MICROFILMED NOV 21 1990

MICROFILMED JAN 3 1991

FHWA REGION	STATE	PROJECT	
5	OHIO	M-BRM-IJ15 (4)	

1 / 254

FRANKLIN COUNTY
* FRA-104-12.41

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
FRA-104-12.41
FRANK-REFUGEE EXPRESSWAY

T-1-R

LINE DATA

PROJECT LENGTH:

M-IJ15 (4)
S.R. 104 STA. 237+00 TO STA. 258+00 = 2,100.00 L.F.
S.R. 104 STA. 263+00 TO STA. 273+10 = 1,010.00 L.F. = 3110.00 L.F. or 0.589 Mi. - M
BRM-IJ15 (4)
S.R. 104 STA. 258+00 TO STA. 263+00 = 500.00 L.F. = 0.095 PROJECT ¢ WORK-BRM
3,610.00 L.F. = 0.684 Mi. TOTAL NET PROJECT

WORK LENGTH:
S.R. 104 STA. 183+50 TO STA. 186+50 = 300.00 L.F.
S.R. 104 STA. 187+50 TO STA. 191+62 = 412.00 L.F.
S.R. 104 STA. 202+50 TO STA. 211+00 = 850.00 L.F.
S.R. 104 STA. 233+15 TO STA. 237+00 = 385.00 L.F.
S.R. 104 STA. 273+10 TO STA. 278+10 = 500.00 L.F.
ALUM CREEK DR. STA. 25+95.00 TO STA. 61+45.50 = 3,550.50 L.F.
ADD FOR SIGNS 75.00 L.F. = 9182.50 L.F. or 1.739 Mi. WORK - M
TOTAL NET WORK LENGTH = 9,682.50 L.F. = 1.834 Mi.

CONVENTIONAL SIGNS

Storm Sewer
Sanitary Sewer
Center Line
Township Line
Section Line
Fence Line — Existing, Proposed
Guard Rail (Existing)
Guard Rail (Proposed)
Railroad
Power Poles
Telephone Poles
Trees or Stumps (Existing)
Trees or Stumps (To be removed)
Existing Right of Way — R/W
Limited Access — LA
Right of Way — R/W
Temporary & Channel Easement
Work Limits

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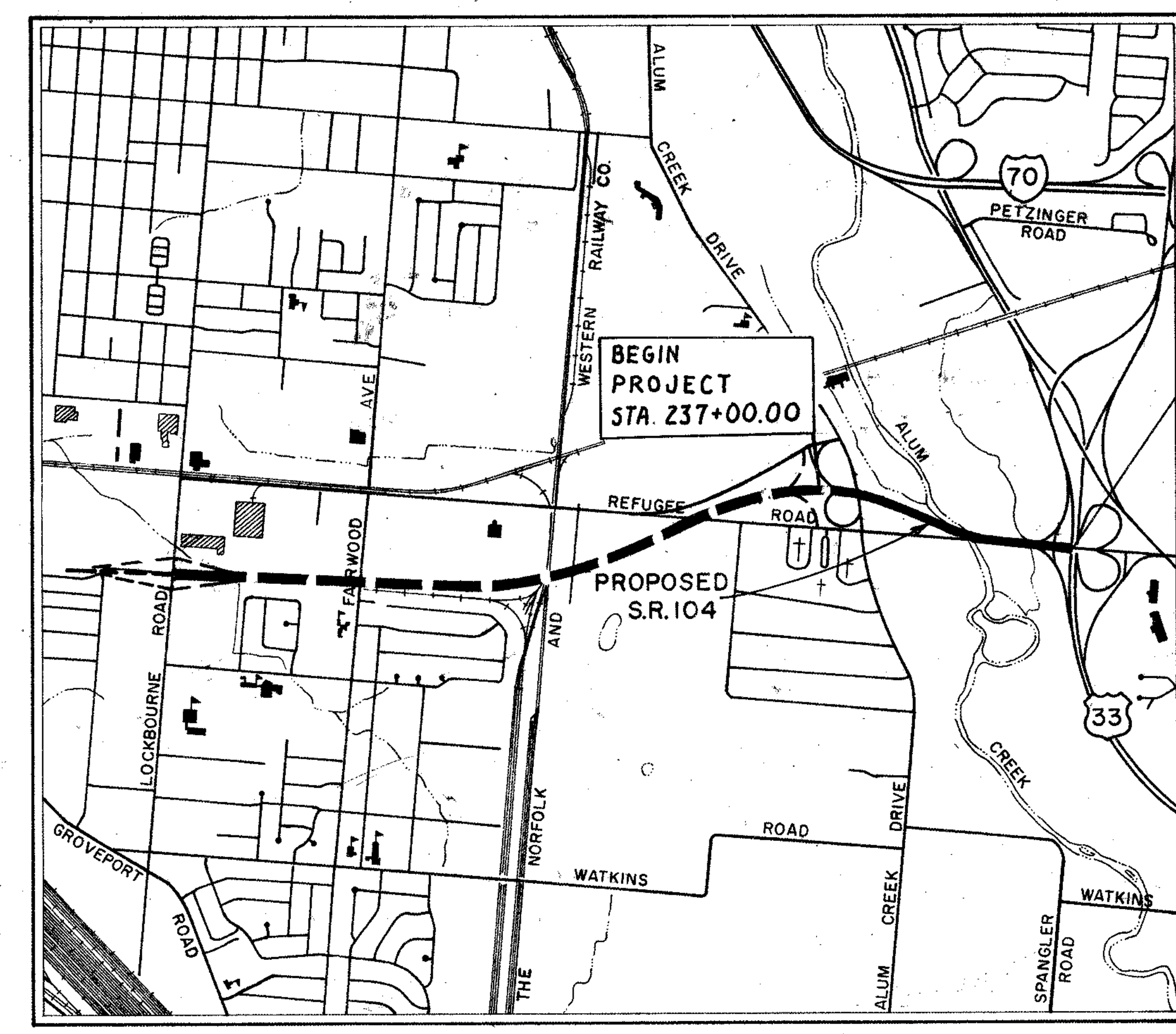
SHEETS 36A, 45A-45D, 51A-51E, AND 244A-244D WERE ADDED TO THIS PLAN FOR EMBANKMENT INFORMATION ONLY.

Revised Sh. 217
9-28-84 SMK.

UNDERGROUND UTILITIES
48 HOURS BEFORE YOU DIG
CALL: 1-800-362-2764 (Toll Free) OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS MUST BE CALLED DIRECTLY

SHEETS OMITTED FROM THIS PLAN
165

CITY OF COLUMBUS
FRANKLIN COUNTY



LOCATION MAP

0 2000 4000 6000
SCALE: 1" = 2000'

LEGEND

APPROVED LOCATION
U.S. ROUTE
INTERSTATE ROUTE
OTHER ROADS

SCALES

PAVEMENT DETAIL	1" = 20'	0' – 20'
PLAN	1" = 50'	0' – 50'
PROFILE - HORIZONTAL	1" = 50'	0' – 50'
PROFILE - VERTICAL	1" = 5'	0' – 5'
CROSS SECTIONS	1" = 10'	0' – 10'

LIMITED ACCESS

This improvement is especially designed for through traffic and has been declared a Limited Access Highway or Freeway by action of the Director, Department of Transportation in accordance with the provisions of Section 5511.02 Revised Code of Ohio.

* Wherever FRA-104-10.57 appears on these plans it shall be meant to read FRA-104-12.41.

1983 SPECIFICATIONS

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

I hereby approve these plans and declare that the making of this improvement will not require the closing 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 Elvetta L. Fields
Date 3-11-83 District Deputy Director of Transportation

Approved Walter J. Jestings
Date 3-21-84 Engineer, Bureau of Bridges and Structural Design

Approved Wayne H. Kauble
Date 5-28-84 Chief Engineer, Planning and Design

Approved Warren J. Smith
Date 5-28-84 Director, Department of Transportation

Approved 9/4/79 D. D. Robbins
Date Chief Sewerage Engineer, Columbus, Ohio

Approved 10-4-79 Theodore J. Wells
Date City Engineer, Columbus, Ohio

Approved Jack J. Holt
Date Oct. 3/79 Superintendent, Div. of Water, Columbus, Ohio

Approved
Date Director of Public Service, Columbus, Ohio

Approved
Date City Traffic Engineer, Columbus, Ohio

Approved
Date Director of Recreation and Parks, Columbus, Ohio

Approved
Date Superintendent, Div. of Electricity, Columbus, Ohio

Approved
Date

Approved
Date

Approved
Date

STANDARD CONSTRUCTION DRAWINGS

DWG. NO.	DATE	DWG. NO.	DATE	DWG. NO.	DATE	DWG. NO.	DATE	DWG. NO.	DATE	DWG. NO.	DATE	DWG. NO.	DATE
BP-1	6-1-65	F-6	5-1-76	MC-1	6-13-69	HL-1	9-6-73	LA-1	6-1-79	TC-41.50	3-26-79	TC-85.10	4-18-79
BP-2	12-6-76	GR-1	2-5-82			HL-2	7-27-73	LA-2	6-1-79	TC-42.10	8-19-77	TC-85.20	4-18-79
BP-3	12-6-76			MC-4	7-26-76	HL-3	7-27-73	TC-7.65	3-1-79	TC-42.20	3-26-79		
BP-4	7-16-81	GR-2B	2-5-82	MC-6	6-1-65	HL-4	1-21-76	TC-12.30	6-10-81	TC-51.10	3-30-79		
BP-5	7-16-81	GR-3	2-5-82	MC-7	10-15-76	HL-5	9-6-73	TC-17.10	3-1-79	TC-41.40	6-18-79	SUPPLEMENTAL SPECS.	
BP-6	6-1-65	GR-4	2-5-82	MC-9	11-1-77	HL-6	3-22-77	TC-21.10	5-24-79	TC-41.41	8-2-79	SPEC. NO.	DATE
BP-7	12-6-76	GR-4A	2-5-82	MC-9A	5-1-81	HL-7	1-21-76	TC-21.20	5-31-79	TC-51.11	4-3-79	803	5-27-83
BP-9	12-6-76	GR-5	2-5-82	MC-10	5-1-76	HL-8	1-21-76	TC-21.40	3-1-79	TC-52.10	4-3-79	824	10-8-82
BP-11	1-3-75	GR-6	2-5-82	MC-11	8-1-78	HL-9	3-22-77	TC-22.10	3-1-79	TC-52.20	4-3-79	836	3-12-75
CB-2-2A & B	5-1-79	HW-43	4-1-80	CB-5	11-10-83	HL-10	6-1-79	TC-22.20	3-1-79	TC-61.10	4-5-82	921	12-4-72
CB-3A	5-1-79	I-2	5-1-79			HL-11	6-1-79	TC-31.20	3-1-79	TC-71.10	4-9-79	839	11-25-70
CB-458A	5-1-79	I-2A	5-1-79	AS-1-81	11-27-81	HL-12	4-6-73	TC-31.21	3-6-79	TC-72.20	2-26-82	861	9-9-83
F-1	11-10-83	I-3A & B	4-1-80	RB-1-55	2-2-59	HL-15	1-21-76	TC-32.10	3-8-79	TC-81.10	4-10-79	939	6-28-82
F-3	5-1-76	MH-1	6-12-75	SD-1-69	6-12-69	HL-16	4-6-73	TC-32.11	3-21-79	TC-82.10	4-11-79		
		MH-3	6-12-75			HL-19	3-22-77	TC-41.10	12-23-81	TC-83.10	4-13-79	961	9-9-83
F-5	5-1-76	MH-5	6-12-75			HL-22	11-9-77	TC-41.20	3-26-79	TC-84.20	4-17-79		

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR — DATE

PREPARED BY
FRANKLIN CONSULTANTS, INC.
CONSULTING ENGINEERS
COLUMBUS, OHIO

Revisions Prepared By:
R. D. ZANDE & ASSOCIATES, ltd.
CONSULTING ENGINEERS
COLUMBUS, OHIO

FILE NO.	FRA-104-12.41
	DATE OF LETTING
	CONTRACT NO.

DESCRIPTION	PLOTTED	TRACED	CHECKED
TOPOGRAPHY			
ALIGNMENT			
DRAINAGE			
R.O.W.			
STRUCTURES			

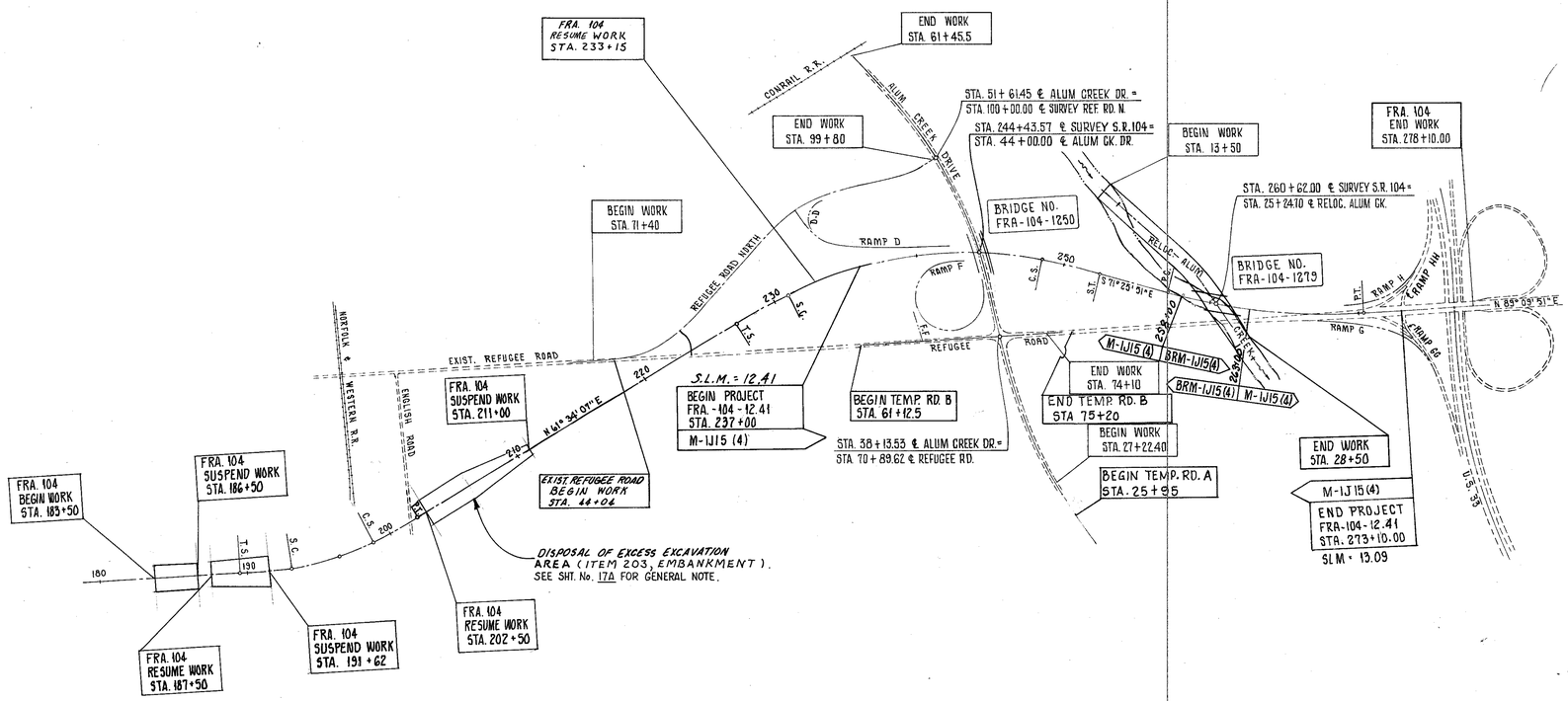
FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA - 104-10.57

DESIGN DESIGNATION

ALUM CREEK DRIVE TO U.S.R. 33

CURRENT ADT (1980)	42660
DESIGN YEAR ADT (2000)	63107
DHV (2000)	6311
D (DIRECTIONAL DISTRIBUTION)	0.55 %
T	7.00 %
V (DESIGN SPEED)	60 M.P.H.



CURVE DATA ~ ℄ SURVEY S.R. 104

P.I. STA. 240 + 62.06	P.I. STA. 264 + 02.06
Δ = 47° 00' 02"	Δ = 19° 24' 18"
Dc = 2° 12' 00"	Dc = 1° 28' 00"
R = 2604.35'	R = 3906.53'
Lc = 1736.38'	L = 1323.07'
Ls = 400.00'	T = 667.93'
L.T. = 266.75'	E = 56.69'
S.T. = 133.41'	
Ts = 1333.50'	
Es = 238.34'	
Θs = 4° 24' 00"	

SCHEMATIC PLAN & DESIGN DESIGNATION

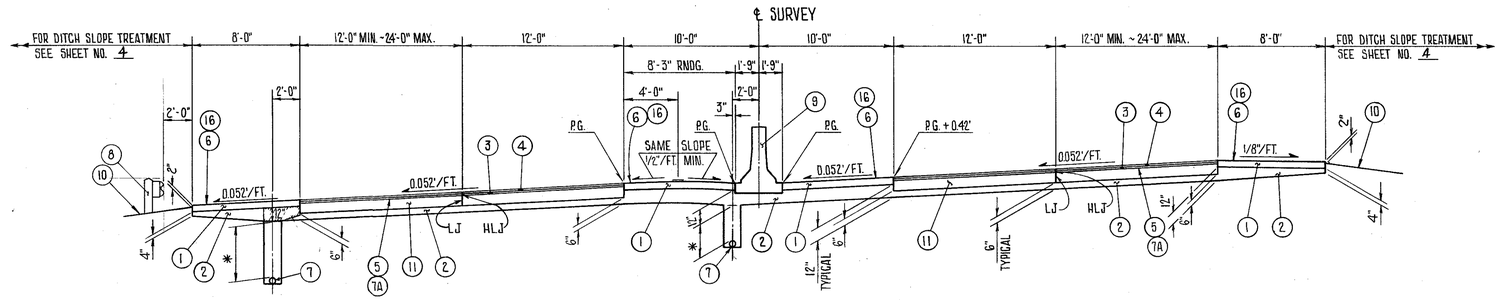
FHWA REGION	STATE	PROJECT	
5	OHIO		

3
254

FRANKLIN COUNTY
FRA - 104-10.57

TYPICAL SECTIONS

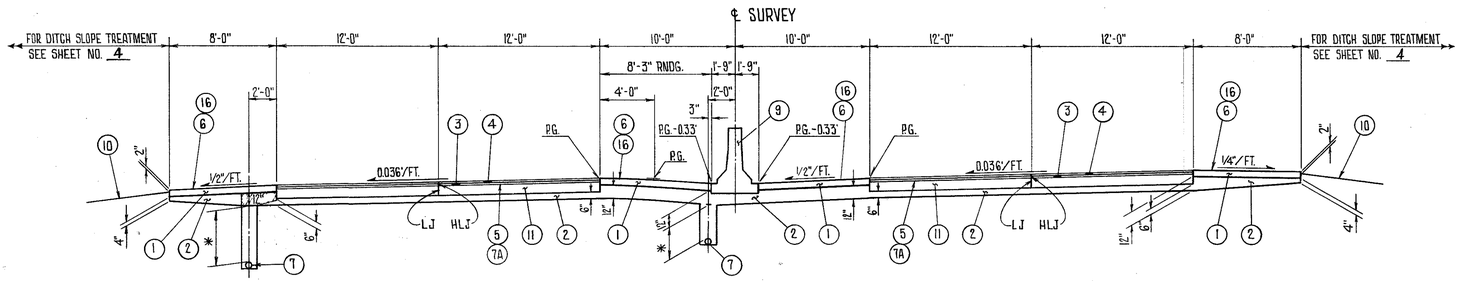
TYPE 404 ON 305



SUPERELEVATED SECTION

STA. 237+00.00 TO STA. 248+64.96 = 1164.96 LIN. FT.

℄ SURVEY



SUPERELEVATED SECTION

STA. 258+63.73 TO STA. 269+48.00 = 1084.27 LIN. FT.
TOTAL = 1084.27 LIN. FT.
DEDUCT FOR STRUCTURES = 259.29 LIN. FT.
NET TOTAL = 824.98 LIN. FT.

ITEM		DESCRIPTION
(1)	301	6" BITUMINOUS AGGREGATE BASE; AC-20, RT-11 OR RT-12
(2)	310	SUBBASE, TYPE II (THICKNESS AS SHOWN)
(3)	402	1 3/4" ASPHALT CONCRETE, AC-20
(4)	404	1 1/4" ASPHALT CONCRETE, AC-20

ITEM		DESCRIPTION
(5)	407	TACK COAT, @ 0.1 gal per sq. yd.
(6)	409	SEAL COAT BITUMINOUS MATERIAL @ 0.3 gal. per sq. yd.
(7)	605	6" UNDERDRAINS
(7A)	407	COVER AGGREGATE.

ITEM		DESCRIPTION
(8)	606	GUARDRAIL, TYPE 5
(9)	622	CONCRETE BARRIER, STANDARD TYPE B-50
(10)	659	SEEDING AND MULCHING, AS PER PLAN SEE SHT. #17.
(11)	305	9" PORTLAND CEMENT CONCRETE BASE, CLASS "C", AS PER PLAN SEE SHT. #16.
(16)	409	SEAL COAT COVER AGGREGATE NO. 8 AT 0.008 C.Y. PER S.Y.

LJ STANDARD LONGITUDINAL JOINT
HLJ HOT LONGITUDINAL JOINT (404 & 402 ONLY)
* 50" IN SOIL CUTS; 30" IN FILLS
** 1/2" PER FT. OR SUPERELEVATION RATE; WHICHEVER IS GREATER

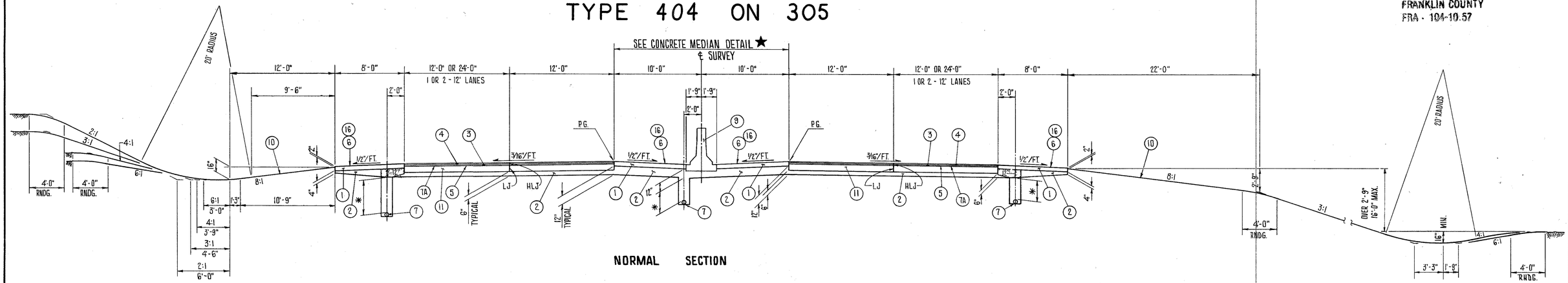
TYPICAL SECTIONS

TYPE 404 ON 305

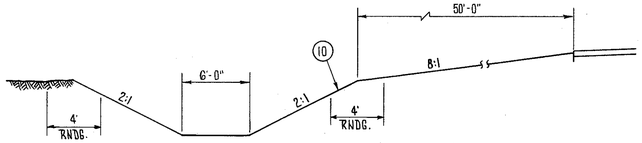
FHWA REGION	STATE	PROJECT	
5	OHIO		

4 / 254

FRANKLIN COUNTY
FRA - 104-10.57

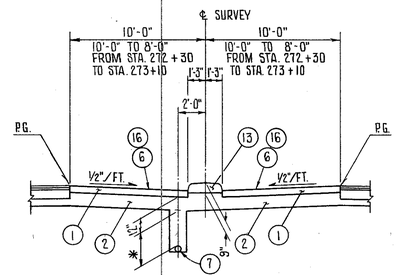


NORMAL SECTION

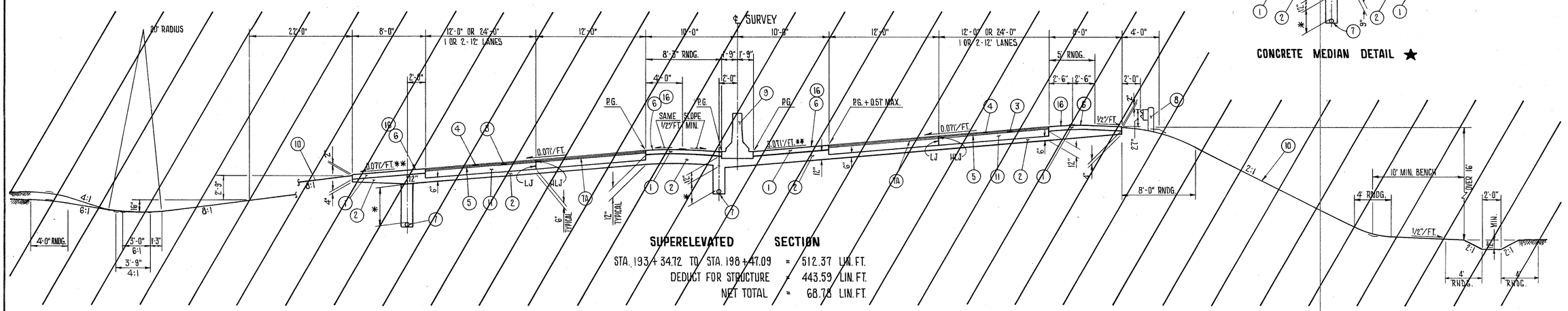


DEEP DITCH SECTION

STA. 248+64.96	TO	STA. 258+63.73	= 998.77	LIN. FT.
★ STA. 269+48.00	TO	STA. 273+10.00	342.00	LIN. FT.
		TOTAL	= 1360.77	LIN. FT.
		~~DEDUCT FOR STRUCTURES~~	~~543.84~~	~~LIN. FT.~~
		~~NET TOTAL~~	~~= 816.93~~	~~LIN. FT.~~



CONCRETE MEDIAN DETAIL ★



SUPERELEVATED SECTION

STA. 193+34.72	TO	STA. 198+47.09	= 512.37 LIN. FT.
		DEDUCT FOR STRUCTURE	= 443.59 LIN. FT.
		NET TOTAL	= 68.78 LIN. FT.

ITEM		DESCRIPTION
(1)	301	6" BITUMINOUS AGGREGATE BASE; AC-20, RT-11 OR RT-12
(2)	310	SUBBASE, TYPE II (THICKNESS AS SHOWN)
(3)	**402**	1¾" ASPHALT CONCRETE, AC-20
(4)	**404**	1¼" ASPHALT CONCRETE, AC-20
(5)	407	TACK COAT @ 0.1 gal. per sq yd.

ITEM		DESCRIPTION
(6)	409	SEAL COAT, BITUMINOUS MATERIAL @ 0.3 gal. per sq.yd.
(7)	605	6" UNDERDRAINS
(7A)	407	COVER AGGREGATE
(9)	622	CONCRETE BARRIER, STANDARD TYPE B-50

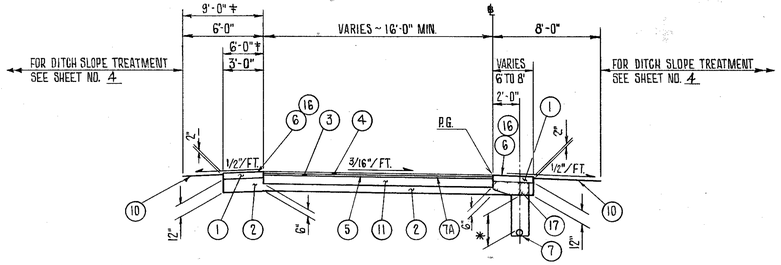
ITEM		DESCRIPTION
(10)	659	SEEDING AND MULCHING, AS PER PLAN SEE SHT. #15.
(11)	305	9" PORTLAND CEMENT CONCRETE BASE, CLASS "C", AS PER PLAN, SEE SHT. #16.
(13)	612	CONCRETE MEDIAN, STANDARD TYPE
(16)	409	SEAL COAT COVER AGGREGATE NO. 8 AT 0.008 C.Y. PER S.Y.

LJ STANDARD LONGITUDINAL JOINT
HLJ HOT LONGITUDINAL JOINT (**404 & 402 ONLY**)
* 50" IN SOIL CUTS; 30" IN FILLS

SEQUENCE OF OPERATIONS: (1) INSTALL PIPE UNDERDRAIN ON OUTSIDE SHOULDER WHERE REQUIRED. INSTALLATION OF SHALLOW UNDERDRAIN IN MEDIAN MAY BE DEFERRED UNTIL PAVEMENT IS PLACED. (2) PLACE SUBBASE OUT TO OUTSIDE EDGE OF UNDERDRAIN OR TO ONE FOOT BEYOND EDGE OF PAVEMENT WHERE NO UNDERDRAIN IS PRESENT.

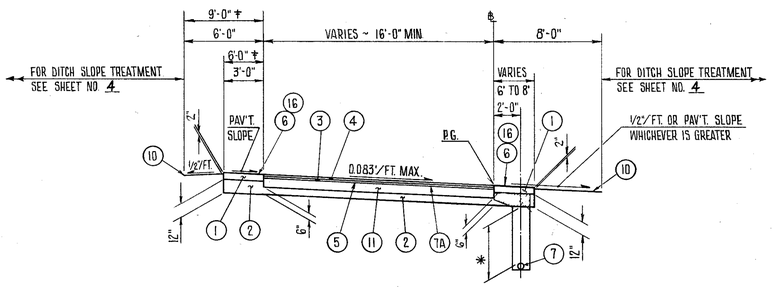
TYPICAL SECTIONS

TYPE 404 ON 305



NORMAL SECTION

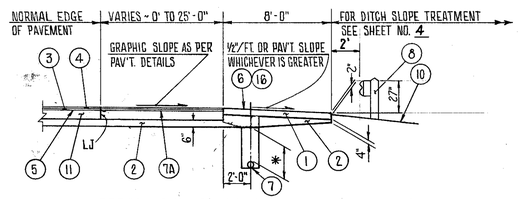
RAMP "D" STA. 237+77.18 TO STA. 238+94.04



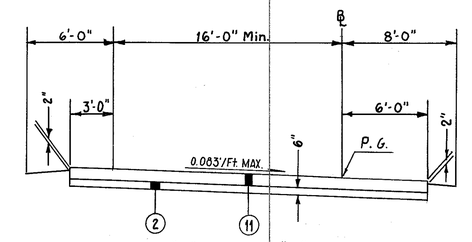
SUPERELEVATED SECTION

RAMP "D" ~ STA. 231+22.41 TO STA. 237+77.18
RAMP "D-D" ~ STA. 231+08.50 TO STA. 233+05.50

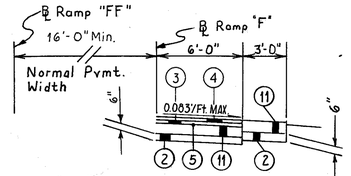
RAMP "F" ~ STA. 231+27 TO STA. 248+29.16
RAMP "F-F" ~ STA. 235+72 TO STA. 237+85.84
RAMP "G" ~ STA. 270+15.77 TO STA. 276+69.31
RAMP "GG" ~ STA. 273+18 TO STA. 274+00
RAMP "H" ~ STA. 269+38.73 TO STA. 276+37.23
RAMP "H-H" ~ STA. 273+25 TO STA. 273+76



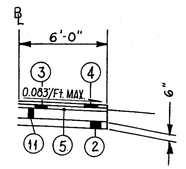
SPEED CHANGE LANE



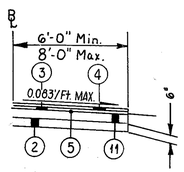
RAMP "C" & RAMP "E"



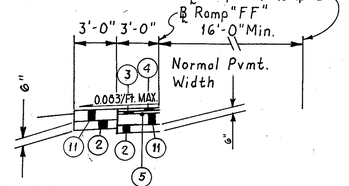
RAMP "FF"- STA. 236+06 To STA. 236+97
RAMP "F"- STA. 240+50 To STA. 242+50



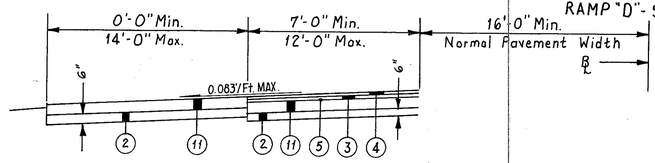
RAMP "F"- STA. 236+75 To STA. 240+50



RAMP "F"- STA. 242+50 To STA. 243+29.16



RAMP "FF"- STA. 235+98 To STA. 237+85.84
RAMP "F"- STA. 237+85.84 To STA. 241+80
RAMP "D"- STA. 231+73 To STA. 231+94



RAMP "F"- STA. 241+80 To STA. 243+29.16

ITEM		DESCRIPTION
(1)	301	6" BITUMINOUS AGGREGATE BASE; AC-20. RT-11 OR RT-12
(2)	310	SUBBASE, TYPE II (THICKNESS AS SHOWN)
(3)	402	13/4" ASPHALT CONCRETE, AC-20
(4)	404	1¼" ASPHALT CONCRETE, AC-20

ITEM		DESCRIPTION
(5)	407	TACK COAT @ 0.1 gal. per sq. yd.
(6)	409	SEAL COAT, BITUMINOUS MATERIAL @ 0.3 gal. per sq. yd.
(7)	605	6" UNDERDRAINS
(7A)	407	COVER AGGREGATE

ITEM		DESCRIPTION
(8)	606	GUARDRAIL, TYPE 5
(10)	659	SEEDING AND MULCHING, AS PER PLAN - SEE SHT. 15
(11)	305	9" PORTLAND CEMENT CONCRETE BASE, CLASS "C", AS PER PLAN - SEE SHT. 16
(16)	409	SEAL COAT COVER AGGREGATE NO. 8 AT 0.008 C.Y. PER S.Y.

LJ STANDARD LONGITUDINAL JOINT
HLJ HOT LONGITUDINAL JOINT (404 & 402 ONLY)
* 50" IN SOIL CUTS; 30" IN FILLS
SEQUENCE OF OPERATIONS: (1) INSTALL PIPE UNDERDRAIN ON OUTSIDE SHOULDER WHERE REQUIRED. (2) PLACE SUBBASE TO OUTSIDE EDGE OF SHOULDER.
+ 6' SHOULDER SHALL BE USED ON THE DRIVER'S LEFT ON RAMP "G", "G-G", "H", & "H-H"

FHWA REGION	STATE	PROJECT	
5	OHIO		

5/254

FRANKLIN COUNTY
FRA - 104-10.57

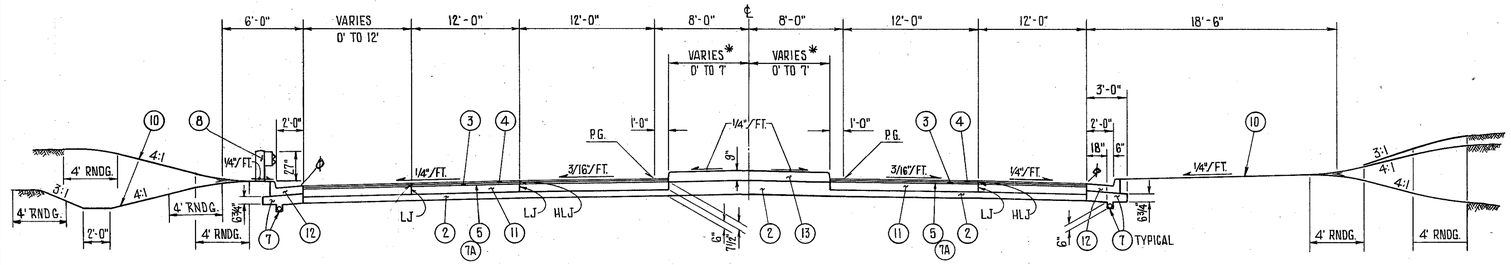
TYPICAL SECTIONS

TYPE 404 ON 305

FHWA REGION	STATE	PROJECT	
5	OHIO		

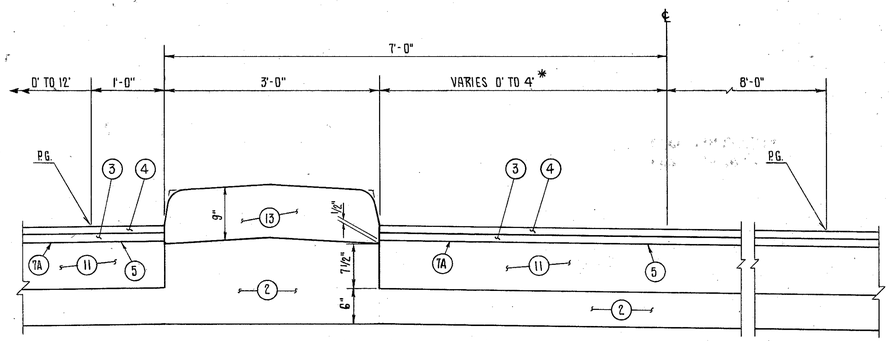
6 / 254

FRANKLIN COUNTY
FRA - 104-10.57

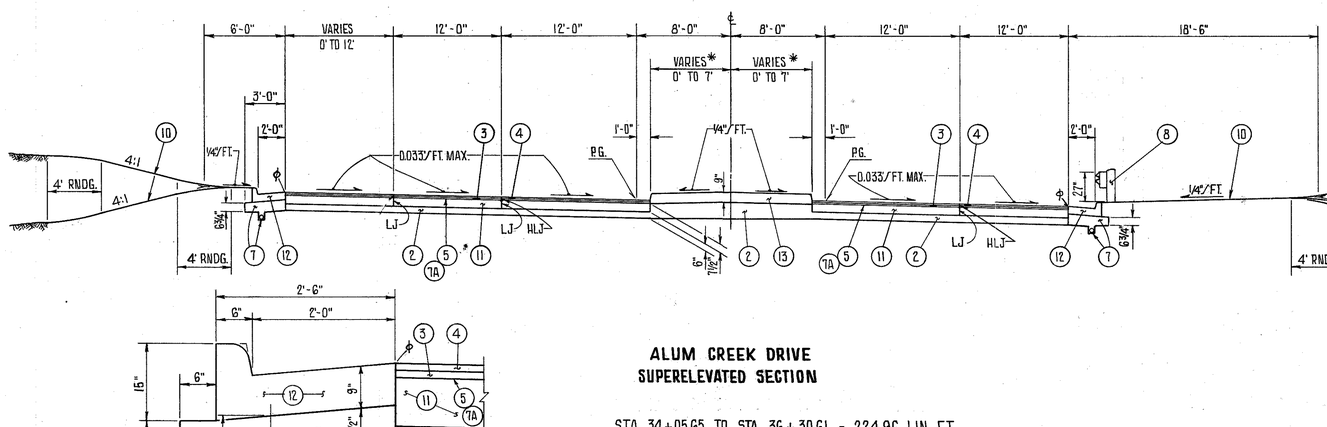


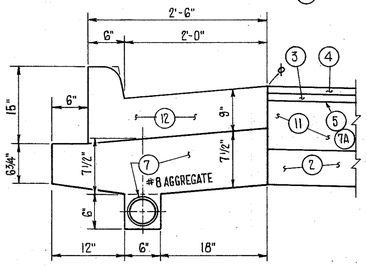
ALUM CREEK DRIVE
NORMAL SECTION

STA. 36+30.61 TO STA. 40+17.02 = 386.41 LIN. FT.



MEDIAN DETAIL ~ LEFT TURN LANE

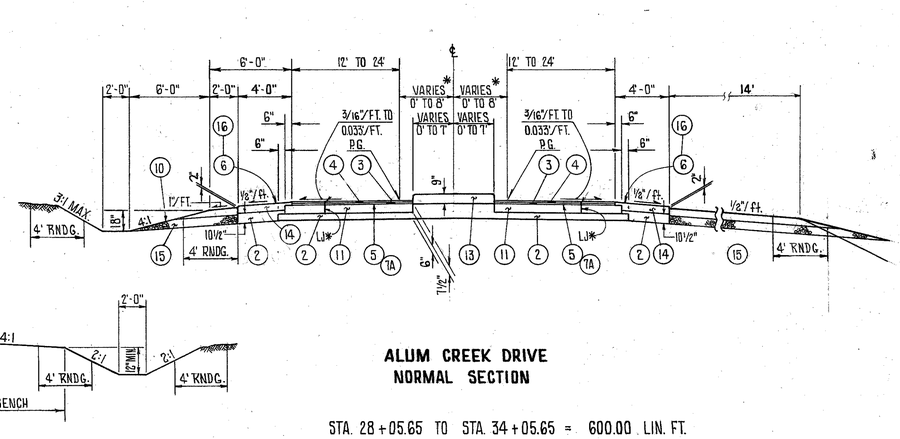




UNDERDRAIN DETAIL

ALUM CREEK DRIVE
SUPERELEVATED SECTION

STA. 34+05.65 TO STA. 36+30.61	=	224.96 LIN. FT.
STA. 40+17.02 TO STA. 57+69.40	=	1752.38 LIN. FT.
TOTAL	=	1977.34 LIN. FT.
DEDUCT FOR STRUCTURE	=	240.28 LIN. FT.
NET TOTAL	=	1737.06 LIN. FT.



ALUM CREEK DRIVE
NORMAL SECTION

STA. 28+05.65 TO STA. 34+05.65	=	600.00 LIN. FT.
STA. 57+69.40 TO STA. 60+39.00	=	269.60 LIN. FT.
TOTAL	=	869.60 LIN. FT.

* NOTE: FOR LOCATION SEE PAVEMENT DETAILS
ϕ 1/4" Typical Gutter drop

ITEM		DESCRIPTION
(2)	310	SUBBASE, TYPE II (THICKNESS AS SHOWN)
(3)	403	1 1/4" ASPHALT CONCRETE, AC-20
(4)	404	1 1/4" ASPHALT CONCRETE, AC-20
(5)	407	TACK COAT @ 0.1 gal. per sq. yd.
(6)	409	SEAL COAT BITUMINOUS MATERIAL @ 0.3 gal. per sq. yd.

ITEM		DESCRIPTION
(7)	605	4" SHALLOW PIPE UNDERDRAINS, 707.15
(7A)	407	COVER AGGREGATE
(8)	606	GUARDRAIL, TYPE 5
(10)	659	SEEDING AND MULCHING, AS PER PLAN - SEE SHT. 15
(11)	305	8" PORTLAND CEMENT CONCRETE BASE, CLASS "C", AS PER PLAN
(15)	605	AGGREGATE DRAINS

ITEM		DESCRIPTION
(12)	609	COMBINATION CURB AND GUTTER, STANDARD TYPE 2
(13)	612	CONCRETE MEDIAN, STANDARD TYPE
(14)	301	6" BITUMINOUS AGGREGATE BASE: AC-20, RT-11 OR RT-12
(16)	409	SEAL COAT COVER AGGREGATE NO. 8 AT 0.008 C.Y. PER S.Y.

LJ STANDARD LONGITUDINAL JOINT
HLJ HOT LONGITUDINAL JOINT (404 & 403 ONLY)

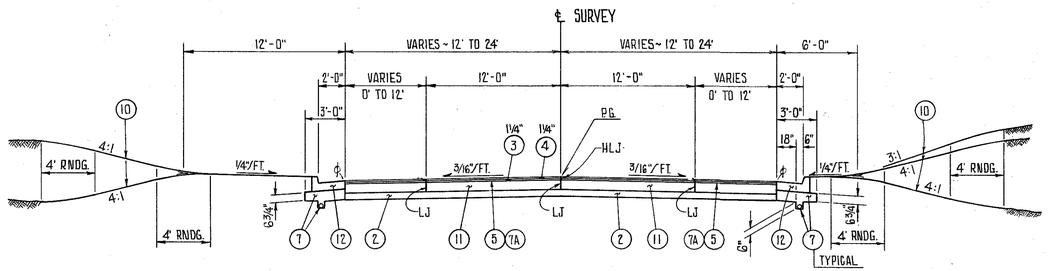
FHWA REGION	STATE	PROJECT	
5	OHIO		

7
254

FRANKLIN COUNTY
FRA - 104-10.57

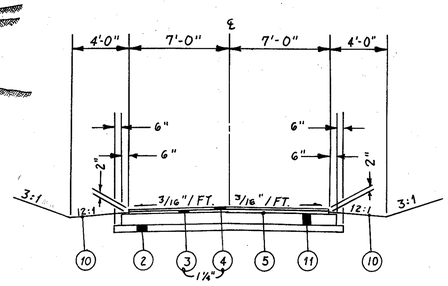
TYPICAL SECTIONS

TYPE 404

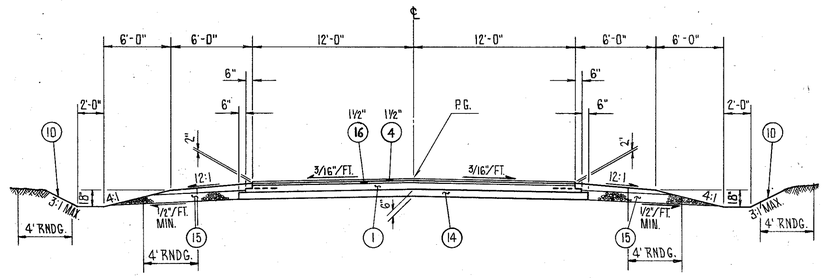


REFUGEE ROAD NORTH
NORMAL SECTION

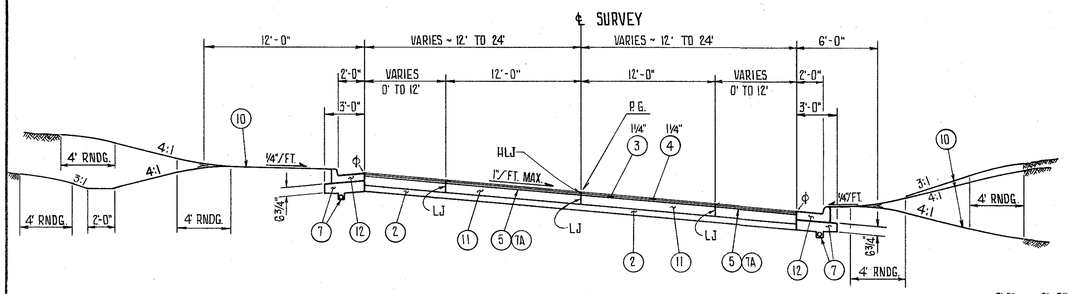
STA. 72+00.00 TO STA. 72+24.10 = 24.10 LIN. FT.
STA. 81+42.17 TO STA. 85+22.53 = 380.36 LIN. FT.
TOTAL = 404.46 LIN. FT.



REFUGEE ROAD CONNECTION

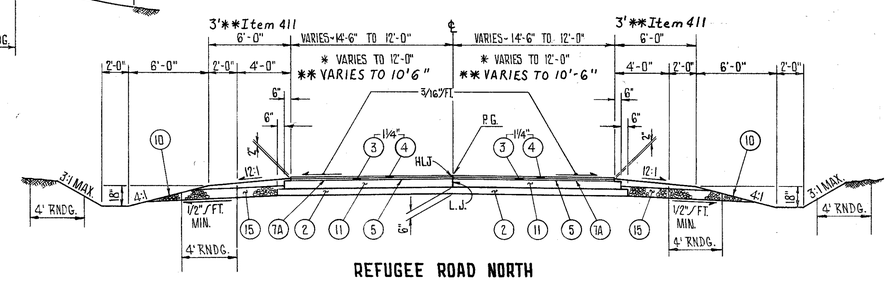


REFUGEE ROAD AT ALUM CREEK DR.
STA. 72+23.00 TO STA. 74+00.00 = 179.00 LIN. FT.

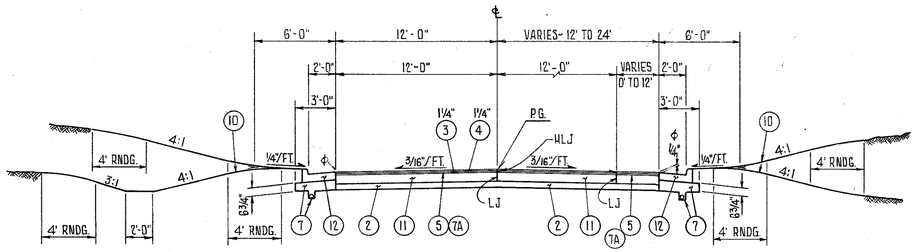


REFUGEE ROAD NORTH
SUPERELEVATED SECTION

STA. 72+24.10 TO STA. 81+42.17 = 918.07 LIN. FT.
STA. 85+22.53 TO STA. 99+68.00 = 1445.47 LIN. FT.
TOTAL = 2363.54 LIN. FT.



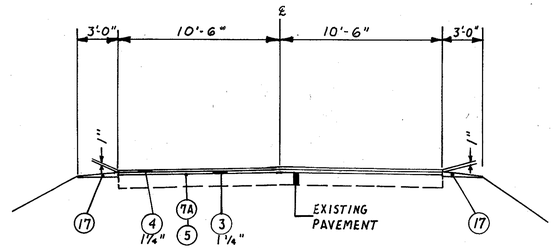
REFUGEE ROAD NORTH
STA. 71+60.00 TO STA. 72+00.00 = 40.00 LIN. FT.



REFUGEE ROAD AT ALUM CREEK DR.
STA. 64+38.52 TO STA. 70+57.00 = 618.48 LIN. FT.
STA. 71+22.00 TO STA. 71+83.00 = 61.00 LIN. FT.
TOTAL = 679.48 LIN. FT.

℄ ¼" Typical Gutter drop

REFUGEE ROAD AT ALUM CREEK DR.
STA. 63+98.52 TO STA. 64+38.52 = 40.00 LIN. FT. *STA. 63+00.00 TO STA. 63+98.52 = 98.52 LIN. FT.
STA. 71+83.00 TO STA. 72+23.00 = 40.00 LIN. FT. **STA. 44+04.00 To STA. 47+70.00 = 366.00 LIN. FT.
TOTAL = 80.00 LIN. FT. TOTAL = 464.52 LIN. FT.



EX. REFUGEE ROAD
STA. 47+70 To STA. 63+00 = 1,530 LIN. FT.

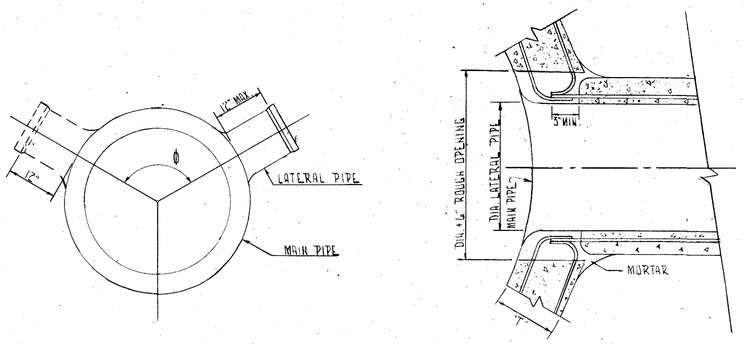
ITEM		DESCRIPTION
(1)	301	6" BITUMINOUS AGGREGATE BASE; AC-20; RT-11 OR RT-12 LAID IN 2-3" COURSES
(2)	310	6" SUBBASE, TYPE II
(3)	403	ASPHALT CONCRETE, AC-20 (THICKNESS AS SHOWN)
(4)	404	ASPHALT CONCRETE, AC-20 (THICKNESS AS SHOWN)
(5)	407	TACK COAT @ 0.1 gal. per sq. yd.

ITEM		DESCRIPTION
(7)	605	4" SHALLOW PIPE UNDERDRAIN, 707.15
(7A)	407	COVER AGGREGATE
(10)	659	SEEDING AND MULCHING, AS PER PLAN - SEE SHT. 17
(11)	305	8" PORTLAND CEMENT CONCRETE BASE, CLASS "C", AS PER PLAN - SEE SHT. 16
(12)	609	COMBINATION CURB AND GUTTER, STANDARD TYPE 2
(14)	304	AGGREGATE BASE
(15)	605	AGGREGATE DRAINS (See General Note)
(16)	402	ASPHALT CONCRETE, AC-20, (THICKNESS AS SHOWN)
(17)	411	STABILIZED CRUSHED AGGREGATE

LJ STANDARD LONGITUDINAL JOINT
HLJ HOT LONGITUDINAL JOINT (404, 402, & 403 ONLY)

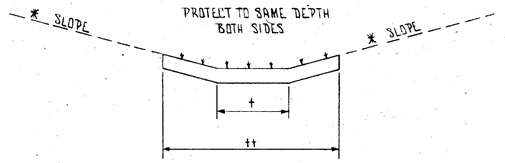
NOTE

1. FOR UNDERDRAIN DETAIL SEE SHEET NO. 6



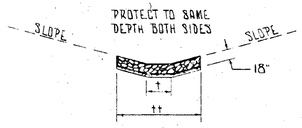
NOTE:
CONCRETE FOR GROUTING SHALL BE THE SAME AS THAT SPECIFIED FOR PERTINENT PIPE.

PRE FABRICATED "T" CONNECTION

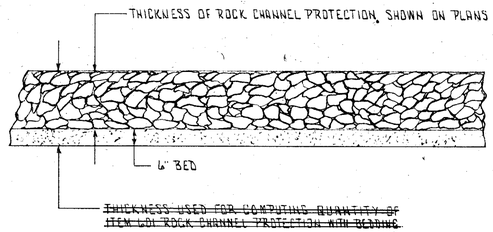


* SEE CROSS SECTIONS FOR SLOPE
† DITCH BOTTOM SEE CROSS SECTION FOR WIDTH
†† SEE PLAN & PROFILE FOR WIDTH MEASURED ALONG WETTED PERIMETER

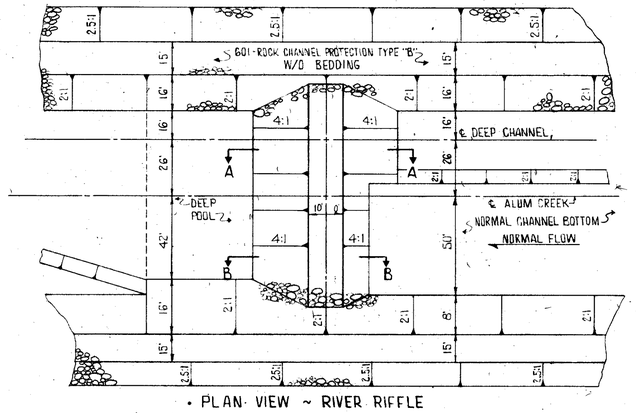
SOD & JUTE OR EXCELSIOR MATTING



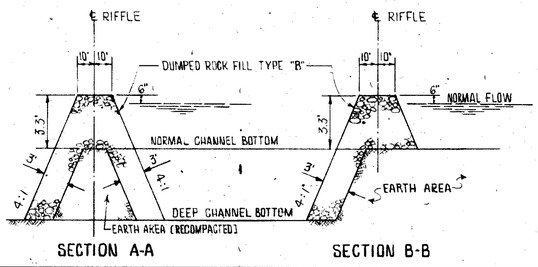
ROCK CHANNEL PROTECTION TYPE "C" WITH BEDDING.
(FOR DITCHES)



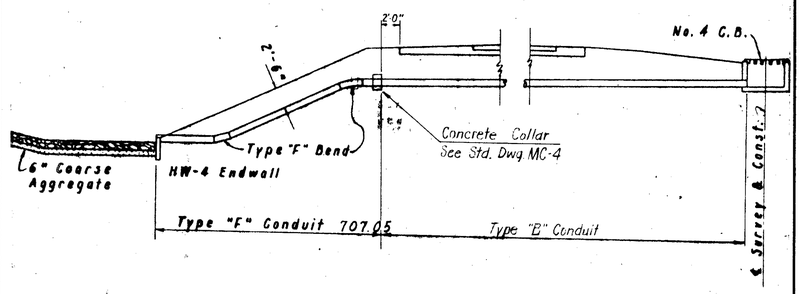
DETAIL
ROCK CHANNEL PROTECTION - TYPE C



• PLAN VIEW ~ RIVER RIFFLE

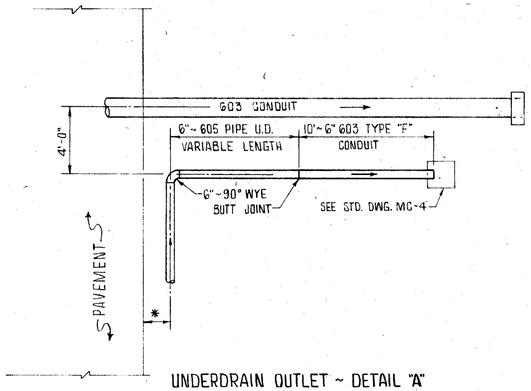


SECTION A-A SECTION B-B

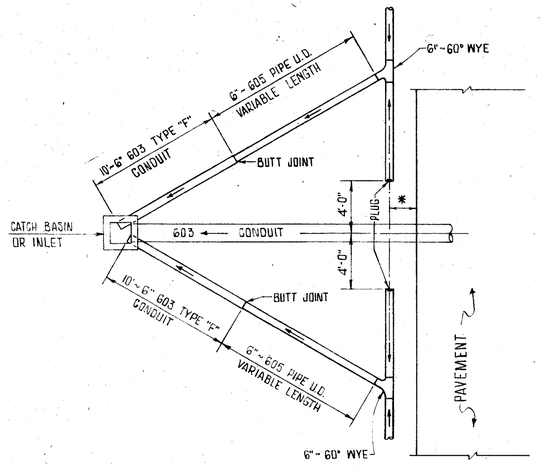


MEDIAN OUTLET DETAIL IN HIGH - FILL

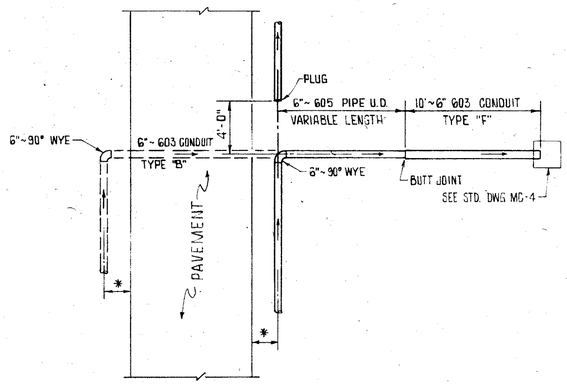
FRANKLIN COUNTY
FRA 104-10.57



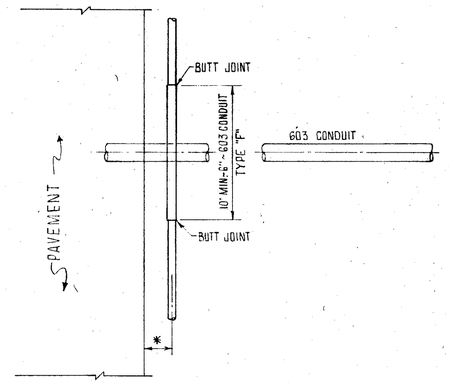
UNDERDRAIN OUTLET ~ DETAIL "A"



UNDERDRAIN OUTLET ~ DETAIL "B"



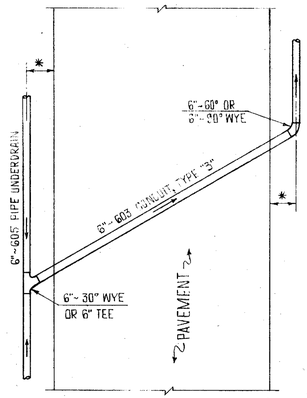
UNDERDRAIN OUTLET ~ DETAIL "C"



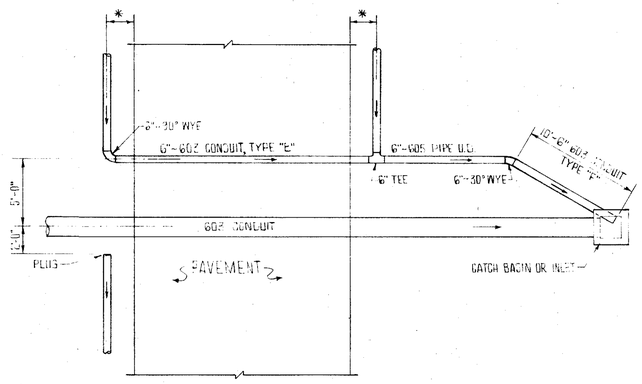
UNDERDRAIN DETAIL "D"

NOTE

* = SEE TYPICAL SECTIONS



UNDERDRAIN OUTLET ~ DETAIL "E"



UNDERDRAIN OUTLET ~ DETAIL "F"

FHWA REGION	STATE	PROJECT	
5	OHIO		

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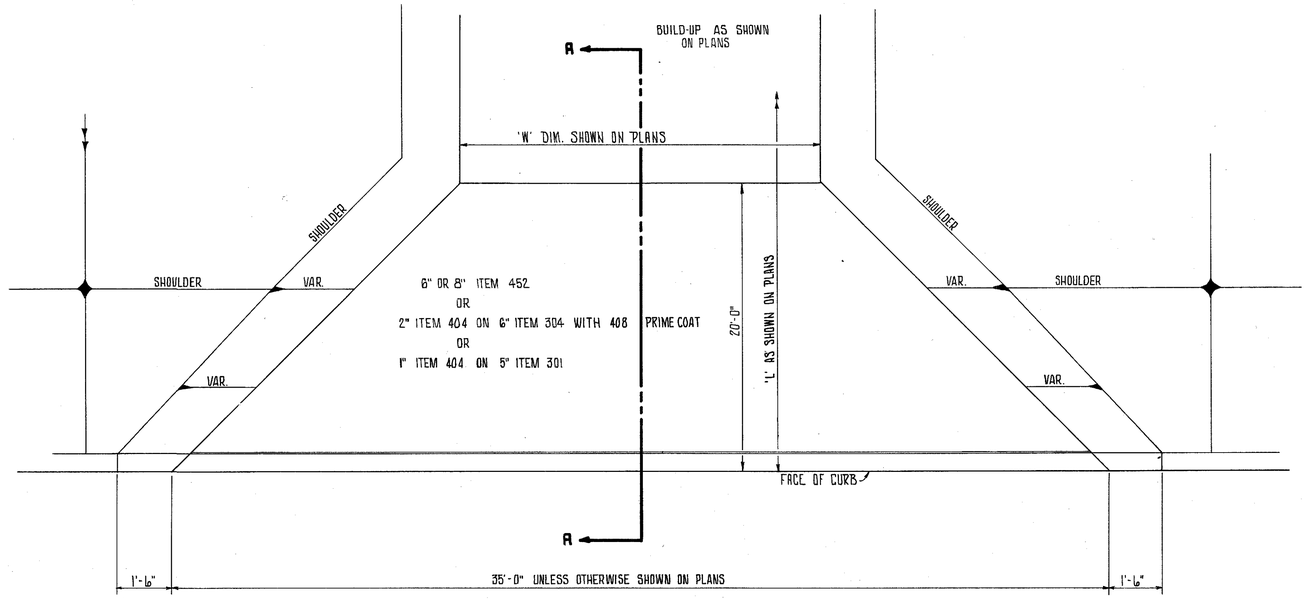
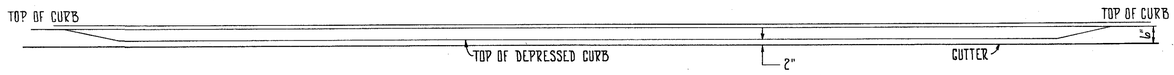
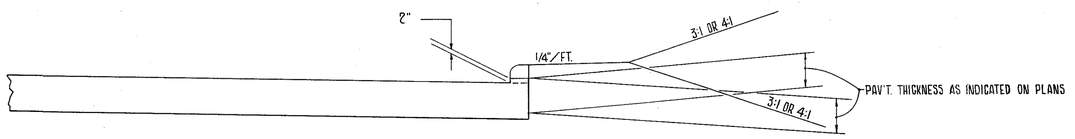
254

FRANKLIN COUNTY
FRA - 104-10.57

DRIVEWAY APPROACH DETAILS







SECTION A-A

SEE STANDARD DRAWING BP-6 FOR ADDITIONAL INFORMATION.

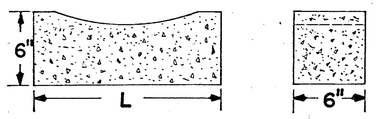
DRIVEWAY APPROACH DETAIL

FHWA REGION	STATE	PROJECT	
5	OHIO		

11
254

FRANKLIN COUNTY
FRA 104-10.57

SIZE OF VALVE	L	VOLUME CU-FT
VALVES 3"	15"	0.31
4"	16"	0.33
6"	17"	0.36
8"	20"	0.42
12"	24"	0.50
16"	30"	0.63
BUTTERFLY VALVES 20"	36"	0.75
24"	42"	0.88
30"	48"	1.00



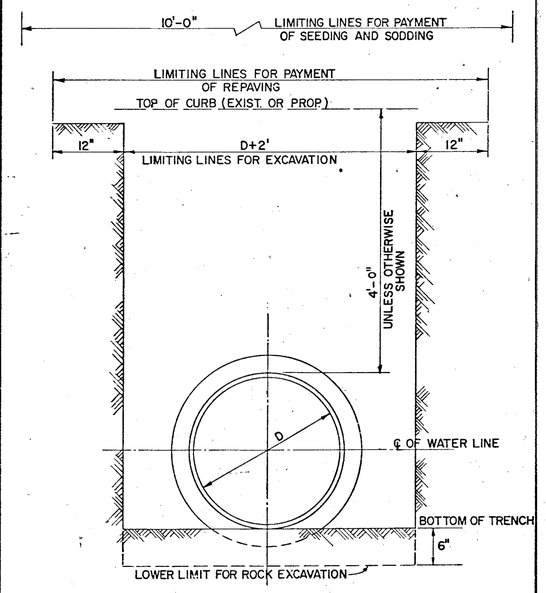
REVISED JANUARY 1978
REVISED DECEMBER 1974

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER

APPROVED: [signature] ENGINEER 12/6/74 DATE

CONCRETE VALVE SUPPORTS
STANDARD DETAIL

L-6306



REVISED JANUARY 1978

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER

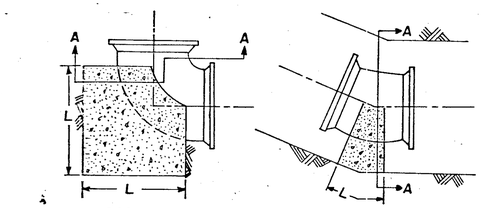
APPROVED: [signature] ENGINEER 1-4-78 DATE

STANDARD DETAIL
TYPICAL TRENCH

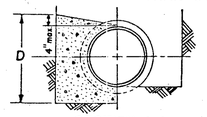
L-6309

SIZE OF PIPE	DEGREE OF BEND 11 1/4° L"	D"	V c.f.	22 1/2° L"	D"	V c.f.	45° L"	D"	V c.f.	90° L"	D"	V c.f.
3"	4	3	0.1	6	4	0.2	10	4	0.3	10	4	0.3
4"	5	4	0.2	9	5	0.4	14	5	0.6	14	5	0.6
6"	8	6	0.5	12	7	0.7	20	8	1.4	18	9	1.7
8"	9	8	0.7	16	9	1.4	24	12	2.7	25	11	4.0
12"	14	12	1.8	24	14	3.6	36	18	6.8	32	18	10.7
16"	18	16	3.4	32	18	6.7	36	32	13.4	41	26	25.4
20"	25	20	6.4	30	30	11.5	49	36	20.5	50	32	46.5
24"	27	24	9.0	39	34	18.4	60	42	35.0	58	40	77.7

STEEL WILL BE USED AS REQUIRED BY ENGINEER



NOTES:
1. BACKER DESIGNED FOR 3000 PSF SOIL BEARING.
2. CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH.



REVISED JANUARY 1975

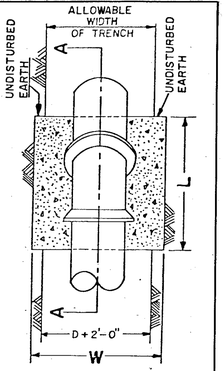
CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER

APPROVED: [signature] ENGINEER 1/9/75 DATE

STANDARD DETAIL
BACKING FOR BENDS
HORIZONTAL AND VERTICAL SAG

L-6311

SIZE OF PIPE	DEGREE OF BEND 11 1/4° L"	W"	H"	Vol.	22 1/2° L"	W"	H"	Vol.	45° L"	W"	H"	Vol.	90° L"	W"	H"	Vol.
3"	12	18	12	1.5	13	25	16	3.0	18	30	19	5.9	25	30	24	10.4
4"	12	24	16	2.6	16	30	18	5.0	22	36	24	11.0	27	48	25	18.7
6"	12	48	18	6.0	15	43	36	13.4	30	55	24	22.9	37	54	36	41.6
8"	12	63	24	10.5	18	57	34	20.2	36	57	33	39.2	47	60	46	75.0
12"	20	54	36	22.6	37	62	37	49.0	48	62	51	87.9	66	66	66	166.4
16"	31	65	38	44.3	60	65	39	88.1	65	65	65	159.2	72	96	72	288.0
20"	45	70	40	72.8	56	70	60	136.2	72	76	78	247.0	86	108	84	451.8
24"	41	72	54	92.3	67	74	69	198.0	88	84	84	359.1	96	120	96	640.0



NOTE: 1. VOLUMES GIVEN IN CUBIC FEET.
2. BACKER TO BE CENTERED HORIZONTALLY ON BEND.
3. STEEL WILL BE USED AS REQUIRED BY THE ENGINEER.

REVISED DECEMBER 1974

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER

APPROVED: [signature] ENGINEER 12/13/74 DATE

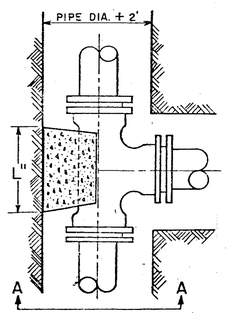
STANDARD DETAIL
BACKING FOR VERTICAL BENDS
(OVER BENDS ONLY)

L-6310

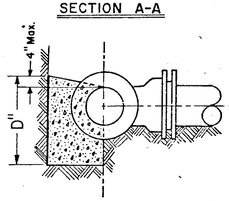
RUN \ BRANCH	3" L"	D"	V c.f.	4" L"	D"	V c.f.	6" L"	D"	V c.f.	8" L"	D"	V c.f.	12" L"	D"	V c.f.	16" L"	D"	V c.f.	20" L"	D"	V c.f.	24" L"	D"	V c.f.
3"	12	5	0.5																					
4"	10	6	0.5	11	8	0.8																		
6"	9	7	0.5	11	8	0.8	18	12	1.9															
8"	8	8	0.5	10	9	0.7	18	12	1.9	23	16	3.5												
12"	6	12	0.6	8	12	0.8	18	12	1.9	23	16	3.5	38	22	8.7									
16"	6	16	0.8	6	16	0.8	14	16	2.0	20	18	3.3	36	23	8.7	49	30	13.6						
20"	6	20	1.0	6	20	1.0	11	20	1.9	18	20	3.3	35	24	8.7	46	32	13.6	60	38	26.5			
24"	6	24	1.2	6	24	1.2	9	24	1.9	15	24	3.3	30	28	8.7	42	36	14.0	54	42	26.3	68	48	45.4

STEEL WILL BE USED AS REQUIRED BY THE ENGINEER

PLAN VIEW



SECTION A-A



NOTES

1. BACKER DESIGNED FOR 3000 PSF SOIL BEARING.
2. CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH.
3. PROVIDE CLEARANCE FOR REMOVAL OF BOLTS.

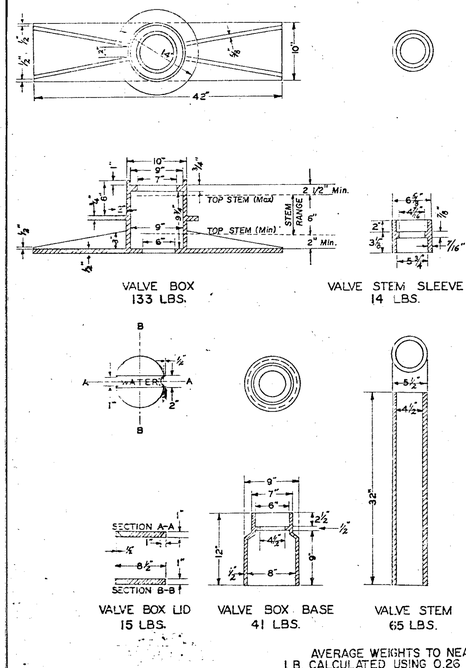
REVISED JANUARY 1975

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER

APPROVED: [signature] ENGINEER 1/30/75 DATE

STANDARD DETAIL
BACKING FOR TEES

L-6312



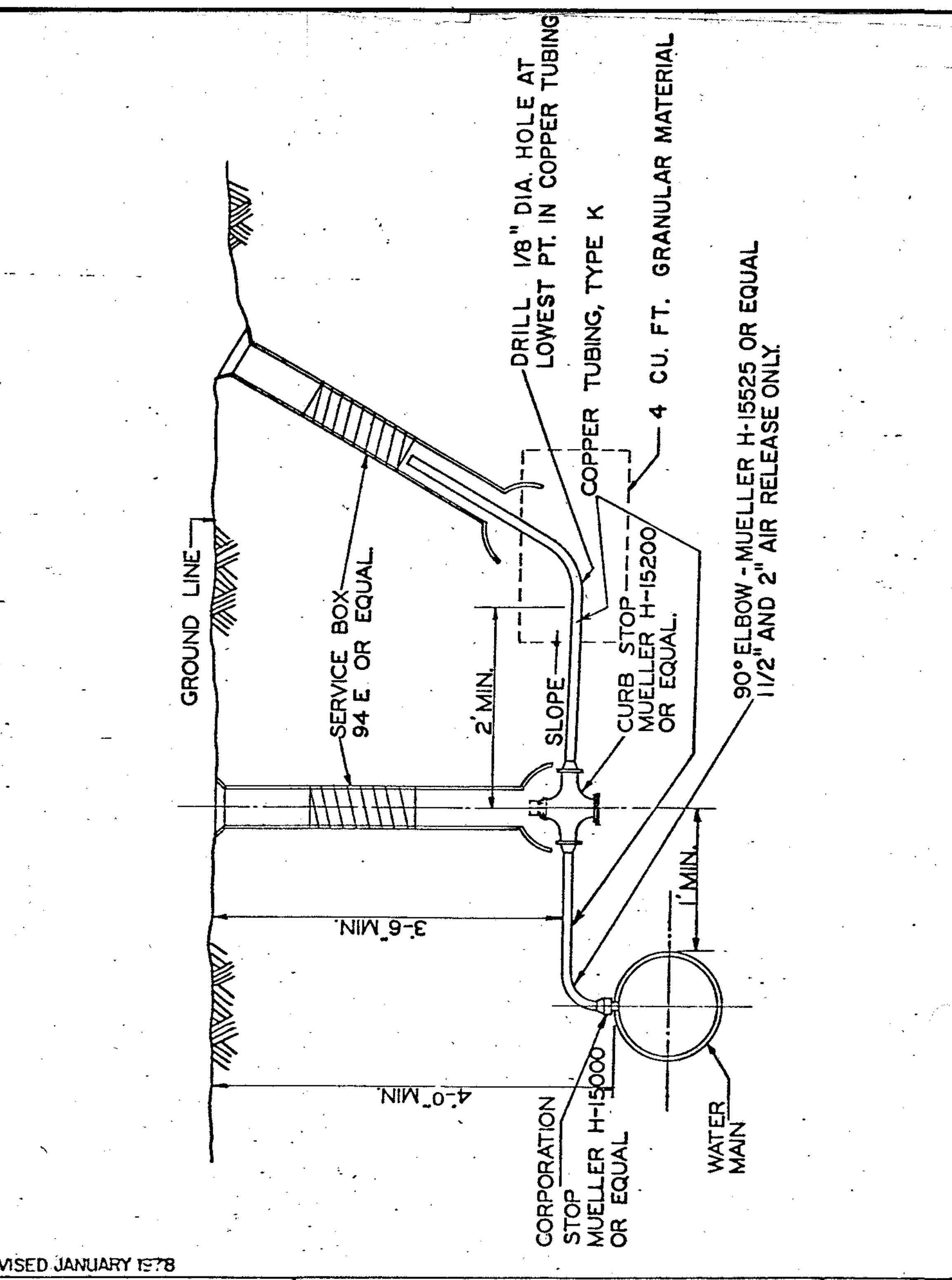
AVERAGE WEIGHTS TO NEAREST EVEN LB. CALCULATED USING 0.26 LBS./CU. IN.

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER

APPROVED: [signature] ENGINEER 4-2-63 DATE

COLUMBUS STANDARD
HEAVY DUTY VALVE BOX
STANDARD DETAIL

L-6316



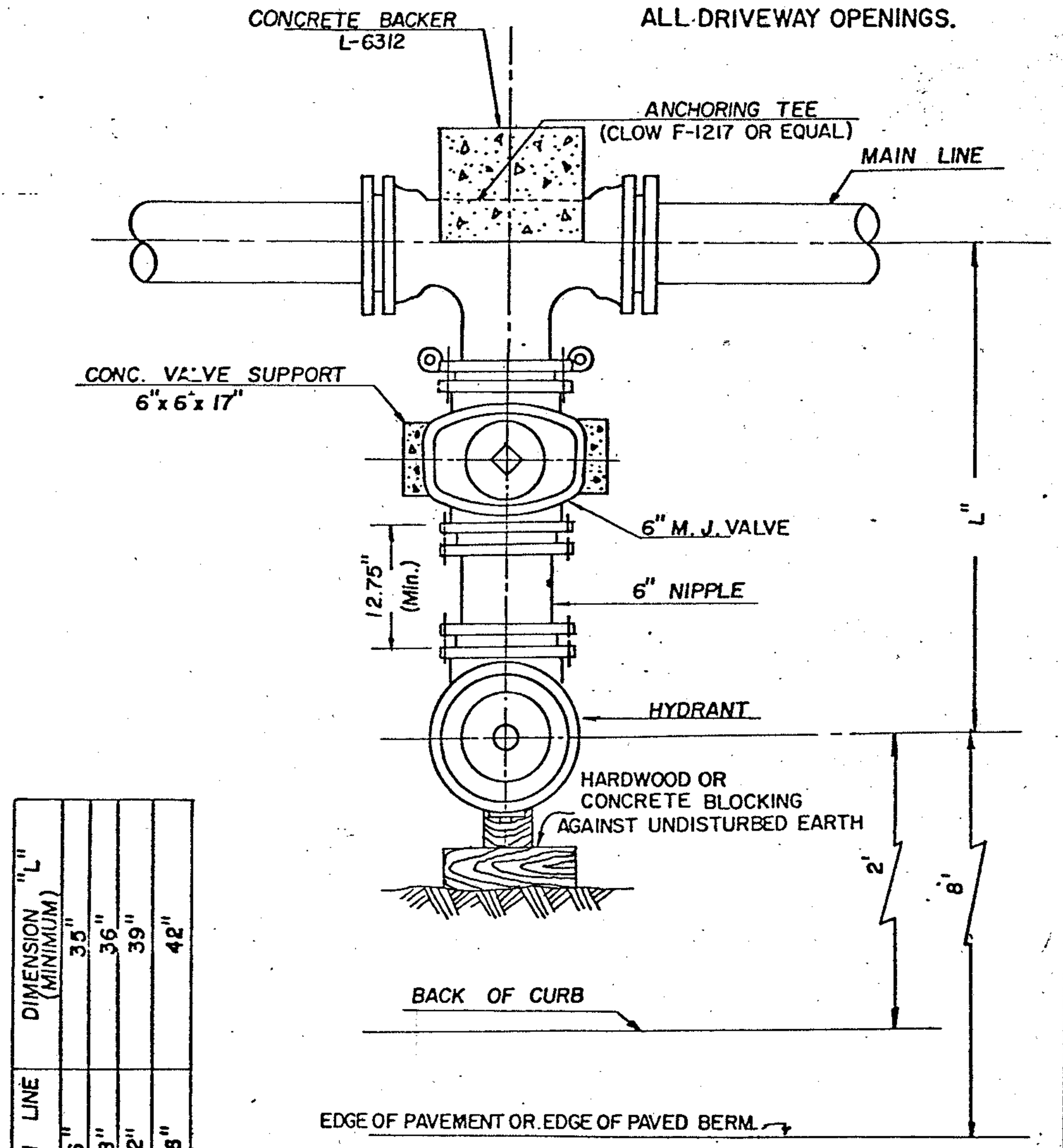
REVISED JANUARY 1978

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER
APPROVED: 9/15/64
ENGINEER DATE

STANDARD DETAIL
TYPICAL AIR RELEASE
¾" THRU 2"

L-6473

FIRE HYDRANTS SHALL BE SET A MINIMUM OF 6' FROM ALL DRIVEWAY OPENINGS.



MAIN LINE	DIMENSION "L" (MINIMUM)
6"	35"
8"	36"
12"	39"
18"	42"

FIRE HYDRANT BACKFILLING SHALL BE POWER TAMPED IN LAYERS NOT TO EXCEED 4 INCHES IN THICKNESS, LOOSE MEASUREMENTS, AND SHALL CONSIST OF GRANULAR MATERIAL CONFORMING TO ITEM 310 GRADING A OR APPROVED SUITABLE EXCAVATED MATERIAL.

REVISED 1-3-78
Revised 11-27-73

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER
APPROVED: 11/20/66
ENGINEER DATE

STANDARD DETAIL
TYPICAL HYDRANT SETTING
TYPE "A"

L-6637

NUMBER of JOINTS	GALLONS PER HR. 6" Pipe	8" Pipe	12" Pipe
1	.01	.01	.02
2	.02	.03	.04
3	.03	.04	.06
4	.04	.05	.08
5	.05	.07	.10
6	.06	.08	.12
7	.07	.09	.14
8	.08	.11	.16
9	.09	.12	.18
10	.10	.13	.20
11	.11	.15	.22
12	.12	.16	.24
13	.13	.17	.26
14	.14	.18	.28
15	.15	.20	.30
16	.16	.21	.32
17	.17	.22	.34
18	.18	.24	.36
19	.19	.25	.38
20	.20	.26	.40
21	.21	.28	.42
22	.22	.29	.44
23	.23	.30	.46
24	.24	.32	.48
25	.25	.33	.50
26	.26	.34	.52
27	.27	.36	.54
28	.28	.37	.56
29	.29	.38	.58
30	.30	.40	.60
31	.31	.41	.62
32	.32	.42	.64
33	.33	.44	.65
34	.34	.45	.67
35	.35	.46	.70
36	.36	.48	.72
37	.37	.49	.73
38	.38	.50	.75
39	.39	.52	.77
40	.40	.53	.79
41	.41	.54	.81
42	.42	.56	.83
43	.43	.57	.85
44	.44	.58	.87
45	.45	.60	.89
46	.46	.61	.91
47	.47	.62	.93
48	.48	.64	.95
49	.49	.65	.97
50	.50	.66	.99

NUMBER of JOINTS	GALLONS PER HR. 6" Pipe	8" Pipe	12" Pipe
51	.51	.67	1.01
52	.52	.69	1.03
53	.53	.70	1.05
54	.54	.71	1.07
55	.55	.73	1.09
56	.56	.74	1.11
57	.57	.75	1.13
58	.58	.77	1.15
59	.59	.78	1.17
60	.60	.79	1.19
61	.61	.81	1.21
62	.62	.82	1.23
63	.63	.83	1.25
64	.64	.85	1.27
65	.65	.86	1.29
66	.66	.87	1.31
67	.66	.89	1.33
68	.67	.90	1.35
69	.68	.91	1.37
70	.69	.93	1.39
71	.70	.94	1.41
72	.71	.95	1.43
73	.72	.97	1.45
74	.73	.98	1.47
75	.74	.99	1.49
76	.75	1.01	1.51
77	.76	1.02	1.53
78	.77	1.03	1.55
79	.78	1.05	1.57
80	.79	1.06	1.59
81	.80	1.07	1.61
82	.81	1.09	1.63
83	.82	1.10	1.65
84	.83	1.11	1.67
85	.84	1.12	1.69
86	.85	1.14	1.71
87	.86	1.15	1.73
88	.87	1.16	1.75
89	.88	1.18	1.77
90	.89	1.19	1.79
91	.90	1.20	1.81
92	.91	1.22	1.83
93	.92	1.23	1.85
94	.93	1.24	1.87
95	.94	1.26	1.89
96	.95	1.27	1.91
97	.96	1.28	1.93
98	.97	1.30	1.95
99	.98	1.31	1.97
100	.99	1.32	1.99

NUMBER of JOINTS	GALLONS PER HR. 6" Pipe	8" Pipe	12" Pipe
100	.99	1.32	1.99
200	1.99	2.65	3.97
300	2.98	3.97	5.96
400	3.97	5.30	7.94
500	4.97	6.62	9.93

FORMULA: $L = \frac{ND\sqrt{P}}{7400}$

Where: L = Leakage (gal./hr.)
N = Number of joints
D = Nominal diameter (In.)
P = Test Pressure (150psi)

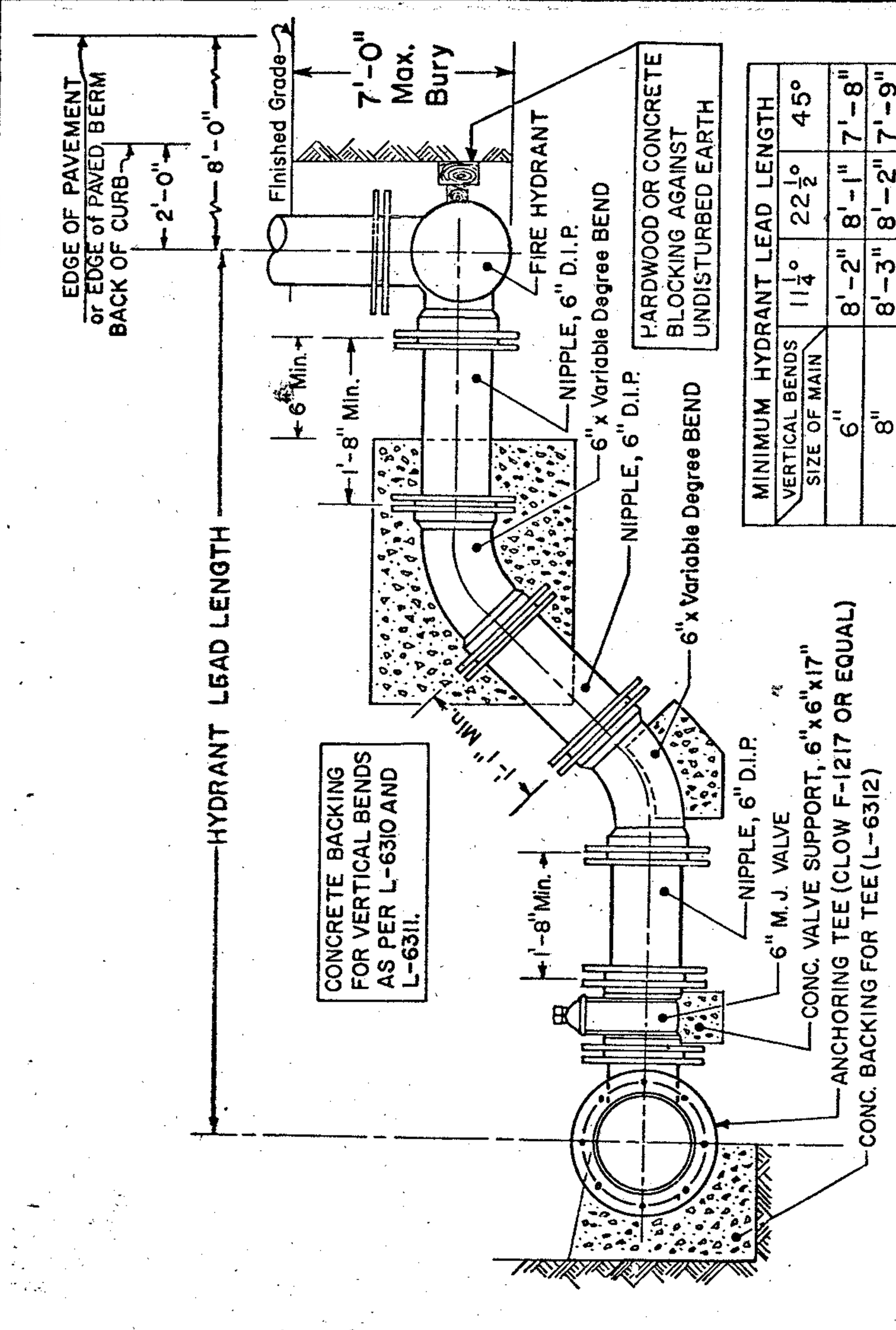
These Calculations Based on the Current "AWWA C 600" Specifications, Section 4 Hydrostatic Testing.

Revised-01/01/79

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER
APPROVED:
ENGINEER DATE

STANDARD DETAIL
TABLE OF ALLOWABLE LEAKAGE PER HOUR
For Mech. Joint & Slip Joint Pipe

L-6640 R



MINIMUM HYDRANT LEAD LENGTH			
VERTICAL BENDS / SIZE OF MAIN	11¼°	22½°	45°
6"	8'-2"	8'-1"	7'-8"
8"	8'-3"	8'-2"	7'-9"
12"	8'-6"	8'-5"	8'-0"
16"	8'-9"	8'-8"	8'-3"

FIRE HYDRANTS SHALL BE SET A MINIMUM OF 6' FROM ALL DRIVEWAY OPENINGS.

PROFILE

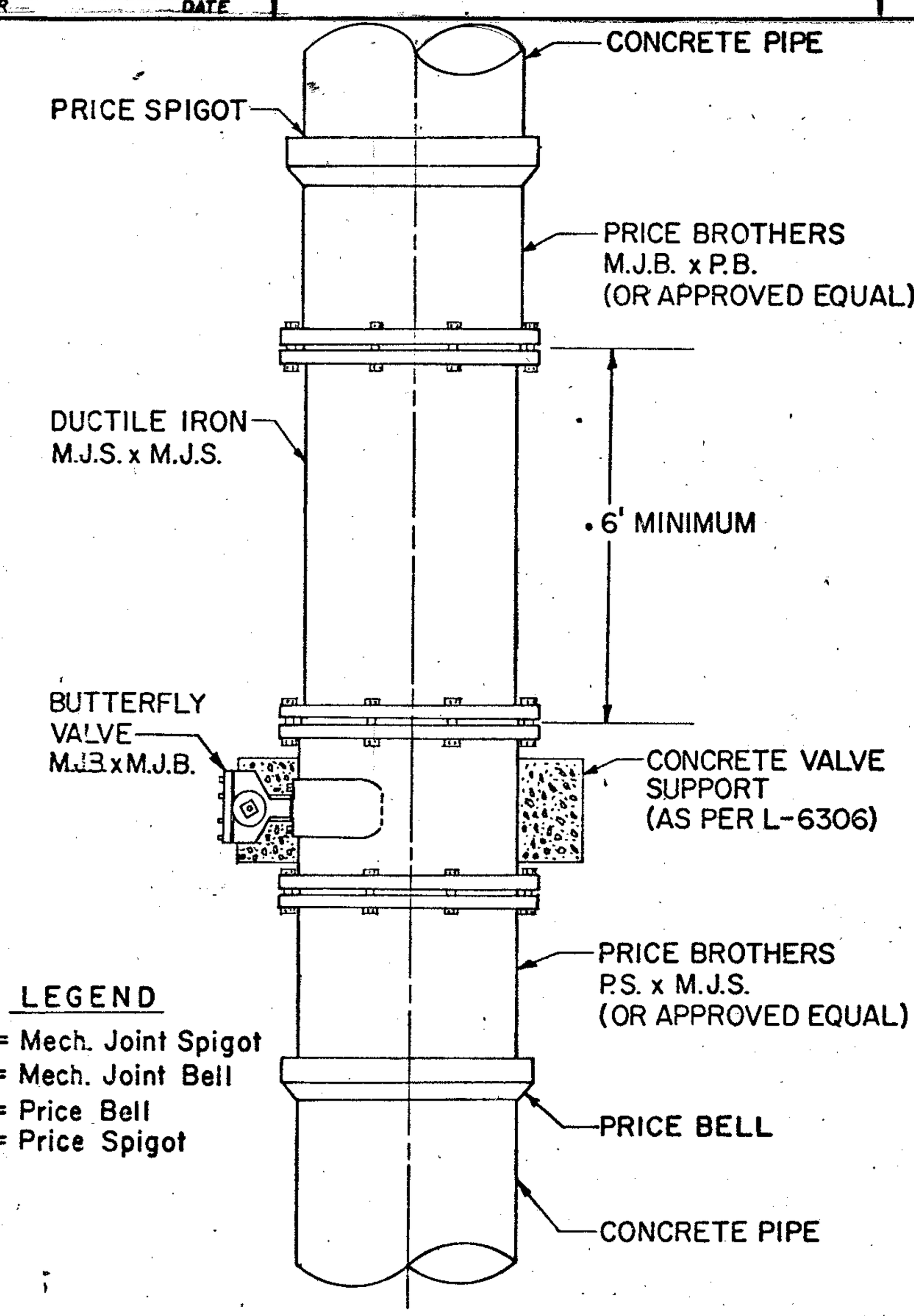
NOTES:
1. VERTICAL BENDS SHALL NOT EXCEED 45°.
2. WHERE APPLICABLE, A COMMERCIAL OFFSET (CLOW F-982 OR EQUAL) MAY BE USED IN LIEU OF THE TWO VERTICAL BENDS AND THE INCLINED NIPPLE, AS APPROVED BY THE ENGINEER.

REVISED JANUARY 1978

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER
8/3/76
ENGINEER DATE

STANDARD DETAIL
TYPICAL HYDRANT SETTING
TYPE "A" MODIFIED
(TO ELIMINATE EXCESSIVE BURY)

L-7601



LEGEND
M.J.S. = Mech. Joint Spigot
M.J.B = Mech. Joint Bell
P.B. = Price Bell
P.S. = Price Spigot

CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF WATER
APPROVED: 10-19-76
CHIEF ENGINEER DATE

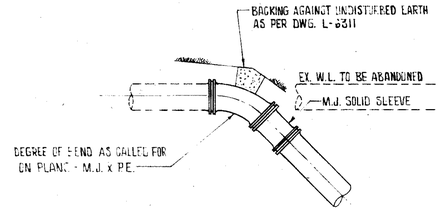
STANDARD DETAIL
CONCRETE PIPE
VALVE PIPING CONNECTION

L-7602

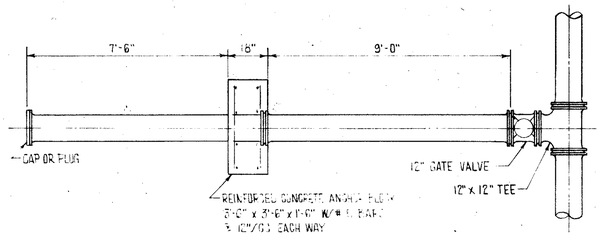
FHWA REGION	STATE	PROJECT	
5	OHIO		

13
254

FRANKLIN COUNTY
FRA 104-10.57



DETAIL "A"



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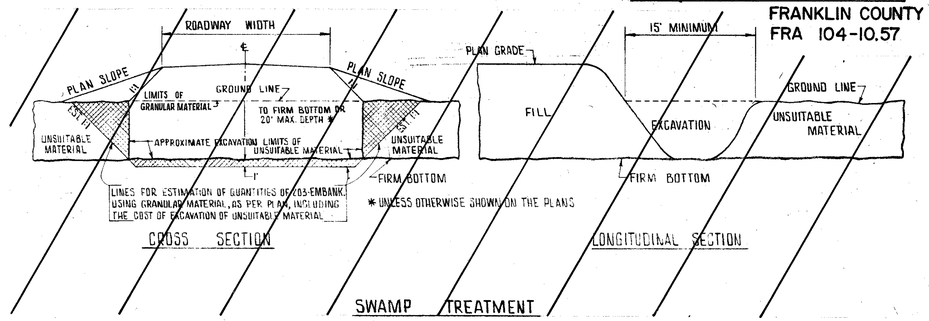
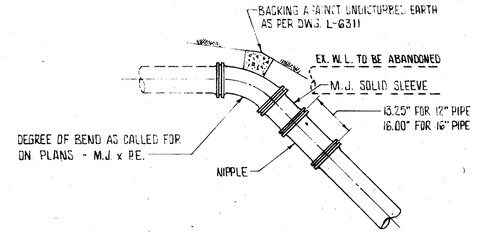


SWAMP TREATMENT



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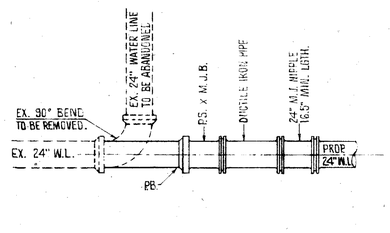

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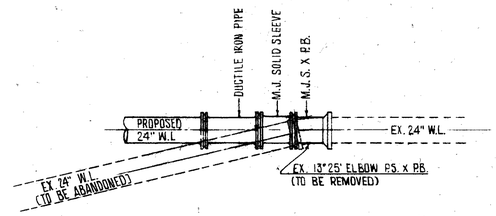

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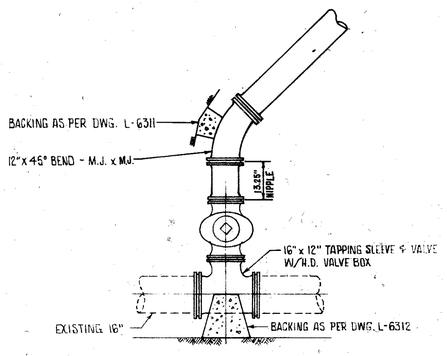

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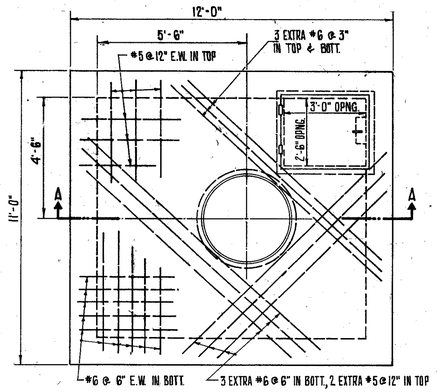
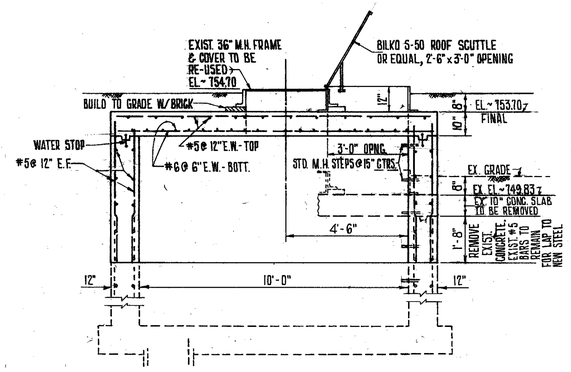


ROOF PLAN



SECTION "A-A"

MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

14
254

CALC: WDG 6-79
CHK: ROB 7-79

FRANKLIN COUNTY
FRA 104-10.57

FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 800 SQ. FT. OF FLOOR SPACE. PAYMENT SHALL BE AT THE LUMP SUM PRICE BID FOR ITEM 619, FIELD OFFICE.

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS

THE ROUNDED CORNERS SHOWN ON THE TYPICAL SECTIONS, APPLY TO ALL CROSS SECTIONS EVEN THOUGH OTHERWISE SHOWN ON THESE PLANS.

UTILITY OWNERSHIP

THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT.

THE ALL AMERICAN CABLEVISION COMPANY
1980 ALUM CREEK DRIVE
COLUMBUS, OHIO (Tele. No. 614-443-0111).

COLUMBIA GAS OF OHIO INC.
99 NORTH FRONT STREET
COLUMBUS, OHIO 43215 (Tele. No. 614-460-2222).

COLUMBUS AND SOUTHERN OHIO ELECTRIC CO.
215 NORTH FRONT STREET
COLUMBUS, OHIO 43215 (Tele. No. 614-464-7111).

OHIO BELL TELEPHONE CO.
150 EAST GAY STREET
11TH. FLOOR
COLUMBUS, OHIO 43215 (Tele. No. 614-223-5123).

CITY OF COLUMBUS
SEWERS & DRAINAGE
CITY HALL
90 WEST BROAD ST., 4TH. FLOOR
COLUMBUS, OHIO 43215 (Tele. No. 614-222-8156).

CITY OF COLUMBUS
DIVISION OF WATER
140 MARCONI BOULEVARD
COLUMBUS, OHIO 43215 (Tele. No. 614-222-7788)

CITY OF COLUMBUS
ELECTRICITY DIVISION
50 WEST GAY STREET
COLUMBUS, OHIO 43215 (Tele. No. 614-222-7294).

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 O.R.C.

EROSION CONTROL

ITEMS 601, 660, 667 AND 668 ARE PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE ANY OF THESE ITEMS, AND TURF OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE 660, 667, OR 668. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES FOR THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

UNRECORDED SANITARY CONNECTIONS

ANY UNRECORDED ACTIVE CONNECTION TO A SANITARY SEWER ENCOUNTERED DURING CONSTRUCTION SHALL BE RECONNECTED TO THE EXISTING SEWER AS DIRECTED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR WORK NOTED ABOVE:

ITEM 603	6" Conduit, Type C, 706.01, 706.02, 706.08 with 706.11 or 706.12 joints	25 L.F.
ITEM 603	6" Conduit, Type B, 706.01, 706.02, 706.08 with 706.11 or 706.12 joints	25 L.F.
ITEM 603	8" Conduit, Type B, 706.01, 706.02 706.08 with 706.11 or 706.12 joints	25 L.F.
ITEM 603	18" Conduit, Type B, 706.01, 706.02, 706.08 with 706.11 or 706.12 joints	25 L.F.

NONE OF THE ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL REQUESTED BY THE ENGINEER.

MEDIAN PAVEMENT ON APPROACH SLABS

THE WIDTH AND TYPE OF MEDIAN PAVEMENT ON APPROACH SLABS SHALL BE TRANSITIONED FROM THE STANDARD SECTION USED ON THE APPROACH PAVEMENT TO THE SECTION USED ON THE BRIDGE WITHIN THE LIMITS OF THE APPROACH SLAB.

FARM DRAINS

ALL FARM DRAINS 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 RIGHT-OF-WAY LIMITS BY ITEM 603 CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF THE ROADWAY DITCHES SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE, IF POSSIBLE, ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL TILE FIELDS WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY 603 TYPE E CONDUIT 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.

ITEM 603 8 IN. CONDUIT, TYPE B	50 LIN. FT.
ITEM 603 10 IN. CONDUIT, TYPE B	50 LIN. FT.
ITEM 603 12 IN. CONDUIT, TYPE B	50 LIN. FT.
ITEM 603 8 IN. CONDUIT, TYPE E	100 LIN. FT.
ITEM 603 10 IN. CONDUIT, TYPE E	50 LIN. FT.
ITEM 603 12 IN. CONDUIT, TYPE E	50 LIN. FT.
ITEM 603 6 IN. CONDUIT, TYPE F	100 LIN. FT.
ITEM 603 8 IN. CONDUIT, TYPE F	50 LIN. FT.
ITEM 603 10 IN. CONDUIT, TYPE F	50 LIN. FT.
ITEM 601, ROCK CHANNEL PROTECTION TYPE C WITH BEDDING (18 IN. THICK)	20 CU. YDS.

NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEM.

NONE OF THE ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL AUTHORIZED BY THE ENGINEER.

ITEM 605 AGGREGATE DRAINS

AGGREGATE DRAINS SHALL BE PLACED AT FIFTY (50) FOOT INTERVALS ON EACH SIDE OF NORMAL, CROWNED SECTIONS AND AT TWENTY-FIVE(25) FOOT INTERVALS ON THE LOW SIDE ONLY OF SUPER-ELEVATED SECTIONS, EXCEPT WHERE ITEM 605 PIPE UNDERDRAINS HAVE BEEN PROVIDED.

AGGREGATE DRAINS ADJACENT TO REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT SHALL BE PLACED AT EACH TRANSVERSE JOINT ON THE OUTSIDE EDGE OF NORMAL SECTIONS AND ON THE LOW SIDE OF SUPERELEVATED SECTIONS.

AN AGGREGATE DRAIN SHALL BE PLACED AT THE LOW POINT OF EACH SAG VERTICAL CURVE.

ELEVATION DATUM

ALL ELEVATIONS ARE BASED ON U.S.G.S. DATUM.

REMOVAL OF TREES AND STUMPS

ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT SHALL BE REMOVED UNDER THE LUMP SUM PRICE BID FOR ITEM 201 CLEARING AND GRUBBING, EXCEPT THAT THOSE TREES FOR WHICH PROTECTION AND PRESERVATION WORK IS INDICATED ELSEWHERE IN THESE PLANS SHALL NOT BE REMOVED.

THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED.

SIZES	NO. TREES	NO. STUMPS	TOTAL	M	BRM
18 IN.	132	—	132	33	99
30 IN.	42	—	42	11	31
48 IN.	15	—	15	4	11
60 IN.	1	—	1	0	1

THE ABOVE ESTIMATE IS APPROXIMATE AND THE STATE OF OHIO RESERVES THE RIGHT TO ORDER THE REMOVAL OF ADDITIONAL TREES OR STUMPS OUTSIDE THE LIMITS OF CONSTRUCTION BUT WITHIN THE RIGHT-OF-WAY AND/OR EASEMENT LINES. PAYMENT FOR THE REMOVAL OF THESE ADDITIONAL TREES OR STUMPS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201 CLEARING AND GRUBBING.

MONUMENTS

MONUMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN ON STANDARD DRAWING MC-1. FOR LOCATIONS, SEE SHEET NO. 243.

LOCATIONS OF GUARDRAIL

THE LOCATIONS OF GUARDRAIL RUNS, AS SHOWN IN THESE PLANS, ARE SUBJECT TO ADJUSTMENT PRIOR TO FINAL ACCEPTANCE. THE ENGINEER SHALL BE SATISFIED THAT ALL INSTALLATIONS WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

FOR OTHER UTILITY GENERAL NOTES, SEE SHT. NO. 15.

FHWA REGION	STATE	PROJECT	
5	OHIO		

15
254

CALC WDG 6-79
CHK PCB 7-79

FRANKLIN COUNTY
FRA 104-10.57

SEEDING

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

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER FOR EROSION AND *SEDIMENT CONTROL MEASURES:*

207 TEMPORARY SEEDING AND MULCHING	*42,000* SQ. YD.
659 WATER	*100* M. GAL.
207 TEMPORARY SLOPE DRAINS	*850* LIN. FT.
207 TEMPORARY BENCHES, *DIKES* , DAMS AND SEDIMENT BASINS	*4,250* CU. YD.
659 MOWING	*473* M. SQ. FT.
659 COMMERCIAL FERTILIZER	*9* TON
659 REPAIR SEEDING AND MULCHING	*10,500* SQ. YD.
601 ROCK CHANNEL PROTECTION TYPE C *WITHOUT FILTER*	*34* CU. YD.
207 STRAW OR HAY BALES	*200* EACH

REINFORCED CONCRETE CATCH BASINS AND REINFORCED PAVED SHOULDER INLET

CATCH BASINS OVER 12 FEET IN DEPTH SHALL BE BUILT OF CLASS C CONCRETE REINFORCED BY PLACING 3/11" DIAMETER BARS 12" CENTER TO CENTER BOTH VERTICALLY AND HORIZONTALLY WITH A 2" CLEARANCE FROM THE INSIDE FACE OF THE WALL. PAYMENT FOR FURNISHING AND PLACING THE REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 604. REINFORCED CONCRETE CATCH BASIN AND ITEM 604 REINFORCED, PAVED SHOULDER INLET.
Concrete

CONNECTIONS TO EXISTING PIPE

WHERE THE PLANS PROVIDE FOR PROPOSED CONDUIT TO BE CONNECTED TO, OR TO CROSS EITHER OVER OR UNDER AN EXISTING SEWER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPE BOTH AS TO LINE AND GRADE BEFORE HE STARTS TO LAY THE PROPOSED CONDUIT.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT 603 CONDUIT ITEMS.

ESTIMATED QUANTITIES

SPECIFIC LOCATIONS AND USAGE OF ESTIMATED QUANTITIES SET UP ON THIS PLAN TO BE USED (AS DIRECTED BY THE ENGINEER) SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT. ESTIMATED QUANTITIES OF MATERIALS SHALL NOT BE ORDERED FOR DELIVERY TO THE PROJECT UNLESS AUTHORIZED BY THE ENGINEER.

REMOVAL OF EXISTING PIPE

THE REMOVAL OF ALL EXISTING PIPE DRAINS WHICH WOULD NORMALLY BE REMOVED IN VARIOUS EXCAVATION ITEMS SHALL BE INCLUDED FOR PAYMENT IN THE UNIT PRICES BID FOR THE RESPECTIVE EXCAVATION ITEMS, UNLESS OTHERWISE ITEMIZED IN THE PLANS.

AGRICULTURAL LIMING, AS PER PLAN

THE LOCATION AND NEED FOR AGRICULTURAL LIMING WILL BE DETERMINED BY LABORATORY TESTS, AFTER ROUGH GRADING OPERATIONS HAVE BEEN PERFORMED. QUANTITIES OF AGRICULTURAL LIMING, AS SHOWN ON THE PLANS, ARE SUFFICIENT FOR THE ENTIRE PROJECT, BUT WILL BE NON-PERFORMED FOR THE AREAS WHERE TESTS SHOW THAT THE LIMING IS NOT REQUIRED.

NOTES REGARDING PARCEL 168

(1) THE ACCESS ROAD ALONG THE WEST SIDE OF THE BUILDING LEADING TO REFUGEE ROAD IS A PRIVATE ROAD AND SHALL NOT BE USED BY THE CONTRACTOR FOR ACCESS TO THE PROJECT SITE.

(2) AN AERATION SYSTEM IS CURRENTLY IN OPERATION IN THE TEMPORARY R/W OF THIS PARCEL. THE CONTRACTOR SHALL NEITHER DISTURB THE SYSTEM NOR IMPEDE THE FLOW OF EFFLUENT FROM IT. THE CONTRACTOR SHALL BE HELD RESPONIBLE FOR ANY DAMAGE TO THE SYSTEM DUE TO HIS OPERATIONS.

NOTES REGARDING PARCEL 168 (CONTINUED)

(3) THE CONTRACTOR SHALL NOTIFY THE CITY EXPRESSWAY ENGINEER (222-7396) AND THE N.S.W. RAILWAY CO. 5/8 (6) WEEKS PRIOR TO BEGINNING SPUR RELOCATION WORK.

CATCHBASIN AND INLET ELEVATION AND STATIONING

THE ELEVATION OF ALL NO. 5 AND NO. 5A CATCH BASINS ARE AT THE FLOW LINE OF THE GRATE, STATIONING AND DISTANCE LEFT OR RIGHT TO THE BASIN IS TO THE CENTER OF THE BASIN.

THE ELEVATION FOR ALL PAVED SHOULDER INLETS AND MEDIAN INLETS IS AT THE FACE OF CURB AND INCLUDES THE 2 INCH DEPRESSION, DISTANCE LEFT OR RIGHT IS TO THE FACE OF CURB AND TO THE CENTER OF THE WINDOW.

FENCING

THE FIRST ITEM OF CONSTRUCTION SHALL BE THE CLEARING OF THE FENCE LINE. UPON COMPLETION OF CLEARING THE FENCE LINE THE PERMANENT FENCE SHALL BE CONSTRUCTED UNLESS OTHERWISE NOTED.

ITEM 601 ROCK CHANNEL PROTECTION WITH FILTER

Where this item is called for on the plans, the quantities shown are based on the dimensions of the rock only and do not include the volume of a 6" stone filter bed. The cost of the filter (either fabric or stone) shall be included in the unit price bid for Item 601 Rock Channel Protection with Filter.

Where the fabric filter option is used the fabric shall meet the requirements of Supplemental Specification 939 Type B.

*The surface to receive the fabric shall be prepared to a relatively smooth surface free of obstruction and debris. The fabric shall be placed with the long dimension parallel to the direction of flow and shall be laid loosely but without wrinkles and creases. Where joints are necessary, strips shall be placed to provide a 12" minimum overlap with the upstream strip overlapping the downstream strip. Securing pins with washers shall be placed at 2' minimum intervals along joints and at (2', 3' or 5')** intervals elsewhere to prevent slippage of the fabric. The securing pins shall be 3/16" diameter of steel pointed at one end and fabricated with a head to retain a steel washer having an outside diameter not less than 1½". Pin lengths shall be greater than or equal to 18".*

*** 2' for flow direction slopes steeper than 3:1, 3' for slopes 3:1 to 4:1, and 5' for slopes less steep than 4:1.*

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR PLAN ITEMS SET UP TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

EXCAVATED UNSUITABLE MATERIAL WHICH IS TO BE USED ADJACENT TO FILLS FOR SLOPE FLATTENING, OR WHICH IS PILED ADJACENT TO THE FILL TO BE DISPOSED OF LATER IN ACCORDANCE WITH 203.05, SHALL BE SHAPED TO ITS FINAL POSITION OR REMOVED FROM THE AREA AT LEAST TWO WEEKS PRIOR TO PAVING OPERATIONS ON THE FILL. NO SANITARY MATERIAL SHALL BE USED FOR ANY EMBANKMENT INCLUDING CHANNEL EMBANKMENT.

EQUIPMENT USED FOR EXCAVATION OF UNSUITABLE MATERIALS SHALL BE LOCATED AHEAD OF THE EXCAVATION UNLESS OTHERWISE AUTHORIZED BY THE ENTIMEER.

COST OF EXCAVATION OF UNSUITABLE MATERIALS BETWEEN THE LIMITING STATIONS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 203 EMBANKMENT USING GRANULAR MATERIAL INCLUDING THE COST OF EXCAVATION OF UNSUITABLE MATERIAL, AS PER PLAN. THE GRANULAR MATERIAL USED BETWEEN THE LIMITING STATIONS AS EMBANKMENT ABOVE THE ORIGINAL GROUND LINE, SHALL BE PAID FOR AS 203 BORROW USING GRANULAR MATERIAL AS PER PLAN.

QUANTITIES ARE INCLUDED TO ALLOW FOR POSSIBLE SLOUGHING AND UNDERCUTTING. REFER TO MISCELLANEOUS DETAILS FOR SWAMP TREATMENT.

ITEM 203 EXCAVATION OF UNSUITABLE MATERIAL

UNSUITABLE MATERIAL HAS BEEN ENCOUNTERED ON THIS PROJECT BETWEEN STATION 87 + 00 AND STATION 99 + 00 ON REFUGEE ROAD NORTH, BETWEEN STATION 233 + 00 AND STATION 235 + 00 RAMP "C", BETWEEN STATION 232 + 00 TO STATION 239 + 00 RAMP "D", BETWEEN STATION 231 + 50 TO STATION 234 + 00 RAMP "DD", BETWEEN STATION 238 + 00 TO STATION 243 + 00 ON S.R. 104, AND BETWEEN STATION 239 + 00 TO STATION 241 + 00 RAMP "F". THIS MATERIAL SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH 203.05 AND TO THE LINES AS DELINEATED ON THE PLAN. THE CONTRACTOR SHALL NOT DISPOSE OF ANY MATERIAL FROM THIS CONTRACT IN ANY FLOOD PLAIN OR WETLAND AREA AND SHALL BE DISPOSED OF, OFF THE PROJECT LIMITS. PAYMENT FOR THIS ITEM SHALL BE PAID FOR UNDER ITEM 203 EXCAVATION OF UNSUITABLE MATERIAL.

SINCE THIS PORTION OF THE PROJECT IS IN A LAND FILL AND THE AMOUNT OF UNSUITABLE MATERIAL WAS INCREASING DAILY DURING THE PREPARATION OF PLANS AN ADDITIONAL 20,000 C.Y. OF ITEM 203, EXCAVATION OF UNSUITABLE MATERIAL ARE CARRIED TO SHEET NO. 37.

INCREASE, DECREASE EXCAVATION, EMBANKMENT, AND SEEDING

IN ADDITION TO THE QUANTITIES SHOWN ON THE CROSS SECTIONS FOR EARTHWORK AND SEEDING THE FOLLOWING QUANTITIES ARE CARRIED TO THE SUB SUMMARY IN ORDER TO CORRECT FOR THE SIX (6) FOOT RAMP SHOULDER IN LIEU OF THE THREE (3) FOOT RAMP SHOULDER SHOWN IN THE CROSS SECTIONS:

ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	*PLUS*	*273* C.Y.
ITEM 203 EMBANKMENT	*MINUS*	*137* C.Y.
ITEM 659 SEEDING & MULCHING	*MINUS*	865 S.Y.

QUANTITIES CARRIED TO SHEET 37.

UTILITIES NOTIFICATION

AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN AN AREA WHICH MAY INVOLVE UNDERGROUND UTILITY FACILITIES, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER, THE REGISTERED UTILITY PROTECTION SERVICE AND THE OWNERS OF EACH UNDERGROUND UTILITY FACILITY SHOWN IN THE PLANS.

THE OWNERS OF THE UNDERGROUND UTILITY FACILITY SHALL, WITHIN FORTY-EIGHT HOURS, EXCLUDING SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS, AFTER NOTICE IS RECEIVED, STAKE, MARK OR OTHERWISE DESIGNATE THE LOCATION OF THE UNDERGROUND UTILITY FACILITIES IN THE CONSTRUCTION AREA IN SUCH A MANNER AS TO INDICATE THEIR COURSE TOGETHER WITH THE APPROXIMATE DEPTH AT WHICH THEY WERE INSTALLED. THE MARKING OR LOCATING SHALL BE COORDINATED TO STAY APPROXIMATELY TWO DAYS AHEAD OF THE PLANNED CONSTRUCTION.

FOR OTHER UTILITY GENERAL NOTES, SEE SHEET NO. 14

Revised: DC 1-4-9-80

GENERAL NOTES

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ITEM 305 PORTLAND CEMENT CONCRETE BASE, AS PER PLAN

ON THIS PROJECT, ALL PORTLAND CEMENT CONCRETE BASE, AS PER PLAN, SHALL CONFORM TO ITEM 305 EXCEPT THAT THE CONCRETE SHALL BE 499 CLASS "C".

ITEM 604 MANHOLE RECONSTRUCTED TO GRADE AS PER PLAN

THIS WORK SHALL CONSIST OF REMOVING THE TOP SLAB, EXTENDING THE EXISTING BOX WALLS VERTICALLY FOR APPROXIMATELY THREE FEET AND PROVIDING A NEW 10" TOP SLAB USING 4000 PSI CONCRETE CLASS "C" AND 20,000 PSI REINFORCING STEEL ASTM A 615, A 616, OR A 617, AS DESCRIBED BELOW.

THIS WORK SHALL CONSIST OF THE CAREFUL REMOVAL AND CLEANING OF THE EXISTING CASTING, THE REMOVAL OF THE EXISTING 10" TOP SLAB, AND THE CAREFUL REMOVAL OF THE CONCRETE ON THE SIDEWALLS TO 1'-8" BELOW THE EXISTING TOP SLAB, EXPOSING THE EXISTING NO.5 REINFORCING BARS SO THAT THEY CAN BE LAPPED WITH NEW STEEL. ALL EXPOSED EXISTING REINFORCING BARS SHALL BE CLEANED OF CONCRETE AS APPROVED BY THE ENGINEER.

THE NEW #5 REINFORCING RODS SHALL LAP THE EXISTING BARS A MINIMUM OF 1'-7". THE NEW NO. 5 REINFORCING RODS SHALL BE LAID AT 12" CENTEP TO CENTER EACH FACE BOTH HORIZONTALLY AND VERTICALLY ON THE EXTENSION OF THE 12" WALLS. THE TOP SLAB SHALL HAVE #6 REINFORCING RODS AT 6" CENTER TO CENTER EACH WAY IN THE BOTTOM AND #5 REINFORCING RODS AT 12" CENTER TO CENTER EACH WAY IN THE TOP. THE TOP SLAB SHALL BE BROUGHT WITHIN ONE (1) FOOT OF FINISHED GRADE. THE SALVAGED 36" MANHOLE FRAME AND COVER SHALL BE INSTALLED DIRECTLY OVER THE PRESSURE REDUCING VALVE AND A NEW BILCO S-50 OR FLYGT ML-20 OR INRYCO RDS-1 *ROOF SCUTTLE OR APPROVED EQUAL SHALL BE PROVIDED* IN THE SAME LOCATION ALONG WITH FIVE (5) *ADDITIONAL* MANHOLE STEPS *PLACED AT 15 INCH CENTERS. FOR DETAILS* SEE SHEET NO. 13 .
ALL LABOR AND MATEPIAL NECESSARY TO COMPLETE THE ABOVE DESCRIBED WORK TO THE APPROVAL OF THE ENGINEER SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 604 MANHOLE RECONSTRUCTED TO GRADE AS PER PLAN.

LIMITATION OF HOURS OF CONSTRUCTION

AS THE IMPROVEMENT IS ADJACENT TO RESIDENTIAL AREAS NO WORK SHALL BE PERFORMED BETWEEN THE HOURS OF 11:00 P.M. AND 6:00 A.M. EXCLUDING WATERLINE CONNECTIONS. NO EARTHWORK OPERATIONS SHALL BE PERFORMED BETWEEN THE HOURS OF 11:00 P.M. AND 6:00 A.M. IN ADDITION PILE DRIVING OPERATIONS SHALL BE PERFORMED ONLY BETWEEN THE HOURS OF 8:00 A.M. TO 5:00 P.M.

ITEM 202 STRUCTURE REMOVED, AS PER PLAN

CONSTRUCTION PROCEDURE: EXTREME CARE SHALL BE TAKEN TO PREVENT DEBRIS FROM THE REMOVAL OF THE REFUGEE ROAD BRIDGE, OR ANY OTHER CONSTRUCTION MATERIALS OR DEBRIS, FROM FALLING INTO ALUM CREEK. THE CONTRACTOR SHALL SUBMIT A PLAN OF OPERATIONS FOR THE REMOVAL OF THE BRIDGE FOR APPROVAL BY THE DIRECTOR BEFORE REMOVING ANY PORTION OF THE BRIDGE.

CONSTRUCTION DEBRIS: ANY DEBRIS WHICH MAY FALL INTO ALUM CREEK SHALL BE PROMPTLY REMOVED.

THE CONTRACTOR SHALL NOT OCCUPY ANY PORTION OF THE ALUM CREEK WATERWAY WHILE REMOVING THE EXISTING BRIDGE OR BUILDING THE NEW BRIDGE.

~~ITEM 603 JACKING PIPE~~

~~AS A PART OF THIS CONTRACT, IT WILL BE NECESSARY TO INSTALL 50'-24" TYPE "B" 706.02, 3000 D-LOAD AS PER PLAN, 70'-42" TYPE "B" 706.02 3000 D-LOAD AS PER PLAN, AND 66'-60" TYPE "B" 706.02 3000 D-LOAD AS PER PLAN UNDER THE EXISTING RAILROAD AS SHOWN ON THE STORM SEWER PROFILE SHEET NO. 1&2-1&2 BY THE METHOD OF BORING AND JACKING.~~

~~NO TRENCH EXCAVATION OR EQUIPMENT SHALL BE CLOSER THAN TWO FEET TO THE EDGE OF THE TRENCHES SHALL BE ADEQUATELY SUPPORTED AND THE SPECIFICATION REQUIREMENT FOR CLASS "B" BEDDING SHALL BE DISREGARDED.~~

JOINTS IN CONCRETE BASE

JOINT CONSTRUCTION AND SEALING SHALL BE PERFORMED AS PER STD. DWG. BP-4.

~~ITEM 848 ASPHALT CONCRETE~~

~~ON THIS PROJECT ITEM 848, TABLES 2-2, PROPERTIES OF MIXTURES SHALL BE FOR HEAVY TRAFFIC VOLUMES.~~

ITEM 407 TACK COAT AND COVER AGGREGATE

THE TACK COAT AND COVER AGGREGATE OPERATION SHALL BE AS DETERMINED AT A PRECONSTRUCTION CONFERENCE AS PER 407.05. PLAN QUANTITIES INDICATE AVERAGE APPLICATION RATES OF 0.10 GALLONS PER SQUARE YARD OF TACK COAT AND 7 POUNDS PER SQUARE YARD OF COVER AGGREGATE.

FEATHER AREAS

THE LENGTH OF PROJECT FEATHERS ARE INDICATED ON THE PLAN SHEETS. THE BUTT JOINT TYPE FEATHER SHALL BE USED WHERE THE FEATHER IS ON EXISTING ASPHALT PAVEMENT AND THE FEATHER EDGE SHALL BE USED WHERE THE FEATHER IS ON EXISTING CONCRETE PAVEMENT. SEE STANDARD CONSTRUCTION DRAWING BP-5 FOR DETAILS OF PLACING FEATHERED AREAS.

~~ITEM SPECIAL, DRILLED WELL ABANDONED~~

~~THE EXISTING CONCRETE OR STONE SLAB WELL COVER AND PUMPING EQUIPMENT SHALL BE REMOVED AND DISPOSED OF. THE CASING SHALL BE CUT OFF AT LEAST ONE FOOT BELOW THE PROPOSED FINISHED GRADE OUTSIDE PROPOSED PAVEMENT AREAS OR AT LEAST ONE FOOT BELOW THE PROPOSED SUBGRADE ELEVATION INSIDE PROPOSED PAVEMENT AREAS. THE WELL SHALL BE FILLED FROM BOTTOM TO TOP WITH CLEAN PUDDLED CLAY OR CONCRETE.~~

~~THE UNIT PRICE BID PER EACH FOR ITEM SPECIAL, DRILLED WELL ABANDONED SHALL INCLUDE PAYMENT FOR ALL LABOR, TOOLS, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.~~

ITEM 203 PROOF ROLLING

AN ESTIMATED QUANTITY FOR THIS ITEM HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR USE *as directed by the Engineer.*

CHANNEL EMBANKMENTS

PORTIONS OF THE EXISTING CHANNEL OUTSIDE THE ROADBED, SHALL BE FILLED AND SLOPED TO DRAIN, AS CALLED FOR ON THE PLANS AND INCLUDED FOR PAYMENT IN THE PRICE BID FOR ITEM 203, EMBANKMENT. THE CONTRACTOR SHALL USE EITHER SUITABLE OR UNSUITABLE MATERIALS, TO THE EXTENT AVAILABLE, FOR CHANNEL EMBANKMENTS, ***HOWEVER NO*** *REFUSE OR ORGANIC MATERIAL SHALL* ***BE USED.***
AREAS WHERE CHANNEL EMBANKMENTS ARE TO BE PLACED SHALL BE CLEARED OF WEEDS AND BRUSH.

THE REQUIREMENTS FOR MOISTURE, DENSITY CONTROL, BENCHING, AND SUITABLE MATERIALS SHALL BE WAIVED.

THE DEPTH OF LAYERS IN WHICH THE EMBANKMENTS ARE PLACED AND THEIR COMPACTION SHALL, IN LIEU OF THE REQIREMENTS OF ITEM 203, CONFORM WITH ACCEPTABLE CONSTRUCTION PRACTICES AS DETERMINED BY THE ENGINEER.

NO PROVISIONS OF THE SPECIFICATIONS SHALL BE WAIVED FOR EMBANKMENTS WHICH SUPPORT ANY PORTION OF THE NEW ROADBED OR STRUCTURAL MEMBERS.

AN ESTIMATED QUANTITY OF 17,062 CUBIC YARDS HAS BEEN PROVIDED IN THE PLANS FOR CHANNEL EMBANKMENT. *SEE SHEET 120.*

CHANNEL WORK ADJACENT TO BRIDGE NO. FRA-104-1279 SHALL BE COMPLETED PRIOR TO BUILDING SUB STRUCTURE UNITS.

~~*SEAL OF ALL 305 JOINTS*~~
~~*THE JOINTS SHALL BE SEALED WITH MATERIAL MEETING THE REQUIRMENTS OF 705.01, 705.02 or 705.11 IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF 451.13. PAYMENT FOR CONSTRUCTION IN SEALING OF THESE JOINTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE BASE.*~~

WATERING AND MOWING PERMANENT SEEDED AREAS

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND TO CARE FOR THE PERMANENT SEEDED AREAS, AS PER 659.09:

659 WATER *300* M. GAL.
659 MOWING *500* M. SQ. FT..

~~PAVEMENT JOINTS IN CONCRETE BASE~~

~~IN LIEU OF THE REQUIREMENTS FOR CONTRACTION JOINTS AT 17 FOOT SPACING PER STANDARD DRAWING BP-4 ON THIS PROJECT, THE MAXIMUM SPACING BETWEEN CONTRACTION JOINTS MAY BE INCREASED TO 20 FEET. CONTRACTION JOINTS SHALL BE SKEWED WITH THE RIGHT EDGE OF THE JOINT 4 FEET AHEAD OF THE LEFT EDGE IN THE DIRECTION OF TRAVEL FOR A 24 FOOT WIDE PAVEMENT.~~

~~THE FIRST 25 JOINTS AWAY FROM THE PRESSURE RELIEF JOINTS SHALL NOT BE SKEWED AND SHALL BE DOWELED AS PER BP-4. CONTRACTION JOINTS SHALL BE SEALED WITH MATERIAL MEETING THE REQUIREMENTS OF 705.01 OR 705.02. PAYMENT FOR CONSTRUCTION IN SEALING OF THESE JOINTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE BASE.~~

~~APPROACH SLAB~~

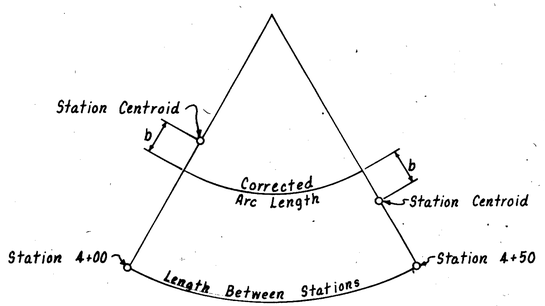
~~JACKING HOLES, AS SHOWN ON AS 1-72, SHALL BE OMITTED. THE REINFORCING IN THE TOP OF THE SLAB SHALL BE 3" CLEAR.~~

EARTHWORK ALONG CURVED ALIGNMENT

THE CENTROIDS OF AREAS ON THE CROSS SECTION SHEETS ARE INDICATED BY A VERTICAL LINE. THE LENGTH OF VOLUME ALONG THE CURVE IS COMPUTED BASED ON THE AVERAGE OF ADJACENT CENTROIDS. INDIVIDUAL VOLUMES ALONG CURVED ALIGNMENT ARE COMPUTED BY AN ELECTRONIC COMPUTER, AND THEN TOTALED. THE TOTAL VOLUME OF EACH SECTION IS SHOWN ON THE CROSS SECTION SHEETS.

EXAMPLE

ASSUME A 10° CURVE, RADIUS 572.96 FEET. CENTROID AT STATION 4 + 00 IS FOUND TO BE 35 FEET FROM THE CENTERLINE AND CENTROID AT STATION 4 + 50 IS FOUND TO BE 25 FEET FROM THE CENTERLINE. CORRECT RADIUS BETWEEN CENTROIDS IS THEREFORE 572.96 FEET MINUS (35+25) ÷ 2 OR 542.96 FEET. ALIGNMENT FACTOR IS THEN 542.96 ÷ 572.96 OR 0.94764 WHICH WHEN MULTIPLIED BY 50 FEET GIVES A CORRECTED ARC LENGTH BETWEEN CENTROIDS OF 47.38 FEET.



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EARTHWORK ALONG CURVED ALIGNMENT (CONTINUED)

CURVE TO THE LEFT WAS USED IN THE ABOVE EXAMPLE. IF CURVE HAD BEEN TO THE RIGHT THE CORRECT RADIUS BETWEEN CENTROIDS WOULD BE 572.96 FEET PLUS (35 + 25)÷ 2 OR 602.96 FEET. ALIGNMENT FACTOR WOULD BE 602.96 ÷ 572.96 OR 1.05236 WHICH WHEN MULTIPLIED BY 50 FEET GIVES A CORRECTED ARC LENGTH BETWEEN CENTROIDS OF 52.62 FEET.

NO. 2-3 C.B. MODIFIED AS PER PLAN, NO. 2-4 C.B. MODIFIED AS PER PLAN

THREE WINDOWS SHALL BE PROVIDED IN LIEU OF THE TWO AS DETAILED ON THE STANDARD DRAWINGS.

ITEM 603 RADIUS CONDUIT, AS PER PLAN

WHERE RADIUS CONDUIT IS CALLED FOR ON THE PLANS, THE CONTRACTOR SHALL HAVE AN OPTION TO USE PRE-FABRICATED BEND SECTIONS, SUBJECT TO THE APPROVAL OF THE ENGINEER.

ITEM 659 SEEDING AND MULCHING, AS PER PLAN

ALL SLOPES STEEPER THAN 3:1 SHALL BE SEEDED WITH CROWN VETCH (CORONILLA VARIA) AT THE RATE OF 1/2 POUND PER 1000 SQ. FT. IN ADDITION TO THE REGULAR SEED MIXTURE AS CALLED FOR UNDER 659.09. THE COST OF THE CROWN VETCH SHALL BE INCLUDED IN THE UNIT PRICE BID PER SQ. YD. FOR ITEM 659 - SEEDING AND MULCHING, AS PER PLAN.

ITEM 668 SEEDING AND EXCELSIOR MATTING, AS PER PLAN

ALL SLOPES COVERED WITH SEEDING AND EXCELSIOR MATTING SHALL BE SEEDED WITH CROWN VETCH (CORONILLA VARIA) AT THE RATE OF 1/2 POUND PER 1000 SQ. FT. IN ADDITION TO ITEM 668 SEEDING AND EXCELSIOR MATTING. THE COST OF THE CROWN VETCH SHALL BE INCLUDED IN THE UNIT PRICE BID PER SQ. YD. FOR ITEM 668 SEEDING AND EXCELSIOR MATTING, AS PER PLAN.

ITEM 608 - 4" CONCRETE WALK, AS PER PLAN

IN ADDITION TO ITEM 608 OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS THE SURFACE OF ALL CONCRETE WALKS SHALL BE FINISHED WITH A WOOD FLOAT TO OBTAIN A SANDY TEXTURE. A BROOM FINISH FOR CONCRETE WALKS SHALL NOT BE PERMITTED. EXPANSION JOINTS SHALL BE PLACED EVERY 30 FEET. THE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID PER SQ. FT. FOR ITEM 608 CONCRETE WALK AS PER PLAN.

WATER LINE GENERAL NOTES

1. THE CITY OF COLUMBUS CONSTRUCTION AND MATERIAL SPECIFICATIONS, 1981 EDITION, INCLUDING ALL SUPPLEMENTS THERETO, SHALL GOVERN ALL WATER LINE WORK THAT IS A PART OF THIS PLAN UNLESS OTHERWISE NOTED.

2. THE CITY OF COLUMBUS, DIVISION OF WATER SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION INVOLVING WATER FACILITIES.

3. WATER LINE RELOCATIONS

   THE RELOCATED WATER LINES SHALL BE LAID TO THE NEW LINE AND GRADE, TESTED AND DISINFECTED PRIOR TO SHUT-DOWN OF EXISTING MAINS AND CONNECTION OF THE RELOCATED LINES TO THE EXISTING MAIN.

   THE TIME AND DURATION OF SHUTDOWN OF EXISTING MAINS SHALL BE DETERMINED BY THE SUPERINTENDENT, DIVISION OF WATER.

   THE CONTRACTOR SHALL NOTIFY ALL WATER CUSTOMERS AFFECTED BY THE PROPOSED WORK AT LEAST 24 HOURS IN ADVANCE OF SHUTDOWN.

   ON RELOCATIONS, ALL BENDS SHALL BE SECURED BY RETAINING GLANDS, RODDING OR OTHER METHODS AS APPROVED BY THE ENGINEER TO RESTORE MAINS TO SERVICE AS SOON AS POSSIBLE. CONCRETE BACKING SHALL THEN BE PROVIDED IN ACCORDANCE WITH THE STANDARD DETAIL DRAWING ON SHEET NO. 11 .

   ALL WATER LINES SHALL BE DISINFECTED IN ACCORDANCE WITH ITEM 801.12 OF THE CONSTRUCTION AND MATERIAL SPECIFICATION OF THE CITY OF COLUMBUS.

4. ALL EXISTING VALVES SHALL BE OPERATED BY DIVISION OF WATER PERSONNEL ONLY AS STATED IN CHAPTER 1113 OF THE COLUMBUS CITY CODES.

5. FIRE HYDRANT RELOCATIONS SHALL CONFORM TO APPLICABLE SECTIONS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS OF THE CITY OF COLUMBUS ITEM 809. WORK SHALL CONSIST OF REMOVING EXISTING HYDRANT, INSTALLING NEW 6" D.I. PIPE AND FITTINGS AS REQUIRED TO SET HYDRANT 2'-0" BACK OF PROPOSED CURB OR 8'-0" OFF EDGE OF PAVEMENT, RESETTING HYDRANT AND BLOCKING AS REQUIRED.

6. ITEM SPECIAL FIRE HYDRANT REMOVED

   WHEN CALLED FOR ON PLANS, THE CONTRACTOR SHALL REMOVE EXISTING FIRE HYDRANT AND STORE FOR PICK UP BY THE CITY OF COLUMBUS, DIVISION OF WATER. THE CONTRACTOR SHALL PLUG HYDRANT VALVE.

ITEM SPECIAL RIVER CROSSING PIPE

THIS PIPE SHALL BE CLOW DUCTILE IRON RIVER CROSSING PIPE NON-BUOYANT, AMERICAN DUCTILE IRON RIVER CROSSING PIPE NON-BUOYANT, U.S. PIPE DUCTILE IRON RIVER CROSSING PIPE NON-BUOYANT,OR APPROVED EQUAL. ALL PIPE SHALL MEET CITY OF COLUMBUS SPECIFICATION ITEM 801 CLASS 56 OR HEAVIER. THE CONTRACTOR SHALL FURNISH THE PIPE, FITTINGS, END CONNECTIONS AND LAY THE PIPE IN ACCORDANCE WITH THE PLANS AND ITEM 801 OF THE CITY OF COLUMBUS CONSTRUCTION AND MATERIAL SPECIFICATIONS.

THE PAYMENT FOR ALL WORK DONE UNDER THIS ITEM SHALL BE AT THE UNIT PRICE PER FOOT BID, WHICH PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO FURNISH AND LAY THE PIPE.

PAYMENT WILL BE MADE AT CONTRACT PRICE FOR:

ITEM	UNIT	DESCRIPTION
SPECIAL	L.F.	DUCTILE IRON RIVER CROSSING PIPE

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT, AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR ALONG WITH LOCAL REPRESENTATIVES SHALL MAKE AN INSPECTION OF THE EXISTING SEWERS WITHIN THE WORK LIMITS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTIONS SHALL BE KEPT IN WRITING BY THE STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE-MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE PERTINENT 603 CONDUIT ITEMS OF THE CONTRACT.

DUST CONTROL

AN ESTIMATED AMOUNT OF 616 (CALCIUM CHLORIDE) AND 616 (WATER) HAS BEEN PROVIDED FOR DUST CONTROL, AS DIRECTED BY THE ENGINEER AS SHOWN BELOW:

616 CALCIUM CHLORIDE---------- 55 TONS
616 WATER---------- 3030 M. GAL.

CITY OF COLUMBUS SPECIFICATIONS

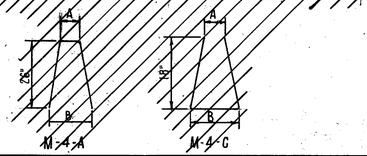
THOSE ITEMS REFERENCED WITH A "C" BEFORE A NUMBER, REFER TO THAT PARTICULAR NUMBERED SPECIFICATION OF THE "1981" "CITY OF COLUMBUS CONSTRUCTION AND MATERIAL SPECIFICATIONS", WHICH MAY BE OBTAINED AT THE OFFICE OF THE DIRECTOR OF PUBLIC SERVICE, LOCATED AT 90 WEST BROAD STREET, SECOND FLOOR.

ITEM 604 - MEDIAN INLET, STANDARD NO. 1-3B-50 MODIFIED AS PER PLAN

ITEM 604 MEDIAN INLET, STANDARD NO 1-3B-50 MODIFIED AS PER PLAN SHALL BE MODIFIED IN ACCORDANCE WITH THE TABLE BELOW. ALL OTHER INFORMATION ON STANDARD CONSTRUCTION DRAWING 1-3 DATED 5-1-78 SHALL APPLY ALONG WITH THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.

PAYMENT WILL BE MADE FOR THE ABOVE WORK AT THE CONTRACT PRICE FOR ITEM 604 MEDIAN INLET, STANDARD NO 1-3B-50 MODIFIED AS PER PLAN.

INLET B LOC	"W" @ QUARTER PT.						REINFORCING STEEL				
							MARK	NO.	LENGTH	A	B
STA 156+08	155+90 21"	155+95 24"	156+00 27"	156+05 30"	156+10 33"		M-4-A	10	6'-1" TO 7'-0"	16" TO 24" @ 1¼" ING.	23" TO 34" @ 1¼" ING.
							M-4-C	10	5'-8½" TO 6'-7½"	13½" TO 24½" @ 1¼" ING.	27" TO 38" @ 1¼" ING.
STA 229+08	228+90 12"	228+95 12"	229+00 12"	229+05 12"	229+10 15"		M-4-A	10	5'-0"	8½"	13½"
							M-4-C	10	4'-6"	4"	11¼"



GENERAL NOTES

GENERAL NOTES

CALCULATED BY R.J.K. DATE 2-10-83

CHECKED BY M.R.D. DATE 2-11-83

GUARDRAIL OVER CULVERTS

WHEN SUFFICIENT POST DEPTH IS NOT AVAILABLE DUE TO A CULVERT, THE GUARDRAIL POSTS DIRECTLY OVER THE CULVERT SHALL NOT BE DRIVEN, BUT SET IN HOLES. IF THE DISTANCE BETWEEN THE GROUND LINE AND THE TOP OF THE CULVERT IS LESS THAN 3 FT., THE POST SHALL BE ENCASED IN A MINIMUM OF 4" THICKNESS OF CLASS C CONCRETE FOR THE FULL DEPTH OF THE POST. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 606, GUARDRAIL TYPE 5.

HOUSE CONNECTIONS

EXISTING ROOF DRAINS, FOOTER DRAINS OR YARD DRAINS, DISTURBED BY THE PROPOSED WORK, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS BY CONNECTING TO A STORM SEWER, MANHOLE, CATCH BASIN, THROUGH THE CURB.

THE LOCATION, TYPE, SIZE AND GRADE OF REQUIRED REPLACEMENTS WILL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

ITEM 603	4" CONDUIT, TYPE E, 711.29	= 50 L.F.
ITEM 603	6" CONDUIT, TYPE E, 706.01.706.02 OR 706.08	= 50 L.F.
ITEM 603	6" CONDUIT, TYPE F	= 50 L.F.

THE ABOVE QUANTITIES ARE CARRIED TO SHEET 39.

NONE OF THE ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL REQUESTED BY THE ENGINEER.

MANHOLES, CATCH BASINS AND INLETS REMOVED OR ABANDONED

THE CASTINGS SHALL BE CAREFULLY REMOVED AND STORED WITHIN THE RIGHT-OF-WAY FOR SALVAGE BY CITY FORCES.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT 202 ITEM.

EROSION CONTROL PADS AND ANIMAL GUARDS

EROSION CONTROL PADS AND ANIMAL GUARDS SHALL BE PROVIDED AT THE OUTLET END OF ALL PIPE UNDERDRAINS AND FARM DRAINS, AS PER STANDARD CONSTRUCTION DRAWING MC-4, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE.

PAYMENT FOR THE EROSION CONTROL PADS AND THE ANIMAL GUARDS SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 603, 6" CONDUIT, TYPE F.

CONDUIT END TREATMENT

IMMEDIATELY AFTER PLACEMENT OF ANY CONDUITS, THE CONTRACTOR SHALL CONSTRUCT THE END TREATMENTS REQUIRED BY THE PLANS AT BOTH THE OUTLET AND INLET ENDS. THIS SHALL INCLUDE HEADWALLS, CONCRETE RIPRAP, ROCK CHANNEL PROTECTION, SODDING, ETC.

ITEM SPECIAL - SEEDING AND EROSION CONTROL MATTING

EITHER ITEM 667, SEEDING AND JUTE MATTING, AND/OR ITEM 668, SEEDING AND EXCELSIOR MATTING MAY BE USED FOR ITEM SPECIAL, SEEDING AND EROSION CONTROL MATTING ON THIS PROJECT. WHEREVER REFERENCE TO ITEM 667, SEEDING & JUTE MATTING, OR ITEM 668, SEEDING & EXCELSIOR MATTING, IS MADE IN THESE PLANS, IT SHALL BE MEANT TO READ: ITEM SPECIAL, SEEDING AND EROSION CONTROL MATTING.

EXCESS SUITABLE EMBANKMENT MATERIAL DISPOSAL AREA

EXCESS EXCAVATION SUITABLE AS EMBANKMENT MATERIAL SHALL BE PLACED ALONG S.R. 104 FROM :

STA. 183 + 50 TO STA. 186 + 50
STA. 187 + 50 TO STA. 191 + 62
STA. 202 + 50 TO STA. 211 + 00,

IN ACCORDANCE WITH O.D.O.T. CONSTRUCTION AND MATERIAL SPECIFICATIONS ITEM 203 AND SHALL CONFORM TO THE GRADES AND LINES AS SHOWN ON THE PLAN.

PAYMENT FOR THIS ITEM SHALL BE PAID FOR UNDER ITEM 203, EMBANKMENT.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER FOR EROSION AND SEDIMENT CONTRROL MEASURES FOR THE EXCESS SUITABLE EMBANKMENT DISPOSAL AREA:

ITEM 207	TEMPORARY SLOPE DRAINS	= 155 L.F.
ITEM 207	TEMPORARY BENCHES, DAMS, DIKES, AND SEDIMENT BASINS	= 775 C.Y.
ITEM 601	TYPE C ROCK CHANNEL PROTECTION *W/O FILTER*	= 7 C.Y.
ITEM 207	TEMPORARY SEEDING AND MULCHING	= 6557 S.Y.
ITEM 659	MOWING	= 74 M.S.F.
ITEM 659	COMMERCIAL FERTILIZER	= 2 TONS
ITEM 659	REPAIR SEEDING AND MULCHING	= 1639 S.Y.
ITEM 659	WATER	= 15 M.GAL.

THE ABOVE QUANTITIES ARE CARRIED TO THE GENERAL SUMMARY, SHT. 38.

EMBANKMENT CONSTRUCTION

It is the intent of this plan to construct the embankment from Sta. 233+15 to Sta. 278+10 as the priority(required) embankment. Any surplus suitable excavated material shall be used to construct the additional embankments between Sta. 183+50 & Sta. 186+50, Sta. 187+50 & Sta. 191+62, and Sta. 202+50 & 211+00. The ending station may vary slightly due to available suitable material, but it is the intent to neither waste any suitable excavated material nor to obtain additional material to place these additional embankments.

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CALC: WDG 6-79
CHK: ROB 7-79

MAINTENANCE OF TRAFFIC

GENERAL:

THE MAINTENANCE OF TRAFFIC SHALL BE GOVERNED BY THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, HEREINAFTER CALLED THE MANUAL, AND AS SUPPLEMENTED BY PERTINENT ITEMS OF THE SPECIFICATIONS AND THE FOLLOWING REQUIREMENTS:

IT IS THE INTENT OF THESE NOTES THAT TEMPORARY ROADS AND TEMPORARY PAVEMENT ARE TO BE USED FOR INTERIM MAINTENANCE OF TRAFFIC FOR MINIMUM PERIODS OF TIME CONSISTENT WITH THE SCHEDULE OF OPERATIONS:

THE CONTRACTOR WILL BE REQUIRED TO PROVIDE, ERECT, MAINTAIN (IN PROPER POSITION, CLEAN, LEGIBLE, AND IN GOOD WORKING CONDITION) AND REMOVE ALL LIGHTS, SIGNS, BARRICADES, DRUMS, AND ALL OTHER TRAFFIC CONTROL DEVICES NECESSARY FOR THE MAINTENANCE OF TRAFFIC, INCLUDING EXISTING AND/OR TEMPORARY PAVEMENT MARKINGS.

THE CONTRACTOR MAY ELECT TO SUBMIT A SCHEDULE WITH AN ALTERNATE TRAFFIC PLAN THAT DOES NOT COMPLY WITH THE TRAFFIC MAINTENANCE PLAN AS SET FORTH IN THE CONTRACT PLAN. THE ALTERNATE TRAFFIC PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. NO ALTERNATE PLAN SHALL BE PLACED IN EFFECT UNTIL IT HAS BEEN REVIEWED, AND APPROVAL HAS BEEN GRANTED, IN WRITING WITHIN THIRTY (30) DAYS OF RECEIPT, BY THE CITY OF COLUMBUS TRAFFIC ENGINEER, OHIO DEPARTMENT OF TRANSPORTATION, AND THE FEDERAL HIGHWAY ADMINISTRATION.

THE COST OF PROVIDING, INSTALLING, MAINTAINING AND REMOVING ALL TRAFFIC CONTROL DEVICES REQUIRED TO MAINTAIN TRAFFIC DURING CONSTRUCTION INCLUDING LIGHTS, SIGNS, AND SUPPORTS, DRUMS, BARRICADES, TEMPORARY PAVEMENT MARKING, AND THE REMOVAL OF TEMPORARY PAVEMENT MARKING SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR ITEM 614, "MAINTAINING TRAFFIC".

TWO-WAY TWO-LANE TRAFFIC SHALL BE MAINTAIMED AT ALL TIMES BY USE OF THE EXISTING PAVEMENT, THE PROPOSED PAVEMENT AND TEMPORARY PAVEMENT CLASS "A". THE LIMITS AND DURATION OF USE OF TEMPORARY PAVEMENT SHALL BE HELD TO AN ABSOLUTE MINIMUM, AND IN ALL CASES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER. THE MANUAL SHALL GOVERN THE TRAFFIC CONTROL DEVICES AND OPERATIONS FOR MAINTENANCE OF TRAFFIC.

PRIOR TO ANY CONSTRUCTION BETWEEN STATION 199 + 00 TO STATION 220 + 00, REEDGEE ROAD SOUTH SHALL BE CONSTRUCTED TO MAINTAIN ACCESS TO LOCAL PROPERTIES. A TEMPORARY CONNECTION SHALL BE USED, UTILIZING ITEM 418 TRAFFIC COMPACTED SURFACE, TYPE "C" FROM STATION 34 + 50, TYING INTO EXISTING REFUGEE ROAD AS DELINEATED ON SHEET NO. 28.

SPECIAL DUTY CITY POLICEMAN AND/OR SPECIAL DUTY CITY POLICEMAN WITH CRUISER

WHEN REQUIRED FOR WORK BEING DONE INSIDE THE CORPORATION LIMITS OF THE CITY OF COLUMBUS, THE CONTRACTOR SHALL PROVIDE THE SERVICES OF A SPECIAL CITY POLICEMAN WITH OR WITHOUT A CRUSIER PER WORK AREA AS REQUIRED IN THESE PLANS. THE WORK AREAS WHERE THESE SERVICES SHALL BE PROVIDED ARE AT ALL SIGNALIZED INTERSECTIONS AND AT LOCATIONS AND EXTENTS AS DESCRIBED IN THESE NOTES, AND AS MAY BE REQUIRED BY CITY PERMIT. IF THE CONTRACTOR DESIRES TO USE A UNIFORMED POLICEMAN OUTSIDE OF THE AREAS DESCRIBED ABOVE IN LIEU OF A FLAGMAN, THIS SHALL BE PERMITTED, HOWEVER THE COST SHALL BE BORNE BY THE CONTRACTOR. ALL CRUISERS SHALL BE EQUIPPED WITH STANDARD TOP MOUNTED FLASHING LIGHTS. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES WITH THE DEPUTY CHIEF, SERVICE SUB-DIVISION, COLUMBUS POLICE DEPARTMENT, PHONE 614-222-4710.

THE SPECIAL DUTY CITY POLICEMEN ARE CONSIDERED TO BE EMPLOYED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTION, ALTHOUGH THEY ARE EMPLOYED BY THE CONTRACTOR, THE PROJECT ENGINEEP SHALL HAVE CONTROL OVER THEIR PLACEMENT. THEY SHALL CONFORM TO ALL PLAN NOTES. PAYMENT SHALL BE MADE AT THE UNIT PRICE BID FOR THE ACTUAL NUMBER OF HOURS REQUIRED FOR ITEM SPECIAL - SPECIAL DUTY CITY POLICEMAN OR ITEM SPECIAL - SPECIAL DUTY POLICEMAN WITH CRUSIER.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN ESTABLISHED AND CARRIED TO SHEET 20 :

ITEM SPECIAL	SPECIAL DUTY CITY POLICEMAN WITH CRUSIER	500 HOURS
ITEM SPECIAL	SPECIAL DUTY CITY POLICEMAN	1000 HOURS

TEMPORARY PAVEMENT MARKINGS:

REFLECTIVE PAVEMENT MARKINGS SHALL BE INSTALLED ON ALL NEWLY PAVED AREAS BEFORE THEY MAY BE OPENED TO TRAFFIC. MARKINGS SHALL BE AS INDICATED ON THE MAINTENANCE OF TRAFFIC PLAN SHEETS.

TEMPORARY PAVEMENT MARKINGS SHALL BE LIMITED TO THOSE INSTALLATIONS WHERE THE PERMANENT MARKINGS CANNOT BE INSTALLED FOR THE PROPER MAINTENANCE OF TRAFFIC.

AT LOCATIONS WHERE TEMPORARY PAVEMENT MARKINGS ARE TO BE INSTALLED ON EXISTING PAVEMENT AND EXISTING PAVEMENT MARKINGS ARE IN PLACE, THE EXISTING PAVEMENT MARKINGS ARE TO BE REMOVED IN ACCORDANCE WITH ITEM 621.

THE TEMPORARY PAVEMENT MARKING SHALL CONFORM TO ITEM 847, EXCEPT AS FURTHER CALLED FOR HEREIN. THE LANE LINES SHALL BE WHITE AND THE EDGE LINES SHALL BE WHITE OR YELLOW, AS REQUIRED BY EXISTING POLICY. THE TEMPORARY PAVEMENT MARKING FOR LANE LINES SHALL BE 4 INCHES WIDE AND 12 INCHES LONG PLACED ON 15 FOOT CENTERS, WHILE THE EDGE LINES SHALL BE 2 INCHES WIDE AND 18 INCHES LONG PLACED ON 10 FOOT CENTERS. THE TEMPORARY MARKINGS SHALL BE MAINTAINED IN GOOD CONDITION UNTIL PERMANENT MARKING IS APPLIED. THE USE OF STANDARD PAVEMENT MARKINGS SHALL BE USED ON ALL TEMPORARY ROADS. THE USE OF STANDARD CHANNELIZING LINES SHALL BE USED WHERE CALLED FOR ON THE PLANS. THE TEMPORARY MARKINGS SHALL BE REPLACED AS DIRECTED BY THE ENGINEER TO MAINTAIN DAY AND NIGHT VISIBILITY. THE COST OF THIS WORK AND MATERIAL SHALL BE INCLUDED IN ITEM 614 MAINTAINING TRAFFIC. ALL TEMPORARY LANELINES SHALL BE REMOVED AFTER THE NEED FOR SUCH MARKINGS IS OVER. PERMANENT PAVEMENT MARKINGS OR TEMPORARY PAVEMENT MARKINGS SHALL BE INSTALLED PRIOR TO OPENING PAVEMENT TO TRAFFIC.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE CITY OF COLUMBUS, DIVISION OF TRAFFIC ENGINEERING AT LEAST TWO (2) WORKING DAYS PRIOR TO THE PLACEMENT OF TEMPORARY PAVEMENT MARKING FOR EACH PHASE OF THE WORK SO THAT REPRESENTATIVES CAN BE PRESENT TO INSPECT THE WORK AND TO INSURE ACCURACY.

TEMPORARY OR EXISTING TRAFFIC SIGNALS:

TEMPORARY TRAFFIC SIGNALS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS. THE CONTRACTOR SHALL NOT REUSE ANY EXISTING SIGNALS, CABLES, OR POLES. THE CONTRACTOR SHALL STORE THESE ITEMS SAFELY ON SITE FOR PICK-UP BY THE CITY DIVISION OF TRAFFIC ENGINEERING.

THE CONTRACTOR SHALL ADJUST ALL TEMPORARY TRAFFIC SIGNAL TIMING AT THE REQUEST OF THE CITY. HE SHALL MAINTAIN THE SIGNAL INSTALLATION 24 HOURS A DAY AND HAVE AVAILABLE A SPARE CONTROLLER WITHIN 2 HOURS IF THE TEMPORARY CONTROLLER IS DAMAGED OR MALFUNCTIONS. THE CONTRACTOR SHALL DESIGNATE HIS REPRESENTATIVE TO BE CONTACTED FOR SIGNAL MAINTENANCE AND SHALL ALSO PROVIDE A KEY TO THE CITY DIVISION OF TRAFFIC ENGINEERING FOR ALL TEMPORARY SIGNAL CONTROL CABINETS.

ALL NEW SIGNALS SHALL FLASH FOR 7 CONSECUTIVE DAYS BEFORE IT IS PLACED IN REGULAR OPERATION. THE SYSTEMS ENGINEER, COLUMBUS DIVISION OF TRAFFIC ENGINEERING SHALL BE NOTIFIED AT LEAST TWO WORKING DAYS PRIOR TO REGULAR OPERATION OF THE SIGNAL. THE FLASH REQUIREMENT SHALL BE WAIVED AT TEMP. ROAD 'A' & REFUGEE AND ALUM CREEK & REFUGEE ONLY IF THE CITY CONTROLLER & CABINET ARE USED.

THE CONTRACTOR SHALL NOTIFY THE SYSTEMS ENGINEER, CITY OF COLUMBUS DIVISION OF TRAFFIC, AT 222-8203 AT LEAST 48 HOURS PRIOR TO REMOVAL OF EXISTING INSTALLATION.

THE CONTROLLER & CABINET AT REFUGEE AND ALUM CREEK DRIVE MAY BE USED AT THE INTERSECTION OF REFUGEE ROAD & TEM. ROAD 'A' AND AGAIN AT THE INTERSECTION OF REFUGEE & ALUM CREEK DRIVE. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING CONCRETE FOUNDATIONS AND RELATED ITEMS FOR MOUNTING THE BASE CABINET. THE SYSTEMS ENGINEER SHALL APPROVE THE LOCATION OF THE FOUNDATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC SIGNAL ITEMS INCLUDING THE SIGNAL CABLES INTO THE CABINET BUT EXCLUDING THE CONTROLLER & CABINET. THE CITY OF COLUMBUS SHALL MAINTAIN THE CONTROLLER & CABINET ONLY. THE CONTRACTOR SHALL PROVIDE ASSISTANCE IN RELOCATING THE CABINET. THE CONTROLLER & CABINET SHALL BE HOOKED UP BY THE CITY.

THE EXISTING TRAFFIC SIGNAL AT REFUGEE ROAD AND THE ON AND OFF RAMPS AT U.S. 33 AS DELINEATED ON SHEET NO. 26 SHALL BE MAINTAINED BY THE CONTRACTOR.
ALL TEMPORARY SIGNALS SHALL BE IN ACCORDANCE WITH ODOT SPECIFICATIONS.

TRENCH FOR WIDENING:

TRENCH EXCAVATION FOR BASE WIDENING SHALL BE PERFORMED ONLY ON ONE SIDE OF THE PAVEMENT AT A TIME. THE OPEN TRENCH SHALL BE PROTECTED WITH DRUMS OR TYPE II BARRICADES AT ALL TIMES. PLACEMENT OF PROPOSED SUBBASE AND BASE MATERIAL SHALL FOLLOW AS CLOSELY AS POSSIBLE BEHIND EXCAVATION OPERATIONS. THE LENGTH OF WIDENING TRENCH WHICH IS OPEN AT ANY ONE TIME SHALL BE HELD TO A MINIMUM AND AT ALL TIMES BE SUBJECT TO APPROVAL OF THE ENGINEER.

DRUMS SHALL BE PLACED AT FIFTY (50) FEET CENTER TO CENTER EXCEPT ON TAPERS AND AROUND RETURNS. WHERE DRUMS ARE PLACED ON RETURNS OR TAPERS THE CENTER TO CENTER SPACING SHALL BE TWELVE AND ONE-HALF (12.5) FEET.

DRUMS USED AS BARRICADES MAY BE PLACED ON THE ADJACENT TRAFFIC SURFACE PROVIDED THAT A MINIMUM LANE WIDTH OF ELEVEN (11) FEET IS MAINTAINED IN THE ADJACENT TRAFFIC SURFACE. WHERE INDICATED ON THE SPECIFIC TRAFFIC DIAGRAMS, DURING RESTRICTED HOURS THE DRUMS SHALL BE REMOVED FROM THE ADJACENT TRAFFIC SURFACE AND PLACED INSIDE THE WORK AREA. RESTRICTED HOURS ARE BETWEEN THE HOURS OF 7:00 A.M. TO 9:00 A.M. AND 3:30 P.M. TO 6:00 P.M. ALL DRUMS SHALL HAVE THE REQUIRED TYPE C LIGHTS MOUNTED IN SUCH A MANNER THAT A MINIMUM HEIGHT OF FOUR (4) FEET IS MAINTAINED FROM THE ADJACENT ROADWAY SURFACE TO THE CENTER OF THE LENS OF THE LIGHT WHEN THE DRUM IS PLACED OFF THE ROADWAY AND INSIDE THE WORK AREA. PLACEMENT OF THE DRUMS SHALL BE AS DETAILED ON SHEET NO. 20.

TEMPORARY LANE CLOSURES OR LANE WIDTH REDUCTIONS:

AT THOSE LOCATIONS WHERE IT IS NECESSARY TO TEMPORARILY CLOSE A LANE OR REDUCE THE WIDTH OF A LANE TO PERFORM WORK, THE CONTRACTOR SHALL NOT INSTITUTE SUCH CLOSURE OR WIDTH REDUCTION BETWEEN THE HOURS OF 7:00 A.M. TO 9:00 A.M. OR 3:30 P.M. TO 6:00 P.M. ON WEEKDAYS.

AT LOCATIONS NOT SPECIFICALLY DETAILED IN THE TRAFFIC MAINTENANCE PLANS, WHERE IT IS DETERMINED THAT IT WILL BE NECESSARY TO TEMPORARILY CLOSE A LANE OR REDUCE A LANE'S WIDTH TO COMPLETE SOME CONSTRUCTION, THE SAME METHODS OF MARKING SUCH A CLOSURE OR LANE WIDTH REDUCTION (USING TYPE II BARRICADES OR DRUMS WITH TYPE C LIGHTS) AS DETAILED AT SIMILAR LOCATIONS AND AS SHOWN IN THE DETAILS SHALL BE USED.

WHEN A LANE IS TO BE CLOSED AFTER DARK, THE LEAD-IN SIGNS IN A WARNING SEQUENCE SHALL BE EQUIPPED WITH THE TYPE B, HIGH INTENSITY FLASHERS.

ON ALL OW-143 SIGNS THE SPEED LIMIT SHALL BE POSTED AT 35 MPH UNLESS OTHERWISE NOTED.

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DRAINAGE MAINTENANCE:

ADEQUATE STORM WATER DRAINAGE SHALL BE MAINTAINED AT THE CONTRACTOR'S EXPENSE EXCEPT FOR THE PROPOSED STORM SEWER SYSTEM, AS APPROVED BY THE ENGINEER. THIS SHALL BE ACCOMPLISHED BY THE USE OF EITHER THE PROPOSED SEWER SYSTEM, THE EXISTING DRAINAGE SYSTEMS, OR BY TEMPORARY DRAINAGE SYSTEMS TO BE PROVIDED BY THE CONTRACTOR. ALL EXPENSE INVOLVED IN THE ABOVE SHALL BE INCLUDED IN ITEM 614 MAINTAINING TRAFFIC.

LOCKBOURNE ROAD:

TWO-WAY TWO-LANE TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON THE EXISTING PAVEMENT EXCEPT AS NOTED BELOW DURING THE CONSTRUCTION OF THE BRIDGE AND THE STRIPING OF THE PAVEMENT. THE CONTRACTOR SHALL AT ALL TIMES BE RESPONSIBLE FOR THE SAFETY OF THE MOTORIST DURING THE CONSTRUCTION OF THE OVERPASS. TRAFFIC CONTROL DEVICES SHALL BE PROVIDED AS SHOWN ON DETAIL C-19 OF THE MANUAL.

DURING THE ERECTION OF THE BRIDGE STEEL, THE CONTRACTOR SHALL NOT OCCUPY THE EXISTING PAVEMENT WITH EQUIPMENT. THIS ROADWAY CAN BE CLOSED FOR A PERIOD OF 15 MINUTES DURING EACH 60 MINUTE PERIOD FOR THE ACTUAL ERECTION OF BEAMS. THE CLOSURE OF THE ROADWAY SHALL BE MADE BY A MINIMUM OF TWO (2) SPECIAL DUTY COLUMBUS POLICE OFFICERS, WITH CRUISERS. ONE OFFICER WILL BE LOCATED AT EACH END OF THE CLOSURE AT A LOCATION DESIGNATED BY THE ENGINEER. SUCH CLOSURES SHALL ONLY TAKE PLACE BETWEEN THE HOURS OF 6:00 A.M. AND 11:00 P.M. SATURDAY AND THEN 6:00 A.M. AND 11:00 P.M. SUNDAY.

EASTWOOD AVENUE:

THE CONTRACTOR SHALL MAINTAIN TWO-WAY TWO-LANE TRAFFIC AT ALL TIMES ON THE EXISTING PAVEMENT EXCEPT AS NOTED BELOW, AND SHALL BE RESPONSIBLE FOR THE SAFETY OF THE MOTORIST DURING THE CONSTRUCTION OF THE OVERPASS. TRAFFIC CONTROL DEVICES SHALL BE PROVIDED AS SHOWN ON DETAIL C-19.

DURING THE ERECTION OF THE BRIDGE STEEL, THE CONTRACTOR SHALL NOT OCCUPY THE EXISTING PAVEMENT WITH EQUIPMENT. THIS ROADWAY CAN BE CLOSED FOR A PERIOD OF 15 MINUTES DURING EACH 60 MINUTE PERIOD FOR THE ACTUAL ERECTION OF BEAMS. THE CLOSURE OF THE ROADWAY SHALL BE MADE BY A MINIMUM OF TWO (2) SPECIAL DUTY COLUMBUS POLICE OFFICERS, WITH CRUISERS. ONE OFFICER WILL BE LOCATED AT EACH END OF THE CLOSURE AT A LOCATION DESIGNATED BY THE ENGINEER. SUCH CLOSURES SHALL ONLY TAKE PLACE BETWEEN THE HOURS OF 6:00 A.M. AND 11:00 P.M. SATURDAY AND THEN 6:00 A.M. AND 11:00 P.M. SUNDAY.

NORFOLK AND WESTERN RAILWAY COMPANY:

TRAFFIC ON THE RAILROAD SHALL BE MAINTAINED AT ALL TIMES. DURING THE CONSTRUCTION OF THE EMBANKMENT, RETAINING WALL, SEWER CONSTRUCTION, AND BRIDGE ERECTION, THE CONTRACTOR SHALL IN NO WAY IMPAIR THE MOVEMENTS OF RAIL TRAFFIC.

THIS SHALL BE ACCOMPLISHED BY COMPLETE COORDINATION BETWEEN THE CONTRACTOR AND THE APPROPRIATE RAILROAD OFFICIALS. A MINIMUM VERTICAL CLEARANCE OF 20'-0" SHALL BE MAINTAINED AT ALL TIMES ON THE MAINLINE TRACKS AND 18'-0" ON THE SOUR. THE MINIMUM HORIZONTAL CLEARANCE OF 8'-6" FROM CENTERLINE OF THE TRACKS SHALL BE MAINTAINED AT ALL TIMES.

CONSTRUCTION PHASING FOR THE MAINTENANCE OF TRAFFIC AT REFUGEE ROAD AND ALUM CREEK DRIVE; AND REFUGEE ROAD AND S.R. 104 (STATION 263 + 00 TO STATION 286 + 00):

TWO-WAY TWO-LANE TRAFFIC SHALL BE MAINTAINED ON REFUGEE ROAD AND ALUM CREEK DRIVE AT ALL TIMES BY USE OF THE EXISTING PAVEMENT, THE PROPOSED PAVEMENT, THE TEMPORARY ROADWAY SURFACED WITH CLASS "A" PAVEMENT, EXCEPT FOR A TOTAL PERIOD OF THIRTY (30) CALENDAR DAYS WHILE THE CONNECTIONS ARE BEING MADE. DURING THIS TIME TWO-WAY TWO-LANE TRAFFIC SHALL BE MAINTAINED ON THE EXISTING PAVEMENT PROPOSED PAVEMENT, AND/OR THE BERM AND DITCH AREAS USING CLASS "A" PAVEMENT. THE TEMPORARY ROADWAY "A", "B", "C", "D", & "E" SHALL BE PROVIDED WITH TRAFFIC CONTROL DEVICES AS DELINEATED ON DETAIL C-24 AND THE DETOUR SIGNING AS SHOWN ON THE PLANS.

SCHEDULE OF CONSTRUCTION OPERATIONS

THE FOLLOWING SCHEDULE OF CONSTRUCTION OPERATIONS SHALL BE USED TO MAINTAIN TRAFFIC:

STEP 1. PRIOR TO ANY CONSTRUCTION ON ALUM CREEK DRIVE OR REFUGEE ROAD AT ALUM CREEK DRIVE, TEMPORARY ROAD "A" SHALL BE CONSTRUCTED AS DELINEATED ON SHEET NO. 22 & 23, FROM STATION 25 + 95.00 TO STATION 59 + 00.00. THE TEMPORARY ROAD SHALL BE SURFACED WITH CLASS "A" PAVEMENT AND PROVIDED WITH TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS AND AS DELINEATED ON DETAIL C-24, STRIPED IN ACCORDANCE WITH THE PLANS AS SHOWN ON SHEET NO. 22 & 23 AND A TEMPORARY SIGNAL PROVIDED AS DELINEATED ON SHEET NO. 22.

ADDITIONAL TWELVE (12) FOOT LANES WITH TAPERS ALONG EXISTING REFUGEE ROAD AT THE INTERSECTION OF TEMPORARY ROAD "A" SHALL BE CONSTRUCTED WITH CLASS "A" PAVEMENT IN ORDER TO PROVIDE LEFT HAND TURN LANES AS DELINEATED ON SHEET NO. 22. REFUGEE ROAD AT TEMPORARY ROAD "A" SHALL BE PROVIDED WITH TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS AND AS DELINEATED ON DETAIL C-19, AND STRIPED IN ACCORDANCE WITH THE PLANS AS DELINEATED ON SHEET NO. 22 .

THE CONTRACTOR SHALL NOTIFY THE CITY DIVISION OF TRAFFIC ENGINEERING SYSTEM'S ENGINEER (1) 48 HOURS PRIOR TO THE REMOVAL OF THE EXISTING SIGNAL AT EX. REFUGEE ROAD AND EX. ALUM CREEK DRIVE AND (2) IMMEDIATELY AFTER THE INSTALLATION OF THE TEMPORARY SIGNALS. UPON THE COMPLETION OF TEMPORARY RD. "A", TRAFFIC ON EXISTING ALUM CREEK DRIVE SHALL BE MAINTAINED ON TEMPORARY ROAD "A" AND TRAFFIC ON EXISTING REFUGEE ROAD MAINTAINED ON EXISTING REFUGEE ROAD. DURING THIS TIME RELOCATED ALUM CREEK DRIVE SHALL BE CONSTRUCTED ACCORDING TO FINAL PLANS FROM STATION 27 + 70.65 TO STATION 37 + 37.11 AND FROM STATION 38 + 54 TO STATION 53 + 00 ON THE RIGHT AND TO STATION 55 + 50 ON THE LEFT AS DELINEATED ON SHEET NO. 22 & 23. THE PERMANENT SIGNAL AT REFUGEE ROAD NORTH AND ALUM CREEK DRIVE SHOULD BE INSTALLED BUT, AT THIS TIME DOES NOT HAVE TO BE OPERATIONAL.

ACCESS TO THE ABUTTING PROPERTIES ALONG ALUM CREEK DRIVE AND REFUGEE ROAD SHALL BE MAINTAINED BY PROVIDING TEMPORARY DRIVES SURFACED WITH ITEM 410 AGGREGATE AND STABILIZED WITH ITEM 616 CALCIUM CHLORIDE.✕

STEP II. UPON COMPLETION OF STEP I TEMPORARY ROAD "B" SHALL BE CONSTRUCTED FROM STATION 61 + 12.50 TO APPROXIMATELY STATION 75 + 20 IN ACCORDANCE WITH THE PLANS UTILIZING CLASS "A" PAVEMENT AS DELINEATED ON SHEET NO. 24. THE TEMPORARY ROAD SHALL BE PROVIDED WITH TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS AND AS DELINEATED ON DETAIL C-24. STRIPING SHALL BE DONE IN ACCORDANCE WITH THE PLANS.

WHEN TEMPORARY ROAD "B" IS CONSTRUCTED, TRAFFIC ON EXISTING REFUGEE ROAD SHALL BE MAINTAINED ON TEMPORARY ROAD "B" AND TRAFFIC ON EXISTING ALUM CREEK DRIVE SHALL BE MAINTAINED ON TEMPORARY ROAD "A". DURING THIS PHASE REFUGEE ROAD AT ALUM CREEK DRIVE SHALL BE CONSTRUCTED ACCORDING TO FINAL PLANS AND THE INTERSECTION AT ALUM CREEK DRIVE FINISHED. THE 12 FOOT STORAGE LANE WITH TAPER TO THE WEST OF THE INTERSECTION OF TEMPORARY RD. "A" AND EX. REFUGEE ROAD SHALL BE REMOVED.

A NEW 12 FOOT STORAGE LANE ON REFUGEE ROAD WITH TAPER TO THE EAST OF THE INTERSECTION OF ALUM CREEK DRIVE AND REFUGEE ROAD SHALL BE CONSTRUCTED UTILIZING CLASS "A" PAVEMENT AND THE PROPOSED GRADE AS DELINEATED ON THE PLANS ON SHEET NO. 24 . THE TYPE 2 CURB AND GUTTER IN THE NORTHEAST RADIUS RETURN SHALL BE OMITTED UNTIL TRAFFIC IS UTILIZING THE COMPLETED PROPOSED PROJECT. TEMPORARY STRIPING AND SIGNING SHALL BE PROVIDED AS DELINEATED ON SHEET NO. 24 ALONG WITH TRAFFIC CONTROL DEVICES AS DELINEATED ON DETAIL C-19.

✕ THIS REQUIREMENT SHALL APPLY TO STEPS II THROUGH VI ALSO.

STRIPING SHALL BE PLACED IN ACCORDANCE WITH FINAL PLANS ON REFUGEE ROAD AND ALUM CREEK DRIVE FROM STATION 27 + 70.65 TO THE SOUTH STOP BAR AT THE INTERSECTION OF REFUGEE ROAD NORTH AND ALUM CREEK DRIVE.

A TEMPORARY SIGNAL SHALL BE CONSTRUCTED AT THE PROPOSED INTERSECTION OF REFUGEE ROAD AND ALUM CREEK DRIVE IN ACCORDANCE WITH THE PLANS. THE TEMPORARY SIGNAL SHALL BE CONSTRUCTED AFTER REFUGEE ROAD IS BUILT AND SHALL BE COMPLETED AND IN OPERATION FOR STEP III. ALSO DURING THIS OPERATION TYPE II BARRICADES OR DRUMS AND TEMPORARY STRIPING SHALL BE PROVIDED AT THE INTERSECTION OF REFUGEE ROAD NORTH AND ALUM CREEK DRIVE AS DELINEATED ON SHEET NO. 25 FOR THE PURPOSE OF MAINTAINING TRAFFIC DURING STEP III.

STEP III. WITH THE COMPLETION OF THE ABOVE STEPS TRAFFIC CAN BE MAINTAINED ON REFUGEE ROAD AND THE FINISHED PORTION OF ALUM CREEK DRIVE AND EXISTING ALUM CREEK DRIVE TO THE NORTH OF THE INTERSECTION WITH REFUGEE ROAD NORTH. DURING THIS TIME TEMPORARY ROAD "A" AND "B" SHALL BE REMOVED ALONG WITH THE TEMPORARY SIGNAL AT THE INTERSECTION OF TEMPORARY ROAD "A" AND "B".

WITH TEMPORARY ROAD "A" REMOVED, ALUM CREEK DRIVE TO THE NORTH OF THE INTERSECTION WITH REFUGEE ROAD NORTH CAN BE CONSTRUCTED TO FINAL PLANS, UTILIZING PART WIDTH CONSTRUCITON. CLOSE ADHERENCE TO THE NOTE PERTAINING TO "TRENCH FOR WIDENING" SHALL BE COMPLIED WITH DURING THIS OPERATION.

THE CONCRETE CAP MEDIAN ON ALUM CREEK DRIVE TO THE NORTH OF REFUGEE ROAD NORTH SHALL NOT BE CONSTRUCTED UNTIL THE COMPLETION OF STEP III.

STEP IV. TEMPORARY ROAD "C" UTILIZING CLASS "A" PAVEMENT SHALL BE CONSTRUCTED FROM STATION 263 + 00 TO STATION 268 + 00 AS DELINEATED ON SHEET NO. 26 . TYPE II BARRICADES, TEMPORARY STRIPING AND SIGNING SHALL ALSO BE PROVIDED AS DELINEATED. TRAFFIC CONTROL DEVICES SHALL BE PROVIDED AS DELINEATED ON DETAIL C-24. THE EXISTING ON-RAMP IN THE NORTHEAST QUADRANT SHALL BE PROVIDED WITH THE CONSTRUCTION SIGNS AS DELINEATED ON DETAIL C-21. REFUGEE ROAD SHALL BE PROVIDED WITH THE CONSTRUCTION SIGNS AS DELINEATED ON DETAIL C-21 FROM STATION 282 + 00 TO STATION 286 + 00. THE EXISTING CONCRETE CAP MEDIAN SHALL BE REMOVED AS DELINEATED.

RAMP "G" SHALL BE PROVIDED WITH TYPE II BARRICADES AS DELINEATED ON SHEET NO. 26 AND ALSO WITH TRAFFIC CONTROL DEVICES AS DELINEATED ON DETAIL C-21. RAMP "H" SHALL BE PROVIDED WITH TYPE II BARRICADES AS SHOWN ON SHEET NO. 26. CLOSE ADHERENCE TO THE NOTE PERTAINING TO "TRENCH FOR WIDENING" SHALL BE COMPLIED WITH DURING THIS OPERATION.

DURING THE ABOVE CONSTRUCTION, EXISTING TRAFFIC SHALL BE MAINTAINED ON THE EAST HALF OF RAMP "H" AND "HH" AND THE EAST HALF OF RAMP "G" AND "GG" AND ON TEMPORARY ROAD "C" AND EXISTING REFUGEE ROAD. DURING THIS TIME THE REMAINING PORTIONS OF THE RAMPS SHALL BE CONSTRUCTED TO FINAL PLANS AS DELINEATED ON SHEET NO. 26 . FULL WIDTH PAVEMENT SHALL BE CONSTRUCTED ON S.R. 104 FROM STATION 264 + 00 TO STATION 265 + 75, EXCEPT FOR THE BARRIER MEDIAN FROM STATION 264 + 00 TO STATION 266 + 50. FROM STATION 265 + 75 TO STATION 273 + 10.00 THE NORTH HALF OF S.R. 104 SHALL BE CONSTRUCTED IN ACCORDANCE WITH FINAL PLANS EXCEPT FOR THE 2'-6" CONCRETE CAP MEDIAN AND THE TOP 9" OF PAVED SHOULDER MEDIAN MATERIAL FROM STATION 269 + 48.00 TO STATION 273 + 10.00. THIS AREA SHALL BE PAVED WITH TEMPORARY PAVEMENT CLASS "A" AS DELINEATED ON SHEET NO. 26 .

STEP V. TEMPORARY ROAD "D" UTILIZING CLASS "A" PAVEMENT SHALL BE CONSTRUCTED FROM STATION 263 + 00 TO STATION 269 + 50 AS DELINEATED ON SHEET NO. 27 . TRAFFIC CONTROL DEVICES AS DELINEATED IN DETAIL C-24 SHALL BE PROVIDED ALONG WITH THE TEMPORARY BARRICADES AND TEMPORARY STRIPING AS SHOWN ON SHEET NO. 27.

Revised D.E.J. 4-9-80

MAINTENANCE OF TRAFFIC

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CALC: WDG 6-79
CHK: AOB 7-79

TYPE II BARRICADES, SIGNING, AND TEMPORARY STRIPING SHALL BE PROVIDED AS DELINEATED ON SHEET NO. 27. REFUGEE ROAD SHALL BE PROVIDED WITH THE CONSTRUCTION SIGNS AS DELINEATED ON DETAIL C-21 EXCEPT THAT THE OW-122 AND OW-60 SIGNS SHALL BE DELETED. THE EXISTING ON RAMP IN THE NORTHEAST QUADRANT SHALL BE PROVIDED WITH THE CONSTRUCTION SIGNS AS DELINEATED ON DETAIL C-21 EXCEPT THAT THE OW-122 AND OW-60 SIGNS SHALL BE DELETED. THE EXISTING WEST BOUND LOOP DETECTOR ON REFUGEE ROAD AND THE EXISTING LEFT TURN LOOP DETECTOR SHALL BE DISCONNECTED AND A TEMPORARY LOOP DETECTOR FOR THE LEFT HAND TURN LANE ON THE EAST APPROACH SHALL BE PROVIDED AS DELINEATED ON SHEET NO. 27. A TEMPORARY LOOP DETECTOR SHALL BE INSTALLED IN THE EAST BOUND APPRAOCH AS DELINEATED ON SHEET NO. 27. TEMPORARY ROAD "E" SHALL BE CONSTRUCTED AS SHOWN ON SHEET NO. 27. TYPE II BARRICADES SHALL BE PROVIDED ON RAMP "H" AS SHOWN ON SHEET NO. 27 AND TRAFFIC CONTROL DEVICES AS DELINEATED ON DETAIL C-21 SHALL BE PROVIDED. TYPE II BARRICADES SHALL BE PROVIDED ON RAMP "G" AS DELINEATED ON SHEET NO. 27. CLOSE ADHERENCE TO THE NOTE PERTAINING TO "TRENCH FOR WIDENING" SHALL BE COMPLIED WITH DURING THIS OPERATION.

ONCE THE ABOVE CONSTRUCTION IS FINISHED THE REMAINING PORTIONS OF RAMPS "G", "H" AND S.R. 104 CAN BE COMPLETED IM ACCORDANCE WITH THE FINAL PLANS EXCEPT FOR THE MEDIAN BARRIER RAIL BETWEEN STATION 264 + 00 TO STATION 266 + 50 AND THE 2'-6" CONCRETE CAP MEDIAN AND THE TOP 9" OF PAVED SHOULDER MATERIAL FROM STATION 269 + 48 TO STATION 273 + 10.10. EXISTING TRAFFIC SHALL BE MAINTAINED ON THE WEST HALF OF RAMP "H" AND TEMPORARY ROAD "E", ON THE WEST HALF OF RAMP "G", AND TEMPORARY ROAD "D" AND THE NORTH HALF OF S.R. 104. EXISTING TRAFFIC SHALL BE MAINTAINED THROUGH THIS AREA AS SUCH UNTIL STEP VI IS COMPLETED.

STEP VI. THE CONNECTION OF REFUGEE ROAD NORTH AND EXISTING REFUGEE ROAD SHALL NOW BE COMPLETED BY PART WIDTH CONSTRUCTION, REFUGEE ROAD, ALUM CREEK DRIVE, AND REFUGEE ROAD NORTH SHALL BE PROVIDED WITH DETOUR SIGNING AS SHOWN ON SHEET NO. 28. DURING THE CONSTRUCTION OF THE ABOVE, EXISTING TRAFFIC SHALL BE MAINTAINED AS IN V AND III. UPON COMPLETION OF THE ABOVE CONSTRUCTION, TRAFFIC SHALL BE REROUTED ONTO REFUGEE ROAD NORTH THROUGH THE DETOUR. TRAFFIC AT U.S. 33 SHALL BE MAINTAINED AS IN STEP V.

~~WITH TRAFFIC BEING MAINTAINED AS DESCRIBED, S.R. 104 CAN NOW BE COMPLETED ACCORDING TO FINAL PLANS UNDER EXISTING REFUGEE ROAD FROM STATION 220 + 00 TO STATION 226 + 00.~~ UPON COMPLETION, TEMPORARY ROAD "D" SHALL BE REMOVED, AND THE DETOUR SIGNING SHALL BE REMOVED. THE PROJECT AT THIS POINT IS COMPLETE EXCEPT FOR THE 2'-6" CONCRETE CAP MEDIAN AND THE MEDIAN PAVED SHOULDER MATERIAL FROM STATION 269 + 48.00 TO STATION 273 + 10.00 AND THE CONCRETE BARRIER MEDIAN FROM STATION 264 + 00 TO STATION 266 + 50. WITH TRAFFIC BEING MAINTAINED ON THE PROPOSED PROJECT THESE ITEMS CAN NOW BE COMPLETED.

GENERAL PROCEDURE: IT SHOULD BE NOTED THAT STEPS I, II, AND III CAN BE PERFORMED IN CONJUNCTION WITH STEPS IV AND V.

THIS WAY TRAFFIC CAN BE MAINTAINED ON REFUGEE ROAD AND ALUM CREEK DRIVE THE MAXIMUM AMOUNT OF TIME AND USING A MINIMUM AMOUNT OF TIME FOR TRAFFIC TO BE MAINTAINED THROUGH THE DETOUR.

THE FOLLOWING QUANTITIES SHALL BE USED TO PERFORM THE ABOVE SPECIFIED ITEMS AS DIRECTED BY THE ENGINEERS:

ITEM 614	MAINTAINING TRAFFIC	LUMP SUM
ITEM 615	TEMPORARY PAVEMENT CLASS "A"	16,500 S.Y.
ITEM 410	TRAFFIC COMPACTED SURFACE, TYPE "C"	700 C.Y.
ITEM 616	WATER	30 M. GAL.
ITEM 616	CALCIUM CHLORIDE	15 TONS
ITEM 621	REMOVAL OF PAVEMENT MARKINGS	2,000 L.F.
ITEM SPECIAL	SPECIAL DUTY CITY POLICEMAN WITH CRUISER	500 HRS.
ITEM SPECIAL	SPECIAL DUTY CITY POLICEMAN	1,000 HRS.
ITEM 615	TEMPORARY ROADS	LUMP SUM

NOTICE TO COLUMBUS FIRE DEPARTMENT

WHENEVER ANY PUBLIC STREET IS CLOSED TO TRAFFIC, OR TRAFFIC IS DIVERTED TO A TEMPORARY ROAD, THE CONTRACTOR SHALL NOTIFY THE COLUMBUS FIRE DEPARTMENT AT LEAST TWENTY-FOUR (24) HOURS IN ADVANCE.

ACCESS TO CEMETERIES

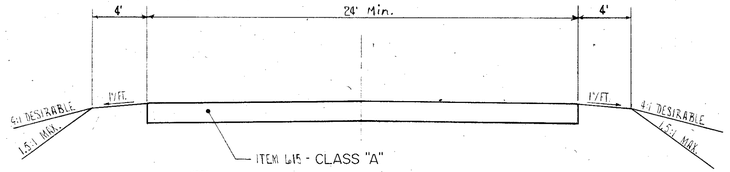
THE PROJECT ENGINEER SHALL CONTACT MR. RICK THOMPSON, CUSTODIAN OF THE JEWISH CEMETERIES ALONG REFUGEE ROAD, WHEN WORK BEGINS (444-3440). THE PROJECT ENGINEER SHALL ACT AS COORDINATOR BETWEEN THE CONTRACTOR AND THE CEMETERIES TO MAXIMIZE CEMETERY ACCESS DURING THE PERIOD OF CONSTRUCTION. THE PROJECT ENGINEER WILL BE NOTIFIED BY MR. THORSEN OF UPCOMING FUNERALS SO THAT DRIVEWAY RECONSTRUCTION WORK CAN BE RESTRICTED OR AVOIDED DURING THE FUNERAL.
SPECIFICALLY FOR THE TIFERETH ISRAEL CEMETERY, ACCESS TO BOTH THE REFUGEE ROAD AND ALUM CREEK DRIVE DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR ONE (1) TWENTY-FOUR (24) HOUR PERIOD FOR EACH DRIVEWAY WHEN THE NEW ASPHALT DRIVEWAY AND APPROACH WILL BE INSTALLED. AT LEAST TWENTY-FOUR (24) HOUR NOTICE SHALL BE GIVEN TO THE CEMETERY CUSTODIAN BEFORE ANY DRIVEWAY WORK REQUIRING CLOSURE BEGINS. THE DRIVEWAY CLOSING(S) SHALL NOT BE PERMITTED DURING THE PERIOD 5:00 P.M. FRIDAY TO 5:00 P.M. SATURDAY.

RAIL ACCESS TO PARCEL 163

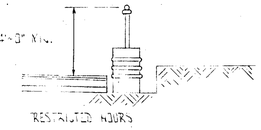
RAILROAD ACCESS TO PARCEL 163 SHALL BE MAINTAINED AT ALL TIMES EXCEPT FOR ONE (1) PERIOD OF TEN (10) WORKING DAYS. THIS WORK WILL REQUIRE CLOSE COORDINATION AND COOPERATION BETWEEN THE CONTRACTOR AND THE N.&W. RAILWAY COMPANY. THE CONTRACTOR SHALL NOTIFY UNITED MCGILL (PARCEL 163) AT LEAST FOUR (4) WEEKS PRIOR TO THE 10-DAY CLOSURE.

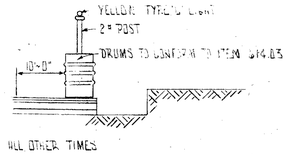
PROTECTION OF RAILROAD FACILITIES

DURING CONSTRUCTION OF THE CATCH BASIN AT STATION 191+70, THE CONTRACTOR SHALL PROTECT RAILROAD FACILITIES AND PERSONNEL BY PROVIDING A WALKWAY AND RAILING WITH A MINIMUM HORIZONTAL CLEARANCE OF 8'-0" FROM CENTERLINE OF TRACK TO THE RAILING. PAYMENT FOR LABOR, MATERIALS, AND EQUIPMENT REQUIRED FOR THIS PROTECTION SHALL BE INCLUDED IN ITEM 614, MAINTENANCE OF TRAFFIC.



TEMPORARY ROAD TYPICAL





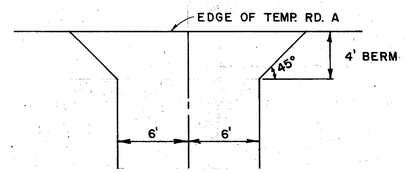
DRUM PLACEMENT DETAIL

ITEM 614
TEMPORARY STRIPING QUANTITIES

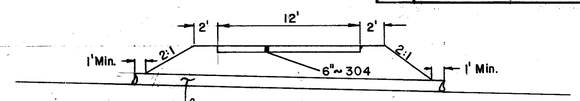
DESCRIPTION	UNIT	SHEET NO. 22	23	24	25	26	27	TOTAL
TEMPORARY CENTERLINES*	L.F.	2,135	1,595	3,040	480	1,465	1,595	10,310
TEMPORARY EDGE LINES*	L.F.	155	220	395		300	2,235	3,305
TEMPORARY CHANNELIZING LINES*	L.F.	850				70	125	1,045
TEMPORARY STOP LINES*	L.F.	115		145	35	10		305
TEMPORARY LANE ARROWS*	Each	8		10		1		19
TEMPORARY TRANSVERSE LINES*	L.F.					240	240	480
TEMPORARY CHANNELIZING LINES, CLASS II, TAPE	L.F.					95	430	525

* CLASS I, TAPE

TEMPORARY DRIVE DETAIL STA. 34+50 RT. (Temp Rd. A)
(NO SCALE)



TO SHT. NO.	QUANTITIES		
37	ITEM 304	6" AGGR. BASE	6 C.Y.
37	ITEM 203	EMBANKMENT	28 C.Y.
39	ITEM 603	12" CONDUIT 706.01, 706.02 OR 707.01 TYPE D	26 L.F.



D.E.J. 10/10/80
REVISED D.E.J. 4/9/80

MAINTENANCE OF TRAFFIC

TEMPORARY PAVEMENT MARKINGS
NOTE B

GENERAL

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN, AND WHEN NECESSARY, REMOVE TEMPORARY RETROREFLECTIVE PAVEMENT MARKINGS ON EXISTING, RECONSTRUCTED, RESURFACED OR TEMPORARY ROADS WITHIN THE WORK LIMITS, IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE MARKINGS SHALL BE MAINTAINED IN GOOD CONDITION DURING THE REQUIRED SERVICE PERIOD TO PROVIDE DAY AND NIGHT VISIBILITY. THE MARKINGS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER TO MAINTAIN REQUIRED VISIBILITY AND/OR REFLECTIVITY AT NO ADDITIONAL COST TO THE STATE.

MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE OF PAINT, PAVEMENT MARKING TAPE OR REMOVABLE PAVEMENT MARKING TAPE (TYPE R TAPE).

A. PAINT

PAINT SHALL COMPLY WITH 708.14 AND SHALL BE APPLIED IN ACCORDANCE WITH 621 EXCEPT AS MODIFIED HEREIN.

B. PAVEMENT MARKING TAPE

FLEXIBLE RETROREFLECTIVE PREFORMED PRESSURE SENSITIVE TAPE SHALL HAVE STRAIGHT EDGES AND BE FREE OF CRACKS. THE TAPE SHALL CONSIST OF PIGMENT AND FILLERS WITH SUFFICIENT BINDER AND PLASTICIZER TO RETAIN GLASS BEADS HAVING A REFRACTIVE INDEX MEETING THE MINIMUM REFLECTIVE INTENSITY STANDARD STATED IN THE MANUFACTURERS INFORMATION. THE TAPE SHALL BE FLEXOLITE "WET REFLECTIVE", 3M "SCOTCHLANE", OR AN APPROVED EQUAL.

THE GLASS BEADS SHALL BE DISTRIBUTED UNIFORMLY THROUGHOUT THE TAPE WITH SUFFICIENT SURFACE BEADS TO PROVIDE OPTIMUM REFLECTORIZATION AT ALL TIMES.

PAVEMENT MARKING TAPE SHALL COMPLY WITH THE COLOR REQUIREMENTS OF 708.14.

THE TAPE SHALL HAVE A PRECOATED ADHESIVE LAYER FOR PAVEMENT APPLICATION WITHOUT THE USE OF HEAT, SOLVENTS OR ADDITIONAL ADHESIVES. THE ADHESIVE SHALL BE SUFFICIENT TO RETAIN COMPLETE MARKINGS ON THE PAVEMENT SURFACE THROUGHOUT THE USEFUL LIFE OF THE MARKINGS.

IN ADDITION TO THE FOREGOING, ALL TEMPERATURE APPLICATION REQUIREMENTS AND OTHER APPLICABLE MANUFACTURERS MATERIAL AND APPLICATION INSTRUCTIONS SHALL BE FOLLOWED.

WHEN APPROVED BY THE ENGINEER THE CONTRACTOR MAY USE REMOVABLE PAVEMENT MARKING TAPE (TYPE R TAPE), IN LIEU OF THAT DESCRIBED ABOVE, TO FACILITATE REMOVAL OF MARKINGS.

C. REMOVABLE PAVEMENT MARKING TAPE (TYPE R TAPE)

THE MARKING MATERIAL SHALL BE A MIXTURE OF POLYMERIC MATERIALS, PIGMENTS, REINFORCING MEDIUM TO FACILITATE REMOVAL, GLASS BEADS THROUGHOUT THE PIGMENTED PORTION, AND A RETROREFLECTIVE LAYER OF GLASS BEADS BONDED TO THE TOP SURFACE.

THE TAPE SHALL BE PRECOATED WITH A PRESSURE SENSITVE ADHESIVE CAPABLE OF TEMPORARILY BONDING TO ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE PAVEMENT AT AN AMBIENT TEMPERATURE OF NOT LESS THAN 50° F AND RISING, AT A PAVEMENT TEMPERATURE OF NOT LESS THAN 50° F NOR MORE THAN 150° F, WITHOUT THE USE OF HEAT, SOLVENTS, AND ADDITIONAL ADHESIVES OR ACTIVATORS.

MATERIALS SHALL CONFORM TO THE COLOR REQUIREMENTS OF 708.14.

THE TAPE SHALL BE REMOVABLE FROM APSHALT AND PORTLAND CEMENT CONCRETE INTACT OR IN LARGE PIECES AT TEMPERATURES ABOVE 40° F WITHOUT USE OF HEAT, SOLVENTS, GRINDING, OR SANDBLASTING. REMOVAL SHALL NOT RESULT IN DAMAGE TO OR OBJECTIONABLE STAINING OF THE PAVEMENT.

GLASS BEADS SHALL BE PROVIDED IN A PROPER SIZE, QUANTITY AND DISTRIBUTION TO ASSURE OPTIMUM RETROREFLECTIVITY AS THE FILM WEARS. THE FOLLOWING INITIAL AVERAGE REFLECTANCE VALUES AT 86.0 ENTRANCE ANGLE AS MEASURED IN ACCORDANCE WITH THE TESTING PROCEDURES OF FEDERAL TEST METHOD 370 SHALL BE CERTIFIED:

	WHITE	YELLOW
OBSERVATION ANGLE	0.2 0.5	0.2 · 0.5
SPECIFIC LUMINANCE	1770 1270	1310 810

(MCD/FT^2)/FC

THE TAPE SHALL BE 3-M COMPANY'S "STAMARK, DETOUR GRADE (SERIES 57L0, 57IL, 6270, 62IL)" OR AN APPROVED EQUAL.

THE CONTRACTOR SHALL FURNISH TO THE ENGINEER CERTIFICATION THAT THE MATERIAL SUPPLIED MEETS THE PROPERTIES SPECIFIED HEREIN.

LAYOUT

THE TEMPORARY MARKINGS SHALL BE ACCURATELY LAID OUT IN CONFORMANCE WITH 621.051 AND SHALL BE LOCATED IN A TRUE LINE ON THE CENTER LINE, LANE LINE, EDGE LINE, OR CHANNELIZING LINE WHERE PERMANENT MARKINGS WOULD LIE UNLESS OTHERWISE SPECIFIED IN THE PLANS.

PLACEMENT

TEMPORARY MARKINGS SHALL BE PLACED IN ACCORDANCE WITH LAYOUTS ON SHEETS 22-27 AND THE FOLLOWING REQUIREMENTS, UNLESS OTHERWISE SPECIFIED IN THE PLANS.

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS ARE NO LONGER NEEDED, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 621.134 AND NECESSARY PAVEMENT MARKINGS INSTALLED BEFORE THE FLOW OF TRAFFIC IS CHANGED TO THE NEXT PHASE OR RETURNED TO ITS NORMAL CHANNEL.

WHERE PERMANENT PAVEMENT MARKINGS ARE CALLED FOR IN THE PLANS, THE CONTRACTOR SHALL FURNISH AND PLACE THE PERMANENT MARKINGS WITHIN 30 CALENDAR DAYS FOLLOWING COMPLETION OF ALL SURFACE COURSES IN A SINGLE ROADWAY OR PRIOR TO THE END OF THE CONSTRUCTION SEASON, WHICHEVER COMES FIRST. PERMANENT MARKINGS SHALL NOT BE PLACED OVER ANY TAPE MARKINGS.

A. CLASS I MARKINGS

CLASS I MARKINGS SHALL BE AS DEFINED IN 621, EXCEPT AS FOLLOWS:
1) LANE LINES SHALL BE 4-INCHES IN WIDTH.
2) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
3) STOP LINES SHALL BE 12-INCHES IN WIDTH.
4) CROSS WALK LINES SHALL BE 8-INCHES IN WIDTH.

GORE MARKINGS SHALL CONSIST OF TWO CHANNELIZING LINES PLACED AT THE THEORETICAL OR TEMPORARY GORE OF RAMPS AND DIVERGING OR CONVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 16 GALLONS PER MILE FOR SOLID 4-INCH LINES, 24 GALLONS PER MILE FOR SOLID 6-INCH LINES, 48 GALLONS PER MILE FOR SOLID 12-INCH LINES, AND 4 GALLONS PER MILE FOR 4-INCH DASHED LINES.

B. CLASS II MARKINGS

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

CHANNELIZING LINES SHALL CONSIST OF WHITE 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 20-FOOT INTERVALS.

GORE MARKINGS SHALL BE TWO CONTINUOUS, WHITE 50-FOOT BY 4-INCH LINES PLACED AT THE THEORETICAL GORE OF AN EXIT RAMP OR DIVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 16 GALLONS PER MILE FOR GORE MARKINGS, 0.8 GALLONS PER MILE FOR CHANNELIZING LINE, AND 0.4 GALLONS PER MILE FOR LANE LINE AND CENTER LINE.

CONFLICTING MARKINGS

THE CONTRACTOR SHALL, PRIOR TO PLACING TEMPORARY MARKINGS, REMOVE ALL EXISTING CONFLICTING MARKINGS VISIBLE TO THE TRAVELING PUBLIC DURING DAYLIGHT OR NIGHTTIME HOURS IN ACCORDANCE WITH 621.134. THE COST FOR REMOVAL OF CONFLICTING MARKINGS SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS.

METHOD OF MEASUREMENT

TEMPORARY PAVEMENT MARKINGS WILL BE MEASURED COMPLETE IN PLACE, BY CLASS AND MATERIAL, IN THE UNITS DESIGNATED. DASHED LINE QUANTITIES WILL BE THE LENGTH OF THE COMPLETED STRIPE, INCLUDING GAPS, INTERSECTIONS, AND OTHER SECTIONS OF PAVEMENT NOT NORMALLY MARKED, IN ACCORDANCE WITH 621.15.

TEMPORARY PAVEMENT MARKINGS WILL INCLUDE THE LAYOUT, APPLICATION AND REMOVAL OF THE MARKINGS, WHEN REQUIRED.

BASIS OF PAYMENT

PAYMENT FOR ACCEPTED QUANTITIES COMPLETE IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR PLACEMENT, MAINTENANCE AND NECESSARY REMOVAL OF THE MARKINGS.

ITEM	UNIT	DESCRIPTION
614	MILES	TEMPORARY LANE LINES, CLASS ____, (PAINT, TAPE OR TYPE R TAPE)
614	MILES	TEMPORARY CENTER LINES, CLASS ____, (PAINT, TAPE OR TYPE R TAPE)
614	MILES/LIN. FT.	TEMPORARY CHANNELIZING LINES, CLASS ____, (PAINT, TAPE OR TYPE R TAPE)
614	MILES	TEMPORARY EDGE LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY GORE MARKING, CLASS II, (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY STOP LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY CROSSWALK LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	EACH	TEMPORARY LANE ARROWS, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	EACH	TEMPORARY WORD "ONLY" ON PAVEMENT, 72-INCH, CLASS I, (PAINT OR TAPE)
614	LIN. FT.	TEMPORARY TRANSVERSE LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)

SEE SHEET 20 FOR QUANTITIES.

5/13/82

FHWA REGION	STATE	PROJECT	
5	OHIO		

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FRANKLIN COUNTY
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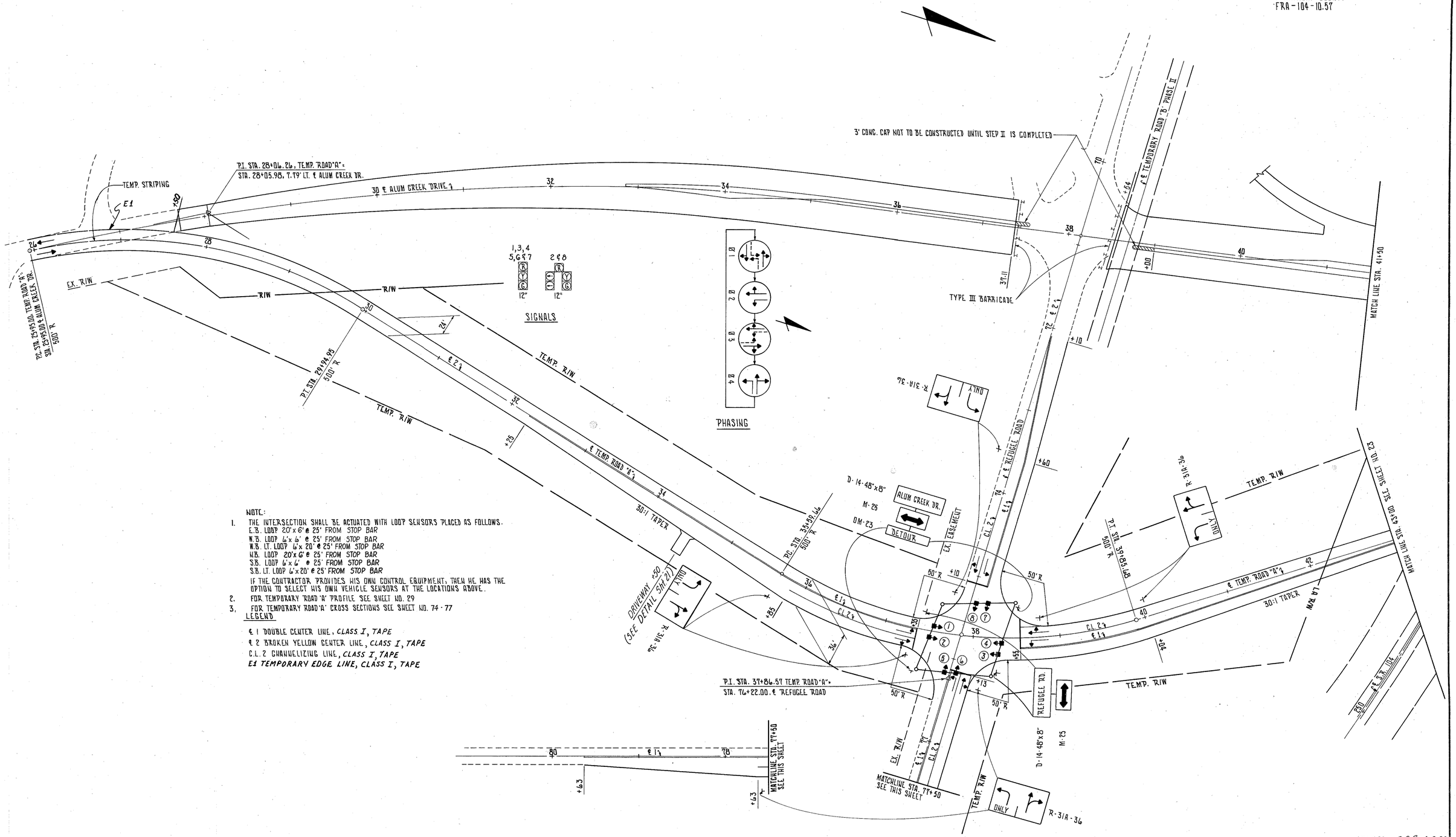

NOTE:

1. THE INTERSECTION SHALL BE ACTUATED WITH LOOP SENSORS PLACED AS FOLLOWS.
   E.B. LOOP 20'x6' ℄ 25' FROM STOP BAR
   N.B. LOOP 6'x6' ℄ 25' FROM STOP BAR
   W.B. LT. LOOP 6'x 20' ℄ 25' FROM STOP BAR
   W.B. LOOP 20'x 6' ℄ 25' FROM STOP BAR
   S.B. LOOP 6'x 6' ℄ 25' FROM STOP BAR
   S.B. LT. LOOP 6'x 20' ℄ 25' FROM STOP BAR
   IF THE CONTRACTOR PROVIDES HIS OWN CONTROL EQUIPMENT, THEN HE HAS THE OPTION TO SELECT HIS OWN VEHICLE SENSORS AT THE LOCATIONS ABOVE.
2. FOR TEMPORARY ROAD 'A' PROFILE SEE SHEET NO. 29
3. FOR TEMPORARY ROAD 'A' CROSS SECTIONS SEE SHEET NO. 74 - 77

LEGEND

℄ 1 DOUBLE CENTER LINE, CLASS I, TAPE
℄ 2 BROKEN YELLOW CENTER LINE, CLASS I, TAPE
C.L. 2 CHANNELIZING LINE, CLASS I, TAPE
E1 TEMPORARY EDGE LINE, CLASS I, TAPE

REVISED 4-9-80

MAINTENANCE OF TRAFFIC STEP I

FHWA REGION	STATE	PROJECT	
5	OHIO		

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FRANKLIN COUNTY
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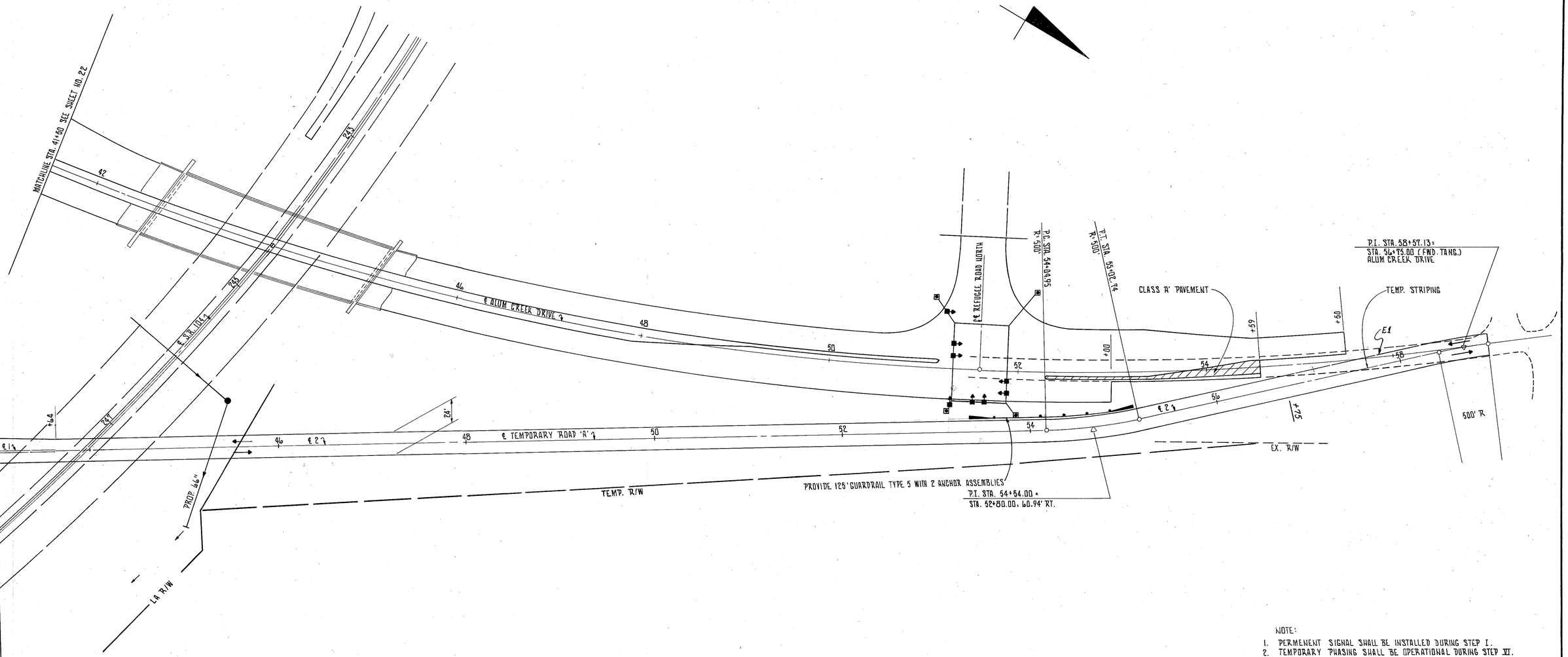

NOTE:

1. PERMENENT SIGNAL SHALL BE INSTALLED DURING STEP I.
2. TEMPORARY PHASING SHALL BE OPERATIONAL DURING STEP II.
3. FOR TEMPORARY ROAD A PROFILE SEE SHEET NO. 29.
4. FOR TEMPORARY ROAD 'A' CROSS SECTIONS SEE SHEET NO. 74-77 .

MAINTENANCE OF TRAFFIC STEP I

FHWA REGION	STATE	PROJECT	
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1, 3, 4, 5, 6 & 7 — 2 & 8

12" 12"

4Ø CONTROLLER WITH OVERLAPS

Ø1 Ø2 Ø3 Ø4

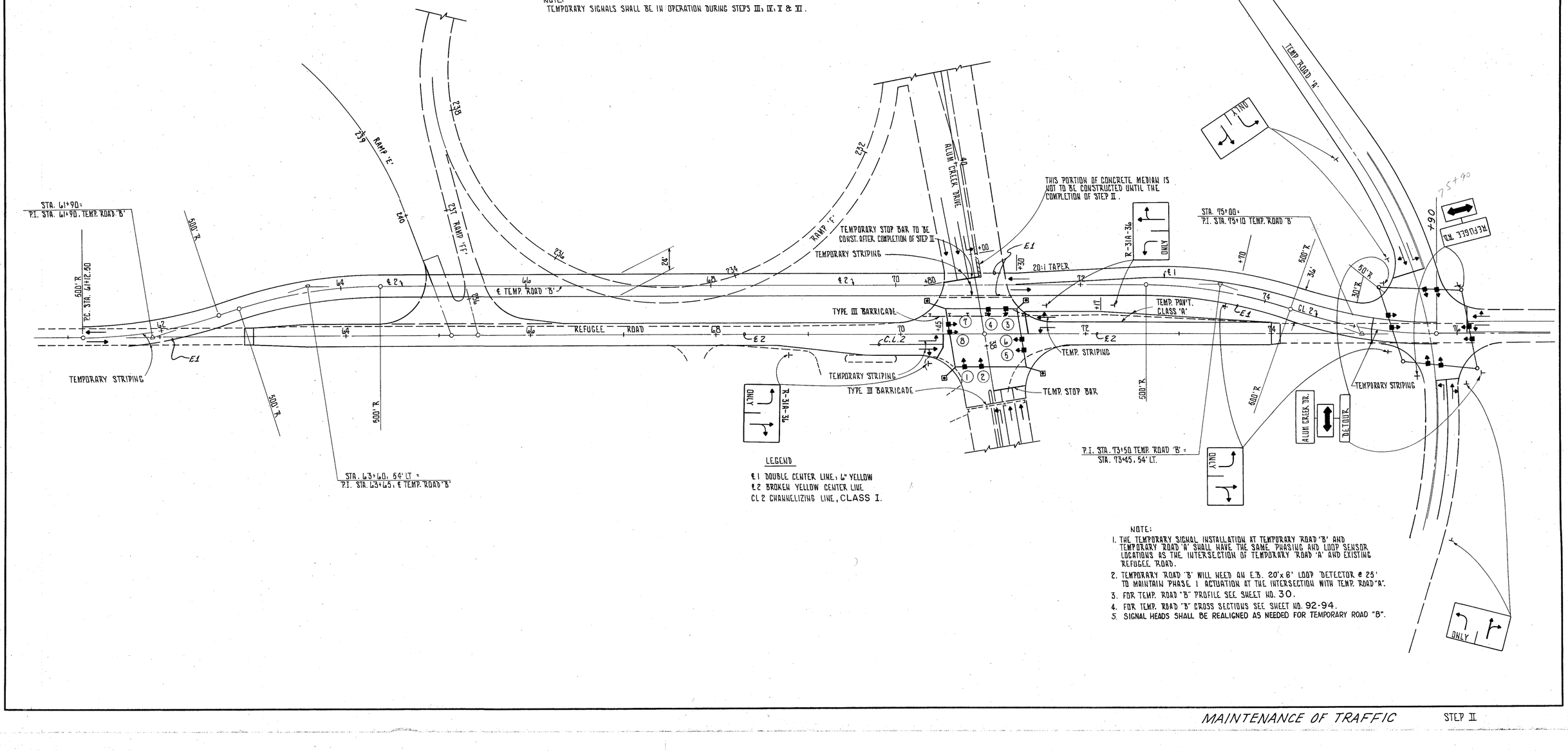
SIGNALS

PHASING DIAGRAM

REFUGEE ROAD AND ALUM CREEK DRIVE

NOTE:
1. THE INTERSECTION SHALL BE ACTUATED WITH LOOP SENSORS AS FOLLOWS.
   E.B. LOOP 20'x6' @ 25' FROM STOP BAR
   W.B. LOOP 6'x6' @ 25' FROM STOP BAR
   W.B. LT. LOOP 6'x20' @ 25' FROM STOP BAR
   N.B. LOOP 20'x6' @ 25' FROM STOP BAR
   S.B. LOOP 6'x6' @ 25' FROM STOP BAR
   S.B. LT. LOOP 6'x20' @ 25' FROM STOP BAR
2. IF THE CONTRACTOR PROVIDES HIS OWN CONTROL EQUIPMENT THEN HE HAS THE OPTION TO SELECT HIS OWN VEHICLE SENSORS AT THE LOCATIONS ABOVE.
3. WHEN REFUGEE ROAD TRAFFIC IS REROUTED TO REFUGEE ROAD NORTH THE DIVISION OF TRAFFIC WILL CAUSE PHASE 4 TO BE OMITTED.

NOTE:
TEMPORARY SIGNALS SHALL BE IN OPERATION DURING STEPS III, IX, X & XI.



LEGEND

℄1 DOUBLE CENTER LINE, 6" YELLOW
℄2 BROKEN YELLOW CENTER LINE
CL 2 CHANNELIZING LINE, CLASS I.

NOTE:
1. THE TEMPORARY SIGNAL INSTALLATION AT TEMPORARY ROAD 'B' AND TEMPORARY ROAD 'A' SHALL HAVE THE SAME PHASING AND LOOP SENSOR LOCATIONS AS THE INTERSECTION OF TEMPORARY ROAD 'A' AND EXISTING REFUGEE ROAD.
2. TEMPORARY ROAD 'B' WILL NEED AN E.B. 20'x6' LOOP DETECTOR @ 25' TO MAINTAIN PHASE 1 ACTUATION AT THE INTERSECTION WITH TEMP. ROAD 'A'.
3. FOR TEMP. ROAD "B" PROFILE SEE SHEET NO. 30.
4. FOR TEMP. ROAD "B" CROSS SECTIONS SEE SHEET NO. 92-94.
5. SIGNAL HEADS SHALL BE REALIGNED AS NEEDED FOR TEMPORARY ROAD "B".

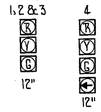
MAINTENANCE OF TRAFFIC STEP II

FHWA REGION	STATE	PROJECT	
5	OHIO		

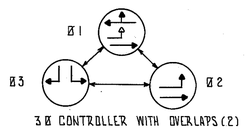
25
254

FRANKLIN COUNTY
FRA-104 - 10.57

PERMENENT SIGNALS TO BE USED FOR TEMPORARY MOVEMENT OF TRAFFIC FOR STEP XI ONLY.



SIGNALS

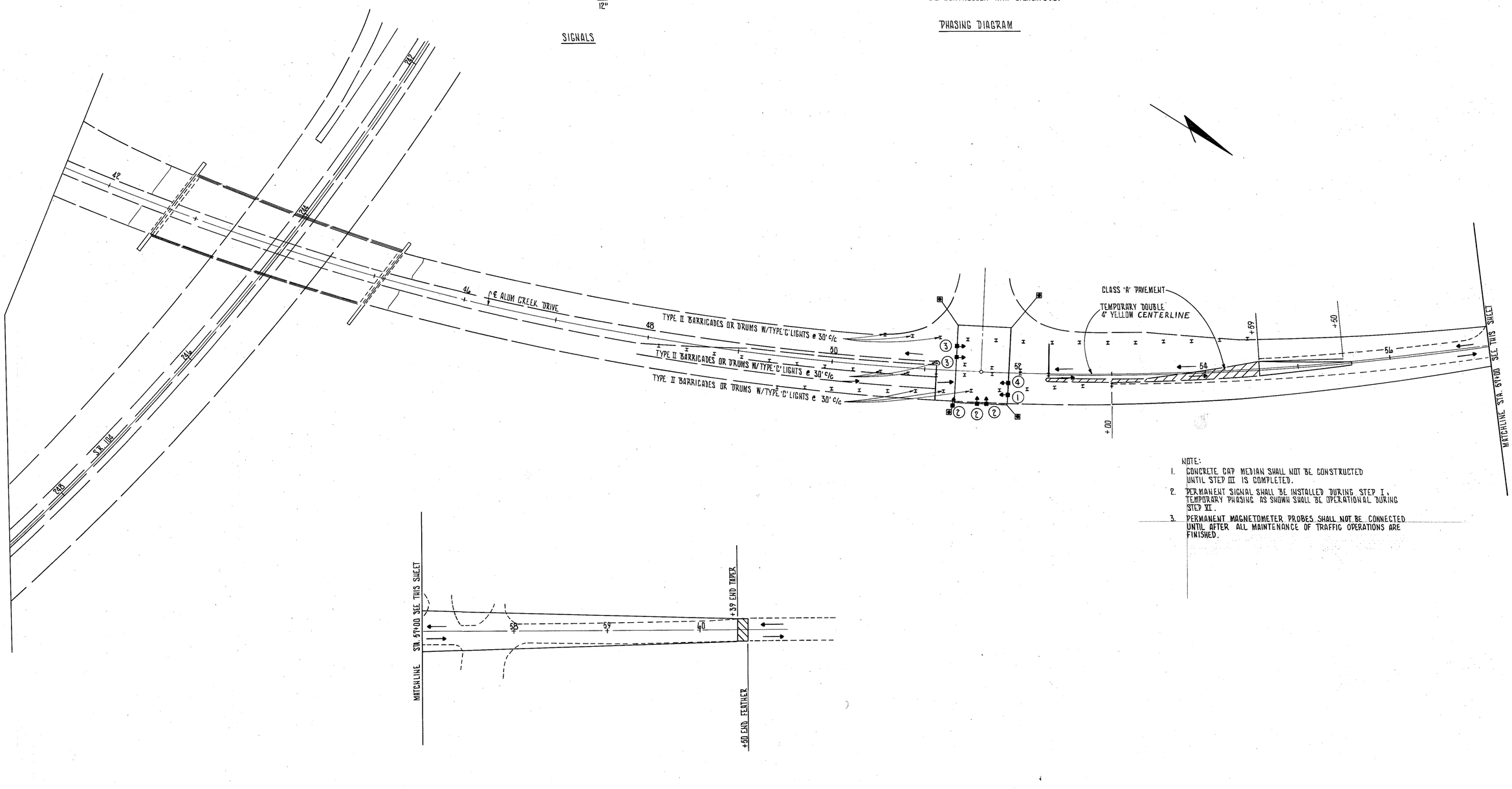


3 Ø CONTROLLER WITH OVERLAPS (2)

PHASING DIAGRAM

NOTE:

1. FOR DETECTION 2 MAGNETOMETER PROBES SHALL BE USED PER LANE LOCATED 25' BACK FROM STOP BAR.
2. PROBE ASSIGNMENTS
   Ø1 ALL N.B. & S.B. THRU LANES
   Ø2 N.B. L.T. LANE
   Ø3 E.B. LANE



NOTE:

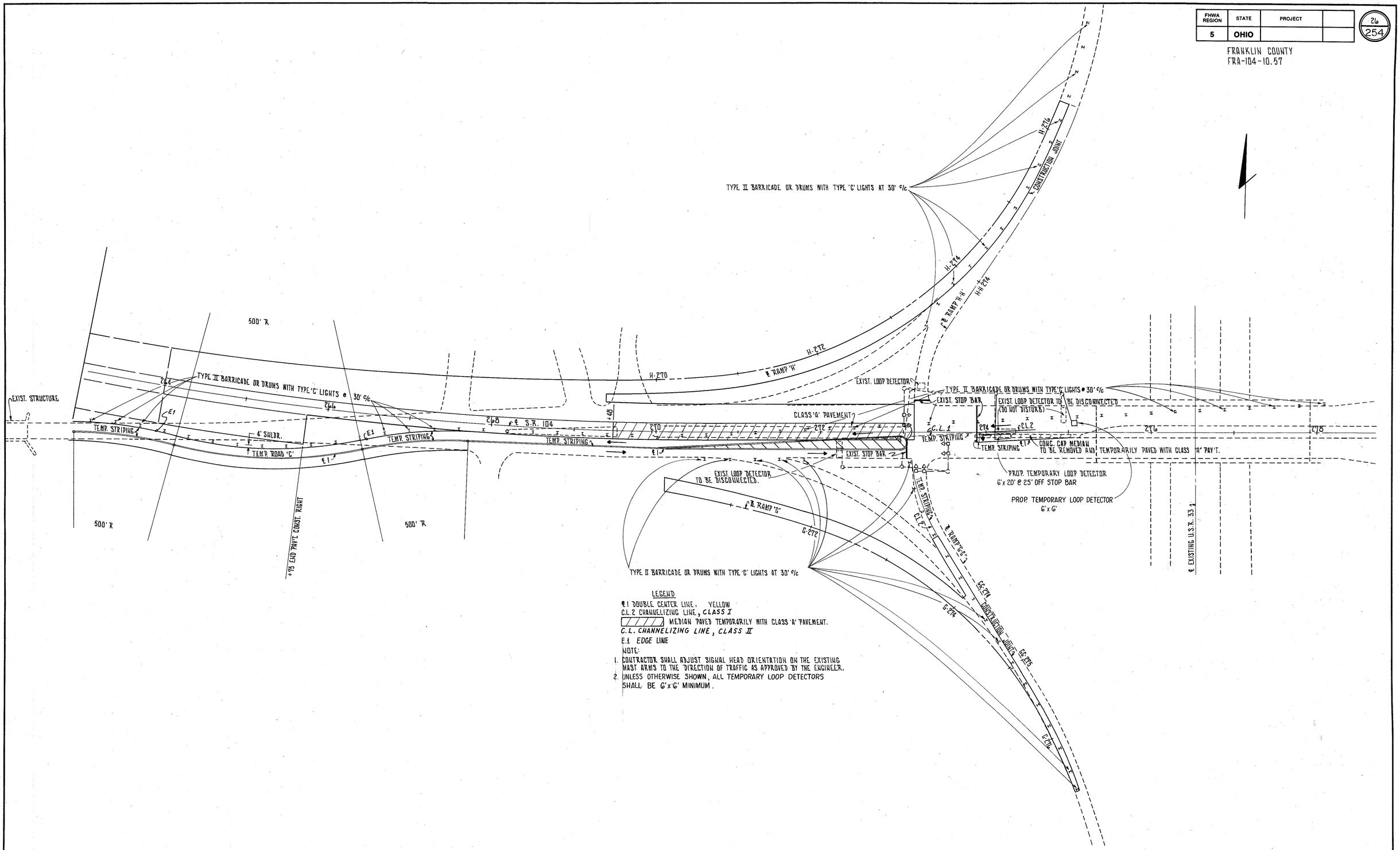
1. CONCRETE GAP MEDIAN SHALL NOT BE CONSTRUCTED UNTIL STEP III IS COMPLETED.
2. PERMANENT SIGNAL SHALL BE INSTALLED DURING STEP I, TEMPORARY PHASING AS SHOWN SHALL BE OPERATIONAL DURING STEP XI.
3. PERMANENT MAGNETOMETER PROBES SHALL NOT BE CONNECTED UNTIL AFTER ALL MAINTENANCE OF TRAFFIC OPERATIONS ARE FINISHED.

MAINTENANCE OF TRAFFIC STEP III

FHWA REGION	STATE	PROJECT	
5	OHIO		

26
254

FRANKLIN COUNTY
FRA-104-10.57



LEGEND

℄1 DOUBLE CENTER LINE, YELLOW
C.L.2 CHANNELIZING LINE, CLASS I
MEDIAN PAVED TEMPORARILY WITH CLASS 'A' PAVEMENT.
C.L. CHANNELIZING LINE, CLASS II
E.1 EDGE LINE

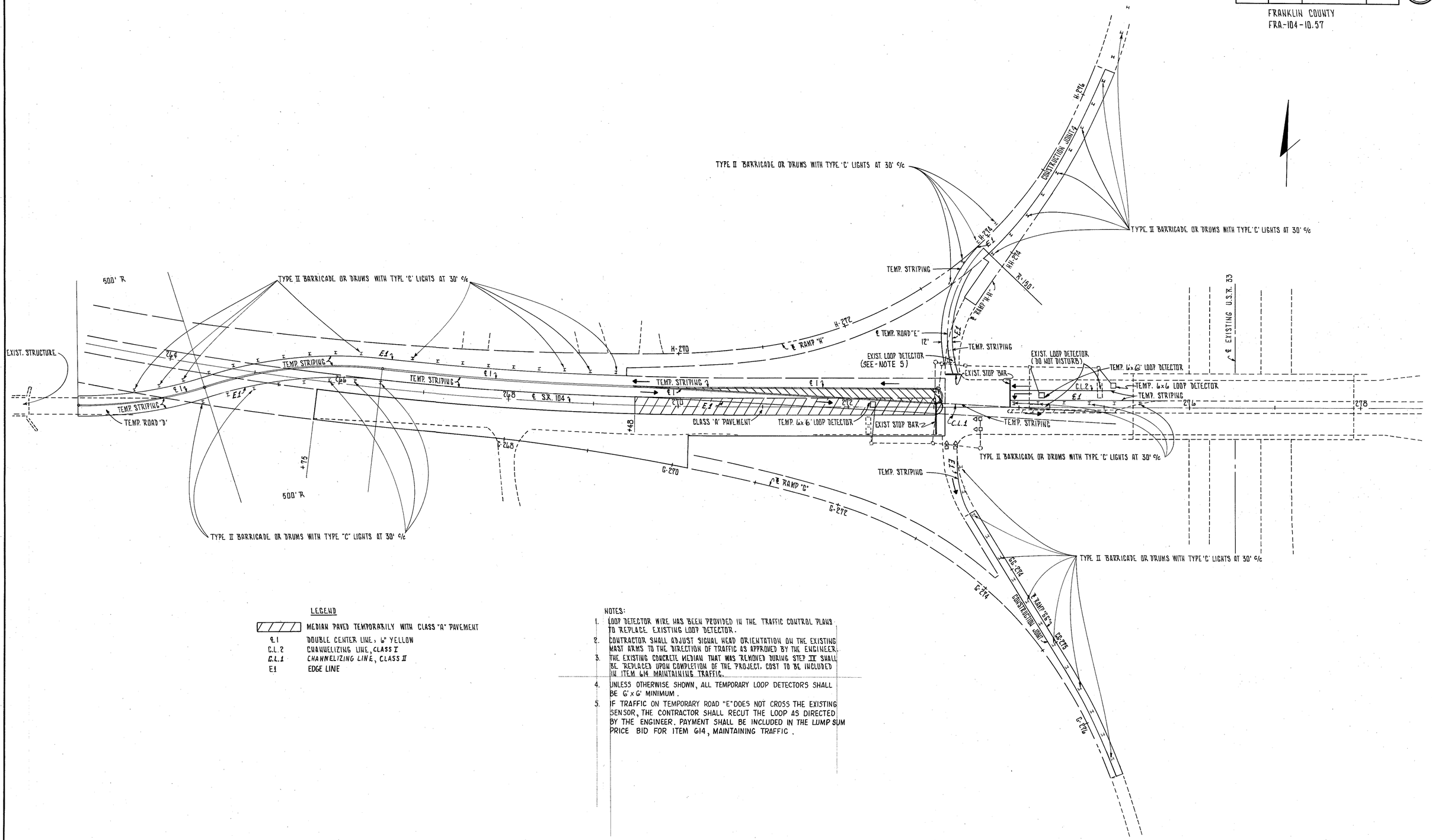
NOTE:

1. CONTRACTOR SHALL ADJUST SIGNAL HEAD ORIENTATION ON THE EXISTING MAST ARMS TO THE DIRECTION OF TRAFFIC AS APPROVED BY THE ENGINEER.
2. UNLESS OTHERWISE SHOWN, ALL TEMPORARY LOOP DETECTORS SHALL BE G'x'G' MINIMUM.

MAINTENANCE OF TRAFFIC STEP IV

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA-104-10.57



LEGEND

▨	MEDIAN PAVED TEMPORARILY WITH CLASS "A" PAVEMENT
℄ 1	DOUBLE CENTER LINE, 6" YELLOW
C.L. 2	CHANNELIZING LINE, CLASS I
C.L. 1	CHANNELIZING LINE, CLASS II
E1	EDGE LINE

NOTES:

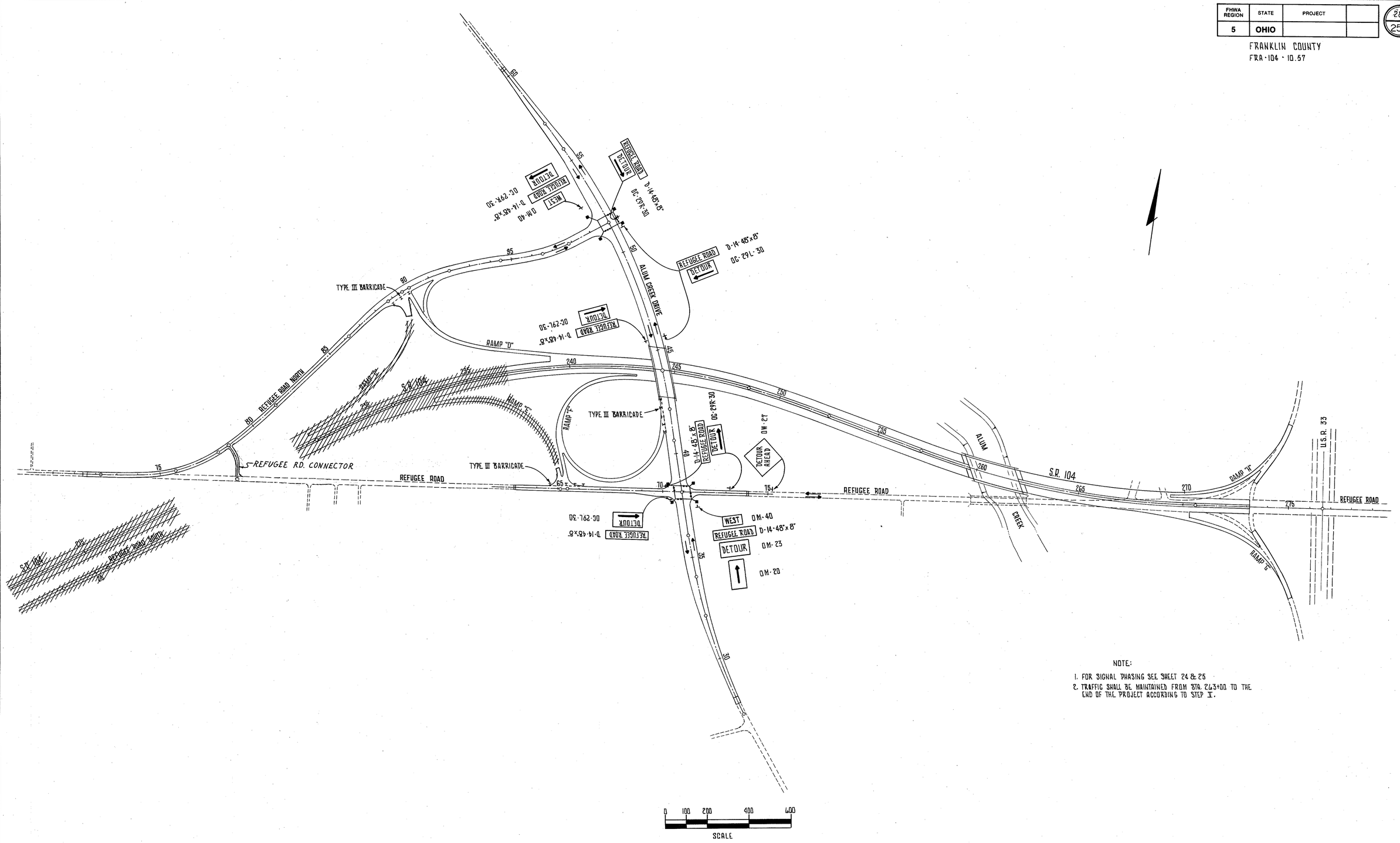
1. LOOP DETECTOR WIRE HAS BEEN PROVIDED IN THE TRAFFIC CONTROL PLANS TO REPLACE EXISTING LOOP DETECTOR.
2. CONTRACTOR SHALL ADJUST SIGNAL HEAD ORIENTATION ON THE EXISTING MAST ARMS TO THE DIRECTION OF TRAFFIC AS APPROVED BY THE ENGINEER.
3. THE EXISTING CONCRETE MEDIAN THAT WAS REMOVED DURING STEP II SHALL BE REPLACED UPON COMPLETION OF THE PROJECT. COST TO BE INCLUDED IN ITEM 614 MAINTAINING TRAFFIC.
4. UNLESS OTHERWISE SHOWN, ALL TEMPORARY LOOP DETECTORS SHALL BE 6'x6' MINIMUM.
5. IF TRAFFIC ON TEMPORARY ROAD "E" DOES NOT CROSS THE EXISTING SENSOR, THE CONTRACTOR SHALL RECUT THE LOOP AS DIRECTED BY THE ENGINEER. PAYMENT SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

MAINTENANCE OF TRAFFIC STEP V

FHWA REGION	STATE	PROJECT	
5	OHIO		

28
254

FRANKLIN COUNTY
FRA-104 - 10.57

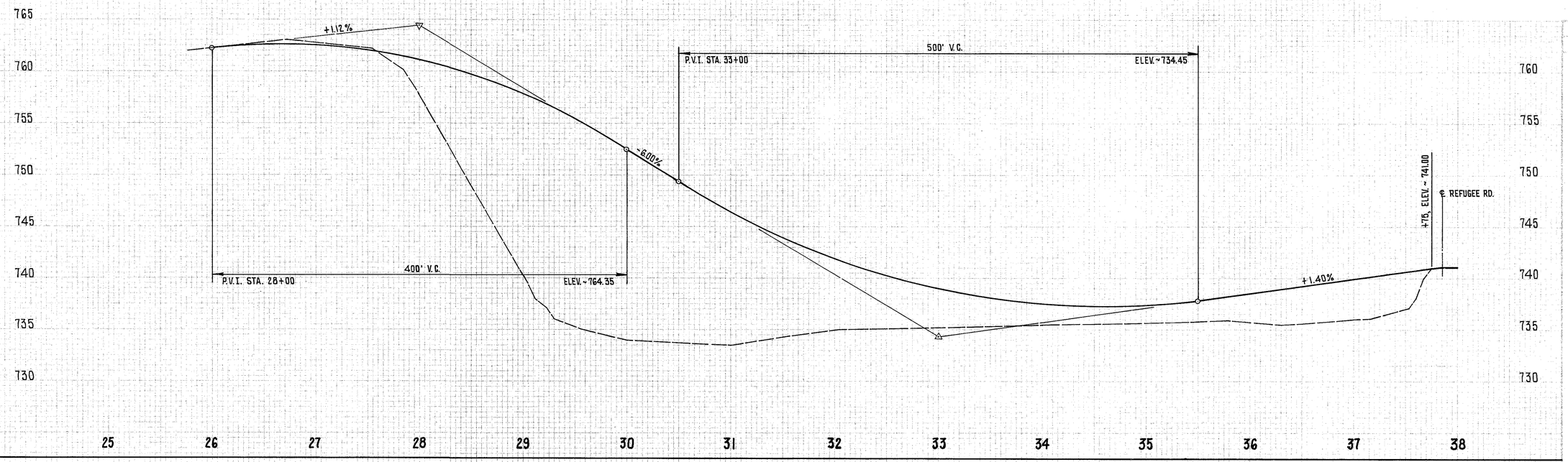


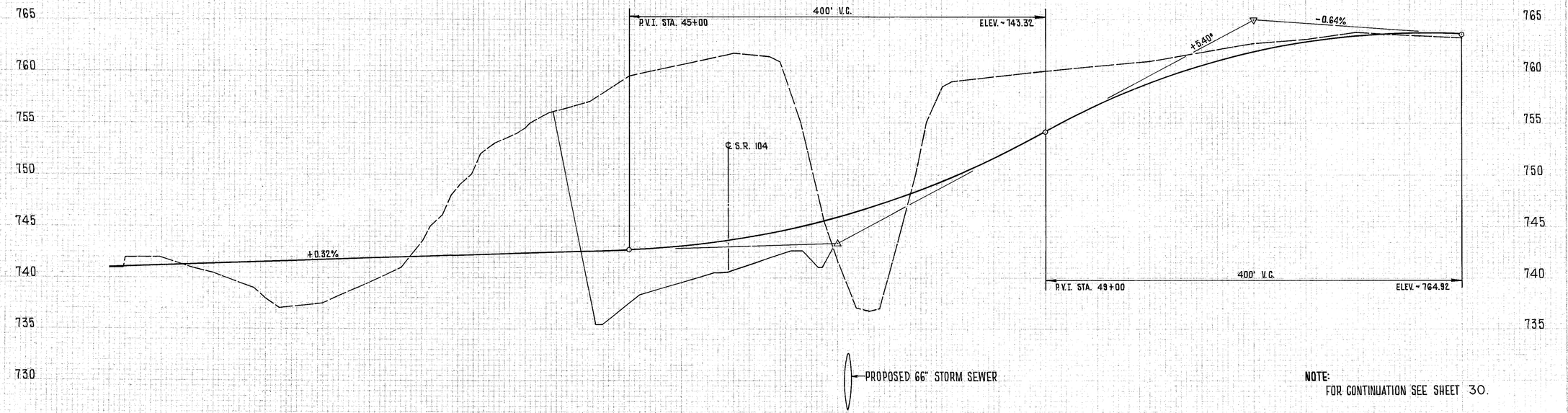
NOTE:

1. FOR SIGNAL PHASING SEE SHEET 24 & 25
2. TRAFFIC SHALL BE MAINTAINED FROM STA. 243+00 TO THE END OF THE PROJECT ACCORDING TO STEP I.

MAINTENANCE OF TRAFFIC STEP VI

FRANKLIN COUNTY
FRA 104 - 10.57



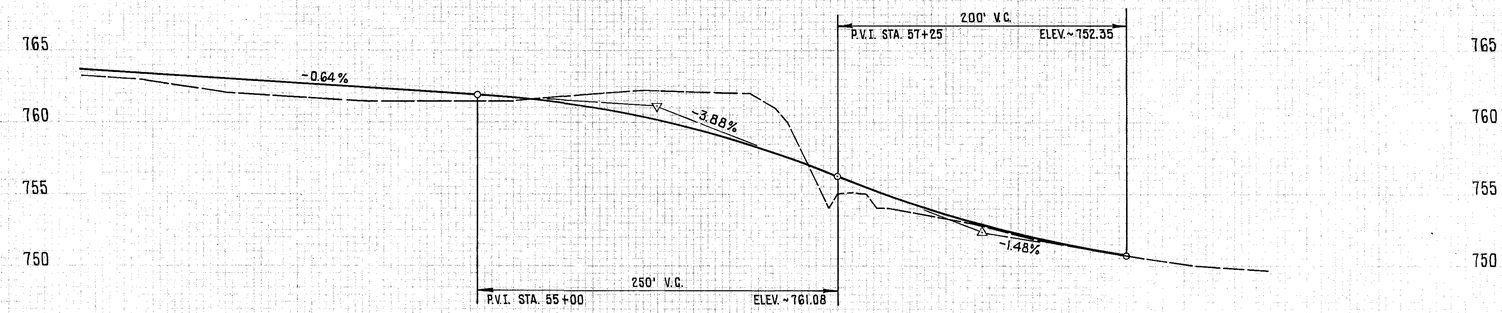


PROPOSED 66" STORM SEWER

NOTE:
FOR CONTINUATION SEE SHEET 30.

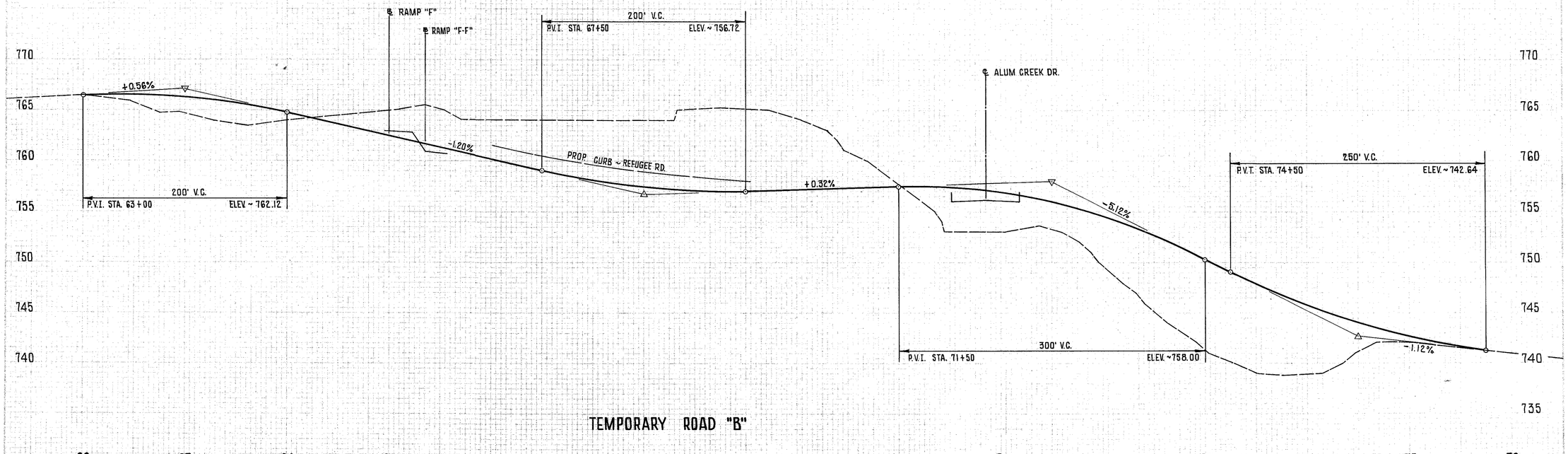
TEMPORARY ROAD "A" ~ STA. 25+00 TO STA. 51+00 PROFILES

FRANKLIN COUNTY
FRA 104-10.57



TEMPORARY ROAD "A"

51 52 53 54 55 56 57 58 59 60



TEMPORARY ROAD "B"

62 63 64 65 66 67 68 69 70 71 72 73 74 75 76

TEMPORARY ROAD "A" ~ STA. 51+00 TO STA. 60+00; TEMPORARY ROAD "B" ~ STA. 62+00 TO STA. 76+00 PROFILES

CALCULATIONS
BRM FUNDS

OHIO	31
FHWA REGION 5	254
FEDERAL PROJECT	

FRANKLIN COUNTY
FRA-104-12.41

S.R. 104 MAINLINE

STA. 258+00 TO STA. 263+00 = 500.00 L.F.
DEDUCT FOR BRIDGE FRA.-104-1279
STA. 259+06.76 TO STA. 262+16.00 = − 309.24 L.F.
TOTAL LENGTH = 190.76 L.F.

AREA = 190.76 L.F. x 24.0' x 2 = 9,156.48 S.F.

MAINLINE ADDITIONAL LANES
AREA = (500.00 L.F. − 309.24 L.F.) x 12.0' x 2 = 4,578.24 S.F.

TOTAL PAV'T. AREA = 13,734.72 S.F.

MAINLINE SHOULDER AREA OUTSIDE
AREA = 190.76 L.F. x 8.0' x 2 = 3,052.16 S.F.

MAINLINE SHOULDER AREA INSIDE
AREA = 190.76 L.F. x 8.25' x 2 = 3,147.54 S.F.

ITEM 404 - 1 1/4" ASPHALT CONCRETE
V = 13,734.72 S.F. x 0.1042' ÷ 27 = 53.0 C.Y.
TOTAL ITEM 404 = 53.0 C.Y.

ITEM 402 - 1 3/4" ASPHALT CONCRETE
V = 13,734.72 S.F. x 0.1458' ÷ 27 = 74.2 C.Y.
TOTAL ITEM 402 = 74.2 C.Y.

ITEM 305 - 9" PORTLAND CEMENT CONCRETE BASE
V = 13,734.72 S.F. ÷ 9 = 1,526.1 S.Y.
TOTAL ITEM 305 = 1,526.1 S.Y.

ITEM 310 - SUBBASE
V = [(13,734.72 S.F. x 0.5') + (3,052.16 S.F. x 0.6667') + (3,147.54 S.F. x 1.0') + ([500.0 L.F. − 259.24 L.F. − 20.0 L.F.] x 3.5' x 0.75') + (596.3 S.Y. (FROM ITEM 611) x 9 x 0.5')] ÷ 27 = 567.2 C.Y.
TOTAL ITEM 310 = 567.2 C.Y.

ITEM 407 - TACK COAT
V = 13,734.72 S.F. ÷ 9 x 0.1 = 152.6 GAL.
TOTAL ITEM 407 = 152.6 GAL.

ITEM 407 - COVER AGGREGATE
V = 13,734.72 S.F. ÷ 9 x 7 ÷ 2,000 = 5.3 TON
TOTAL ITEM 407 = 5.3 TON

ITEM 301 - 6" BITUMINOUS AGGREGATE BASE
V = (3,052.16 S.F. + 3,147.54 S.F.) x 0.5' ÷ 27 = 114.8 C.Y.
TOTAL ITEM 301 = 114.8 C.Y.

ITEM 409 - SEAL COAT BITUMINOUS MATERIAL
V = (3,052.16 S.F. + 3,147.54 S.F.) ÷ 9 x 0.3 = 206.7 GAL.
TOTAL ITEM 409 = 206.7 GAL.

ITEM 409 - SEAL COAT COVER AGGREGATE
V = (3,052.16 S.F. + 3,147.54 S.F.) ÷ 9 x 0.008 = 5.5 C.Y.
TOTAL ITEM 409 = 5.5 C.Y.

ITEM 203 - SUBGRADE COMPACTION
V = [26,073.78 S.F. (FROM ITEM 310) + (190.76 L.F. x 3.0')] ÷ 9 = 2,960.7 S.Y.
TOTAL ITEM 203 = 2,960.7 S.Y.

ITEM 203 - PROOF ROLLING
V = 2,960.7 S.Y. ÷ 3,000 = 1.0 HRS.
TOTAL ITEM 203 = 1.0 HRS.

ITEM 611 - APPROACH SLABS
FRA-104-1279 4.0' x 25.0 L.F. x 53.6667' ÷ 9 = 596.3 S.Y.
TOTAL ITEM 611 = 596.3 S.Y.

ITEM 622 - CONCRETE BARRIER TYPE B 50
500.0 L.F. − (259.24 L.F. + 20.0 L.F.) = 220.8 L.F.
TOTAL ITEM 622 = 220.8 L.F.

ITEM 659 - SEEDING
V = 5,101 S.Y. + 6,295 S.Y. (FROM ALUM CREEK) = 11,396.0 S.Y.
DEDUCT FOR SODDING
367 S.Y + 61 S.Y. + 46 S.Y. + 395 S.Y. + 77 S.Y. = − 946.0 S.Y.
DEDUCT FOR ROCK CHANNEL PROTECTION
(6'x4') + (22'x12') ÷ 9 = − 32.0 S.Y.
TOTAL ITEM 659 = 10418.0 S.Y.

ITEM 659 - AGRICULTURAL LIMING
V = 10,418 S.Y. x 9 x 100 ÷ 1,000 ÷ 2,000 = 4.7 TON
TOTAL ITEM 659 = 5.0 TON

ITEM 659 - COMMERCIAL FERTILIZER
V = (10,418 S.Y. + 946 S.Y. (FROM ITEM 660)) x 9 x 15 ÷ 1,000 ÷ 2,000 = 0.8 TON
TOTAL ITEM 659 = 1.0 TON

ITEM 207 - TEMPORARY SEEDING & MULCHING
V = 10,418 S.Y x 0.20 = 2,084.0 S.Y.
TOTAL ITEM 207 = 2,100.0 S.Y.

ITEM 207 - TEMPORARY SLOPE DRAINS
V = 10 x (5 + 9) = 140.0 L.F.
TOTAL ITEM 207 = 140.0 L.F.

ITEM 207 - TEMPORARY BENCHES, DAMS, DIKES, & SEDIMENT BASINS
V = 5 x 140 = 700.0 C.Y.
TOTAL ITEM 207 = 700.0 C.Y.

ITEM 601 - TYPE C ROCK CHANNEL PROTECTION
V = 140 ÷ 25 = 5.6 C.Y.
TOTAL ITEM 601 = 6.0 C.Y.

ITEM 659 - MOWING
V = 10,418 S.Y. x 0.25 x 9 ÷ 1,000 = 23.4 M.S.F.
TOTAL ITEM 659 = 30.0 M.S.F.

ITEM 659 - COMMERCIAL FERTILIZER
V = (2,100 S.Y. x 10 x 9) + (10,418 S.Y. x 7.5 x 9) ÷ 1,000 ÷ 2,000 = 0.5 TON
TOTAL ITEM 659 = 1.0 TON

ITEM 659 - REPAIR SEEDING & MULCHING
V = 10,418 S.Y. x 0.05 = 520.9 S.Y.
TOTAL ITEM 659 = 600.0 S.Y.

ITEM 659 - WATER
V = 2,100 S.Y. x 9 x 240 ÷ 1,000 ÷ 2,000 = 4.5 M.GAL.
TOTAL ITEM 659 = 10.0 M.GAL.

WATERING & MOWING PERMANENT SEEDED AREAS

ITEM 659 - WATER
V = 10,418 S.Y. x 9 ÷ 1,000 x 120 ÷ 1,000 = 11.3 M.GAL.
TOTAL ITEM 659 = 20.0 M.GAL.

ITEM 659 - MOWING
V = 10,418 S.Y. x 0.25 x 9 ÷ 1,000 = 23.4 M.S.F.
TOTAL ITEM 659 = 30.0 M.S.F.

TOTALS TO GENERAL SUMMARY - BR FUNDS

ITEM 404 - ASPHALT CONCRETE	=	53 C.Y.
ITEM 402 - ASPHALT CONCRETE	=	75 C.Y.
ITEM 305 - 9" PORTLAND CEMENT CONCRETE BASE	=	1,527 S.Y.
ITEM 310 - SUBBASE	=	568 C.Y.
ITEM 407 - TACK COAT	=	153 GAL.
ITEM 407 - COVER AGGREGATE	=	6 TON
ITEM 301 - BITUMINOUS AGGREGATE BASE	=	115 C.Y.
ITEM 409 - SEAL COAT BITUMINOUS MATERIAL	=	207 GAL.
ITEM 409 - SEAL COAT COVER AGGREGATE	=	6 C.Y.
ITEM 203 - SUBGRADE COMPACTION	=	2,961 S.Y.
ITEM 203 - PROOF ROLLING	=	1 HRS.
ITEM 611 - APPROACH SLABS	=	597 S.Y.
ITEM 622 - CONCRETE BARRIER TYPE B 50	=	221 L.F.
ITEM 659 - SEEDING	=	10,418 S.Y.
ITEM 659 - AGRICULTURAL LIMING	=	5 TON
ITEM 659 - COMMERCIAL FERTILIZER	=	1 TON

CALCULATIONS
M FUNDS

CALC: PEB 6-79
CHK: RDB 7-79

FRANKLIN COUNTY
FRA 104-10.57

S.R. 104 MAINLINE
STA. 237+ 00.00 TO STA. 273 + 10.00= 3,610.00L.F.
DEDUCT FOR BRIDGES
~~FRA-104-1060 145 + 52.96 TO 145 + 97.58= 114.57 L.F.~~
~~FRA-104-1111 170 + 41.96 TO 172 + 02.54= 160.58 L.F.~~
~~FRA-104-1158 194 + 03.80 TO 199 + 38.35= 308.85 L.F.~~
FRA-104-1279 259 + 06.76 TO 262 + 26.00= 309.24 L.F.
TOTAL LENGTH = 3,300.76L.F.
AREA= 3,300.76 x 24 x 2= 158,436.48 S.F.
~~RAMP A ENTRANCE STA. 156 + 80.76 TO STA. 156 + 00~~
~~AREA= 1000 x 1/2 (8 + 25)= 17,500.00 S.F.~~

~~RAMP B EXIT STA. 156 + 75.76 TO STA. 161 + 75~~
~~AREA= 1/2 (0 + 12) 100 + (228.86 x 12)~~
~~+1/2 (12 + 18) 194.5 + (15 x 286.10)~~
~~+1/2 (0 + 23) 286.5=~~ 14,527.97 S.F.

~~RAMP C ENTRANCE STA. 221 + 00 TO STA. 221 + 00~~
~~AREA= 1/2 (25 x 1000)=~~ 12,500.00 S.F.

RAMP D EXIT STA. 239 + 50 TO STA. 242 + 34.59
AREA= (12 x 166.5) + 1/2 (6 x 106)
+(16 x 174.05) + 1/2 (23 x 173)= 7,090.30 S.F.

~~RAMP E EXIT STA. 225 + 00 TO STA. 233 + 17~~
~~AREA= 1/2 (100 x 12) + (12 x 143.17)~~
~~+16 x 543) + (12 x 184.51)~~
~~+(1.52 x 400) + 2.8 x 400)~~
~~+ 12 x 220) + 1.6 x 112)=~~ 15,124.94 S.F.

RAMP F ENTRANCE STA. 243 + 29.16 TO STA. 248 + 49.16
AREA= 1/2 (520 x 13)= 3,380.00 S.F.

RAMP G EXIT STA. 267 + 17.08 TO STA. 270 + 12.87
AREA= (158 x 16) + (12 x 65.5) + 1/2 (11 x 66.5)
+1/2 (12 + 6)49.5 + 1/2 (2 + 6) 43.5
+(12 x 142) + 1/2 (6 x 91)= 6,276.25 S.F.

RAMP H ENTRANCE STA. 264 + 18.73 TO STA. 269 + 38.73
AREA= (520 x 12) + 1/2 (13 x 520)= 9,620.00 S.F.

MAINLINE ADDITIONAL LANES
STA. 242 + 34.59 TO STA. 264 + 18.73 LT.
AREA= (2184.14 - 309.24) 12= 22,498.80 S.F.
STA. 243 + 29.16 TO STA. 267 + 17.08 RT
AREA= (2387.92 - 309.24) 12= 24,944.16 S.F.
TOTAL PAVEMENT AREA MAINLINE= 232,245.99 S.F.
MAINLINE SHOULDER AREA OUTSIDE
AREA= [(3,300.76 x 8) 2]-[8(154 + 147 + 154.16 + 169.27)] = 47,816.72 S.F.

MAINLINE SHOULDER AREA INSIDE
AREA= [(3,300.76 x 8.25)2]-[1/2 (8.25 - 6.25) 80 x 2]
-[(1/2 (1 x 40) 4 + (10 x 2)) 4]- [((72 + 10) 3)+(1.5 (60)2)] = 53,476.54 S.F.

MAINLINE
ITEM 404-1 1/4" ASPHALT CONCRETE
V = 232,245.99 x 0.1042 ÷ 27 = 896.3 C.Y.

ITEM 305-9" PORTLAND CEMENT CONCRETE BASE
A= 232,245.99 ÷ 9= 25,805.1 S.Y.

ITEM 310 SUBBASE
V= [(232,245.99 x 0.5) + (47,816.72 x 0.666)
+(53,476.54 x 1) +([3.5 (2,678.76-(1.75 x 8)) + (2 x 40 + 10 x 2) 4
+(82 x 3) + 1.5(60x2)] 0.75)+(140.63 x 9 x 1.25)] ÷ 27 = 7,802.8 C.Y.

ITEM 301 BITUMINOUS AGGREGATE BASE
V= 47,816.72 + 53,476.54 +(360.25 x 0.5 x 2) x 0.5 ÷ 27 = 1,882.5 C.Y.

ITEM 402-1 3/4" ASPHALT CONCRETE
V= 232,245.99 x 0.14583 ÷ 27 = 1,254.1 C.Y.

ITEM 407 COVER AGGREGATE
V= (232,245.99) (7) ÷ 9 ÷ 2,000 = 90.3 TONS

ITEM 407 TACK COAT 0.1 GAL. PER S.Y.
V= (232,245.99 ÷ 9) 0.1 = 2,580.5 GAL.

ITEM 409 SEAL COAT BITUMINOUS MATERIAL
V= (47,816.72 +53,476.54) 0.30 ÷ 9= 3,376.4 GAL.

ITEM 409 SEAL COAT COVER AGGREGATE
V= (47,816.72 +53,476.54)0.008 ÷ 9= 90.0 C.Y.

ITEM 622 CONCRETE BARRIER TYPE B50 STA. 237+00 TO STA. 269+48
L= [3,248 + (1.25 x 8)] - [259.24 + (4x10) + (5x20)] = 2,858.8 L.F.

ITEM 612 CONCRETE MEDIAN
A= [(360.25 x 3.5) + π/2 (1.75)^2] ÷ 9= 140.6 S.Y.

ITEM 203 SUBGRADE COMPACTION
V = [232,245.99 +47,816.72 +53,476.54 +10,152.66 (FROM ITEM 310) + 1,265.69 (FROM ITEM 612) + 5,366.7 (FROM ITEM 611) + (3,300.76 x 3.0')] ÷ 9 = 40,025.2 S.Y.

ITEM 203 PROOF ROLLING
V = 40,025.2 S.Y. ÷ 3,000 = 13.3 HR.

ITEM 611 APPROACH SLABS
FRA-104-1279 4 x 25 L.F. x 53.6667 ÷ 9 = 596.3 S.Y.

RAMP D STA. 231 + 22.41 TO STA. 238 + 94.04
PAV'T. AREA= (266.86 x 16) + 1/2 (16 + 24) 202.1
+1/2 (16 + 24) 209.90 + (16 x 101.26)= 14,129.92 S.F.

RAMP D
SHOULDER AREA= (366.86 x 6) + 1/2 (6 + 8) 100
+(470.86 + 216.30 +28.67) 3= 5,048.65S.F.

RAMP DD STA. 230 + 48.98 TO STA. 234 + 27.18
PAV'T. AREA= (2.62 + 2.90) 400 + (18 x 208.245)= 5,956.41 S.F.
SHOULDER AREA= (218.68 x 6) 1,312.08 S.F.

RAMP F STA. 229+64 TO STA. 243+29.16
PAV'T. AREA = (5.6 x 400) +(701.11 x 16) +(1/2 [4 x 401]) +(1/2 [32 +16] x 308.43) +(16 x 253.37) +(44.5 x [4 + 16.5 ÷ 2]) +(30 x 3) +(404.16 x 6) +(434.76 x 3) +([6 + 8 ÷ 2] x 250) +([7 +12 ÷ 2] x 100) +([9 +12 ÷ 2] x 54.16) = 32,538.04 S.F.
SHOULDER AREA =([939.90 -404.16] x 6) +([617.57 - 30.0] x 3) +(434.76 x 3) +(200 x 3) +([4 +10 ÷ 2] x 20) +(100 x 14 ÷ 2) + (400 x 5.3) = 9,841.43 S.F.

RAMP FF STA. 235+71.50 TO STA. 237+85.84
PAV'T. AREA = (73.43 x 16) +(4.03 x 16 ÷ 2) +(19.93 x 3) +([71.44 x 7.18 ÷ 21 x 2) +([7.18 x 6.02 ÷ 2] x 2) +(50^2 x [0.63192 -0.56356]) +([6 + 2 ÷ 21 x 40.20) +(51.5 x 25) +(89.41 x 19) = 5,141.06 S.F.
SHOULDER AREA = (23 + 19.93 + 140.91 + 40.20 +51.50) x 3 = 826.62 S.F.

RAMP G & GG STA. 270 + 15.77 TO STA. 276 + 69.31
PAV'T. AREA= (661.79 + 102) 16 + 1/2 (6 x 20)
+(1.9 x 400)= 13,040.64 S.F.
SHOULDER AREA= 1/2 (8+6) 100 + (365.97 x 3) + (553.54 + 54)6+ 6 (232 + 123.68) + 1/2 (6+16) 27.5= 7,879.73 S.F.

RAMP H & HH STA. 269 + 38.73 TO STA. 276 + 37.23
PAV'T. AREA= (445.17 + 90.4) 16 + (152 x 24)
+(12 x 110.10) +(3.1 x 400)= 14,778.32 S.F.

RAMP H & HH
SHOULDER AREA= 1/2 (8 + 6) 100 + (598.5 + 15.5) 6
+(248) 3 + 1/2 (6 + 16) 36.3
+(400 x 5.14)= 9,472.7 S.F.

TOTAL RAMP PAVEMENT AREA
A= RAMP D = 14,129.92S.F.
RAMP DD = 5,956.41 S.F.
RAMP F = 32,538.04S.F.
RAMP FF = 5,141.06S.F.
RAMP G & GG = 13,040.64S.F.
RAMP H & HH = 14,778.32 S.F.
TOTAL = 85,584.39 S.F.

TOTAL RAMP SHOULDER AREA
A = RAMP D = 5,048.65S.F.
RAMP DD = 1,312.08S.F.
RAMP F = 9,841.43 S.F.
RAMP FF = 826.62 S.F.
RAMP G & GG = 7,879.73S.F.
RAMP H & HH = 9,472.70 S.F.
TOTAL = 34,381.21 S.F.

RAMP C
PAV'T. AREA - FULL DEPTH = (116.5 x 21.5 ÷ 2) +(16 x 21.5) +(16 x 30 ÷ 2) +(50 x [16+6 ÷2]) +(22 x 3) = 2,452.38 S.F.
PAV'T. AREA - BASE = (97.0 x [(302.48 + 286.48 ÷ 2) ÷ 286.48] x 16) + (25 x 16 ÷ 2) + (122.0 x 13.5 ÷ 2) + (.404 x [0.97416 - 0.77231]) = 2,941.80 S.F.
SHOULDER AREA = (97.0 x [(305.48+302.48 ÷ 2) ÷ 286.48] x 3) + (82.0 x 6) = 800.78 S.F

RAMP E
PAV'T. AREA - FULL DEPTH = (24 x 5 ÷ 2) + (42 x 5) + (42 x 12.5 ÷ 2) +(17.5 x 6 ÷ 2) +([18.5 + 23 ÷ 2] x 16) +([23 + 27 ÷ 2] x [15 + 13 ÷ 2]) +(25 x 8 ÷ 2) + (36 x 3) = 1,475.00S.F.
PAV'T. AREA - BASE = (50^2 x [1.42815 - 0.95993]) -([24 x 5 ÷ 2] +[42 x 5] +[42 x 12.5 ÷ 2] +[17.5 x 6 ÷ 2]) +(53.5 x 16) = 1,441.55 S.F.
SHOULDER AREA = (95.99 x 6) + (55 x 3) = 740.94S.F.

~~REFUGEE ROAD SOUTH STA. 0 + 25.00 TO STA. 37 + 00~~
~~ITEM 848 1 1/4" ASPHALT CONCRETE~~
~~V= 1/2 (10 + 24) 50 + 1/2 (24 + 28) 34.35 + (24 x 2680.67) 0.125 ÷ 27=~~ 296.30 C.Y.

~~ITEM 848 1 1/2" ASPHALT CONCRETE~~
~~V= SEE ITEM 404~~ 306.30 C.Y.

~~ITEM 301 6" BITUMINOUS AGGREGATE BASE~~
~~V= (166,181.34 x 0.5) + (2775 x 0.5 x 2 x 0.25) ÷ 27=~~ 1,325.27 C.Y.

~~ITEM 304 6" AGGREGATE BASE~~
~~V= (166,181.34 x 0.5) + (2775 x 1.0 x 2.0 x 0.5) ÷ 27=~~ 1,328.26 C.Y.

~~ITEM 605 AGGREGATE DRAINS~~
~~L= (2775 ÷ 50) + 2) x 10 (2)=~~ 1,250.00 L.F.

~~REFUGEE ROAD STA. 62 + 90 TO STA. 79 + 10~~
~~ITEM 848 1 1/4" ASPHALT CONCRETE~~
~~V= [(1/2 (20 + 24) 60 + (24 x 687.18) + 1/2 (12 x 100) + 3 (40 x 2.5) 1/2 +(93.07 x 12) + (24 x 277.94) + 400 (1.05 + 2.20 + 2.03 + 0.63)] 0.1041? + 1/2 (0.08 x 20 x 10) + 1/2 (0.09 x 24 x 10)] ÷ 27=~~ 142.78 C.Y.

~~ITEM 848 1 1/4" ASPHALT CONCRETE~~
~~V= (29.05.72 x 0.1041? ÷ 27)~~ 111.11 C.Y.

CALCULATIONS
M FUNDS

OHIO | FHWA REGION 5 | FEDERAL PROJECT

33
254

FRANKLIN COUNTY
FRA-104-12.41

RAMPS

ITEM 404 - 1-1/4" ASPHALT CONCRETE
RAMP C V = 2,452.38 S.F. x 0.1042' ÷ 27 = 9.5 C.Y.
RAMP E V = 1,475.00 S.F. x 0.1042' ÷ 27 = 5.7 C.Y.
V = 85,584.39 S.F. x 0.1042' ÷ 27 = 330.3 C.Y.
TOTAL ITEM 404 = 345.5 C.Y.

ITEM 402 - 1-3/4" ASPHALT CONCRETE
RAMP C V = 2,452.38 S.F. x 0.1458' ÷ 27 = 13.2 C.Y.
RAMP E V = 1,475.00 S.F. x 0.1458' ÷ 27 = 8.0 C.Y.
V = 85,584.39 S.F. x 0.1458' ÷ 27 = 462.2 C.Y.
TOTAL ITEM 402 = 483.4 C.Y.

ITEM 305 - 9" PORTLAND CEMENT CONCRETE BASE
RAMP C V = (2,452.38 S.F. + 2,941.80 S.F.) ÷ 9 = 599.4 S.Y.
RAMP E V = (1,475.00 S.F. + 1,441.55 S.F.) ÷ 9 = 324.1 S.Y.
V = 85,584.39 S.F. ÷ 9 = 9,509.4 S.Y.
TOTAL ITEM 305 = 10,432.9 S.Y.

ITEM 310 - SUBBASE
RAMP C V = ([2,452.38 S.F. + 2,941.80 S.F.] x 0.5') + (800.78 S.F. x 1.0') ÷ 27 = 129.6 C.Y.
RAMP E V = ([1,475.00 S.F. + 1,441.55 S.F.] x 0.5') + (740.94 S.F. x 1.0') ÷ 27 = 81.5 C.Y.
V = (85,584.39 S.F. x 0.5') + (34,381.21 S.F. x 1.0') ÷ 27 = 2,858.3 C.Y.
TOTAL ITEM 310 = 3,069.4 C.Y.

ITEM 407 - TACK COAT
RAMP C V = 2,452.38 S.F. ÷ 9 x 0.1 = 27.2 GAL.
RAMP E V = 1,475.00 S.F. ÷ 9 x 0.1 = 16.4 GAL.
V = 85,584.39 S.F. ÷ 9 x 0.1 = 950.9 GAL.
TOTAL ITEM 407 = 994.5 GAL.

ITEM 407 - COVER AGGREGATE
RAMP C V = 2,452.38 S.F. ÷ 9 x 7 ÷ 2,000 = 1.0 TON
RAMP E V = 1,475.00 S.F. ÷ 9 x 7 ÷ 2,000 = 1.0 TON
V = 85,584.39 S.F. ÷ 9 x 7 ÷ 2,000 = 33.3 TON
TOTAL ITEM 407 = 35.3 TON

ITEM 301 - 6" BITUMINOUS AGGREGATE BASE
V = 34,381.21 S.F. x 0.5' ÷ 27 = 636.7 C.Y.
TOTAL ITEM 301 = 636.7 C.Y.

ITEM 409 - SEAL COAT BITUMINOUS MATERIAL
V = 34,381.21 S.F. ÷ 9 x 0.3 = 1,146.0 GAL.
TOTAL ITEM 409 = 1,146.0 GAL.

ITEM 409 - SEAL COAT COVER AGGREGATE
V = 34,381.21 S.F. ÷ 9 x 0.008 = 30.6 C.Y.
TOTAL ITEM 409 = 30.6 C.Y.

ITEM 203 - SUBGRADE COMPACTION
V = ([85,584.39 S.F. + 34,381.21 S.F. (FROM ITEM 310)] + [2,452.38 S.F. + 2,941.80 S.F. + 800.78 S.F. (FROM RAMP C)] + [1,475.00 S.F. + 1,441.55 S.F. + 740.94 S.F. (FROM RAMP E)] + [4,306.37 L.F. x 3.0'] + [361.0 L.F. (FROM ITEM 609) x 2.5']) ÷ 9 = 15,960.0 S.Y.
TOTAL ITEM 203 = 15,960.0 S.Y.

ITEM 203 - PROOF ROLLING
V = 15,960.0 S.Y. ÷ 3,000 = 5.3 HRS.
TOTAL ITEM 203 = 5.3 HRS.

REFUGEE ROAD CONNECTION
AREA = (134.5 L.F. x 14.0') + (50.0'² x 0.15370) + (10.0'² x 0.21460) + (50.0' x 0.16737) = 2,707.14 S.F.

ITEM 404 - 1-1/4" ASPHALT CONCRETE
V = 2,707.14 S.F. x 0.1042' ÷ 27 = 10.4 C.Y.
TOTAL ITEM 404 = 10.4 C.Y.

ITEM 403 - 1-1/4" ASPHALT CONCRETE
V = 2,707.14 S.F. x 0.1042' ÷ 27 = 10.4 C.Y.
TOTAL ITEM 403 = 10.4 C.Y.

ITEM 305 - 8" PORTLAND CEMENT CONCRETE BASE
V = [2,707.14 S.F. + (115.0 L.F. x 0.5') + (124.3 L.F. x 0.5')] ÷ 9 = 314.1 S.Y.
TOTAL ITEM 305 = 314.1 S.Y.

ITEM 310 - SUBBASE
V = [2,707.14 S.F. + (115.0 L.F. x 1.0') + (124.3 L.F. x 1.0')] x 0.5' ÷ 27 = 54.6 C.Y.
TOTAL ITEM 310 = 54.6 C.Y.

ITEM 407 - TACK COAT
V = 2,707.14 S.F. ÷ 9 x 0.1 = 30.1 GAL.
TOTAL ITEM 407 = 30.1 GAL.

ITEM 407 - COVER AGGREGATE
V = 2,707.14 S.F. ÷ 9 x 7 ÷ 2,000 = 1.1 TON
TOTAL ITEM 407 = 1.1 TON

ITEM 203 - SUBGRADE COMPACTION
V = [2,707.14 S.F. + (115.0 L.F. x 1.5') + (124.3 L.F. x 1.5') + (87.27 L.F. (FROM ITEM 609) x 2.5')] ÷ 9 = 364.9 S.Y.
TOTAL ITEM 203 = 364.9 S.Y.

ITEM 203 - PROOF ROLLING
V = 364.9 S.Y. ÷ 3,000 = 0.1 HRS.
TOTAL ITEM 203 = 0.1 HRS.

REFUGEE ROAD
FULL DEPTH STA. 44+04 TO STA. 47+70
AREA = (172.0 L.F. x 10.5' ÷ 2) + (72.0 L.F. x 10.5') + (72.0 L.F. x 10.5' ÷ 2) + (122.0 L.F. x 21.0') + (45.0 L.F. x 10.0' ÷ 2) = 4,824.00 S.F.

RESURFACING STA. 47+70 TO STA. 63+00
AREA = 1,530.0 L.F. x 21.0' = 32,130.00 S.F.

FULL DEPTH STA. 63+00 TO STA. 72+23.
AREA = [1/2 (20.0' + 24.0') x 60.0 L.F.] + [24.0' x 697.18 L.F.] + [1/2 (12.0' x 100.0 L.F.)] + [3 x (40.0 L.F. x 2.5') 1/2] + [93.07 L.F. x 12.0'] + [400 x (1.05 + 2.20 + 2.03 + 0.93)] + [98.94 L.F. x 24.0'] = 24,777.72 S.F.

STA. 72+23 TO STA. 74+00
AREA = 179.0 L.F. x 24.0' = 4,296.00 S.F.

ITEM 404 - 1-1/4" ASPHALT CONCRETE
V = 4,824.00 S.F. x 0.1042' ÷ 27 = 18.6 C.Y.
32,130.00 S.F. x 0.1042' ÷ 27 = 124.0 C.Y.
24,777.72 S.F. x 0.1042' ÷ 27 = 95.6 C.Y.
1-1/2" ASPHALT CONCRETE
[4,296.00 S.F. x 0.125'] + [1/2 (0.09' x 24.0' x 10.0')] ÷ 27 = 20.3 C.Y.
TOTAL ITEM 404 = 255.2 C.Y.

ITEM 411 - STABILIZED CRUSHED AGGREGATE
V = 289.0 L.F. x 3.0' x 0.125' ÷ 27 = 4.0 C.Y.
(1,607.0 L.F. x 3.0' x 0.125' ÷ 27) x 2 = 44.6 C.Y.
TOTAL ITEM 411 = 48.6 C.Y.

ITEM 402 - 1-1/2" ASPHALT CONCRETE
V = 4,296.00 S.F. x 0.125' ÷ 27 = 19.9 C.Y.
TOTAL ITEM 402 = 19.9 C.Y.

ITEM 403 - 1-1/4" ASPHALT CONCRETE
V = 4,824.00 S.F. x 0.1042' ÷ 27 = 18.6 C.Y.
32,130.00 S.F. x 0.1042' ÷ 27 = 124.0 C.Y.
24,777.72 S.F. x 0.1042' ÷ 27 = 95.6 C.Y.
TOTAL ITEM 403 = 238.2 C.Y.

ITEM 305 - 8" PORTLAND CEMENT CONCRETE BASE
V = [4,824.00 S.F. + (77.0 L.F. x 0.5') + (366.0 L.F. x 0.5')] ÷ 9 = 560.6 S.Y.
[24,777.72 S.F. + (0.5' x [138.52 L.F. x 2])] ÷ 9 = 2,768.5 S.Y.
TOTAL ITEM 305 = 3,831.7 S.Y.

ITEM 310 - SUBBASE
V = [4,824.00 S.F. + (77.0 L.F. x 1.0') + (366.0 L.F. x 1.0')] x 0.5' ÷ 27 = 97.5 C.Y.
[24,777.72 S.F. + (1.0' x [138.52 L.F. x 2])] x 0.5' ÷ 27 = 464.0 C.Y.
TOTAL ITEM 310 = 561.5 C.Y.

ITEM 407 - TACK COAT
V = 4,824.00 S.F. ÷ 9 x 0.1 = 53.6 GAL.
32,130.00 S.F. ÷ 9 x 0.1 = 357.0 GAL.
24,777.72 S.F. ÷ 9 x 0.1 = 275.3 GAL.
TOTAL ITEM 407 = 685.9 GAL.

ITEM 407 - COVER AGGREGATE
V = 4,824.00 S.F. ÷ 9 x 7 ÷ 2,000 = 1.9 TON
32,130.00 S.F. ÷ 9 x 7 ÷ 2,000 = 12.5 TON
24,777.72 S.F. ÷ 9 x 7 ÷ 2,000 = 9.6 TON
TOTAL ITEM 407 = 24.0 TON

ITEM 301 - 6" BITUMINOUS AGGREGATE BASE
V = [4,296.00 S.F. + ([179.0 L.F. x 2] x 0.5')] x 0.5' ÷ 27 = 82.9 C.Y.
TOTAL ITEM 301 = 82.9 C.Y.

ITEM 304 - 6" AGGREGATE BASE
V = [4,296.00 S.F. + ([179.0 L.F. x 2] x 1.0')] x 0.5' ÷ 27 = 86.2 C.Y.
TOTAL ITEM 304 = 86.2 C.Y.

ITEM 203 - SUBGRADE COMPACTION
V = [4,824.00 S.F. + 24,777.72 S.F. + 4,296.00 S.F. + (366.0 L.F. x 1.5') + (77.0 L.F. x 1.5') + (237.53 L.F. x 1.5') + (217.0 L.F. x 1.5') + (138.52 L.F. x 3.0') + (1,346.69 L.F. (FROM ITEM 609) x 2.5') + (99.0 L.F. (FROM ITEM 609) x 0.5')] ÷ 9 = 4,341.8 S.Y.
TOTAL ITEM 203 = 4,341.8 S.Y.

ITEM 203 - PROOF ROLLING
V = 4,341.8 S.Y. ÷ 3,000 = 1.4 HRS.
TOTAL ITEM 203 = 1.4 HRS.

ITEM 609 - TYPE 2 CURB & GUTTER
(580.23 L.F. + 70.34 L.F. + 86.74 L.F. + 70.34 L.F. + 86.74 L.F. + 395.90 L.F. + 56.40 L.F. = 1,346.69 L.F.
TOTAL ITEM 609 = 1,346.69 L.F.

ITEM 609 - TYPE 6 CURB
AT SERVICE STATION = 13 + 13 + 13 + (12 x 5) = 99.00 L.F.
TOTAL ITEM 609 = 99.00 L.F.

ITEM 605 - AGGREGATE DRAINS
([(138.52 L.F. + 217.0 L.F. + 77.0 L.F. + 336.0 L.F.) ÷ 50] + 2) x (10 x 2) = 347.4 L.F.
TOTAL ITEM 605 = 347.4 L.F.

ITEM SPECIAL 605 - 4" UNDERDRAIN = 1,346.69 L.F.
TOTAL ITEM SPEC. = 1,346.69 L.F.

CALCULATIONS
M FUNDS

CALC: PCB. 4-79
CHK: RDB 7-79

FRANKLIN COUNTY
FRA 104-10.57

REFUGEE ROAD NORTH STA. 71+40 TO STA. 99+68

ITEM 404 - 1 1/4" ASPHALT CONCRETE
V= [(1/2 (20+24)40 + (24 x 2768) + 1/2(12 x 360) + (2 x 40 x 2.5) 1/2 + (12 x 537.25) + 1/2(16+12) 80 + (24 x 665.75) + (7.5 x 158.5) + 1/2(2+10) 34.8 + (3.5 x 400 x 2) 0.10417 + (0.13 x 20 x 20)] ÷ 27 = 377.50 C.Y

ITEM 203 - SUBGRADE COMPACTION
V= [97,346.55 S.F. + (5,252.4 L.F. (FROM ITEM 609) x 2.5') + (329.0 L.F. (FROM ITEM 609) x 0.5') + (40.0 L.F. x 2 x 1.5')] ÷ 9 = 12,306.9 S.Y.

ITEM 203 - PROOF ROLLING
V= 12,306.9 S.Y. ÷ 3,000 = 4.1 HRS.

ITEM 403 1 1/4" ASPHALT CONCRETE
V= 97346.55 x 0.10417 ÷ 27= 375.58 C.Y.

ITEM 305 8" PORTLAND CEMENT CONCRETE BASE
V= [97,346.55 + 0.5 (40 x 2)] ÷ 9= 10,820.73 C.Y.

ITEM 407 TACK COAT
V= 97,346.55 x 0.1 ÷ 9= 1,081.63 GAL.

ITEM 407 COVER AGGR. - 97,346.55 (7) ÷ 9 (2000)= 37.86 TONS

ITEM 609 TYPE 2 CURB & GUTTER
L= [2659.78 + (46.61 + 65.27 + 48.15)2 + 649.54 + 1637 + 119 + 159.52 + 167.5] - [70+390] = 5,252.4 L.F.

ITEM 609 TYPE 6 CURB
L= 141 + 188= 329.00 L.F.

ITEM 310 SUBBASE TYPE II
V= [(97,346.55 x 0.5) + 0.5 (40 x 2)] ÷ 27= 1,804.20 C.Y.

ITEM SPECIAL 605 4" UNDERDRAIN
L= 5,252.4 = 5,252.4 L.F.

ITEM 605 AGGREGATE DRAINS
L= [(40 ÷ 50) + (100 ÷ 50) + 2] x [10 x 2] = 96.00 L.F.

ALUM CREEK DRIVE STA. 28 + 05.65 TO STA. 42 + 45.61
PAV'T. AREA= 1/2 (24 + 48) 360 + 1/2 (48 + 56) 120 + 1/2 (53+50)120 + 1/2 (50 + 61) 120 + (61 x 228.85) + (3 x 1.5 - π/2 (1.5)²) 2 + (64x 119) + (121.5 x 61) + 1/2 (50+61)120 + (50 x 130.61) + 1/2 (6 x 216) + 1/2 (10 + 1.5) 41= 75,103.53 S.F.

ALUM CREEK DRIVE STA. 45 + 35.89 TO STA. 60 + 39.00
PAV'T. AREA= (50 x 258.11) + 1/2 (50 + 61) 120 + (61 x 201.5) + (3 x 1.5 - π/2 (1.5)²)2 + (64 x 116) + 61 x 107.5) + 1/2 (61 + 51.83) 100 + 1/2 (50 + 51.83) 20 + 1/2(50+53)100 + 1/2(56 + 24) 480 + (12x152.33) + 1/2 (12 x 100)= 79,280.53 S.F.

ITEM 404 1 1/4" ASPHALT CONCRETE
V= [(75,103.53 + 79,280.53) 0.10417 + 1/2 (30 x 24) 0.36 + 1/2 (11 x 24) 0.11] ÷ 27= 600.97 C.Y.

ITEM 403 1 1/4" ASPHALT CONCRETE
V= (75,103.53 + 79,280.53) 0.20417 ÷ 27= 595.63 C.Y.

ITEM 407 COVER AGG. [(75,103.53+79,280.53+30(24)+11(24)] 7 ÷ 9(2000)= 60.42 TONS

ITEM 407 TACK COAT
V= [(75,103.53 + 79,280.53) + (30 x 24) + 11 x 24)] 0.1 ÷ 9= 1,726.31 GAL.

ITEM 305 8" PORTLAND CEMENT CONCRETE BASE
A= [(75,103.53 + 79,280.53) + 0.5 (600 + 600) 2] ÷ 9= 17,287.11 S.Y.

ITEM 310 6" SUBBASE TYPE II
V= [(75,103.53 + 79,280.53) 0.5 + (1200 x 2) ÷ 27= 2,903.41 C.Y.
V= [(600 x 3 x 2)2 x 0.875 + (1200 x 2)(0.5 x 0.375)] ÷ 27= 250.00 C.Y.
T= 3153.41 C.Y.

ITEM 609 TYPE 2 CURB & GUTTER
L= 346.45 + 331.46 + 196.0 + 173.17 + 389.2 + 930 + 494.05 + 153.12= 3,013.45 L.F.

ITEM SPECIAL 605 4" UNDERDRAIN
L= 3013.45= 3,013.45 L.F.

ITEM 301 6" BITUMINOUS AGGREGATE BASE
V= [(600 x4x2) 2 x 0.500 - (1200 x 2)(0.5x0.29[illegible] 164.84 C.Y.

ITEM 409 SEAL COAT BITUMINOUS MATERIAL
V= 9600 x 0.30 ÷ 9= 320.00 GAL.

ITEM 409 SEAL COAT COVER AGGREGATE
V= 9600 x 0.008 ÷ 9= 8.53 C.Y.

ITEM 605 AGGREGATE DRAINS
L= [(1200 ÷ 50) + 2] (10 + 22)= 832.00 L.F.

ITEM 612 CONCRETE MEDIAN
A= [1/2 (3 + 14) 120 x 2 + (3 x 227.35) + π/2 (1.5² 2 + (120 x 3) + 1/2 (3 + 14) 120 + (14 x 155.08) + (14 x 282.60) + 1/2 (14 + 3) 120 + (3 x 200) + π/2 (1.5,² 2 + (106 N 3) + 1/2(3 + 12.67) 120 + 1/2 (12.67 3) 100 + 1/2 (4 + 10) 14.5 + 1/2 (9.5 + 3.5) 14.5] ÷ 9= 1,566.80 S.Y.

ITEM 203 - SUBGRADE COMPACTION
V = [75,103.53 S.F. + 79,280.53 S.F. + (1,200.0 L.F. x 2) + (600.0 L.F. x 3.0' x 2) + (1,200.0 L.F. x 2) + (869.60 L.F. x 3.0') + (3,013.45 L.F. (FROM ITEM 609) x 2.5')] ÷ 9 = 19,214.1 S.Y.

ITEM 203 - PROOF ROLLING
V = 19,214.1 S.Y. ÷ 3,000 = 6.4 HRS.

~~ITEM 310 SUBBASE TYPE II (UNDER APPROACH SLABS)~~
~~V= x 0.5 ÷ 3=~~ ~~C.Y.~~

~~ITEM SPECIAL 605 4" UNDERDRAINS~~
~~REFUGEE ROAD~~ 1,346.89 L.F.
~~REFUGEE ROAD NORTH~~ 5,712.40 L.F.
~~ALUM CREEK DRIVE~~ 3,033.45 L.F.
10,092.54 L.F.

~~TOTAL ITEM SPECIAL TO GENERAL SUMMARY=~~ 10,093.00 L.F.

~~ITEM 404 ASPHALT CONCRETE SURFACE COURSE TYPE I~~
~~S.R. 104 MAINLINE~~ ~~C.Y.~~
~~RAMPS~~ ~~C.Y.~~
~~REFUGEE ROAD~~ 112.79 C.Y.
~~REFUGEE ROAD NORTH~~ 377.50 C.Y.
~~ALUM CREEK DRIVE~~ 600.97 C.Y.
~~C.Y.~~
~~TOTAL ITEM 848 TO GENERAL SUMMARY=~~ ~~C.Y.~~

~~ITEM 848 ASPHALT CONCRETE INTERMEDIATE COURSE TYPE 2~~
~~S.R. 104 MAINLINE~~ ~~C.Y.~~
~~RAMPS~~ ~~C.Y.~~
~~REFUGEE ROAD~~ ~~C.Y.~~
~~REFUGEE ROAD NORTH~~ ~~C.Y.~~
~~ALUM CREEK DRIVE~~ 595.63 C.Y.
~~C.Y.~~
~~TOTAL ITEM 848 TO GENERAL SUMMARY=~~ ~~C.Y.~~

~~ITEM 301 8" PORTLAND CEMENT CONCRETE BASE~~
~~S.R. 104~~ ~~S.Y.~~
~~RAMPS~~ ~~S.Y.~~
~~S.Y.~~
~~TOTAL ITEM 301 TO GENERAL SUMMARY=~~ ~~S.Y.~~

~~ITEM 301 8" PORTLAND CEMENT CONCRETE BASE~~
~~REFUGEE ROAD~~ 3,771.08 S.Y.
~~REFUGEE ROAD NORTH~~ 10,820.73 S.Y.
~~ALUM CREEK DRIVE~~ 17,287.11 S.Y.
31,878.92 S.Y.
~~TOTAL ITEM 301 TO GENERAL SUMMARY=~~ 32,379.00 S.Y.

~~ITEM 310 SUBBASE TYPE II~~
~~S.R. 104 MAINLINE~~ ~~C.Y.~~
~~RAMPS~~ ~~C.Y.~~
~~REFUGEE ROAD~~ 551.45 C.Y.
~~REFUGEE ROAD NORTH~~ 1,804.20 C.Y.
~~ALUM CREEK DRIVE~~ 2,153.41 C.Y.
~~UNDER APPROACH SLABS~~ ~~C.Y.~~
~~C.Y.~~
~~TOTAL ITEM 310 TO GENERAL SUMMARY=~~ ~~C.Y.~~

~~ITEM 301 BITUMINOUS AGGREGATE BASE~~
~~S.R. 104 MAINLINE~~ ~~C.Y.~~
~~RAMPS~~ ~~C.Y.~~
~~ALUM CREEK DRIVE~~ 164.84 C.Y.
~~C.Y.~~
~~TOTAL ITEM 301 TO GENERAL SUMMARY=~~ ~~C.Y.~~

~~ITEM 407 TACK COAT~~
~~S.R. 104 MAINLINE~~ ~~GAL.~~
~~RAMPS~~ ~~GAL.~~
~~REFUGEE ROAD~~ 327.93 GAL.
~~REFUGEE ROAD NORTH~~ 1,081.63 GAL.
~~ALUM CREEK DRIVE~~ 1,726.31 GAL.
12,638.56 GAL.
~~TOTAL ITEM 407 TO GENERAL SUMMARY=~~ ~~GAL.~~

CALCULATIONS
M FUNDS

	OHIO
	FHWA REGION 5
	FEDERAL PROJECT

35/254

FRANKLIN COUNTY
FRA-104-12.41

ITEM 404 – 1-1/4" ASPHALT CONCRETE

S.R. 104 MAINLINE	=	896.3 C.Y.
RAMPS	=	345.5 C.Y.
REFUGEE ROAD	=	255.2 C.Y.
REFUGEE ROAD NORTH	=	377.5 C.Y.
REFUGEE ROAD CONNECTION	=	10.4 C.Y.
ALUM CREEK DRIVE	=	601.0 C.Y.
SUB-TOTAL	=	2,485.9 C.Y.
BR FUNDS	= –	53.0 C.Y.
TOTAL	=	2,432.9 C.Y.

TOTAL ITEM 404 TO GENERAL SUMMARY = 2,433 C.Y.

ITEM 402 – 1-3/4" ASPHALT CONCRETE

S.R. 104 MAINLINE	=	1,254.1 C.Y.
RAMPS	=	483.4 C.Y.
REFUGEE ROAD	=	19.9 C.Y.
SUB-TOTAL	=	1,757.4 C.Y.
BR FUNDS	= –	74.2 C.Y.
TOTAL	=	1,683.2 C.Y.

TOTAL ITEM 402 TO GENERAL SUMMARY = 1,684 C.Y.

ITEM 403 – 1-1/4" ASPHALT CONCRETE

REFUGEE ROAD	=	238.2 C.Y.
REFUGEE ROAD NORTH	=	375.6 C.Y.
REFUGEE ROAD CONNECTION	=	10.4 C.Y.
ALUM CREEK DRIVE	=	595.6 C.Y.
TOTAL	=	1,219.8 C.Y.

TOTAL ITEM 403 TO GENERAL SUMMARY = 1,220 C.Y.

ITEM 305 – 9" PORTLAND CEMENT CONCRETE BASE

S.R. 104 MAINLINE	=	25,805.1 S.Y.
RAMPS	=	10,432.9 S.Y.
SUB-TOTAL	=	36,238.0 S.Y.
BR FUNDS	= –	1,526.1 S.Y.
TOTAL	=	34,711.9 S.Y.

TOTAL ITEM 305 TO GENERAL SUMMARY = 34,712 S.Y.

ITEM 305 – 8" PORTLAND CEMENT CONCRETE BASE

REFUGEE ROAD	=	3,831.7 S.Y.
REFUGEE ROAD NORTH	=	10,820.7 S.Y.
REFUGEE ROAD CONNECTION	=	314.1 S.Y.
ALUM CREEK DRIVE	=	17,287.1 S.Y.
TOTAL	=	32,253.6 S.Y.

TOTAL ITEM 305 TO GENERAL SUMMARY = 32,254 S.Y.

ITEM 310 – SUBBASE

S.R. 104 MAINLINE	=	7,802.8 C.Y.
RAMPS	=	3,069.4 C.Y.
REFUGEE ROAD	=	561.5 C.Y.
REFUGEE ROAD NORTH	=	1,804.2 C.Y.
REFUGEE ROAD CONNECTION	=	54.6 C.Y.
ALUM CREEK DRIVE	=	3,153.4 C.Y.
UNDER APPROACH SLABS	=	54.4 C.Y.
SUB-TOTAL	=	16,500.3 C.Y.
BR FUNDS	= –	567.2 C.Y.
TOTAL	=	15,933.1 C.Y.

TOTAL ITEM 310 TO GENERAL SUMMARY = 16,033 C.Y.

ITEM 301 – 6" BITUMINOUS AGGREGATE BASE

S.R. 104 MAINLINE	=	1,882.5 C.Y.
RAMPS	=	636.7 C.Y.
REFUGEE ROAD	=	82.9 C.Y.
ALUM CREEK DRIVE	=	164.8 C.Y.
SUB-TOTAL	=	2,766.9 C.Y.
BR FUNDS	= –	114.8 C.Y.
TOTAL	=	2,652.1 C.Y.

TOTAL ITEM 301 TO GENERAL SUMMARY = 2,653 C.Y.

ITEM 304 – AGGREGATE BASE

REFUGEE ROAD	=	86.2 C.Y.
TOTAL	=	86.2 C.Y.

TOTAL ITEM 304 TO GENERAL SUMMARY = 87 C.Y.

ITEM 407 – TACK COAT

S.R. 104 MAINLINE	=	2,580.5 GAL.
RAMPS	=	994.5 GAL.
REFUGEE ROAD	=	685.9 GAL.
REFUGEE ROAD NORTH	=	1,081.6 GAL.
REFUGEE ROAD CONNECTION	=	30.1 GAL.
ALUM CREEK DRIVE	=	1,726.3 GAL.
SUB-TOTAL	=	7,098.9 GAL.
BR FUNDS	= –	152.6 GAL.
TOTAL	=	6,946.3 GAL.

TOTAL ITEM 407 TO GENERAL SUMMARY = 6,947 GAL.

ITEM 407 – COVER AGGREGATE

S.R. 104 MAINLINE	=	90.3 TON
RAMPS	=	35.3 TON
REFUGEE ROAD	=	24.0 TON
REFUGEE ROAD NORTH	=	37.9 TON
REFUGEE ROAD CONNECTION	=	1.1 TON
ALUM CREEK DRIVE	=	60.4 TON
SUB-TOTAL	=	249.0 TON
BR FUNDS	= –	5.3 TON
TOTAL	=	243.7 TON

TOTAL ITEM 407 TO GENERAL SUMMARY = 244 TON

ITEM 409 – SEAL COAT BITUMINOUS MATERIAL

S.R. 104 MAINLINE	=	3,376.4 GAL.
RAMPS	=	1,146.0 GAL.
ALUM CREEK DRIVE	=	320.0 GAL.
SUB-TOTAL	=	4,842.4 GAL.
BR FUNDS	= –	206.7 GAL.
TOTAL	=	4,635.7 GAL.

TOTAL ITEM 409 TO GENERAL SUMMARY = 4,636 GAL.

ITEM 411 – STABILIZED CRUSHED AGGREGATE

REFUGEE ROAD	=	48.6 C.Y.
TOTAL	=	48.6 C.Y.

TOTAL ITEM 411 TO GENERAL SUMMARY = 49 C.Y.

ITEM 409 – SEAL COAT COVER AGGREGATE

S.R. 104 MAINLINE	=	90.0 C.Y.
RAMPS	=	30.6 C.Y.
ALUM CREEK DRIVE	=	8.5 C.Y.
SUB-TOTAL	=	129.1 C.Y.
BR FUNDS	= –	5.5 C.Y.
TOTAL	=	123.6 C.Y.

TOTAL ITEM 409 TO GENERAL SUMMARY = 124 C.Y.

ITEM 203 – SUBGRADE COMPACTION

S.R. 104 MAINLINE	=	40,025.2 S.Y.
RAMPS	=	15,960.0 S.Y.
REFUGEE ROAD	=	4,341.8 S.Y.
REFUGEE ROAD NORTH	=	12,306.9 S.Y.
REFUGEE ROAD CONNECTION	=	364.9 S.Y.
ALUM CREEK DRIVE	=	19,214.1 S.Y.
AREA UNDER APPROACH SLAB	=	326.4 S.Y.
SUB-TOTAL	=	92,539.3 S.Y.
BR FUNDS	= –	2,960.7 S.Y.
TOTAL	=	89,578.6 S.Y.

TOTAL ITEM 203 TO GENERAL SUMMARY = 89,579 S.Y.

ITEM 203 – PROOF ROLLING

S.R. 104 MAINLINE	=	13.3 HRS.
RAMPS	=	5.3 HRS.
REFUGEE ROAD	=	1.4 HRS.
REFUGEE ROAD NORTH	=	4.1 HRS.
REFUGEE ROAD CONNECTION	=	0.1 HRS.
ALUM CREEK DRIVE	=	6.4 HRS.
AREA UNDER APPROACH SLAB	=	0.1 HRS.
SUB-TOTAL	=	30.7 HRS.
BR FUNDS	=	1.0 HRS.
TOTAL	=	29.7 HRS.

TOTAL ITEM 203 TO GENERAL SUMMARY = 30 HRS.

ITEM 609 – TYPE 2 CURB & GUTTER

RAMP D & DD	=	361.0 L.F.
REFUGEE ROAD	=	1,346.7 L.F.
REFUGEE ROAD NORTH	=	5,252.4 L.F.
REFUGEE ROAD CONNECTION	=	87.3 L.F.
ALUM CREEK DRIVE	=	3,013.5 L.F.
TOTAL	=	10,060.9 L.F.

TOTAL ITEM 609 TO GENERAL SUMMARY = 10,061 L.F.

ITEM 609 – TYPE 6 CURB

REFUGEE ROAD	=	99.0 L.F.
REFUGEE ROAD NORTH & RAMP DD	=	329.0 L.F.
TOTAL	=	428.0 L.F.

TOTAL ITEM 609 TO GENERAL SUMMARY = 428 L.F.

ITEM 611 – APPROACH SLAB

FRA-104-1250	=	326.4 S.Y.
FRA-104-1279	=	596.3 S.Y.
SUB-TOTAL	=	922.7 S.Y.
BR FUNDS	= –	596.3 S.Y.
TOTAL	=	326.4 S.Y.

TOTAL ITEM 611 TO GENERAL SUMMARY = 327 S.Y.

CALCULATIONS
M FUNDS

		OHIO
		FHWA REGION 5
		FEDERAL PROJECT

36/254

FRANKLIN COUNTY
FRA-104-12.41

ITEM 612 - CONCRETE MEDIAN
S.R.104 MAINLINE = 140.6 S.Y.
ALUM CREEK DRIVE = 1,566.8 S.Y.
TOTAL = 1,707.4 S.Y.

TOTAL ITEM 612 TO GENERAL SUMMARY = 1,708 S.Y.

ITEM 622 - CONCRETE BARRIER TYPE B 50
S.R. 104 MAINLINE = 2,858.8 L.F.
SUB-TOTAL = 2,858.8 L.F.
BR FUNDS = – 220.8 L.F.
TOTAL = 2,638.0 L.F.

TOTAL ITEM 622 TO GENERAL SUMMARY = 2,638 L.F.

ITEM 605 - AGGREGATE DRAINS
REFUGEE ROAD = 347.4 L.F.
REFUGEE ROAD NORTH = 96.0 L.F.
REFUGEE ROAD CONNECTION = 93.6 L.F.
ALUM CREEK DRIVE = 832.0 L.F.
TOTAL = 1,369.0 L.F.

TOTAL ITEM 605 TO GENERAL SUMMARY = 1,369 L.F.

ITEM SPECIAL 605 - 4" UNDERDRAIN
REFUGEE ROAD = 1,346.7 L.F.
REFUGEE ROAD NORTH = 5,252.4 L.F.
ALUM CREEK DRIVE = 3,013.5 L.F.
TOTAL = 9,612.6 L.F.

TOTAL ITEM SPEC. 605 TO GENERAL SUMMARY = 9,613 L.F.

ITEM 659 - SEEDING
DEDUCT FOR SHOULDERS
35,922.93 S.F. – 28,141.03 S.F. ÷ 9 = – 865.0 S.Y.
TOTAL TO GENERAL NOTES = – 865 S.Y.

ITEM 659 – SEEDING (FROM SUB-SUMMARY) = 221,070.0 S.Y.
DEDUCT FOR SODDING
9,576.0 S.Y. + 107.0 S.Y. = – 9,683.0 S.Y.
DEDUCT FOR ROCK CHANNEL PROTECTION & RIPRAP
[(14.0' x 12.0') + (16.0' x 8.0' ÷ 2) + (5.0' x 12.0') + (41.0' x 6.0') + (6.0' x 4.0') + (22.0' x 12.0') + (50.0' x 8.0') + (8.0' x 4.0') + (4.0' x 5.0') + (23.0' x 5.0') + (6.0' x 4.0') + (11.0' x 7.0') + (6.0' x 4.0') + (6.0' x 4.0') + (12.0' x 4.0') + (16.0' x 16.0')] ÷ 9 = – 205.0 S.Y.

SUB-TOTAL = 211,782.0 S.Y.
BR FUNDS = – 10,418.0 S.Y.
TOTAL = 200,764.0 S.Y.

TOTAL ITEM 659 TO GENERAL SUMMARY = 200,764 S.Y.

ITEM 659 - AGRICULTURAL LIMING
V = 211,182 S.Y. x 9 x 100 ÷ 1,000 ÷ 2,000 = 95.1 TON
SUB-TOTAL = 95.1 TON
BR FUNDS = – 4.7 TON
TOTAL = 90.4 TON

TOTAL ITEM 659 TO GENERAL SUMMARY = 90 TON

ITEM 659 - COMMERCIAL FERTILIZER
V = (211,182 S.Y. + 9,683 S.Y.) x 9 x 15 ÷ 1,000 ÷ 2,000 = 14.9 TON
SUB-TOTAL = 14.9 TON
BR FUNDS = – 0.8 TON
TOTAL = 14.1 TON

TOTAL ITEM 659 TO GENERAL SUMMARY = 14 TON

ITEM 207 - TEMPORARY SEEDING & MULCHING
V = 211,182 S.Y. x 0.20 = 42,236.4 S.Y.
TOTAL TO GENERAL NOTES = 42,200 S.Y.
BR FUNDS = – 2,100 S.Y.
NORMAL PARTICIPATION FUNDS = 40,100 S.Y.

ITEM 207 - STRAW OR HAY BALES
V = 8 x 23 = 184 EA.
TOTAL TO GENERAL NOTES = 200 EA.
NORMAL PARTICIPATION FUNDS = 200 EA.

ITEM 207 - TEMPORARY SLOPE DRAINS
V = 10 x (57+28) = 850.0 L.F.
TOTAL TO GENERAL NOTES = 850 L.F.
BR FUNDS = – 140 L.F.
NORMAL PARTICIPATION FUNDS = 710 L.F.

ITEM 207 - TEMPORARY BENCHES, DAMS, DIKES, & SEDIMENT BASINS
V = 850 L.F. x 5 = 4,250.0 C.Y.
TOTAL TO GENERAL NOTES = 4,250 C.Y.
BR FUNDS = – 700 C.Y.
NORMAL PARTICIPATION FUNDS = 3,550 C.Y.

ITEM 601 - TYPE C ROCK CHANNEL PROTECTION
V = 850 L.F. ÷ 25 = 34.0 C.Y.
TOTAL TO GENERAL NOTES = 34 C.Y.
BR FUNDS = – 6 C.Y.
NORMAL PARTICIPATION FUNDS = 28 C.Y.

ITEM 659 - MOWING
V = 211,182 S.Y. x 0.25 x 9 ÷ 1,000 = 475.2 M.S.F.
TOTAL TO GENERAL NOTES = 474 M.S.F.
BR FUNDS = – 30 M.S.F.
NORMAL PARTICIPATION FUNDS = 444 M.S.F.

ITEM 659 – COMMERCIAL FERTILIZER
V = (41,800 S.Y. x 10 x 9) + (211,182 S.Y. x 7.5 x 9) ÷ 1,000 ÷ 2,000 = 9.0 TON
TOTAL TO GENERAL NOTES = 9 TON
BR FUNDS = – 1 TON
NORMAL PARTICIPATION FUNDS = 8 TON

ITEM 659 – REPAIR SEEDING & MULCHING
V = 211,182 S.Y. x 0.05 = 10,559.1 S.Y.
TOTAL TO GENERAL NOTES = 10,600 S.Y.
BR FUNDS = – 600 S.Y.
NORMAL PARTICIPATION FUNDS = 10,000 S.Y.

ITEM 659 - WATER
V = 41,800 S.Y. x 9 x 240 ÷ 1,000 ÷ 1,000 = 90.3 M.GAL.
TOTAL TO GENERAL NOTES = 100 M.GAL.
BR FUNDS = – 10 M.GAL.
NORMAL PARTICIPATION FUNDS = 90 M.GAL.

WATERING & MOWING PERMANENT SEEDED AREAS
ITEM 659 - WATER
V = 211,182 S.Y. x 9 ÷ 1,000 x 120 ÷ 1,000 = 228.1 M.GAL.
TOTAL TO GENERAL NOTES = 300 M.GAL.
BR FUNDS = – 20 M.GAL.
NORMAL PARTICIPATION FUNDS = 280 M.GAL.

ITEM 659 - MOWING
V = 211,182 S.Y. x 0.25 x 9 ÷ 1,000 = 475.2 M.S.F.
TOTAL TO GENERAL NOTES = 500 M.S.F.
BR FUNDS = – 30 M.S.F.
NORMAL PARTICIPATION FUNDS = 470 M.S.F.

ADDITIONAL EARTHWORK
[(35,922.93 S.F. – 28,141.03 S.F.) x 1.42] ÷ 27 = 410 C.Y.

		INCREASE CUT	DECREASE FILL
RAMP D	=	462.82	
DD	=	218.68	
F	=	1,150.00	
FF	=	91.00	
G	=	69.31	600.00
GG	=	53.00	
H	=	137.22	500.00
HH	=	16.00	
TOTAL=		2,198.03	+ 1,100.00 = 3,298.03

DECREASE FILL
1,100.00 ÷ 3,298.03 x 410 = 137 C.Y.
TOTAL TO GENERAL NOTES = 137 C.Y.

INCREASE EXCAVATION
2,198.03 ÷ 3,298.03 x 410 = 273 C.Y.
TOTAL TO GENERAL NOTES = 273 C.Y.

KEY BLUE PRINT CO. NY555

TEMPORARY EROSION CONTROL

CALCULATED BY R.J.K. DATE 2-10-83

CHECKED BY M.R.D. DATE 2-11-83

SUB-SUMMARY EROSION CONTROL					M-FUNDING			BRM-FUNDING	
LOCATION					ITEM 207 TEMPORARY BENCHES DAMS, DIKES & SEDIMENT BASINS	ITEM 601 R.C.P. TYPE C WITHOUT BEDDING	ITEM 207 STRAW OR HAY BALES	ITEM 207 TEMPORARY BENCHES DAMS, DIKES & SEDIMENT BASINS	ITEM 601 R.C.P. TYPE C WITHOUT BEDDING
REF. NO.	ROADWAY	STATION	DRAINAGE AREA	SIDE	C.Y.	C.Y.	EA.	C.Y.	C.Y.
1 E	DITCH	10 + 50	9.6 AC.	C.L.	640	7.4			
2 E	DITCH	18 + 00	3.5 AC.	C.L.	235	1.9			
3 E	S.R. 104	257 + 00	15.42 AC.	LT.	1037	10.2			
4 E	S.R. 104	260 + 00	8.38 AC.	RT.				563	6.8
5 E	S.R. 104	261 + 50	5.37 AC.	LT.				356	5.0
6 E	S.R. 104	265 + 00	5.08 AC.	RT.	340	2.4			
7 E	ALUM CREEK	34 + 00	12.80 AC.	RT.	867	4.5			
8 E	ALUM CREEK	44 + 50		RT.			5		
9 E	ALUM CREEK	47 + 50		RT.			5		
10 E	RAMP F	240 + 00		RT.			5		
11 E	RAMP F	241 + 00		RT.			5		
12 E	RAMP F	242 + 00		RT.			5		
13 E	RAMP F	243 + 00		RT.			5		
TOTALS TO GENERAL SUMMARY					3119	26.4	30	919	11.8
(TOTAL)						(27)			(12)

NOTE: FOR CALCULATIONS OF TEMPORARY EROSION AND SEDIMENT CONTROL ITEMS LISTED IN THE PLAN NOTES FOR USE AS DIRECTED BY THE ENGINEER
SEE SHT. NO. 36 FOR M-FUNDING CALCULATIONS
SEE SHT. NO. 31 FOR BRM-FUNDING CALCULATIONS

NOTE: LOCATION OF TEMPORARY EROSION CONTROL ITEMS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER

TEMPORARY EROSION CONTROL FOR EXCESS EMBANKMENT DISPOSAL AREA

CALCULATIONS - M FUNDS

ITEM 207 TEMPORARY SLOPE DRAINS
V=10X(8.5 + 4 + 3) = 155 L.F.

ITEM 207 TEMPORARY BENCHES, DAMS, DIKES, AND SEDIMENT BASINS
V=5X155 = 775 C.Y.

ITEM 601 TYPE C ROCK CHANNEL PROTECTION
V=155/25 = 6.2 C.Y.
TOTAL = 7 C.Y.

ITEM 207 TEMPORARY SEEDING AND MULCHING
V=32,786 X .20 = 6557 S.Y.

ITEM 659 MOWING
V=32,786 X 9 X .25 / 1000 = 74 M.S.F.

ITEM 659 COMMERCIAL FERTILIZER 12-12-12
V=(6557 X 10 X 9) + (32,786 X 7.5 X 9) / 1000 / 2000 = 1.4 TONS
TOTAL = 2 TONS

ITEM 659 REPAIR SEEDING AND MULCHING
V=32,786 X .05 = 1639 S.Y.

ITEM 659 WATER
V=6557 X 9 X 240 /1000 /1000 = 14.2 M.GAL.
TOTAL = 15 M.GAL.

THE ABOVE QUANTITIES ARE CARRIED TO THE GENERAL NOTES, SHT. 17A .

SUB-SUMMARY

CALC: PCB 7-79
CHK: WDG 7-79

FHWA REGION	STATE	PROJECT	
5	OHIO		

37/254

FRANKLIN COUNTY
FRA-104-10.57

	202			203			601			602	603					604				605			606			659	660	SPEC.	202			304
	PIPE REMOVED UNDER 24"	CATCH BASINS REMOVED	STRUCTURES REMOVED	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	EMBANKMENT	EXCAVATION OF UNSUITABLE MATERIAL	ROCK CHANNEL PROTECTION TYPE "B" WITHOUT BEDDING	ROCK CHANNEL PROTECTION TYPE "B" WITH BEDDING	DUMP ROCK FILL TYPE "B"	CONCRETE MASONRY	6" CONDUIT TYPE "B"	6" CONDUIT TYPE "F"	12" CONDUIT TYPE "B" 706.01 OR 706.02	15" CONDUIT TYPE "B" 706.01 OR 706.02	24" CONDUIT TYPE "B" 706.02	NO. 5 CATCH BASIN	NO. 1-24-4 INLET REINFORCED	NO. 1-24-8 INLET	6" DEEP UNDERDRAIN	6" SHALLOW UNDERDRAIN	6" UNCLASSIFIED UNDERDRAIN	GUARDRAIL TYPE "5	ANCHOR ASSEMBLY TYPE "A"	ANCHOR ASSEMBLY TYPE "T"	SEEDING & MULCHING	SODDING	SEEDING AND EROSION CONTROL MATTING	GUARDRAIL REMOVED	CURB REMOVED	PAVEMENT REMOVED	AGGREGATE BASE
	L.F.	EA.	LUMP	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	C.Y.	L.F.	L.F.	L.F.	L.F.	L.F.	EA.	EA.	EA.	L.F.	L.F.	L.F.	L.F.	EA.	EA.	S.Y.	S.Y.	S.Y.	L.F.	L.F.	S.Y.	C.Y.
20					28																										6
45-46C					See Sh. 7 & 8																											
45D				5125	0																					3301		789				
46				60776	550	14,011																				9686						
47				91,018	6375	44,556																				15,772						
48				7698	47,089																					19,685						
49				18620	35,603																					20,802						
50				1248	884																					589						
61				496	13,871																					10,043						
62				8513	11,432																					10,320						
63				5370	5901																					9871						
64			LUMP	1882	2500																					2089						
78				874	166																					2209						
79				3695	73																					4036						
80				1624	36,766	51,720																				6378						
81				0	32,266	47,078																				5314						
89				322	17																					255						
90				3127	0																					2412						
91				1866	1682																					2713						
97																										42,811						
102				28,537	24,283	65,671					40	20			398			1				1527				14,259	644					
109	390							2		0.3	45	30	102	68			1		1			1795		511			664		42			
110				149,973	78	2925																				13,019						
114	45	1	LUMP	370	22,917			2		0.3	66	20		64			1						477	215	675	1		7752	178	42	1022	1166	
117			LUMP	4026	9423			23		0.3		20		120			1						643		712.5	1	1	12,324	702	42	1050	1314	
120				61,408	17,062		959		1254																	6295						
GEN. N.				273	-137	20,000																				-865						
TOTALS	435	1	LUMP	435,841	268,801	245,961	959	27	1254	0.9	151	90	102	252	398		3	1	1			3322	1120	726	1387.5	2	1	221,070 ‡	2188	915	2072	2080	6

‡ CARRIED TO THE CALCULATIONS

Revised 4-11-80 D.E.J.

GENERAL SUMMARY

CALC: PCB 7-79
CHK: WDG 7-79

OHIO
FRANKLIN COUNTY
FRA-104-10.57

ITEM	SHEET NUMBER: GENERAL NOTES M	GENERAL NOTES BRM	31 BR.	35	36	37 BRM	37 M	46	47	48 BRM	48 M	49 BRM	49 M	50	61	62	63	64	78	79	80	81	90	91	243 BRM	243 M	45	45A	45B	45C	36A M	36A BRM	BRM FUNDS	M FUNDS	ITEM	TOTAL	UNIT	DESCRIPTION
																																						ROADWAY
201	LUMP	LUMP																														LUMP	LUMP	201	LUMP		CLEARING AND GRUBBING
202													5																				5	202	5	EA.	UNDERGROUND STORAGE TANK REMOVED
202							435					25	110		30	292	106	464					711	1138								25	32816	202	3311	L.F.	PIPE REMOVED, 24" AND UNDER
202													324	12		184																520	202	520	L.F.	PIPE REMOVED, OVER 24"
202							LUMP						LUMP	LUMP				LUMP					LUMP	LUMP									LUMP	202	LUMP		STRUCTURES REMOVED
202												LUMP																				LUMP	202	LUMP		STRUCTURE REMOVED, AS PER PLAN
202							2480						571	1485																			4536	202	4536	S.Y.	PAVEMENT REMOVED
202													748	625																			1,373	202	1,373	L.F.	CURB REMOVED
202							2092			225		94	1260		778	310	20	642						400								319	5802	202	5801	L.F.	GUARDRAIL REMOVED
202							1											4	1				4	5									15	202	15	EA.	CATCH BASIN OR INLET REMOVED
																																	LUMP	202	LUMP		PARCEL Nº 189WL, REMOVAL OF ONE 1-STORY CONCRETE BLOCK COMMERCIAL BUILDING
202																								2									2	202	2	EA.	MANHOLE ABANDONED
202																		76															76	202	76	L.F.	FENCE REMOVED FOR STORAGE
203						2247	454,594																									2247	454,594	203	456,841	C.Y.	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION,
203						15567	253392																			57,171	16,211	53,950	452			15567	383,018	203	398,585	C.Y.	EMBANKMENT
203							245961																										245,961	203	245,961	C.Y.	EXCAVATION OF UNSUITABLE MATERIAL
203			2961	89579																												2961	89579	203	92540	S.Y.	SUBGRADE COMPACTION
203			1	30																												1	30	203	31	HRS.	PROOF ROLLING
410	700																																700	410	700	C.Y.	TRAFFIC COMPACTED SURFACE, TYPE C
604																									15								15	604	15	EA.	MONUMENT ASSEMBLY, STANDARD
604																									22								22	604	22	EA.	REFERENCE MONUMENT, STANDARD
606							13875		125	197	153	125	125		750	125	150	362.5														322	3178	606	3500	L.F.	GUARDRAIL, TYPE 5
606							2		1		2	1	1		1	1	1	4														1	13	606	14	EA.	ANCHOR ASSEMBLY, STD. TYPE A
606							1		1		1		1		1																		5	606	5	EA.	ANCHOR ASSEMBLY, STD. TYPE T
606										1		1				1	1															2	2	606	4	EA.	BRIDGE TERMINAL ASSEMBLY. STD. TYPE A
64	10310																																				
607																								706	8146							706	8146	607	8852	L.F.	FENCE, TYPE CL
612	3305																																				
613	16,500																																16,500	613	16,500	S.Y.	TEMPORARY PAVEMENT, CLASS A
615	LUMP																																LUMP	615	LUMP		TEMPORARY ROADS
616	3060																																3060	616	3060	M.GAL.	WATER
616	70																																70	616	70	TONS	CALCIUM CHLORIDE
																																				EROSION CONTROL
207	46457	2100																														2,100	46,457	207	48,557	S.Y.	TEMPORARY SEEDING AND MULCHING
207	865	140																														140	865	207	1,005	L.F.	TEMPORARY SLOPE DRAINS
207	4325	700																														3,119	919	1,619	7,444	207	9,063	C.Y.	TEMPORARY BENCHES, DIKES, DAMS AND SEDIMENT BASINS
207	200																															30			230	207	230	EA.	STRAW OR HAY BALES
601						1254																										1254		601	1254	C.Y.	DUMPED ROCK FILL, TYPE B
601							27	11	26			2	30			9	2	6	4													2	115	601	117	C.Y.	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER
601						959			12			15																				972	14	601	986	C.Y.	ROCK CHANNEL PROTECTION, TYPE B WITHOUT FILTER
601									7																								7	601	7	S.Y.	RIPRAP, USING 6" REINFORCED CONCRETE SLAB
601	20														3																		23	601	23	C.Y.	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER
601	35	6																														27	12	18	62	601	80	C.Y.	ROCK CHANNEL PROTECTION, TYPE C WITHOUT FILTER
659	10	1	1		14																												2	24	659	26	TONS	COMMERCIAL FERTILIZER
659																																					
659			5		90																												5	90	659	95	TONS	AGRICULTURAL LIMING, AS PER PLAN
659			1048		800764																					11,968	3,615	18,211	878				1048	235,436	659	245,854	S.Y.	SEEDING AND MULCHING, AS PER PLAN
659	11,539	600																															600	11,539	659	12,139	S.Y.	REPAIR SEEDING AND MULCHING
659	405	10																															10	405	659	415	M.GAL.	WATER
659	1018	30																															30	1,018	659	1,048	M.S.F.	MOWING
660							2188		1150	367	2946	472	1907		200		99	230	22				17										839	8,759	660	9,598	S.Y.	SODDING
660										107																							107		660	107	S.Y.	REINFORCED SODDING, STANDARD
SPL.							915	1098	299												125	125												2,502	SPECIAL	2,502	S.Y.	SEEDING AND EROSION CONTROL MATTING

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GENERAL SUMMARY

CALC: PCB 7-79
CHK: WLDG 7-79

FHWA REGION	STATE	PROJECT	
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FRANKLIN COUNTY
FRA-104-10.57

ITEM	SHEET NUMBER: GEN NOTES	20	37	48 BRM	48	49 BRM	49	46	47	50	61	62	63	64	78	79	80	81	90	91	BRM FUNDS	M FUNDS	ITEM	TOTAL	UNIT	DESCRIPTION
																										DRAINAGE
602			0.9			0.3			8.4		0.3	0.5	0.2	0.8		0.8					0.3	5.9	602	6.2	C.Y.	CONCRETE MASONRY
603			151		52				20	80												303	603	303	L.F.	6" CONDUIT, TYPE B
603	50																					50	603	50	L.F.	8" CONDUIT, TYPE B
603	50																					50	603	50	L.F.	10" CONDUIT, TYPE B
603												38										38	603	38	L.F.	12" CONDUIT, TYPE B, 706.02
603			102									114	64	70		139	588	30	12	10		1189	603	1189	L.F.	12" CONDUIT, TYPE B, 706.01 OR 706.02
603			252			104		58	132		25	105			50						104	622	603	726	L.F.	15" CONDUIT, TYPE B, 706.01 OR 706.02
603								192			158							68				418	603	418	L.F.	18" CONDUIT, TYPE B, 706.01 OR 706.02
603			398														206		212			816	603	816	L.F.	24" CONDUIT, TYPE B, 706.02
603																400			850	824		974	603	974	L.F.	27" CONDUIT, TYPE B, 706.02
603								238														238	603	238	L.F.	30" CONDUIT, TYPE B, 706.02
603								248														248	603	248	L.F.	30" CONDUIT, TYPE B, 706.02, 1250 D-LOAD
603														100								100	603	100	L.F.	36" CONDUIT, TYPE B, 706.02
603														180								180	603	180	L.F.	42" CONDUIT, TYPE B, 706.02
603								430														430	603	430	L.F.	48" CONDUIT, TYPE B, 706.02
603								96	290													386	603	386	L.F.	60" CONDUIT, TYPE B, 706.02
603									282													282	603	282	L.F.	66" CONDUIT, TYPE B, 706.02
603	50																					50	603	50	L.F.	12" CONDUIT, TYPE B
603																	16	54		56		126	603	126	L.F.	12" CONDUIT, TYPE C, 706.01 OR 706.02
603																		230				230	603	230	L.F.	15" CONDUIT, TYPE C, 706.01 OR 706.02
603																28		205				233	603	233	L.F.	18" CONDUIT, TYPE C, 706.01 OR 706.02
603								54							324		50	250				678	603	678	L.F.	24" CONDUIT, TYPE C, 706.02
603																				12		12	603	12	L.F.	27" CONDUIT, TYPE C, 706.02
603												465										465	603	465	L.F.	27" CONDUIT, TYPE C, 706.02, 1750 D-LOAD
603														110								110	603	110	L.F.	42" CONDUIT, TYPE C, 706.02
603								5														5	603	5	L.F.	48" CONDUIT, TYPE C, 706.02
603	50																					50	603	50	L.F.	4" CONDUIT, TYPE E, 711.29
603	50																					50	603	50	L.F.	6" CONDUIT, TYPE E, 706.01, 706.02 OR 706.08
603									294													294	603	294	L.F.	66" CONDUIT, TYPE C, 706.02
603		26									112											138	603	138	L.F.	12" CONDUIT, TYPE D, 706.01, 706.02 OR 707.01
603	100																					100	603	100	L.F.	8" CONDUIT, TYPE E
603	50																					50	603	50	L.F.	10" CONDUIT, TYPE E
603	50																					50	603	50	L.F.	12" CONDUIT, TYPE E
603	150		90			20		40	90										80	20		450	603	470	L.F.	6" CONDUIT, TYPE F
603	50																					50	603	50	L.F.	8" CONDUIT, TYPE F
603	50																					50	603	50	L.F.	10" CONDUIT, TYPE F
604								1			1	1							1			4	604	4	EA.	CATCH BASIN, STANDARD NO. 2-2-B
604																			1			1	604	1	EA.	CATCH BASIN, STANDARD NO. 3A WITH V GRATE.
604			3					2						1	1		1	1	1			10	604	10	EA.	CATCH BASIN, STANDARD NO. 5
604								3	2					2								7	604	7	EA.	CATCH BASIN, STANDARD NO. 5A
604									1													1	604	1	EA.	REINFORCED Concrete Catch Basin, Standard No. 5A
604								1				1			1		1	2		1		7	604	7	EA.	MANHOLE, STANDARD NO. 1
604												1					1		3	1		6	604	6	EA.	MANHOLE, STANDARD NO. 3

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GENERAL SUMMARY

CALC: PCB 7-79
CHK: GWDK 7-79

FHWA REGION	STATE	PROJECT	
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FRANKLIN COUNTY
FRA-104-10.57

ITEM	GEN. NOTES	SHEET NUMBER 37	31 BRM	35	36	48 BRM	48	49 BRM	49	46	47	50	61	62	63	64	78	79	80	81	90	91	BRM FUNDS	M FUNDS	ITEM	TOTAL	UNIT	DESCRIPTION
																												DRAINAGE CONTINUED
604																		3	3	3				9	604	9	EA.	INLET, STANDARD NO. 2-A-6
604		1																	1					2	604	2	EA.	REINFORCED CONCRETE INLET, STANDARD NO. 2-A-6
604		1											1	2	1				1	1		2		9	604	9	EA.	INLET, STANDARD NO. 2-A-8
604														1						1	1			3	604	3	EA.	INLET, STANDARD NO. 2-A-10
604																					1			1	604	1	EA.	INLET, STANDARD NO. 2-A-12
604														1										1	604	1	EA.	INLET, STANDARD NO. 2-B
604																				1				1	604	1	EA.	INLET, STANDARD NO. 2-10
604																1								1	604	1	EA.	INLET, STANDARD NO. 2-12
604								1		1	3													4	604	5	EA.	INLET, STANDARD NO. I-3B50
605					1369																			1369	605	1369	L.F.	AGGREGATE DRAINS
605		726								140	710													1576	605	1576	L.F.	6" UNCLASSIFIED PIPE UNDERDRAIN
605					9613																			9613	605	9613	L.F.	4" SHALLOW PIPE UNDERDRAIN, 707.15
605		1120				162	1969	50	1580		50	732											212	5451	605	5663	L.F.	6" SHALLOW PIPE UNDERDRAIN
605		3322								536	1919													5777	605	5777	L.F.	6" DEEP PIPE UNDERDRAIN
																												PAVEMENT
301			115	2653									8	39		67					33	27	115	2827	301	2942	C.Y.	BITUMINOUS AGGREGATE BASE: AC-20, RT-11 OR RT-12
304		6		87		12							56		12	12	9						12	182	304	194	C.Y.	AGGREGATE BASE
310			568	16,033																			568	16,033	310	16,601	C.Y.	SUBBASE, TYPE II
402			75	1684																			75	1,684	402	1,759	C.Y.	ASPHALT CONCRETE, AC-20
404			53	2433																			53	2,433	404	2,486	C.Y.	ASPHALT CONCRETE, AC-20
404						4							8	8	4	6	3				9	6	4	44	404	48	C.Y.	ASPHALT CONCRETE, AC-20 (DRIVEWAYS)
407			153	6947																			153	6,947	407	7,100	GAL.	TACK COAT
407			6	244																			6	244	407	250	TONS	COVER AGGREGATE
408						28							42		29		21						28	92	408	120	GAL.	BITUMINOUS PRIME COAT
409			207	4636																			207	4,636	409	4,843	GAL.	SEAL COAT BITUMINOUS MATERIAL
409			6	124																			6	124	409	130	C.Y.	SEAL COAT COVER AGGREGATE NO. 8
452														56								106		162	452	162	S.Y.	8" PLAIN PORTLAND CEMENT CONCRETE PAVEMENT
403				1220																				1220	403	1220	C.Y.	ASPHALT CONCRETE, AC-20
305				32,254																				32,254	305	32,254	S.Y.	8" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN
305			1527	34,712																			1527	34,712	305	36,239	S.Y.	9" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN
411				49																				49	411	49	C.Y.	STABILIZED CRUSHED AGGREGATE
609				428		43																	43	428	609	471	L.F.	CURB, STANDARD TYPE 6
609				10,061																				10,061	609	10,061	L.F.	COMBINATION CURB AND GUTTER, STANDARD TYPE 2
611			597	327																			597	327	611	924	S.Y.	REINFORCED CONCRETE APPROACH SLABS (T=15")
612					1708																			1,708	612	1708	S.Y.	CONCRETE MEDIAN, STANDARD TYPE
622			221		2638																		221	2,638	622	2859	L.F.	CONCRETE BARRIER, STANDARD TYPE B-50
SPECIAL						72		72															144		SPECIAL	144	L.F.	PRESSURE RELIEF JOINT, STANDARD TYPE D
																												SANITARY SEWERS
603	25																							25	603	25	L.F.	6" Conduit, Type C, 706.01, 706.02 or 706.08 with 706.11 or 706.12 joints
603	25																							25	603	25	L.F.	6" Conduit, Type B, 706.01, 706.02 or 706.08 with 706.11 or 706.12 joints
603	25																							25	603	25	L.F.	8" Conduit, Type B, 706.01, 706.02 or 706.08 with 706.11 or 706.12 joints
603	25																							25	603	25	L.F.	18" Conduit, Type B, 706.01, 706.02 or 706.08 with 706.11 or 706.12 joints

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GENERAL SUMMARY

CALC: PCB 7-79
CHK: WDG 7-79

FRANKLIN COUNTY
FRA-104-10.57

ITEM	GENERAL NOTES BRM	GENERAL NOTES	49	61	62	63	64	140	R/W	BRM FUNDS	M FUNDS	ITEM	TOTAL	UNIT	DESCRIPTION	CITY CODE COLUMBUS
															WATER WORK (TYPE CODE Y-060)	
SPECIAL								28			28	SPECIAL	28	L.F.	6" DUCTILE IRON WATER PIPE AND FITTINGS	C-801
SPECIAL								4449			4449	SPECIAL	4449	L.F.	12" DUCTILE IRON WATER PIPE AND FITTINGS	C 801
SPECIAL								175			175	SPECIAL	175	L.F.	16" DUCTILE IRON WATER PIPE AND FITTINGS	C 801
SPECIAL								993			993	SPECIAL	993	L.F.	24" DUCTILE IRON WATER PIPE AND FITTINGS	C 801
SPECIAL								270			270	SPECIAL	270	L.F.	24" DUCTILE IRON RIVER CROSSING PIPE A.N.S.I. CLASS 62	
SPECIAL								20			20	SPECIAL	20	C.Y.	CONCRETE BLOCKING CLASS "C"	C 801
SPECIAL								7			7	SPECIAL	7	EA.	6 INCH VALVE AND APPURTENANCES	C 802
SPECIAL								1			1	SPECIAL	1	EA.	12 INCH VALVE AND APPURTENANCES	C 802
SPECIAL								1			1	SPECIAL	1	EA.	16"x 12" TAPPING SLEEVE AND VALVE	C 803
SPECIAL				254	554		254	254			1316	SPECIAL	1316	LB.	IRON CASTINGS	C 804
SPECIAL					6						6	SPECIAL	6	EA.	VALVE BOXES ADJUSTED TO GRADE	C 807
SPECIAL								7			7	SPECIAL	7	EA.	FIRE HYDRANT	C 509
SPECIAL				1	1		1				3	SPECIAL	3	EA.	FIRE HYDRANT RELOCATED	C 809
SPECIAL								1			1	SPECIAL	1	EA.	6" HYDRANT EXTENSIONS	C 810
SPECIAL								3			3	SPECIAL	3	EA.	12" HYDRANT EXTENSIONS	C 810
SPECIAL								1			1	SPECIAL	1	EA.	18" HYDRANT EXTENSIONS	C 810
SPECIAL								1			1	SPECIAL	1	EA.	24" HYDRANT EXTENSIONS	C 810
604					1						1	604	1	EA.	MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN	
SPECIAL								228			228	SPECIAL	228	C.Y.	INCREASE OR DECREASE IN EXCAVATION	C 811
SPECIAL								3			3	SPECIAL	3	EA.	1" AIR RELEASE OUTLET	C 812
SPECIAL								1			1	SPECIAL	1	EA.	2" AIR RELEASE OUTLET	C 812
SPECIAL			1		2	2					5	SPECIAL	5	EA.	FIRE HYDRANT REMOVED	
															TRAFFIC CONTROL	
															FOR QUANTITIES SEE SHEET NOS. 143-144	
															LIGHTING	
															FOR QUANTITIES SEE SHEET NO. 164	
															LANDSCAPING	
															FOR QUANTITIES SEE SHEET NO. 213	
															STRUCTURES OVER 20' SPAN	
															FOR FRA 104 1250 QUANTITIES SEE SHEET NO. 183	
															FOR FRA 104 1279 QUANTITIES SEE SHEET NO. 196	
															POWER LINES	
															FOR QUANTITIES SEE SHEET NO. 217	
SPEC.		1000									1000	SPECIAL	1000	HRS.	SPECIAL DUTY CITY POLICEMAN	
SPEC.		500									500	SPECIAL	500	HRS.	SPECIAL DUTY CITY POLICEMAN WITH CRUISER	
614	LUMP	LUMP								LUMP	LUMP	614	LUMP		MAINTAINING TRAFFIC	
619	LUMP	LUMP								LUMP	LUMP	619	LUMP		FIELD OFFICE	
623										LUMP	LUMP	623	LUMP		CONSTRUCTION LAYOUT STAKES	
624	LUMP	LUMP								LUMP	LUMP	624	LUMP		MOBILIZATION	

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FHWA REGION	STATE	PROJECT	
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FRANKLIN COUNTY
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SUPERELEVATION TABLES

STATION	34'LT.	10'LT.	10'RT.	34'RT.
237+ 0.00	750.83	749.58	749.16	747.91
237+25.00	750.46	749.21	748.79	747.54
237+50.00	750.08	748.83	748.41	747.16
237+75.00	749.71	748.46	748.04	746.79
238+ 0.00	749.33	748.08	747.66	746.41
238+25.00	748.96	747.71	747.29	746.04
238+50.00	748.58	747.33	746.91	745.66
238+75.00	748.20	746.95	746.53	745.28
239+ 0.00	747.83	746.58	746.16	744.91
239+25.00	747.45	746.20	745.78	744.53
239+50.00	747.08	745.83	745.41	744.16
239+75.00	746.70	745.45	745.03	743.78
240+ 0.00	746.33	745.08	744.66	743.41
240+25.00	745.95	744.70	744.28	743.03
240+50.00	745.57	744.32	743.90	742.65
240+75.00	745.20	743.95	743.53	742.28
241+ 0.00	744.82	743.57	743.15	741.90
241+25.00	744.46	743.21	742.79	741.54
241+50.00	744.14	742.89	742.47	741.22
241+75.00	743.85	742.60	742.18	740.93
242+ 0.00	743.60	742.35	741.93	740.68

STATION	46' LT.	10' LT.	10'RT.	46' RT.
249+ 0.00	743.12	741.39	741.01	739.27
249+25.00	743.08	741.44	741.09	739.45
249+50.00	743.03	741.49	741.17	739.62
249+75.00	742.99	741.54	741.25	739.80
250+ 0.00	742.94	741.59	741.33	739.97
250+25.00	742.90	741.64	741.41	740.15
250+50.00	742.85	741.69	741.49	740.32
250+75.00	742.81	741.74	741.57	740.50
251+ 0.00	742.76	741.78	741.65	740.67
251+25.00	742.72	741.83	741.73	740.84
251+50.00	742.67	741.88	741.81	741.02
251+75.00	742.63	741.93	741.89	741.19
252+ 0.00	742.58	741.99	741.97	741.36

STATION	46'LT.	10'LT.	10'RT.	46'RT.
252+25.00	742.54	742.05	742.05	741.49
252+50.00	742.50	742.13	742.13	741.57
252+75.00	742.45	742.21	742.21	741.65
253+ 0.00	742.41	742.29	742.29	741.73
253+25.00	742.37	742.37	742.37	741.81
253+50.00	742.34	742.45	742.45	741.89
253+75.00	742.32	742.53	742.53	741.97
254+ 0.00	742.30	742.61	742.61	742.05
254+25.00	742.28	742.69	742.69	742.13
254+50.00	742.27	742.77	742.77	742.21
254+75.00	742.30	742.85	742.85	742.34
255+ 0.00	742.37	742.93	742.93	742.51
255+25.00	742.45	743.01	743.01	742.69
255+50.00	742.53	743.09	743.09	742.87
255+75.00	742.61	743.17	743.17	743.05
256+ 0.00	742.69	743.25	743.25	743.24
256+25.00	742.77	743.33	743.33	743.43
256+50.00	742.85	743.41	743.41	743.64
256+75.00	742.93	743.49	743.49	743.84
257+ 0.00	743.01	743.57	743.57	744.05
257+25.00	743.03	743.65	743.65	744.25
257+50.00	743.00	743.73	743.73	744.46
257+75.00	742.96	743.81	743.81	744.66
258+ 0.00	742.91	743.89	743.89	744.87
258+25.00	742.87	743.97	743.97	745.07
258+50.00	742.83	744.05	744.05	745.27
258+75.00	742.84	744.13	744.13	745.42
259+ 0.00	742.91	744.21	744.21	745.51
259+25.00	742.99	744.29	744.29	745.59
259+50.00	743.07	744.37	744.37	745.67

STATION	46'LT.	10'LT.	10'RT.	46'RT.
259+75.00	743.15	744.45	744.45	745.75
260+ 0.00	743.23	744.53	744.53	745.83
260+25.00	743.31	744.61	744.61	745.91
260+50.00	743.39	744.69	744.69	745.99
260+75.00	743.47	744.77	744.77	746.07
261+ 0.00	743.55	744.85	744.85	746.15
261+25.00	743.63	744.93	744.93	746.23
261+50.00	743.71	745.01	745.01	746.31
261+75.00	743.79	745.09	745.09	746.39
262+ 0.00	743.87	745.17	745.17	746.47
262+25.00	743.95	745.25	745.25	746.55
262+50.00	744.03	745.33	745.33	746.63
262+75.00	744.11	745.41	745.41	746.71
263+ 0.00	744.19	745.49	745.49	746.79
263+25.00	744.27	745.57	745.57	746.87
263+50.00	744.35	745.65	745.65	746.95
263+75.00	744.43	745.73	745.73	747.03
264+ 0.00	744.51	745.81	745.81	747.11
264+25.00	744.58	745.89	745.89	747.19
264+50.00	744.64	745.97	745.97	747.27
264+75.00	744.69	746.05	746.05	747.35
265+ 0.00	744.75	746.13	746.13	747.43
265+25.00	744.81	746.21	746.21	747.51
265+50.00	744.87	746.29	746.29	747.59
265+75.00	744.92	746.37	746.37	747.67
266+ 0.00	744.98	746.45	746.45	747.75
266+25.00	745.06	746.55	746.55	747.85
266+50.00	745.17	746.69	746.69	747.99
266+75.00	745.33	746.86	746.86	748.16
267+ 0.00	745.52	747.07	747.07	748.37

NOTES:
FOR ELEVATIONS IN CURVES NOT SHOWN, SEE PAVEMENT DETAILS.

FHWA REGION	STATE	PROJECT	
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FRANKLIN COUNTY
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SUPERELEVATION TABLES

RAMP A

STATION	16' LT.	℄
145+19.14	757.73	758.07
145+50.00	757.83	758.23
145+75.00	757.83	758.37
146+ 0.00	757.87	758.51
146+25.00	757.98	758.65
146+50.00	758.12	758.79
146+75.00	758.26	758.93
147+ 0.00	758.40	759.07
147+25.00	758.54	759.21
147+50.00	758.68	759.35
147+75.00	758.82	759.49
148+ 0.00	758.96	759.63
148+25.00	759.10	759.77
148+50.00	759.26	759.91
148+75.00	759.48	760.05
149+ 0.00	759.74	760.19
149+25.00	760.01	760.33
149+50.00	760.27	760.47
149+75.00	760.53	760.61
150+ 0.00	760.76	760.78
150+25.00	760.93	760.84
150+50.00	761.08	760.93
150+75.00	761.20	760.99
151+ 0.00	761.27	761.03
151+25.00	761.29	761.04
151+50.00	761.29	761.04
151+75.00	761.26	761.01
152+ 0.00	761.21	760.96
152+25.00	761.13	760.88
152+50.00	761.04	760.79
152+75.00	760.92	760.67
153+ 0.00	760.79	760.54

RAMP B

STATION	LT. EDGE	℄	16' RT.
146+25.00		758.51	
146+50.00		758.89	
146+75.00	759.09	759.27	759.63
147+ 0.00	759.48	759.65	759.99
147+25.00	759.86	760.03	760.37
147+50.00	760.24	760.41	760.75
147+75.00	760.62	760.79	761.13
148+ 0.00	761.00	761.17	761.51
148+25.00	761.40	761.55	761.89
148+50.00	761.81	761.93	762.27
148+75.00	762.22	762.31	762.65
149+ 0.00	762.62	762.69	763.03
149+25.00	763.01	763.05	763.39
149+50.00	763.34	763.36	763.70
149+75.00		763.62	763.96
150+ 0.00		763.84	764.11
150+25.00		764.02	764.27
150+50.00		764.15	764.40
150+75.00		764.23	764.48
151+ 0.00		764.27	764.52
151+25.00		764.26	764.51
151+50.00		764.21	764.46
151+75.00		764.11	764.36
152+ 0.00		763.96	764.21
152+25.00		763.77	764.02
152+50.00		763.54	763.79

REFUGEE ROAD NORTH

STATION	12' LT.	℄	12' RT.
71+50.00		774.29	
71+75.00		774.05	
72+ 0.00	773.62	773.81	773.62
72+25.00	773.38	773.57	773.40
72+50.00	773.14	773.33	773.20
72+75.00	772.90	773.09	773.03
73+ 0.00	772.66	772.85	772.85
73+25.00	772.42	772.61	772.67
73+50.00	772.18	772.37	772.49
73+75.00	771.92	772.13	772.33
74+ 0.00	771.60	771.89	772.18
74+25.00	771.26	771.65	772.04
74+50.00	770.92	771.41	771.90
74+75.00	770.58	771.17	771.76
75+ 0.00	770.24	770.93	771.62
75+25.00	769.90	770.69	771.48
75+50.00	769.56	770.45	771.34
75+75.00	769.24	770.21	771.18
76+ 0.00	768.97	769.97	770.97
76+25.00	768.73	769.73	770.73
76+50.00	768.49	769.49	770.49
76+75.00	768.25	769.25	770.25
77+ 0.00	768.01	769.01	770.01
77+25.00	767.79	768.79	769.79
77+50.00	767.61	768.61	769.61
77+75.00	767.48	768.48	769.47
78+ 0.00	767.42	768.38	769.34
78+25.00	767.45	768.33	769.20
78+50.00	767.54	768.31	769.08
78+75.00	767.67	768.34	769.01
79+ 0.00	767.85	768.41	768.97
79+25.00	768.04	768.50	768.96

REFUGEE ROAD NORTH

STATION	12' LT.	℄	12' RT.
79+50.00	768.23	768.59	768.95
79+75.00	768.42	768.68	768.93
80+ 0.00	768.57	768.77	768.94
80+25.00	768.67	768.86	768.96
80+50.00	768.76	768.95	768.99
80+75.00	768.85	769.04	769.02
81+ 0.00	768.94	769.13	769.05
81+25.00	769.01	769.20	769.06
81+50.00	769.05	769.24	769.06
81+75.00	769.05	769.24	769.05
82+ 0.00	769.02	769.21	769.02
82+25.00	768.95	769.14	768.95
82+50.00	768.85	769.04	768.85
82+75.00	768.71	768.90	768.71
83+ 0.00	768.54	768.73	768.54
83+25.00	768.35	768.54	768.35
83+50.00	768.16	768.35	768.16
83+75.00	767.97	768.16	767.97
84+ 0.00	767.78	767.97	767.78

NOTES:
FOR ELEVATIONS IN CURVES NOT SHOWN, SEE PAVEMENT DETAILS.

SUPER ELEVATION TABLES

REFUGEE ROAD NORTH

	24'	12'	℄	12'	24'
92+ 0.00	762.86	762.37	761.89	761.41	
92+25.00	762.57	762.14	761.70	761.26	
92+50.00	762.26	761.88	761.51	761.14	
92+75.00	761.94	761.63	761.32	761.01	
93+ 0.00	761.63	761.38	761.13	760.88	
93+25.00	761.31	761.13	760.94	760.75	760.57
93+50.00	761.00	760.87	760.75	760.63	760.50
93+75.00	760.68	760.62	760.56	760.50	760.44
94+ 0.00	760.39	760.38	760.37	760.36	760.35
94+25.00	760.14	760.16	760.18	760.20	760.22
94+50.00	759.91	759.95	759.99	760.03	760.07
94+75.00	759.69	759.74	759.80	759.86	759.91
95+ 0.00	759.46	759.53	759.61	759.69	759.76
95+25.00	759.23	759.32	759.42	759.52	759.61
95+50.00	759.00	759.12	759.23	759.34	759.46
95+75.00	758.77	758.91	759.04	759.17	759.31
96+ 0.00	758.55	758.70	758.85	759.00	759.15
96+25.00	758.32	758.49	758.66	758.83	759.00
96+50.00	758.10	758.28	758.47	758.66	758.84
96+75.00	757.92	758.11	758.30	758.49	758.68
97+ 0.00	757.80	757.99	758.18	758.37	758.56
97+25.00	757.72	757.91	758.10	758.29	758.48
97+50.00	757.69	757.88	758.07	758.26	758.45

NOTES:
1. FOR ELEVATIONS IN CURVES NOT SHOWN, SEE PAVEMENT DETAILS.

FHWA REGION	STATE	PROJECT	
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FRANKLIN COUNTY
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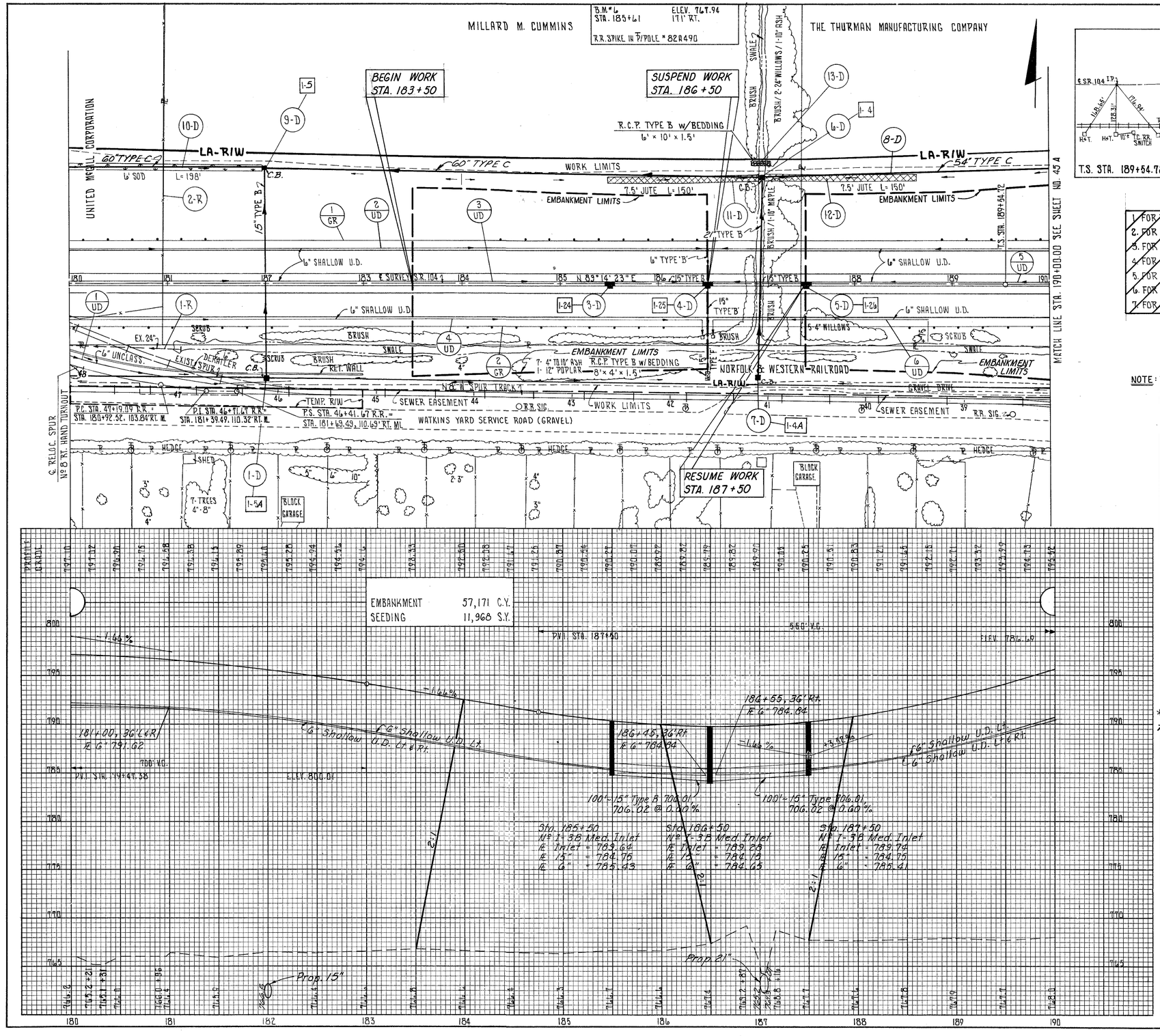

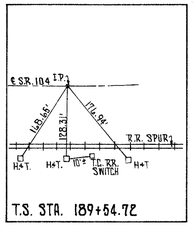

WDC 4-79
ROB 4-79

NOTES

1. FOR RELOC. RAILROAD PROFILE SEE SHEET 183.
2. FOR RELOC. RAILROAD X-SECTIONS SEE SHEET 184.
3. FOR 1-D TO 9-D STORM SEWER PROFILE SEE SHEET 66.
4. FOR 4-D STORM SEWER PROFILE SEE SHEET 67.
5. FOR 6-D TO 7-D STORM SEWER PROFILE SEE SHEET 67.
6. FOR MAIN SEWER PROFILE SEE SHEET 163.
7. FOR UNDERDRAIN DETAILS SEE SHEET 10.

NOTE: THIS SHEET FOR EMBANKMENT INFORMATION ONLY. AFTER SUITABLE EMBANKMENT MATERIAL HAS BEEN PLACED CONTRACTOR SHALL GRADE TO DRAIN.

REF.	STATION TO STATION	SIDE	202 FENCE REM.	202 PIPE REM. 24" & UNDER	603 6" TYPE B	603 6" TYPE F	605 6" SHALLOW U.D.	605 6" UNCLASS. U.D.	605 BENDS & BRANCHES	606 GUARDRAIL TYPE 5
			L.F.	L.F.	L.F.	L.F.	L.F.	L.F.		L.F.
1-GR	180+00 TO 180+00	LT.								1000
2-GR	180+00 TO 190+00	RT.								1000
1-R	180+00 TO 181+14	RT.		114						
2-R	180+00 TO 180+36	L&R	291							
1-UD	44+11.16 TO 48+15.00 R.M. SPUR	RT.				10		132		
2-UD	180+00 TO 190+00	LT.			36		1000		1	
3-UD	186+00 TO 185+50	LT.				10	540			
4-UD	180+00 TO 186+45	RT.				10	693		1	
5-UD	187+50 TO 190+80	LT.				10	240			
6-UD	186+55 TO 188+75	RT.				10	228		1	
	TOTALS		291	114	36	50	2661	132		2000

** 706.01, 706.02; *** 707.05 ### 706.02, 3000 D-LOAD AS PER PLAN
* # 706.02; # 706.02, 2500 D LOAD; * ## 701.02, 3000 D-LOAD ⊗ MOD. AS PER PLAN

REF.	STATION TO STATION	SIDE	601 C.I.P. TYPE 3 W/BEDDING	602 CONCRETE MASONRY	603 6" TYPE F	603 6" TYPE C	603 54" TYPE C	603 TYPE 'B'	603 60" TYPE C	603 BENDS & BRANCHES	604 No 1-38 MOD. INLET	604 No 1-38 CATCH BASIN	604 No 2-B CATCH BASIN	604 No 2-6 CATCH BASIN	604 No 2-3 CATCH BASIN	606 SODDING	607 SEEDING & JUTE MATTING
			C.Y.	C.Y.	L.F.	L.F.	L.F.	L.F.	L.F.		EA.	EA.		EA.	EA.	S.Y.	S.Y.
1-D	182+00	L&R										X			1		
3-D	186+50 TO 186+50	℄		100							1						
4-D	186+50	RT.	3	.3	44	47				2	1						
5-D	186+50 TO 187+50	℄		100							1						
6-D	182+00 TO 187+05	LT.													1		
7-D	187+00 TO 187+05	L&R					550										
8-D	187+05 TO 190+00	LT.						575							1		
9-D	180+00 TO 187+00	L&R					200										
10-D	180+00 TO 181+98	LT.														132	
11-D	186+53 TO 187+03	LT.														125	
12-D	187+02 TO 188+57	LT.														138	
13-D	187+05	LT.	9														
	TOTALS		12	3	240	47	295	218	750		3	1		2	1	132	280

S.R. 104 STA. 180+00.00 TO STA. 190+00.00

FHWA REGION	STATE	PROJECT	
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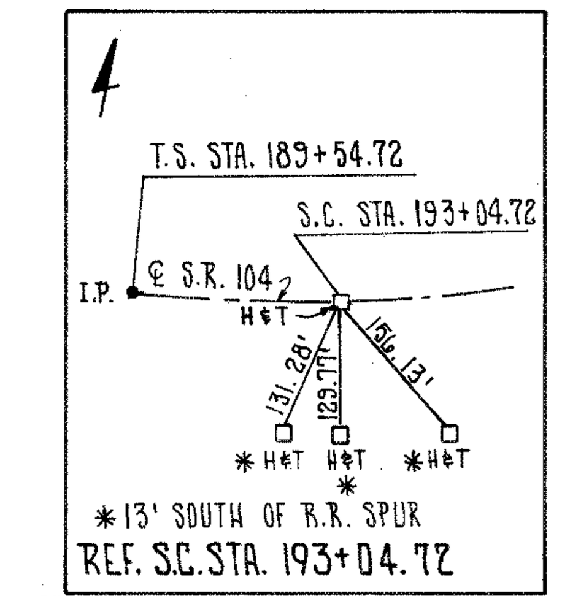
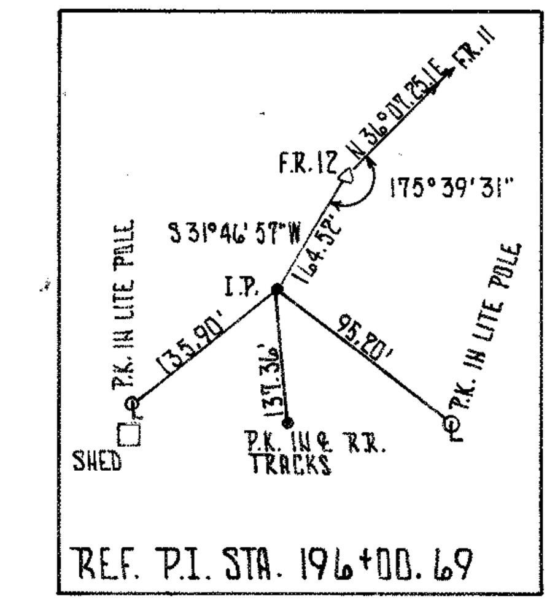
FRANKLIN COUNTY
FRA-104-10.57

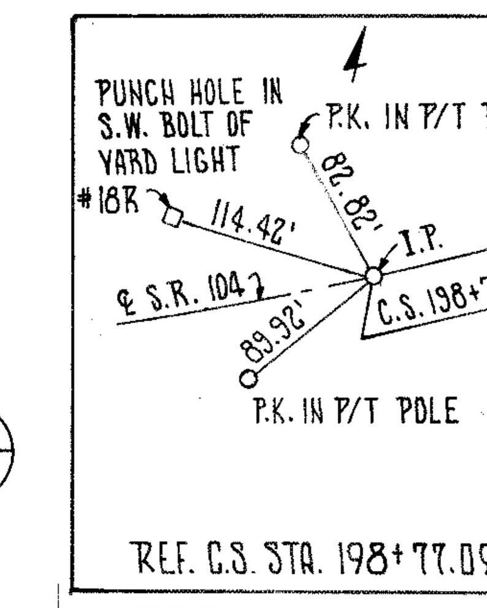
WDG 4-79
ROB 4-79



REF. S.C. STA. 193+04.72

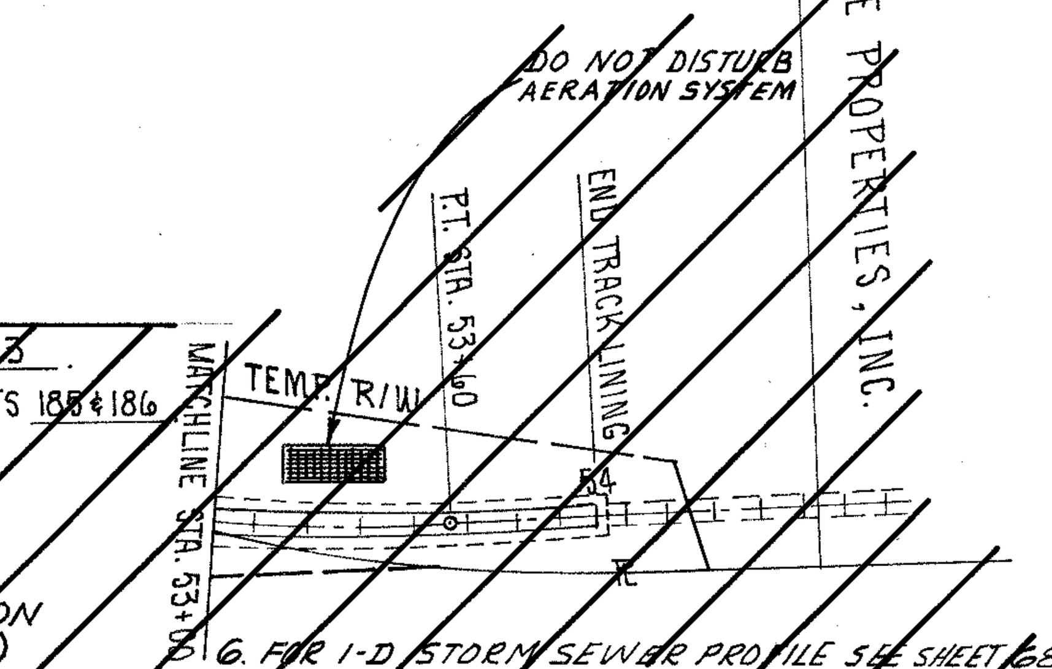


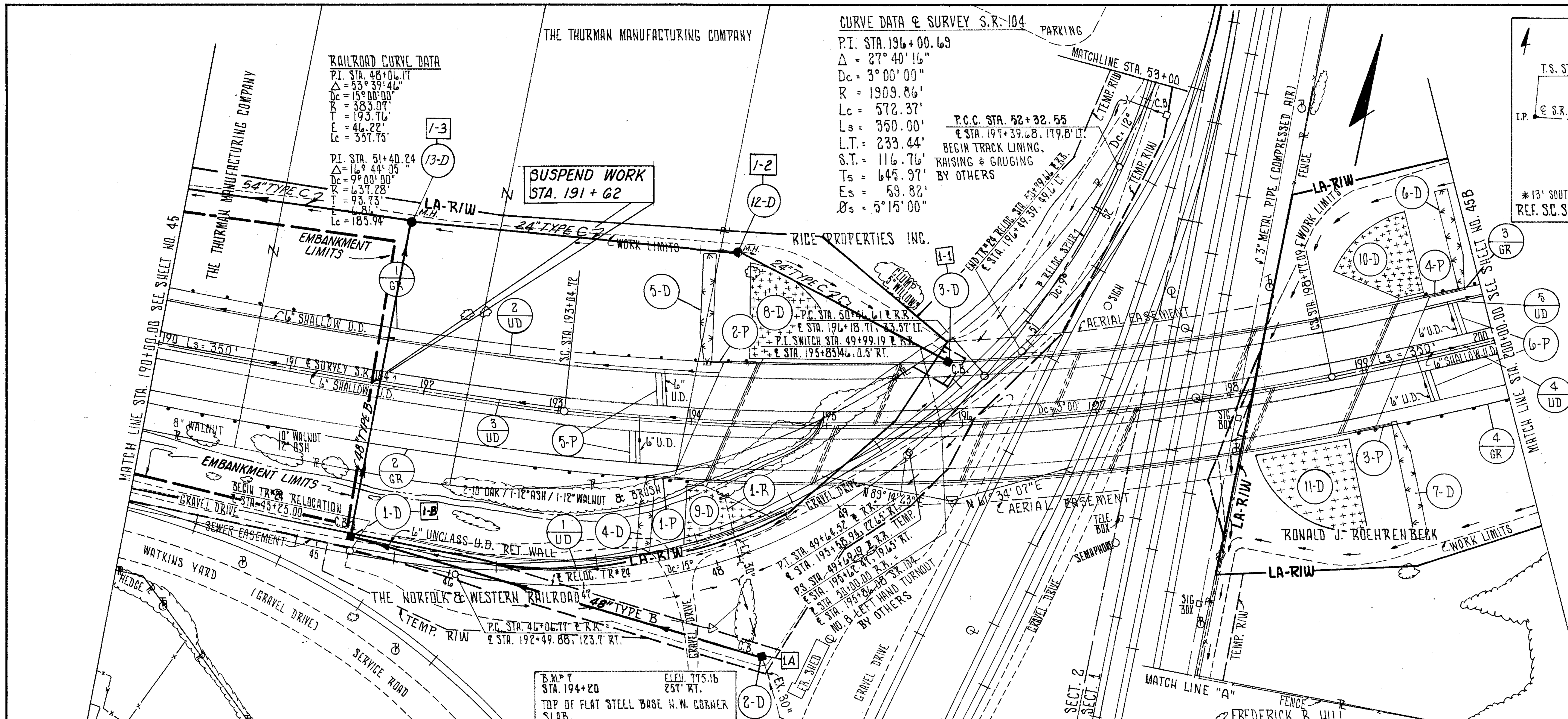
REF. P.I. STA. 196+00.69

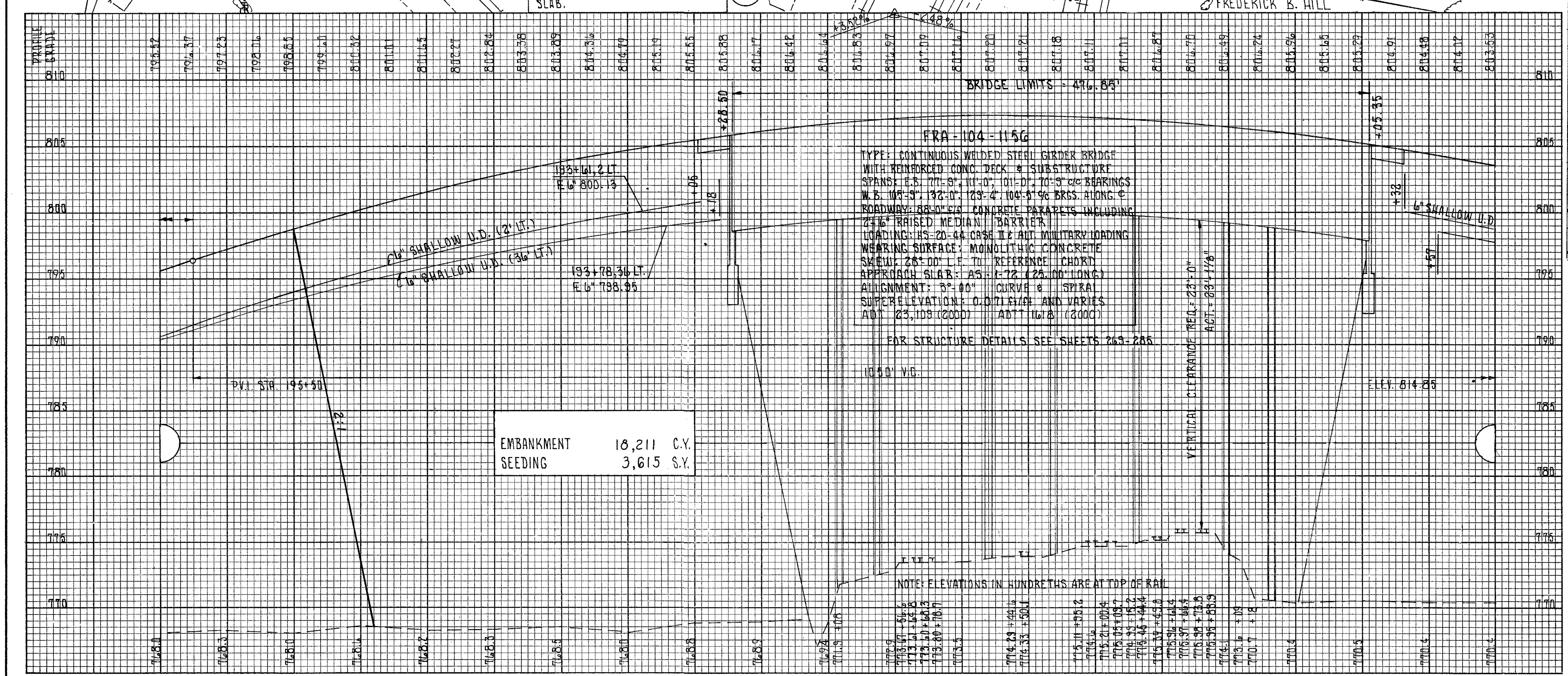


REF. C.S. STA. 198+77.09

NOTE: THIS SHEET FOR EMBANKMENT INFORMATION ONLY AFTER SUITABLE EMBANKMENT MATERIAL HAS BEEN PLACED, CONTRACTOR SHALL GRADE TO DRAIN.







1. FOR RELOCATED RAILROAD PROFILES SEE SHEET 183.
2. FOR RELOCATED RAILROAD X-SECTIONS SEE SHEETS 185 & 186
3. FOR MAIN SEWER PROFILES SEE SHEET 163.
4. ALL RAILROAD EQUIPMENT WILL BE RELOCATED BY RAILROAD FORCES.
5. SEE GENERAL NOTES REGARDING WORK ON RICE PROPERTIES, INC., (PARCEL 168)
6. FOR 1-D STORM SEWER PROFILE SEE SHEET 68.

* 706.02 ** 706.02, 3000 D-LOAD ‡ 706.02, 3000 D-LOAD AS PER PLAN

REF.	STATION TO STATION	SIDE	603 24" TYPE C *	603 48" TYPE B **	603 48" TYPE B ‡	603 54" TYPE C *	604 No 2-3 CATCH BASIN	604 No 3 MANHOLE	604 No 2-5 CATCH BASIN	604 No 4 MANHOLE	660 REINFORCED SODDING	668 SEEDING & EXCELSIOR MATTING AS PER PLAN	202 PIPE REMOVED OVER 24"
			L.F.	L.F.	L.F.	L.F.	EA.	EA.	EA.	EA.	S.Y.	S.Y.	L.F.
1-D	1+70 TO 191+70	L.&R.		236					1				
2-D	191+70 TO 194+55	RT.		246	70				1				
3-D	194+31 TO 50+37 RELOC. R.R.	LT.	175				1						
4-D	193+69	RT.									55		
5-D	194+03	LT.									80		
6-D	199+84	LT.									70		
7-D	199+16	RT.									84		
8-D	194+41 TO 195+10	LT.										378	
9-D	194+00 TO 194+60	RT.										181	
10-D	198+84 TO 199+57	LT.										278	
11-D	198+17 TO 198+80	RT.										414	
12-D	191+70 TO 194+31	LT.	261					1					
13-D	190+00 TO 191+70					170				1			
1-R	194+26 TO 194+41	RT.											50
		TOTALS	436	482	70	170	1	1	2	1	289	1251	50

‡ OMIT WHEEL GUARD

REF.	STATION TO STATION	SIDE	605 BENDS & BRANCHES	603 6" TYPE F	605 6" SHALLOW U.D.	605 6" UNCLASS. U.D. 707.01	606 GUARDRAIL TYPE 5	606 BRIDGE TERMINAL ASSEMBLY TYPE A ‡	609 CURB TYPE 6	SPEC. PRESSURE RELIEF JOINT TYPE A
				L.F.	L.F.	L.F.	L.F.	EA.	L.F.	L.F.
1-GR	190+00 TO 194+30.96	LT.					430.96	1		
2-GR	190+00 TO 193+97.04	RT.					397.04	1		
3-GR	199+55.71 TO 200+00	LT.					44.29	1		
4-GR	198+87.82 TO 200+00	RT.					112.18	1		
1-P	193+71.04 TO 193+89.04	RT.							18	
2-P	194+04.96 TO 194+19.96	LT.							15	
3-P	198+98.82 TO 199+13.82	RT.							14	
4-P	199+60.21 TO 199+81.71	LT.							21.5	
5-P	193+54 TO 193+80	L&R								48
6-P	199+45 TO 199+82	L&R								48
1-UD	45+25 TO 48+60 RELOC. R.R.	LT.		10		325				
2-UD	190+00 TO 194+18	LT.	1		446					
3-UD	190+00 TO 194+05	L&R	1		443					
4-UD	199+32 TO 200+00	L&R	1		106					
5-UD	199+57 TO 200+00	LT.	1		71					
		TOTALS		10	1066	325	984.47	4	68.5	96

Revised: D.E.J. 4-10-80

S.R. 104 STA. 190+00.00 TO STA. 200+00.00

FRANKLIN COUNTY
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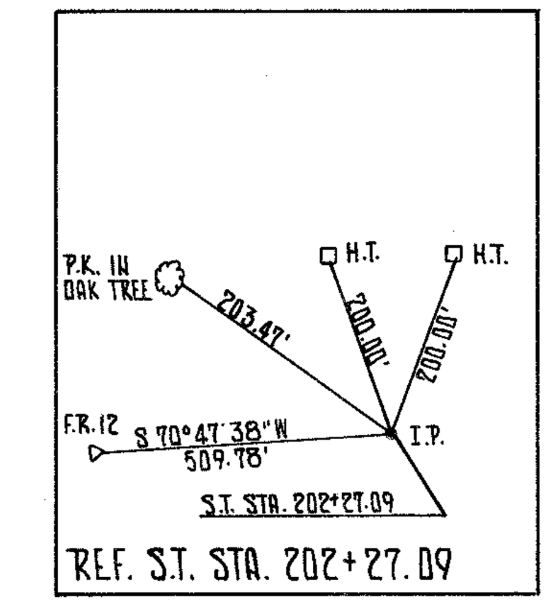
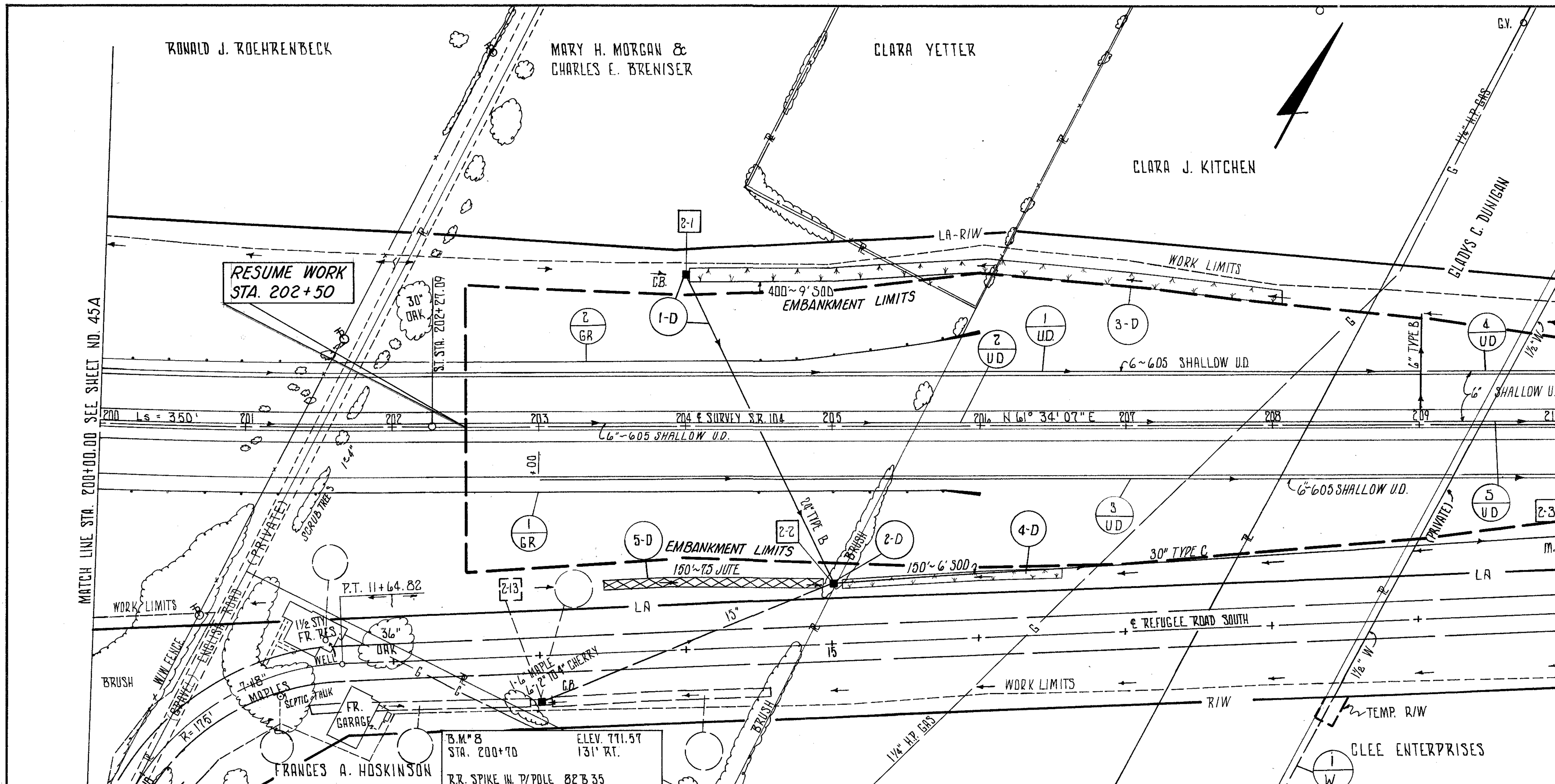


PCB 3-79
ROB 4-79

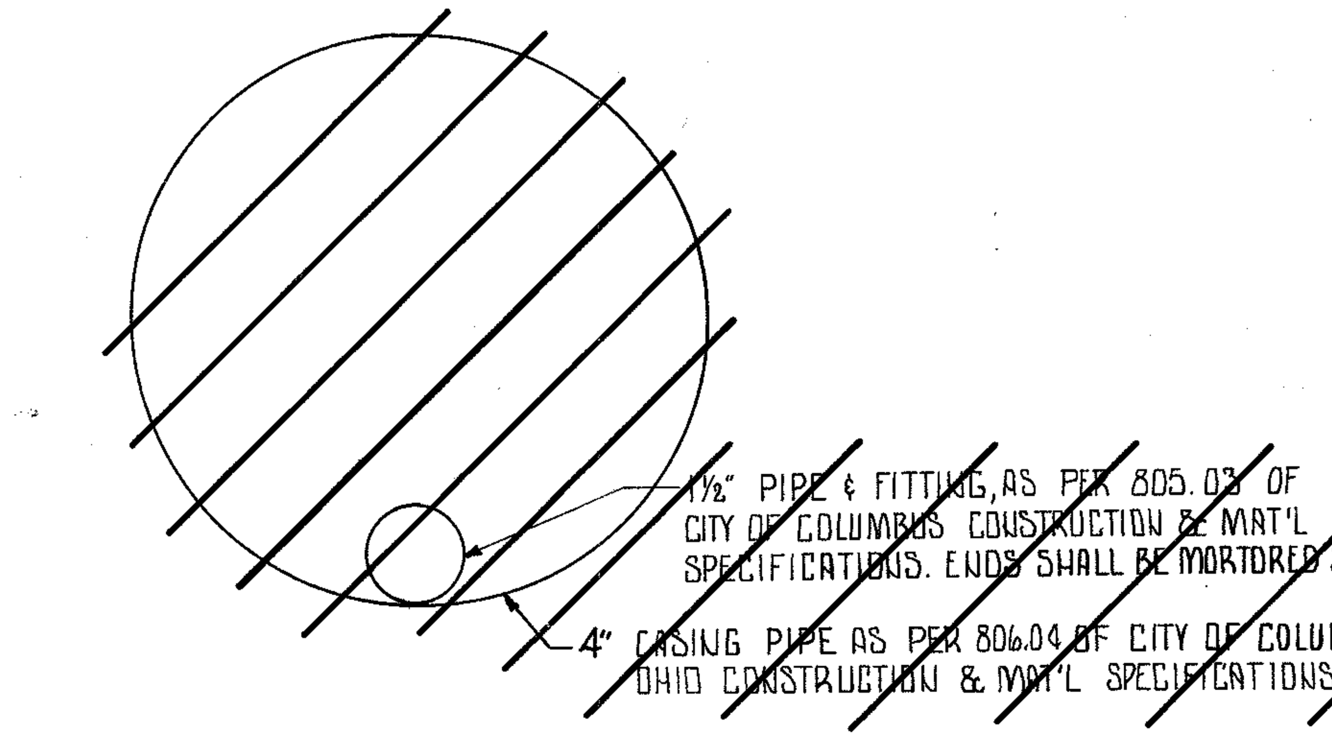


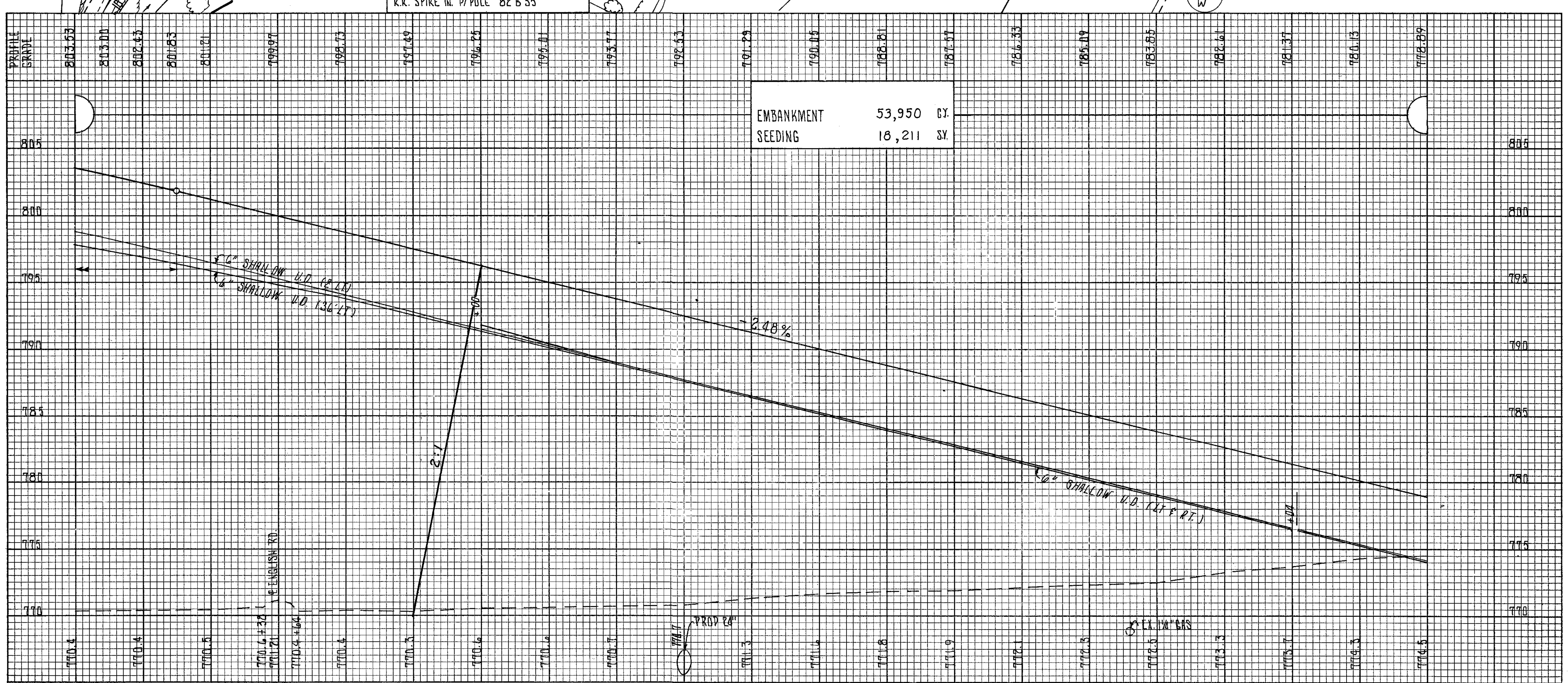
NOTES

1. FOR STORM SEWER PROFILES SEE SHEET 164.
2. FOR REF. RD. SOUTH P&P SEE SHEET 119-121
3. FOR UNDERDRAIN DETAILS SEE SHEET 10.
4. ITEM SPECIAL 1½" PIPE ENCASEMENT SHALL INCLUDE THE 4" CASING PIPE AND 1½" WATER PIPE AND FITTINGS IN THE UNIT PRICE BID.

( ) INDICATES QUANTITIES CARRIED ON ANOTHER SHEET.

NOTE: THIS SHEET FOR EMBANKMENT INFORMATION ONLY. AFTER THE SUITABLE EMBANKMENT MATERIAL HAS BEEN PLACED, THE CONTRACTOR SHALL GRADE TO DRAIN.





‡ OMIT DIKE   * 706.02 2250 D-LOAD

REF	STATION TO STATION	SIDE	603 24" TYPE B * (L.F.)	603 6" TYPE B (L.F.)	603 6" TYPE F (L.F.)	603 30" TYPE C 706.02 (L.F.)	604 NO.5 C.B. (EA.)	604 2-3 C.B. (EA.)	605 6" SHALLOW U.D. (L.F.)	605 BENDS & BRANCHES	606 GUARDRAIL TYPE 5 (L.F.)	SPECIAL 1½" PIPE ENCASEMENT (L.F.)	606 ANCHOR ASSEMBLY A (EA.)	606 ANCHOR ASSEMBLY T (EA.)	660 SODDING (S.Y.)	667 SEEDING & JUTE MATTING (S.Y.)
1-D	204+00 TO 205+00	LT.& RT.	234					1								
2-D	205+00 TO 210+00	RT.				500	1									
3-D	204+02 TO 208+02	LT.													400	
4-D	208+07 TO 206+57	RT.													100	
5-D	203+43 TO 204+93	RT.														125
1-GR	200+00 TO 206+00.32	RT.									581.82			1		
2-GR	200+00 TO 206+05.71	LT.									580.71		1			
1-W	209+43	LT.& RT.										330				
1-UD	200+00 TO 209+00	LT.							900	1						
2-UD	200+00 TO 209+00	LT.		34	10				929	1						
3-UD	203+00 TO 210+00	RT.							700							
4-UD	209+04 TO 210+00	LT.							96							
5-UD	209+04 TO 210+00	LT.							96							
TOTALS			234	34	10	500	1	1	2721		1162.53	330	1	1	500	125

FHWA REGION	STATE	PROJECT	
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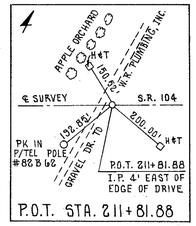
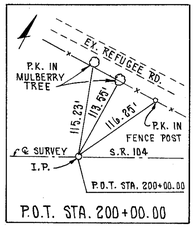
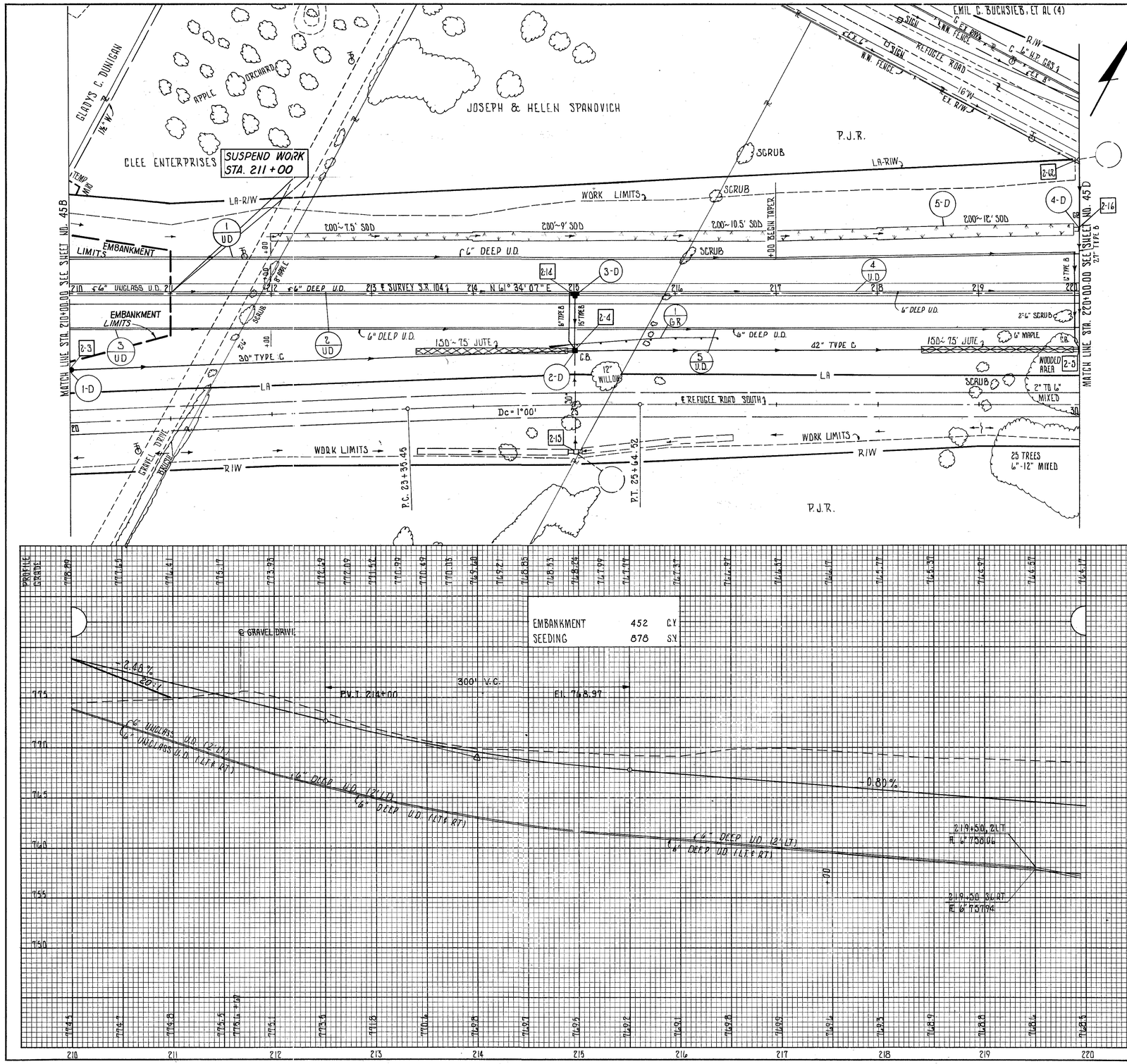
FRANKLIN-COUNTY
FRA-104-10.57

CH.	PCB	3-79
CHK.	ROD	4-79







NOTES

1. FOR STORM SEWER PROFILE SEE SHEET NO. 104
2. FOR REF. RD. NORTH PLAN & PROFILE SEE SHEET NO. 108.
3. FOR REFUGEE RD. SOUTH PLAN & PROFILE SEE SHEET NO. 120 & 121.
4. FOR C-D TO 3-D STORM SEWER PROFILE SEE SHEET NO. 73 & 125.
5. FOR 4-D STORM SEWER PROFILE SEE SHEET NO. 74.
6. FOR UNDERDRAIN DETAILS SEE SHEET NO. 10.

NOTE: THIS SHEET FOR EMBANKMENT INFORMATION ONLY. AFTER SUITABLE EMBANKMENT MATERIAL HAS BEEN PLACED CONTRACTOR SHALL GRADE TO DRAIN.

REF.	STATION TO STATION		SIDE	603 6" TYPE B	603 6" TYPE F	605 6" UNCLASS U.D.	605 6" DEEP U.D.	605 BENDS & BRANCHES	606 GUARDRAIL TYPE 5	606 ANCHOR ASSEMBLY TYPE A	606 ANCHOR ASSEMBLY TYPE T
				L.F.	L.F.	L.F.	L.F.		L.F.	EA.	EA.
1-UD	210+00	TO 219+95	LT.	42		208	795	1			
2-UD	210+00	TO 214+98	LT.	38		200	295	1			
3-UD	210+00	TO 214+95	RT.		10	200	305	2			
4-UD	213+02	TO 219+95	LT.	38			498	1			
5-UD	213+00	TO 219+93	RT.		10		302	2			
1 GR	214+75	TO 216+37.5	RT.						125	1	1
			TOTALS	118	20	600	2390		125	1	1

* 704.01 OR 704.02

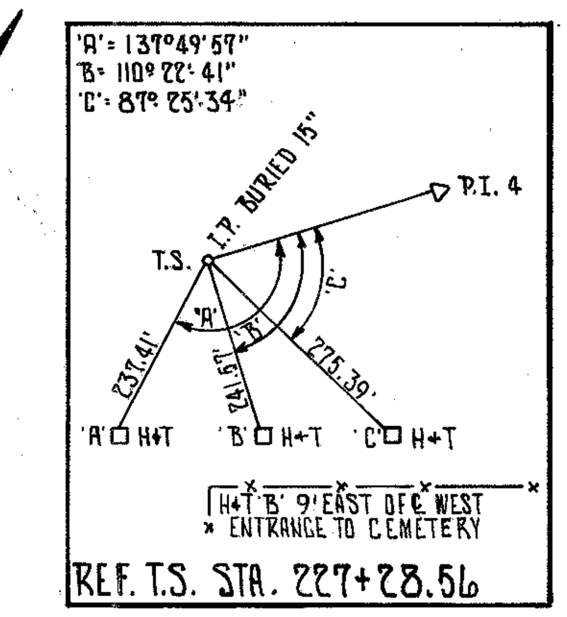
REF.	STATION TO STATION		SIDE	603 15" TYPE B 704.02	603 27" TYPE B 704.02	603 30" TYPE C 704.02	603 42" TYPE C 704.02	604 T-3B INLET	604 NO. 3 MAN HOLE	604 NO. 5 C.B.	604 NO. 3A C.B.	604 SEEDING	604 JUTE MATTING
				L.F.		L.F.		EA.	EA.	EA.	EA.	S.Y.	S.Y.
1-D	210+00	TO 215+00	RT.			500			1				125
2-D	215+00	TO 220+00	RT.			500					1		125
3-D	215+00		RT.	52				1					
4-D	220+00		LT & RT.		118					1			
5-D	218+43	TO 219+93	LT.									867	
			TOTALS	52	118	500	500	1	1	1	1	867	250

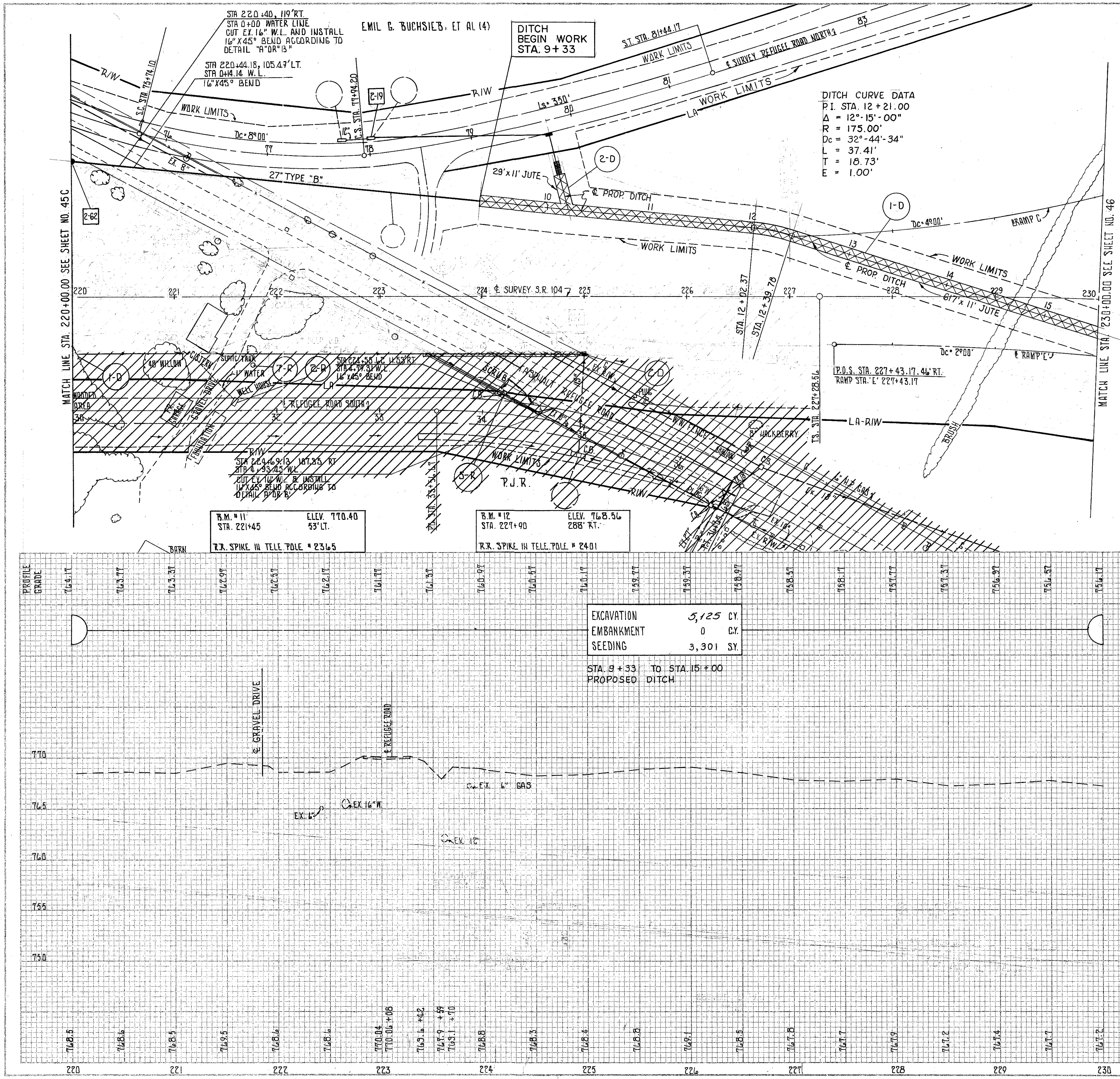
S.R. 104 STA. 210+00.00 TO STA. 220+00.00

FHWA REGION	STATE	PROJECT		SHEET
5	OHIO			45D / 254

FRANKLIN COUNTY
FRA-104-10.57

CALC: PCB 3-79
CHK: ROB 4-79





NOTES

1. FOR REF. RD. NORTH PLAN & PROFILE SEE SHEET NO. 79
2. ~~FOR REF. RD. SOUTH PLAN & PROFILE SEE SHEET NO. 121~~
3. ~~FOR STORM SEWER PROFILES SEE SHEET NO. 74 & 164~~
4. ~~FOR PAVEMENT DETAILS SEE SHEET NO. 169 & 170~~
5. ~~FOR WATERLINE PROFILE AND QUANTITIES SEE SHEETS 187 & 189~~
6. ~~CONTRACTOR SHALL FIELD LOCATE EX. 16" PRIOR TO WATERLINE CONSTRUCTION.~~
7. ~~CONSTRUCTION OF THE RELOCATED W.L. SHALL BE AT THE SAME TIME THE W.L. IS CONSTRUCTED ON SHEET 127 ALLOWING ONE SHUT DOWN OF THE EXISTING 16" W.L.~~
8. ~~FOR UNDERDRAIN DETAILS SEE SHEET 10.~~

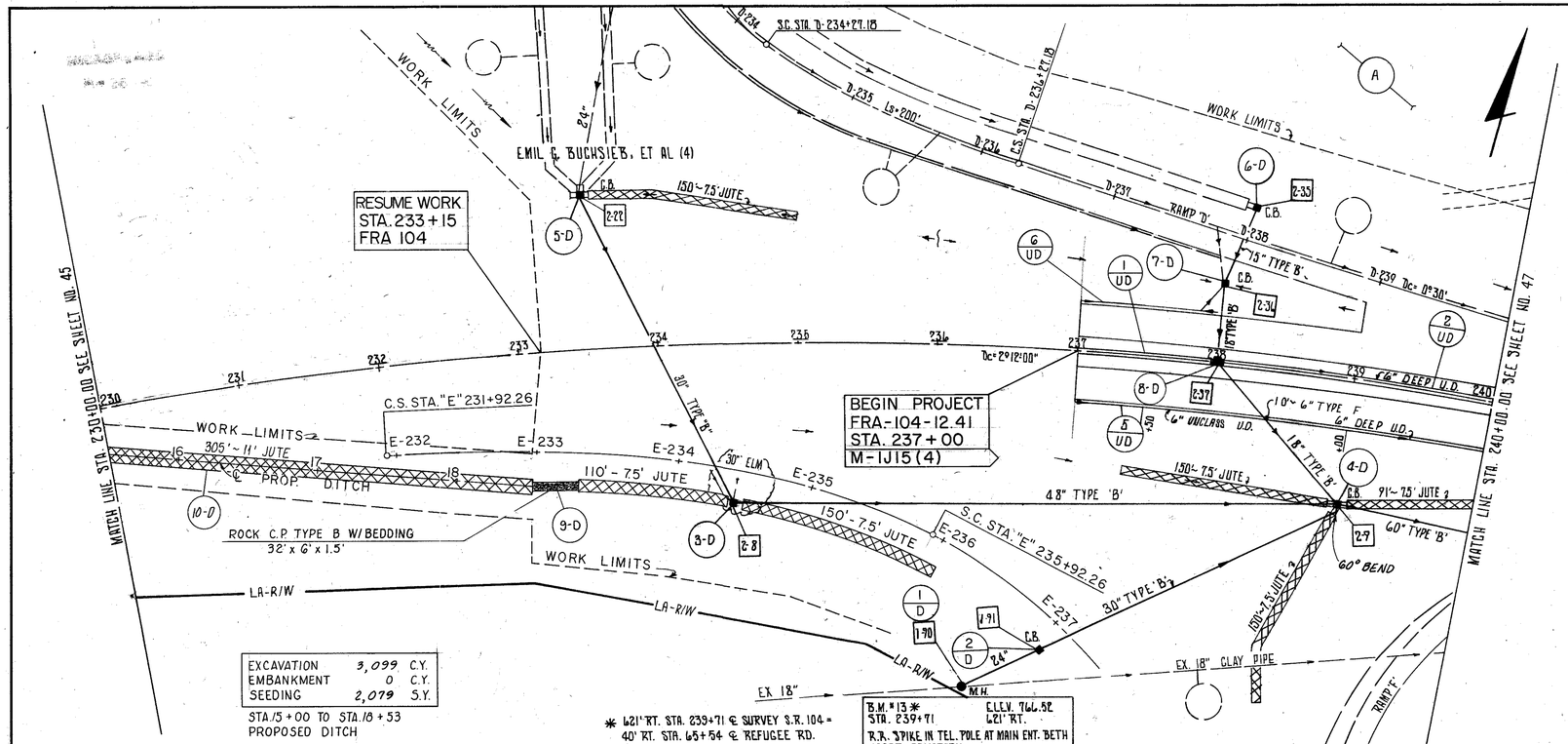
2. FOR PROP. DITCH PROFILE & CROSS SECTIONS SEE SHEET NO. 96

REF.	STATION TO STATION	SIDE	603 6" TYPE B	603 6" TYPE F	605 6" UNCLASS U.D.	605 6" DEEP U.D.	605 BENDS & BRANCHES	606 GUARD RAIL TYPE 5	606 ANCHOR ASSEMBLY TYPE A	606 ANCHOR ASSEMBLY TYPE T
			L.F.	L.F.	L.F.	L.F.		L.F.	EA.	EA.
1-UD	220+02 TO 224+30	LT.	71	18		372	1			
2-UD	220+02 TO 224+72	LT.	53	10		422	1			
3-UD	220+02 TO 225+00	RT.		20		482	2			
4-UD	223+94 TO 229+00 (C)	LT.		10	210	586	1			
5-UD	224+44 TO 229+00	LT.		10		446				
6-UD	224+82 TO 230+00	RT.				518	1			
7-UD	229+02 TO 230+00	LT.				98				
8-UD	229+02 TO 230+00	LT.				98				
1-GR	228+25 TO 229+87.5	RT.						125	1	1
	TOTALS		124	60	210	2742		125	1	1

* 706.01 OR 706.02 ** 706.02 *‡ MODIFIED AS PER PLAN ‡‡ OMIT DIKE

REF.	STATION TO STATION	SIDE	202 PIPE REMOVED UNDER 24"	202 SEPTIC TANK REMOVED	202 CATCH BASIN REMOVED	202 UNDERGROUND STOR. TANK REMOVE	603 18" TYPE B *	603 21" TYPE B **	603 48" TYPE C 706.02	604 NO. 5 C.B. ‡‡	604 NO. 5A C.B.	604 I-3B INLET *‡	667 SEEDING & JUTE MATTING	SPECIAL DRILLED WELL ABANDON
			L.F.	EA.	EA.		L.F.		L.F.	EA.		EA.	S.Y.	EA.
1-D	9+45 TO 15+50, DITCH	Ⓒ											754	
2-D	79+75 REF. RD. NORTH	RT.											35	
3-D	78+00 (REF. N.) TO 228+00	LT. & RT.					296							
4-D	229+00 (C) TO 229+00	L.T.						100		1				
5-D	229+00 TO 230+00	Ⓒ-RT.						114				1		
6-D	227+43 (C) TO 228+93 (C)	L.T.											125	
7-D	229+07 (C) TO 230+07 (C)	L.T.											83	
8-D	228+93 (E) TO 230+00 (E)	R.T.											89	
1-R	221+12	R.T.				1								
2-R	221+58	R.T.												1
3-R	220+00 TO 222+14	L.T.	244		1									
4-R	222+14 TO 224+20	LT. & RT.	236		1									
5-R	224+20 TO 36+46 (REF. S.)	R.T.	228		1									
6-R	222+70 TO 225+46	LT. & RT.	314		1									
7-R	221+75	R.T.		1										
	TOTALS		1022	1	4	1	296	214	1000	1	2	1	789	1

S.R. 104 STA. 220+00.00 TO STA. 230+00.00



FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA-104-10.57

46
254

CALC PCB 3-79
CHK ROB 4-79

NOTES

1. FOR PROP. DITCH PROFILE & CROSS SECTION SEE SHEET 96
2. FOR RAMP D PLAN & PROFILE SEE SHEET 102
4. FOR RAMP F PLAN & PROFILE SEE SHEET 109
5. FOR PAVEMENT DETAIL SEE SHEETS 127 & 129.
6. FOR STORM SEWER PROFILE SEE SHEETS 125,126
7. FOR UNDERDRAIN DETAILS SEE SHEET 9.

REF	STATION TO STATION	SIDE	603 6" TYPE F		605 6" DEEP U.D.	605 6" UNCLASS U.D.	605 BENDS & BRANCHES	601 ROCK C.P. TYPE B WITH BEDDING		
			L.F.		L.F.	L.F.		C.Y.		
1-UD	237+00 TO 238+00	LT	20		80					
2-UD	238+04 TO 240+00	LT			196					
5-UD	237+00 TO 240+00	RT			160	140				
6-UD	237+00 TO 238+00	LT	20		100		1			
9-D	8+53 TO 8+63, DITCH	℄						11		
TOTALS			40		536	140		11		

* 706.01 OR 706.02 ** 706.02 † OMIT DIKE

REF	STATION TO STATION	SIDE	603 15" TYPE "B" *	603 18" TYPE "B" *	603 24" TYPE "C" **	603 30" TYPE "B" †	603 36" TYPE "B" **	603 42" TYPE "D" **	603 48" TYPE "B" **	603 60" TYPE "B" **	604 I-38.50 MANHOLE	604 NO. 22-15 C.B.	604 NO. 34 C.B.	604 NO. 5 C.B.	604 NO. 1 M.H.	667 SEEDING & JUTE MATTING
			L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	EA.	EA.	EA.	EA.	EA.	S.Y.
1-D	236+86 TO 237+10	RT.			54										1	
2-D	237+10(E) TO 239+00	RT.									238		1			
3-D	8+63 (DITCH) TO	239+00 RT							430	5			1**			217
4-D	239+00 TO	240+00 RT										96	1**			326
5-D	239+50 TO	234+50 (E) LT & RT				248								1**		125
6-D	238+00 (D)	LT & RT	58											1		
7-D	238+00	LT		56								1				
8-D	238+00 TO	239+00 RT		136							1					
10-D	15+50 TO 18+53, DITCH	℄														370
TOTALS			58	192	54	248			430	5	96	238	1	1	3	2	1	1038

S.R. 104 STA. 230+00.00 TO STA. 240+00.00

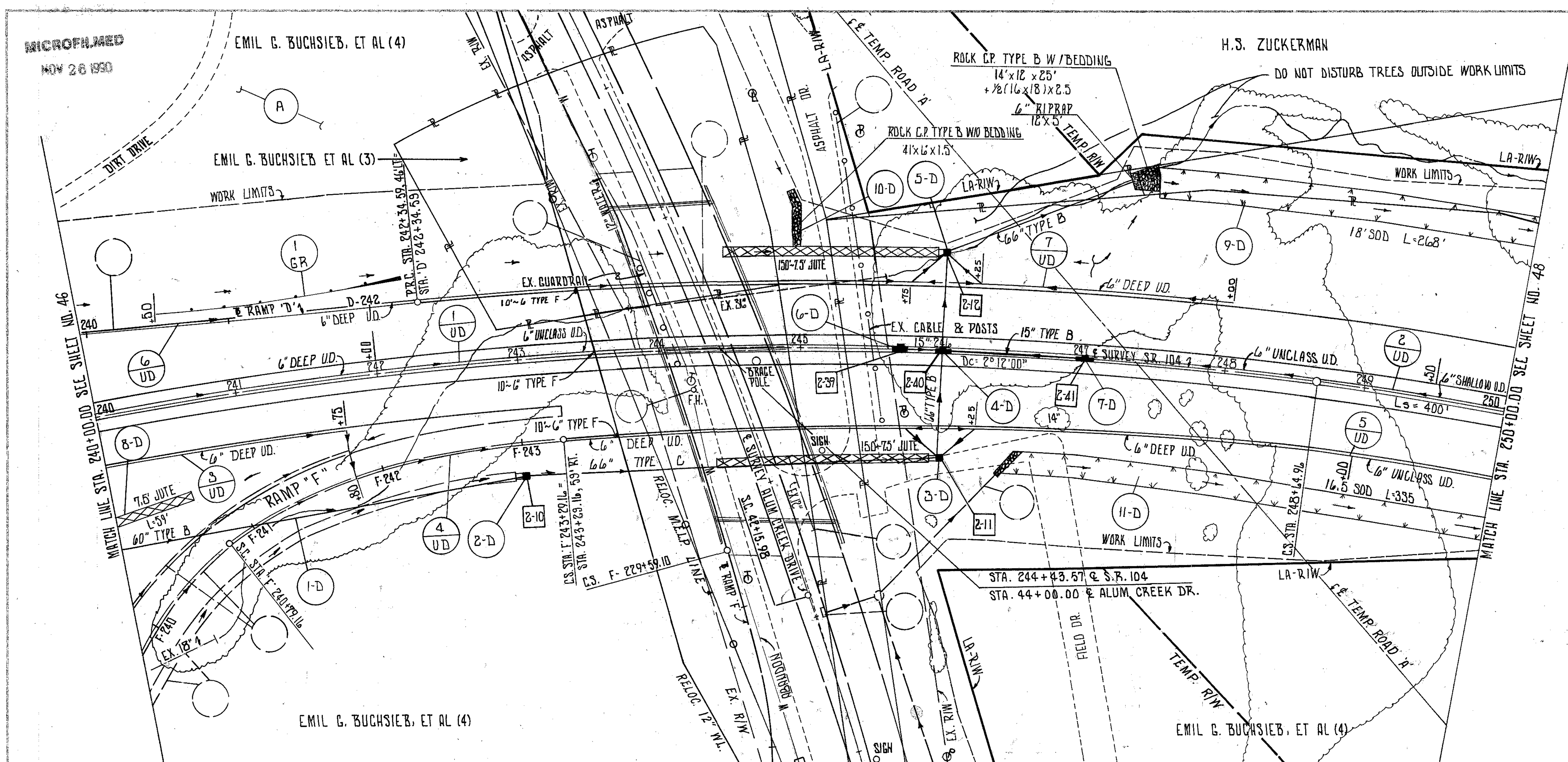
FHWA REGION	STATE	PROJECT	
5	OHIO		

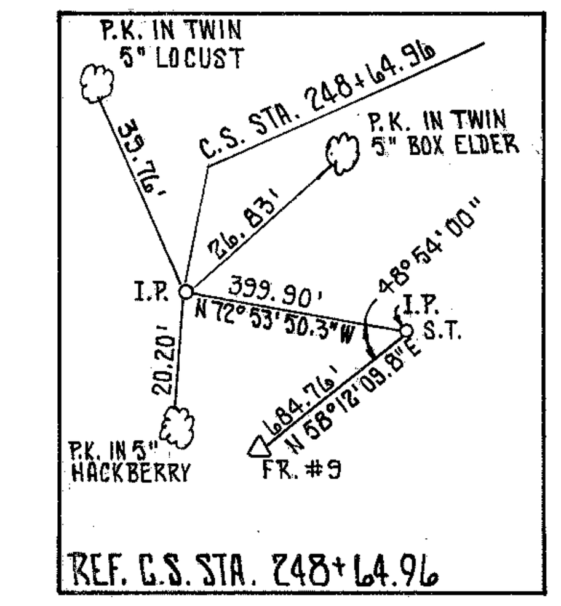
47
254

FRANKLIN COUNTY
FRA-104-10.57

CALC: PCB 3-79
CHK: ROB 4-79

MICROFILMED
NOV 26 1990





CURVE DATA ℄ SURVEY S.R. 104
P.I. STA. 240+62.06
Δ = 47° 00' 02"
Dc = 2° 12' 00"
R = 2604.35'
Lc = 1736.39'
Ls = 400.00'
L.T. = 266.75'
S.T. = 133.41'
Ts = 1333.50'
Es = 238.34'
Øs = 4° 24' 00"

NOTES

1. FOR RAMP D PLAN & PROFILE SEE SHEET NO. 102
2. FOR RAMP F PLAN & PROFILE SEE SHEET NO. 109
3. FOR PAVEMENT DETAILS SEE SHEET NO. 127 & 129.
4. FOR STORM SEWER PROFILE SEE SHEET NO. 125, 126
5. FOR ALUM CREEK DRIVE PLAN & PROFILE SEE SHEET NO. 62
6. FOR UNDERDRAIN DETAILS SEE SHEET 9

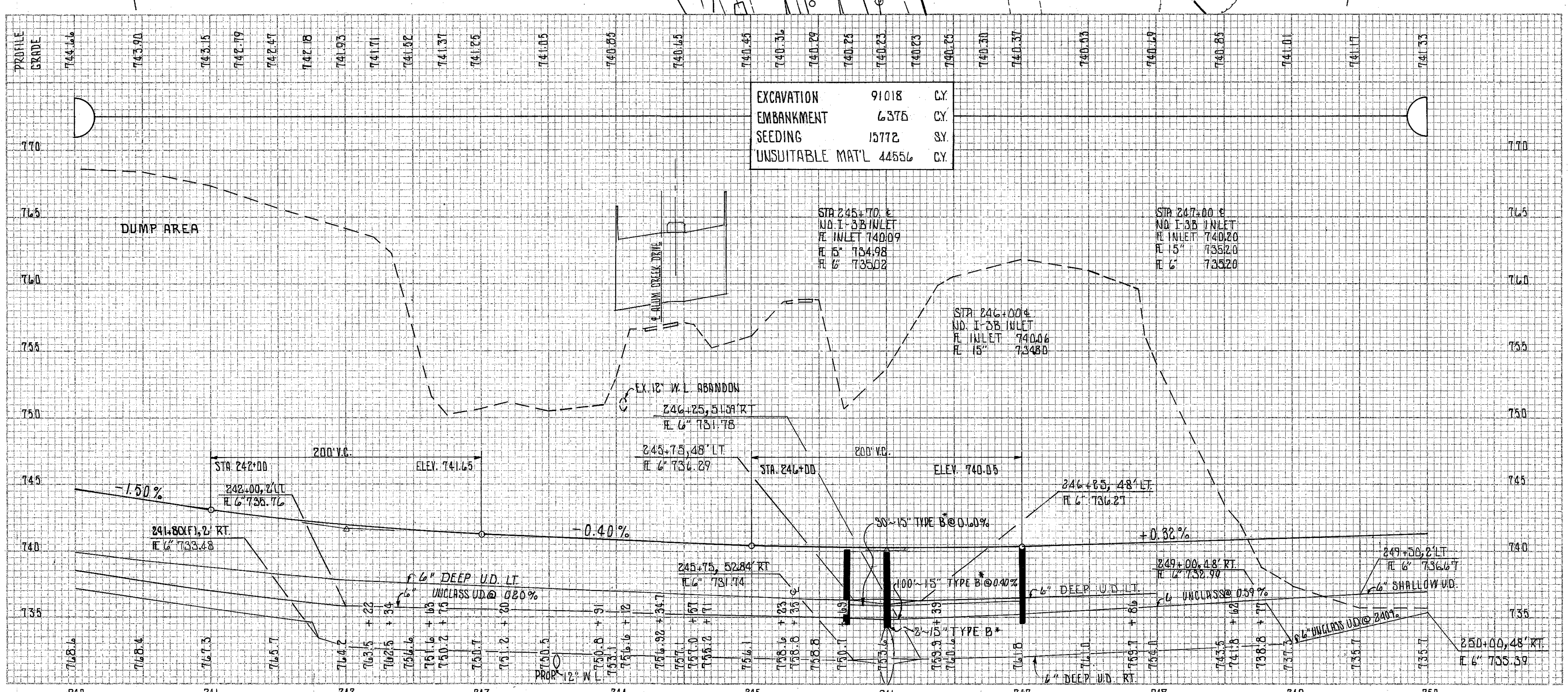
QUANTITIES FOR (R) ITEM 653 & 659 SEE SHEET 97

7. FOR TEMPORARY ROADWAY SEE SHEETS 22 & 23
8. FOR WATERLINE PROFILE & QUANTITIES SEE SHEETS 138 & 140
9. ~~FOR RELOCATED ELECTRIC LINES SEE SHEETS 235~~

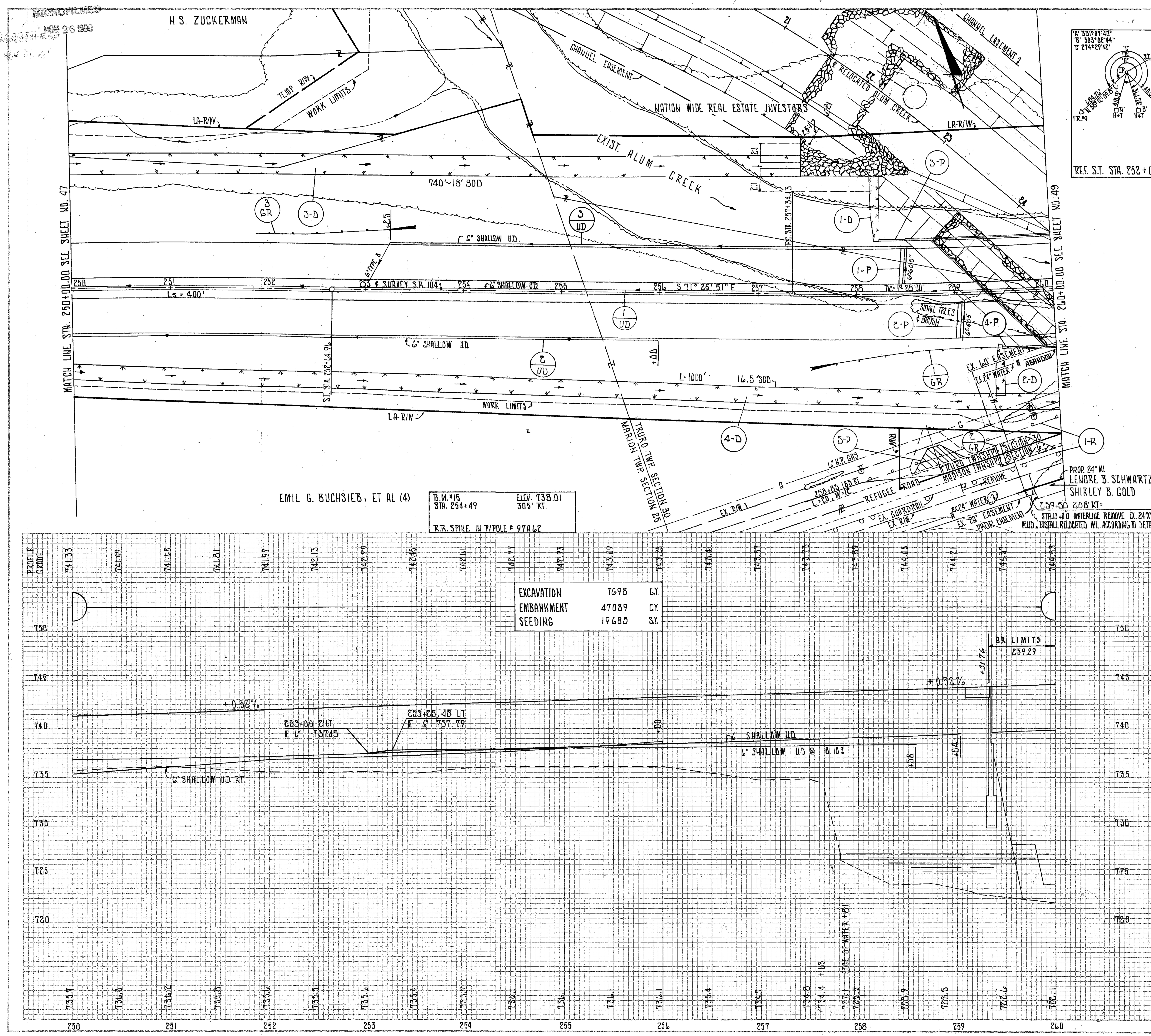
REF	STATION TO STATION	SIDE	603 6" TYPE B	603 6" TYPE F	605 6" SHALLOW U.D.	605 6" DEEP U.D.	605 6" UNCLASS U.D.	605 BENDS & BRANCHES	606 GUARD RAIL TYPE 5	606 ANCHOR ASSEM. TYPE A	606 ANCHOR ASSEM. TYPE T
			L.F.	L.F.	L.F.	L.F.	L.F.		L.F.	E.A.	
1 UD	240+00 TO 245+70	LT.		20		200	350				
2 UD	247+00 TO 250+00	LT.		10	50		240				
3-UD	240+00 TO 241+75	RT.				191		1			
4 UD	241+80 (F) TO 246+00	RT.	20	20		428	20	2			
5 UD	246+00 TO 250+00	RT.		10		320	100	1			
6 UD	240+50 (D) TO 246+00	LT.		20		560		1			
7 UD	246+00 TO 248+00	LT.		10		220		1			
1 GR	240+62.5 TO 242+25	LT.							125	1	1
	TOTALS		20	90	50	1919	710		125	1	1

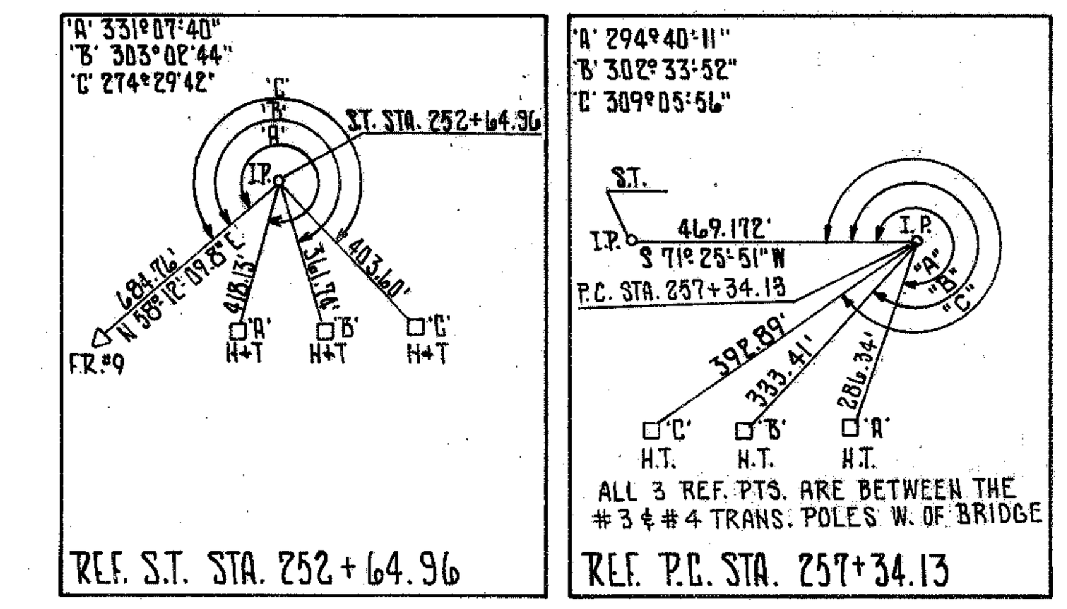
** WITH BEDDING
* 706.01 OR 706.02
‡ W/O BEDDING
‡‡ OMIT DIKE
*‡ REINFORCED CB. OMIT DIKE

REF	STATION TO STATION	SIDE	601 ROCK CHAN. PROT. TYPE B **	601 ROCK CHAN. PROT. TYPE B ‡	601 6" RIPRAP	602 CONC. MASONRY	603 15"* TYPE B	603 60" TYPE B 706.02	603 66" TYPE B 706.02	603 66" TYPE C 706.02	604 NO. 5A C.B. *‡	604 I-3B-50 INLET	604 NO. 5A C.B.	660 SODDING	667 JUTE MATTING
			C.Y.	C.Y.	S.Y.	C.Y.	L.F.	L.F.	L.F.	L.F.	E.A.	E.A.	E.A.	S.Y.	S.Y.
1-D	240+00 TO 243+00	RT.						290							
2-D	243+00 TO 246+00	RT.								294			1		
3-D	246+00	LT.&RT.							142				1		125
4-D	246+00	℄					2					1			
5-D	246+00 TO 247+45	LT.	26		7	2.4			140		1				125
6-D	245+70 TO 246+00	℄					30					1			
7-D	246+00 TO 247+00	℄					100					1			
8-D	240+00 TO 240+59	RT.													49
9-D	247+40 TO 250+00	LT.												536	
10-D	245+00	LT.		14											
11-D	246+50 TO 250+00	RT.												614	
	TOTALS		26	14	7	2.4	132	290	282	294	1	3	2	1150	299



S.R. 104 STA. 240+00.00 TO STA. 250+00.00





FHWA REGION	STATE	PROJECT
5	OHIO	

48
254

FRANKLIN COUNTY
FRA-104-10.57

CALC: PCB 3-79
CHK: ROB 4-79

LEGEND

6" ITEM 848 ASPHALT CONCRETE & ITEM 408 PRIME COAT ON 6" ITEM 304 AGGREGATE BASE

FLEXIBLE PAVEMENT REMOVED UNDER ITEM 203

NOTES

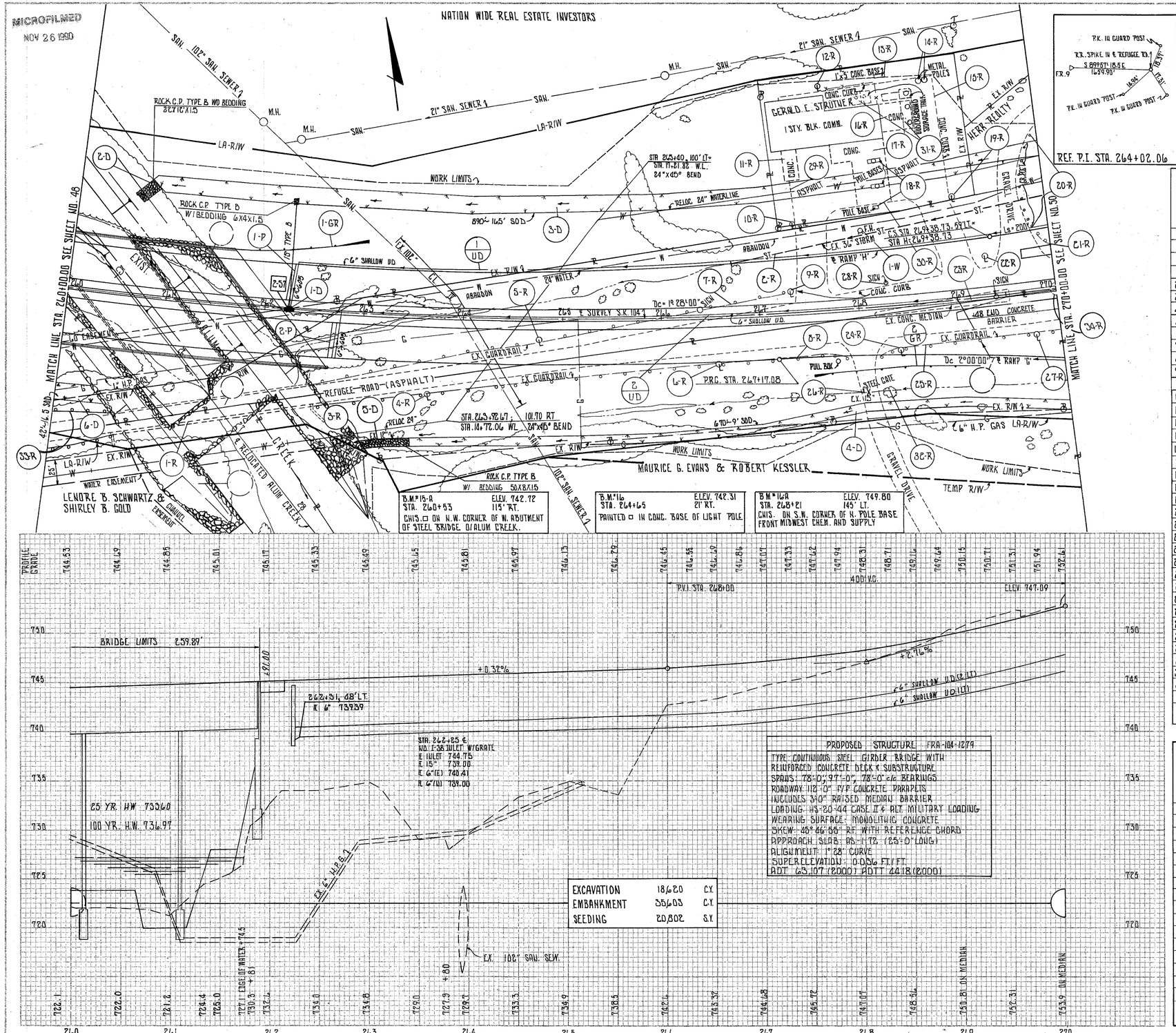
1. FOR PLAN & PROFILE OF CHANNEL RELOCATION SEE SHEET NO. 120
2. FOR RELOCATED WATER LINE SEE SHEET NO. 140
3. CONTRACTOR SHALL FIELD LOCATE EX. 24" PIROR TO WATERLINE CONSTRUCTION.
4. FOR UNDERDRAIN DETAIL SEE SHEET 9

⊕ OMIT WHEEL GUARD

REF	STATION TO STATION	SIDE	603 6" TYPE B	605 6" SHALLOW U.D.	605 BENDS & BRANCHES	[illegible]	606 GUARD RAIL TYPE 5	606 ANCHOR ASSEMBLY TYPE A	606 ANCHOR ASSEMBLY TYPE T	606 BRIDGE TERM. ASSEMBLY TYPE A ⊕
			L.F.	L.F.			L.F.	E.A.	E.A.	E.A.
1-UD	250+00 TO 259+04	LT.		958	3					
2-UD	250+00 TO 256+00	RT.		600						
3-UD	253+00 TO 258+58	LT.	52	573	2					
1-GR	257+47.27 TO 259+72.27	RT.					200	1		1
2-GR	259+40	RT.					25			
3-GR	251+87.5 TO 253+50	LT.					125	1	1	
	TOTALS		52	2131			350	2	1	1

REF	STATION TO STATION	SIDE	202 GUARD RAIL REMOVED	304 AGGREGATE BASE	408 PRIME COAT	404 ASPHALT CONCRETE	609 CURB TYPE 6	660 SODDING	660 REINFORCED SODDING	SPECIAL PRESSURE RELIEF JOINT TYPE D
			L.F.	C.Y.	GAL	C.Y.	L.F.	S.Y.	S.Y.	L.F.
1-D	258+21.92	LT.							61	
2-D	259+44	RT.							46	
3-D	250+00 TO 257+40	LT.						1480		
4-D	250+00 TO 260+00	RT.						1833		
1-P	258+45 TO 258+48	LT.								36
2-P	259+02 TO 259+05	RT.								36
3-P	258+19.92 TO 258+45.92	LT.					26			
4-P	259+44.27 TO 259+61.27	RT.					17			
5-P	258+56 TO 259+10	RT.		12	28	4				
1-R	258+40 TO 260+00	RT.	225							
	TOTALS		225	12	28	4	43	3313	107	72

S.R. 104 STA. 250+00.00 TO STA. 260+00.00



CURVE DATA & SURVEY S.R. 104
P.I. STA. 264+02.06
Δ = 19°24'18"
Dc = 1°28'00"
R = 3906.53'
L = 1323.07'
T = 667.93'
E = 56.69'

NOTES
1. FOR PLAN & PROFILE OF CHANNEL RELOC. SEE SHEET NO. 120
2. FOR 1-D PIPE PROFILE SEE SHEET NO. 58
3. FOR PAVEMENT DETAIL SEE SHEET NO. 131
4. FOR BRIDGE STRUCTURE SEE SHEETS 194-210
5. FOR RELOC. WATER LINE SEE SHEET NO. 140
6. 1-R REMOVE SUBSTRUCTURE TO 1 FOOT BELOW PROPOSED GRADE
7. RUMBLE STRIPS SHALL BE PROVIDED IN EASTBOUND LANES FROM BRIDGE TO STA. 270+40 AS SHOWN ON DETAIL ON SHEET 148.

FHWA REGION	STATE	PROJECT		49 / 254
5	OHIO			

FRANKLIN COUNTY
FRA-104-10.57

CALC: WDG 4-79
CHK: RDB 4-79

REF.	STATION TO STATION			SIDE	202 STRUCTURE REMOVED	202 PIPE REMOVED OVER 24"	202 PIPE REMOVED 24" & UNDER	202 GUARDRAIL REMOVED	202 PAVEMENT REMOVED	202 UNDERGROUND STORAGE TANK REMOVED	202 CURB REMOVED	202 STRUCTURE REMOVED AS PER PLAN
					LUMP	L.F.	L.F.	L.F.	S.Y.	EA.	L.F.	LUMP
1-R	260+95	TO	262+67	R T.								LUMP
2-R	266+72	TO	270+00	L T.			324					
3-R	262+77	TO	263+10	R T.				65				
4-R	263+67			R T.	LUMP							
5-R	264+76			R T.	LUMP							
6-R	266+57			R T.	LUMP							
7-R	262+50	TO	267+29	L & R				479				
8-R	262+56	TO	267+85	L T.				548				
9-R	267+33			L T.	LUMP							
10-R	267+39			L T.	LUMP							
11-R	267+33	TO	267+48	L T.					83			
12-R	267+77			L T.	LUMP							
13-R	268+36	TO	268+47	L T.	LUMP							
14-R	268+82	TO	268+87	L T.	LUMP							
15-R	267+35	TO	269+26	L T.							362	
16-R	268+41	TO	268+73	L T.					100			
17-R	267+83	TO	268+40	L T.					297			
18-R	268+19	TO	268+84	L T.	LUMP							
19-R	269+05			L T.	LUMP							
20-R	269+84	TO	269+92	L T.	LUMP							
21-R	269+92	TO	270+00	L T.				18				
22-R	269+32			L T.	LUMP							
23-R	268+18	TO	269+52	℄					121			
24-R	268+40			R T.	LUMP							
25-R	268+18	TO	270+00	R T.				186				
26-R	267+97	TO	268+14	R T.	LUMP							
27-R	269+76			R T.	LUMP							
28-R	268+28			L T.	LUMP							
29-R	267+36	TO	267+41	L T.							122	
30-R	267+71	TO	268+88	L T.							246	
31-R	268+50			L T.						5		
32-R	267+70	TO	268+38	R T.			70					
33-R	260+00	TO	260+62	R T.				123				
34-R	269+94	TO	270+00	LT & RT							18	
	TOTALS				LUMP	324	135	1354	671	5	748	LUMP

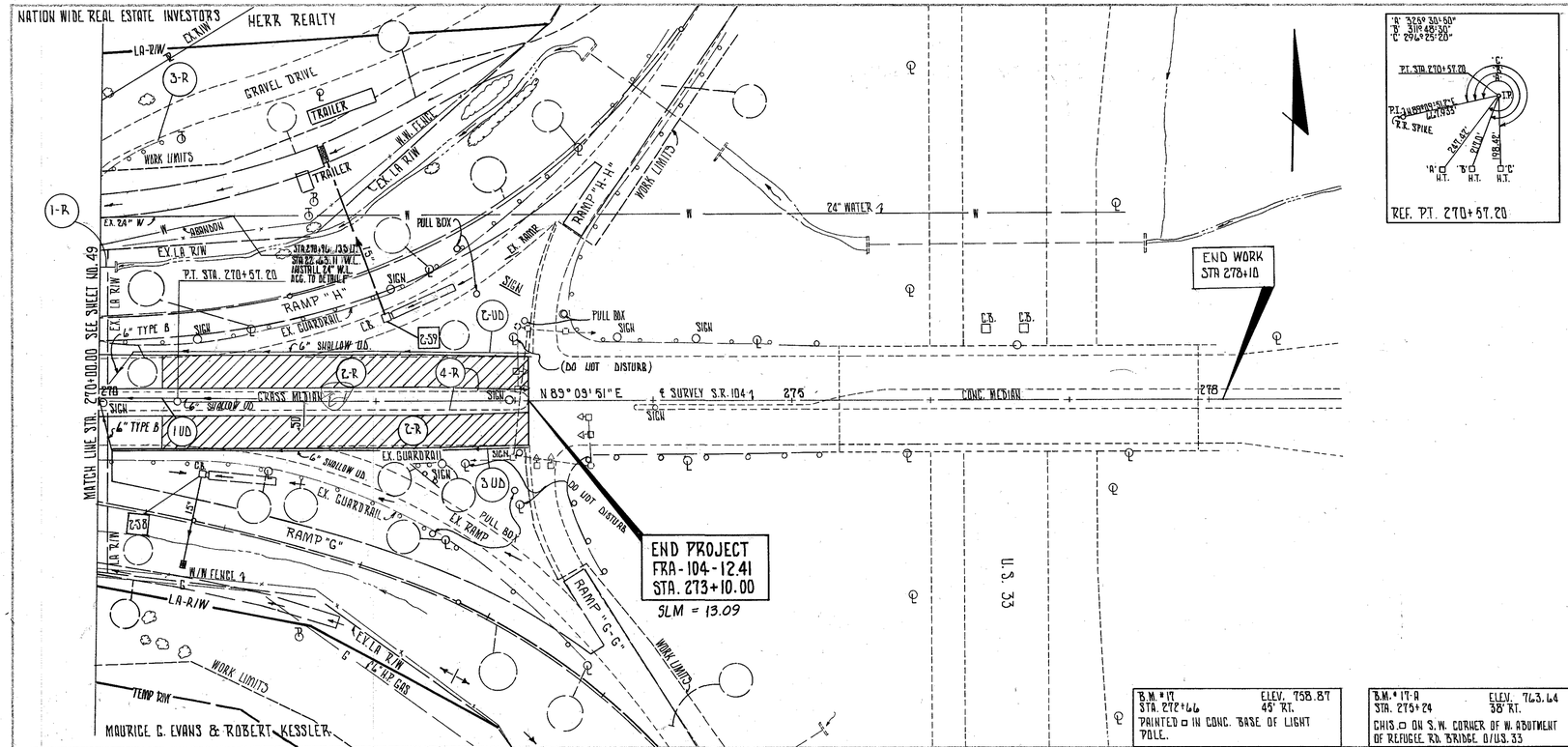
PROPOSED STRUCTURE FRA-104-12.79
TYPE: CONTINUOUS STEEL GIRDER BRIDGE WITH REINFORCED CONCRETE DECK & SUBSTRUCTURE
SPANS: 78'-0", 97'-0", 78'-0" c/c BEARINGS
ROADWAY: 112'-0" F/F CONCRETE PARAPETS INCLUDES 3'0" RAISED MEDIAN BARRIER
LOADING: HS-20-44 CASE II & ALT. MILITARY LOADING
WEARING SURFACE: MONOLITHIC CONCRETE
SKEW: 45° 46' 56" RT. WITH REFERENCE CHORD
APPROACH SLABS: AS-1-72 (25'-0" LONG)
ALIGNMENT: 1° 28' CURVE
SUPERELEVATION: 0.036 FT/FT
ADT 63,107 (2000) ADTT 4418 (2000)

EXCAVATION	18,620	C.Y.
EMBANKMENT	55,603	C.Y.
SEEDING	20,802	S.Y.

** W/O BEDDING * WITH BEDDING † 706.01 OR 706.02

REF.	STATION TO STATION			SIDE	601 ROCK CHANNEL PROTECTION TYPE B	608 CONCRETE MASONRY	608 15" † TYPE B	608 6" TYPE F	604 1'-3"B-50 INLET	605 6" SHALLOW UNDERDRAIN	605 BEVELS & BRANCHES	606 GUARDRAIL TYPE 3	606 ANCHOR ASSEMBLY TYPE A	606 ANCHOR ASSEMBLY TYPE T	606 BRIDGE TERM. ASSEM. TYPE A	660 SODDING	SPECIAL PRESSURE RELIEF JOINT TYPE D	SPECIAL FIRE HYDRANT REMOVED
					C.Y.	C.Y.	L.F.	L.F.	EA.	L.F.		L.F.	EA.	EA.	EA.	S.Y.	L.F.	EA.
1-D	262+25			L T.	2*	0.5	104		1									
2-D	260+57	TO	260+79	L T.	15**													
3-D	260+79	TO	270+00	L T.												1632		
4-D	263+30	TO	270+00	R T.												670		
5-D	263+02	TO	263+50	R T.	30.*													
6-D	260+00	TO	260+49	R T.												77		
1-UD	262+25	TO	270+00	L T.				10		817	1							
2-UD	262+25	TO	270+00	R T.				10		813	1							
1-P	262+25	TO	262+26	L T.													36	
2-P	262+69	TO	262+72	R T.													36	
1-GR	261+51.14	TO	263+01.14	L T.								126	1		1			
2-GR	267+54.5	TO	269+17	R T.								125	1	1				
1-W	268+07			L T.														1
	TOTALS				15** / 30.*	0.5	104	20	1	1630		250	2	1	1	2379	72	1

S.R. 104 STA. 260+00.00 TO STA. 270+00.00



FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA-104-10.57

B.M. #17 ELEV. 758.87
STA. 272+66 45' RT.
PAINTED □ IN CONC. BASE OF LIGHT POLE.

B.M. #17-A ELEV. 763.64
STA. 275+24 38' RT.
CHIS. □ ON S.W. CORNER OF W. ABUTMENT OF REFUGEE RD. BRIDGE O/U.S. 33

REF. PT. 270+57.20

CALC:	WDG 4-79
CHK:	ROB 4-79

NOTES

1 FOR RAMP "G" P. & P. SEE SHEET NO. 114
2 FOR RAMP "H" P. & P. SEE SHEET NO. 117
3. FOR PAVEMENT DETAILS SEE SHEET NO. 132 & 133.
4. FOR RELOC. 24" W.L. PROFILE AND QUANTITES SEE SHEET NO. 140
5. CONTRACTOR SHALL FIELD LOCATE EX. 24" PRIOR TO WATERLINE CONSTRUCTION

LEGEND

▨ ITEM 202 PAVEMENT REMOVED

ADJACENT TYPICAL

EXCAVATION	1248	C.Y.
EMBANKMENT	884	C.Y.
SEEDING	589	S.Y.

REF	STATION TO STATION	SIDE	202	202	202	603	605	605	202	
			PIPE REMOVED OVER 24"	PAVEMENT REMOVED	STRUCTURE REMOVED	6" TYPE B	6" SHALLOW UD	BENDS & BRANCHES	CURB REMOVED	
			L.F.	S.Y.	LUMP	L.F.	L.F.		L.F.	
1-R	270+00 TO 270+12	LT.	12							
2-R	270+48 TO 273+10	L&R		1485						
3-R	270+00 TO 270+44	LT.			LUMP					
4-R	270+00 TO 273+10	LT&RT							625	
1 UD	270+00 TO 271+50	LT.					150	1		
2UD	270+00 TO 273+10	LT.				41	285	1		
3UD	270+00 TO 273+10	RT.				39	297	1		
TOTALS			12	1485	LUMP	80	732		625	

S.R. 104 STA. 270+00.00 TO STA. 278+00.00

FHWA REGION	STATE	PROJECT	
5	OHIO		

51A 254

FRANKLIN COUNTY
FRA - 104-10.57

RO
GKS

2-79
3-79

SEEDING		END AREA		VOLUME	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL
228			3240		
					12,284
	2638				
220			3018		
					2459
	538				
0				0	
0				0	
	650				2722
234			2940		
	2522				11,278
220			3150		

℄ R.R.

791.21
189+00
767.9

789.03
187+94
767.6

187+50
765.2

186+50
765.9

788.42
186+00
766.6

186+00 to 189+00

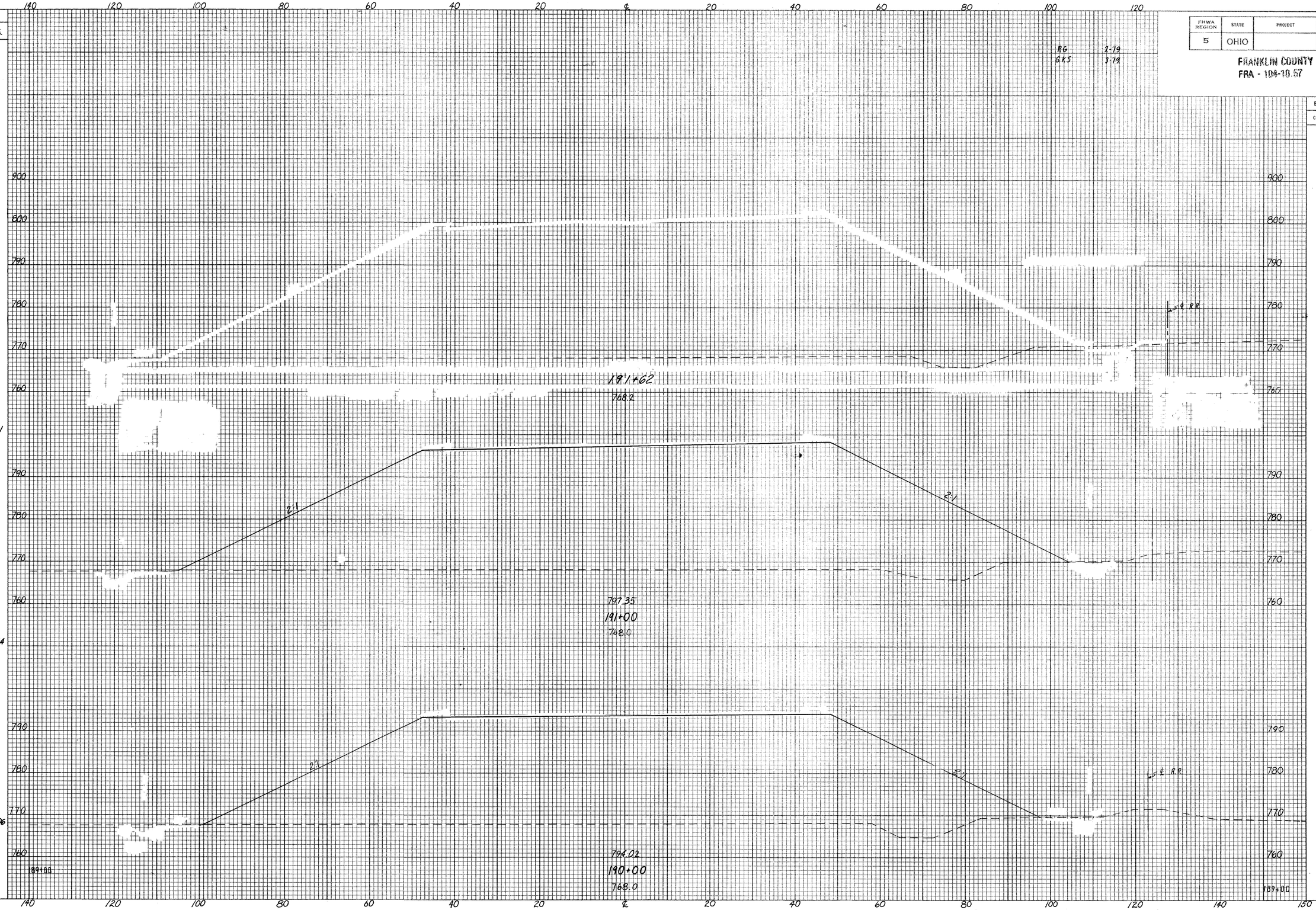
FHWA REGION	STATE	PROJECT	
5	OHIO		

518
254

FRANKLIN COUNTY
FRA - 104-10.57

RG 2-79
GRS 3-79

SEEDING		END AREA		VOLUME	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL
0		0			
	871				2787
253				4495	
	2744				15,424
241				3834	
	2606				13,100
228				3240	



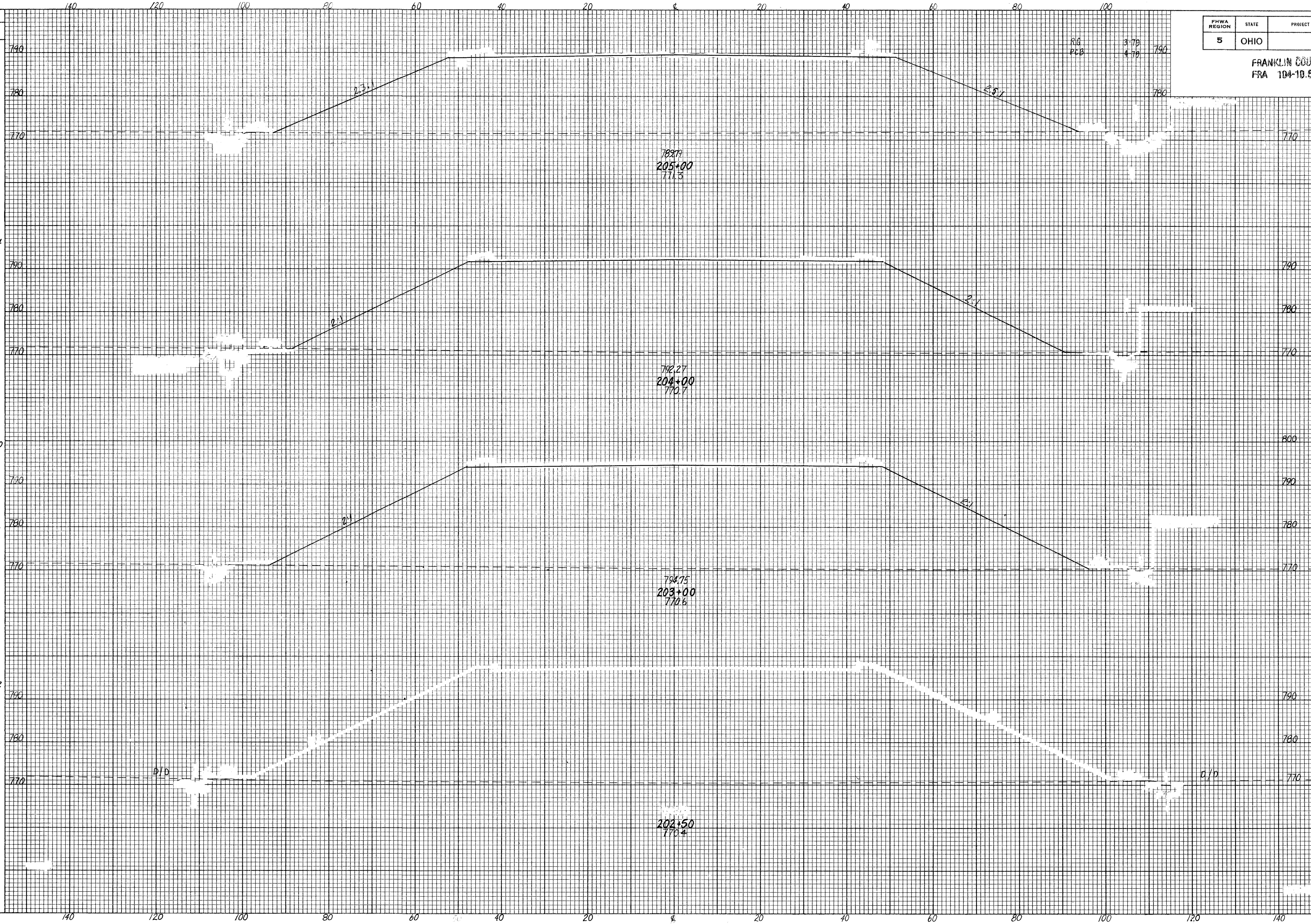
190+00 to 192+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

51C/254

FRANKLIN COUNTY
FRA 104-10.57

RG 3-79
PCB 4-79



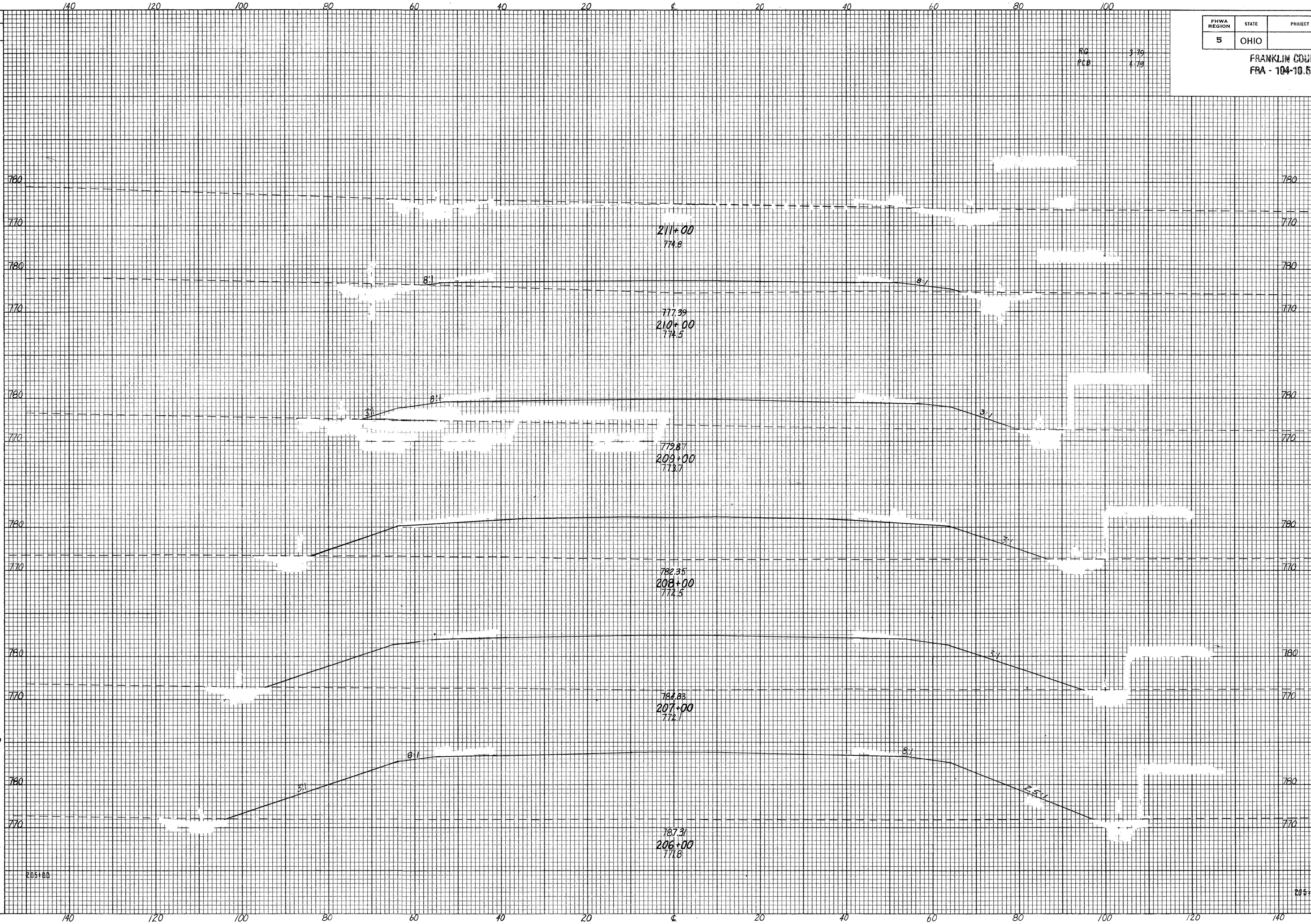
SEEDING END WIDTH	SEEDING SQ. YDS.
230	
	2444
210	
	2450
231	
	642
0	

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	2555		
			10,167
	2935		
			11,772
	3422		
			3169
	0		

202+50 to 205+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA - 104-10.67



SEEDING END WIDTH	SEEDING SQ. YDS.
0	
	878
158	
	1844
174	
	2028
191	
	2211
207	
	2289
205	
	2417
230	

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	0		
			452
	244		
			1867
	764		
			3885
	1334		
			5932
	1869		
			7919
	2408		
			9239
	2555		

206+00 to 211+00


FHWA REGION 5
STATE OHIO
PROJECT
51E
254
FRANKLIN COUNTY
FRA - 104-10.57
CALC RG 3-79
CHK PCB 4-79
SEEDING
END WIDTH
SQ. YDS.
END AREA
CUT
FILL
VOLUME
CUT
FILL
RAMP D
RAMP E
RAMP C
C-1981
C-2362
C-2217
C-2381
751.95
235+00
763.8
752.96
234+00
765.1
753.50
233+40
765.7
233+15
766.3
753.57
231+00
766.3
747.8
746.0
746.3
749.3
747.0
753.0
751.3
8:1
STA. 233+15
8109
5154
1034
150
1756
166
1093
162
225
0
233+15 TO 235+00

FRANKLIN COUNTY
FEA-104-10(67)

CALC: RG 5-79
CHK: GKS 5-79

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

143 | 516 | 444 | 60 | 667 | 60 | 1122 | 60 | 489 | 150

770 / 760 / 750

239+00 AHEAD

RAMP D

+00 AHEAD

+00 BACK

F-66

2:1

C-2505 AHEAD *

AHD

BK

UNSUITABLE MATERIAL

C-1240 BACK *

RAMP E & F

239+00 BACK

8:1

745.6

747.7

AHEAD
C-3077

AHD

BK

BACK
C-2311

746.16
239+00
769.4

738.7

NOTE:
* UNSUITABLE MATERIAL

RAMP D

RAMP E

C-2908

747.6

740.4

747.66
238+00
765.7

RAMP D

RAMP E

C-2704 AHEAD
C-2572 BACK

748.0

743.0

749.16
237+00
765.8

RAMP D

RAMP E

C-1980

748.2

746.0

750.66
236+00
763.4

235+00

2287 *
9545 129

10820 D

8408 D

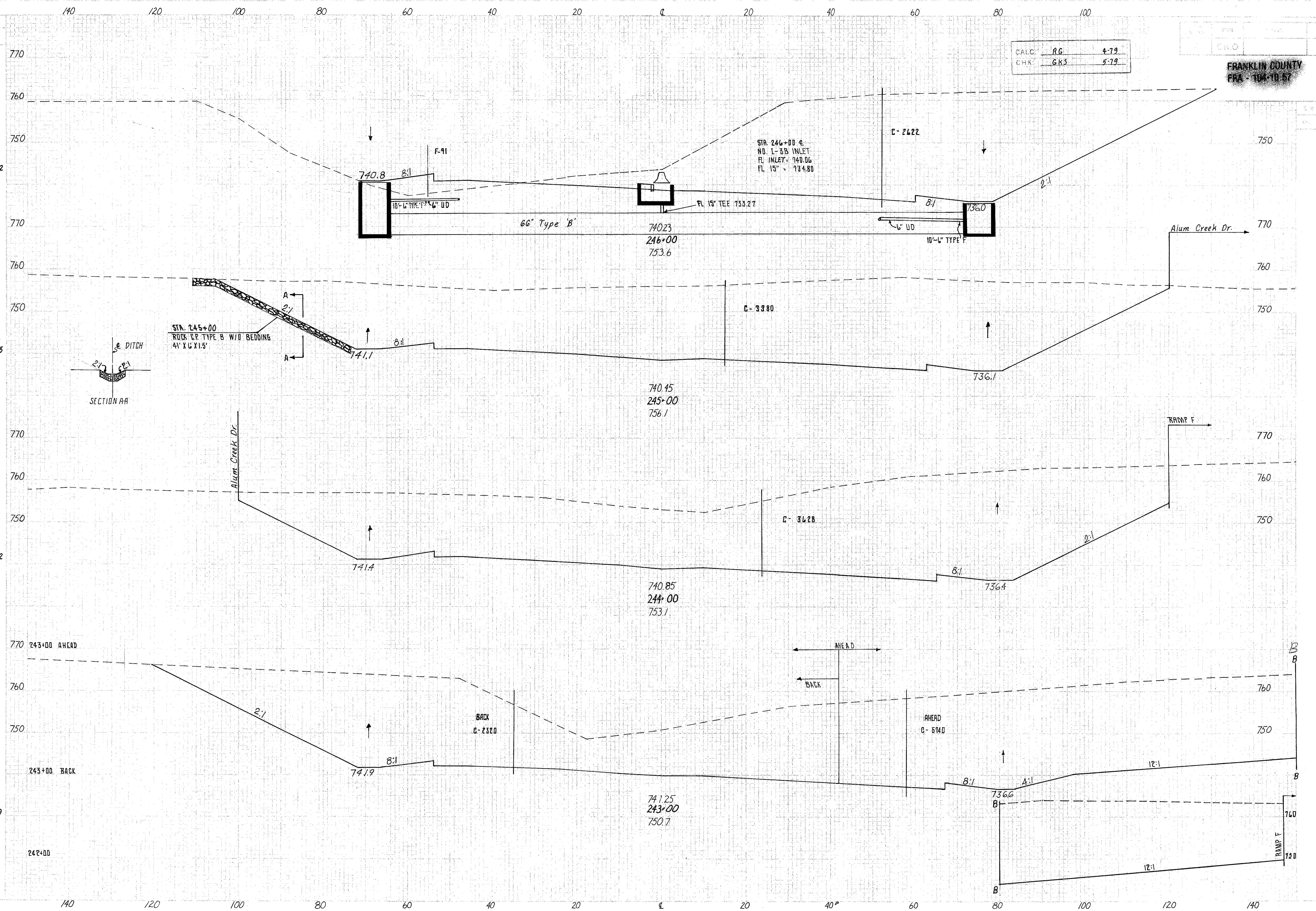
7351 D

236+00 to 239+00

53
254
CALC: RG 5-79
CHK: GKS 5-79
FRANKLIN COUNTY
FRA - 104-10.57
RAMP F
C-2839 ✱
2:1
8:1
742.4
F-190
C-650
741.93
242+00
764.2
12922✱
1788 934
C-4036✱
743.1
F-300
C-330
8:1
739.5
743.15
241+00
767.3
NOTE: ✱ Unsuitable Material
14562✱
2279 863
C-3715✱
2:1
F-151
8:1
744.2
C-1145
8:1
739.2
744.66
240+00
768.6
11724✱
7736 421
78
967
96
1150
111
1411
143
239+00
770
760
750
140
120
100
80
60
40
20
℄
Sta. 240+00 to 242+00

CALC. RG 4-79
CHK. GKS 5-79

FRANKLIN COUNTY
FRA - 104-10.57


STA. 246+00 ℄
NO. L-3B INLET
FL INLET = 740.06
FL 15" = 734.80
F-91
C-2622
740.8
8:1
10'-6" TYPE F
6" UD
FL 15" TEE 733.27
66" Type 'B'
740.23
246+00
753.6
736.0
2:1
Alum Creek Dr.
C-3380
STA. 245+00
ROCK C.P. TYPE B W/O BEDDING
℄ DITCH
SECTION A-A
741.1
740.45
245+00
756.1
736.1
RAMP F
Alum Creek Dr.
C-3628
741.4
740.85
244+00
753.1
736.4
243+00 AHEAD
243+00 BACK
242+00
AHEAD
BACK
C-2320
C-5740
741.9
741.25
243+00
750.7
736.6
12:1
4:1
RAMP F

154
1522
120
1295
113
1872
224
73
839
78

10972 170
12881 0
17065 0
5348*
5508 363


FHWA REGION 5
OHIO
55
254
CALC RG 4-79
CHK GKS 5-79
FRANKLIN COUNTY
FRA - 104-10.57
741.33
250+00
735.7
726.2
734.8
741.01
249+00
737.3
C-169
F-522
C-522
726.4
735.1
740.69
248+00
754.0
C-250
F-80
C-2532
726.6
735.4
740.37
247+00
761.8
C-3947
741.0
735.7
246+00
247+00 to 250+00

SECTIONS

END AREA CUT | END AREA FILL | VOLUME CUT | VOLUME FILL

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

STATE: OHIO | PROJECT | 56 254

CALC: RG 4-79
CHK: GKS 5-79

FRANKLIN COUNTY
FRA- 104 - 10.57

255+00

742.93
736.1

740 / 730 — 2:1 — 725.2 — 2:1 — 8:1 — 8:1 — 3:1 — 733.3 — 4:1

BELOW ALUM. CREEK

180 | 2096 | 197 | 1443 | 2061

END AREA CUT: 32 | END AREA FILL: 1140
VOLUME CUT: 587 | VOLUME FILL: 3483

254+00

742.61
735.9

740 / 730 — 2:1 — 725.4 — 2:1 — 8:1 — 733.6

ALUM. CR.

END AREA CUT: 285 | END AREA FILL: 741
VOLUME CUT: 776 | VOLUME FILL: 1942

253+30

742.29
735.6

A 740 / 730 A — 2:1 — 725.6 — 2:1 — 8:1 — 8:1 — 3:1 — 733.9 — 4:1

174 | 688 | 239 | 2294 | 220 | 150

END AREA CUT: 326 | END AREA FILL: 1195
VOLUME CUT: 1154 | VOLUME FILL: 3570

96:1 — F-438

252+00

741.97
735.6

740 / 730 — 96:1 — 725.8 — 2:1 — 734.2

174 | 1928

END AREA CUT: 297 | END AREA FILL: 733
VOLUME CUT: 1091 | VOLUME FILL: 2509

251+00

741.65
736.2

740 / 730 — 96:1 — 7260 — 2:1 — 8:1 — 8:1 — 3:1 — 734.5 — 4:1

173 | 2022 | 191

END AREA CUT: 292 | END AREA FILL: 422
VOLUME CUT: 1007 | VOLUME FILL: 2515

250+00 | END AREA CUT: 252 | END AREA FILL: 736

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

251+00 to 255+00

CALC: RG 4-79
CHK: PCB 4-79

FRANKLIN COUNTY
FRA-104-10.57

57
254

SEEDING
SQ. YARDS | SQ. YARDS

END AREA | VOLUME
CUT | FILL | CUT | FILL

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

180 259+39 END SEEDING
585

259+75 EARTHWORK (ONLY)

RELOC. ALUM. CREEK
3:1 731.8 4:1

203 259+11.6
740
730
2447

RELOC. ALUM. CREEK
8:1 3:1 4:1
732.1
740
730
744.21
259+00
723.5

258+83 185' RT
℄ Dr EL. 740.5
2:1

ADD FOR DR@ 258+83
GUTTER(10X½(52+32)70.667+27=
FILL(42X12)+½(10+42)20X2)=27

258+05 AHEAD 39 2352
BACK 308 2352

172 552
276 2729
27 1413
116 4424
10 50
114 1742
308 2352

192
740
730
RELOC. ALUM. CREEK
4.8:1 2:1 724.5 2:1 8:1
743.84
257+85
725.5
732.4
740
730

872 7219

2106
187
740
730
RELOC. ALUM. CREEK
724.8
743.57
257+00
734.70
732.7
740
730
246 2234

510 7395

2057
183
740
730
RELOC. ALUM. CREEK
2:1 725.0 2:1 8:1 8:1 3:1 4:1
733.0
740
730
743.25
256+00
736.10
29 1759

112 5368

2020
180 255+00

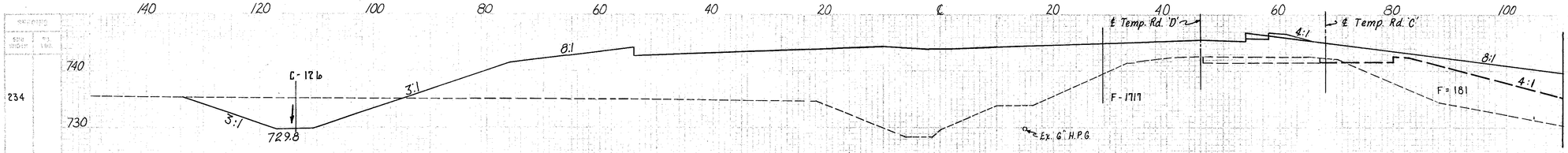
255+00 32 1140

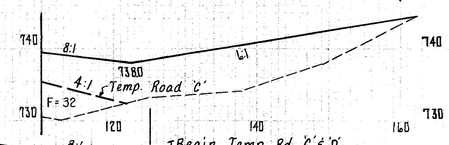
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

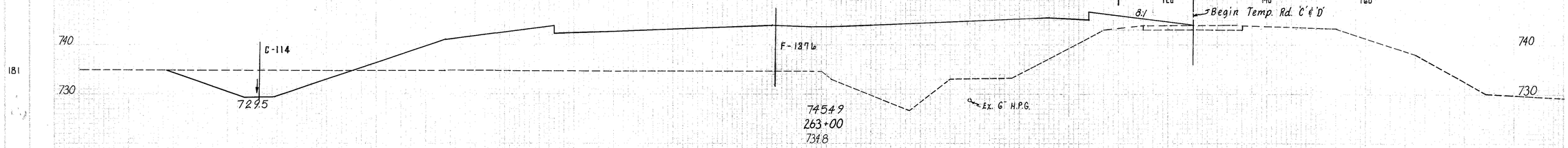
256+00 to 259+00

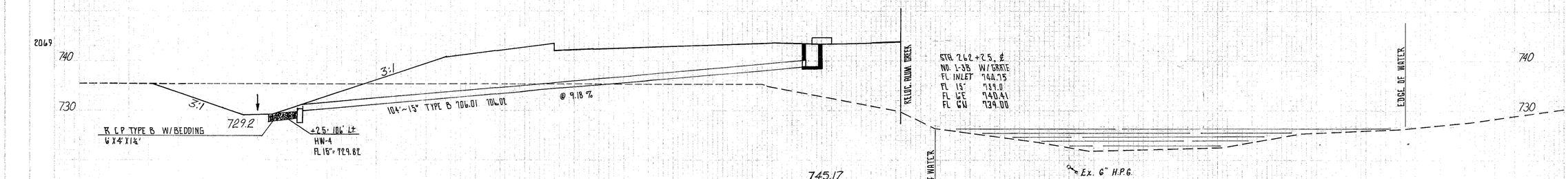
FRANKLIN COUNTY
FRA-104-10.57

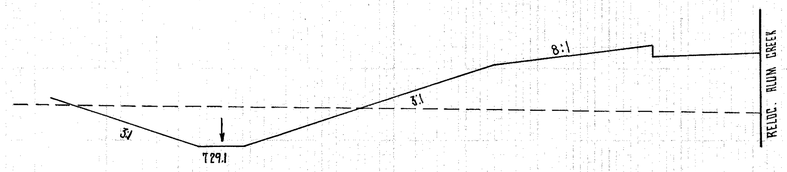
CALC:	RG	4-79
CHK:	PCB	4-79





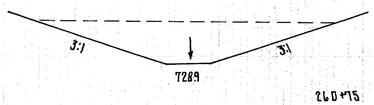






261+50 EARTHWORK ONLY

BRIDGE NO. FRA-104-12.79
S.R. 104 OVER ALUM CREEK
FOR DETAILS SEE SHEET NO. 194

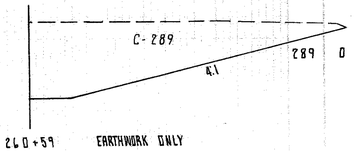


260+75 EARTHWORK ONLY

EXISTING PAVEMENT REMOVED FOR REFUGEE ROAD
STA. 259+43 TO STA. 260+56
(38' X 20' X 15') ÷ 27 = 42.2 C.Y.

FILL ONLY 261+22 0

CUT ONLY 260+75 144



260+59 EARTHWORK ONLY

	261+50	127	345
			376 179
			42
			427 5192
			459 4048
	260+75	144	819
			251 1078
			717 859
	259+75	172	552

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

262+00 to 269+00

FRANKLIN COUNTY
FRA-104-10.57
59
254
CALC: RG 4-79
CHK: PCB 4-79
RAMP H
+129 Ahead
+12.9 Back
+39 AHEAD
+39 BACK
269+40 AHEAD
269+38.6 BACK
752.61
270+00
753.9
750.15
269+00
750.8
748.31
268+00
747.0
747.07
267+00
744.6
746.45
266+00
742.6
746.13
265+00
734.9
264+00
End Temp. Rd. 'C'
℄ Temp. Rd. 'C'
Temp. Rd. 'C'
Ex. 6" H.P.G
Approx. Loc. Ex. 6" H.P.G
C-163
F-1682
C-1287
F-1060
C-12.66
F-106
C-5
C-1000
F-817
C-107.6
F-1380
F=266
C-110
F 1524
F=328
265+00 to 270+00

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

CALC: RG 4-79
CHK: PCB 4-79

60
254

FRANKLIN COUNTY
FRA-104-10.57

END WORK
STA. 278+10

760
750

274+00
761.6

END PROJECT
FRA-104-10.57
STA. 273+10.00

770
760
750

8:1 8:1

760.24
273+10
761.0

28 5

308 10

RAMP H RAMP G

4:1 8:1

758.04
272+00
759.0

740
730

RAMP H RAMP G

8:1

755.37
271+00
756.6

740
730

40
300
14
87
4
141
202
143

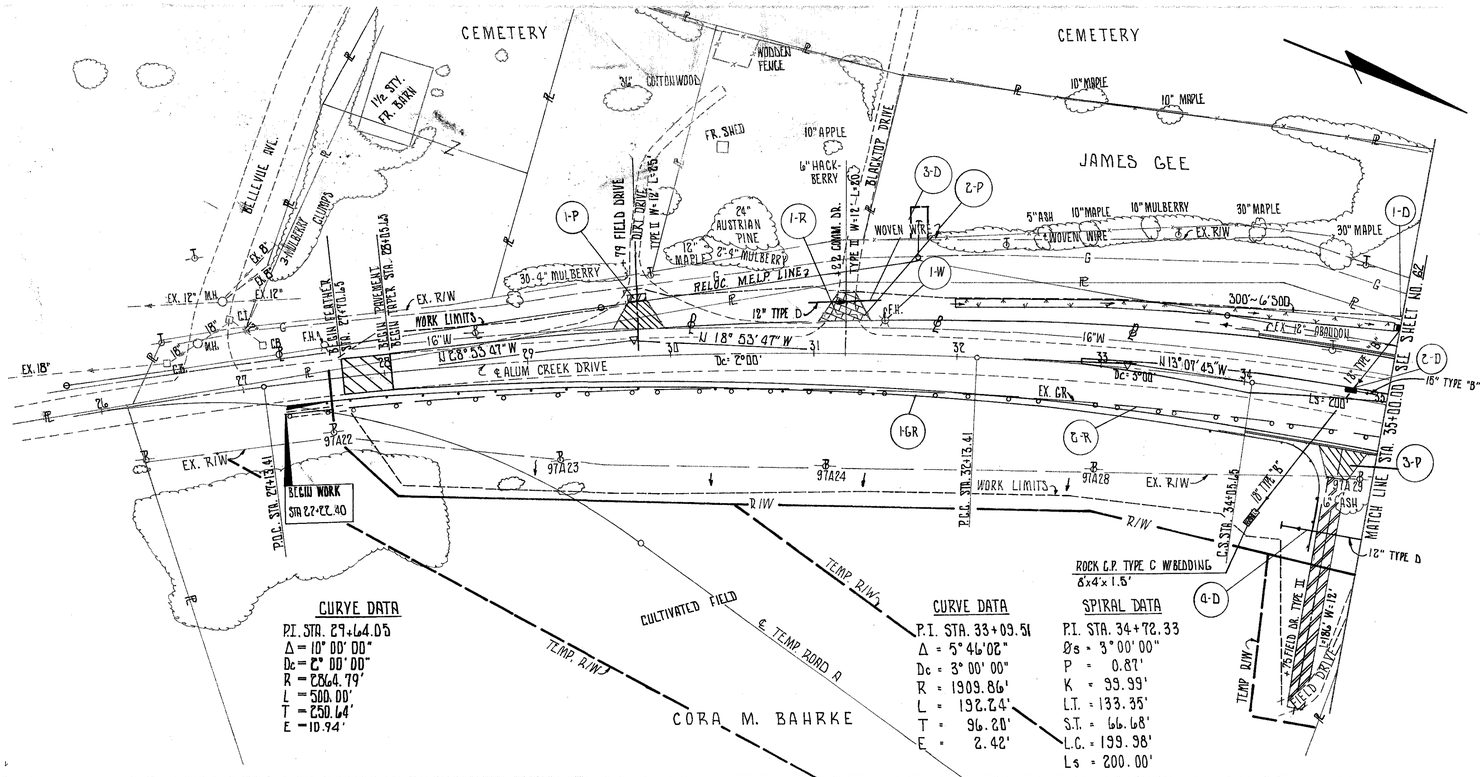
270+13 AHEAD
270+12 BACK
270+00

199 0
441 31
109 17 217 25
270+48 116 9
154 9
205 6
270+129 161 1

271+00 to 273+10

FRANKLIN COUNTY
FRA-104-10.57

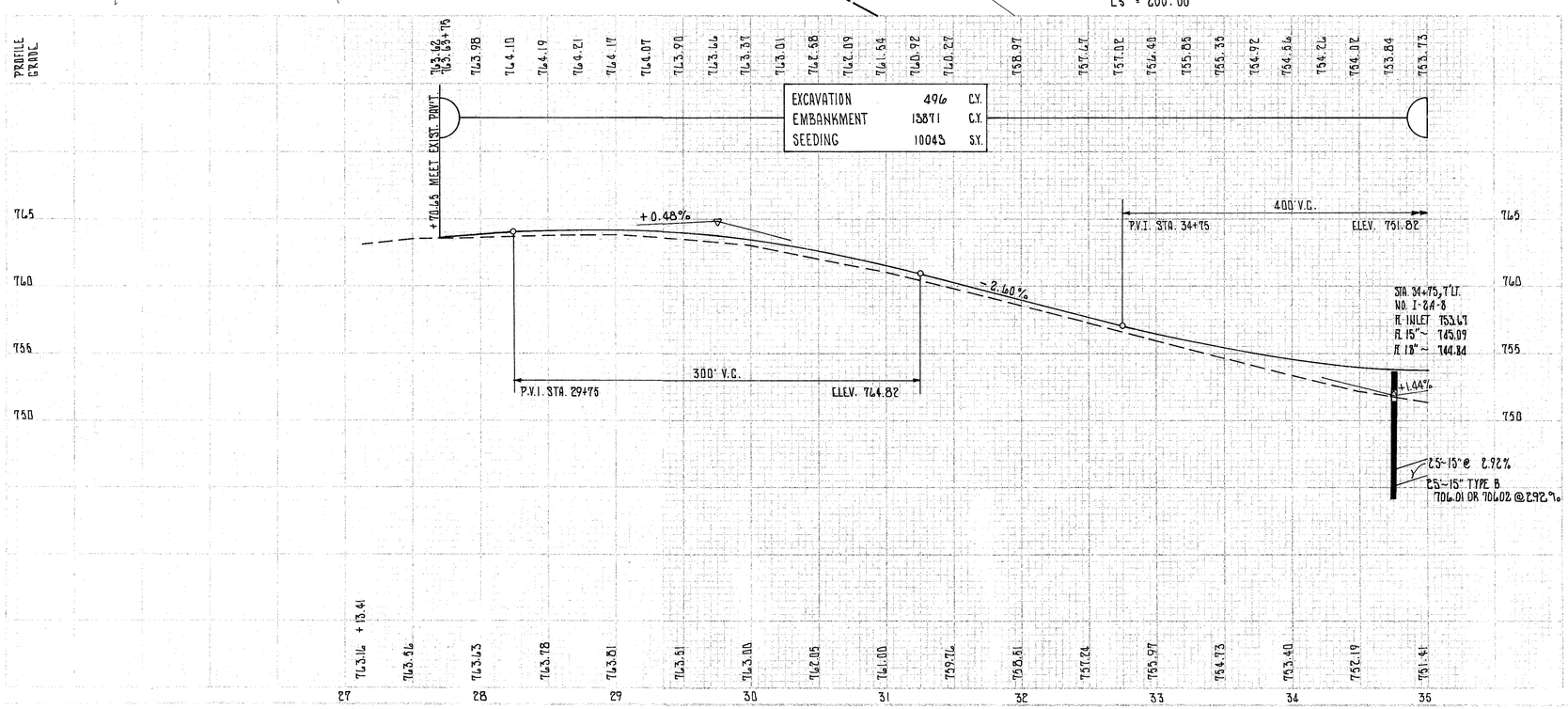
CALC: PCB 4-79
CHK: RUB 4-79

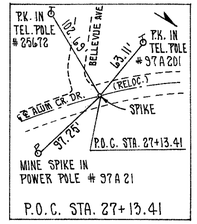


CURVE DATA
P.I. STA. 29+64.05
Δ = 10° 00' 00"
Dc = 2° 00' 00"
R = 2864.79'
L = 500.00'
T = 250.64'
E = 10.94'

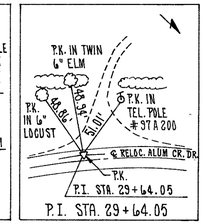
CURVE DATA
P.I. STA. 33+09.51
Δ = 5° 46' 02"
Dc = 3° 00' 00"
R = 1909.86'
L = 192.24'
T = 96.20'
E = 2.42'

SPIRAL DATA
P.I. STA. 34+72.33
Øs = 3° 00' 00"
P = 0.87'
K = 99.99'
L.T. = 133.35'
S.T. = 66.68'
L.C. = 199.98'
Ls = 200.00'

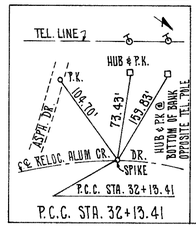




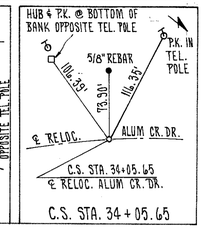
P.O.C. STA. 27+13.41



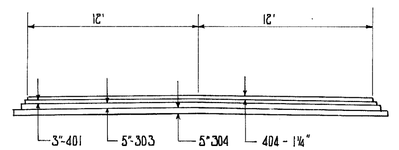
P.I. STA. 29+64.05



P.C.C. STA. 32+13.41



C.S. STA. 34+05.65



ADJACENT TYPICAL
ALUM CREEK DRIVE

LEGEND
- 2" ITEM 404 ASPHALT CONCRETE + ITEM 408 PRIME COAT ON 6" ITEM 304 AGGREGATE BASE
- 6" ITEM 304 AGGREGATE BASE
- 8" ITEM 452 PLAIN PORTLAND CEMENT CONCRETE
- 1" ITEM 404 *ASPHALT CONCRETE ON* 5" ITEM 301 *BITUMINOUS AGGREGATE BASE*

NOTES
1. 1-W RELOC. SEE TYPICAL HYDRANT SETTING MISC. DETAIL SHEET NO. 12
2. FOR PAVEMENT DETAILS SEE SHEET 134.
3. FOR STORM SEWER PROFILES SEE SHEET 67.
4. 1-W PROVIDE COLUMBUS HEAVY DUTY VALUE BOX OR EXISTING VALVE.

REF	STATION TO STATION			SIDE	202 PIPE REMOVED, UNDER 24"	202 GUARDRAIL REMOVED	304 AGGREGATE BASE	408 PRIME COAT	404 ASPHALT CONCRETE	301 5" BIT. AGGREGATE BASE	606 ANCHOR ASSEMBLY TYPE A	606 ANCHOR ASSEMBLY TYPE T	606 GUARDRAIL TYPE 3	SPEC. FIRE HYD. RELOC.	SPEC. IRON CASTINGS
					L.F.	L.F.	C.Y.	GAL.	C.Y.	C.Y.	EA.	EA.	L.F.	EA.	LBS.
1-R	31+07	TO	31+37	LT.	30										
℄R	27+22.4	TO	35+00	RT.		778									
1-GR	27+25	TO	34+65	RT.							1	1	750		
1-P	29+79			LT.			10	21	3						
2-P	31+22			LT.					2	8					
3-P	34+73			RT.			46	21	5						
1-W	31+49			LT.										1	254
				TOTALS	30	778	56	42	8	8	1	1	750	1	254

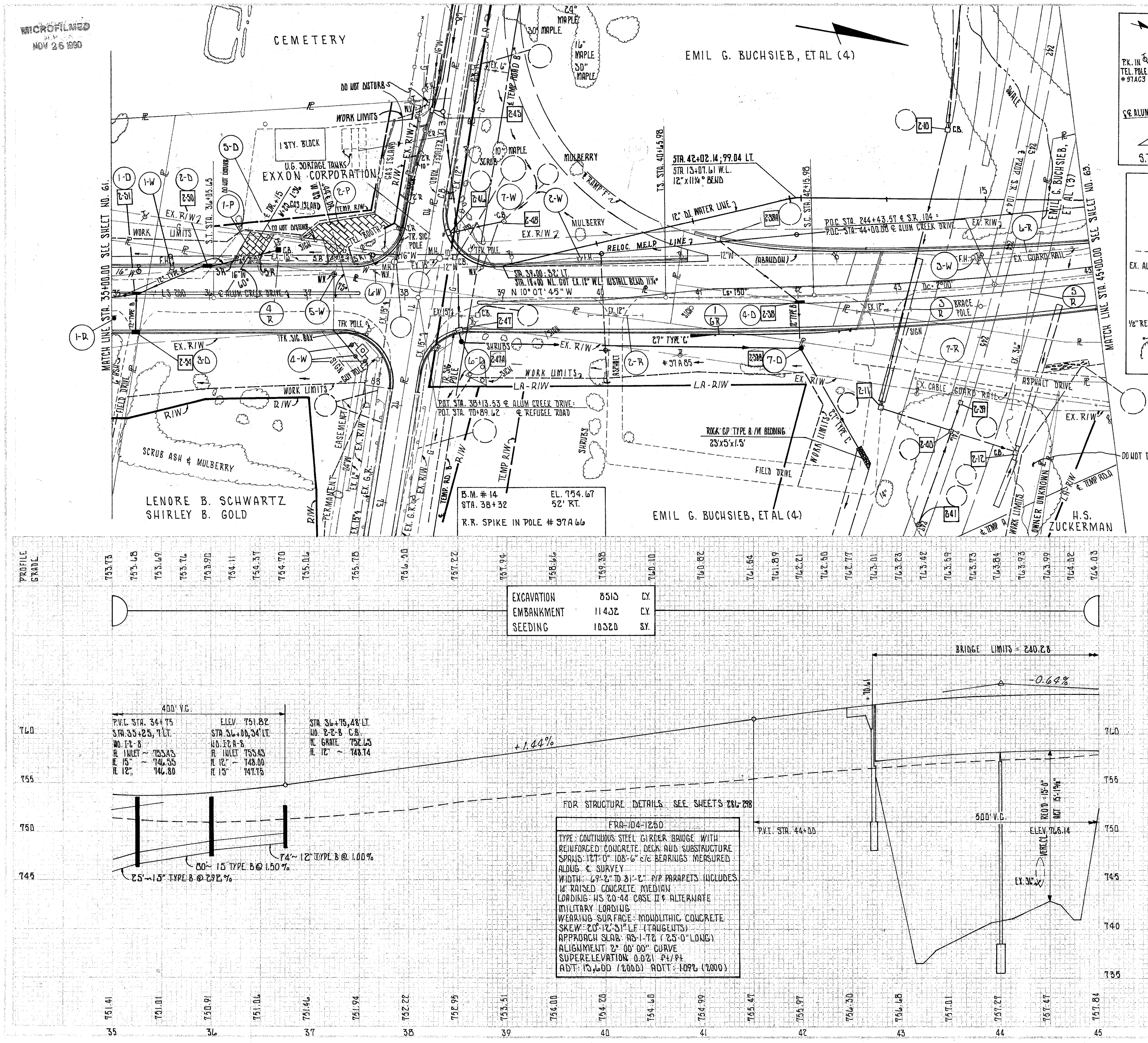
* WITH BEDDING
† 706.01 OR 706.02
♦ 706.01, 706.02, 707.01

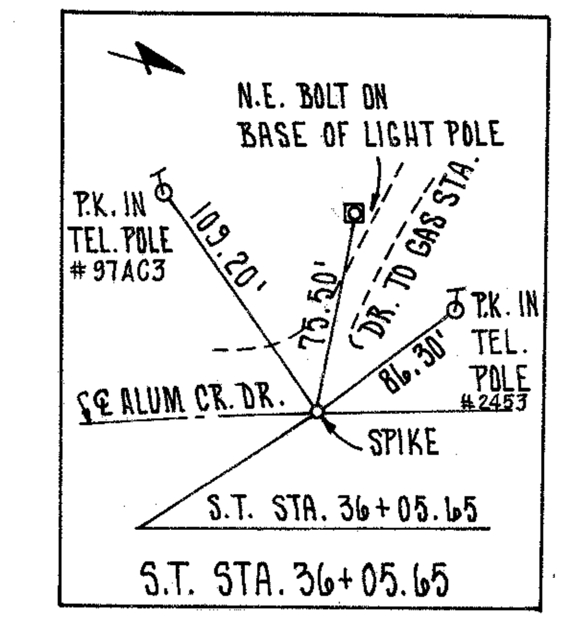
REF	STATION TO STATION			SIDE	601 ROCK C.P. TYPE C *		602 CONCRETE MASONRY	603 18" TYPE B †	603 15" TYPE B †	603 12" TYPE D ♦	604 MANHOLE C.B.	604 I-GR-B	660 SODDING
					C.Y.		C.Y.	L.F.	L.F.	L.F.	EA.	EA.	S.Y.
1-D	34+75	TO	35+00	LT.				54			1		200
℄D	34+22	TO	35+00	RT.	3		0.3	104	25			1	
3D	31+00	TO	31+48	LT.						48			
4-D	34+44	TO	35+08	RT.						64			
				TOTALS	3		0.3	158	25	112	1	1	200

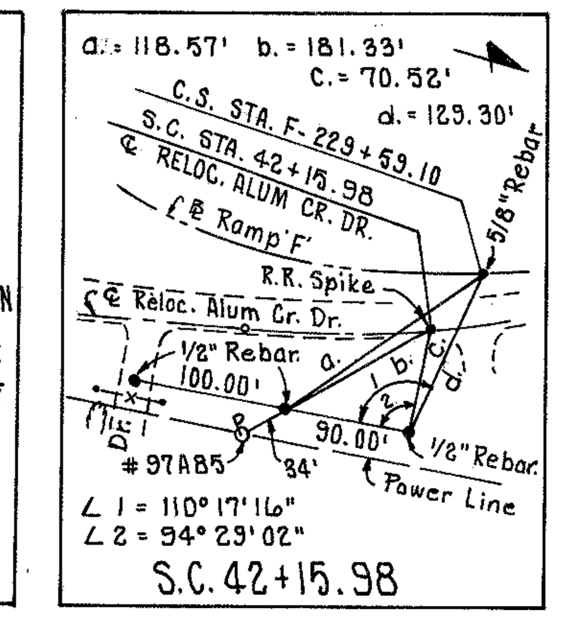
REVISED BLF 4-10-80

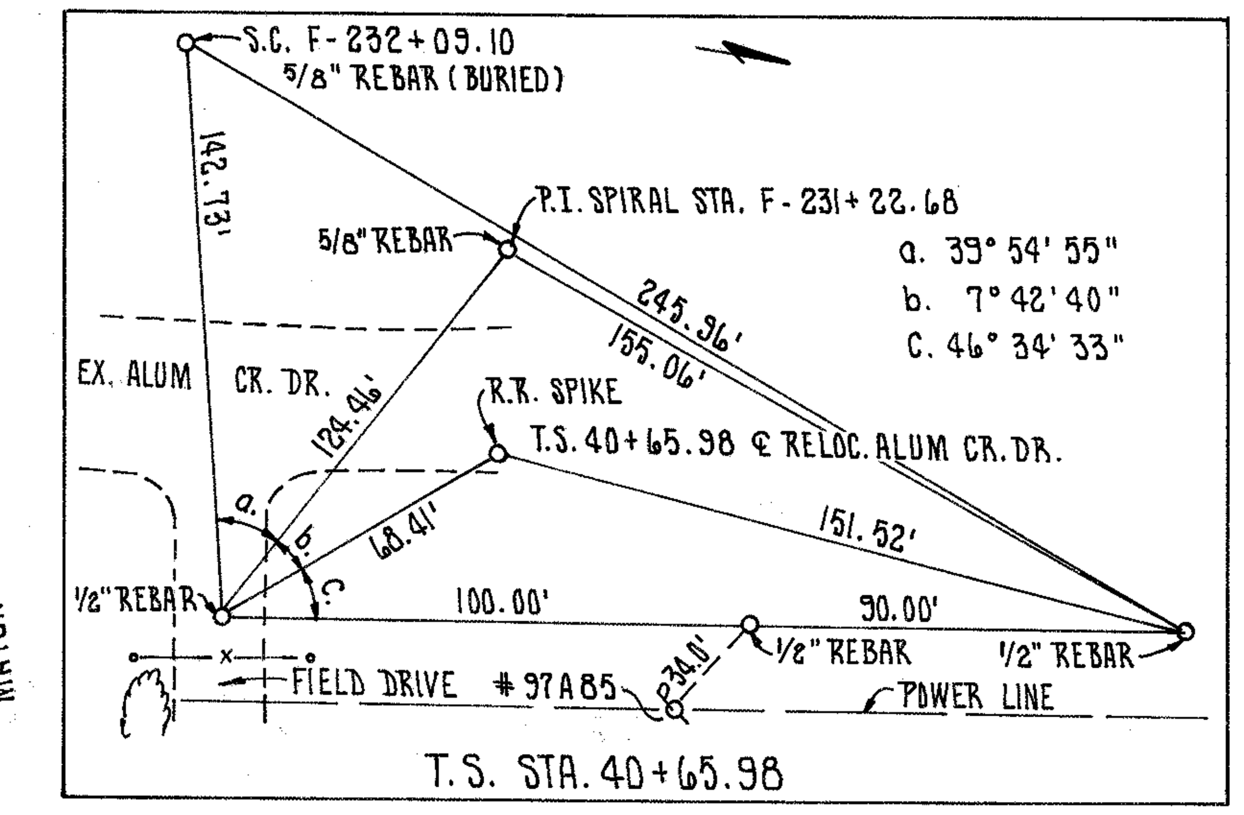
ALUM CREEK DRIVE ~ STA. 27+13.41 TO STA. 35+00

CALC: PCB 4-79
CHK: WDG 4-79









LEGEND

- 1" ITEM 404 ASPHALT CONCRETE ON 5" ITEM 301 BITUMINOUS AGGREGATE BASE
- 8" ITEM 452 PLAIN PORTLAND CEMENT CONCRETE

NOTES

1. FOR PAVEMENT DETAILS SEE SHEETS 134 & 135
2. FOR STORM SEWER PROFILES SEE SHEETS 67 & 126
3. FOR REFUGEE ROAD PLAN SEE SHEET 91
4. FOR S.R. 104 PLAN SEE SHEET 47
5. FOR WATER LINE PROFILE SEE SHEET 138
6. CONTRACTOR SHALL FIELD LOCATE EX. 12" W.L. PRIOR TO CONSTUCTION

‡‡‡ AS PER PLAN
‡‡ OMIT WHEEL GUARD

** NO IRON CASTINGS SHALL BE ORDERED BY THE CONTRACTOR UNTIL REQUESTED BY THE ENGINEER.

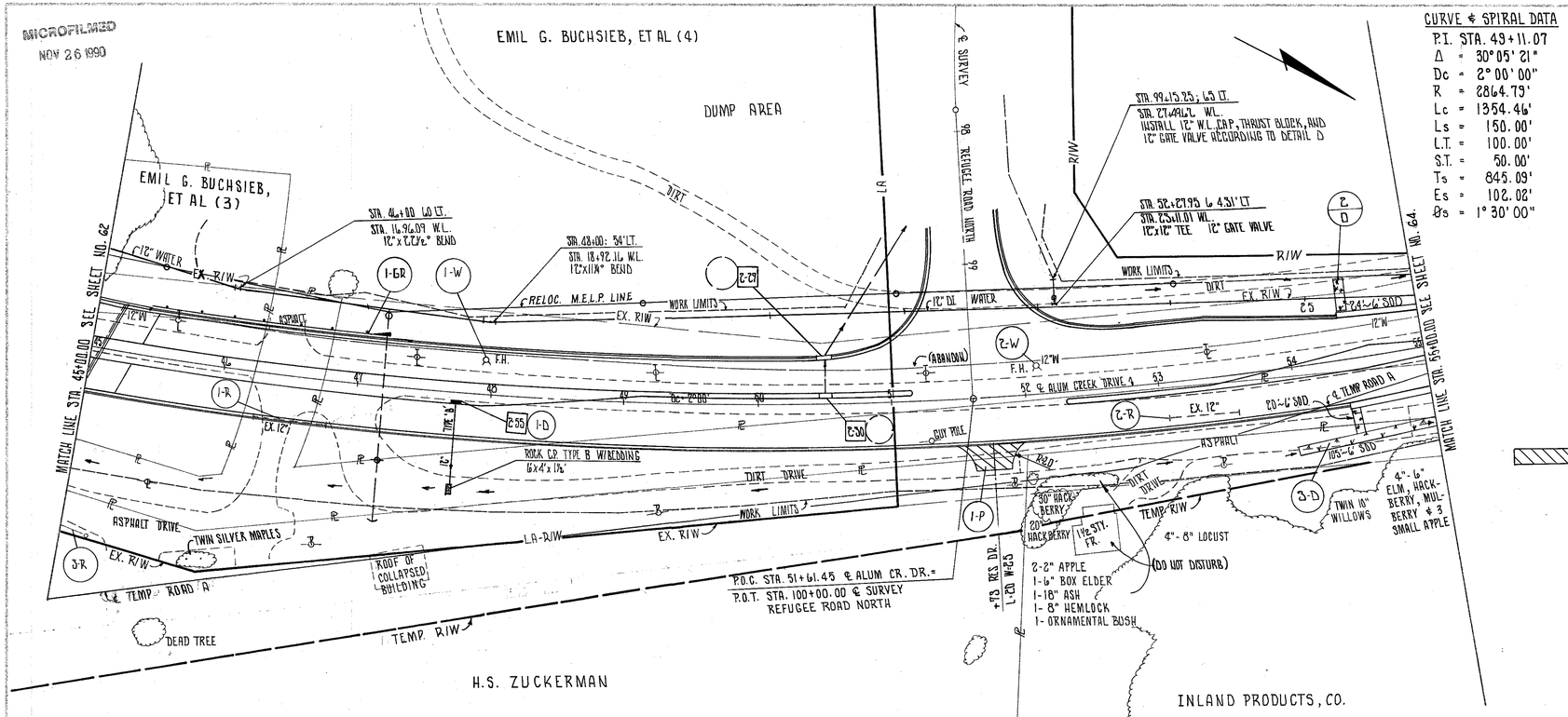
REF.	STATION TO STATION	SIDE	301 BIT. AGGR. BASE	452 PLAIN PORTLAND CEMENT 8"	404 ASPHALT CONCRETE	604 M.H. ‡‡‡ RECON. TO GR.	606 ANCHOR ASSEM. TYPE A	606 GUARDRAIL TYPE 5	606 BRIDGE TERMINAL ASSEMBLY TYPE A‡‡	SPEC. IRON CASTINGS	SPEC. W.L. BOXES ADJ. TO GRADE	SPECIAL FIRE HYDRANT RELOCATED	SPECIAL FIRE HYDRANT REMOVED
			C.Y.	S.Y.	C.Y.	EA.	EA.	L.F.	EA.	LB	EA.	EA.	EA.
1-P	36+12 TO 36+67	LT.	9	28	2								
2-P	37+13 TO 37+85	LT.	30	28	6								
1-W	35+59	LT.								254		1	
2-W	39+78	LT.											1
3-W	43+85	LT.											1
4-W	37+54	RT.				1				150**	3		
5-W	37+15	LT.								50**	1		
6-W	37+70	LT.								50**	1		
7-W	38+80	LT.								50**	1		
1-GR	40+92.99 TO 42+42.99	RT.					1	125	1				
	TOTALS		39	56	8	1	1	125	1	554	6	1	2

+ 706.02, 1750 D LOAD ⊙ WITH BEDDING * 706.01 OR 706.02 ‡ 706.02

REF.	STATION TO STATION	SIDE	202 PIPE REMOVED 24" & UNDER	202 PIPE REMOVED OVER 24"	202 GUARDRAIL REMOVED	601 R.C.P. TYPE B⊙	602 CONCRETE MASONRY	603 12" TYPE B	603 15" TYPE B*	603 27" TYPE C+	604 INLETS 1-2A-10	604 INLETS 1-2A-8	604 INLETS 1-2-8	604 C.B. 22-B	604 NO. 3 M.H.	604 NO. 1 M.H.
			L.F.	L.F.	L.F.	C.Y.	C.Y.	L.F.	L.F.	L.F.	EA.	EA.	EA.	EA.	EA.	EA.
1-D	35+25	℄							25				1			
2-D	36+00	LT.							80			1				
3-D	35+25	RT.						40 *				1				
4-D	42+00	RT.						38 ‡			1					
5-D	36+00 TO 36+75	LT.						74 *						1		
6-D	38+58 TO 42+00	RT.								345						1
7-D	42+00 TO 42+70	RT.				9	0.5			120					1	
1-R	35+00 TO 35+05.6	RT.			5.6											
2-R	39+87 TO 40+41	RT.	54													
3-R	42+59 TO 43+13	RT.	54													
4-R	36+05 TO 70+58 REF. RD.	LT.	184													
5-R	45+50	℄		184												
6-R	43+96 TO 45+00	LT.			104.0											
7-R	43+14 TO 45+00	RT.			200.0											
	TOTALS		292	184	310	9	0.5	114* / 38‡	105	465	1	2	1	1	1	1

REVISED BLS 4/10/80

ALUM CREEK DRIVE ~ STA. 35+00 TO STA. 45+00



CURVE & SPIRAL DATA

P.I. STA. 49+11.07
Δ = 30° 05' 21"
Dc = 2° 00' 00"
R = 2864.79'
Lc = 1354.46'
Ls = 150.00'
L.T. = 100.00'
S.T. = 50.00'
Ts = 845.09'
Es = 102.02'
θs = 1° 30' 00"

CALC.	PCB	4-79
CHK.	WDS	4-79

PRIMARY REGION	STATE	PROJECT		SHEET	TOTAL SHEETS
5	OHIO			63	254

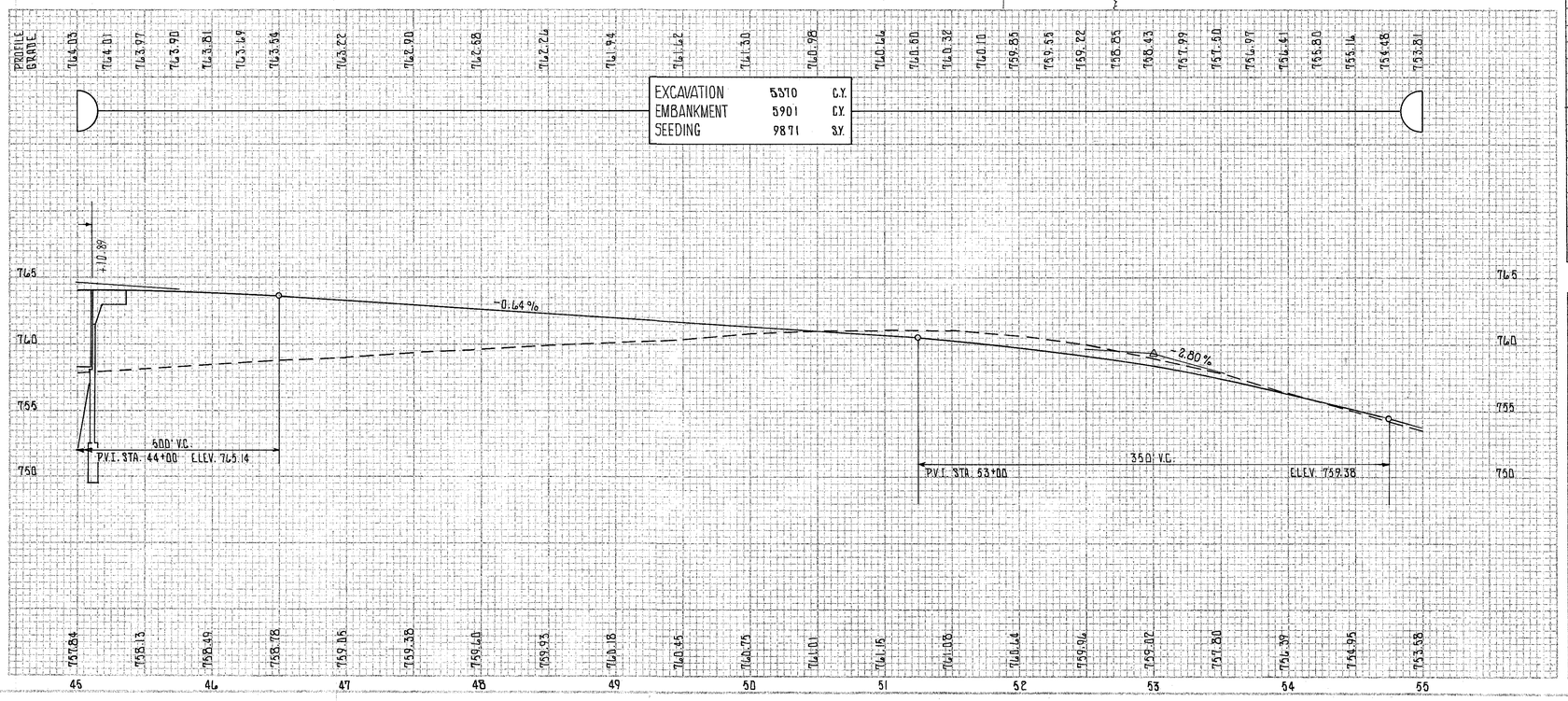
FRANKLIN COUNTY
FRA-104-10.57

NOTES

1. FOR REFUGEE ROAD NORTH PLAN & PROFILE SEE SHEET NO. 81
2. FOR ALUM CREEK DRIVE PAVEMENT DETAIL SEE SHEET NO. 135 & 136
3. FOR RELOCATED 12" WATERLINE PROFILE SEE SHEET NO. 138
4. FOR STORM SEWER PROFILE SEE SHEET NO. 70

LEGEND

2" ITEM 404 ASPHALT CONCRETE & ITEM 408 PRIME COAT ON 6" ITEM 304 AGGREGATE BASE



* OMIT WHEEL GUARD

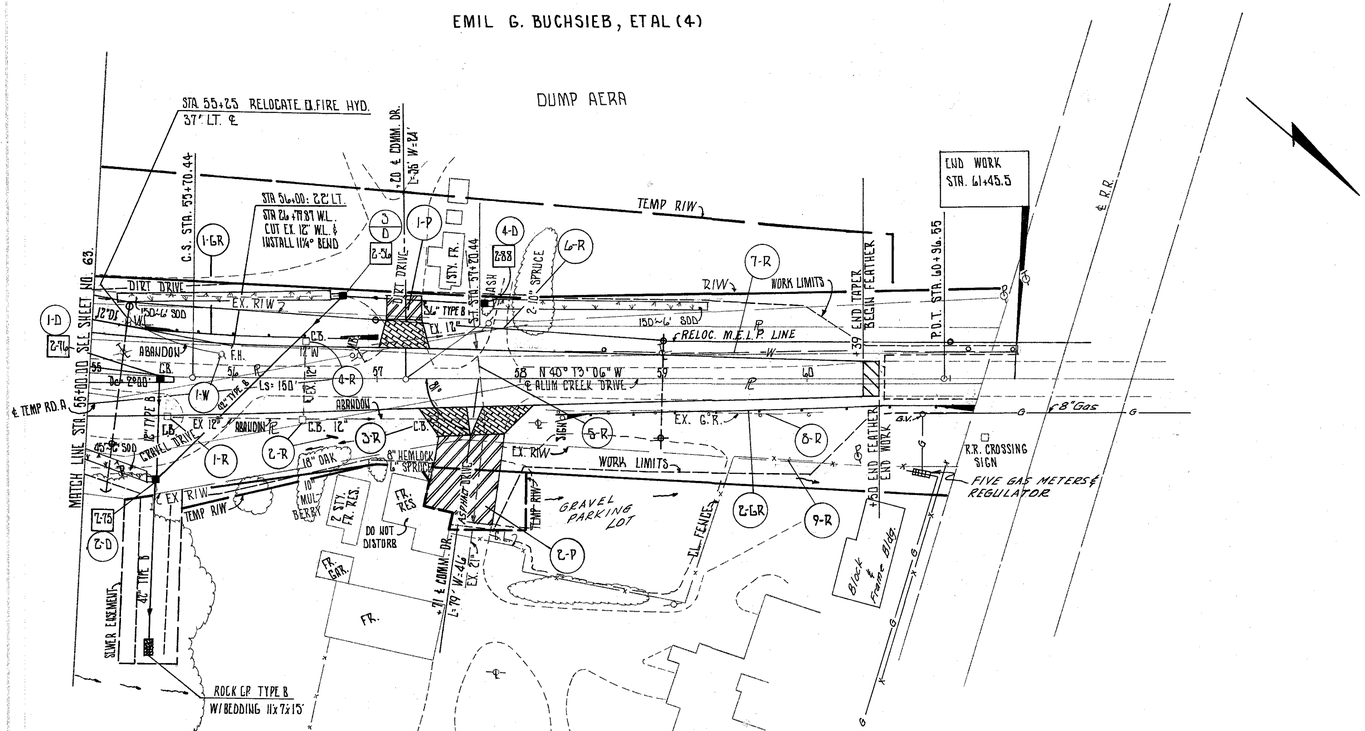
REF.	STATION TO STATION	SIDE	304 AGGREGATE BASE	403 ASPHALT CONCRETE	408 PRIME COAT	606 GUARDRAIL TYPE B	606 BRIDGE TERMINAL ASSEMBLY TYPE A *	606 ANCHOR ASSEMBLY TYPE A		
			C.Y.	C.Y.	GAL.	L.F.	E.A.	E.A.		
1-GR	45+43.51 TO 47+18.51	LT.				150	1	1		
1-7	51+00 TO 52+05	RT.	12	4	29					
	TOTALS		12	4	29	150	1	1		

\# W/ BEDDING

*706.01, 706.02

REF	STATION TO STATION	SIDE	202 PIPE REMOVED 24" & UNDER	202 GUARDRAIL REMOVED	601 ROCK CHANNEL PROTECTION TYPE B#	602 CONCRETE MASONRY	603 12"* TYPE B	604 I-2A-8 INLET	660 SODDING	SPECIAL FIRE HYDRANT REMOVED
			L.F.	L.F.	C.Y.	C.Y.	L.F.	E.A.	S.Y.	E.A.
1-D	47+75	RT.			2	0.2	64	1		
2-D	54+50	LT.							16	
3-D	54+00 TO 55+00	RT.							83	
1-W	47+95	LT.								1
2-W	52+09	LT.								1
1-R	46+26 TO 46+79	RT.	54							
2-R	53+06 TO 53+58	RT.	52							
3-R	45+00 TO 45+19	LT.		20						
	TOTALS		106	20	2	0.2	64	1	99	2

ALUM CREEK DRIVE STA. 45+00 TO STA. 55+00



FRANKLIN COUNTY
FRA - 104 - 10.57

CALC:	PCB	3-79
CHK:	WDG	4-79

C.S. STA. 55+70.44 & S.T. STA. 57+20.44

P.O.T. STA. 60+96.55

EMIL G. BUCHSIEB, ETAL (4)

EXCAVATION	1882	C.Y.
EMBANKMENT	2500	C.Y.
SEEDING	2089	S.Y.

LEGEND

- ▨ 10" ITEM 304 AGGREGATE BASE
- ░ 8" ITEM 452 PLAIN PORTLAND CEMENT CONCRETE
- ▩ *1" ITEM 404 ASPHALT CONCRETE ON 5" ITEM 301 BITUMINOUS AGGREGATE BASE*

NOTES

1. FOR STORM SEWER PROFILES SEE SHEET NO. 126
2. FOR PAVEMENT DETAIL SEE SHEET NO. 137
3. FOR RELOCATED 12" WATERLINE SEE SHEET NO. 138
4. *ITEM 202 STRUCTURE REMOVED (REF. 2-R) IS ABANDONED CONCRETE HEADWALL*

REF.	STATION TO STATION	SIDE	404	202	304	301	606	606		202	SPECIAL	SPECIAL
			ASPHALT CONCRETE	GUARDRAIL REMOVED	AGGREGATE BASE	*5" BIT. AGGR. BASE*	GUARDRAIL TYPE 5	ANCHOR ASSEMBLY TYPE A		FENCE REMOVED	IRON CASTINGS	FIRE HYDRANT RELOCATED
			C.Y.	L.F.	C.Y.	C.Y.	L.F.	EA.	EA.	L.F.	LBS.	EA.
1-GR	55+37.5 TO 57+00	LT.					125	2				
2GR	58+28.5 TO 61+16.00	RT.					237.5	2				
7-R	58+05 TO 61+45.5	LT.		340.5								
8-R	58+20.8 TO 61+22.3	RT.		301.5								
9-R	59+44 TO 60+06	RT.								76		
1-W	55+90	LT.									254	1
1-P	56+62 TO 57+52	LT.	*2*		12	*9*						
2-P	57+25 TO 58+12	RT.	*4*			*58*						
	TOTALS		*6*	642	*12*	*67*	362.5	4		76	254	1

‡‡ OMIT DIKE
‡ WITH BEDDING

* 706.02
** 706.01 OR 706.02

\# NOT FIELD LOCATED: NON-PERFORM IF NOT FOUND

REF.	STATION TO STATION	SIDE	202	202	202	601	602	603		603		604			660
			STRUTURE REMOVED	PIPE # REMOVED 24" & UNDER	CATCH BASIN * REMOVED	ROCK ‡ CHANNEL PROTECTION TYPE B	CONCRETE MASONRY	12" TYPE B **	36" TYPE B *	42" TYPE B *	42" TYPE C *	I-2-12 INLET	NO. 5A C.B.	NO. 5 C.B.	SODDING
				L.F.	EA.	C.Y.	C.Y.	L.F.		L.F.		EA.		EA.	S.Y.
1-D	55+50	RT.						70				1			
2-D	55+50	RT.				6	0.8				110		1‡‡		30
3-D	55+50 TO 56+75	LT.&RT.								180			1		100
4-D	56+75 TO 57+75	LT.							100					1	100
1-R	55+52 TO 56+46	RT.		74	1										
2-R	56+46 TO 57+39	RT.	*LUMP SUM*	93	1										
3-R	57+39 TO 57+72	RT.		33	1										
4-R	56+46	LT.&RT.		52	1										
5-R	56+96 TO 58+02	LT.		106											
6-R	57+70	LT.&RT.		86											
	TOTALS		*LUMP SUM*	464 #	4 #	6	0.8	70	100	180	110	1	2	1	230

Revised D.E.J. 4-11-80

ALUM CREEK DRIVE STA. 55+00 TO STA. 60+50

SEEDING

SEED AREA	SQ. FEET
115	1158
106	215
4	

CALC.	RG	3-79
CHK.	GKS	3-79

STATE OHIO

65
254

FRANKLIN COUNTY
FRA - 104-10.57

SEED AREA	VOLUME
76	931
20	173
13	96
0	0

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

770
760
750
740

F-2
C-23
F-36.3
4:1
2:1
764.17
29+00
763.81

770
760
750
740

4:1
24:1
2:1
764.01
28+05.65
763.63

27+70.65 BEGIN SEEDING

BEGIN WORK
STA. 27+22.40

27+70.65

760
750
740

27+00
763.20

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

ALUM CK. Sta. 28+00 to 29+00

FRANKLIN COUNTY
FRA - [illegible] 57

CALC.	RG	3-79
CHK.	GKS	3-79

CUT AREA | FILL AREA | CUT VOLUME | FILL VOLUME

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

138
760
750
1528
740
730
-38
137
750
1472
740
730
128
750
-44
1350
740
730
115
29+00

F-17 C-20 A-1 7580 21 F-531

FL INLET 740.0

FL OUTLET 739.04

48"-12" TYPE D 706.01, 706.02 or 707.01 @ 2.00%

758.97
32+00
758.5

ADD FILL AND DEDUCT CUT FOR DR. STA 31+22 LT.
[(83 x .5 x 7)+(83 x .5 x 2')+(83 x .5 x 7')] ÷ 54 = 12.3 C.Y.

-12 12

DEDUCT SEEDING FOR DR. STA. 31+22 LT.
[(11.5 x 20 x 2').5+(20 x 12')-(33 x 4')] ÷ 9 = 37.6 S.Y.

TYPE II COMM. DRIVE
W=12' L=20'

42.55 LT
EL. 762.12

2.5%

31+22.22, 55' LT
EL 761.62

760

+22
DRIVE LT.

C-5 A1 7600 21 F-10 C-20 F-508 21

761.54
31+00
761.00

TYPE II FIELD DRIVE
29+79 W=12' L=25
℄ DR. PROFILE @ 0.24%

+42.75 LT
EL. 764.26

E.X. DRIVE

C-23 A1 7620 21 C-7

AHEAD

29+78, 19.75' LT
EL. 764.22

763.37
30+00
763.00

F-455 21

DEDUCT CUT FOR DR. @ 29+79
(7 x 22) + ½ (7x4) 2 = 6.7 C.Y.

-7

104 1967

100 1490

ALUM CK. Sta. 30+00 to 32+00

REVISED

CALC.	RG	3-79
CHK.	GKS	3-79

OHIO

FRANKLIN COUNTY
FAP 104-10.67

67
254

DEDUCT SEEDING FOR DRIVE STA. 36+15 LT.
[(21 x 2.5) + .5(10 x 10) + .5(12 x 2)] ÷ 9 = 64.1 S.Y.

DEDUCT SEEDING FOR DRIVE STA. 34+75 RT.
[(11.5 x 20 x 2) . 5 + (12 x 186) - (33 x 4)] ÷ 9 = 258.9 S.Y.

-225

+ 15 CONN. DRIVE

FL OUTLET
735.84

FL INLET
737.12

64'-12" TYPE D @ 2.00% 706.01, 706.02, 709.01

ADD FILL FOR DRIVE STA 36+15 LT.
(22 x 2.5 x 1) ÷ 54 = 10.19 C.Y.

753.90
36+00
750.91

STA. 35+25, 7' LT
NO. 1-2-8 INLET
FL INLET 753.93
FL 15" 744.55
FL 12" 746.80

STA. 35+25, 34' RT
NO. 2-A-6 INLET
FL INLET 752.91
FL 12" 747.60

C-3

F-552

54'-18" TYPE B 706.01 706.02 @ 4.00%

40'-12" TYPE B 706.01 706.02 @ 2.00%

2.0' VC

END DRIVE

ADD FILL FOR DRIVE STA 34+75 RT.
[(482 x 50) + (482 x 50)] ÷ 54 = 14.78 C.Y.
DEDUCT CUT FOR DRIVE STA. 34+75 RT.
[(3 x 78) + (4 x 78) - (2 x 13)] ÷ 54 = 12.17 C.Y.

FIELD DRIVE +7.5 -12.0%

753.73
35+00
751.41

STA. 35+00, 55' LT
NO. 2-2-8 C.B.
FL GRATE 749.75
FL 18" 747.00

STA 34+75, 7' LT
NO. 1-2-8-8
FL INLET 750.67
FL 15" 745.09
FL 18" 744.84

C-7

2:1 SKEWED

104'-18" TYPE 'B' 706.01, 706.02 @ 9.36 %

34+22, 87' RT.
FL 18" 735.10

ROCK C.P. TYPE C w/BEDDING
8' x 4' x 1.5'

HW-48 HEADWALL

C-2

F-39

754.56
34+00
753.40

F-559

F-24

C-19

756.40
33+00
755.97

F-530

32+00

ALUM CK Sta. 33+00 to 36+00

CALC.	RG	3-79
CHK.	GKS	3-79

OHIO

FRANKLIN COUNTY
FRA - 104-10.57

68
254

			END AREA		VOLUME	
			CUT	FILL	CUT	FILL
127	760	RAMP F				
	750	15:1 8:1 4:1 3:1 758.0 760	750	499	417	
412		760.82 41+00 754.99				370
68	760	RAMP F 8:1 4:1 3:1 756.8	760	24	402	576
	750	760.27 40+62 754.70	750			
523						78
84	760	RAMP F 8:1 756.7	760	42	440	967
1461	750	759.38 40+00 754.20	750			
179	39+00 AHEAD					913
	RAMP F AHEAD BACK 760 32:1 18:1 11:1 754.4		760			1475
99	39+00 BACK		AHEAD	451	356	
	750		BACK	96	356	
1014		757.94 39+00 753.51	750			
	740		740			177
151	38+27 BEGIN SEEDING	REF. RD. REF. RD. 753.0				1249
93	750 37+92 END SEEDING		750	0	318	
-139	740 DEDUCT SEEDING FOR DRIVE STA. 37+44 LT. [(28x25)+.5(8x5)+.5(5x5)+(40x13)]÷9=139.2 SY.	-3.1% 795.12 COMM. DRIVE +44	75650 38+00 752.22		ADD FILL FOR DRIVE STA. 37+44 LT. [(25x1.8x9)+(2x2x25x1.8)+(1.5x25x20)]÷54=17.94 CY.	740
951						18
						8
93	750	4:1 4:1 792.8	750			1258
	740 36+15 48' LT. NO. 2-2-B C.B. FL GRATE 752.65 FL 12" TYPE B 748.14		755.06 37+00 751.46	4	361	
1128			740			27
110	36+00		36+00	12	312	1247

ALUM CK DR. Sta. 37+00 to 41+00

CALC RG 3-79
CHK GKS 3-79

OHIO | PROJECT

69
254

FRANKLIN COUNTY
FRA-104-10.57

SEEDING
SEED WIDTH | SQ. YDS.

END AREA: CUT | FILL
VOLUME: CUT | FILL

87 2108

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

149
760
750
1522
760
45 750 46+07 BEGIN SEEDING
770
760
750
45 42+71 END SEEDING
1168
231
937
280
1515
1297
41+00

4:1
7620
F-470
763.81
46+00
758.49
4:1
C-38
3:1
7571.5
760
750

C-12
4:1
3:1
757.0
F-753
764.03
45+07.5 (AHEAD ONLY)
757.85
C-5
756.6
760
750

BRIDGE NO. FRA-104-1250
OVER ALUM CREEK DRIVE

RAMP C
C-152
3.8:1
F-528
762.97
42+71 (BACK ONLY)
756.46
42+00.7' RT
NO. 1-CA-10 INLET
R INLET TOP EL. 762
FL 12" 754.59
4:1
C-6
3:1
759.0
760
750

RAMP B
14.7:1
C-1410
200
150
F-481
762.21
42+00
755.97
38-12" Type B 706.02@ 2.00%
STA. 42+00.4' RT
NO. 3 M.H.
COVER EL. 763.1
FL 27" 740.82
FL 12" 753.83

RAMP A
14.7:1
C-1981
250
200
150
F-489
761.78
41+67
755.64
4:1
C-7
3:1
758.5
760
750

770
760
750
1979 1330
1951 592
2981 1123
41+00 499 417

ALUM CK. DR. Sta. 42+00 to 46+00

ALUM. CK. DR. Sta. 47+00 to 51+00

SEEDING	
SQ. YDS.	SQ. YDS.

CALC:	RG	3-79
CHK:	GKS	3-79

71
254

FRANKLIN COUNTY
FRA-104-10.57

MINE AREA		MINE AREA	
CUT	FILL	CUT	FILL

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

770
760
750

87
972

C-111
F-1
F-10
C-9
C-199
℄ Temp. Road A
Sta. 55+75
4:1
761.0
4:1
4:1
755.0
4:1
756.41
54+00
756.39

770
760
750

88
744

C-24
C-209
F=4
C=1
C-27
℄ Temp. Road A
Sta. 54+72
4:1
763.0
4:1
4:1
758.0
758.43
53+00
759.02

770
760
750

46
373
46

REF RD. N.
F-1
C-236
F-2
C-24
C-2
F-13
℄ Temp. Road A
Sta. 53+70
4:1
759.0
4:1
2:1
759.85
52+00
760.64
51+27

DEDUCT SEEDING FOR DRIVE STA 51+73 RT
[(13x13x2)1.5+(20x25)]÷9=74.2 S.Y.

-74
234

+73.34' RT
EL. 760.62
℄ DR PROFILE
5.40%
+54 END DR
EL. 761.7

ADD CUT FOR DR @ +73
(20x33)0.7÷27=17.1

770
760
750

1150 ℄
1049 3
17
668 27
51+27

62
50+88

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

ALUM CK. DR. Sta. 52+00 to 54+00

CALC. RG 3-79
CHK. GKS 3-79

OHIO

FRANKLIN COUNTY
FRA-104-19.57

72
254

SEEDING

SEED (LBS)	MULCH (TONS)
94	1028
91	-231
	928
	-106
76	939
93	1072
100	1039
87	

DEDUCT SEEDING FOR DRIVE STA 59+71 RT
[(20x46) + ½(35+23)20x2] ÷ 9 = 231.1 S.Y.

DEDUCT SEEDING FOR DRIVE STA 57+20 LT.
[(35x14)+.5(5.5x20)2] ÷ 9 = 105.6 S.Y.

ADD. FILL FOR DRIVE STA 59+71 RT
[(11x46x1.5)+(32x46x1.5)] ÷ 54 = 54.9 C.Y.

END AREA		PRISMOIDAL	
CUT	FILL	CUT	FILL
33	265		
			55
		99	771
20	161		
		136	374
53	51		
247	2	556	97
		930	4
		1048	3

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

750 740

744.5 — 4:1 — 2:1 — 751.97 — 59+00 — 751.98

744.1 — 4:1 — 4:1 — 750.87 — 58+00 — 750.42

END DR. 56 LT. EL. 748.09 — +20.22.63 LT EL. 750.39 — ℄ DR. PROFILE @ 6.50% — +71 21 RT EL. 750.47 — 4.16% — ℄ DR. PROFILE @ 10.00% — 15 VC 97.5 LT. EL. 744.44 — END DR. EL. 744.14 — 20' VC 41' LT EL. 749.59

743.6 — 747.11 — 750.81 — 57+00 — 750.05

C-88 — F-2 — C-28 — ℄ Temp. Road A — C-134 — 745.5 — 746.8 — 751.79 — 56+00 — 751.33 — 746.5

C-147 — ℄ Temp. Road A Sta. 56+77 — C-107 — 3:1 — 4:1 — 3:1 — 749.0 — 752.0 — 753.81 — 55+00 — 753.58

64+00

ALUM CK. DR. Sta. 55+00 to 59+00

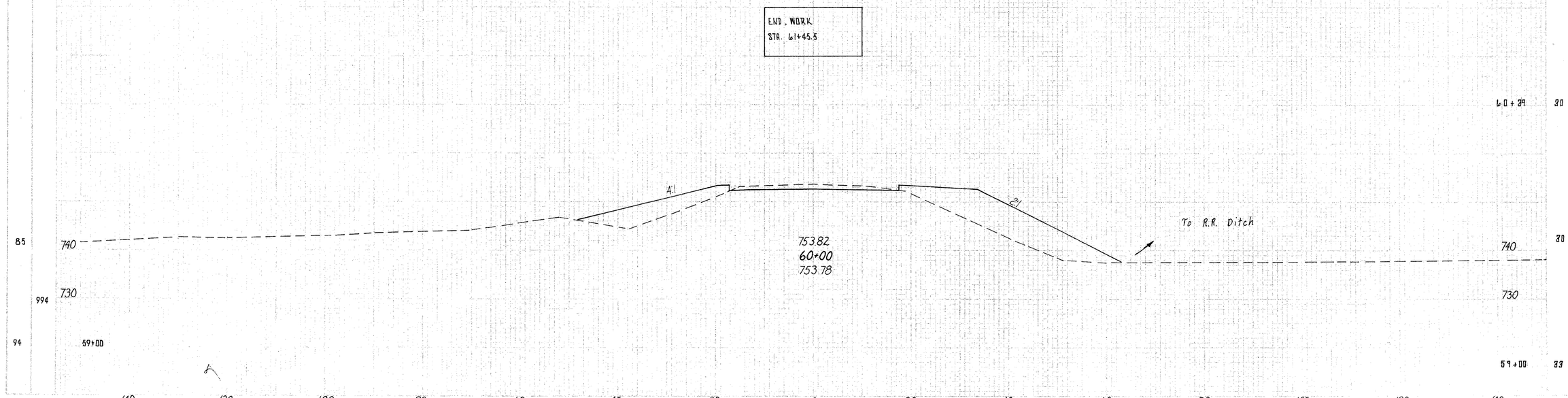
CALC: RG 3-79
CHK: GKS 3-79

UNIC

73
264

FRANKLIN COUNTY
FRA 104-10.57

END WORK
STA. 61+45.5



ALUM CK DR. Sta. 60+00

CALC:	PCB	6-79
CHK:	GKS	7-79

FRANKLIN COUNTY
FRA 104 - 10.57

60 40 20 ℄ 20 40 60

750
740
730

2:1 2:1 C-2 C-2 F-677

31+00
733.5

750
740

F-1169

30+00
733.9

760
750
740

2:1 2:1 ALUM CREEK DR. F-853

29+00
740.0

ALUM CREEK DR. C-24 F-110 2:1

760
750
740

28+00
757.5

750
740

C-10

27+00
762.9

60 40 20 ℄ 20 40 60 80

TEMPORARY ROAD "A" ~ STA. 27+00 TO STA. 31+00

CALC: PCB 6-79
CHK: GKS 7-79

FRANKLIN COUNTY
FRA 104-10.56

75
254

60 40 20 ℄ 20 40 60

740
730

C-5 2:1 F-150 2:1 C-5 2:1 2:1

37+00
736.0

740
730

C-4 C-3
F-93

36+00
735.6

740
730

C-4 C-4
F-43

35+00
735.5

740
730

+50 DRIVEWAY L=26' W=12'
C-5 C-4 -8.33 %
F-40

TEMP R/W

ADD FOR DRIVEWAY STA. 34+50 RIGHT
FILL: 27.5 C.Y.

34+00
735.5

740
730

C-4 F-115 C-5

33+00
735.3

740
730

C-4 2:1 F-280 2:1 C-4 2:1 2:1

32+00
735.0

60 40 20 ℄ 20 40 60

REVISED BRS 4/10/80

TEMPORARY ROAD "A" ~ STA. 32+00 TO STA. 37+00

CALC: PCB 6-79
CHK: GKS 7-79

FRANKLIN COUNTY
FRA 104-10.57

60 40 20 ℄ 20 40 60

760
750
740
730

S.R. 104 2:1 F-154 2:1 S.R. 104

44+00
761.7

S.R. 104 2:1 F-204 2:1 S.R. 104

43+00
759.5

2:1 C-958 4:1 4:1 2:1

42+00
754.5

2:1 4:1 C-141 4:1 2:1

41+00
743.5

2:1 F-177 2:1

TEMP. PIPE @ LOW POINT

40+00
737.3

2:1 F-5 F-32 2:1

39+00
740.5

REFUGEE ROAD INTERSECTION

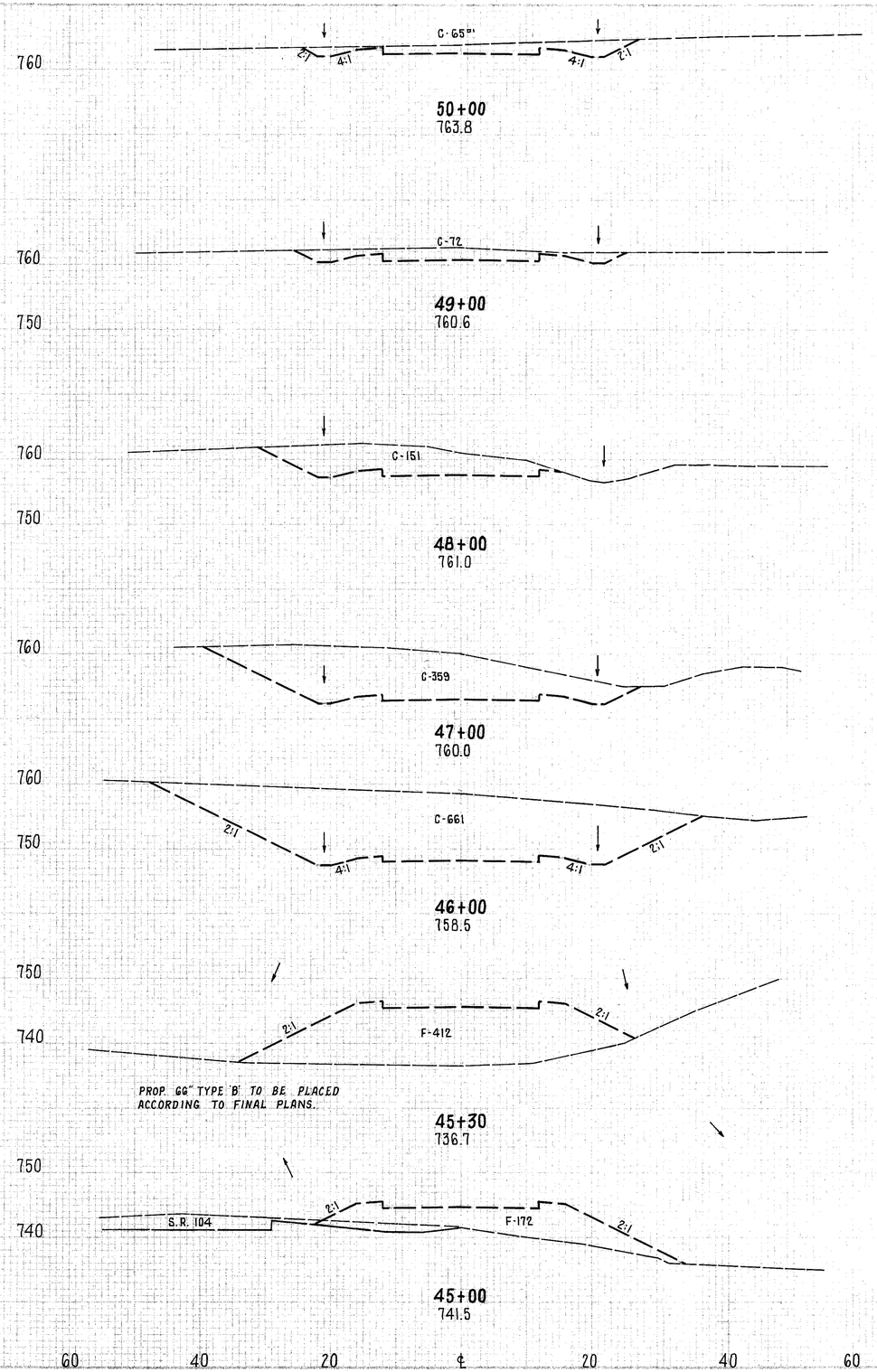
60 40 20 ℄ 20 40 60

TEMPORARY ROAD "A" ~ STA. 39+00 TO STA. 44+00

CALC: PCB 6-79
CHK: GKS 7-79

FRANKLIN COUNTY
FRA 104 - 10.57

FOR CONTINUATION OF CROSS SECTIONS
SEE SHEET NO. 70.



TEMPORARY ROAD "A" - STA. 45+00 TO STA. 50+00

FRANKLIN COUNTY
FRA-104- 10.57

CALC: PCB 4-79
CHK: ROB 7-79

EXCAVATION	874	C.Y.
EMBANKMENT	166	C.Y.
SEEDING	2209	S.Y.

NOTES

1. FOR S.R. 104 PLAN & PROFILE SEE SHEET 45
2. [illegible]
3. FOR WATERLINE PROFILE AND QUANTITIES SEE SHEETS 139 & 140
4. CONTRACTOR SHALL FIELD LOCATE EX. 16" PRIOR TO WATERLINE CONSTUCTION
5. WATERLINE SHALL BE CONSTRUCTED 10' BEHIND CURB UNLESS OTHERWISE SHOWN
6. FOR CURVE DATA SEE SHEET 100

TYPICAL EXISTING REFUGEE ROAD

LEGEND

▨ 2" Item 404 Asphalt Concrete and Item 408 Prime Coat on 6" Item 304 Aggregate Base

REF.	STATION to STATION	SIDE	404 ASPHALT CONCRETE	408 PRIME COAT	304 AGGREGATE BASE
			C.Y.	Gal.	C.Y.
1-P	74+00	RT.	3	21	9
	TOTALS		3	21	9

* 706.01 OR 706.02 ** 706.02

REF	STATION TO STATION	SIDE	604 CATCH BASIN REMOVED			*603 15" TYPE "B"	**603 24" TYPE "C"	604 NO. 1 MANHOLE	604 NO. 5 CATCH BASIN	660 SODDING
			EA.			L.F.	L.F.	EA.	EA.	S.Y.
1-R	74+00	LT.	1							
1-D	72+00	L-R				50		1		
2-D	71+60 TO 75+19	RT.					324		1	22
	TOTALS		1			50	324	1	1	22

Revised D.E.J. 4-11-80

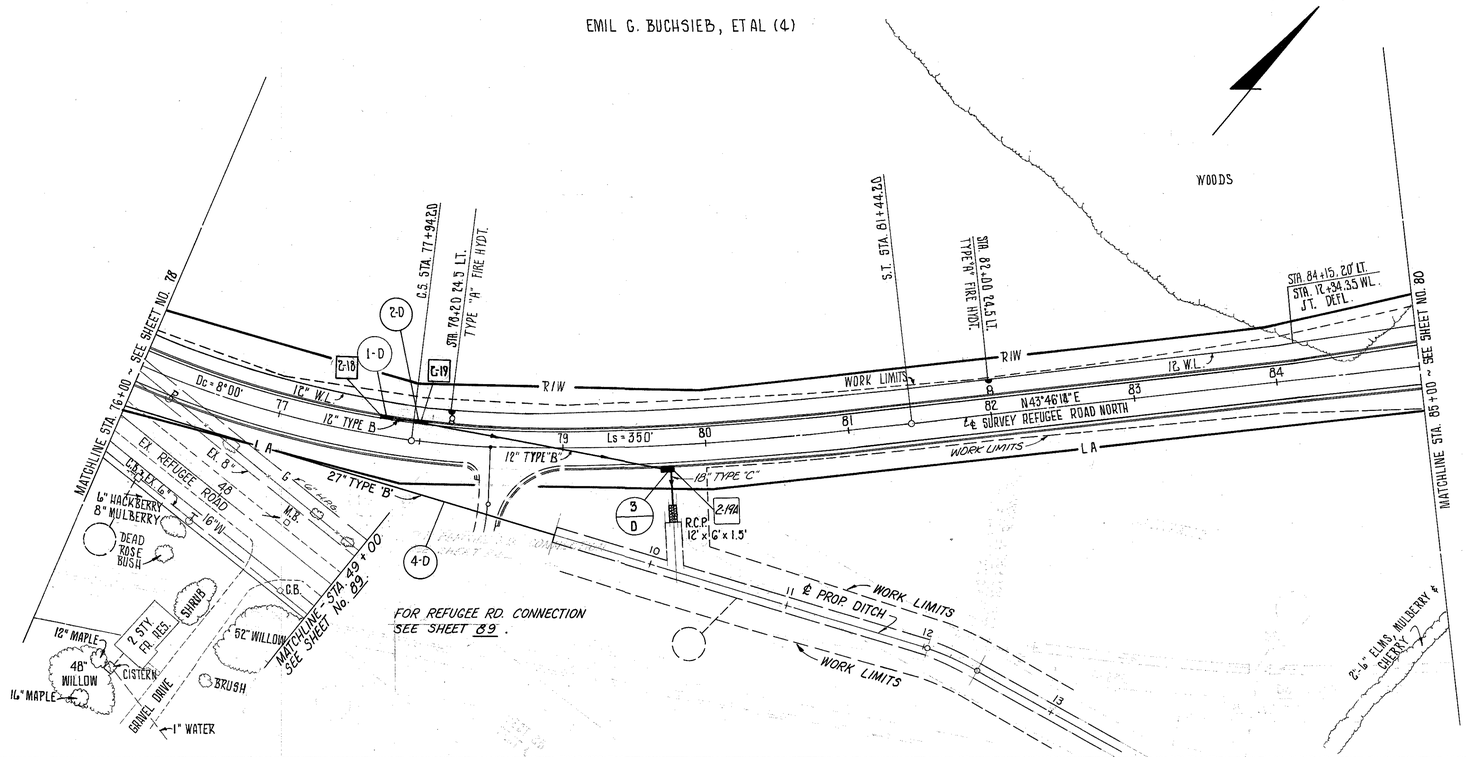
REFUGEE ROAD NORTH ~ STA. 71+40 TO STA. 76+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

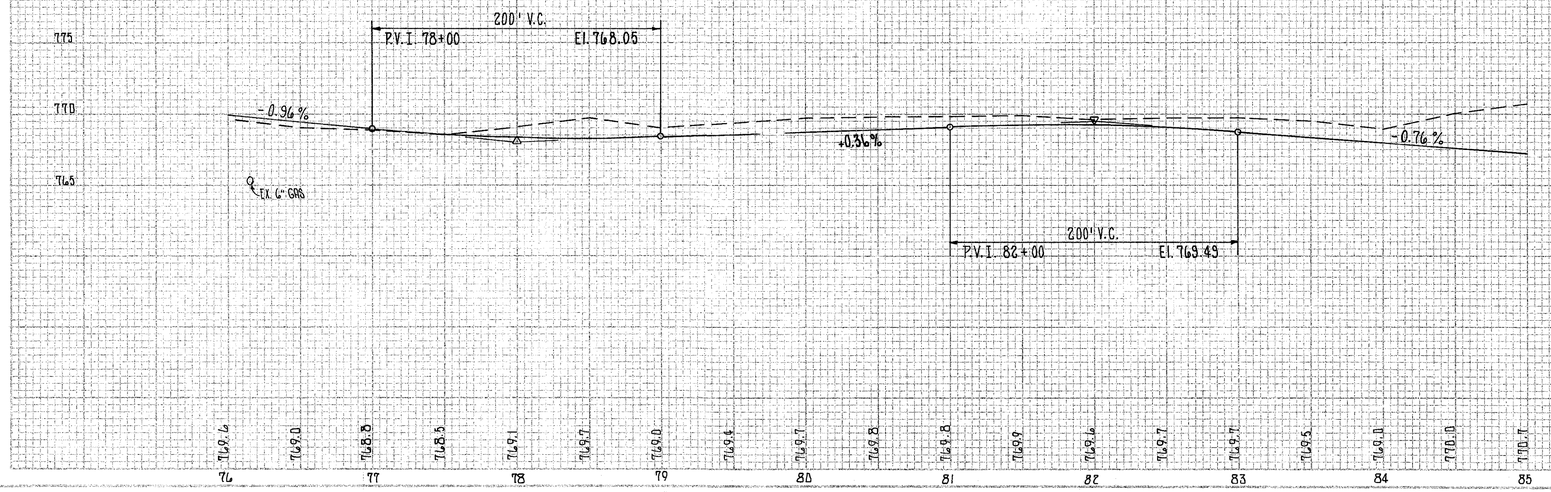
79
254

FRANKLIN COUNTY
FRA-104-10.57

CALC:	PCB	4-79
CHK:	RDB	7-79



EXCAVATION	3695	C.Y.
EMBANKMENT	73	C.Y.
SEEDING	4036	S.Y.



NOTES

1. FOR STORM SEWER PROFILES NOT SHOWN SEE SHEET 126
3. FOR WATERLINE PROFILE SEE SHEET 140
4. FOR CURVE DATA SEE SHEET NO. 100
5. FOR WATERLINE QUANTITIES SEE SHEET 140

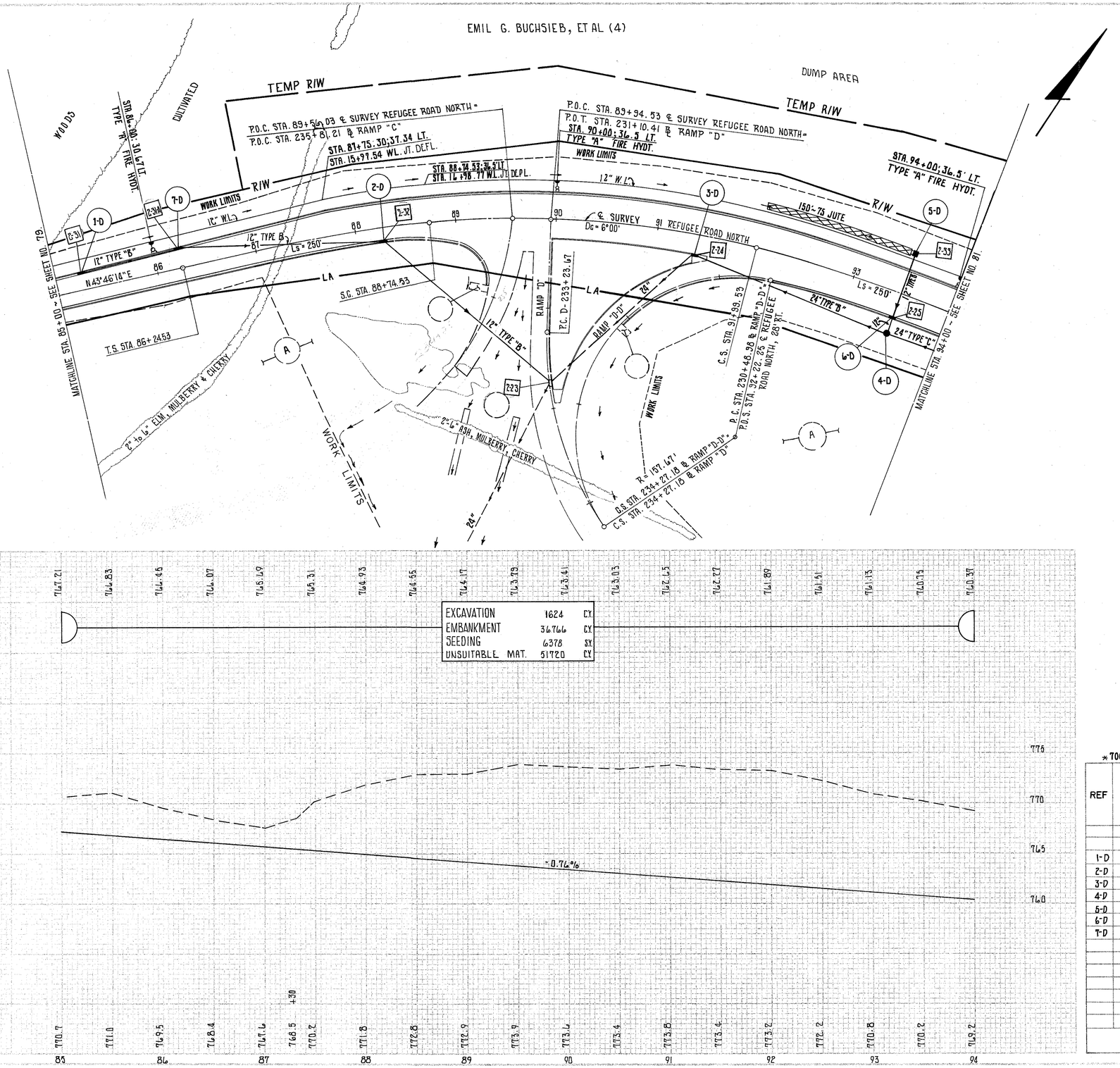
REF	STATION TO STATION	SIDE		602 CONC. MASONARY	603 12" TYPE "B" 706.01, 706.02	604 NO.1-2A-6 INLET	603 18" TYPE "C" 706.01 OR 706.02	601 ROCK CHANNEL PROTECTION TYPE "B"	604 NO. 1 MANHOLE	603 27" TYPE "B" 706.02
				C.Y.	L.F.	EA.	L.F.	C.Y.	EA.	L.F.
1-D	77+75 TO 78+00	LT.			25	1				
2-D	78+00	LT.				1				
3-D	79+75 TO 78+00	L-R		0.51	174	1	28	4		
4-D	75+19 TO 76+95	RT.		0.49					1	400
TOTALS				0.80	199	3	28	4	1	400

REFUGEE ROAD NORTH ~ STA. 76+00 TO STA. 85+00

FHWA REGION	STATE	PROJECT		80
5	OHIO			254

FRANKLIN COUNTY
FRA-104-10.57

CALC. PCB 4-79
CHK. RDB 7-79



EXCAVATION	1624	CY.
EMBANKMENT	36766	CY.
SEEDING	6378	SY.
UNSUITABLE MAT.	51720	CY.

NOTES

1. FOR STORM SEWER PROFILES SEE SHEET NO. 126
2. FOR PROFILE 33 TO 25 SEE X-SEC. SHEET NO. 87
4. FOR RAMPS "D" + "D'D" P & P SEE SHEET NO. 102
5. FOR PAVEMENT DETAILS SEE SHEET NO. 128
6. FOR 12" WATERLINE PROFILE SEE SHEET 139
7. FOR CURVE DATA SEE SHEET NO. 100.
8. FOR WATERLINE QUANTITIES SEE SHEET 140

(A) FOR ITEM 659 IN THIS AREA SEE SHEET 97

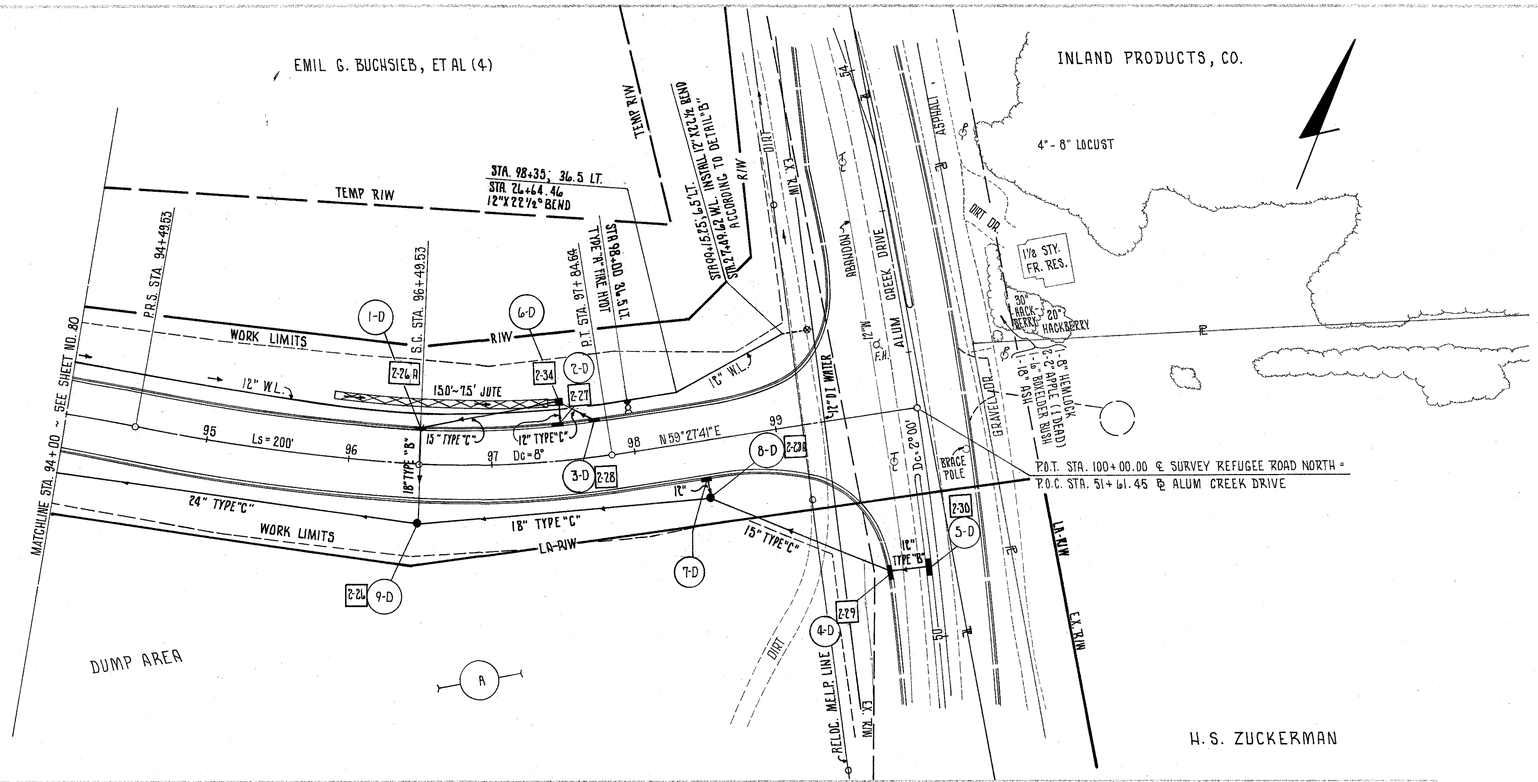
* 706.01 OR 706.02 ** 706.02 † REINFORCED

REF	STATION TO STATION	SIDE	603 * 12" TYPE "B"	603 ** 24" TYPE "B"	603 24" TYPE "C" 706.02	603* 12" TYPE "C"	604 INLETS 12 A-6	604 INLETS 12 A-8	604 NO. 3 M.H.	604 NO. 5 C.B.	667 SEEDING & JUTE MATTING
			LF	L.F.	L.F.	L.F.	EACH		EA.	EA.	S.Y.
1-D	85+25 TO 86+25	L-R	100					1			
2-D	88+25 TO 233+76 (D)	RT.	216				1				
3-D	91+40 TO 93+50	RT.		206			1†				
4-D	93+50 TO 94+00	RT.			50				1		
5-D	93+50	L-R	68							1	125
6-D	93+50	RT.				16	1				
7-D	86+25 TO 88+25	L-R	204				1				
	TOTALS		588	206	50	16	3/1†	1	1	1	125

REFUGEE ROAD NORTH ~ STA. 85+00 TO STA. 94+00

FRANKLIN COUNTY
FRA-104-10.57

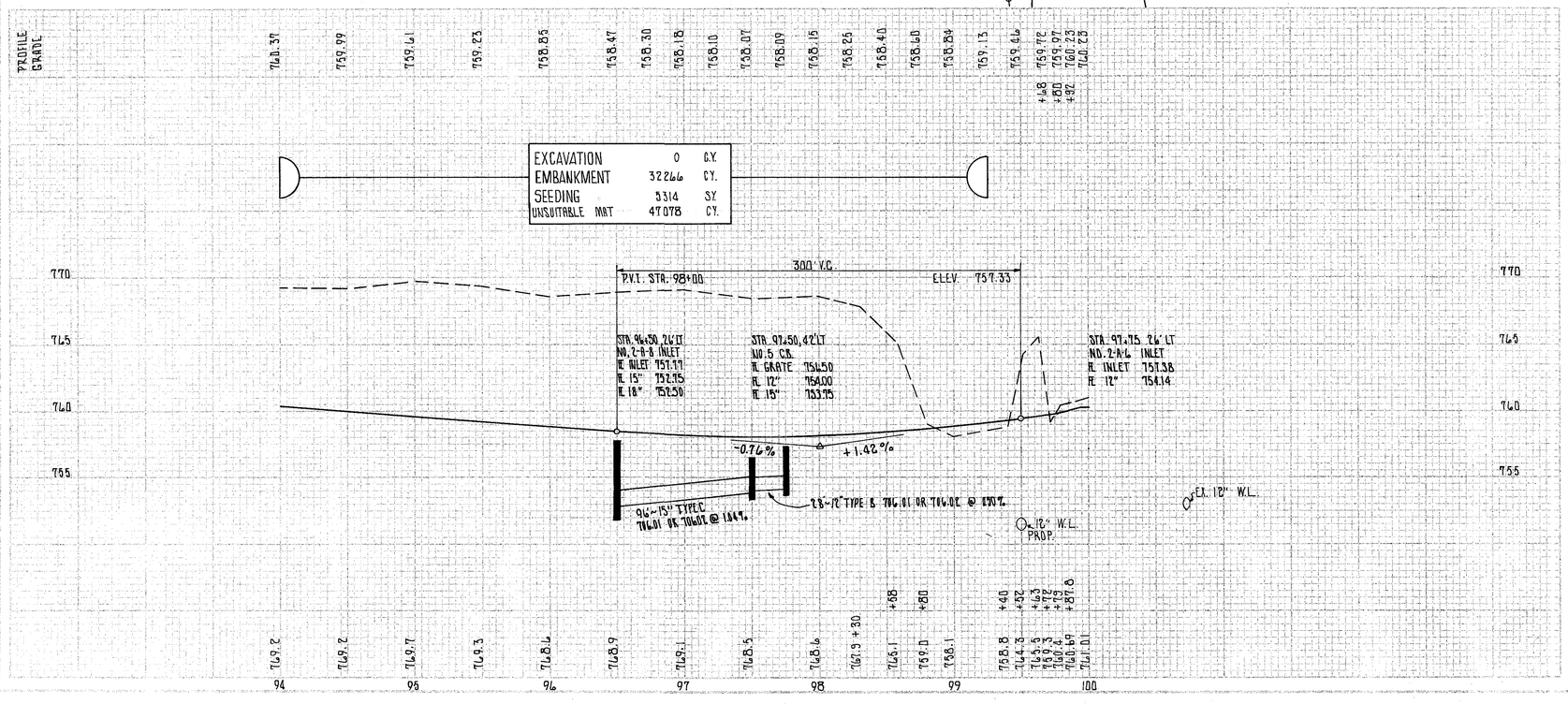
CALC.	PCB	4-79
CHK:	RDB	7-79



NOTES

1. FOR STORM SEWER PROFILES SEE SHEET NO 126
2. FOR PROFILE 34 TO 27 SEE SHEET NO. 87
3. FOR ALUM CR. DR. P&P. SEE SHEET NO. 63
4. FOR PAVEMENT DETAILS SEE SHEET NO. 136
5. FOR 12" WATERLINE PROFILE SEE SHEET 139
6. FOR CURVE DATA SEE SHEET NO. 100
7. FOR WATERLINE QUANTITIES SEE SHEET 140

(A) FOR ITEM 659 IN THIS AREA SEE SHEET 97



EXCAVATION	0	C.Y.
EMBANKMENT	32266	C.Y.
SEEDING	3314	S.Y.
UNSUITABLE MAT	47078	C.Y.

* 706.01 OR 706.02

REF	STATION TO STATION	SIDE	603 12" TYPE "B"*	603 15" TYPE "C"*	603 18" TYPE "B"*	603 24" TYPE "C" 706.02	603 18" TYPE "C"*	603 12" TYPE "C"*	604 NO. 5 CATCH BASIN	604 NO. 1 M.H.	604 INLETS 12A-6	604 INLETS 12A-8	604 INLETS 12A-10	604 INLETS 12C-10	667 SEEDING & JUTE MATTING
			LIN. FT.						EA.	EA.	EACH				S.Y.
1-D	96+50	L-R			68							1			
2-D	97+50	LT.						14			1				
3-D	97+50 TO 97+75	LT.						28			1				
4-D	98+50 TO 50+50 LT. AL. CK.	L-R		134									1		
5-D	50+50 ALUM CK. DR.	LT.	30											1	
6-D	96+50 TO 97+50	LT.		96					1						125
7-D	98+50	RT.						12			1				
8-D	96+50 TO 98+50	RT.					205			1					
9-D	94+00 TO 96+50	RT.				250				1					
	TOTALS		30	230	68	250	205	54	1	2	3	1	1	1	125

REFUGEE ROAD NORTH ~ STA. 94+00 TO STA. 100+00

STATE | ROUTE | SECTION
OHIO
82
254
FRANKLIN COUNTY
FRA 104-10.57

CALC: RG 3-79
CHK: GKS 3-79

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

40 | 770 | 760

STA. 72+00, 25' LT.
NO. 1 MANHOLE
EL COVER 772.50
EL 15" 765.19
EL EX.8" 767.56

℄ EX. 6" H.P.C.

4:1 4:1 3:1

EX 16" W 20

50'~18" TYPE B 706.01 or 706.02 @ 3.00%

773.81
72+00
773.8

STA. 72+00, 25' RT.
NO. 5 C.B.
EL GRATE 772.00
EL 15" 763.69
EL 24" 762.94
EL EX.6" 768.50

37 | 12

138

22 | 770 | 760

774.19
71+60
774.2

BEGIN WORK
STA. 71+40

25 | 0

770 | 760

46 | 9

770 | 760

770 | 760

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

REF. Rd. N. Sta. 72+00

FRANKLIN COUNTY
FRA - 104-10.57
83
254
CALC: RG 3-79
CHK: GKS 3-79
C-67
EX 6" H.P.G.
770.93
75+00
771.8
DEDUCT SEEDING FOR DR.@ 74+00
(½(11.5X20)2+(12X20))÷9=-52 S.Y.
ADD CUT FOR DR.@+00
(½(11.5x20)2+(20X12))1.35+27=23.7 C.Y.
74+00,14' RT.
EL. 772.18
F-13
C-55
END DR.34' RT.
EL. 770.40
DR PROFILE @ 8.40 %
EX.6" H.P.G.
771.89
74+00
772.70
F-23
C-48
EX.6" H.P.G.
772.85
73+00
773.41
72+00
REF. RD.N. STA. 73+00 TO 75+00

FRANKLIN COUNTY
FRA - 104-10.57

CALC: RG 3-79
CHK: GKS 3-79

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

26 743 — 770 / 760 — 4:1 — 769.13 / 81+00 / 769.8 — 770 / 760 — 65 0 — 84 254 — 896 0

FOR DITCH SECTIONS SEE SHEET No. 96.

81 554 — 770 / 760 — C=322 — 4:1 — PROP. DITCH — 0.24% — 768.68 / 79+75 / 769.7 — HEADWALL STA. 79+75 42' RT. — 770 / 760 — 322 0 — 604 3

52 461 — C-65 — C-48 — 4:1 — PROP. DITCH — 770 / 760 — 768.41 / 79+00 / 769.0 — 113 2 — 343 9

31 406 — C-72 — 770 / 760 — 768.38 / 78+00 / 769.1 — 72 3 — 196 24

42 500 — C-35 — F-10 — Ex. 6" H.P.G. — 770 / 760 — 769.01 / 77+00 / 768.8 — 35 10 — 178 37

48 528 — C-27 — 64 — C-1 — C-33 — F-6 — 4:1 — 4:1 — Ex. 6" H.P.G. — 770 / 760 — 769.97 / 76+00 / 769.6 — 61 10 — 237 19

47 75+00 — 67 0

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

REF. R.d.N. STA. 76+00 to 81+00

FRANKLIN COUNTY
FRA - 104 - 10.57

CALC: RG 3-79
CHK: GKS 3-79

REF. Rd.N. Sta. 82+00 to 87+00

CALC. RG 5-79
CHK. GKS 5-79
FRANKLIN COUNTY
FRA-104-10.57
86
254
LEGEND
UNSUITABLE MATERIAL
* EXCAVATION OF UNSUITABLE MATERIAL
92+22 AHEAD
92+22 BACK
761.72
92+22.25
769.8
761.89
92+00
770.0
762.65
91+00
769.2
89+97 AHEAD
89+97 BACK
763.43
89+97
769.0
764.17
89+00
766.5
764.93
88+00
764.8
87+00
REF. Rd N. Sta. 88+00 to 92+00

FRANKLIN COUNTY
FRA - 104 - 10.57

CALC: RG 5-79
CHK: GKS 5-79

STA. 97+50, 26' LT
NO. 2-A-C INLET
FL INLET 757.36
FL 12" 754.11

(34) STA. 97+50, 42' LT
NO. 5 CATCH BASIN
FL GRATE 764.50
FL 12" 754.88
FL 15" 753.75

14'~12" TYPE C 704.01, 704.02 0.80%

758.18
97+00
767.2

C* 16.14
F 16.14

C-926*

3:1 4:1 1:1

STA. 96+50, 26' LT
NO. 2-A-B INLET
FL INLET 757.77
FL 15" 752.75
FL 18" 752.50

757.8

68'~18" TYPE B 704.01 OR 704.02 @ 0.72 %

758.85
96+00
767.7

C-1726*
F-1726

C-990*

STA. 96+50, 42' RT
NO. 1 MANHOLE
COVER EL 763.20
FL 18" 752.01
FL 24" 751.51

EXC. LIMITS FOR MANHOLE

ADD UNSUIT & EMB. FOR MH.
@ STA. 96+50
(15.4 X 40.5 X 22) ÷ 27 = 508.2

759.7

C-1680*
F-1680

759.61
95+00
768.6

FOR LEGEND SEE SHEET 86

759.7

C-1637*
F-1637

760.37
94+00
767.8

700.9 4:1

48'~12" TYPE B 704.01 OR 704.02 @ 6.00 %

761.13
93+00
769.2

C-1622*
F-1622

C- 867*

STA 93+50, 42' LT
NO. 5 CATCH BASIN
FL GRATE 760.80
FL 12" 757.33

STA 93+50, 42' RT
NO. 3 MANHOLE
COVER EL. 764.80
FL 12" 751.07
FL 24" 750.07

EXC. LIMITS FOR MANHOLE

ADD UNSUIT & EMB. FOR M.H.
@ STA. 93+50
(38.5 x 12.5 x 18) ÷ 27 = 320.8

16'~12" TYPE C 704.01 OR 704.02 @ 13.62%

STA 93+50, 26' RT
NO. 2-A-A INLET
FL INLET 760.17
FL 12" 753.75

		3480*	0
		6207*	6207
		970*	0
		1726*	1726
		508*	508
		3532*	0
		6308*	6308
		946*	0
		1680*	1680
		3165*	0
		6143*	6143
		763*	0
		1637*	1637
		3023*	0
		6035*	6035
		867*	0
		1622*	1622
		321*	321
		2491*	0
		4639*	4639

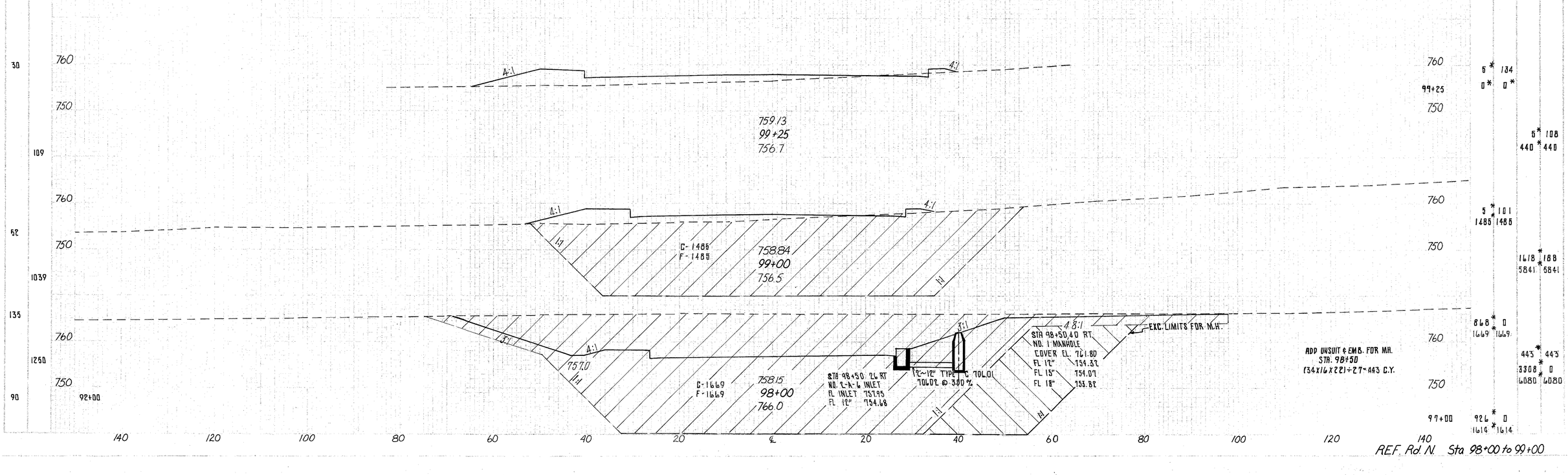
REF. Rd. N. Sta. 93+00 to 97+00

88
264

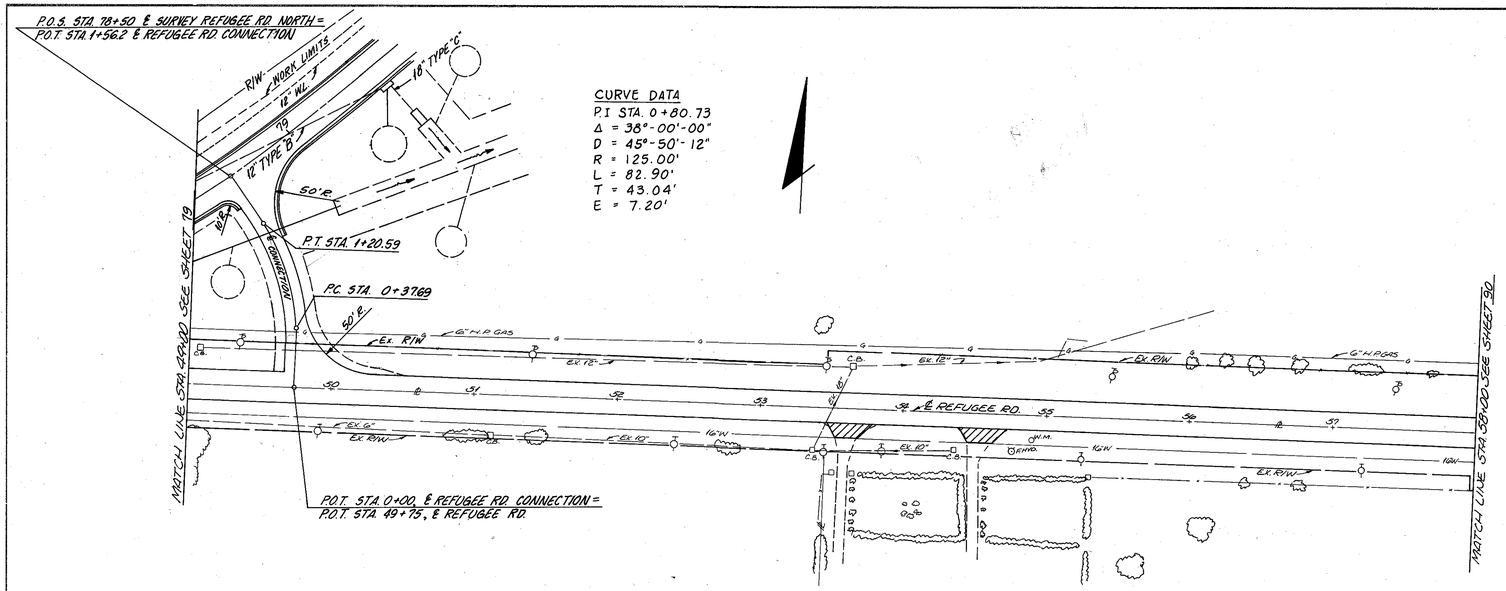
FRANKLIN COUNTY
FRA - 104 - 10.57

CALC: RG 5-79
CHK: GKS 5-79

FOR LEGEND SEE SHEET 86

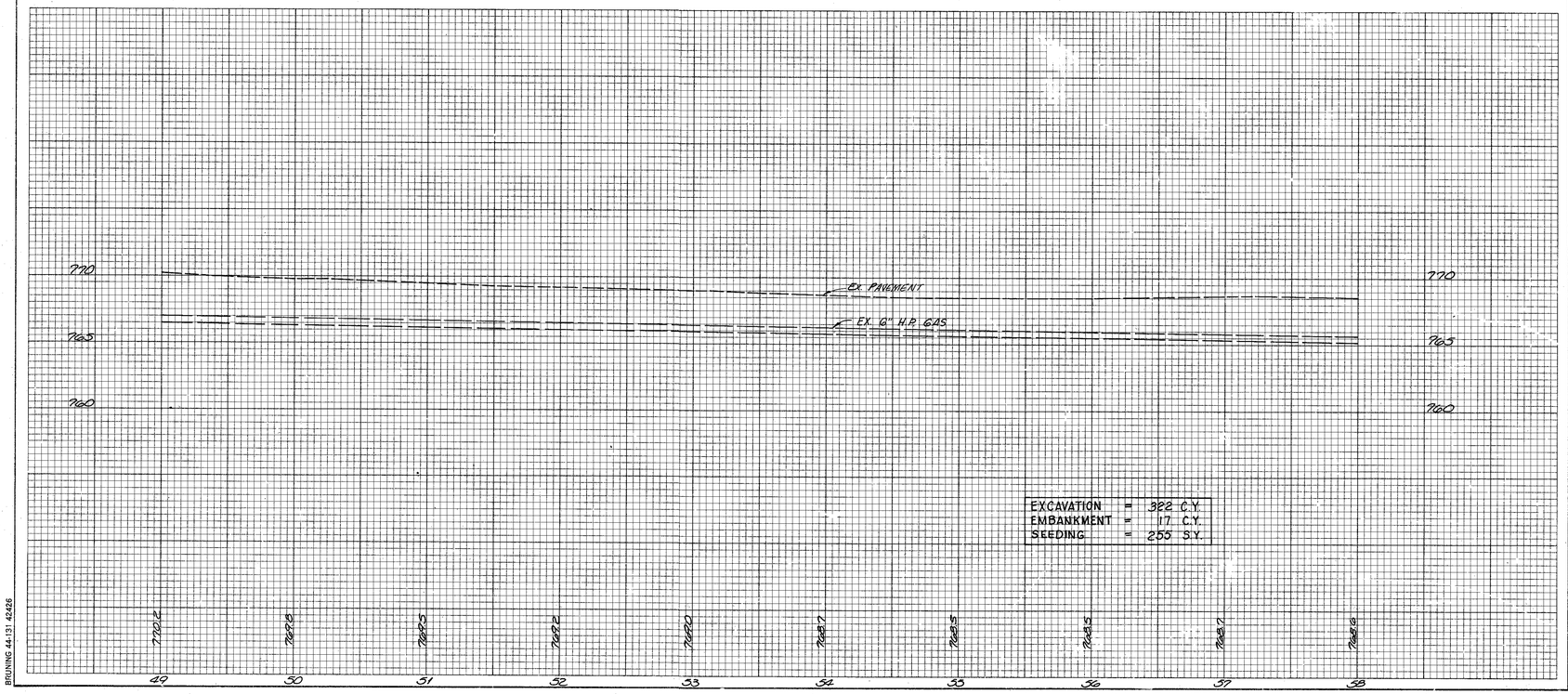


OHIO
FHWA REGION 5
FEDERAL PROJECT
89
256



CURVE DATA
P.I STA. 0+80.73
Δ = 38°-00'-00"
D = 45°-50'-12"
R = 125.00'
L = 82.90'
T = 43.04'
E = 7.20'

▨ - FEATHER



EXCAVATION	=	322 C.Y.
EMBANKMENT	=	17 C.Y.
SEEDING	=	255 S.Y.

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE
TOTALS		

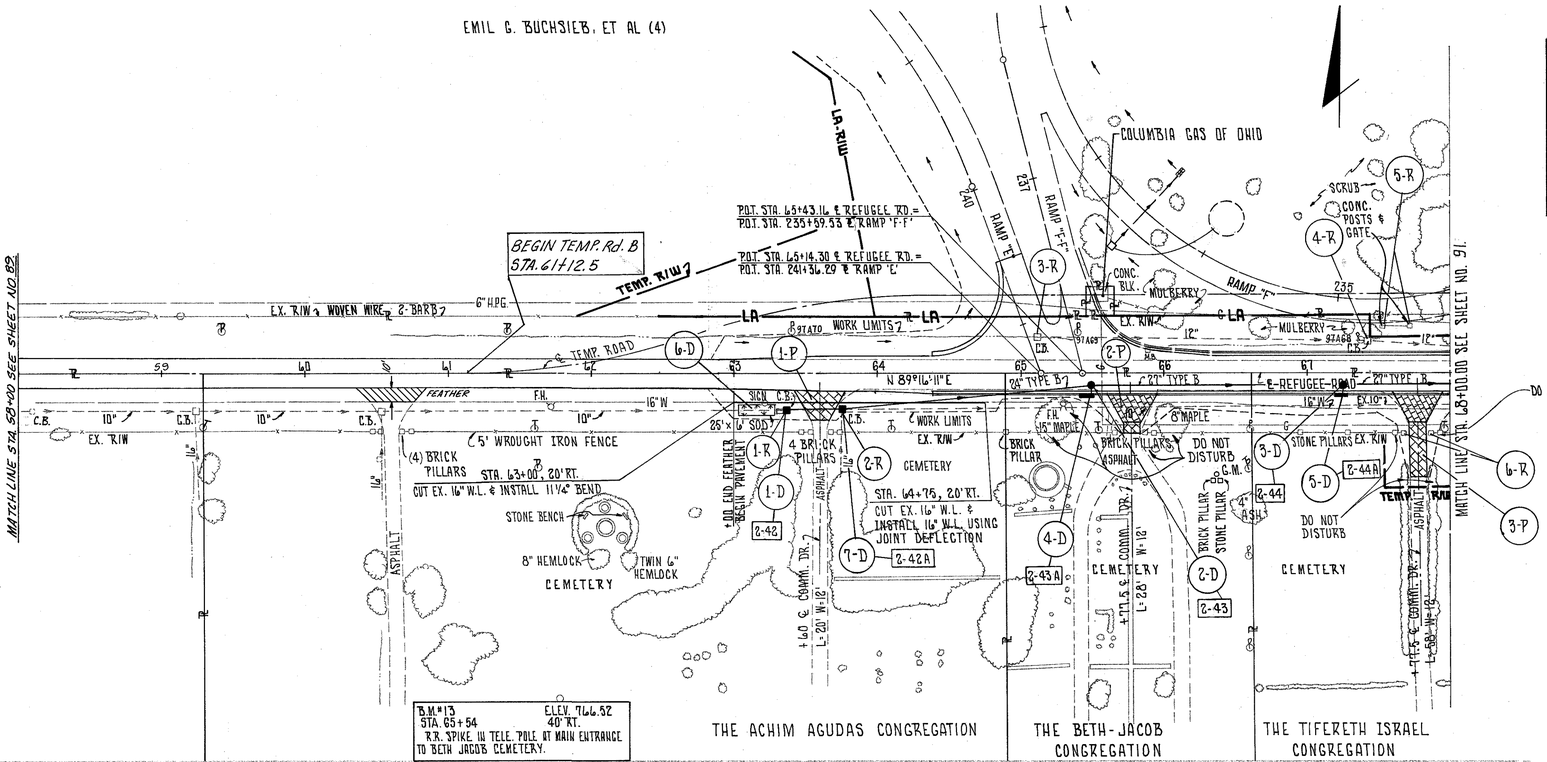
REFUGEE ROAD STA 49+00 TO STA. 58+00

BRUNING 44-131 42426

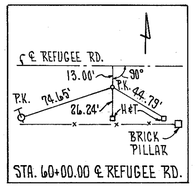
FRANKLIN COUNTY
FRA-104-10.57

CALC. G.K.S. 5-79
CHK. P.C.B. 5-79

EMIL G. BUCHSIEB, ET AL (4)



B.M.#13 ELEV. 766.52
STA. 65+54 40' RT.
R.R. SPIKE IN TELE. POLE AT MAIN ENTRANCE TO BETH JACOB CEMETERY.



NOTES

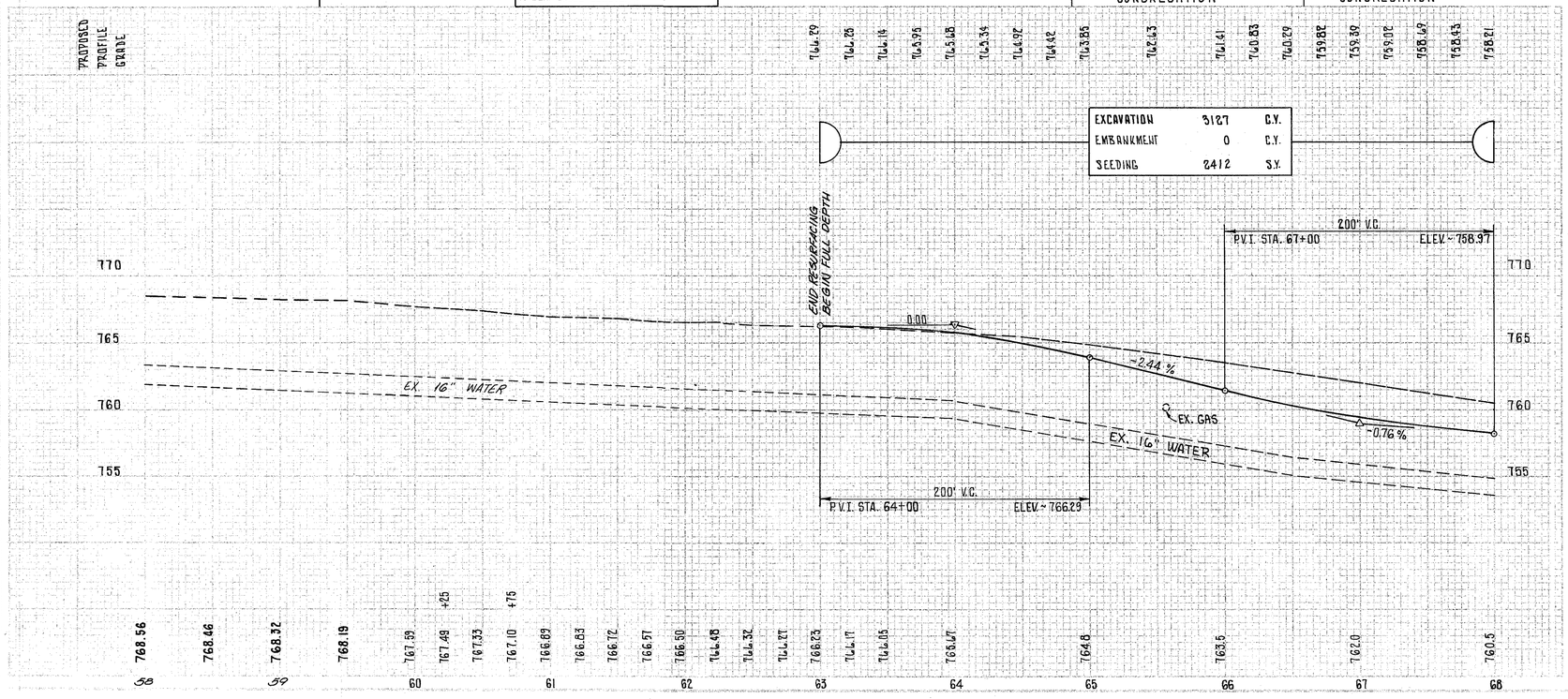
1. FOR STORM SEWER PROFILES SEE SHEET 126.
3. FOR "RAMP F" PLAN & PROFILE SEE SHEET 109.
4. FOR PAVEMENT DETAILS SEE SHEET 130.
5. FOR RELOCATED WATER LINE SEE SHEET 138.
6. CONTRACTOR SHALL FIELD LOCATE EXISTING 16" WATER LINE PRIOR TO WATER LINE CONSTRUCTION.
7. CONSTRUCTION OF THE RELOCATED WATER LINE SHALL BE AT THE SAME TIME THE WATER LINE IS CONSTRUCTED ON SHEET 45, ALLOWING ONE SHUT DOWN OF THE EXISTING 16" WATER LINE.

B. SEE MAINTENANCE OF TRAFFIC NOTES REGARDING ACCESS TO CEMETERIES.

LEGEND

ITEM 404 1" ASPHALT CONCRETE ON 5"
ITEM 301 BITUMINOUS AGGREGATE BASE

ITEM 404 FEATHER AREA



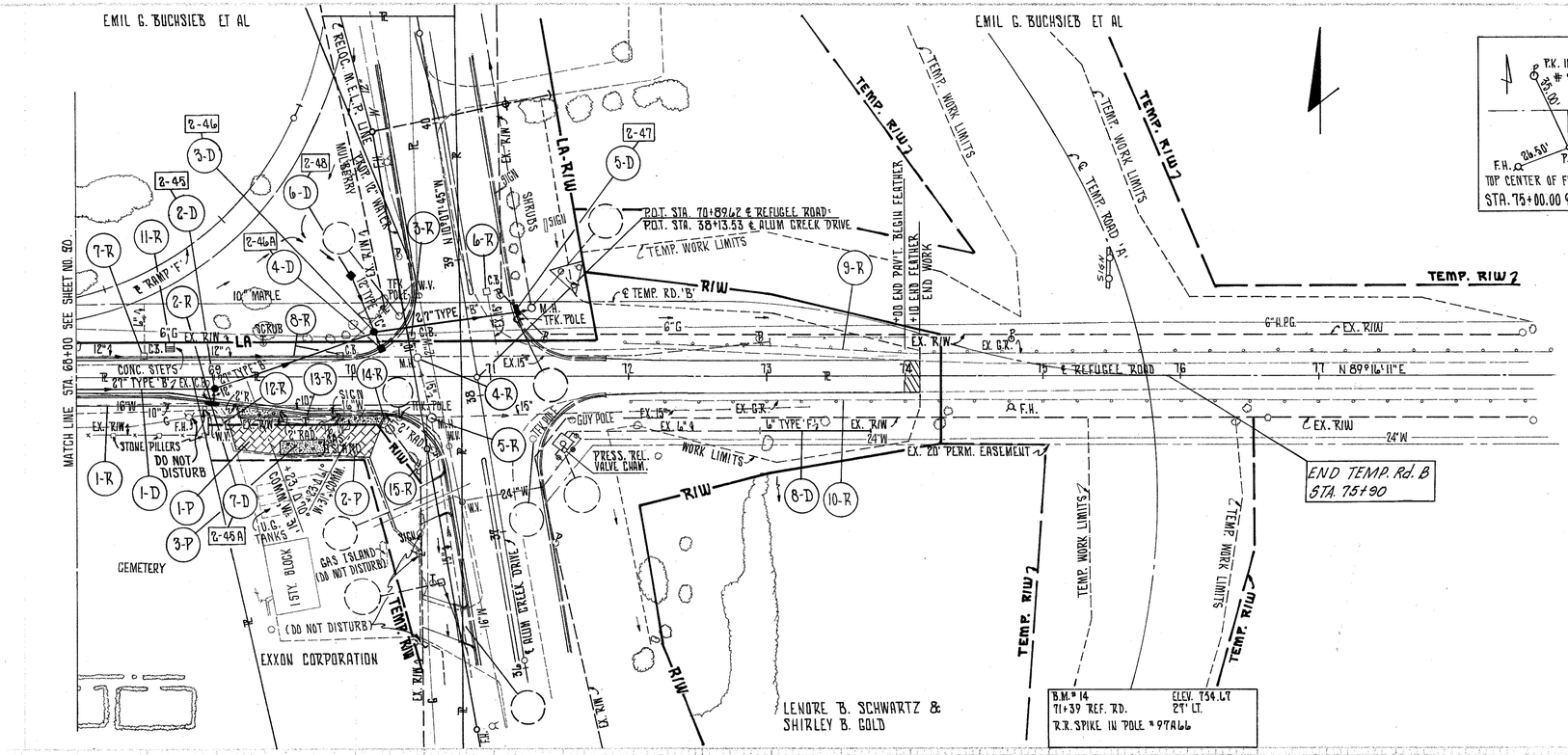
EXCAVATION	3127	C.Y.
EMBANKMENT	0	C.Y.
SEEDING	2412	S.Y.

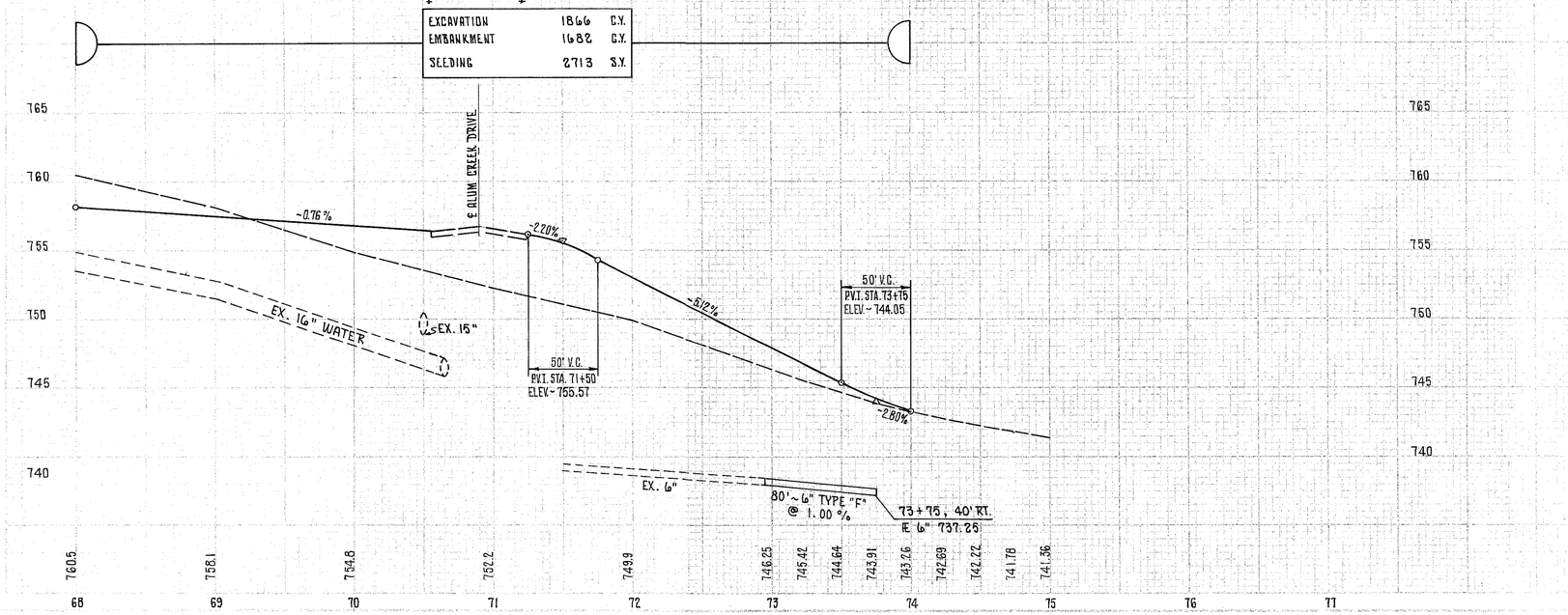
* 706.01, 706.02

REF.	STATION TO STATION	SIDE	202 CATCH BASIN REMOVED	202 TYPE REM. UNDER 24"	202 STRUCTURE REMOVED	301 BITUMINOUS AGG. BASE	603 12" * TYPE B	603 TYPE B 706.02 24"	603 TYPE B 706.02 27"	604 Nº 5 CATCH BASIN	604 I-2A-10 INLET	604 I-2A-12 INLET	604 Nº 3 MANHOLE	660 SODDING	404 ASPHALT CONCRETE
			EA.	L.F.	LUMP	C.Y.	L.F.	L.F.	L.F.	EA.	EA.	EA.	EA.	S.Y.	C.Y.
1-D	63+38 TO 63+76	RT.						38		1					
2-D	65+50 TO 67+25	RT.							175				1		
3-D	67+25 TO 68+00	RT.							75				1		
4-D	65+50	RT.					6					1			
5-D	67+25	RT.					6				1				
6-D	63+06 TO 63+31	RT.												17	
7-D	63+76 TO 65+50	RT.						174					1		
1-P	63+60	RT.				8									2
2-P	65+77.5	RT.				10									3
3-P	67+77.5	RT.				15									4
1-R	63+38 TO 63+76	RT.	1												
2-R	63+76 TO 68+00	RT.	1	424											
3-R	65+12 TO 67+42	LT.	1	230											
4-R	67+42 TO 68+00	LT.	1	57											
5-R	67+53 & 67+72	LT.			LUMP										
6-R	67+68 & 67+87	RT.			LUMP										
	TOTAL		4	711	LUMP	33	12	212	250	1	1	1	3	17	9

Revised D.C.T. 4-10-80

REFUGEE ROAD STA 62+90.00 TO STA. 68+00.00





FHWA REGION 5 — 91 254

FRANKLIN COUNTY
FRA-104-10.57

CALC GKS 5-79
CHK WDG 7-79

LEGEND

- ITEM 452 8" PLAIN PORTLAND CEMENT
- ITEM 404 1" ASPHALT CONCRETE ON 5" ITEM 301 BITUMINOUS AGGREGATE BASE
- ITEM 404 FEATHER AREA

NOTES

1. FOR STORM SEWER PROFILE SEE SHEET 126.
2. FOR RAMP "F" PLAN & PROFILE SEE SHEET 109.
3. FOR ALUM CREEK DRIVE PLAN & PROFILE SEE SHEET 62.
4. FOR PAVEMENT DETAILS SEE SHEET 135.
5. FOR WATER LINE PROFILE SEE SHEET 138.
6. FOR WATER LINE VALVE ADJUSTMENTS SEE SHEET 62.

* 706.02 ‡ 706.01 OR 706.02

REF.	STATION TO STATION	SIDE	603 6" TYPE 'F'	603 12" TYPE 'B' ‡	603 12" TYPE 'C' ‡	603 27" TYPE 'B' *	603 27" TYPE 'C' *	604 Nº 1 MAN-HOLE	604 Nº 3 MAN-HOLE	604 2-2-B CATCH BASIN	604 3-A CATCH BASIN	604 I-2A-8 INLET
			L.F.	L.F.	L.F.	L.F.	L.F.	EA.	EA.	EA.	EA.	EA.
1-D	68+00 TO 69+00	RT.				100						
2-D	69+00 TO 70+15	R&L				122			1			
3-D	70+15 REF.RD. TO 38+55 ALUM CR.DR.	LT.				102		1				
4-D	70+15 TO 70+21	LT.			12						1	
5-D	38+55 TO 38+58 ALUM CR. DR.	RT.					12					1
6-D	70+00 TO 70+15	LT.			44					1		
7-D	69+00	RT.		10								1
8-D	72+95 TO 73+75	RT.	80									
	TOTAL		80	10	56	324	12	1	1	1	1	2

REF.	STATION TO STATION	SIDE	202 CATCH BASIN REM.	202 GUARD RAIL REM.	202 MANHOLE ABAN.	202 PIPE REM. 24" & UNDER	203 STRUCTURE REM.	301 BITUM. AGGR. BASE	452 8" PLAIN PORTLAND CEMENT	404 ASPHALT CONCRETE
			EA.	L.F.	EA.	L.F.	LUMP	C.Y.	S.Y.	C.Y.
1-P	69+23	RT.						12	33	3
2-P	70+23	RT.						15	33	3
3-P	69+47 TO 69+79	RT.							40	
1-R	68+00 TO 69+00	RT.				100				
2-R	69+00 TO 70+58	RT.	1			158				
3-R	70+43 TO 70+47	LT.	1			14				
4-R	70+47 TO 73+04	LT.			1	256				
5-R	70+47 TO 73+32	RT.			1	318				
6-R	70+95 TO 71+06	LT.	1			46				
7-R	68+00 TO 68+49	LT.	1			48				
8-R	68+49 TO 70+47	LT.	1			198				
9-R	71+97 TO 74+00	LT.		203						
10-R	72+03 TO 74+00	RT.		197						
11-R	68+68	LT.					LUMP			
12-R	69+08	RT.					LUMP			
13-R	69+66	RT.					LUMP			
14-R	70+23	RT.					LUMP			
15-R	70+47	RT.					LUMP			
	TOTAL		5	400	2	1138	LUMP	27	106	6

REVISED BLB 4/10/80

REFUGEE ROAD STA. 68+00.00 TO STA. 74+10.00

		STATE	
		OHIO	

92
254

FRANKLIN COUNTY
FRA - 104-10.57

CALC.	RG	9-79
CHK.	GKS	9-79

SEEDING		END AREA		VOLUME	
FILL	CUT	FILL	CUT	FILL	CUT

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

DEDUCT SEEDING FOR DR. @ +77.5
(½ (11.5 x 19.5) 2 + (57.5 x 12)) ÷ 9 = 101.6 SY

ADD CUT FOR DR @ 77.5
((115 x 20) + ½ (115 +0) 5 +½ (54)(8) 2) ÷ 27 = 112.4 CY

112

-102 38 444 42 617 -62 69 539 28 -52 51 589 55

760

RAMP F
℄ Temp. Road B
2:1
F-31
35:1
67+77.5, 14' RT
EL. 758.72
5:1
℄ DR @ 10.00%
+72' END DR.
EL. 764.92
758.21
68+00
760.5

165 0 760 651 0

℄ Temp. Road B
RAMP F
2:1
F-117
35:1
759.39
67+00
762.0

186 0 760 1019 0

DEDUCT SEEDING FOR DR. @ +77.5 RT.
(½ (11.5 x 19.5) 2 + (27.5 x 12)) ÷ 9 = 61.6 SY.

ADD CUT FOR DR @ +77.5
(40 x 20) + ½ (40+0) 5 x 2 + 35 x ½ (8) 2) ÷ 27 = 47.1 CY.

48

RAMP F
℄ Temp. Road B
2:1
F-95
5.6:1
65+77.5, 14' RT
EL 761.77
3:1
℄ DR @ 11.74%
+42' END DR.
EL 764.93
6' VC
761.41
66+00
763.5

364 0 760 852 0

RAMP E
℄ Temp. Road B
F-4
F-2

96 0 760

763.85
65+00
764.8

DEDUCT SEEDING FOR DR @ +60 RT
(½ (11.5 x 20) 2 + (12 x 20)] ÷ 9 = 52.2 SY.

ADD CUT FOR DR @ +60
(½ (11.5 x 20) 2+(20 x 12)] 1.35 ÷ 27 = 23.7 CY.

256 0
24

℄ Temp. Road B
F-5
C-15
3:1
4:1
764.0
63+60, 12' RT
EL. 765.88
℄ DR. @ 2.50%
+32' END DR
EL. 766.38

42 0 760 157 0

765.74
64+00
766.0

℄ Temp. Road B
F-18
2:1
3:1
4:1
764.4
766.53
63+00
766.6

43 0 760 8 0

BEGIN WORK
STA. 62+90

62+90 0 0

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

REF. Rd. Sta. 63+00 to 68+00

93
254
CALC: RG 4-79
CHK: GKS 4-79
FRANKLIN COUNTY
FRA - 104-10.67
s℄ Temp. Road B
F-359
2:1
4:1
747.89
73+00
746.25
F-170
3:1
746.7
753.01
72+00
749.9
ALUM CREEK
FROM A.C. DRIVE
F-56
8:1
750 BEGIN SEEDING
755.39
71+50
751.2
71+50 AH.
DEDUCT SEEDING FOR DRIVES @ +23+ +23
[(25X35)+(21X12.5)+(25X38)+1/2(22+40)21+(24X4)]÷9=301 SY
ALUM CREEK DRIVE INTERSECTION STA. 70+89.62
-4.00 %
+23 COMM. DRIVE
ADD FILL FOR DR. @ +23
[(21X25)+1/2(21X38)]÷27= 31.9 CY
RAMP F
70+00 END SEEDING
12.6:1
12:1
F-23
C-2
756.69
70+00
754.8
70+00 BK.
-2.6 %
+23 COMM. DRIVE
ADD CUT FOR DR. @ +23
(12X38÷27)=16.9 CY
F=11
9.6:1
C-12
757.45
69+00
758.1
68+00
REF. Rd. Sta. 69+00 to 73+00

FRANKLIN COUNTY
FRA 104-10 57

CALC: RG 4-79
CHK: GKS 4-79

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

℄ Temp. Road B

F-50

2:1

75+00
741.3

END WORK
STA 74+10

℄ Temp. Road B

750
740
730

2:1
F-271
3:1
2:1
4:1

743.25
74+00
743.26

750
74+10
740
730

73+00

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

Ref. Rd Sta. 74+00

SEEDING	
END WIDTH	SQ. YDS.

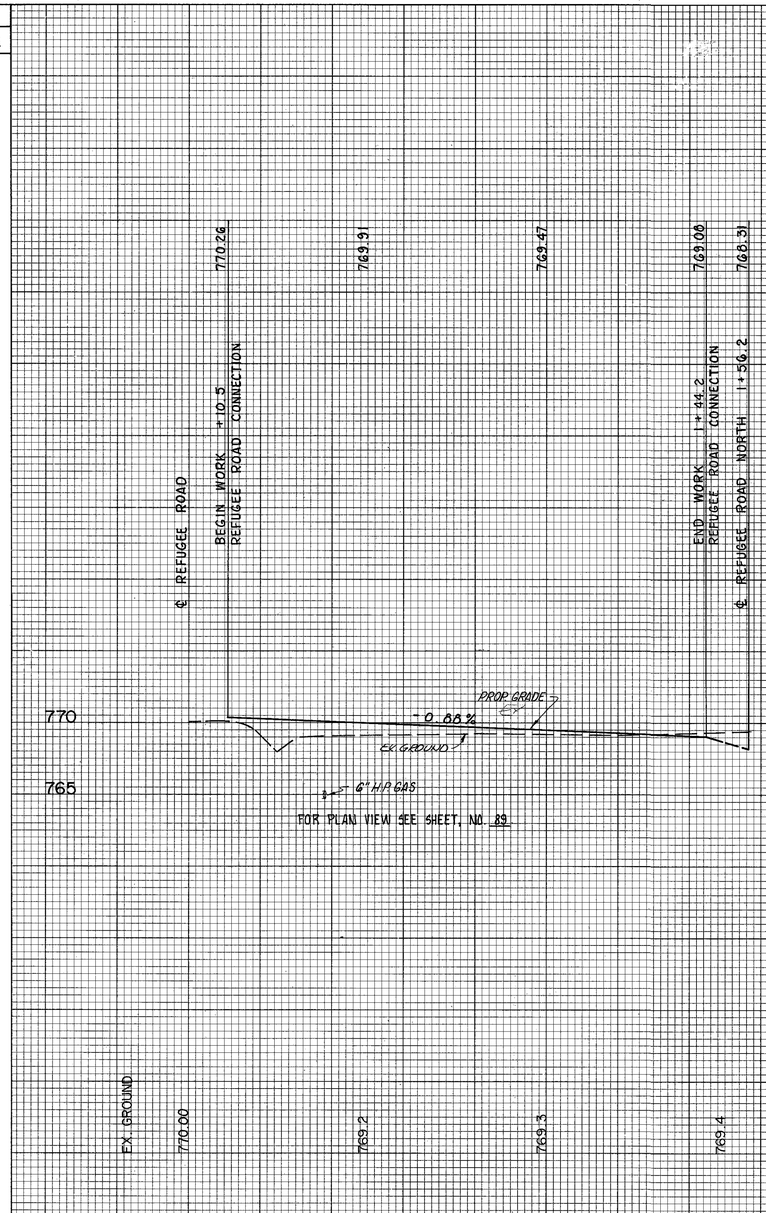
	OHIO
	FHWA REGION 5
	FEDERAL PROJECT

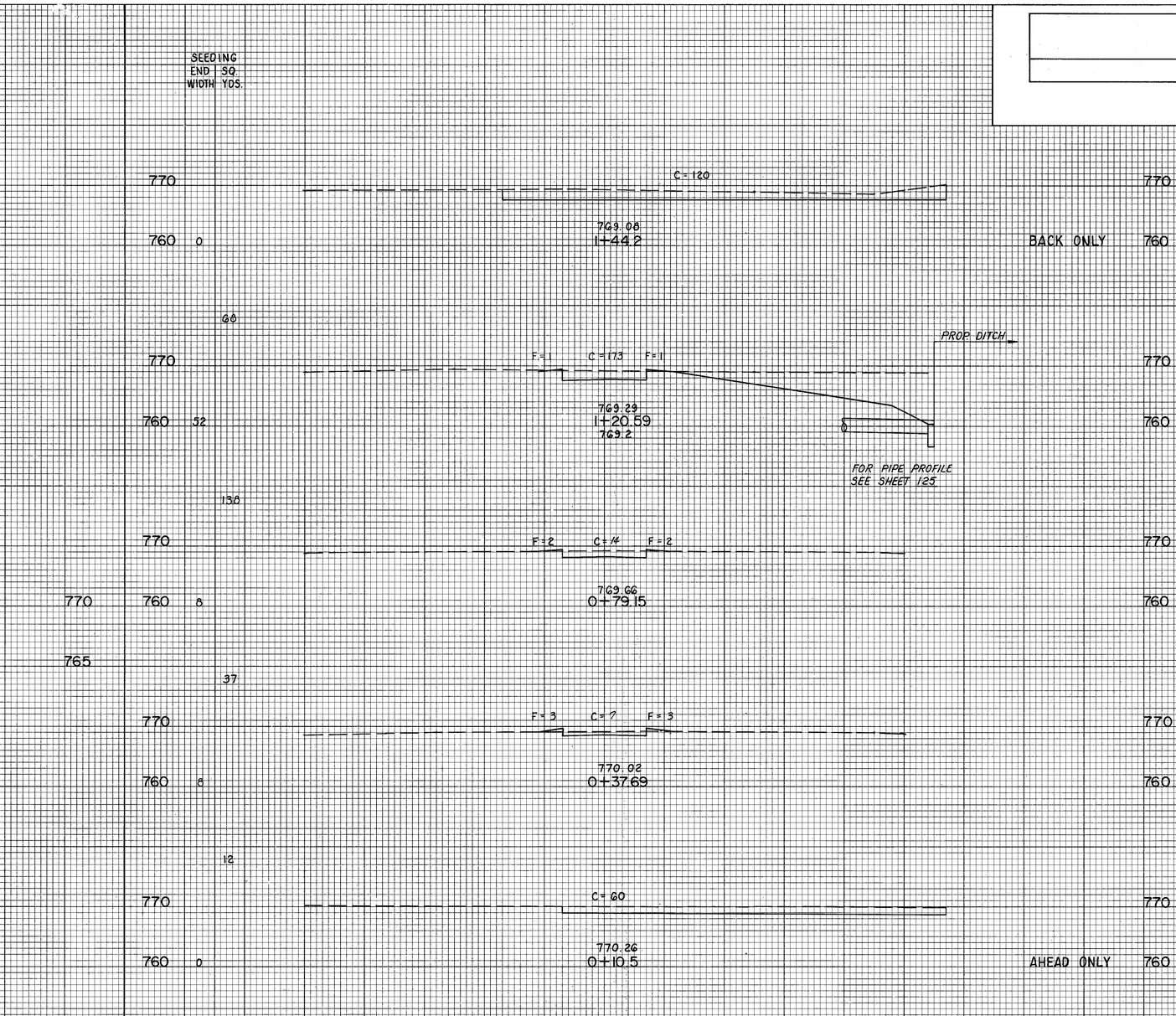
95
254

SEEDING

END WIDTH	SQ. YDS.
68	128
138	144
37	16
12	34

END AREA		VOLUME	
CUT	FILL	CUT	FILL
120	0	128	1
173	2	144	5
14	4	16	8
7	6	34	3
60	0		





PROFILE & CROSS SECTIONS — REFUGEE RD. CONNECTION — STA. 0+00 TO 1+56.2

OHIO
FHWA REGION 5
FEDERAL PROJECT
96
254

FRANKLIN COUNTY
FRA 104-12.41

SEEDING			
END WIDTH	SQ. YDS.		
55		18+53	
	324		
55		18+00	
	600		
53		17+00	
	583		
52		16+00	
	572		
51		15+00	
	578		
53		14+00	
	572		
50		13+00	
	561		
51		12+00	
	578		
53		11+00	
	606		
56		10+20	
	406		
53		9+33	

	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
18+53	274	0		
			520	0
18+00	256	0		
			922	0
17+00	242	0		
			848	0
16+00	216	0		
			809	0
15+00	221	0		
			843	0
14+00	234	0		
			815	0
13+00	206	0		
			761	0
12+00	205	0		
			813	0
11+00	234	0		
			859	0
10+20	346	0		
			1034	0
9+33	296	0		

BRUNING 44-131 42426

DITCH PROFILE & X-SECTIONS

	OHIO
	FHWA REGION 5
	FEDERAL PROJECT

97
254

FRANKLIN COUNTY
FRA - 104 - 12.41

P.O.C. STA. 51+61.45 ℄ ALUM CREEK DR. =
P.O.T. STA. 100+00.00 ℄ SURVEY REFUGEE RD. NORTH

P.O.C. STA. 89+94.53 ℄ SURVEY REFUGEE RD. NORTH =
P.O.T. STA. 231+10.41 ℄ RAMP "D"

P.O.C. STA. 89+56.03 ℄ SURVEY REFUGEE RD. NORTH =
P.O.C. STA. 235+81.21 ℄ RAMP "C"

P.O.C. STA. 244+43.57 ℄ SURVEY S.R. 104 =
P.O.C. STA. 44+00.00 ℄ ALUM CREEK DR.

P.O.S. STA. 76+50 ℄ SURVEY REFUGEE RD. NORTH =
P.O.T. STA. 1+56.2 ℄ REFUGEE RD. CONNECTOR

P.O.T. STA. 45+76, ℄ REFUGEE RD. =
P.O.S. STA. 74+72, 12' RT. ℄ SURVEY REFUGEE RD. NORTH

P.O.T. STA. 0+00, ℄ REFUGEE RD. CONNECTOR =
P.O.T. STA. 49+75, ℄ REFUGEE RD.

P.O.T. STA. 241+36.29 ℄ RAMP "E" =
P.O.T. STA. 65+14.30 ℄ REFUGEE RD.

P.O.T. STA. 235+59.53 ℄ RAMP "FF" =
P.O.T. STA. 65+43.16 ℄ REFUGEE RD.

P.O.T. STA. 38+13.53 ℄ ALUM CREEK DR. =
P.O.T. STA. 70+89.62 ℄ REFUGEE RD.

℄ REFUGEE RD.

0 50 100 200 300
SCALE

CALCULATIONS (QUANTITIES CARRIED TO SUB-SUMMARY)

(1-D) ITEM 659 (PLANIMETERED) (29.53 × 100 × 100) ÷ 9 = 32,811 S.Y.

(2-D) ITEM 659 (PLANIMETERED) ((1.29+7.23+0.48) (100 × 100)) ÷ 9 = 10,000 S.Y.

TOTAL 42,811 S.Y.

GRADING PLAN

KEY BLUE PRINT CO. N2255

	OHIO	98 / 254
	FHWA REGION 5	
	FEDERAL PROJECT	

FRANKLIN COUNTY
FRA - 104 - 12.41

P.O.C. STA. 89+56.03, ℄ SURVEY REFUGEE RD. NORTH =
P.O.C. STA. 235+81.21, ℄ RAMP "C"

P.O.C. STA. 89+94.53 ℄ SURVEY REFUGEE RD. NORTH =
P.O.T. STA. 234+40.41 ℄ RAMP "D"

P.O.C. STA. 51+61.45 ℄ ALUM CREEK DR. =
P.O.T. STA. 100+00.00 ℄ SURVEY REFUGEE RD. NORTH

℄ SURVEY REFUGEE RD. NORTH

℄ ALUM CREEK DRIVE

LIMITS OF LAND FILL AREA
(UNSUITABLE MATERIAL SEE GENERAL NOTES)

RAMP "D"

RAMP "D"

P.O.C. STA. 244+43.57 ℄ SURVEY S.R. 104 =
P.O.C. STA. 44+00.00 ℄ ALUM CREEK DR.

℄ SURVEY S.R. 104

℄ SURVEY S.R. 104

RAMP "E"

RAMP "F"

RAMP "FF"

RAMP "F"

℄ DITCH

P.O.S. STA. 78+50 ℄ SURVEY REFUGEE RD. NORTH =
P.O.T. STA. 1+56.2 ℄ REFUGEE RD. CONNECTOR

P.O.T. STA. 45+76, ℄ REFUGEE RD. =
P.O.S. STA. 74+72, 12' RT. ℄ SURVEY REFUGEE RD. NORTH

P.O.T. STA. 0+00, ℄ REFUGEE RD. CONNECTOR =
P.O.T. STA. 49+75, ℄ REFUGEE RD.

P.O.T. STA. 241+36.29, ℄ RAMP "E" =
P.O.T. STA. 65+14.30, ℄ REFUGEE RD.

P.O.T. STA. 235+59.53 ℄ RAMP "FF" =
P.O.T. STA. 65+43.16 ℄ REFUGEE RD.

P.O.T. STA. 38+13.53 ℄ ALUM CREEK DR. =
P.O.T. STA. 70+89.62 ℄ REFUGEE RD.

℄ REFUGEE RD.

0 50 100 200 300
SCALE

KEY BLUE PRINT CO. 107255

CROSS SECTION LAYOUT

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA - 104-10.57

99
254

P.O.C. STA. 89+56.03 ℄ SURVEY REFUGEE RD. NORTH =
P.O.C. STA. 235+81.21 ℄ RAMP "D"

P.O.C. STA. 89+94.53 ℄ SURVEY REFUGEE RD. NORTH =
P.O.T. STA. 231+10.41 ℄ RAMP "D"

P.O.S. STA. 78+50 ℄ SURVEY REFUGEE RD. NORTH =
P.O.T. STA. 1+56.2 ℄ REFUGEE RD. CONNECTOR

P.O.T. STA. 0+00, ℄ REFUGEE RD. CONNECTOR =
P.O.T. STA. 49+75, ℄ REFUGEE ROAD.

P.O.C. STA. 51+61.45 ℄ ALUM CREEK DR. =
P.O.T. STA. 100+00.00 ℄ SURVEY REFUGEE RD. NORTH

P.O.C. STA. 244+43.57 ℄ SURVEY S.R. 104 =
P.O.C. STA. 44+00.00 ℄ ALUM CREEK DR.

P.O.T. STA. 241+36.29 ℄ RAMP "E" =
P.O.T. STA. 65+14.30 ℄ REFUGEE RD.

P.O.T. STA. 235+59.53 ℄ RAMP "FF" =
P.O.T. STA. 65+43.16 ℄ REFUGEE RD.

P.O.T. STA. 38+13.53 ℄ ALUM CREEK DR. =
P.O.T. STA. 70+89.62 ℄ REFUGEE RD.

NOTE:
FOR CURVE DATA AND REFERENCES SEE SHEET NO. 100

0 50 100 200 300
SCALE IN FEET

GEOMETRIC LAYOUT

FHWA REGION	STATE	PROJECT		100 / 254
5	OHIO			

FRANKLIN COUNTY
FRA-104-10.57

REFUGEE RD. NORTH ①
P.I. STA. 77+02.87
Δ = 45° 36' 30"
Dc = 8° 00' 00"
R = 716.20'
Lc = 220.10'
Ls = 350.00'
L.T. = 234.07'
S.T. = 117.33'
Ts = 478.77'
Es = 68.44'
Øs = 14° 00' 00"

REFUGEE RD. NORTH ②
P.I. STA. 90+46.82
Δ = 34° 30' 00"
Dc = 6° 00' 00"
R = 954.93'
Lc = 325.00'
Ls = 250.00'
L.T. = 166.82'
S.T. = 83.47'
Ts = 422.29'
Es = 47.83'
Øs = 7° 30' 00"

REFUGEE RD. NORTH ③
P.I. STA. 95+83.00
Øs = 8° 00' 00"
P = 2.33'
K = 99.93'
L.T. = 133.47'
S.T. = 66.79'
L.C. = 199.83'
Ls = 200.00'

REFUGEE RD. NORTH ④
P.I. STA. 97+17.29
Δ = 10° 48' 32"
Dc = 8° 00' 00"
R = 716.20'
L = 135.11'
T = 67.76'
E = 3.20'

RAMP "C" ⑤
P.I. STA. 229+26.50
Δ = 17° 58' 15"
Dc = 12° 00' 00"
R = 477.32.40'
L = 449.27'
T = 226.30'
E = 17.80'

RAMP "C" ⑥
P.I. STA. 232+72.90
Δ1 = 4° 00' 00"
Δ2 = 30° 00' 00"
Øs = 16° 00' 00"
P = 4.64'
L.T. = 123.63'
S.T. = 79.08'
Ls = 200.00'

RAMP "C" ⑦
P.I. STA. 234+72.02
Δ = 46° 23' 18"
Dc = 20° 00' 00"
R = 286.48'
L = 231.94'
T = 122.75'
E = 25.19'

RAMP "D" ⑧
P.I. STA. 233+29.04
Δ = 36° 37' 56"
Dc = 18° 00' 00"
R = 318.31'
L = 203.51'
T = 105.37'
E = 16.99'

RAMP "D" ⑨
P.I. STA. 234+96.34
Δ1 = 0° 30' 00"
Δ2 = 18° 00' 00"
Øs = 17° 30' 00"
P = 5.07'
L.T. = 132.29'
S.T. = 69.16'
Ls = 200.00'

RAMP "D" ⑩
P.I. STA. 239+30.95
Δ = 3° 02' 13"
Dc = 0° 30' 00"
R = 11,459.16'
L = 607.41'
T = 303.77'
E = 4.03'

RAMP "D-D" ⑪
P.C. STA. 230+48.98
C.S. STA. 234+27.18
Δ = 137° 24' 03"
Dc = 36° 20' 21"
R = 157.67'
L = 378.20'

RAMP "E" ⑫
P.I. STA. 223+68.18
Δ = 8° 58' 55"
Dc = 8° 00' 00"
R = 716.79'
L = 449.03'
T = 225.01'
E = 8.82'

RAMP "E" ⑬
P.I. STA. 234+47.24
Δ1 = 4° 00' 00"
Δ2 = 88° 00' 00"
Øs = 24° 00' 00"
P = 13.85'
L.T. = 254.38'
S.T. = 154.56'
Ls = 400.00'

RAMP "E" ⑭
P.I. STA. 238+13.17
Δ = 56° 43' 09"
Dc = 14° 00' 00"
R = 409.26'
L = 405.14'
T = 220.91'
E = 55.82'

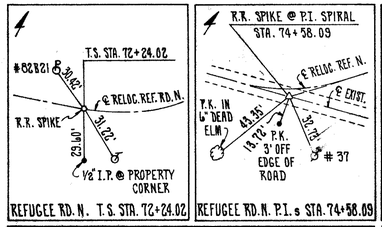
RAMP "F" ⑮
P.I. STA. 231+22.68
Δ1 = 2° 32' 20"
Δ2 = 30° 44' 17"
Øs = 28° 11' 57"
P = 10.15'
L.T. = 163.58'
S.T. = 92.67'
Ls = 250.00'

RAMP "F" ⑯
S.C. STA. 232+09.10
C.S. STA. 240+79.16
Δ = 213° 57' 06"
Dc = 24° 35' 26"
R = 233.00'
L = 870.06'

RAMP "F" ⑰
P.I. STA. 241+72.53
Δ1 = 2° 48' 49"
Δ2 = 30° 44' 17"
Øs = 27° 55' 28"
P = 10.05'
L.T. = 163.02'
S.T. = 93.37'
Ls = 250.00'

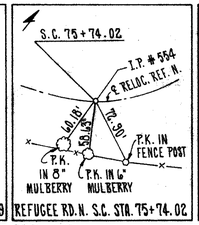
ALUM CREEK DRIVE ⑱
P.I. STA. 49+11.07
Δ = 30° 05' 21"
Dc = 2° 00' 00"
R = 2864.79'
Lc = 1354.46'
Ls = 150.00'
L.T. = 100.00'
S.T. = 50.00'
Ts = 845.09'
Es = 102.02'
Øs = 1° 30' 00"

REFUGEE RD. CONN. ⑲
P.I. STA. 0+80.74
Δ = 38°00'00"
Dc = 45°50'12"
R = 125.00'
L = 82.90'
T = 43.04'
E = 7.20'

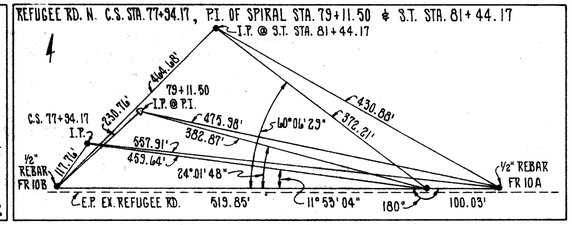


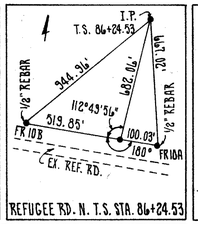
REFUGEE RD. N. T.S. STA. 72+24.02

REFUGEE RD. N. P.I.s STA. 74+58.09

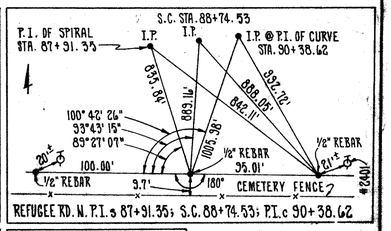


REFUGEE RD. N. S.C. STA. 75+74.02

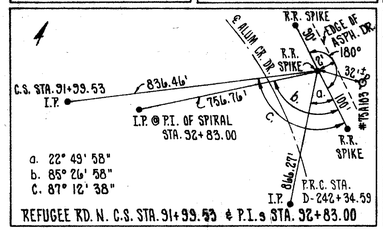




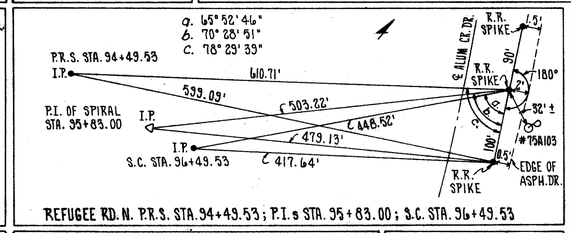
REFUGEE RD. N. T.S. STA. 86+24.53



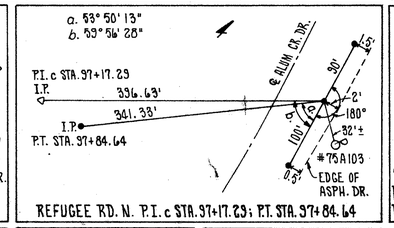
REFUGEE RD. N. P.I.s 87+91.35; S.C. 88+74.53; P.I.c 90+38.62



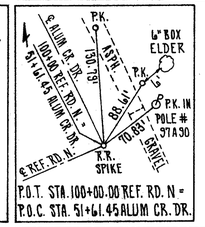
REFUGEE RD. N. C.S. STA. 91+99.53 & P.I.s STA. 92+83.00



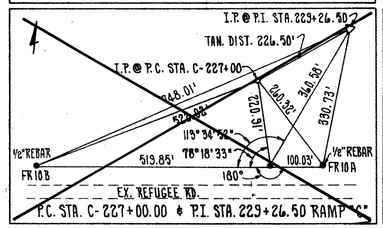
REFUGEE RD. N. P.R.S. STA. 94+49.53; P.I.s STA. 95+83.00; S.C. STA. 96+49.53



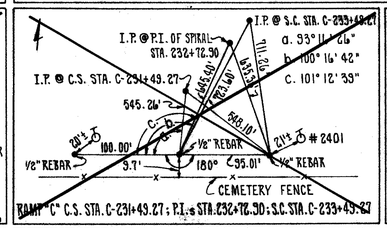
REFUGEE RD. N. P.I.c STA. 97+17.29; P.T. STA. 97+84.64



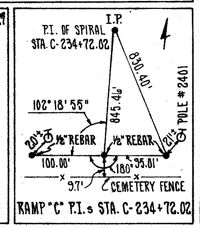
P.O.T. STA. 100+00.00 REF. RD. N = P.O.C. STA. 51+61.45 ALUM CR. DR.



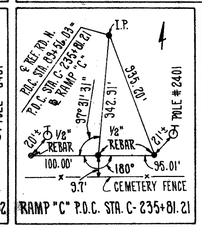
P.C. STA. C-227+00.00 & P.I. STA. 223+26.50 RAMP "C"



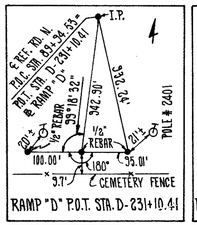
RAMP "C" C.S. STA. C-231+49.27; P.I.s STA. 232+72.90; S.C. STA. C-233+49.27



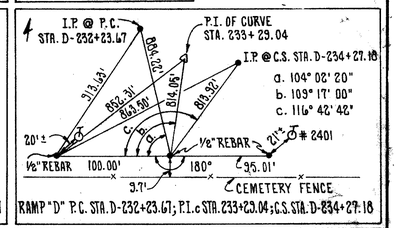
RAMP "C" P.I.s STA. C-234+72.02



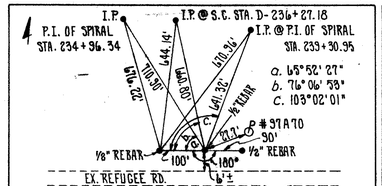
RAMP "C" P.O.C. STA. C-235+81.21



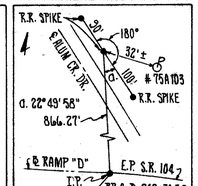
RAMP "D" P.O.T. STA. D-231+10.41



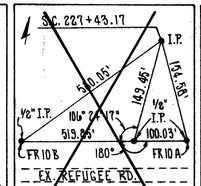
RAMP "D" P.C. STA. D-232+23.67; P.I.c STA. 233+23.04; C.S. STA. D-234+27.18



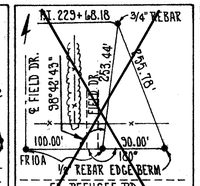
RAMP "D" P.I.s STA. 234+36.34; S.C. STA. D-236+27.18; P.I.s STA. 239+30.95



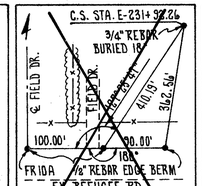
RAMP "D" P.R.C. STA. D-242+34.59



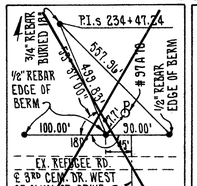
RAMP "E" S.C. STA. E-227+43.17



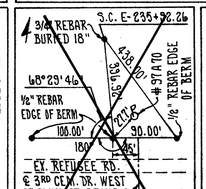
RAMP "E" P.I.c STA. 229+68.18



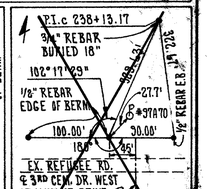
RAMP "E" C.S. STA. E-231+92.26



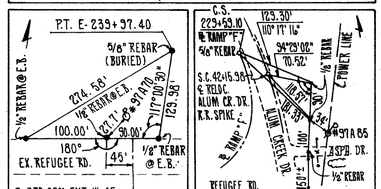
RAMP "E" P.I.s STA. 234+47.24



RAMP "E" S.C. STA. E-235+92.26

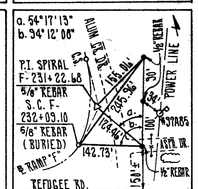


RAMP "E" P.I.c STA. 238+13.17

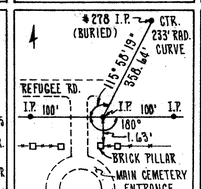


P.T. E-239+97.40

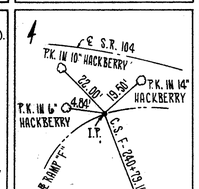
C.S. F-229+59.10



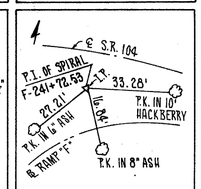
P.I. F-231+22.68 & S.C. F-232+09.10



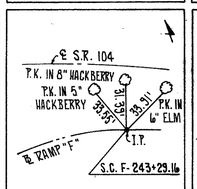
RAMP "F" CTR. 233' RAD. CURVE



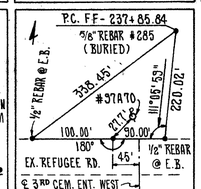
C.S. F-240+79.16



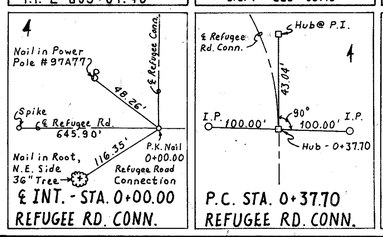
P.I. F-241+72.53



S.C. F-243+29.16

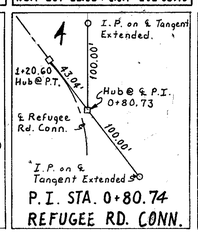


P.C. FF-237+85.84

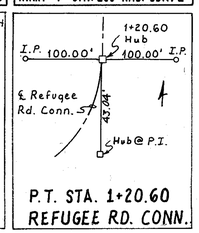


℄ INT. - STA. 0+00.00 REFUGEE RD. CONN.

P.C. STA. 0+37.70 REFUGEE RD. CONN.



P.I. STA. 0+80.74 REFUGEE RD. CONN.



P.T. STA. 1+20.60 REFUGEE RD. CONN.

SEEDING

SEED LBS/ACRE	MULCH TONS/ACRE

STATE	PROJECT	SHEET NO.	TOTAL SHEETS
OHIO			101 254

FRANKLIN COUNTY
FRA-104-10.57

CALC. RG 3-79
CHK. GKS 3-79

END EARTHWORK
STA. 235+00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

REFUGEE RD. N.

RAMP D

C 554
C-811*
F-811
760.86
235+00
768.5
758.8
760.1
8:1
1:1

463

1638* 0
3709* 3709

REFUGEE RD. N.

BACK
AHEAD

RAMP D

C-303 BACK
C-336 AHEAD
C-1271* AHD
F-1271 AHD
C-1304 BACK
F-1304 BACK
759.90
234+25
763.0
758.0
759.3
4:1
8:1
1:1

68 AHEAD
90 BACK
276

1282* 0
5110* 5110

109
1839

RAMP D

C-366
C-1385*
F-1385
759.72
234+00
763.0
757.7
758.9
4:1
8:1
1:1

* UNSUITABLE MATERIAL

222 233+00 AHEAD
216 233+00 BACK

5725 0
2605* 2605
701 *

AHEAD RAMP D

3:1
8:1
0.60%
757.0
756.5
C-2758 BACK
C-2736 AHEAD
747.0
5:1

240

BACK M.L. 1154 0

0

757.00
233+00
768.9

TEMPORARY DITCH
STA. 232+97

758.86
232+80
768.8

STA. 232+80 0 0

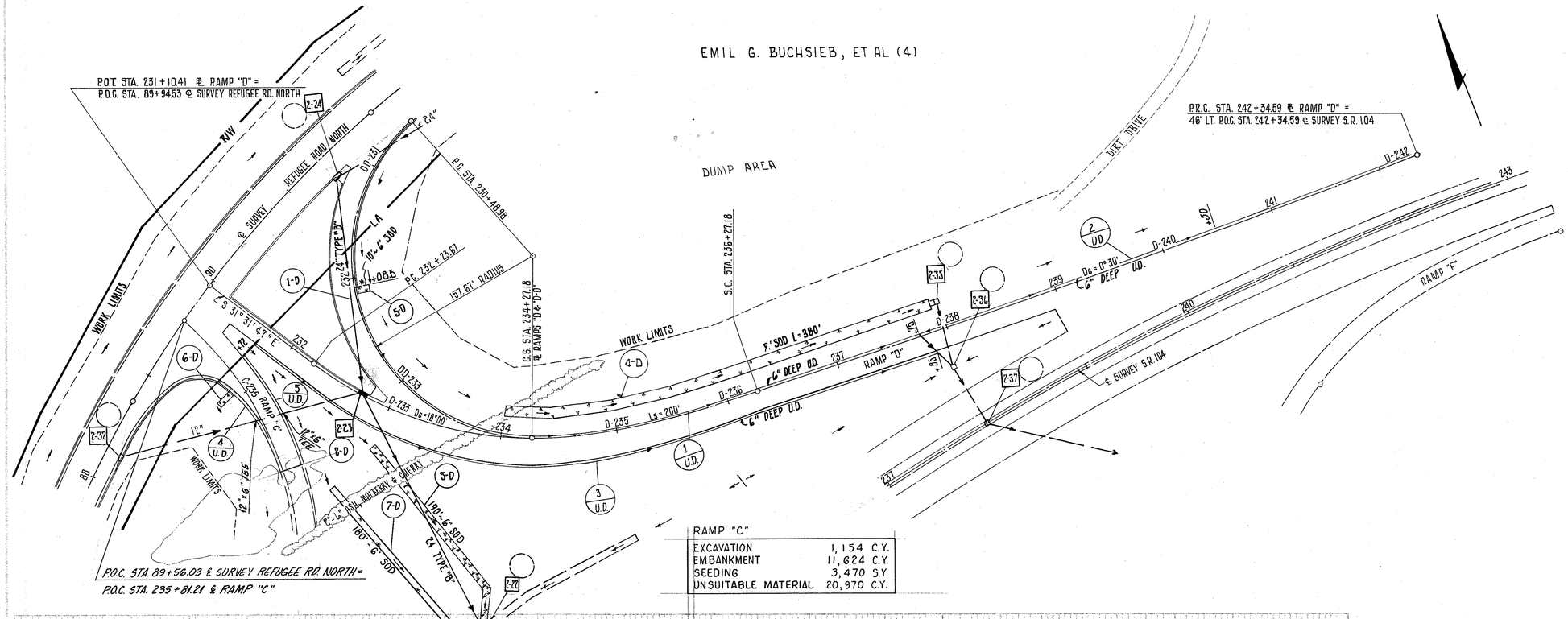
140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

RAMP C STA 232+80 to 235+00

FRANKLIN COUNTY
FRA-104-10.57

CALC: GKS 3-79
CHK: PCB 3-79

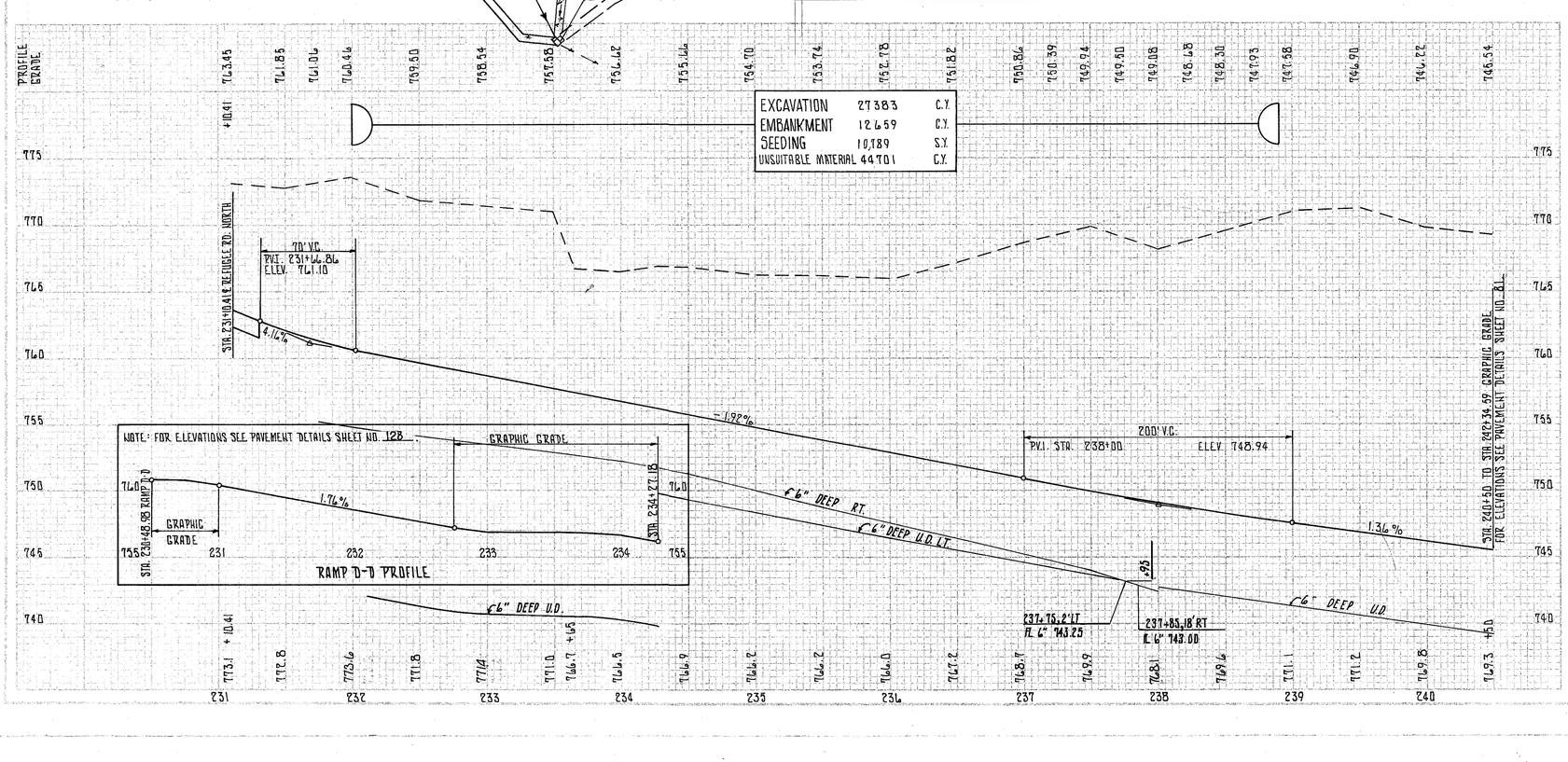
EMIL G. BUCHSIEB, ET AL (4)



RAMP "C"

EXCAVATION	1,154 C.Y.
EMBANKMENT	11,624 C.Y.
SEEDING	3,470 S.Y.
UNSUITABLE MATERIAL	20,970 C.Y.

EXCAVATION	27383 C.Y.
EMBANKMENT	12659 C.Y.
SEEDING	10,189 S.Y.
UNSUITABLE MATERIAL	44701 C.Y.



NOTES

1. FOR STORM SEWER PROFILES SEE SHEET NO. 125.
2. FOR REFUGEE RD. N. P & P. SEE SHEET NO. 80.
3. FOR RAMP "C" P & P. SEE SHEET NO. [illegible].
4. FOR S.R. 104 P & P. SEE SHEET NO. 45.
5. FOR PAVEMENT DETAILS SEE SHEET NO. 128.
6. FOR GEOMETRIC LAYOUT SEE SHEET NO. 99 & 100.

* CONNECT CURB UNDERDRAIN TO DEEP UNDERDRAIN

* NO ADDITIONAL PAYMENT

REF	STATION TO STATION	SIDE	603 24" TYPE "B" TO 602	603 6" TYPE "F"	603 6" TYPE "B"	604 NO 1-2A-6 INLET REINFORCED	605 6" DEEP U.D.	605* BENDS & BRANCHES	603* 12"x6" TEE	660 SODDING
			L.F.	L.F.	L.F.	EA.	L.F.			S.Y.
1-D	91+40 RT. REF. R.N. TO 232+75 LT "D"	L.T.	190							
2-D	232+75 TO 233+50 LT-S.R. 104	L-R	208			1				
3-D	233+00 RT. "D" TO 233+50 LES.R. 104	RT.								127
4-D	234+00 "D" TO 238+00 "D"	L.T.								380
5-D	232+08.5 (DD) TO 232+14.5 (DD)	RT.								7
6-D	C-235+02 TO C-235+08	L.T.								10
1-UD	232+08.5 (DD) TO 237+95 (D)	L.T.			25		586	1		
2-UD	237+99 TO 240+50 (D)	L.T.					251			
3-UD	231+72 TO 237+85	RT.			17		613	1		
4-UD	C-234+75 TO C-235+12	L.T.		10			32		1	
5-UD	C-234+70 TO C-235+25	RT.		10			45		1	
7-D	234+00 (C) TO 233+50 (104)	LT & RT.								120
	TOTALS		398	20	40	1	1527			644

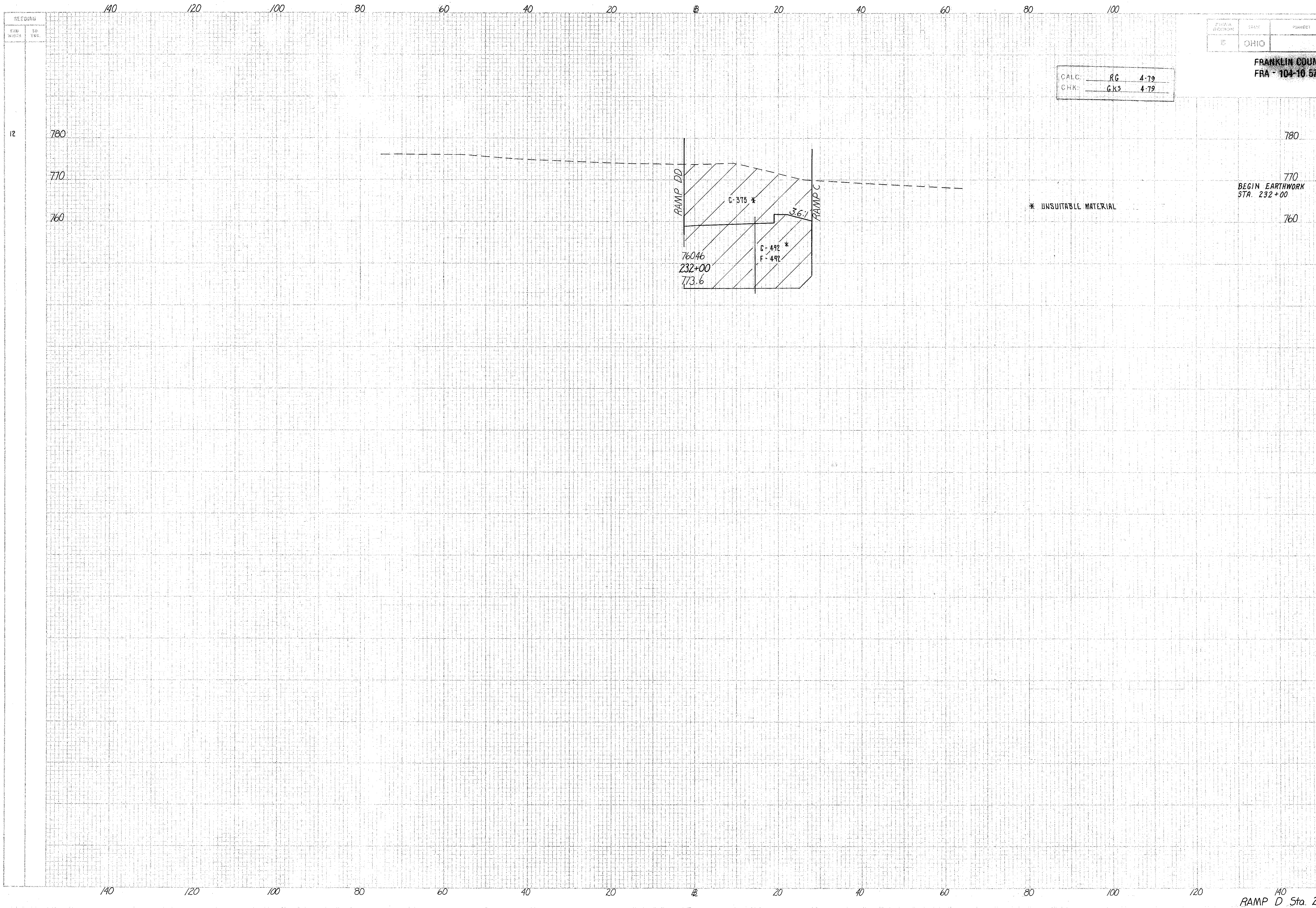
RAMPS "D" & "D-D" STA. 230+48.98 "D-D" TO STA. 240+50 "D"

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA - 104-10.57

CALC: RG 4-79
CHK: GKS 4-79

END AREA		VOLUME	
CUT	FILL	CUT	FILL



* UNSUITABLE MATERIAL

BEGIN EARTHWORK
STA. 232+00

RAMP D Sta. 232+00

104
254
OHIO
FRANKLIN COUNTY
FRA - 104-10.57
CALC. RG 4-79
CHK. GKS 4-79
M.L.
C-651 *
F-92
2:1
C-1169
8:1
750.6
748.2
D/D
752.78
236+00
766.0
3:1
C-1913
752.5
747.8
754.70
235+00
766.2
234+00 AHEAD
234+00 BACK
AHEAD
BACK
C-210 *
F-53
AHEAD
C-2471
BACK
C-2168
754.3
747.1
4.8:1
756.62
234+00
766.5
RAMP C
RAMP DD
C-588 *
C-588 *
F-588
4:1
758.1
758.54
233+00
771.4
* UNSUITABLE MATERIAL
232+00
5744
1199 * 169
10059
341 * 84
5227
1164 *
1164 * 1164
1885 *
2115 * 2115
RAMP D Sta. 233-236


105
254
OHIO
FRANKLIN COUNTY
FRA - 104-10.57
CALC RC 4-79
CHK GKS 4-79
M.L.
770
760
750
C-1297 *
F-74
C-677
7456
747.72
238+90
771.1
END EARTHWORK
STA. 238+90
2196 282
4150 *
C-1199 *
F-96
C-640
746.8
7475
749.08
238+00
768.1
* UNSUITABLE MATERIAL
1586 361
5660 *
C-1862 *
C-214
F-100
F-58
7489
7480
750.86
237+00
768.7
2571 461
4644 *
82
875
93
1102
105
1233
117
236+00
140
120
100
80
60
40
20
20
40
60
80
100
120
140
RAMP D Sta. 237+00 to 238+90

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

59 770 760 750 478

C-210*
2:1
F-53
C-356
8:1
754.3
RAMP D
756.57
234+00
767.0

CALC: PCB 2-79
CHK: RG 4-79

770 760

106
254

FRANKLIN COUNTY
FRA - 104-10.57

750

714*
3987* 1306

43 770 760 750 1089

C-1106*
2:1
8:1
754.6
C-564*
F-564
756.88
233+00
772.0
RAMP D

770 760 750

5775*
2614 * 2614

133 770 760 750 978

2:1
4:1
759.4
C-1844*
12:1
FLAT
REF. RD. NORTH
758.53
232+00
776.7
C-918*
F-918

770 760 750

4549*
2858* 2858

43 770 760 750 218

3:1
4:1
759.6
C-428*
C-676*
F-676
760.29
231+00
769.3
REF. RD. NORTH

* UNSUITABLE MATERIAL

770 760 750

635*
1245 * 1245

34 770 760 750

3:1
C-266*
C-595*
F-595
760.68
230+48.98
770.0
REF. RD. NORTH

770 760 750

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

OHIO

107
254

FRANKLIN COUNTY
FRA - 104-10.57

CALC:	RG	3-79
CHK:	GKS	3-79

RAMP E Sta. 233+30 to 236+00

OHIO
108
254
FRANKLIN COUNTY
FRA 104-10.57

CALC: RG 3-79
CHK: GKS 3-79

RAMP F
REF. RD.
770
760
750
740
43
333
754.7
6:1
763.2
241+00
764.9

RAMP F
BACK
AHEAD
C = 236 BACK
C = 269 AHD.
82
102
AHEAD
BACK
2:1
8:1
6:1
760.4
762.4
240+52.11
765.1

331
118
324
RAMP F
2:1
8:1
6:1
759.8
761.7
240+25
762.2

115 1228 240+00
106
1517
167
993
RAMP F
C = 70
F-21
C = 32
4.3:1
8:1
6:1
742.6
756.3
758.3
239+00
758.1
Ramp "F"
M.L.
RAMP F
A
A
C = 1441
4.3:1
8:1
4:1
753.4
755.6
238+00
761.6
740.0
739.0
4:1
180
160
24:1

280
1383
218
2316
161
A
A
C = 4111
6:1
24:1
8:1
3:1
752.3
754.5
237+60
763.5
M.L.
C = 3130
8:1
753.10
237+10
765.3
236+00
740.4
STA. 237+10.22' RT
NO. 5A C.B.
FL GRATE 750.50
FL 24" 746.79
FL 30" 746.29
F 6" 747.04
5A - 24" @ 17.88%
TYPE "C" 704.01 706.02-17.50 D-LOAD
3:1
EX 18"
STA. 236+86.72' RT
NO. 1 MANHOLE
COVER EL 760
EX 18" EL. 755.4
FL 24" EL 753.14

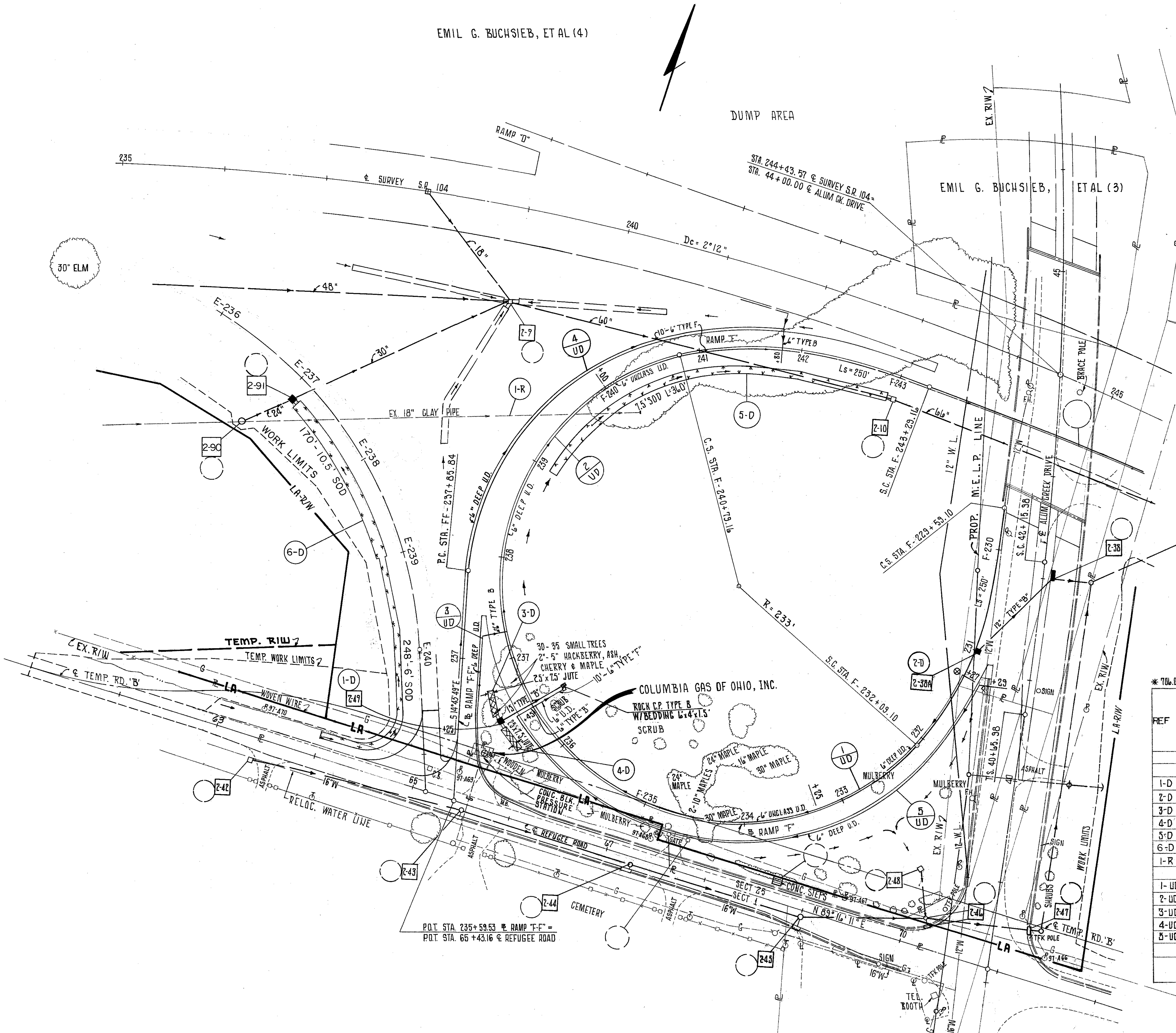
	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
END EARTHWORK +00	549	0		
			725	0
AHEAD	269	0		
BACK	230	0		
			252	0
	266	0		
			188	0
240+00	142	0		
			466	39
			3109	39
			4930	0
			8154	0
			11648	0
STA. 236+00	2090			

RAMP E Sta. 237+00 to 241+00

FHWA REGION	STATE	PROJECT		
5	OHIO			

FRANKLIN COUNTY
FRA-104-10.57

CALC: PCB 3-79
CHK: ROB 3-79



NOTES

1. FOR STORM SEWER PROFILE SEE X-SEC. SHEET NOS. 111, 125 & 126.
2. FOR S.R. 104 P. & P. SEE SHEET NOS. 46 & 47.
3. FOR RAMP "F" P. & P. SEE SHEET [illegible]
4. FOR REFUGEE RD. P. & P. SEE SHEET NO. 91.
5. FOR ALUM CREEK DR. P. & P. SEE SHEET NO. 62.
6. FOR PAVEMENT DETAILS SEE SHEET NOS. 129, 130 & 135.
7. FOR GEOMETRIC LAYOUT SEE SHEET NOS. 99 & 100.

⊗ CONNECT CURB UNDERDRAIN TO DEEP UNDERDRAIN

8. FOR UNDERDRAIN DETAILS SEE SHEET NO. 9.
9. FOR WATER LINE PROFILE SEE SHEET NO. 138.

* 706.01 OR 706.02 ‡ OMIT DIKE

REF	STATION TO STATION	SIDE	202 PIPE REMOVED 24" & UNDER	601 ROCK CHANNEL PRO. TYPE B W/BEDDING	602 CONCRETE MASONRY	603* 12" TYPE "B"	603* 15" TYPE "B"	603 6" TYPE "B"	603 6" TYPE "F"	604 NO. 3 C.B. ‡	604 1-2A-8 INLET	605 6" UNCLASS U.D.	605 6" DEEP U.D.	605 BENDS & BRANCHES	660 SODDING	667 SEEDING & JUTE MATTING
			L.F.	C.Y.	C.Y.	L.F.	L.F.	L.F.	L.F.	EA.	EA.	L.F.	L.F.		S.Y.	S.Y.
1-D	236+50	L-R		2	0.3		68			1						
2-D	F-231+00 TO 42+00 ALUM CK. DR.	LT.				102					1					
3-D	F-236+56 TO F-236+81	LT.														21
4-D	F-236+19 TO F-236+44	LT.														21
5-D	F-239+00 TO F 243+00	RT.													300	
6-D	E-237+10 TO 64+00 REF. RD.	RT.													364	
1-R	F-239+58	L-R	390													
1-UD	231+27 TO 236+45	RT.							10			341	198	1		
2-UD	236+52 TO 241+80	RT.							10			170	348	1		
3-UD	236+11 TO 237+25 (F-F)	RT.						25					114	1		
4-UD	236+25 (F-F) TO 241+80 (F)	LT.							10				579	1		
5-UD	231+29 TO 236+45	LT.						20					556	1		
	TOTALS		390	2	0.3	102	68	45	30	1	1	511	1795		664	42

RAMPS "F" & "FF" PLAN

SEEDING	
END STATION	SQ. YDS.

FEDERAL AID PROJECT	STATE	PROJECT	
S	OHIO		

110
254

FRANKLIN COUNTY
FRA 104-10.57

CALC. RG 3-79
CHK. GKS 3-79

END AREA		VOLUME	
CUT	FILL	CUT	FILL

RAMP "E"

EXCAVATION	=	45,847 C.Y.
EMBANKMENT	=	78 C.Y.
SEEDING	=	13,019 S.Y.

NOTE:
FOR PROFILE GRADE ELEVATIONS ON RAMP F-F
SEE SHEET NO. 130

PROFILE GRADE: 761.10 761.64 759.54 758.48 757.94 757.44 757.00 756.64 756.35 756.14 755.99 756.88 755.64 755.44 755.22 755.00 754.78 754.63 754.38 754.06 753.63 753.12 752.52 751.83 751.05 750.19 749.23 747.23 745.23 744.23 743.28 742.42 741.65 740.97 740.39 739.90 739.61 739.21 739.00 738.88 738.81 738.69 738.60

GRAPHIC GRADE
SEE PAV'T. DETAILS

150' V.C.
P.V.I. 232+50
EL. 764.32

-2.16%

-0.44%

+29
+27

233+95.2'RT
FL 6" 749.92

6" DEEP U.D.

UNCLASS @ 0.10%

+159.33 ℄ REFUGEE RD. SOUTH

℄ RAMP F-F

4.00%

RAMP F-F
237+85.84

+25
+12

234+45.18'LT
FL 6" 749.58

6" DEEP U.D. LT.

PROP 15"

234+45.2'RT
FL 6" 749.40

+52

6" TYPE 'B'

250' V.C.
P.V.I. 237+25
ELEV. 754.23

237+25.2'RT
FL 6" 746.84

-4.00%

6" DEEP U.D. LT

6" DEEP U.D. RT

UNSUITABLE MAT'L.	2925	C.Y.
EXCAVATION	104126	C.Y.
EMBANKMENT	0	C.Y.

250' V.C.
P.V.I. 241+00
ELEV. 739.23

241+08.2'RT
FL 6" 736.50

-0.28%

+29.16 EL. 738.59

SEE PAV'T. DETAILS

240+00.2'RT
FL 6" 737.00

6" UNCLASS

UD @ 0.50%

6" UNCLASS @ 3.78%

℄ STREAM

242+00.2'RT
FL 6" 732.72

Prop 60"

241+80.2'RT
FL 6" 733.48

764.9 764.9 758.4 763.1 763.6 +06 761.7 762.0 761.1 +09 761.5 763.7 760.0 764.4 764.6 764.3 764.3 764.6 763.1 +40 763.9 764.7 766.9 +10 762.8 759.7 758.7 758.0 758.3 762.1 762.6 +13 763.7 763.7 +13 766.7 +13 764.1 762.6 +10 757.8 758.5 +05 753.6 749.8 +15 ℄ STREAM 753.0 759.0 759.1

230 231 232 233 234 235 236 237 238 239 240 241 242 243

RAMP F & FF PROFILES

FRANKLIN COUNTY
FRA-104-10.57

CALC. RG 3-79
CHK: GKS 3-79

60 40 20 ℄ 20 40 60 80 100 120 140 160 180

STA 234+50.35' LT
NO. 5 CB. DMH DIKE
FL GATE 753.75
R 15" 751.29

20'~6" TYPE B @ 0.90%

68'~15" TYPE B
234+45.18' LT
FL 6" 749.58

70601 or 706.02 @ 2.88%

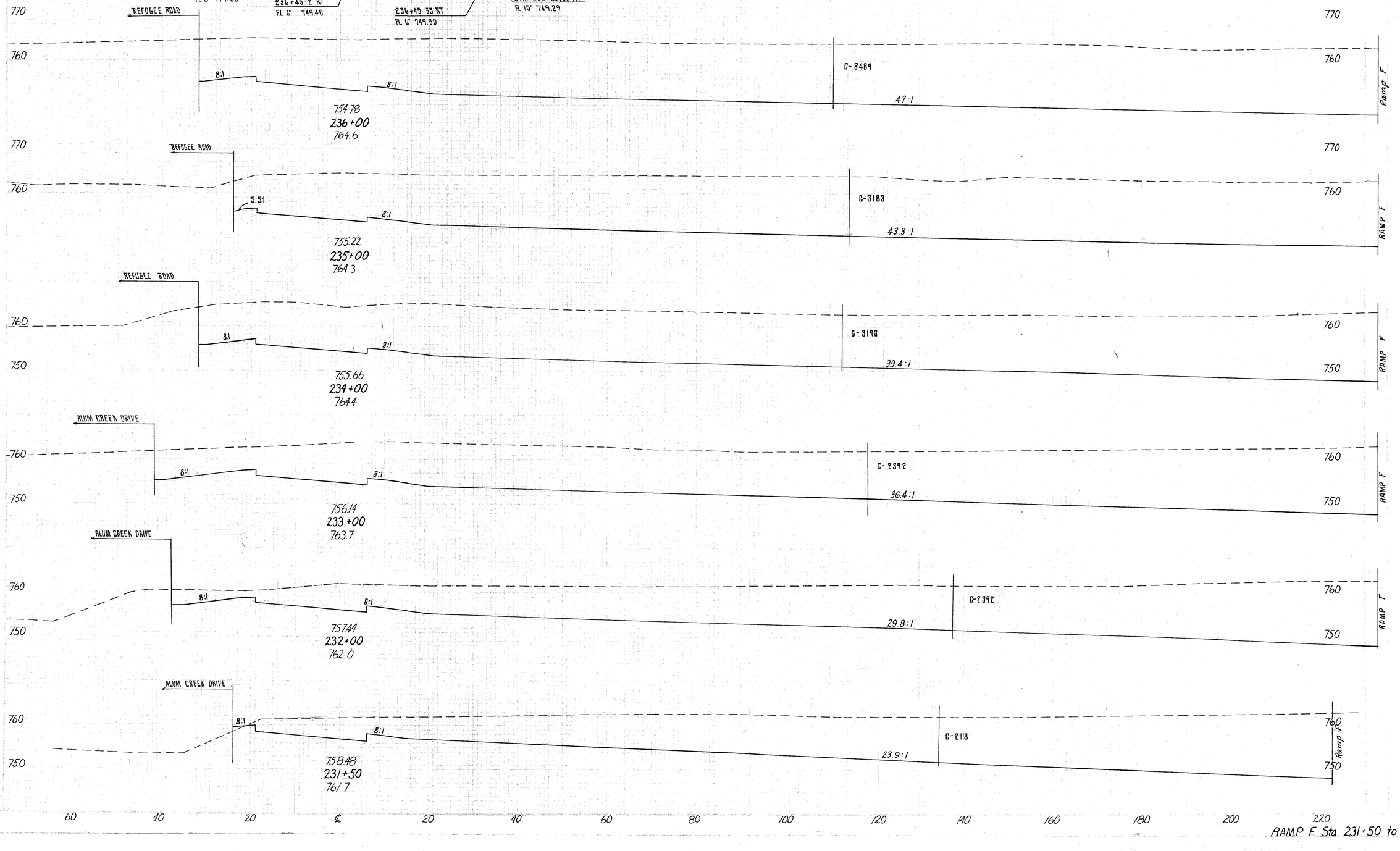
236+45 2' RT
FL 6" 749.40

6'~6.05 @ 0.32%

236+45 33' RT
FL 6" 749.30

ROCK C.P. TYPE B w/ BEDDING
6'X7'X1.5'

749.2
HW 4 HEADWALL
STA. 236+50.38' RT
FL 15" 749.29



6392 D

6060 D

5743 D

4468 D

1741 D

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

RAMP F Sta. 231+50 to 236+00

OHIO

FRANKLIN COUNTY
FRA-104-10.57

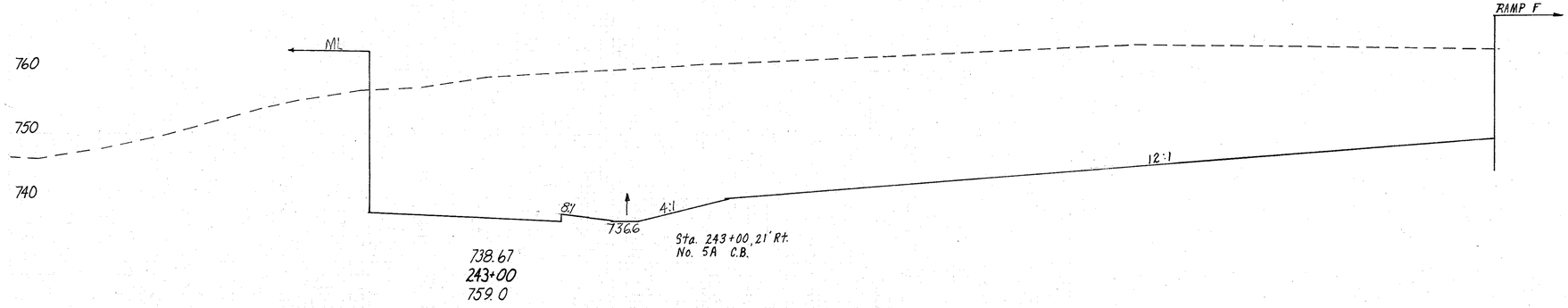
CALC: RG 3-79
CHK: GKS 3-79

RAMP F Sta. 237+00 to 239+80

CALC:	RG	3-79
CHK:	GKS	3-79

FRANKLIN COUNTY
FRA - 104-10.97

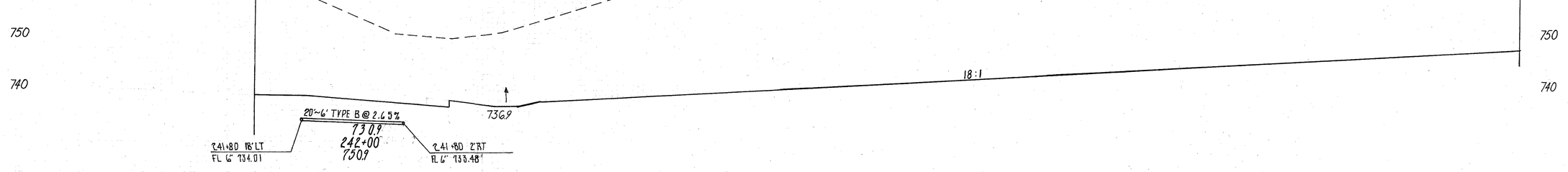
60 40 20 ℄ 20 40 60 80 100 120 140 160 180



END EARTHWORK
STA. 243+00

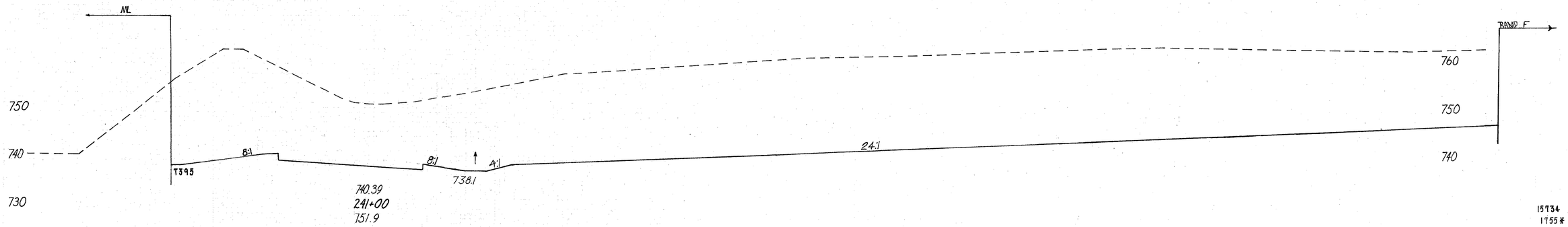
3479 D

14623 D



4418 D

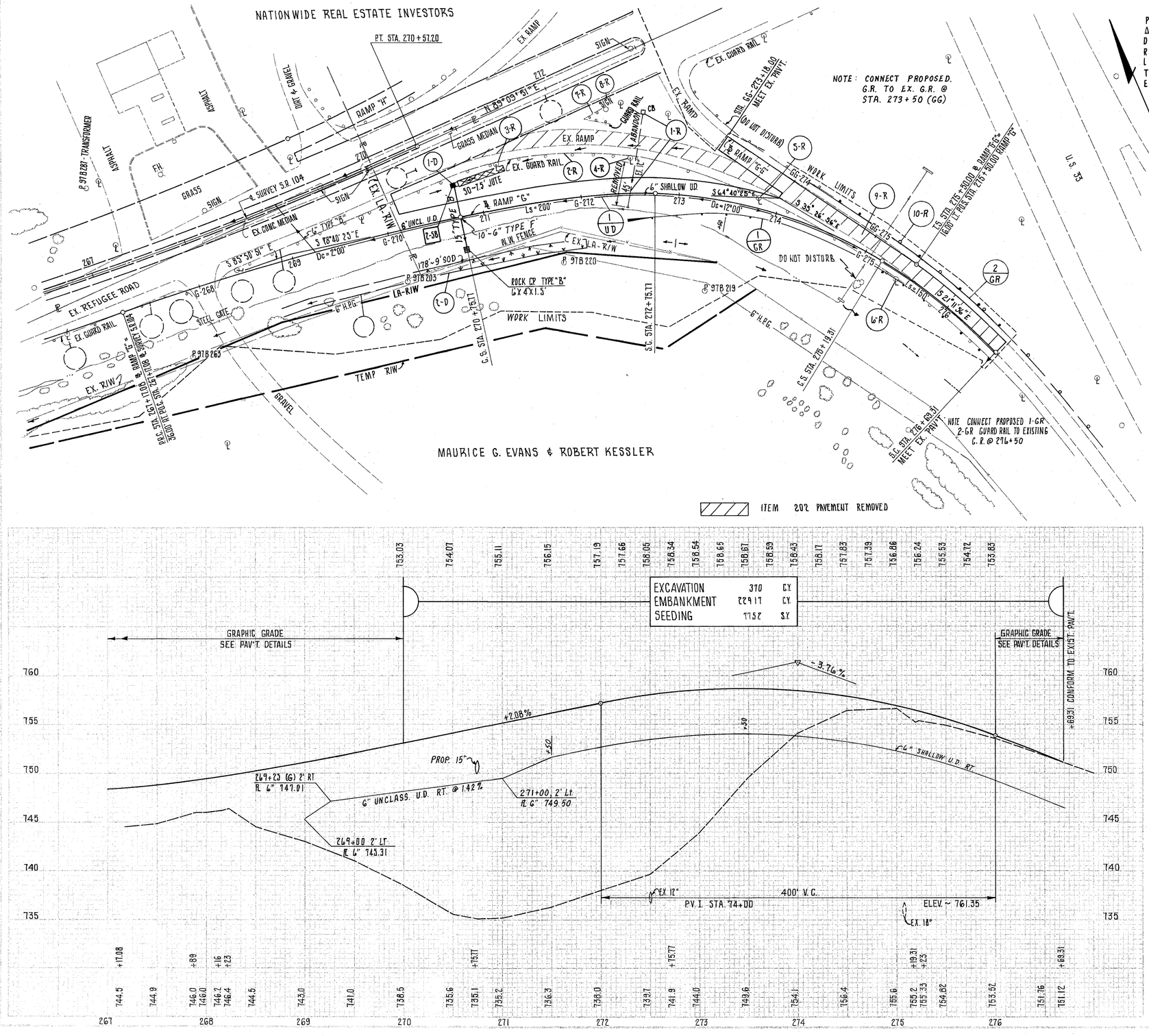
13836 D



15734 D
17558

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

RAMP F Sta. 241+00 to 243+00



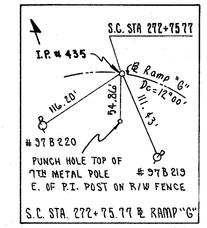
CURVE DATA

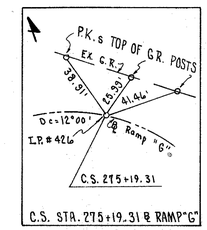
PI-268+96.66	PI-272+00.05	PI-274+00.25	PI-275+88.11
Δ-7° 10'26"	Δ-2° 00' 00"	Δ-29°13' 29"	Δ-5° 15' 00"
D-2° 00'00"	θ_s-12°00' 00"	D-12° 00' 08"	θ_s-9° 00' 00"
R-2864.79'	θ_s-10° 00' 00"	R-477.47'	θ_s-3° 45' 00"
L-358.69'	P-2.90'	L-243.54'	P-0.82'
T-179.58'	LT-124.28'	T-124.48'	LT-81.97'
E-5.42'	ST-74.62'	E-15.96'	ST-58.60'
	L_s-200'		L_s-150'

FHWA REGION	STATE	PROJECT		114
5	OHIO			254

FRANKLIN COUNTY
FRA-104-10.57

CALC:	PCB	2-79
CHK:	ROB	3-79





NOTES

1. FOR STORM SEWER PROFILE SEE X SEC SHEET NO. 115.
2. FOR S.R. 104 P & P. SEE SHEET NO. 50.
3. FOR RAMP "H" P & P. SEE SHEET NO. 117.
4. FOR PAVEMENT DETAILS SEE SHEET NO. 132.

REF	STATION TO STATION	SIDE	202 PAVEMENT REMOVED	202 CATCH BASIN REMOVED	202 PIPE REMOVED 24" & UNDER	202 GUARDRAIL REMOVED	202 STRUCTURE REMOVED		606 GUARDRAIL TYPE 5	606 ANCHOR ASSEM. TYPE A
			S.Y.	EA.	L.F.	L.F.	LUMP		L.F.	EA.
10-R	273+50 (GG) TO 276+50 (G)	LT.				300				
1-R	272+47 TO 272+63	L+R		1	45					
2-R	270+00 TO 274+50	R.T.				674				
3-R	271+20	L.T.					LUMP			
4-R	272+50	L.T.					LUMP			
5-R	273+79	L.T.					LUMP			
6-R	275+41	R.T.					LUMP			
7-R	272+23 TO 272+43 (MIL.)	R.T.				45				
8-R	272+48 (MIL.)	R.T.					LUMP			
9-R	270+50 TO 276+69.31	L.T.	1166							
1-GR	272+50 TO 276+50	R.T.							375	1
2-GR	273+50 (GG) TO 276+50 (G)	L.T.							300	
TOTALS			1166	1	45	1022	LUMP		675	1

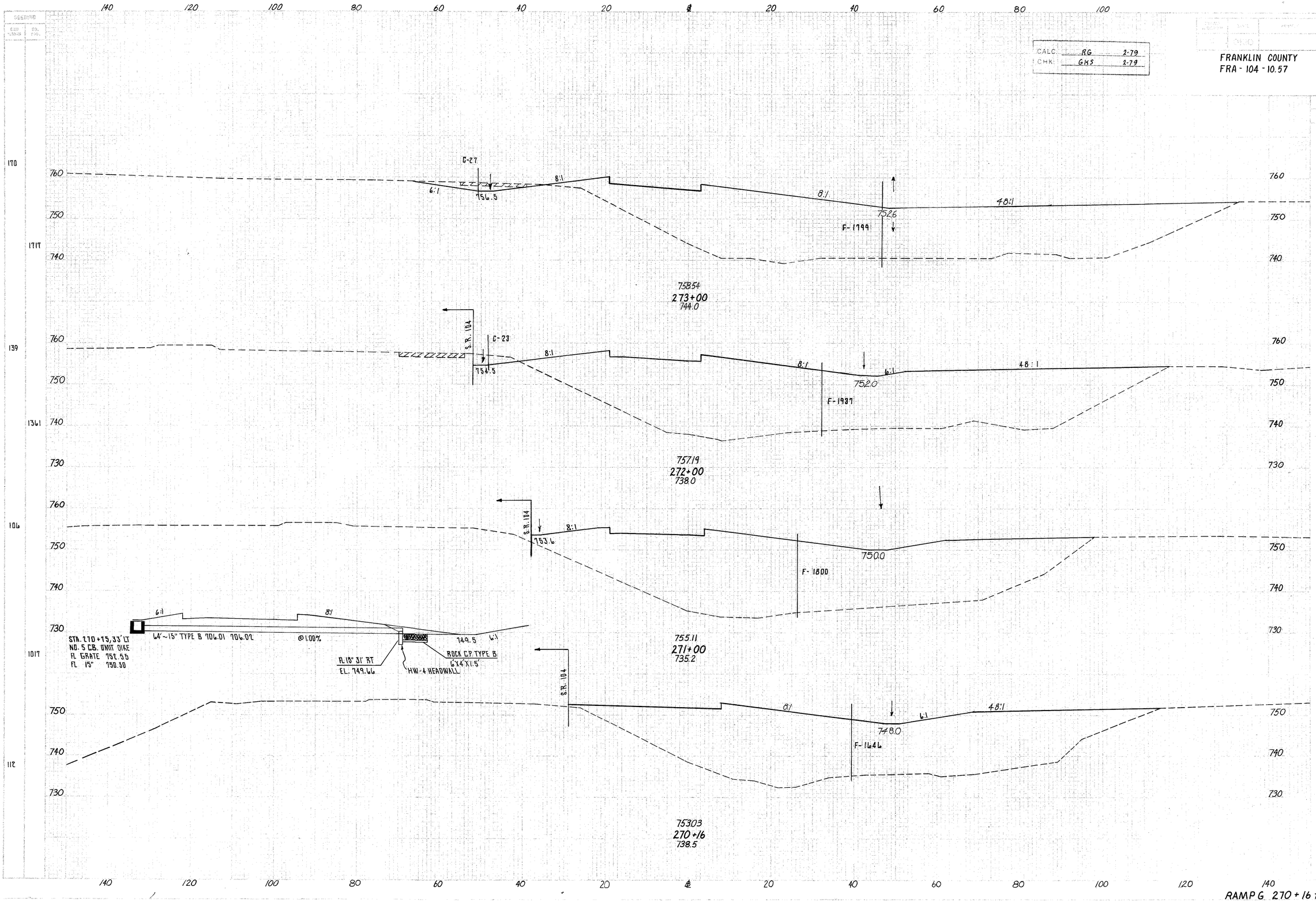
* 706.01 OR 706.02 ‡ OMIT DIKE ** WITH BEDDING

REF	STATION TO STATION	SIDE	601** ROCK CHANNEL PROTECTION TYPE "B"	602 CONCRETE MASONRY	* 603 15" TYPE "B"	603 6" TYPE "D"	603 6" TYPE "F"	604 No. 5 C.B.	605 6" UNCLASS	605 6" SHALLOW U.D.	605 DRAINS & BRANCHES	660 SEEDING	667 SEEDING & JUTE MATTING
			C.Y.	C.Y.	L.F.	L.F.	L.F.	EA.	L.F.	L.F.		S.Y.	S.Y.
1-D	270+15	L&R	2	0.3	64			1					42
2-D	270+18 TO 272+00	R.T.										178	
1-UD	269+00 TO 276+69	R.T.				66	20		215	477	2		
TOTALS			2	0.3	64	66	20	1	215	477		178	42

RAMP "G" STA. 267+00 TO STA. 276+69.31

CALC. RG 2-79
CHK. GKS 2-79

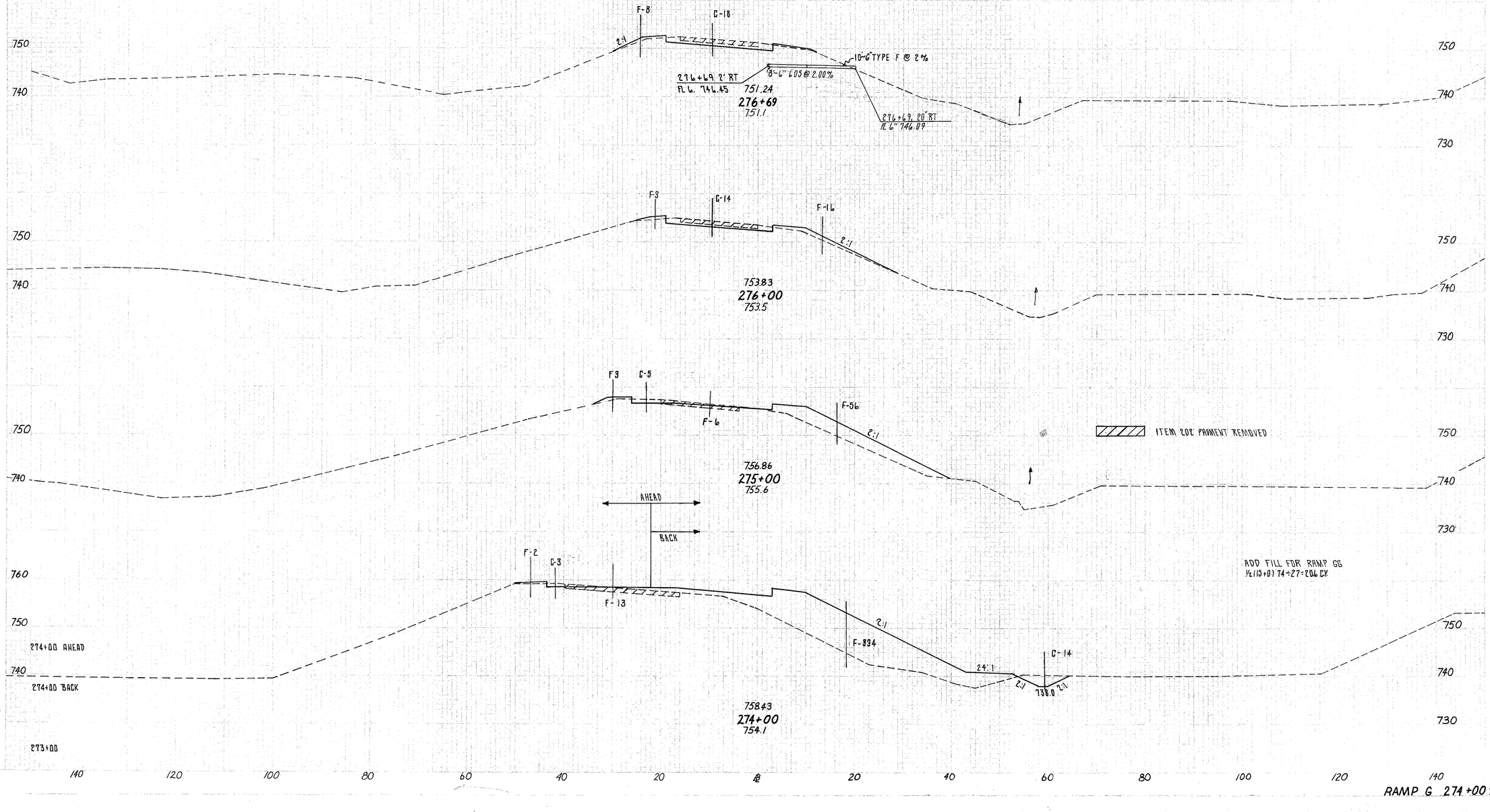
FRANKLIN COUNTY
FRA - 104 - 10.57



CALC. RG 2-79
CHK. GKS 2-79

FRANKLIN COUNTY
FRA - 104 - 10.57

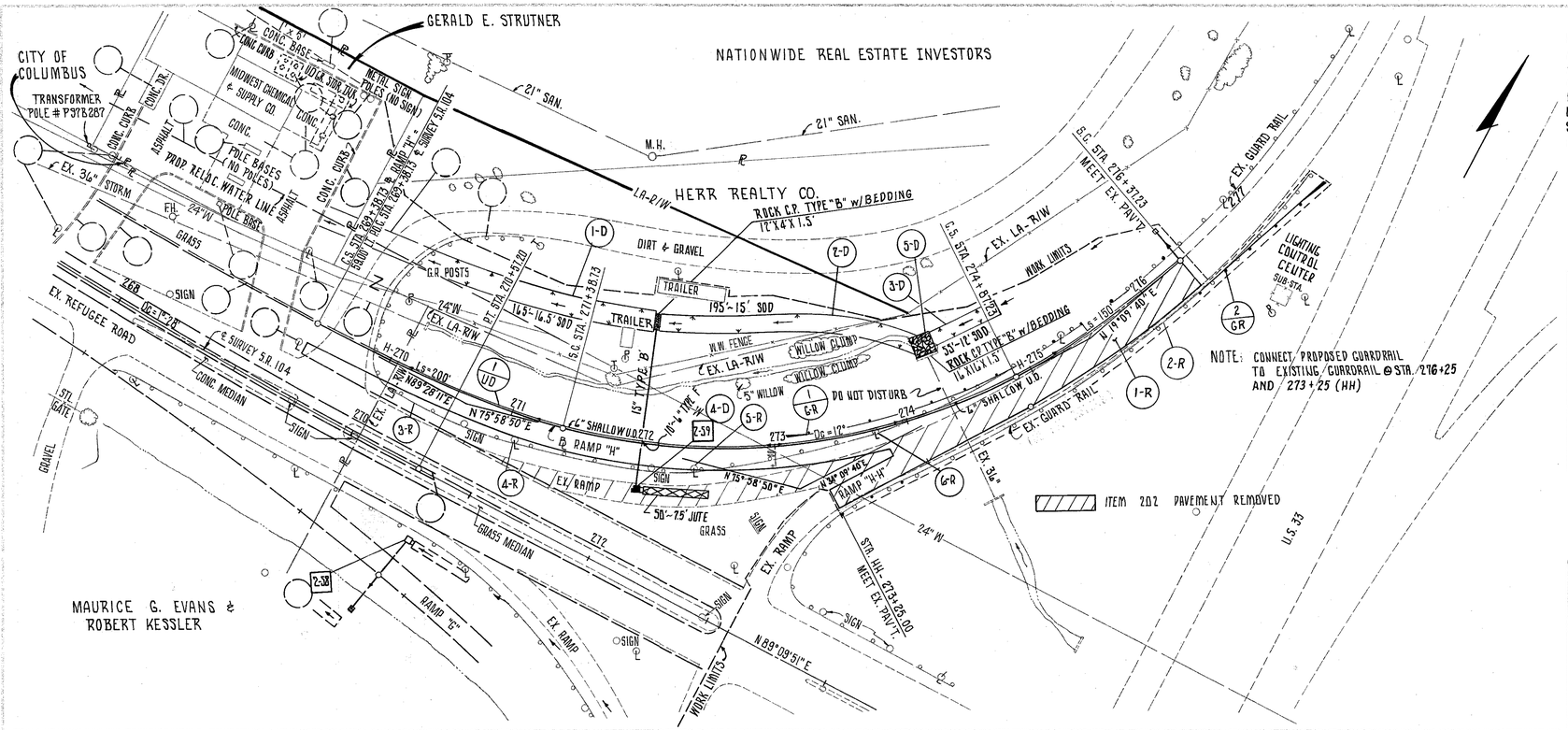
140 120 100 80 60 40 20 0 20 40 60 80 100



86 475 90 922 76 788 64 1282 61 170

41 34 35 150 40 733 21 81 3677

RAMP G 274+00 to 276+69



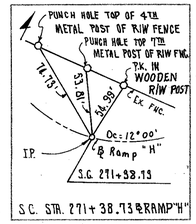
CURVE DATA

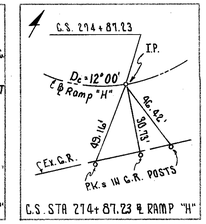
PI - 270+45.13	PI- 273+21.15	PI - 275+57.43
Δ - 1° 29' 21"	Δ - 41° 49' 10"	Δ - 6° 00' 00"
de - 12° 00' 00"	D - 12° 00' 00"	Δ - 9° 00' 00"
θs - 10° 30' 34"	R - 477.49'	θs - 3° 00' 00"
P - 30.5'	L - 348.50'	P - 0.45'
LT - 126.40'	T - 182.42'	LT - 88.43'
ST - 74.42'	E - 33.66'	ST - 78.42'
Ls - 200'		Ls - 150'

FHWA REGION	STATE			117
5	OHIO			254

FRANKLIN COUNTY
FRA-104-10.57

CALC:	PCB	2-79
CHK:	ROB	3-79





NOTES

1. FOR STORM SEWER PROFILE SEE X SEC SHEET NO. 118.
2. FOR S.R. 104 P & P SEE SHEET NO. 50.
3. FOR RAMP "G" P & P. SEE SHEET NO. 114.
4. FOR PAVEMENT DETAILS SEE SHEET NO. 133.
5. FOR WATERLINE PROFILE & QUANTITIES SEE SHEET NO. 140.

REF.	STATION TO STATION	SIDE	202 GUARDRAIL REMOVED		202 STRUCTURE REMOVED	202 PAVEMENT REMOVED		606 ANCHOR ASSEM. TYPE A	608 GUARDRAIL TYPE 5	608 ANCHOR ASSEM. TYPE T
			L.F.		LUMP	S.Y.		EA.	L.F.	EA.
1-R	270+48 TO 276+37.23	R.T.				1314				
2-R	273+25 (HH) TO 277+50	R.T.	425							
3-R	270+00 TO 276+25	L.T.	625							
4-R	271+08	R.T.			LUMP					
5-R	272+40	R.T.			LUMP					
6-R	273+75	℄			LUMP					
1-GR	273+00 TO 276+25	L.T.							312.5	1
2-GR	273+25 (HH) TO 277+50	R.T.					1	400		
	TOTALS		1050		LUMP	1314		1	712.5	1

* 706.01 OR 706.02 ≠ OMIT DIKE

REF	STATION TO STATION	SIDE	601 ROCK CHANNEL PROTECTION TYPE "B" W/BEDDING	602 CONCRETE MASONRY	603 * 15" TYPE B	603 6" TYPE "F"	604 NO. 5 C.B. ≠	605 6" SHALLOW U.D.	605 BENDS & BRANCHES	660 SODDING	667 SEEDING & JUTE MATTING
			CY.	CY	L.F.	L.F.	EA.	L.F.		S.Y.	S.Y.
1-D	270+00 TO 271+98	L.T.								303	
2-D	272+02 TO 274+30	L.T.								325	
3-D	274+39 TO 275+00	L.T.								74	
4-D	272+00	L.R.	4	0.3	12.0		1				42
5-D	274+23 TO 274+39	L.T.	19								
1-UD	270+00 TO 276+37	L.T.				20		643	1		
	TOTALS		23	0.3	12.0	20	1	643		702	42

RAMP "H" STA. 269+00 TO STA. 2

FRANKLIN COUNTY
FRA - 104 - 10.57

CALC	RG	2-79
CHK	GKS	2-79

RAMP H 269+39 to 272+00

OHIO

FRANKLIN COUNTY
FRA - 104 - 10.57

CALC	RG	2-79
CHK	GKS	2-79

ITEM 202 PAVEMENT REMOVED

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

C-27
276+37, 2' LT
FL 6" 739.43
276+37, 28' LT
FL 6" 738.39
18"~6" TYPE F
16'~6"~605 @ 4.00%
749.10
276+37
749.10

C-27
C-40
2:1
24:1
735.5
750.08
276+00
749.99

C-23
F-40
F-6
2:1
24:1
735.0
752.72
275+00
752.5

℄ TEMP. RD. 'E'
C-45
F-137
C-33
F-12
2:1
24:1
732.8
754.72
274+00
754.7

℄ TEMP. RD. 'E'
C-72
8:1
4:1
755.3
C-124
3:1
C-680
732.5
755.46
273+00
751.4

274+35.41' LT
IE EX 36" 732.8

272+00

RAMP H 273+00 to 276+37

CALC.	RG	4-79
CHK.	PCB	4-79

NOTES
1. FOR RIFFLE DETAILS SEE SHEET NO 8.
2. FOR ROCK CHANNEL PROTECTION QUANT NOT SHOWN SEE STRUCTURE DETAILS SHEET NOS 194-210.
3. FOR MAINLINE PLAN & PROFILE SEE SHEET NOS 48 & 49.
4. FOR WILLOW MAT BANK PROTECTION, SEE LANDSCAPING PLANS

CURVE DATA
P.I. STA. 21+58.86
Δ = 12°-54'-59"
Dc = 5° 00' 00"
R = 1145.92'
T = 129.71'
E = 7.32'
L = 258.33

QUANTITIES

1-D	ITEM 601	D.R. FILL TYPE B	728.8 C.Y.
2-D	ITEM 601	R.C.P. TYPE B W/O BED	312.2 C.Y.
3-D	ITEM 601	RCP TYPE B W/O BED	183.4 C.Y.
4-D	ITEM 601	D.R. FILL TYPE B	525.5 C.Y.
5-D	ITEM 601	RCP TYPE B W/O BED	463.5 C.Y.

BRIDGE NO. FRA-104-1274
S.R. 104 OVER ALUM CREEK
FOR DETAILS SEE SHEET NO. 194.

EXCAVATION	61,408	C.Y.
EMBANKMENT *	17,062	C.Y.
ROCK CHANNEL PROT. TYPE B WITHOUT BEDDING	959.1	C.Y.
DUMP ROCK FILL TYPE B	1254.3	C.Y.
SEEDING	6295	S.Y.

* SEE GENERAL NOTE SHEET 16.

RELOC. ALUM CREEK STA 13+50 TO STA. 28+50

FHWA REGION	STATE	PROJECT		121
5	OHIO			254

FRANKLIN COUNTY
FRA 104-10.57

CALC: PCB 4-79
CHK: RG 4-79

SEEDING

END WIDTH	SQ YDS
32	178
0	

120 100 80 60 40 40 20 ℄ 20 40 60 80 100 120 140 160 180

740 730 720

2.5:1 2:1 2:1 4.8:1 2.5:1 2:1

725.65
16+00
731.8

740 730 720

2.5:1 2:1 2:1 2.5:1 2:1

725.85
15+00
725.6

740 730 720

2.5:1 2:1 2:1 2:1

726.05
14+00
726.1

BEGIN WORK
STR 13+50

740 730 720

13+00
725.9

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
986	355		
		2847	820
552	87		
		1711	234
372	39		
		86	6
208	0		
		142	
0	0		

RELOC. ALUM CREEK 13+50 to 16+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

122
254

FRANKLIN COUNTY
FRA 104-10.57

CALC:	PCB	4-79
CHK:	RG	4-79

SEEDING

END WIDTH	SQ. FOS	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	92				
	1300	1793	270	5267	2621
	142	1051	1146		
	1844	5286	4922		
	190	1804	1512		
	1456	5451	4212		
	72	1248	742		
	578	4134	2070		
	32	986	355		

RELOC. ALUM CREEK 17+00 to 20+00

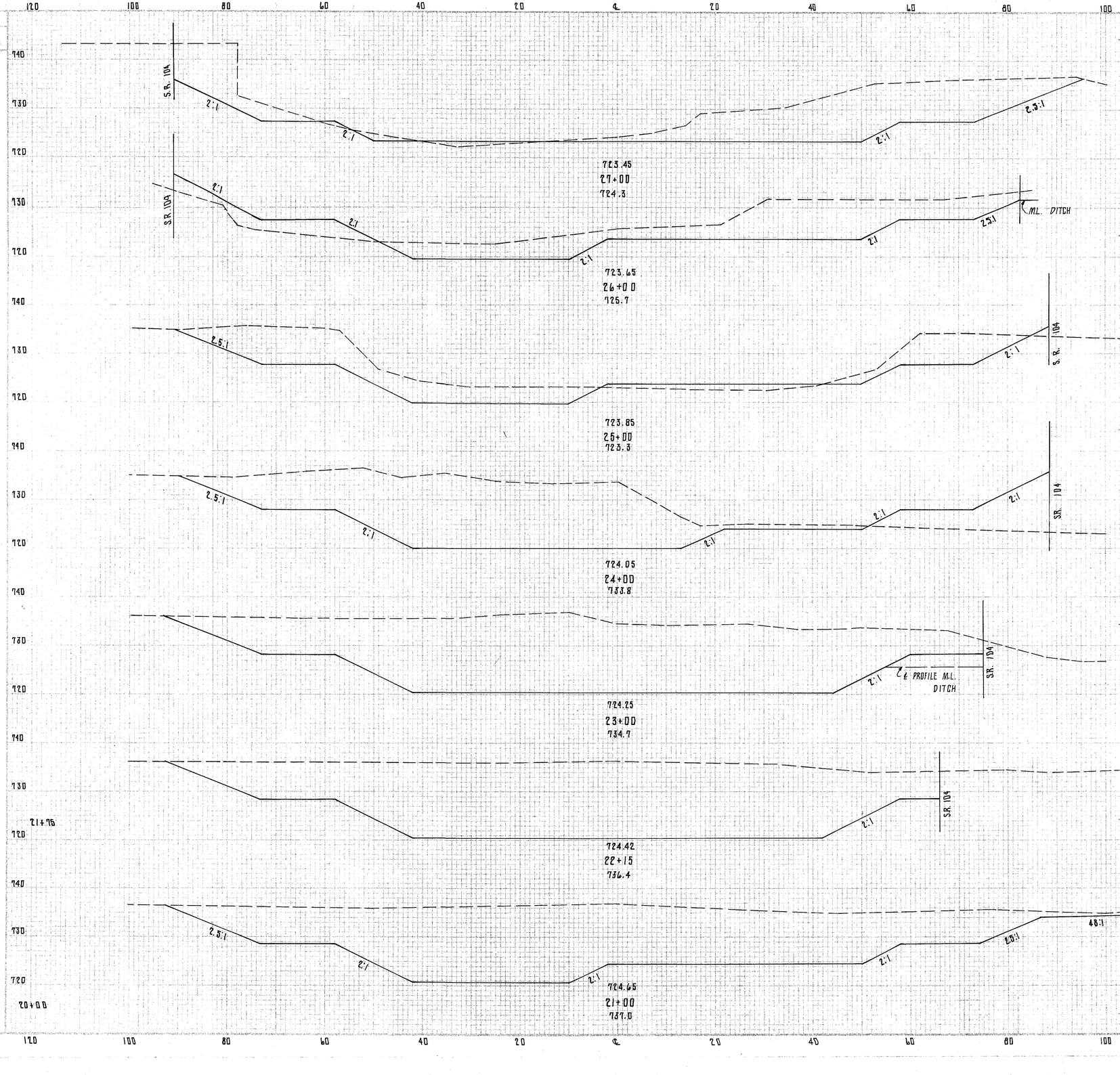
FHWA REGION	STATE	PROJECT	
5	OHIO		

123
254

FRANKLIN COUNTY
FRA 104-10.57

CALC: PCB 4-79
CHK: RG 4-79

SEEDING
DIST. WIDTH | SL. TOS.



DEDUCT CUT FOR RIFFLE @ 26+75
[(10.83 x 4 x 40 + ½ (4x10) 40] ÷ 27

STR 26+75 AHEAD 781 21
BACK 781 21

ADD FILL FOR RIFFLE STR 21+76
[(4x1.15)+(4x15.5x5x2)] 32+(2x5x108)] ÷ 27 =

DEDUCT CUT FOR RIFFLE @ 21+79
[(15.8)(4)(52) + (2)(8)(15.8)(4)] ÷ 27

STR. 21+75 AHEAD 1973 0
BACK 1765 0

	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	781	21		
			723	19
			-112	
	781	21		
	923	0		
			2063	146
	562	105		
			2067	276
	555	44		
			3115	443
	1127	196		
			6474	561
	1829	0		
			5867	0
	1898	0		
			2867	0
			169	
	1829	0	4992	0
			6708	500
20+00	1793	270		

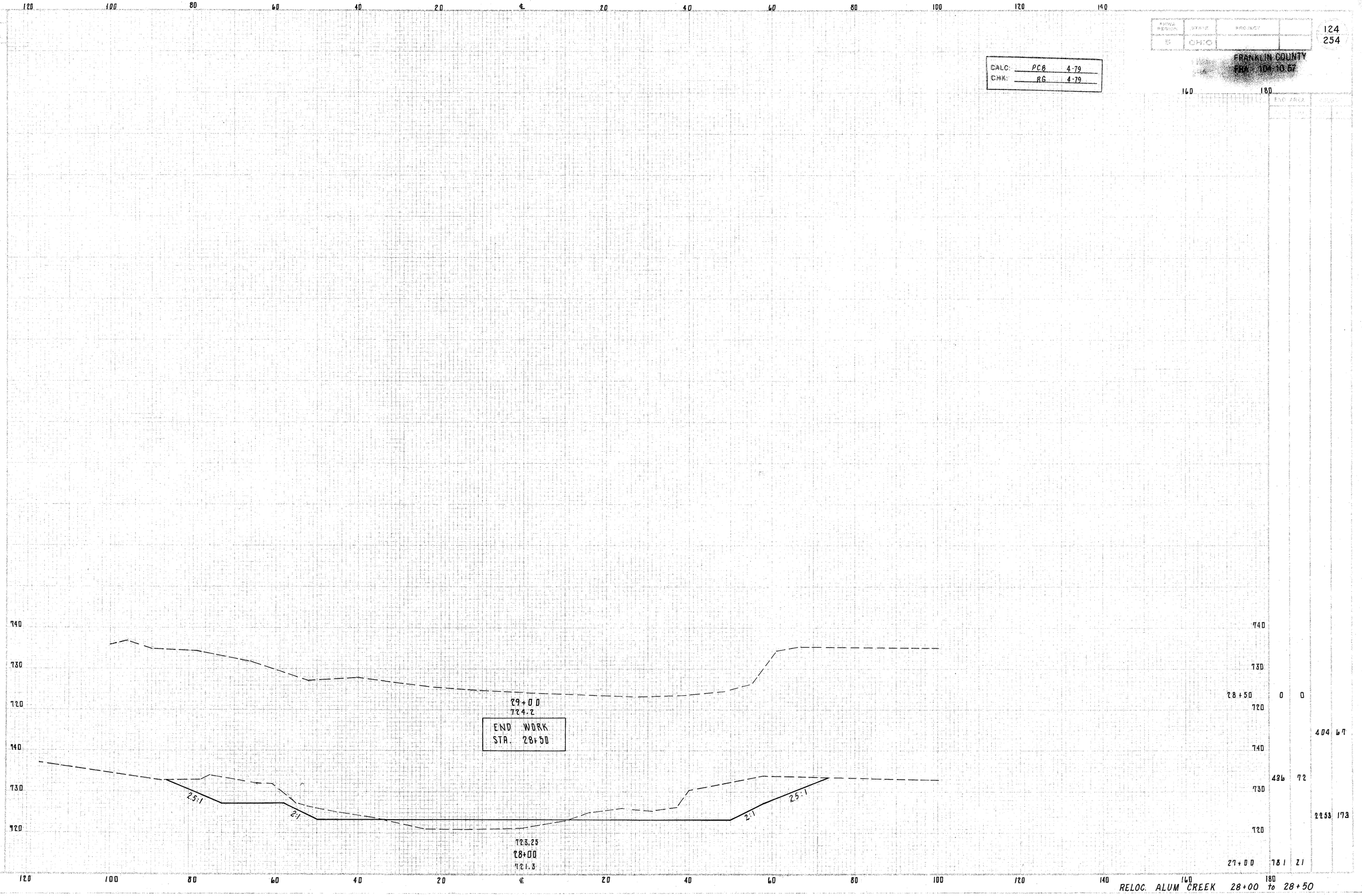
RELOC. ALUM CREEK 21+00 to 27+00

CALC:	PCB	4-79
CHK:	RG	4-79

FHWA REGION	STATE	PROJECT	
5	OHIO		

124
254

FRANKLIN COUNTY
FRA-104-10.67



RELOC. ALUM CREEK 28+00 to 28+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

125
254

FRANKLIN COUNTY
FRA - 104-10.57

STA. 75+19,46' RT.
NO. 1 M.H.
COVER EL. 770.20
IE 24" = 760.61
IE 27" = 760.36

℄ EX. REFUGEE RD.

PROP. GROUND

EX. GROUND

PROP. GROUND

℄ REFUGEE RD. CONN.

STA. 78+95, 61' RT.
HW-48 HEADWALL
IE 27" = 759.08

62

400'~27" TYPE "B" 706.02 @ .32%

0.24%
PROP DITCH SEE SHEET 96

STA. E- 236+86, 72' RT.
NO. 1 MANHOLE
COVER EL. 765.0
IE EX. 18" 755.4±
IE 24" 753.74

90

EXISTING GROUND

EX. 18"

54'~30" TYPE "C" 706.02 @ 12.88%

℄ PROPOSED GROUND

91

238'~30" TYPE "B" 706.02 @ 5.12%

9

STA. 239+00, 91' RT. S.R. 104
NO. 5-A CATCH BASIN
IE GRATE 738.60
IE 18" 735.10
IE 30" 734.10
IE 48" 732.60
IE 60" 731.60

STA. E- 237+10, 22' RT.
NO. 5-A CATCH BASIN
IE GRATE 750.50
IE 24" 744.79
IE 30" 744.23
IE 6" 747.04

IE 24" 763.83
IE 30" 763.33

2

PROPOSED GROUND

500'~30" TYPE "C" 706.02 @ 0.52%

℄ REFUGEE RD. SOUTH

13

PROPOSED GROUND

EXISTING GROUND

212'~15" TYPE "B" 706.01, 706.02 @ 0.30%

STA. 13+00, 31' RT.
NO. 5 CATCH BASIN (OMIT DIKE)
IE GRATE 769.00
IE 15" 766.48

STA. 205+80, 187' RT.
NO. 5 CATCH BASIN (OMIT DIKE)
IE GRATE 768.50
IE 15" 764.88
IE 24" 763.83
IE 30" 763.33

STA. 215+00, 56' RT.
NO. 5-A CATCH BASIN
IE GRATE 765.80
IE 15" 758.38
IE 30" 756.13
IE 42" 751.13
IE 6" 760.13

4

PROPOSED GROUND

500'~42" TYPE "C" 706.02 @ 0.48%

3

STA. 220+00, 55' RT.
NO. 5-A CATCH BASIN
IE GRATE 761.50
IE 27" 756.13
IE 42" 754.88
IE 6" 756.88

20

STA. 229+00 (RAMP "C"), 21' LT.
NO. 5 CATCH BASIN (OMIT DIKE)
IE GRATE 754.20
IE 21" 751.20
IE 6" 751.25

100'~21" TYPE "B" 706.02 @ 1.20%

21

℄ RAMP "B"

℄ S.R. 104

EXISTING GROUND

PROPOSED GROUND

STA. 229+00, ℄
NO. I-3B INLET*
IE INLET 754.52
IE 21" 750.05
750.46

148'~21" TYPE "B" 706.02 @ 2.20%

*MODIFIED AS PER PLAN

7

STA. 230+80, 80' RT.
NO. 5-A CATCH BASIN
IE GRATE 751.70
IE 21" 746.35
IE 42" 744.60
IE 48" 744.10
IE 6" 747.60

5

EXISTING GROUND

500'~42" TYPE "C" 706.02 @ 8.78%

STA. 220+00, 56' RT.
NO. 5-A CATCH BASIN
IE GRATE 761.50
IE 27" 756.13
IE 42" 754.88

EX. 16" WATER

RELOC. 16" WATER

6

STA. 225+00, 56' RT.
NO. 5-A CATCH BASIN
IE GRATE 757.50
IE 15" 753.28
IE 18" 752.98
IE 42" 750.38

PROPOSED GROUND

550'~42" TYPE "C" 706.02 @ 1.16%

7

PROPOSED GROUND

332'~48" TYPE "C" 706.01 @ 1.53%

8

STA. 234+50 (RAMP "E"), 03' RT.
NO. 5-A CATCH BASIN
IE GRATE 746.00
IE 30" 739.60
IE 48" 738.10
IE 6" 742.60

STA. 234+50 (RAMP "E"), 23' RT.
NO. 5-A CATCH BASIN (OMIT DIKE)
IE GRATE 746.00
IE 30" 739.60
IE 48" 738.10*
IE 6" 742.56

℄ RAMP "E"

* STUB 48" WEST

8

PROPOSED GROUND

430'~48" TYPE "B" 706.02 @ 1.28%

EXISTING GROUND

STA. 239+00, 91' RT.
NO. 5-A CATCH BASIN (OMIT DIKE)
IE GRATE 738.60
IE 18" 735.10
IE 30" 734.10
IE 48" 732.60
IE 60" 731.60

9

386'~60" TYPE "B" 706.02 @ 0.60%

℄ RAMP "F"

STA. 243+00, 82' RT.
NO. 5-A CATCH BASIN
IE GRATE 736.35
IE 60" 729.28
IE 66" 728.78

10

294'~66" TYPE "C" 706.02 @ 0.36%

11

PROPOSED GROUND

142'~66" TYPE "B" 706.02 @ 0.36%

STA. 246+00, ℄
NO. I-3B INLET
IE INLET 740.06
IE 15" 734.80

STA. 246+00, 75' RT.
NO. 5-A CATCH BASIN
IE GRATE 735.70
IE 66" 727.72
IE 6" 731.44

℄ S.R. 104

40

IE 15" TEE 733.27

12

140'~66" TYPE "B" 706.02 @ 0.30%

STA. 246+00, 68' LT.
NO. 5-A REINFORCED CATCH BASIN (OMIT DIKE)
IE GRATE 740.50
IE 66" 727.21
IE 6" 736.00

IE 66" 726.78
STA. 247+25, 126' LT.
HW-48 HEADWALL

ROCK C.F. TYPE B w/ BEDDING
14' × 12' × 2 1/8"

RIPRAP USING 6" REINFORCED
CONCRETE SLAB 5' × 12'

36

STA. 238+00, 56' LT.
NO. 2 & 3 CATCH BASIN
IE GRATE 747.25
IE 15" 742.24
IE 18" 741.99
IE 6" 742.49

37

STA. 238+00, ℄
NO. I-3B INLET
IE INLET 747.49
IE 15" 740.56
IE 18" 740.31

STA. 238+00 (RAMP "D"), 23' LT.
NO. 5 CATCH BASIN
IE GRATE 746.50
IE 15" 743.98

℄ RAMP "D"

℄ S.R. 104

35

PROPOSED GROUND

58'~15" TYPE "B" 706.01, 706.02 @ 3.00%

56'~18" TYPE "B" 706.01, 706.02 @ 3.00%

136'~18" TYPE "B" 706.01, 706.02 @ 3.84%

9

STA. 239+00, 91' RT.
NO. 5-A CATCH BASIN (OMIT DIKE)
IE GRATE 738.60
IE 18" 735.10
IE 30" 734.10
IE 48" 732.60
IE 60" 731.60

STA. 77+75, 14' LT.
NO. 1-2A-6 INLET
IE INLET 767.15
IE 12" 763.80

19

STA. 78+00, 14' LT.
NO. 1-2A-6 INLET
IE INLET 767.09
IE 12" 763.43
IE 18" 762.93

℄ REF. RD. NORTH

EXISTING GROUND

PROPOSED GROUND

19A

STA. 79+75, 14' RT.
NO. 1-2A-6 INLET
IE INLET 768.59
IE 18" 761.54

IE 18" 761.32
STA. 79+75, 42' RT.
HW-4B HEADWALL
ITEM 602
CONC. MASONRY 0.31 C.Y.

18

0.24%

R.C.P. TYPE C
12' x 6' x 1.5'

25'~12" TYPE "B" 706.01, OR 706.02 @ 1.48%

174'~18" TYPE "B" 706.01, OR 706.02 @ 0.80%

28'~18" TYPE "C" 706.01 OR 706.02 @ 0.80%

STORM SEWER PROFILES - 2

FHWA REGION	STATE	PROJECT	
5	OHIO		

126
254

FRANKLIN COUNTY
FRA-104-10.57

STA. 30+50, 4' LT.
NO. I-2-10 INLET
FE INLET 760.58
FE 12" 757.12

STA. 38+50, 40' RT.
NO. 1 MANHOLE
COVER EL. 761.80
FE 12" 754.32
FE 15" 754.07
FE 18" 753.82

STA. 36+50, 42' RT.
NO. 1 MANHOLE
COVER EL. 763.20
FE 18" 752.01
FE 24" 751.51

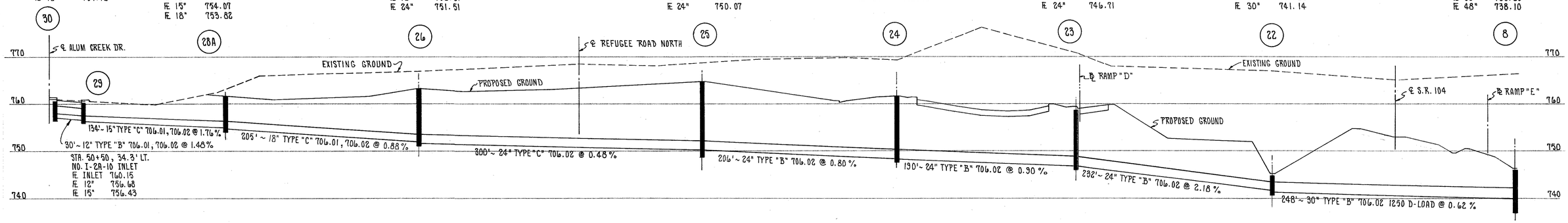
STA. 93+50, 42' RT.
NO. 3 MANHOLE
COVER EL. 764.80
FE 12" 751.07
FE 24" 750.07

STA. 91+40, 19.5' RT.
NO. I-2A-6 REINFORCED INLET
FE INLET 761.34
FE 24" 748.42

STA. 232+75 (RAMP "D"), 2' LT.
NO. I-2A-6 REINFORCED INLET
FE INLET 758.63
FE 12" 747.71
FE 24" 746.71

STA. 233+50 (S.R. 104), 110' LT.
NO. 5 CATCH BASIN
FE GRATE 744.85
FE 24" 741.64
FE 30" 741.14

STA. 234+50 (RAMP "E"), 23' RT.
NO. 5A CATCH BASIN
FE GRATE 746.00
FE 30" 739.60
FE 48" 738.10



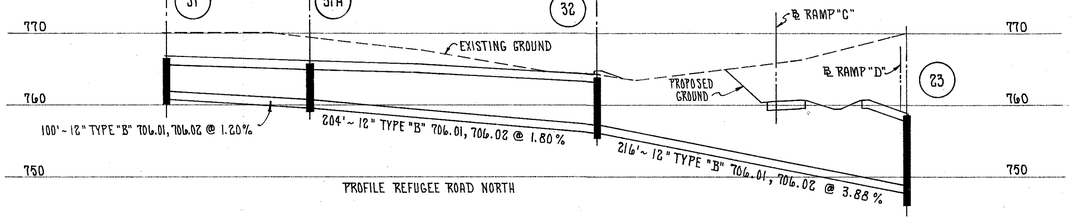
STA. 50+50, 34.3' LT.
NO. I-2A-10 INLET
FE INLET 760.15
FE 12" 756.68
FE 15" 756.43

STA. 85+25,
NO. I-2A-8 INLET
FE INLET 766.51
FE 12" 760.96

STA. 86+25,
NO. I-2A-6 INLET
FE INLET 765.99
FE 12" 759.76

STA. 88+25, 14' RT.
NO. I-2A-6 INLET
FE INLET 763.99
FE 18" 756.03

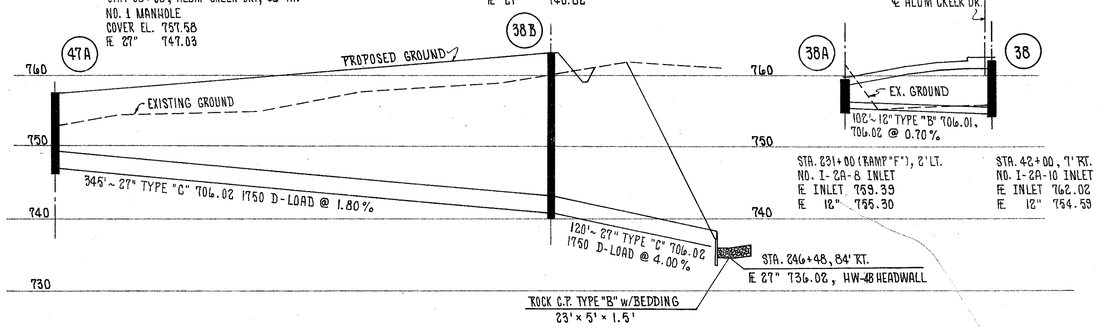
STA. 232+75 (RAMP "D"), 2' LT.
NO. I-2A-6 INLET (REINFORCED)
FE INLET 758.63
FE 12" 747.71
FE 24" 746.71



PROFILE REFUGEE ROAD NORTH

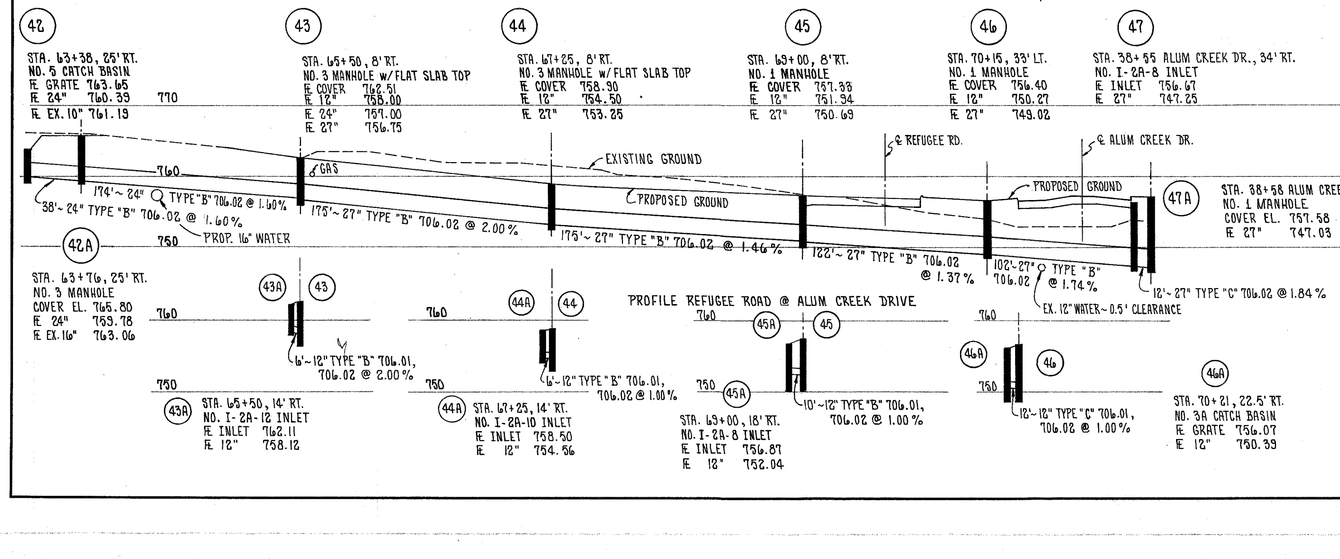
STA. 38+58, ALUM CREEK DR., 44' RT.
NO. 1 MANHOLE
COVER EL. 757.58
FE 27" 747.03

STA. 42+00 ALUM CREEK DR., 46' RT.
NO. 3 MANHOLE
COVER EL. 763.00
FE 12" 753.83
FE 27" 740.82



STA. 231+00 (RAMP "F"), 2' LT.
NO. I-2A-8 INLET
FE INLET 763.39
FE 12" 755.30

STA. 42+00, 1' RT.
NO. I-2A-10 INLET
FE INLET 762.02
FE 12" 754.59



STA. 63+38, 25' RT.
NO. 5 CATCH BASIN
FE GRATE 763.65
FE 24" 760.39
FE EX. 10" 761.19

STA. 65+50, 8' RT.
NO. 3 MANHOLE w/FLAT SLAB TOP
FE COVER 762.51
FE 12" 758.00
FE 24" 757.00
FE 27" 756.75

STA. 67+25, 8' RT.
NO. 3 MANHOLE w/FLAT SLAB TOP
FE COVER 758.90
FE 12" 754.50
FE 27" 753.25

STA. 69+00, 8' RT.
NO. 1 MANHOLE
FE COVER 757.38
FE 12" 751.34
FE 27" 750.69

STA. 70+15, 33' LT.
NO. 1 MANHOLE
FE COVER 756.40
FE 12" 750.27
FE 27" 749.02

STA. 38+55 ALUM CREEK DR., 34' RT.
NO. I-2A-8 INLET
FE INLET 756.67
FE 27" 747.25

STA. 38+58 ALUM CREEK DR., 44' RT.
NO. 1 MANHOLE
COVER EL. 757.58
FE 27" 747.03

STA. 63+76, 25' RT.
NO. 3 MANHOLE
COVER EL. 765.80
FE 24" 759.78
FE EX. 16" 763.06

STA. 65+50, 14' RT.
NO. I-2A-12 INLET
FE INLET 762.11
FE 12" 758.12

STA. 67+25, 14' RT.
NO. I-2A-10 INLET
FE INLET 758.50
FE 12" 754.56

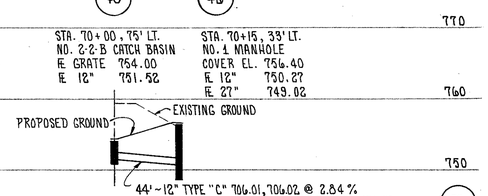
PROFILE REFUGEE ROAD @ ALUM CREEK DRIVE

STA. 63+00, 18' RT.
NO. I-2A-8 INLET
FE INLET 756.87
FE 12" 752.04

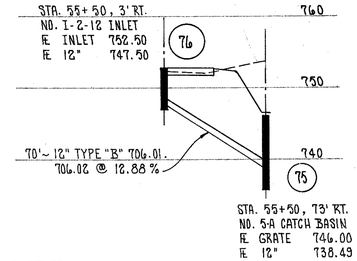
STA. 70+21, 22.5' RT.
NO. 3A CATCH BASIN
FE GRATE 756.07
FE 12" 750.39

STA. 70+00, 75' LT.
NO. 2-2-B CATCH BASIN
FE GRATE 754.00
FE 12" 751.52

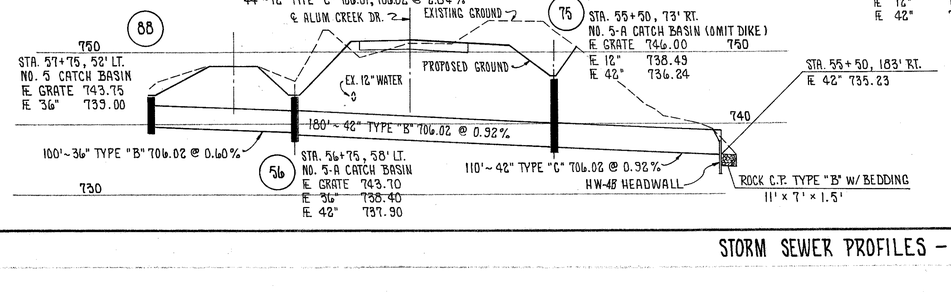
STA. 70+15, 33' LT.
NO. 1 MANHOLE
COVER EL. 756.40
FE 12" 750.27
FE 27" 749.02



STA. 55+50, 3' RT.
NO. I-2-12 INLET
FE INLET 752.50
FE 12" 747.50



STA. 55+50, 73' RT.
NO. 5-A CATCH BASIN
FE GRATE 746.00
FE 12" 738.49
FE 42" 736.24



STA. 57+75, 52' LT.
NO. 5 CATCH BASIN
FE GRATE 743.75
FE 36" 739.00

STA. 56+75, 58' LT.
NO. 5-A CATCH BASIN
FE GRATE 743.70
FE 36" 738.40
FE 42" 737.90

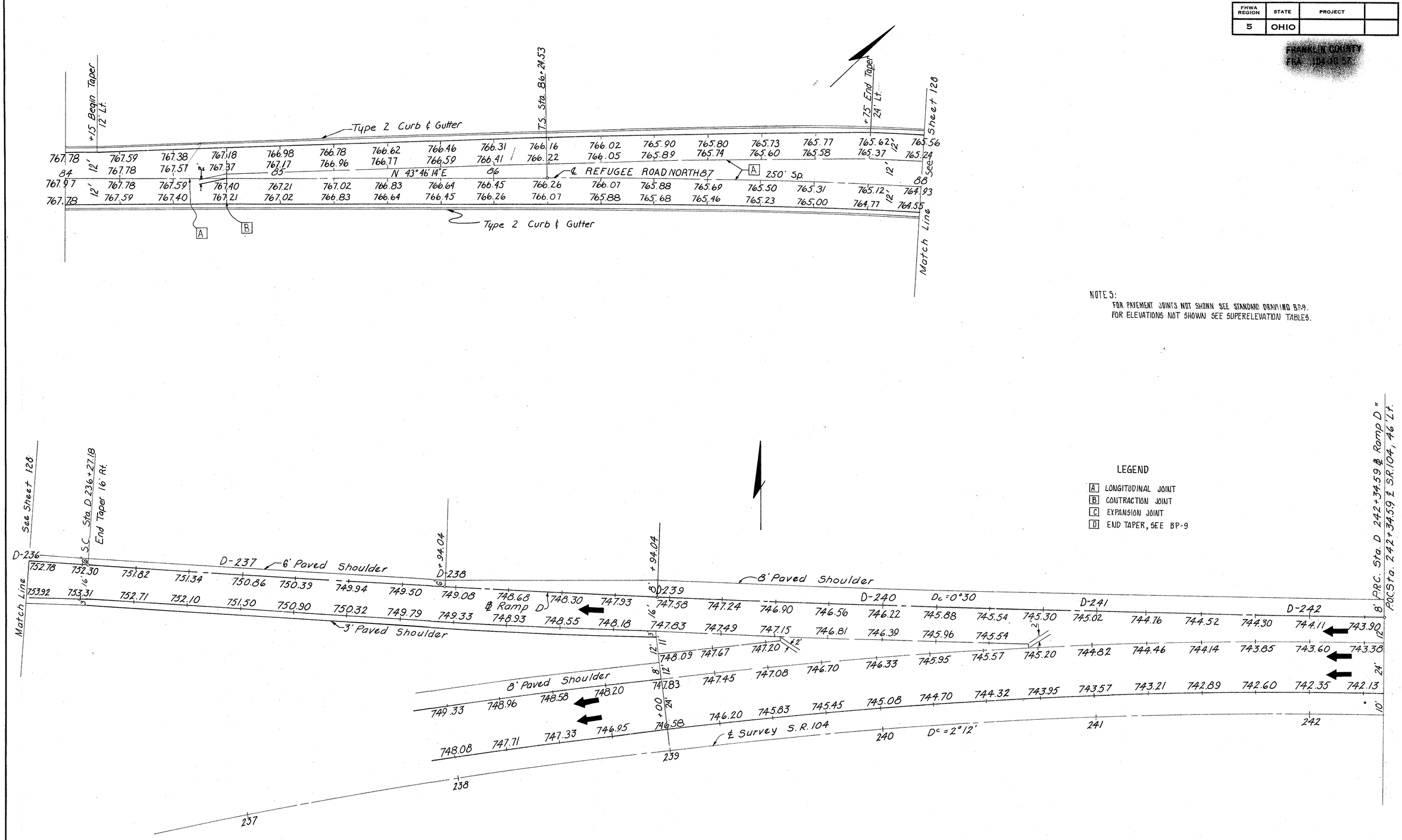
STORM SEWER PROFILES - 2

FHWA REGION	STATE	PROJECT	
5	OHIO		

127
254

FRANKLIN COUNTY
FRA- 104-10.57

NOTES:
FOR PAVEMENT JOINTS NOT SHOWN SEE STANDARD DRAWING BP-9.
FOR ELEVATIONS NOT SHOWN SEE SUPERELEVATION TABLES.



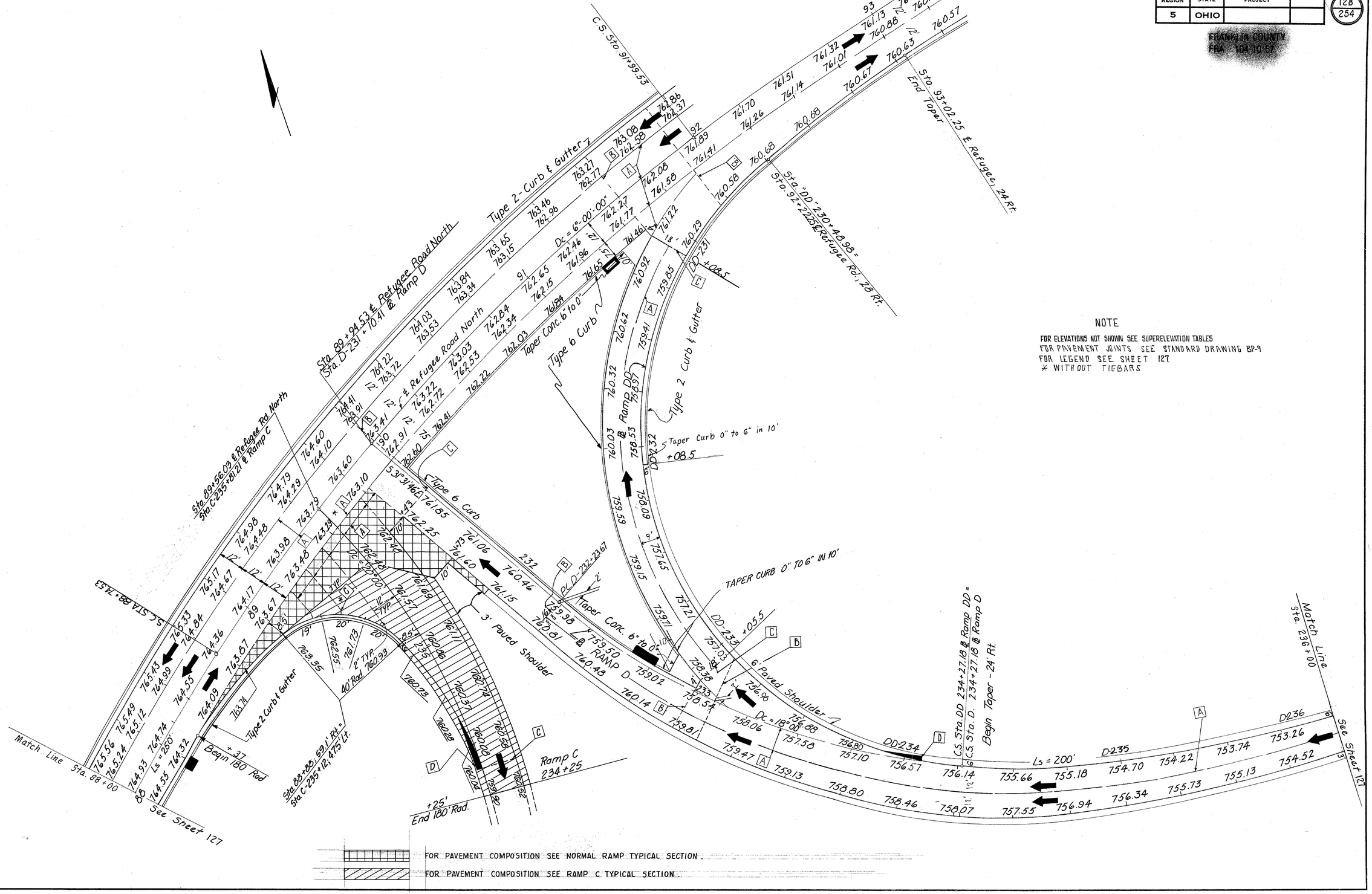
LEGEND
A LONGITUDINAL JOINT
B CONTRACTION JOINT
C EXPANSION JOINT
D END TAPER, SEE BP-9

PAVEMENT DETAIL RAMP D EXIT @ S.R. 104 + REFUGEE RD. N Sta. 84+00 to 88+

FHWA REGION	STATE	PROJECT	
5	OHIO		

128
254

FRANKLIN COUNTY
FRA 104-10.57



NOTE

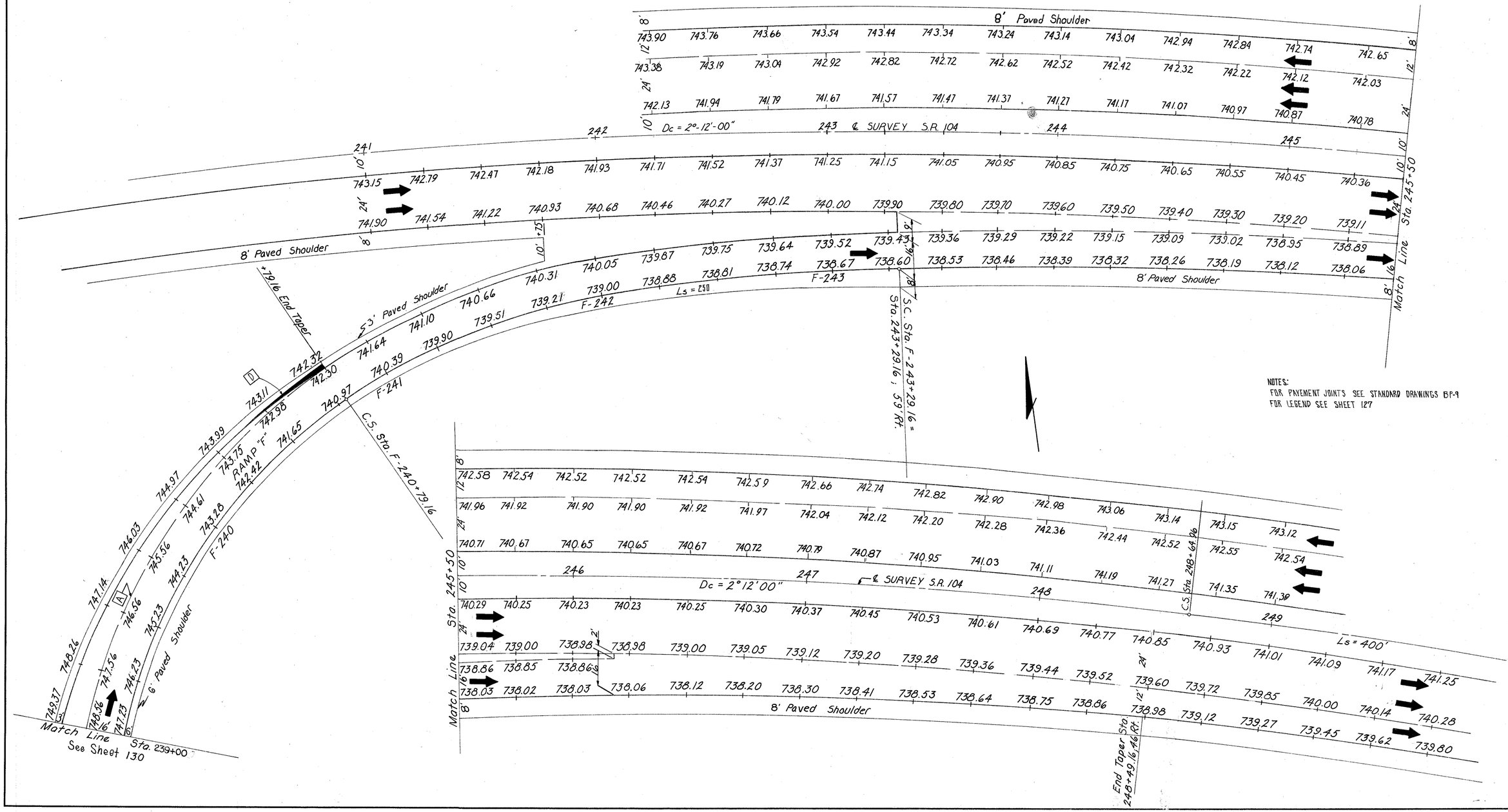
FOR ELEVATIONS NOT SHOWN SEE SUPERELEVATION TABLES
FOR PAVEMENT JOINTS SEE STANDARD DRAWING BP-9
FOR LEGEND SEE SHEET 127
* WITHOUT TIEBARS

PAVEMENT DETAIL RAMPS C, D & DD @ REFUGEE ROAD NORTH

FHWA REGION	STATE	PROJECT	
5	OHIO		

129
254

FRANKLIN COUNTY
FRA - 104-10.97



NOTES:
FOR PAVEMENT JOINTS SEE STANDARD DRAWINGS BP-9
FOR LEGEND SEE SHEET 127

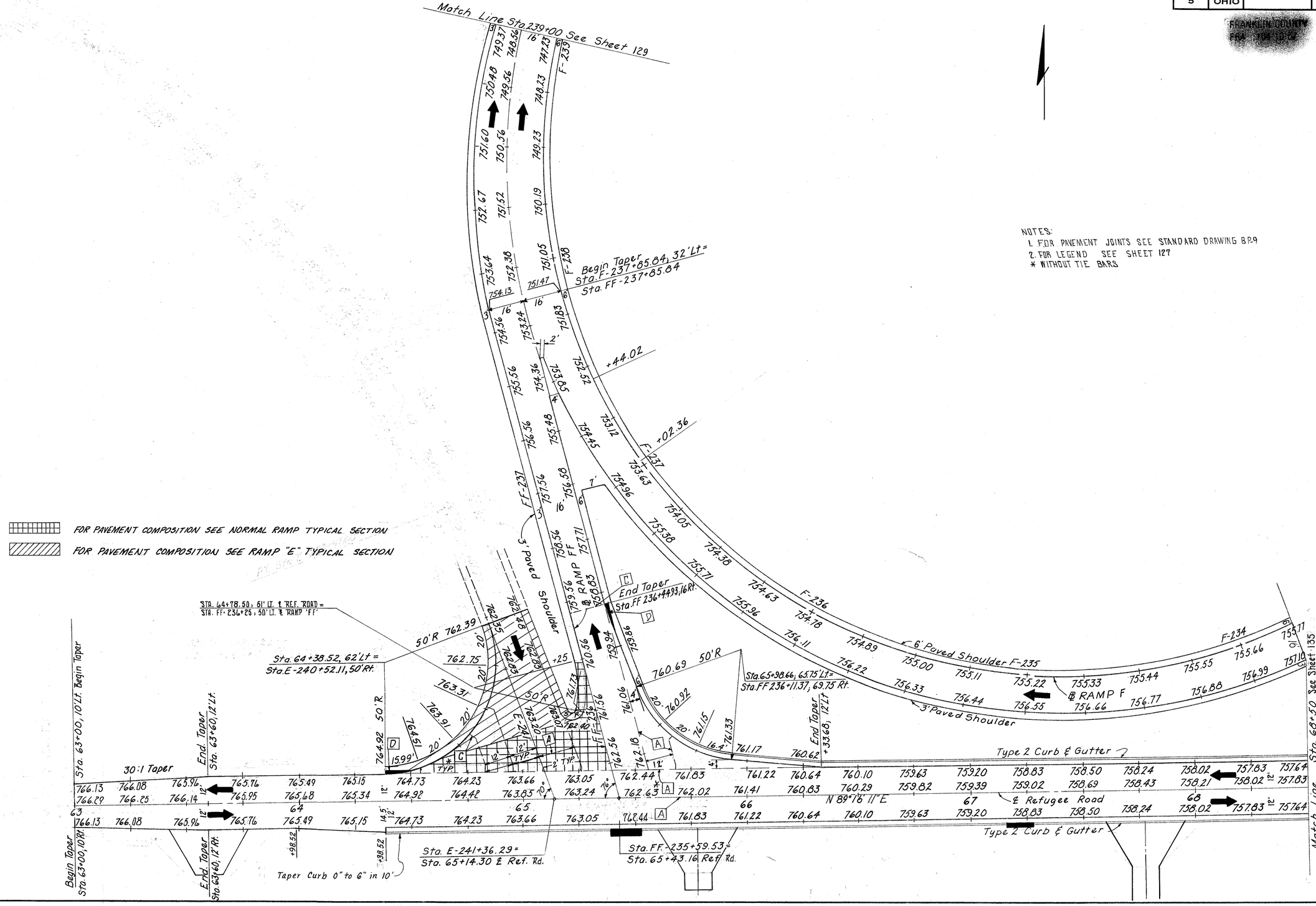
PAVEMENT DETAIL RAMP F ENTRANCE @ S.R. 104

FHWA REGION	STATE	PROJECT	
5	OHIO		

130
254

FRANKLIN COUNTY
FRA - 104-10.07

NOTES:
1. FOR PAVEMENT JOINTS SEE STANDARD DRAWING BP-9
2. FOR LEGEND SEE SHEET 127
* WITHOUT TIE BARS

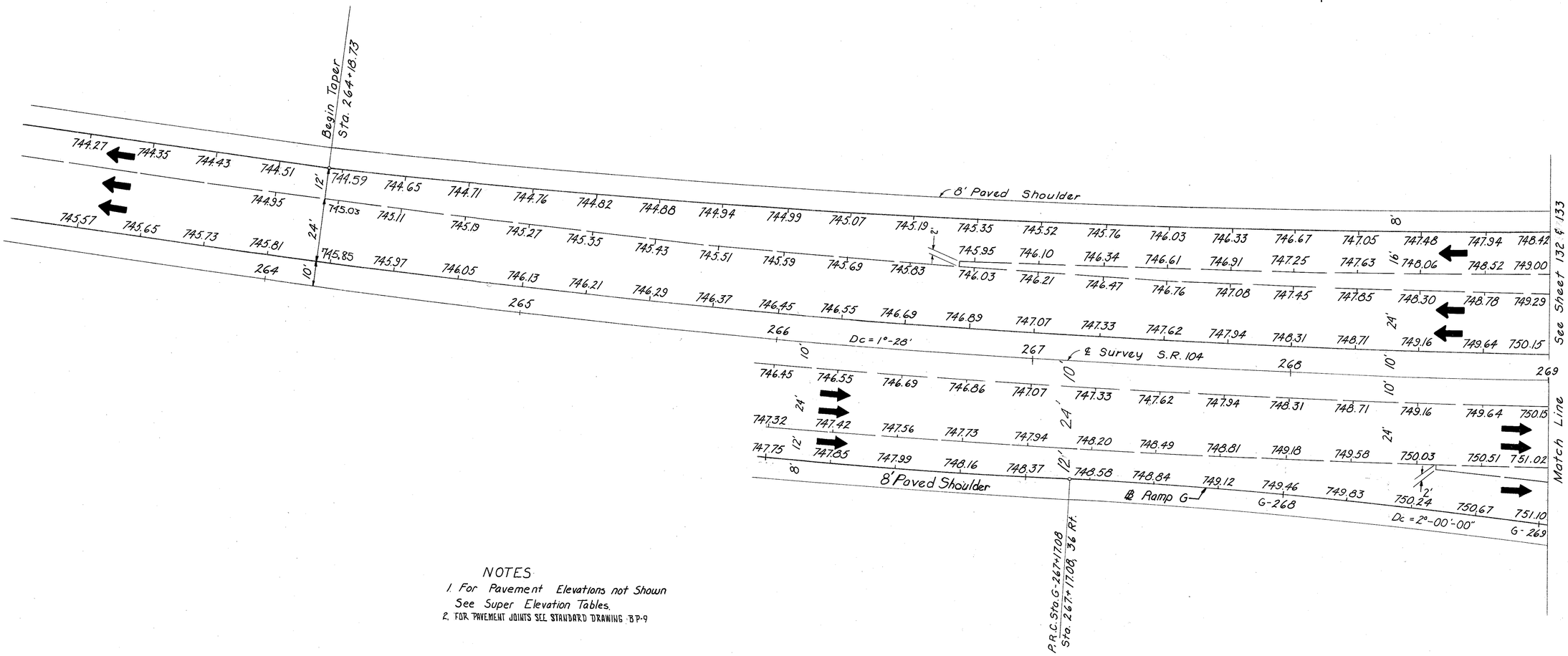


PAVEMENT DETAIL RAMPS E', 'F' & FF' @ REFUGEE ROAD

FHWA REGION	STATE	PROJECT	
5	OHIO		

131
254

FRANKLIN COUNTY
FRA - 104-10.57



NOTES

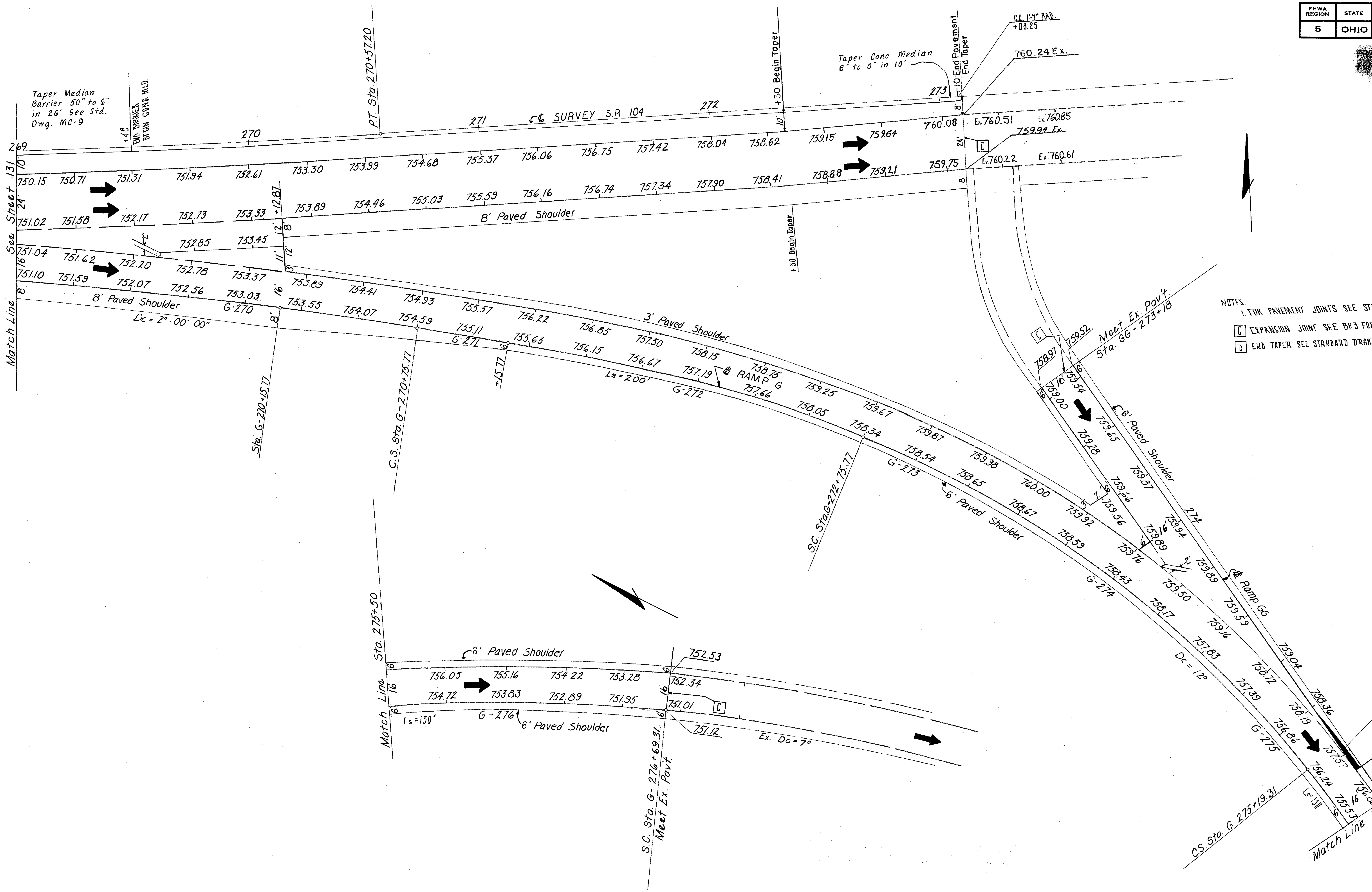
1. For Pavement Elevations not Shown See Super Elevation Tables.
2. FOR PAVEMENT JOINTS SEE STANDARD DRAWING BP-9

PAVEMENT DETAIL RAMP "G" EXIT + RAMP "H" ENTRANCE @ S.R. 104

FHWA REGION	STATE	PROJECT		
5	OHIO			

132/254

FRANKLIN COUNTY
FRA - 104-10.57



NOTES:
1. FOR PAVEMENT JOINTS SEE STANDARD DRAWING BP-9
[C] EXPANSION JOINT SEE BP-3 FOR JOINING EX. CONCRETE.
[D] END TAPER SEE STANDARD DRAWING BP-9

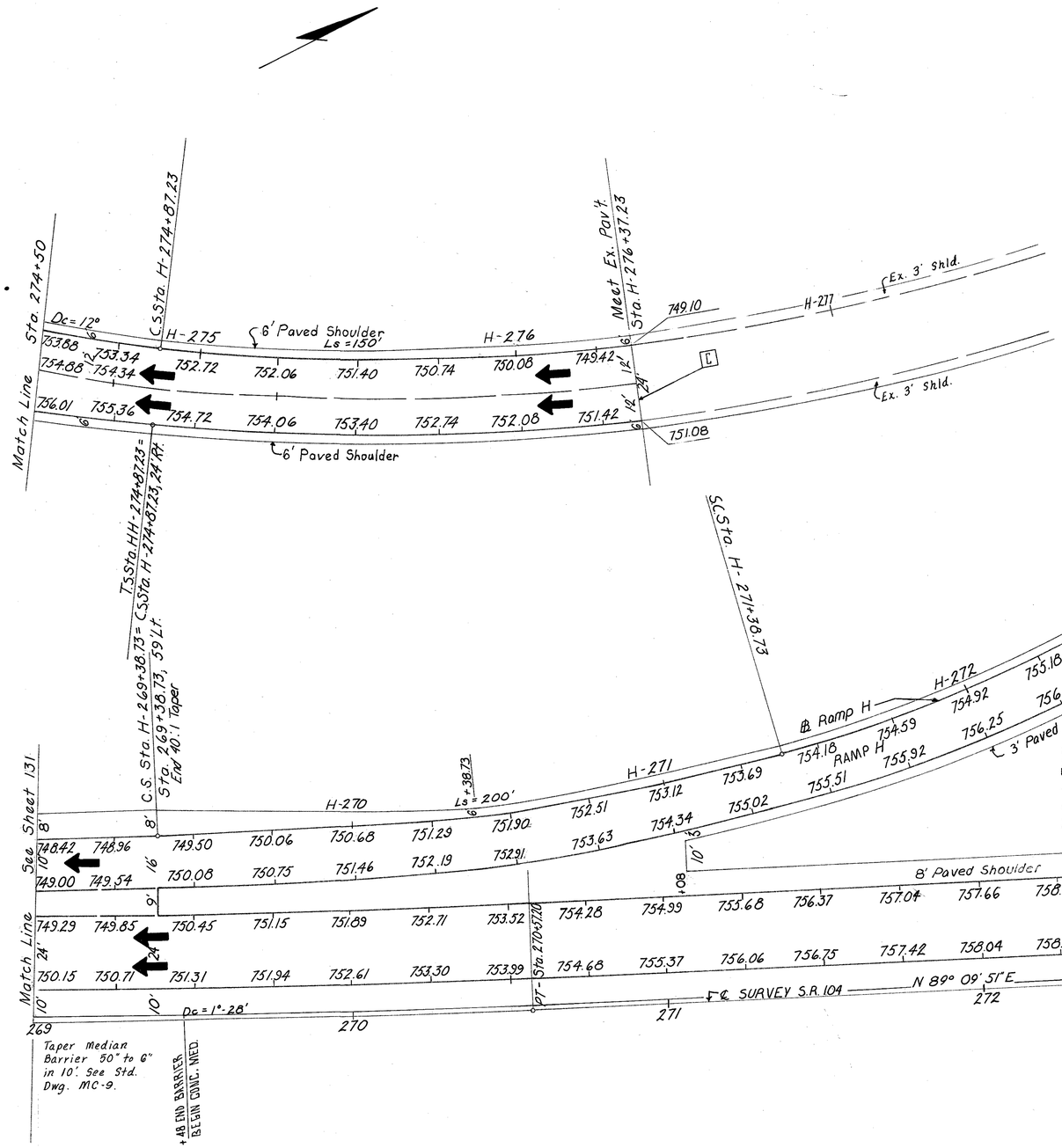
PAVEMENT DETAIL RAMP "G" + RAMP "GG" EXIT @ S.R. 104

FHWA REGION	STATE	PROJECT	
5	OHIO		

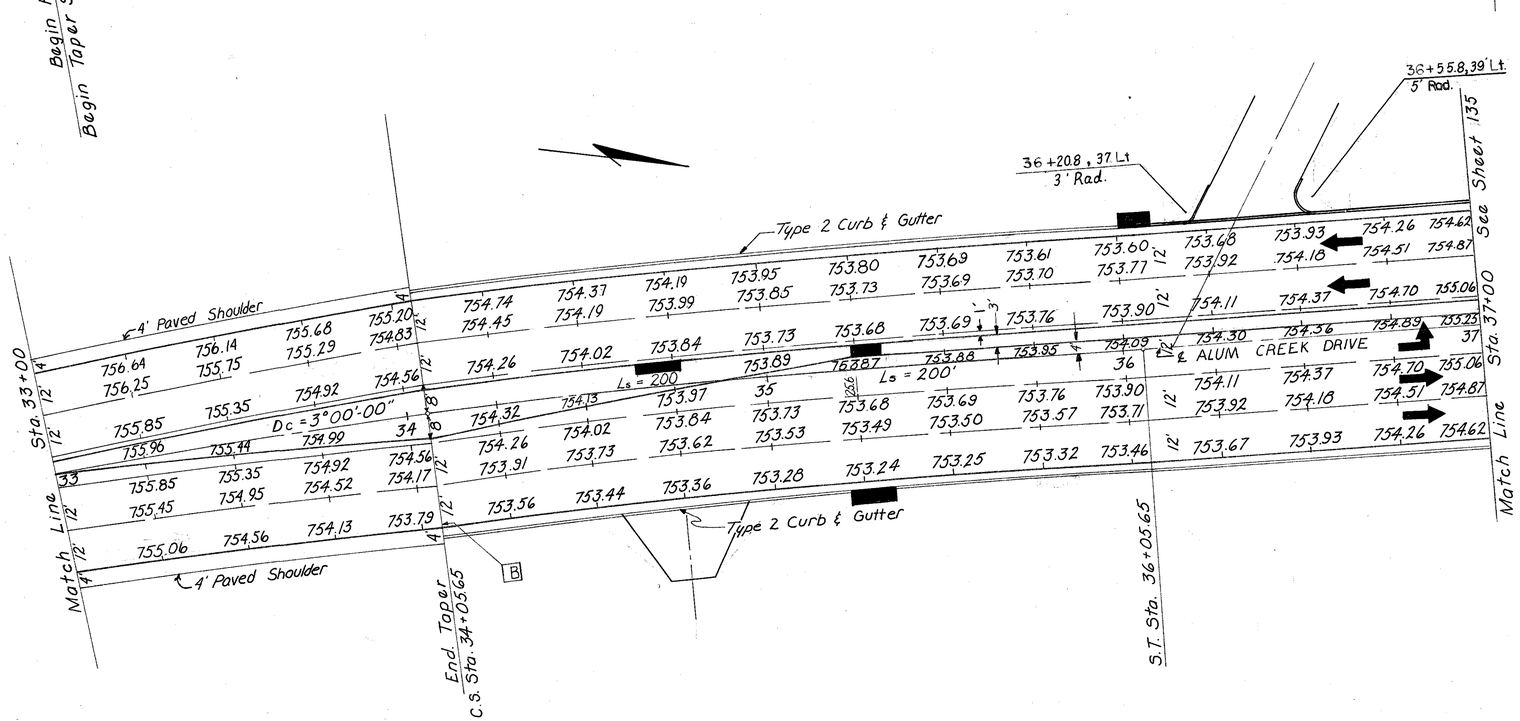
133
254

FRANKLIN COUNTY
FRA-104-10.57

NOTES:
1. FOR PAVEMENT JOINTS SEE STANDARD DRAWINGS BP-9
2. [C] EXPANSION JOINT SEE BP-3 FOR JOINING EX. CONCRETE



PAVEMENT DETAIL RAMP 'H' AND S.R. 104



FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA. 104-10.57

PAVEMENT DETAIL ALUM CREEK DRIVE Sta. 28+05.65 to 37+00


See Sheet 130
Match Line Sta. 68+50
Begin Taper Sta. 68+67.05 12' Rt.
End Taper Sta. 69+67.05, 24' Rt.
N 89° 16' 11" E
℄ REFUGEE ROAD
Type 2 Curb & Gutter
+23 ℄ Dr Δ=70° W=27'
+23 ℄ Dr Δ=61° W=27'
+44 ℄ Dr Δ=75° W=25
Sta. 38+90.25 82.02' Lt.
Sta. 69+94.56 62' Lt.
Sta. 37+52.10 82' Lt.
Sta. 70+18.75 74' Rt.
50' Rad.
S.C. Sta. F-232+09.10
6' Paved Shoulder
3' Paved Shoulder
F-233
F-232
F-230
Type 2 Curb & Gutter Ls = 250'
Taper Curb 6" to 0" in 10'
Begin Taper C.S. Sta. F-229+59.10 = Sta. 42+63.45, 44' Lt.
End Appr. Slab 42+70.61
Begin Appr. Slab 42+45.61
Dc = 2°-00'00"
℄ ALUM CREEK DR.
Ls = 150'
N10°-07'-45"W
80°36'-04"
Begin Taper Sta. 39+95.4 Rt.
Sta. 38+75.55' Rt - 1.5' R
Taper Median 0" to 6" in 10'
Taper Median 0" to 6" in 10'
See Sheet 134
Match Line
Sta. 38+13.53 ℄ ALUM CREEK DR
Sta. 70+89.62 ℄ REFUGEE RD
Sta. 38+62.80; 82' Rt.
Sta. 71+62.47, 62' Lt.
Sta. 37+37.11, 82' Rt.
Sta. 71+83.00, 62' Rt.
TAPER CURB 0" TO 6" IN 10'
N 89° 16' 11" E
12' (TYP.)

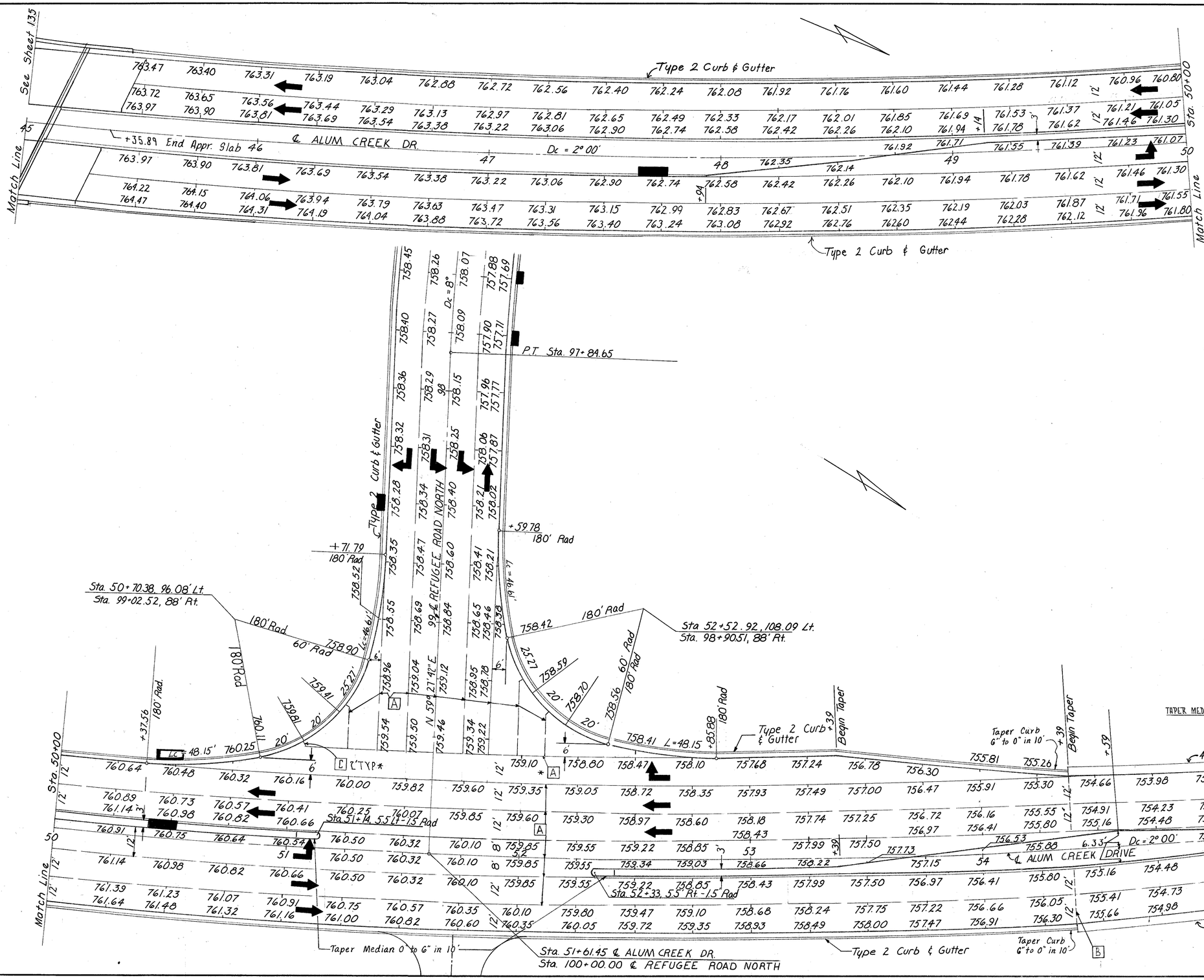
NOTES:
1. FOR PAVEMENT JOINTS SEE STANDARD DRAWING BP-9
 * WITHOUT TIE BARS
2. FOR LEGEND SEE SHEET 127

PAVEMENT DETAIL ALUM CREEK DRIVE Sta. 37+00 to 43+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

136
254

FRANKLIN COUNTY
FRA - 161-10.57



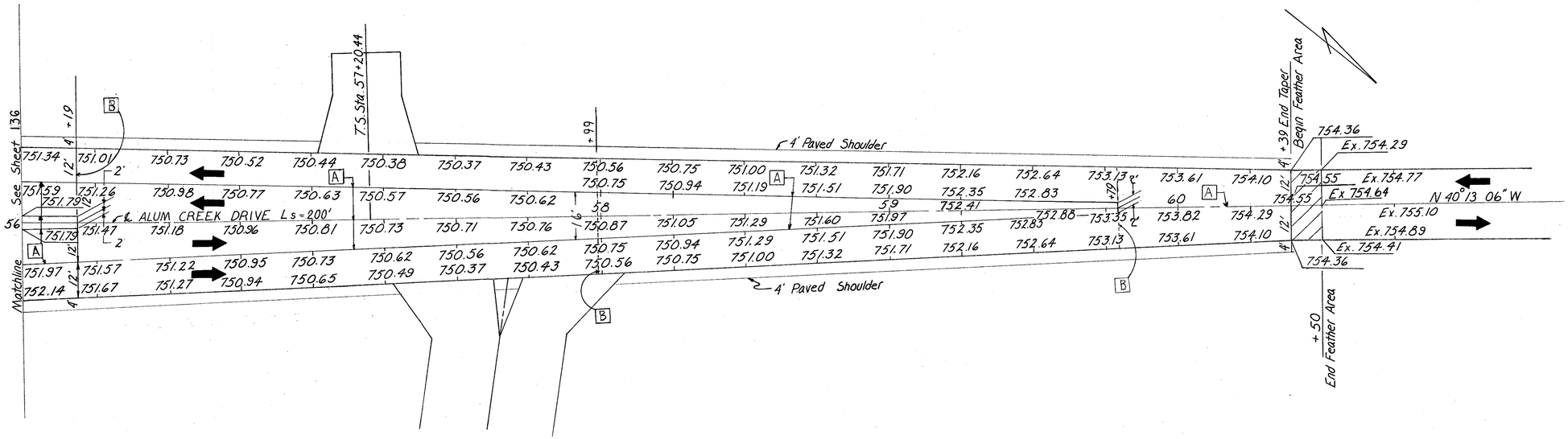
NOTES:
FOR PAVEMENT JOINTS SEE STANDARD DRAWINGS BP-9
FOR LEGEND SEE SHEET 127
* WITHOUT TIE BARS

PAVEMENT DETAIL ALUM CREEK DRIVE Sta. 46+00 to Sta. 56+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

137
254

FRANKLIN COUNTY
FRA 104 10.52



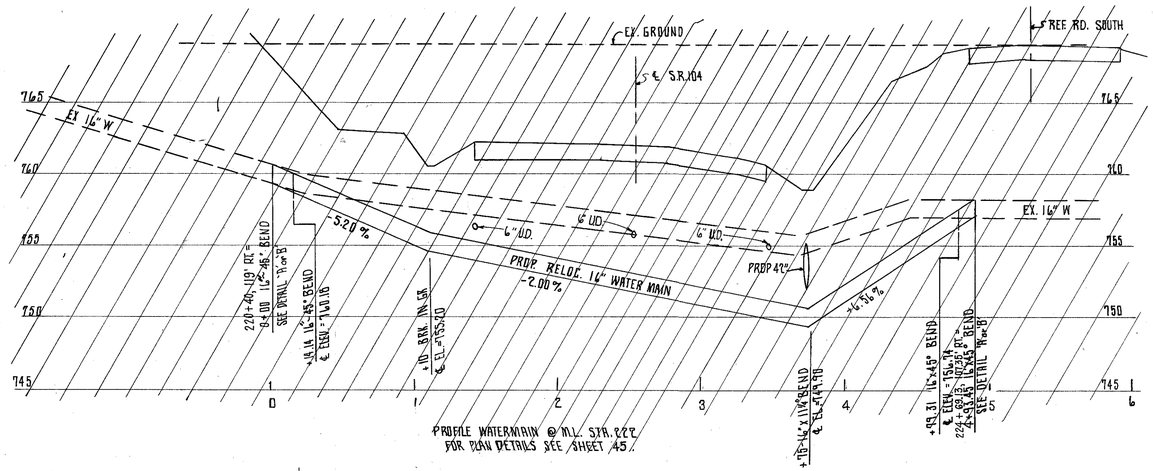
NOTES:
FOR PAVEMENT JOINTS SEE STANDARD DRAWING BP-9
FOR LEGEND SEE SHEET 127

PAVEMENT DETAIL ALUM CREEK DRIVE Sta. 56+00 to Sta. 60+50

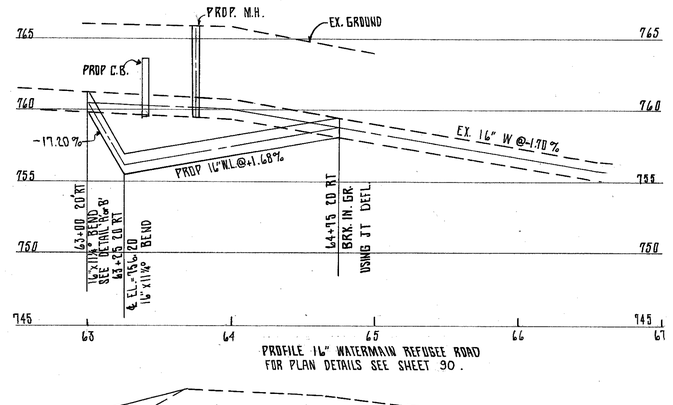
FHWA REGION	STATE	PROJECT	
5	OHIO		

138
254

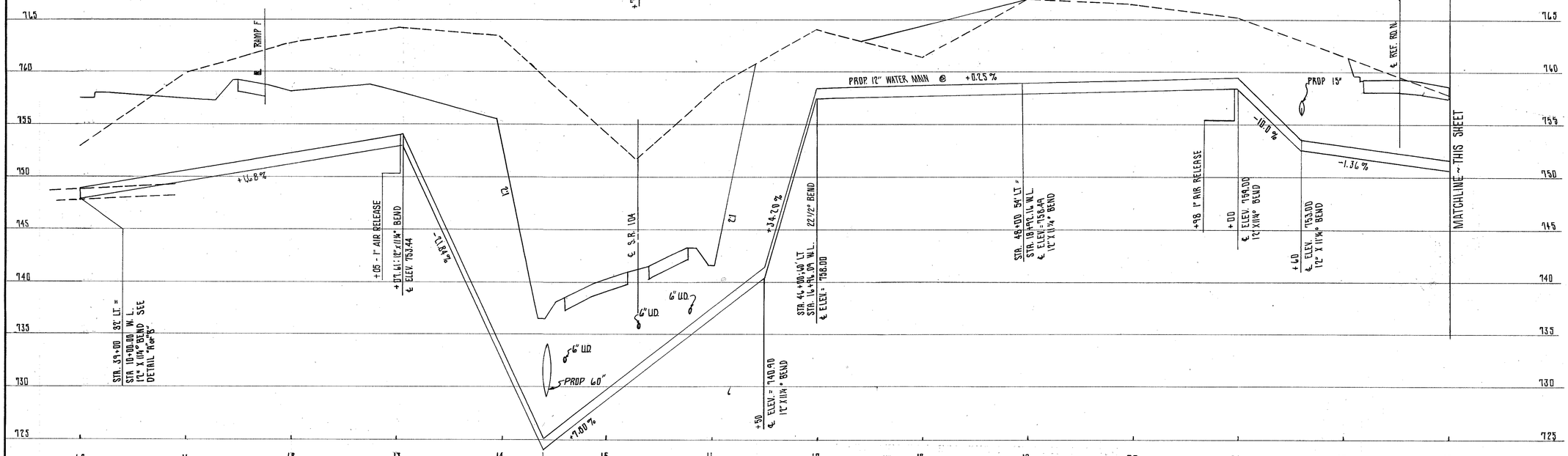
FRANKLIN COUNTY
FRA - 104-10.37



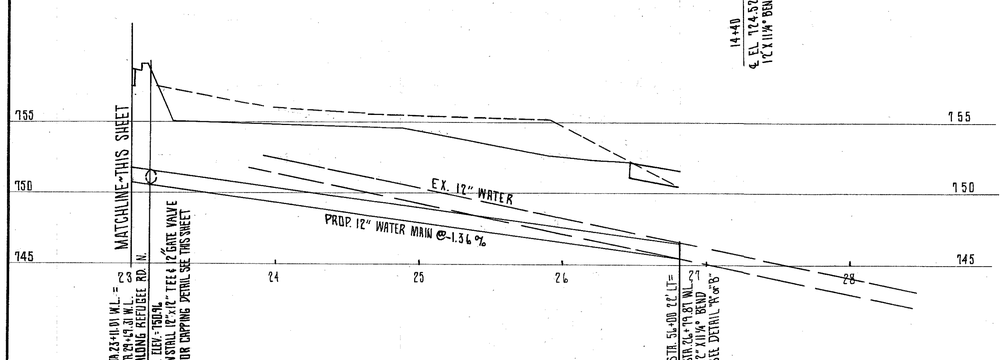
PROFILE WATERMAIN @ W.L. STA. 222
FOR PLAN DETAILS SEE SHEET 45.



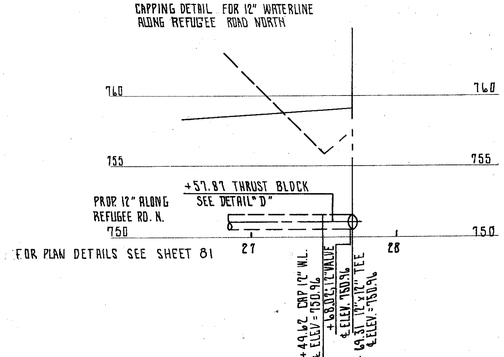
PROFILE 16" WATERMAIN REFUGEE ROAD
FOR PLAN DETAILS SEE SHEET 90.



PROFILE WATERMAIN ALUM CREEK DR STA. 39+00 TO STA. 54+00
FOR PLAN DETAILS SEE SHEETS 61, 62 & 63.



CAPPING DETAIL FOR 12" WATERLINE
ALONG REFUGEE ROAD NORTH



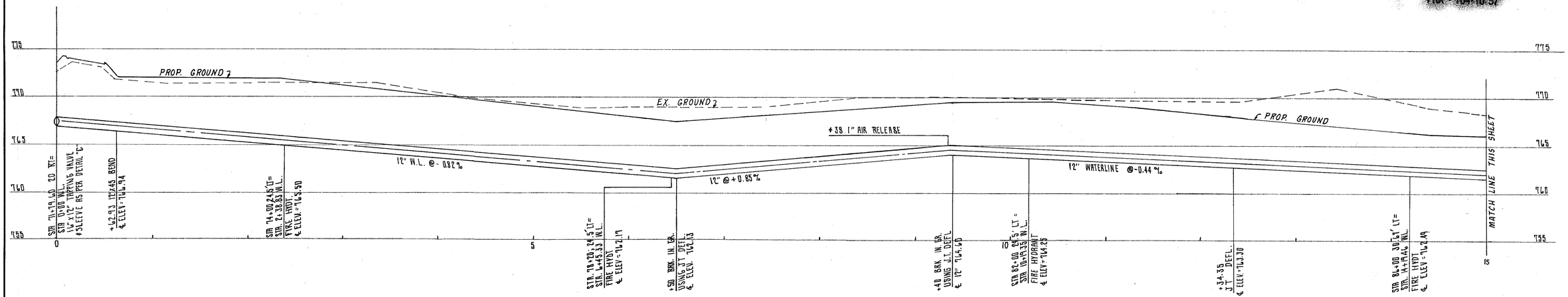
FOR PLAN DETAILS SEE SHEET 81

WATERLINE PROFILES
ALUM CREEK DR. & REF. RD. @ S.R. 104

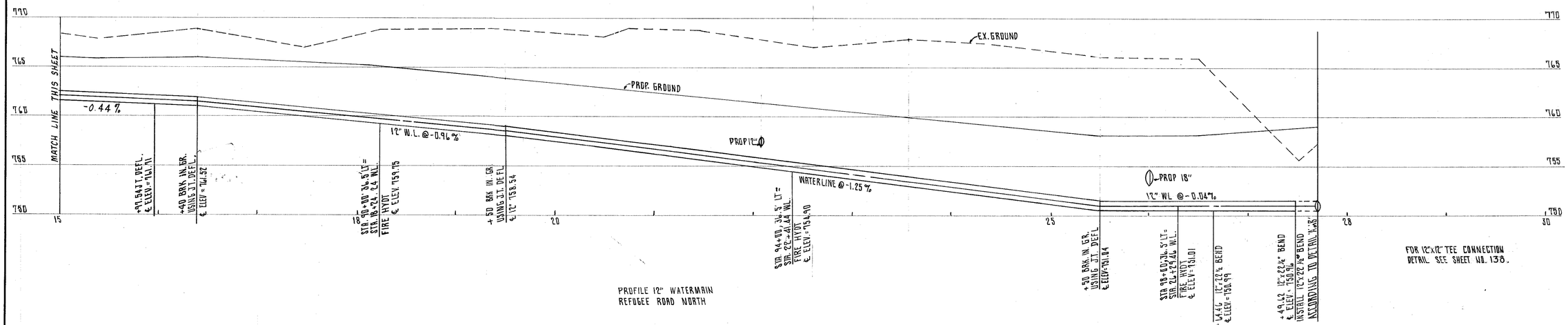
FHWA REGION	STATE	PROJECT	
5	OHIO		

139
254

FRANKLIN COUNTY
FRA-104-10.57



PROFILE 12" WATERMAIN
REFUGEE ROAD NORTH
FOR DETAILS SEE SHEETS 78, 79, 80 & 81.



FOR 12"x12" TEE CONNECTION
DETAIL SEE SHEET NO. 138.

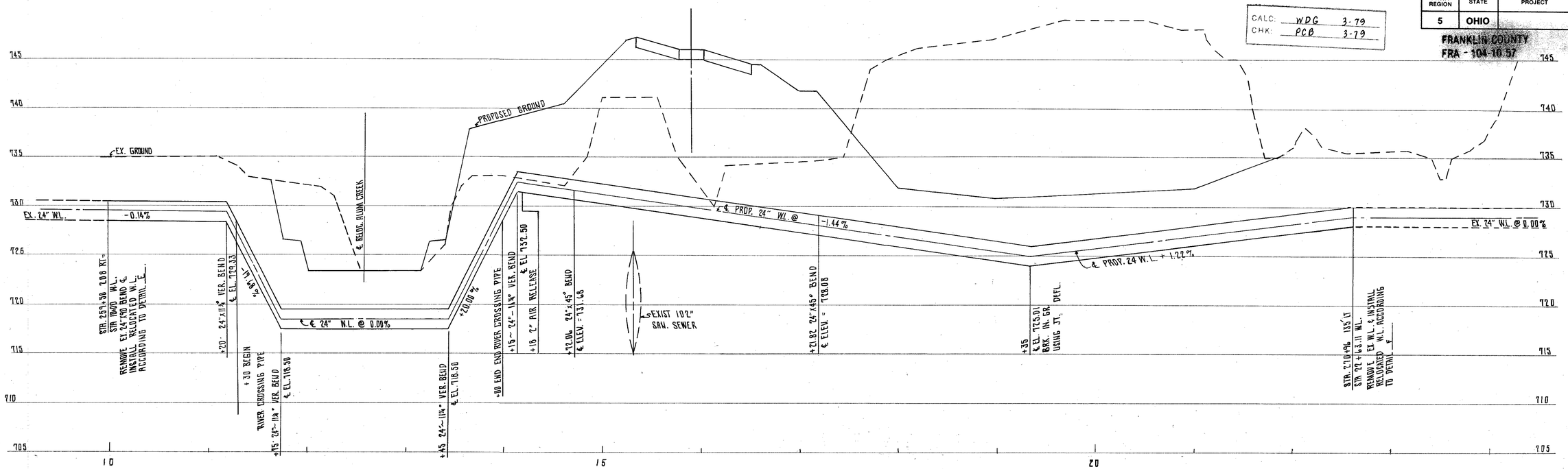
PROFILE 12" WATERMAIN
REFUGEE ROAD NORTH

WATERLINE PROFILE
REFUGEE ROAD NORTH

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA - 104-10.57

CALC: WDG 3-79
CHK: PCB 3-79



PROFILE 24" W.L. RELOC. 259+50 RT TO 270+96 LT
FOR PLAN DETAILS SEE SHEETS 48, 49 & 50.

SHEET NO.	STATION TO STATION	SIDE	ITEM SPEC. DUCTILE IRON WATER PIPE & FITTINGS						SPECIAL									SPECIAL							
			6"	12"	16"	24"			24" D.I. RIVER CROSSING PIPE	CONC. BLK. CLASS 'C'	6" VALVE & APPURT.	12" VALVE & APPURT.	16"x12" TAPPING SLEEVE & VALVE	IRON CASTINGS	VALVE BOXES ADJ. TO GRADE	FIRE HYDRANT			INCREASE OR DECREASE EXCAVATION	1" AIR RELEASE OUTLET	2" AIR RELEASE OUTLET	6" HYDT. EXT.	12" HYDT EXT.	18" HYDT EXT.	24" HYDT EXT.	
			L.F.	L.F.	L.F.	L.F.			L.F.	C.Y.	EA	EA	EA	LB	EA	EA			C.Y.	EA.	EA.	EA.	EA.	EA.	EA.	
	WATER LINE REFUGEE																									
138	ROAD STA 63+00 TO STA 69+75				175					1.76									8							
	WATERLINE ALUM CREEK																									
138	DRIVE STA 39+00 TO STA 56+00			1699.56						6.52		1							80	2						
	WATERLINE REFUGEE ROAD																									
139	NORTH STA 91+79.60 TO STA 99+13.25		28	2749.62						1.58	7		1	254		7			100	1		1	3	1	1	
	WATERLINE ML STA 259+50 TO STA																									
140	270+96					993.11			270	10.10									40		1					
	TOTALS CARRIED TO GENERAL SUMMARY		28	4449.18	175	993.11			270	19.96	7	1	1	254		7			228	3	1	1	3	1	1	

GENERAL NOTES

FHWA REGION	STATE	PROJECT	
5	OHIO		

141
254

FRANKLIN COUNTY
FRA-104-10.57

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

REFERENCES TO SUPPLEMENTAL SPECIFICATIONS 857, 858, 859, 957, 958, 959 AND 843 ON THE TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 630, 631, 632, 730, 731, 732 AND 861 & 961.

632 POWER SUPPLY FOR TRAFFIC SIGNALS

ELECTRIC POWER IS PRESENTLY BEING OBTAINED FROM THE COLUMBUS AND SOUTHERN OHIO ELECTRIC COMPANY FOR THE EXISTING TRAFFIC SIGNALS AT RAMPS "GG" & HH" WITH S.R. 104. POWER SHALL CONTINUE TO BE SUPPLIED BY COLUMBUS AND SOUTHERN OHIO ELECTRIC COMPANY TO THOSE TRAFFIC SIGNALS.

ELECTRIC POWER SHALL BE OBTAINED FROM THE CITY OF COLUMBUS ELECTRICITY DIVISION FOR THE TRAFFIC SIGNALS AT REFUGEE ROAD NORTH WITH ALUM CREEK DRIVE AT THE LOCATION INDICATED ON THE PLANS.

POWER SUPPLIED SHALL BE 120/240 VOLTS WITH NEUTRAL 3 CONDUCTOR.

630 REMOVAL OF GROUND MOUNTED SIGNS

GROUND MOUNTED SIGNS SHALL BE CAREFULLY REMOVED WHERE INDICATED ON THE PLANS. THE SIGNS SHALL BE RE-ERECTED ELSEWHERE ON THE PROJECT OR STORED ON THE PROJECT FOR SALVAGE BY CITY FORCES.

TO ASSURE MAINTENANCE OF ADEQUATE TRAFFIC CONTROL AT ALL TIMES, NO SIGNS SHALL BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

RE-ERECTION MAY REQUIRE FIELD DRILLING AND ANY NECESSARY HARDWARE SHALL BE FURNISHED.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH SIGN REMOVED AND STORED OR RE-ERECTED, CATEGORIZED AS MAJOR SIGNS (40 SQUARE FEET OR LARGER) OR OTHER SIGNS.

630 EACH REMOVAL OF GROUND MOUNTED MAJOR SIGN AND (STORAGE OR RE-ERECTION)

630 EACH REMOVAL OF GROUND MOUNTED SIGN AND (STORAGE OR RE-ERECTION)

630 REMOVAL OF GROUND MOUNTED SIGN SUPPORTS

GROUND MOUNTED SIGN SUPPORTS SHALL BE CAREFULLY REMOVED WHERE INDICATED ON THE PLANS AND STORED ON THE PROJECT FOR SALVAGE BY CITY FORCES. SUPPORTS SHALL BE REMOVED WITH CARE TO AVOID DAMAGING. FOUNDATIONS FOR SUPPORTS SHALL BE REMOVED TO AT LEAST ONE FOOT BELOW GROUNDLINE WITH BACKFILLING, RESTORATION OF SURFACES AND DISPOSAL OF SURPLUS MATERIAL IN ACCORDANCE WITH 603.09.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH SUPPORT REMOVED AND STORED, CATEGORIZED AS BEAM OR POST (NO. 8 AND SMALLER).

630 EACH REMOVAL OF GROUND MOUNTED BEAM SUPPORT

630 EACH REMOVAL OF GROUND MOUNTED POST SUPPORT

630 REMOVAL OF OVERHEAD MOUNTED SIGNS

OVERHEAD MOUNTED SIGNS SHALL BE CAREFULLY REMOVED WHERE INDICATED ON THE PLANS. THE SIGNS SHALL BE RE-ERECTED ELSEWHERE ON THE PROJECT OR STORED ON THE PROJECT FOR SALVAGE BY CITY FORCES.

TO ASSURE MAINTENANCE OF ADEQUATE TRAFFIC CONTROL AT ALL TIMES, NO SIGNS SHALL BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

SIGNS TO BE RE-ERECTED MAY REQUIRE NEW HARDWARE AND SIGN BRACKETS SHALL BE REDRILLED WHEN NECESSARY.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH SIGN REMOVED AND CATEGORIZED AS STORED OR RE-ERECTED.

630 EACH REMOVAL OF OVERHEAD MOUNTED SIGN AND (STORAGE OR RE-ERECTED)

630 REMOVAL OF OVERHEAD SIGN SUPPORTS, BY TYPE

OVERHEAD SIGN SUPPORTS SHALL BE REMOVED WHERE INDICATED ON THE PLANS. SUPPORTS SHALL BE CAREFULLY DISMANTLED, REMOVED, AND STORED ON THE PROJECT FOR SALVAGE BY CITY FORCES. SUPPORT FOUNDATIONS SHALL BE REMOVED TO AT LEAST ONE FOOT BELOW GROUNDLINE WITH BACKFILLING, RESTORATION OF SURFACES AND DISPOSAL OF SURPLUS MATERIAL IN ACCORDANCE WITH 603.09.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH SUPPORT REMOVED AND CATEGORIZED AS STORED, BY TYPE.

630 EACH REMOVAL OF OVERHEAD SIGN SUPPORT AND (STORAGE BY TYPE)

631 REMOVAL OF SIGN LIGHTING LUMINAIRES

LUMINAIRES OR FIXTURES FOR SIGN LIGHTING SHALL BE CAREFULLY REMOVED WHERE INDICATED ON THE PLANS. LUMINAIRES SHALL BE RE-ERECTED ON ANOTHER SUPPORT IN THE PROJECT OR STORED ON THE PROJECT FOR SALVAGE BY CITY FORCES.

LUMINAIRES TO BE RE-ERECTED SHALL BE REPARED, WHEN REQUIRED, CLEANED, AND RELAMPED WITH THE PROPER TYPE AND SIZE IN ACCORDANCE WITH SPECIFICATION 631, AND PROVIDED WITH NEW MOUNTING HARDWARE AS REQUIRED.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH LUMINAIRE, REMOVED AND CATEGORIZED AS STORED OR RE-ERECTED.

631 EACH REMOVAL OF SIGN LIGHTING LUMINAIRE AND (STORAGE OR RE-ERECTION)

ITEM SPECIAL – SAND BARREL IMPACT ATTENUATOR (14 MODULE ARRAY, AS PER PLAN)

THIS WORK SHALL CONSIST OF AN IMPACT ATTENUATOR COMPOSED OF FRANGIBLE PLASTIC BARRELS FILLED WITH SAND IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND PLACED TO CONFORM TO THE DESIGN SHOWN ON THE PLANS.

THE BARRELS SHALL BE AS SUPPLIED BY FIBCO, INC., ONE BOSTON PLACE, BOSTON, MASS. (FITCH BARRELS) OR ENERGY ABSORPTION SYSTEMS, INC., ONE IBM PLAZA, CHICAGO, ILLINOIS (ENERGITE BARRELS).

THE AXIS OF ORIENTATION OF BARRELS IS TO BE FROM CENTER OF OBSTACLE TO BEGINNING OF SPLIT, UNLESS OTHERWISE NOTED ON THE PLANS. THE CONTRACTOR SHALL, PRIOR TO FILLING THE BARRELS, OUTLINE IN YELLOW SPRAY-TYPE PAINT THE LOCATION OF EACH MODULE AND PAINT THE RESPECTIVE SAND WEIGHTS (MINIMUM HEIGHT OF NUMBERS – 6") INSIDE SAID OUTLINE AS INDICATED ON PLAN SHEETS. THE CONTRACTOR SHALL DRILL HOLES IN THE RIM AND BARREL AT FOUR EQUI-DISTANT POINTS AND POP-RIVET THE TOP TO THE BARREL.

THE SAND PLACED IN THE BARRELS SHALL BE APPROVED BY THE ENGINEER BEFORE USE. THE CONTRACTOR SHALL USE WASHED CONCRETE SAND, SPEC. 703.02 (GRADATION ONLY) WITH A WATER CONTENT BY WEIGHT OF TWO (2) % OR LESS. SAND PLACED WITHIN THE BARRELS SHALL HAVE A DENSITY BETWEEN 90–100 LBS. PER CU.FT.

THE ACCEPTED QUANTITY OF IMPACT ATTENUATORS WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH MODULE ARRAY WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING AND PLACING ALL MATERIALS IN ACCORDANCE WITH THE PLAN DETAIL SHEETS, INCLUDING ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL SAND BARREL IMPACT ATTENUATOR.

AT LOCATIONS WHERE THE ENGINEER DETERMINES THE PAVEMENT SLOPE AND/OR VIBRATIONS FROM TRUCKS MAY CAUSE RELOCATION OF BARRELS, THE CONTRACTOR SHALL INSTALL FIBCO MODULE LOCATING HALF RINGS OR APPROVED EQUAL, TO PREVENT MOVEMENT OF THE BARRELS. AN ESTIMATED QUANTITY OF (12) TWELVE ATTENUATOR LOCATING HALF RINGS ARE PROVIDED IN THE GENERAL SUMMARY.

TO DETER FREEZING OF SAND IN THE BARRELS, A SALT BRINE SOLUTION SHALL BE ADDED UNIFORMLY TO THE SAND FOLLOWING EACH LAYER OF SAND OF A MAXIMUM HEIGHT OF 6.5 INCHES. THE SOLUTION SHALL CONTAIN ONE POUND OF SALT (97% PURE NaCl) FOR EVERY 5 POUNDS OF WATER. EQUAL AMOUNT OF SAID SOLUTION SHALL BE ADDED TO EACH LAYER OF SAND PLACED IN THE BARRELS. THE TOTAL AMOUNT OF SALT BRINE SOLUTION ADDED TO EACH BARREL SHALL BE 5% OF THE SAND WEIGHT PER RESPECTIVE BARREL. THE SALT BRINE SOLUTION SHALL BE UNIFORMLY SPRINKLED OR SPRAYED OVER THE SURFACE OF EACH LAYER OF SAND.

AN ALTERNATIVE METHOD WOULD BE TO PRE-MIX, WITH THE SAME PROPORTIONS AS STATED ABOVE, THE SAND AND THE SALT BRINE SOLUTION BY AGITATION OR OTHER METHODS WHICH WOULD ACHIEVE A THOROUGH BLEND OF MATERIALS.

~~631 SIGN SERVICE~~

~~IN LIEU OF THE REQUIREMENTS OF 631.06, CABLE FOR SIGN SERVICE SHALL BE RATED THE SAME AS THE HIGHWAY LIGHTING DISTRIBUTION AND CIRCUIT CABLE USED ON THIS PROJECT~~

~~631 FOUNDATION CONDUIT~~

~~UNLESS OTHERWISE DETAILED IN THE PLANS, ALL SIGN SUPPORT OR SIGNAL SUPPORT FOUNDATIONS SHALL CONTAIN A MINIMUM OF ONE 2 INCH CAPPED CONDUIT ELL IN CONFORMANCE WITH STANDARD CONSTRUCTION DRAWING TC-21.20.~~

631 SIGNAL CONTROLLER CABINET MOUNTING

IN LIEU OF THE DETAILS SHOWN ON STANDARD CONSTRUCTION DRAWING TC-83.10, THE CONTROLLER CABINET AT STA. 39+00, 62' LT. ALUM CREEK DRIVE SHALL BE MOUNTED AS SHOWN IN DETAIL ON SHEET 178. THE BLIND HALF COUPLING FOR THE 2-1/2" L.B. SHALL BE CENTERED 6" BELOW THE BOTTOM OF THE HANDHOLE FRAME AND AT 90° TO THE HANDHOLE.

608-4" CONCRETE WALK, AS PER PLAN

A QUANTITY OF 12 SQ. FT. OF 4" CONCRETE WALK, AS PER PLAN, IS INCLUDED FOR USE WHEN DIRECTED BY THE ENGINEER. THIS IS TO PROVIDE 4 FT. X 3 FT. PLATFORMS NEAR POLE OR PEDESTAL MOUNTED SIGNAL CONTROL CABINETS IN UNPAVED AREAS, FROM WHICH SIGNAL MAINTENANCE PERSONNEL CAN CONVENIENTLY REACH THE SIGNAL EQUIPMENT FOR SERVICE.

631 ENCLOSURE PADLOCKS

DISCONNECT SWITCH ENCLOSURES FURNISHED IN ACCORDANCE WITH SPECIFICATION 631.08 SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNON 669, WITH LOCK BODY OF BRONZE OR BRASS, AND KEYING IN ACCORDANCE WITH THE FOREGOING SPECIFICATION.

632 REMOVAL OF EXISTING TRAFFIC SIGNAL INSTALLATION

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, MESSENGER WIRE, STRAIN POLES, CABINET, CONTROLLER, ETC., SHALL BE REMOVED AS INDICATED ON THE PLANS. SUPPORT FOUNDATIONS SHALL BE REMOVED TO AT LEAST ONE FOOT BELOW GROUNDLINE WITH BACKFILLING, RESTORATION OF SURFACES AND DISPOSAL OF SURPLUS MATERIAL IN ACCORDANCE WITH 603.09. REMOVED ITEMS SHALL BE STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF COLUMBUS, IN ACCORDANCE WITH THE LISTING GIVEN HEREIN. IN ACCORDANCE WITH 614.03, ITEMS SHALL NOT BE REMOVED UNTIL A NEW OR TEMPORARY SIGNAL INSTALLATION IS IN OPERATION, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. AN EXCEPTION SHALL BE ITEMS WHICH MUST BE REMOVED TO PERMIT CONSTRUCTION OF THE NEW INSTALLATION. ITEMS TO BE STORED SHALL BE SUITABLY PROTECTED.

THE FOLLOWING ITEMS ARE TO BE STORED: SIGNAL HEADS, STRAIN POLES, CONTROLLER AND RELATED EQUIPMENT.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH EXISTING TRAFFIC SIGNAL INSTALLATION REMOVED.

GENERAL NOTES

632 EACH . REMOVAL OF EXISTING TRAFFIC SIGNAL INSTALLATION.

THE REMOVAL OF THE EXISTING TRAFFIC SIGNAL AT THE INTERSECTION OF ALUM CREEK DRIVE AND REFUGEE ROAD SHALL BE COORDINATED WITH THE MAINTENANCE OF TRAFFIC AS APPROVED BY THE ENGINEER. FOR MAINTENANCE OF TRAFFIC SEE SHEET 19. THE REMOVAL OF THIS SIGNAL INSTALLATION HAS BEEN PROVIDED FOR IN THE GENERAL SUMMARY.

THE CONTRACTOR SHALL NOTIFY THE SYSTEM ENGINEER, CITY OF COLUMBUS DIVISION OF TRAFFIC, AT 222-8203 AT LEAST 48 HOUPS PRIOR TO REMOVAL OF EXISTING INSTALLATION.

632 INSTALLATION OF NEW OR TEMPORARY TRAFFIC SIGNAL

THE SIGNAL SHALL FLASH FOR 7 CONSECUTIVE DAYS BEFORE IT IS PLACED IN REGULAR OPERATION. THE SYSTEMS ENGINEER, CITY OF COLUMBUS, SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO REGULAR OPEPATION OF THE SIGNAL AT 222-8203. THE FLASH REQUIREMENT SHALL BE WAIVED AT TEMP. RD. 'A' & REFUGEE ONLY IF THE CITY CONTROLLER & CABINET ARE USED, THE SYSTEMS ENGINEER, CITY OF COLUMBUS, SHALL BE NOTIFIED ONE WEEK PRIOR TO THE START OF THE TEN (10) DAY TEST FOR THE SIGNAL AT ALUM CREEK & REFUGEE ROAD NORTH.

TEMPORARY DRUMS FOR 641, INCLUDING ALL ATTACHED POSTS, SIGNS, DELINEATORS, ETC., SHALL BE REMOVED AND DISPOSED OF AND THE SITE CLEANED FOR USE BY TRAFFIC.

TO ASSURE MAINTENANCE OF ADEQUATE TRAFFIC CONTROL AT ALL TIMES, NO ITEMS SHALL BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH EXISTING DRUM REMOVED AND DISPOSED OF.

212 EACH REMOVAL OF EXISTING TEMPORARY DRUMS

630 SIGN HANGER ASSEMBLY

SIGNS MOUNTED ON SPAN WIRE OR MAST ARMS SHALL BE ATTACHED BY AN ASSEMBLY CONSISTING OF ALL PARTS NECESSARY TO ATTACH AN INDIVIDUAL SIGN TO THE SPAN WIRE OR MAST ARM AS SHOWN ON SHEET 18.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH SIGN HANGER ASSEMBLY FURNISHED AND INSTALLED.

630 EACH SPAN WIRE SIGN HANGER ASSEMBLY

630 EACH MAST ARM SIGN HANGER ASSEMBLY

ITEM SPECIAL RUMBLE STRIP

THE PROPOSED RUMBLE STRIPS SHALL CONSIST OF PARALLEL GROOVES CUT AT ONE (1) FOOT CENTER TO CENTER.

EACH GROOVE SHALL BE CUT TO A DEPTH OF APPROXIMATELY 3/8 INCH, WITH ALLOWANCE FOR PAVEMENT SURFACE IRREGULARITIES AND VARIATIONS. WIDTH OF THE GROOVE AT THE PAVEMENT SURFACE IS TO BE 4 INCHES, WITH TAPERED SIDES SUCH THAT GROOVE WIDTH AT THE BOTTOM IS APPROXIMATELY 3 1/2 INCHES. CONSTRUCTION METHODS OTHER THAN SAW CUTTINGS MUST BE APPROVED BY THE ENGINEER PRIOR TO USE.

THE RUMBLE STRIP SHALL BE PLACED ACCORDING TO THE DETAIL SHOWN ON SHEET NO. 148 BASIS OF PAYMENT FOR RUMBLE STRIPS WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID.

PAYMENT WILL BE MADE UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	LUMP.	RUMBLE STRIP

630 EXISTING SIGN PANELS REVISED WITH DEMOUNTABLE COPY

IN ADDITION TO THE PROVISIONS OF SUPPLEMENTAL SPECIFICATION 630.09, ANY SINGLE REVISED LINE OF LEGEND SHALL HAVE ALL NEW COPY AND BUTTONS, OR ALL SALVAGED COPY AND BUTTONS.

1 1/2" VARIABLE LENGTH DROP PIPE FOR SUSPENDED SIGNAL HEADS

THE CONTRACTOR SHALL HAVE APPROVAL FROM THE SYSTEMS ENGINEER, CITY OF COLUMBUS, DIVISION OF TRAFFIC, FOR ANY DROP PIPE IN EXCESS OF SIX (6) INCHES.

631-SIGN LIGHTING

SIGN LIGHTING SHALL CONFORM TO ITEM 631 AND STANDARD CONSTRUCTION DRAWING TC-31.21 EXCEPT THAT ALL MERCURY VAPOR LUMINAIRES, SUPPORT ARMS AND MOUNTING TUBES SHALL BE INSTALLED AT THE TOP OF THE SIGN. SEE DETAIL, SHEET 148.

PAYMENT SHALL BE MADE UNDER "ITEM 631 - MERCURY VAPOR LUMINAIRE, TYPE TC-31.21, WITH 100 WATT LAMP, MODIFIED" AND UNDER ITEM 631 - MERCURY VAPOR LUMINAIRE, TYPE TC-31.21, WITH 175 WATT LAMP, MODIFIED".

CONTROLLER, ACTUATED, 2 PHASE, SOLID STATE DIGITAL MICROPROCESSOR

IN ADDITION TO THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 861, THE CONTROLLER ASSEMBLY SHALL CONFORM TO OR EXCEED NEMA STANDARDS PUBLICATION NO. TS 1-1983. THE UNIT SHALL HAVE THE FOLLOWING CAPABILITIES.

A. FULL-TRAFFIC-ACTUATED UNIT.
B. SOLID STATE, MICROPROCESSOR
C. DIGITAL TIMING-THUMBWHEEL SWITCHES OR PROGRAMMING PINS SHALL BE THE ONLY METHOD ACCEPTABLE TO SET THE TIMING INTERVALS.
D. INCREMENTS FOR TIMING SHALL BE EITHER IN ONE SECOND OR ONE-TENTH OF A SECOND INTERVALS.
E. PLUG-IN MODULAR DESIGN-MODULES SHALL NOT REQUIRE SPECIAL TOOLS FOR INSERTION INTO THE MAIN FRAME.
F. EXPANDABLE TO THREE PHASES.
G. BE CAPABLE OF PROVIDING AT LEAST TWO OVERLAP COMBINATIONS WHICH SHALL BE GENERATED INTERNALLY AND SHALL NOT REQUIRE ANY EXTERNAL LOGIC.
H. BE CAPABLE OF SKIPPING ANY PHASE WHICH DOES NOT HAVE A DEMAND REGISTERED.
I. LAST VEHICLE PASSAGE.
J. VOLUME-DENSITY PHASE MODULES.

ALL POSSIBLE SIGNAL OUTPUTS SHALL BE MONITORED FOR ANY NON-COMPATIBLE MOVEMENT CONFLICTS. A CONFLICT SHALL CAUSE THE INTERSECTION TO BE PLACED IN THE FLASHING MODE. ALL POWER FROM THE LOAD SWITCHES TO THE SIGNAL INDICATIONS SHALL BE DISRUPTED.

THE 24 VDC CONTROLLER POWER SUPPLY VOLTAGE AND THE CONTROLLER UNIT VOLTAGE MONITOR OUTPUT SHALL BE MONITORED. ANY UNSATISFACTORY VOLTAGE AS DETERMINED BY THE REQUIREMENTS OF THE CONTROLLER UNIT SHALL CAUSE THE INTERSECTION SIGNALS TO GO ON FLASH.

THE SIGNAL-VOLTAGE MONITOR SHALL CONFORM TO NEMA STANDARDS PUBLICATION NO. TS 1-1983, INCLUDING ALL REVISIONS.

THE MONITOR SHALL BE CAPABLE OF INDICATING THE STATUS OF THE CONTROLLER UNIT IF A CONFLICT OCCURS. THE INFORMATION FROM THE MONITOR SHALL BE SUCH THAT THE CAUSE OF THE CONFLICT CAN BE DETERMINED AND CORRECTED.

AFTER A POWER INTERRUPTION OF ONE SECOND OR GREATER THE CONTROLLER ASSEMBLY, UPON RESTORATION OF POWER, SHALL CAUSE THE INTERSECTION SIGNALS TO FLASH FOR AT LEAST 10 SECONDS. AFTER THE FLASH INTERVAL HAS EXPIRED THE CONTROLLER UNIT SHALL REVERT TO ITS START-UP SEQUENCE. OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' FLASH OPERATION SHALL BE MAINTAINED.

THE CABINET SHALL HAVE AMPLE ROOM FOR THE CONTROLLER UNIT AND ALL AUXILIARY EQUIPMENT. IF A BASE MOUNTED CABINET IS USED, THEN THE ANCHOR BOLTS SHALL HAVE THEIR ENTIRE LENGTH GALVANIZED. THE CABINET SHALL HAVE A POLICE DOOR WITH A BRASS KEY LOCK. THE MAIN DOOR LOCK SHALL BE A CYLINDER TYPE LOCK WITH A NO. 2 KEY. THE POLICE DOOR SHALL HOUSE A SIGNAL SHUT DOWN SWITCH AND A FLASH CONTROL SWITCH. TWO KEYS SHALL BE PROVIDED FOR EACH LOCK. THE SIGNAL SHUT DOWN SWITCH SHALL BE RATED AT 15 AMPS.

THE CABINET SHALL BE SUPPLIED WITH A THERMOSTATICALLY CONTROLLED FAN AND A FILTER VENT. THE CABINET SHALL BE ABLE TO HOUSE A CONTROLLER UNIT WITH DIMENSIONS OF WIDTH 27", HEIGHT 21", AND DEPTH 14 1/2".

THE CABINET SHALL HAVE THE FOLLOWING ACCESSORIES:

A. THYRECTOR SURGE PROTECTOR WITH RMS INPUT 150V, INPUT PEAK 210V ACROSS AC INPUT POWER LINE.
B. 50 AMP LINE FILTER.
C. TWO CIRCUIT SOLID STATE FLASHER, 15 AMPS PER CIRCUIT.
D. SOLID STATE SWITCHING FOR ALL SIGNAL CIRCUITS. THE LOAD SWITCHES SHALL HAVE INDICATOR LIGHTS FOR EACH SIGNAL OUTPUT.
E. TERMINAL BLOCKS FOR WIRE TERMINATIONS.
F. FLASH TRANSFER RELAYS.
G. TWO 25 AMP CIRCUIT BREAKERS. ONE CIRCUIT BREAKER SHALL BE WIRED FOR PEDESTRIAN SIGNAL LOAD ONLY, THE OTHER CIRCUIT BREAKER SHALL BE WIRED FOR ALL OTHER ELECTRICAL COMPONENTS.
H. CONVENIENCE OUTLET W/INCANDESCENT LAMP W/OFF SWITCH.
I. SHEET ALUMINUM & NATURAL COLOR.

LIGHTNING PROTECTION FOR VEHICLE LOOP SENSORS.

A. PROTECTION SHALL BE FOR DIFFERENTIAL AND COMMON MODE SURGES.
B. VOLTAGE CLAMPING SHALL BE PROVIDED UNLESS THE DETECTOR AMPLIFIER HAS CLAMPING CAPABILITIES.
C. INSTALLATION OF A PROTECTIVE DEVICE SHALL HAVE VERY MINIMAL EFFECTS ON THE LOOP INDUCTANCE.

DETECTORS SHALL HAVE SOLID STATE OUTPUT CIRCUITS.

CONTROLLER, FULL ACTUATED, 8 PHASE, SOLID STATE DIGITAL WITH CABINET, AS PER PLAN

THIS CONTROLLER SHALL HAVE THE SAME SPECIFICATIONS AS THE ONE AT ALUM CREEK DRIVE AND REFUGEE ROAD NORTH EXCEPT FOR "F" AND "G" OF THE FIRST PARAGRAPH.

632 LOOP DETECTOR AMPLIFIERS, DELAY AND EXTENSION TYPE, DIGITAL, SHELF MOUNTED

IN ADDITION TO THE REQUIREMENTS OF 732.08 LOOP DETECTOR AMPLIFIERS SHALL HAVE AUTOMATIC TUNING W/O USE OF SPECIAL TUNING TOOLS IMMEDIATELY UPON POWER UP.

THE DELAY INTERVAL SHALL BE SELECTABLE FROM 0 TO 31 SECONDS MINIMUM, AND SELECTABLE INTERVAL INCREMENTS SHALL NOT EXCEED ONE SECOND. EXTENSION INTERVAL SETTINGS SHALL RANGE FROM 0 TO 7.5 SECONDS IN 0.5 SECOND INCREMENTS.

MAGNETOMETER DETECTOR AMPLIFIERS EXTENSION SHALL BE CONTINUOUS RANGE FROM 0 TO 5 SECONDS.

LOOP DETECTORS AND MAGNETOMETER DETECTORS SHALL HAVE INDICATOR LIGHT ON EACH OUTPUT CHANNEL.

LOOP DETECTORS SHALL CONFORM TO NEMA STANDARDS PUBLICATION NO. TS 1-1976. (AND REVISIONS 1,2,&3)

632 MAGNETOMETER DETECTOR AMPLIFIER, AS PER PLAN

IN LIEU OF 732.09 WHERE EACH AMPLIFIER SHALL BE SUITABLE FOR CONNECTION WITH UP TO SIX (6) SENSOR PROBES, EACH AMPLIFIER SHALL BE SUITABLE FOR CONNECTION WITH UP TO TWELVE (12) SENSOR PROBES.

Rev R 3-31-80

CALC. BY ____ DATE		OHIO	142A 254
CHKD. BY ____ DATE		FHWA REGION 5	

FRANKLIN COUNTY
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620 Delineators, By Type, Flexible Post Mounted, As Per Plan

This item shall consist of furnishing and installing delineators as specified. The reflectors shall be either Type C or D and shall be approximately 3 inches by 6 inches with a minimum area of 18 square inches. The reflector shall be reflective sheeting bonded directly to the delineator post (not screwed or bolted).

The Seal Test as described in 620.03 shall not apply.

The flexible posts shall be white non-metallic, ultraviolet resistant, and designed to withstand repeated automobile impacts at 55 MPH and return to a vertical position with little or no damage to the vehicle. The posts shall be capable of being hand driven. Where adverse soil conditions cause the delineator post to exceed 1/4 inch per foot out of plumb in any direction, the Contractor may drive a pilot shaft before driving the post.

Flexible delineator posts shall be one of the following designs or approved equal:

1. Design 1 flexible post shall be manufactured from lexan with a 24 inch length of No. 1 steel drive post bolted to the bottom of the flexible portion. The total length of the composite post shall be 78 inches. The width of the post shall be 3.25 inches.

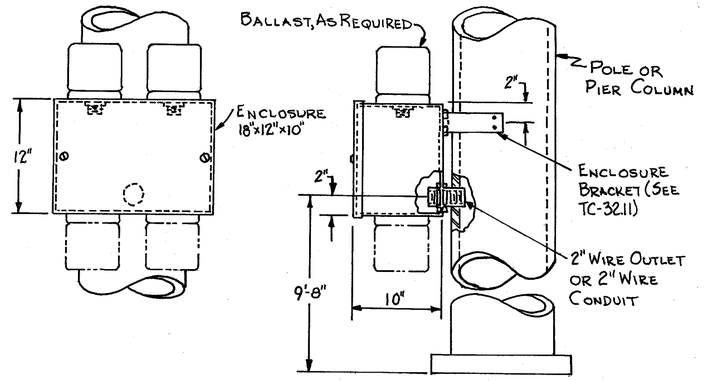
2. Design 2 flexible post shall be manufactured from fiberglass reinforced plastic with a T cross-section. The post shall be 72 inches long and 3.60 inches wide.

3. Design 3 flexible post shall be manufactured from fiberglass reinforced plastic with a curved cross-section The post shall be 72 inches long and 3.60 inches wide.

4. Design 4 flexible post shall be manufactured from fiberglass reinforced plastic with a curved cross-section. The post shall be 27 inches long and 3.25 inches in width. These posts may be installed by the Contractor in lieu of Designs 1, 2 or 3 when delineators would be placed behind guardrail. These posts shall be installed on the front of the wooden guardrail blockouts facing approaching traffic by installing either two 5/16 inch diameter by 1 1/2 inch long, zinc coated lag screws with zinc coated 5/16 inch flat washers or two 5/16 inch diameter by 1 1/2 inch long, zinc coated indented hex washer-head lag screws.

Payment will be at the contract unit price for each delineator which shall include furnishing and installing the post and all necessary hardware, labor and equipment.

620 EACH DELINEATORS, TYPE (C OR D), FLEXIBLE POST MOUNTED, AS PER PLAN



BALLAST ENCLOSURE
TYPE B

FHWA REGION	STATE	PROJECT	
5	OHIO		

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FRANKLIN COUNTY
FRA 104-10.57

CALC: RCG 6-79
CHK: [illegible] 6-79

GENERAL SUMMARY — TRAFFIC CONTROL

158 BRM	158 M	141 & 142	149 BRM	149 M	150	151	154	152 & 153	20	159	160	155	PARTICIPATION BRM	PARTICIPATION M	GRAND TOTAL	UNIT	ITEM	ITEM DESCRIPTION
		LUMP												Lump	LUMP		SPECIAL	RUMBLE STRIP
		12												12	12	EACH	SPECIAL	ATTENUATOR LOCATING HALF RINGS
												LUMP		LUMP	LUMP		SPECIAL	SAND BARREL IMPACT ATTENUATOR (14 MODULE ARRAY)
								1646						1646	1646	L.F.	606	GUARDRAIL, TYPE G
	31													31	31	EACH	620	DELINEATORS, TYPE C, FLEXIBLE POST MOUNTED, AS PER PLAN
	98													98	98	EACH	620	DELINEATORS, TYPE D, FLEXIBLE POST MOUNTED, AS PER PLAN
									1.95					1.95	1.95	MILES	614	TEMPORARY CENTERLINES, CLASS I, TAPE
									0.63					0.63	0.63	MILES	614	TEMPORARY EDGE LINES, CLASS I, TAPE
									1,045					1,045	1,045	L.F.	614	TEMPORARY CHANNELIZING LINES, CLASS I, TAPE
0.38	2.76									2.04			0.38	4.80	5.18	MILES	621	EDGE LINES
									305					305	305	L.F.	614	TEMPORARY STOP LINES, CLASS I, TAPE
0.28	1.41									1.12			0.28	2.53	2.81	MILES	621	5" LANE LINES
									19					19	19	EACH	614	TEMPORARY LANE ARROWS, CLASS I, TAPE
	0.16									0.67				0.83	0.83	MILES	621	5" CENTER LINES
	0.03									0.21				0.24	0.24	MILES	621	5" DOUBLE WHITE, SOLID LINES
0.08	0.93									0.54			0.08	0.87	0.95	MILES	621	10" CHANNELIZING LINES
									480					480	480	L.F.	614	TEMPORARY TRANSVERSE LINES, CLASS I, TAPE
	66									166				232	232	L.F.	621	20" STOP LINES
									525					525	525	L.F.	614	TEMPORARY CHANNELIZING LINES, CLASS II, TAPE
									2,000					2,000	2,000	L.F.	621	REMOVAL OF PAVEMENT MARKINGS
										1113				1113	1113	L.F.	621	20" TRANSVERSE LINES
										385				385	385	S.F.	621	ISLAND MARKING
	7									25				32	32	EACH	621	LANE ARROWS
										2				2	2	EACH	621	RAILROAD SYMBOL MARKINGS
	3									11				14	14	EACH	621	WORD "ONLY" ON PAVEMENT, 72"
			1	4	1	5					4		1	14	15	EACH	625	GROUND RODS
							4				9			13	13	EACH	625	PULL BOXES 18", CIRCULAR 713.09
											39			39	39	L.F.	625	CONDUIT 1" 713.04
							615				771			1386	1386	L.F.	625	CONDUIT 2" 713.04
											297			297	297	L.F.	625	CONDUIT 3" 713.04
							615				1107			1722	1722	L.F.	625	TRENCH
											7			7	7	EACH	632	VEHICULAR SIGNAL HEAD, 3 SECTION, 12" LENS, ONEWAY
		12												12	12	SQ.FT.	608	4" CONCRETE WALK, AS PER PLAN
											7			7	7	EACH	632	COVERING OF VEHICULAR SIGNAL HEAD
											4			4	4	EACH	632	LOOP DETECTOR AMPLIFIER, DELAY AND EXTENSION TYPE
							58				238			296	296	L.F.	632	LOOP DETECTOR PAVEMENT CUTTING
											2			2	2	EACH	632	MAGNETOMETER DETECTOR AMPLIFIER, as per plan
							12				18			30	30	EACH	632	MAGNETOMETER SENSOR PROBE
											495			495	495	L.F.	632	SIGNAL CABLE 5 CONDUCTOR NO. 14 AWG
											235			235	235	L.F.	632	SIGNAL CABLE 7 CONDUCTOR NO. 14 AWG
							570				673			1243	1243	L.F.	632	LOOP DETECTOR WIRE, TYPE E
											354			354	354	L.F.	632	LOOP DETECTOR LEAD IN CABLE
											2			2	2	EACH	632	CABLE SUPPORT ASSEMBLY
											9.6			9.6	9.6	C.Y.	632	CONCRETE FOR ANCHOR BASE FOUNDATION
											4			4	4	EACH	632	STRAIN POLE, TYPE TC-81.10, DESIGN 6, 30'-0"
											30			30	30	L.F.	632	POWER CABLE 3 CONDUCTOR NO. 8 AWG
											20			20	20	L.F.	632	SERVICE CABLE 3 CONDUCTOR NO. 6 TRIPLEX
											1			1	1	EACH	632	POWER SERVICE
							200							200	200	L.F.	632	SERVICE CABLE 3 CONDUCTOR NO. 4 AWG
											1			1	1	EACH	861	CONTROLLER, ACTUATED, 2 PHASE, SOLID STATE DIGITAL MICROPROCESSOR
											384			384	384	L.F.	632	MESSENGER WIRE 7 STRAND (3/8" DIA) WITH ACCESSORIES
		1												1	1	EACH	632	REMOVAL OF TRAFFIC SIGNAL INSTALLATION
											1521			1521	1521	L.F.	632	MAGNETOMETER LEAD IN CABLE

GENERAL SUMMARY — TRAFFIC CONTROL

FHWA REGION	STATE	PROJECT	
5	OHIO		

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FRANKLIN COUNTY
FRA 104-10.57

CALC: RLG 6-79
CHK: WDG 6-79

ROADWAY FROM SHEET No. 142	149 BRM	149 M	150	151		158	159	160	PAPTICIPATION TOTAL BRM	TOTAL M	GRAND TOTAL	UNIT	ITEM	ITEM DESCRIPTION
		2								2	2	EACH	630	REMOVAL OF OVERHEAD MOUNTED SIGN AND STORAGE
		2								2	2	EACH	630	REMOVAL OF OVERHEAD SIGN SUPPORT AND STORAGE, CANTILEVER TYPE
		2								2	2	EACH	631	REMOVAL OF LUMINAIRE AND STORAGE
		1								1	1	EACH	630	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND STORAGE
		9								9	9	EACH	630	REMOVAL OF GROUND MOUNTED SIGN AND STORAGE
		10								10	10	EACH	630	REMOVAL OF GROUND MOUNTED POST SUPPORT
	139	24.8	7.3	15.4					139	47.5	61.4	C.Y.	630	CONCRETE FOR ANCHOR BASE FOUNDATIONS
		1.7								1.7	1.7	C.Y.	630	CONCRETE FOR EMBEDDED FOUNDATIONS
		17	101	205						323	323	L.F.	630	GROUND MOUNTED SUPPORT, NO. 3 POST
	28	187	316	234					28	737	765	L.F.	630	GROUND MOUNTED SUPPORT, NO. 4 POST
		63								63	63	L.F.	630	GROUND MOUNTED SUPPORT, S4 x 7.7 BEAM
		34								34	34	L.F.	630	GROUND MOUNTED SUPPORT, W6 x 9 BEAM
		6								6	6	EACH	630	BREAKAWAY BEAM CONNECTION
	1								1		1	EACH	630	OVERHEAD SIGN SUPPORT, TYPE 7.65, DESIGN 6, SPAN 61 FEET
		1								1	1	EACH	630	OVERHEAD SIGN SUPPORT, TYPE 7.65, DESIGN 6, SPAN 66 FEET
				5						5	5	EACH	630	OVERHEAD SIGN SUPPORT, TYPE 12.30, DESIGN 3, ARM 16 FEET
		1								1	1	EACH	630	OVERHEAD SIGN SUPPORT, TYPE 12.30, DESIGN 4, ARM 24 FEET
			1							1	1	EACH	630	COMBINATION OVERHEAD SIGN SUPPORT, TYPE 12.30, DESIGN 3, ARM 16 FEET
		2								2	2	EACH	630	OVERHEAD SIGN SUPPORT, TYPE 12.30, DESIGN 8, ARM 28 FEET
			1							1	1	EACH	630	SPAN WIRE SIGN SUPPORT, TYPE 17.10, DESIGN 4, SPAN 66 FEET
			4							4	4	EACH	630	SIGN SUPPORT ASSEMBLY, POLE MOUNTED
		40	156	86				38		320	320	S.F.	630	SIGNS, FLAT SHEET, TYPE G
	16	112	71	197					16	380	396	S.F.	630	SIGNS, FLAT SHEET
	174	675	44	266					174	985	1159	S.F.	630	SIGNS, EXTRUSHEET
				104						104	104	S.F.	630	SIGNS, OVERLAY
	1	4	1	5					1	10	11	EACH	631	SIGN SERVICE
	2	5	1	6					2	12	14	EACH	631	SIGNS WIRED
	1	4	1	5					1	10	11	EACH	631	DISCONNECT SWITCH WITH ENCLOSURE, TYPE X
			1	6						7	7	EACH	631	BALLAST, TYPE CMRI-100-480
	3	10							3	10	13	EACH	631	BALLAST, TYPE CMRI-175-480
	1	1							1	1	2	EACH	631	BALLAST WIRING ENCLOSURE, TYPE A
		3	1	5						9	9	EACH	631	BALLAST WIRING ENCLOSURE, TYPE B
			1	6						7	7	EACH	631	MERCURY VAPOR LUMINAIRE, TYPE TC-31.21, WITH 100 WATT LAMP, MODIFIED
	3	10							3	10	13	EACH	631	MERCURY VAPOR LUMINAIRE, TYPE TC-31.21, WITH 175 WATT LAMP, MODIFIED
								5		5	5	EACH	630	SIGN HANGER ASSEMBLY, SPAN WIRE, TYPE 2

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SIGNING PLAN

FHWA REGION	STATE	PROJECT			
5	OHIO				

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FRANKLIN COUNTY
FRA. 104-1057

0 100 200 400
SCALE IN FEET

FHWA REGION	STATE	PROJECT	
5	OHIO		

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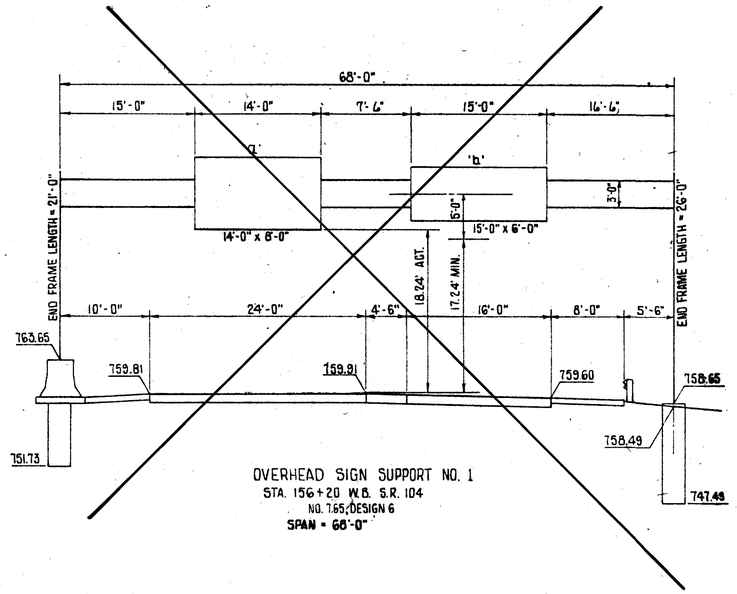
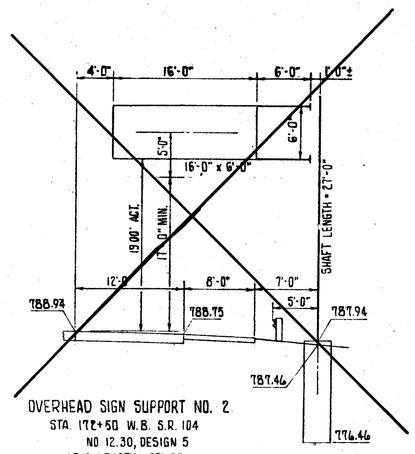
254

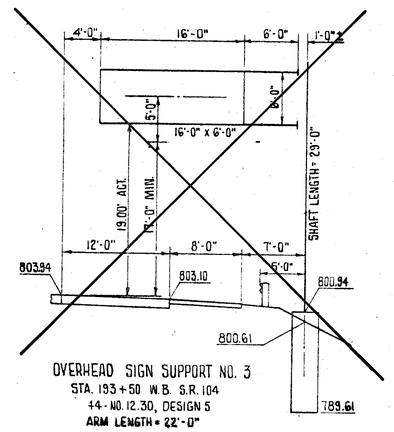
FRANKLIN COUNTY
FRA-104-10.57



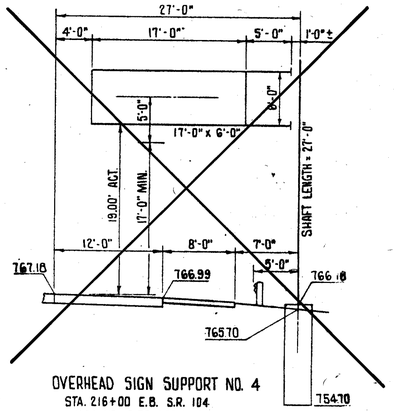
OVERHEAD SIGN SUPPORT NO. 1
STA. 156+20 W.B. S.R. 104
NO. 7.65, DESIGN 6
SPAN = 68'-0"



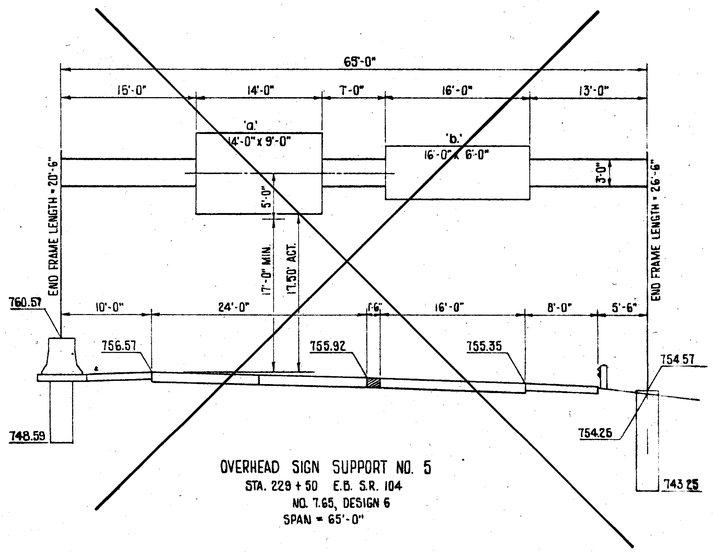
OVERHEAD SIGN SUPPORT NO. 2
STA. 172+50 W.B. S.R. 104
NO 12.30, DESIGN 5
ARM LENGTH = 22'-0"



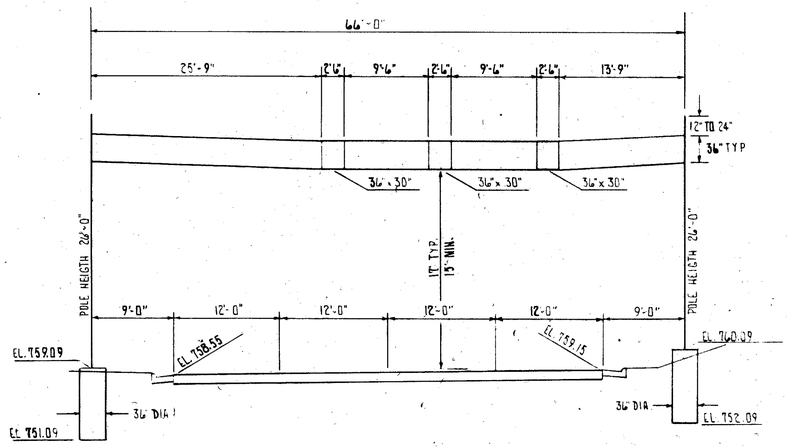
OVERHEAD SIGN SUPPORT NO. 3
STA. 193+50 W.B. S.R. 104
44-NO. 12.30, DESIGN 5
ARM LENGTH = 22'-0"



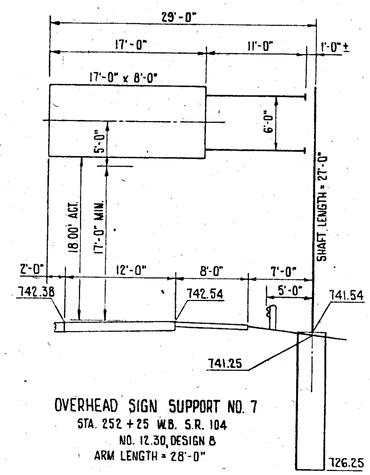
OVERHEAD SIGN SUPPORT NO. 4
STA. 216+00 E.B. S.R. 104
844-NO. 12.30, DESIGN 5
ARM LENGTH = 22'-0"



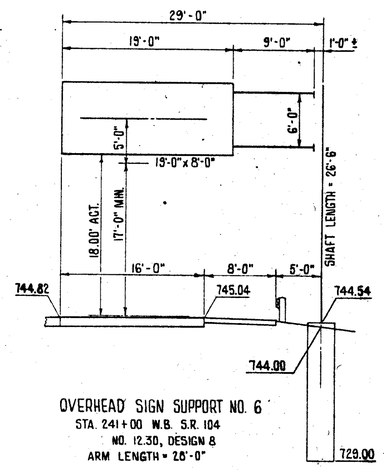
OVERHEAD SIGN SUPPORT NO. 5
STA. 229+50 E.B. S.R. 104
NO. 7.65, DESIGN 6
SPAN = 65'-0"



SPAN WIRE SIGN SUPPORT TYPE 17.10
STA. 96+00 REFUGEE ROAD NORTH
SPAN LENGTH 66'-0"
DESIGN NO. 4



OVERHEAD SIGN SUPPORT NO. 7
STA. 252+25 W.B. S.R. 104
NO. 12.30, DESIGN 8
ARM LENGTH = 28'-0"

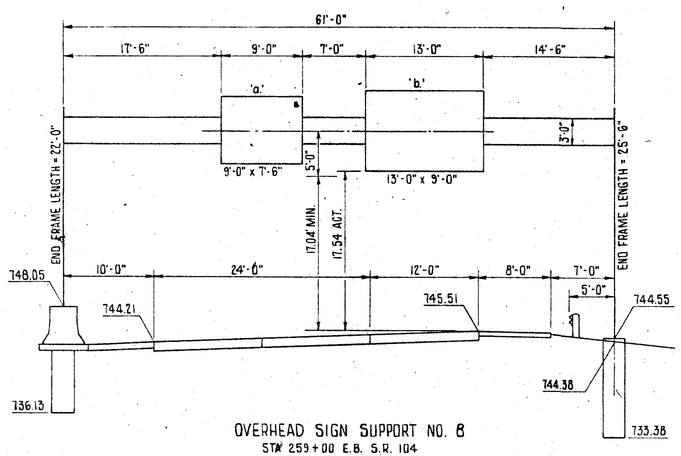


OVERHEAD SIGN SUPPORT NO. 6
STA. 241+00 W.B. S.R. 104
NO. 12.30, DESIGN 8
ARM LENGTH = 28'-0"

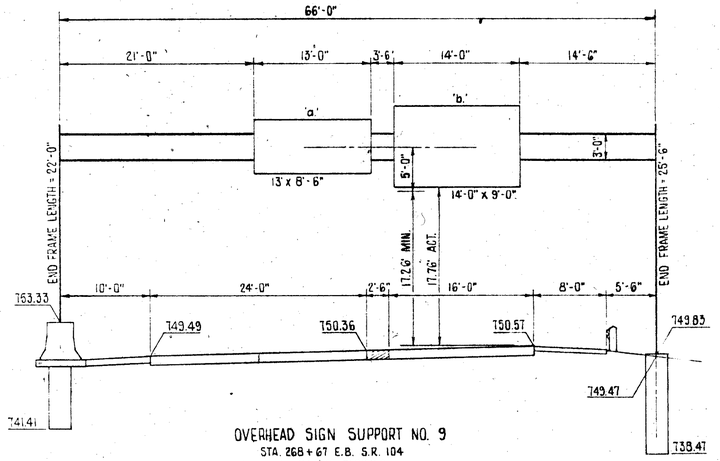
FHWA REGION	STATE	PROJECT	
5	OHIO	-	

147
254

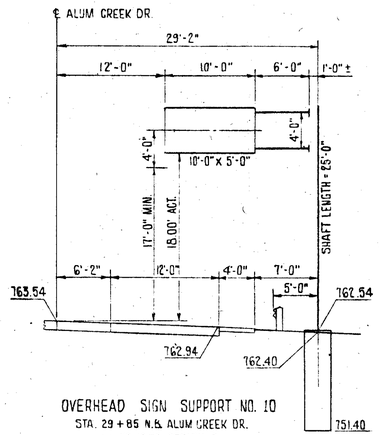
FRANKLIN COUNTY
FRA-104-10.57



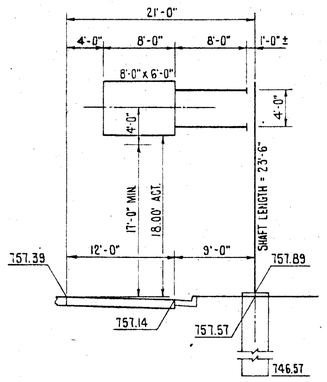
OVERHEAD SIGN SUPPORT NO. 8
STA 259+00 E.B. S.R. 104
NO 7.65, DESIGN 6
SPAN = 61'-0"



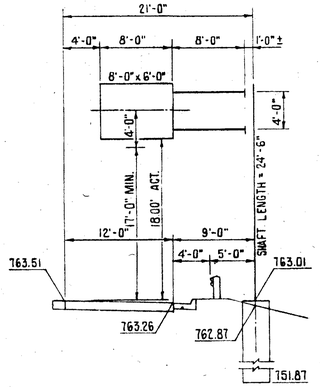
OVERHEAD SIGN SUPPORT NO. 9
STA. 268+67 E.B. S.R. 104
NO. 7.65, DESIGN 6
SPAN = 66'-0"



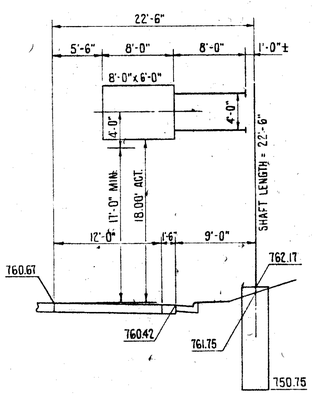
OVERHEAD SIGN SUPPORT NO. 10
STA. 29+85 N.B. ALUM CREEK DR.
NO. 12.30, DESIGN 3
ARM LENGTH = 16'-0"



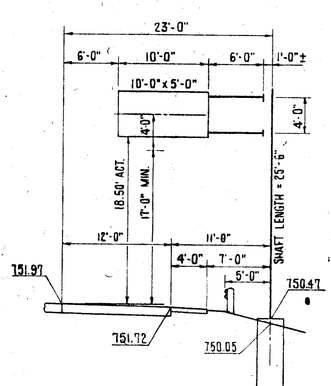
OVERHEAD SIGN SUPPORT NO. 11
STA. 38+75 N.B. ALUM CREEK DR.
NO. 12.30 DESIGN 3
ARM LENGTH = 16'-0"



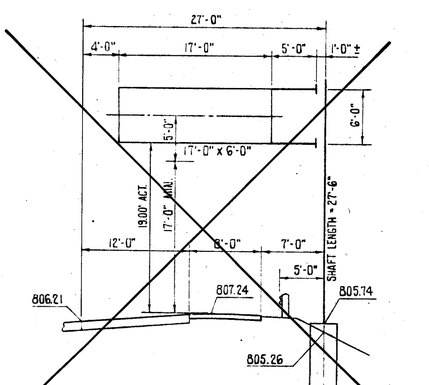
OVERHEAD SIGN SUPPORT NO. 12
STA. 46+10 S.B. ALUM CREEK DR.
NO. 12.30, DESIGN 3
ARM LENGTH = 16'-0"



OVERHEAD SIGN SUPPORT NO. 13
STA. 50+60 S.B. ALUM CREEK DR
NO. 12.30, DESIGN 3
ARM LENGTH = 16'-0"



OVERHEAD SIGN SUPPORT NO. 14
STA. 55+75 S.B. ALUM CREEK DR.
NO. 12.30, DESIGN 3
ARM LENGTH = 16'-0"

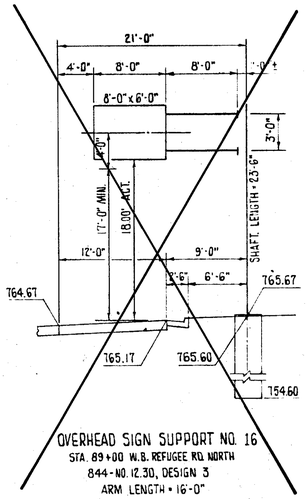


OVERHEAD SIGN SUPPORT NO. 15
STA. 193+50 E.B. S.R. 104
844-NO. 12.30, DESIGN 5
ARM LENGTH = 22'-0"

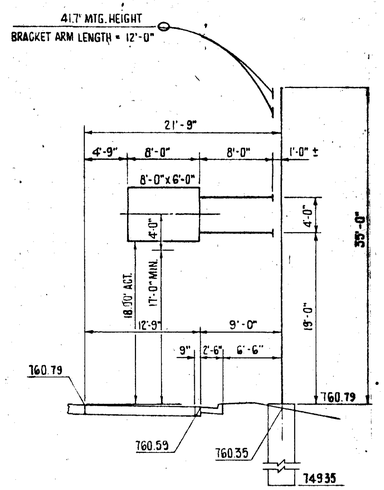
FHWA REGION	STATE	PROJECT	
5	OHIO		

148
254

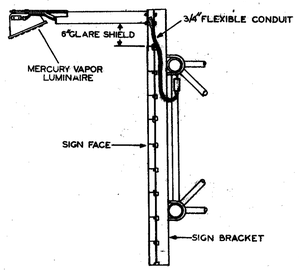
FRANKLIN COUNTY
FRA-104-10.57



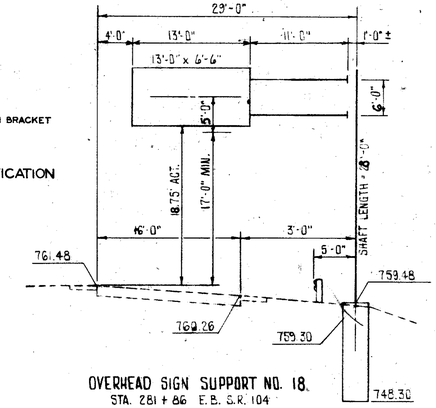
OVERHEAD SIGN SUPPORT NO. 16
STA. 89+00 W.B. REFUGEE RD. NORTH
844-NO.12.30, DESIGN 3
ARM LENGTH = 16'-0"



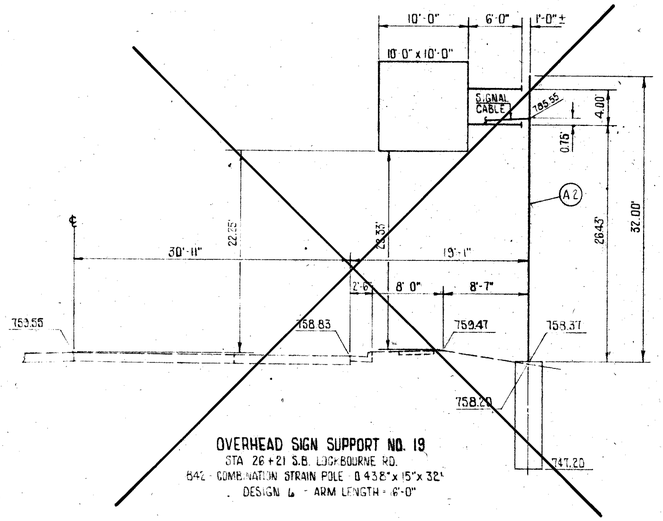
OVERHEAD SIGN SUPPORT NO. 17
STA 66+27 W.B. REFUGEE RD.
COMBINATION SUPPORT - NO. 12.30, DESIGN 3
ARM LENGTH-SIGN = 16'-0"



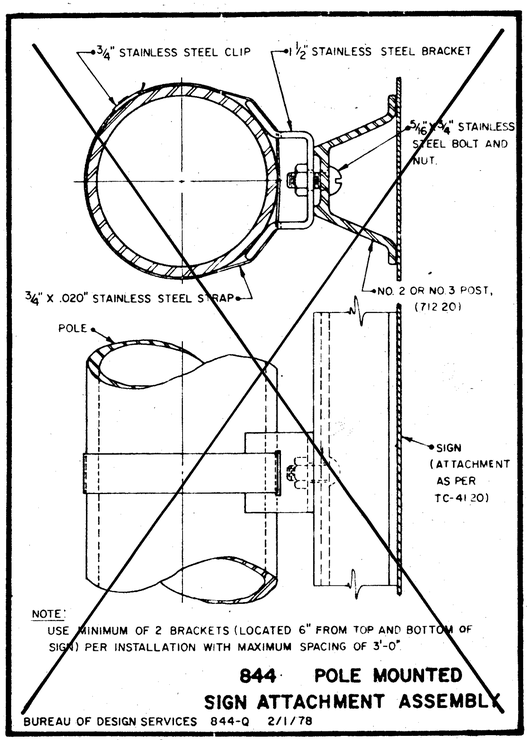
SIGN LIGHTING MODIFICATION
TYPICAL



OVERHEAD SIGN SUPPORT NO. 18.
STA. 281+86 E.B. S.R. 104
NO 12.30, DESIGN 6
ARM LENGTH = 24'-0"



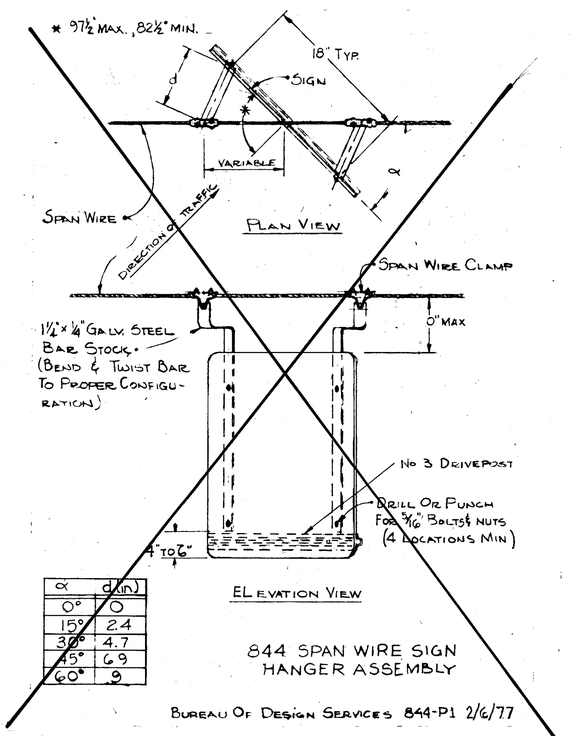
OVERHEAD SIGN SUPPORT NO. 19
STA 26+21 S.B. LOCKBOURNE RD.
842 - COMBINATION STRAIN POLE - 0.438" x 15" x 32'
DESIGN 6 - ARM LENGTH = 6'-0"



NOTE:
USE MINIMUM OF 2 BRACKETS (LOCATED 6" FROM TOP AND BOTTOM OF SIGN) PER INSTALLATION WITH MAXIMUM SPACING OF 3'-0"

844 POLE MOUNTED SIGN ATTACHMENT ASSEMBLY

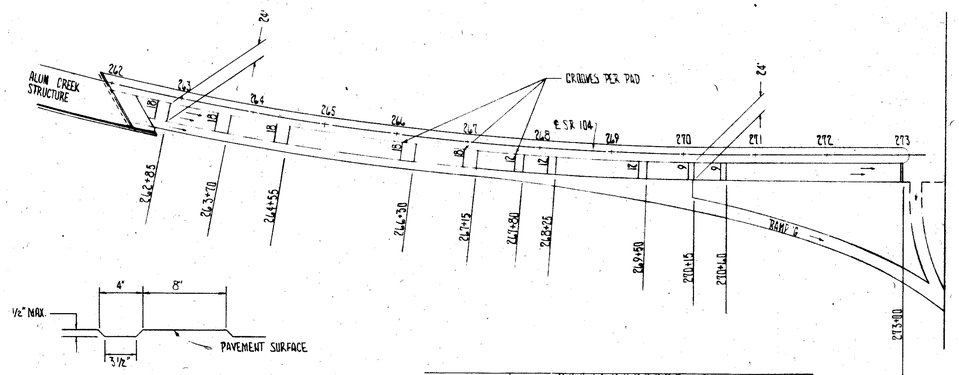
BUREAU OF DESIGN SERVICES 844-Q 2/1/78

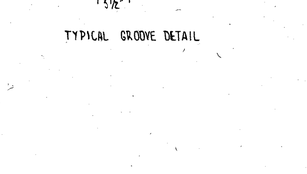


α	d (in)
0°	0
15°	2.4
30°	4.7
45°	6.9
60°	9

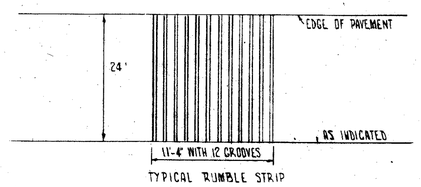
844 SPAN WIRE SIGN HANGER ASSEMBLY

BUREAU OF DESIGN SERVICES 844-P1 2/6/77





TYPICAL GROOVE DETAIL



TYPICAL RUMBLE STRIP

RUMBLE STRIP DETAIL

Rev 3-31-80

DIMENSION "A" = EDGE OF PAVEMENT TO ℄ FIRST SUPPORT.
DIMENSION "B" = ℄ FIRST SUPPORT TO ℄ SECOND SUPPORT.
DIMENSION "C" = ℄ SECOND SUPPORT TO ℄ THIRD SUPPORT.
DIMENSION "D" = ℄ SUPPORT TO EDGE OF SIGN.

SUB-SUMMARY — TRAFFIC CONTROL

CALC: GKS 6-79
CHK: RS 6-79

FHWA REGION	STATE	PROJECT
5	OHIO	

FRANKLIN COUNTY
FRA-104-10.57

SIGN AND SUPPORT QUANTITIES

FROM SHEET No.	SIGN SUPPORT No.	SIGN LOCATION	SIGN DESIGNATION	EFFECTIVE SIGN SIZE "He"	ROADWAY OR RAMP	DIMENSION "A" L.F.	DIMENSION "B" L.F.	DIMENSION "C" L.F.	DIMENSION "D" L.F.	ITEM 630 SIGNS, FLAT SHEET S.F.	SIGNS, EXTRUSHEET S.F.	SIGNS, FLAT SHEET, TYPE G S.F.	EXISTING SIGN PANELS REVISED WITH DEMOUNTABLE COPY
~~194~~		~~153 + 10 W.B.~~		~~6'-0" x 5'-0"~~		~~13.32~~	~~3.36~~		~~1.32~~		~~30.0~~		
		~~154 + 00 E.B.~~		~~48" x 48"~~		~~13.58~~	~~2.50~~		~~1.58~~	~~16.0~~			
	~~1~~	~~156 + 71 W.B.~~	~~'a'~~	~~14'-0" x 7'-0"~~							~~105.0~~		
			~~'b'~~	~~15'-0" x 5'-6"~~							~~82.5~~		
		~~169 + 50 E.B.~~		~~36" x 18"~~		~~14.75~~	~~2.25~~		~~0.75~~	~~4.5~~			
				~~45" x 36"~~						~~11.25~~			
~~194~~	~~2~~	~~172 + 50 W.B.~~		~~16'-0" x 5'-0"~~							~~88.0~~		
~~195~~		~~176 + 50 E.B.~~		~~48" x 60"~~		~~14.75~~	~~2.50~~		~~0.75~~	~~20.0~~			
	~~15~~	~~193 + 00 E.B.~~		~~17'-0" x 5'-0"~~							~~93.5~~		
	~~3~~	~~193 + 50 W.B.~~		~~16'-0" x 5'-0"~~							~~88.0~~		
		~~202 + 00 W.B.~~		~~48" x 60"~~		~~14.75~~	~~2.50~~		~~3.75~~	~~20.0~~			
		~~212 + 00 W.B.~~		~~36" x 18"~~		~~14.75~~	~~2.25~~		~~0.75~~	~~4.5~~			
				~~45" x 36"~~						~~11.25~~			
	~~4~~	~~216 + 00 E.B.~~		~~17'-0" x 5'-0"~~							~~93.5~~		
		~~229 + 00 W.B.~~		~~48" x 48"~~		~~13.58~~	~~2.50~~		~~1.58~~	~~16.0~~			
	~~5~~	~~229 + 50 E.B.~~	~~'a'~~	~~14'-0" x 8'-0"~~	104						~~119.0~~		
~~195~~			~~'b'~~	~~16'-0" x 5'-0"~~							~~88.0~~		
145													
		238 + 90 W.B.		6'-0" x 5'-0"		13.32	3.36		1.32		30.0		
	6	241 + 00 W.B.		19'-0" x 7'-0"	S. R.						142.5		
	7	252 + 25 W.B.		17'-0" x 7'-0"							127.5		
		253 + 00 E.B.		36" x 18"		18.75	2.25		0.75	4.5			
				45" x 36"						11.25			
	2	258 + 00 W.B.		36" x 18"		18.75	2.25		0.75	4.5			
				45" x 36"						11.25			
	8	269 + 00 E.B.	'a'	9'-0" x 6'-6"							63.0		
			'b'	13'-0" x 8'-0"							110.5		
		264 + 50 E.B.											
	9	268 + 67 E.B.	'a'	13'-0" x 7'-6"							104.0		
			'b'	14'-0" x 8'-0"							119.0		
		269 + 50 W.B.		EXIST									
		270 + 00 E.B.		EXIST									
		270 + 50 E.B.		6'-0" x 5'-0"		13.32	3.36		1.32		30.0		
		272 + 00 E.B.		EXIST									
		273 + 00 E.B.		EXIST									
		273 + 00 W.B.		24" x 30"		8.00			1.00			5.0	
		274 + 25 W.B.		EXIST									
		275 + 00 E.B.		EXIST									
	18	281 + 86 E.B.		13'-0" x 5'-6"							78.0		
		273 + 55 LT.		48" x 48"	RAMP "G"	13.58	2.50		1.58			16.0	
		255+40		12'-0" x 4'-0"	S.R. 104	13.75	4.25	4.25	1.75	48.0			
		267+40		12'-0" x 4'-0"		13.75	4.25	4.25	1.75	48.0			
		~~231 + 43 LT.~~		36" x 36"	RAMP "D"	~~3.00~~	~~2.00~~		~~1.00~~			9.0	
				~~48" x 48"~~						~~16.0~~			
		~~233 + 50 LT.~~		24" x 12"		~~14.42~~	~~6.16~~		~~2.42~~			2.0	
				11'-0" x 4'-0"							44.0		
		~~233 + 50 RT.~~		24" x 12"		~~13.50~~			~~1.50~~			2.0	
145				36" x 24"								6.0	
		272 + 00 LT.		EXIST	[illegible]								
		TOTALS TO GENERAL SUMMARY								127.5	848.5	40	–

SIGN LOCATION	7.65 DESIGN 6, SPAN 61 FEET EA.	7.65 DESIGN 6, SPAN 65 FEET EA.	7.65 DESIGN 6, SPAN 66 FEET EA.	7.65 DESIGN 6, SPAN 68 FEET EA.	SPAN WIRE HANGER ASSEMBLY	12.30 DESIGN 3, ARM 16 FEET EA.	12.30 DESIGN 4, ARM 24 FEET EA.	COMBINATION SUPPORT 12.30 DESIGN 3 MODIFIED, ARM 16 FEET EA.	12.30 DESIGN 5, ARM 22 FEET EA.	12.30 DESIGN 8, ARM 28 FEET EA.	SPAN WIRE SUPPORT 17.10 DESIGN 4, SPAN 66 FEET EA.	EA.	CONCRETE FOR ANCHOR BASE FOUNDATIONS C.Y.	CONCRETE FOR EMBEDDED FOUNDATIONS C.Y.		BREAKAWAY BEAM CONNECTION EA.	STRUCTURAL SUPPORTS: GROUND MOUNTED SUPPORT NO. 3 POST L.F. LT.	CTR.	RT.	GROUND MOUNTED SUPPORT NO. 4 POST L.F. LT.	CTR.	RT.	GROUND MOUNTED SUPPORT NO. 4 POST, AS PER PLAN L.F. LT.	CTR.	RT.	L.F. LT.	CTR.	RT.	GROUND MOUNTED SUPPORT S4 x 7.7 L.F. LT.	CTR.	RT.	GROUND MOUNTED SUPPORT W6 x 9 L.F. LT.	CTR.	RT.
~~153 + 10 W.B.~~														~~0.54~~		~~2~~													~~15.5~~		~~16.0~~			
~~154 + 00 E.B.~~																				~~16.5~~		~~17.0~~												
~~156 + 71 W.B.~~				~~1~~									~~12.37~~																					
~~169 + 50 E.B.~~																				~~14.0~~		~~14.0~~												
~~172 + 50 W.B.~~									~~1~~				~~2.93~~																					
~~176 + 50 E.B.~~																				~~16.5~~		~~16.5~~												
~~193 + 00 E.B.~~									~~1~~				~~2.93~~																					
~~193 + 50 W.B.~~									~~1~~				~~2.93~~																					
~~202 + 00 W.B.~~																				~~17.0~~		~~17.0~~												
~~212 + 00 W.B.~~																				~~16.0~~		~~16.0~~												
~~216 + 00 E.B.~~									~~1~~				~~2.93~~																					
~~229 + 00 W.B.~~																				~~16.5~~		~~17.0~~												
~~229 + 50 E.B.~~													~~13.87~~																					
238 + 90 W.B.														0.54		2													15.5		16.0			
241 + 00 W.B.										1			3.98																					
252 + 25 W.B.										1			3.98																					
253 + 00 E.B.																				14.0		14.0												
258 + 00 W.B.																				14.0		14.0												
269 + 00 E.B.	1												13.87																					
268 + 67 E.B.			1										13.87																					
270 + 50 E.B.														0.54		2													15.5		16.0			
273 + 00 W.B.																		12																
281 + 86 E.B.							1						8.93																					
273 + 55 LT.																				16.5		16.0												
255+40																				14.0	14.0	14.5												
267+40																				14.0	14.0	14.5												
~~231 + 43 LT.~~																				~~14.0~~		~~14.5~~												
~~233 + 50 LT.~~														~~0.66~~		2		~~5~~														~~16.0~~		~~17.5~~
~~233 + 50 RT.~~																					~~13.0~~													
TOTALS TO GENERAL SUMMARY	1		1	–	–	–	1	–	–	2	–		38.6	1.7		6	17			215									63.0			34.0		

SIGN LOCATION	REMOVALS ITEM 202: REMOVAL OF TEMPORARY DRUMS EA.			ELECTRICAL QUANTITIES ITEM 631: MERCURY VAPOR LUMINAIRE WITH 480 VOLT LAMP MODIFIED 100 WATT EA.	175 WATT EA.			SIGNS WIRED EA.	DISCONNECT SWITCH WITH ENCLOSURE SIZE "X" EA.	SIGN SERVICE EA.	BALLAST CRMI-100-480 EA.	BALLAST CRMI-175-480 EA.	ITEM 625 GROUND ROD EA.	BALLAST WIRING ENCLOSURE TYPE A EA.	BALLAST WIRING ENCLOSURE TYPE B EA.	REMOVALS ITEM 630: REMOVAL OF OVERHEAD MOUNTED SIGN AND STORAGE EA.	REMOVAL OF OVERHEAD SIGN SUPPORT AND STORAGE - CANTILEVER TYPE EA.	ITEM 631: REMOVAL OF SIGN LIGHTING LUMINAIRE AND STORAGE EA.	EA.	ITEM 630: REMOVAL OF TEMPORARY OVERLAY SIGN EA.	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND STORAGE EA.	REMOVAL OF GROUND MOUNTED BEAM SUPPORT EA.	REMOVAL OF GROUND MOUNTED SIGN AND STORAGE EA.	REMOVAL OF GROUND MOUNTED POST SUPPORT EA.	REMOVAL OF GROUND MOUNTED SIGN AND RE-ERECTION EA.
~~156 + 71 W.B.~~ ~~'a'~~					~~2~~			~~1~~	~~1~~	~~1~~		~~2~~	~~1~~												
~~'b'~~				~~2~~				~~1~~			~~2~~														
~~172 + 50 W.B.~~				~~2~~				~~1~~	~~1~~	~~1~~	~~2~~		~~1~~												
~~193 + 00 E.B.~~				~~2~~				~~1~~	~~1~~	~~1~~	~~2~~		~~1~~												
~~193 + 50 W.B.~~				~~2~~				~~1~~	~~1~~	~~1~~	~~2~~		~~1~~												
~~216 + 00 E.B.~~				~~2~~				~~1~~	~~1~~	~~1~~	~~2~~		~~1~~												
~~229 + 50 E.B.~~ ~~'a'~~					~~2~~			~~1~~	~~1~~	~~1~~		~~2~~	~~1~~												
~~'b'~~				~~2~~				~~1~~			~~2~~														
241 + 00 W.B.					2			1	1	1		2	1		1										
252 + 25 W.B.					2			1	1	1		2	1		1										
269 + 00 E.B. 'a'					1			1	1	1		1	1	1											
'b'					2			1				2													
264 + 50 E.B.																1	1	1							
268 + 67 E.B. 'a'					2			1	1	1		2	1	1											
'b'					2			1				2													
269 + 50 W.B.																							1	1	
270 + 00 E.B.																							2	1	
272 + 00 E.B.																							1	2	
273 + 00 E.B.																							1	1	
273 + 00 W.B.																							1	1	
274 + 25 W.B.																							2	1	
275 + 00 E.B.																					1			2	
281 + 86 E.B.					2			1	1	1		2	1		1	1	1	1							
272 + 00 LT.																							1	1	
TOTALS TO GENERAL SUMMARY	–			–	13			7	5	5	—	13	5	2	3	2	2	2	–	–	1	–	9	10	–

Rev 3-31-80

SUB-SUMMARY - TRAFFIC CONTROL

DIMENSION "A" = EDGE OF PAVEMENT TO ℄ FIRST SUPPORT.
DIMENSION "B" = ℄ FIRST SUPPORT TO ℄ SECOND SUPPORT.
DIMENSION "C" = ℄ SECOND SUPPORT TO ℄ THIRD SUPPORT.
DIMENSION "D" = ℄ SUPPORT TO EDGE OF SIGN.

SUB-SUMMARY — TRAFFIC CONTROL

CALC: GKS 6-79
CHK: RLG 6-79

FHWA REGION	STATE	PROJECT
5	OHIO	

FRANKLIN COUNTY
FRA-104-10.57

SIGN AND SUPPORT QUANTITIES — ITEM 630

From Sheet No.	Sign Support No.	Sign Location	Sign Designation	Effective Sign Size "He"	Roadway or Ramp	Dimension "A" L.F.	Dimension "B" L.F.	Dimension "C" L.F.	Dimension "D" L.F.	Signs, Flat Sheet S.F.	Signs, Extrusheet S.F.	Signs, Flat Sheet Type G S.F.	Existing Sign Panels Revised with Demountable Copy
~~196~~				~~24" x 12"~~						~~2.0~~			
		~~237 + 50 LT.~~		~~36" x 24"~~		~~13.50~~			~~1.50~~	~~6.0~~			
		~~237 + 50 RT.~~		~~36" x 24"~~	~~RAMP~~ "E"	~~14.42~~	~~6.16~~		~~2.42~~	~~6.0~~			
				~~11'-0" x 2'-0"~~							~~22.0~~		
		~~241 + 00 LT.~~		~~36" x 48"~~		~~12.75~~	~~2.50~~		~~0.75~~	~~12.00~~			
				~~48" x 48"~~						~~16.0~~			
		~~240 + 90 RT.~~		~~36" x 36"~~		~~13.00~~	~~2.00~~		~~1.00~~	~~9.0~~			
145													
		231 + 25 RT.		48" x 60"	RAMP "F"	12.75	2.50		0.75			20.0	
		236 + 75 LT.		48" x 48"		13.58	2.50		1.58			16.0	
145		238 + 00 RT.		30" x 18"		13.25			1.25			3.75	
		84+00 RT.		10'-0" x 1'-6"		4.20	5.60		2.20	15.0			
145		84+00 LT.		30" x 30"		3.00	2.00		0.50			6.25	
		80+00 LT.		30" x 30"		3.00	2.00		0.50			6.25	
		75+50 LT.		30" x 30"								6.25	
				36" x 24"	NORTH	2.50	2.00		0.50			6.00	
		70+00 RT.		36" x 36"		4.25			2.12			9.00	
145													
145	~~16~~	~~89 + 00 LT.~~	~~'a'~~	~~8'-0" x 5'-0"~~	RD.						~~44.0~~		
			~~'b'~~	~~8'-0" x 5'-0"~~							~~44.0~~		
				30" x 36"	REFUGEE							7.50	
		96 + 00 L-R		30" x 36"								7.50	
				30" x 36"								7.50	
		96 + 00 RT.		24" x 12"		9.00				2.00			
				24" x 12"		9.00				2.00			
		MOUNTED ON SPAN WIRE SUPPORT		30" x 24"		9.00				5.00			
				21" x 15"		9.00				2.19			
				9'-0" x 1'-5"		6.98	5.04		1.98	13.5			
		49+75 Rt.		48" x 18"								6.00	
				24" x 12"						2.00			
				24" x 12"						2.00			
				30" x 24"						5.00			
		61+25 L-R		30" x 24"	RD.	6.00	2.00		1.00	5.00			
				21" x 15"						2.19			
				21" x 15"	REFUGEE					2.19			
		69+70		36" x 30"		5.25			2.00			7.50	
	17	66 + 27 LT.		8'-0" x 5'-0"							44.0		
		68 + 00 RT.		36" x 36"		5.00						9.00	
		70 + 46 RT.		36" x 36"		2.50	2.00		0.50			9.00	
		71 + 37 LT.		30" x 30"		5.25			1.25			6.25	
		71 + 70 RT.		8'-0" x 1'-6"		5.76	4.48		1.76	12.00			
		72 + 40 RT.		30" x 30"		13.75			1.75			6.25	
		0 + 22 LT.		30" x 30"	Refugee Road Conn.	5.25			1.25			6.25	
145		0 + 40 RT.		36" x 36"		3.00	2.00		1.00			9.00	
TOTALS TO GENERAL SUMMARY										70.07	44.0	155.25	

Sign Location	Effective Sign Size "He"	7.65 Design 6, Span 61 Feet EA.	7.65 Design 6, Span 65 Feet EA.	7.65 Design 6, Span 66 Feet EA.	7.65 Design 6, Span 68 Feet EA.	Span Wire Hanger Assembly	12.30 Design 3, Arm 16 Feet EA.	12.30 Design 6, Arm 24 Feet EA.	Combination Support 12.30 Design 3 Modified, Arm 16 Feet EA.	12.30 Design 5, Arm 22 Feet EA.	12.30 Design 8, Arm 28 Feet EA.	Span Wire Support 17.10 Design 4, Span 66 Feet EA.	EA.	Concrete for Anchor Base Foundations C.Y.	Concrete for Embedded Foundations C.Y.	Sign Support Assembly Pole Mounted EA.	Breakaway Beam Connection EA.
	~~24" x 12"~~																
~~237 + 50 LT.~~	~~36" x 24"~~																
~~237 + 50 RT.~~	~~36" x 24"~~														~~0.54~~		~~2~~
	~~11'-0" x 2'-0"~~																
~~241 + 00 LT.~~	~~36" x 48"~~																
	~~48" x 48"~~																
~~240 + 90 RT.~~	~~36" x 36"~~																
231 + 25 RT.	48" x 60"																
236 + 75 LT.	48" x 48"																
238 + 00 RT.	30" x 18"																
84+00 RT.	10'-0" x 1'-6"																
84+00 LT.	30" x 30"																
80+00 LT.	30" x 30"																
75+50 LT.	30" x 30"																
	36" x 24"																
70+00 RT.	36" x 36"																
~~89 + 00 LT.~~	~~8'-0" x 5'-0"~~						~~1~~							~~3.08~~			
	~~8'-0" x 5'-0"~~																
	30" x 36"																
96 + 00 L-R	30" x 36"											1		4.18			
	30" x 36"																
96 + 00 RT.	24" x 12"															1	
	24" x 12"															1	
MOUNTED ON SPAN WIRE SUPPORT	30" x 24"															1	
	21" x 15"															1	
	9'-0" x 1'-5"																
49+75 Rt.	48" x 18"																
	24" x 12"																
	24" x 12"																
	30" x 24"																
61+25 L-R	30" x 24"																
	21" x 15"																
	21" x 15"																
69+70	36" x 30"																
66 + 27 LT.	8'-0" x 5'-0"								1					3.08			
68 + 00 RT.	36" x 36"																
70 + 46 RT.	36" x 36"																
71 + 37 LT.	30" x 30"																
71 + 70 RT.	8'-0" x 1'-6"																
72 + 40 RT.	30" x 30"																
0 + 22 LT.	30" x 30"																
0 + 40 RT.	36" x 36"																
TOTALS TO GENERAL SUMMARY		-	-	-	-	-	-	-	1	-	-	1	-	7.26	-	4	-

STRUCTURAL SUPPORTS

Sign Location	Effective Sign Size "He"	Ground Mounted Support No. 3 Post L.F. LT.	CTR.	RT.	Ground Mounted Support No. 4 Post L.F. LT.	CTR.	RT.	Ground Mounted Support No. 4 Post, as per Plan L.F. LT.	CTR.	RT.	L.F. LT.	CTR.	RT.	Ground Mounted Support S4 x 7.7 L.F. LT.	CTR.	RT.	Ground Mounted Support W6 x 9 L.F. LT.	CTR.	RT.
	~~24" x 12"~~																		
~~237 + 50 LT.~~	~~36" x 24"~~					~~14.5~~													
~~237 + 50 RT.~~	~~36" x 24"~~		~~5~~											~~13.5~~		~~14.5~~			
	~~11'-0" x 2'-0"~~																		
~~241 + 00 LT.~~	~~36" x 48"~~				~~15.5~~		~~16.0~~												
	~~48" x 48"~~																		
~~240 + 90 RT.~~	~~36" x 36"~~				~~15.5~~		~~16.0~~												
231 + 25 RT.	48" x 60"				16.0		15.5												
236 + 75 LT.	48" x 48"				16.0		15.5												
238 + 00 RT.	30" x 18"		13.0																
84+00 RT.	10'-0" x 1'-6"				12.0		12.0												
84+00 LT.	30" x 30"				13.0		13.0												
80+00 LT.	30" x 30"				13.0		13.0												
75+50 LT.	30" x 30"																		
	36" x 24"				13.5		13.5												
70+00 RT.	36" x 36"					14.5													
~~89 + 00 LT.~~	~~8'-0" x 5'-0"~~																		
	~~8'-0" x 5'-0"~~																		
	30" x 36"																		
96 + 00 L-R	30" x 36"																		
	30" x 36"																		
96 + 00 RT.	24" x 12"																		
	24" x 12"																		
MOUNTED ON SPAN WIRE SUPPORT	30" x 24"																		
	21" x 15"																		
	9'-0" x 1'-5"				12.0		12.0												
49+75 Rt.	48" x 18"	3.75		3.75															
	24" x 12"																		
	24" x 12"																		
	30" x 24"																		
61+25 L-R	30" x 24"				15.5		15.5												
	21" x 15"																		
	21" x 15"																		
69+70	36" x 30"	16.0		16.0															
66 + 27 LT.	8'-0" x 5'-0"																		
68 + 00 RT.	36" x 36"					13													
70 + 46 RT.	36" x 36"				13.0		13.5												
71 + 37 LT.	30" x 30"		12.5																
71 + 70 RT.	8'-0" x 1'-6"	12.0		11.5															
72 + 40 RT.	30" x 30"					13.0													
0 + 22 LT.	30" x 30"		12.5																
0 + 40 RT.	36" x 36"				14.0		14.0												
TOTALS TO GENERAL SUMMARY			101.0			315.50			—						—			–	

Sign Location	Effective Sign Size "He"	REMOVALS ITEM 202				ELECTRICAL QUANTITIES ITEM 631												REMOVALS ITEM 630		ITEM 631	ITEM 630						
			Removal of Temporary Drums EA.			Mercury Vapor Luminaire with 480 Volt Lamp Modified 100 Watt EA.	175 Watt EA.			Signs Wired EA.	Disconnect Switch with Enclosure Size "X" EA.	Sign Service EA.	Ballast CRMI-100-480 EA.	Ballast CRMI-175-480 EA.	Item S-625 Ground Rod EA.	Ballast Wiring Enclosure Type A EA.	Ballast Wiring Enclosure Type B EA.	Removal of Overhead Mounted Sign and Storage EA.	Removal of Overhead Sign Support and Storage - Cantilever Type EA.	Removal of Sign Lighting Luminaire and Storage EA.	EA.	Removal of Temporary Overlay Sign EA.	Removal of Ground Mounted Major Sign and Storage EA.	Removal of Ground Mounted Beam Support EA.	Removal of Ground Mounted Sign and Storage EA.	Removal of Ground Mounted Post Support EA.	Removal of Ground Mounted Sign and Re-erection EA.
	~~24" x 12"~~																										
~~237 + 50 LT.~~	~~36" x 24"~~																										
~~237 + 50 RT.~~	~~36" x 24"~~																										
	~~11'-0" x 2'-0"~~																										
~~241 + 00 LT.~~	~~36" x 48"~~																										
	~~48" x 48"~~																										
~~240 + 90 RT.~~	~~36" x 36"~~																										
231 + 25 RT.	48" x 60"																										
236 + 75 LT.	48" x 48"																										
238 + 00 RT.	30" x 18"																										
84+00 RT.	10'-0" x 1'-6"																										
84+00 LT.	30" x 30"																										
80+00 LT.	30" x 30"																										
75+50 LT.	30" x 30"																										
	36" x 24"																										
70+00 RT.	36" x 36"																										
~~89 + 00 LT.~~	~~8'-0" x 5'-0"~~					~~1~~				~~1~~	~~1~~	~~1~~	~~1~~		~~1~~												
	~~8'-0" x 5'-0"~~					~~1~~				~~1~~			~~1~~														
	30" x 36"																										
96 + 00 L-R	30" x 36"																										
	30" x 36"																										
96 + 00 RT.	24" x 12"																										
	24" x 12"																										
MOUNTED ON SPAN WIRE SUPPORT	30" x 24"																										
	21" x 15"																										
	9'-0" x 1'-5"																										
49+75 Rt.	48" x 18"																										
	24" x 12"																										
	24" x 12"																										
	30" x 24"																										
61+25 L-R	30" x 24"																										
	21" x 15"																										
	21" x 15"																										
69+70	36" x 30"																										
66 + 27 LT.	8'-0" x 5'-0"					1				1	1	1	1		1		1										
68 + 00 RT.	36" x 36"																										
70 + 46 RT.	36" x 36"																										
71 + 37 LT.	30" x 30"																										
71 + 70 RT.	8'-0" x 1'-6"																										
72 + 40 RT.	30" x 30"																										
0 + 22 LT.	30" x 30"																										
0 + 40 RT.	36" x 36"																										
TOTALS TO GENERAL SUMMARY			–			1	-			1	1	1	1	-	1	-	1	-	-	-	-	-	-	-	-	-	-

Rev 3-31-80

DIMENSION "A" = EDGE OF PAVEMENT TO ℄ FIRST SUPPORT.
DIMENSION "B" = ℄ FIRST SUPPORT TO ℄ SECOND SUPPORT.
DIMENSION "C" = ℄ SECOND SUPPORT TO ℄ THIRD SUPPORT.
DIMENSION "D" = ℄ SUPPORT TO EDGE OF SIGN.

SUB-SUMMARY — TRAFFIC CONTROL

CALC: GKS 6-79
CHK: RLG 6-79

FHWA REGION	STATE	PROJECT
5	OHIO	

FRANKLIN COUNTY
FRA 104-10.57

SIGN AND SUPPORT QUANTITIES

ITEM 630

From Sheet No.	Sign Support No.	Sign Location	Sign Designation	Effective Sign Size "He"	Roadway or Ramp	Dimension "A" L.F.	Dimension "B" L.F.	Dimension "C" L.F.	Dimension "D" L.F.	Signs, Flat Sheet S.F.	Signs, Extrusheet S.F.	Signs, Overlay S.F.	Signs, Flat Sheet Type G S.F.	7.65 Design 6, Span 61 Feet EA	7.65 Design 6, Span 65 Feet EA.	7.65 Design 6 Span 66 Feet EA.	7.65 Design 6 Span 68 Feet EA.	Span Wire Hanger Assem.	12.30 Design 3, Arm 16 Feet EA.	12.30 Design 6 Arm 24 Feet EA.	Comb. Support 12.30 Design 3, Mod. Arm 16' EA.	12.30 Design 5, Arm 22 Feet EA.	12.30 Design 8, Arm 28 Feet EA.	Span Wire Support 17.30 Design 4 Span 66' EA.	Concrete for Anchor Base Foundations C.Y.	Concrete for Embedded Foundations C.Y.	Breakaway Beam Connection EA.
145		26 + 50 NB		21" x 15"						2.19																	
				30" x 24"		13.25			1.25	5.00																	
	10	29 + 85 N.B.		10'-0" x 4'-0"							45.0								1						3.08		
		33 + 25 N.B.		24 x 30"		3.00			1.00				5.00														
		34 + 30 N.B.		9'-0" x 1'-6"		3.98	5.04		1.98	13.50																	
		36 + 00 S.B.		36" x 36"		6.12			2.12				9.00														
		37 + 53 S.B.		24" x 30"		2.50			1.00				5.00														
		29 + 85 N.B.		3'-0" x 4'-0"								12															
	11	38 + 75 N.B.		8'-0" x 5'-0"							44.0								1						3.08		
		38 + 80 N.B.		24" x 30"	ALUM CREEK DRIVE	1.50			1.00				5.00														
		39 + 00 S.B.		9'-0" x 1'-6"		3.98	5.04		1.98	13.50																	
	12	46 + 10		8'-0" x 5'-0"							44.0								1						3.08		
		47 + 50 N.B.		8'-0" x 1'-6"		5.76	4.48		1.76	12.00																	
	13	50 + 60 LT.	'a'	8'-0" x 5'-0"							44.0	40							1						3.08		
			'b'	8'-0" x 5'-0"							44.0	40															
		51 + 14 S.B.		24" x 30"		1.50			1.00				5.00														
				24" x 12"						2.00																	
				24" x 12"						2.00																	
		51 + 25 RT.		30" x 24"						5.00																	
				21" x 15"						2.19																	
				8'-0" x 1'-6"		6.76	4.48		1.76	12.00																	
		52 + 33 S.B.		36" x 36" x 36"		5.00			1.50				3.90														
		52 + 33 N.B.		24" x 30"		1.50			1.00				5.00														
		52 + 75 N.B.		36" x 36"		6.12			2.12				9.00														
		53 + 75 N.B.		36" DIA.		5.50			1.50				9.00														
		55 + 00 S.B.		8'-0" x 1'-6"		13.76	4.48		1.76	12.00																	
		55 + 50 S.B.		24" x 30"		3.50			1.00				5.00														
		64 + 50 N.B.		21" x 15"						2.19																	
				30" x 24"		13.25			1.25	5.00																	
		55 + 75		3'-0" x 4'-0"								12															
145	14	55+75 S.B.		10'-0" x 4'-0"							45.0								1						3.08		
		63+25 L-R		30" x 30"	REFUGEE ROAD	6.00	2.00		1.00				6.25														
				30" x 30"									6.25														
		59+25 L-R		30" x 30"		6.00	2.00		1.00				6.25														
				30" x 30"									6.25														
		Sta. 255+40 to Sta. 238+94.04 Ramp "D" 12 Each attached to drums.		36" x 36"						108.00																	
		TOTALS TO GENERAL SUMMARY								196.57	266.0	104.0	85.9	–	–	–	–		5	–	–	–	–	–	15.40		

ITEM 630 STRUCTURAL SUPPORTS — REMOVALS ITEM 202 — ELECTRICAL QUANTITIES ITEM 631 — REMOVALS

Sign Location	Effective Sign Size "He"	Ground Mounted Support No. 3 Post L.F. LT.	No. 3 Post CTR.	No. 3 Post RT.	Ground Mounted Support No. 4 Post L.F. LT.	No. 4 Post CTR.	No. 4 Post RT.	Ground Mounted Support No. 4 Post as per Plan L.F. LT.	No. 4 Post as per Plan CTR.	No. 4 Post as per Plan RT.	Ground Mounted Support No. 6 Post L.F. LT.	No. 6 Post CTR.	No. 6 Post RT.	Ground Mounted Support S4 x 7.7 L.F. LT.	S4 x 7.7 CTR.	S4 x 7.7 RT.	Ground Mounted Support W6 x 9 L.F. LT.	W6 x 9 CTR.	W6 x 9 RT.	Removal of Temporary Drums (Item 202) EA.	Mercury Vapor Luminaire with 480 Volt Lamp Modified 100 Watt EA	Mercury Vapor Luminaire with 480 Volt Lamp Modified 175 Watt EA.	Signs Wired EA.	Disconnect Switch with Enclosure Size "X" EA.	Sign Service EA.	Ballast CRM1-100-480 EA.	Ballast CRM1-175-480 EA.	Item S-625 Ground Rod EA.	Ballast Wiring Enclosure Type A EA	Ballast Wiring Enclosure Type B EA	Removal of Overhead Mounted Sign & Stor. (Item 630) EA	Removal of Overhead Mounted Sign and Storage—Cantilever Type (Item 630) EA.	Removal of Sign Lighting Luminaire and Storage (Item 631) EA.	EA.	Removal of Temporary Overlay Sign (Item 630) EA.	Removal of Ground Mounted Major Sign and Storage EA.	Removal of Ground Mounted Beam Sup. EA.	Removal of Ground Mounted Sign and Storage EA.	Removal of Ground Mounted Post Support EA.	Removal of Ground Mounted Sign and Re-Erected EA.
26 + 50 NB	21" x 15"		15.0																																					
	30" x 24"																																							
29 + 85 N.B.	10'-0" x 4'-0"																				1		1	1	1	1		1		1										
33 + 25 N.B.	24 x 30"		12.0																																					
34 + 30 N.B.	9'-0" x 1'-6"	12.0		12.0																																				
36 + 00 S.B.	36" x 36"					14.0																																		
37 + 53 S.B.	24" x 30"		13.5																																					
29 + 85 N.B.	3'-0" x 4'-0"																																							
38 + 75 N.B.	8'-0" x 5'-0"																				1		1	1	1	1		1		1										
38 + 80 N.B.	24" x 30"		13.5																																					
39 + 00 S.B.	9'-0" x 1'-6"	12.0		12.5																																				
46 + 10	8'-0" x 5'-0"																				1		1	1	1	1		1		1										
47 + 50 N.B.	8'-0" x 1'-6"	12.0		12.0																																				
50 + 60 LT. 'a'	8'-0" x 5'-0"																				1		1	1	1	1		1		1										
'b'	8'-0" x 5'-0"																				1		1			1														
51 + 14 S.B.	24" x 30"		13.5																																					
	24" x 12"																																							
	24" x 12"																																							
51 + 25 RT.	30" x 24"				12.00		18.00																																	
	21" x 15"																																							
	8'-0" x 1'-6"																																							
52 + 33 S.B.	36" x 36" x 36"					13.0																																		
52 + 33 N.B.	24" x 30"		13.5																																					
52 + 75 N.B.	36" x 36"				12.5																																			
53 + 75 N.B.	36" DIA.				12.5																																			
55 + 00 S.B.	8'-0" x 1'-6"	11.5		12.0																																				
55 + 50 S.B.	24" x 30"		12.0																																					
64 + 50 N.B.	21" x 15"		16.0																																					
	30" x 24"																																							
55 + 75	3'-0" x 4'-0"																																							
55+75 S.B.	10'-0" x 4'-0"																				1		1	1	1	1		1		1										
63+25 L-R	30" x 30"																																							
	30" x 30"																																							
					13.0		13.0																																	
59+25 L-R	30" x 30"																																							
	30" x 30"																																							
					13.0		13.0																																	
Sta. 255+40 to Sta. 238+94.04 Ramp "D" 12 Each attached to drums.	36" x 36"					100																																		
TOTALS TO GENERAL SUMMARY		205			234			–			–						–			–	6	–	6	5	5	6	–	5	–	5	–	–	–	–	–	–	–	–	–	–

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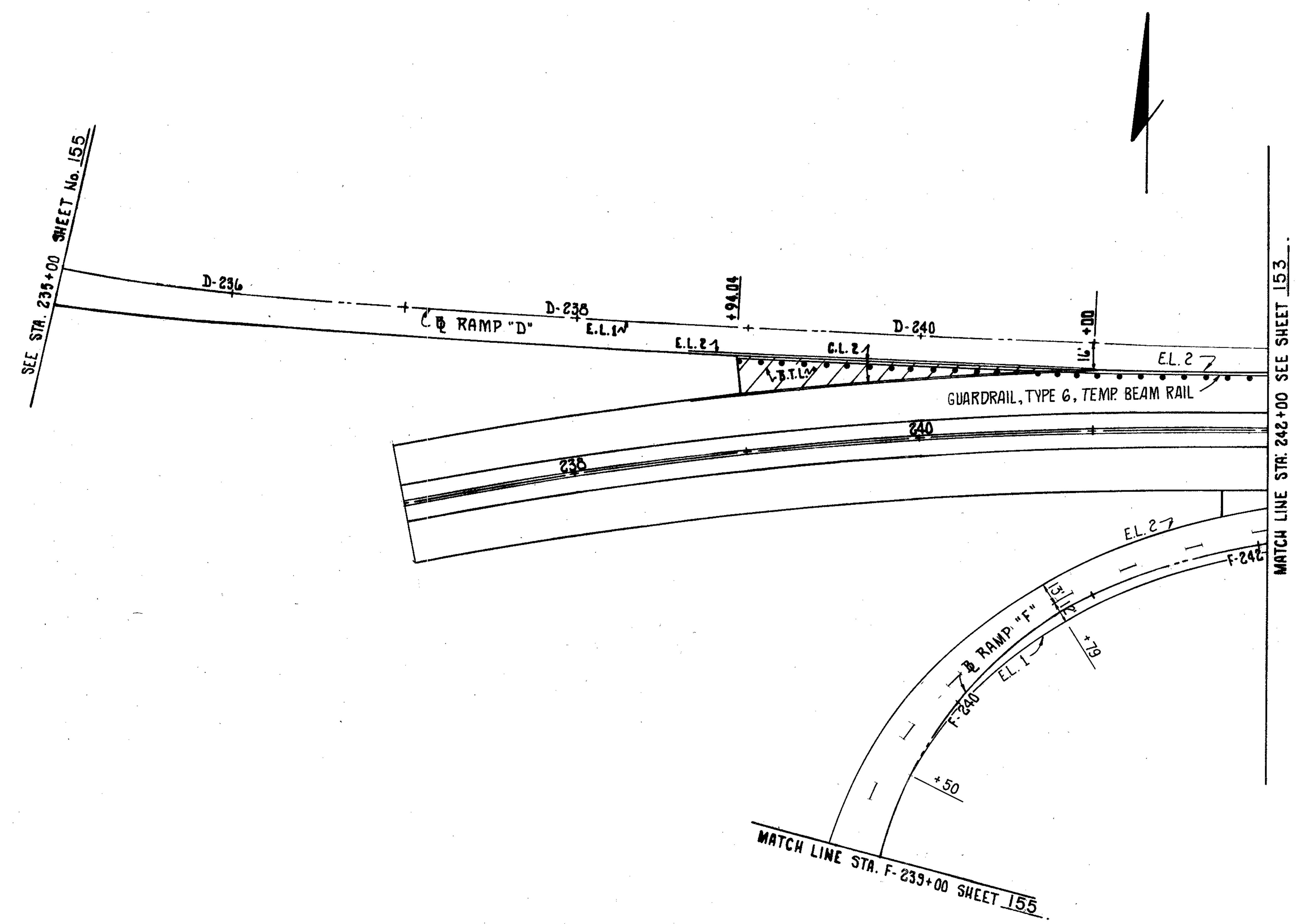


LEGEND

B.T.L.	BROAD TRANSVERSE LINES – 20" WHITE
C.L.2	CHANNELIZING LINE – 10" WHITE
D.L.	DOTTED LINE – 5" WHITE – 2' LINE SEGMENT / 4' SPACE
E.L. 1	EDGE LINE – 4" WHITE
E.L. 2	EDGE LINE – 4" YELLOW
L.L. 2	LANE LINE – 5" WHITE – 10' LONG / 30' SPACE
S.L.	STOP LINE – 20" WHITE
℄ 1	DOUBLE CENTER LINE – 5" YELLOW
P.I.	PAINTED ISLAND – 2-5" YELLOW LINES WITH YELLOW STRIPING INSIDE (20" YELLOW TRANSVERSE LINES ON 12' CENTERS)
DW.1	DOUBLE LINE – 5" WHITE

NOTE: 306' - ITEM 606 - GUARDRAIL, TYPE 6, TEMPORARY BEAM RAIL.

PAVEMENT MARKING DETAILS STA. 237+00 TO STA. 242+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

153
254

FRANKLIN COUNTY
FRA-104-10.57

NOTE:
FOR LEGEND SEE SHEET NO. 152.
1340' - ITEM 606 - GUARDRAIL, TYPE 6, TEMPORARY BEAM RAIL.

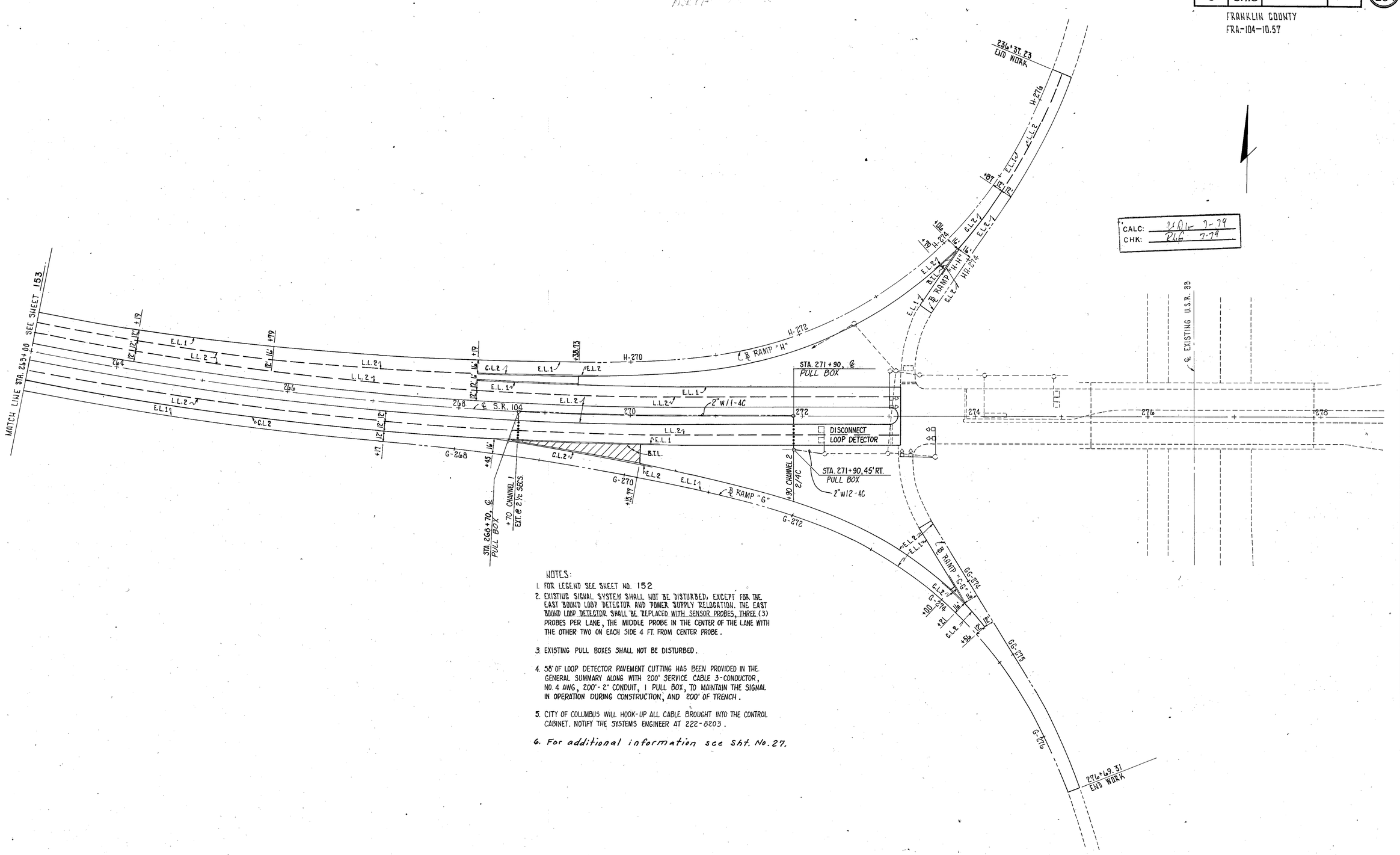
PAVEMENT MARKING DETAILS - STA. 242+00 TO STA. 263+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

154
254

FRANKLIN COUNTY
FRA-104-10.57

CALC: MDH 7-79
CHK: RLG 7-79



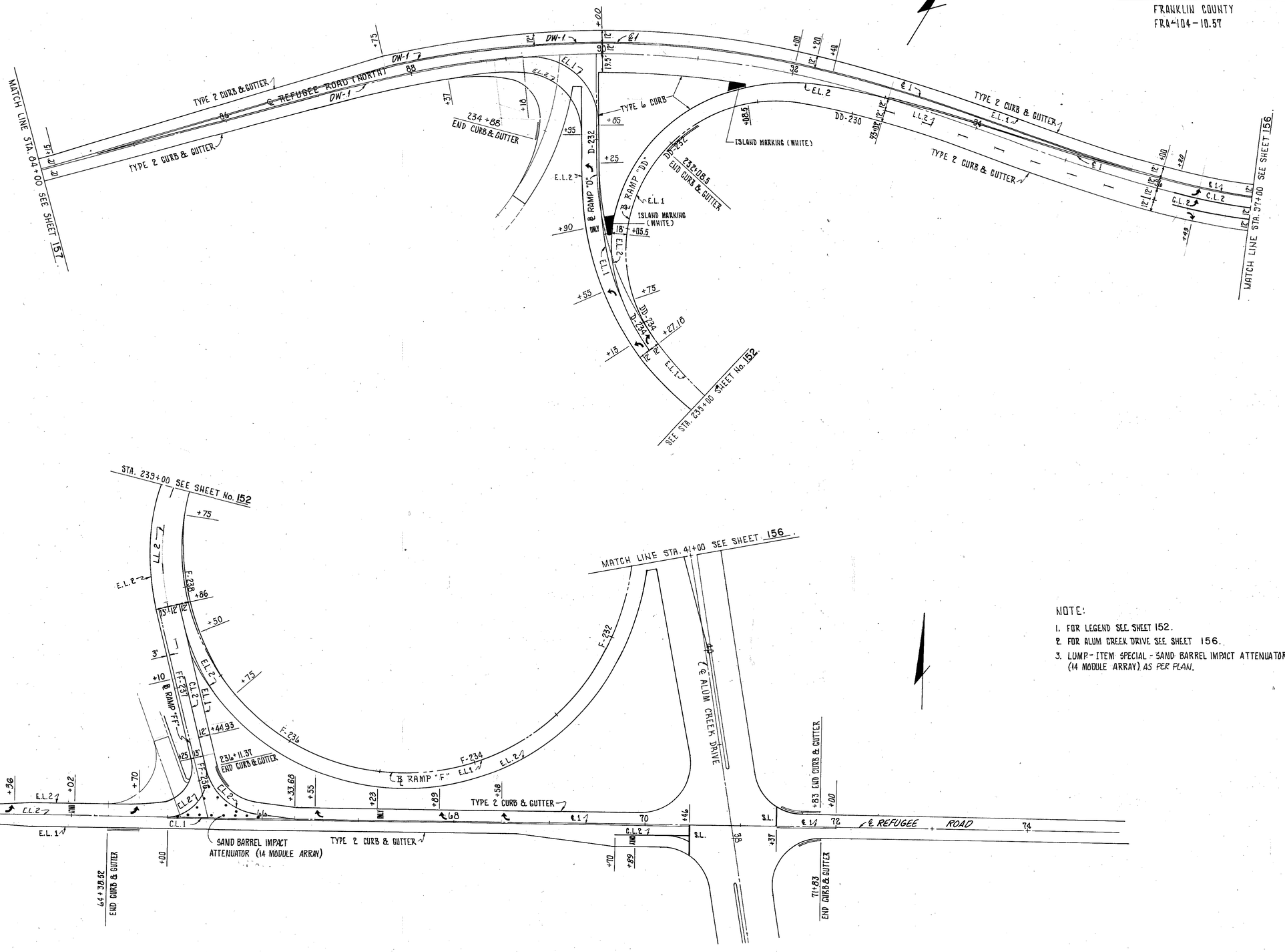
NOTES:

1. FOR LEGEND SEE SHEET NO. 152
2. EXISTING SIGNAL SYSTEM SHALL NOT BE DISTURBED, EXCEPT FOR THE EAST BOUND LOOP DETECTOR AND POWER SUPPLY RELOCATION. THE EAST BOUND LOOP DETECTOR SHALL BE REPLACED WITH SENSOR PROBES, THREE (3) PROBES PER LANE, THE MIDDLE PROBE IN THE CENTER OF THE LANE WITH THE OTHER TWO ON EACH SIDE 4 FT. FROM CENTER PROBE.
3. EXISTING PULL BOXES SHALL NOT BE DISTURBED.
4. 58' OF LOOP DETECTOR PAVEMENT CUTTING HAS BEEN PROVIDED IN THE GENERAL SUMMARY ALONG WITH 200' SERVICE CABLE 3-CONDUCTOR, NO. 4 AWG, 200'-2" CONDUIT, 1 PULL BOX, TO MAINTAIN THE SIGNAL IN OPERATION DURING CONSTRUCTION, AND 200' OF TRENCH.
5. CITY OF COLUMBUS WILL HOOK-UP ALL CABLE BROUGHT INTO THE CONTROL CABINET. NOTIFY THE SYSTEMS ENGINEER AT 222-8203.
6. For additional information see Sht. No. 27.

FHWA REGION	STATE	PROJECT	
5	OHIO		

155
254

FRANKLIN COUNTY
FRA-104-10.57



NOTE:

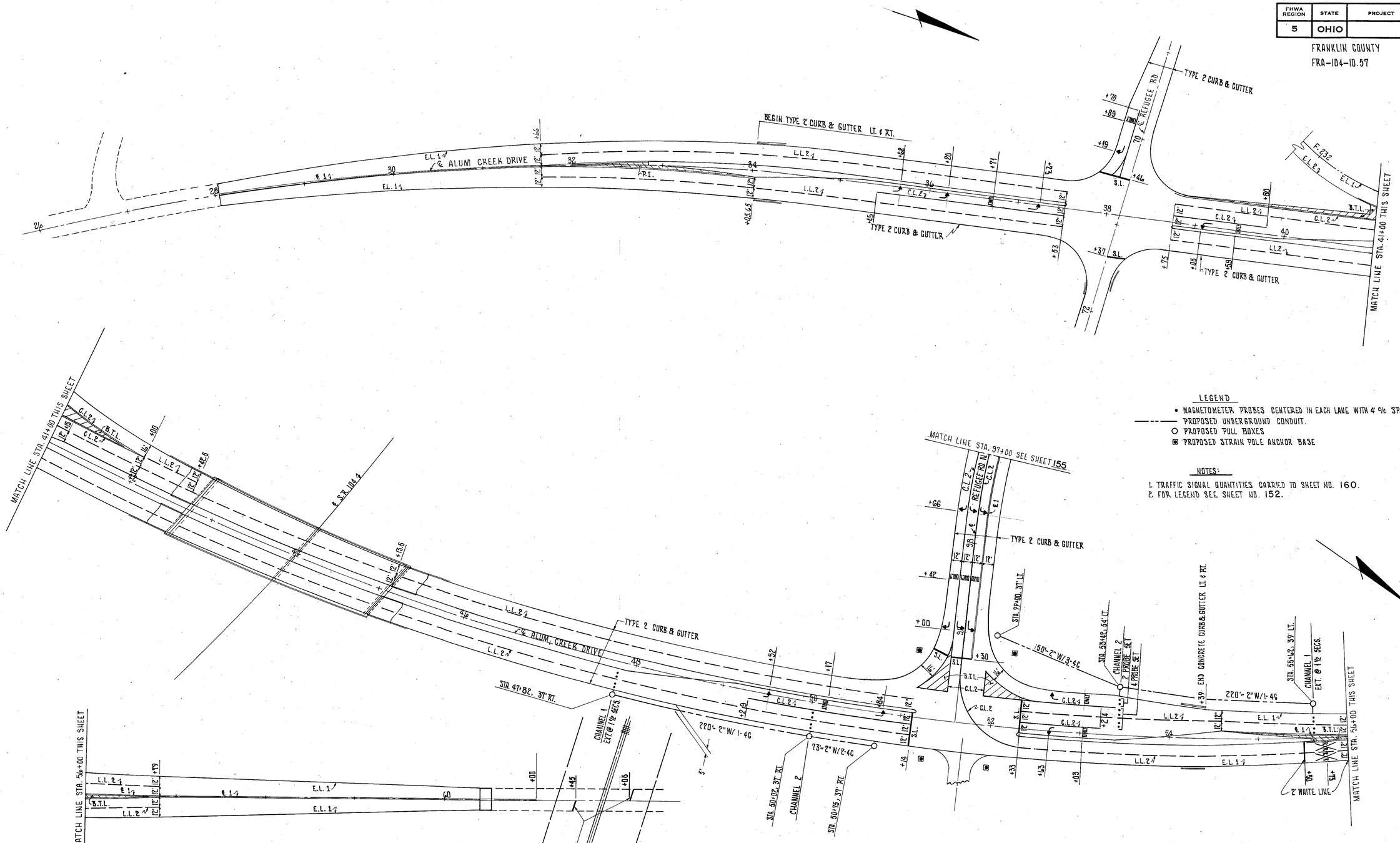
1. FOR LEGEND SEE SHEET 152.
2. FOR ALUM CREEK DRIVE SEE SHEET 156.
3. LUMP - ITEM SPECIAL - SAND BARREL IMPACT ATTENUATOR (14 MODULE ARRAY) AS PER PLAN.

PAVEMENT MARKING DETAILS - REFUGEE ROAD & REFUGEE ROAD NORTH

FHWA REGION	STATE	PROJECT	
5	OHIO		

156
254

FRANKLIN COUNTY
FRA-104-10.57



LEGEND

- • MAGNETOMETER PROBES CENTERED IN EACH LANE WITH 4' c/c SPACING.
- ——— PROPOSED UNDERGROUND CONDUIT.
- ○ PROPOSED PULL BOXES
- ▣ PROPOSED STRAIN POLE ANCHOR BASE

NOTES:

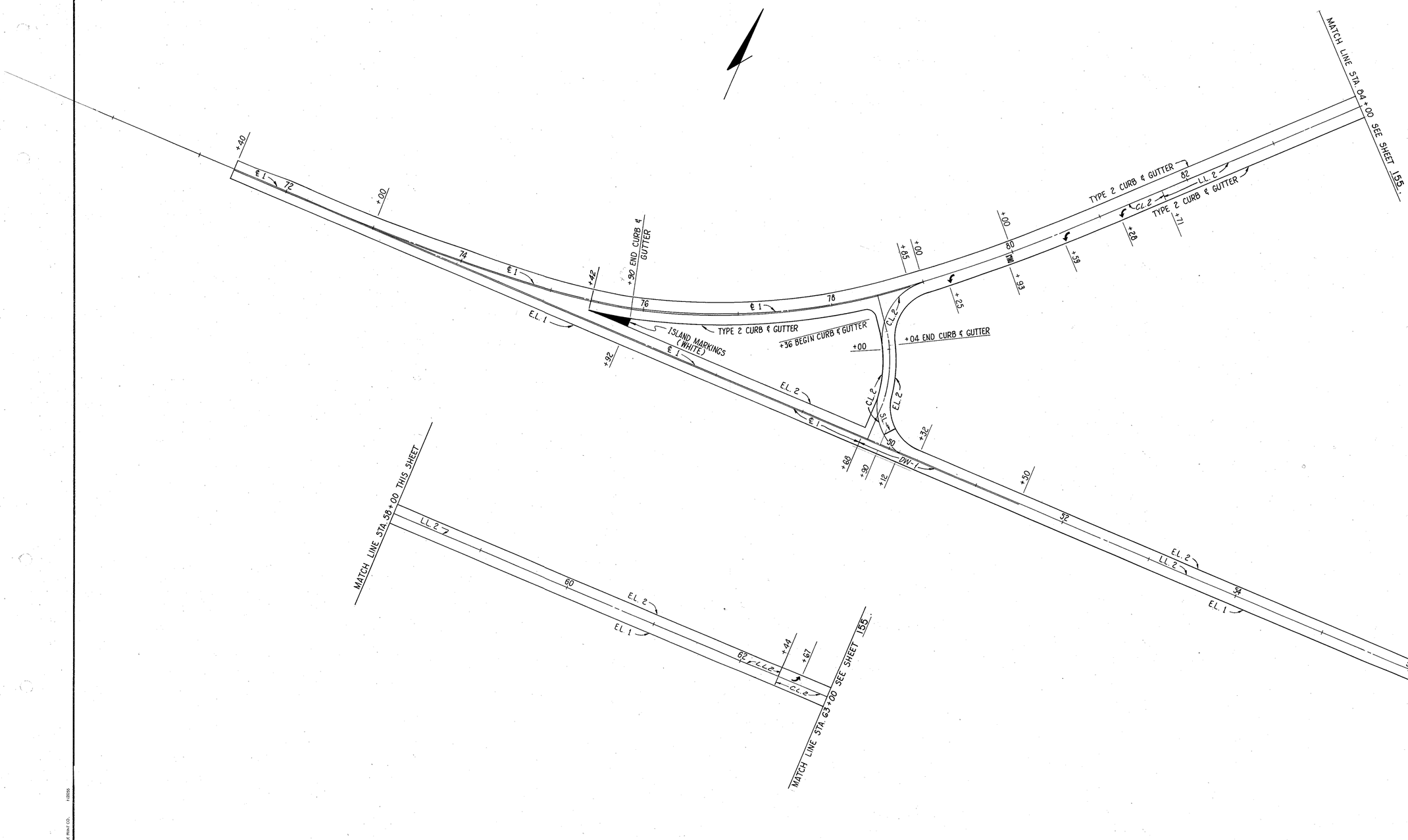
1. TRAFFIC SIGNAL QUANTITIES CARRIED TO SHEET NO. 160.
2. FOR LEGEND SEE SHEET NO. 152.

PAVEMENT MARKING DETAILS - ALUM CREEK DRIVE

	OHIO
	FHWA REGION 5
	FEDERAL PROJECT

157
254

FRANKLIN COUNTY
FRA – 104 – 12.41



PAVEMENT MARKING DETAILS - REFUGEE ROAD & REFUGEE ROAD NORTH

621 - PAVEMENT MARKING

NOTE: PAVEMENT MARKINGS HAVE BEEN SELECTED TO INDICATE THE PATTERNS ESTABLISHED BY PAVEMENT MARKING DETAILS. EACH SECTION OF MAINLINE PAVEMENT OR SECTION OF RAMP LISTED INCLUDES 4" EDGE LINE AND/OR 10" CHANNELIZING LINE AS APPLICABLE FOR BOTH SIDES OF PAVEMENT AND LANE LINES AS REQUIRED FOR THE NUMBER OF LANES AND AS REQUIRED FOR RAMP TERMINALS.

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

158
254

FRANKLIN COUNTY
FRA-104-10.57

CALC: GKS 6-79
CHK: RWG 6-79

RAMP OR ROADWAY	LENGTH OF SECTION	STATION	TO	STATION	4" EDGE LINES (WHITE)	4" EDGE LINES (YELLOW)	5" LANE LINES		5" CENTER LINES SOLID, DOUBLE	10" CHANNELIZING LINES	20" STOP LINES	20" TRANSVERSE LINES (WHITE)	24" BROAD TRANSVERSE LINES (WHITE)	24" BROAD TRANSVERSE LINES (YELLOW)	SOUND MARKING (WHITE)	LANE ARROWS	72" "ONLY" ON PAVEMENT	24" SYMBOL ON PAVEMENT	GUARDRAIL TYPE 6, TEMP. BEAM RAIL
	L.F.				L.F.	L.F.	L.F.		L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	S.F.	EA.	EA.	EA.	L.F.
											S.R. 104								
	1680	140+00		156+00	1600	1680	1600												
	128	156+00		157+20	240	120	120												
	240	157+20		159+60	240	240	480												
	6783	159+60		227+43	6783	6783	6783												
	182	227+43		229+25	182	182	364												
	393	229+25		233+18		393	393												
	546	243+29		248+75	546	546	546												
	1025	248+75		259+00	1025	1025	2050												
	945	259+00		268+45	945	945	945			945									
	167	268+45		270+12		167	167			167									
E.B.	298	270+12		273+10	298	298	298												
W.B.	371	273+10		269+39	371	371	371												
	120	269+39		268+19	240	120	120			120									
	1279	268+19		255+40	1279	1279	2558												
	720	255+40		248+20	720	720	720												720
	720	248+20		241+00	720	720													720
	200	241+00		239+00						200									
	128	221+00		225+80	240	120	120												
	240	228+50		223+40	240	240	480												
	6465	223+40		158+75	6465	6465	6465												
	208	156+75		156+75	200	200	400												
	300	156+75		153+75		300	300												
	1315	153+75		140+60	1315	1315	1315												
RAMP "A"	1081	145+15		156+80	1081	1081													
RAMP "B"	249	156+15		153+16	249					195		320							
	576	153+76		148+80	576	576													
	225	148+00		146+75						225									
		146+18																	
		145+40																	
	65	146+75		146+10	65	65				65									
RAMP "B"		145+18									40								
RAMP "FF"	14	236+11		236+25	14					14									
	85	236+25		237+10	85	85				85									
	40	237+10		237+50	40	40	40												
RAMP "FF"	36	237+50		237+86		36	36												

LOCKBOURNE RD. INTERCHANGE

RAMP OR ROADWAY	LENGTH OF SECTION	STATION	TO	STATION	4" EDGE LINES (WHITE)	4" EDGE LINES (YELLOW)	5" LANE LINES	5" DOUBLE LINES WHITE, SOLID	5" CENTER LINES SOLID, DOUBLE	10" CHANNELIZING LINES	20" STOP LINES	24" BROAD TRANSVERSE LINES (WHITE)	24" BROAD TRANSVERSE LINES (YELLOW)	SOUND MARKING (WHITE)	LANE ARROWS	72" "ONLY" ON PAVEMENT	24" SYMBOL ON PAVEMENT
	L.F.				L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	S.F.	EA.	EA.	EA.
LOCKBOURNE RD.	50	18+17		18+67					50								
	98	19+67		20+65					196				70				
	168	20+65		22+33					336				280				
	87	22+33		23+20			141		170				120				
		22+93									37						
		23+75									39						
	148	23+75		24+90			495		80	80							
		24+05															
		24+55															
	120	24+55		25+75					122								
	30	25+75		26+05					30	30							
		25+35															
		25+75															
		26+05									38						
	58	26+85		27+20			77		115				80				
	48	27+20		27+68			80		80				55				
REFUGEE RD.	290	73+00 REF. RD. NORTH		46+92	290				290								
	276	46+92		49+68	276	276			276		38						
	64	49+68		50+32	64			64									
		49+90									14		55				
	105	1+00 REF. RD. CONN.		50+12													
	125	1+00 REF. RD. CONN.		50+32		125				105							
	118	50+32		51+50	118	118		118									
	1094	51+50		62+44	1094	1094	1094										
		62+67													1		
		63+36													1		
		64+02														1	
		64+70													1		
	195	62+44		64+39	195	195				195							
	118	64+39		236+25 RAMP FF		118											
	61	64+39		65+00						61							
	73	65+00		236+11 RAMP FF						73							
	134	65+00		66+34					134								
	120	66+34		236+11 RAMP FF						120							
	336	66+34		69+70													
		66+55													1		
		67+23														1	
		67+89													1		
		68+58													1		
		69+89														1	
	76	69+70		70+46					76	100							
		70+19													1		
		70+46									32						
		71+37									20						
REFUGEE RD.	263	71+37		72+00					63								
TOTALS - LINEAR FEET					8320	8278	8945	182	839	2185	66				7	3	
TOTALS - MILES					3.14		1.69	.03	0.16	0.41							
TOTALS TO GENERAL SUMMARY					3.14		1.69	.03	0.16	0.41	66				7	3	

620 - DELINEATORS

PARTICIPATION	RAMP/ROADWAY	STATION	TO	STATION	SIDE *	INTERVAL	TYPE C POST	TYPE C BRACKET	TYPE D POST	TYPE D BRACKET
	RAMP									
	"A"	145+20		149+20	RT.	80	16			
		150+20		154+16	RT.	100	8			
		154+96		156+76	RT.	80	2		3	
	"B"	156+76		146+76	RT.	100	11			
	RAMP									
	"B"	146+70		144+68	LT.	100	16			
	RAMP									
	"C"	227+00		228+50	RT.	100	12			
		228+50		229+70	LT.	80			2	
		230+40		234+00	RT.	60			2	
	"C"	234+50		233+10	RT.	40			10	
	RAMP									
	"D"	231+35		232+85	LT.	30			6	
	"D"	231+30		235+70	RT.	40			12	
		236+10			RT.	80			1	
		236+90		238+90	RT.	100			3	
	"D"	238+35		242+35	LT.	100	5			
	RAMP									
	"E"	229+00		224+00	RT.	100	18			
		233+10		236+00	LT.	70			5	
		236+40		240+80	LT.	40			10	
	"E"	240+70		241+00	LT.	30			1	
	RAMP									
	"F"	229+50		231+50	RT.	50	5			
	"F"	231+50		237+00	LT.	30			19	
	"F-F"	236+25		240+70	LT.	30			16	
	"F"	240+70		241+40	LT.	70			2	
	"F"	241+40		248+40	RT.	100	8			
	RAMP									
	"G"	267+00		271+00	RT.	100	5			
		270+25		273+75	LT.	50			8	
		273+95		275+15	RT.	40			4	
	"G"	275+85		276+65	LT.	40			3	
	G-G	273+15		275+15	LT.	100			3	
	RAMP									
	"H"	276+30	"H-H"	273+25	RT.	60			6	
		273+20		271+20	RT.	40			6	
	"H"	271+20		264+20	LT.	100	8			
	RT. 104									
	W.B.	255+40		239+00	LT.				9	
TOTALS TO GENERAL SUMMARY							31		98	

SUB-SUMMARIES ~ PAVEMENT MARKINGS & DELINEATORS

621 - PAVEMENT MARKING

NOTE: PAVEMENT MARKINGS HAVE BEEN SELECTED TO INDICATE THE PATTERNS ESTABLISHED BY PAVEMENT MARKING DETAILS. EACH SECTION OF MAINLINE PAVEMENT OR SECTION OF RAMP LISTED INCLUDES 4" EDGE LINE AND/OR 10" CHANNELIZING LINE AS APPLICABLE FOR BOTH SIDES OF PAVEMENT AND LANE LINES AS REQUIRED FOR THE NUMBER OF LANES AND AS REQUIRED FOR RAMP TERMINALS.

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO	"	

159
254

FRANKLIN COUNTY
FRA-104-10.57

CALC: GKS 6-79
CHK: RLG 6-79

RAMP OR ROADWAY	LENGTH OF SECTION	STATION	TO STATION	4" EDGE LINES (WHITE)	4" EDGE LINES (YELLOW)	5" LANE LINES	5" DOUBLE LINES WHITE, SOLID	5" CENTER LINES SOLID, DOUBLE	10" CHANNELIZING LINES	20" STOP LINES	20" TRANSVERSE LINES (WHITE)	20" TRANSVERSE LINES (YELLOW)	ISLAND MARKING (WHITE)	LANE ARROWS	72" "ONLY" ON PAVEMENT	'RXR' SYMBOL ON PAVEMENT
	L.F.			L.F.	L.F.	L.F.		L.F.	L.F.	L.F.	L.F.	L.F.	S.F.	EA.	EA.	EA.
		ALUM CREEK DR. INTERCHANGE														
RAMP "D"	180	231+95	88+37 REFUGEE RD. N.		180											
	122	231+85	89+18 REFUGEE RD. N.	122												
	206	241+00	238+94	206					206		260					
	467	238+94	234+27	467	467											
	232	234+27	231+95	232	232											
	10	231+95	231+85	10												
		234+13												2		
		233+55												1		
		232+90													1	
RAMP "D"		231+95												1		
RAMP "DD"	52	234+27	233+75	52												
	69	233+75	233+06	69	69											
	16	233+06	232+90	16									105			
	81	232+90	232+09	81												
	15	231+22	231+09										105			
RAMP "DD"	153	231+09	93+02 REFUGEE RD. N.		153											
REFUGEE RD. NORTH		97+66												3		
	160	71+40	73+00	160				160								
	252	73+00	75+52					252								
	35	75+52	75+87					35					175			
	298	75+87	78+85					298								
	90	79+00	1+00 REFUGEE RD. CONNECTOR						90							
		79+25												1		
		79+92													1	
		80+55												1		
		81+20												1		
	100	79+00	80+00						100							
	415	80+00	84+15			415										
	360	84+15	87+75				720									
	143	87+75	89+18				286									
	384	89+18	93+02				82	302								
	318	93+02	96+20			318		616								
	300	96+20	99+30					330	660							
		98+42													3	
		99+00												3		
		99+30										46				
		99+30	99+68						200		178					
REFUGEE RD. NORTH		96+43												3		
RAMP "F"	107	230+21	231+28	107					107							
	547	231+28	236+75	547	547											
	75	236+75	237+50	75	75											
	36	237+50	237+86	36											1	
RAMP "F"	543	237+86	243+29	543	543	543								1		

RAMP OR ROADWAY	LENGTH OF SECTION	STATION	TO STATION	4" EDGE LINES (WHITE)	4" EDGE LINES (YELLOW)	5" LANE LINES	5" DOUBLE LINES WHITE, SOLID	5" CENTER LINES SOLID, DOUBLE	10" CHANNELIZING LINES	20" STOP LINES	20" TRANSVERSE LINES (WHITE)	20" TRANSVERSE LINES (YELLOW)	ISLAND MARKING (WHITE)	LANE ARROWS	72" "ONLY" ON PAVEMENT	'RXR' SYMBOL ON PAVEMENT
	L.F.			L.F.	L.F.	L.F.		L.F.	L.F.	L.F.	L.F.	L.F.	S.F.	EA.	EA.	EA.
		ALUM CREEK DRIVE														
ALUM CK. DR.		36+20												1		
		35+68												1		
	416	27+50	31+66	832				416								
	240	31+66	34+06	480		480		360				80				
	139	34+06	35+45			258										
	208	35+45	37+53			436			208							
		36+71													1	
		37+23												1		
	105	38+75	39+88			286			207		30					
		39+05												1		
		39+59													1	
	220	39+80	42+00			425			220		280					
	64	42+00	42+64			192										
	665	42+64	49+29			1330										
	185	49+29	51+14			370			185							
		51+14								36						
		50+17													1	
		50+84												1		
		49+52												1		
	70	51+63	52+33						100							
		52+33								36						
	91	52+33	53+24			212			182							
		52+63												2		
		53+03													2	
	115	53+24	54+39			230										
	20	54+39	54+59	40		40										
	91	54+59	55+50	182		182		91				15				
	119	55+50	56+79	238		238		238				45				
		55+75													2	
	421	56+79	61+00	842				421								
		61+45								24						
ALUM CK. DR.		62+05								24						
				U.S. 33 INTERCHANGE												
RAMP "G"	171	268+45	270+16	171					171		200					
	384	270+16	274+00	384	384											
	21	274+00	274+21	21					21							
	35	274+21	274+56	35	35				35							
RAMP "G"	219	274+56	276+75	219	219											
RAMP "GG"	83	273+15	273+98	83	83											
RAMP "GG"	21	273+98	274+19	21					21							
RAMP "H"	153	276+40	274+87	153	153											
	81	274+87	274+06	81	81				81							
	27	274+06	273+79	27					27		25					
RAMP "H"	440	273+79	269+39	440	440											
RAMP "HH"	27	274+04	273+77		27				27							
RAMP "HH"	27	273+77	273+20	57	57											
TOTALS - LINEAR FEET				7029	3745	5894	1088	3519	2848	166	973	140	385	25	11	2
TOTALS - MILES				2.04		1.12	0.21	0.67	0.54	—	—	—				
TOTALS TO GENERAL SUMMARY				2.04		1.12	0.21	0.67	0.54	166	1113		385	25	11	2

620 - DELINEATORS

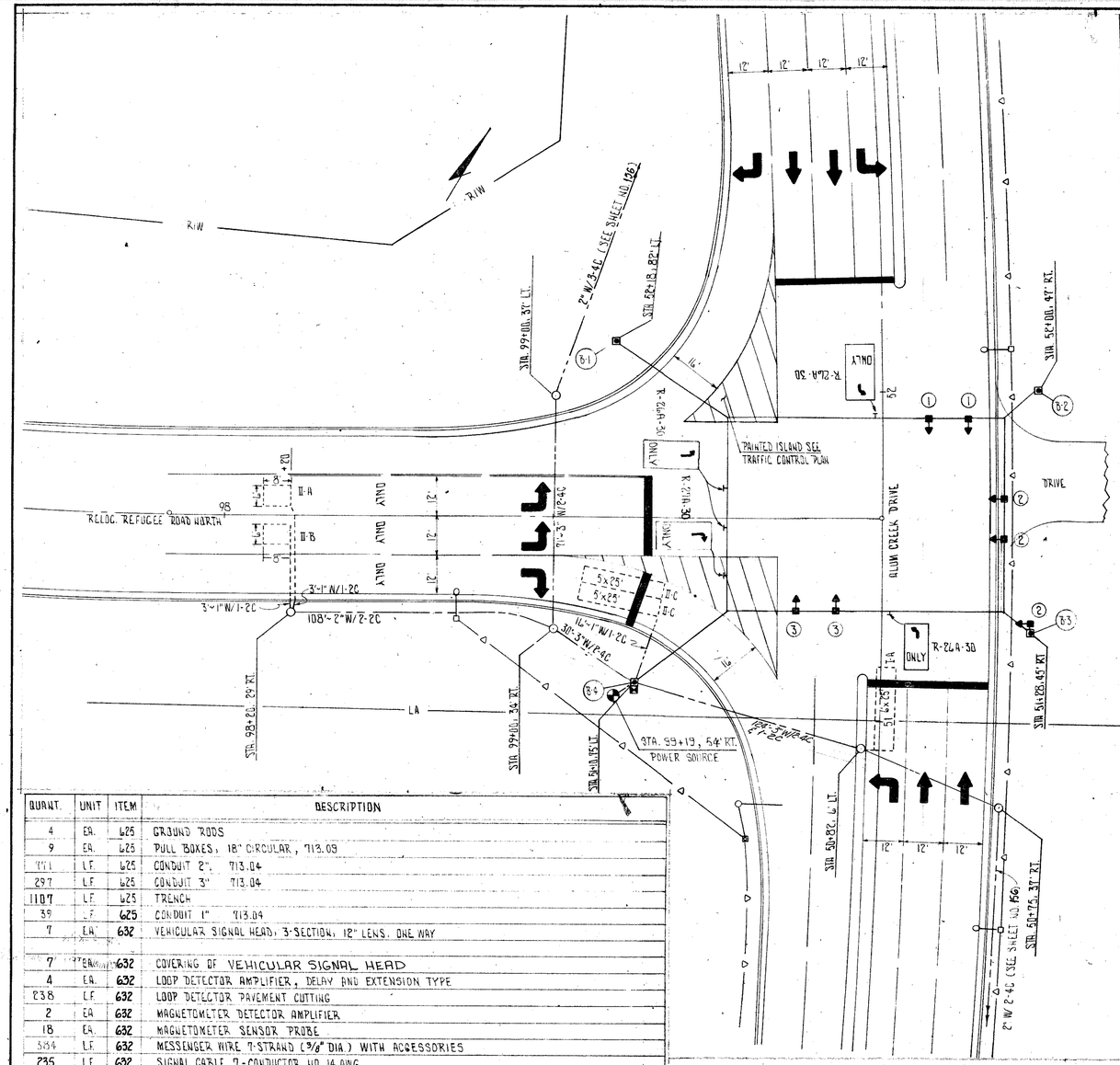
PARTICIPATION	RAMP ROADWAY	STATION	TO STATION	SIDE *	INTERVAL	TYPE 'A' POST	TYPE 'A' BRACKET	TYPE 'D' POST	TYPE 'D' BRACKET

FHWA REGION	STATE	PROJECT	
5	OHIO		

160
254

FRANKLIN COUNTY
FRA-104-10.57

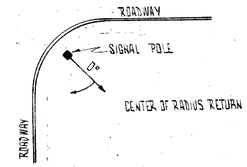
CALC: RLG 6-79
CHK: RLG 6-79



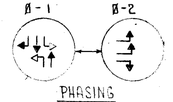
LEGEND

- PROPOSED STRAIN POLE ANCHOR BASE
- PROPOSED SIGNAL HEAD
- PROPOSED PULL BOX
- PROPOSED LOOP DETECTOR WIRE
- PROPOSED UNDERGROUND CONDUIT
- PROPOSED MESSENGER WIRE
- PROPOSED CONTROL CABINET
- MAGNETOMETER PROBES
- LIGHTING CIRCUIT
- PROPOSED LIGHT POLES
- OVERHEAD SIGN
- LIGHTING PULL BOX
- POWER SOURCE
- SERVICE CABLE

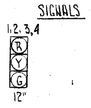
NOTE:
THE PROPER ALIGNMENT OF THE ANCHOR BOLT PATTERN AND HANDHOLE FOR STRAIN POLES SHALL BE RADIALLY FROM THE STRAIN POLE LOCATION TOWARD THE CENTER OF THE RADIUS RETURN. SEE PAVEMENT DETAILS FOR CENTER OF RADIUS RETURN.



TYPICAL ORIENTATION SKETCH



PHASING



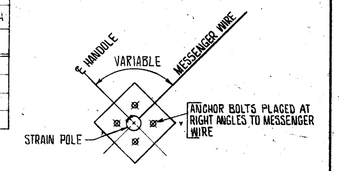
POLE DESIGNATION	CABLE ENTRANCE	CONTROLLER	WEATHERHEAD	CONDUIT ELL'S IN FOUNDATION 2" SIGNAL	3" SIGNAL		HANDHOLE
NW	204°	—	—	—	—		0°
NE	204°	—	—	—	—		0°
SE	180°	—	—	—	—		0°
SW	204°	330°	45°	80° 170°	100° 255° 285°		71°30'

SIGNAL TIMING	A-1	A-2
MINIMUM GREEN	15	10
PASSAGE	4.5	4.0
YELLOW CLEAR	4.7	3.6
RED CLEAR	1.0	1.0
MAXIMUM GREEN	50	40
SEC./ACT.	1.3	1.5
TIME TO REDUCE	10	20
TIME BEFORE REDUCTION	25	10
MINIMUM GAP	2.5	2.8
RECALL	ON	LOCK

II C DELAY @ 15 SEC.
I A DELAY @ ZERO
MAGNETOMETER CHANNEL 1 EXT. @ 1½ SEC.

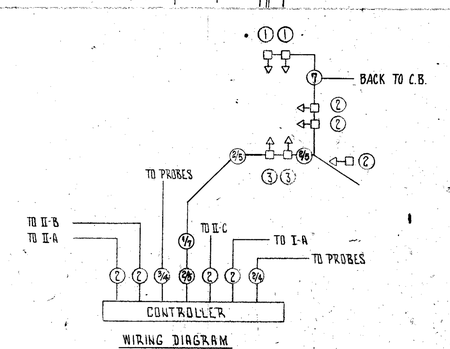
SIGNAL INDICATION								
PHASE	A-1			A-2				FLASH
MOVEMENT	R/W	YELLOW CLEAR	RED CLEAR	R/W	YELLOW CLEAR	RED CLEAR		
SIGNAL 1	G	Y	R	R	R	R		R
2	R	R	R	G	Y	R		R
3	G	Y	R	R	R	R		R

INITIALIZATION A-1 GREEN
POWER UP FLASH DURATION SET AT 10 SECONDS

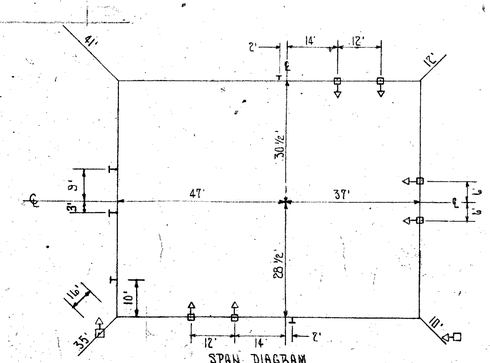


ANCHOR BOLT ORIENTATION SKETCH

QUANT.	UNIT	ITEM	DESCRIPTION
4	EA.	625	GROUND RODS
9	EA.	625	PULL BOXES, 18" CIRCULAR, 713.09
771	L.F.	625	CONDUIT 2", 713.04
297	L.F.	625	CONDUIT 3" 713.04
1107	L.F.	625	TRENCH
39	L.F.	625	CONDUIT 1" 713.04
7	EA.	632	VEHICULAR SIGNAL HEAD, 3-SECTION, 12" LENS, ONE WAY
7	EA.	632	COVERING OF VEHICULAR SIGNAL HEAD
4	EA.	632	LOOP DETECTOR AMPLIFIER, DELAY AND EXTENSION TYPE
238	L.F.	632	LOOP DETECTOR PAVEMENT CUTTING
2	EA	632	MAGNETOMETER DETECTOR AMPLIFIER
18	EA.	632	MAGNETOMETER SENSOR PROBE
384	L.F.	632	MESSENGER WIRE 7-STRAND (3/8" DIA.) WITH ACCESSORIES
235	L.F.	632	SIGNAL CABLE 7-CONDUCTOR NO. 14 AWG
496	L.F.	632	SIGNAL CABLE 5-CONDUCTOR NO. 14 AWG
673	L.F.	632	LOOP DETECTOR WIRE, TYPE E
354	L.F.	632	LOOP DETECTOR LEAD IN CABLE
152	L.F.	632	MAGNETOMETER LEAD IN CABLE
30	L.F.	632	POWER CABLE 3-CONDUCTOR NO. 8 AWG
20	L.F.	632	SERVICE CABLE 3-CONDUCTOR NO. 6 TRIPLEX
1	EA.	632	POWER SERVICE
2	EA.	632	CABLE SUPPORT ASSEMBLY
9.6	C.Y.	632	CONCRETE FOR ANCHOR BASE FOUNDATION
4	EA.	632	STRAIN POLE, TYPE TC-81.10, DESIGN 6, 30'0"
1	EA.	861	CONTROLLER, ACTUATED, 2 PHASE, SOLID STATE DIGITAL MICROPROCESSOR
37.5	S.F.	630	SIGN FLAT SHEET, TYPE G
5	EA.	630	SIGN HANGER ASSEMBLY, SPAN WIRE, TYPE 2



WIRING DIAGRAM



SPAN DIAGRAM

NOTES:

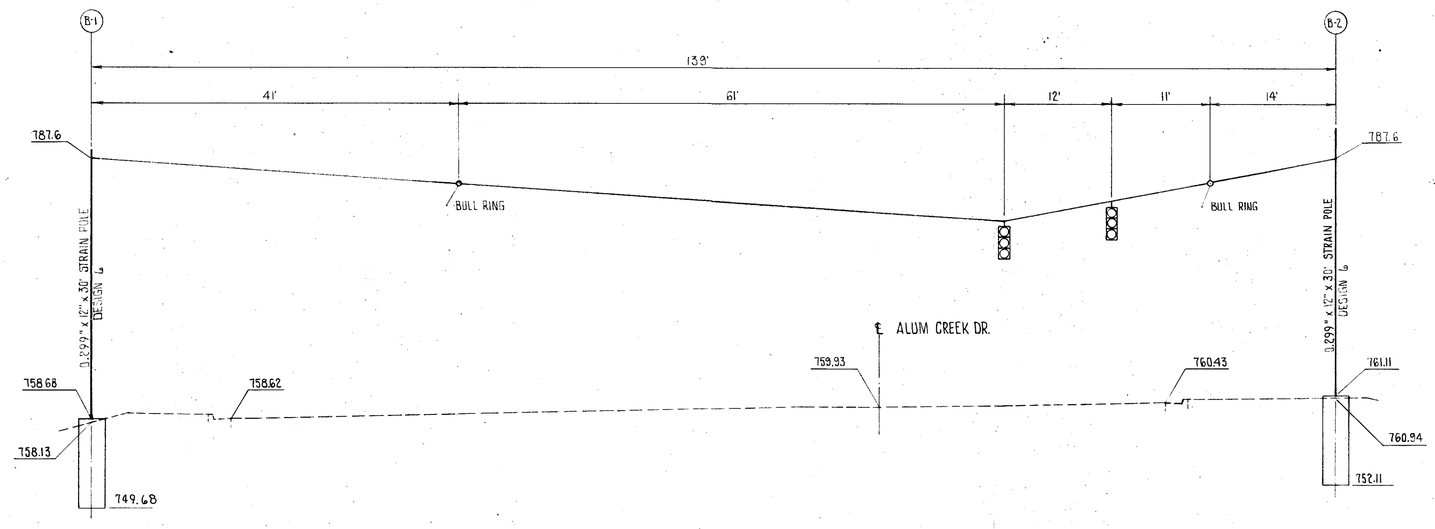
1. THE EBRT LOOP DETECTOR AMPLIFIER SHALL BE CAPABLE OF DELAYING THE CALL TO THE CONTROLLER UNIT DURING THE PHASE 2 RED. THE DELAY INTERVAL SHALL BE ABLE TO BE SET FROM 0 TO 30 SECONDS.
2. THE MAGNETOMETER PROBES SHOWN ON SHEET NO. 156 SHALL BE PLACED 12" DEEP AND SEPARATED BY 4' CENTERED ON THE MIDDLE OF EACH LANE.
3. THE PROBES LOCATED AT STA. 55+62 AND STA. 47+82 SHALL BE CONNECTED TO THE SAME AMPLIFIER OR CHANNEL. THIS CHANNEL SHALL BE CAPABLE OF EXTENDING THE VEHICLE CALL FOR 3 SECONDS. THE PROBES AT STA. 50+02 AND STA. 53+42 SHALL BE CONNECTED TO ANOTHER AMPLIFIER OR CHANNEL. THIS CHANNEL SHALL DETECT VEHICLES WHILE THEY ARE IN THE ZONE OF INFLUENCE THEN DROP THE CALL WHEN THEY LEAVE. EXTENSION INTERVAL SHALL RANGE FROM 0 TO 5 SECONDS.
4. FOR SIGNAL SPAN PROFILES SEE SHEET NO. 161

TRAFFIC SIGNAL PLAN — ALUM CREEK DRIVE AT RELOC. REFUGEE ROAD

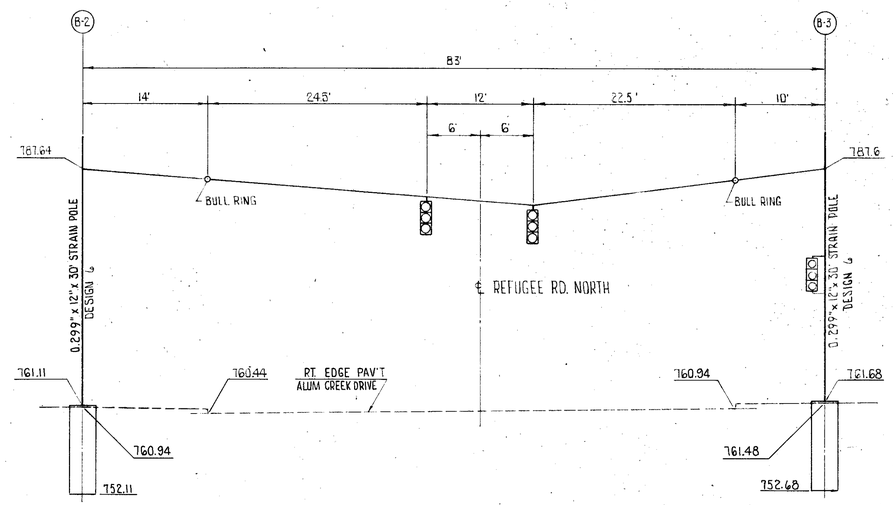
FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA-104-10.57

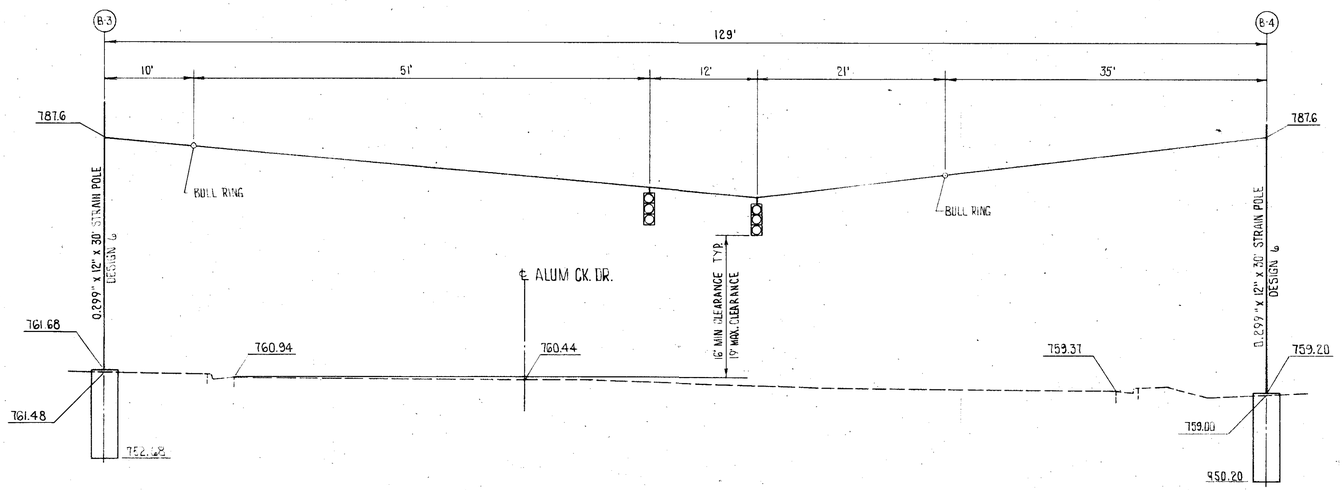
161
254



SPAN B-1 TO B-2



SPAN B-2 TO B-3



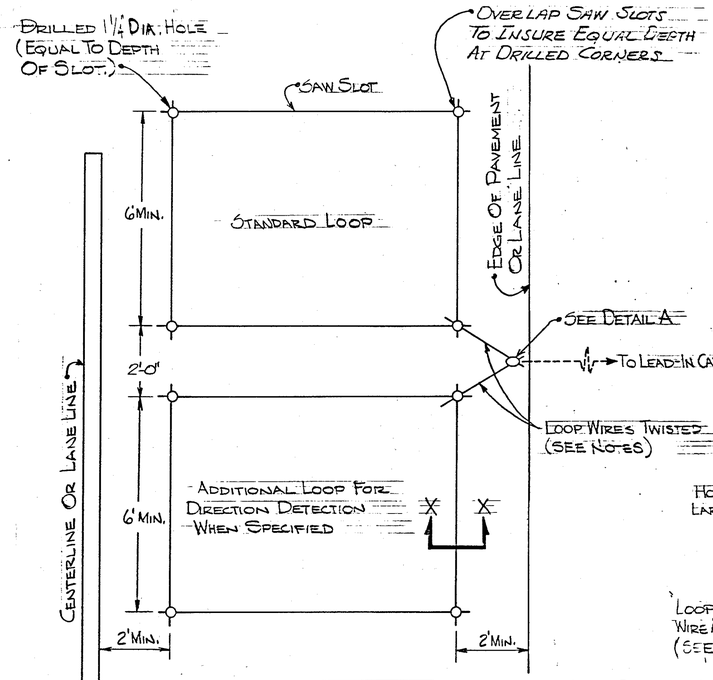
SPAN B-3 TO B-4

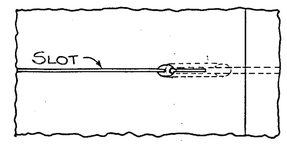
NOTE

1. FOR TRAFFIC SIGNAL PLAN SEE SHEET NO. 160.

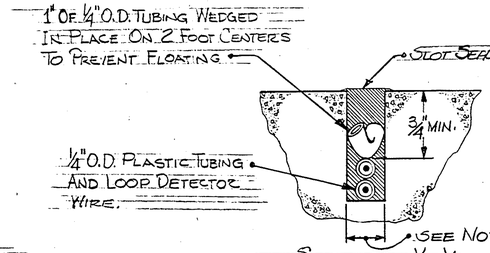
CALC. BY		OHIO
DATE		FHWA REGION 5
CHKD. BY		161A / 254
DATE		

FRANKLIN COUNTY
FRA-104-10.57

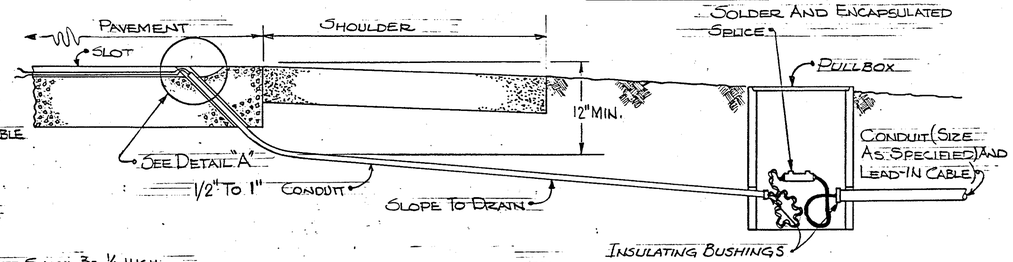


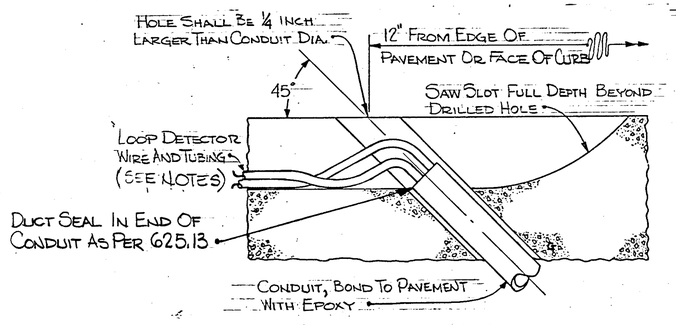


Plan View



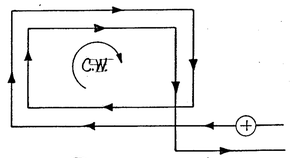
Section X-X



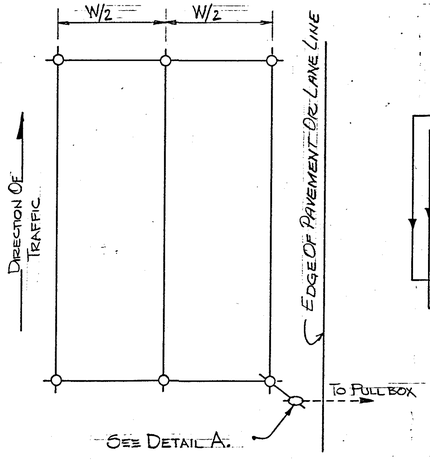


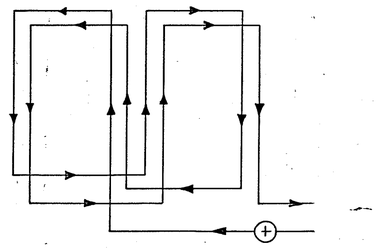
Detail "A"

Loop Wire Construction	
Loop Perimeter	Number Of Turns
Less Than 40 Feet	3
40 To 160 Feet	2
Over 160 Feet	1



Typical Polarity Marking





Wiring Layout And Polarity

Figure 8 Loop Details

SPECIAL LOOP DETECTOR DETAILS, TYPE E

10/7/83

LIGHTING PLAN

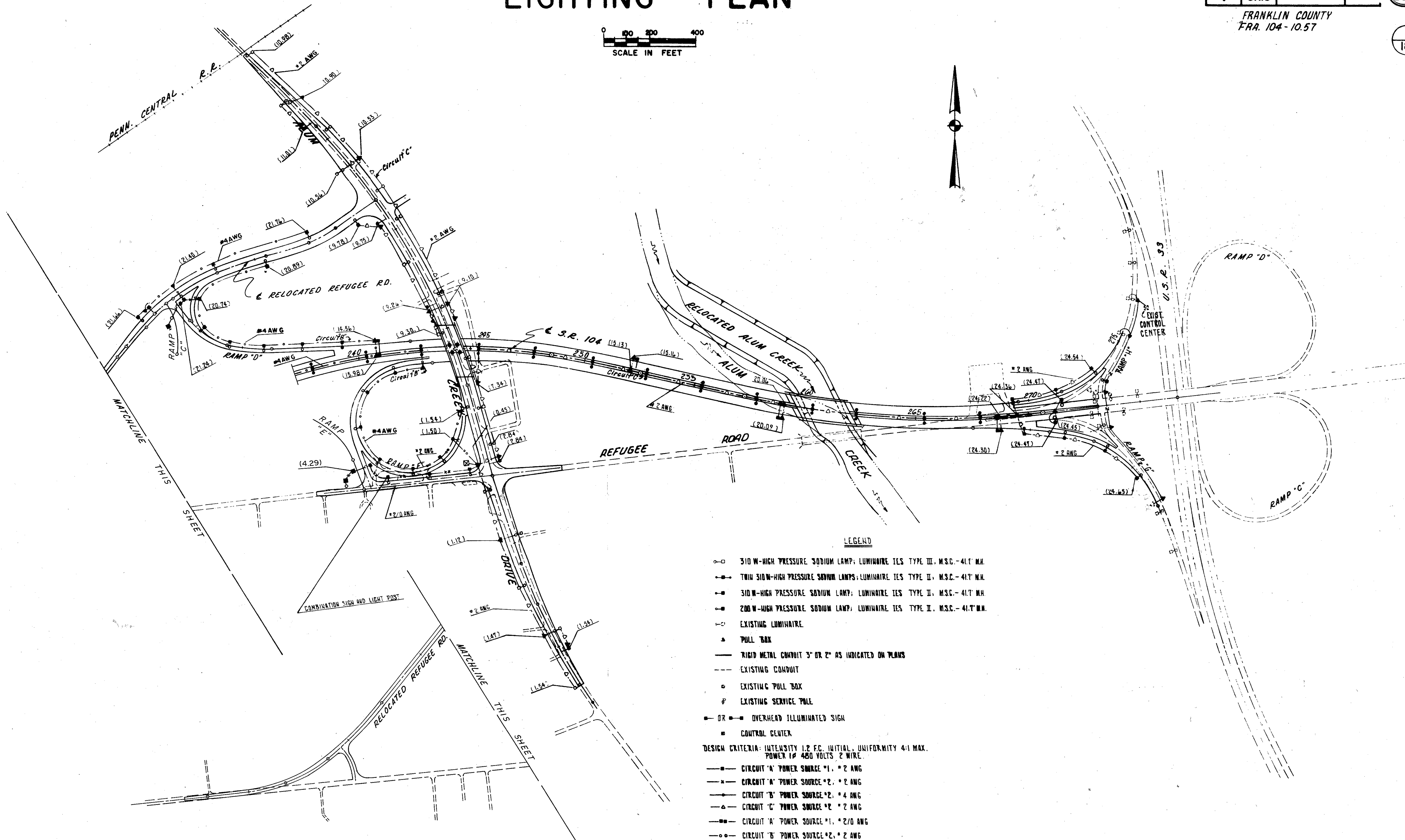
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA. 104 - 10.57

162
254

1
18

0 100 200 400
SCALE IN FEET



LEGEND

- 310 W-HIGH PRESSURE SODIUM LAMP; LUMINAIRE IES TYPE III, M.S.C.-41.7' M.H.
- TWIN 310 W-HIGH PRESSURE SODIUM LAMPS; LUMINAIRE IES TYPE II, M.S.C.-41.7' M.H.
- 310 W-HIGH PRESSURE SODIUM LAMP; LUMINAIRE IES TYPE II, M.S.C.-41.7' M.H.
- 200 W-HIGH PRESSURE SODIUM LAMP; LUMINAIRE IES TYPE II. M.S.C.-41.7' M.H.
- EXISTING LUMINAIRE
- PULL BOX
- RIGID METAL CONDUIT 3" OR 2" AS INDICATED ON PLANS
- EXISTING CONDUIT
- EXISTING PULL BOX
- EXISTING SERVICE POLE
- OR OVERHEAD ILLUMINATED SIGN
- CONTROL CENTER

DESIGN CRITERIA: INTENSITY 1.2 F.C. INITIAL, UNIFORMITY 4:1 MAX.
POWER 1Ø 480 VOLTS 2 WIRE.

- CIRCUIT 'A' POWER SOURCE #1, #2 AWG
- CIRCUIT 'A' POWER SOURCE #2, #2 AWG
- CIRCUIT 'B' POWER SOURCE #2, #4 AWG
- CIRCUIT 'C' POWER SOURCE #2 #2 AWG
- CIRCUIT 'A' POWER SOURCE #1, #2/0 AWG
- CIRCUIT 'B' POWER SOURCE #2, #2 AWG
- CIRCUIT 'A' POWER SOURCE #2, #2/0 AWG
- UNDERPASS LUMINAIRE
- ( ) VOLTAGE DROP

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA 104-10.57

163
254

2
18

LIGHTING GENERAL NOTES

PLAN SPECIFICATIONS REFERENCES

REFERENCES TO ITEM S625 AND S713 IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 625 AND 713.

625.03 GENERAL

THE POWER SUPPLY AGENCY FOR THIS PROJECT IS:

CITY OF COLUMBUS
DIVISON OF ELECTRICITY
50 WEST GAY STREET
COLUMBUS, OHIO

THIS PROJECT HAS BEEN DESIGNED ON THE BASIS OF 5% VOLTAGE DROP PERMISSIBLE ON BRANCH CIRCUITS. THE PROJECT WILL RECEIVE 480 VOLT TWO-WIRE GROUNDED NEUTRAL.

THE PROJECT HAS BEEN DESIGNED ON THE BASIS OF FULL LIGHTING WITH 1.2 FOOT CANDLE INITIAL, WITH A MAXIMUM UNIFORMITY RATIO OF 4.0 TO 1.

625.07 - 713.11 LUMINAIRES

STYLE B LUMINAIRES SHALL HAVE SINGLE RATED 480 VOLT, 200 WATT, INTEGRAL REGULATOR BALLASTS FOR USE WITH HIGH PRESSURE SODIUM LAMPS AND SHALL BE GENERAL ELECTRIC M400, WESTINGHOUSE OV-25, ITT AMERICAN 400, OR EQUAL APPROVED BY THE ENGINEER.

STYLE C LUMINAIRES SHALL HAVE SINGLE RATED 480 VOLT, 310 WATT, INTEGRAL REGULATOR BALLASTS AND SHALL BE GENERAL ELECTRIC M-1000, WESTINGHOUSE OV-50, ITT AMERICAN 1000, OR EQUAL APPROVED BY THE ENGINEER.

625.07 - 713.13 - UNDERPASS LUMINAIRES - LOW PRESSURE SODIUM

UNDERPASS LUMINAIRES SHALL BE QUALITY OUTDOOR LIGHTING LPS 2001 WALLPAK, "NORTH AMERICAN PHILIPS LIGHTING CORP. NORELCO LOW PRESSURE SODIUM WALL-PACK" OR EQUAL APPROVED BY THE ENGINEER AND SHALL BE FURNISHED WITH AN INTEGRAL FUSE HOLDER AND 10-AMPERE FUSE. THE INTEGRAL BALLAST SHALL BE OF A REGULATOR TYPE, RATED 480 VOLTS AND DESIGNED FOR USE WITH A 55 WATT LOW PRESSURE SODIUM LAMP.

HIGH PRESSURE SODIUM LAMPS

HIGH PRESSURE SODIUM LAMPS SHALL BE GENERAL ELECTRIC "LUCALOX", SYLVANIA "LUMALUX", WESTINGHOUSE "CERAMALUX", OR EQUAL APPROVED BY THE ENGINEER.

UNDERDRAINS FOR PULL BOXES

REFERENCE IS MADE TO STANDARD DRAWING HL-10 FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED APPROXIMATELY 20 FEET. AN ESTIMATED QUANTITY OF 400 LINEAR FEET OF ITEM 605, 4" SHALLOW PIPE UNDERDRAINS IS INCLUDED IN THE LIGHTING GENERAL SUMMARY FOR THIS PURPOSE.

ITEM SPECIAL LIGHT POLE ANCHOR BOLTS FOR BRIDGES AND RETAINING WALLS

ANCHOR BOLTS FOR MOUNTING LIGHT POLES ON BRIDGES AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF S713.01 AND DETAILS SHOWN ON THE PLANS AND STANDARD DRAWINGS, OR THE APPROVED SHOP DRAWINGS, FOR THE RESPECTIVE POLES TO BE PLACED THEREON. PAYMENT SHALL BE MADE AT THE UNIT PRICE BID FOR EACH SET OF THE SIZE REQUIRED AND NECESSARY TO INSTALL ONE POLE, AND THIS PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING AND PLACING THE BOLTS.

CONDUIT ON STRUCTURES

EXPANSION FITTINGS FOR CONDUIT ON STRUCTURES SHALL BE OZ TYPE AX, CROUSE-HINDS TYPE XJ-4, APPLETON TYPE XJ-4, OR EQUAL APPROVED BY THE ENGINEER, FOR BRIDGE NOS.:

FRA-104-1250
FRA-104-1279

EACH EXPANSION FITTING SHALL HAVE A COPPER EXTERNAL BONDING JUMPER.

ELECTRICAL SERVICE FOR ILLUMINATED SIGNS

THE PAY ITEMS IN THE LIGHTING GENERAL SUMMARY INCLUDE THE PULL BOX OR JUNCTION BOX ADJACENT TO EACH LIGHTED SIGN AND THE ELECTRICAL SERVICE CONNECTIONS LEADING INTO THE BOX, INCLUDING CONNECTOR KITS IN THE PULL BOX OR JUNCTION BOX. QUANTITIES FOR ELECTRICAL SERVICE FROM THE CONNECTOR KITS IN THE PULL BOX OR JUNCTION BOX TO THE SIGN ARE INCLUDED IN THE TRAFFIC CONTROL GENERAL SUMMARY.

HIGH VOLTAGE DIRECT CURRENT TEST:

A HIGH VOLTAGE DIRECT CURRENT TEST, AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 839, SHALL BE PERFORMED ON ALL DISTRIBUTION CABLE AND DUCT CABLE SYSTEMS TO BE INSTALLED ON THIS PROJECT. THE TEST SHALL NOT BE PERFORMED UNTIL AFTER ALL NEW CONSTRUCTION, SUCH AS GUARD RAIL, FENCE, DELINEATOR POSTS, SIGN SUPPORTS, ETC., IN THE IMMEDIATE VICINITY OF THE LOCATION OF THE CABLE RUN BEING TESTED, HAS BEEN COMPLETED.

HIGH VOLTAGE DIRECT CURRENT TEST ON 5 KV CABLE

A HIGH VOLTAGE DIRECT CURRENT TEST FOR TESTING CABLES RATED AT 5,000 VOLTS SHALL BE CONDUCTED AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 839 EXCEPT AS FOLLOWS:

839.02 PREPARATION. SECOND PARAGRAPH, SECOND SENTENCE SHALL READ AS FOLLOWS:
THE EQUIPMENT SHALL HAVE ADEQUATE MILLIAMPERE CAPACITY CAPABLE OF SUPPLYING A VARIABLE, METERED DIRECT CURRENT VOLTAGE FROM 0 TO 25,000 VOLTS TO A CIRCUIT, AND A METER TO READ THE SYSTEM LEAKAGE CURRENT.
839.03 PROCEDURE. THE VOLTAGE STEPS LISTED IN PARAGRAPH B(2) SHALL BE 5,000, 10,000, 15,000, 20,000, AND 25,000 VOLTS IN LIEU OF 1500, 3000, 4500, AND 6000 VOLTS.
THE VOLTAGE LISTED IN PARAGRAPHS D(3) AND 4 SHALL READ 25,000 VOLTS IN LIEU OF 6000 VOLTS.

ALL OTHER PROVISIONS OF SUPPLEMENTAL SPECIFICATION 839 NOT HEREIN AMENDED NOR CHANGED SHALL APPLY.

PADLOCKS AND KEYS

PADLOCKS FURNISHED SHALL BE EITHER BRASS OR BRONZE, EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNAN 660A, AND SHALL BE KEYED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 844.10 (4), PARAGRAPH 3. PAYMENT SHALL BE INCLUDED IN THE BID FOR THE ITEM BEING LOCKED.

713.07 POLYVINYL CHLORIDE PLASTIC CONDUIT

CONDUIT FURNISHED UNDER THIS SPECIFICATION SHALL CONFORM TO NEMA STANDARDS PUBLICATION NO. TC-6 WITH THE EXCEPTION THAT CONDUIT AND CONDUIT FITTINGS COMPOSED OF ACRYLONITRILE-BUTADIENE-STYRENE (ABS) SHALL NOT BE ACCEPTABLE.

AS AN ALTERNATE TO POLYVINYL CHLORIDE, CORRUGATED COILABLE POLYPROPYLENE CONFORMING TO NEMA STANDARDS PUBLICATION NO. TC-5 MAY BE USED

ITEM 625 - CONDUIT JACKED UNDER PAVEMENT, AS PER PLAN

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING CONDUIT OF THE SIZE OR SIZES INDICATED UNDER EXISTING PAVEMENT AND CONTIGUOUS SHOULDERS BY AN APPROVED METHOD SUCH AS "DRILLING" OR "JACKING".

THE CONTRACTOR SHALL PLACE THE CONDUIT WITH THE LEAST AMOUNT OF DISTURBANCE TO THE EXISTING PAVEMENT, SUBBASE, BERM PAVEMENT, OR SHOULDERS OF THE ROADWAY. ALL PUSH PITS OR ANY NECESSARY EXCAVATIONS SHALL BE BACKFILLED AND RESTORED IN ACCORDANCE WITH 625.01.

MEASUREMENT OF THE CONDUIT SHALL BE THE ACTUAL AMOUNT OF LINEAL FEET INSTALLED UNDER PAVEMENT AND SHOULDERS, MEASURED IN PLACE, AS ACCEPTED BY THE ENGINEER. THE UNIT PRICE BID FOR ITEM 625 "CONDUIT JACKED UNDER PAVEMENT, AS PER PLAN" SHALL BE FULL COMPENSATION FOR EXCAVATION, DRILLING OR JACKING, BACKFILLING, COMPACTION, RESTORATION, AND ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.

ITEM SPECIAL - SERVICE TO UNDERPASS LIGHTING

THIS ITEM SHALL CONSIST OF PROVIDING COMPLETE ELECTRICAL SERVICE, EXCEPT FOR LUMINAIRES AND STRUCTURE GROUNDING, FOR AN UNDERPASS LIGHTING SYSTEM ON BRIDGE NO.

FRA-104-1250 UNDER ALUM CREEK DRIVE. THE INSTALLATION WORK SHALL INCLUDE CONDUITS, CONDUIT GROUNDING, MOUNTINGS, FITTINGS, JUNCTION BOXES, CABLES, AND ALL INCIDENTALS NECESSARY TO COMPLETE, READY FOR USE, THE SERVICE AS DETAILED ON SHEET 15. THE LUMP SUM PRICE BID FOR "ITEM SPECIAL - SERVICE TO UNDERPASS LIGHTING" SHALL INCLUDE PAYMENT FOR ALL EQUIPMENT, LABOR, AND MATERIALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED. COMPONENT PARTS NOT SPECIFICALLY MENTIONED BUT REQUIRED FOR SATISFACTORY OPERATION OF THIS ITEM SHALL BE FURNISHED AND CONSIDERED PAID FOR AS PART OF THE ITEM.

ITEM SPECIAL - CABLE SPLICING KIT

THIS ITEM SHALL CONSIST OF PROVIDING AND INSTALLING AN APPROVED CABLE SPLICING KIT AS DESCRIBED IN PARAGRAPH 5 OF SECTION 713.15 OF THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE COST OF ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY FOR THIS ITEM SHALL BE INCLUDED IN THE UNIT PRICE BID FOR EACH "ITEM SPECIAL - CABLE SPLICING KIT."

BARRIER MEDIAN RACEWAY ON STRUCTURES

DETAILS FOR RACEWAY LOCATION IN THE MEDIAN BARRIER DESIGN ACROSS STRUCTURES ARE PROVIDED ON THE STRUCTURE PLANS ALONG WITH THE TEN FOOT TRANSITION SECTION.

SPECIFICATIONS

THESE NOTES ARE SUPPLEMENTAL TO ITEMS 625 AND 725 OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.

CONNECTORS KITS

AT THE OPTION OF THE CONTRACTOR, TYPE IX CABLE CONNECTIONS MAY BE SUBSTITUTED WHERE TYPE II OR III CABLE CONNECTIONS ARE SPECIFIED IN HAND HOLES OR TRANSFORMER BASES OF LIGHT POLES.

SERVICE POLE AND CONTROL CENTER, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 625.18 AND 625.19 OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION SPECIFICATIONS THE CONTRACTOR SHALL FURNISH AND INSTALL A SERVICE POLE AND CONTROL CENTER AS DETAILED ON SHEET NO. 12 & 16.

MEDIAN BARRIER MOUNTED LIGHT POLES ON BRIDGES

FOUNDATION DETAILS FOR MEDIAN BARRIER MOUNTED LIGHT POLES ON BRIDGES ARE DETAILED ON SHEET NO. 208 OF THE STRUCTURE DRAWINGS. PAYMENT FOR THE CONCRETE AND REINFORCING STEEL SHALL BE INCLUDED IN 511 AND 518 ITEMS FOR THE STRUCTURE. THE TRANSITION JUNCTION BOX AND BARRIER MOUNTING DETAILS ARE DETAILED ON SHEET NO. 17.

ITEM 202 LIGHT POLE REMOVED FOR STORAGE

THIS ITEM SHALL CONSIST OF REMOVING EXISTING LIGHT POLES FOR STORAGE AS INDICATED ON THE PLANS.

THE CONTRACTOR SHALL CAREFULLY REMOVE THE EXISTING LIGHT POLE, BRACKET ARM, LUMINAIRE, AND LAMP AND STORE THEM ON THE PROJECT IN A LOCATION DESIGNATED BY THE ENGINEER FOR REMOVAL BY CITY FORCES. THE CONTRACTOR SHALL COORDINATE THIS WORK WITH THE DIVISION OF ELECTRICITY AND ALSO WITH THE CITY OF COLUMBUS DIVISION OF TRAFFIC.

THE UNIT PRICE BID FOR ITEM 202 - "LIGHT POLE REMOVED FOR STORAGE" SHALL INCLUDE PAYMENT FOR ALL EQUIPMENT, LABOR, AND MATERIALS NECESSARY TO REMOVE AND STORE THE LIGHT POLE AS SPECIFIED.

AN ESTIMATED 14 LIGHTS POLES HAVE BEEN PROVIDED FOR IN THE GENERAL SUMMARY.

STANDARD CONSTRUCTION DRAWING HL-12

POLE BASE DETAILS SHOWN ON THIS DRAWING ARE ESSENTIALLY FOR GALVANIZED STEEL POLES FOR ALUMINUM DESIGNS, OR OTHER PERMITTED STEEL MATERIAL DESIGNS, VARIATIONS FROM THESE DETAILS WILL BE ACCEPTABLE, AS APPROVED BY THE ENGINEER.

ITEM SPECIAL - BRACKET ARM, 12

THIS ITEM SHALL CONSIST OF FURNISHING A LIGHTING BRACKET ARM OF THE SIZE INDICATED AND INSTALLING THE BRACKET ARM ON THE COMBINATION LIGHT AND SIGN POLE AT STATION 66 + 27 LT., REFUGEE RD.

THE UNIT PRICE BID FOR ITEM SPECIAL - BRACKET ARM, 12' SHALL INCLUDE PAYMENT FOR ALL EQUIPMENT, LABOR, AND MATERIALS NECESSARY TO COMPLETE THE WORK.

GENERAL SUMMARY - LIGHTING

CALC: RJG 6-79
CHK: GKS 6-79

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA. 104-10.57

(164) 254

3/18

TOTAL BRM. FUNDS	TOTAL 11 NORMAL PARTICIPATION	ROADWAY 2	ROADWAY BR 4	ROADWAY NORM. 4	ROADWAY 5	ROADWAY 6	ROADWAY 7	ROADWAY 8	ROADWAY 9	STRUCTURES BR 4	STRUCTURES 5	STRUCTURES 6	STRUCTURES 7	STRUCTURES 8	STRUCTURES 9	GRAND TOTALS	ITEM	UNIT	DESCRIPTION TYPE CODE	REFERENCE LETTER	REFERENCE LINE
1	11		1	11												12	625	EA.	LIGHT POLE DESIGN A 12 B B 37.5 D	A	1
	29				7	13	6	3								29	625	EA.	LIGHT POLE DESIGN AT 12 B 41.7	B	2
1										1						1	625	EA.	LIGHT POLE DESIGN A 12 B B 37.5 D	C	3
	18				1	2	9	6								18	625	EA.	LIGHT POLE DESIGN A 10 B 41.7	D	4
	2							1						1		2	625	EA.	LIGHT POLE DESIGN ST 6 B 39	F	5
	1							1								1	625	EA.	LIGHT POLE DESIGN AT 18 B 41.7	G	6
2				2												2	625	EA.	LIGHT POLE DESIGN AT 15 B 41.7	H	7
	1						1									1	SPECIAL	EA.	BRACKET ARM 12'		8
1	11		1	11												12	625	EA.	MEDIAN LIGHT POLE FOUNDATION		9
	52			2	9	16	15	10								52	625	EA.	LIGHT POLE FOUNDATION 24"x8' DEEP		10
	26			2	6	12	6									26	625	EA.	LUMINAIRE STYLE "B" TYPE II 200 WATT HIGH PRESSURE SODIUM 713.11		11
																					12
4	25		2	22	1	2				2						29	625	EA.	LUMINAIRE STYLE "C" TYPE II 310 WATT HIGH PRESSURE SODIUM 713.11		13
	24				1	1	10	11						1		24	625	EA.	LUMINAIRE STYLE "C" TYPE III 310 WATT HIGH PRESSURE SODIUM 713.11		14
	4													4		4	625	EA.	LUMINAIRE, UNDERPASS, 55 WATT LOW PRESSURE SODIUM 713.11		15
	4						4									4	625	EA.	PULLBOX 24" CIRCULAR, METAL 713.09		16
1	26		1	4		2	8	11								26	625	EA.	PULLBOX 18" CIRCULAR, METAL 713.09		17
1	5		1	5												6	625	EA.	MEDIAN PULLBOX		18
1	63		1	13	9	16	15	10								64	625	EA.	GROUND ROD, 713.16		19
	226						226									226	625	L.F.	CONDUIT JACKED UNDER PAVEMENT, AS PER PLAN		20
61	11,116		61	223	1006	2874	4007	3006								11,177	625	L.F.	TRENCH 24" DEEP		21
	849							40						809		849	625	L.F.	CONDUIT 2" 713.04		22
61	2,669		61	223	220	500	401	1125								2,730	625	L.F.	CONDUIT 3" 713.04		23
																					24
	1						1									1	625	EA.	POWER SERVICE		25
	1						1									1	625	EA.	CONTROL CENTER		26
	172					172										172	625	L.F.	NO. 2/0 AWG, 5000 V DISTRIBUTION CABLE		27
1242	9,898		681	4912		638	1086	2606		561				656		11,140	625	L.F.	NO. 2 AWG, 5000V DISTRIBUTION CABLE		28
	3,400			1282	500	310	1308									3,400	625	L.F.	NO. 4 AWG, 5000V DISTRIBUTION CABLE		29
	4,526					1571	952	2003								4,526	625	L.F.	1½" DUCT CABLE W/2 NO. 2 AWG 5000V CABLES		30
	5,920				836	953	4131									5,920	625	L.F.	1½" DUCT CABLE W/2 NO. 4 AWG 5000V CABLES		31
294	7,227		147	1845	855	1603	1682	1152		147				90		7,521	625	L.F.	NO 10 AWG POLE AND BRACKET CABLE		32
	1,212						1212									1,212	625	L.F.	2" DUCT CABLE W/2 NO. 2/0 AWG 5000V CABLE		33
2	64		1	13	8	15	16	11		1				1		66	625	EA.	CONNECTOR KIT TYPE II		34
2	64		1	13	8	15	16	11		1				1		66	625	EA.	CONNECTOR KIT TYPE III		35
4	6			4			2			4						10	625	EA.	CONNECTOR KIT TYPE III A		36
2	10		2	8				2								12	625	EA.	CONNECTOR KIT TYPE III B		37
																					38
2	86		2	6		4	58	18								88	SPECIAL	EA.	CABLE SPLICING KIT		39
																					40
																					41
																					42
	1													1		1	625	EA.	STRUCTURE GROUND SYSTEM FRA. 104 1250		43
1										1						1	625	EA.	STRUCTURE GROUND SYSTEM FRA. 104 1279		44
																					45
	LUMP	LUMP														LUMP	839		HIGH VOLTAGE TEST		46
	40								40							40	607	L.F.	FENCE TYPE CL, AS PER PLAN		47
	2								2							2	607	EA.	8' GATE TYPE CL, AS PER PLAN		48
400		400														400	605	L.F.	4" SHALLOW PIPE UNDERDRAINS		49
14		14														14	202	EA.	LIGHT POLE REMOVED FOR STORAGE		50
																					51
																					52
	LUMP														LUMP	LUMP	SPECIAL		SERVICE TO UNDERPASS LIGHTING FOR BRIDGE NO. FRA. 104 1250		53
	1														1	1	625	EA.	JUNCTION BOX 18"x8"x6"		54
	1														1	1	625	EA.	JUNCTION BOX TYPE III		55
																					56
	2														2	2	625	EA.	TRANSITION JUNCTION BOX, AS PER PLAN		57
	1													1		1	SPECIAL	SET	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES (1"x40")		58
1										1						1	SPECIAL	SET	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES		59
																					60
																					61
																					62
																					63
																					64

LIGHTING SUB-SUMMARY

CALC: RLG 6-79
CHK: GKS 6-79

REFERENCE No.	SIDE	STATION	STATION	(A) LIGHT POLE DESIGN A 12 BB 37.5 D	(B) LIGHT POLE DESIGN AT 12 B 41.7	(C) LIGHT POLE DESIGN A 12 BB 37.5	(D) LIGHT POLE DESIGN A 10 B 41.7	(F) LIGHT POLE DESIGN ST 6 B 39	(G) LIGHT POLE DESIGN AT 18 B 41.7	(H) LIGHT POLE DESIGN AT 15 B 41.7	BRACKET ARM 12'	MEDIAN LIGHT POLE FOUNDATION	LIGHT POLE FOUNDATION 24"x8' DEEP	LUMINAIRE STYLE "B" TYPE II 200 WATT HPS	LUMINAIRE STYLE "B" TYPE III 200 WATT HPS	LUMINAIRE STYLE "C" TYPE II 310 WATT HPS	LUMINAIRE STYLE "C" TYPE III 310 WATT HPS	LUMINAIRE, UNDERPASS 55 WATT LPS
				EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.
1																		
2																		
3																		
4																		
5																		
6	℄	237+00	237+86															
7	℄	237+86		1								1				2		
8	℄	237+86	240+36															
9	℄	240+36		1								1				2		
10	℄	240+36	240+90															
11	℄	240+90																
12	℄	240+90	242+86															
13	℄	242+86		1								1				2		
14	℄	242+86	242+91															
15	℄	242+91																
16	℄	245+45																
17	℄	245+45	245+50															
18	℄	245+50		1								1				2		
19	℄	245+50	247+86															
20	℄	247+86		1								1				2		
21	℄	247+86	250+36															
22	℄	250+36		1								1				2		
23	℄	250+36	252+15															
24	LT.	252+15																
25	℄	252+15	252+86															
26	℄	252+86		1								1				2		
27	℄	252+86	255+36															
28	℄	255+36		1								1				2		
29	℄	255+36	257+86															
30	℄	257+86		1								1				2		
31	℄	257+86	259+10															
32	RT.	259+10																
33	℄	259+10	259+31.16															
34	℄	259+31.16																
35	℄	259+31.16	260+21															
36	℄	260+21				1 *										2 *		
37	℄	260+21	261+91.62															
38	℄	261+91.62																
39	℄	261+91.62	262+86															
40	℄	262+86		1								1				2		
41	℄	262+86	265+36															
42	℄	265+36		1								1				2		
43	℄	265+36	267+86															
44	℄	267+86		1								1				2		
45	℄	267+86	268+77															
46	RT.	268+77																
47	℄	268+77	269+51															
48	℄	269+51																
49	℄	269+51	271+18															
50	℄	271+18																
51	RT.	271+15	271+18							1			1	1				
52	LT.	271+37	271+18							1			1	1				
53	(SUB TOTALS CARRIED TO GEN. SUMMARY)			12		1 *				2		12	2	2		24 / 2 *		

REFERENCE No.	PULLBOX 24" CIRCULAR METAL	PULLBOX 18" CIRCULAR METAL	MEDIAN PULLBOX	GROUND ROD	CONDUIT JACKED UNDER PAVEMENT, AS PER PLAN	TRENCH 24" DEEP	CONDUIT 2"	CONDUIT 3"	CONDUIT 3" ENCASED	POWER SERVICE	CONTROL CENTER	NO. 2/0 AWG. 5000V DISTRIBUTION CABLE	NO. 2 AWG. 5000 V DISTRIBUTION CABLE	NO. 4 AWG. 5000 V DISTRIBUTION CABLE	1½" DUCT CABLE W/2 NO. 2 AWG 5000 V CABLES	1½" DUCT CABLE W/2 NO. 4 AWG 5000 V CABLES	NO. 10 AWG POLE AND BRACKET CABLE	2" DUCT CABLE W/2 NO. 2/0 AWG 5000 V CABLE
	EA.	EA.	EA.	EA.	L.F.	L.F.	L.F.	L.F.	L.F.	EA.	EA.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.
1																		
2																		
3																		
4																		
5																		
6														192				
7				1													147	
8														520				
9				1													147	
10														128				
11			1															
12														412				
13				1													147	
14														30				
15			1															
16			1															
17													30					
18				1													147	
19													492					
20				1													147	
21													520					
22				1													147	
23													378					
24		1	1			61		61					142					
25													162					
26				1													147	
27													520					
28				1													147	
29													520					
30				1													147	
31													268					
32		1	1			61		61					142					
33													62					
34																		
35													230 *					
36																	147 *	
37													331 *					
38																		
39													209					
40				1													147	
41													520					
42				1													147	
43													520					
44				1													147	
45													202					
46		1	1			65		65					150					
47													168					
48		1																
49													354					
50		1																
51				1		50		50					120				114	
52				1		47		47					114				114	
53		5	6	14		284		284					5593 / 561 *	1282			1992 / 147 *	

REFERENCE No.	CONNECTOR KIT TYPE II	CONNECTOR KIT TYPE III	CONNECTOR KIT TYPE III A	CONNECTOR KIT TYPE III B	CONNECTOR KIT TYPE III C	CABLE SPLICING KIT	STRUCTURE GROUND SYSTEM FRA. 104 1060	STRUCTURE GROUND SYSTEM FRA. 104 1111	STRUCTURE GROUND SYSTEM FRA. 104 1156	STRUCTURE GROUND SYSTEM FRA. 104 1250	STRUCTURE GROUND SYSTEM FRA. 104 1279	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES (1"x40")	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES, AS PER PLAN	LIGHT POLE REMOVED FOR STORAGE
	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	SET	SET	EA.
1														
2														
3														
4														
5														
6														
7	1	1												
8														
9	1	1												
10														
11				2										
12														
13	1	1												
14														
15			2											
16			2											
17														
18	1	1												
19														
20	1	1												
21														
22	1	1												
23														
24				2		2								
25														
26	1	1												
27														
28	1	1												
29														
30	1	1												
31														
32				2		2								
33														
34			2 *											
35														
36	1 *	1 *									1 *		1 *	
37														
38			2 *											
39														
40	1	1												
41														
42	1	1												
43														
44	1	1												
45														
46				2		2								
47														
48						2								
49														
50				2										
51	1	1												
52	1	1												
53	14 / 1 *	14 / 1 *	4 / 4 *	10		8					1 *		1 *	

* STRUCTURE QUANTITY

BRUNING 44 510 10941

LIGHTING SUB-SUMMARY

CALC: RLG 6-79
CHK: GKS 6-79

FRANKLIN COUNTY
FRA. 104-10.57

167
254

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18

REFERENCE NO.	SIDE	STATION	STATION		(A) LIGHT POLE DESIGN A 12 B3 37.5 D	(B) LIGHT POLE DESIGN AT 12 B 41.7	(C) LIGHT POLE DESIGN A 12 B3 37.5 D	(D) LIGHT POLE DESIGN A 10 B 41.7	(F) LIGHT POLE DESIGN ST 4 B 39	(G) LIGHT POLE DESIGN AT 10 B 41.7	(H) LIGHT POLE DESIGN AT 15 B 41.7	BRACKET ARM 12'	MEDIAN LIGHT POLE FOUNDATION	LIGHT POLE FOUNDATION 24"x8' DEEP	LUMINAIRE STYLE "B" TYPE II 200 WATT HPS	LUMINAIRE STYLE "B" TYPE III 200 WATT HPS	LUMINAIRE STYLE "C" TYPE II 310 WATT HPS	LUMINAIRE STYLE "C" TYPE III 310 WATT HPS	LUMINAIRE, UNDERPASS 55 WATT LPS	PULLBOX 24" CIRCULAR METAL	PULLBOX 18" CIRCULAR METAL	MEDIAN PULLBOX	GROUND ROD	CONDUIT JACKED UNDER PAVEMENT, AS PER PLAN	TRENCH 24" DEEP	CONDUIT 2"	CONDUIT 3"	CONDUIT 3" ENCASED		NO. 2/0 AWG. 5000 V DISTRIBUTION CABLE	NO. 2 AWG., 5000 V DISTRIBUTION CABLE	NO. 4 AWG. 5000 V DISTRIBUTION CABLE	1½" DUCT CABLE W/2 NO. 2 AWG 5000 V CABLES	1½" DUCT CABLE W/2 NO. 4 AWG 5000 V CABLES	NO. 10 AWG POLE AND BRACKET CABLE	2" DUCT CABLE W/2 NO. 2/0 AWG 5000 V CABLE	CONNECTOR KIT TYPE II	CONNECTOR KIT TYPE III	CONNECTOR KIT TYPE III A	CONNECTOR KIT TYPE III B	CONNECTOR KIT TYPE III C	CABLE SPLICING KIT	STRUCTURE GROUND SYSTEM FRA. 104-10.0	STRUCTURE GROUND SYSTEM FRA. 104-11.1	STRUCTURE GROUND SYSTEM FRA. 104-11.5	STRUCTURE GROUND SYSTEM FRA. 104-12.5	STRUCTURE GROUND SYSTEM FRA. 104-12.7	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES (1"x 40")	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES, AS PER PLAN	LIGHT POLE REMOVED FOR STORAGE
					EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	LF.	LF.	LF.	LF.	LF.	LF.		LF.	LF.	LF.	LF.	LF.	LF.	LF.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	SET	SET	EA.
1		RAMP "A"																																														
2		A 141+96				//								+	+							+	+81																									
3		A 141+96	A 148+77			//								+	+							+	+81																									
4		A 148+77				//								+	+							+	+81																									
5		A 148+77	A 150+58			//								+	+							+	+81																									
6		A 150+58				//								+	+							+	+81																									
7		A 150+58	A 152+39			//								+	+							+	+81																									
8		A 152+39				//								+	+							+	+81																									
9		A 152+39	A 154+20			//								+	+							+	+81																									
10		A 154+20				//								+	+							+	+81																									
11		A 154+20	A 156+10			//								+	+							+	+81																									
12		A 156+10				//								+			+					+	+98																									
13		RAMP "B"				//								+	+							+	+78	78				164																			
14		B 147+31				//								+	+							+																									
15		B 147+50	B 149+17			//								+	+							+	+167																									
16		B 149+17				//								+	+							+	+166																									
17		B 149+17	B 150+83			//								+	+							+	+166																									
18		B 150+83				//								+	+							+	+166																									
19		B 150+83	B 152+49			//								+	+							+	+166																									
20		B 152+49				//								+	+							+																									
21		B 152+49	B 154+15			//								+	+							+	+166																									
22		B 154+15				//								+			+					+	+195																									
23		B 154+15	B 156+10																				+805																									
24		B 156+10																			+		+65	65			50																			2
25		RAMP "C"																																														
26		C 227+80				//								+			+					+																									
27		C 227+80	C 228+42																				+62																									
28		C 228+42				//								+	+							+																									
29		C 228+42	C 230+24			//								+	+							+	+62																									
30		C 230+24				//								+	+							+																									
31		C 230+24	C 231+86			//								+	+							+	+62																									
32		C 231+86				//								+	+							+																									
33		C 231+86	C 233+47			//								+	+							+	+61																									
34		C 233+47				//								+	+							+																									
35		C 233+47	C 235+08			//																	+61																									
36		C 235+08				//								1	+							1	85	85				190																			
37		RAMP "D" & DD																																														
38		D 231+49			1									1	1							1																									
39		D 231+49	90+35 REF. RD. N.											1								1	35	35				90																			
40		90+35 REF. RD. N.					1							1		1						1	100	100				220																			
41		90+35 REF. RD. N.	DD 231+49																																												
42		DD 231+49			1									1	1							1																									
43		DD 231+49	DD 232+99																				150																									
44		DD 232+99			1									1	1							1																									
45		DD 232+99	D 234+49																				150																									
46		D 234+49			1									1	1							1																									
47		D 234+49	D 235+99																				150																									
48		D 235+99			1									1	1							1																									
49		D 235+99	D 237+67																				168																									
50		D 237+67			1									1	1							1																									
51		D 237+67	D 239+35																				168																									
52		D 239+35			1									1			1					1																									
53		(SUB-TOTALS TO GEN. SUMMARY)			7	1								9	6	1	1					9	1006	220				500																			

1																																															
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* STRUCTURE QUANTITY

* LIGHTING SUB-SUMMARY

LIGHTING SUB-SUMMARY

CALC: RL6 6-79
CHK: GKS 6-79

REFERENCE NO.	SIDE	STATION	STATION	(A) LIGHT POLE DESIGN A 12 BB 37.5 D	(B) LIGHT POLE DESIGN AT 12 B 41.7	(C) LIGHT POLE DESIGN A 12 BB 37.5 D	(D) LIGHT POLE DESIGN A 10 B 41.7	(F) LIGHT POLE DESIGN ST A B 39	(G) LIGHT POLE DESIGN AT 15 B 41.7	(H) LIGHT POLE DESIGN AT 15 B 41.7	BRACKET ARM 12'	MEDIAN LIGHT POLE FOUNDATION	LIGHT POLE FOUNDATION 24"x8' DEEP	LUMINAIRE STYLE "B" TYPE II 200 WATT HPS	LUMINAIRE STYLE "B" TYPE III 200 WATT HPS	LUMINAIRE STYLE "C" TYPE II 310 WATT HPS	LUMINAIRE STYLE "C" TYPE III 310 WATT HPS	LUMINAIRE, UNDERPASS 55 WATT LPS	PULLBOX 24" CIRCULAR METAL	PULLBOX 18" CIRCULAR METAL	MEDIAN PULLBOX	GROUND ROD	CONDUIT JACKED UNDER PAVEMENT, AS PER PLAN	TRENCH 24" DEEP	CONDUIT 2"	CONDUIT 3"	CONDUIT 3" ENCASED		NO. 2/0 AWG. 5000V DISTRIBUTION CABLE	NO. 2 AWG. 5000 V DISTRIBUTION CABLE	NO. 4 AWG. 5000 V DISTRIBUTION CABLE	1½" DUCT CABLE W/2 NO. 2 AWG 5000 V CABLES	1½" DUCT CABLE W/2 NO. 4 AWG 5000 V CABLES	NO. 10 AWG POLE AND BRACKET CABLE	2" DUCT CABLE W/2 NO. 2/0 AWG 5000 V CABLE	CONNECTOR KIT TYPE II	CONNECTOR KIT TYPE III	CONNECTOR KIT TYPE III A	CONNECTOR KIT TYPE III B	CONNECTOR KIT TYPE III C	CABLE SPLICING KIT	STRUCTURE GROUND SYSTEM FRA. 104 10-0	STRUCTURE GROUND SYSTEM FRA. 104 1111	STRUCTURE GROUND SYSTEM FRA. 104 1156	STRUCTURE GROUND SYSTEM FRA. 104 1250	STRUCTURE GROUND SYSTEM FRA. 104 1279	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES (1"x 40")	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES, AS PER PLAN	LIGHT POLE REMOVED FOR STORAGE
1		RAMP	"D" CONT.																																													
2		D 239+35	D 240+90																				155									165															
3		D 240+90																	1				65		65					150								2									
4		RAMP	"E"																																													
5																																																
6																																																
7																																																
8																																																
9																																																
10																																																
11																																																
12																																																
13																																																
14																																																
15		E 240+47											1								1																											
16		E 240+47	FF 236+55																				76		76				172																	
17		E 240+47	64+38 REF. RD																				63									73														
18		64+38 REF. RD					1						1	1							1													103.4			1	1								
19		RAMP	"F"																																													
20		41+48 ALUM CK. DR.					1						1				1				1													103.4			1	1								
21		41+48 ALUM CK. DR.	F 232+36																				145									155														
22		F 232+36	39.00 ALUM CK. DR.																				137		137				294																	
23		F 232+36			1								1	1							1													107.4			1	1								
24		F 232+36	F 233+82																				146									156														
25		F 233+82			1								1	1							1													107.4			1	1								
26		F 233+82	F 235+37																				155									165														
27		F 235+37			1								1	1							1													107.4			1	1								
28		F 235+37	F 236+93																				156									166														
29		F 236+93			1								1	1							1													107.4			1	1								
30		F 236+93	F 238+49																				156									166														
31		F 238+49			1								1	1							1													107.4			1	1								
32		F 238+49	F 240+05																				156									166														
33		F 240+05			1								1	1							1													107.4			1	1								
34		F 240+05	F 241+61																				156									166														
35		F 241+61			1								1	1							1													107.4			1	1								
36		F 241+61	F 242+86																				125									135														
37		F 242+86																	1				70		70					160								2								
38		RAMP	"G"																																													
39		269+51 NL	G 269+73																				78		78				176																	
40		G 269+73			1								1				1				1													107.4			1	1								
41		G 269+73	G 271+60																				187									197														
42		G 271+60			1								1	1							1													107.4			1	1								
43		G 271+60	G 273+47																				187									197														
44		G 273+47			1								1	1							1													107.4			1	1								
45		G 273+47	G 275+34																				187									197														
46		G 275+34			1								1	1							1													107.4			1	1								
47		RAMP	"H"																																													
48		H 269+39	269+51 NL																				74		74				168																	
49		H 269+39			1								1				1				1													107.4			1	1								
50		H 269+39	H 271+39																				200									210														
51		H 271+39			1								1	1							1													107.4			1	1								
52		H 271+39	H 273+39																				200									210														
53		SUB. TOTALS	CARRIED TO GEN. SUM.		13		2						16	12		2	1		2		16		2874		500				172	638	310	1571	953	1603			15	15				4					

* STRUCTURE QUANTITY

FRANKLIN COUNTY
FRA-104-10.57

LIGHTING SUB-SUMMARY

CALC: RLG 6-79
CHK: GKS 6-79

REFERENCE No.	SIDE	STATION	STATION	Ⓐ LIGHT POLE DESIGN A 12 BB 37.5 D	Ⓑ LIGHT POLE DESIGN AT 12 B 41.7	Ⓒ LIGHT POLE DESIGN A 12 BB 37.5 D	Ⓓ LIGHT POLE DESIGN A 10 B 41.7	Ⓕ LIGHT POLE DESIGN ST 6 B 39	Ⓖ LIGHT POLE DESIGN AT 18 B 41.7	Ⓗ LIGHT POLE DESIGN AT 15 B 41.7'	BRACKET ARM 12'	MEDIAN LIGHT POLE FOUNDATION	LIGHT POLE FOUNDATION 24"x8' DEEP	LUMINAIRE STYLE "B" TYPE II 200 WATT HPS	LUMINAIRE STYLE "B" TYPE III 200 WATT HPS	LUMINAIRE STYLE "C" TYPE II 310 WATT HPS	LUMINAIRE STYLE "C" TYPE III 310 WATT HPS	LUMINAIRE, UNDERPASS 55 WATT LPS	PULLBOX 24" CIRCULAR METAL	PULLBOX 18" CIRCULAR METAL	MEDIAN PULLBOX	GROUND ROD
1		RAMP "H" CONTINUED																				
2		H-273+39			1								1	1								1
3		PROP. CIRCUIT "N", "O", "Z" & "U"																				
4		H-276+90																	1			
5		H-276+90	H-275+35																			
6		H-275+35																	1			
7		H-275+35	HH-273+15																			
8		HH-273+15			1								1	1								1
9		HH-273+15	HH-272+65																			
10		HH-272+65																	1			
11		HH-272+65	GG-272+60																			
12		GG-272+60																	1			
13		GG-272+60	GG-277+10																			
14		GG-277+10																		1		
15		"REFUGEE ROAD"																				
16		FF-236+55			1								1	1								1
17		FF-236+55	66+17																			
18		66+17																		1		
19		66+27									1			1								
20		66+17	68+16																			
21		68+16					1						1	1								1
22		68+16	69+93																			
23		69+93					1						1	1								1
24		69+93	39+00 ALUM CR.DR.																			
25		"REFUGEE ROAD NORTH"																				
26		88+40					1						1				1					1
27		88+40	88+90																			
28		88+90																		1		
29		88+90	90+35																			
30		90+35																		1		
31		90+35	92+25																			
32		92+25					1						1				1					1
33		92+25	96+55																			
34		96+55					1						1				1					1
35		DD-231+49	94+40																			
36		94+40					1						1				1					1
37		98+70					1						1				1					1
38		98+70	50+60 ALUM CR.DR.																			
39		"ALUM CREEK DRIVE"																				
40	LT.	28+25			1								1				1					1
41	LT.	28+25	30+75																			
42	L-R	30+75			1								1				1			1		1
43	RT.	30+75	29+95																			
44	RT.	29+95																		1		
45	LT.	30+75	33+11																			
46	LT.	33+11			1								1				1					1
47	LT.	33+11	35+31																			
48	L-R	35+31					1						1				1			1		1
49	LT.	35+31	37+60																			
50	↓	37+60					1						1				1					1
51	↓	37+60	39+00																			
52	LT.	39+00																		1		
53					6		9				1		15	6			10		4	8		15

REFERENCE No.	CONDUIT JACKED UNDER PAVEMENT, AS PER PLAN	TRENCH 24" DEEP	CONDUIT 2"	CONDUIT 3"	CONDUIT 3" ENCASED	POWER SERVICE EA.	CONTROL CENTER EA.	NO. 2/0 AWG. 5000 V DISTRIBUTION CABLE	NO. 2 AWG. 5000 V DISTRIBUTION CABLE	NO. 4 AWG. 5000 V DISTRIBUTION CABLE	1½" DUCT CABLE W/2 NO. 2 AWG 5000 V CABLES	1½" DUCT CABLE W/2 NO. 4 AWG 5000 V CABLES	NO. 10 AWG POLE AND BRACKET CABLE	2" DUCT CABLE W/2 NO. 2/0 AWG 5000 V CABLE	CONNECTOR KIT TYPE II	CONNECTOR KIT TYPE III	CONNECTOR KIT TYPE III A	CONNECTOR KIT TYPE III B	CONNECTOR KIT TYPE III C	CABLE SPLICING KIT	STRUCTURE GROUND SYSTEM FRA. 104 1060	STRUCTURE GROUND SYSTEM FRA 104 1111	STRUCTURE GROUND SYSTEM FRA. 104 1156	STRUCTURE GROUND SYSTEM FRA. 104 1250	STRUCTURE GROUND SYSTEM FRA 104 1279	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES (1"x40")	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES, AS PER PLAN	LIGHT POLE REMOVED FOR STORAGE
1																												
2													107.4		1	1												
3																												
4	48	40								116		220								10								
5		155										660																
6	48									116										10								
7		220										920																
8													107.4		1	1												
9		50										240																
10																				10								
11	130									840																		
12																				8								
13		450										920																
14				40						100										4								
15																												
16													107.4		1	1												
17		120												260														
18																				2								
19													107.4		1	1												
20		199												418														
21													103.4		1	1												
22		177												374														
23													103.4		1	1												
24		70												160														
25																												
26													103.4		1	1												
27		50										60																
28																				2								
29		145										155																
30				58						136										2								
31		190										200																
32													103.4		1	1												
33		430										440																
34													103.4		1	1												
35		306										316																
36													103.4		1	1												
37													103.4		1	1												
38		116									126																	
39																												
40													107.4		1	1												
41		250									260																	
42		57		57					134				107.4		1	1				2								
43		80									90																	
44																												
45		236									246						2											
46													107.4		1	1												
47		220									230																	
48		77		77					174				103.4		1	1				2								
49		229		229					478																			
50													103.4		1	1												
51		140		140					300																			
52						1	1													6								
53	226	4007		601		1	1		1086	1308	952	4131	1682.4	1212	16	16	2			58								

* STRUCTURE QUANTITY

FED. HIGH. DIVISION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA-104-10.57

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LIGHTING SUB-SUMMARY

CALC: RLG 6-79
CHK: GKS 6-79

REFERENCE No.	SIDE	STATION	STATION		(A) LIGHT POLE DESIGN A 12 B5 37.5 D	(B) LIGHT POLE DESIGN AT 12 B 41.7	(C) LIGHT POLE DESIGN A 12 B5 37.5 D	(D) LIGHT POLE DESIGN A 10 B 41.7	(F) LIGHT POLE DESIGN ST 6 B 39	(G) LIGHT POLE DESIGN AT 10 B 41.7	(H) LIGHT POLE DESIGN AT 15 B 41.7'	BRACKET ARM 12'	MEDIAN LIGHT POLE FOUNDATION	LIGHT POLE FOUNDATION 24"x8' DEEP	LUMINAIRE STYLE "B" TYPE II 200 WATT H.P.S	LUMINAIRE STYLE "B" TYPE III 200 WATT H.P.S	LUMINAIRE STYLE "C" TYPE II 310 WATT H.P.S	LUMINAIRE STYLE "C" TYPE III 310 WATT H.P.S	LUMINAIRE, UNDERPASS 55 WATT L.P.S	PULLBOX 24" CIRCULAR METAL	PULLBOX 18" CIRCULAR METAL	MEDIAN PULLBOX	GROUND ROD	CONDUIT JACKED UNDER PAVEMENT, AS PER PLAN	TRENCH 24" DEEP	CONDUIT 2"	CONDUIT 3"	CONDUIT 3" ENCASED			NO. 2/0 AWG. 5000 V DISTRIBUTION CABLE	NO. 2 AWG. 5000 V DISTRIBUTION CABLE	NO. 4 AWG. 5000 V DISTRIBUTION CABLE	1½" DUCT CABLE W/2 NO. 2 AWG 5000 V CABLES	1½" DUCT CABLE W/2 NO. 4 AWG 5000 V CABLES	NO. 10 AWG POLE AND BRACKET CABLE	2" DUCT CABLE W/2 NO. 2/0 AWG 5000 V CABLE	CONNECTOR KIT TYPE II	CONNECTOR KIT TYPE III	CONNECTOR KIT TYPE III A	CONNECTOR KIT TYPE III B	CONNECTOR KIT TYPE III C	CABLE SPLICING KIT	STRUCTURE GROUND SYSTEM FRA 104 1049	STRUCTURE GROUND SYSTEM FRA 104 1111	STRUCTURE GROUND SYSTEM FRA 104 1136	STRUCTURE GROUND SYSTEM FRA. 104 1250	STRUCTURE GROUND SYSTEM FRA 104 1279	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES (1"x40")	LIGHT POLE ANCHOR BOLTS FOR STRUCTURES, AS PER PLAN	LIGHT POLE REMOVED FOR STORAGE
1		"ALUM CREEK DRIVE" CONTINUED																																														
2	L-R	39+00	38+85																					79		79				178																		
3	RT.	38+85																		1																2												
4		38+85	39+40																					55									65														
5		39+40						1						1				1				1												103.4		1	1										
6		39+40	41+20																					180									190														
7		41+20								1				1				1				1												119.4		1	1										
8		41+20	42+28																					108									160														
9		42+28	245+45 ℳ																		1			150		150				320																
10		42+28	42+95																					10	10					*154																
11		42+95							*1									*1																*90		*1	*1								*1		
12	RT.	42+95	43+90																											*210																
13	L-R	43+90																	*4																												
14	RT.	43+90	45+26																					10	10					*292																
15	RT.	45+26																			1																2										
16	RT.	45+26	46+00																					74									84														
17	L-R	46+00																			1			77		77				174								2								
18	RT.	46+00	46+60																					60									70														
19		46+60						1						1				1				1												103.4		1	1										
20		46+60	50+40																					380									390														
21		50+40						1						1				1				1												103.4		1	1										
22		50+40	52+13																					173		173				366																
23		52+13						1						1				1				1												103.4		1	1										
24	RT.	52+13	53+86																					173									183														
25	L-R	53+86						1						1				1			1		1	85		85				190				103.4		1	1			2						
26	RT.	53+86	55+60																					174									184														
27	RT.	55+60				1								1				1				1												107.4		1	1										
28	RT.	55+60	57+00																					140									150														
29	L-R	57+00	57+57																		1			82		82				184								2								
30	RT.	57+00	60+07																					307		307				634																
31	RT.	60+07				1								1				1																107.4		1	1										
32	LT.	42+60																			1																										
33		42+60	42+70																					10	10																					
34		44+70							1									1																90		1	1										
35		44+70	45+53																					10	10					186																
36		45+53																			1																2										
37		45+53	46+00																					47									57														
38		46+00																			1																2										
39		46+00	48+50																					250									260														
40		48+50						1						1				1				1												103.4		1	1										
41		48+50	50+50																					200									210														
42		50+50																			1																2										
43		55+85																			1																2										
44		55+85	57+57																					172		172				372																
45	LT.	57+57				1								1				1				1												107.4		1	1										
46																																																
47																																																
48																																																
49		BRIDGE NO.	104-1250																						*550																						
50		BRIDGE NO.	104-1279																						*259																						
51																																																
52																																																
53					3		6	*1/1		1				10				*1/11	*4		11		10	3006	809*/40	1125				651*/2606			2003	90*/1152		*1/11	*1/11	2		18			*1		*1		

* STRUCTURE QUANTITY

BRUNING 44560 10943

LIGHTING SUB-SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA 104-10.57

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LIGHTING SUB-SUMMARY

CALC: RGG 6-79
CHK: GKS 6-79

REFERENCE No.	SIDE	STATION	STATION		FENCE TYPE CL, AS PER PLAN L.F.	8' GATE TYPE CL. AS PER PLAN EA.	JUNCTION BOX 18"x18"x8" EA.	JUNCTION BOX TYPE III EA.	SERVICE TO UNDERPASS LIGHTING FOR BRIDGE NO. FRA 104-1280 LUMP	TRANSITION JUNCTION BOX, AS PER PLAN EA.
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11	℄	259+31.16								1 *
12	℄	260+316						1 *		
13	℄	261+91.62								1 *
14										
15		ALUM CREEK DRIVE								
16		43+90					1 *		LUMP *	
17										
18										
19										
20		CONTROL	CENTER II		40	2				
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31		(SUB TOTALS CARRIED TO GEN'L SUMMARY)			40	2	1 *	1 *	LUMP *	2 *
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										
51										
52										
53										

* STRUCTURE QUANTITY

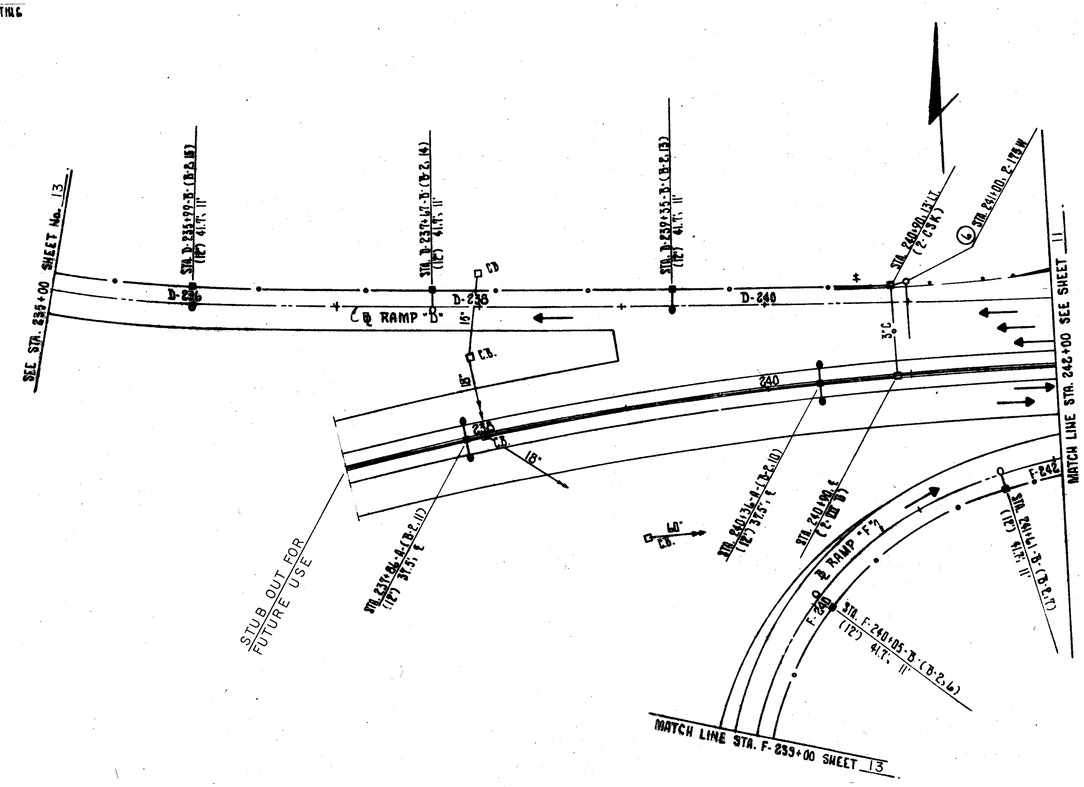
LEGEND

- TWIN 310 W-HIGH PRESSURE SODIUM LAMPS, LUMINAIRE IES TYPE II, M.S.C.-37.5' M.H.
- 310W-HIGH PRESSURE SODIUM LAMPS, LUMINAIRE IES TYPE II, M.S.C.-41.7' M.H.
- 200 W-HIGH PRESSURE SODIUM LAMPS, LUMINAIRE IES TYPE II, M.S.C.-41.7' M.H.
- 310 W-HIGH PRESSURE SODIUM LAMPS, LUMINAIRE IES TYPE III, M.S.C.-41.7' M.H.
- EXISTING LIGHT POLE REMOVED
- EXISTING LUMINAIRE
- STA. LOCATION, POLE TYPE, (CIRCUIT & POLE NUMBER) / (BRACKET ARM LENGTH) MOUNTING HEIGHT, OFFSET / #
- PROPOSED UNDERPASS LUMINAIRE (55 WATT LOW PRESSURE SODIUM)

NOTE:
NUMBER AND TYPE CONNECTOR KITS, IF NOT NOTED, STANDARD CONNECTOR KIT TYPE II & III ARE TO BE USED.

- EXISTING PULL BOX
- CONTROL CENTER
- MEDIAN PULL BOX WITH TYPE III JUNCTION BOX.
- TRANSITION JUNCTION BOX STA. & LOCATION / NO. & TYPE CONNECTOR KITS
- STUB OUT FOR FUTURE USE.
- STA. LOCATION, OFFSET FM. EDGE OF PAVEMENT TO ℄ OF 15" PULL BOX / NUMBER & TYPE OF CONNECTOR KITS (TYPE AS CALLED)
- PROPOSED 24" PULLBOX
- JUNCTION BOX TYPE II

- LIGHT POLE & LUMINAIRE (FOUNDATION MOUNTED)
- STR. LOCATION, POLE TYPE, (CIRCUIT & POLE NUMBER) / BRACKET ARM LENGTH, MOUNTING HEIGHT, OFFSET FROM EDGE OF TRAVELED PAVEMENT TO ℄ OF FOUNDATION.
- LIGHT POLE & LUMINAIRE (STRUCTURE MOUNTED)
- CONDUIT (SIZE AS SHOWN)
- CIRCUIT "A" POWER SOURCE #1 (A-1) #2/0 AWG WIRE
- CIRCUIT "A" POWER SOURCE #1 (A-1) #2 AWG WIRE
- CIRCUIT "A" POWER SOURCE #2 (A-2) #2 AWG WIRE
- CIRCUIT "B" POWER SOURCE #2 (B-2) #4 AWG WIRE
- CIRCUIT "C" POWER SOURCE #2 (C-2) #2 AWG WIRE
- CIRCUIT "A" POWER SOURCE #2 (C-2) #2/0 AWG WIRE
- STRUCTURE GROUNDING SYSTEM
- CIRCUIT "B" POWER SOURCE #2 (B-2) #2 AWG WIRE
- CSK CABLE SPLICING KIT
- PROPOSED REPLACEMENT CIRCUIT FOR EXISTING "W5" "D5" "Z" & "U", USING NO. 4 AWG WIRE
- POWER POLE



LIGHT POLE DATA

POLE TYPE	DESIGN NUMBER	FOUNDATION ANCHOR BOLTS: SIZE (DIA. x LENGTH)	FOUNDATION ANCHOR BOLTS: BOLT CIRCLE DIAMETER	TRANSFORMER BASE STYLE
A △	A 12 B B 37.5 D	1¼" x 70" *	1'-9 3/4"	
B	AT 12 B 41.7	1" x 40"	15"	AT-A
C	A 12 B B 37.5 D	⌖	—	—
D	A 10 B 41.7	1" x 40"	15"	AT-A
F	ST 6 B 39	1" x 40"	15"	STEEL TRANSFORM
G	AT 18 B 41.7	1" x 40"	15"	AT-A
H	AT 15 B 41.7	1" x 40"	15"	AT-A

△ REQUIRES SPECIAL BASE PLATE SEE SHEET NO. 18
⌖ FOR ANCHOR BOLT LOCATION AND DETAIL SEE STRUCTURE PLANS
* FOR ANCHOR BOLT LOCATION SEE STANDARD DRAWING HL 22

FHWA REGION	STATE	PROJECT	
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FRANKLIN COUNTY
FRA. 104-10.57

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NOTES:
1. THERE IS NO CABLE IN THE 4" MEDIAN RACEWAY BETWEEN THE MEDIAN PULL BOX AT STA. 242+91 AND THE MEDIAN PULL BOX AT STA. 245+45.
2. FOR UNDERPASS LIGHTING SEE SHEET NO. 15
3. FOR LIGHTING ON ALUM CREEK DRIVE SEE SHEET NO. 14
4. M.E.L.P. - MUNICIPAL ELECTRIC LIGHT & POWER
5. CSOE - COLUMBUS & SOUTHERN OHIO ELECTRIC
6. OBT - OHIO BELL TELEPHONE

NOTE:
1. FOR DETAILS ON STRUCTURE MOUNTED LIGHT POLES SEE STRUCTURE PLANS FOR BRIDGE NO. FRA-104-1279.
2. FOR LIGHTING LEGEND SEE SHEET NO. 10.

LIGHTING PLAN STA. 242+00 TO STA. 263+00 S.R. 104

FHWA REGION	STATE	PROJECT	
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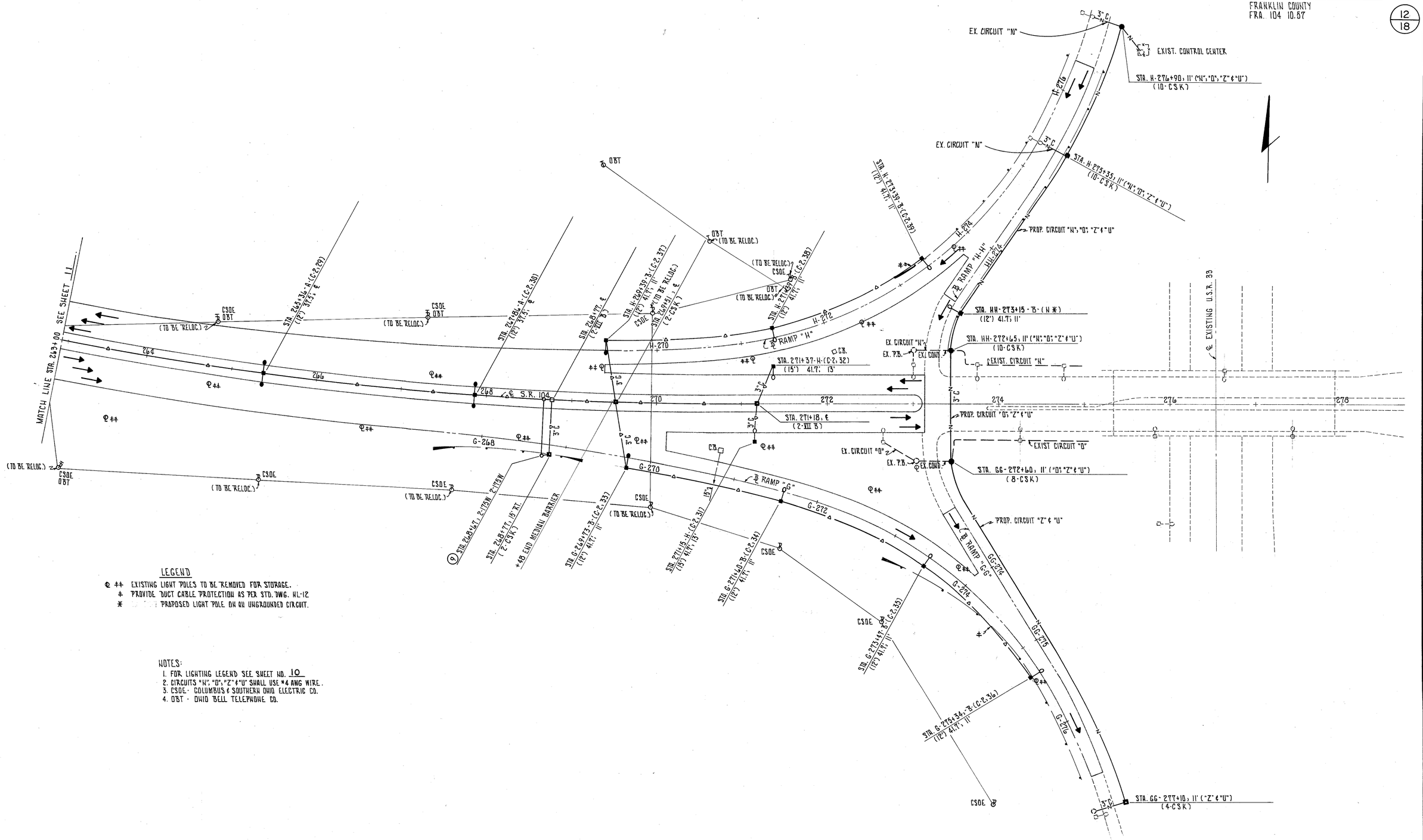
FRANKLIN COUNTY
FRA. 104 10.57



LEGEND

℄ ++ EXISTING LIGHT POLES TO BE REMOVED FOR STORAGE.
+ PROVIDE DUCT CABLE PROTECTION AS PER STD. DWG. HL-12
* PROPOSED LIGHT POLE ON AN UNGROUNDED CIRCUIT.

NOTES:

1. FOR LIGHTING LEGEND SEE SHEET NO. 10
2. CIRCUITS "N", "O", "Z" & "U" SHALL USE #4 AWG WIRE.
3. CSOE - COLUMBUS & SOUTHERN OHIO ELECTRIC CO.
4. OBT - OHIO BELL TELEPHONE CO.

LIGHTING PLAN STA. 263+00 TO STA. 274+00 S.R. 104 & RAMPS "G" & "H"

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA. 104-10.57

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STA. 88+90, 7' LT. (2-CSK)

STA. 88+40-D-(B-2,28) (10") 41.7'; 7'

STA. 89+00, 2'-100 W

STA. 90+35, 7' LT. (2-CSK)

STA. 90+35-D-(B-2,21) (10") 41.7'; 7'

STA. 92+25-D-(B-2,29) (10") 41.7'; 7'

STA. 96+55-D-(B-2,30) (10") 41.7'; 7'

℄ REFUGEE ROAD (NORTH)

STA. C-235+08-B-(B-2,22)
11'(FOUNDATION ONLY)
STUB FOR FUTURE USE

3"C

℄ RAMP "C"

D-232

STA. D-231+49-B-(B-2,21) (12") 41.7'; 11'

STA. DD-231+49-B-(B-2,18) (12") 41.7'; 11'

℄ RAMP "DD"

DD-232

STA. DD-232+99-B-(B-2,17) (12") 41.7'; 11'

℄ RAMP "D"

DD-230

DD-234

D-234

STA. D-234+49-B-(B-2,16) (12") 41.7'; 11'

SEE STA. 235+00 SHEET NO. 10

MATCH LINE STA. 97+00 SEE SHEET 14

STA. 94+40-D-(B-2,19) (10") 41.7'; 7'

STA. 239+00 SEE SHEET No. 10

STA. F-238+49-B-(B-2,5) (12") 41.7'; 11'

F-238

2# 4 ANG

STA. F-236+93-B-(B-2,4) (12") 41.7'; 11'

2# 2 ANG

F-236

STA. F-235+37-B-(B-2,3) (12") 41.7'; 11'

STA. F-233+82-B-(B-2,2) (12") 41.7'; 11'

F-234

℄ RAMP "F"

STA. F-232+36-B-(B-2,1) (12") 41.7'; 11'

#4 ANG

F-232

MATCH LINE STA. 41+00 SEE SHEET 14

M.E.L.P.

CSOE

OBT

STA. F-240+49-B-(A-2,5)
11'(FOUNDATION ONLY)
STUB FOR FUTURE USE

#2 ANG

℄ RAMP "E"

FF-237

℄ RAMP "FF"

FF-238

STA. FF-238+35-B-(A-2,4) (12") 41.7'; 11'

CSOE (TO BE RELOC.)

2# 2/0 ANG

STA. 39+00, 12' LT. CONTROL CENTER

℄ REFUGEE ROAD

STA. L44+38-D-(A-2,14) (10") 41.7'; 7'

STA. L44+17, 7' (2-CSK)

STA. L44+27 (12") 41.7'; 9' (COMBINATION LIGHT & SIGN POLE)

STA. L45+16-D-(A-2,12) (10") 41.7'; 7'

STA. L47+97-D-(C-2,14) (10") 41.7'; 7' LT.

STA. 371+40-D-(C-2,14) (10") 41.7'; 7' LT.

MATCH LINE STA. 37+00 SEE SHEET NO. 14

℄ ALUM CREEK DRIVE

M.E.L.P. (TO BE RELOC.)

OBT

C.B.

M.H.

STA. 39+40-D-(C-2,1) (10") 41.7'; 7' RT.

STA. 38+35, 7' RT. (2-VII D)

STA. 38+75, 1'-100 W

NOTE:
1. FOR LIGHTING LEGEND SEE SHEET NO. 10.
2. M.E.L.P. - MUNICIPAL ELECTRIC LIGHT & POWER.
3. CSOE - COLUMBUS & SOUTHERN OHIO ELECTRIC
4. OBT OHIO BELL TELEPHONE

LIGHTING PLAN REFUGEE ROAD & RAMPS "C" "D" "E" & "F"

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA. 104-10.57

176
254

14
18

NOTES:
1. ± PROVIDE DUCT CABLE PROTECTION AS PER STANDARD DRAWING NO. HL-12.
2. FOR LIGHTING LEGEND SEE SHEET NO. 10.
3. FOR 2" CONDUIT LOCATION AND PILASTER DETAILS FOR STRUCTURE MOUNTED POLES SEE STANDARD DRAWING HL-19 AND H-4.
4. FOR UNDERPASS LIGHTING DETAILS SEE SHEET NO. 15
5. M.E.L.P. - MUNICIPAL ELECTRIC LIGHT & POWER
6. CSOE - COLUMBUS & SOUTHERN OHIO ELECTRIC CO.
7. OBT - OHIO BELL TELEPHONE

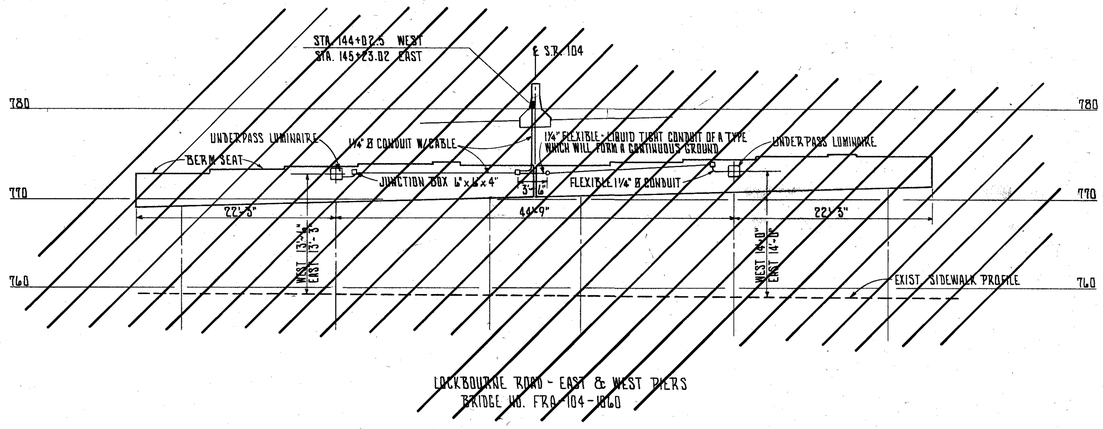
LIGHTING PLAN STA. 28+00 TO STA. 60+50 ALUM CREEK DRIVE

FHWA REGION	STATE	PROJECT	
5	OHIO		

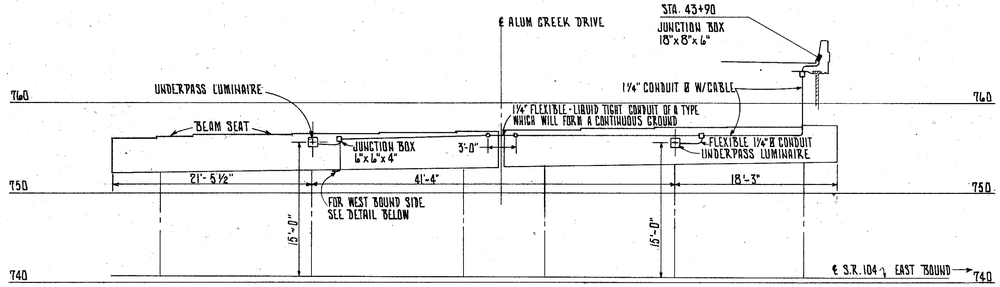
177
254

15
18

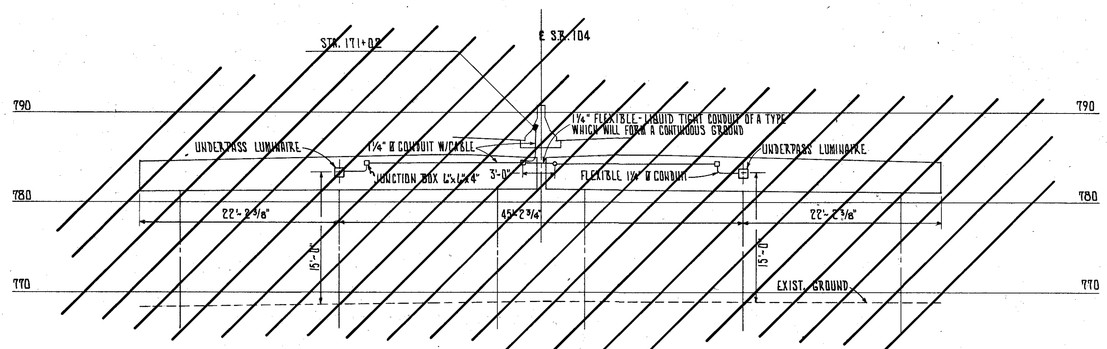
FRANKLIN COUNTY
FRA. 104-10.57



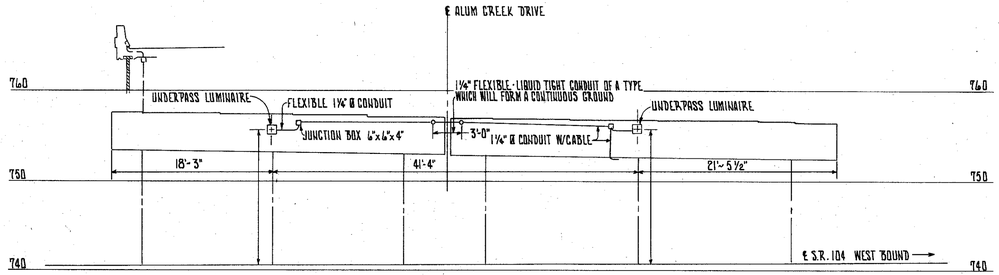
LOCKBOURNE ROAD - EAST & WEST PIERS
BRIDGE NO. FRA-104-1860



ALUM CREEK DRIVE - SOUTH FACE OF CENTER PIERS
BRIDGE NO. FRA.-104-1250



FAIRWOOD AVE. - WEST PIERS
BRIDGE NO. FRA-104-1111



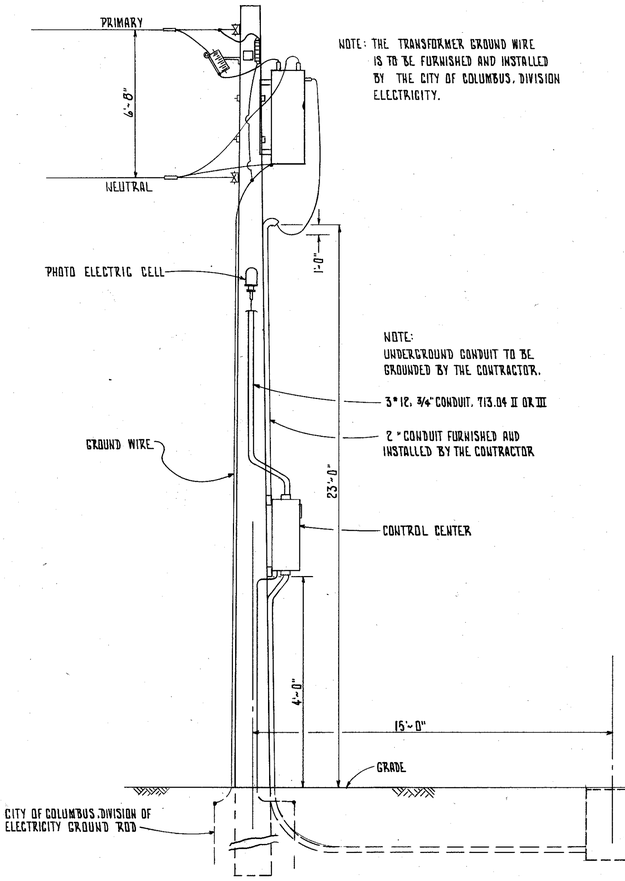
ALUM CREEK DRIVE - NORTH FACE OF CENTER PIERS
BRIDGE NO. FRA-104-1250

FHWA REGION	STATE	PROJECT	
5	OHIO		

178/254

16/18

FRANKLIN COUNTY
FRA 104-10.57



NOTE: THE TRANSFORMER GROUND WIRE IS TO BE FURNISHED AND INSTALLED BY THE CITY OF COLUMBUS, DIVISION ELECTRICITY.

NOTE:
UNDERGROUND CONDUIT TO BE GROUNDED BY THE CONTRACTOR.

3"ø, 3/4" CONDUIT. 713.04 II OR III

2" CONDUIT FURNISHED AND INSTALLED BY THE CONTRACTOR

CONTROL CENTER

NOTE:
1. THE CITY OF COLUMBUS, DIVISION OF ELECTRICITY SHALL FURNISH AND INSTALL THE TRANSFORMER. THE CONTRACTOR SHALL FURNISH AND INSTALL THE 45' SERVICE POLE AND A 2" CONDUIT TO THE ENCLOSURE INCLUDING THE WEATHERHEAD SHOWN ON THE SERVICE POLE. THE CONTRACTOR SHALL FURNISH AND INSTALL THE TWO 1/0 #2 AWG WIRES LEADING FROM THE ENCLOSURE TO THE WEATHERHEAD LEAVING 15'-0" OF FREE CABLE ABOVE THE WEATHERHEAD FOR CONNECTION TO THE TRANSFORMER BY THE CITY OF COLUMBUS, DIVISION OF ELECTRICITY.

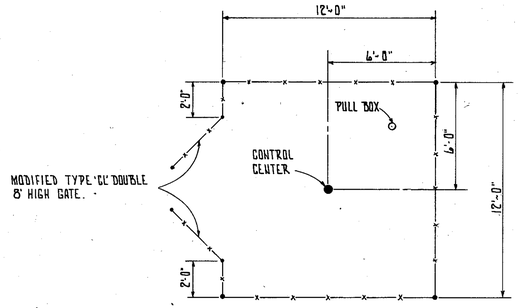
2. THE CONTRACT LUMP SUM PRICE BID FOR ITEM 625 POWER SERVICE AND CONTROL CENTER #II SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS AND PERFORMING ALL LABOR INDICATED FOR THE CONTRACTOR. IN ITEM 1 ABOVE. FURNISHING ALL THE MATERIALS AND EQUIPMENT SHOWN ON THE DETAIL DRAWING FOR THE CONTROL CENTER. FOR FURNISHING AND INSTALLING ALL CONDUIT AND CABLE REQUIRED TO CONNECT THE CONTROL STRUCTURE TO THE PULL BOX AS SHOWN ON SHEET NO. 14 AND FOR FURNISHING AND INSTALLING ALL INCIDENTALS NECESSARY TO MAKE A COMPETE WORKABLE INSTALLATION.

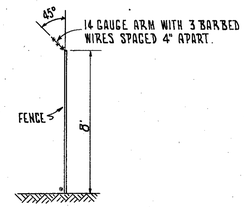
3.

4. ALL FUSES SHALL BE DELAYED ACTION.

5. ALL STRUCTURAL MEMBERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

POWER SERVICE POLE & CONTROL CENTER





TYPICAL FENCE DIAGRAM MODIFIED TYPE CL

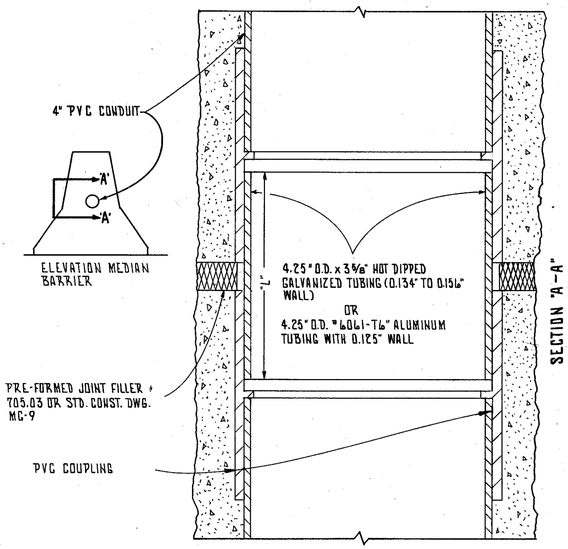
NOTE:
FENCE ABOUT CONTROL CENTER — 12' SQUARE FENCED ENCLOSURE AND 8' WIDE DOUBLE GATE. CHAIN LINK FENCE AND GATE SHALL BE 8' HIGH PLUS A 1' 45° ARM W/ 3 STRAND BARBED WIRE AS PER 710.01 AT TOP. MATERIAL AND INSTALLATION SHALL CONFORM TO ITEM 607, LOCK TO BE PROVIDED BY CITY OF COLUMBUS. DOUBLE GATE LOCATION TO BE DETERMINED ON SITE AT TIME OF CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.

POWER SERVICE & CONTROL CENTER FENCE DETAIL

CONTROL CENTER WIRE & FUSE SCHEDULE

CONTROL CENTER	SERVICE CONDUCTORS	BRANCH CONDUCTOR	BRANCH FUSE	CIRCUIT LOAD AMPS.
CONTROL CENTER #2	2-#2/0 CU			
CIRCUIT A		2-#2/0 CU	80A, ULK-5 DUAL ELEMENT	40.1
CIRCUIT B		2-#2 CU	80A, ULK-5 DUAL ELEMENT	28.3
CIRCUIT C		2-#2 CU	80A, ULK-5 DUAL ELEMENT	51.7

CONTROL CIRCUIT TRANSFORMER: 0.8 AMP. ULK-5, DUAL ELEMENT
ALL CONTROL WIRING #12 MTW-THWN, CU, STRANDED
USE RING TONGUE WIRE TERMINATIONS ON ALL CONTROL WIRES



"L" IS APPROX. 3 3/4" WHEN JOINT IS 1/2"

NOTE:
CONDUIT COUPLINGS AS DETAILED HEREIN SHALL BE PROVIDED AT ALL MEDIAN BARRIER JOINTS WHERE A JOINT FILLER IS USED, AS REQUIRED OR PERMITTED BY ITEM 622 OR STANDARD CONSTRUCTION DRAWING MC-9.

CONCRETE COUPLING DETAIL AT MEDIAN BARRIER JOINT

FRANKLIN CONSULTANTS INC.
Consulting Engineers
COLUMBUS, OHIO

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED

BRUNING 44-132 30845-1

LIGHTING DETAILS - CONTROL STRUCTURE & SERVICE POLE

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA 104-10.57

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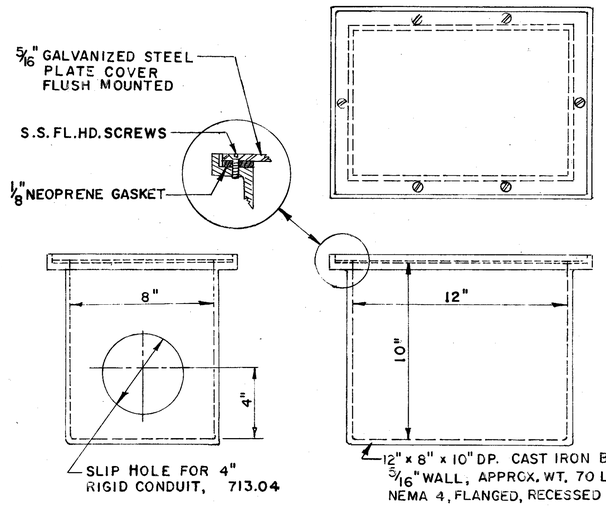
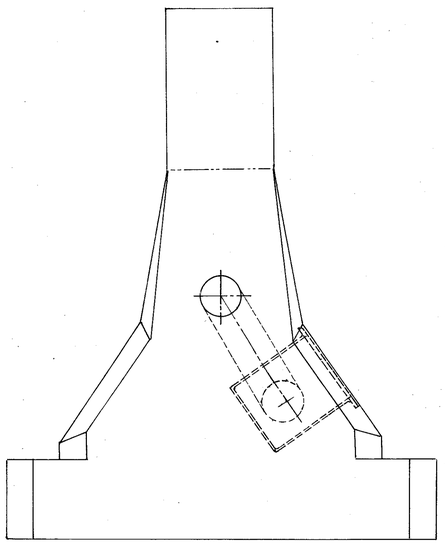
17/18

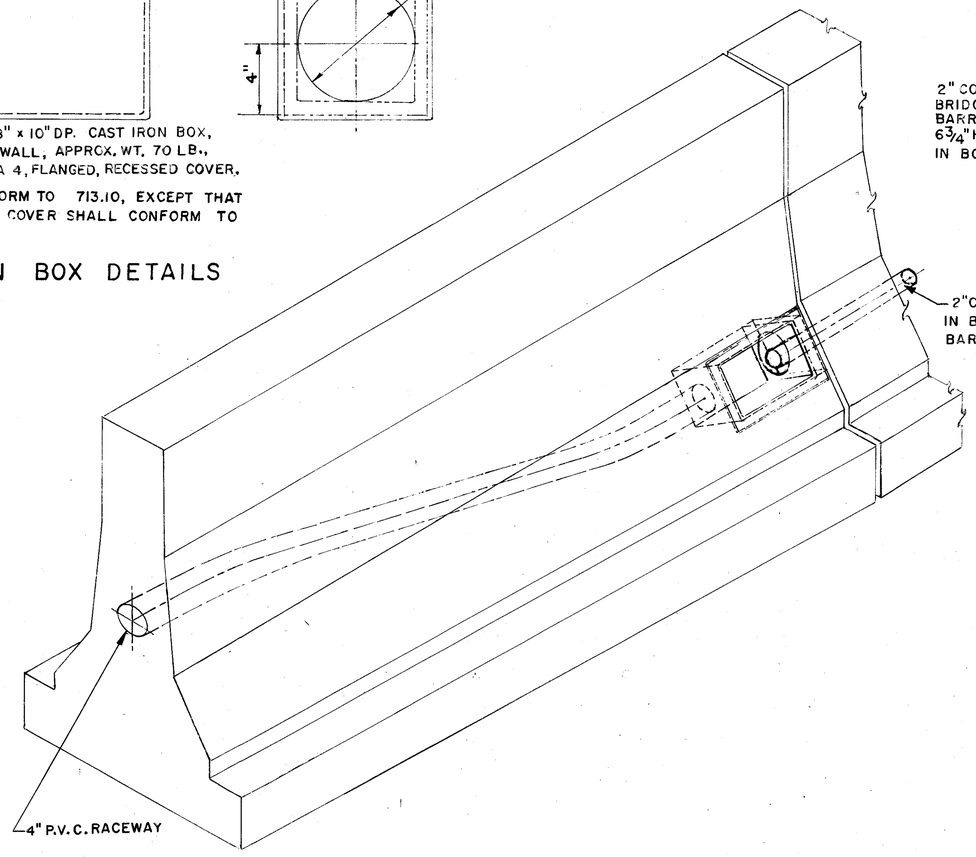


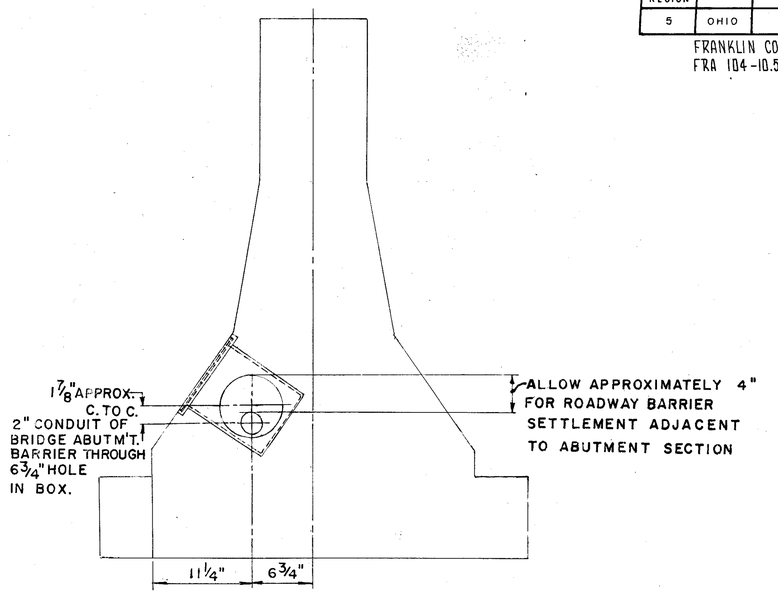
JUNCTION BOX SHALL CONFORM TO 713.10, EXCEPT THAT THE GALVANIZED STEEL PLATE COVER SHALL CONFORM TO ASTM A-242 OR A-36.

TRANSITION JUNCTION BOX DETAILS

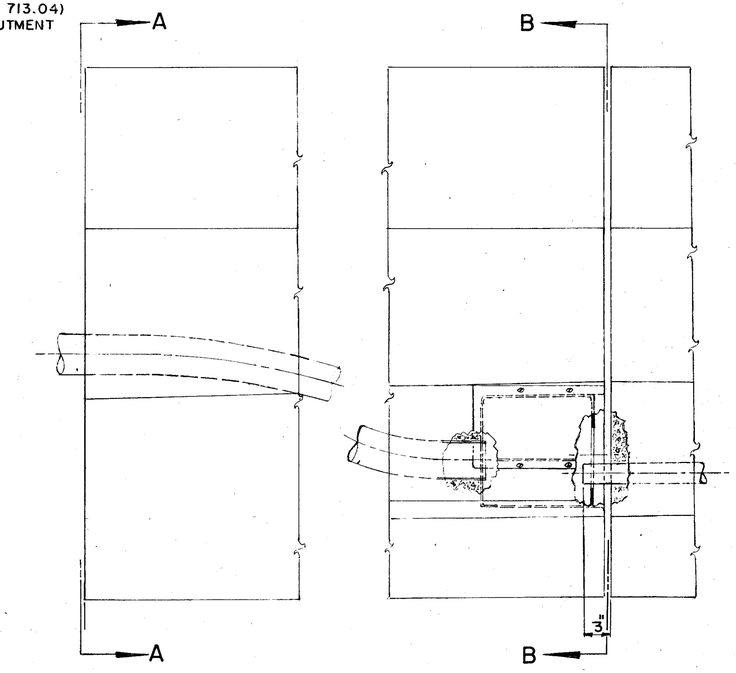


END ELEV. A-A





END ELEV. B-B



SIDE ELEVATION, TRANSITION BARRIER FROM ROADWAY TO BRIDGE CONFIGURATIONS

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA-104-10.57

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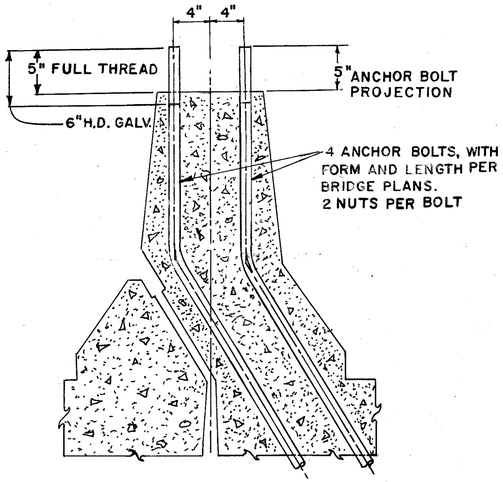
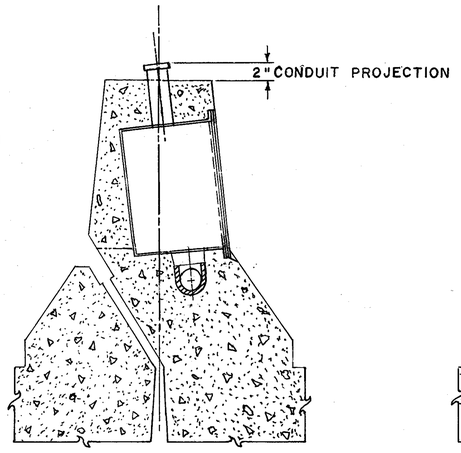
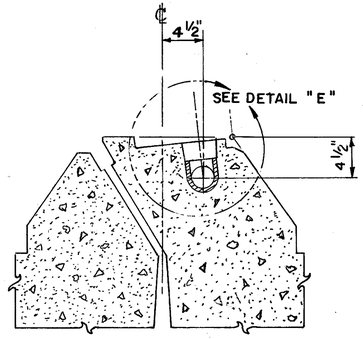


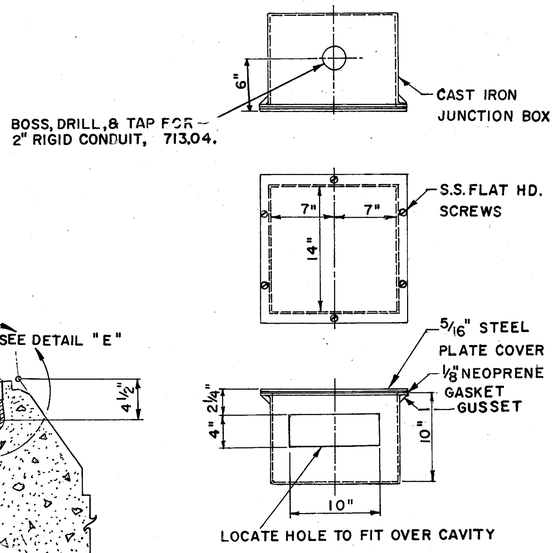
SECTION B-B



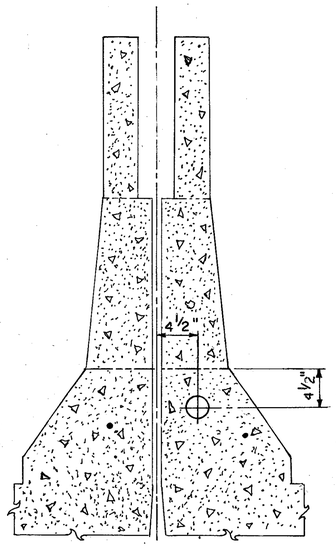
SECTION C-C



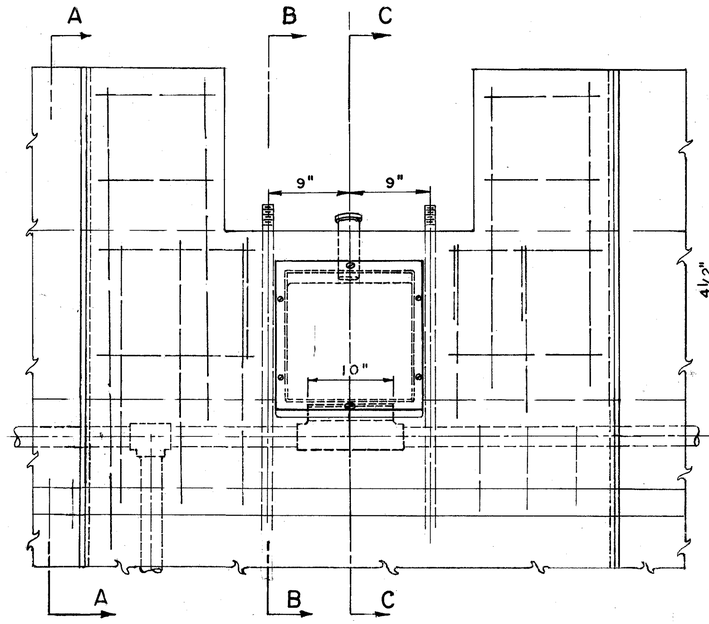
DETAIL OF TOP OF CONCRETE POUR BELOW JUNCTION BOX AT SECTION C-C



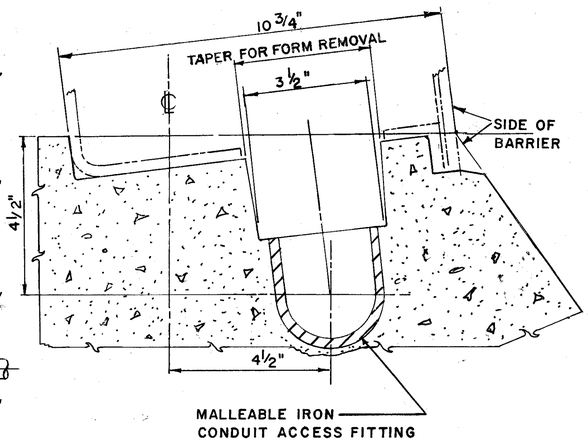
JUNCTION BOX



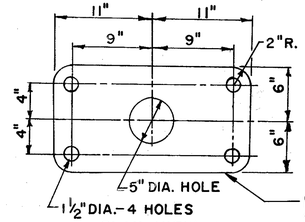
SECTION A-A



LIGHT POLE INSTALLATION ON BRIDGE CONCRETE MEDIAN BARRIER



DETAIL "E"



MEDIAN BARRIER LIGHT POLE BASE PLATE

LIGHTING DETAILS

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

FRA-104-10.57

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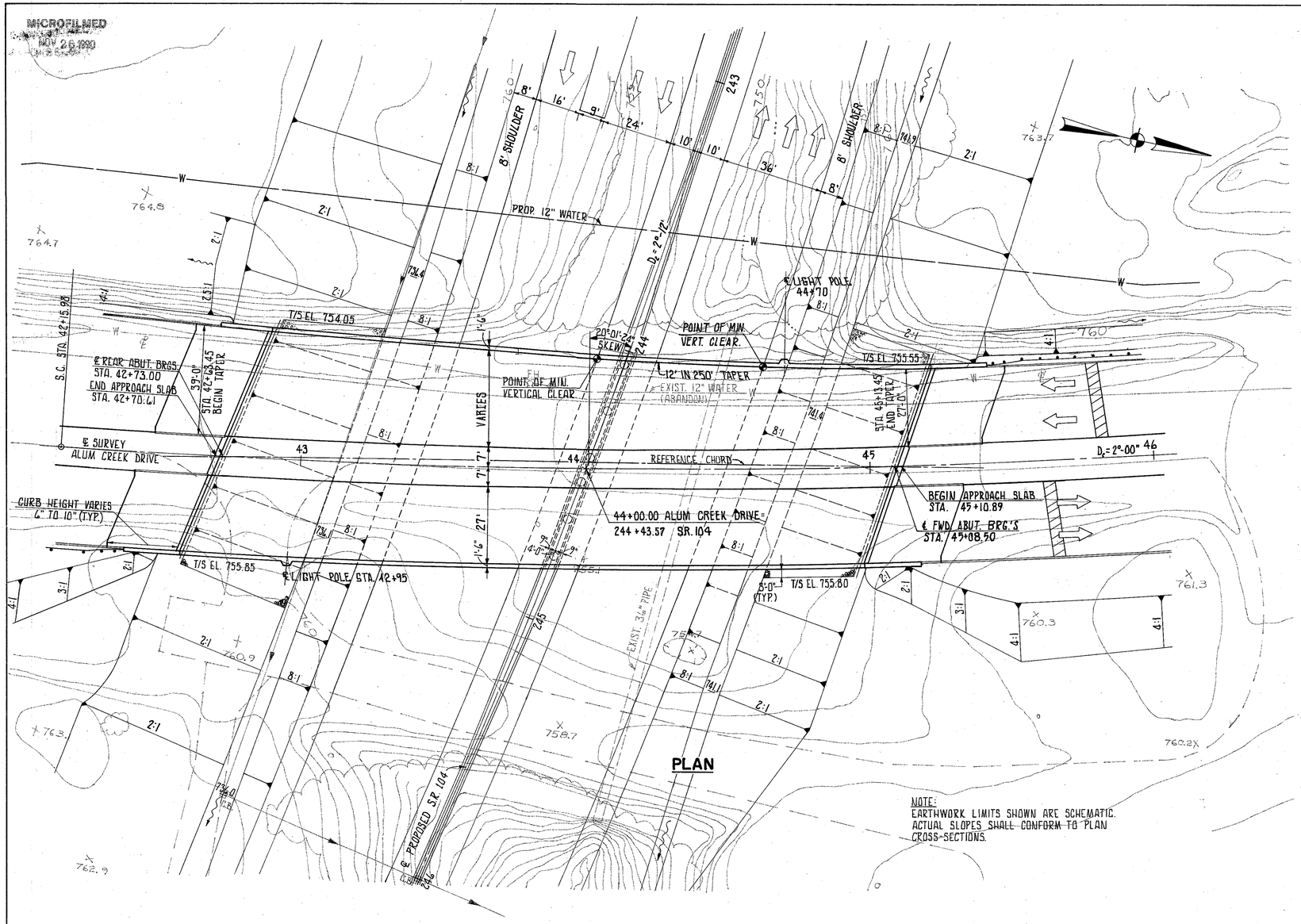
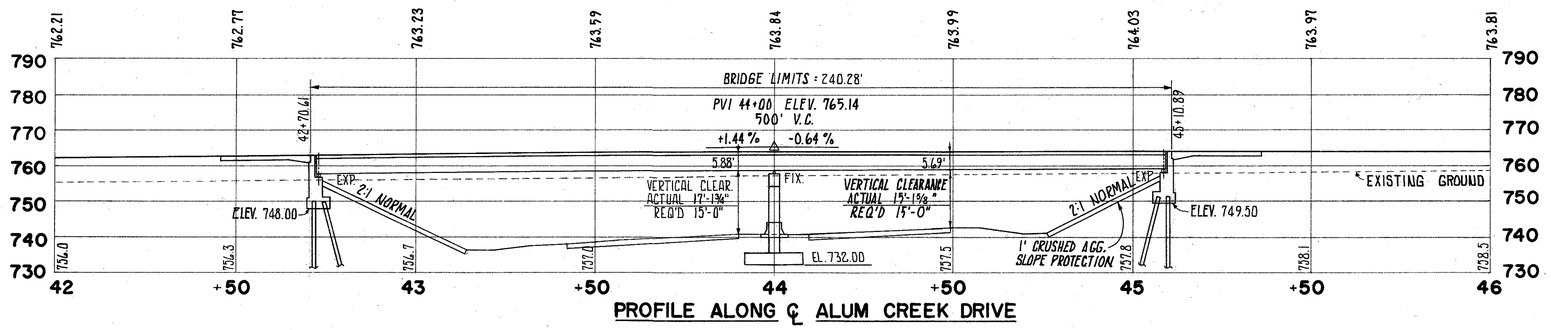


NOTE:
EARTHWORK LIMITS SHOWN ARE SCHEMATIC. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS-SECTIONS.



PROFILE ALONG ℄ ALUM CREEK DRIVE

12" DIA. C.I.P. PILES (AT ABUTMENTS)
EST. PAY LENGTH = 25'-0"

HORIZONTAL CURVE DATA

S.R. 104	ALUM CREEK DRIVE
D_c = 2° 12'	D_c = 2°00'
L_c = 1736.39'	L_c = 1354.46'
R = 2604.35'	R = 2864.79'
Δ = 47° 0' 2"	Δ = 30° 05' 21"
S.C. STA. 231+28.56	S.C. STA. 42+15.98
C.S. STA. 248+64.96	C.S. STA. 55+70.44

PROPOSED STRUCTURE

TYPE: CONTINUOUS STEEL GIRDER BRIDGE WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE
SPANS: 127'-0", 108'-6", c/c BEARINGS, MEASURED ALONG ℄ SURVEY
WIDTH: 69'-2" TO 81'-2" F/F PARAPETS INCLUDES 14' RAISED MEDIAN
LOADING: HS 20-44 *CASE II & ALTERNATE MILITARY*
WEARING SURFACE: MONOLITHIC CONCRETE
SKEW: 20°-01'-24" L.F. REFERENCE CHORD
APPROACH SLAB: AS-1-81 *(25'-0" LONG)*
ALIGNMENT: *2°-00" CURVE*
SUPERELEVATION: *0.021 ft/ft*
ADT: 15,600 (2000) **ADTT:** 1092 (2000)

FRANKLIN CONSULTANTS INC. 1/13
Consulting Engineers
COLUMBUS, OHIO

SITE PLAN
BRIDGE No. FRA-104-1250
S.R. 104 UNDER
ALUM CREEK DR.

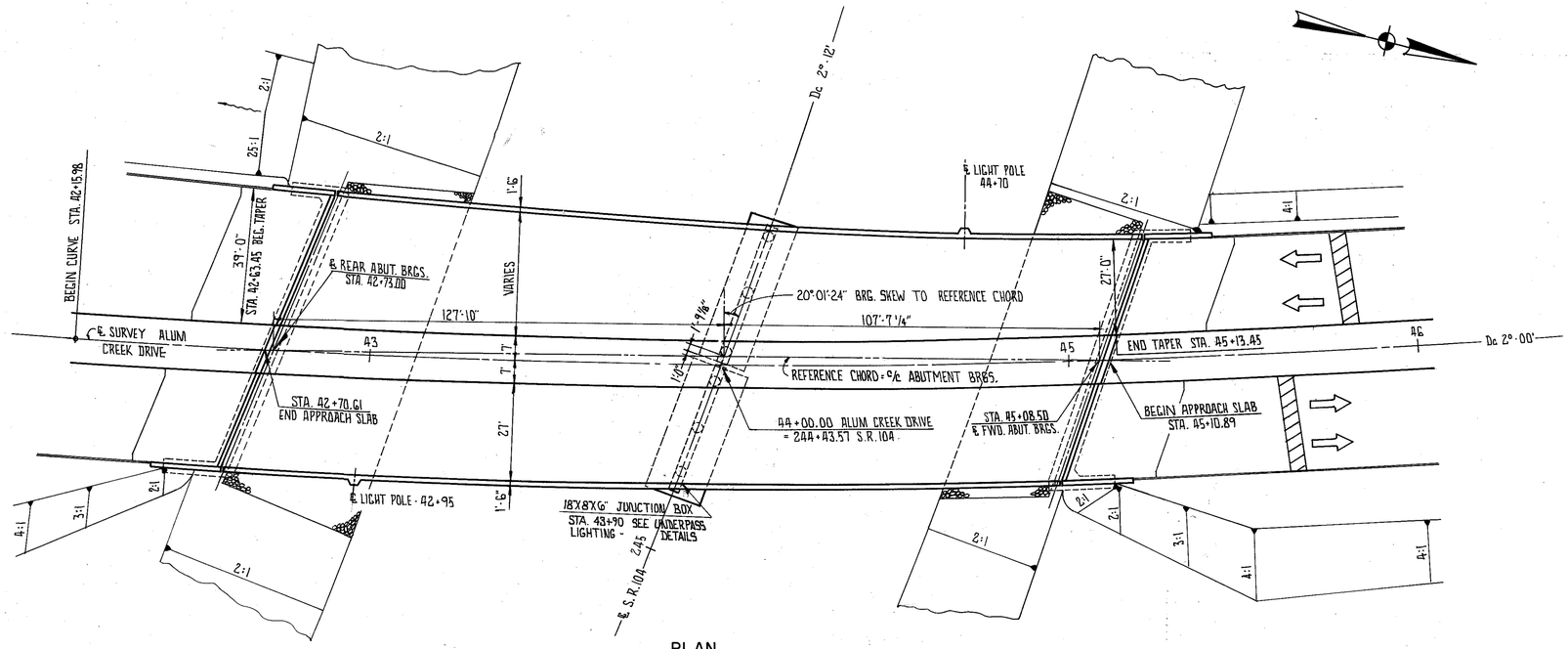
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	GK	TC	SM	JA	3/16-18	

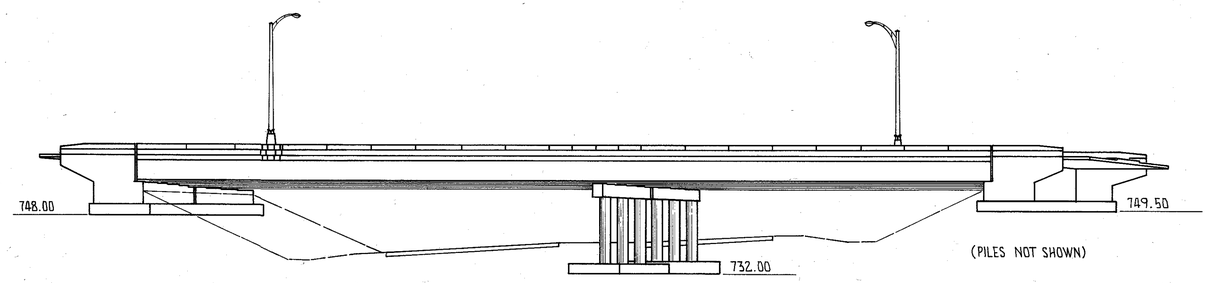
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

182
254

FRA-104-10.57



PLAN



ELEVATION

FRANKLIN CONSULTANTS INC. 2 / 13
Consulting Engineers
COLUMBUS, OHIO

GENERAL PLAN AND ELEVATION

BRIDGE No. FRA-104-1250
S.R. 104 UNDER ALUM CREEK DRIVE
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	GW	SRJ	SM	JF	5/25-79	

BRUNING 44-132 30645-1

FHWA REGION	STATE	PROJECT		183 / 254
5	OHIO			

FRA-104-10.57

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	SUPER	PIERS	ABUT.	GEN'L
503	877	CU. YDS.	UNCLASSIFIED EXCAVATION		387	490	
505	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION			LUMP SUM	
507	1,400	LIN. FT.	12" CAST-IN-PLACE REINFORCED CONCRETE PILES			1,400	
509	142,150	LBS.	REINFORCING STEEL	80,687	34,589	26,874	
511	700	CU. YDS.	CLASS S CONCRETE, SUPERSTRUCTURE (SEE PROPOSAL NOTE)	700			
511	61	CU. YDS.	CLASS C CONCRETE, PIERS ABOVE FOOTINGS		61		
511	230	CU. YDS.	CLASS C CONCRETE, ABUTMENTS ABOVE FOOTINGS			230	
511	283	CU. YDS.	CLASS C CONCRETE, FOOTINGS		143	140	
512	9	SQ. YDS.	TYPE B WATERPROOFING			9	
513	786,400	LBS.	STRUCTURAL STEEL (AISC CATEGORY III) (A588)	786,400			
514	LUMP SUM	LUMPSUM	FIELD PAINTING OF NEW STRUCTURAL STEEL, AS PER PLAN	LUMP SUM			
516	14,200	LBS.	STRUCTURAL STEEL EXPANSION JOINTS	14,200			
518	129	CU. YDS.	POROUS BACKFILL			129	
518	148	LIN. FT.	6" PERFORATED, HELICAL CORRUGATED STEEL PIPE 707.01			148	
518	96	LIN. FT.	6" NON-PERFORATED, HELICAL CORRUGATED STEEL PIPE, INCLUDING SPECIALS 707.01			96	
518	6	EA.	SCUPPERS, INCLUDING SUPPORTS	6			
523	3	HOURS	DYNAMIC LOAD TEST			3	
601	776	SQ. YDS.	CRUSHED AGGREGATE SLOPE PROTECTION				776
625			SEE SHEET 164 LIGHTING SUMMARY				
824	85,834	LBS.	EPOXY COATED REINFORCING STEEL	85,834			
SPEC.	1,158	SQ.YDS	SEALING OF CONCRETE SURFACES (SEE PROPOSAL NOTE)	982		176	
SPEC	242	SQ.YDS	SEALING OF CONCRETE SURFACES (EPOXY) (SEE PROPOSAL NOTE)		242		

GENERAL NOTES

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS: AS-1-81, (11-27-81) RB-1-55 (2-2-59), SD-1-69 (6-12-69) SHEET 1, 2 AND 3 OF 4, AND SUPPLEMENTAL SPECIFICATIONS 836 (3-12-75) AND 824 (10-8-82).

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, 1977, INCLUDING THE 1978, 1979, 1980, & 1981 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

DESIGN DATA:
DESIGN LOADING - HS 20-44 CASE II AND THE ALTERNATE MILITARY LOADING.
CONCRETE CLASS S - UNIT STRESS 1500 PSI FOR SUPERSTRUCTURE.
CONCRETE CLASS C - UNIT STRESS 1333 PSI FOR SUBSTRUCTURES.
STRUCTURAL STEEL - A.S.T.M. A 588 UNIT STRESS 27,000 PSI
REINFORCING STEEL - A.S.T.M. A 615, A 616 OR A 617 - UNIT STRESS 20,000 PSI. SPIRAL REINFORCEMENT MAY BE PLAIN BARS A.S.T.M. A 82 OR A 615.

EMBANKMENT CONSTRUCTION: THE EMBANKMENT SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF THE ABUTMENTS. EXCAVATION MAY THEN BE MADE FOR THE ABUTMENTS AND THE PILES DRIVEN.

PILES: SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 45 TONS PER PILE FOR THE ABUTMENTS.

FOUNDATION BEARING PRESSURE: PIER FOOTINGS ARE DESIGNED FOR A MAXIMUM BEARING PRESSURE OF 3 TONS PER SQ. FT.

UTILITY LINES: ALL EXPENSES INVOLVED IN RELOCATING AND INSTALLING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNERS. THE CONTRACTOR AND OWNERS ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

DECK PROTECTION METHOD: EPOXY COATED REINFORCING STEEL, TOP MAT ONLY.

ATTACHMENT OF GUARDRAIL TO CONCRETE PARAPETS: CONCRETE INSERT ANCHOR ASSEMBLIES PER STANDARD CONSTRUCTION DRAWINGS GR-3 AND GR-1 SHALL BE PLACED DURING PARAPET CONSTRUCTION.

PARTIAL PAINTING OF A588 STEEL: AN 8 FOOT LENGTH OF THE ENDS OF GIRDERS ADJACENT TO ABUTMENTS AND ALL CROSSFRAMES AND OTHER A588 STEEL WITHIN THESE LIMITS SHALL BE PAINTED. PAINT SHALL BE 514, SYSTEM A. THE PRIME COAT SHALL BE 708.17. THE TOP COAT SHALL BE 708.17. THE TOP COAT SHALL BE 708.18 EXCEPT THAT THE COLOR SHALL CLOSELY APPROACH FEDERAL STANDARD NO. 595a - 20045 OR 20059.

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1".

ITEM SPECIAL, SEALING OF CONCRETE SURFACES: A concrete sealer, either silane or epoxy, shall be applied to the following concrete surfaces: the abutment backwalls and bridge seats, the median, the parapets (all sides), the edges of the deck, the underside of the deck in the bay beneath the joint and from the exterior beam to the edge of deck. An epoxy sealer shall be applied to the exposed areas of the piers. See the Proposal for specifications.

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COLUMBUS, OHIO

ESTIMATED QUANTITIES & GENERAL NOTES

BRIDGE No. FRA-104-1250
S.R. 104 UNDER ALUM CREEK DR.
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	GW	GW	SM	JL	5/25/79	

FED RD. DIVISION	STATE	PROJECT	
5	OHIO		

FRA-104-10.57

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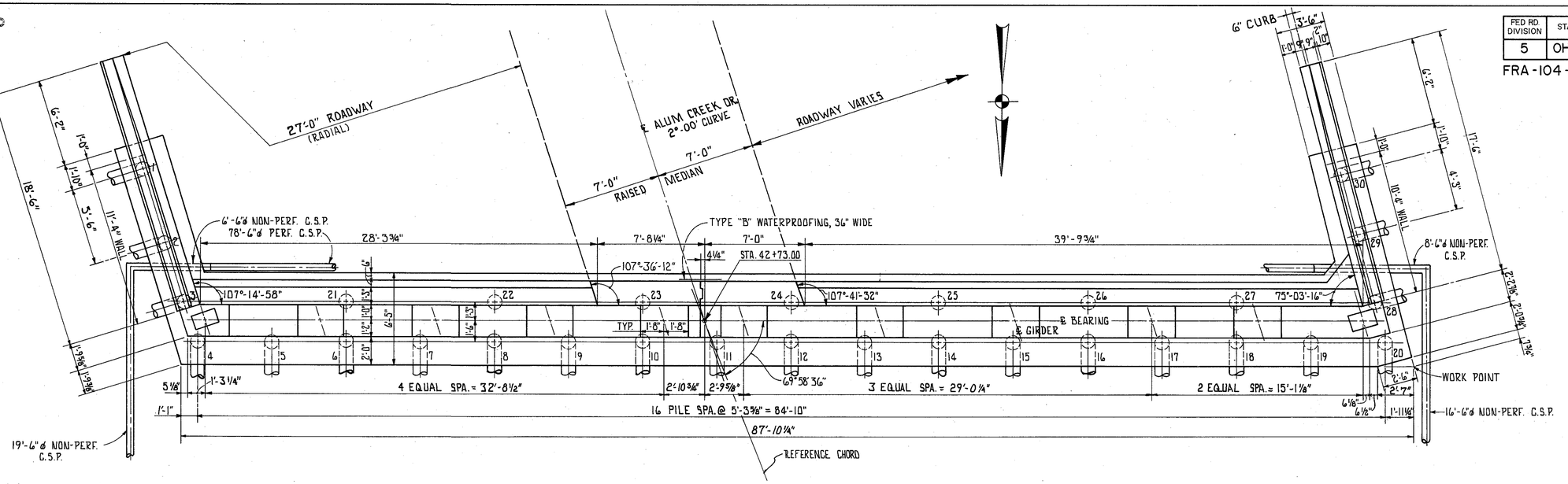
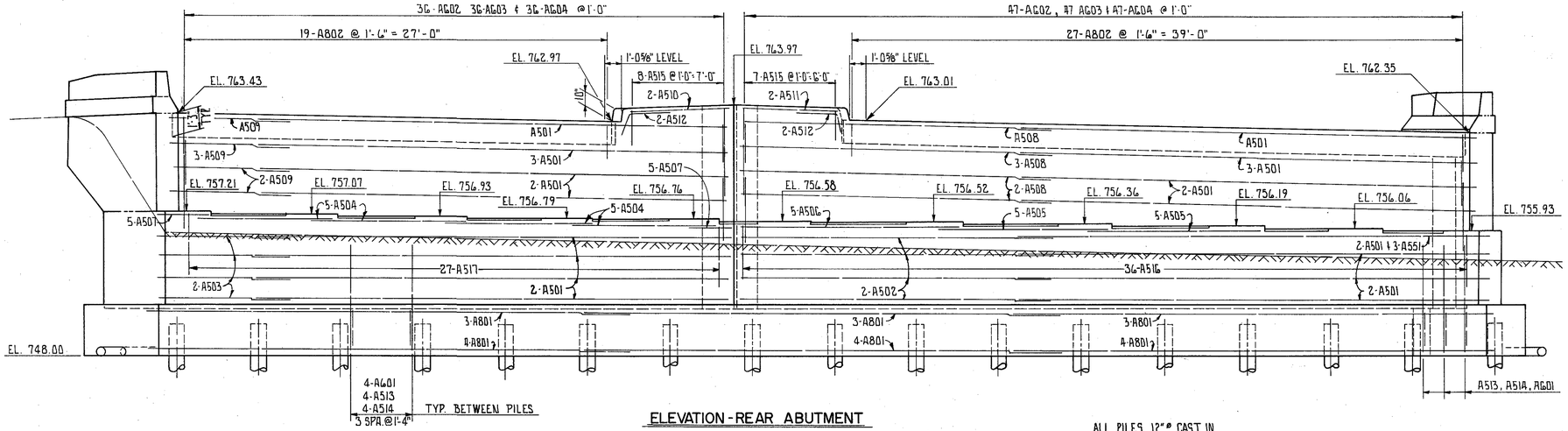
254



PLAN - REAR ABUTMENT



ELEVATION - REAR ABUTMENT

ALL PILES 12"ø CAST IN PLACE CONCRETE PILES

MIN. BAR LAP
#8 BARS = 3'-5"
#6 BARS = 1'-11"
#5 BARS = 1'-7"

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REAR ABUTMENT

BRIDGE No. FRA.-104-1250
S.R. 104 UNDER ALUM CREEK DRIVE
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	GW	B	SM	JF	5/25/79	

BRUNING 44-132 30845-1

FED RD DIVISION	STATE	PROJECT	
5	OHIO		

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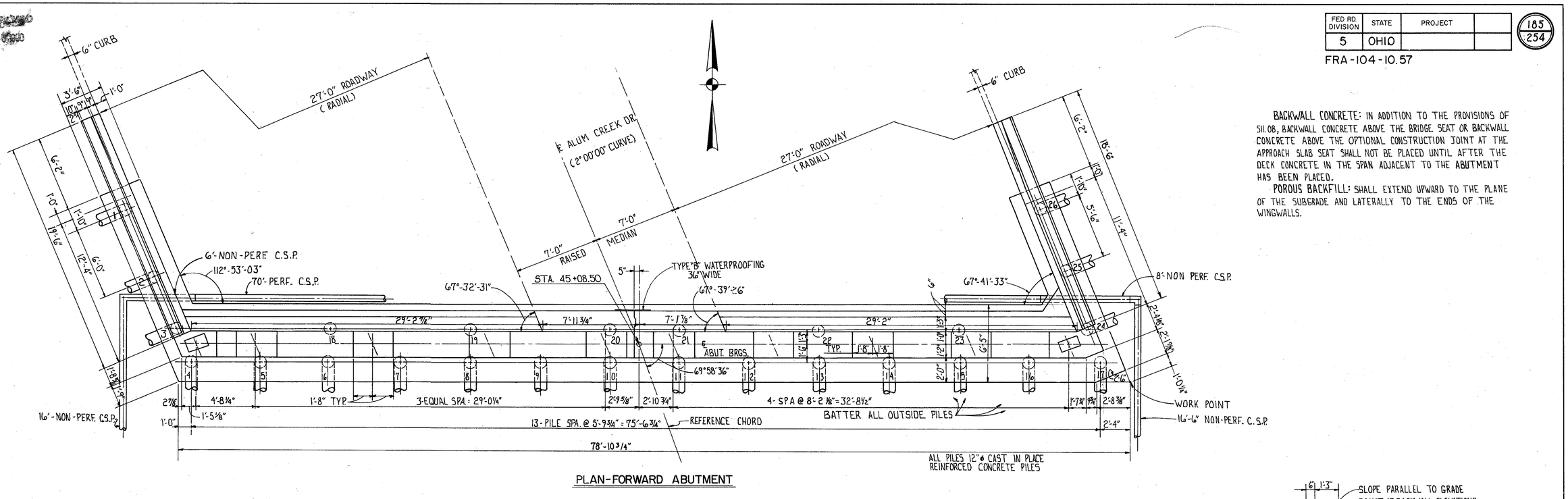
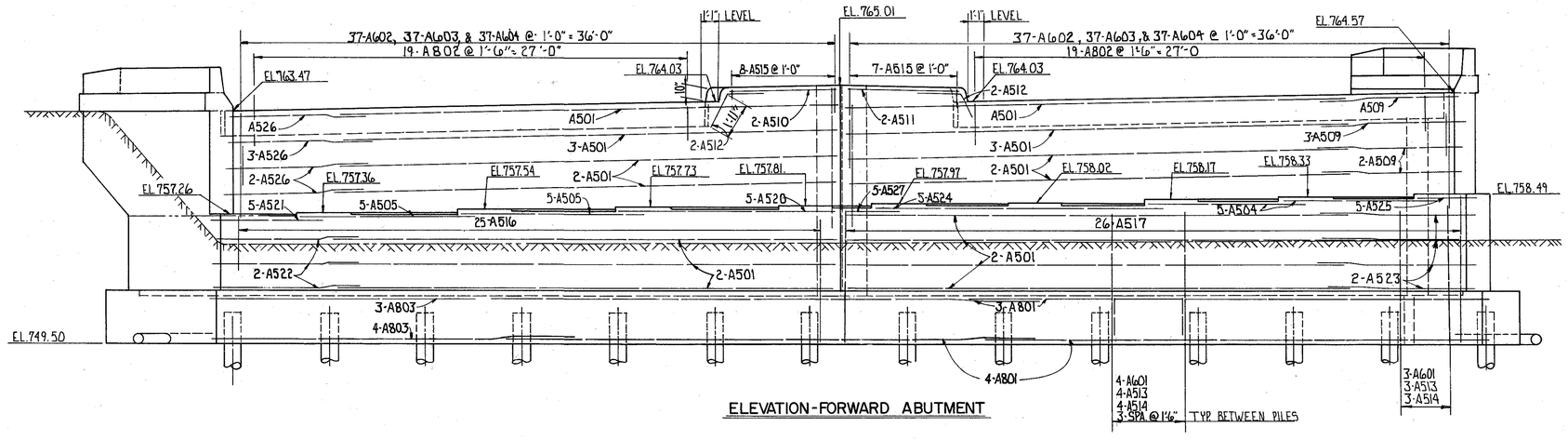
BACKWALL CONCRETE: IN ADDITION TO THE PROVISIONS OF 511.08, BACKWALL CONCRETE ABOVE THE BRIDGE SEAT OR BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTIL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.

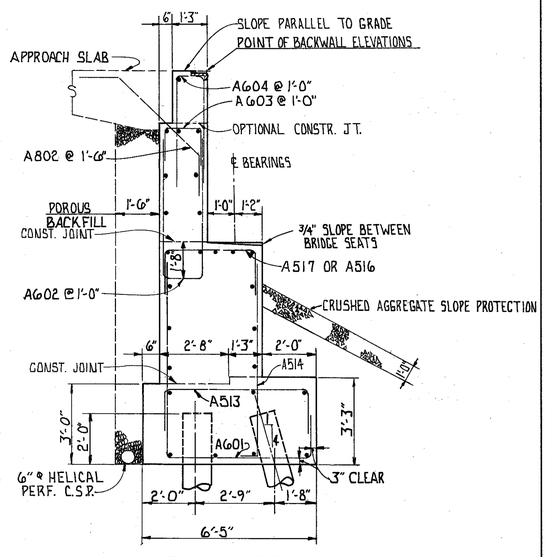
POROUS BACKFILL: SHALL EXTEND UPWARD TO THE PLANE OF THE SUBGRADE AND LATERALLY TO THE ENDS OF THE WINGWALLS.



PLAN-FORWARD ABUTMENT



ELEVATION-FORWARD ABUTMENT



TYPICAL SECTION

BAR No.	MINIMUM LAP
8	3'-5"
6	1'-11"
5	1'-7"

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FORWARD ABUTMENT

BRIDGE No. FRA.-104-1250
S.R. 104 UNDER ALUM CREEK DRIVE
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MM	GW	JB	SM	JF	5/25-79	

BRUNING 44-132-30845-1

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5	OHIO		

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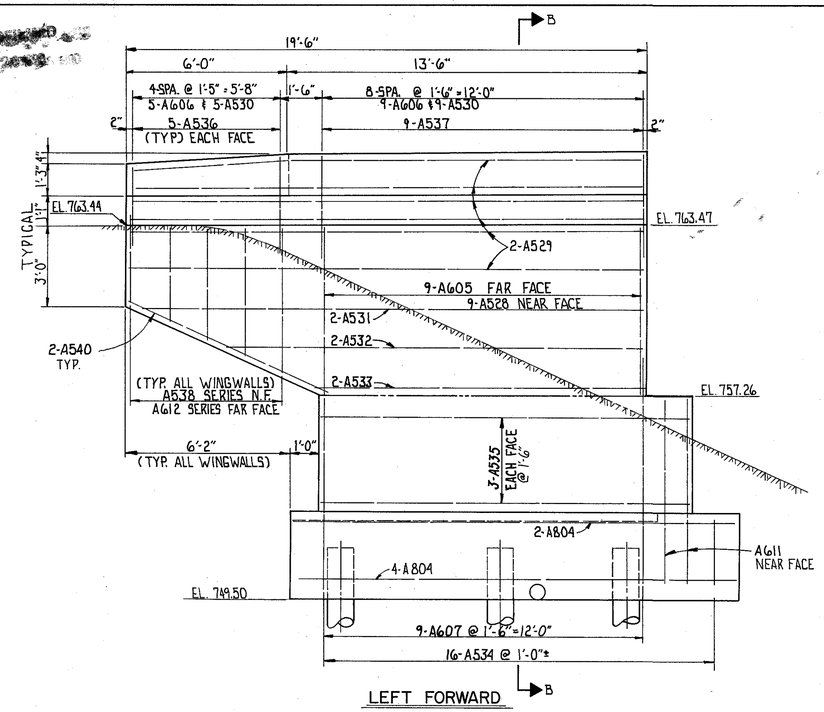
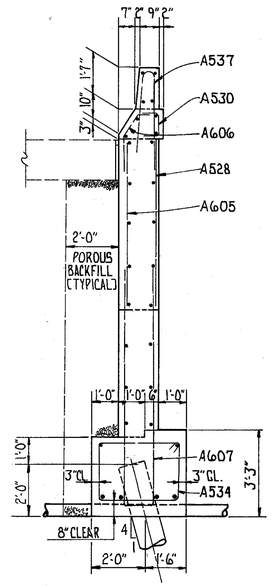
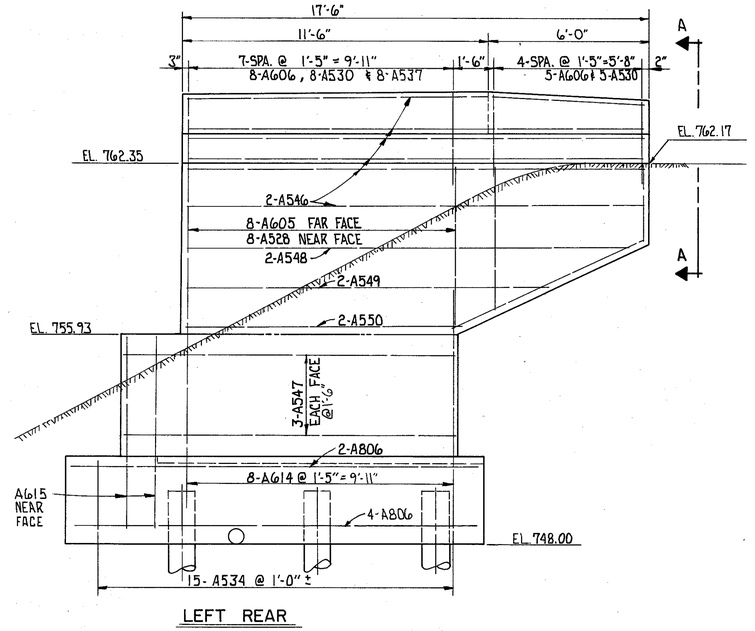


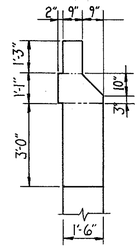
LEFT FORWARD



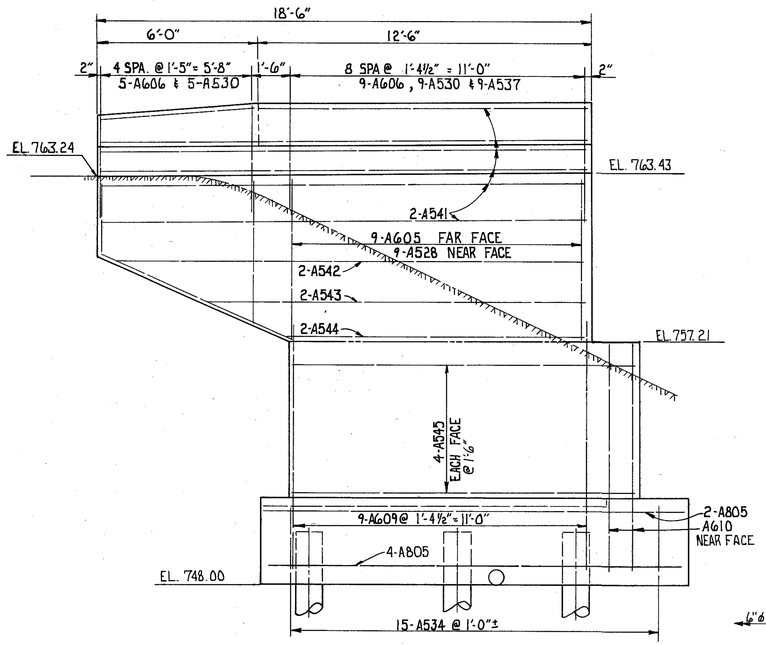
SECTION B-B



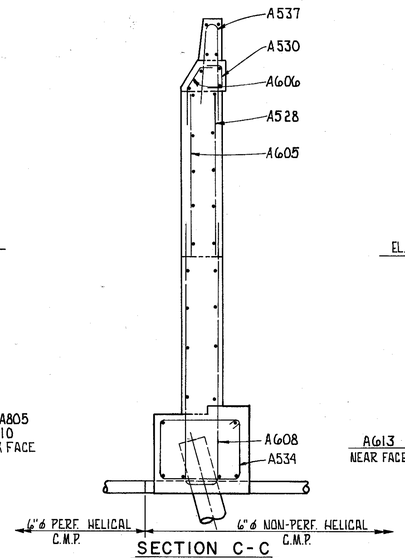
LEFT REAR



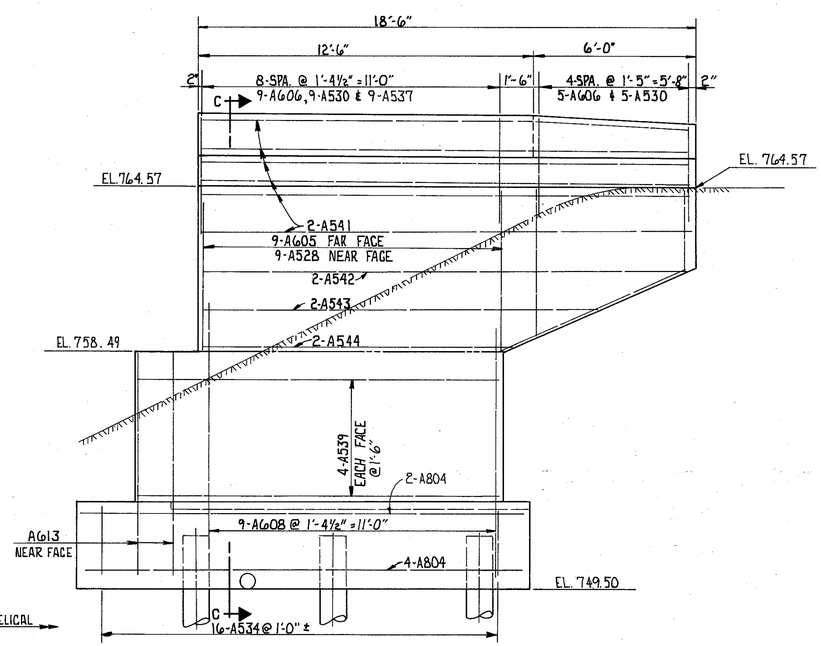
END VIEW A-A



RIGHT REAR



SECTION C-C



RIGHT FORWARD

NOTE: ALL WINGWALLS TO HAVE 2"ø CONDUIT
(SEE STANDARD DRAWING HL-5)

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ABUTMENT WINGWALLS

BRIDGE No. FRA - 104 - 1250
S.R. 104 UNDER ALUM CREEK DRIVE
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	GW	TB	SM	JJ	9/25-79	

BRUNING 44-132 30845-1

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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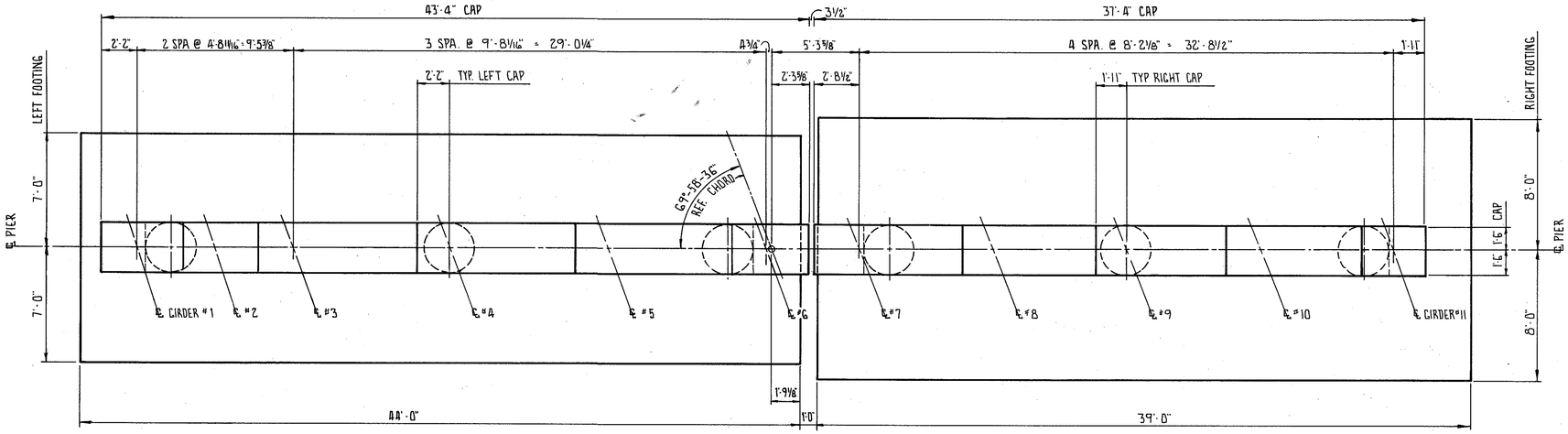
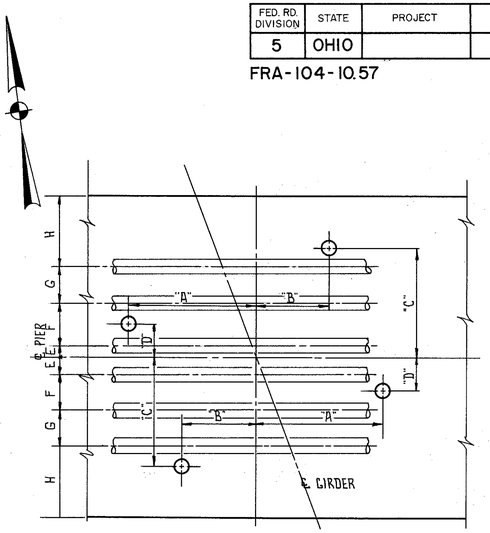


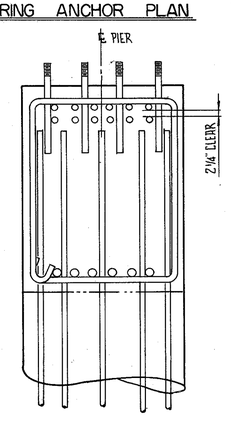
PLAN



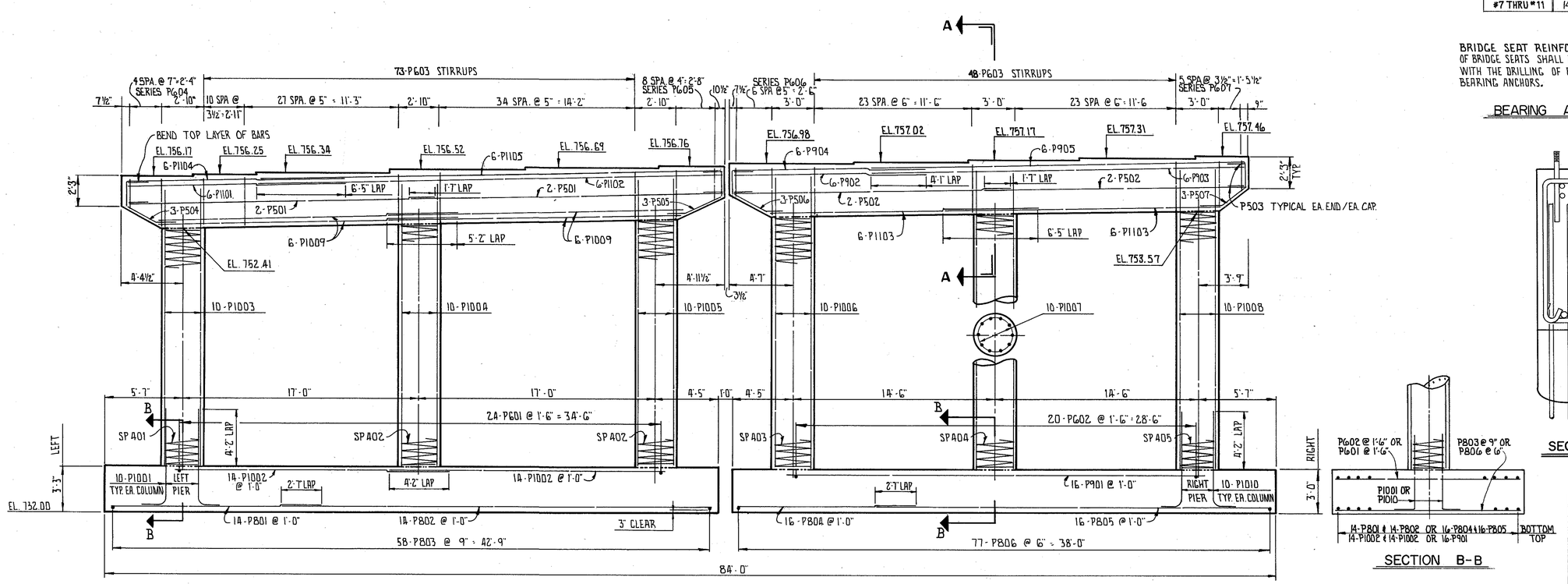
GIRDER	A	B	C	D	E	F	G	
#1	15 1/8	9 5/8	12 1/2	4 5/8	2	4 3/4	3 1/2	7 3/4
#2	15 1/8	9 5/8	12 9/16	4 5/8	2	4 3/4	3 1/2	7 3/4
#3 THRU #6	15 5/16	9 1/8	12 1/16	4	2	4 3/4	3 1/2	7 3/4
#7 THRU #11	14 3/16	8 5/16	12 1/8	3 13/16	1 3/4	4 1/2	3 3/4	8

BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF BRIDGE SEATS SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES, OR THE PRESETTING OF BEARING ANCHORS.

BEARING ANCHOR PLAN



SECTION A-A



ELEVATION

SECTION B-B

FRANKLIN CONSULTANTS INC. 7 | 13
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PIER DETAILS

BRIDGE No. FRA - 104 - 1250
S. R. 104 UNDER ALUM CREEK DRIVE
FRANKLIN COUNTY S. R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	STR	STR	SM	JF	5/25-79	

BRUNING 44-132 30845-1

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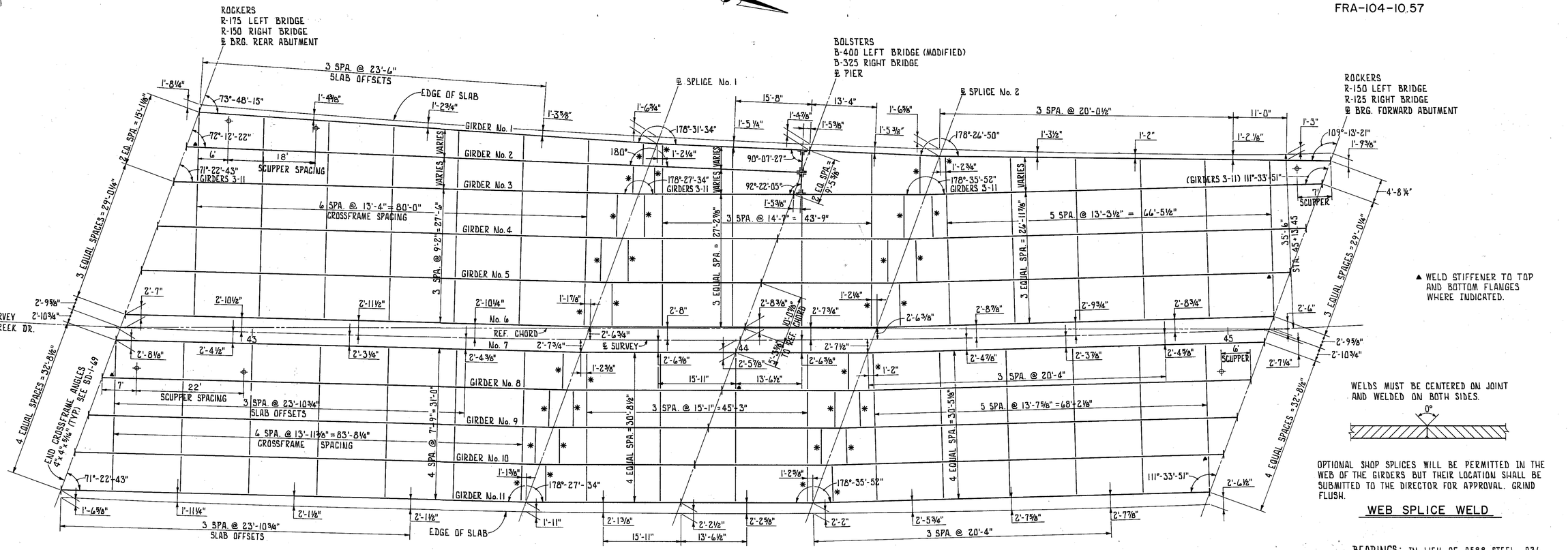
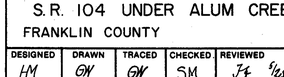


FRAMING PLAN

▲ WELD STIFFENER TO TOP AND BOTTOM FLANGES WHERE INDICATED.

WELDS MUST BE CENTERED ON JOINT AND WELDED ON BOTH SIDES.



OPTIONAL SHOP SPLICES WILL BE PERMITTED IN THE WEB OF THE GIRDERS BUT THEIR LOCATION SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL. GRIND FLUSH.

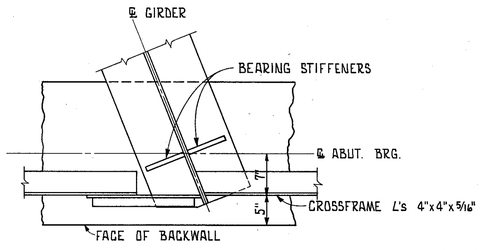
WEB SPLICE WELD

BEARINGS: IN LIEU OF A588 STEEL, A36 STEEL, GALVANIZED, MAY BE FURNISHED FOR BEARINGS, EXCEPT FOR UPPER PLATE ELEMENT OF BEARINGS. THIS A36 STEEL SHALL BE INCLUDED WITH A588 STEEL QUANTITY FOR PAYMENT.

THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR FOR APPROVAL THREE SETS OF PRINTS SHOWING HIS METHOD OF ERECTING THE PLATE GIRDERS.

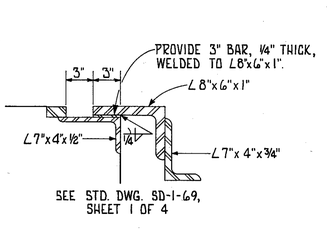
TRANSVERSE WEB STIFFENERS SHALL ONLY BE PROVIDED FOR THE ATTACHMENT OF DECK CROSSFRAMES.

✱ ONE ADDITIONAL HORIZONTAL CROSSFRAME ANGLE AT TOP OF GIRDERS AT ALL BEND POINTS.



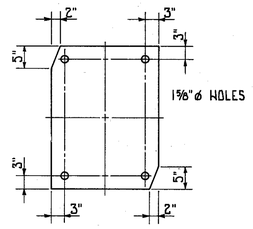
PLAN

REFER TO STD. DWG. SD-1-69, SHEET 1 OF 4.



LONGITUDINAL SECTION AT END DAM

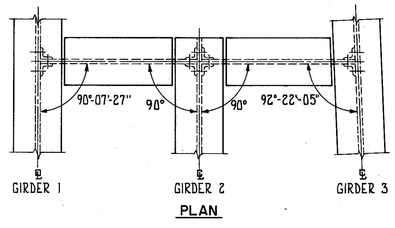
THESE MEMBERS PLUS THE ANCHORAGE BARS AND PLATES ARE PAID FOR AS STRUCTURAL STEEL EXPANSION JOINTS.



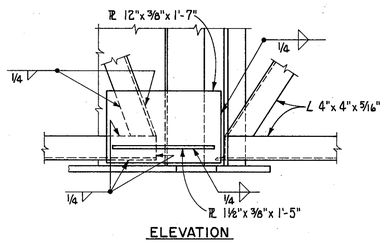
BEARING PLATE FOR B-400

BOLSTER DIMENSIONS													
	A	B	C	D	F	G	H	K	L	M	R	T	Y
B-400	4	24	4	3¼	⅞	12	22⅛	18	32	26	14½	3½	11 5/16
B-325	4	21	3¾	3¼	⅞	12	19⅞	14	28	25	12¾	3¼	1 15/16

REFER TO STANDARD DRAWING RB-1-55, REVISED 2-2-59

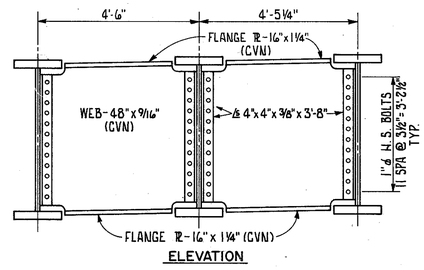


PLAN



ELEVATION

END CROSSFRAME CONNECTION



ELEVATION

DIAPHRAGM DETAIL

FRANKLIN CONSULTANTS INC. Consulting Engineers						8 / 13
COLUMBUS,					OHIO	
FRAMING PLAN AND DETAILS						
BRIDGE No. FRA-104-1250						
S.R. 104 UNDER ALUM CREEK DR.						
FRANKLIN COUNTY					S.R. 104	
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	GW	GW	SM	JF	5/25-79	

BRUNING 44-102 30845-1

FED.RD. DIVISION	STATE	PROJECT	
5	OHIO		

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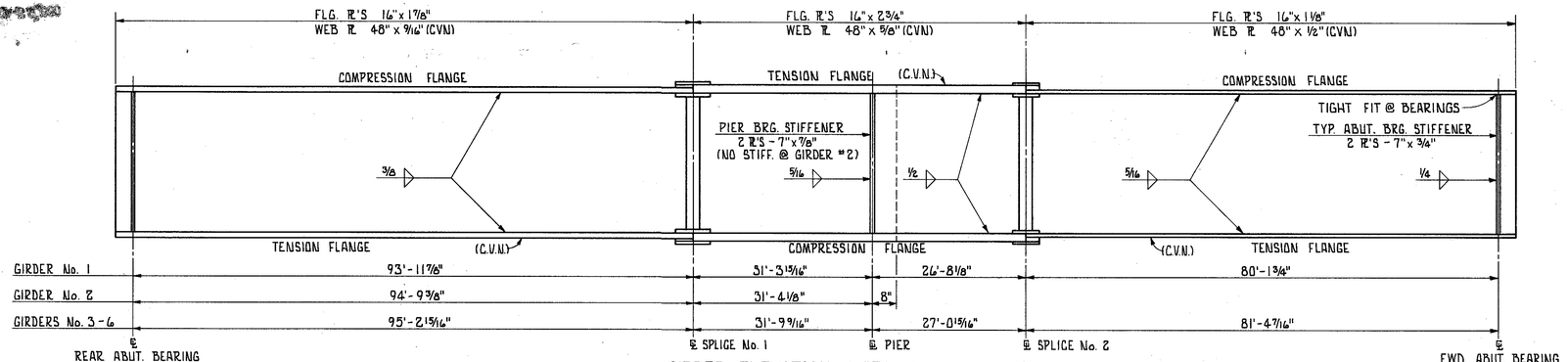
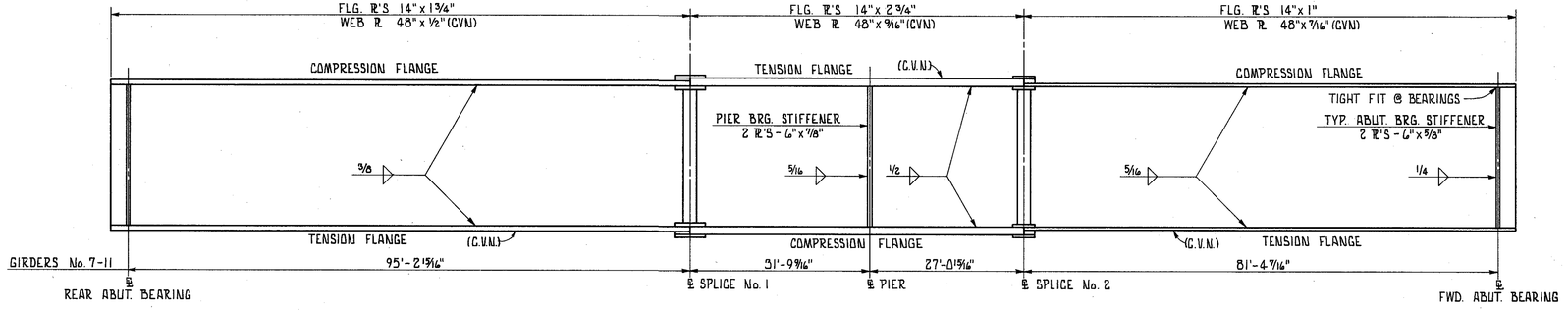


GIRDER ELEVATION - LEFT BRIDGE

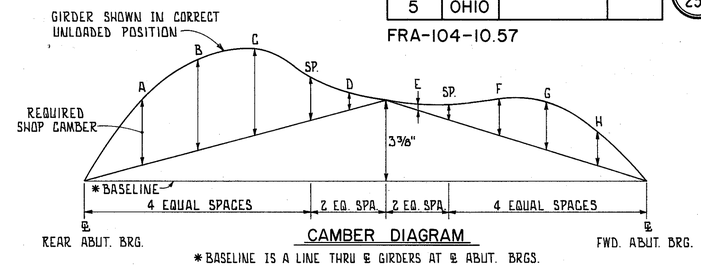


GIRDER ELEVATION - RIGHT BRIDGE

USE 5"x 5/16" ℝ'S FOR CONNECTIONS TO CROSSFRAME ANGLES. SEE FRAMING PLAN FOR LOCATIONS.

WHERE A PLATE IS DESIGNATED (CVN), THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS.

WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN MINIMUM SIZE REQUIRED BY AASHTO.



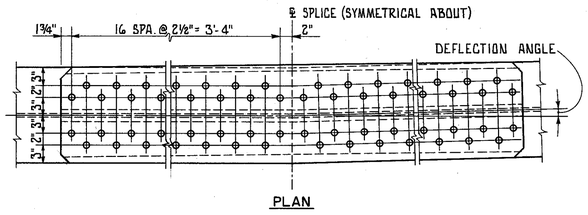
CAMBER DIAGRAM

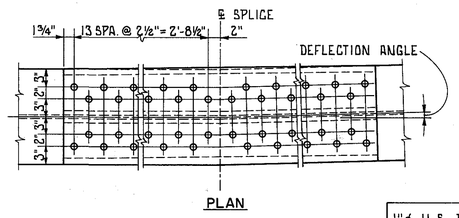
* BASELINE IS A LINE THRU ℄ GIRDERS AT ℄ ABUT. BRGS.

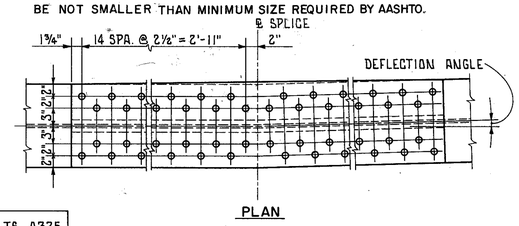
DEFLECTION AND CAMBER TABLES (INCHES)

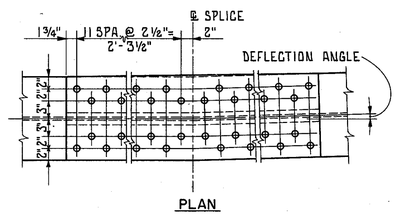
	GIRDER No. 1										GIRDER No. 2				
	SPAN No. 1					SPAN No. 2					SPAN No. 1				
	A	B	C	SP.	D	E	SP.	F	G	H	A	B	C	SP.	D
DEFLECTION DUE TO WEIGHT OF STEEL	7/16	5/8	9/16	1/4	1/16	0	0	5/16	1/4	3/16	13/16	1 3/8	1 5/16	13/16	5/16
DEFLECTION DUE TO REMAINING DEAD LOAD	15/16	1 1/4	1 1/8	7/16	1/8	-1/16	-1/16	3/16	1/2	3/16	2 3/8	2 3/4	2 5/8	2	3/4
ADJUSTMENT REQ'D FOR HORIZ. & VERTICAL CURVES	5/8	7/8	1 5/16	3/4	1/2	5/16	5/16	3/4	1 1/16	3/8	3/8	1 1/16	1 3/16	5/8	3/8
REQUIRED SHOP CAMBER	2	2 3/4	2 5/8	1 7/16	1 1/16	1/4	1/2	1 5/16	1 7/16	1 5/16	3 5/16	5 3/16	5 3/4	3 7/16	1 7/16

	GIRDERS No. 3 THRU 6										GIRDERS No. 7 THRU 11									
	SPAN No. 1					SPAN No. 2					SPAN No. 1					SPAN No. 2				
	A	B	C	SP.	D	E	SP.	F	G	H	A	B	C	SP.	D	E	SP.	F	G	H
DEFLECTION DUE TO WEIGHT OF STEEL	5/8	7/8	1 3/16	5/16	1/8	-1/16	0	1/4	3/8	5/16	1/2	5/8	5/8	1/4	1/16	0	0	3/16	5/16	1/4
DEFLECTION DUE TO REMAINING DEAD LOAD	1 5/8	2 1/4	2 1/16	1 3/16	1/4	-1/8	-1/16	1 1/16	7/8	3/4	1 1/16	2 3/16	2 1/8	1 3/16	1/8	-1/16	-1/16	5/8	1	1 3/16
ADJUSTMENT REQ'D FOR HORIZ. & VERTICAL CURVES	5/8	7/8	1 5/16	3/4	1/2	5/16	9/16	3/4	1 1/16	3/8	5/8	7/8	1 5/16	3/4	1/2	5/16	9/16	3/4	1 1/16	3/8
REQUIRED SHOP CAMBER	2 7/8	4	3 13/16	1 7/8	7/8	1/8	1/2	1 1/16	1 15/16	1 7/16	2 13/16	3 1/16	3 1/16	1 13/16	1 1/16	1/4	1/2	1 9/16	2	1 7/16



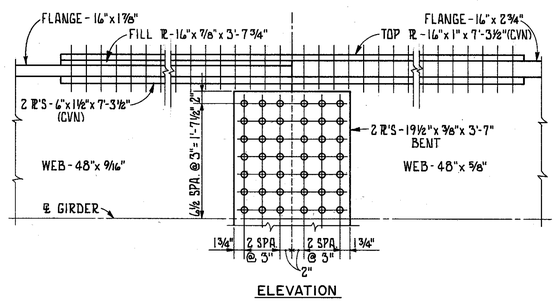




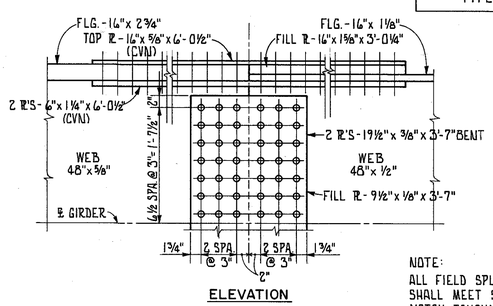


SPLICE DEFLECTION ANGLE		
GIRDER No.	SPLICE No.1	SPLICE No.2
1	1°-28'-26"	1°-33'-10"
2	0°-00'	
3 THRU 11	1°-32'-26"	1°-24'-08"

1"ϕ H.S. BOLTS A325 TYPE 3

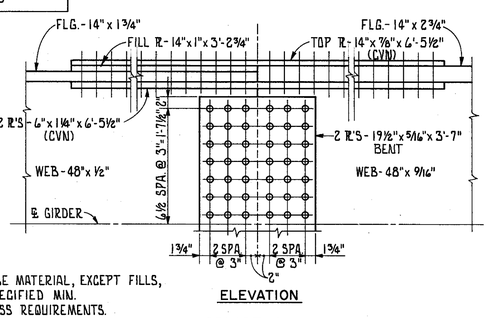


SPLICE No. 1

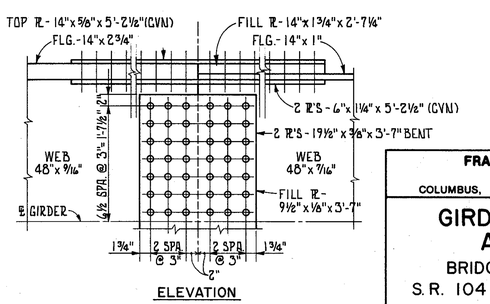


SPLICE No. 2

LEFT BRIDGE



SPLICE No. 1



SPLICE No. 2

RIGHT BRIDGE

NOTE:
ALL FIELD SPLICE MATERIAL, EXCEPT FILLS, SHALL MEET SPECIFIED MIN. NOTCH TOUGHNESS REQUIREMENTS.

BRUNING 44-132 30845-1

FRANKLIN CONSULTANTS INC. 9/13
Consulting Engineers
COLUMBUS, OHIO

GIRDER ELEVATIONS AND DETAILS

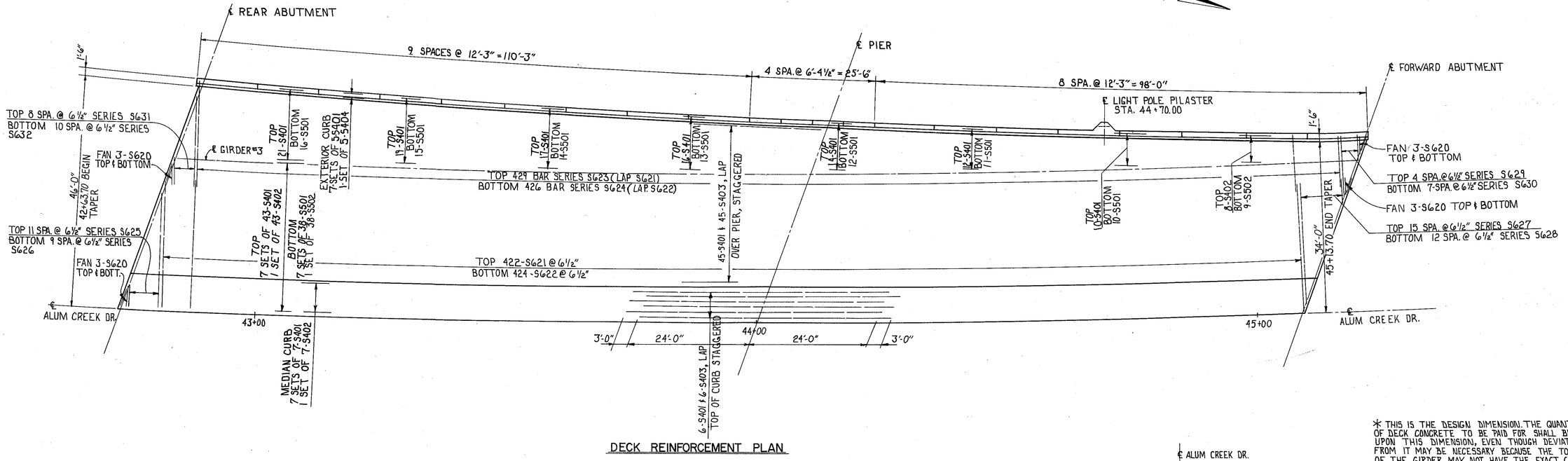
BRIDGE No. FRA-104-1250
S.R. 104 UNDER ALUM CREEK DR.
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	GW	GW	SM	JH	5/25-79	

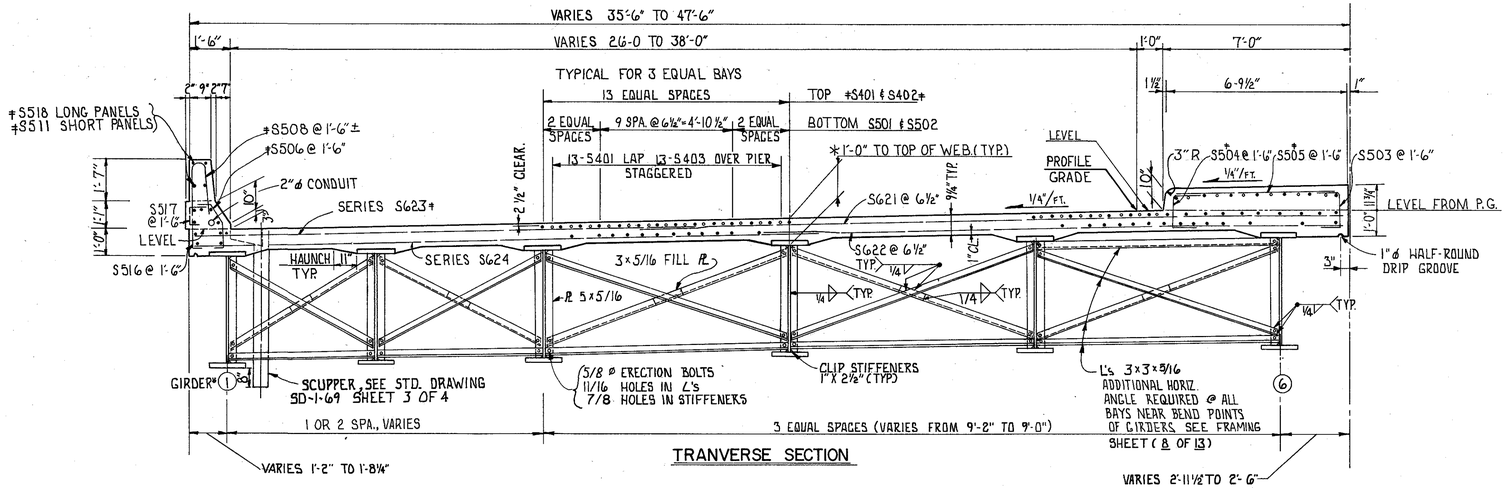
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

190
254

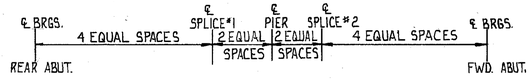
FRA-104-10.57



DECK REINFORCEMENT PLAN



TRANVERSE SECTION



SCREED POINTS MEASURED ALONG CENTERLINE OF GIRDERS # 1, 6, 7, & 11

SCREED SPACING

TABLE OF SCREED ELEVATIONS

	REAR ABUT.	1/4 PT.	1/2 PT.	3/4 PT.	SPLICE #1	1/2 PT.	PIER	1/2 PT.	SPLICE #2	1/4 PT.	1/2 PT.	3/4 PT.	FWD. ABUT.
GIRDER # 1	762.36	762.66	762.88	763.04	763.13	763.19	763.25	763.31	763.35	763.45	763.50	763.51	763.48
GIRDER # 6	763.00	763.34	763.58	763.72	763.76	763.79	763.84	763.88	763.93	764.04	764.09	764.09	764.03
GIRDER # 7	762.99	763.34	763.56	763.72	763.75	763.78	763.84	763.87	763.91	764.02	764.10	764.10	764.03
GIRDER # 11	763.44	763.80	764.03	764.20	764.24	764.27	764.33	764.38	764.43	764.55	764.62	764.64	764.57

* THIS IS THE DESIGN DIMENSION. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFIGURATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE. DEDUCTION SHALL BE MADE FOR VOLUME OF ENCASED STEEL PLATES AS PER 511.18.

SCREED ELEVATIONS ARE AT TOP OF CONCRETE AT GUTTER LINE AND INCLUDE CONCRETE DEAD LOAD DEFLECTIONS.

A HAUNCH WIDTH OF 9" SHALL BE USED FOR COMPUTING QUANTITY OF CONCRETE. HOWEVER THE HAUNCH WIDTH MAY VARY BETWEEN 6" AND 12" (PROVIDED THAT THE SLOPE SHALL BE NOT MORE THAN 1:4 FOR A HAUNCH LESS THAN 9" IN WIDTH)

= EPOXY COATED BARS

BAR No.	MINIMUM BAR LAP
No. 6	2'-10"
No. 5	1'-4"
No. 4	1'-0"

FRANKLIN CONSULTANTS INC. 10 / 13
Consulting Engineers
COLUMBUS, OHIO

SUPERSTRUCTURE LEFT BRIDGE

BRIDGE No. FRA-104-1250
S.R. 104 UNDER ALUM CREEK DR.
FRANKLIN COUNTY SR.104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MM	GW	TB	SM	JF	5/25-79	

BRUNING 44-132 30845-1

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

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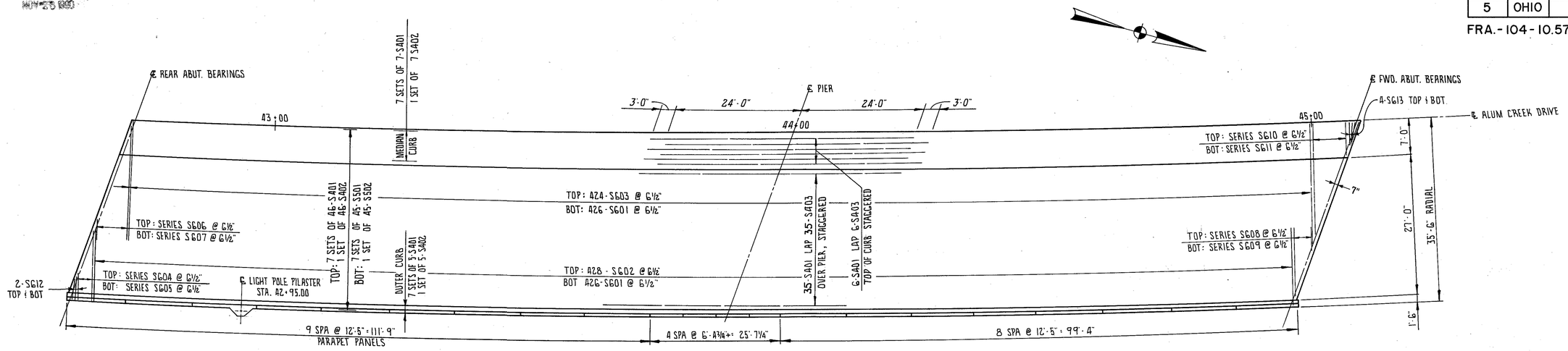
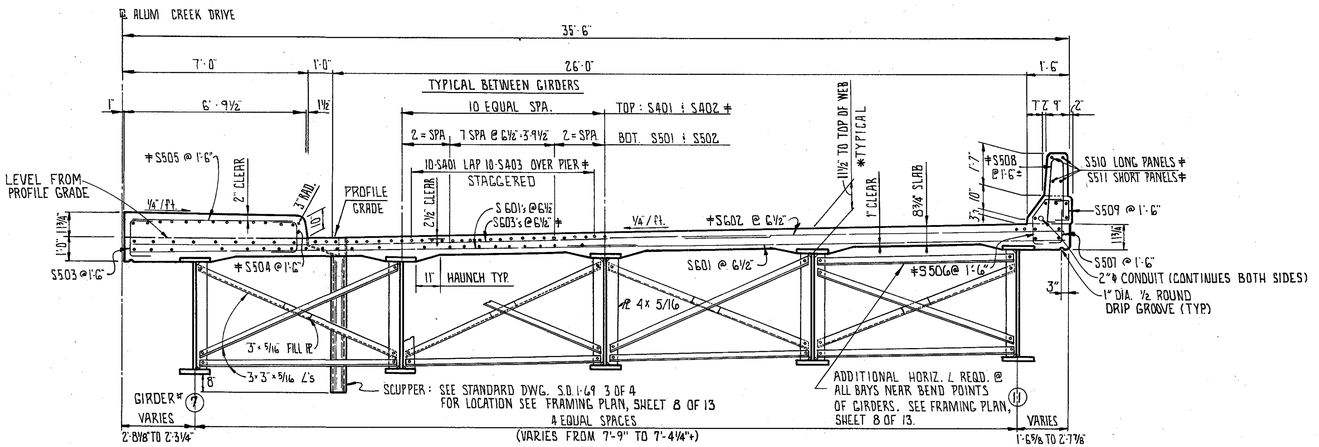
254

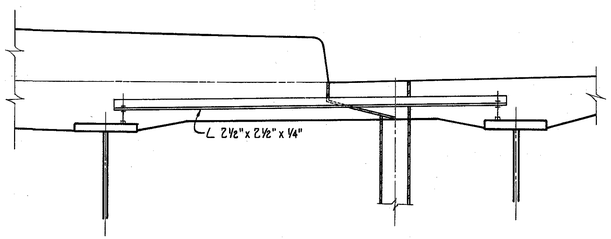
FRA.-104-10.57



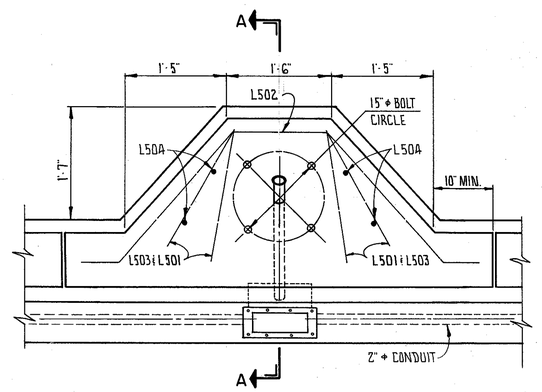
SLAB PLAN



TRANSVERSE SECTION



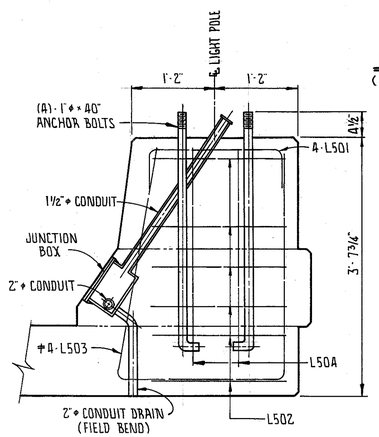
STANDARD SCUPPER WITH 2 SUPPORT ANGLES 2½" x 2½" x ¼" BETWEEN GIRDERS WITH ⅝" ADJUSTABLE BOLTS.
(SEE STD. DRAWING SD-1-69 SHEET 3 OF 4)



PLAN

LIGHT POLE PILASTER

(REFER TO LIGHTING STANDARD HL-3,4)



SECTION A-A

BAR #	MINIMUM BAR LAP
No. 6	2'-10"
No. 5	1'-4"
No. 4	1'-0"

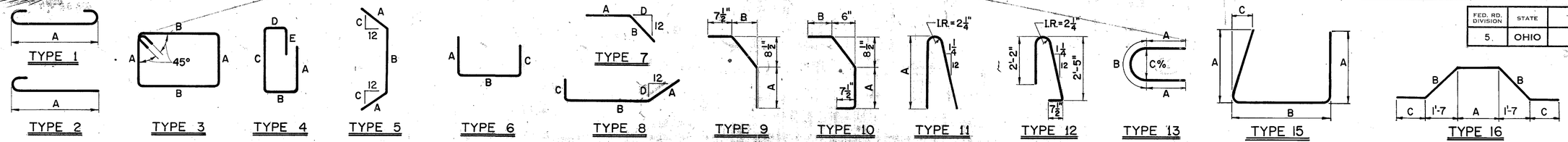
FRANKLIN CONSULTANTS INC. Consulting Engineers — 11 / 13
COLUMBUS, OHIO

SUPERSTRUCTURE RIGHT BRIDGE

BRIDGE No. FRA.-104-1250
S.R. 104 UNDER ALUM CREEK DRIVE
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MM	SRJ	SRJ	SM	JF	9/25-79	

BRUNING 44-132 30845-1



FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

192/254

FRA-104-10.57

REAR ABUTMENT

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
AB01	21	31'-6"	1,766	STR.					
AB02	46	6'-7"	809	5	1'-6"	3'-7"	12		
AB05	6	15'-5"	247	STR.					
AB06	6	15'-1"	242	STR.					
AG01	63	13'-10"	1,309	6	6'-8"	5'-6"	2'-0"		
AG02	83	12'-5"	1,548	6	5'-8"	1'-5"	5'-8"		
AG03	83	7'-1"	883	6	3'-0"	1'-5"	3'-0"		
AG04	83	7'-3"	904	6	3'-4"	11"	3'-4"		
AG05	17	5'-11"	151	STR					
AG06	27	4'-0"	162	9	2'-8"	6"			
AG09	9	21'-10"	295	6	10'-6"	1'-2"	10'-6"		
AG10	2	9'-0"	27	6	8'-4"	10"	——		
AG12	▲10	*2'-8" TO 5'-1"	58	STR	*7¼" INCREMENTS		▲2 SERIES OF 5		
AG14	8	19'-4"	232	6	9'-3"	1'-2"	9'-3"		
AG15	2	7'-9"	23	6	7'-1"	10"	——		
A501	32	30'-0"	1,001	STR.					
A502	8	19'-3"	161	↓					
A503	8	8'-7"	72						
A504	20	9'-9"	203						
A505	10	11'-3"	117						
A506	5	14'-2"	74						
A507	10	2'-7"	27						
A508	8	19'-11"	166						
A509	8	8'-11"	74						
A510	2	6'-10"	14	↓					
A511	2	6'-5"	13	STR.					
A512	4	4'-2"	17	7	2'-4"	1'-11"		13/4	
A513	63	9'-7"	630	6	2'-2"	5'-6"	2'-2"		
A514	63	7'-2"	471	6	6'-8"	7½"	——		
A515	15	5'-4"	83	6	2'-1"	1'-5"	2'-1"		
A516	36	9'-6"	357	6	3'-1"	3'-7"	3'-1"		
A517	27	10'-8"	300	6	3'-8"	3'-7"	3'-8"		
A528	17	5'-11"	105	STR.					
A530	27	1'-10"	52	6	7½"	10"	7½"		
A534	30	10'-10"	339	3	3'-0"	2'-2"			
A536	20	4'-3"	89	STR.					
A537	17	9'-5"	161	11	4'-7"				
A538	▲10	*2'-8" TO 5'-1"	40	STR.	*7¼" INCREMENTS		▲2 SERIES OF 5		
A540	4	7'-10"	33	↓					
A541	12	18'-2"	227						
A542	2	17'-11"	37						
A543	2	14'-8"	31						
A544	2	11'-2"	23						
A545	8	12'-9"	106						
A546	12	17'-2"	215						
A547	6	12'-3"	77						
A548	2	16'-4"	34						
A549	2	13'-4"	28						
A550	2	10'-4"	22	↓					
A551	3	16'-9"	52	STR.					
		TOTAL =	14,113						

SUPERSTRUCTURE

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
S601	852	19'-0"	24,314	STR					
‡S602	428	15'-0"	9,643	↓					
‡S603	424	23'-0"	14,648						
‡S604	▲6	*5'-5" TO 13'-10"	87						
S605	8	5'-5 TO 17'-3	136						
‡S606	12	3'-0 TO 21'-10"	224						
S607	10	2'-10 TO 18'-0"	156						
‡S608	8	3'-2 TO 12'-8"	95						
S609	10	4'-6 TO 16'-6"	158						
‡S610	13	5'-9" TO 21'-9"	268						
S611	▲11	*5'-9" TO 19'-1"	205						
‡S612	4	4'-6"	27						
‡S613	8	5'-0"	60						
‡S620	24	4'-6"	162						
‡S621	422	26'-5"	16,744						
S622	424	21'-11"	13,958						
‡S623	▲429	*22'-5 TO 11'-9"	11,008						
S624	▲426	26'-11 TO 16'-3"	13,810						
‡S625	12	5'-6" TO 24'-2"	267						
S626	10	5'-6" TO 20'-10"	198						
‡S627	16	24'-9 TO 5'-1"	358						
S628	13	20'-3 TO 4'-6"	242						
‡S629	5	10'-4 TO 5'-1"	58						
S630	8	14'-3 TO 5'-1"	116						
‡S631	9	19'-3 TO 5'-8"	168	↓					
S632	▲11	*23'-9 TO 6'-9"	252	STR					
S501	672	30'-0"	21,027	STR					
S502	92	35'-8"	3,422	STR					
S503	316	3'-11"	1,291	6	1'-4"	1'-6"	1'-4"		
‡S504	316	3'-9"	1,236	6	1'-4"	1'-4"	1'-4"		
‡S505	316	6'-4"	2,087	STR					
‡S506	316	2'-8"	879	10	11"	6"			
S507	159	2'-0"	332	6	7½"	1'-6"	——		
‡S508	346	5'-4"	1,925	12					
S509	159	1'-10"	304	6	7½"	10"	7½"		
‡S510	68	12'-1"	857	STR					
‡S511	32	6'-0"	200	STR					
S516	157	2'-0"	328	6	7½"	1'-6"	——		
S517	157	1'-10"	300	6	7½"	10"	7½"		
‡S518	68	11'-11"	845	STR					
‡S401	992	30'-0"	19,880	STR					
‡S402	116	33'-4"	2,583	↓					
‡S403	92	22'-0"	1,352						
‡S404	5	30'-9"	103	STR.					
		REGULAR BARS	80,549						
		‡ EPOXY COATED	85,764						
		TOTAL	166,313						

* 20¼" INCREMENTS	▲1 SERIES OF 6
↓ 20¼" " "	" " 8
20¼" " "	" " 12
20¼" " "	" " 10
16⅝" " "	" " 8
16" " "	" " 10
↓ 16" " "	" " 13
* 16" "	▲ " " 11
* 5/16" INCREMENTS	▲1 SERIES OF 429
↓ 5/16" " "	" " ▲426
1'-8⅜" " "	" " 12
1'-8⅛" " "	" " 10
1'-3¼" " "	" " 16
1'-3⅛" " "	" " 13
1'-3⅛" " "	" " 5
1'-3¼" " "	" " 8
1'-8⅜" " "	" " 9
* 1'-8⅜" "	▲ " " 11

LIGHT POLE PILASTER

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
L501	8	2'-9"	23	6	1'-0"	1'-10"	7"		
L502	12	7'-1"	89	16	1'-4"	2'-5½"	6"		
‡ L503	8	8'-5"	70	15	3'-2"	2'-4"	6"		
L504	8	3'-2"	26	STR					
		REGULAR BARS	138						
		‡ EPOXY COATED	70						
		TOTAL	208						

(INCLUDED WITH SUPERSTRUCTURE ON ESTIMATED QUANTITIES)

‡ DENOTES EPOXY COATED REBAR

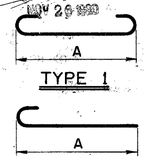
REINFORCING STEEL SAMPLES: Refer to C.M.S. Sections 106.03, 700, 703.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel, 12 13 spliced in accordance with 509.08.

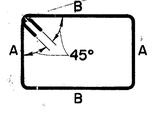
FRANKLIN CONSULTANTS INC.
Consulting Engineers
COLUMBUS, OHIO

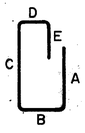
REINFORCING STEEL

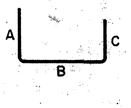
BRIDGE No. FRA-104-1250
S.R. 104 UNDER ALUM CREEK DRIVE
FRANKLIN COUNTY S.R. 104

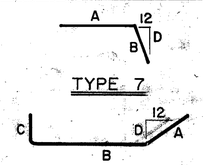
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MM	SRJ	SRJ	SM	JH	5/25/77	

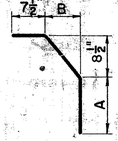


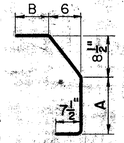


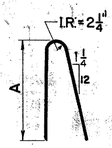


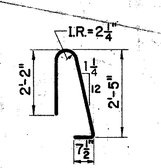


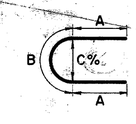


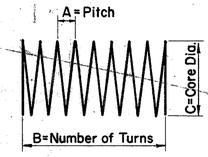


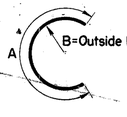












FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

FRA 104 - 10.57

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FORWARD ABUTMENT

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
A801	14	31' - 6"	1,177	STR					
A802	38	6 - 7	668	5	1' - 6"	3' -7"	12		
A803	7	22' - 3"	416	STR					
A804	12	16 - 3"	521	STR					
AG01	51	13' - 10"	1,060	G	6' - 8"	5' - 6"	2' - 0"		
AG02	74	12' - 5"	1,380	G	5' - 8"	1' - 5"	5' - 8"		
AG03	74	7' - 1"	787	G	3' - 0"	1' - 5"	3' - 0"		
AG04	74	7' - 3"	806	G	3' - 4"	11"	3' - 4"		
AG05	18	5' - 11"	160	STR					
AG06	28	4' - 0"	168	9	2' - 8"	6"			
AG07	9	18' - 10"	255	G	9' - 0"	1' - 2"	9' - 0"		
AG08	9	21' - 4"	288	G	10'-3"	1' - 2"	10'-3"		
AG11	2	7' - 7"	23	G	6' - 11"	10"	——		
AG12	▲10	✱ 2'-8" TO 5'-1"	58	STR	✱ 7¼" INCREMENTS		▲2 SERIES OF 5		
AG13	2	9' - 0"	27	G	8' -4"	10"	——		
A501	30	30' - 0"	939	STR					
A504	10	9' - 9"	102	↕					
A505	10	11' - 3"	117						
A509	8	9' - 6"	79						
A510	2	6' - 10"	14	↓					
A511	2	6' - 5"	13	STR					
A512	4	4' - 2"	17	7	2' - 4"	1' - 11"		1¾	
A513	51	9' - 7"	510	G	2' - 2"	5' - 6"	2' - 2"		
A514	51	7' - 2"	381	G	6' - 8"	7½"	——		
A516	15	5' - 4"	83	G	2' - 1"	1' - 5"	2' - 1"		
A516	25	9' - 6"	248	G	3' - 1"	3' - 7"	3' - 1"		
A517	26	10' - 8"	289	G	3' - 8"	3' - 7"	3' - 8"		
A520	5	13 - 4"	70	STR					
A521	5	6 - 9"	35	↕					
A522	6	10' - 3"	64						
A523	8	9' - 0"	75						
A524	5	17' - 11"	93						
A525	5	3' - 0"	16						
A526	8	10' - 3"	86						
A527	5	3' - 3"	17						
A528	18	5 - 11"	111	↓					
A529	12	19' - 2"	240	STR					
A530	28	1' - 10"	54	G	7½"	10"	7½"		
A531	2	18' - 7"	39	STR					
A532	2	15' - 6"	32	STR					
A533	2	12' - 4"	26	STR					
A534	32	10' - 10"	362	3	3' - 0"	2' -2"			
A535	6	13' - 8"	86	STR					
A536	20	4' - 3"	89	STR					
A537	18	9' - 5"	177	11	4' - 7"				
A538	▲10	✱ 2'-8" TO 5'-1"	40	STR	✱ 7¼" INCREMENTS		▲2 SERIES OF 5		
A539	8	13' - 4"	111	↕					
A540	4	7' - 10"	33						
A541	12	18' - 2"	227						
A542	2	17' - 11"	37						
A543	2	14' - 8"	31	↓					
A544	2	11' - 4"	24	STR					
		TOTAL =	12,761						

PIERS

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
P1101	6	16' - 0"	510	STR					
P1102	6	33' - 6"	1,068	STR					
P1103	12	17'- 8"	1,126	STR					
P1104	6	17'-6"	558	6	16'-0"	1'-9"	——		
P1105	6	35'-0"	1,116	6	33'-6"	1'-9"	——		
P1001	30	8' - 3"	1,085	6	7' - 2"	1' - 5"	——		
P1002	28	19' - 7"	2,359	STR					
P1003	10	20' - 2"	868	↓					
P1004	10	20' - 6"	882						
P1005	10	20' - 9"	893						
P1006	10	21' - 2"	911						
P1007	10	21' - 5"	922						
P1008	10	21' - 8"	932	↓					
P1009	24	21' - 0"	2,169	STR					
P1010	30	8' - 0"	1,033	6	6'-11"	1' - 5"	——		
P901	16	30' - 0"	1,632	STR					
P902	6	14' - 2"	289	STR					
P903	6	27' - 0"	551	STR					
P904	6	15'- 7"	318	6	14'- 2"	1'-8"	——		
P905	6	28'-6"	581	6	27'-0"	1'-9"	——		
P801	14	16' - 1"	601	STR					
P802	14	30' - 0"	1,121	↕					
P803	58	13' - 6"	2,091						
P804	16	12' - 9"	545						
P805	16	28' - 4"	1,210	↓					
P806	77	15' - 6"	3,187	STR					
P601	24	13'- 6"	487	STR					
P602	20	15 - 6"	466	STR					
P603	121	12'- 10"	2,332	3	2'-8"	3'-5"			
P604	▲5	✱10'-2" TO 12'-8"	86	3	2'-8"	✱✱2'-1" TO 3'-4"	✱7½" AND ✱✱3¾" INCREMENTS		▲1 SERIES OF 5
P605	9	10'-6" TO 12'-8"	157	3	2'-8"	2'-3" TO 3'-4"	3¼" " 1⅜" "		" " " 9
P606	7	10'-0" TO 12'-10"	120	3	2'-8"	2'-0" TO 3'-5"	3¾" " 2⅞" "		" " " 7
P607	▲6	✱10'-6" TO 12'-8"	104	3	2'-8"	✱✱2'-5" TO 3'-4"	✱5¼" " ✱✱2⅝" "		" " " 6
P501	4	22'-4"	93	STR					
P502	4	19'-4"	81	STR					
P503	8	5'-7"	47	6	1'-7"	2'-8"	1'-7"		
P504	3	4'-9"	15	7	3'-2"	1'-7"	6½		
P505	3	5'-4"	17	7	3'-9"	1'-7"	5		
P506	3	4'-11"	15	7	3'-4"	1'-7"	6¾		
P507	3	4'-2"	13	7	2'-7"	1'-7"	8½		
SP401	1	17'-2"	324	14	4½"	49	2'-8"		
SP402	2	17'-6"	660	14	4½"	50	2'-8"		
SP403	1	18'-1"	340	14	4½"	51	2'-8"		
SP404	1	18'-4"	345	14	4½"	52	2'-8"		
SP405	1	18'-7"	349	14	4½"	53	2'-8"		
		TOTAL =	34,589						

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E

SPIRAL REINFORCING BARS: The "Length" shown in the steel list for spiral bars is the distance from the top of the footing to the bottom of the pier cap. The "Number of Turns" shown is the "Length" divided by the "Pitch", plus three turns (total number of closed coils), expressed as the nearest whole number with ½ closed coils provided at the ends of each spiral unit. Four steel channel, tee or angle spacers weighing approximately 0.80 pounds per lineal foot of spacers 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 0.80 pounds per lineal foot, will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

REINFORCING STEEL SAMPLES: Refer to CMS Sections 106.03, 700, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel, spliced in accordance with 509.08.

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FRANKLIN CONSULTANTS INC.
Consulting Engineers
COLUMBUS, OHIO

REINFORCING STEEL

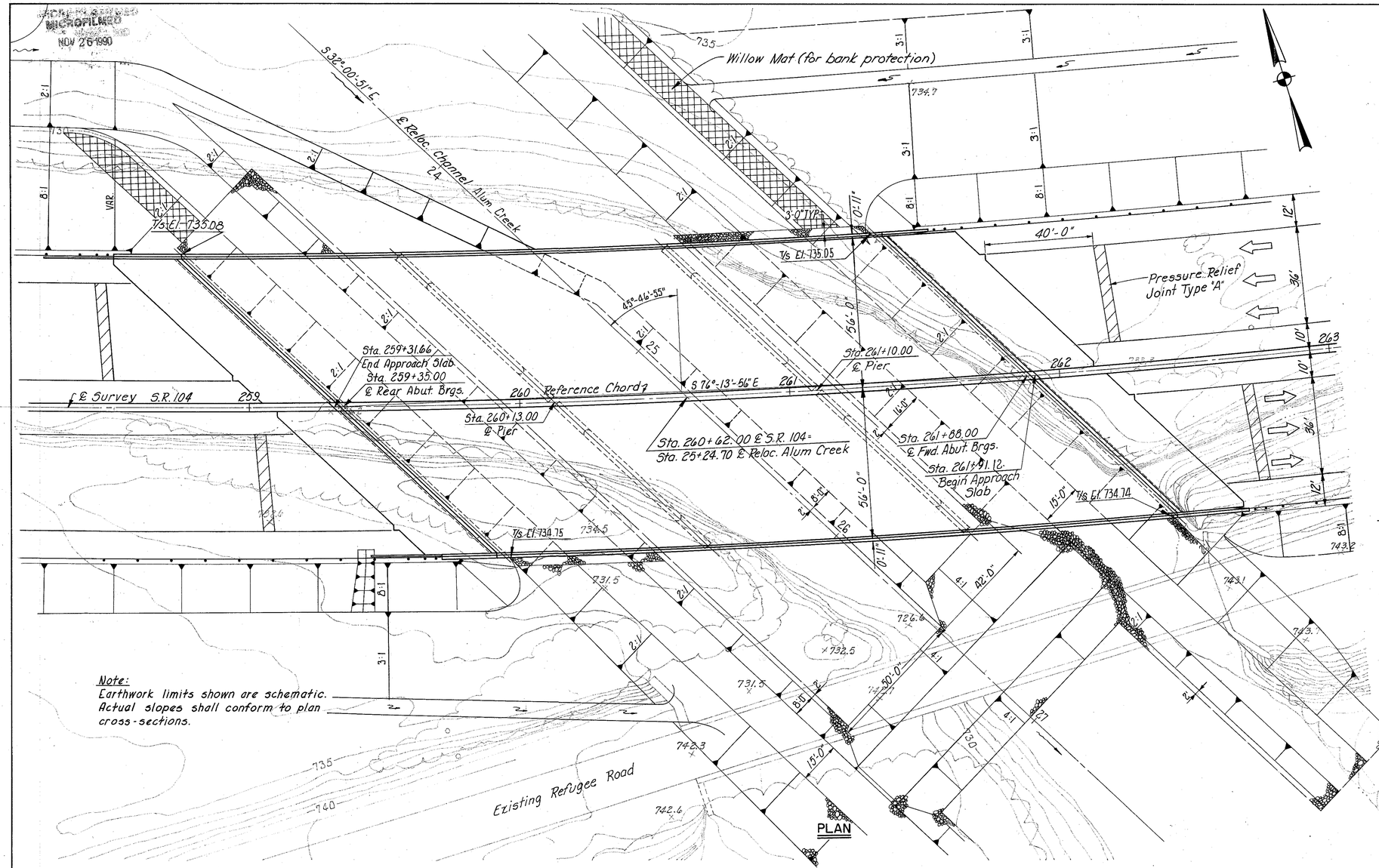
BRIDGE No. FRA - 104 - 1250
S. R. 104 UNDER ALUM CREEK DRIVE
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRJ	SRJ	SM	JA	5/25/79	

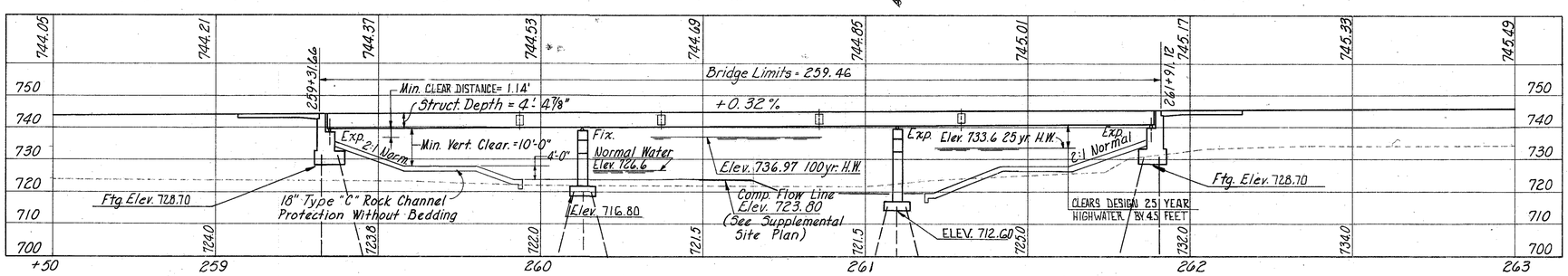
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

194/254

FRA-104-10.57



Note:
Earthwork limits shown are schematic. Actual slopes shall conform to plan cross-sections.



HORIZONTAL CURVE DATA

P.I. Sta. 264+02.06
Δ = 19°24'18"
Dc = 1°28'
R = 3906.53'
L = 1323.07'
T = 667.93'
E = 56.69'

DRAINAGE DATA

Drainage Area = 189 Sq. Miles
Q_{100} = 9500 cfs (From U.S. Corps of Engineers)
Q_{50} = 6200 cfs
Q_{25} = 5000 cfs
Q_{10} = 3750 cfs
V_{100} = 5.8 fps, Center of Channel; d = 12.90 + .27 = 13.17 ft.
Discharges shown are for modified conditions, resulting from the Alum Creek Flood Control Project.

EXISTING STRUCTURE

TYPE: THROUGH TRUSS BRIDGE
SPAN: 208'±
ROADWAY: 20'±
SKEW: 21° R.F.
CONDITION: FAIR

PROPOSED STRUCTURE

TYPE: Continuous Steel Girder Bridge with Reinforced Concrete Deck and Substructure
SPANS: 78'-0", 97'-0", 78'-0" c/c Bearings
ROADWAY: 112'-0" f/f Concrete Parapets Includes 2'-6" Raised Median Barrier
LOADING: H5-20-44 Case I & Alt. Military Loading
WEARING SURFACE: Monolithic Concrete
SKEW: 45°46'55" R.F. with Reference Chord
APPROACH SLAB: AS-1-81 (25'-0" Long)
ALIGNMENT: 1°28' Curve
SUPERELEVATION: 0.036 ft/ft
ADT 6310? (2000) ADTT 4418

12" ø C.I.P. PILES, EST. AVERAGE PAY LENGTHS:
REAR ABUT. = 55'
REAR PIERS = 50'
FORWARD PIERS = 40'
FORWARD ABUT. = 40'

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Consulting Engineers
COLUMBUS, OHIO

SITE PLAN

BRIDGE No. FRA-104-1279
S.R. 104 over ALUM CREEK
FRANKLIN COUNTY S.R. 104
Scale: 1" = 20'

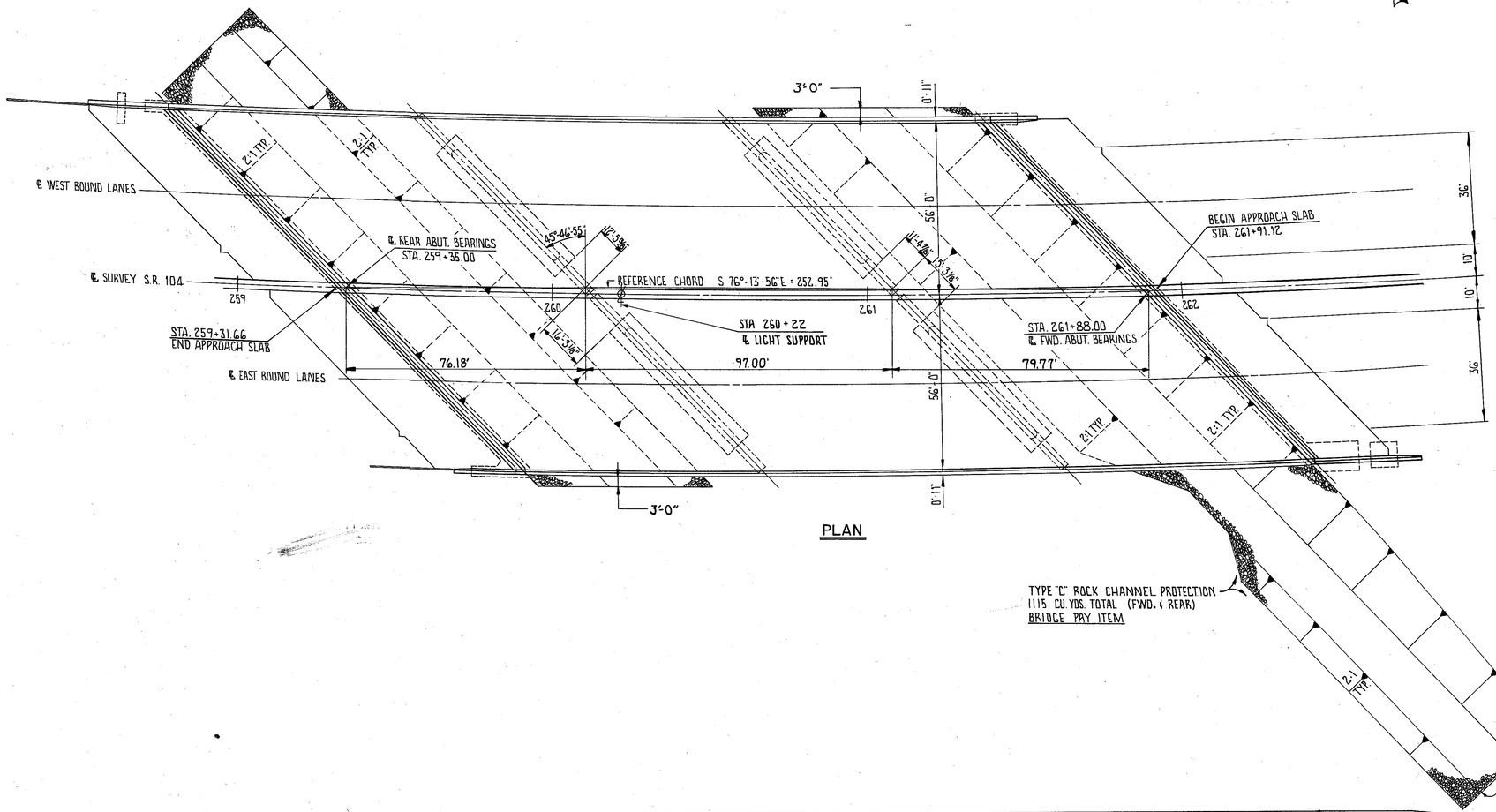
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
F.A.	F.F.		S.M.	JH	3/16-78	SPW 3/20/79

BRUNING 44-560-30845

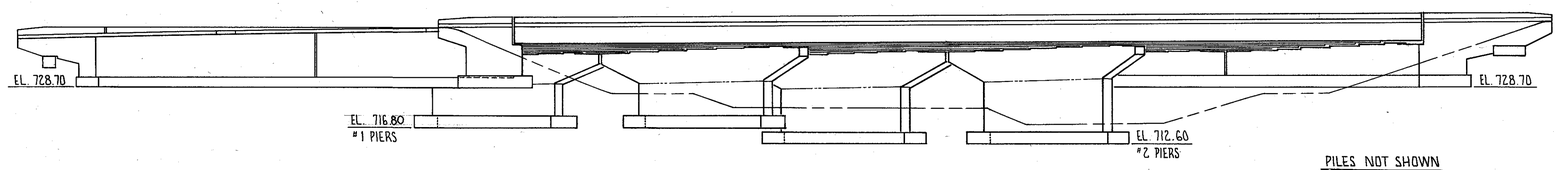
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

195
254

FRA-104-10.57



PLAN



PILES NOT SHOWN

ELEVATION

BRUNING 44-132 30845-1

FRANKLIN CONSULTANTS INC. 2 / 17
Consulting Engineers
COLUMBUS, OHIO

GENERAL PLAN AND ELEVATION

BRIDGE No. FRA.-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	STRJ	STRJ	S.M.	JF	5/4-79	

FHWA REGION	STATE	PROJECT		196 / 254
5	OHIO			

FRA - 104 - 10.57

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	SUPER	PIERS	ABUT.	GEN'L
503	LUMP		COFFERDAMS, CRIBS & SHEETING		LUMP		
503	1,491	CU. YDS.	UNCLASSIFIED EXCAVATION		647	844	
505	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION		LUMP		
507	10,350	LIN.FT.	12" ϕ CAST-IN-PLACE REINFORCED CONCRETE PILES		5,400	4,950	
509	138,539	LBS.	REINFORCING STEEL		85,614	52,925	
511	945	CU.YDS.	CLASS S CONCRETE: SUPERSTRUCTURE (SEE PROPOSAL NOTE)	945			
511	530	CU.YDS.	CLASS C CONCRETE: PIERS ABOVE FOOTINGS		530		
511	492	CU. YDS.	CLASS C CONCRETE: ABUTMENTS ABOVE FOOTINGS			492	
511	523	CU.YDS.	CLASS C CONCRETE: FOOTINGS		252	271	
512	8	SQ.YDS.	TYPE B WATERPROOFING			8	
513	786,100	LBS	STRUCTURAL STEEL (AISC CATEGORY III) (A588)	786,100			
514	LUMP		FIELD PAINTING OF STRUCTURAL STEEL, AS PER PLAN	LUMP			
516	30,900	LBS.	STRUCTURAL STEEL EXPANSION JOINTS	30,900			
518	254	CU.YDS.	POROUS BACKFILL			254	
518	304	LIN.FT.	6" ϕ PERFORATED, HELICAL CORRUGATED STEEL PIPE, 707.01			304	
518	65	LIN.FT.	6" ϕ NON-PERFORATED, HELICAL CORRUGATED STEEL PIPE, INCLUDING SPECIALS 707.01			65	
518	14	EACH	SCUPPERS, INCLUDING SUPPORTS	14			
528	3	HOURS	DYNAMIC LOAD TESTS		3		
601	1115	CU.YDS.	ROCK CHANNEL PROTECTION, TYPE C WITHOUT BEDDING				1115
625			SEE SHEET 164 LIGHTING SUMMARY				
824	249,039	LBS.	EPOXY COATED REINFORCING STEEL	249,039			
SPEC.	1,403	SQ.YDS.	SEALING OF CONCRETE SURFACES (SEE PROPOSAL NOTE)	976		427	
SPEC	10,953	SQ.FT.	PROTECTION OF CONCRETE SURFACES (SEE PROPOSAL NOTE)		10,953		

NOTE: ALL QUANTITIES ARE BR. PARTICIPATION.

GENERAL NOTES

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS: AS-1-81 (11-27-81), RB-1-55 (2-2-59), SD-1-69 (6-12-69) SHEET 1, 2 AND 3 OF 4, AND SUPPLEMENTAL SPECIFICATIONS 836 (3-12-75) AND 824 (10-8-82).

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, 1977, INCLUDING THE 1978, 1979, 1980, & 1981 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

DESIGN DATA:

DESIGN LOADING - HS 20-44 *CASE I AND THE ALTERNATE MILITARY LOADING.*
CLASS "S" CONCRETE - UNIT STRESS 1500 P.S.I. FOR SUPERSTRUCTURE.
CLASS "C" CONCRETE - UNIT STRESS 1333 P.S.I. FOR SUBSTRUCTURE.
STRUCTURAL STEEL - A.S.T.M. A588 UNIT STRESS 27,000 P.S.I.
REINFORCING STEEL - A.S.T.M. A615, A616, OR A617 - UNIT STRESS 20,000 P.S.I.

EMBANKMENT CONSTRUCTION: THE EMBANKMENT SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF THE ABUTMENTS. EXCAVATION MAY THEN BE MADE FOR THE ABUTMENTS AND REAR PIERS AND PILES DRIVEN.

CONDUIT ON STRUCTURES: EXPANSION FITTINGS FOR CONDUIT ON STRUCTURES SHALL BE OZ TYPE AX, CROUSEHINDS TYPE XJ-4, APPLETON TYPE XJ-4, OR EQUAL APPROVED BY THE ENGINEER. EACH EXPANSION FITTING SHALL HAVE A COPPER EXTERNAL BONDING JUMPER.

UTILITY LINES: ALL EXPENSE INVOLVED IN RELOCATING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNERS. THE CONTRACTOR AND OWNERS ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 50 TONS PER PILE FOR THE ABUTMENTS, AND 45 TONS PER PILE FOR THE PIERS.

DECK PROTECTION METHOD: EPOXY COATED REINFORCING STEEL, TOP AND *BOTTOM MATS.*

ATTACHMENT OF GUARDRAIL TO CONCRETE PARAPETS: CONCRETE INSERT ANCHOR ASSEMBLIES PER STANDARD CONSTRUCTION DRAWINGS GR-3 AND GR-1 SHALL BE PLACED DURING PARAPET CONSTRUCTION.

PARTIAL PAINTING OF A588 STEEL: A 7 FOOT LENGTH OF THE ENDS OF GIRDERS ADJACENT TO ABUTMENTS AND ALL CROSSFRAMES AND OTHER A588 STEEL WITHIN THESE LIMITS SHALL BE PAINTED. PAINT SHALL BE 514, SYSTEM A. THE PRIME COAT SHALL BE 708.17. THE TOP COAT SHALL BE 708.18 EXCEPT THAT THE COLOR SHALL CLOSELY APPROACH FEDERAL STANDARD NO.595a-20045 or 20059.
MONOLITHIC WEARING SURFACE THICKNESS IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1".

COFFERDAMS, CRIBS AND SHEETING: ONLY STEEL SHEET PILING WILL BE PERMITTED FOR THE CONSTRUCTION OF THE PIER.

ITEM SPECIAL, SEALING OF CONCRETE SURFACES: A concrete sealer, either silane or epoxy, shall be applied to the following concrete surfaces: the abutment backwalls and bridge seat, the exposed surfaces of the median curb, parapets (all sides), edges of deck and underside of deck in the bay beneath the joint and from the exterior beam to the edge of deck. See the Proposal for specifications.

FRANKLIN CONSULTANTS INC. 3 / 17
Consulting Engineers
COLUMBUS, OHIO

ESTIMATED QUANTITIES & GENERAL NOTES

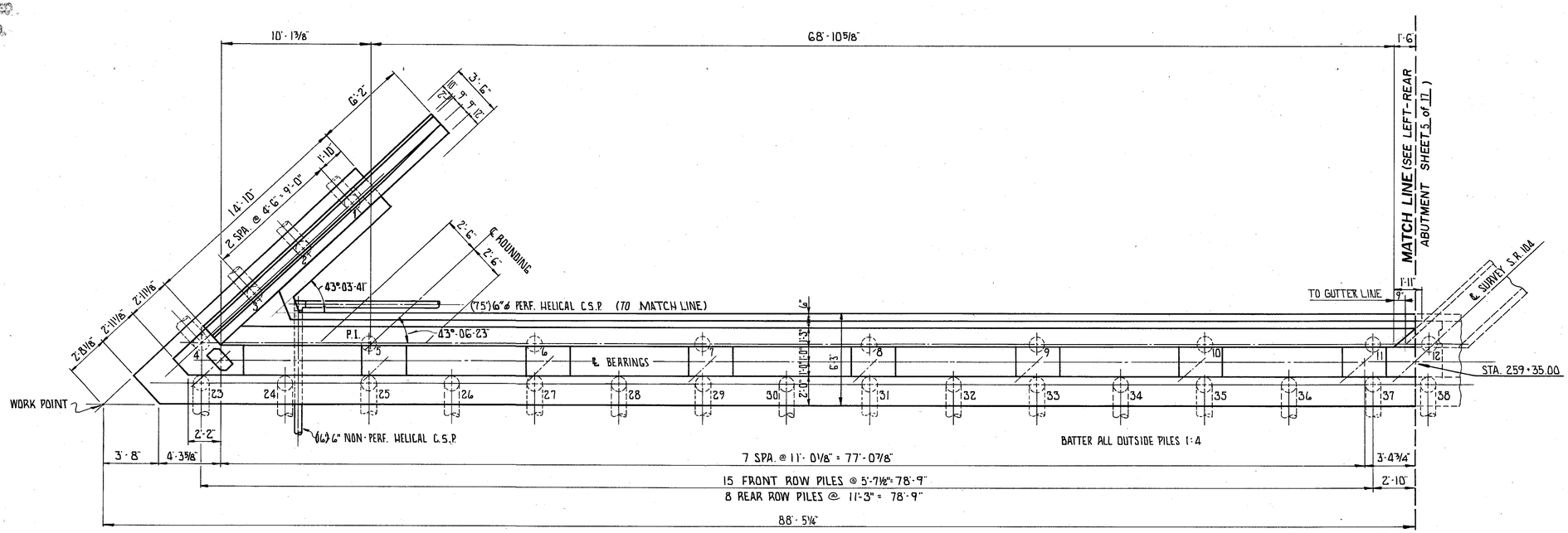
BRIDGE No. FRA-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRJ	SRJ	S.M.	JH	9/4-79	

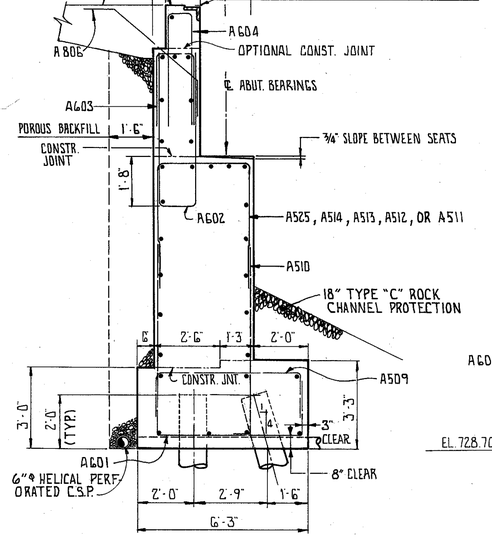
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

197
254

FRA-104-10.57

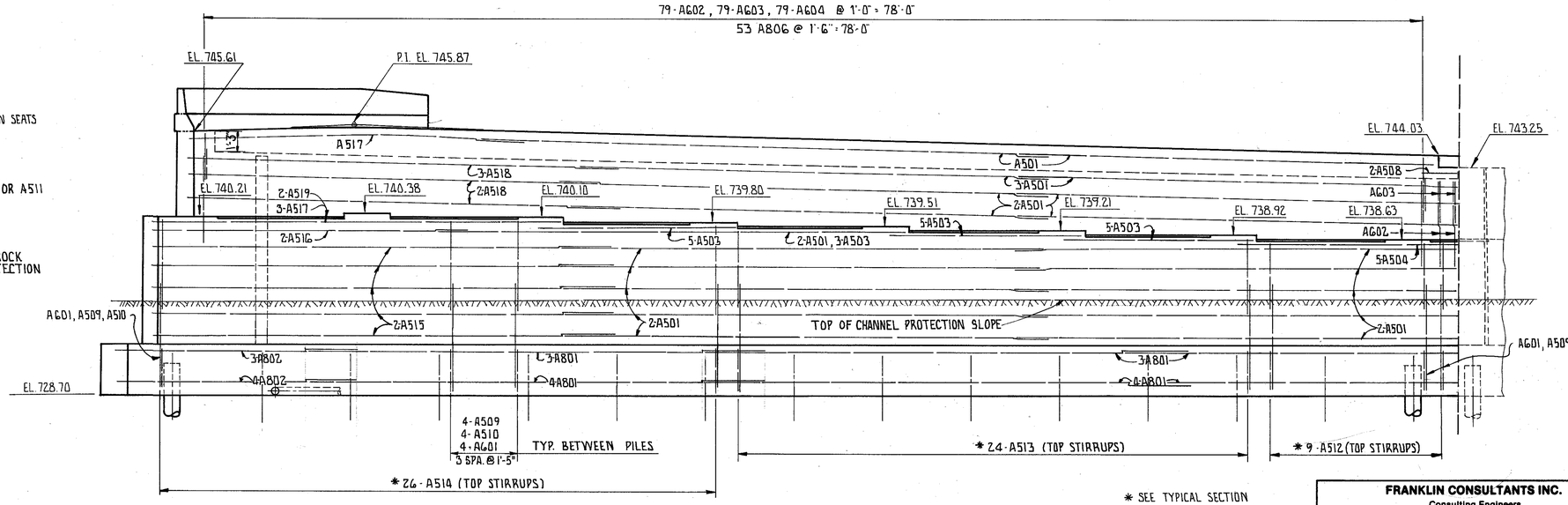


PLAN



TYPICAL SECTION

POROUS BACKFILL, 1'-6" THICK SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE AND LATERALLY TO THE ENDS OF THE WINGWALLS.



ELEVATION

BACKWALL CONCRETE: IN ADDITION TO THE PROVISIONS OF 511.08, BACKWALL CONCRETE ABOVE THE BRIDGE SEAT OR BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTIL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.

* SEE TYPICAL SECTION

MIN. BAR LAP
#8 - 3'-5"
#6 - 1'-11"
#5 - 1'-7"

FRANKLIN CONSULTANTS INC. 4 / 17
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COLUMBUS, OHIO

RIGHT REAR ABUTMENT

BRIDGE No. FRA.-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

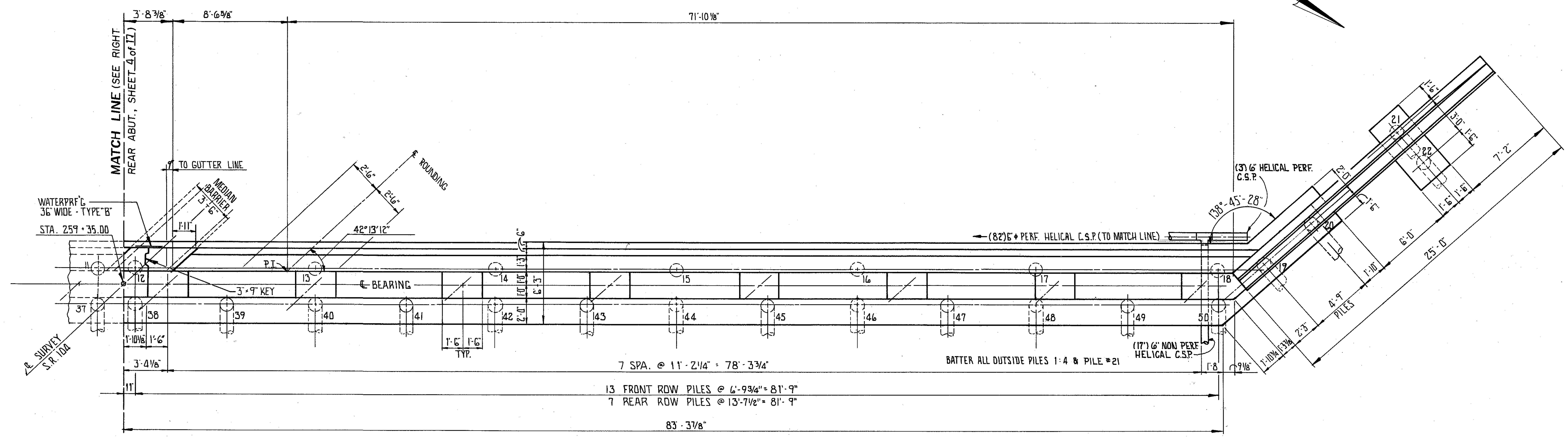
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SPW	SPW	S.M.	JF	4-99	

BRUNING 44-132 30845-1

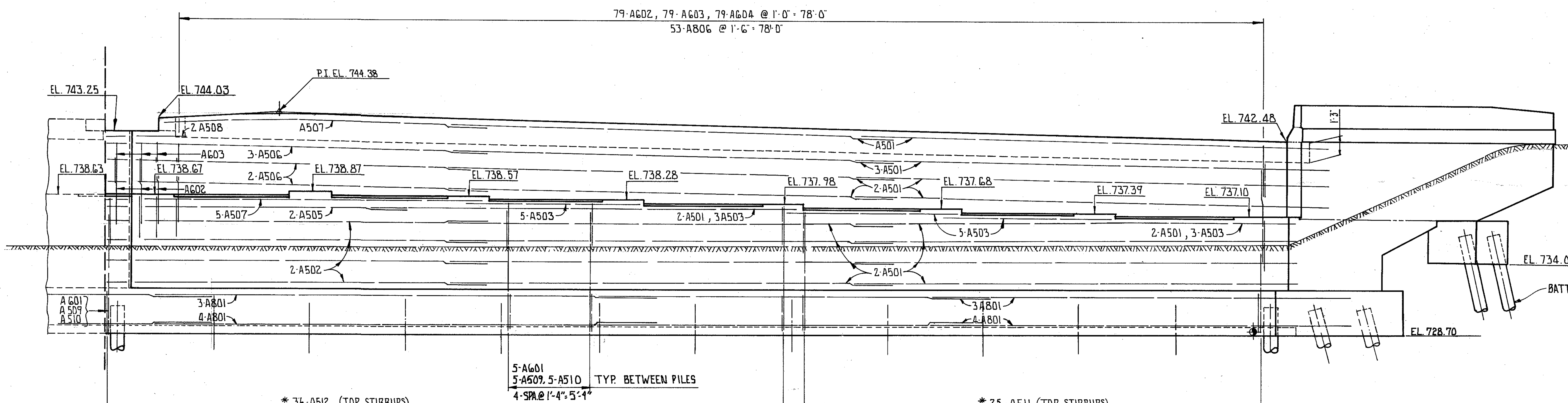
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

198 / 254

FRA-104-10.57



PLAN



ELEVATION

MIN. BAR LAP
#8 - 3'-5"
#6 - 1'-11"
#5 - 1'-7"

* SEE TYPICAL SECTION SHEET 4 OF 17

FRANKLIN CONSULTANTS INC. 5 / 17
Consulting Engineers
COLUMBUS, OHIO

LEFT REAR ABUTMENT

BRIDGE No. FRA.-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

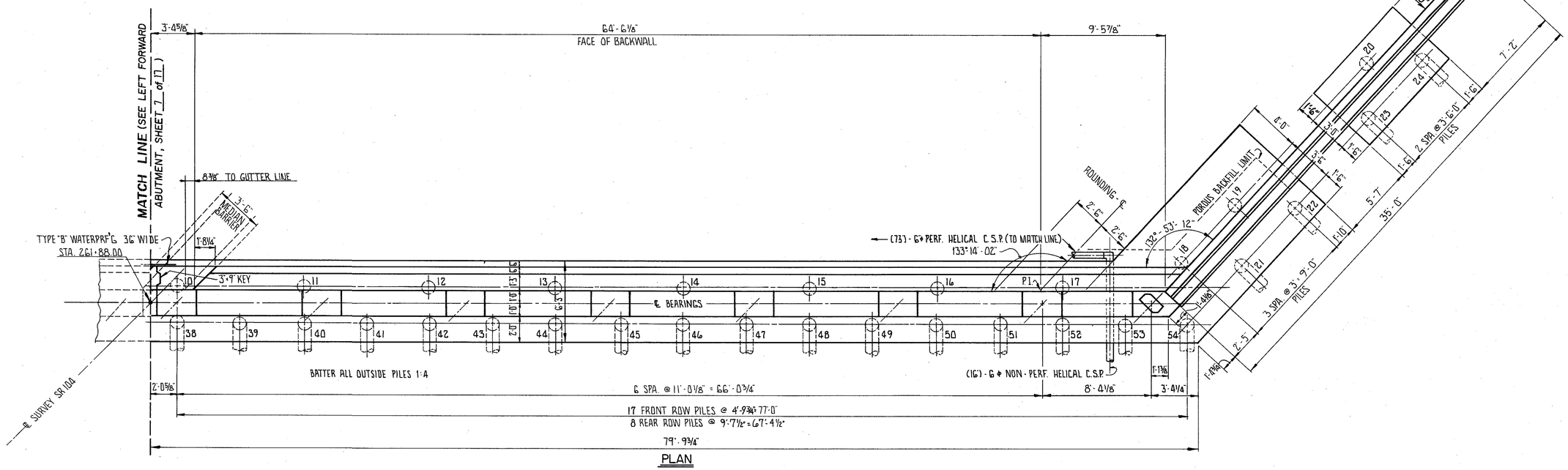
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRJ	SRJ	S.M.	JF	1/4-79	

NOV 26 1980

FED RD. DIVISION	STATE	PROJECT	
5	OHIO		

199
254

FRA-104-10.57



* SEE TYPICAL SECTION SHEET 4 OF 17

MIN. BAR LAP
#8 - 3'-5"
#6 - 1'-11"
#5 - 1'-7"

FRANKLIN CONSULTANTS INC. 6 / 17
Consulting Engineers
COLUMBUS, OHIO

RIGHT FORWARD ABUTMENT

BRIDGE No. FRA.-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

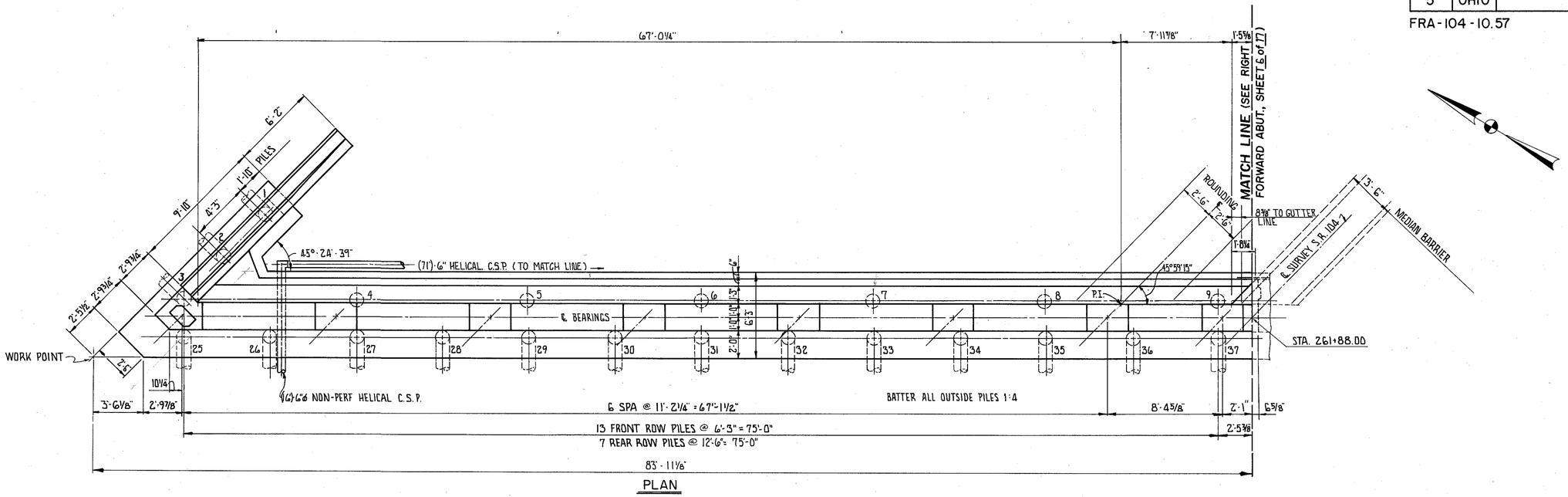
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRW	SRJ	S.M.	JF	5/4-79	

BRUNING 44-132 30845-1

FED RD. DIVISION	STATE	PROJECT	
5	OHIO		

200
254

FRA-104-10.57



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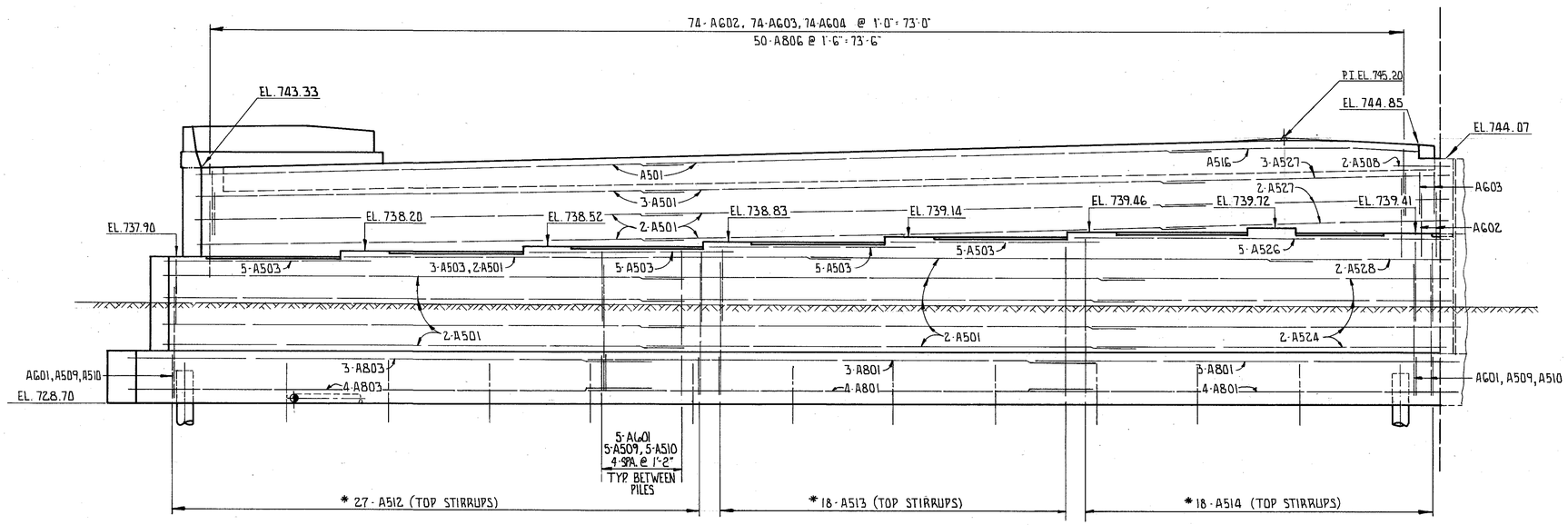


ELEVATION

MIN. BAR LAP
#8 - 3'-5"
#6 - 1'-11"
#5 - 1'-7"

* SEE TYPICAL SECTION, SHEET 4 OF 17

FRANKLIN CONSULTANTS INC. 7 / 17
Consulting Engineers
COLUMBUS, OHIO

LEFT FORWARD ABUTMENT

BRIDGE No. FRA.-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

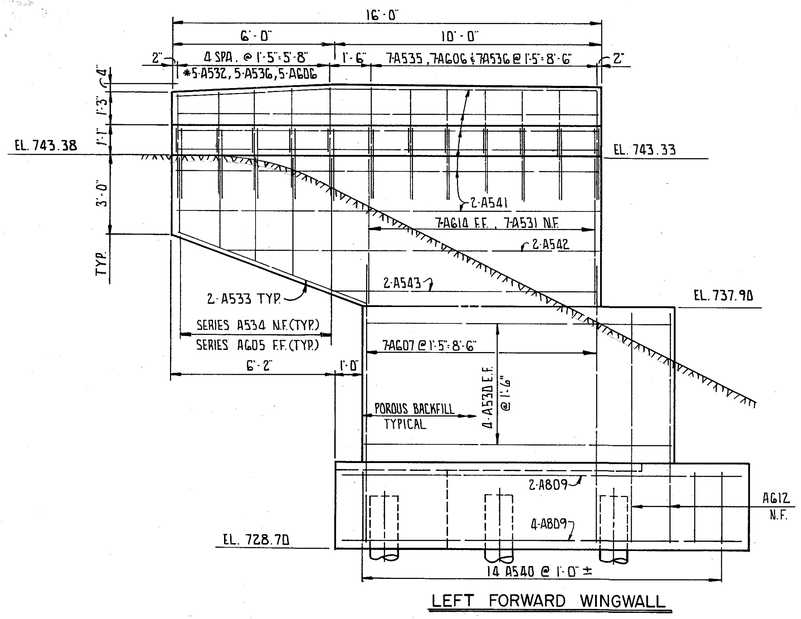
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRW	SRW	S.M.	JF	5/4-79	

BRUNING 44-132 30845-1

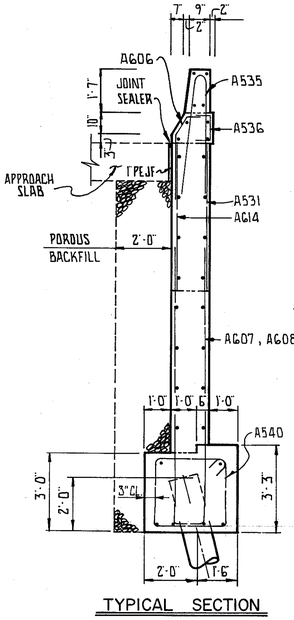
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

201
254

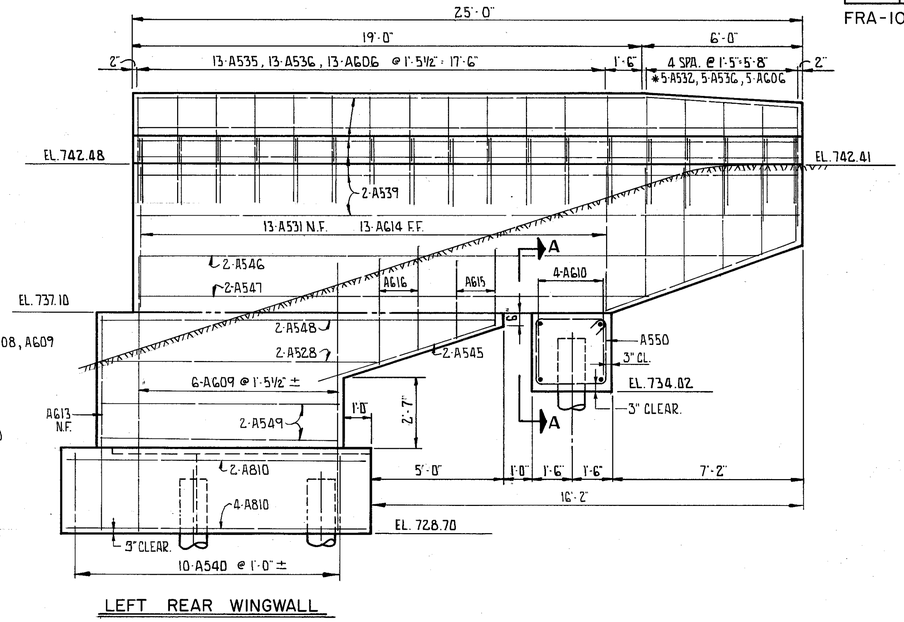
FRA-104-10.57



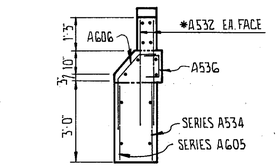
LEFT FORWARD WINGWALL



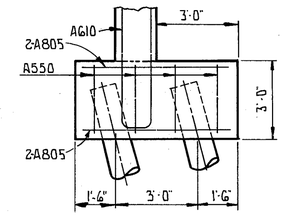
TYPICAL SECTION



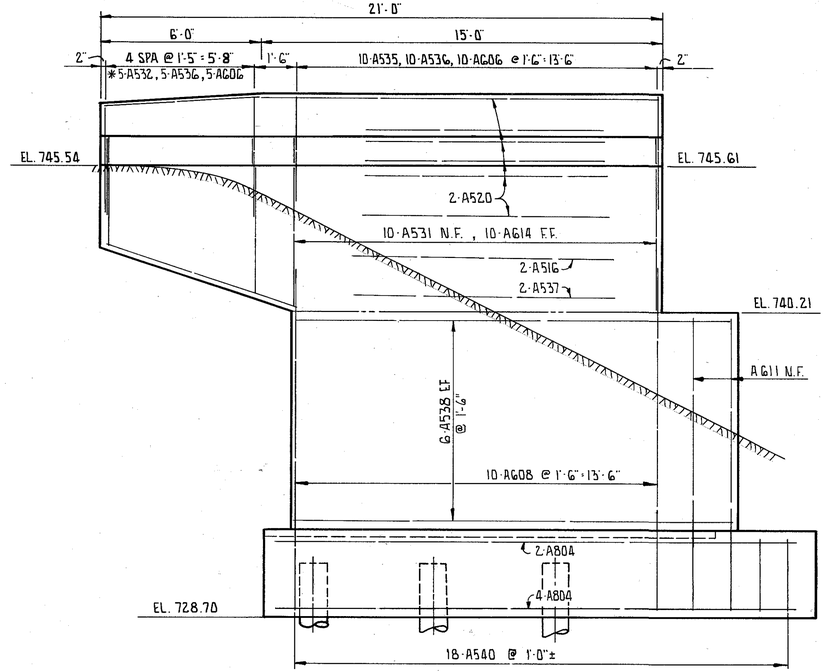
LEFT REAR WINGWALL



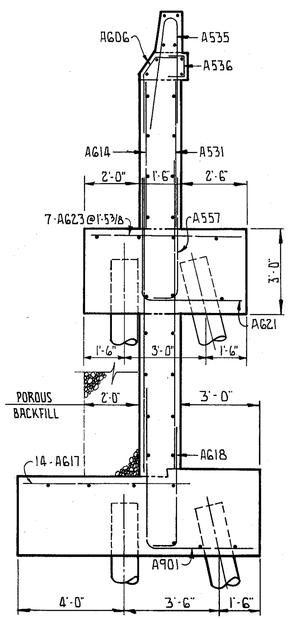
END VIEW



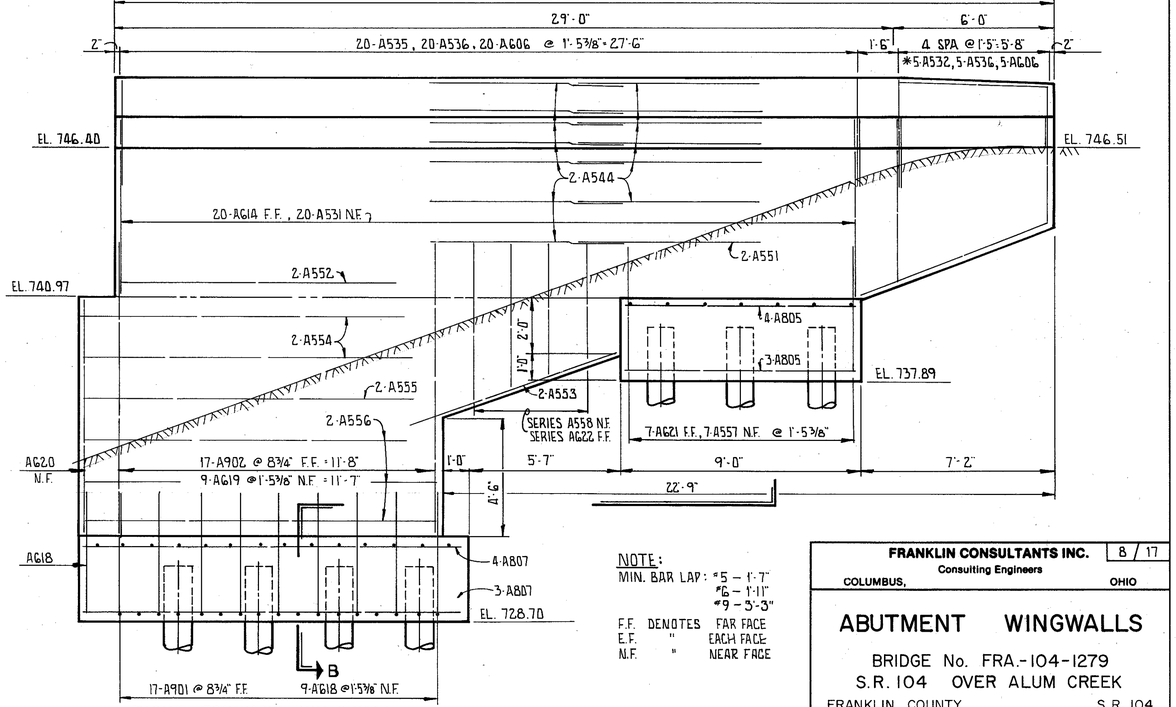
SECTION A-A



RIGHT REAR WINGWALL



SECTION B-B



RIGHT FORWARD WINGWALL

NOTE:
MIN. BAR LAP: #5 – 1'-7"
#6 – 1'-11"
#9 – 3'-3"

F.F. DENOTES FAR FACE
E.F. " EACH FACE
N.F. " NEAR FACE

FRANKLIN CONSULTANTS INC. 8 / 17
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COLUMBUS, OHIO

ABUTMENT WINGWALLS

BRIDGE No. FRA.-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

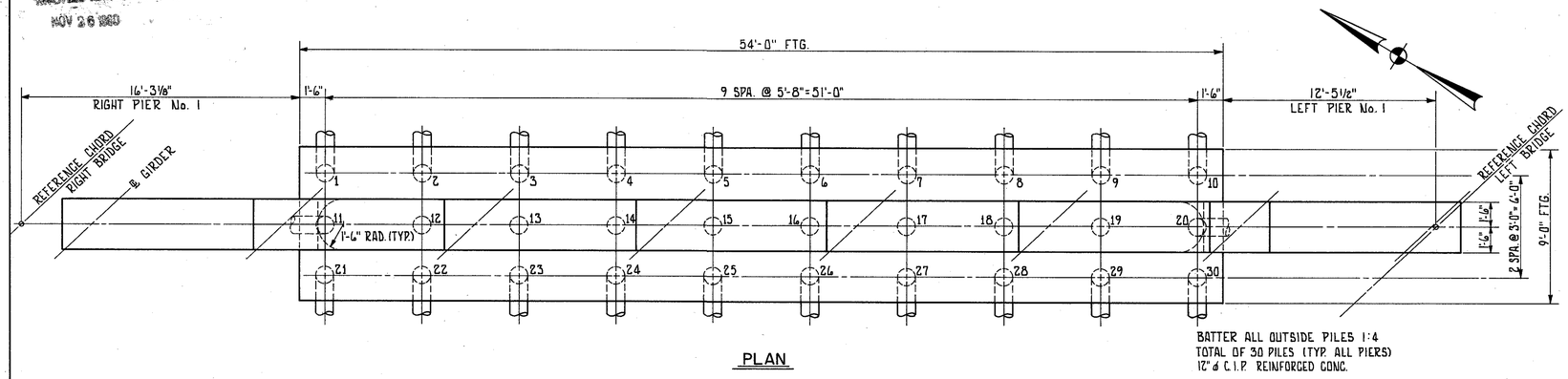
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRW	SRW	SM	JK	4-79	

BRUNING 44-132 30845-1

FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

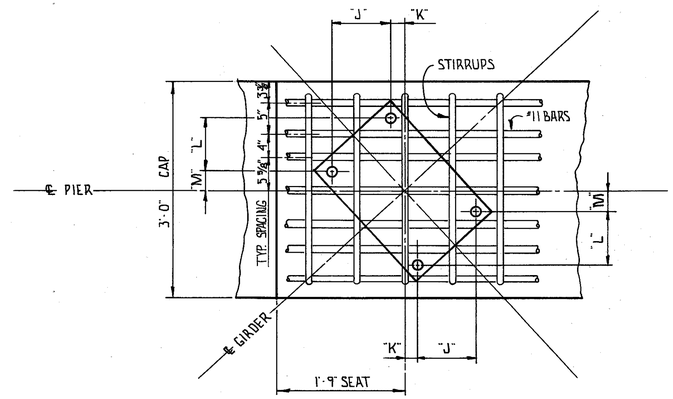
202
254

FRA-104-10.57

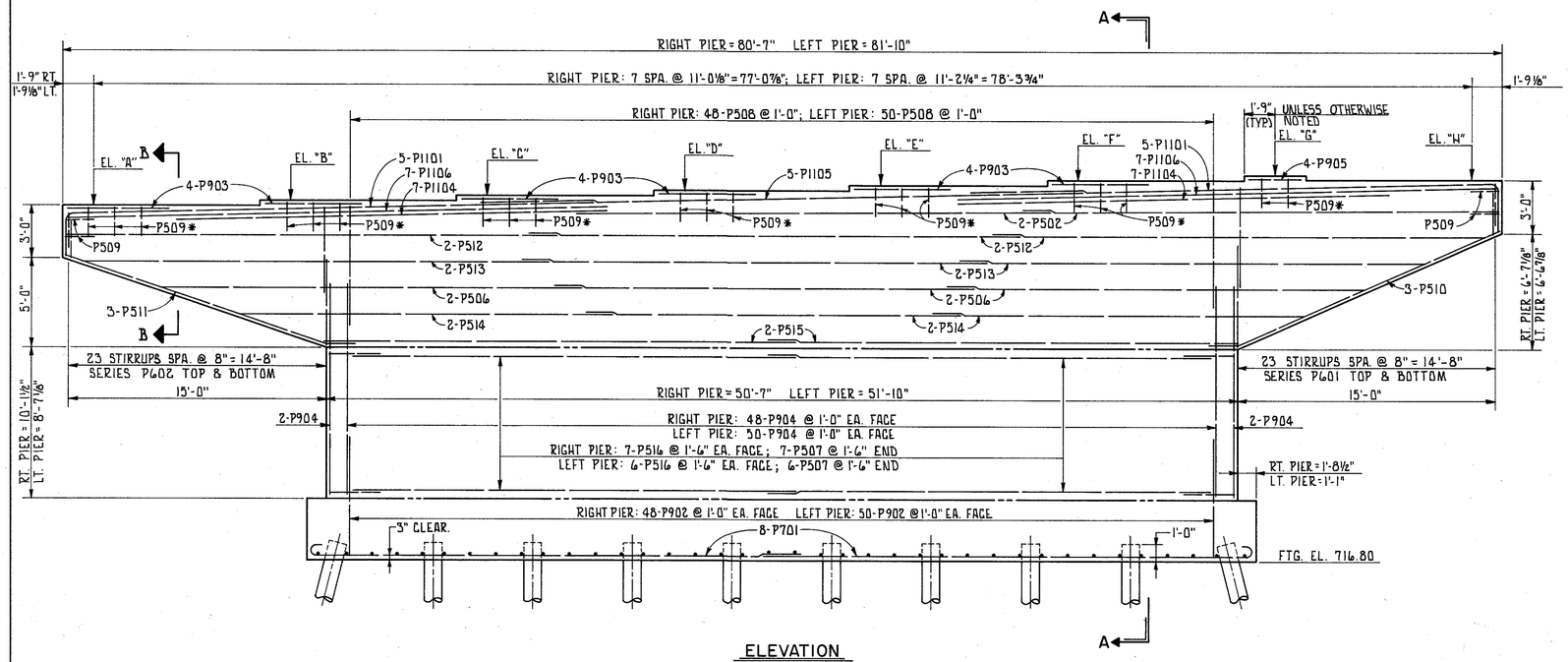


PLAN

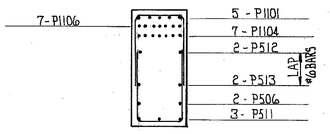
BATTER ALL OUTSIDE PILES 1:4
TOTAL OF 30 PILES (TYP. ALL PIERS)
12" ø C.I.P. REINFORCED CONC.



BEARING ANCHOR PLAN



ELEVATION



SECTION B-B

PIER DATA

	ELEVATIONS								DIMENSIONS			
EL.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"	"L"	"M"
RIGHT	738.42	738.72	739.02	739.32	739.62	739.92	740.21	740.01	9⅞"	2 1/2"	8 15/16"	3 1/8"
LEFT	736.89	737.19	737.50	737.80	738.10	738.40	738.70	738.46	9⅞"	2 5/16"	8 13/16"	3 5/16"

SECTION A-A

NOTE: FOOTING TYP. ALL PIERS

RT. DENOTES RIGHT PIER
LT. " " LEFT PIER
FTG. " " FOOTING

MIN. BAR LAP
#11 – 6'-5"
#9 – 3'-3"
#7 – 2'-2"
#6 – 1'-11"
#5 – 1'-7"

* P509's SHALL ENCLOSE P903's & P905's @ 1'-6"

BEAM SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF BEAM SEATS @ #1 PIERS SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

FRANKLIN CONSULTANTS INC. 9 / 17
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#1 PIERS

BRIDGE No. FRA.-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

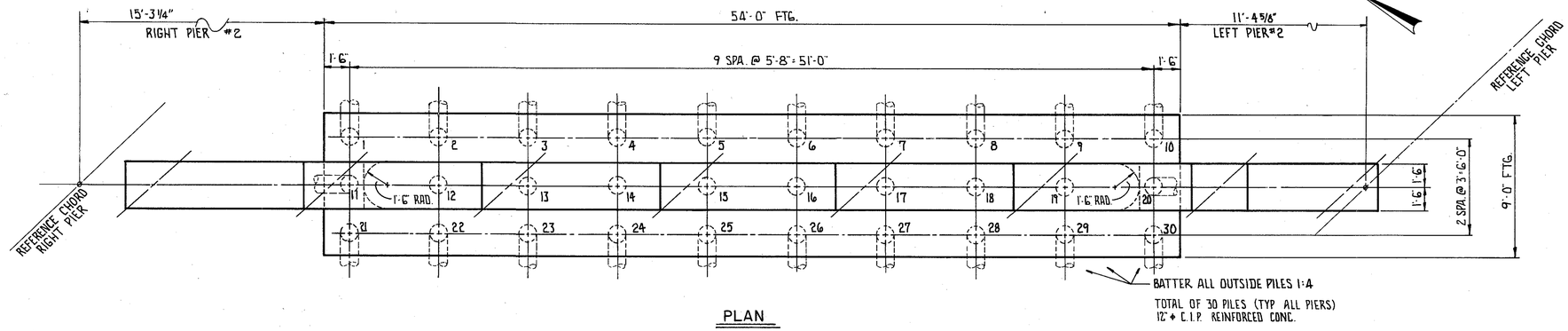
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SPW	SPW	S.M.	JH	5/4-79	

BRUNING 44-132 30845-1

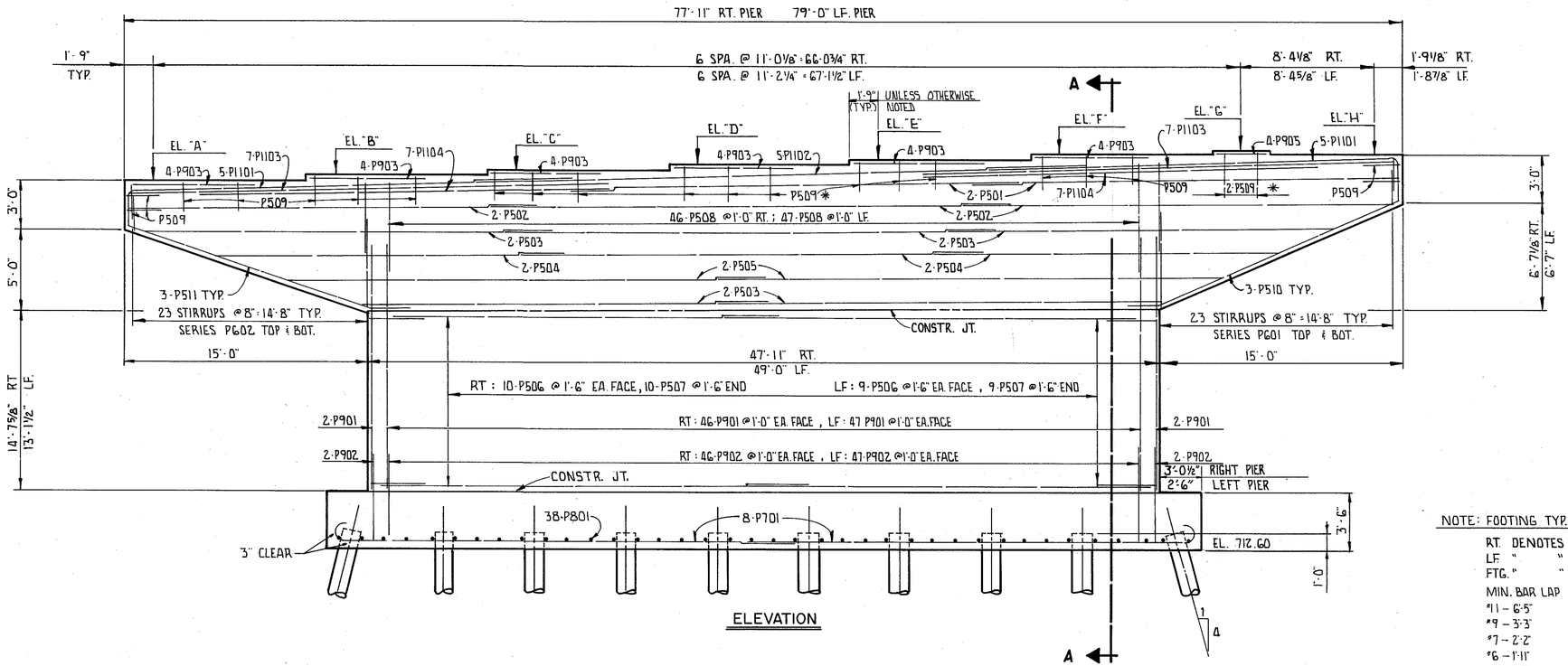
FED. RD DIVISION	STATE	PROJECT	
5	OHIO		

203
254

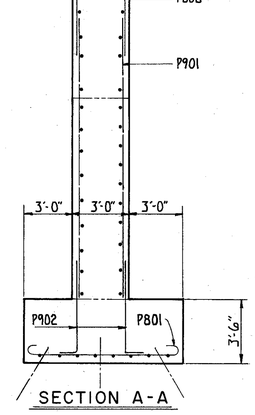
FRA-104-10.57



PLAN



ELEVATION



SECTION A-A

NOTE: FOOTING TYP. ALL PIERS

RT. DENOTES RIGHT PIER
LF. " " LEFT PIER
FTG. " " FOOTING

MIN. BAR LAP
#11 - 6'-5"
#9 - 3'-3"
#7 - 2'-2"
#6 - 1'-11"
#5 - 1'-7"

*P509's SHALL STIRRUP P903's
†P905's @ 1'-6"

BEAM SEAT ELEVATIONS

EL.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
RIGHT	738.74	739.05	739.35	739.66	739.96	740.27	740.52	740.33
LEFT	737.22	737.53	737.84	738.14	738.45	738.76	739.04	738.80

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#2 PIERS

BRIDGE No. FRA.-104-1279
S. R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S. R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRW	SRW	S.M.	JT	9/6-19	

BRUNING 44-132 30845-1

RECEIVED
NOV 26 1980

FED RD. DIVISION	STATE	PROJECT	
5	OHIO		

204
254

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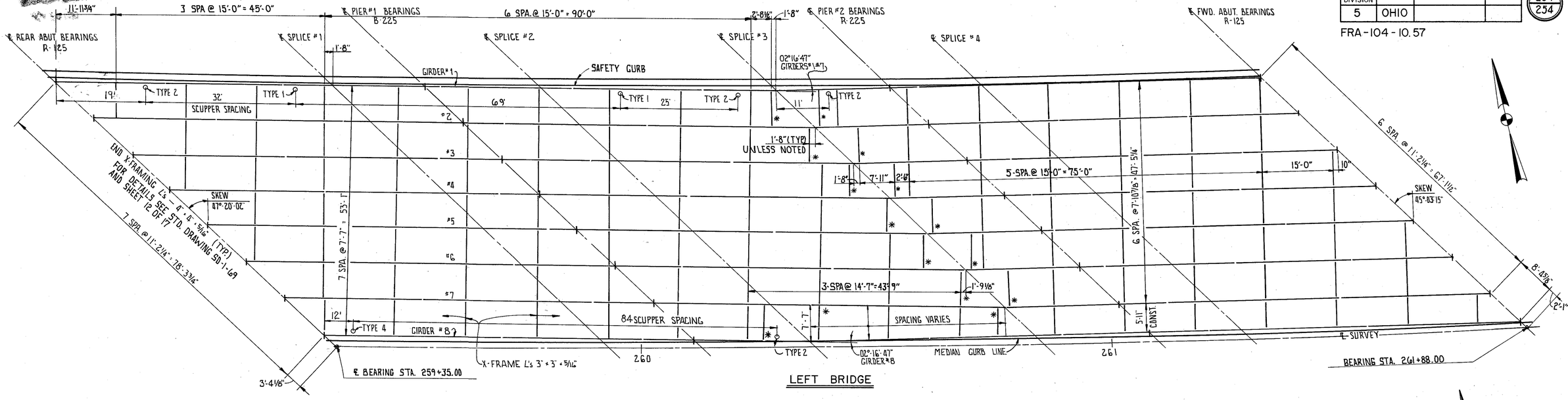
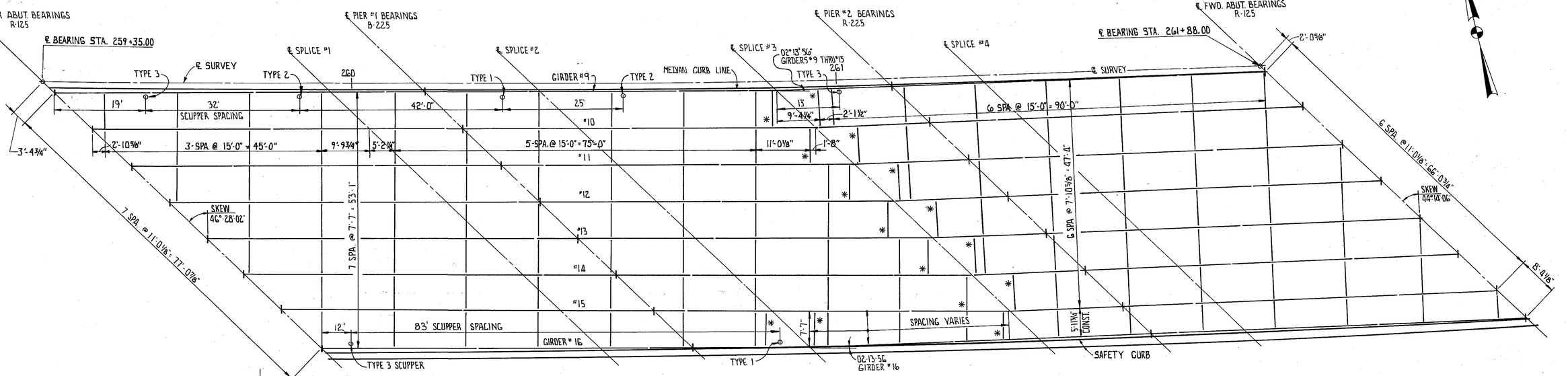
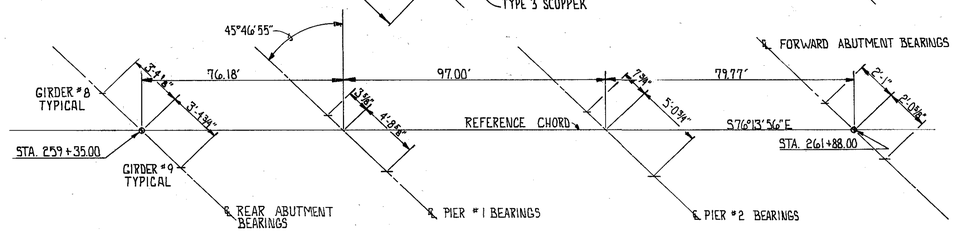


LEFT BRIDGE



RIGHT BRIDGE



LAYOUT DIAGRAM

BEARINGS: IN LIEU OF A588 STEEL, A36 STEEL, GALVANIZED MAY BE FURNISHED FOR BEARINGS, EXEPT FOR UPPER PLATE ELEMENT OF BEARINGS. THIS A36 STEEL SHALL BE INCLUDED WITH A588 STEEL QUANTITY FOR PAYMENT.

THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR FOR APPROVAL THREE SETS OF PRINTS SHOWING HIS METHOD OF ERECTING THE PLATE GIRDERS

TRANSVERSE WEB STIFFENERS SHALL ONLY BE PROVIDED FOR THE ATTATCHMENT OF DECK CROSSFRAMES

* ADDITIONAL HORIZONTAL ANGLE NEAR TOP FLANGE REQUIRED AT BAYS NEAR BEND POINTS OF GIRDERS

SCUPPER INFORMATION MAY BE FOUND ON TRANSVERSE SECTION SHEET, No. 12 OF 17

FRANKLIN CONSULTANTS INC. 11 / 17
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COLUMBUS, OHIO

FRAMING PLAN

BRIDGE No. FRA.-104-1279
S. R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R.104

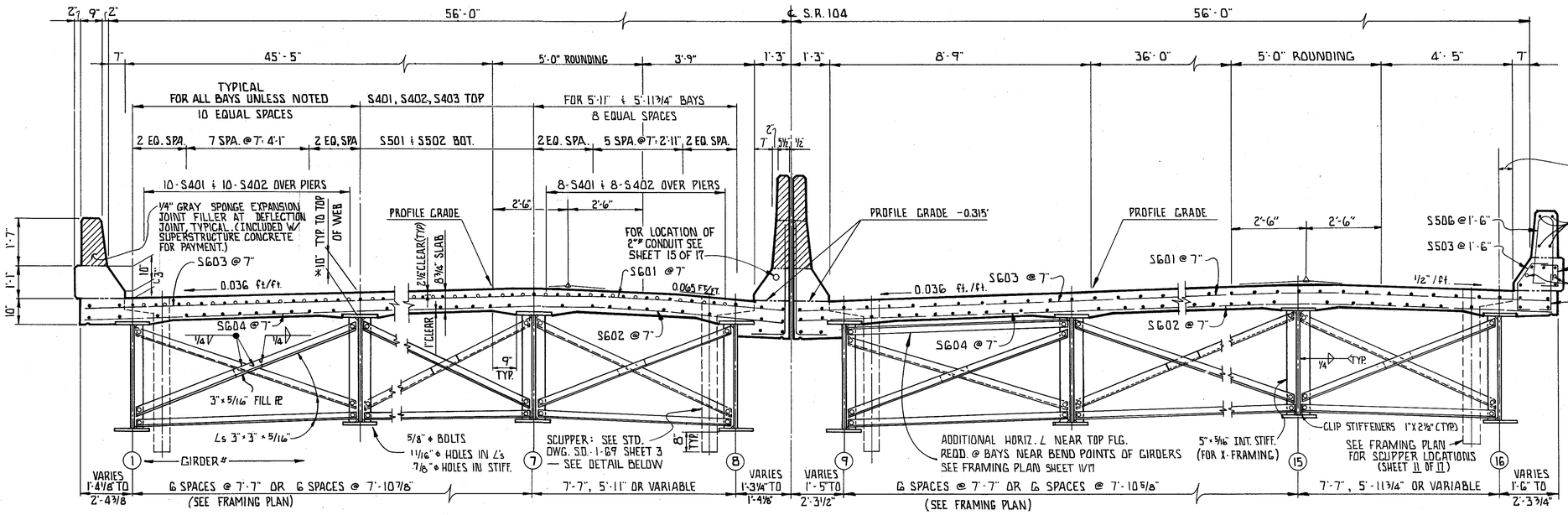
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRJ	SRJ	S.M.	JF	8/6-79	

BRUNING 44-132 30845-1

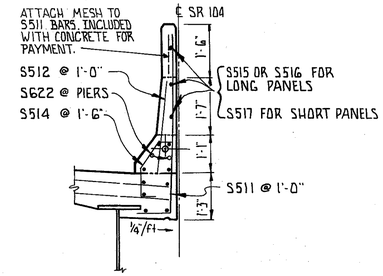
FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

205
254

FRA-104-10.57



TRANSVERSE SECTION



TYPICAL MEDIAN CURB

L = LEFT R = RIGHT

TABLE OF GUTTER OFFSETS AND SCREED ELEVATIONS

		REAR ABUT.	1/3	2/3	SPLICE 1	PIER 1	SPLICE 2	1/2	SPLICE 3	PIER 2	SPLICE 4	1/3	2/3	FWD. ABUT.
GIRDER #1	GUTTER OFFSET	10 3/8" L.	6" L.	2 1/8" L.	1" L.	1/4" L.	1" L.	3 3/4" L.	8 1/4" L.	3 1/8" L.	1/4" L.	1 3/8" R.	1 7/8" R.	1 1/8" R.
	SCREED ELEVATION	742.09	742.61	742.68	742.71	742.75	742.88	742.99	743.04	743.07	743.16	743.26	743.31	743.32
GIRDER #8	GUTTER OFFSET	1" R.	1 1/8" R.	1" R.	7/8" R.	3/4" R.	1/4" R.	5/8" R.	7/8" R.	1" R.	1" R.	7/8" R.	5/8" R.	1/4" R.
	SCREED ELEVATION	744.00	744.12	744.19	744.22	744.25	744.38	744.49	744.53	744.56	744.65	744.75	744.80	744.81

		REAR. ABUT.	1/3	2/3	SPLICE 1	PIER 1	SPLICE 2	1/2	SPLICE 3	PIER 2	SPLICE 4	1/3	2/3	FWD. ABUT.
GIRDER #9	GUTTER OFFSET	12 1/2" L.	8 1/2" L.	5 5/8" L.	3 7/8" L.	3 3/8" L.	4 1/4" L.	7" L.	11 1/2" L.	6 5/8" L.	4" L.	2 3/8" L.	2" L.	2 3/4" L.
	SCREED ELEVATION	744.02	744.14	744.21	744.24	744.26	744.39	744.50	744.54	744.57	744.66	744.76	744.81	744.82
GIRDER #16	GUTTER OFFSET	9" R.	9 3/4" R.	9 1/4" R.	7 3/4" R.	5" R.	0	4 1/2" R.	7 1/4" R.	8 3/8" R.	8" R.	6 1/2" R.	3 3/4" R.	0
	SCREED ELEVATION	745.61	745.72	745.79	745.82	745.85	745.98	746.09	746.13	746.15	746.24	746.34	746.39	746.40

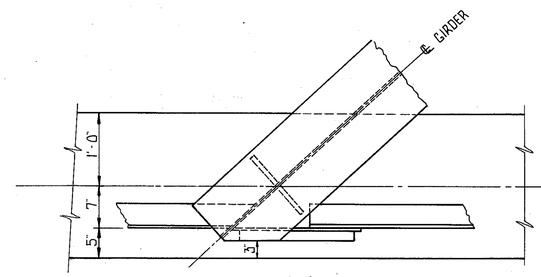
* THIS IS THE DESIGN DIMENSION. THE QUANITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE. DEDUCTION SHALL BE MADE FOR VOLUME OF ENCASED STEEL PLATES AS PER 511.18.

SCUPPERS SHALL BE IN ACCORDANCE WITH STD. DWG. SD-1-69 EXCEPT THAT SCUPPER PIPES SHALL EXTEND 8" BELOW THE BOTTOM OF THE BEAMS INSTEAD OF 2".

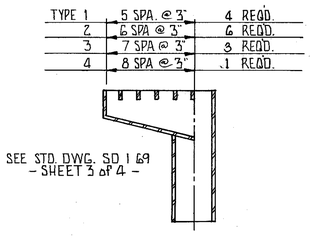
GUTTER OFFSETS ARE FROM ℄ OF GIRDER TO GUTTER LINE.

SCREED ELEVATIONS ARE AT TOP OF CONCRETE AT GUTTER LINE AND INCLUDE CONCRETE DEAD LOAD DEFLECTION.

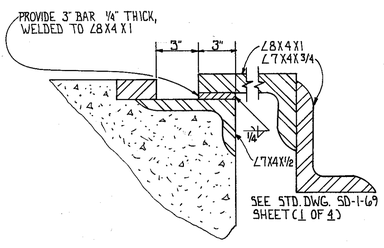
A HAUNCH WIDTH OF 9" SHALL BE USED FOR COMPUTING QUANTITY OF CONCRETE. HOWEVER THE HAUNCH WIDTH MAY VARY FROM 6" TO 12" PROVIDED THAT THE SLOPE SHALL BE NOT MORE THAN 1:4 FOR A HAUNCH LESS THAN 9" IN WIDTH.



PLAN

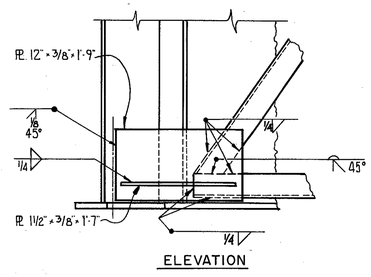


SCUPPER DETAIL



LONGITUDINAL SECTION

THESE MEMBERS PLUS THE ANCHORAGE BARS AND PLATES ARE PAID FOR AS STRUCTURAL STEEL EXPANSION JOINTS.



ELEVATION

END CROSS FRAME CONNECTION

REFER TO STD. DWG. SD-1-69 SHEET (1 OF 4)

FRANKLIN CONSULTANTS INC. 12 / 17
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TRANSVERSE SECTION AND DETAILS

BRIDGE No. FRA.-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HY	SRW	SRW	S.J.N.	JL	4-79	

BRUNING 44-132 30845-1

FED RD DIVISION	STATE	PROJECT	
5	OHIO		

206
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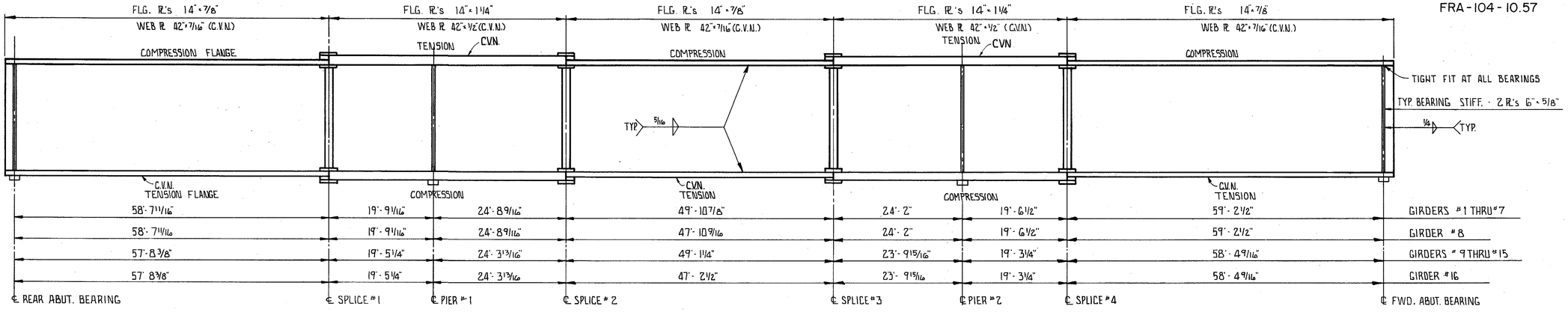
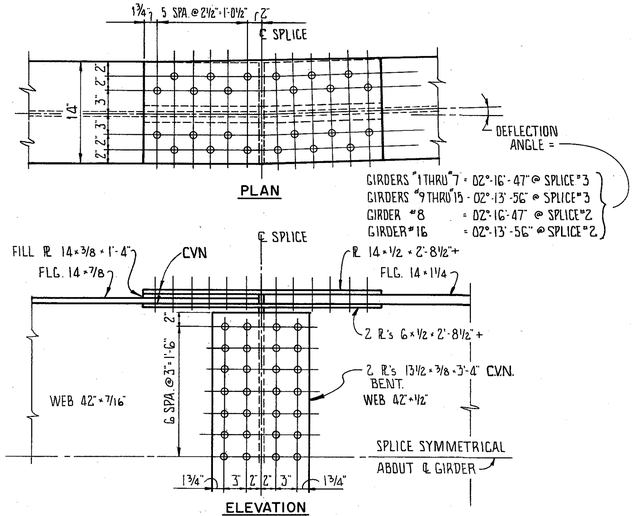
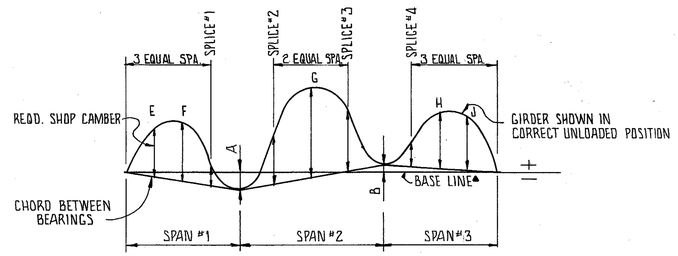


GIRDER ELEVATION



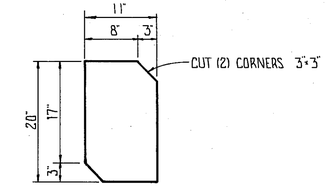
SPLICE DETAIL



GIRDER #	A	B
1	-1/4	0
2 THRU 6	-1/16	1/16
7	-1/16	1/8
8	-1/8	9/16
9 THRU 14	-3/16	1/16
15	0	1/16
16	-1/16	1/4

♠ BASE LINE IS A LINE BETWEEN ℄ OF ABUT. BEARINGS @ ℄ OF GIRDER WEBS

CAMBER DIAGRAM



BEARING PLATES FOR R-125

NOTE:

WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS.

WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.

K: GIRDER #1 ..... 0"
GIRDERS #2 THRU #6 ..... -1/16"
GIRDERS #10 THRU #14 ..... 1/16"
L: GIRDER #1 ..... 3/4"
GIRDERS #2 THRU #6 ..... 11/16"
GIRDERS #10 THRU #14 ..... 13/16"

CAMBER TABLES (IN.)

	GIRDERS No.1 THRU No.6 & No.10 THRU No.14									GIRDER No.7									GIRDER No.8								
	SPAN 1			SPAN 2			SPAN 3			SPAN 1			SPAN 2			SPAN 3			SPAN 1			SPAN 2			SPAN 3		
	E	F	SP.	SP.	G	SP.	SP.	H	J	E	F	SP.	SP.	G	SP.	SP.	H	3/4	E	F	SP.	SP.	G	SP.	SP.	H	J
DEFLECTION DUE TO WEIGHT OF STEEL	1/8	1/8	1/16	1/8	3/16	1/8	1/16	1/8	1/8	1/8	1/8	1/16	1/8	3/16	1/8	1/16	1/8	1/8	1/8	1/8	1/16	1/8	3/16	1/8	1/16	1/8	1/8
DEFLECTION DUE TO REMAINING DEAD LOAD	5/8	3/4	5/16	9/16	1	9/16	5/16	3/4	5/8	5/8	3/4	5/16	9/16	1	9/16	6/16	3/4	5/8	5/8	3/4	5/16	9/16	1	9/16	5/16	3/4	5/8
ADJUSTMENT REQD. FOR HORIZONTAL CURVE	-1/16	-1/16	-1/16	0	1/16	3/16	-1/16	-1/16	K	-1/16	-1/16	-1/16	1/16	1/16	1/16	0	0	0	3/16	3/16	3/16	-9/16	-3/16	-1/16	3/16	1/4	3/16
REQUIRED SHOP CAMBER	11/16	13/16	9/16	11/16	1 1/4	7/8	5/16	13/16	L	11/16	13/16	5/16	3/4	1 1/4	3/4	3/8	7/8	3/4	15/16	1 1/16	9/16	1/8	1	5/8	9/16	1 1/8	15/16

	GIRDER No.9									GIRDER No.15									GIRDER No.16								
	SPAN 1			SPAN 2			SPAN 3			SPAN #1			SPAN #2			SPAN #3			SPAN 1			SPAN 2			SPAN 3		
	E	F	SP.	SP.	G	SP.	SP.	H	J	E	F	SP.	SP.	G	SP.	SP.	H	J	E	F	SP.	SP.	G	SP.	SP.	H	J
DEFLECTION DUE TO WEIGHT OF STEEL	1/8	1/8	1/16	1/8	3/16	1/8	1/16	1/8	1/8	1/8	1/8	1/16	1/8	3/16	1/8	1/16	1/8	1/8	1/8	1/8	1/16	1/8	3/16	1/8	1/16	1/8	1/8
DEFLECTION DUE TO REMAINING DEAD LOAD	5/8	3/4	5/16	9/16	1	9/16	5/16	3/4	5/8	5/8	3/4	5/16	9/16	1	9/16	5/16	3/4	5/8	5/8	3/4	5/16	9/16	1	9/16	5/16	3/4	5/8
ADJUSTMENT REQD. FOR HORIZONTAL CURVE	0	0	1/16	0	1/16	3/16	-1/16	-1/8	-1/16	-1/16	-1/16	0	1/16	1/16	0	0	0	0	1/16	1/8	1/16	-3/16	-1/16	D	1/16	1/16	1/16
REQUIRED SHOP CAMBER	3/4	7/8	7/16	11/16	1 1/4	7/8	5/16	3/4	11/16	11/16	15/16	3/8	3/4	1 1/4	1 1/16	3/8	7/8	3/4	13/16	1	7/16	1/2	1 1/8	11/16	7/16	15/16	13/16

FRANKLIN CONSULTANTS INC. Consulting Engineers	13 / 17
COLUMBUS, OHIO	

SUPERSTRUCTURE DETAILS

BRIDGE No. FRA-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SPW	SPW	S.M.	JT	5/4-79	

BRUNING 44-132-30845-1

FED RD. DIVISION	STATE	PROJECT	
5	OHIO		

FRA-104-10.57

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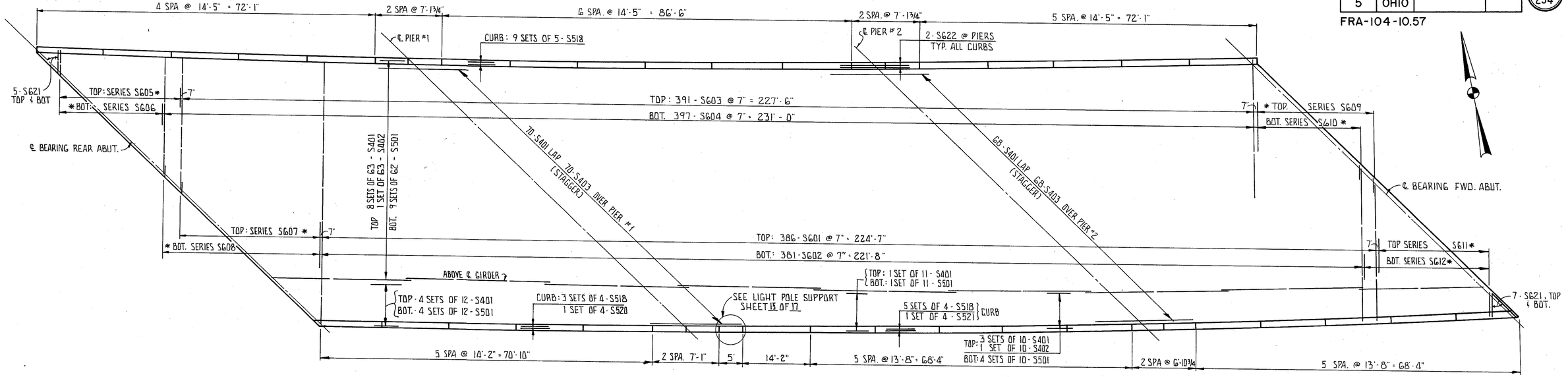
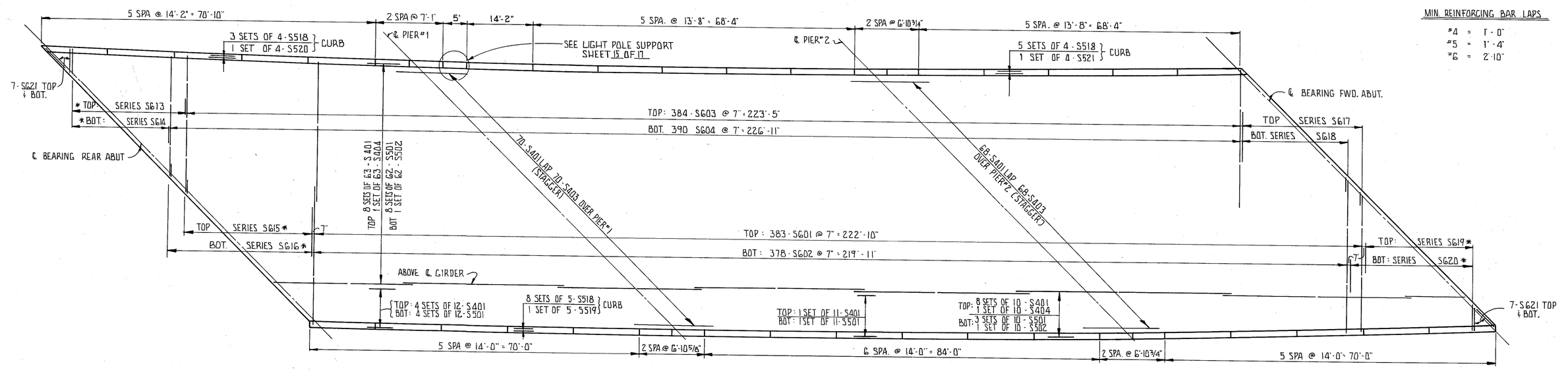


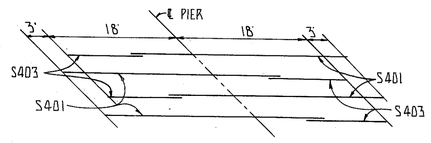
LEFT BRIDGE



RIGHT BRIDGE

MIN. REINFORCING BAR LAPS

#4	=	1'-0"
#5	=	1'-4"
#6	=	2'-10"



STAGGER OF BARS S401 & S403 AT PIERS

* BAR SERIES S605 THRU S620 SHALL BE SPACED @ 7"

FRANKLIN CONSULTANTS INC. 14 / 17
Consulting Engineers
COLUMBUS, OHIO

SLAB PLAN

BRIDGE No. FRA.-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R.104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SPW	SPW	S.M.	JF	5/4-79	

BRUNING 44-132 30845-1

FED.RD. DIVISION	STATE	PROJECT	
5	OHIO		

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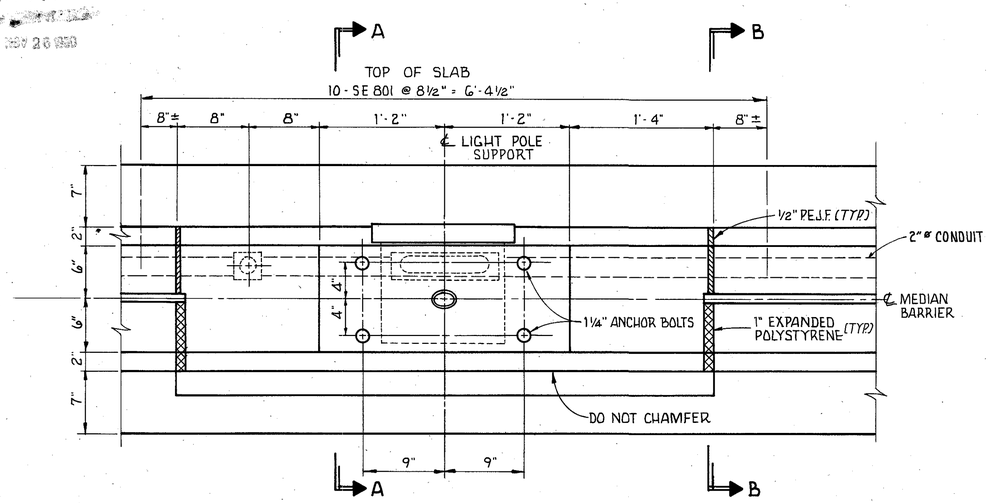
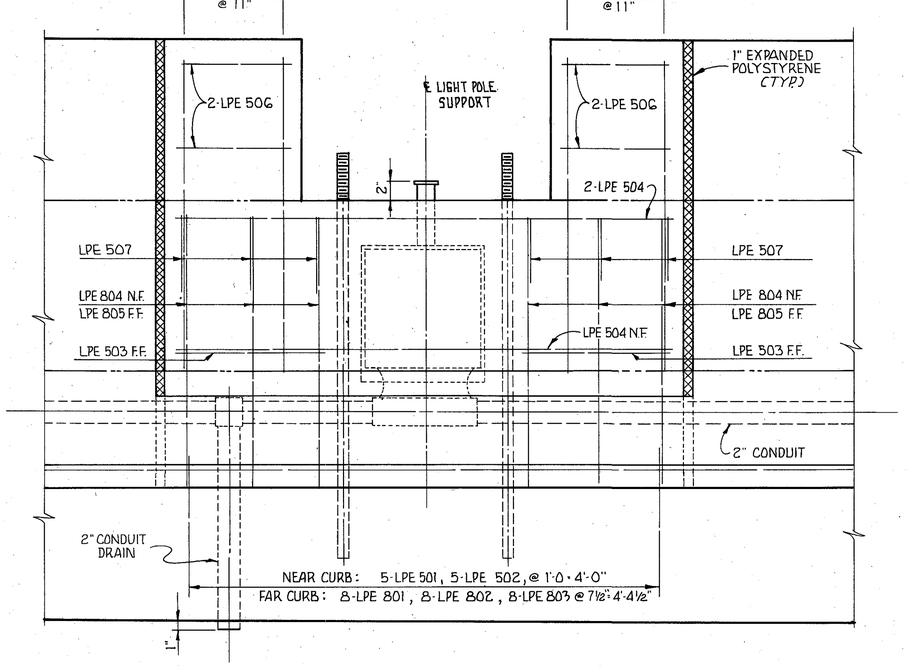
254

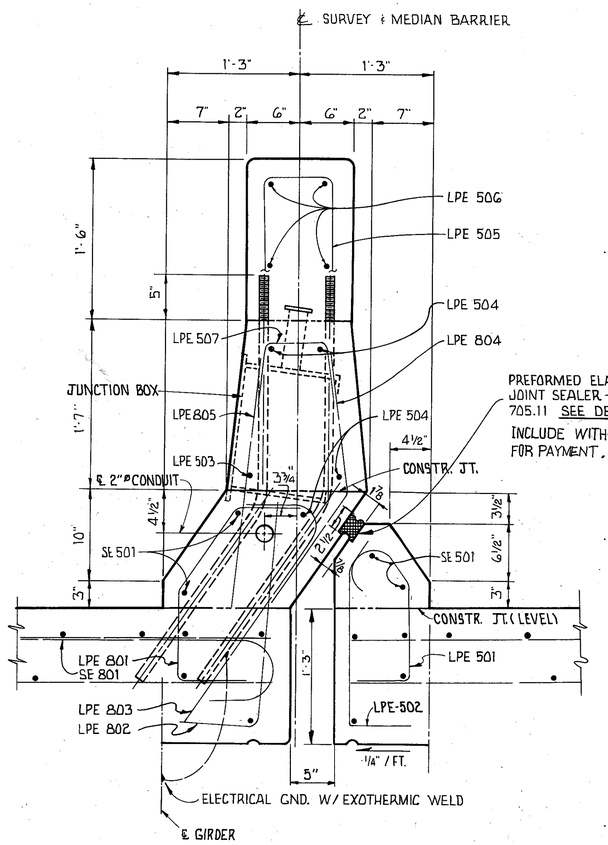
FRA-104-10.57



PLAN

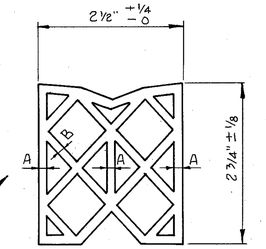


ELEVATION



SECTION A-A

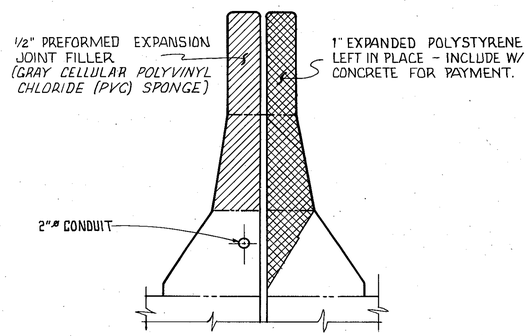
PREFORMED ELASTOMERIC JOINT SEALER - 5'-1" LG. 705.11 SEE DETAIL "C" INCLUDE WITH CONCRETE FOR PAYMENT.



THE ELASTOMERIC JOINT SEALER SHALL BE MADE BY WATSON BOWMAN ASSOCIATES INC. OF BUFFALO N.Y., ACME HIGHWAY PRODUCTS CORP. OF BUFFALO N.Y., OR D.S. BROWN OF NORTH BALTIMORE OHIO.

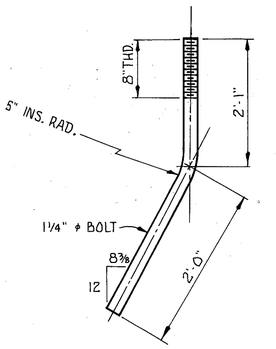
THE ADHESIVE SHALL BE "BON LASTIC" DISTRIBUTED BY WATSON BOWMAN ASSOCIATES INC. OF BUFFALO N.Y., "PRIMA LUBE" DISTRIBUTED BY ACME HIGHWAY PRODUCTS CORP. OF BUFFALO N.Y. OR APPROVED EQUAL.

DETAIL "C"



SECTION B-B

PROVIDE REVERSE BENDS IN CONDUIT WITHIN A DISTANCE OF 10'-0" FROM EACH END OF DECK TO CHANGE ITS LOCATION IN THE DECK MEDIAN, TO RUN IT INTO THE ABUTMENT MEDIAN. FIELD BENDING OF CONDUIT SHALL BE PERMITTED.



ANCHOR BOLT DETAIL

N.F. DENOTES "NEAR FACE."
F.F. DENOTES "FAR FACE."
SEE GENERAL PLAN FOR LOCATION (SHEET 2 OF 17)

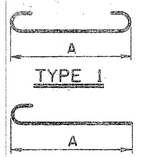
FRANKLIN CONSULTANTS INC. 15 / 17
Consulting Engineers
COLUMBUS, OHIO

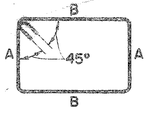
LIGHT POLE SUPPORT

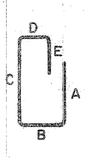
BRIDGE No. FRA-104-1279
S.R. 104, OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

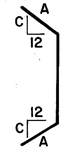
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	STR	STR	SM	JT	5/4-79	

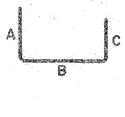
BRUNING 44-132 30845-1

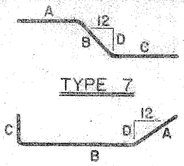


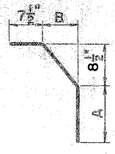


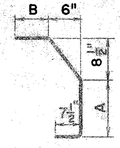


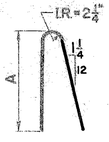


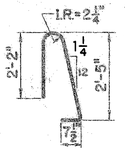


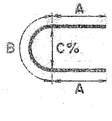












FED. RD. DIVISION	STATE	PROJECT	
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FRA-104-10.57

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FORWARD ABUTMENT

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	
A801	35	30'-0"	2,804	STR.				
A803	7	31'-3"	584	STR.				
A805	7	8'-6"	159	STR.				
A806	100	6'-7"	1,757	5	1'-6"	3'-7"	12	
A807	7	14'-2"	265	STR.				
A809	6	14'-7"	234	STR.				
A601	128	13'-5"	2,579	6	6'-9"	5'-4"	1'-8"	
A602	154	11'-11"	2,756	6	5'-5"	1'-5"	5'-5"	
A603	154	6'-5"	1,484	6	2'-8"	1'-5"	2'-8"	
A604	148	8'-7"	1,907	6	4'-0"	11"	4'-0"	
A605	✱10	▲2'-8" TO 5'-0"	58	STR.				✱2 SERIES OF 5 ▲7" INCREMENTS
A606	37	3'-8"	204	9	2'-4"	6"		
A607	7	22'-8"	238	6	10'-11"	1'-2"	10'-11"	
A612	2	9'-5"	28	6	8'-9"	10"	——	
A614	27	5'-3"	213	STR.				
A617	14	4'-3"	131	STR.				
A618	10	5'-7"	84	6	4'-11"	10"	——	
A619	9	10'-8"	144	STR.				
A620	1	8'-10"	13	STR.				
A621	7	8'-1"	85	6	4'-8"	3'-7"	——	
A622	✱4	▲4'-3" TO 6'-0"	31	STR.				✱1 SERIES OF 4 ▲7" INCREMENTS
A623	7	5'-6"	58	STR				
A501	76	30'-0"	2,378	STR.				
A503	46	12'-7"	604	STR.				
A508	4	3'-6"	15	STR.				
A509	128	9'-3"	1,235	6	2'-1"	5'-4"	2'-1"	
A510	128	7'-3"	968	6	6'-9"	7½"	——	
A512	27	11'-6"	324	6	4'-2"	3'-5"	4'-2"	
A513	18	12'-10"	241	6	4'-10"	3'-5"	4'-10"	
A514	45	14'-6"	681	6	5'-4"	3'-5"	5'-4"	
A516	1	19'-2"	20	STR				
A521	5	21'-10"	114	STR.				
A522	1	22'-6"	23	STR.				
A523	2	12'-0"	25	STR				
A524	15	22'-4"	349	STR				
A525	37	14'-6"	560	6	5'-8"	3'-5"	5'-8"	
A526	15	23'-4"	365	STR.				
A527	7	20'-3"	148	STR.				
A528	2	10'-7"	22	STR.				
A530	8	11'-4"	95	STR.				
A531	27	5'-3"	148	STR.				
A532	20	4'-3"	89	STR.				
A533	4	7'-7"	32	STR.				
A534	✱10	▲2'-8" TO 5'-0"	40	STR.				✱2 SERIES OF 5 ▲7" INCREMENTS
A535	27	8'-7"	242	11	4'-3"			
A536	37	1'-10"	71	6	7½"	10"	7½"	
A540	14	11'-8"	170	3	3'-0"	2'-7"		
A541	12	15'-8"	196	STR				
A542	2	13'-10"	29	STR.				
A543	2	9'-9"	20	STR				
A544	26	18'-2"	492	STR.				
A551	2	16'-9"	35	STR.				
A552	2	28'-10"	60	STR.				
A553	2	8'-0"	17	STR.				
A554	4	19'-10"	83	STR.				
A555	2	15'-2"	32	STR.				
A556	6	13'-3"	83	STR				
A557	7	4'-10"	35	6	4'-4"	7½"	——	
A558	✱4	▲3'-11" TO 5'-8"	20	STR				✱1 SERIES OF 4 ▲7" INCREMENTS
A901	17	9'-10"	568	6	6'-0"	4'-1"	——	
A902	17	11'-3"	650	STR.				
		TOTAL WEIGHT:	27,095					

SUPERSTRUCTURE

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	
SG01	769	30'-0"	34,651	STR.				
SG02	759	33'-3"	37,906	STR.				
SG03	775	29'-5"	34,242	STR.				
SG04	787	26'-2"	30,931	STR.				
SG05	✱45	▲5'-7" TO 29'-5"	1,183	STR.				✱1 SERIES OF 45 ▲6½" INCREMENTS
SG06	39	5'-7" TO 26'-2"	930	STR.				" " 39 6½" " "
SG07	52	2'-10" TO 30'-6"	1,302	STR.				" " 52 6½" " "
SG08	58	2'-10 TO 33'-9"	1,593	STR.				" " 58 6½" " "
SG09	43	3'-6" TO 28'-0"	1,017	STR.				" " 43 7" " "
SG10	38	3'-2" TO 24'-9"	797	STR.				" " 38 7" " "
SG11	42	5'-1 TO 29'-6"	1,107	STR.				" " 42 7" " "
SG12	47	5'-7" TO 32'-5"	1,341	STR.				" " 47 7" " "
SG13	43	5'-7" TO 29'-3"	1,125	STR.				" " 43 6¾" " "
SG14	37	5'-7" TO 25'-10"	873	STR.				" " 37 6¾" " "
SG15	47	2'-10" TO 28'-8"	1,112	STR.				" " 47 6¾" " "
SG16	53	2'-10 TO 32'-1"	1,390	STR.				" " 53 6¾" " "
SG17	43	2'-10" TO 28'-3"	1,004	STR.				" " 43 7¼" " "
SG18	38	2'-10" TO 25'-2"	799	STR.				" " 38 7¼" " "
SG19	41	5'-7" TO 29'-9"	1,088	STR.				" " 41 7¼" " "
SG20	46	5'-7" TO 32'-9"	1,324	STR				" " 46 7¼" " "
SG21	52	5'-0"	391	STR				
SG22	16	33'-3"	799	STR				
S501	1242	30'-0"	38,862	STR.				
S502	72	25'-0"	1,877	STR				
S503	341	2'-8"	949	10	11"	6"		
S504	341	1'-11"	682	6	1'-5"	7½"	——	
S505	341	1'-10"	652	6	7½"	10"	7½"	
S506	360	5'-4"	2,003	12				
S507	64	14'-1	940	STR				
S508	16	6'-9	113	STR.				
S509	64	13'-8"	912	STR				
S510	16	6'-6"	108	STR.				
S511	498	6'-0"	3,116	6	5'-1"	1'-0"	——	
S512	504	2'-5"	1,270	STR				
S514	332	2'-5"	837	10	11"	4"		
S515	18	13'-10"	260	STR.				
S516	30	13'-4"	417	STR.				
S517	12	6'-7"	82	STR.				
S518	149	30'-0"	4,662	STR				
S519	5	22'-0"	115	STR.				
S520	8	14'-0"	117	STR.				
S521	8	6'-9"	56	STR				
S401	1462	30'-0"	29,298	STR.				
S402	73	27'-0"	1,317	STR.				
S403	276	10'-0"	1,804	STR				
S404	75	22'-6"	1,097	STR				

BARS [illegible]
EPOXY COATED [illegible]
TOTAL WEIGHT: 248,491

(ALL SUPERSTRUCTURE REINFORCING BARS SHALL BE EPOXY COATED)

PIERS

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D
P1101	40	32'-5"	6,890	6	30'-0"	2'-8"	——	
P1102	10	32'-5"	1,722	STR.				
P1103	28	29'-4"	4,363	STR.				
P1104	56	24'-6"	7,289	STR				
P1105	10	34'-5"	1,829	STR				
P1106	28	30'-9"	4,574	STR.				
P901	194	16'-9"	11,048	STR.				
P902	390	10'-0"	13,260	6	9'-0"	1'-3"	——	
P903	96	5'-6"	1,795	STR.				
P904	204	12'-0"	8,323	STR.				
P905	16	3'-2"	178	STR.				
P801	152	10'-4"	4,194	1	8'-6"			
P701	64	28'-9"	3,761	2	27'-11"			
PG01	✱184	▲13'-10" TO 17'-2"	2,902	6	5'-9 TO 2'-5"	2'-8"	5'-9" TO 2'-5"	
PG02	✱184	▲11'-8" TO 6'-4"	2,487	6	4'-8 TO 2'-0"	2'-8"	4'-8" TO 2'-0"	
P501	8	26'-4"	220	STR.				
P502	20	27'-0"	563	STR.				
P503	20	25'-8"	535	STR.				
P504	12	23'-1"	289	STR.				
P505	8	29'-8"	248	STR.				
P506	86	23'-11"	2,145	STR.				
P507	60	6'-11"	462	13	1'-7"	3'-9"	2'-5¾"	
P508	191	15'-11"	3,171	6	6'-9"	2'-8"	6'-9"	
P509	96	5'-7"	559	6	1'-7"	2'-8"	1'-7"	
P510	6	18'-1"	113	8	1'-8"	16'-5"	——	5¼
P511	6	17'-6"	110	8	1'-8"	15'-10"	——	4
P512	12	27'-11"	349	STR.				
P513	12	26'-6"	332	STR.				
P514	12	21'-4"	267	STR.				
P515	8	27'-2"	227	STR.				
P516	52	26'-1"	1,415	STR.				
		TOTAL WEIGHT	85,614					

PG01
✱ 8 SERIES OF 23
▲ 3½" INCREMENTS

PG02
✱ 8 SERIES OF 23
▲ 3" INCREMENTS

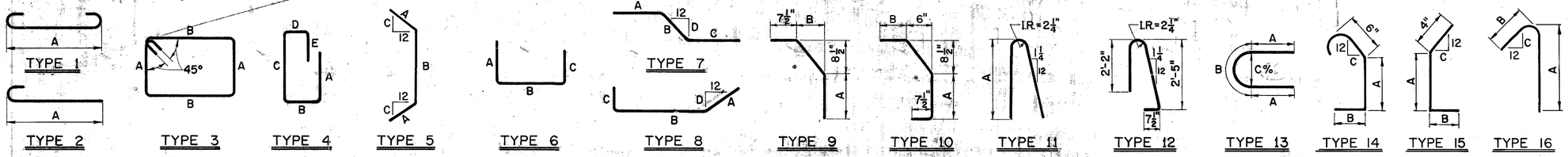
REINFORCING STEEL SAMPLES: Refer to CMS Sections 106.03, 700, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel, 16/17 spliced in accordance with 509.08.

FRANKLIN CONSULTANTS INC.
Consulting Engineers
COLUMBUS, OHIO

REINFORCING STEEL

BRIDGE NO. FRA-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRJ	SRJ	S.M.	JF	8/4-79	



FED. RD. DIVISION	STATE	PROJECT	
5	OHIO		

FRA.-104-10.57

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REAR ABUTMENT

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
A801	42	30'-0"	3,364	STR.					
A802	7	13'-8"	255	STR.					
A804	6	19-6"	312	STR.					
A805	4	5'-6"	59	STR.					
A806	106	6'-7"	1,863	5	1'-6"	3'-7"	12		
A810	6	11'-7"	186	STR.					
AG01	120	13'-5"	2,418	G	6'-9"	5'-4"	1'-8"		
AG02	163	11'-11"	2,918	G	5'-5"	1'-5"	5'-5"		
AG03	163	6'-5"	1,571	G	2'-8"	1'-5"	2'-8"		
AG04	158	8'-7"	2,036	G	4'-0"	11"	4'-0"		
AG05	*10	▲2'-8" TO 5'-0"	58	STR.	*2 SERIES OF 5		▲7" INCREMENTS		
AG06	33	3'-8"	182	9	2'-4"	6"			
AG08	10	27'-2"	408	G	13'-2"	1'-2"	13'-2"		
AG09	6	21'-0"	189	G	10'-1"	1'-2"	10'-1"		
AG10	4	10'-6"	63	G	4'-10"	1'-2"	4'-10"		
AG11	2	11'-9"	35	G	11'-1"	10"	——		
AG13	1	8'-3"	12	G	7'-7"	10"	——		
AG14	23	5'-3"	181	STR					
AG15	2	6'-6"	20	G	2'-10"	1'-2"	2'-10"		
AG16	2	8'-6"	26	G	3'-10"	1'-2"	3'-10"		
A501	74	30'-0"	2,315	STR.					
A502	8	28'-6"	238	STR.					
A503	39	12'-7"	512	STR.					
A504	5	16'-8"	87	STR.					
A505	2	19'-0"	40	STR.					
A506	7	29'-0"	212	STR.					
A507	4	25'-0"	156	STR.					
A508	4	3'-6"	15	STR.					
A509	120	9'-3"	1,158	G	2'-1"	5'-4"	2'-1"		
A510	120	7'-3"	907	G	6'-9"	7½"	——		
A511	25	9'-2"	239	G	3'-0"	3'-5"	3'-0"		
A512	45	11'-6"	540	G	4'-2"	3'-5"	4'-2"		
A513	24	12'-10"	321	G	4'-10"	3'-5"	4'-10"		
A514	26	14'-6"	393	G	5'-8"	3'-5"	5'-8"		
A515	10	27'-8"	289	STR.					
A516	4	19'-2"	80	STR.					
A517	4	25'-3"	105	STR.					
A518	7	25'-8"	187	STR.					
A519	2	23'-6"	49	STR.					
A520	12	20'-8"	259	STR.					
A528	2	10'-7"	22	STR.					
A531	23	5'-3"	126	STR.					
A532	20	4'-3"	89	STR.					
A533	4	7'-7"	32	STR.					
A534	*10	▲2'-8" TO 5'-0"	40	STR.	*2 SERIES OF 5		▲7" INCREMENTS		
A535	23	8'-7"	206	11	4'-3"				
A536	33	1'-10"	63	G	7⅛"	10"	7½"		
A537	2	14'-9"	31	STR.					
A538	12	16'-5"	206	STR.					
A539	12	24'-8"	308	STR.					
A540	28	11'-8"	341	3	3'-0"	2'-7"			
A545	2	7'-6"	16	STR.					
A546	2	23'-2"	48	STR.					
A547	2	18'-9"	39	STR.					
A548	2	14'-10"	31	STR.					
A549	4	8'-10"	37	STR.					
A550	4	10'-8"	45	3	2'-6"	2'-7"			
		TOTAL WEIGHT=	25,830						

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E

LIGHT POLE SUPPORT

MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E
LPE 801	8	2'-8"	57	10	10"	8"			
LPE 802	8	2'-7"	55	6	2'-0"	9"	——		
LPE 803	8	3'-1"	66	16	2'-3"	8"	8½		
LPE 804	6	2'-5"	39	7	1'-3"	1'-4"	——	10½	
LPE 805	6	2'-5"	39	STR.					
LPE 501	5	2'-5"	13	14	10½"	6½"	8¼		
LPE 502	5	2'-2"	11	15	1'-5½"	6"	7⅞		
LPE 503	2	1'-6"	3	STR.					
LPE 504	4	4'-6"	19	STR.					
LPE 505	4	6'-5"	27	G	2'-11"	10"	2'-11"		
LPE 506	8	1'-0"	9	STR.					
LPE 507	6	1'-7"	10	5	7½"	7"	1¼		
SE801	10	5'-11"	158	2	5'-0"				
SE501	5	10'-0"	52	STR.					
		BARS							
		EPOXY COATED							
		TOTAL:	558						

LIGHT POLE SUPPORT BARS ARE INCLUDED WITH SUPERSTRUCTURE BARS FOR PAYMENT (ALL ARE EPOXY COATED)

REINFORCING STEEL SAMPLES: Refer to C.M.S. Sections 106.03, 700, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel, 17/17 spliced in accordance with 509.08.

FRANKLIN CONSULTANTS INC.
Consulting Engineers
COLUMBUS, OHIO

REINFORCING STEEL

BRIDGE No. FRA-104-1279
S.R. 104 OVER ALUM CREEK
FRANKLIN COUNTY S.R. 104

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HM	SRJ	SRJ	S.M.	JT	1/4-79	

CALC BY AWB DATE 10-24-81
CHKD BY JJB DATE 12-2-81

FHWA REGION	STATE	PROJECT	
5	OHIO		

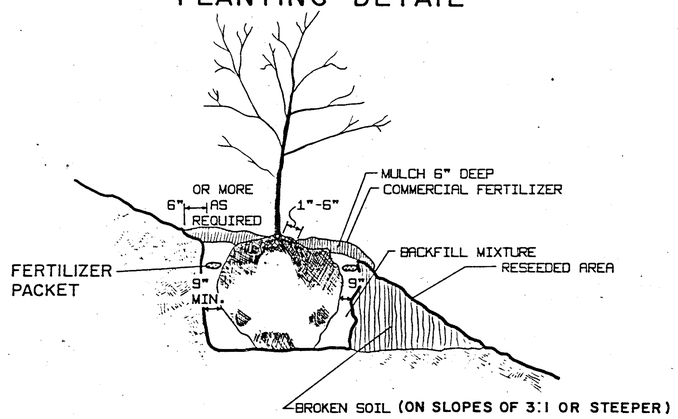
211/254

2/13

FRANKLIN COUNTY
FRA-104-12.41

GENERAL NOTES

PLANTING DETAIL



THE TOP OF THE ROOT BALL SHALL BE 2 INCH ABOVE THE NORMAL GROUND LINE IN AVERAGE SOILS, 3 INCHES IN HEAVY CLAY SOILS AND 6 INCHES WHERE IMPERMEABILITY IS ENCOUNTERED.

ON SLOPES WHERE HEAVY CLAY AND IMPERMEABLE SOILS ARE PRESENT THE DOWN HILL SIDE OF THE POCKET HOLE SHALL BE BROKEN OR LOOSENED AND RETURNED TO ITS NATURAL GRADE TO PROVIDE DRAINAGE FOR THE HOLE.

PLANTING HOLE AND BED PREPARATION

AFTER THE LAYOUT IS APPROVED BY THE ENGINEER, SHRUB BEDS SHALL BE CULTIVATED TO A MINIMUM DEPTH OF SIX (6) INCHES BY A PLOW, HARROW OR DISC, OR OTHER METHOD APPROVED BY THE ENGINEER. THE CULTIVATION SHALL TAKE PLACE AS FAR IN ADVANCE OF THE PLANTING OPERATION AS POSSIBLE. WHERE SHRUBS ARE SHOWN, INDIVIDUAL HOLES SHALL BE DUG ON CENTERS AS SHOWN ON THE PLANS. THESE HOLES SHALL ALLOW FOR A MINIMUM OF NINE (9) INCHES OF BACKFILL MIXTURE AROUND THE SIDES OF THE BALLS. THE BOTTOM OF THE HOLE SHALL BE NO DEEPER THAN THE BALL TO BE PLANTED. THE MATERIAL REMOVED FROM THE HOLES SHALL BE TAKEN FROM THE PROJECT IF IT IS FOUND TO BE UNACCEPTABLE FOR USE AS BACKFILL AS DETERMINED BY THE ENGINEER. THE PLANT SHALL THEN BE SET AND THE HOLE FILLED WITH BACKFILL MIXTURE, AND THE PLANTING OPERATION PERFORMED AS SPECIFIED IN ITEMS 662.17 AND 662.18. ALL EXCESS DIRT SHALL BE REMOVED FROM THE SITE.

EXISTING TREES AND SHRUBS SHALL TAKE PRIORITY OVER PROPOSED PLANTINGS. THE LOCATIONS OF THE PROPOSED TREES AND SHRUBS ARE APPROXIMATE AND MAY BE REARRANGED AT THE DIRECTION OF THE ENGINEER WHEN OBSTRUCTIONS ARE ENCOUNTERED.

IF AN AUGER IS USED IN DIGGING POCKET HOLES AND POLISHED (SHINY) SIDES OCCUR IN CLAY OR HEAVY SOILS, THE USE OF SUCH AN AUGER SHALL BE DISCONTINUED AND THE HOLES SHALL BE DUG WITH A BACKHOE OR ANOTHER APPROVED METHOD.

BACKFILL NO. 1 - THE BACKFILL MIXTURE USED TO FILL POCKET HOLES IN LIGHT AND MEDIUM SOILS (SAND & AVERAGE) SHALL CONSIST BY VOLUME OF: 2 PARTS *SOIL CONDITIONER, 2 PARTS COMPRESSED SPHAGNUM PEAT OR 3 PARTS SEDGE PEAT, AND 2 PARTS APPROVED TOPSOIL.

BACKFILL NO. 2 - THE BACKFILL MIXTURE USED TO FILL POCKET HOLES IN HEAVY SOILS (CLAY & SHALE) SHALL CONSIST BY VOLUME OF : 1 PART *SOIL CONDITIONER, 1 PART COMPRESSED SPHAGNUM PEAT OR 2 PARTS SEDGE PEAT, AND 2 PARTS APPROVED TOPSOIL.

INCORPORATE THOROUGHLY INTO THE BACKFILL MIXTURES 5 LBS. OF COMMERCIAL FERTILIZER (0-20-20) PER CUBIC YARD. THE ENGINEER, AFTER CONSULTATION WITH THE LANDSCAPE ARCHITECT, SHALL DETERMINE THE LOCATIONS WHERE THE BACKFILL MIXTURES SHALL BE USED.

SCHEDULING

ALL DIGGING AND PLANTING OF DECIDUOUS PLANTS SHALL BE DONE AFTER OCTOBER 1, AND BEFORE JUNE 1. EVERGREENS SHALL BE DUG AND PLANTED AFTER MARCH 15, AND BEFORE JUNE 1.

ITEMS 662 & 663

ALL TREES AND SHRUBS SHALL BE SPECIMEN (NO. 1 GRADE) PLANTS WITH GROWTH AND BRANCHING HABIT TYPICAL OF THE SPECIES SPECIFIED. NO PARK GRADE (NO. 2 OR 3 GRADE) PLANTS WILL BE ACCEPTED.

FERTILIZER

FOUR OUNCE (8 YEAR) COMMERCIAL FERTILIZER PACKETS USED IN PLANTING OPERATION SHALL BE DELIVERED DRY IN ORIGINAL, UNOPENED CONTAINERS. FERTILIZER ANALYSIS SHALL BE 16% NITROGEN, 8% PHOSPHORIC ACID AND 16% POTASH. FERTILIZER SHALL BE OF A SLOW RELEASE TYPE IN A POLYETHYLENE PERFORATED PACKET WITH MICROPORE HOLES.

THE PACKETS SHALL BE PLACED 6 TO 8 INCHES DEEP AND EVENLY SPACED AROUND THE PERIMETER OF THE PLANTING HOLE, ADJACENT TO THE BALL OR ROOT MASS BUT NOT IN DIRECT CONTACT WITH THE ROOTS. THE PACKETS SHALL NOT BE CUT, RIPPED OR DAMAGED.

EACH SHRUB OR TREE SHALL BE FERTILIZED ACCORDING TO THE FOLLOWING SCHEDULE:

SHRUBS 1'-2'	2 PACKETS
SHRUBS 2'-3'	2 PACKETS
SHRUBS 3'-4'	3 PACKETS
TREES 5'-6'	3 PACKETS
TREES 6'-8'	4 PACKETS
TREES 1½"-2" CAL.	2 PACKETS
TREES 2'-2½" CAL.	3 PACKETS
TREES 2½-3" CAL.	4 PACKETS
TREES 3"-3½" CAL.	5 PACKETS

IF IT BECOMES NECESSARY TO REMOVE AND REPLACE MISSING, DEAD OR UNHEALTHY PLANTS, ALL OLD PACKETS SHALL BE REPLACED WITH NEW PACKETS.

THE FOUR OUNCE 16-8-16 FERTILIZER PACKETS SHALL BE DESIGNATED BY THE MANUFACTURER TO BE EFFECTIVE FOR EIGHT YEARS. PACKETS SUCH AS "EEESY GROW", "THE UNIQUE FEEDER" OR AN APPROVED EQUAL SHALL BE USED.

ITEM 661.21 WATERING

WATER SHALL BE FURNISHED BY THE CONTRACTOR AND ALL PLANT MATERIAL SHALL BE WATERED THOROUGHLY AT THE TIME OF PLANTING REGARDLESS OF AMPLE MOISTURE CONTENT OF THE SURROUNDING SOIL. SUSPENSION OF WATERING OPERATIONS BECAUSE OF RAINFALL WILL BE DETERMINED BY THE ENGINEER IN CONSULTATION WITH THE LANDSCAPE ARCHITECT. AN AVERAGE OF ONE INCH OF RAINFALL PER WEEK SHALL BE CONSIDERED ADEQUATE. DETERMINATION OF RAINFALL SHALL BE BASED UPON THE USE OF A RAIN GAUGE APPROVED BY THE PROJECT ENGINEER.

MULCH

MULCH SHALL BE AS PER ITEM 661.04 WITH THE FOLLOWING EXCEPTIONS: WOOD SHAVINGS OR PEAT MOSS OR CORN COBS SHALL NOT BE USED AS A TOP MULCH. WOOD CHIPS SHALL BE AGED (STOCKPILED) AT LEAST 6 MONTHS PRIOR TO PLACEMENT AROUND PLANTS. MULCH SHALL BE SIX INCHES LOOSE MEASUREMENT. AFTER MULCHING, COMMERCIAL FERTILIZER (12-12-12) SHALL BE APPLIED AS SPECIFIED IN ITEM 662.18.

PRUNING

ALL PLANTS SHALL BE PRUNED WITHIN SEVEN DAYS AFTER PLANTING. THE PRUNING SHALL BE DONE ACCORDING TO SELECTED TYPICAL PLANTS OF EACH SPECIES PRUNED AND USED AS A SAMPLE AS DIRECTED BY THE ENGINEER.

ANY CANDLE GROWTH ON NEEDLE EVERGREENS WHICH EXCEED 3 INCHES AT PLANTING TIME SHALL BE CUT BACK TO THAT LENGTH IMMEDIATELY.

STORAGE AREAS

THE CONTRACTOR MAY STORE MATERIALS AND EQUIPMENT 30 FEET FROM PAVEMENT, BEHIND GUARDRAIL AND WITHIN OR ADJACENT TO THE PROJECT LIMITS BY OBTAINING OFFICAL PERMISSION OF THE ENGINEER. NO PEDESTRIAN OF VEHICULAR TRAFFIC MAY BE IMPEDED NOR HAZARDOUS CONDITION CREATED AS A RESULT OF SUCH STORAGE.

THE STORAGE OF ALL DUG PLANTS SHALL CONFORM TO 661.14 WHETHER WITHIN THE PROJECT LIMITS, ADJACENT THERETO, OR AT SOME OTHER LOCATION. THESE AREAS SHALL BE DESIGNATED PRIOR TO ACTUAL PLANT STORAGE AND SHALL BE OPEN TO INSPECTION UPON REQUEST OF THE ENGINEER.

STAKING MATERIALS

ALL TREES SHALL BE STAKED AS SHOWN IN THE STANDARD DRAWING LA-2. STAKING OF SMALL ORNAMENTAL TREES SHALL BE SIMILAR TO THAT OF EVERGREENS. ALL DECIDUOUS TREE TRUNKS ARE TO BE TREATED WITH LINDANE SPRAY BEFORE WRAPPING.

PLANTING PERIOD OF ESTABLISHMENT

BEFORE FINAL INSPECTION, ALL PLANTINGS SHALL BE IN PLACE AND UNDER THE CARE OF THE CONTRACTOR FOR A PERIOD OF ESTABLISHMENT. THIS PERIOD SHALL BEGIN IMMEDIATELY UPON COMPLETION OF THE PLANTING OPERATION FOR ANY PLANT OR SPECIES GROUP AND CONTINUE UNTIL OCTOBER 1. IN NO CASE SHALL IT BE LESS THAN ONE GROWING SEASON, JUNE 1 TO OCTOBER 1.

DURING THIS PERIOD OF ESTABLISHMENT, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW SUCH HORTICULTURAL PRACTICES AS REQUIRED TO ASSURE THE VIGOR AND GROWTH OF THE TRANSPLANTED MATERIAL. THIS CARE SHALL INCLUDE WATERING, REMULCHING, RESTAKING, GUYING AND CULTIVATING. THERE SHALL BE A MINIMUM OF TWO WEEDING AND MOWING (BED EDGES, AROUND TREES AND GUY STAKES) PROGRAMS OF SUCH INTENSITY AS TO COMPLETELY RID THE PLANTED AND MULCHED AREAS OF WEEDS AND GRASSES. THE FIRST PROGRAM SHALL BEGIN ON OR ABOUT JUNE 15 AND THE OTHER APPROXIMATELY 8 WEEKS LATER.

EACH PLANT SHALL HAVE SUFFICIENT WATER TO KEEP IT IN A HEALTHY, GROWING CONDITION. IF LOCAL WEATHER CONDITIONS WARRANT, THE ENGINEER MAY REQUIRE WEEKLY WATERING. WHEN WATERING IS REQUIRED, A SCHEDULE FOR WATERING EACH PLANT SHALL BE SUPPLIED TO AND APPROVED BY THE ENGINEER. THE WATER SHALL BE APPLIED IN SUCH A MANNER AS TO SATURATE THE ROOT AND MULCHED AREA OF EACH PLANT WITHOUT CAUSING RUNOFF (SEE WATERING TABLE). IN CASE OF FALL PLANTINGS, THESE WATERINGS SHALL CONTINUE UNTIL SOIL FREEZE-UP AND RECOMMENCE AFTER THE SPRING THAW UNLESS OTHERWISE DIRECTED.

ON OR ABOUT SEPTEMBER 15, THE ENGINEER SHALL INSPECT THE PLANTING AND SUPPLY THE CONTRACTOR WITH A LISTING OF THOSE PLANTS HAVING DIED, DIED BACK BEYOND NORMAL PRUNING LINES OR ARE MISSING FROM THE PLANTING. THE CONTRACTOR SHALL MAKE THE REPLANTING AS REQUIRED AND IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE ORIGINAL MATERIAL. THESE REPLACEMENTS ARE NOT SUBJECT TO THE PERIOD OF ESTABLISHMENT, HOWEVER, PLANTS PLANTED INITIALLY IN THE FALL WHICH HAVE DIED BEFORE THE SPRING PLANTING SEASON SHALL BE REPLACED IMMEDIATELY AND ARE SUBJECT TO THE ESTABLISHMENT PERIOD.

AFTER REPLACEMENTS HAVE BEEN PLANTED, THE FINAL INSPECTION SHALL BE MADE AND THE ACTUAL COUNT OF LIVE PLANTS OF EACH VARIETY AND SPECIES LISTED FOR PAYMENT.

WATERING TABLE

SHRUBS 1'-2' SIZE	2 GALLON PER PLANT
SHRUBS 2'-3' SIZE	4 GALLONS PER PLANT
SHRUBS 4'-5' SIZE	7 GALLONS PER PLANT
TREES 5'-6' SIZE	10 GALLONS PER PLANT
TREES 1-1/4" - 1-1/2" CAL.	15 GALLONS PER PLANT
TREES 1-1/2" - 2" CAL.	20 GALLONS PER PLANT
TREES 2"-3" CAL.	25 GALLONS PER PLANT
TREES 3"-4" CAL.	30 GALLONS PER PLANT

THE METHOD OF MEASUREMENT FOR SUMMER WATERING SHALL BE BY APPROVED METERING FROM TANKS OR BY INDIVIDUALLY MEASURED CONTAINERS TO EACH PLANT TO BE WATERED. PAYMENT FOR PLANTING PERIOD OF ESTABLISHMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS 661, 662 AND 663.

*SOIL CONDITIONER

A SOIL CONDITIONER SUCH AS "TURFACE," "LUSOIL," "TERRAGREEN," OR AN APPROVED EQUAL SHALL BE USED. THE PARTICLE SIZE GRADATION OF THE SOIL CONDITIONER SHALL BE AT LEAST 80% PASSING A NO. 6 SIEVE AND NOT MORE THAN 5% PASSING A NO. 50 SIEVE. ALTERNATE SHALL BE HORTICULTURAL PERLITE.

HERBICIDES

AFTER PLANTING AND FERTILIZING HAVE BEEN COMPLETED AND APPROVED, THE AREA OF THE BED SHALL BE TREATED WITH SIMAZINE, DYMID OR AN APPROVED EQUAL HERBICIDE. RATE AND METHOD OF APPLICATION SHALL BE IN STRICT CONFORMANCE WITH MANUFACTURER'S INSTRUCTIONS AND UNDER THE DIRECT SUPERVISION OF A PESTICICE APPLICATOR LICENSED BY THE STATE OF OHIO.

TOPSOIL TESTING

TOPSOIL FAILING CURRENT TEST STANDARDS MAY BE ALTERED, UPON APPROVAL OF THE ENGINEER, BY ADDING APPROVED CONDITIONERS TO CORRECT THE DEFICIENCIES. TOPSOIL SHALL BE FREE OF JOHNSON GRASS AND CONFORM TO ITEM 653 AS DETERMINED BY THE ENGINEER.

AWB 12/02/81

CALC BY _____ DATE _____
CHKD BY HWB DATE 9-6-79

FHWA REGION	STATE	PROJECT	
5	OHIO		

212/254

3/13

FRANKLIN COUNTY
FRA-104-10.57

GENERAL NOTES

RENOVATION OF EXISTING GRASS AREAS

1. AREAS WHICH ARE DAMAGED DUE TO THE STORAGE OR PLANTING OPERATIONS UNDER THIS CONTRACT ARE TO BE UNIFORMLY COVERED WITH ONE (1) INCH OF TOPSOIL (653.02).

2. FERTILIZER (12-12-12), 659.03, SHALL BE APPLIED AT THE RATE OF 15 POUNDS PER 1,000 SQUARE FEET AND WORKED INTO THE SOIL TO A DEPTH OF THREE (3) INCHES.

3. THE FOLLOWING MIXTURE OF SEED SHALL BE WORKED INTO THE SOIL FOR A DEPTH OF 1/4 INCH, AND AT THE RATE OF THREE (3) POUNDS PER 1,000 SQUARE FEET:

45% CREEPING RED FESCUE (FESTUCA RUBRA)
40% KENTUCKY BLUEGRASS (POA PRATENSIS)
5% WHITE DUTCH CLOVER (TRIFOLIUM REPENS)
5% BIRDSFOOT TREFOLIA (LOTUS CORNICULATUS)
5% PERENNIAL RYEGRASS (LOLIUM PERENNE)

4. MULCH SHALL BE AS SPECIFIED IN 659.09.

5. EXTENT OF AREAS TO BE RENOVATED SHALL BE DETERMINED BY THE ENGINEER.

EARTH DAMS RESULTING FROM THE PLANTING OF ALL PLANTS SHALL BE HAND GRADED, SEEDED, FERTILIZED AND MULCHED AS OUTLINED ABOVE UNDER "RENOVATION OF EXISTING GRASS AREA."

ALL AREAS TO BE RENOVATED, PLUS THE IMMEDIATE ADJACENT AREA, SHALL BE MOWED TO A HEIGHT OF TWO (2) INCHES BEFORE ACTUAL OPERATION OF SEEDING AND RENOVATING EXISTING SOIL IN ACCORDANCE WITH ITEM 655. ALL AREAS TO BE RENOVATED SHALL BE DONE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE.

METHOD OF PAYMENT

ALL EQUIPMENT, LABOR AND MATERIALS SHALL BE INCLUDED IN THE BID PRICE PAID FOR THE INDIVIDUAL VINE, SHRUB OR TREE EXCEPT AS OTHERWISE NOTED.

SPECIFICATIONS

ALL OPERATIONS NOT HEREIN COVERED SHALL BE IN ACCORDANCE WITH THE CURRENT "STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS."

PLANTING

CONTAINER GROWN STOCK SHALL NOT BE ACCEPTED FOR MAJOR DECIDUOUS TREES AND EVERGREENS. CONTAINER GROWN STOCK IN ACCORDANCE WITH AAN STANDARDS AND ODOT APPROVAL SHALL BE ACCEPTED FOR ORNAMENTAL TREES AND SHRUBS. CENTER OF PLANT MATERIAL SHALL BE PLANTED NO CLOSER THAN FIVE (5) FEET OF RIGHT-OF-WAY FENCES.

NO PLANT MATERIAL WITH A MATURE CALIPER GREATER THAN FOUR (4) INCHES SHALL BE PLANTED CLOSER THAN THIRTY (30) FEET FROM EDGE OF PAVEMENT OR AS NOTED ON THE PLAN. THESE DISTANCES SHALL BE MEASURED FROM OUTSIDE OF TRUNK TO EDGE OF PAVEMENT. NO TREES SHALL BE PLANTED CLOSER THAN FIVE (5) FEET OF CENTERLINE OF DITCHES. THE BOTTOM OF THE POCKET HOLES. SHALL NOT BE BELOW THE FLOW-LINE OF THE DITCH.

APPROVALS

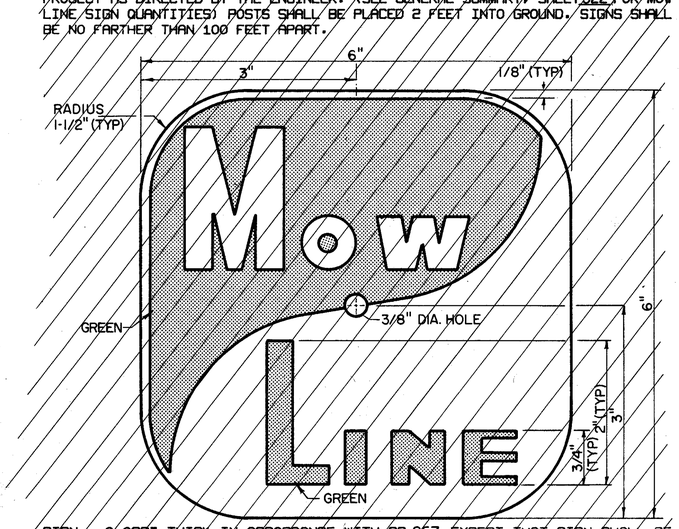
ALL APPROVALS OR CHANGES MADE BY THE ENGINEER SHALL BE MADE IN CONSULTATION WITH THE LANDSCAPE ARCHITECT.

COOPERATION

THE CONTRACTOR IS HEREBY ADVISED THAT THERE MAY BE ANOTHER CONTRACTOR OPERATING IN CERTAIN AREAS OF THIS PROJECT AT THE SAME TIME WORK IS BEING CARRIED ON UNDER THIS CONTRACT. THE CONTRACTORS SHALL COOPERATE ONE WITH THE OTHER SO THAT INTERFERENCE AND INCONVENIENCE TO EACH BE HELD TO A MINUMUM.

ITEM 857 MOW LINE SIGN

SHALL CONSIST OF SUPPLYING ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO PROVIDE THE MOW LINE SIGN CONFORMING TO DETAIL DRAWING AND SS 857 COMPLETE AND IN PLACE ON NO. 2, 5 FT. DRIVE POST (712.20) AT LOCATIONS ALONG THE PROJECT AS DIRECTED BY THE ENGINEER. (SEE GENERAL SUMMARY, SHEET 322 FOR MOW LINE SIGN QUANTITIES) POSTS SHALL BE PLACED 2 FEET INTO GROUND. SIGNS SHALL BE NO FARTHER THAN 100 FEET APART.



SIGN - 0.063" THICK IN ACCORDANCE WITH SS 857 EXCEPT THAT SIGN SHALL BE NON-REFLECTIVE SHEETING OR GOOD QUALITY ENAMEL PAINT. SIGNS SHALL BE ORIENTED PARALLEL TO MOW LINE WITH FACE TO MOW AREA.

FHWA REGION	STATE	PROJECT	
5	OHIO		

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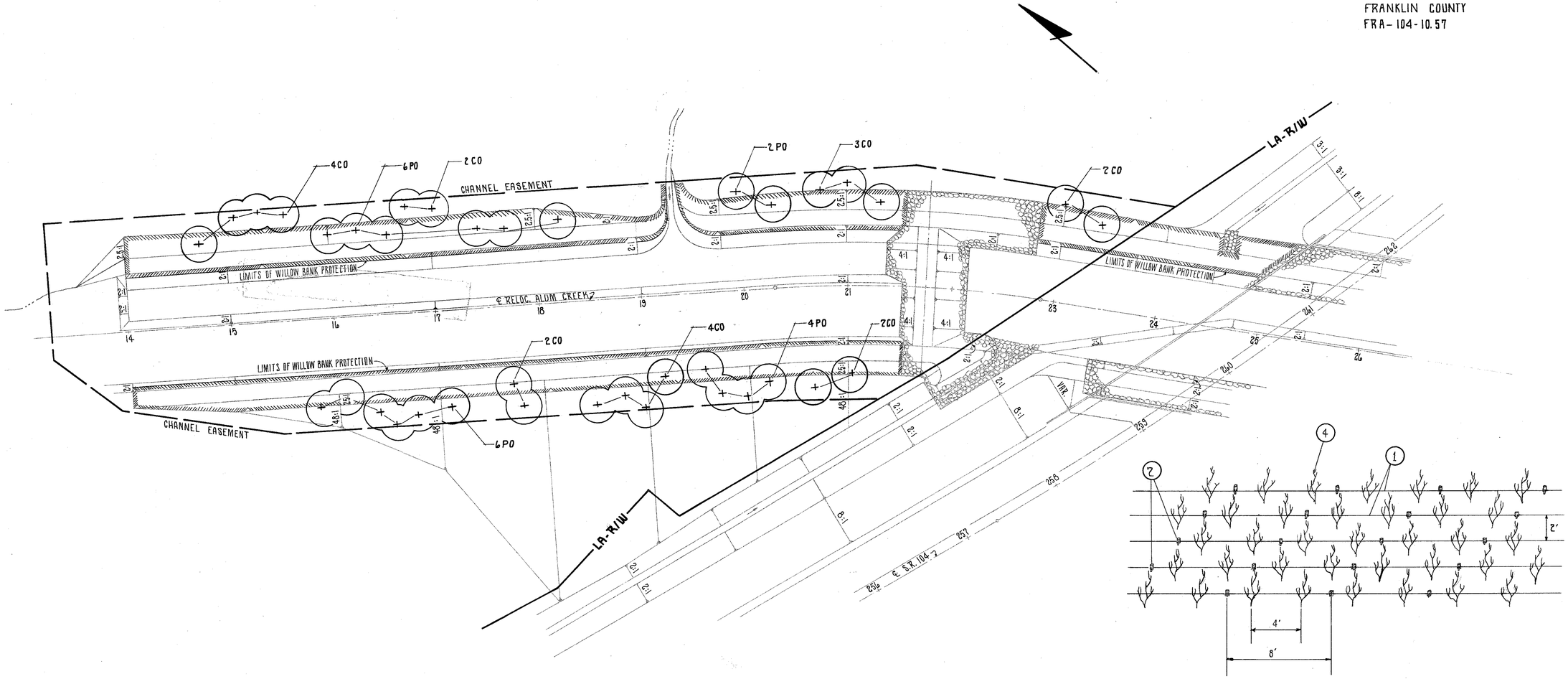
FRA-104-10.57



SHOW DETAIL OF WILLOW BANK PROTECTION

AREA OF WILLOW BANK PROTECTION
RT SIDE
[½(21+32)100+32x200+½(32+33)100+33x350]÷9= 2450 SY.
LT. SIDE
[½(41+38)100+(38x100)+½(38+41)200+½(41+23)100+½(23+5)39+(5x20)]÷9= 2116.2 SY.
[½(39+48)124+(40x58)+½(41+38)125+38x(93+131))½+½(39+8)55]÷9= 1944.4 SY.
TOTAL= 6510.6 SY.
ITEM SPECIAL WILLOW BANK PROTECTION = 6761 SY.

NOTE : ALL QUANTITIES ARE BRM PARTICIPATION .

THE ESTIMATED SQUARE YARDS OF WILLOW BANK PROTECTION IS APPROXIMATE AND THE ACTUAL LIMITS WILL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION. THE SQUARE YARDS OF WILLOW BANK PROTECTION WILLBE DETERMINED BY FINAL MEASUREMENTS.

THE METHOD OF OPERATION SHALL BE AS FOLLOWS:(1) FERTILIZER TO BE INCORPORATED INTO SOIL A DEPTH OF 2"(2) PLACE WILLOW BRANCHES. (3) SEED WITH GRASS AS PER PLAN.(4) PLACE 2" STRAW MULCH.(5) TIE DOWN AS PER PLAN. THE ENTIRE OPERATION SHALL BE COMPLETED WITHIN 48 HOURS AFTER THE PLACING OF THE WILLOW BRANCHES. ANY CUT BRANCHES FROM THE WILLOW BRANCHES SHALL BE PLACED ON THE CHANNEL BANK AS PER PLAN, IF SO DIRECTED BY THE ENGINEER.

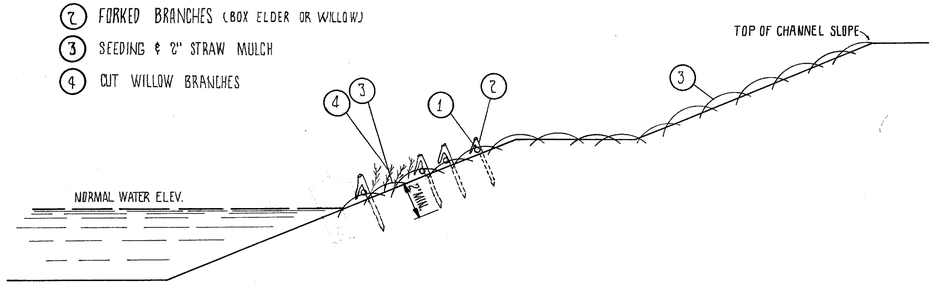
THE MIXTURE OF SEEDS FOR THE BANK PROTECTION SHALL BE 15% ALSIKE, 20% REED CANARY, 15% YELLOW CLOVER, 20% ALTA FESCUE, 20% KENTUCKY BLUE GRASS, 10% PRENNIAL RYE. ALL LEGUMES TO BE INOCULATED. RATE OF APPLICATION FOR SEEDING SHALL BE 4 LBS. PER 1000 SQ.FT. AFTER JUNE 1ST; 2 LBS. PER 1000 SQ.FT. BEFORE JUNE 1ST. FERTILIZER SHALL BE 10-6-4 APPLIED AT THE RATE OF 20 LBS. PER 1000 SQ.FT. ESTIMATED 0.6 TONS.

BASIS OF PAYMENT SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR ITEM SPECIAL "WILLOW BANK PROTECTION" WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR LABOR, EQUIPMENT, & MATERIAL SPECIFIED ABOVE.

QUANT.	KEY	ITEM	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION
			MAJOR DECIDUOUS TREES			
19	CO	GG3	CELTIS OCCIDENTALIS	COMMON HACKBERRY	1"-1½" CAL.	B & B 20"
18	PO	GG3	PLATANUS OCCIDENTALIS	AMERICAN PLANETREE	1"-1½" CAL.	B & B 20"

ITEM	TOTAL	UNIT	DESCRIPTION
SPECIAL	6,761	SQ.YD.	WILLOW BANK PROTECTION

1. NO. 11 GAGE SUPPORT WIRE
2. FORKED BRANCHES (BOX ELDER OR WILLOW)
3. SEEDING & 2" STRAW MULCH
4. CUT WILLOW BRANCHES



RELOCATED ALUM CREEK LANDSCAPING

FHWA REGION	STATE	PROJECT	
5	OHIO		

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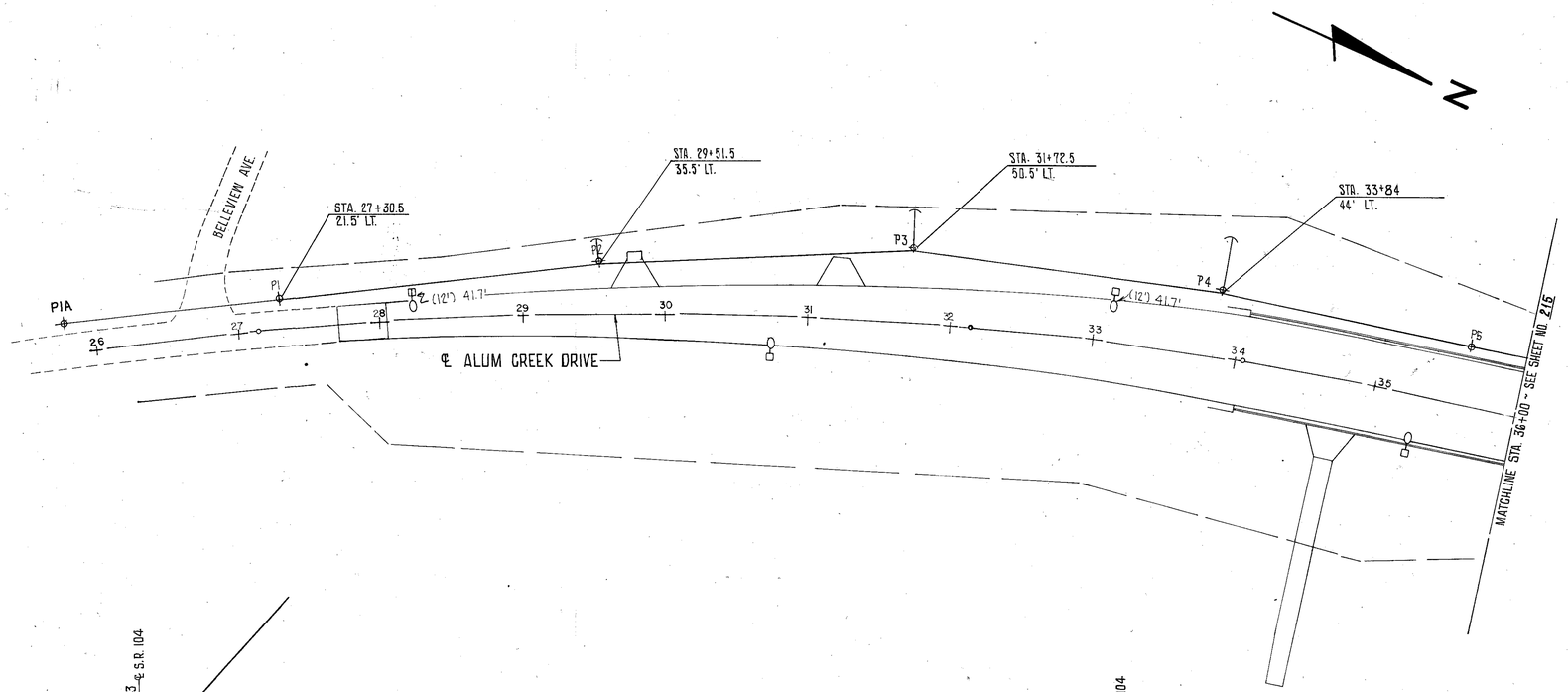
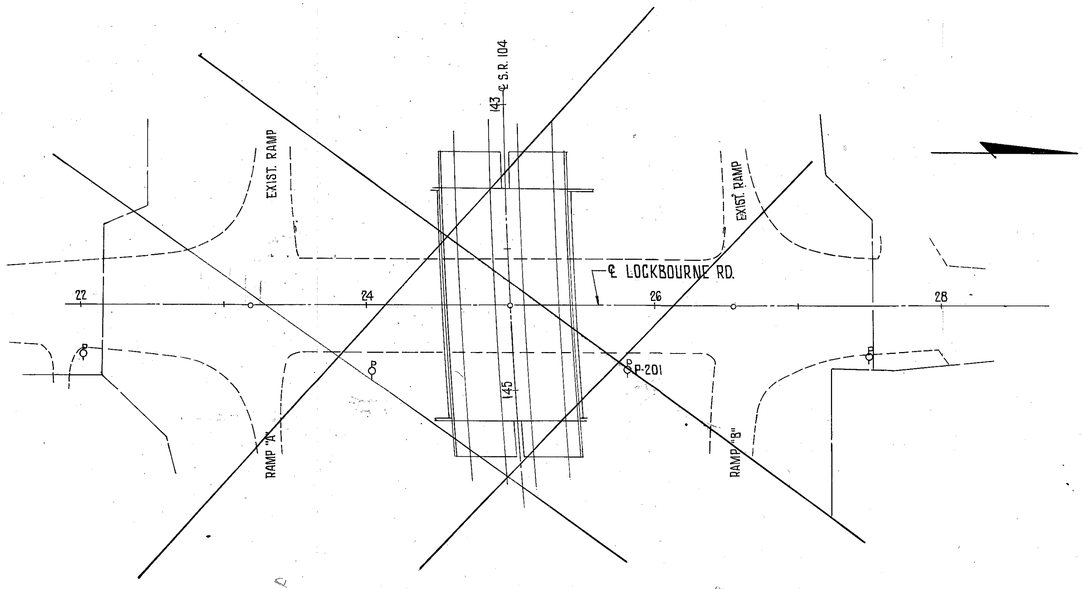
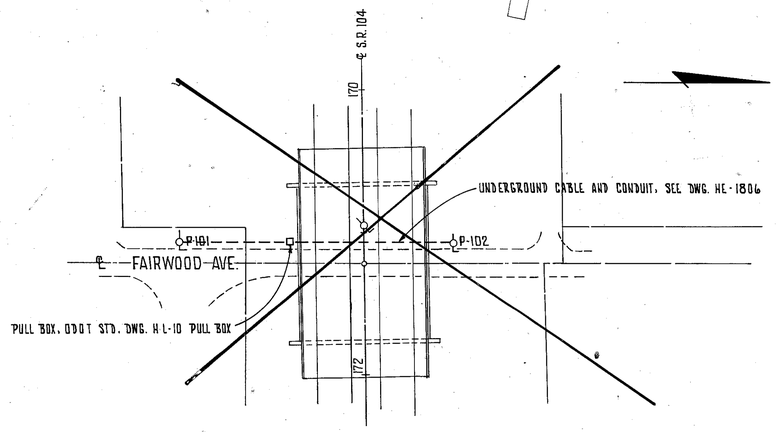
FRANKLIN COUNTY
FRA 104-10.57







LEGEND

GUY

GUY STUB

ELECTRICAL PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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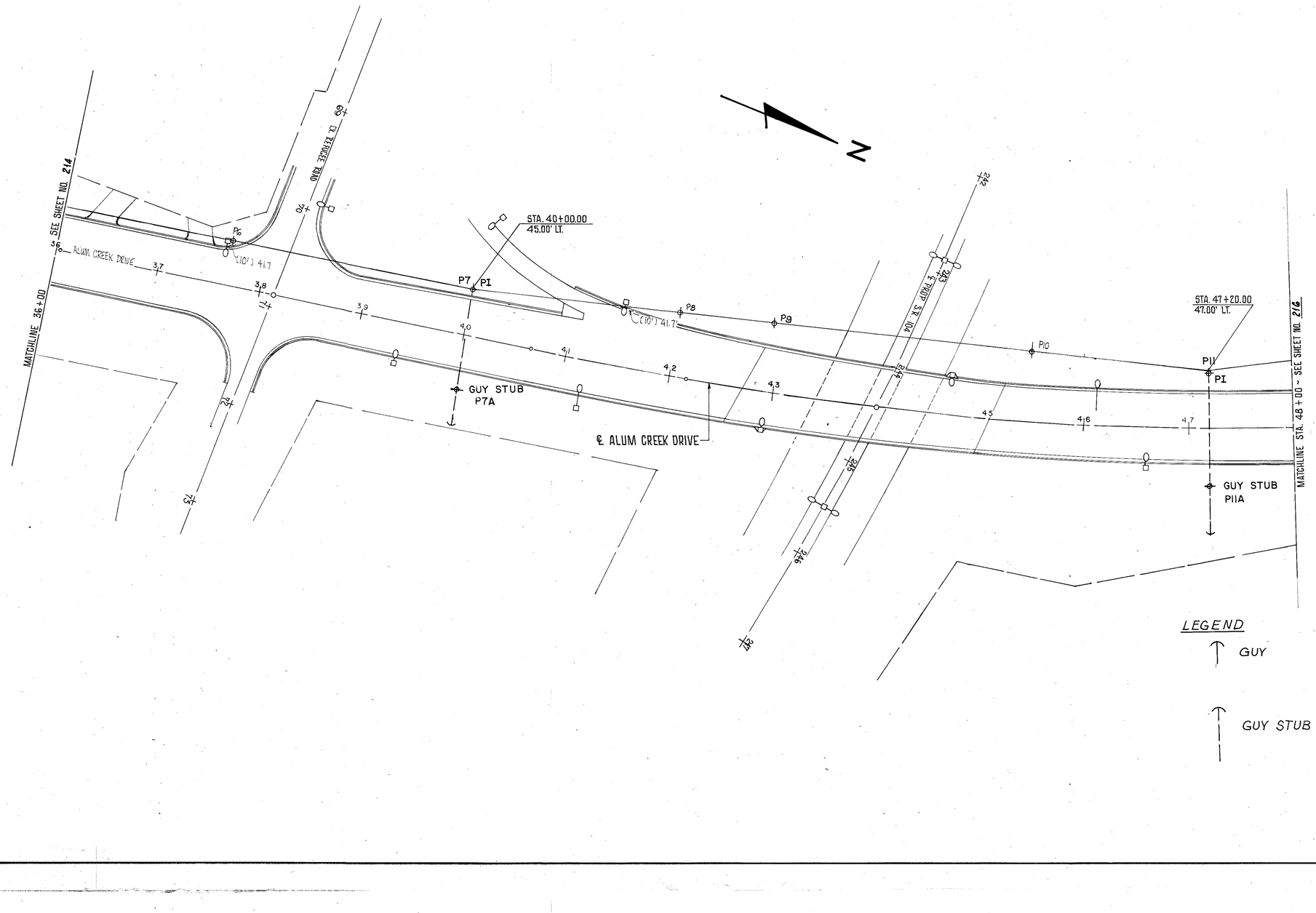
FRANKLIN COUNTY
FRA 104-10.57



ELECTRICAL PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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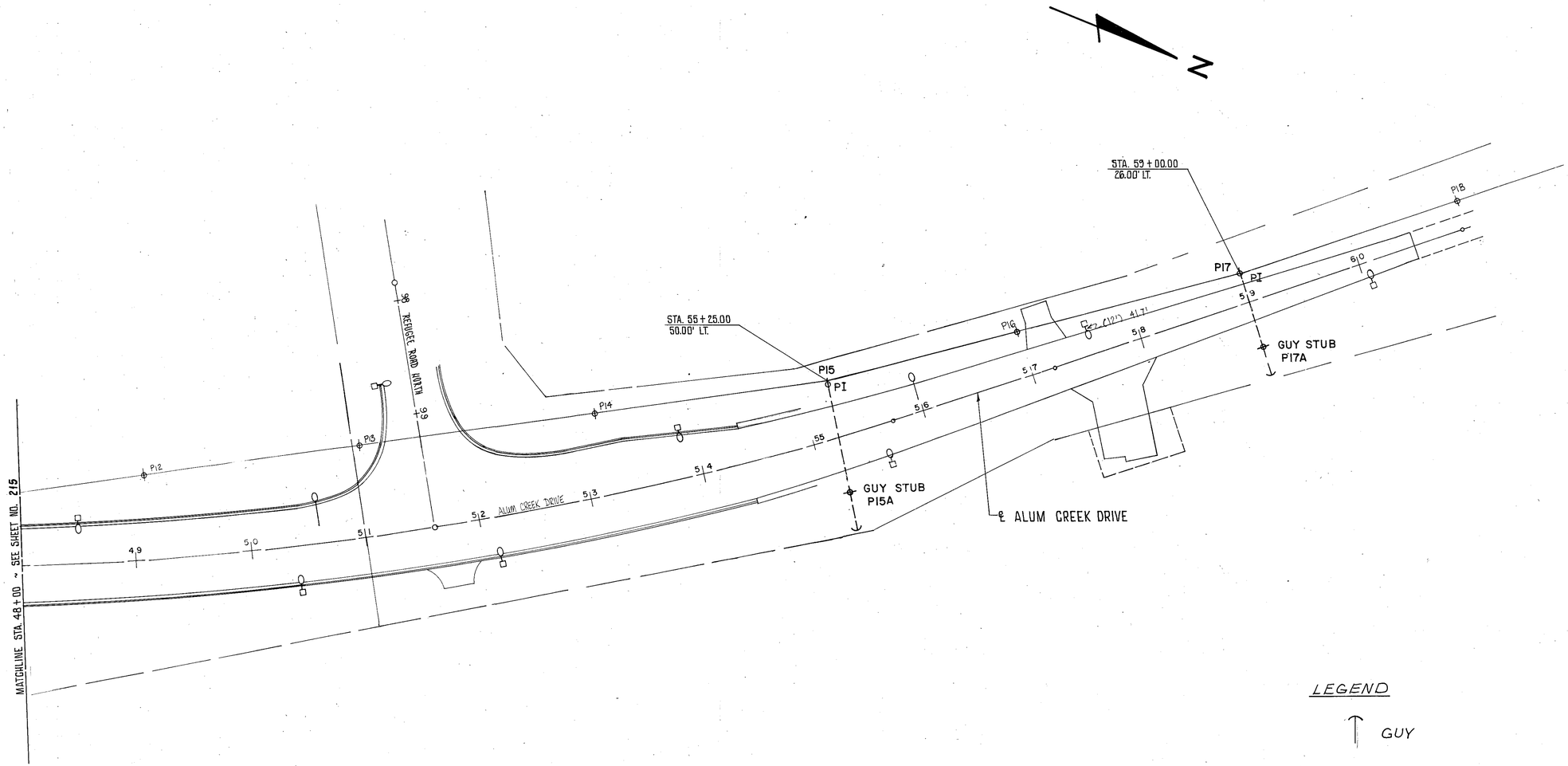
FRANKLIN COUNTY
FRA 104-10.57



LEGEND

GUY

GUY STUB

ELECTRICAL PLAN

GENERAL SUMMARY - POWER LINES

CALCULATED BY CHG DATE 4/22/83
CHECKED BY MLD DATE 4/22/83

FRA-104-12.41 | OHIO | FHWA REGION 5 | FEDERAL PROJECT

217/254

94% City
90.5% Normal

SHEET NUMBERS	ITEM NO.	TOTAL QUANTITY M Funds	UNIT	DESCRIPTION
217				
1	SPEC.	1	EACH	75' HIGH WOOD POLE, CLASS 2, TYPE T
1	SPEC.	1	EACH	80' HIGH WOOD POLE, CLASS 2, TYPE T
1	SPEC.	1	EACH	80' HIGH WOOD POLE, CLASS 2, TYPE SA, 4 DEGREE ANGLE, VARIABLE GUY LEADS
1	SPEC.	1	EACH	80' HIGH WOOD POLE, CLASS 2, TYPE SA, 10 DEGREE ANGLE, VARIABLE GUY LEADS
1	SPEC.	1	EACH	85' HIGH WOOD POLE, CLASS 2, TYPE SA, 4 DEGREE ANGLE, 35' GUY LEAD
2	SPEC.	2	EACH	95' HIGH WOOD POLE, CLASS 2, TYPE T
1	SPEC.	1	EACH	90' HIGH WOOD POLE, CLASS 2, TYPE SA, 6 DEGREE ANGLE, VARIABLE GUY LEADS
1	SPEC.	1	EACH	45' HIGH WOOD GUY POLE, CLASS 3
3	SPEC.	3	EACH	85' HIGH WOOD POLE, CLASS 2, TYPE T
1	SPEC.	1	EACH	75' HIGH WOOD POLE, CLASS 2, TYPE SA, 13 DEGREE ANGLE, VARIABLE GUY LEADS
1	SPEC.	1	EACH	45' HIGH WOOD GUY POLE, CLASS 3, 40' GUY LEAD
1	SPEC.	1	EACH	70' HIGH WOOD POLE, CLASS 2, TYPE T, 25' & 35' GUY LEADS
1	SPEC.	1	EACH	70' HIGH WOOD POLE, CLASS 2, TYPE T
1	SPEC.	1	EACH	70' HIGH WOOD POLE, CLASS 2, TYPE DE, 45', 55', & 65' GUY LEADS
1	SPEC.	1	EACH	55' HIGH WOOD POLE, CLASS 3, TYPE SA, 7 DEGREE ANGLE, VARIABLE GUY LEAD
1	SPEC.	1	EACH	45' HIGH WOOD GUY POLE, CLASS 3, 20' GUY LEAD
2	SPEC.	2	EACH	55' HIGH WOOD POLE, CLASS 3, TYPE R-T
1	SPEC.	1	EACH	55' HIGH WOOD POLE, CLASS 3, TYPE R-SA, 4 DEGREE ANGLE, VARIABLE GUY LEAD
1	SPEC.	1	EACH	45' HIGH WOOD GUY POLE, CLASS 3, 20' GUY LEAD
9	SPEC.	9	EACH	POLE TOP ASSEMBLY UNITS, T.L. TANGENT STRUCTURE
5	SPEC.	5	EACH	POLE TOP ASSEMBLY UNITS, T.L. STR., HORIZONTAL LINE POST, SMALL ANGLE
1	SPEC.	1	EACH	POLE TOP ASSEMBLY UNITS, T.L. STR., DEAD END
1	SPEC.	1	EACH	POLE TOP ASSEMBLY UNITS, TRANSITION POLE ASSEMBLY
5	SPEC.	5	EACH	POLE TOP ASSEMBLY UNITS, SPACER CABLE, TANGENT MESG. BRACKET ASSEMBLY
1	SPEC.	1	EACH	POLE TOP ASSEMBLY UNITS, SPACER CABLE, ANGLE BRACKET ASSEMBLY
3	SPEC.	3	EACH	POLE TOP ASSEMBLY UNITS, INSULATOR STRING ASSEMBLY
4	SPEC.	4	EACH	GUY ASSEMBLY UNITS, GUY INSULATOR
22	SPEC.	22	EACH	GUY ASSEMBLY UNITS, GUY ASSEMBLY, PREFORMED GRIPS
1	SPEC.	1	EACH	GUY ASSEMBLY UNITS, T.L., GUY ASSEMBLY, DOUBLE GUY TO 2 RODS
4	SPEC.	4	EACH	GUY ASSEMBLY UNITS, GUY INSULATOR FIBER GLASS
4	SPEC.	4	EACH	GUY ASSEMBLY UNITS, GUY LINK ASSEMBLY (TYPE 1)
12	SPEC.	12	EACH	GUY ASSEMBLY UNITS, GUY ATTACHMENT ASSEMBLY (HE-203)
2	SPEC.	2	EACH	GUY ASSEMBLY UNITS, GUY ATTACHMENT ASSEMBLY (HE-203A)
2	SPEC.	2	EACH	GUY ASSEMBLY UNITS, GUY ATTACHMENT ASSEMBLY (HE-203B)
9	SPEC.	9	EACH	ANCHOR ASSEMBLY UNITS, T.L., STEEL PLATE ANCHOR ASSEMBLY
5	SPEC.	5	EACH	ANCHOR ASSEMBLY UNITS, SWAMP ANCHOR ASSEMBLY
16	SPEC.	16	EACH	GROUND ASSEMBLY UNITS, POLE GROUNDING UNIT
3	SPEC.	3	EACH	GROUND ASSEMBLY UNITS, POLE GROUNDING UNIT
3	SPEC.	3	EACH	MISCELLANEOUS ASSEMBLY UNITS, SINGLE PHASE REGULATOR ASSEMBLY
1	SPEC.	1	EACH	MISCELLANEOUS ASSEMBLY UNITS, HIGHWAY LIGHTING C.C. TRANSFORMER ASSEMBLY
1	SPEC.	1	EACH	MISCELLANEOUS ASSEMBLY UNITS, TRAFFIC SIGNAL C.C. TRANSFORMER ASSEMBLY
3015	SPEC.	3015	L.F.	69 KV CIRCUIT WITH SHIELD
1304	SPEC.	1304	L.F.	15 KV SPACER CABLE CIRCUIT
1	SPEC.	1	EACH	GUY ASSEMBLY UNITS, GUY ATTACHMENT ASSEMBLY (TA-2)
1	SPEC.	1	EACH	GUY ASSEMBLY UNITS, GUY ATTACHMENT ASSEMBLY (F1-4)
1	SPEC.	1	EACH	MISCELLANEOUS ASSEMBLY UNITS, FOUNDATION STABILIZER
LUMP	SPEC.	LUMP		EXISTING SYSTEM REMOVAL

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ELECTRICAL UNITS of CONSTRUCTION

CALC: RBH 8/79
CHK: HB 8/79

FOR △ NOTES SEE POLE NARRATIVE PAGE.

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Construction Unit Description	SPEC. No.	UNIT	POLE NUMBER P1A	P1	P2	P3	P4	P5	P6	P7	P7A	P8	P9	P10	P11	P11A	P12	P13	P14	P15	P15A	P16	P17	P17A	P18	*
			←					ALUM	CREEK		DRIVE															→
WOOD POLE UNIT (Height / Class)	N/A	EA.	75/2	80/2	80/2	80/2	85/2	95/2	95/2	90/2	45/3	85/2	85/2	85/2	75/2	45/3	70/2	70/2	70/2	55/3	45/3	55/3	55/3	45/3	55/3	
CONDUCTORING UNITS																										
See Profile dwg. & written Specification																										
69 KV CIRCUIT WITH SHIELD	N/A	L.F.		157	243	243	233	205	225	258		220	99	275	198		215	215	229							
15 KV SPACER CABLE CIRCUIT	N/A	L.F.																215	229	228		187	225		220	
POLE TOP ASSEMBLY UNITS																										
T.L. Tangent Structure	TP-69	EA.	1	1				1	1			1	1	1			1	1								
T.L. Str., Horz. Line Post, Small Angle	HE-301	EA.			1	1	1			1					1											
T.L. Str., Dead End	HE-302	EA.																	1							
Transition Pole Assembly	HE-1808	EA.															1									
Spacer Cable, Tangent Mesg. Bracket Assembly	HE-101	EA.																1	1			1	1		1	
Spacer Cable, Angle Bracket Assembly	HE-102	EA.																		1						
Insulator String Assembly	TM-1	EA.																	3							
GUY ASSEMBLY UNITS																										
Guy Insulator	HE-202	EA.									1					1					1			1		
Guy Assembly, Preformed Grips	HE-204	EA.			2	2	2			2	1				2	1	2		4	1	1		1	1		
T.L., Guy Assembly, Double Guy to 2 Rods	TG-3	EA.																								1
Guy Insulator Fiber Glass	HE-201-54	EA.																	4							
Guy Link Assembly (Type 1)	TG-22	EA.																	4							
Guy Attachment Assembly	HE-203	EA.			2	2	2			2					2					1			1			
Guy Attachment Assembly	HE-203A	EA.																			1			1		
Guy Attachment Assembly	HE-203B	EA.									1					1										
GUY ATTACHMENT ASSEMBLY	TA-2	EA.																								1
GUY ATTACHMENT ASSEMBLY	FI-4	EA.																								1
ANCHOR ASSEMBLY UNITS																										
T.L., Steel Plate Anchor Assembly	TA-3	EA.									1					1	2		3		1			1		
Swamp Anchor Assembly	F6-3	EA.			2	2	1																			
GROUND ASSEMBLY UNITS																										
Pole Grounding Unit	HE-401	EA.	1	1	1	1	1	1	1	1		1	1	1	1		1	1	1	1						
Pole Grounding Unit	HE-401-1	EA.																				1	1		1	
MISCELLANEOUS ASSEMBLY UNITS																										
Single Phase Regulator Assembly	HE-1807	EA.																				1	1		1	
Highway Lighting C. C. Transformer Assm.	HE-1802	EA.								1																
Traffic Signal C.C. Transformer Assm.	HE-1805	EA.																1								
~~Highway Lighting C.C. Transformer Assm.~~	~~HE-1804~~																									
~~Street Lighting Circuit U.G. Extension~~	~~HE-1806~~																									
~~Ohio D.O.T. std. pull box, Std. Dwg. HL-10~~	~~HL-10~~	~~1~~ (Dwg. not in this set, see ODOT Std. Dwgs.)																								
Foundation Stabilizer	TM101	EA.																								1
EXISTING SYSTEM REMOVAL	N/A	LUMP																								

* NOTE: THE ITEMS BELOW HAVE BEEN PROVIDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

POLE NARRATIVE AND NOTES

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1. IF GUY IS ATTACHED TO OTHER POLE HARDWARE, ADJUST GUY ATTACHMENT HOLE DIA. TO SUIT.
2. CONFIRM BIKE TRAIL LOCATION AND ADJUST STUB POLE & DOWN GUY LOCATION AS NECESSARY. COORDINATE WORK ON EAST SIDE OF ALUM CREEK DRIVE WITH COLUMBUS & SOUTHERN OHIO ELEC.
3. PLACE DOWN GUY IN LINE WITH OVERHEAD GUYS.
4. PLACE DOWN GUY IN LINE WITH DEAD ENDED CONDUCTORS.
5. LOCATE TOP OVERHEAD GUY 1'-0 BELOW TOP OF STUB POLE.

POLE	COMMENT
P2	OFFSET POLE & GUY TO WEST ON OUTSIDE BISECTOR. POOR SOIL CONDITIONS. ADD EXTENSION RODS AS REQ'D. TO ACHIEVE MANUFACTURER'S RECOMMENDED TORQUE. BACKFILL POST HOLE WITH REA TM-101 MIX OR ALTERNATELY OHIO D.H. TYPE C CONCRET. GUY LEADS: MAXIMUM POSSIBLE WITHIN R-O-W & MAX. LESS 5' FOR SECOND ANCHOR.
P3	SAME NOTE AS P2
P4	SAME NOTE AS P2 EXCEPT INSTALL ONLY ONE ANCHOR WITH 35' LEAD
P7	OFFSET POLE TO EAST ON OUTSIDE BISECTOR. 2 OVERHEAD GUYS TO STUB POLE P7A, ALSO ON BISECTOR.
P7A	△2 △3 GUY LEAD 30'
P11	OFFSET POLE TO EAST ON OUTSIDE BISECTOR. 2 OVERHEAD GUYS TO STUB POLE P11A, ALSO ON BISECTOR.
P11A	△2 △3 GUY LEAD 40'
P12	△1 △4 GUY LEADS 25' & 35'
P14	ATTACH GUYS TO ITEM (1) OF HE-302. △4 LOCATE UNITS HE-201-54 TO PROTECT SPACER CABLE. ATTACH OHGW & TOP PHASE GUYS TO ONE ANCHOR. GUY LEADS 45', 55' AND 65' BACKFILL POLE HOLE WITH O.D.H. TYPE C CONCRETE.
P15	OVERHEAD GUY & P15A STUB POLE LOCATED ON OUTSIDE BISECTOR. GND GUY.
P15A	△2 △3 GUY LEAD 20'
P17	OVERHEAD GUY & P17A STUB POLE LOCATED ON OUTSIDE BISECTOR. GND GUY.
P17A	△2 △3 GUY LEAD 20'

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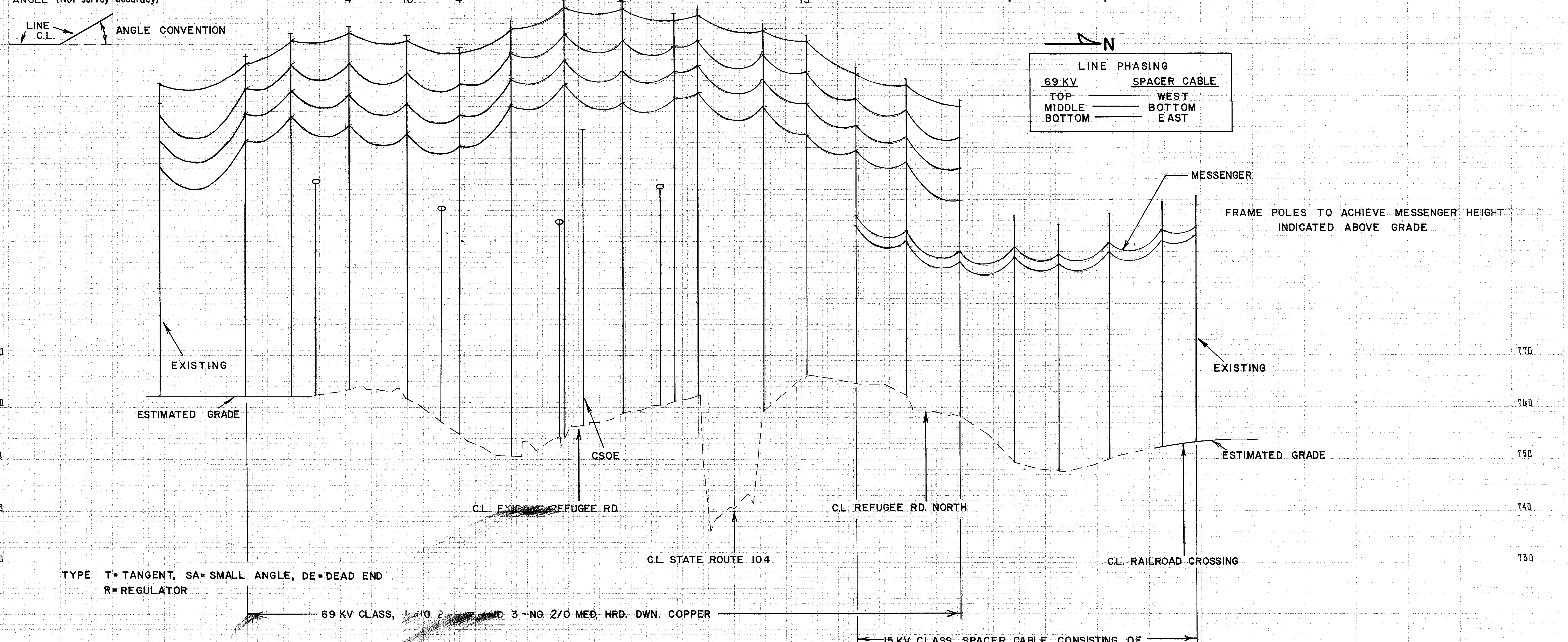
POLE NUMBER	P1A	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18
HEIGHT	75	80	80	80	85	95	95	90	85	85	85	75	70	70	70	55	55	55	55
CLASS	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3
TYPE	T	T	SA	SA	SA	T	T	SA	T	T	T	SA	T	T	DE	SA	R-T	R-SA	R-T
ANGLE (Not survey accuracy)			4°	10°	4°			6°				13°				7°		4°	



TYPE T= TANGENT, SA= SMALL ANGLE, DE= DEAD END
R= REGULATOR

VERTICAL 1" = 10'
HORIZONTAL 1" = 200'

DISTANCE ALONG CENTER LINE OF CONDUCTORS, 38+00 DEFINED AT C.L. OF EXISTING REFUGEE RD.

20 | 30 | 40 | 50 | 60 | 70

(FEET X 100)

ALUM CREEK DRIVE

ELECTRIC LINE PROFILE

GENERAL NOTES

FRANKLIN COUNTY

SPECIFICATIONS FOR ELECTRIC LINE CONSTRUCTION FRA-104-10.57

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6. Guys and Anchors
7. Insulators
8. Conductors and Overhead Ground Wires
9. Clearing Right-of-Way and Danger Trees
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16. Conductors, 69KV Line Construction
17. Conductors, 15KV Spacer Cable Assembly
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45. Step Voltage Regulator
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1. General

The Power Supplying Agency, designated Owner for this portion of the project is:

City of Columbus Ohio
Division of Electricity
50 W. Gay St.
Columbus Ohio, 43215

All construction work shall be done in a thorough and workmanlike manner in accordance with the Plans, Specifications, and Construction Drawings. The 1981 Edition of the National Electrical Safety Code shall be followed except where local regulations are more stringent, in which case, local regulation shall govern.

2. Drawings and Maps.

The Vicinity Map showing the general route of the transmission line or lines, and showing sections of the line covered by each Plan and Profile sheet is listed separately hereinafter and is part of these Plans and Specifications. The Construction Drawings, including the Plan and Profile and structure lists, showing the type of construction to be used where indicated on the Plan and Profile, also are listed separately hereinafter and are part of these Plans and Specifications.

3. Locations of Structures.

Structure, guys, etc., shall be placed in locations and staked by the Contractor as shown on the Plan and Profile sheets and structure lists. Structures, guys, etc., shall not be erected in any other location without prior approval of the Owner. Angle poles shall be offset appropriately for the insulator used.

4. Wood Poles.

In distributing poles, extra heavy, choice, close-grained poles shall be reserved for angles, crossings, and dead ends.

Also see Note No. 36, Timber Products.

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The minimum setting depths for poles shall be as follows

Pole length (feet)	Setting depth (feet)
35	6.0
40	6.0
45	6.5
50	7.0
55	7.5
60	8.0
65	8.5
70	9.0
75	9.5
80	10.0
85	10.5
90	11.0
95	11.0
100	11.0

Two or three pole structures located on sloping ground shall have the pole setting depth increased as required to level the crossarm.

Pole holes shall be approximately 8 inches larger than the butt diameter of the pole, and shall be at least as large at the bottom as at the top.

All poles shall be set in alignment, except on line angles, and plumb. At line angles, where suspension construction is used, poles shall be offset on the bi-sector of the angle so that conductors will hang directly over the point of intersection or in line with the tangent in both directions. All poles shall be plumb after conductors are strung.

In backfilling, holes shall be thoroughly tamped with a power tamper the full depth. Earth shall be banked up around each pole. After completion of the job, holes shall be inspected and any settlement refilled.

Where new gains or holes are required in fir, pine, and full-length treated cedar poles, the gains shall be painted with preservative compound and the holes treated with preservative compound.

The tops of poles shall not be cut except under very exceptional conditions and upon approval of the Engineer. If cutting is deemed necessary, the pole top shall be covered with a mastic type cap. Under no circumstances shall the butt of any pole be cut.

All unused holes in poles shall be plugged prior to erection, using treated wood dowel pins. For holes in used poles where the hole has been enlarged, the hole will be treated with preservative compound.

5. Bolts.

Pole through bolts must be of proper length. (Lengths shown on drawings are for maximum conditions). Through bolts, when installed in the structure shall extend at least 1/2 inch and not more than 2 1/2 inches beyond the nuts. Engineer to modify lengths to suit special requirements.

6. Guys and Anchors.

Guys shall be installed in locations specified by the *plan.* Points of attachment to poles shall be as shown on construction drawings. Guys shall be installed before conductors or overhead ground wires are strung.

Holes for anchors shall be dug in locations specified *by the plan and* staked by the Contractor. Anchor rods shall be in line with the strain and so installed that approximately 8 inches of the rod shall remain out of the ground. Under no circumstances shall the eye of the rod be covered. Holes shall be backfilled and tamped in the same manner as for pole holes. The setting of each anchor as regards depth and position shall be inspected by the Engineer and his approval given in writing before the anchor hole is backfilled.

7. Insulators.

Care shall be exercised in handling and erecting insulators and in assembling suspension units to insure that all cotter keys are in place.

8. Conductors and Overhead Ground Wires.

Conductors may be strung by either conventional or tension stringing method as specified by the *Owner.*

Care shall be exercised to avoid kinking, twisting or abrading the conductor or overhead ground wire in any manner. Conductors or overhead ground wires shall not be tramped on, run over by vehicles, or dragged over sharp rocks. The wire on each reel shall be inspected for cuts, kinks, or other injuries. Injured portions or crooked or imperfect splices in either the conductor or overhead ground wire shall be cut out and the wire respliced.

Conductors and overhead ground wires shall be pulled over suitable rollers or stringing blocks properly mounted on the pole or crossarm, to prevent binding while stringing.

Installation of conductors and accessories shall be done in accordance with manufacturer's recommendations.

With pin-type insulators the conductors shall be tied in the top groove of the insulator on tangent poles and on the side of the insulator away from the strain at angles. Pin-type insulators shall be tight on the pins and on tangent construction the top groove must be in line with the conductor after tying in.

There shall not be more than one splice per conductor in any span, and no splice shall be located within 10 feet of the conductor support.

Utmost care shall be exercised in installing parallel groove clamps. The contact surface of the clamp and the wire shall be clean and bright. A steel brush shall be the principal cleaning medium. Bolts shall be brought down hard, but the threads must not be overstressed. These same precautions for cleaning shall apply to the conductor before splicing.

Conductors and overhead ground wires shall be sagged in accordance with sag and tension charts or tables *shown on sheet 225.* The sag of all conductors after stringing shall be in accordance with the Conductor Manufacturer's recommendations, except that a maximum increase of 3 inches of the specified sag in any span will be acceptable: Provided, however, that required clearances are obtained; under no circumstances will a decrease in the specified sag be allowed. Sagging by sighting between targets is recommended.

The air temperature at the time and place of stringing shall be determined by a certified etched-glass thermometer. The temperature at which the conductor is sagged in and the spans in which sags are measured shall be recorded and the information given to the Engineer.

Tension Stringing - Conductors may be strung by controlled-tension method using neoprene-lined (or approved equal) double bull-wheel type tension stringing equipment. The equipment shall have groove sizes that will in no way damage the conductor. It shall be of a type capable of maintaining preset tensions and pulling speed. Sufficient continuous tension shall be maintained to keep conductors clear of ground or obstructions that could damage conductor

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or that could be damaged by conductor. Sheaves shall be designed and used so that the pulling line does not damage the sheaves or deposit foreign matter in the liner which may damage the conductor or cause foreign matter to be deposited on the conductor.

The maximum pulling tensions shall not exceed 110% final sag tension. The cable pullers, tensioners and pulling machines shall be located preferrably as near the midspan as possible, but in no case shall the slope of the conductor between the machine and the stringing block at the first structure be steeper then three horizontal to one vertical. Complete manufacturer's data on tension equipment should be furnished to the *Owner* for approval prior to beginning of work. The length of conductor sagged in one operation shall be limited to the length that can be sagged satisfactorily as approved by the *Owner*.

9. Clearing Right-of-Way and Danger Trees.

In preparing the right-of-way, every precaution should be taken to protect the environment. Only such vegetation should be removed as is necessary to permit construction as well as operation and maintenance of the line. Clearing activities should be undertaken in such a manner as to produce a minimum of soil disturbance and silting of streams. The disposal of trees and brush shall meet appropriate environmental requirements. ~~Dead trees within the right-of-way which would strike the line in falling shall be removed. Leaning trees within the right-of-way which would strike the line in falling and which should require topping if not removed may be removed or topped at the option of the Contractor.~~

10. Pole Grounding Conductor Protection.

Protect all pole grounding conductors with 8 foot tall, molded plastic or wood guards, with at least 5 retaining staples.

11. Guy Grounding.

Ground all guys with suitable jumpers and clamps to pole grounding conductor, unless guys are insulated.

12. Reserved.

13. Guy Guards.

Protect all guys at ground end with guy guards or markers. Guards shall be substantial, conspicious yellow, and not less than 8 feet long.

14. Field Framing.

Field framing permitted, treat all drilled holes as directed elsewhere in these specifications.

15. Guy Strand.

Guy strand shall be class A galvanized, specification or utility grade (Western Union & A.T.T. spec.), 3/8" (three-eights inch), with minimum strength of 11,500 pounds, 7 strand. This specification shall prevail over all other strength specifications for lesser strength than 11,500 pounds found elsewhere in these specifications. Adjust all guying hardware dimensions where required to accept 3/8" diameter.

16. Conductors, 69KV Line Construction.

All conductors shall be prestressed to enable sag matching with existing construction.

(a) Overhead Ground Wire (OHGW) or shield:
#2 ACSR, 7/1 Stranding, 3640 # Ultimate rated strength, class A galv. core.

(b) Phase Conductors
#2/0 Copper, 7 Strand, Medium Hard Drawn, 5926# Ultimate rated strength.

17. Conductors, 15KV Spacer Cable Assembly.

Conductors and messenger shall be prestressed to enable sag matching with existing construction.

(a) Messenger - 052 Alumoweld and Aluminum, 0.486 inch O.D., 17,120 pound strength, 0.346 pound weight per foot.

(b) Phase Conductors - 336,400 CM Aluminum Cable with 0.150" two pass extrusion consisting of an inner layer of 0.075" natural high molecular weight polyethylene and an outer layer of 0.075 black track resistant high density polyethylene. Cable shall be rated 15 KV.

18. Insulators, 69 KV Line Construction.

REA Materials List, Conditional List, ea (2), July 1977 horizontal post type, shall be used. Reference Lapp F-4788 and Ohio Brass 43790. Appropriate tangent or angle structure conductor clamps shall be installed. Clamps shall be of sufficient capacity to accept armor rod when specified. Gain and cap shall be malleable iron, hot dip galvanized. Insulators shall be light gray color.

19. Insulators, Spacer Type, Spacer Cable Assembly.

Provide spacer assemblies rated 15 KV or above, with appropriate cable and messenger retaining ties, located at 30" away from, and on each side or tangent messenger bracket. Distribute spacers along line at approximately 30 foot intervals, and at dead ends and angles as recommended by manufacturer (40 to 50 feet).

20. Spacer Cable System.

Spacer cable, cable insulators, cable messengers, cable clamps, cable ring ties, messenger brackets, stringing blocks, messenger trolley, bracket stirrup, insulator brackets, dead end brackets, angle brackets, insulator pins, insulator plates, tap brackets, angle stringing block, angle blocks, messenger guide, utility block, stringing bucket, etc., shall be supplied as an integrated assembly by one source or manufacturer. Manufacturer shall have comprehensive printed literature illustrating installation methods, stringing tension charts, sagging charts, cable tap practices, cable insulation practices, cable and messenger properties, hardware dimensional drawings, etc. Contractor shall install and tension cable specified in accordance with manufacturer's recommendations for medium loading district. Manufacturer's recommendation for lightning protection shall be adhered to. Cable splices shall be made in strict compliance with manufacturer's recommendation. Cable taps shall be prepared as suggested by manufacturer and reinsulated, even where lightning arresters are installed as part of tap conductor.

21. Outage Prohibited.

Serving electric utility has not alternate electrical feeds for the lines to be relocated and/or reconductored along Alum Creek Drive. Contractor shall include in his bid all cost associated with temporary taps, temporary lines, rigging and hot line work so that the construction may be accomplished without an outage on these lines.

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22. Removal *and Disposal* of Electrical Line Materials.

All electric line materials obsoleted by this construction, including but not limited to; wood poles, horizontal line post insulators, insulator hardware, line conductors, overhead ground wire, all fittings and hardware, street lighting fixtures and mounting arms, voltage regulators, regulator bypass switches, lightning arresters, fused cutouts, guy guards, cross arms, power factor correction capacitors. and other materials *shall be removed and disposed of by the Contractor.*

23. Regulator Transfer.

Contractor shall furnish one (1) new 167 KVA, pole mounted step voltage regulator and one (1) new 600 ampere regulator bypass switch as described elsewhere. Contractor shall transfer two existing similar regulators and bypass switches from existing line to new relocated line. One old regulator and bypass switch removed from existing line shall be *disposed of by the Contractor.* Regulators shall be protected from damage by Contractor, particularly as pertains to only energizing and de-energizing regulators while they are in the neutral position. Cost of repair for Contractor caused damage to either new or old regulators shall be deducted from monies due Contractor.

24. Capacitor Bank Transfer.

As part of his work, Contractor shall transfer from the existing Alum Creek Drive Line one three phase capacitor bank along with associated fused cutouts, lightning arresters, crossarms, pin insulators, and taps, onto new pole P5. Existing material may be reused. Capacitor bank is located north of Bellevue Ave. and south of Refugee Road, west along Alum Creek Drive.

25. Units of Construction.

These plans and specifications incorporate by reference the following United States of America, U.S. Department of Agriculture, Rural Electrification Administration (REA) documents:

(a) REA Bulletin 43-5 dated July 1977 (with amendments and revisions thereto), entitled: "List of Materials, Acceptable for use on Systems of REA Electrification Borrowers."

(b) REA Form 806 dated January 1975 entitled: "Specifications and Drawings for Underground Electric Distribution."

(c) REA Form 804 revised August 1962 entitled: "Specifications and Drawings for 7.2/12.5 KV Line Construction."

(d) REA Form 803 revised September 1969 entitled: "Specifications and Drawings for 14.4/24.9 KV Line Construction."

(e) REA Form 805 revised February 1973 entitled: "Electric Transmission Specifications and Drawings."

(f) REA Bulletin 44-2 (Specification DT-5C) revised January 19, 1977 entitled "Specification for Wood Poles, Stubs, and Anchor Logs and Preservative Treatment of these Materials."

(g) REA Bulletin 44-3 (Specification DT-5B0) dated January 1972 enittled "Specifications for Wood Crossarms, Transmission Timbers and Pole Keys."

(h) REA Bulletin 44-4 dated January 1977 entitled "Quality Control and Inspection of Timber Products."

These documents are available for purchase at a nominal price by Contractor or bidders from:

(a) Superintendent of Documents
U.S. Government Printing Office
Washington D.C. 20402

(b) U.S. Public Documents Distribution Center
Pueblo, Colorado 81009.

Selected pages from these documents are included in these specifications for convenience in reference. However, non-inclusion shall not excuse Contractor from performing any construction units cited by number but not shown.

Work shall, in part, be accomplished under the "Unit Of Construction" method of description and payment. A unit of construction (UOC) generally consists of a drawing, (including materials list, notes, installation suggestions, and a unit code or descriptor such as E3-2), the providing of all material shown on the drawing or otherwise referenced, the installation of said materials in their proper place on poles, conductors, in the ground, etc., and all construction tools, equipment, and materials required to accomplish the construction but not a permanent part of the construction.

In the unit of construction drawings, items not a part of the unit of construction are shown dashed. Although most units of construction are mutually compatible, there are cases where contractor must exercise judgment of discretion in the reconcilation of units. Examples include sharing a common bolt between units where each unit specifies an individual bolt, providing a single bonding jumper between two units where each unit specifies an individual jumper, etc. It is to be noticed that all REA bolts carry by implication, the providing and installation of a matching nut. Only nuts in addition to the nut to be supplied with the bolt are noted on the drawings.

Materials referenced on REA units of construction shall be as specified in referenced document (a), above, REA Bulletin 43-5, unless modified by these written specifications or drawings.

Non-REA units of construction are designated by the symbol HE- followed by numbers and letters such as HE-101A. Like REA units, the non-REA unit of construction consists of a drawing or description, the furnishing of all material listed or referenced thereon, the furnishing of all labor for its installation, and all construction material, equipment, tools, machinery, etc. required for its installation but not a permanent part of the construction. Whenever possible, Contractor shall supply REA approved materials when constructing non-REA units of construction.

The units of construction to be accomplished on the project are summarized in a matrix or tabulation sheet entitled "Electrical Units of Construction" and "General Summary-Power Lines". On the "Plan" sheets, "Profile" sheets and miscellaneous drawings, the poles to be supplied or which are effected by construction are given a number. From the "Electrical Units of Construction" sheet, the Contractor may ascertain the exact type and number of construction units to be installed on each pole.

In addition to work described by the Unit of Construction method, other work described by drawings, notes, and general specifications is required of the Contractor.

GENERAL NOTES

Contractor is warned to review and include such other work in his bid and construction. Work to be accomplished on every pole or every guy, for example, is specified by note rather than repetively on the drawings.

26. Implied Work.

Contractor shall be competent in outside line construction work and shall supply all labor and material required to make a complete and workable installation to fulfill the intent of these specifications and drawings. Minor items of material and the labor for its installation, required for a professional and serviceable installation, such as grounding jumpers, grounding connectors, staples, the sawing off of bolt protrusions, and the training of wires, shall be provided at no additional cost as if fully described herein.

27. Connectors.

Select, supply and install cable connectors based upon the size of wire or cable to be joined and the type of cable material. All connectors shall be approved for types of metal or alloy in the cables being joined. Use only installation tools approved by the connector manufacturer. Prepare joints as directed by connector manufacturer, applying any specified chemicals.

28. Armor Rods.

Provide and install preformed armor rods on the 69KV line construction along Alum Creek Drive on the Over Head Ground Wire (#2ACSR) and the Phase Conductors (#4/0 CU). Armor rods shall be of such material as to be compatible with the conductor composition. Adjust the size of all insulator clamps, OHGW support clamps, and connectors required to accommodate the armor rod diameter regardless of hardware sizes shown on standard units of construction.

29. Pole Toppers.

Install pole toppers or pole roofs on all poles supplied for this project.

30. Pole Gains.

Field made pole gains shall be malleable iron or hot dip galvanized.

31. Pole Grounds.

Installation Practices:

Ground wire must clear all ungrounded hardware by 2" minimum.

Connect all ground electrodes together and to the common neutral when it is present.

Check all ground electrodes with a ground meggar.

Drive up to two additional rods with extension couplings if the resistance of an individual electrode is higher than 25 ohms when measured with a ground meggar.

Advise Owner when additional rods have been driven and resulting resistance still exceeds 25 ohms.

Drive ground rod in undisturbed earth at least 24 inches from the face of the pole unless obstructions limit the area where a rod can be driven.

Attach the vertical ground lead along the pole on the quarter in the quadrant that best provides a clear climbing area, and where possible free from traffic hazards. Cover with plastic moulding, beginning at a point two inches below finished grade and extending up the pole a minimum of eight feet.

Do not install aluminum conductor or connectors directly in earth.

Report ground meggar readings by pole number to Owner in writing.

32. Double Arm Implied Hardware

When two or more cross arms are mounted at the same height on a pole or structure, install (2) 5/8" double arming (spacer bolts), (8) 2 1/4 x 2 1/4 x 3/16 with 11/16 hole flat washers, (8) 5/8" nuts and (8) 5/8" lock nuts, type MF. Oval eye bolts, common bolts, shoulder eye bolts, etc. may be used where more appropriate. Select length of bolt as required. Bolt assemblies are implied by construction and do not appear on drawings or material lists but shall be installed as though specified therein.

33. Line Merging Splices

Provide and install full tension compression sleeves to merge new line construction with existing line. Confirm size, materials and stranding of both old line materials and new. Use only sleeves recommended by the manufacturer as satisfactory for the cables to be joined. Observe all manufacturers' installation directions. Use only compression tools and dies approved for the sleeves used. Use REA approved sleeves where such sleeves are available for the size, stranding, and composition of cables to be joined. Splices made for the Contractor's convenience shall meet these specifications and be at his expense. Because of the short overall length of the construction, more than one. Contractor convenience splice in any single run conductor shall require Owner's approval.

34. Trenching, Backfilling, Compacting, Patching

Dig, drill or excavate all openings required for the erection or enclosure of all electrical materials included in this work. Backfill with such materials as will cause no damage to the electrical materials below. Compact as required for intended use of grade surface. Patch with materials required to restore original integrity of sod, soil, gravel, sidewalk or road as applicable. Fill and compact all vacated pole holes. All vacated pole holes which will lie under planned pavement or road shoulders shall be brought to the attention of the Highway Department Field Inspector. Backfill and compaction method shall be approved by said inspector for such holes.

35. Transfer of Street Lighting Fixture and Circuit

Transfer existing street lighting fixture, arm, spool rack, and conductors from existing pole to pole P18 which replaces it in approximate same location. Street lighting circuit from north will dead end on P18. Supply additional conductor and splices as needed. Transfer existing street lighting fixtures, arms, spools, racks, and conductors from existing poles P1A and P1 which replaces them in approximate same location. Street lighting circuit from the south will dead end on P1.

36. Timber Products

Use poles, crossarms, and other timber products, whose physical characteristics, method of treatment, type of preservation, instructions on inspection and general procedure are in accordance with REA standards and requirements.

Crossarms shall be Southern Yellow Pine or Douglas Fir, treated with creosote or pentachlorophenol by pressure process.

GENERAL NOTES

Poles shall be Southern Yellow Pine, Douglas Fir, Western Red Cedar, and conditionally other Genus and Species proposed by Contractor and approved by Owner in writing to insure timely procurement. Pole preservative may be creosote or pentachlorophenol or creosote plus 2% Penta. Poles shall be pressure treated full length. Poles may be offered under either the Insured Warranted or Independently Inspected programs or both.

Pole units consist of one new pole erected in place. The first two digits indicate the length of the pole, the third digit indicates the ANSI class. (For example 90-2 means a pole 90 feet long, class 2.)

All timber preservation costs, insured warranty program costs or independently inspected service costs are a part of the pole cost and no additional payment will be made therefore.

37. Insulator Ties

Provide and install tie wires on conductors and insulators as required as part of miscellaneous work not covered by construction units. Tie wires shall be insulated or bare corresponding to the conductors tied. Tie wires shall be annealed copper size #2 for 2/0 copper line conductors using "High tension" style, "Cross top" style, or "Looped Western Union" style ties.

38. Conductor Sagging Tables

#2 ACSR - Unstressed - Sagging Table

Sags are in Inches	Span In Feet			
Air Temp °F	100	150	200	250
30	2	4	7	12
60	2	5	9	15
90	3	8	14	21

#2 ACSR - Prestressed - Sagging Table

Sags are in Inches	Span In Feet			
Air Temp °F	100	150	200	250
30	2	5	9	13
60	3	6	12	19
90	4	10	18	28

#2/0 Copper MHD, Unstressed - Sagging Table
(Copper MELP - 03S0012)

Sags are in Inches	Span in Feet			
Air Temp °F	150	175	200	250
30	13	16	18.5	29
60	18	21	24	36
90	23.5	28	31	44

#2/0 Copper MHD - Prestressed - Sagging Table

Sags are in Inches	Span in Feet			
Air Temp. in °F	150	175	200	250
30	19	24	27	43
60	23	26	30	44
90	27	32	35	49

Spacer Cable shall be sagged and tensioned in accordance with manufacturers published tables but shall not have a final sag at 60°F in excess of that shown on the "Electric Line Profile" drawing.

(CONTINUED SHEET 226 COLUMN 1)

43. Transformer Support Hardware

Adjust dimensions of transformer mounting hardware shown on the drawings, typically consisting of two bolts, two square curved washers, two nuts and two lock nuts to such dimensions as will properly engage and retain the support lugs on the transformers actually installed.

44. Overhead Distribution Transformers, Single Phase

A. Standards

Transformers shall be designed, manufactured and tested in compliance with the applicable portions of the following standards:

(1) NEMA TR-1-1974, "Transformers, Regulators and Reactors."

(2) ANSI C57.12.00-1973, "General Requirements for Distribution, Power and Regulating Transformers"

(3) ANSI C57.20-1971, "Requirements for Overhead-Type Distribution Transformers, 67000 Volts and Below 500 KVA and Smaller."

(4) ANSI C57.12.70-1978, "Terminal Markings and Connections for Distribution and Power Transformers."

(5) ANSI C57.12.80-1978 "Terminology for Power and Distribution Transformers."

(6) ANSI C57.12.90-1973, "Test Code for Distribution, Power, and Regulating Transformers."

(7) ANSI C57.12.90a-1978, "Distribution and Power Transformer Short-Circuit Test Code."

B. Common Construction Features

(1) Support lugs (2), slip slots with jump proof lips on upper lug.

(2) Liquid level marking.

(CONTINUED SHEET 226 COLUMN 2)

GENERAL NOTES

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(CONTINUED FROM SHEET 225 COLUMN 2)

39. Clamp Liners

Provide copper strain clamp liners when using non-bronze strain clamps to terminate copper conductors.

Provide aluminum strain clamp liners when using non-aluminum strain clamps to terminate ACSR, Aluminum or Aluminum Alloy conductors.

Make appropriate adjustment in clamp catalog numbers to account for liner reduction of cable diameter accommodation range of clamp.

40. Lightning Arrester Ratings

Alum Creek Line. Line is energized at 14.4 KV line to line from a grounded wye source. Arresters shall be rated 12 KV distribution class.

All arresters shall have ground disconnectors as opposed to REA external gaps.

41. Ohio Department of Highway Transportation Standards

Comply with State of Ohio, Department of Transportation, Construction and Materials Specifications, dated January 1, 1981, as applicable to the materials or construction processes being provided.

42. National Electric Code and UL Listing

Use materials bearing the listing mark of Underwriters Laboratories or similar nationally recognized testing laboratory wherever materials supplied are covered by listing standards. Install materials in accordance with manufacturers instructions and the latest edition of the National Electric Code, NFPA standard 70. (The applicability of this paragraph is limited to low voltage work, mainly consisting of 600V cable, conduit, conduit clamps, supporting and clamping intervals, weatherheads, etc. characterized as "secondary" service equipment and wiring.)

(CONTINUED SHEET 225 COLUMN 3)

(CONTINUED FROM SHEET 225 COLUMN 3)

(3) Tap changer, 4 full capacity taps, all below rated voltage, each tap 2½%. For non-energized operation only. Changer operator shall be located externally (preferred) or internally.

(4) Combination automatic and manual pressure relief valve.

(5) Oxidation resistant transformer oil fill.

(6) Handhole in cover if changer operator internal.

(7) Lifting lugs.

(8) Tank grounding connector.

(9) Low-voltage grounding connector.

(10) High voltage bushing connector (s), AL/CU

(11) Low voltage bushing connectors AL/CU

(12) Nameplate.

(13) Stenciled rating.

(14) Removable banded cover.

(15) Insulated coating applied to cover, handhole and clamping band to prevent bird and squirrel caused flashovers.

(16) Multi coat paint system consisting of tank preparation/cleaning, baked primer, intermediate coat, and final baked coat finish after assembly.

C. Test Data

Provide four copies of ANSI C57.12.00 Routine Test Data for each KVA rating supplied. Data may be on similar units. Supply for record use only.

D. Shop Drawings

Provide four copies of dimensional outline drawings, maintenance manuals, illustrated parts bulletins, installation instructions and manufacturer's warranty as record submittal for each class of transformer supplied.

E. Specific Transformer Requirements

(1.) Capacity: 50 KVA
High Voltage Winding: 2 cover bushings for line to line connection on 7200 volt delta system. 95 KV BIL
Low Voltage Winding: 240/480 volts. One outside leg to be grounded in field. Provide adequately long LV grounding strap.
Maximum Product of Losses: 53999

(2.) Capacity: 75 KVA
High Voltage Winding: 2 cover bushings for line to line connection on a 14,400 volt three wire delta system 95KV BIL.
Low Voltage Winding: 240/480 volts. Provide adequately long LV grounding strap.
Maximum Product of Losses: 112999

(3.) Capacity: 10 KVA
High Voltage Winding: 2 cover bushings for line to line connection on a 14,400 volt three wire delta system 95KV BIL.
Low Voltage Winding: 120/240 volts.
Maximum Product of Losses: 5099

(Product of losses is defined as guaranteed NO LOAD LOSS (watts) X guaranteed LOAD LOSS (watts). Zero positive tolerance on values specified.)

GENERAL NOTES

45. Step Voltage Regulator

A. General
Regulator shall be rated 167 KVA (product of series winding current times voltage buck or boost rating) for use on a 7620/13200 volt grounded wye system. Unit shall be single phase, pole mounted, thirty-two (32) step, 10 percent raise to 10 per cent lower, sixty Hertz, oil immersed, complete with remotely mounted control cabinet and connecting cable.

B. Standards
Regulator shall be designed, manufactured, and tested in compliance with applicable ANSI, NEMA and IEEE standards, and in particular, NEMA std. TR1 and ANSI C57.15, latest issues.

C. Common Construction Features

(1) Sealed tank system using 65°C rise insulation in 55°C rise rated design to provide base rating of 167 KVA with additional 12 per cent capacity above nameplate rating without loss of insulation life. All regulator components shall be sized for additional capacity.

(2) Tap changer with preventive autotransformer.

(3) Position indicator with ground resettable drag hands.

(4) Corrosion resistant nameplate.

(5) Lifting lugs.

(6) Oil drain and sampling device.

(7) Pole mounting support lugs.

(8) Mounting provision for shunt arresters.

(9) Provision for base mounting.

(10) Liquid level indicator.

(11) Automatic pressure relief valve.

(12) Handhole.

(13) Series winding surge protector (Thyrite resistor).

(14) Extra length control cable for remote mounting of control cabinet.

(15) Control cabinet with following features:

(a) Bandwidth control

(b) Voltage level control

(c) Line drop compensator

(d) Polarity switch

(e) Test rheostat

(f) Band edge indicators

(g) Drag hand reset switch

(h) Operation counter

(i) Time delay, continuously adjustable from 10 to 90 seconds

(j) Control switch - automatic, test, lower, off, raise positions

(k) Neutral indicator light

(l) Test terminals

(m) Control circuit breaker - On/Off control

(n) Internal-external power supply selector switch

(o) Weatherproof housing and sealing gasket

(p) CT shorting disconnect plug

(q) Locking provision for control cabinet cover.

(16) Bushings with cable clamping feature.

(17) Upper filter press connection.

(18) Tank grounding connector.

(19) Oxidation resistant oil fill.

(20) Stenciled rating.

(21) Insulating coating applied to cover, handhole and clamping band to reduce probability of flashover due to birds and squirrels.

(22) Tank corrosion preventing preparation and multicoat paint system.

D. Increased Load Current Capability
Regulator shall possess the feature of increased load current operation at reduced maximum voltage increase and decrease. At maximum voltage increase or decrease of 5%, for instance, rated current shall be 160% of 10% voltage raise or decrease current rating. All control devices required to use this feature shall be supplied. Submit table of intermediate load current capabilities versus % raise or decrease limits as part of proposal.

E. Short Circuit Withstand
Entire regulator assembly shall be capable of withstanding a short circuit through current of 40 times rated current for 0.8 seconds on the ±10% regulation range, with reduced currents for longer times in accordance with the formula:

$$I_{sc}^2 t = 61 \times 10^6 \text{ Amp.}^2\text{-Sec.}$$

F. Basic Impulse Insulation Level
Regulator shall have a basic impulse insulation level (BIL) withstand of 95 KV.

G. Test Data
Provide four copies of ANSI standard routine test data. Data may be for similar units. Supply for record use only.

H. Shop Drawings
Provide four copies of dimensional outline drawings, maintenance manuals, illustrated parts bulletins, installation instructions and manufacturers warranty as record documents.

I. Approval Documents
Submit for Owner's approval four copies of all documents required to substantiate that the units to be supplied fullfils these specifications. In particular, show length of control cable for remote control cabinet mounting and its diameter. Installation contractor to supply length data.

GENERAL NOTES

J. Manufacturers
Regulators shall be General Electric type ML 32, McGraw-Edison cat. section 225-10 or Siemens-Allis JFR, modified as required to comply with this specification.

46. Regulator Bypass Switch

A. General
Regulator bypass switch shall be rated at or above the following: 600 amperes continuous, 30,000 amperes momentary withstand, 15.5 KV Operating Voltage, 110 KV BIL, 60 Hertz, suitable for outdoor, pole mounting, hook stick operated, with suitable arc quenching features to safely close on, and interrupt regulator magnetizing current.

B. Detail Design Features

(1) Automatic sequencing. Opening and closing of switch shall perform the required switching operations of bypassing, opening both line leads, interrupting regulator exciting current, and similar functions in reverse order upon closing.

(2) Current carrying parts shall be copper or high conductivity bronze, silver plated where required. Switch design shall use the force developed by fault currents to enhance switch contact continuity.

(3) Insulators shall be NEMA standard station post, sky gray glaze.

(4) Mounting base shall be galvanized structural steel channel.

(5) Terminal pads shall be NEMA standard two hole.

(6) Provide cable terminals for line and load pads, sized for the cables required and of a material suitable for use with the cable metal.

(7) Provide "Arcrupter" or "S & C Interrupter" for breaking magnetizing current without exposed arc.

C. Manufacturers
Switch shall be as manufactured by Kearney cat. no. 125821-10 or S & C cat. no. 333412R7 with appropriate options and modifications to conform to this specification. Switches of other manufacturers conforming to this specification, when approved in writing by the City of Columbus, Division of Electricity, are acceptable.

D. Shop Drawings
Submit four copies of dimensional outline drawings, maintenance manuals, illustrated parts bulletin, installation instructions and manufacturer's warranty as record submittal if above brand name and catalog devices are supplied. If other switches are proposed, submit same data for approval by Owner before purchase or installation.

DETAILS

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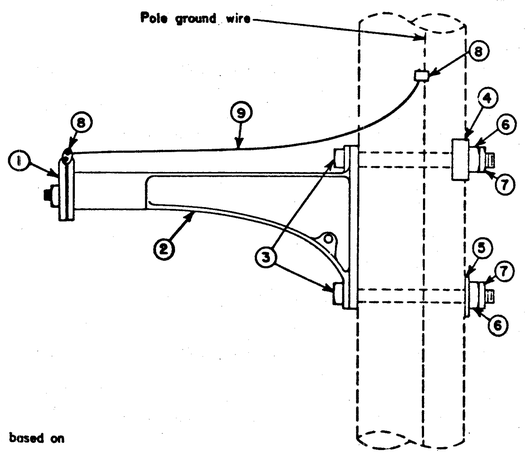
INDEX - UNITS OF CONSTRUCTION DRAWINGS

UNIT NO.	TITLE
HE-101	Spacer Cable, Tangent Messenger Bracket Assembly
HE-102	Spacer Cable, Angle Bracket Assembly
HE-103	Spacer Cable, Dead End Assembly
HE-105	Spacer Cable, Tangent Bracket Extension Assembly
HE-201	Guy Insulator, Fiber Glass
HE-202	Insulator Guy Strain Assembly
HE-203	Guy Attachment Assemblies
HE-204	Guy Assembly with Preformed Grips
HE-301	Transmission Line Structure, Horizontal Line Post, Small Angle
HE-302	Transmission Line Structure, Dead End
HE-401	Pole Grounding Unit, Rod Type
HE-1802	Highway Lighting Control Center, Transformer Assembly
~~HE-1804~~	~~Highway Lighting Control Center, Transformer Assembly~~
HE-1805	Traffic Signal Control Center, Transformer Assembly
~~HE-1806~~	~~Street Lighting Circuit, Underground Extension~~
HE-1807	Single Phase Regulator Assembly, Pole Mount
HE-1808	Transition Pole Assembly

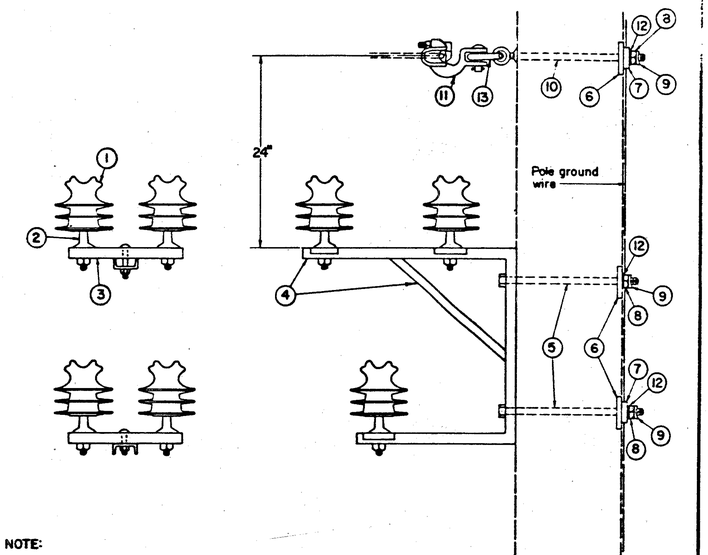


Notes:
(1) Choose MC-1 or MC-2 based on messenger cable dia.

		ASSEMBLY	
		HE-101	HE-101A
9	Jumper, # 2 BC, soft, length as req'd.	1	1
8	Clamp, cable, size and mat. to suit conductor	2	2
7	Nut, lock, 5/8" type MF	2	2
6	Nut, square, 5/8"	2	2
5	Washer, square, 2-1/4"x 2-1/4"x 1/4", 11/16" hole	1	1
4	Washer, square curved, 3"x 3"x 1/4", 11/16" hole	1	1
3	Bolt, machine, 5/8"x req'd. length	2	2
2	Tangent messenger bracket, Hendrix BM-24		1
2	Tangent messenger bracket, Hendrix BM-14	1	
1	Messenger clamp, Hendrix MC-1 or MC-2	1	1
ITEM	MATERIAL	NO. REQ'D	NO. REQ'D

SPACER CABLE
TANGENT MESSENGER BRACKET
ASSEMBLY

June 1, 1979 | HE-101, HE-101A



NOTE:
(1) Use covered tie wires on insulated conductors.
(2) Place conductors on side of insulators at angles.
(3) Guying hardware should be attached to items (5) and (10) when guying is specified.
(4) Position pole on side of conductor ℄ away from turn.

		ASSEMBLY	
		HE-102	HE-102A
13	Shackle, forged steel, REA (bo), Joslyn J2742	1	1
12	Washer, spring, for 5/8" bolt	3	3
11	Clamp, ground wire, Lapp 10366	1	1
10	Eyebolt, forged shoulder, 5/8"x req'd length	1	1
9	Nut, lock, 5/8", type MF	3	3
8	Nut, Square, 5/8"	3	3
7	Grounding clamp	2	2
6	Washer, Square Curved, 3"x3"x1/4", 11/16" hole	3	3
5	Bolt, 5/8"x req'd length	2	2
4	Angle Bracket, Hendrix BA3-35	1	1
3	Double Insulator Plate, Hendrix 21P		3
2	Insulator Pin, Hendrix SSP-2	3	6
1	Insulator, Polyethylene, Hendrix HPI-15	3	6
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D

SPACER CABLE
ANGLE BRACKET ASSEMBLY

June 1, 1979 | HE-102, HE-102A

DETAILS

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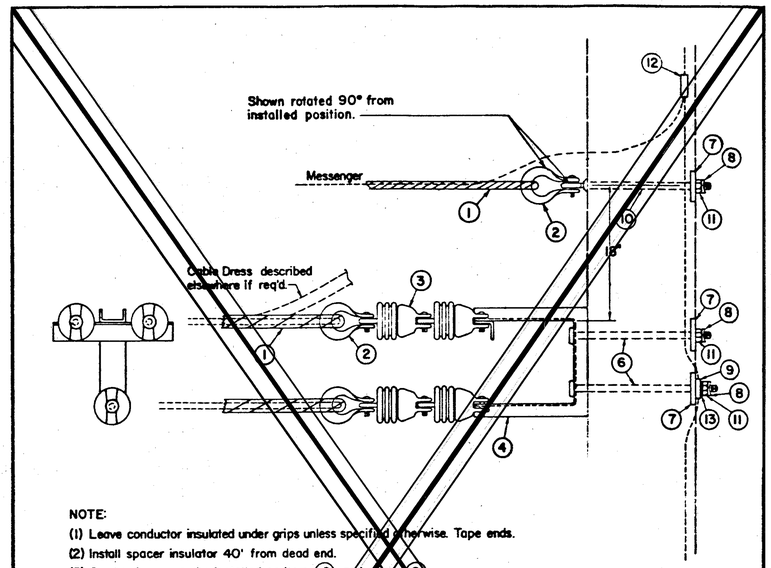
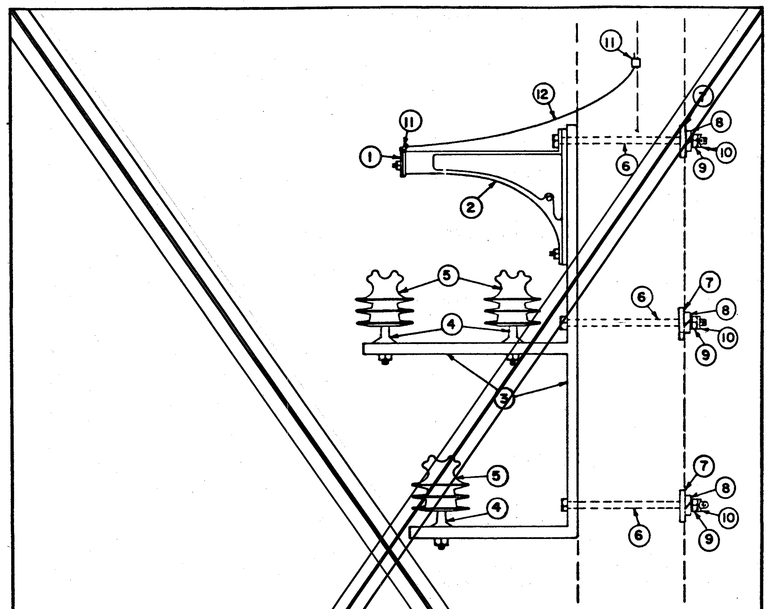


NOTE:
(1) Leave conductor insulated under grips unless specified otherwise. Tape ends.
(2) Install spacer insulator 40' from dead end.
(3) Guy hardware may be installed on item (10) and (upper (6) when guying is specified.

		ASSEMBLY HE-103	
13	Washer, spring for 3/4" bolt	1	
12	Clamp, messenger to gnd.wire, size & mat'l per cond's.	1	
11	Nut, 3/4" Square	3	
10	Shoulder eyebolt, 3/4"x req'd length, Joslyn J95XX	1	
9	Grounding clamp	1	
8	Locknuts, 3/4" M.F.	3	
7	Washer, Square, Curved, 3 1/4"x 3 1/4"x 1/4", 13/16" hole	3	
6	Bolt, 3/4"x req'd length	2	
5	(NOT USED)	0	
4	Deadend bracket, Hendrix . BD-15	1	
3	Insulator, deadend, Ohio Brass 42399	6	
2	Thimble Clevises, Joslyn J555	4	
1	Preformed cable grips, size for conductor and insulation	4	
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D.

SPACER CABLE
DEAD END ASSEMBLY

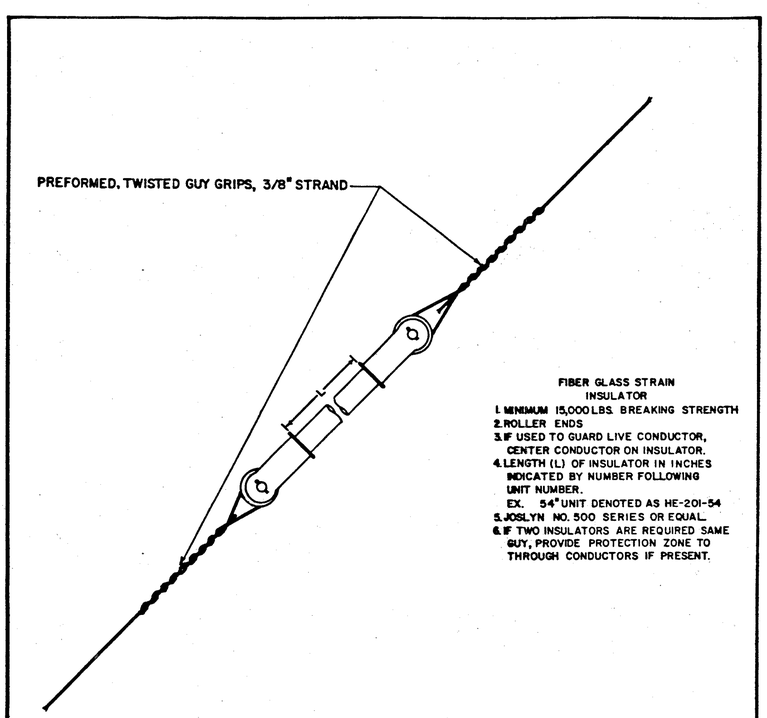
June 1, 1979 — HE-103



		ASSEMBLY HE-105	
12	Jumper, #2 BC, soft, length as req'd.	1	
11	Clamp, cable, size and material to suit conductor	2	
10	Nut, lock, 5/8" type MF	3	
9	Nut, square, 5/8"	3	
8	Washer, spring, for 5/8" bolt	3	
7	Washer, square curved, 3"x 3"x 1/4"	3	
6	Bolt, 5/8" by req'd. length	3	
5	Insulator, polyethylene, Hendrix HPI-15	3	
4	Insulator pin, Hendrix SSP-2	3	
3	Tangent bracket extension, Hendrix XTB-15	1	
2	Tangent messenger bracket, Hendrix BM-14	1	
1	Messenger clamp, Hendrix MC-1 or MC-2	1	
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D.

SPACER CABLE
TANGENT BRACKET EXTENSION
ASSEMBLY

SEPT. 1, 1979 — HE-105



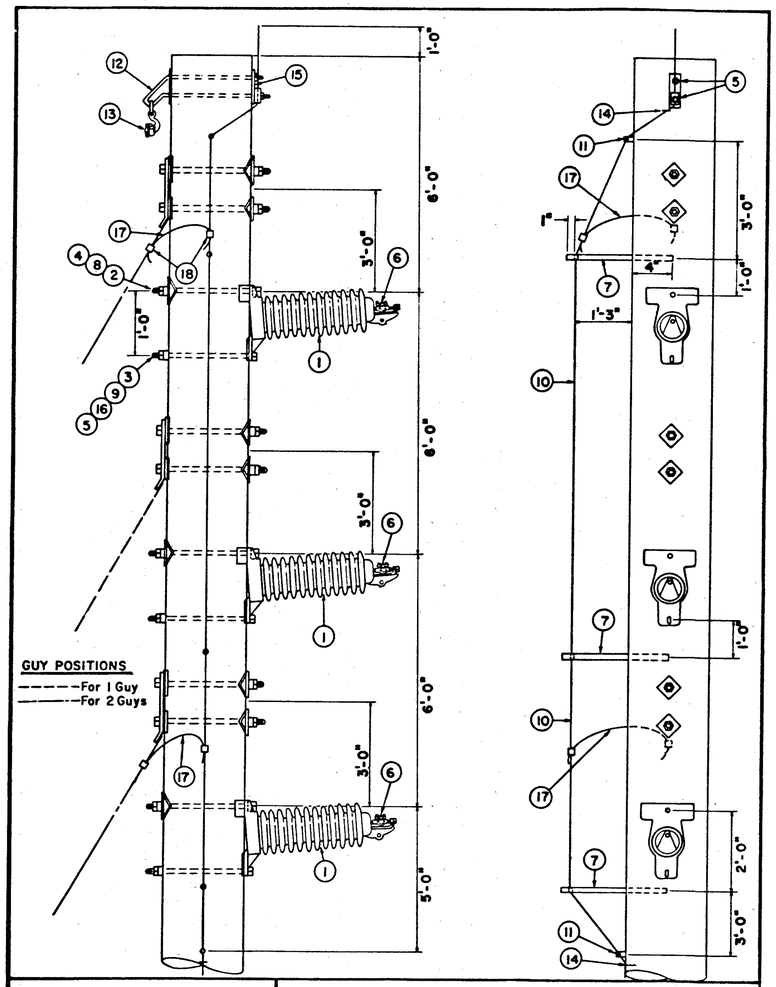
FIBER GLASS STRAIN INSULATOR
1. MINIMUM 15,000 LBS. BREAKING STRENGTH
2. ROLLER ENDS
3. IF USED TO GUARD LIVE CONDUCTOR, CENTER CONDUCTOR ON INSULATOR.
4. LENGTH (L) OF INSULATOR IN INCHES INDICATED BY NUMBER FOLLOWING UNIT NUMBER.
EX. 54" UNIT DENOTED AS HE-201-54
5. JOSLYN NO. 500 SERIES OR EQUAL.
6. IF TWO INSULATORS ARE REQUIRED SAME GUY, PROVIDE PROTECTION ZONE TO THROUGH CONDUCTORS IF PRESENT.

GUY INSULATOR
FIBER GLASS

June 1, 1979 — HE-201

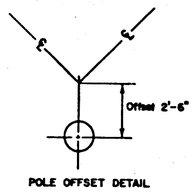
DETAILS

FRANKLIN COUNTY
FRA-104-10.57



TRANSMISSION LINE STRUCTURE
HORIZONTAL LINE POST, SMALL ANGLE

		Page 1 of 2
JUNE 1, 1979		HE - 301



POLE OFFSET DETAIL

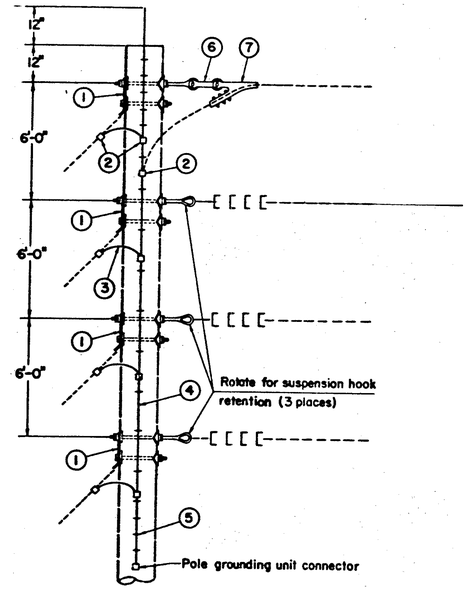
NOTE:

1. Staples on downlead shall be 2 feet apart except for a distance of 8 feet above ground, and 2 feet from top of pole where they shall be 6" apart.
2. Metal shims should be used to adjust insulators when brackets are located on uneven pole surfaces.

		ASSEMBLY HE-301	
18	Connector REA (p)	4	
17	Jumper REA (aq)	2	
16	Spring Washer, 11/16" hole	3	
15	Ground Wire Clamp REA (dp)	1	
14	2" x 1/2" Open Galvanized Staples REA (al)	See NOTE 1	
13	Ground Wire Suspension Clamp REA (m)	1	
12	Ground Wire Cable Support REA (ed)	1	
11	Ground Wire Holder (McGraw-Edison DW 2L2 or Equal)	2	
10	Steel Wire, 3-Strand, .5/16" Dia., "C" Galv. REA (cj), length as req'd.	1	
9	Washer, Square, Galv., 2 1/4" x 2 1/4" x 3/16", 11/16" Hole REA (d)	3	
8	Washer, Curved, 4" x 4" x 1/4" with 13/16" Hole REA (d)	3	
7	Fiberglass Bracket, Tapped For Downlead	3	
6	Armor Grip Support, or Equivalent, select for angle involved	3	
5	5/8" Locknut REA (ek)	5	
4	3/4" Locknut REA (ek)	3	
3	5/8" Machine Bolt x Required Length REA (c)	3	
2	3/4" Machine Bolt x Required Length REA (c)	3	
1	Horizontal Post Insulator, REA ea(2), LAPP F-4788-70	3	
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D.

TRANSMISSION LINE STRUCTURE
HORIZONTAL LINE POST
SMALL ANGLE

		Page 2 of 2
June 1, 1979		HE-301



NOTES:
(1) Install staples every 2 ft. except within 8 ft. of top and within 2 ft. of grounding unit connector where they shall be every 6 inches apart

		ASSEMBLY HE-302	
7	Clamp, strain, OB-83832	1	
6	Clevis-Eye extension, 10", OB-82910	1	
5	Staples, Ground wire, copercoated as req'd. 2" x 1/2" opening	as req'd.	
4	Cable, Ground, #2 BC SD, length as req'd.	1	
3	Jumper, #2 BC SD, length as req'd.	4	
2	Connector, compression, REA (p)	9	
1	REA Unit TG 21	4	
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D.

TRANSMISSION LINE STRUCTURE DEAD END

June 1, 1979		HE-302

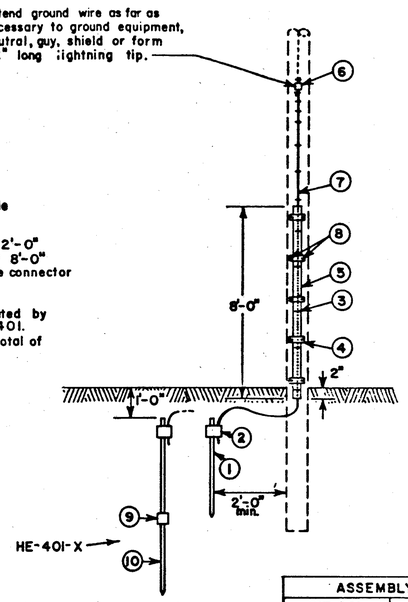
FHWA REGION	STATE	PROJECT	
	OHIO		

232
254

DETAILS

FRANKLIN COUNTY
FRA-104-10.57

232

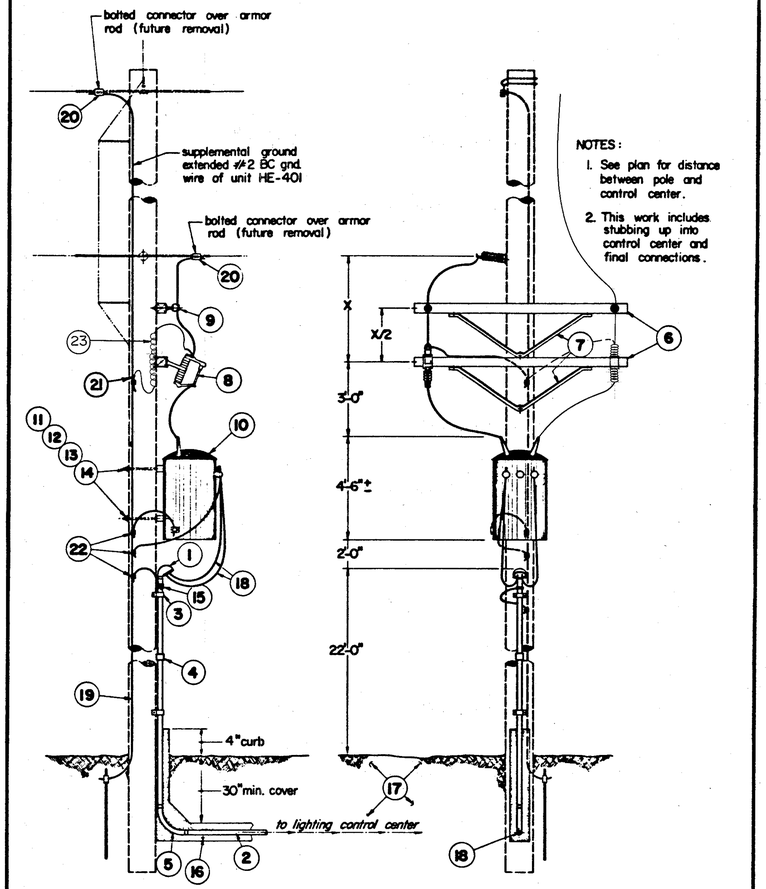


NOTES:
1. Locate ground wire on neutral side of pole.
2. Staples on ground wire shall be 2'-0" apart except for a distance of 8'-0" above ground and 2'-0" from tie connector where they shall be 6" apart.
3. No. of extension sections indicated by adding a digit to end of HE-401. Example, one additional rod (total of 2) would be HE-401-1

ITEM	MATERIAL	ASSEMBLY HE-401 NO. REQ'D.	ASSEMBLY HE-401-X NO. REQ'D.
10	Rod, copperweld, 5/8"x 8' long, sectional		X
9	Coupling, ground rod, 5/8"		X
8	Nails, gal., 10d	as req'd.	as req'd.
7	Wire, # 2 BC S.D., length as req'd.	1	1
6	Connector, compression, REA (p)	1	1
5	Molding, plastic, 8'x 3/4" nom. (96-KG-3/4)	1	1
4	Staples, plastic, 3/4" (KS-3/4)	5	5
3	Staples, copper coat, 3/8"x 1-3/4"	as req'd.	as req'd.
2	Connector, ground rod, copper or bronze, 5/8"	1	1
1	Copperweld Rod, 5/8" X 8', sectional type	1	1

POLE GROUNDING UNIT
ROD TYPE

June 1, 1979 | HE-401 , HE-401-X



NOTES:
1. See plan for distance between pole and control center.
2. This work includes stubbing up into control center and final connections.

ITEM	MATERIAL	NO. REQ'D.
23		2
22	Connector, compression, size and material to suit conductors	5
21	Jumper, Copper, size # 2 BC S.D., length as required	4
20	Clamp, bolted, size and material to suit conductors	4
19	Grounding Unit HE-401	1
18	Cable, No. 2/0 Cu, THW-USE	as req'd.
17	Trenching, back fill and patch	as req'd.
16	Concrete, Ohio DOH type C, 3" encasement all sides	as req'd.
15	Clamp, grounding, saddle, 2"	1
14	Nut, Lock, type MF, 5/8"	2
13	Nut, 5/8" square	2
12	Washer, square, curved, 3"x3"x 1/4", 11/16" Hole	2
11	Bolt, 5/8"x length required	2
10	Transformer, 75KVA, SEE WRITTEN SPEC.	1
9	REA Unit M5-5	2
8		2
7	REA Unit M5-12	2
6	REA Unit M5-14	2
5	Elbow, 90°, long sweep, gal. steel	2
4	Coupling, 2" gal. steel	as req'd.
3	Clamp, 2" conduit, 2 hole, gal. with 2 lag screws	4
2	Conduit, 2", rigid gal. steel	as req'd.
1	Weatherhead, 2", insulated, gal.	1

HIGHWAY LIGHTING CONTROL CENTER
TRANSFORMER ASSEMBLY

June 1, 1979 | Page 1 of 2 | HE-1802

ASSEMBLY
HE 1802

HIGHWAY LIGHTING CONTROL CENTER
TRANSFORMER ASSEMBLY

June 1, 1979 | Page 2 of 2 | HE-1802

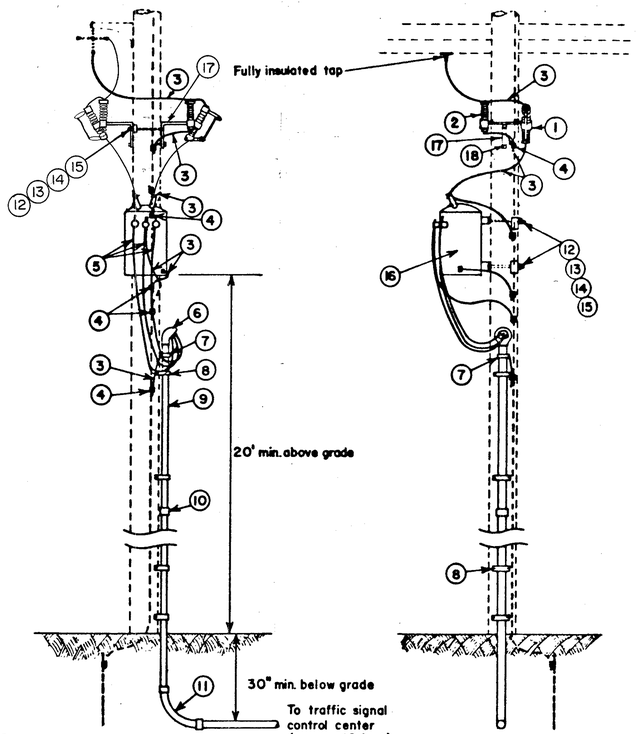
DETAILS

FRANKLIN COUNTY
FRA-104-10.57

		ASSEMBLY HE 1805	
18	Screw, lag, 1/2"x 4"	1	
17	Bracket, ell, Chance C206-0236	2	
16	Transformer, 10 KVA, written spec.	1	
15	Nut, lock, type MF, 5/8", galvanized	2	
14	Nut, 5/8", square, galvanized	2	
13	Washer, square, curved, 3"x 3"x 1/4" with 11/16" hole	2	
12	Bolt, 5/8" by length req'd.	2	
11	Elbow, 90°, 2" galvanized rigid steel	2	
10	Coupling, 2", conduit, galvanized rigid steel	as req'd.	
9	Conduit, 2", galvanized rigid steel, length as req'd.	1	
8	Clamp, conduit, 2", 2 hole, with 2-4" lag screw	3	
7	Clamp, saddle, grounding, 2" conduit	1	
6	Weather head, insulated, 2"	1	
5	Cable, #6 CU, THW, stnd., length as req'd.	3	
4	Connector compression, size and material to suit conductors	5	
3	Jumper, #6 BC, length as req'd.	5	
2	Arrester, lightning, 12 kv, gnd. disconnect type	2	
1	Cutout, fused, 100A., 15kv, Chance type C	2	
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D.

TRAFFIC SIGNAL CONTROL CENTER
TRANSFORMER ASSEMBLY

June 1, 1979 | Page 2 of 2 | HE 1805

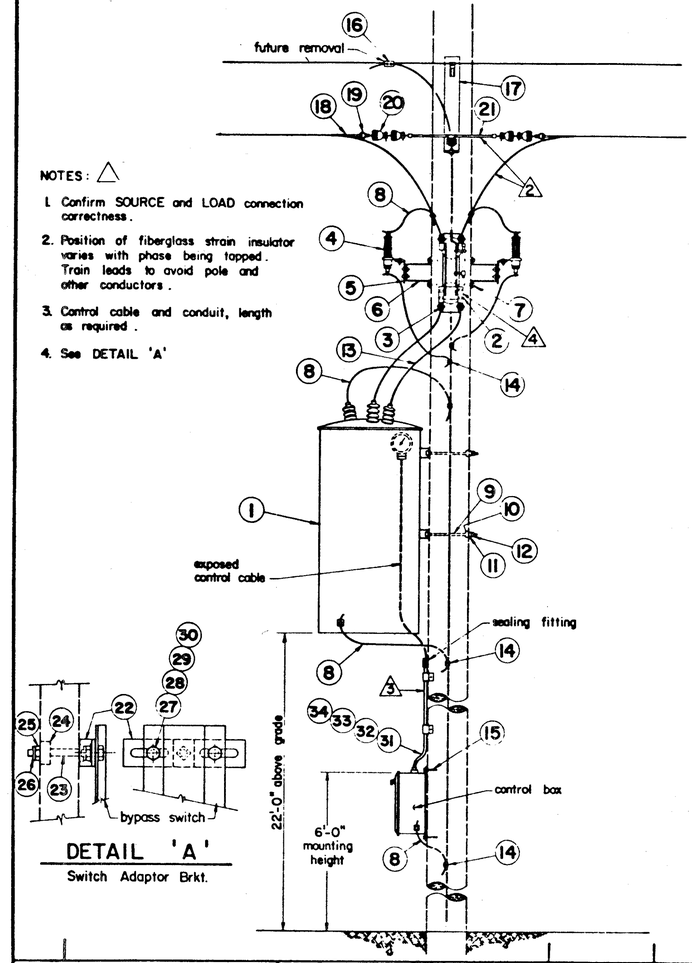


NOTES:

1. This work includes stubbing up into control center service switch and making final connections.
2. Provide extender bracket so that energized cutout hardware clears crossarm brace by at least 7 inches.

TRAFFIC SIGNAL CONTROL CENTER
TRANSFORMER ASSEMBLY

June 1, 1979 | Page 1 of 2 | HE 1805



NOTES: △

1. Confirm SOURCE and LOAD connection correctness.
2. Position of fiberglass strain insulator varies with phase being tapped. Train leads to avoid pole and other conductors.
3. Control cable and conduit, length as required.
4. See DETAIL 'A'

DETAIL 'A'
Switch Adaptor Brkt.

SINGLE PHASE REGULATOR
ASSEMBLY, POLE MOUNT

SEPT. 1, 1979 | PAGE 1 OF 2 | HE - 1807

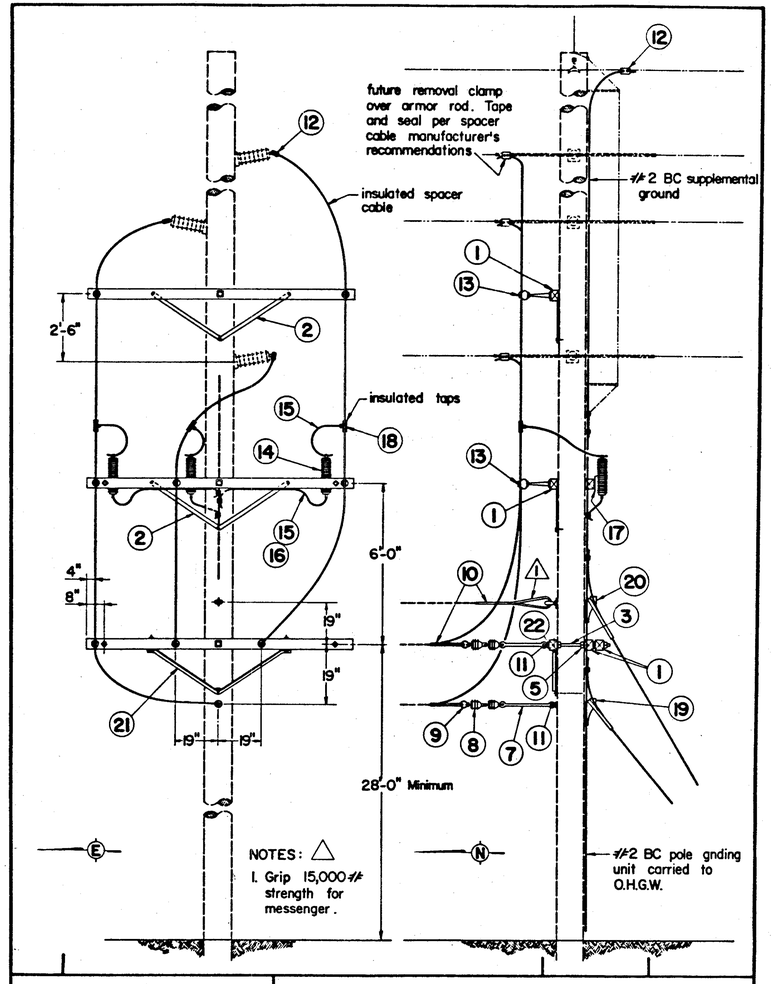
DETAILS

FRANKLIN COUNTY
FRA-104-10.57

ITEM	MATERIAL	ASSEMBLY HE-1807 NO. REQ'D.	NO. REQ'D.
1	Regulator, step, voltage, see written specification	1	
2	Switch, regulator bypass, 600 Amp., see written specification	1	
3	Connector, cable, NEMA 2 hole, to suit metals joined	4	
4	Arrester, lightning, 12 KV, ground disconnector type	2	
5	Bracket, NEMA arrester, with bolt, lock washer & nuts	2	
6	Bracket, standoff, Joslyn J24519	2	
7	Screw, lag, 1/2" x 4"	4	
8	Jumper, #2 BC soft drawn, length as req'd.	7	
9	Bolt, 3/4", length as req'd.	2	
10	Washer, square, curved, 4" x 4" x 1/4"	2	
11	Nut, square, 3/4"	2	
12	Nut, lock, type MF	2	
13	Jumper, , length as req'd., copper, NO. 4/0	2	
14	Connector, compression, size & material to suit conductors joined	8	
15	Screw, lag, dia. & length to suit control box	2	
16	Connector, 2 bolt, #2 BC to 052 AWA messenger	1	
17	Tangent Bracket Extension Assembly, Unit HE-105	1	
18	Grip, conductor, preformed, dia. to suit spacer cable	2	
19	Clevis, thimble, Joslyn J555	2	
20	Insulator, deadend, OB 42399	4	
21	Insulator, fiberglass strain, 12", eye-eye ends, Joslyn 500 series	1	
22	Plate, adapter, Chance C211-0015	2	
23	Bolt, 5/8" by req'd length	2	
24	Washer, square, curved 2 1/4" x 2 1/4" x 3/16"	2	
25	Nut, 5/8", square	2	
26	Nut, 5/8", lock type MF	2	
27	Bolt, 1/2" x req'd. length	4	
28	Washer, round, 1 3/8" O.D., 9/16" I.D.	4	
29	Washer, spring, lock, for 1/2" bolt	4	
30	Nut, square, 1/2"	4	
31	Conduit, rigid steel, dia. to suit control cable, length 10'	1	
32	Connectors, WP, one cable sealing & one rain hub, dia. as req'd.	2	
33	Clamp, conduit, dia. as req'd.	3	
34	Screw, lag, to suit item 33	3	

SINGLE PHASE REGULATOR ASSEMBLY, POLE MOUNT

Sept. 1, 1979 | PAGE 2 OF 2 | HE-1807



TRANSITION POLE ASSEMBLY

Sept. 1, 1979 | PAGE 1 OF 2 | HE-1808

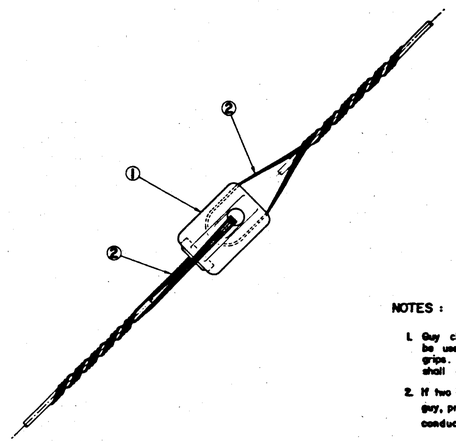
ITEM	MATERIAL	ASSEMBLY HE-1808 NO. REQ'D.	NO. REQ'D.
1	Crossarm, 3 1/2" x 4 1/2" x 10'	6	
2	Brace, REA Unit M5-11	6	
3	Bolt, double arming, 5/8" x req'd. length	7	
4	Washer, square, flat, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	25	
5	Nut, 5/8", square	22	
6	Nut, 5/8", lock, type MF	22	
7	Link, extension, 20", Joslyn J6659	3	
8	Insulator, deadend, OB 42339	6	
9	Clevis, thimble, Joslyn J555	4	
10	Grip, preformed, size & material to suit gripped object	4	
11	Oval Eyenut, 5/8"	3	
12	Connector, bolted, similar to Anderson LCC, LCU-10 as appropriate	4	
13	REA Unit M5-5	6	
14	Arrester, lightning, 12 KV, ground disconnect type	3	
15	Jumper, #6 BC, length as req'd.	6	
16	Staples, copper	as req'd.	
17	Bracket, arrester, NEMA type A	3	
18	Connector, tap, per spacer cable mfg's. recommendations, insulated	3	
19	Unit HE-203 plus Ovaleyenut	1	
20	Unit HE-203A	1	
21	REA Unit M5-12	2	
22	Washer, spring lock, 9/16" hole	14	

TRANSITION POLE ASSEMBLY

Sept. 1, 1979 | PAGE 2 OF 2 | HE-1808

DETAILS

FRANKLIN COUNTY
FRA-104-10.57



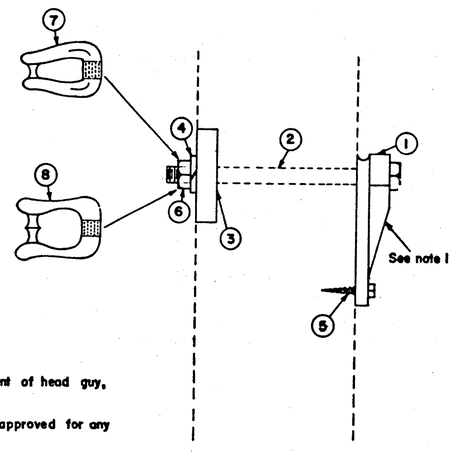
NOTES :

1. Guy clamps and clips may be used in place of preformed grips. Holding power of clamps shall equal or exceed 12,000 lbs.
2. If two insulators are required in same guy, provide protection zone to through conductors if present.

		ASSEMBLY	
		HE-202	HE-202X
2	Grip, guy strand, 12,000# min. strength, diameter as req'd. by guy	2	2+2X
1	Insulator, strain, porcelian, O B 31504	1	1+X
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D.

INSULATOR GUY STRAIN ASSEMBLY

June 1, 1979 — HE-202



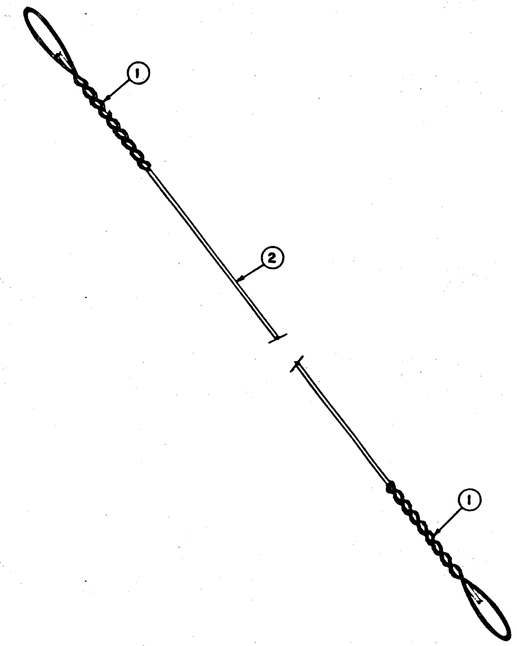
NOTES:

1. When used as lower attachment of head guy, invert guy hook.
2. Items 1, 7, and 8 shall be approved for any guy grips used thereon.
3. Cut off bolt length as req'd. for use of items 7 and 8.

		ASSEMBLY		
		HE-203	HE-203A	HE-203B
8	Nut, twineye, Joslyn J6515			1
7	Nut, thimbleye, Joslyn J6510		1	
6	Nut, 5/8", square	1		
5	Screw, lag, 1/2" x 4"	1	1	1
4	Washer, spring, lock for 5/8" bolt	1	1	1
3	Washer, square, curved, 3" x 3" x 1/4" with 11/16" hole	1	1	1
2	Bolt, 5/8" x req'd. length	1	1	1
1	Hook, guy, for 5/8" bolt	1	1	1
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D.	NO. REQ'D

GUY ATTACHMENT ASSEMBLIES

SEPT. 1, 1979 — HE-203, 203A,B



		ASSEMBLY	
		HE-204	
2	Wire, guy, 3/8" galvanized, 11,500# min. strength, length as req'd.	1	
1	Grip, guy, for 3/8" galvanized steel strand, #15,000 strength	2	
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D

GUY ASSEMBLY WITH PREFORMED GRIPS

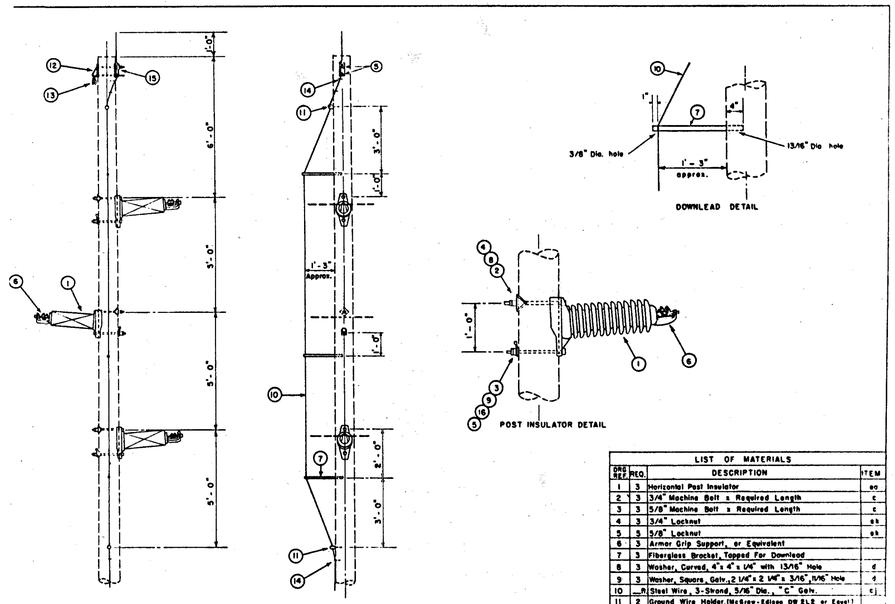
SEPT. 1, 1979 — HE-204

FRANKLIN COUNTY
FRA-104-10.57

DETAILS

INDEX - REA UNITS OF CONSTRUCTION DRAWINGS

UNIT NO.	TITLE
TP-69	Transmission Line Tangent Structure 69 KV Horizontal Line Post
TA-1-5	Transmission Line, Single Rod Log Anchor Assembly
TA-1-8	Transmission Line, Two Rod Log Anchor Assembly
TA-2	Transmission Line, Rock Anchor Assembly
TA-3	Transmission Line, Steel Plate Anchor Assembly
TA-3S	Transmission Line, Steel Plate Anchor Assembly
TG-1,2,3,4	Transmission Line Guy Assemblies
TG-19,20,21	Transmission Line Guy Attachment Units
TG-22	Guy Link Assemblies
TM-1	Guide to Insulator String Assemblies
TM-101	Foundation Stabilizer for Braced H-Frame Structure
E1-1,-2,-3	Single Down Guy, Through Bolt Type
E2-1,-2,-3	Single Overhead Guy, Through Bolt Type
F1-1 to 4	Line Anchor Assemblies
F6-1,-2,-3	Swamp Anchor Assembly
M5-1 to 8	Miscellaneous Primary Assemblies
M5-9 to 16	Miscellaneous Primary Assemblies
M5-17 to 23	Miscellaneous Primary Assemblies
M45-20	Splicing Guide-Compression Type Copper Type Conductors
M45-21	Splicing Guide-Compression Type A.C.S.R. Conductor



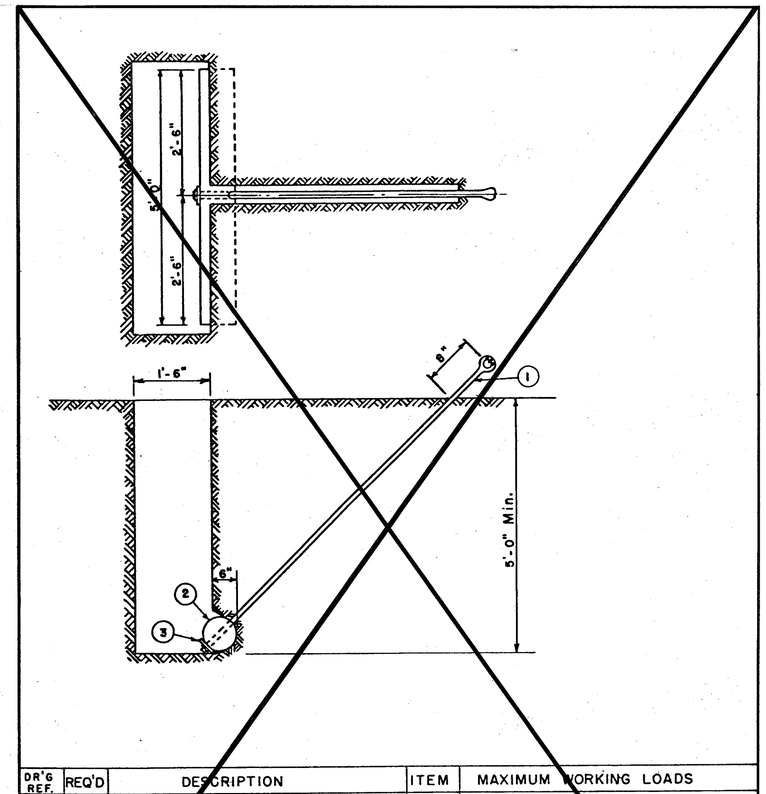
NOTE:
1. Staples on downlead shall be 2 feet apart except for a distance of 8 feet above ground, and 2 feet from top of pole where they shall be 6 inches apart.
2. Metal shims should be used to adjust insulators when brackets are located on uneven pole surfaces.

LIST OF MATERIALS

DRG REF.	REQ.	DESCRIPTION	ITEM
1	3	Horizontal Post Insulator	ao
2	3	3/4" Machine Bolt x Required Length	c
3	3	5/8" Machine Bolt x Required Length	c
4	3	3/4" Lockwt	eh
5	3	5/8" Lockwt	eb
6	3	Armor Grip Support, or Equivalent	
7	3	Fiberglass Bracket, Topped For Downlead	
8	3	Washer, Curved, 4"x 4" x 1/4" with 13/16" Hole	d
9	3	Washer, Square, Galv., 2 1/4" x 2 1/4" x 3/16", 11/16" Hole	d
10	1	Steel Wire, 3-Strand, 5/8" Dia. "E" Galv.	ej
11	2	Ground Wire Holder, (Westinghouse-Edison DW ELB or Equal)	
12	1	Ground Wire Cable Support	ed
13	1	Ground Wire Suspension Clamp	m
14	__"	2"s 1/2" Open Galvanized Staples	al
15	1'	Ground Wire Clamp	do
16	3	Spring Washer, 11/16" Hole	

TRANSMISSION LINE TANGENT STRUCTURE
69 KV. HORIZONTAL LINE POST
(69 KV. MAXIMUM)

REV. JULY 1972 | JAN. 1968 | TP-69



DR'G REF.	REQ'D	DESCRIPTION	ITEM	MAXIMUM WORKING LOADS
1	1	3/4"x 8'-0" Twin Eye Anchor Rod	x	8,000#
2	1	8"x 5'-0" Anchor Log	z	8,000# in average soil
3	1	4"x 4" x 1/2" Galv. Sq. Washer, 13/16" Hole	d	

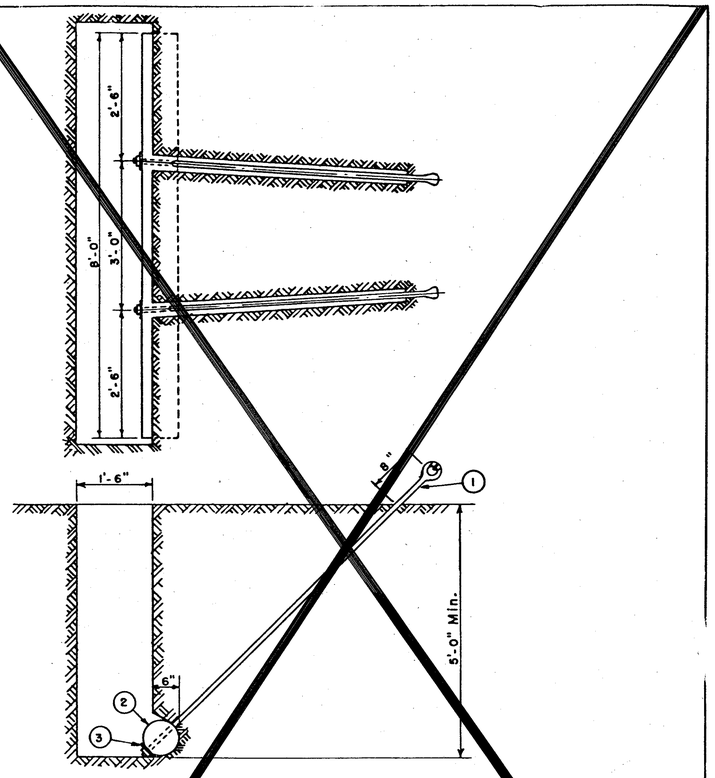
TRANSMISSION LINE
SINGLE ROD LOG ANCHOR ASSEMBLY

No.	REVISION	Date:
1	Reissued.	8-56

Scale:
Date:
TA-1-5

DETAILS

FRANKLIN COUNTY
FRA-104-10.57

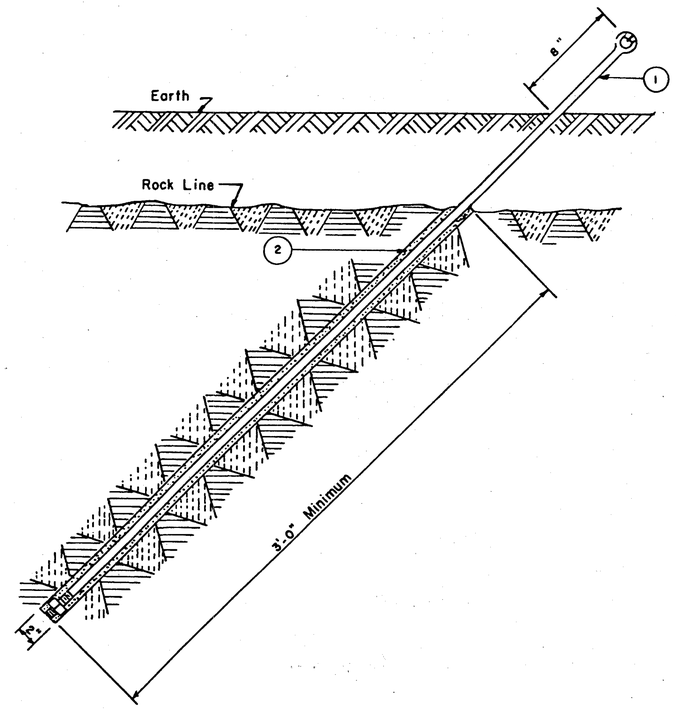


DR'G REF.	REQ'D	DESCRIPTION	ITEM	MAXIMUM WORKING LOADS
1	2	3/4"x8'-0" Twin Eye Anchor Rod	x	8,000 #
2	1	8"x8'-0" Anchor Log	z	16,000 # in average soil
3	2	4"x 4"x 1/2" Galv. Sq. Washer, 13/16" Hole	d	

TRANSMISSION LINE
TWO ROD LOG ANCHOR ASSEMBLY

No.	REVISION	Date:
1	Reissued	8-56

Scale:
Date:
TA-1-8

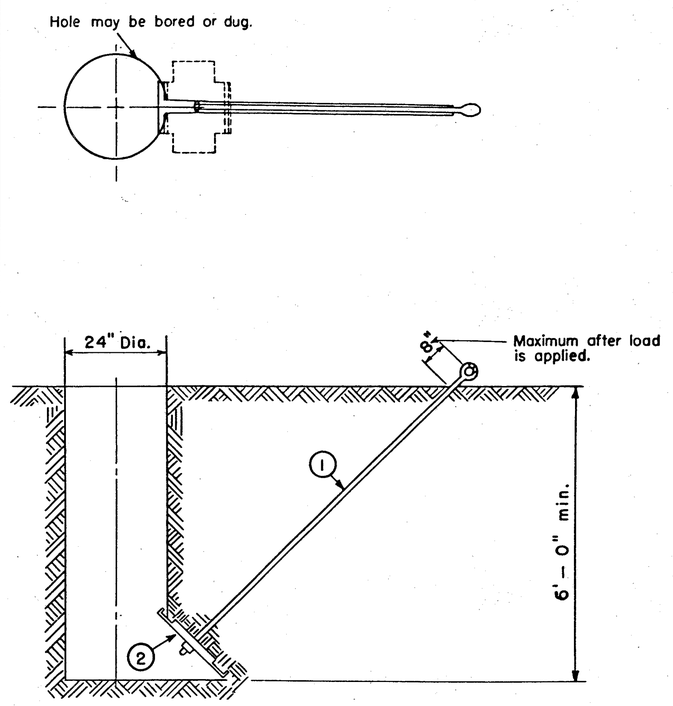


DR'G REF.	REQ'D	DESCRIPTION	ITEM	MAXIMUM WORKING LOAD
1	1	3/4"x 8'-0" Twin Eye Anchor Rod	x	8000 #
2		Grout		

TRANSMISSION LINE
ROCK ANCHOR ASSEMBLY

No.	REVISION	Date:
1	Reissued	8-56

Scale:
Date:
TA-2



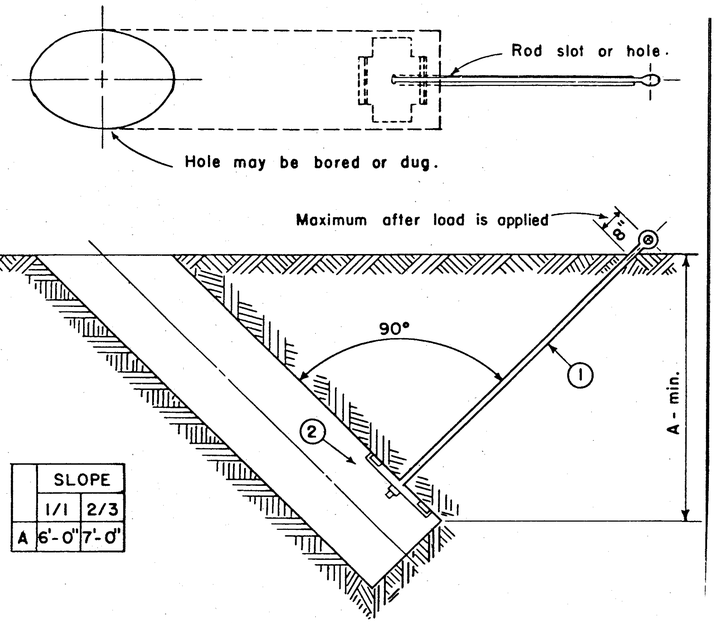
DR'G REF.	REQ'D	DESCRIPTION	ITEM	MAXIMUM WORKING LOADS
1	1	3/4" x 8'-0" Twin Eye Anchor Rod & Sq. Nut	x	8,000 #
2	1	Plate Anchor	z	8,000 # in average soil

TRANSMISSION LINE
STEEL PLATE ANCHOR ASSEMBLY

Scale:
Date: 11-23-66
TA - 3

DETAILS

FRANKLIN COUNTY
FRA-104-10.57



	SLOPE	
	1/1	2/3
A	6'-0"	7'-0"

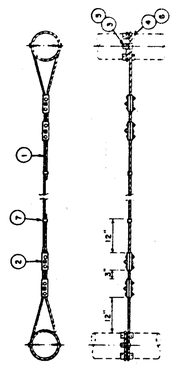
NOTES:

1. Dig or bore hole at an angle of approximately 90° with guy.
2. Apply tension to anchor rod before backfilling.

ORG REF.	REQD	DESCRIPTION	ITEM	MAXIMUM WORKING LOADS
1	1	3/4" x 8'-0" Twin Eye Anchor Rod & Sq. Nut	x	8000 lb.
2	1	Plate Anchor	z	8000 lb., in average soil

TRANSMISSION LINE
STEEL PLATE ANCHOR ASSEMBLY

Feb. 1965
TA - 3S



OVERHEAD GUY
TG-4

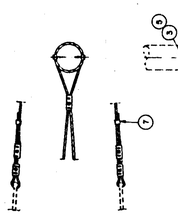
LIST OF MATERIAL

ORG REF	REQUIRED TG-1	TG-2	TG-3	TG-4	DESCRIPTION	ITEM
1	75'±	150'±	150'±	225'±	Guy Wire	f
2	4	5	5	4	3 Bolt Guy Clamp, 6" Long	a
3	2	2	2	4	Guy Hook	bi
4	2	2	2	4	Guy Plate	bi
5	2	2	2	4	1/2" x 4" Lag Screw	j
6	1/16*	1/16*	1/16*	1/8*	8d GALV. NAILS	bp
7	2	2	2	2	Guy Clip	dz

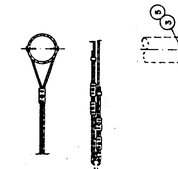
TRANSMISSION LINE GUY ASSEMBLIES

Date: TG-1,2,3,4
Scale: 1/8"=1'-0"
Date: 8-56

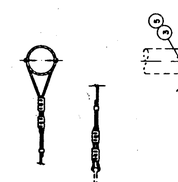
No.	REVISION
1	Reissued



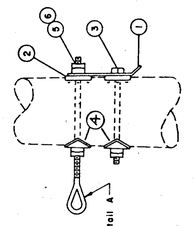
DOUBLE GUY TO TWO RODS
TG-3



DOUBLE GUY TO ONE ROD
TG-2



SINGLE GUY
TG-1



GUY ATTACHMENT
TG-21

NOTES
1. Tighten machine bolts until grid gain teeth are indented full depth into guys.
* 2. One, single curve, grid gain 4 1/2" x 9" may be substituted for two grid gains 4" x 4".

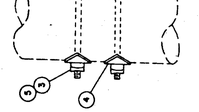
LIST OF MATERIALS

ORG REF.	REQ'D	ITEM	DESCRIPTION
1	12-61		
*	2	2	Guying Plate 3/8" x 5"
	2	2	Grid Gain 4" x 4" Min. 13/16" hole
	2	2	Bolt, Machine, 3/4" x req'd length
3	2	2	Washer, Cut 2 1/2" x 2 1/2" x 13/16" hole
5	2	2	Lockwasher for 3/4" bolt, MF 13/16" hole
6	1	1	Eyebolt-Double arming 3/4" x req'd length
	1	1	Grid Gain 4 1/2" x 9" min. x 13/16" holes, single curve
2	1	1	Grid Gain 4" x 4" min. x 13/16" holes, single curve

Date: 12-3-62
TG-19, 20, 21

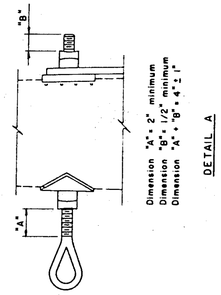
TRANSMISSION LINE
GUY ATTACHMENT UNITS

Scale: NONE



OVERHEAD GUY ATTACHMENT
TG-19

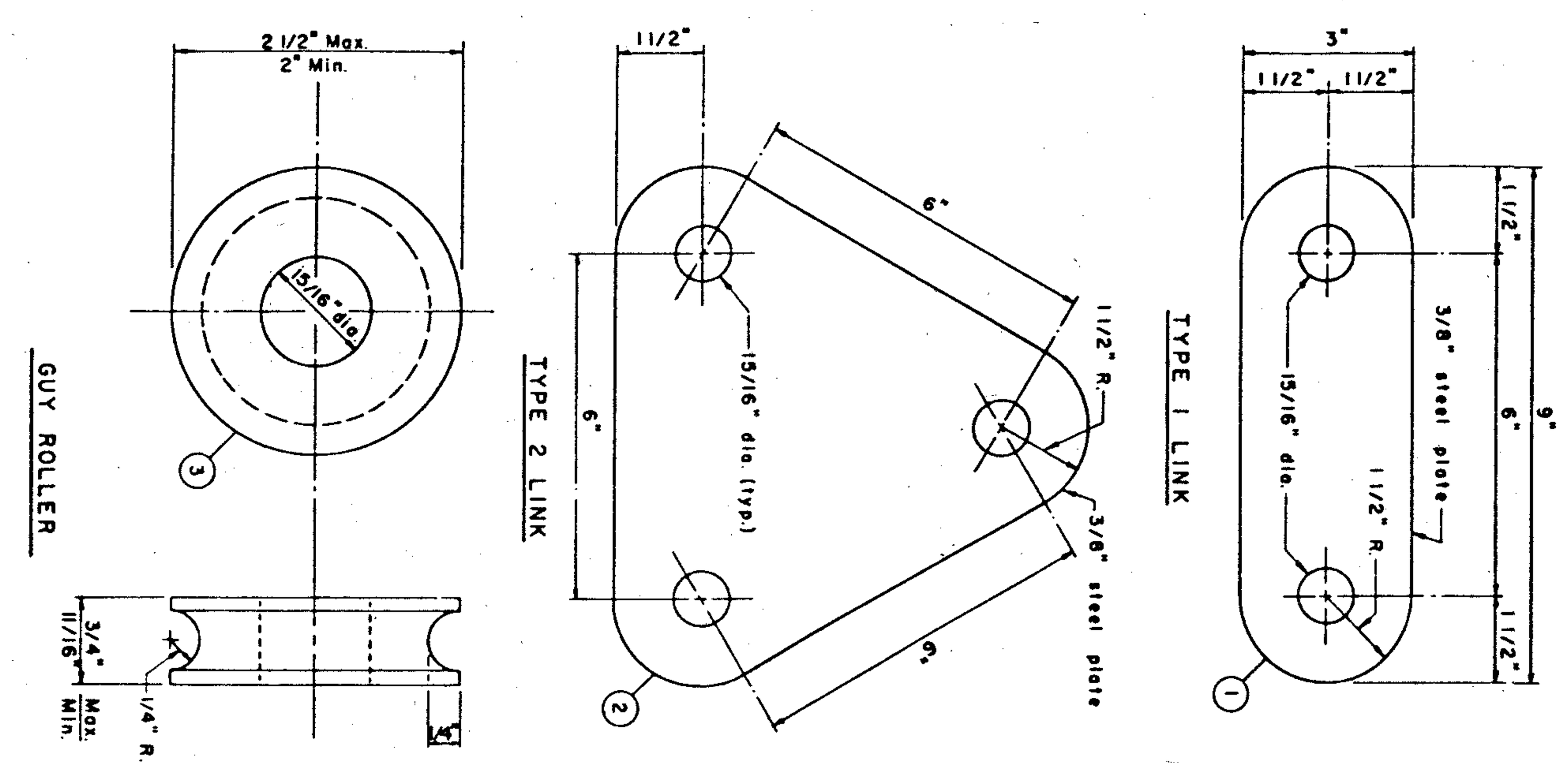
GUY ATTACHMENT
TG-20



DETAIL A

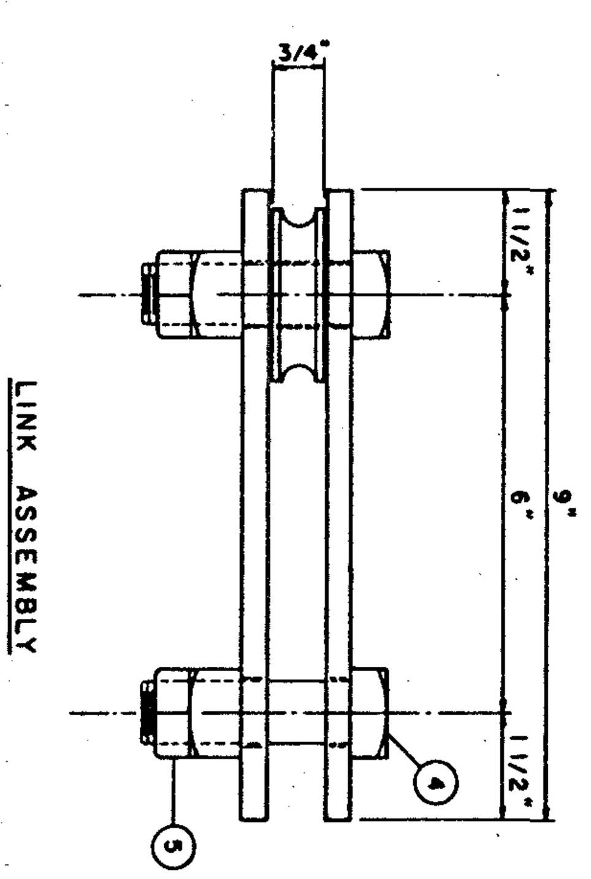
DETAILS

FRANKLIN COUNTY
FRA-104-10.57



NOTES

1. Leave roller free to turn during adjustment of guys. Tighten nuts and locknuts after completion of adjustments.
2. Use Type 1 Guy Link Assembly for all normal guying applications.
3. Substitute one Type 2 Guy Link Assembly for two Type 1 assemblies when attaching two down guy assemblies to one guy plate for spread, head or back guying of OHGW on tangent structures where OHGW is located directly above conductor, i.e. TM-15 structure.
4. Links to be fabricated from ASTM-A36 steel plate.
5. All steel parts shall be hot-dip galvanized.

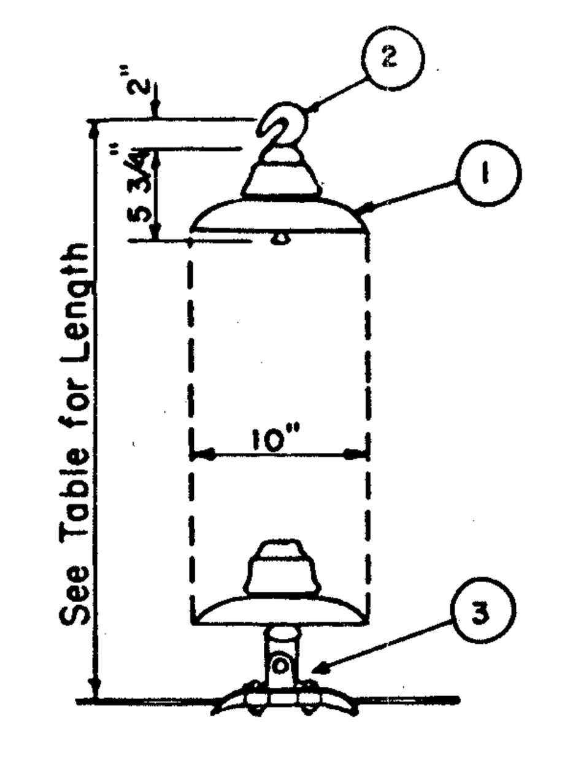


LIST OF MATERIALS

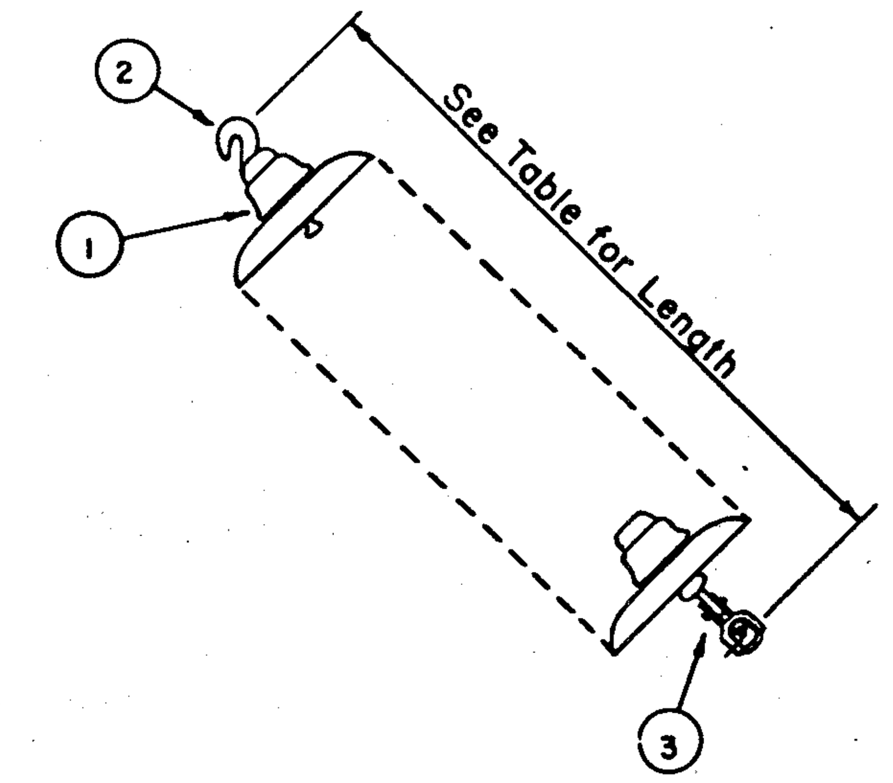
DRG REF	REQ'D TYPE 1	REQ'D TYPE 2	DESCRIPTION	ITEM
1	1		Type 1 link	
2		1	Type 2 link	
3	1	2	Guy Roller	
4	2	3	Bolt, Machine, 7/8" x 3"	c
5	2	3	Locknut for 7/8" bolt, MF Type	ek

GUY LINK ASSEMBLIES

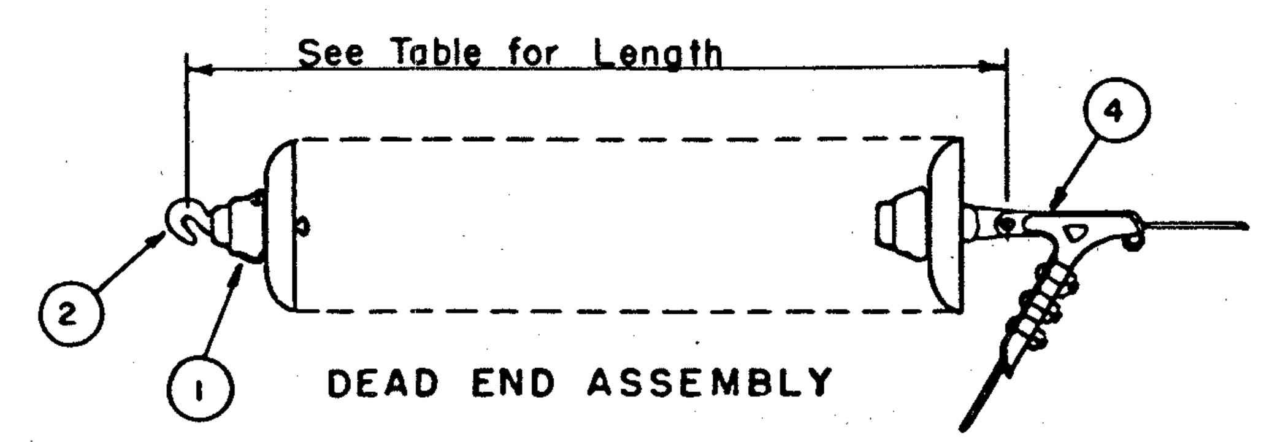
Scale: NONE | Date: 12-3-62 | TG-22



TANGENT ASSEMBLY



ANGLE ASSEMBLY



DEAD END ASSEMBLY

NOTE:
(1) Suitable conductor clamps must be selected for the conductor being used. The exact length of suspension and angle strings will depend on the clamp used.

(2) Number of units are for average conditions.

(3) 230 KV. conductor hardware and accessories shall be approved by the engineer and shall be of a type which minimizes formation of corona and RIV.

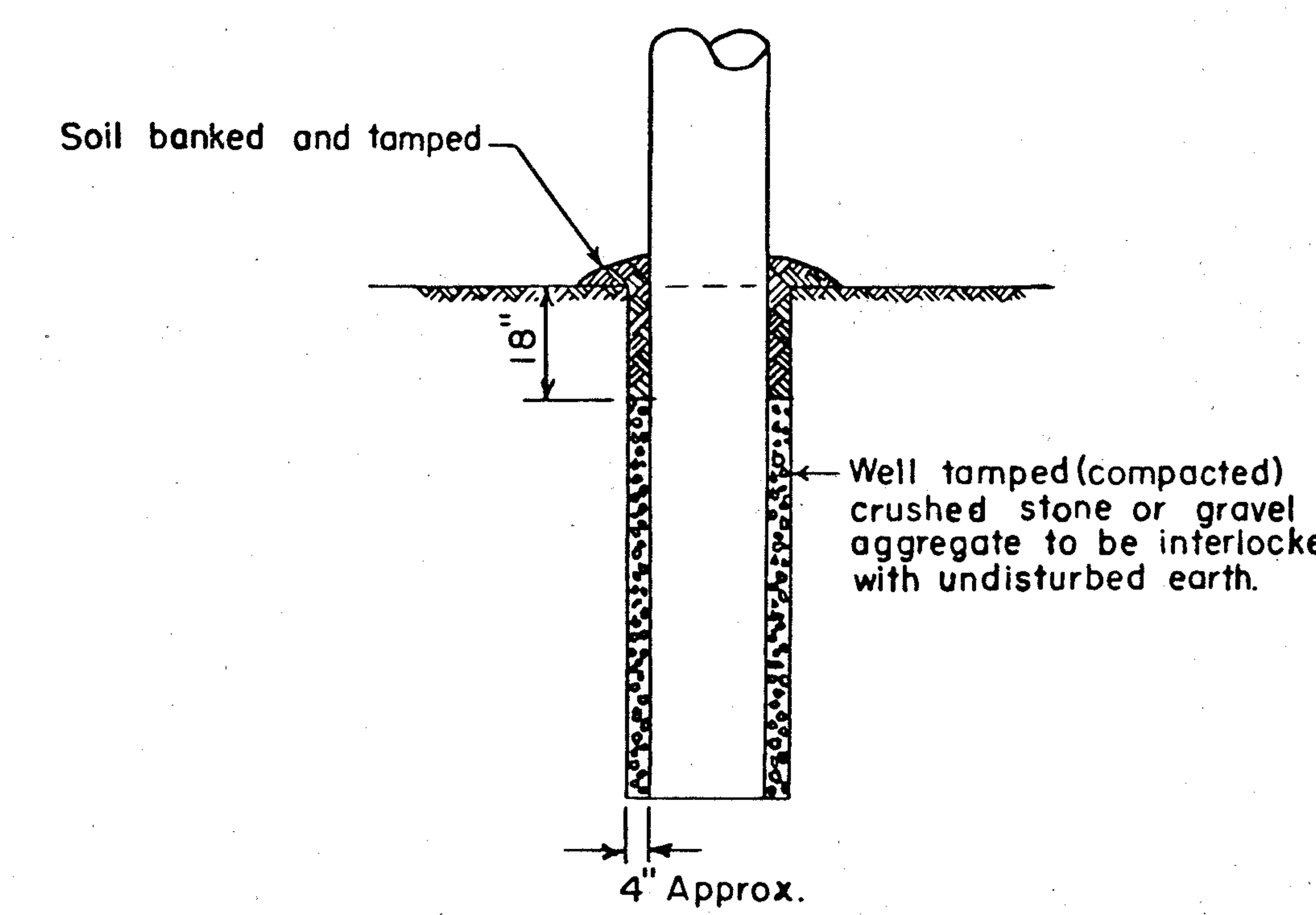
VOLTAGE CLASS	TANGENT UNITS	TANGENT LENGTH	ANGLE UNITS	ANGLE LENGTH	DEAD END UNITS	DEAD END LENGTH
34.5 KV.			3	2'-0"±	4	2'-3"±
46 KV.	3	2'-0"±	4	2'-6"±	5	2'-9"±
69 KV.	4	2'-6"±	5	3'-0"±	6	3'-2"±
115 KV.	7	3'-11"±	8	4'-5±	9	4'-8"±
138 KV.	8	4'-5"±	9	4'-11"±	10	5'-2"±
161 KV.	10	5'-4"±	11	5'-10"±	12	6'-1"±
230 KV.	12-14		13-16		16	8'-1"±

LIST OF MATERIAL

DRG. REF.	REQ'D	DESCRIPTION	ITEM
1		5 3/4" x 10" Suspension Insulator	k
2	1	Suspension Hook	eh
3	1	Suspension Clamp & Connecting Piece	el
4	1	Dead End Clamp & Connecting Piece	ej

GUIDE TO
INSULATOR STRING ASSEMBLIES

Scale: | Date: 11-22-66 | TM-1



NOTES

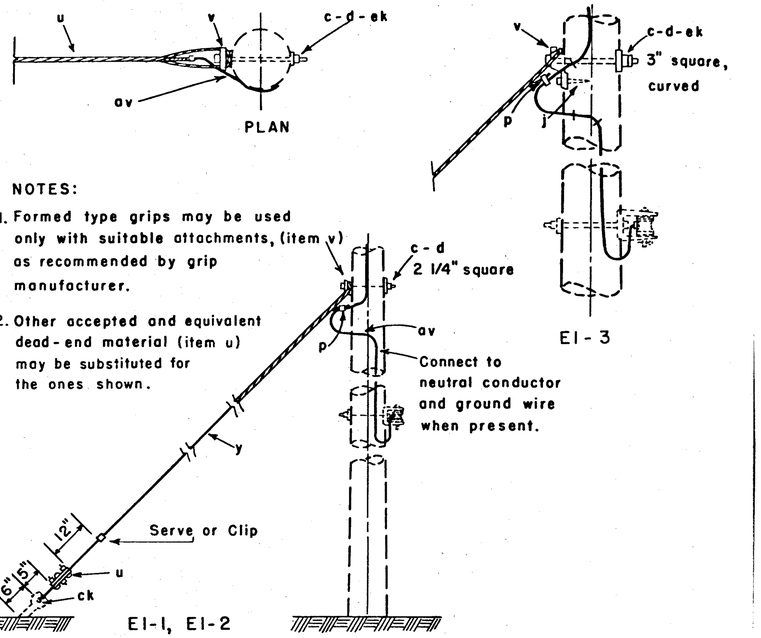
1. The TM-101 special backfill shall be specified by Engineer where replacement of earth removed from hole will not provide adequate pole stability.
2. The specification for aggregate given below is minimum. In areas where smaller fines can be procured at reasonable cost it is recommended that Engineer so specify.
3. The aggregate shall be well mixed in stock pile so that materials distributed to individual poles shall essentially conform to specifications.

SIZE OF GRAVEL OR CRUSHED STONE	SIZE OF MESH IN INCHES
100% by weight to pass 1" screen	1.00
60%-90% " " " 1/2" "	.500
40%-60% " " " No. 4 "	.187
25%-50% " " " " 8 "	.0937
20%-40% " " " " 16 "	.0469
15%-30% " " " " 40 "	.0165

FOUNDATION STABILIZER FOR BRACED
H-FRAME STRUCTURE

Scale: None | Date: 10-26-62 | TM-101

DETAILS



NOTES:

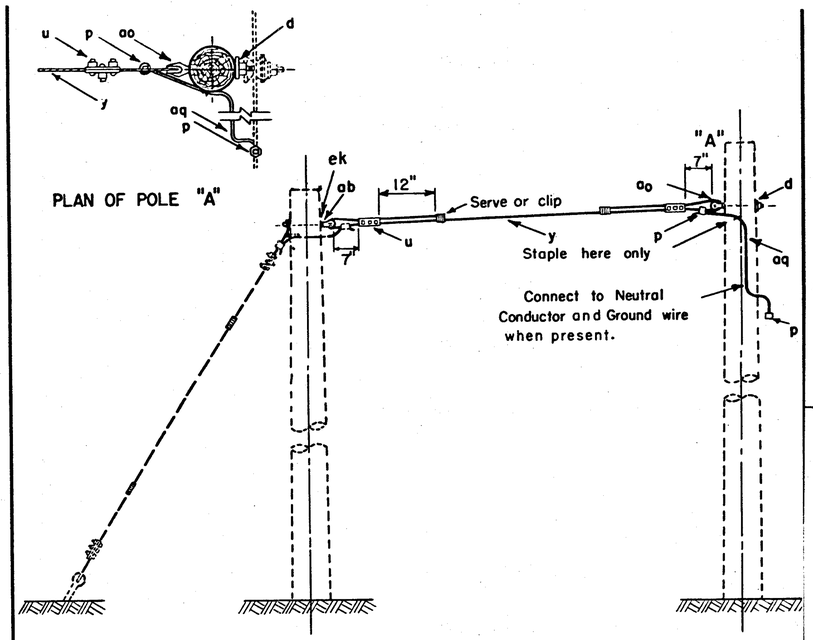
1. Formed type grips may be used only with suitable attachments, (item v) as recommended by grip manufacturer.
2. Other accepted and equivalent dead-end material (item u) may be substituted for the ones shown.

See guide drawings M30-1 and M30-2

ITEM	MATERIAL	ASSEMBLY UNIT EI-1 1/4" Guy Wire No. REQ'D.	EI-2 3/8" Guy Wire No. REQ'D.	EI-3 7/16" Guy Wire No. REQ'D.
c	Bolt, machine, 5/8" x required length	1	1	1
d	Washer, 2 1/4" square	1	1	
d	Washer, 3" square, curved			1
j	Screw, lag, 1/2" x 4"			1
p	Connectors	as req'd	as req'd	as req'd
u	Deadend for guy strand	2	2	2
v	Guy attachment	1	1	1-heavy duty
y	Guy wire, S.M., 7 strand	req'd. length	req'd. length	req'd. length
av	Jumper, No. 4 stranded Al. alloy or equiv.	1	1	1
ck	Clamp, anchor rod bonding	1	1	1
ek	Locknuts			

7.2/12.5 KV.
SINGLE DOWN GUY, THROUGH BOLT TYPE

July 12, 1968 | EI-1, EI-2, EI-3

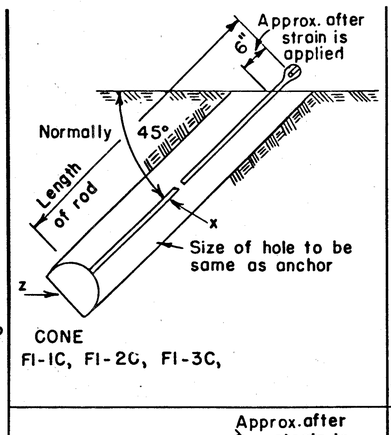


Note:
Other accepted and equivalent items of deadend material may be substituted for the 3-bolt clamp shown.

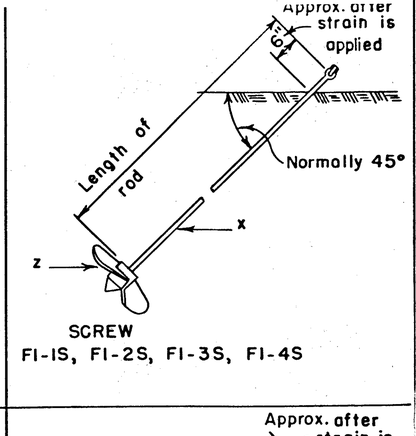
ITEM	MATERIAL	ASSEMBLY UNIT E2-1 1/4" GUY WIRE No. REQ'D.	E2-2 3/8" GUY WIRE No. REQ'D.	E2-3 7/16" GUY WIRE No. REQ'D.
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	1		
d	Washer, curved, 3" x 3" x 5/16", 11/16" hole		1	1
u	Deadend for guy strand	2-Light Duty	2-Heavy Duty	2-Heavy Duty
y	Guy wire, S.M., 7-strand	req'd. length	req'd. length	req'd. length
ab	Nut, thimble type eye, 5/8"	1	1	1
ao	Bolt, thimbleye, 5/8" x req'd. length	1	1	1
aq	Jumper, #6 S.D. or equivalent	1	1	1
p	Connectors, as req'd.			
ek	Locknuts			

7.2/12.5 KV
SINGLE OVERHEAD GUY, THROUGH BOLT TYPE

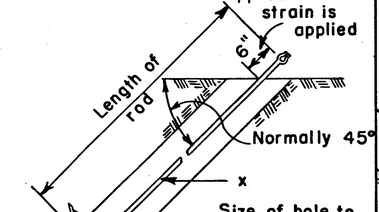
Jan 1, 1962 | E2-1, E2-2, E2-3



CONE
FI-1C, FI-2C, FI-3C,



SCREW
FI-1S, FI-2S, FI-3S, FI-4S



EXPANDING

FI-1, FI-2, FI-3, FI-4
Note: Projection of anchor rods above earth may be increased to a max. of 12" in cultivated fields or other locations where necessary to prevent burying of the rod eye.

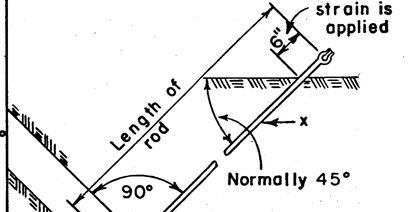


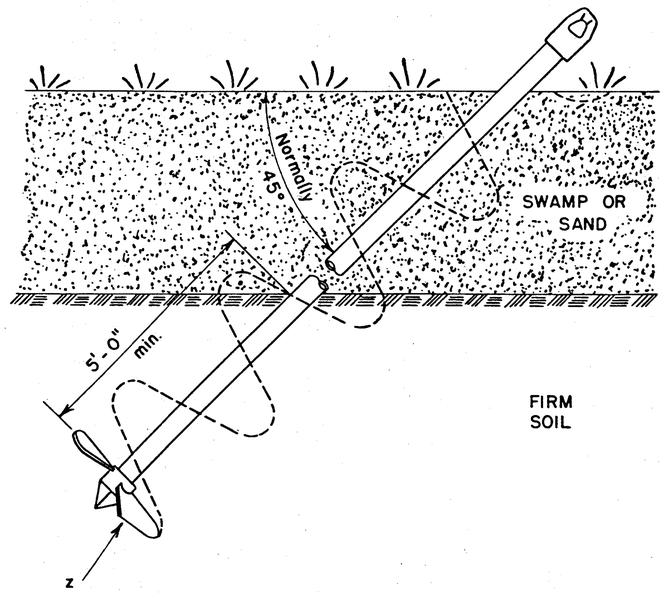
PLATE
FI-1P, FI-2P, FI-3P, FI-4P

ITEM	MATERIAL	ASSEMBLY UNIT FI-1 NO.		FI-2 NO.		FI-3 NO.		FI-4 NO.	
Holding Power in Ordinary Soil (pounds)		6000		8000		10,000		12,000	
x	Rod, anchor, thimble eye	1	5/8" x 7'-0"	1	5/8" x 7'-0"				
x	Rod, anchor, twin eye					1	3/4" x 8'-0"	1	3/4" x 8'-0"
z	Anchor _____ type	1		1		1		1	

LINE ANCHOR ASSEMBLIES

Jan 1, 1962 | FI-1 TO 4

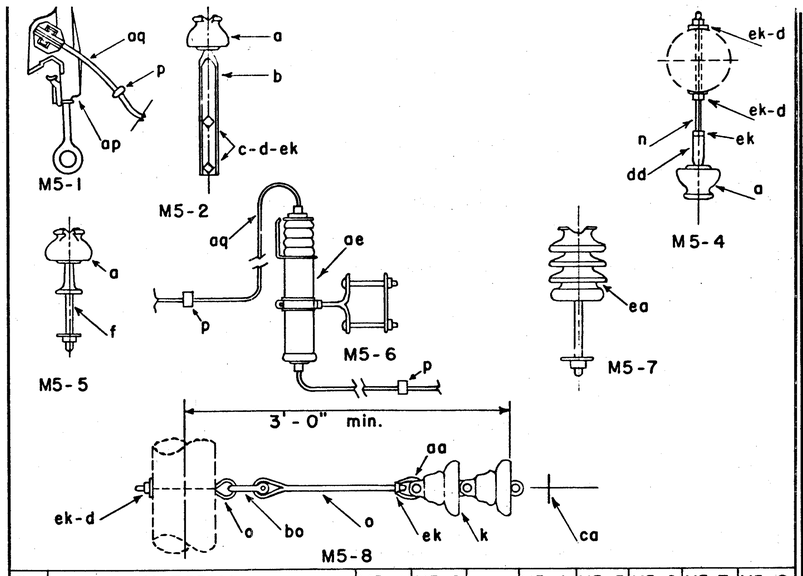
DETAILS



ITEM	MATERIAL	ASSEMBLY UNIT F6-1 NO.	F6-1 TYPE	F6-2 NO.	F6-2 TYPE	F6-3 NO.	F6-3 TYPE	NO.	TYPE
z	Anchor, swamp	1	10"	1	12"	1	15"		
	Holding power		6000#		8000#		10,000#		
	Nut, thimble type eye	1		1		1			
	Pipe, galvanized, as req'd								

SWAMP ANCHOR ASSEMBLY

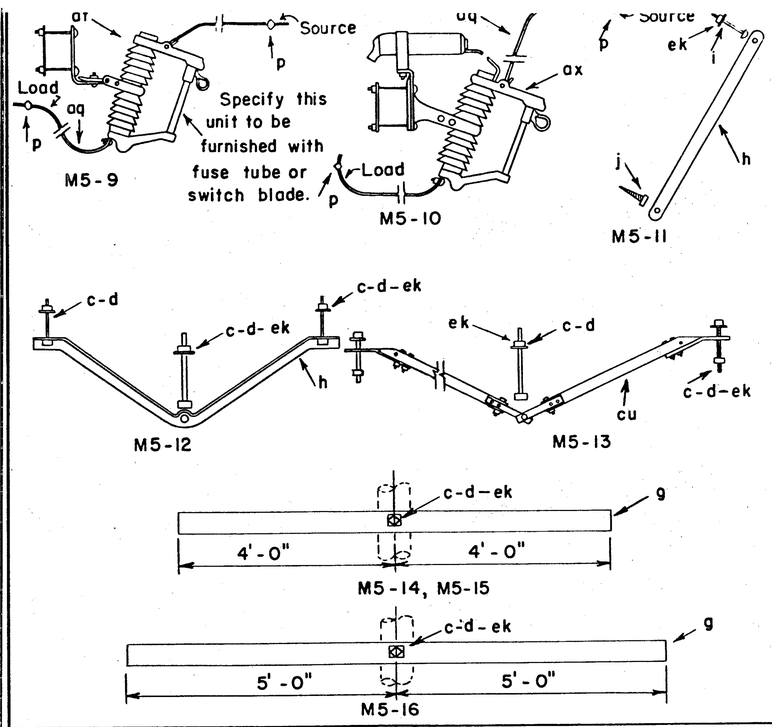
Jan 1, 1962 — F6-1, F6-2, F6-3



ITEM	MATERIAL	M5-1	M5-2		M5-4	M5-5	M5-6	M5-7	M5-8
a	Insulator, pin type		1		1	1			
b	Pin, pole top, 20"		1						
c	Bolt, machine, 5/8"x req'd. length		2						
d	Washer, square, 2 1/4"		2		2			1	1
f	Pin, crossarm, steel, 5/8"x 10 3/4"					1			
k	Insulator, suspension								2
n	Bolt, double arming, 5/8"x req'd. length				1				
o	Bolt, eye, 5/8"x req'd. length								2
p	Connector	1					2		
aa	Nut, eye, 5/8"								1
ae	Lightning arrester						1		
ap	Clamp, hot line	1							
aq	Jumper	1							
bo	Shackle, anchor								1
dd	Adapter, insulator				1				
ea	Insulator, post type, 7" stud							1	
ek	Locknuts		2		3				2

7.2/12.5 KV.
MISCELLANEOUS PRIMARY ASSEMBLIES

Jan. 1, 1962 — M5-1 TO 8



ITEM	MATERIAL	NUMBER REQUIRED M5-9	M5-10	M5-11	M5-12	M5-13	M5-14	M5-15	M5-16
c	Bolt, machine, 5/8" x req'd length				1	1	1	1	
c	Bolt, machine, 1/2" x req'd length				2	2			
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole				1	1	2	2	2
d	Washer, round, 1 3/8" dia., 9/16" hole				2	2			
g	Crossarm, 3 1/2" x 4 1/2" x 8'-0"						1		
g	Crossarm, 3 3/4" x 4 3/4" x 10'-0"								1
h	Brace, flat, 1 1/4" x 1/4" x 28"			1					
h	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span				1				
i	Bolt, carriage, 3/8" x 4 1/2"			1					
j	Screw, lag, 1/2" x 4"			1					
p	Connector	2	2						
af	Cutout, single-shot	1							
aq	Jumper	2	2						
ax	Cutout and arrester combination		1						
cu	Brace, wood, 60" span					1			
ek	Locknuts			1	3	3	1	1	1
g	Crossarm, 3 3/4" x 4 3/4" x 8'-0"							1	

MISCELLANEOUS PRIMARY ASSEMBLIES

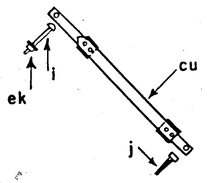
Jan 1, 1962 — M5-9 TO 16

FHWA REGION	STATE	PROJECT	
5	OHIO		

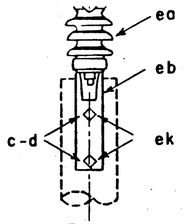
242
254

FRANKLIN COUNTY
FRA-104-10.57

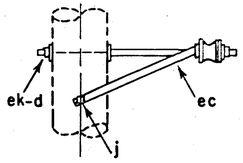
DETAILS



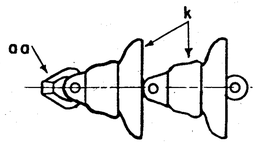
M5 – 17



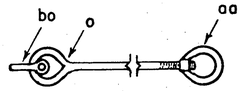
M5 – 18



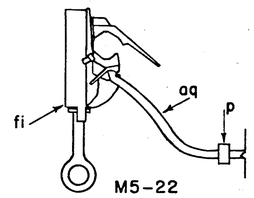
M5 – 19



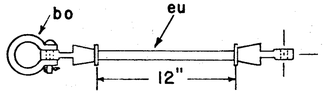
M5 – 20



M5-21



M5-22

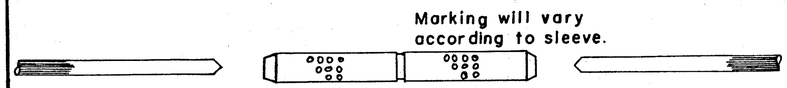


M5 - 23

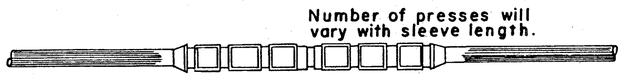
ITEM	MATERIAL	M5-17	M5-18	M5-19	M5-20	M5-21	M5-22	M5-23
c	Bolt, machine, 5/8"x required length		2					
d	Washer, 2 1/4" square		2	1				
i	Bolt, carriage, 3/8"x 4 1/2"	1						
j	Screw, lag, 1/2" x 4"	1		2				
k	Insulator, suspension				2			
ea	Insulator, post type, 1 3/4" stud		1					
eb	Bracket, for post type insulator		1					
ec	Bracket, offset, neutral, insulated			1				
ek	Locknuts	1	2	1				
cu	Brace, wood, 28"	1						
aa	Eye nut				1	1		
bo	Shackle, anchor					1		1
o	Bolt, eye, 5/8" x req'd. length					1		
fi	Connector, hot line						1	
aq	Jumper						1	
p	Connector						1	
eu	Link, extension, insulated							1

MISCELLANEOUS PRIMARY ASSEMBLIES

Jan. 1, 1962 — M5-17T023



COPPER COMPRESSION SLEEVE
BEFORE SPLICING



COPPER COMPRESSION SPLICE COMPLETE

NOTE:

Clean the wire with abrasive cloth before making the splice.

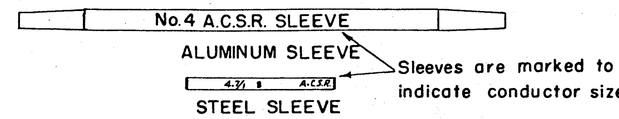
Splice shall not be within 10 feet of insulator.

Begin presses at center of sleeve and work toward ends, press entire length of sleeve, spacing presses about 1/16" to 1/8" apart.

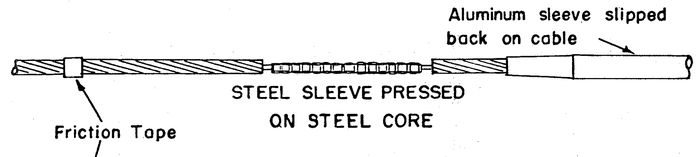
Groove letters printed on sleeves correspond to groove letters printed on tool.

SPLICING GUIDE-COMPRESSION TYPE
COPPER TYPE CONDUCTORS

Jan 1, 1962 — M45-20




A.C.S.R. READY FOR SPLICING



COMPLETED SPLICE

DIRECTIONS FOR MAKING A.C.S.R. SPLICE

1. Slip Aluminum Sleeve on cable far enough back to be out of the way. Cut back Aluminum Strands at end of cable 3/8"more than half the length of steel sleeve.
2. Insert steel core wires in the steel sleeve and press with inner groove of tool. Press entire length of sleeve starting at the middle and working toward the ends. Leave about 1/16" space between presses.
3. Straighten steel sleeve by hammering carefully against a suitable block.
4. Place a piece of friction tape on the cable to mark the position of the end of the Aluminum sleeve such that it will be centered on the splice.
5. Clean conductor by wirebrushing, paint the steel sleeve and the adjacent cable that will be covered by the aluminum sleeve, with a suitable corrosion inhibitor.
6. Slip the Aluminum sleeve in place and press with the outer groove of tool using the same procedure as with the steel sleeve.
7. Straighten entire splice by hammering carefully against a suitable block.
8. Splice shall not be within 10 feet of Insulator.

SPLICING GUIDE-COMPRESSION TYPE
A.C.S.R. CONDUCTOR

Jan 1, 1962 — M45-21

CENTERLINE SURVEY PLAT

S.R. 104

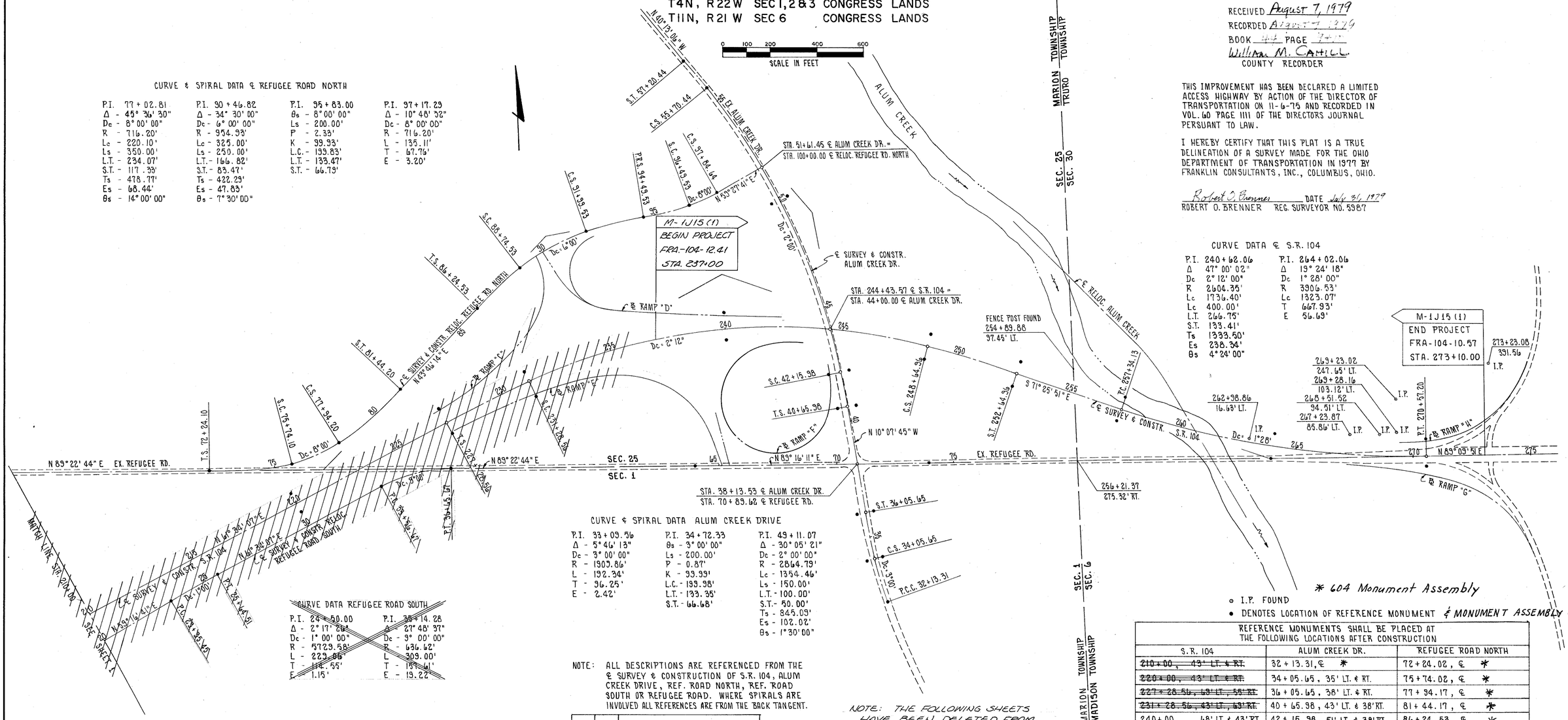
STATE OF OHIO FRANKLIN COUNTY
CITY OF COLUMBUS

MARION, TRURO & MADISON TOWNSHIPS
T5N, R22W SEC 25 THE REFUGEE TRACT
T12N, R21W SEC 30 THE REFUGEE TRACT
T4N, R22W SEC 1,2&3 CONGRESS LANDS
T11N, R21W SEC 6 CONGRESS LANDS

607- FENCE, TYPE C.L.			
SHEET NO.	UNIT	BRM. FUNDS	M. FUNDS
245	L.F.		610
246	L.F.		775
247	L.F.		1946
248	L.F.	352	1600
249	L.F.	354	2059
252	L.F.		127
254	L.F.		1029
TOTALS TO GENERAL SUMMARY		706	8146

CURVE & SPIRAL DATA & REFUGEE ROAD NORTH

P.I. 77+02.81	P.I. 90+46.82	P.I. 95+83.00	P.I. 97+17.29
Δ - 45° 36' 30"	Δ - 34° 30' 00"	θ_s - 8° 00' 00"	Δ - 10° 48' 32"
Dc - 8° 00' 00"	Dc - 6° 00' 00"	Ls - 200.00'	Dc - 8° 00' 00"
R - 716.20'	R - 954.93'	P - 2.33'	R - 716.20'
Lc - 220.10'	Lc - 325.00'	K - 99.93'	L - 135.11'
Ls - 350.00'	Ls - 250.00'	L.C. - 139.83'	T - 67.76'
L.T. - 234.07'	L.T. - 166.82'	L.T. - 133.47'	E - 3.20'
S.T. - 117.33'	S.T. - 83.47'	S.T. - 66.79'	
Ts - 478.77'	Ts - 422.29'		
Es - 68.44'	Es - 47.83'		
θ_s - 14° 00' 00"	θ_s - 7° 30' 00"		



CURVE & SPIRAL DATA ALUM CREEK DRIVE

P.I. 33+09.56	P.I. 34+72.33	P.I. 49+11.07
Δ - 5° 46' 13"	θ_s - 3° 00' 00"	Δ - 30° 05' 21"
Dc - 3° 00' 00"	Ls - 200.00'	Dc - 2° 00' 00"
R - 1909.86'	P - 0.87'	R - 2864.79'
L - 192.34'	K - 99.99'	Lc - 1354.46'
T - 96.25'	L.C. - 199.98'	Ls - 150.00'
E - 2.42'	L.T. - 133.35'	L.T. - 100.00'
	S.T. - 66.68'	S.T. - 50.00'
		Ts - 845.03'
		Es - 102.02'
		θ_s - 1° 30' 00"

CURVE DATA REFUGEE ROAD SOUTH

P.I. 24+50.00	P.I. 35+14.28
Δ - 2° 17' 26"	Δ - 27° 48' 37"
Dc - 1° 00' 00"	Dc - 9° 00' 00"
R - 5723.58'	R - 636.62'
L - 229.06'	L - 309.00'
T - 114.55'	T - 157.41'
E - 1.15'	E - 19.22'

NOTE: ALL DESCRIPTIONS ARE REFERENCED FROM THE ℄ SURVEY & CONSTRUCTION OF S.R. 104, ALUM CREEK DRIVE, REF. ROAD NORTH, REF. ROAD SOUTH OR REFUGEE ROAD. WHERE SPIRALS ARE INVOLVED ALL REFERENCES ARE FROM THE BACK TANGENT.

REV.	DATE	DESCRIPTION

NOTE: THE FOLLOWING SHEETS HAVE BEEN DELETED FROM THIS PLAN:

1/24	9/24
3/24	10/24
5/24	22/24
6/24	23/24
7/24	24/24
8/24	

FHWA REGION	STATE	PROJECT	
5	OHIO		

243
254

2
24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

#26307

RECEIVED August 7, 1979
RECORDED August 7, 1979
BOOK 44 PAGE 74
William M. Cahill
COUNTY RECORDER

THIS IMPROVEMENT HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY BY ACTION OF THE DIRECTOR OF TRANSPORTATION ON 11-6-75 AND RECORDED IN VOL. 60 PAGE 1111 OF THE DIRECTORS JOURNAL PERSUANT TO LAW.

I HEREBY CERTIFY THAT THIS PLAT IS A TRUE DELINEATION OF A SURVEY MADE FOR THE OHIO DEPARTMENT OF TRANSPORTATION IN 1979 BY FRANKLIN CONSULTANTS, INC., COLUMBUS, OHIO.

Robert O. Brenner DATE July 31, 1979
ROBERT O. BRENNER REG. SURVEYOR NO. 5987

CURVE DATA ℄ S.R. 104

P.I. 240+62.06	P.I. 264+02.06
Δ 47° 00' 02"	Δ 19° 24' 18"
Dc 2° 12' 00"	Dc 1° 28' 00"
R 2604.35'	R 3906.53'
Lc 1736.40'	Lc 1323.07'
Lc 400.00'	T 667.93'
L.T. 266.75'	E 56.69'
S.T. 133.41'	
Ts 1333.50'	
Es 238.34'	
θ_s 4° 24' 00"	

* 604 Monument Assembly
○ I.P. FOUND
● DENOTES LOCATION OF REFERENCE MONUMENT & MONUMENT ASSEMBLY

REFERENCE MONUMENTS SHALL BE PLACED AT THE FOLLOWING LOCATIONS AFTER CONSTRUCTION

S.R. 104	ALUM CREEK DR.	REFUGEE ROAD NORTH
~~210+00, 43' LT. & RT.~~	32+13.31, ℄ *	72+24.02, ℄ *
~~220+00, 43' LT. & RT.~~	34+05.65, 35' LT. & RT.	75+74.02, ℄ *
~~227+28.56, 43' LT., 55' RT.~~	36+05.65, 38' LT. & RT.	77+94.17, ℄ *
~~231+28.56, 43' LT., 63' RT.~~	40+65.98, 43' LT. & 38' RT.	81+44.17, ℄ *
240+00, 68' LT. & 43' RT.	42+15.98, 51' LT. & 38' RT.	86+24.53, ℄ *
248+64.96, 55' LT. & RT.	50+00.00, 38' LT. & RT.	88+74.53, ℄ *
252+64.96, 55' LT. & RT.	55+70.44, ℄ *	91+99.53, ℄ *
257+34.13, 55' LT. & RT.	57+20.44, ℄ *	94+49.53, ℄ *
264+00, 55' LT. & RT.	REFUGEE ROAD SOUTH	96+49.53, ℄ *
270+57.20, 75' LT. & 43' RT.	~~23+35.45 ℄, 25+64.51 ℄~~	97+84.64, ℄ *
	~~33+56.67 ℄, 36+65.67 ℄~~	64+00 & 74+00 ℄ REF. RD. *

22 Each ITEM 604 REFERENCE MONUMENTS & 15 Each Item 604 Monument Assembly

PROPERTY MAP

FHWA REGION	STATE	PROJECT	
5	OHIO		

244
254

4
24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

SCALE IN FEET 0 100 200 400

MATCH LINE SEE SHEET 3

CONRAIL RAILROAD R/W

M-1J15(1)
BEGIN PROJECT
FRA-104-12.41
STA. 237+00

℄ REFUGEE RD. NORTH

℄ REFUGEE ROAD SOUTH

EXIST. REFUGEE ROAD

℄ S.R. 104

℄ RAMP "C"

℄ RAMP "D"

℄ RAMP "E"

℄ RAMP "F"

℄ RAMP "G"

℄ RAMP "H"

ALUM CR. DR.

EX. R/W

R/W

LA-R/W

LA

EXIST. 20' WATERLINE EASEMENT

EXIST. 60' WATERLINE EASEMENT

GAS Co. EASE.

CHANNEL EASEMENT

℄ RELOC. ALUM CREEK

EXIST. 20' SEWER EASEMENT

CHANNEL EASE.

ALUM CREEK

REFUGEE RD.

U.S. 33

MARION TWP.
TRURO TWP.

MARION TWP.
MADISON TWP.

SEC. 25
SEC. 30

SEC. 1
SEC. 6

DETAIL "A"
SCALE IN FEET 0 1000 2000 3000

188 SEE DETAIL "A" L.L.

190 SEE DETAIL "A" L.L.

END ACQUISITION
FRA-104-10.57
STA-273+26.18

M-1J15(1)
END PROJECT
FRA-104-10.57
STA. 273+10.00

—·—·— FLOODWAY BOUNDARY
—— FLOODPLAIN BOUNDARY

PARCEL NO.	OWNER
175	GLADYS C. DUNIGAN
176	CLEE ENTERPRISES
177	LEO F. & ESTELLA M. GALL
178	JOSEPH & HELEN SPANOVICH
179	PJR
180	EMIL G. BUCHSIEB ETAL (4)
181	EMIL G. BUCHSIEB ETAL (3)
182	COLUMBIA GAS OF OHIO, INC.
183	EXXON CORPORATION
184	HARRIETTE S. ZUCKERMAN

PARCEL NO.	OWNER
185	INLAND PRODUCTS, INC. FRANK ROAD
186	LENORE BERMAN SCHWARTZ & SHIRLEY B. GOLD
187	CORA MAE BAHRKE
188	NATIONWISE REAL ESTATE INVESTORS
189	GERALD E. STRUTNER
190	MAURICE G. EVANS & ROBERT KESSLER
191	UNKNOWN
192	UNKNOWN
193	HERR REALTY CO.
194	CITY OF COLUMBUS
196	THE TIFERETH ISRAEL CONGREGATION
198	RAY A. BEHM
199	OSCAR BERMAN

(PARCEL 197 NOT USED)

REV.	DATE	DESCRIPTION
3	3-26-81	Add Gas Co. Easement
2	5-30-80	Add floodway & floodplain boundaries & 198 & 199
1	10-25-79	Deleted parcel series 197

PROPERTY MAP

MARION TOWNSHIP
T4N, R22W SEC.2 CONGRESS LANDS
CITY OF COLUMBUS

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

244-A
254
11
24

[A] For 163-R: R = 587.69', L = 202.00', Chord = 201.01', Bearing = N 54° 40' 00" W, Δ = 19°41' 37"

[A] For 163-T-1 & 163-WL-1: R = 587.69', L = 303.68', Chord = 300.31', Bearing = N 49° 42' 36" W, Δ = 29° 36' 24"

[B] For 163-R: R = 559.69', L = 229.56', Chord = 227.95', Bearing = S 56° 34' 11" E, Δ = 23° 30' 01"

[B] For 163-T-1 & 163-WL-2: R = 559.69, L = 335.19, Chord = 330.20, Bearing = S 53° 57' 26" E, Δ = 34° 18' 49"

[C] R = 587.69', L = 80.59', Chord = 80.53', Brg. = N 68° 26' 31" W, Δ = 07° 51' 25"

[D] R = 559.69', L = 115.24', Chord = 115.03', Bearing S 77° 00' 44" E, Δ = 11° 47' 50"

NOTE
* ADD POST FOR TYING INTO EXISTING FENCE
[E] 33.81', N 88° 15' 32" E
[F] 28.00', N 45° 10' 48" E
[G] 42.21', S 89° 14' 50" W
[M] 113.69', S 89° 14' 50" W
[I] 36.71', S 82° 54' 38" E
[J] 113.69', S 89° 14' 50" W

MILLARD M. CUMMINS (164)

UNITED McGILL CORPORATION

HARRY C. DENUNE

(146) PAUL W. SEBERIG, ET AL
(160) RUTH F. SEBERIG
(161) GEORGE M. SEBERIG

Note: Unless Otherwise noted houses north of Burley Drive are 1-Sty. Frame w/ Basement.

STA. 170+00.00 To STA. 185+00.00 S.R. 104 R/W

Match Line Sta. 185+00

Sheet 12

REV.	DATE	DESCRIPTION
-1	5/27/80	Revised LA-R/W line at United McGill spur (Parcel 163-WL). Added Parcel 163-R (aerial easement) and Parcel 163-T-1.
2	7/14/80	Split 163-WL into WL-1 and WL-2.
3	10-10-80	Revised storm sewer

FHWA REGION	STATE	PROJECT	
5	OHIO		

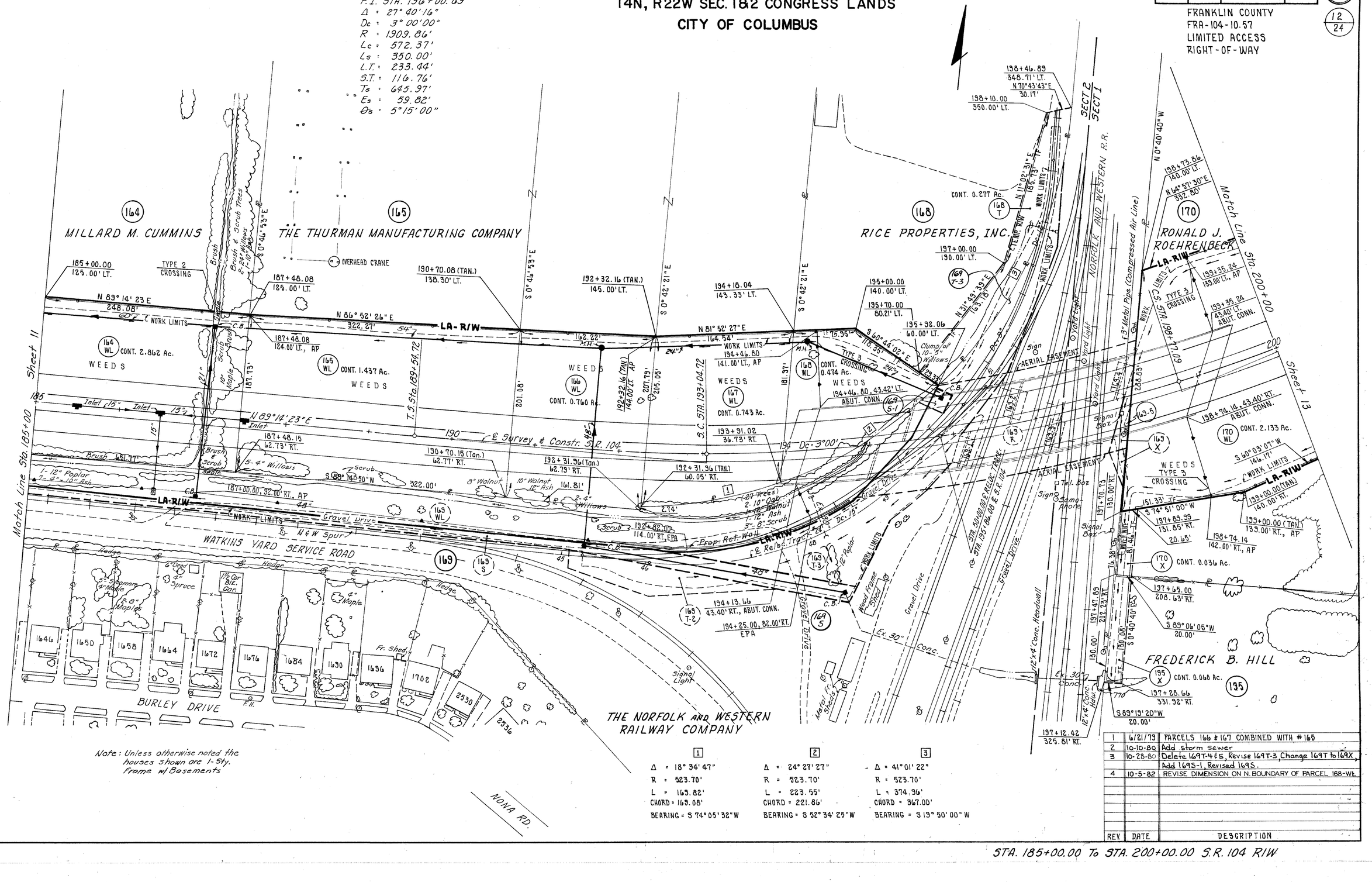
244-B
254

12
24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

MARION TOWNSHIP
T4N, R22W SEC. 1&2 CONGRESS LANDS
CITY OF COLUMBUS

CURVE & SPIRAL DATA & SURVEY S.R. 104
P.I. STA. 196+00.69
Δ = 27° 40' 16"
Dc = 3° 00' 00"
R = 1909.86'
Lc = 572.37'
Ls = 350.00'
L.T. = 233.44'
S.T. = 116.76'
Ts = 645.97'
Es = 59.82'
Θs = 5° 15' 00"



Note: Unless otherwise noted the houses shown are 1-Sty. Frame w/ Basements

	Δ	R	L	CHORD	BEARING
1	18° 34' 47"	523.70'	169.82'	169.08'	S 74° 05' 32" W
2	24° 27' 27"	523.70'	223.55'	221.86'	S 52° 34' 25" W
3	41° 01' 22"	523.70'	374.96'	367.00'	S 19° 50' 00" W

REV.	DATE	DESCRIPTION
1	6/21/79	PARCELS 166 & 167 COMBINED WITH #166
2	10-10-80	Add storm sewer
3	10-28-80	Delete 169T-4ES, Revise 169T-3 Change 169T to 169X, Add 169S-1, Revised 169S.
4	10-5-82	REVISE DIMENSION ON N. BOUNDARY OF PARCEL 168-WL

STA. 185+00.00 To STA. 200+00.00 S.R. 104 R/W

MARION TOWNSHIP
T4N, R22W SEC. 1 CONGRESS LANDS
CITY OF COLUMBUS

FHWA REGION	STATE	PROJECT	
5	OHIO		

244-C 254

13 24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

170 RONALD J. ROEHRENBECK

171 MARY H. MORGAN & CHARLES E. BRENISER

173 CLARA YETTER

174 CLARA J. KITCHEN

175 GLADYS C. DUNIGAN

176 CLEE ENTERPRISES

178 JOSEPH & HELEN SPANOVICH

172 FRANCES A. HOSKINSON

179 PJR

ENGLISH ROAD

EX. R/W

℄ EX. REFUGEE RD

REFUGEE ROAD SOUTH

Gravel Rd.

Sheet 12

Sheet 14

Notch Line Sta. 200+00

Notch Line Sta. 215+00

℄ E. Survey & Constr. S.R. 704

LA-R/W

WORK LIMITS

CONT. 2.133 Ac.

CONT. 2.231 Ac.

CONT. 1.437 Ac.

CONT. 0.525 Ac.

CONT. 1.122 Ac.

CONT. 1.753 Ac.

CONT. 0.037 Ac.

CONT. 0.424 Ac.

CONT. 0.503 Ac.

CONT. 0.007 Ac.

CONT. 0.479 Ac.

CONT. 0.787 Ac.

CONT. 0.133 Ac.

CONT. 0.487 Ac.

CONT. 0.016 Ac.

CONT. 0.009 Ac.

CONT. 0.009 Ac.

CONT. 0.022 Ac.

CONT. 0.018 Ac.

CONT. 0.064 Ac.

CONT. 0.004 Ac.

DO NOT DISTURB

CURVE DATA REFUGEE ROAD SOUTH
P.I. STA. 10+82.48
Δ = 60°06'52"
Dc = 32°44'26"
R = 175.00'
L = 183.61'
T = 101.27'
E = 27.19'

CURVE DATA REFUGEE ROAD SOUTH
P.I. STA. 24+50.00
Δ = 2°17'26"
Dc = 1°00'00"
R = 5729.58
L = 229.06'
T = 114.55'
E = 1.15'

REV.	DATE	DESCRIPTION

STA. 200+00.00 To STA. 215+00.00 S.R. 104 R/W

FHWA REGION	STATE	PROJECT	
5	OHIO		

244-D
254
14
24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

MARION TOWNSHIP
T4N, R22W SEC.1 CONGRESS LANDS
T5N, R22W SEC.25 THE REFUGEE TRACT
CITY OF COLUMBUS

177
LEO F. & ESTELLA M. GALL

178
JOSEPH & HELEN SPANOVICH

180
EMIL G. BUCHSIEB, ET AL (4)

179
P J R

CURVE & SPIRAL DATA & REFUGEE RD. NORTH
P.I. STA. 77+02.87
Δ = 45°36'30"
Dc = 8°00'00"
R = 716.20'
Lc = 220.10'
Ls = 350.00
L.T. = 234.07'
S.T. = 117.33'
Ts = 478.77'
Es = 68.44'
Θs = 14°00'00"

CURVE DATA REFUGEE ROAD SOUTH
P.I. STA. 35+14.28
Δ = 27°48'37"
Dc = 9°00'00"
R = 636.62'
L = 309.00'
T = 157.61'
E = 19.22'

Sheet 13
Sheet 15
Match Line Sta. 215+00
Match Line Sta. 230+00 Sheet 16

STA. 215+00.00 To STA. 230+00.00 S.R. 104 / REFUGEE RD. N & S RIW

REV.	DATE	DESCRIPTION

CURVE & SPIRAL DATA & REFUGEE ROAD NORTH
P.I. STA. 90+46.82
Δ = 34°30'00"
Dc = 6°00'00"
R = 954.93'
Lc = 325.00'
L.T. = 166.82'
S.T. = 83.47'
Ts = 422.29'
Es = 47.83'
Øs = 7°30'00'
Ls = 250.00'

MARION TOWNSHIP
T5N, R22W SEC. 25 THE REFUGEE TRACT
CITY OF COLUMBUS

(180)

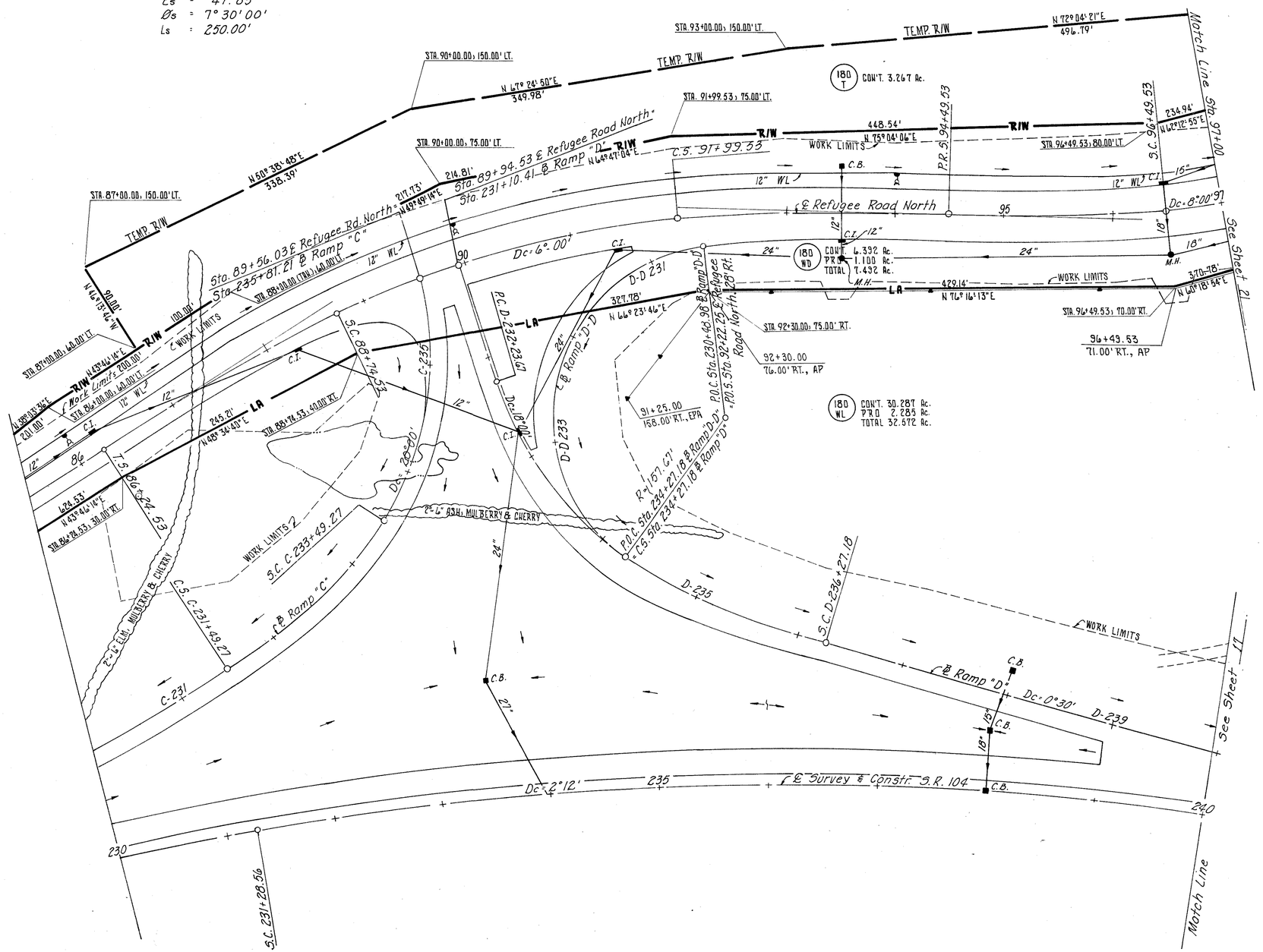
EMIL G. BUCHSIEB, ETAL (4)

FHWA REGION	STATE	PROJECT	
5	OHIO		

245/254

15/24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY



SPIRAL DATA & REFUGEE ROAD NORTH
P.I. STA. 95+83.00
Øs = 8°00'00"
p = 2.33'
K = 99.93'
L.T. = 133.47'
S.T. = 66.79'
L.C. = 199.83'
Ls = 200.00'

CURVE DATA & REFUGEE ROAD NORTH
P.I. STA. 97+17.29
Δ = 10°48'32"
Dc = 8°00'00"
R = 716.20'
L = 135.11'
T = 67.76'
E = 3.20'

CURVE & SPIRAL DATA & S.R. 104
P.I. STA. 240+62.06
Δ = 47°00'02"
Dc = 2°12'00"
R = 2604.35'
Lc = 1736.40'
Ls = 400.00'
L.T. = 266.75'
S.T. = 133.41'
Ts = 1333.50'
Es = 238.34'
Øs = 4°24'00'

ITEM 607 TYPE C.L. 610 L.F.

REV.	DATE	DESCRIPTION

STA. 230+00.00 To 240+00.00 NORTH OF ℄ S.R. 104 / REFUGEE RD. NORTH R/W

FHWA REGION	STATE	PROJECT	
5	OHIO		

246
254

16
24

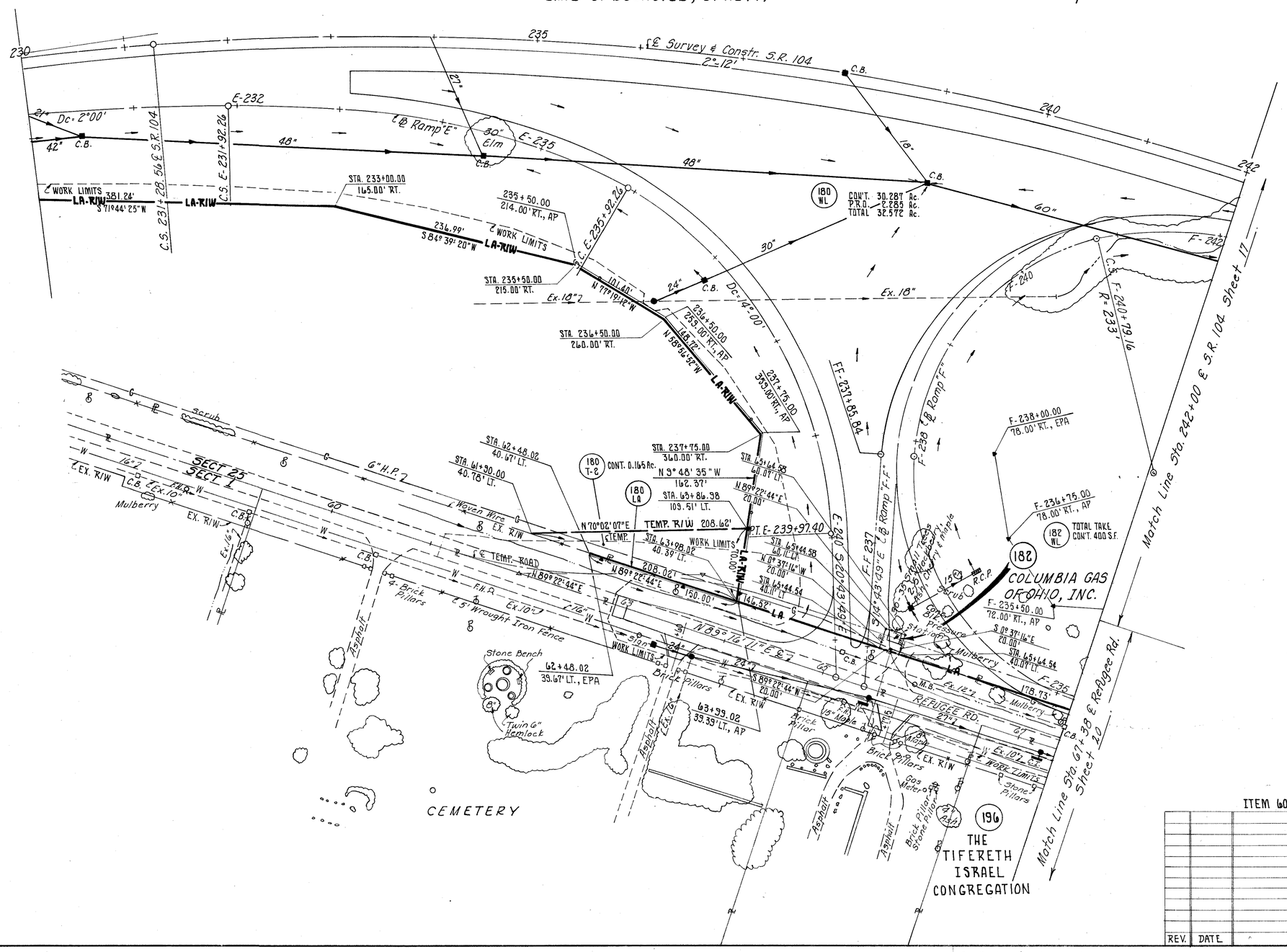
FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

MARION TOWNSHIP
T5N, R22W SEC.25 THE REFUGEE TRACT
CITY OF COLUMBUS

(180)

EMIL G. BUCHSIEB, ET AL (4)

CURVE & SPIRAL DATA ℄ S.R. 104
P.I. STA. 240+62.06
Δ = 47°00'02"
Dc = 2°12'00"
R = 2604.35'
Lc = 1736.39'
Ls = 400.00'
L.T. = 266.75'
S.T. = 133.41'
Ts = 1333.50'
Es = 238.34'
θs = 4°24'00'



ITEM 607 TYPE C.L. 775 L.F.

REV.	DATE	DESCRIPTION

STA. 230+00.00 To STA. 242+00.00 SOUTH OF ℄ S.R. 104 R/W

FHWA REGION	STATE	PROJECT	
5	OHIO		

247
254

17
24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

MARION TOWNSHIP
T5N, R22W SEC.25 THE REFUGEE TRACT
CITY OF COLUMBUS

CURVE & SPIRAL DATA ℄ ALUM CREEK DRIVE
P.I. STA. 49+11.07
Δ = 30°05'21"
Dc = 2°00'00"
R = 2864.79'
Lc = 1354.46'
Ls = 150.00'
L.T. = 100.00'
S.T. = 50.00'
Ts = 845.09'
Es = 102.02'
θs = 1°30'00"

CURVE & SPIRAL DATA ℄ S.R. 104
P.I. STA. 240+62.06
Δ = 47°00'02"
Dc = 2°12'00"
R = 2604.35'
Lc = 1736.39'
Ls = 400.00'
L.T. = 266.75'
S.T. = 133.41'
Ts = 1333.50'
Es = 238.34'
θs = 4°24'00'

ITEM 607 TYPE CL 1946 L.F.

REV	DATE	DESCRIPTION

STA. 240+00.00 To STA. 250+00.00 S.R. 104 / ALUM CREEK DR. STA. 40+00.00 To STA. 47+00.00 R/W

FHWA REGION	STATE	PROJECT	
5	OHIO		

248/254

18/24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

TRURO & MADISON TOWNSHIP
T11N, R21W SEC. 6 CONGRESS LANDS
T5N, R22W SEC. 25 THE REFUGEE TRACT
T12N, R21W SEC. 30 THE REFUGEE TRACT
CITY OF COLUMBUS

	TOTAL	MARION TWP.	TRURO TWP.
CON'T.	8.064 Ac.	6.037 Ac.	2.027 Ac.
P.R.O.	0.560 Ac.	0.455 Ac.	0.105 Ac.
TOTAL	8.624 Ac.	6.492 Ac.	2.132 Ac.

ITEM 607 TYPE C.L. 1952 L.F.

REV.	DATE	DESCRIPTION
	10-30-79	Added sign to 180T-1

STA. 250+00.00 To STA. 260+00.00 S.R. 104 R/W

TRURO & MADISON TOWNSHIP
T11N, R21W SEC. 6 CONGRESS LANDS
T12N, R21W SEC. 30 THE REFUGEE TRACT
CITY OF COLUMBUS

FHWA REGION	STATE	PROJECT	
5	OHIO		

249
254
19
24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

CURVE DATA ℄ S.R. 104
P.I. STA. 264+02.06
Δ = 19°24'18"
Dc = 1°28'00"
R = 3906.53'
L = 1323.07'
T = 667.93'
E = 56.69'

(188) NATIONWIDE REAL ESTATE INVESTORS

(180) EMIL G. BUCHSIEB ET AL(4)

(186) LENORE B. SCHWARTZ SHIRLEY B. GOLD

(187) CORA M. BAHRKE

(190) MAURICE G. EVANS & ROBERT KESSLER

(193) HERR REALTY

(194) CITY OF COLUMBUS

GERALD E. STRUTNER Mid-West Chem. & Supply Co.

Match Line Sta 260+00

Sheet 18

102" Trunk San. Sewer

CHANNEL EASEMENT S 32°00'31" E 258.42'

260+51.61 163.18' LT.

S 74°44'44" E 503.89'

WORK LIMITS TYPE 3 CROSSING

261+40.00 160.00' LT., AP

STA. 260+62.00 ℄ S.R. 104 = STA. 25+24.70 ℄ RELOC. CHANNEL

261+40.00 56.90' LT. ABUT. CONN.

R.C.P.

44°13'

Dc=1°28'

(I.P. FOUND) 262+38.86 16.63' LT.

CONT. 4.039 Ac.

℄ Reloc. Channel

Inlet

Ex. RIW 7

N 88°06'43" E 424.84' 549.86'

24" Water

6" H.P. Gas

261+65.65 73.38' RT.

261+91.88 98.60' RT.

262+10.98 124.39' RT.

262+49.13 115.92' RT.

262+91.09 132.56' RT.

263+24.15 146.14' RT.

263+25.15, 146.14' RT., AP

263+44.50 173.00' RT., AP

263+43.50 180.00' RT.

263+66.34 220.81' RT.

263+06.71 257.32'

263+15.07 269.47' RT.

262+55.46 307.92'

262+41.62 321.93'

262+67.18 316.63' RT.

260+89.78 92.19' RT.

260+86.89 201.15'

260+22.37 172.30' RT.

260+01.91 147.23' RT. WORK LIMITS

S 89°09'10" W 123.90'

℄ Ex. RIW 69.24'

℄ LA-R/W

N 89°09'10" E 262.05'

℄ 25' EASEMENT FOR WATER 137.16'

24" Water

S 89°09'10" W 273.36'

260+82.10 156.11' RT.

N 10°12'29" W 46.86'

261+00.00 199.07' RT.

CONT. 0.154 Ac.

(186 U)

(186 WL) CONT. 0.000 P.R.O. 0.116 TOTAL 0.116

Cont. 0.556 Ac.

CHANNEL EASEMENT S 32°00'31" E 258.42'

N 44°36'51" W 276.35'

Dirt Drive

(186 X) CONT. 0.525 Ac.

(190 U) CONT. 0.031 Ac.

(190 X) CONT. 0.260 Ac.

Ex. RIW 7

N 88°06'43" E 424.84' 549.86'

Reloc. 24" Water

Transformer Pole

2-6" POPLARS

267+24.01 83.60' LT.

Ditch 7

CITY OF COLUMBUS (194)

Ex. 36" Storm

F.H.

S 89°09'05" W 125.00'

Ex. Guard Rail

Survey & Constr. S.R. 104

SEC. 30 TRURO TOWNSHIP

SEC. 6 MADISON TOWNSHIP

N 89°09'10" E 306.87' 829.62'

(1170.16' TO SECTION CORNER)

Ex. Refugee Road

Ex. Conc. Median

TYPE 3 CROSSING

263+24.15 146.14' RT.

Ex. RIW 7

WORK LIMITS

S 84°41'26" W

LA-R/W

TEMP. R/W

102" SAN.

SCRUB

G-268

Dc. 2°00' ℄ Ramp "G"

N 89°43'00" W 304.22'

℄ 26" H.P. Gas

P.R.C. G-268 177.08'

623.76' N 79°44'59" W

Gravel Drive

(190 WL) CONT. 0.270 Ac. P.R.O. 1.662 Ac. TOTAL 1.932 Ac.

(190 T) CONT. 1.029 Ac.

265+00.00 139.00' RT., AP

265+00.00 140.00' RT.

(189 WL) TOTAL TAKE CONT. 0.284 Ac.

(I.P. FOUND) STA. 267+23.87 85.86' LT.

Loading Dock

U.G. TANKS

Conc. Curb

Conc. Base

Poles/No Sign

1-5' 200.00' Metal Sign

℄ 5.0' Metal Pole

Conc.

Pole Bases (No Poles)

Asph.

UNDER GROUND STORAGE TANKS

Conc. Curb

Conc. Curb 2

Conc. Curb 3

Conc. Curb 4

N 0°50'55" W 150.00'

152.27'

267+10.23 234.29' LT., AP

STA. 267+10.23 235.29' LT.

STA. 269+23.02 247.65' LT. (I.P. FOUND)

269+23.02, 246.65' LT. AP

N 89°09'05" E

N 86°07'10" E 150.11'

(188 WL-1) CONT. 0.129 Ac.

269+38.73, 59' Lt.

S 0°50'55" E 143.41'

116.00'

269+38.73 S 2.104

S 60°12'32" W 171.32'

(193 WL) CONT. 0.000 Ac. P.R.O. 2.693 Ac. TOTAL 2.693 Ac.

Dirt & Gravel Service Rd.

245.88'

LA-R/W

Ex. RIW 7

21" San.

M.H.

269+25.73 172.68' LT.

STA. 269+28.16 (I.P. FOUND) 183.12' LT.

Ex. Guard Rail

POLE BASE & SIGN

75.19'

N 85°10'21" W

158.33'

Ex. LA-R/W S 85°21'00" W

270+04.70 110.44' LT.

271+56.18 120.78' LT.

S.C. H-271+38.73

TRAILER

R.C.P.

Barb Woven Wire

Ex. LA-R/W

S 54°44'42" W 226.75'

WILLOWS

273+26.18 269.80' LT., EPA

Dc=12°00' H-274

Ramp "H"

Ramp "H-1"

24" Water

M-1J15(1)
END PROJECT
STA. 273+10.00

END ACQUISITION
FRA-104-10.57
STA. 273+26.18

C.S. H-274+07.23

Ex. LA-R/W ℄

H-276

P.O.C. W.I. 276+37.23 Meet Existing

21" San.

I.P. FOUND

Ex. RIW 7

270+81.45 259.78' LT.

M.H.

HERR REALTY

273+26.18 270.80' LT.

WORK LIMITS

WILLOWS

TRAILER

R.C.P.

Barb Woven Wire

Ex. LA-R/W ℄

S 54°44'42" W 226.75'

WILLOWS

273+26.18 269.80' LT., EPA

Dc=12°00' H-274

Ramp "H"

Ramp "H-1"

24" Water

C.S. H-271+38.73

H-270

P.R.C. H-270

110.79'

Ex. Ramp

Sign

Ex. Guard Rail

Ex. Gross Median

N 89°09'51" E 275

℄ Ramp "G"

℄ Ex. Guard Rail

270+06.19 0.35' RT.

Ex. LA-R/W

Ex. Guard Rail

Steel Gate

268+61.66 110.83' RT., AP

S 84°07'01" E 151.04'

271+50.00 159.00' RT., AP

271+50.00 160.00' RT.

271+56.18 140.22' RT.

S 54°57'58" E 140.42'

Barb Woven Wire

℄ Ramp "G"

G-272

Dc=12°00'

272+86.18 233.22' RT., EPA

272+86.18 234.22' RT.

S 32°29'16" E 112.33'

S 81°29'24" W 158.10'

N 55°50'38" W 122.07'

271+00.00 220.00' RT.

270+07.74 122.87' RT.

S.C. G-272+87.77

C.S. G-270+57.77

N 84°32'23" W-150.91'

N 80°25'18" W-238.74'

268+61.66 111.03' RT.

272+00.00 290.00' RT.

273+11.32 275.00' RT.

ITEM 607 TYPE CL 2413 L.F.

REV.	DATE	DESCRIPTION
	3-26-81	Add parcel 186U-1

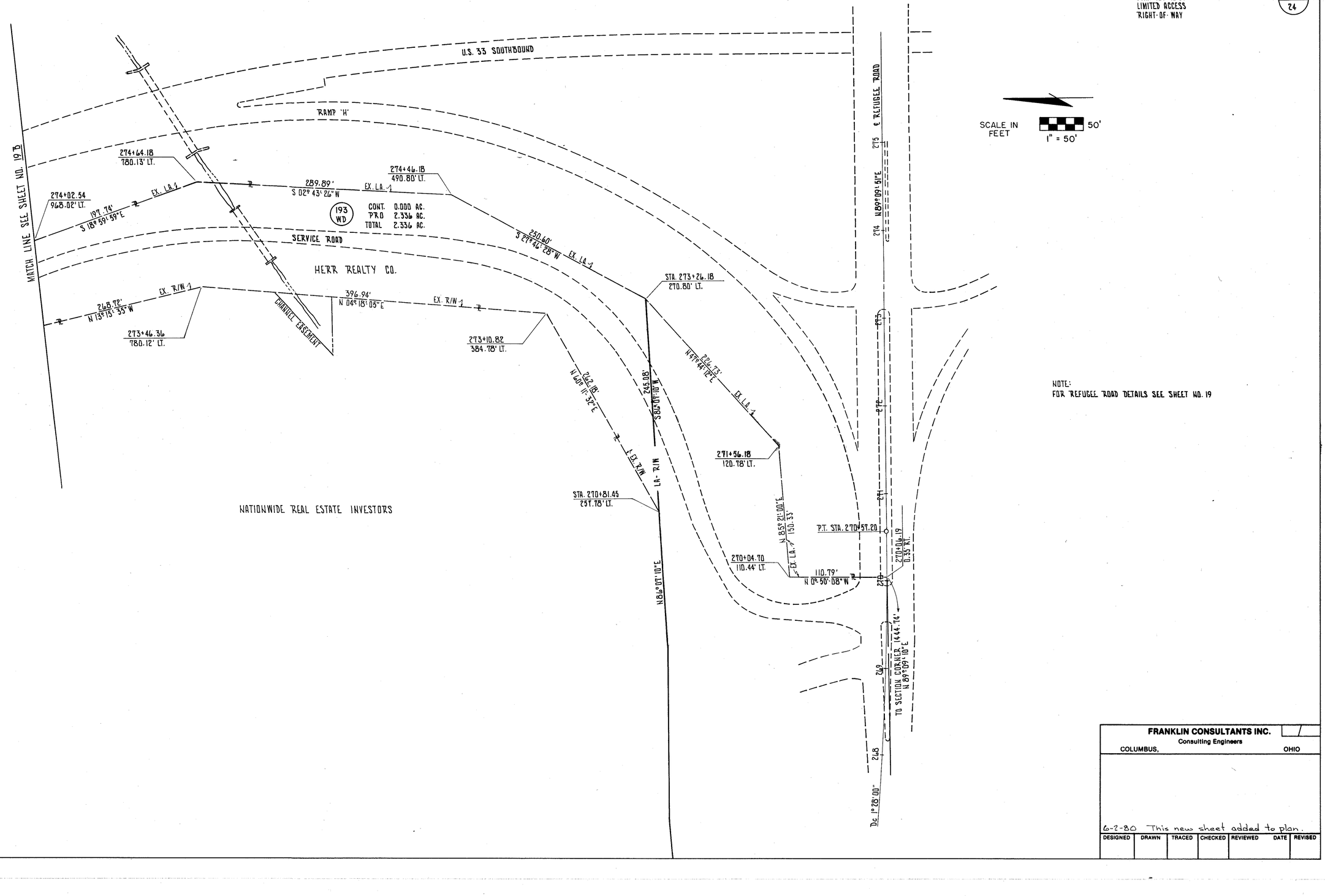
STA. 260+00.00 To STA. 273+26.18 S.R. 104 RIW

FHWA DIVISION	STATE	PROJECT	
5	OHIO		

250
254

19 A
24

FRANKLIN COUNTY
FRA.-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY



SCALE IN FEET
1" = 50'
50'

NOTE:
FOR REFUGEE ROAD DETAILS SEE SHEET NO. 19

FRANKLIN CONSULTANTS INC.
Consulting Engineers
COLUMBUS, OHIO

6-2-80 This new sheet added to plan.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED

BRUNING 44.132.30845-1

FHWA DIVISION	STATE	PROJECT	
5	OHIO		

251 / 254

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

19-B / 24

50'
SCALE IN FEET
1" = 50'
SOUTHBOUND U. S. 33 & REFUGEE ROAD EXIT RAMP
265+11.31
2345.04' LT.
EX. L.A. R/W
S 19°02'22" E
552.68'
269+72.65
1834.75' LT.
N 58°59'36" E
189.93'
199 PR
OSCAR BERMAN
516.65'
N 21°35'20" W
261+64.81
2221.02' LT.
EX. R/W
162.84'
198 WD
144.51'
N 70°22'35" W
EX. R/W
269+43.70
1730.24' LT.
266+93.10
1772.41' LT.
N 69°57'36" E
EX. L.A.
CONT. 0.000 AC.
PRO 1.099 AC.
TOTAL 1.099 AC.
271+45.67
1527.72' LT.
S 24°16'17" E
335.17'
S 25°29'18" E
372.39'
SERVICE ROAD
RAY A. BEHM
613.56'
N 24°08'10" W
EX. R/W
273+01.00
1189.27' LT.
EX. L.A.
274+02.54
968.02' LT.
S 25°29'18" E
243.44'
67.86'
HERR REALTY CO.
135.42'
N 23°21'28" W
EX. R/W
272+36.67
1167.64' LT.
272+88.55
1042.54' LT.
MATCH LINE SEE SHEET 19A
N 70°34'36" E
NATIONWIDE REAL ESTATE INVESTORS

FRANKLIN CONSULTANTS INC.
Consulting Engineers
COLUMBUS, OHIO

8-29-80 Changed 199 WD to 199 PR
6-2-80 This new sheet added to plan.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED

BRUNING 44-132 30645-1

MARION TOWNSHIP
T4N, R22W SEC.1 CONGRESS LANDS
T5N, R22W SEC.25 THE REFUGEE TRACT
CITY OF COLUMBUS

THE TIFERETH ISRAEL CONGREGATION

FHWA REGION	STATE	PROJECT	
5	OHIO		

252
254

20
24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

EMIL G. BUCHSIEB ET AL (4)

CURVE DATA ALUM CREEK DR.

P.I. STA. 33+09.51
Δ = 5°46'02"
Dc = 3° 00' 00"
R = 1909.86'
L = 192.24'
T = 96.20'
E = 2.42'

SPIRAL DATA ALUM CREEK DR.

P.I. STA. 34+72.33
θs = 3°00'00"
P = 0.87'
K = 99.99'
L.T. = 133.35'
S.T. = 66.68'
L.C. = 199.98'
Ls = 200.00'

NOTE: (196-T) DO NOT DISTURB PILLARS

FOR ENLARGED VIEW OF THIS AREA SEE DETAIL "A" SHEET 20-A

EXXON CORPORATION
DO NOT DISTURB 165.77'
U.G. STORAGE TANKS
1-Sty. Blk. Exxon
PUMP ISLAND

LENORE B. SCHWARTZ
SHIRLEY B. GOLD

CORA M. BAHRKE

CULTIVATED FIELD

CEMETERY

BELLEVUE AVE.

ALUM CREEK DRIVE

Match Line Sta. 67+38 & Refugee Rd.

Match Line Sta. 40+00 & Alum Creek Drive

Match Line Sta. 250+00.00 Sheet 18

Sheet 16

ITEM 607 TYPE CL 12? L.I.

NOTE:
* TO SECTION CORNER 242.94', N 89° 08' 36" E

REV	DATE	DESCRIPTION
	10-30-79	Added sign to 180WL-1
	10-25-79	Deleted 197U

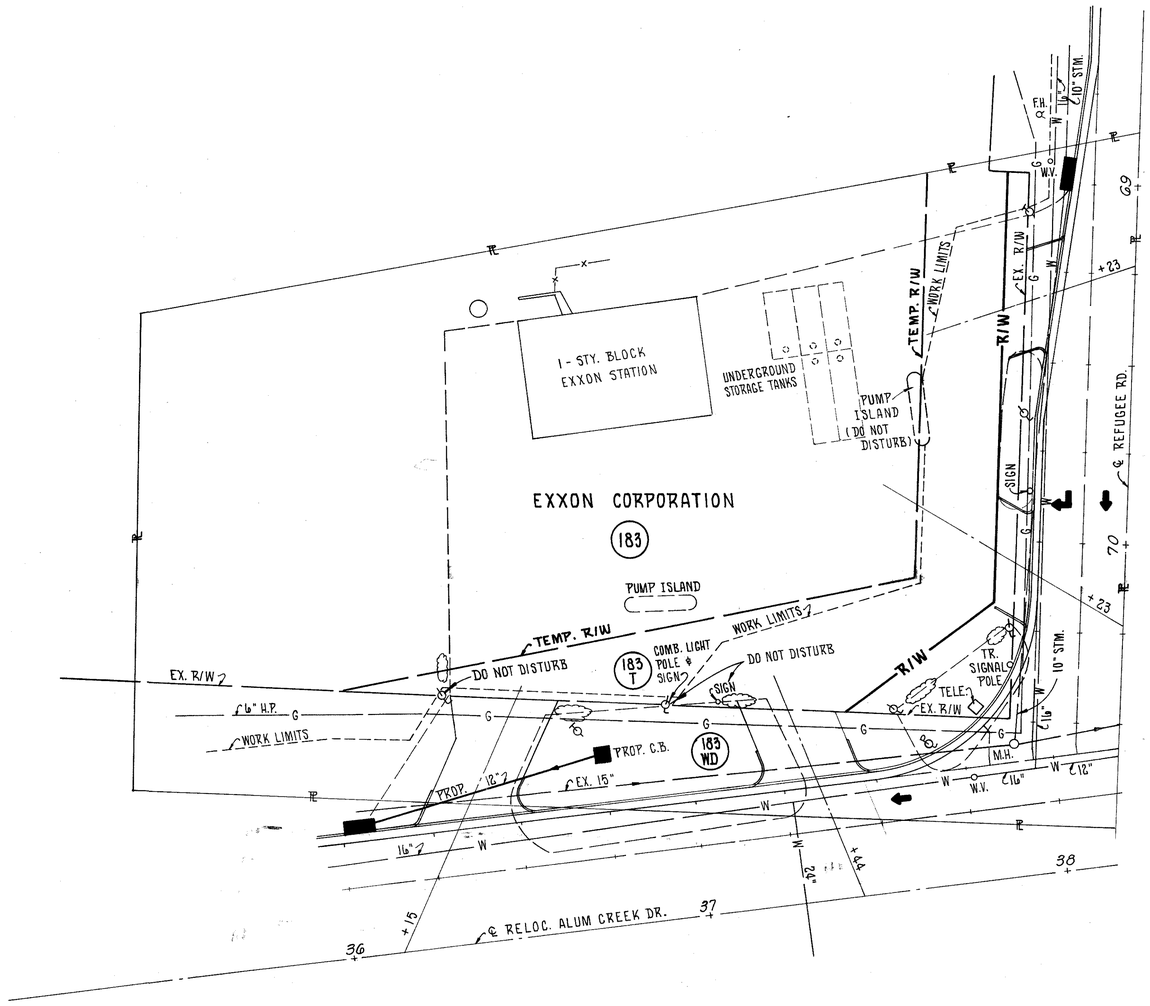
P.O.C. STA. 27+13.41 To STA. 40+00.00 ALUM CREEK DRIVE RIW

FHWA REGION	STATE	PROJECT	
5	OHIO		

253
254

20-A
24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY



DETAIL "A"

SEE SHEET 20

ALUM CREEK DRIVE @ REFUGEE ROAD R/W ~ DETAIL "A"

MARION TOWNSHIP
T5N, R22W SEC. 25 THE REFUGEE TRACT
CITY OF COLUMBUS

FHWA REGION	STATE	PROJECT	
5	OHIO		

254
254

21
24

FRANKLIN COUNTY
FRA-104-10.57
LIMITED ACCESS
RIGHT-OF-WAY

CURVE & SPIRAL DATA ℄ ALUM CREEK DRIVE
P.I. STA. 49+11.07
Δ = 30°05'21"
Dc = 2°00'00"
R = 2864.79'
Lc = 1354.46'
Ls = 150.00'
L.T. = 100.00'
S.T. = 50.00'
Ts = 845.09'
Es = 102.02'
Øs = 1°30'00"

ITEM 607 TYPE C.L. 1029 L.F.

REV.	DATE	DESCRIPTION
4	6-28-83	ADD PARCEL 185-X
3	1-2-81	Revised 185T-2. Added detail
2	2-26-80	Added topo to 185
1	10-2-79	Removed structure from plans 184

STA. 47+00.00 To STA. 60+50.00 ALUM CREEK DRIVE R/W

NOV 26 1980

GENERAL INFORMATION

INTRODUCTION

The project consists of a 2.6 mile major relocation of Refugee Road in Franklin County, Ohio. The alignment begins at Lockburne Road, approximately 1500 feet south of its intersection with existing Refugee Road, and extends eastward crossing Fairwood Avenue, a spur and the main line of the Norfolk and Western Railroad, the existing Refugee Road, Alum Creek Drive and Alum Creek, ending at the intersection of U.S. Route 33 and the existing Refugee Road. Included with this project are structures for six grade separations, a North and a South Refugee Service Road, and improvement for 0.62 miles of Alum Creek Drive and ramps at the Alum Creek Drive Interchange.

Proposed cuts and fill are up to 35 feet in depth and height.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

The alignment begins on the uplands between the Scioto River and Alum Creek and proceeds to the east floodplain of Alum Creek. The natural soil deposits in this area are comprised of glacial till on the highland and glacial outwash deposits in the valley of Alum Creek. Generalized geologic reports indicate the deposits to be quite thick, possibly in excess of 100 feet, overlying shale of the Devonian age.

A boggy depression occurs just west of the intersection of the proposed Refugee Road South with existing Refugee Road.

A sanitary land fill occurs on the alignment of Ramp C and Refugee Road North, and in the proximity of the intersection of Ramp D and the main alignment of Refugee Road.

EXPLORATION

Exploratory borings were made to procure Standard Penetration drive samples by means of a truck-mounted rotary drill rig. Drilling was performed at intermittent times between June 20 and December 19, 1978. Included with this report are the logs of borings made in conjunction with the foundation investigations for structures on the project.

INVESTIGATIONAL FINDINGS

Subsoils occuring immediately below proposed grade and in the embankment foundation areas consist predominantly of sandy silts (A-4a), silt clays (A-6a) and clays (A-7-6).

Roadway fill was found to occur in the borings along Alum Creek Drive which is presently in a shallow side-hill cut-fill section south of existing Refugee Road. In one area north of existing Refugee Road, Alum Creek Drive is on fill embankment occuring in a ravine. These fills comprise predominantly sandy silts (A-4a) and silt clays (A-6a).

The sanitary land fill was found to be as deep as 28.4 feet at the boring locations and to extend as much as 21.5 feet below grade at station 88+00, 50 feet left of centerline on Refugee Road North.

The bog area was found to contain very soft, compressible, low strength silts and clays (some of which were organic) and peats, encountered to depths of approximately 9 to 16 feet. These conditions were found to occur approximately between stations 24+50 and 26+00 at 50 feet left of centerline, between stations 23+50 and 26+00 on centerline and between stations 23+00 and 25+50 at 50 feet right of centerline, along the alignment of Refugee Road South.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS

DESCRIPTION	H.R.B. CLASS	OHIO CLASS	% AGG	% C.SAND	% M.SAND	% F.SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
GRAVEL AND/OR STONE FRAGMENTS	A-1-A(0)	A-1-A	69	16	0	7	6	2	N.P.	N.P.	17	6
GRAVEL WITH SAND	A-1-B(0)	A-1-B	38	30	2	14	12	4	N.P.	N.P.	11.7	10
COARSE AND FINE SAND	----	A-3A	19	17	4	39	16	5	N.P.	N.P.	7.4	10
GRAVEL OR STONE FRAGMENTS WITH SAND AND SILT	A-2-4(0)	A-2-4	42	30	0	11	12	5	23	8	6	1
GRAVEL WITH SAND, SILT AND CLAY	A-2-6(0)	A-2-6	31	21	7	11	19	11	22	9	13	3
SANDY SILT	A-4(6)	A-4A	16	10	1	16	37	20	25	8	11.5	69
SILT	A-4(8)	A-4B	4	3	0	8	73	12	N.P.	N.P.	15.9	8
SILT AND CLAY	A-6(9)	A-6A	9	8	0	15	42	26	29	12	20.3	23
SILTY CLAY	A-6(11)	A-6B	7	7	0	14	44	28	38	19	14	10
ELASTIC CLAY	A-7-5(17)	A-7-5	0	2	0	1	54	43	53	31	23	1
CLAY	A-7-6(14)	A-7-6	6	4	0	9	44	37	47	20	22.9	21
RANDOM FILL												
PEAT												

● WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT
-⊖- NON PLASTIC MATERIAL WITH HIGH WATER CONTENT

NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (X/Y/Z)
X = NUMBER OF BLOWS FOR FIRST 6 INCHES
Y = NUMBER OF BLOWS FOR SECOND 6 INCHES
Z = NUMBER OF BLOWS FOR THIRD 6 INCHES

BERM MATERIAL

SOD AND/OR TOPSOIL = X = APPROXIMATE DEPTH
⊗ NON PLASTIC
DRIVE SAMPLE AND/OR CORE BORING - PLAN VIEW
DRIVE SAMPLE AND/OR CORE BORING PLOTTED TO VERTICAL SCALE ONLY

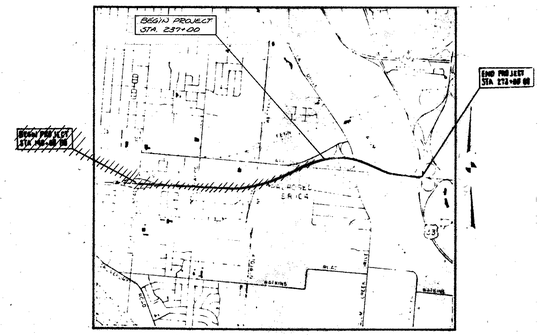
NOTE: FIGURES BESIDE BORING INDICATE WATER CONTENT IN PERCENTAGE e.g. 15

FRANKLIN COUNTY
FRA - 104-12.41

(1/10)

NOTE: WHEREVER "FRA-104-10.57" APPEARS ON THESE PLANS, IT SHALL BE MEANT TO READ "FRA-104-12.41"

FED. NO. M-BRM-1J15(4)



LOCATION MAP

SOIL INFORMATION - All available soil and bedrock information which can be conveniently shown on the soil profile and/or structure foundation investigation sheets has been so reported. Additional subsurface investigation may have been made to study some special aspect of the project. Copies of this data, if any, may be inspected in the District Deputy Director's Office, the Bureau of Tests at 1600 West Broad Street, the Pavement and Soils Section of the Bureau of Roadway Design or in the Bridge Bureau at 25 South Front Street.

DATE	SYMBOL	DESCRIPTION	BY

REVISIONS

FRANKLIN CONSULTANTS INC.
CONSULTING ENGINEERS
COLUMBUS, OHIO

DESIGNED	DRAWN	TRACED	CHECKED	APPROVED

FILE NO. SHEET . OF

BRUNING 44-132 30910-1

SUMMARY OF SOIL TEST DATA

FRANKLIN COUNTY
FRA 104-12.41

*DENOTES INSUFFICIENT MATERIAL

Boring No.	Ground Surface Elevation	Sample No. Drive	Sample No. Press	Depth from (ft.)	Depth to (ft.)	Water Content (%)	Gradation Agg (%)	C.S (%)	M.S (%)	F.S (%)	Silt (%)	Clay (%)	Plasticity LL (%)	PL (%)	PI (%)	SHTL CLASS
1		1		0	1.5	17.5	15	6	-	11	37	31	35	18	21	A-6b
1		8		12.0	13.5	19.4	6	7	-	14	46	27	35	20	15	A-6a
1		14		20.5	21.0	21.1	27	14	-	20	24	15	19	14	5	A-4a
1		15		25.5	27.0	18.2	0	1	-	8	77	14	21	18	3	A-4b
1		18		43.5	45.0	9.2	7	11	-	20	40	22	22	14	8	A-4a
2		4		4.5	6.0	14.1	11	10	-	16	40	23	23	14	9	A-4a
2		10		13.5	15.0	19.8	8	0	-	3	39	22	21	17	4	A-4b
2		14		20.5	22.0	7.7	57	17	-	14	9	3	Non-Plastic			A-1-a
2		15		25.5	27.0	9.5	9	12	-	19	43	17	21	13	8	A-4a
2		18		43.5	45.0	9.3	12	10	-	20	37	21	22	13	9	A-4a
3		2		1.5	3.0	20.4	6	5	-	14	39	36	42	20	22	A-7-6
3		4		4.5	6.0	15.2	16	7	-	11	41	25	33	22	11	A-6a
3		6		7.5	9.0	14.0	10	11	-	18	40	21	23	18	5	A-4a
3		9		12.0	13.5	10.7	21	10	-	14	36	19	21	14	7	A-4a
3		12		19.5	20.1	11.1	42	32	-	10	15	3	Non-Plastic			A-1-b
3		16		30.5	30.9	10.8	11	10	-	19	40	19	21	14	7	A-4a
4		1		0	1.5	14.2	4	4	-	10	53	31	34	23	11	A-6a
4		3		3.0	4.5	21.8	6	6	-	15	43	20	35	17	18	A-6b
4		6		7.5	9.0	12.1	11	11	-	18	39	19	23	16	7	A-4a
4		9		12.0	13.5	11.1	10	10	-	16	40	25	22	13	9	A-4a
4		13		20.0	21.0	10.8	4	5	-	26	59	6	Non-Plastic			A-4b
4		18		43.5	45.0	11.4	6	6	-	17	48	21	26	14	12	A-6a

Remarks:

Boring No.	Ground Surface Elevation	Sample No. Drive	Sample No. Press	Depth from (ft.)	Depth to (ft.)	Water Content (%)	Gradation Agg (%)	C.S (%)	M.S (%)	F.S (%)	Silt (%)	Clay (%)	Plasticity LL (%)	PL (%)	PI (%)	SHTL CLASS
79		2		1.5	3.0	12.4	17	12	-	16	34	21	23	16	7	A-4a
79		6		8.5	9.0	12.7	9	14	-	16	38	23	23	16	7	A-4a
79		11		16.5	18.0	12.2	16	10	-	15	41	18	21	14	7	A-4a
81		7		9.0	10.5	9.4	54	15	-	9	17	5	*	17		A-1-b
81		10		13.5	15.0	11.1	37	15	-	10	27	11	22	16	6	A-4a

Remarks: Insufficient Material For Liquid Limit Test

Boring No.	Ground Surface Elevation	Sample No. Drive	Sample No. Press	Depth from (ft.)	Depth to (ft.)	Water Content (%)	Gradation Agg (%)	C.S (%)	M.S (%)	F.S (%)	Silt (%)	Clay (%)	Plasticity LL (%)	PL (%)	PI (%)	SHTL CLASS
97		2		1.5	3.0	20.9	2	3	-	10	46	39	42	19	23	A-7-6
98		4		5.2	6.0	17.8	13	11	-	17	36	23	29	18	11	A-6a
100		8		10.5	12.0	13.2	42	35	-	8	10	5	Non-Plastic			A-1-b
104		7		9.0	10.5	20.3	14	10	-	15	38	23	24	17	7	A-4a
105		7		9.0	10.5	17.4	26	8	-	11	32	23	28	17	11	A-6a
108		12		19.5	21.0	18.2	0	1	-	4	84	11	Non-Plastic			A-4b
109		11		16.5	18.0	10.9	27	9	-	13	30	21	25	17	8	A-4a
110		10		16.5	18.0	11.0	12	11	-	14	42	21	21	14	7	A-4a

Remarks:

Boring No.	Ground Surface Elevation	Sample No. Drive	Sample No. Press	Depth from (ft.)	Depth to (ft.)	Water Content (%)	Gradation Agg (%)	C.S (%)	M.S (%)	F.S (%)	Silt (%)	Clay (%)	Plasticity LL (%)	PL (%)	PI (%)	SHTL CLASS
26		3		3.0	4.5	22.7	2	3	-	9	48	35	52	21	31	A-7-6
26		8		10.5	12.0	13.5	16	10	-	15	37	22	26	15	11	A-6a
27		17		38.5	39.5	4.8	0	2	-	77	17	4	Non-Plastic			A-3a
28		3		3.0	4.5	17.9	15	6	-	11	40	28	45	21	24	A-7-6
28		8		10.5	12.0	9.8	33	11	-	16	37	23	26	16	10	A-4a
28		18		43.5	45.0	4.8	58	27	-	19	16	4	Non-Plastic			A-3a
29		3		3.5	4.5	26.0	11	3	-	12	65	19	40	23	17	A-6b
29		9		13.5	15.0	8.8	12	12	-	15	36	25	22	14	8	A-4a
29		17		43.5	44.8	4.5	39	34	-	13	11	3	Non-Plastic			A-1-b
30		2		1.5	3.0	23.5	1	3	-	11	47	38	45	19	26	A-7-6
30		9		12.0	13.5	9.1	14	10	-	16	38	22	21	14	7	A-4a
31		6		7.5	9.0	33.3	11	1	-	4	42	42	62	17	45	A-7-6
31		18		43.5	43.8	3.9	22	42	-	23	10	3	Non-Plastic			A-1-b
35		4		6.0	7.5	20.9	6	7	-	16	40	31	30	18	12	A-6a
35		9		13.5	13.9	9.5	20	10	-	13	36	21	24	14	10	A-4a

Remarks:

Boring No.	Ground Surface Elevation	Sample No. Drive	Sample No. Press	Depth from (ft.)	Depth to (ft.)	Water Content (%)	Gradation Agg (%)	C.S (%)	M.S (%)	F.S (%)	Silt (%)	Clay (%)	Plasticity LL (%)	PL (%)	PI (%)	SHTL CLASS
88		2		1.5	3.0	10.0	0	1	-	23	63	13	33	21	12	A-6a
88		8		10.6	12.0	19.6	2	1	-	17	54	26	22	16	6	A-4b
90		8		10.5	12.0	13.1	71	17	-	6	5	1	Non-Plastic			A-1a
90		20		53.5	54.0	8.7	34	10	-	13	27	16	23	14	9	A-4a
90A		14		25.5	27.0	12.7	63	24	-	8	4	1	Non-Plastic			A-1a

Remarks:

BRUNING 44-132 30910-1

DATE	SYMBOL	DESCRIPTION	BY

REVISIONS

FRANKLIN CONSULTANTS INC.
CONSULTING ENGINEERS
COLUMBUS, OHIO

DESIGNED	DRAWN	TRACED	CHECKED	APPROVED

FILE NO. | SHEET OF

SUMMARY OF SOIL TEST DATA

* DENOTES INSUFFICIENT MATERIAL

FRANKLIN COUNTY
FRA - 104- 12.41

Boring No.	Ground Surface Elevation	Sample No. Boring	Sample No. Prss	Depth from (ft.)	Depth to (ft.)	Water Content (%)	Gradation Agg (%)	Gradation C.S (%)	Gradation M.S (%)	Gradation F.S (%)	Gradation Silt (%)	Gradation Clay (%)	Plasticity LL (%)	Plasticity PL (%)	Plasticity PI (%)	SHTL CLASS
5		2		1.5	3.0	23.7	3	3	–	10	43	41	52	21	31	A-7-6
5		5		6.5	7.5	13.9	14	10	–	16	38	22	22	16	6	A-4a
5		8		12.0	13.5	10.1	16	11	–	16	37	20	22	14	8	A-4a
6		3		3.0	4.5	19.4	3	5	–	15	45	32	40	18	22	A-6b
6		6		4.5	6.0	19.3	8	10	–	22	41	19	30	17	13	A-6a
6		6		7.5	9.0	12.3	14	14	–	17	37	17	24	15	9	A-4a
7		1		0.5	1.5	21.1	1	2	–	7	46	18	49	21	28	A-7-6
7		5		3.0	4.5	11.4	31	9	–	14	27	19	26	16	10	A-4a
8		6		7.5	9.0	14.3	16	16	–	15	36	21	23	15	8	A-4a
9		1		0.9	1.5	18.3	4	6	–	10	39	42	42	20	22	A-7-6
9		3		3.5	4.5	22.6	6	25	–	22	24	23	37	17	20	A-6b
9		8		7.5	9.0	20.0	3	1	–	2	93	1	Non-Plastic			A-7-6
10		3		3.0	4.5	24.8	3	2	–	7	42	46	45	21	24	A-7-6
10		6		7.5	9.0	14.1	9	9	–	20	37	29	23	14	9	A-4a
10		8		10.5	12.0	9.4	29	8	–	13	31	19	24	16	8	A-4a
10		12		19.0	20.5	7.9	21	11	–	15	33	20	21	14	7	A-4a
10		15		28.5	29.0	7.3	27	13	–	17	28	15	22	15	7	A-4a
10		17		38.5	39.0	4.0	18	27	–	37	5	13	Non-Plastic			A-3a
11		1		0.5	1.5	10.6	11	9	–	14	40	26	30	17	13	A-6a
11		9		12.0	13.5	8.8	14	11	–	15	35	25	23	15	8	A-4a
11		13		22.5	24.0	10.0	13	10	–	15	39	23	21	14	7	A-4a
11		17		38.5	39.5	8.5	5	16	–	48	26	5	Non-Plastic			A-3a
11		18		43.5	44.5	3.1	33	42	–	18	6	1	Non-Plastic			A-1b
12		2		3.0	4.5	20.0	3	5	–	11	43	38	40	19	21	A-6b
12		5		7.5	9.0	14.9	8	9	–	12	35	35	30	17	13	A-6a
12		9		13.5	15.0	9.3	11	11	–	15	40	23	20	14	6	A-4a
12		12		25.5	26.0	9.2	22	1	–	15	33	19	22	12	10	A-4a
13		3		3.0	4.5	16.4	12	9	–	14	35	30	28	16	12	A-6a
13		5		6.0	7.5	18.7	9	11	–	14	35	31	29	17	12	A-6a
13		9		13.5	15.0	9.3	11	11	–	14	12	22	21	14	7	A-4a
13		13		25.5	27.0	9.4	14	12	–	14	37	23	21	14	7	A-4a
13		15		33.5	34.5	10.5	10	10	–	13	36	31	25	14	11	A-6a
13		18		48.5	48.9	3.5	24	15	–	26	13	3	Non-Plastic			A-3a
14		4		3.0	4.5	24	2	2	–	8	42	46	47	13	34	A-7-6
14		6		4.5	6.0	23	2	2	–	13	38	24	41	22	19	A-7-6
14		8		10.5	12.0	14	11	10	–	14	43	22	32	16	6	A-4a
36		3		3.0	4.5	23.5	6	3	–	13	45	33	36	20	16	A-6b
37		2		1.5	3.0	24.4	9	3	–	9	48	31	43	19	24	A-7-6
37		6		7.5	9.0	14.7	13	10	–	31	23	23	23	16	7	A-4a
38		5		6.0	7.5	14.7	6	10	–	17	44	23	23	16	7	A-4a
39		4		4.5	6.0	13.8	14	12	–	17	34	23	25	16	9	A-4a
40		3		3.0	4.5	25.7	11	3	–	10	43	33	41	23	18	A-7-6
40		9		13.5	15.0	10.1	16	9	–	15	38	22	23	14	9	A-4a
41		7		11.0	12.0	13.1	33	6	–	12	33	16	20	13	7	A-4a
41		9		14.3	15.0	12.6	17	16	–	5	52	10	Non-Plastic			A-4b

Boring No.	Ground Surface Elevation	Sample No. Drive	Sample No. Prss	Depth from (ft.)	Depth to (ft.)	Water Content (%)	Gradation Agg (%)	Gradation C.S (%)	Gradation M.S (%)	Gradation F.S (%)	Gradation Silt (%)	Gradation Clay (%)	Plasticity LL (%)	Plasticity PL (%)	Plasticity PI (%)	SHTL CLASS
42		2		1.5	3.0	15.6	1	2	–	7	45	45	47	18	29	A-7-6
42		10		13.5	15.0	10.5	82	11	–	3	3	1			*	A-1-a
50		7		9.0	10.5	12.2	14	10	–	16	38	22	24	16	8	A-4a
51		5		6.0	7.5	30.0	0	1	–	3	76	20	118	28	90	
51		7		9.0	10.5	19.6	10	13	–	19	35	23	23	15	8	A-4a
51		11		16.5	18.0	4.7	0	0	–	2	92	6	Non-Plastic			A-4-b
52		7		9.0	10.5	10.0	22	9	–	14	35	20	22	15	7	A-4-a
53		3		3.0	4.5	19.1	8	20	–	16	23	33	35	18	17	A-6b
54		15		33.5	34.0	10.6	17	12	–	16	36	19	22	14	8	A-4a
55		13		22.5	24.0	15.2	16	10	–	13	32	29	25	16	9	A-4a
56		13		28.5	30.0	11.6	12	11	–	17	39	21	26	15	11	
57		13		28.5	29.0	8.2	56	9	–	23	10	2	Non-Plastic			
59		12		28.5	29.3	8.5	12	11	–	17	39	21	22	15	7	A-4a
60		10		16.5	18.0	14.0	44	15	–	11	21	9	22	18	4	A-3a
61		1		0.5	1.5	18.2	1	6	–	13	43	37	41	22	19	A-7-6
61		7		9.0	10.5	11.5	22	13	–	20	28	17	21	15	6	A-4a
62		11		28.5	29.0	11.1	13	12	–	15	39	21	23	14	9	A-4a
64		4		4.5	6.0	14.2	14	12	–	17	37	20	22	16	6	A-4a
64		12		20.0	21.5	10.5	18	12	–	18	39	20	20	15	5	A-4a
66		5		6.0	7.5	13.3	25	12	–	10	34	19	24	17	7	A-4a
66		13		22.5	24.0	9.2	24	9	–	14	34	19	*	14		
67		3		3.0	4.5	23.1	0	2	–	1	54	43	53	22	31	A-7-5
67		10		13.5	15.0	20.2	47	11	–	9	23	10	38	21	17	A-2-6
68		5		6.0	7.5	6.2	70	12	–	5	8	5	**			A-1-a
69		5		6.7	7.5	17.3	9	10	–	15	41	25	28	17	11	A-6a
70		2		1.5	3.0	20.3	17	8	–	13	30	32	34	17	17	A-6b
70		7		10.5	12.0	6.0	48	28	–	10	10	4	23	20	3	A-1-b
71		12		19.6	20.0	8.9	23	9	–	13	35	20	23	15	8	A-4a
73		3		3.0	4.5	13.1	28	34	–	12	15	11	29	18	11	A-2-6

Boring No.	Ground Surface Elevation	Sample No. Drive	Sample No. Prss	Depth from (ft.)	Depth to (ft.)	Water Content (%)	Gradation Agg (%)	Gradation C.S (%)	Gradation M.S (%)	Gradation F.S (%)	Gradation Silt (%)	Gradation Clay (%)	Plasticity LL (%)	Plasticity PL (%)	Plasticity PI (%)	SHTL CLASS
74		10		13.5	14.0	21.4	2	5	–	10	52	31	31	19	12	A-6a
75		3		3.0	4.5	12.9	9	11	–	17	41	22	26	16	10	A-4a
76		1		0.2	1.5	11.2	13	13	–	18	34	22	23	15	8	A-4a
77		2		1.5	3.0	6.3	42	30	–	11	12	5	23	15	8	A-2-4
78		5		6.0	7.5	15.8	8	11	–	16	36	29	31	17	14	A-6a
78		11		16.7	18.0	25.1	2	0	–	6	62	30	49	24	25	A-7-6
43		10		13.5	15.0	11.5	14	12	–	15	34	25	22	15	7	A-4a
44		3		3.0	4.5	15.3	8	9	–	17	37	29	32	18	14	A-6a
45		12		19.5	20.5	5.3	68	14	–	8	7	3	Non-Plastic			A-1-a
47		7		9.0	10.5	4.9	61	16	–	6	12	5	*	18		A-1-b
47		15		29.0	30.0	10.7	26	10	–	15	31	18	22	15	7	A-4a
48		14		28.5	30.0	9.8	17	10	–	17	38	18	21	15	6	A-4a
83		3		3.0	4.5	23.6	11	12	–	17	32	28	46	20	26	A-7-6
83		5		6.5	7.5	21.6	37	12	–	7	25	19	57	25	32	A-7-6
84		8		9.0	10.5	29.1	0	7	–	63	23	7	Non-Plastic			A-3a
85		3		3.0	4.5	19.4	0	0	–	21	53	26	30	17	13	A-6a
85		9		9.0	10.5	15.9	45	12	–	17	23	3	Non-Plastic			A-3a
86		3		3.0	4.5	13.4	0	0	–	17	61	22	32	20	12	A-6a
91		7		9.0	10.5	22.5	0	0	–	6	68	26	40	21	19	A-6b
93		4		4.5	6.0	14.7	10	14	–	31	22	23	16	27	11	A-6a
93		9		12.0	13.5	11.5	22	13	–	15	31	19	15	27	12	A-6a
96		4		4.5	6.0	13.5	20	36	–	25	15	4	Non-Plastic			A-1-b
10		3		4.5	6.0	23	1	2	–	3	10	48	45	16	29	A-7-6
15		6		9.0	10.5	14	4	4	–	15	18	42	20	22	17	A-4a
15		9		13.5	15.0	11	8	6	–	16	15	36	25	22	14	A-4a
15		12		22.5	24.0	8	24	8	–	11	14	30	16	22	15	A-4a
15		15		33.5	35.0	10	27	8	–	12	16	26	11	18	14	A-4a
15		18		48.5	50.0	10	8	5	–	10	19	38	19	22	14	A-4a
16		4		4.5	6.0	25	1	3	–	2	9	16	39	19	21	A-7-6
16		8		8.5	12.0	13	9	8	–	10	15	36	24	25	16	A-4a
16		10		13.5	14.0	8	17	19	–	20	12	20	12	–	12	A-2-6
16		13		19.5	20.5	6	11	8	–	14	29	29	19	18	14	A-4a
17		4		4.5	6.0	18	7	10	–	12	5	47	16	23	17	A-4a
17		14		26.5	27.0	12	9	7	–	12	16	36	20	21	15	A-4a
20		11		16.5	18.0	–	15	32	–	30	10	9	4	–	18	A-3a
20		15		28.5	30.0	10	9	9	–	41	19	9	3	Non-Plastic		A-3a
20		18		43.5	45.0	–	25	20	–	24	10	14	7	20	13	A-1-b

DATE	SYMBOL	DESCRIPTION	BY

REVISIONS

FRANKLIN CONSULTANTS INC.
CONSULTING ENGINEERS
COLUMBUS, OHIO

DESIGNED	DRAWN	TRACED	CHECKED	APPROVED

FILE NO. | SHEET OF

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

4/19

FRANKLIN COUNTY
FRA 104-12.41

NOTES:
1. PENETRATION BLOWS AT 1.5' INCREMENTS
~~2. LOGS FOR BORING NO. 15, 16, 17, 18, 20, 26, 27, 28, 29, 30, 31 & 35 ARE SHOWN ON STRUCTURE BORING PLANS~~
~~3. FOR REFUGEE RD SO BORING LOGS SEE SHEET NO. 10~~

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

5/19

FRANKLIN COUNTY
FRA - 104 - 12.41

SWAMP
WOODS
REFUGEE RD. NORTH
RAMP 'D-D'
RAMP 'C'
RAMP 'D'
RAMP 'E'
RAMP F
S.R. 104
PROPOSED REFUGEE RD. SOUTH
REFUGEE ROAD

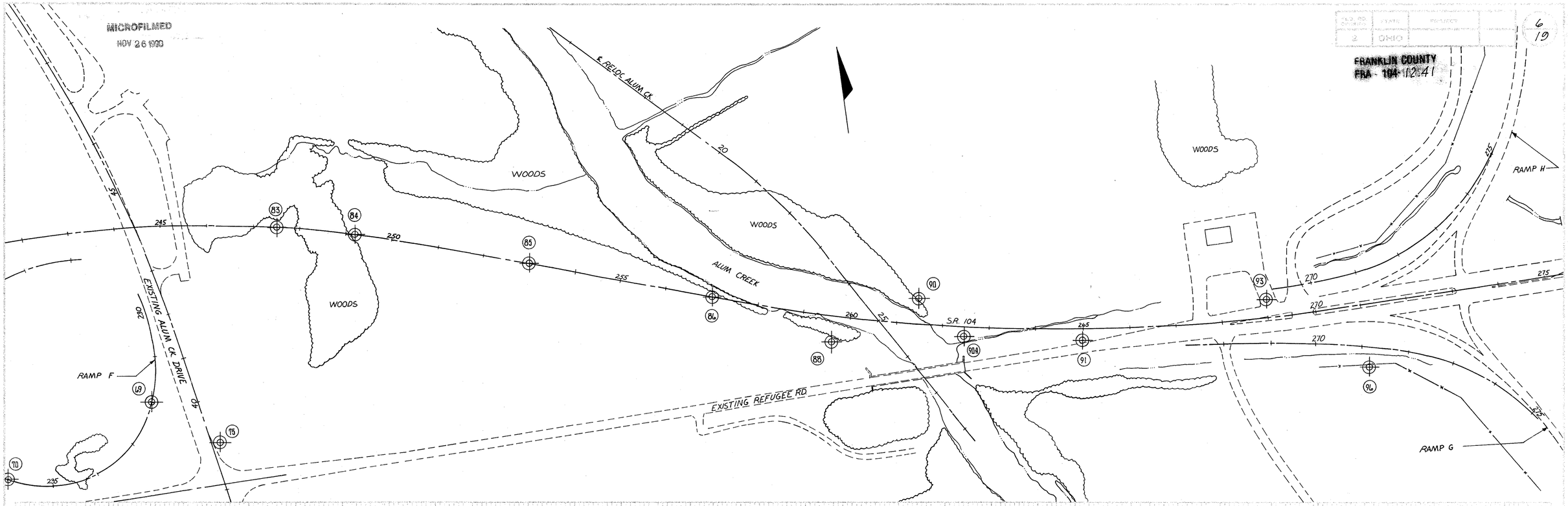
NOTES:
1. PENETRATION BLOWS AT 1.5' INCREMENTS.
2. FOR BORING LOGS ON REFUGEE ROAD NORTH & SOUTH SEE SHEET NO. 6
3. FOR BORING LOGS 45 & 47 SEE CROSS SECTION SHEET NO. 2
4. FOR BORING LOGS ON RAMPS 'C' D' E' & F' SEE PROFILES SHEET NO. 7
5. FOR BORING LOGS 98 THRU 109 AND 103 THRU 116 SEE X SECTION SHEET NO. 13 & 14
6. FIGURES BESIDE PENETRATION BLOWS INDICATES DEPTH BELOW SURFACE ELEV.

INDICATES NO PENETRATION BLOWS RECORDED

800
790
780
770
760
750
740

209 210 215 220 225 230 235 240 242

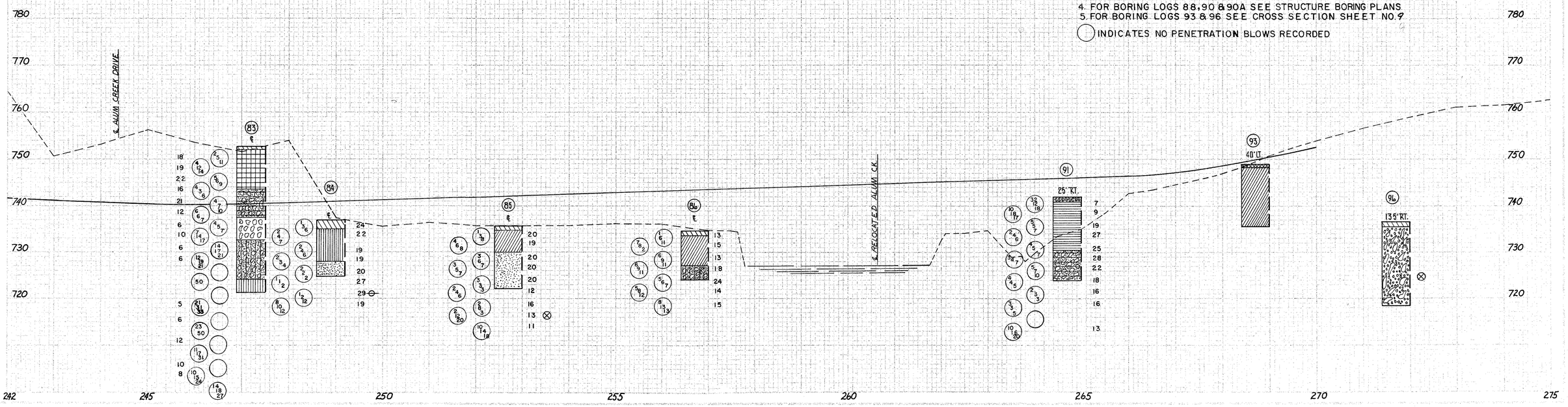
FRANKLIN COUNTY
FRA - 104-12.41



NOTES.

1. PENETRATION BLOWS AT 1.5' INCREMENTS
2. FOR RAMP 'F' BORING LOGS SEE SHEET NO. 6
3. FOR ALUM CREEK DRIVE BORING LOGS SEE SHEET NO. 6
4. FOR BORING LOGS 88, 90 & 90A SEE STRUCTURE BORING PLANS
5. FOR BORING LOGS 93 & 96 SEE CROSS SECTION SHEET NO. 9

◯ INDICATES NO PENETRATION BLOWS RECORDED



FRANKLIN COUNTY
FRA - 104-12.41

NOTES:
1. PENETRATION BLOWS AT 1.5' INCREMENTS
2. FOR RAMP 'E' BORINGS SEE SHEET NO. 7
3. FOR RAMP 'F' BORINGS SEE SHEET NO. 7
4. FOR REFUGEE ROAD NORTH BORINGS SEE SHEET NO. 8
5. FOR BORINGS 79 & 81 SEE STRUCTURE BORING PLANS
6. FIGURES BESIDE PENETRATION BLOWS INDICATES DEPTH BELOW SURFACE ELEV.
○ INDICATES NO PENETRATION BLOWS RECORDED

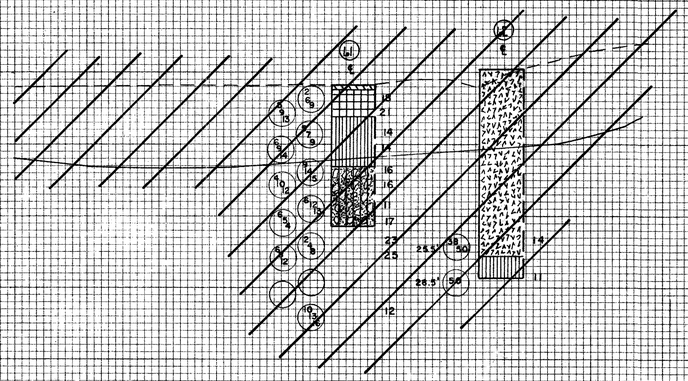
ALUM CREEK DRIVE
REFUGEE RD SOUTH
REFUGEE RD NORTH
℄ EXISTING REFUGEE ROAD
℄ SR 104
WOODS
MATCHLINE STA. 40+00 SEE THIS SHEET
MATCHLINE STA. 60+00 SEE THIS SHEET
+50 END WORK
15' RT.
25' RT.
7.5'
9'
780
770
760
750
740
27
30
35
40
45
50
55
60

FHWA REGION	STATE	PROJECT	
5	OHIO		

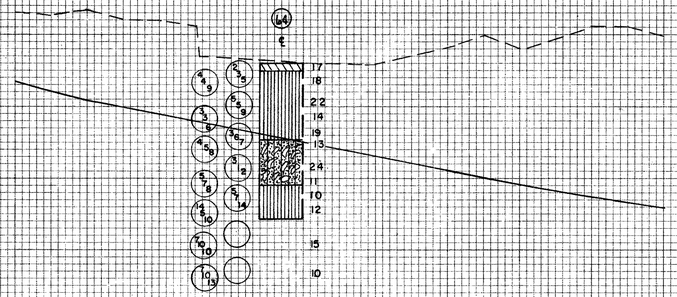
FRANKLIN COUNTY
FRA - 104-12.41

8
10

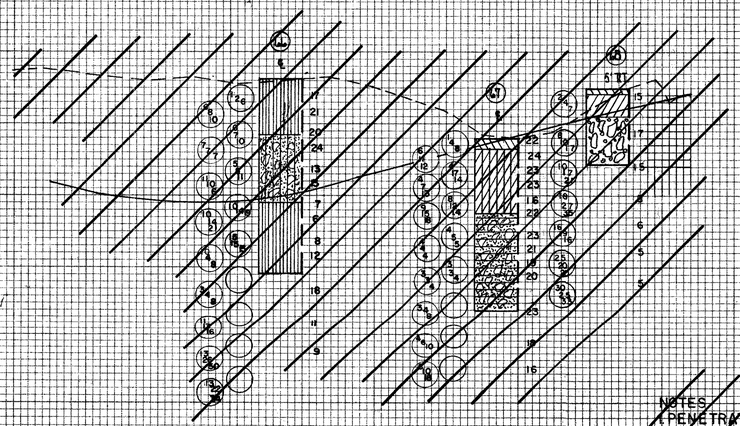
SEEDING		END AREA		VOLUME	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL



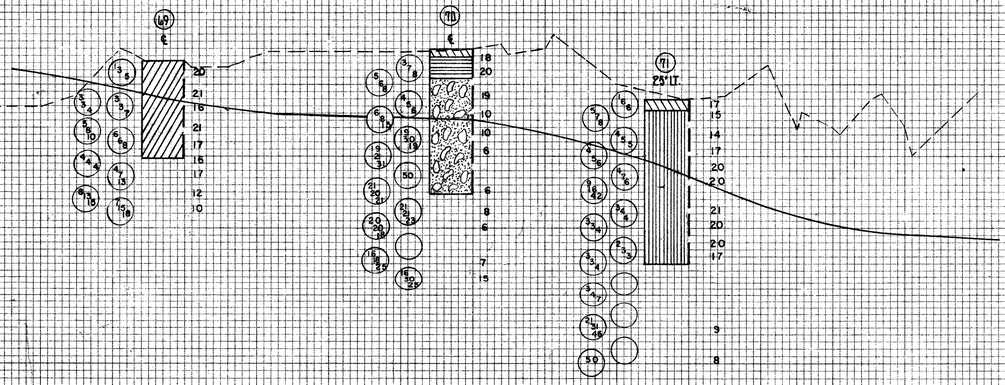
RAMP C



RAMP D



RAMP E



RAMP F

NOTES.
1. PENETRATION BLOWS AT 1.5' INCREMENTS.
2. FOR RAMP 'C' BORING PLAN SEE SHEET NO. 6
3. FOR RAMP 'D' BORING PLAN SEE SHEET NO. 6
4. FOR RAMP 'E' BORING PLAN SEE SHEET NO. 6
5. FOR RAMP 'F' BORING PLAN SEE SHEET NO. 6
6. FIGURES BESIDE PENETRATION BLOWS INDICATES DEPTH BELOW SURFACE ELEV.
( ) INDICATES NO PENETRATION BLOWS RECORDED

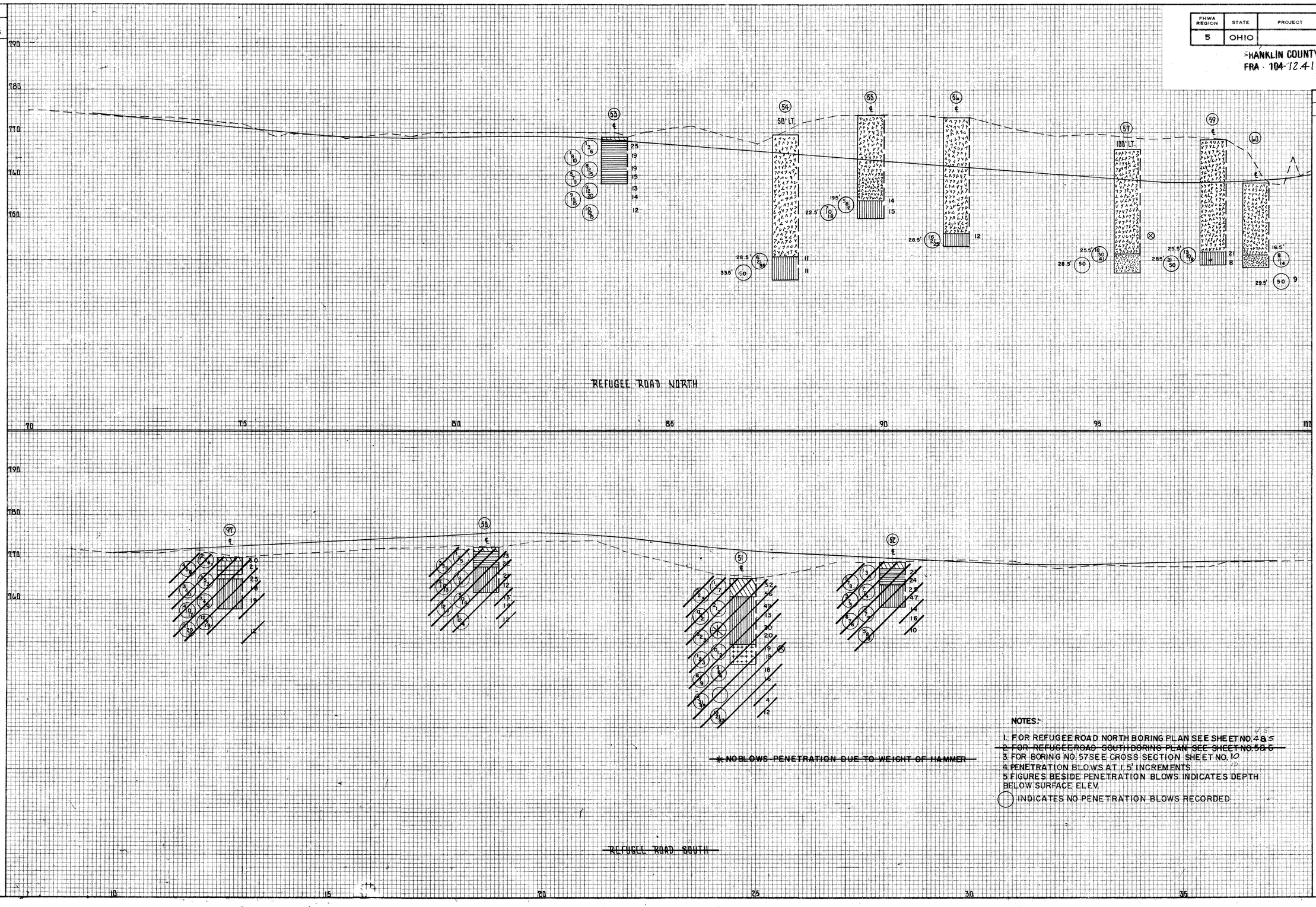
FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA - 104-12.41

9
19

RECEIVED
NOV 26 1980

SEEDING		END AREA		VOLUME	
END WIDTH	SQ YDS	CUT	FILL	CUT	FILL



* NO BLOWS PENETRATION DUE TO WEIGHT OF HAMMER

NOTES:

1. FOR REFUGEE ROAD NORTH BORING PLAN SEE SHEET NO. 48.5
2. ~~FOR REFUGEE ROAD SOUTH BORING PLAN SEE SHEET NO. 58.5~~
3. FOR BORING NO. 57 SEE CROSS SECTION SHEET NO. 10
4. PENETRATION BLOWS AT 1.5' INCREMENTS
5. FIGURES BESIDE PENETRATION BLOWS INDICATES DEPTH BELOW SURFACE ELEV.

◯ INDICATES NO PENETRATION BLOWS RECORDED

10
12

FRANKLIN COUNTY
FRA 104-12.41

140 120 100 80 60 40 20 ℄ 20 40 60 80 100

760
750
740
730

272+00
S.R. 104

Ramp 'G'

(96)
135' RT.

760
750
740
730

750
740
730

(93)
40' LT.

269+00
S.R. 104

750
740
730

Ramp "F"

(45)
100' LT.

770
760
750

(47)
75' R

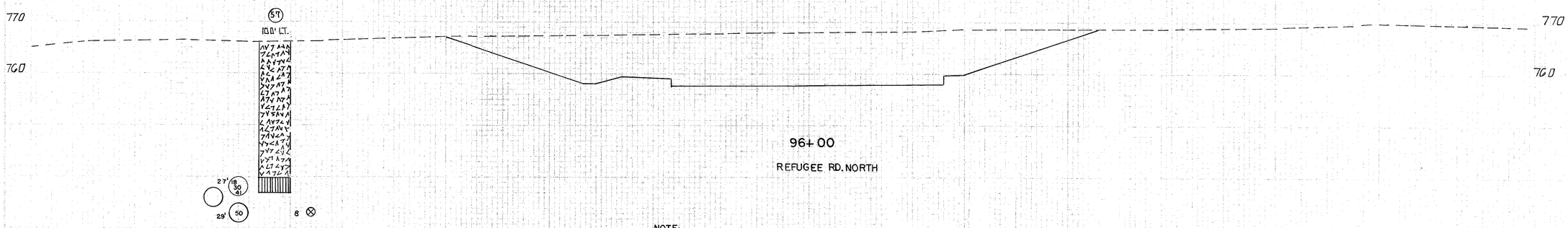
770
760
750

NOTES:
FOR BORING PLAN SEE SHEET NO. 485
PENETRATION BLOWS AT 1.5' INCREMENTS
FIGURES BESIDE PENETRATION BLOWS INDICATES DEPTH BELOW SURFACE ELEV.
◯ INDICATES NO PENETRATION BLOWS RECORDED

239+00
S.R. 104

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140



96+00

REFUGEE RD. NORTH

NOTE:
FOR BORING PLAN SEE SHEET NO. 48.5
PENETRATION BLOWS AT 1.5' INCREMENTS
FIGURES BESIDE PENETRATION BLOWS INDICATES DEPTH BELOW SURFACE ELEV.
◯ INDICATES NO PENETRATION BLOWS RECORDED

140 120 100 80 60 40 20 ℄ 20 40 60 80 100 120 140

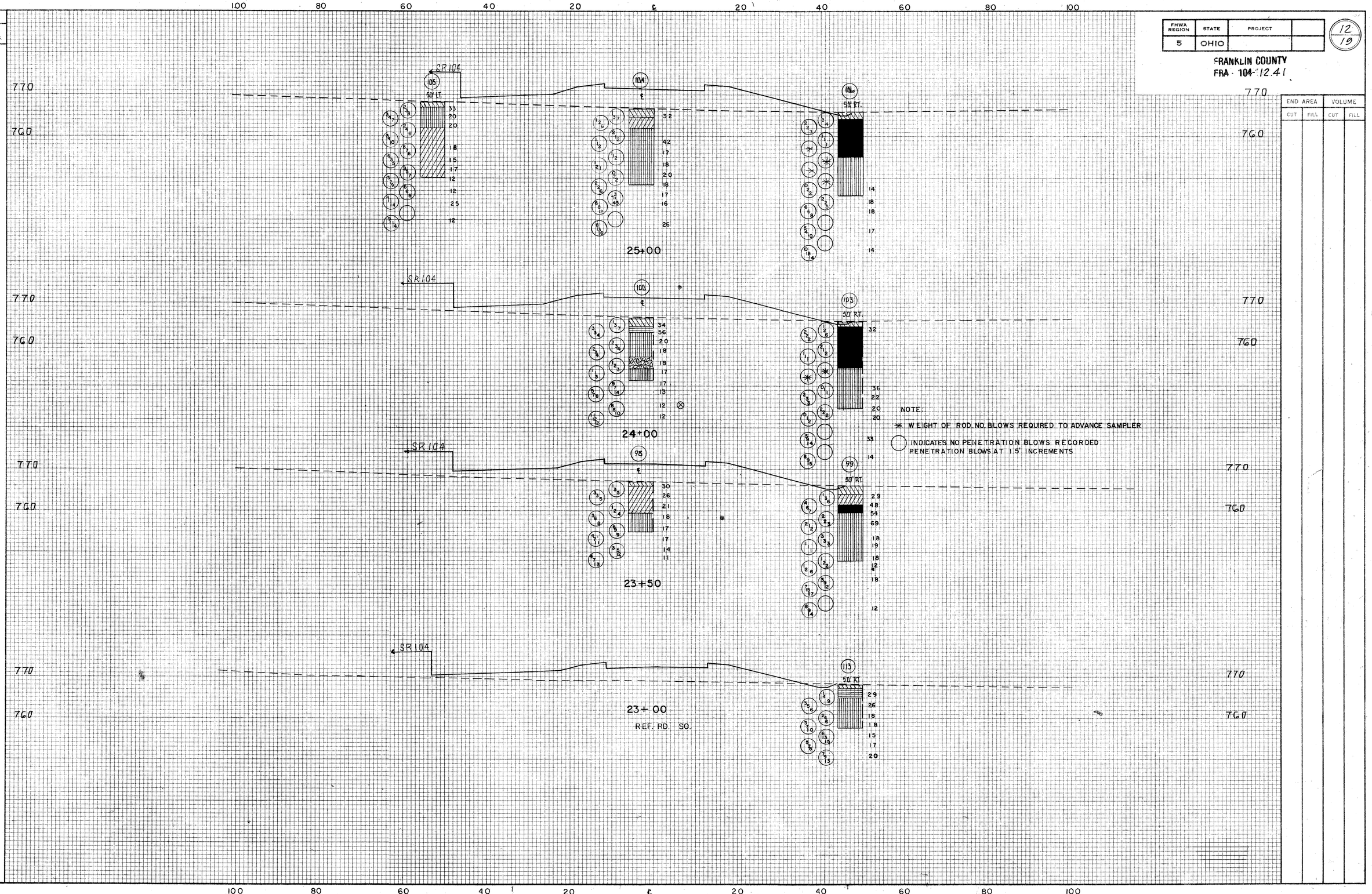
FHWA REGION	STATE	PROJECT	
5	OHIO		

12/19

FRANKLIN COUNTY
FRA-104-12.41

SEEDING	
END WIDTH	SQ YDS

	END AREA		VOLUME	
	CUT	FILL	CUT	FILL



NOTE:

✱ WEIGHT OF ROD, NO. BLOWS REQUIRED TO ADVANCE SAMPLER

◯ INDICATES NO PENETRATION BLOWS RECORDED
PENETRATION BLOWS AT 15" INCREMENTS

SEEDING	
END WIDTH	SQ. YDS.

FHWA REGION	STATE	PROJECT	
5	OHIO		

FRANKLIN COUNTY
FRA-104-12.41

13
19

END AREA		VOLUME	
CUT	FILL	CUT	FILL

100 80 60 40 20 ℄ 20 40 60 80 100

770
760

114
50' LT.

30 28 21 18 24 25 14

111
℄

35 23 21 18 17 16 14 10 10 10

24+00
REFUGEE ROAD SOUTH

112
50' LT.

109
℄

110
50' RT.

30 38 51 30 22 20 16 14 18 11 15

39 28 14 19 16 21 17 16 13 11 12

25+50
REFUGEE ROAD SOUTH

SR 1104

107
50' LT.

108
50' RT.

28 22 18 17 22 18 20 15 13 22

37 51 177 87 24 28 36 18 16 16 18 ⊗

25+00
REFUGEE ROAD SOUTH

NOTES:
1. FOR BORING PLAN SEE SHEET NO. 4
2. PENETRATION BLOWS AT 1.5' INCREMENTS
◯ INDICATES NO PENETRATION BLOWS RECORDED

FRANKLIN COUNTY
FRA-104-12.41

GEOLOGY AND OBSERVATIONS OF THE PROJECT

THE ALIGNMENT BEGINS ON THE UPLANDS BETWEEN THE SCIOTO RIVER AND ALUM CREEK AND PROCEEDS TO THE EAST FLOODPLAIN OF ALUM CREEK. THE NATURAL SOIL DEPOSITS IN THIS AREA ARE COMPRISED OF GLACIAL TILL ON THE HIGHLAND AND GLACIAL OUTWASH DEPOSITS IN THE VALLEY OF ALUM CREEK. GENERALIZED GEOLOGIC REPORTS INDICATE THE DEPOSITS TO BE QUITE THICK, POSSIBLE IN EXCESS OF 100 FEET, OVERLYING SHALE OF THE DEVONIAN AGE.

A BOGGY DEPRESSION OCCURS JUST WEST OF THE INTERSECTION OF THE PROPOSED REFUGEE ROAD SOUTH WITH EXISTING REFUGEE ROAD.

A SANITARY LAND FILL OCCURS ON THE ALIGNMENT OF RAMP C AND REFUGEE ROAD NORTH, AND IN THE PROXIMITY OF THE INTERSECTION OF RAMP D AND THE MAIN ALIGNMENT OF REFUGEE ROAD.

INVESTIGATIONAL FINDINGS

SUBSOILS OCCURRING IMMEDIATELY BELOW PROPOSED GRADE AND IN THE EMBANKMENT FOUNDATION AREAS CONSIST PREDOMINANTLY OF SANDY SILTS (A-4A), SILT CLAYS (A-6A) AND CLAYS (A-7-6).

ROADWAY FILL WAS FOUND TO OCCUR IN THE BORINGS ALONG ALUM CREEK DRIVE WHICH IS PRESENTLY IN A SHALLOW SIDE-HILL CUT-FILL SECTION SOUTH OF EXISTING REFUGEE ROAD. IN ONE AREA NORTH OF EXISTING REFUGEE ROAD, ALUM CREEK DRIVE IS ON FILL EMBANKMENT OCCURRING IN A RAVINE. THESE FILLS COMPRISE PREDOMINANTLY SANDY SILTS (A-4A) AND SILT CLAYS (A-6A).

THE SANITARY LAND FILL WAS FOUND TO BE AS DEEP AS 28.4 FEET AT THE BORING LOCATIONS AND TO EXTEND AS MUCH AS 21.5 FEET BELOW GRADE AT STATION 88+00, 50 FEET LEFT OF CENTERLINE ON REFUGEE ROAD NORTH.

THE BOG AREA WAS FOUND TO CONTAIN VERY SOFT, COMPRESSIBLE, LOW STRENGTH SILTS AND CLAYS (SOME OF WHICH WERE ORGANIC) AND PEATS, ENCOUNTERED TO DEPTHS OF APPROXIMATELY 9 TO 16 FEET. THESE CONDITIONS WERE FOUND TO OCCUR APPROXIMATELY BETWEEN STATIONS 24+50 AND 26+00 AT 50 FEET LEFT OF CENTERLINE, BETWEEN STATIONS 23+50 AND 26+00 ON CENTERLINE AND BETWEEN STATIONS 23+00 AND 25+50 AT 50 FEET RIGHT OF CENTERLINE, ALONG THE ALIGNMENT OF REFUGEE ROAD SOUTH.

LEGEND

- Auger Boring Location – Plan View
- Press and/or Drive Sample and/or Core Boring Location – Plan View
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- H — Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y/Z — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
  X = Number of Blows for First 6 inches.
  Y = Number of Blows for Second 6 inches.
  Z = Number of Blows for Third 6 inches.
- W— Indicates Free Water Elevation
- Indicates Static Water Elevation

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Mudstone or Claystone
- Mudstone or Claystone
- Weathered Shale
- Shale
- Weathered Siltstone
- Siltstone
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone
- Boulders or Cobbles

EXPLORATION

EXPLORATORY BORINGS WERE MADE TO PROCURE STANDARD PENETRATION DRIVE SAMPLES BY MEANS OF A TRUCK-MOUNTED ROTARY DRILL RIG. DRILLING WAS PERFORMED AT INTERMITTENT TIMES BETWEEN JUNE 20 AND DECEMBER 19, 1978. INCLUDED WITH THIS REPORT ARE THE LOGS OF BORINGS MADE IN CONJUNCTION WITH THE FOUNDATION INVESTIGATIONS FOR STRUCTURES ON THE PROJECT.

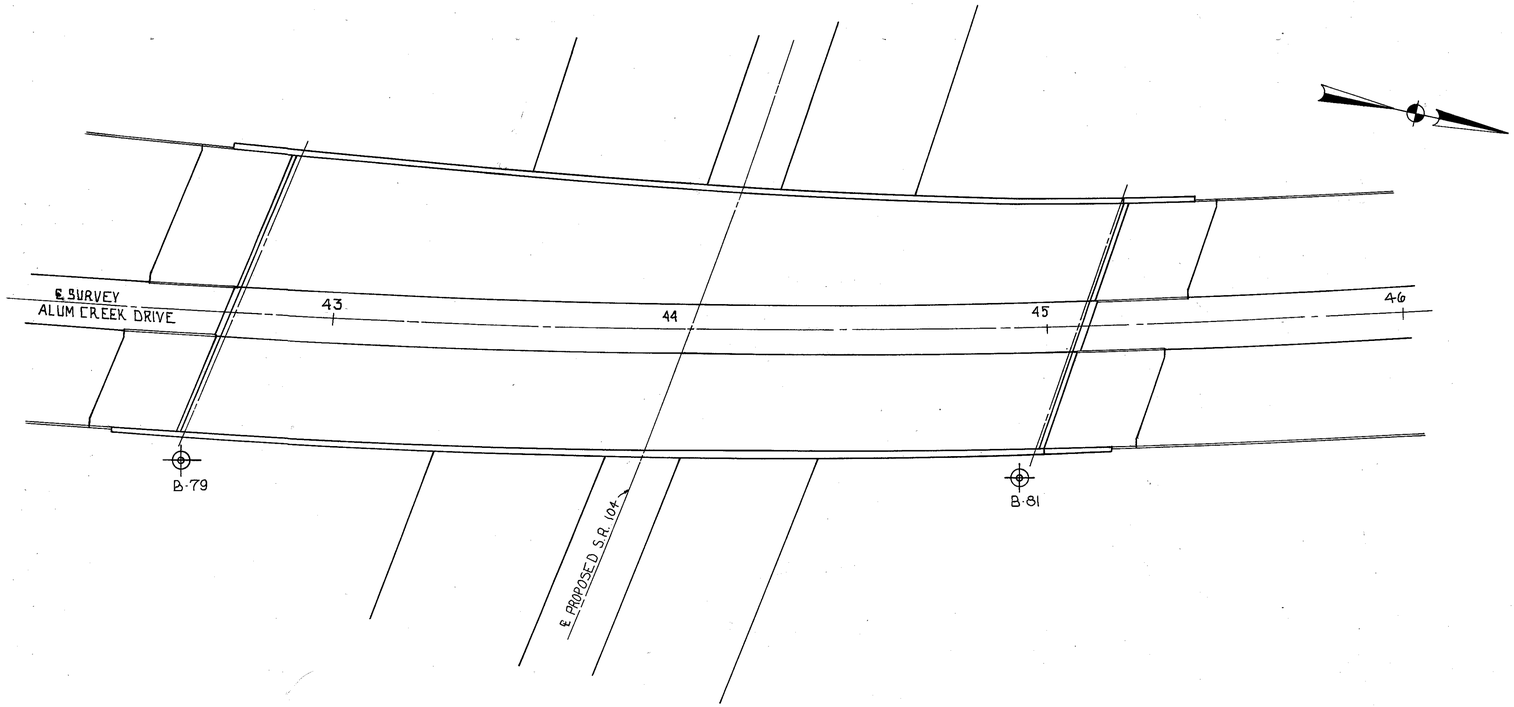
FRANKLIN CONSULTANTS INC. 1 / 3
Consulting Engineers
COLUMBUS, OHIO

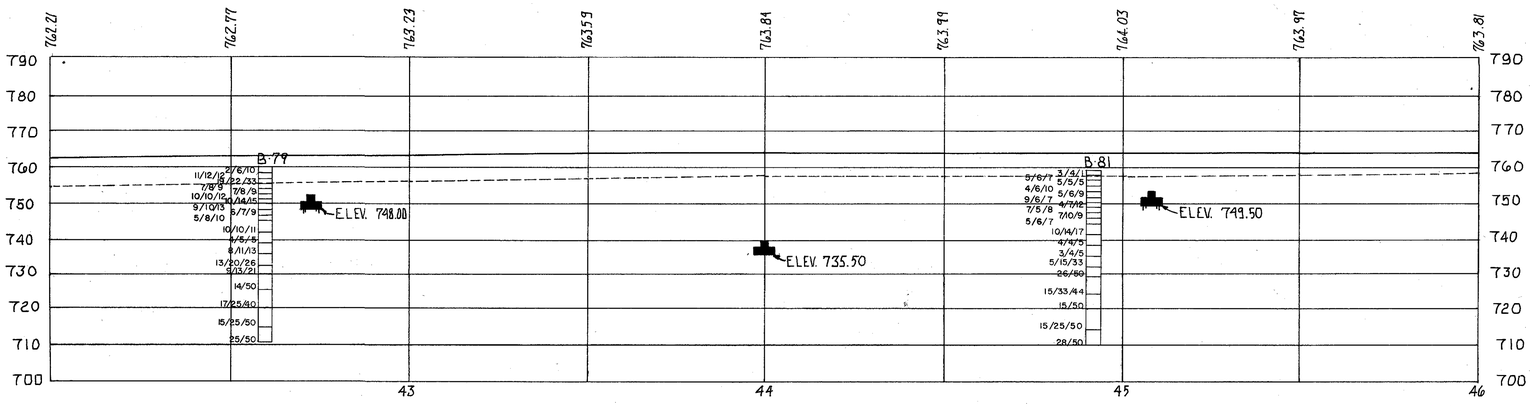
STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. FRA-104-1250
S.R. 104 UNDER ALUM CREEK D.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	GW					

FRANKLIN COUNTY
FRA-104-12.41





FRANKLIN CONSULTANTS INC. 2 / 3
Consulting Engineers
COLUMBUS, OHIO

STRUCTURE FOUNDATION INVESTIGATION

PLAN AND PROFILE

BRIDGE NO. FRA-104-1250
S.R. 104 UNDER ALUM CREEK DR.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
		T.B.				

BRUNING 44-132 30845-1

FRANKLIN COUNTY
FRA-104-12.41

BORING LOG — Boring No. 79

Location: 42+60', 42' Right of ℄

Water seepage at: 22', 19.0', 27.0', 29.8'
Water level at completion: 42.6'
Drilling Water level at completion:

Date Drilled: 10-3-78

DEPTH in feet	ELEVATION in feet	PENETRATION BLOWS per RECOVERY in inches	SAMPLE NO.	DRIVE	PRESS	WATER OBSERVATIONS / DESCRIPTION			Soil Classification	GRADATION % Agg.	% C.S.	% M.S.	% F.S.	% Silt	% Clay	STANDARD PENETRATION (N) Blow per foot 10 20 30 40	MOISTURE CONTENT - % PL Natural LL 10 20 30 40
0																	
0.5		2 10 14	1			Fill: Clayey Sandy SILT,	trace root fibers	Light Brown									
		11 12 18	2			Damp	trace to some Gravel		A-4a	17	12	-	16	34	21		
		22 23 3	3*			Sandy SILT,	some Gravel										
5		7 8 9 18	4			Damp to Moist		Brown									
		7 8 9 18	5			Sandy Clayey SILT	little Gravel										
		10 12 18	6					Grayish Brown	A-4a	9	14	-	16	38	23		
10		10 15 18	7			Damp		Brownish Gray									
		9 13 18	8			Sandy CLAY	trace Gravel	Gray									
		6 7 9 17	9			Damp to Moist	little Gravel	Gray, Brown Streaks									
		8 10 18	10			SILT	trace Gravel	Gray									
15																	
		10 10 11 18	11			Moist	Sandy CLAY SILT, trace Gravel	Gray	A-4a	16	10	-	15	41	18		
20		4 5 5 18	12			Damp	Laminated Clayey SILT & Fine Sandy SILT, Fine Sand streaks	Gray									
23.2		8 11 13 16	13			Damp	Sandy Clayey SILT, trace Gravel	Gray									
25																	
26.0		13 20 18	14			Moist	Silty SAND & GRAVEL & Fine Sandy SILT	Brown & Gray									
						(SAND & GRAVEL seam - 29.5')											
		9 13 21 18	15			Moist	Sandy CLAY SILT, trace Gravel (Fine Sandy SILT seam - 29.8')	Gray									
29.8							Sandy Clayey SILT, trace Gravel	Brown									
30																	
35		14 50 10 16	16			Very Moist	Sandy CLAY SILT, trace Gravel, Sand seams	Gray									
40		17 25 40 18	17			Damp	Clayey SILT, Fine Sand lenses	Gray									
45		15 25 50 12	18			Damp	Like Sample No. 17, with some Sand	Gray									
49.4		25 38 50 10	19			Wet	Silty SAND & GRAVEL	Gray									
		Bottom of Boring — 49.4'															

Note:
* Drive large Gravel ahead of sampler
① 50 blows for 0.4" penetration

BORING LOG — Boring No. 81

Location: 39+32', 42' Right of ℄

Water seepage at: 25.0', 37.0'
Water level at completion: 23.8'
Drilling Water level at completion:

Date Drilled: 10-3-78

DEPTH in feet	ELEVATION in feet	PENETRATION Blows per RECOVERY in inches	SAMPLE NO.	DRIVE	PRESS	WATER OBSERVATIONS / DESCRIPTION			Soil Classification	GRADATION % Agg.	% C.S.	% M.S.	% F.S.	% Silt	% Clay	STANDARD PENETRATION (N) Blow per foot 10 20 30 40	MOISTURE CONTENT - % PL Natural LL 10 20 30 40
0																	
		3 4 1 18	1			Fill: Sandy SILT CLAY, trace Gravel		Light Brown to Brown									
		5 6 7 18	2			Sandy Clayey SILT,		Topsoil to Dark Gray									
		5 5 5 18	3			Possible Fill	trace root possible fibers										
5		4 6 10 18	4			Sandy Silty CLAY	brick frags.	Brown									
		5 6 7 14	5			Damp											
		7 9 7 6	6			Sandy Clayey SILT & GRAVEL											
		4 7 12 18	7			Clayey Silty SAND & GRAVEL		Brown, White & Rust stains									
10		7 6 8 18	8			Clayey Silty SAND & GRAVEL to Sandy Clayey SILT			A-1-b	54	15	-	9	17	5		
		7 10 9 18	9			Clayey Sandy SILT	trace Gravel	Brown									
		5 6 7 18	10				some Gravel	Brown, Rust stains	A-4a	37	15	-	10	27	11		
15																	
		10 14 17 18	11			Damp	Clayey Sandy SILT, trace Gravel	Brown									
19.0																	
20		4 5 5 12	12			Damp	Silty SAND & GRAVEL	Brown									
		3 4 5 18	13			Damp	Silty Fine to Medium SAND	Brown									
25							(SAND & GRAVEL seam - 25.5)										
26.1		5 13 22 18	14			Damp	Sandy CLAY SILT, trace Gravel	Gray									
		30 50 12	15			Damp	Silty Fine SAND, trace Clay & Gravel	Grayish Brown									
30																	
35		15 33 44 15	16			Damp	Clayey Silty Fine SAND, trace Gravel	Gray									
		15 50 10 17	17			Wet	Fine Sandy SILT to Silty SAND	Gray									
40																	
45		15 25 50 16 18	18			Wet	Silty SAND & GRAVEL	Gray									
49.3		20 35 7 19	19			Wet	Silty SAND & GRAVEL to Silty Fine SAND	Gray									
		Bottom of Boring — 49.3'															

Note:
② 50 blows for 0.3" penetration
① 50 blows for 0.1" penetration
Insufficient material for Liquid Limit Test

FRANKLIN CONSULTANTS INC.
Consulting Engineers
COLUMBUS, OHIO

3 / 3

STRUCTURE FOUNDATION INVESTIGATION

BORING DATA

BRIDGE NO. FRA-104-1250
S.R 104 UNDER ALUM CREEK D.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
		B				

FRANKLIN COUNTY
FRA-104-12.41

GEOLOGY AND OBSERVATIONS OF THE PROJECT

THE ALIGNMENT BEGINS ON THE UPLANDS BETWEEN THE SCIOTO RIVER AND ALUM CREEK AND PROCEEDS TO THE EAST FLOODPLAIN OF ALUM CREEK. THE NATURAL SOIL DEPOSITS IN THIS AREA ARE COMPRISED OF GLACIAL TILL ON THE HIGHLAND AND GLACIAL OUTWASH DEPOSITS IN THE VALLEY OF ALUM CREEK. GENERALIZED GEOLOGIC REPORTS INDICATE THE DEPOSITS TO BE QUITE THICK, POSSIBLE IN EXCESS OF 100 FEET, OVERLYING SHALE OF THE DEVONIAN AGE.

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LEGEND

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- Footing on Pile
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SYMBOLS OF ROCK TYPES

- Coal
- Weathered Mudstone or Claystone
- Mudstone or Claystone
- Weathered Shale
- Shale
- Weathered Siltstone
- Siltstone
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone
- Boulders or Cobbles

EXPLORATION

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FRANKLIN CONSULTANTS INC. 1 / 3
Consulting Engineers
COLUMBUS, OHIO

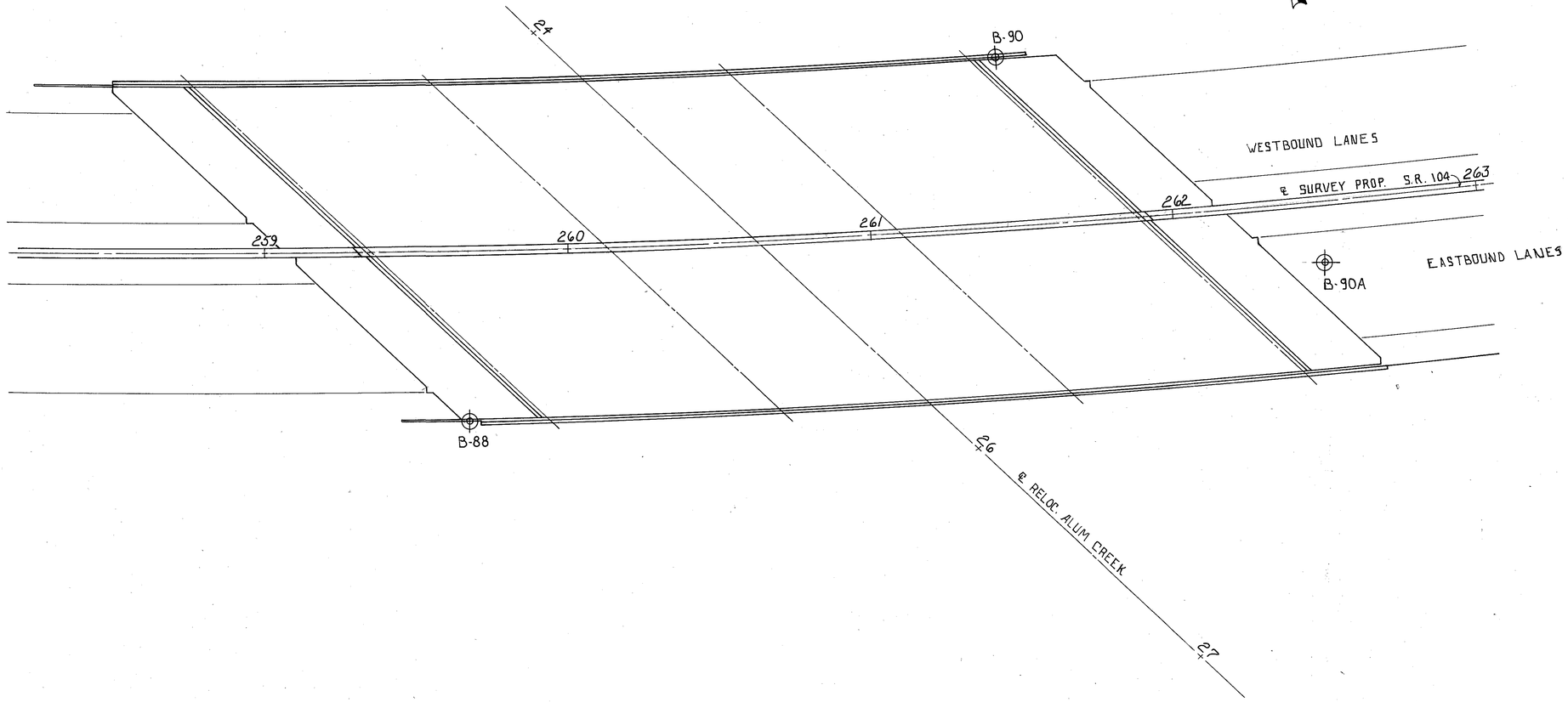
STRUCTURE FOUNDATION INVESTIGATION

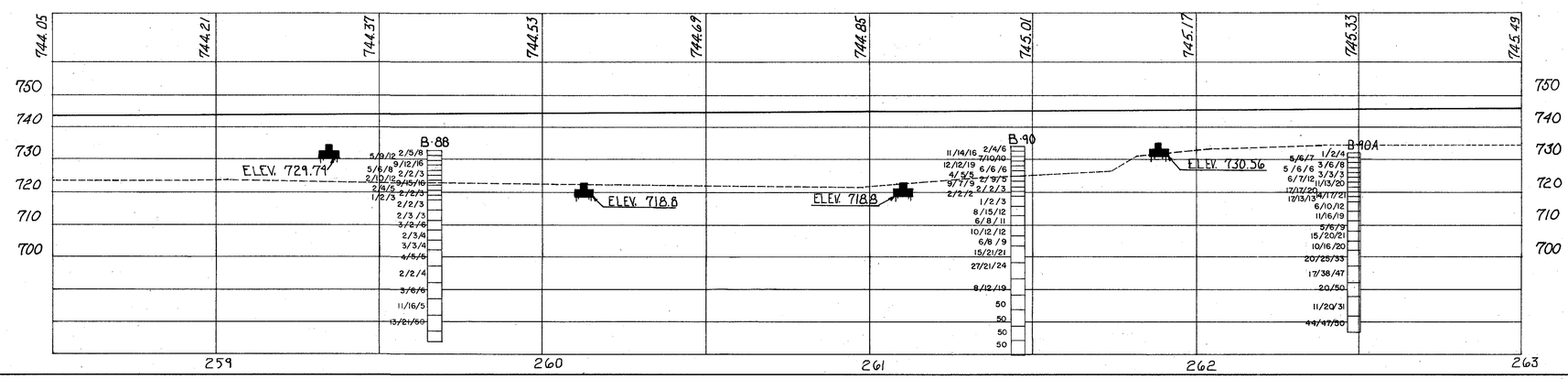
BRIDGE NO. FRA-104-1279
S.R. 104 OVER ALUM CREEK

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	GW					

BRUNING 44-132 30845-1

FRANKLIN COUNTY
FRA-104-12.41





BRUNING 44-132 30845-1

FRANKLIN CONSULTANTS INC. Consulting Engineers	2 / 3
COLUMBUS, OHIO	

STRUCTURE FOUNDATION INVESTIGATION

PLAN AND PROFILE

BRIDGE NO. FRA-104-1279
S.R. 104 OVER ALUM CREEK

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
		TB				

FRANKLIN COUNTY
FRA-104-12.41

BORING LOG — Boring No. 88

Location: 259+67', 56' Right of ℄ | Date Drilled: 10-5-78

WATER OBSERVATIONS: Water seepage at: 7.8', 92.0'; Water level at completion: 6.1'; Drilling Water level at completion:

DEPTH in feet	ELEVATION in feet	PENETRATION Blows per 6"	RECOVERY in inches	SAMPLE NO.	DRIVE	PRESS.	DESCRIPTION	Soil Classification	GRADATION % Agg.	% C.S.	% M.S.	% F.S.	% Silt	% Clay	MOISTURE CONTENT - % PL	Natural	LL	STANDARD PENETRATION (N) Blow per foot
0		2 5 8	15	1			Sandy Clayey SILT, Topsoil organic odor — Brown											
		5 9 12	16	2			Damp SILT, trace root fibers — Light Brown; Rust Stains	A-6a	0	1	–	23	63	13				
5		9 12 10	18	3			Silty Fine to Medium SAND — Rusty Brown & Gray											
5.2		5 6 8	14	4														
6.5		2 2 3	8	5			Moist Silty SAND & GRAVEL, Wood Fragments — Brown & Gray											
		4 6 10	10	6														
10		9 15 10	7	7			Wet											
10.6		2 4 5	9	8			Fine Sandy Clayey SILT, trace Gravel — Brownish Gray	A-4b	2	1	–	17	54	26				
		2 2 3	13	9			Very Moist Clayey Fine Sandy SILT											
15		1 2 3	13	10														
		2 2 3	19	11			Very Moist Like Sample No. 10 — Brownish Gray											
20		2 3 3	16	12			Very Moist Clayey Silty Fine SAND — Brownish Gray											
		3 2 6	12	13			Very Moist Like Sample No. 12 — Brownish Gray											
25		2 3 4	12	14			Very Moist Clayey Fine Sandy SILT — Brownish Gray											
30		3 3 4	15	15			Very Moist Like Sample No. 14 — Brownish Gray											
35		4 5 7	17	16			Very Moist Clayey Silty Fine SAND — Brownish Gray											
36.5																		
40		2 2 4	12	17			Very Moist SILT CLAY — Brownish Gray											
42.0																		
45		3 4 6	5	18			Wet SAND & GRAVEL — Brown & Gray											
50		11 16 25	10	19			Wet Like Sample No. 18 — Brown & Gray											
55		13 21 50	4	20			Wet Like Sample No. 18 — Brown & Gray											
58.8		50/0"	0"	21			Wet Like Sample No. 18 — Brown & Gray; Bottom of Boring - 58.8'											

Note:
* Drove large Gravel ahead of sampler.
② 50 blows for 0.3' penetration.

BORING LOG — Boring No. 90

Location: 261+93', 56' Left of ℄ | Date Drilled: 11-3-78

WATER OBSERVATIONS; Water seepage at: 8.0'; Water level at completion:; Drilling Water level at completion: 10.3'

DEPTH in feet	ELEVATION in feet	PENETRATION Blows per 6"	RECOVERY in inches	SAMPLE NO.	DRIVE	PRESS.	DESCRIPTION	Soil Classification	GRADATION % Agg.	% C.S.	% M.S.	% F.S.	% Silt	% Clay	MOISTURE CONTENT - % PL	Natural	LL	STANDARD PENETRATION (N) Blow per foot
0																		
1.6		2 4 6	15	1			Topsoil: Clayey SILT, some Sand, trace root fibers — Brown											
3.2		7 10 10	18	3			Damp Clayey Fine Sandy SILT, Sandy Clayey SILT, trace root fibers — Light Brown											
5		12 12 12	10	4														
7.8		6 6 8	14	5			Moist Clayey Sandy SILT — Brown & Gray											
9.2		4 5 5	12	6			Very Moist Silty Fine to Medium SAND, trace leaves & root fibers, Clayey & partially decomposed leaves — Dark Gray											
10		2 5 5	12	7			Silty SAND & GRAVEL, trace Clay — Brown & Gray											
12.0		3 7 3	8	8			Saturated	A-1a	71	17	–	6	5	1			NON-PLASTIC	
13.8		2 2 3	17	9			Silty Fine SAND, trace Clay — Gray											
15		2 2 2	16	10			Wet Clayey Silty Fine SAND, trace Gravel — Brownish Gray											
		1 2 3	6	11			Wet Like Sample No. 10, with Sand & Gravel seams — Brownish Gray											
20		5 8 12	10	12			Saturated Silty SAND & GRAVEL, trace Clay — Brown & Gray											
		6 8 11	13	13			Saturated Like Sample No. 12 — Brown & Gray											
		10 12 12	5	14			Saturated Like Sample No. 12 — Brown & Gray											
30		6 8 7	10	15			Saturated Like Sample No. 12 — Brown & Gray											
35		15 21 21	9	16			Saturated Like Sample No. 12 — Brown & Gray											
40		27 21 29	10	17			Saturated Like Sample No. 12 — Brown & Gray											
45		8 12 19	8	18			Saturated Like Sample No. 12 — Brown & Gray											
		50 4	4	19			Wet Like Sample No. 12 — Brown & Gray											
53.0		50 5		20			Damp Sandy Clayey SILT, some Gravel — Grayish Brown	A-1a	34	10	–	13	27	16				
55																		
60		50/4"		21			Damp Like Sample No. 20 — Grayish Brown											
63.9		50/0"	4	22			Moist Like Sample No. 20, with Sand lenses. — Grayish Brown; Bottom of Boring 63.9'											

Note:
② 50 blows for 0.2' penetration.
④ 50 blows for 0.1'

BORING LOG — Boring No. 90A

Location: 262+98', 20' Right of ℄ | Date Drilled: 11-6-78

WATER OBSERVATIONS: Water seepage at: 7.9'; Water level at completion: 22.0'; Drilling Water level at completion:

DEPTH in feet	ELEVATION in feet	PENETRATION Blows per 6"	RECOVERY in inches	SAMPLE NO.	DRIVE	PRESS.	DESCRIPTION	Soil Classification	GRADATION % Agg.	% C.S.	% M.S.	% F.S.	% Silt	% Clay	MOISTURE CONTENT - % PL	Natural	LL	STANDARD PENETRATION (N) Blow per foot
0																		
1.5		1 2 4	18	1			Damp to Moist Topsoil: Sandy Clayey SILT, trace Gravel, & leaves, trace root fibers — Dark Brown											
		5 6 7	14	2			Moist Laminated Silty CLAY to Clayey SILT, Clayey SILT, trace Gravel — Grayish Brown											
5		3 6 8	18	3			Fine Sandy SILT, some Clay, trace root fibers — Brown											
		5 6 8	18	4														
		3 3 3	2	5			Damp Fine Sandy Clayey SILT, Sand lense — Brown & Gray											
7.9		6 7 12	14	6			Wet											
10		11 13 20	10	7			Silty SAND & GRAVEL, trace Clay, organic odor — Dark Gray											
		17 17 20	15	8														
		14 17 21	13	9			Saturated — Brown & Gray											
		17 15 13	4	10														
15		6 10 12	10	11			Saturated Silty SAND & GRAVEL, trace Clay — Brown & Gray											
20		11 14 19	9	12			Saturated Like Sample No. 11 — Brown & Gray											
		5 6 7	3	13			Saturated Like Sample No. 11 — Brown & Gray											
23.5		15 20 21	12	14			Saturated Like Sample No. 11 — Brown & Gray	A-1a	63	24	–	8	4	1			NON-PLASTIC	
		10 10 10	10	15			Wet Like Sample No. 11 — Brown & Gray											
28.5		22 25 33	12	16			Wet Like Sample No. 11 — Brown & Gray											
30		17 35 47	5	17			Damp Sandy Clayey SILT, some Gravel — Brownish Gray											
33.0		20 30 30	8	18			Wet* Silty Fine to Medium SAND — Brownish Gray											
34.5		11 70 50	18	19			Wet Like Sample No. 18 — Brownish Gray											
36.0				20			Moist Laminated SILT-CLAY, Sand seams											
38.5		44 77 50	15	21			Very Moist Clayey Silty SAND — Brownish Gray											

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STRUCTURE FOUNDATION INVESTIGATION
BORING DATA
BRIDGE NO. FRA-104-1279
S.R. 104 OVER ALUM CREEK

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
		JB				

BRUNING 44-132 30845-1