 11.5'



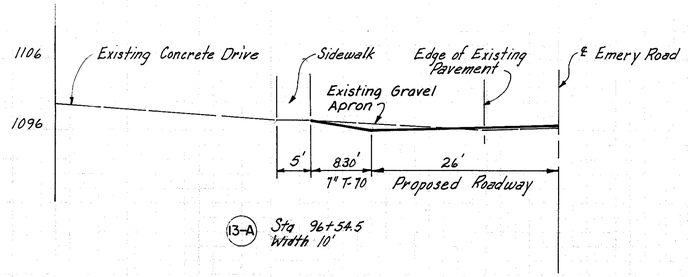
10-A Sta. 93+31
Width 16.5



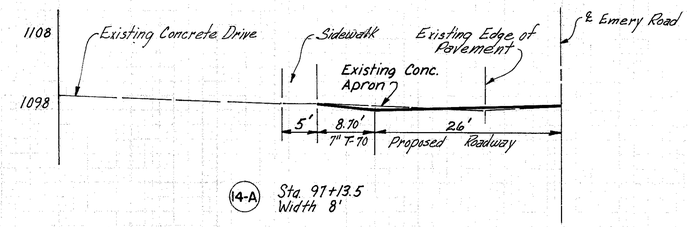
11-A Sta. 94+04.9
Width 8'



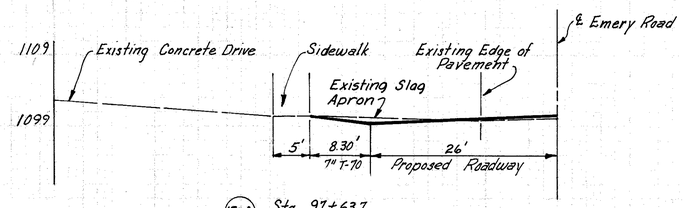
12-A Sta. 94+57.3
Width 12'



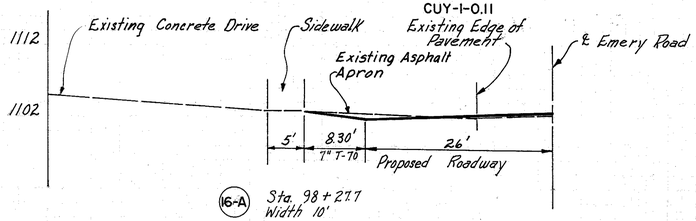
13-A Sta. 96+54.5
Width 10'



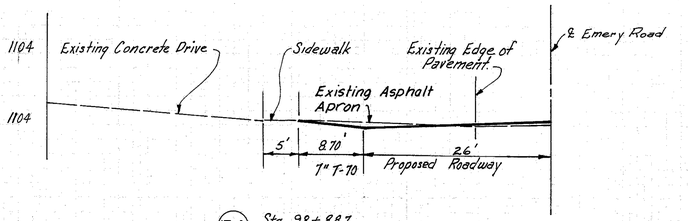
14-A Sta. 97+13.5
Width 8'



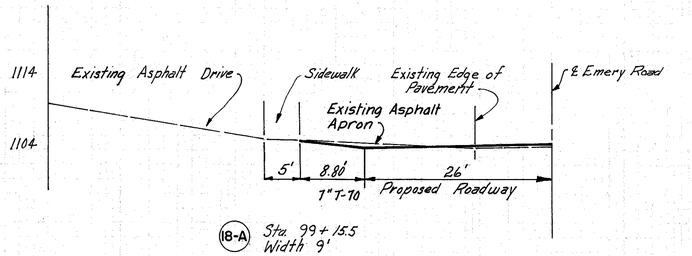
15-A Sta. 97+63.7
Width 12'



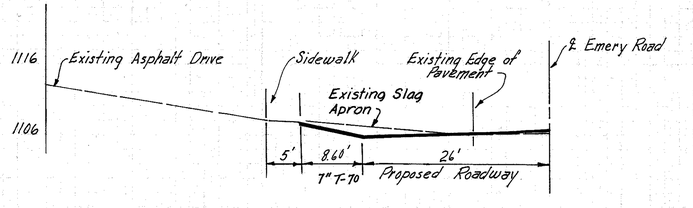
16-A Sta. 98+27.7
Width 10'



17-A Sta. 98+88.7
Width 8'



18-A Sta. 99+15.5
Width 9'



19-A Sta. 99+75
Width 8'

9-30-63
10-1-63
R.J.Z.
E.C.E.

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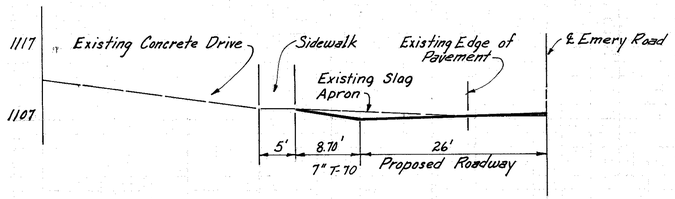
KANSAS CITY CLEVELAND NEW YORK

EMERY ROAD DRIVEWAY PROFILES – LEFT SIDE

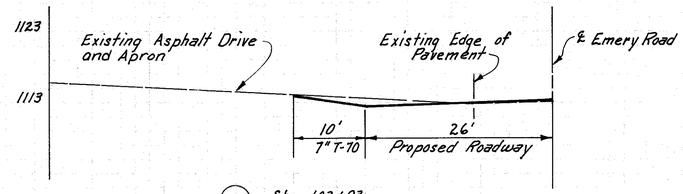
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

63
256

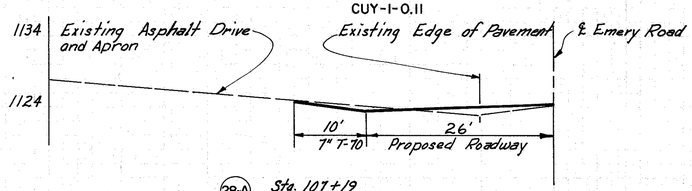
CUYAHOGA COUNTY
CUY-I-0.11



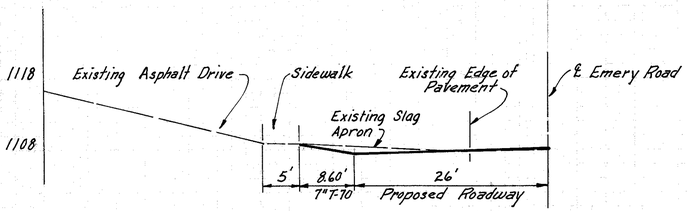
20-A Sta. 100+54.5
Width 12'



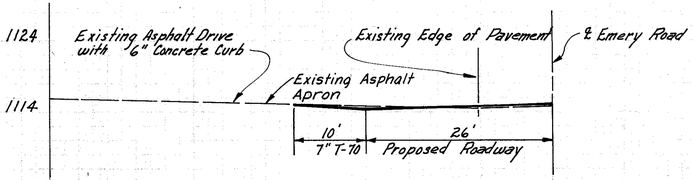
24-A Sta. 103+93
Width 10'



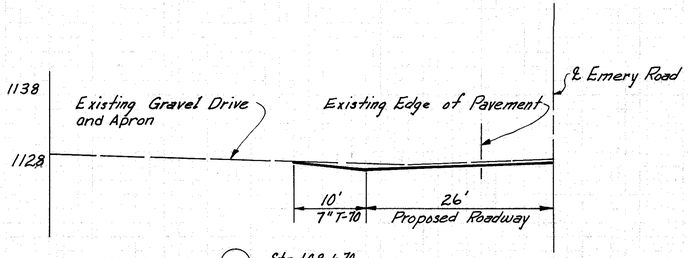
28-A Sta. 107+19
Width 10'



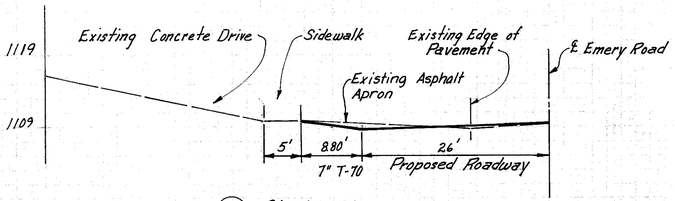
21-A Sta. 100+86.5
Width 11.5'



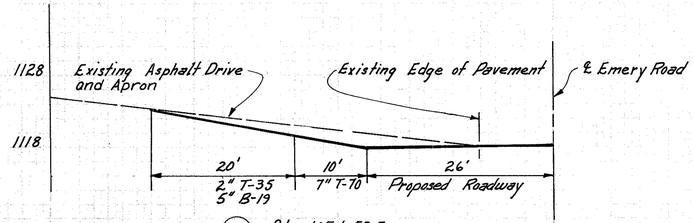
25-A Sta. 104+56
Width 11'



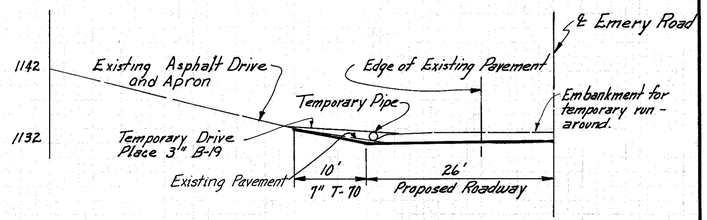
1-A Sta. 108+70
Width 10'



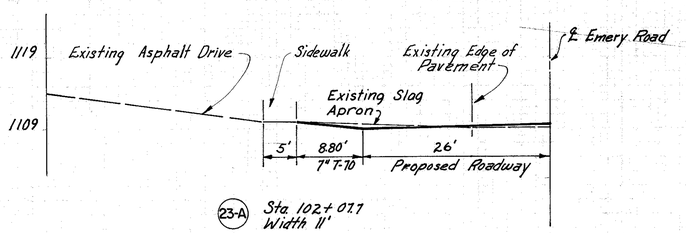
22-D Sta. 101+87.6
Width 12'



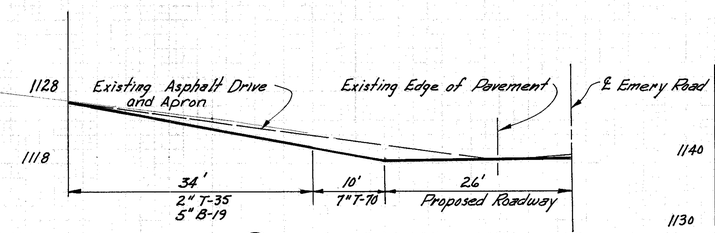
26-A Sta. 105+52.5
Width 10'



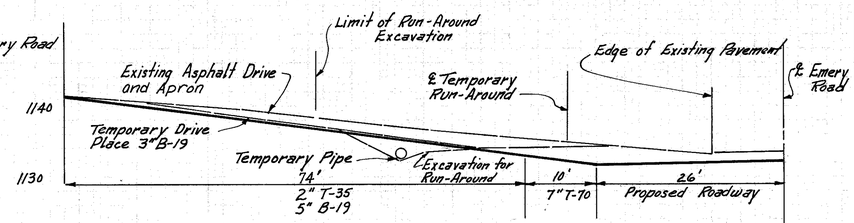
2-A Sta. 109+86
Width 10'



23-A Sta. 102+07.7
Width 11'



27-A Sta. 105+67
Width 9'



3-A Sta. 110+70
Width 10'

9-30-63
10-4-63

R/W
2-2-6

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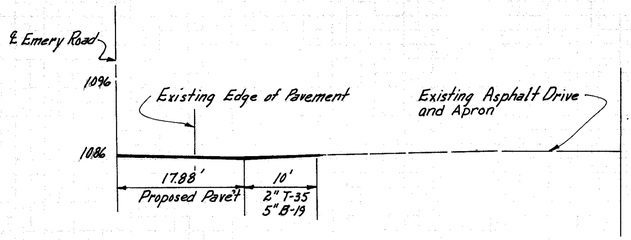
KANSAS CITY CLEVELAND NEW YORK

EMERY ROAD DRIVEWAY PROFILES – LEFT SIDE

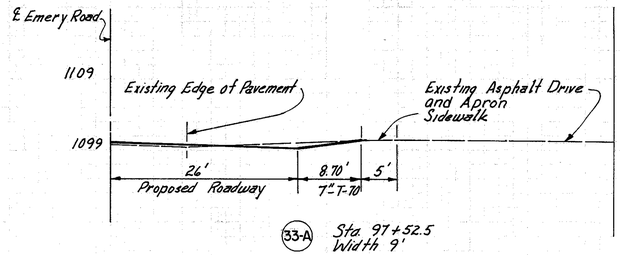
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

64
256

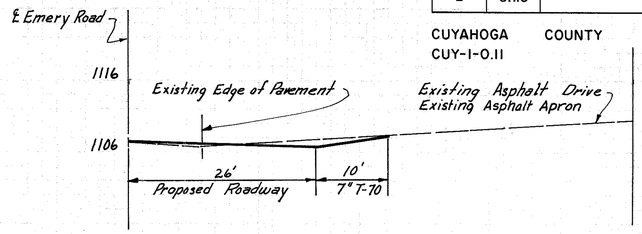
CUYAHOGA COUNTY
CUY-1-0.11



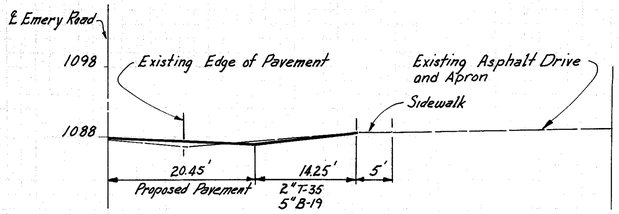
29-A Sta 93+00
Width 10'



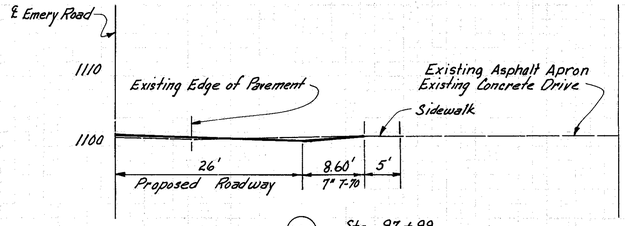
33-A Sta 97+52.5
Width 9'



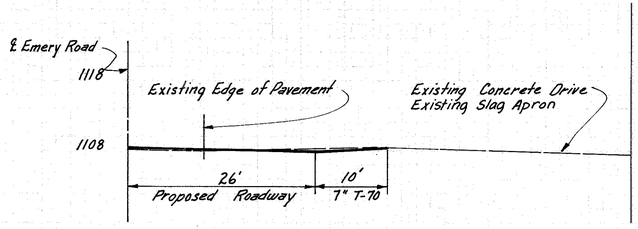
37-A Sta 100+25.5
Width 11'



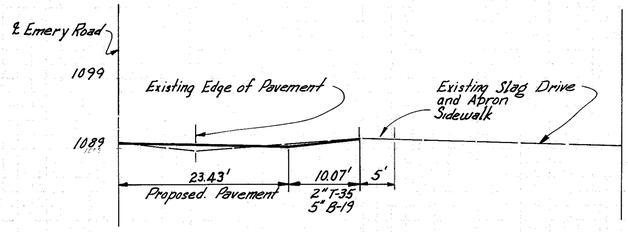
30-A Sta 93+62.5
Width 9'



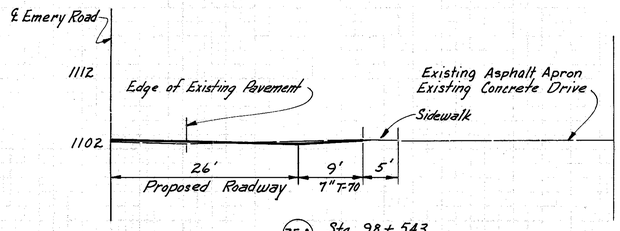
34-A Sta 97+99
Width 8'



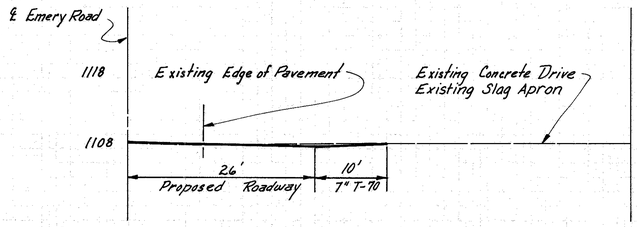
38-A Sta 101+05.7
Width 10'



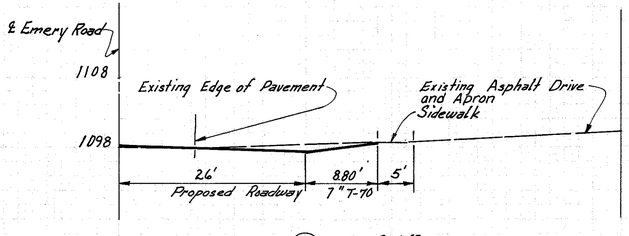
31-A Sta 94+12.4
Width 10'



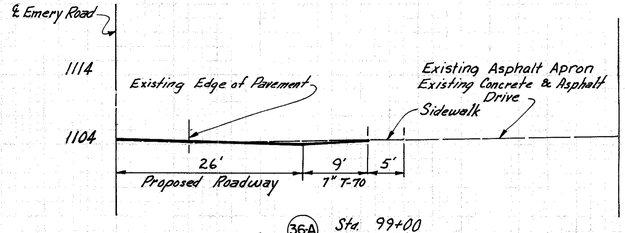
35-A Sta 98+54.3
Width 8'



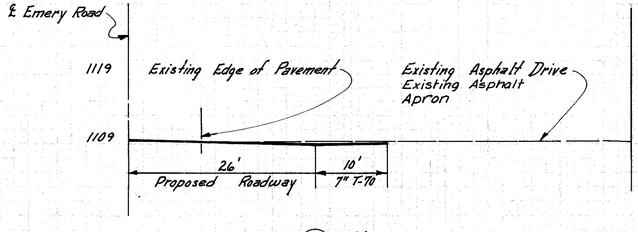
39-A Sta 101+55.9
Width 10'



32-A Sta 97+02
Width 9'



36-A Sta 99+00
Width 12'



40-A Sta 102+06.5
Width 10.5'

9-27-63
9-30-63

R.J.E.
E.C.E.

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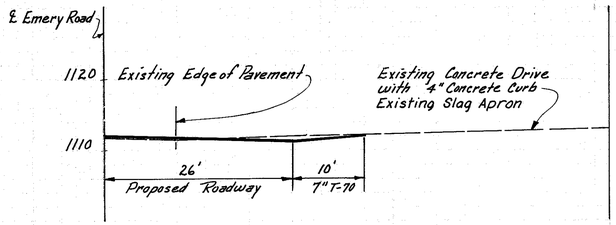
EMERY ROAD DRIVEWAY PROFILES — RIGHT SIDE

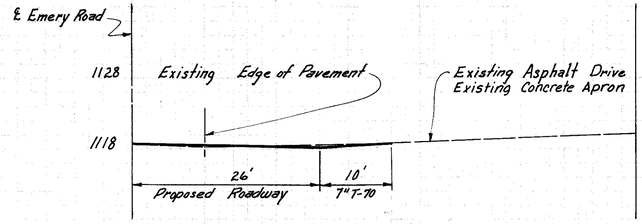
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

65
256

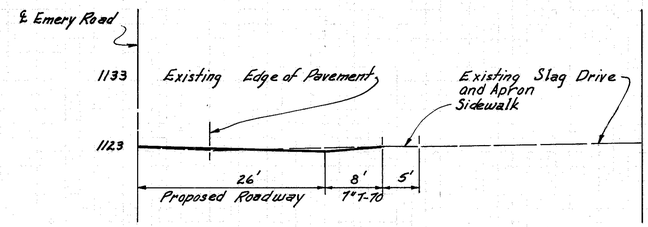
CUYAHOGA COUNTY
CUY-1-0.11



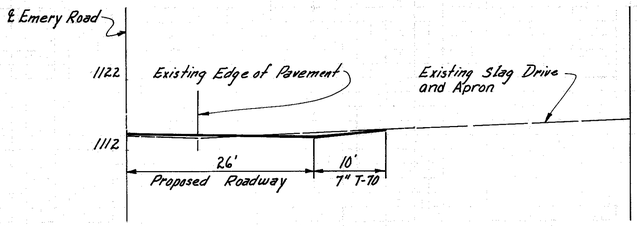
41-A Sta. 103+48.5
Width 8'



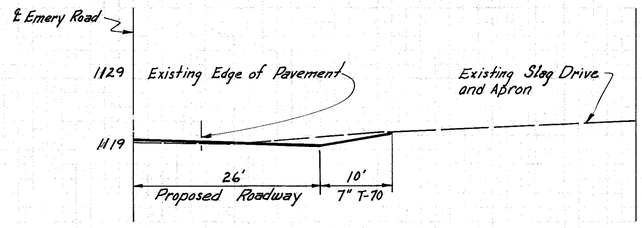
44-A Sta. 105+50
Width 9'



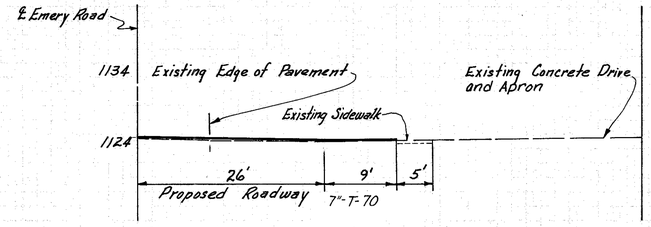
47-A Sta. 107+05
Width 8'



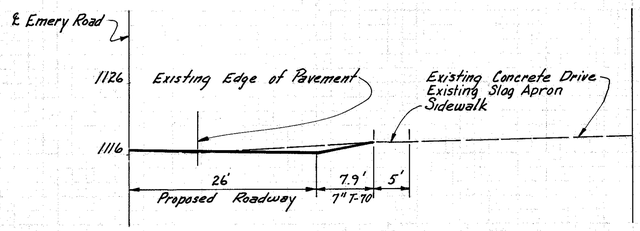
42-A Sta. 104+21
Width 13'



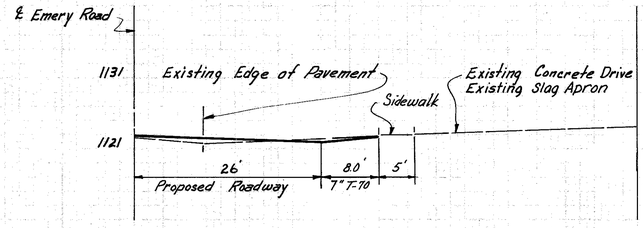
45-A Sta. 106+04
Width 9'



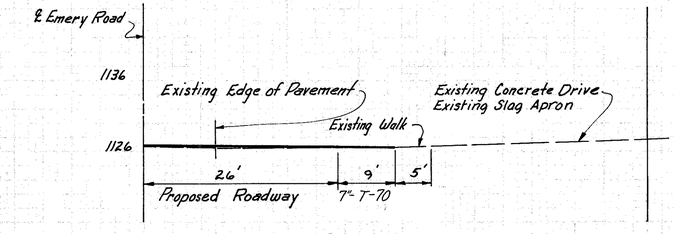
48-A Sta. 107+56
Width 8'



43-A Sta. 104+99
Width 8'



46-A Sta. 106+55'
Width 8'



49-A Sta. 108+04.4
Width 8'

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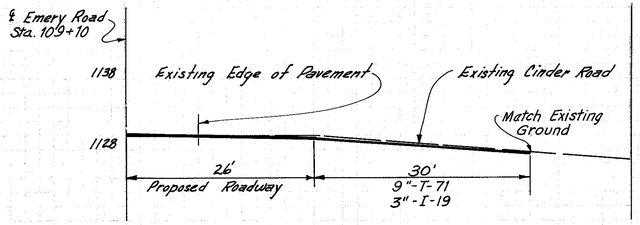
Rev. 9-29-63
10-30-63
✓ ECG

EMERY ROAD DRIVEWAY PROFILES – RIGHT SIDE

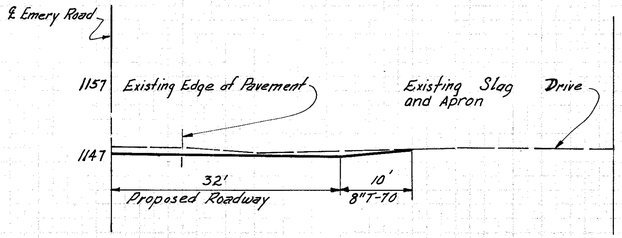
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

66
256

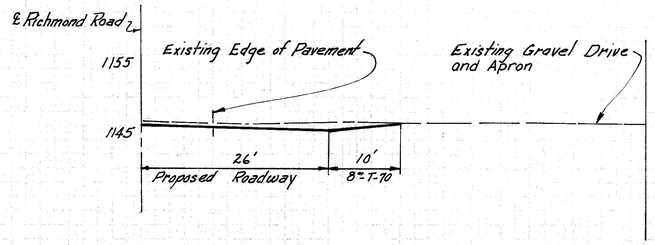
CUYAHOGA COUNTY
CUY-1-0.11



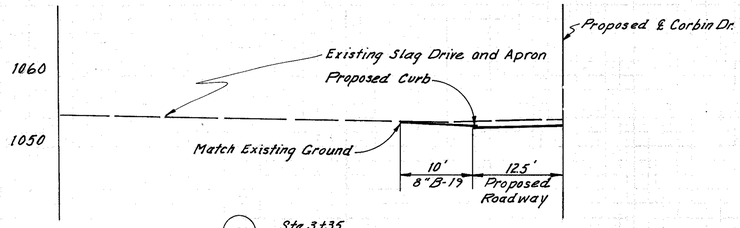
FARNHURST ROAD TURNOUT
Sta. 109+10 ℄ Emery Road



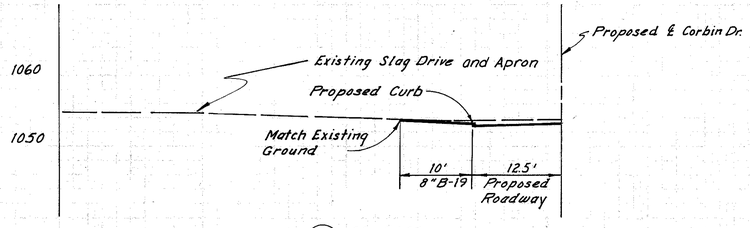
(5-A) Sta. 119+75
Width 10'



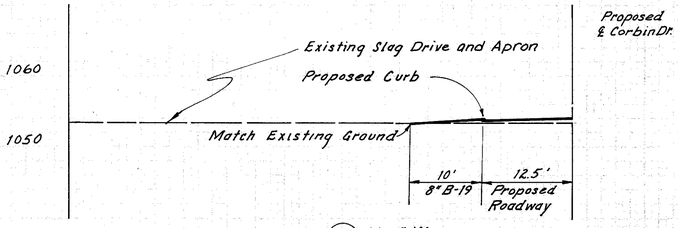
(7-A) Sta. 25+10
Width 12'



(50A) Sta 3+35
Width 10'



(51-A) Sta. 3+87
Width 9'



(52A) Sta. 5+16
Width 9

9-30-63
10-4-63
R.V.E.
E.C.E.

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KANSAS CITY CLEVELAND NEW YORK

CORBIN DR., RICHMOND ROAD, EMERY ROAD, DRIVEWAY PROFILES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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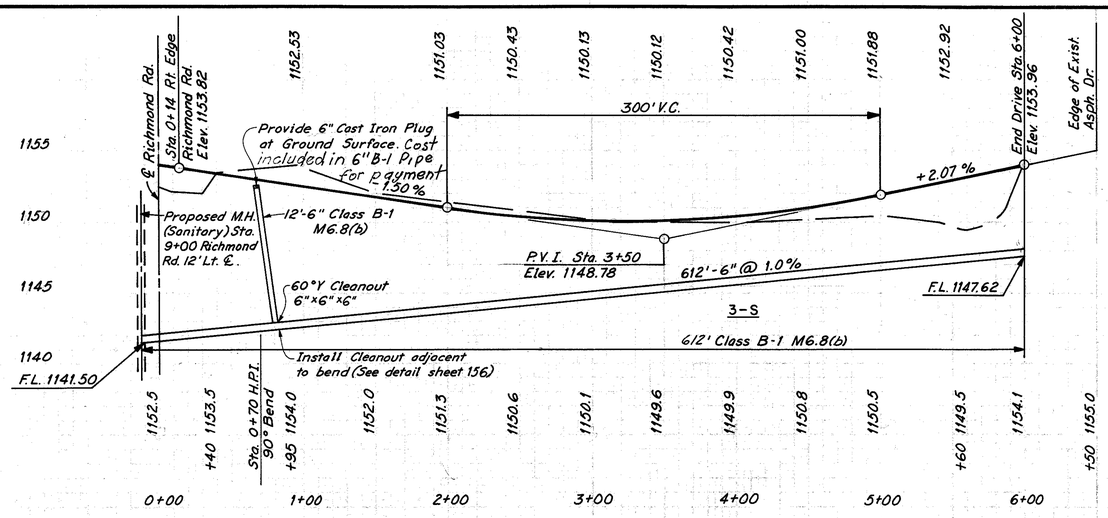
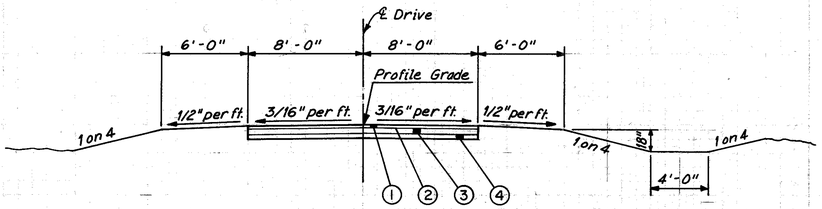
256

CUYAHOGA COUNTY
CUY-1-0.11



PROFILE
Scale: Hor. 1" = 50', Vert. 1" = 5'



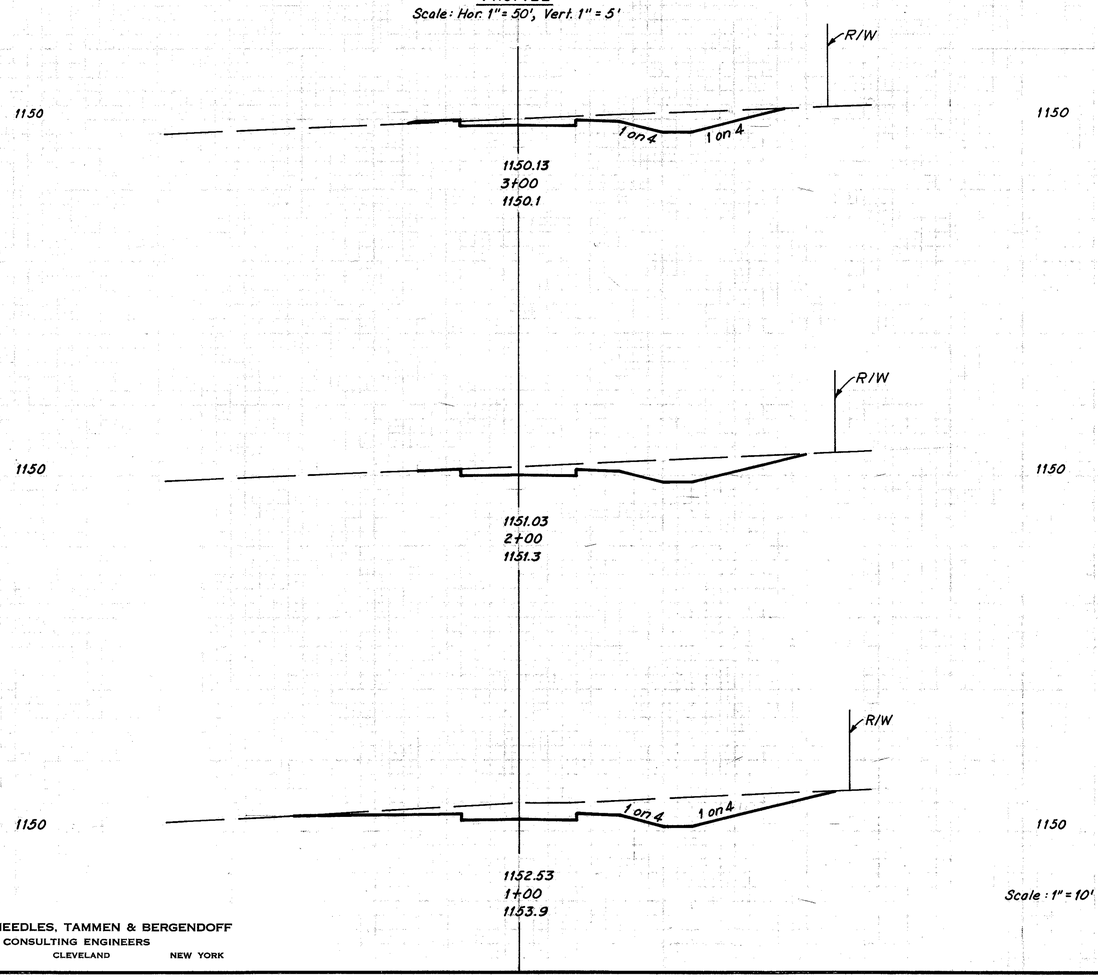
TYPICAL SECTION
Scale: 1" = 5'

① Item T-35 1½" Asphaltic Concrete Surface Course Type C (70-85)

② Item T-30 Bituminous Prime Coat, Sec. M-5.7, RT-2 or RT-3, applied at the rate of 0.40 gal. per square yard

③ Item B-19 5" Aggregate Base Course

④ Item I-22 4" Subbase



Note:
See Sheet 44 for Plan and Quantity Tabulation.

Scale: 1" = 10'

EARTHWORK				EARTHWORK			
END AREA		VOLUME		END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.	EXC.	EMB.	EXC.	EMB.
64	2			37	0		
		261	4			102	39
77	0			18	21		
		394	0			104	54
136	0			38	8		
		282	0			189	19
64	2						
16	0						
Sta. 3+00							
Sta. 0+24							
Total		1293	116				

6-7-63 ECE
6-7-63 ECE
6-4-63 ECE
6-4-63 LVM
JAG-6-4-63 ECE
JAG-6-4-63 ECE

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FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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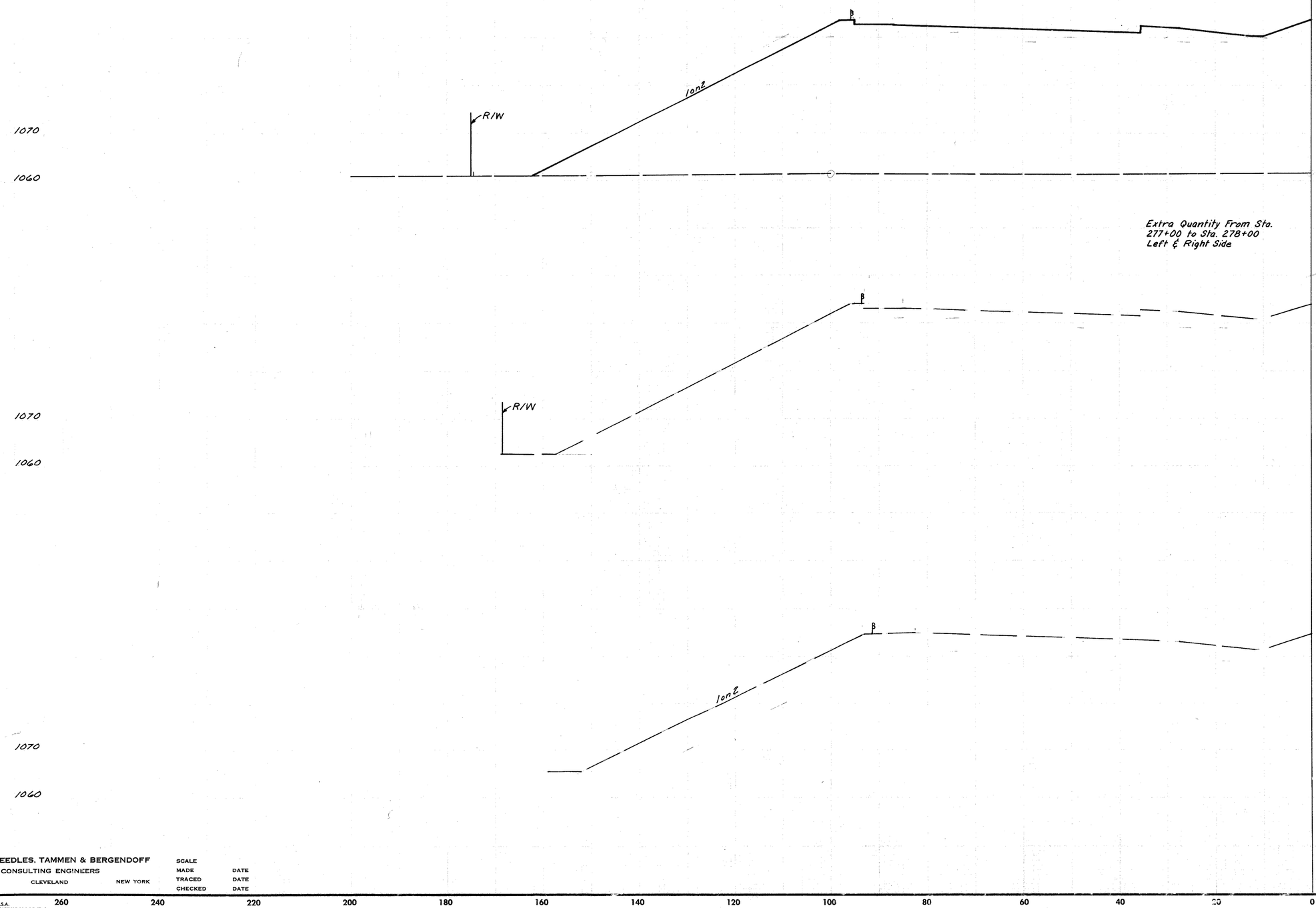
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1092.10 278+00 1061.8	0	4001		
			0	19,209

LEFT HALF
STA. 276+00 TO STA. 278+00

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

ORIGINAL SURVEY	BY	DATE
SURVEYED		3-26-63
PLOTTED	H.L.D	3-26-63
TEMPLATE	H.L.D	3-26-63
AREAS	RDJ	3-28-63
AREAS CHECKED	LCM	3-28-63
NOTE BOOK		
NO.		

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SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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2	OHIO		

69
256

CUYAHOGA COUNTY
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		EARTHWORK			
		END AREA		VOLUME	
		EXC.	EMB.	EXC.	EMB.
1070					
1060	Ahead	39	2944		
	Back	25	5		
				100	19
1070					
1060		16	5		
				12	4
1070					
1060		0	0		

1092.10
278+00
1061.8

1 on 2

R/W

1 on 24

1 on 3

1059.9

1 on 3

Begin Ditch Sta. 276+60-150' Rt.
Elev. 1061.8

1092.64
277+00

R/W

1 on 24

1 on 4

1061.3

1 on 4

1093.16
276+00

1 on 2

FINAL SURVEY

NOTE BOOK NO.	BY	DATE
SURVEYED		
PLOTTED		
TEMPLATE		
AREAS		
AREAS CHECKED		

ORIGINAL SURVEY

NOTE BOOK NO.	BY	DATE
SURVEYED		
PLOTTED	H.L.D.	3-26-63
TEMPLATE	H.L.D.	3-26-63
AREAS	H.L.D.	3-27-63
AREAS CHECKED	H.L.D.	3-27-63

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

RIGHT HALF
STA. 276+00 TO STA. 278+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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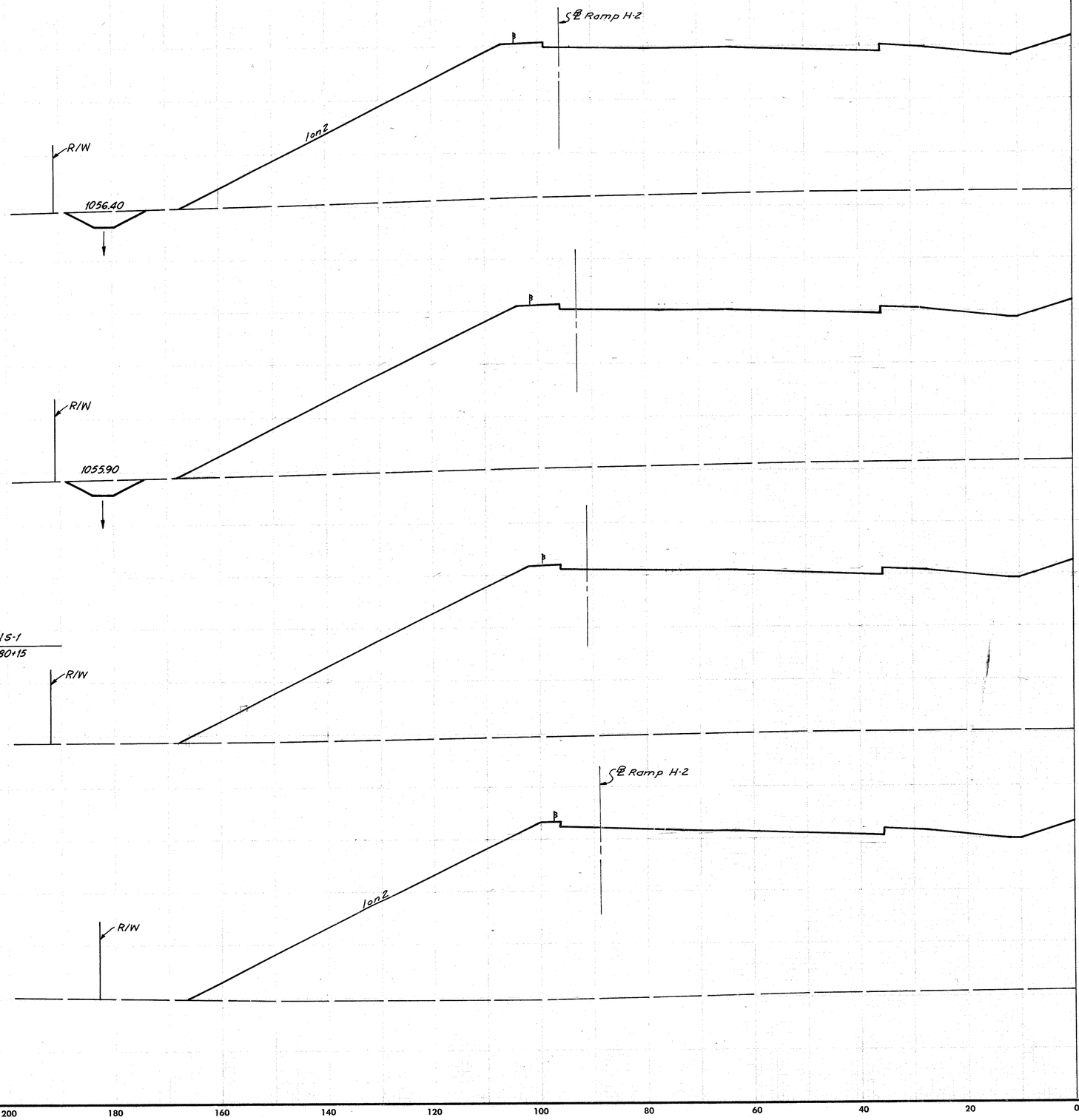
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1089.98 282+00 1062.7	30	3799		
			95	14,440
1090.52 281+00 1061.7	25	3998		
			83	15,150
1091.04 280+00 1060.5	0	4181		
			0	15,560
1091.58 279+00 1061.2	0	4220		
			0	15,230
Sta. 278+00	0	4001		

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED 4-24-63 NHL 3-1-63
PLOTTED 4-26-63 NHL 3-19-63
TEMPLATE 5-2-63 JDJ 3-28-63
AREAS JEN 5-28-63
AREAS CHECKED

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KANSAS CITY CLEVELAND NEW YORK

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 279+00 TO STA. 282+00

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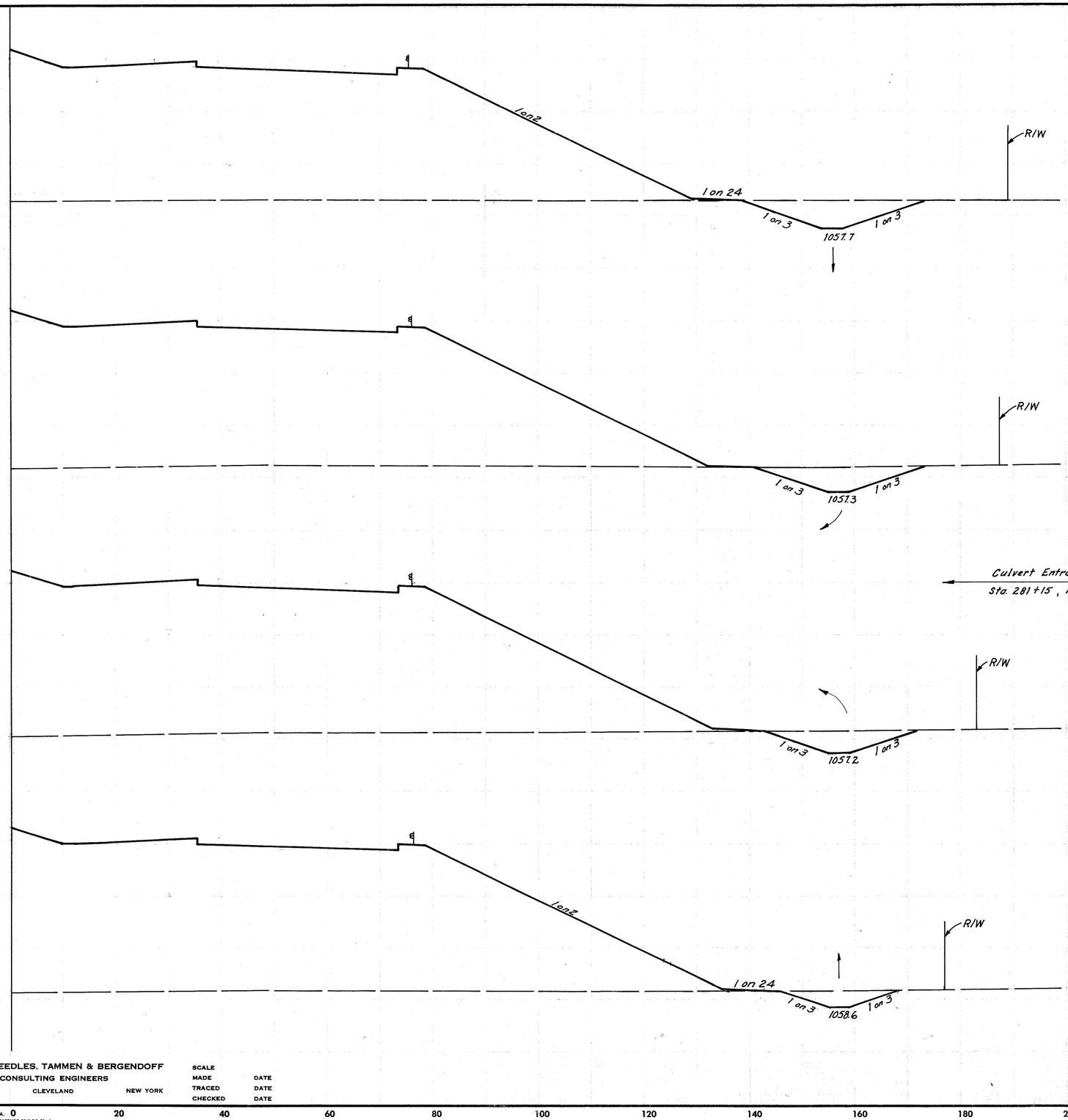
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

71
256

CUYAHOGA COUNTY
CUY-1-0.11

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

FINAL SURVEY
NOTE BOOK
NO.
SURVEYED J.A.S. 3-4-63
PLOTTED J.A.S. 3-7-63
TEMPLATE K.L.O. 3-15-63
AREAS K.L.O. 3-16-63
AREAS CHECKED H.L.D. 3-22-63
BY
DATE



EARTHWORK				
END	AREA	VOLUME		
	EXC.	EMB.	EXC.	EMB.
1070				
1060	104	2647		
			359	10,128
1070				
1060	90	2822		
			306	10,807
1070				
1060	75	3014		
			216	11,218
1070				
1060	42	3044		
			150	11,089
Sta. 278+00 Ahead	39	2944		

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SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

RIGHT HALF
STA. 279+00 TO STA. 282+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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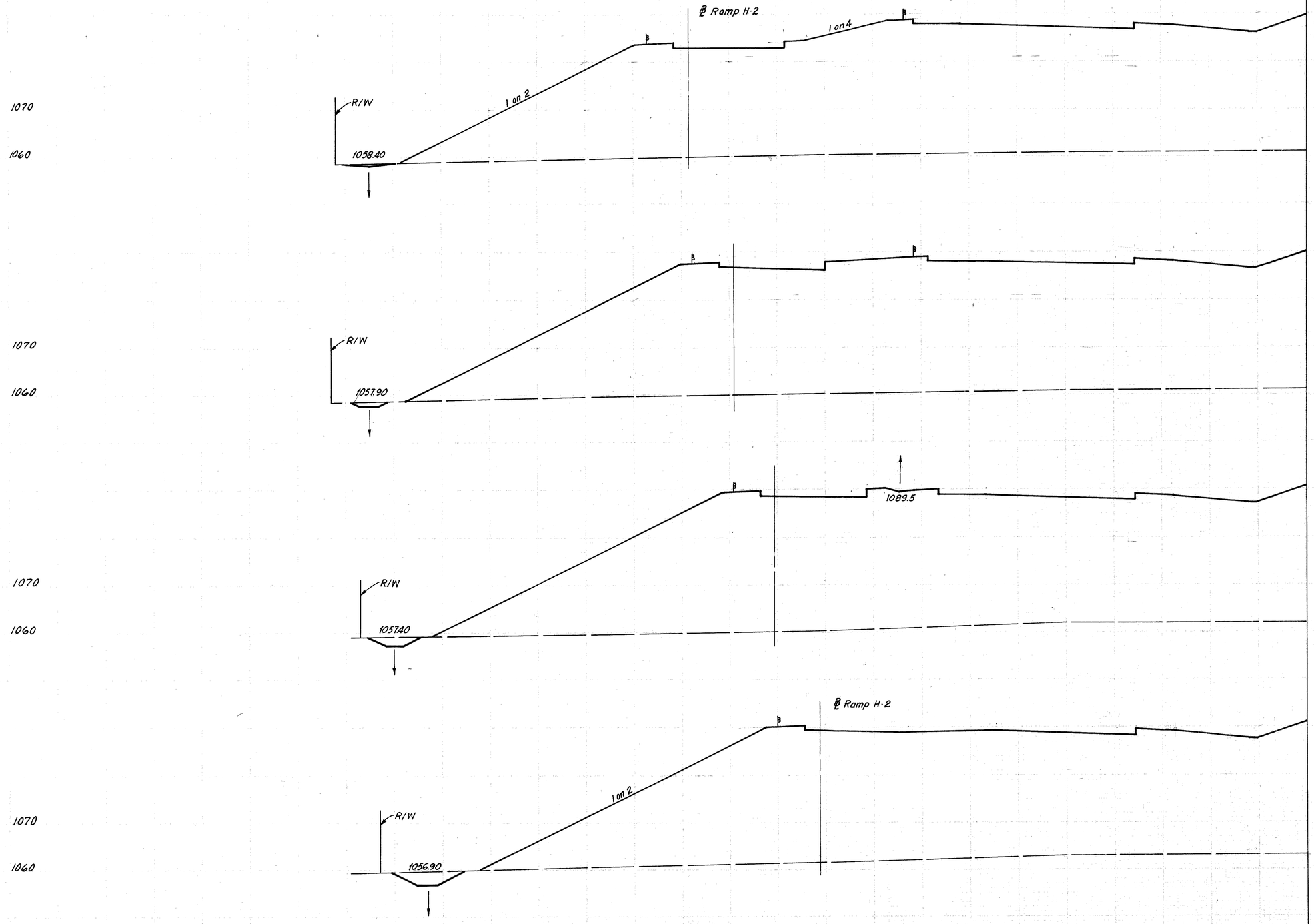
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1087.86 286+00 1061.0	2	4175		
			13	15,700
1088.40 285+00 1061.1	5	4300		
			37	15,740
1088.92 284+00 1062.0	12	4200		
			69	14,880
1089.46 283+00 1063.2	25	3836		
			95	14,140
Sta. 282+00	30	3799		

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

ORIGINAL SURVEY
SURVEYED 3-4-63
PLOTTED 3-6-63 N.K.O.
TEMPLATE 3-8-63 J.L.D.
AREAS J.L.D.
AREAS CHECKED J.E.N.
NOTE BOOK
NO.
DATE
BY
3-4-63
3-13-63
4-1-63

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 283+00 TO STA. 286+00

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FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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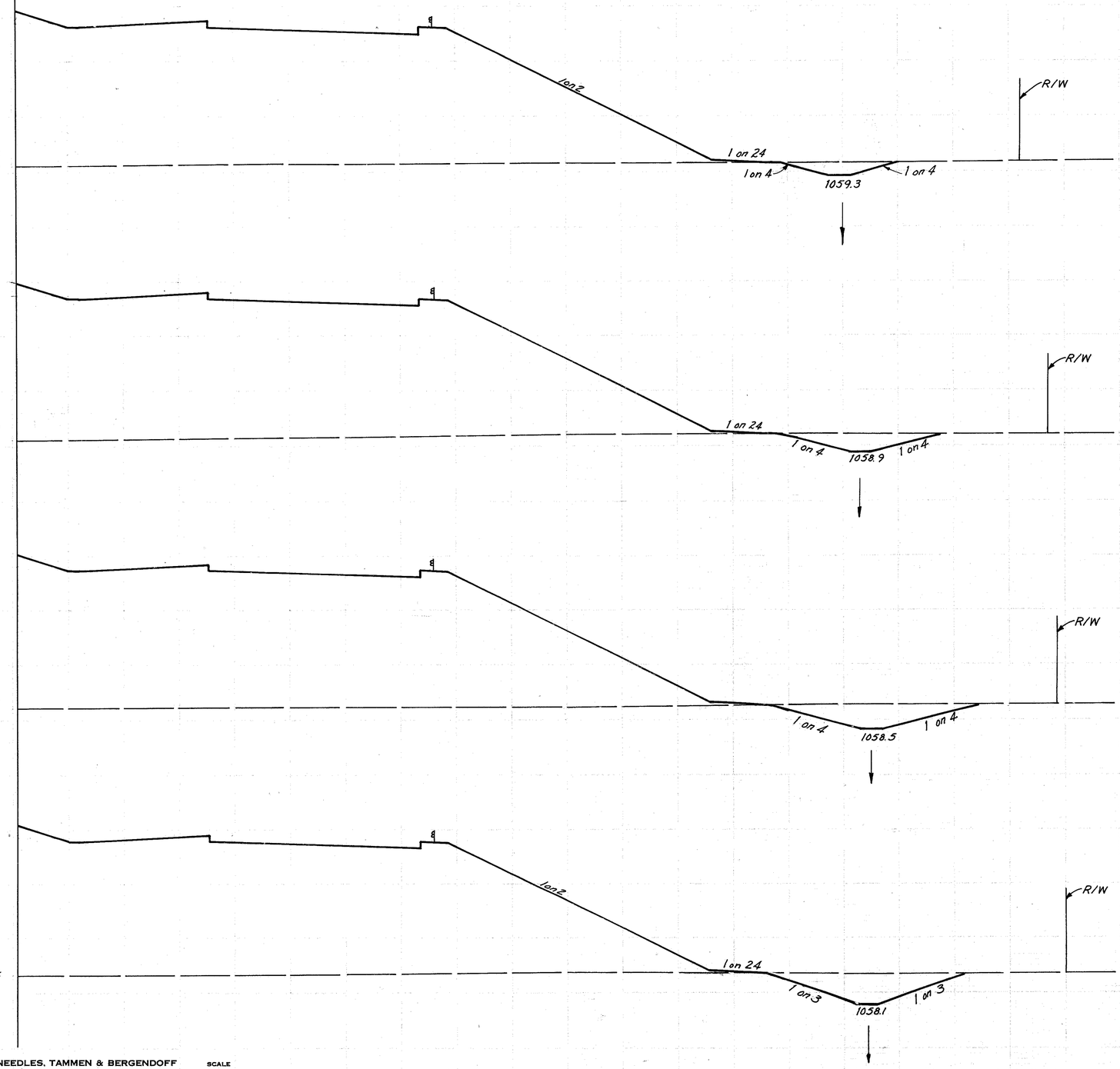
256

CUYAHOGA COUNTY
CUY-1-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1070			
1060	30	2561	
		165	9552
1070			
1060	60	2597	
		291	9611
1070			
1060	97	2593	
		313	9422
1070			
1060	72	2495	
		326	9522
Sta 282+00	104	2647	

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

ORIGINAL SURVEY
NOTE BOOK NO.
SURVEYED 1966-3-4-68 JWL 3-6-68
PLOTTED 1966-3-4-68 KJD 3-12-68
TRAVERSE 246 Pg 68 KJD 3-12-68
AREAS JEN 3-27-68
AREAS CHECKED

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

RIGHT HALF
STA. 283+00 TO STA. 286+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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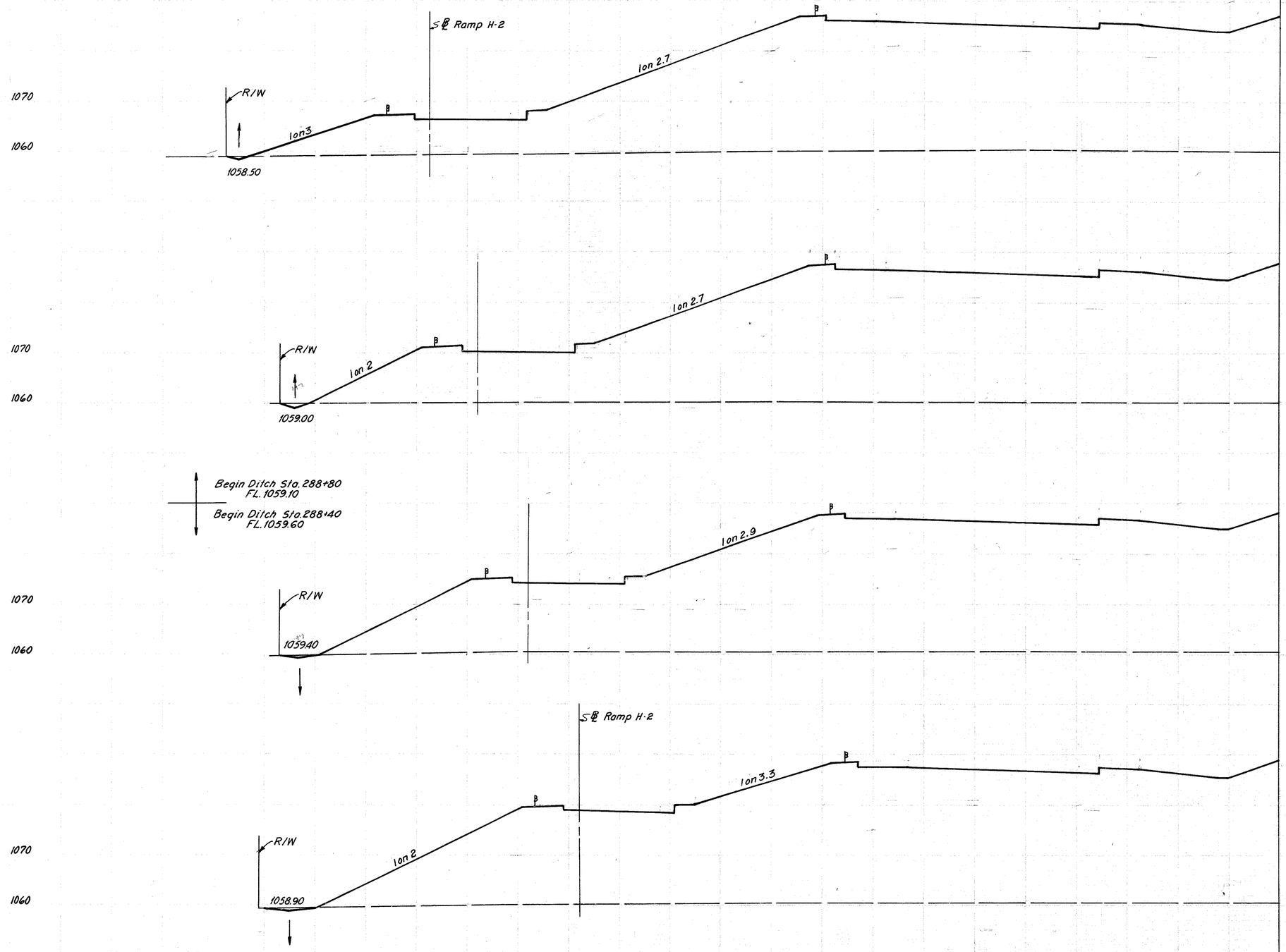
256

CUYAHOGA COUNTY
CUY – 1 – 0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1085.74			
290+00			
1060.0			
1	3609		
		7	13,500
1086.28			
289+00			
1060.1			
3	3678		
		3	13,770
1086.80			
288+00			
1060.6			
1	3757		
		6	14,390
1087.34			
287+00			
1060.6			
2	4014		
		7	15,160
Sta. 286+00			
2	4175		

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

LEFT HALF
STA. 287+00 TO STA. 290+00

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

ORIGINAL SURVEY
SURVEYED BY H.L.D. 3-5-63
PLOTTED JAG 3-8-63 H.L.D. 3-19-63
TEMPLATE JAG 3-8-63 J.E.N. 4-27-63
AREAS J.E.N.
AREAS CHECKED
NOTE BOOK
NO.
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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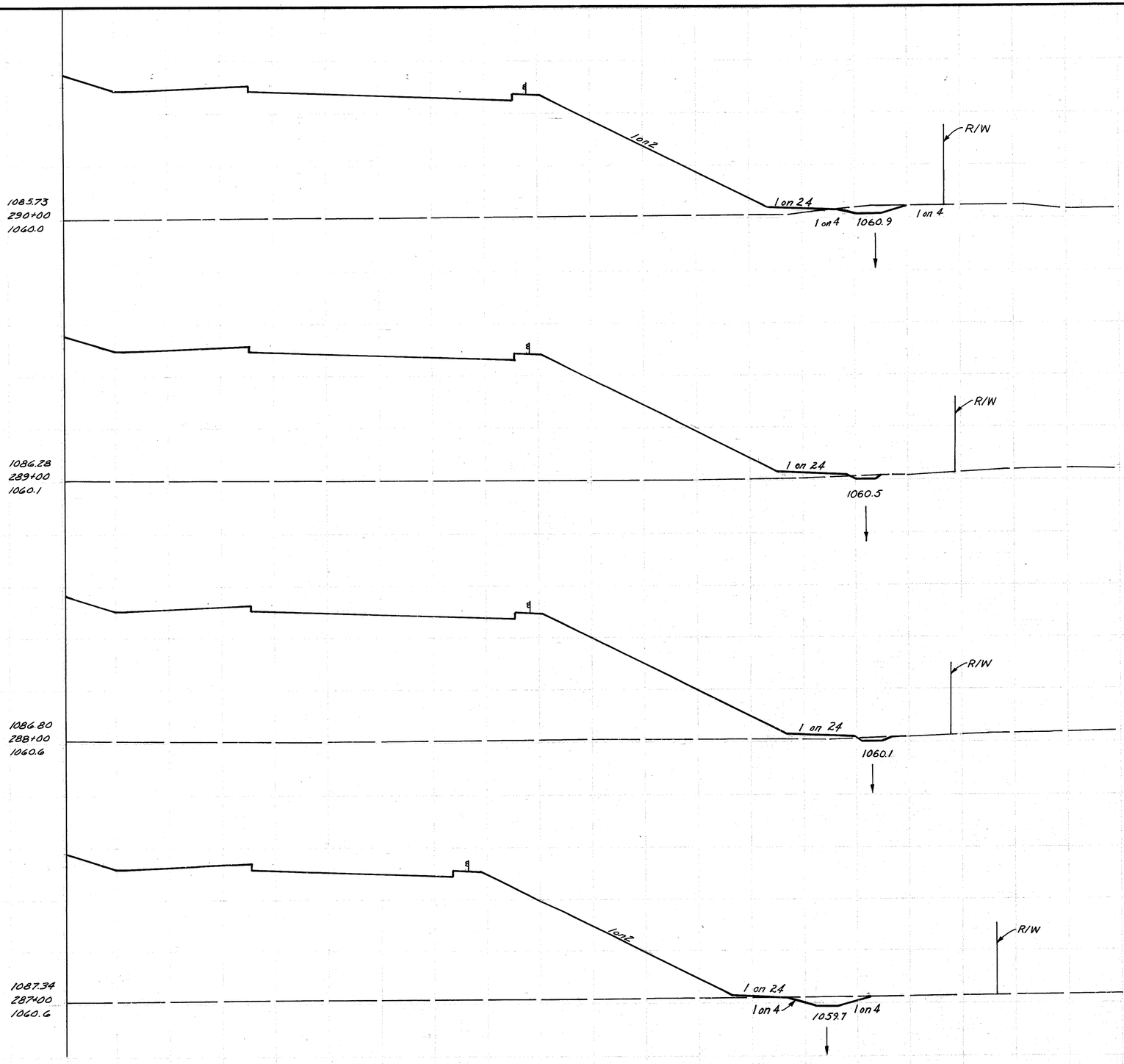
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1070				
1060	13	2680		
			35	10,110
1070				
1060	6	2780		
			20	10,373
1070				
1060	5	2822		
			37	10002
1070				
1060	16	2579		
			48	9518
Sta. 286+00	30	2561		

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

ORIGINAL SURVEY
SURVEYED 3-5-63 W.K.D.
PLOTTED 3-19-63 H.L.D.
TEMPLATE 3-11-63 H.L.D.
AREAS 3-20-63 H.L.D.
AREAS CHECKED 3-28-63 H.L.D.
NOTE BOOK
NO.
DATE
BY

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MADE DATE
TRACED DATE
CHECKED DATE

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

RIGHT HALF
STA. 287+00 TO STA. 290+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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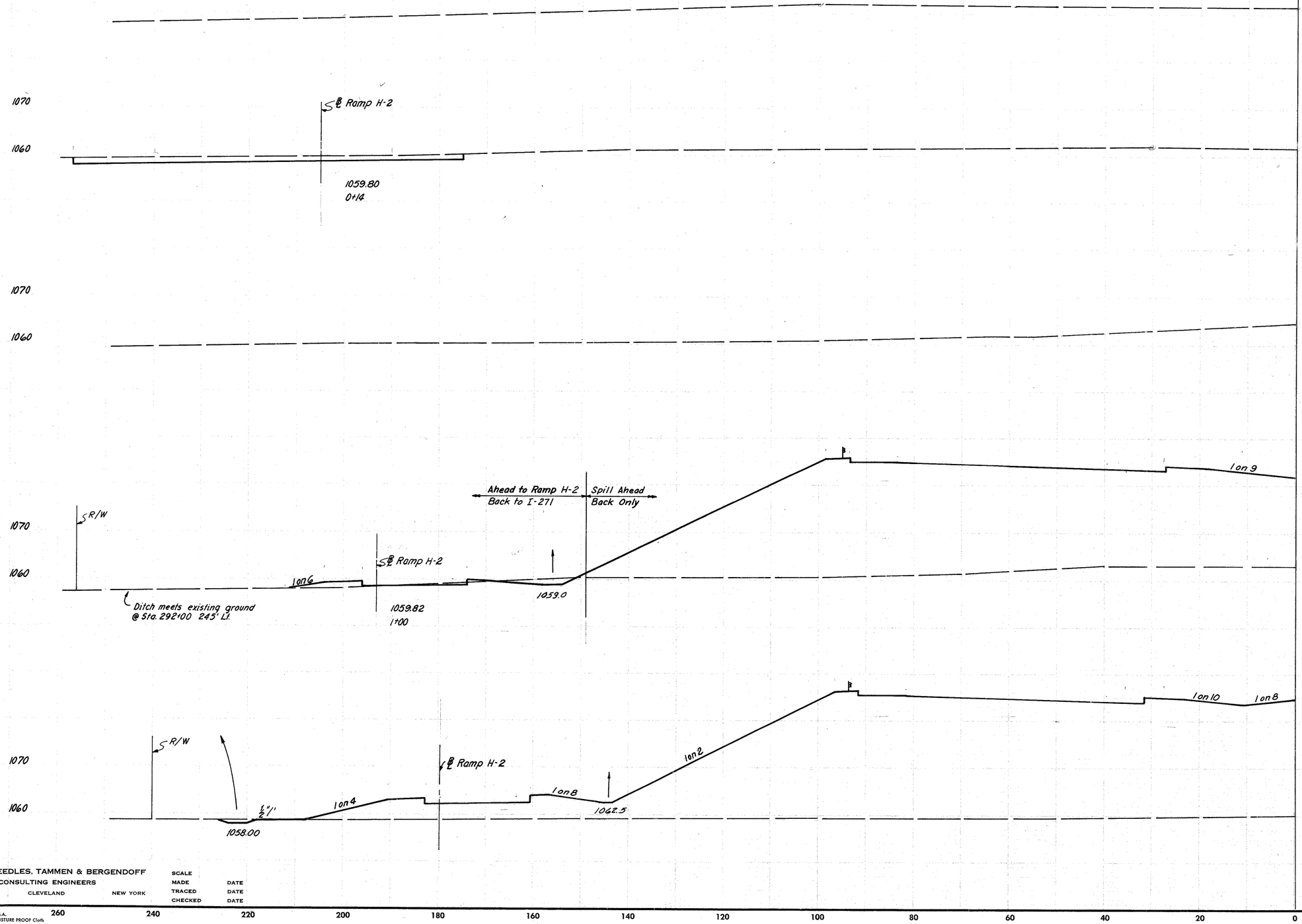
256

CUYAHOGA COUNTY
CUY-1 - 0.11

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

ORIGINAL SURVEY — NOTE BOOK NO. — SURVEYED 8-24-63 — PLOTTED AUG 29-63 — TEMPLATE — AREAS — AREAS CHECKED — BY H.J.D. R.J.D. H.L.O. — DATE 3-5-63 3-21-63 4-1-63



EARTHWORK

	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
293+48 1061.6				
293+09 1061.8	95	0		
			174	25
292+82 1064.8				
Spill Quantity			0	9368
1084.44 Ahead	14	16		
292+00 Back	14	2790		
1063.1				
			35	11,370
1085.12				
291+00	5	3348		
1060.1				
			11	12,880
Sta. 290+00	1	3609		

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KANSAS CITY CLEVELAND NEW YORK

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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LEFT HALF
STA. 291+00 TO STA. 293+09

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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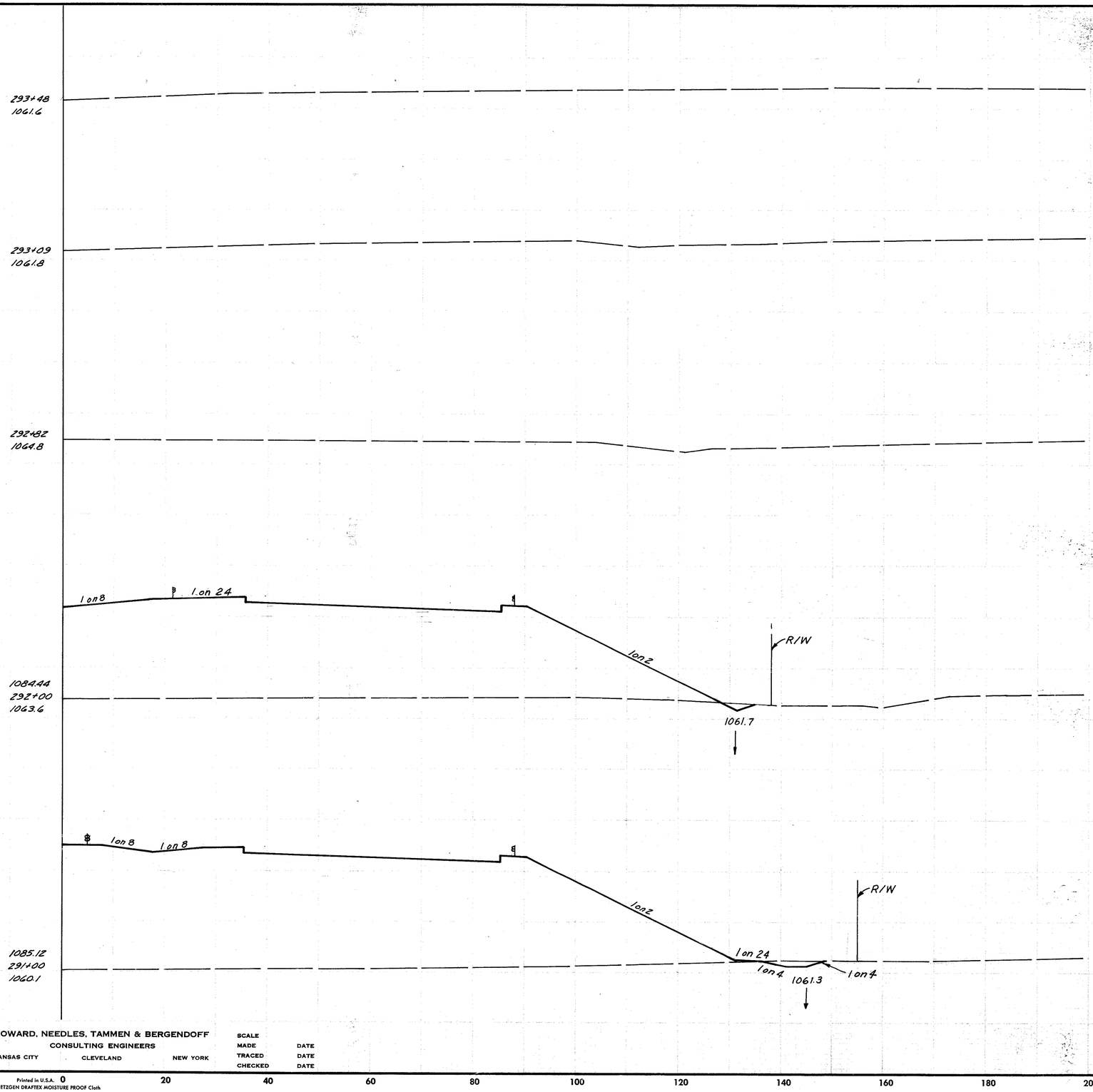
256

CUYAHOGA COUNTY
CUY-1 - 0.11

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED
PLOTTED 3-4-63 WLD
TEMPLATE 3-4-63 WLD
AREAS 3-28-63 WLD
AREAS CHECKED WLD 3-28-63



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1060			
1070			
1060			
1070			
1060			
1070			
1060	3	1992	
			26 8311
1070			
1060	11	2496	
			44 9585
Sta 290+00	13	26	

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

RIGHT HALF
STA. 291 +00 TO STA. 292+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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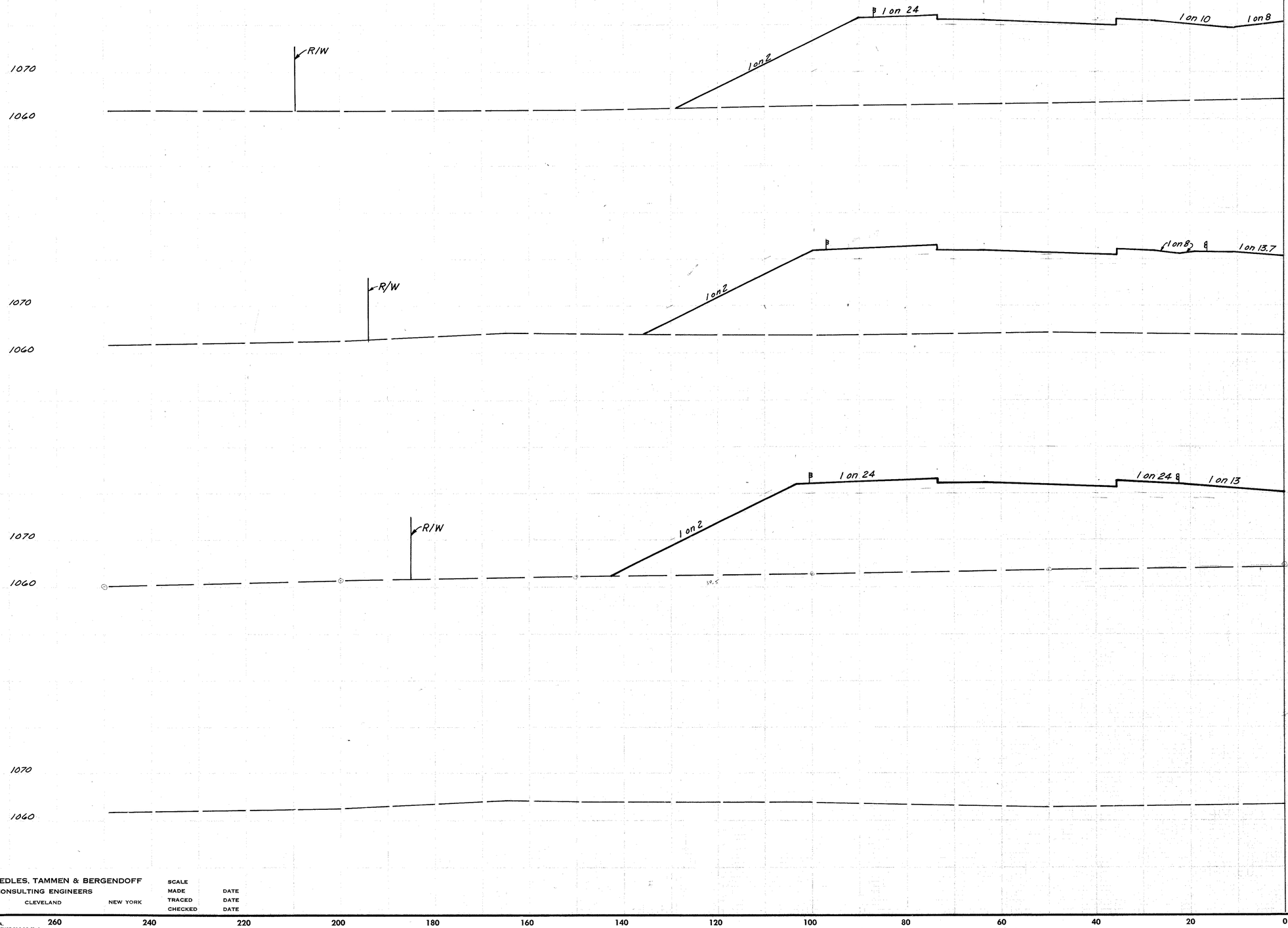
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1081.12 296+00 1064.2	0	1930		
			0	7480
1081.98 295+00 1064.8	0	2109		
			0	4080
1082.40 294+50 1064.1	0	2302		
Spill Quantity			0	6502
294+00 1063.4				

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 294+50 TO STA. 296+00

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

ORIGINAL SURVEY
SURVEYED 6-7-68 NHD
PLOTTED JAG 3-4-68 NHD
TEMPLATE JAG 3-4-68 JDJ
AREAS 3-6-68 JDJ
AREAS CHECKED JDH
NOTE BOOK
NO.
BY
DATE
3-5-68
3-20-68
3-28-68
4-1-68

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FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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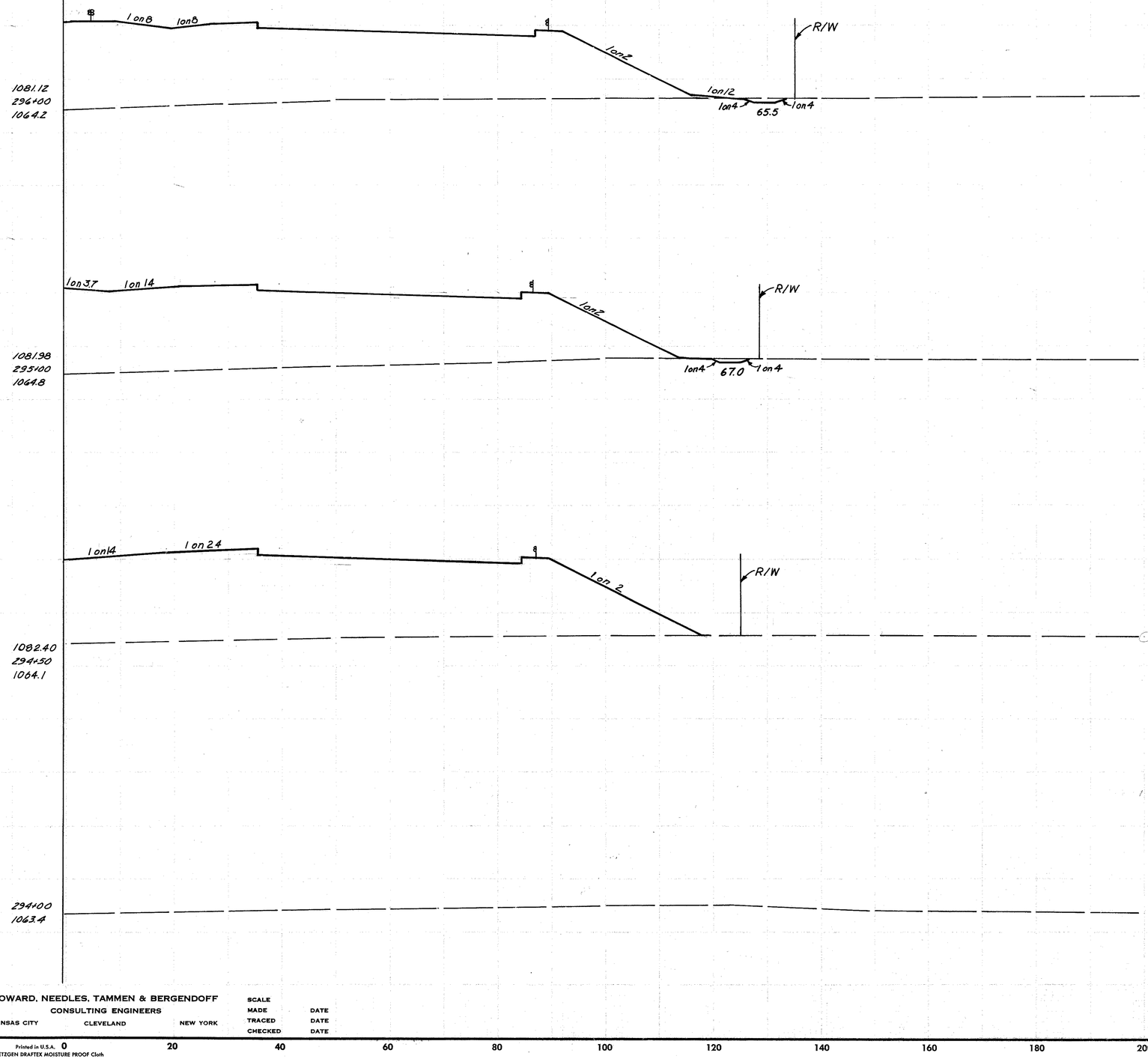
256

CUYAHOGA COUNTY
CUY-1 - 0.11



EARTHWORK				
END	AREA	VOLUME		
EXC.	EMB.	EXC.	EMB.	
				1070
	4	1433		1060
			15	5291
				1070
	4	1424		1060
			4	2798
				1070
0	1596			1060
				1070
				1060

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

ORIGINAL SURVEY
SURVEYED
PLOTTED 4-24-63 WLD
TRACED 4-26-63 WLD
AREAS 2-20-63
NOTE BOOK
NO.
AREAS CHECKED WLD
BY
DATE 3-27-63 3-28-63

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

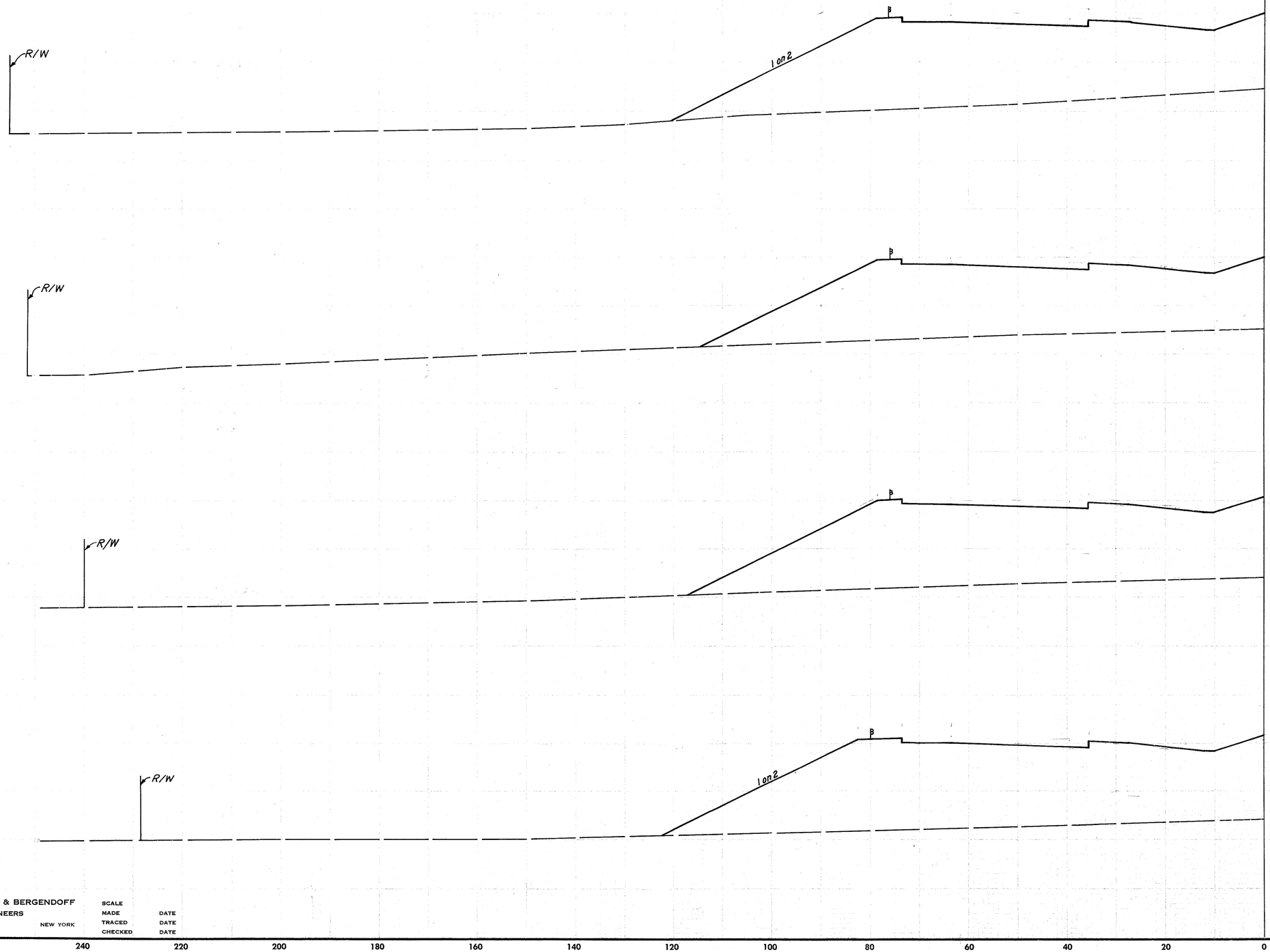
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 294+50 TO STA. 296+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

80
256

CUYAHOGA COUNTY
CUY-1 - 0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1078.36				
299+28	0	1628		
1064.5				
			0	1570
1078.58				
299+00	0	1404		
1065.2				
			0	5580
1079.42				
298+00	0	1607		
1064.0				
			0	6280
1080.28				
297+00	0	1783		
1064.2				
			0	6680
Sta 296+00	0	1930		

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED 9-27-63
PLOTTED 10-1-63
TRACED 10-2-63
AREAS 10-3-63
AREAS CHECKED 10-4-63
BY V.H.U. R.D.J. J.R.M.
DATE 9-27-63 10-1-63 10-2-63 10-3-63 10-4-63

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 297+00 TO STA. 299+28

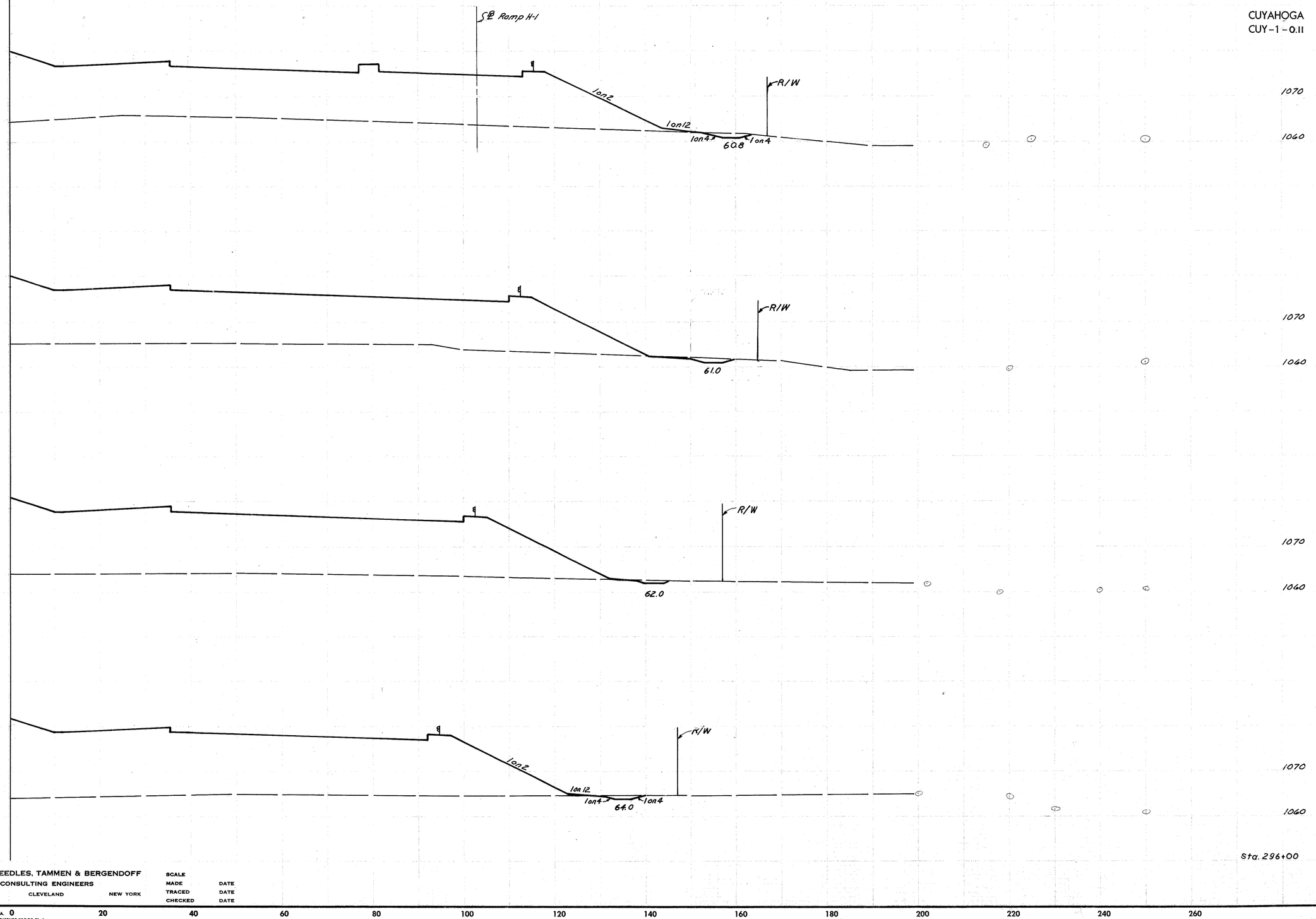
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

81
256

CUYAHOGA COUNTY
CUY-1-0.11

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED — JAG-3-7-63 — H.L.D. — 3-7-63
PLOTTED — JAG — 3-22-63
TEMPLATE — H.L.D. — 3-25-63
AREAS — H.L.D.
AREAS CHECKED — 3-29-63
BY
DATE



EARTHWORK				
END AREA		VOLUME		
	EXC.	EMB.	EXC.	EMB.
1070				
1060	6	1510		
			6	1535
1070				
1060	6	1451		
			19	5611
1070				
1060	4	1579		
			17	5709
1070				
1060	5	1504		
			17	5439
Sta. 296+00	4	1433		

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

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

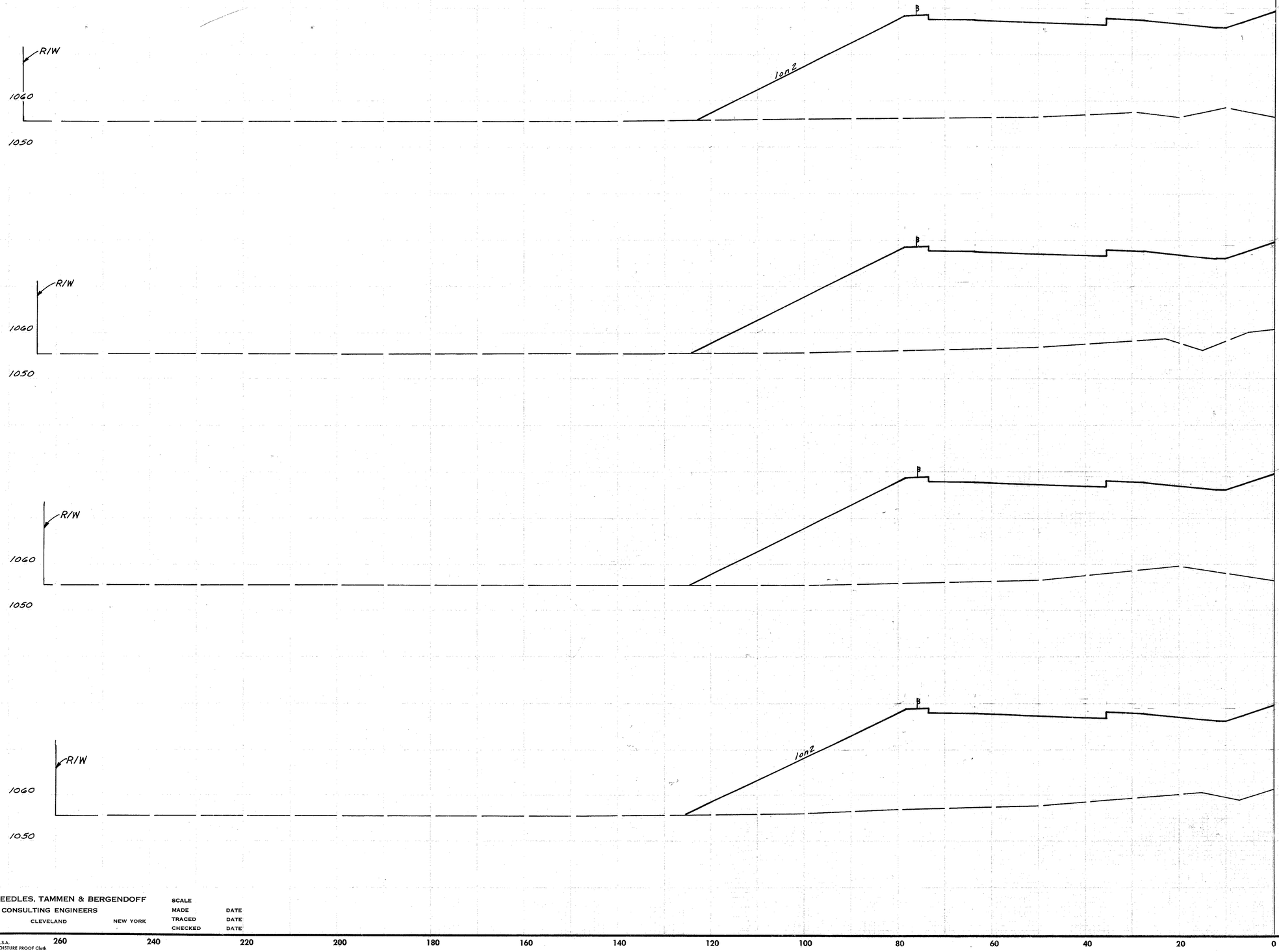
RIGHT HALF
STA. 297+00 TO STA. 299+28

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

82
256

CUYAHOGA COUNTY
CUY-1 - 0.11

	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1077.65 300+08 1056.8	0	2083		
			0	1616
1077.83 299+87 1060.8	0	2073		
			0	929
1077.94 299+75 1056.5	0	2107		
			0	993
1078.05 299+62 1061.3	0	2012		
			0	2290
Sta. 299+28	0	1628		



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

ORIGINAL SURVEY
SURVEYED AG 3-5-63 WLD
PLOTTED AG 3-12-63 HLD
TEMPLATE AG 3-12-63 JEV
AREAS JEV 3-29-63
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

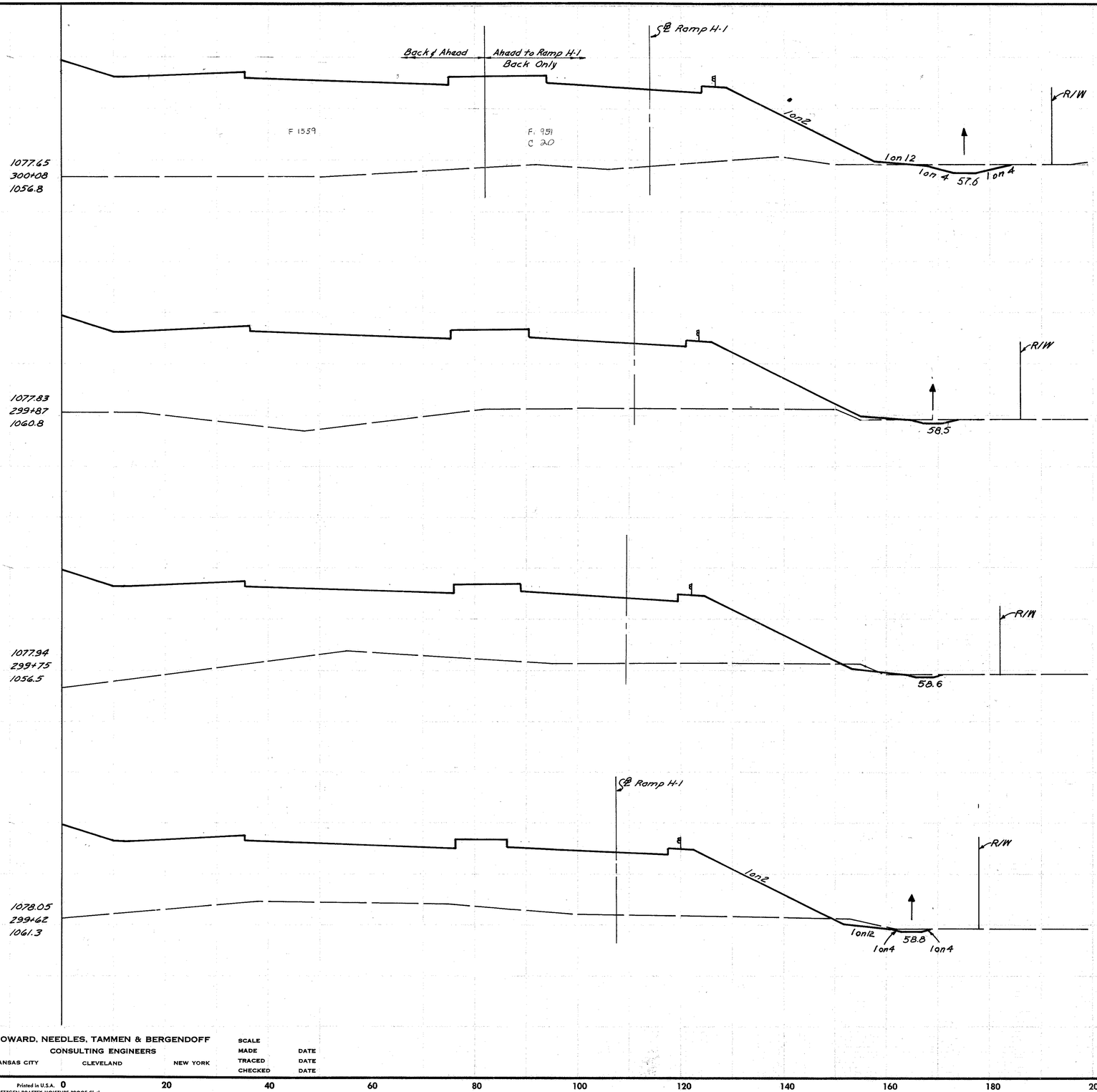
260 240 220 200 180 160 140 120 100 80 60 40 20 0

LEFT HALF
STA 299+62 TO STA 300+08

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

83
256

CUYAHOGA COUNTY
CUY-1 - 0.11



		EARTHWORK			
		END AREA		VOLUME	
		EXC.	EMB.	EXC.	EMB.
1060					
	Ahead	0	1559		
1050	Back	20	2510		
			2085		
				10	1811
1060		5	2146		
1050					
				3	916
1060					
1050		10	1975		
				6	889
1060		13	1715		
1050				12	2030
Sta. 299+28		6	1510		

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

FINAL SURVEY
SURVEYED 3-5-63 HLD
PLOTTED 3-6-63 MDJ
TRIANGLE 3-6-63
AREAS 3-8-63 HLD
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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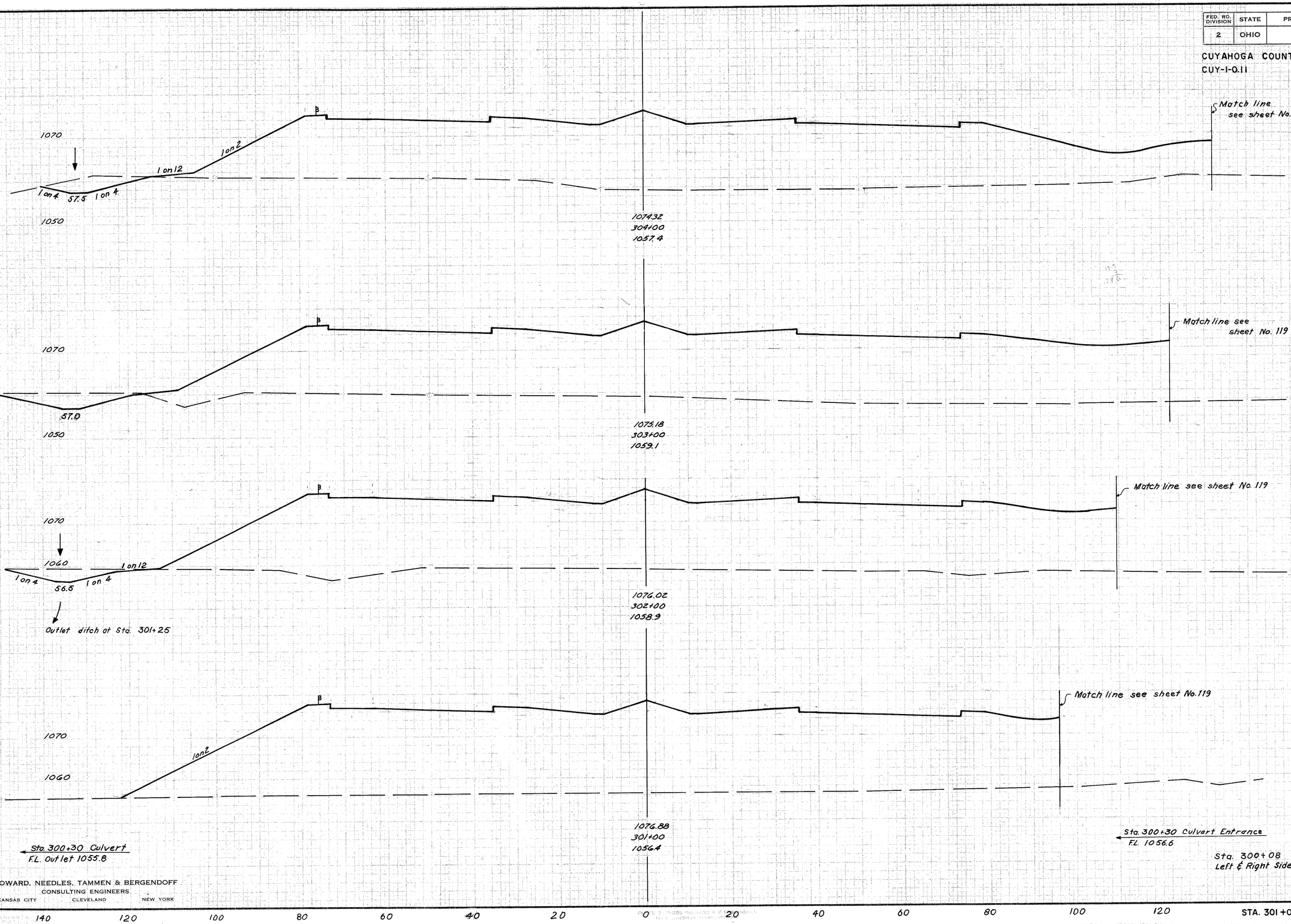
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 299+62 TO STA. 300+08

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

84
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
54	3050		
		232	11,843
71	3345		
		215	12,483
45	3396		
		83	13,356
0	3816		
		0	12,706
0	3642		

3-5-63
3-21-63
4-16-63
4-17-63

JAG 3-5-63 H.L.D.
JAG 3-12-63 H.L.D.
4-4-0
JAN

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

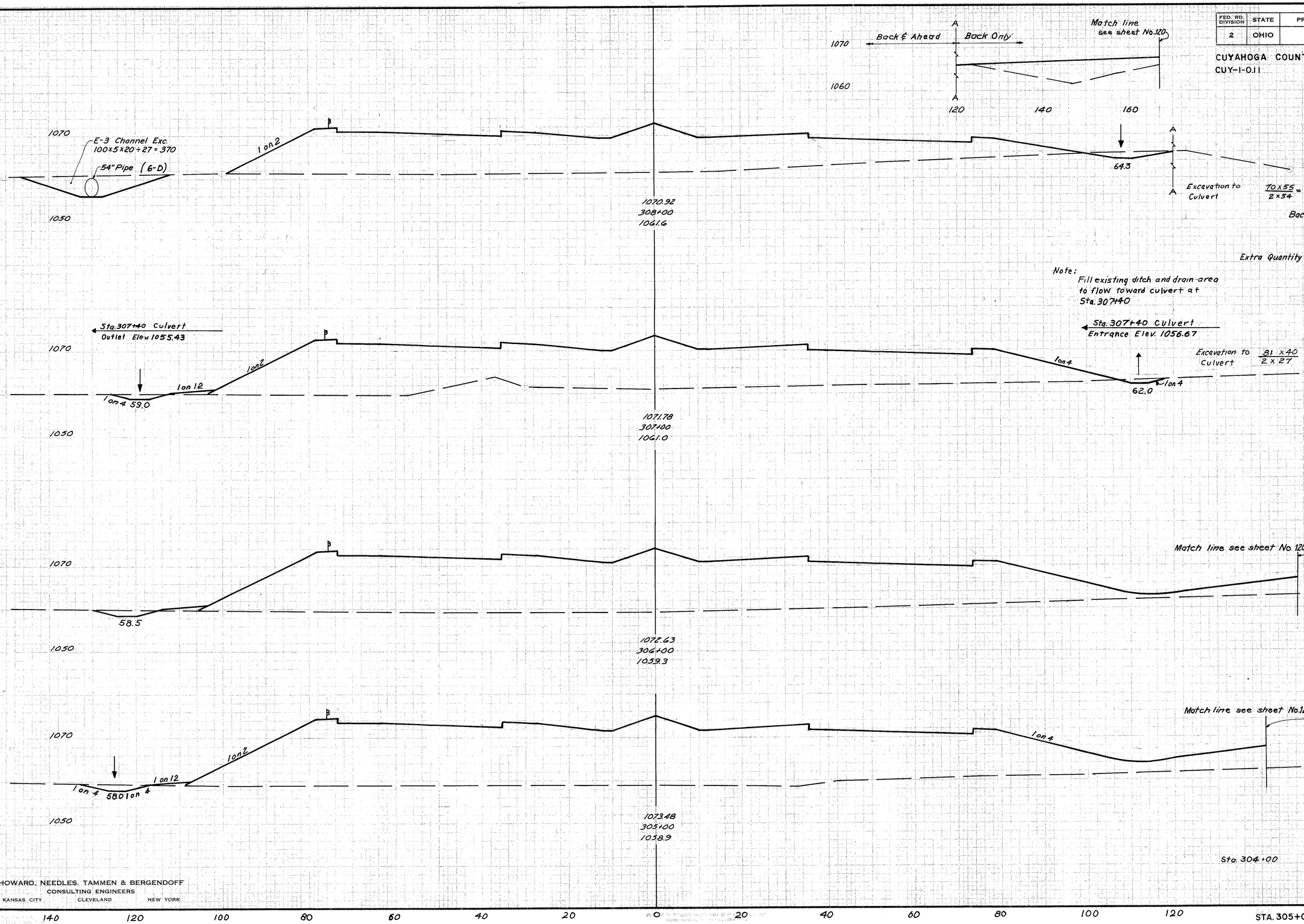
140 120 100 80 60 40 20 0 20 40 60 80 100 120

STA. 301+00 TO STA. 304+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

85
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
Y.C.	EMB.	Y.C.	EMB.
		66	
Back 21	1541		
Extra Quantity		70	910
		61	6132
		60	
12	1770		
		54	7585
17	2326		
		57	9205
14	2645		
		126	10,546
54	3050		

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

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

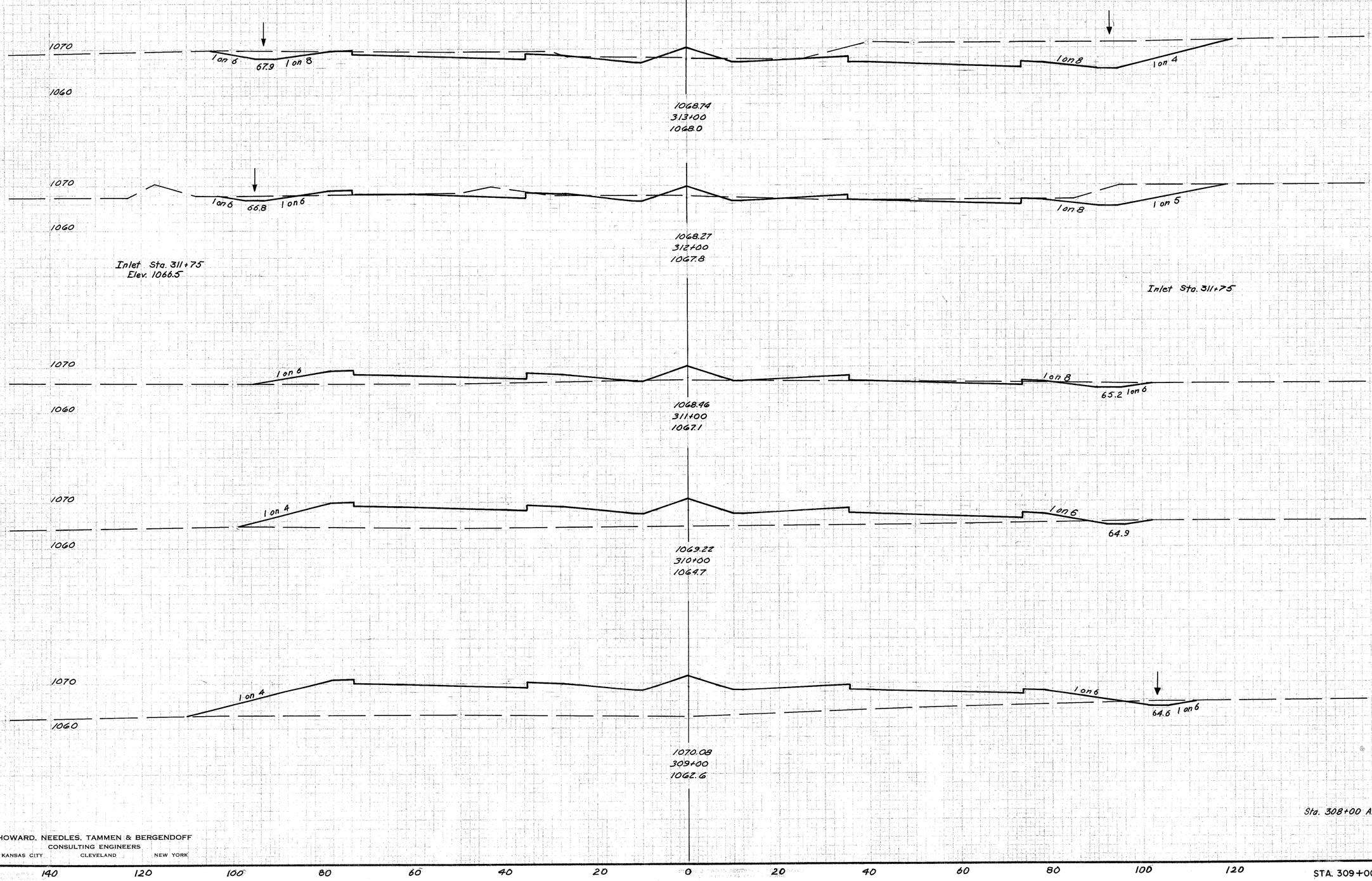
STA. 305+00 TO STA. 308+00

JAG 3-5-63 \ H.L.D.
JAG 3-13-63 \ H.L.D.
3-5-63
3-21-63
4-15-63
H.L.D.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

86
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
448	19		
		1130	94
162	32		
		337	407
20	188		
		52	1483
8	613		
		33	3139
10	1082		
		57	4617
Sta. 308+00 Ahead	21	1411	

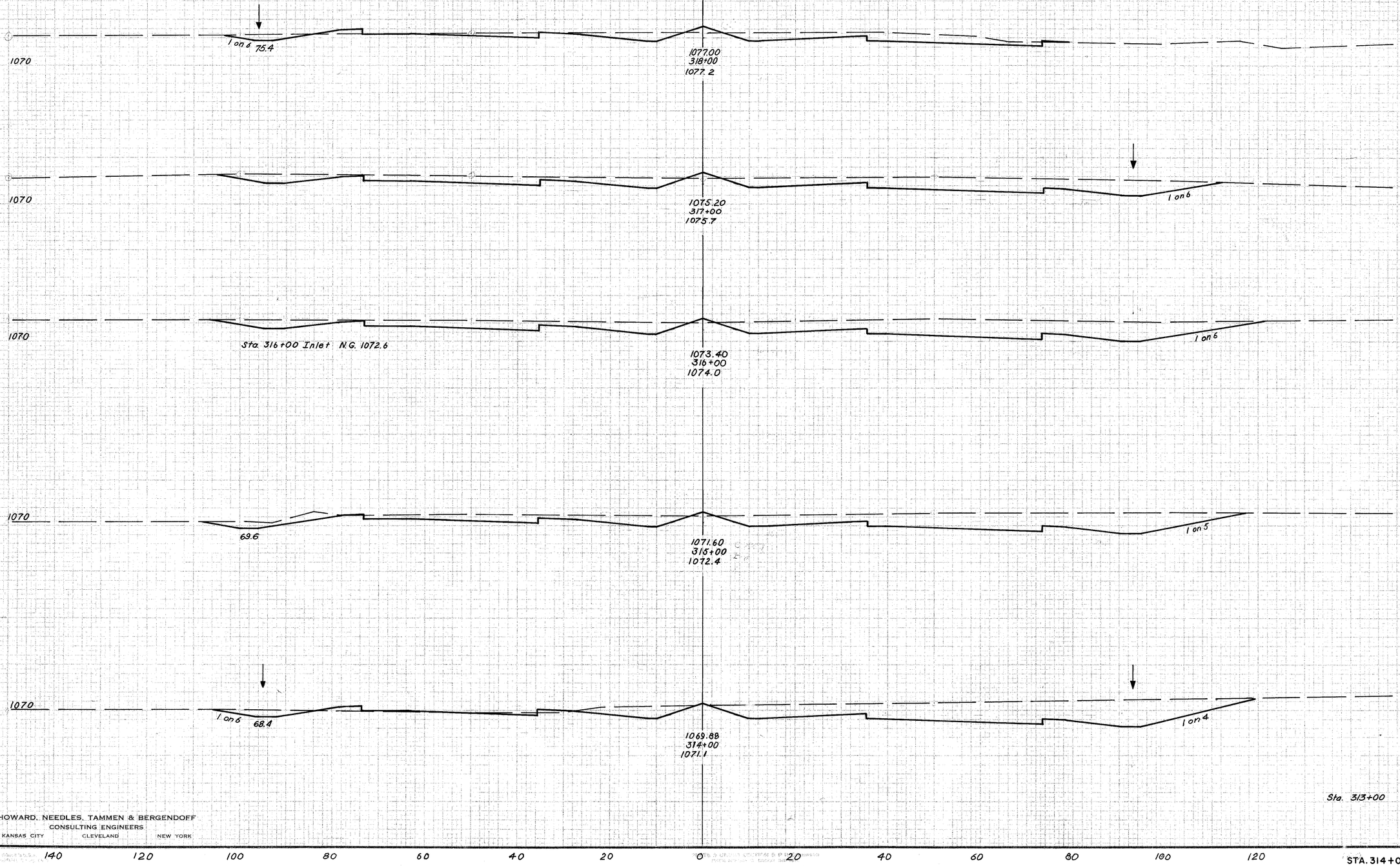
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

JHB-5-63
JAS-3-1963
3-5-63
4-17-63
JHB
JAS
JEN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

87
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
144	11		
		946	32
367	6		
		1576	17
484	3		
		1698	11
433	3		
		1683	20
476	8		
		1711	50
448	19		

Sta. 313+00

3-5-63 H.L.D.
3-12-63 J.H.D.
4-16-63 H.E.D.
4-17-63 H.E.N.

146 3-5-63
163 3-12-63

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

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

STA. 314+00 TO STA. 318+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

88
256

CUYAHOGA COUNTY
CUY-I-0.11

EARTHWORK

END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
576	0		
		1684	15
334	8		
		1104	304
252	156		
		718	985
136	365		
		396	1004
78	177		
		411	348
144	11		

STA. 319+00 TO STA. 323+00

JAN 8-63 WLD
JAN 14-63 RDJ
HLD

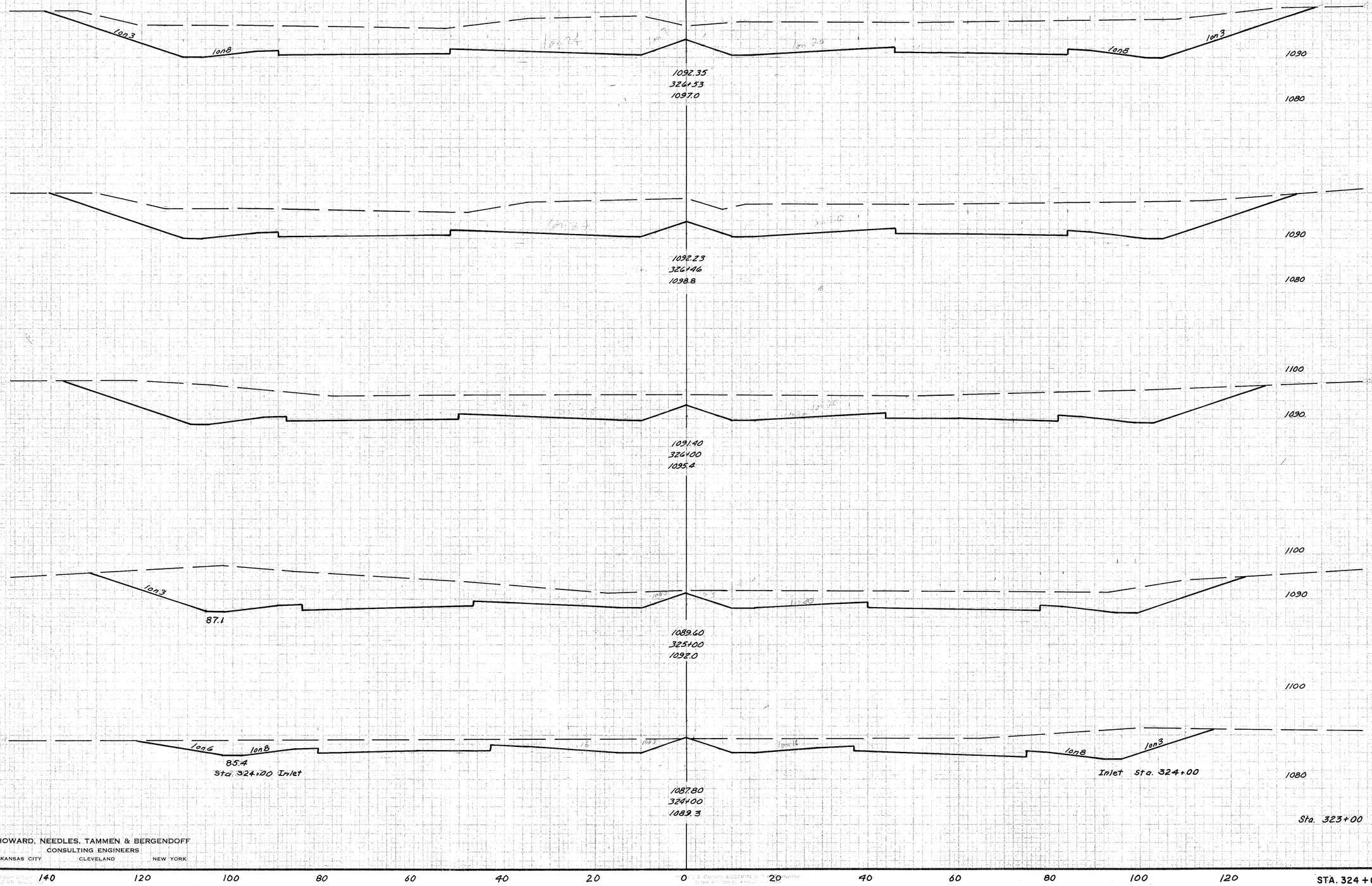
3-7-63
3-28-63
3-29-63

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

89
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1665	0		
		419	0
1565	0		
		2487	0
1355	0		
		4646	0
1154	0		
		3404	0
683	0		
		2331	0
576	0		

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

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

STA. 324+00 TO STA. 326+53

3-7-63
3-28-63
3-29-63

M635-143 \ H.L.D.
M633-143 \ H.L.D.
ADJ
ADJ

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

90
256

CUYAHOGA COUNTY
CUY-I-0.11

EARTHWORK

END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
2988	0		
		7690	0
2336	0		
		1790	0
2051	0		
		2088	0
1707	0		
		1061	0
1665	0		

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

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

STA. 326+70 TO STA. 328+00

JAG 3-6-63 \ HLD
JAG 3-14-63 \ HLD
REV
HLD

3-7-63
3-22-63
3-28-63
5-29-63 REV 4 HLD

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

91
256

CUYAHOGA COUNTY
CUY-1-0.11

	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1102.20 332+00 1116.2	1946	0		
			7018	0
1100.40 331+00 1111.3	1844	0		
			6441	0
1098.60 330+00 1112.1	1634	0		
			5896	0
1096.80 329+00 1106.8	1550	0		
			5559	0
Sta. 328+00 Left Side	1452	0		

1110
1100
1 on 3
1110
1100
1110
1100
1098
260 240 220 200 180 160 140 120 100 80 60 40 20 0

LEFT HALF
STA. 329 + 00 TO STA. 332 + 00

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

ORIGINAL SURVEY	BY	DATE
SURVEYED	MEJ	3-12-63
PLOTTED	MEJ	3-14-63
TRACED	MEJ	3-27-63
AREAS	MEJ	4-1-63
AREAS CHECKED	JEN	4-1-63
NOTE BOOK		
NO.		

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

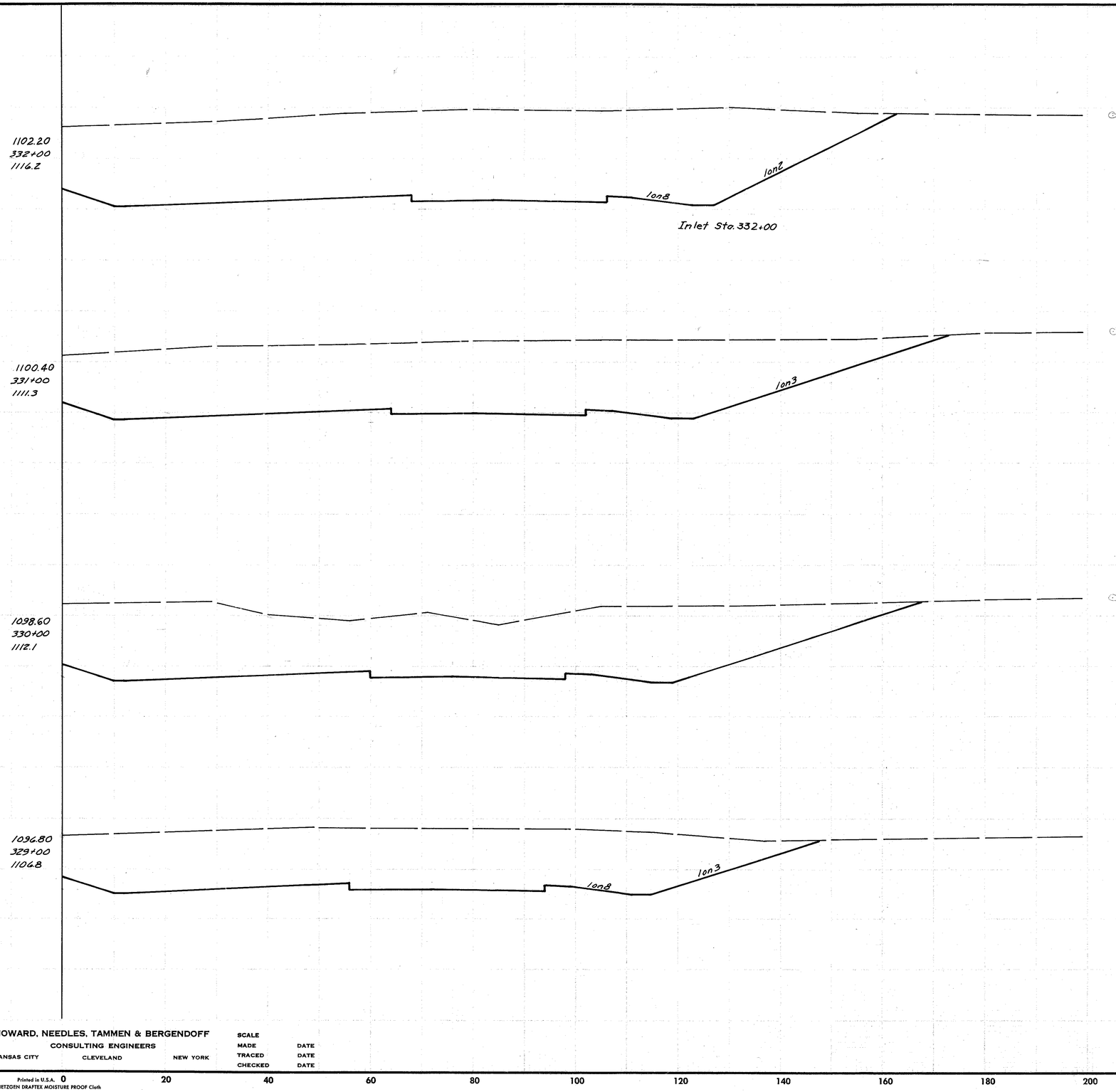
SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

92
256

CUYAHOGA COUNTY
CUY-1 - 0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1110				
1100	2497	0		
			8460	0
1110	2069	0		
1100				
			7367	0
1110	1909	0		
1100				
			6394	0
1110				
1100	1544	0		
			5710	0
Sta. 328+00 Right Side	1536	0		

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

ORIGINAL SURVEY
SURVEYED JAS 3-6-63 S.H.L.D. 3-15-63
PLOTTED JAS 3-8-63 J.H.D. 3-22-63
TEMPLATE 3-26-63
AREAS 4-1-63
AREAS CHECKED H.L.D.
NOTE BOOK
NO.

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

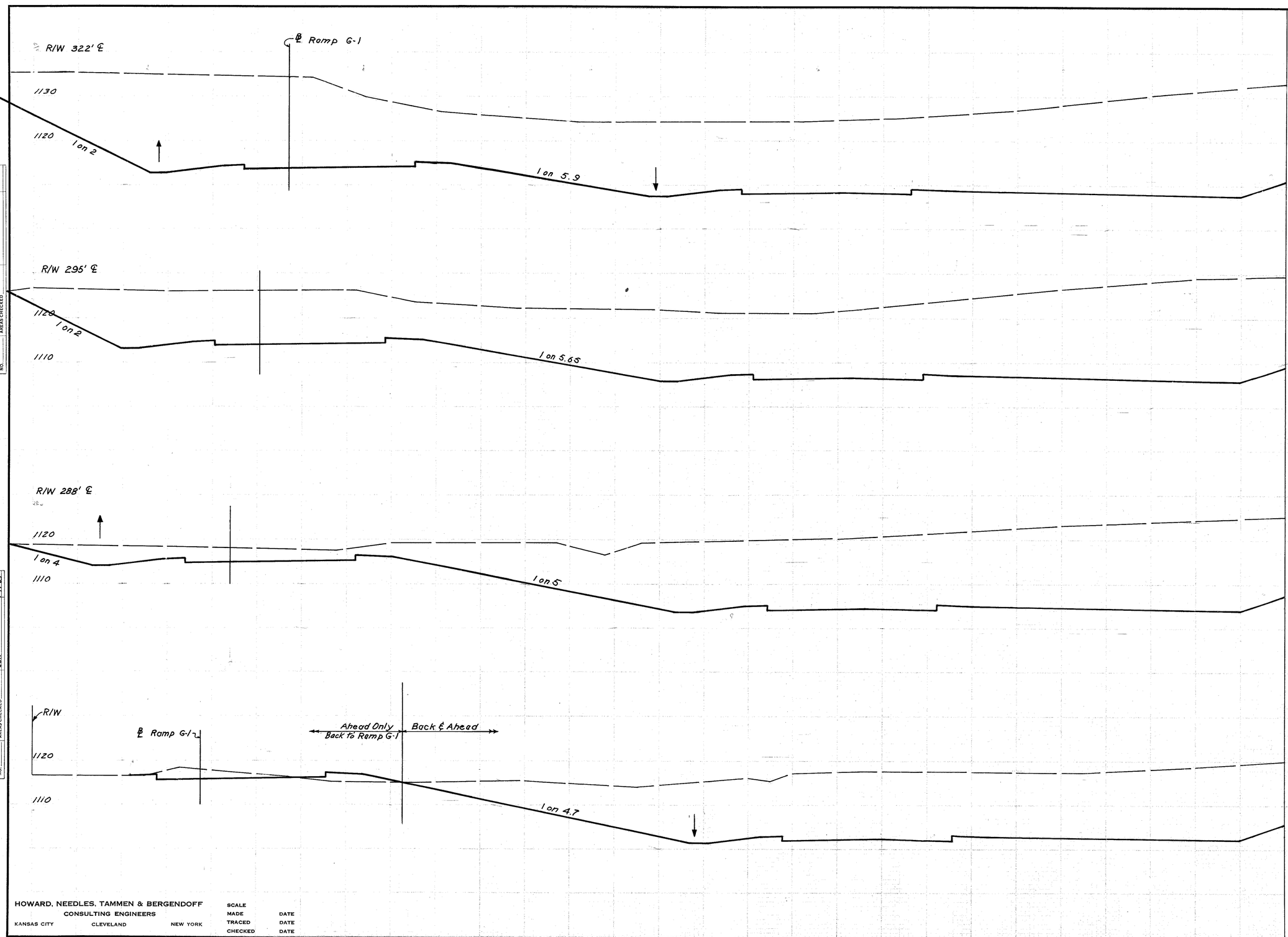
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 329+00 TO STA. 332+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

93
256

CUYAHOGA COUNTY
CUY-1-0.11



EARTHWORK				
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1109.40				
336+00	5041	0		
1133.0				
			17,020	0
1107.60				
335+00	4151	0		
1129.6				
			13,640	0
1105.80				
334+00	3216	0		
1125.2				
			10,560	46
1104.00 Ahead	2486	25		
333+00 Back	2442	0		
1120.0				
			8126	0
Sta. 332+00	1946	0		

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

ORIGINAL SURVEY
SURVEYED AJG 3-15-63
PLOTTED AJG 3-18-63
TEMPLATE AJG
AREAS
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE
3-15-63
3-18-63
4-10-63
4-17-63
AJG
AJG
JEN

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

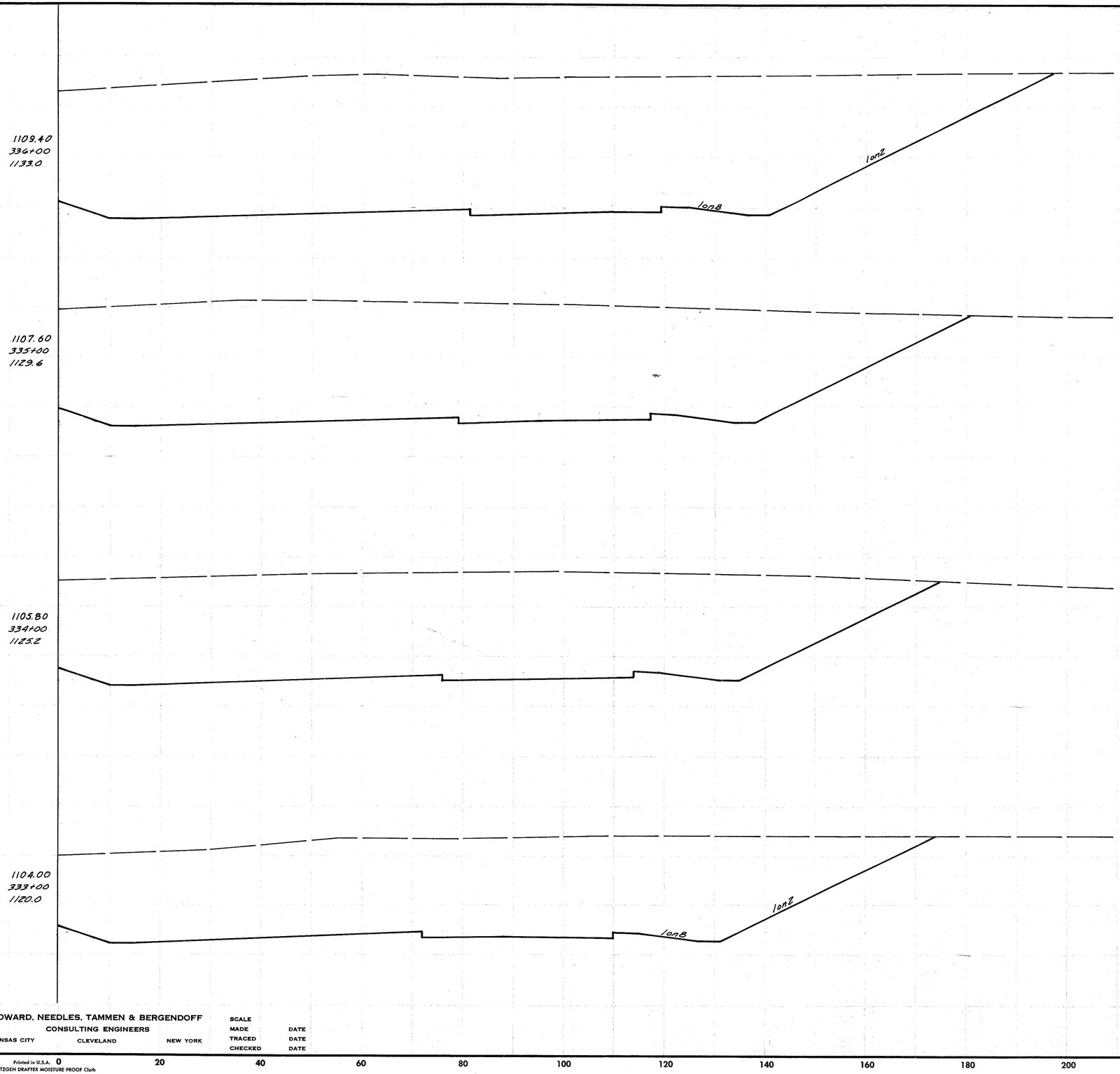
LEFT HALF
STA. 333+00 TO STA. 336+00

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

94
256

CUYAHOGA COUNTY
CUY-1-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
4542	0		
		15,316	0
3729	0		
		12,976	0
3278	0		
		11,637	0
3006	0		
		10,191	0
2497	0		

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

ORIGINAL SURVEY
SURVEYED 6-3-63 H.L.O.
PLOTTED 6-3-63 A.P.L.
TEMPLATE 6-3-63 H.L.O.
AREAS 6-3-63 A.P.L.
AREAS CHECKED 6-4-63 H.L.O.
NOTE BOOK
NO.
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

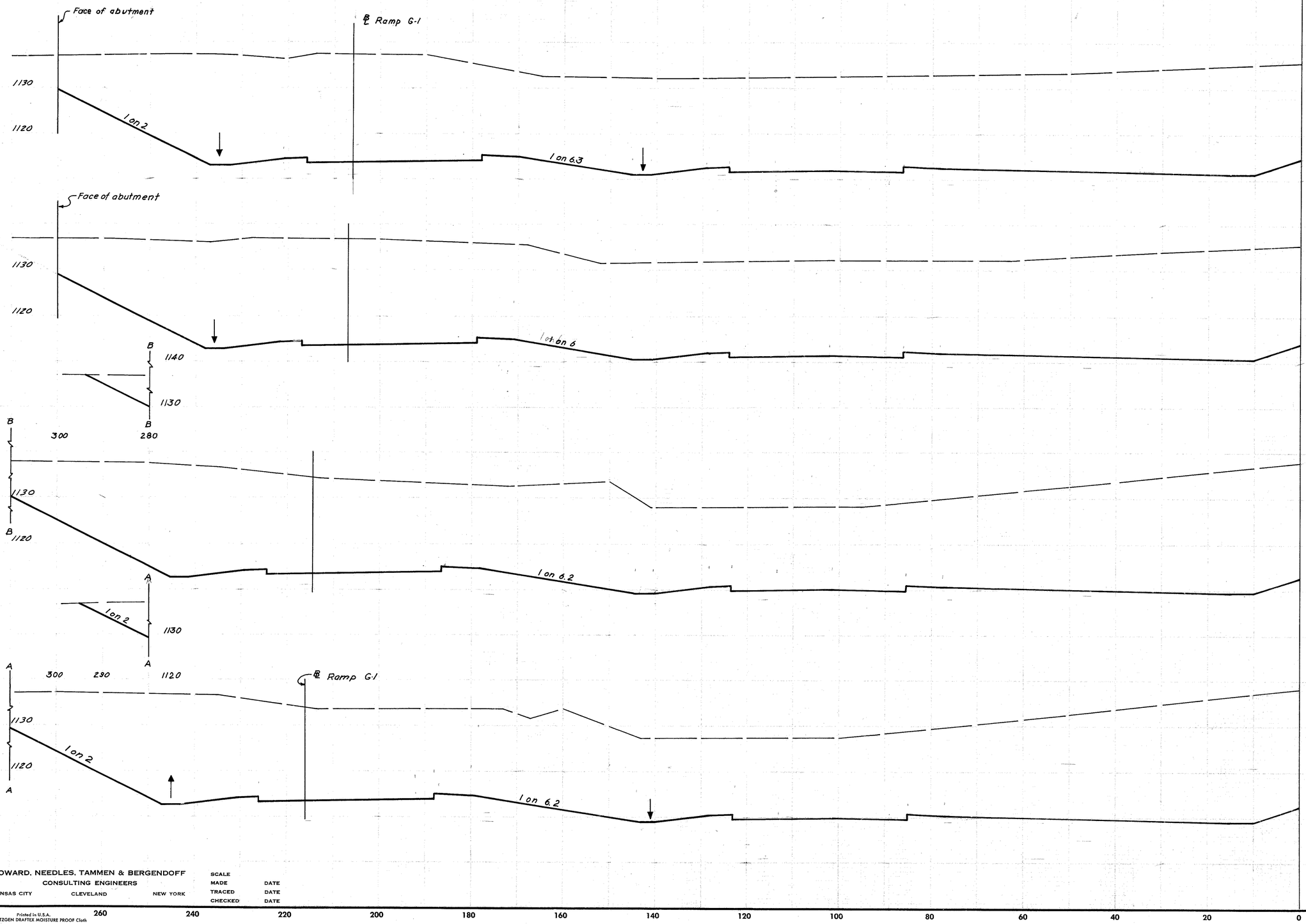
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 333+00 TO STA. 336+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

95
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1113.00				
338+00	5628	0		
1135.8				
			2720	0
1112.81				
337+87	5682	0		
1135.5				
			18,433	0
1111.20				
337+00	5759	0		
1138.0				
			3420	0
1110.91				
336+84	5773	0		
1138.2				
			16,820	0
Sta. 336+00	5041	0		

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

ORIGINAL SURVEY
SURVEYED AEB 1-6-63
PLOTTED JMC 3-26-63
FINAL SITE LMS 3-28-63
NOTE BOOK ALO 4-18-63
AREAS JEH 4-19-63
AREAS CHECKED
NO.
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 336+84 TO STA. 338+00

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

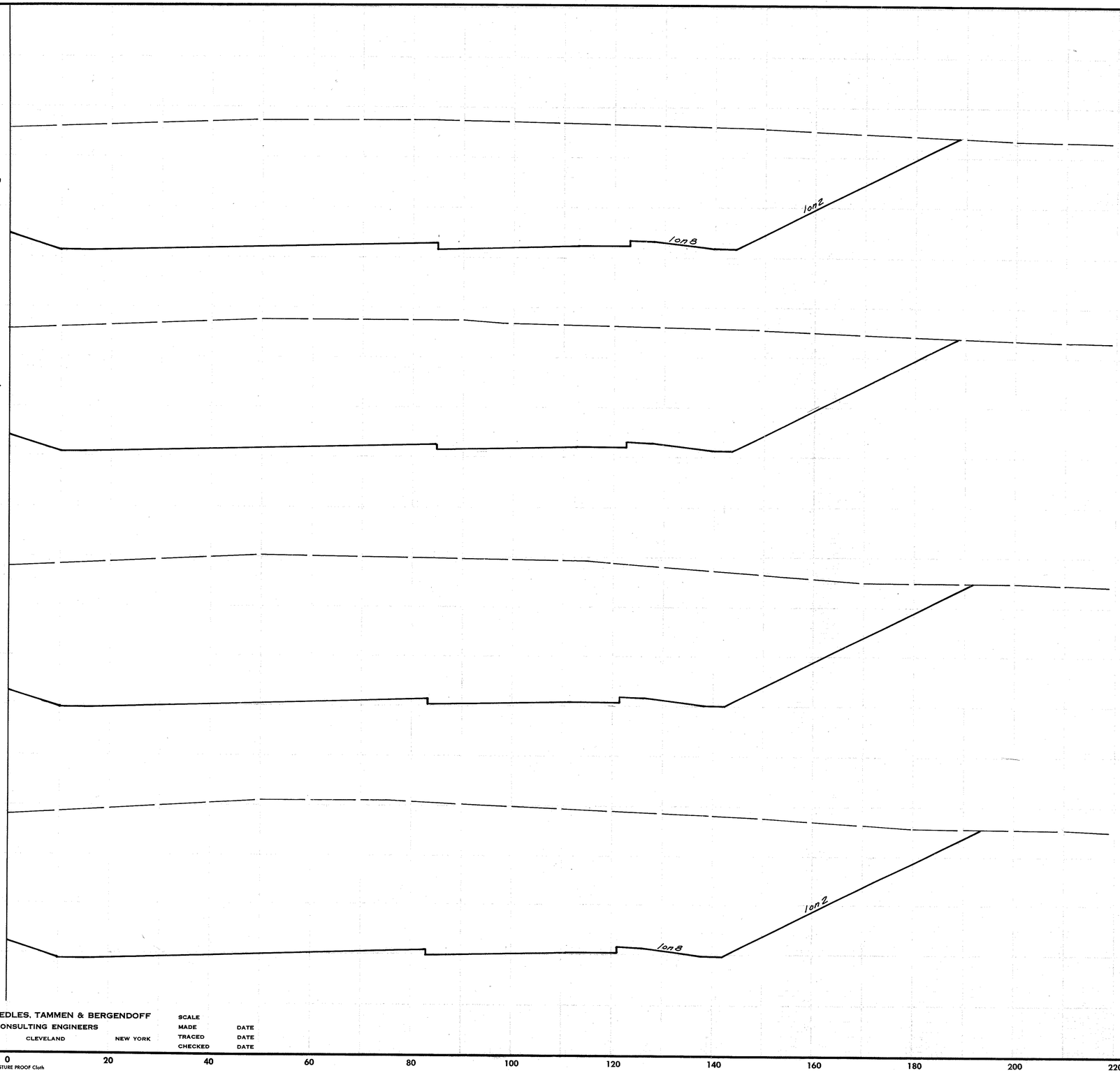
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

96
256

CUYAHOGA COUNTY
CUY-1-0.11

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

ORIGINAL SURVEY
SURVEYED 4-3-63 HLD
PLOTTED 4-15-63 HLD
TEMPLATE 4-22-63 RDJ
AREAS 4-26-63 HLD
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE



Sta.	EARTHWORK END AREA EXC.	EMB.	VOLUME EXC.	EMB.
1120				
	4099	0		
1110				
			1987	0
1120				
	4155	0		
1110				
			14,340	0
1120				
	4731	0		
1110				
			2870	0
1120				
	4948	0		
1110				
			17,574	0
Sta. 336+00	4542	0		

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

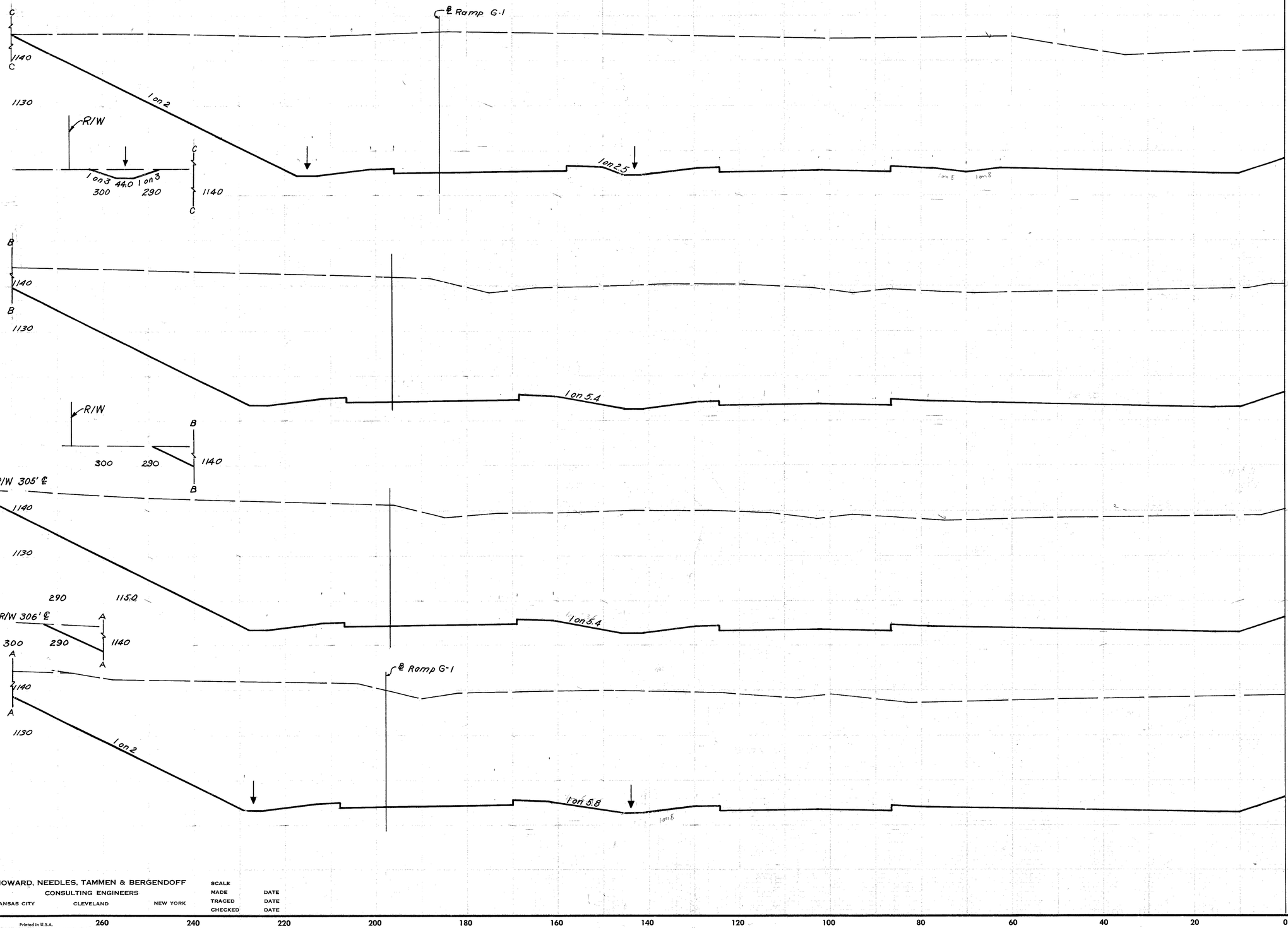
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 336+84 TO STA. 338+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

97
256

CUYAHOGA COUNTY
CUY-1-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1116.60			
340+00	7313	0	
1142.6			
		26,137	0
1114.80			
339+00 ✓	6801	0	
1140.5			
		1247	0
1114.71			
338+95	6666	0	
1140.4			
		1727	0
1114.58			
338+88	6658	0	
1138.9			
		20,022	0
Sta. 338+00	5628	0	

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

ORIGINAL SURVEY
SURVEYED 2-15-63
PLOTTED 3-15-63
TRACED 4-15-63
AREAS 4-16-63
AREAS CHECKED
NOTE BOOK
NO.
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

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

LEFT HALF
STA. 338+88 TO STA. 340+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

98
256

CUYAHOGA COUNTY
CUY-1-0.11

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

ORIGINAL SURVEY	DATE	BY
SURVEYED	AG 3-15-63	HLO
PLOTTED	AUG 3-26-63	HLO
TEMPLATE	AUG 3-26-63	HLO
AREAS		HLO
AREAS CHECKED		HLO
NOTE BOOK		
NO.		

1116.60
340+00
1142.6

1 on 45

1 on 2

1120

1110

1114.35
339+00
1140.5

1120

1110

1114.71
338+95
1140.4

1120

1110

1114.38
338+88
1138.9

1 on 2

1 on 8

1120

1110

Sta. 338+00

EARTHWORK				
END AREA		VOLUME		
EXC.	EMB.	EXC.	EMB.	
5880	0			
		19,130	0	
4449	0			
		817	0	
4382	0			
		11,330	0	
4356	0			
		13,785	0	
4099	0			

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

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

RIGHT HALF
STA. 338+88 TO STA. 340+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

99
256

CUYAHOGA COUNTY
CUY-1-0.11

R/W 287' ℄

1150

1140

1on2

R/W

B

300

1on3

50.0

B

1150

B

50.0

1on3

B

1140

1130

R/W

A

1on3 47.0 1on3

A

1140

300

A

1140

1130

1on2

℄ Ramp G-1

EARTHWORK				
END AREA		VOLUME		
EXC.	EMB.	EXC.	EMB.	
1122.00				
343+00 ✓	8558	0		
1158.8				
		30,926	0	
1120.20				
342+00	8142	0		
1154.0				
		28428	0	
1118.40				
341+00	7209	0		
1148.4				
		26,892	0	
Sta. 340+00	7313	0		

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

ORIGINAL SURVEY
SURVEYED H.D. 3-7-68
PLOTTED SS 3-25-68
TEMPLATED J.H.L.D. 4-1-68
AREAS J.D.J.
AREAS CHECKED H.L.D.
NOTE BOOK
NO.
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 341+00 TO STA. 343+00

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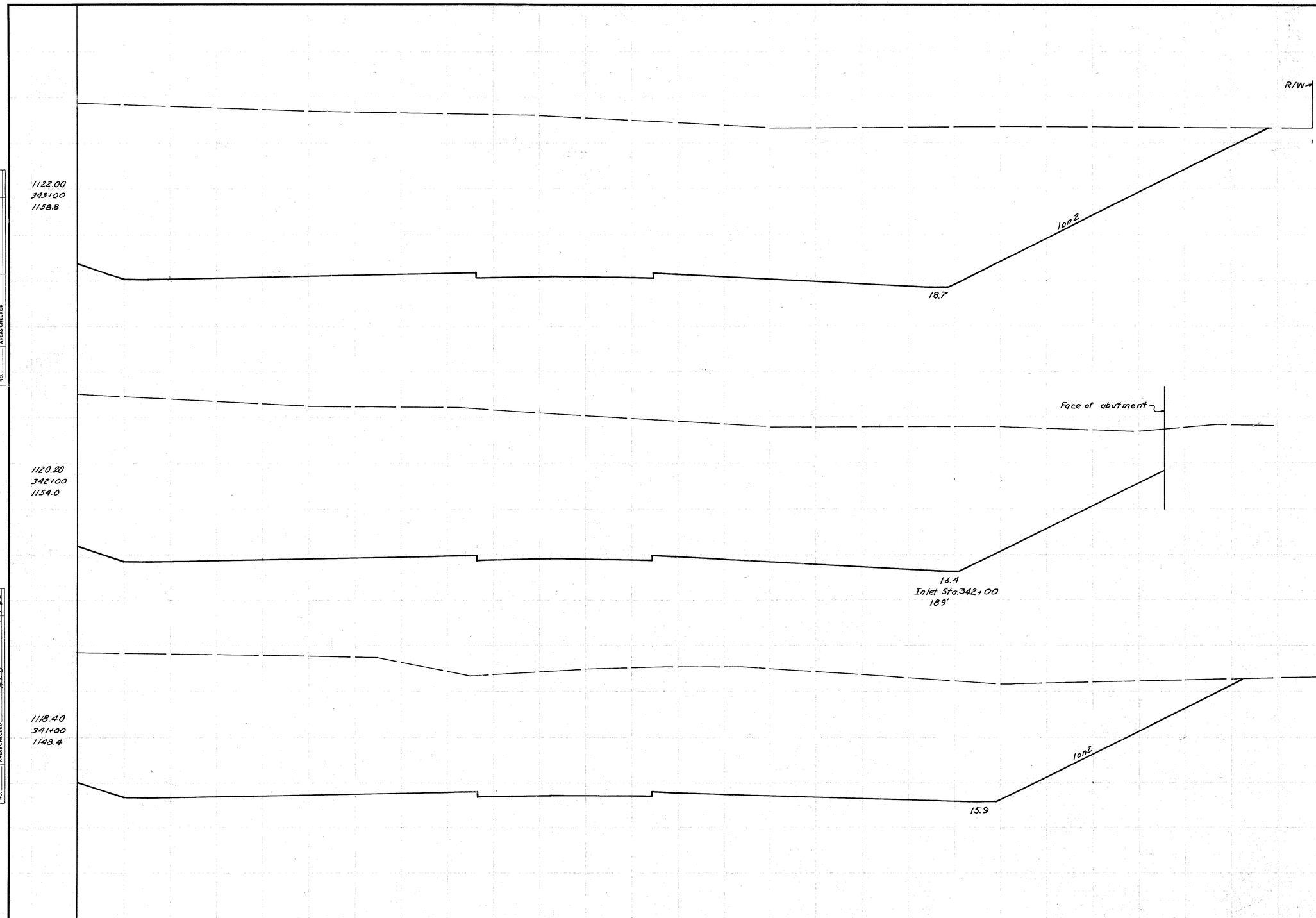
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

100
256

CUYAHOGA COUNTY
CUY-1-0.11

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED HLD 3-7-63
PLOTTED JAG 3-22-63
TEMPLATE
AREAS
AREAS CHECKED
BY SST HLD JAG
DATE 3-7-63 3-22-63 4-1-63



EARTHWORK

END AREA EXC.	END AREA EMB.	VOLUME EXC.	VOLUME EMB.
7823	0		
		27,450	0
7000	0		
		24,668	0
6321	0		
		22,600	0
5880	0		

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

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

RIGHT HALF
STA. 341+00 TO STA. 343+00

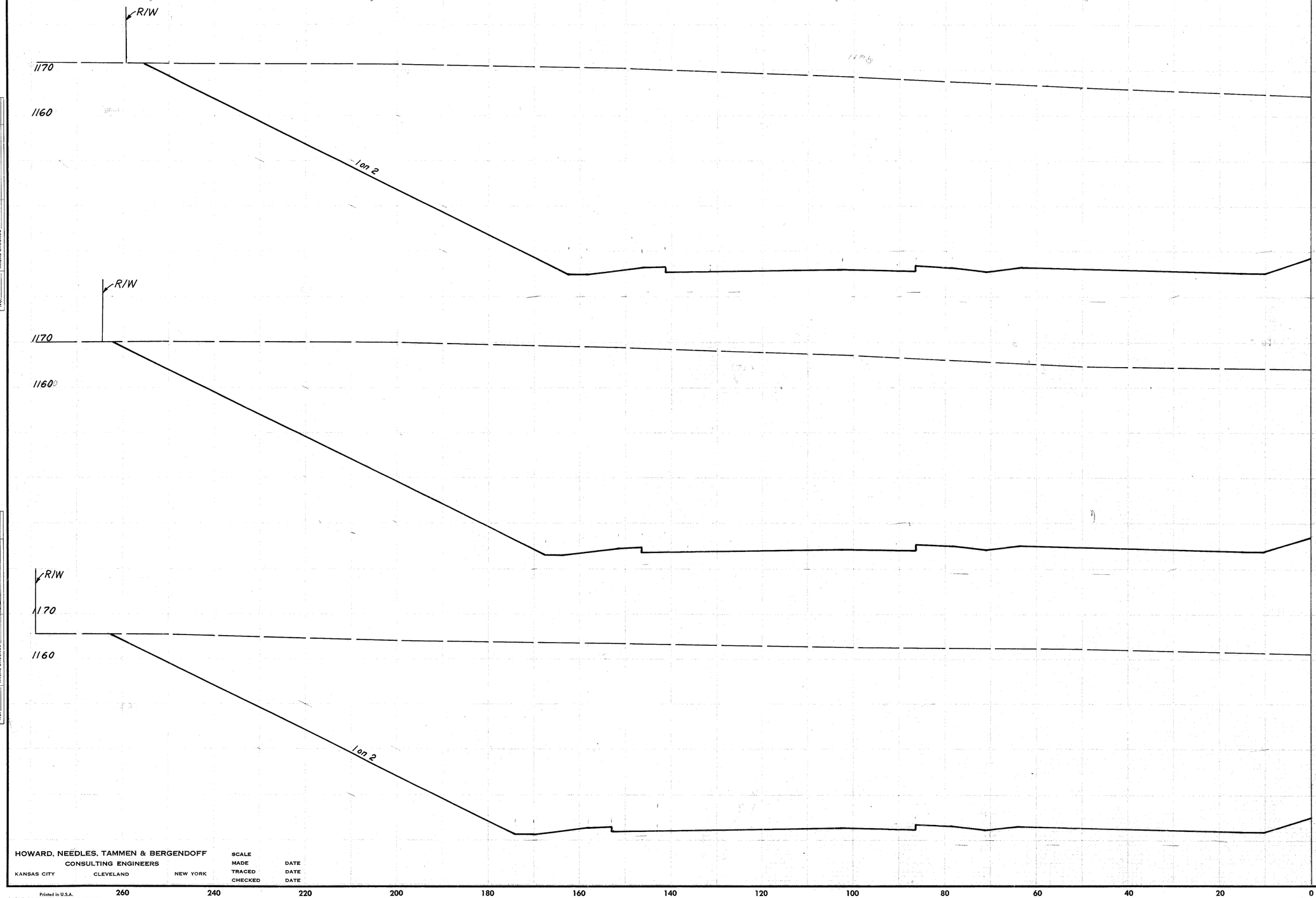
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

101
256

CUYAHOGA COUNTY
CUY-1-0.11

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED HLD 3-27-68
PLOTTED JAE 3-28-68
TEMPLATE 3-29-68
AREAS JEN 3-29-68
AREAS CHECKED
BY
DATE



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1127.12				
346+00	8917	0		
1164.5				
			33661	0
1125.57				
345+00	9260	0		
1164.3				
			33,511	0
1123.80				
344+00	8836			
1161.2				
			32,211	0
Sta. 343+00	8558	0		

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 344+00 TO STA. 346+00

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

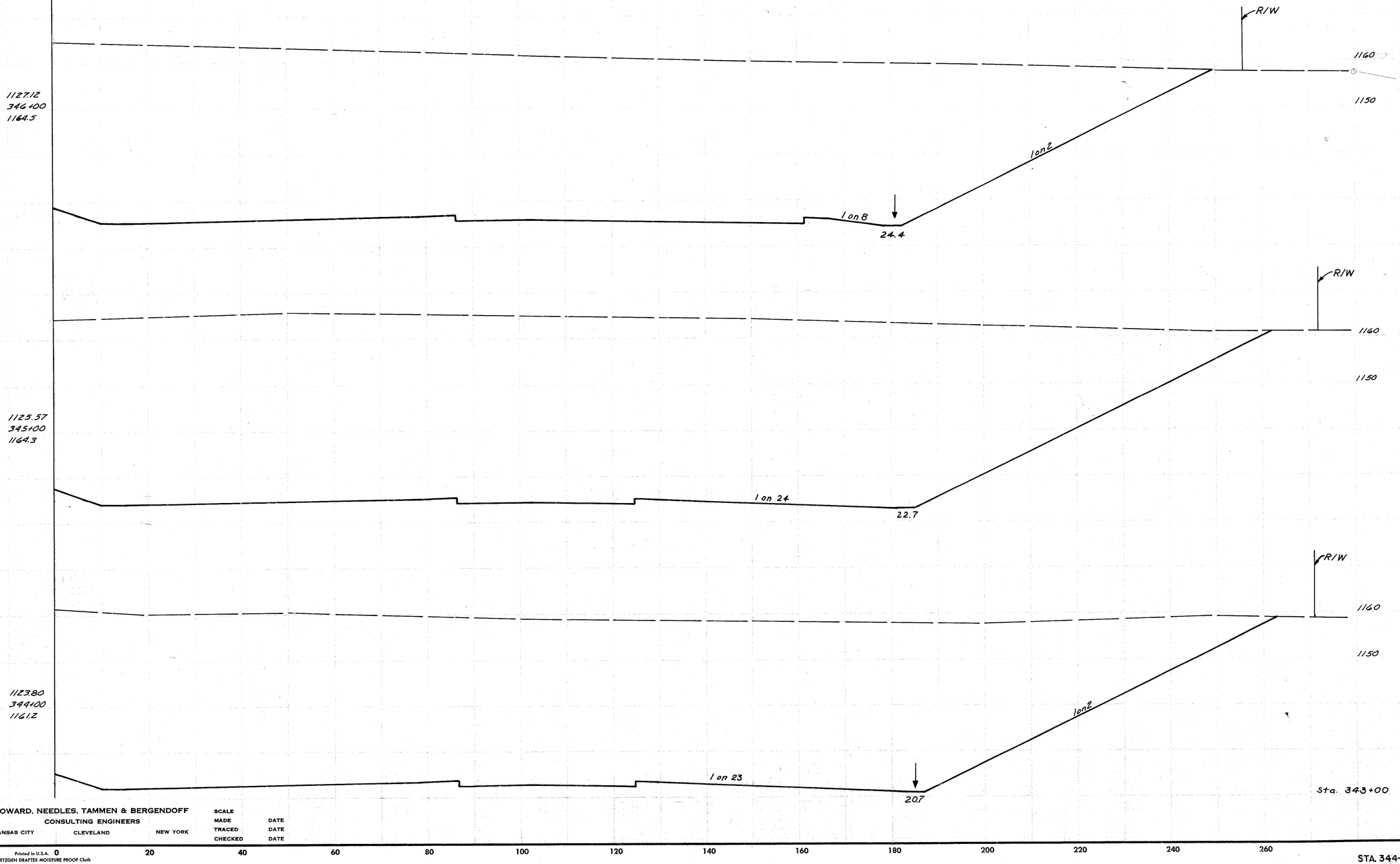
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

102
256

CUYAHOGA COUNTY
CUY-1-0.11

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED 11-2-62
PLOTTED 11-2-62
TEMPLATE 12-6-62
AREAS 12-6-62
AREAS CHECKED 12-7-62
BY SSS
JLD
JEN
DATE 12-7-62
3-26-63
4-2-63



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
7763	0		
		31,044	0
9001	0		
		32,000	0
8279	0		
		29,818	0
7823	0		

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

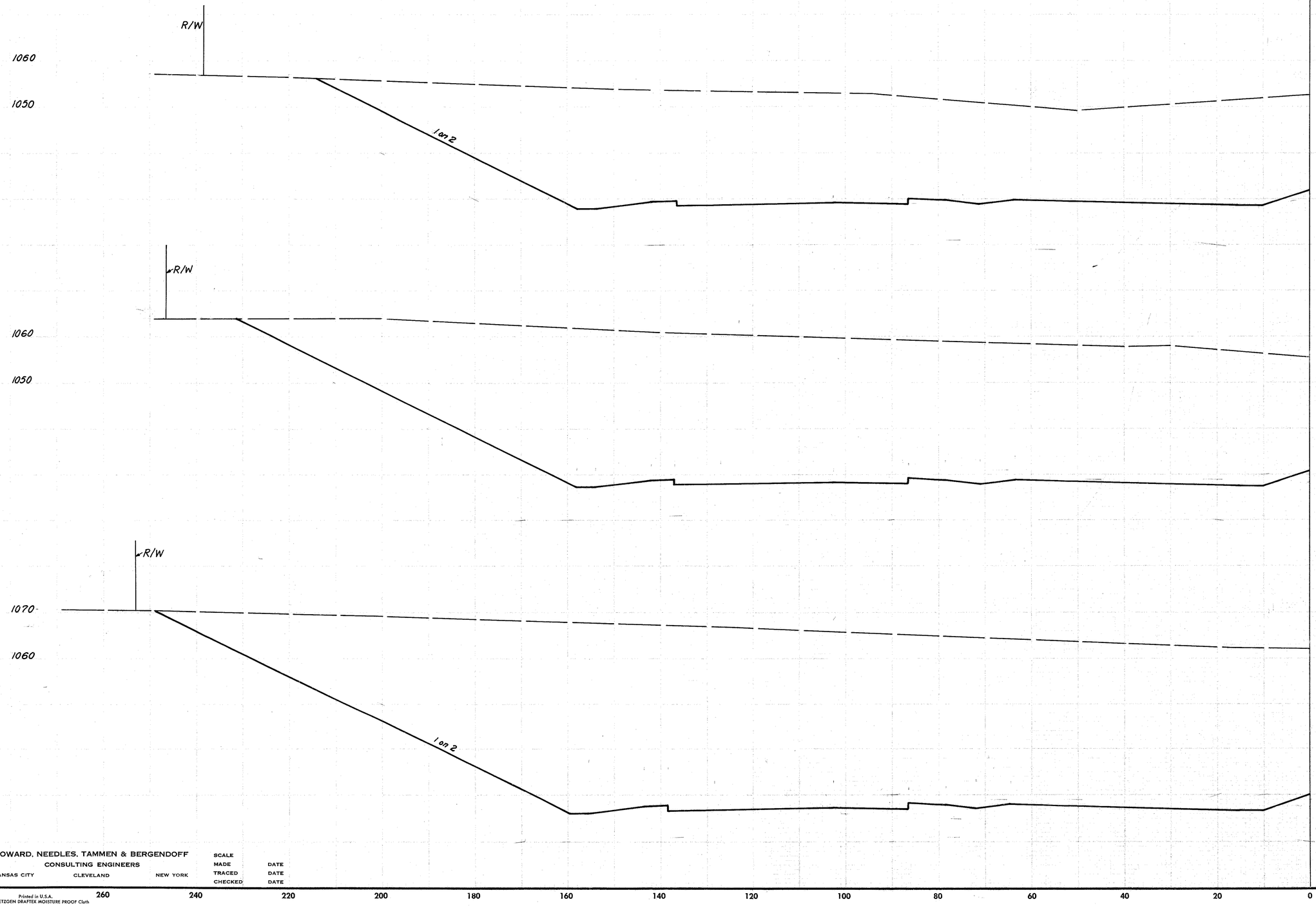
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 344+00 TO STA. 346+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

103
256

CUYAHOGA COUNTY
CUY-1-0.11



EARTHWORK				
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1130.30 349+00 1152.5	4342	0		
			19,452	0
1129.47 348+00 1155.5	6162	0		
			26,057	0
1128.42 347+00 1161.9	7909	0		
			31,159	0
Sta. 346+00	8917	0		

LEFT HALF
STA. 347+00 TO STA. 349+00

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED 11-8-43 JEN
PLOTTED 11-23-43 JEN
TRACED 11-24-43 JEN
AREAS 11-25-43 JEN
AREAS CHECKED JEN
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

104
256

CUYAHOGA COUNTY
CUY-1 - 0.11

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

ORIGINAL SURVEY	BY	DATE
SURVEYED	H.D. 3-28	3-7-58
PLOTTED	J.S.C.	3-26-58
TEMPLATE	3-28-58 V.D.J.	3-28-58
AREAS	H.L.O.	5-19-63
NOTE BOOK		
NO.	AREAS CHECKED H.L.O.	

1130.30
349+00
1152.5

Figure Quant. to here

Match Line
See Sheet 135

℄ Ramp G-2

1140

1129.47
348+00
1153.5

Match Line
See Sheet No. 135

1150

1140

1128.42
347+00
1161.9

1150

Ramp

1140

Sta. 346+00

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
3202	0		
		13,694	0
4193	0		
		19,320	0
6240			
		25,931	0
7763	0		

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

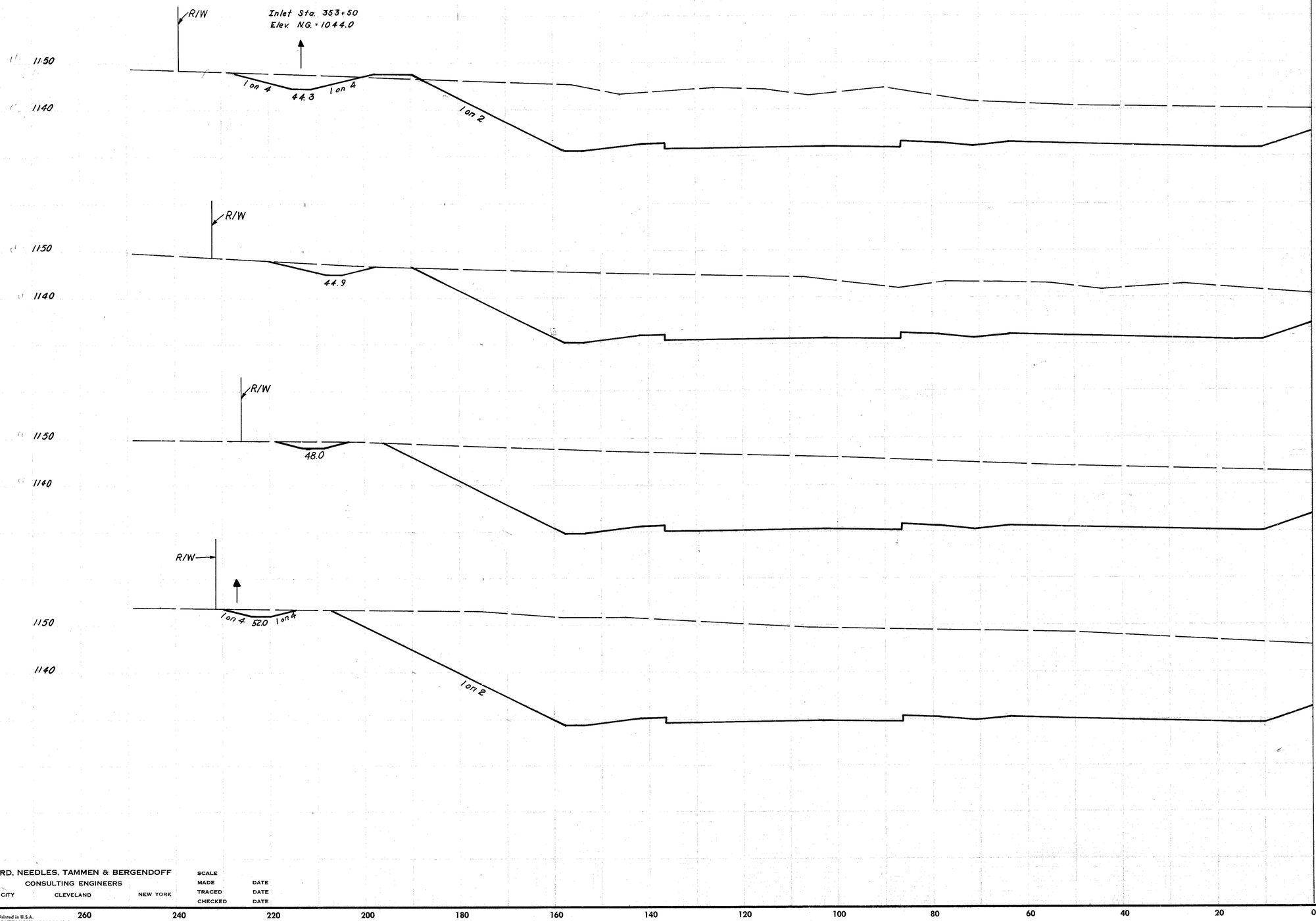
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 347+00 TO STA. 349+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

105
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1133.50 353+00 1140.0	1860	8		
			7426	15
1132.70 352+00 1140.6	2150	0		
			8848	0
1131.90 351+00 1142.7	2628	0		
			11,594	0
1131.10 350+00 1145.7	3633	0		
			14,768	0
Sta. 349+00	4342	0		

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

LEFT HALF
STA. 350+00 TO STA. 353+00

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED SSS. 2-7-63 HLD 3-8-63
PLOTTED
TEMPLATE JA&B-20-63 HLD 3-26-63
AREAS CEH 3-27-63
AREAS CHECKED

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

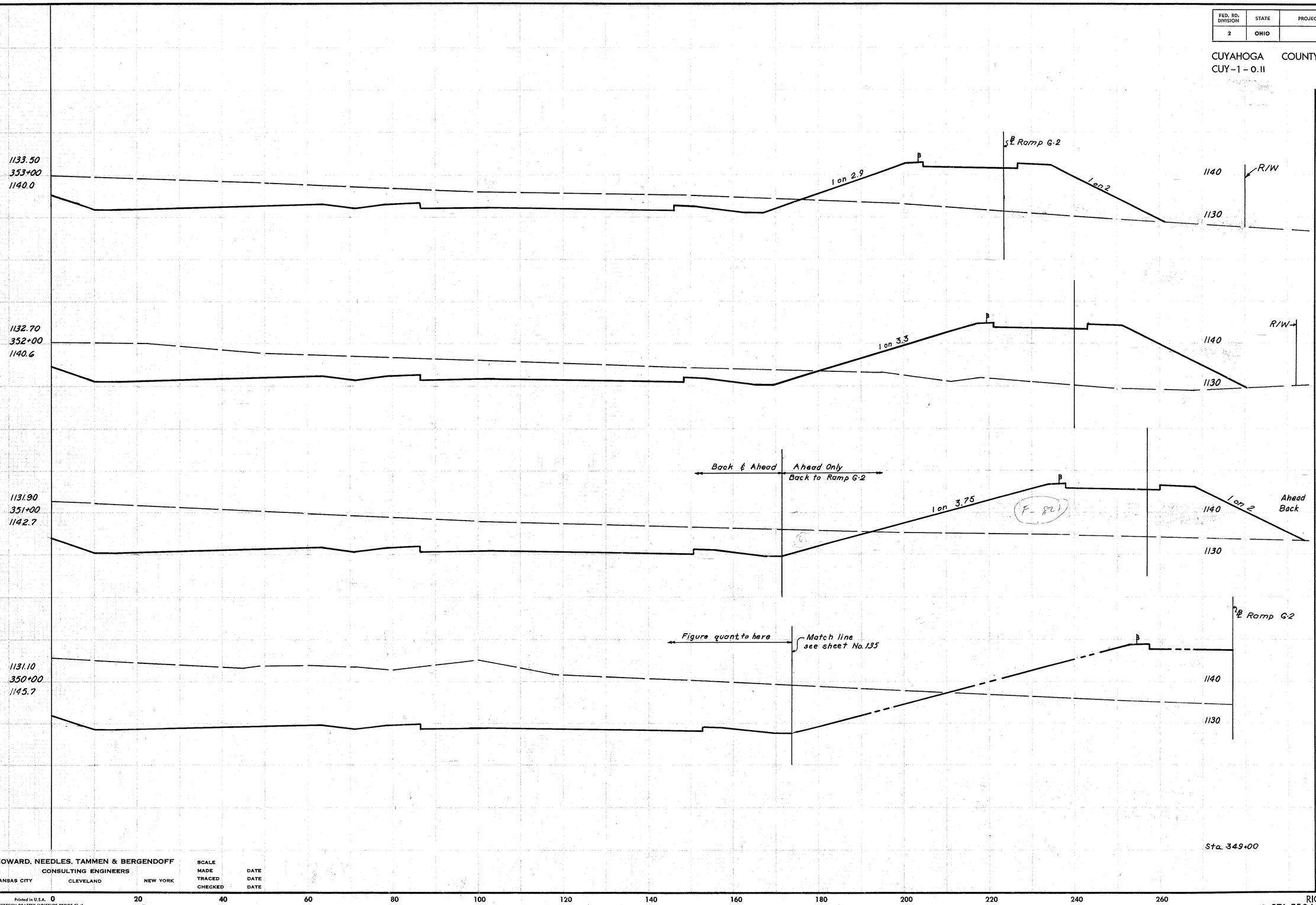
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

106
256

CUYAHOGA COUNTY
CUY-1-0.11

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED 3-21-63 ~ H.L.D.
PLOTTED JHB 3-25-63 \ H.L.D.
TEMPLATE 3-26-63
AREAS 4-15-63
AREAS CHECKED JEN



EARTHWORK

	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
	793	620		
			3128	2860
	896	925		
			4360	3230
Ahead	1450	821		
Back	1382	0		
			7080	0
	2443	0		
			10,454	0
	3202	0		

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

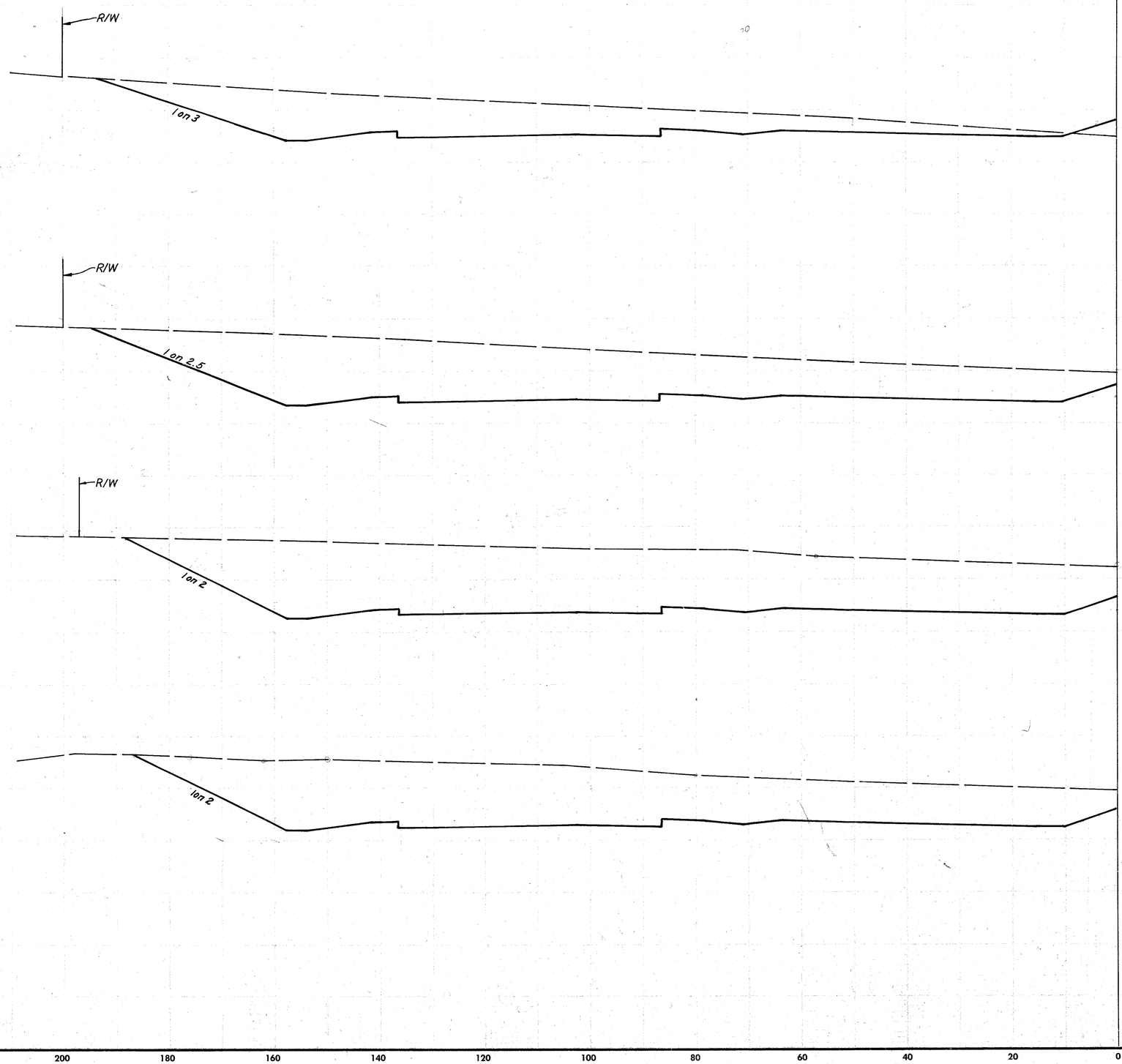
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 350+00 TO STA. 353+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

107
256

CUYAHOGA COUNTY
CUY-1-0.11



EARTHWORK				
END AREA		VOLUME		
EXC.	EMB.	EXC.	EMB.	
1136.70				
357+00	864	15		
1134.7				
		4590	28	
1135.90				
356+00	1614	0		
1139.5				
		6707	0	
1135.10				
355+00	2008	0		
1142.1				
		6911	0	
1134.30				
354+00	1724	0		
1139.4				
		6637	7	
Sta. 353+00	1860	8		

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED 4-14-43 VHL
PLOTTED 4-20-43 HLO
TRACED 4-26-43 RGJ
AREAS 5-3-43 JEN
AREAS CHECKED
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

LEFT HALF
STA. 354+00 TO STA. 357+00

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On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

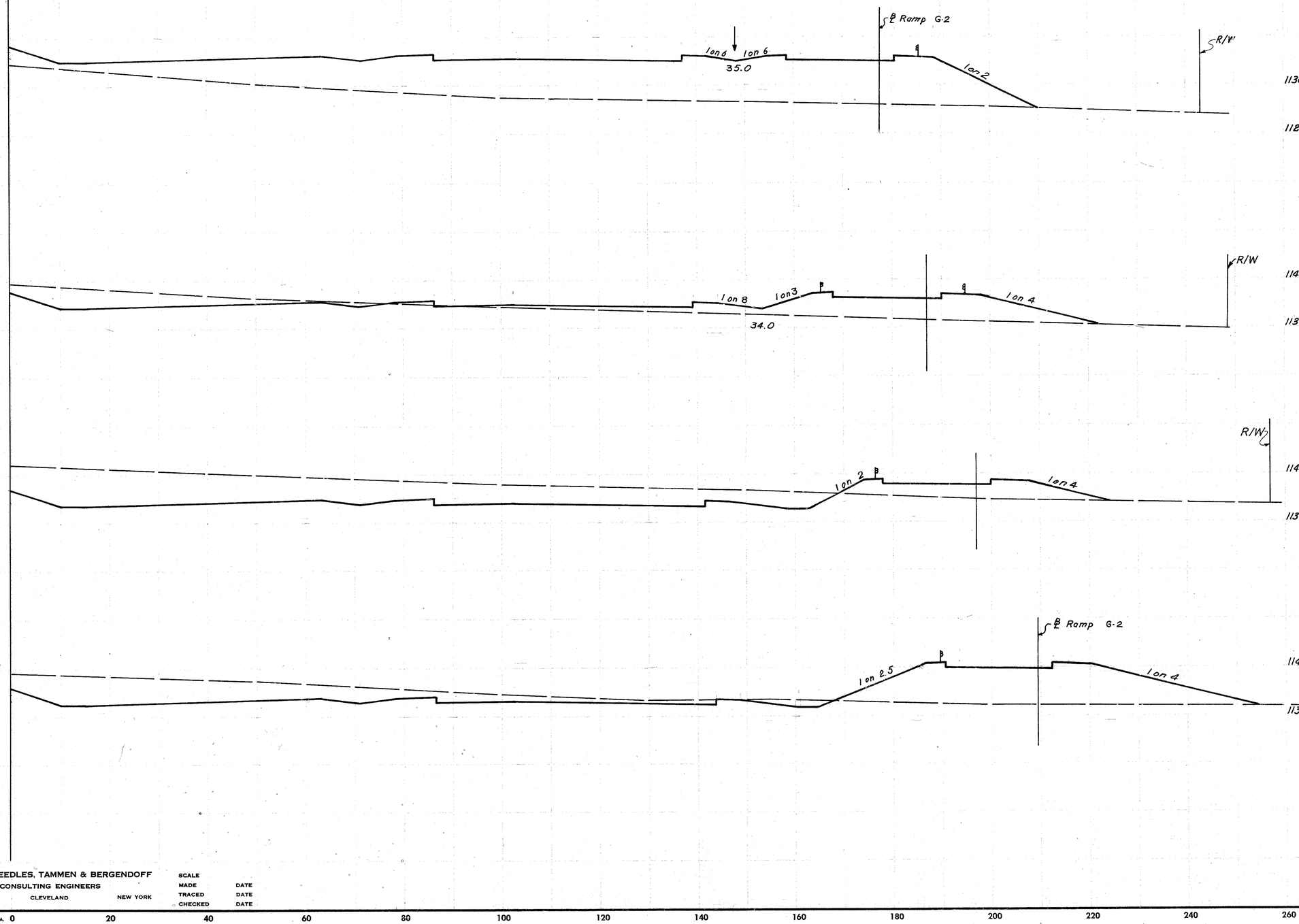
S-8

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

108
256

CUYAHOGA COUNTY
CUY-1-0.11
CUY-271-4.85

Culvert Outlet Sta. 357+58
Flow Line Elev. 1119.6



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	1382		
		298	3160
161	324		
		1782	895
801	159		
		2294	1222
438	501		
		2280	2074
Sta. 353+00			
793	620		

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

ORIGINAL SURVEY
SURVEYED 5-5-63 H.D.
PLOTTED 5-8-63 H.D.
TEMPLATE JAN 3-25-63 H.D.
NOTE BOOK
NO.
AREAS CHECKED 4-15-63 H.D.

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

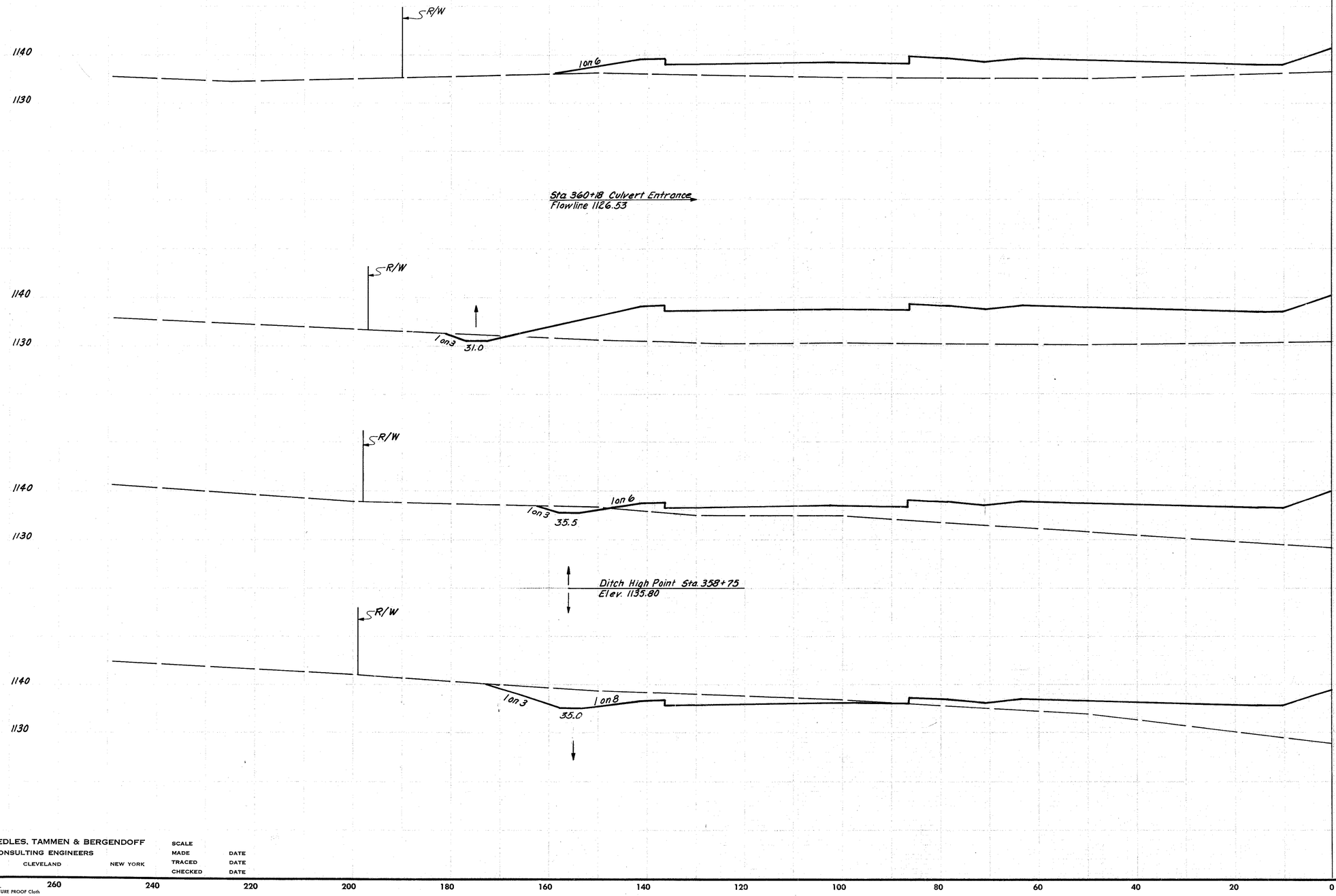
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 354+00 TO STA. 357+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

109
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1139.90				
361+00	0	481		
1136.6				
			26	2972
1139.10				
360+00	14	1124		
1130.8				
			69	3317
1138.30				
359+00	23	667		
1128.3				
			332	1900
1137.50				
358+00	156	359		
1127.7				
			1890	693
Sta. 357+00	864	15		

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

FINAL SURVEY
SURVEYED 555-2-1-63 WJD 3-26-63
PLOTTED 246-2-20-63 HLD 3-26-63
TEMPLATE 246-2-20-63 HLD 3-26-63
AREAS CJH 3-27-63
AREAS CHECKED EJH 4-1-63
NOTE BOOK
NO.
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 358+00 TO STA. 361+00

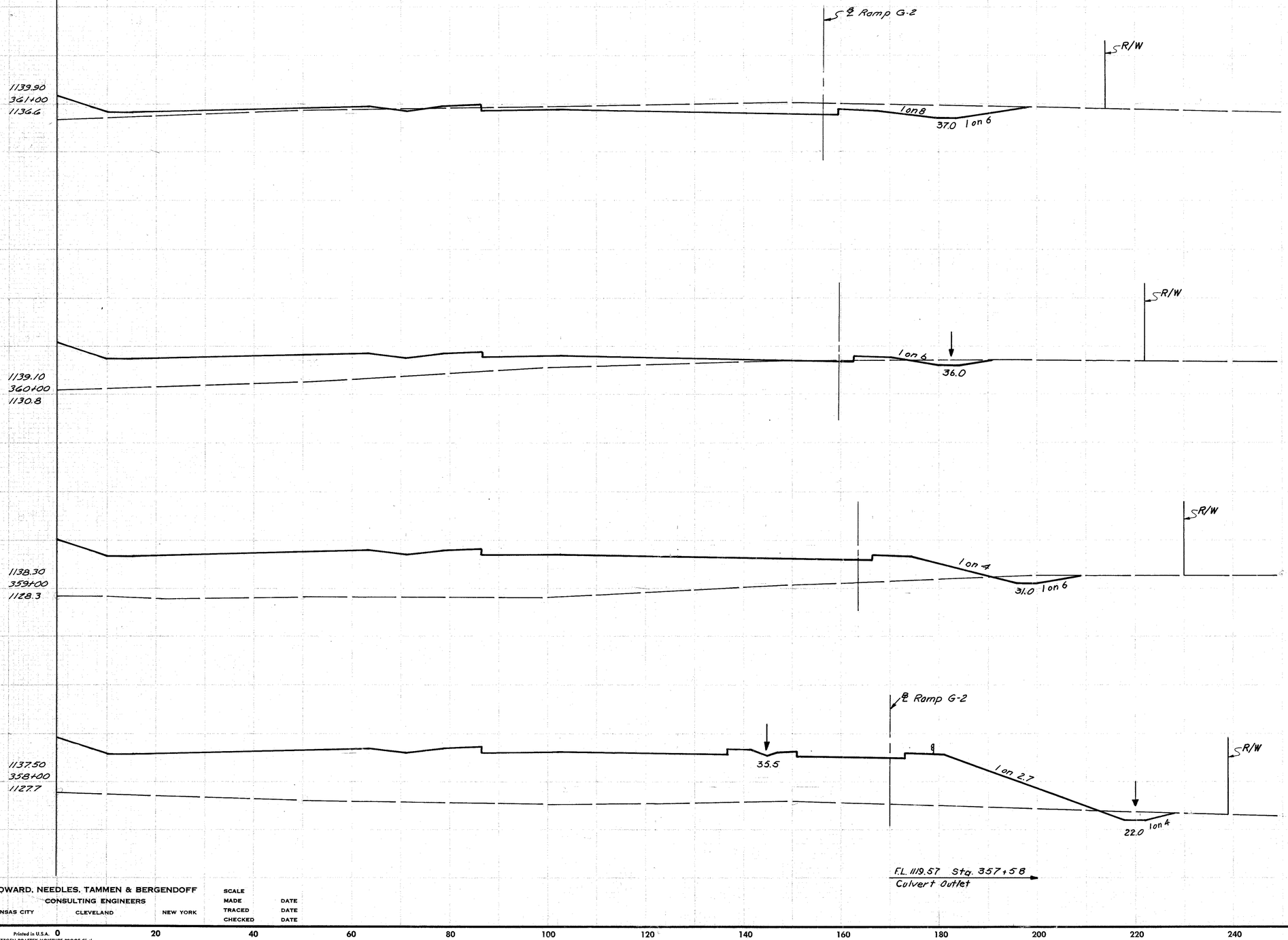
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

110
256

CUYAHOGA COUNTY
CUY-1-0.11

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED 3-6-63 HLO
PLOTTED 3-25-63 HLO
TEMPLATE M6 3-25-63 HLO
AREAS 4-9-63 JEN
AREAS CHECKED



EARTHWORK				
END AREA		VOLUME		
EXC.	EMB.	EXC.	EMB.	
181	81			
		354	1250	
10	594			
		54	3796	
19	1456			
		69	6420	
18	2000			
		33	6260	
0	1382			

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

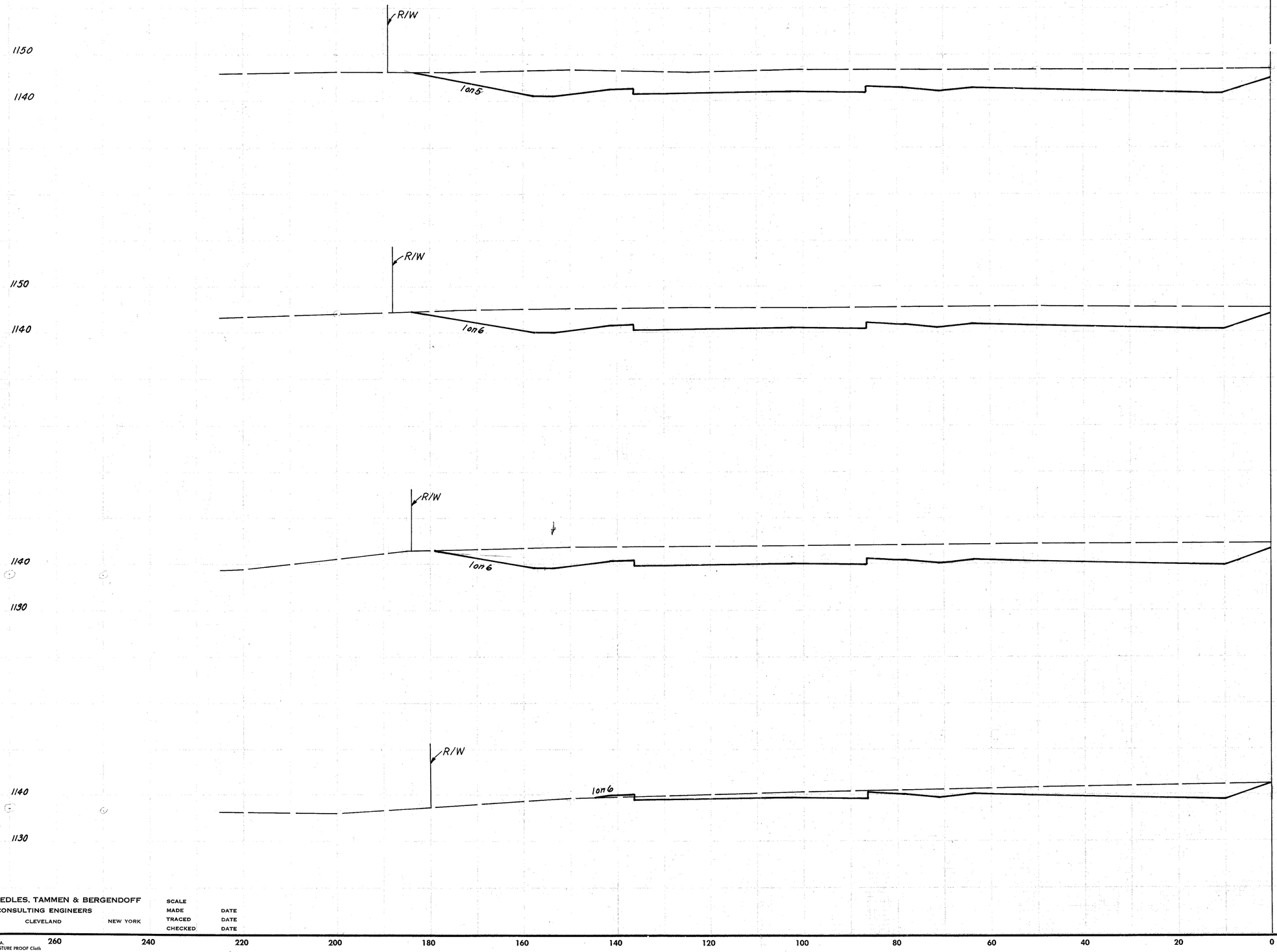
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA 358+00 TO STA. 361+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

111
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1143.26				
365+00				
1146.9	799	0		
			2894	0
1142.32				
364+00	764	0		
1145.2				
			2654	0
1141.50				
363+00	669	0		
1144.3				
			1661	4
1140.70				
362+00	228	2		
1142.3				
			422	8
Sta. 361+00	0	481		

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

FINAL SURVEY
SURVEYED 3-1-63
PLOTTED 3-20-63
FIELD NOTE BOOK 3-22-63
AREAS 2-20-63
NO. 207
AREAS CHECKED JEM
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

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

LEFT HALF
STA. 362+00 TO STA. 365+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

112
256

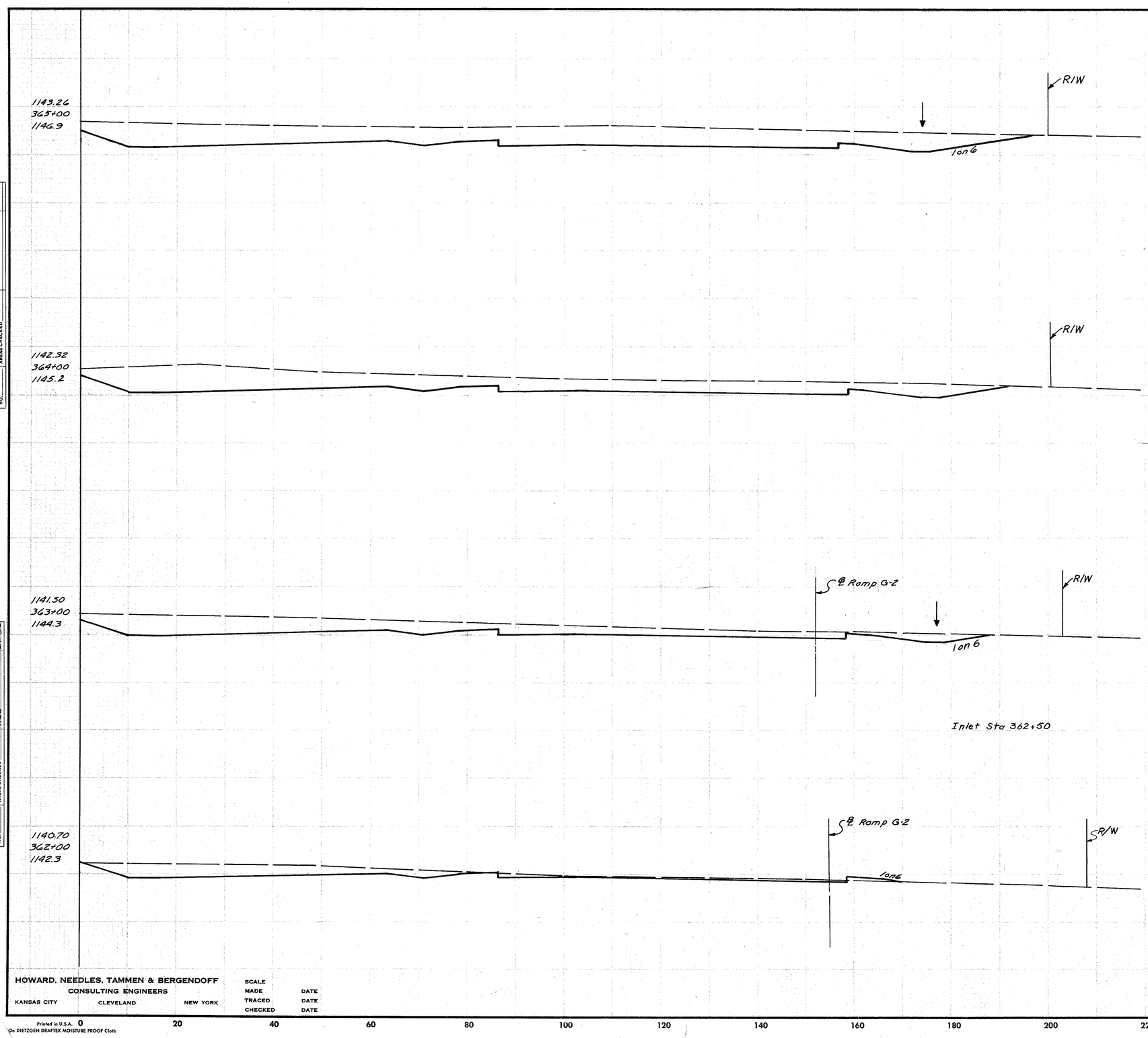
CUYAHOGA COUNTY
CUY-1 - 0.11

FINAL SURVEY
NOTE BOOK
NO.

	BY	DATE
SURVEYED		
PLOTTED		
TEMPLATE		
AREAS		
AREAS CHECKED		

ORIGINAL SURVEY
NOTE BOOK
NO.

	BY	DATE
SURVEYED	MLB	3-1-63
PLOTTED	555-2-8-63	3-22-63
TEMPLATE	JAG 325-63	3-22-63
AREAS	MLB	3-29-63
AREAS CHECKED	MLO	3-29-63



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
678	0		
		2298	0
563	0		
		1756	0
385	0		
		1037	15
175	8		
		659	167
181	81		

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

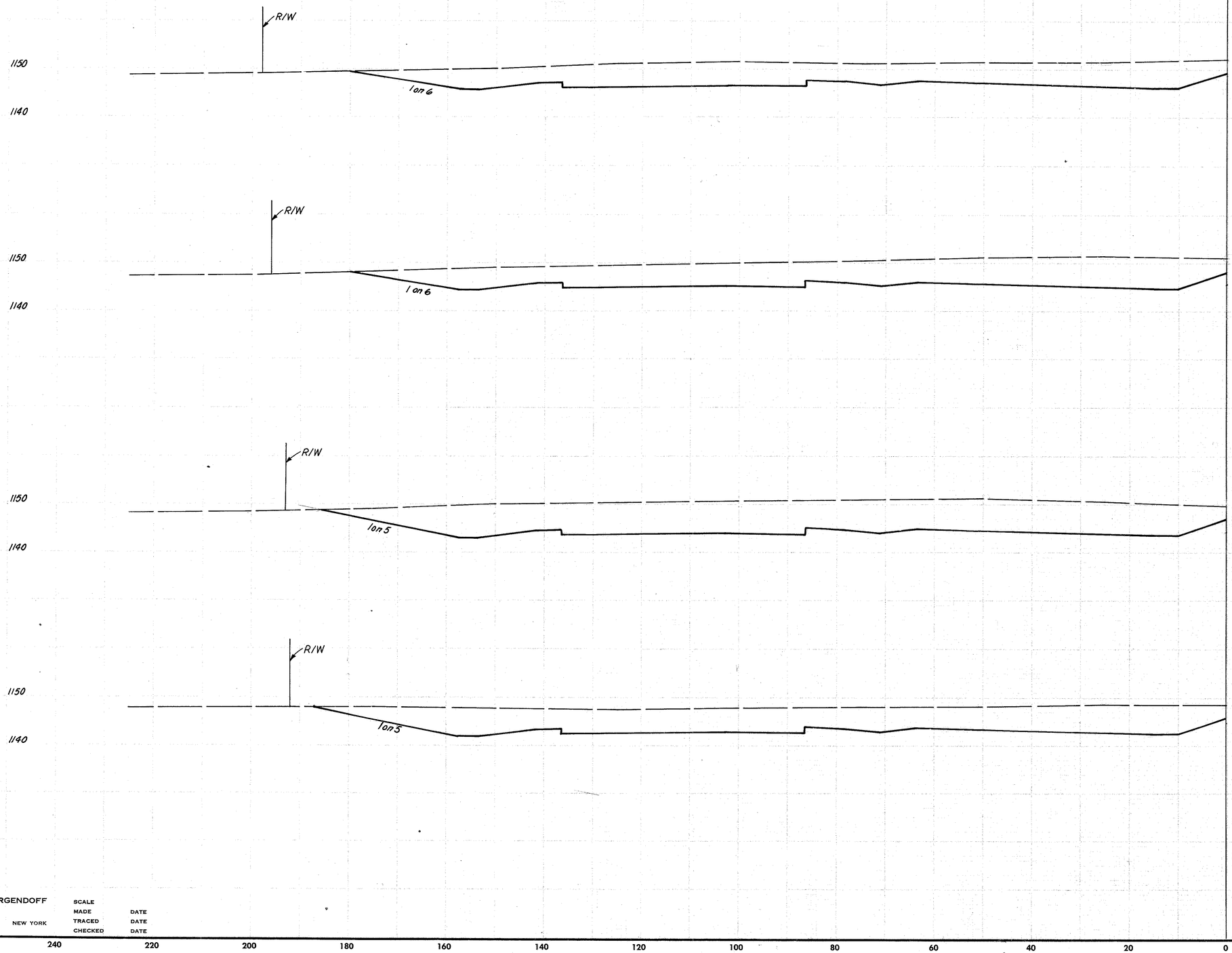
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 362 + 00 TO STA. 365 + 00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

113
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1148.11				
369+00				
1152.1	766	0		
			2980	0
1146.81				
368+00	843	0		
1151.1				
			3624	0
1145.52				
367+00	1114	0		
1149.8				
			3713	0
1144.33				
366+00	890	0		
1148.6				
			3128	0
Sta. 365+00	799	0		

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

ORIGINAL SURVEY
SURVEYED 5-1-63 J.A.D.
PLOTTED 5-13-63 J.A.D.
TEMPLATE JAB 5-20-63 R.O.D.
AREAS 5-27-63 JEN
NOTE BOOK
NO.
AREAS CHECKED
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 366+00 TO STA. 369+00

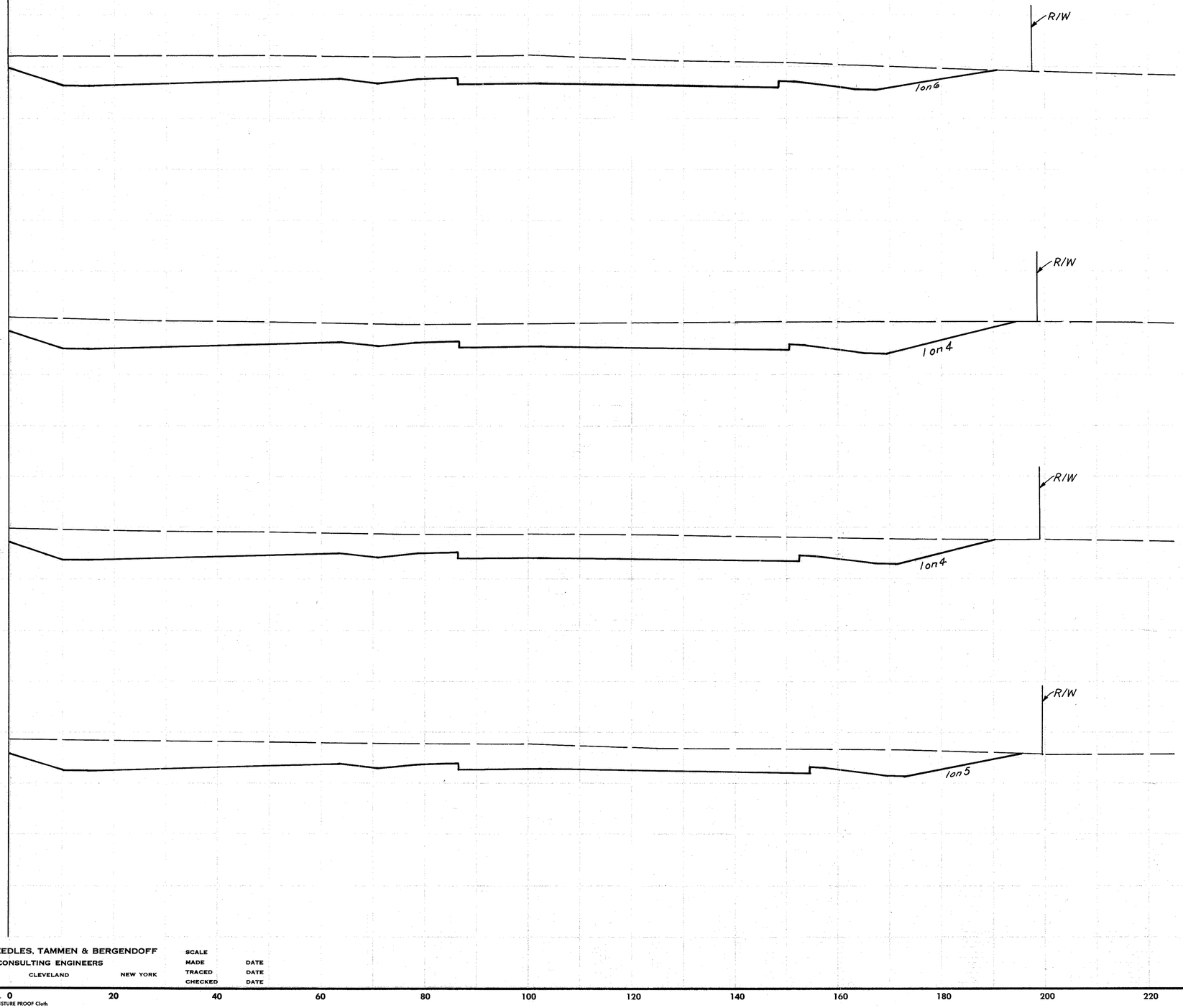
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

114
256

CUYAHOGA COUNTY
CUY-1 - 0.11

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED 555-28-63 H.L.D.
PLOTTED 3-17-63
TEMPLATE 463-21-63 3-14-63
AREAS H.L.D. 3-14-63
AREAS CHECKED H.L.D. 3-19-63
BY
DATE



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
891	0		
		3269	0
873	0		
		3165	0
836			
		3159	0
870			
		2867	0
678	0		

1150
1140
1150
1140
1150
1140
1150
1140
Sta. 365+00

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

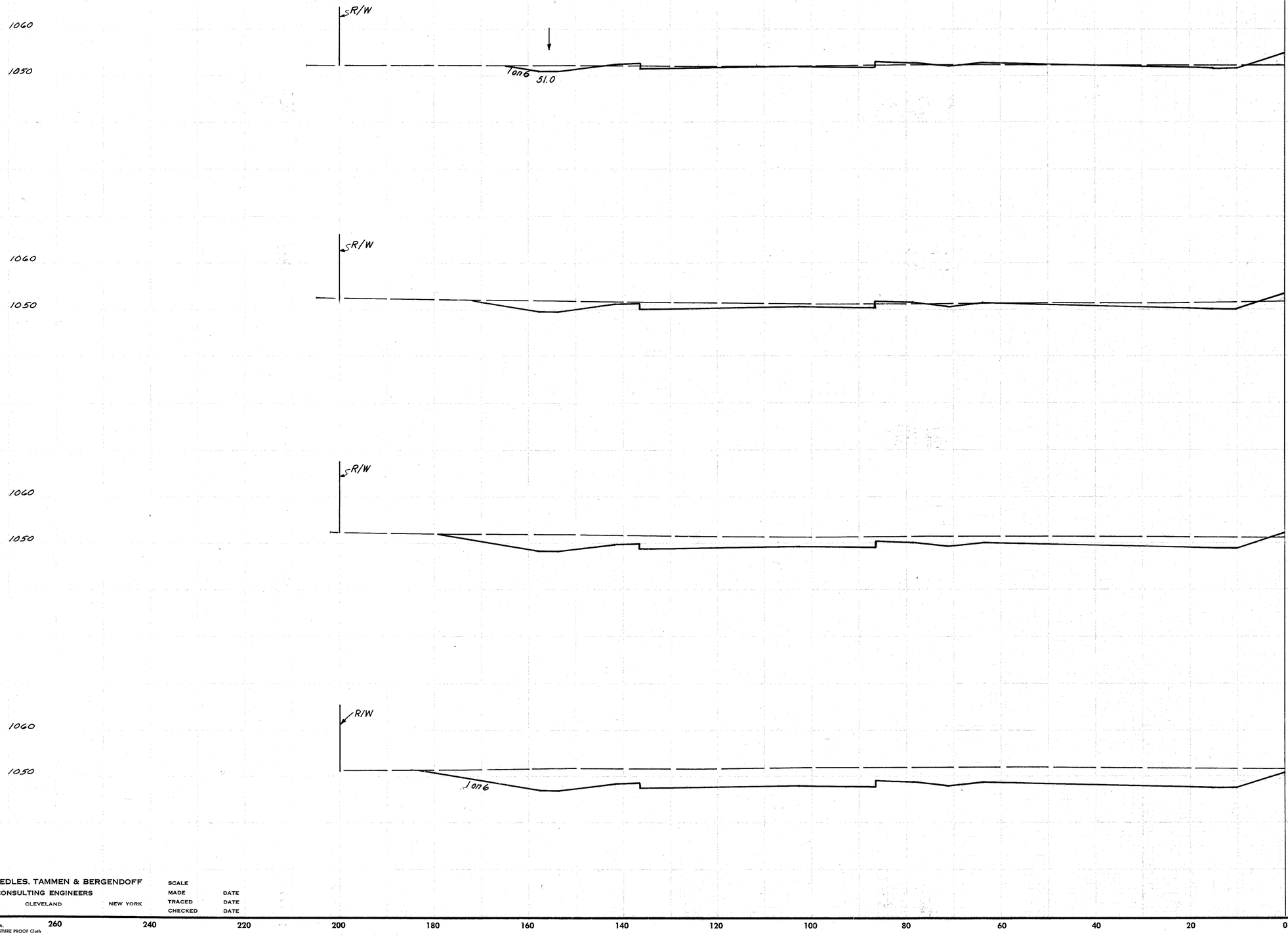
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 366+00 TO STA. 369+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

115
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1153.31				
373+00				
1152.1	43	20		
			335	52
1152.01				
372+00	138	8		
1151.7				
			913	15
1150.71				
371+00	355	0		
1151.1				
			1854	0
1149.41				
370+00	646	0		
1151.7				
			2615	0
Sta. 369+00	766	0		

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

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

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

LEFT HALF
STA. 370+00 TO STA. 373+00

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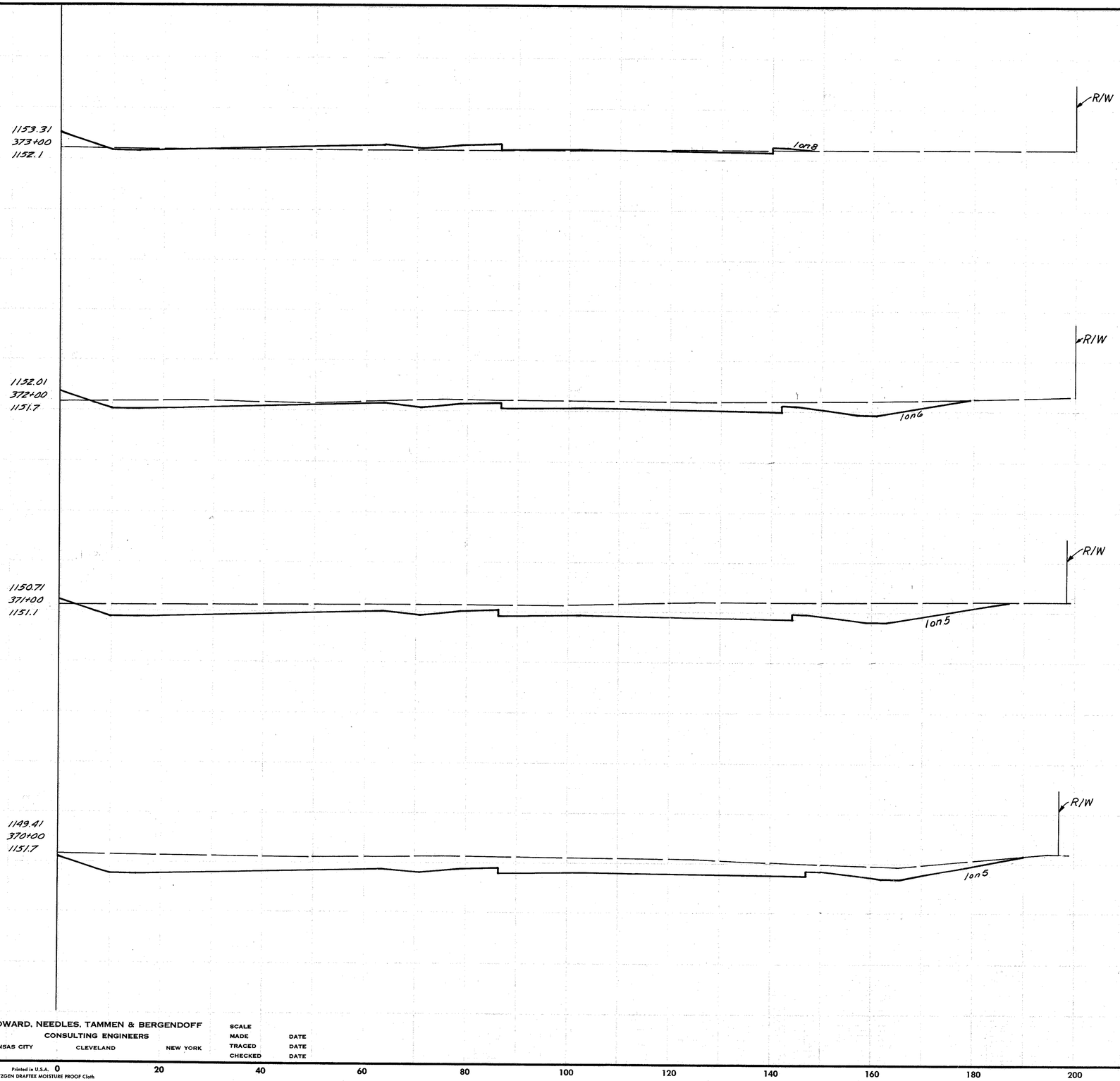
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

116
256

CUYAHOGA COUNTY
CUY-1-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
11	75		
		450	150
232	6		
		1198	15
415	2		
		1772	4
542	0		
		2654	0
891	0		

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

ORIGINAL SURVEY
SURVYED SCS-7-26-63 HLD
PLOTTED 8-05-63 KPD
TEMPLATE 8-26-63 KPD
AREAS 8-26-63 HLD
NOTE BOOK
NO.
AREAS CHECKED
BY
DATE

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

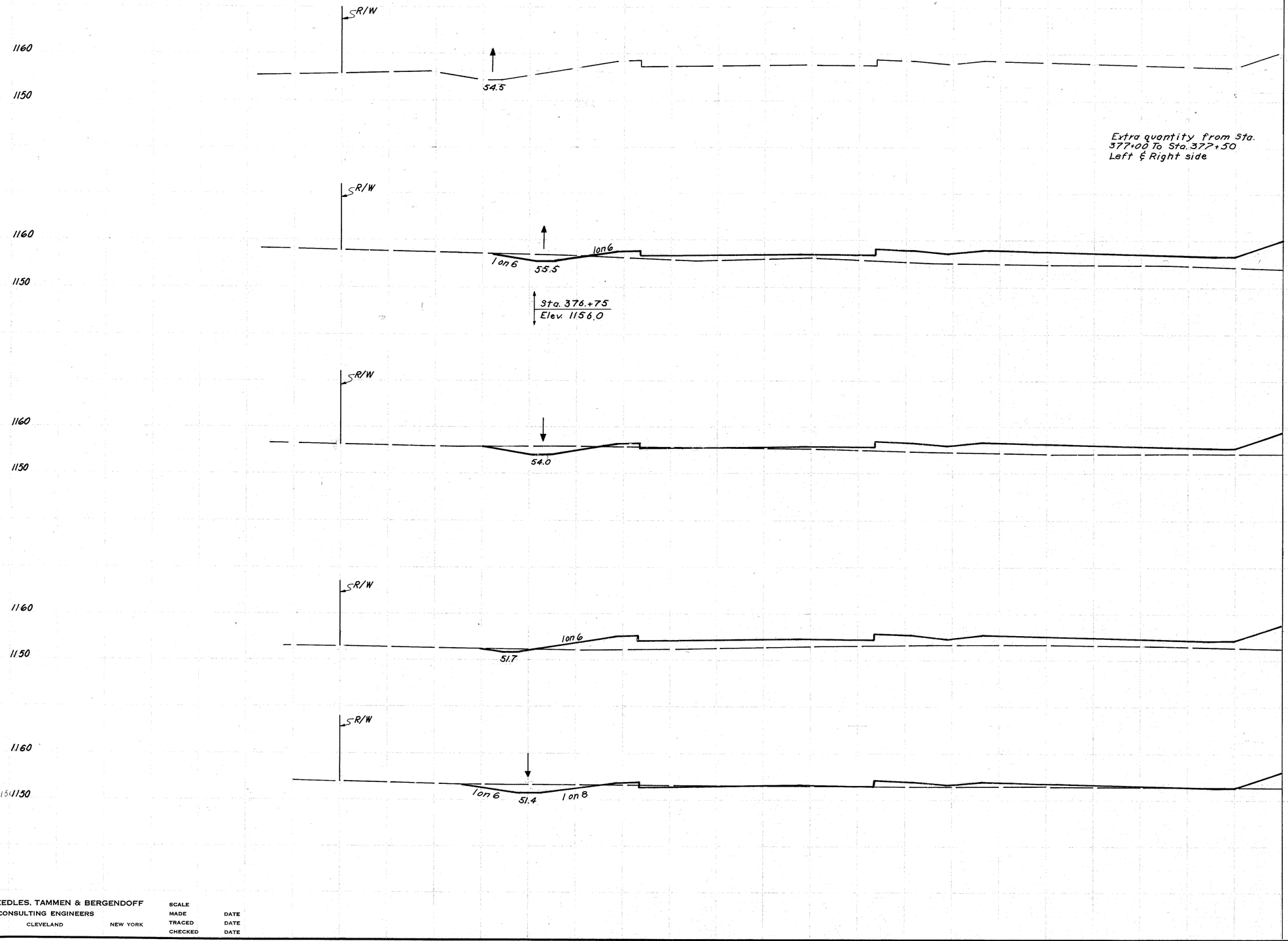
0 20 40 60 80 100 120 140 160 180 200 220 240 260

RIGHT HALF
STA. 370+00 TO STA. 373+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

117
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1159.16 377+50 1152.0				
			57	896
1158.51 377+00 1154.1	17	294		
			85	906
1157.21 376+00 1154.2	29	195		
			65	915
1155.91 375+00 1152.4	6	299		
			70	685
1154.61 374+00 1152.7	32	70		
			139	167
Sta. 373+00	43	20		

LEFT HALF
STA. 374+00 TO STA. 377+50

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

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

ORIGINAL SURVEY — NOTE BOOK NO. — SURVEYED 5-22-63 JLD — PLOTTED 5-23-63 JLD — TEMPLATE 5-20-63 JLD — AREAS 5-29-63 JLD — AREAS CHECKED 6-7-63 JEM

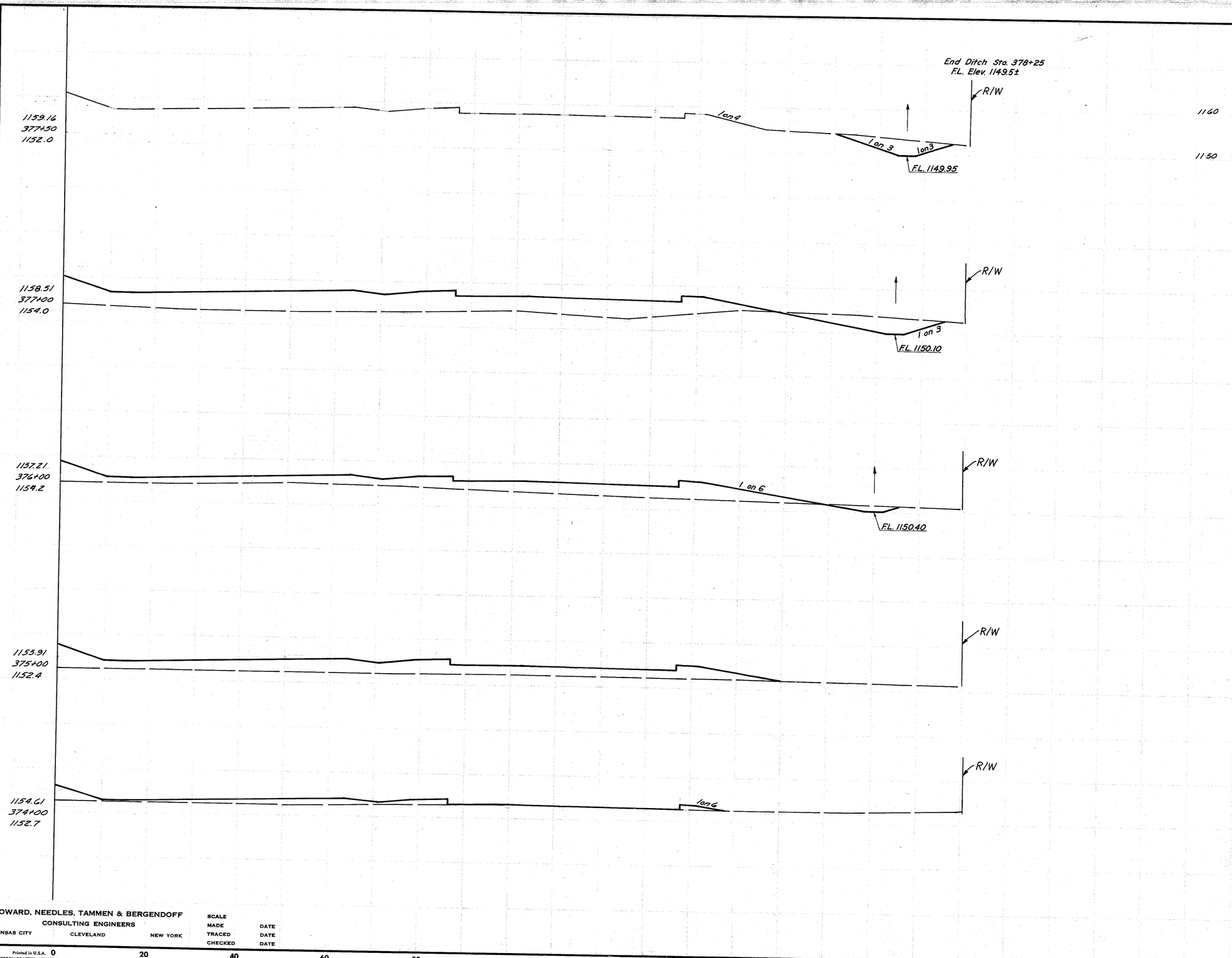
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

118
256

CUYAHOGA COUNTY
CUY-1-0.11

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

ORIGINAL SURVEY	BY	DATE
SURVEYED	555-5/C13	
PLOTTED	JAG 3-27-63	3-26-63
TEMPLATE	HLD	3-27-63
NOTE BOOK	AREAS	2-28-63
NO.	AREAS CHECKED	HLD



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
		67	
47	0		
		113	
		161	1811
		0	1389
		0	896
		20	344

Extra. Quantity Ditch to Sta. 378+25

1160			
1150			
1160			
1150		75	602
1160			
1150	Ahead	12	376
	Back	0	
1160			
1150		0	374
1160			
1154		0	111
Sta. 373+00		11	75

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

SCALE
MADE DATE
TRACED DATE
CHECKED DATE

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

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

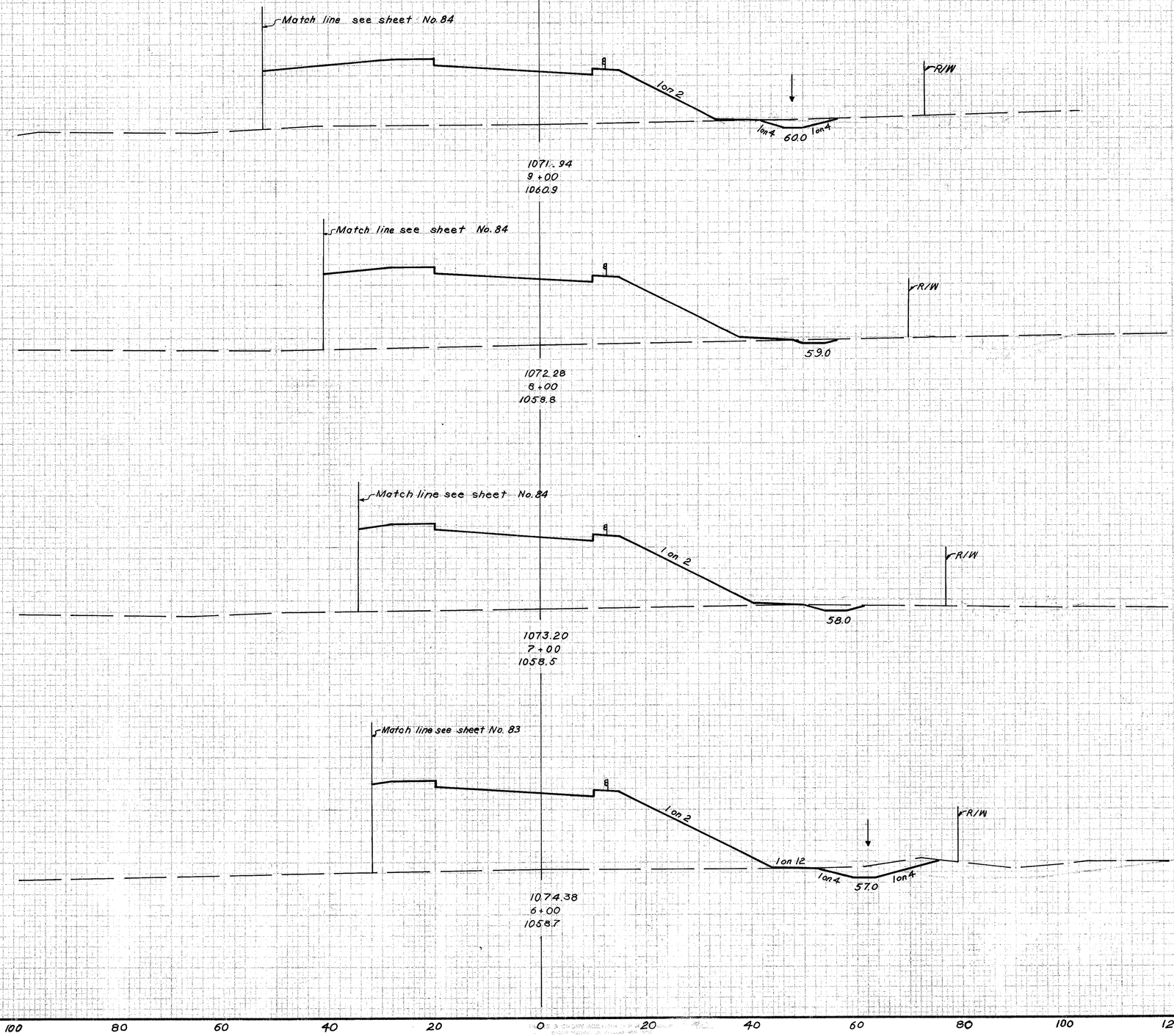
RIGHT HAIF

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

119
256

CUYAHOGA COUNTY

CUY-I-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1070				
1060				
	13	845		
1070			33	3259
1050	5	914		
			24	3369
1070				
1050	8	905		
			74	3424
1070				
1050	32	944		
			43	1614
Sta. 300+08	20	951		

SURVEYED	3-25-63	
PLOTTED	4-18-63	
DRAWN	4-19-63	
TRACED		
CHECKED		

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

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

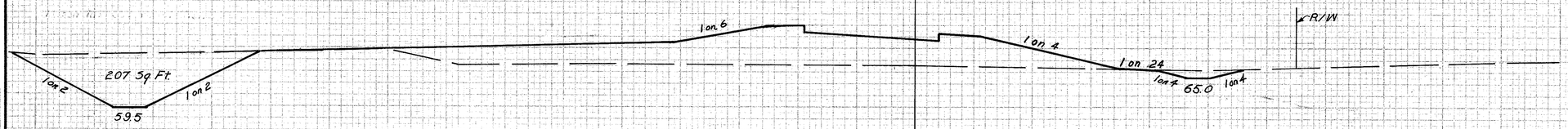
RAMP H-I STA. 6+00 TO STA. 9+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

120
256

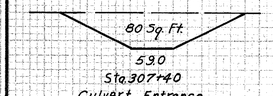
CUYAHOGA COUNTY

CUY-I-0.11



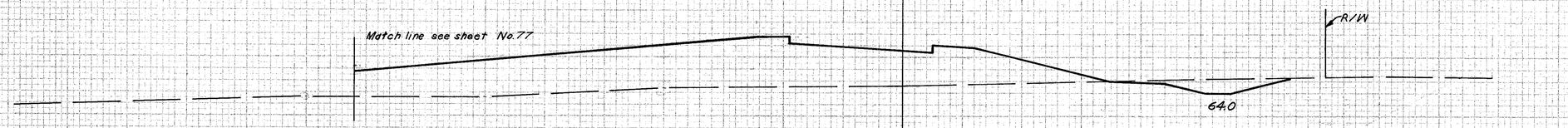
Note: Excavation for left side drainage channel is computed separately from Sta. 307+40 Entrance to culvert to Sta 24+00

1072.83
13+00
1067.1

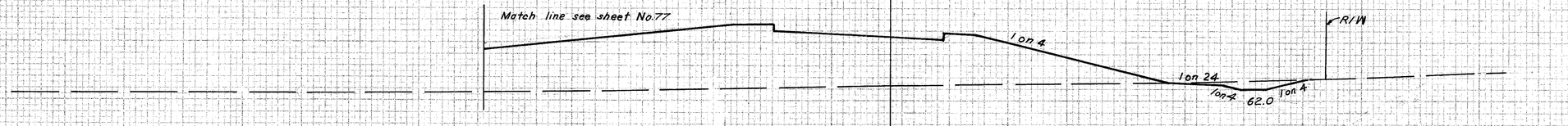


Sta 307+40
Culvert Entrance

1072.77
12+00
1065.7



1072.54
11+00
1065.1



1072.15
10+00
1062.5

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

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
13	490		
		611	0
		39	1958
8	551		
		72	2448
31	771		
		87	3073
16	910		
		54	3250
13	845		

Left side $\frac{287 \times 115}{2 \times 27}$ =

1070
1060
1070
1060
1070
1060

Sta. 9+00

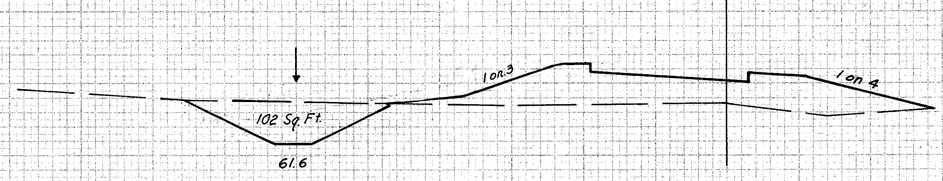
140 120 100 80 60 40 20 0 20 40 60 80 100 120

RAMP H-I STA 10+00 TO STA. 13+00

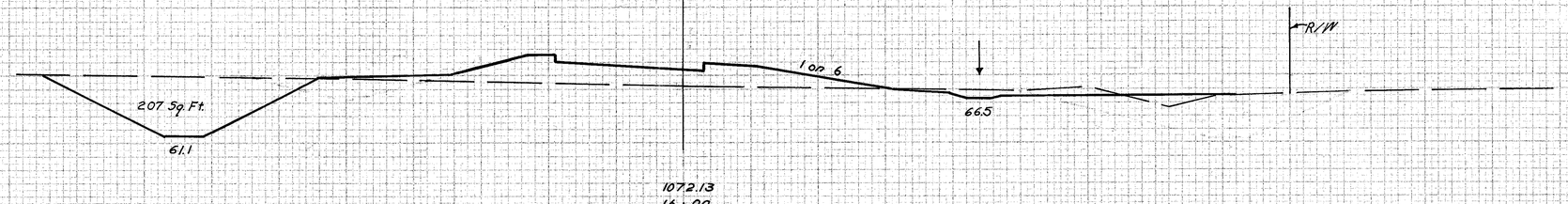
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

121
256

CUYAHOGA COUNTY
CUY-I-0.11

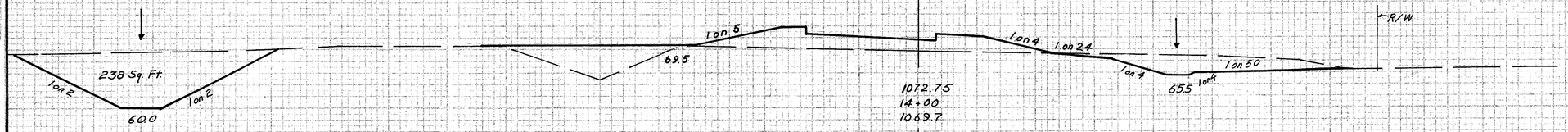


1071.73
17+00
1067.3



1072.13
16+00
1068.5

1072.51
15+00
1068.5



1072.75
14+00
1069.7

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

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1070			
1060			
0	258		
Lt. Side 309x105/2x27 =		601	0
		44	820
1070			
1060			
24	185		
Lt. Side 447x110/2x27 =		911	0
		198	806
1070			
1060			
83	250		
Lt. Side 478x110/2x27 =		974	0
		317	878
1080			
1070			
Lt. Side 445x100/2x27 =		845	0
88	224		
		187	1322
Sta. 13+00	13	490	

RAMP H-1 STA. 14+00 TO STA. 17+00

ORIGINAL SURVEY	SURVEYED	3-15-63
FINAL SURVEY	PLOTTED	4-2-63
	TEMPLATES	4-2-63
	AREAS	
	VOLS. CHECKED	

NO.	DATE	BY	REVISIONS
1	5-27-63	H.L.D.	
2	6-7-63	H.L.D.	
3	6-26-63	JSH	
4	7-22-63	JSH	

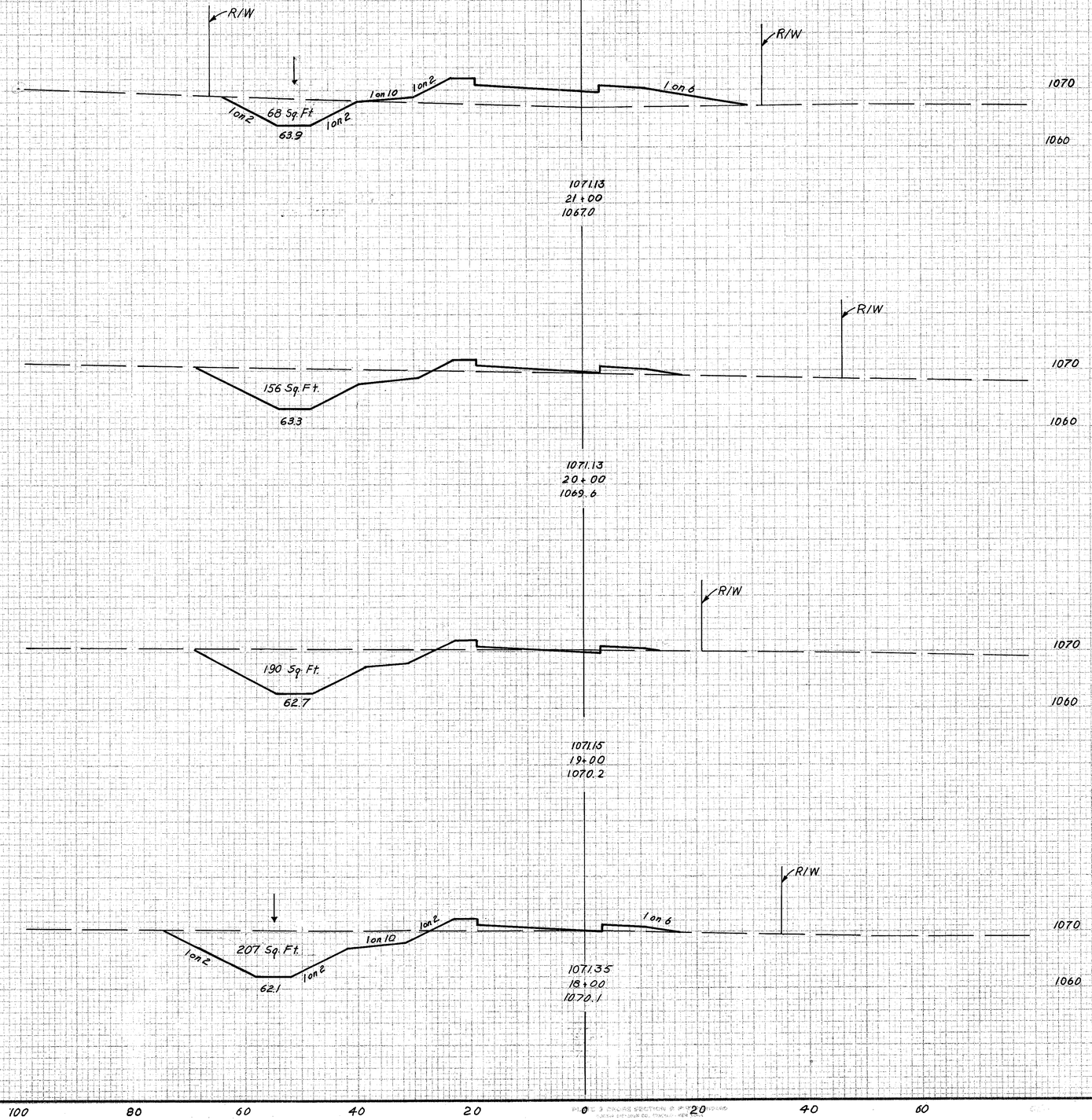
FINAL SURVEY	SURVEYED			
	PLOTTED			
	TEMPLATES			
	AREAS			
	VOLS. CHECKED			
NOTE BOOK				
NO.				

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

122
256

CUYAHOGA COUNTY

CUY-I-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
	0	175		
Lt. Side 224x123 / 2x27 =			510	0
			0	389
	0	35		
Lt. Side 346x122 / 2x27 =			782	0
			0	102
	0	20		
Lt. Side 397x122 / 2x27 =			897	0
			0	107
	0	38		
			0	541
Sta. 17+00	0	254		
Lt. Side 309x107 / 2x27 =			612	0
				0

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

140 120 100 80 60 40 20 0 20 40 60 140 160

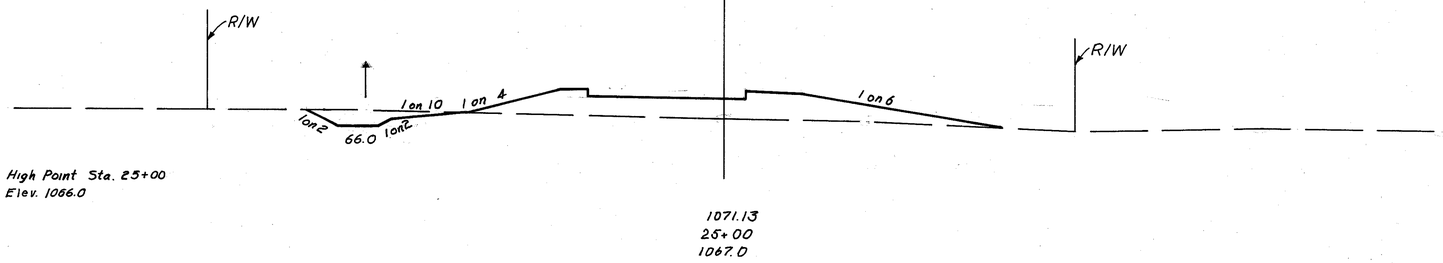
RAMP H-1 STA. 18+00 TO STA. 21+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

123
256

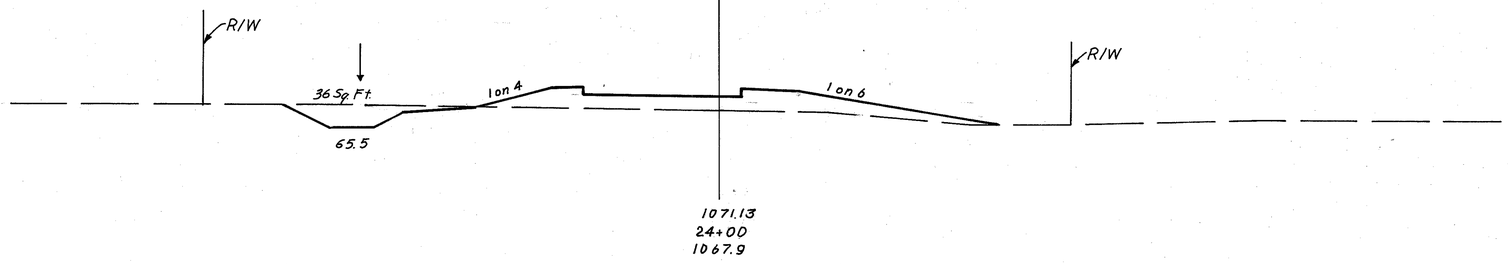
CUYAHOGA COUNTY

CUY-I-0.11

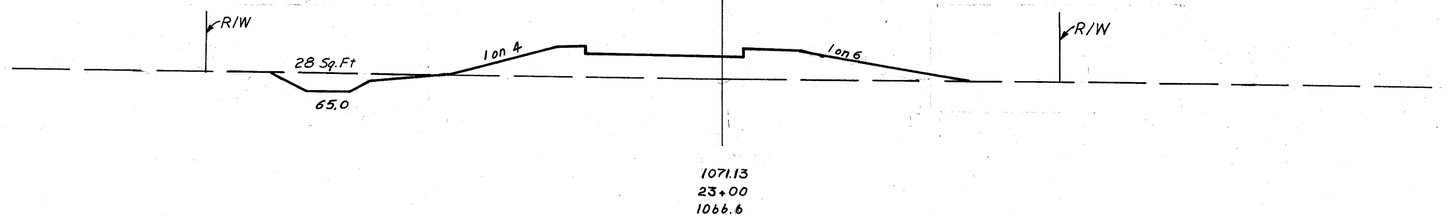


High Point Sta. 25+00
Elev. 1066.0

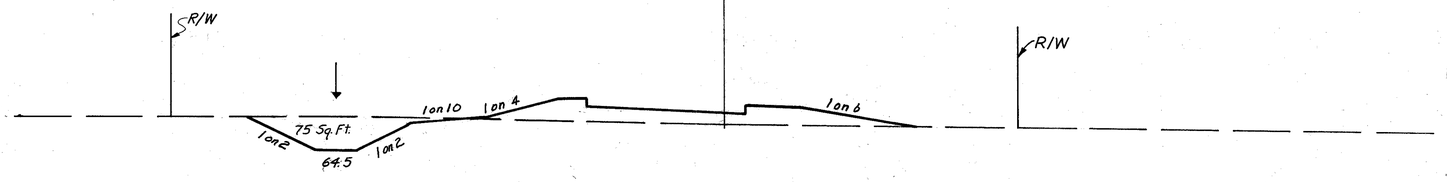
1071.13
25+00
1067.0



1071.13
24+00
1067.9



1071.13
23+00
1066.6



1071.13
22+00
1068.2

	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1060				
	23	184		
			43	600
1070				
	0	140		
Lt Side $\frac{64 \times 100}{2 \times 27}$ =			119	0
			0	639
1070				
1060				
	0	205		
Lt. Side $\frac{103 \times 112}{2 \times 27}$ =			214	0
			0	594
Lt. Side $\frac{143 \times 125}{2 \times 27}$ =			331	0
	0	116		
			0	539
Sta. 21+00	0	175		

3/6/03 #-2-63 #-22-63

SSS-37-2-63 \ HLD \ H-1-0.11 #690

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

140 120 100 80 60 40 20 0 20 40 60 80 100 140 160

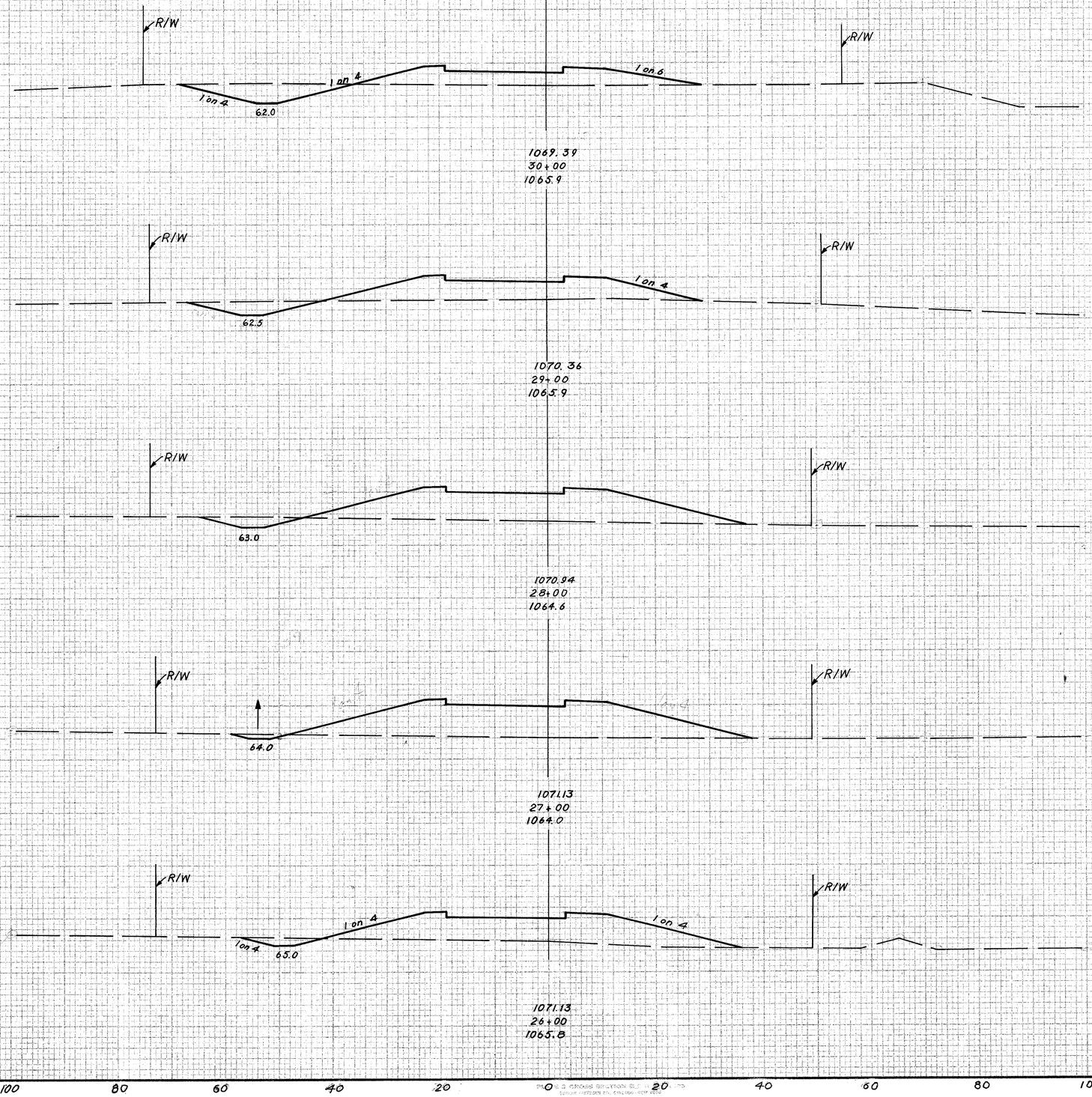
RAMP H-1 STA. 22+00 TO STA. 25+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

124
256

CUYAHOGA COUNTY

CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1060			
65	149		
1070		193	671
1060			
39	213		
1070		117	1017
1060			
24	336		
1070		57	1337
1060			
7	386		
1070		39	1237
1060			
14	282		
		69	863
Sta. 25+00			
23	184		

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

RAMP H-1 STA. 26+00 TO STA. 30+00

ORIGINAL SURVEY	SURVEYED	3-15-68
	PLOTTED	4-2-68
	CHECKED	4-10-68
	LINES	4-11-68
	NOTE BOOK	
	TEMPLATE	
	AREAS	
	VOLS.	
	AREAS CHECKED	

BY	DATE	NO.	NOTE
N. HILD	3-15-68		
N. HILD	4-2-68		
H.G.B.	4-10-68		
JENK	4-11-68		

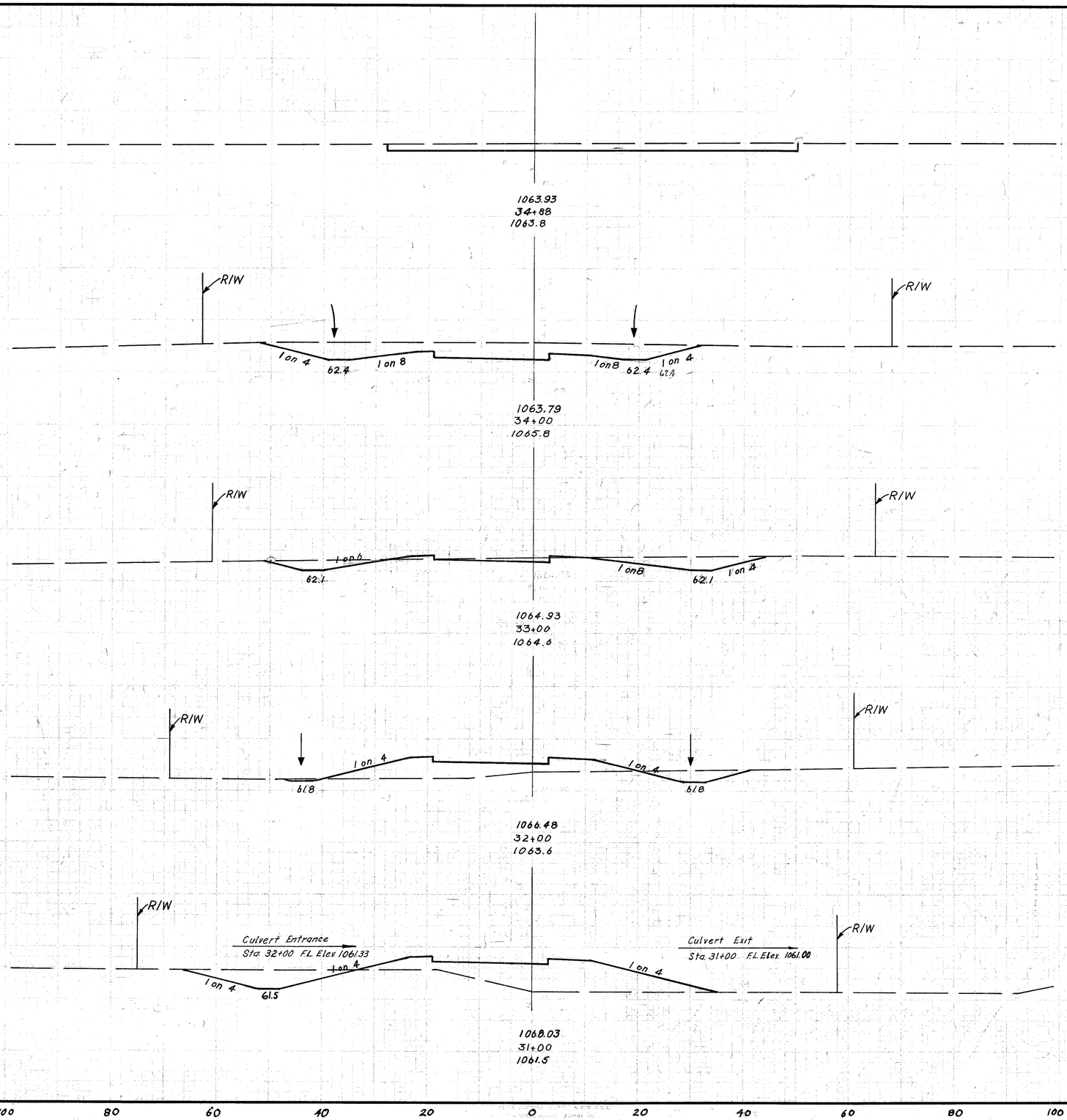
FINAL SURVEY	HORIZONTAL	
	VERTICAL	
	NOTE BOOK	
	TEMPLATE	
	AREAS	
	VOLS.	
	AREAS CHECKED	

Printed in U.S.A.
On IMPERIAL Drafting Cloth

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

125
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1060			
107	0		
		505	0
1060			
203	0		
		532	11
1060			
84	6		
		213	274
1060			
31	142		
		176	684
1060			
64	227		
		239	697
Sta. 30+00	65	149	

3-6-63
4-2-63
4-10-63

SSS-7-4-63 ~ H.L.D
JOB 4-2-63 ~ H.L.D
~ JEN

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

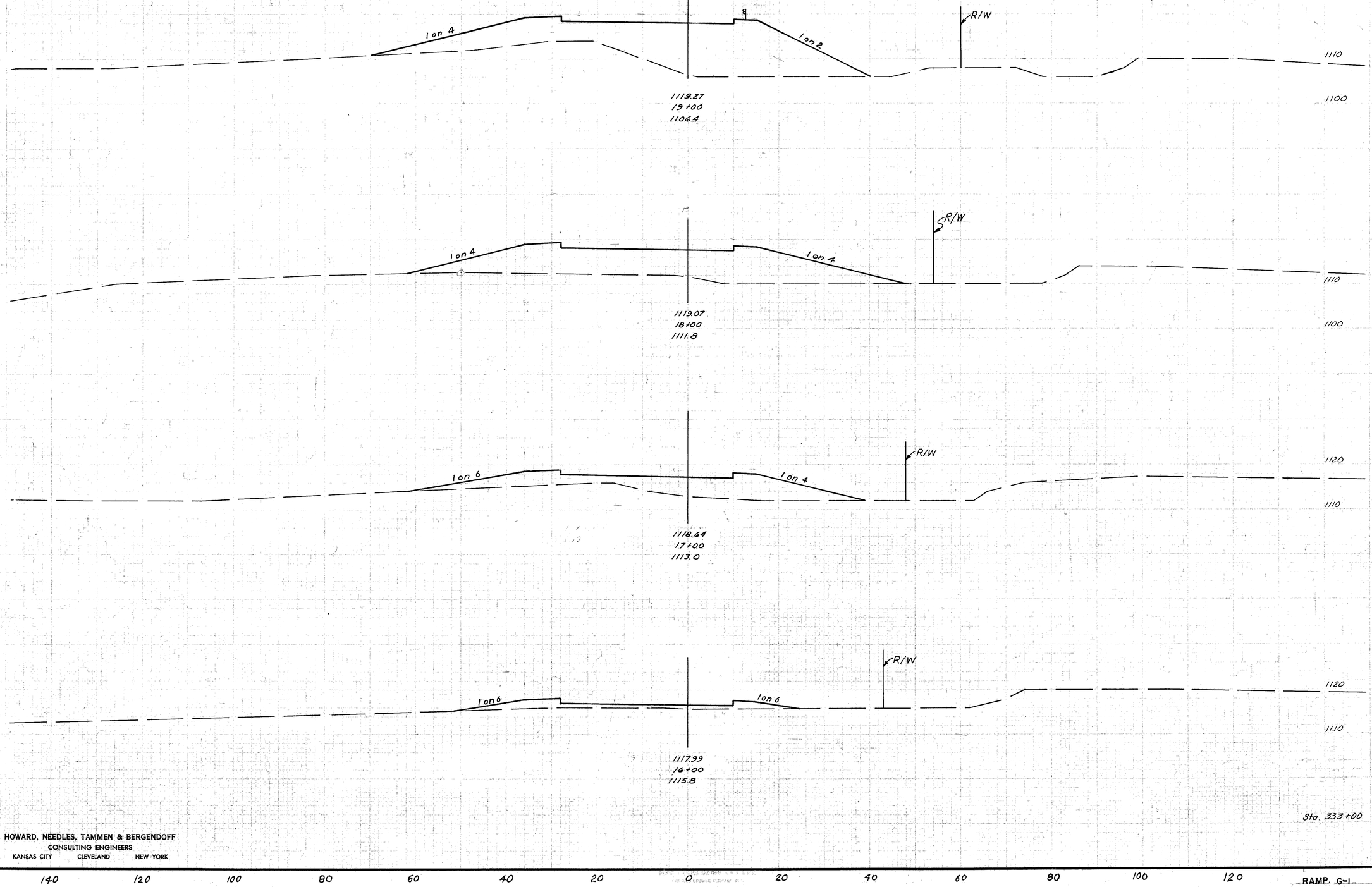
140 120 100 80 60 40 20 0 20 40 60 80 100 120

RAMP H-1 STA. 31+00 TO STA. 34+88

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

126
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	700		
		0	2315
0	550		
		0	1559
0	292		
		0	700
0	86		
		68	171
44	25		

3-14-63
3-27-63
4-20-63

3-25-63 HLD
JHB 3-28-63 HLD
HLD

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

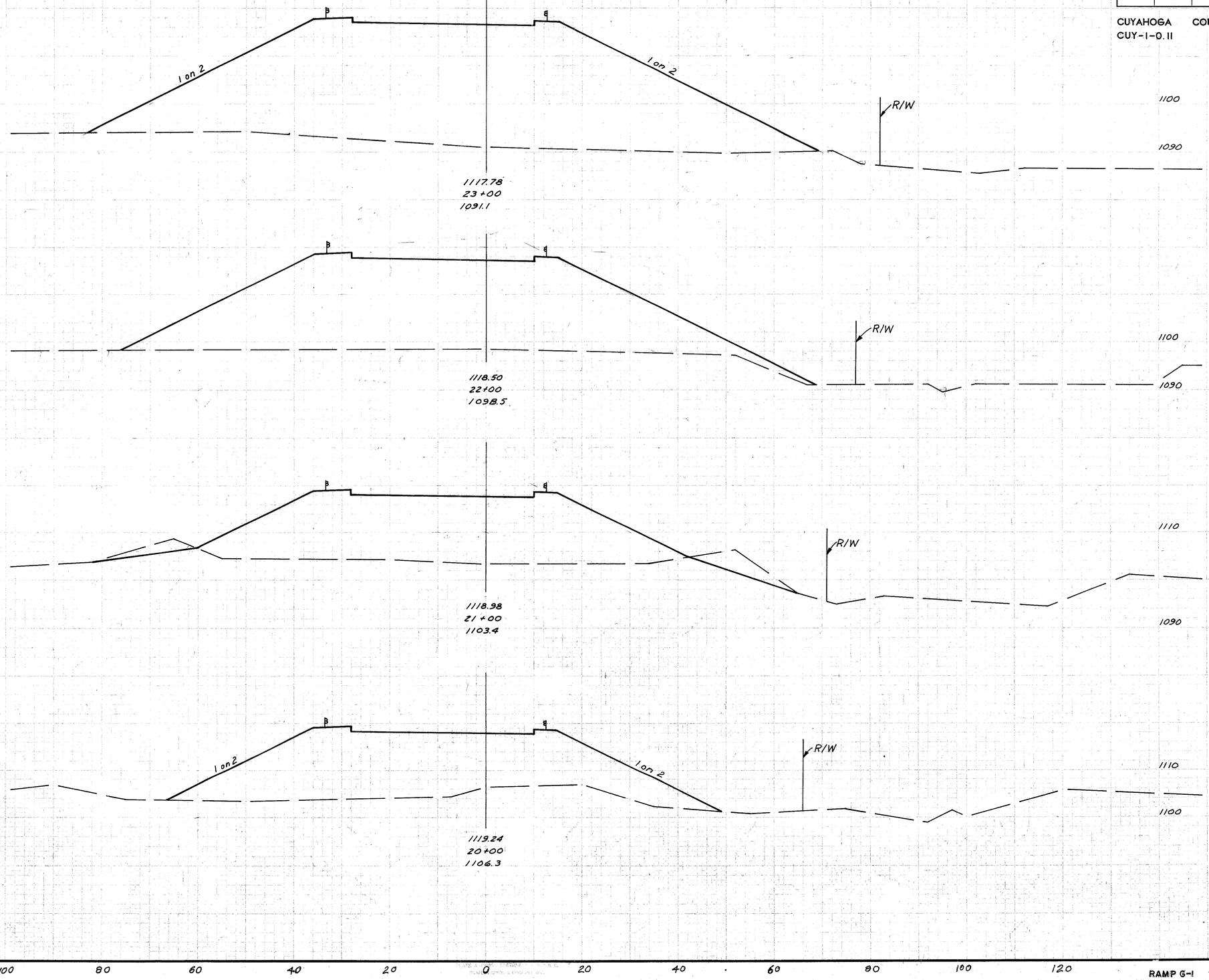
140 120 100 80 60 40 20 0 20 40 60 80 100 120 Sta. 333+00

RAMP G-I STA. 16+00 TO STA. 19+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

127
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK:			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	2575		
		0	8140
0	1819		
		165	5520
89	1160		
		165	4270
0	1146		
		0	3420
0	700		

3-14-63
3-20-63
4-17-63

SSS-3-6-63 \ HLD
JAS-3-26-63 \ HLD
HLD

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

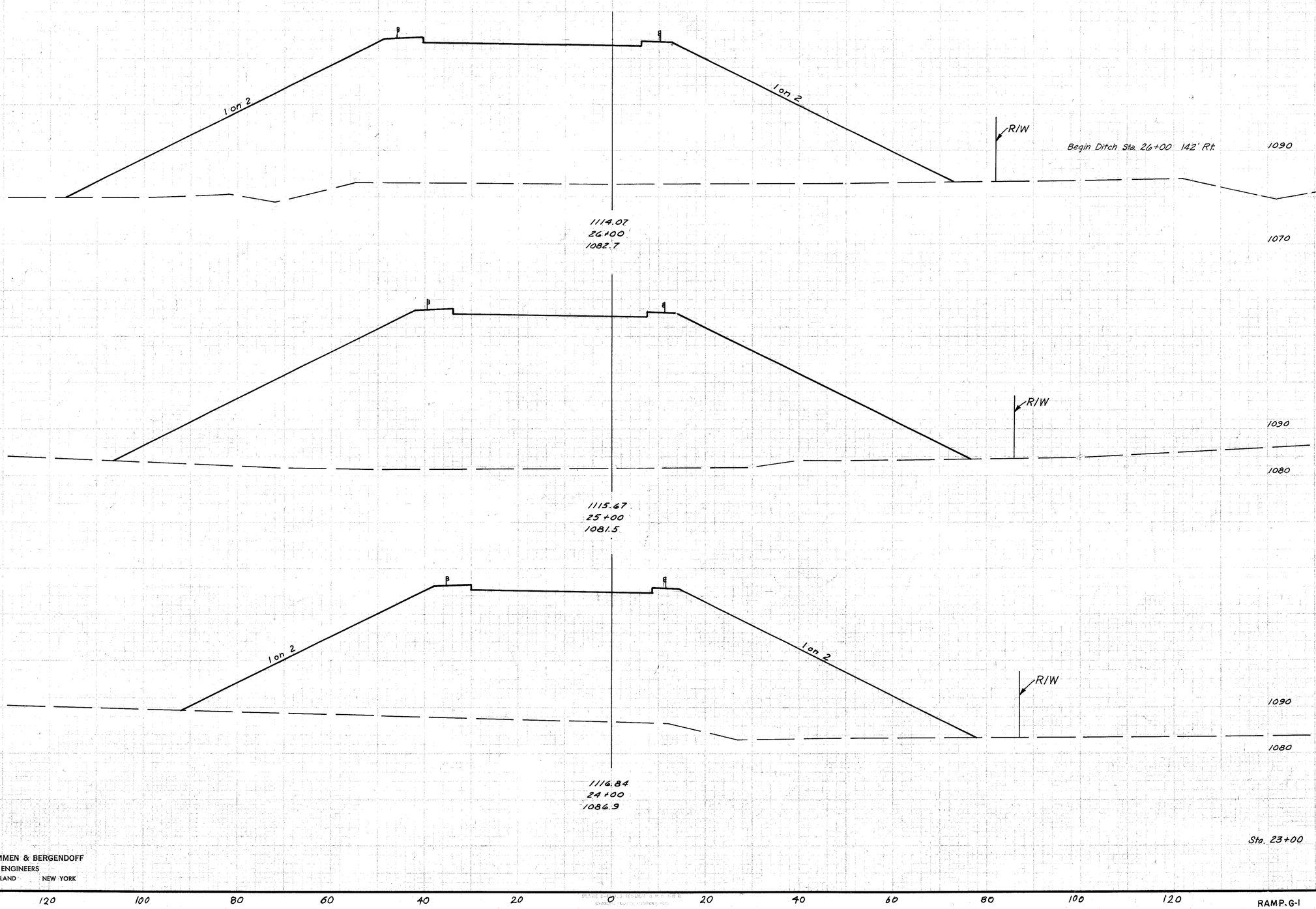
140 120 100 80 60 40 20 0 20 40 60 80 100 120

RAMP G-1 STA. 20+00 TO STA. 23+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

128
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
	0	3927		
			0	14,740
	0	4033		
			0	13,500
	0	3253		
			0	10,800
Sta. 23+00	0	2575		

SSS-3-15-63 ✓ H.L.D. 3-18-63
JAG 3-27-63 ✓ H.L.D. 3-21-63
JEN 4-19-63
HLD 4-20-63

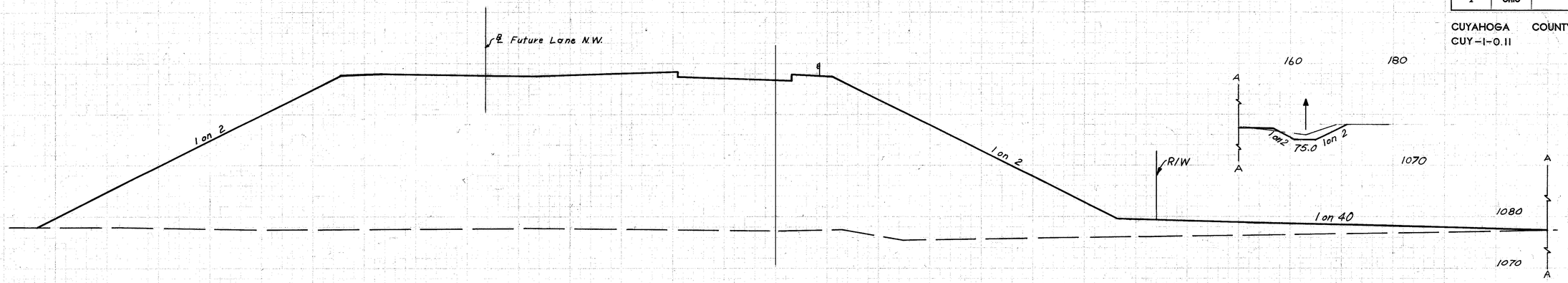
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

RAMP. G-1 STA. 24+00 TO STA. 26+00

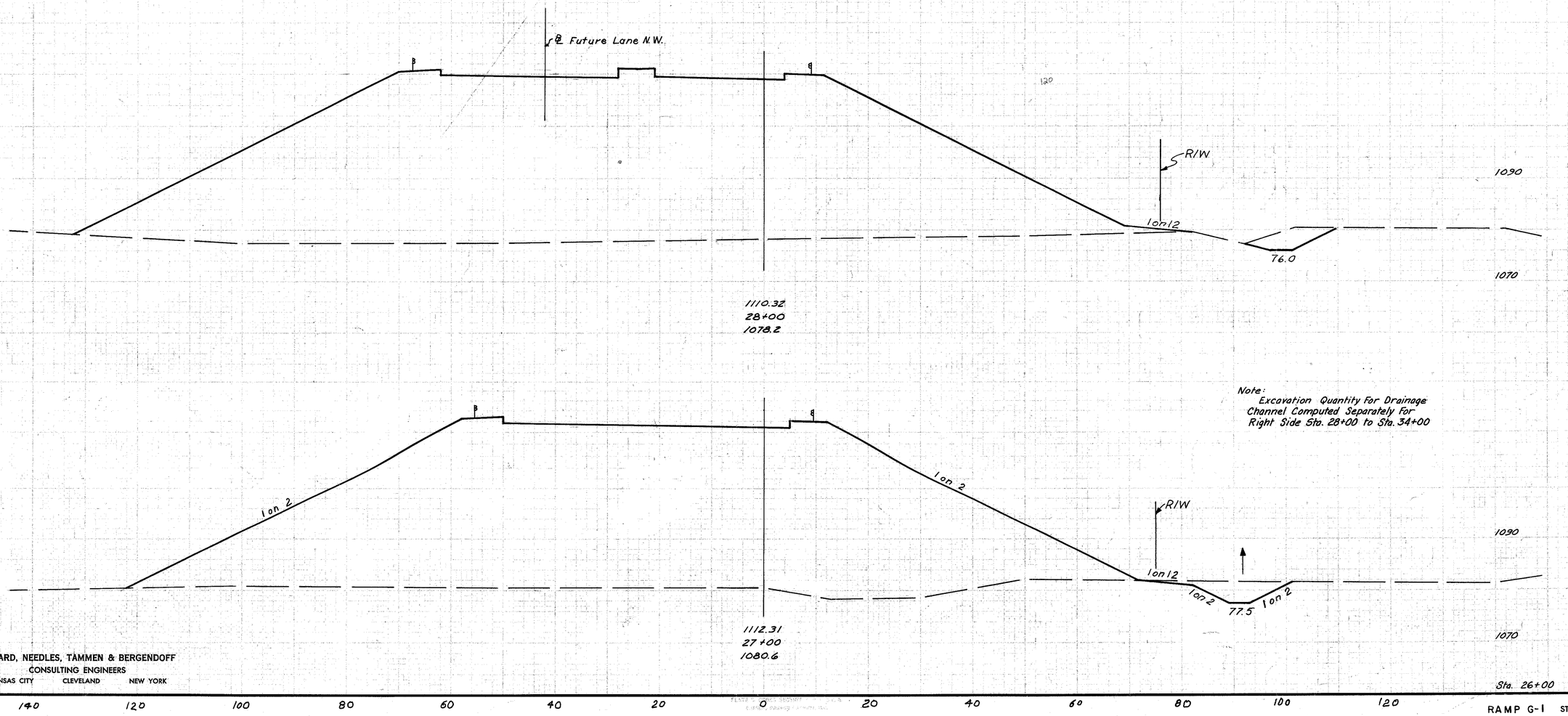
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

129
256

CUYAHOGA COUNTY
CUY-I-0.11



1108.07
29+00
1077.2



1110.32
28+00
1078.2

1112.31
27+00
1080.6

Note:
Excavation Quantity For Drainage Channel Computed Separately For Right Side Sta. 28+00 to Sta. 34+00

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
Ahead 0	4870		
Back 14	4870		
			120 17,580
40	4625		
			174 16,280
54	4167		
			100 15,000
0	3927		

3-18-63
3-28-63
4-22-63

555-37-63 N.H.L.D.
563-37-63 ML.D.
JEW

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

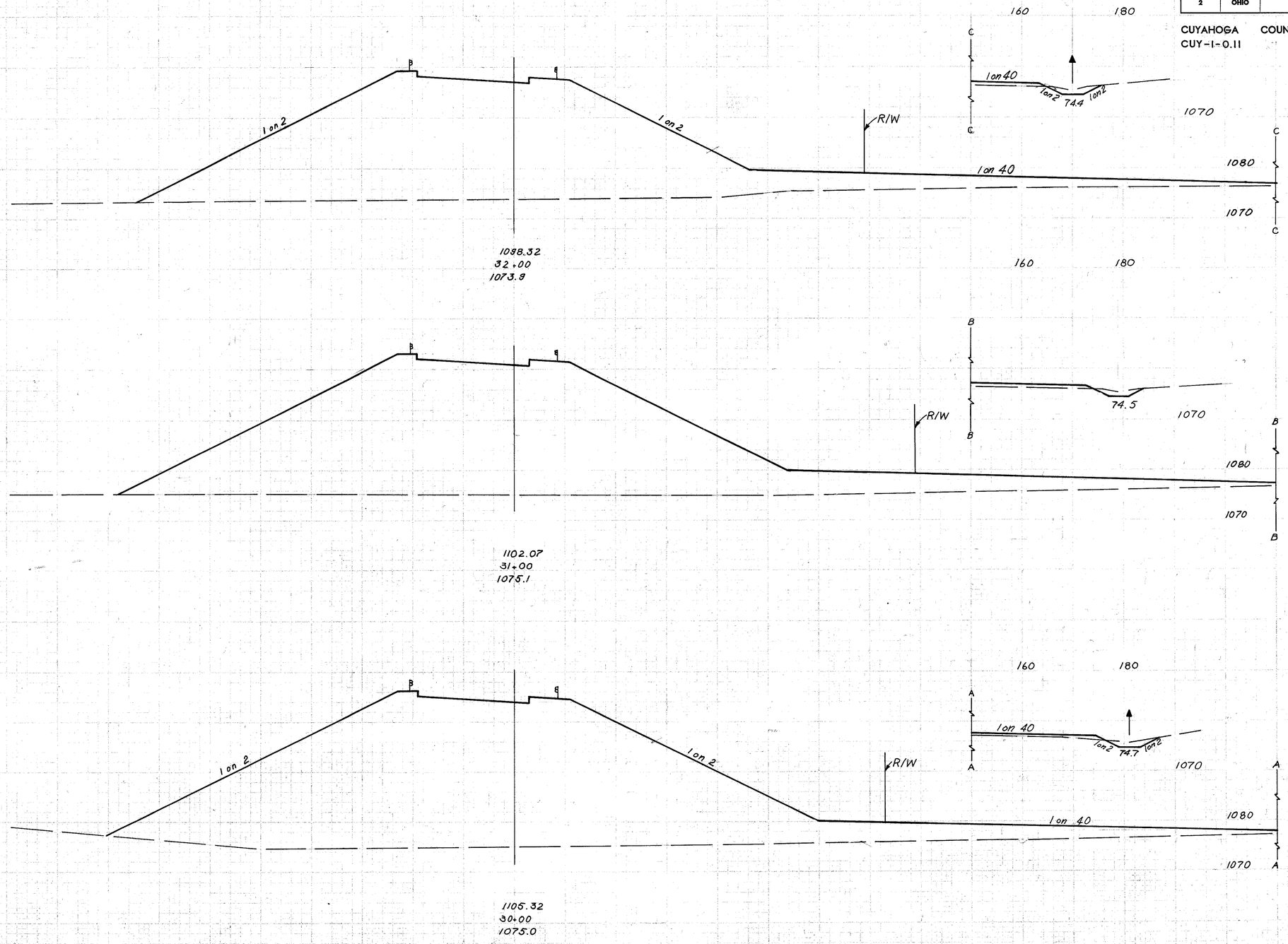
140 120 100 80 60 40 20 0 20 40 60 80 100 120

RAMP G-1 STA. 27+00 TO STA. 29+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

130
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	2252		
		0	8970
0	2594		
		0	10,420
0	3034		
		0	14,640
Sta. 29+00 Ahead	0	4870	

3/8/63
3-28-63
4-1-63
4-23-63

SSS-2-15-63 ~~NLD~~
AG-3-25-68 ~~NLD~~ HLY
HLD

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

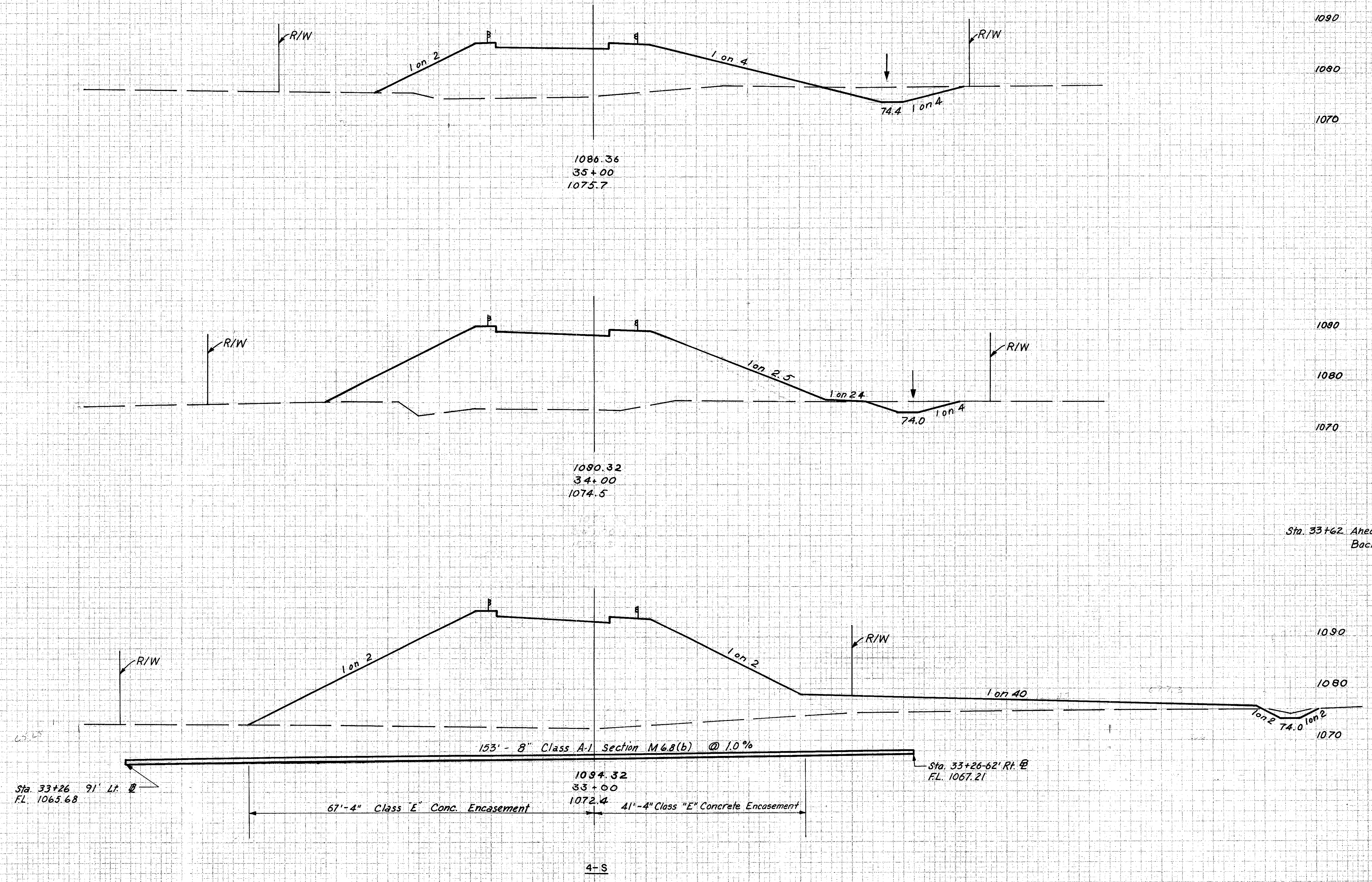
140 120 100 80 60 40 20 0 20 40 60 80 100 120

RAMP G-1 STA. 30+00 TO STA. 32+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

131
256

CUYAHOGA COUNTY
CUY-1-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
	48	581		
			130	2960
	22	1016		
			31	0
Sta. 33+62 Ahead	22	0		
Back	0	0		
			0	5220
	0	1801		
			0	7510
Sta 32+00	0	2252		

ORIGINAL SURVEY		BY	DATE
NOTE BOOK	SURVEYED		
	PLOTTED 555-3-15-63	H.L.D.	3-18-63
	TEMPLATE JAG 3-27-63	H.L.D.	3-28-63
	AREAS	JEN	4-22-63
NO.	AREAS CHECKED	HLD	4-23-63

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

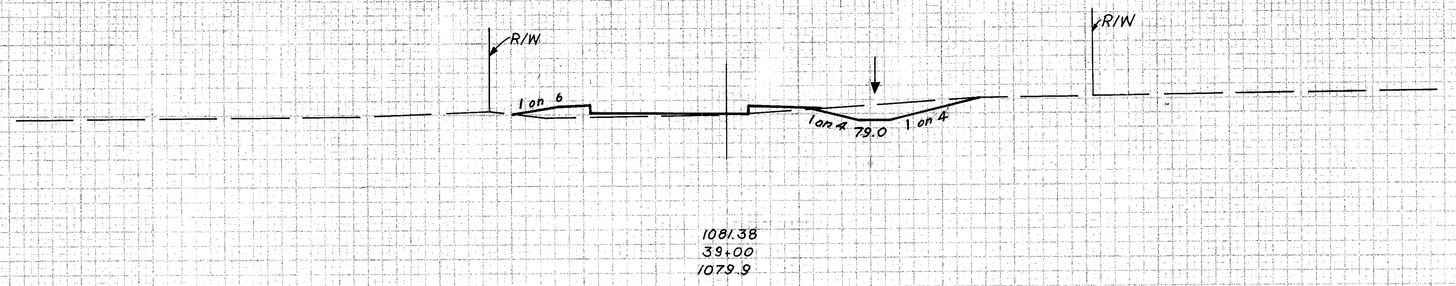
140 120 100 80 60 40 20 0 20 40 60 80 100 120

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

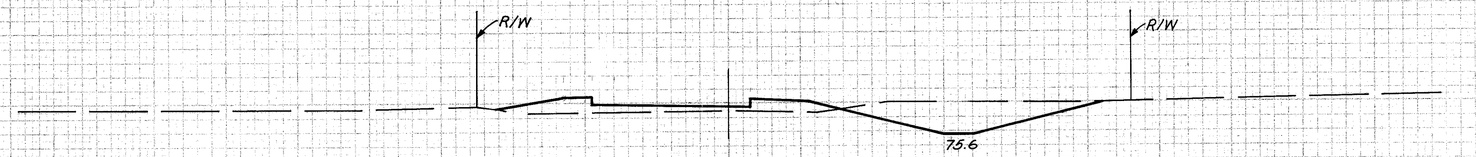
132
256

CUYAHOGA COUNTY

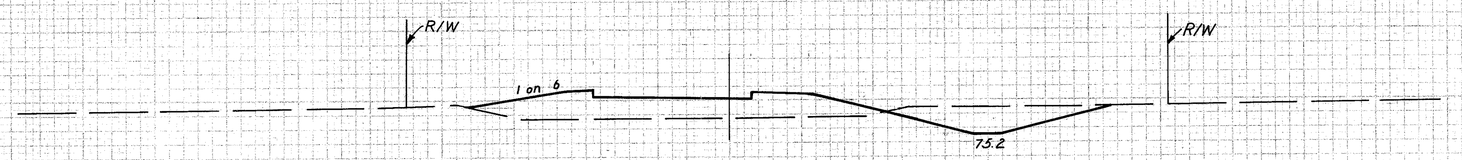
CUY-I-0.11



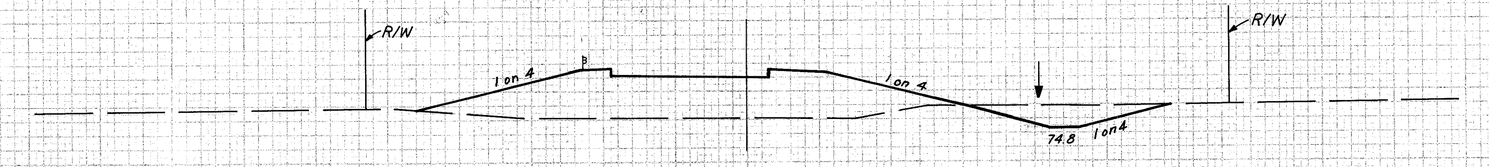
1081.38
39+00
1079.9



1080.19
38+00
1078.9



1081.42
37+00
1077.4



1083.28
36+00
1076.1

	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB	EXC.	EMB
1080				
1070				
	30	31		
			232	169
1080				
1070				
	95	60		
			370	413
1080				
1070				
	76	163		
			241	974
1080				
1070				
	54	363		
1082			189	1748
Sta. 35+00	48	581		

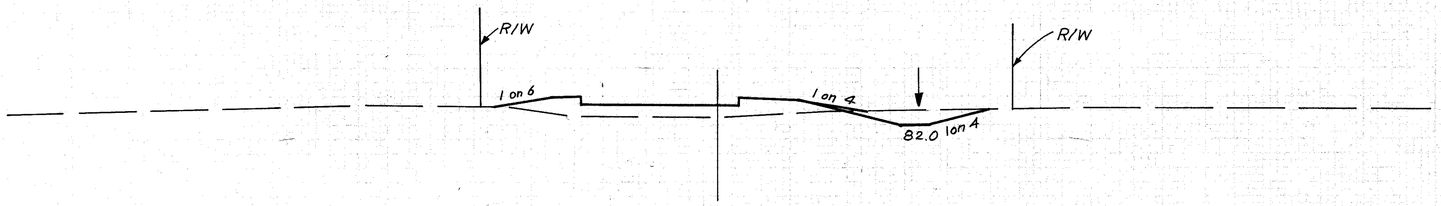
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

RAMP G-I STA. 36+00 TO STA. 39+00

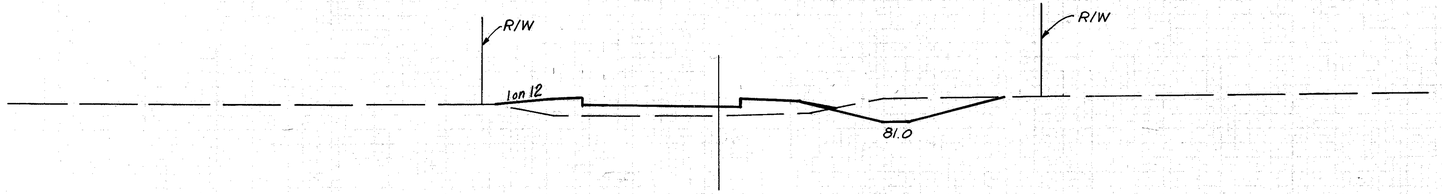
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

133
256

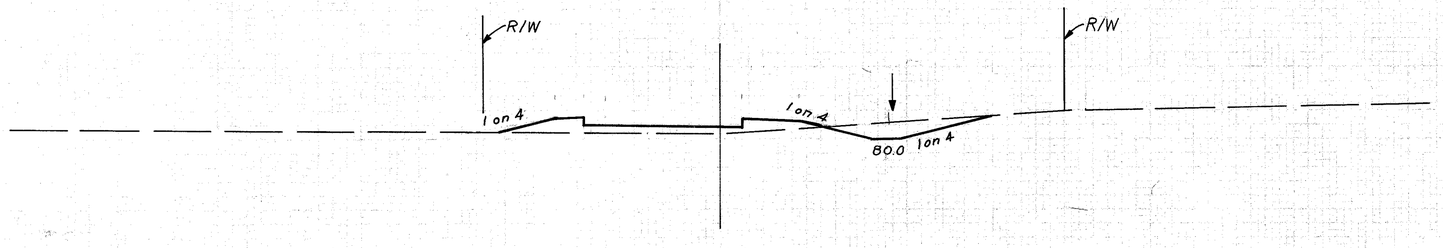
CUYAHOGA COUNTY
CUY.-I-0.11



1085.87
42+00
1083.0



1084.36
41+00
1081.9



1082.85
40+00
1080.7

Sta.	EARTHWORK END AREA EXC.	END AREA EMB.	VOLUME EXC.	VOLUME EMB.
1080				
	24	84		
			111	285
1080				
	36	70		
			130	234
1080				
	34	56		
			119	161
Sta. 39+00	30	31		

3/8/63
3-28-63
4-22-63

SSS-3-1463 ~~NHL-0~~ NHL-0
AGS-4-863 ~~NHL-0~~ NHL-0

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

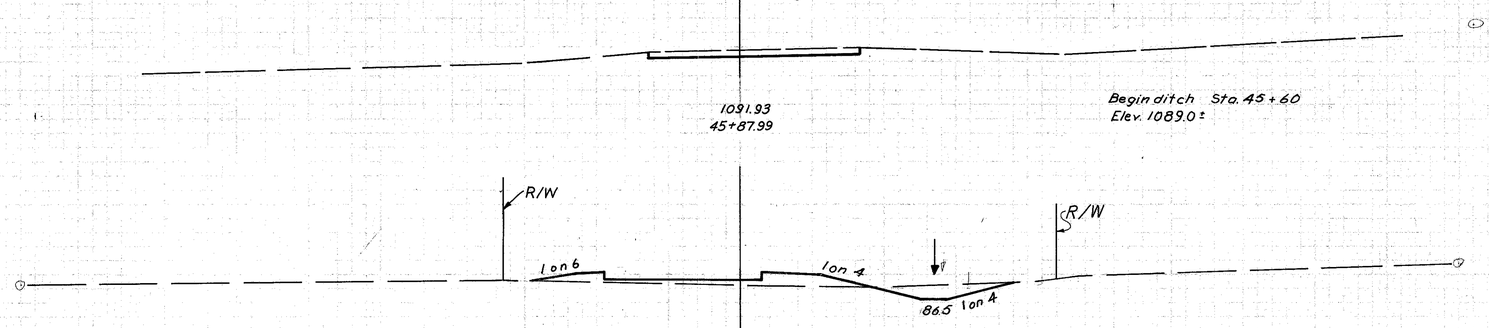
140 120 100 80 60 40 20 0 20 40 60 80 100 120

RAMP G-1 STA. 40+00 TO STA. 42+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

134
256

CUYAHOGA COUNTY
CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1090			
117	0		
		267	95
1090			
23	50		
		72	263
1080			
16	92		
		70	358
1080			
22	101		
		85	341
Sta. 42+00	24	84	

5-1-63 JAG
5-1-63 JAG
5-8-63 HLM

JAG 5-1-63 ~ HLD
JAG 5-1-63 ~ HLD
HLD
HLM

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

100 80 60 40 20 0 20 40 60 80 100

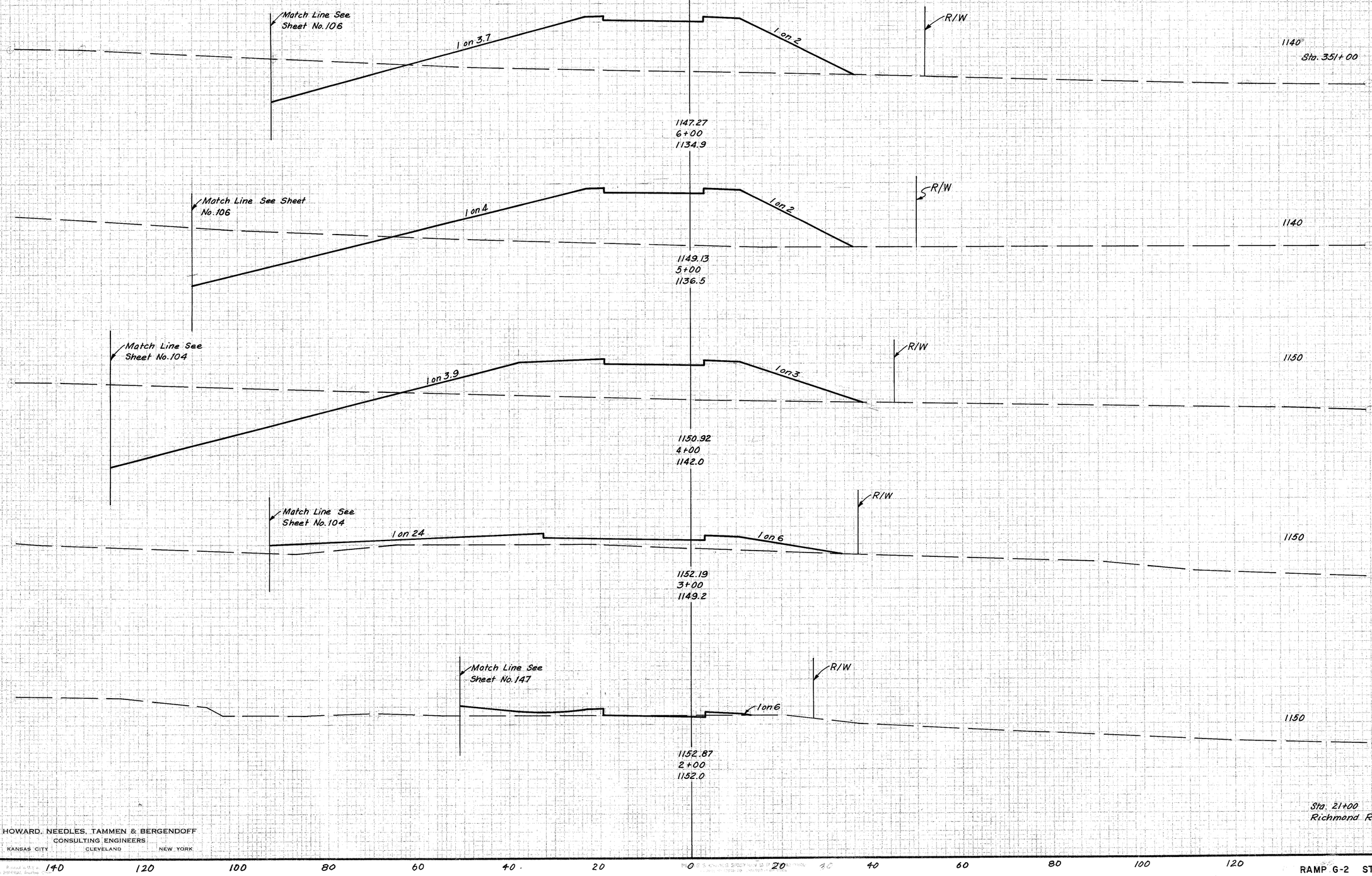
RAMP G-1 STA. 43+00 TO STA. 45+87.99

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

133
256

CUYAHOGA COUNTY

CUY-I-0.11



EARTHWORK

	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1140 Sta. 351+00	68	821		
			130	979
	145	779		
			793	2960
1140				
	283	817		
			1598	2625
1150				
	580	601		
			1074	1523
1150				
	0	221		
			6	487
1150				
	3	42		
			97	58
Sta. 21+00 Richmond Rd.	68	0		

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

RAMP G-2 STA. 2+00 TO STA. 6+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

137
256

CUYAHOGA COUNTY

CUY-I-0.11

1098.06
97+00
1098.02

Special 3-C Mod. C.B.
Sta. 96+75
26' Rt.
N/G 1096.78

1090

Existing 12" Pipe
FL 1091.5 ±

62-D

1094.92
96+00
1094.88

Special 3-C Mod. C.B.
Sta. 95+60
26' Rt.
N/G 1093.28

1090

Existing 12" Pipe
FL 1087.9 ±

61-D

Existing Pavement Removal
Merrygold Blvd.

℄ Ramp G-1

1091.83
95+00
1091.97

1089.31
94+00
1089.27

1086.30
93+00
1086.26

1084.49
92+00
1084.45

1090
1080

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
49	2		
		165	22
40	10		
		168	22
51	2		
		128	11
18	4		
		63	9
16	1		
		41	2
6	0		
		6	0
Sta. 91+50	0	0	

LAZ 12-1-43
LAZ ✓ ECE 12-2-43
LAZ ✓ ECE 12-9-43

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

100 80 60 40 20 0 20 40 60 80 100

EMERY ROAD STA. 93+00 TO STA. 97+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

138
256

CUYAHOGA COUNTY

CUY-I-0.11

Special 3-C Mod. C.B.
Sta. 102+25
26'Rt.
N/G 1109.09

Exist. 12" Pipe
FL. 1104.3±

69-D

Special 3-C Mod. C.B.
Sta. 101+75-26'Lt.
N/G 1108.41

Exist. 12" Pipe
FL. 1103.3

68-D

1109.36
102+00
1109.12

1110

1100

1100

1100

1108.12
101+00
1108.08

Special 3-C Mod. C.B.
Sta. 100+70
26'Lt.
N/G 1107.25

Exist. 12" Pipe
FL. 1101.9±

67-D

Special 3-C Mod. C.B.
Sta. 100+50
26'Rt.
N/G 1106.96

Exist. 12" Pipe
FL. 1102.2±

66-D

1100

1100

1 on 3

Special 3-C C.B.
Sta. 99+60-26'Lt.
N/G 1105.25

T/C Adjusted to
Elev. 1105.37

1106.70
100+00
1106.66

FL. 1101.07

Exist. M.H.
FL. 1100.6±

7'-12" @ 1.0%
CL. J-1

FL. 1101.00

65-D

1100

1100

1104.27
99+00
1104.23

Special 3-C Mod. C.B.
Sta. 98+75-26'Rt.
N/G 1103.07

Exist. 12" Pipe
FL. 1098.0±

64-D

1100

1100

Special 3-C C.B.
Sta. 97+85
26'Lt.
N/G 1100.19

T/C Adjusted to
Elev. 1100.31

Exist. M.H.

FL. 1096.57

Exist 12" Pipe
FL. 1095.7±

7'-12" @ 1.0%
CL. J-1

FL. 1096.50

1101.19
98+00
1101.15

63-D

1100

Sta. 97+00

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
55	0		
		207	0
57	0		
		272	0
90	0		
		254	0
47	0		
		189	0
55	0		
		193	4
49	2		

LA2 — ECE 12-11-63
LA2 — ECE 12-13-63
LA2 — ECE 12-13-63

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

100 80 60 40 20 0 20 40 60 80 100

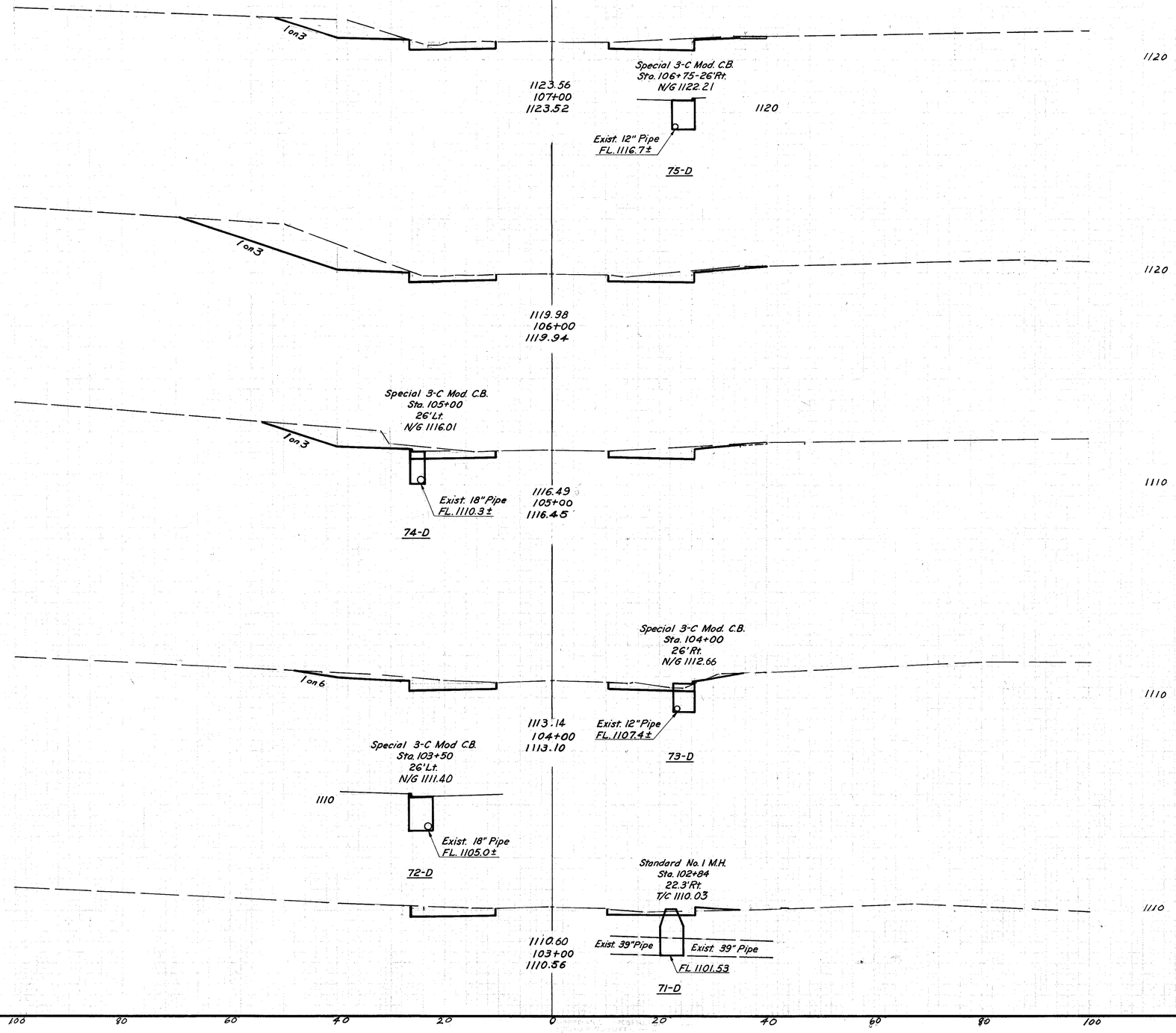
EMERY ROAD STA. 98+00 TO STA. 102+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

139
256

CUYAHOGA COUNTY

CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
103	0		
		511	0
173	0		
		533	0
115	0		
		333	0
65	0		
		206	7
46	4		
		187	7
Sta. 102+00	55	0	

EMERY ROAD STA. 103+00 TO STA. 107+00

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

12-4-63
12-4-63
12-4-63

LAZ
LAZ
LAZ

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

140
256

CUYAHOGA COUNTY

CUY.-I-0.11

Begin new 5' sidewalk Sta. 110+80
Lt. side

1 on 4

R/W

Begin new 5' sidewalk Sta 110+00

Existing Sidewalk

1132.70
110+00
1132.73

Special 3-C Mod. C.B.
Sta. 109+50
26' Rt.
N/G 1130.95

Exist. 12" Pipe
FL. 1125.3±

77-D

1129.84
109+00
1129.70

1 on 4

Std. No. 1-2A C.B.
Sta. 108+10
48' Lt.
N/G 1120.0

Special 3-C Mod. C.B.
Sta. 108+10
26' Lt.
N/G 1126.49

1 on 4

22"-12" @ 4.0%

CL. E-1

FL. 1122.88

FL. 1122.00

Exist. 18" Pipe
FL. 1120.8

Existing Sidewalk

1126.72
108+00
1126.68

76-D

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
116	0		
		306	35
49	19		
		139	91
26	30		
		239	56
103	0		

1130
1130
1130
1120
Sta 107+00

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

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

EMERY ROAD STA. 108+00 TO STA. 110+00

SSS-2/1-63 \ HLD
SHT. 12-63 \ HLD
HLD
JEN

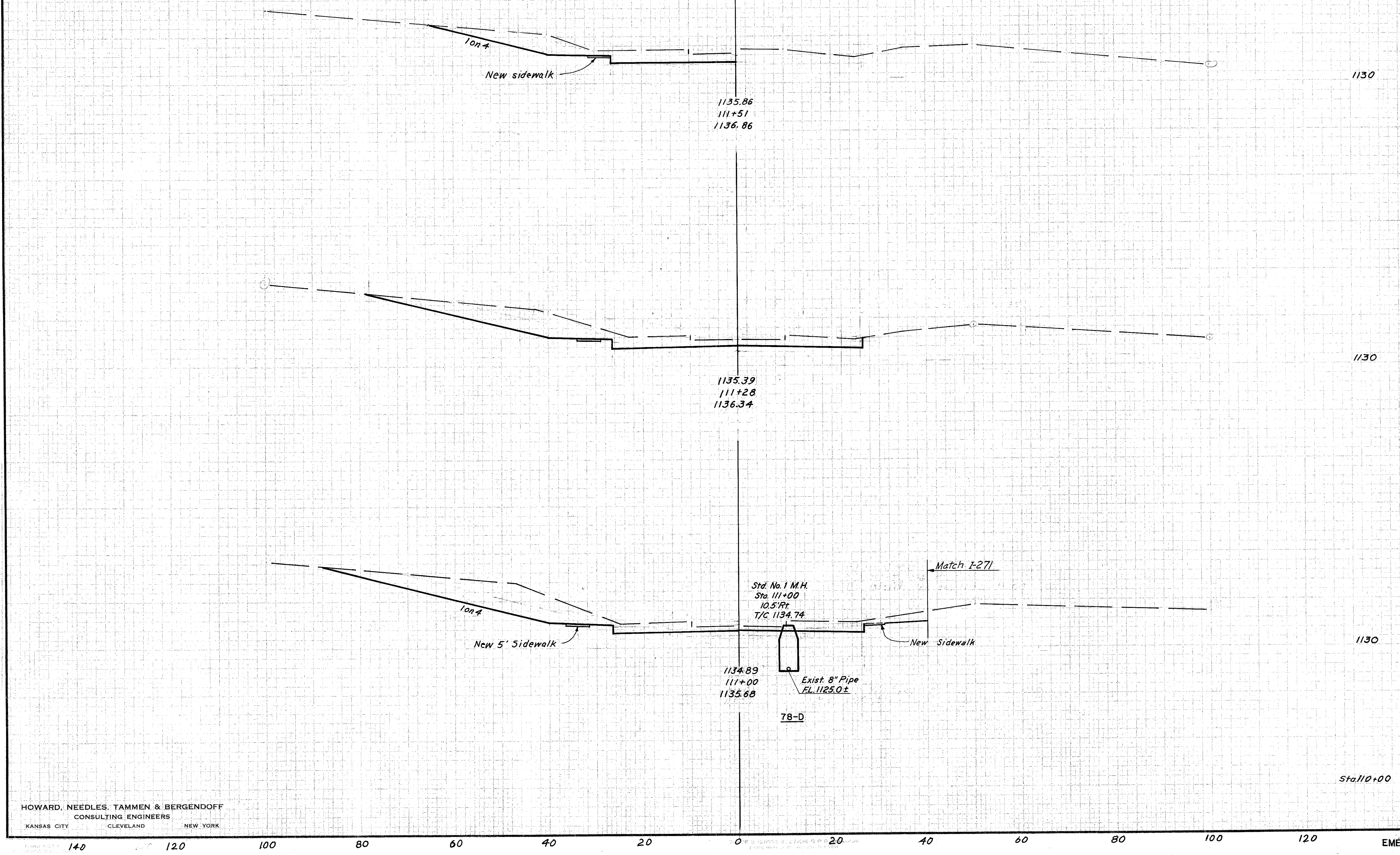
3-19-63
3-19-63
5-3-63
5-7-63

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

141
256

CUYAHOGA COUNTY

CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
150	0		
		175	0
262	0		
		319	0
353	0		
		868	0
116	0		

S.S.S-3-11-63 ✓ H.L.D. 3-13-63
JAG 5-2-63 ✓ HLD 5-9-63
HLD 5-9-63
JEN 5-9-63

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

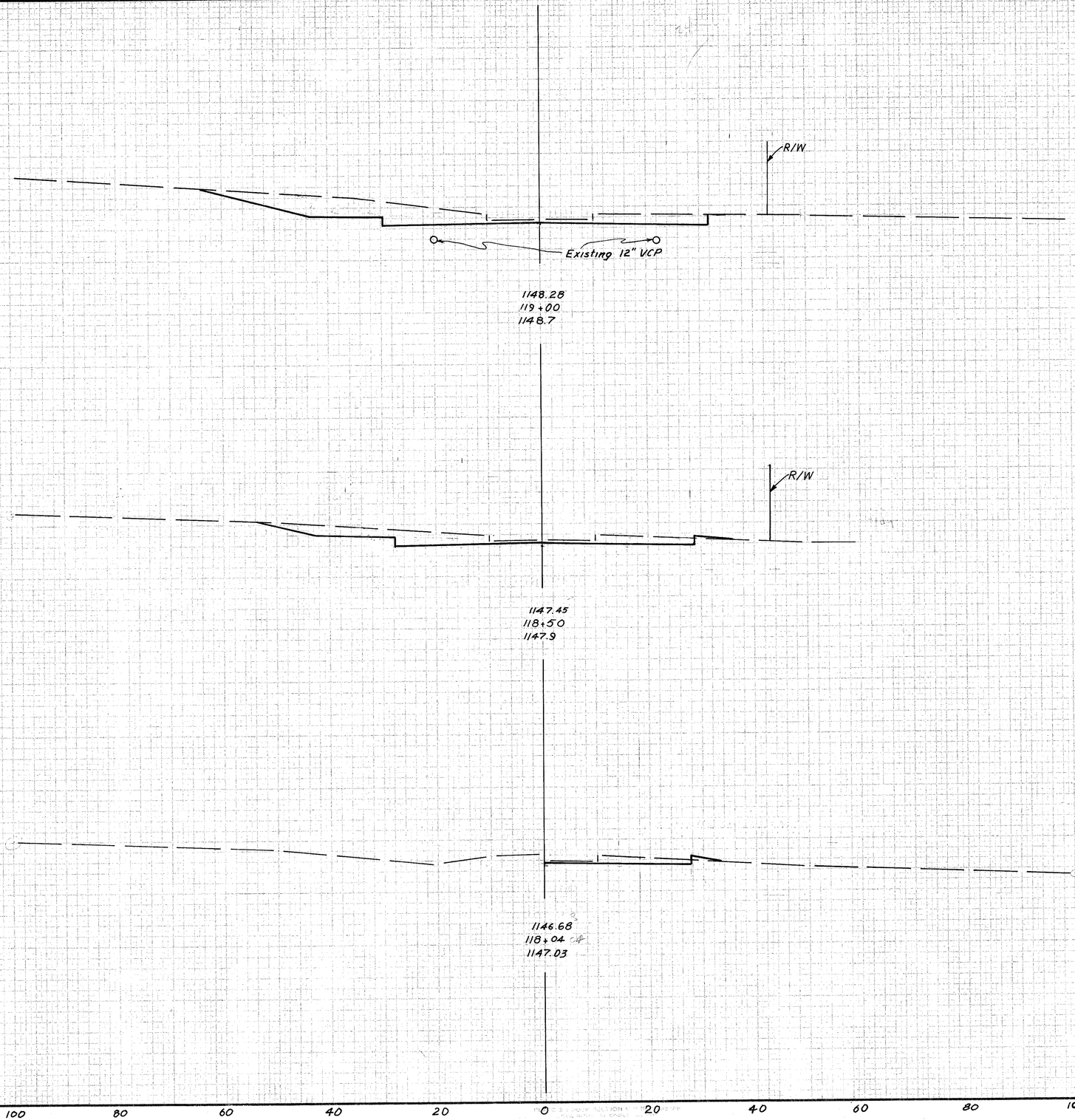
EMERY ROAD STA.111+00 TO STA.111+56

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

142
256

CUYAHOGA COUNTY

CUY-I-0.11



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1140				
	210	0		
			308	0
1140				
	122	0		
			132	0
1140				
	21	0		
Bridge Extra Quantity			0	0

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

EMERY ROAD STA.118+00 TO STA.119+00

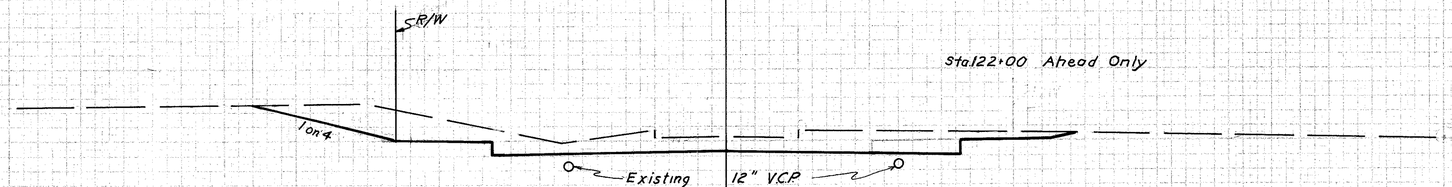
SSS-3-24.3 & H.L.D. 2.19.63
JAB-4-64 H.O. 2.20.63
H.E.N. 5.9.63

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

143
256

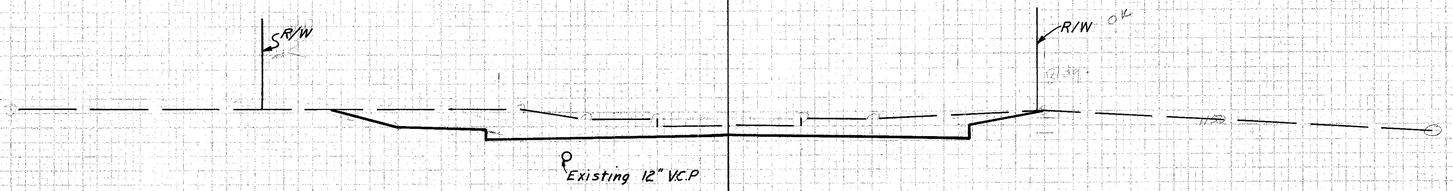
CUYAHOGA COUNTY

CUY.-I-0.11

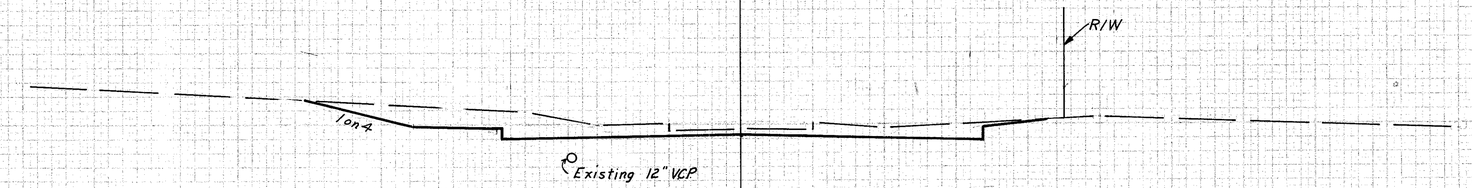


1149.73
122+00
1151.7

Note:
Richmond-Emery Rd. Intersection
See Sheet No.149 For Quantity.



1150.15
120+50
1151.1



1149.75
120+00
1150.3

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1150			
191	0		
1150			
215	0		
		361	0
1150			
175	0		
		713	0
Sta.119+00			
210	0		

3-13-63 WILD
3-18-63 WILD
5-10-63 HLD
5-10-63 JEN

555-3-63 WILD
586-3-63 WILD

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

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

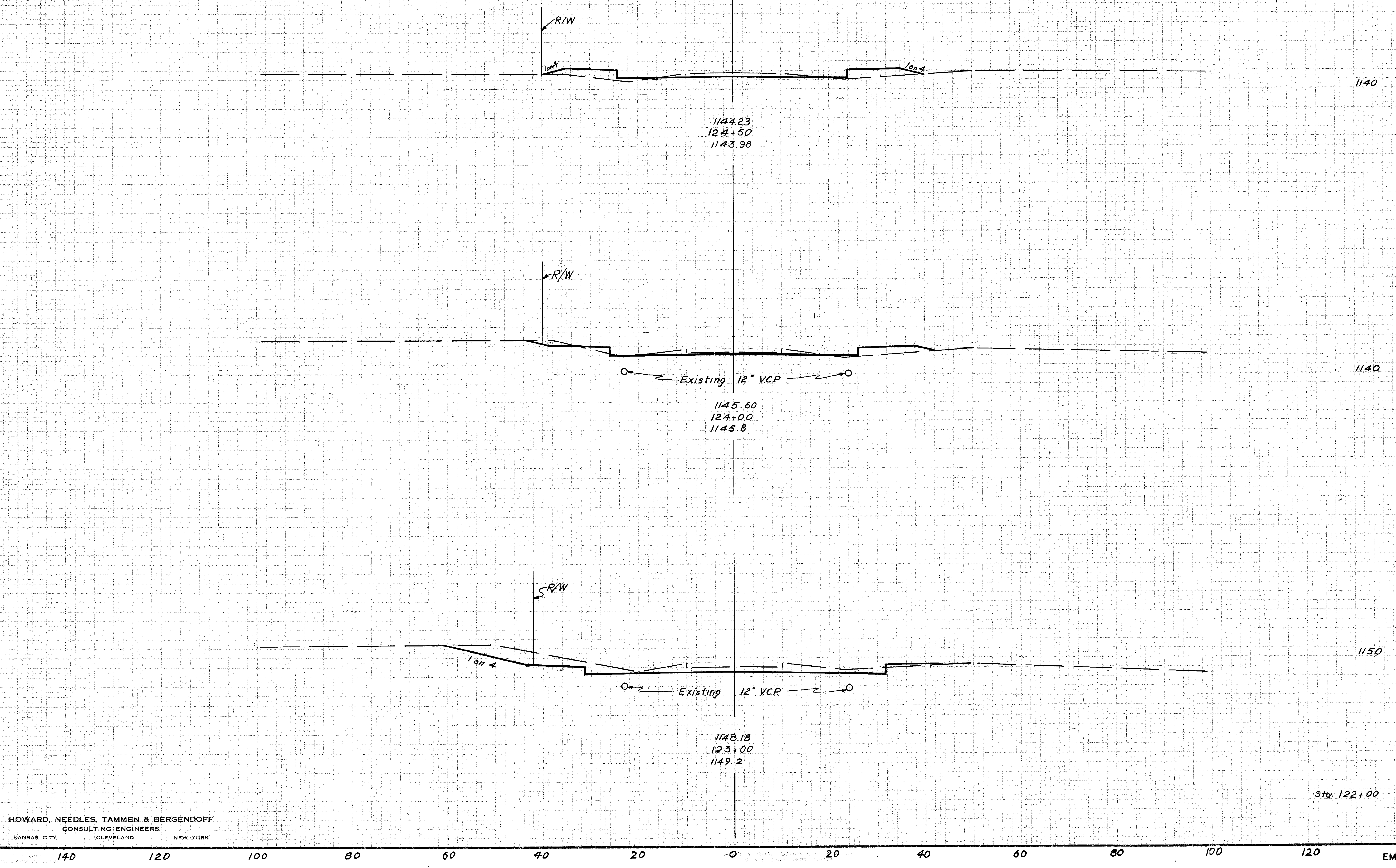
EMERY ROAD STA.120+00 TO STA.122+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY

CUY.-I-0.11

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
23	45		
		37	67
17	27		
		256	59
121	5		
		578	9
191	0		



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

SSS 3-12-63 ✓ H.L.D. 3-13-63
JAG 5-8-63 ✓ HLD 5-9-63
HLD 5-10-63
JEN 5-10-63

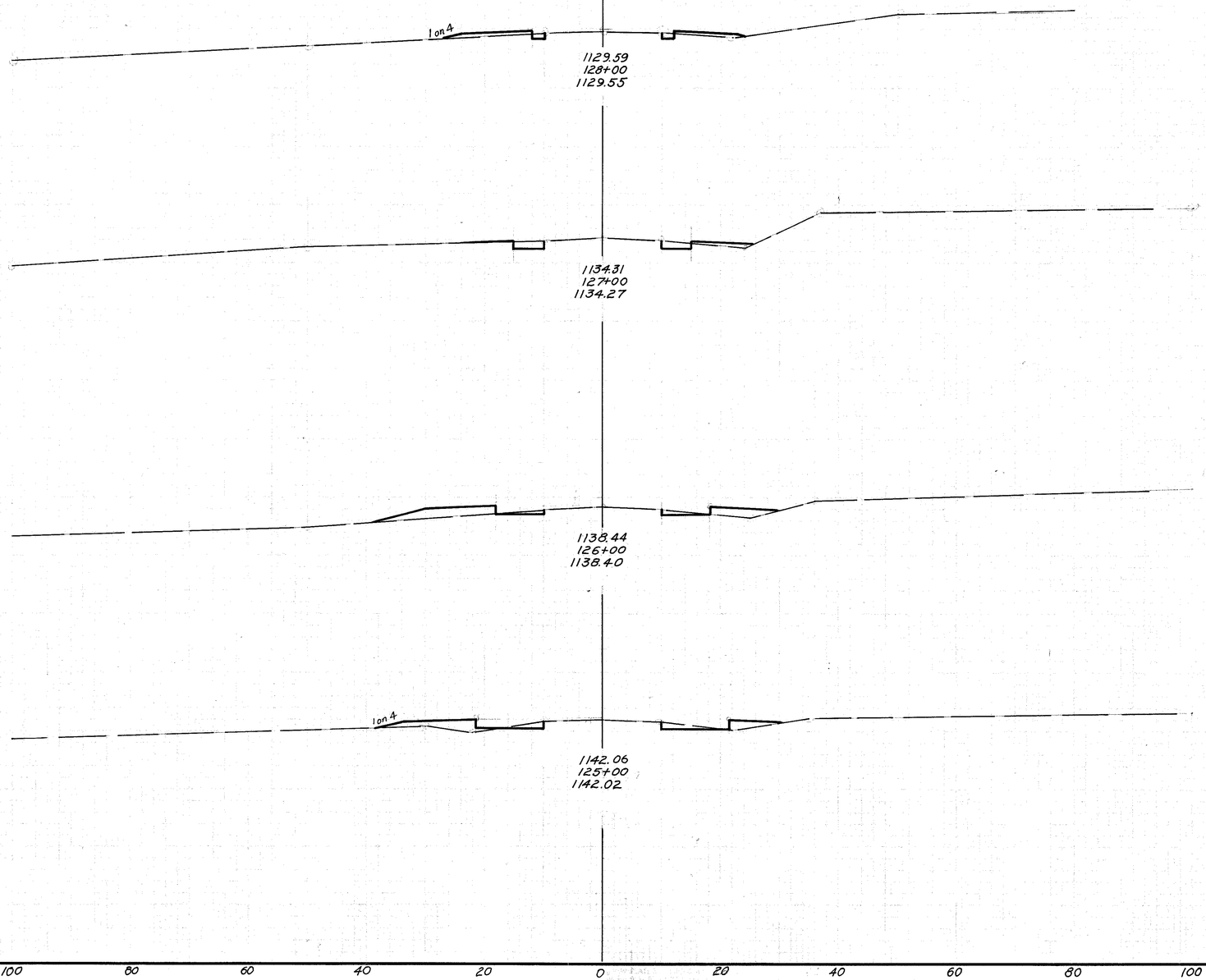
EMERY ROAD STA.123+00 TO STA.124+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

145
256

CUYAHOGA COUNTY
CUY-I-0.11

Note:
Left and Right Taper
Ends at Sta. 128+27



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
Quantity to 128+27			2	8
1130	4	15		
			28	41
1130	11	7		
			33	91
1140	7	42		
			30	130
1140	9	28		
			30	72
Sta 124+50	23	45		

L A2
L A2
L A2

ECE
ECE
ECE

10-1249
10-1243
10-1241

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

100 80 60 40 20 0 20 40 60 80 100

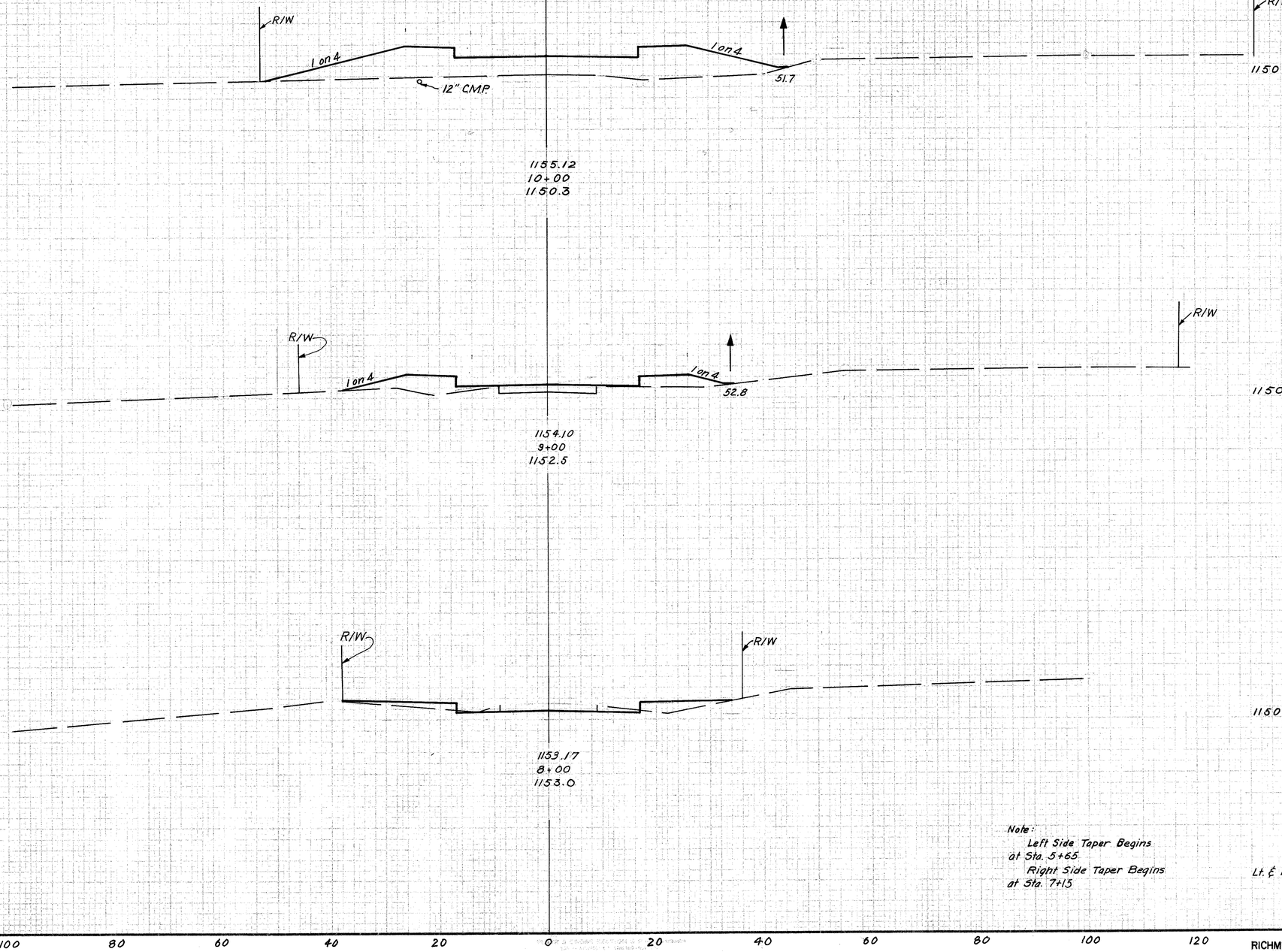
EMERY ROAD STA. 125+00 TO 128+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

146
256

CUYAHOGA COUNTY

CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	359		
		43	825
23	87		
		61	239
10	42		
Lt. & Rt. Taper Quantity		48	0

Note:
Left Side Taper Begins at Sta. 5+65.
Right Side Taper Begins at Sta. 7+15

RICHMOND ROAD STA. 8+00 TO STA. 10+00

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

SSC FILING NO. 0
SHEET 3 OF 43 SHEETS
JEN

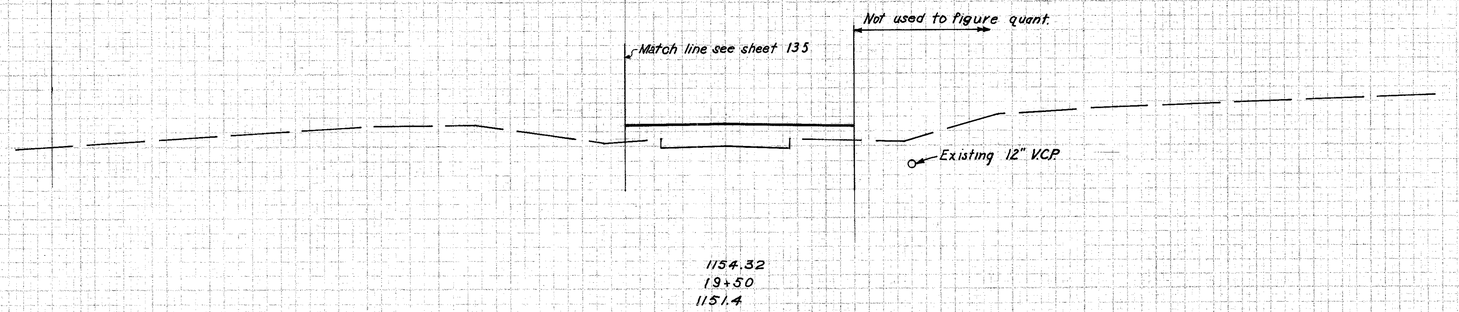
3-13-63
4-9-63
4-18-63
4-19-63

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

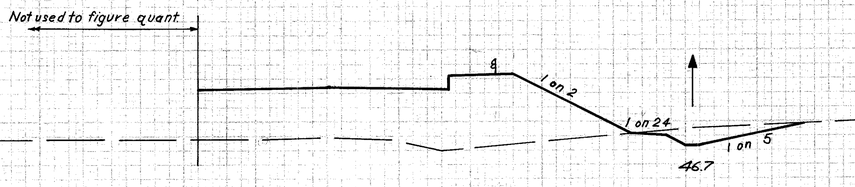
147
256

CUYAHOGA COUNTY

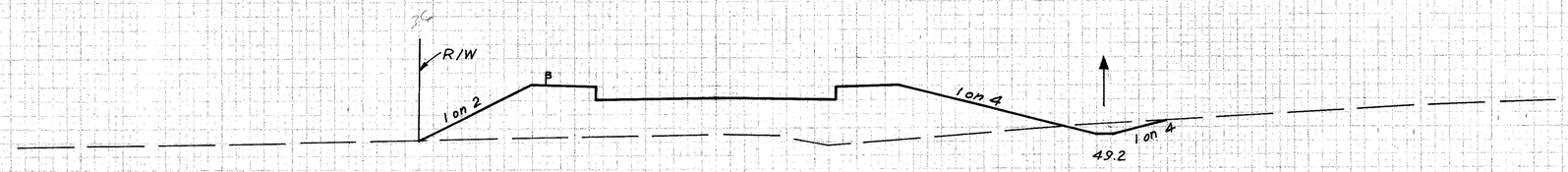
CUY-I-0.11



1154.32
19+50
1151.4



1156.20
11+00
1147.8



1155.66
10+50
1149.1

	EARTHWORK END AREA EXC.	EMB.	VOLUME EXC.	EMB.
1150				
	0	84		
Bridge Extra Quantity			0	284
1150				
	28	427		
			38	834
1150				
	13	473		
			12	770
Sta. 10+00	0	359		

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

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

RICHMOND ROAD STA. 10+50 TO STA. 19+50

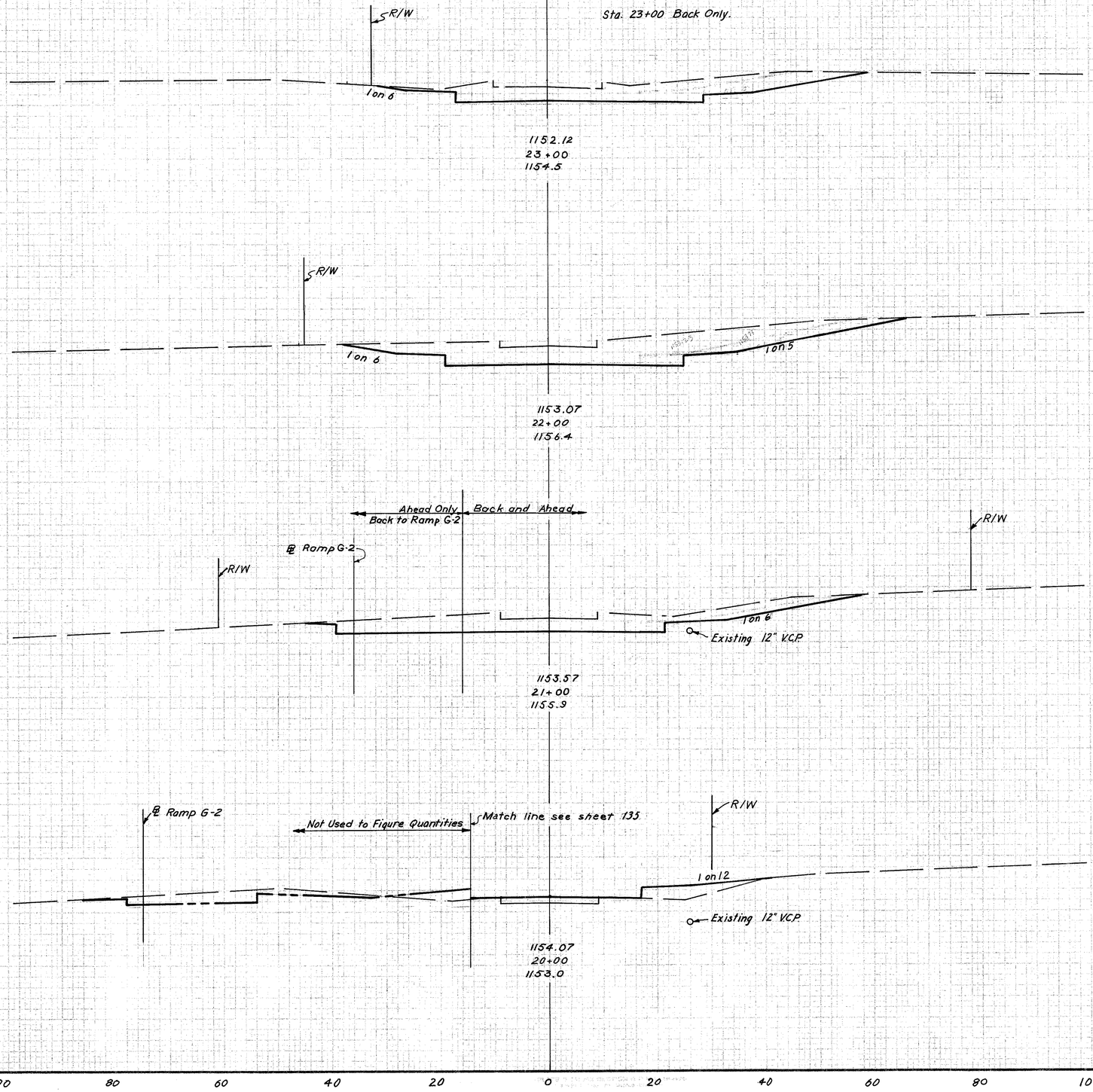
3-7-63
4-10-63
4-18-63
HLD.
HLD.
JEH

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

148
256

CUYAHOGA COUNTY

CUY-1-0.11



EARTHWORK				
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
1150				
	218	0		
			1048	0
1150				
	347	0		
			1026	0
1150				
Ahead	240	0		
Back	172	0		
			318	113
1150				
	0	61		
			0	134
Sta. 19+50	0	84		

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

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

RICHMOND ROAD STA. 20+00 TO STA. 23+00

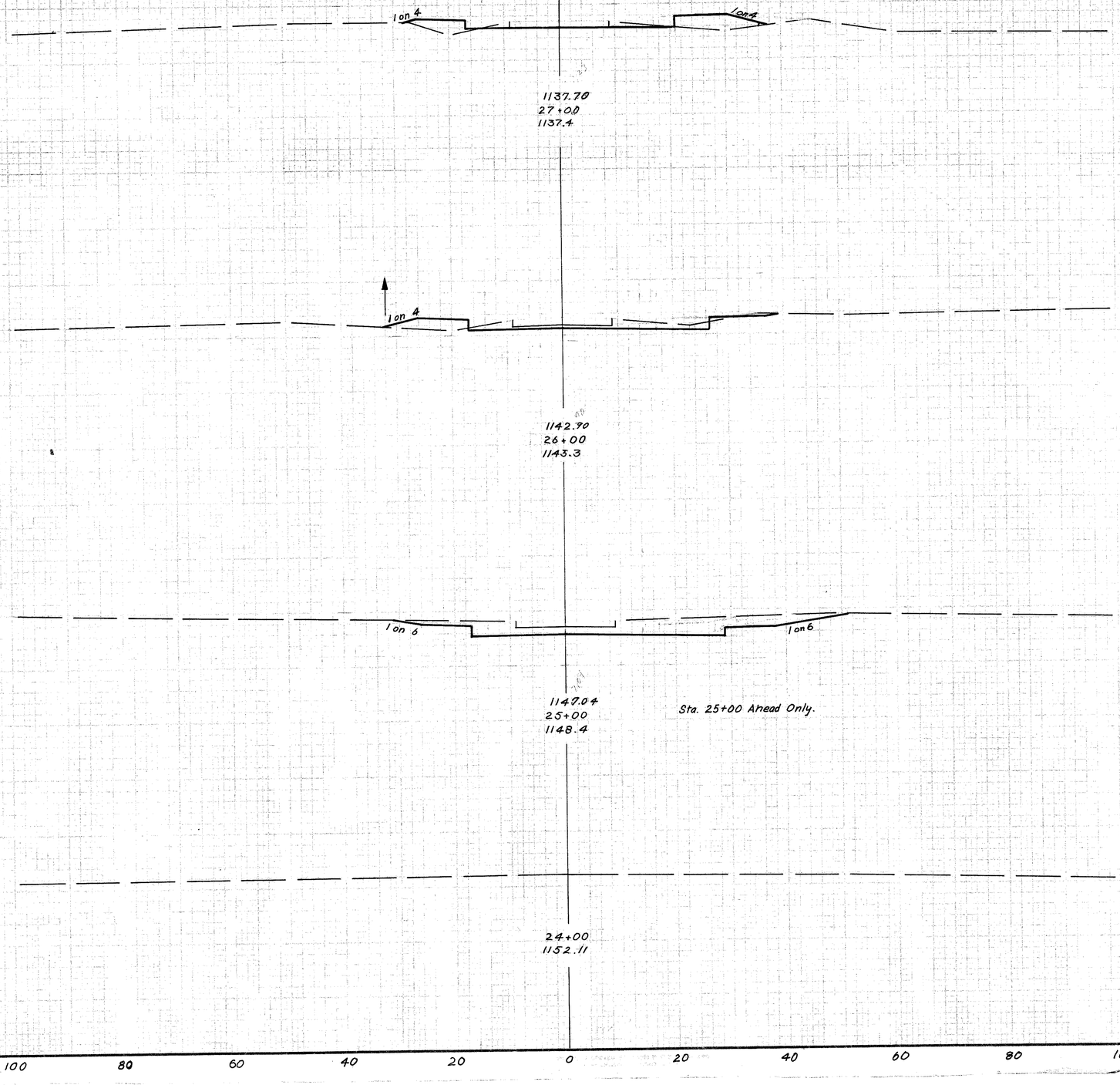
SIGNED H.L.D. 3-10-63
CHKD H.L.D. 3-10-63
APP'D H.L.D. 4-18-63
JEN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

149
256

CUYAHOGA COUNTY

CUY-I-0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
6	62		
		80	180
34	28		
		335	52
147	0		
		1922	0

Richmond - Emery Rd. Intersection Quantity

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

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

RICHMOND ROAD STA. 24+00 TO STA. 27+00

3-7-63 DRN
4-10-63 CHKD
4-18-63 APP'D

JAN 1963 SURVEY

S-8

8-5

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

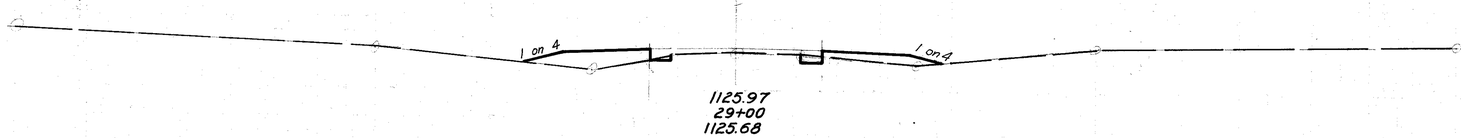
130
256

CUYAHOGA COUNTY

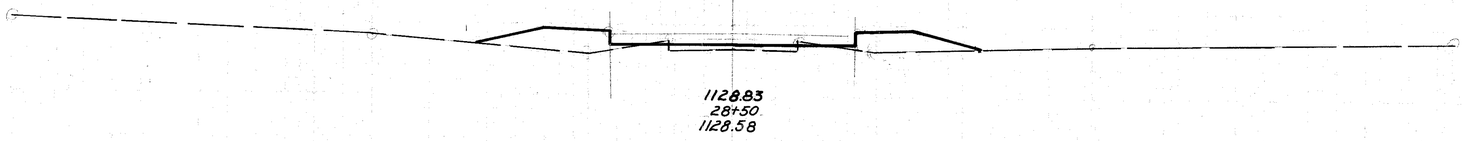
CUY-I-O II

CUY-271-4.85

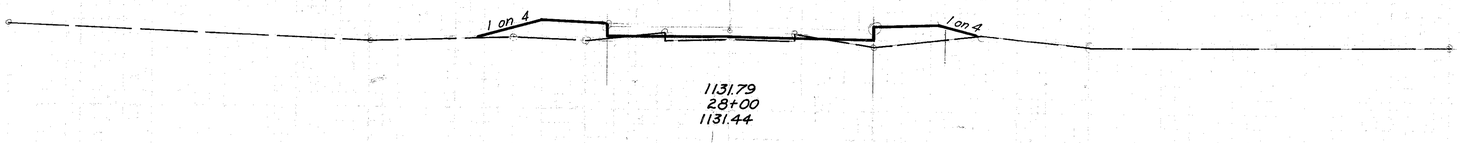
Note:
Right and Left Side
Taper End at Sta. 29+75



1125.97
29+00
1125.68



1128.83
28+50
1128.58



1131.79
28+00
1131.44

	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
Quantity To Sta. 29+75			3	65
1130 30				
	4	47		
			5	137
1130				
	2	101		
			4	168
1130				
	2	80		
			15	263
Sta 27+00	6	62		

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

100 80 60 40 20 0 20 40 60 80 100

ND ROAD STA. 28+00 TO STA. 29+

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

151
256

CUYAHOGA COUNTY
CUY - I - 0.11

1052.64
4+00
1053.3

D-103

Std. No. 6 C.B.
Sta. 3+00 ℄ Corbin Dr.
11.5' Lt. & Rt.
N.G. 1051.95

1052.14
3+00
1053.2

F.L. 1048.20

F.L. 1048.08

23'-12" @ 1.0%
Class J-1,

D-102

1051.64
2+00
1052.3

Std. No. 6 C.B.
Sta. 1+15
℄ Corbin Dr. 11.5 Lt.
N.G. 1051.06

Std. No. 6 C.B.
Sta. 1+15
℄ Corbin Dr. - 11.5 Rt.
N.G. 1051.06

F.L. 1047.80

F.L. 1047.68

1051.28
1+00
1052.0

D-101

23'-12" @ 0.5%
Class J-1

1051.99
0+50
1052.2

1052.61
0+13.6
1052.61

1060	1050	EARTHWORK END AREA EXC.	EMB.	VOLUME EXC	EMB
		56	0		
				224	0
		66	0		
				218	0
		52	0		
				189	0
		50	0		
				76	11
		32	12		
				45	8
		35	0		

LA2 - ECE 3-64
LA2 - ECE 3-64
LA2 - ECE

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

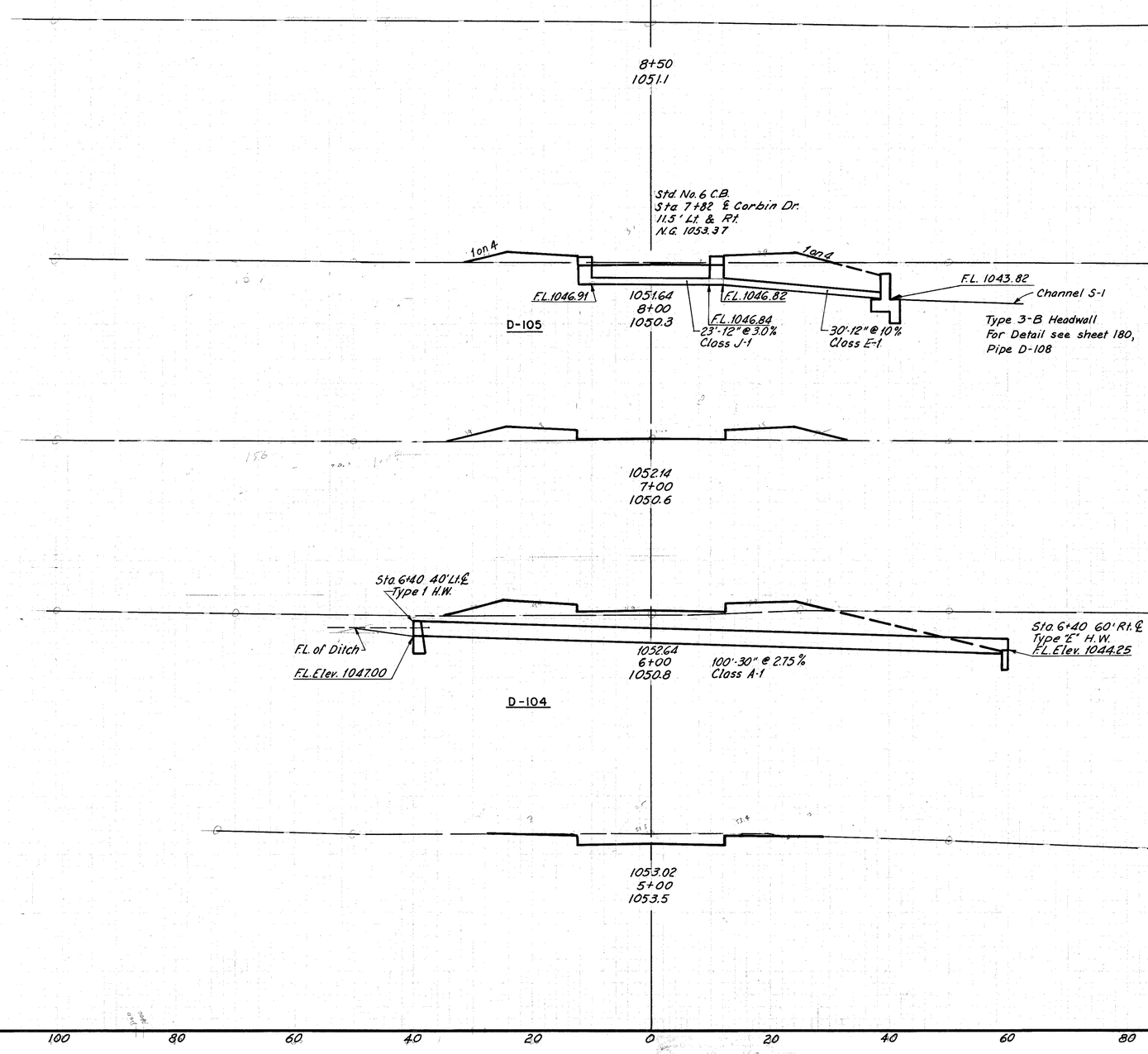
100 80 60 40 20 0 20 40 60 80 100

CORBIN DRIVE STA 0+13.6 TO STA. 4+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

152
256

CUYAHOGA COUNTY
CUY - 1 - 0.11



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB
0	0		
		11	43
12	46		
		22	232
0	79		
		0	306
0	86		
		98	159
53	0		
		202	0
56	0		

100 80 60 40 20 0 20 40 60 80 100

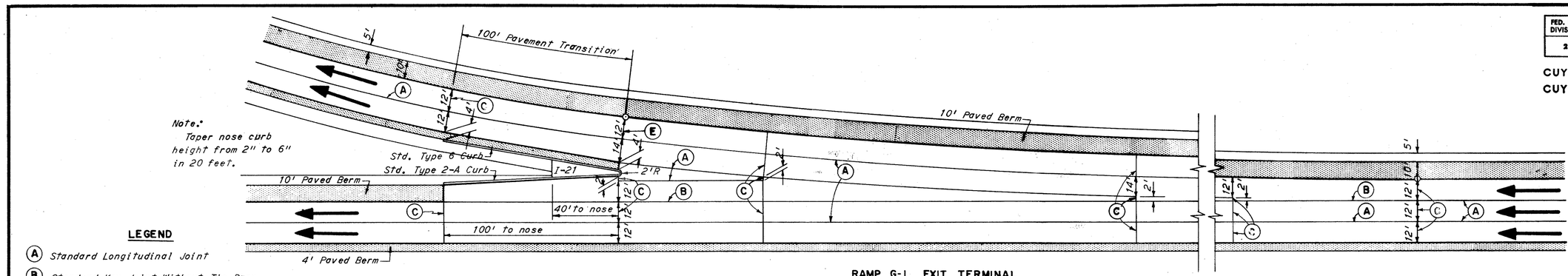
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CORBIN DRIVE STA. 5+00 TO STA. 8+50

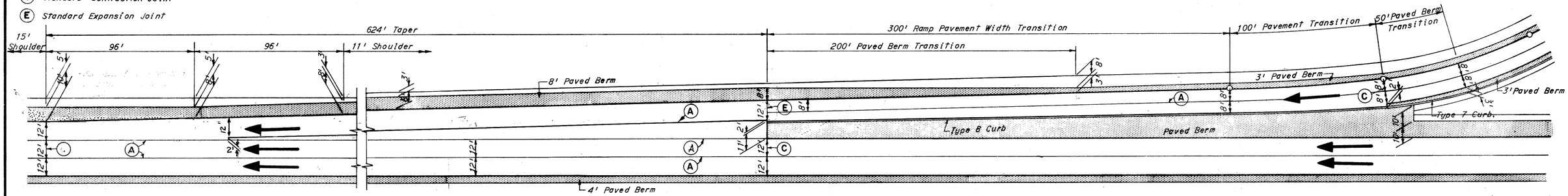
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

153
256

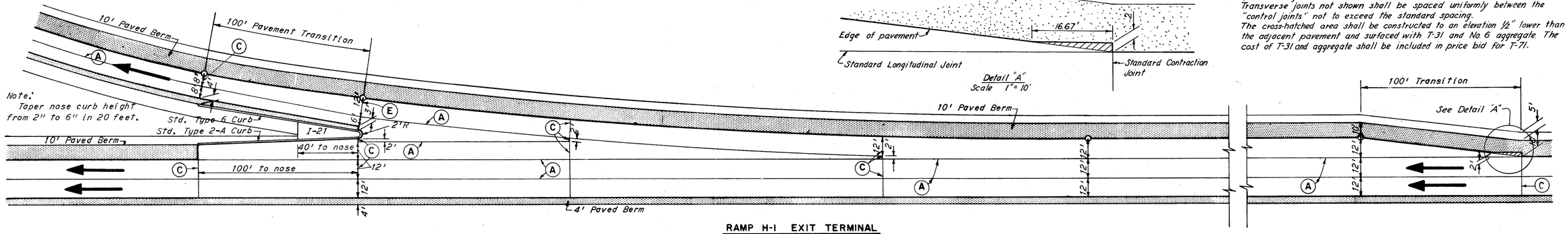
CUYAHOGA COUNTY
CUY-I-0.11

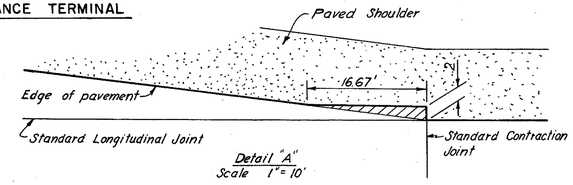


RAMP G-1 EXIT TERMINAL



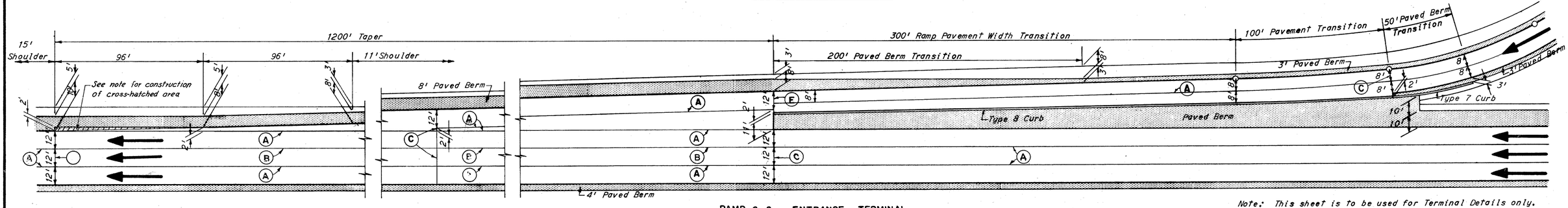
RAMP H-2 ENTRANCE TERMINAL





The transverse joints shown on this drawing are termed "control joints". Their location is fixed in accordance with the dimensions shown. Joints on speed change lanes shall extend across the mainline pavement. Transverse joints not shown shall be spaced uniformly between the "control joints" not to exceed the standard spacing.
The cross-hatched area shall be constructed to an elevation ½" lower than the adjacent pavement and surfaced with T-31 and No. 6 aggregate. The cost of T-31 and aggregate shall be included in price bid for T-71.

RAMP H-1 EXIT TERMINAL



RAMP G-2 ENTRANCE TERMINAL

Note: This sheet is to be used for Terminal Details only. The curvature shown on this sheet does not apply. For ramp curvature see the plan sheets for the various ramps, and sheet 9 for Curve Data.

MADE E.C.E. DATE 5-6-63 TRACED ____ DATE ____
CHECKED DWK DATE 5-6-63 SCALE 1" = 30'

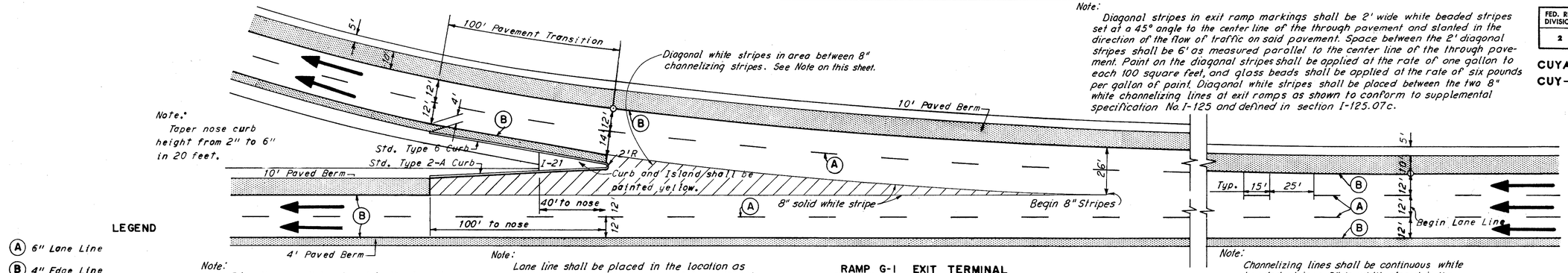
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

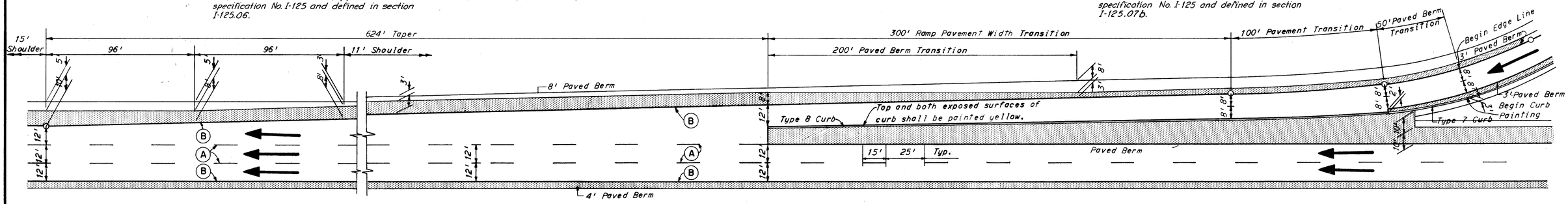
TERMINAL DETAILS

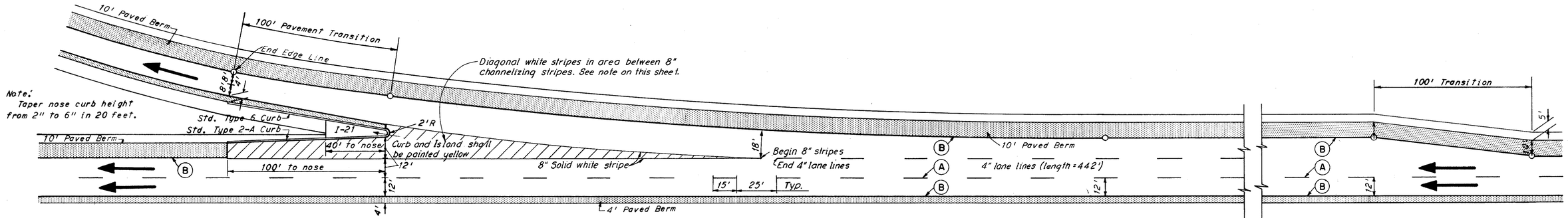
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

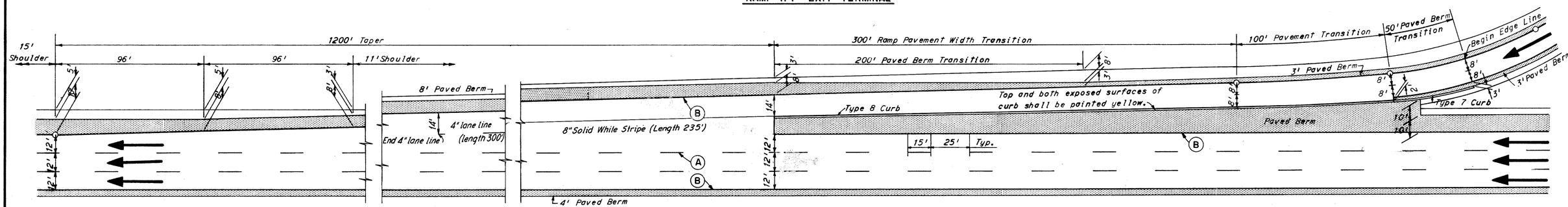
154
256

CUYAHOGA COUNTY
CUY-I-0.11









MADE E.C.E. DATE 5-6-63 TRACED DATE
CHECKED DWK DATE 5-6-63 SCALE 1"=30'

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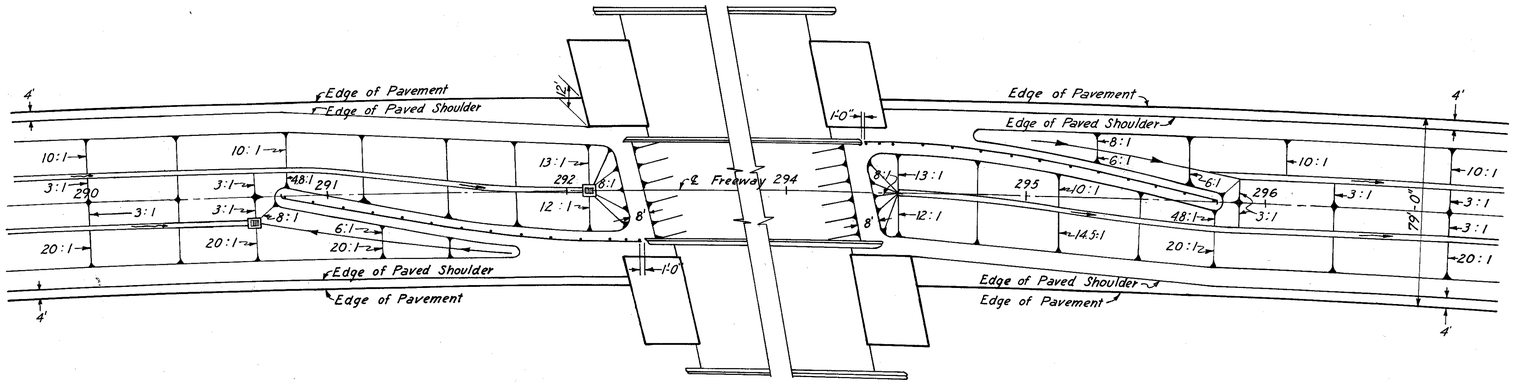
KANSAS CITY CLEVELAND NEW YORK

EDGE AND LANE LINE DETAILS

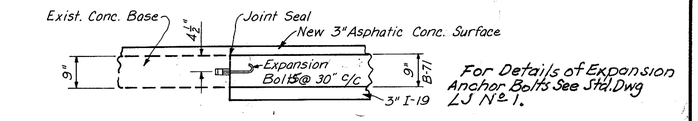
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

155
256

CUYAHOGA COUNTY
CUY-I-0.11

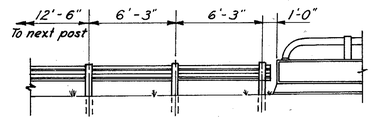


GUARD RAIL DETAILS AT MILES ROAD
Scale : 1" = 30'

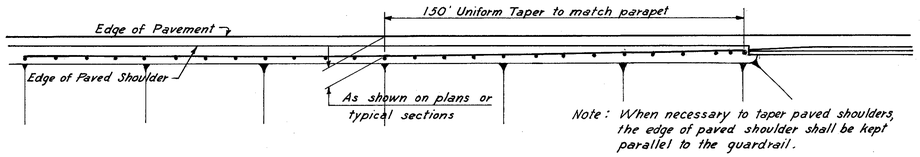


For Details of Expansion Anchor Bolts See Std. Dwg LJ N° 1.

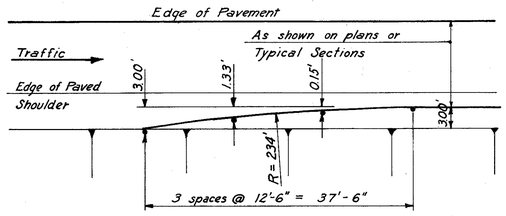
SPECIAL LONGITUDINAL KEY JOINT DETAIL
EMERY RD. STA. 94+65.25 TO STA. 108+50



TYPICAL GUARD RAIL TERMINAL AT WINGWALL
Scale 1" = 5'



TYPICAL GUARD RAIL TAPER AT BRIDGE WINGWALLS
Scale 1" = 30'

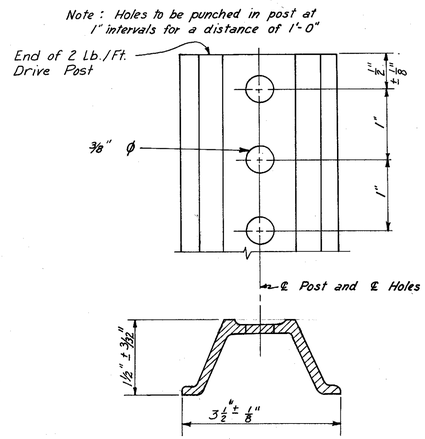


TYPICAL GUARD RAIL FLARE
Scale 1" = 10'

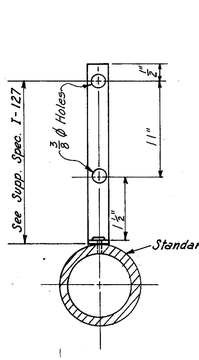
MEDIAN GUARD RAIL OFF-SETS - MEASURED FROM FACE OF PARAPET			
Post	Offset	Post	Offset
½	0.04'	9	12.78'
1	0.16'	10	15.33'
2	0.64'	11	17.87'
3	1.44'	12	20.42'
4	2.57'		
5	4.01'		
6	5.77'		
7	7.84'		
8	10.23'		

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

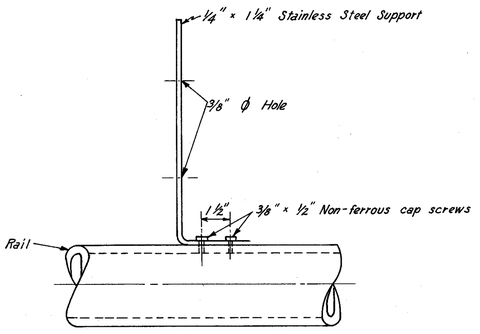
Delineators,
The delineator housings shall be fabricated according to Supplemental Specification I-127. The type to be erected shall be submitted to the Engineer for approval prior to the time of erection.
Delineators shall be placed 2'-6" from the outside edge of the shoulder where called for in the table. See Detail.
The spacing of holes on the bridge railing delineator support bracket should be adjusted to accomodate the approved delineator housings.



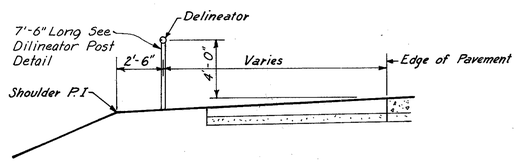
DELINEATOR DRIVE POST



TYPE C-2

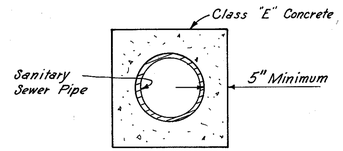


DELINEATOR BRACKET FOR BRIDGE RAILING
Scale 3" = 1'-0"



DELINEATOR LOCATION
Scale ¼" = 1'-0"

DELINEATOR LOCATIONS AND ESTIMATED QUANTITIES							
Roadway	Station From	Station To	Side	Space	Number of Delineators A-1	C-2	C-3
I-271	278+00	286+00	Rt.	200'	5		
I-271	288+00	292+00	Rt.	200'		3	
I-271	278+00	—	Lt.	—		1	
I-271	282+50	—	Lt.	—			1
I-271	284+50	290+50	Lt.	200'		4	
I-271	296+00	340+00	Lt.	200'	23		
I-271	300+00	344+00	Rt.	200'	23		
I-271	346+00	356+00	Rt.	200'		6	
I-271	357+20	—	Rt.	—			1
I-271	350+00	376+00	Lt.	200'	14		
I-271	364+00	374+00	Rt.	200'		6	
I-271	375+65	—	Rt.	—			1
H-1	1+50	5+50	Rt.	200'		3	
H-1	6+10	9+70	Lt.	90'		5	
H-1	10+40	17+40	Lt.	70'		11	
H-1	17+80	23+20	Lt.	30'		19	
H-2	1+30	14+30	Rt.	100'		14	
G-1	0+00	8+00	Rt.	200'		5	
G-1	21+90	27+90	Rt.	100'		7	
G-1	28+50	34+80	Lt.	30'		22	
G-2	5+00	11+00	Lt.	100'		7	
G-2	15+50	18+50	Rt.	100'		4	
		Total			65	117	3



TYPICAL SEWER PIPE ENCASMENT
Scale 1" = 1'-0"

MADE E.C.E.	DATE 4-10-63	TRACED H.L.D.	DATE 4-12-63
CHECKED LAZ	DATE 4-11-63	SCALE As Noted	

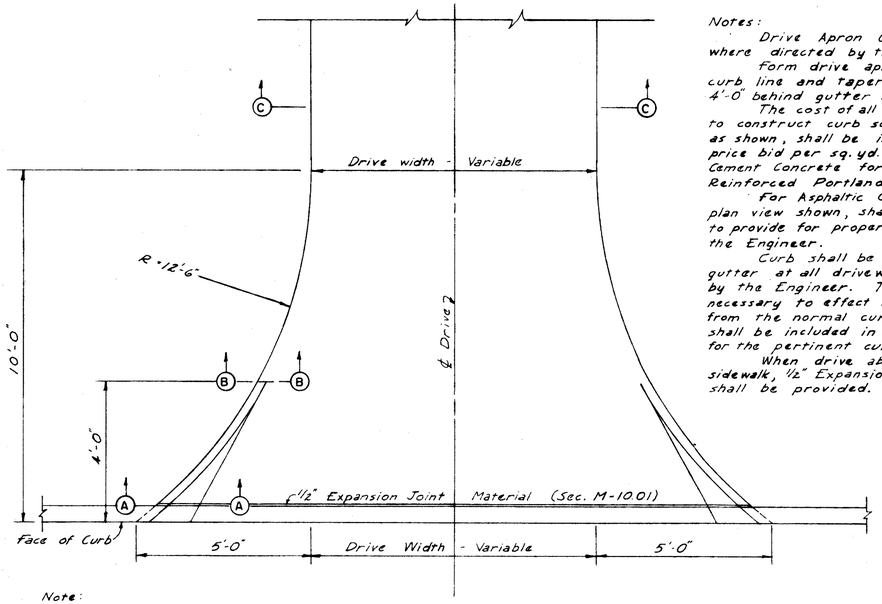
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

156
256

CUYAHOGA COUNTY

CUY - I-0.11



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

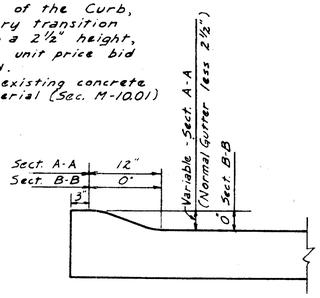
When drive abuts new or existing concrete sidewalk, ½" Expansion Joint Material (Sec. M-10.01) shall be provided.

Note:

This Apron Detail applies to all driveways on this project.

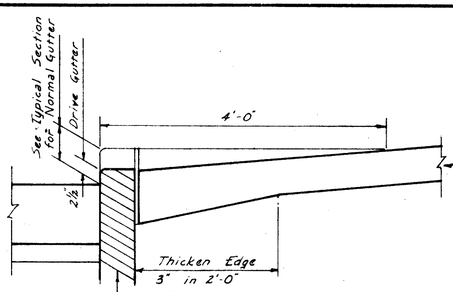
CONCRETE APRON DETAIL

Scale: ½" = 1'-0"



APRON CURB DETAIL
SECTION A-A & B-B

Scale: 1" = 1'-0"



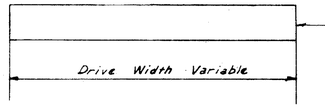
See Typical Section for Curb Specified. When drive abuts a pavement with no curb, the drive apron curb section shall be omitted.

APRON CURB TRANSITION

Scale: 1" = 1'-0"

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

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



SECTION C-C

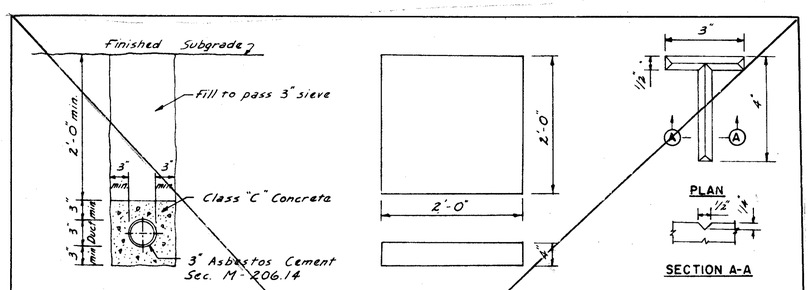
No Scale

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

(a.) 7" Plain Portland Cement Concrete, Item T-70.

(b.) 5" B-19 surfaced with two 1" courses of Type "C" Asphaltic Concrete, Item T-35.

(c.) 8" B-19 Aggregate, Stabilized with calcium chloride.



DUCT SECTION

Scale: 1" = 1'-0"

MARKER DETAIL

Scale: 1" = 1'-0"

TYPICAL SYMBOL

Scale: 3/8" = 1"

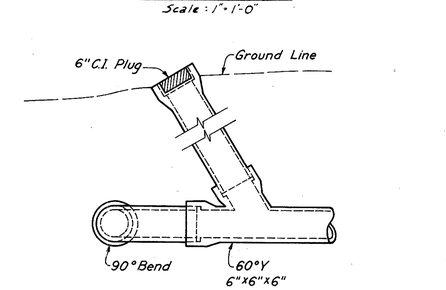
VOID

Notes:

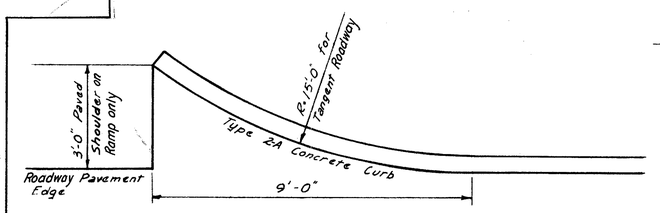
Underground Electrical Ducts shall be encased in Class "C" concrete having a minimum thickness of 3", shall have a minimum of 2'-0" cover below subgrade and shall be pitched to drain. Ends of ducts shall extend 2' beyond the edge of paved berm or back of curb. One No. 10 AWG galvanized steel draw wire 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 57, 58 and 67 to 75.

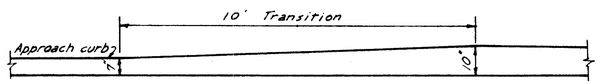


CLEANOUT DETAIL · SANITARY SEWER 3-S



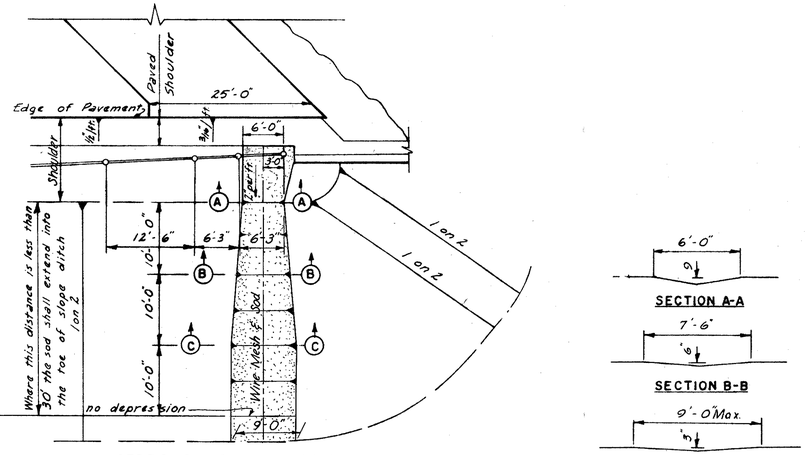
DETAIL "X"

Scale: ½" = 1'-0"



CURB HEIGHT TRANSITION DETAIL

Scale: ½" = 1'-0"



APPROACH SLAB EROSION CONTROL

Scale: 1" = 10'-0"

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"x1"x8" wood stakes and shall be perpendicular to the ground and flush with the finished grade.

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

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

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

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

ESTIMATED QUANTITIES	
FLUME LOCATION	L-10 Spec. Sodding
Sta. 292+10 Lt.	62 Sq. Yds.
Sta. 292+40 Rt.	46 Sq. Yds.
Sta. 294+20 Lt.	45 Sq. Yds.
Sta. 294+55 Rt.	32 Sq. Yds.
Total	185 Sq. Yds

MADE F.V.R. DATE 9-13-62 TRACED DATE

CHECKED R.J.H. DATE 10-4-62 SCALE As Shown

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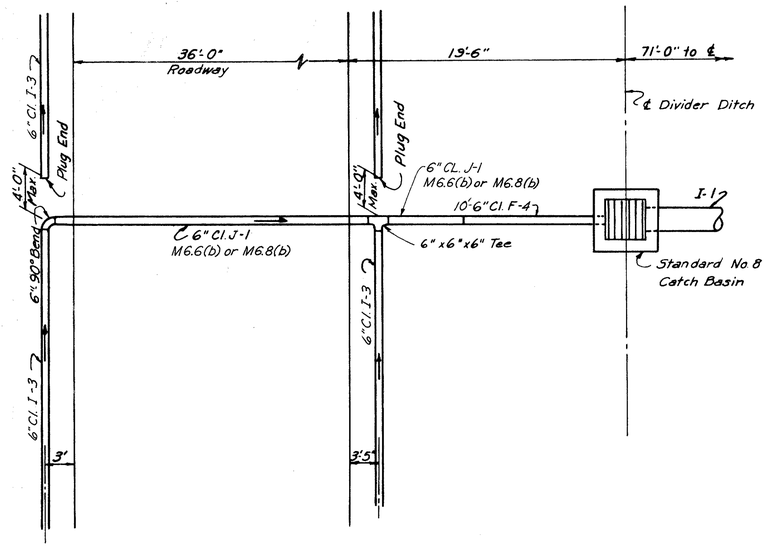
MISCELLANEOUS DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

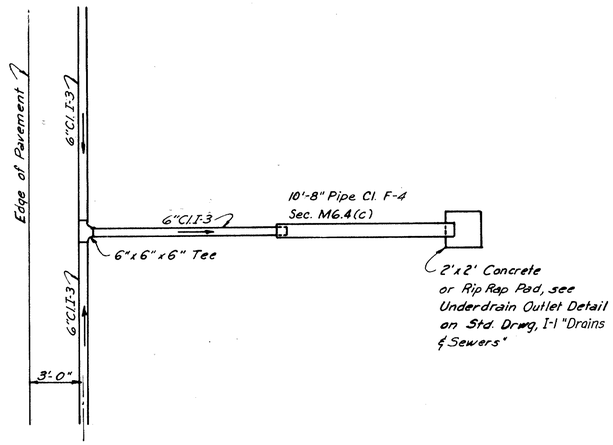
157
256

CUYAHOGA COUNTY

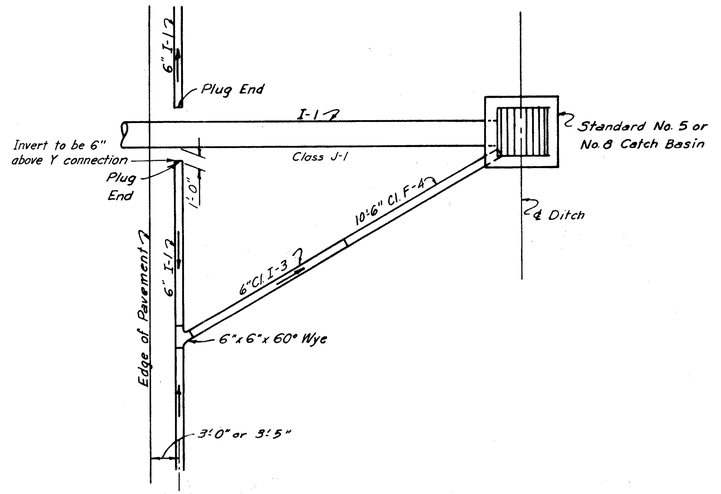
CUY I-0.11



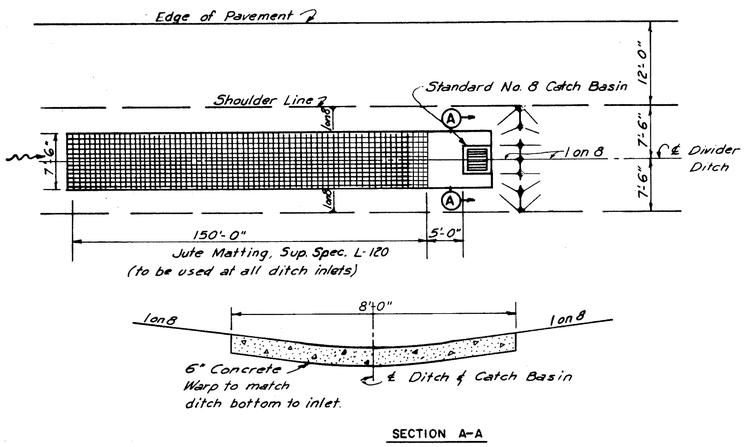
TYPICAL UNDERDRAIN OUTLET DETAIL— A



TYPICAL UNDERDRAIN OUTLET DETAIL— B



TYPICAL UNDERDRAIN OUTLET DETAIL— C

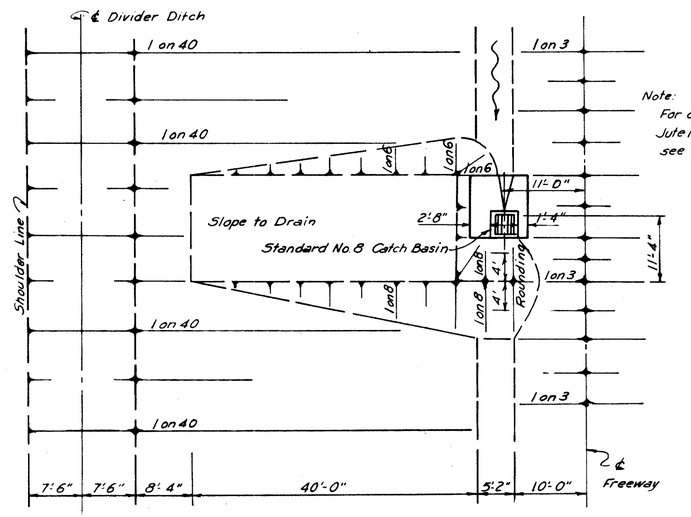


SECTION A-A

DIVIDER DITCH DRAINAGE DETAIL

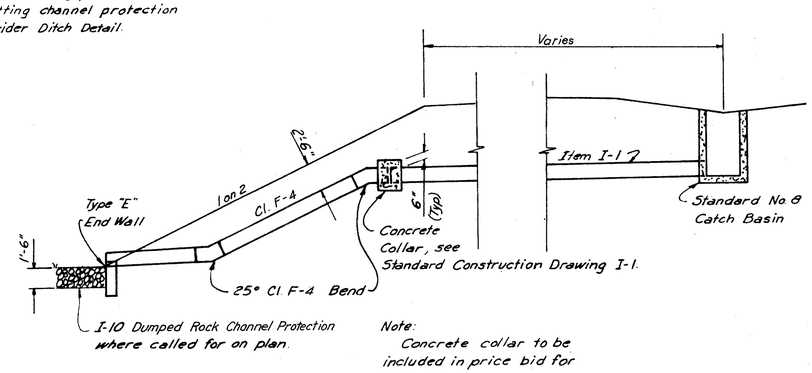
SHOWING TYPICAL PLACEMENT OF JUTE MATTING

Cost of Concrete apron and downstream dike to be included in unit price bid for Catch Basin.



Note:
For detail showing placement of Jute Matting channel protection see Divider Ditch Detail.

MEDIAN DITCH DRAINAGE DETAIL



Note:
Concrete collar to be included in price bid for Item I-1 pipe.

I-1 OUTLET DETAIL IN HIGH FILL

MADE DRK DATE 8-1-62 TRACED ____ DATE ____
CHECKED DDS DATE 8-9-62 SCALE ____

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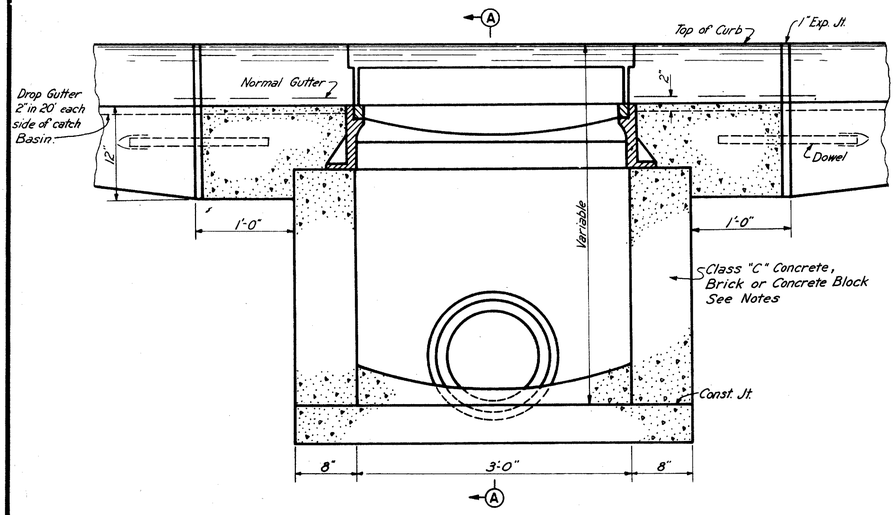
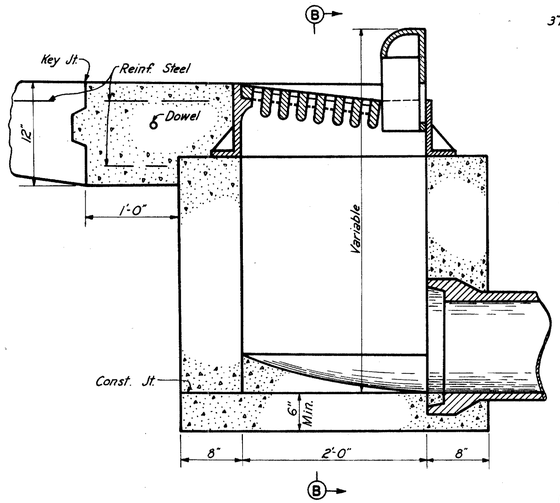
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

158
256

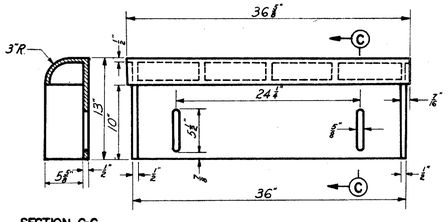
CUYAHOGA COUNTY
CUY-1-0.11



SECTION B-B

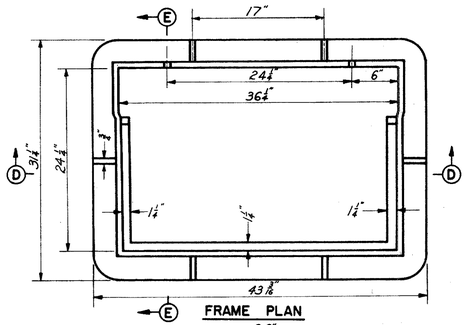


SECTION A-A

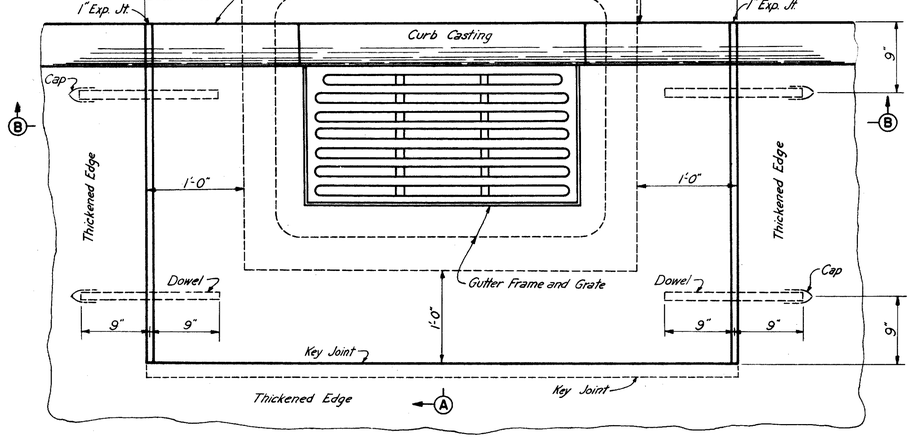


SECTION C-C

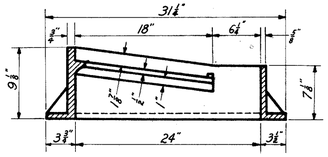
ELEVATION
RADIUS CURB BOX



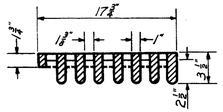
FRAME PLAN



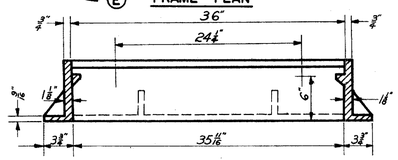
PLAN OF CATCH BASIN & PAVEMENT JOINTS



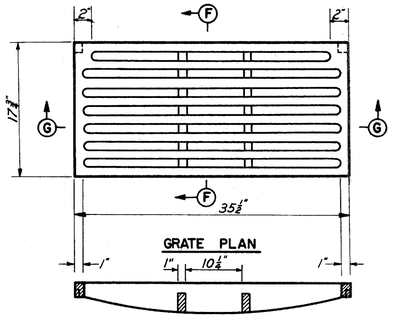
SECTION E-E



SECTION F-F



SECTION D-D



GRATE PLAN

SECTION G-G

Castings shall meet the requirements of Item I-8. The design shall be essentially the same and equally as strong as those shown hereon.

Weights, minimum.

Curb casting	*100 pounds*
Gutter grate	*200 pounds*
Gutter frame	*300 pounds*

Bearing Areas of frame and grate shall be so fitted and finished as to provide a firm and and even seat for all portions of the grate in the frame. No projections shall exist on bearing areas of either casting and the grate shall seat in its frame without rocking. Frame and grate shall be fitted, matched and marked before delivery to the project.

Dowels to be 1 inch round, smooth bars 18 inches long spaced as shown hereon and greased.

Concrete cast in place to be class "C".

Brick or Concrete Block side walls, when used in place of concrete, shall be 8 inches minimum in thickness.

Pavement - The portion blocked out of the pavement shall be placed after the casting has been set but shall be paid for as part of the pavement.

Expansion Joint - The 1" Expansion Material shall be omitted when Asphaltic Concrete Surface is part of the Pavement.

Note: This catch basin is identical with the Cuyahoga County Standard No. 3-C Catch Basin.

MADE RJK DATE 12-30-59 TRACED DATE
CHECKED HJH DATE 12-31-59 SCALE

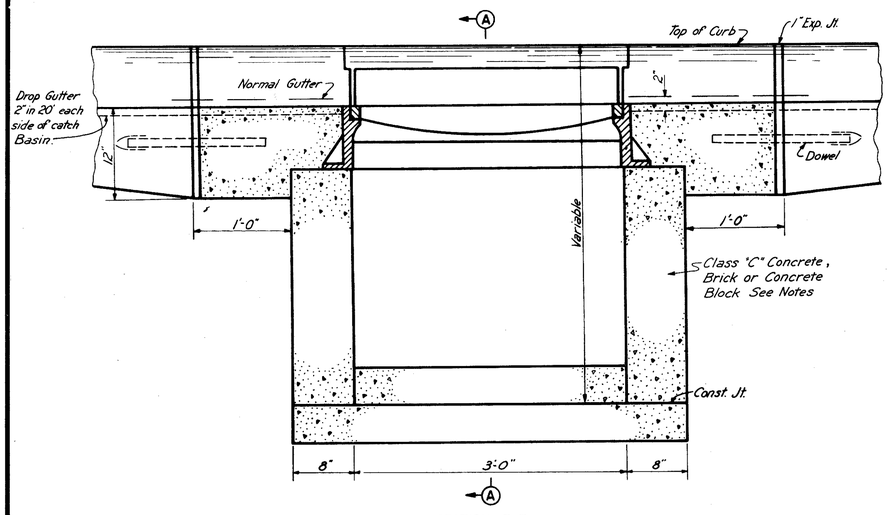
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SPECIAL NO. 3-C CATCH BASIN

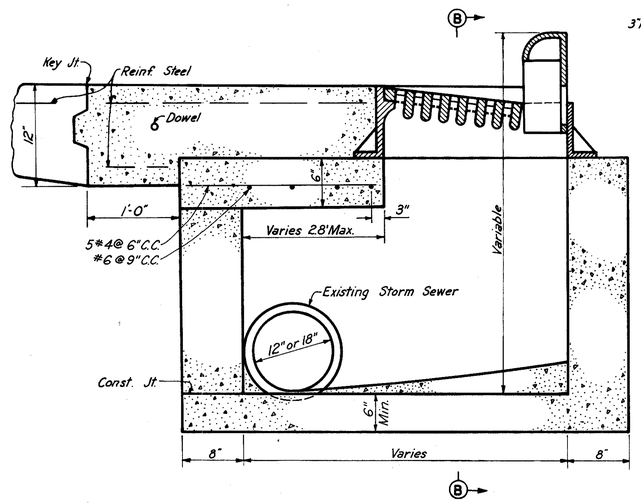
FED RD DIVISION	STATE	PROJECT	
2	OHIO		

139
256

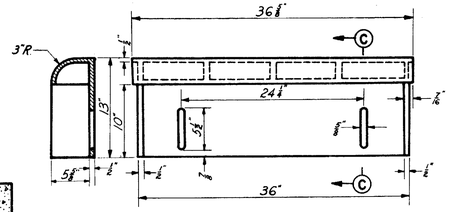
CUYAHOGA COUNTY
CUY-1-0.11



SECTION B-B

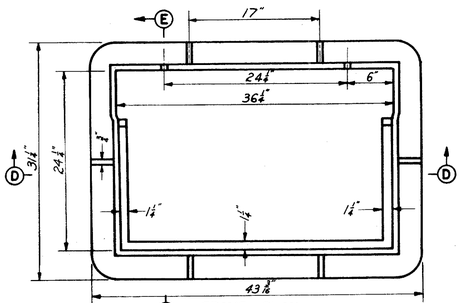


SECTION A-A

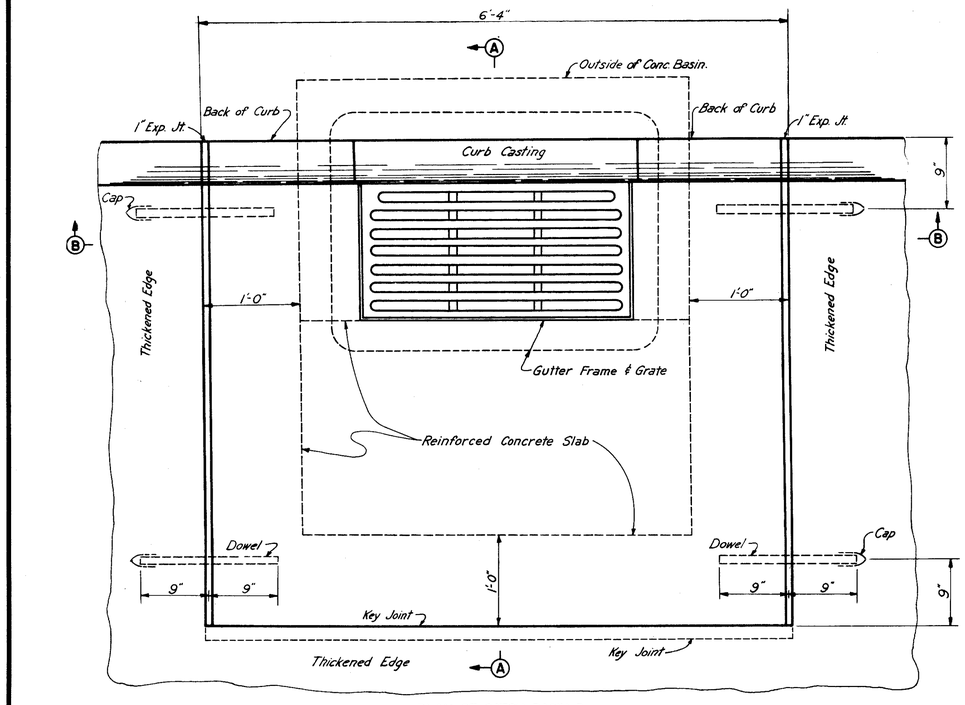


SECTION C-C

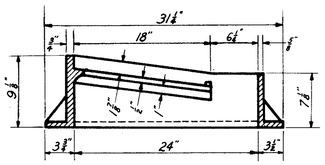
ELEVATION
RADIUS CURB BOX



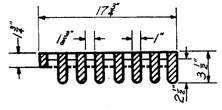
FRAME PLAN



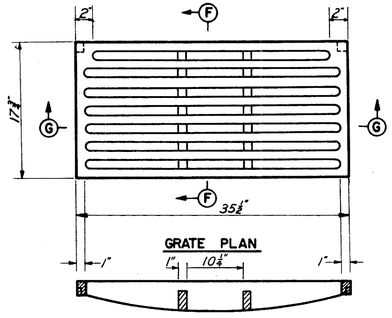
PLAN OF CATCH BASIN & PAVEMENT JOINTS



SECTION E-E



SECTION F-F



GRATE PLAN

SECTION G-G

Castings shall meet the requirements of Item 1-8. The design shall be essentially the same and equally as strong as those shown hereon.

Weights, minimum.

Curb casting	*100 pounds*
Gutter grate	*200 pounds*
Gutter frame	*300 pounds*

Bearing Areas of frame and grate shall be so fitted and finished as to provide a firm and and even seat for all portions of the grate in the frame. No projections shall exist on bearing areas of either casting and the grate shall seat in its frame without rocking. Frame and grate shall be fitted, matched and marked before delivery to the project.

Dowels to be 1 inch round, smooth bars 18 inches long spaced as shown hereon and greased.

Concrete cast in place to be class "C".

Brick or Concrete Block side walls, when used in place of concrete, shall be 8 inches minimum in thickness.

Pavement: The portion blocked out of the pavement shall be placed after the casting has been set but shall be paid for as part of the pavement.

Expansion Joint - The 1" Expansion Material shall be omitted When Asphaltic Concrete Surface is part of the Pavement.

Note:

This catch basin is similar to the Cuyahoga County Standard No. 3-C Catch Basin. It is modified to widen the Basin to enclose an existing storm sewer.

MADE E.C.E. DATE 10-15-63 TRACED R.J.K. DATE
CHECKED L.A.Z. DATE 10-11-63 SCALE

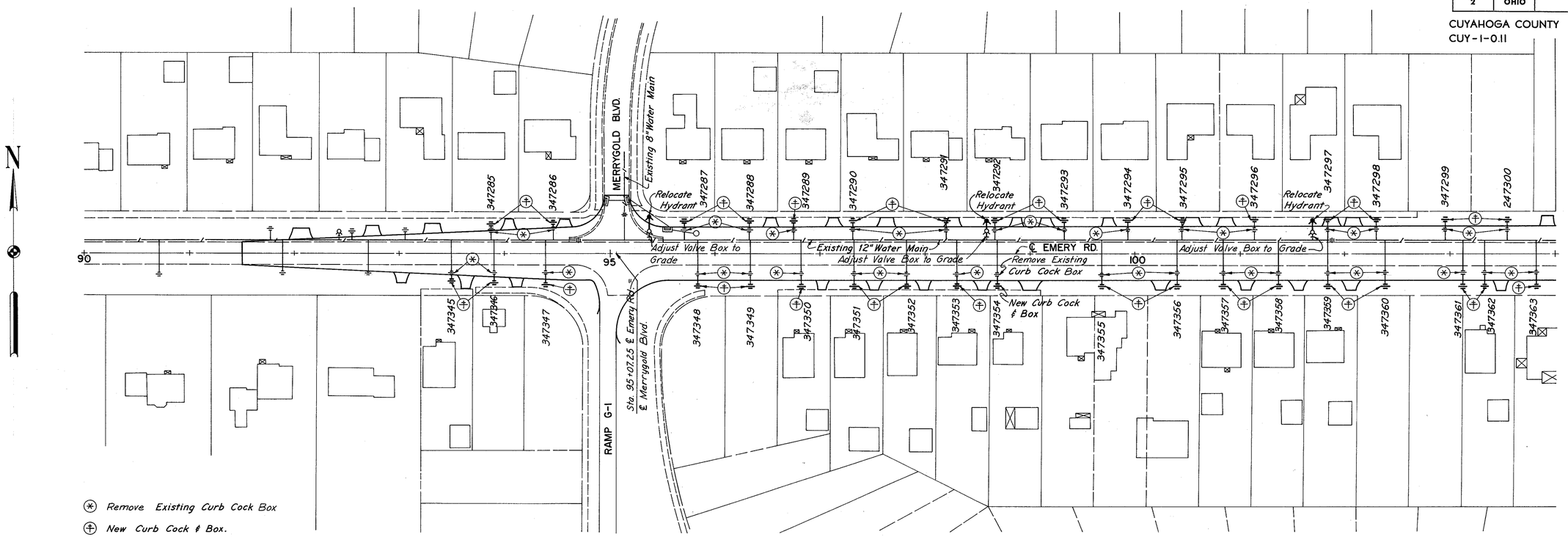
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SPECIAL NO. 3-C MODIFIED CATCH BASIN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

160
256

CUYAHOGA COUNTY
CUY-1-0.11



APPROVED
ONLY FOR GENERAL DESIGN
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
V. M. DeMELTO, Director of Public Utilities
By William J. Lang ENGINEER OF DESIGN
DATE 12-28-63

APPROVED
Arnold Pastor
COMMISSIONER UTILITIES ENGINEERING
per Edw. J. Cotter
DATE 4-28-1964

ESTIMATED QUANTITIES

Item	Description	SU-274 (2)
Special	Remove Existing Curb Cock Box	35 Each
Special	Furnish and Install New Curb Cock and Box	35 Each
Special	Adjust Existing Valve Box to Grade	3 Each
Special	Fire Hydrants Relocated	3 Each
Special	6" Water Main A.S.A. Class 25 C.I. Pipe, Cement Lined	45 Lin. Ft.

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT 12" CAST IRON AND DUCTILE IRON WATER MAIN RELOCATION IN EMERY ROAD AT INTERSTATE ROUTE 271 FROM 157.75' EAST OF MERRYGOLD BLVD. TO 216.65' EAST OF RICHMOND ROAD, AND OTHER WATER FACILITY RELOCATIONS.

MADE E.C.E. DATE 12-17-63 TRACED R.J.K. DATE 12-26-63
CHECKED L.A.Z. DATE 12-18-63 SCALE 1"=50' Hor. 1"=5' Vert.

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-I-0.11

161
256

Service Connections 347301 thru 347304 and 347307 & 347308 are to be lowered within Construction Limits to provide 5½' minimum cover.

SU-274(2) | I-271-6(22)243

N

Remove Existing Curb Cock Box

New Curb Cock & Box.

Begin Water Main Sta. 110+80 12' Lt. & Emery Road = Sta. 1+58 & Water Main & Elevation = 1128.0± 12" Tapping Sleeve 12" Tapping Valve & Valve Box, Concrete Pier

Install 1" Service Connection Relocation main to existing Service line at Construction Limit.

Relocate Hydrant

Construction Limits

Adjust Valve Box to Grade

Adjust Existing Valve Box to Grade

Plug Service Connections at Main Sta. 110+80 30' Rt. & Emery Rd. = Sta. 2+00 & Water Main & Elevation = 1129.3 Bend ⅛ Class 'D' with Lead Joints, Concrete Pier.

12" Plug or Cap with Clamps & Conc. Pier.

Sta. 111+30 80' Rt. & Emery Road = Sta. 2+71 & Water Main & Elevation = 1107.7 Bend ⅛ Class 'D' with Lead Joints, Concrete Pier.

Existing 12" Water Main and appurtenances are to be removed within the Structure Limits. Payment for Removal is included in Item E-1 Roadway Exc.

Relocated 12" Water Main

Sta. 117+65 80' Rt. & Emery Rd. = Sta. 9+06 & Water Main & Elevation = 1136.48 Bend ⅛ Class 'D' with Lead Joints, Concrete Pier.

℄ EMERY RD.

℄ I-271

Sta. 340+05.14 ℄ I-271

Sta. 115+00.00 ℄ Emery Rd.

347301 Relocate Hydrant 347302 347303 347304 347305 Sta. 108+50 347306 347307 347308 347309 347310 Abandon Service 347311 Abandon Service 347312 Abandon Service 347313 Abandon Service 347314 Abandon Service Abandon Service 347364 347365 347366 347367 347368 347369 347370 347371 347372 347373 347374 Abandon Service 347375 Abandon Service 347376 Abandon Service

105 110 115 5+00 80'

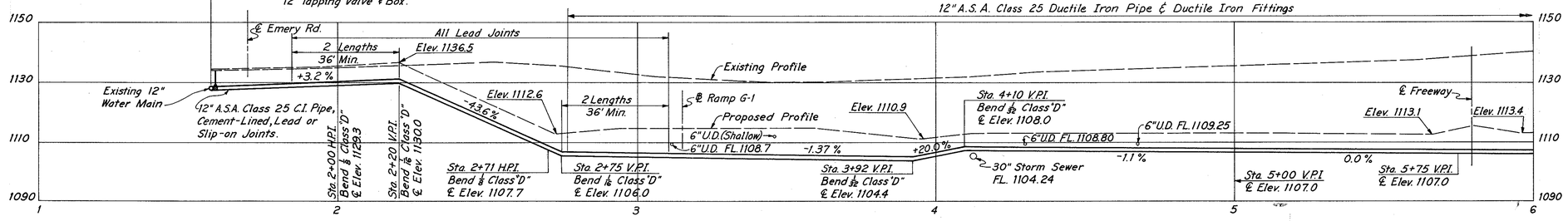
LA

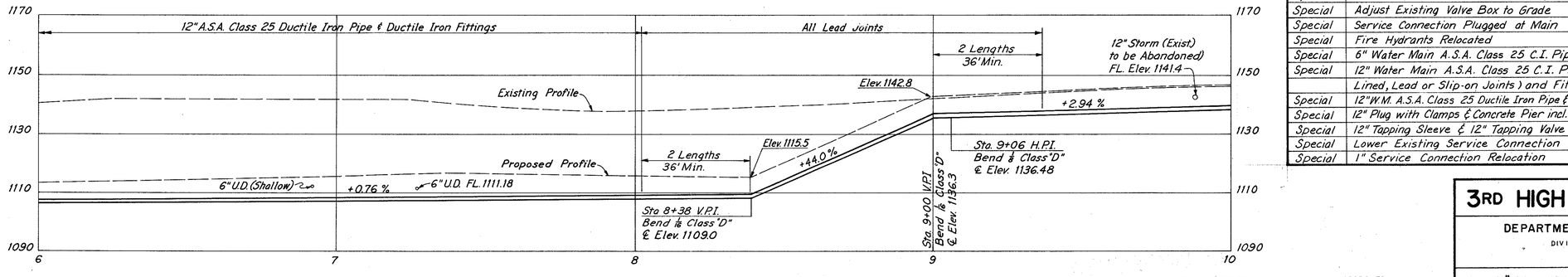
RW

PLAN
Scale 1"=50'

Test 150 #/Sq. in.

Sta. 110+80 12' Lt. & Emery Road = Sta. 1+58 & Water Main Relocation & Elevation = 1128.0± Install : 12" Tapping Sleeve 12" Tapping Valve & Box.





PROFILE
Scale 1"=20'

ESTIMATED QUANTITIES

Item	Description	SU-274(2)	I-271-6(22)243
Special	Remove Existing Curb Cock Box	14 Each	7 Each
Special	Furnish & Install New Curb Cock & Box	14 Each	3 Each
Special	Adjust Existing Valve Box to Grade	2 Each	2 Each
Special	Service Connection Plugged at Main	–	2 Each
Special	Fire Hydrants Relocated	2 Each	1 Each
Special	6" Water Main A.S.A. Class 25 C.I. Pipe, Cement Lined	30 Lin. Ft.	15 Lin. Ft.
Special	12" Water Main A.S.A. Class 25 C.I. Pipe, (Cement Lined, Lead or Slip-on Joints) and Fittings	–	326 Lin. Ft.
Special	12" W.M. A.S.A. Class 25 Ductile Iron Pipe & Ductile Iron Fitts.	–	525 Lin. Ft.
Special	12" Plug with Clamps & Concrete Pier incl. Pipe Cuts	–	1 Each
Special	12" Tapping Sleeve & 12" Tapping Valve	–	1 Each
Special	Lower Existing Service Connection	155 Lin. Ft.	70 Lin. Ft.
Special	1" Service Connection Relocation	–	1 Each

APPROVED
ONLY FOR GENERAL DESIGN
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
V. M. DeMELTO, Director of Public Utilities
By William J. Lamont ENGINEER OF DESIGN 4/21/64

APPROVED
Arnold Tackel
COMMISSIONER—UTILITIES ENGINEERING
for Edw. J. Vetter
DATE 4-28-1964

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT 12" CAST IRON AND DUCTILE IRON WATER MAIN RELOCATION IN EMERY ROAD AT INTERSTATE ROUTE 271 FROM 157.75' EAST OF MERRYGOLD BLVD. TO 216.65' EAST OF RICHMOND ROAD, AND OTHER WATER FACILITY RELOCATIONS.

MADE E.C.E. DATE 12-17-63 TRACED R.J.K. DATE 12-23-63
CHECKED R.J.Z. DATE 12-18-63 SCALE As Noted

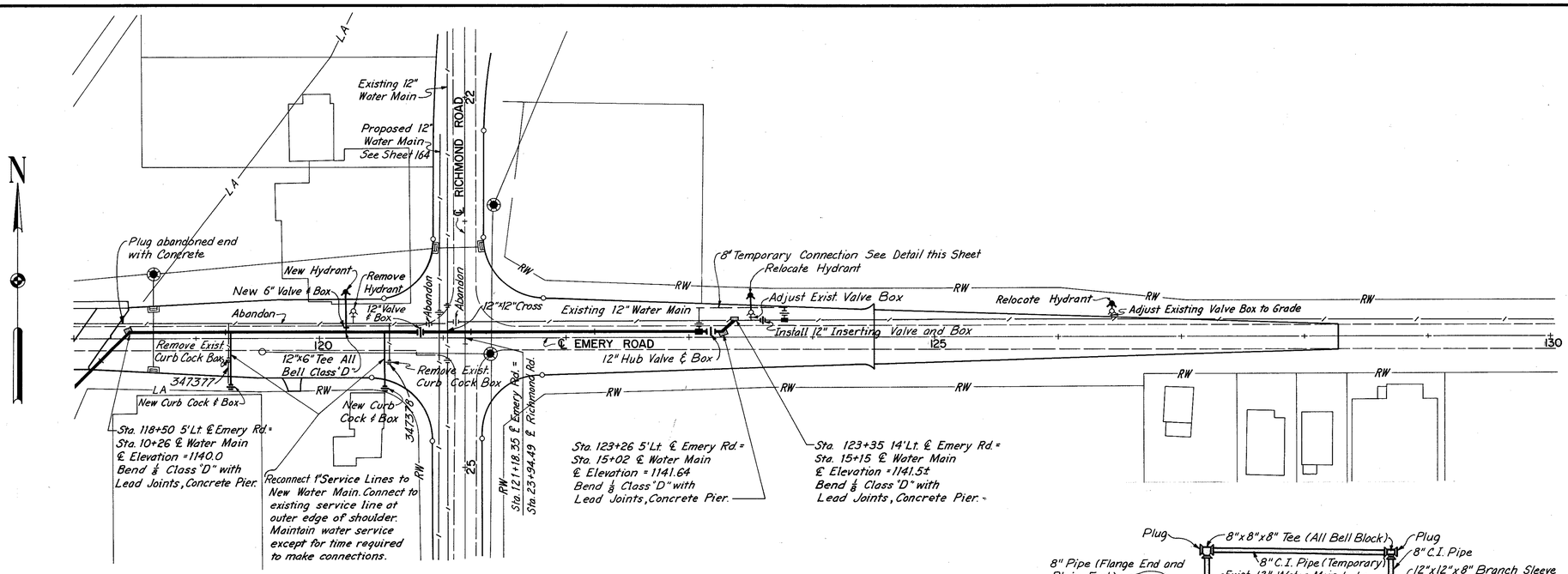
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

WATER MAIN RELOCATION – EMERY ROAD

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

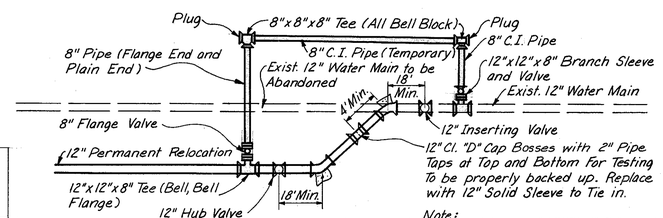
162
256

CUYAHOGA COUNTY
CUY-1-0.11



ESTIMATED QUANTITIES

Item	Description	Quantity
Special	12" Water Main A.S.A. Class 25 C.I. Pipe (Cement Lined, or Slip-on Joints) and Fittings	515 Lin. Ft.
Special	Remove Existing Curb Cock Box	2 Each
Special	1" Service Connection Relocation	2 Each
Special	Fire Hydrants Removed	1 Each
Special	6" Fire Hydrants	1 Each
Special	6" Water Main A.S.A. Class 25 C.I. Pipe, Cement Lined	50 Lin. Ft.
Special	12" Hub Valve	2 Each
Special	Test Main	1 Each
Special	6" Valve	1 Each
Special	Fire Hydrants Relocated	2 Each
Special	Adjust Existing Valve Box to Grade	2 Each
Special	8" W.M. Temporary Connection Complete with Valves, Pipe & Fitts.	1 Each
Special	12" Inserting Valve	1 Each
Special	Furnish & Install New Curb Cock & Box	2 Each



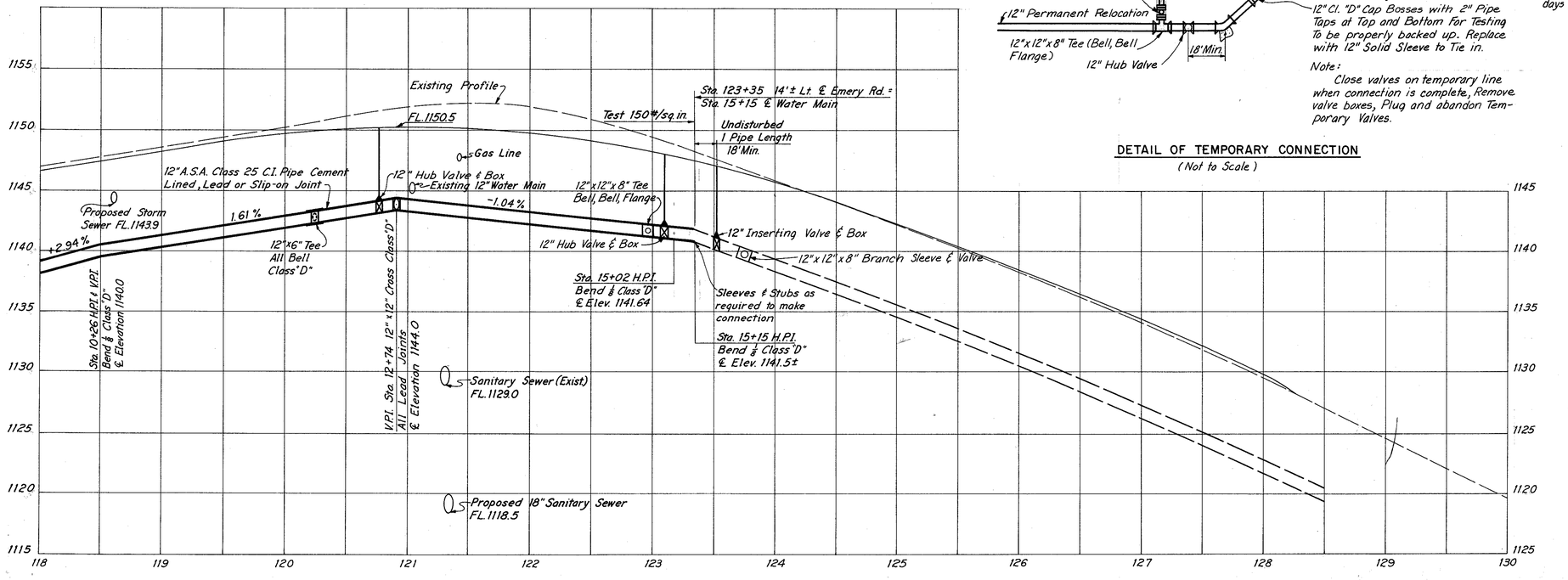
DETAIL OF TEMPORARY CONNECTION
(Not to Scale)

Note:
The Contractor shall notify the Utilities Engineering Office 3 working days prior to starting water work. Call TOwer 1-4600 Line 813.

Procedure for construction of 12" water main relocation.

1. Install 12" Tapping Sleeve & Valve at West end of the Relocation.
2. Install relocated section from the West end to a point near the connection with the existing water main. Install temporary C.I. plug with clamps and properly backed up for testing. The 12" plug shall have 2" Tapped Holes top and bottom and delivered with 2 cast iron screwed plugs.
3. Taps for chlorination to be provided after the work has begun. The Division of Water will determine the location of necessory taps.
4. After chlorination and testing, the tempory plug can be removed and the connection made to the new water line.
5. Due to unusual water demands and the backfeeding of water from Richmond Road 3rd High Service Water Main to Emery Road 2nd High Service Water Main and adjoining area, and the dead end characteristics of Emery Road Water Main, all water mains to be relocated must be in service before any existing water mains may be abandoned by valving as shown on the temporary connection detail.

Note: Close valves on temporary line when connection is complete, Remove valve boxes, Plug and abandon Temporary Valves.



APPROVED
ONLY FOR GENERAL DESIGN
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
V. M. DeMELTO, Director of Public Utilities
BY William J. Johnson ENGINEER OF DESIGN
4/29/64

APPROVED
Russell Teubel
COMMISSIONER UTILITIES ENGINEERING
Paul Paul J. Deller
DATE 4-28-1964

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT 12" CAST IRON AND DUCTILE IRON WATER MAIN RELOCATION IN EMERY ROAD AT INTERSTATE ROUTE 271 FROM 1572.75' EAST OF MERRYGOLD BLVD. TO 216.65' EAST OF RICHMOND ROAD, AND OTHER WATER FACILITY RELOCATIONS.

MADE E.C.E. DATE 12-17-63 TRACED R.J.K. DATE 12-26-63
CHECKED R.J.Z. DATE 12-18-63 SCALE 1"=50' Hor. 1"=5' Vert.

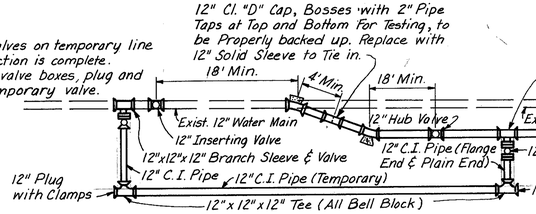
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

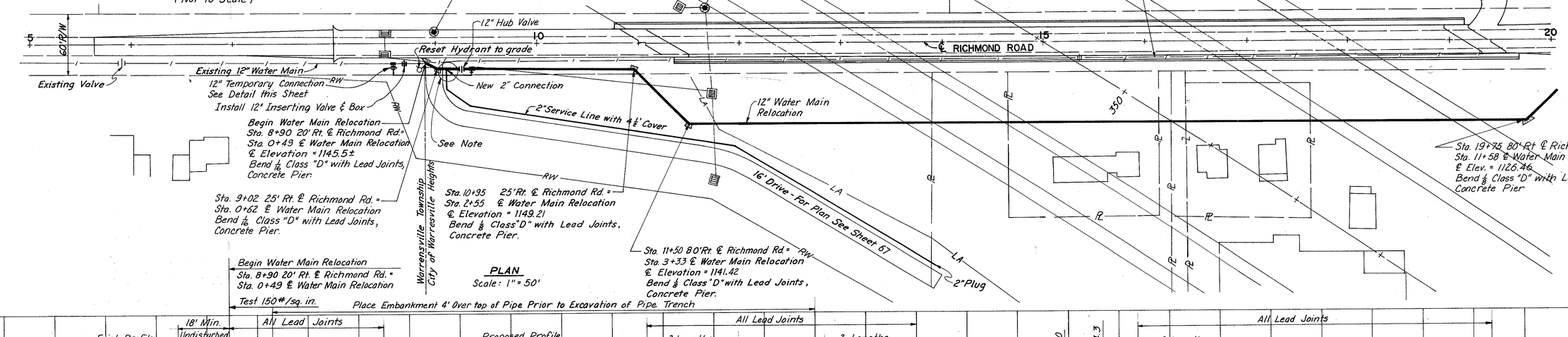
CUYAHOGA COUNTY
CUY-I-0.11

163
256

Note:
Close valves on temporary line when connection is complete.
Remove valve boxes, plug and abandon temporary valve.



DETAIL OF 12" TEMPORARY CONNECTION
(Not to Scale)

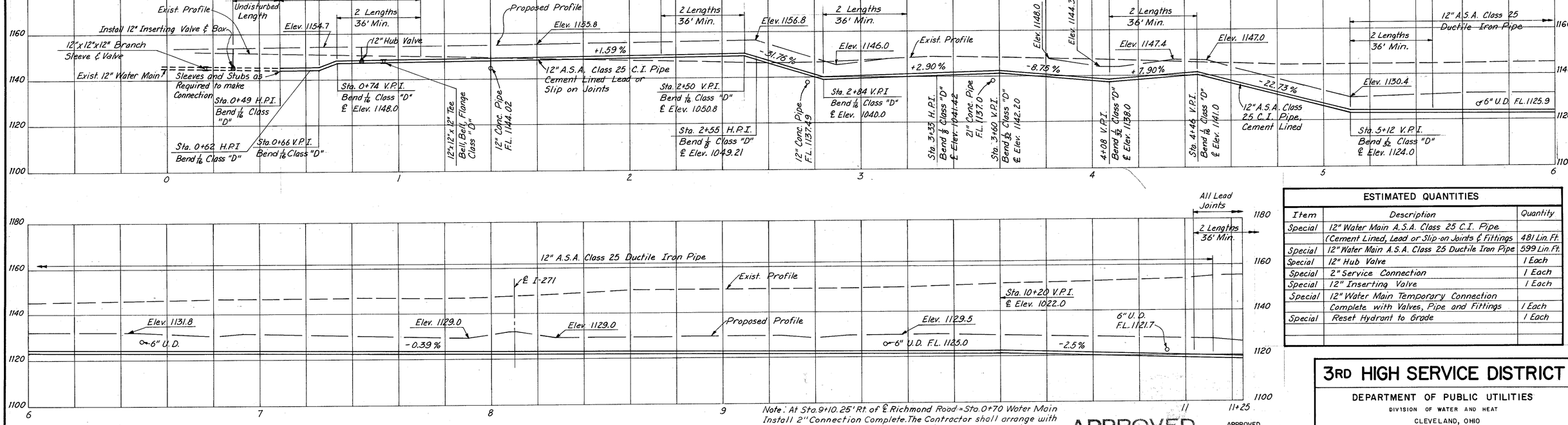


PLAN
Scale: 1" = 50'

Begin Water Main Relocation
Sta. 8+90 20' Rt. ℄ Richmond Rd. =
Sta. 0+49 ℄ Water Main Relocation

Test 150#/sq. in.

Place Embankment 4' Over top of Pipe Prior to Excavation of Pipe Trench



PROFILE
Scale 1"=20'

Note: At Sta. 9+10.25' Rt. of ℄ Richmond Road = Sta. 0+70 Water Main Install 2" Connection Complete. The Contractor shall arrange with the Division of Water and Heat of the City of Cleveland and the City of Warrensville Heights for release for the property owner on restricted water main in Richmond Road for necessary 2" connection including piping, valves, and water meter, and vault complete. The Contractor shall pay the City of Cleveland and City of Warrensville Heights for this work.

APPROVED
ONLY FOR GENERAL DESIGN
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
V. M. DeMELTO, Director of Public Utilities
By William J. Lenard ENGINEER OF DESIGN
APPROVED Harold Fendel COMMISSIONER UTILITIES ENGINEERING
John Edward Vocker
4-28-1964

MADE E.C.E.	DATE 12-17-63	TRACED R.J.K. & H.L.D	DATE 12-30-63
CHECKED DWK	DATE 4-2-64	SCALE As Noted	

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

ESTIMATED QUANTITIES

Item	Description	Quantity
Special	12" Water Main A.S.A. Class 25 C.I. Pipe	
	(Cement Lined, Lead or Slip-on Joints & Fittings	481 Lin. Ft.
Special	12" Water Main A.S.A. Class 25 Ductile Iron Pipe	599 Lin. Ft.
Special	12" Hub Valve	1 Each
Special	2" Service Connection	1 Each
Special	12" Inserting Valve	1 Each
Special	12" Water Main Temporary Connection	
	Complete with Valves, Pipe and Fittings	1 Each
Special	Reset Hydrant to Grade	1 Each

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

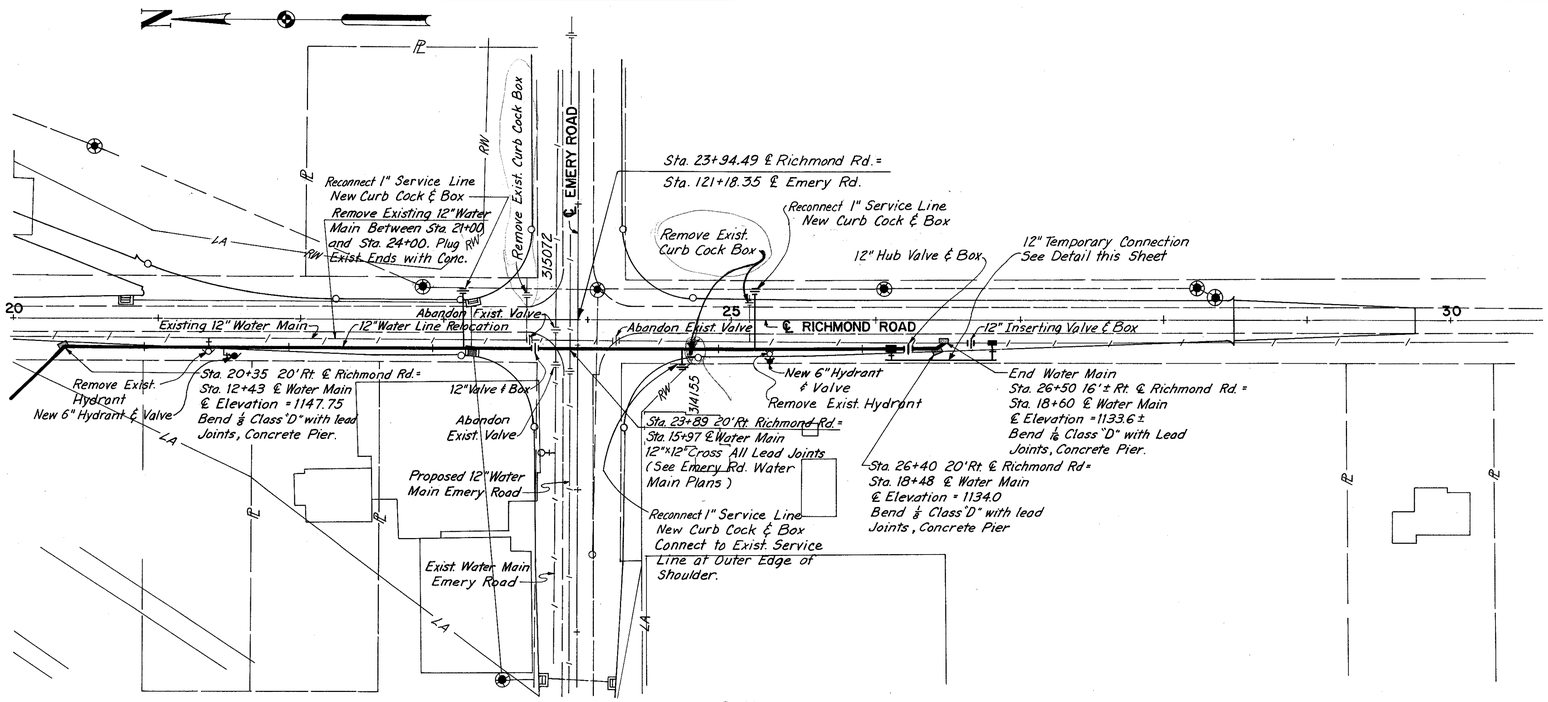
SUBJECT 12" CAST IRON AND DUCTILE IRON WATER MAIN RELOCATION IN RICHMOND ROAD AT INTERSTATE ROUTE 271 FROM 1504.49' NORTH OF EMERY ROAD TO 255.51 SOUTH OF EMERY ROAD.

WATER MAIN RELOCATION- RICHMOND ROAD

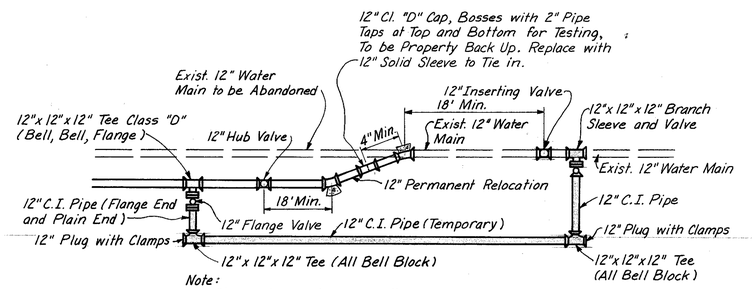
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

164
256

CUYAHOGA COUNTY
CUY-I-0.11

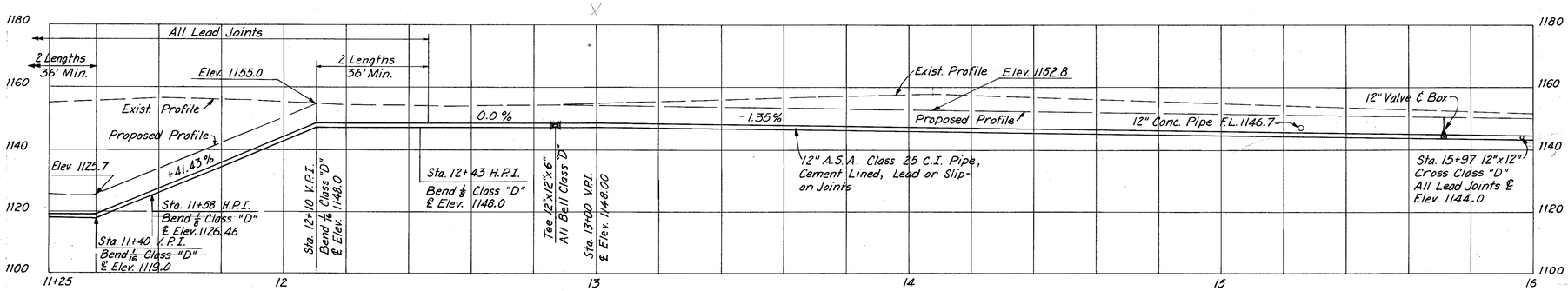


PLAN
Scale 1"=50'

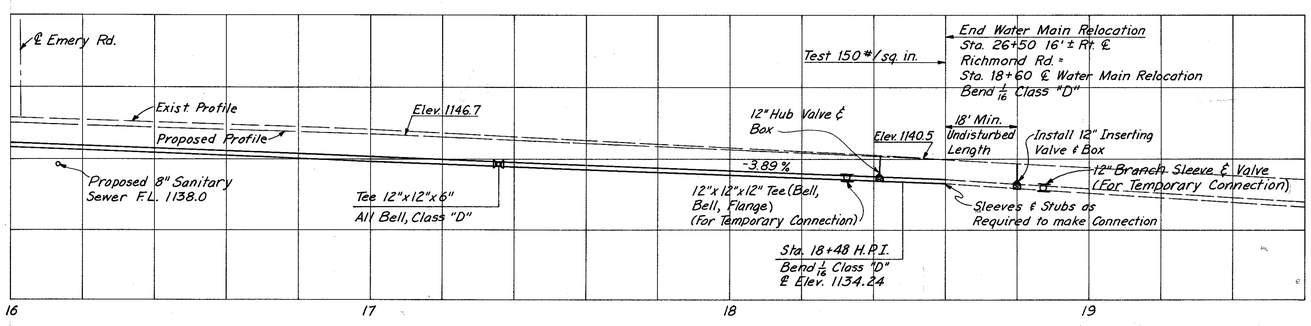


Note:
Close valves on temporary line when connection is complete. Remove valve boxes, plug and abandon temporary valves.

DETAIL OF 12" TEMPORARY CONNECTION
Not to Scale



ESTIMATED QUANTITIES		
Item	Description	Quantity
Special	12" Water Main A.S.A. Class 25 C.I. Pipe (Cement	
	Lined, Lead or Slip-on Joints) and Fittings	745 Lin.Ft.
Special	12" Valve	2 Each
Special	Fire Hydrants Removed	2 Each
Special	6" Valve	2 Each
Special	6" Fire Hydrants	2 Each
Special	6" Water Main A.S.A. Class 25 C.I. Pipe, Cement	
	Lined & Fittings	20 Lin. Ft.
Special	Test Main	1 Each
E-12	Pipe Removal 15" and Under	300 Lin. Ft.
Special	1" Service Connection Relocation	3 Each
Special	12" Inserting Valve	1 Each
Special	12" Water Main Temporary Connection Complete	
	with Pipe, Valves and Fittings	1 Each
Special	Furnish & Install New Curb Cock & Box	3 Each
Special	Remove Existing Curb Cock Box	3 Each



PROFILE
Scale 1"=20'

Note:
The Contractor shall notify the Utilities Engineering Office 3 days prior to starting water work. Call TOwer-1-4600 Line 813.
Taps for chlorination are to be provided after the work has begun. The Division of Water will determine the location of necessary taps.
Pipe removed under Item E-12 shall become the property of the Contractor.
See the note on sheet 162 with regard to the requirements for maintenance of service.

APPROVED
ONLY FOR GENERAL DESIGN
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
V. M. DeMELTO, Director of Public Utilities
By William J. Searey ENGINEER OF DESIGN
4/29/64

APPROVED
Arnold Tardi
COMMISSIONER OF UTILITIES, ENGINEER
DATE 4-30-1964

MADE E.C.E. DATE 12-17-63 TRACED R.J.K & H.L.D. DATE 12-30-63
CHECKED DWK DATE 4-2-64 SCALE As Noted

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

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

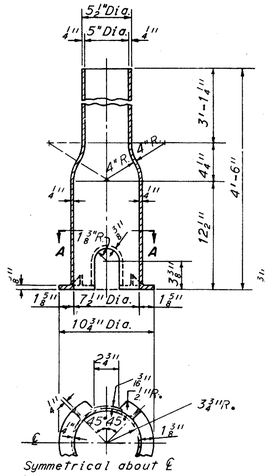
SUBJECT 12" CAST IRON AND DUCTILE IRON WATER MAIN RELOCATION IN RICHMOND ROAD AT INTERSTATE ROUTE 271 FROM 1504.49' NORTH OF EMERY ROAD TO 255.51' SOUTH OF EMERY ROAD.

WATER MAIN RELOCATION - RICHMOND ROAD

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

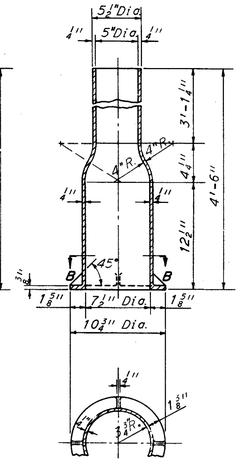
165
256

CUYAHOGA COUNTY
CUY-1-0.11

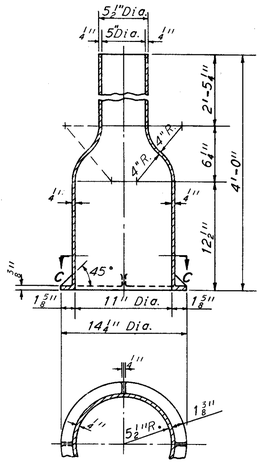


Symmetrical about ℄

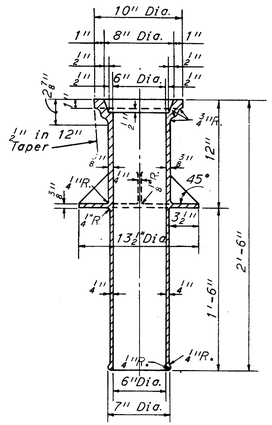
SECTION A-A
Base No. 1 for 1½" and 2" Valves
Est. Wt. 69#



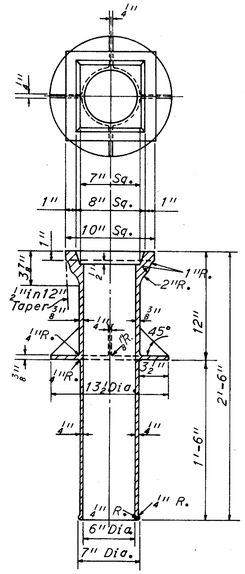
SECTION B-B
Base No. 2 and 3 for 3", 4", 6" and 8" Valves
Est. Wt. 71#



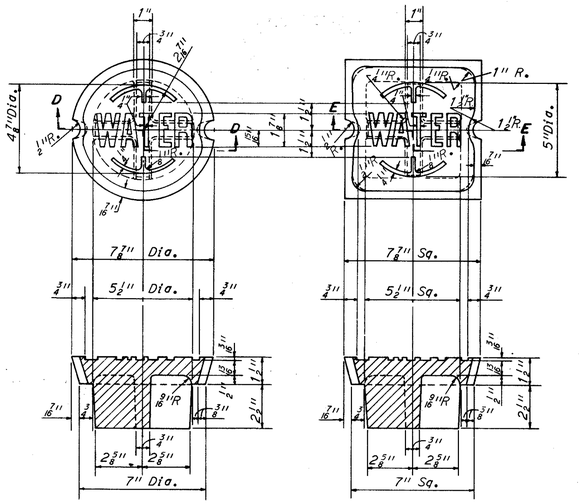
SECTION C-C
Base No. 4 for 10", 12" and 16" Valves
Est. Wt. 79#



SECTION OF TOP WITH ROUND HEAD NO. 1 AND 2
Est. Wt. 73#

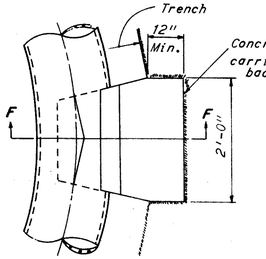


SECTION OF TOP WITH SQUARE HEAD NO. 3 AND 4
Est. Wt. 85#

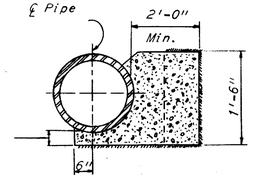


SECTION D-D
Detail of round cover for No. 1 and 2 top
Est. Wt. 20#

SECTION E-E
Detail of square cover for No. 3 and 4 top
Est. Wt. 23#



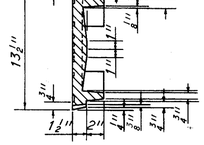
PLAN



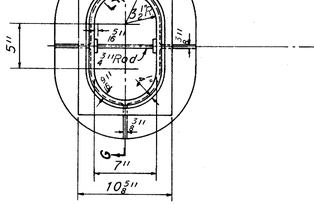
6" Min.

SECTION-FF CONCRETE PIER FOR BENDS

Scale ½" = 1'-0"

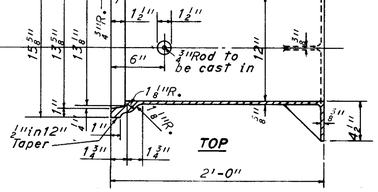


SECTION K-K
Est. Wt. 37#

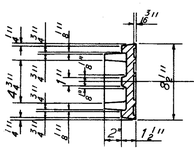


PLAN

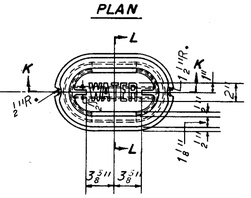
SECTION F-F



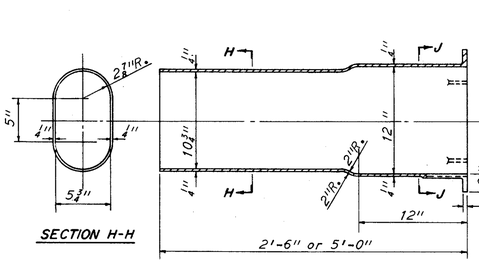
SECTION G-G
Air Cock Box No.5 is Top and Cover
Air Cock Box No.6 is Top, Base 2'-6" Long and Cover
Flushing Box No.7 is Top, Base 5'-0" Long and Cover
Est. Wt. 128#



SECTION L-L



COVER



SECTION H-H

BASE
Est. Weight 2'-6" Long= 70#
Est. Weight 5'-0" Long= 126#

SECTION J-J

This opening to be in 5'-0" base only.

Note:

See Waterwork Notes for definite information for work to be done and material to be furnished by the City.

STANDARD DETAILS - VALVE AND AIR COCK BOXES

APPROVED
ONLY FOR GENERAL DESIGN
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
V. M. DeMELTO, Director of Public Utilities
By William J. Sweeney ENGINEER OF DESIGN
4/28/64

APPROVED
Donald Burdell
COMMISSIONER OF WATER ENGINEERING
DATE 4-28-1964

3RD HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK DETAILS FOR THE RELOCATION OF WATER FACILITIES IN EMERY AND RICHMOND ROADS IN WARRENSVILLE HEIGHTS, OHIO

MADE	DWK	DATE	10-18-61	TRACED	AEK	DATE	10-27-61
CHECKED	DDS	DATE	10-25-61	SCALE	—		

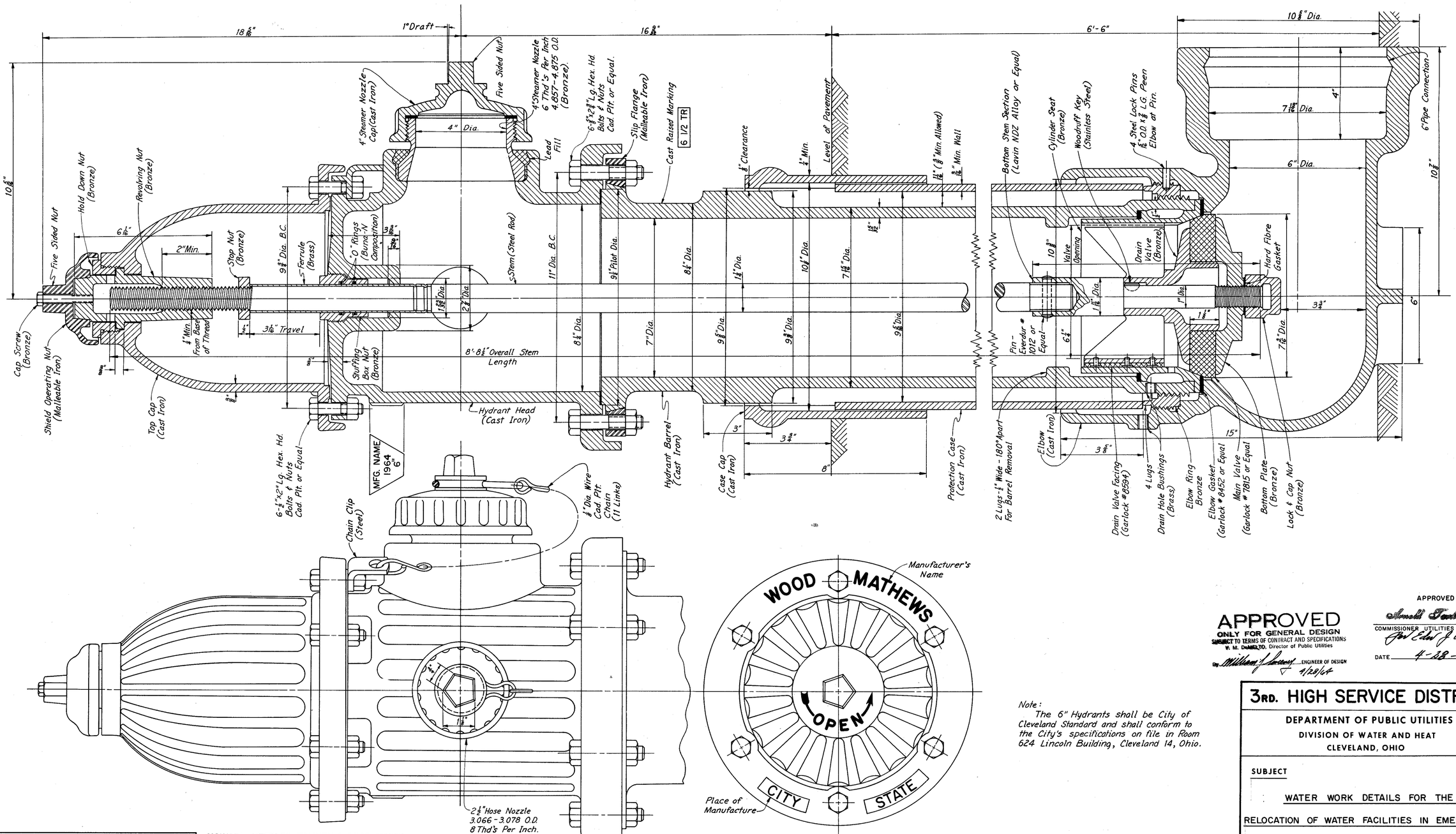
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

WATER LINE DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

165A
256

CUYAHOGA COUNTY
CUY-1-0.11



Note:
The 6" Hydrants shall be City of Cleveland Standard and shall conform to the City's specifications on file in Room 624 Lincoln Building, Cleveland 14, Ohio.

APPROVED
ONLY FOR GENERAL DESIGN
SUBJECT TO TERMS OF CONTRACT AND SPECIFICATIONS
W. M. DeMATTEO, Director of Public Utilities
By William J. Lockhart ENGINEER OF DESIGN 4/24/64

APPROVED
Arnold Tenkel
COMMISSIONER UTILITIES ENGINEERING
Joe Cedar J. Voters
DATE 4-28-1964

3RD. HIGH SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT

WATER WORK DETAILS FOR THE RELOCATION OF WATER FACILITIES IN EMERY AND RICHMOND ROADS IN WARRENSVILLE HEIGHTS, OHIO

MADE R.J.K. DATE 3-30-64 TRACED DATE
CHECKED DWK DATE 3-30-64 SCALE

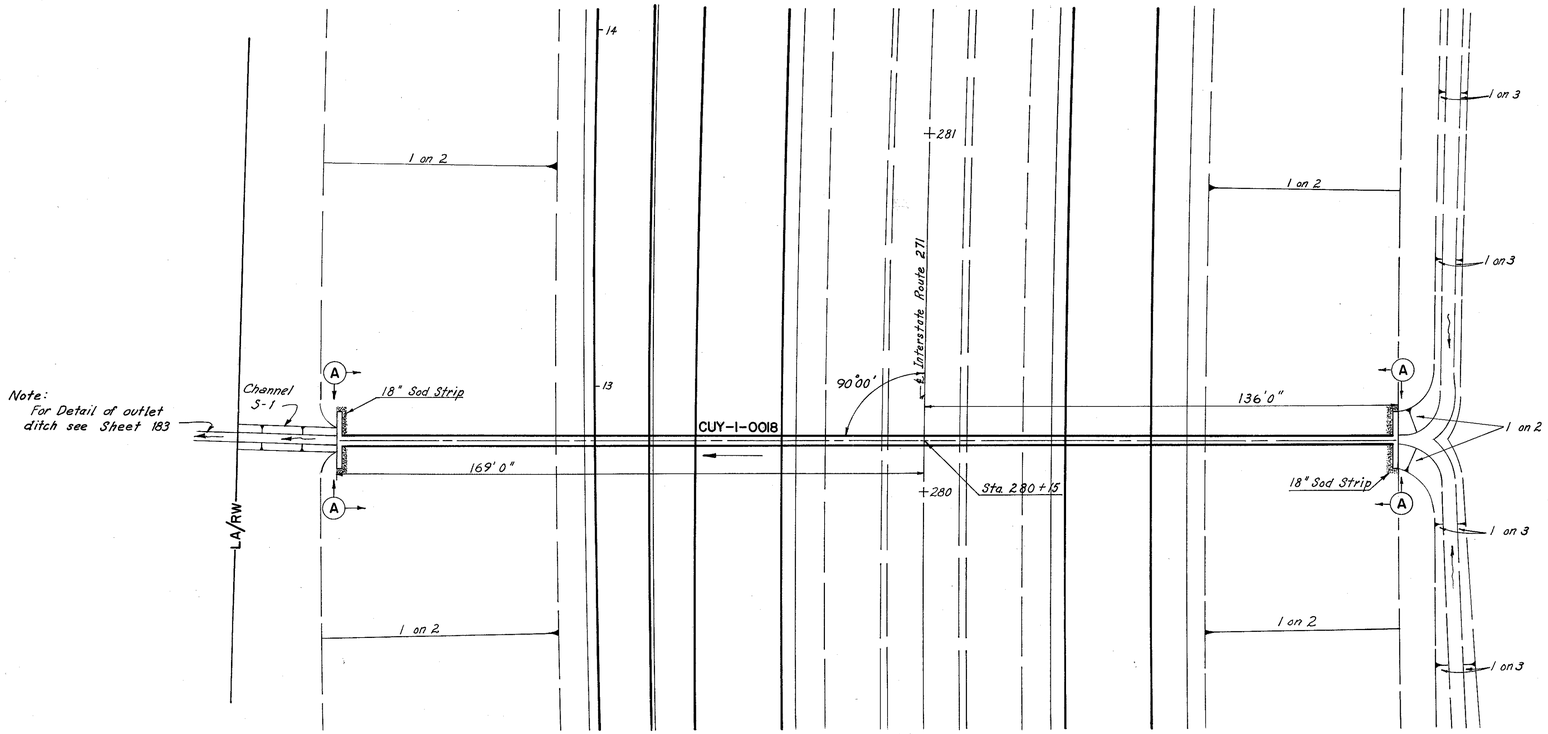
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

WATER LINE DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

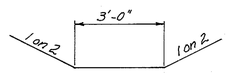
166
256

CUYAHOGA COUNTY
CUY-I-0.11

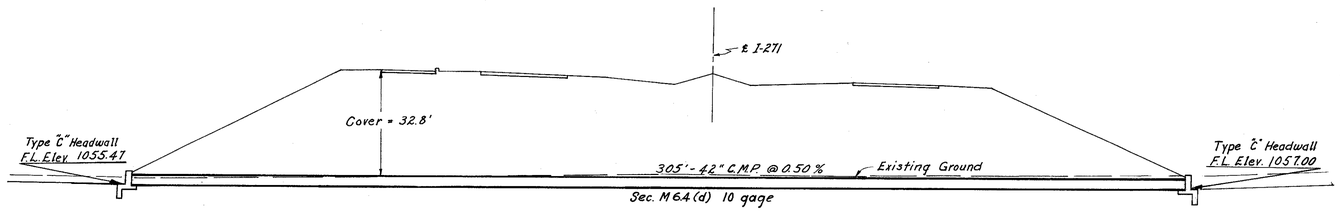


PLAN

ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
I-1	42" Pipe, Class A-1 Sec M 6.4 (d) 10 gage	305	Lin.Ft
I-2	Masonry	22	Cu. Yds.
L-10	Sodding	8.4	Sq Yds.
E-3	Channel Excavation	5.0	Cu. Yds.



SECTION A-A



ELEVATION

Note:
See Sheet 28 for Plan - Profile I-271

MADE	RJZ	DATE	8-21-63
CHECKED	ECE	DATE	2-28-64
TRACED		DATE	
SCALE	1" = 20'		

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

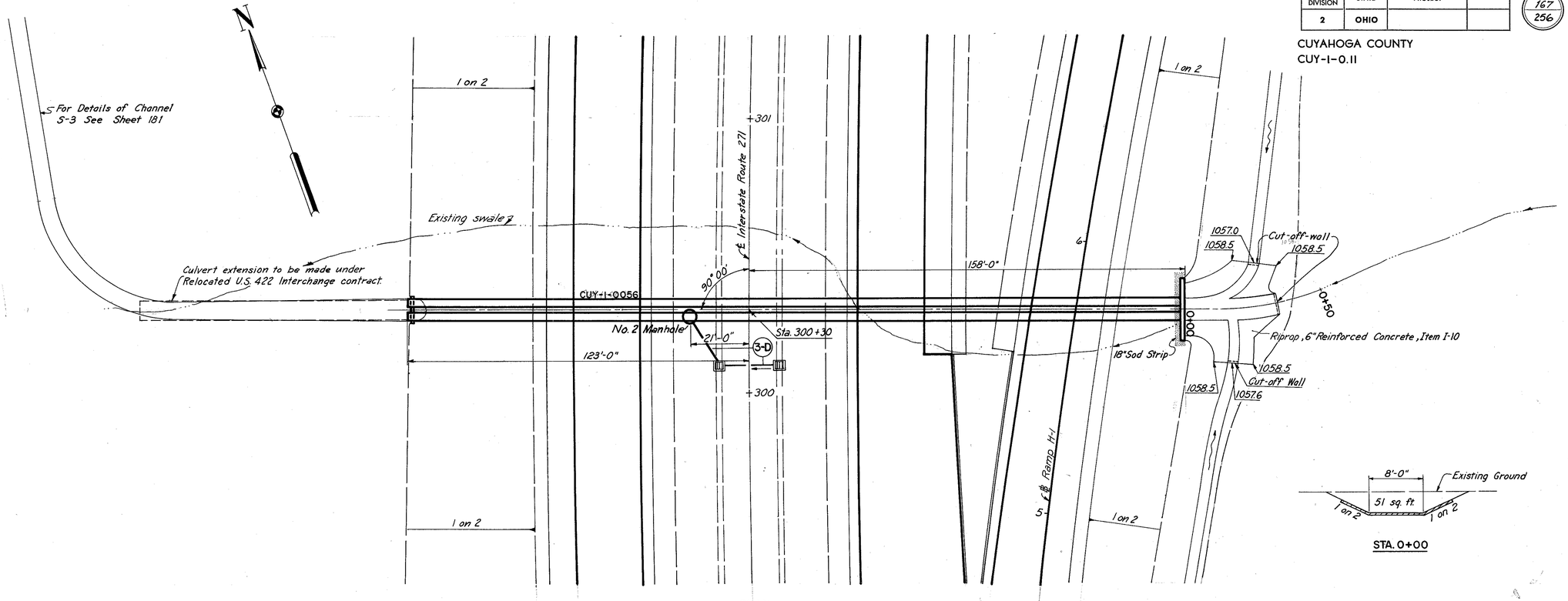
D.A.	=36.2 Acres
Q 50	=67.0 c.f.s.

STRUCTURE S-1 STA. 280+15

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

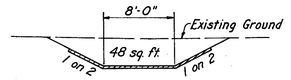
167
256

CUYAHOGA COUNTY
CUY-I-0.11

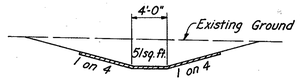


PLAN

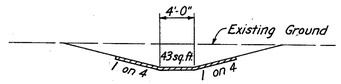
STA. 0+00



STA. 0+25



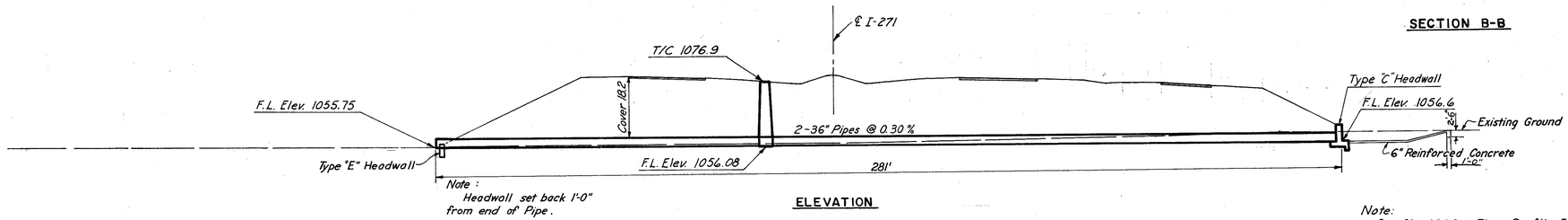
STA. 0+25
15' Left



STA. 0+18
20' Right

ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
I-1	36" Pipe, Class A-1, Sec. M 6.6 (c)	562	Lin. Ft.
I-2	Masonry	10.5	Cu. Yds.
I-10	Riprap, 6" Reinforced Concrete, as per plan	60	Sq. Yds.
L-10	Sodding	8	Sq. Yds.
I-8	Standard No. 2 Manhole w/o drop	1	Each
E-3	Channel Excavation	4.9	Cu. Yds.

SECTION B-B



Note :
Headwall set back 1'-0" from end of Pipe.

ELEVATION

Note:
See Sheet 30 for Plan-Profile I-271
See Ramp H-1 cross sections.
Payment for cut-off walls to be included in unit price bid for Item I-10, Riprap.

D.A. = 1650 Acres
Q 50 = 186 c.f.s.

MADE LVM DATE 4-24-63 TRACED DATE
CHECKED ECE DATE 4-25-63 SCALE 1"=20'-0"

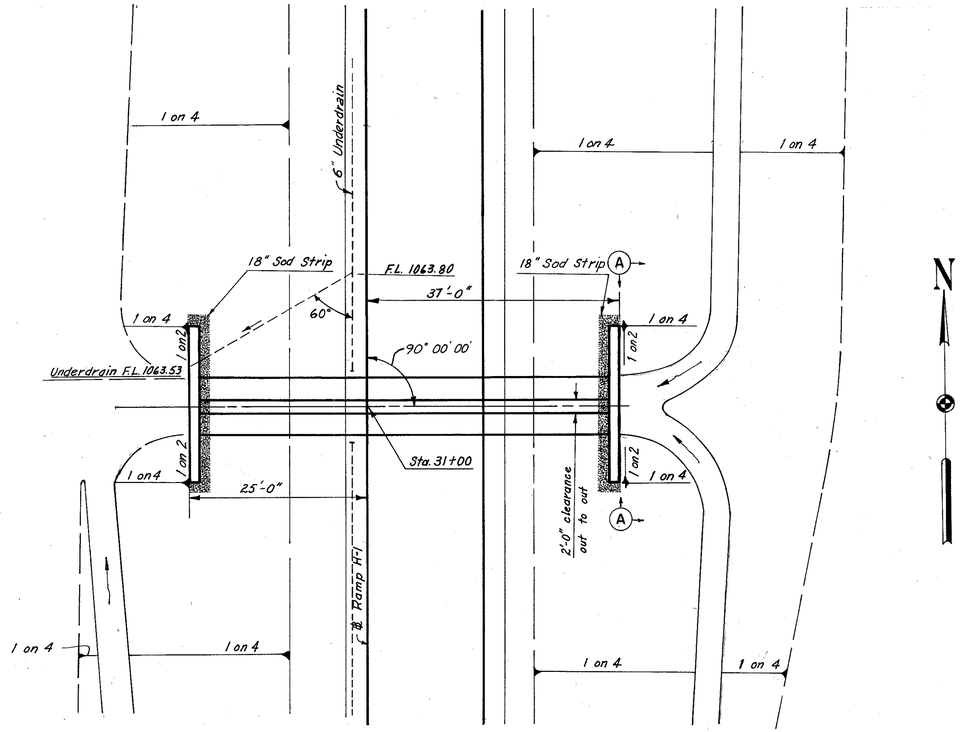
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

STRUCTURE S-3 STA. 300+30

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

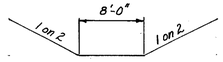
169
256

CUYAHOGA COUNTY
CUY-I-0.11

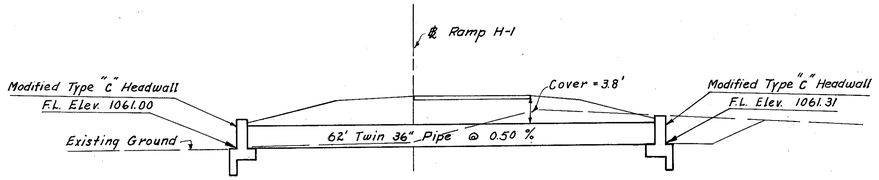


PLAN

ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
I-1	36" Pipe, Class A-1, Sec. M 6.6 (a) or M 6.8 (b)	124	Lin. Ft.
I-2	Masonry	21	Cu. Yds.
L-10	Sodding	9	Sq. Yds.
E-3	Channel Excavation	2	Cu. Yds.



SECTION A-A



ELEVATION

Note:
For ditches see Ramp H-1 cross sections.
See sheets 49 and 51 for Plan and Profile
For headwall detail see sheet 172

MADE R.D.J.-L.V.M.	DATE 4-2-63	TRACED	DATE
CHECKED E.C.E.	DATE 4-3-63	SCALE 1" = 10'	

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

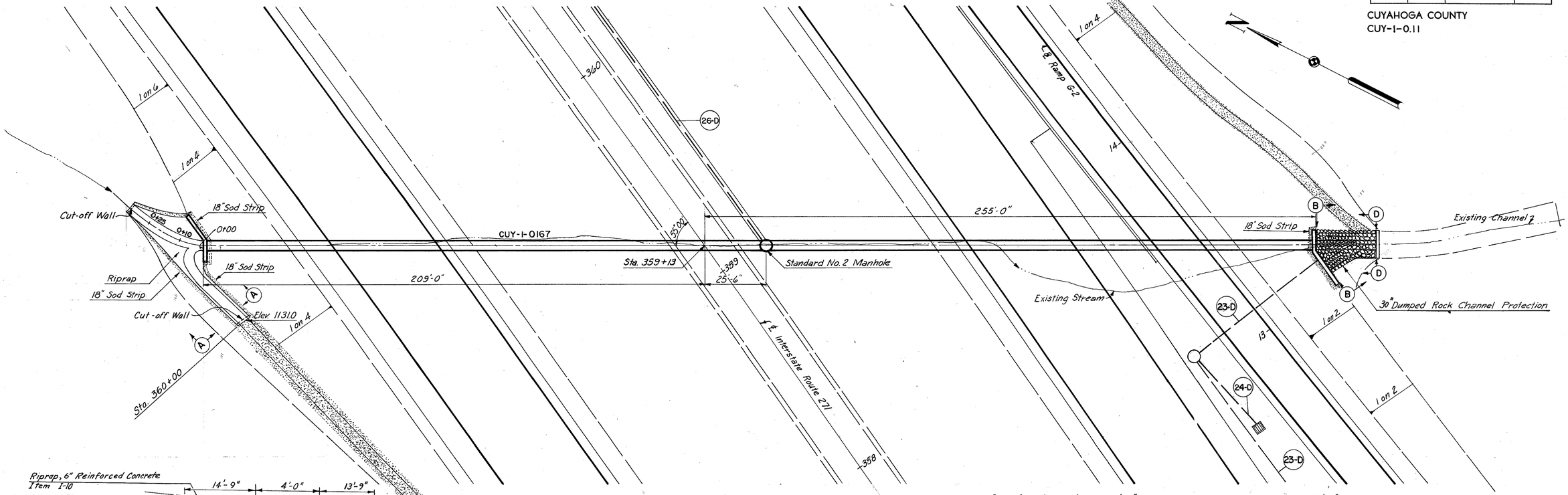
D.A. = 32.9 Acres
Q 50 = 52.0 c.f.s.

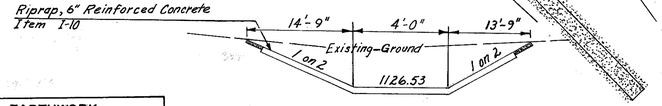
STRUCTURE S-5 RAMP H-1 STA. 31+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

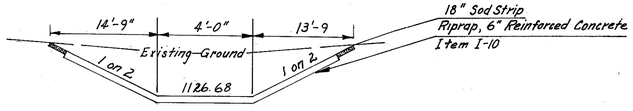
168
256

CUYAHOGA COUNTY
CUY-I-0.11

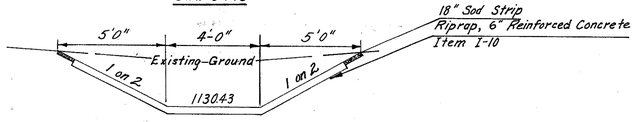




STA. 0+00



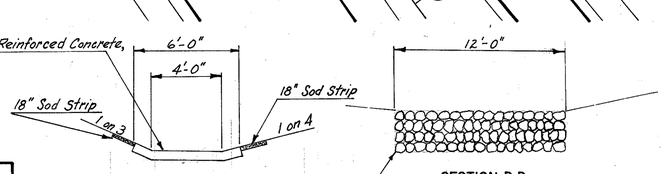
STA. 0+10



STA. 0+25

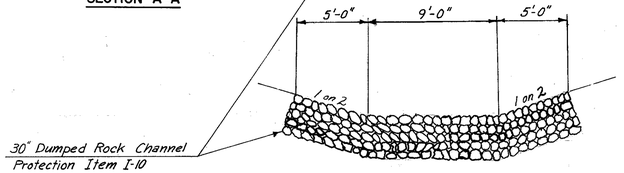
EARTHWORK		
STATION	END AREA Sq. Ft.	VOLUME Cu. Yds.
0+00	129.5	
		45
0+10	112.6	
		37
0+25	22.1	
		4
0+35	0	
TOTAL		86

PLAN



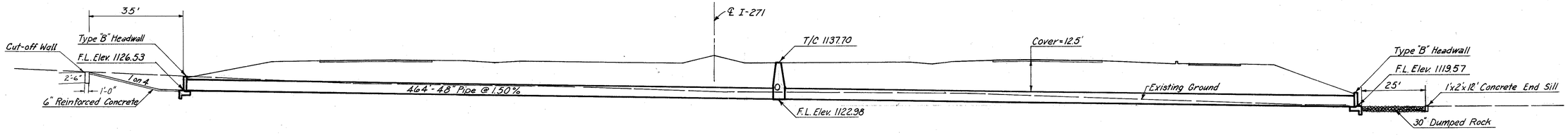
SECTION A-A

SECTION D-D



SECTION B-B

ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
I-1	48" Pipe, Class A-1, Sec. M 6.6(b)	464	Lin. Ft.
I-2	Masonry	31.7	Cu. Yds.
I-8	Standard No. 2 Manhole w/o drop	1	Each
I-10	Riprap, 6" Reinforced Concrete, as per plan	77	Sq. Yds.
I-10	Dumped Rock Channel Protection	32	Cu. Yds.
L-10	Sodding	26	Sq. Yds.
E-3	Channel Excavation	86	Cu. Yds.



ELEVATION

Note:
For headwall detail see sheet 172
See Sheet 36 for Plan-Profile
I-271

MADE LVM DATE 4-30-63 TRACED DATE
CHECKED ECE DATE 3-3-64 SCALE 1"=20'

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

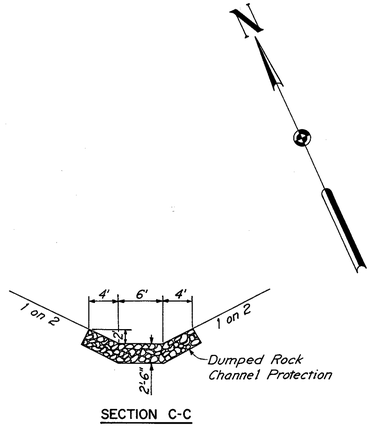
D.A. = 141.3 Acres
Q 50 = 160 c.f.s.

STRUCTURE S-4 STA. 359+13

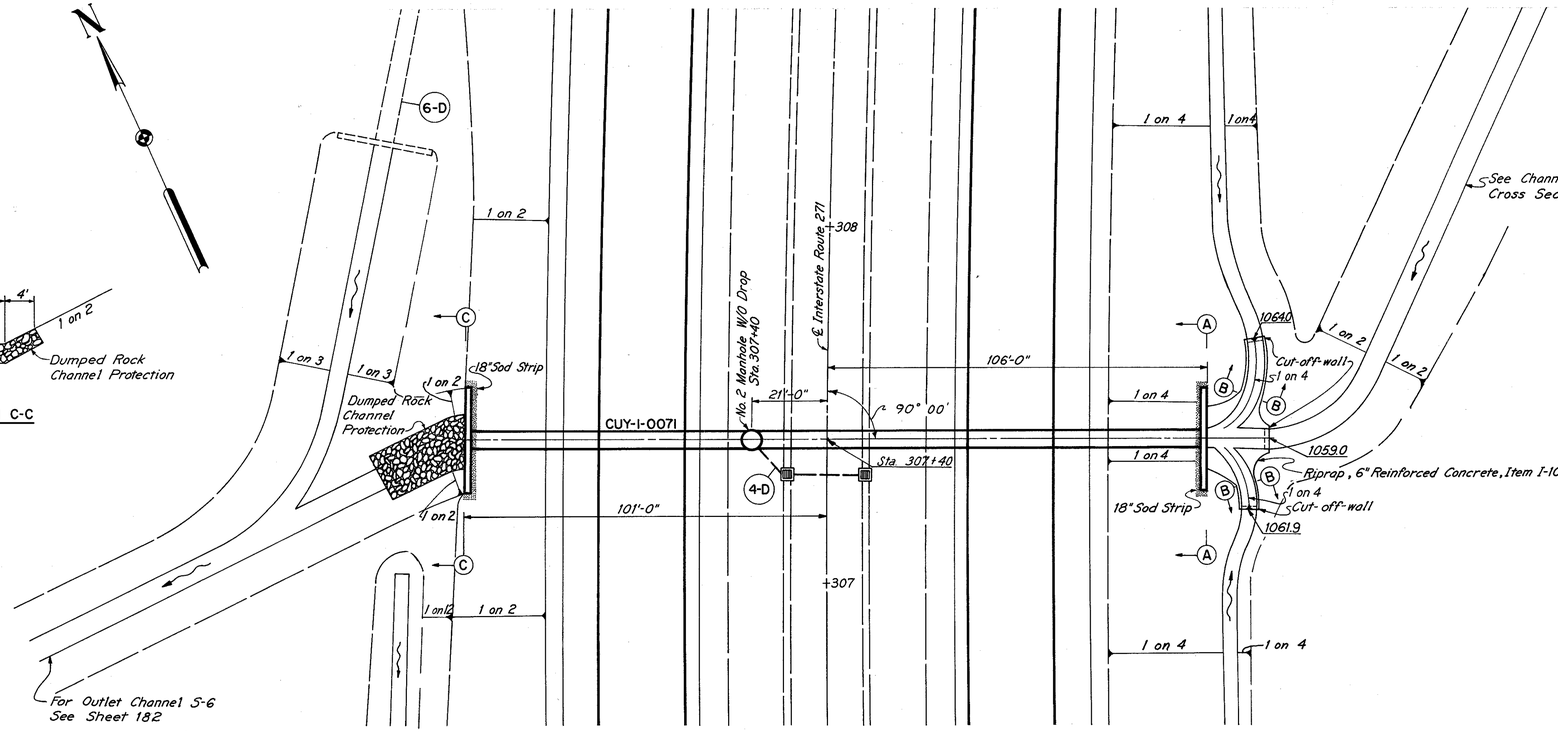
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

170
256

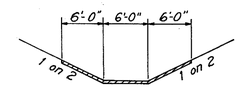
CUYAHOGA COUNTY
CUY-I-0.11



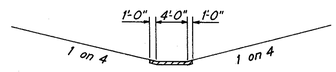
SECTION C-C



PLAN

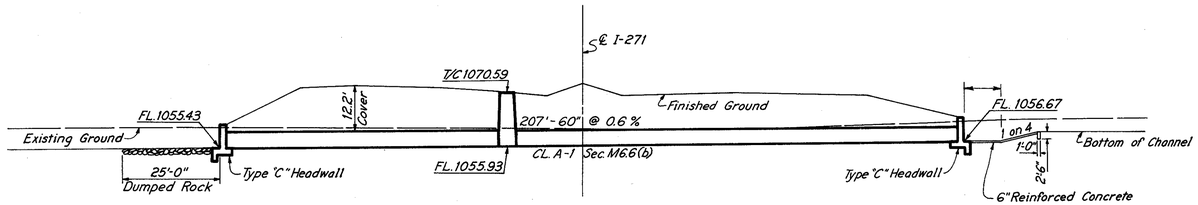


SECTION A-A



SECTION B-B

ESTIMATED QUANTITIES			
ITEM	DESCRIPTION	QUANTITY	UNIT
I-1	60" Pipe, Class A-1, Sec. M6.6(b)	207	Lin. Ft.
I-2	Masonary	44	Cu. Yds.
I-10	Riprap, 6" Reinforced, Concrete as per plan	32	Sq. Yds.
I-8	Standard No. 2 Manhole W/O Drop	1	Each
I-10	Dumped Rock Channel Protection	32.2	Cu. Yds.
L-10	Sodding	12	Sq. Yds.



ELEVATION

MADE	L.A.Z.	DATE	9-15-63	TRACED	R.J.K.	DATE	10-18-63
CHECKED	E.C.E.	DATE	10-25-63	SCALE	1" = 20'		

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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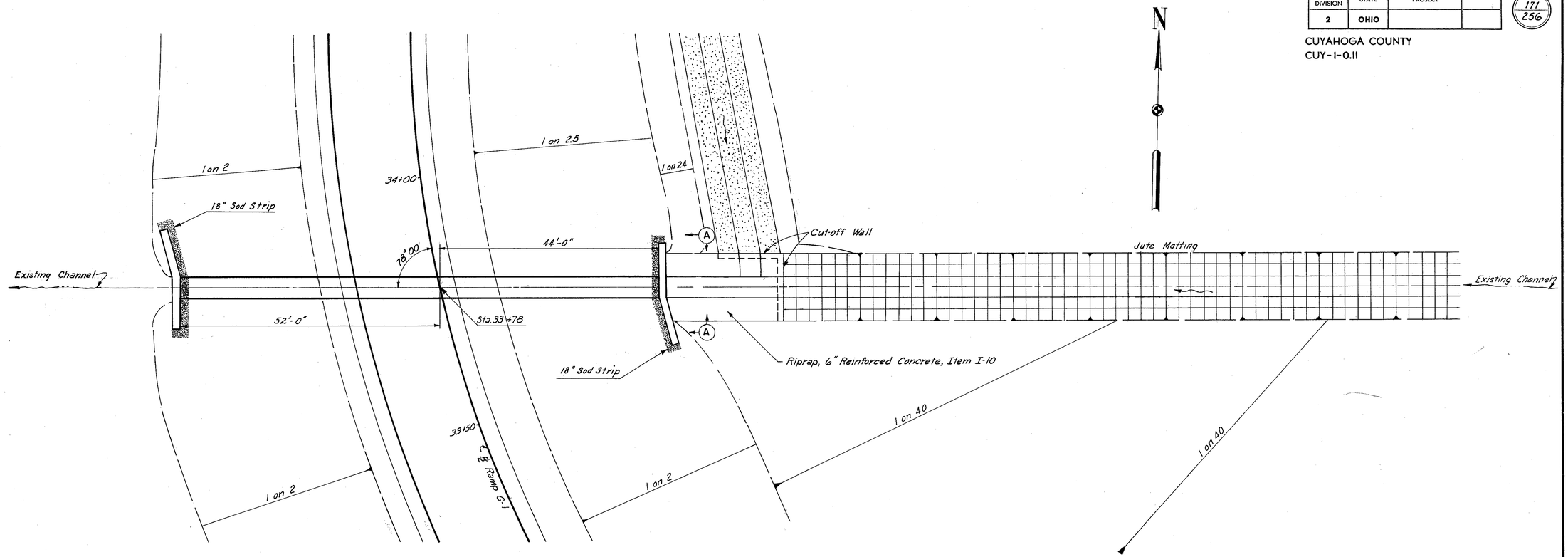
D.A. = 90 Acres
Q 50 = 195 c.f.s.

STRUCTURE S-6 STA. 307 + 40

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

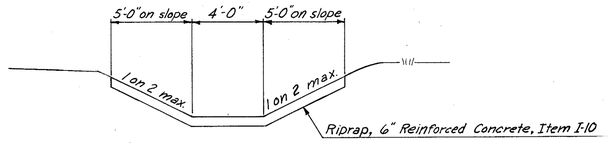
171
256

CUYAHOGA COUNTY
CUY-I-0.11

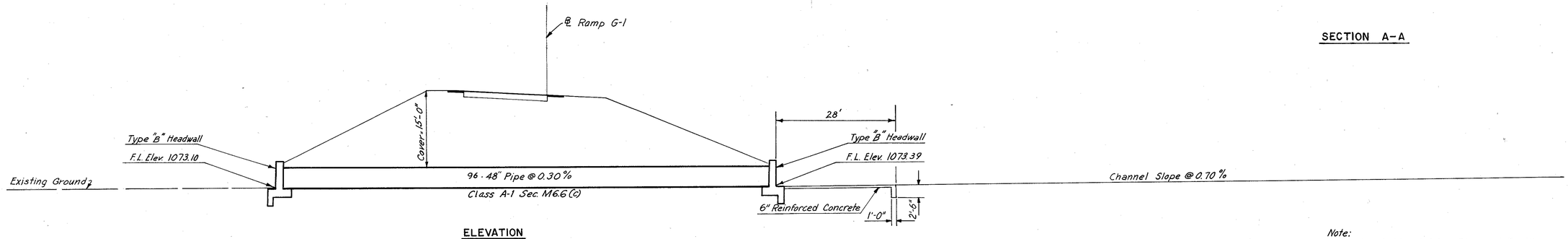


ESTIMATED QUANTITIES

ITEM	DESCRIPTION	QUANTITY	UNIT
I-1	48" Pipe, Class A-1, Sec. M 6.6 (c)	96	Lin. Ft.
I-2	Masonry	22	Cu. Yds.
I-10	Riprap, 6" Reinforced Concrete, as per plan	36	Sq. Yds.
L-10	Sodding	9	Sq. Yds.



SECTION A-A



ELEVATION

Note:
See Sheets 55 and 58 for Plan and Profile
See Ramp G-1 cross sections.
Payment for cut-off wall to be included in unit price bid for Item I-10, Riprap.

D.A. = 66.7 Acres
Q 50 = 10.5 c.f.s.

MADE LVM DATE 5-8-63 TRACED DATE
CHECKED ECE DATE 3-3-64 SCALE 1"=10'

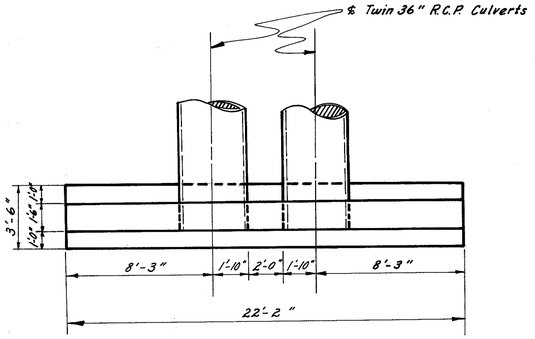
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

STRUCTURE S-8 RAMP G-1 STA 33+78

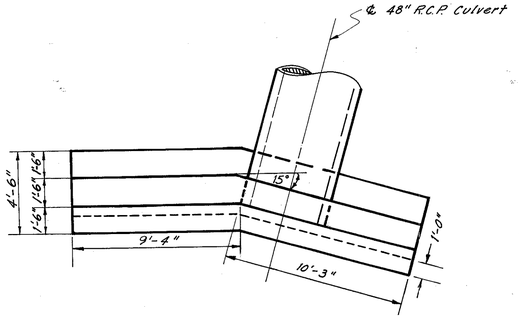
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

172
256

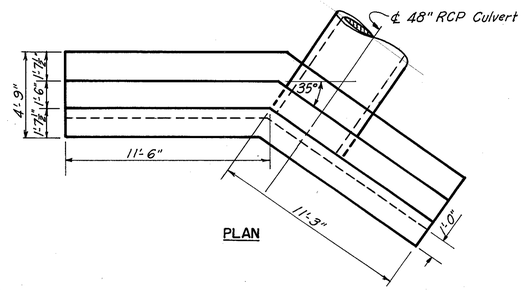
CUYAHOGA COUNTY
CUY-1 – 0.11



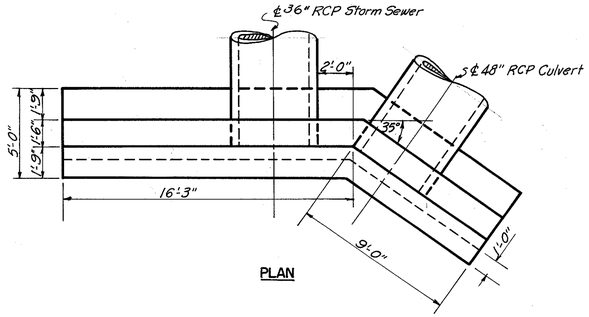
PLAN



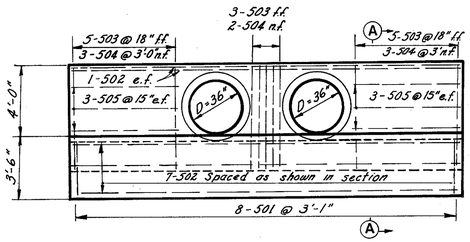
PLAN



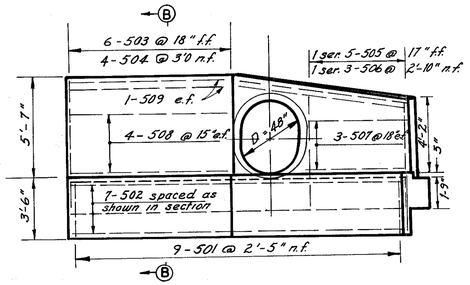
PLAN



PLAN



ELEVATION



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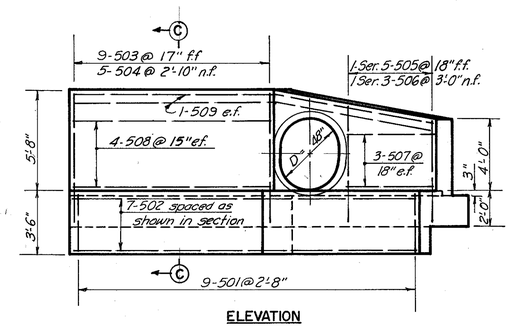
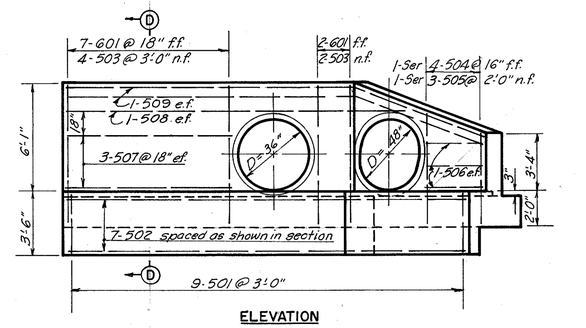


ELEVATION



ELEVATION

CULVERT S-3 & S-5

REINFORCEMENT SCHEDULE

Mark	No	Headwalls S-3 & S-5 Dimensions Type	A	B	C	Length	Ser. Inc.	Weight
501	8	3	3'-1"	8"		4'-2"		35
502	11	Str.				21'-8"		249
503	13	1	5'-10"	2'-5"		8'-2"		111
504	8	1	5'-10"	8"		6'-5"		53
505	12	Str.				5'-11"		74
						Total		522

Concrete Quantity - 10.5 C.Y. per Headwall

CULVERT S-8

REINFORCEMENT SCHEDULE

Mark	No.	Headwall S-8 Dimensions Type	A	B	C	Length	Ser. Inc.	Weight
501	9	3	3'-1"	8"		4'-2"		39
502	7	2	9'-0"	9'-11"	3¼"	18'-11"		138
503	6	1	7'-2"	2'-5"		12'-0"		75
504	4	1	7'-2"	8"		8'-6"		35
505	1 Ser. of 3	1	5'-8" to 6'-0"	2'-5"		8'-1" to 11'-2"	2"	50
506	1 Ser. of 3	1	5'-8" to 6'-0"	8"		8'-1" to 11'-2"	3"	30
507	3	Str.				5'-8"		18
508	8	Str.				9'-6"		78
509	4	2	9'-2"	10'-1"	3½"	19'-3"		82
						Total		545

Concrete Quantity - 10.7 C.Y. per Headwall

CULVERT S-4(LEFT)

REINFORCEMENT SCHEDULE

Mark	No.	Headwall S-4 (Left) Dimensions Type	A	B	C	Length	Ser. Inc.	Weight
501	9	3	3'-1"	8"		4'-2"		39
502	7	2	10'-10"	10'-7"	8⅜"	21'-5"		156
503	9	1	7'-3"	2'-9"		9'-11"		93
504	5	1	7'-3"	8"		7'-10"		41
505	1 Ser. of 3	1	5'-7"-6'-6"	2'-9"		8'-3"-9'-2"	2¾"	45
506	1 Ser. of 3	1	5'-7"-6'-6"	8"		6'-2"-7'-1"	5½"	21
507	6	Str.				6'-3"		39
508	8	Str.				11'-6"		96
509	4	2	11'-4"	11'-1"	8 1/16"	22'-5"		93
						Total		623

Concrete Quantity - 14.8 Cu.Yds.

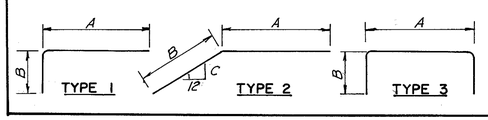
CULVERT S-4(RIGHT)

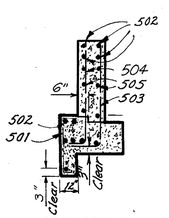
REINFORCEMENT SCHEDULE

Mark	No.	Headwall S-4 (Right) Dimensions Type	A	B	C	Length	Ser. Inc.	Weight
501	9	3	3'-1"	8"		4'-2"		39
502	7	2	15'-6"	8'-3"	8⅜"	23'-9"		173
503	4	1	7'-8"	8"		8'-3"		34
504	1 Ser. of 3	1	4'-11"-6'-2"	2'-11"		7'-9"-9'-0"	5"	35
505	1 Ser. of 3	1	4'-11"-6'-2"	8"		5'-6"-6'-9"	7½"	19
506	6	Str.				4'-0"		25
507	6	Str.				9'-3"		58
508	2	2	16'-1"	3'-0"	8⅜"	19'-1"		40
509	4	2	16'-1"	9'-3"	9 1/16"	25'-4"		105
601	7	1	7'-8"	2'-11"		10'-5"		110
						Total		638

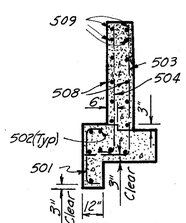
Concrete Quantity-16.9 Cu.Yds.

BAR BENDING DIAGRAMS





SECTION A-A



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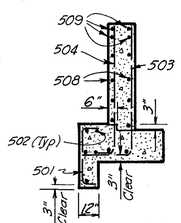
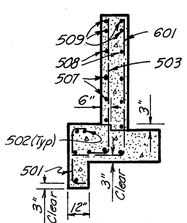


SECTION C-C



SECTION D-D

Note:
Concrete for Headwalls shall be Class "C".
All exposed edges shall be chamfered ¾".
Reinforcement size is indicated in the bar mark; for example a 501 is a number 5 bar.
Bars of a series shall vary in length by a constant increment.
Bar Dimensions are given out-to-out.
All bars shall be 2" clear from face of Concrete, except as noted.
Abbreviations: n.f.=near face; f.f.= far face; e.f. = each face.

MADE DRK DATE 6-17-63 TRACED DATE
CHECKED DWK DATE 6-18-63 SCALE 1/4" = 1'-0"

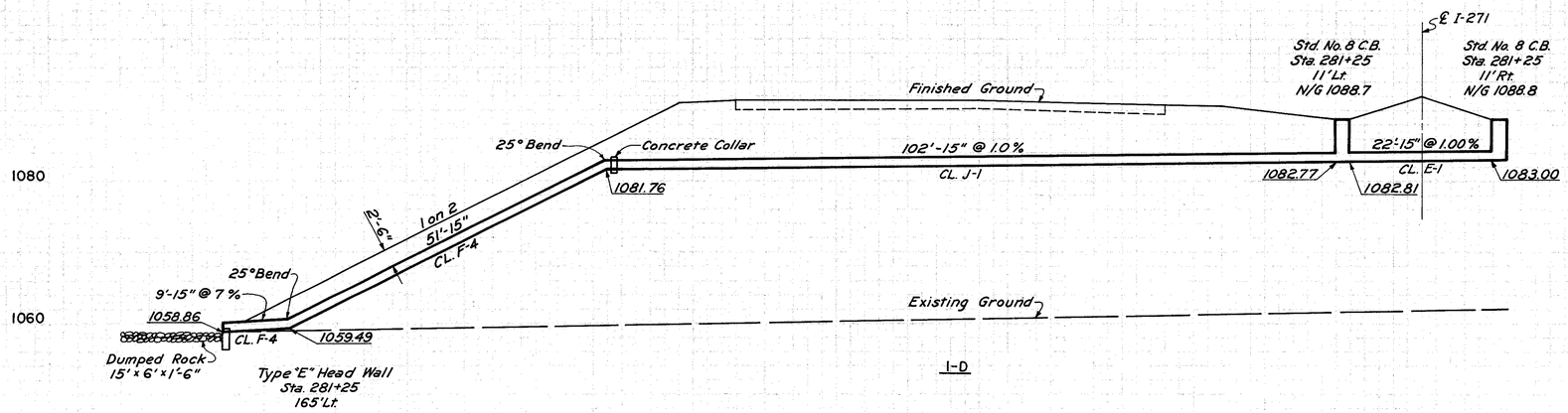
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SKEWED HEADWALL DETAILS

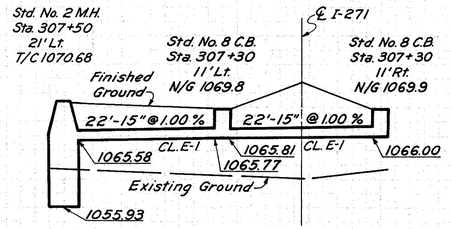
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

173
256

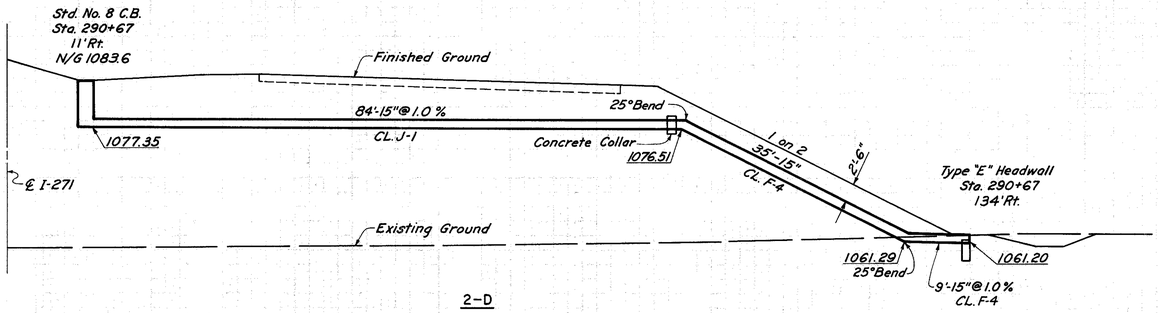
CUYAHOGA COUNTY
CUY-I-0.11



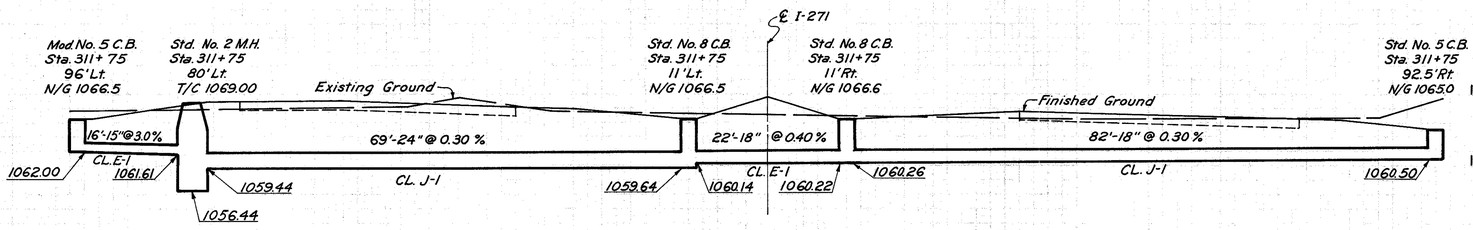
1-D



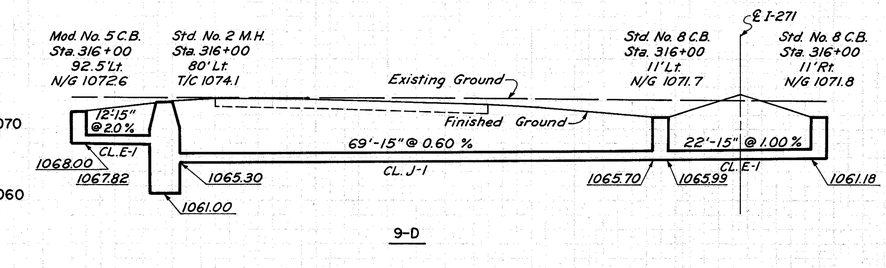
4-D



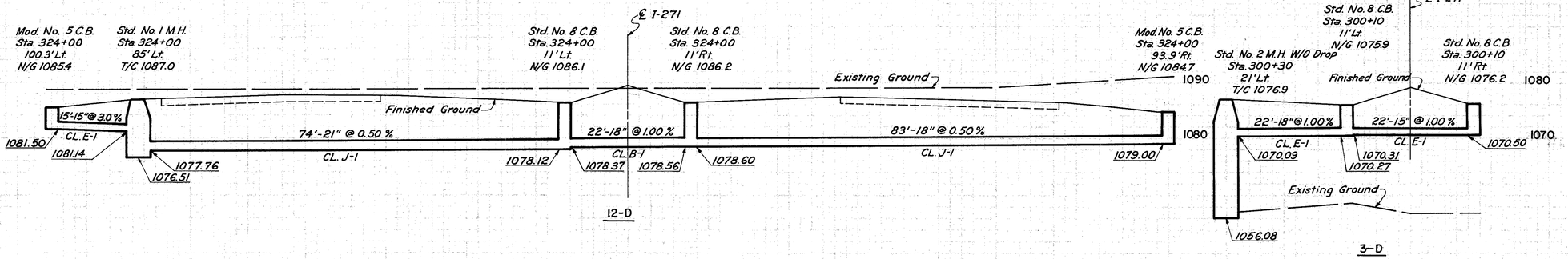
2-D



7-D



9-D



12-D

3-D

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

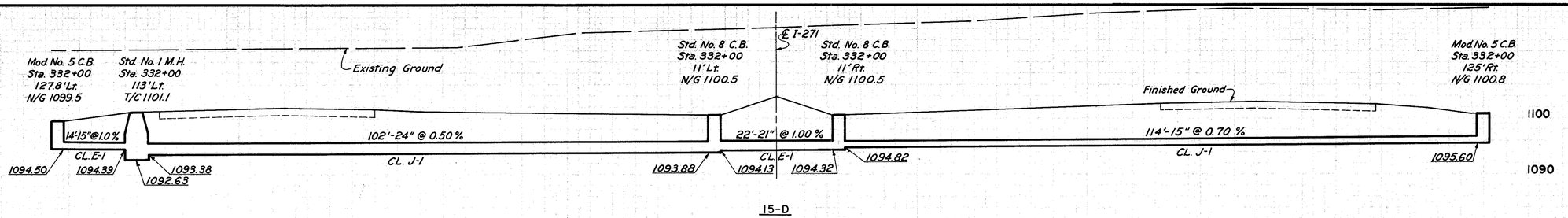
R.U.K. - R.J.L. 5-2-69

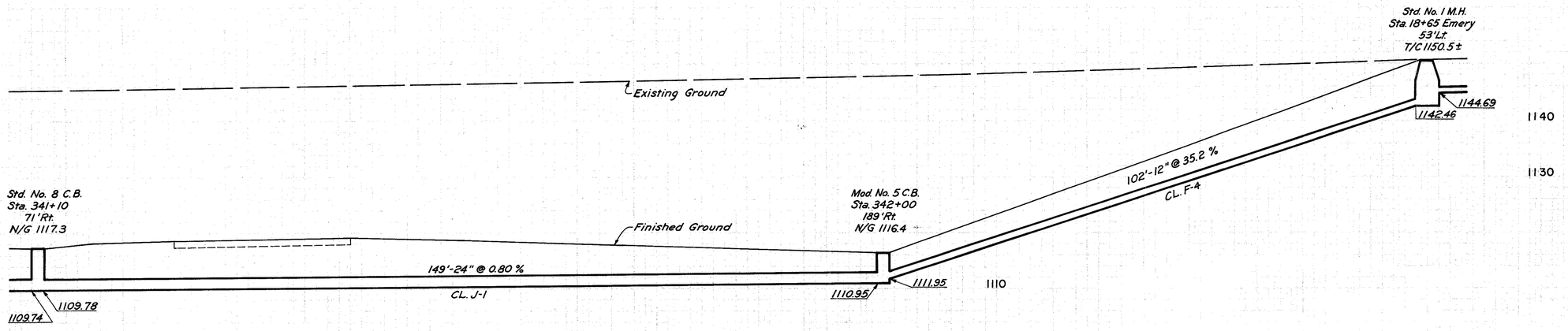
STORM SEWER PROFILES 1-D TO 12-D

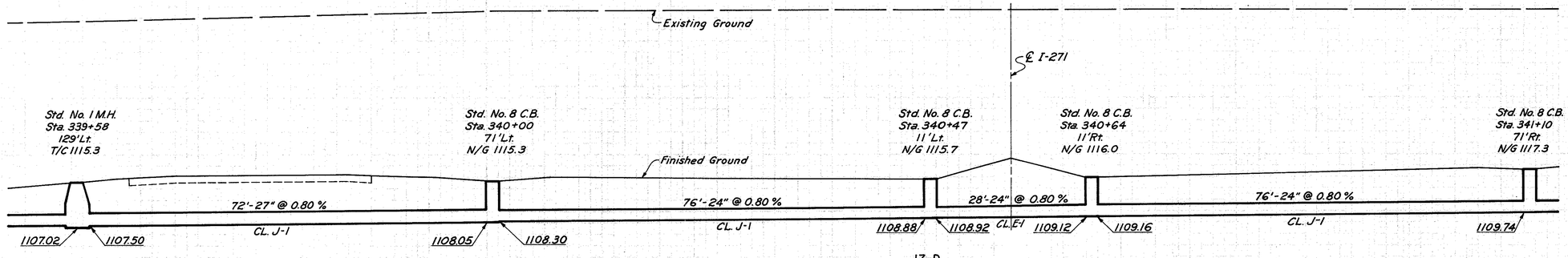
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

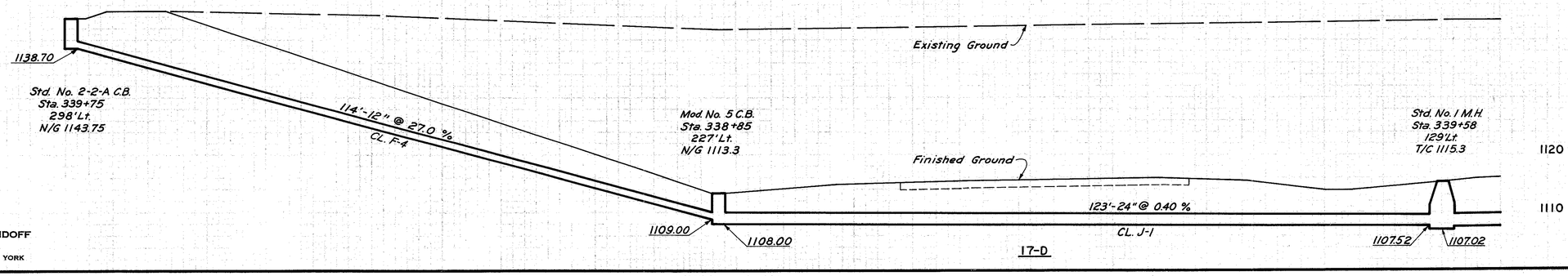
174
256

CUYAHOGA COUNTY
CUY-I-0.11









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

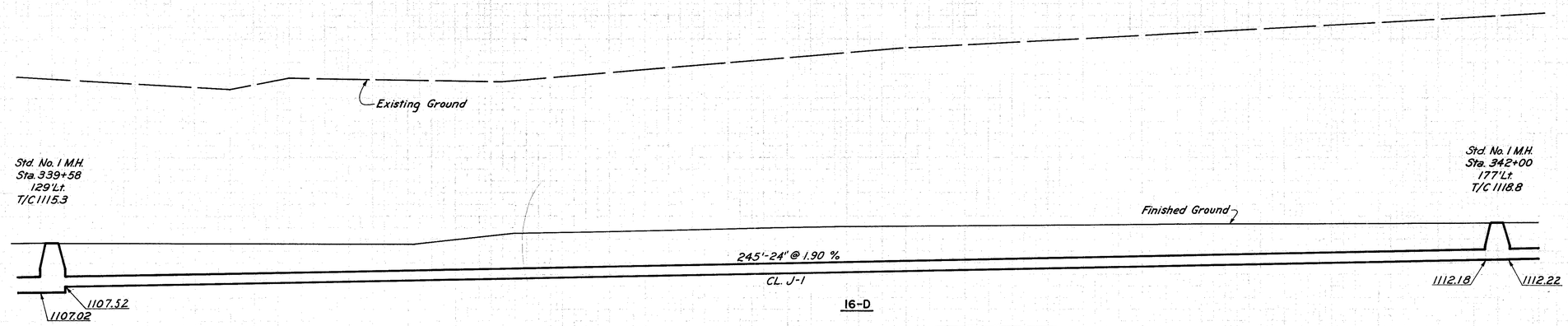
R.J.K. - 8/12 5-7-63

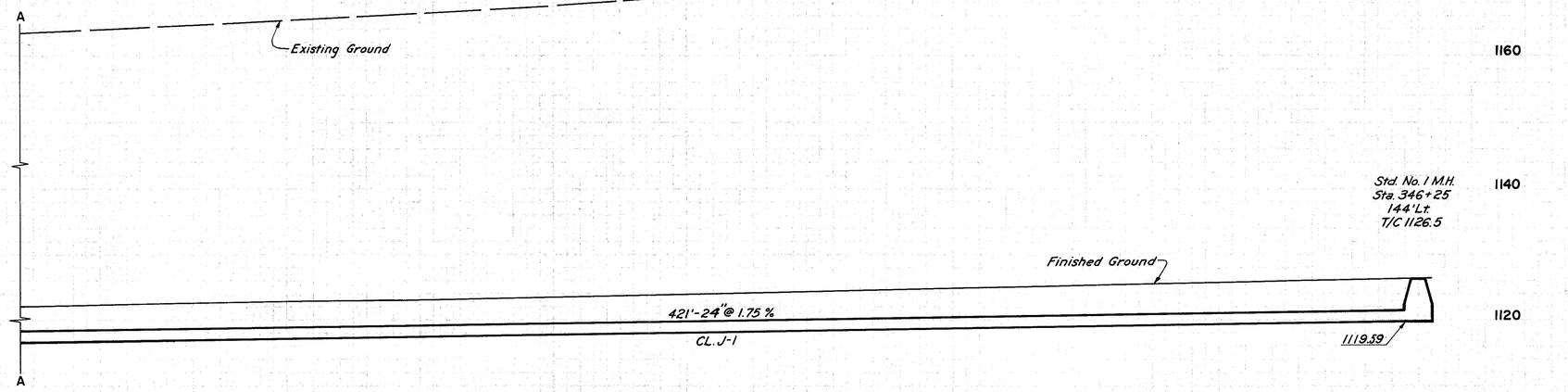
STORM SEWER PROFILES 14-D TO 17-D

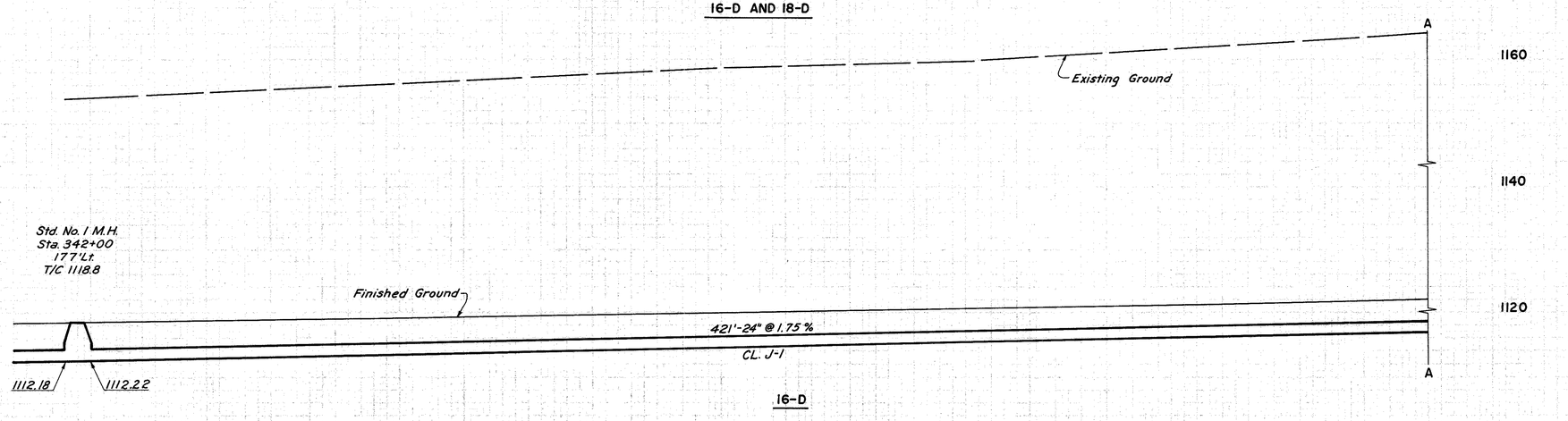
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

175
256

CUYAHOGA COUNTY
CUY-I-0.11







R.J.K. - R.J.L. 5-10-63

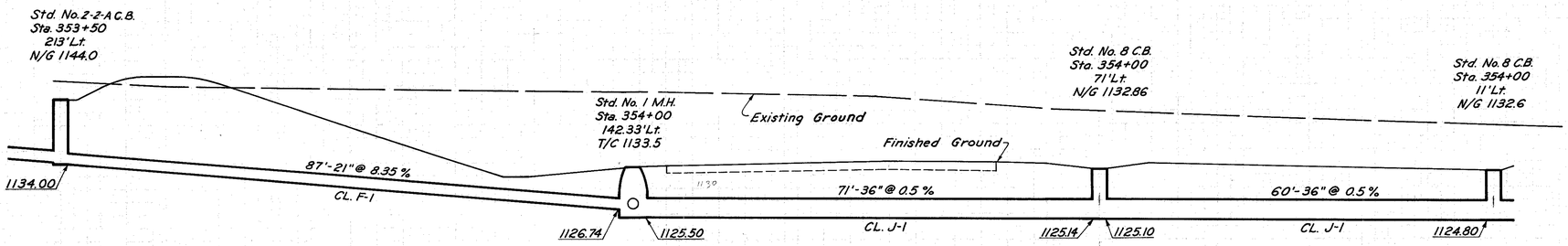
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

STORM SEWER PROFILES 16-D AND 18-D

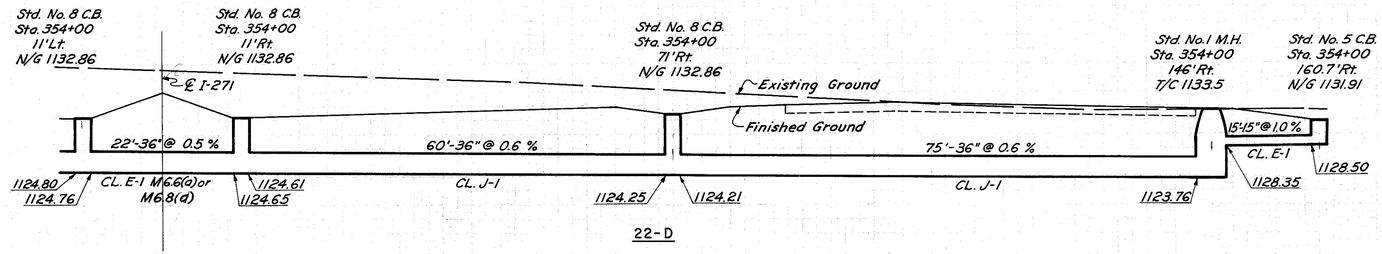
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

176
256

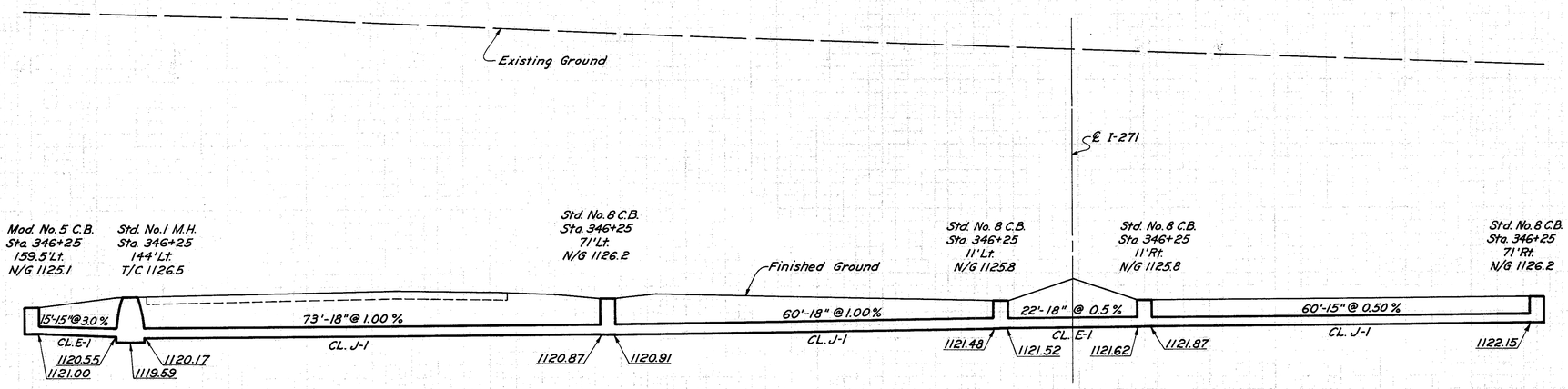
CUYAHOGA COUNTY
CUY-I-0.11



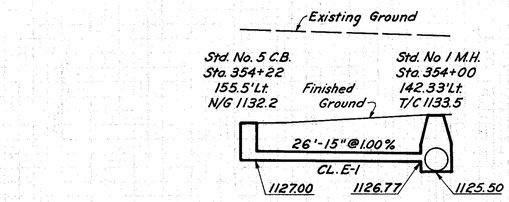
22-D



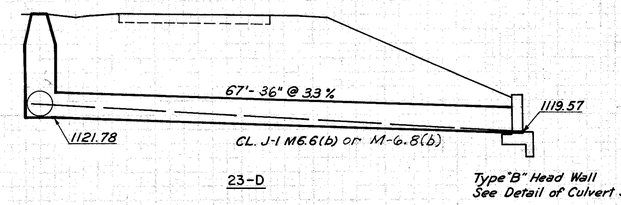
22-D



19-D



21-D



23-D

Type "B" Head Wall
See Detail of Culvert S-4

R.J.K. - 2-12. 5-17-63

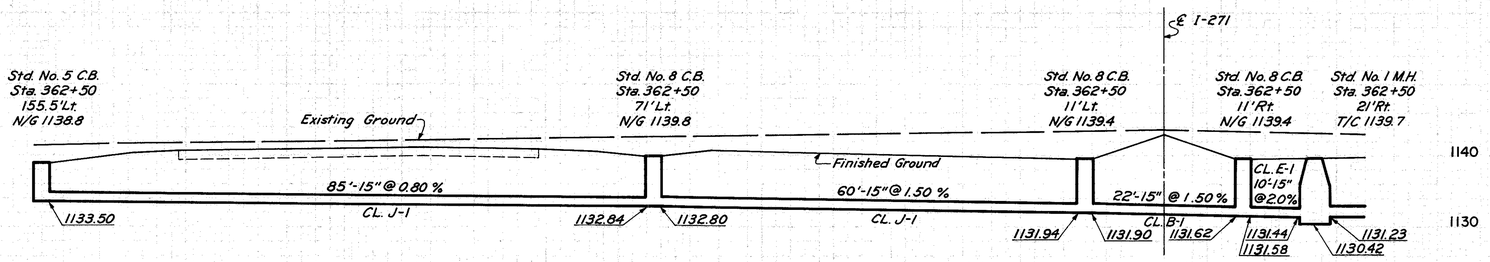
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

STORM SEWER PROFILES 19-D TO 23-D

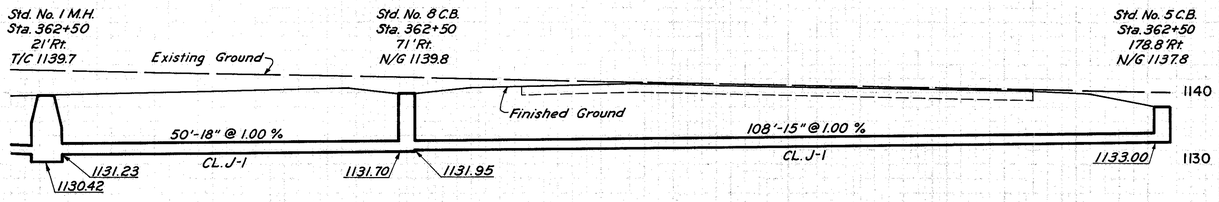
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

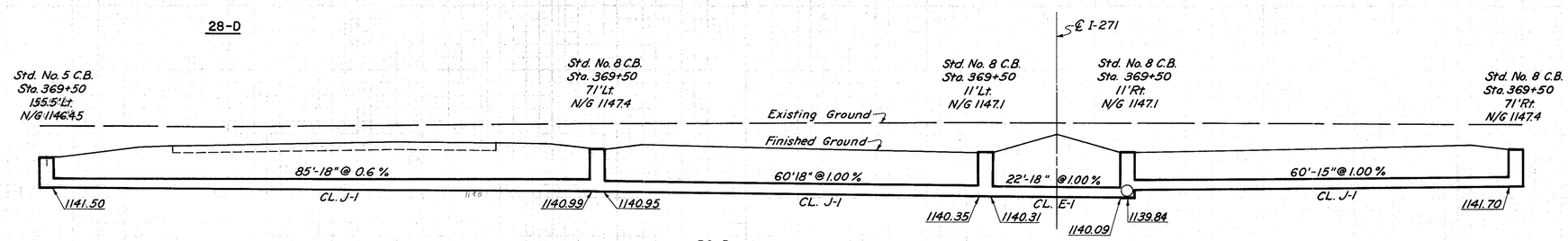
177
256

CUYAHOGA COUNTY
CUY-I-0.11

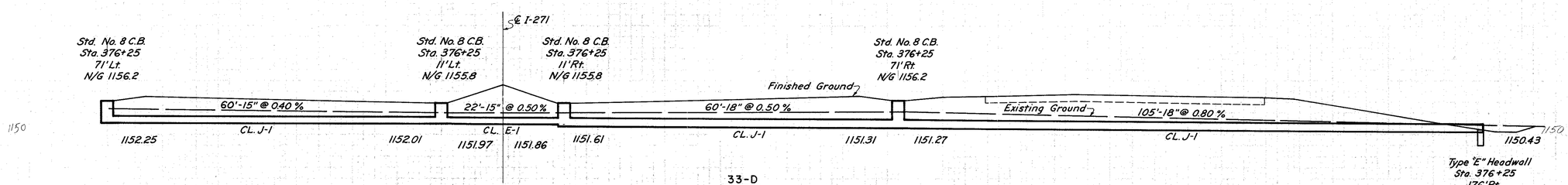


28-D





30-D



33-D

R.J.K. - 2/12 5-21-63

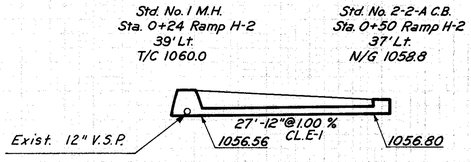
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

STORM SEWER PROFILES 28-D TO 33-D

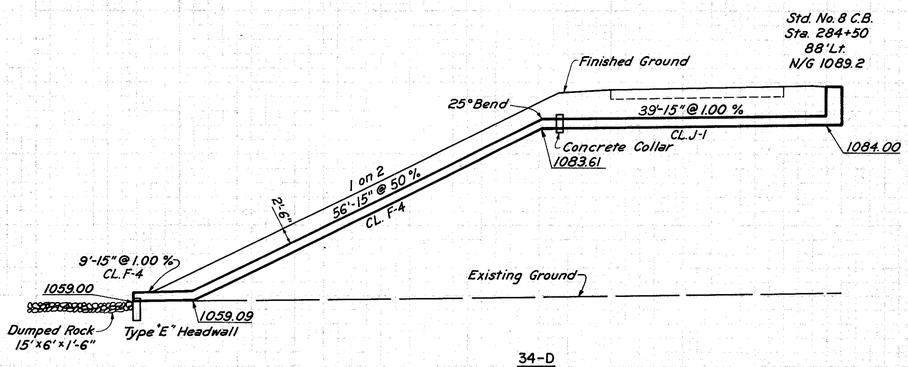
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

178
256

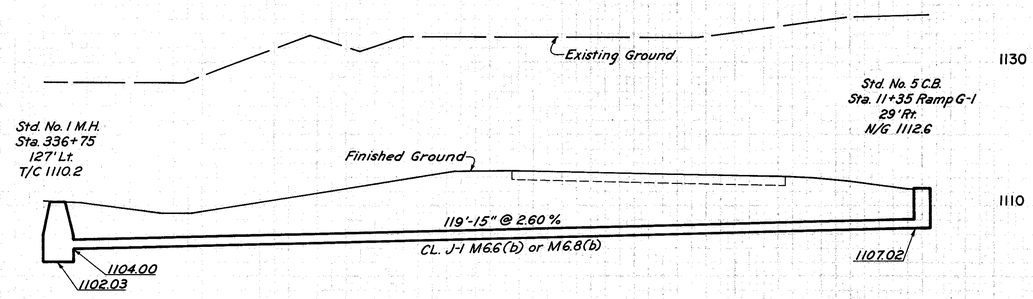
CUYAHOGA COUNTY
CUY-I-0.11



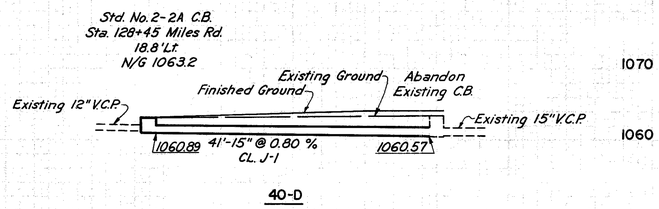
36-D



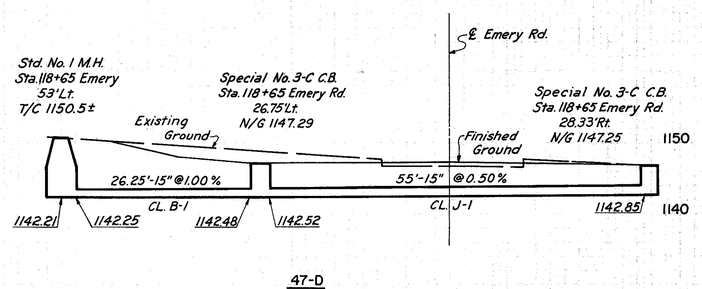
34-D



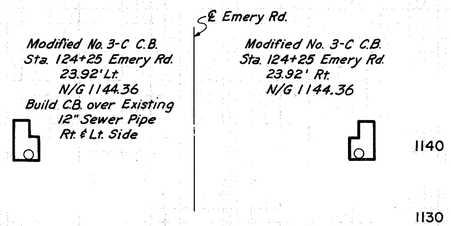
42-D



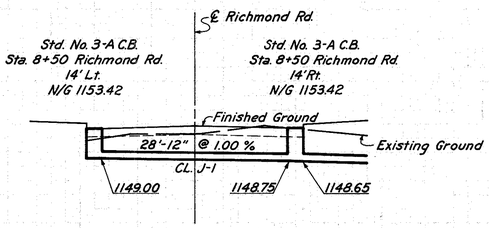
40-D



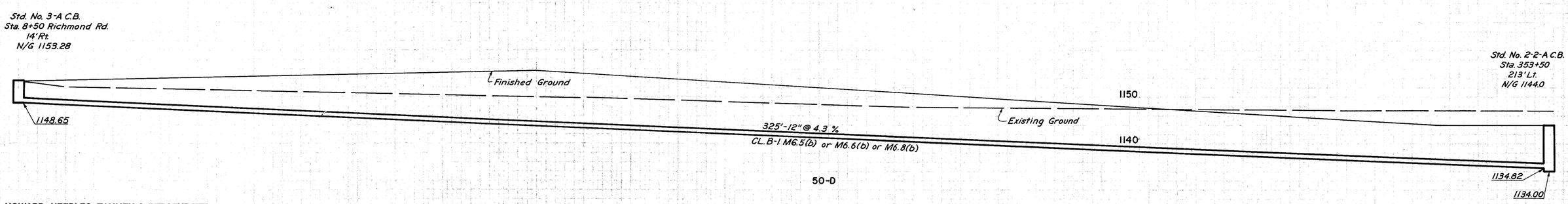
47-D



48-D



49-D



50-D

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

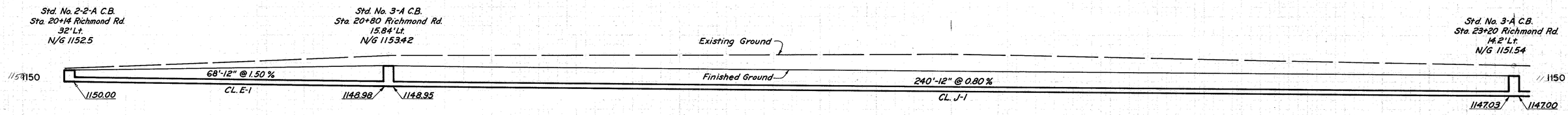
R.J.K. - R.J.L. 3-24-69

STORM SEWER PROFILES 34-D TO 50-D

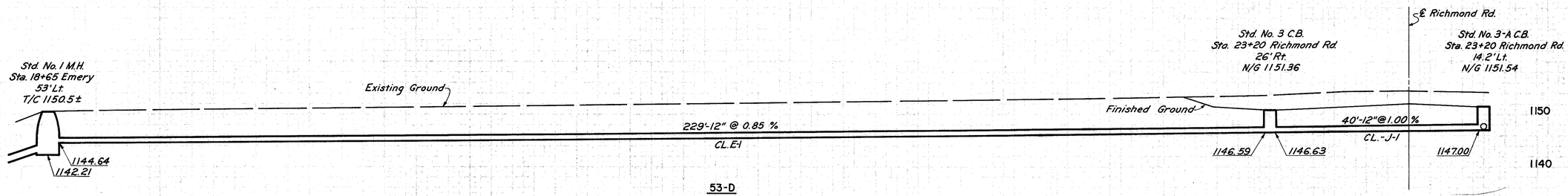
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

179
256

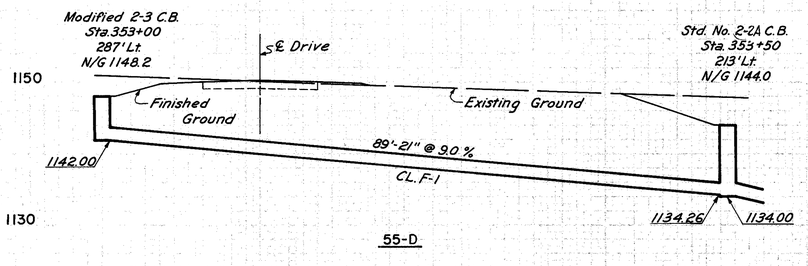
CUYAHOGA COUNTY
CUY-I-0.11



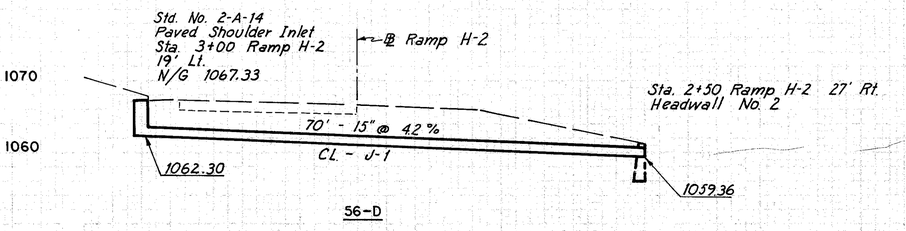
52-D



53-D



55-D



56-D

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

R.J.K. - R.I.Z. 5-28-63

STORM SEWER PROFILES 52-D TO 56-D

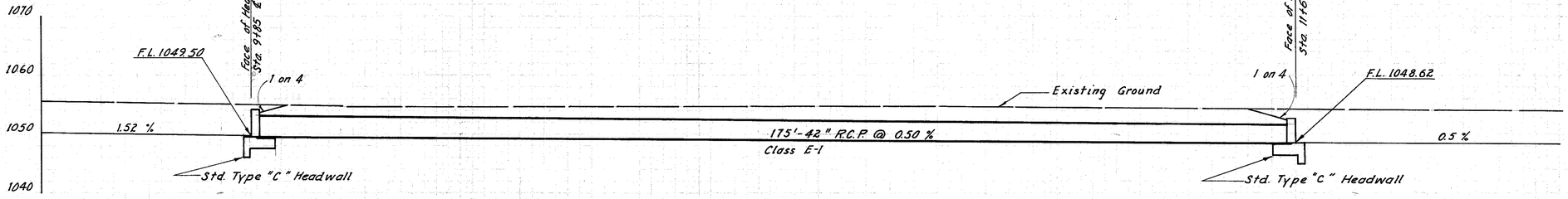
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

180
256

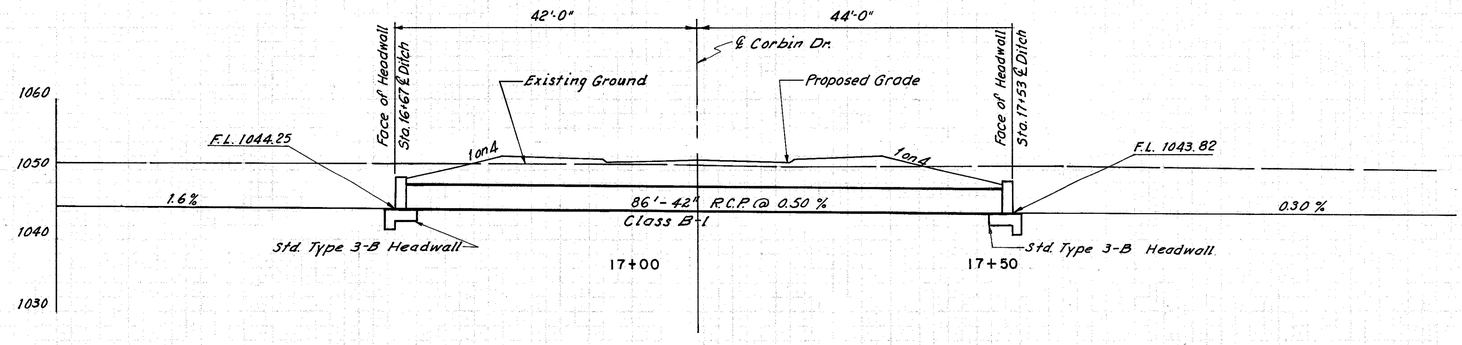
CUYAHOGA COUNTY
CUY- I- 0.11

R-12 3-18-64

R-12 - L42 3-12-64



107-D



108-D

Note:
For Plan of D-107 & D-108 see sheet 185

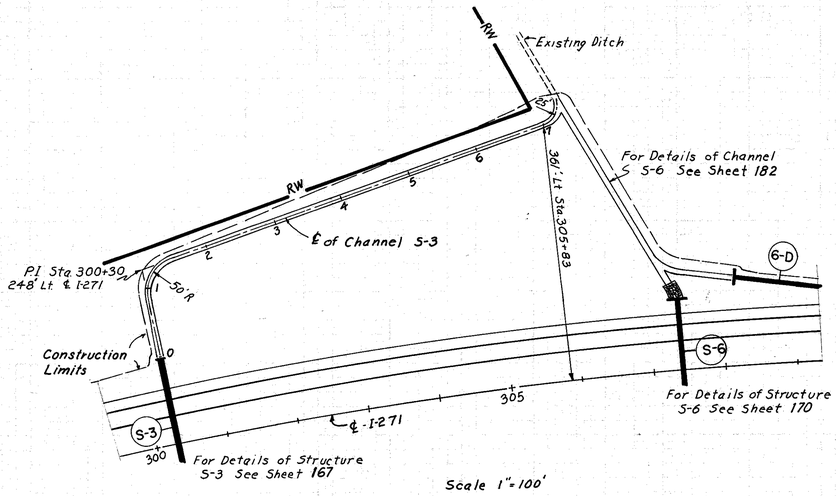
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

PIPE PROFILES D-107 TO D-109

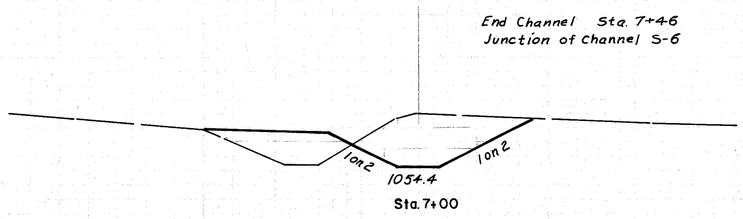
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

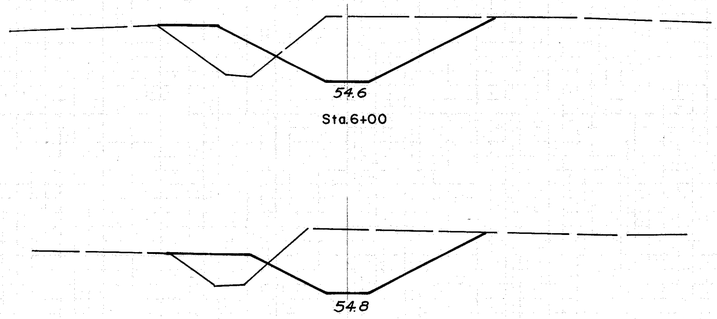
181
256

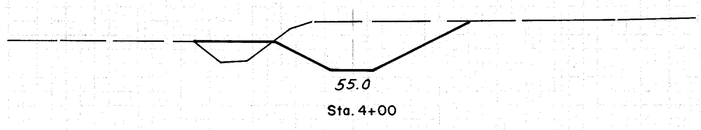
CUYAHOGA COUNTY
CUY-I-0.11

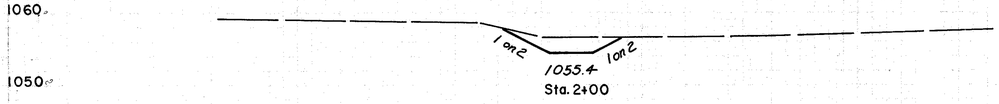


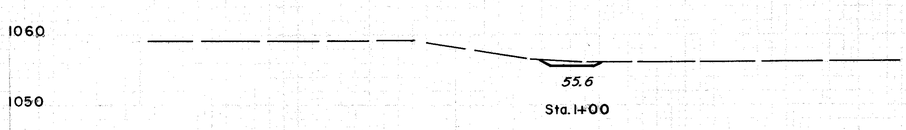
Scale 1"=100'

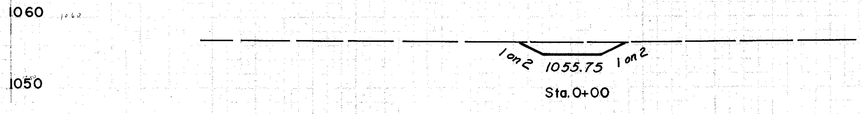












Sta 0+00 Culvert Outlet
F.L. Elev. 1055.75

		EARTHWORK			
		END AREA		VOLUME	
		EXC.	EMB.	EXC.	EMB.
	Sta 7+46	0	0		
				187	106
1060	Sta 7+00	101	57		
1050				498	209
	Sta 6+00	168	56		
1060				617	178
1050	Sta 5+00	165	40		
				532	113
	Sta 4+00	122	21		
				337	52
	Sta 3+00	60	7		
				150	13
	Sta 2+00	21	0		
				46	0	
	Sta 1+00	4	0		
				39	0
	Sta 0+00	17	0		
	Total			2406	671

6-18-63 RJZ
6-11-63 RJZ
6-11-63 RJZ

LAZ
LAZ
LAZ

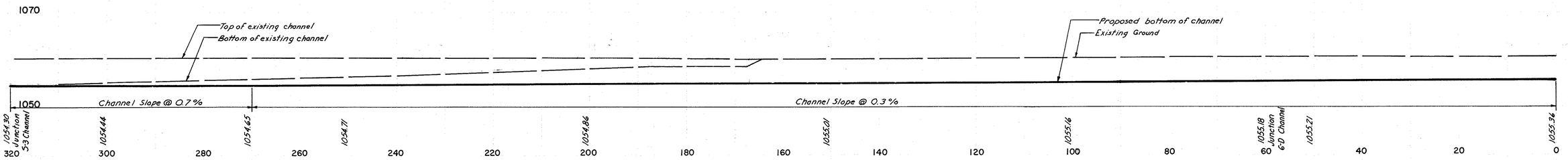
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

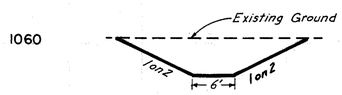
SCALE 1"=10'
MADE LAZ DATE 9-12-63
TRACED LAZ DATE 9-13-63
CHECKED DATE

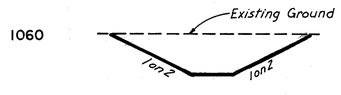
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

182
256

CUYAHOGA COUNTY
CUY-1-0.11







EARTHWORK		
STATION	END AREA EXC.	VOLUME EXC.
0-12	82	
		201
0+50	93	
		162
1+00	82	
		145
1+50	74	
		134
2+00	71	
		134
2+50	74	
		115
3+00	50	
		27
3+20	22	
TOTAL		918

For Location of Channel S-6 See Sheets 170 & 181

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

ORIGINAL SURVEY
NOTE BOOK
NO.
SURVEYED LAZ 6-18-43
PLOTTED LAZ 6-19-43
TRACED LAZ 6-19-43
AREAS RDJ 6-20-43
AREAS CHECKED LVM 6-20-43
BY
DATE

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

SCALE 1"=10'
MADE LAZ DATE 6-18-43
TRACED R.D.J DATE 6-19-43
CHECKED L.V.M. DATE 6-20-43

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

183
256

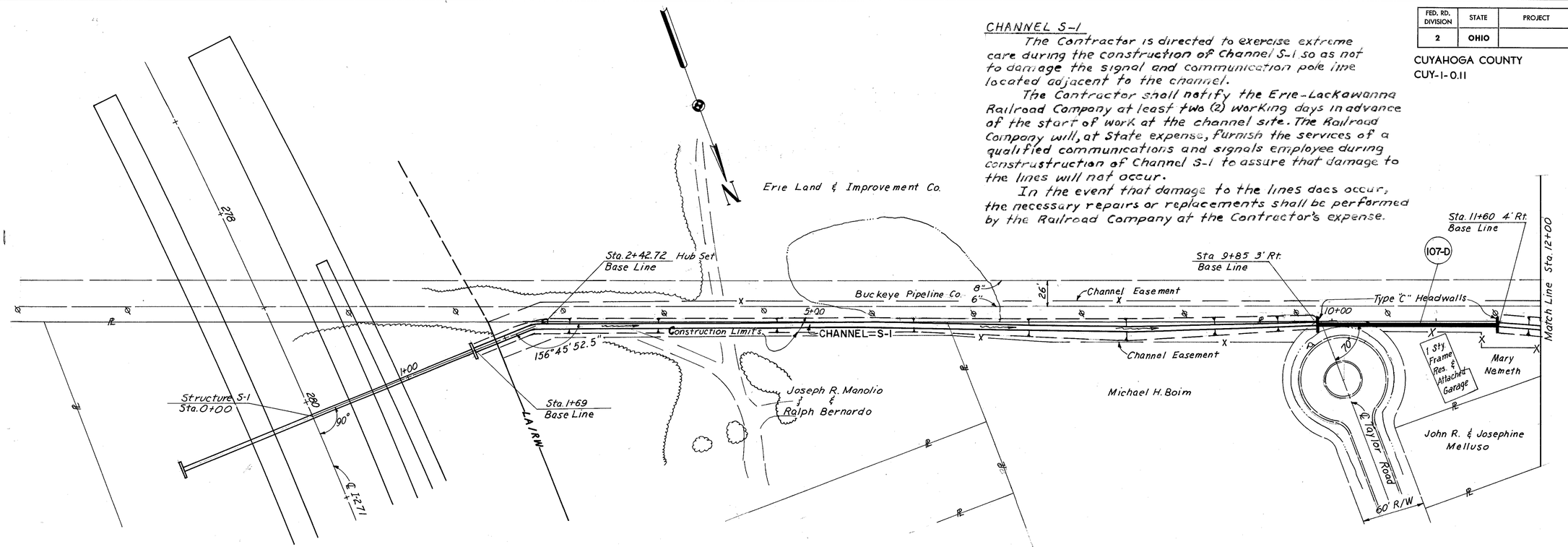
CUYAHOGA COUNTY
CUY-1-0.11

CHANNEL S-1

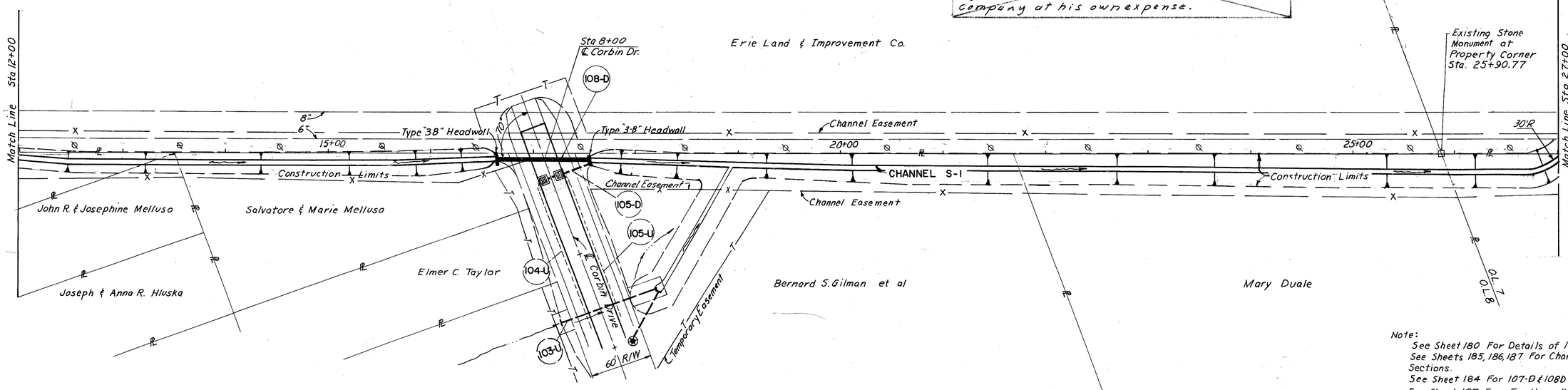
The Contractor is directed to exercise extreme care during the construction of Channel S-1 so as not to damage the signal and communication pole line located adjacent to the channel.

The Contractor shall notify the Erie-Lackawanna Railroad Company at least two (2) working days in advance of the start of work at the channel site. The Railroad Company will, at State expense, furnish the services of a qualified communications and signals employee during construstruction of Channel S-1 to assure that damage to the lines will not occur.

In the event that damage to the lines does occur, the necessary repairs or replacements shall be performed by the Railroad Company at the Contractor's expense.



Note - The Contractor will be responsible for any damage to the utility pole line incurred by his construction operations. Any damages shall be repaired or replaced by him to the satisfaction of the railroad company at his own expense.



Note:
See Sheet 180 For Details of 107-D & 108-D
See Sheets 185, 186, 187 For Channe S-1 Cross-Sections.
See Sheet 184 For 107-D & 108D Quantities
See Sheet 187 For Earthwork Quantity

MADE	LAZ	DATE	2-28-61	TRACED	LAZ	DATE	2-28-64
CHECKED	ECE	DATE	2-28-64	SCALE	1"=50'		

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

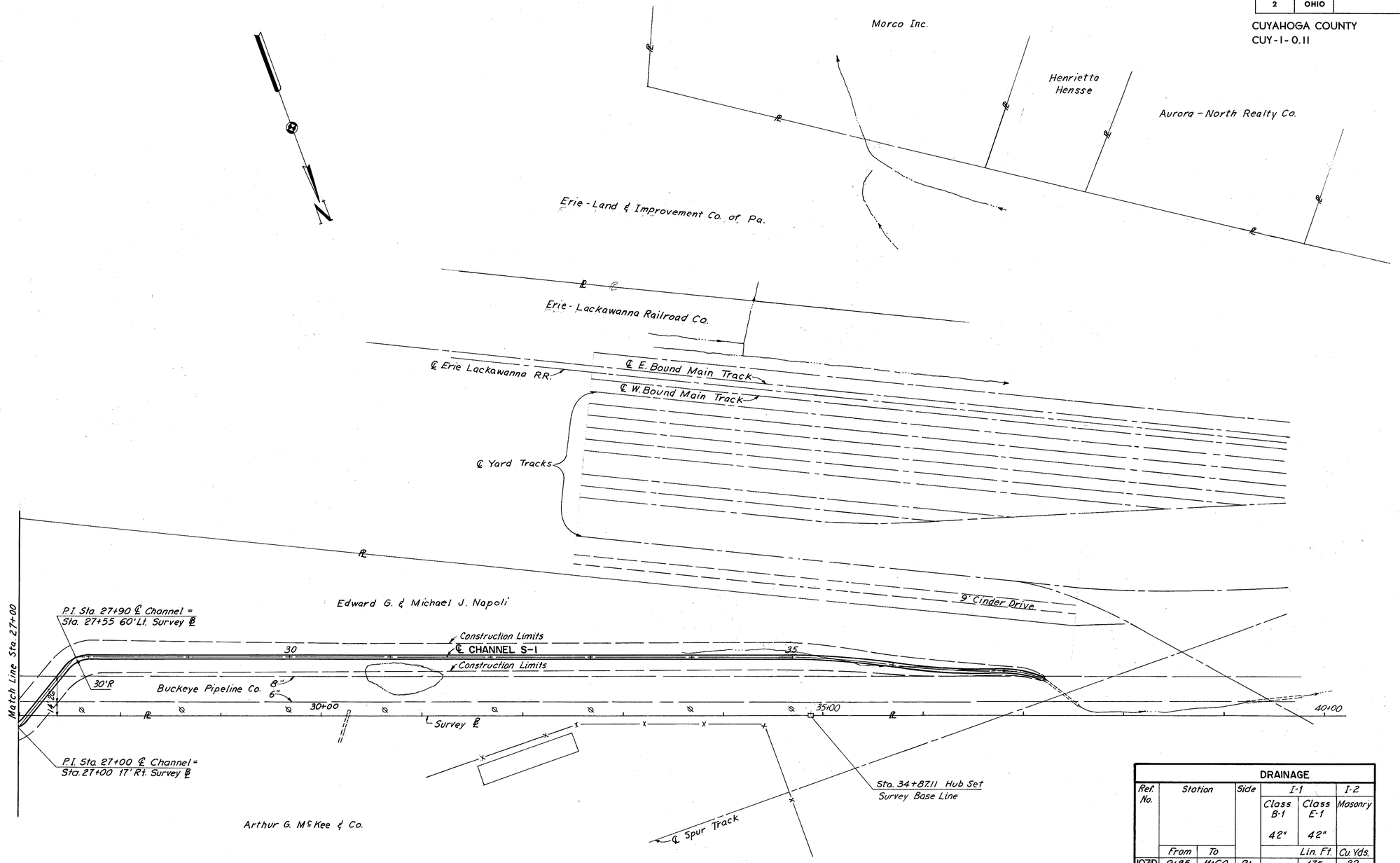
Revised C.E.H. 2-1-65

CHANNEL S-1 STA. 1+69 TO STA. 27+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

184
256

CUYAHOGA COUNTY
CUY-1-0.11



DRAINAGE						
Ref. No.	Station		Side	I-1		I-2
				Class B-1 42"	Class E-1 42"	Masonry
	From	To		Lin. Ft.		Cu. Yds.
107-D	9+85	11+60	Rt.		175	22
108-D	16+59	17+61	Rt.	86		14.6
				86	175	36.6

Note:
For Channel S-1 Cross Sections see sheets 185, 186, and 187.
For Earthwork Quantity see sheet 187

MADE LAZ DATE 3-10-64 TRACED LAZ DATE 3-11-64
CHECKED RJZ DATE 3-13-64 SCALE 1" = 50'

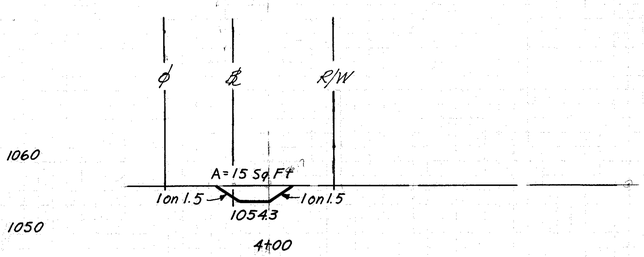
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

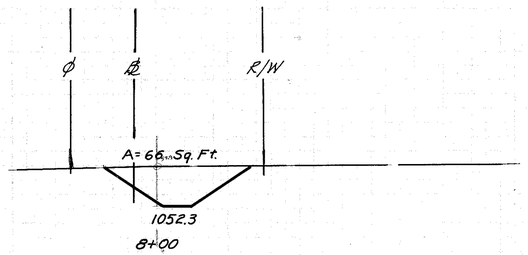
CHANNEL S-1 STA. 27+00 TO STA. 39+60

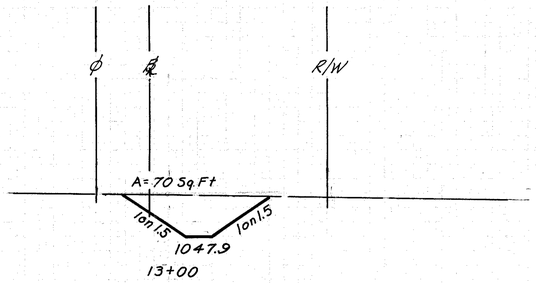
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

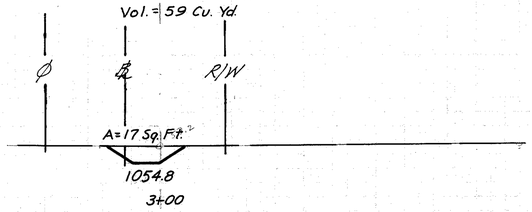
185
256

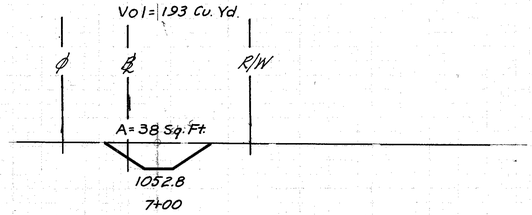
CUYAHOGA COUNTY
CUY - 1 - 0.11

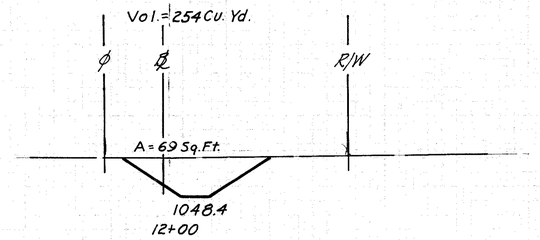




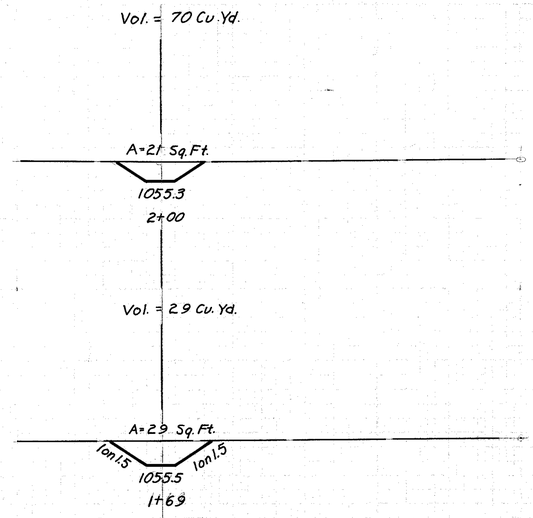


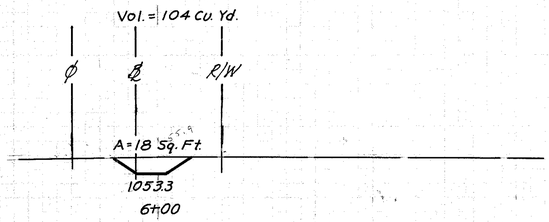


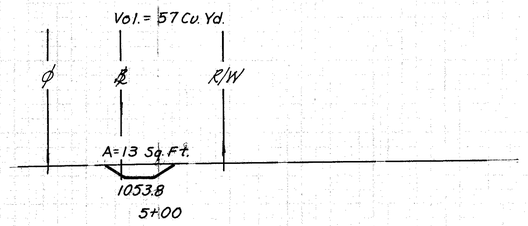




Vol. = 102 Cu. Yd.

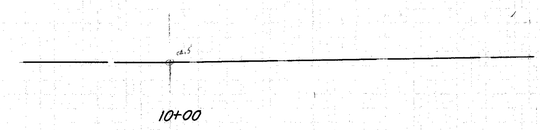




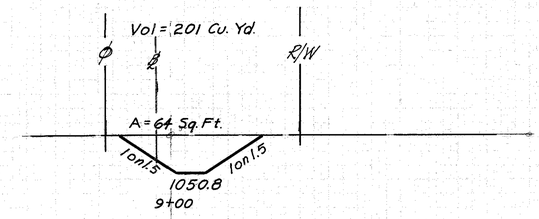


Vol.= 52 Cu. Yd.

Sta. 4+00 A= 15 Sq. Ft.



Culvert Inlet at Sta. 9+85



Vol.= 241 Cu. Yd.

Sta. 8+00 A= 66 Sq. Ft.

10' 0 10'
Horizontal Scale

Note: For plan view of Channel S-1 see sheets 183 & 184.

ϕ Indicates railroad communications line

LAZ - R/Z 3-569
LAZ - R/Z 3-644
LAZ - R/Z 3-644

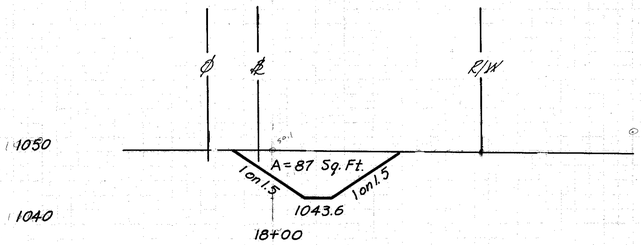
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CHANNEL S-1 STA. 1+69 TO STA. 13+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

186
256

CUYAHOGA COUNTY
CUY - I - 0.11

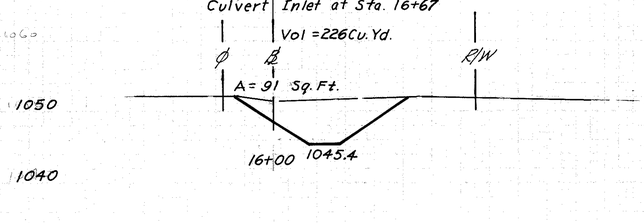


Vol = 152 Cu. Yd.

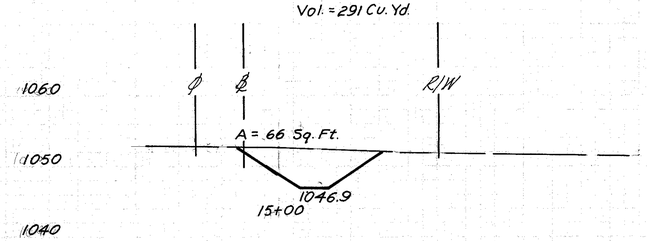
Culvert Outlet at Sta. 17+53

Culvert Inlet at Sta. 16+67

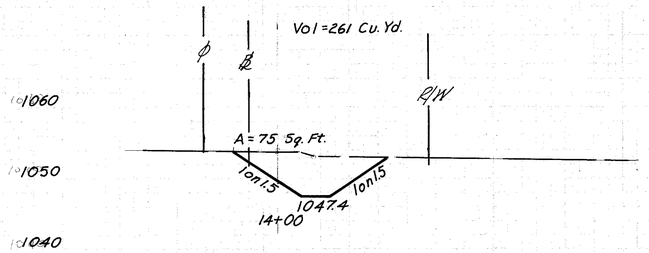
Vol = 226 Cu. Yd.



Vol. = 291 Cu. Yd.

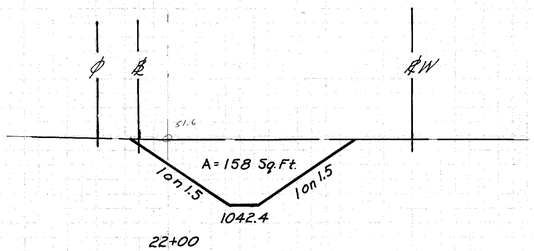


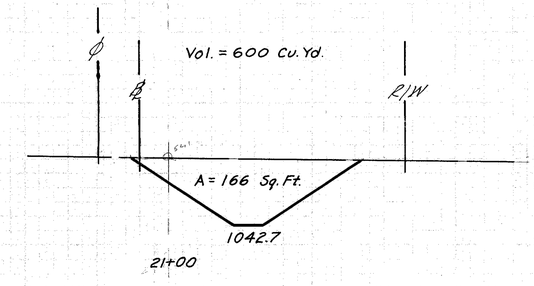
Vol = 261 Cu. Yd.

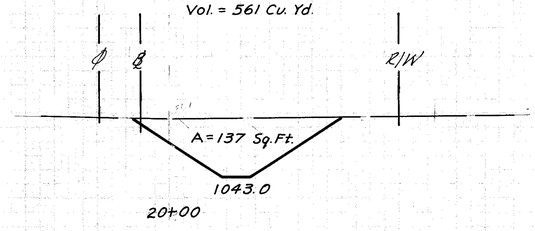


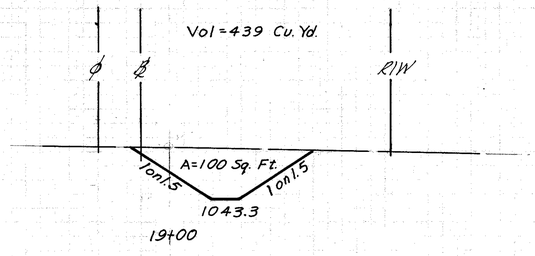
Vol = 268 Cu. Yd.

Sta 13+00 A = 70 Sq. Ft.



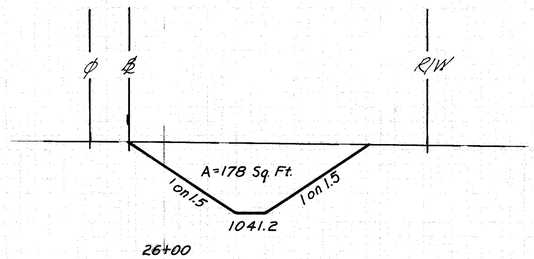


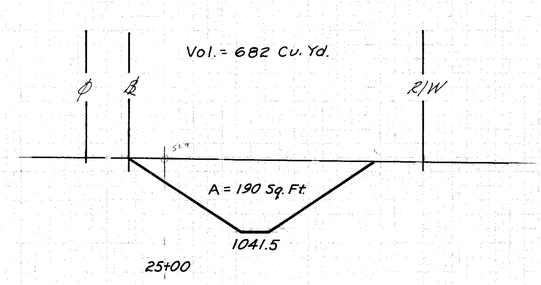


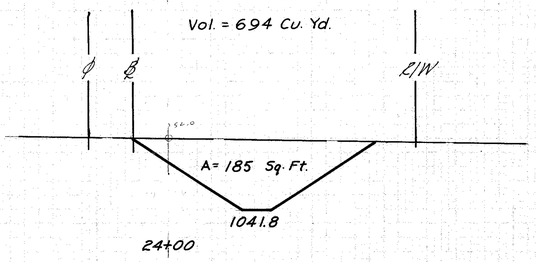


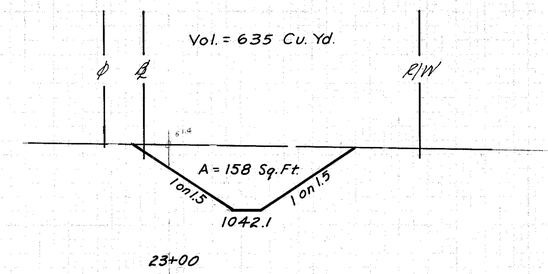
Vol. = 346 Cu. Yd.

Sta. 18+00 A = 87 Sq. Ft.









Vol. = 585 Cu. Yd.

Sta 22+00 A = 158 Sq. Ft.

10' 0 10'
Horizontal Scale

Note:
For plan view of Channel S-1
see sheets 183 & 184

ϕ Indicates railroad communications line

LA2 ~ BJ2 3-5-64
LA2 ~ BJ2 3-6-64
LA2 ~ BJ2 3-6-64

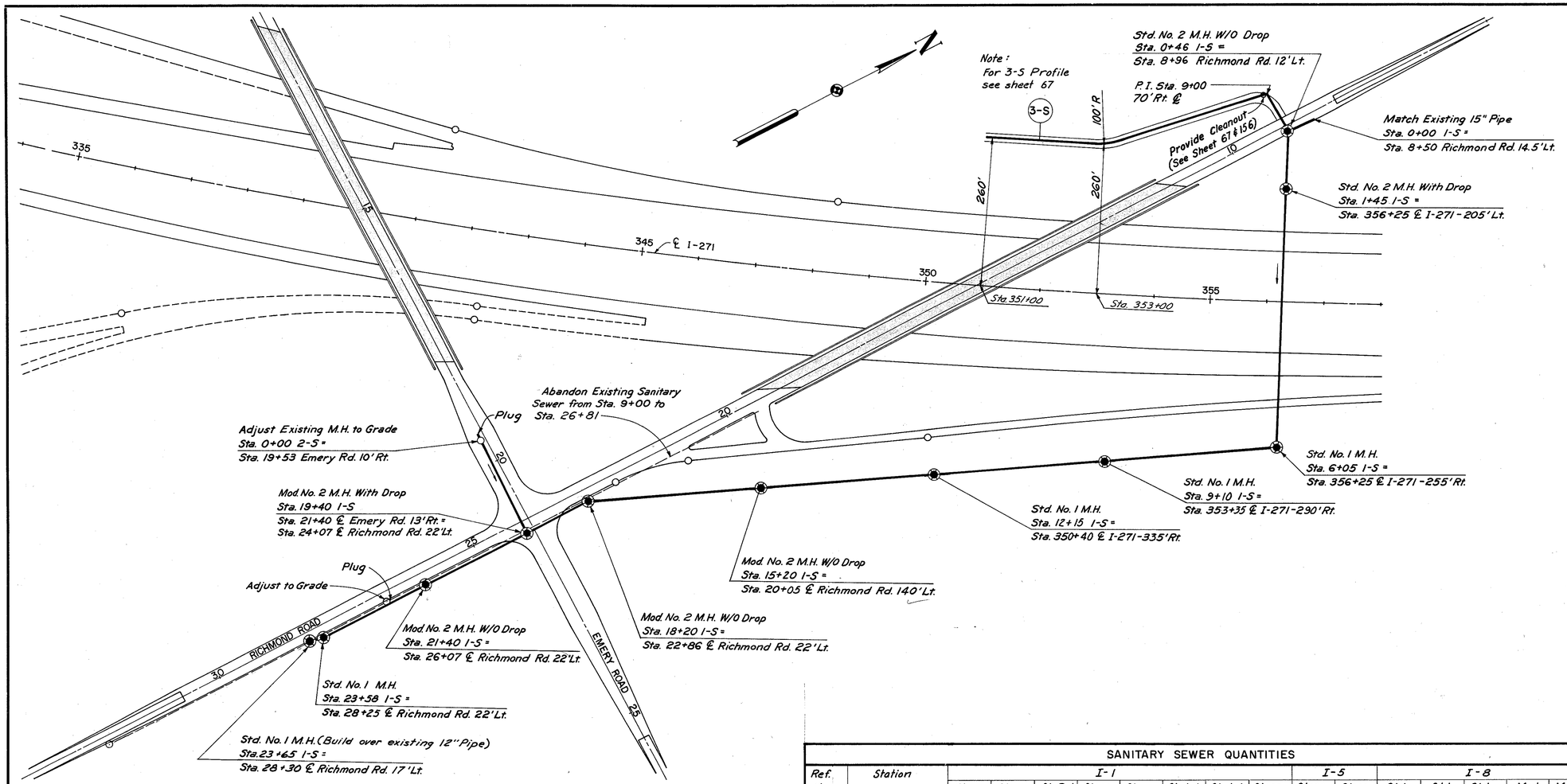
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CHANNEL S-1 STA. 14+00 TO STA. 26+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-1-0.11

188
256



SANITARY SEWER QUANTITIES

Ref. No.	Station		I-1								I-5		I-8				
			Class B-1 M6.8(b) 6"	Class B-1 M6.8(b) 15"	Cl. B-1 M6.8(a) Encased 18"	Class B-1 M6.8(b) 18"	Class J-1 M6.8(b) 8"	Cl. J-1 M6.8(a) Encased 15"	Cl. J-1 M6.8(a) Encased 18"	Class J-1 M6.8(b) 18"	Class B-1 90° Bend 6"	Class B-1 60° Y 6"x6"x6"	Std. No. 1 M.H.	Std. No. 2 M.H.	Std. No. 2 M.H. W/O Drop	Mod. No. 2 M.H.	Mod. No. 2 M.H. W/O Drop
	From	To	Lin. Ft.								Each		Each				
1-S	0+00	0+46						46									
1-S	0+46	1+45		68				31							1		
1-S	1+45	6+05			23					437				1			
1-S	6+05	9+10				305							1				
1-S	9+10	12+15				305							1				
1-S	12+15	15+20			230	75							1				
1-S	15+20	18+20			300												1
1-S	18+20	19+40							120								1
1-S	19+40	21+40							200							1	
1-S	21+40	23+58							100	118							1
1-S	23+58	23+65								7			2				
2-S	0+00	1+87					187										
3-S	0+00	6+00	625								1	1					
	Total		625	68	553	685	187	77	420	562	1	1	5	1	1	1	3

Note : For 3-S Profile see sheet 67.

MADE K.A.T. DATE 4-17-63 TRACED R.J.K. DATE 4-25-63
CHECKED E.C.E. DATE 3-3-64 SCALE 1" = 100'

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

189
256

CUYAHOGA COUNTY
CUY-I-0.11

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

No.	BY	DATE
	R.J.K.	5-12-63

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

SCALE 1"=10'
MADE K.A.T. DATE 4-1-63
TRACED R.J.K. DATE 4-5-63
CHECKED L.V.M. DATE 6-26-63

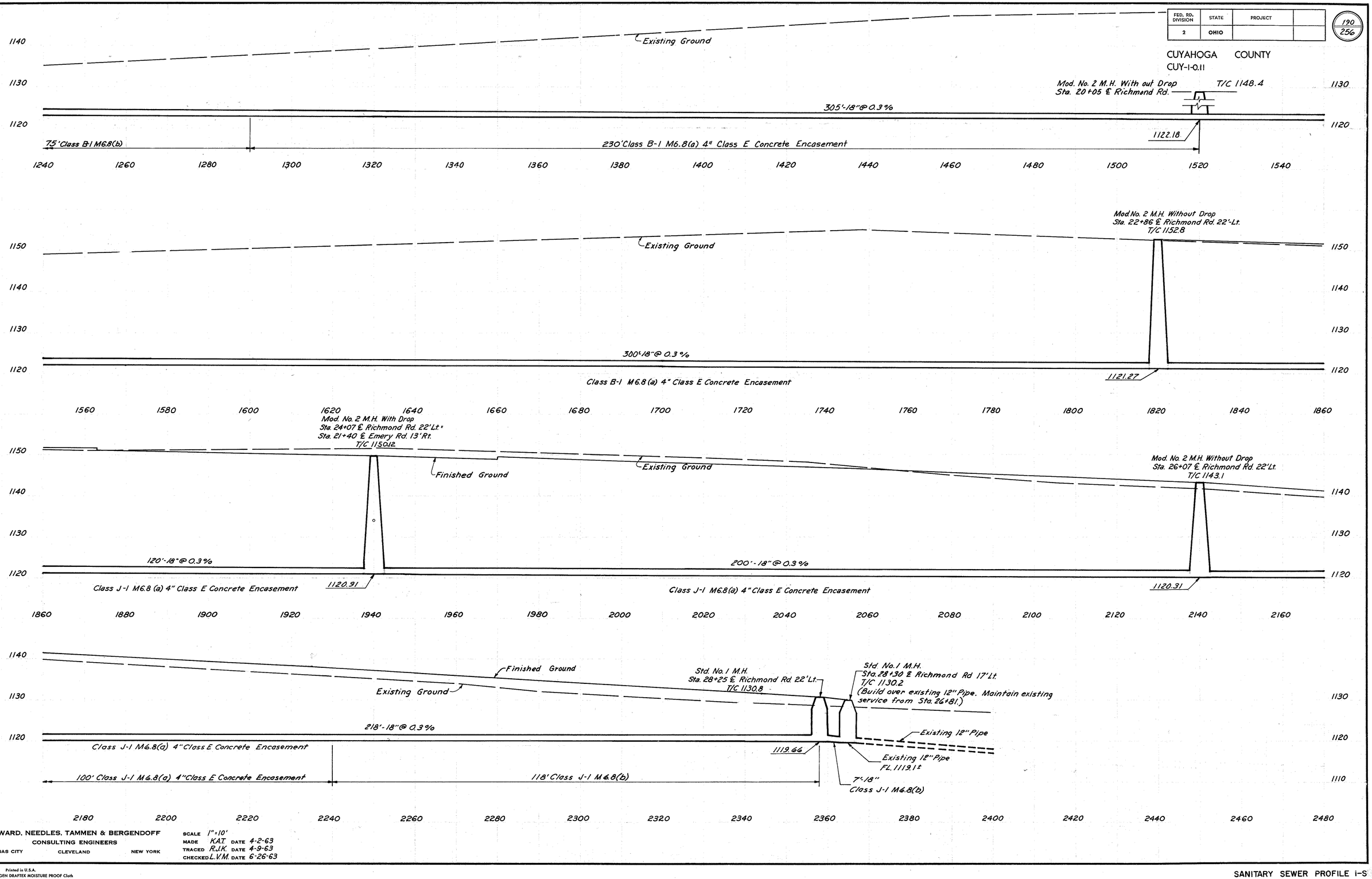
Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

SANITARY SEWER PROFILE I-S

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

190
256

CUYAHOGA COUNTY
CUY-I-0.11



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

Div.
BY RJE 6/12 5-1-63

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

SCALE 1"=10'
MADE K.A.T. DATE 4-2-63
TRACED R.J.K. DATE 4-9-63
CHECKED L.V.M. DATE 6-26-63

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

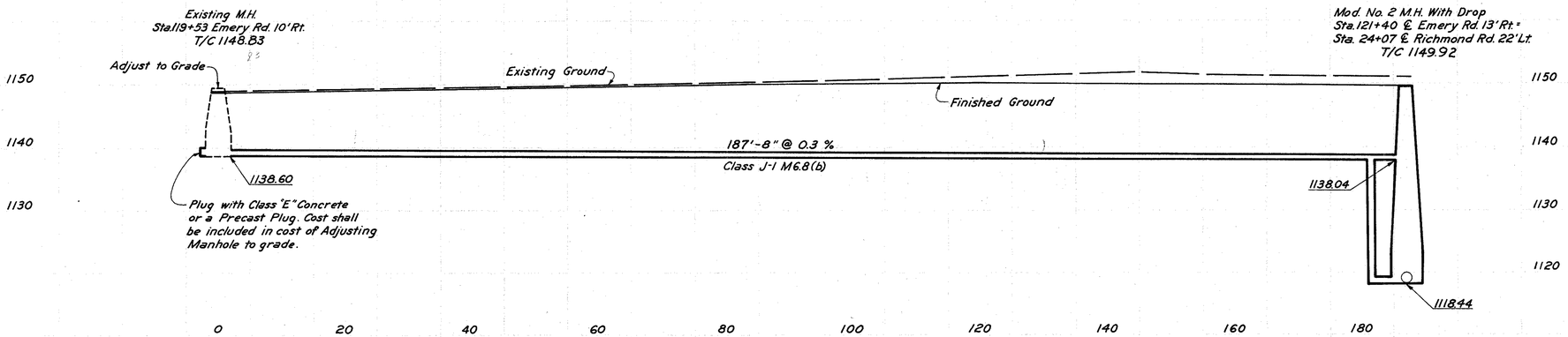
SANITARY SEWER PROFILE I-S

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

191
256

CUYAHOGA COUNTY
CUY-I-0.11

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



SANITARY SEWER 2-S

BY	DATE
RJK ~ RJE	3-19-63

ORIGINAL SURVEY	
SURVEYED	
PLOTTED	
TRACED	
AREAS	
AREAS CHECKED	
NOTE BOOK	
NO.	

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

SCALE 1"=10'
MADE K.A.T. DATE 4-2-63
TRACED R.J.K. DATE 4-29-63
CHECKED L.V.M. DATE 6-26-63

Printed in U.S.A.
On DIETZGEN DRAFTEX MOISTURE PROOF Cloth

SANITARY SEWER PROFILE I-S, 2-S

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

192
256

CUYAHOGA COUNTY
CUY-I-0.11

1. DESIGN SPECIFICATIONS

Design specifications for Highway Structures of the State of Ohio, Department of Highways, dated September 1, 1957, together with current revisions thereof. The design loadings are CF 2000 (57) for Bridge No. 44 L and R and CF 400 (57) for Bridge Nos. 45 and 46.

The classes of concrete and the grades of structural steel and reinforcing steel, together with the working stresses for each are as follows:

Concrete Class C	- basic unit stress 1,333 p.s.i.
Concrete Class E	- basic unit stress 1,133 p.s.i.
Structural Steel	- ASTM A36 - basic unit stress 20,000 p.s.i., (ASTM A7 and A373 steel not permitted)
Reinforcing Steel (except piling)	- ASTM A15, A16, A160, Deformed, Intermediate or Hard Grade. Basic unit stress 20,000 p.s.i. except, spiral reinforcement may be plain, Structural Grade with basic unit stress of 18,000 p.s.i.

2. SUPPLEMENTAL SPECIFICATIONS

Reference shall be made to Supplemental Specifications No. S-307, Radiographic Examination of Welds, dated August 23, 1960; No. S-101, Water-Reducing, Set-Retarding Admixtures, dated July 12, 1962; and to No. I-127, Delineators, dated Rev. Jan. 15, 1962.

3. REFERENCE DRAWINGS

Reference shall be made to Standard Drawing Numbers RB-1-55 revised 2-2-59, AR-1-57 revised 4-2-62, CSB-2-56 (Sheet 2 of 6 and 3 of 6) revised 2-2-59, AS-1-54 revised 7-5-62 and to FSB-1-62 revised 1-15-63.

4. DIMENSIONS

Dimensions given are measured horizontally and at 60° F. unless otherwise noted.

5. UTILITIES

Any existing privately owned utility facilities encountered at the site of the work which will interfere with portions of the finished roadways or structures 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.

6. The embankment shall be placed and compacted to the finished spill-thru slope and to the level of the subgrade, as shown on the plans, after which the excavation shall be made for the abutments.

The embankment at Bridge No. 44 L and R shall be placed and compacted for a distance of at least 200 feet back of the abutments before the excavation is made.

The excavation quantity includes the removal of embankment material required for the construction of the abutments.

7. FOUNDATION SOUNDINGS

Foundation design and foundation quantities are based on a study of rod soundings and soil-sampling soundings made at the site. This sounding information, the accuracy of which the State does not guarantee, may be examined in the office of the Bureau of Bridges in Columbus or the Division Office in Garfield Heights.

8. 12"ϕ CAST-IN-PLACE REINFORCED CONCRETE PILES

All piles for Bridge No. 44 L and R shall be driven to a minimum bearing capacity of 35 tons per pile.

9. 10BP42 STEEL BEARING PILES

All steel bearing piles for Bridges Nos. 45 and 46 shall be driven to a minimum bearing capacity of 35 tons per pile.

10. CONCRETE DECK

a. The steel girders and beams 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.

b. The final surface of the roadway shall conform as nearly as practicable to the elevations shown on the plans. To compensate for deflections due to dead load of the concrete, the screeds used to strike off the surface of the concrete to the final desired grade line shall be adjusted by amounts equal to deflections shown for this dead load. Screeds may require further adjustments due to irregularities in the fabricated steel.

c. The depth of concrete over each beam or girder (top of concrete to top of flange or 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.

d. The aforementioned depth of concrete over each beam or girder is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the top flange may not have the exact camber or conformation required to place it parallel to the finished grade. See note g.

e. In order to facilitate water curing of the concrete, its placement shall progress upgrade. The slab may be placed in sections between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.

f. The decks of Bridges Nos. 45 and 46 shall be finished by the use of a finishing machine. The decks of Bridge No. 44 L and R may, at the Contractor's option, be finished by the use of a finishing machine.

g. Deduction shall be made for volume of encased steel plates as per Sec. S-1.25 of the Construction and Material Specifications.

14. S-7.10 HIGH STRENGTH STEEL BOLTS, NUTS AND WASHERS

In the final assembly of the parts to be bolted, drift pins shall be placed in a sufficient number of holes (not less than 25 percent for field erection) to provide and maintain accurate alignment of holes and parts, and sufficient bolts shall be installed and brought to a snug tight condition to bring the parts into complete contact. Bolts shall then be installed in any remaining open holes and tightened to a snug tight fit, after which all bolts shall be tightened completely by calibrated wrenches or by the turn-of-nut method. Drift pins shall then be replaced with bolts, tightened in the same manner.

11. SURFACE FINISH OF CONCRETE

The requirements of Section S-1.22, Rubbed Finish, shall apply to the following exposed concrete surfaces:

a. The entire superstructure except the top and bottom surface of sidewalks and roadways.

b. The entire surface of piers and abutments except bridge seats, backwalls and the face of the abutments between outside beams or girders.

12. REINFORCING STEEL

a. All bars are designated on the plans by bar numbers. The bar size is indicated by the first digit of three-digit numbers and by the first two digits of four-digit numbers.

All bar dimensions are given out to out.

All bars of a series shall vary in length by a constant increment.

b. The clear distance between reinforcing steel and face of concrete shall be 3" at the bottom of footings, 2½"± at bar mats under shoes and 2" elsewhere unless otherwise shown on the plans.

13. CONTINUOUS BEAM SHOP ASSEMBLY

Reference paragraph 4, Section S-7.12 of the Construction and Material Specifications, if rolled beams are field spliced only at supports, for the purpose of checking the fit-up of weld joint preparation, only two adjacent beams need be shop assembled at a time in their correct, unloaded positions. All beams shall be assembled and match marked.

15. WATERPROOFING

All contraction and expansion joints in back face of substructure or retaining wall against which earth is to be placed shall be waterproofed with a premolded sealing strip as shown on the plans.

16. 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: B

17. ITEMS NOT INCLUDED IN BRIDGE PLANS

The following items are not included in the bridge plans. See roadway plans for details.

1. Approach grading, pavement and slab
2. Roadway guard rail and sod flumes
3. Relocation or removal of existing utilities
4. Removal of existing pavements, etc.

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

GENERAL NOTES

CONSTRUCTION SECTION C-54

CUYAHOGA COUNTY OHIO

DRAWN C.P.	TRACED	CHECKED WF	REVIEWED RLR	REVISED
DATE 4-1-66	DATE	DATE 4-8-66	DATE 4-16-66	SHEET 192

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

193
256

CUYAHOGA COUNTY
CUY-1-0.11

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	BRIDGE NO. 44 L					BRIDGE NO. 44 R				
			ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL	ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL
E-2	Unclassified Excavation	Cu. Yd.	400	190			590	360	210			570
S-1	Class "C" Concrete, Superstructure	Cu. Yd.			408		408			357		357
S-1	Class "C" Concrete, Pier Caps and Columns	Cu. Yd.		112			112		92			92
S-1	Class "E" Concrete, Abutments (Above Footings)	Cu. Yd.	156				156	133				133
S-1	Class "E" Concrete, Footings	Cu. Yd.	127	84			211	109	84			193
S-3	Waterproofing, Premolded Sealing Strip	Lin. Ft.	29				29	28				28
S-4	Reinforcing Steel	Pounds	19,950	41,680	120,400		182,030	17,340	35,850	100,150		153,340
S-7	Structural Steel	Pounds			324,130		324,130			284,370		284,370
S-8	Field Painting of Structural Steel	Pounds			324,130		324,130			284,370		284,370
S-14	Railing, Type "A" (Aluminum Rail and Supports and Concrete Parapet)	Lin. Ft.	48.60		341.66		390.26	48.58		342.51		391.09
S-16	First Test Pile	Lump Sum				Lump Sum*	Lump Sum*					*
S-18	12" ϕ C.I.P. Reinforced Concrete Piles	Lin. Ft.	1,770	1,650			3,420	1,500	1,650			3,150
S-25	For Lighting Quantities See Sheet 229A											
S-29	Porous Backfill	Cu. Yd.	48				48	39				39
S-29	Scuppers, Including Supports	Each			4		4			2		2
I-10	Concrete Slope Protection	Sq. Yd.				1,270	1,270				1,110	1,110
I-127	Bridge Delineator, Bracket Mounted Type C-2	Each			1		1			1		1
S-101	Water Reducing, Set Retarding Admixture	Each			408		408			357		357

* FIRST TEST PILE: Payment will be made for only one first test pile: It may be driven for either Bridge No. CUY-1-0060 L or CUY-1-0060 R.

REPLACEMENT REINFORCEMENT SCHEDULE

Size	No.	Length	Type
4	2	5'-3"	Str.
5	15	5'-7"	Str.
6	31	5'-11"	Str.
7	1	6'-2"	Str.
8	2	6'-6"	Str.
9	1	6'-10"	Str.
10	6	7'-2"	Str.
11	4	7'-6"	Str.

Note:
Replacement bars are listed for all the Bridges.

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	UNIT	BRIDGE NO. 45					BRIDGE NO. 46				
			ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL	ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL	TOTAL
E-2	Unclassified Excavation		420	1,035			1,455	530	530			1,060
S-1	Class "C" Concrete, Superstructure	Cu. Yd.			(1.358) 1,356		ϕ (1,358) 1,356			ϕ 1,207		1,207
S-1	Class "C" Concrete, Pier Caps and Columns	Cu. Yd.		424			424		170			170
S-1	Class "E" Concrete, Abutments (Above Footings)	Cu. Yd.	216				216	300				300
S-1	Class "E" Concrete, Footings	Cu. Yd.	131	402			533	150	240			390
S-3	Waterproofing, Premolded Sealing Strip	Lin. Ft.	18				18	42				42
S-4	Reinforcing Steel	Pounds	24,990	123,570	(334,920) 334,200		ϕ (483,480) 482,760	30,687	58,623	‡259,450		348,760
S-7	Structural Steel	Pounds			(1,114,500) 1,114,500	1,116,160	(1,114,500‡ and ϕ)			‡1,357,450		1,357,450**
S-8	Field Painting of Structural Steel	Pounds			(1,114,500) 1,114,500	1,116,160	(1,114,500‡ and ϕ)			‡1,357,450		1,357,450**
S-9	1" Preformed Expansion Joint Filler	Sq. Ft.						132				132
S-14	Railing, Type "C" (Aluminum Rails and Supports and Concrete Parapet)	Lin. Ft.	76.35		1,299.42		1,375.77	141.08		1,537.33		1,678.41
S-16	First Test Pile	Lump Sum				Lump Sum	Lump Sum				Lump Sum	Lump Sum
S-18	Steel Bearing Piles (T6BP42)	Lin. Ft.	1,820	5,640			7,460	2,240	5,150			7,390
S-25	For Lighting Quantities See Sheet 229 A											
S-29	Porous Backfill	Cu. Yd.	65				65	100				100
S-29	Scuppers, Including Supports	Each			16		16			18		18
I-10	Crushed Aggregate Slope Protection	Sq. Yd.				1,115	1,115				1,060	1,060
S-101	Water Reducing, Set Retarding Admixture	Each			1,356		1,356			1,203		1,203

ϕ Includes quantities for installation of C.E.I. ducts. Quantities to be paid for by the Cleveland Electric Illuminating Company are summarized on sheet 214 A.

\+ Includes quantities for installation of C.E.I ducts. Quantities to be paid for by the Cleveland Electric Illuminating Company are summarized on sheet 227B

H.N.T.B. BR. NO.	STATE BR. NO.	DESCRIPTION
44 L and R	CUY-1-0060 L and R	I-271 Over Miles Road
45	CUY-1-0149	I-271 Under Emery Road
46	CUY-1-0170	I-271 Under Richmond Road

** 454 lbs. to be paid for by Gas Company
‡‡ 349 " " " " " " " " "

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

ESTIMATED QUANTITIES

CONSTRUCTION SECTION C-54

CUYAHOGA CO. OHIO

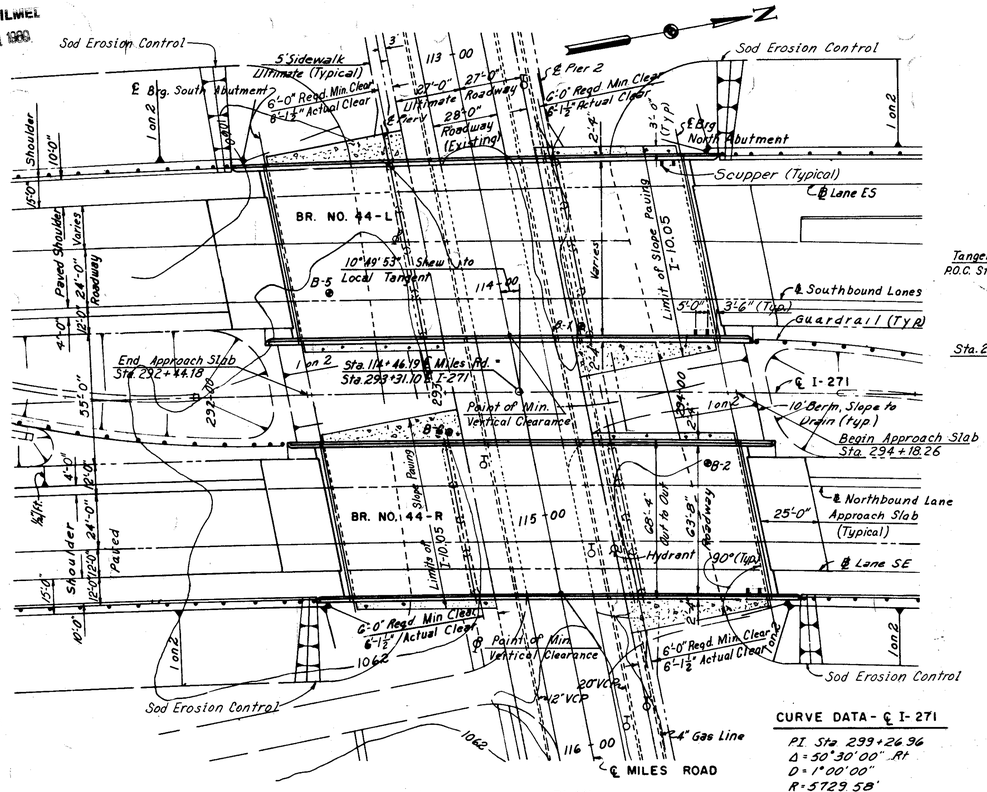
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
U.S.		WF	DLR	8-17-64
DATE 10/30/63	DATE	DATE 4-8-64	DATE 4-16-64	1040 SHEET 193

REVISED 8-19-64

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

194
256

CUYAHOGA COUNTY
CUY-1-0.11
CUY-271-4.85



PLAN

CURVE DATA - ℄ I-271

PI Sta 293+26.96
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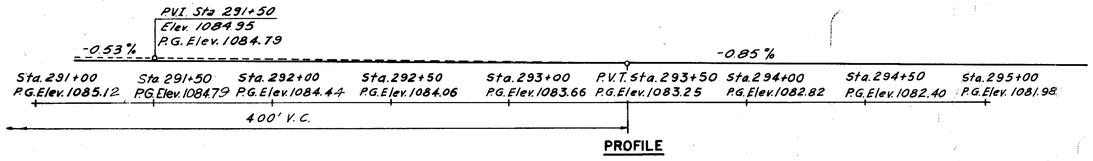
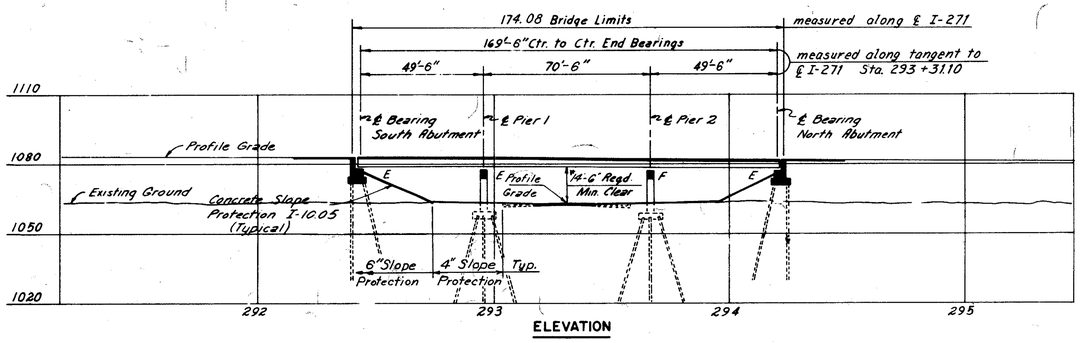
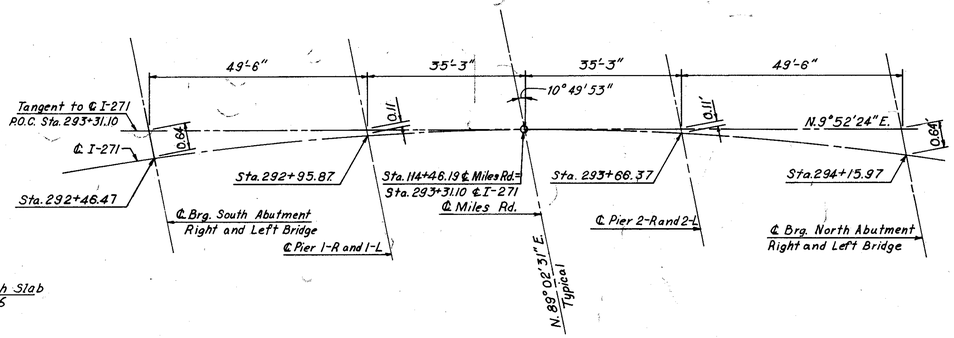
R = 5729.58'
T = 2702.24'
L = 5050.00'
E = 605.26'



PROFILE



ELEVATION



LAYOUT SKETCH

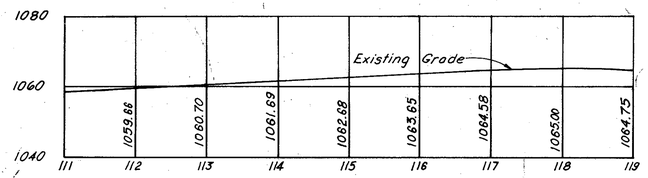
BRIDGE DELINEATORS

Item I-127

One bridge delineator, Type C-2, shall be placed at the following locations:

BR. NO. 44-L Sta. 292+50 (West Parapet)
BR. No. 44-R Sta. 294+00 (East Parapet)

For delineator details see sheet 155A



PROFILE MILES ROAD

* Actual Minimum Vertical Clearance
Right Bridge 14'-8½"
Left Bridge 17'-6⅜"

PROPOSED STRUCTURE

TYPE: Continuous rolled beam with reinforced concrete deck and substructure.
SPANS: 49'-6", 70'-6", 49'-6".
ROADWAY: Northbound - 66'-0" face to face of parapet.
Southbound - Varies: 74'+ to 78'+ face to face of parapet.
LOAD FREQUENCY: CF2000(57) Adequate for alternate AASHO loading.
SKEW: 10°49'53" to local tangent.
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: 1°00'00" Right

Note:
All piles shall be 12¼ cast-in-place concrete with an estimated length of 30'-0" for abutments and 25'-0" for piers. These estimates are based on boring data and are approximate only. The Contractor shall assume full responsibility for length of piling selected for driving.

Foundation design and foundation quantities are based on a study of rod soundings and soil sampling soundings made of the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus or in the Division office, but the State does not guarantee the accuracy there of.

Borings locations are shown thus ◕

The following items are not included in the bridge plans. See Roadway plans for details.

Relocation or removal of existing utilities.

Approach grading, pavements and slabs, guardrails, etc.

Traffic Data:
Miles Road: 1975 - 15,709 A.D.T. (Total both ways)

H.N.T.B. BRIDGE NO. 44 L & R

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

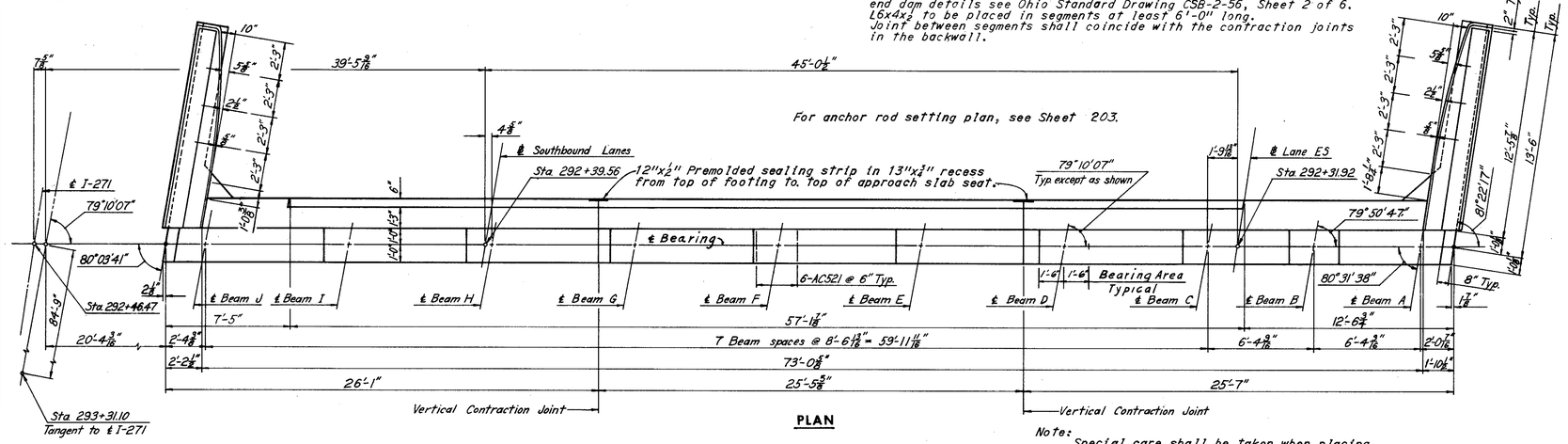
SITE PLAN
I-271 OVER MILES ROAD
BR NO CUY 1 0060 L & R STA 292+44.18
SCALE STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN PAS	TRACED	CHECKED MDM	REVIEWED J.S	REVISED
DATE 6-28-83	DATE	DATE 7-26-83	DATE 4-16-84	1040 SHEET 194

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

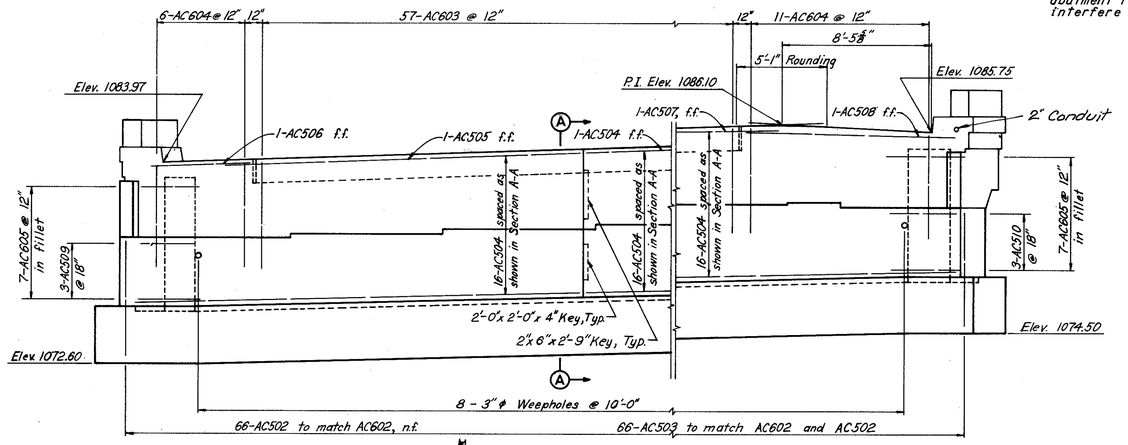
CUYAHOGA COUNTY
CUY-1-0.11

Note:
Elevations given to top of backwall are to top of L8x4x1. AC521 bars shall be placed 2½"± below bridge seat. For roadway end dam details see Ohio Standard Drawing CSB-2-56, Sheet 2 of 6. L6x4x½ to be placed in segments at least 6'-0" long. Joint between segments shall coincide with the contraction joints in the backwall.



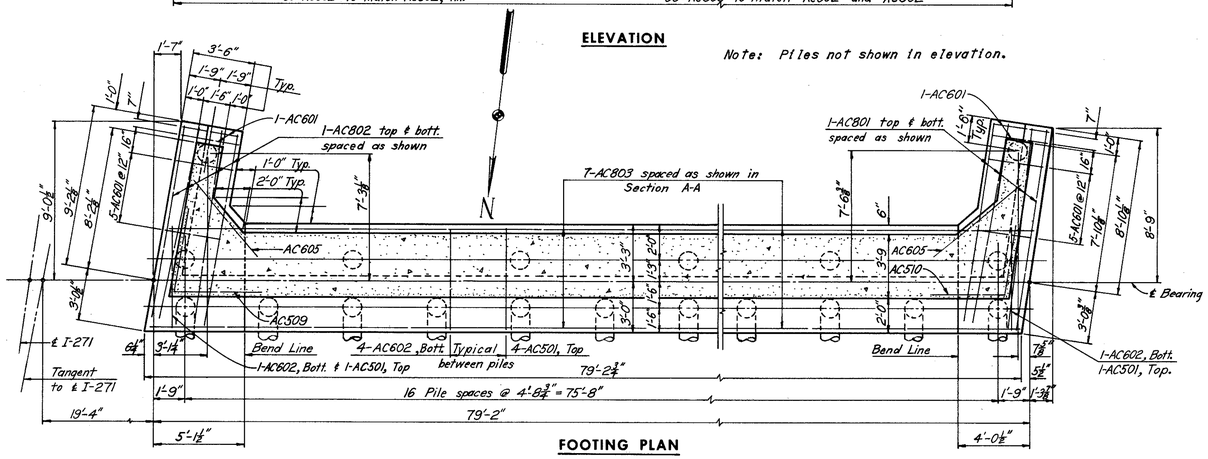
PLAN

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



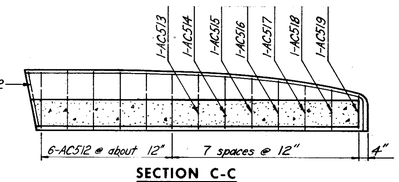
ELEVATION

Note: Piles not shown in elevation.

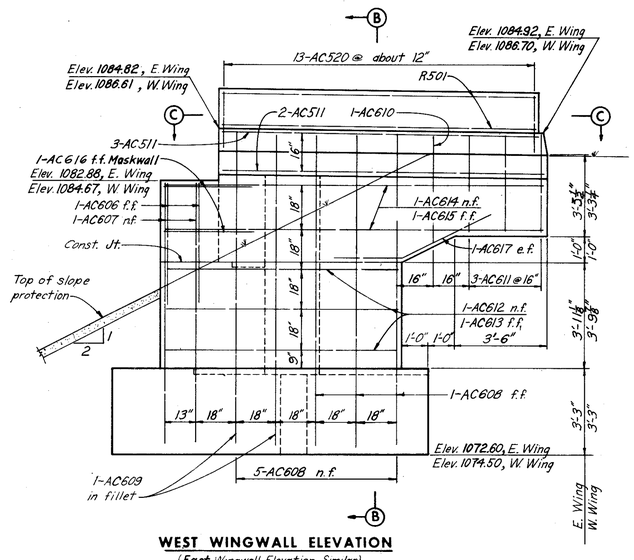


FOOTING PLAN

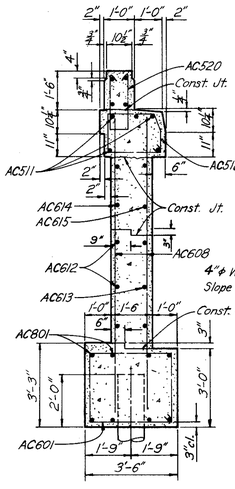
NOTES
n.f. denotes near face, f.f. denotes far face.
e.f. denotes each face.
For reinforcement schedule see Sheet 205.
For longitudinal parapet steel see Miscellaneous Detail Sheet 203.
28 - 12¼ cast-in-place concrete piles with an estimated average length of 30 ft. are required.
All pile spacings are measured at bottom of footing.
All battered piles are battered 3 in 12.
Porous backfill, 2 ft. thick, shall extend upward to the underside of the approach slab. Excavation, therefore, in excess of that required for construction of the abutment shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.
For Anchor Rod Details, see Ohio Standard Drawing FSB-1-62.



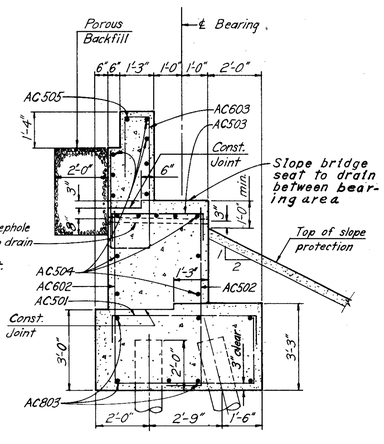
SECTION C-C
Scale: ¾"=1'-0"



WEST WINGWALL ELEVATION
(East Wingwall Elevation Similar)
Scale: ¾"=1'-0"



SECTION B-B
Scale: ¾"=1'-0"



SECTION A-A
Scale: ¾"=1'-0"

TABLE OF PAD ELEVATIONS

Location	Elevation
Beam A	1081.57
Beam B	1081.83
Beam C	1081.75
Beam D	1081.46
Beam E	1081.18
Beam F	1080.90
Beam G	1080.62
Beam H	1080.34
Beam I	1080.06
Beam J	1079.78

H.N.T.B. BRIDGE NO. 44 L & R

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

SOUTH ABUTMENT L

I-271 OVER MILES ROAD

BR NO CUY 1 0060 L & R STA 292+44.18
SCALE ¼"=1'-0" STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN JVL	TRACED	CHECKED PRS	REVIEWED J.S.	REVISED
DATE 6-26-63	DATE	DATE 7-23-63	DATE 4-16-64	1040 SHEET 195

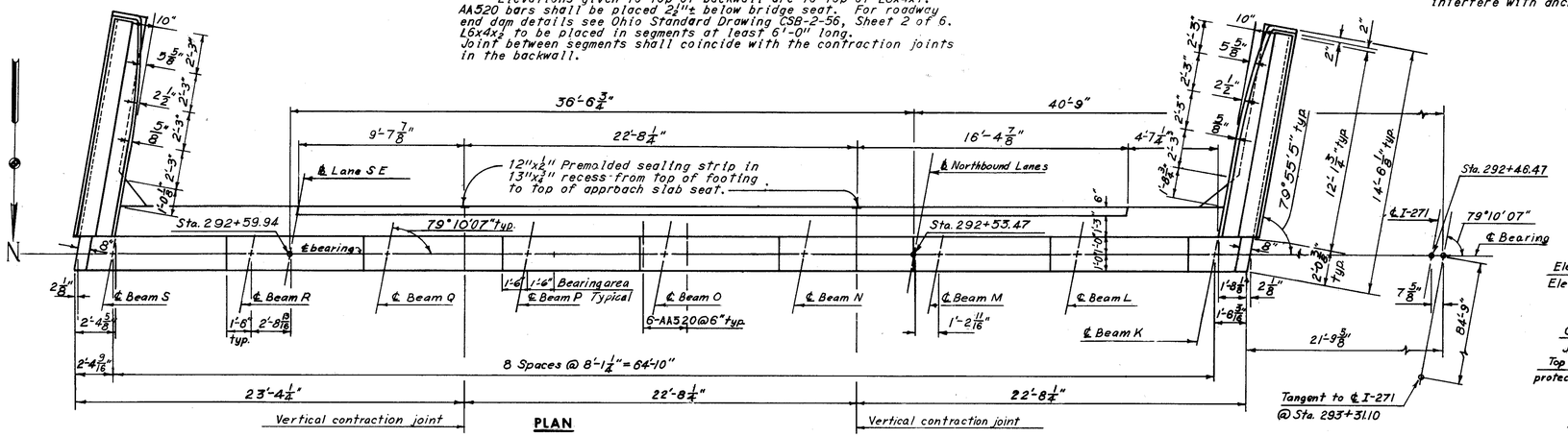
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

196
256

CUYAHOGA COUNTY
CUY-1-0.11

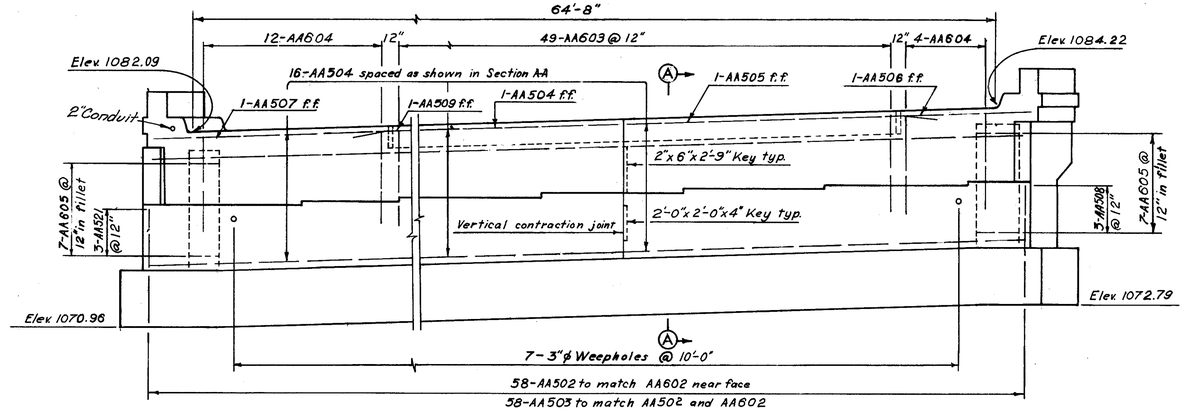
Note:
Elevations given to top of backwall are to top of L8x4x1. AA520 bars shall be placed 2½"± below bridge seat. For roadway end dam details see Ohio Standard Drawing CSB-2-56, Sheet 2 of 6. L6x4x½ to be placed in segments at least 6'-0" long. Joint between segments shall coincide with the contraction joints in the backwall.

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



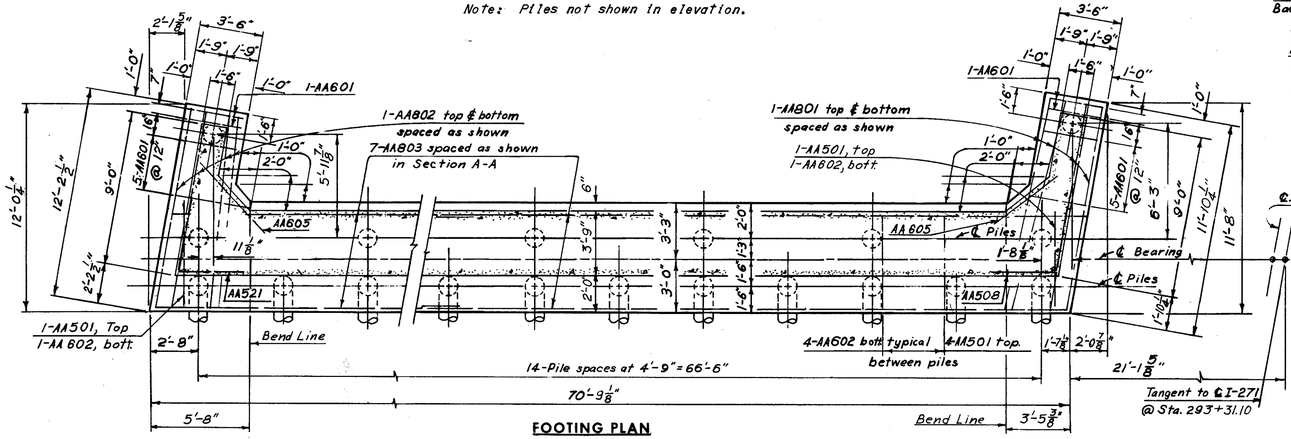
PLAN

For anchor rod setting plan, see Sheet 203.

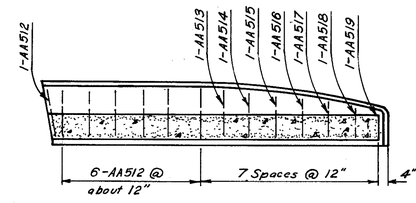


ELEVATION

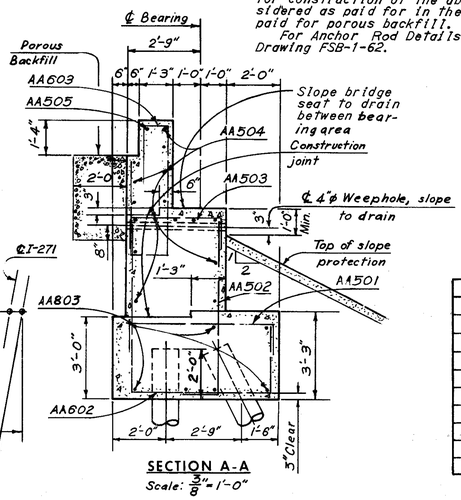
Note: Piles not shown in elevation.



FOOTING PLAN



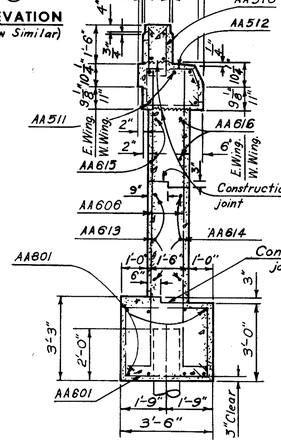
SECTION C-C
Scale: ⅜"= 1'-0"



SECTION A-A
Scale: ⅜"= 1'-0"

NOTES
n.f. denotes near face, f.f. denotes far face.
e.f. denotes each face.
For reinforcement schedule see Sheet 204.
For longitudinal parapet steel see Miscellaneous Detail Sheet 203.
25 - 12"ϕ cast-in-place concrete piles with an estimated average length of 30 ft. are required.
All pile spacings are measured at bottom of footing.
All battered piles are battered 3 in 12.
Porous backfill, 2 ft. thick, shall extend upward to the underside of the approach slab. Excavation, therefore, in excess of that required for construction of the abutment shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.
For Anchor Rod Details, see Ohio Standard Drawing FSB-1-62.

WEST WINGWALL ELEVATION
(East Wingwall Elevation Similar)
Scale: ⅜"= 1'-0"



SECTION B-B
Scale: ⅜"= 1'-0"

PAD ELEVATIONS	
Location	S. Abut. R.
Beam K	1080.03
Beam L	1079.79
Beam M	1079.54
Beam N	1079.30
Beam O	1079.05
Beam P	1078.80
Beam Q	1078.55
Beam R	1078.31
Beam S	1078.06

H.N.T.B. BRIDGE NO. 44 L & R

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

SOUTH ABUTMENT R
I-271 OVER MILES ROAD

BR NO CUY 1 0060 L & R STA 292+44.18
SCALE: 1"/4"= 1'-0" STA 294+18.26
CUYAHOGA CO. OHIO

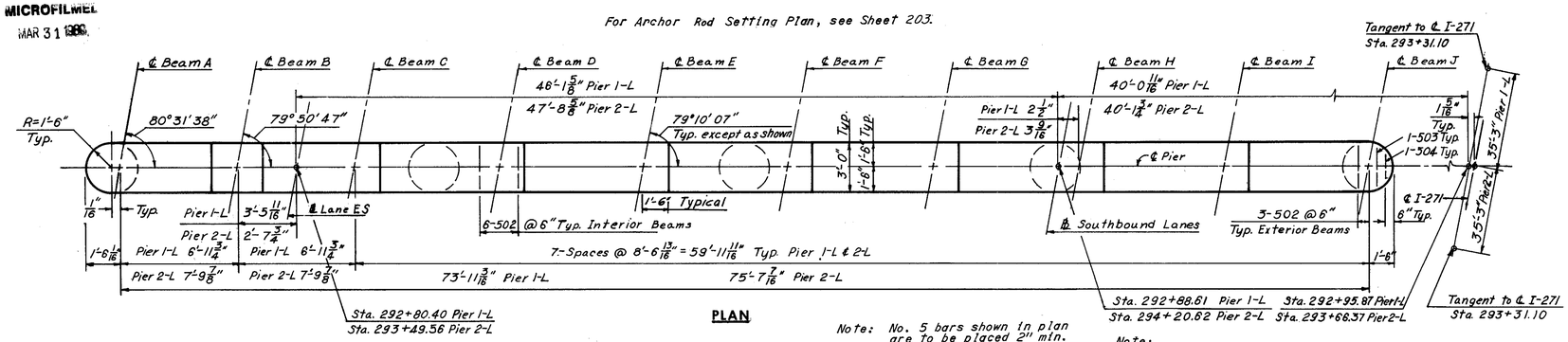
DRAWN P.R.S	TRACED	CHECKED W.L.	REVIEWED J.S	REVISED
DATE 4-26-63	DATE	DATE 7-23-63	DATE 4-16-64	1040 SHEET 196

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

197
256

CUYAHOGA COUNTY
CUY-1-0.11

For Anchor Rod Setting Plan, see Sheet 203.

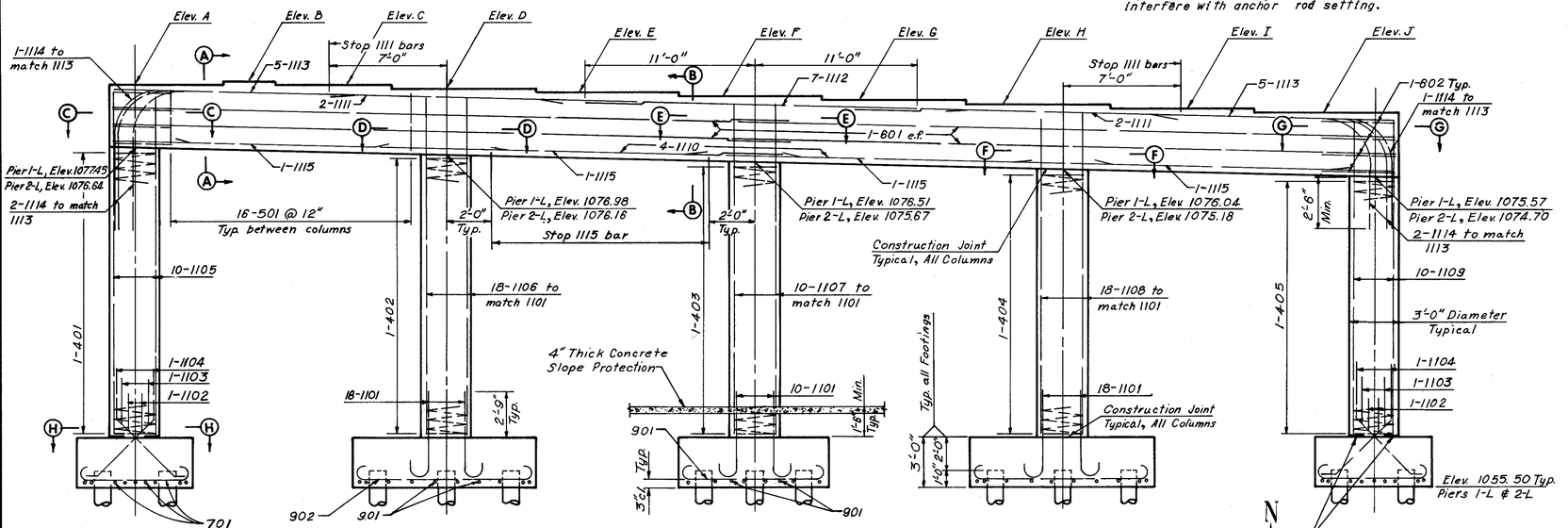


PLAN

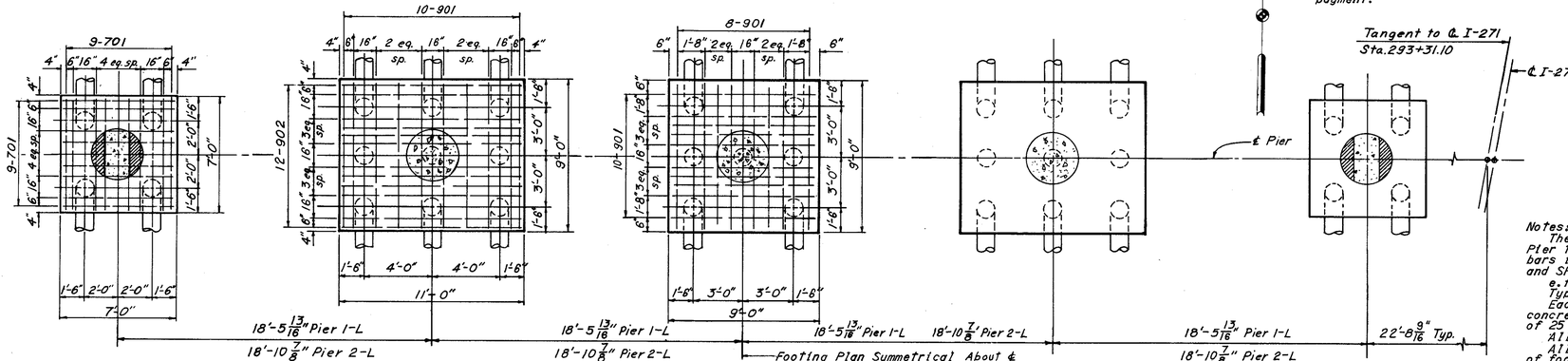
Note: No. 5 bars shown in plan are to be placed 2" min. below top of cap beam.

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

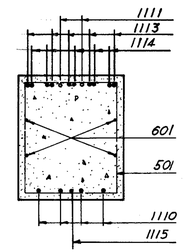
PAD ELEVATIONS		
Location	Pier 1-L	Pier 2-L
A	1081.20	1080.39
B	1081.48	1080.70
C	1081.30	1080.43
D	1081.01	1080.14
E	1080.72	1079.85
F	1080.44	1079.57
G	1080.16	1079.29
H	1079.88	1079.00
I	1079.60	1078.72
J	1079.32	1078.45



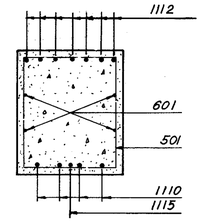
ELEVATION



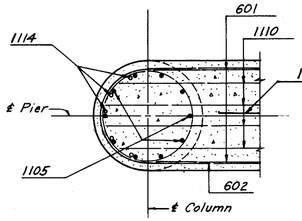
FOOTING PLAN



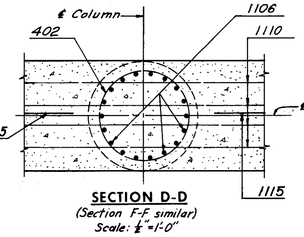
SECTION A-A
Scale: 1/2"=1'-0"



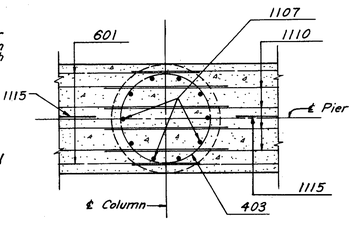
SECTION B-B
Scale: 1/2"=1'-0"



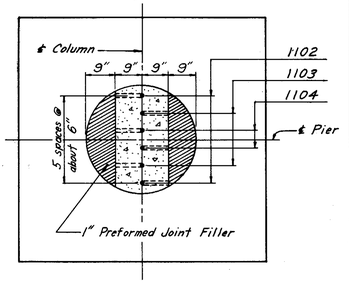
SECTION C-C
(Section G-G similar)
Scale: 1/2"=1'-0"



SECTION D-D
(Section F-F similar)
Scale: 1/2"=1'-0"



SECTION E-E
Scale: 1/2"=1'-0"



SECTION H-H
Scale: 1/2"=1'-0"

1" Preformed Expansion Joint Filler meeting the requirements of Section M-10.02, Type 1, to be included with Item S-1, Class "C" Concrete for payment.

Notes:
The prefix PC shall be added to all bars in Pier 1-L. The prefix PD shall be added to all bars in Pier 2-L. Spirals shall be prefixed SPC and SPD respectively.
e.f. denotes each face.
Typ. denotes typical.
Each pier requires 33 - 12"ϕ cast-in-place concrete piles with an estimated average length of 25 ft.
All battered piles shall be battered 3 in 12.
All pile spacings are measured at bottom of footing.
For reinforcement schedule see Sheet 205.
For Anchor Rod Details, see Ohio Standard Drawing FSB-1-62.
For Electrical Ground at Pier 2L See Sht 229A

H.N.T.B. BRIDGE NO. 44 L & R

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

PIERS 1-L AND 2-L

I-271 OVER MILES ROAD

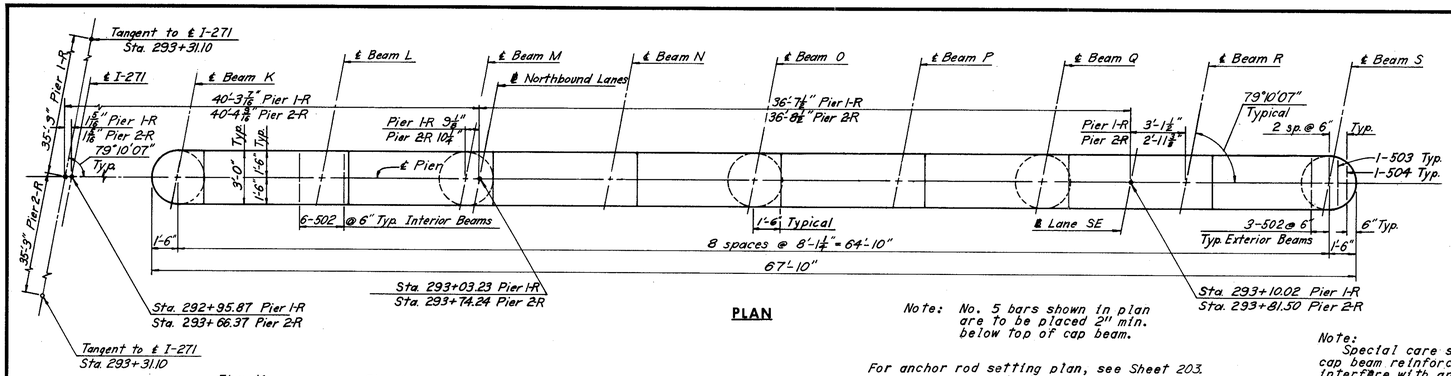
BR NO CUY 1 0060 L & R STA 292+44.18
SCALE 1/4"=1'-0" STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN P.R.S.	TRACED	CHECKED J.V.L.	REVIEWED J.S.	REVISED
DATE 6-14-63	DATE	DATE 7-19-63	DATE 4-16-64	1040 SHEET 197

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

198
256

CUYAHOGA COUNTY
CUY-1-0.11



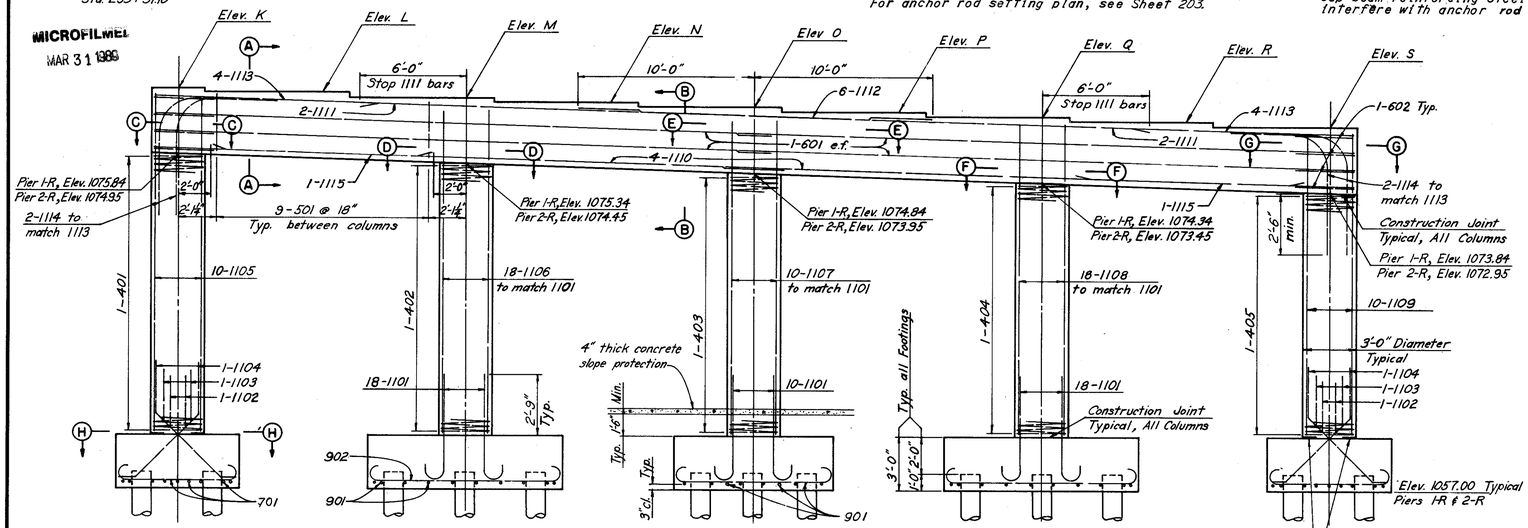
PLAN

Note: No. 5 bars shown in plan are to be placed 2" min. below top of cap beam.

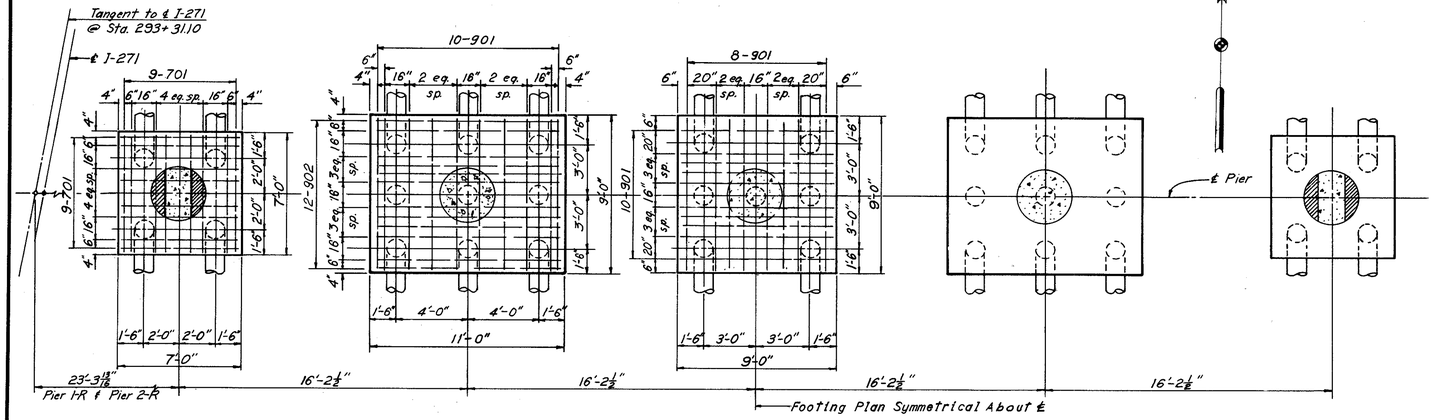
For anchor rod setting plan, see Sheet 203.

TABLE OF PAD ELEVATIONS		
Location	Pier 1R	Pier 2R
K	1079.58	1078.70
L	1079.33	1078.45
M	1079.08	1078.20
N	1078.84	1077.95
O	1078.59	1077.70
P	1078.34	1077.45
Q	1078.09	1077.20
R	1077.84	1076.95
S	1077.59	1076.70

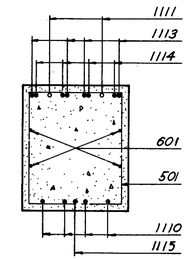
Note:
Special care shall be taken when placing cap beam reinforcing steel so as not to interfere with anchor rod setting.



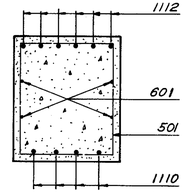
ELEVATION



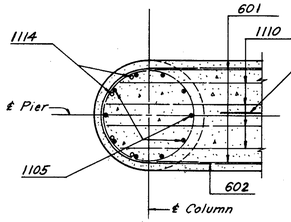
FOOTING PLAN



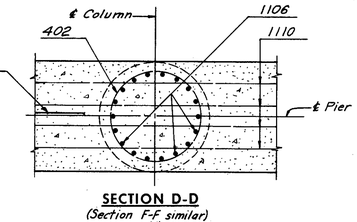
SECTION A-A
Scale: 1/2"=1'-0"



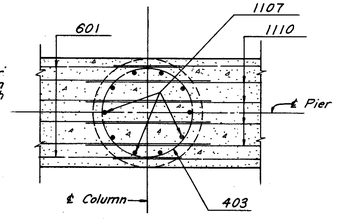
SECTION B-B
Scale: 1/2"=1'-0"



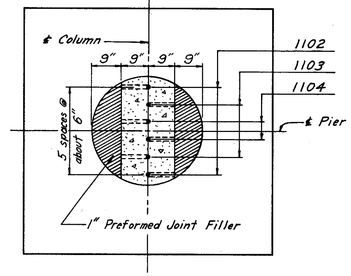
SECTION C-C
(Section G-G similar)
Scale: 1/2"=1'-0"



SECTION D-D
(Section F-F similar)
Scale: 1/2"=1'-0"



SECTION E-E
Scale: 1/2"=1'-0"



SECTION H-H
Scale: 1/2"=1'-0"

Notes:
The prefix PA shall be added to all bars in Pier 1R. The prefix PB shall be added to all bars in Pier 2R. Spirals shall be prefixed SPA and SPB respectively.
e.f. denotes each face.
Typ. denotes Typical.
Each pier requires 33 - 12"ϕ cast-in-place concrete piles with an estimated average length of 25 ft.
All battered piles shall be battered 3 in 12.
All pile spacings are measured at bottom of footing.
For reinforcement schedule see Sheet 204.
For Anchor Rod Details, see Ohio Standard Drawing FSB-1-62.
For Electrical Ground at Pier 2R see sht. 229A.

H.N.T.B. BRIDGE NO. 44 L & R

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

PIERS 1-R AND 2-R

I-271 OVER MILES ROAD

BR NO CUY 1 0060 L & R STA 292+44.18
SCALE 1/4"=1'-0" STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN JVL	TRACED	CHECKED P.R.S	REVIEWED J.S	REVISED
DATE 3-21-63	DATE	DATE 6-11-63	DATE 4-16-64	1040 SHEET 198

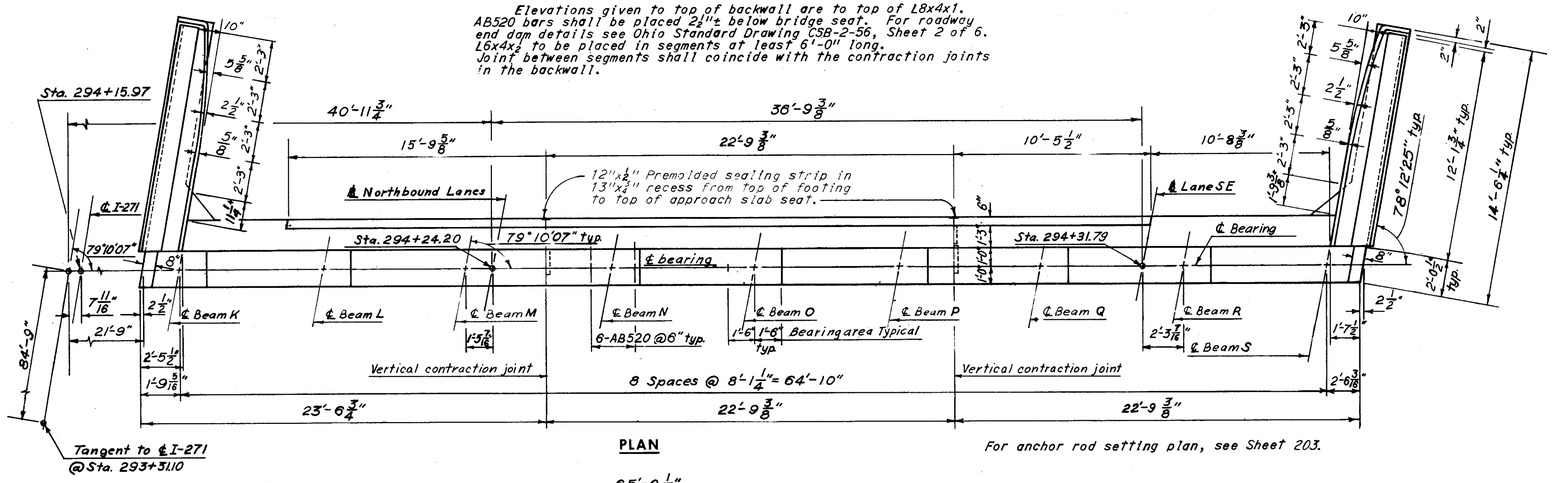
FED ROADS DIV NO	STATE	FED AID PROJ NO	
2	OHIO		

199
256

CUYAHOGA COUNTY
CUY-1-0.11

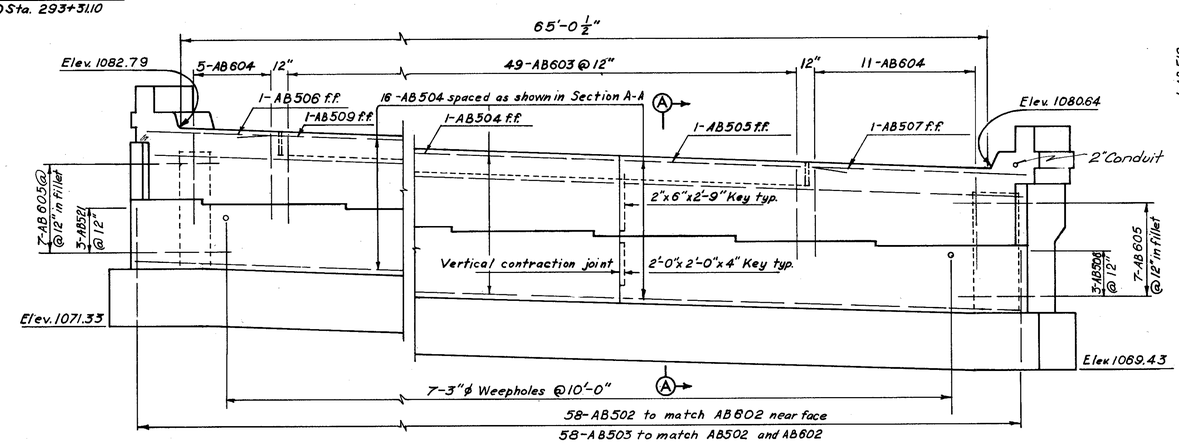
Note:
Elevations given to top of backwall are to top of L8x4x1. AB520 bars shall be placed 2½"± below bridge seat. For roadway end dam details see Ohio Standard Drawing CSB-2-56, Sheet 2 of 6. L6x4x½ to be placed in segments at least 6'-0" long. Joint between segments shall coincide with the contraction joints in the backwall.

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



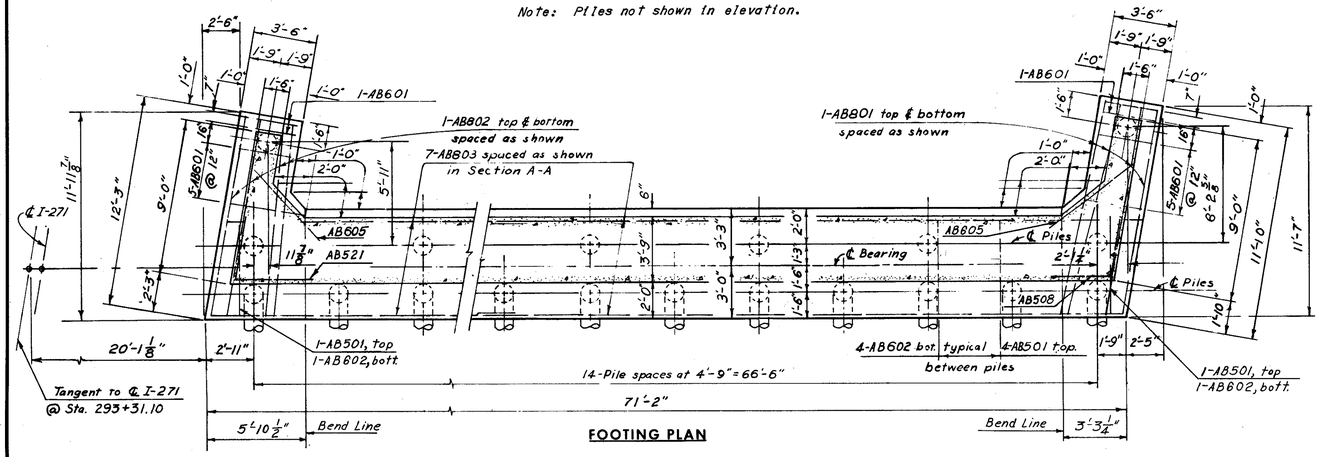
PLAN

For anchor rod setting plan, see Sheet 203.

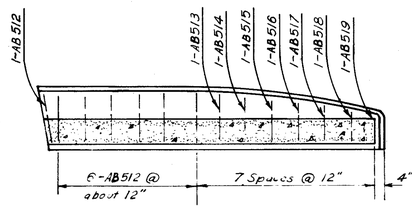


ELEVATION

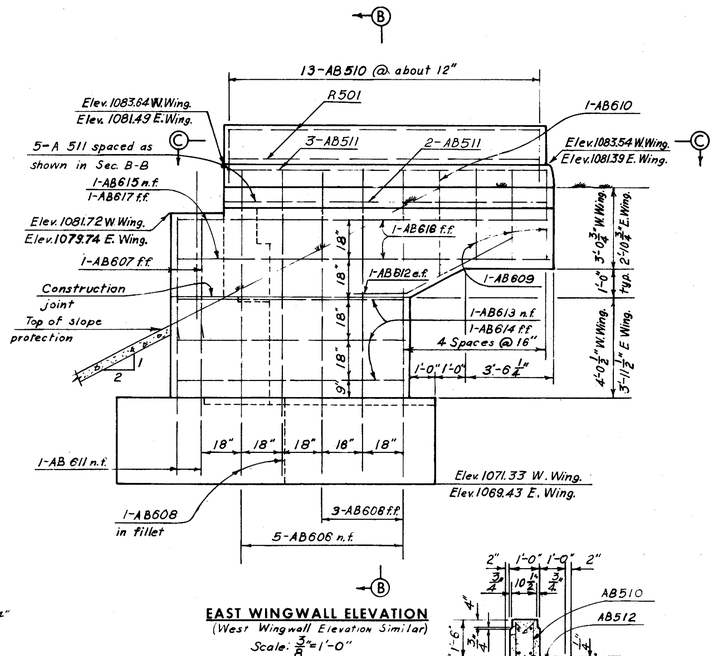
Note: Piles not shown in elevation.



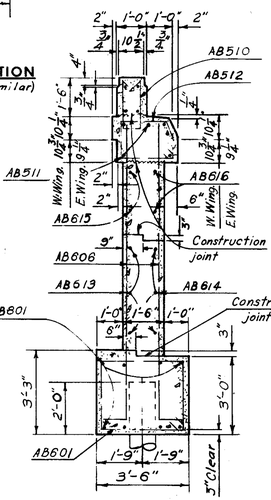
FOOTING PLAN



SECTION C-C
Scale: ⅜" = 1'-0"

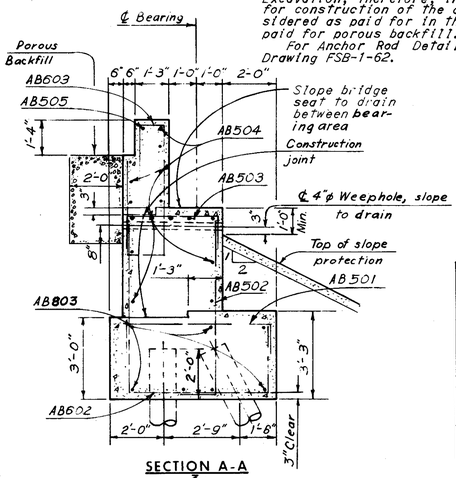


EAST WINGWALL ELEVATION
(West Wingwall Elevation Similar)
Scale: ⅜" = 1'-0"



SECTION B-B
Scale: ⅜" = 1'-0"

NOTES
n.f. denotes near face, f.f. denotes far face.
e.f. denotes each face.
For reinforcement schedule see Sheet 204.
For longitudinal parapet steel see Miscellaneous Detail Sheet 203.
25-12"ø cast-in-place concrete piles with an estimated average length of 30 ft. are required.
All pile spacings are measured at bottom of footing.
All battered piles are battered 3 in 12.
Porous backfill, 2 ft. thick, shall extend upward to the underside of the approach slab. Excavation, therefore, in excess of that required for construction of the abutment shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.
For Anchor Rod Details, see Ohio Standard Drawing FSB-1-62.



SECTION A-A
Scale: ⅜" = 1'-0"

PAD ELEVATIONS	
Location	N. Abut. R.
Beam K	1078.62
Beam L	1078.39
Beam M	1078.14
Beam N	1077.89
Beam O	1077.64
Beam P	1077.39
Beam Q	1077.14
Beam R	1076.89
Beam S	1076.64

H.N.T.B. BRIDGE NO. 44 L & R

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

NORTH ABUTMENT R

I-271 OVER MILES ROAD

BR NO CUY.1 0060 L & R STA 292+44.18
SCALE: ¼" = 1'-0" STA 294+18.26
CUYAHOGA CO. OHIO

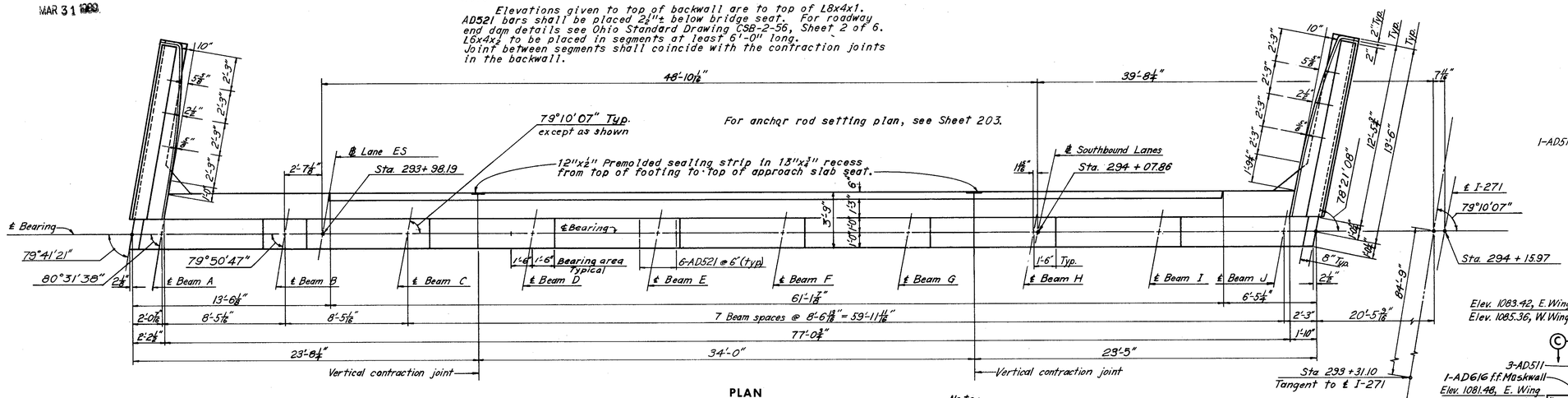
DRAWN PRS	TRACED	CHECKED WL	REVIEWED LS	REVISED
DATE 4-30-63	DATE	DATE 8-2-63	DATE 4-16-64	1040 SHEET 199

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

200
256

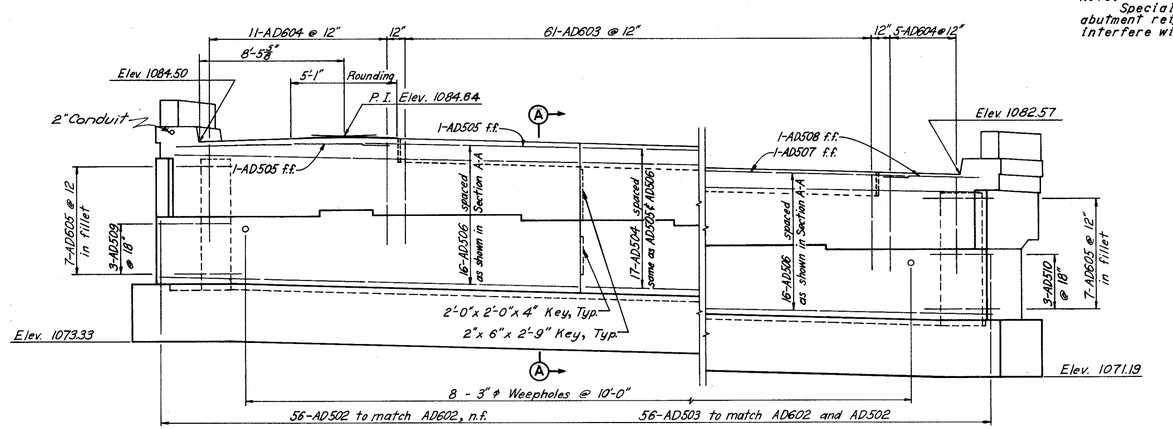
CUYAHOGA COUNTY
CUY-1-0.11

Note:
Elevations given to top of backwall are to top of L8x4x1. AD521 bars shall be placed 2½"± below bridge seat. For roadway end dam details see Ohio Standard Drawing CSB-2-56, Sheet 2 of 6. L6x4x½ to be placed in segments at least 6'-0" long. Joint between segments shall coincide with the contraction joints in the backwall.



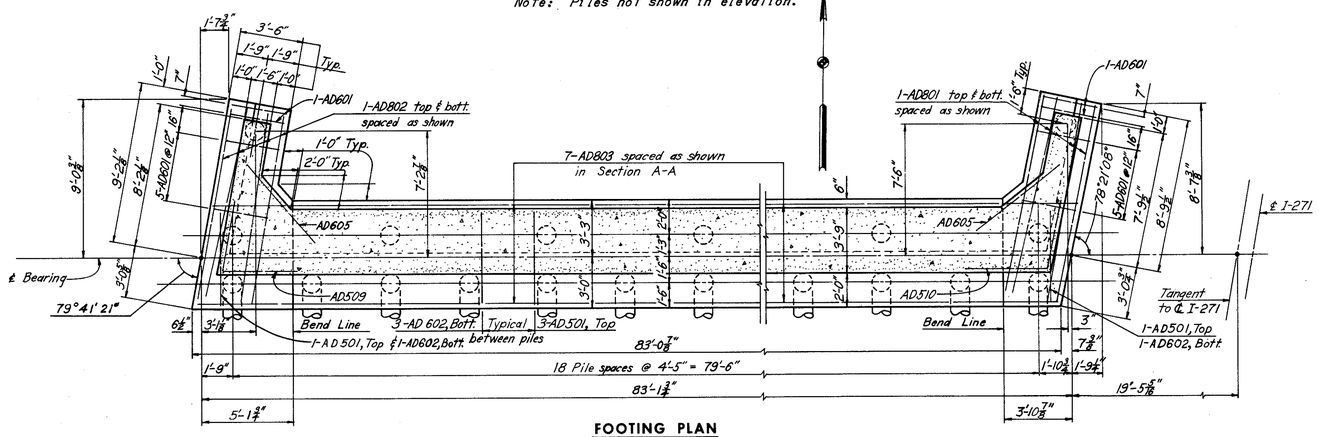
PLAN

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



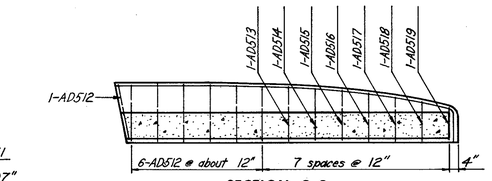
ELEVATION

Note: Piles not shown in elevation.

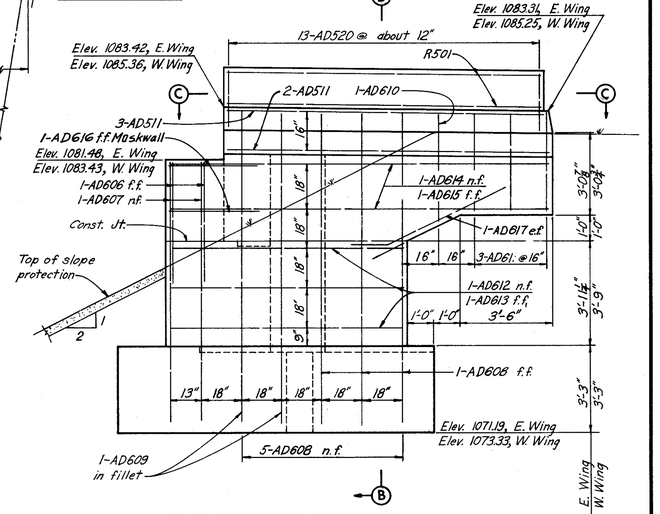


FOOTING PLAN

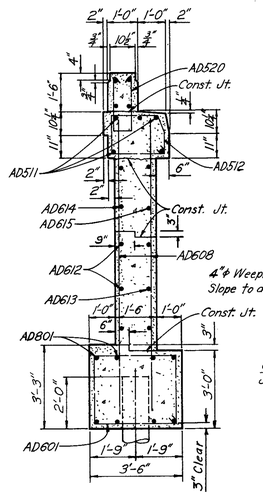
NOTES
n.f. denotes near face, f.f. denotes far face.
e.f. denotes each face.
For reinforcement schedule see Sheet 205.
For longitudinal parapet steel see Miscellaneous Detail Sheet 203.
31 - 12"ϕ cast-in-place concrete piles with an estimated average length of 30 ft. are required.
All pile spacings are measured at bottom of footing.
All battered piles are battered 3 in 12.
Porous backfill, 2 ft. thick, shall extend upward to the underside of the approach slab. Excavation, therefore, in excess of that required for construction of the abutment shall be considered as paid for in the bid price per cu. yd. paid for porous backfill.
For Anchor Rod Details, see Ohio Standard Drawing FSB-1-62.



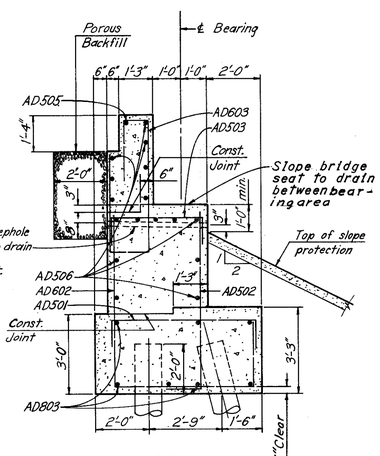
SECTION C-C
Scale: ⅜"=1'-0"



EAST WINGWALL ELEVATION
(West Wingwall Elevation Similar)
Scale: ⅜"=1'-0"



SECTION B-B
Scale: ⅜"=1'-0"



SECTION A-A
Scale: ⅜"=1'-0"

TABLE OF PAD ELEVATIONS	
Location	Elevation
Beam A	1080.33
Beam B	1080.66
Beam C	1080.38
Beam D	1080.08
Beam E	1079.80
Beam F	1079.52
Beam G	1079.23
Beam H	1078.95
Beam I	1078.67
Beam J	1078.38

H.N.T.B. BRIDGE NO. 44 L & R

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

NORTH ABUTMENT L

I-271 OVER MILES ROAD

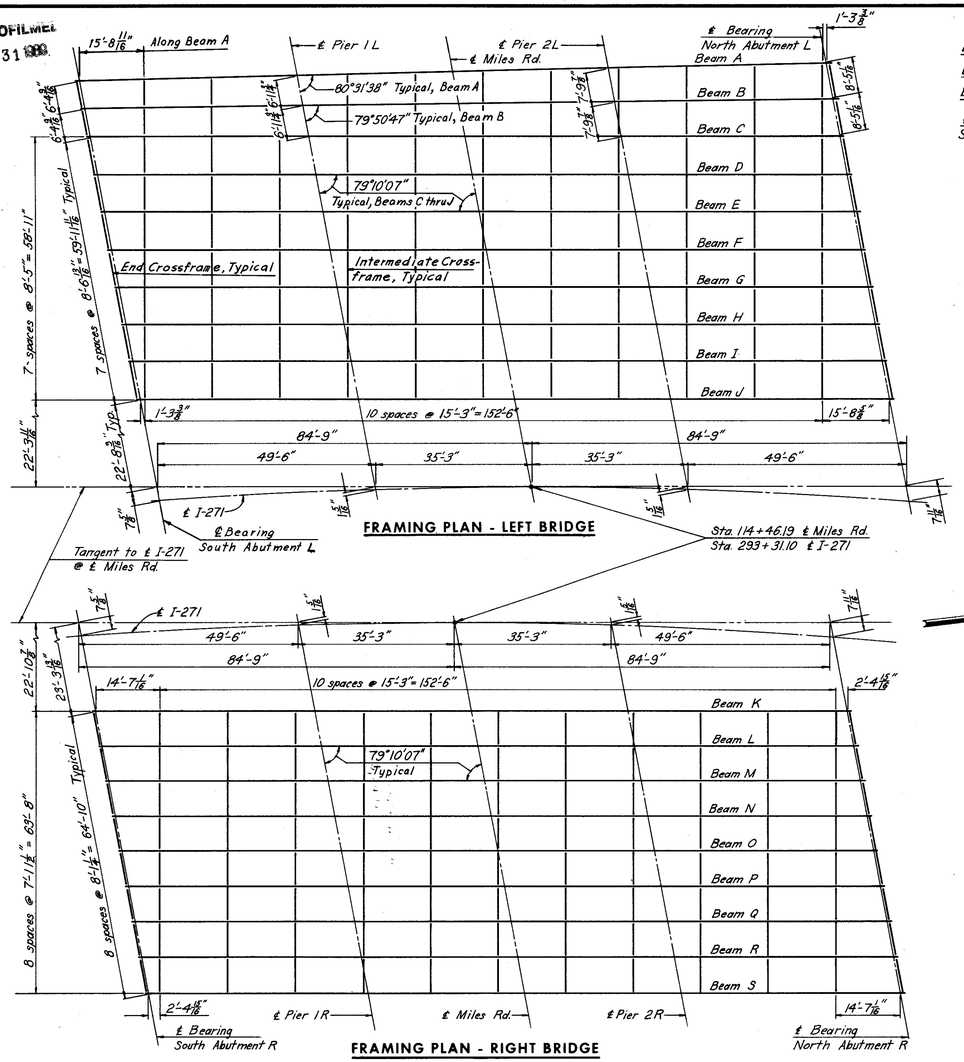
BR NO CUY 1 0060 L & R STA 292+44.18
SCALE ¼"=1'-0" STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN JVL	TRACED	CHECKED P.S.	REVIEWED J.S	REVISED
DATE 6-16-63	DATE	DATE 6-28-63	DATE 4-16-64	1040 SHEET 200

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

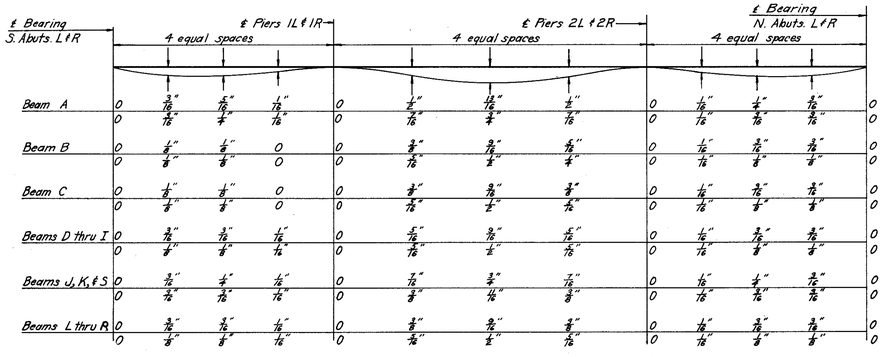
201
256

CUYAHOGA COUNTY
CUY-1-0.11



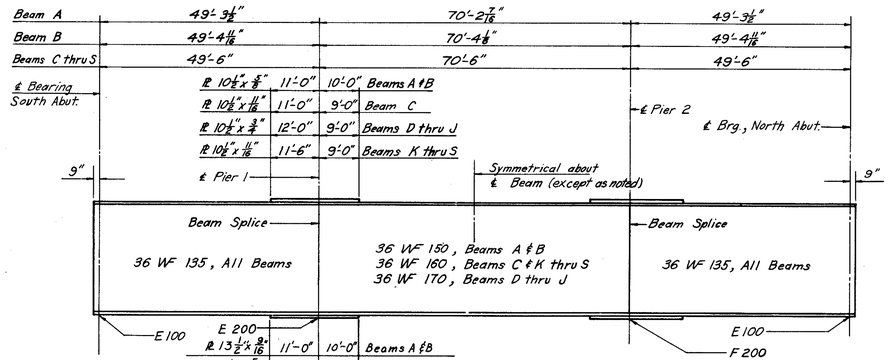
FRAMING PLAN - LEFT BRIDGE

FRAMING PLAN - RIGHT BRIDGE

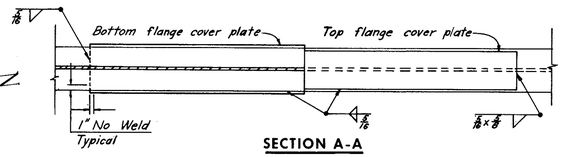


DEAD LOAD DEFLECTION DIAGRAM
No Scale

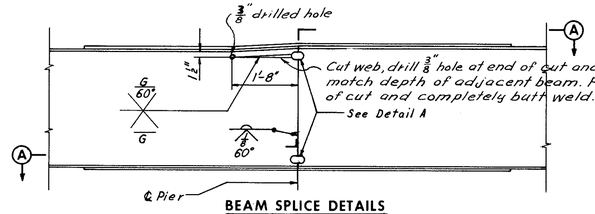
Note:
Deflections shown above the reference line are those due to total dead load. Those shown below the reference line are due to dead load of concrete only. Deflections are measured to the nearest 1/16 inch.



BEAM ELEVATION
No Scale



SECTION A-A

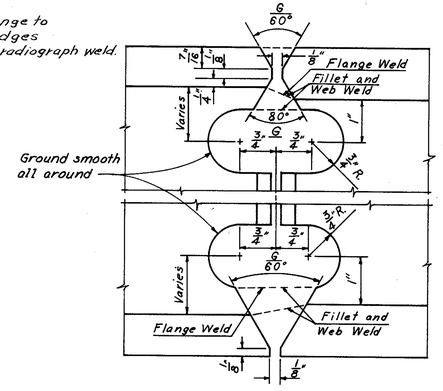


BEAM SPLICE DETAILS
No Scale

Beam	℄ Brg. S. Abut.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	℄ Brg. N. Abut.
A	2'-2"	2'-4 5/16"	2'-6 11/16"	2'-8 3/16"	2'-9 11/16"	2'-9 5/16"	2'-9 1/16"	2'-8 3/16"	2'-6 11/16"	2'-4 5/16"	2'-2"
J	2'-5 5/16"	2'-3 1/16"	2'-0 3/16"	1'-11 3/16"	1'-10 1/16"	1'-9 11/16"	1'-9 5/16"	1'-10 3/16"	1'-11 13/16"	2'-1 7/16"	2'-4 13/16"
K	1'-10 1/16"	2'-0 5/16"	2'-2 13/16"	2'-3 15/16"	2'-4 11/16"	2'-4 5/16"	2'-3 13/16"	2'-1 5/16"	1'-11 13/16"	1'-8 3/16"	1'-8 1/2"
S	2'-4 1/16"	2'-1 5/16"	2'-0 13/16"	1'-11 1/2"	1'-11 3/16"	1'-11 1/2"	2'-0 3/16"	2'-1 7/16"	2'-4"	2'-6 3/16"	2'-10 1/8"

HORIZONTAL OFFSETS FROM FASCIA TO ℄ BEAM

Note: Fascia as used in horizontal offsets is the outside face of parapet. Offsets are measured normal to beam and are given at tenth points of the horizontal distance between ℄ Bearing - South Abutment and ℄ Bearing - North Abutment.



DETAIL A
No Scale

Beam	Pier 1L	Pier 2L	N. Abut. L	Beam	S. Abut. R	Pier 1R	Pier 2R	N. Abut. R
A	1085.43	1084.91	1084.51	K	1084.21	1083.81	1083.22	1082.80
B	1085.71	1085.22	1084.84	L	1083.97	1083.57	1082.98	1082.57
C	1085.54	1084.96	1084.56	M	1083.73	1083.32	1082.73	1082.32
D	1085.26	1084.68	1084.28	N	1083.48	1083.07	1082.48	1082.07
E	1084.98	1084.40	1084.00	O	1083.23	1082.82	1082.23	1081.82
F	1084.70	1084.12	1083.71	P	1082.98	1082.57	1081.98	1081.57
G	1084.42	1083.83	1083.43	Q	1082.74	1082.32	1081.73	1081.32
H	1084.13	1083.55	1083.15	R	1082.49	1082.07	1081.48	1081.07
I	1083.85	1083.27	1082.86	S	1082.24	1081.82	1081.23	1080.82
J	1083.58	1082.99	1082.58					

TOP OF PAVEMENT ELEVATIONS AT SUPPORTS

Note:
For end cross frame see Ohio Standard Drawing CSB-2-56, Sheet 2 of 6.
For railing post and parapet joint spacing and longitudinal parapet steel see Sheet 203.
For details of fixed and expansion bearings see Ohio Standard Drawing FSB-1-62.
For intermediate cross frame detail see Sheet 202.
For location of scuppers see Site Plan Sheet 194.
For details of scuppers see Ohio Standard Drawing CSB-2-56, Sheet 3 of 6.

Camber Note:
The beams do not require camber but shall be fabricated so that any curved beam will be placed with the convex flange up.

BEAM SPLICE WELDING PROCEDURE

1. Weld bottom flange cover plate to beam on one side of joint only, at both Piers 1 and 2.
2. Raise beam end at South Abutment 1" for Beams A, B, and C and 1/8" for all other beams and follow Steps 3, 4, 5, and 6 at Pier 1.
3. 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 the welds are complete.
4. Weld the top cover plate on each side of joint.
5. Complete welding of bottom cover plate.
6. Lower beam end to final position.
7. Raise end of beam at North Abutment 2" for Beams A, B, and C and 1" for all other beams and follow Steps 3, 4, 5 and 6 at Pier 2.

H.N.T.B. BRIDGE NO. 44 L & R

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

FRAMING PLAN

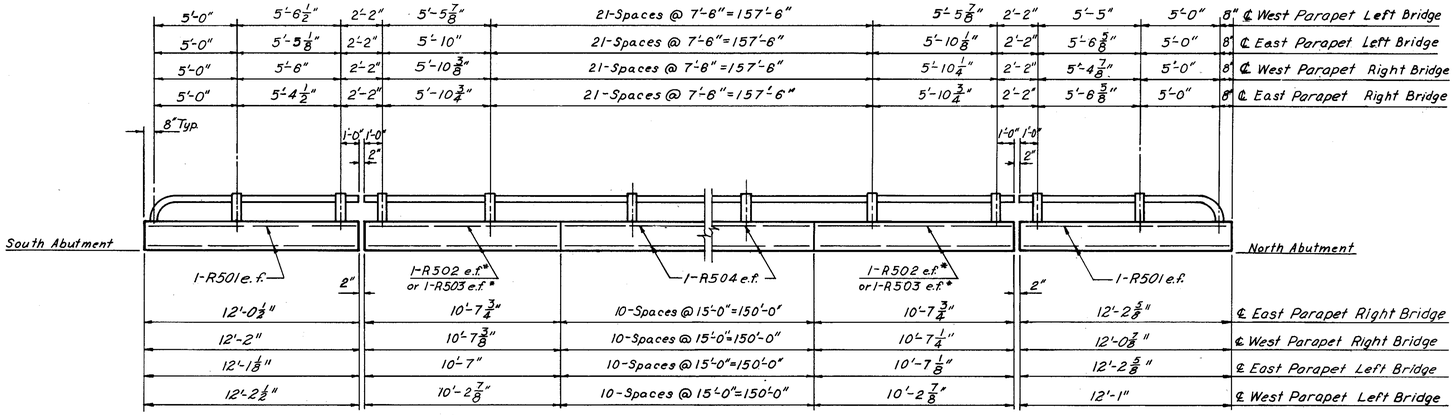
I-271 OVER MILES ROAD

BR NO CUY 1 0060 L & R STA 292+44.18
SCALE: 1/16"=1'-0" STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN JVL	TRACED	CHECKED MDM	REVIEWED J.S.	REVISED
DATE 4-23-63	DATE	DATE 7-25-63	DATE 4-16-64	1040 SHEET 201

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

CUYAHOGA COUNTY
CUY-1-0.11

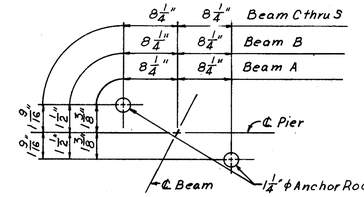


*1-R502 e.f. of East Parapet Right Bridge, West Parapet Right Bridge, and East Parapet Left Bridge, 1-R503 e.f. of West Parapet Left Bridge.

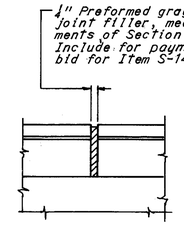
RAILING LAYOUT
Scale: ¼"= 1'-0"

Note: For Reinforcement Schedule see sheet 205.

Legend
e.f. = each face



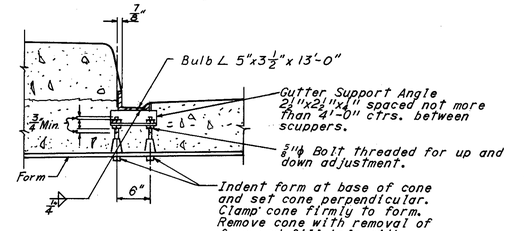
ANCHOR ROD SETTING DETAIL PIER 1-R AND 1-L
Not to Scale



½" Preformed gray rubber expansion joint filler, meeting the requirements of Section M-1002 (Type 1). Include for payment in unit price bid for Item S-14.

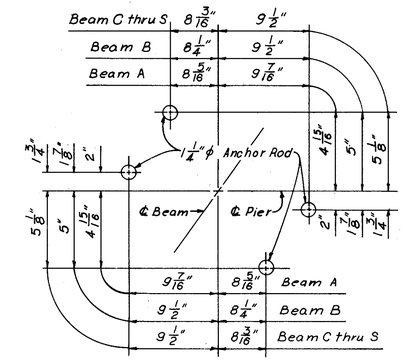
PARAPET JOINT DETAIL
Not to Scale

Note:
Expansion joints in superstructure parapets shall be at mid points of alternate railing panels. See railing post spacing.

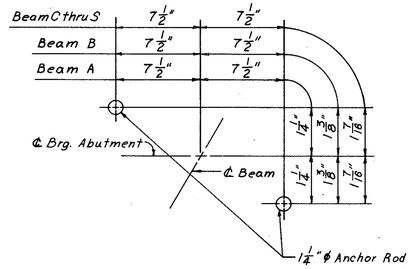


GUTTER SUPPORT DETAIL
1"=1'-0"

Note:
Gutter support detail shown shall be used in locations where standard gutter support detail is not applicable. For standard gutter support detail, see Ohio Standard Drawing CSB-2-56, Sheet 3 of 6. No gutter is required at the West Curb, Right Bridge.



ANCHOR ROD SETTING DETAIL PIER 2-R AND 2-L
Not to Scale



ANCHOR ROD SETTING DETAIL ABUTMENTS
Not to Scale

RAILING 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 posts shall be normal to 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 shims, nuts, anchor bolts, set screws, etc. necessary to complete the installation of railing.
Concrete and longitudinal reinforcing steel in the parapets 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 AR-1-57, revised 4-2-62.
For scupper detail, see Ohio Standard Drawing CSB-2-56, Sheet 3 of 6.

H.N.T.B. BRIDGE NO. 44 L & R

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

MISCELLANEOUS DETAILS

I-271 OVER MILES ROAD

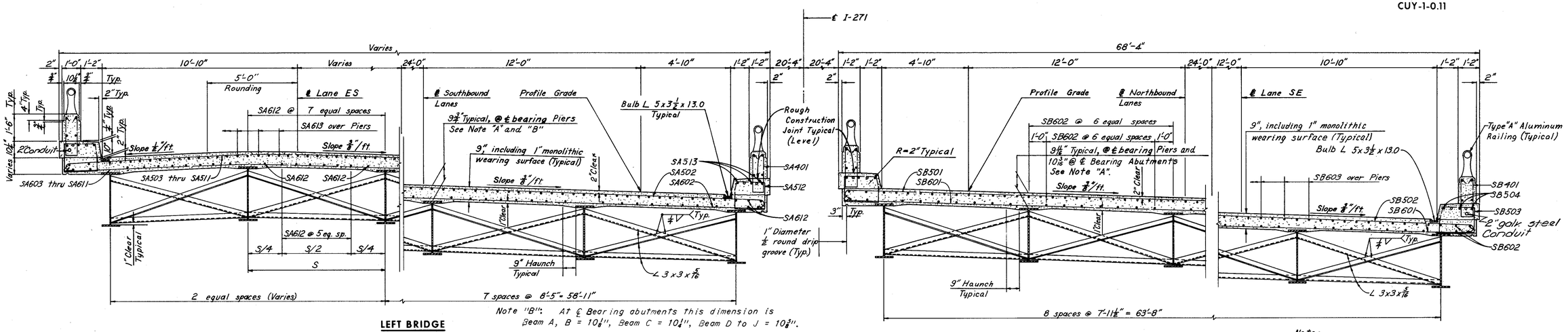
BR NO CUY 1 0060 L & R STA 292+44.18
SCALE: As Shown STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN P.R.S.	TRACED	CHECKED MDM	REVIEWED J.S.	REVISED
DATE 6-26-63	DATE	DATE 7-19-63	DATE 4-16-64	1040 SHEET 203

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

202
256

CUYAHOGA COUNTY
CUY-1-0.11



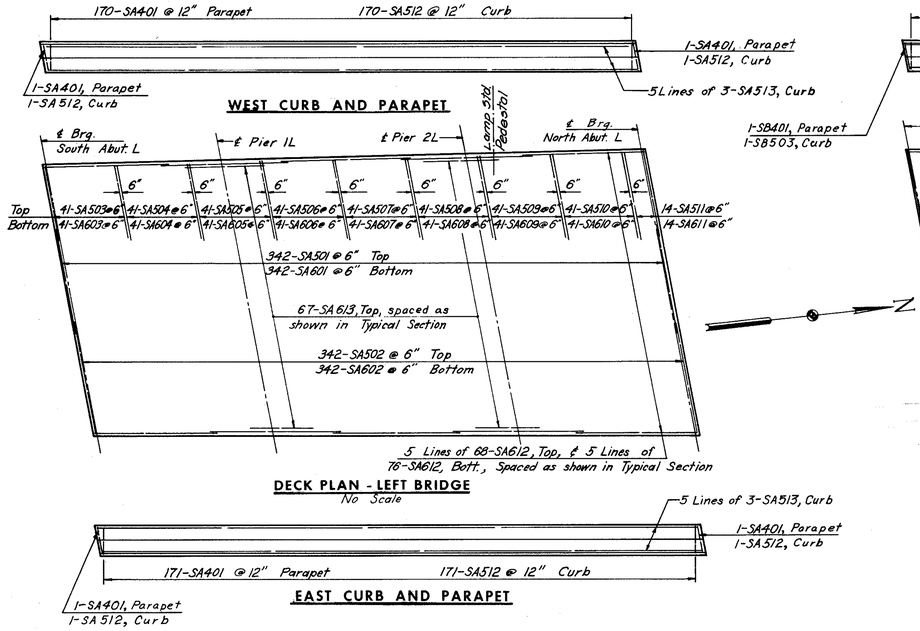
LEFT BRIDGE **RIGHT BRIDGE**

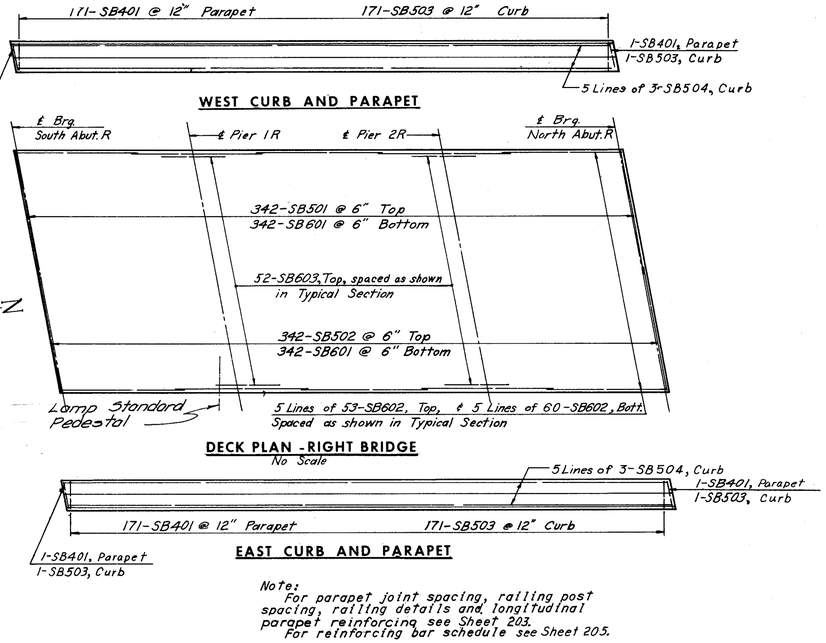
TYPICAL SECTION
Scale: ¾" = 1'-0"

Note:
Intermediate crossframes shall be 3x3x5/16 angles. Weld both sides of vertical leg and top side of horizontal leg to beam with ¼" continuous fillet weld.

Note "A": 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 conformation required to place it parallel to the finished grade. This dimension is measured from extended top of pavement to top flange where ℄ exterior beam is under curb.

Note:
The haunch in the superelevated deck slab adjacent to the top of steel beams, which is shown as 9" wide, may vary from this dimension between the limits of 6" and 12" on the low side and between 9" and 12" on the high side. Except on the high side, the maximum slope shall not exceed 3" per foot. Payment for deck slab concrete shall be based on the 9" width.

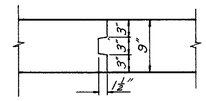




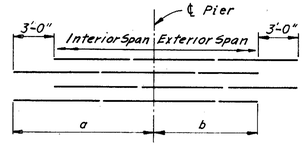
Note:
For parapet joint spacing, railing post spacing, railing details and longitudinal parapet reinforcing see Sheet 203.
For reinforcing bar schedule see Sheet 205.

For top of pavement elevations at supports and Dead Load Deflection Diagram see Sheet 201.

For location of scuppers see Site Plan Sheet 194.



OPTIONAL CONSTRUCTION JOINT
Scale: 1"=1'-0"



Pier	Bar	Dimensions a	Dimensions b
1L	SA613	12'-0"	9'-0"
2L	SA613	12'-0"	9'-0"
1R	SB603	12'-0"	9'-0"
2R	SB603	12'-0"	9'-0"

DIAGRAM SHOWING PLACEMENT OF ADDITIONAL LONGITUDINAL BARS OVER PIERS

NOTE: For details and location of lamp standard pedestals and 2" galvanized steel conduit see Sht 229A

H.N.T.B. BRIDGE NO. 44 L & R

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

DECK PLAN

I-271 OVER MILES ROAD

BR NO CUY 1 0060 L & R STA 292+44.18
SCALE: As Shown STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN JVL	TRACED	CHECKED WDM	REVIEWED JS	REVISED
DATE 4-24-63	DATE	DATE 7-23-63	DATE 4-16-64	1040 SHEET 202

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS A	B	C	SERIES INCRE.	WEIGHT POUNDS
SOUTH ABUTMENT L								
AC501	66	8'-8"	105	5'-9"	1'-7"			597
AC502	66	7'-3"	104	6'-4"	1'-0"			499
AC503	66	6'-4"	105	3'-5"	1'-7"			436
AC504	49	25'-2"	Str.					1286
AC505	1	20'-3"	Str.					21
AC506	1	6'-7"	Str.					7
AC507	1	14'-7"	Str.					15
AC508	1	12'-8"	Str.					13
AC509	3	4'-4"	111	2'-3"	2'-3"	5"		14
AC510	3	3'-4"	108	1'-9"	1'-9"	4"		10
AC511	10	11'-9"	Str.					123
AC512	14	6'-8"	116	1'-8"				97
AC513	2	6'-4"	116	1'-6"				13
AC514	2	6'-2"	116	1'-5"				13
AC515	2	6'-0"	116	1'-4"				13
AC516	2	5'-10"	116	1'-3"				12
AC517	2	5'-8"	116	1'-2"				12
AC518	2	5'-4"	116	1'-0"				11
AC519	2	5'-0"	116	10"				10
AC520	26	5'-9"	110	8"	2'-3"			156
AC521	60	4'-11"	105	2'-2"	1'-6"			308
AC601	14	11'-6"	109	3'-0"	2'-6"			242
AC602	66	14'-0"	106	2'-8"	5'-4"	6'-4"		1388
AC603	57	15'-8"	117	6'-0"	4'-8"			1341
AC604	17	13'-1"	105	1'-5"	6'-0"			334
AC605	14	5'-6"	Str.					116
AC606	4	5'-0"	Str.					30
AC607	4	10'-6"	104	9'-8"	1'-0"			63
AC608	16	12'-5"	104	11'-7"	1'-0"			298
AC609	4	10'-8"	104	9'-10"	1'-0"			64
AC610	2	8'-8"	105	1'-2"	3'-11"			26
AC611	6	6'-3"	106	1'-10"	1'-2"	3'-7"		56
AC612	6	8'-8"	Str.					78
AC613	6	5'-0"	Str.					45
AC614	4	14'-2"	Str.					85
AC615	4	10'-2"	Str.					61
AC616	4	3'-8"	Str.					22
AC617	4	6'-3"	108	2'-6"	3'-9"	3'-3"		38
AC801	8	13'-8"	100	11'-6"	1'-1"			292
AC802	8	13'-4"	100	11'-2"	1'-1"			285
AC803	14	41'-9"	101	40'-8"	1'-1"			1561
						Total		10,091
SOUTH ABUTMENT R								
AA501	58	8'-8"	105	5'-9"	1'-7"			528
AA502	58	7'-3"	104	6'-4"	1'-0"			439
AA503	58	6'-4"	105	3'-5"	1'-7"			383
AA504	49	22'-4"	Str.					1141
AA505	1	17'-9"	Str.					19
AA506	1	6'-0"	Str.					6
AA507	1	13'-3"	Str.					14
AA508	3	3'-4"	108	1'-9"	1'-9"	3"		10
AA509	1	10'-11"	Str.					11
AA510	26	5'-9"	110	8"	2'-3"			156
AA511	10	11'-8"	Str.					122
AA512	14	6'-8"	116	1'-8"				97
AA513	2	6'-4"	116	1'-6"				13
AA514	2	6'-2"	116	1'-5"				13
AA515	2	6'-0"	116	1'-4"				13
AA516	2	5'-10"	116	1'-3"				12
AA517	2	5'-8"	116	1'-2"				12
AA518	2	5'-4"	116	1'-0"				11
AA519	2	5'-0"	116	10"				10
AA520	54	4'-11"	105	2'-2"	1'-6"			277
AA521	3	4'-4"	111	2'-3"	2'-3"	4"		14
AA601	14	11'-6"	109	3'-0"	2'-6"			242
AA602	58	14'-0"	106	2'-8"	5'-4"	6'-4"		1218
AA603	49	15'-4"	117	5'-11"	4'-5"			113
AA604	16	13'-1"	105	1'-5"	6'-0"			314
AA605	14	5'-6"	Str.					116
AA606	16	12'-6"	104	11'-8"	1'-0"			300
AA607	4	5'-0"	Str.					30
AA608	4	10'-5"	104	9'-7"	1'-0"			63
AA609	6	6'-3"	106	1'-10"	1'-2"	3'-7"		56
AA610	2	8'-4"	105	1'-2"	3'-9"			25
AA611	4	10'-7"	104	9'-9"	1'-0"			64
AA612	4	6'-6"	108	4'-6"	2'-0"	1'-2"		39

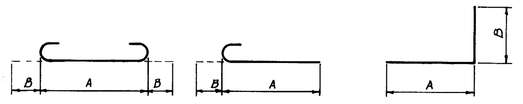
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS A	B	C	SERIES INCRE.	WEIGHT POUNDS
AA613	6	8'-8"	Str.					78
AA614	6	5'-6"	Str.					50
AA615	4	14'-2"	Str.					85
AA616	4	11'-3"	Str.					68
AA617	4	3'-8"	Str.					22
AA801	8	13'-5"	100	11'-3"	1'-1"			287
AA802	8	13'-4"	100	11'-2"	1'-1"			285
AA803	14	37'-7"	101	36'-6"	1'-1"			1405
							Total	8161
PIER 1-L								
PC501	64	12'-2"	109	2'-8"	3'-2"			812
PC502	54	4'-5"	105	2'-8"	1'-0"	1'-0"		249
PC503	2	4'-2"	105	2'-5"	1'-0"	1'-0"		9
PC504	2	3'-6"	105	1'-9"	1'-0"	1'-0"		7
PC601	8	37'-11"	Str.					456
PC602	8	8'-0"	113	2'-0"	4'-0"			96
PC701	36	8'-2"	100	6'-6"	10"			601
PC901	38	11'-0"	100	8'-6"	1'-3"			1421
PC902	24	13'-0"	100	10'-6"	1'-3"			1061
PC1101	46	7'-1"	101	5'-6"	1'-7"			1731
PC1102	4	7'-9"	107	3'-0"	3'-10"	1'-0"		165
PC1103	4	8'-3"	107	3'-0"	4'-4"	1'-0"		175
PC1104	4	9'-0"	107	3'-0"	5'-1"	1'-0"		191
PC1105	10	22'-0"	Str.					1169
PC1106	18	21'-6"	Str.					2056
PC1107	10	21'-3"	Str.					1129
PC1108	18	20'-6"	Str.					1960
PC1109	10	20'-3"	Str.					1076
PC1110	8	40'-0"	Str.					1700
PC1111	4	14'-0"	Str.					298
PC1112	7	22'-0"	Str.					818
PC1113	10	29'-6"	Str.					1567
PC1114	10	9'-7"	115	2'-6"	2'-10"	4'-3"		509
PC1115	4	14'-6"	Str.					308
							Total	20,957
PIER 2-L								
SPD401	1	420'-7"	123	51	18'-0"			281
SPD402	1	412'-4"	123	50	17'-7"			275
SPD403	1	395'-10"	123	48	16'40"			263
SPD404	1	387'-7"	123	47	16'-6"			259
SPD405	1	379'-4"	123	46	16'-1"			253
PD501	64	12'-2"	109	2'-8"	3'-2"			812
PD502	54	4'-5"	105	2'-8"	1'-0"	1'-0"		249
PD503	2	4'-2"	105	2'-5"	1'-0"	1'-0"		9
PD504	2	3'-6"	105	1'-9"	1'-0"	1'-0"		7
PD601	8	38'-9"	Str.					465
PD602	8	8'-0"	113	2'-0"	4'-0"			96
PD701	36	8'-2"	100	6'-6"	10"			601
PD901	38	11'-0"	100	8'-6"	1'-3"			1421
PD902	24	13'-0"	100	10'-6"	1'-3"			1061
PD1101	46	7'-1"	101	5'-6"	1'-7"			1731
PD1102	4	7'-9"	107	3'-0"	3'-10"	1'-0"		165
PD1103	4	8'-3"	107	3'-0"	4'-4"	1'-0"		175
PD1104	4	9'-0"	107	3'-0"	5'-1"	1'-0"		191
PD1105	10	21'-3"	Str.					1129
PD1106	18	21'-0"	Str.					2008
PD1107	10	20'-3"	Str.					1076
PD1108	18	19'-9"	Str.					1889
PD1109	10	19'-3"	Str.					1023
PD1110	8	40'-9"	Str.					1732
PD1111	4	14'-0"	Str.					298

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS A	B	C	SERIES INCRE.	WEIGHT POUNDS
PD1112	7	22'-0"	Str.					818
PD1113	10	30'-3"	Str.					1607
PD1114	10	9'-7"	115	2'-6"	2'-10"	4'-3"		509
PD1115	4	14'-11"	Str.					317
						Total		20,720
PIER 1-R								
SPA401	1	371'-1"	123	45	15'40"			248
SPA402	1	354'-7"	123	43	15'-4"			237
SPA403	1	346'-4"	123	42	14'40"			231
SPA404	1	338'-1"	123	41	14'-4"			226
SPA405	1	321'-7"	123	39	13'40"			215
PA501	36	12'-2"	109	2'-8"	3'-2"			457
PA502	48	4'-5"	105	2'-8"	1'-0"	1'-0"		221
PA503	2	4'-2"	105	2'-5"	1'-0"	1'-0"		8
PA504	2	3'-6"	105	1'-9"	1'-0"	1'-0"		7
PA601	8	33'-5"	Str.					401
PA602	8	8'-0"	113	2'-0"	4'-0"			96
PA701	36	8'-2"	100	6'-6"	10"			601
PA901	38	11'-0"	100	8'-6"	1'-3"			1421
PA902	24	13'-0"	100	10'-6"	1'-3"			1061
PA1101	46	7'-1"	101	5'-6"				1731
PA1102	4	7'-9"	107	3'-0"	3'40"	1'-0"		165
PA1103	4	8'-3"	107	3'-0"	4'-4"	1'-0"		175
PA1104	4	9'-0"	107	3'-0"	5'-1"	1'-0"		191
PA1105	10	19'-0"	Str.					1009
PA1106	18	18'-6"	Str.					1769
PA1107	10	18'-0"	Str.					956
PA1108	18	17'-6"	Str.					1674
PA1109	10	17'-0"	Str.					903
PA1110	8	33'-8"	Str.					1431
PA1111	4	15'-9"	Str.					335
PA1112	6	20'-0"	Str.					638
PA1113	8	27'-3"	Str.					1158
PA1114	8	10'-3"	115	2'-6"	2'40"	4'41"		436
PA1115	2	12'-0"	Str.					128
						Total		17,925
PIER 2-R								
SPB401	1	346'-4"	123	42	14'41"			231
SPB402	1	338'-1"	123	41	14'-5"			226
SPB403	1	329'-10"	123	40	13'41"			220
SPB404	1	313'-4"	123	38	13'-5"			209
SPB405	1	305'-1"	123	37	12'41"			204
PB501	36	12'-2"	109	2'-8"	3'-2"			457
PB502	48	4'-5"	105	2'-8"	1'-0"	1'-0"		221
PB503	2	4'-2"	105	2'-5"	1'-0"	1'-0"		8
PB504	2	3'-6"	105	1'-9"	1'-0"	1'-0"		7
PB601	8	33'-5"	Str.					401
PB602	8	8'-0"	113	2'-0"	4'-0"			96
PB701	36	8'-2"	100	6'-6"	10"			601
PB901	38	11'-0"	100	8'-6"	1'-3"			1421
PB902	24	13'-0"	100	10'-6"	1'-3"			1061
PB1101	46	7'-1"	101	5'-6"	1'-7"			1731
PB1102	4	7'-9"	107	3'-0"	3'40"	1'-0"		165
PB1103	4	8'-3"	107	3'-0"	4'-4"	1'-0"		175
PB1104	4	9'-0"	107	3'-0"	5'-1"	1'-0"		191
PB1105	10	18'-0"	Str.					956
PB1101	18	17'-6"	Str.					1674
PB1102	10	17'-0"	Str.					903
PB1108	18	16'-6"	Str.					1578
PB1109	10	16'-3"	Str.					863
PB1110	8	33'-8"	Str.					1431
PB1111	4	15'-9"	Str.					335
PB1112	6	20'-0"	Str.					638
PB1113	8	27'-3"	Str.					1158
PB1114	8	10'-3"	115	2'-6"	2'40"	4'41"		436
PB1115	2	12'-0"	Str.					128
						Total		17,925

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

204
256

CUYAHOGA COUNTY
CUY-1-0.11



* No. of turns @ 4" pitch (includes 1½ turns @ each end)

Spiral reinforcement shall not have deformations, but shall in other respects conform to Item S-4. Four steel channel, tee or angle spacers weighing approximately 0.68 pounds per linear foot shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The spacers shall be paid for as reinforcing steel and their weight has been included in the Tabulated weights of the spirals.

H.N.T.B. BRIDGE NO. 44 L & R

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

REINFORCEMENT SCHEDULES

I-271 OVER MILES ROAD

BR NO CUY 1 0060 L & R STA 292+44.18
SCALE STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN PRS	TRACED	CHECKED JWL	REVIEWED JS	REVISED
DATE 7-26-63	DATE	DATE 8-2-63	DATE 4-16-64	1040 SHEET 204

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS A	B	C	SERIES INCRE.	WEIGHT POUNDS
NORTH ABUTMENT L								
AD501	56	8'-8"	105	5'-9"	1'-7"			506
AD502	56	7'-3"	104	6'-4"	1'-0"			423
AD503	56	6'-4"	105	3'-5"	1'-7"			370
AD504	17	33'-8"	Str.					597
AD505	2	12'-3"	Str.					26
AD506	32	22'-6"	Str.					751
AD507	1	18'-6"	Str.					19
AD508	1	6'-6"	Str.					7
AD509	3	4'-4"	111	2'-3"	2'-3"	5"		13
AD510	3	3'-4"	108	1'-9"	1'-9"	4"		10
AD511	10	11'-9"	Str.					123
AD512	14	6'-8"	116	1'-8"				97
AD513	2	6'-4"	116	1'-6"				13
AD514	2	6'-2"	116	1'-5"				13
AD515	2	6'-0"	116	1'-4"				12
AD516	2	5'-10"	116	1'-3"				12
AD517	2	5'-8"	116	1'-2"				12
AD518	2	5'-4"	116	1'-0"				11
AD519	2	5'-0"	116	10"				10
AD520	26	5'-9"	110	8"	2'-3"			156
AD521	60	5'-2"	105	2'-2"	1'-6"			323
AD601	14	11'-6"	109	3'-0"	2'-6"			242
AD602	56	14'-0"	106	2'-8"	5'-4"	6'-4"		1177
AD603	61	15'-8"	117	6'-0"	4'-8"			1435
AD604	16	13'-1"	105	1'-5"	6'-0"			314
AD605	14	5'-6"	Str.					116
AD606	4	5'-0"	Str.					30
AD607	4	10'-6"	104	9'-8"	1'-0"			63
AD608	16	12'-5"	104	11'-7"	1'-0"			298
AD609	4	10'-8"	104	9'-10"	1'-0"			84
AD610	2	8'-8"	105	1'-2"	3'-11"			26
AD611	6	6'-3"	106	1'-10"	1'-2"	3'-7"		56
AD612	6	8'-8"	Str.					78
AD613	6	5'-0"	Str.					45
AD614	4	14'-2"	Str.					85
AD615	4	10'-2"	Str.					60
AD616	4	3'-8"	Str.					22
AD617	4	6'-3"	108	2'-6"	3'-9"	3'-3"		37
AD801	8	13'-8"	100	11'-6"	1'-1"			292
AD802	8	13'-2"	100	11'-0"	1'-1"			281
AD803	14	43'-8"	101	42'-7"	1'-1"			1632
						Total		9857
NORTH ABUTMENT R								
AB501	58	8'-8"	105	5'-9"	1'-7"			524
AB502	58	7'-3"	104	6'-4"	1'-0"			439
AB503	58	6'-4"	105	3'-5"	1'-7"			383
AB504	49	22'-5"	Str.					1146
AB505	1	12'-1"	Str.					12
AB506	1	7'-5"	Str.					8
AB507	1	12'-6"	Str.					13
AB508	3	3'-4"	108	1'-9"	1'-9"	3"		10
AB509	1	17'-4"	Str.					17
AB510	26	5'-9"	110					156
AB511	10	11'-8"	Str.					122
AB512	14	6'-8"	116	1'-8"				97
AB513	2	6'-4"	116	1'-6"				13
AB514	2	6'-2"	116	1'-5"				12
AB515	2	6'-0"	116	1'-4"				12
AB516	2	5'-10"	116	1'-3"				12
AB517	2	5'-8"	116	1'-2"				11
AB518	2	5'-4"	116	1'-0"				11
AB519	2	5'-0"	116	10"				10
AB520	54	4'-11"	105	2'-2"	1'-6"			277
AB521	3	4'-4"	111	2'-3"	2'-3"	4"		13
AB601	14	11'-6"	109	3'-0"	2'-6"			242
AB602	58	14'-0"	106	2'-8"	5'-4"	6'-4"		1220
AB603	49	15'-4"	117	5'-11"	4'-5"			1129
AB604	16	13'-1"	105	1'-5"	6'-0"			315
AB605	14	5'-6"	Str.					116
AB606	16	12'-5"	104	11'-7"	1'-0"			298
AB607	4	5'-0"	Str.					30
AB608	4	10'-4"	104	9'-6"	1'-0"			62
AB609	6	5'-11"	106	1'-8"	1'-2"	3'-5"		53
AB610	2	8'-10"	105	1'-2"	4'-0"			26
AB611	4	10'-6"	104	9'-8"	1'-0"			63

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS A	B	C	SERIES INCRE.	WEIGHT POUNDS
AB612	4	6'-6"	108	4'-6"	2'-0"	1'-2"		39
AB613	6	8'-8"	Str.					78
AB614	6	5'-6"	Str.					50
AB615	4	14'-2"	Str.					85
AB616	4	11'-3"	Str.					68
AB617	4	3'-8"	Str.					22
AB801	8	13'-6"	100	11'-4"	1'-1"			288
AB802	8	13'-3"	100	11'-1"	1'-1½"			283
AB803	14	37'-11"	101	36'-10"	1'-1"			1417
						Total		9182
SUPERSTRUCTURE L								
SA401	345	5'-6"	110	8"	2'-0"			1268
SA501	342	27'-2"	Str.					9692
SA502	342	33'-6"	101	32'-11"	7"			11,950
SA503	41	21'-6"	101	20'-11"	7"			919
SA504	41	22'-0"	101	21'-5"	7"			941
SA505	41	22'-7"	101	22'-0"	7"			965
SA506	41	22'-11"	101	22'-4"	7"			980
SA507	41	23'-5"	101	22'-10"	7"			1001
SA508	41	23'-11"	101	23'-4"	7"			1023
SA509	41	24'-4"	101	23'-9"	7"			1041
SA510	41	24'-10"	101	24'-3"	7"			1062
SA511	14	25'-0"	101	24'-5"	7"			365
SA512	345	6'-7"	116	1'-8"				2368
SA513	30	35'-6"	Str.					1110
SA601	342	27'-6"	Str.					14,126
SA602	342	28'-10"	Str.					14,810
SA603	41	25'-4"	Str.					1560
SA604	41	25'-10"	Str.					1590
SA605	41	26'-5"	Str.					1627
SA606	41	26'-9"	Str.					1647
SA607	41	27'-3"	Str.					1678
SA608	41	27'-9"	Str.					1709
SA609	41	28'-2"	Str.					1735
SA610	41	28'-8"	Str.					1766
SA611	14	29'-0"	Str.					610
SA612	720	35'-8"	Str.					38,571
SA613	134	21'-0"	Str.					4227
						Total		120,341
SUPERSTRUCTURE R								
SB401	346	5'-6"	110	8"	2'-0"			1271
SB501	342	39'-6"	101	37'-3"				14,090
SB502	342	31'-3"	101	29'-2"				11,147
SB503	346	6'-7"	116	1'-8"				2375
SB504	30	35'-6"	Str.					1111
SB601	684	35'-6"	Str.					36,472
SB602	565	35'-9"	Str.					30,338
SB603	104	21'-0"	Str.					3280
						Total		100,084
PARAPET								
R501	32	11'-9"	Str.					392
R502	32	10'-3"	Str.					342
R503	32	9'-10"	Str.					328
R504	160	14'-8"	Str.					2446
						Total		3508

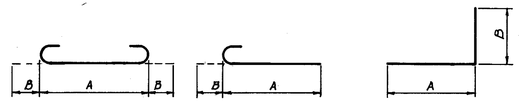
Reinforcement for lamp standard pedestals on bridges is detailed on Sht. 229A.

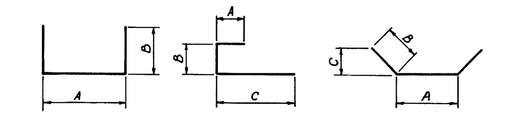
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS A	B	C	SERIES INCRE.	WEIGHT POUNDS

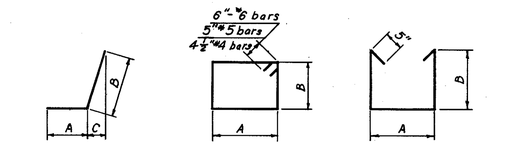
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

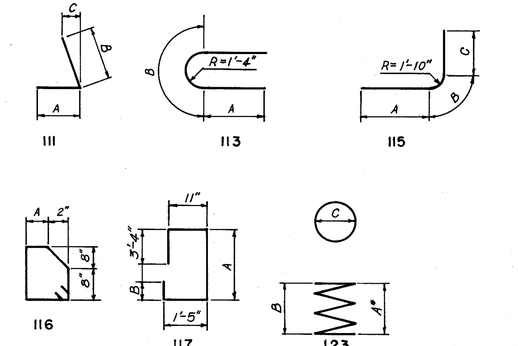
205
256

CUYAHOGA COUNTY
CUY-1-0.11









* No. of turns @ 4½" pitch (includes 1½ turns @ each end)

Spiral reinforcement shall not have deformations, but shall in other respects conform to Item S-4. Four steel channel, tee or angle spacers weighing approximately 0.68 pounds per linear foot shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The spacers shall be paid for as reinforcing steel and their weight has been included in the tabulated weights of the spirals.

Note:
For replacement bar schedule see Sheet 193.

H.N.T.B. BRIDGE NO. 44 L & R

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

REINFORCEMENT SCHEDULES

I-271 OVER MILES ROAD

BR NO CUY 1 0060 L & R STA 292+44.18
SCALE STA 294+18.26
CUYAHOGA CO. OHIO

DRAWN PRS	TRACED	CHECKED JWL	REVIEWED J.S.	REVISED
DATE 7-26-63	DATE	DATE 8-8-63	DATE 4-16-64	1040 SHEET 205

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

206
256

CUYAHOGA COUNTY
CUY-1-0.11

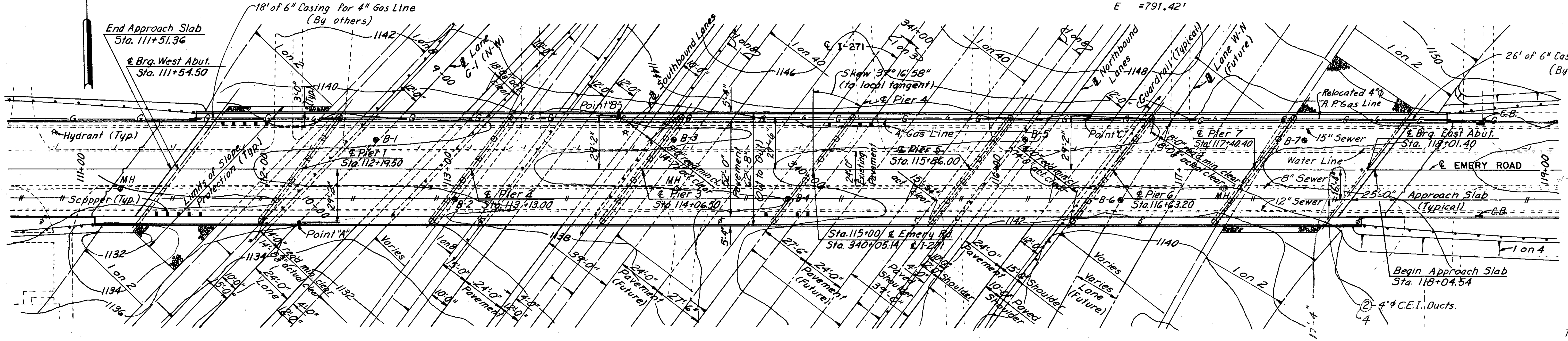
BORING LOCATIONS

B-1=Sta.	112+61	16.5'Lt.
B-2=Sta.	113+04	16.5'Rt.
B-3=Sta.	114+23	16.5'Lt.
B-4=Sta.	114+86	16.5'Rt.
B-5=Sta.	116+15	16.5'Lt.
B-6=Sta.	116+68	16.5'Rt.
B-7=Sta.	117+67	16.5'Lt.

Note:
Drive Sample borings were made at locations B-2, B-4, B-5 and B-7. Rod soundings were taken at all locations.
Boring locations are shown thus ●

CURVE DATA(℄ I-271)

P.C.=Sta. 334+44.43
P.I.=Sta. 379+23.25
P.T.=Sta. 420+33.72
Δ =40° 05' 00" Lt.
D =0° 28' 00" Lt.
R =12,277.67
L =8,589.29'
T =4,478.82'
E =791.42'

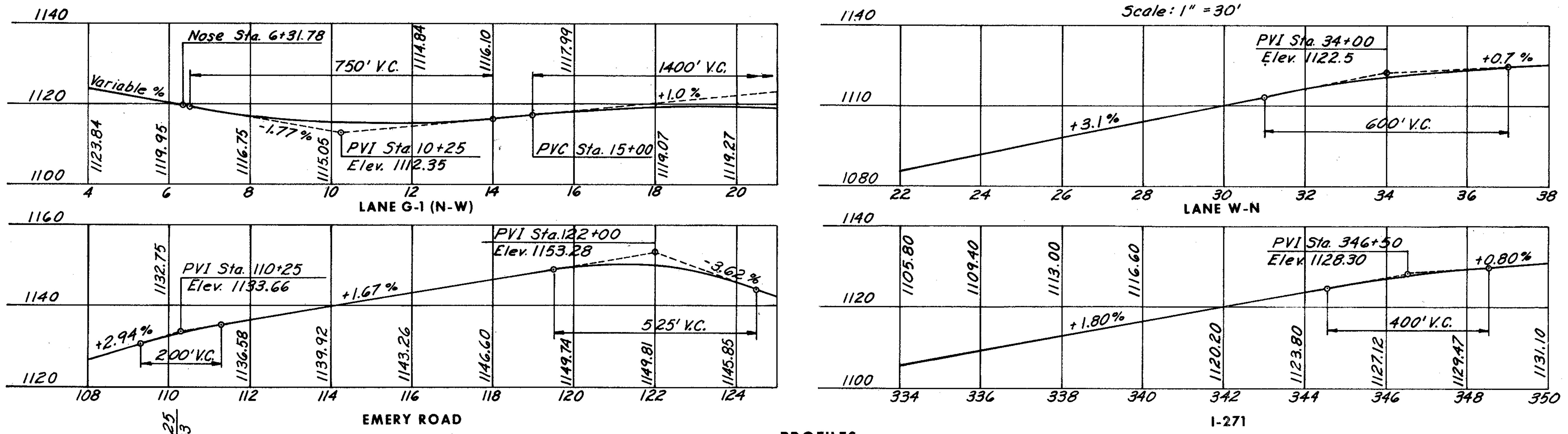


PLAN
Scale: 1" = 30'

PROPOSED STRUCTURE

TYPE: Continuous welded girders with reinforced concrete deck and substructure.
SPANS: 65'-0", 3 @ 93'-6", 86'-0", 2 @ 77'-2 3/8", 61'-0"
ROADWAY: 52'-0" curb/curb with two 4'-2" sidewalks.
LOAD FREQUENCY: CF400 (57)
SKEW: 37°16'58"
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54 (25' Long)
ALIGNMENT: Tangent

TRAFFIC DATA:
Emery Road: 1975- 11,401 ADT (Total both ways)



PROFILES

SCUPPER LOCATIONS

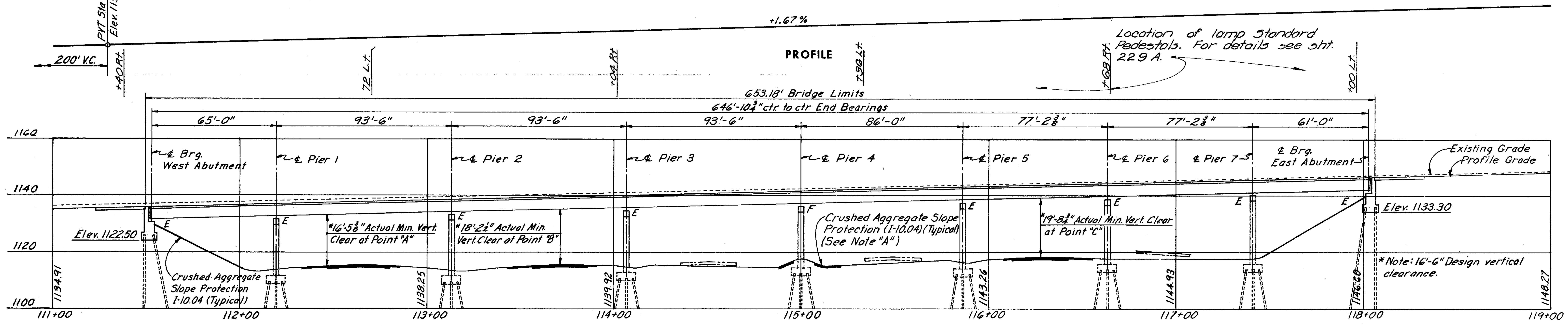
North Gutter	South Gutter
Sta. 111+78.5	Sta. 111+44.0
Sta. 111+84.5	Sta. 111+50.0
Sta. 111+90.5	Sta. 111+56.0
Sta. 111+96.5	Sta. 111+62.0
Sta. 112+02.5	Sta. 111+68.0
Sta. 115+07.5	Sta. 114+75.5
Sta. 115+24.5	Sta. 114+92.5
Sta. 115+30.5	Sta. 114+98.5

16 Scuppers required.

Note "A":
An 8'x8'x1'-0" protective cover of crushed aggregate shall be centered directly under each scupper downspout at Pier 4 and shall be so placed as to blend with the contours of the final construction cross sections and shall be included with "Item I-10.04, Crushed Aggregate Slope Protection" for payment.

Note:
All piles are 10BP42 with estimated vertical lengths as tabulated:

West Abutment	30'
Piers	20'
East Abutment	40'



For pier footing elevations see pier details.

ELEVATION *Scale: Hor. 1" = 30' Vert. 1" = 20'*

H.N.T.B. BR. NO. 45

H.N.T.B. BRIDGE NO. 45

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

SITE PLAN

I-271 UNDER EMERY ROAD

BR NO CUY-1-0149 STA 111+51.36
SCALE *As Noted* STA 118+04.54
CUYAHOGA CO. **OHIO**

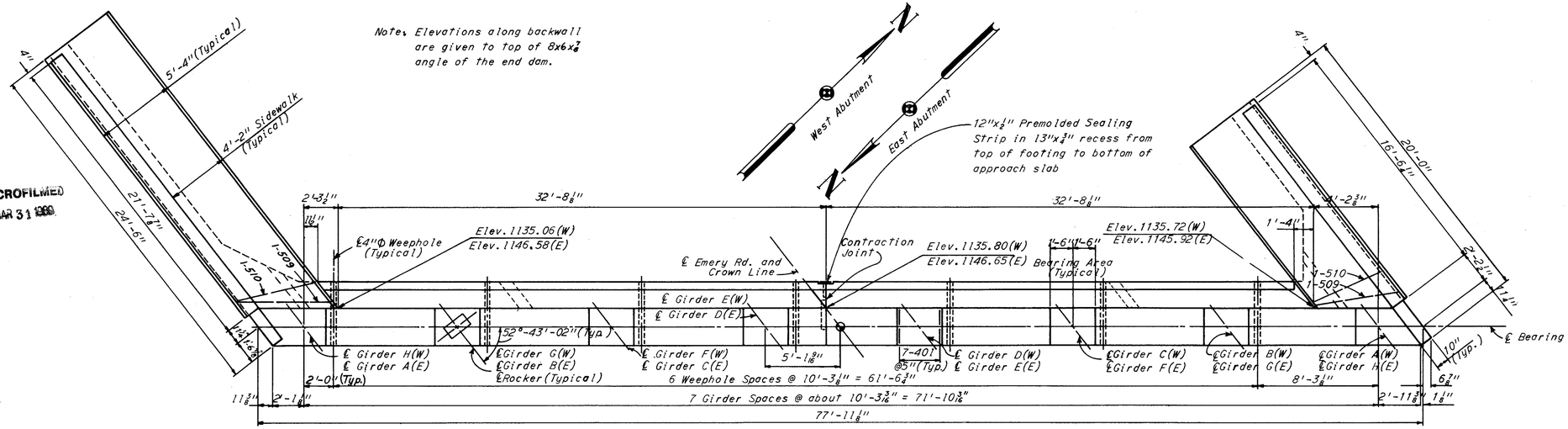
DRAWN *G.E.W.* DATE *10-14-63*	TRACED DATE	CHECKED *R.S.D.* DATE *10-14-63*	REVIEWED *WF* DATE *4-6-64*	REVISED *8-19-64* 1040 SHEET 206

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

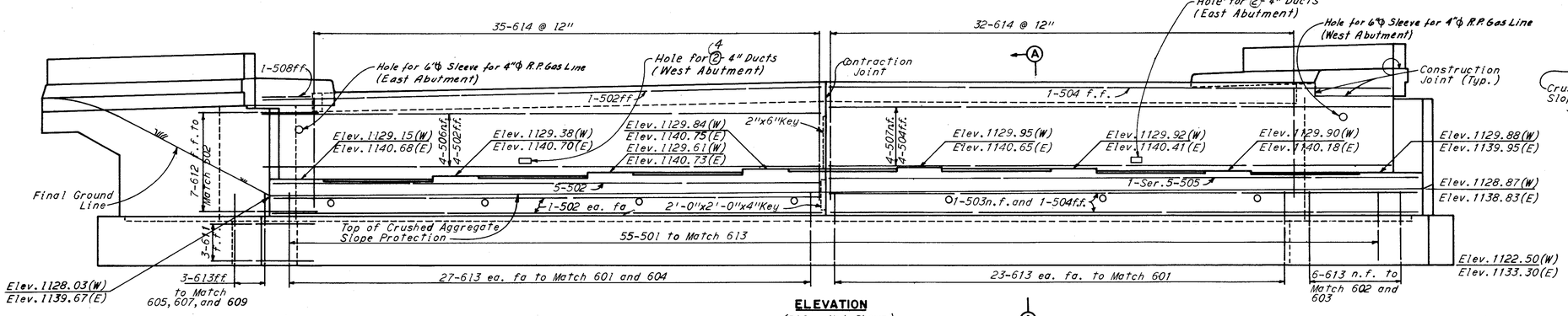
207
256

CUYAHOGA COUNTY
CUY-1-0.11

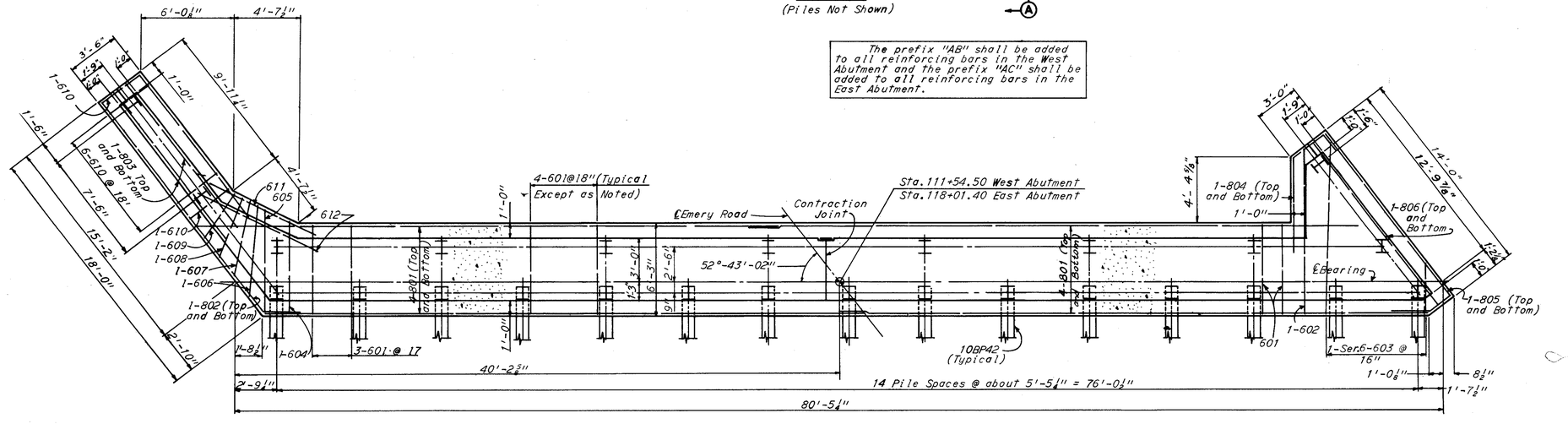
Note: Elevations along backwall are given to top of 8x6x⅞ angle of the end dam.



PLAN

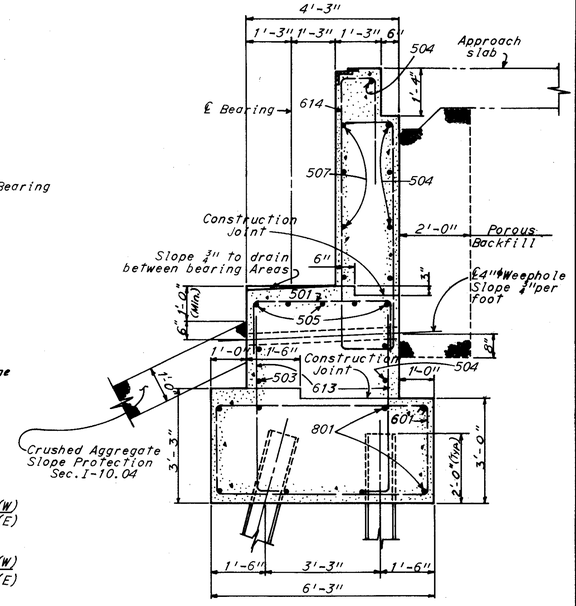


ELEVATION
(Piles Not Shown)



FOOTING PLAN

The prefix "AB" shall be added to all reinforcing bars in the West Abutment and the prefix "AC" shall be added to all reinforcing bars in the East Abutment.



SECTION A-A

Notes:

For reinforcement schedule and bar bending diagrams see sheet 215.

For wingwall details see sheet 208.

For roadway end dam details see Ohio Standard Drawing CSB-2-56 sheet 2 of 6. and sheet 214. Provide a joint, in that part of the end dam attached to the back wall, at the contraction joint.

For sidewalk end dam details see sheet 214.

All battered piles shall be battered 3 in 12 in direction shown.

W. denotes West Abutment
E. denotes East Abutment

The following abbreviations are used:
n.f. = near face
f.f. = far face
ea.fa. = each face

H.N.T.B. BRIDGE NO. 45

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

ABUTMENTS

1-271 UNDER EMERY ROAD

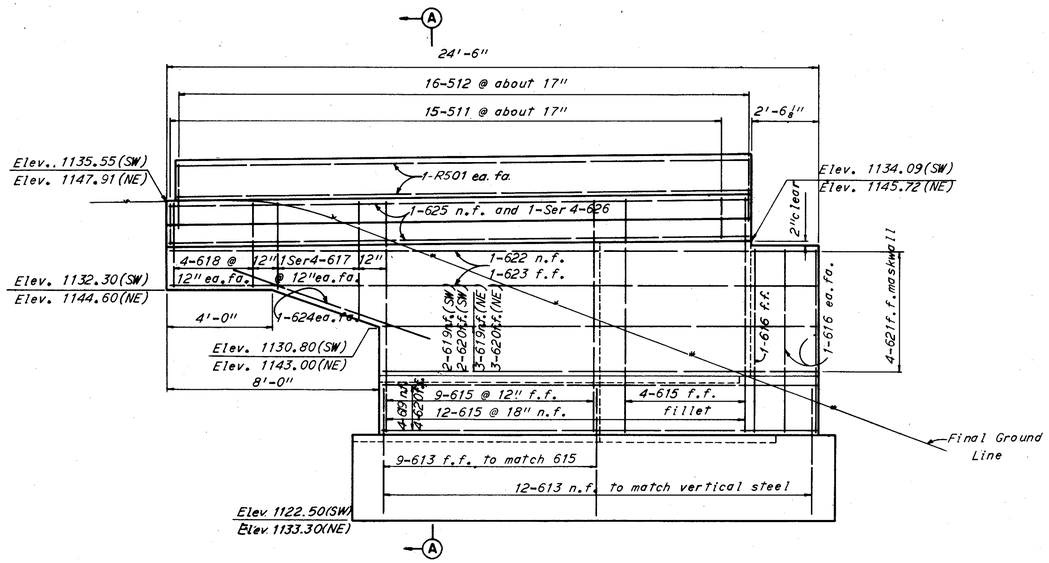
BR NO CUY-1-0149 STA 111+51.36
SCALE ¼" = 1'-0" STA 118+04.54
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED 8-19-64
VJD DATE 9-27-63	DATE	J.K.H DATE 2-4-64	WF DATE 4-6-64	1040 SHEET 207

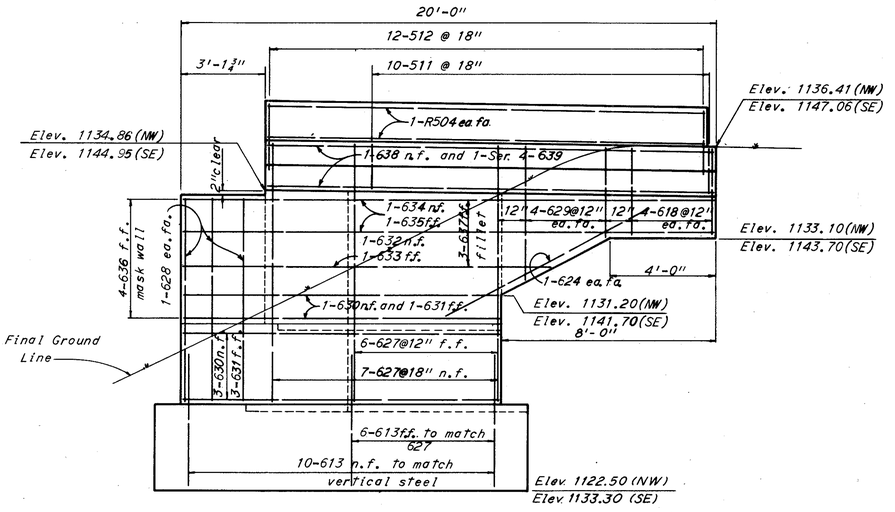
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

208
256

CUYAHOGA COUNTY
CUY-1-0.11



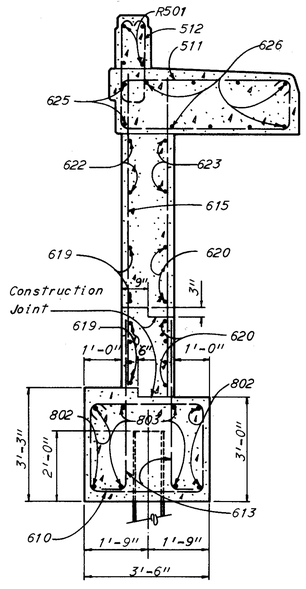
SOUTHWEST AND NORTHEAST
(Piles not shown)



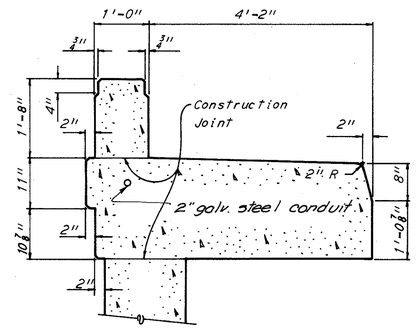
NORTHWEST AND SOUTHEAST
(Piles not shown)

The prefix "AB" shall be added to all reinforcing bars in the West Abutment and the prefix "AC" shall be added to all the reinforcing bars in the East Abutment.

Note:
West Abutment wingwalls shown, East Abutment wingwalls similar except as noted.



SECTION A-A



SIDEWALK DETAILS
(Reinforcement and Type C Railing not shown)

Notes:
For reinforcement schedule and bar bending diagrams see sheet 215.
For longitudinal reinforcement in the parapets and railing post spacing see sheet 214.
For railing details see Ohio Standard Drawing AR-1-57.
Backfill shall be completed prior to construction of sidewalks on wingwalls.
The following abbreviations are used:

SW	= Southwest wingwall
NW	= Northwest wingwall
SE	= Southeast wingwall
NE	= Northeast wingwall
n.f.	= near face
f.f.	= far face
ea.fa.	= each face

For conduit details see sheet 229A.

H.N.T.B. BRIDGE NO. 45

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

WINGWALLS

I-271 UNDER EMERY ROAD

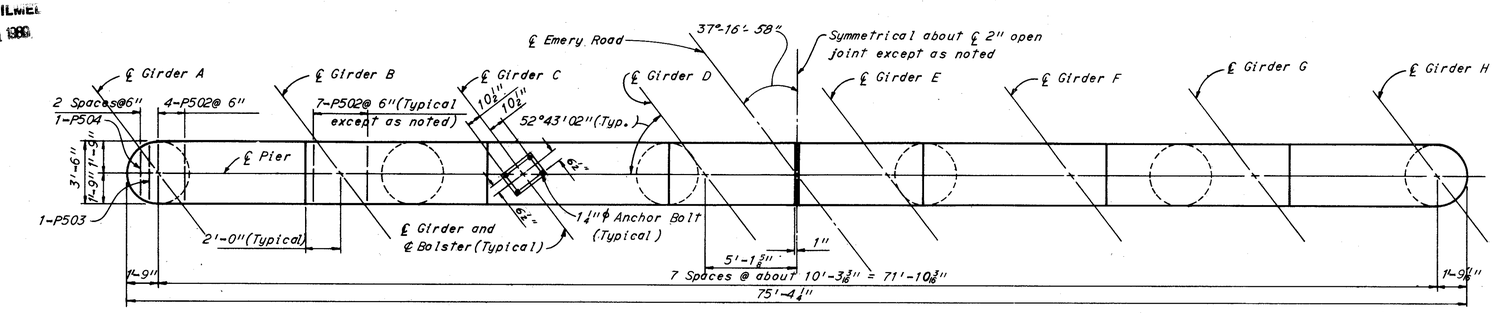
BR NO CUY-1-0149 STA 111+51.36
SCALE None STA 118+04.54
CUYAHOGA CO. OHIO

DRAWN CLA	TRACED	CHECKED J.K.M.	REVIEWED WF	REVISED
DATE 10-11-63	DATE	DATE 2-4-64	DATE 4-6-64	1040 SHEET 208

FED ROADS DIV NO	STATE	FED AID PROJ NO	
2	OHIO		

209
256

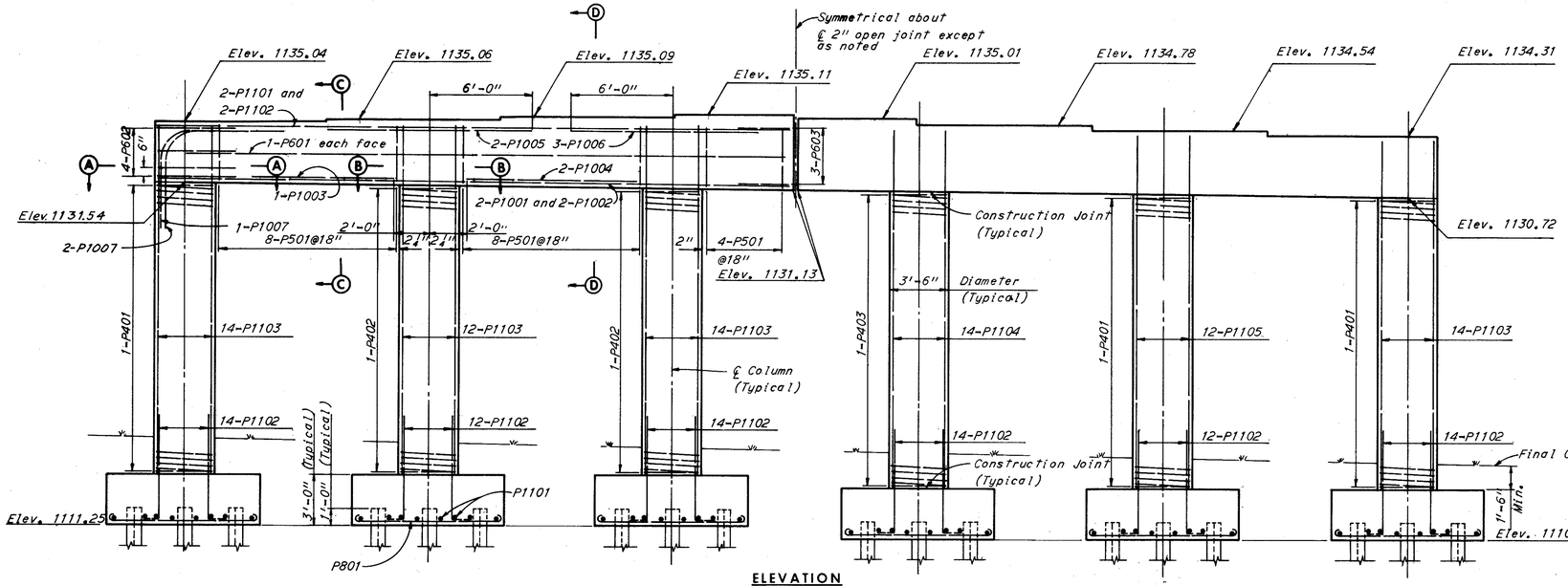
CUYAHOGA COUNTY
CUY-1-0.11



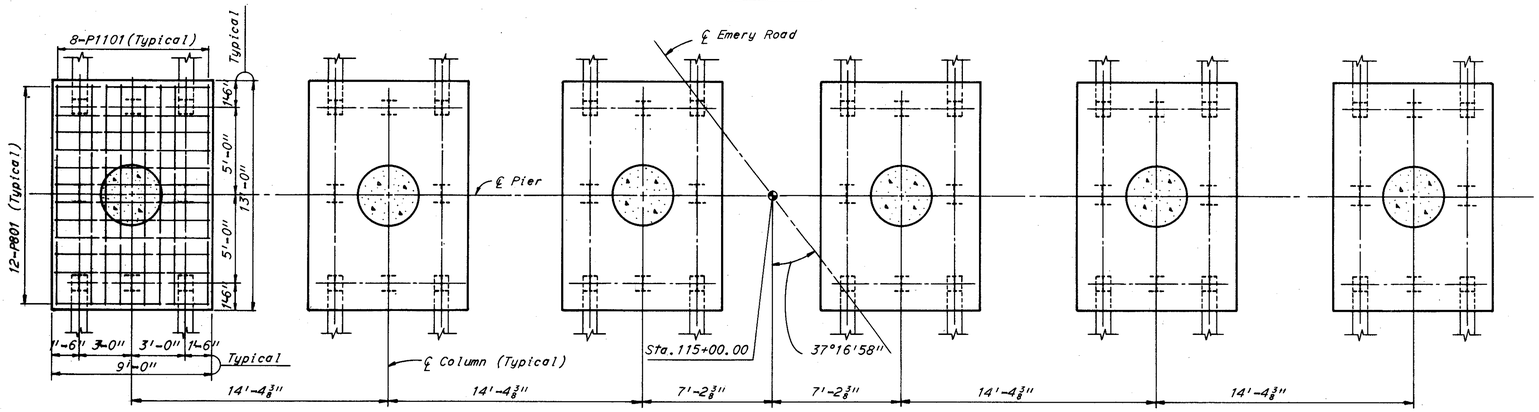
PLAN

Note: Special care shall be taken when placing reinforcement so as not to interfere with anchor bolt setting.

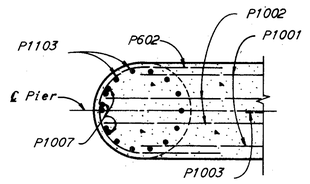
All reinforcement shall be prefixed PD; e.g., PD1104



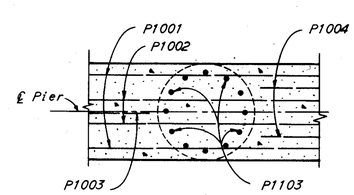
ELEVATION



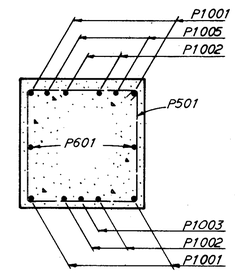
FOOTING PLAN



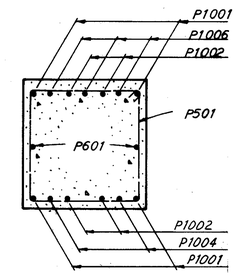
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Notes:

For anchor bolt details see Ohio Standard Drawing RB-1-55.

All piles are 10BP42. All battered piles are inclined 3 in 12 in the direction shown.

Pile spacings are measured along bottom of footings.

For Reinforcement Schedule and Bending Diagrams see sheet 215.

For Electrical grounds at this pier see sheet 229A.

H.N.T.B. BRIDGE NO. 45

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

PIER 4

I-271 UNDER EMERY ROAD

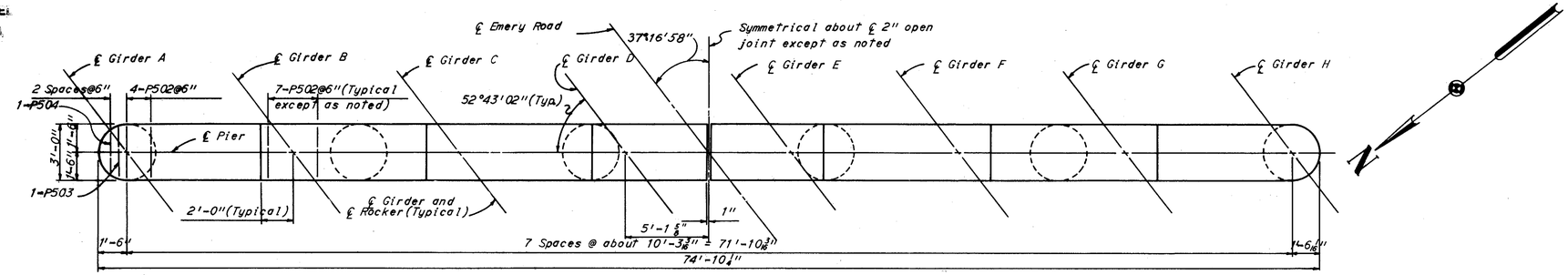
BR NO CUY-1-0149 STA 111+51.36
SCALE None STA 118+04.54
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
K.E.W. 10-8-63	DATE	DATE 10-17-63	DATE 4-6-64	1040 SHEET 209

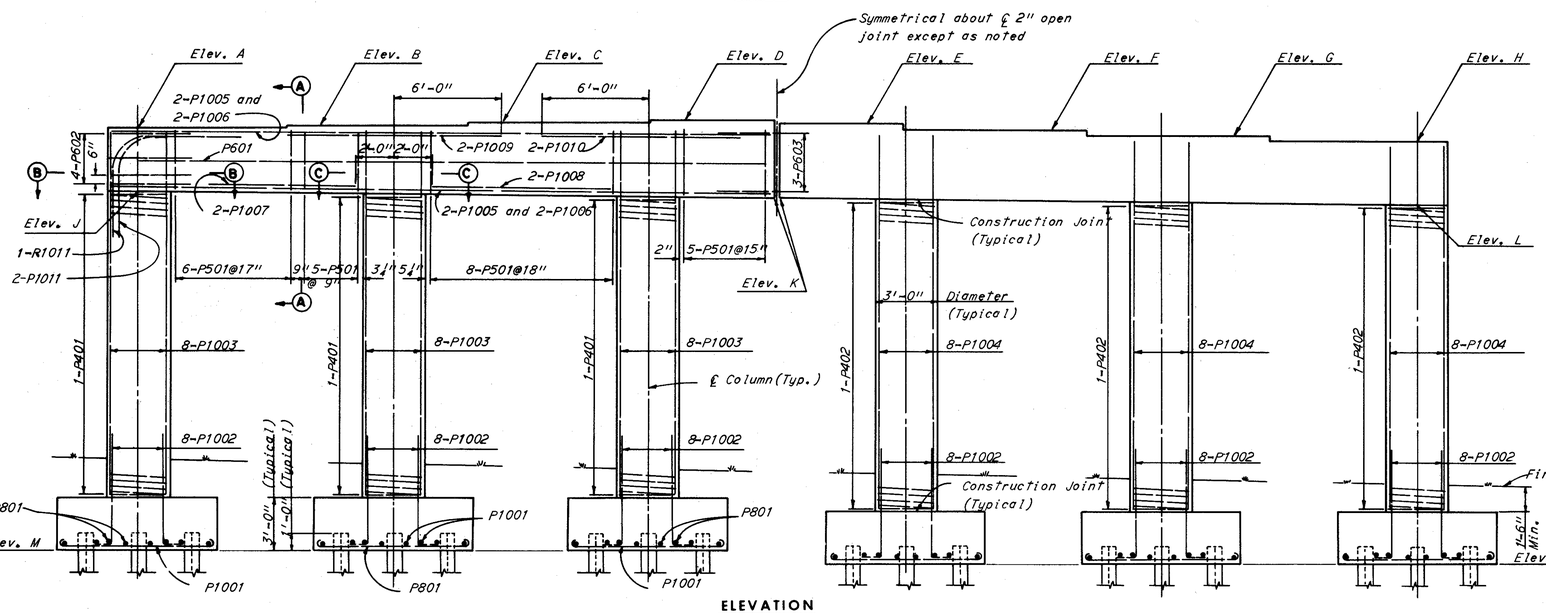
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

210
256

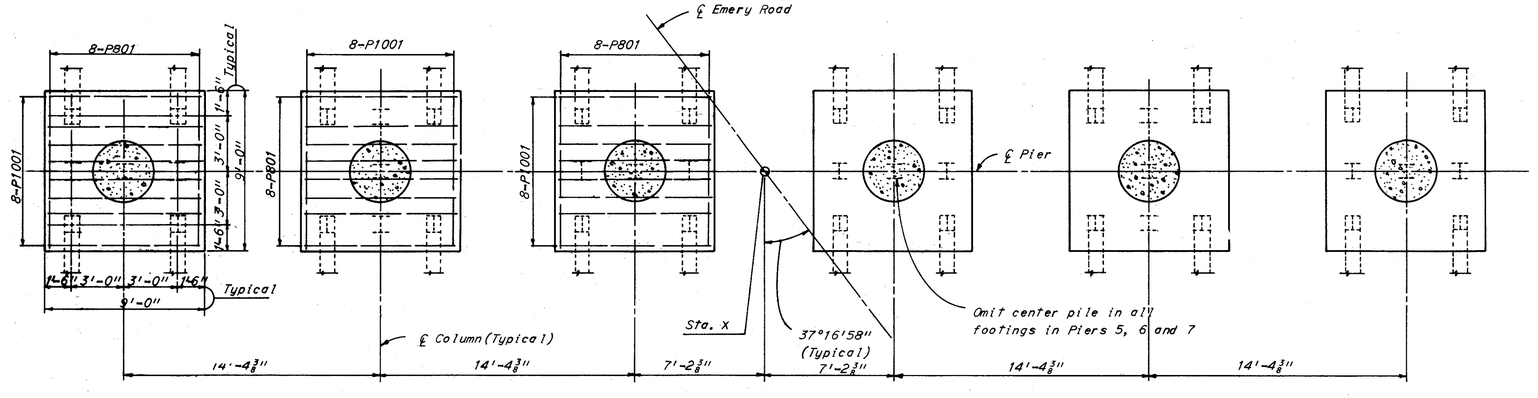
CUYAHOGA COUNTY
CUY-1-0.11



PLAN



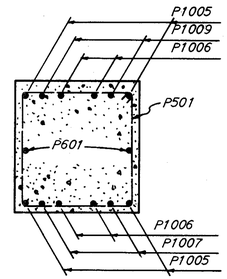
ELEVATION



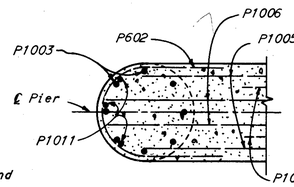
FOOTING PLAN

Note: The following prefixes shall be used for all bar marks:

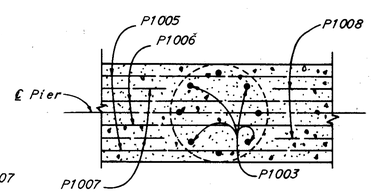
Pier 1 - PA	Pier 5 - PE
Pier 2 - PB	Pier 6 - PF
Pier 3 - PC	Pier 7 - PG



SECTION A-A



SECTION B-B



SECTION C-C

TABLE OF ELEVATIONS AND STATIONS

Elevation	Pier 1	Pier 2	Pier 3	Pier 5	Pier 6	Pier 7
A	1130.38	1131.92	1133.48	1136.55	1137.85	1139.14
B	1130.40	1131.94	1133.50	1136.57	1137.87	1139.17
C	1130.42	1131.96	1133.53	1136.59	1137.89	1139.19
D	1130.45	1131.99	1133.55	1136.62	1137.92	1139.22
E	1130.34	1131.88	1133.45	1136.51	1137.81	1139.11
F	1130.11	1131.65	1133.21	1136.28	1137.58	1138.88
G	1129.88	1131.42	1132.98	1136.05	1137.35	1138.65
H	1129.65	1131.19	1132.75	1135.82	1137.12	1138.42
J	1126.88	1128.42	1129.98	1133.05	1134.35	1135.64
K	1126.47	1128.01	1129.57	1132.64	1133.94	1135.23
L	1126.06	1127.60	1129.16	1132.23	1133.53	1134.83
M	1108.50	1108.00	1109.75	1111.50	1112.25	1111.00
N	1108.50	1107.25	1109.00	1110.75	1111.50	1110.00
Station						
X	112+19.50	113+13.00	114+06.50	115.86+00	116+63.20	117+40.40

Notes:
All piles are 10BP42. All battered piles are inclined 3 in 12 in the direction shown.
Pile spacings are measured along bottom of footings.
For Reinforcement Schedule and Bending Diagrams see sheet 215.

H.N.T.B. BRIDGE NO. 45

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

PIERS 1,2,3,5,6, AND 7

I-271 UNDER EMERY ROAD

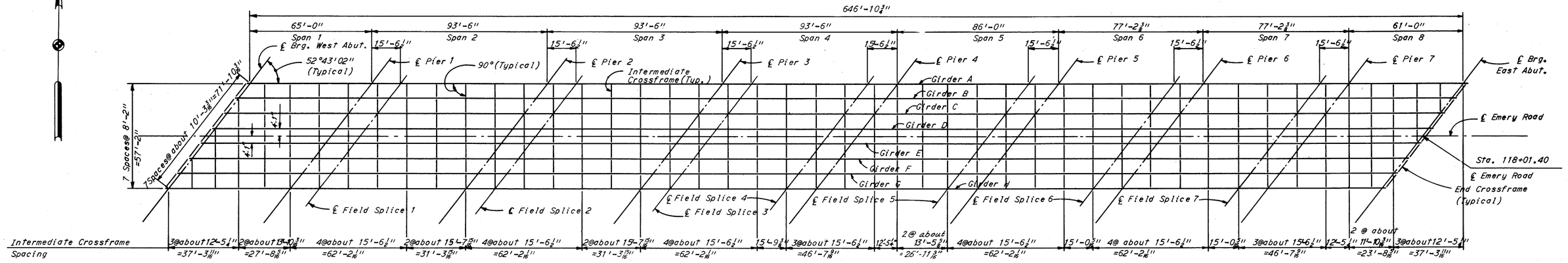
BR NO CUY-1-0149 STA 111+51.36
SCALE None STA 118+04.54
CUYAHOGA CO. OHIO

DRAWN E.A.B.	TRACED	CHECKED [illegible]	REVIEWED WF	REVISED
DATE 10/2/63	DATE	DATE 12/4/63	DATE 4-6-64	1040 SHEET 210

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

211
256

CUYAHOGA COUNTY
CUY-1-0.11



FRAMING PLAN

TOP OF PAVEMENT ELEVATIONS

Girder	℄ Brg. W. Abut.	SPAN 1 A	SPAN 1 B	SPAN 1 C	℄ Pier 1	SPAN 2 A	SPAN 2 B	SPAN 2 C	℄ Pier 2	SPAN 3 A	SPAN 3 B	SPAN 3 C	℄ Pier 3	SPAN 4 A	SPAN 4 B	SPAN 4 C	℄ Pier 4	SPAN 5 A	SPAN 5 B	SPAN 5 C	℄ Pier 5	SPAN 6 A	SPAN 6 B	SPAN 6 C	℄ Pier 6	SPAN 7 A	SPAN 7 B	SPAN 7 C	℄ Pier 7	SPAN 8 A	SPAN 8 B	SPAN 8 C	℄ Brg. E. Abut.	Girder
* A	1135.74	1136.01	1136.28	1136.55	1136.83	1137.22	1137.61	1138.00	1138.39	1138.78	1139.17	1139.56	1139.95	1140.34	1140.73	1141.12	1141.51	1141.87	1142.23	1142.59	1142.95	1142.27	1143.59	1143.91	1144.24	1144.56	1144.88	1145.20	1145.52	1145.78	1146.03	1146.29	1146.54	A
B	1135.76	1136.04	1136.31	1136.58	1136.85	1137.24	1137.63	1138.02	1138.41	1138.80	1139.19	1139.58	1139.97	1140.36	1140.75	1141.14	1141.53	1141.89	1142.25	1142.61	1142.97	1143.29	1143.61	1143.94	1144.26	1144.58	1144.90	1145.23	1145.55	1145.80	1146.06	1146.31	1146.57	B
C	1135.79	1136.06	1136.33	1136.60	1136.87	1137.26	1137.65	1138.04	1138.43	1138.82	1139.21	1139.61	1140.00	1140.39	1140.78	1141.17	1141.56	1141.91	1142.27	1142.63	1142.99	1143.32	1143.64	1143.96	1144.28	1144.60	1144.93	1145.25	1145.57	1145.83	1146.08	1146.34	1146.59	C
D	1135.81	1136.08	1136.35	1136.63	1136.90	1137.29	1137.68	1138.07	1138.46	1138.85	1139.24	1139.63	1140.02	1140.41	1140.80	1141.19	1141.58	1141.94	1142.30	1142.66	1143.02	1143.34	1143.66	1142.98	1144.31	1144.63	1144.95	1145.27	1145.60	1145.85	1146.10	1146.36	1146.61	D
E	1135.71	1135.98	1136.25	1136.52	1136.79	1137.18	1137.57	1137.96	1138.35	1138.74	1139.13	1139.53	1139.92	1140.31	1140.70	1141.09	1141.48	1141.84	1142.20	1142.55	1142.91	1143.24	1143.56	1143.88	1144.20	1144.52	1144.85	1145.17	1145.49	1145.75	1146.00	1146.26	1146.51	E
F	1135.48	1135.75	1136.02	1136.29	1136.56	1136.95	1137.34	1137.73	1138.12	1138.51	1138.90	1139.29	1139.68	1140.07	1140.47	1140.86	1141.25	1141.60	1141.96	1142.32	1142.68	1143.00	1143.33	1143.65	1143.97	1144.29	1144.62	1144.94	1145.26	1145.52	1145.77	1146.02	1146.28	F
G	1135.24	1135.52	1135.79	1136.06	1136.33	1136.72	1137.11	1137.50	1137.89	1138.28	1138.67	1139.06	1139.45	1149.84	1140.23	1140.62	1141.01	1141.37	1141.73	1142.09	1142.45	1142.77	1143.10	1143.42	1143.74	1144.06	1144.38	1144.71	1145.03	1145.28	1145.54	1145.79	1146.05	G
* H	1135.01	1135.28	1135.56	1035.83	1136.10	1136.49	1136.88	1137.27	1137.66	1138.05	1138.44	1138.83	1139.22	1139.61	1140.00	1140.39	1140.78	1141.14	114150	1141.86	1142.22	1142.54	1142.86	1143.19	1143.51	1143.83	1144.15	1144.48	1144.80	1145.05	1145.31	1145.56	1145.82	H

DEAD LOAD DEFLECTIONS

Girder	SPAN 1 Tot.	SPAN 1 Con.	SPAN 2 Tot.	SPAN 2 Con.	SPAN 3 Tot.	SPAN 3 Con.	SPAN 4 Tot.	SPAN 4 Con.	SPAN 5 Tot.	SPAN 5 Con.	SPAN 6 Tot.	SPAN 6 Con.	SPAN 7 Tot.	SPAN 7 Con.	SPAN 8 Tot.	SPAN 8 Con.	Girder
A and H	0	0	1/4	3/16	1/4	3/16	0	0	0	0	3/16	1/8	5/16	1/4	1/4	1/4	A and H
B thru G	0	0	3/16	3/16	3/16	3/16	0	0	3/16	1/8	1/4	1/16	1/8	1/16	1/8	1/16	B thru G

Girder	SPAN 1 Tot.	SPAN 1 Con.	SPAN 2 Tot.	SPAN 2 Con.	SPAN 3 Tot.	SPAN 3 Con.	SPAN 4 Tot.	SPAN 4 Con.	SPAN 5 Tot.	SPAN 5 Con.	SPAN 6 Tot.	SPAN 6 Con.	SPAN 7 Tot.	SPAN 7 Con.	SPAN 8 Tot.	SPAN 8 Con.	Girder
A and H	0	0	5/16	1/4	3/8	1/4	0	0	0	0	1/4	1/16	3/8	1/16	1/4	1/16	A and H
B thru G	0	0	1/4	1/16	1/4	1/16	0	0	1/4	1/16	3/8	1/16	1/2	1/16	3/8	1/16	B thru G

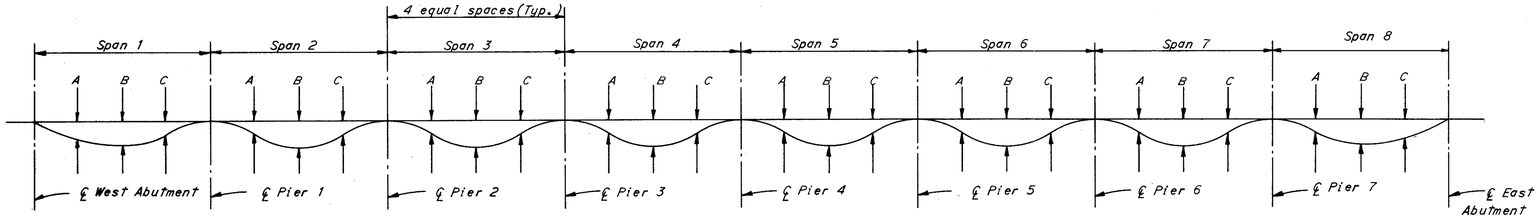
Girder	SPAN 1 Tot.	SPAN 1 Con.	SPAN 2 Tot.	SPAN 2 Con.	SPAN 3 Tot.	SPAN 3 Con.	SPAN 4 Tot.	SPAN 4 Con.	SPAN 5 Tot.	SPAN 5 Con.	SPAN 6 Tot.	SPAN 6 Con.	SPAN 7 Tot.	SPAN 7 Con.	SPAN 8 Tot.	SPAN 8 Con.	Girder
A and H	0	0	3/8	1/8	1/2	1/4	0	0	0	0	5/16	1/8	1/2	1/8	3/8	1/8	A and H
B thru G	0	0	5/16	1/8	3/8	1/8	0	0	5/16	1/8	1/2	1/8	3/8	1/8	1/4	1/8	B thru G

Girder	SPAN 1 Tot.	SPAN 1 Con.	SPAN 2 Tot.	SPAN 2 Con.	SPAN 3 Tot.	SPAN 3 Con.	SPAN 4 Tot.	SPAN 4 Con.	SPAN 5 Tot.	SPAN 5 Con.	SPAN 6 Tot.	SPAN 6 Con.	SPAN 7 Tot.	SPAN 7 Con.	SPAN 8 Tot.	SPAN 8 Con.	Girder
A and H	0	0	7/16	5/16	9/16	3/8	0	0	0	0	3/8	1/8	9/16	1/8	1/2	1/8	A and H
B thru G	0	0	3/8	1/8	1/2	1/8	0	0	3/8	1/8	9/16	1/8	1/2	1/8	1/2	1/8	B thru G

Girder	SPAN 1 Tot.	SPAN 1 Con.	SPAN 2 Tot.	SPAN 2 Con.	SPAN 3 Tot.	SPAN 3 Con.	SPAN 4 Tot.	SPAN 4 Con.	SPAN 5 Tot.	SPAN 5 Con.	SPAN 6 Tot.	SPAN 6 Con.	SPAN 7 Tot.	SPAN 7 Con.	SPAN 8 Tot.	SPAN 8 Con.	Girder
A and H	0	0	7/16	5/16	9/16	3/8	0	0	0	0	3/8	1/8	9/16	1/8	1/2	1/8	A and H
B thru G	0	0	3/8	1/8	1/2	1/8	0	0	3/8	1/8	9/16	1/8	1/2	1/8	1/2	1/8	B thru G

* Note: Elevations for Girder A and H are given to extend top of pavement.

Note: To obtain top of web elevations at supports deduct 0.91' from top of pavement elevations.



DEAD LOAD DEFLECTION DIAGRAM

Notes: Elevations and deflection in the above table are given along ℄ Girders.

Tot. denotes deflection due to dead load of concrete and steel.

Con. denotes deflection due to dead load of concrete only.

Deflections are measured to the nearest 1/16 inch.

Notes: For details of roadway end dam see Ohio Standard Drawing CSB-2-56 sheet 2 of 6 and sheet 214.

For details of end dams at sidewalks see sheet 214.

For details of beveled bearing bar at abutments see sheet 213.

For scupper locations see sheet 206.

For scupper and bulb angle gutter details see Ohio Standard Drawing CSB-2-56 sheet 3 of 6.

For scupper and bulb angle gutter support details see sheet 213.

H.N.T.B. BRIDGE NO. 45

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

FRAMING PLAN

1-271 UNDER EMERY ROAD

BR NO CUY-1-0149 STA 111+51.36

SCALE None STA 118+04.54

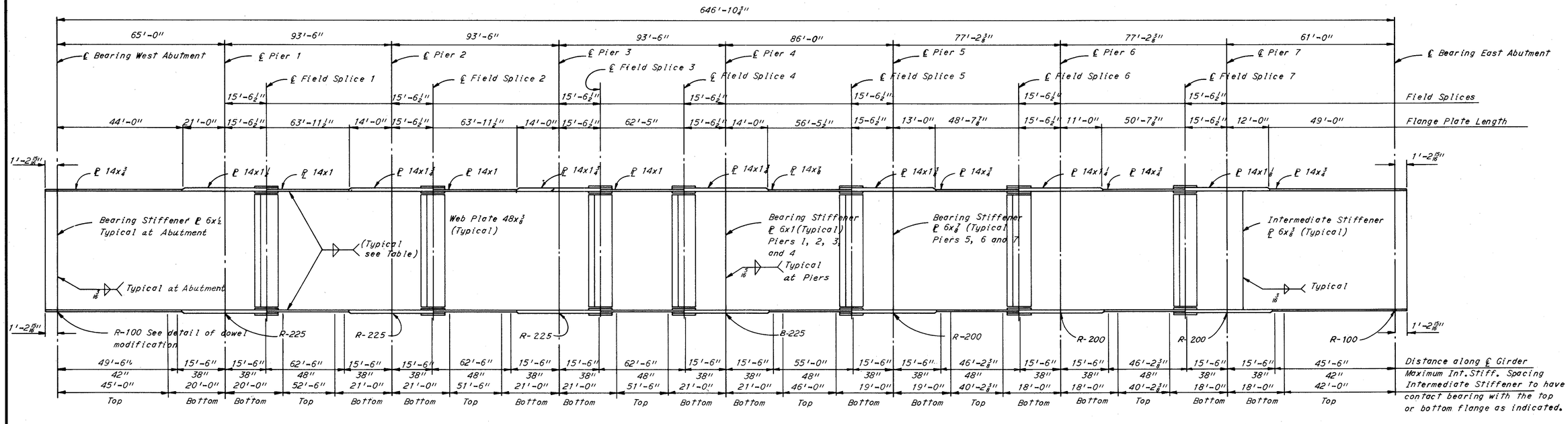
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 10-15-68	DATE	DATE 10-18-68	DATE 4-6-69	1040 SHEET 211

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

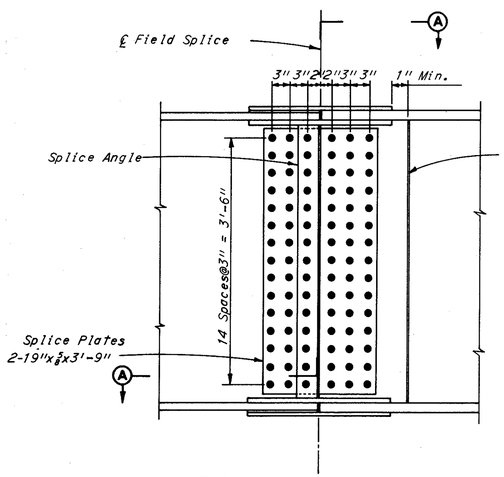
212
256

CUYAHOGA COUNTY
CUY-1-0.11

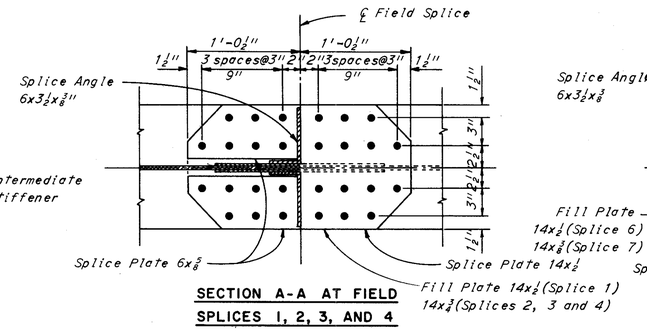


TYPICAL GIRDER ELEVATION

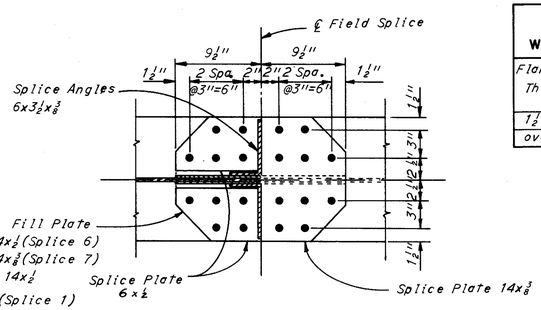
Note: For details of Rockers and Bolsters see Ohio Standard Drawing RB-1-55.



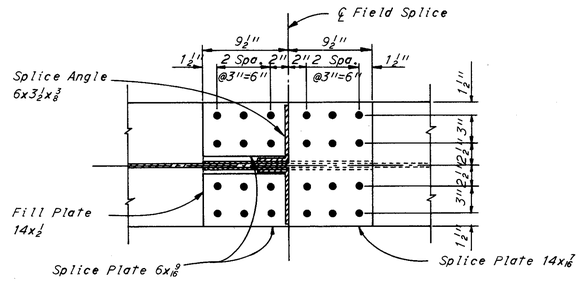
TYPICAL FIELD WEB SPLICE



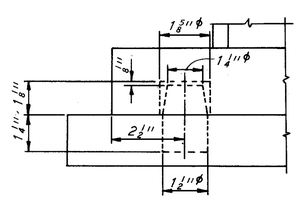
SECTION A-A AT FIELD SPLICES 1, 2, 3, AND 4



SECTION A-A AT FIELD SPLICE 6 AND 7

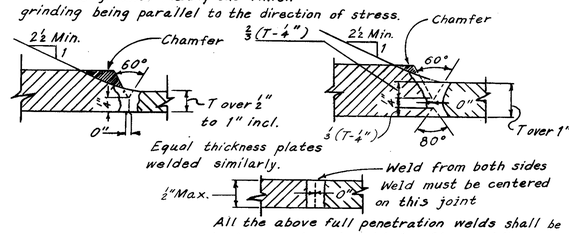


SECTION A-A AT FIELD SPLICE 5



DOWEL MODIFICATION
For R-100 at Abutments

WELD SIZE WEB TO FLANGE	
Flange Plate Thickness	Fillet Weld Size
1/2" or less	5/16"
over 1/2"	3/8"



GIRDER SHOP WELDING DETAILS

Notes:

The girders shall be fabricated to compensate for the effects of dead load deflections and, under full dead load, shall parallel the profiles formed by the top of pavement elevations directly over the girders.

Top and bottom flange plates are to be the same and shall be spliced at points shown on the girder elevations.

The web plates may be shop spliced as required by available plate lengths. The location of such shop web splices and the details of any additional shop flange splices shall be submitted to the Director for approval prior to ordering of material.

Intermediate stiffeners shall be placed in pairs equally spaced between crossframes or crossframes and field splices or crossframes and bearing stiffeners and shall have contact bearing with the flange indicated on the Typical Girder Elevation. A clearance of not more than 1/8" from the other flange shall be maintained. In shop painting care shall be taken to force paint through the 1/8" opening.

Bearing stiffeners at abutments and piers shall be placed in pairs and shall be beveled and fully butt welded to the lower flange and fitted to close contact to the upper flange without welding.

All stiffeners shall be set normal to girder flanges.

All girder field splices shall be made with 7/8" ϕ high strength steel bolts. The bolts shall be placed with the heads on the outside face of the exterior girders and on the bottom of all flange plates.

The Contractor shall submit to the Director, for approval, three sets of prints showing his proposed erection procedure.

H.N.T.B. BRIDGE NO. 45

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

GIRDER DETAILS

I-271 UNDER EMERY ROAD

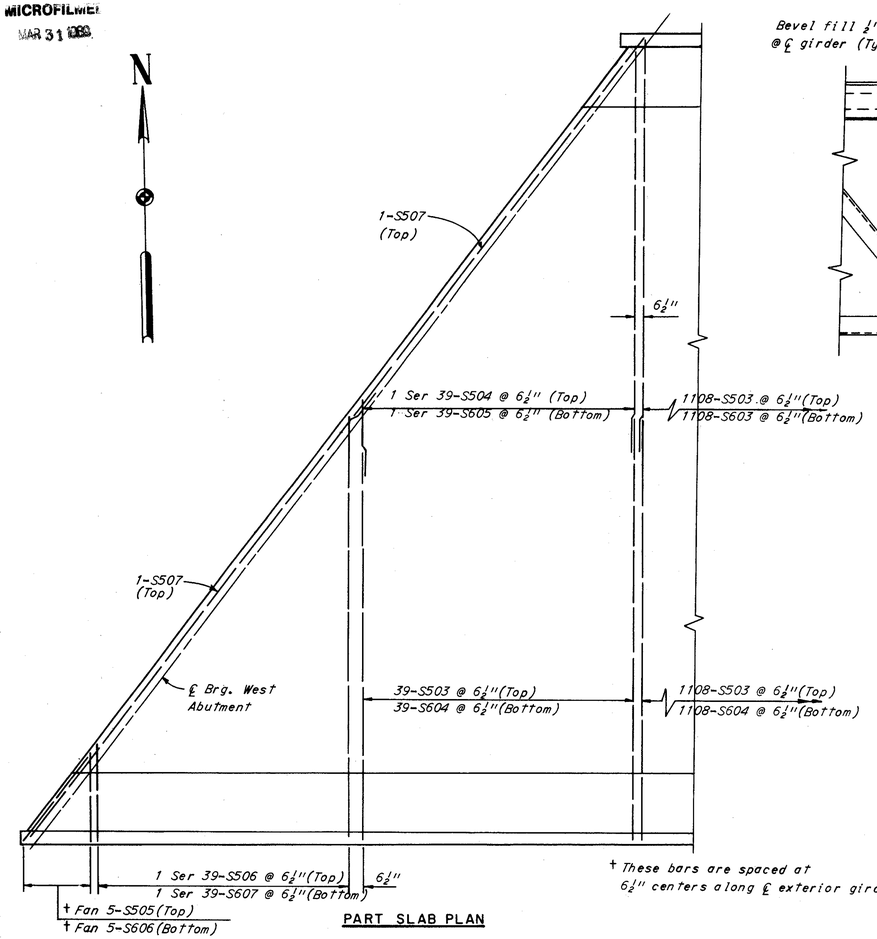
BR NO CUY-1-0149 STA 111+51.36
SCALE None STA 118+04.54
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
F.K.H.				
DATE 10-16-62	DATE	DATE 10-16-63	DATE 4-6-64	1040 SHEET 212

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

213
256

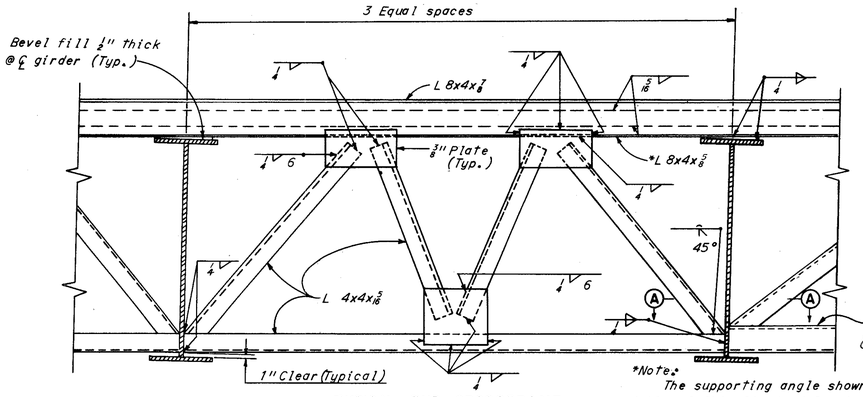
CUYAHOGA COUNTY
CUY-1-0.11



† These bars are spaced at 6½" centers along ℄ exterior girder.

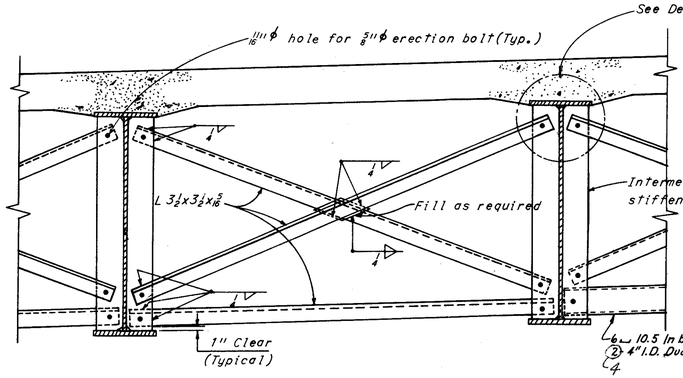
PART SLAB PLAN

West End of slab shown, East End similar.

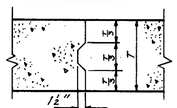


TYPICAL END CROSSFRAME

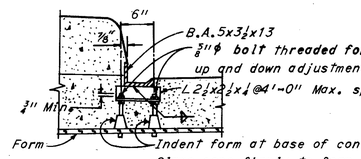
*Note:
The supporting angle shown in the "Roadway End Dam Data" table of Ohio Standard Drawing CSB-2-56, sheet 2 of 6 shall be increased from 6x4x⅝ to 8x4x⅝.



TYPICAL INTERMEDIATE CROSSFRAME

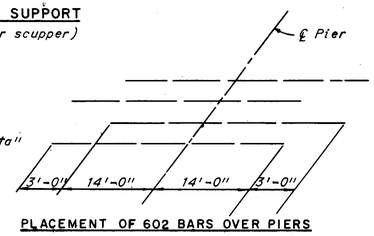


OPTIONAL TRANSVERSE SLAB CONSTRUCTION JOINT

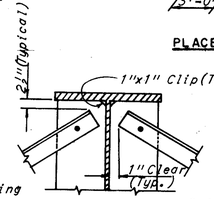


Indent form at base of cone and set cone perpendicular. Clamp cone firmly to form. Remove cone with removal of form and fill hole with grout.

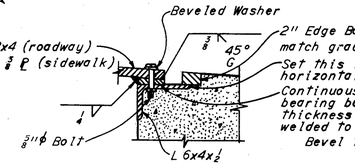
BULB ANGLE GUTTER SUPPORT
(Use same support for scupper)



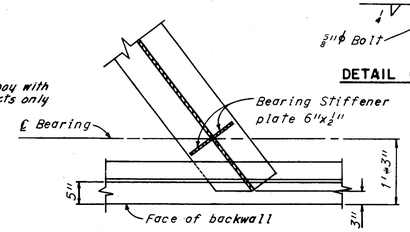
PLACEMENT OF 602 BARS OVER PIERS



DETAIL B



DETAIL OF BEVELED BEARING BAR
(Both Abutments)



SECTION A A

Notes:
The haunch in the deck slab adjacent to the top of the steel girders, which is shown as 9" wide, may vary from this dimension between the limits of 6" and 12". Maximum slope of the haunch shall be 1 vertical to 4 horizontal. Payment for the deck slab concrete shall be based on the 9" width.

For Reinforcement Schedule and Bending Diagram see sheet 215.

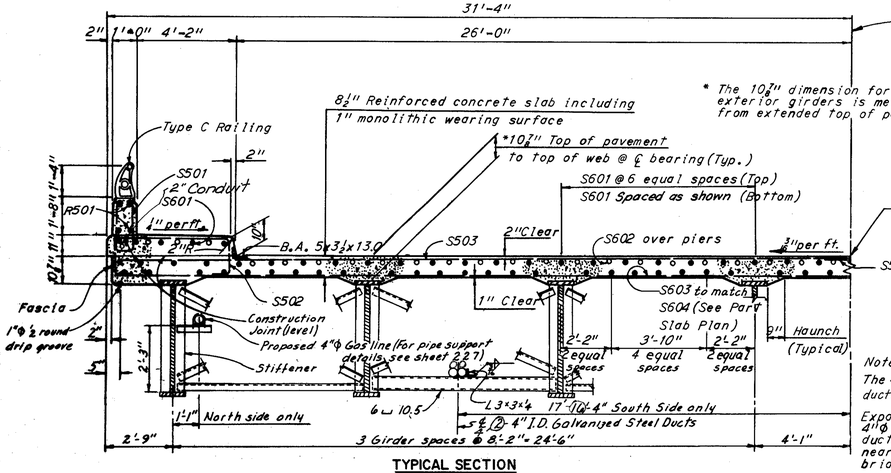
For longitudinal reinforcement in the parapets see sheet 214.

For railing post and parapet joint spacing see sheet 214.

For additional details of roadway end dam and details of 2" ϕ standard pipe drain see Ohio Standard Drawing CSB-2-56 sheet 2 of 6.

For sidewalk end dam details see sheet 214.

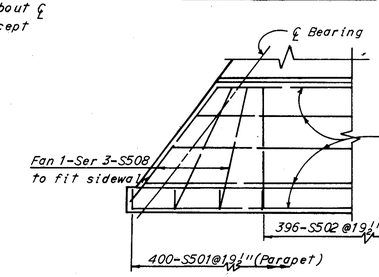
For details of lamp Standard Pedestals and Conduit see Sht. 229 A.



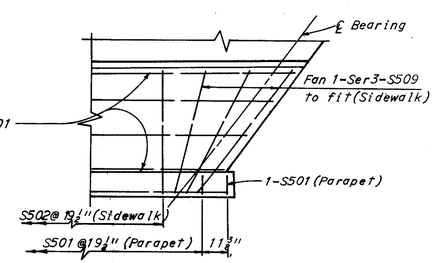
TYPICAL SECTION

Notes:
The 4" ϕ gas line and the 2-4" steel ducts to be provided by others.

Expansion couplings for 4" ϕ gas pipe and 4" ϕ ducts shall be provided near abutments within bridge limits as required.



SOUTHWEST CORNER
(Northeast corner similar)



SOUTHEAST CORNER
(Northwest corner similar)

SIDEWALK AND PARAPET REINFORCEMENT

H.N.T.B. BRIDGE NO. 45

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

DECK REINFORCEMENT AND TYPICAL CROSS SECTIONS

I-271 UNDER EMERY ROAD

BR NO CUY-1-0149 STA 111+51.36
SCALE None STA 118+04.54
CUYAHOGA CO. OHIO

DRAWN DEK DATE 10-7-63	TRACED DATE	CHECKED DATE 10-10-63	REVIEWED WF DATE 4-6-64	REVISED 8-19-64 1040 SHEET 213

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

214
256

CUYAHOGA COUNTY
CUY-1-0.11

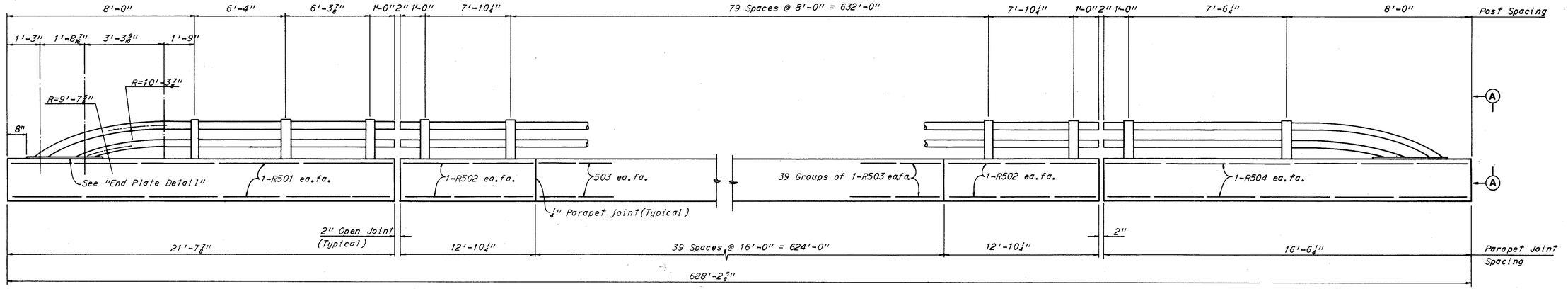
Notes:

Railing shall be fabricated in lengths not less than three panels each unless otherwise shown, and finished railing shall be free of burrs, sharp corners and rough surfaces.

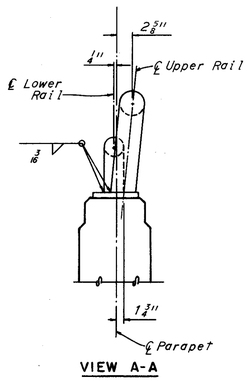
Railing posts shall be normal to grade.

Payment for railing shall be made at the contract unit price bid for "Item S-14, Railing, Type C". Pay length shall be the overall length of the parapets and shall include cost of shims, anchor bolts, nuts, set screws, etc. necessary to complete the installation of railing. Concrete, expansion joint material and longitudinal reinforcing steel in the parapets shall be included in "Item S-14, Railing, Type C" for payment. All other reinforcing steel in the parapet shall be included in "Item S-4" for payment.

For additional details and notes regarding railing, see Ohio Standard Drawing AR-1-57, revised 4-2-62.

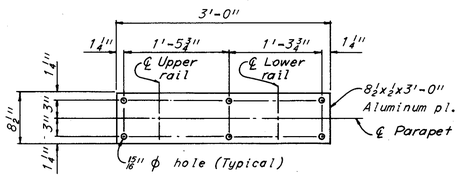


WEST ABUTMENT



VIEW A-A

Note:
End plate anchor bolts shall be set in place before parapet is poured.

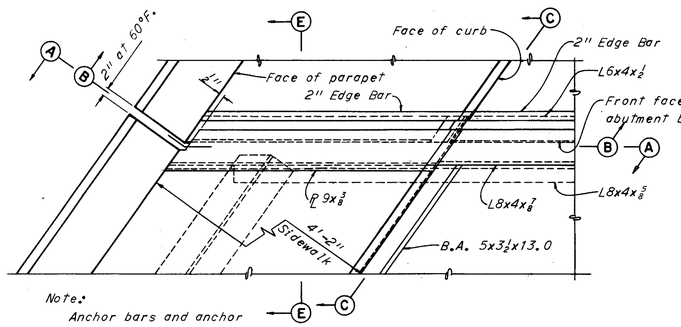


END PLATE DETAIL

LONGITUDINAL PARAPET REINFORCEMENT			
MARK	NUMBER	LENGTH	TYPE
R501	8	21'-3"	Str.
R502	16	12'-6"	Str.
R503	312	15'-6"	Str.
R504	8	16'-0"	Str.

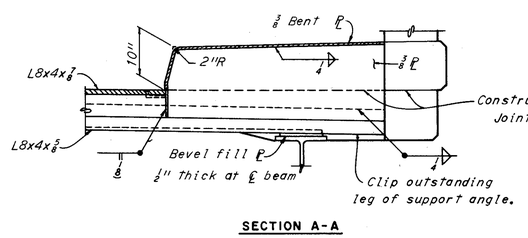
TYPE "C" RAILING

(South Railing shown North Railing similar by 180° rotation)



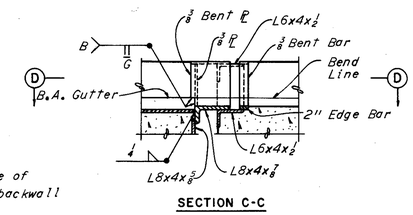
Note:
Anchor bars and anchor plates not shown. For placement and details see Section E-E.

PLAN

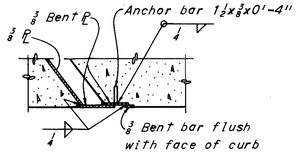


SECTION A-A

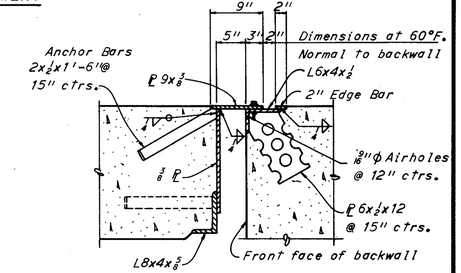
EAST ABUTMENT



SECTION C-C



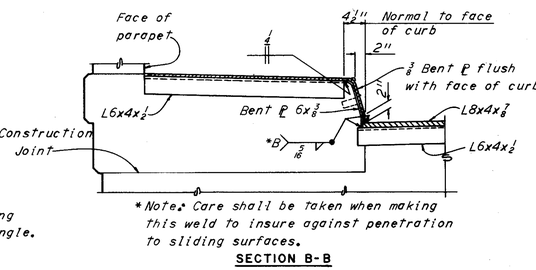
SECTION D-D



Note:
For details and notes not shown see Section C-C, Ohio Standard Drawing CSB-2-56, sheet 2 of 6.

SECTION E-E

Note:
The supporting angle in the End Dam Data Table, Ohio Standard Drawing CSB-2-56, sheet 2 of 6 shall be increased from 6x4x3/8 to 8x4x3/8.



**Note: Care shall be taken when making this weld to insure against penetration to sliding surfaces.*

SECTION B-B

SIDEWALK END DAM DETAILS

H.N.T.B. BRIDGE NO. 45

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

SUPERSTRUCTURE AND RAILING DETAILS

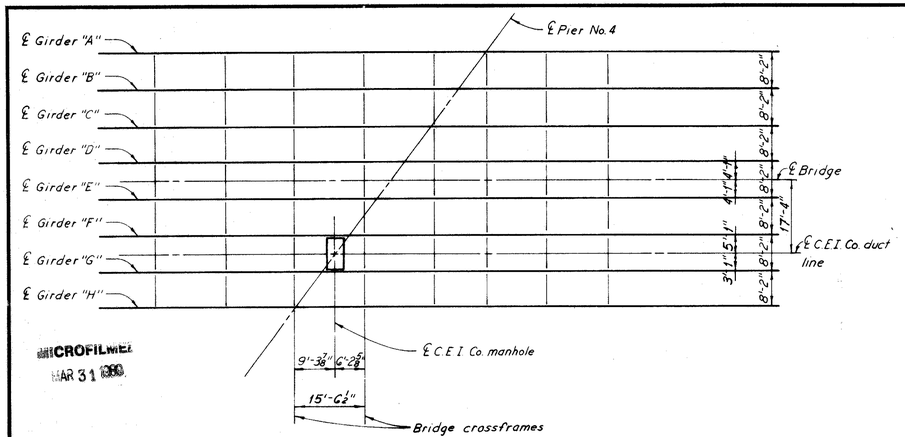
I-271 UNDER EMERY ROAD

BR NO CUY-1-0149 STA 111+51.36

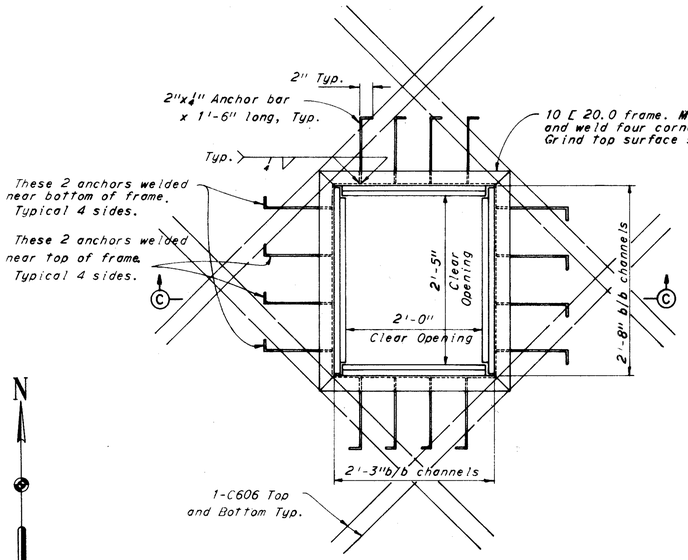
SCALE *None* STA 118+04.54

CUYAHOGA CO. OHIO

DRAWN C.H.B.	TRACED	CHECKED R.S.A.	REVIEWED W.L.	REVISED
DATE 10-30-63	DATE	DATE 10-30-63	DATE 4-6-64	1040 SHEET 214

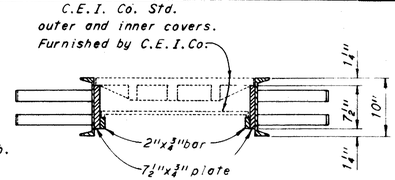


MANHOLE LOCATION PLAN



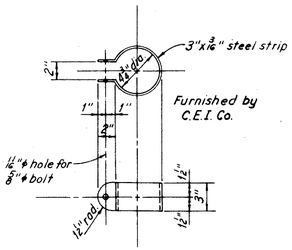
PLAN

MANHOLE FRAME DETAILS

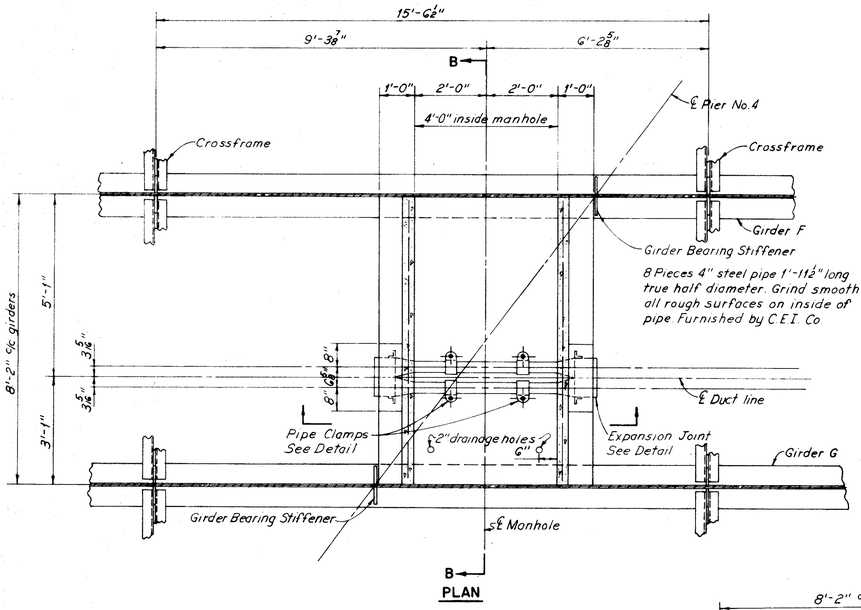


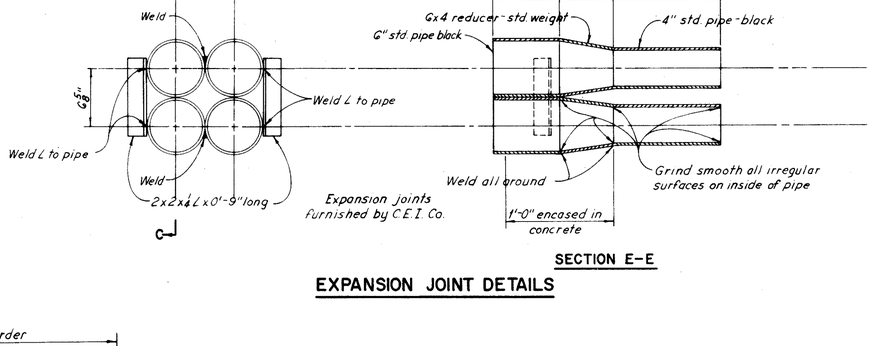
SECTION C-C

Slot weld bar and plate to channel assembly. Assembled frame shall be square and true.



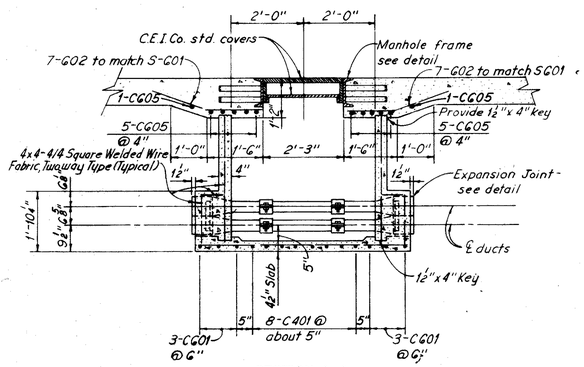
PIPE CLAMP DETAIL
8 REQ'D



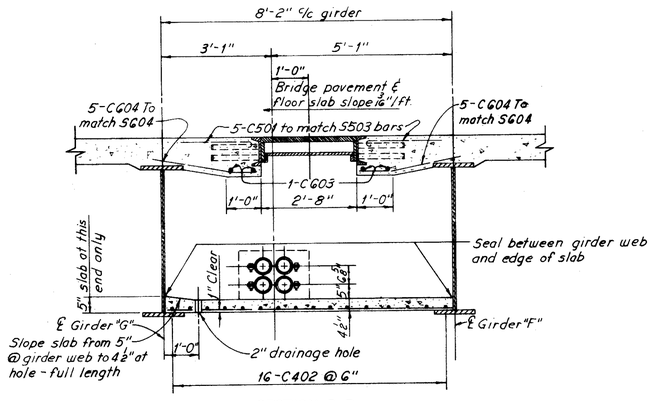


SECTION E-E

EXPANSION JOINT DETAILS



SECTION A-A



SECTION B-B

ESTIMATED QUANTITIES REQUIRED FOR INSTALLATION OF C.E.I. DUCTS			
ITEM	DESCRIPTION	UNIT	QUANTITY
S-1	Class "C" Concrete, Superstructure	Cu. Yd.	2
S-4	Reinforcing Steel	Pounds	720
S-7	Structural Steel	Pounds	1,660
S-8	Field painting of Structural Steel	Pounds	1,660

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

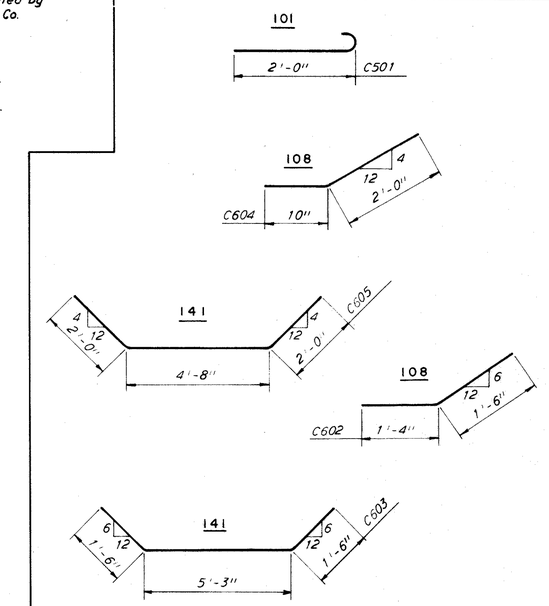
214A
256

CUYAHOGA COUNTY
CUY-1-0 11

REINFORCEMENT SCHEDULE
CABLE SPLICING MANHOLE

MARK	NO.	LENGTH	TYPE	SER INCR	WEIGHT (LBS)
C401	8	8'-0"	Str.		43
C402	16	5'-8"	Str.		61
C501	10	2'-7"	101		27
C601	6	8'-0"	Str.		72
C602	14	2'-10"	108		60
C603	4	8'-3"	141		49
C604	10	2'-10"	108		43
C605	12	8'-8"	141		56
C606	16	6'-6"	Str.		156
(62 0" of Welded Wire Fabric @ 85# per 100#)					53
		TOTAL WEIGHT =			720 lbs

BENDING DIAGRAMS — CABLE SPLICING MANHOLE



This sheet added 8-19-64

H.N.T.B. BRIDGE NO. 45

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

CABLE MANHOLE DETAILS AND QUANTITIES FOR C.E.I. DUCTS

I-271 UNDER EMERY ROAD

BR NO CUY-1-0149 STA 111+51.36

SCALE STA 118+04.54

CUYAHOGA CO. OHIO

DRAWN DLR	TRACED	CHECKED WF	REVIEWED R.E.R.	REVISED
DATE 6-30-64	DATE	DATE 7-6-64	DATE 7-8-64	1040 SHEET 214-A

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
WEST ABUTMENT					
AB401	56	4'-5"	105		165
AB501	55	10'-2"	105		583
AB502	14	37'-0"	Str.		540
AB503	2	39'-6"	Str.		82
AB504	7	37'-3"	Str.		272
AB505	1-Ser 5	37'-3" to 39'-6"	Str.	6¾"	200
AB506	4	38'-6"	Str.		161
AB507	4	38'-0"	Str.		159
AB508	1	5'-9"	Str.		6
AB509	2	8'-4"	105		17
AB510	2	7'-5"	105		15
AB511	25	12'-8"	109		330
AB512	28	5'-7"	110		163
AB601	49	17'-9"	109		1306
AB602	1	27'-7"	109		41
AB603	1-Ser 6	12'-11" to 28'-9"	109	3'-2"	188
AB604	1	18'-7"	109		28
AB605	1	19'-11"	109		30
AB606	1	17'-11"	109		27
AB607	1	15'-11"	109		24
AB608	1	14'-3"	109		21
AB609	1	12'-9"	109		19
AB610	8	12'-3"	109		147
AB611	3	9'-0"	Str.		41
AB612	7	9'-6"	Str.		100
AB613	146	5'-11"	104		1293
AB614	67	20'-0"	112		2013
AB615	25	9'-9"	Str.		366
AB616	5	8'-0"	Str.		60
AB617	2-Ser 4	3'-0" to 4'-0"	Str.	4"	42
AB618	16	2'-9"	Str.		66
AB619	6	16'-0"	Str.		144
AB620	6	10'-3"	Str.		92
AB621	4	4'-6"	Str.		27
AB622	2	24'-0"	Str.		72
AB623	2	18'-6"	Str.		56
AB624	4	7'-3"	Str.		44
AB625	2	21'-6"	Str.		65
AB626	2-Ser 4	21'-6" to 24'-6"	Str.	1'-0"	276
AB627	13	10'-6"	Str.		205
AB628	6	8'-9"	Str.		79
AB629	2-Ser 4	3'-0" to 4'-6"	Str.	6"	45
AB630	5	13'-9"	124		103
AB631	5	9'-8"	124		73
AB632	1	13'-6"	Str.		20
AB633	1	4'-0"	Str.		6
AB634	2	19'-6"	Str.		59
AB635	2	9'-9"	Str.		29
AB636	4	5'-0"	Str.		30
AB637	3	9'-0"	Str.		41
AB638	2	16'-6"	Str.		50
AB639	2-Ser 4	13'-6" to 16'-6"	Str.	1'-0"	180
AB801	16	40'-0"	Str.		1709
AB802	2	35'-5"	149		189
AB803	4	12'-6"	Str.		134
AB804	2	11'-2"	124		60
AB805	2	17'-8"	124		94
AB806	2	13'-6"	Str.		72
		TOTAL WEIGHT =			12,459
EAST ABUTMENT					
AC401	56	4'-5"	105		165
AC501	55	10'-2"	105		583
AC502	14	37'-0"	Str.		540
AC503	2	39'-6"	Str.		82
AC504	7	37'-3"	Str.		272
AC505	1-Ser 5	37'-3" to 39'-6"	Str.	6¾"	200
AC506	4	38'-6"	Str.		161
AC507	4	38'-0"	Str.		159
AC508	1	5'-9"	Str.		6
AC509	2	8'-4"	105		17
AC510	2	7'-5"	105		15
AC511	25	12'-8"	109		330
AC512	28	5'-7"	110		163
AC601	49	17'-9"	109		1306
AC602	1	27'-7"	109		41
AC603	1-Ser 6	12'-11" to 28'-9"	109	3'-2"	188
AC604	1	18'-7"	109		28
AC605	1	19'-11"	109		30
AC606	1	17'-11"	109		27
AC607	1	15'-11"	109		24
AC608	1	14'-3"	109		21
AC609	1	12'-9"	109		19
AC610	8	12'-3"	109		147
AC611	3	9'-0"	Str.		41
AC612	7	9'-6"	Str.		100
AC613	146	5'-11"	104		1293
AC614	67	20'-0"	112		2013
AC615	25	10'-9"	Str.		404
AC616	5	8'-9"	Str.		66
AC617	2-Ser 4	3'-0" to 4'-0"	Str.	4"	42
AC618	16	2'-9"	Str.		66
AC619	7	16'-0"	Str.		168
AC620	7	10'-3"	Str.		108
AC621	4	4'-6"	Str.		27
AC622	2	24'-0"	Str.		72
AC623	2	18'-6"	Str.		56
AC624	4	7'-3"	Str.		44
AC625	2	21'-6"	Str.		65
AC626	2-Ser 4	21'-6" to 24'-6"	Str.	1'-0"	276
AC627	13	10'-0"	Str.		195
AC628	6	7'-9"	Str.		70
AC629	2-Ser 4	3'-0" to 4'-6"	Str.	6"	45
AC630	5	13'-9"	124		103
AC631	5	9'-8"	124		73
AC632	1	13'-6"	Str.		20
AC633	1	4'-0"	Str.		6
AC634	2	19'-6"	Str.		59
AC635	2	9'-9"	Str.		29
AC636	4	5'-0"	Str.		30
AC637	3	9'-0"	Str.		41
AC638	2	16'-6"	Str.		50
AC639	2-Ser 4	13'-6" to 16'-6"	Str.	1'-0"	180
AC801	16	40'-0"	Str.		1709
AC802	2	35'-5"	149		189
AC803	4	12'-6"	Str.		134
AC804	2	11'-2"	124		60
AC805	2	17'-8"	124		94
AC806	2	13'-6"	Str.		72
		TOTAL WEIGHT =			12,524
PIER-1					
PA401	3	15'-3"	150		852
PA402	3	14'-9"	150		815
PA501	48	12'-2"	109		609
PA502	50	4'-7"	105		239
PA503	2	4'-5"	105		9
PA504	2	3'-9"	105		8
PA601	4	35'-9"	Str.		215
PA602	8	7'-11"	144		95
PA603	6	6'-2"	105		56
PA801	48	10'-10"	100		1388
PA1001	48	11'-6"	100		2375
PA1002	48	7'-1"	104		1463
PA1003	24	18'-6"	Str.		1911
PA1004	24	18'-0"	Str.		1859
PA1005	8	35'-9"	Str.		1231
PA1006	8	36'-9"	Str.		1265
PA1007	4	8'-6"	Str.		146
PA1008	4	10'-6"	Str.		181
PA1009	4	12'-0"	Str.		207
PA1010	4	11'-0"	Str.		189
PA1011	6	10'-10"	123		280
		TOTAL WEIGHT =			15,393
PIER-2					
PB401	3	17'-3"	150		951
PB402	3	17'-6"	150		970
PB501	48	12'-2"	109		609
PB502	50	4'-7"	105		239
PB503	2	4'-5"	105		9
PB504	2	3'-9"	105		8
PB601	4	35'-9"	Str.		215
PB602	8	7'-11"	144		95
PB603	6	6'-2"	105		56
PB801	48	10'-10"	100		1388
PB1001	48	11'-6"	100		2375
PB1002	48	7'-1"	104		1463
PB1003	24	20'-9"	Str.		2143
PB1004	24	20'-9"	Str.		2143
PB1005	8	35'-9"	Str.		1231
PB1006	8	36'-9"	Str.		1265
PB1007	4	8'-6"	Str.		146
PB1008	4	10'-6"	Str.		181
PB1009	4	12'-0"	Str.		207
PB1010	4	11'-0"	Str.		189
PB1011	6	10'-10"	123		280
		TOTAL WEIGHT =			16,163
PIER-3					
PC401	3	17'-1"	150		950
PC402	3	17'-4"	150		952
PC501	48	12'-2"	109		609
PC502	50	4'-7"	105		239
PC503	2	4'-5"	105		9
PC504	2	3'-9"	105		8
PC601	4	35'-9"	Str.		215
PC602	8	7'-11"	144		95
PC603	6	6'-2"	105		56
PC801	48	10'-10"	100		1388
PC1001	48	11'-6"	100		2375
PC1002	48	7'-1"	104		1463
PC1003	24	20'-6"	Str.		2117
PC1004	24	20'-6"	Str.		2117
PC1005	8	35'-9"	Str.		1231
PC1006	8	36'-9"	Str.		1265
PC1007	4	8'-6"	Str.		146
PC1008	4	10'-6"	Str.		181
PC1009	4	12'-0"	Str.		207
PC1010	4	11'-0"	Str.		189
PC1011	6	10'-10"	123		280
		TOTAL WEIGHT =			16,092
PIER-4					
PD401	3	17'-3"	150		1223
PD402	2	16'-11"	150		801
PD403	1	17'-6"	150		415
PD501	40	13'-2"	109		549
PD502	50	5'-1"	105		265
PD503	2	4'-11"	105		10
PD504	2	4'-4"	105		9
PD601	4	35'-9"	Str.		215
PD602	8	8'-9"	144		105
PD603	6	6'-8"	105		60
PD801	72	10'-10"	100		2083
PD1001	8	35'-9"	Str.		1231
PD1002	8	37'-0"	Str.		1274
PD1003	2	8'-6"	Str.		73
PD1004	4	10'-6"	Str.		181
PD1005	4	12'-0"	Str.		207
PD1006	6	11'-0"	Str.		284
PD1007	6	10'-10"	123		280
PD1101	48	15'-10"	100		4038
PD1102	80	7'-6"	104		3188
PD1103	54	20'-6"	Str.		5881
PD1104	14	21'-0"	Str.		1562
PD1105	12	20'-9"	Str.		1323
		TOTAL WEIGHT =			25,257
PIER-5					
PE401	3	18'-5"	150		1010
PE402	3	18'-8"	150		1029
PE501	48	12'-2"	109		609
PE502	50	4'-7"	105		239
PE503	2	4'-5"	105		9
PE504	2	3'-9"	105		8
PE601	4	35'-9"	Str.		215
PE602	8	7'-11"	144		95
PE603	6	6'-2"	105		56
PE801	48	10'-10"	100		1388
PE1001	48	11'-6"	100		2375
PE1002	48	7'-1"	104		1463
PE1003	24	21'-9"	Str.		2246
PE1004	24	21'-9"	Str.		2246
PE1005	8	35'-9"	Str.		1231
PE1006	8	36'-9"	Str.		1265
PE1007	4	8'-6"	Str.		146
PE1008	4	10'-6"	Str.		181
PE1009	4	12'-0"	Str.		207
PE1010	4	11'-0"	Str.		189
PE1011	6	10'-10"	123		280
		TOTAL WEIGHT =			16,659
PIER-6					
PF401	3	18'-11"	150		1031
PF402	3	19'-2"	150		1050
PF501	48	12'-2"	109		609
PF502	50	4'-7"	105		239
PF503	2	4'-5"	105		9
PF504	2	3'-9"	105		8
PF601	4	35'-9"	Str.		215
PF602	8	7'-11"	144		95
PF603	6	6'-2"	105		56
PF801	48	10'-10"	100		1388
PF1001	48	11'-6"	100		2375
PF1002	48	7'-1"	104		1463
PF1003	24	22'-3"	Str.		2298
PF1004	24	22'-6"	Str.		2324
PF1005	8	35'-9"	Str.		1231
PF1006	8	36'-9"	Str.		1265
PF1007	4	8'-6"	Str.		146
PF1008	4	10'-6"	Str.		181
PF1009	4	12'-0"	Str.		207
PF1010	4	11'-0"	Str.		189
PF1011	6	10'-10"	123		280
		TOTAL WEIGHT =			16,487
PIER-7					
PG401	3	21'-6"	150		1168
PG402	3	22'-0"	150		1205
PG501	48	12'-2"	109		609
PG502	50	4'-7"	105		239
PG503	2	4'-5"	105		9
PG504	2	3'-9"	105		8
PG601	4	35'-9"	Str.		215
PG602	8	7'-11"	144		95
PG603	6	6'-2"	105		56
PG801	48	10'-10"	100		1388
PG1001	48	11'-6"	100		2375
PG1002	48	7'-1"	104		1463
PG1003	24	25'-0"	Str.		2582
PG1004	24	25'-3"	Str.		2608
PG1005	8	35'-9"	Str.		1231
PG1006	8	36'-9"	Str.		1265
PG1007	4	8'-6"	Str.		146
PG1008	4	10'-6"	Str.		181
PG1009	4	12'-0"	Str.		207
PG1010	4	11'-0"	Str.		189
PG1011	6	10'-10"	123		280
		TOTAL WEIGHT =			17,519

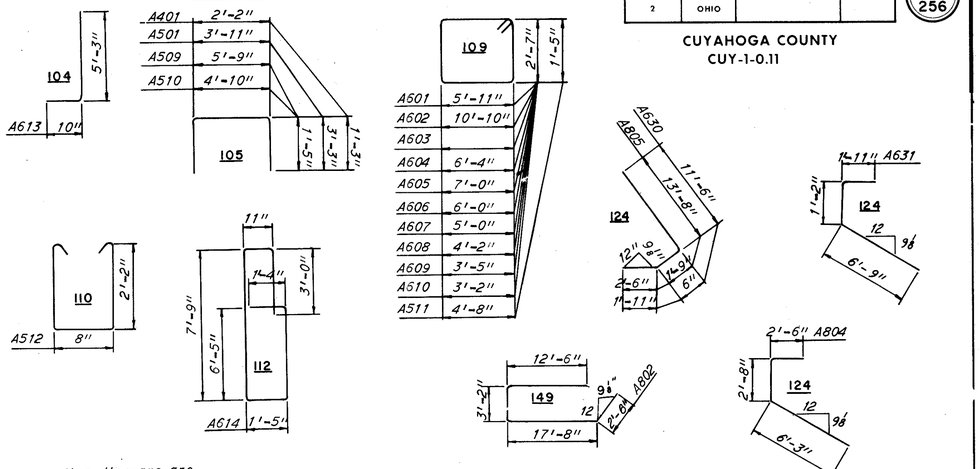
*Note:
R=1'-6¼" Pier 4 only
R=1'-3¼" all other piers

SUPERSTRUCTURE

S501	802	6'-1"	110		5089
S502	792	7'-11"	104		6540
S503	2294	32'-5"	101		77,562
S504	2 Ser 39	3'-9" to 30'-9"	Str.	8½"	1403
S505	10	6'-0"	101		63
S506	2 Ser 39	7'-4" to 34'-4"	101	8½"	1695
S507	4	39'-11"	101		167
S508	2 Ser 3	8'-1" to 8'-10"	111	4½"	53
S509	2 Ser 3	8'-1" to 9'-1"	111	6"	54
S601	1870	39'-9"	Str.		111,647
S602	308	31'-0"	Str.		14,341
S603	1108	36'-3"	Str.		60,328
S604	1186	28'-0"	Str.		49,878
S605	2 Ser 39	8'-3" to 35'-3"	Str.	8½"	2548
S606	10	5'-6"	Str.		83
S607	2 Ser 39	6'-9" to 33'-9"	Str.	8½"	2372
		TOTAL WEIGHT =			333,823

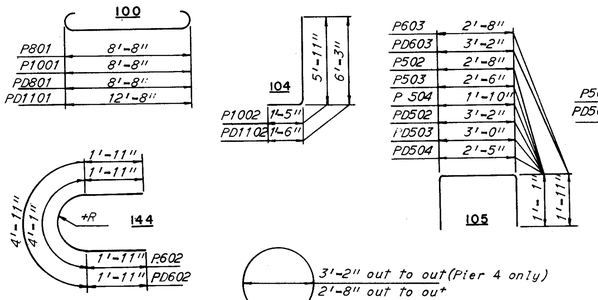
Reinforcement for lamp Standard Pedestals on bridge is detailed on sheet 229 A.

ABUTMENT BAR BENDING DIAGRAMS



Bending diagrams are typical for both Abutments.

PIER BAR BENDING DIAGRAMS



3'-2" out to out (Pier 4 only)
2'-8" out to out

Note: Bending diagrams having the prefix "P" only are typical for all Piers except Pier 4. Pier 4 has the prefix "PD".

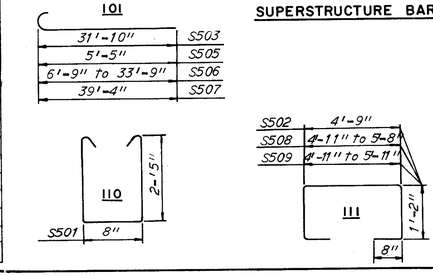
*No of turns at 4½" pitch including 1½ turns at each end

*No of turns @ 4" pitch including 1½ turns at each end

The "Length" shown in the reinforcement schedule for the spiral bars is the distance from the top of footing to the bottom of the pier cap.
Four steel channels, tee or angle spacers, weighing approximately 0.68 lbs. per ft. of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The number of pounds of these spacers based on 0.68 lbs. per ft. will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.
Spiral reinforcing bars shall not have deformations but shall in other respects conform to Item S-4.

Note: For replacement bar schedule see sheet 193

SUPERSTRUCTURE BAR BENDING DIAGRAMS



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

215
256

CUYAHOGA COUNTY
CUY-1-0.11

H.N.T.B. BRIDGE NO. 45

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

REINFORCEMENT SCHEDULE

I-271 UNDER EMERY ROAD

BR NO CUY-1-0149 STA 111+51.36
SCALE None STA 118+04.54
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
S.R.K.		R.S.A.	W.F.	
DATE 10-29-69	DATE	DATE 10-29-69	DATE 4-6-70	1040 SHEET 215

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

216
256

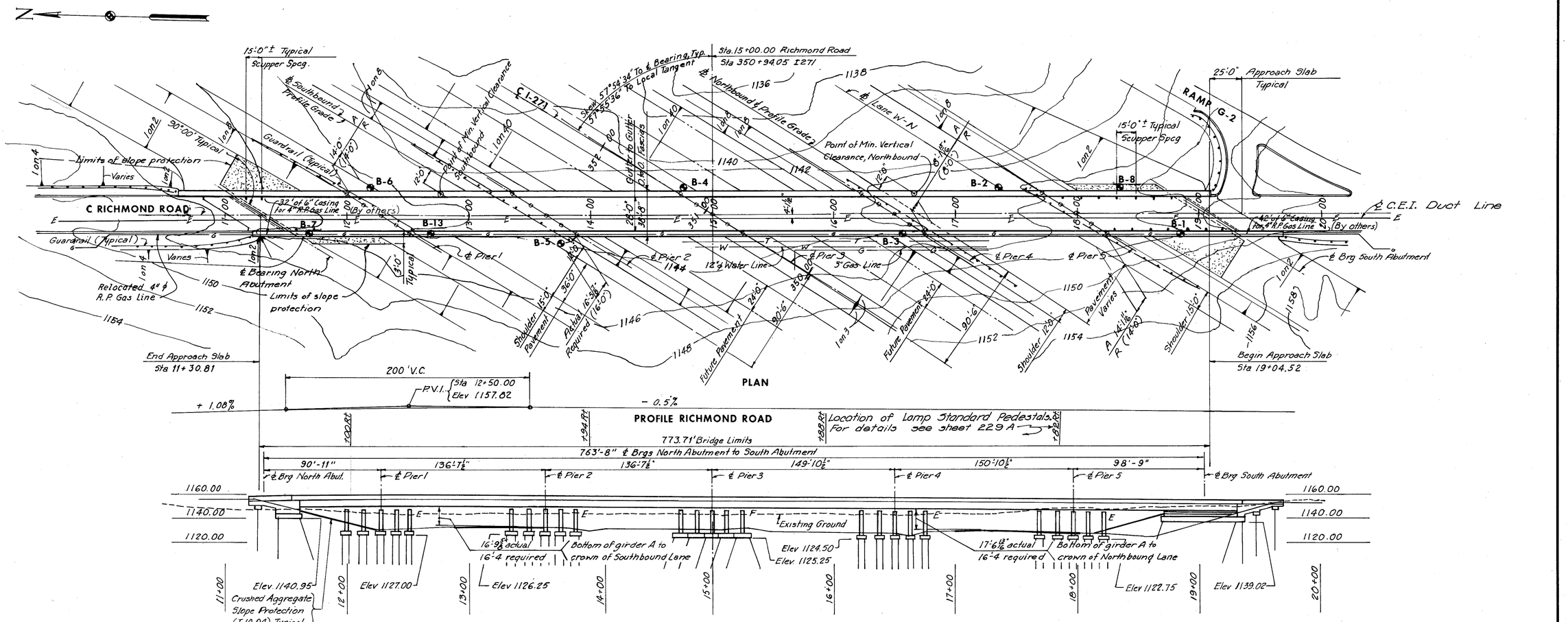
CUYAHOGA COUNTY
CUY-1-0.11

P.I. Sta. 346+50 Elev 1128.30 — +0.80% — P.I. Sta 365+38 Elev. 1143.40

PROFILE I-271

CURVE DATA (I-271)

P.C.	Sta. 334+44.43
P.I.	Sta. 379+23.25
P.T.	Sta. 420+33.72
Δ	40°-05'-00"
D	0°-28'-00"
R	12,277.67'
L	8,589.29'
T	4,478.82'
E	791.42'



PLAN

ELEVATION

Note: All piles shall be 10 BP42, Approx length
Abutments 35'-0"
Piers 25'-0"

TRAFFIC DATA:
Richmond Road: 1975-2,594 ADT(Total both ways)

BORING LOCATIONS

Boring	Sta.	Left	Right	Type
B1	18+85		16.5'	Core Boring
B2	17+35	21.0'		Rod Sounding
B3	16+56		16.5'	" "
B4	14+77	21.0'		" "
B5	13+88		16.5'	Core Boring
B6	12+19	21.0'		Rod Sounding
B7	11+69		16.5'	" "
B8	18+35	21.0'		" "
B13	12+69		16.5'	" "

PROPOSED STRUCTURE

Type: Continuous Welded girder with reinforced concrete deck and sub-structure
Spans: 90.917'-136.625'-136.25'-149.875' 150.875'-98.750'
Roadway: 28'-0" curb To curb with two 4'-2" walks
Load Frequency: CF400(57)
Skew: 57°-54'-33.6"
Wearing Surface: 1" Monolithic Concrete
Approach Slabs: AS-1-54(25' Long)
Alignment: Tangent

LEGEND

1040	Existing Ground Elevation
T	Existing Combination Telephone & Power Lines
W	Existing Water Line (12" Dia.)
G	Gas Line
14'-1⅛" A (14'-0") R	Actual Horizontal Clearance / Minimum Required Horizontal Clearance
	Boring Location
E	Power Lines

H.N.T.B. BRIDGE NO. 46

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

SITE PLAN

I-271 UNDER RICHMOND ROAD (S.R. 175)

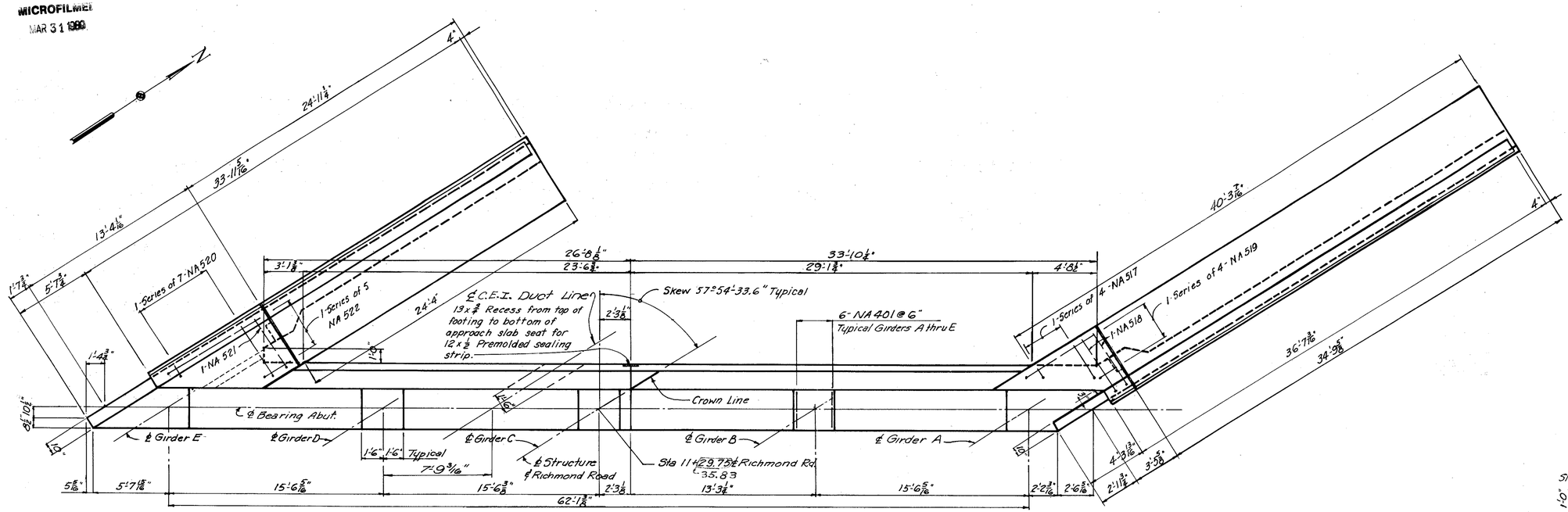
BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN CGP	TRACED	CHECKED RLM	REVIEWED JS	REVISED 6-17-64
DATE 3-18-63	DATE	DATE 3-26-63	DATE 4-16-64	1040 SHEET 216

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

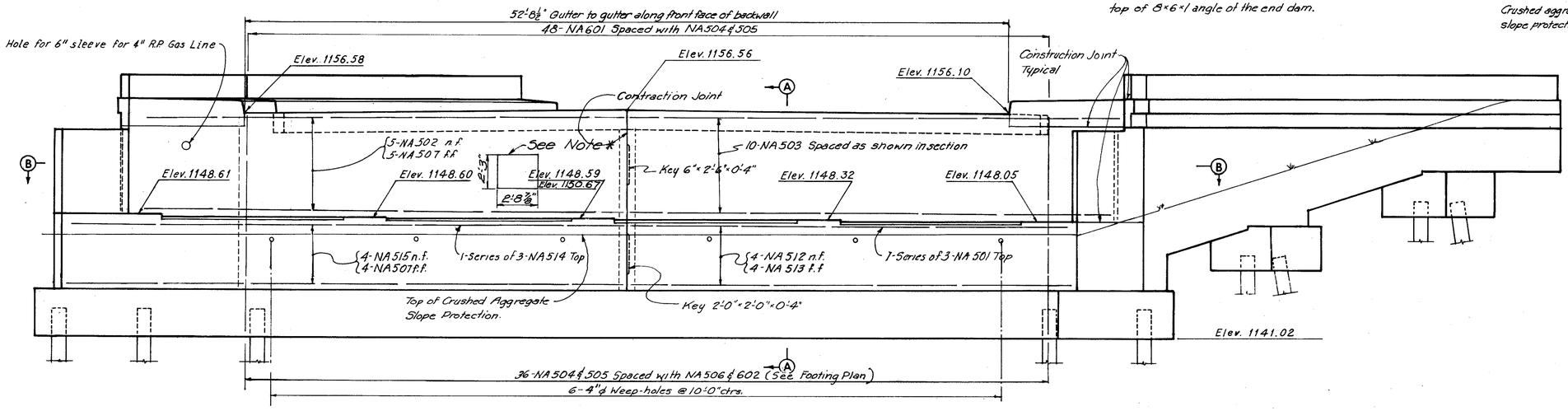
217
256

CUYAHOGA COUNTY
CUY-1-0.11



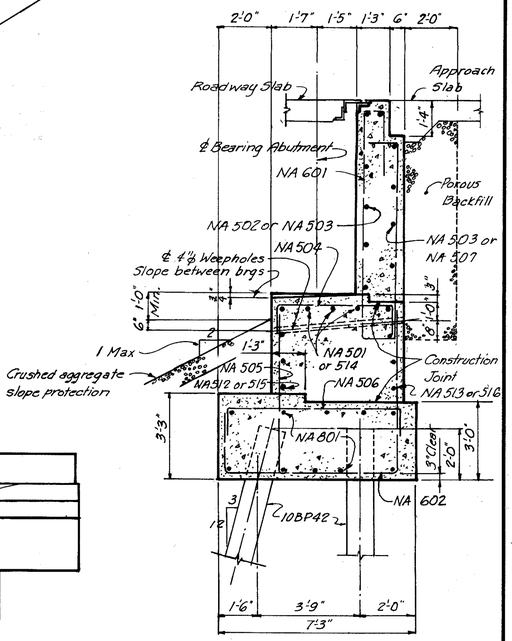
PLAN

Note: Backwall Elevations are given along near face of backwall and to the top of 8"x6"x1/2 angle of the end dam.



ELEVATION

* Note:
Field cut reinforcement as required and place cut-offs diagonally at corners of opening



SECTION A-A

Note:
For reinforcing schedule see Sheet 229.

Designation for reinforcing:
n.f. near face
f.f. far face
e.f. each face
For pile spacing and footing details see Sheet 219.
For wingwall details see sheet 218.
For Section BB see sheet 218.
For roadway and dam details see sheet 226.
Provide a joint, in that portion of the end dam attached to the backwall, at the contraction joint.

H.N.T.B. BRIDGE NO. 46

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

NORTH ABUTMENT
PLAN ELEVATION

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CGP		R.C.M.	J.S.	6-17-64
DATE 2-7-63	DATE	DATE 3-13-63	DATE 4-16-64	1040 SHEET 217

Revised 8-31-64

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

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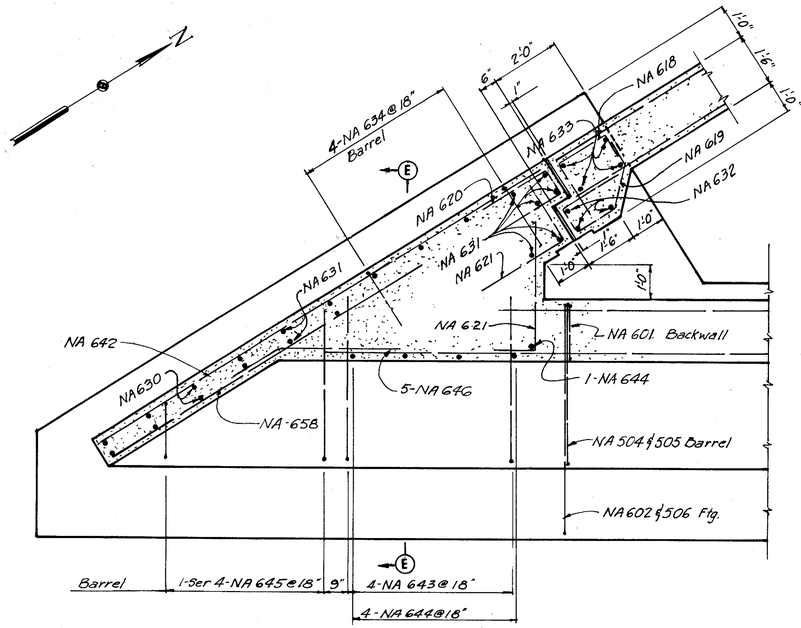
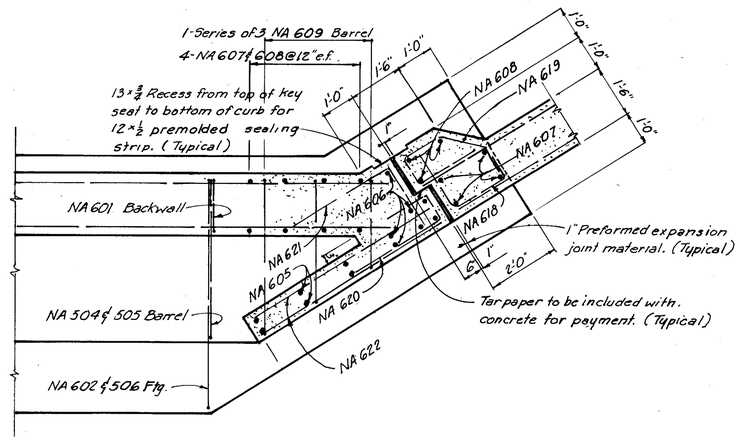
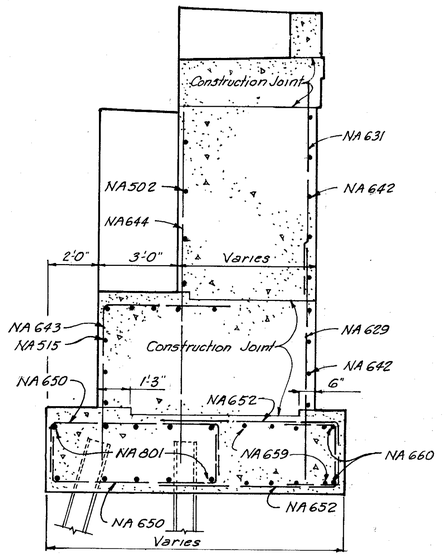
256

CUYAHOGA COUNTY
CUY-1-0.11

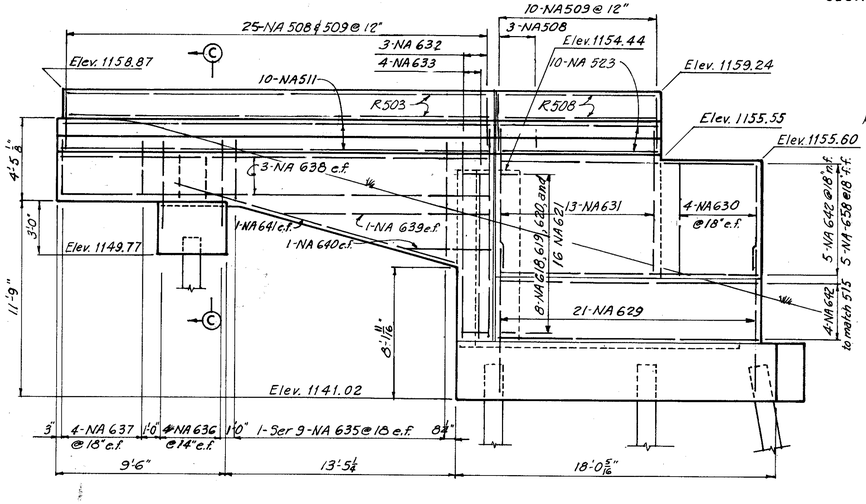


SECTION B-B

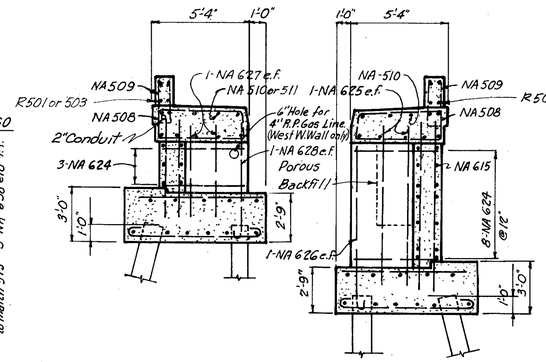




SECTION E-E

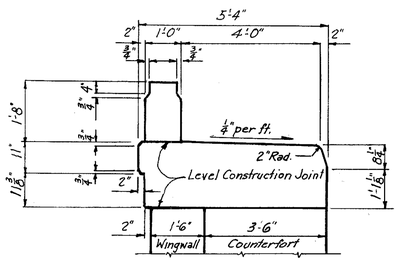


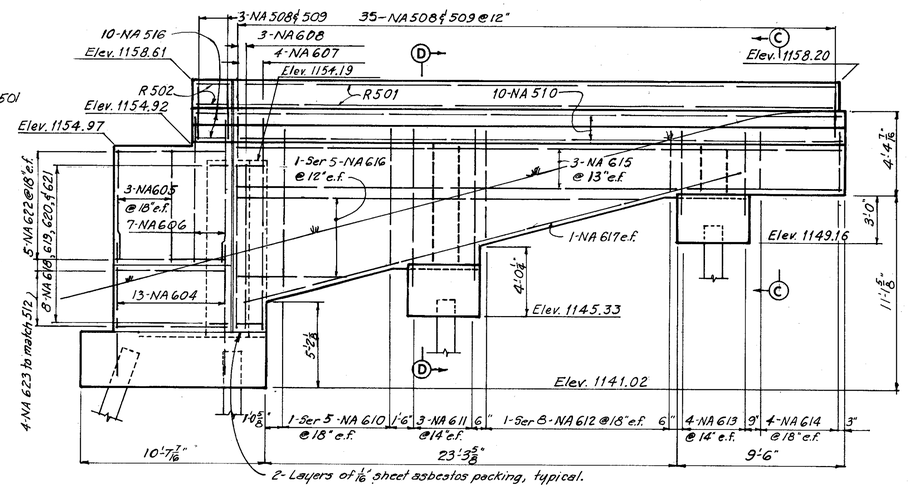
WINGWALL ELEVATION
North West Wingwall



SECTION C-C

SECTION D-D





WINGWALL ELEVATION
North East Wingwall

TYPICAL WINGWALL CURB AND PARAPET DIMENSIONS

Note:
For reinforcing schedule see Sheet 229.
Designation for reinforcing:
n.f. near face
f.f. far face
e.f. each face
For Conduit details see sht. 229 A.

H.N.T.B. BRIDGE NO. 46

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

NORTH ABUTMENT
WINGWALLS

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CGP		RLM	JS	
DATE 2-13-63	DATE	DATE 3-15-63	DATE 4-16-64	1040 SHEET 218

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

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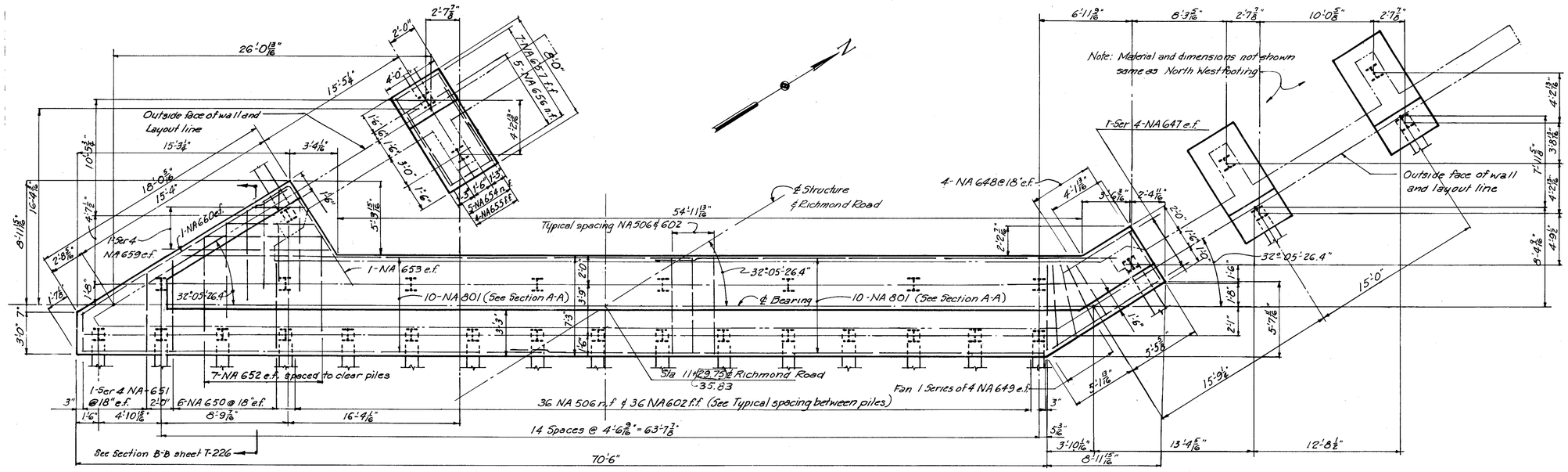
256

CUYAHOGA COUNTY
CUY-1-0.11



FOOTING PLAN

Note:
For reinforcing schedule see Sheet 229.
Designation for reinforcing:
n.f. near face
f.f. far face
e.f. each face
All piles shall be 10BP42 battered 3" in 12 where shown. All pile spacings are given along bottom of footing.
For Section A-A see sheet 217.

H.N.T.B. BRIDGE NO. 46

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

NORTH ABUTMENT FOOTING PLAN

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CGP		R & M	JS	8-31-64
DATE 2-21-63	DATE	DATE 3-18-63	DATE 4-16-64	1040 SHEET 219

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

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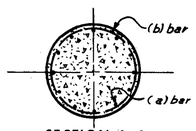
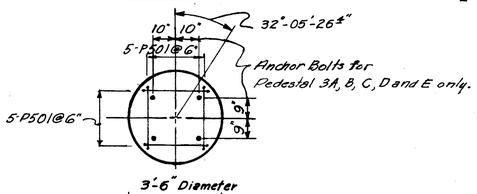
256

CUYAHOGA COUNTY
CUY-1-0.11

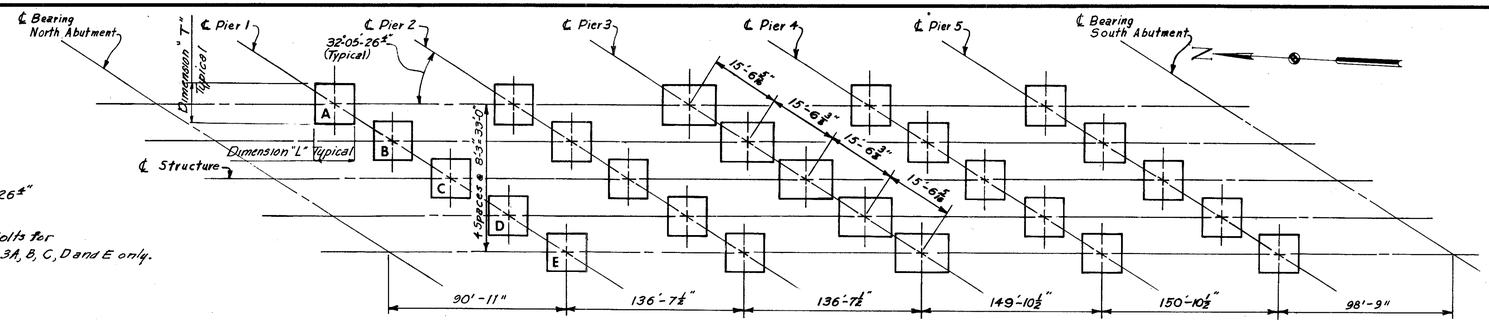


SECTION A-A



Note:
Longitudinal bars in bottom for Piers 3 and 4.
Transverse bars in bottom for Piers 1, 2, and 5.

TYPICAL PEDESTAL ELEVATION



Each pier consists of five pedestals with designations A thru E as shown.

PIER LAYOUT DIAGRAM

Notes for spiral reinforcing bars:
The "Length" shown in the steel list for the spiral bars is the distance from the top of the footing to within 3" below the top of the pedestal.
The "No. of Turns" shown is the "Length" divided by the pitch, plus 3 turns (total number of closed coils), expressed as the nearest whole number.
Spiral reinforcing bars shall not have deformations but shall in other respects conform to Item S-4. 1½ closed coils shall be provided at the ends of each spiral unit.
Four steel channel, tee or angle spacers, weighing approximately 0.68 lbs. per lin. ft. of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The number of pounds of these spacers, based on 0.68 lbs. per lin. ft. will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

TABULATION OF PEDESTAL DATA

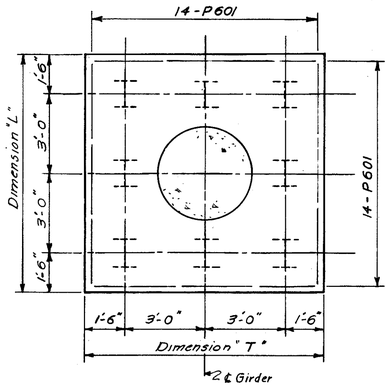
PEDESTAL		1A	1B	1C	1D	1E	2A	2B	2C	2D	2E	3A	3B	3C	3D	3E	4A	4B	4C	4D	4E	5A	5B	5C	5D	5E
ELEVATION	X	1148.11	1148.32	1148.52	1148.44	1148.36	1148.29	1148.35	1148.42	1148.23	1148.03	1147.59	1147.65	1147.72	1147.53	1147.33	1146.74	1146.80	1146.87	1146.68	1146.48	1146.10	1146.16	1146.23	1146.04	1145.84
	Y	1127.00	1127.00	1127.00	1127.00	1127.00	1126.25	1126.25	1126.25	1126.25	1126.25	1125.25	1125.25	1125.25	1125.25	1125.25	1124.50	1124.50	1124.50	1124.50	1124.50	1122.75	1122.75	1122.75	1122.75	1122.75
DIMENSION	H	18'-1⅛"	18'-3⅛"	18'-6⅛"	18'-5⅛"	18'-4⅛"	19'-0⅛"	19'-1⅛"	19'-2"	18'-11⅜"	18'-9⅜"	19'-4⅛"	19'-4⅜"	19'-5⅛"	19'-3⅜"	19'-1"	19'-2⅜"	19'-3⅜"	19'-4½"	19'-2⅛"	18'-11⅛"	20'-4⅛"	20'-4⅛"	20'-5⅛"	20'-3⅛"	20'-1⅛"
	L	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"
	T	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"	9'-0"
REINF. STEEL MARK	(a)	P1003	P1005	P1007	P1009	P1005	P1004	P1006	P1008	P1004	P1010	P1011	P1013	P1012	P1011	P1004	P1008	P1011	P1013	P1006	P1004	P1014	P1014	P1014	P1014	P1015
	(b)	SP401	SP403	SP405	SP407	SP409	SP402	SP404	SP406	SP408	SP410	SP411	SP413	SP415	SP417	SP419	SP412	SP414	SP416	SP418	SP408	SP420	SP421	SP422	SP423	SP424

SPIRAL REINFORCEMENT SCHEDULE

MARK	PEDESTAL	NUMBER	LENGTH	NO. OF TURNS
SP401	1A	1	17'-10"	51
SP402	2A	1	18'-9½"	54
SP403	1B	1	18'-1"	52
SP404	2B	1	18'-10"	54
SP405	1C	1	18'-3"	52
SP406	2C	1	18'-11"	54
SP407	1D	1	18'-2"	52
SP408	2D, 4E	2	18'-9"	54
SP409	1E	1	18'-1½"	52
SP410	2E	1	18'-6"	53
SP411	3A	1	19'-1½"	55
SP412	4A	1	19'-0"	54
SP413	3B	1	19'-2½"	55
SP414	4B	1	19'-1"	54
SP415	3C	1	19'-3"	55
SP416	4C	1	19'-2"	55
SP417	3D	1	19'-0½"	54
SP418	4D	1	18'-11½"	54
SP419	3E	1	18'-10½"	54
SP420	5A	1	20'-1"	57
SP421	5B	1	20'-2"	57
SP422	5C	1	20'-3"	58
SP423	5D	1	20'-0"	57
SP424	5E	1	19'-10"	57

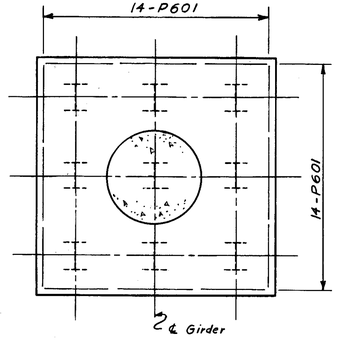
Pitch of spirals = 4½"

Note:
Material and dimensions not shown are the same as those of the footing view of Piers 1 and 2 - Exterior Footings.

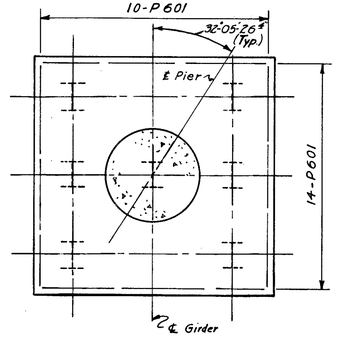


PIERS 1 AND 2 - EXTERIOR FOOTINGS

PIER 4 - EXTERIOR FOOTINGS



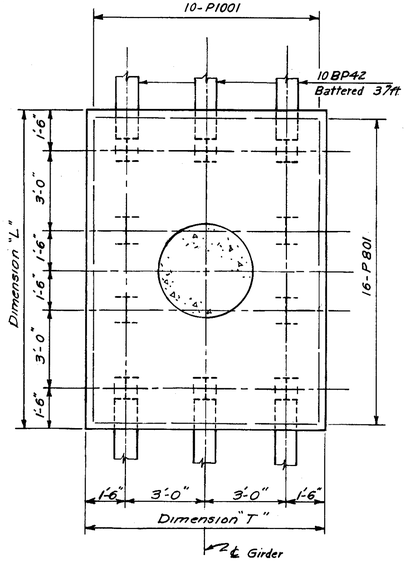
PIERS 1 AND 2 - INTERIOR FOOTINGS



PIERS 1 AND 2 - INTERIOR FOOTINGS

FOOTING PLAN

PIER 5 - INTERIOR & EXTERIOR FOOTINGS



PIER 3 - INTERIOR & EXTERIOR FOOTINGS

Notes:
All piles shall be 10BP42 battered 3 in 12 where shown.
Pile spacing is measured along the bottom of footing.

For reinforcement schedule see Sheet 229.
For Electrical Grounds, at Pier 3 see Sheet 229A
For anchor bolts see State of Ohio Standard Drawing number RB-1-55 dated 2-2-59.

H.N.T.B. BRIDGE NO. 46

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

PIERS

I-271 UNDER RICHMOND ROAD (S.R. 175)

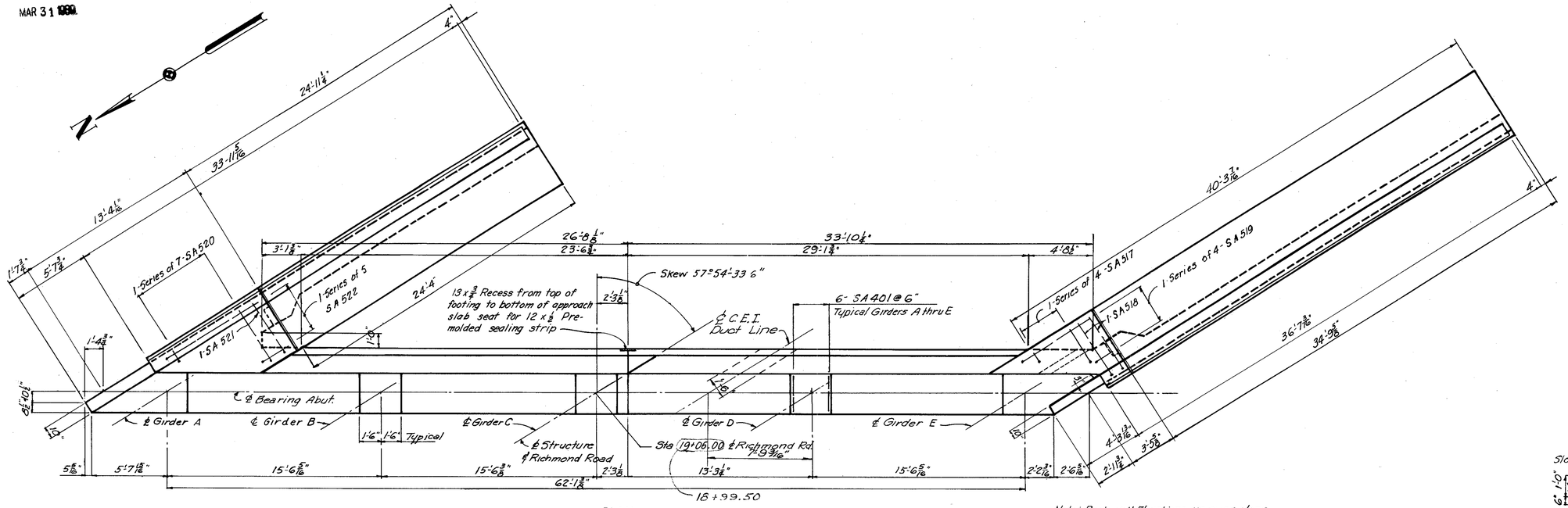
BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
RLM		GGP	JS	
DATE 2-27-63	DATE	DATE 3-25-63	DATE 4-16-64	1040 SHEET 220

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

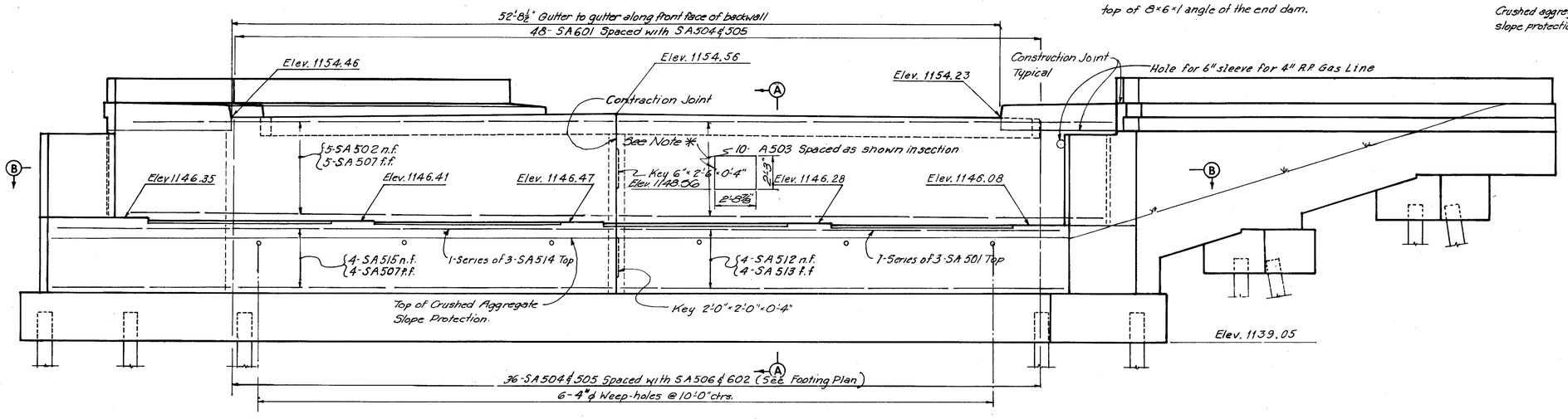
221
256

CUYAHOGA COUNTY
CUY-1-0.11



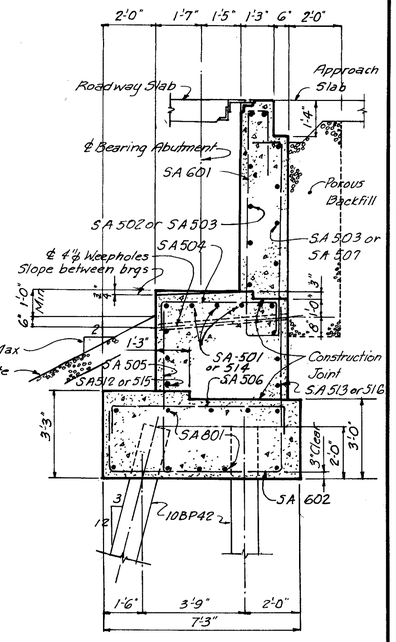
PLAN

Note: Backwall Elevations are given along near face of backwall and to the top of 8"x6"x1/2 angle of the end dam.



ELEVATION

* Note
Field cut reinforcement as required and place cut-offs diagonally at corners of opening.



SECTION A-A

Note:
For reinforcing schedule see Sheet 229.

Designation for reinforcing:
n.f. near face
f.f. far face
e.f. each face

For pile spacing and footing details see Sheet 223.
For wingwall details see sheet 222.
For Section BB see sheet 222.
For roadway end dam details see sheet 226. Provide a joint, in that part of the end dam attached to the backwall, at the contraction joint.

H.N.T.B. BRIDGE NO. 46

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

SOUTH ABUTMENT PLAN ELEVATION

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

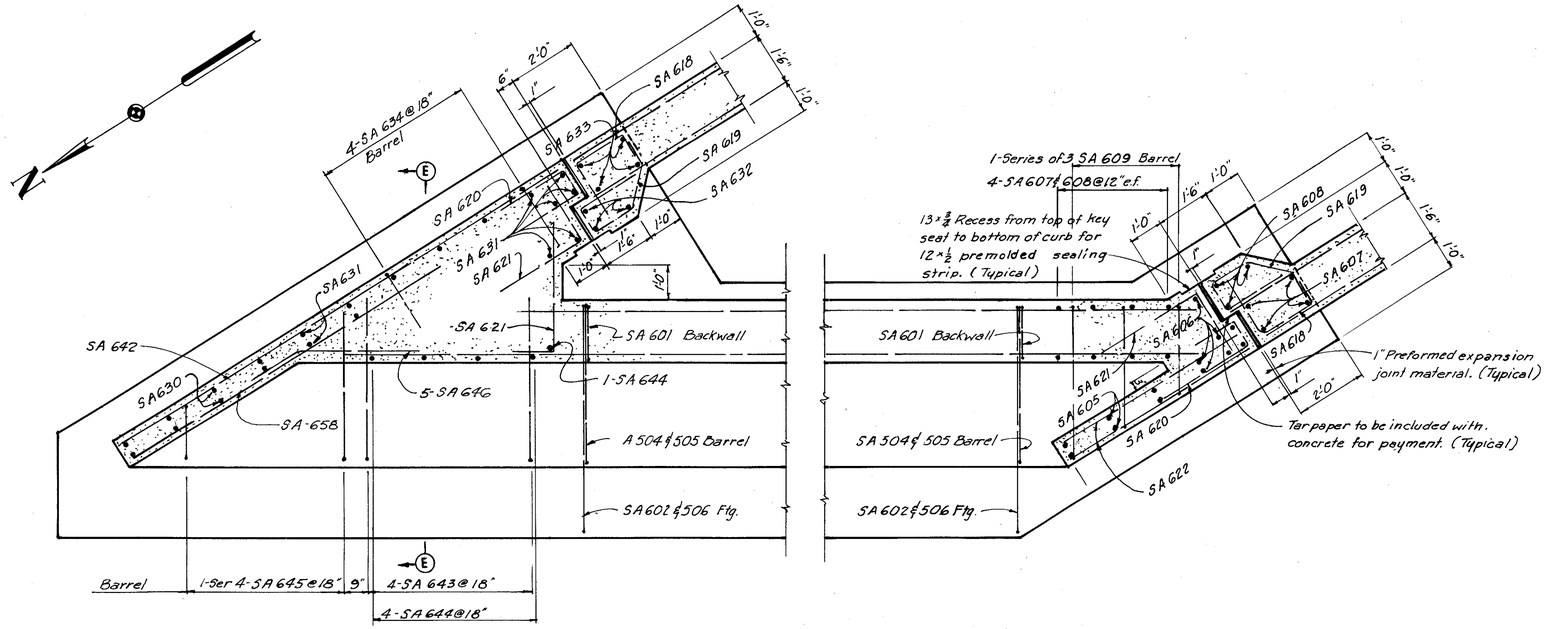
DRAWN	TRACED	CHECKED	REVIEWED J.S.	REVISED 6-17-64
CGP DATE 2-7-63	DATE	RLM DATE 2-13-63	DATE 4-16-64	1040 SHEET 221

Revised 3-31-64

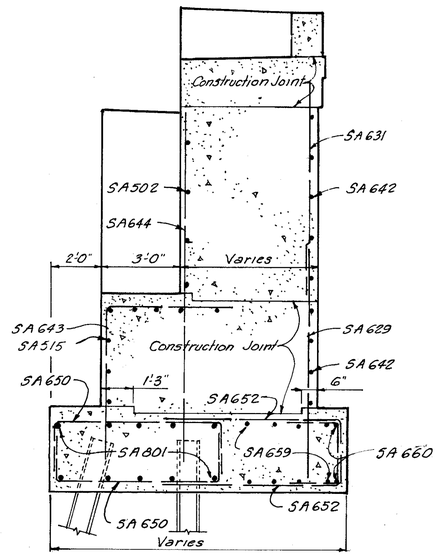
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

222
256

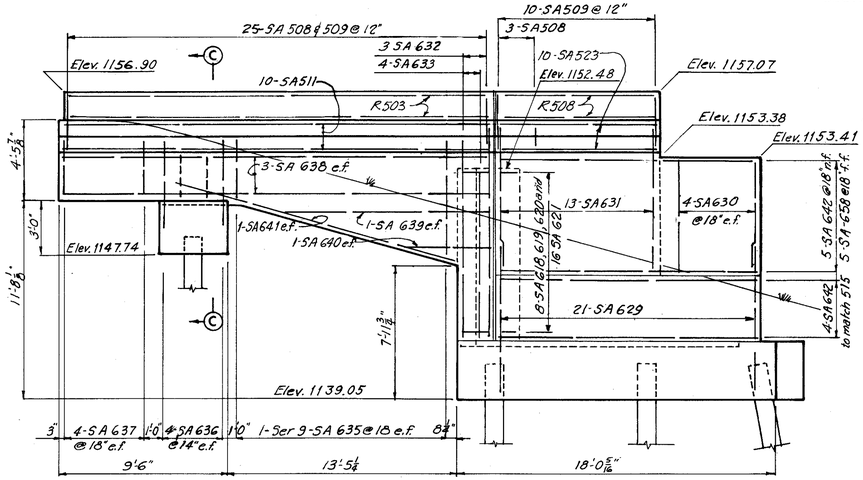
CUYAHOGA COUNTY
CUY-1-0.11



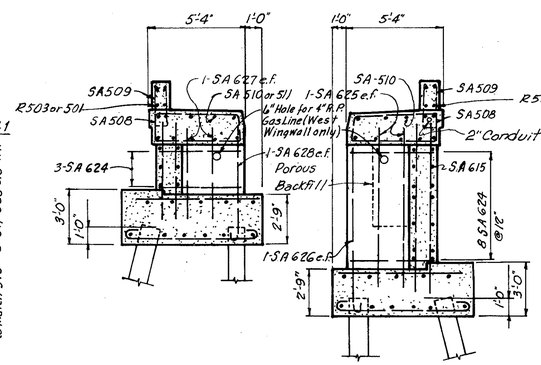
SECTION B-B



SECTION E-E

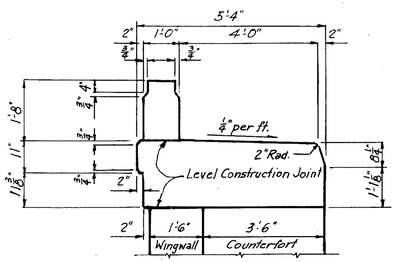


WINGWALL ELEVATION
South East Wingwall

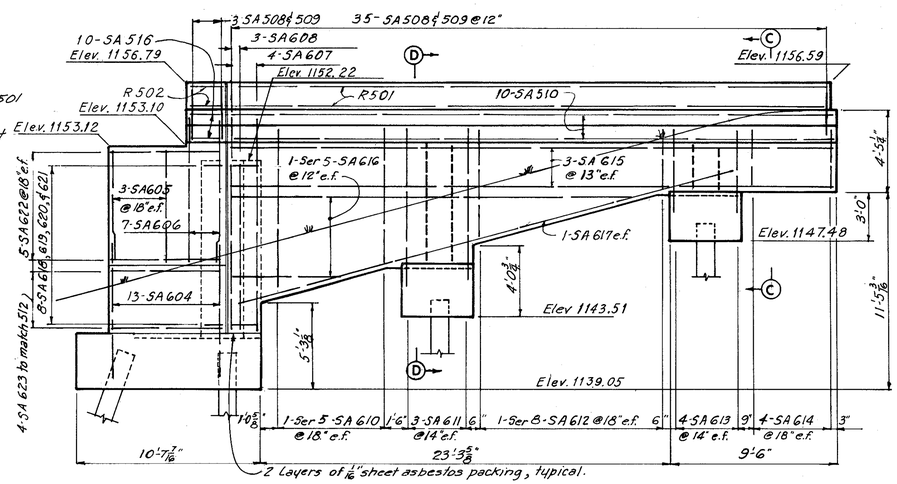


SECTION C-C

SECTION D-D



TYPICAL WINGWALL CURB AND PARAPET DIMENSIONS



WINGWALL ELEVATION
South West Wingwall

Note:
For reinforcing schedule see Sheet 229.

Designation for reinforcing:
n.f. near face
f.f. far face
e.f. each face

For Conduit details see sheet 229 A.

H.N.T.B. BRIDGE NO. 46

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

SOUTH ABUTMENT
WINGWALLS

I-271 UNDER RICHMOND ROAD (S.R. 175)

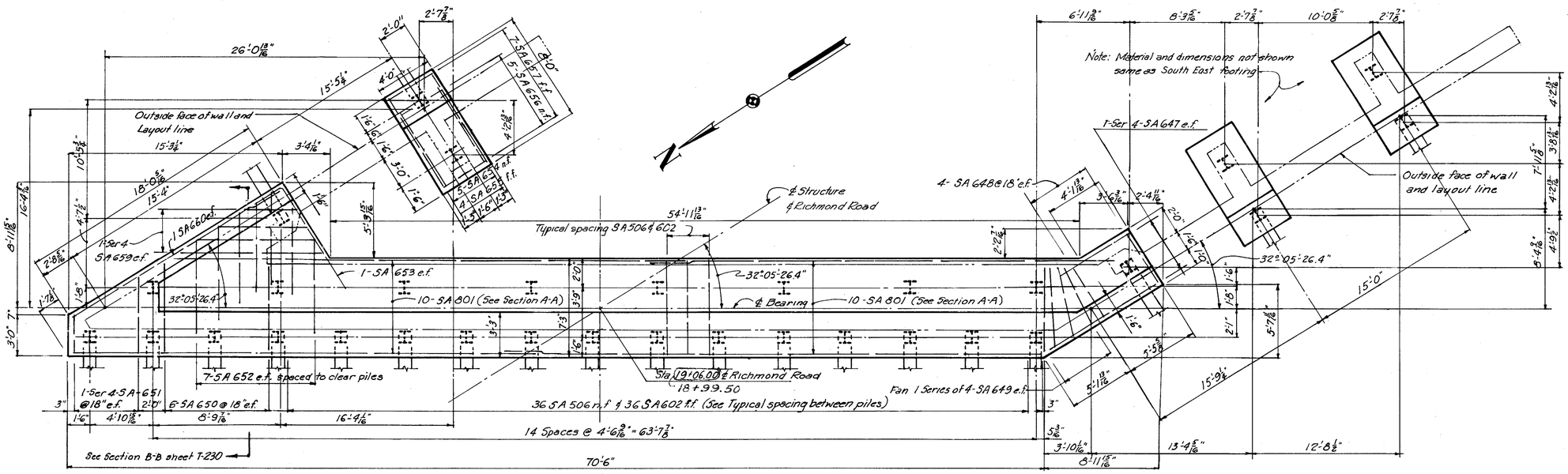
BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CGP		RLM	JS	
DATE 2-13-63	DATE	DATE 3-15-63	DATE 4-16-64	1040 SHEET 222

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

223
256

CUYAHOGA COUNTY
CUY-1-0.11



FOOTING PLAN

Note:
For reinforcing schedule see Sheet 229.

Designation for reinforcing:
n.f. near face
f.f. far face
e.f. each face
All piles shall be 10BP42 battered 3" in 12 where shown. All pile spacings are given along bottom of footing.
For Section A-A see sheet 221.

H.N.T.B. BRIDGE NO. 46

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

SOUTH ABUTMENT FOOTING PLAN

I-271 UNDER RICHMOND ROAD (S.R. 175)

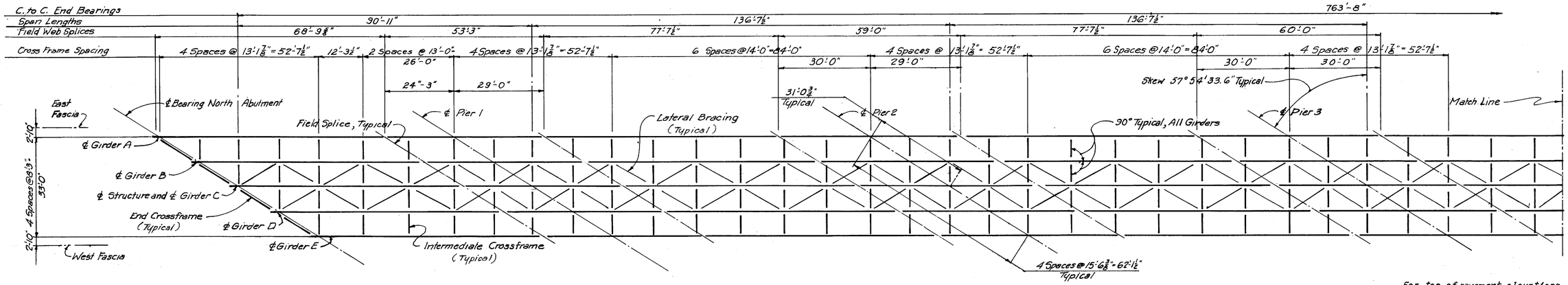
BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

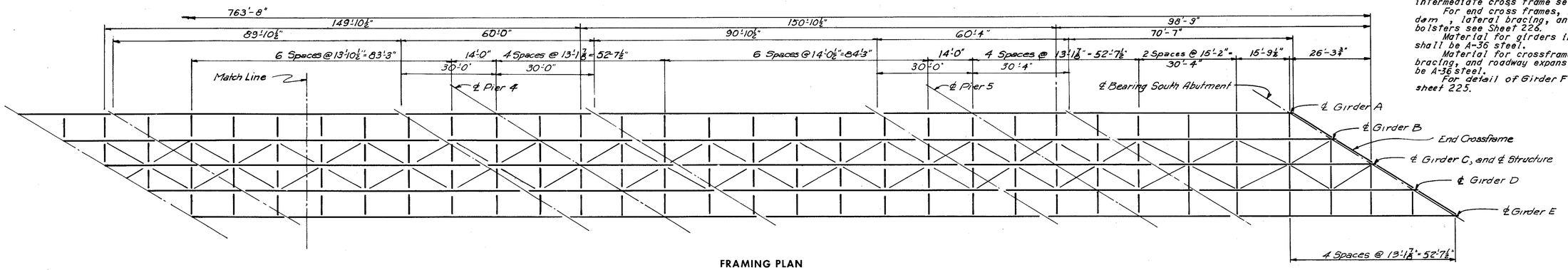
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CGP		R & L M	J.S.	3-31-67
DATE 2-21-63	DATE	DATE 3-18-63	DATE 4-16-64	1040 SHEET 223

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

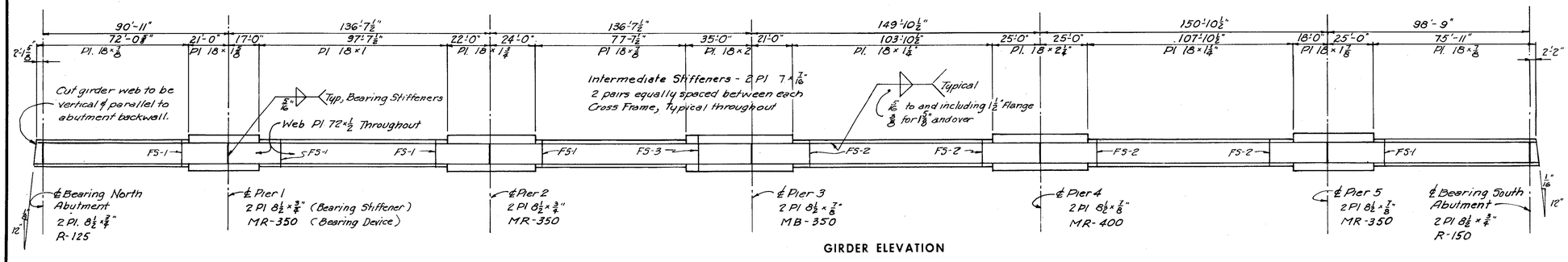
224
256

CUYAHOGA COUNTY
CUY-1-0.11





FRAMING PLAN



GIRDER ELEVATION

For top of pavement elevations, dead load deflections, and girder field splices see Sheet 225.

For typical roadway cross section and intermediate cross frame see Sheet 227.

For end cross frames, roadway end dam , lateral bracing, and rockers and bolsters see Sheet 226.

Material for girders including splices shall be A-36 steel.

Material for crossframes, lateral bracing, and roadway expansion joints shall be A-36 steel.

For detail of Girder Field Splices, see sheet 225.

Intermediate stiffeners to web welds shall be ⅛" continuous fillets both sides of stiffener. Stiffeners shall not be welded to the flanges, but shall fit sufficiently tight to exclude moisture after painting.

Bearing stiffeners at piers and abutments shall be full grooved and butt welded to the lower flange and fitted in close contact with the upper flange.

Angles 7x4x⅝ shall be substituted for intermediate stiffener plates falling inside field splices. The toe of the 7" leg shall be placed at the centerline of splice.

See sheet 225 for additional notes.

H.N.T.B. BRIDGE NO. 46

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

FRAMING PLAN

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CGP		R.L.M.	J.S.	
DATE 1-4-63	DATE	DATE 3-9-63	DATE 4-16-64	1040 SHEET 224

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

225
256

CUYAHOGA COUNTY
CUY-1-0.11

TOP OF WEARING SURFACE ELEVATIONS

	Girder	North Abut.	.1	.2	.3	.4	.5	.6	.7	.8	.9	Pier 1.
Span 1	A	1156.05	1156.14	1156.24	1156.34	1156.44	1156.54	1156.63	1156.71	1156.79	1156.86	1156.93
	B	1156.32	1156.42	1156.51	1156.61	1156.71	1156.79	1156.88	1156.95	1157.02	1157.08	1157.14
	C	1156.59	1156.69	1156.78	1156.88	1156.96	1157.04	1157.11	1157.18	1157.24	1157.29	1157.34
	D	1156.60	1156.70	1156.79	1156.87	1156.94	1157.01	1157.08	1157.13	1157.18	1157.23	1157.26
	E	1156.61	1156.69	1156.77	1156.85	1156.91	1156.97	1157.03	1157.07	1157.11	1157.15	1157.18
	Girder	Pier 1	.1	.2	.3	.4	.5	.6	.7	.8	.9	Pier 2
Span 2	A	1156.93	1157.01	1157.09	1157.14	1157.18	1157.21	1157.21	1157.21	1157.20	1157.16	1157.12
	B	1157.14	1157.21	1157.27	1157.31	1157.34	1157.35	1157.34	1157.33	1157.29	1157.25	1157.18
	C	1157.34	1157.40	1157.44	1157.47	1157.48	1157.49	1157.47	1157.44	1157.39	1157.33	1157.25
	D	1157.26	1157.30	1157.32	1157.33	1157.33	1157.32	1157.29	1157.25	1157.20	1157.14	1157.06
	E	1157.18	1157.20	1157.22	1157.21	1157.19	1157.17	1157.13	1157.09	1157.02	1156.94	1156.86

	Girder	Pier 2	Pier 3	Pier 4	Pier 5	South Abut.
Spans 3, 4, 5, & 6	A	1157.12	1156.44	1155.69	1154.94	1154.45
	B	1157.18	1156.50	1155.75	1155.00	1154.51
	C	1157.25	1156.57	1155.82	1155.07	1154.57
	D	1157.06	1156.38	1155.63	1154.87	1154.38
	E	1156.86	1156.18	1155.43	1154.68	1154.18

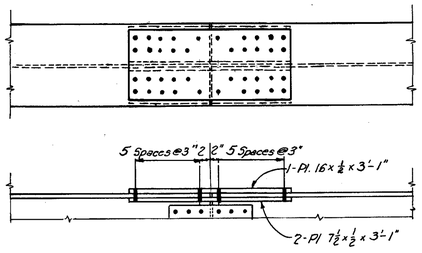
Note: Elevations are given at tenthpoints between bearings in area of vertical curve (Spans 1 & 2).
Elevations are given at points of bearing in tangent area, (Spans 3, 4, and 5.).

DEAD LOAD DEFLECTIONS

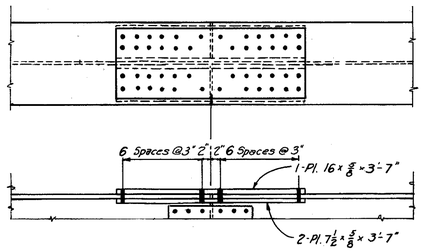
Span 1	2	3	4	5	6
97.00'	136.625'	136.625'	149.875'	150.875'	105.25'

Note: Dead Load Deflections are given to tenth points between spans.
Minus (-) deflections are upward. T = Total ; C = Concrete.

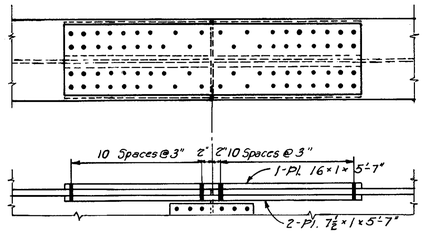
Point	0	0.1		0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		0
Span		T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	
Interior Girders B, C, and D																				
1	0"	1/8	1/16	3/16	1/8	1/4	3/16	1/4	3/16	3/16	3/16	1/8	1/8	1/16	1/16	0	0	-1/16	0	0"
2	0"	3/16	3/16	1/2	3/8	13/16	5/8	1 1/4	13/16	1 5/8	13/16	1	3/4	3/4	9/16	7/16	5/16	3/16	1/8	0"
3	0"	1/16	1/16	3/16	1/8	7/16	5/16	5/8	7/16	11/16	1/2	5/8	7/16	7/16	5/16	3/16	3/16	1/16	1/16	0"
4	0"	3/16	1/8	1/4	3/8	3/8	9/16	1	3/4	1 1/16	13/16	1 5/16	11/16	1/2	1/2	3/8	1/4	1/8	1/16	0"
5	0"	1/8	1/8	1/2	3/8	7/8	5/8	1 3/16	7/8	1 5/16	1	1 1/4	1	1	3/4	5/8	1/2	1/4	3/16	0"
6	0"	-1/16	-1/16	0	0	1/16	1/16	3/16	1/8	1/4	3/16	5/16	1/4	5/16	1/4	1/4	3/16	1/8	1/8	0"
Exterior Girders A and E																				
1	0"	1/8	1/16	3/16	3/16	1/4	3/16	1/4	3/16	1/4	3/16	1/8	1/8	1/16	1/16	0	0	-1/16	0	0"
2	0	1/4	3/16	9/16	7/16	7/8	11/16	1 1/8	7/8	1 3/8	7/8	1 1/16	13/16	13/16	5/8	1/2	3/8	3/16	1/8	0"
3	0"	1/16	0	1/4	3/16	7/16	3/8	5/8	1/2	3/4	9/16	5/8	1/2	7/16	5/16	1/4	3/16	1/16	0	0"
4	0"	5/16	1/8	1/2	3/8	13/16	5/8	1 1/16	13/16	1 1/8	7/8	1	3/4	11/16	9/16	3/8	1/4	1/16	1/16	0"
5	0"	3/16	1/8	1/2	3/8	15/16	11/16	1 1/4	15/16	1 7/16	1 1/16	1 3/8	1	1 1/16	13/16	11/16	1/2	1/4	3/16	0"
6	0"	-1/16	-1/16	0	0	1/16	1/16	3/16	1/8	5/16	1/4	3/8	1/4	3/8	1/4	5/16	3/16	3/16	1/8	0"



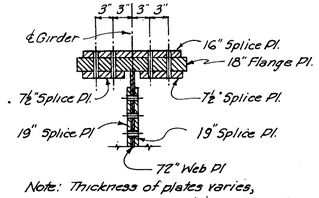
FS-1



FS-2

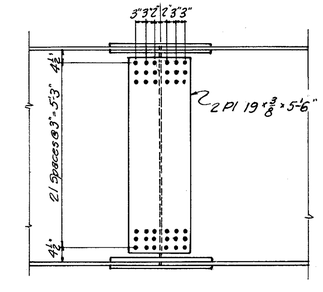


FS-3

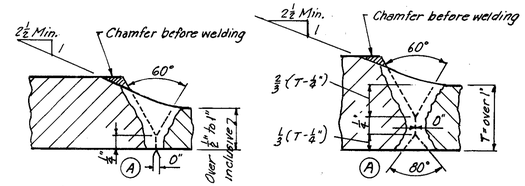


Note: Thickness of plates varies, see Girder Elevation, sheet T-232 and FS-1, FS-2, & FS-3 this sheet.

TYPICAL SECTION
GIRDER FIELD SPLICE



TYPICAL WEB SPLICE



(A) = Weld after placing at least one pass on other side.

All of the above full penetration welds shall be back gouged and welded after welding far side.

Butt welds on beam and girder flange plates shall be ground flush the finish grinding being parallel to the direction of stress.

SHOP BUTT WELD DETAILS

Notes:

The Contractor shall submit three prints of his proposed plate girder erection procedure to the Director for approval.

Top and bottom flange plates shall be the same and shall be spliced at points shown on the Girder Elevation.

The girders shall be fabricated to compensate for the effects of vertical curvature (convexity) and dead load deflections and under full dead load shall parallel the profiles formed by the top of pavement elevations directly over the girders.

If additional shop splices are necessary, their location and detail shall be submitted to the Director for approval prior to ordering of material.

All girder field splices shall be made with 7/8" diameter high strength bolts. The bolts shall be placed with their heads on the outside face of exterior girders and on the bottom of flange plates.

Supplementary to Section S-7.14 of the Construction and Material Specifications, intermediate stiffeners shall have contact bearing with the lower flange in the area of each pier, but may have a clearance of not more, than 3/8" from the top flange. In the areas between the piers within the limits defined by the change in the flange thickness, the stiffeners shall have contact bearing with the top flange and not more than 3/8" clearance from the bottom flange. In these spans having no change in flange thickness, the limits for stiffeners in contact with the top flange shall be at the two tenths points of the spans. In shop painting, care shall be taken to make certain that paint is forced through from one side to the other of the 3/8" opening.

H.N.T.B. BRIDGE NO. 46

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

ELEVATIONS
DEFLECTIONS FIELD SPLICES

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
CSP		R.L.M.	J.S.	
DATE 1-9-63	DATE	DATE 3-6-63	DATE 4-16-64	1040 SHEET 225

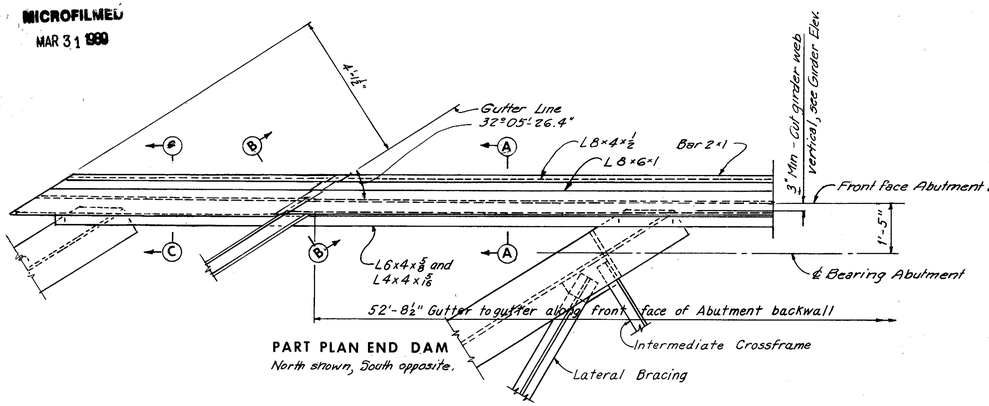
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

CUYAHOGA COUNTY
CUY-1-0.11

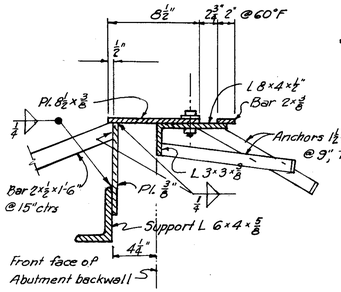
EXPANSION JOINT NOTES

Note A
Provide $\frac{3}{8}$"ϕx2$\frac{1}{2}$" bolts at 2'-0 ctrs. maxtmum centered in 1$\frac{1}{8}$"ϕ holes in 8x6x1 and 8x4x$\frac{1}{2}$ angle.
Prior to placing backwall concrete, unpainted contact surface between 8x4x$\frac{1}{2}$ and 8x6x1 angles together with the surface between washer and 8x6x1 angle shall be coated with flake graphite. Entire joint shall be adjusted to correct line and grade and the bolts tightened. Release bolts one-half turn.
Remove bolts as soon as concrete has set, preferably within two hours after placing. Fill holes with bituminous material.

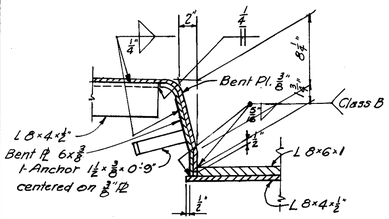
Note B
L8x4x$\frac{1}{2}$ and bar 2x$\frac{3}{8}$ shall be placed in segments of not less than 6'-0" with one joint in the apex of the crown. Joints shall be closely butted but not welded. 8x$\frac{1}{2}$ anchor plates shall be spaced 6" from the butted joint in 8x4x$\frac{1}{2}$ angles and at 15" ctrs. between joints. The top of backwall form shall be below $\frac{13}{16}$"ϕ holes in 8x4x$\frac{1}{2}$ angle.



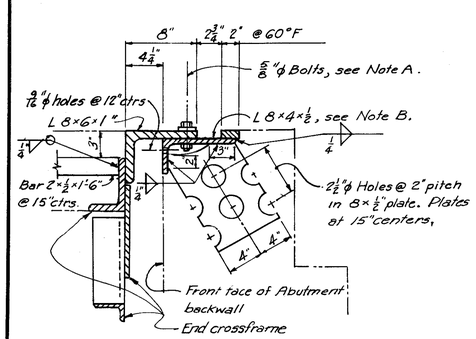
PART PLAN END DAM
North shown, South opposite.



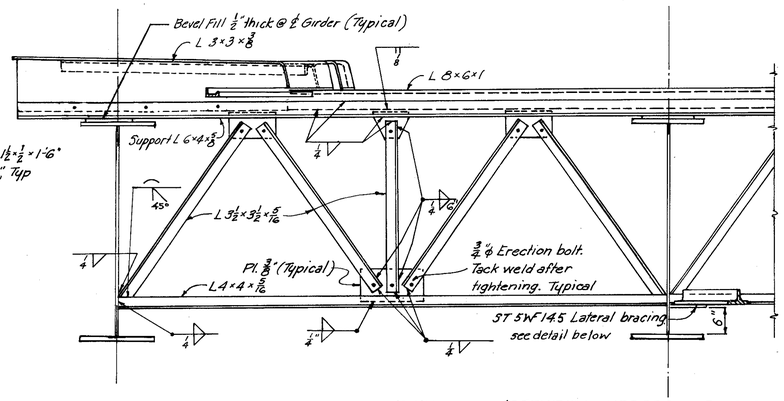
SECTION C-C



SECTION B-B

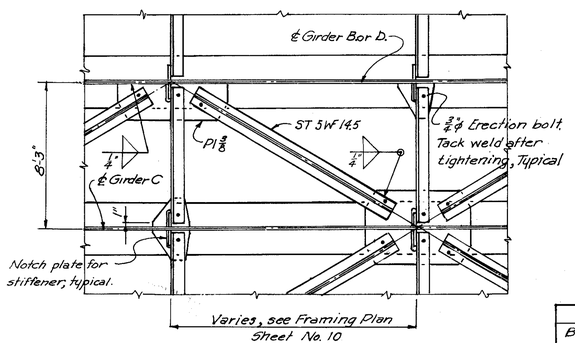


SECTION A-A



END CROSS FRAME (BETWEEN GIRDERS A-B, B-C AND D-E)

(For End Crossframe between Girders C and D, See sheet 227B)

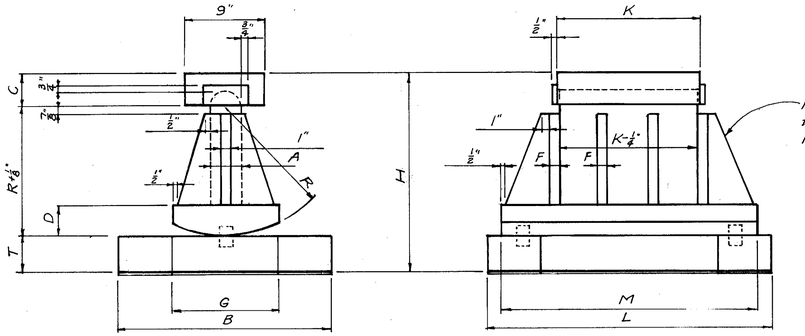


LATERAL BRACING

SHOE NOTES

Rockers and bolsters prefixed with the letter M are modifications of Standard Rockers and Bolsters for steel beam and girder bridges State of Ohio. See Part Section Masonry Plate for modified shoes MR-350, MR-400, and MB-350. Weights given are for one shoe complete including sheet lead, anchor bolts, washers, welds, welds to girder, and lead or babbit filling of anchor bolt well.
Machined surfaces of rockers and masonry plates shall be coated with a mixture of white lead paste, tallow, and linseed oil in accordance with Section S-8.04.
The annular spaces between anchor bolts and masonry plates shall be filled with lead or babbit before setting nuts.
Lower portions of shoes shall be centered in both directions under top portions for a temperature of 60°. All masonry plates, rockers, and sole plates shall be scribed with centerlines in both directions.

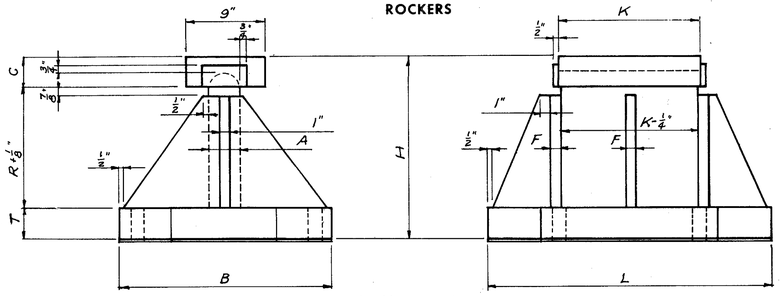
FINISH AND WELDING FOR ROCKERS AND BOLSTERS				
			√	Fillet Weld
Contact surfaces pin ℄ cap plate			125	–
"	"	roller ℄ masonry plate	250	–
"	"	vertical gussets to roller	500	$\frac{1}{2}$"
"	"	stem to roller	1,000	$\frac{1}{2}$"
"	"	vertical gussets to stem plate	1,000	$\frac{1}{2}$"
"	"	closure plates to cap	–	$\frac{3}{16}$"



Note: Exterior stiffeners for Modified Rockers MR 350 and MR 400

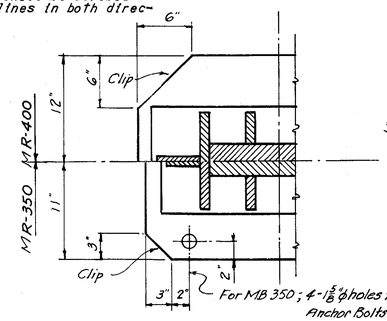
For corner clips, see "Part Section MB350, MR 350 & 400"

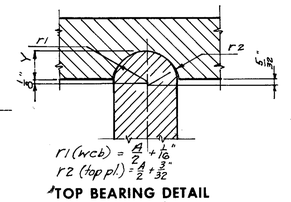
ROCKERS



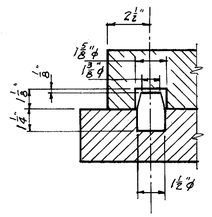
For anchor bolt holes and corner clips, see "Part Section MB350, MR350 & 400"

BOLSTERS





TOP BEARING DETAIL



DOWEL DETAIL

PART SECTION MB 350, MR 350 & 400

SHOE DIMENSIONS

Bolster No.	Rocker No.	Dimensions (Inches) A	B	C	D	F	G	H	K	L	M	R	T	Y	Weight ea. (Lbs.) Bolster	Rocker	Max. Load (Lbs.)
—	R-125	3"	11"	3"	2"	$\frac{1}{2}$"	8"	12$\frac{1}{8}$"	10$\frac{1}{2}$"	20"	18"	7$\frac{1}{2}$"	1$\frac{1}{2}$"	1$\frac{1}{16}$"	—	315	125,000
—	R-150	3"	12"	3"	2$\frac{1}{4}$"	$\frac{1}{2}$"	8$\frac{1}{2}$"	13$\frac{3}{8}$"	11$\frac{1}{2}$"	22"	19"	8$\frac{1}{2}$"	1$\frac{5}{8}$"	1$\frac{1}{16}$"	—	400	150,000
MB-350	MR-350	3$\frac{1}{2}$"	22"	3$\frac{1}{2}$"	4"	1"	12"	21$\frac{1}{16}$"	15"	30"	27"	14"	3$\frac{1}{2}$"	1$\frac{15}{16}$"	1195	1360	350,000
—	MR-400	3$\frac{1}{2}$"	24"	3$\frac{1}{2}$"	4"	1"	12"	22$\frac{1}{16}$"	16"	32"	29"	14$\frac{1}{2}$"	4"	1$\frac{1}{16}$"	—	1600	400,000

H.N.T.B. BRIDGE NO. 46

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

END DAM SHOES
LATERAL BRACING
I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN C.G.P.	TRACED	CHECKED R L M	REVIEWED J.S.	REVISED 6-17-64
DATE 1-18-63	DATE	DATE 3-8-63	DATE 4-16-64	1040 SHEET 226

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

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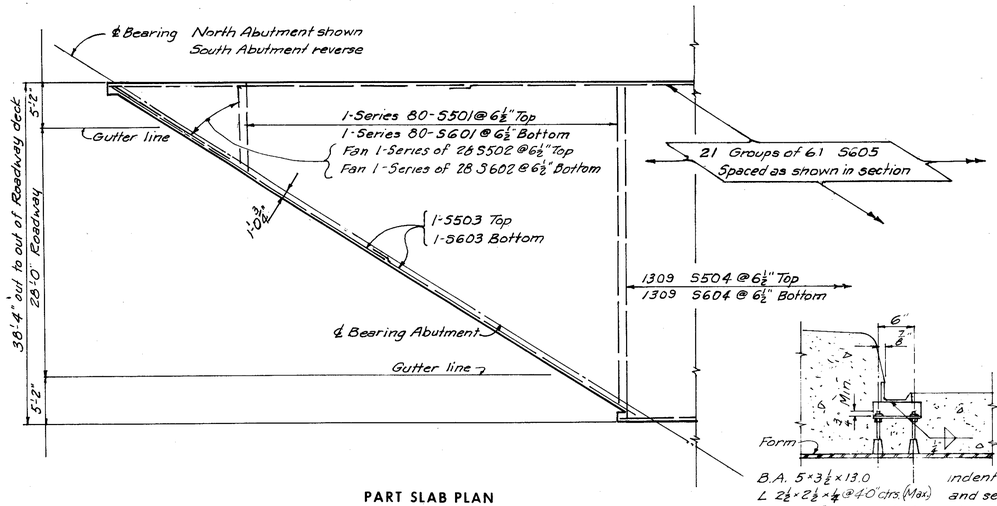
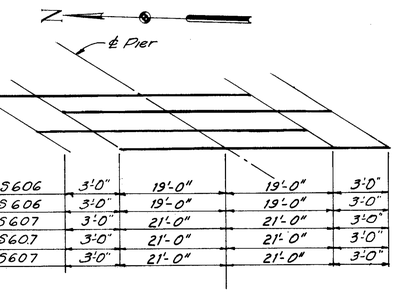
256

CUYAHOGA COUNTY
CUY-1-0.11

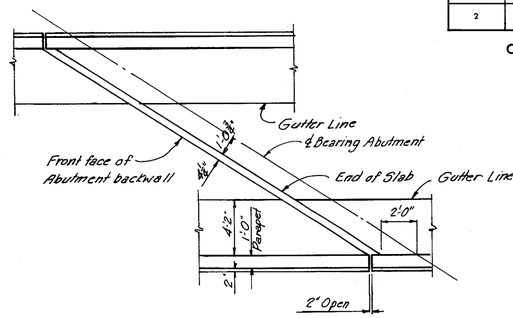


PART SLAB PLAN



Pier 1	5606	3'-0"	19'-0"	19'-0"	3'-0"
Pier 2	5606	3'-0"	19'-0"	19'-0"	3'-0"
Pier 3	5607	3'-0"	21'-0"	21'-0"	3'-0"
Pier 4	5607	3'-0"	21'-0"	21'-0"	3'-0"
Pier 5	5607	3'-0"	21'-0"	21'-0"	3'-0"

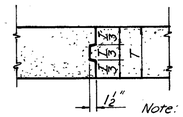
ADDITIONAL REINFORCEMENT OVER PIERS
(28 Required each)



PART PLAN AT ABUTMENT

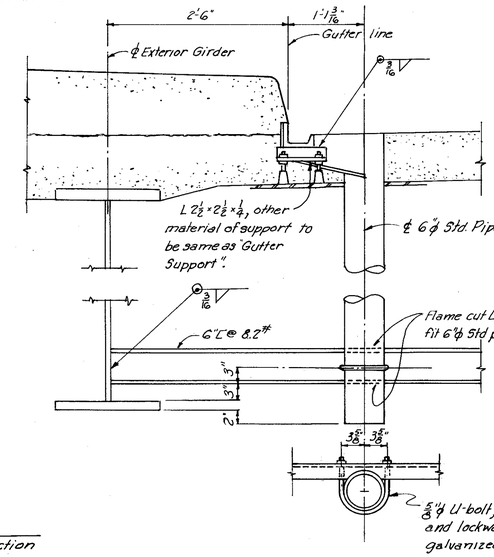
B.A. 5"×3½"×13.0
L 2½"×2½"×¼"@40 ctrs (Max)
Bolts - ⅝"ϕ threaded for adjustment.

indent format cone base and set cone perpendicular. Clamp cone firmly to form. Remove cone when form is stripped and fill hole with grout.



Note: T = Slab thickness

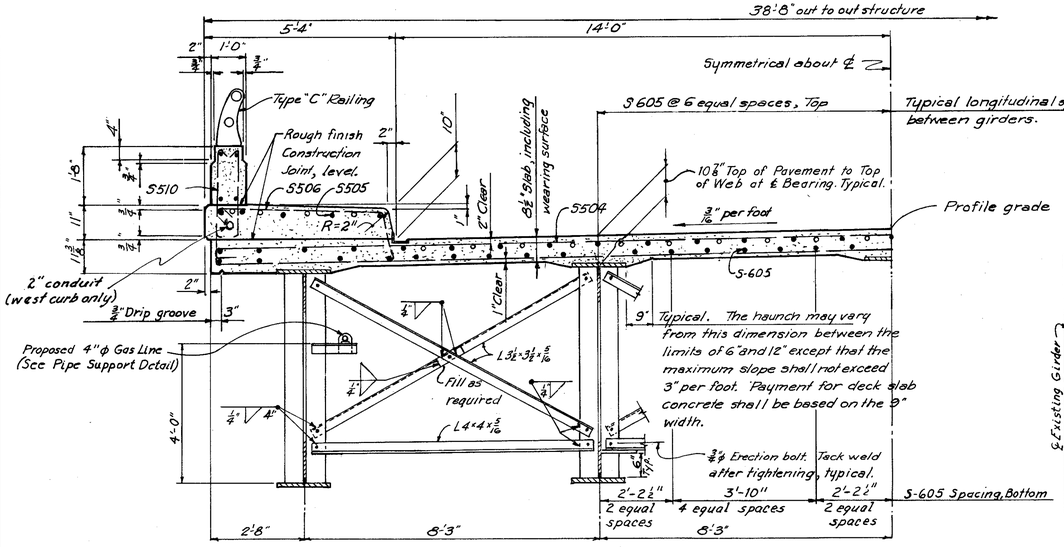
OPTIONAL TRANSVERSE SLAB CONSTRUCTION JOINT



SCUPPER SUPPORT

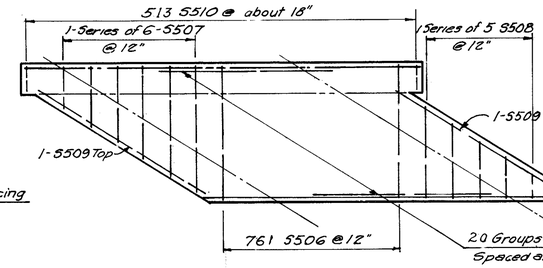
For scupper detail, see sheet CSB-2-56 (3 of 6)
For details of lamp Standard Pedestals and Conduit see sheet 229A.

GUTTER SUPPORT



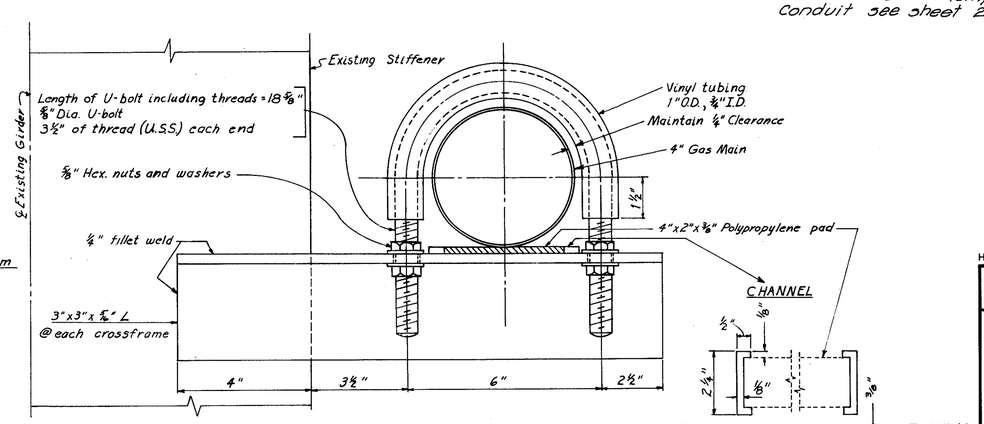
TYPICAL CROSS SECTION BETWEEN GIRDERS A-B, B-C AND D-E

(For Typical Cross Section between Girders C and D, see sheet 227B)



PART PLAN SIDEWALK REINFORCEMENT

Notes:
Expansion couplings for 4"ϕ gas pipe shall be provided near abutments within bridge limits.
Pipe and expansion coupling to be provided by others.



PIPE SUPPORT DETAIL

All material except 3"×3"×⅝" L shall be furnished and installed by the gas company

H.N.T.B. BRIDGE NO. 46

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

TYPICAL SECTION
SLAB PLAN

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

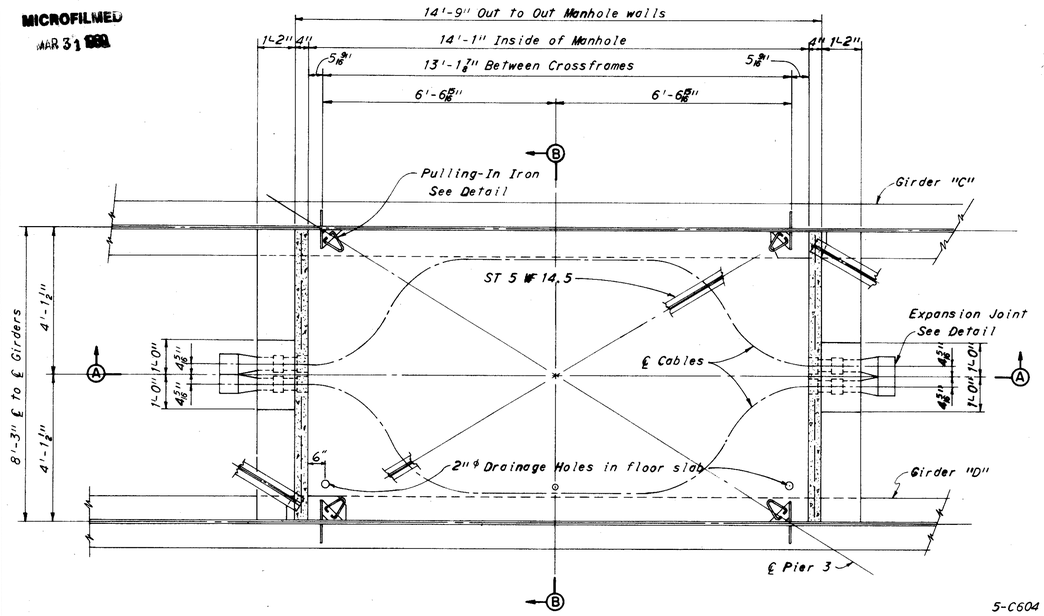
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 12-28-63	DATE	DATE 5-11-64	DATE 4-16-64	8-17-65

1040 SHEET 227

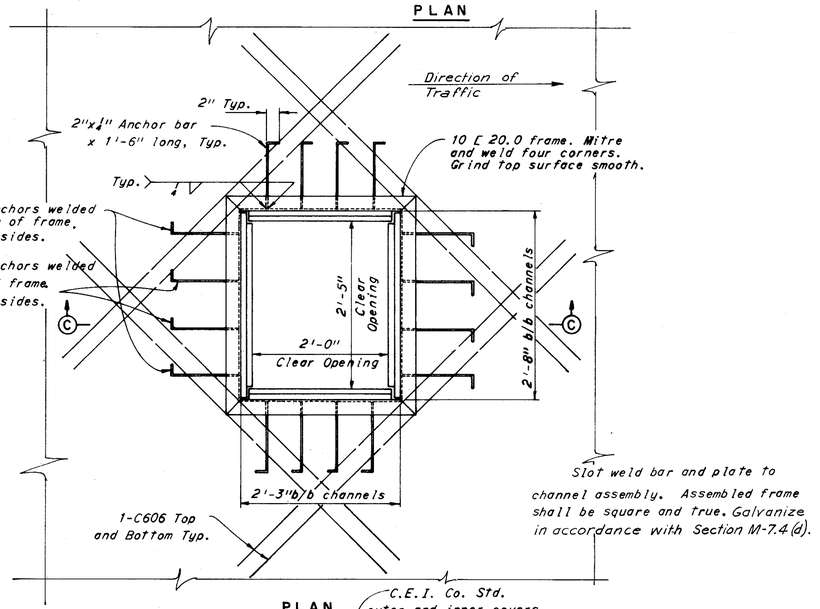
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

227A
256

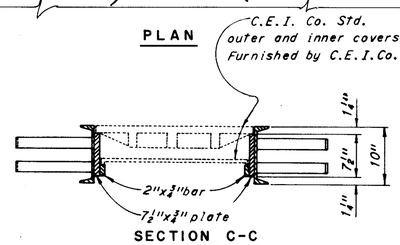
CUYAHOGA COUNTY
CUY-1-0.11



PLAN

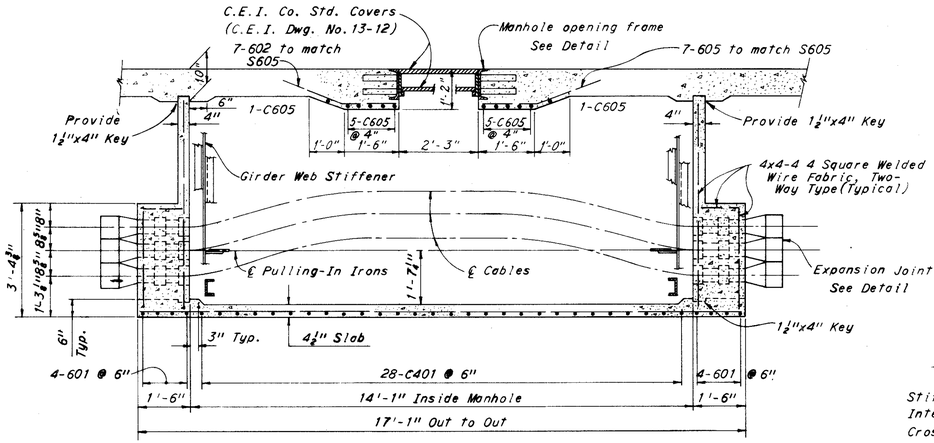


PLAN

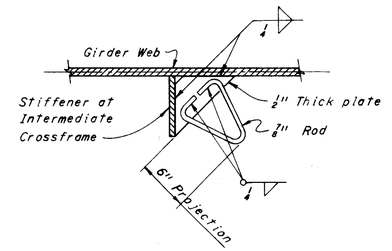


SECTION C-C

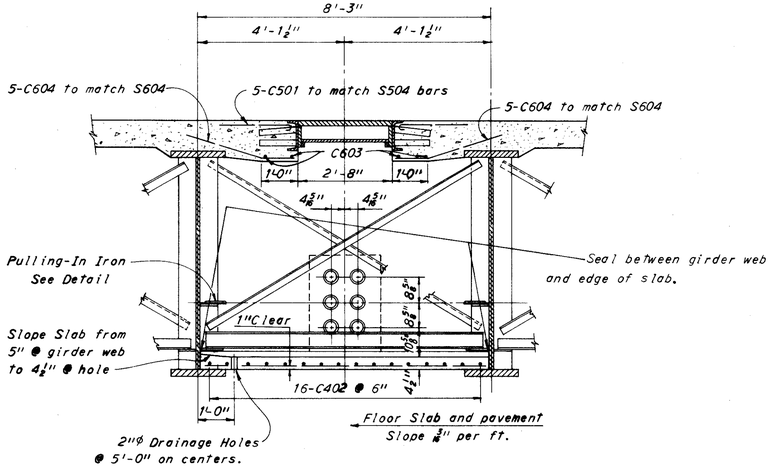
MANHOLE FRAME DETAILS



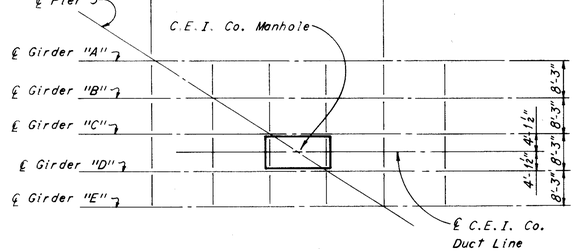
SECTION A-A



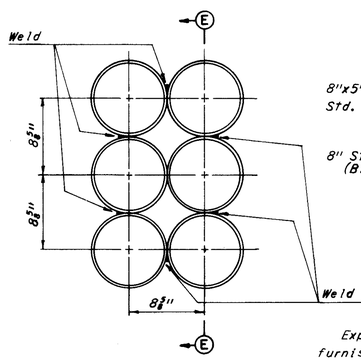
DETAIL OF PULLING-IN IRON - 4 REQUIRED



SECTION B-B

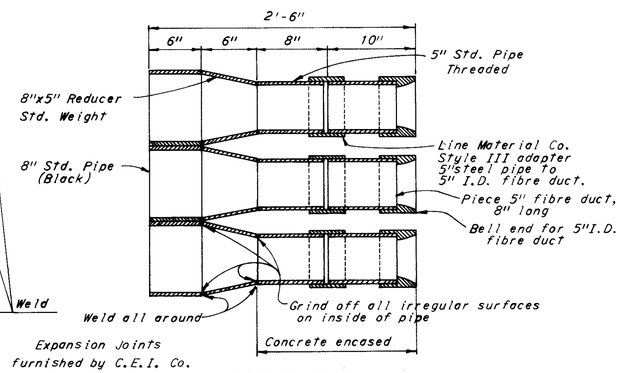


MANHOLE LOCATION PLAN



Expansion Joints furnished by C.E.I. Co.

EXPANSION JOINT DETAIL



SECTION E-E

Note:
For reinforcement schedule and quantity summary see sheet 227B.

H.N.T.B. BRIDGE NO. 46

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

CABLE SPLICING MANHOLE DETAILS

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN C.P	TRACED	CHECKED JMC	REVIEWED WC	REVISED
DATE 6-12-64	DATE	DATE 6-12-64	DATE 6-15-64	1040 SHEET 227A

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

227B
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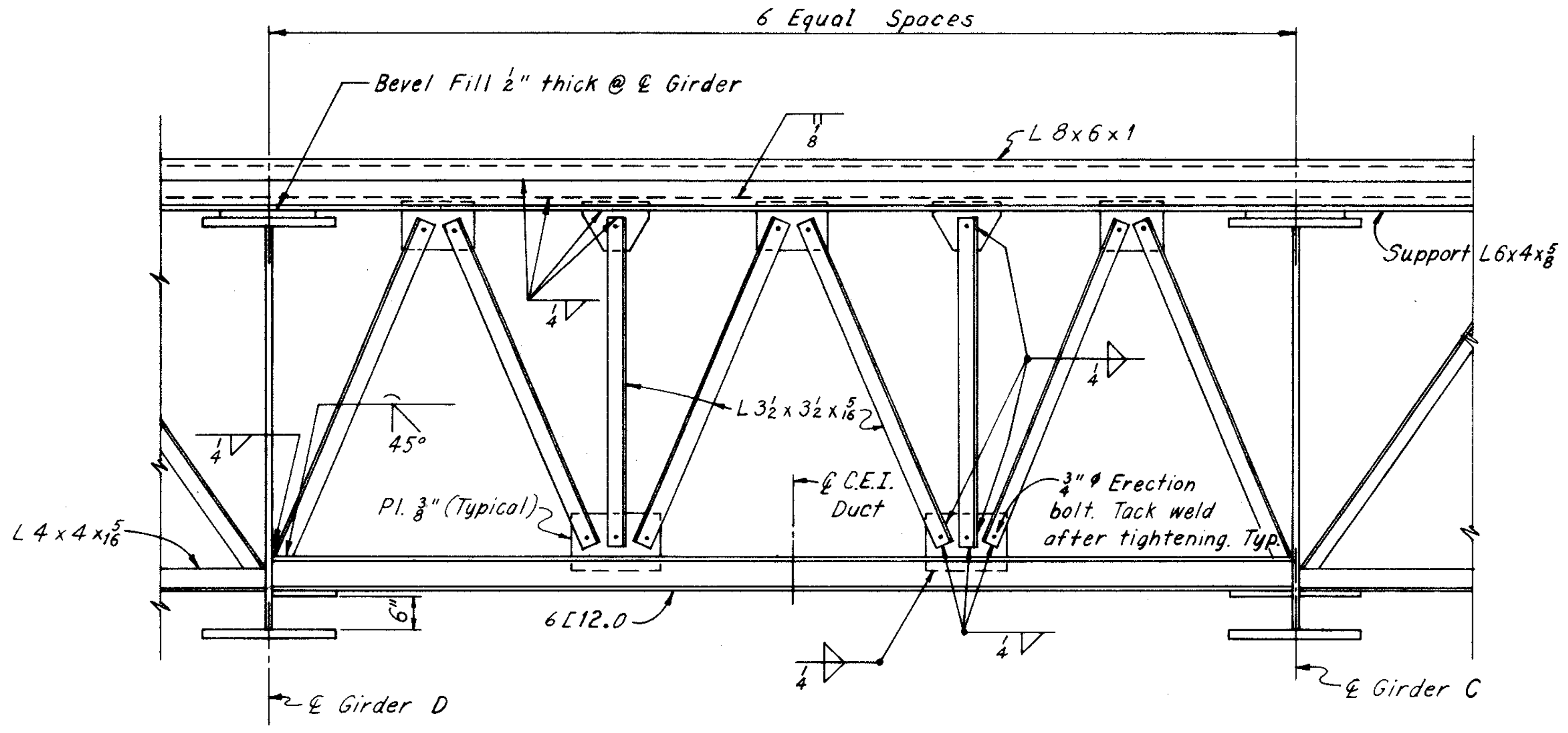
CUYAHOGA COUNTY
CUY-1-0.11

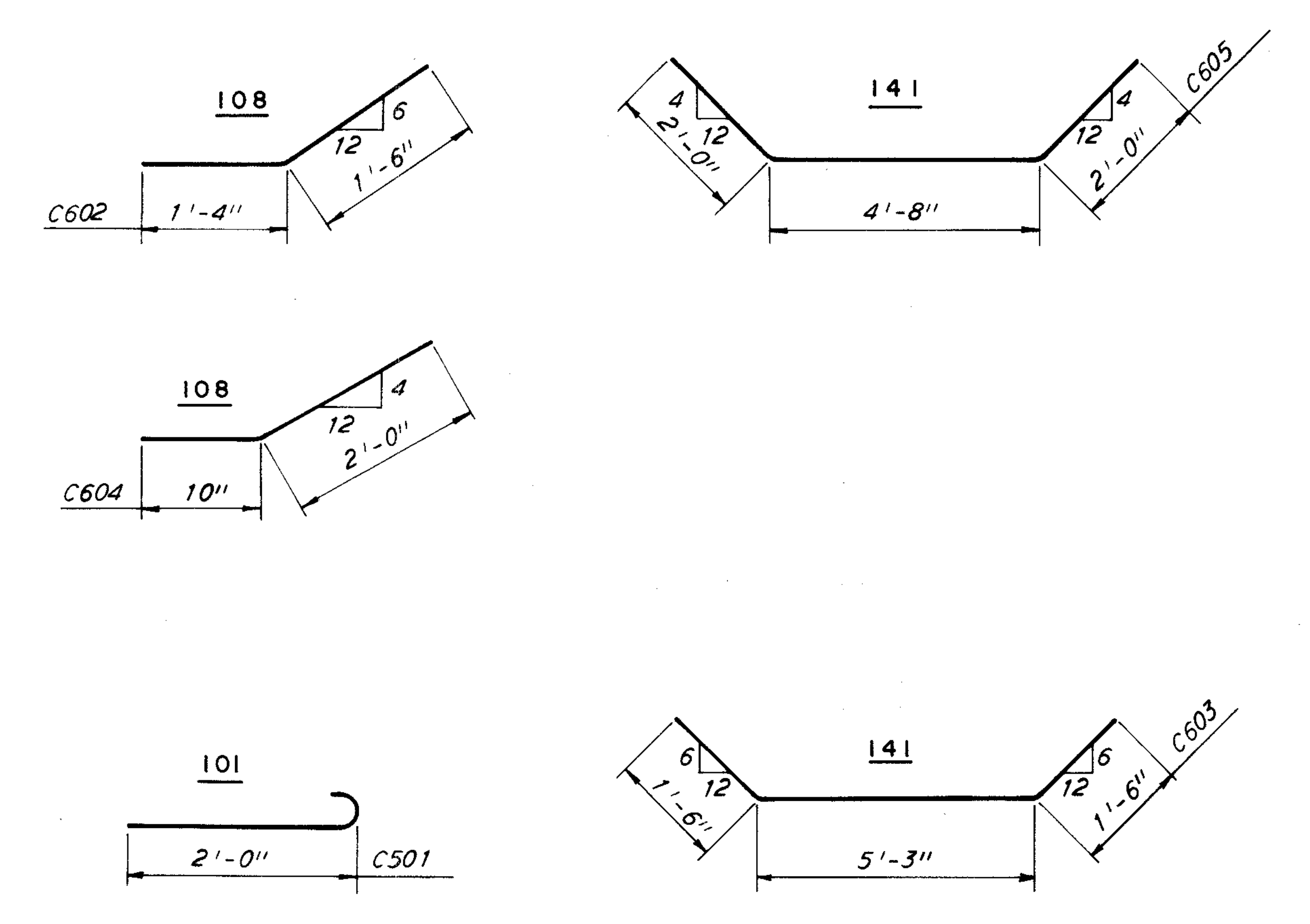


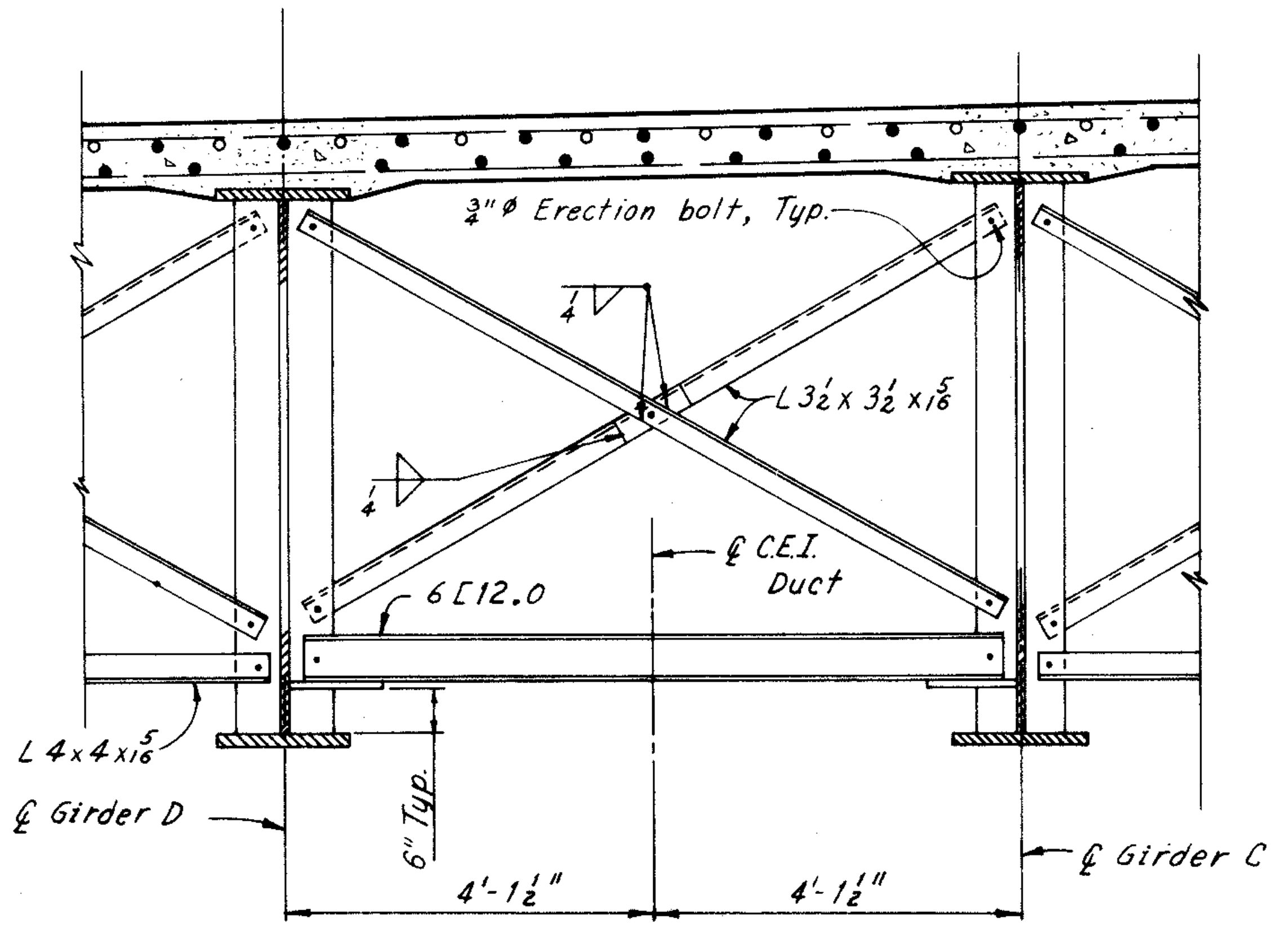
TYPICAL END CROSS FRAME BETWEEN GIRDERS C AND D

ESTIMATED QUANTITIES REQUIRED FOR INSTALLATION OF C.E.I. DUCTS			
ITEM	DESCRIPTION	UNIT	QUANTITY
S-1	Class "C" Concrete, Superstructure	Cu. Yd.	4
S-4	Reinforcing Steel	Pounds	1,005
S-7	Structural Steel	Pounds	2,600
S-8	Field Painting of Structural Steel	Pounds	2,600

REINFORCEMENT SCHEDULE CABLE SPLICING MANHOLE					
MARK	NO.	LENGTH	TYPE	SER INCR	WEIGHT (LBS)
C401	28	8'-0"	Str.		150
C402	16	16'-9"	Str.		179
C501	10	2'-7"	101		27
C601	8	8'-0"	Str.		96
C602	14	2'-10"	108		60
C603	4	8'-3"	141		49
C604	10	2'-10"	108		43
C605	12	8'-8"	141		156
C606	16	6'-6"	Str.		156
(104□' of Welded Wire Fabric @ 85# per 100□')					89
				TOTAL WEIGHT =	1,005 lbs

BENDING DIAGRAMS — CABLE SPLICING MANHOLE





TYPICAL INTERMEDIATE CROSS FRAME BETWEEN GIRDER C AND D

H.N.T.B. BRIDGE NO. 46

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

SPECIAL DETAILS AND QUANTITIES FOR C.E.I. DUCTS

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN C.P.	TRACED	CHECKED WF JMC	REVIEWED WF	REVISED
DATE 6-11-64	DATE	DATE 6-15-64	DATE 6-15-64	1040 SHEET 227B

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

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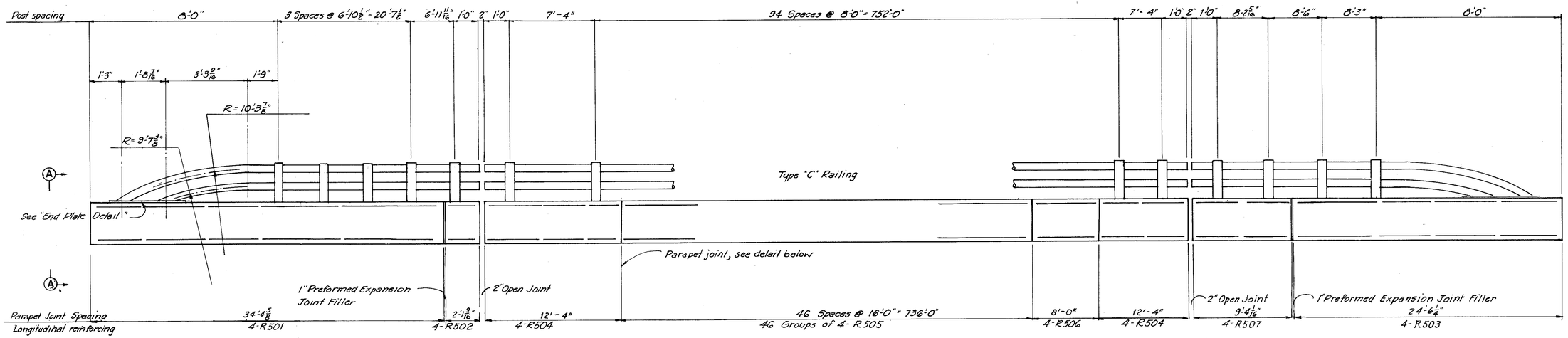
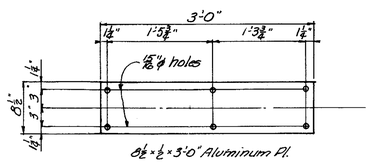
CUYAHOGA COUNTY
CUY-1-0.11

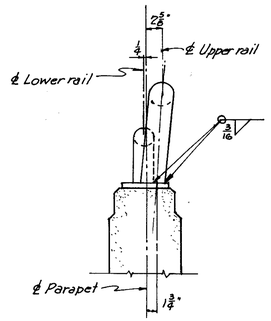


NORTH ABUTMENT **EAST RAILING** *shown, West similar by rotation.* **SOUTH ABUTMENT**

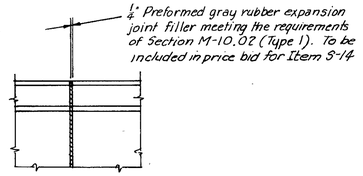
End Plate anchor bolts shall be set in place before parapet is poured.



END PLATE DETAIL



VIEW AA



PARAPET JOINT DETAIL

PARAPET REINFORCEMENT LONGITUDINAL

MARK	NUMBER	LENGTH	TYPE
R501	4	34'-1"	S
R502	4	1'-10"	S
R503	4	24'-2"	S
R504	8	12'-0"	S
R505	184	15'-8"	S
R506	4	7'-6"	S
R507	4	9'-0"	S

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 posts shall be normal to grade and the final adjustment of the railing shall be such that the top rail shall not depart more than ¼" 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 over-all length of the parapets and shall include cost of shims, nuts, anchor bolts, set screws, etc. necessary to complete the installation of railing.

Concrete and longitudinal reinforcing steel in the parapets 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 AR-1-57, revised 4-2-62.

H.N.T.B. BRIDGE NO. 46

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

RAILING DETAILS

I-271 UNDER RICHMOND ROAD (S.R. 175)

BR. NO. CUY-1-0170 STA. 11+24.73
SCALE STA. 19+11.02
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 3-1-63	DATE	DATE 3-27-63	DATE 4-16-64	1040 SHEET 228

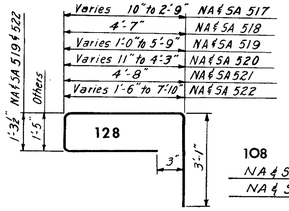
MARK	NUMBER	LENGTH	SER. INC.	TYPE	WT. LBS.
NORTH ABUTMENT REINFORCEMENT					
NA401	30	4'-11"	-	105	99
NA501	1 Ser. 3	Varies 31'-10" to 34'-9"	1'-5½"	S	104
NA502	5	32'-9"	-	S	171
NA503	10	34'-7"	-	S	361
NA504	36	6'-6"	-	105	244
NA505	36	6'-10"	-	101	257
NA506	36	8'-2"	-	105	307
NA507	9	28'-1"	-	5	264
NA508	66	12'-9"	-	125	878
NA509	73	6'-1"	-	110	463
NA510	10	34'-0"	-	S	355
NA511	10	24'-0"	-	S	250
NA512	4	30'-8"	-	5	128
NA513	4	35'-5"	-	S	148
NA514	1 Ser. 3	Varies 35'-0" to 38'-0"	1'-6"	5	114
NA515	4	38'-8"	-	5	161
NA516	10	1'-10"	-	5	19
NA517	1 Ser. 4	Varies 5'-6" to 9'-4"	1'-3"	128	31
NA518	2	13'-0"	-	128	27
NA519	1 Ser. 4	Varies 5'-9" to 15'-3"	3'-2"	128	44
NA520	1 Ser. 7	Varies 5'-8" to 12'-4"	11½"	128	66
NA521	1	13'-2"	-	128	14
NA522	1 Ser. 5	Varies 6'-9" to 19'-5"	3'-2"	128	68
NA523	10	9'-0"	-	S	94
NA601	48	24'-0"	-	127	1730
NA602	36	15'-1"	-	123	816
NA604	13	8'-0"	-	S	156
NA605	6	6'-7"	-	S	59
NA606	7	7'-7"	-	S	80
NA607	12	12'-0"	-	S	216
NA608	11	9'-6"	-	S	157
NA609	1 Ser. 3	Varies 3'-7" to 5'-6"	11½"	105	21
NA610	2 Ser. 5	Varies 8'-7" to 9'-11"	7"	S	139
NA611	6	10'-6"	-	S	94
NA612	2 Ser. 8	Varies 4'-2" to 7'-2"	5"	S	136
NA613	8	6'-3"	-	S	75
NA614	8	4'-0"	-	S	48
NA615	6	34'-6"	-	S	311
NA616	2 Ser. 5	Varies 7'-4" to 22'-0"	3'-8"	S	220
NA617	2	30'-0"	-	S	90
NA618	16	4'-1"	-	123	98
NA619	16	5'-11"	-	124	142
NA620	16	5'-2"	-	123	124
NA621	24	5'-0"	-	104	180
NA622	10	5'-8"	-	S	85
NA623	4	8'-8"	-	108	52
NA624	11	11'-10"	-	121	196
NA625	4	10'-6"	-	S	63
NA626	2	11'-5"	-	101	34
NA627	8	6'-3"	-	S	75
NA628	2	7'-2"	-	101	22
NA629	21	8'-6"	-	S	268
NA630	8	6'-8"	-	S	80
NA631	13	8'-6"	-	S	166
NA632	3	9'-9"	-	S	44
NA633	4	12'-0"	-	S	72
NA634	4	8'-8"	-	104	52
NA635	2 Ser. 9	Varies 4'-3" to 6'-7"	3½"	S	147
NA636	8	6'-2"	-	S	74
NA637	8	3'-10"	-	S	46
NA638	6	24'-6"	-	S	221
NA639	2	10'-6"	-	S	32
NA640	2	5'-0"	-	S	15
NA641	2	18'-0"	-	S	54
NA642	9	14'-2"	-	104	192
NA643	4	8'-11"	-	104	54
NA644	5	10'-6"	-	S	79
NA645	1 Ser. 4	Varies 9'-0" to 15'-0"	2'-0"	105	72
NA646	5	4'-6"	-	108	34
NA647	2 Ser. 4	Varies 6-2" to 10-2"	1'-4"	S	98
NA648	8	7'-10"	-	105	94
NA649	2 Ser. 4	Varies 7'-10" to 10'-6"	11"	105	111
NA650	12	10'-6"	-	105	189
NA651	2 Ser. 4	Varies 6'-4" to 9'-1"	11"	105	93
NA652	14	10'-8"	-	123	225
NA653	2	11'-10"	-	104	36
NA654	15	6'-0"	-	S	135

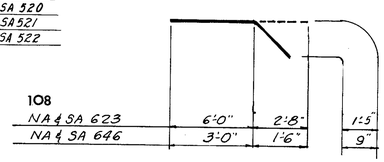
MARK	NUMBER	LENGTH	SER. INC.	TYPE	WT. LBS.
NORTH ABUTMENT REINFORCEMENT CONT.					
NA655	12	8'-10"	-	100	159
NA656	15	3'-8"	-	S	83
NA657	21	4'-10"	-	100	152
NA658	5	10'-0"	-	S	75
NA659	2 Ser. 4	Varies 3'-6" to 10'-6"	2'-4"	S	84
NA660	2	17'-8"	-	S	53
NA801	20	37'-0"	-	S	1,975
PIER REINFORCEMENT					
SP401	1	497'-6"		126	382
SP402	1	521'-10"			400
SP403	1	503'-4"			386
SP404	1	523'-5"			401
SP405	1	508'-3"			390
SP406	1	525'-2"			401
SP407	1	506'-1"			388
SP408	2	520'-2"			798
SP409	1	504'-1"			386
SP410	1	515'-1"			394
SP411	1	529'-8"			406
SP412	1	527'-0"			403
SP413	1	531'-2"			407
SP414	1	528'-7"			405
SP415	1	533'-0"			408
SP416	1	530'-8"			407
SP417	1	528'-0"			405
SP418	1	525'-6"			402
SP419	1	522'-10"			401
SP420	1	556'-1"			426
SP421	1	557'-8"			428
SP422	1	559'-6"			429
SP423	1	554'-7"			425
SP424	1	549'-4"		126	421
P501	250	3'-5"		105	892
P601	536	10'-0"		100	8,051
P801	80	10'-10"		100	2,313
P1001	50	14'-6"		100	3,120
P1002	300	7'-6"		101	9,682
P1003	12	17'-10"		S	921
P1004	48	18'-9"		S	3,870
P1005	24	18'-1"		S	1,867
P1006	24	18'-10"		S	1,947
P1007	12	18'-3"		S	942
P1008	24	18'-11"		S	1,954
P1009	12	18'-2"		S	938
P1010	12	18'-6"		S	955
P1011	36	19'-0"		S	2,943
P1012	12	19'-2"		S	990
P1013	24	19'-1"		S	1,968
P1014	48	20'-1"		S	4,147
P1015	12	19'-10"		S	1,024
SLAB REINFORCEMENT					
S501	2 Ser. 80	Varies 10'-8" to 37'-4"	4"	100	4,006
S502	2 Ser. 28	9'-5"		S	549
S503	4	36'-3"		S	151
S504	1309	39'-2"		100	53974
S505	200	40'-0"		S	8344
S506	1522	12'-9"		125	20240
S507	2 Ser. 6	Varies 6-0" to 12-8"	1'-4"	109	116
S508	2 Ser. 5	Varies 4'-10" to 10'-2"	1'-4"	109	78
S509	4	8'-2"		104	34
S510	1026	6'-1"		110	6510
S601	2 Ser. 80	Varies 10'-8" to 37'-4"	4"	100	5768
S602	2 Ser. 28	9'-5"		S	792
S603	4	36'-3"		S	218
S604	1309	38'-0"		S	74712
S605	1281	38'-6"		S	74076
S606	56	41'-0"		S	3,449
S607	84	45'-0"		S	5,678

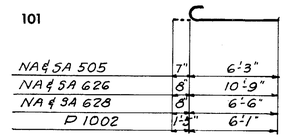
MARK	NUMBER	LENGTH	SER. INC.	TYPE	WT. LBS.
SOUTH ABUTMENT REINFORCEMENT					
SA401	30	4'-11"	-	105	99
SA501	1 Ser. 3	Varies 31'-10" to 34'-9"	1'-5½"	S	104
SA502	5	32'-9"	-	S	171
SA503	10	34'-7"	-	S	361
SA504	36	6'-6"	-	105	244
SA505	36	6'-10"	-	101	257
SA506	36	8'-2"	-	105	307
SA507	9	28'-1"	-	5	264
SA508	66	12'-9"	-	125	878
SA509	73	6'-1"	-	110	463
SA510	10	34'-0"	-	S	355
SA511	10	24'-0"	-	S	250
SA512	4	30'-8"	-	5	128
SA513	4	35'-5"	-	5	148
SA514	1 Ser. 3	Varies 35'-0" to 38'-0"	1'-6"	5	114
SA515	4	38'-8"	-	5	161
SA516	10	1'-10"	-	5	19
SA517	1 Ser. 4	Varies 5'-6" to 9'-4"	1'-3"	128	31
SA518	2	13'-0"	-	128	27
SA519	1 Ser. 4	Varies 5'-9" to 15'-3"	3'-2"	128	44
SA520	1 Ser. 7	Varies 5'-8" to 12'-4"	11½"	128	66
SA521	1	13'-2"	-	128	14
SA522	1 Ser. 5	Varies 6'-9" to 19'-5"	3'-2"	128	68
SA523	10	9'-0"	-	S	94
SA601	48	24'-0"	-	127	1730
SA602	36	15'-1"	-	123	816
SA604	13	8'-0"	-	S	156
SA605	6	6'-7"	-	S	59
SA606	7	7'-7"	-	S	80
SA607	12	12'-0"	-	S	216
SA608	11	9'-6"	-	S	157
SA609	1 Ser. 3	Varies 3'-7" to 5'-6"	11½"	105	21
SA610	2 Ser. 5	Varies 8'-7" to 9'-11"	7"	S	139
SA611	6	10'-6"	-	S	94
SA612	2 Ser. 8	Varies 4'-2" to 7'-2"	5"	S	136
SA613	8	6'-3"	-	S	75
SA614	8	4'-0"	-	S	48
SA615	6	34'-6"	-	S	311
SA616	2 Ser. 5	Varies 7'-4" to 22'-0"	3'-8"	S	220
SA617	2	30'-0"	-	S	90
SA618	16	4'-1"	-	123	98
SA619	16	5'-11"	-	124	142
SA620	16	5'-2"	-	123	124
SA621	24	5'-0"	-	104	180
SA622	10	5'-8"	-	S	85
SA623	4	8'-8"	-	108	52
SA624	11	11'-10"	-	121	196
SA525	4	10'-6"	-	S	63
SA626	2	11'-5"	-	101	34
SA627	8	6'-3"	-	S	75
SA628	2	7'-2"	-	101	22
SA629	21	8'-6"	-	S	268
SA630	8	6'-8"	-	S	80
SA631	13	8'-6"	-	S	166
SA632	3	9'-9"	-	S	44
SA633	4	11'-6"	-	S	69
SA634	4	8'-8"	-	104	52
SA635	2 Ser. 9	Varies 3'-5" to 6'-9"	5"	S	137
SA636	8	6'-2"	-	S	74
SA637	8	3'-10"	-	S	46
SA638	6	24'-6"	-	S	221
SA639	2	10'-6"	-	S	32
SA640	2	5'-0"	-	S	15
SA641	2	18'-0"	-	S	54
SA642	9	14'-2"	-	104	192
SA643	4	8'-11"	-	104	54
SA644	5	10'-6"	-	S	79
SA645	1 Ser. 4	Varies 9'-0" to 15'-0"	2'-0"	105	72
SA646	5	4'-6"	-	108	34
SA647	2 Ser. 4	Varies 6-2" to 10-2"	1'-4"	S	98
SA648	8	7'-10"	-	105	94
SA649	2 Ser. 4	Varies 7'-10" to 10'-6"	11"	105	111
SA650	12	10'-6"	-	105	189
SA651	2 Ser. 4	Varies 6'-4" to 9'-1"	11"	105	93
SA652	14	10'-8"	-	123	225
SA653	2	11'-10"	-	104	36
SA654	15	6'-0"	-	S	135

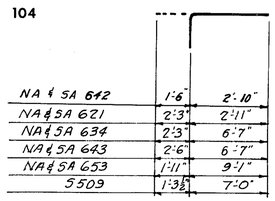
MARK	NUMBER	LENGTH	SER. INC.	TYPE	WT. LBS.
SOUTH ABUTMENT REINFORCEMENT CONT.					
SA655	12	8'-10"	-	100	159
SA656	15	3'-8"	-	S	83
SA657	21	4'-10"	-	100	152
SA658	5	10'-0"	-	S	75
SA659	2 Ser. 4	Varies 3'-6" to 10'-6"	2'-4"	S	84
SA660	20	17'-8"	-	S	53
SA801	20	37'-0"	-	S	1975

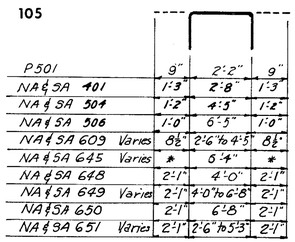
Total Lbs = 347505

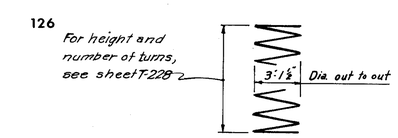












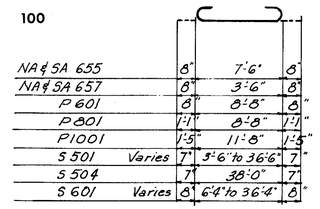
Note:
For replacement bar schedule see Sheet 193.

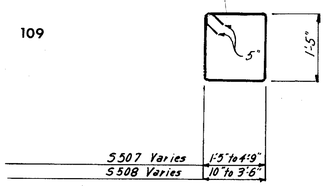
Reinforcement for lamp Standard Pedestals on the Bridge is detailed on sheet 229A.

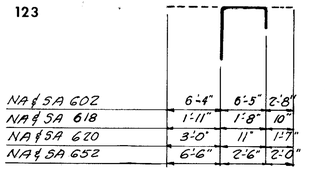
FED. ROADS DIV. NO.	STATE	FED. AID PROJ. NO.	
2	OHIO		

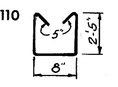
229
256

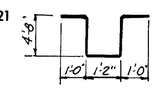
CUYAHOGA COUNTY
CUY-1-0.11

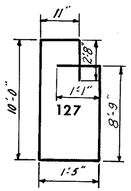


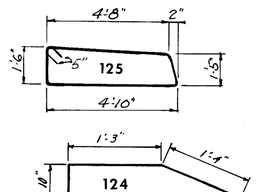


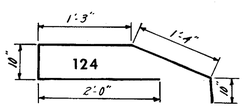












H.N.T.B. BRIDGE NO. 46

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

REINFORCEMENT SCHEDULE

I-271 UNDER RICHMOND ROAD (S.R. 175)

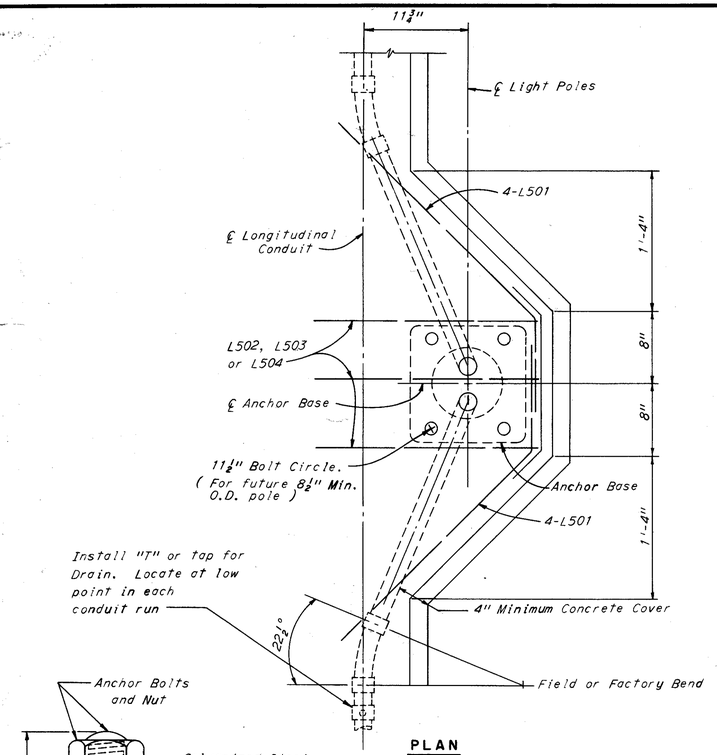
BR. NO. CUY-1-0170 STA. 11 24.73
SCALE STA. 19 11.02
CUYAHOGA CO. OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R L M		J G P	W.S	
DATE 5-29-63	DATE	DATE 5-7-63	DATE 4-16-64	1040 SHEET 229

FED RD. DIVISION	STATE	PROJECT	
2	OHIO		

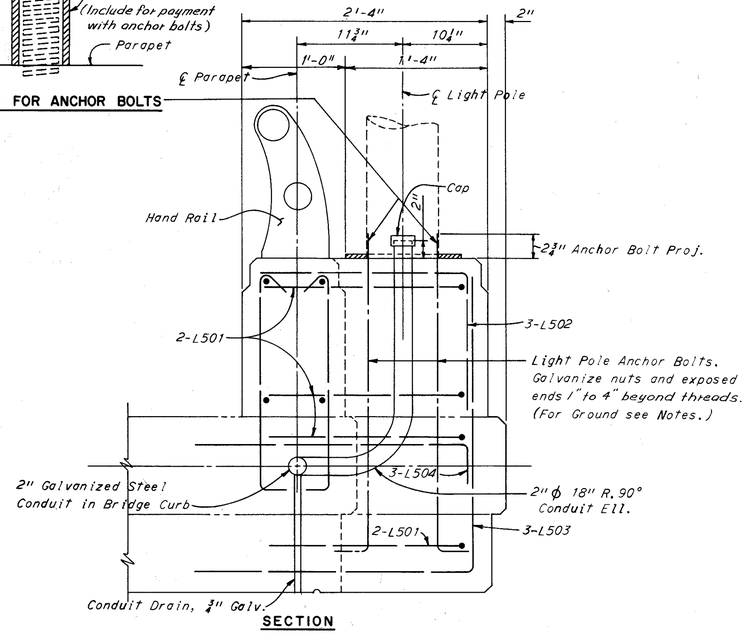
229A
256

CUYAHOGA COUNTY
CUY-I-O.II



PLAN

COVER FOR ANCHOR BOLTS



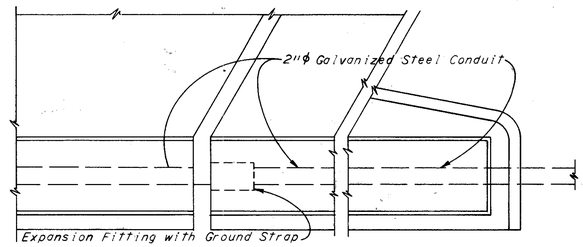
SECTION

BRIDGE LIGHT POLE SUPPORT

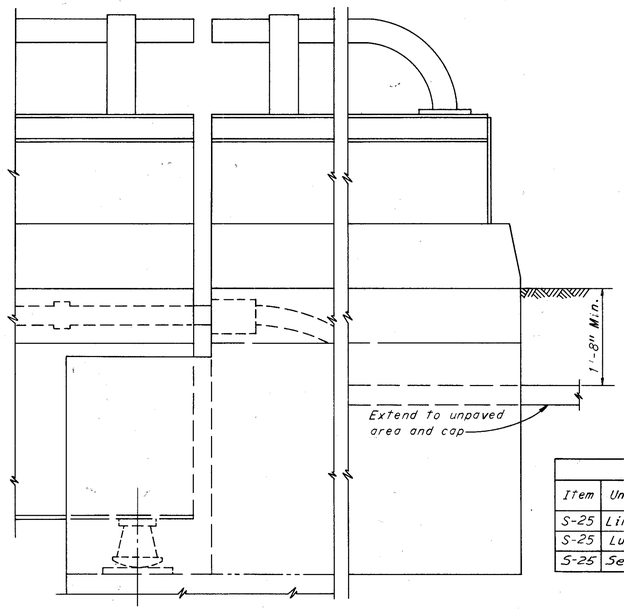
(Included in Bridge Superstructure Quantities)

BRIDGE LIGHTING TABULATION

Bridge No.	Bridge Location	Structure Ground Location	Light Poles Supports Location	Station			
CUY-1-0060 L	I-271 Over Miles Road	North Side, Pier 2	West Side	293+54			
CUY-1-0060 R	I-271 Over Miles Road	North Side, Pier 2	East Side	293+07			
CUY-1-0149	I-271 Under Emery Road	East Side, Pier 4	South Side	111+40	114+04	116+68	
CUY-1-0149	I-271 Under Emery Road	East Side, Pier 4	North Side	112+72	115+36	118+00	
CUY-1-0170	I-271 Under Richmond Road	South Side, Pier 3	West Side	12+00	13+94	15+88	17+82



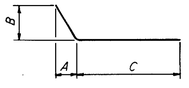
PLAN WITH TURN-BACK WINGS



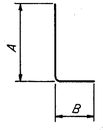
ELEVATION WITH TURN-BACK WINGS

REINFORCING STEEL LIST (I LAMP STANDARD)

Mark	No.	Length	Wgt.	Type	A	B	C	D	E	Shp.
L501	8	3'-3"	27	6	7"	7"	2'-6"			bt.
L502	3	3'-0"	9	1	1'-10"	1'-4"				bt.
L503	3	5'-6"	17	1	2'-9"	2'-11"				bt.
L504	3	3'-1"	10	1	2'-9"	6"				bt.



TYPE 6



TYPE 1

BRIDGE LIGHTING NOTES

1. GENERAL

The Contractor shall comply with Item S-25.05 before ordering any materials. The Contractor shall notify State Highway Lighting Engineer four (4) weeks in advance of the date of beginning bridge deck construction so that the location of each Bridge Light Pole Support can be verified.

Tentative location of light pole supports are shown by station in the tabulation.

2. CONDUIT AND FITTINGS

Conduit and fittings shall be standard weight steel, hot-dipped galvanized inside and outside. Mandrel each conduit run. A full size clear raceway shall be proven to the Engineer and immediately capped at each end. Metallic conduit expansion joints shall be hot-dipped galvanized, OZ Company "AX", Spring City "AFI", or approved equal. Provide grounding jumper for each joint. Position insulating bushing in accordance with temperature at the time of installation to provide for adequate expansion and contraction movement. Payment per linear foot, straight measure, installed including fittings, expansion joints and ground jumpers.

3. LIGHT POLE ANCHOR BOLTS

Four high grade steel anchor bolts (1"x40") fitted with hex nuts shall be furnished for each standard. Each anchor bolt shall have an "L" bend at the bottom end and be threaded at the top end. Threaded ends and nuts shall be galvanized in accordance with ASTM A-153 with galvanizing extending 1" to 4" beyond threads. Anchor bolts shall conform to ASTM A-107, Grade 1035 Special Quality, and shall have a minimum yield strength of 46,000 p.s.i. Bolt stock shall conform with A.S.T.M. Spec. A-39 and nominal bar size shall equal nominal bolt size.

4. BRIDGE GROUNDING SYSTEM

All grounding cable shall be 1/0 AWG, 7 strand soft annealed copper.

All grounding connections shall be exothermic welded.

STRUCTURE GROUND for each structure, connect the lower end of ground cable to the steel shell of a concrete pile of the fixed pier and extend the cable in one continuous length, a sufficient distance above the pier cap, to connect the upper end to the outside steel girder of the superstructure.

LIGHT POLE SUPPORT GROUND at each light pole support, connect one end of the ground cable to one of the light pole anchor rods and connect the other end to the top flange of the outside steel girder of the superstructure.

CONDUIT GROUND. For each conduit run, connect one end of ground cable to conduit and connect the other end to the grounded light pole anchor bolt or top flange of the adjacent steel girder of the superstructure.

PAYMENT for Bridge Ground System shall be lump sum bid for each structure.

BRIDGE LIGHTING SUMMARY

Item	Unit	Description	CUY-1-0060 L	CUY-1-0060 R	CUY-1-0149	CUY-1-0170
S-25	Lin.Ft.	2" Galv. Steel Conduit	195	195	1377	840
S-25	Lump	Bridge Grounding Systems	Lump	Lump	Lump	Lump
S-25	Sets	Anchor bolts incl. sleeves	1	1	6	4

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

BRIDGE LIGHTING AND SUMMARY LIGHTING NOTES

I-271 UNDER EMERY ROAD

BR NO CUY-I-0149 STA 111+51.36
SCALE None STA 118+04.54
CUYAHOGA CO. OHIO

DRAWN C.P.	TRACED	CHECKED M.C.	REVIEWED W.F.	REVISED
DATE 4-8-64	DATE	DATE 4-8-64	DATE 4-8-64	

EDD S

FF-3

L

STATE OF OHIO
DEPARTMENT OF HIGHWAYS

CUY-I-0.11
I-271
CUYAHOGA COUNTY
CITY OF BEDFORD HEIGHTS
CITY OF WARRENSVILLE HEIGHTS
WARRENSVILLE TOWNSHIP

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

230
256

CUYAHOGA COUNTY
CUY-I-0.11

CUY-271-7.85

LIMITED ACCESS

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

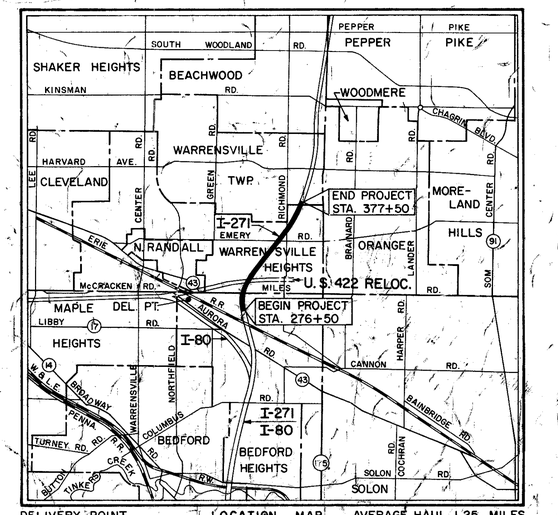
I-271-6(22)243
SU-274(2)

1963 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.

CONVENTIONAL SIGNS

Channel Easement Line	X X
Temporary Right of Way Line	T T
Limited Access Right of Way Line	LA/RW
Sewer Easement Line	S S
Slope Easement Line	SL SL
Property Line	℄
Existing Right of Way	
Limited Access Line	LA
Right of Way Line	RW RW
Temporary Right of Way	
Center Line	
Corporation Line	
Fence Line	
Guard Rail (Existing)	
Guard Rail (Proposed)	
Railroad	
Power Poles	
Telephone Poles	
Power & Telephone Poles	
Light Poles	
Trees (Existing)	
Water Line	
Gas Line	
Telephone Conduit	



DELIVERY POINT
ERIE - LACKAWANNA R.R.

LOCATION MAP

AVERAGE HAUL 1.25 MILES

SCALE IN MILES
0 1 2

Portion to be improved	
State Roads	
Other Roads	

SCALE

PLAN	1" = 50'
PROFILE: Horizontal	1" = 50'
PROFILE: Vertical	1" = 5'
CROSS SECTIONS	1" = 10'
SEWER PROFILES	1" = 10'

PREPARED AND RECOMMENDED BY

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

H. G. SOURS
ASSOCIATE
COLUMBUS

00138

FILE NO.
CUYAHOGA COUNTY
DATE OF LETTING ,196
CONTRACT NO.

706584

715

RECEIVED FOR RECORD
AT 10 4 M
JUL 22 1963
RECORDED IN CUYAHOGA COUNTY RECORDS
Vol. 3871 Page 15
MARK McELROY
County Recorder

TRANSFER NOT REQUIRED
JUL 22 1963
AUDITOR

779375

715

RECEIVED FOR RECORD
AT. 1105 A M
APR 14 1964
RECORDED IN CUYAHOGA COUNTY RECORDS
Vol. 124 Page 111
MARK McELROY
County Recorder

This improvement has been declared a limited access highway from Station 276+50 (I-271) to Station 317+50 (I-271) by the action of the Director of Highways and recorded in Volume 46, Page 1138 and Volume 42, Page 805 of the Directors Journal pursuant to law.

CENTER LINE SURVEY PLAT (REVISED 4-3-64)

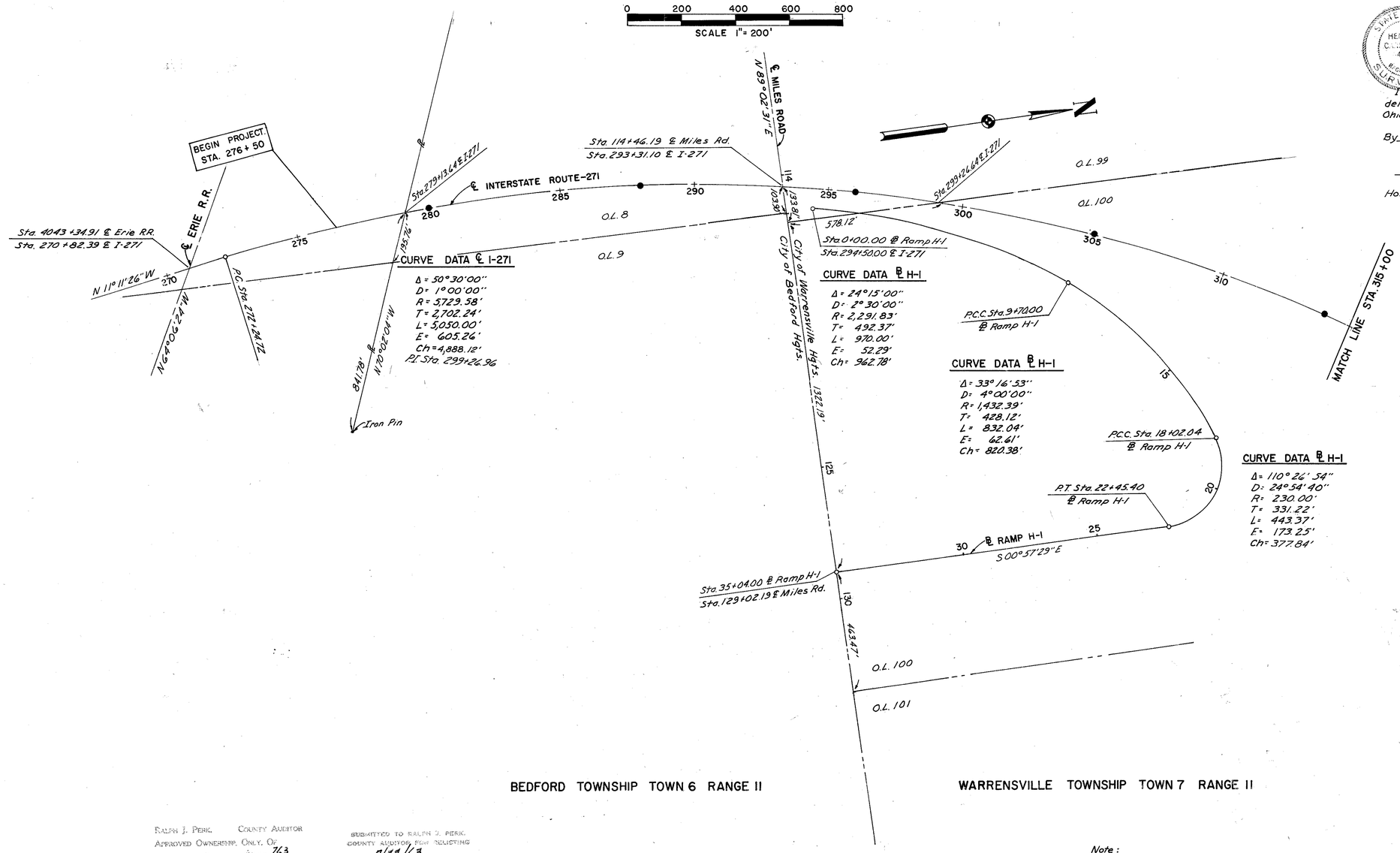
I.R:271 & S.R:1 CUY.-I-0.11

CUYAHOGA COUNTY, OHIO

BEDFORD TWP. R.11 T.6 O.L.'S 8 & 9

WARRENSVILLE TWP. R.11 T.7 O.L.'S 99,100,101,88,89,90,&80

SCALE 1"= 200'



BEDFORD TOWNSHIP TOWN 6 RANGE II

WARRENSVILLE TOWNSHIP TOWN 7 RANGE II

RALPH J. PERK. COUNTY AUDITOR
APPROVED OWNERSHIP ONLY. OF
PER'L NO. Map 763 Map 791
BY: J.M. Curly 7/22/63

SUBMITTED TO RALPH J. PERK. COUNTY AUDITOR FOR TRANSFER
DATE 7/22/63
E.D. Lavelle
CHIEF DEPUTY AUDITOR

Note:
- Monuments shall be located at the following stations where this symbol is shown:

280+00	P.C. 334+44.43
288+00	343+00
296+00	352+00
305+00	360+00
314+00	368+00
P.T. 322+74.72	376+00
329+00	

MADE E.R.H. DATE 4 Apr. 63 TRACED R.D.J. DATE 4-12-63
CHECKED D.W.K. DATE 7-17-63 SCALE 1"=200'

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

MAP 763 - MAP 791

NAME	REVISION	DATE
E.R.H.	See Sheet No 2 For Revision.	4-3-64

✓ 6-29 July 19 '64

MAY 19 1964

CENTER LINE SURVEY PLAT

Cuy 271-4.85

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

231 256

1 2

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS

Signed: Charles M. Gurick
Date: 7-19-63 Division Deputy Director
Ohio Department of Highways

STATE OF OHIO HENRY H. CARPENTER 4671 REGISTERED SURVEYOR

I hereby certify that this plat is a true delineation of a survey made for the Ohio Department of Highways in 1963

By Henry H. Carpenter
Registered Surveyor No. 4671
Date 7-18-63

Howard, Needles, Tammen & Bergendoff
Consulting Engineers

TRANSFER NOT REQUIRED
JUL 22 1963
AUDITOR

706585

715

779376

715

RECEIVED FOR RECORD
AT 1105 M
JUL 22 1963
RECORDED IN CUYAHOGA COUNTY RECORDS
Vol 187 Page 16
FRANK S. DAY
County Recorder
TRANSFER NOT REQUIRED
JUL 22 1963
AUDITOR

RECEIVED FOR RECORD
715 AT 1106 A M
APR 14 1964
RECORDED IN CUYAHOGA COUNTY RECORDS
Vol 1921 Page 15
MARK McELROY
County Recorder

CENTER LINE SURVEY PLAT (REVISED 4-3-64)

I.R-271 & S.R-1 CUY-1-0.11
CUYAHOGA COUNTY, OHIO

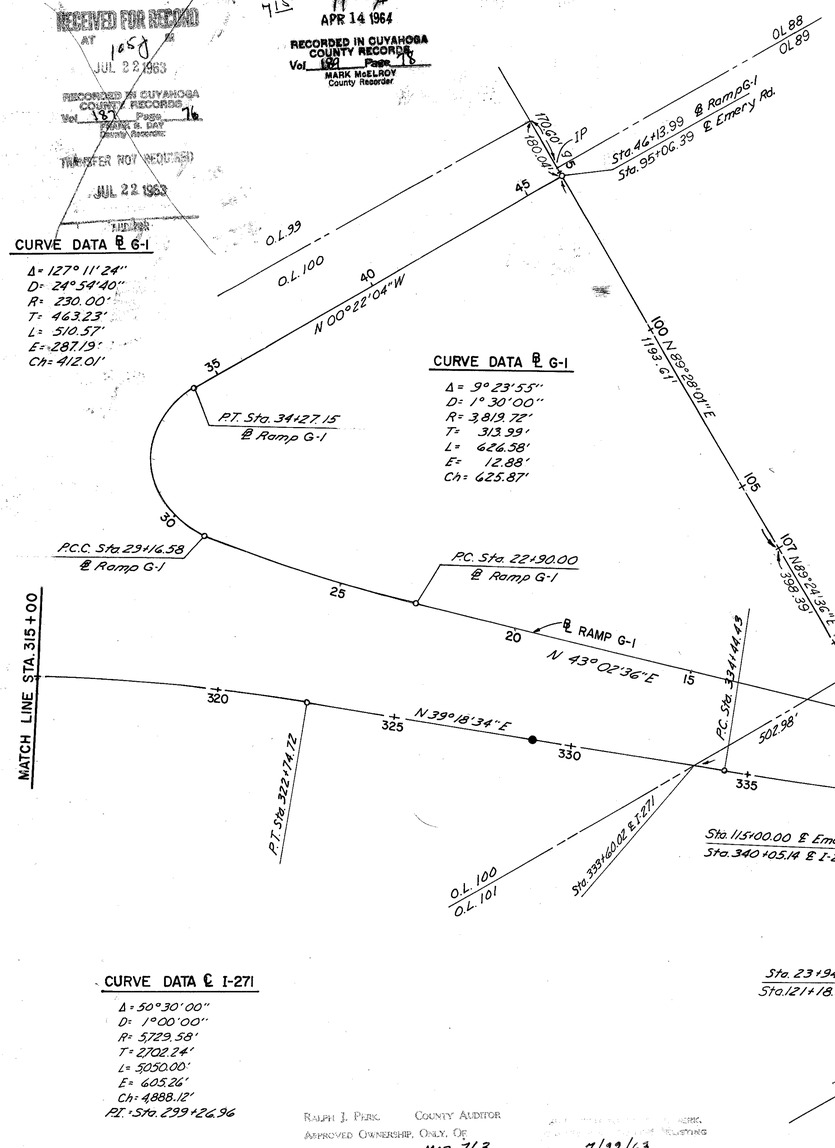
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

232
256

2
2

CUYAHOGA COUNTY
CUY-1-0.11
LIMITED ACCESS

0 200 400 600 800
SCALE 1"=200'



TRANSFER NOT REQUIRED
JUL 22 1963
AUDITOR

CURVE DATA ℄ G-1
Δ = 127° 11' 24"
D = 24° 54' 40"
R = 230.00'
T = 463.23'
L = 510.57'
E = 287.19'
Ch = 412.01'

CURVE DATA ℄ G-1
Δ = 9° 23' 55"
D = 1° 30' 00"
R = 3,819.72'
T = 313.99'
L = 626.58'
E = 12.88'
Ch = 625.87'

CURVE DATA ℄ G-1
Δ = 10° 12' 00"
D = 1° 30' 00"
R = 3,819.72'
T = 340.90'
L = 680.00'
E = 15.18'
Ch = 679.10'

CURVE DATA ℄ I-271
Δ = 50° 30' 00"
D = 1° 00' 00"
R = 5,729.58'
T = 2702.24'
L = 5050.00'
E = 605.26'
Ch = 4888.12'
P.T. Sta. 299+26.96

CURVE DATA ℄ I-271
Δ = 40° 05' 00"
D = 0° 28' 00"
R = 12,277.67'
T = 4,478.82'
L = 8,583.29'
E = 791.42'
Ch = 8,415.20'
P.T. Sta. 379+23.25

RALPH J. PERK, COUNTY AUDITOR
APPROVED OWNERSHIP ONLY, OF
PERM. PARC. NO. MAP 763
By: [signature] 7/22/63

[illegible] SURVEYING
7/22/63
D.W. Lowrie
COUNTY AUDITOR

MADE E.R.H.	DATE 4 Apr 63	TRACED R.D.J.	DATE 4-23-63
CHECKED D.V.H.K.	DATE 7-17-63	SCALE 1"=200'	

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

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

MAP
763

VSTP July 19/63

NAME	REVISION	DATE
E.R.H	Rev. Emery Rd. Bearing & Stationing	4-3-64

MAY 19 1964

CENTER LINE SURVEY PLAT

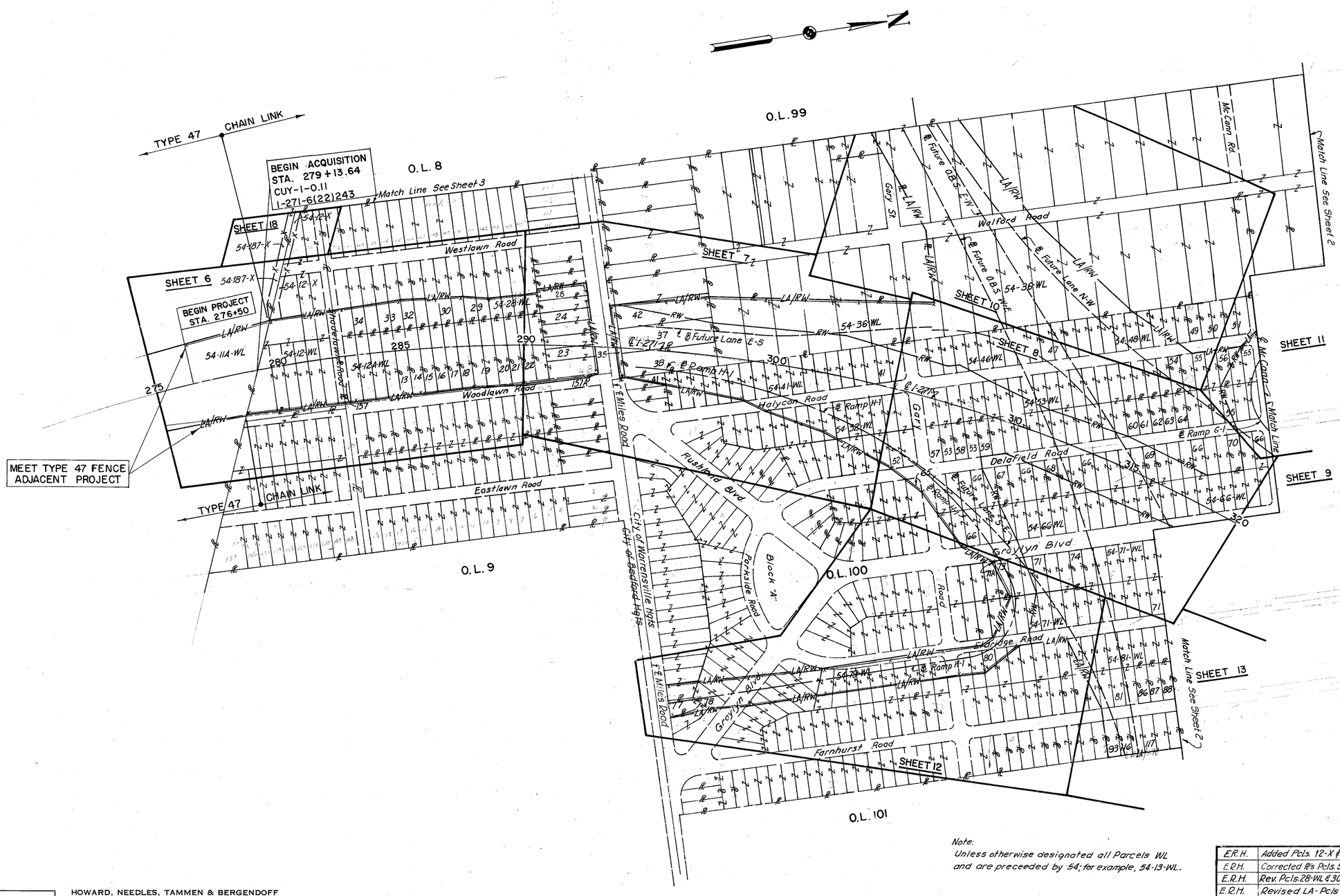
PROPERTY MAP

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

233
256

1
3

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I-271-6(22)243



Note:
Unless otherwise designated all Parcels WL and are preceeded by 54; for example, 54-13-WL.

NAME	REVISION	DATE
E.R.H.	Added Pcls. 12-X & 187-X	9 Mar 64
E.R.H.	Corrected R/s Pcls. 53-WL & 57-WL	8 Jan 64
E.R.H.	Rev. Pcls. 28-WL & 30-WL. Delete Pcl. 31-WL	22 Nov 63
E.R.H.	Revised LA-Pcls 41-WL, 52-WL, 65-WL & 66-WL. Elim. Pcls. 71A-X & 72-X	28 Aug 63

MADE E.R.H. DATE 3 June 63 TRACED DATE
CHECKED E.C.E. DATE 4-17-64 SCALE 1"=200'

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

PROPERTY MAP

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

234/256

2/3

CUYAHOGA COUNTY
CUY-1-0.11
LIMITED ACCESS
I-271-6(22)243
SU-274(2)

SHEET 8 | SHEET 9 | SHEET 11 | SHEET 11A | SHEET 13 | SHEET 14 | SHEET 15 | SHEET 16 | SHEET 17

O.L. 99 | O.L. 100 | O.L. 88 | O.L. 89 | O.L. 101 | O.L. 90 | O.L. 80

Wolford Road | Tamberlane Road | Merrygold Blvd | Dorover Rd | London Lane | Berrimore Lane | E. Emery Road | Ivyton Road | Graylyn Blvd | Delafield Road | Holycon Road | Meadvale Blvd. | Eldridge Road | Farnhurst Road | Richmond Road | 109-WD Road

Warrensville Township
City of Warrensville Hgts.

Match Line See Sheet 1

℄ Ramp G-1 | ℄ Ramp G-1X | ℄ McBaron Road | ℄ Future Lane E-N | ℄ Future 0.85 E-W | ℄ I-271 | ℄ Richmond | ℄ Emery Road

SU-274(2)

MEET TYPE 47 FENCE ADJACENT PROJECT

END ACQUISITION
STA. 371+01.82
CUY.-1-0.11
I-271-6(22)243

END PROJECT
STA. 377+50

CHAIN LINK TYPE 47

Note:
Unless otherwise designated, all Parcels WL and are preceeded by 54; for example 54-13-WL.

E.R.H.	Rev. 123-A, 156 & 160, WL to LA. Add 160-A-LA	13 Apr. 64
E.R.H.	Rev. Pcl. 95-T Delete Pcl. 126-T	26 Mar 64
E.R.H.	Added Pcls. 94-T(1), 109-T, 126-WD & 161-T	26 Mar 64
E.R.H.	Rev. Pcls. 103-WL, 103-WD, 103-S & 103-SL.	12 Feb. 64
E.R.H.	Rev. Pcls. 103-WD, 104-WD & 104-SL. Add	"
	Pcl. 103-WL. Delete Pcl. 104-S.	7 Jan. 64
E.R.H.	Add Pcl. 124-WD. Delete Pcl. 124-T	19 Dec. 63
E.R.H.	Delete Pcls. 108-S, 108A-S, 108-X, 163-SL.	
	thru 166-SL & 166-WD.	22 Nov. 63
E.R.H.	Rev. Pcls. 107-T, 108-WL, 110-WL, 162-WD &	
	162-SL. Add Pcl. 110A-WL.	22 Nov. 63
E.R.H.	Rev. Pcls. 103-WD, 103-SL, 104-WD, 104-SL	
	154-WD, 154-SL, 156-WD & 172-SL.	
	Delete Pcls. 156-T & 156A-T. Add Pcl. 156-SL	6 Nov. 63
E.R.H.	Rev. Pcls. 94-SL, 95-WL, 95-SL, 103-WD, 104-WD,	
	154-WD & 161-SL. Add Pcls. 94-WD, 95-T, 103-SL,	
	104-SL, 154-SL, 161-WD, 162-WD, 166-WD thru	
	171-WD & 162-SL thru 172-SL. Delete Pcl 154-WA.	9 Oct 63
NAME	REVISION	DATE

MADE ERH DATE 3 June 63 TRACED DATE
CHECKED ECE DATE 4-17-64 SCALE 1" = 200'

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

PROPERTY MAP

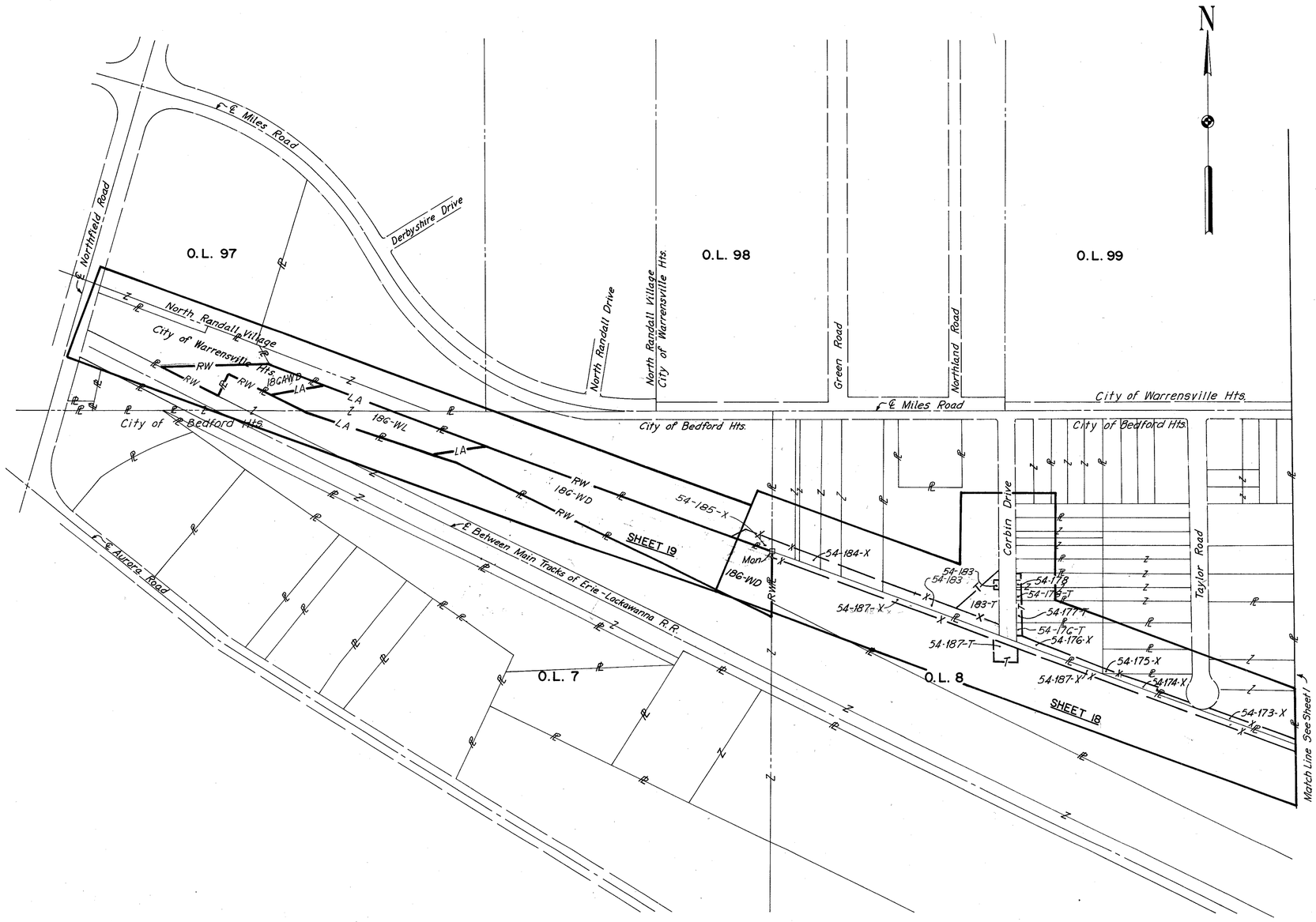
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

235
256

3
3

CUYAHOGA COUNTY
CUY-1-0.11
LIMITED ACCESS
I-271-6(22)243

PROPERTY MAP



MADE	E.R.H.	DATE	2-10-64	TRACED	R.J.K	DATE	2-14-64
CHECKED	ECE	DATE	4-17-64	SCALE	1" = 200'		

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

NAME	REVISION	DATE
E.R.H.	Rev. Pcls. 17G-X, 183-X, 183-T & 185-X Add	
	Pcls. 17G-T, 177-T, 178-T, 183, 18G-WL, 18G-WD, & 18GA-WD, Delete 179-T, 185-T, 18G-X, 187A-X & 187B-X.	9-Apr.64

PROPERTY MAP

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-I-0.11

236/256

1/19

	PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
*	54-12-WL	Joseph R. Manolio & Ralph Bernardo	8898	568	210,172	125,739		67,143	10,211	6	Also owns Pcls. 12A-WL & 32-WL;
*	54-12-X	" " " "				7,079				6 & 18	sep. prop. Also Deed Vol. 10356 Pg. 449
*	54-12A-WL	" " " "	8802	7	54,000	54,000				6	Total Taking. A sep. property.
			10356	449							
*	54-13-WL	Wilma Galewood	6863	169	13,500	13,500				6	" "
*	54-14-WL	Frank Jezek	5699	246	13,500	13,500				6	" "
*	54-15-WL	Frank Link	7624	612	13,500	13,500				6	" "
*	54-16-WL	Patrick Antonelli & William Cesa	7625	700	13,500	13,500				6	" "
*	54-17-WL	Rose M. Weber & Helene W. Pucher	-	-	13,500	13,500				6	Probate Ct. 480-471,387. Total Taking.
*	54-18-WL	Gus Kornicks	7032	509	13,500	13,500				6	Total Taking. Also owns Pcls. 126-WL & 150-WL; sep. properties
*	54-19-WL	Julia R. Abelt	8639	705	27,000	27,000				6	Total Taking.
*	54-20-WL	Emil Fecho	5806	426	13,500	13,500				6	Total Taking; Also owns Pcl. 23-WL, A separate property
*	54-21-WL	Paul T. Korecko	8637	382	13,500	13,500				6	Total Taking
*	54-22-WL	Joseph Nero	9464	113	13,500	13,500				6 & 17	" "
*	54-23-WL	Emil Fecho	5891	729	47,500	47,500				7	Total Taking. A separate property.
*	54-24-WL	Steve Codley	7037	151	30,000	30,000				7	Total Taking. Also owns Pcls. 27 & 29; separate properties.
	54-25-WL	Lucarelli & Albert Co.	8204	613	-	-				7	Not Needed.
	54-26-WL	Frank Novak	9410	180	-	-				7	" "
	54-27-WL	Steve Codley	5286	361	-	-				7	" " ; A sep. prop.
*	54-28-WL	Gust Codley	6414	651	64,000	24,833		39,167		6 & 7	Also Deed Vol 8882 Pg. 440
			6013	413							INCLUDES LIMITATION OF ACCESS ON MILES ROAD
*	54-29-WL	Steve Codley	5277	297 & 299	27,000	9,416		17,584		6	A separate property
*	54-30-WL	Marie Haussler	4872	283	54,000	22,000		32,000		6	
			8206	127 & 131							
			8455	688							
	54-31-WL										Part of Pcl. 30-WL
*	54-32-WL	Joseph R. Manolio & Ralph Bernardo	8804	634	13,500	5,917		7,583		6	A separate property.
			10356	449							
*	54-33-WL	Louis C. Roylan	9757	363	27,000	11,841		15,159		6	
*	54-34-WL	Patricia L. & Gust Codley	10967	547	40,500	17,166		23,334		6	
*	54-35-WL	Sanford Gottsegen	10601	433	23,891	6,000		17,891		7	NOT NEEDED - TAKE IS P.R.O.
*	54-36-WL	Paul Lipman, Trs.	10396	4	50.00*A.	22.32 A		27.68*A		7, 8, 10 & 11	
			10396	93 thru 135							
*	54-37-WL	Ignatius & Anna Golias	6013	36	38,000	38000	Yes			7	Total Taking
*	54-38-WL	Oscar S. & Anna M. Killen	5693	631	38,004	38004	Yes			7	" "
	54-39-WL	Lee & Margaret McClurg	8630	720	-	-				7	Not Needed.
	54-40-WL										Part of Pcl 36-WL
*	54-41-WL	Cleveland Harvard Lumber & Door	10659	617	169,356	140,686			28,670	7 & 8	Also owns Pcls 46, 48, 51, 52, 53, 55, 65, 66, 71, 78, 79, 80, 81, 83, 85, 93, 117, 120, 123, 125, 127, 129, 134, 136, 141, 143 & 146
*	54-42-WL	John Stark	7,230	256	76,004	34,202		41,802		7	
	54-43-WL										Part of Pcl 36-WL
	54-44-WL										" " " "
	54-45-WL										" " " "
*	54-46-WL	Cleveland Harvard Lumber & Door	10659	617	78,824	78,824				8	Total Taking. A separate prop.

FENCE LEGEND

- (E) End Post
- (C) Corner Post
- (I) Intermediate Post

ESTIMATED QUANTITIES - FENCE

R/W Sheet No. 6	7	8	9	10	11	11A	12	13	14	15	16	17	Total Quantity	Unit	Item	Description
536											1,352	1,996	3,884	Lin. Ft.	I-25	Type 47 Fence
2,172	3,479	577	1,349		2,590	516	3,262	35	1,550	1,970	1,616	489	19,605	Lin. Ft.	I-26	Chain Link Fence

Note:
Areas followed by the letter "A" are in acres; all other areas are in square feet.
Residual areas that are landlocked are followed by the letter (L).
* Parcels required this project.
** Parcels required future construction.

K.J.S.	Rev. Taking & Residue Parcel 54-28-WL	28 May 65
A.M.	Parcel 54-35 WL Not Needed - Note added.	6-23-64
	Cleveland Land & Development Company.	4 May 64
K.J.S.	Cleveland Harvard Lumber & Door, Formerly	
E.R.H.	Add I-25 Fence Rev. I-26 Fence Quantity	7 Apr. 64
E.R.H.	Added Pcl. 12-X	12 Mar 64
E.R.H.	Rev Taking & Res Quan. Pcl. 35-WL	19 Dec 63
E.R.H.	Rev I-26 Fence Quan. Delete I-25 Fence.	21 Nov 63
E.R.H.	Rev Owner Pcls. 12-WL, 12A-WL, 32-WL & 34-WL. Rev.	
	Pcls. 28-WL, 30-WL, 35-WL, 36-WL & 42-WL. Delete	
	Pcls. 31-WL, 40-WL, 43-WL, 44-WL & 45-WL.	20 Nov 63
RJZ	Rev. taking & residue, Parcel 41-WL; Rev. Fence quant.	8/23/63
NAME	REVISION	DATE

MADE E.R.H. DATE 1 June 63 TRACED ____ DATE ____
CHECKED E.C.E. DATE 4-17-64 SCALE ____

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY - I - 0.11

237 / 256

2 / 19

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

	PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
**	54-47-WL	Joseph Frezek	8807	183	15,725	15,725				8 & 10	Total Taking
**	54-48-WL	Cleveland Harvard Lumber & Door	10659	617	78,338	60,757		17,581		8 & 10	A separate property
	54-49-WL	Joseph Frezek & Estelle Schottke	10673	399						10	Not Needed.
	54-50-WL	Frances C. Stedronsky	4449	624						10	" "
	54-51-LA	Cleveland Harvard Lumber & Door	10659	617						10 & 11	" " A sep. property. Limitation of Access Parcels 86,90 & 91
*	54-52-WL	" " " "			260,220	97,046			163,174	7 & 8	A separate property.
*	54-53-WL	" " " "			247,414	247,414				8 & 10	" " " ; Total Taking.
**	54-54-WL	Albert Osterheld	3372	103	7,500	7,500				8 & 10	Total Taking.
*	54-55-WL	Cleveland Harvard Lumber & Door	10659	617	82,328	82,328				8, 10 & 11	" " ; A sep. property.
*	54-56-WL	Helen Groben	8848	105	7,500	7,500				11	" "
*	54-57-WL	Matilda C. Freedman	10333	558	7,414	7,414				8	" "
*	54-58-WL	John Jr. & Margaret Mahovlic	7223	169	7,500	7,500				8	" "
*	54-59-WL	Louis S. Rubin	7225	46	7,500	7,500				8	" "
**	54-60-WL	Otto W. & Bertha M. Glasnapp	3431	470	7,500	7,500				8	" "
**	54-61-WL	Joseph B. Wainright & Fred C. Boston	2744	300	7,500	7,500				8	" "
**	54-62-WL	Emma A. O'Brien	4602	120	7,500	7,500				8	" "
**	54-63-WL	George F. Watson	6620	86	7,500	7,500				8	Total Taking.
**	54-64-WL	Abraham Guttentag	8631	175	7,500	7,500				8	" "
*	54-65-WL	Cleveland Harvard Lumber & Door	10659	617	107,753	1,744			106,009	8	A separate property.
*	54-66-WL	" " " "			374,657	369,075			5,582	8, 9 & 11	Also Deed Vol. 7021 Pgs. 310 & 315 & Vol. 7623 Pgs. 550, 552 & 556; & Vol. 8488 Pgs. 147, 148 & 150. A separate property.
**	54-67-WL	Dornback Realty Co.	6819	27	7,500	7,500				8	Total Taking.
*	54-68-WL	Felix E. & Dorothy Sycle	10177	377	7,500	7,500				8	" "
*	54-69-WL	Olive M. Rooney	8012	140	7,500	7,500				8	" "
**	54-70-WL	John W. Wallasse	3960	74	7,500	7,500				8	" "
*	54-71-WL	Cleveland Harvard Lumber & Door	10659	617	367,157	315,578			51,429	8, 9, 12 & 13	Also Deed Vol. 8270 Pg. 429 & Vol. 8406 Pg. 472. A separate property.
*	54-71A-WL	" " " "				150				12	
	54-71A-X	" " " "				-				12	Not Needed
	54-72-WL	E. Lee Langham	9068	341	7,500	-			7,500	12	Not Needed.
	54-72-X	" " "				-				12	Not Needed
*	54-73-WL	Eileen Rosenthal	10952	393	7,500	5,100			2,400	12	
**	54-74-WL	Frank J. Moran	8037	451	7,500	7,500				8	Total Taking.
**	54-75-WL	Irma C. Frantz	2922	220	7,500	7,500				8	" "
*	54-76-WL	M. Clark Mixter	8246	430	7,500	7,500				9	" "
*	54-77-WL	Laddie Jezek	6298	329	6570	6570				12	" "
*	54-78-WL	Cleveland Harvard Lumber & Door	10659	617	375,037	26,512		17,575	330,950	12	Residue left and right of @ Ramp H-1. A separate property.

Note:
Areas followed by the letter "A" are in acres; all other areas are in square feet.
Residual areas that are landlocked are followed by the letter (L)
* Parcels required this project.
** Parcels required future construction.

NAME	REVISION	DATE
K.J.S	Parcel 54-51-WL Changed to 54-51 LA	4 May 64
	Cleveland Land & Development Company	4 May 64
K.J.S	Cleveland Harvard Lumber & Door Formerly	
E.R.H	Rev. Owner Pcls. 49-WL & 73-WL.	21 Nov 63
R.J.Z	Parcels 71A-X & 72-X - not needed	8/29/63
R.J.Z	Rev. taking & residue, Parcels 52-WL, 65 WL, 66-WL	8/23/63

MADE E.R.H DATE 1 June 63 TRACED DATE
CHECKED E.C.E DATE 4-17-64 SCALE

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

238/256

CUYAHOGA COUNTY
CUY-I-0.11

3/19

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

	PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
*	54-79-WL	Cleveland Harvard Lumber & Door	10659	617	269,009	82,937		181,016	5,050	12	A separate property. Residue left and right of I-71 Ramp H-1.
*	54-80-WL	" " " "			232,328	14,039			128,289	12	A separate property.
**	54-81-WL	" " " "				90,000				12&13	
**	54-82-WL	Leah Monreal	5811	314	15,000	15,000				13	Total Taking.
**	54-83-WL	Cleveland Harvard Lumber & Door	10659	617	45,000	45,000				13	" " . A sep property
**	54-84-WL	Ben Hoffman	9962	57	7,500	7,500				9&13	Total Taking.
**	54-85-WL	Cleveland Harvard Lumber & Door	10659	617	44,828	44,828				9,13&14	" "
**	54-86-WL	Charles & Helen J. Kensicki	6807	114	7,500	7,500				13	" "
**	54-87-WL	Jerry Jezek	7628	14	7,500	7,500				13	" " . Also owns Pcl 92-WL, A separate property.
**	54-88-WL	S.W. Selker, Trustee	7216	208	7,500	7,500				13	Total Taking.
**	54-89-WL	Anna Hecker	4533	324	7,500	7,500				13	" "
**	54-90-WL	Stephen Rossy	6687	408	7,500	7,500				13	" " . Also owns Pcls. 91, 116, 118, 130, 137, & 138.
**	54-91-WL	" "	6687	387	7,500	7,500				13	Total Taking. A sep. property.
**	54-92-WL	Jerry Jezek	7070	720	7,500	7,500				13	" " . " " "
**	54-93-WL	Cleveland Harvard Lumber & Door	10659	617	7,500	7,500				13	" " . " " "
*	54-94-SL	Karel & Colette Fiser	9935	375	41,463	4,759		35,884		14	Deed Area excl. 2,460 sq ft-Rd.
*	54-94-T	" " "				5,307				14	Part of Pcl. 94-T occupies some
*	54-94-WD	" " "				820				14	area as all of Pcl. 94-SL.

	PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
*	54-95-WL	Fred D. Nero	8664	122	41,448	5,330	Yes	33,026(L)		14	Deed Area excl. 2,460 sq.ft-Road.
*	54-95-SL	" " "				3,092				14	Pcls. 95-T(1) & 95-SL occupy some
*	54-95-T	" " "				1,418				14	area.
*	54-95-T(1)	" " "				3,092				14	
*	54-96-WL	Albert & Margaret Frihauf	8656	570	41,396	13,776	Yes			14	Total Taking. Residue 27,620 sq.ft.EL Deed Area excl. 2,460 sq.ft-Road
*	54-97-WL	Andrew E. & Mae Bodnar	6082	142	41,361	21,641	Yes			14	Total Taking. Residue 19,720 sq. ft. EL Deed Area excl. 2,460 sq.ft-Road.
*	54-98-WL	Selden & Barbara J. Burich	9047	107&109	82,676	66,904	Yes			14	Deed Area excl. 4,920 sq.ft-Road.
	54-98-EL					15,772					Total Taking. Residue 15,772 sq. ft. EL
*	54-99-WL	Mary A. Seman	7609	296	41,273	41,273	Yes			14&15	Total Taking. Deed Area excl. 2,460 sq.ft-Road.
*	54-100-WL	Harold A. & Eva Deeks	5837	341	191,035	191,035	Yes			14&15	Purchased as Total Taking-AA-12-103. Deed Area excl. 24,675 sq.ft-Road.
*	54-101-WL	" " " "	4078	48	20,808	20,808	Yes			15	Purchased as Total Taking-AA-12-103. Deed Area excl. 2,700 sq.ft-Road.
*	54-102-WL	Martha R. Deeks	5837	343	17,360	17,360				15	Purchased as Total Taking-AA-12-103A Deed Area excl. 2,250 sq.ft-Road.
*	54-103-WD	Standard Oil Co.	–	–	0.588 A	0.075 A		0.417A		15	Torrens Cert. No. 79019. Deed
*	54-103-S	" " "				0.021 A				15	Area excl. 0.241A-Road. Residue
*	54-103-SL	" " "				0.089 A				15	Left of Richmond Rd.
*	54-103-WL	" " "				0.007 A				15	
*	54-104-WL	Layce Investment Co.	8438	72	30.75 A	3.129 A	Yes		25.347A	15&16	Deed Area excl. 1.421 A - Road.
*	54-104-WD	" " "				2.245 A				15&16	
	54-104-S	" " "				–				15&16	Not Needed.
*	54-104-SL	" " "				0.029 A				15	
*	54-105-WL	Hubert W. Ellacott et al	5144	262	4.99 A	1.85 A	Yes	3.14 A (L)		14&15	Deed Area excl. 0.07 A - Road.
*	54-105A-WL	Hubert W. & Russell J. Ellacott	7067	342	0.23 A	0.05 A		0.18 A (L)		14	
*	54-105B-WL	Hubert W. & Delia E. Ellacott	4141	487	0.21 A	0.21 A	Yes			14&15	Total Taking. Deed Area excl. 0.01 A - Road.
			7067	344							
*	54-105C-WL	Russell J. Ellacott	4141	485	0.18 A	0.18 A	Yes			14&15	Total Taking.
*	54-105D-WL	Russell J. & Kathleen Ellacott	7240	632	0.04 A	0.04 A				15	" ". Also owns Pcl 161-SL, a sep prop. Deed Area excl. 0.1 A - Road.
*	54-105E-WL	Hubert W. Ellacott et al	6669	104	0.03A	0.03A				15	Total Taking. Deed Area excl. 0.08 A - Road.
*	54-106-WL	Juanita Ellacott	7820	61	0.50A	0.50A	Yes			14&16	Total Taking. Deed Area excl. 0.10 A - Road.
*	54-107-WL	William F. & Juanita Ellacott	7041	692	12.51 A	0.82 A	Yes	11.69A(L)		14&16	Deed Area excl. 0.06 A - Road.
*	54-107-T	Ervin Brown	10943	87	11.69 A	0.12 A		11.69A (L)		14&16	Acquired residue Pcl. 107-WL
*	54-108-WL	Ethel M. Cutting	6084	290	4.752A	8.77 A	Yes	1.51 A	37.13A(L)	16	Deed Area excl. 0.58 A - Road.
*	54-108-WD	" " "				0.11 A				16	Purchased as Total Taking-AA-12-104.

Note:
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Residual areas that are landlocked are followed by the letter (L).
* Parcels required this project.
** Parcels required future construction.

E.R.H.	Rev. Deed area & Residue Parcel 104-WL		17 Apr. 64
E.R.H	Rev. Pcls: 94-T & 104, Pcl. 95-T(1) Added.		26 Mar. 64
E.R.H	Rev. Takings Pcls. 103-WL, 103-WD, 103-SL & 103-S.		
	Rev. Deed Areas & Res. Pcls 94, 95 & 103.		12 Feb 64
E.R.H.	Rev. Pcls. 103-WD, 104-WD & 104-SL. Add Pcl. 103-WL.		
	Delete Pcl. 104-S.		7 Jan 64
E.R.H.	Rev. Pcls. 107-T & 108-WL Delete Pcls 108-S & 108A-S.		20 Nov 63
E.R.H	Rev. Pcls. 103-SL & 104-WD		6 Nov 63
E.R.H	Rev. Pcls. 100-WL, 101-WL, 102-WL Elim. Pcls. 100-WD, 101-WD, 102-WD		8 Oct 63
E.R.H	Rev. Pcls. 96-WL, 97-WL, 98-WL Total Taking		8 Oct 63
E.R.H	Rev. Pcls 94-SL, 95-WL, 95-SL, 103-WD & 104-WD		
	Added Pcls. 94-WD, 95-T, 103-SL & 104-SL		8 Oct 63
NAME	REVISION		DATE

		K.J.S	Rev. Take & Residue Parcel 54-94-SL	4 May 64
			Cleveland Land & Development Company	4 May 64
W.F.T.	Rev. Pcl. 54-98WL & Added Pcl. 54-98 EL	29 SEPT 89 K.J.S.	Cleveland Harvard Lumber & Door Formerly	NAME

MADE E.R.H. DATE 3 June 63 TRACED DATE
CHECKED E.C.E DATE 4-17-64 SCALE

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

FED. RD. DIVISION	STATE	PROJECT	
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SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

	PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
*	54-109-WL	Board of County Commissioners	–	–	50.000°A	0.548A.		48.308°A		16	
*	54-109-WD	" " "				1.144 A.				16	
*	54-109-T	" " "				0.126 A.				16	
*	54-110-WL	Michael F Kotyuk	9091	611	1.212	0.520A		0.692A		16	Deed Area incl 0.061A-Road
*	54-110A-WL	Edward F. & Connie Kotyuk	9046	507	1.212	0.415A		0.797A		16	" " " " "
*	54-111-WL	John J. & Mary M. Steber	6646	183	20.910A	2.838A		0.877A	17.195A(L)	16 & 17	" " " " "
*	54-112-WL	Julia & Attilio Catanese	5290	227	1.211A	0.255 A		0.956A		16	" " " " "
*	54-113-WL	Donald J. & Ruth Zagorski	10611	577	3.264 A	0.290A		2.974 A		16 & 17	Deed Area incl. 0.163A-Road
	54-114-WL	Lois Jean & Charles Robert Tuttle	9939	608	–	–				17	Not Needed.
*	54-115-WL	Steve & Anna Gittinger	5290	289	20.888A	4.008A		1.532A	15.348A(L)	17	Deed Area incl. 0.061A-Road
**	54-116-WL	Stephen Rossy	6687	421	7,500	7,500				13	Total Taking. A sep. property.
**	54-117-WL	Cleveland Harvard Lumber & Door	10659	617	30,000	30,000				13	" " " " "
**	54-118-WL	Stephen Rossy	6687	388	37,500	37,500				13	" " " " "
			"	393&396							
**	54-119-WL	Agnes R. Mayer	4290	606	7,500	7,500				13	" "
**	54-120-WL	Cleveland Harvard Lumber & Door			15,000	15,000				13	" " " " "
**	54-121-WL	Otto Thorpe	4936	94	7,500	7,500				13	Total Taking. Also owns Pcl. 131-WL a separate property.
**	54-122-WL	Robert Novak	8643	142	7,414	7,414				13	Total Taking.
*	54-123-WL	Cleveland Harvard Lumber & Door	10659	617	154,370	11,914		142,456(L)		11	A separate property.
*	54-123A-LA	" " " "				–				11	Pcl 123A-LA Limitation of Access only, Sublots 103 thru 111 & 114 & 117
*	54-124-WL	John T. Hyduke	4802	571	8,164	5,689				11	Total Taking.
*	54-124-WD	" " "				2,475				11	
*	54-125-WL	Cleveland Harvard Lumber & Door	10659	617	195,296	3,000			164,396	11	Also Deed Vol. 7021 Pg. 303. Residue right of ℄ Ramp G-1
*	54-125A-WL	" " " "				17,171				11	
*	54-125B-WL	" " " "				10,729				11	
*	54-125-T	" " " "				22,414				11	
*	54-126-WL	Gus Kornicks	6033	78	7,500	3,000				11	A separate property.
*	54-126-WD	" "				4,500				11	Total taking

	PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
*	54-127-WL	Cleveland Harvard Lumber & Door	10659	617	124,300	60,578			63,722	9 & 11	A separate property. Residue right of ℄ Ramp G-1
*	54-127-X	" " " "				12,150				9 & 11	
*	54-128-WL	Marvin Hoffman	10177	385	8,914	8,914				9	Total Taking.
*	54-129-WL	Cleveland Harvard Lumber & Door	10659	617	123,219	123,219				9	" " . A sep. property.
*	54-130-WL	Stephen Rossy	6687	409	7,500	7,500				9	" " " " "
*	54-131-WL	Otto Thorpe	4936	94	8,111	8,111				9	" " " " "
*	54-132-WL	Marie Rody	8880	280	8089	8089				9	" " .
*	54-133-WL	Katie Ticere	3402	34	8,164	8,164				9	" " .
*	54-134-WL	Cleveland Harvard Lumber & Door	10659	617	83,164	83,164				9 & 13	" " " " "
*	54-135-WL	Ladimir L. Herold	2880	200	7,500	7,500				9	" " .
*	54-136-WL	Cleveland Harvard Lumber & Door	10659	617	112,645	112,645				9	" " " " "
*	54-137-WL	Stephen Rossy	6687	424	7,500	7,500				9	" " " " "
*	54-138-WL	" "	"	423	7,500	7,500				9	" " " " "
*	54-139-WL	Ethel A. Partridge	3918	386	7,500	7,500				9	" "
*	54-140-WL	Richard Korecko	8251	76	7,380	7,380				9	" "
**	54-141-WL	Cleveland Harvard Lumber & Door	10659	617	7,414	7,414				13	" " " " "
**	54-142-WL	Anthony & Cecilia Virost	8012	520	15,000	15,000				13	" "
**	54-143-WL	Cleveland Harvard Lumber & Door	10659	617	22,500	22,500				9 & 13	" " " " "
**	54-144-WL	William J. Milbrandt	7873	625&627	15,000	15,000				9 & 13	" "

Note:
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Residual areas that are landlocked are followed by the letter (L).
* Parcels required this project.
** Parcels required future construction.

NAME	REVISION	DATE
	Cleveland Land & Developement Company	4 May 64
K.J.S	Cleveland Harvard Lumber & Door, Formerly	
E.R.H.	Rev. 123A-WL to 123A-LA	14 Apr. 64
E.R.H.	Add Pcl. 109-T & 126-WD Delete Pcl. 126-T	6 Apr. 64
E.R.H	Added Pcl 124-WD, Delete Pcl 124-T.	19 Dec 63
E.R.H.	Rev. Pcl 110-WL, Added Pcl. 110A-WL. Rev. Pcls. 111-WL, 112-WL, 113-WL, & 115-WL to agree with Deed Areas.	20-Nov. 63

MADE E.R.H DATE 3 June 63 TRACED _____ DATE _____
CHECKED E.C.E DATE 4-17-64 SCALE _____

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

	PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
*	54-145-WL	Vincent J. Milbrandt	8034	692&694	15,000	15,000				9	Total Taking.
*	54-146-WL	Cleveland Harvard Lumber & Door	10659	617	22,500	22,500				9	" " . A sep. property
*	54-147-WL	Frank & Theresa Gollinger	8083	20	15,000	15,000				9	" " .
*	54-148-WL	Stephen Rossy	6687	399 to 406	45,000	45,000				9 & 14	" " . " " "
*	54-149-WL	W.A. & Verla S. Myers	4232	414	7,500	7,500				9 & 14	" " .
*	54-150-WL	Gus Kornicks	6033	76	7,500	7,200		300		14	" " . " " "
*	54-151-WL	Joan H. Lovasz	8807	342	7,149	630		6,519		14	
*	54-152-WL	Donald R. & Rosemarie Reid	8666	148	7,676	7,676	Yes			14	Total Taking.
*	54-153-WL	Edward P. & Jean M. Kalesky	8685	90	7,685	7,685	Yes			14	" " ,
*	54-154-WL	Emma S. Sklenicka	4091	393	16.43 A	12.31 A			3.89 A	9, 14 & 15	Also Deed Vol. 5239 Pg. 443
*	54-154-WD	" " "				0.10 A				15	Deed Area excl. 0.98 A - Road
*	54-154-SL	" " "				0.13 A				15	
*	54-155-WL	Lucille J. Sklenicka	8670	717	0.55 A	0.55 A	Yes			15	Total Taking. Deed Area incl. 0.07 A - Road.
*	54-156-WD	Edward C. Koster	4091	390 & 391	11.92 A	0.15 A			11.66 A	15	Deed Area excl. 0.87 A. - Road.
*	54-156-SL	" " "				0.11 A				15	
*	54-157-WL	Reliance Investment Company	2442	429	185,000	9,541		60,218	124,783	6	Taking part Shadelawn Rd (prop.)
*	54-157A-WL	" " "				7,095				6 & 7	Taking part Woodlawn Rd. (prop.)
*	54-158-WL	John A. Kress	3923	64	7,500	1,828			5,672 (L)	11	Residue right of Rt. Ramp G-1.
*	54-159-LA	Frances E. & Roy E. Bennett	4367	506	7,683	–		7,683 (L)		11	Limitation of Access.
*	54-160-LA	Joseph & Lizzie Takacs	3834	582	7,679	–		7,679 (L)		11 & 11A	" "
*	54-160A-LA	Frank Buzoleski	6875	55						11A	" "
*	54-161-WD	Russell J. & Kathleen Ellacott	9780	209	83,028	1,640		77,672		14	A sep. prop. Deed Area excl. 4,920 sq. ft.-
*	54-161-SL	" " " " "				3,716				14	Rd. Also Deed Vol. 10116 Pg. 523 161-T
*	54-161-T	" " " " "				3,716				14	occupies same area as 161-SL

	PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
*	54-162-WD	Frank Hojek	10973	689	83,175	1,640		80,100		11A & 14	Deed Area Excl. 4,920 sq. ft.-Road
*	54-162-SL	" "				1,435				11A & 14	
*	54-163-SL	Michael Sr. & Rose Mirtich	9785	175	–	–			–	14	Not Needed
*	54-164-SL	Joseph C. & Rita E. Barrett	9746	245	–	–			–	11-A	" "
*	54-165-SL	John A. & Jean M. Cervenak	8694	636	–	–			–	11-A	" "
	54-166-WD										Part of Pcl. 162-WD
	54-166-SL										Part of Pcl. 162-SL
*	54-167-WD	Mary & Marie T. Horan	6288	267	42,799	820		40,339		11A	Deed Area excl. 2,460 sq. ft.-Road
*	54-167-SL					1,640				11A	
*	54-168-WD	Bartolan W. & Ida Toth	9716	62	31,503	868		27,976		11A	Deed Area excl. 2,604 sq. ft.-Road
*	54-168-SL	" " " " "				2659				11A	
*	54-169-WD	Henry N. & Betty M. Jelinek	8664	624	19,713	689		17,473		11A	Deed Area excl. 2,068 sq. ft.-Road
*	54-169-SL	" " " " " "				1,551				11A	
*	54-170-WD	Agnes T. Kohl	2613	52	19,023	919		16,955		11A	Deed Area excl. 2,757 sq. ft.-Road
*	54-170-SL	" " "				1,149				11A	
*	54-171-WD	Louis & Agnes Walters	6458	458	62,344	200		61,994		11A	Deed Area excl. 600 sq. ft.-Road
*	54-171-SL	" " " "				150				11A	
*	54-172-SL	John & Peroska Molnar	10322	578	30,138	1,500			28,638	11A	
*	54-173-X	Michael H. Boim	9476	136	146,915	6,279			146,915	18	Deed Area incl. 13,090 sq. ft. - Road
*	54-174-X	Mary Nemeth	10386	379	21,029	5,442			21,029	18	Deed Area incl. 1,883 sq. ft. - Road
*	54-175-X	John R. & Josephine Melluso	9764	664	28,338	938			28,338	18	Deed Area incl. 2,523 sq. ft. - Road
*	54-176-X	Salvatore & Maria Melluso	8811	254	36,175	8,367			36,175	18	Deed Area incl. 1,521 sq. ft. - Road
*	54-176-T	" " " "				750				18	
*	54-177-X	Elmer C. Taylor	5838	326	26,960				26,960	18	Pcl 177-X Not Needed.
*	54-177-T	" " "				1,000				18	Deed Area incl. 2400 sq. ft.-Road

Note:
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Residual areas that are landlocked are followed by the letter (L).
* Parcels required this project.
** Parcels required future construction.

	Cleveland Land & Development Company	4 May 64
K.J.S	Cleveland Harvard Lumber & Door, Formerly	
E.R.H.	Rev Pcls. 159 & 160; Wl. to LA. Add Pcls. 160A-LA, 161-T,	
	176-T, & 177-T. Delete Pcl 177-X. Rev. Pcl. 176-X	14 Apr 64
E.R.H.	Rev Quan. Pcls. 157, 173 & 174.	23 Mar 64
E.R.H.	Add. Pcls. 173-X, 174-X, 175-X, 176-X & 177-X	12 Mar 64
E.R.H.	Rev. Deed Areas & Res; Pcls. 151, 161, 162, 167, 168, 170 & 171.	12 Feb 64
E.R.H.	Rev. Pcls. 162-WD & 162-SL. Deleted Pcls. 163-SL	
	164-SL, 165-SL, 166-WD & 166-SL.	20 Nov 63
E.R.H.	Rev. Pcls. 154-WD, 154-SL, 156-WD & 172-SL. Added Pcl.	
	156-SL. Deleted Pcl. 156-T & 156A-T.	6 Nov 63
E.R.H.	Revised Pcls. 154-WD & 161-WD, Deleted Pcl. 154-WA,	
	Added Pcls. 154-SL, 161-WD, 162 thru 172	9 Oct 63
NAME	REVISION	DATE
A.M.	Pcl's 54-173-X, 174-X, 175-X, 176-X Revised Residues	8 July '64
A.M.	Parcel 54-176-X Rev. Deed area	8 May '64
K.J.S	Parcel 54-169 WD Changed to 54 169-SL	4 May '64

MADE E.R.H. DATE 4 June 63 TRACED DATE
CHECKED E.C.E. DATE 17 April 64 SCALE

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

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-1-0.11

241/256

5A/19

	PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
*	54-178-X	Arcangelo D'Agustino & Vincent J. Selvaggio	10958	421 & 423	33,700				33,400	18	Deed Area incl. 3,000 sq. ft.-Road
*	54-178-T	" " " " "				1,500				18	Pcls. 178-X Not Needed
*	54-178	" " " " "				300				18	
	54-179-T	Frederick Corbin	1338	607	16,850					18	Not Needed
	54-180-T	Sabatino Salvatori	5281	493						18	Not Needed
			7667	257							
	54-181-T	James & Anna R. Donnelly	5895	609						18	" "
			6850	40							
	54-182-T	Mary Novello	9923	398						18	" "
*	54-183-Y	Bernard S. Gilman, et. al.	10951	321	5.513 A	0.318 A			5.497A	18	Deed Area incl. 0.673 Ac.-Road
*	54-183-X	" " " " " "	"	"		0.371 A				18	
*	54-183	" " " " " "	"	"		0.016 A				18	
	54-184-X	Mary Duale	5095	41	5.142 A	0.383 A			5.142 A.	18	Also Deed Vol. 6870 Pg. 643
			5402	356							Deed Area incl. 0.270 Ac.-Road
			5406	137							
*	54-185-X	Arthur G. McKee & Company	5466	96	7.734 A	0.121 A			7.734 A.	18 & 19	Deed Area incl. 0.506 Ac.-Road
*	54-185-T	" " " "									Pcl. 185-T Not Needed
*	54-186-X	Edward G. & Michael J. Napoli	9705	318	8.03 A					18 & 19	Delete, See Pcls 186-WL, 186-WD & 186A-WD Below.
*	54-187-T	Erie Land & Improvement Co. of Pa.	-	-		0.091 A				18	
*	54-187-X	" " " " " " " "	-	-		1.095 A				6, 18 & 19	
*	54-187A-X	" " " " " " " "	-	-						19	Not Needed
*	54-187B-X	Erie - Lackawanna Railroad Co.	-	-						19	" "
**	54-186-WL	Edward G & Michael J. Napoli	9705	318	8.030 A	0.673 A.			1.917 A	19	
	54-186EL-1	" " "				2.851 A.				19	Purchased as Pcl. 54-186WD
**	54-186A-WD	" " "				1.386 A				19	
	54-186EL-2	" " "				0.768 A.				18 & 19	Purchased as Pcl. 54-186WD
	54-186WU	" " "				0.435 A.				19	Purchased as Pcl. 54-186WD Deeded to E-L R.R. for access. Governors Deed-Vol. 13625, Pg. 899
	54-186EL-3	" " "				0.550 A.					Purchased as part of Pcl. 54-186A-WD & 54-186WL
	53-11E-WL	Erie Land & Improvement Company	-	-						6	Acquired Under Cuy-14-13.28
	55-1-LA	City of Cleveland								17	Acquired Under Cuy-1-2.20

Note:
Areas followed by the letter "A" are in acres; all others are in square feet.
* Parcels required this project
** Parcels required future construction

NO.	REVISION	DATE
H.R.T.	Added Parcel 54-186EL-3	5-4-81
HRT	Added Pcl. 54-186WU & changed Pcl. 54-186WD to 54-186EL-1 & 54-186EL-2	8-23-74
K.J.S.	Parcel 54-183-T Changed to 54-183-Y	22 Jul. 64
K.J.S.	Rev. Residues Parcels 54-183; 54-184-X & 54-185-X	4-May 64
E.R.H	Rev. Pcls. 183-T, 183-X, & 185-X. Add Pcls. 178-T, 178-X, 183, 186-WL, 186-WD, & 186A-WD. Delete Pcls. 178-X, 179-T, 185-T, 186-X, 187A-X & 187B-X.	14 Apr 64
E.R.H	Rev. Taking Pcls. 187-T, 187A-X & 187B-X.	23 Mar 64

MADE E.R.H. DATE 3-9-64 TRACED J.A.G. DATE 3-10-64
CHECKED E.R.H. DATE 4-14-64 SCALE

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

242/256

6/19

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I-271-6(22)243

MATCH LINE SEE SHEET 18

BEGIN ACQUISITION
STA. 279+13.64
CUY-I-0.11
I-271-6(22)243

BEGIN PROJECT
STA. 276+50

WESTLAWN ROAD (Proposed)

SHADELAWN ROAD (Proposed)

Erie Land & Improvement Company of Pa.

Reliance Investment Company

Patricia L. & Gust Codley

Louis C. Roylon

Ralph Bernardo & Joseph R. Manolio

Marie Haussler

Steve Codley

Gust Codley

Joseph R. & Manolio
Ralph Bernardo

Patrick Antonelli
William Cesa

Julia Pinter

Arthur W. Bard et al

Andrew Michael Matta

Barbara Korecko

James R. Atkinson
Ellwood L. Longham

Stephen & Theresa Klentonics

Julia Shisila

Louis Perko

Julia R. Abelt

Emil Fecho

Paul T. Korecko

Rose M. Weber & Helene W. Pucher

Gus Kornicks

Frank Jezek

Frank Link

Wilma Galewood

Ralph Bernardo & Joseph R. Manolio

Patrick Antonelli & William Cesa

Construction Limits

Type 47 Fence Chain Link Fence

Buckeye Pipe Line Co.

8" Pipe

6" Pipe

10" Pipe

4" Pipe

50' R/W

LA/RW

OL B

OL 9

54-187-X

54-12-X

54-11E-WL

54-12-WL

54-12A-WL

54-13-WL

54-14-WL

54-15-WL

54-15A-WL

54-16-WL

54-17-WL

54-18-WL

54-19-WL

54-20-WL

54-21-WL

54-28-WL

54-29-WL

54-30-WL

54-32-WL

54-33-WL

54-34-WL

CUY-I-0018
42"

℄ INTERSTATE ROUTE I-271

℄ RAMP H-2

WOODLAWN ROAD (Proposed)

Reliance Investment Company

RELIANCE INVESTMENT COMPANY'S
CORBEN ESTATES SUBDIVISION N.R.

SEE SHEET 7

MATCH LINE STA. 290+00

RIGHT OF WAY STA. 275+00 TO STA. 290+00

CURVE DATA ℄ I-271

Δ = 50°30'00"
D = 1°00'00"
R = 5729.58'
T = 2702.24'
L = 5050.00'
E = 605.26'
Ch = 4888.12'

MADE E.R.H.	DATE 17 June 63	TRACED R.D.J.	DATE 4-3-63
CHECKED E.R.H.	DATE 4-17-64	SCALE 1"=50'	

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

BEDFORD TOWNSHIP TOWN 6 RANGE 11

NAME	REVISION	DATE
E.R.H.	Rev. Fence Add Type 47 Fence	9 Apr. 64
E.R.H.	Add. Pcls. 12-X & 187-X	12-Mar-64
E.R.H.	Rev. Pcl. 30-WL. Delete Pcl. 31-WL. Rev.	
	Owner Pcls. 12-WL, 12A-WL, 32-WL & 34-WL.	20 Nov 63

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

243/256

7/19

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I-271-6(22)243

C12" Slag Street) WESTLAWN ROAD (Proposed) Existing 5' Conc. Sidewalk
Steve Codley
Frank Novak
Lucarelli & Albert Co.
LIMITED ACCESS WITH THE RIGHT TO INSTALL & MAINTAIN UNDERGROUND UTILITIES.
Gust Codley
Construction Limits
54-28-WL
54-24-WL
54-35-WL
54-23-WL
54-22-WL
54-37-WL
54-42-WL
54-41-WL
54-52-WL
54-38-WL
54-15TA-WL
Bert D. & Stephanie Samerdyke
Asphalt Drive
Forest City Enterprises & Jack & Esther Goldberg
Existing Ditch
Paul Lipman, Trs.
John Stark
Future Construction Limits
Future Lane ES
Ignatius & Anna Golias
Oscar S. & Anna M. Killen
8" Slag Drive
1½ St. Fr.
1 St. Fr.
Emil Fecha
Joseph Nero
Louis Perko
Reliance Investment Company
Joseph & Louise Laska
Gravel
St. Br
Lee & Margaret Mc Clurg
Cleveland Harvard Lumber & Door
Marsh
Stanford Gorlitzer
Type 3 Stream Crossing
8' Earth Drive
RAMP H-2
RAMP H-1
E. MILES ROAD
HALYCON ROAD (Proposed)
WOODLAWN ROAD (Proposed)
DELAFIELD ROAD (Proposed)
RUSHLAND BOULEVARD (Proposed)
℄ INTERSTATE ROUTE-271
CUY-I-0056
2-36"
WALFORD SUBDIVISION N.R.
RANDALL SPRINGS PARK SUBDIVISION V.87 P.17
RELIANCE INVESTMENT COMPANY'S CORBEN ESTATES SUBDIVISION N.R.
MATCH LINE STA. 290+00 SEE SHEET 6
MATCH LINE STA. 305+00 SEE SHEET 8
BEDFORD TOWNSHIP TOWN 6 RANGE 11
WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

Note:
Chain Link Fence to be erected thruout.

A.M.	Pcl. 54-52 Note changed from Sanitary Sewer to underground utilities	5-12-66
K.J.S.	REVISED PARCEL 54-28-WL	28 MAY 65
	Cleveland Land & Development Company	4-May 64
K.J.S.	Cleveland Harvard Lumber & Door, Formerly	
E.R.H.	Rev. Pcl. 28-WL	20 Nov 63
E.R.H.	Revised LA-Pcls 41-WL & 52-WL	28 Aug 63
NAME	REVISION	DATE

MADE E.R.H.	DATE 18 June 63	TRACED R.D.J.	DATE 4-5-63
CHECKED E.R.H.	DATE 4-17-64	SCALE 1"=50'	

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

RIGHT OF WAY STA. 290+00 TO STA. 305+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

244
256

8
19

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I-271-6(22)243

MATCH LINE SEE SHEET 10

MATCH LINE SEE SHEET 11

MATCH LINE STA. 305+00 SEE SHEET 7

MATCH LINE STA. 320+00 SEE SHEET 9

MATCH LINE SEE SHEET 12

HALYCON ROAD (Proposed)

DELAFIELD ROAD (Proposed)

GARY ROAD (Proposed)

GRAYLYN BOULEVARD (Proposed)

Existing 4' Conc. Sidewalk

Existing 4' Conc. Sidewalk

℄ INTERSTATE ROUTE-271

CUY-I-0071
60"

℄ RAMP H-17

℄ Future Outer Belt South E-W

℄ Future Outer Belt South W-E

℄ Future Outer Belt South E-W

WALFORD SUBDIVISION N.R.

RANDALL SPRINGS PARK SUBDIVISION V.87 P.17

Future ℄ Lane ES

Existing Ditch

Construction Limits

50'-R/W

RW

℄ LA/RW

305+68.05
379.13'

305+69.00
378.00

310+32.80
280.69'

309+93.76
188.41'

307+84.27
232.41'

308+51.33
209.28'

306+84.90
375.30'

307+14.90
395.41'

307+41.00
380.00'

305+82.35
314.95'

305+83.00
314.00'

306+51.91
341.34'

307+40.21
381.01'

308+25.75
432.72'

311+75.27
95.30'

314+18.93
148.73'

314+23.02
148.10'

315+13.10
208.09'

314+58.86
295.55'

316+00.85
239.54'

314+55.49
284.63'

318+52.65
122.11'

Cleveland Harvard Lumber & Door

Paul Lipman, Trs. 54-36-WL

Joseph Freed 54-47-WL

Otto W. & Bertha M. Glasnapp

Joseph B. Wainright & Fred C. Boston

Emma A. OBrien

George F. Watson

Abraham Guttentag

John W. Wallasse

S.L. McCann Rd

54-41-WL

54-46-WL

54-53-WL

54-54-WL

54-55-WL

54-62-WL

54-63-WL

54-64-WL

54-66-WL

54-70-WL

54-49-WL

Olive M. Rooney

Matilda C. Freedman 54-57-WL

John Jr. & Margaret Wahovic 54-58-WL

Louis S. Rubin 54-59-WL

54-52-WL

54-65-WL

Dornback Realty Co 54-67-WL

Felix E. & Dorothy Sycle 54-68-WL

54-66-WL

54-74-WL

Frank J. Morgan 356

54-71-WL

54-75-WL

Irma C. Frantz

W.L. Eldridge Road

Note:
Chain Link Fence to be erected thru out.

MADE E.R.H	DATE 19June63	TRACED R.D.J.	DATE 4-5-63
CHECKED E.R.H	DATE 4-17-64	SCALE 1"=50'	

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

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

NAME	REVISION	DATE
	Cleveland Land & Development Company	4 May 64
K.J.S.	Cleveland Harvard Lumber & Door, Formerly	
E.R.H.	Revised LA-Pcls 52-WL, 65-WL & 66-WL	28Aug63

RIGHT OF WAY STA. 305+00 TO STA. 320+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

245/256

9/19

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I-271-6(22)243

MATCH LINE SEE SHEET 11

MATCH LINE SEE SHEET 11A

MATCH LINE STA. 320+00 SEE SHEET 8

MATCH LINE STA. 335+00 SEE SHEET 14

SEE SHEET 15

MATCH LINE SEE SHEET 13

MEADVALE BOULEVARD (Proposed)

GRAYLYN BOULEVARD

ELDRIDGE ROAD

McCANN ROAD

IVYTON ROAD (Proposed)

FARNHURST ROAD

INTERSTATE ROUTE 271

RAMP G-1

RANDALL SPRINGS PARK SUBDIVISION V.87 P.17

Construction Limits

Existing 4' Conc. Sidewalk

Cleveland Harvard Lumber & Door

Nettie Helmert

Pauline Sarli et al

William J. Spangler

Marvin Hoffman

Stephen Rossy

Otto Thorpe

Marie Rody

M. Clark Mixter

Ladimir L. Herold

Ethel A. Partridge

Richard Korecko

Frank & Theresa Gollinger

William J. Milbrandt

Vincent J. Milbrandt

Katie Ticere

Emma S. Sklenicka

Note:
Chain Link Fence to be erected thru out. Stations and offsets Pcl. 127 & 127-X are from ℄ Ramp G-1; all others from ℄ I-271.

K.J.S	Cleveland Land & Development Company	4 May 64	
NAME	REVSION	DATE	

MADE E.R.H. DATE 17 June 63 TRACED W.C.I. DATE 5-9-63
CHECKED E.C.E. DATE 4-17-64 SCALE 1" = 50'

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

WARRENSVILLE TOWNSHIP TOWN 7 RANGE II

RIGHT OF WAY STA. 320+00 TO STA. 335+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

246
256

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I- 271-6(22)243

10
19

Paul Lipman, Trs.
Paul Lipman, Trs.
Paul Lipman, Trs.
Paul Lipman, Trs.
Larry, Inc.
Forest City Enterprises, Inc.
Jack & Esther Goldberg
Joseph Frezek
Frances C. Stedronsky
Joseph Frezek & Estelle Schottke
Cleveland Harvard Lumber & Door
Albert Osterheld
Cleveland Harvard Lumber & Door

304+81.61
112.77'
355.01'
302+00.32
389.27'
1168.76' to ℄ Miles Rd.
LA/RW
℄ ℄ Walford Rd. (Proposed)
308+16.19
815.54'
1760.00' to ℄ Miles Rd.
54-36-WL
1330.00' to ℄ Miles Rd.
304+45.39
646.70'
290.00' to LA Corner
Existing Ditch
℄ Future ℄ Outer Belt South E-W
℄ Future ℄ Outer Belt South W-E
℄ Future ℄ Lane N-W
WALFORD SUBDIVISION N.R.
RANDALL SPRINGS PARK SUBDIVISION V.87 P.17
312+73.17
595.25'
Type I Stream Crossing
CL 99
CL 100
314+19.39
351.37'
2110.00' to ℄ Miles Rd.
54-47-WL
54-48-WL
54-55-WL
54-59-WL
54-53-WL
HALYCON ROAD
315+42.34
535.48'
50' R/W
314+44.80
482.59'

MATCH LINE SEE SHEET 8

MATCH LINE SEE SHEET 11

RIGHT OF WAY OUTER BELT SOUTH

	Cleveland Land & Development Company	K.J.S.
K.J.S.	Cleveland Harvard Lumber & Door, Formerly	
E.R.H.	Delete Fence	6 Apr. 64
NAME	REVISION	DATE

MADE E.R.H. DATE 18 June 63 TRACED R.D.J. DATE 5-9-63
CHECKED E.C.E. DATE 4-17-64 SCALE 1"=50'

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

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

247
256

11
19

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I-271-6(22)243

WALFORD SUBDIVISION N.R.
O.L. 99
O.L. 100
RANDALL SPRINGS PARK SUBDIVISION V.87 P.17
HALYCON ROAD (Proposed)
℄ RAMP G-1
DELAFIELD ROAD (Proposed)
MC CANN ROAD (Proposed)
GRAYLYN BOULEVARD (Proposed)
Fulvue St. Lane NW
Construction Limits
Type 2 Stream Crossing
Gus Kornicks
John T. Hyduke
John A Kress
Edith L. Parker
Joseph Perko
Mary Bobinchuck
Howard C. Sr. & M.A. Halfhill
Irene Spaulding
Susan Hill et al
Phillip F. Zito
Fred W. & Katherine Grulich
Anna L. Roberts
Frank & Mary Ann Malkovsky
Edward & Helen Kerner
Frances E. & Ray E. Bennett
Joseph & Lizzie Takacs
Larry, Inc.
Paul Lipman, Trs.
Cleveland Harvard Lumber & Door
Helen Graben
5' Conc. Sidewalk
MATCH LINE SEE SHEET 10
MATCH LINE SEE SHEET 8
MATCH LINE SEE SHEET 9
MATCH LINE SEE SHEET 11A

Note:
All parcels Numbered 123 thru 127 and parcels 158 thru 160; stations & offsets from ℄ Ramp G-1.
Chain Link Fence to be erected thru out.

MADE E.R.H. DATE 18 June 63 TRACED R.D.J. DATE 5-9-63
CHECKED E.C.E. DATE 4-17-64 SCALE 1"=50'

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

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

NAME	REVISION	DATE
E.R.H	Add Pcl. 124-WD. Delete Pcl. 124-T.	19Dec63
E.R.H.	Rev. Fence Add Pcl 126-WD Delete 126-T	6 Apr. 64
E.R.H	Rev. Pcls 123A, 159 & 160; WL to LA	10 Apr 64
K.J.S.	Cleveland Harvard Lumber & Door, Formerly	
	Cleveland Land & Development Company	4 May 64

RIGHT OF WAY RAMP G-1

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

248/256

11A/19

CUYAHOGA COUNTY
CUY-I-0.11
I-271-6(22)243
SU-274(2)

RIGHT OF WAY EMERY ROAD

N

LONGLEAF ROAD 50'
TIMBERLANE ROAD 50'
MERRYGOLD BLVD. 50'
BERRIMORE LANE 50'
O.L. 88
O.L. 89
O.L. 99
O.L. 100
E. EMERY RD.
Construction Limits
Concrete Pavement
Hubert W. Ellacott, et al.
Ellen V. Walters
Louis E. & Agnes Walters
DEEKS SUBDIVISION N.R.
SU 274(2) I-271-6(22)243
CLARKWOOD ESTATES SUBDIVISION NO.2 V.159 P.16
CLARKWOOD ESTATES SUBDIVISION NO.1 V.158 P.7
CLARKWOOD ESTATES SUBDIVISION NO. 2 V.159 P.16
RANDALL SPRINGS PARK SUBDIVISION V. 87 P.17
WALFORD SUBDIVISION N.R.
B. RAMP G-1
LARW 114
LARW 115
54-160-LA
54-123A-LA
54-162-SL
54-162-WD
54-163-SL
54-164-WA
54-165-SL
54-166-SL
54-167-WD
54-167-SL
54-168-WD
54-168-SL
54-169-WD
54-169-WA
54-170-SL
54-170-WD
54-171-SL
54-171-WD
54-172-WA
MATCH LINE SEE SHEET 11
MATCH LINE SEE SHEET 9
MATCH LINE SEE SHEET 14

	Cleveland Land & Development Company	4 May 64
K.J.S.	Cleveland Harvard Lumber & Door, Formerly	
E.R.H.	Rev. Pcl 160 'W. to L.A. Add Pcls 123A-LA & 160A-LA	10 Apr 64
E.R.H.	Rev. Pcls 162-WD & 162-SL. Delete Pcls. 164-SL, 165-SL, 166-WD & 166-SL	20 Nov 63
E.R.H.	Revised Pcl. 172-SL.	6 Nov 63
NAME	REVISION	DATE

A.M. Pcl's 168-WA, 169-WA & 170A-WA, added 6-18-'65

Note: Chain Link Fence to be erected; Ramp G-1

MADE E.R.H. DATE 23 Sept 63 TRACED J.E.N. DATE 10-7-63
CHECKED E.C.E. DATE 4-17-64 SCALE 1"=50'

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

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

249/256

12/19

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I-271-6(22)243

END LIMITED ACCESS STA. 34+53.99

MATCH LINE SEE SHEET 8

MATCH LINE SEE SHEET 13

MATCH LINE "A"

B RAMP H-1

Existing 4' Conc. Sidewalk

GRAYLYN BOULEVARD (Proposed)

GARY ROAD (Proposed)

FARNHURST ROAD (Proposed)

ELDRIDGE ROAD

B Future Lane S-E

I-271 & MILES RD.

Parking Area Pesco Products Corp.

Loddie Jezek

Eileen Rosenthal

E. Lee Langham

Jerry Jezek

Mary A. Piunno

Benny Belfiore

Robert Antonelli

Eva Cassell, et al

Carl F. & Eleanor Schueller

Cleveland Harvard Lumber & Door

Construction Limits

LA/RW

50' R/W

75' R/W

RANDALL SPRINGS PARK SUBDIVISION V.87 P.17

O.L.100

O.L.101

54-71-WL

54-71A-WL

54-72-WL

54-73-WL

54-77-WL

54-78-WL

54-79-WL

54-80-WL

54-81-WL

Note:
Stations & offsets for Parcels 71 thru 73, 77 thru 79 are from ℄ Ramp H-1 all others from ℄ I-271.
Chain Link Fence to be placed thru out.

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

	Formerly Cleveland Land & Develop. Co.	4 May 64
K.J.S	Cleveland Harvard Lumber & Door,	
E.R.H.	Rev. Fence	6 Apr. 64
E.R.H.	Rev. Owner Pcl. 73-WL.	20 Nov 63
E.R.H.	Eliminated Pcls 71A-X & 72-X	28 Aug 63
NAME	REVISION	DATE

MADE E.R.H.	DATE 19 June 63	TRACED W.C.I.	DATE 4-10-63
CHECKED E.C.E.	DATE 4-17-64	SCALE 1"=50'	

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

RIGHT OF WAY RAMP H-1

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

250/256

13/19

CUYAHOGA COUNTY
CUY-1-0.11
LIMITED ACCESS
I-271-6(22)243

MATCH LINE SEE SHEET 8

MATCH LINE SEE SHEET 9

MATCH LINE SEE SHEET 12

MATCH LINE SEE SHEET 15

ELDRIDGE ROAD (Proposed)

FARNHURST ROAD (Proposed)

MC CANN ROAD (Proposed)

RANDALL SPRINGS PARK SUBDIVISION V.87 P.17

Future Rt. Outer Belt South W-E

Rt. Future Lane S-E

Rt. Future Lane E-N

50' R/W

LA

LA/RW

Cleveland Harvard Lumber & Door

54-71-WL 397 398 399 400

54-81-WL 450 451 452 453 508 509 510

54-82-WL 444 445

54-83-WL 442 443

54-84-WL 440 441

54-85-WL 438 439

54-86-WL 512

54-87-WL 513

54-88-WL 514

54-89-WL 515

54-90-WL 520 521

54-91-WL 522

54-92-WL 523

54-93-WL 655

54-116-WL 654

54-117-WL 652

54-118-WL 647

54-119-WL 644

54-120-WL 642

54-121-WL 641

54-122-WL 640

54-134-WL 525 526

54-141-WL 639

54-142-WL 637 638

54-143-WL 634 635 636

54-144-WL 632 633

54-154-WL

Leah E. Monreal

Ben Hoffman

Stephen Rossy

Jerry Jezek

Charles & Helen J. Kensicki

S.W. Selker Trustee

Anna Hecker

Agnes R. Mayer

Otto Thorpe

Robert T. Novak

Anthony & Cecelia Virpst

William J. Milbrandt

Emma S. Sklenicka

Marvin Hoffman

Edward Koster

Friars Minor of the Order of St. Francis of Cleveland

Maria Frautschy

Angela Salamone

Donald & Gladia R. Shirk

Benny Belfiore

320+71.06
103.37'

320+00.03
822.68'

320+55.38
791.43'

321+14.38
731.00'

321+24.31
580.44'

321+53.38
573.86'

321+69.45
478.16'

321+82.26
770.08'

325+39.83
484.74'

324+55.38
389.04'

319+37.39
892.66'

318+66.35
911.43'

319+01.44
951.99'

320+07.97
1073.71'

330+30.19
273.29'

334+07.00
729.00'

334+06.71
730.19'

93.32' to N.P.

588.42'

Note:
Chain Link Fence to be erected thru out.

	Cleveland Land & Development Company	4 May 64
K.J.S.	Cleveland Harvard Lumber & Door Formerly	
E.R.H.	Rev. Fence	6 Apr. 64
NAME	REVISION	DATE

MADE E.R.H.	DATE 24 June 63	TRACED R.D.J	DATE 5-8-63
CHECKED E.C.E	DATE 4-17-64	SCALE 1"=50'	

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

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

RIGHT OF WAY- FARNHURST ROAD

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

251
256

14
19

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I-271-6(22)243

MATCH LINE SEE SHEET 11A

SEE SHEET 9
MATCH LINE STA. 335 + 00

SEE SHEET 16
MATCH LINE STA. 350 + 00

RANDALL SPRINGS PARK SUBDIVISION V.87 P.17

FARNHURST ROAD

Slag Dr.

Gravel Parking Area

Temporary Run-around

DEEKS SUBDIVISION N.R.

Board of County Commissioners

Hubert W. & Russell J. Ellacott

Erwin Brown

Construction Limits

LA/RW

RAMP G-1

E. 271 & Emery Rd.

E. 271 & Emery Rd. 30.00'

Emery Rd. 40.00'

E. 271 & Emery Rd. 50.00'

E. 271 & Emery Rd. 70.00' RW

E. 271 & Emery Rd. 80.00' RW

E. 271 & Emery Rd. 90.00' RW

E. 271 & Emery Rd. 100.00' RW

E. 271 & Emery Rd. 110.00' RW

E. 271 & Emery Rd. 120.00' RW

E. 271 & Emery Rd. 130.00' RW

E. 271 & Emery Rd. 140.00' RW

E. 271 & Emery Rd. 150.00'

E. 271 & Emery Rd. 160.00'

E. 271 & Emery Rd. 170.00'

E. 271 & Emery Rd. 180.00'

E. 271 & Emery Rd. 190.00'

E. 271 & Emery Rd. 200.00'

E. 271 & Emery Rd.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

252
256

15
19

CUYAHOGA COUNTY
CUY-I-011
LIMITED ACCESS
I-271-6(22)243

MATCH LINE SEE SHEET 13

SEE SHEET 9
MATCH LINE STA. 335 + 00

MATCH LINE SEE SHEET 14
℄ INTERSTATE ROUTE-271

MATCH LINE STA 350+00 SEE SHEET 16

115+100.00 ℄ Emery Rd.
= 340+05.14 ℄ I-271

339+86.04
24.99'

338+20.46
152.61'

Construction Limits

Emma S. Sklenicka
54-154-WL

℄ Future Lane E-N

R/W

LA/RW

600.00' to S. ℄

Lubilie J. Sklenicka 18 St. Fr.
54-155-WL

10' Black Top Dr.

Mary A. Semon 16 St. Fr.
54-99-WL

Harold & Eva Deeks

Born

Martin & Deeks

Harold A. & Eva Deeks
54-101-WL

54-102-WL

54-100-WL

Russell & Elizabeth Ellacott
54-105-WL

Hubert W. & Delia E. Ellacott
54-105C-WL

54-105E-WL

54-105B-WL

Loyce Investment Co.
54-104-WL

PERMIT # C-74008 TO CEI
2 POLES #132 KV LINE

Greenhouse
54-140-WL

℄ RICHMOND ROAD

℄ RAMP G-2

℄ RAMP G-21

Construction Limits

Greenhouse

Donald P. & Gertrude Smolik

John & Ann S. Basela

Ray & Mary Polarski

Louis & Leila Donick

Edward C. Koster

Emma S. Sklenicka

Edward C. Koster
54-154-SL

Black Top Dr.

Gravel Dr.

Conc. Dr.

1½ St. Fr.

4" RP

12" Storm

12" Water

18" Sanitary

Construction Limits
℄ Emery Road
℄ Richmond Rd.

℄ EMERY ROAD

54-156-SL

54-156-WD

54-103-WL

54-103-S

54-104-WD

54-104-SL

Edward C. Koster

Standard Oil Co.

Edward C. Koster

John & Agnes Cooper

Gail M. Shurtleff Ft. Gar.

Thelma Ellacott Ft. Gar.

Henrietta E. Ellacott

Greenhouse

9' Slag Dr.

9' Cinder Dr.

8' Asph. Dr.

EXISTING R/W

PERMIT NO. C-74009 TO CEI
HEAVY WALL CONDUIT

MATCH LINE STA. 126+25

Sta. 128+27.53
End Taper & Resurfacing

CURVE DATA ℄ I-271

Δ = 40° 05' 00"
D = 0° 28' 00"
R = 12,277.67'
T = 4,478.82'
L = 8,589.32'
E = 791.42'
Ch = 8,415.20'

Note:
Chain Link Fence to be erected thru out.

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

	Added CEI Poles & 132 KV Line		5 APR. 74
	OFFSET REV. STA. 24+44 RICHMOND		29 JULY 64
	Drive at Sta. 123+33.42 Emery Rd. Added		4 May 64
E.R.H.	Rev. Pcls 103-WL, 103-WD, 103-SL & 103-S.		12 Feb 64
E.R.H.	Revised Pcls: 103-WD, 104-WD & 104-SL. Added		
	Pcl. 103-WL. Deleted Pcl. 104-S.		6 Jan 64
E.R.H.	Revised Pcls. 103-WD, 103-SL, 104-WD, 104-SL,		
	154-WD, 154-SL & 156-WD. Added Pcl. 156-SL.		
	Deleted Pcls. 156-T & 156A-T.		6 Nov. 63
E.R.H.	Revised Pcls. 103-WD, 104-WD & 154-WD.		
	Added Pcls. 103-SL, 104-SL & 154-SL.		
	Deleted Pcl. 154-WA.		9 Oct 63
NAME	REVISION		DATE

MADE E.R.H. DATE 21 June 63 TRACED R.D.J. DATE 4-9-63
CHECKED ECE DATE 4-17-64 SCALE 1" = 50'

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

RIGHT OF WAY STA. 335 + 00 TO STA. 350 + 00 EAST

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

253
256

16
19

CUYAHOGA COUNTY
CUY-I-0.11
LIMITED ACCESS
I-271-6(22)243

PERMIT NO. C-74009 TO CEI
UNDERGROUND DUCTS

Board of County Comissioners

Warrensville - Twp.
City of Warrensville
Hgts.

Ervin Brown

William F. & Juanita Ellacott

Juanita Ellacott

Michael F. Kotyuk

Edward F. & Connie Kotyuk

John J. & Mary Steber

Julia & Attilio Catanese

Donald J. & Ruth Zagorski

State of Ohio

Ethel Cutting

Layce Investment Co.

Gravel Drive

Black Top Dr.

RICHMOND ROAD

℄ INTERSTATE ROUTE-271

℄ RAMP G-2

℄ Temporary Run-Around

Construction Limits

Type 3 Stream Crossing

Fr. Barn

Fr. Gar.

1 St. Fr.

2 St. Fr.

1 St. Br.

Br. & Bl. Gar.

½ St. Fr. & Gar.

9 Gravel Dr.

10.5 Asph. Dr.

9.5 Asph. Dr.

CUY-I-0167
48"

MATCH LINE STA. 350 + 00

MATCH LINE STA. 365 + 00

SEE SHEET 14

SEE SHEET 15

SEE SHEET 17

CURVE DATA ℄ I-271
Δ = 40° 05' 00"
D = 0° 28' 00"
R = 12,277.67'
T = 4,478.82'
L = 8,589.32'
E = 791.42'
Ch = 8,415.20'

K.J.S.	Added Drive on Parcel 54-104-WD	4 May 64
E.R.H.	Add Pcl. 109-T Rev. Fence	10 Apr. 64
E.R.H.	Add Pcl. 104-WD. Delete Pcl. 104-S.	6 Jan 64
E.R.H.	Rev. Pcls. 107-T, 108-WL & 110-WL. Add	
	Pcl. 110A-WL. Delete Pcls. 108-S, 108A-S & 108-X	20 Nov 63
NAME	REVISION	DATE

MADE E.R.H.	DATE 26 June 63	TRACED R. D. J.	DATE 4-8-63
CHECKED E.C.E.	DATE 4-17-64	SCALE 1"=50'	

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

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

STA. 350 + 00 TO STA. 365 + 00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

254
256

17
19

CUYAHOGA COUNTY
CUY-1-0.11
LIMITED ACCESS
I-271-6(22)243

END ACQUISITION
STA. 371+01.82
CUY-1-0.11
I-271-6(22)243

END PROJECT
STA. 377+50

MATCH LINE STA. 365+00 SEE SHEET 16

Pond
Donald J. & Ruth Zagorski
Louis Jean & Charles R. Tuttle
Joseph & Helen Gittinger
Steve & Anna Gittinger
707.54' to I.D. in Richmond Rd.
Chain Link Fence
Type 47 Fence
370+17.89
200.00'
R = 12,077.67'
377+50.00
198.00'
L.A./RW
Construction Limits
367+33.77
92.77'
367+34.00
190.50'
370+18.00
198.00'
54-113-WL
365+46.32
98.88'
162.92'
162.00' to ℄ Corner
365+69.30
124.46'
Steve & Anna Gittinger
54-115-WL
366+41.40 ℄
355.00'
371+01.82 ℄
432.69'
City of Cleveland
55-1-LA
℄ INTERSTATE ROUTE - 271
365
370
375
380
John J. & Mary Steber
54-111-WL
367+30.00
196.50'
367+30.56
198.64'
371+82.70
198.00'
371+82.84
200.00'
R. = 12,477.67'
CL 80
CL 90

CURVE DATA ℄ I-271

Δ = 40° 05' 00"
D = 0° 28' 00"
R = 12,277.67'
T = 1,478.82'
L = 8,589.32'
E = 791.42'
Ch = 8,415.20'

MADE	E.R.H.	DATE	21 June 63	TRACED	R.D.J.	DATE	5-15-63
CHECKED	E.C.E.	DATE	4-17-64	SCALE	1"=50'		

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

WARRENSVILLE TOWNSHIP TOWN 7 RANGE 11

NAME	REVISION	DATE
E.R.H.	Rev. Fence	9 Apr. 64

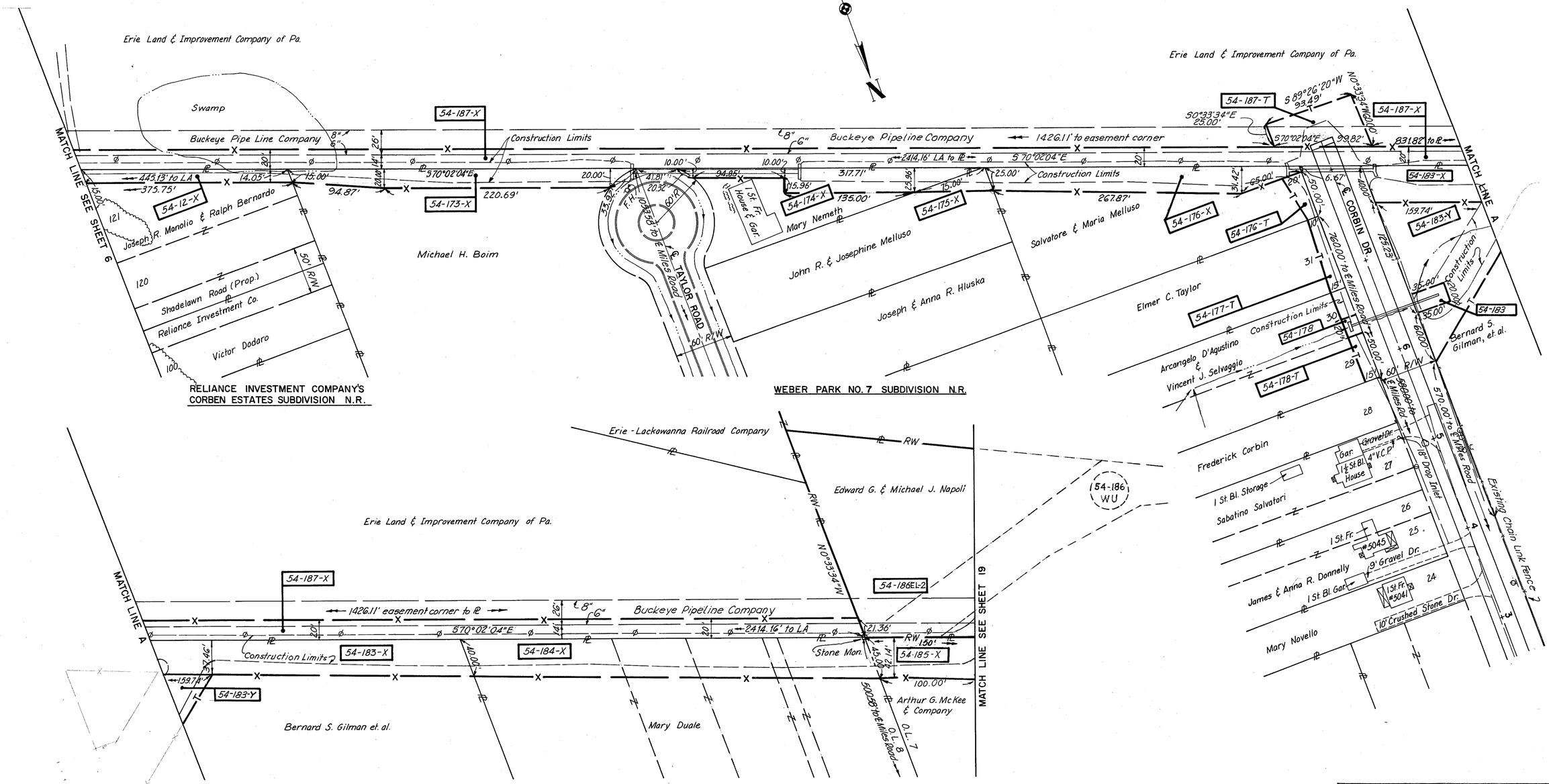
STA. 365+00 TO STA. 371+01.82

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-1-0.11
I-271-6(22)243

255
256

18
19



BEDFORD TOWNSHIP TOWN 6 RANGE 11

HRT	Changed Pcl. 54-186WD to 54-186EL-2	8-23-74
K.J.S	Parcel 54-183-T Changed to 54-183-Y	22 Jul 64
E.R.H.	Rev. Pcls. 176-X, 183-T, & 185-X, Add Pcls 176-T,	
	177-T, 178, 178-T, 183, & 186-WD, Delete	
	Pcls 177-X, 178-X, 179-T & 186-X.	10 Apr. 64
E.R.H.	Added Dist. Pcls 174, 177, 179, 183, 184 & 187	23 Mar 64
NAME	REVISION	DATE

MADE E.R.H. DATE 3-4-64 TRACED J.A.G. DATE 3-6-64
CHECKED E.R.H DATE 3-13-64 SCALE 1"=50'

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

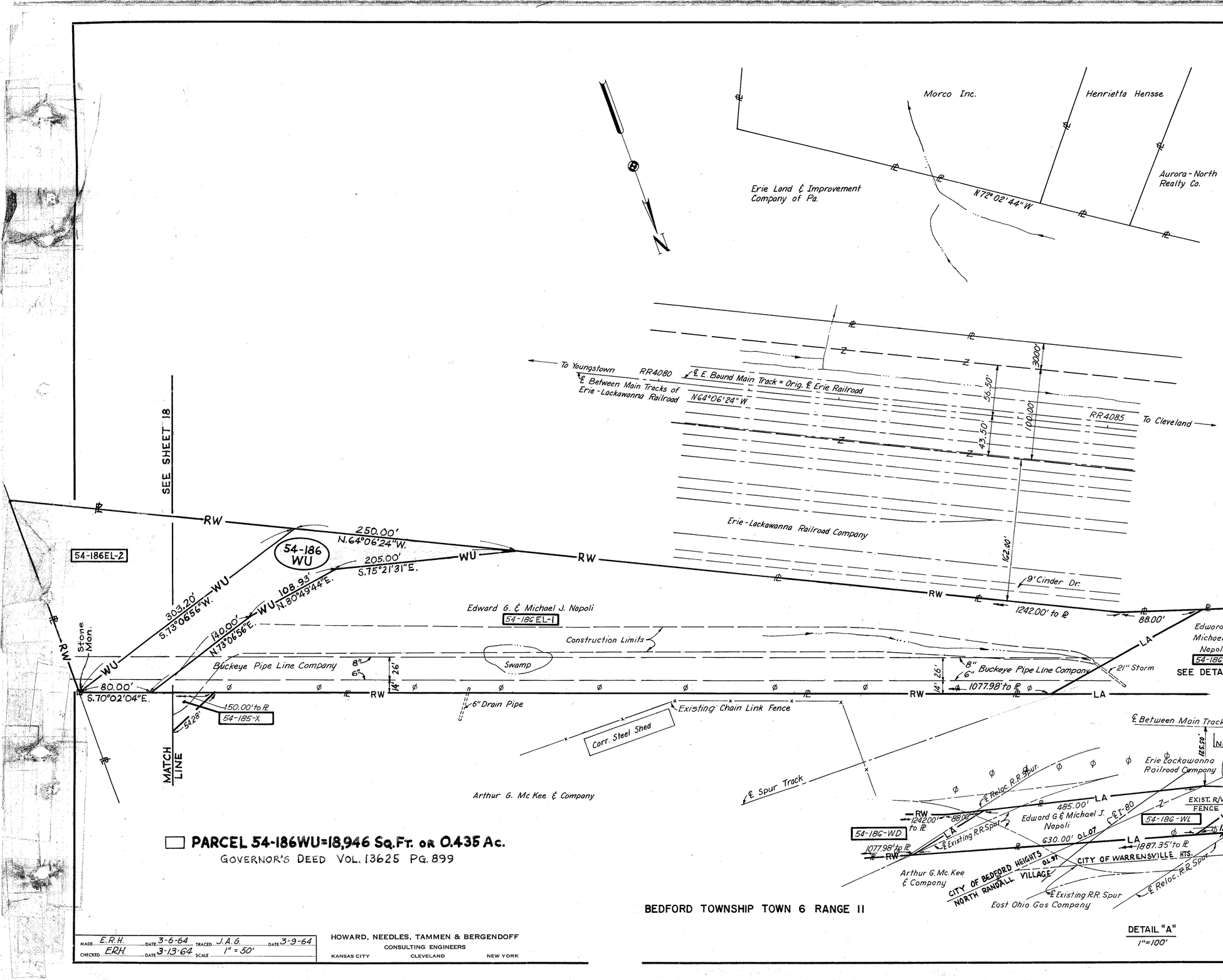
CORBIN DR.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

256
256

19
19

CUYAHOGA COUNTY
CUY-I-0.11
I-271-6(22)243



H.R.T.	Added Pcl. 54-186EL-3 & Rev. L/A Line.	5-4-81
H.R.T.	Added Pcl. 54-186WU & rev. Pcl. 54-186WD	
	to Pcls. 54-186EL-1 & 54-186EL-2	8-23-74
E.R.H	Added Corporation Lines	21 Mar. 64
E.R.H	Rev. Pcls. 185-X, Add Pcls. 186-WD, 186-A-WD & 186-WL	
	Delete Pcls. 185-T, 186-X & 187-B-X.	13 Apr. 64
E.R.H.	Rev. Dist. Pcl. 187A-X.	23 Mar. 64
NAME	REVISION	DATE

MADE E.R.H. DATE 3-6-64 TRACED J.A.G. DATE 3-9-64
CHECKED E.R.H. DATE 3-13-64 SCALE 1" = 50'

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

ERIE-LACKAWANNA R.R.