STATE OF OHIO
DEPARTMENT OF HIGHWAYS

Pg 8(71)

FRA-104-8.04

CITY OF COLUMBUS - FRANKLIN COUNTY
FRANKLIN TOWNSHIP

2	OHIO	STATE	

FRANKLIN COUNTY
FRA-104-8.04

CONVENTIONAL SIGNS

Center Line
Corporation Line
Existing R/W
Proposed Limited Access Line — L.A.
Proposed L.A. Line Coincident With Ex. R/W — LA&R/W
Proposed R/W — R/W
Slope Easement
Property Line — PL
Fence Line
Water Line — W
Gas Line — G
Existing Sewer — Shr
Proposed Sewer
Water Valves
Existing Manholes
Proposed Manholes
Manholes Adjusted to Grade
Manholes Removed
Power Pole (Municipal)
Power Pole (Col. & Southern Ohio Power)
Light Pole
Trees & Stumps
Gas Meter
Trees & Stumps (to be removed) R.X.
Gas Valves
Existing Catch Basins
Proposed Catch Basins
Catch Basins Adjusted to Grade
Catch Basins Removed
Telephone Pole
Water Hydrant
Traffic Light
Water Meter
Proposed Power Pole
Existing Retaining Wall
Existing Guard Rail
Proposed Guard Rail
Railroads

INDEX OF SHEETS

LINE DATA

		RURAL		MUNICIPAL	
		WORK	PROJECT	WORK	PROJECT
Begin Work	Sta. 44+00.00				
Station Equation	Sta. 48+62.00 Back =	462.00 L.F.			
	Sta. 5+81.62 Ahead				
Begin Project	Sta. 8+53.00	501.08 L.F.			
Corp. Line, Columbus	Sta. 14+79.08	626.08 L.F.	588.08 L.F.		
End Project	Sta. 49+00.00			4401.92 L.F.	3420.92 L.F.
End Work	Sta. 58+81.00			981.00 L.F.	
Work Additions					
Begin Work	Sta. 86+60.00 S.R. 104 N.B.				
End Work	Sta. 100+91.00 S.R. 104 N.B.	1431.00 L.F.			
Begin Work	Sta. 16+55.00 Ser. Rd. "A-A"				
Corp. Line, Columbus	Sta. 33+35.00	1680.00 L.F.			
End Work	Sta. 91+00.00 Ser. Rd. "A-A"			5765.00 L.F.	
Net Length of Work		4,300.23 L.F. or 0.814 M.		10,166.92 L.F. or 1.926 M.	
Net Length of Project			626.08 L.F. or 0.119 M.		3,420.92 L.F. or 0.648 M.
Total Length of Work	14,467.15 Lin. Ft. or 2.739 Miles				
Total Length of Project	4,047.00 Lin. Ft. or 0.766 Miles				

FILE NUMBER	FRANKLIN COUNTY	FRA-104-8.04
	DATE OF LETTING	
	CONTRACT NUMBER	

BURGESS & NIPLE / ENGINEERS CONSULTANTS, LTD.

LOCATION MAP

0 1 2 3
SCALE OF MILES

SCALE

PORTION TO BE IMPROVED
INTERSTATE, U.S. & STATE HIGHWAYS
OTHER ROADWAYS
S.R. 104 UNDER CONSTRUCTION

PLANS
PAVEMENT DETAILS
CROSS SECTIONS
PROFILE (HOR.)
PROFILE (VERT.)

STANDARD DRAWINGS

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
BP-1	6-1-65	F-1	2-10-67	HL-1	11-1-66	MC-6	6-1-65
BP-2	12-1-65	F-2	3-17-66	HL-2	11-1-65	MC-7	10-1-65
BP-4	12-1-65	F-3	3-17-66	HL-3	11-1-65		
BP-5	6-1-65	F-4	9-1-65	HL-4	1-1-65		
BP-6	6-1-65	F-5	1-10-69			A-1-67	6-12-69
BP-7	1-1-65			RW-2	[illegible]	[illegible]	[illegible]
		GR-1	1-1-67	[illegible]	[illegible]	[illegible]	[illegible]
CB-2-2A&2B	6-1-65	GR-2.6	7-1-67	[illegible]	[illegible]	[illegible]	[illegible]
CB-3	6-1-65	GR-2.8	[illegible]				
CB 3-A	6-1-65	GR-3	[illegible]	MC-1	[illegible]		
CB-5	5-1-65			MC-3	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	MC-4	5-13-65		

SUPPLEMENTAL SPECIFICATIONS

NUMBER	DATE	NUMBER	DATE
801	[illegible]-69	830	6-17-69
		835	6-17-69
802	5-16-69	850	3-16-70
807	[illegible]-69	909	6-17-69
[illegible]	[illegible]-69	1011	1-1-69
815	[illegible]		
[illegible]	[illegible]		

"LIMITED ACCESS"

This improvement is especially designed for thru traffic and has been declared a Limited Access Highway or Freeway by action of the Director of Highways, in accordance with the provisions of Sec. 5 of The Revised Code of Ohio.

1969 SPECIFICATIONS

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

The Right of Way for this improvement will be provided by the State of Ohio.

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

Approved ....
Date 10-28-70 .... City Traffic Engineer, Columbus, O.

Approved ....
Date 10-28-70 .... Chief Sewerage Engineer, Columbus, O.

Approved ....
Date .... Superintendent, Division of Water, Columbus, O.

Approved ....
Date Oct. 29, 1970 Superintendent, Division of Electricity, Columbus

Approved .... Theodore E. Wallace
Date 10-29-70 .... Chief Engr., Division of Engineering & Construction

Approved ....
Date 10-29-70 .... Director of Public Service, Columbus, O.

Approved .... Richard D. [illegible]
Date Nov. 2, 1970 Division Deputy Director

Approved .... C. H. [illegible]
Date 11-3-70 Engineer of Bridges

Approved .... R. E. [illegible]
Date 11-3-70 Engineer of Location & Design

Approved ....
Date 11-5-70 Deputy Director of Design and Construction

Approved ....
Date 11-6-70 Deputy Director of Right of Way

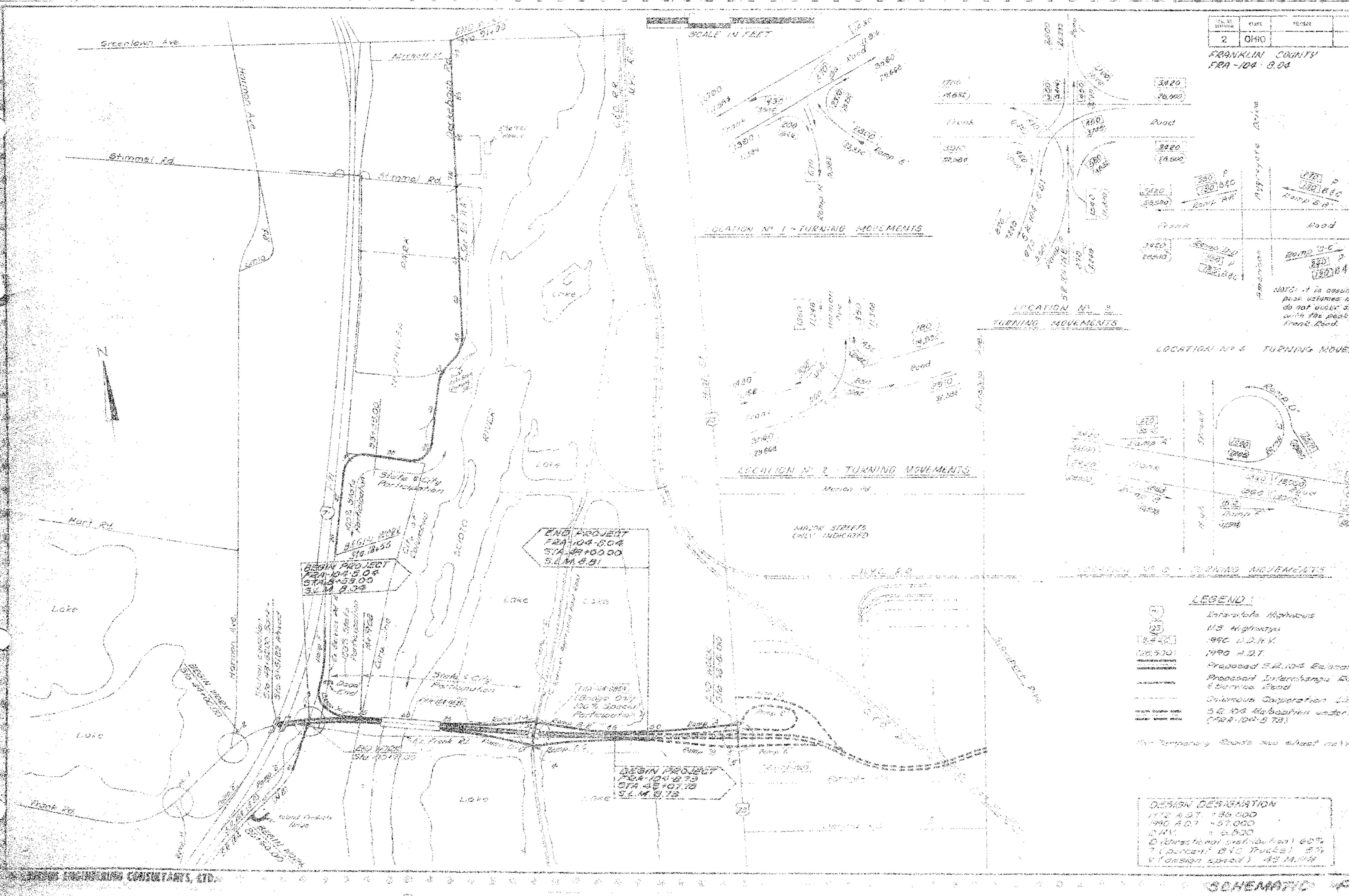
Approved ....
Date .... Deputy Director of Planning and Programming

Approved ....
Date .... First Assistant Director

Approved .... P. E. [illegible]
Date .... Director of Highways

Completed 11-[illegible]-72

PLANS PREPARED BY
BURGESS & NIPLE ENGINEERS CONSULTANTS, LTD.
COLUMBUS, OHIO
STATE OF OHIO

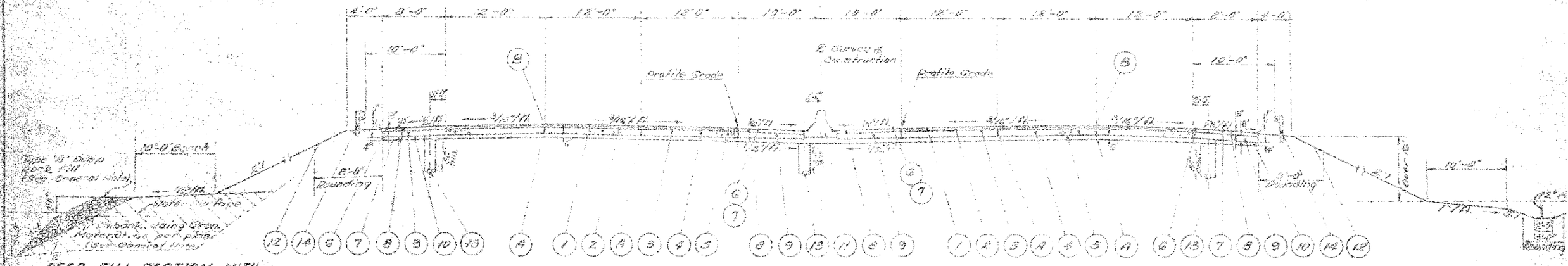

2 OHIO
FRANKLIN COUNTY
FRA-104-8.04
SCALE IN FEET
Greenlawn Ave
Stimmel Rd.
Hart Rd.
Frank Rd.
Harmon Ave.
Scioto
River
Park
Lake
END PROJECT
FRA-104-8.04
STA.49+00.00
S.L.M.8.81
BEGIN PROJECT
FRA-104-8.04
BEGIN PROJECT
FRA-104-8.78
LOCATION Nº 1 - TURNING MOVEMENTS
LOCATION Nº 2 - TURNING MOVEMENTS
LOCATION Nº 3 TURNING MOVEMENTS
LOCATION Nº 4 TURNING MOVEMENTS
MAJOR STREETS
ONLY INDICATED
State & City
Participation
LEGEND:
Interstate Highways
U.S. Highways
1990 D.D.H.V.
1990 A.D.T.
Proposed S.R.104 Relocation
Proposed Interchange Ramps
& Service Road
Columbus Corporation Line
DESIGN DESIGNATION
D (directional distribution) 60%
V (design speed) 45 M.P.H.
SCHEMATIC

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

TYPICAL SECTIONS

TYPE 404 ON 305



DEEP FILL SECTION WITH GRANULAR EMBANKMENT

DEEP FILL SECTI

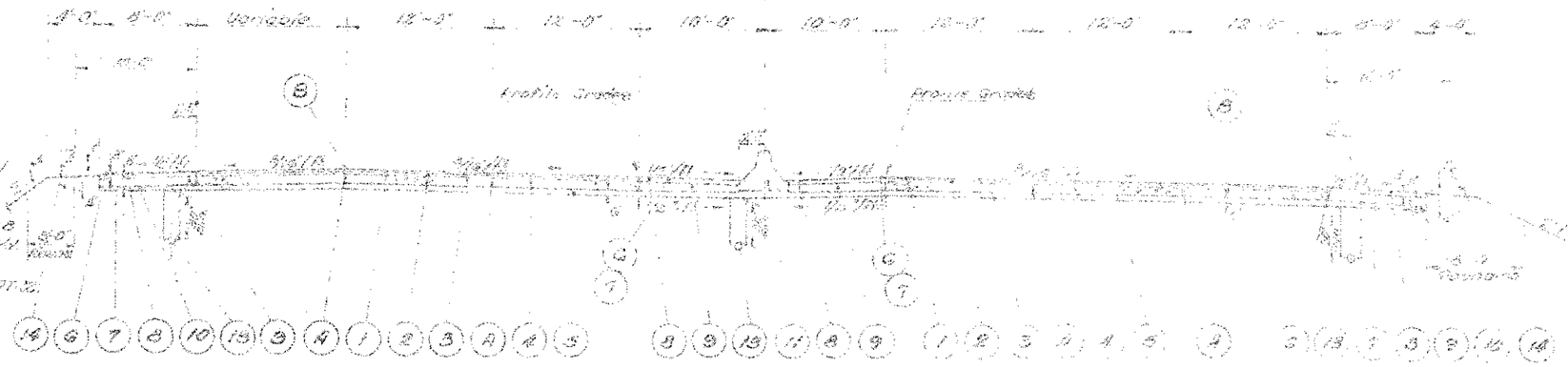
TYPICAL SECTION "A"
NORMAL SECTION

Sta. 12+53.30 to Sta. 12+92.74 = 39.44 L.F.
Sta. 14+31.28 to Sta. 34+50.16 = 1022.36 L.F.
Sta. 36+41.52 to Sta. 49+00.00 = 1258.36 L.F.
Total 3,342.63 L.F.

BRIDGE & APPROACH SLAB
LIMITING STATIONS

Typical Section	Bridge No.	Station to Station
"A"	FRA-104-0830	16+52.92 to 24+31.2
"A"	FRA-104-0852	34+56.12 to 36+21.5

ITEM		DESCRIPTION
①	404	1½" Asphalt Concrete (60-70)
②	402	1¾" Asphalt Concrete (60-70)
③	407	Tack Coat 702.04 MS-2 or SS-1 or 702.08 or RC-70 or SC-250 @ the rate of 0.10 Gal./Sq. Yd.
④	305	8" Portland Cement Conc. Base
⑤	310	Subbase, Grading "A" Thickness as shown
⑥	*409	Seal Coat Bituminous Material as per plan @ the rate of 0.32 Gal./Sq. Yd.
⑦	409	Seal Coat Cover Aggregate, No. 8 @ the rate of 0.008 Cu. Yds./Sq. Yd.
⑧	301	Bituminous Aggregate Base, 702.01 (85-100) or 702.03 RS-11 or RT-12, Thickness as shown
⑨	304	Aggregate Base, Thickness as shown
⑩	310	Subbase, Regular Grading Thickness as shown
⑪	622	Concrete Barrier
⑫	659	Seeding & Mulching See Gen. Notes
⑬	605	6" Pipe Underdrain (Shallow)
⑭	606	Guard Rail, Standard Type 5
Ⓐ		Standard Longitudinal Joint



TYPICAL SECTION "B"
SUPERELEVATED SECTION

Sta. 13+75.00 to Sta. 16+53.50 = 278.50 L.F.

Earth shoulders bea… paved berm shall be …

For Concrete Barrier See Sheet 2A-3

* = Shown as shown on Cross Sections

®Profile Grade is on … from 13+75 to 16+5… 16+55 Opened, profile of median pavement. Between 16+75 an… the profile grade … from center line … edges graphically. … detail see in Per elev…

*—See Note in Proposal

Ⓑ Hot Longitudinal Joint (402 only)

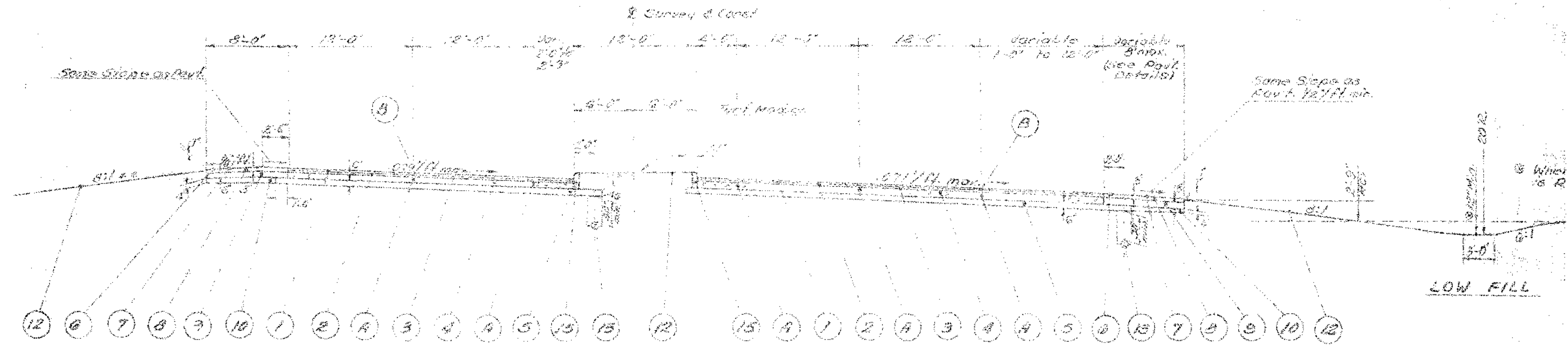
… ENGINEERING CONSULTANTS, LTD.

SR 104 RELOC
TYPICAL SEC

TYPICAL SECTIONS

TYPE 404 ON 305

** Except as shown on Cross Sections



TYPICAL SECTION "C"
SUPERELEVATED SECTION

Sta. [illegible] to Sta. [illegible] Total = 1,151.6 L.F.

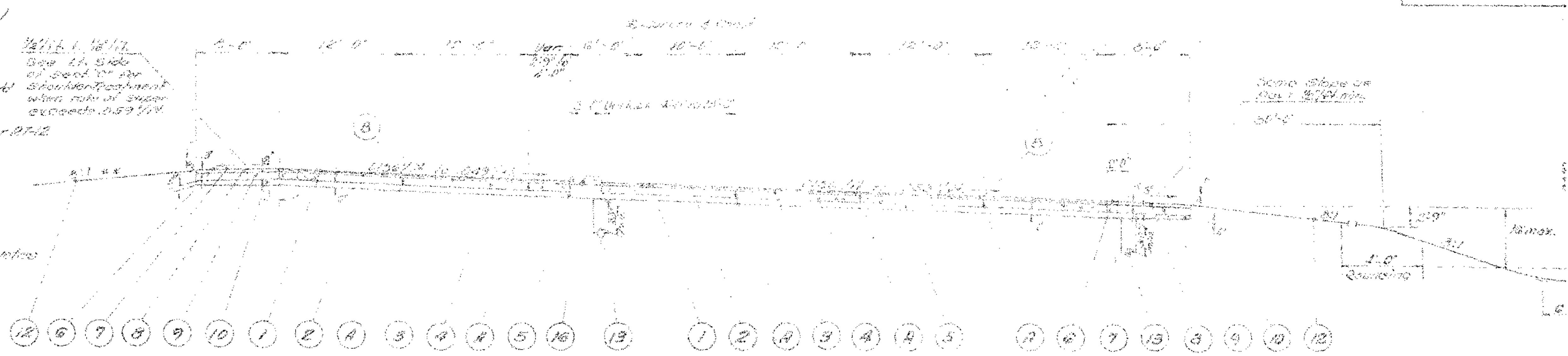
*Station Equation [illegible] Back = [illegible] Ahead

Notes:
Profile Grade for Typical Sections "C & D" is on centerline of Survey & Construction, pavement edge elevations have been developed graphically.

See Pavement Details Sheets for Elevations

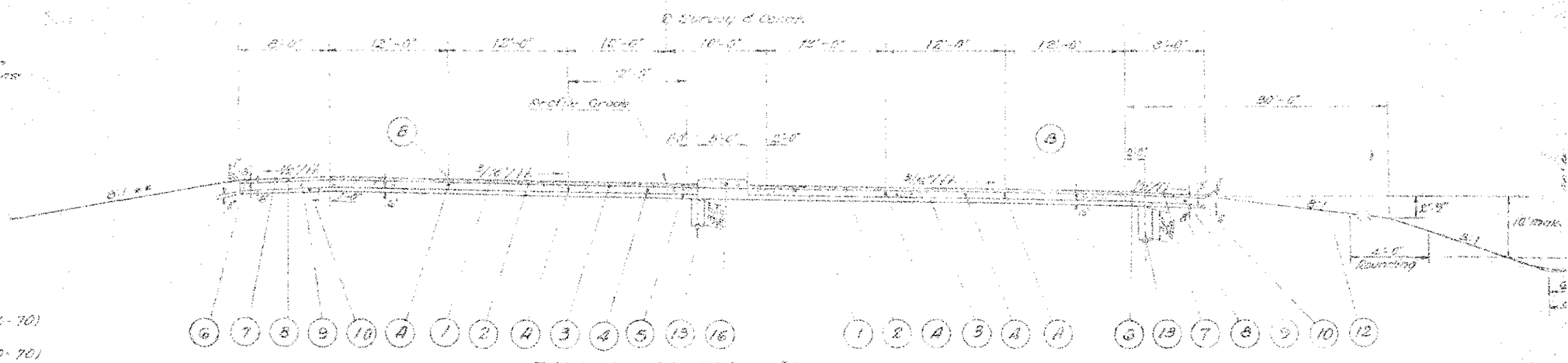
ITEM		DESCRIPTION
(1)	404	1½" Asphalt Concrete (60-70)
(2)	402	1¾" Asphalt Concrete (60-70)
(3)	407	Tack Coat 702.04 MS-2 or RS-1 or 702.02 or RC-70 or RC-250 @ the rate of 0.10 Gal/Sq.Yd.
(4)	305	8" Portland Cement Conc. Base
(5)	310	Subbase, Grading "A" Thickness as Shown
(6)	* 409	Seal Coat Bituminous Material as per plan @ the rate of 0.30 Gal/Sq.Yd.
(7)	409	Seal Coat Cover Aggregate, [illegible] @ the rate 0.008 C.Y./Sq.Yd.
(8)	301	Bituminous Aggregate Base, 702.01 (85-100) or 702.09 RT-11 or RT-12 Thickness as shown
(9)	304	Aggregate Base, Thickness as Shown
(10)	310	Subbase, Regular Grading Thickness as Shown
(12)	659	Seeding & Mulching, see Gen. Notes
(13)	605	6" Pipe Underdrain (Shallow)
(15)	609	Concrete Curb, Standard Type 6
(16)	612	Concrete Median
(A)		Standard Longitudinal Joint
(B)	*	Hot Longitudinal Joint (404 only)

* See Note in Proposal



TYPICAL SECTION "D"
SUPERELEVATED SECTION

Sta. [illegible] to Sta. [illegible]



FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
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TYPICAL SECTIONS

TYPE 404 ON 305

** Except as shown on Cross Sections

TYPICAL SECTION "E"
SUPERELEVATED SECTION

Sta. 8+00.00 to Sta. 13+75.00 - 575.00 L.F.

Note:-
Profile Grade is at Centerline Surveyed Construction; however, pavement edges have been developed graphically.

See Pavement Detail Sheets for Elevations

ITEM		DESCRIPTION
①	404	1½" Asphalt Concrete (60-70)
②	402	1¾" Asphalt Concrete (60-70)
③	407	Tack Coat 702.04 MS-2 or RS-1 or 702.03 or RC-70 or RC-250 @ the rate of 0.10 Gal./Sq. Yd.
④	305	8" Portland Cement Conc. Base
⑤	310	Subbase, Grading "A" Thickness as shown
⑥	409	Seal Coat Bituminous Material as per plan @ the rate of 0.37 Gal./Sq. Yd.
⑦	409	Seal Coat Cover Aggregate, No. 8 @ the rate 0.02 Cu. Yds./Sq. Yd.
⑧	301	Bituminous Aggregate Base 702.01 (85-100) or 702.09 RT-11 or RT-12 Thickness as shown
⑨	304	Aggregate Base, Thickness as shown
⑩	310	Subbase, Regular Grading Thickness as shown
⑫	659	Seeding & Mulching, See Gen. Notes
⑬	605	6" Pipe Underdrain (Shallow)
⑯	612	Concrete Median
Ⓐ		Standard Longitudinal Joint
Ⓑ		Hot Longitudinal Joint (404 only)
⑭		Guard Rail Standard Type 5

* See Note in Proposal

CONCRETE BARRIER DETAIL

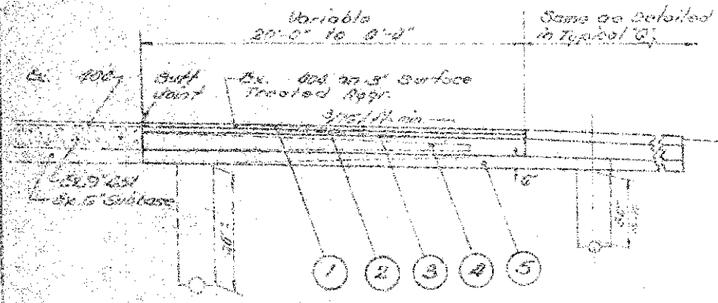
For width & height variation see traffic control details & roadway pavement details.

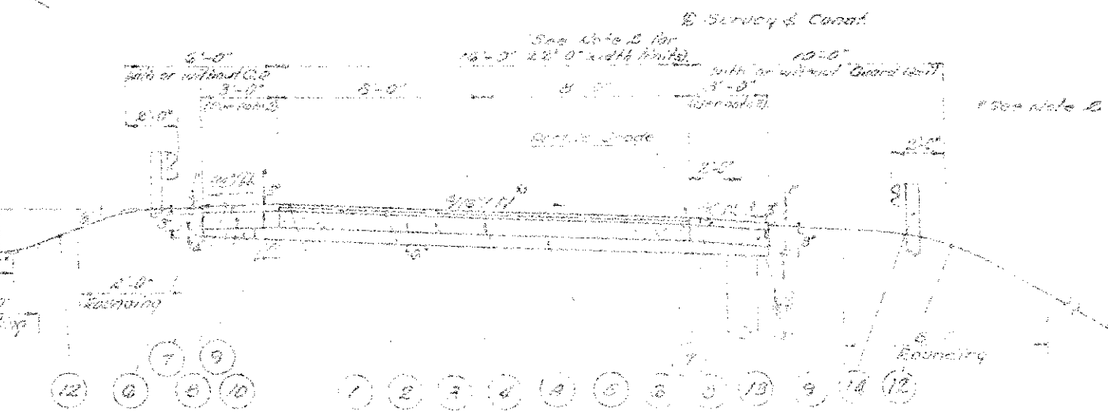
See traffic control & light pole foundation details for anchor bars included as a part of these foundations.

ACCELERATION OR DECELERATION LANE DETAIL

[illegible] ENGINEERING CONSULTANTS, LTD

S.R. 104 RELOC
TYPICAL SEC





FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-3.04

TYPICAL SECTIONS

TYPE 404 ON 305

RAMP "F" ADJOINING EX. RAMP "F"

Sta. 73+03.00 to Sta. 81+03.00 = 800.00 L.F.

Note:– Sta. 68+85.00 to Sta. 69+38.10 Ex. Ramp "F" pavement type and thickness shall be in accordance with Typical Section "F". See pavement details for widths.

ITEM		DESCRIPTION
①	404	1¼" Asphalt Concrete (65-70)
②	402	1¾" Asphalt Concrete (65-70)
③	407	Tack Coat 702.04 MS-2 or RS-1 or 702.02 or RC-70 or RC-250 @ the rate of 0.10 Gal/Sq. Yd.
④	305	8" Portland Cement Conc. Base
⑤	310	Subbase, Grading "B" Thickness as shown
(6a)	408	Seal Coat Bituminous Material as per plan @ the rate of 0.30 Gal./Sq. Yd.
⑦	409	Seal Coat Cover Aggregate No. 8 @ the rate 0.008 C. Yds./Sq. Yd.
⑧	301	Bituminous Aggregate Base 702.01 (85-100) or 702.09 RT-11 or RT-12 Thickness as shown
⑨	304	Aggregate Base, Thickness as shown
⑩	310	Subbase, Regular Grading Thickness as shown
⑫	659	Seeding & Mulching, See Gen. Notes
⑬	605	6" Pipe Underdrain (Shallow)
⑭	606	Guard Rail, Standard Type 5
(A)		Standard Longitudinal Joint
* –		See Note in proposal

TYPICAL SECTION "F"
NORMAL SECTION

Sta. [illegible] to Sta. 68+85.03 = 800.00 L.F. Ramp "F" High St. Int.
Sta. 69+00.00 to Sta. 80+02.00 = [illegible] L.F. Ramp "B-B"
Sta. [illegible] to Sta. [illegible] = [illegible] L.F. Ramp "E-E" Hm. App. Inter.
Sta. [illegible] to Sta. [illegible] = [illegible] L.F. Ramp "C-C"
Sta. [illegible] to Sta. 35+17.[illegible] = [illegible] L.F. Ramp "D-D"
Total = [illegible] L.F.

* * Except as shown on Cross Section.

TYPICAL SECTION "G"
SUPERELEVATED SECTION

Sta. 6+28.81 to Sta. 5+65.06 (473.75 L.F.) Ramp "[illegible]"

Note:–
Payment for
Shall be inclu
the unit price
Item 305

Embankment using Granular Material, as per plan (See General Note)

* Cross slope for Ramp D-D varie
.032 to .0104 between Sta.
and 31+00 (see pavement

Sod Shoulders beyond pave
shall be 18"/ft.

Notes:–
1. Ramp Typicals are shown
of traffic

2. [illegible] Sta. 32+03 [illegible]
and Ramp "C-C" Sta. 35+[illegible]
3+[illegible]. Full depth paveme
be constructed 22'-0" wid
the above limits. The pave
shall not be constructed as
surface shown and be as
Typical Section "F" for the
section. For remaining

CHAS. DOTY ENGINEERING CONSULTANTS, LTD.

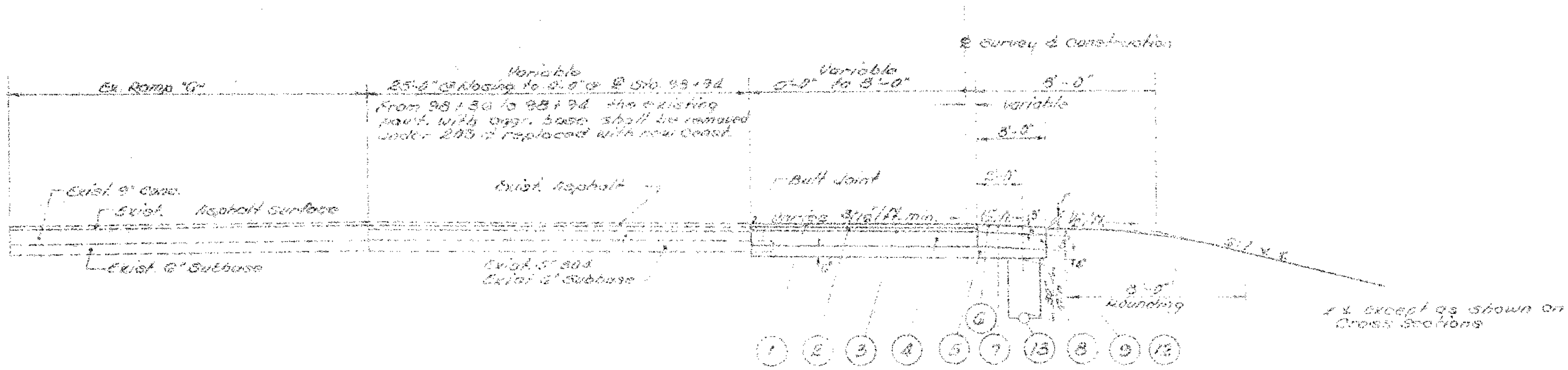
RAMP TYPICAL SEC

FED. RD. DIVISION | STATE | PROJECT
2 | OHIO |

FRANKLIN COUNTY
FRA-104-8.04

TYPICAL SECTIONS

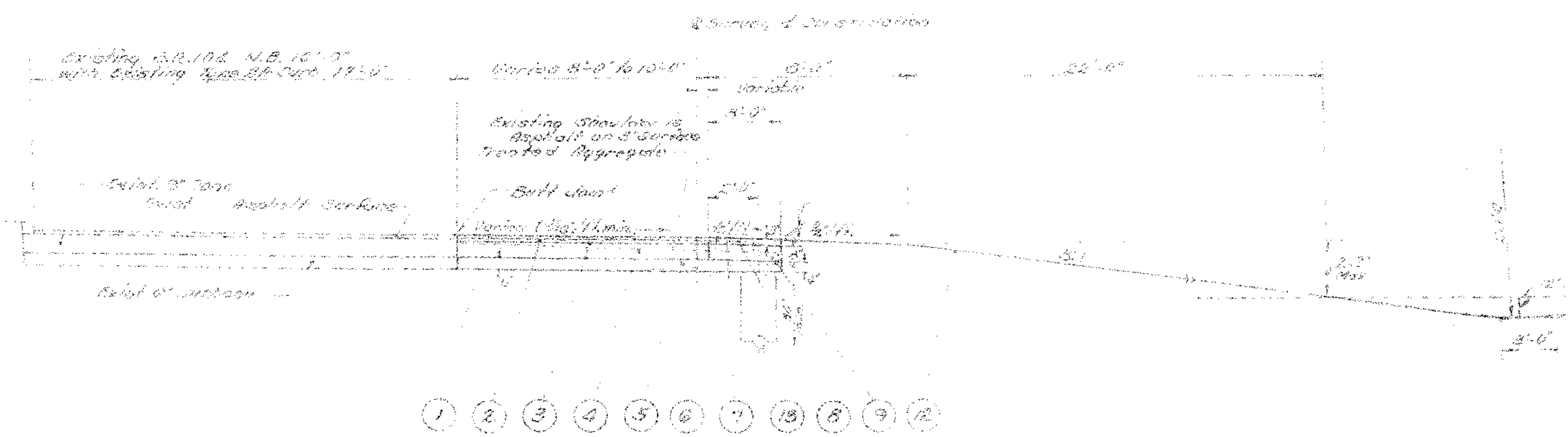
TYPE 404 ON 305



TYPICAL SECTION "H"
BUTT JOINT CONSTRUCTION
WITH EXISTING ASPHALT ON AGG. BASE

Sta. 94+95.50 to Sta. 95+36.00 = 341.00 L.F.

For Edge Elevations See Pavement Detail Plans



TYPICAL SECTION "I"
BUTT JOINT CONSTRUCTION
WITH EXIST. ASPHALT ON CONC.

Sta. 98+36.00 to Sta. 99+75.00 = 139.00 L.F.

Note: Sta. 99+75.00 to Sta. 100+90.00 pavement type and thickness shall be in accordance with Typical Section "I" and pavement details for widening.

ITEM		DESCRIPTION
(1)	404	1¼" Asphalt Concrete (60-70)
(2)	402	1¾" Asphalt Concrete (60-70)
(3)	407	Tack Coat 702.04 MS-2 or RS-1 or 702.02 or RC-70 or RC-250 @ the rate of 0.10 Gal./Sq.Yd.
(4)	305	8" Portland Cement Conc. Base.
(5)	310	Subbase, Grading "A" Thickness as shown
(6)	409	Seal Coat Bituminous Material as per plan @ the rate of 0.30 Gal./Sq.Yd.
(7)	409	Seal Coat Cover Aggregate No 8 @ the rate of 0.008 Cu.Yds/Sq.Yd.
(8)	301	Bituminous Aggregate Base 702.01 (85-100) or 702.09 RT-11 or RT-12 Thickness as Shown
(9)	304	Aggregate Base, Thickness as Shown
(12)	659	Seeding & Mulching, See Gen. Notes
(13)	605	6" Pipe Underdrains (Shallow)

* See Note in proposal

S.R. 104 N.B. W...
TYPICAL SE...

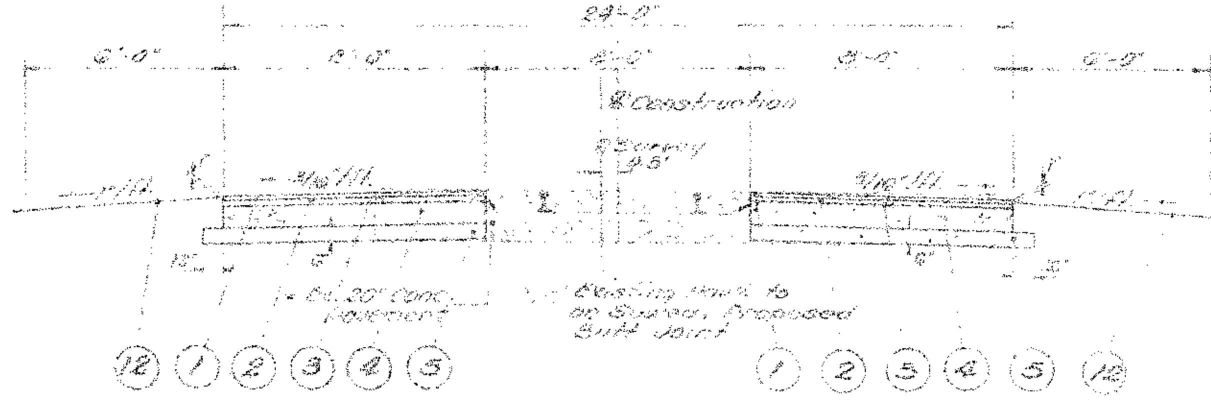
COLUMBUS ENGINEERING CONSULTANTS, LTD.

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COU
FRA-104-8.04

TYPICAL SECTIONS

TYPE 404 ON 305
& TYPE 404 ON 304

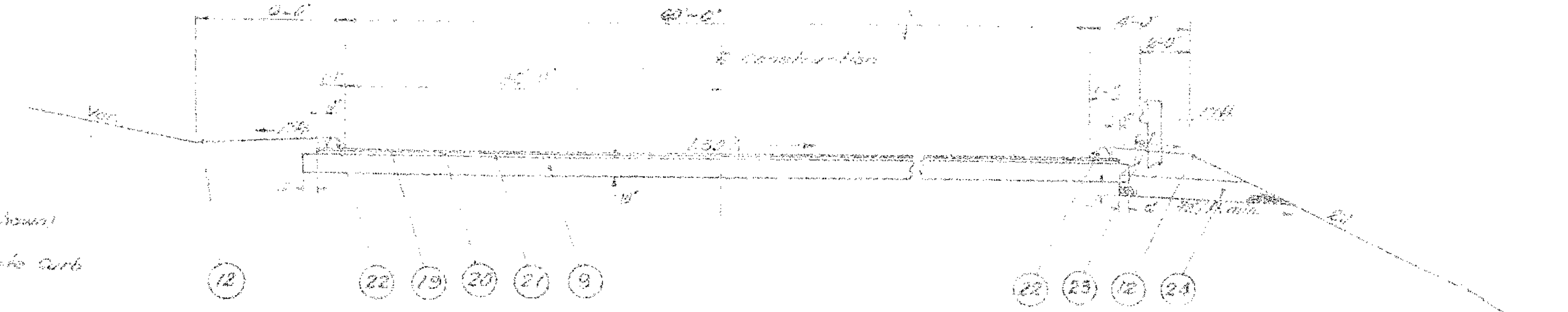


* Note:-
Existing Concrete Pavement is from 12+93 to 18+55. Outside of these limits the existing pavement is 5" Asphalt on a 12" Aggregate Base.

For edge elevations See Pavement Detail Sheets

TYPICAL SECTION "J"
AMERICAN AGGREGATES HAUL RD.
Sta. 12+72.00 to Sta. 18+13.00 = 640.00 L.F.

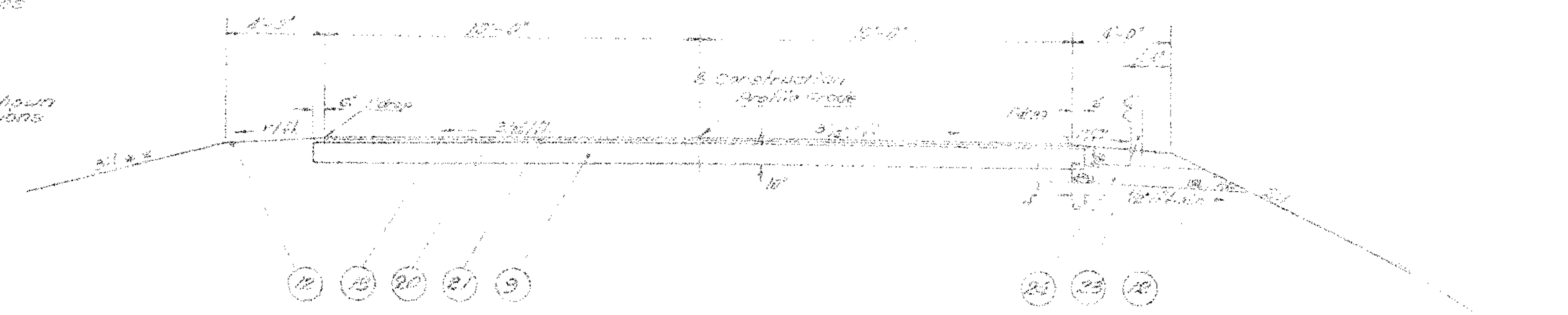
ITEM		DESCRIPTION
(1)	404	1¼" Asphalt Concrete (60-70)
(2)	402	1¾" Asphalt Concrete (60-70)
(3)	407	Tack Coat 702.04 MS-2 or RS-1 or 702.02 or RC-70 or RC-250 @ the rate of 0.10 Gal./Sq. Yd.
(4)	305	8" Portland Cement Conc. Base
(5)	310	Subbase, Grading "A" Thickness as shown
(19)	404	1" Asphalt Concrete (85-100)
(20)	402	1" Asphalt Concrete (85-100)
(21)	408	Bituminous Prime Coat using 702.09 RT-2 or RT-3 applied at the rate of 0.4 gal. per Sq. Yd.
(9)	304	Aggregate Base (Thickness as Shown)
(22)	609	Type 1, Standard Asphalt Concrete Curb
(23)	606	Guardrail, Standard Type A
(24)	605	Aggregate Drains
(12)	659	Seeding & Mulching See Gen. Notes



TYPICAL SECTION "K"
AMERICAN AGGREGATES PARKING LOT
Sta. 6+69.16 to Sta. 7+91.32 = 122.16 L.F.

* Not less than 2'

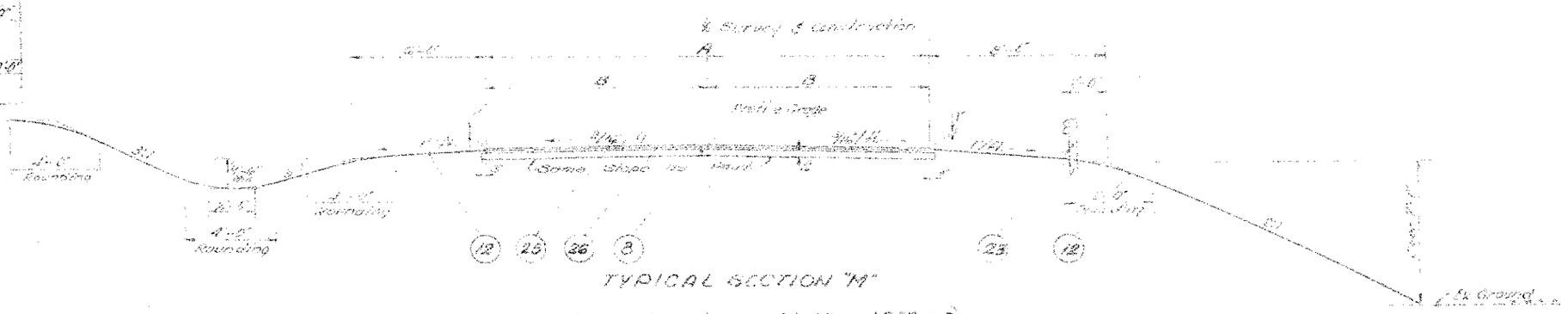
** Except as shown On Cross Sections



TYPICAL SECTION "L"
DRIVE TO AMERICAN AGGREGATES PARKING LOT
Sta. 7+91.32 to Sta. 9+43.97 = 152.65 L.F.

Note: Sta. 9+40.97 to 9+86.50 - Pavement type and thickness shall be in accordance with Typical Section "K". See pavement details for widths

AMERICAN AG
& PARKING
TYPICAL S



FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Station to Station	A	B
Service Rd. "A-A"		
18+80 to 30+92	20'-0"	10'-0"
30+92 to 31+67	20'-0" to 25'-0"	10'-0" to 12'-6"
35+05 to 38+54	25'-0"	12'-6"
42+10 to 42+85	25'-0" to 20'-0"	12'-6" to 10'-0"
42+85 to 49+50	20'-0"	10'-0"
49+50 to 50+35	20'-0" to 25'-0"	10'-0" to 12'-6"
52+33 to 52+67	25'-0"	12'-6"
55+60 to 56+35	25'-0" to 20'-0"	12'-6" to 10'-0"
56+35 to 72+05	20'-0"	10'-0"
72+05 to 73+65	20'-0" to 36'-0"	10'-0" to 18'-0"
73+65 to 74+35	36'-0"	18'-0"
Inland Products Drive		
7+40 to 8+40	20'-0" to 40'-0"	10'-0" to 20'-0"
8+40 to 10+00	40'-0"	20'-0"

TYPICAL SECTIONS

TYPE 404 ON 301

TYPICAL SECTION "M"

Sta. 18+80 to Sta. 31+67 = 1,287 L.F.
Sta. 35+05 to Sta. 38+54 = 349 L.F.
Sta. 42+10 to Sta. 50+35 = 825 L.F.
Sta. 52+33 to Sta. 52+67 = 34 L.F.
Sta. 55+60 to Sta. 74+35 = 1,875 L.F.
} Service Rd. "A-A"
Sta. 7+40 to Sta. 10+00 = 260 L.F. Inland Products Dr.
Total = 4,629 L.F.

ITEM		DESCRIPTION
(25)	404	1½" Asphalt Concrete (85-100)
(26)	402	1¼" Asphalt Concrete (85-100)
(8)	301	Bituminous Aggregate Base 702.01 (85-100) or 702.09 AT-11 or 12. Thickness as Shown
(12)	659	Seeding & Mulching, See Gen. Note
(23)	606	Guard Rail, Standard Type 4

* ℄ Except as Shown on X-Sect.

TYPICAL SECTION "N"

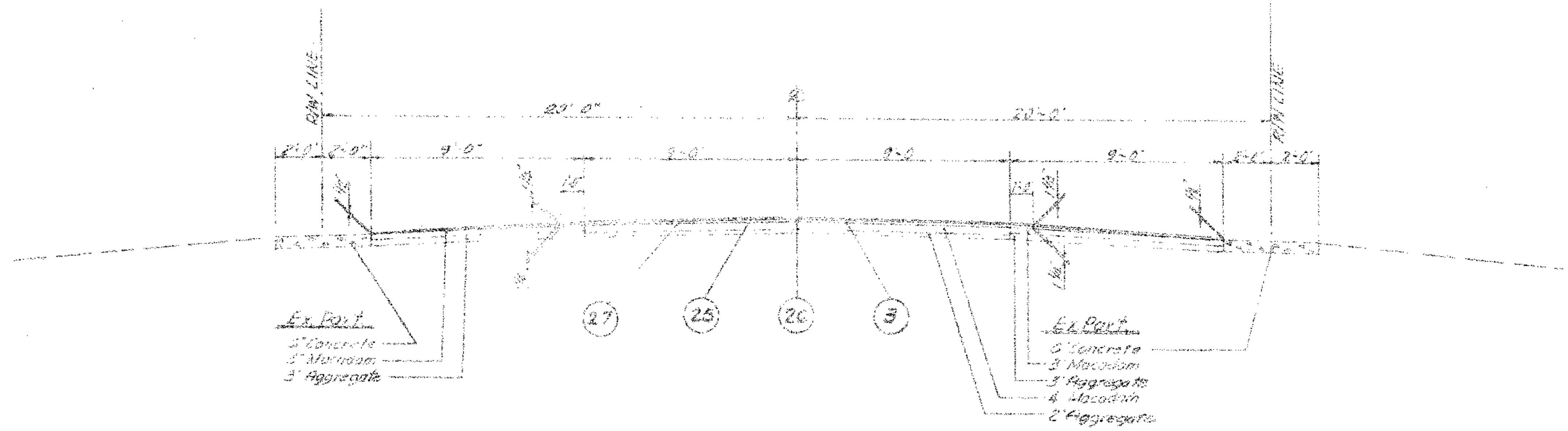
Sta. 31+67 to Sta. 35+05 = 338 L.F.
Sta. 38+54 to Sta. 42+10 = 356 L.F.
Sta. 50+35 to Sta. 52+33 = 198 L.F. } Service Rd. "A-A"
Sta. 52+67 to Sta. 55+60 = 293 L.F.
Total = 1,185 L.F.

"V" TYPE DITCH DETAIL

INLAND PROD
& SERVICE R
TYPICAL SEC

TYPICAL SECTIONS

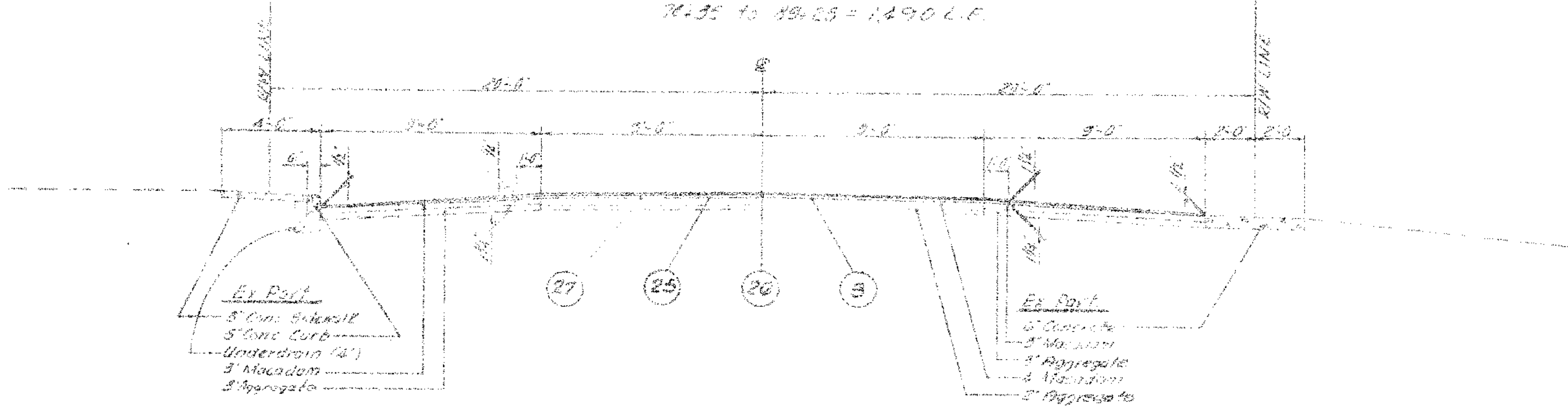
RESURFACING



TYPICAL SECTION "O"

DECKEBACH ROAD FROM STIMMEL ROAD TO MITHOFF ST.

74+35 to 89+25 = 1490 L.F.



TYPICAL SECTION "P"

DECKEBACH ROAD FROM MITHOFF ST. TO GREENLAWN AVE.

89+25 to 95+75 = 650 L.F.

ITEM		DESCRIPTION
(25)	404	1¼" Asphalt Concrete (85-100)
(26)	402	1¼" Asphalt Concrete (85-100)
(3)	407	Tack Coat 702.04 MS-2 or RS-1 or 702.02 or RC-70 or RC-250 @ The Rate of 0.10 Gal./Sq. Yd.
(27)	402	Asphalt Concrete (Pre-leveling) (85-100)

FRANKLIN COUN[illegible]
FRA-104-8.04

GENERAL NOTES

FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 800 SQUARE FEET OF FLOOR SPACE. THE CONTRACTOR SHALL ALSO PROVIDE AND MAINTAIN SANITARY PROVISIONS AS PER 107.05. ALL THE ABOVE IS INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 619 FIELD OFFICE.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS HAVE BEEN OBTAINED BY DILIGENT FIELD CHECKS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE STATE OF OHIO DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS.

CONSTRUCTION LAYOUT STAKES

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

UTILITY OWNERSHIP

COLUMBIA GAS OF OHIO, INC.
99 NORTH FRONT STREET
COLUMBUS, OHIO 43215

CITY OF COLUMBUS
SEWERAGE AND DRAINAGE DIVISION
CITY HALL
COLUMBUS, OHIO 43215

CITY OF COLUMBUS
DIVISION OF WATER
CITY HALL
COLUMBUS, OHIO 43215

OHIO BELL TELEPHONE COMPANY
21 NORTH FOURTH STREET
COLUMBUS, OHIO 4321[illegible]

COLUMBUS AND SOUTHERN OHIO ELECTRIC CO.
215 NORTH FRONT STREET
COLUMBUS, OHIO 432[illegible]

CITY OF COLUMBUS
DIVISION OF ELECTRICITY
CITY HALL
COLUMBUS, OHIO 43215

ELEVATION DATUM

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

ROUNDING OF CORNERS SHOWN ON [illegible] SECTIONS

THE ROUNDED CORNERS SHOWN ON THE TYPICAL SECTIONS APPLY TO ALL CROSS SECTIONS EVEN [illegible] OTHERWISE SHOWN ON THESE PLANS.

ITEM 203 PROOF ROLLING

AN ESTIMATED QUANTITY FOR THIS ITEM HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR USE IN PROOF ROLLING OF SUBGRADE FOR THE [illegible] AND RAMP PAVEMENTS, FOR PAVED SHOULDERS, SERVICE ROAD [illegible], AND AMERICAN [illegible] IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION [illegible].

DUMPED ROCK FILL [illegible]

A QUANTITY OF [illegible] OF [illegible] DUMPED ROCK [illegible] PROVIDED IN THE [illegible] FOR [illegible] OF STATION 27+[illegible] TO [illegible] AND STATION [illegible] TO [illegible]. [illegible]

See detail on Sheet No. 8

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.

UNSUITABLE MATERIAL, LANDFILLS

BETWEEN 14+00 AND 16+50 STATE ROUTE 104 RELOCATION, THE LANDFILL MATERIAL SHALL BE EXCAVATED WITHIN THE LIMITS SHOWN ON THE CROSS SECTIONS, OR AS DIRECTED BY THE ENGINEER, WASTED AND REPLACED WITH COMPACTED EMBANKMENT.

THE COST OF EXCAVATING AND WASTING THE UNSUITABLE MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION. THE COST OF REPLACING THE MATERIAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 203 EMBANKMENT.

EMBANKMENT USING GRANULAR MATERIAL INCLUDING EXCAVATION OF UNSUITABLE MATERIAL AS PER PLAN

BETWEEN 29+70 AND [illegible] STATE ROUTE 104 RELOCATION, THE PEAT AND ORGANIC CLAYS SHALL BE EXCAVATED WITHIN THE LIMITS SHOWN ON THE CROSS SECTIONS, OR AS DIRECTED BY THE ENGINEER, WASTED AND REPLACED BY GRANULAR MATERIAL AS DEFINED IN 203.12 EXCEPT THAT AT LEAST 75 PER CENT BY WEIGHT OF THE GRAINS OR PARTICLES SHOULD BE RETAINED ON A NO. 200 SIEVE. THE COST FOR THIS WORK INCLUDING THE COST OF EXCAVATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 203 EMBANKMENT USING GRANULAR MATERIAL INCLUDING EXCAVATION OF UNSUITABLE MATERIAL, AS PER PLAN.

EMBANKMENT USING GRANULAR MATERIAL AS PER PLAN

MATERIAL FURNISHED FOR THIS ITEM SHALL BE AS DEFINED IN 203.12 EXCEPT THAT AT LEAST 75 PER CENT BY WEIGHT OF THE GRAINS OR PARTICLES SHALL BE RETAINED ON A NO. 200 SIEVE. BETWEEN STATIONS [illegible] EMBANKMENT INDICATED ON THE PLANS MAY BE PLACED BY THE METHOD OF END DUMPING IF SURFACE WATER IS PRESENT AT THE TIME OF CONSTRUCTION. THE DUMPING METHOD MAY BE USED UP TO AN ELEVATION [illegible] FEET ABOVE THE WATER LEVEL. ABOVE THIS ELEVATION, EMBANKMENT CONSTRUCTION SHALL BE IN ACCORDANCE WITH 203.[illegible] TO 203.12 INCLUSIVE. WHERE END DUMPING OF GRANULAR MATERIAL IS PERMITTED, NORMAL CLEARING AND GRUBBING SHALL BE PERFORMED BUT THE REQUIREMENTS OF 201.[illegible] FOR [illegible] SHALL BE WAIVED.

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 [illegible] PROTECTION AND PRESERVATION [illegible] AS INDICATED ELSEWHERE IN THESE PLANS SHALL NOT BE REMOVED.

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

SIZES	NO. TREES
18"	2[illegible]
30"	7
48"	1

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

PAVEMENT REMOVAL OUTSIDE NORMAL CONSTRUCTION LIMITS

THE EXISTING PAVEMENT AS INDICATED ON THE PLANS SHALL BE REMOVED AND DISPOSED OF, THE OLD ROADWAY GRADED TO THE LEVEL OF THE SURROUNDING GROUND, THE OLD DITCHES FILLED, AND THE DISTURBED AREAS SLOPED TO DRAIN AND LEFT IN A NEAT CONDITION READY FOR SEEDING. SEEDING SHALL BE MEASURED AND PAID FOR IN ACCORDANCE WITH ITEM 659 SEEDING AND MULCHING. PAYMENT FOR THE ABOVE WORK, EXCEPT SEEDING, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203.

MONUMENTS

MONUMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN ON STANDARD DRAWING MO 1. FOR LOCATIONS SEE SHEET NOS. [illegible]

SEEDING

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

SEEDING QUANTITIES ARE NOT PROVIDED FOR AREAS [illegible] THE [illegible] STRUCTURE FRA-104-0[illegible] OR ON GRANULAR EMBANKMENT SURFACES.

[illegible] LIMING

THE AREA [illegible] LIMED SHALL BE DETERMINED BY LABORATORY TEST [illegible] SEEDING AND SODDING AND AFTER THE FINISHED [illegible] HAS BEEN [illegible]. THE LIME SHALL BE APPLIED AT THE STANDARD RATE [illegible] AS DIRECTED BY THE ENGINEER.

[illegible] FERTILIZING

FERTILIZER [illegible] SHALL BE [illegible] AT THE RATE OF FIFTEEN (15) POUNDS PER 1000 [illegible] THE ENTIRE AREA TO BE SEEDED OR SODDED AND [illegible] A DEPTH OF NOT LESS THAN TWO [illegible] INCHES.

[illegible] SEEDING

SEEDING [illegible]

[illegible]

THE SEED BED SHALL BE LOOSENED TO A MINIMUM DEPTH OF 2".

WHEN ASPHALT IS USED AS A TIE, IT SHALL BE APPLIED AT THE RATE OF 200 GALLONS PER TON OF STRAW IN LIEU OF THE SPECIFI[illegible] RATE.

NO ASPHALT SHALL BE APPLIED WHEN THE TEMPERATURE IS BELOW [illegible]

WHEN STRAW IS USED AS A MULCH, IT SHALL BE APPLIED AT SUCH RATE AS TO INSURE A MINIMUM TWO (2) INCH DEPTH LOOSE MEAS[illegible]

THE ACTUAL OPERATION OF SEEDING SHALL NOT BE PERFORMED BET[illegible] DATES OF OCTOBER 15 AND FEBRUARY 14.

ALL SLOPES 2:1 OR STEEPER, EXCEPT GRANULAR EMBANKMENT SURF[illegible] SHALL BE PROTECTED BY EXCELSIOR MATTING. PAYMENT FOR THE WORK SHALL BE ITEM 830, SEEDING AND EXCELSIOR MATTING.

DRIVE LOCATIONS

THE LOCATIONS OF THE DRIVES AS SHOWN ON THE PLANS MAY BE [illegible] LOCATED AS DIRECTED BY THE ENGINEER OUTSIDE THE LIMITED AC[illegible] RIGHT-OF-WAY AND PROVIDING THAT THERE IS NO ADDITIONAL COS[illegible] TO THE STATE.

CLEANING PRIVY VAULT

PRIVY VAULTS SHALL BE EMPTIED AND CLEANED AS DIRECTED BY [illegible] ENGINEER.

THE MATERIAL REMOVED FROM THESE VAULTS SHALL BE CLASSIFIE[illegible] UNSUITABLE AND DISPOSED OF OUTSIDE THE LIMITS OF RIGHT-OF[illegible] OR EASEMENT LINES. THE PRIVY VAULTS SHALL SUBSEQUENTLY B[illegible] BACKFILLED WITH SUITABLE SOIL OR GRANULAR MATERIAL IN ACC[illegible] DANCE WITH [illegible].

THIS [illegible] SHALL BE INCLUDED FOR PAYMENT IN THE UNIT PRICE FOR ITEM 203, EXCAVATION NOT INCLUDING EMBANKMENT CONSTRU[illegible] [illegible] AND PAYMENT SHALL CONSTITUTE FULL COMPENSATIO[illegible] [illegible] REMOVAL AND DISPOSAL OF THE UNSUITABLE MATERI[illegible] BACKFILLING AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCID[illegible] [illegible] NECESSARY TO COMPLETE THIS ITEM.

[illegible] AND DISPOSAL OF EXISTING SEPTIC TANKS

[illegible] SHALL INCLUDE CLEANING, [illegible] AND REMOVI[illegible] ALL [illegible] OF EXISTING SEPTIC TANKS.

[illegible] SEPTIC TANKS [illegible] WITHIN THE [illegible] SHALL BE [illegible]. MATERIAL REMOVED FROM THE[illegible] [illegible] SHALL BE CLASSIFIED AS UNSUITABLE AND DISPOSED OF [illegible] THE RIGHT-OF-WAY OR EASEMENT LINES.

[illegible] THE SEPTIC TANKS ARE LOCATED ABOVE THE FINISHED [illegible] [illegible] OR GRADING LINES, THEY SHALL BE ENTIRELY REMOVED AND [illegible] IN ACCORDANCE WITH 202.

[illegible]

GENERAL NOTES

CLEANING AND DISPOSAL OF EXISTING SEPTIC TANKS (CONT'D)

WHEN THE TANKS ARE LOCATED ABOVE THE FINISHED PAVEMENT OR GROUND LINES, THE TOPS OF THE TANKS SHALL BE REMOVED, AND THE WALLS SHALL BE REMOVED TO A DEPTH OF ONE (1) FOOT BELOW THE FINISHED SUBGRADE OR GROUND LINES. THE REMOVED MATERIAL SHALL BE DISPOSED OF AS EXPLAINED ABOVE. THE TANKS SHALL SUBSEQUENTLY BE BACKFILLED WITH SUITABLE SOIL OR GRANULAR MATERIAL IN ACCORDANCE WITH 203.

THIS ITEM SHALL BE INCLUDED FOR PAYMENT IN THE UNIT PRICE BID FOR ITEM 203, EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR CLEANING, REMOVING AND DISPOSING OF EXCESS MATERIALS, BACKFILLING AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM INCLUDING INCIDENTAL EXCAVATION.

PAVEMENT ELEVATIONS

PAVEMENT EDGE ELEVATIONS ARE AT THE FACE OF THE CURB UNLESS OTHERWISE INDICATED.

SANITARY FLOW INTO HIGHWAY DRAINAGE SYSTEMS (LIMITED ACCESS RIGHT OF WAY)

THIS PLAN MAKES NO PROVISION FOR CONNECTING, NOR SHALL THE ENGINEER OR CONTRACTOR CONNECT, ANY EXISTING OR NEW DRAINAGE INTO THE HIGHWAY DRAINAGE SYSTEM WHEN SUCH DRAINS CARRY FLOW FROM ANY PLUMBING FIXTURES INCLUDING FLOOR DRAINS AND SINK DRAINS OR DRAINS FROM LIVESTOCK LOTS OR BARNS OR POLLUTED WATER OF ANY KIND.

EXISTING PIPE CARRYING FLOW WHICH COMES WITHIN THE CATEGORY OUTLINED ABOVE SHALL BE PLUGGED WITH CLASS C CONCRETE AT THE RIGHT-OF-WAY LINE. PAYMENT FOR SAID PLUGGING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203 EXCAVATION.

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.

ITEM 605 AGGREGATE DRAINS

AGGREGATE DRAINS SHALL BE PLACED AT FIFTY (50) FOOT INTERVALS ON EACH SIDE OF NORMAL CROWNED SECTIONS, EXCEPT WHERE ITEM 605 PIPE UNDERDRAINS HAVE BEEN PROVIDED.

PIPE ENDS

ALL CULVERTS SHALL BEGIN AND END WITH PIPE ENDS AS NORMALLY FABRICATED BY THE MANUFACTURER. ENDS SHALL NOT BE CUT TO FIT EITHER SKEW OR SLOPE. IF FIELD CUTTING IS FOUND TO BE NECESSARY TO FIT AN EXACT LENGTH CONTROL, THE CUT END SHALL BE LOCATED AT AN INTERIOR JOINT AND CRADLE, COLLAR OR BAND SHALL BE PROVIDED TO ASSURE A STABLE JOINT. PAYMENT FOR THE JOINT SHALL BE INCLUDED IN THE PRICE BID FOR THE PERTINENT 603 CONDUIT ITEM.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT, AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE, THE CITY AND THE CONTRACTOR SHALL MAKE A VISUAL INSPECTION OF THE EXISTING STORM AND SANITARY SEWERS WITHIN THE WORK LIMITS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. 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.

INLET LOCATION

THE LOCATION OF AN INLET AS SHOWN ON THE PLANS IS TO THE CENTER OF THE MANHOLE COVER OR GRATE.

CATCH BASIN LOCATION

THE LOCATION OF A C. B. AS SHOWN ON THE PLANS IS THE CENTER OF GRATE.

LOCATION AND SIZE OF EXISTING PIPES

THE LOCATION, TYPE, DEPTH AND SIZE OF ALL EXISTING PIPES ARE SHOWN AS NEAR EXACT AS THE AVAILABLE INFORMATION WILL PERMIT. THE STATE WILL NOT BE RESPONSIBLE FOR ANY VARIATION FOUND DURING CONSTRUCTION.

ROCK CHANNEL PROTECTION

ANY PIECE OF STONE, BROKEN MASONRY, OR BROKEN PAVEMENT RESULTING FROM THE REMOVAL OF EXISTING STRUCTURES OR PAVEMENT AND MEETING THE SIZE REQUIREMENTS AS PROVIDED IN 601.3? MAY BE USED IN THIS ITEM. ANY PROTRUDING REINFORCING STEEL IN BROKEN CONCRETE SHALL BE REMOVED FLUSH WITH CONCRETE SURFACE BEFORE MATERIAL IS USED.

CONTRACTION AND EXPANSION JOINTS

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

CONTRACTION JOINTS IN PAVEMENT WIDENING

WHERE NEW PAVEMENT IS PLACED ADJACENT TO EXISTING PAVEMENT, CONTRACTION JOINTS SHALL BE PROVIDED IN THE NEW PAVEMENT SO AS TO FORM A CONTINUOUS JOINT WITH THAT IN THE EXISTING PAVEMENT.

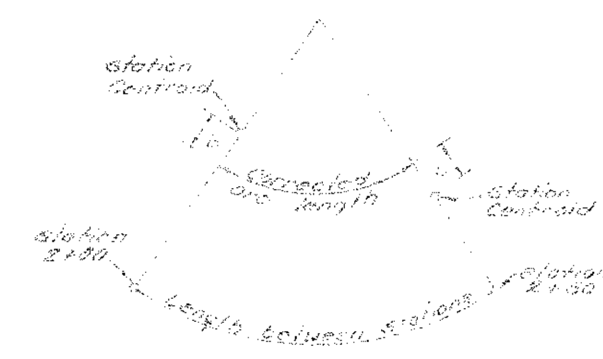
UTILITIES

THE EXISTING POWER, SANITARY AND WATER LINES SHALL NOT BE REMOVED UNTIL SUCH TIME THAT THE NEW AND/OR RELOCATED LINES ARE PLACED IN SERVICE.

EARTHWORK COMPUTATIONS - CURVED ALIGNMENT

THE EARTHWORK WITHIN THE FOLLOWING LIMITS HAS BEEN OBTAINED BY CORRECTING THE ARC LENGTH BETWEEN THE CENTROID OF THE AREA OF EACH CROSS SECTION AS SHOWN BELOW. CORRECTED ARC LENGTHS ARE SHOWN ON THE CROSS SECTIONS.

0+50 to 4+00 Ramp "A"



ITEM SPECIAL, PIPE CLEANOUT

WHERE SHOWN ON THE PLANS, EXISTING PIPE SHALL BE CLEANED OUT AS DIRECTED BY THE ENGINEER. THE WORK SHALL CONSIST OF THE REMOVAL OF ALL MATERIAL FROM THE INSIDE OF THE EXISTING PIPE. THE MATERIAL REMOVED SHALL BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF 203.05.

THE FOOTAGE TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF LINEAL FEET OF EXISTING PIPE CLEANED OUT AS DIRECTED BY THE ENGINEER.

THE FOOTAGE MEASURED AS PROVIDED ABOVE SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LINEAL FOOT "ITEM SPECIAL, PIPE CLEANOUT" WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR REMOVAL AND DISPOSAL OF ALL MATERIAL FOUND IN THE PIPE AND THE FURNISHING OF ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

MAINTENANCE OF SEWER FLOWS

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO AS TO MAINTAIN AT ALL TIMES SEWER FLOWS THROUGH EXISTING FACILITIES TO REMAIN IN PLACE AND THROUGH EXISTING FACILITIES TO BE REPLACED UNTIL NEW FACILITIES ARE COMPLETED AND PLACED IN USE.

PAYMENT FOR ANY ADDITIONAL COSTS INVOLVED IN MAINTAINING THESE FLOWS BY PUMPING OR BY ANY OTHER MEANS APPROVED BY THE ENGINEE[R] SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE RESPECTIVE ITEMS OF 603 CONDUIT.

COOPERATION BETWEEN CONTRACTORS

SEVERAL FEATURES ON THE ADJOINING PROJECT TO THE EAST (FRA-10[illegible] MUST BE COMPLETED PRIOR TO COMMENCEMENT OF CERTAIN PHASES OF [illegible] ON THIS CONTRACT. CONSEQUENTLY, IT IS POSSIBLE THAT CERTAIN CONSTRUCTION OPERATIONS AT THE EASTERN END OF THIS PROJECT MA[Y] BE PERFORMED BY THE CONTRACTOR FOR THE ADJOINING PROJECT DURI[NG] THE LIFE OF THIS CONTRACT. REFERENCE IS MADE TO SECTION 105.[illegible] FOR COOPERATION REQUIREMENTS.

CONCRETE BARRIER, AS PER PLAN

TRANSITIONS OF WIDTH AND HEIGHT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "ITEM 622 CONCRETE BARRIER, AS PER PLAN". SPEC[illegible] CONSTRUCTION FOR OVERHEAD SIGN SUPPORT FOUNDATIONS SHALL BE [illegible] FOR PER CU. YD. OF ITEM 816 CONCRETE FOUNDATIONS FOR TRAFFIC SIGN SUPPORTS.

SURVEY CONTROL FOR SERVICE ROAD A-A AND INTERCHANGE RAMPS

SURVEY CONTROL DATA FOR SERVICE ROAD A-A AND INTERCHANGE RAMP[S] SHALL BE FURNISHED BY THE STATE SUBSEQUENT TO THE SALE DATE FOR THIS PROJECT.

SERVICE ROAD A-A PROPOSED ELEVATIONS

PROFILE GRADE AND SUPERELEVATION TABLES SHALL BE FURNISHED BY THE STATE SUBSEQUENT TO THE SALE DATE FOR THIS PROJECT.

SERVICE ROAD A-A RIGHT-OF-WAY SHEETS

RIGHT-OF-WAY PLAN SHEETS FROM APPROXIMATE STATION 33+35 TO TH[E] INTERSECTION OF BROKMACH ROAD AND GREENLAWN AVENUE SHALL BE FURNISHED BY THE STATE SUBSEQUENT TO THE SALE DATE FOR THIS PROJECT.

CONDUITS UNDER RAILROADS

THE 2" WATER LINE AND THE 16" SANITARY SEWER SHOWN ON THE [illegible] SHALL BE JACKED INTO PLACE OR PLACED BY SOME OTHER METHO[D] [illegible] BY THE ENGINEER UNDER THE PRIVATE TRACKS AND HAUL ROAD OF T[HE] AMERICAN AGGREGATE CORPORATION.
IF JACKED INTO PLACE, NO TRENCH EXCAVATION OR EQUIPMENT SH[ALL BE] CLOSER THAN 10'-0" TO THE CENTERLINE OF THE NEAR TRACK, T[illegible] SHALL BE ADEQUATELY SUPPORTED AND THE SPECIFICATION REQ[illegible] FOR CLASS B BEDDING SHALL BE DISREGARDED. IF INSTALLATIO[N] [illegible] THE OPEN TRENCH METHOD, THE CONTRACTOR SHALL PROVIDE CL[illegible] BEDDING FOR THE CONDUIT. TRACKS SHALL BE RESTORED TO OR[illegible] CONDITION AS DIRECTED BY THE ENGINEER.

EXCAVATION FOR POWER POLE (UNSUITABLE [illegible]

At Station 26+[illegible] Rt, the contractor shall remove [illegible] section of the existing ground (10 feet [illegible] the proposed power pole location) to a depth of [illegible] below the bottom of the power pole foundation. The material shall be wasted and replaced with embankment. Quantities have been included for the [illegible] on the cross sections. Care shall be taken to not disturb the existing [illegible] Sewer. The cost of excavating and wasting the unsuitable [illegible] shall be included in the unit price bid for 203 Exc[avation] including Embankment Construction. The cost of the material shall be included in the unit price [illegible] embankment.

FED. PROJ. NUMBER	STATE	NUMBER
	OHIO	

FRANKLIN COUNT
FRA-104-8.04

GENERAL NOTES

MAINTENANCE OF TRAFFIC

GENERAL

TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON FRANK ROAD, S.R. 104 AND S.R. 104 (N.B. & S.B.), AND ONE-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON RAMP "F", BY THE USE OF THE EXISTING PAVEMENT, THE PROPOSED PAVEMENT AND TEMPORARY ROADS USING CLASS "A" PAVEMENT. TWO-WAY TRAFFIC SHALL BE MAINTAINED ON THE AMERICAN AGGREGATES HAUL ROAD, EXCEPT FOR A LIMITED TIME AS NOTED BELOW, BY THE USE OF THE EXISTING AND PROPOSED PAVEMENTS. THE TEMPORARY PAVEMENT WIDTH SHALL BE AS INDICATED BELOW OR ON THE PLANS. THE SHOULDER WIDTH ON TEMPORARY ROADS SHALL BE A MINIMUM OF THREE FEET FROM THE EDGE OF THE TEMPORARY PAVEMENT.

THE LIMITS AND DURATION OF USE OF TEMPORARY ROADS SHALL BE HELD TO AN ABSOLUTE MINIMUM AND IN ALL CASES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE USED AND IS SHOWN ON SHEETS 28 THROUGH 37 OF THE PLANS.

STAGE 1

SERVICE ROAD A-A SHALL BE CONSTRUCTED AND OPEN TO TRAFFIC AND THE CONNECTION OF EXISTING SERVICE ROAD NO. 4 TO EXISTING FRANK ROAD SHALL BE CLOSED PRIOR TO CONSTRUCTION OF STAGE 2, PHASE B.

THE EXISTING CONNECTION BETWEEN SERVICE ROAD NO. 4 AND FRANK ROAD SHALL REMAIN OPEN TO TWO-WAY TRAFFIC UNTIL SERVICE ROAD "A-A" IS OPEN TO TRAFFIC.

TRAFFIC SHALL BE MAINTAINED ON THE EXISTING FACILITY AND ON TEMPORARY ROAD NO. 9 (CONSTRUCTED BY OTHERS).

STAGE 2, PHASE A

CONSTRUCT TEMPORARY ROADS NO. 1 AND 2, S.R. 104 (N.B.) BETWEEN 98+85 AND 99+75, AND INLAND PRODUCTS ACCESS DRIVE.

THE EXISTING CONCRETE MEDIAN BETWEEN 7+50 AND 7+85 AND BETWEEN 8+60 AND 9+50 SHALL BE REMOVED AND REPLACED WITH CLASS "A" PAVEMENT.

TRAFFIC SHALL BE MAINTAINED ON THE EXISTING FACILITY AND ON TEMPORARY ROAD NO. 9 AS INDICATED ON THE PLANS.

STAGE 2, PHASE B

CONSTRUCT S.R. 104 (N.B.) BETWEEN 98+10 AND 9+90 AS INDICATED ON THE PLANS. THE PROPOSED MEDIAN AND CURB BETWEEN 8+25 AND 7+80 SHALL BE OMITTED AND THE AREA PAVED WITH CLASS "A" PAVEMENT. CONSTRUCT THE AMERICAN AGGREGATES PARKING LOT AND PARKING LOT DRIVE.

TRAFFIC SHALL BE MAINTAINED ON THE EXISTING PAVEMENT AND TEMPORARY ROADS NO. 1, 2 & 9 AS INDICATED ON THE PLANS

STAGE 2, PHASE C

CONSTRUCT S.R. 104 (N.B.) BETWEEN 8+90 AND 98+00. CONSTRUCT BRIDGE NO. FRA-104-0820 (E.B. & W.B.) AND BRIDGE NO. FRA-104-0854 (N.B.). CONSTRUCT RAMP F-F. CONSTRUCT TEMPORARY PAVEMENT BETWEEN 8+90 AND 9+20. CONSTRUCT TEMPORARY ROADS NO. 3, 4 & 5. CONSTRUCT RAMPS A, A-A & B-B. CONSTRUCT RAMP D-D FROM 32+00 TO 35+17. CONSTRUCT AMERICAN AGGREGATES HAUL ROAD BETWEEN 15+00 AND 19+14 IN TWO STAGES SO THAT ONE-WAY OPERATION MAY BE MAINTAINED DURING THIS CONSTRUCTION.

TRAFFIC SHALL BE MAINTAINED ON THE EXISTING PAVEMENT AND TEMPORARY ROADS NO. 3 AND 9 AS INDICATED ON THE PLANS. ACCESS TO AMERICAN AGGREGATES SHALL BE OVER THE EXISTING DRIVE LOCATED RIGHT OF 36+25.

STAGE 3, PHASE A

CONSTRUCT S.R. 104 (E.B.) BETWEEN 98+10 AND 9+90. CONSTRUCT S.R. 104 (S.B.) AS INDICATED ON THE PLANS. CONSTRUCT TEMPORARY ROADS NO. 6 AND 7. REMOVE CURB LEFT OF 09+00 (S.R. 104 N.B.) SO THAT TEMPORARY ROAD NO. 7 MAY BE CONSTRUCTED. CURB SHALL BE REPLACED WHEN THE TEMPORARY ROAD IS REMOVED.

TRAFFIC SHALL BE MAINTAINED ON S.R. 104 (N.B.), RAMP F-F, TEMPORARY ROADS NO. 2, 3, 4 & 5 AND RAMPS A, A-A, B-B & D-D AS INDICATED ON THE PLANS. ACCESS TO INLAND PRODUCTS LOCATED RIGHT OF 32+00 SHALL BE CLOSED PRIOR TO CONSTRUCTION OF THIS PHASE.

STAGE 3, PHASE B

CONSTRUCT S.R. 104 (E.B.) BETWEEN 8+90 AND 28+50 AND BETWEEN 29+75 AND 99+00. CONSTRUCT S.R. 104 (N.B. & S.B.) AS INDICATED ON THE PLANS. CONSTRUCT RAMP C-C & TEMPORARY ROAD NO. 8.

REMOVE THE EXISTING AMERICAN AGGREGATES BRIDGE LOCATED RIGHT OF 35+50. THE REMOVAL SHALL BE ACCOMPLISHED BETWEEN THE HOURS OF 6:00 P.M. AND 6:00 A.M. OR ON WEEKENDS SO THAT TRAFFIC REQUIRED TO USE THE AMERICAN AGGREGATE HAUL ROAD OR RAILROAD MAY BE MAINTAINED. THE CONTRACTOR SHALL NOTIFY AMERICAN AGGREGATES 48 HOURS IN ADVANCE OF THIS OPERATION.

CONSTRUCT AMERICAN AGGREGATES HAUL ROAD BETWEEN 12+70 AND 10+30 IN TWO STAGES SO THAT ONE-WAY OPERATION MAY BE MAINTAINED DURING THIS CONSTRUCTION.

TRAFFIC SHALL BE MAINTAINED ON S.R. 104 (N.B.), RAMP F-F, TEMPORARY ROADS 5, 6, 7, 8 & 9, AND RAMPS A, A-A, B-B & D-D AS INDICATED ON THE PLANS.

STAGE 3, PHASE C

CONSTRUCT S.R. 104 (E.B.) BETWEEN 28+50 AND 29+75. CONSTRUCT RAMP D-D TO 32+00.

TRAFFIC SHALL BE MAINTAINED ON S.R. 104 (N.B.), RAMP F-F, TEMPORARY ROADS 5, 6, 7 & 8 AND RAMPS A, A-A, B-B AND C-C AS INDICATED ON THE PLANS.

FOLLOWING THE COMPLETION OF CONSTRUCTION OF THIS PHASE, THE MEDIAN AND CURB BETWEEN 8+25 & 7+80 SHALL BE CONSTRUCTED.

ALTERNATE METHODS

IF THE CONTRACTOR SO ELECTS, HE MAY SUBMIT ALTERNATE METHODS FOR THE MAINTENANCE OF TRAFFIC PROVIDED THE INTENT OF THE ABOVE PROVISIONS IS FOLLOWED AND NO ADDITIONAL INCONVENIENCE TO THE PUBLIC RESULTS THEREFROM. NO ALTERNATE PLAN SHALL BE PLACED INTO EFFECT UNTIL APPROVAL HAS BEEN GRANTED IN WRITING BY THE DIRECTOR.

TEMPORARY CONNECTIONS AND MAINTENANCE OF LOCAL TRAFFIC

100 CUBIC YARDS OF TYPE A OR 2 410 AGGREGATE, 100 CUBIC YARDS OF TYPE C 410 AGGREGATE AND 9 TONS OF 615 CALCIUM CHLORIDE ARE PROVIDED TO BE USED AT THE DIRECTION OF THE ENGINEER FOR MAINTAINING TRAFFIC.

DUST CONTROL

20 TONS OF 615 CALCIUM CHLORIDE AND 400 M GALLONS OF 615 WATER ARE PROVIDED TO BE USED AT THE DIRECTION OF THE ENGINEER FOR DUST CONTROL WITHIN THE LIMITS OF THE PROJECT.

TRAFFIC CONTROL DEVICES

THE INSTALLATION, TEMPORARY ADJUSTMENT & SUPPORT AND OPERATION OF ALL TRAFFIC CONTROLS AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH ITEM 614 AND ITEM 625 MAINTAINING EXISTING TRAFFIC SIGNALS (SEE TRAFFIC SIGNAL SPECIFICATIONS).

ITEM 614 PAYMENT

PAYMENT FOR ALL THE PRECEDING IS INCLUDED WITH ITEM 614 - MAINTAINING TRAFFIC, ITEM 615 - TEMPORARY ROADS AND PAVEMENTS OR ITEM 616 - DUST CONTROL.

614 TEMPORARY SIGNS AND SUPPORTS FOR MAINTAINING TRAFFIC

THE FOLLOWING REQUIREMENTS SHALL BE ADHERED TO REGARDING MATERIALS AND PLACEMENT OF SIGNS TO BE FURNISHED, INSTALLED, MAINTAINED, AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE PLANS.

SIGNS SHALL BE ALUMINUM SHEET OR PLYWOOD TYPE WITH REFLECTIVE SHEETING IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 815. SIGN MATERIAL SHALL CONFORM WITH THE FOLLOWING SCHEDULE:

INDIVIDUAL SIGN AREA	MATERIAL
LESS THAN 10 SQ. FT.	0.080 ALUM. SHEET
10 TO 15 SQ. FT.	0.10 ALUM. SHEET
16-20 SQ. FT.	0.100 ALUM. SHEET
OVER 20 SQ. FT.	3/8 INCH PLYWOOD

THE CONTRACTOR SHALL HAVE THE OPTION OF FURNISHING EXTRUDED ALUMINUM PANELS AS A SUBSTITUTE FOR PLYWOOD

ALL SUPPORTS FOR GROUND MOUNTED SIGNS NOT ERECTED ON BRIDGE OR OVERPASS MOUNTED SHALL BE STEEL CHANNEL TYPE, DRIVEN TO A MINIMUM DEPTH OF 5 FEET. SIGNS SHALL HAVE 1, 2 OR 3 SEPARATE SUPPORTS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

TOTAL SIGN ASSEMBLY AREA (SQ. FT.)	SUPPORT TYPE: SIGN LENGTH (AREA)		
	9 FT. OR LESS (9 SQ. FT.)	9-10 FT. (10 SQ. FT.)	11 FT. OR OVER (11 SQ. FT.)
10 OR LESS	1-4 LB. POST	2-3 LB. POST	-
11-20	1-6 LB. BEAM	2-4 LB. POST	-
21-40	-	2-6 LB. BEAM	2-6 LB. BEAM
41-75	-	-	3-6 LB. BEAM

SUPPORTS FOR GROUND MOUNTED SIGNS GREATER THAN 75 SQ. FT. IN AREA SHALL BE AS DIRECTED BY THE ENGINEER.

MOUNTING HEIGHT AND LATERAL PLACEMENT OF TEMPORARY SIGNS SHALL BE IN ACCORDANCE WITH FIGURES 2-2 AND 5-1 ON PAGES 2-4 AND 15 OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

STANDARDS AND SIGN LAYOUTS FOR TEMPORARY SIGNS ARE AVAILABLE FROM THE OFFICE OF HIGHWAY DESIGN SERVICES, 25 SOUTH FRONT ST. COLUMBUS, OHIO 43215.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ALL TEMPORARY SIGNS AND SUPPORTS WHEN NO LONGER NEEDED, AND HE SHALL RESTORE EACH SIGN SITE TO ITS ORIGINAL CONDITION.

ALL SIGNS AND SUPPORTS FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTR

BASIS OF PAYMENT FOR THE ABOVE DESCRIBED WORK SHALL BE INCLUDED IN THE LUMP SUM ITEM OF WORK FOR ITEM 614, MAINTAINING TRAFFI

		ITEM
		100% STATE
SHEET NO.	DESCRIPTION	TEMP PAVT. Class A S.Y.
27	Temporary Road #1	253
28	Temporary Road #2	60
29	Temp. Pvt (8.60 to 9.50)	98
30	Temp. Pvt (9.36 to 9.80)	16
31	Temp. Pvt (9.35 to 9.82)	52
31	Temporary Road #3	
32	Temp. Pvt (8.90 to 9.30)	13
32	Temporary Road #4	
32	Temporary Road #5	
33	Temporary Road #6	225
34	Temporary Road #7	150
35	Temporary Road #8	
TOTALS TO GENERAL SUMMARY		1791

TEMP ROADS Class A	
LUMP	
LUMP	
-	
-	
-	
-	
LUMP	
LUMP	
LUMP	
LUMP	

GENERAL SUMMARY

Quantities by ... 10/70
Checked by ... 10/70

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

SHEET NUMBERS

100% STATE PARTICIPATION: 11, 13, 17, 21, 22, 23, 39, 40, 54, 55, 56, 77

STATE & CITY PARTICIPATION: 11, 13, 17, 19, 22, 23, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 76, 80, 83

TOTALS 100% STATE	TOTALS STATE & CITY	TOTALS PROJECT TOTAL	ITEM	UNIT	DESCRIPTION
					ROADWAY
Lump	Lump	Lump	201	Lump	Clearing and Grubbing
7		7	202	C.Y.	Portions of Existing Structures Re[illegible]
540	2,162	2,702	202	S.Y.	Existing Pavement Removed and Disp[illegible]
14		14	202	Ea.	Precast Traffic Dividers Removed
616		616	202	L.F.	Existing Curb & Gutter Removed and [illegible]
49		49	202	S.Y.	Existing Concrete Median Removed [illegible]
	50	50	202	S.F.	Existing Sidewalk Removed and Dis[illegible]
17,383	44,746	62,129	203	C.Y.	Excavation, not including Embankme[illegible] Construction, as per plan
43,207	164,507	207,714	203	C.Y.	Embankment
988	49,640	50,628	203	C.Y.	Embankment, using Granular Material
	19,185	19,185	203	C.Y.	Embankment, using Granular Materia[illegible] Excavation of Unsuitable Material, as [illegible]
18,036	55,708	73,744	203	S.Y.	Subgrade Compaction
6	19	25	203	Hours	Proof Rolling
50	50	100	410	C.Y.	Traffic Compacted Surface, Type A
50	50	100	410	C.Y.	Traffic Compacted Surface, Type C
11	38	49	604	Ea.	Centerline Reference Monument
712.5	262.5	975	606	L.F.	Guard Rail, Type 4
1,811	5,614	7,425	606	L.F.	Guard Rail, Type 5
2	4	6	606	Ea.	Approach End Assembly, Single [illegible]
5	10	15	606	Ea.	Anchor Assembly
	3	3	606	Ea.	Bridge Terminal Assembly
2,242	5,606	7,848	607	L.F.	Fence, Type 47
	49	49	607	L.F.	Fence, Type CL, 8' modified as per [illegible]
	1	1	607	Ea.	Gate, Type CL, 8' modified as per [illegible]
	2	2	607	Ea.	Vehicular Gate, Type 47
1	1	2	607	Ea.	Walk Gate, Type 47
	270	270	608	S.F.	4" Concrete Walk
Lump	Lump	Lump	615	Lump	Temporary Roads
1,711	2,165	3,876	615	S.Y.	Temporary Pavement, Class "A"
200	200	400	616	M.Gal.	Water
12	12	24	616	Tons	Calcium Chloride
					BUILDING REMOVALS
	Lump	Lump	202	Lump	Parcel 4-WL, Removal of one 2 [illegible] combination clubhouse - residence [illegible] attached frame garage, concrete [illegible] raft type boat dock; one metal [illegible] with concrete floor and concrete [illegible] ramp, on frame drive
					PAVEMENT
759	2,337	3,1[illegible]	301	C.Y.	Bituminous Aggregate Base, 302 or 302.09 BT-1 or BT-2
840	[illegible]	4,3[illegible]	304	C.Y.	Aggregate Base
11,379	33,5[illegible]	44,9[illegible]	305	S.Y.	8" Portland Cement Concrete Ba[illegible]
253	[illegible]	[illegible]	310	C.Y.	Subbase
2,280	[illegible]	[illegible]	310	S.Y.	Subbase, Grading "A"
552	1,6[illegible]	2,18[illegible]	402	C.Y.	Asphalt Concrete (60-70)
157	[illegible]	[illegible]	402	C.Y.	Asphalt Concrete (85-100)
401	1,165	1,566	404	C.Y.	Asphalt Concrete (60-70)
157	627	784	404	C.Y.	Asphalt Concrete (85-100)

GENERAL SUMMARY

Quantities by [illegible] 10/70
Checked by [illegible] 10/70

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

SHEET NUMBERS

100% STATE PARTICIPATION: 11 13 17 21 22 23 39 40 54 55 58 77

STATE & CITY PARTICIPATION: 11 13 17 19 22 23 40 41 42 43 44 45 46 47 48 49 50 51 52 53 78 80 83

TOTALS

100% STATE	STATE & CITY	PROJECT TOTAL	ITEM	UNIT	DESCRIPTION
					PAVEMENT (cont.)
1,136	4,007	5,143	407	Gal.	Tack Coat 702.04, MS-2 or RS-1, or R[illegible] RC-70 or SC-250
	476	476	408	Gal.	Bituminous Prime Coat 702.09, RT-2 or [illegible]
999	3,974	4,973	409	Gal.	Seal Coat Bituminous Material, as pe[illegible]
27	107	134	409	C.Y.	Seal Coat Cover Aggregate, No. 9
	157	157	609	L.F.	Curb, Standard Type 2-B
230		230	609	L.F.	Curb, Standard Type 6
77	473	550	609	L.F.	Curb, Standard Type 7
100	496	596	609	L.F.	Curb, Standard Type 8
	338	338	609	L.F.	Asphalt Concrete Curb, Standard Typ[illegible]
	810	810	611	S.Y.	Reinforced Concrete Approach Slab[illegible]
343		343	612	S.Y.	Concrete Median
34	3,173	3,207	622	L.F.	Concrete Barrier
50	180	230	622	L.F.	Concrete Barrier, as per plan
					EROSION CONTROL
362	55	417	601	C.Y.	Rock Channel Protection, Type B
	2,000	2,000	601	C.Y.	Dumped Rock Fill, Type B
30,330	12,254	42,584	659	S.Y.	Seeding and Mulching, as per plan
2.41	5.55	7.96	659	Ton	Commercial Fertilizer 18-46-0, as p[illegible]
16.06	37.01	53.07	659	Ton	Agricultural Liming
540	1,535	2,075	660	S.Y.	Sodding
	177	177	660	S.Y.	Sodding for Special Berm and Slope, as per plan
4,829	8,470	13,299	630	S.Y.	Seeding and Excelsior Matting, as p[illegible]
					DRAINAGE
2		2	202	Ea.	Catch Basins Removed or Abandon[illegible]
68		68	202	L.F.	Pipe Removed, over 24"
3.7	2.3	6.0	602	C.Y.	Concrete Masonry
50	72	122	603	L.F.	6" Conduit, Type B
150	263	413	603	L.F.	6" Conduit, Type F
118		118	603	L.F.	12" Conduit, Type C
22	50	100	603	L.F.	12" Conduit, Type D
489	887	1,372	603	L.F.	15" Conduit, Type B
	10	110	603	L.F.	15" Conduit, Type C, 706.01, 706.02 [illegible]
66	264	330	603	L.F.	15" Conduit, Type F
12		12	603	L.F.	18" Conduit, Type A, 706.01, 706.02 or 7[illegible]
	54	54	603	L.F.	18" Conduit, Type B
	10	10	603	L.F.	18" Conduit, Type F
	46	46	603	L.F.	21" Conduit, Type A, 706.01, 706.02 or [illegible]
30		30	603	L.F.	30" Conduit, Type A, 706.02 or 706.[illegible]
8		8	603	L.F.	36" Conduit, Type A, 706.02 or 70[illegible]
128		128	603	L.F.	54" Conduit, Type B
	2	2	604	Ea.	Standard No. 2-4 B Catch Basin
1		1	604	Ea.	Standard No. 4 Catch Basin
1		1	604	Ea.	Standard No. 2-4 Catch Basin
	5	5	604	Ea.	Standard No. 5 Catch Basin
1		1	604	Ea.	Standard No. 5-4 Catch Basin
1		1	604	Ea.	Standard No. 2-4-12 Paved Shoulder [illegible]
1		1	604	Ea.	Standard No. 5-4-12 Paved Shoulder [illegible]
1	5	6	604	Ea.	Standard No. 2-4 B Median Inlet

GENERAL SUMMARY

Quantities by [illegible] 10/70
Checked by [illegible] 10/70

FED. AID DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNT
FRA-104-8.04

100% STATE PARTICIPATION												SHEET NUMBERS STATE & CITY PARTICIPATION																			TOTALS 100% STATE	PROJECT	ITEM	UNIT	STATE & CITY TOTAL	DESCRIPTION
11	13	17	21	22	23	39	40	54	55	58	77	11	13	17	19	22	23	40	41	42	68	44	45	46	47	48	49	50	51	52	53	78	60	83						
																				42																		DRAINAGE (cont.)
			1,004	1,409	277	443	411													61	640	214	1,200	1,175	700	788	673	1,200	400	1,263	1,213	527	440								42	42	605	L.F.	Aggregate Drains
																																			3,544	10,624	14,168	605	L.F.	6" Shallow Pipe Underdrains
						366					270																					246				696		696	Special	L.F.	Pav. Cleanout
																																				2.53	253	Special	C.Y.	12" Reinforced Concrete Collar Sta
																																								SANITARY SEWER
																																								See Sheet No. 124 for Quantities
																																								LIGHTING
																																								See Sheet No. 193 for Quantities
																																								TRAFFIC CONTRO
																																								See Sheet No. 149 for Quantities
																																								WATER MAINS
																																								See Sheet No. 124 for Quantities
																																								MUNICIPAL POWE
																																								See Sheet No. 131 for Quantities
																																								STRUCTURES OVER 20
																																								Structure No. FRA-104-0830. See Sheet No. 204 for Quantities
																																								Structure No. FRA-104-0554. See Sheet No. 219 for Quantities
Lump												Lump																							Lump	Lump	Lump	0.8	Lump	Maintaining Traffic
Lump												Lump																							Lump	Lump	Lump	0.7	Lump	Construction Layout Stake
																																								Field Office

Quantities by: [illegible]
Checked by: - SRT 9/76

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

® as per plan

* Including Excavation of unsuitable Material, as per plan

LOCATION STATION TO STATION	100% STATE PARTICIPATION Excavation C.Y.	100% STATE PARTICIPATION Embankment C.Y.	100% STATE PARTICIPATION Emb Using Granular Material ® C.Y.	STATE & CITY PARTICIPATION Excavation C.Y.	STATE & CITY PARTICIPATION Embankment C.Y.	STATE & CITY PARTICIPATION Emb. Using Granular Material ® C.Y.	100% STATE Exc. unsuitable for Emb. C.Y.	STATE & CITY Exc. unsuitable for Emb. C.Y.	STATE & CITY Emb. Using Granular Material * C.Y.	SEEDING 100% STATE S.Y.	SEEDING STATE & CITY S.Y.	SEEDING & EXCELSIOR MATTING 100% STATE S.Y.	SEEDING & EXCELSIOR MATTING STATE & CITY S.Y.
S.R. 104													
98+35 to 10+00	3,797	1,561								3,238			
10+00 to 25+00	4,374	22,263	888	916	15,293		2,976	13,279		4,3[illegible]	21,559	1,692	[illegible]
25+00 to 40+00				17,962	105,778	45,506			10,048		11,[illegible]		5,901
40+00 to 50+00				1,902	21,295	4,376			9,137		3,223		2,362
EL. RAMP "F"													
69+00 to 71+56	400	227								4,164			
73+08 to 81+00	748	2,621								2,[illegible]		1,228	
RAMP "F-F"													
0+50 to 5+00	2,266	6,381								3,1[illegible]		1,512	
S.R. 104 N.B.													
99+75 to 100+00	407	350								1,72[illegible]			
INLAND PRODUCTS DRIVE													
8+82 to 10+00	159	1,732								1,[illegible]72			
AMERICAN AGGREGATES HAUL RD.													
12+74 to 18+14				6,601	1,756						3,443		
RAMP "A"													
50+00 to 58+75				1,274							1,497		
BICYCLE TRAIL													
0+00 to 3+27				298							745		
SERVICE ROAD "A-A"													
18+20 to 33+35	1,156	5,086								6,386			
33+35 to 74+35				904	2,397						10,574		
EXCAVATION SUB TOTAL	14,357	40,231		31,517	151,228		2,976	13,279					
EXC. UNSUITABLE FOR EMBANKMENT	2,976	2,976		13,279	13,279								
TOTALS TO GENERAL SUMMARY	17,333	43,207	888	44,796	164,507	49,880			9,135	*20,2[illegible]	*[illegible]	2,82[illegible]	[illegible]

* Seeding Quantities Tabulated on Cross Sections Include Excelsior Quantities.

Item 659 - Commercial Fertilizer ([illegible])					To Gen. Summary
Participation	Sodding S.Y.	Seeding S.Y.	Excelsior S.Y.		Tons
100% State	941 + 30,350 + [illegible]			[illegible]	[illegible]
State & City	1,275 + 77,228 + 8,[illegible]			[illegible]	[illegible]

EARTHWORK CALCULATIONS
~ Project Totals ~

203 Excavation .... 66,129 C.Y.

203 Excavation Unsuitable for Embankment ---- 16,255 C.Y.

EXCAVATION AVAILABLE FOR EMBANKMENT ---- 49,874 C.Y.

203 Embankment ---- 207,714 C.Y.

203 Embankment Using Granular Material ---- 58,528 C.Y.

203 Embankment Using Granular Material Including Exc. for Unsuitable Material ---- 19,185 C.Y.

TOTAL EMBANKMENT 277,427 C.Y.

Item 659 - Agricultural Liming					To Gen. Summary
Participation	Sodding S.Y.	Seeding S.Y.	Excelsior S.Y.		Tons
100% State	890 + 30,8[illegible]			[illegible]	[illegible]
State & City	[illegible]			[illegible]	[illegible]

Item	Description	Unit	Participation: 100% State	Participation: State & City	Project Total	Sheet
[illegible]	Reference Monuments	Ea.		53	[illegible]	[illegible]
607	Fence, Type 47	L.F.	[illegible]	[illegible]	3,808	134
607	Fence, Type [illegible]	L.F.		[illegible]	[illegible]	134
607	Gate, Type [illegible]	Ea.		[illegible]	[illegible]	134
607	Vehicular Gate, [illegible]	Ea.		[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]			[illegible]	[illegible]
Totals to General Summary						

EXCELSIOR COMPUTATIONS STATION	100% STATE LENGTH	100% STATE S.Y.	STATE & CITY LENGTH	STATE & CITY S.Y.
S.R. 104				
11+00 Lt.	56			
		891		
13+00 Lt.	62			
		760		
15+00 Lt.	28			
		378		
16+50 Lt.	53			
20+19 Lt.			0	
				0
22+00 Lt.			38	
25+50 Lt.			40	
				235
27+00 Lt.			53	
				372
28+00 Lt.			20	
				[illegible]
29+00 Lt.			42	
				188
30+00 Lt.			46	
				288
31+00 Lt.			40	
				423
32+00 Lt.			36	
				385
33+00 Lt.			34	
				217
34+00 Lt.			5	
				174
[illegible]			[illegible]	
[illegible]			4	
				78
37+00 Lt.			16	
				217
38+00 Lt.			46	
				392
39+00 Lt.			21	
				372
40+00 Lt.			36	
				406
41+00 Lt.			[illegible]	
				4[illegible]
42+00 Lt.			[illegible]	
				4[illegible]
43+00 Lt.			[illegible]	
				40[illegible]
44+00 Lt.			26	
				40[illegible]
45+00 Lt.			[illegible]	
				40[illegible]
46+00 Lt.			[illegible]	
				1[illegible]
47+00 Lt.			34	
				300
48+00 Lt.			[illegible]	
				[illegible]
49+00 Lt.			[illegible]	
50+00 Lt.			[illegible]	
				[illegible]
[illegible]			[illegible]	
[illegible]			[illegible]	
52+00 Lt.			26	
				[illegible]
53+00 Lt.			24	
				1[illegible]
54+00 Lt.			[illegible]	

EXCELSIOR COMPUTATIONS (CONT'D)	100% STATE LENGTH	100% STATE S.Y.	STATE & CITY LENGTH	STATE & CITY S.Y.
34+30 Lt.			16	
				78
34+50 Lt.			10	
RAMP "E"				
[illegible]+50	56			
		306		
[illegible]+50	54			
		292		
[illegible]+50	51			
		206		
2+00	22			
		129		
2+50	[illegible]			
		170		
3+00	57			
		211		
3+50	57			
		203		
4+00	56			
		200		
4+50	35			
		1[illegible]		
5+08	23			
RAMP "F"				
73+08	23			
		342		
74+00	34			
		361		
75+00	31			
		339		
76+00	30			
		182		
76+50	36			
TOTALS	→	4,229		3,472

SUMMARY OF QUANTI

Quantities by JP 10/70
Checked by [illegible] 10/70

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

PARTICIPATION
◎ 100% State Participation
• State & City Participation

FRANKLIN COUNTY, FRA-104

LOCATION Station to Station		Typical Section	Length Lin. Ft.	404 1¼" Asphalt Concrete (60-70)	Cu. Yds.	402 1½" Asphalt Concrete (60-70)	Cu. Yds.	407 Tack Coat	Gals.	305 8" Portland Cement Conc. Base	Sq. Yds.	310 Subbase - Grading "A"	Cu. Yds.	409 Seal Coat, Bituminous Mate[rial]
MAIN LINE														
E.B. LANES														
48+35.00	6+25.00 ◎	C	100.18	100.18 (24+40) ½ x ¼ x 0.0347	13.33	384.02 x 0.0486	18.66	384.02 x 0.10	38.40	384.02	384.02	100.18 (32.67+45.67) ½ x 0.5 x 1/27	70.81	100.18 x 4.00 x ½ x 0.30
6+25.00	6+40.00 ◎	C	15.00	15.00 x 40.00 x ¼ x 0.0347	2.31	66.67 x 0.0486	3.24	66.67 x 0.10	6.67	66.67	66.67	15.00 x 43.67 x 0.5 x 1/27	12.13	15.00 x 9.667 x ½ x 0.30
6+40.00	6+70.00 ◎	D	30.00	30.00 x (40+44) ½ x ¼ x 0.0347	6.15	148.33 x 0.0486	7.21	148.33 x 0.10	14.83	148.33	148.33	30.00 x 47.17 x 0.5 x 1/27	26.21	30.00 x 4.833 x ½ x 0.30
6+70.00	8+90.00 ◎	D-E	220.00	220.00 x 46 x ¼ x 0.0347	39.02	1124.44 x 0.0486	54.65	1124.44 x 0.10	112.44	1124.44	1124.44	220.00 x 46.00 x 0.5 x 1/27 + 2.97	190.38	60.00 x 8.00 x ½ x 0.30
8+90.00	12+75.00 ◎	E	385.00	385.00 x 38 x ¼ x 0.0347	54.41	1625.55 x 0.0486	79.00	1625.55 x 0.10	162.56	1625.55	1625.55	(50.0 x 14.0 + 335.0 x 40.67) 0.5 x 1/27	237.41	335.00 x 8.00 x ¼ x 0.30
12+75.00	13+75.00 ◎	E	100.00	100.00 x 36 x ¼ x 0.0347	13.88	400.00 x 0.0486	19.44	400.00 x 0.10	40.00	400.00	400.00	100.00 x 43.67 x 0.5 x 1/27	80.87	100.00 x 19.00 x ¼ x 0.30
13+75.00	14+79.08 ◎	B	104.08	104.08 x 36 x ¼ x 0.0347	14.45	416.32 x 0.0486	20.23	416.32 x 0.10	41.63	416.32	416.32	104.08 x 48.07 x 0.5 x 1/27 + 1.78	95.09	104.08 x 16.00 x ¼ x 0.30
14+79.08	16+92.74 •	A-B	213.66	213.66 x 36 x ¼ x 0.0347	29.66	854.64 x 0.0486	41.54	854.64 x 0.10	85.46	854.64	854.64	213.66 x 48.67 x 0.5 x 1/27 + 2.63	195.20	213.66 x 16.00 x ¼ x 0.30
16+92.74	17+17.74 •		25.00									25.00 x 48.67 x 0.5 x 1/27 + 0.31	22.84	25.00 x 16.00 x ¼ x 0.30
24+06.26	24+31.26 •		25.00									12.12.75 x 0.5 x 1/27 + 0.31	23.01	25.00 x 16.00 x ¼ x 0.30
24+31.26	30+00.00 •	A	568.74	568.74 x 36 x ¼ x 0.0347	78.94	2274.96 x 0.0486	110.56	2274.96 x 0.10	227.50	2274.96	2274.96	568.74 x 46.0 x 0.5 x 1/27 + 7.00	491.48	568.74 x 8.00 x ¼ x 0.30
30+00.00	31+00.00 •	A	100.00	100.00 x 36 x ¼ x 0.0347	13.88	400.00 x 0.0486	19.44	400.00 x 0.10	40.00	400.00	400.00	100.00 x 48.67 x 0.5 x 1/27 + 1.23	91.30	100.00 x 17.00 x ¼ x 0.30
31+00.00	34+56.12 •	A	356.12	356.12 x 36 x ¼ x 0.0347	49.43	1424.48 x 0.0486	69.23	1424.48 x 0.10	142.45	1424.48	1424.48	356.12 x 48.67 x 0.5 x 1/27 + 4.38	325.35	356.12 x 16.00 x ¼ x 0.30
34+56.12	34+81.12 •		25.00									25.00 x 48.67 x 0.5 x 1/27 + 0.31	22.84	25.00 x 16.00 x ¼ x 0.30
35+96.62	36+21.62 •		25.00									25.00 x 48.67 x 0.5 x 1/27 + 0.31	22.84	25.00 x 16.00 x ¼ x 0.30
36+21.62	40+15.00 •	A	393.38	393.38 x 36 x ¼ x 0.0347	54.60	1573.52 x 0.0486	76.47	1573.52 x 0.10	157.35	1573.52	1573.52	393.38 x 48.67 x 0.5 x 1/27 + 4.84	359.39	393.38 x 16.00 x ¼ x 0.30
40+15.00	49+00.00 •	A	885.00	885.00 x 36 x ¼ x 0.0347	122.84	3540.00 x 0.0486	172.04	3540.00 x 0.10	354.00	3540.00	3540.00	885.00 x 46.0 x 0.5 x 1/27 + 10.89	764.79	885.00 x 8.00 x ¼ x 0.30
49+00.00	57+95.00 •	A	895.00									895.00 x 46.0 x 0.5 x 1/27 + 11.07	773.51	895.00 x 8.00 x ¼ x 0.30
W.B. LANES														
48+35.00	6+40.00 ◎	C	115.18	115.18 x 25.44 x ¼ x 0.0347	11.74	338.37 x 0.0486	16.44	338.37 x 0.10	33.84	338.37	338.37	115.18 x 30.11 x 0.5 x 1/27	64.22	115.18 x 8.00 x ¼ x 0.30
6+40.00	6+70.00 ◎	D	30.00	30.00 x 27.00 x ¼ x 0.0347	3.12	90.00 x 0.0486	4.37	90.00 x 0.10	9.00	90.00	90.00	30.00 x 35.50 x 0.5 x 1/27 + 0.55	25.27	30.00 x 8.00 x ¼ x 0.30
6+70.00	7+82.00 ◎	D	112.00	112.00 x 30.25 x ¼ x 0.0347	13.20	380.30 x 0.0486	18.48	380.30 x 0.10	38.03	380.30	380.30	112.00 x 37.16 x 0.5 x 1/27 + 8.80	79.78	112.00 x 8.00 x ¼ x 0.30
7+82.00	8+90.00 ◎	D-E	108.00	108.00 x 34.00 x ¼ x 0.0347	14.16	408.00 x 0.0486	19.83	408.00 x 0.10	40.80	408.00	408.00	[illegible]	69.81	76.00 x 8.00 x ¼ x 0.30
8+90.00	12+28.81 ◎	E	338.81	338.81 x 37.00 x ¼ x 0.0347	48.26	1390.83 x 0.0486	67.59	1390.83 x 0.10	139.08	1390.83	1390.83	338.81 x 43.00 x 0.5 x 1/27 + 4.18	311.18	338.81 x 8.00 x ¼ x 0.30
12+28.81	12+75.00 ◎	E	46.19	46.19 x 37.00 x ¼ x 0.0347	6.66	191.95 x 0.0486	9.33	191.95 x 0.10	19.20	191.95	191.95	46.19 x 42.00 x 0.5 x 1/27 + 0.76	42.97	
12+75.00	13+00.00 ◎	E	25.00	25.00 x 36.50 x ¼ x 0.0347	3.52	101.39 x 0.0486	4.93	101.39 x 0.10	10.14	101.39	101.39	25.00 x 41.50 x 0.5 x 1/27 + 0.09	22.30	
13+00.00	13+75.00 ◎	E	75.00	75.00 x 29.00 x ¼ x 0.0347	2.89	241.67 x 0.0486	11.75	241.67 x 0.10	24.17	241.67	241.67	75.00 x 38.10 x 0.5 x 1/27 + 0.93	61.00	75.00 x 8.00 x ¼ x 0.30
13+75.00	14+79.08 ◎	B	104.08	104.08 x 24.00 x ¼ x 0.0347	9.64	277.55 x 0.0486	13.50	277.55 x 0.10	27.76	277.55	277.55	104.08 x 24.00 x 0.5 x 1/27 + 1.29	46.82	104.08 x 8.00 x ¼ x 0.30
14+79.08	16+53.30 •	B	174.22	174.22 x 24.00 x ¼ x 0.0347	16.18	464.58 x 0.0486	22.58	464.58 x 0.10	46.46	464.58	464.58	174.22 x 31.00 x 0.5 x 1/27 + 2.15	111.84	174.22 x 8.00 x ¼ x 0.30
16+53.30	16+92.74 •	A	39.44	39.44 x 36.00 x ¼ x 0.0347	5.47	157.76 x 0.0486	7.67	157.76 x 0.10	15.78	157.76	157.76	39.44 x 45.00 x 0.5 x 1/27 + 0.49	33.04	39.44 x 8.00 x ¼ x 0.30
16+92.74	17+17.74 •		25.00									25.00 x 41.67 x 0.5 x 1/27 + 0.31	22.54	25.00 x 16.00 x ¼ x 0.30
24+06.26	24+31.26 •		25.00									[illegible] x 0.5 x 1/27 + 0.31	23.30	25.00 x 16.00 x ¼ x 0.30
24+31.26	29+00.00 •	A	468.74	468.74 x 40.00 x ¼ x 0.0347	65.06	1874.96 x 0.0486	91.12	1874.96 x 0.10	187.50	1874.96	1874.96	468.74 x 46.00 x 0.5 x 1/27 + 5.72	405.07	468.74 x 8.00 x ¼ x 0.30
29+00.00	30+56.00 •	A	156.00	156.00 x 36.00 x ¼ x 0.0347	21.65	624.00 x 0.0486	30.33	624.00 x 0.10	62.40	624.00	624.00	156.00 (56.0 + 60.0) ½ x 0.5 x 1/27 + 1.93	170.25	156.00 (8 + 32) ½ x ¼ x 0.30
30+56.00	34+56.12 •	A	400.12	400.12 x 40.00 x ¼ x 0.0347	55.47	1600.48 x 0.0486	77.78	1600.48 x 0.10	160.05	1600.48	1600.48	400.12 x 48.67 x 0.5 x 1/27 + 4.92	365.57	400.12 x 16.00 x ¼ x 0.30
34+56.12	34+81.12 •		25.00									25.00 x 48.67 x 0.5 x 1/27 + 0.31	22.84	25.00 x 16.00 x ¼ x 0.30
35+96.62	36+21.62 •		25.00									25.00 x 48.67 x 0.5 x 1/27 + 0.31	22.84	25.00 x 16.00 x ¼ x 0.30
36+21.62	36+70.00 •	A	48.38	48.38 x 36.0 x ¼ x 0.0347	6.72	193.52 x 0.0486	9.41	193.52 x 0.10	19.35	193.52	193.52	48.38 x 48.67 x 0.5 x 1/27 + 0.60	44.20	48.38 x 16.00 x ¼ x 0.30
36+70.00	41+50.00 •	A	480.00	480.00 x 41.0 x ¼ x 0.0347	77.73	2240.00 x 0.0486	108.86	2240.00 x 0.10	224.00	2240.00 [illegible]	2240.00	480.00 x 54.0 x 0.5 x 1/27 + 5.91	485.91	480.00 x 16.00 x ¼ x 0.30
41+50.00	49+00.00 •	A	750.00	750.00 x 35.0 x ¼ x 0.0347	104.10	3000.00 x 0.0486	145.80	3000.00 x 0.10	300.00	3000.00	3000.00	750.00 x 46.00 x 0.5 x 1/27 + 9.23	648.12	750.00 x 8.00 x ¼ x 0.30
49+00.00	57+95.00 •	A	895.00									895.00 x 46.0 x 0.5 x 1/27 + 11.07	773.51	895.00 x 8.00 x ¼ x 0.30
SUB-TOTALS CARRIED TO SHEET 80	◎				363.86		366.63		718.07		1782.18		[illegible]	
SUB-TOTALS CARRIED TO SHEET 80	•				701.74		982.63		2412.50		20239.18		[illegible]	

Area for Proof Rolling or Subgrade Compaction:
◎ 1478.56 Sq. Yds.
• 5189.10 Sq. Yds.

Quantities by JP 10/70
Checked by [illegible] 10/70

PARTICIPATION
⊚ 100% State Participation
* State & City Participation

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY, FRA-10

LOCATION Station to Station		Typical Section	Length Lin. Ft.	409 Seal Coat Cover Aggregate No. 8	Cu. Yds.	301 Bituminous Aggregate Base	Cu. Yds.	304 Aggregate Base	Cu. Yds.	310 Subbase Regular Grading	Cu. Yds.	612 Concrete Median	Sq. Yds.	611 Approach Slabs
MAINLINE														
E.B. LANES														
48+35.00	6+85.00 ⊚	C	100.18	44.52 x 0.008	0.36	44.52 x 0.25 x [illegible]	3.70	44.52 x 0.667 x [illegible]	9.88	100.18 x 1.33 x ½ x 0.260 x ½	1.28			
6+85.00	6+40.00 ⊚	C	15.00	7.78 x 0.008	0.06	7.78 x 0.083	0.65	7.78 x 0.222	1.72	15.00 x 2.000 x ½ x 0.280 x ⅓	0.41			
6+40.00	6+70.00 ⊚	D	30.00	22.22 x 0.008	0.18	22.22 x 0.083	1.84	22.22 x 0.222	4.93	30.00 x 4.000 x ⅓ x 0.280 x ⅓	1.[illegible]			
6+70.00	8+90.00 ⊚	D-E	220.00	58.33 x 0.008	0.43	58.33 x 0.083	4.43	58.33 x 0.222	11.84	80.00 x 5.333 x ⅓ x 0.389 x ⅓	[illegible]			
8+90.00	12+75.00 ⊚	E	385.00	297.78 x 0.008	2.38	297.78 x 0.083	24.72	297.78 x 0.222	66.11	385.00 x 5.333 x ⅓ x 0.389 x ⅓	25.73			
12+75.00	13+75.00 ⊚	E	100.00	144.44 x 0.008	1.16	144.44 x 0.083	11.99	144.44 x 0.222	32.07	100.00 x 5.333 x ⅓ x 0.389 x ⅓	7.68			
13+75.00	14+79.08 ⊚	B	104.08	185.03 x 0.008	1.48	185.03 x 0.083	15.36	185.04 x 0.222	41.08	104.08 x 5.333 x ⅓ x 0.389 x ⅓	7.99			
14+79.08	16+92.74 *	A-B	213.66	379.84 x 0.008	3.04	379.84 x 0.083	31.53	379.84 x 0.222	84.32	213.66 x 5.333 x ⅓ x 0.389 x ⅓	16.41			
16+92.74	17+17.74 *		25.00	44.44 x 0.008	0.36	44.44 x 0.083	3.69	44.44 x 0.222	9.87	25.00 x 5.333 x ⅓ x 0.389 x ⅓	1.92			86.0 x 25.0 x ⅑
24+06.26	24+31.26 *		25.00	44.44 x 0.008	0.36	44.44 x 0.083	3.69	44.44 x 0.222	9.87	25.00 x 5.333 x ⅓ x 0.389 x ⅓	1.92			920.00 x ⅑
24+31.26	30+30.00 *	A	568.74	505.55 x 0.008	4.04	505.55 x 0.083	41.96	505.55 x 0.222	112.23					
30+00.00	31+00.00 *	A	100.00	188.89 x 0.008	1.51	188.89 x 0.083	15.68	188.89 x 0.222	41.93	100.00 x 5.333 x ⅓ x 0.389 x ⅓	9.12			
31+00.00	34+56.12 *	A	356.12	633.10 x 0.008	5.06	633.10 x 0.083	52.15	633.10 x 0.222	140.55	356.12 x 5.333 x ⅓ x 0.389 x ⅓	27.35			
34+56.12	34+81.12 *		25.00	44.44 x 0.008	0.35	44.44 x 0.083	3.69	44.44 x 0.222	9.87	25.00 x 5.333 x ⅓ x 0.389 x ⅓	1.92			36.0 x 25.0 x ⅑
35+96.62	36+21.62 *		25.00	44.44 x 0.008	0.36	44.44 x 0.083	3.69	44.44 x 0.222	9.87	25.00 x 5.333 x ⅓ x 0.389 x ⅓	1.92			36.0 x 25.0 x ⅑
36+21.62	40+15.00 *	A	393.38	699.34 x 0.008	5.59	699.34 x 0.083	58.05	699.34 x 0.222	155.25	393.38 x 5.333 x ⅓ x 0.389 x ⅓	30.21			
40+15.00	49+00.00 *	A	885.00	786.67 x 0.008	6.29	786.67 x 0.083	65.29	786.67 x 0.222	174.64					
49+00	57+95.00 *	A	895.00	795.56 x 0.008	[illegible]	795.56 x 0.083	66.[illegible]	795.56 x 0.222	176.6[illegible]					
W.B. LANES														
48+35.00	6+40.00 ⊚	C	115.18	102.38 x 0.008	0.82	102.38 x 0.083	8.49	102.38 x 0.222	22.73	115.18 x 7.00 x ⅑ x 0.406 x ⅓	12.12			
6+40.00	6+70.00 ⊚	D	30.00	26.67 x 0.008	0.21	26.67 x 0.083	2.21	26.67 x 0.222	5.92	30.00 x 7.00 x ⅑ x 0.406 x ⅓	3.16	30.00 (10.0 + 5.0) ½ x ⅑	25.00	
6+70.00	7+82.00 ⊚	D	112.00	99.56 x 0.008	0.80	99.56 x 0.083	8.26	99.56 x 0.222	22.10	112.00 x 7.00 x ⅑ x 0.406 x ⅓	11.78	112.00 x 5.0 x ⅑	31.33	
7+82.00	8+90.00 ⊚	D-E	108.00	67.56 x 0.008	0.54	67.56 x 0.083	5.61	67.56 x 0.222	15.00	76.00 x 7.00 x ⅑ x 0.406 x ⅓	8.00			
8+90.00	12+28.31 ⊚	E	338.31	293.33 x 0.008	2.35	293.33 x 0.083	24.35	293.33 x 0.222	65.12	310.00 x 7.00 x ⅑ x 0.406 x ⅓	34.72	338.31 x 5.0 x ⅑ − 5.82 − 4.94	177.33	
12+28.31	12+75.00 ⊚	E	46.69									46.69 x 5.0 x ⅑	25.94	
12+75.00	13+00.00 ⊚	E	25.00									25.00 x 5.0 x ⅑	13.89	
13+00.00	13+75.00 ⊚	E	75.00	41.67 x 0.008	0.33	41.67 x 0.083	3.46	41.67 x 0.222	9.25			75.00 x 5.0 x ⅑	[illegible]	
13+75.00	14+79.08 ⊚	B	104.08	92.52 x 0.008	0.74	92.52 x 0.083	7.68	92.52 x 0.222	20.54					
14+79.08	16+53.30 *	B	174.22	154.86 x 0.008	1.24	154.86 x 0.083	12.85	154.86 x 0.222	34.38					
16+53.30	16+92.74 *	B	39.44	70.12 x 0.008	0.56	70.12 x 0.083	5.82	70.12 x 0.222	15.57	39.44 x 5.33 x ⅑ x 0.389 x ⅓	3.03			
16+92.74	17+17.74 *		25.00	44.44 x 0.008	0.36	44.44 x 0.083	3.69	44.44 x 0.222	9.87	25.00 x 5.33 x ⅑ x 0.389 x ⅓	1.92			36.00 x 25.00 x ⅑
24+06.26	24+31.26 *		25.00	44.44 x 0.008	0.36	44.44 x 0.083	3.69	44.44 x 0.222	9.87	25.00 x 5.33 x ⅑ x 0.389 x ⅓	1.92			920.00 x ⅑
24+31.26	29+00.00 *	A	468.74	416.66 x 0.008	3.33	416.66 x 0.083	34.58	416.66 x 0.222	92.50					
29+00.00	33+[illegible] *	A	430.00	381.33 x 0.008	3.05	381.33 x 0.083	31.65	381.33 x 0.222	84.66					
30+30.00	34+56.12 *	A	400.12	711.32 x 0.008	5.69	711.32 x 0.083	59.04	711.32 x 0.222	157.91	400.12 x 5.33 x ⅑ x 0.389 x ⅓	30.73			
34+56.12	34+81.12 *		25.00	44.44 x 0.008	0.36	44.44 x 0.083	3.69	44.44 x 0.222	9.87	25.00 x 5.33 x ⅑ x 0.389 x ⅓	1.92			36.00 x 21.00 x ⅑
										25.00 x 5.33 x ⅑ x 0.389 x ⅓	1.92			36.00 x 21.00 x ⅑
35+96.62	36+21.62 *		25.00	44.44 x 0.008	0.36	44.44 x 0.083	3.69	44.44 x 0.222	9.87					
36+21.62	36+70.00 *	A	48.38	86.01 x 0.008	0.69	86.01 x 0.083	7.14	86.01 x 0.222	19.09	48.38 x 5.33 x ⅑ x 0.389 x ⅓	3.72			
36+70.00	41+50.00 *	A	480.00	853.33 x 0.008	6.83	853.33 x 0.083	70.83	853.33 x 0.222	189.49	480.00 x 5.33 x ⅑ x 0.389 x ⅓	36.86			
41+50.00	49+00.00 *	A	750.00	666.67 x 0.008	5.33	666.67 x 0.083	55.33	666.67 x 0.222	148.00					
49+06.00	57+95.00 *	A	[illegible]	795.56 x 0.008	6.36	795.56 x 0.083	66.0[illegible]	795.56 x 0.222	176.6[illegible]					
TOTALS TO GENERAL SUMMARY														
SUB-TOTALS CARRIED TO SHEET 21 ⊚					[illegible]		182.78		389.50		[illegible]		518.99	
SUB-TOTALS CARRIED TO SHEET 21 *					61.05		7[illegible].53		[illegible]		[illegible]			

CALDWELL ENGINEERING CONSULTANTS, LTD.

PAVEMENT CALCU[LATIONS]

PARTICIPATION
◎ 100% State Participation
• State & City Participation

Quantities by JP 10/70
Checked by [illegible] 10/70

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY, FRA-[illegible]

LOCATION			Typical Section	Length	404		402		407		305		310		409
Station to Station				Lin Ft	1½" Asphalt Concrete (60-70)	Cu. Yds.	1¾" Asphalt Concrete (60-70)	Cu. Yds.	Tack Coat	Gals	8" Portland Cement Conc. Base	Sq. Yds.	Subbase - Grading "A"	Cu. Yds.	Seal Coat Bituminous Mat[erial]
S.R. 104 N.B.															
94+95.00	96+75.00	◎	H	180.00	180.00 x 4.00 x 1/9 x 0.0347	2.78	80.00 x 0.0486	3.89	80.00 x 0.10	8.00	80.00 [illegible]	80.00	180.00 x (4.00 x 2.5 + 3.00 x 0.917) 1/27	21.67	180.00 x 3.50 x 1/9 x 0.30
96+75.00	98+36.00	◎	H	161.00	161.00 x 8.00 x 1/9 x 0.0347	4.97	143.11 x 0.0486	6.96	143.11 x 0.10	14.31	143.11	143.11	161.00 x (8.00 x 0.5 + 3.00 x 0.917) 1/27	31.31	161.00 x 7.00 x 1/9 x 0.30
98+30.00	99+75.00	◎	I	139.00	139.00 x 9.00 x 1/9 x 0.0347	4.82	139.00 x 0.0486	6.76	139.00 x 0.10	13.90	139.00	139.00	139.00 x (9.00 x 0.5 + 3.00 x 0.917) 1/27	29.61	139.00 x 8.00 x 1/9 x 0.30
99+75.00	100+91.00	◎		116.00	105.00 x 52.00 x 1/9 x 0.0347	21.05	606.67 x 0.0486	29.48	606.67 x 0.10	60.67	606.67	606.67	606.67 x 0.5 x 1/3 + 72.00 x 3.00 x .917 x 1/27	106.89	
					1368 x 1/9 x 0.0347	5.27	152.00 x 0.0486	7.39	152.00 x 0.10	15.20	152.00	152.00	1368.00 x 0.490 x 1/27	32.09	400 x 1/9 x 0.30
					604 x 1/9 x 0.0347	2.33	67.11 x 0.0486	3.26	67.11 x 0.10	6.71	67.11	67.11	1200.00 x 0.490 x 1/27	21.78	598 x 1/9 x 0.30
RAMP "F"															
67+86.00	69+32.00	◎		46.00	772.00 x 1/9 x 0.0347	2.98	85.78 x 0.0486	4.17	85.78 x 0.10	8.58	85.78	85.78	1264.00 x 0.49 x 1/27	22.94	692 x 1/9 x 0.30
73+08.00	75+55.00	◎		247.00	247.00 x 17 x 1/9 x 0.0347	16.19	466.56 x 0.0486	22.67	466.56 x 0.10	46.66	466.56	466.56	247.00 [illegible] 1/27	89.97	247.00 x 8.00 x 1/9 x 0.30
75+35.00	81+08.00	◎		553.00	553.00 x 7 x 1/9 x 0.0347	14.92	430.11 x 0.0486	20.90	430.11 x 0.10	43.01	430.11 + 2(85[illegible])	[illegible]	553.00 [illegible]	[illegible]	653.0 x 8.00 x 1/9 x 0.30
RAMP "F-F"															
5+03.00	4+02.00	◎	G	100.06	100.06 x 15 x 1/9 x 0.0347	5.79	166.77 x 0.0486	8.11	166.77 x 0.10	16.68	166.77	166.77	100.06 x (17.65 x 0.5) x 1/27 + 8.97	41.77	(100.06 x 8 + 7.5 x 57) x 1/9
4+02.00	3+02.00	◎	G	100.00	100.00 x 16 x 1/9 x 0.0347	6.17	177.78 x 0.0486	8.64	177.78 x 0.10	17.78	177.78	177.78	100.00 x 19.67 x 0.5 x 1/27	36.43	100.00 x 10.50 x 1/9 x 0.30
3+02.00	0+28.31	◎	G	273.69	273.59 x 18 x 1/9 x 0.0347	18.99	547.38 x 0.0486	26.60	547.38 x 0.10	54.74	547.38	547.38	273.69 x 21.57 x 0.5 x 1/27	109.62	273.69 x 11.00 x 1/9 x 0.30
12+22.76	13+25.00	◎	E	102.24	102.24 x 24.0 x 1/9 x 0.0347	9.46	272.64 x 0.0486	13.25	272.64 x 0.10	27.26	272.64	272.64	102.24 x 26.67 x 0.5 x 1/27	50.50	102.24 x 8.00 x 1/9 x 0.30
					876.0 x 1/9 x 0.0347	3.38	97.33 x 0.0486	4.73	97.33 x 0.10	9.73	97.33	97.33	876.0 x 1/9 x 0.5 x 1/3	16.22	
13+20.00	14+79.08	◎		154.08	3060.00 x 1/9 x 0.0347	11.80	340.00 x 0.0486	16.52	340.00 x 0.10	34.00	340.00	340.00	[illegible]	64.29	154.08 x 8.00 x 1/9 x 0.30
14+79.08	15+25.00	•		45.92	45.92 x 15.0 x 1/9 x 0.0347	2.66	76.53 x 0.0486	3.72	76.53 x 0.10	7.65	76.53	76.53	45.92 x 17.67 x 0.5 x 1/27	15.03	45.92 x 8.00 x 1/9 x 0.30
15+25.00	16+53.30	•		128.30	128.30 x 13.0 x 1/9 x 0.0347	6.43	185.32 x 0.0486	9.01	185.32 x 0.10	18.53	185.32	185.32	128.3 x 15.67 x 0.5 x 1/27	37.23	128.30 x 8.00 x 1/9 x 0.30
RAMP "A-A"															
27+31.26	29+00.00	•	A	468.74	468.74 x 13.22 x 1/9 x 0.0347	24.20	691.65 x 0.0486	33.61	691.65 x 0.10	69.17	691.65	691.65	468.74 x 15.95 x 0.5 x 1/27	138.45	468.74 x 8.00 x 1/9 x 0.30
29+00.00	30+00.00	•	F	100.00	100.00 x 15.0 x 1/9 x 0.0347	5.78	166.67 x 0.0486	8.10	166.67 x 0.10	16.67	166.67	166.67	100.00 x 22.75 x 0.5 x 1/27	42.13	100.00 x [illegible] x 1/9 x 0.30
30+00.00	31+00.00	•	F	100.00	100.00 x 15.0 x 1/9 x 0.0347	5.78	166.67 x 0.0486	8.10	166.67 x 0.10	16.67	166.67	166.67	100.00 x 20.25 x 0.5 x 1/27	37.50	100.00 x 6.75 x 1/9 x 0.30
31+00.00	34+65.50	•	F	365.50	365.50 x 16.0 x 1/9 x 0.0347	22.55	649.78 x 0.0486	31.58	649.78 x 0.10	64.98	649.78	649.78	365.50 x 20.00 x 0.5 x 1/27	135.37	365.5 x 8.00 x 1/9 x 0.30
34+65.50	35+48.00	•	F	82.50	2692 x 1/9 x 0.0347	10.38	299.11 x 0.0486	14.54	299.11 x 0.10	29.91	299.11	299.11	3212 x 0.5 x 1/27	59.48	614.0 x 1/9 x 0.30
RAMP "B-B"															
35+75.00	36+29.50	•	F	57.50	2400 x 1/9 x 0.0347	9.25	266.67 x 0.0486	[illegible]	266.67	26.67	266.67	266.67	2866 x 0.5 x 1/27	53.07	570 x 1/9 x 0.30
36+29.50	40+50.00	•	F	420.50	420.50 x 16.0 x 1/9 x 0.0347	25.94	747.56 x 0.0486	36.33	747.56 x 0.10	74.76	747.56	747.56	420.50 x 20.0 x 0.5 x 1/27	155.74	420.5 x 8.00 x 1/9 x 0.30
40+50.00	41+53.00	•	F	103.00	103.00 x 16.0 x 1/9 x 0.0347	6.35	183.11 x 0.0486	8.90	183.11 x 0.10	18.31	183.11	183.11	103.00 x 22.5 x 0.5 x 1/27	42.91	103.00 x 8.00 x 1/9 x 0.30
41+53.00	42+85.00	•	A	132.00	132.00 x 32.6 x 1/9 x 0.0347	16.58	478.67 x 0.0486	23.17	478.67 x 0.10	47.87	478.67	478.67	132.00 x 35.17 x 0.5 x 1/27	85.97	132.00 x 8.00 x 1/9 x 0.30
42+85.00	45+00.00	•	A	215.00	4105.00 x 1/9 x 0.0347	[illegible]	456.11 x 0.0486	[illegible]	456.11 x 0.10	[illegible]	456.11	[illegible]	[illegible]	[illegible]	215.00 x 8.00 x 1/9 x 0.30
45+00.00	45+60.00	•	F	60.00	60.00 x 14.0 x 1/9 x 0.0347	3.24	93.33 x 0.0486	4.54	93.33 x 0.10	9.33	93.33	93.33	60.00 x 18.67 x 0.5 x 1/27	20.52	60.00 x 8.00 x 1/9 x 0.30
45+60.00	50+00.00	•	F	440.00	440.00 x 19.5 x 1/9 x 0.0347	33.08	953.33 x 0.0486	46.33	953.33 x 0.10	95.33	953.33	953.33	440.00 x 22.17 x 0.5 x 1/27	180.64	440.00 x 8.00 x 1/9 x 0.30
RAMP "A"															
50+00.00	51+00.00	•	F	100.00	100.00 x 15.00 x 1/9 x 0.0347	5.78	166.67 x 0.0486	8.10	166.67 x 0.10	16.67	166.67	166.67	100.00 x 28.92 x 0.5 x 1/27	53.56	[illegible]
51+00.00	52+00.00	•	F	100.00	100.00 x 15.00 x 1/9 x 0.0347	5.78	166.67 x 0.0486	8.10	166.67 x 0.10	16.67	166.67	166.67	100.00 x [illegible] x 0.5 x 1/27	66.67	[illegible]
52+00.00	57+98.00	•	F	598.00	598.00 x 16.00 x 1/9 x 0.0347	36.87	1063.[illegible] x 0.0486	51.66	1063.0 x 0.10	106.30	1063.0	1063.[illegible]	[illegible]	[illegible]	598.00 x [illegible] x 1/9 x 0.30
57+98.00	58+85.00	•	F	87.00	87.00 x 16.00 x 1/9 x 0.0347	5.37	154.67 x 0.0486	7.52	154.67 x 0.10	15.47	154.67	154.67	87.00 x [illegible]	[illegible]	[illegible]
					1296 x 1/9 x 0.0347	5.00	144 x 0.0486	7.00	144 x 0.10	14.40	144.00	144.00	1296 x 0.5 x 1/27	[illegible]	
SUB-TOTALS THIS SHEET		◎				[illegible]		203.93		[illegible]		[illegible]		[illegible]	
SUB-TOTALS FROM SHEET 18		◎				[illegible]		368.65		[illegible]		[illegible]		[illegible]	
SUB-TOTALS CARRIED TO SHEET 21		◎				[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	[illegible]
SUB-TOTALS THIS SHEET		•				800.02		385.83		[illegible]		[illegible]		[illegible]	
SUB-TOTALS FROM SHEET 18		•				70[illegible].14		982.98		[illegible]		[illegible]		[illegible]	
SUB-TOTALS CARRIED TO SHEET 32		•				909.92		[illegible]		[illegible]		[illegible]		[illegible]	

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PAVEMENT CALCU[LATIONS]

PARTICIPATION
⊚ 100% State Participation
• State & City Participation

Quantities by JP 10/70
Checked by [illegible] 10/70

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY, FRA-10

LOCATION Station to Station		Typical Section	Length Lin. Ft.	409 Seal Coat, Cover Aggregate No. 8	Cu. Yds.	301 Bituminous Aggregate Base	Cu. Yds.	304 Aggregate Base	Cu. Yds.	310 Subbase, Regular Grading	Cu. Yds.	612 Concrete Median	Sq. Yds.
S.R. 104 N.B.													
94+95.00	96+75.00	⊚ H	180.00	180.00 x 3.00 x 1/9 x 0.008	0.48	60.00 x 0.083	4.98	60.00 x 0.222	13.32				
96+75.00	98+36.00	⊚ H	161.00	53.67 x 0.008	0.43	53.67 x 0.083	4.45	53.67 x 0.222	11.91				
98+36.00	99+75.00	⊚ I	139.00	46.33 x 0.008	0.37	46.33 x 0.083	3.85	46.33 x 0.222	10.29				
99+75.00	100+91.00	⊚	116.00									78.33 x 3.0 x 1/9	26.11
				44.44 x 0.008	0.36	44.44 x 0.083	3.69	44.44 x 0.222	9.87				
				66.22 x 0.008	0.53	66.22 x 0.083	5.50	66.22 x 0.222	14.70				
RAMP "F"													
63+86.00	64+32.00	⊚	46.00	54.67 x 0.008	0.44	54.67 x 0.083	4.54	54.67 x 0.222	12.14				
73+08.00	75+55.00	⊚	247.00	219.56 x 0.008	1.76	219.56 x 0.083	18.22	219.56 x 0.222	48.74	247.00 x 5.333 x 1/9 x 0.389 x 1/3	18.97		
75+55.00	81+08.00	⊚	553.00	491.56 x 0.008	3.93	491.56 x 0.083	40.80	491.56 x 0.222	109.13	553.00 x 5.333 x 1/9 x 0.389 x 1/3	42.49		
RAMP "F-F"													
5+02.00	4+02.00	⊚ G	100.00	136.44 x 0.008	1.09	136.44 x 0.083	11.32	136.44 x 0.222	30.29	100.00 x 5.33 x 0.417 x 1/27	8.23		
4+02.00	3+02.00	⊚ G	100.00	116.67 x 0.008	0.93	116.67 x 0.083	9.68	116.67 x 0.222	25.90	100.00 x 7.33 x 0.417 x 1/27	11.32		
3+02.00	0+28.31	⊚ G	273.69	334.51 x 0.008	2.68	334.51 x 0.083	27.76	334.51 x 0.222	74.26	273.69 x 7.33 x 0.417 x 1/27	30.98		
12+22.76	13+25.00	⊚	102.24	90.88 x 0.008	0.73	90.88 x 0.083	7.54	90.88 x 0.222	20.18	102.24 x 5.33 x 0.417 x 1/27	8.41		
13+25.00	14+79.08	⊚	154.08	136.96 x 0.008	1.10	136.96 x 0.083	11.37	136.96 x 0.222	30.41	154.08 x 5.33 x 0.417 x 1/27	12.68		
14+79.08	15+25.00	•	45.92	40.82 x 0.008	0.33	40.82 x 0.083	3.39	40.82 x 0.222	9.06	45.92 x 5.33 x 0.417 x 1/27	3.78		
15+25.00	16+53.30	•	128.30	114.04 x 0.008	0.91	114.04 x 0.083	9.46	114.04 x 0.222	25.32	128.30 x 5.33 x 0.417 x 1/27	10.56		
RAMP "A-A"													
24+31.26	29+00.00	• A	468.74	416.66 x 0.008	3.33	416.66 x 0.083	34.58	416.66 x 0.222	92.50	468.74 x 5.33 x 0.417 x 1/27	38.58		
29+00.00	30+00.00	• F	100.00	75.00 x 0.008	0.60	75.00 x 0.083	6.23	75.00 x 0.222	16.65				
30+00.00	31+00.00	• F	100.00	75.00 x 0.008	0.60	75.00 x 0.083	6.23	75.00 x 0.222	16.65	200 x 1.50 x 0.375 x 1/27	2.08		
31+00.00	34+65.50	• F	365.50	243.67 x 0.008	1.95	243.67 x 0.083	20.22	243.67 x 0.222	54.09	365.50 x 2.00 x 0.417 x 1/27	11.29		
34+65.50	35+48.00	• F	82.50	76.0 x 0.008	0.61	76.0 x 0.083	6.31	76.00 x 0.222	16.87	164.00 x 0.417 x 1/27	2.53		
RAMP "B-B"													
35+70.00	36+29.50	• F	59.50	64.44 x 0.008	0.52	64.44 x 0.083	5.35	64.44 x 0.222	14.31	114.0 x 0.417 x 1/27	1.76		
36+29.50	40+50.00	• F	420.50	280.33 x 0.008	2.24	280.33 x 0.083	23.27	280.33 x 0.222	62.23	420.50 x 2.00 x 0.417 x 1/27	12.99		
40+50.00	41+53.00	• F	103.00	97.28 x 0.008	0.78	97.28 x 0.083	8.07	97.28 x 0.222	21.60	103.00 x 2.00 x 0.417 x 1/27	3.18		
41+53.00	42+85.00	• A	132.00	117.33 x 0.008	0.94	117.33 x 0.083	9.74	117.33 x 0.222	26.05	132.00 x 5.33 x 0.417 x 1/27	10.87		
42+85.00	45+00.00	• A	215.00	191.11 x 0.008	1.53	191.11 x 0.083	15.86	191.11 x 0.222	42.43	215.00 x 5.33 x 0.417 x 1/27	17.70		
45+00.00	45+60.00	• A	60.00	53.33 x 0.008	0.43	53.33 x 0.083	4.43	53.33 x 0.222	11.84	60.00 x 5.33 x 0.417 x 1/27	4.94		
45+60.00	50+00.00	• A	440.00	391.11 x 0.008	3.13	391.11 x 0.083	32.46	391.11 x 0.222	86.83	440.00 x 5.33 x 0.417 x 1/27	36.21		
RAMP "A"													
50+00.00	51+00.00	• F	100.00	186.11 x 0.008	1.49	186.11 x 0.083	15.45	186.11 x 0.222	41.32	100.00 x 4.08 x 0.417 x 1/27	6.30		
51+00.00	52+00.10	• F	100.00	236.11 x 0.008	1.89	236.11 x 0.083	19.60	236.11 x 0.222	52.42	100.00 x 1.58 x 0.417 x 1/27	2.44		
52+00.00	57+98.00	• F	598.00	398.67 x 0.008	3.19	398.67 x 0.083	33.09	398.67 x 0.222	88.50	598.00 x 2.00 x 0.417 x 1/27	18.47		
57+98.00	57+85.00	• F	27.00	24.00 x 0.008	0.19	24.00 x 0.083	1.99	24.00 x 0.222	5.33	27.00 x 2.00 x 0.417 x 1/27	0.83		
SUB-TOTALS THIS SHEET		⊚			14.83		153.78		[illegible]		133.08		26.11
SUB-TOTALS FROM SHEET 19		⊚			11.84		122.76		510.80		119.68		316.99
SUB-TOTALS CARRIED TO SHEET 23		⊚			26.67		276.41		1129.64		252.76		
TOTALS TO GENERAL SUMMARY		⊚											343
SUB-TOTALS THIS SHEET		•			28.56		255.73		633.79		193.96		
SUB-TOTALS FROM SHEET 19		•			63.85		703.88		1880.23		172.79		
SUB-TOTALS CARRIED TO SHEET 23		•			92.51		959.61		2520.02		356.65		

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PAVEMENT CALCU

* Item 404 - 1" Asphalt Concrete (85-100)
‡ Item 402 - 1" Asphalt Concrete (85-100)
** Subtotal

PARTICIPATION
⊙ 100% State Participation
State & City Participation

Quantities by JP 10/70
Checked by [illegible] 10/70

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY, FRA-...

LOCATION Station to Station		Typical Section	Length Lin. Ft.	404 1¼" Asphalt Concrete (60-70)	Cu. Yds.	402 1¾" Asphalt Concrete (60-70)	Cu. Yds.	407 Tack Coat	Gals	305 8" Portland Cement Conc. Base	Sq. Yds.	310 Subbase - Grading "A"	Cu. Yds.	409 Seal Coat Bituminous Ma...
RAMP DD														
24+31.26	25+00.00	⊙ A	68.74	68.74 × 7.35 × 1/9 × 0.0347	2.05	60.19 × 0.0486	2.93	60.19 × 0.10	6.02	60.19	60.19	68.74 × 10.55 × 0.5 × 1/27	13.43	68.74 × 8.00 × 1/9 × 0....
25+00.00	26+50.00	⊙ A	150.00	150.00 × 13.00 × 1/9 × 0.0347	7.52	216.67 × 0.0486	10.53	216.67 × 0.10	21.67	216.67	216.67	150.00 × 15.67 × 0.5 × 1/27	43.53	150.00 × 8.00 × 1/9 × 0....
26+50.00	28+75.00	⊙ A	225.00	4322 × 1/9 × 0.0347	16.67	480.44 × 0.0486	23.35		48.04	480.44	480.44	(4323 + 22.5 × 2.67) × 0.5 × 1/27	97.20	225.00 × 8.00 × 1/9 × 0....
28+75.00	30+00.00	⊙ A	125.00	125.00 × 32.50 × 1/9 × 0.0347	15.66	451.39 × 0.0486	21.94	451.39 × 0.10	45.14	451.39	451.39	125.00 × 35.17 × 0.5 × 1/27	81.41	125.00 × 8.00 × 1/9 × 0....
30+00.00	31+00.00	⊙ F	100.00	100.00 × 16.00 × 1/9 × 0.0347	6.17	177.78 × 0.0486	8.64	177.78 × 0.10	17.78	177.78	177.78	100.00 × 19.67 × 0.5 × 1/27	36.43	100.00 × 8.50 × 1/9 × 0....
31+00.00	32+00.00	⊙ F	100.00	100.00 × 16.00 × 1/9 × 0.0347	6.17	177.78 × 0.0486	8.64	177.78 × 0.10	17.78	177.78	177.78	100.00 × 20.00 × 0.5 × 1/27	37.04	100.00 × 6.00 × 1/9 × 0....
32+00.00	34+85.00	⊙ F	285.00	285.00 × 22.00 × 1/9 × 0.0347	24.17	696.67 × 0.0486	33.86	696.67 × 0.10	69.67	696.67	696.67	285.00 × 22.00 × 0.5 × 1/27	116.11	
34+85.00	35+17.00	⊙ F	32.00	1584 × 1/9 × 0.0347	6.11	176.00 × 0.0486	8.55	176.00 × 0.10	17.60	176.00	176.00	1760 × 0.5 × 1/27	32.56	279 × 1/9 × 0.30
RAMP C-C														
35+20.00	35+66.00	⊙ F	46.00	1992 × 1/9 × 0.0347	7.68	221.33 × 0.0486	10.76	221.33 × 0.10	22.13	221.33	221.33	2138 × 0.5 × 1/27	39.59	240 × 1/9 × 0.30
35+66.00	39+75.00	⊙ F	407.00	407.00 × 22.00 × 1/9 × 0.0347	34.52	994.83 × 0.0486	48.35	994.83 × 0.10	99.49	994.83	994.83	407.00 × 22.00 × 0.5 × 1/27	165.81	
39+75.00	41+50.00	⊙ F	175.00	175.00 × 15 × 1/9 × 0.0347	10.12	291.67 × 0.0486	14.18	291.67 × 0.10	29.17	291.67	291.67	175.00 × 18.67 × 0.5 × 1/27	60.50	175.00 × 8.50 × 1/9 × 0.30
														75.00 × 2.50 × 1/9 × 0.30
												135.00 × 14.00 × 0.5 × 1/27	35.00	135.00 × 14.00 × 1/9 × 0.30
41+50.00	45+17.25	⊙ A	367.25	367.25 × 15.82 × 1/9 × 0.0347	22.40	645.54 × 0.0486	31.37	645.54 × 0.10	64.55	645.54	645.54	367.25 × 18.49 × 0.5 × 1/27	125.75	367.25 × 8.00 × 1/9 × 0.3...
45+17.25	49+03.00	⊙ A	385.75	3580 × 1/9 × 0.0347	13.80	397.78 × 0.0486	19.33	397.78 × 0.10	39.78	397.78	397.78	(3580 + 385.75 × 2.67) × 0.5 × 1/27	85.97	385.75 × 8.00 × 1/9 × 0....
AM. AGG. PARKING LOT AND DRIVE														
6+69.16	7+91.32	⊙ K	122.16	122.16 × 62.17 × 1/9 × 0.0278	23.45 ‡	843.86 × 0.0278	23.45 ‡							
7+91.32	9+46.97	⊙ L	155.65	155.65 × 20.0 × 1/9 × 0.0278	9.62 ‡	345.94 × 0.0278	9.62 ‡							
9+46.97	9+88.20	⊙	41.23	1232 × 1/9 × 0.0347	4.75	136.89 × 0.0486	6.65	136.89 × 0.10	13.69	136.89	136.89	136.89 × 0.5 × 1/3	22.82	
AM. AGG. HAUL ROAD														
12+74.00	13+60.00	⊙ J	86.00	½(2.0+8.0) × 120.0 × 1/9 × 0.0347	0.39	11.11 × 0.0486	0.52	11.11 × 0.10	1.11	11.11	11.11	(100 + 20) × 0.5 × 1/27	2.22	5600 × 8.00 × 1/9 × 0.30
				8.00 × 66.0 × 1/9 × 0.0347	2.04	50.67 × 0.0486	2.45	50.67 × 0.10	5.07	50.67	50.67	50.67 × 0.5 × 1/3	9.78	
				8.00 × 86.0 × 1/9 × 0.0347	2.65	76.44 × 0.0486	3.71	76.44 × 0.10	7.64	76.44	76.44	76.44 × 0.5 × 1/3	12.74	
				944 × 1/9 × 0.0347	3.64	104.89 × 0.0486	5.10	104.89 × 0.10	10.49	104.89	104.89	(944 + 23 × 86 (3)) × 0.5 × 1/27	21.56	
13+60.00	18+14.00	⊙ J	454.00	454.00 × 16.0 × 1/9 × 0.0347	28.01	807.11 × 0.0486	39.23	807.11 × 0.10	80.71	807.11	807.11	(454.00 × 15.0 + 454 × 1.0) × 0.5 × 1/27	143.83	
SUB-TOTALS THIS SHEET		⊙			594.14		551.98		1135.80		11,372.33		2280.25	Area for Proof Rolling
SUB-TOTALS FROM SHEET 20		⊙			394		552		1136		11529		2282	Subgrade Compaction
TOTALS TO GENERAL SUMMARY		⊙			214.56		300.51		213.33		4183.34		1176.73	125350 sq yds
SUB-TOTALS THIS SHEET		*			948.98		1318.29		2135.10		22,599.05		6,558.11	
SUB-TOTALS FROM SHEET 20		*			1162		1620		2351		33,583		7693	
TOTALS TO GENERAL SUMMARY		*												
				404 1¼" Asphalt Concrete (85-100)	Cu. Yds.	402 1½" Asphalt Concrete (85-100)	Cu. Yds.	407 Tack Coat	Gals.	402 (85-100) 1¼" Asphalt Concrete Pre-leveling	Cu. Yds.			
INLAND PRODUCTS DRIVE														
7+40.00	8+40.00	⊙ M	100.00	100.00 × (40+40)½ × 1/9 × 0.0347	11.57	333.33 × 0.0347	11.57							
8+40.00	10+06.50	⊙ M	166.50	7562 × 1/9 × 0.0347	29.16	840.22 × 0.0347	29.16							
					40.73									
SERVICE ROAD AA														
19+80.00	30+92.00	⊙ M	1212.00	1212.00 × 26.00 × 1/9 × 0.0347	93.46	2693.33 × 0.0347	93.46							
30+92.00	31+67.00	⊙ M	75.00	75.00 × 22.50 × 1/9 × 0.0347	6.51	187.50 × 0.0347	6.51							
31+67.00	33+35.00	⊙ N	168.00	168.00 × 25.00 × 1/9 × 0.0347	16.19	466.67 × 0.0347	16.19							
33+35.00	42+10.00	* N·M	875.00	875.00 × 25.00 × 1/9 × 0.0347	84.34	2430.56 × 0.0347	84.34							
42+10.00	42+85.00	* M	75.00		6.51		6.51							
42+85.00	49+50.00	* M	665.00	665.00 × 20.00 × 1/9 × 0.0347	51.28	1477.78 × 0.0347	51.28							
49+50.00	50+25.00	* M	75.00		6.51		6.51							
50+25.00	55+60.00	* N M	535.00	535.00 × 25.00 × 1/9 × 0.0347	51.57	1486.11 × 0.0347	51.57							
55+60.00	56+35.00	* M	75.00	6.51	6.51		6.51							
56+35.00	72+05.00	* M	1570.00	1570 × 30 × 1/9 × 0.0347	181.66	5233.33 × 0.0347	181.66							
72+05.00	73+65.00	* M	160.00	160 × 28 × 1/9 × 0.0347	17.27	497.78 × 0.0347	17.27							
73+65.00	74+35.00	* M	70.00	70 × 36 × 1/9 × 0.0347	9.72	280.00 × 0.0347	9.72							
DECKEBACH ROAD														
74+35.00	89+25.00	* O	1490.00	1490.00 × 20.00 × 1/9 × 0.0347	114.90	3311.11 × 0.0347	114.90	5960 × 0.10	596.00	7960 × 0.007	41.72			
				1490.00 × 18.00 × 1/9 × 0.0263	43.37	2980.00 × 0.0175	45.82							
89+25.00	90+75	* O	150.00	150.00 × 20.00 × 1/9 × 0.0347	11.57	333.33 × 0.0347	11.57							
				150.00 × 16.00 × 1/9 × 0.0263	6.48	266.67 × 0.0175	4.67	600 × 0.10	60.00	600 × 0.007	4.20			
TOTALS TO GENERAL SUMMARY		⊙			157		157							
TOTALS TO GENERAL SUMMARY		*			485		554		657		46			

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PAVEMENT CALCULA...

PAR. SEPARATION
⊚ 100% State Participation
• State & City Participation

Checked by [illegible] 10/70

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY, FRA-[illegible]

LOCATION Station to Station		Typical Section	Length Lin. Ft.	409 Seal Coat Cover Aggregate No.8	Cu. Yds.	301 Bituminous Aggregate Base	Cu. Yds.	304 Aggregate Base	Cu. Yds.	310 Subbase, Regular Grading	Cu. Yds.	408 Bituminous Prime Coat	Gals.
RAMP D-D													
24+91.26	25+00.00	• A	58.74	31.10 x 0.008	0.08	31.10 x 0.083	5.07	31.10 x 0.222	13.56	58.74 x [illegible] x 1/9 x 0.389 x 1/2	5.28		
25+00.00	25+50.00	• A	150.00	133.33 x 0.008	1.07	133.33 x [illegible]	11.07	133.33 x 0.222	29.60	150.00 x [illegible] x 1/9 x 0.389 x 1/2	11.51		
25+50.00	26+75.00	• A	225.00	200.00 x 0.008	1.60	200.00 x 0.083	16.60	200.00 x 0.222	44.44	225.00 x 5.33 x 1/9 x 0.389 x 1/2	13.28		
28+75.00	30+00.00	• A	125.00	111.11 x 0.008	0.89	111.11 x 0.083	9.22	111.11 x 0.222	24.67	125.00 x [illegible] x 1/9 x 0.389 x 1/2	9.20		
30+00.00	31+00.00	• F	100.00	94.44 x 0.008	0.75	94.44 x 0.083	7.84	94.44 x 0.222	20.97	100.00 x [illegible] x 1/9 x 0.389 x 1/2	[illegible]		
31+00.00	32+00.00	• F	100.00	66.67 x 0.008	0.53	66.67 x 0.083	5.53	66.67 x 0.222	[illegible]	100.00 x [illegible] x 1/9 x 0.389 x 1/2	2.53		
32+00.00	34+30.00	• F	305.00										
34+85.00	35+17.00	• F	32.00	31.00 x 0.008	[illegible]	31.00 x 0.083	2.57	31.00 x 0.222	[illegible]	[illegible] x 1/9 x 0.617 x 1/2	[illegible]		
RAMP C-C													
35+30.00	35+65.00	F	45.00	26.67 x 0.008	0.21	[illegible]	2.21	[illegible] x 0.222	[illegible]	[illegible] x 1/9 x [illegible] x 1/2	1.62		
35+68.00	39+75.00	• F	407.00										
39+75.00	41+50.00	• F	175.00	106.94 x 0.008	0.86	106.94 x 0.083	8.87	106.94 x 0.222	[illegible]	[illegible] x 1/9 x [illegible] x 1/2	7.00		
				20.83 x 0.008	0.17	20.83 x 0.083	1.73	20.83 x 0.222	4.63				
				210.00 x 0.008	1.68	210.00 x 0.083	17.43	210.00 x 0.222	46.62				
41+50.00	45+17.25	• A	367.25	326.44 x 0.008	2.61	326.44 x 0.083	27.09	326.44 x 0.222	72.47	[illegible] x 1/9 x 0.617 x 1/2	36.73		
45+17.25	49+03	• A	385.75	342.89 x 0.008	2.74	342.89 x 0.083	28.46	342.89 x 0.222	[illegible]	[illegible] x 1/9 x 0.617 x 1/2	35.76		
AM. AGG. PARKING LOT AND DRIVE													
6+69.16	7+91.32	• K	122.16					[illegible] x 0.278	[illegible]			343.37 x 2.5	858.42
7+91.32	7+96.77	• L	125.50					[illegible]	[illegible]			[illegible]	138.47
8+96.77	9+65.00	• J	41.73										
AM. AGG. HAUL ROAD													
12+74.00	13+60.00	• J	86.00	22.00 x 0.008	0.18	22.00 x 0.0[illegible]	1.83	22.00 x [illegible]	4.88				
13+60.00	18+14.00	• J	454.00										
TOTALS TO GENERAL SUMMARY		•											

				203 Final Grading	Acres	206 Subgrade Compaction
				[illegible]	3.62	
				[illegible]	[illegible]	
				[illegible]	[illegible]	

LOCATION Station to Station		Typical Section	Length Lin. Ft.	409	Cu. Yds.	301 Bituminous Aggregate Base	Cu. Yds.
INLAND PRODUCTS DRIVE							
3+70.00	4+70.00	⊚ M	100.00			[illegible]	[illegible]
8+40.00	10+06.50	⊚ M	166.50			[illegible]	[illegible]
SERVICE ROAD A-A							
18+83.00	30+95.00	⊚ M	1212.00			[illegible]	336.71
30+95.00	31+70.00	⊚ M	75.00			[illegible]	21.19
31+70.00	33+38.00	⊚ M-M	168.00			168.00 x [illegible]	52.84
33+38.00	42+13.00	• M	875.00			875.00 x [illegible]	[illegible]
42+13.00	42+88.00	• M	75.00				[illegible]
42+88.00	49+75.00	• M	687.00			[illegible]	188.[illegible]
49+75.00	50+45.00	• M	70.00				[illegible]
50+45.00	55+60.00	• M-M	515.00			[illegible]	[illegible]
55+60.00	56+75.00	• M	115.00				[illegible]
56+75.00	72+45.00	• M	1570.00			[illegible]	[illegible]
72+45.00	73+45.00	• M	100.00			[illegible]	[illegible]
73+45.00	74+15.00	• M	70.00			[illegible]	[illegible]

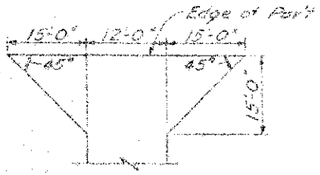
		409 Cu. Yds.	301 Cu. Yds.	304 Cu. Yds.	310 Cu. Yds.
SUB-TOTALS THIS SHEET	⊚		[illegible]		
SUB-TOTALS FROM SHEET 21	⊚	[illegible]	270.46	170.64	[illegible]
TOTALS TO GENERAL SUMMARY	⊚	[illegible]	[illegible]	[illegible]	[illegible]
SUB-TOTALS THIS SHEET	•	[illegible]	[illegible]	[illegible]	[illegible]
SUB-TOTALS FROM SHEET 21	•	[illegible]	[illegible]	[illegible]	[illegible]
TOTALS TO GENERAL SUMMARY	•	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] ENGINEERING CONSULTANTS, LTD.

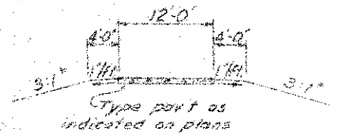
PAVEMENT CALCU[illegible]

FED. AID DIVISION	STATE	PROJECT
2	OHIO	

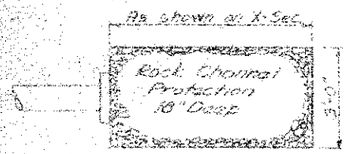
FRANKLIN COUNTY
FRA-104-8.04



FIELD DRIVE DETAIL



TYPICAL SECTION-FIELD DRIVE



To be used as noted in areas where no ditches are to be constructed

MEDIAN OUTLET PROTECTION

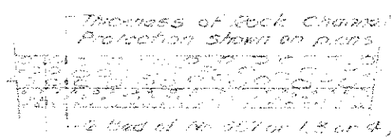
Rock shall be Type B

* See X-Sections for Slopes Use 2:1 Slopes unless otherwise noted Points A & B are to be the same elev.

ROADSIDE DITCH
ROCK CHANNEL PROTECTION
TRAPEZOID SECTION

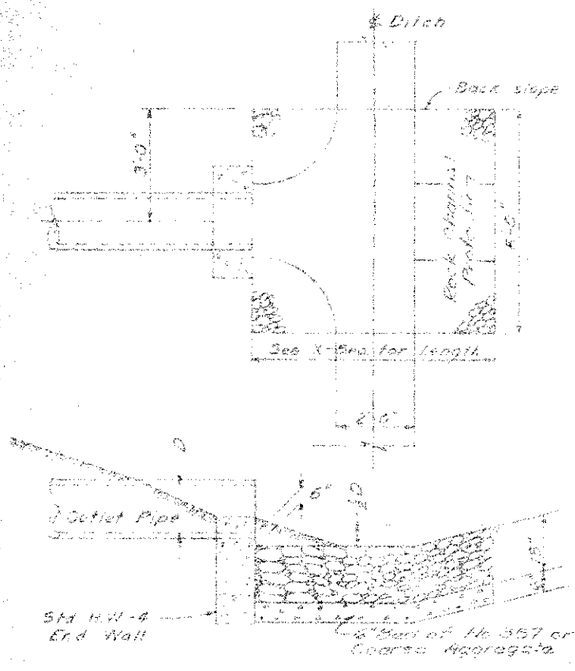
Points A & B are to be the same elev.

ROADWAY DITCH
SOD DETAIL FOR
TRAPEZOID SECTION

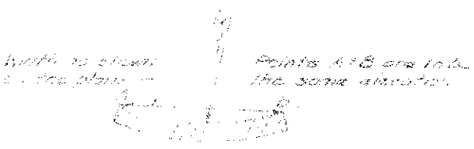


- Thickness used for computing quantity of Item 601 Rock Channel Protection

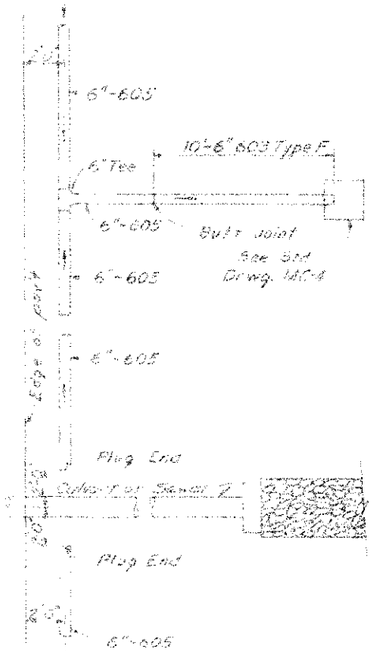
DETAIL OF ROCK CHANNEL
PROTECTION TYPE B



ROCK CHANNEL PROTECTION
FOR OUTLETS INTO SIDE DITCH

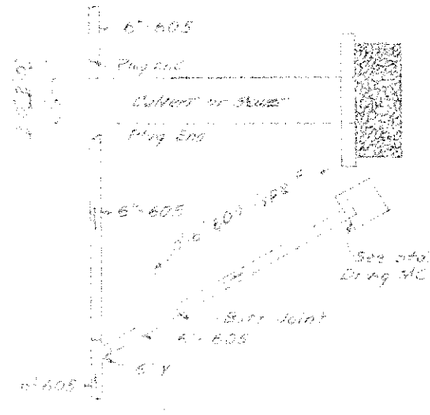


ROADSIDE CIRCULAR DITCH
WITH SOD DETAIL

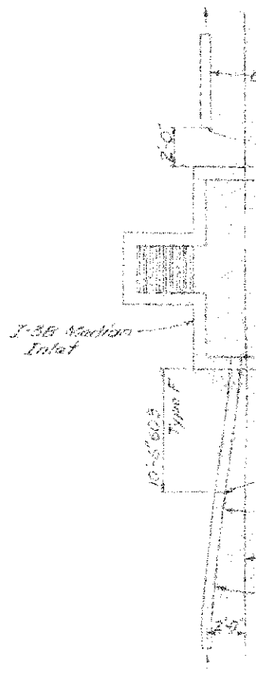


NOTE:
If 603 line is to be carried over culvert or sewer conduit, provide 10'-6" 603 Type F where underdrain is within 2' of culvert or sewer.

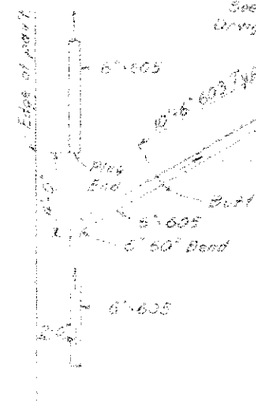
UNDERDRAIN OUTLET
DETAIL "A"



UNDERDRAIN OUTLET
DETAIL "C"



UNDERDRAIN
DETAIL



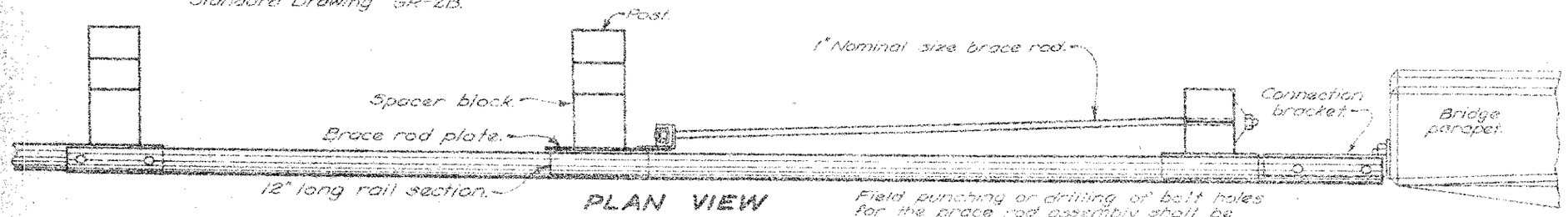
UNDERDRAIN
DETAIL "

SPECIAL

FED. R.D. DIVISION	STATE	PROJECT
5	OHIO	

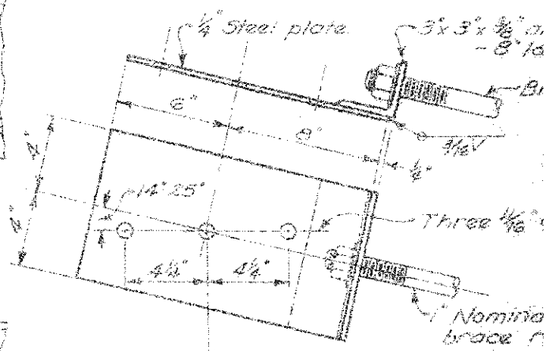
FRANKLIN COUNTY
FRA-104-8.04

Posts may be round or square-sawed wood, or 6 B&S steel. See Standard Drawing GR-2B.

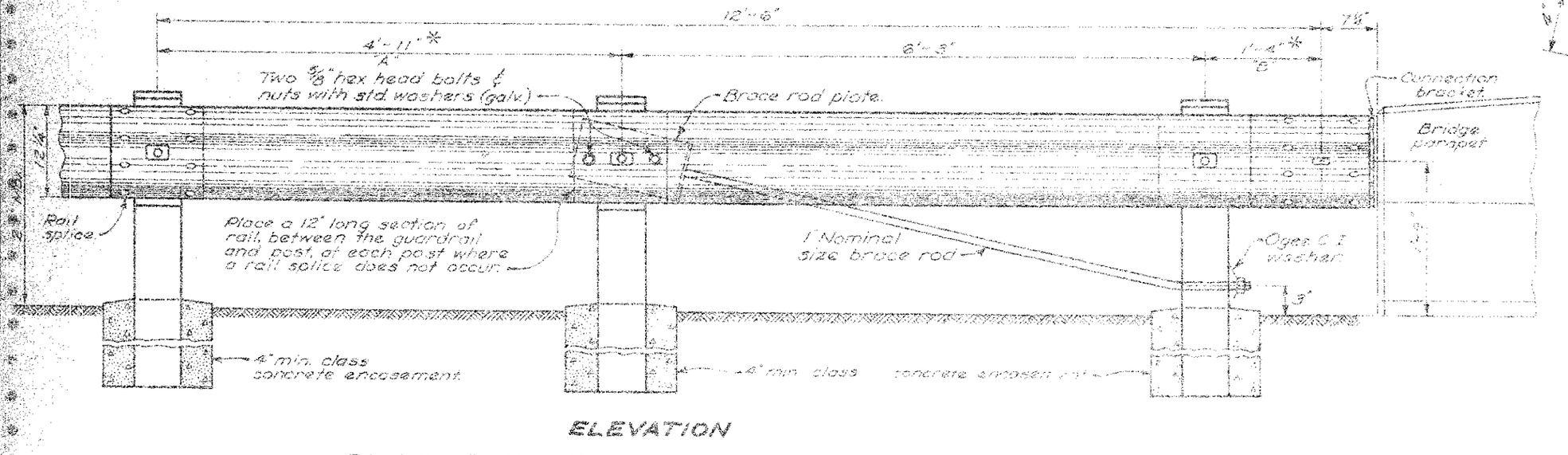


PLAN VIEW

Field punching or drilling of bolt holes for the brace rod assembly shall be accomplished as provided for in 606.04



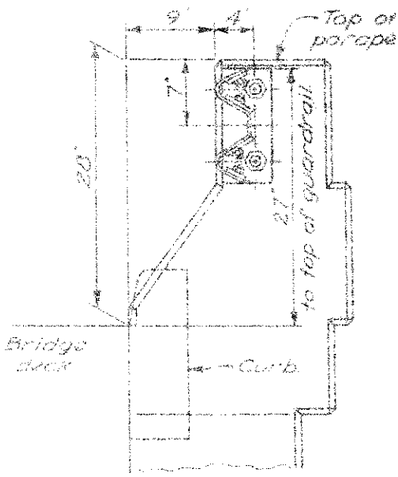
BRACE ROD PLATE



ELEVATION

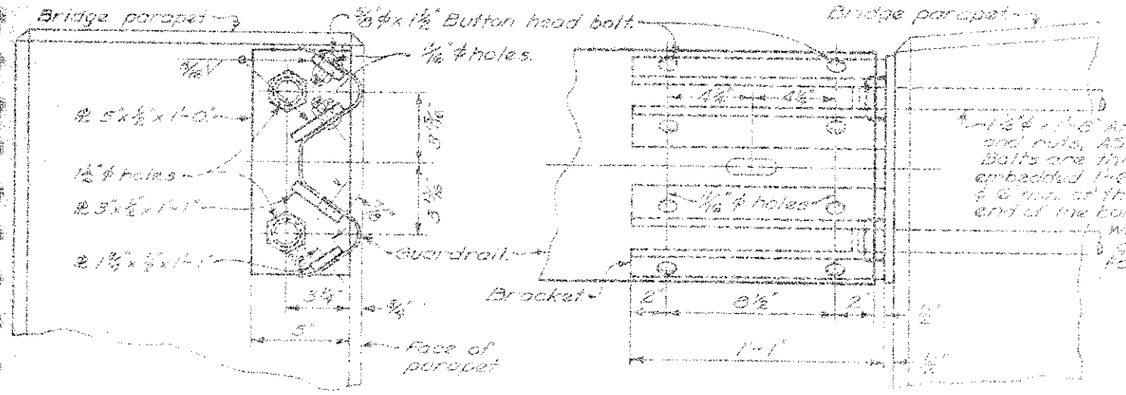
GUARDRAIL TERMINAL AT BRIDGE

* Dimension 'A' shall decrease as dimension 'B' increases to accommodate interference by the bridge substructure



PARAPET APPROACH

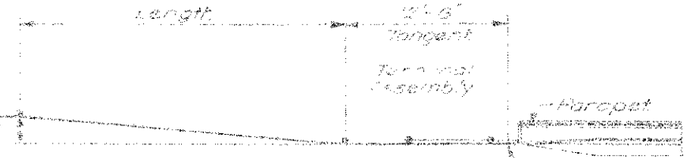
For uncurbed approaches, guardrail to be set 27" above ground line at face. For curbed approaches guardrail shall be centered 27" above gutter line and 9" from the face of curb.



CONNECTION BRACKET DETAIL

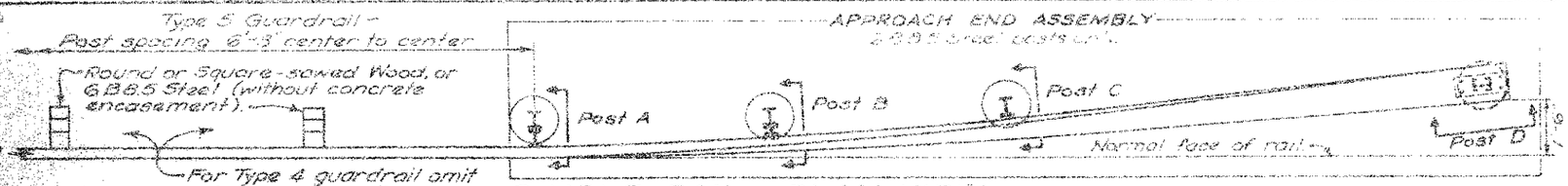
GUARDRAIL - BRIDGE CONNECTION

The connection bracket shall be galvanized after welding and shall be included with guardrail for payment.

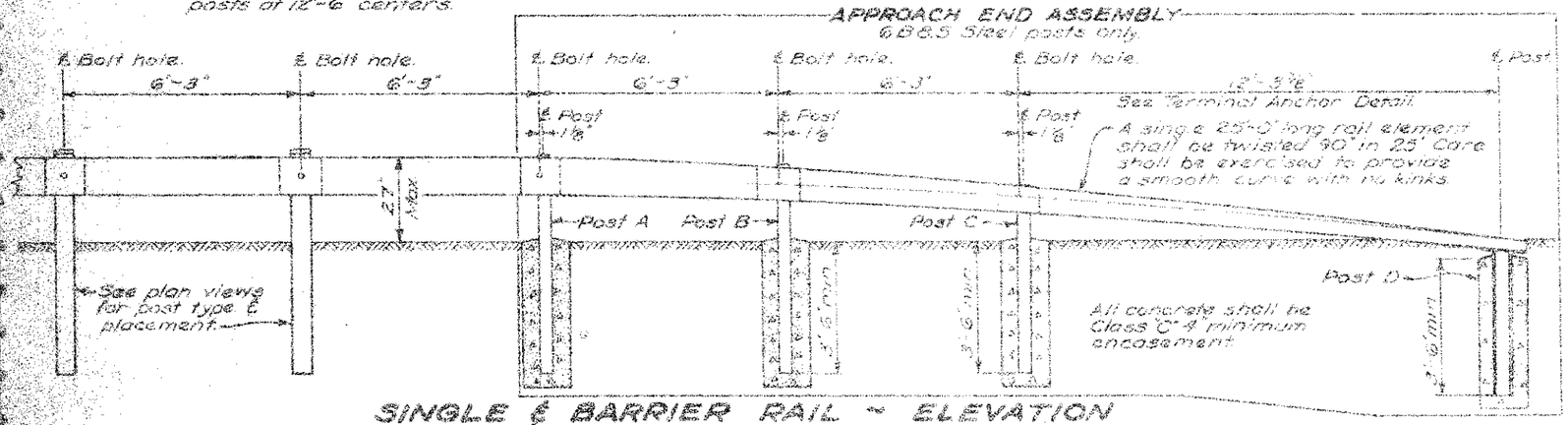


Offset	Length	Offset	Length
1'-0"	4'-6"	6'-0"	18'-0"
2'-0"	9'-0"	6'-6"	19'-6"
3'-0"	13'-6"	7'-0"	21'-0"

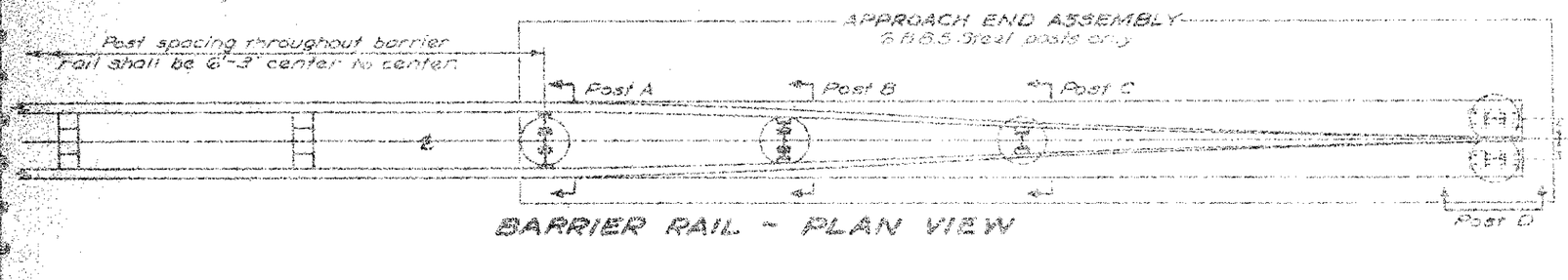
GUARDRAIL OFFSET DETAIL



SINGLE RAIL - PLAN VIEW



SINGLE & BARRIER RAIL - ELEVATION



BARRIER RAIL - PLAN VIEW

NOTES

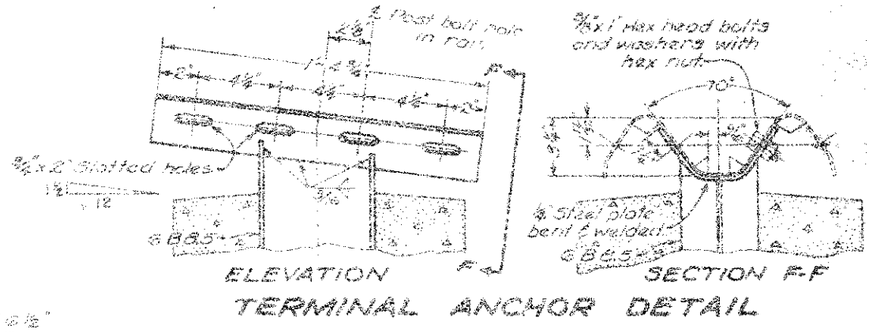
For details not shown, see Standard Drawings GR-2A and GR-2B.

All steel parts shall be galvanized in accordance with ASTM A123, A153 or A525, whichever may apply.

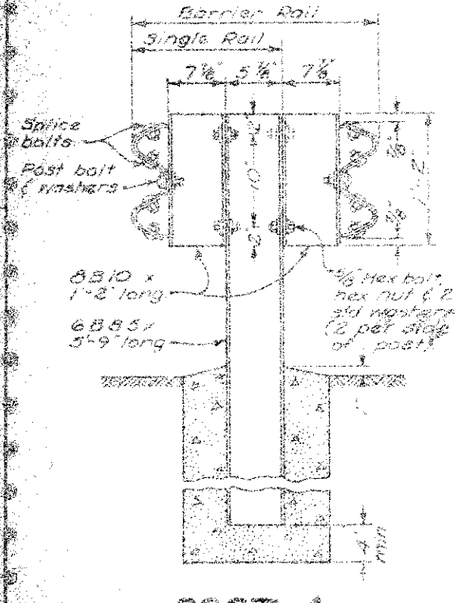
This drawing shall govern where a conflict arises.

REVISION	DATE	PROJECT
2	0-80	

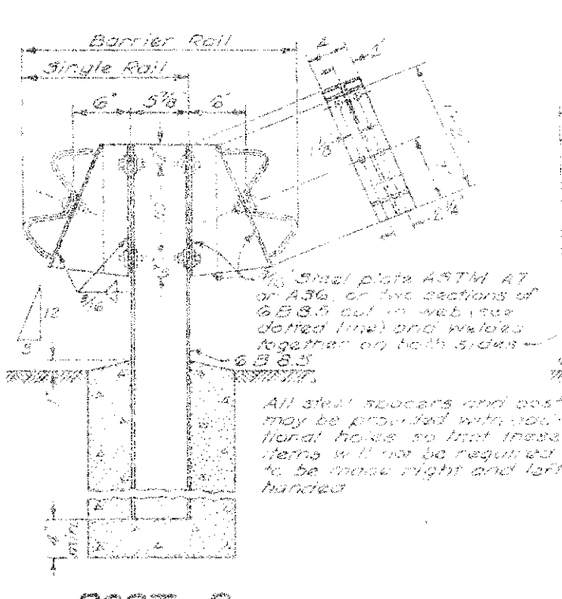
FRANKLIN COUNTY
FRA - 104 - 8.04



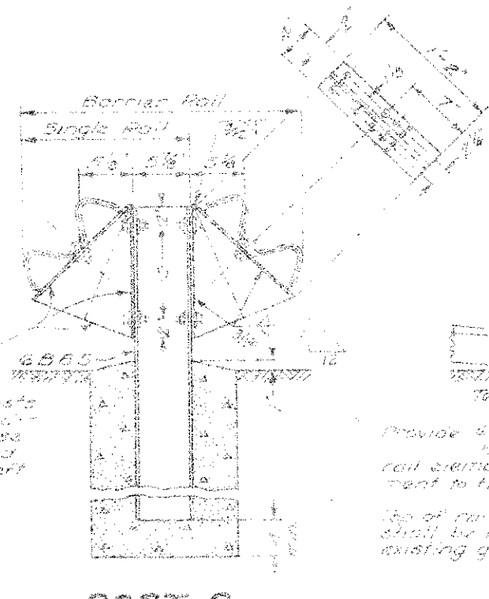
TERMINAL ANCHOR DETAIL



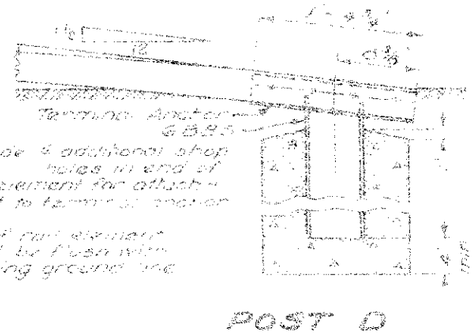
POST A



POST B



POST C



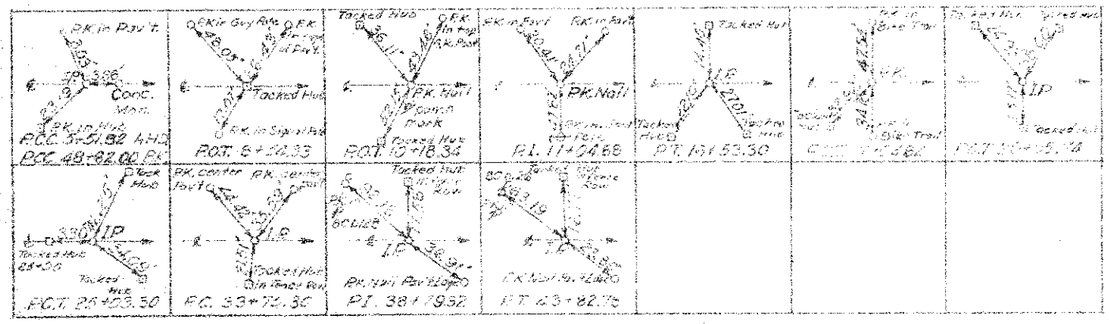
POST D

FED. ROAD DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

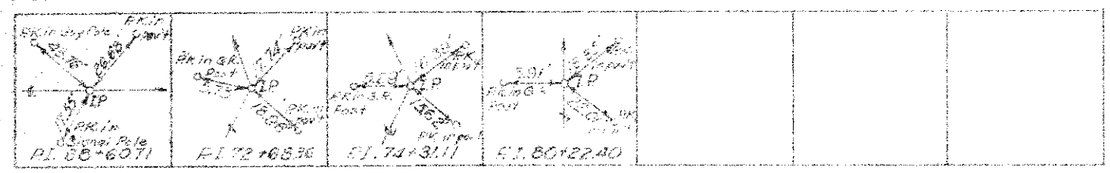
REFERENCES

S.R. 104

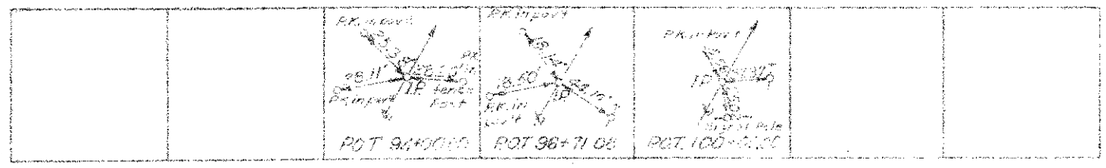


N

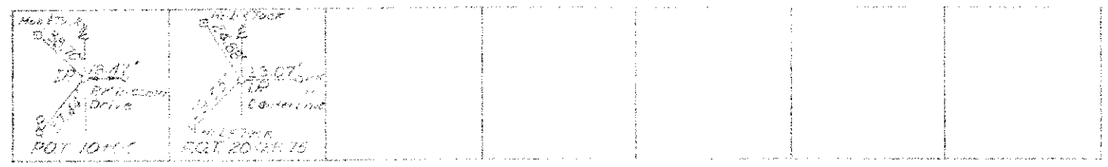
RAMP "F"

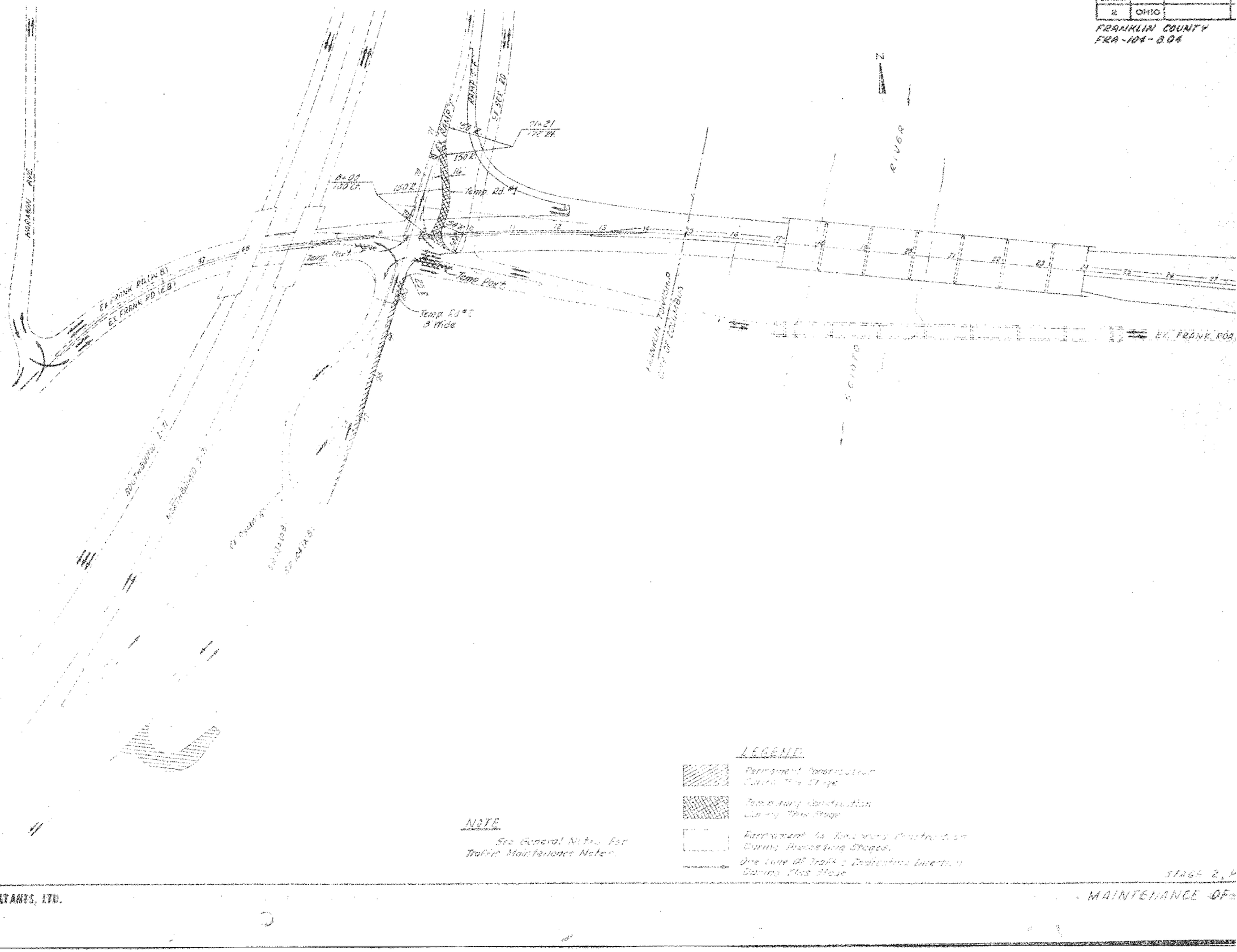


N.B. 104



AMER. AGG. R.D.





FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

LEGEND

▨	Permanent Construction During This Stage
▩	Temporary Construction During This Stage
☐	Permanent Or Temporary Construction During Preceding Stages.
—	One Lane Of Traffic Indicating Direction During This Stage

NOTE

See General Notes For Traffic Maintenance Notes.

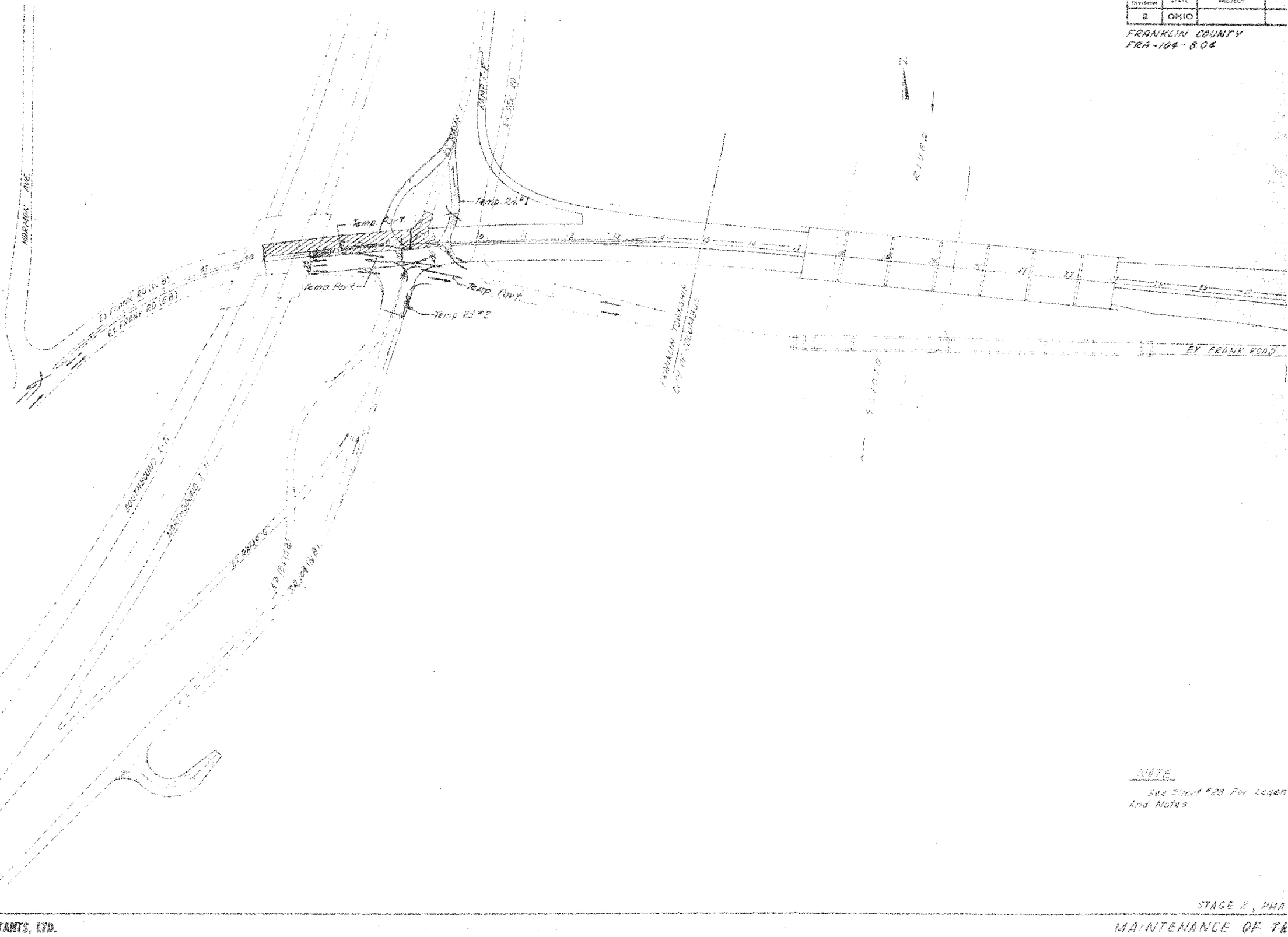
STAGE 2, P

COLUMBUS ENGINEERING CONSULTANTS, LTD.

MAINTENANCE OF

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

FRANKLIN COUNTY
FRA-104-8.04



NOTE
See Sheet #28 For Legen
And Notes.

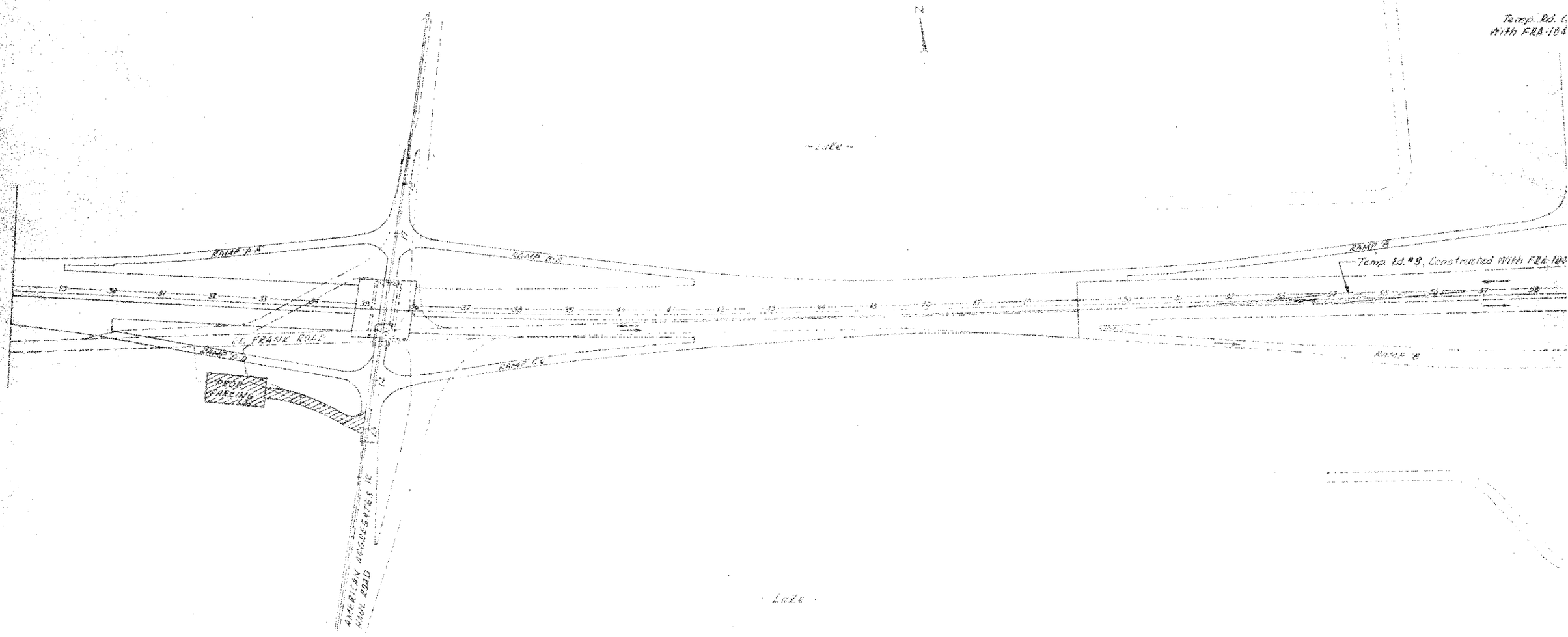
STAGE 2, PHA

COLUMBUS ENGINEERING CONSULTANTS, LTD.

MAINTENANCE OF T

FED. HWY. DIVISION	STATE	PROJECT
5	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

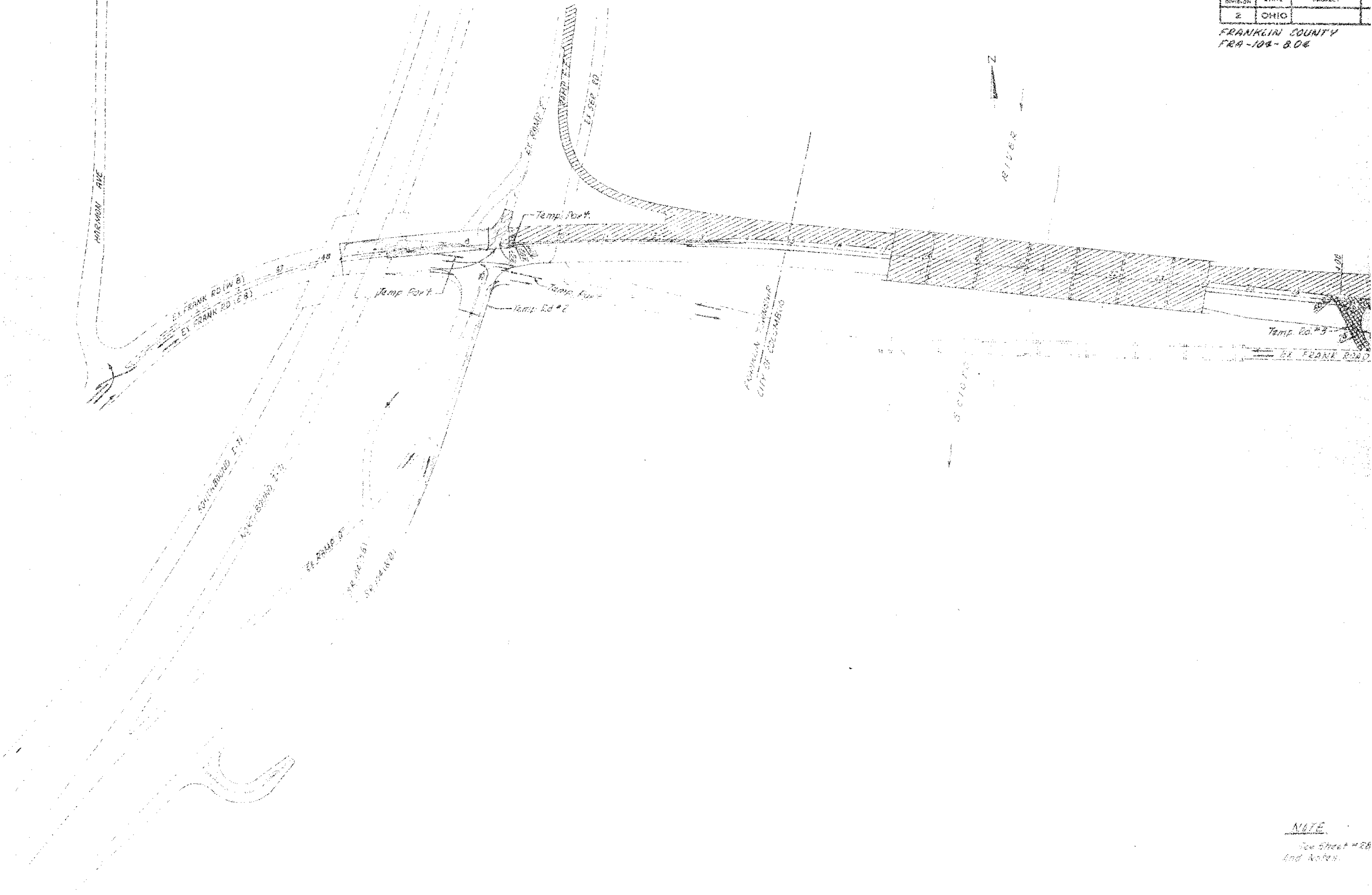


NOTE
See Sheet # 25
And Notes.

STAGE
MAINTENANCE &

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04



NOTE
See Sheet #… and Notes.

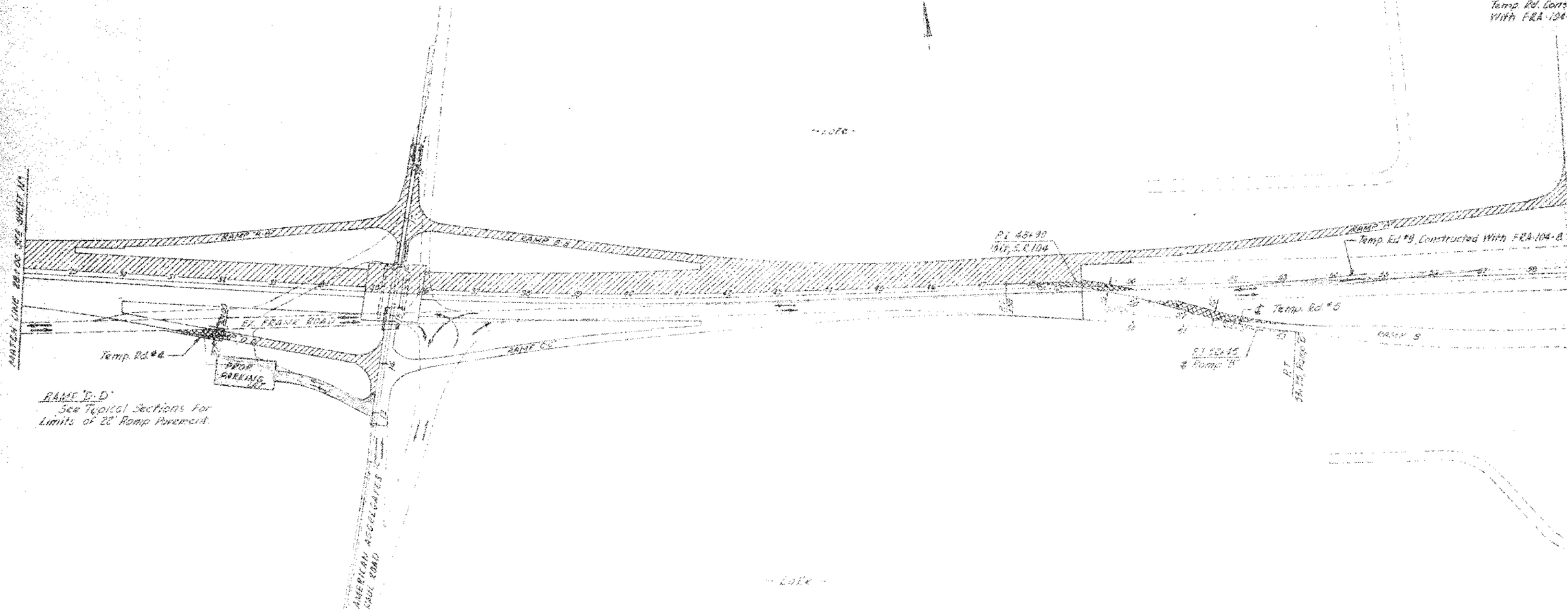
COLUMBUS ENGINEERING CONSULTANTS, LTD.

MAINTENANCE OF T…

FED. RD. DIVISION	STATE	PROJECT
5	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Temp. Rd. Cons
With FRA-104



MATCH LINE 28+00 SEE SHEET No

RAMP "D-D"
See Typical Sections For
Limits of 22' Ramp Pavement.

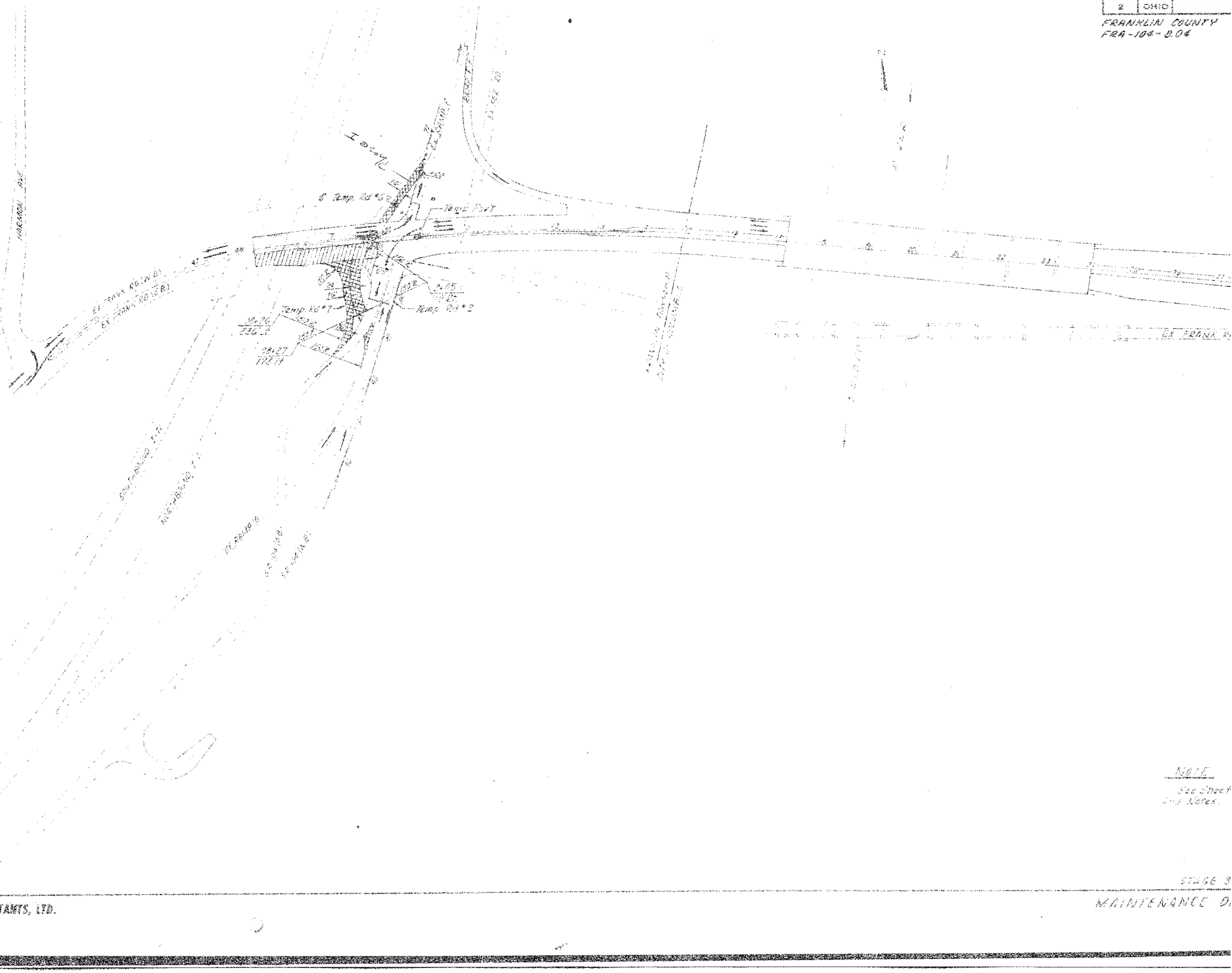
NOTE
See Sheet
And Notes

STAGE 2, P
MAINTENANCE O

COLUMBUS ENGINEERING CONSULTANTS, LTD.

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04



NOTE
See Sheet
for Notes.

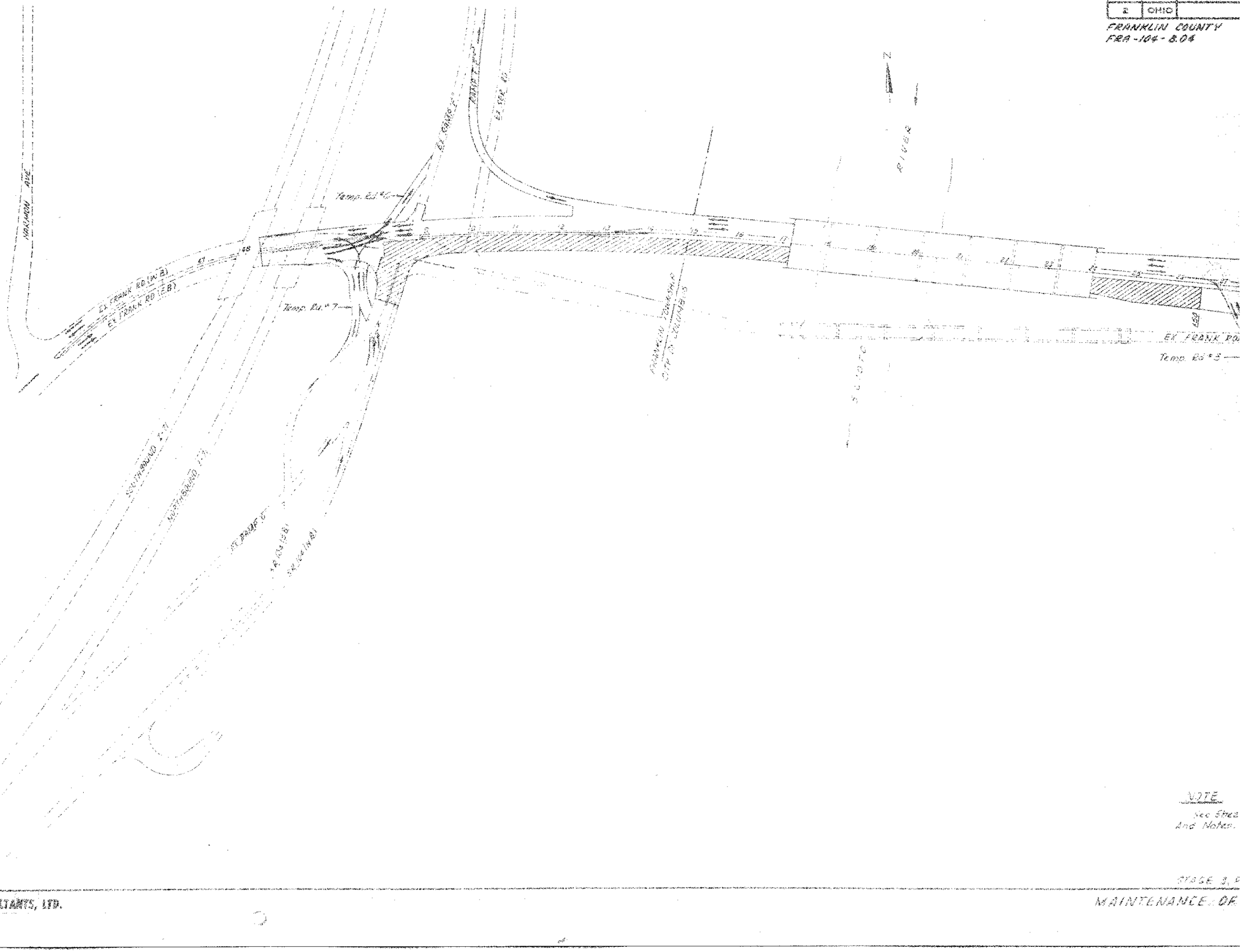
STAGE 3

MAINTENANCE D

COLUMBUS ENGINEERING CONSULTANTS, LTD.

FED. RD. DIVISION	STATE	PROJECT
5	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

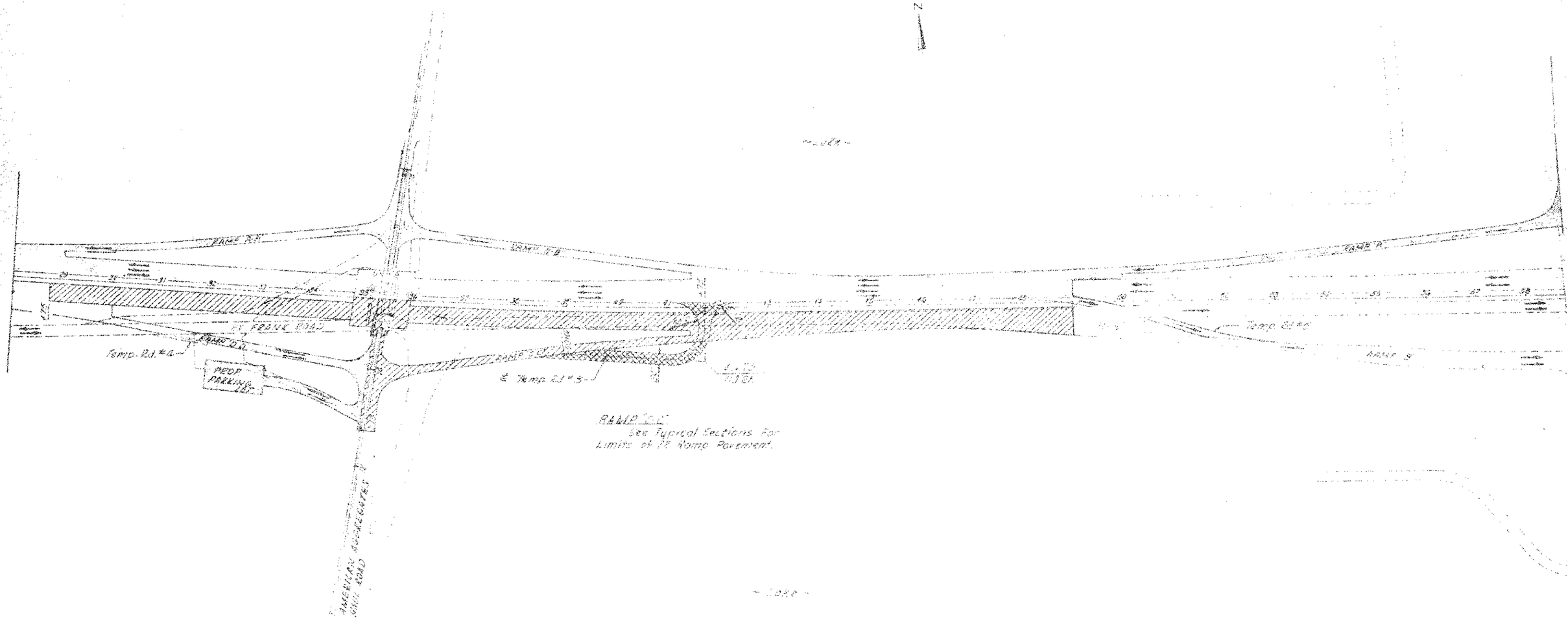


NOTE
See Sheet
And Notes.

STAGE 3, C

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04



RAMP C, E
See Typical Sections For
Limits of PP Ramp Pavement.

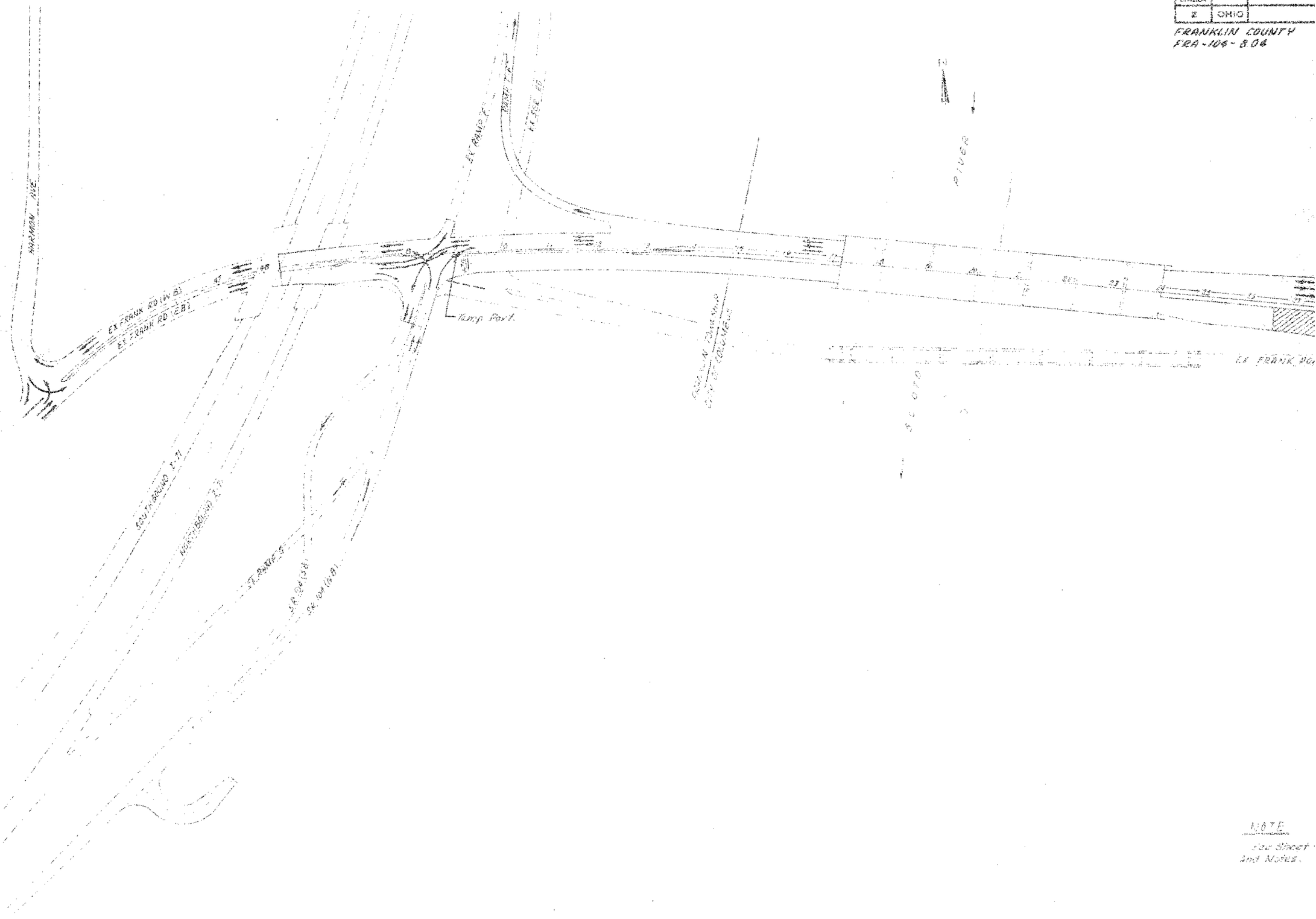
NOTE
See Sheet 68
And Notes.

COLUMBUS ENGINEERING CONSULTANTS, LTD.

STAGE 3, PHA
MAINTENANCE OF

KYO. RD. DIVISION	DISTRICT	PROJECT
2	ORIG	

FRANKLIN COUNTY
FRA-104-8.04

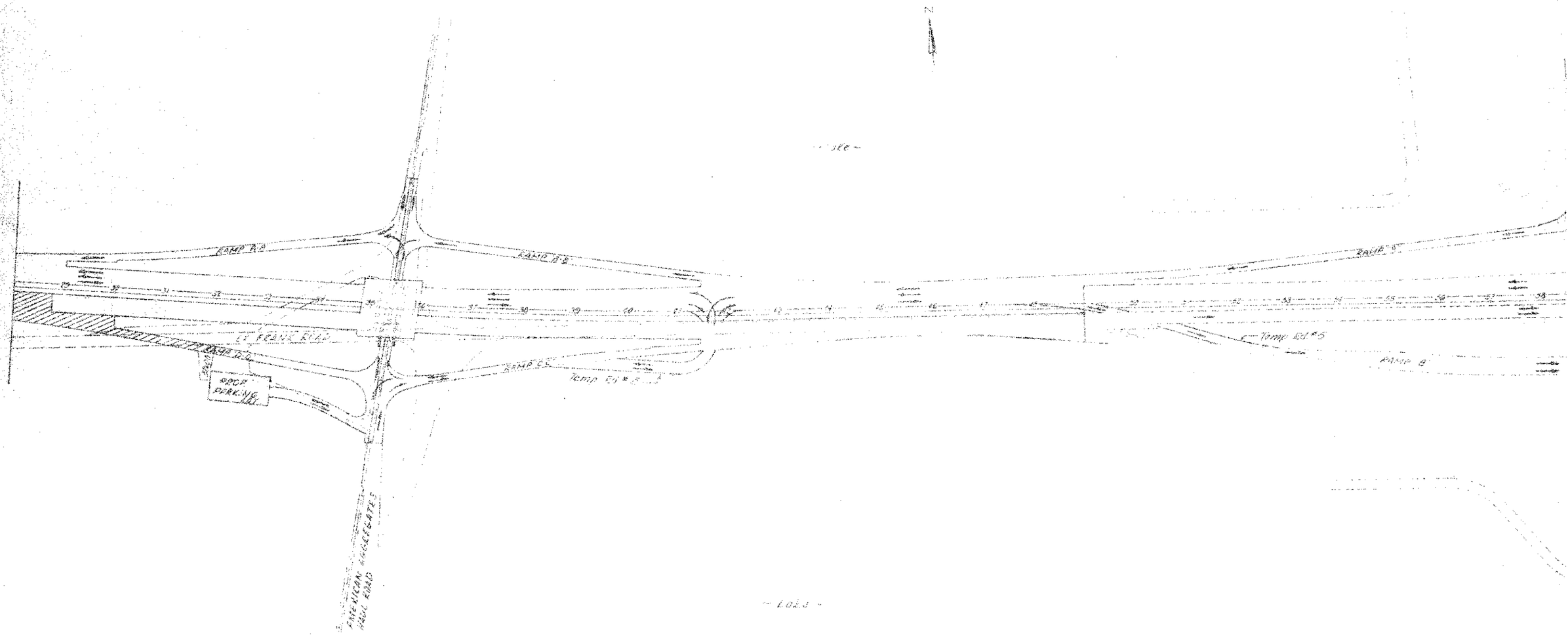


NOTE
See Sheet
and Notes.

STAGE 3.

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-B.04



NOTE
See Sheet
and Notes.

STAGE 3, F

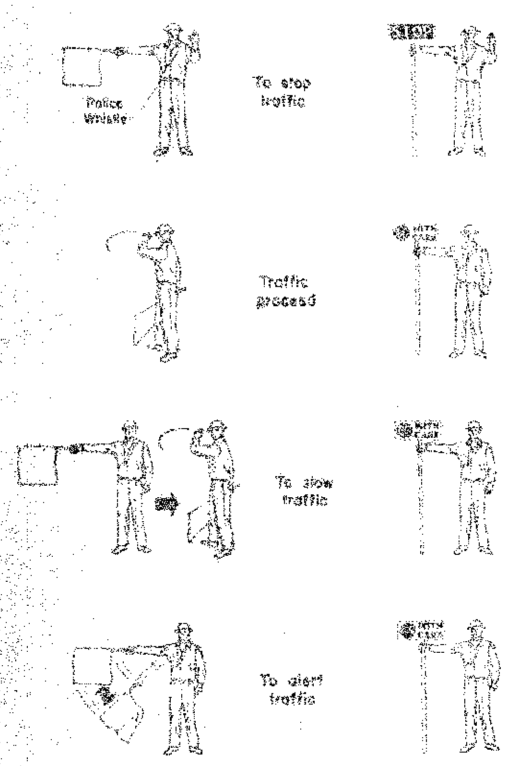
[illegible] ENGINEERING CONSULTANTS, LTD.

MAINTENANCE O

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA - 104 - 8.04

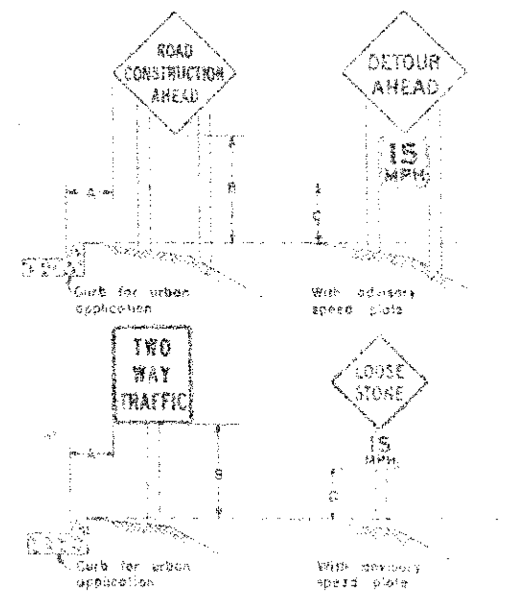
PROCEDURES FOR FLAGMAN



HEIGHT AND LATERAL LOCATION OF SIGNS

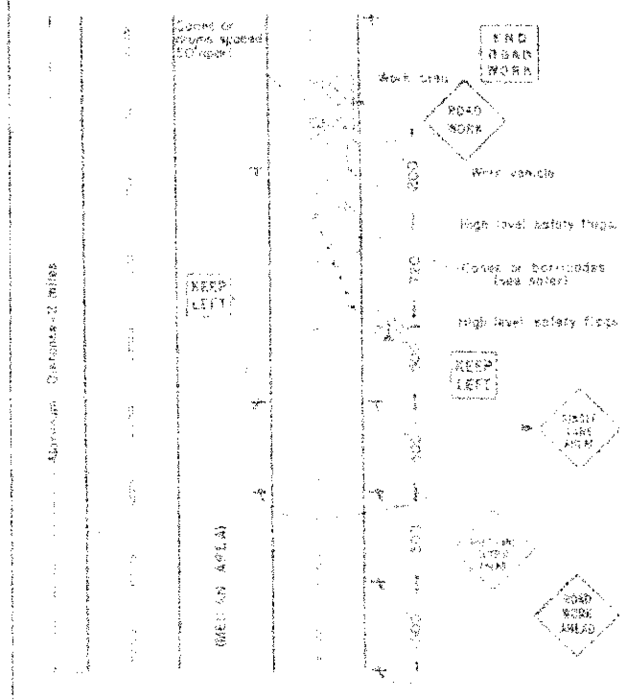
FOR

TYPICAL RURAL AND URBAN INSTALLATIONS



Location	Urban	Rural
A	2'	6 to 12'
B	7'	5'
C	6'	4'

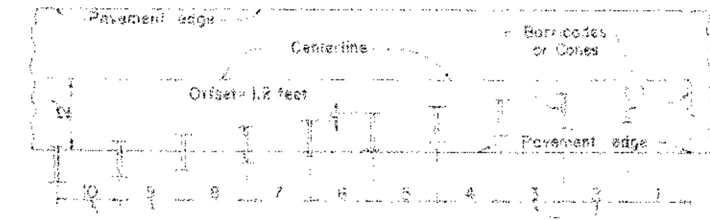
TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR CLOSING ONE LANE ON A MULTIPLE LANE HIGHWAY



NOTES

1. See Table III and Table IV for spacing and offset of cones in the taper.
2. Erect additional KEEP LEFT signs in the median at intervals of 1000 feet through the restricted area.

PLACEMENT OF BARRICADES OR CONES



TAPER RATES AND LENGTHS

HIGHWAY DESIGN SPEED (MPH)	85% HIGHWAY SPEED (MPH)	RATIO (RATE)	TAPER LENGTHS 9' Lane	10' Lane	11' Lane	12' Lane
12	9	1:10	90	100	110	120
20	18	1:20	180	200	220	240
30	27	1:30	270	300	330	360
40	34	1:40	360	400	440	[illegible]
50	40	1:50	450	500	550	600
60	45	1:60	540	600	660	720
70	49	1:70	630	700	770	840

LOCATION OF CONES OR BARRICADES

TYPE	NUMBER CONES OR BARRICADES	INTERVALS IN FEET BETWEEN CONES OR BARRICADES 1	2	3	4	5	6	7	8	9	10
URBAN	9	16	24	32	40	48	56	64	69		
	10	16	24	32	40	48	56	64	68	68	
MINOR	10	39	36	44	52	60	68	76	84	98	
RURAL ROUTE	11	39	36	44	52	60	68	76	84	98	85
MAJOR	10	38	46	54	62	70	76	86	94	98	
RURAL ROUTE	11	38	46	54	62	70	78	86	94	98	75
FREEWAY	10	48	56	64	72	80	88	96	104	108	
	11	48	56	64	72	80	88	96	104	108	108

NOTE: Additional cones or barricades may be added at the end of the taper by maintaining the same spacing of the last distance.

614 MAINTENANCE OF TRAFFIC

TRAFFIC SHALL BE MAINTAINED ON THE EXIS[TING PAVE]MENT WITHOUT INTERRUPTION DURING CON[STRUCTION] OF THE WORK EXCEPT AS OTHERWISE APPROV[ED BY THE] ENGINEER. THE CONTRACTOR SHALL SET UP HIS EQUIPMENT IN SUCH A MANNER AS TO [ENCROACH] UPON THE TRAVELED WIDTH OF THE PAVEME[NT TO A] MINIMUM EXTENT.

ALL TRAFFIC CONTROL DEVICES REQUIRED W[ITHIN THE] WORK LIMITS, EXCEPT REGULATORY AND GU[IDE SIGNS] AND PAVEMENT MARKINGS, SHALL BE FURNIS[H]ED AND MAINTAINED BY THE CONTRACTOR. THE ROAD CONSTRUCTION SIGN (C-6) AND [THE] CONSTRUCTION SIGN (C-8) ERECTED ON THE BARRICADES IN ACCORDANCE WITH STANDAR[D CONSTRUCT]ION DRAWING MC-3.

ALL WARNING, REGULATORY, AND GUIDE SIG[NS] OUTSIDE THE WORK LIMITS SHALL BE FURNIS[H]ED AND MAINTAINED BY THE DEPARTMENT.

ALL SIGNS, CONES, BARRICADES AND FLAGM[EN] UTILIZED IN CONFORMANCE WITH THE OHIO UNIFORM TRAFFIC CONTROL DEVICES FOR ST[REETS AND] HIGHWAYS, 1963 EDITION.

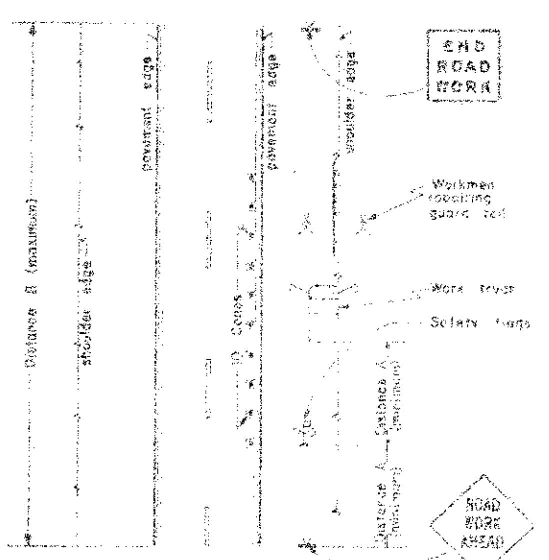
LANE RESTRICTIONS ON ANY ROADWAY OR ST[REET] OCCUR DURING HOURS OTHER THAN 7:00 A. A.M. AND 4:00 P.M. TO 6:00 P.M. MONDA[Y THROUGH] FRIDAY.

WHEN IT IS NECESSARY TO STOP ALL TRAFFIC OF OVERHEAD SUPPORTS, THE WORK SHALL ED THAT THE STOPPAGE IS LESS THAN TEN (IN ANY ONE (1) CONSECUTIVE THIRTY (30) M

NO TRAFFIC STOPPAGE SHALL OCCUR FOR E OVERHEAD SUPPORTS WITHOUT FLAGMA SITE FOR ASSISTANCE IN CONTROLLING TRA INFORMING DRIVERS AS TO THE NATURE OF

* SINGLE LANE AHEAD, SIGN NOT REQUIRED WHEN LANES ARE OPEN.

TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR STATIONARY OPERATIONS ON THE SHOULDER

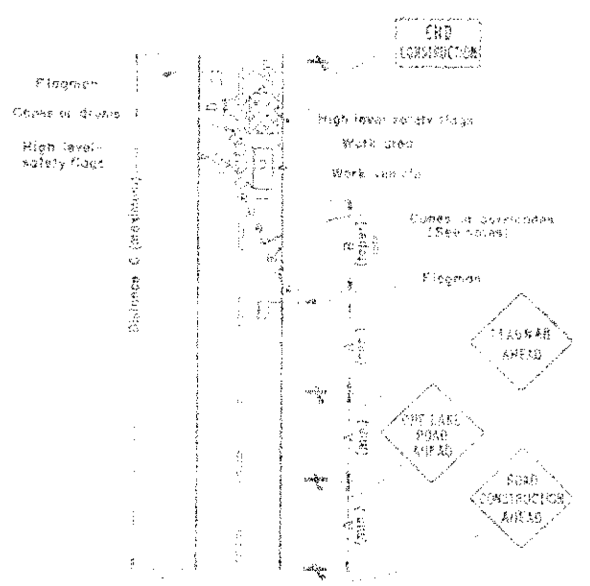


NOTES

1. Space the 10 cones as shown in table IV.
2. For work within the median, install the same cones and signs for both directions of travel.

TYPE OF ROADWAY	DISTANCE A (ft)	B (mi)
Urban	200	0.5
Rural Minor	350	1.0
Rural Major	500	1.0
Expressway	750	2.0

TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR STATIONARY OPERATIONS IN ONE LANE

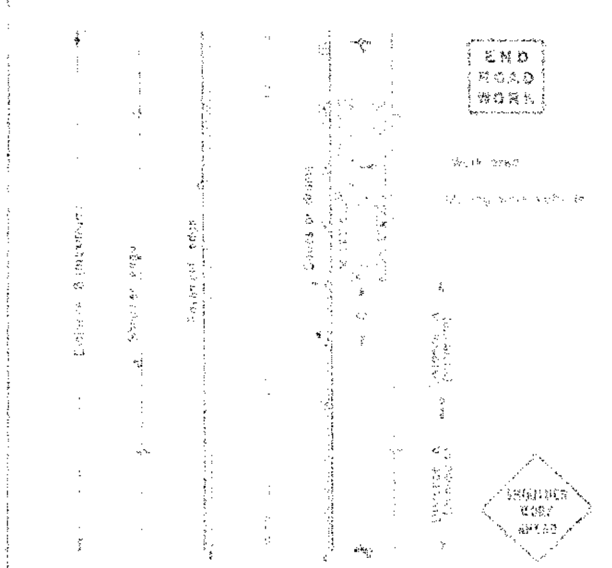


NOTES

1. See Table III and Table IV for locating cones on the taper.
2. Use the same warning signs on the opposite approach.

TYPE OF ROADWAY	DISTANCE A (ft)	B (mi)	C (mi)	D (ft)
Urban	200	1.10	0.5	30
Rural-Minor	350	1.20	1.0	100
Rural-Major	500	1.40	0	120

TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR MOVING OPERATIONS ON THE SHOULDER

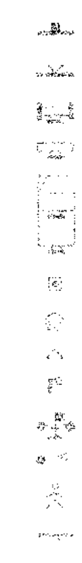


NOTES

1. For work within the median use the same treatment for both directions of travel.

TYPE OF ROADWAY	DISTANCE A (ft)	B (mi)	C
Urban	200	0.5	[illegible]
Rural Minor	350	1.0	1.0
Rural Major	500	[illegible]	100
Expressway	750	2.0	200

— SYMBOLS —



Sign mounted on a post.
Sign mounted on an easel.
Sign on a portable barricade.
Sign on a fixed barricade.
Signs on a truck.
Cone
Drum
Wet paint guard.
Road edge delineator
Safety flags
Flagman
Workman
Guard rail
Painted centerline

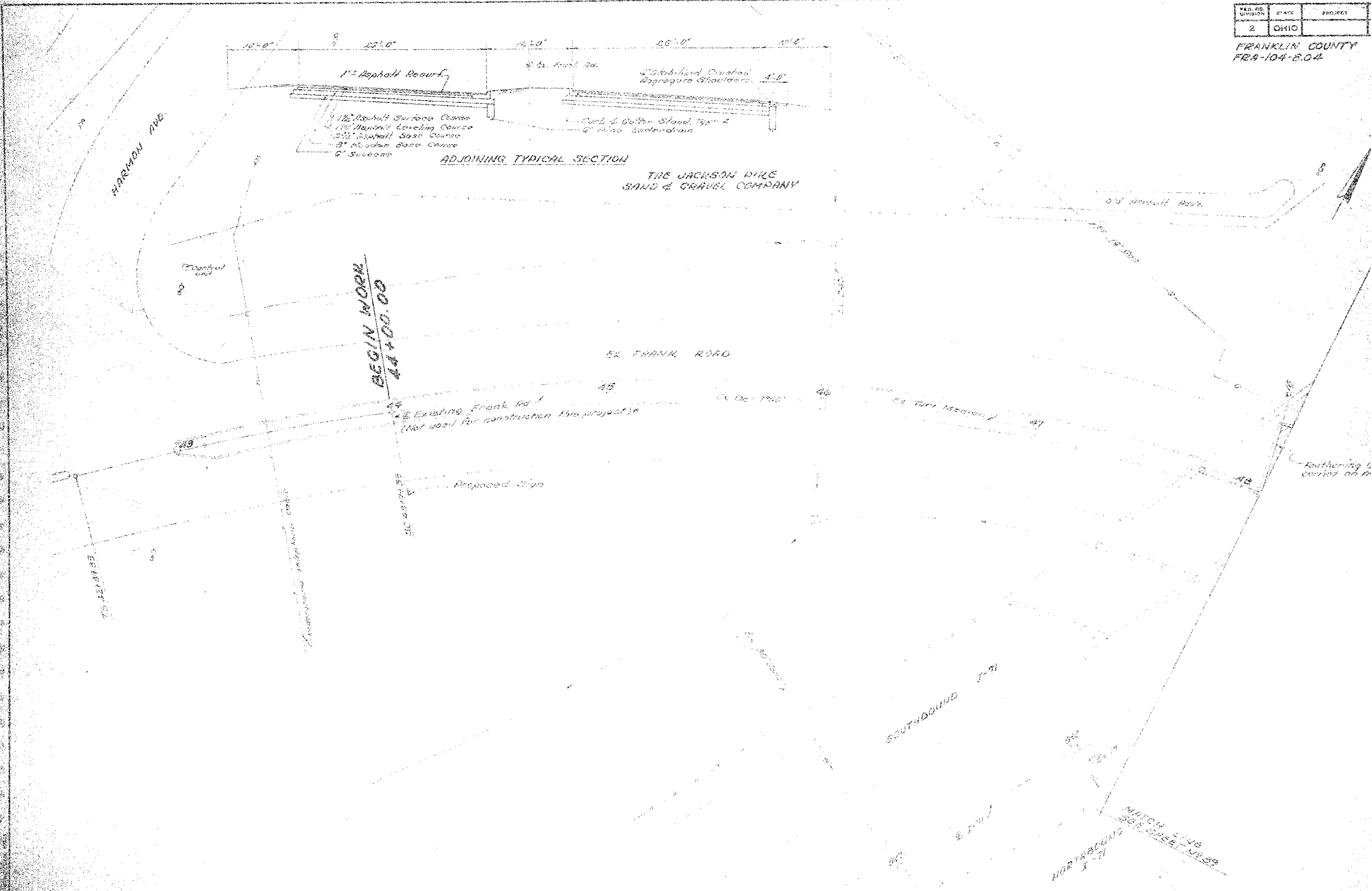
BUREAU OF TRAF[FIC]
OHIO DEPARTMENT OF H[IGHWAYS]

MAINTENANCE of TRA[FFIC]

APPROVED ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04


1½" Asphalt Resurf.
1½" Asphalt Surface Course
1½" Asphalt Leveling Course
2½" Asphalt Base Course
8" Macadam Base Course
6" Subbase
Curb & Gutter Stand. Type 2
6" Pipe Underdrain
ADJOINING TYPICAL SECTION
THE JACKSON PIKE SAND & GRAVEL COMPANY
HARMON AVE.
BEGIN WORK 44+00.00
EX. FRANK ROAD
Existing Frank Rd.
(Not used for construction this project)
Proposed Sign
SOUTHBOUND I-71
NORTHBOUND I-71
MATCH LINE SEE SHEET

42+38.16

CROSS REFERENCE	
SHEET NO.	ITEM
60	Horiz. Profile
65	Pavement Details
135	Power Line Relocs.
147	Grading Plans
150	Traffic Control Plans
152	Culvert Detail

Quantities by SAS. 9/70
Checked by SAS. 10/70

FED. AID PROJECT NO.	STATE	PROJECT
R	OHIO	

FRANKLIN COUNTY
FRA-104-9.04

SOUTHBOUND I-71

NORTHBOUND I-71

CURVE DATA
S.R. 104
R = 11459.16'
Δ = 1°51'02" Rt.
D = 1°00'
R = 5,911.07'
L = 1,161.63'
T = 580.99'
E = 51.32'

MATCH LINE SEE SHEET NO. 5A

BEGIN PAVEMENT
48+35.00

BEGIN PROJECT
P.O.C. 8+35.00
S.L.N. 8.0 Rd.

WILLIAM M. PRINGLE

Prop. 24

Construction Limits

Contract No.
Existing Pavement

BENCH MARK #6
Mag. Spike in S.O.
21' Lt. Sta. 50+10

MATCH LINE SEE SHEET NO. 5B

INLAND MOULDING INC.

48+10 TO 48
51+51.62-TO 10

COLUMBUS ENGINEERING CONSULTANTS, LTD.

Quantities by: [illegible] 9/10
Checked by: [illegible]

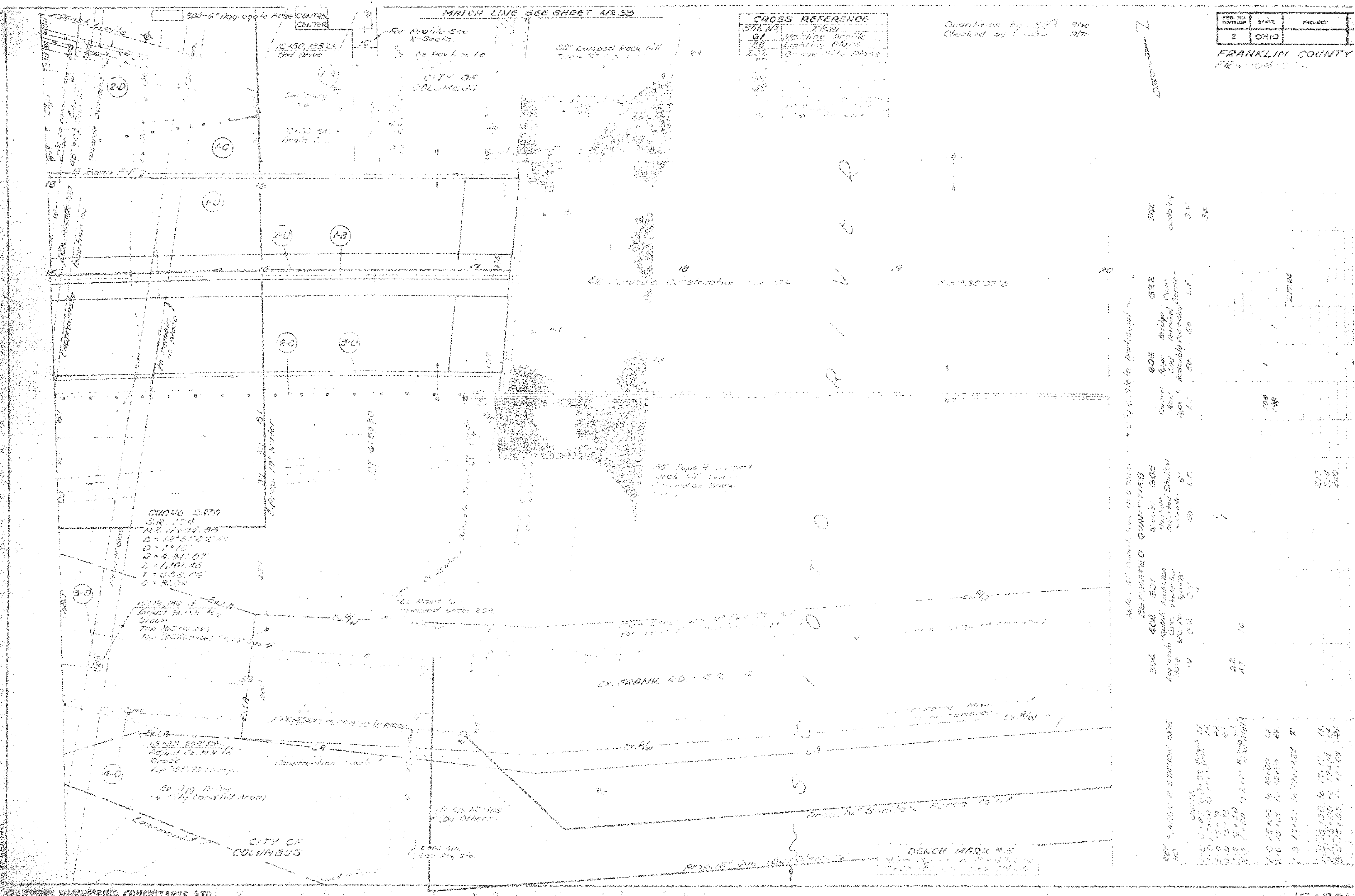
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

CROSS REFERENCE	
Sht. No.	Item
61	Mainline Profile
68-39	Pavement Details
187	Lighting Plan
175	Traffic Control Plan
62	Ramp "F-F" Profile
133	Sewer Line Relocation
184	Culvert Detail
185	Water Line Plans

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	202 Ex. Curb & Gutter Removed	202 Catch Basin Removed	202 Surface of Asph. Removed	202 Pipe Removed 24"	601 Rock Chan. Prot. Type "B"	602 Conc. Masonry	603 Type C 6"	603 Type C 12"	603 Type B 15"	603 Type C 15"	603 Standard Perforated 6"	603 Bedding & Drainage	604 C.I. Inlet	604 3.33 Inlet	672 Conc. Barrier	606 Guard Rail Type 5	606 Anchor Assembly	632 Conc. Median	660 Sodding
			L.F.	No.	C.Y.	L.F.	C.Y.	C.Y.	L.F.	L.F.	L.F.	L.F.	L.F.		Ea.	Ea.	L.F.	L.F.	Ea.	L.F.	S.Y.
	Culverts																				
1-D	11+70	Rt.					5	0.2			50				1						
2-D	12+82	Rt.&Lt.					5	0.3			62 + 66			1		1					
3-D	10+00 to 10+20	Rt.							28												
4-D	10+00 to 11+72	Rt.																			169
5-D	11+00 to 12+00	[illegible]					125														
6-D	13+50 to 15+00	Lt.					72														
1-U	13+35.5 to 14+70	Rt.															2985	1			
2-U	[illegible]	Rt.															404				
3-U	14+09 to 15+00	Lt.															11				
2-U	14+72 to 15+00	Rt.															30				
1-B	10+60 to 12+20	Lt.			3.5	60															
2-B	10+70	Rt.																			
3-B	10+00 to 11+65	Rt.	395																		
4-B	13+29	Rt.		1																	
1-R	12+45 to 14+79	Rt.																		44	
2-R	14+29 to 15+00	Rt.															52			21	
3-R	13+79 to 14+28	Rt.																			



MATCH LINE SEE SHEET
CONTROL CENTER
CROSS REFERENCE
Mainline Profile
Lighting Plans
Quantities by
Checked by
N
FED. RD. DIVISION
STATE
PROJECT
2
OHIO
FRANKLIN COUNTY
CITY OF COLUMBUS
CURVE DATA
S.R. 104
ESTIMATED QUANTITIES
Construction Limit
CITY OF COLUMBUS
BENCH MARK
ENGINEERING CONSULTANTS, LTD.
15+00

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

CROSS REFERENCE	
Sht. No.	Item
31 & 82	Mainline Profile
76	Pavement Details
188	Lighting Plans
125	San. Sewer Reloc.
202	Bridge Site Plan
196	Power Line Reloc.

BENCH MARK #4A

ESTIMATED QUANTITIES

Note: All quantities this sheet ... participation

REF. NO.	STATION TO STATION	SIDE	606 Guard Rail Type 5 Assembly	622 Concrete Barrier
[illegible]	[illegible]	[illegible]	[illegible]	97.24

COLUMBUS ENGINEERING CONSULTANTS, LTD.

20+00 TO

Quantities by [illegible]
Checked by [illegible]

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

CURVE DATA
RAMP "D-D"
P.I. 27+49.60
Δ = 7°18'40" Lt.
D = 1°30'
R = 3819.72'
L = 487.31'
T = 244.08'
E = 7.13'

CROSS REFERENCE

Sht. No.	Item
34	Mainline Profile
70	Pavement Details
135	Lighting Plans
125	Sanitary Sewer Plans
150	Traffic Control Plans
136	Water Line Plans

BENCH MARK #4
Mag spike in ℄ #671079
@S. end of bridge 25+13,
1.6' Rt. Elev. 714.52

Existing Pavement to be removed under Item 203

Note - All quantities this sheet are State & City participation

ESTIMATED QUANTITIES

REF NO.	STATION TO STATION SIDE	605 Underdrain 6"	606 Guard Rail Type 5	606 Anchor Assembly	622 Concrete Median Barrier	622
	UNITS	L.F.	L.F.	EA	L.F.	L.F.
1-G	25+00 to 28+23.5 Rt.		326.5	1		
2-G	25+00 to 29+00 Lt.		400			
1-B	25+00 to 29+00 ℄				326	60
1-U	25+00 to 29+00 Lt.	400				
2-U	25+00 to 29+00 Lt.	400				
3-U	25+00 to 29+00 Rt.	400				
TOTALS TO GENERAL SUMMARY		1200	726.5	1	326	60

ENGINEERING CONSULTANTS, LTD.

25+00 T

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Quantities by: [illegible] 2/80
Checked by: [illegible]

CROSS REFERENCE

Sht. No.	Item
62	Mainline Profile
64	Ramp "R-A" Profile
70	Pavement Details
188 & 189	Lighting Plans
187	Power Line Reloc.

CURVE DATA
Ramp "R-A"
P.I. 30+51.27
Δ = 6°02'45" Lt.
D = 2°00'
R = 2864.79'
L = 302.29'
T = 151.29'
E = 3.99'

AMERICAN AGGREGATES CORP.

Note: All quantities this sheet - State & City

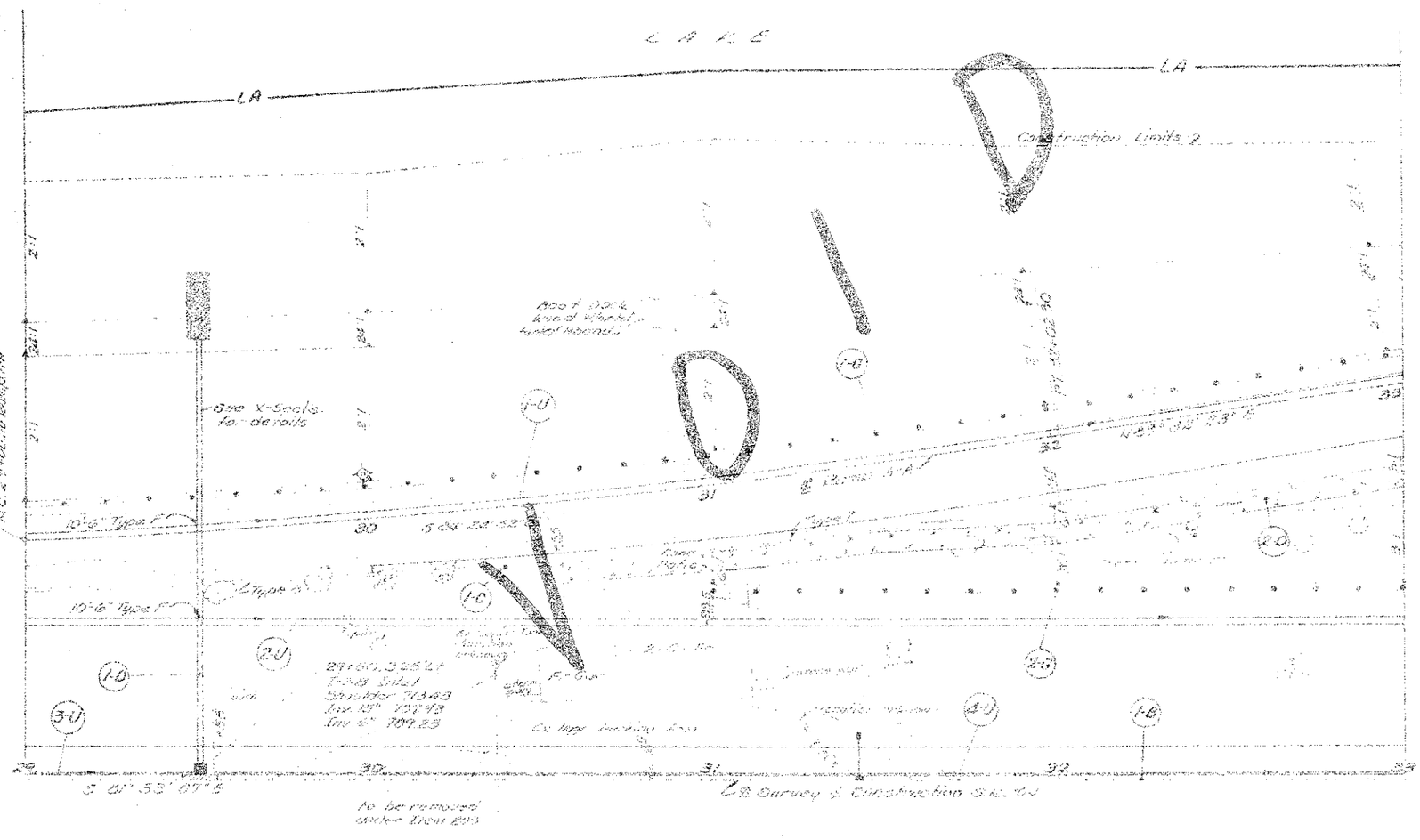
ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	601 Rock Channel Prot. Type B	602 Concrete Masonry	603 Type "B" 15"	603 Type "F" 6"	603 Type "F" 15"	604 I-3B Inlet	605 Shallow 6"	606 Guard Rail Type 5	606 Anchor Assembly	606 Bracket Branches	609 Curb Type 1	609 Curb Type 8	622 Conc. Barrier	660 Sodding
	UNITS		C.Y.	C.Y.	L.F.	L.F.	L.F.	Ea.	L.F.	Ft.	Ea.		L.F.	L.F.	L.F.	S.Y.
1-D	29+50	Lt.	9	0.3	82		50	1				2				
2-D	29+50 to 32+02.5	Rt.														165
1-G	29+00 to 33+25.66	Lt.								405						
2-G	32+99.5 to 33+00	Lt.								200.5	1					
1-B	29+00 to 33+00	R													373	
1-E	29+00 to 32+02.5	Rt.											147	157		
1-U	29+00 to 33+00	Lt.							400							
2-U	29+00 to 33+00	Lt.				10			390							
3-U	29+00 to 29+39	Lt.				70			40							
4-U	30+25 to 33+00	Lt.							345							
TOTALS TO GENERAL SUMMARY			9	0.3	82	80	50	1	1175	605.5	1		147	157	378	165

Rev. 11-30-78

[illegible] ENGINEERING CONSULTANTS, LTD.

29+00 TO 33+



FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Quantities by S.F.F. 2/70
Checked by JCS 3/70

CROSS REFERENCE	
Sht. Nº	Item
62	Mainline Profile
64	Ramp "A-A" Profile
70	Pavement Details
188 & 189	Lighting Plans
137	Power Line Reloc.

CURVE DATA
Ramp "A-A"
P.I. 30+51.29
Δ = 6°02'45" Lt.
D = 2°00'
R = 2864.79'
L = 302.29'
T = 151.29'
E = 3.99'

AMERICAN AGGREGATES CORP.

Note: All quantities this sheet = * State & City

ESTIMATED QUANTITIES

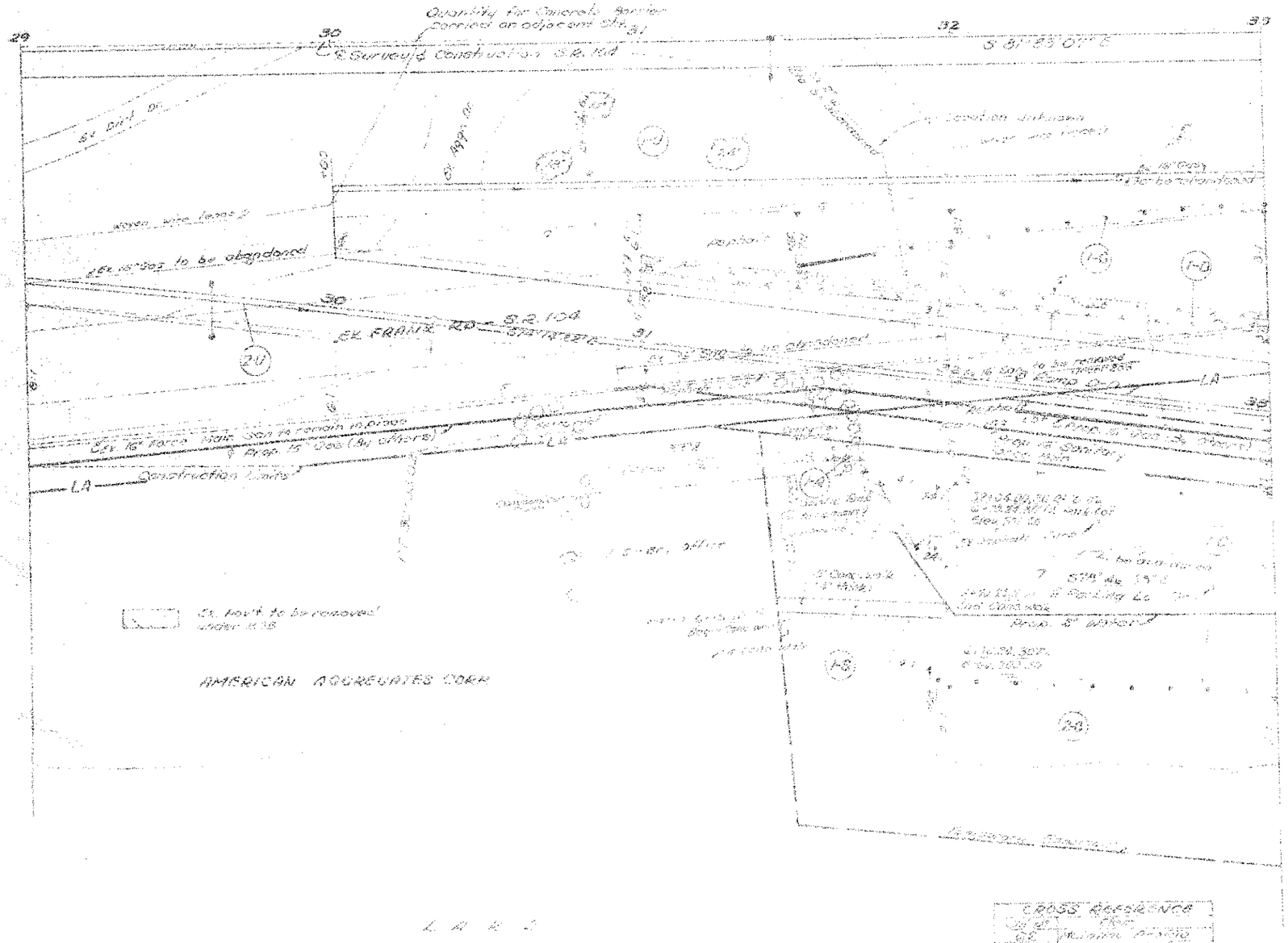
REF. NO.	STATION TO STATION	SIDE	601 Rock Channel Prot. Type B C.Y.	602 Concrete Masonry C.Y.	603 Type "B" 15" L.F.	603 Type "F" 6" L.F.	603 Type "F" 15" L.F.	604 E-3B Inlet Ea.	605 Shallow 6" L.F.	606 Guard Rail Type 5 Ft.	606 Anchor Assembly Ea.	606 Bends & Brackets	609 Curb Type 7 L.F.	609 Curb Type 8 L.F.	622 Conc. Barrier L.F.	660 Sodding S.Y.
	RAMP															
1-G	29+50	Lt.	9	0.8	82		30	1				2				105
2-G	29+35 to 33+00 R.A"	Rt.														
1-G	29+00 to 35+05 R.A"	Lt.								405	1					
2-G	30+92.5 to 33+00	Lt.								200.5						
1-S	29+00 to 33+00	℄													378	
1-C	29+00 to 32+50 R.A"	Rt.											147	157		
1-U	29+00 to 33+00 R.A"	Lt.							400							
2-U	29+00 to 33+00	Lt.				10			390							
3-U	29+00 to 29+50	Lt.				10			40							
4-U	29+35 to 33+00	Lt.							345							
TOTALS TO GENERAL SUMMARY			9	0.8	82	20	30	1	1175	605.5	1		147	157	378	105

COLUMBUS ENGINEERING CONSULTANTS, LTD.

29+00 TO 33

FED. RD. DIVISION	STATE	PROJECT
5	OHIO	

FRANKLIN COUNTY
FRA-104-8.04



CROSS REFERENCE	
[illegible]	Plan and Profile
[illegible]	Cross Sections / Profile
[illegible]	Parking Lot Details
[illegible]	Pavement Details
[illegible]	Sanitary Sewer Plans
[illegible]	Water Line Plans
[illegible]	Striping Plans

[illegible]

ESTIMATED QUANTITIES

	202	203	606	606	606	606	608	609	660
	Ex. Sidewalk Removed	[illegible]	Guard Rail Type 5	Guard Rail Approach End	Anchor Assembly	[illegible]	Concrete Walk	Asphalt Concrete Curb	[illegible]
	S.Y.	C.Y.	L.F.	L.F.	Ea.	Ea.	S.F.	L.F.	S.Y.
[illegible]									135
[illegible]			110	150	1	1			
[illegible]								274	
[illegible]							270		
[illegible]	50								
[illegible]		300							
[illegible]		400							
TOTALS TO GENERAL SUMMARY	50	700	110	150	1	1	270	274	135

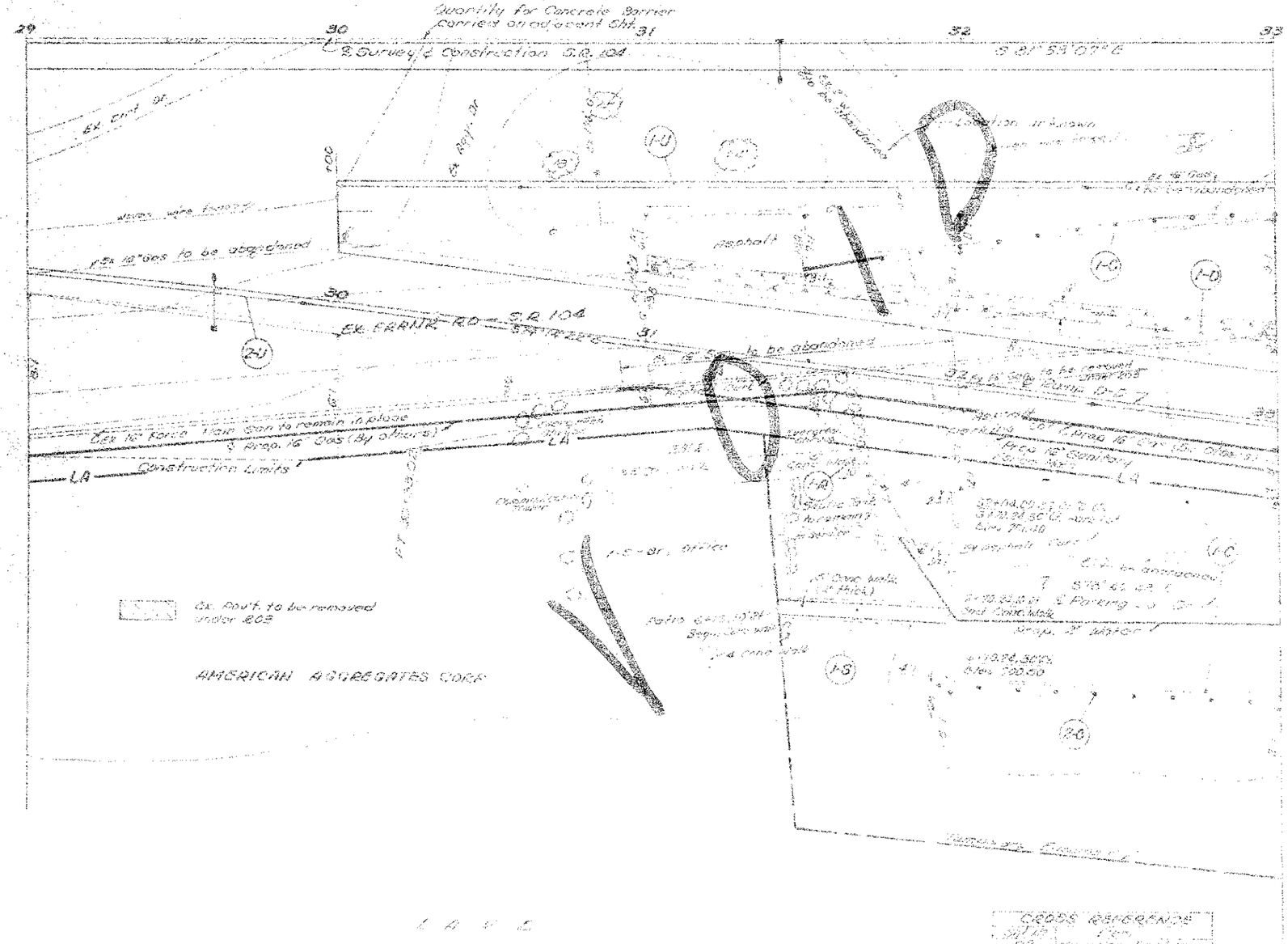
[illegible] ENGINEERING CONSULTANTS, LTD.

29+00 TO 33+00

Quantities by: [illegible]
Checked by: [illegible]

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04



ESTIMATED QUANTITIES

Note: All quantities on this sheet [illegible]

REF. NO.	STATION TO STATION	SIDE	202 Ex. Side-walk Rem. & Disposal of	605 Shallow Underdrain	608 Curb Ramp Type A	608 Concr. Road Type A	608 Approach Slab Assembly	608 Anchor Assembly	608 Concrete Walk	609 Asphalt Concrete Curb	660 Sodding
	UNITS		S.Y.	L.F.	S.F.	S.F.	Ea.	Ea.	S.F.	L.F.	S.Y.
2-0	29+00 to 33+00	Lt.									135
1-H	31+00 to 33+00	Rt.				150	1				
2-H	[illegible] to [illegible]	Lt.			110			1			
1-C	[illegible] to [illegible]	Rt.								274	
1-B	[illegible] to [illegible]	Rt.							270		
1-A	[illegible] to [illegible]	Rt.	50								
1-D	30+00 to 33+00	Rt.		300							
2-D	29+00 to 33+00	Lt.		460							
TOTALS TO GENERAL SUMMARY			50	760	110	150	1	1	270	274	135

CROSS REFERENCE	
Sht. No.	Item
62	[illegible] Profile
63	Ramp D [illegible]
64	Parking Lot [illegible]
65	Pavement Details
123, 126	Sanitary Sewer [illegible]
123, 126	Water Line Plan
123, 130	Lighting Plans

CROSS REFERENCE

C4	Water Line Profile
C5	Storm Drain Profile
C6	Sewer Line Profile
C7	Pavement Details
217	Erosion Site Plan
139	Lighting Plans
126	Water Main Plans
66	Box Beam Profile
132	Traffic Control Devices
127	Power Line Relocation

AMERICAN AGGREGATES CORP.

406-0" to 1" Asphalt Conc. (650-701) Feathering Area

Pavement to be removed

L A N E

Water Level
Elev 699.1 (2.69)
Elev 688.3 (13.47)

CURVE DATA
S.R. 104
P.I. 38+79.32
Δ = 4°48'06" Lt.
D = 0°28'
R = 12,277.67'
L = 1,001.48'
T = 500.82'
E = 10.34'

Temporary Easement

Construction Limits

Water Level
Elev 699.1 (2.69)
Elev 688.3 (13.47)

FRANKLIN COUNTY
FAP-104-B 04

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Quantities by

CROSS REFERENCE	
Sht. No.	Item
32	Mainline Profile
64	Ramp "A-A" Profile
65	Ramp "B-B" Profile
71	Pavement Details
217	Bridge Site Plan
169	Lighting Plans
126	Water Main Plans
66	Am. Aggr. Profile
152	Traffic Control Plans
137	Power Line Reloc.

Note: All quantities this sheet – State & City Participation

ESTIMATED QUANTITIES

202 Ex. Pav't. Removed
404 Asphalt Concrete (60-70)
601 Rock Channel Prot.
602 Conc. Masonry
603 Type
604 No. 5 C.B. / I-3B Inlet
605 Shallow Subgrade Drain
606 Bridge Term. Assem.
622 Concrete Barrier
660 Sodding

REF. NO. | STATION TO STATION | SIDE

33+00 TO 37+

CURVE DATA

L = 1,007.93
T = 504.62
E = 10.34

33 | 34 | 35 | 36 | 37

S 81° 33' 07" E

CE Survey & Construction S.R. 103

EX. FRANK RD. - S.R. 103

EX. 12" to 36" Concrete Culvert

EX. 16" Force Main

EX. 8" Water Line

EX. Gas Line

EX. Power Line

EX. Telephone Line

EX. Fence

EX. Guard Rail

EX. Gas Valve

EX. Water Valve

EX. Power Pole

EX. Light Pole

EX. Telephone Pole

EX. Manhole

EX. Catch Basin

EX. Inlet

EX. Gas Meter

EX. Water Meter

EX. Mail Box

EX. Sign

EX. Hydrant

EX. Tree

EX. Shrub

EX. Bush

EX. Rock

EX. Stump

EX. Ditch

EX. Curb

EX. Gutter

EX. Sidewalk

EX. Pavement

EX. Building

EX. Garage

EX. Shed

EX. Barn

EX. Silo

EX. Tank

EX. Pump

EX. Well

EX. Spring

EX. Pond

EX. Lake

EX. River

EX. Creek

EX. Stream

EX. Bridge

EX. Culvert

EX. Overhead Wires

EX. Underground Wires

EX. Guy Wire

EX. Anchor

EX. Transformer

EX. Meter

EX. Switch

EX. Fuse

EX. Conduit

EX. Duct

EX. Manhole

EX. Handhole

EX. Pedestal

EX. Cabinet

EX. Vault

EX. Tower

EX. Antenna

EX. Dish

EX. Microwave

EX. Satellite

EX. Radio

EX. Repeater

EX. Amplifier

EX. Battery

EX. Charger

EX. Rectifier

EX. Inverter

EX. Converter

EX. Multiplexer

EX. Demultiplexer

EX. Modem

EX. Coupler

EX. Acoustic Coupler

EX. Data Set

EX. Terminal

EX. Printer

EX. Keyboard

EX. Display

EX. Monitor

EX. Video Display Terminal

EX. Video Tape Recorder

EX. Video Tape Player

EX. Video Camera

EX. Video Monitor

EX. Video Switcher

EX. Video Processor

EX. Video Amplifier

EX. Video Distribution Amplifier

EX. Video Line Amplifier

EX. Video Equalizer

EX. Video Corrector

EX. Video Stabilizer

EX. Video Noise Reducer

EX. Video Enhancer

EX. Video Sharpener

EX. Video Blanker

EX. Video Clamp

EX. Video Limiter

EX. Video Compressor

EX. Video Expander

EX. Video Gain Control

EX. Video Level Control

EX. Video Phase Control

EX. Video Timing Control

EX. Video Sync Generator

EX. Video Test Signal Generator

EX. Video Color Bar Generator

EX. Video Pattern Generator

EX. Video Character Generator

EX. Video Graphics Generator

EX. Video Overlay Generator

EX. Video Mixer

EX. Video Fader

EX. Video Wipe Generator

EX. Video Effects Generator

EX. Video Switcher Panel

EX. Video Control Panel

EX. Video Monitor Wall

EX. Video Projector

EX. Video Screen

EX. Video Wall

EX. Video Floor

EX. Video Ceiling

EX. Video Roof

EX. Video Foundation

EX. Video Footing

EX. Video Pile

EX. Video Caisson

EX. Video Pier

EX. Video Abutment

EX. Video Wing Wall

EX. Video Retaining Wall

EX. Video Bridge Deck

EX. Video Bridge Girder

EX. Video Bridge Beam

EX. Video Bridge Truss

EX. Video Bridge Arch

EX. Video Bridge Cable

EX. Video Bridge Suspender

EX. Video Bridge Tower

EX. Video Bridge Pier

EX. Video Bridge Abutment

EX. Video Bridge Wing Wall

EX. Video Bridge Retaining Wall

EX. Video Bridge Deck

EX. Video Bridge Girder

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EX. Video Bridge Truss

EX. Video Bridge Arch

EX. Video Bridge Cable

EX. Video Bridge Suspender

EX. Video Bridge Tower

EX. Video Bridge Pier

EX. Video Bridge Abutment

EX. Video Bridge Wing Wall

EX. Video Bridge Retaining Wall

CURVE DATA
MAPLE LOT DRIVE
P.I. Sta. 22+30
Δ = 18° 30' 11" Rt
D = 28° 00'
R = 204.69
L = 34.18
T = 17.27
E = 3.91

NEW ASPH. PAVT. 12" PA. 08

NEW CURB

Existing Drive

Pavement to be removed

AMERICAN AGGREGATES CORP.

(130)

ITEMS ADJUSTING	
Station	LF
0+75 Rt.	7
1+05 Rt.	7
1+75 Rt.	7
2+30 Rt.	5
2+75 Rt.	7
3+20 Rt.	7
TOTAL	42

CROSS REFERENCE

1-D	Inlet, Type D
1-E	Inlet, Type E
1-F	Inlet, Type F
1-G	Inlet, Type G
1-H	Inlet, Type H
1-I	Inlet, Type I
1-J	Inlet, Type J
1-K	Inlet, Type K
1-L	Inlet, Type L
1-M	Inlet, Type M
1-N	Inlet, Type N
1-O	Inlet, Type O
1-P	Inlet, Type P
1-Q	Inlet, Type Q
1-R	Inlet, Type R
1-S	Inlet, Type S
1-T	Inlet, Type T
1-U	Inlet, Type U
1-V	Inlet, Type V
1-W	Inlet, Type W
1-X	Inlet, Type X
1-Y	Inlet, Type Y
1-Z	Inlet, Type Z

ESTIMATED QUANTITIES

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Quantities by ~ ~~ 9/70
Checked by

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

ITEM 605 6" U.D. DRAINS	
Station	Lt.
6+75 Rt.	7
7+25 Rt.	7
7+75 Rt.	7
8+25 Rt.	7
8+75 Rt.	7
9+25 Rt.	7
TOTAL	42

[illegible] ENGINEERING CONSULTANTS, LTD.

33+00 TO 37+

Quantities Calculated by ... Checked by ...

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-6.04

CURVE DATA
S.R. 104
P.I. 38+79.82
Δ = 3°42'06" Lt.
D = 0°28'
R = 16,577.37'
L = 1,007.48
T = 504.02'
E = 10.34'

CROSS REFERENCE

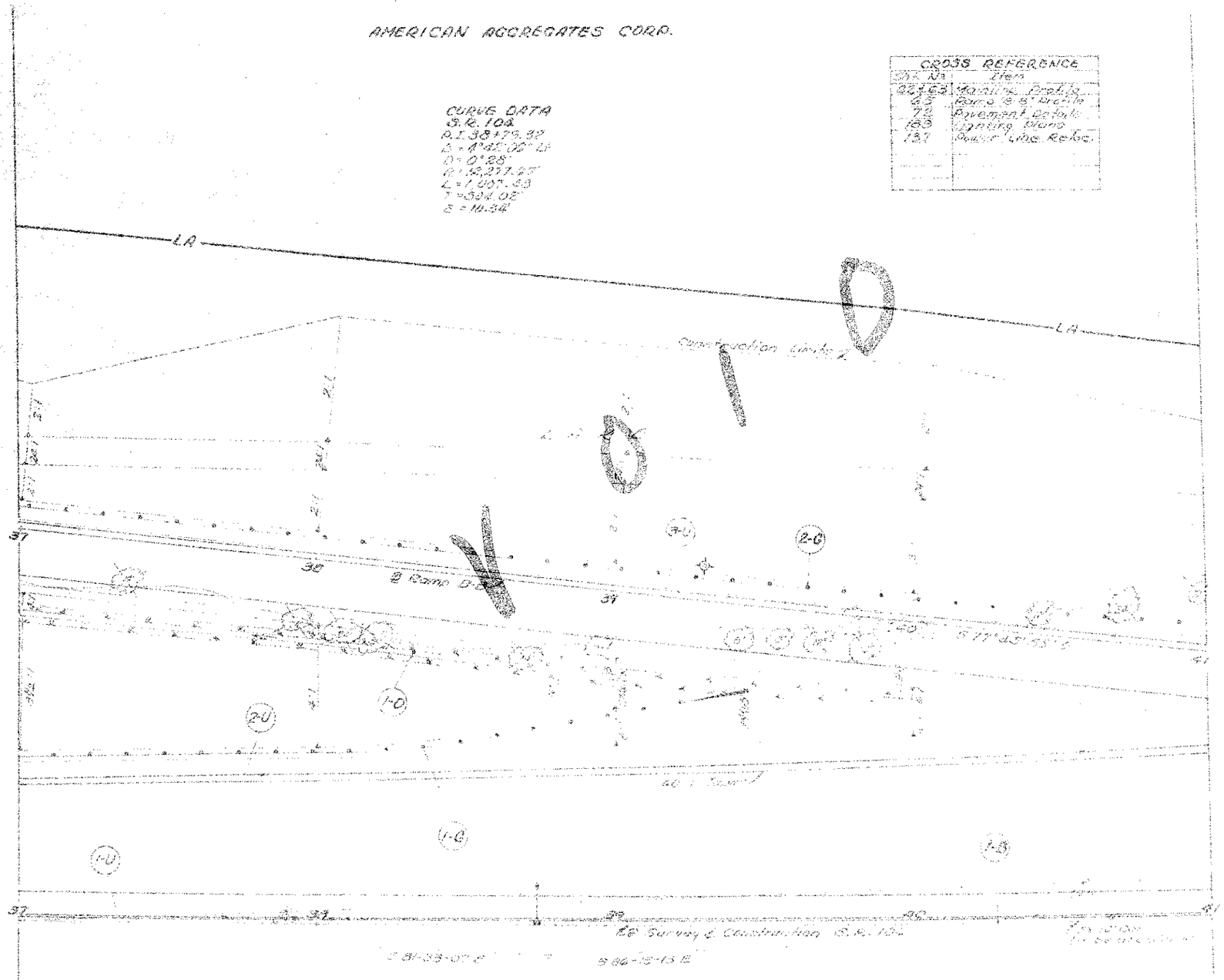
St. No.	Item
22&23	Mainline Profile
25	Ramp B-3' Profile
74	Pavement Details
183	Lighting Plans
137	Power Line Poles

ESTIMATED QUANTITIES

TOTALS TO GENERAL SUMMARY

ENGINEERING CONSULTANTS, INC.

37+00 TO 41+



Quantities by - G.J.T. 9/70
Checked by - [illegible]

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

CURVE DATA
S.R. 104
P.I. 38+79.32
Δ = 4°42'00" Lt
D = 0°28'
R = 12,277.97
L = 1,007.53
T = 504.02
E = 10.34'

CROSS REFERENCE	
Sh. No.	Item
62-63	Mainline Profile
65	Ramp "B" Profile
72	Pavement Details
180	Lighting Plans
187	Power Line Reloc.

Note:- All quantities this sheet - State & City Participation

ESTIMATED QUANTITIES

Ref. No.	Station to Station Side	605 Shallow Underdrain 6"	606 Guard Rail Type 5	606 Approach End Assembly	622 Concrete Barrier	660 Seeding
	Units	L.F.	L.F.	Ea.	L.F.	S.Y.
1-G	37+00 to 41+00 38' Rt.					200
1-G	37+00 to 39+46.5 Lt.		240.5	1		
2-G	37+00 to 41+00 28' Lt.		400			
1-B	37+00 to 41+00 ⊈				399	
1-U	37+00 to 41+00 Rt.	400				
2-U	37+00 to 41+00 Lt.	400				
3-U	37+00 to 41+00 38' Lt.	400				
	TOTALS TO GENERAL SUMMARY	1200	640.5	1	398	200

Quantities by
Checked by 9/70

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Notes: Quantities this sheet [illegible]

ESTIMATED QUANTITIES

Station to Station	605	606	606	608	608	660
	[illegible]	Guardrail [illegible]	[illegible]	Concrete Curb [illegible]	Curb Ramp [illegible]	Sodding
Units	L.F.	L.F.	Ea.	L.F.	L.F.	S.Y.
[illegible]						211
[illegible]		2825	1			
[illegible]				153	65	
[illegible]	400 400					
TOTALS TO GENERAL SUMMARY	800	2825	1	153	65	211

ENGINEERING CONSULTANTS, LTD.

37+00 TO 41

[illegible]	OHIO

FRANKLIN COUNTY
FRA-104-8.04

CURVE DATA
S.R. 104
P.I. 38+79.92
Δ = 8°48'26" [illegible]
D = [illegible]
T = [illegible]
L = [illegible]
R = [illegible]
E = [illegible]

CURVE DATA
RAMP "C-C"
P.I. 39+02.65
Δ = 5°01'04" Rt
D = 1°30'
R = [illegible]
L = 334.43
T = 167.37
E = [illegible]

CROSS REFERENCE

Sheet No.	Item
65 & 63	Mainline Profile
[illegible]	Ramp "C-C" Profile
[illegible]	Pavement Details
180	Lighting Plans
[illegible]	San. Sewer Plans
[illegible]	Water Line Plans
153	Traffic Control Plans

BENCH MARK # 3
Mine Spike in O.E.T.P. # 238
37+50, 60' Rt. Elev. [illegible]

Note: [illegible] quantities this sheet [illegible] City Participation

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION SIDE	605 Shallow Pipe Underdrain 6" L.F.	606 Guard Rail Type 5 L.F.	606 Anchor Assembly Ea.	609 Curb Type 7 L.F.	609 Curb Type [illegible] L.F.	660 Sodding S.Y.
1-G	38+[illegible] to 38+[illegible] Lt		282.5	1			
1-C	37+00 to 39+[illegible] Rt						
2-C 2-C	39+62 to 40+50 Lt 40+15 to 41+00 Lt				153	85	
1-D 2-D	37+00 to 41+00 Lt 37+00 to 41+00 Rt	400 400					
CARRIED TO GENERAL SUMMARY		400	282.5	1	153	85	211

COLUMBUS ENGINEERING CONSULTANTS, LTD.

37+00-70 41+

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Quantities by: [illegible]
Checked by: [illegible]

CURVE DATA
RAMP "B-B"
P.I. 43+67.42
Δ = 9°55'10" Lt.
D = 2°00'
R = 2864.79'
L = 495.95'
T = 248.61'
E = 10.77'

CURVE DATA
S.R. 104
P.I. 38+79.32
Δ = 4°42'02" Lt.
D = 0°28'
R = 12,277.67'
L = 1,007.46'
T = 504.02'
E = 10.34'

CROSS REFERENCE

Sht. No.	Item
[illegible]	Mainline Profile
[illegible]	Ramp "B-B" Profile
[illegible]	Ramp "C-C" Profile
[illegible]	Grading Plans
[illegible]	Traffic Control Plans
[illegible]	Water Line Plans
[illegible]	San. Sewer Plans
[illegible]	Pavement Details
[illegible]	Water Line Details

BENCH MARK #2
Mag Spike in 18" Poplar Tree
41+80, 75' Lt. Elev. 700.91

Note: All quantities this sheet … [illegible]

ESTIMATED QUANTITIES

Ref. No.	Station to Station Side	601	602	603	603	603	604	605	606	622	609	622
		C.Y.	C.Y.	L.F.	L.F.	L.F.	Ea.	L.F.	L.F.	L.F.	L.F.	L.F.
1-U	[illegible]	8	0.3									
1-G	[illegible]								400			
1-B	[illegible]									60		386
1-D	[illegible]										30	
[illegible]	[illegible]			[illegible]		[illegible]		53 50 46 220 343 327 336 87				
TOTALS TO GENERAL SUMMARY		8	0.3	73	72.50	72	1	1283	400	60	30	386

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Note:-
Items indicated by dashe
on this sheet are to be do
"by others".

Quantities by :- [illegible]
Checked by :- [illegible]

CROSS REFERENCE	
Sht. No.	Item
58	Mainline Profile
73	Pavement Details
192	Lighting Plans
193	Power Line Poles

COLUMBUS ENGINEERING CONSULTANTS, LTD.

45+00 TO

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Quantities by [illegible]
Checked by [illegible]

CURVE DATA
RAMP "A"
P.I. 51+17.81
Δ = 4°42'35" Lt.
D = 2°00'
R = 2864.79'
L = 235.49'
T = 117.81'
E = 2.42'

CROSS REFERENCE

Sht. No.	Item
21	Ramp "A" Prof. To
78	Pavement Details

Note:- All quantities this sheet - State & City Participation

ESTIMATED QUANTITIES

REF. NO.	STATION TO STATION	SIDE	202 Ex. Pavt. Removed & Disposed of	603 Type [illegible] 8"	605 Shallow Pipe Underdrain 6"	608 Guard Rail Type 5	608 Anchor Assembly	609 Curb Type 7	609 Curb Type 8	Bends & Branches	622 Conc. Barrier
UNITS			S.Y.	L.F.	L.F.	L.F.	Ea.	L.F.	L.F.		L.F.
1-C	50+00 to 55+00 "F"	Lt.				500					
2-C	53+75 to 55+00 "H"	Rt.				125	1				
1-B	50+00 to 55+00	E									492
1-C	50+00 to 52+00 "?"	Rt.							204		
2-C	52+04 to 53+77	Lt.						173			
1-R	51+50 to 55+00	Med.	1000								
1-U	50+00 to 54+03 "F"	Lt.			3						
2-U	50+09 to 55+00 "F"	Lt.		20	304					1	

Note:-
Items indicated by dashed [illegible]
on this sheet are to be constr[illegible]
"by others"

[illegible] ENGINEERING CONSULTANTS, LTD.

50+00

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

BENCH MARK
"X" on N.E. Edge of Sanitary M.H. rim 100' ± S. of Frank Rd. & 40' ± W. of High St. Elev. 732.82

CROSS REFERENCE
Ramp "A" Profile
Pavement Details

BURGESS & NIPLE ENGINEERING CONSULTANTS, LTD.

55+00 T

Quantities by: [illegible]
Checked by: [illegible]

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

CURVE DATA
RAMP "F-F"

P.I. 2+08.85
Δ = 8°00'00" Lt.
D = 38°00'
R = 150.79'
L = 21.05'
T = 10.54'
E = 0.37'

P.I. 3+18.35
Δ = 28°00'00" Rt.
Ls = 200.00'
θs = 38°00'00"
L.T. = 136.53'
S.T. = 69.55'

CROSS REFERENCE	
Sheet No.	Item
66	Ramp "F-F" Profile
74	Pavement details
183	Culvert detail
33&39	Power line [illegible]

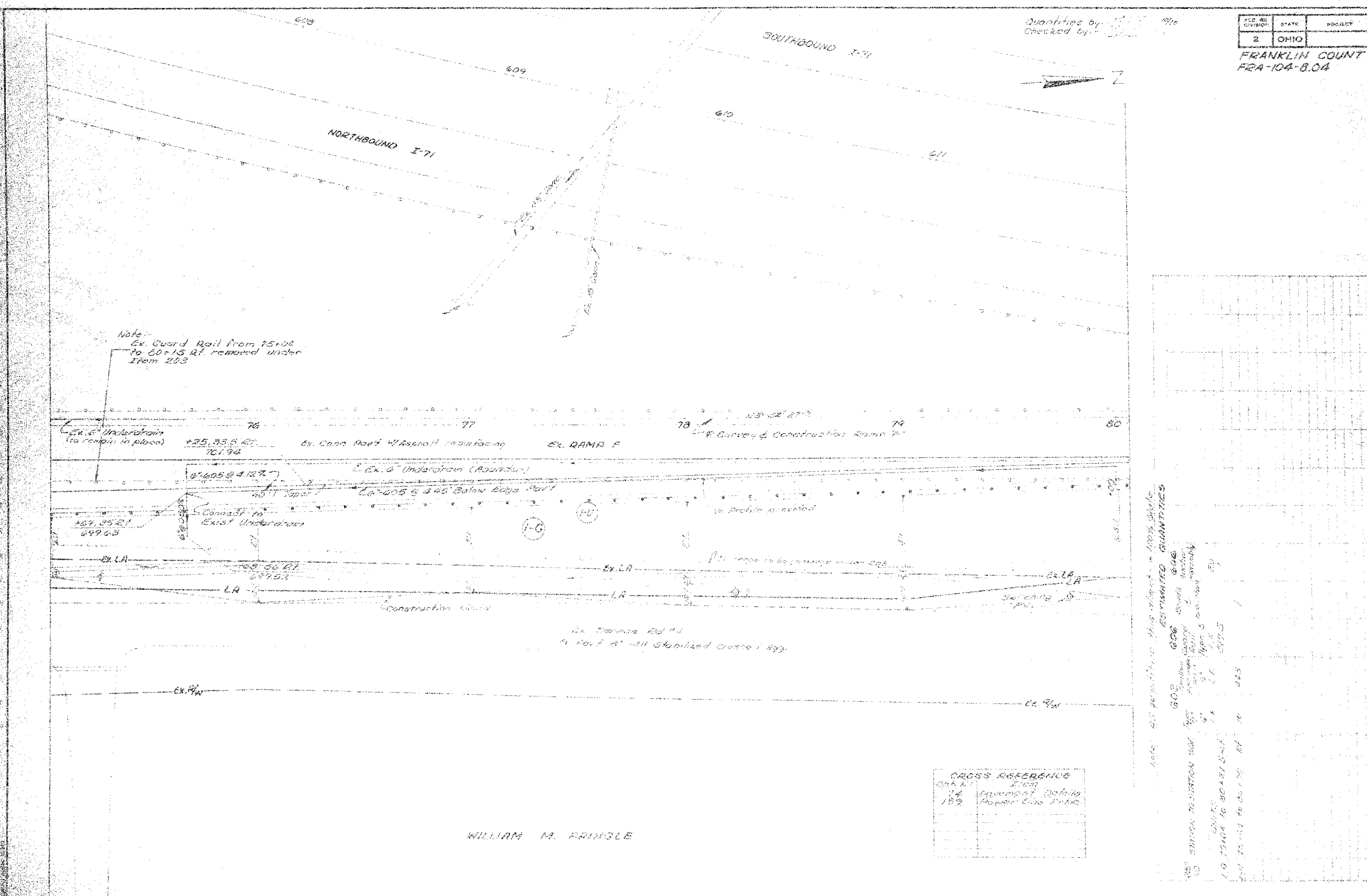
Note: All quantities included in 100% State Participation

ESTIMATED QUANTITIES

Ref. No.	Station to Station	Side	304 Aggregate Base	601 Rock Channel Prot. Type "B"	602 Conc. Masonry	603 [illegible]	603	603 Bends & Screenends	605 Shallow Pipe Underdrain 6"	606 Guard Rail Type 5	606 Guard Rail Type 4	609 Curb Type 7	609 Curb Type 8	660 Sodding
	UNITS		C.Y.	C.Y.	C.Y.	L.F.	L.F.		L.F.	L.F.	L.F.	L.F.	L.F.	S.Y.
[illegible]	[illegible]				1.3		128							
[illegible]	[illegible]	Lt.												31
[illegible]	[illegible]	Rt.		181										
[illegible]	[illegible]	Rt.								476				
[illegible]	[illegible]	Lt.									25			
[illegible]	[illegible]	Lt.										77		
[illegible]	[illegible]	Lt.											100	
[illegible]	[illegible]	Rt.	13											
[illegible]	[illegible]	Rt.				10		1	277					
	TOTALS TO GENERAL SUMMARY		13	181	1.3	10	128		277	476	25	77	100	31

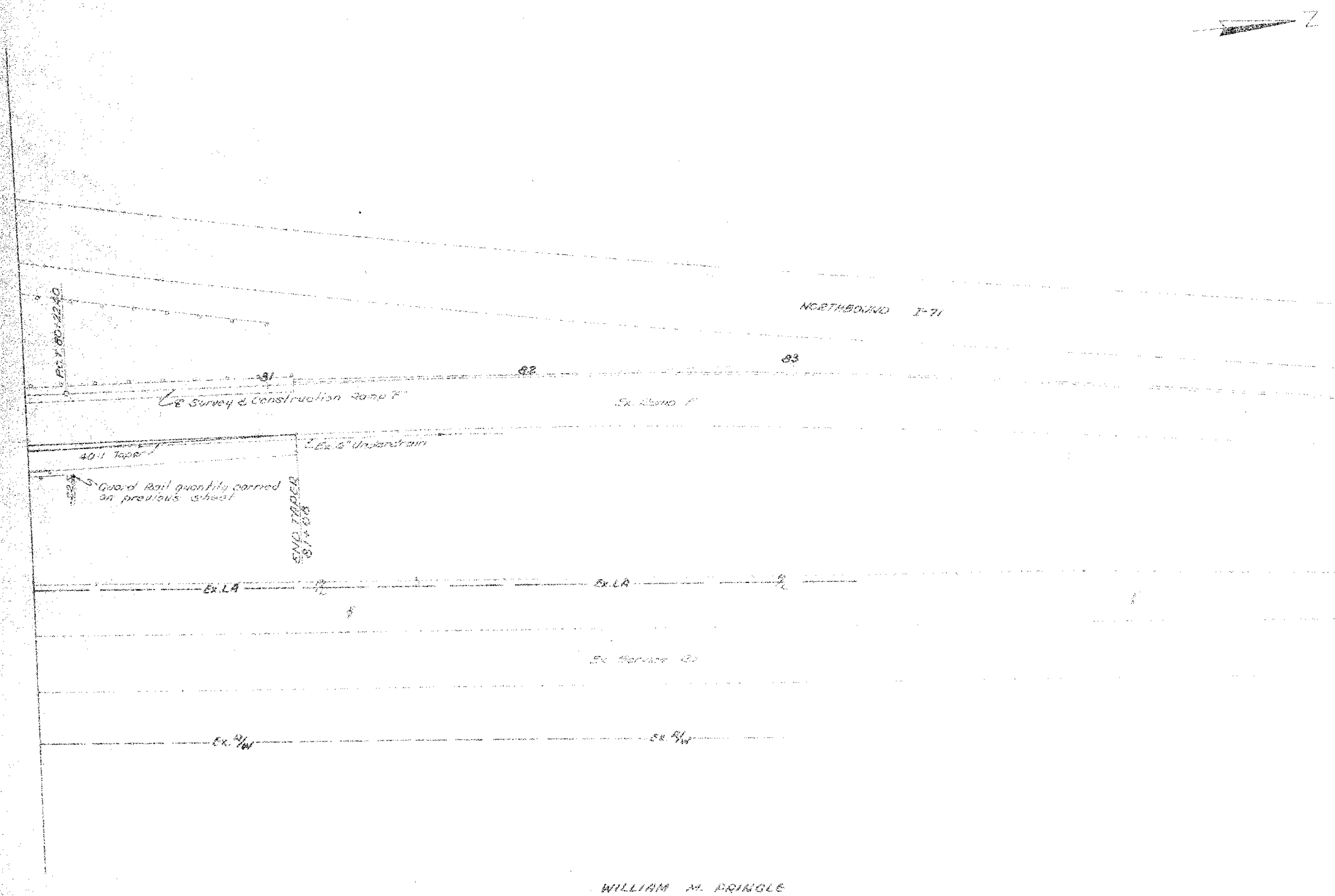
2+28.32 to 3+02,
75+00 to 75+0

COLUMBUS ENGINEERING CONSULTANTS, LTD.


Quantities by
Checked by
2 OHIO
FRANKLIN COUNTY
FRA-104-8.04
SOUTHBOUND I-71
NORTHBOUND I-71
608
609
610
611
Note:-
Ex. Guard Rail from 75+04 to 80+15 Rt. removed under Item 203
76
77
78
79
80
Ex. 6" Underdrain (to remain in place)
+25.35.5 Rt.
701.94
Ex. Conc. Pav't W/Asphalt resurfacing
Ex. RAMP F
℄ Survey & Construction Ramp "F"
℄ Ex. 6" Underdrain (Abandon)
6"-605 @ 4.12%
40:1 Taper
℄ 6"-605 @ 3'-6" Below Edge Pav't
Connect to Exist. Underdrain
+67.35 Rt.
699.63
Ex. LA
LA
Construction Limits
Ex. R/W
CROSS REFERENCE
Sh. No. Item
74 Pavement Details
153 Power Line Relocation
WILLIAM M. PRINGLE
ESTIMATED QUANTITIES

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

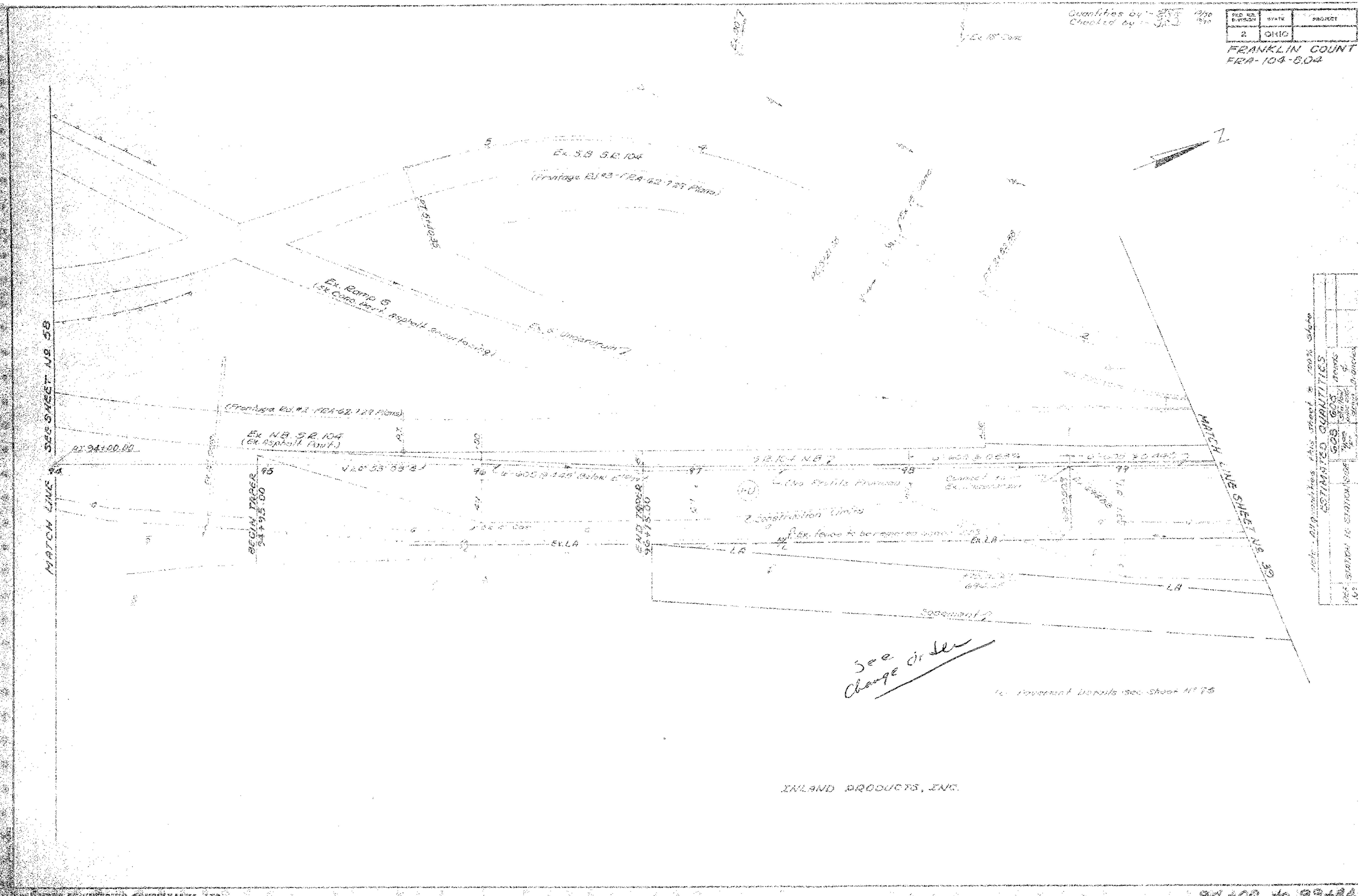


ESTIMATED QUANTITIES

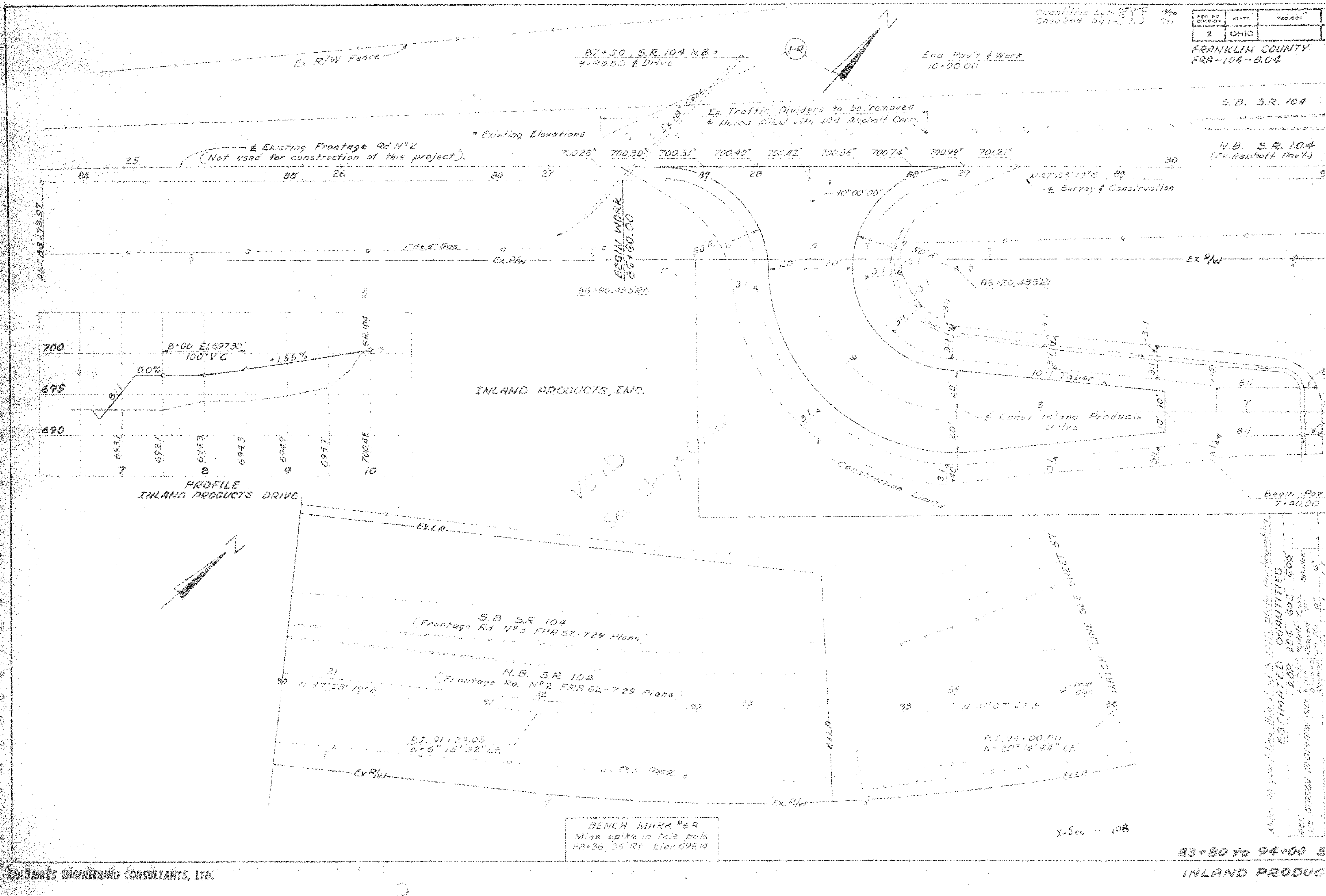
STATION TO STATION

ENGINEERING CONSULTANTS, LTD.

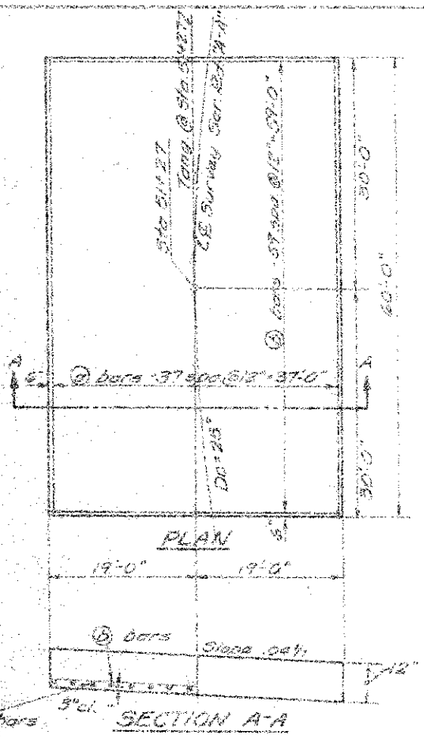
80+06 to 83+8



Quantities by
Checked by
FED. RD. DIVISION
STATE
PROJECT
2
OHIO
FRANKLIN COUNT
FRA-104-8.04
Ex. S.B. S.R. 104
(Frontage Rd.#3 - FRA-62-7.23 Plans)
Ex. Ramp G
Ex. 6" Underdrain
(Frontage Rd.#3 - FRA-62-7.23 Plans)
Ex. N.B. S.R. 104
(Ex. Asphalt Pavt.)
See Sheet No. 58
MATCH LINE
P.I. 94+00.00
BEGIN TAPER 94+95.00
END TAPER 96+15.00
S.R. 104 N.B.
Ex. L.A.
L.A.
Construction Limits
Ex. fence to be removed
Easement
MATCH LINE SHEET No. 59
ESTIMATED QUANTITIES
See Change Order
Pavement Details See Sheet No. 75
INLAND PRODUCTS, INC.
COLUMBUS ENGINEERING CONSULTANTS, LTD.
94+00 to 99+44



FRANKLIN COUNTY
FRA-104-8.04
2 OHIO
S.B. S.R. 104
N.B. S.R. 104
(Ex. Asphalt Pav't.)
87+50 S.R. 104 N.B. = 9+93.50 ℄ Drive
End Pav't & Work 10+00.00
Ex. R/W Fence
Ex. Traffic Dividers to be removed & Holes filled with 404 Asphalt Conc.
* Existing Elevations
℄ Existing Frontage Rd Nº 2 (Not used for construction of this project)
700.28* 700.30* 700.31* 700.40* 700.42* 700.66* 700.74* 700.99* 701.21*
℄ Survey & Construction
BEGIN WORK 86+60.00
86+60.435 Rt.
88+20.435 Lt.
Ex. R/W
Taper
℄ Const Inland Products Drive
Construction Limits
INLAND PRODUCTS, INC.
8+00 EL 697.30
100' V.C.
0.0%
+1.56%
700
695
690
PROFILE
INLAND PRODUCTS DRIVE
Begin Pav't 7+40.00
S.B. S.R. 104 (Frontage Rd Nº 3 FRA 62-7.29 Plans)
N.B. S.R. 104 (Frontage Rd. Nº 2 FRA 62-7.29 Plans)
P.I. 91+24.05 Δ=6° 15' 32" Lt.
P.I. 94+00.00 Δ=20° 16' 44" Lt.
MATCH LINE SEE SHEET 57
Ex. L.A.
Ex. R/W
BENCH MARK Nº 6R
Mine spike in pole pole 88+36, 36' Rt. Elev. 698.14
X-Sec - 108
83+80 to 94+00
INLAND PRODUC
COLUMBUS ENGINEERING CONSULTANTS, LTD.



PLAN

SECTION A-A

ESTIMATED QUANTITY

253 Sq. Yds.			
Bar	No.	Size	Length
a	38	4	59'-6"
b	60	4	37'-6"

NOTES

1. Cost of the above shall be paid for at the contract unit price bid per sq.yd. for Item Special - 12" Reinforced Concrete Cover Slab as per plan, which price and payment shall constitute full compensation for furnishing, hauling, preparing and placing all materials in accordance with section 451 of the Construction And Material Specifications and for all tools, labor, excavation and equipment necessary to complete this item. Hand finishing will be permitted

2. The Proposed Reinforced Concrete Cover Slab indicated at Sta. 51+27 is to provide a means of passing heavy construction equipment over the 9'-3"×10'-0" Renick Run Storm Sewer. This slab is to be utilized by the Contractor at all times for the passage of all construction equipment over the 9'-3"×10'-0" Renick Run Storm Sewer during construction operations except for such equipment and at such times necessary for earthwork operations in the immediate vicinity. The Contractor shall use extreme care during the grading of the ditches in the vicinity of the 9'-3"×10'-0" Renick Run Storm Sewer, 48" West Side Relief Sewer and 78" Sanitary Sewer on Service Road "A-A" to avoid any damage to the Existing Sewers. Such operations shall be performed with equipment having a maximum wheel load of 8,000 lbs. Any damage to the Existing Sewers shall be restored at the Contractors expense

3. The Proposed Reinforced Concrete Cover Slab to be placed on the native soil as soon as the vegetation scalping and necessary excavation for the Concrete Cover Slab is complete and before any other earth work operations are initiated. The Contractor shall erect a barricade, suitable to the Project Engineer, to preclude the passage of construction equipment over the 9'-3"×10'-0" Renick Run Storm Sewer except across the Proposed Reinforced Concrete Cover Slab. Any additional cost for the above shall be included in the price bid for the Item Special, Reinforced Concrete Cover Slab

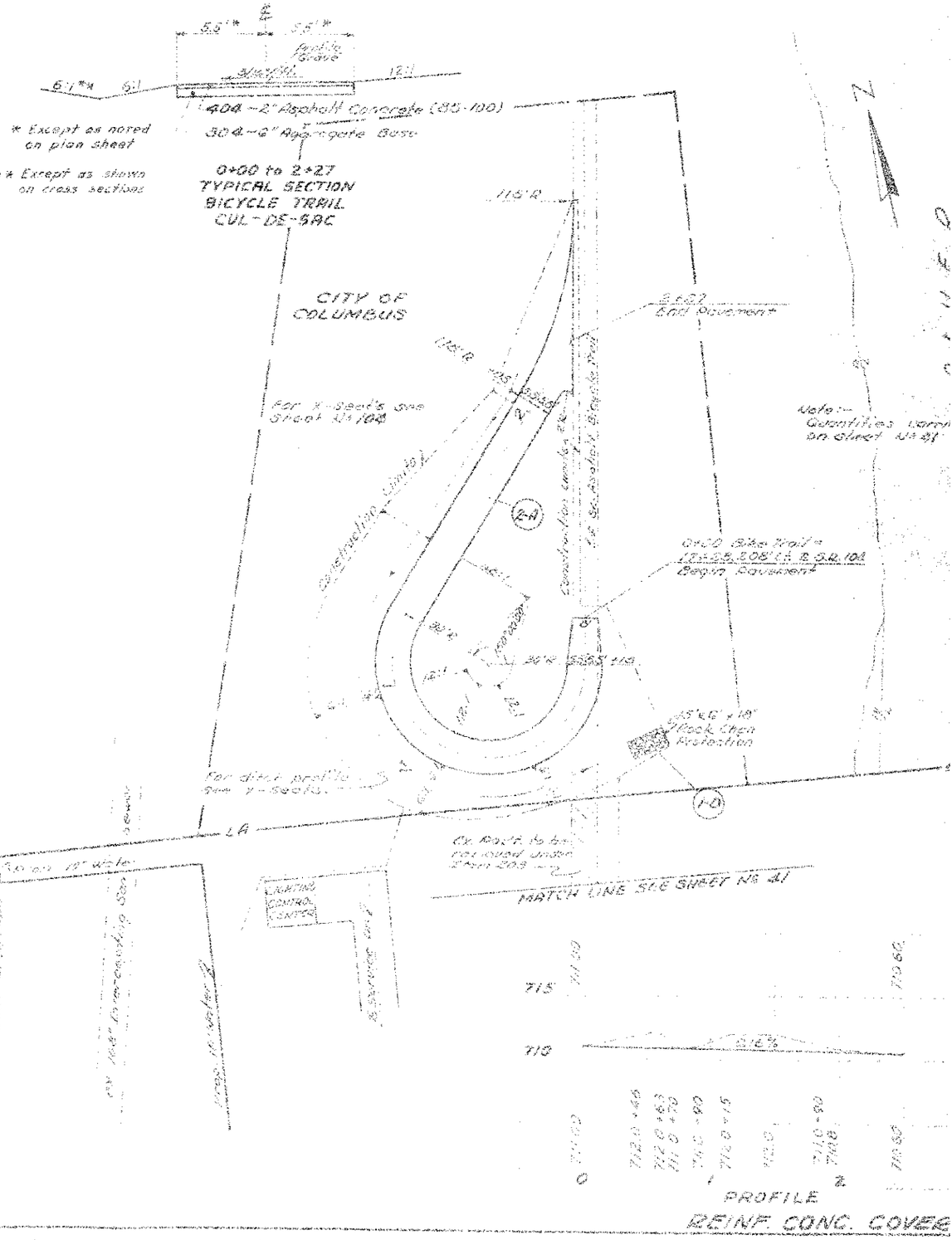
4. The top of slab elevation at ℄ Sta 51+27 shall be 702.64. The longitudinal slope of the slab shall conform to the Profile Grade of +0.36%. The transverse slope shall conform to the Pavement Superelevation Slope

REINFORCED CONCRETE COVER SLAB - STA. 51+27 SERVICE RD. "A-A"

COLUMBUS ENGINEERING CONSULTANTS, LTD.

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

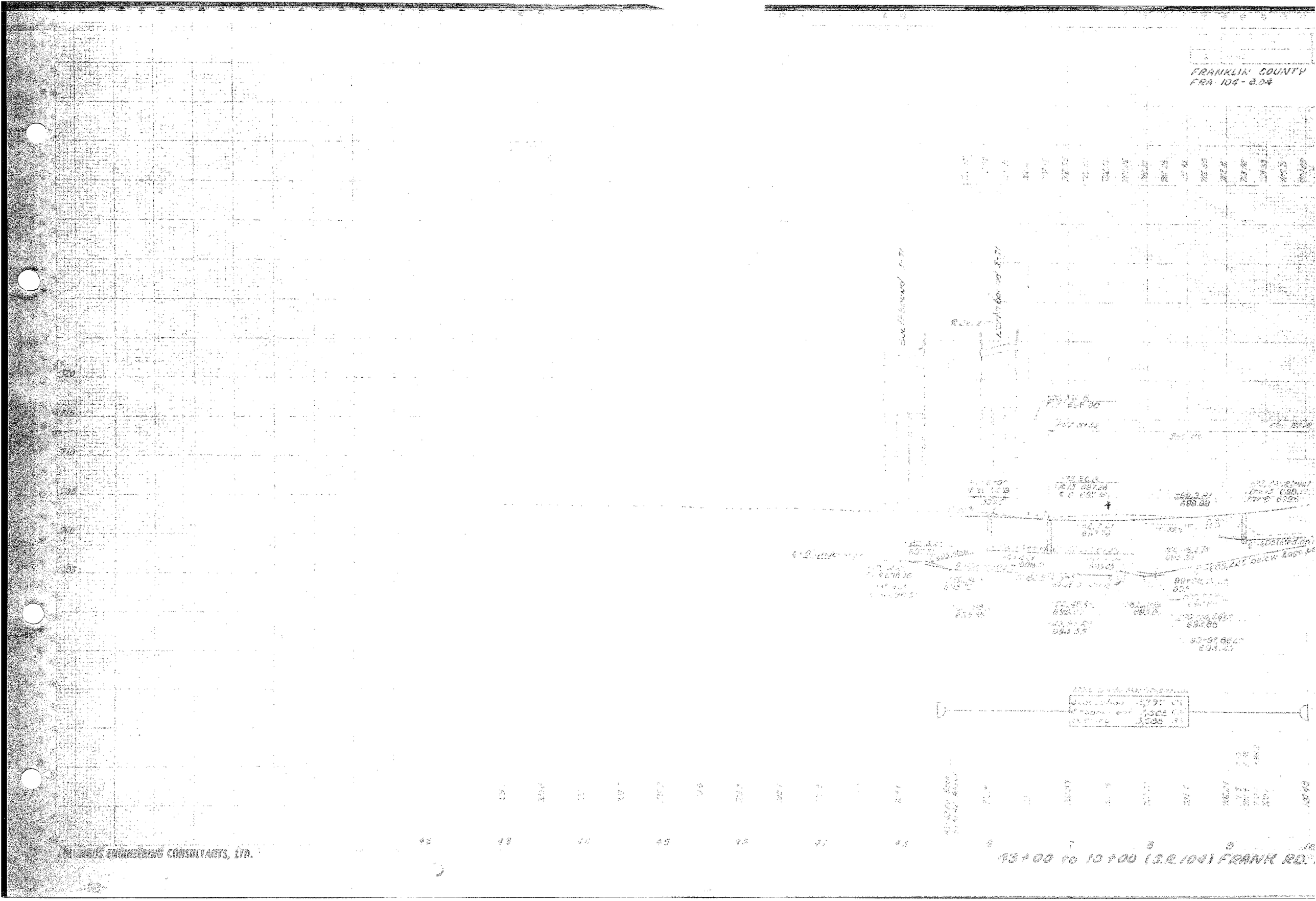
FRANKLIN COUNTY
FRA-104-8.04



REINF. CONC. COVE

BICYCLE TRAIL C

FRANKLIN COUNTY
FRA-104-3.04



FRANKLIN COUNTY
FRA-104-8.04

PROPOSED STRUCTURE

TYPE - Continuous Steel girder SB0033 steel with reinforced concrete deck and substructure
SPANS - 82'-0" - 5 @ 104'-0" - 82'-0"
ROADWAY - 118'-0" 2 parapets with barrier curbs and barrier median
LOADING - HS 20-44
WEARING SURFACE - 1" monolithic concrete
SKEW - 5°00' left Forward
ALIGNMENT - Tangent
APPROACH SLABS - 35'-6" long see BS-1-67

Profile Grade
15 on centerline Survey & Const. Book

Profile Grade Transition
See Pavt. Detail Sheets for median Pavt. Edge Elevs.

Profile Grade
15 or Median Pavt. Edges Ahead

Bridge Limits 683.52'

-5.40%

+35 (-33 rdial)
Inv LT 703.78
Inv RT 703.84

+75.24 (4 Equal Jts @ 18.81)
Inv LT 703.20
Inv RT 703.26

+71.0 PI
702.81

Continuous or Ramp F-C

+73.0 PI
704.33

125.46 PI
709.50

106.60 PI
702.03

70.45 PI
701.89

65.2 PI
701.36

6" Conduit (typ) 4.5' below Edge of pav't

6" Conduit (typ) 4.5' below Edge pav't

6" Conduit (typ) 4.5' below Edge pav't

6"-8" Conduit (typ) 4.5' below Edge of pav't of Median

Bridge 10" Water Main

Area for unsuitable Material

6" W.L. Water Line

6" C.I. (or) Concrete Sub Drain

6" W.L. Water Line

Proposed 8" Sanitary Sewer

700' LT

50' Easement

High Water

SCIOTO RIVER

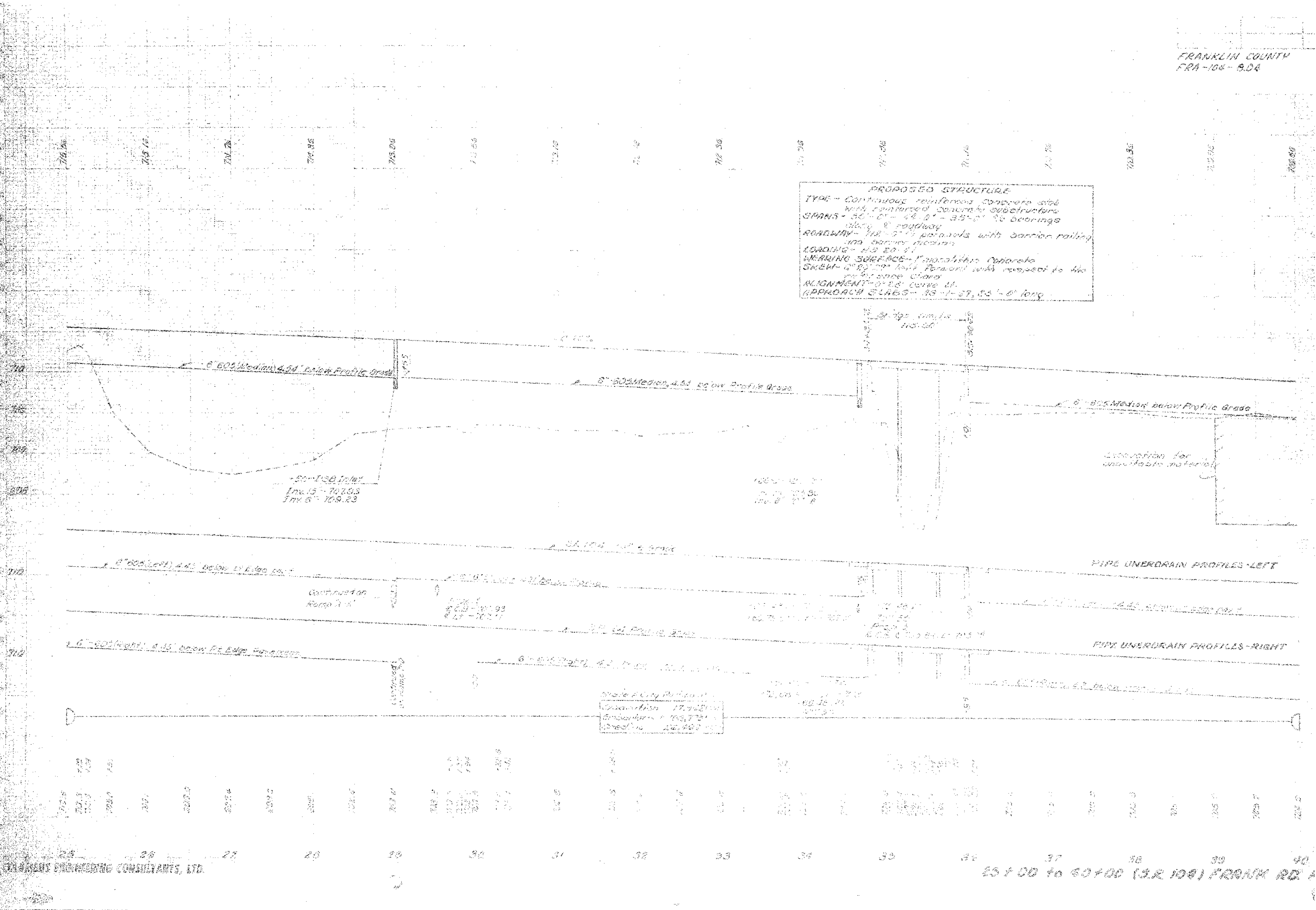
Bridge Limits

100% State Participation
Excavation 4,974 CY
Embankment 22,733 CY
Borrow 9,213 CY

State & City Participation
Excavation 316 CY
Embankment 15,699 CY
Topsoil 2,504 CY

COLUMBUS ENGINEERING CONSULTANTS, LTD.

10+00 to 25+00 (S.R. 104) FRANKLIN CO.



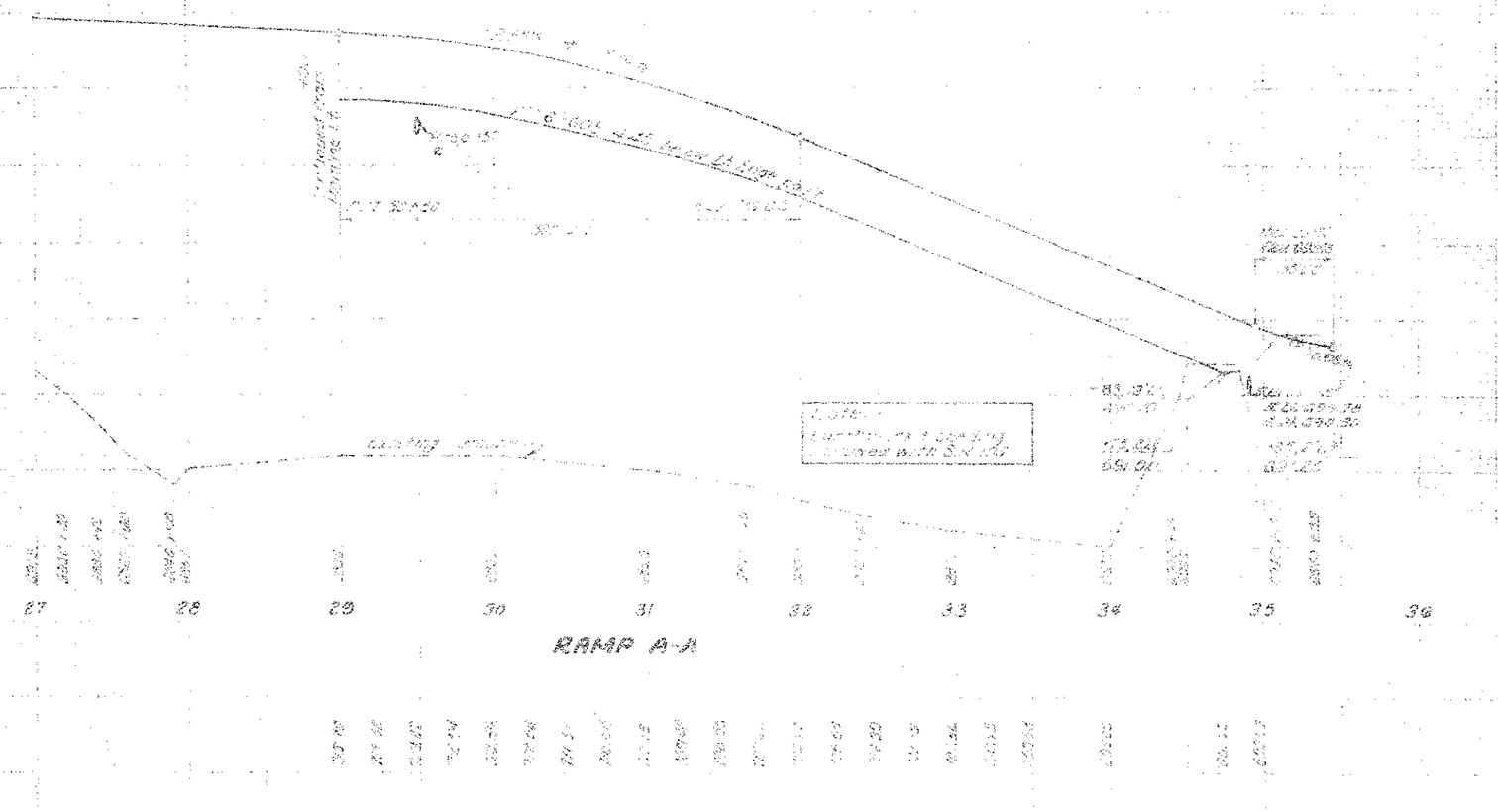
FRANKLIN COUNTY
FRA-104-8.04
PROPOSED STRUCTURE
PIPE UNDERDRAIN PROFILES-LEFT
PIPE UNDERDRAIN PROFILES-RIGHT
Excavation for unsuitable material
ENGINEERING CONSULTANTS, LTD.
25+00 to 60+00 (S.R. 104) FRANK RD.

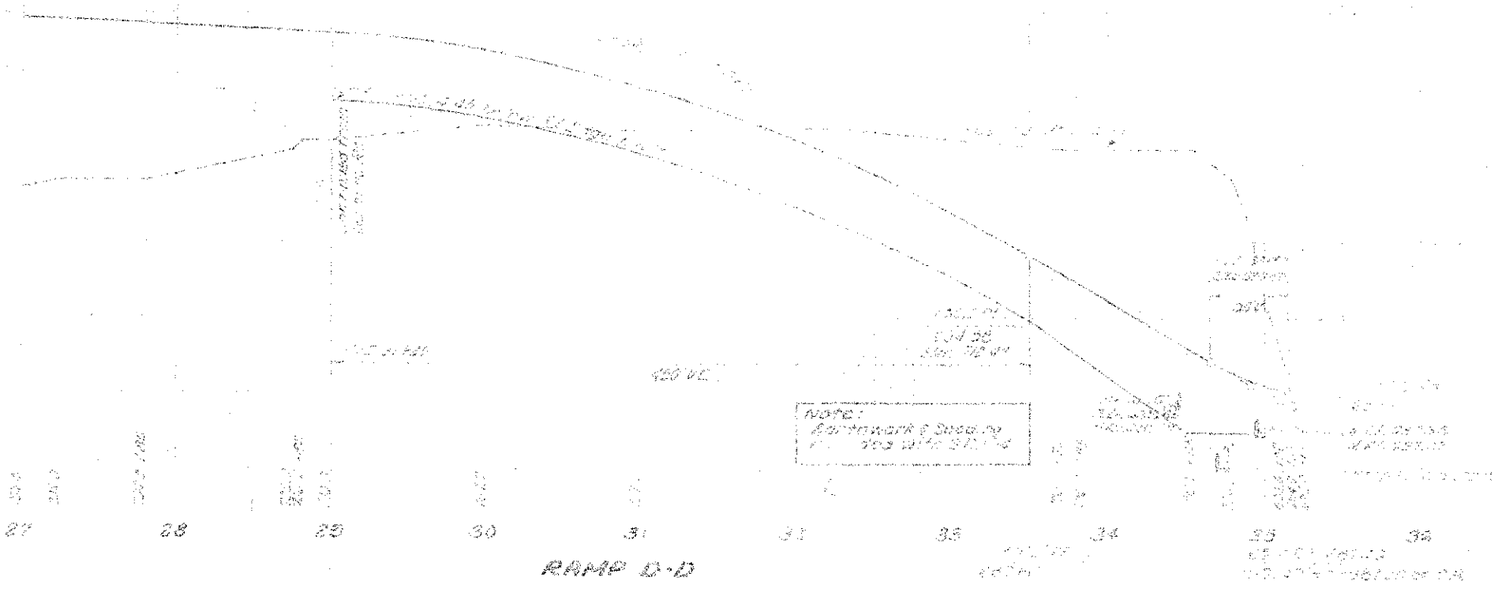
FRANKLIN COUNTY
FRA-106-5.04

PIPE UNDERDRAIN PROFILES-LEFT

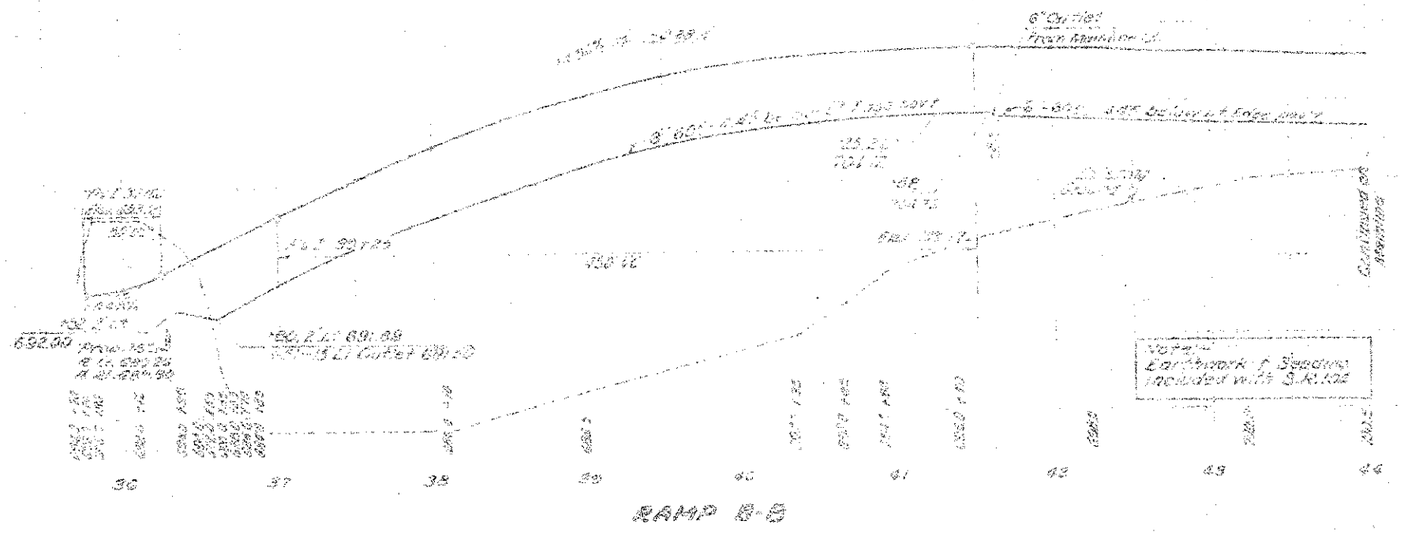
PIPE UNDERDRAIN PROFILES-RIGHT

FRANKLIN COUNTY
FRA-108-8.04



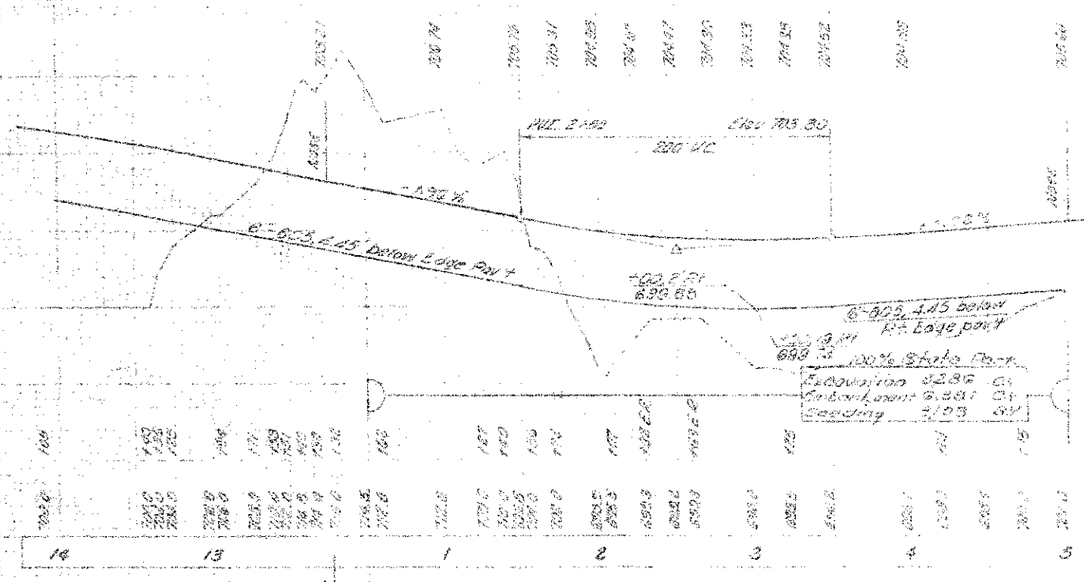


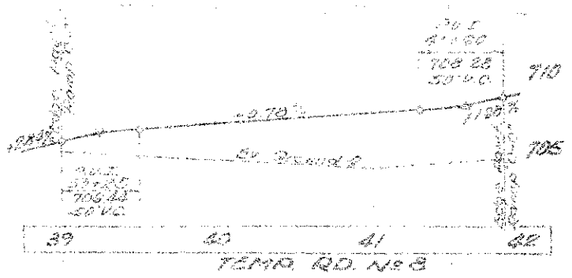
FRANKLIN COUNTY
FRA-104-8.04

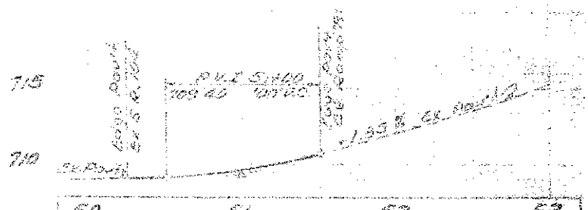


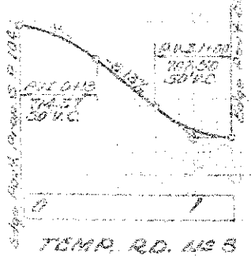
RAMP B-D

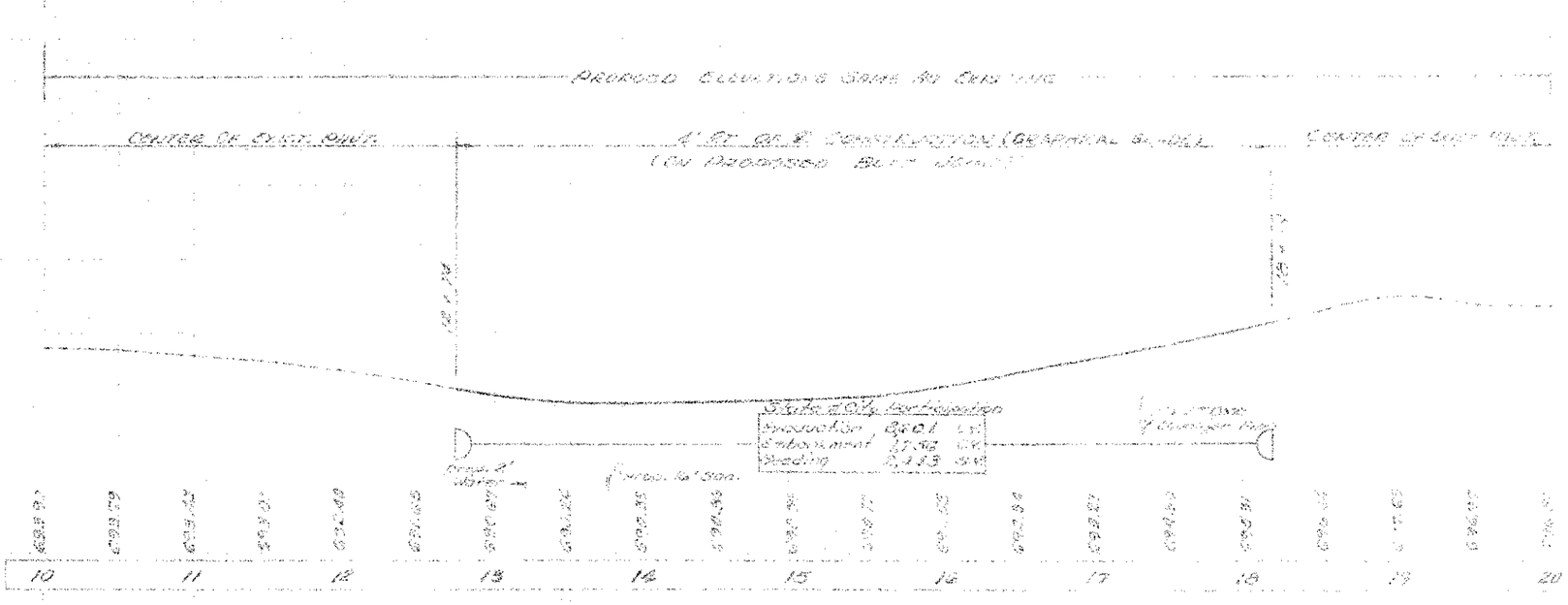
RAMP C-C

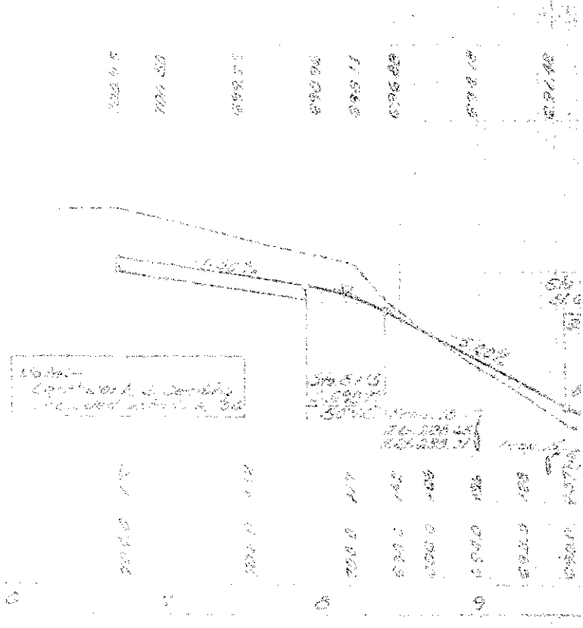

RAMP "C-F"


FRANKLIN COUNTY
FRA-104 - 8.02
TEMP. RD. No 6

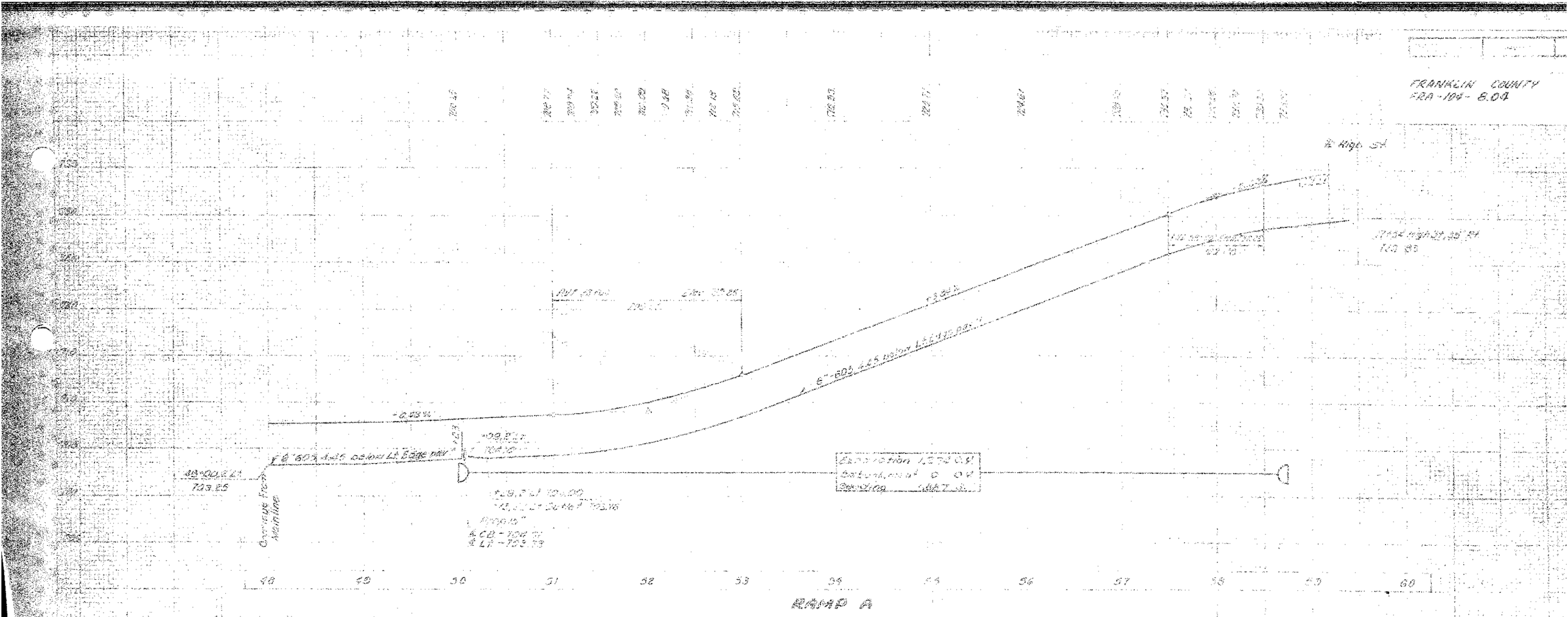

TEMP. RD. No 5


TEMP. RD. No 8


AMERICAN AGGREGATES HAUL RD.


AMERICAN AGGREGATES
DRIVE & PARKING LOT

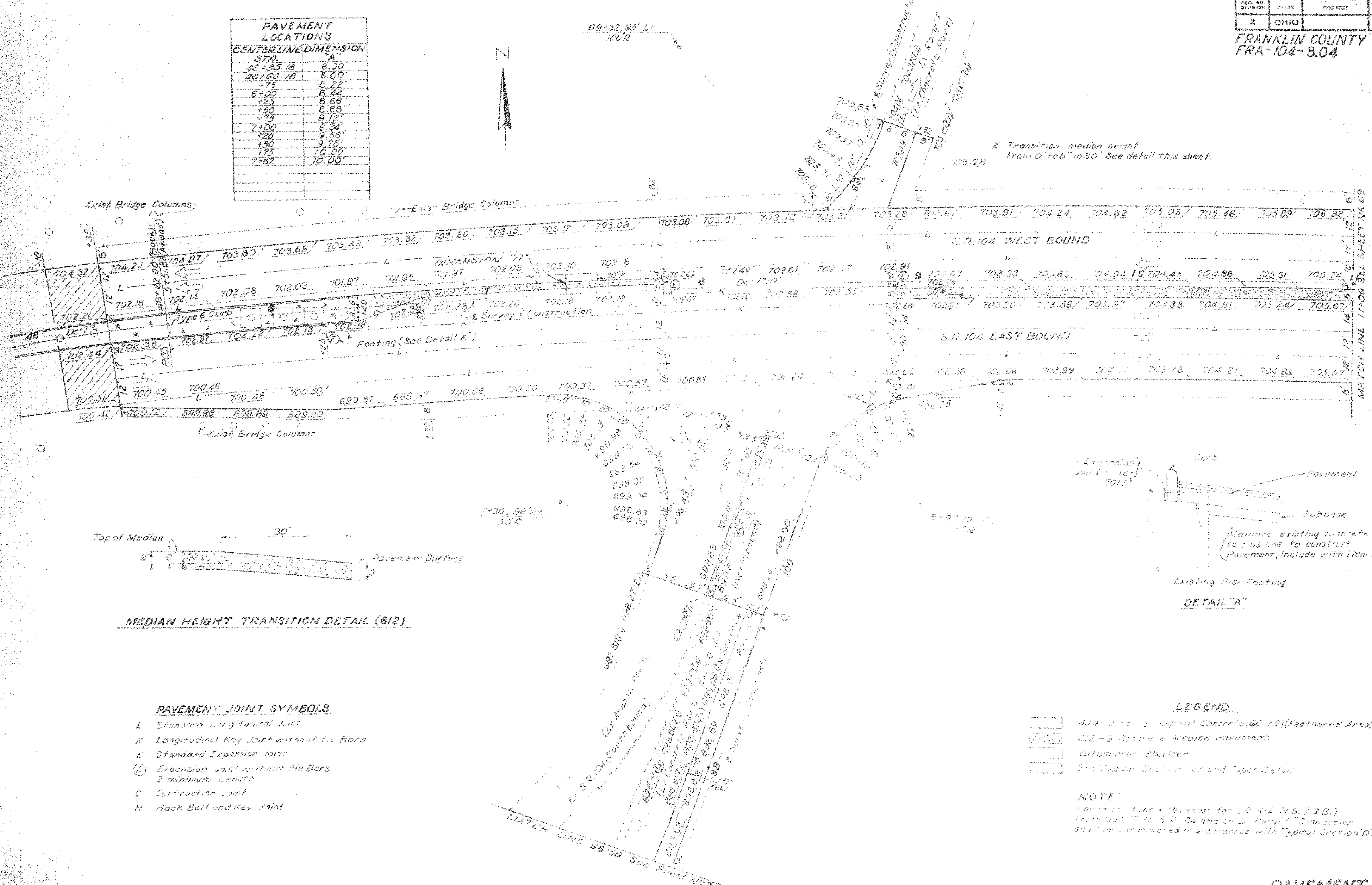
FRANKLIN COUNTY
FRA-104-8.04



FED. RD. DIVISION 2 | STATE OHIO | PROJECT

FRANKLIN COUNTY
FRA-104-8.04

PAVEMENT LOCATIONS	
CENTERLINE STA.	DIMENSION "A"
48+35.18	8.00'
48+60.18	8.00'
+75	8.22'
6+00	8.44'
+25	8.66'
+50	8.88'
+75	9.12'
7+00	9.34'
+25	9.56'
+50	9.76'
+75	10.00'
7+82	10.00'



PAVEMENT JOINT SYMBOLS

- L Standard Longitudinal Joint
- K Longitudinal Key Joint without tie Bars
- E Standard Expansion Joint
- (E) Expansion Joint without tie Bars 2 minimum Length
- C Contraction Joint
- H Hook Bolt and Key Joint

LEGEND

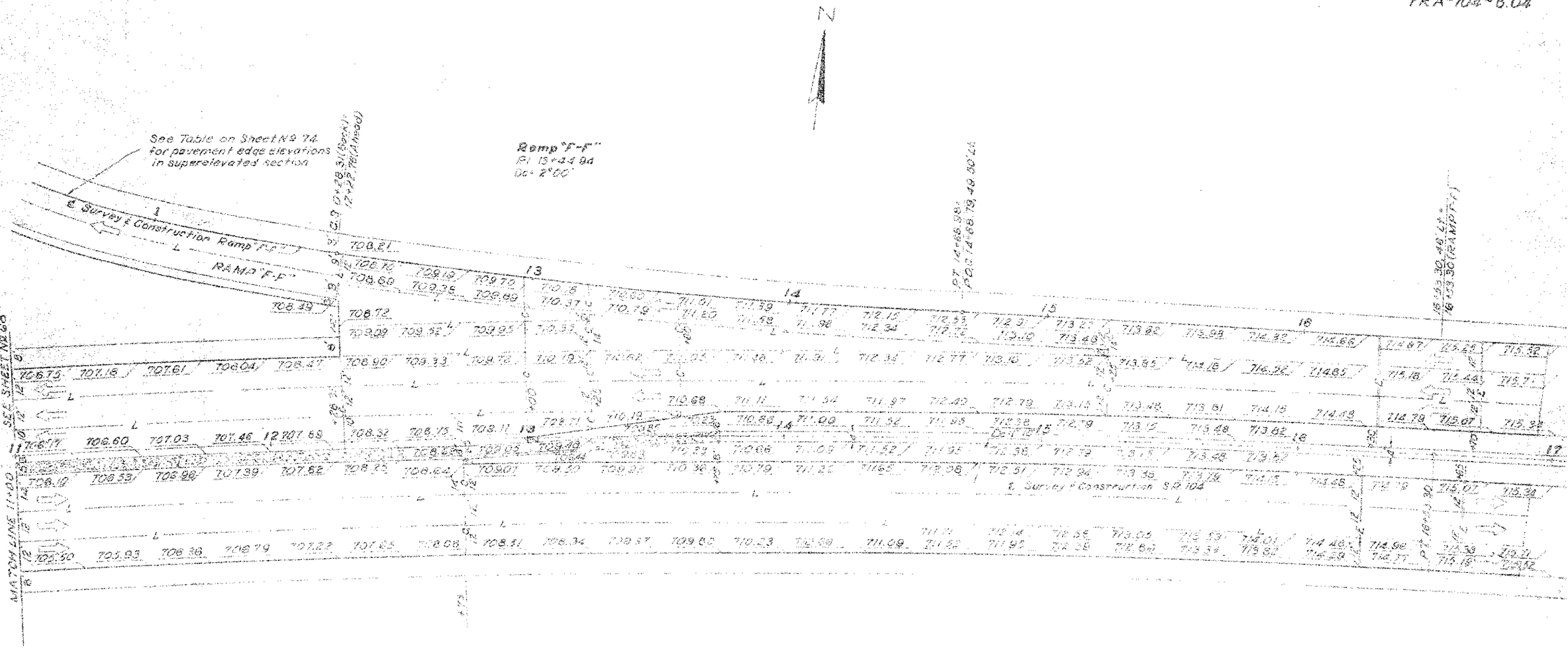
- 404 ... Asphalt Concrete (60-70) (Feathered Area)
- 812-9 Curb & Median Pavement
- Bituminous Shoulder
- See Typical Section for ... Detail

NOTE:
Pavement type & thickness for S.R. 104 (N.B. & S.B.) from 98+75 to S.R. 104 and on Ex. Ramp "F" Connection shall be constructed in accordance with Typical Section "B".

PAVEMENT D...
5+00 TO ...

FED. HIGHWAY DIVISION	STATE	PROJECT
2	OHIO	

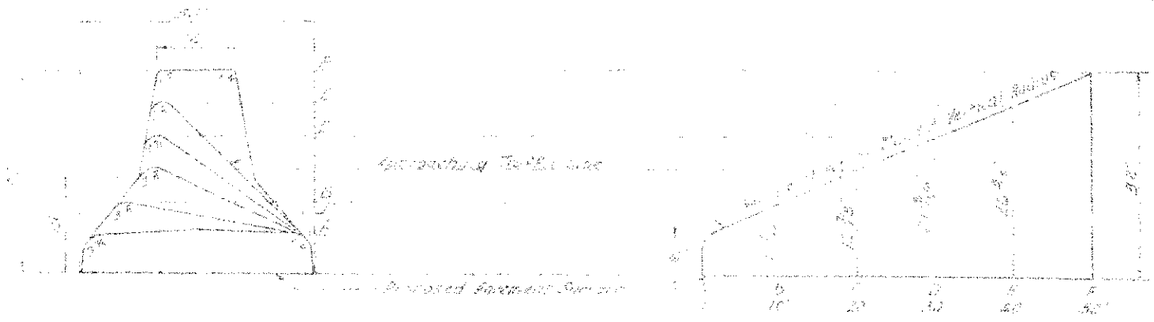
FRANKLIN COUNTY
FRA-104-8.04



NOTE:
For Pavement Joint Detail Legend, See Sheet No 68

Transition barrier median height from 6" at Sta 12+75 to 32" at Sta 14+25.

Transition median width from 5' at Sta 12+75 to 3' at Sta 13+75 to match barrier median at Sta 13+75



CONCRETE BARRIER HEIGHT TRANSITION DETAIL
Js-75 To 14+25

FED. TO STATE DIVISION	STATE	PROJECT
5	OHIO	

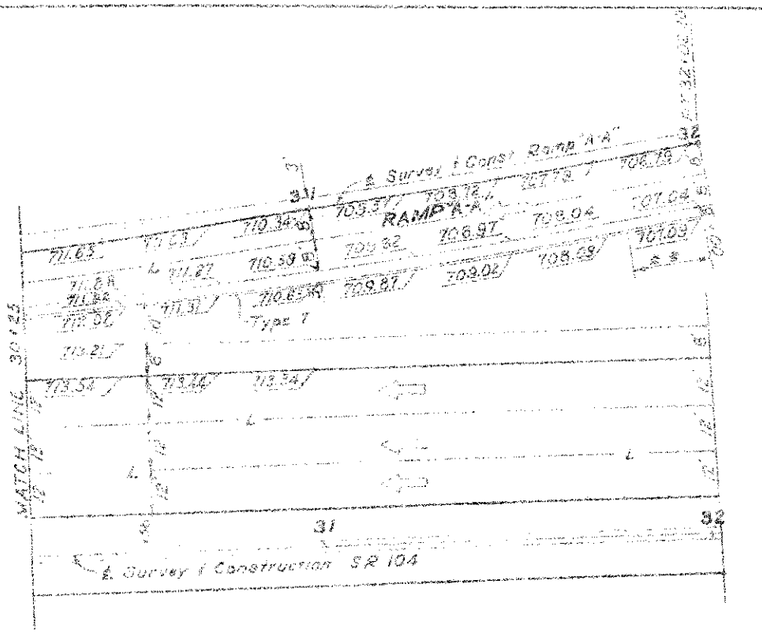
FRANKLIN COUNTY
FRA-104-5.04

RAMP "A-A" PAVEMENT ELEVATION

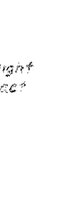
STA.	LT. EDGE	RT. EDGE
32+00	706.79	707.04
+25	705.75	706.00
+50	704.71	704.96
+75	703.67	703.92
33+00	702.63	702.88
+25	701.59	701.84
+50	700.55	700.80
+75	699.51	699.76

RAMP "D-D" PAVEMENT ELEVATION

STA	LT. EDGE	RT. EDGE
30+00	713.08	712.32
+25	712.20	712.08
+50	711.05	711.51
+75	710.19	710.85
31+00	709.43	710.13
+25	709.85	709.34
+50	708.80	708.51
+75	707.87	707.72
32+00	708.87	706.86
+25	705.78	705.54
+50	704.64	704.39
+75	703.54	703.18
33+00	702.11	701.86
+25	700.73	700.48
+50	699.28	699.03
+73	697.78	697.52

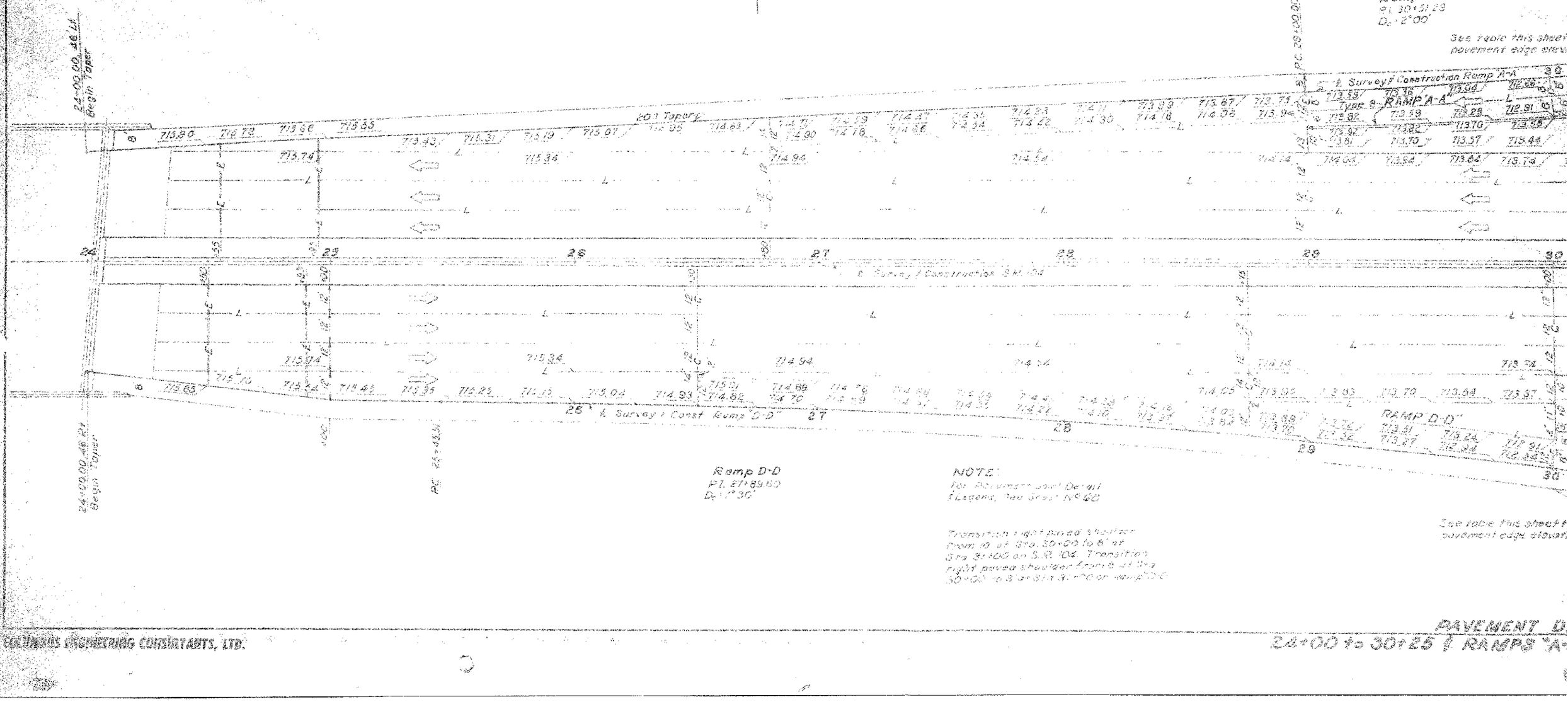


℄ ℄ Transition curb height from 2"to 9" in 20 feet



Ramp "A-A"
PI 30+31.29
Δ = 2°00'

See table this sheet for pavement edge elevations

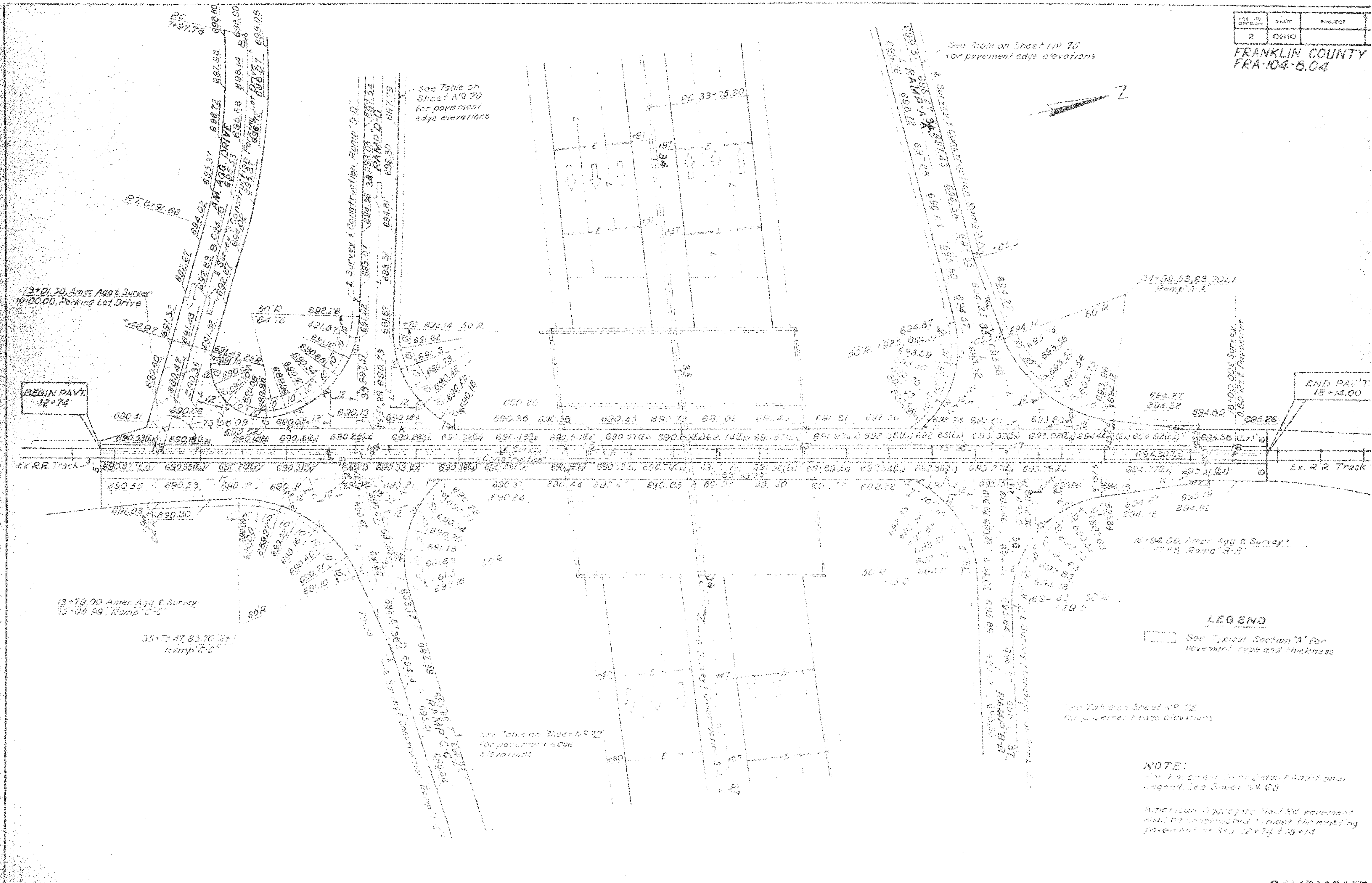


Ramp D-D
PI 27+89.90
Δ = 7°30'

NOTE:
For Pavement Joint Detail
Elsewhere, See Sheet No 40

Transition right paved shoulder from 10' at Sta. 30+00 to 8' at Sta. 31+00 on S.R. 104. Transition right paved shoulder from 8' at Sta. 30+00 to 3' at Sta. 31+00 on Ramp D-D.

See table this sheet for pavement edge elevations

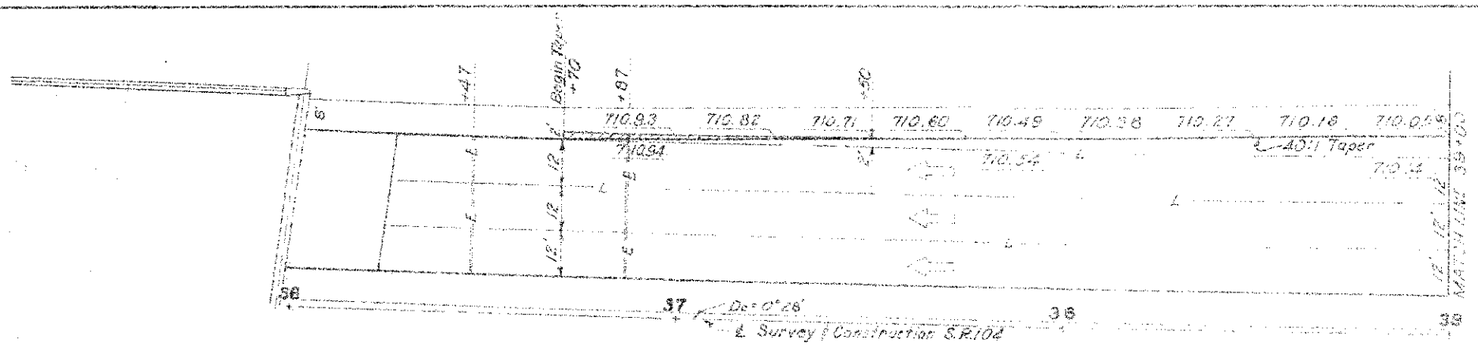

FED. RD. DIVISION | STATE | PROJECT
2 | OHIO
FRANKLIN COUNTY
FRA-104-8.04
See Table on Sheet No. 70 for pavement edge elevations
See Table on Sheet No. 70 for pavement edge elevations
RAMP "A-A"
RAMP "D-D"
AM. AGG. DRIVE
P.C. 7+97.78
P.T. 8+91.68
13+01.50, Amer. Agg. ℄ Survey = 10+00.00, Parking Lot Drive
BEGIN PAVT. 12+74
END PAVT. 18+14.00
Ex. R.R. Track
P.C. 33+75.90
34+99.53, 63.70 Lt. Ramp "A-A"
16+94.00, Amer. Agg. ℄ Survey = ... Ramp "B-B"
13+78.00 Amer. Agg. ℄ Survey = 33+08.99, Ramp "C-C"
33+73.47, 63.70 Rt. Ramp "C-C"
RAMP "C-C"
RAMP "B-B"
See Table on Sheet No. 72 for pavement edge elevations
See Table on Sheet No. 72 for pavement edge elevations
LEGEND
See Typical Section "A" for pavement type and thickness
NOTE:
For Pavement Joint Details Additional Legend, See Sheet No. 68
American Aggregate Haul Rd. pavement shall be constructed to meet the existing pavement at Sta. 12+74 & 18+14.

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PAVEMENT
AMERICAN AGGREGATES INTERC

FED. ROAD DIV. NO.	STATE	PROJECT
5	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

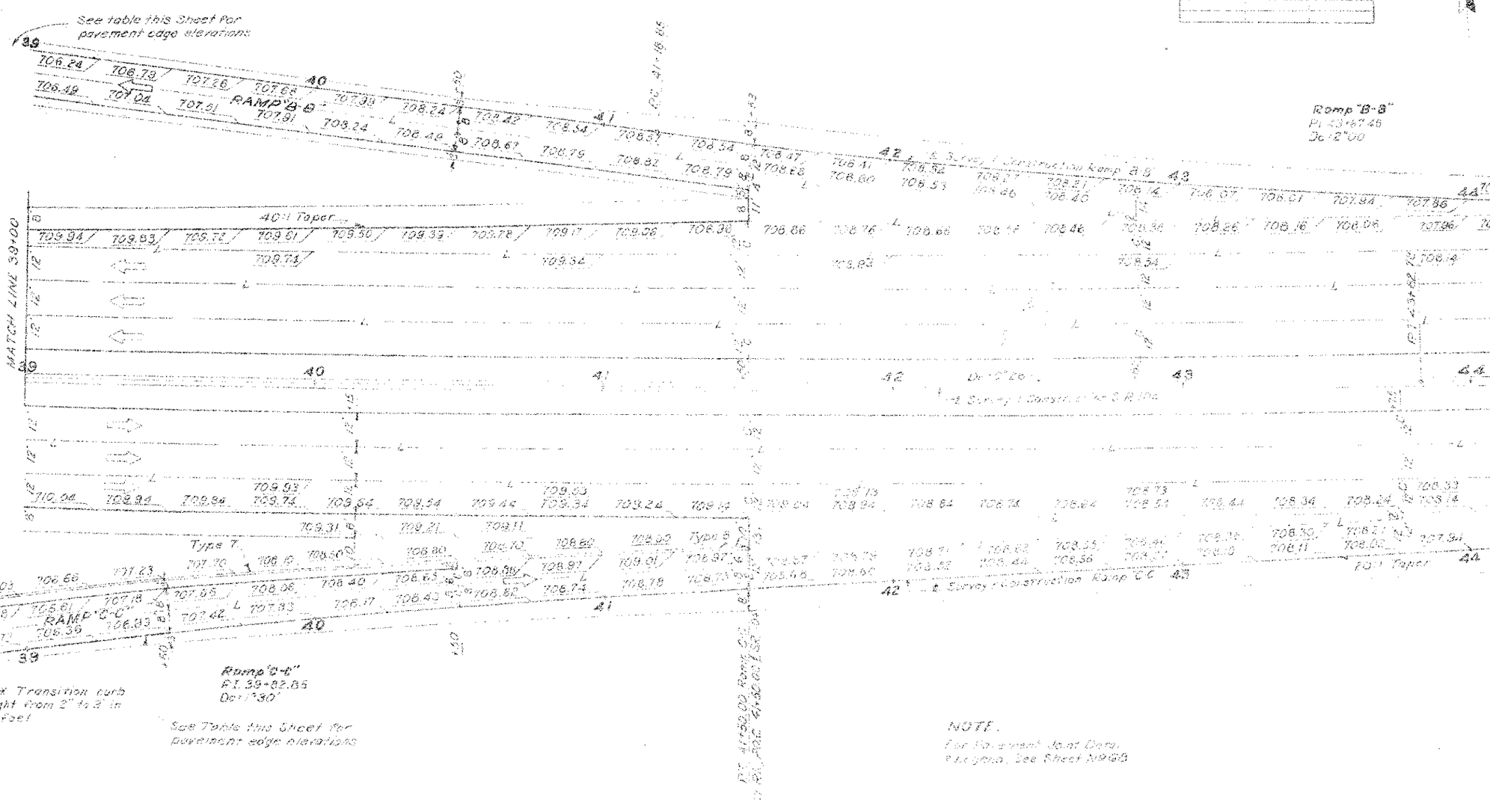


RAMP "B-B"
PAVEMENT ELEVATION

STA.	LT EDGE	RT EDGE
37+00	698.10	698.35
25	699.29	699.54
50	700.48	700.67
75	701.42	701.72
38+00	702.44	702.62
25	703.35	703.60
50	704.18	704.43
75	704.94	705.19
39+00	705.83	705.86
25	706.24	706.39

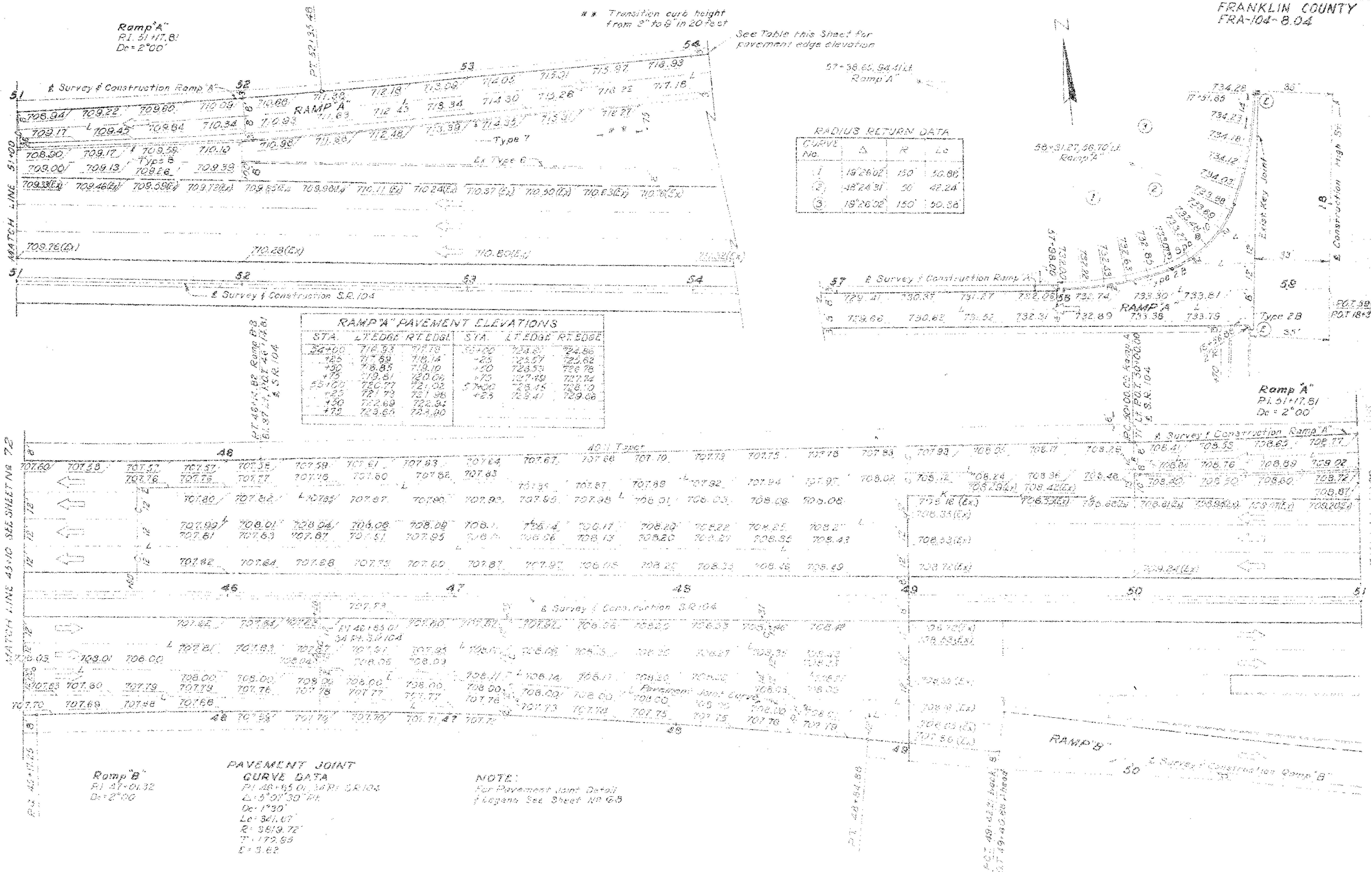
RAMP "C-C"
PAVEMENT ELEVATI

STA.	LT EDGE	RT EDG
36+75	696.53	696.8
37+00	698.20	698.5
25	699.43	699.7
50	700.59	700.8
75	701.67	701.9
38+00	702.68	702.9
25	703.62	703.8
50	704.46	704.7
75	705.27	705.5



COLUMBUS ENGINEERING CONSULTANTS, LTD.

PAVEMENT E
39+00 to 45+10 ℄ RAMPS B



RAMP "A" PAVEMENT ELEVATIONS

STA.	LT. EDGE	RT. EDGE	STA.	LT. EDGE	RT. EDGE
54+00	716.93	717.18	56+00	724.81	724.86
+25	717.89	718.14	+25	725.57	725.62
+50	718.85	719.10	+50	726.53	726.78
+75	719.81	720.06	+75	727.49	727.74
55+00	720.77	721.02	57+00	728.45	728.10
+25	721.73	721.98	+25	729.41	729.66
+50	722.69	722.94			
+75	723.65	723.90			

RADIUS RETURN DATA

CURVE No.	Δ	R	Lc
1	19°26'02"	150'	50.86'
2	48°24'31"	50'	42.24'
3	19°26'02"	150'	50.86'

Ramp "A"
P.I. 51+17.81
Dc = 2°00'

** Transition curb height from 2" to 6" in 20 feet

See Table this Sheet for pavement edge elevation

Ramp "B"
P.I. 47+01.32
Dc = 2°00'

PAVEMENT JOINT CURVE DATA

P.I. 46+85.01 34' Rt. S.R. 104
Δ = 5°07'30" Rt.
Dc = 1°30'
Lc = 341.67
R = 3819.72'
T = 172.95
E = 3.82

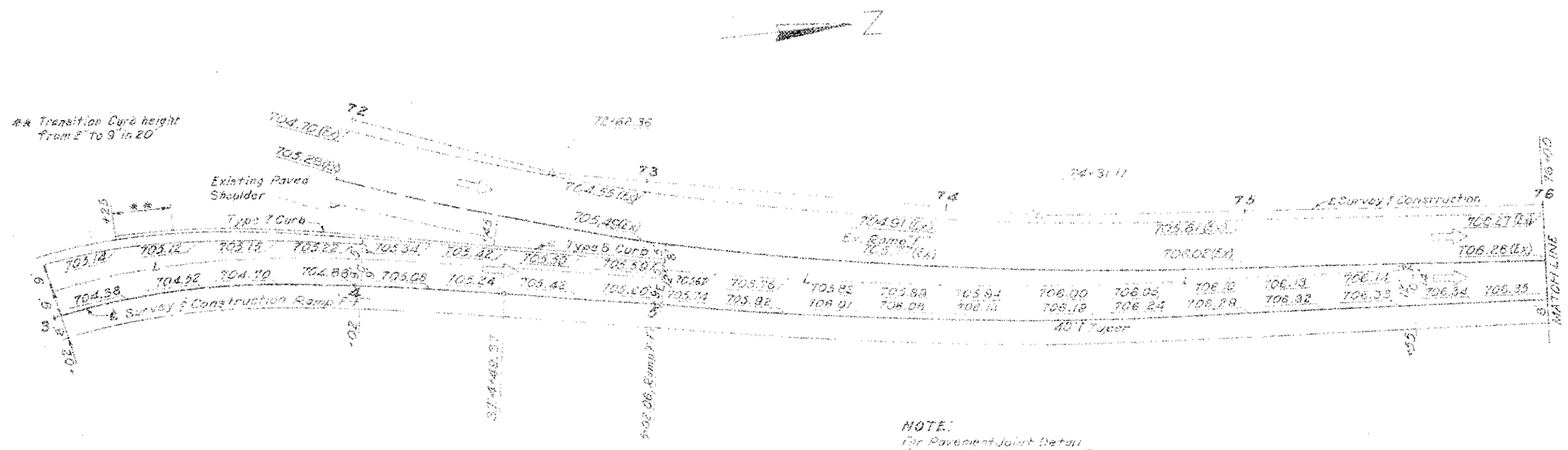
NOTE:
For Pavement Joint Detail & Legend See Sheet No. 68

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PAVEMENT D
45+10 to 51+00 S.R

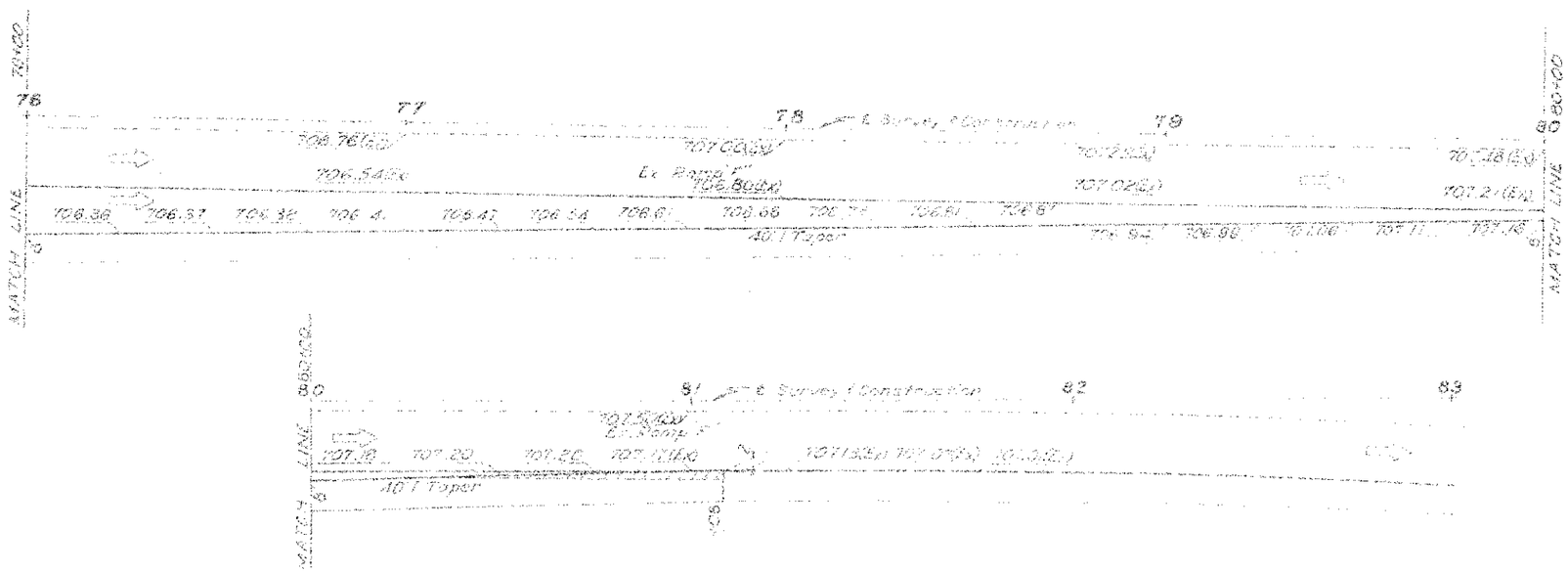
FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04



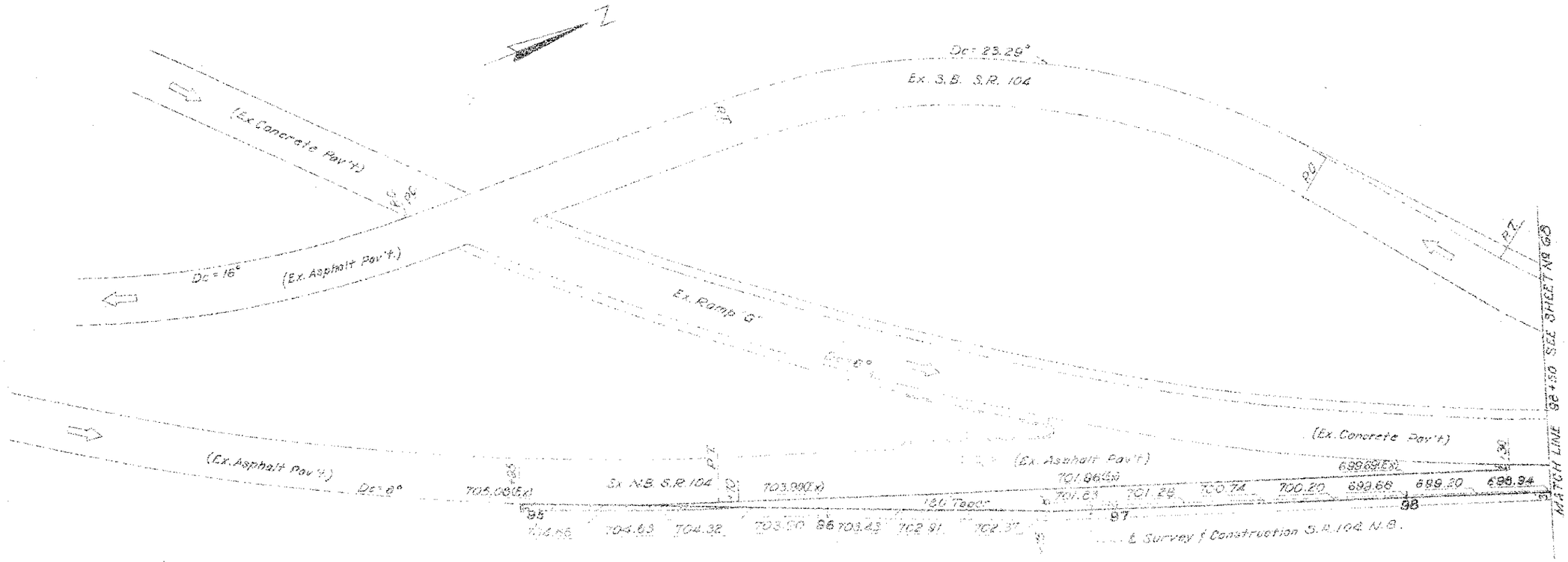
NOTE:
For Pavement Joint Detail
& Legend, See Sheet No 62

RAMP "F-F" PAVEMENT ELEVATION		
STA.	LT. EDGE	RT. EDGE
2+50	708.06	707.74
+75	707.83	707.75
3+00	707.58	707.74
+25	708.33	708.04
+50	708.24	708.16
+75	708.15	708.31
4+00	708.31	708.41
+25	708.56	708.67
+50	708.47	708.67
+75	708.37	708.38
5+00	708.23	708.36

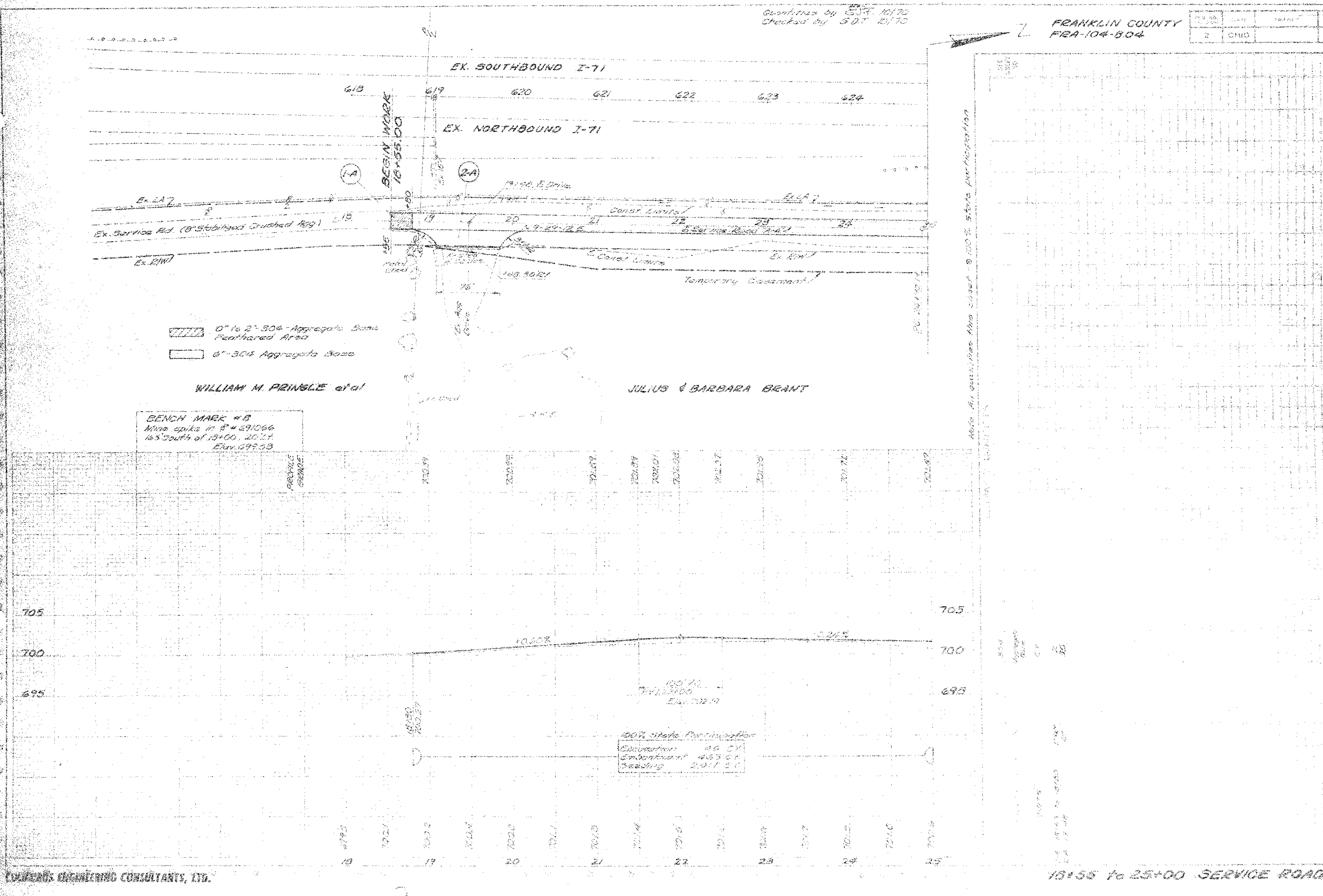


FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

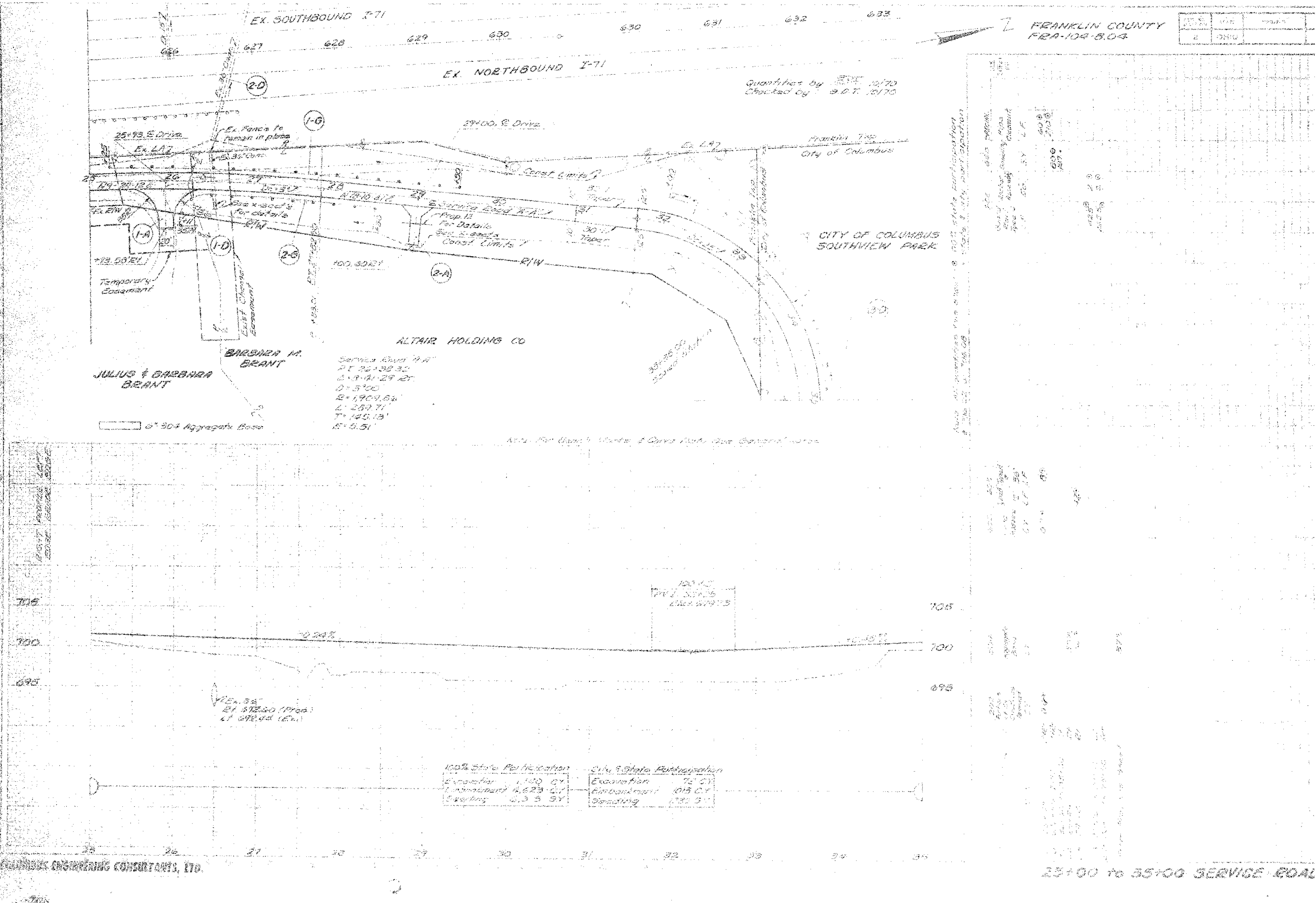
FRANKLIN COUNTY
FRA-104-8.04



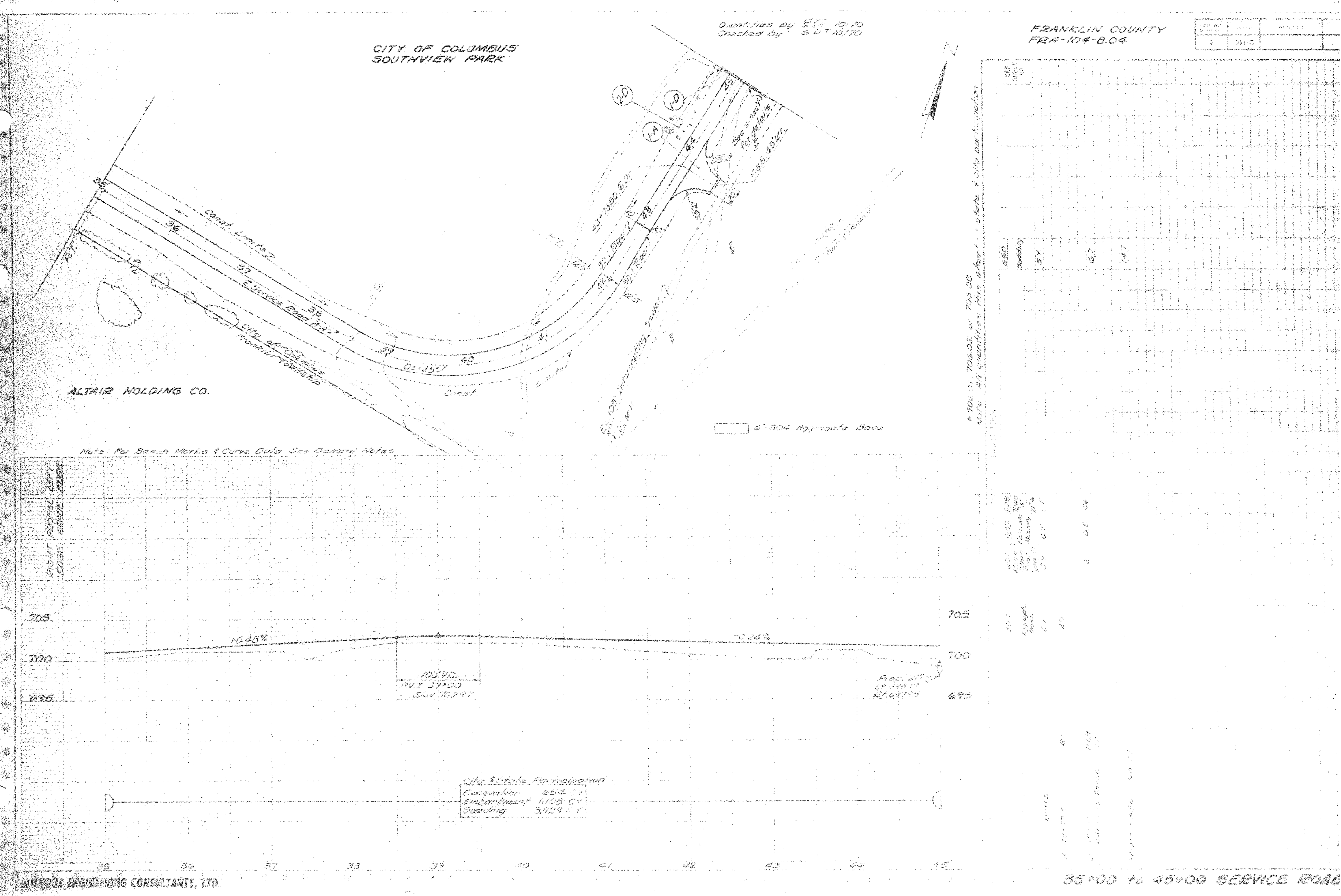
NOTE:
For Pavement Joint Detail & Legend, See Sheet No. 6B



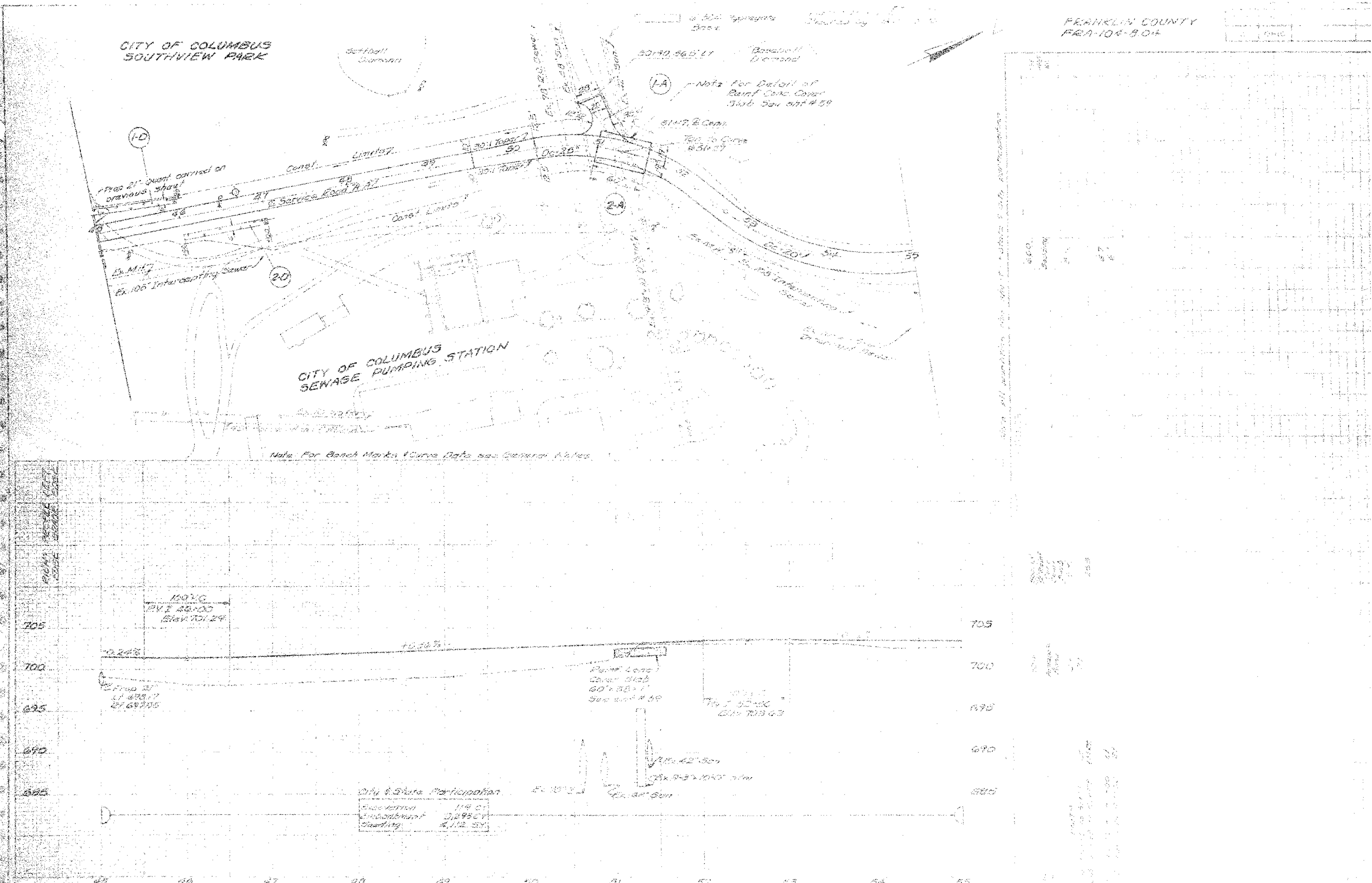
Quantities by S.D.T. 10/70
Checked by S.D.T. 10/70
FRANKLIN COUNTY
FRA-104-8.04
2
OHIO
EX. SOUTHBOUND I-71
EX. NORTHBOUND I-71
618
619
620
621
622
623
624
BEGIN WORK
16+55.00
1-A
2-A
Ex. L/A
Ex. Service Rd. (8" Stabilized Crushed Agg.)
Ex. R/W
Const. Limits
Temporary Easement
0" to 2" 304 - Aggregate Base
Feathered Area
6" 304 Aggregate Base
WILLIAM M. PRINGLE et al
JULIUS & BARBARA BRANT
BENCH MARK #8
Elev. 699.53
Note: All quantities this sheet @ 100% state participation
705
700
695
100% State Participation
Excavation
Embankment
Seeding
18
19
20
21
22
23
24
25
COLUMBUS ENGINEERING CONSULTANTS, LTD.
16+55 to 25+00 SERVICE ROAD



FRANKLIN COUNTY
FRA-109-8.04
EX. SOUTHBOUND I-71
EX. NORTHBOUND I-71
Quantities by 10/70
Checked by: 10/70
29+00, ℄ Drive
25+93, ℄ Drive
Ex. Fence to remain in place
Ex. L/A
Franklin Twp.
City of Columbus
Const. Limits
See x-sect's for details
Service Road "A-A"
Prop 13 For Details
See X-sects
Const. Limits
Taper
R/W
100.00' Rt.
Temporary Easement
Exist. Channel Easement
CITY OF COLUMBUS
SOUTHVIEW PARK
ALTAIR HOLDING CO
BARBARA M. BRANT
JULIUS & BARBARA BRANT
Service Road "A-A"
P.T. 26+38.32
D= 3°00'
R= 1,909.86'
L= 267.71'
T= 145.13'
E= 5.51'
6" 304 Aggregate Base
705
700
695
-0.24%
P.V.I. 32+05
Ex. 36"
100% State Participation
Excavation 1,190 C.Y.
Embankment 4,623 C.Y.
Seeding 3,35 S.Y.
City & State Participation
Excavation 73 C.Y.
Embankment 1015 C.Y.
Seeding S.Y.
25 26 27 28 29 30 31 32 33 34 35
COLUMBUS ENGINEERING CONSULTANTS, LTD.
25+00 TO 35+00 SERVICE ROAD



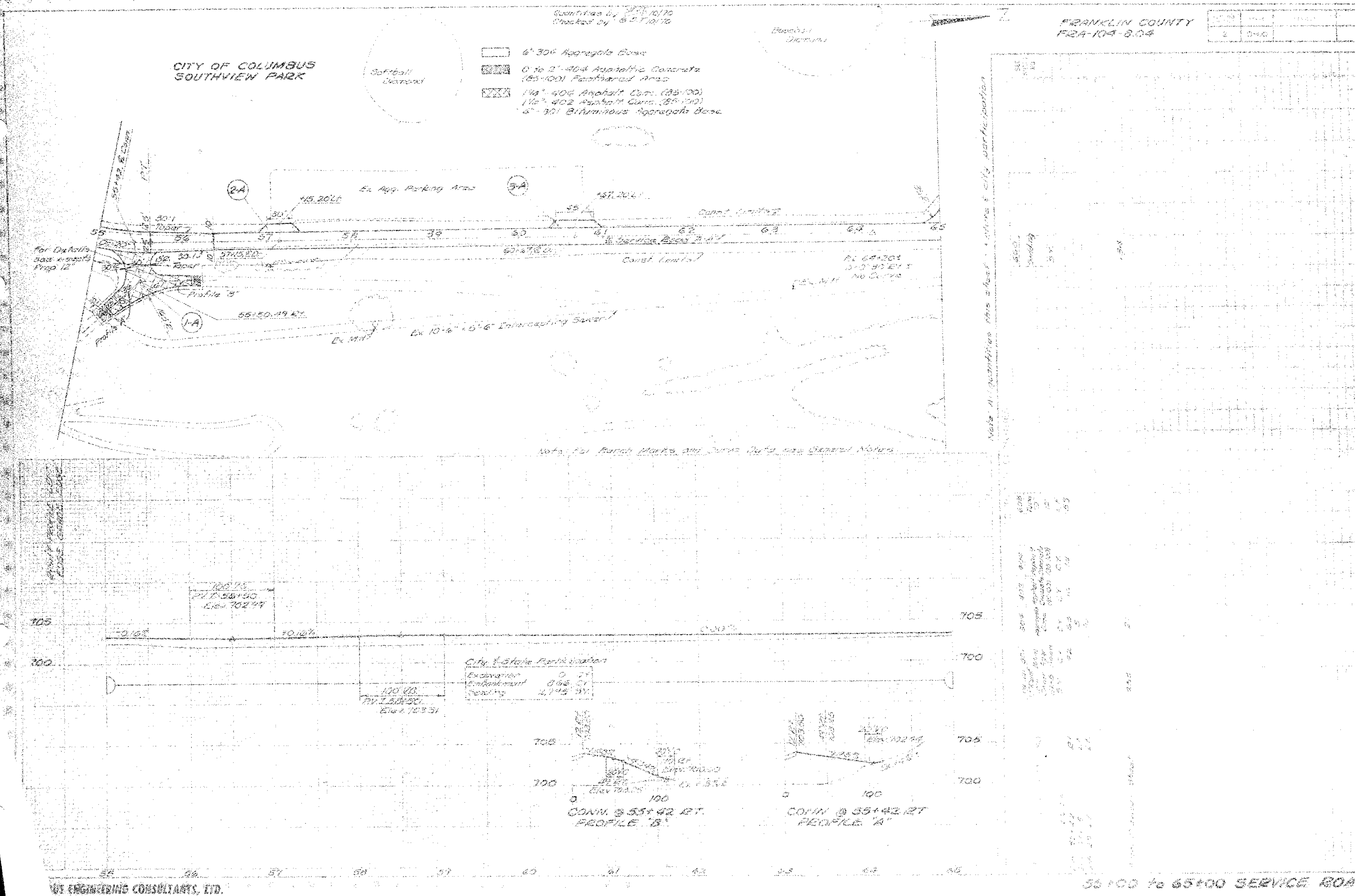
CITY OF COLUMBUS
SOUTHVIEW PARK
Quantities by
Checked by
FRANKLIN COUNTY
FRA-104-8.04
ALTAIR HOLDING CO.
Const. Limits
Service Road
Note: For Bench Marks & Curve Data See General Notes
Aggregate Base
705
700
695
+0.48%
PVI 39+00
35
36
37
38
39
40
41
42
43
44
45
Excavation
Embankment
Seeding
ENGINEERING CONSULTANTS, LTD.
35+00 to 45+00 SERVICE ROAD



FRANKLIN COUNTY
FRA-104-8.04
CITY OF COLUMBUS
SOUTHVIEW PARK
Softball Diamond
Baseball Diamond
Note: For Detail of Reinf. Conc. Cover Slab See sht # 59
Const. Limits
Service Road
Const. Limits
Ex. 106" Intercepting Sewer
CITY OF COLUMBUS
SEWAGE PUMPING STATION
Note: For Bench Marks & Curve Data see General Notes
100' VC
PVI 49+00
Elev. 701.24
-0.24%
+0.36%
Reinf. Conc. Cover Slab
See sht # 59
705
700
695
690
685
City & State Participation
Excavation
Embankment
Seeding
46
47
48
49
50
51
52
53
54
55

ENGINEERING CONSULTANTS, LTD.

45+00 TO 55+00 SERVICE ROA


FRANKLIN COUNTY
FRA-104-8.04
Quantities by
Checked by
CITY OF COLUMBUS
SOUTHVIEW PARK
Softball Diamond
Baseball Diamond
6" 304 Aggregate Base
0 to 2" 404 Asphaltic Concrete (85-100) Feathered Area
1½" 404 Asphalt Conc. (85-100)
1½" 402 Asphalt Conc. (85-100)
6" 301 Bituminous Aggregate Base
Ex. Agg. Parking Area
Const. Limits
Service Road
For Details See Exhibits Prop 12
Profile "B"
Profile "A"
Ex. 10'-6" x 5'-6" Intercepting Sewer
Ex. MH
No Curve
Note: All quantities this sheet - state & city participation
Note: For Bench Marks and Curve Data see General Notes
City & State Participation
Excavation
Embankment
Seeding
705
700
CONN. @ 55+42 RT.
PROFILE "B"
CONN. @ 55+42 RT.
PROFILE "A"
55 56 57 58 59 60 61 62 63 64 65
ENGINEERING CONSULTANTS, LTD.
55+00 to 65+00 SERVICE ROA

Quantities by: [illegible] 10/70
Checked by: G.D.T. 10/70

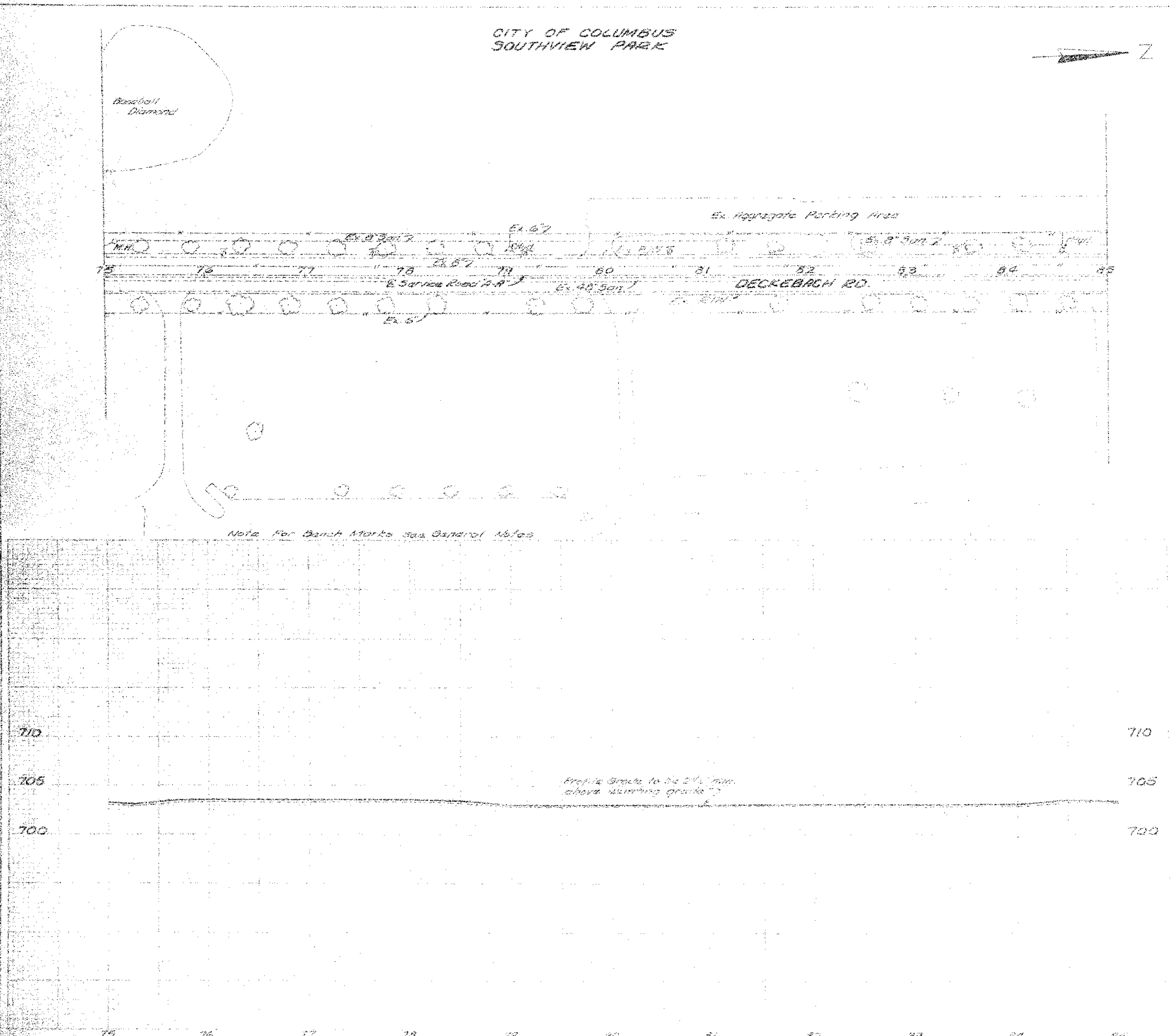
FRANKLIN COUNTY
FRA-104-8.04

2	OHIO	

65+00 to 75+00 SERVICE R

COLUMBUS ENGINEERING CONSULTANTS, LTD.

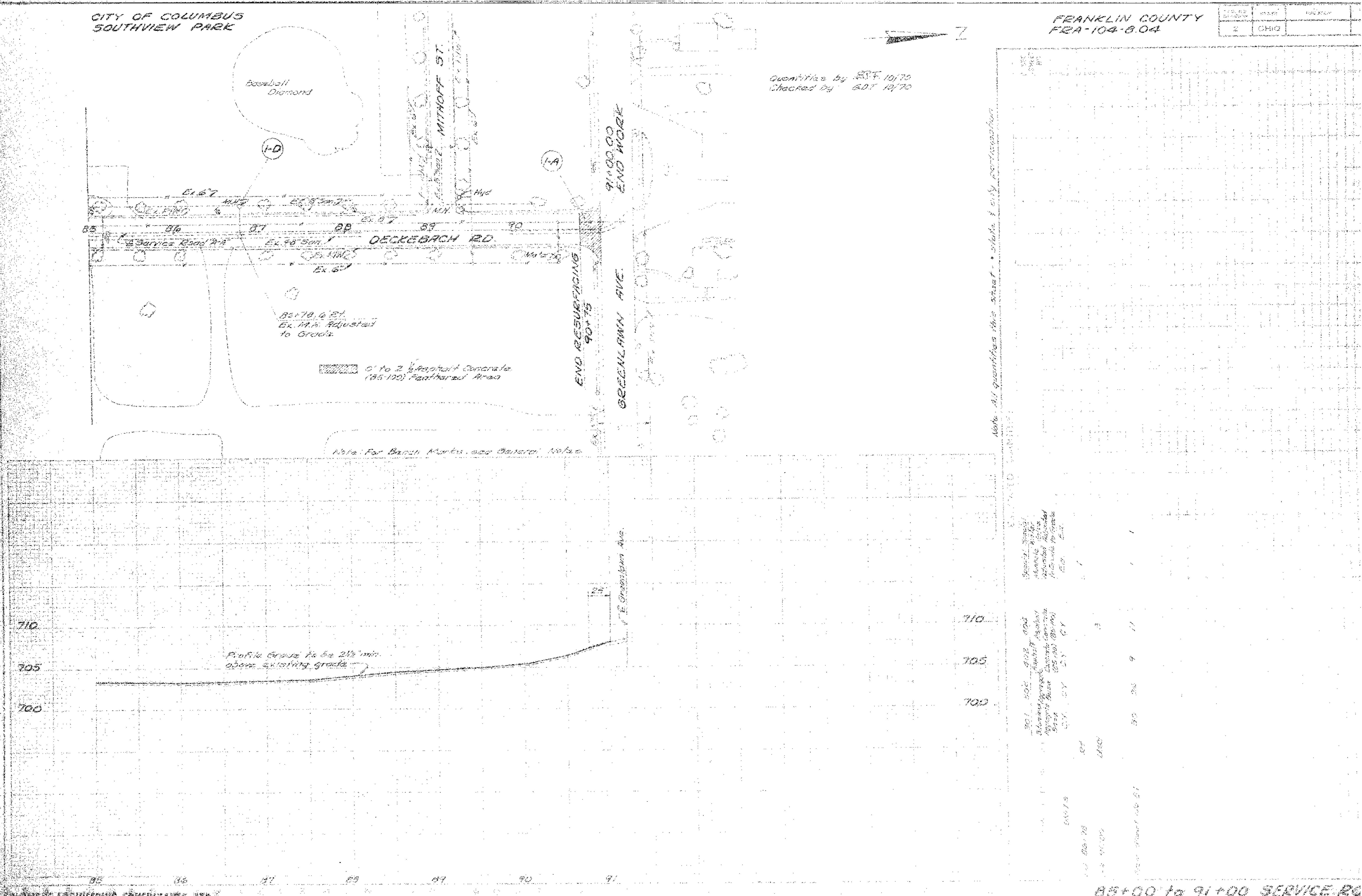
FRANKLIN COUNTY
FRA-104-6.04



COLUMBUS ENGINEERING CONSULTANTS, LTD.

75+00 to 85+00 SERVICE RD.

FRANKLIN COUNTY
FRA-104-8.04



85+00 to 91+00 SERVICE RD

COLUMBUS ENGINEERING CONSULTANTS, LTD.

FRANKLIN COUNTY
FRA-104-8.04

3:1 Conc collar

(Ex. 154'-30" Conc. @ 0.90 %

8:1

30'-36" Type A @ 0.20%

7+85.81' Lt
℄ 30" 693.19
HW-4 Headwall

Ex 79.92' Lt
℄ 30" 693.25 (Ex)
Headwall to be Removed

102.3

Prop 15" ℄

8+09.65' Lt
N°3 CSt.
Part. 39/35
℄ 15" 687.86

7+00

6970

Bridge Ceiling

699.0

-L- 8.81 Lt
N° 34 CSt
Pvt 702.09
℄ 24" 698.00

6+90

6+20

STA. EQUATION
48+62.00:
5+51.62

48+25

48+35
5+51.62

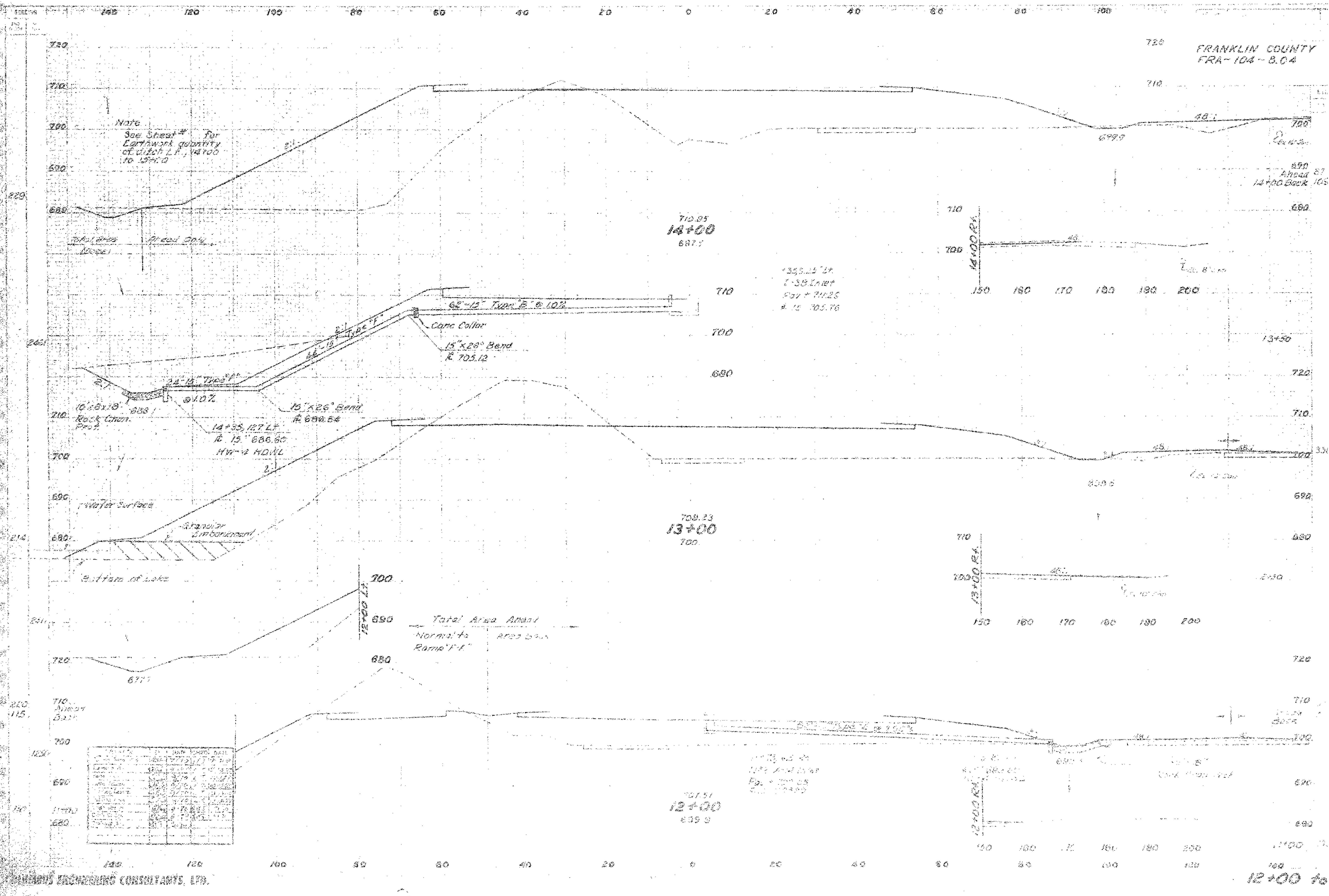
DRAWING INDEX				
DRAWING TITLE	NO.	DATE	APPD	DATE

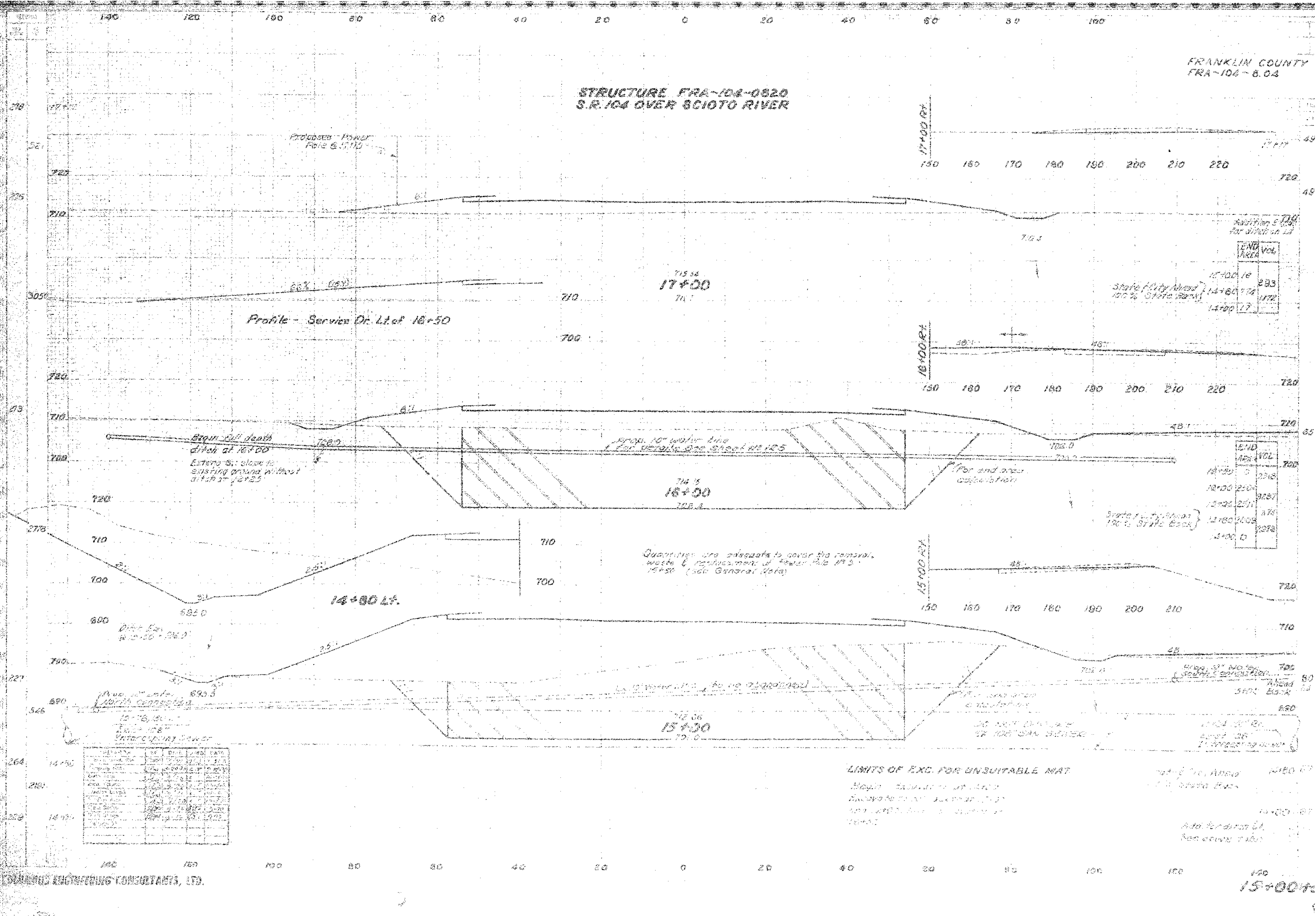
CORRIDOR ENGINEERING CONSULTANTS, LTD.

FRANKLIN COUNTY
FRA-104-8.04

8+00 to

ENGINEERS CONSULTANTS LTD.


FRANKLIN COUNTY
FRA-104-8.04
Note
See Sheet # for Earthwork quantity of ditch Lt. 14+00 to 15+00
Total Area Ahead Only
710.95
14+00
14+00 Rt.
1353.25 Lt.
62'-15" Type B @ 1.0%
Conc Collar
15"x28° Bend
705.12
24'-15" Type F
@ 1.0%
15"x26° Bend
686.54
Rock Chan. Prot.
14+35, 12.7 Lt.
15" 686.60
HW-4 HDWL
Water Surface
Granular Embankment
Bottom of Lake
13+50
708.23
13+00
13+00 Rt.
12+00 Lt.
Total Area Ahead
Normal to Ramp F-F
Ahead Back
12+00
12+00 Rt.
12+00 to
COLUMBUS ENGINEERING CONSULTANTS, LTD.


FRANKLIN COUNTY
FRA-104-8.04
STRUCTURE FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
Proposed Power Pole & Stub
Profile - Service Dr. Lt. of 16+50
17+00
17+00 Rt.
16+00 Rt.
15+00 Rt.
16+00
Begin full depth ditch at 16+00
Prop. 10" water line
For end area calculation
Quantities are adequate to cover the removal, waste & replacement of Power Pole No. 5 15+50 (See General Note)
14+80 Lt.
15+00
LIMITS OF EXC. FOR UNSUITABLE MAT.
END AREA
VOL.
State / City Ahead
100% State Back
BURGESS & NIPLE? ENGINEERING CONSULTANTS, LTD.
15+00 Lt.

FRANKLIN COUNTY
FRA-104-0.04

26+00

25+00

24+50

24+30

24+00

Proposed Power Pole

Note
Earthwork includes removal of Ex. pipe and replacement with embankment

For Earthwork Only

COLUMBUS ENGINEERING CONSULTANTS, LTD.

FRANKLIN COUNTY
FRA-104-6.04

Granular Material

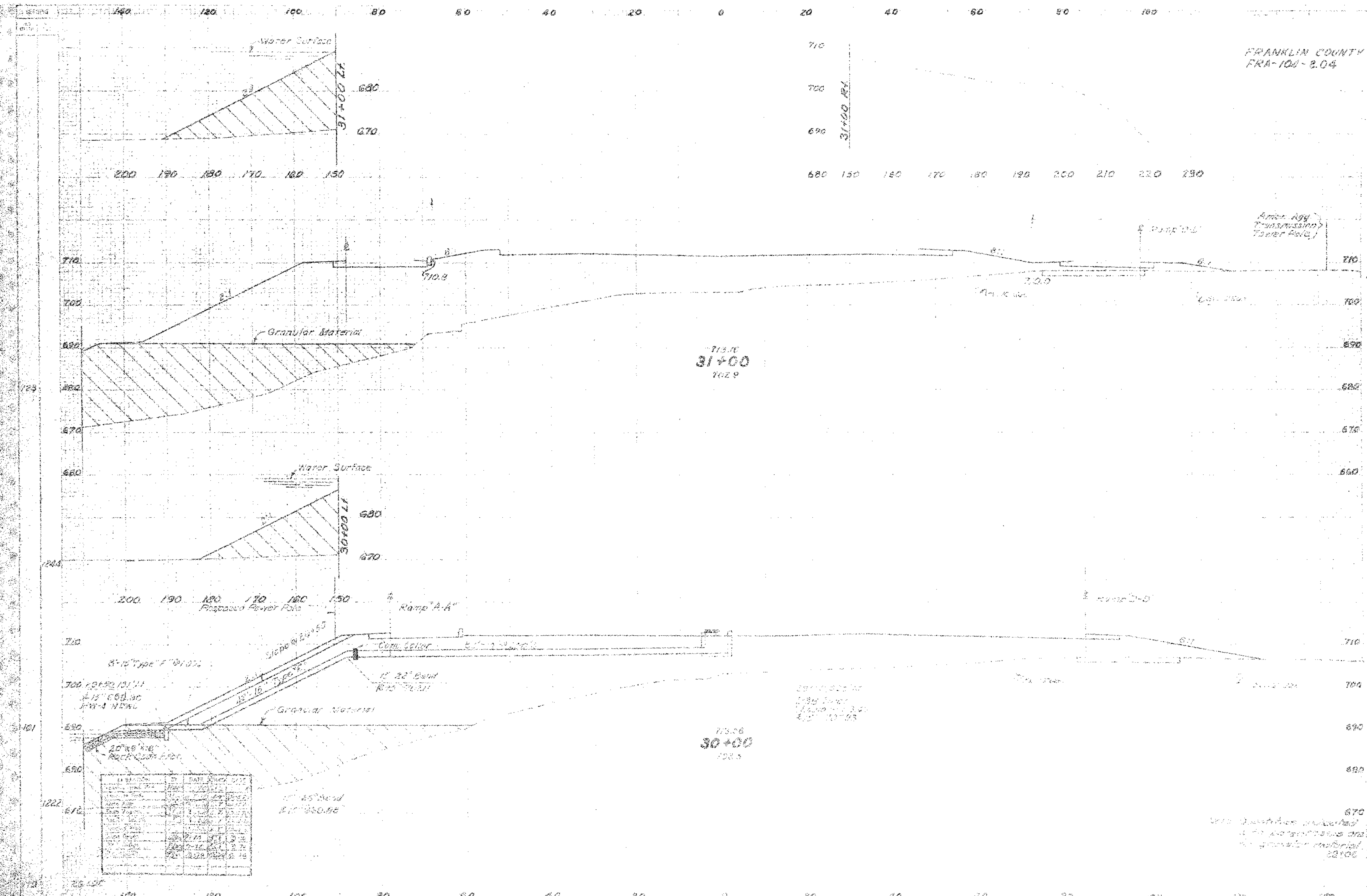
Water Surface

29+00

28+00

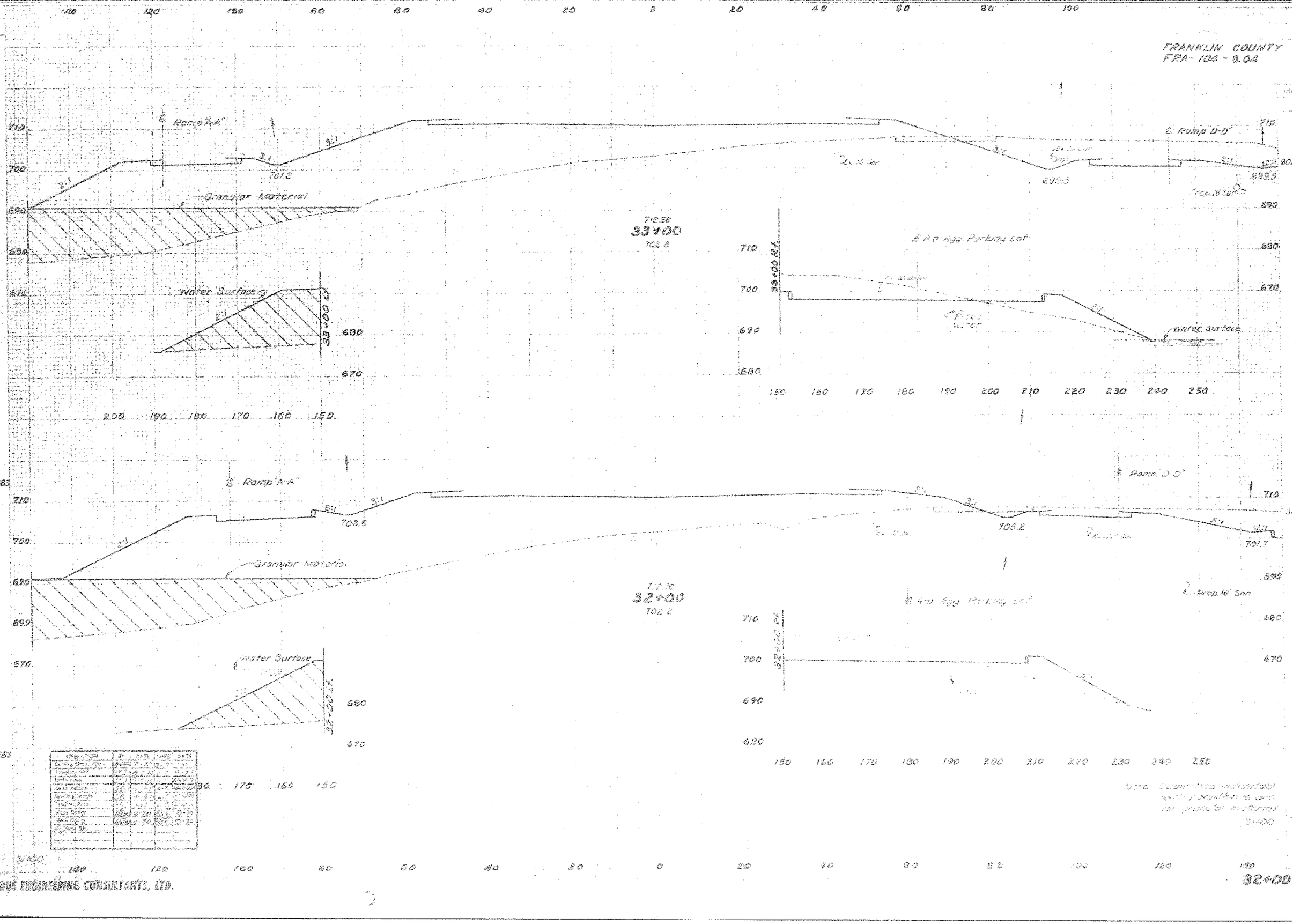
27+00

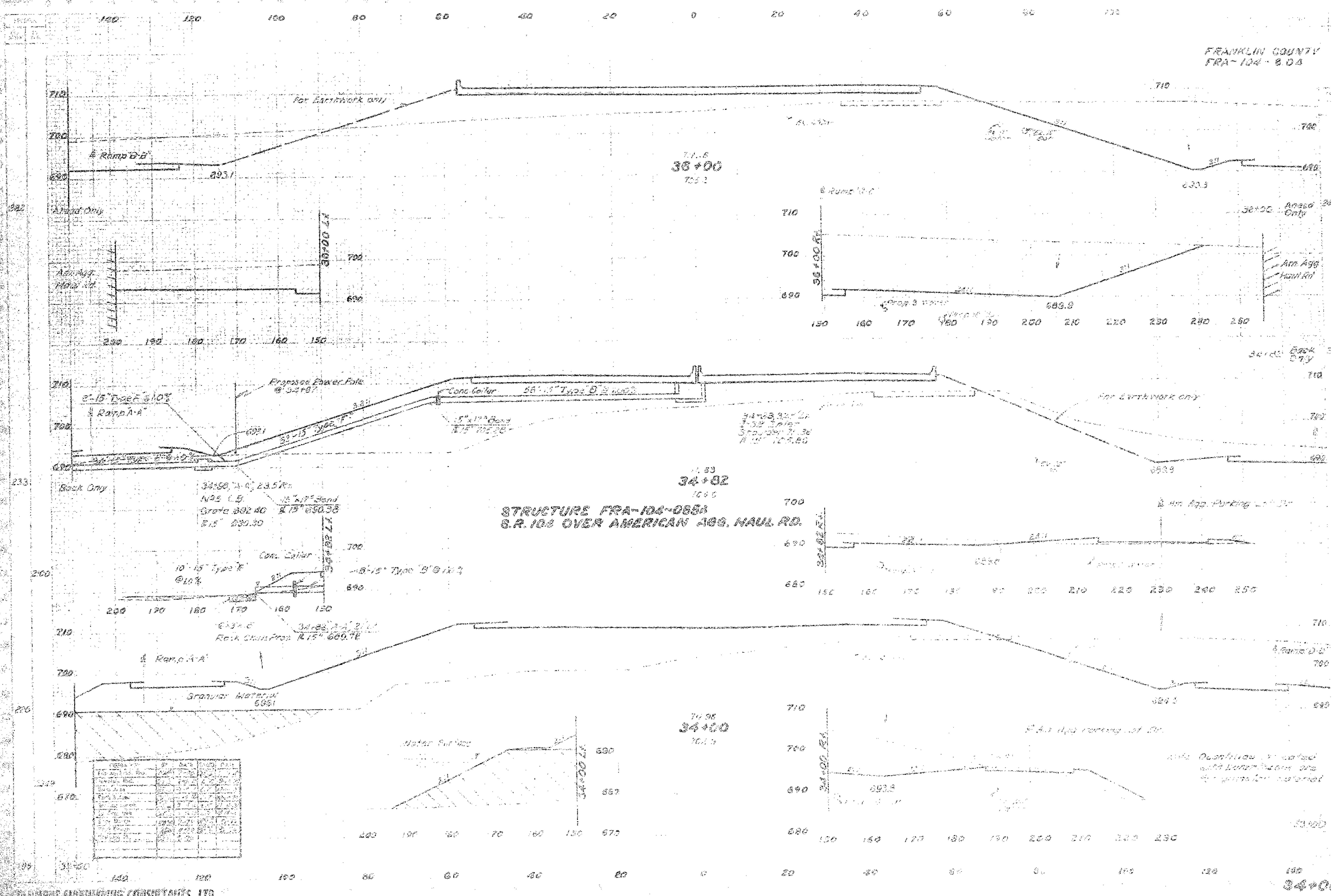
27+00 to

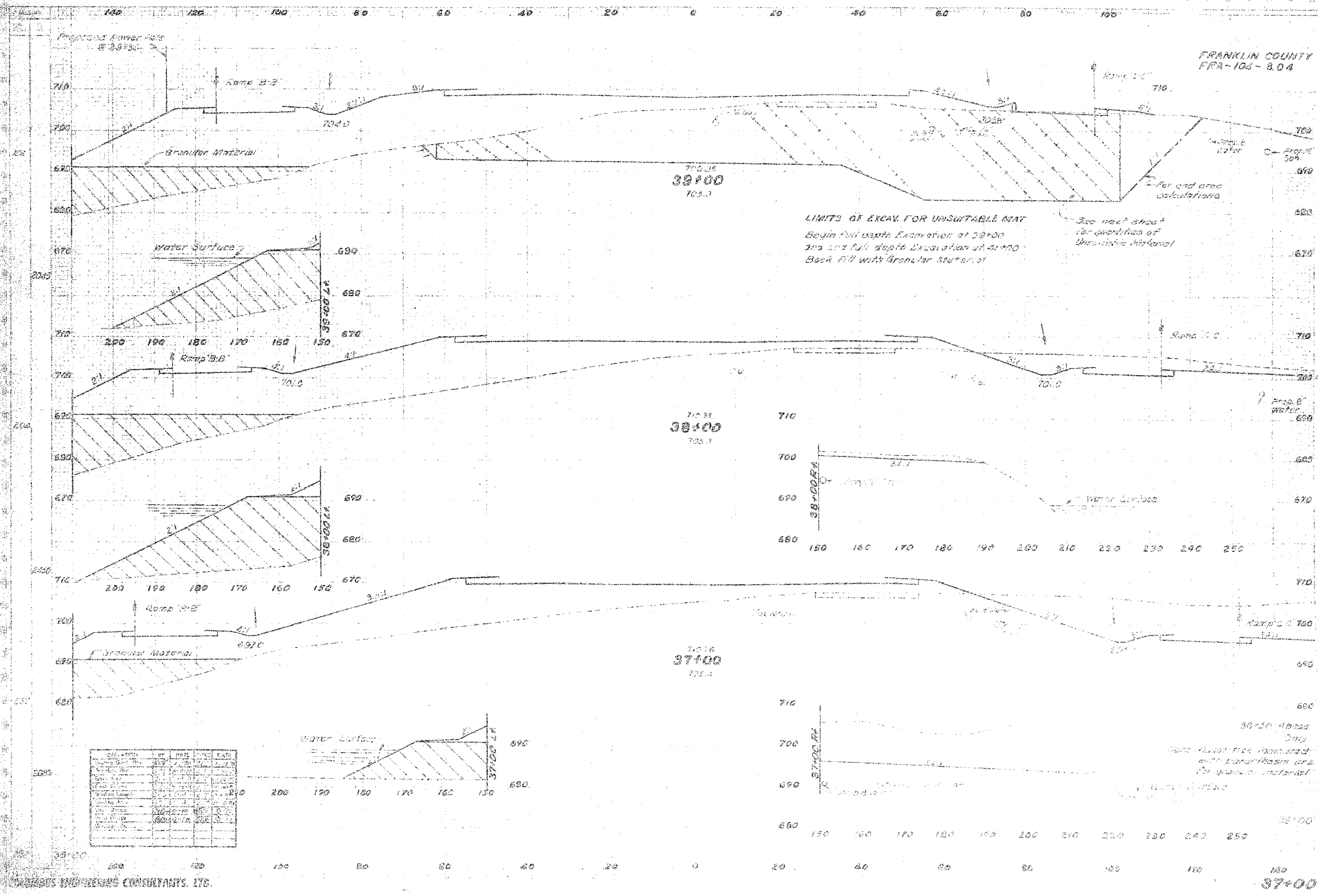


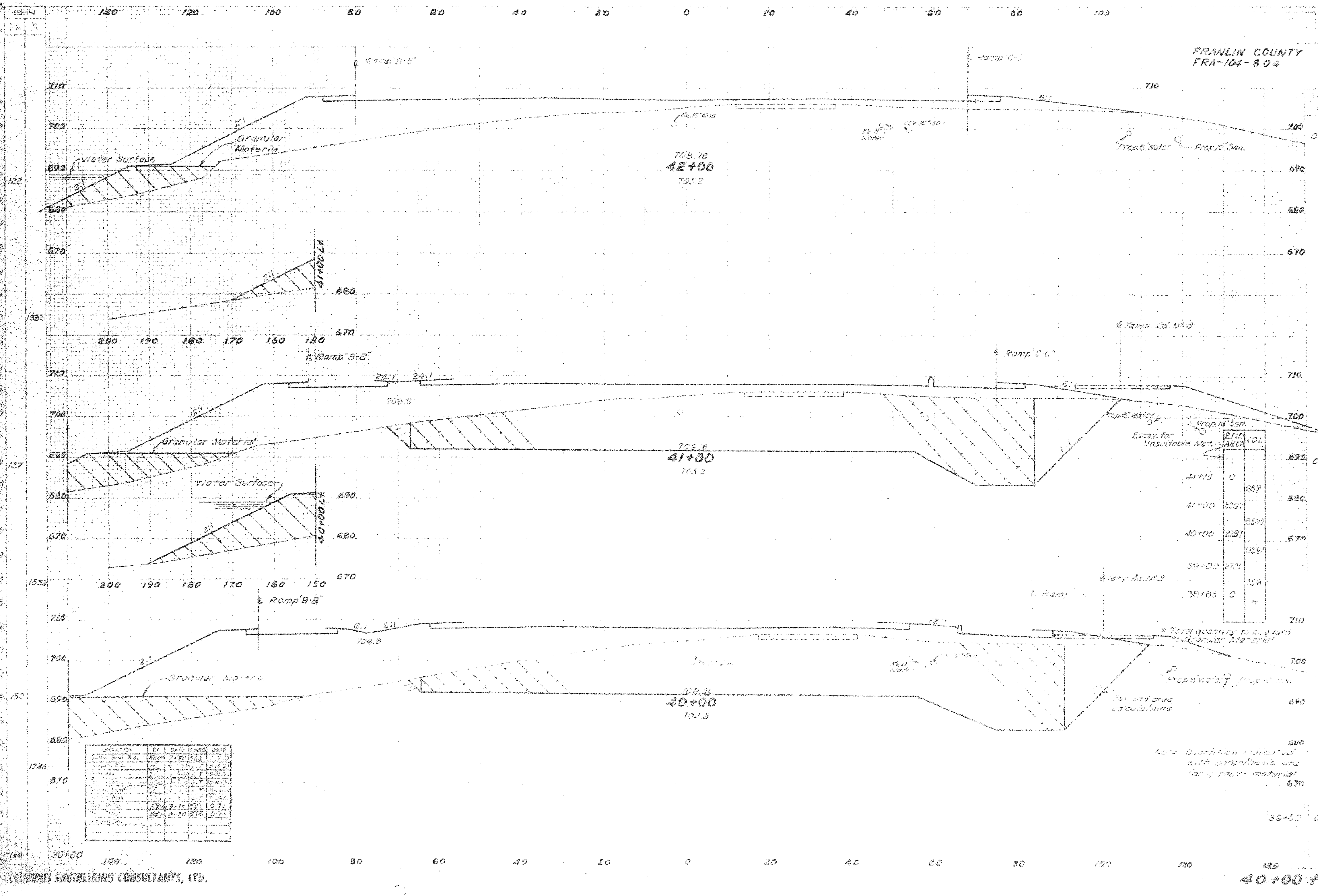
COLUMBUS ENGINEERING CONSULTANTS, LTD.

FRANKLIN COUNTY
FRA-106-8.04



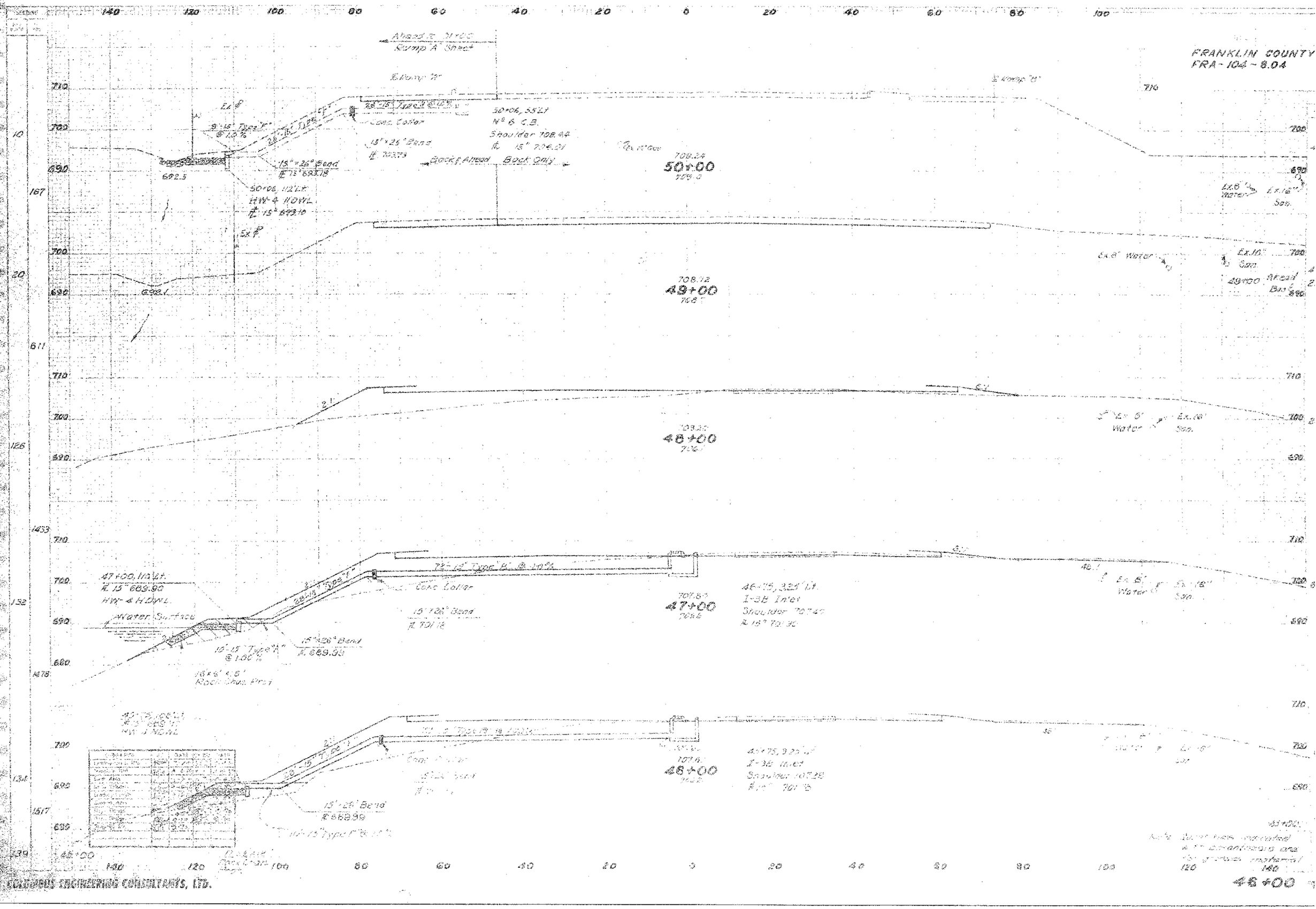

FRANKLIN COUNTY
FRA-104-8.04
For Earthwork only
Ramp 'B-B'
693.1
36+00
Ahead Only
36+00 Rt.
Am. Agg. Haul Rd.
36+00 Lt.
683.9
Back Only
Proposed Power Pole
Ramp 'A-A'
Conc. Collar
34+82
STRUCTURE FRA-104-0858
S.R.104 OVER AMERICAN AGG. HAUL RD.
34+82 Rt.
34+82 Lt.
Rock Channel Prot.
Granular Material
34+00
Water Surface
34+00 Lt.
34+00 Rt.
ENGINEERING CONSULTANTS, LTD.

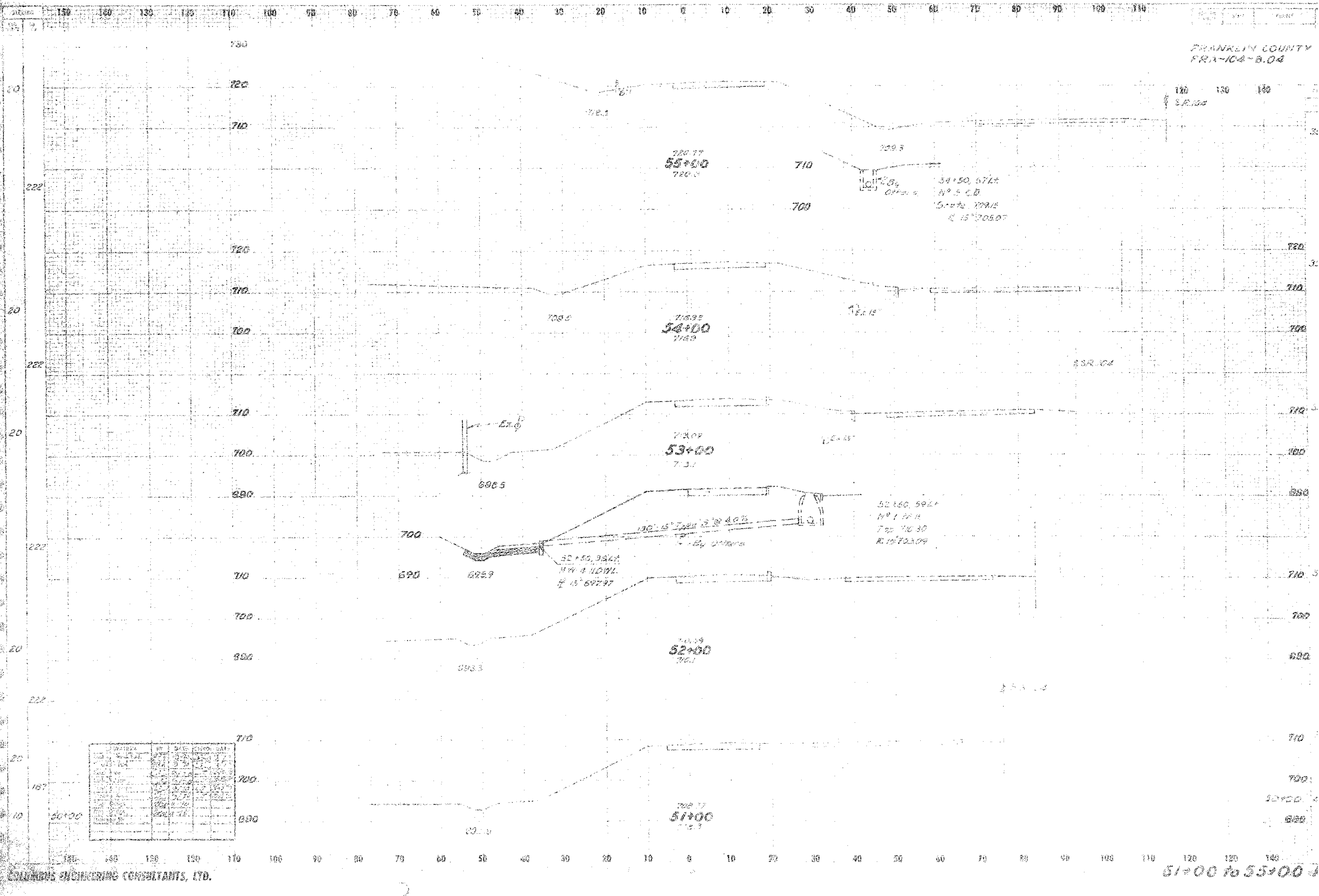

FRANKLIN COUNTY
FRA-104-8.04
Proposed Power Pole
Ramp 'B-B'
Ramp 'C-C'
Granular Material
39+00
38+00
37+00
LIMITS OF EXCAV. FOR UNSUITABLE MAT
Begin full depth Excavation at 39+00
End full depth Excavation at 41+00
Back Fill with Granular Material
For end area calculations
See next sheet for quantities of Unsuitable Material
Water Surface
39+00 Lt
38+00 Lt
37+00 Lt
38+00 Rt
37+00 Rt
Prop. 8" Water
ENGINEERING CONSULTANTS, LTD.


FRANLIN COUNTY
FRA-104-8.04
Water Surface
Granular Material
42+00
41+00
40+00
Ramp "B-B"
Ramp "C-C"
Granular Material
Water Surface
41+00
40+00
COLUMBUS ENGINEERING CONSULTANTS, LTD.
40+00

Note: Quantities indicated [illegible] are for granular material

FRANKLIN COUNTY
FRA-104-8.04




FRANKLIN COUNTY
FRA-104-8.04
55+00
54+00
53+00
52+00
51+00
54+50, 67Lt
No 5 C.B.
Grate 709.15
52+60, 59Lt
52+50, 35Lt
COLUMBUS ENGINEERING CONSULTANTS, LTD.
51+00 to 55+00

FRANKLIN COUNTY
FRS-104-8.04

58+55 Ahead
58+55 Back

58+75

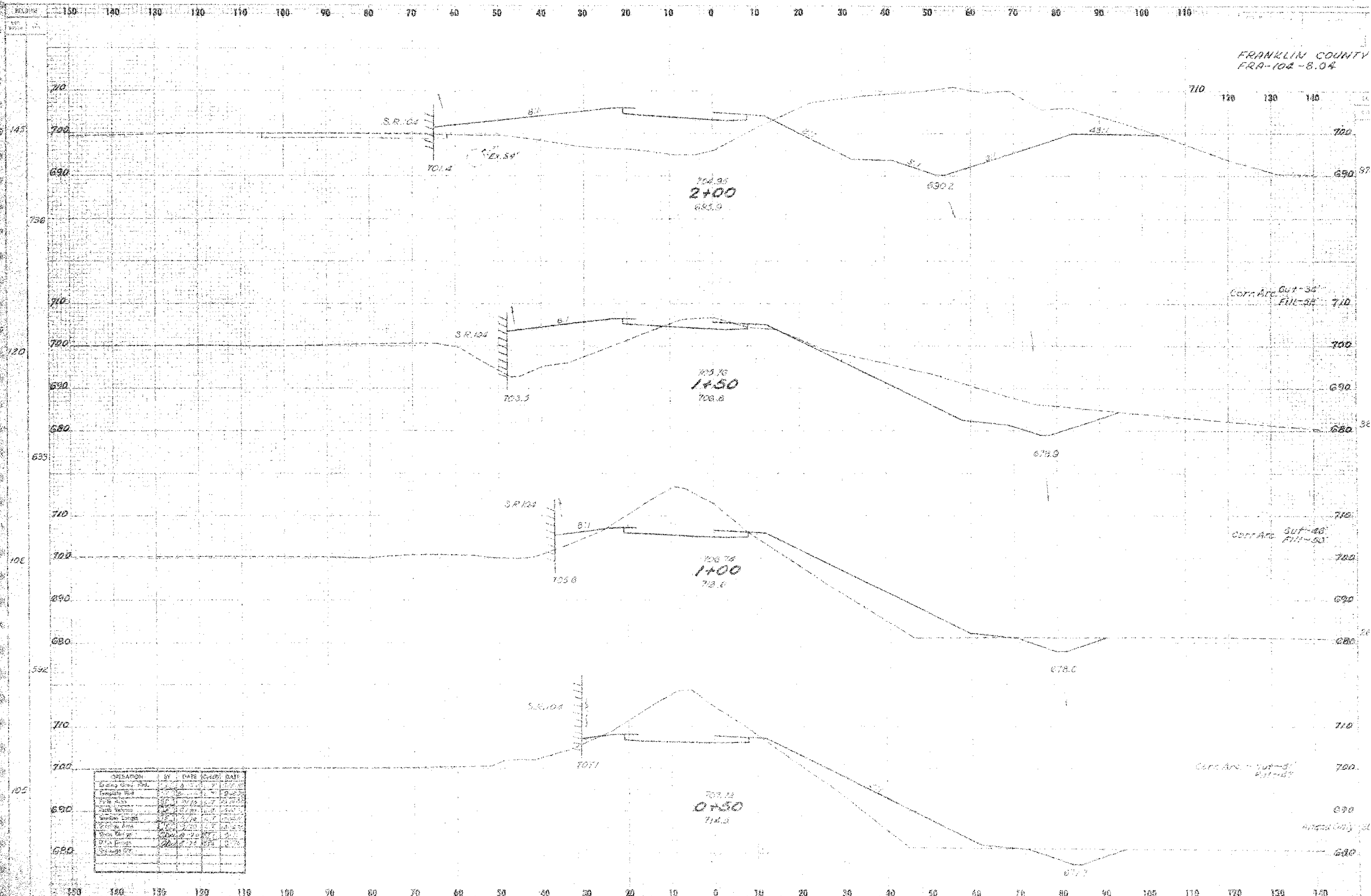
58+00

57+00

56+00

56+00 to 58+75

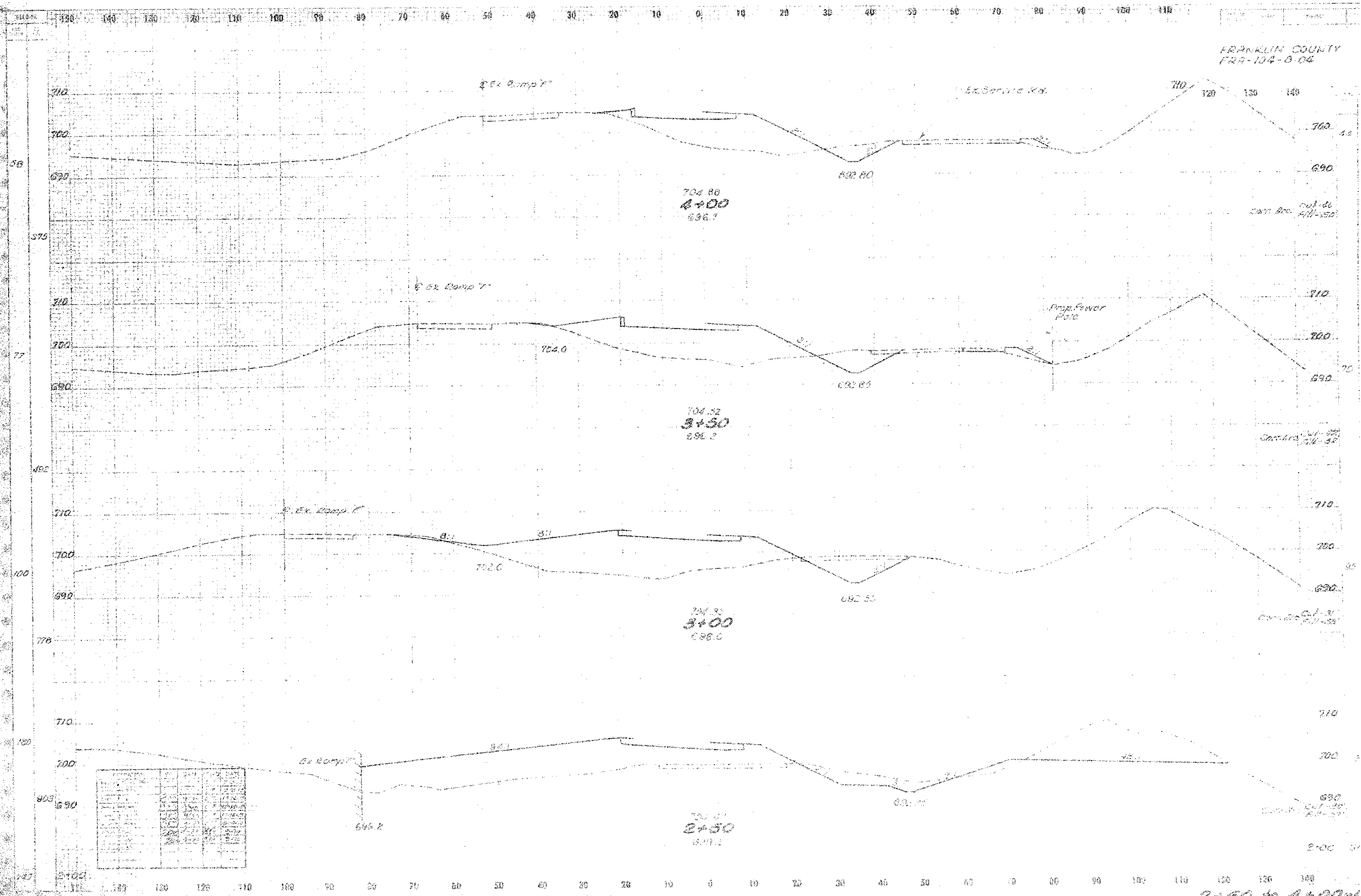
COLUMBUS ENGINEERING CONSULTANTS, LTD.



COLUMBUS ENGINEERING CONSULTANTS, LTD.

0+50 to 2+00-R

FRANKLIN COUNTY
FRA-104-0.04



2+50 to 4+00

ENGINEERING CONSULTANTS, LTD.

FRANKLIN COUNTY
FAP-104-B.04

76+00

75+00

74+00

STATION EQUATION
5+02.06 BACK =
79+08 AHEAD

5+00

4+50

CHARLES ENGINEERING CONSULTANTS, LTD.

79+08 to 76+
4+50 to 5+0

FRANKLIN COUNTY
IRA-16A-3.08

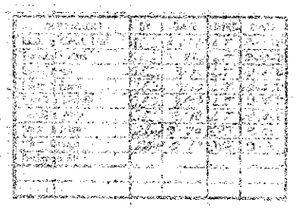
81+00

80+00

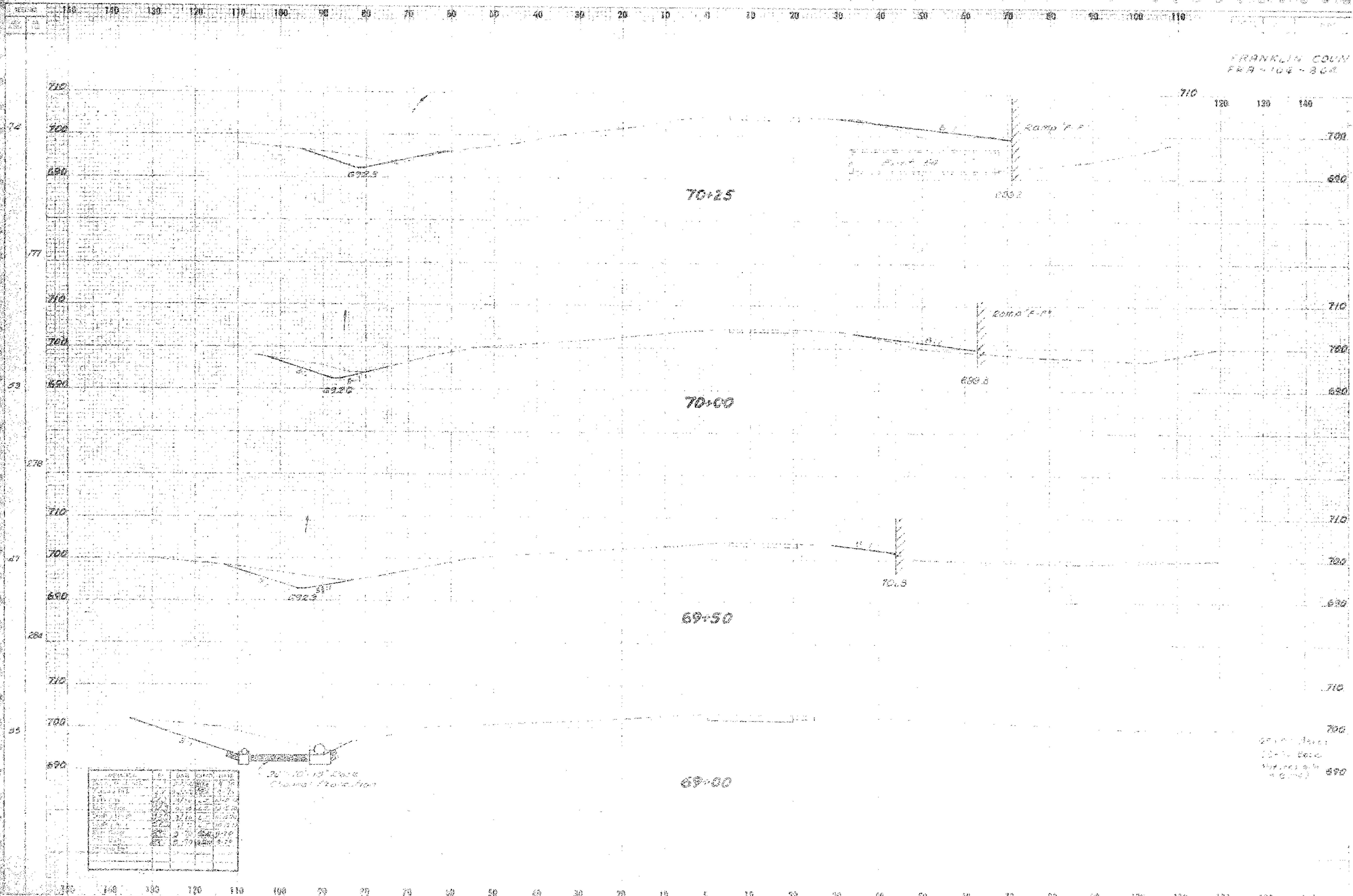
79+00

78+00

77+00



77+00 to 81+00



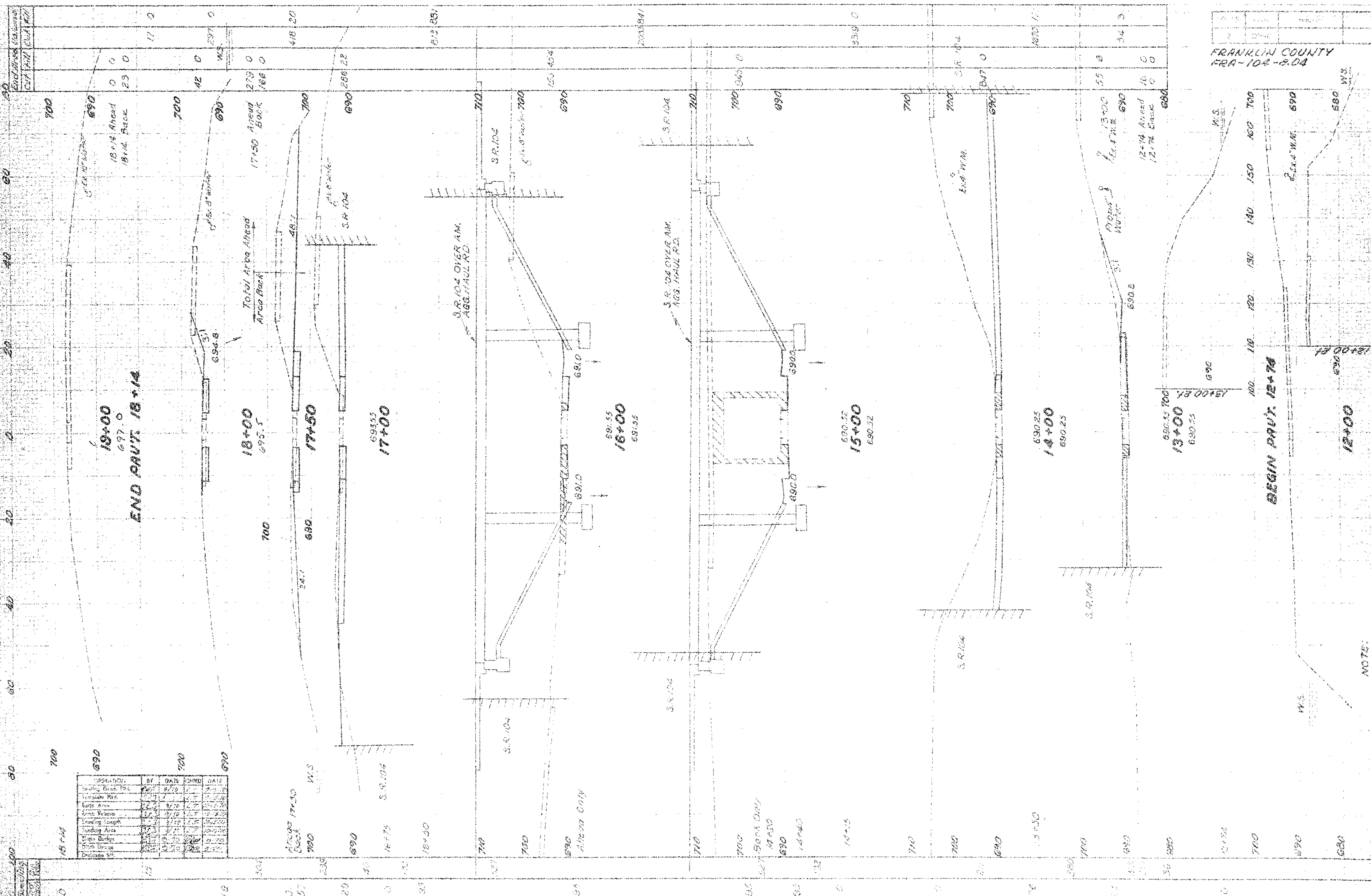
COLUMBUS ENGINEERING CONSULTANTS, LTD.

68+00 to 70+25 EX.

FRANKLIN COUNTY
FRA-104-3.04

COLUMBUS ENGINEERING CONSULTANTS, LTD.

0+00 to 2+00 BICY
70+50 to 71+50 EX. R



COLUMBUS ENGINEERING CONSULTANTS, LTD.

AMERICAN AGG. HAUL RD.-12+00 to

FRANKLIN COUNTY
FRA-104-8.08

96+00

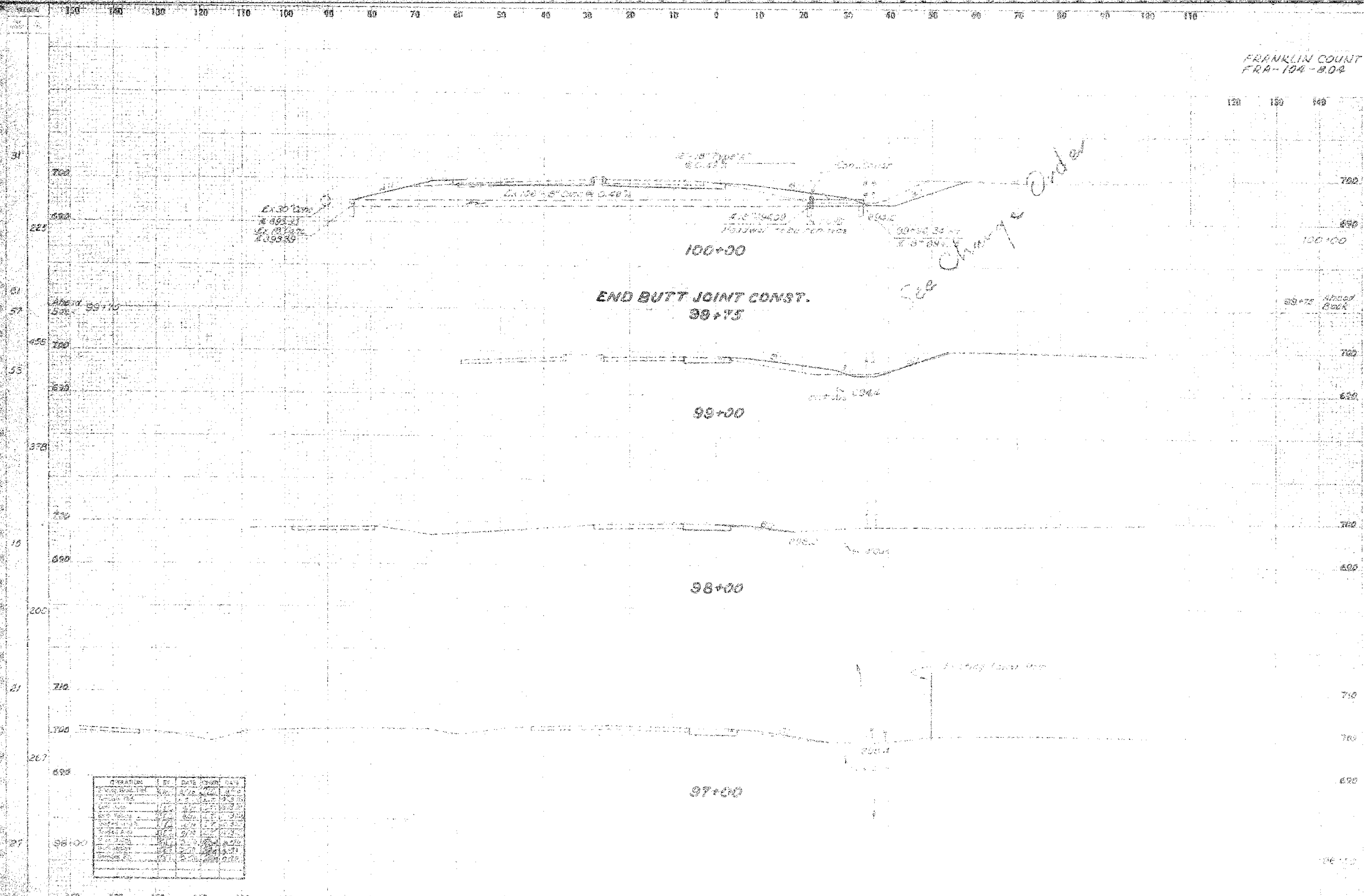
95+00

BEGIN WORK 94+95

94+00

94+00 to 96+00 S.R.

FRANKLIN COUNTY
FRA-104-8.04



COLUMBUS ENGINEERING CONSULTANTS, LTD.

97+00 to 100+00 S.R.

FRANKLIN COUNTY
FRA-104-9.04

9+50

9+00

8+50

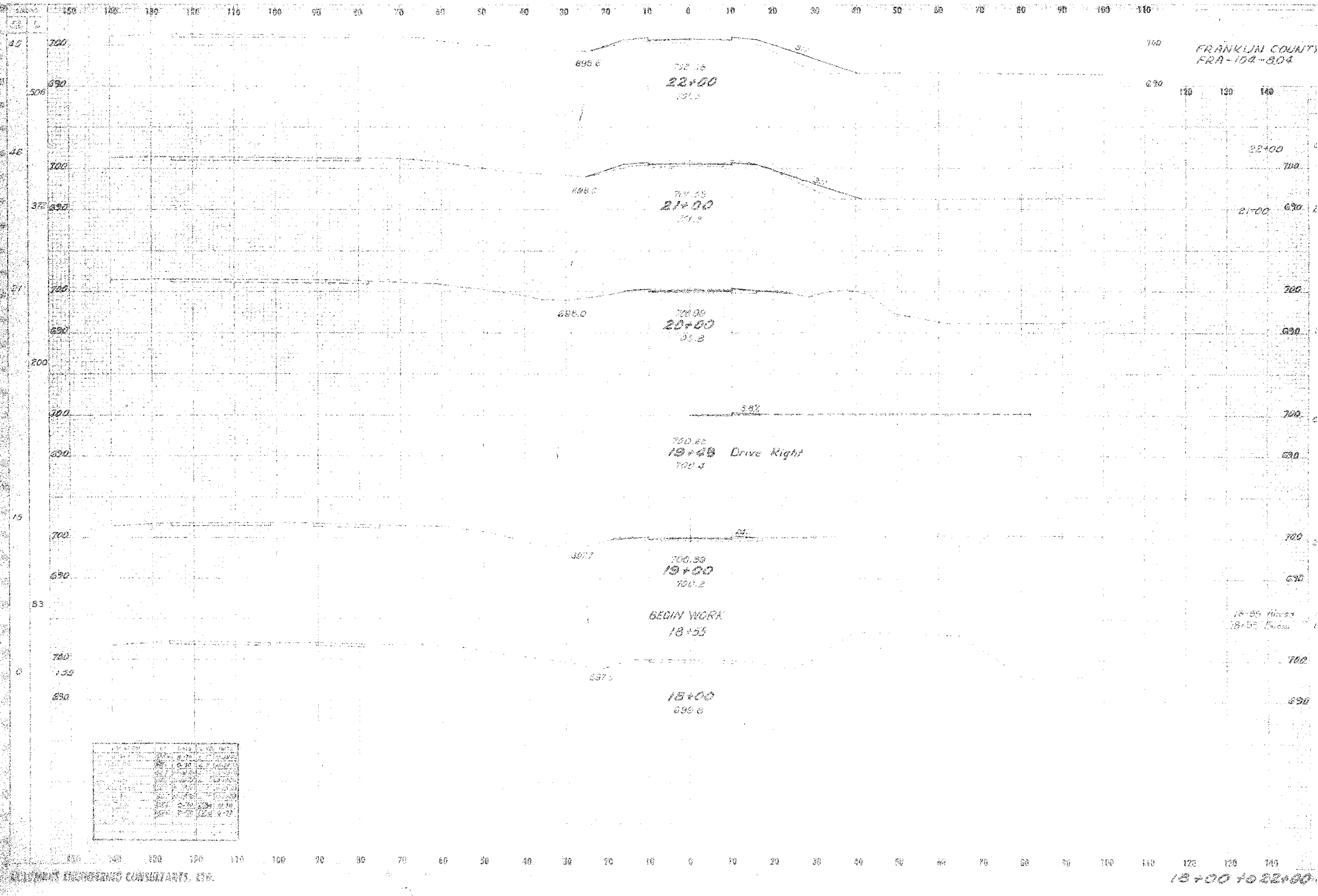
8+00

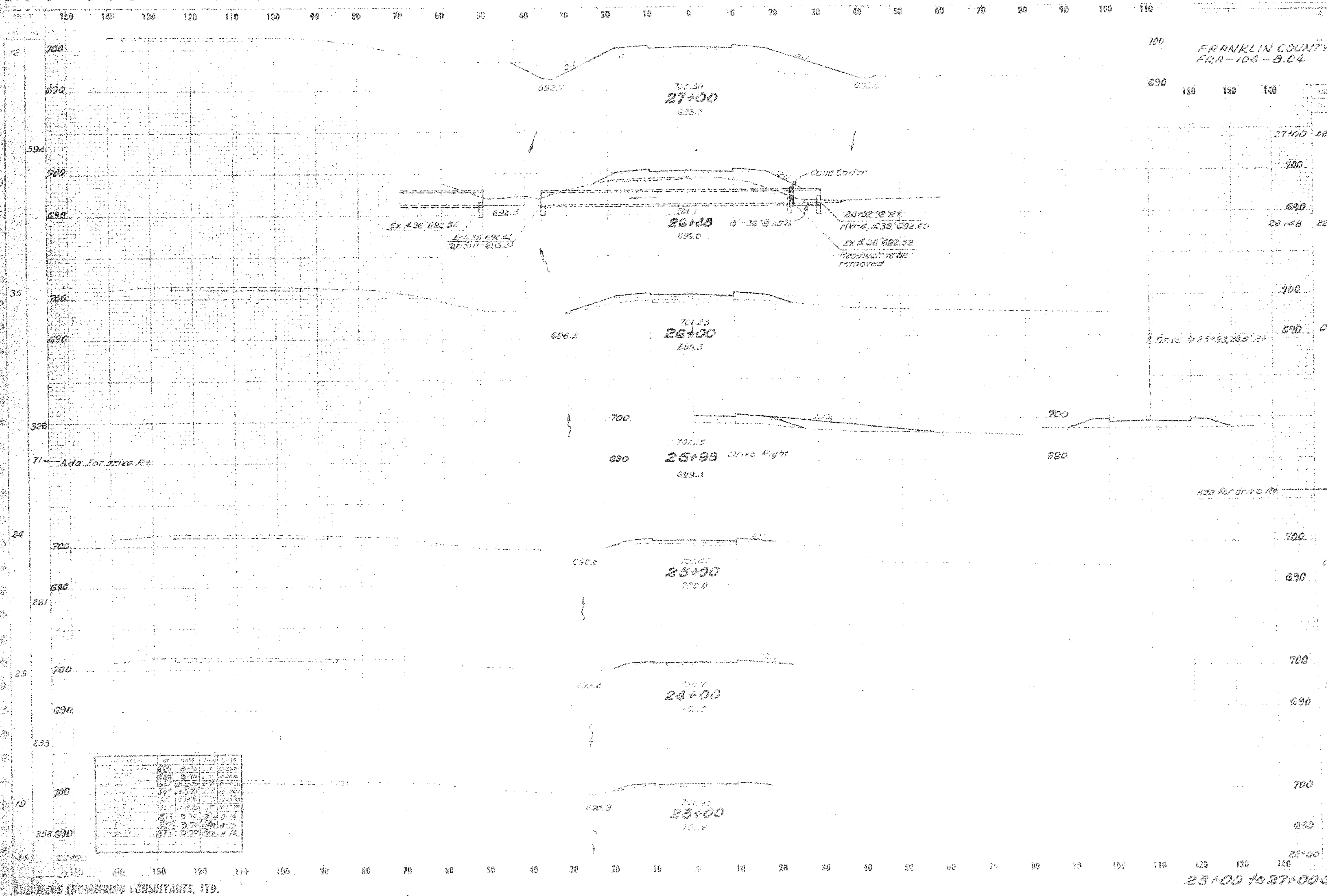
7+50

7+13

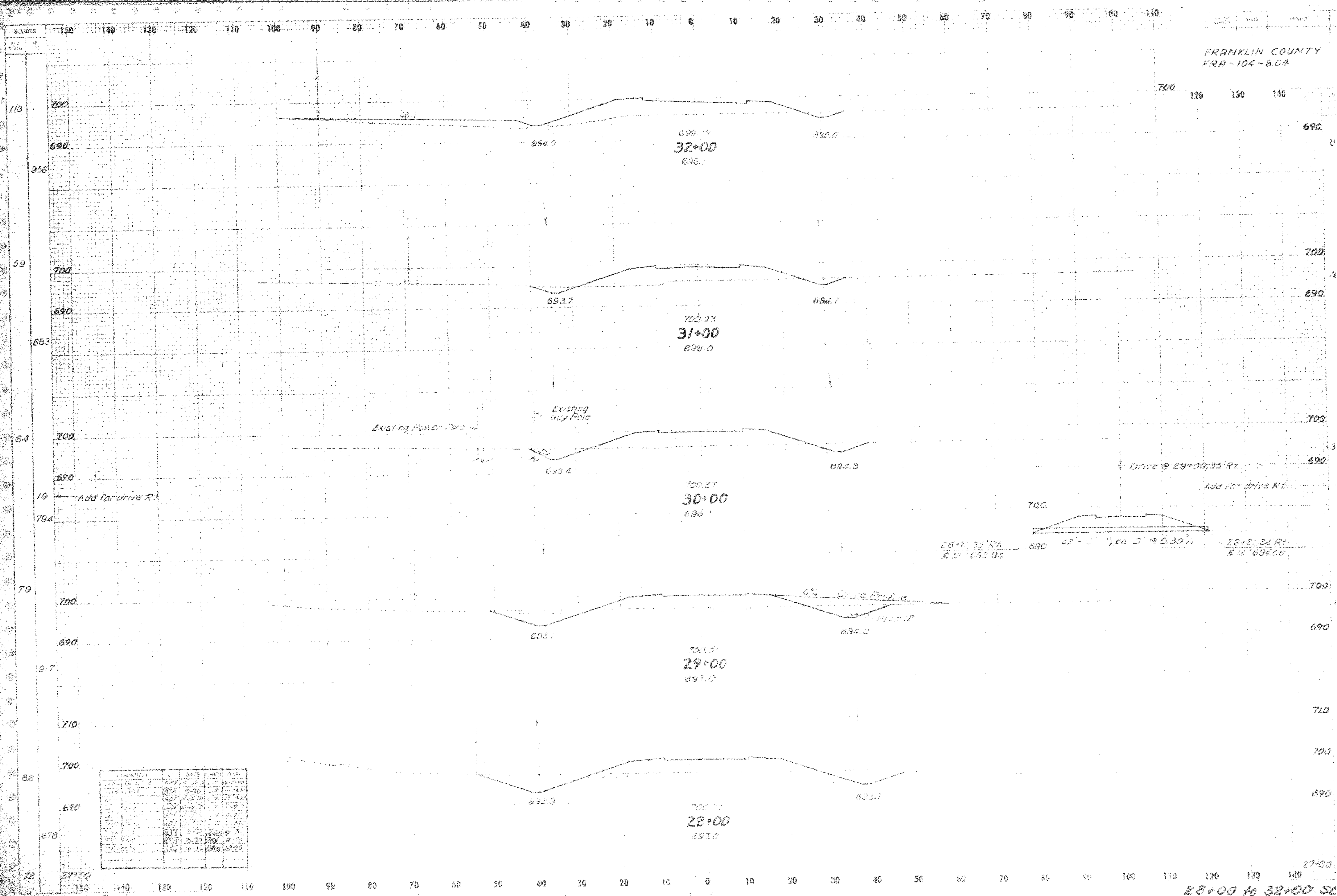
COLUMBUS ENGINEERING CONSULTANTS, LTD.

INLAND PRODUCTS


FRANKLIN COUNTY
FRA-104-8.04
22+00
21+00
20+00
19+48 Drive Right
19+00
BEGIN WORK
18+55
18+00
ENGINEERING CONSULTANTS, INC.
18+00 to 22+00



FRANKLIN COUNTY
FRA-104-8.04
27+00
26+48
Conc Collar
26+00
25+99
Drive Right
Add for drive Rt.
25+00
24+00
23+00
23+00 to 27+00
ENGINEERING CONSULTANTS, LTD.



COLUMBUS ENGINEERING CONSULTANTS, LTD.

FRANKLIN COUNTY
RSS - 104 - 11.04

37+00

36+00

35+00

34+00

33+00

33+00 to 37+00

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

42+00
701.0

41+00
701.3

40+00
701.5

39+00

38+00

FOURNIS ENGINEERING CONSULTANTS, LTD.

39+00 to 42+00 SB

FRANKLIN COUNTY
FRR-104-8.04

47+00

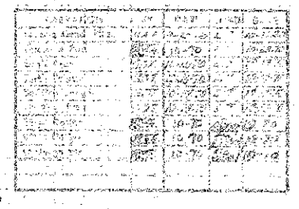
46+00

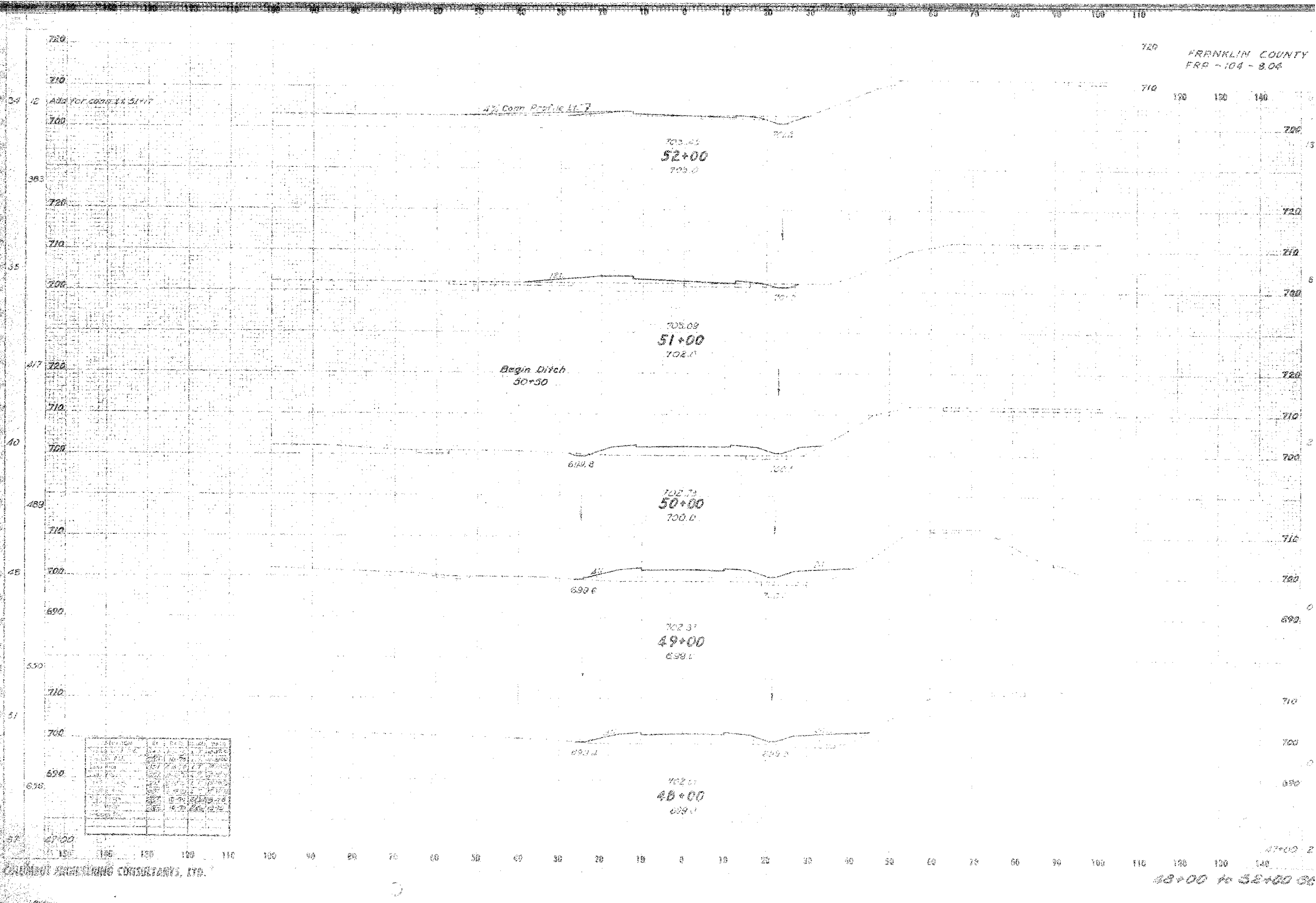
45+00

44+00

43+00

Add for Drive 43+73.5 Rt.




FRANKLIN COUNTY
FRA - 104 - 8.04
52+00
51+00
Begin Ditch
50+50
50+00
700.0
49+00
48+00
48+00 to 52+00
ENGINEERING CONSULTANTS, LTD.

FRANKLIN COUNTY
FRR ~ 10.4 ~ 8.04

57+00
702.0

56+00
702.0

55+00
702.0

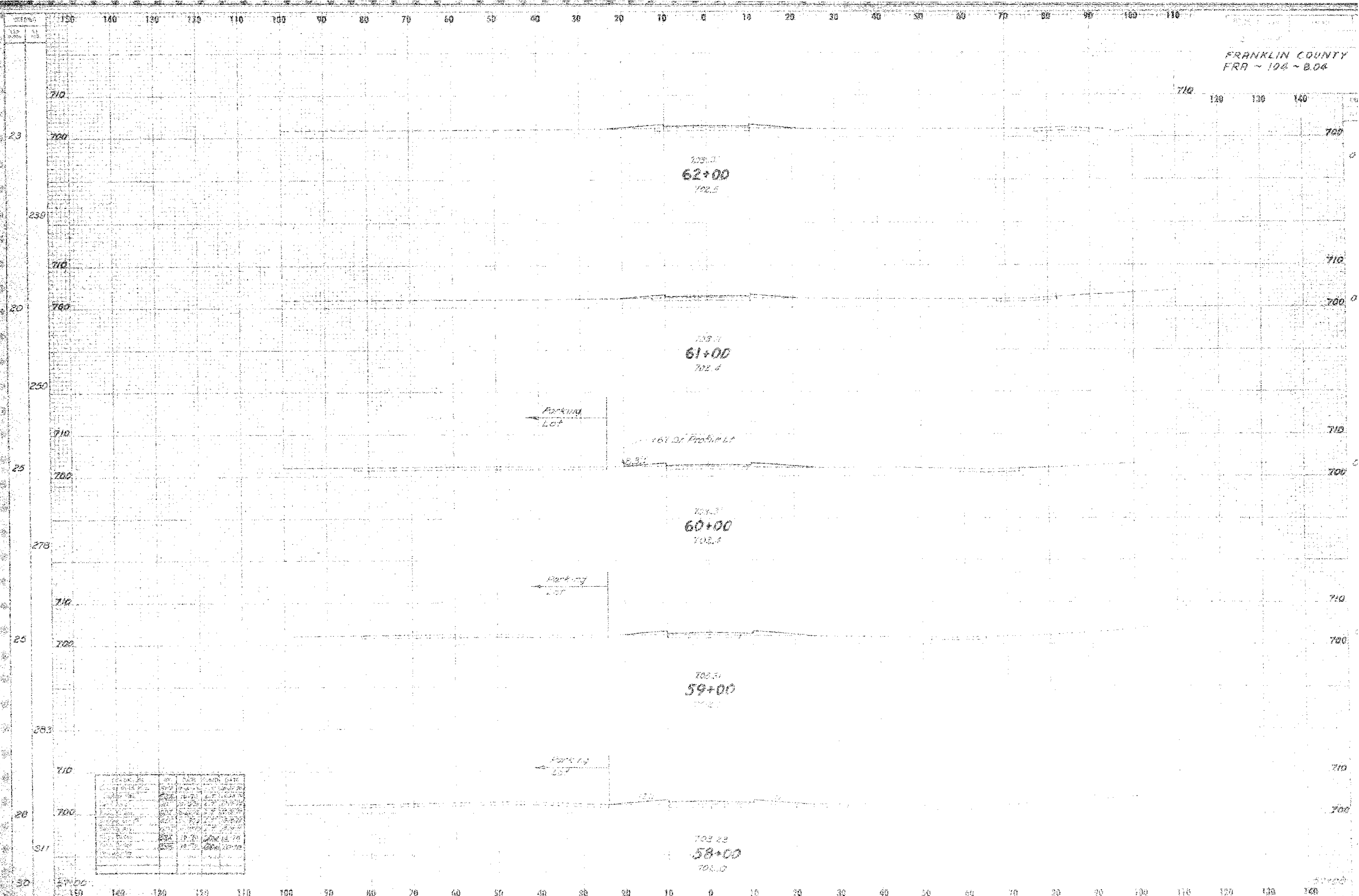
54+00
702.0

53+00
702.0

Add for Comp Rt 55+42

COLUMBUS ENGINEERING CONSULTANTS, LTD.

53+00 to 57+00 S.



COLUMBUS ENGINEERING CONSULTANTS, LTD.

58+00 to 62+00

FRANKLIN COUNTY
FRA - 104 - 8.04

STATION

710
709
708
707
706
705
704
703
702
701
700

18
178
18
240
6 Add for Drive Lt. 65+18
26
207
22
256
24
287
25

Exist.

705.3
67+00
705.3

705.3
66+00
705.3

Exist. Conn Profile Lt

705.3
65+00
705.3

705.3
64+00
705.3

705.3
63+00
705.3

63+00

120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540 1550 1560 1570 1580 1590 1600 1610 1620 1630 1640 1650 1660 1670 1680 1690 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100 2110 2120 2130 2140 2150 2160 2170 2180 2190 2200 2210 2220 2230 2240 2250 2260 2270 2280 2290 2300 2310 2320 2330 2340 2350 2360 2370 2380 2390 2400 2410 2420 2430 2440 2450 2460 2470 2480 2490 2500 2510 2520 2530 2540 2550 2560 2570 2580 2590 2600 2610 2620 2630 2640 2650 2660 2670 2680 2690 2700 2710 2720 2730 2740 2750 2760 2770 2780 2790 2800 2810 2820 2830 2840 2850 2860 2870 2880 2890 2900 2910 2920 2930 2940 2950 2960 2970 2980 2990 3000 3010 3020 3030 3040 3050 3060 3070 3080 3090 3100 3110 3120 3130 3140 3150 3160 3170 3180 3190 3200 3210 3220 3230 3240 3250 3260 3270 3280 3290 3300 3310 3320 3330 3340 3350 3360 3370 3380 3390 3400 3410 3420 3430 3440 3450 3460 3470 3480 3490 3500 3510 3520 3530 3540 3550 3560 3570 3580 3590 3600 3610 3620 3630 3640 3650 3660 3670 3680 3690 3700 3710 3720 3730 3740 3750 3760 3770 3780 3790 3800 3810 3820 3830 3840 3850 3860 3870 3880 3890 3900 3910 3920 3930 3940 3950 3960 3970 3980 3990 4000 4010 4020 4030 4040 4050 4060 4070 4080 4090 4100 4110 4120 4130 4140 4150 4160 4170 4180 4190 4200 4210 4220 4230 4240 4250 4260 4270 4280 4290 4300 4310 4320 4330 4340 4350 4360 4370 4380 4390 4400 4410 4420 4430 4440 4450 4460 4470 4480 4490 4500 4510 4520 4530 4540 4550 4560 4570 4580 4590 4600 4610 4620 4630 4640 4650 4660 4670 4680 4690 4700 4710 4720 4730 4740 4750 4760 4770 4780 4790 4800 4810 4820 4830 4840 4850 4860 4870 4880 4890 4900 4910 4920 4930 4940 4950 4960 4970 4980 4990 5000 5010 5020 5030 5040 5050 5060 5070 5080 5090 5100 5110 5120 5130 5140 5150 5160 5170 5180 5190 5200 5210 5220 5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360 5370 5380 5390 5400 5410 5420 5430 5440 5450 5460 5470 5480 5490 5500 5510 5520 5530 5540 5550 5560 5570 5580 5590 5600 5610 5620 5630 5640 5650 5660 5670 5680 5690 5700 5710 5720 5730 5740 5750 5760 5770 5780 5790 5800 5810 5820 5830 5840 5850 5860 5870 5880 5890 5900 5910 5920 5930 5940 5950 5960 5970 5980 5990 6000 6010 6020 6030 6040 6050 6060 6070 6080 6090 6100 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200 6210 6220 6230 6240 6250 6260 6270 6280 6290 6300 6310 6320 6330 6340 6350 6360 6370 6380 6390 6400 6410 6420 6430 6440 6450 6460 6470 6480 6490 6500 6510 6520 6530 6540 6550 6560 6570 6580 6590 6600 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000 7010 7020 7030 7040 7050 7060 7070 7080 7090 7100 7110 7120 7130 7140 7150 7160 7170 7180 7190 7200 7210 7220 7230 7240 7250 7260 7270 7280 7290 7300 7310 7320 7330 7340 7350 7360 7370 7380 7390 7400 7410 7420 7430 7440 7450 7460 7470 7480 7490 7500 7510 7520 7530 7540 7550 7560 7570 7580 7590 7600 7610 7620 7630 7640 7650 7660 7670 7680 7690 7700 7710 7720 7730 7740 7750 7760 7770 7780 7790 7800 7810 7820 7830 7840 7850 7860 7870 7880 7890 7900 7910 7920 7930 7940 7950 7960 7970 7980 7990 8000 8010 8020 8030 8040 8050 8060 8070 8080 8090 8100 8110 8120 8130 8140 8150 8160 8170 8180 8190 8200 8210 8220 8230 8240 8250 8260 8270 8280 8290 8300 8310 8320 8330 8340 8350 8360 8370 8380 8390 8400 8410 8420 8430 8440 8450 8460 8470 8480 8490 8500 8510 8520 8530 8540 8550 8560 8570 8580 8590 8600 8610 8620 8630 8640 8650 8660 8670 8680 8690 8700 8710 8720 8730 8740 8750 8760 8770 8780 8790 8800 8810 8820 8830 8840 8850 8860 8870 8880 8890 8900 8910 8920 8930 8940 8950 8960 8970 8980 8990 9000 9010 9020 9030 9040 9050 9060 9070 9080 9090 9100 9110 9120 9130 9140 9150 9160 9170 9180 9190 9200 9210 9220 9230 9240 9250 9260 9270 9280 9290 9300 9310 9320 9330 9340 9350 9360 9370 9380 9390 9400 9410 9420 9430 9440 9450 9460 9470 9480 9490 9500 9510 9520 9530 9540 9550 9560 9570 9580 9590 9600 9610 9620 9630 9640 9650 9660 9670 9680 9690 9700 9710 9720 9730 9740 9750 9760 9770 9780 9790 9800 9810 9820 9830 9840 9850 9860 9870 9880 9890 9900 9910 9920 9930 9940 9950 9960 9970 9980 9990 10000

FRANKLIN COUNTY
FRA - 104 - 8.04

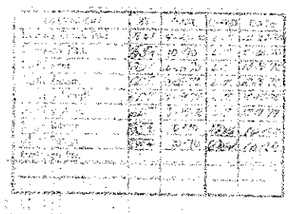
72+00
703.4

71+00
702.9

70+00
702.6

69+00
702.2

68+00
701.7



FRANKLIN COUNTY
FRA-104-8.06

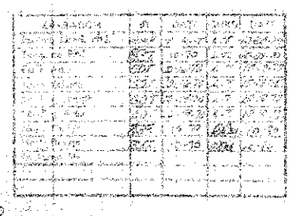
91+00 END WORK

90+75 END RESURFACING

74+35 END PAVEMENT & BEGIN RESURFACING

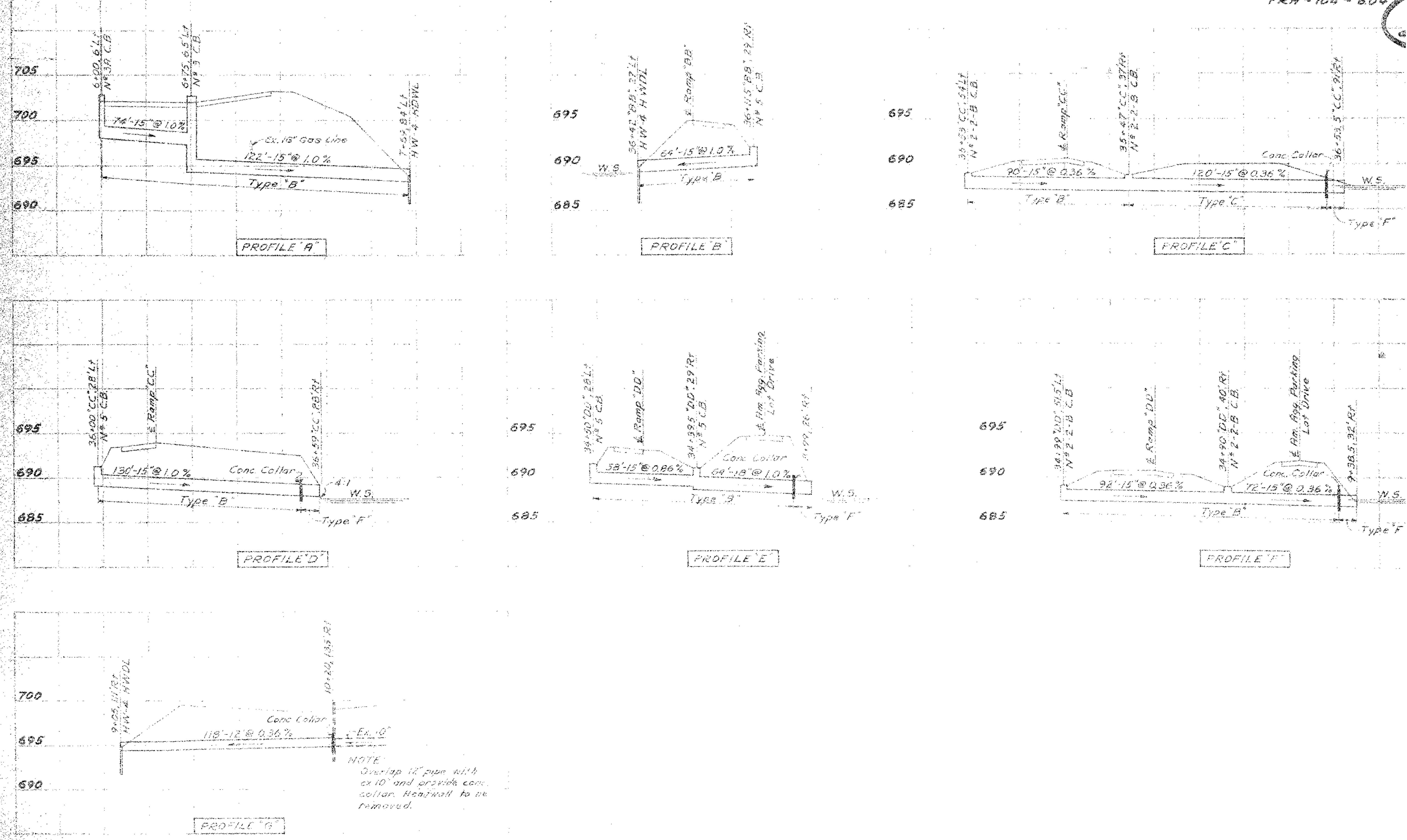
74+00

73+00



2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

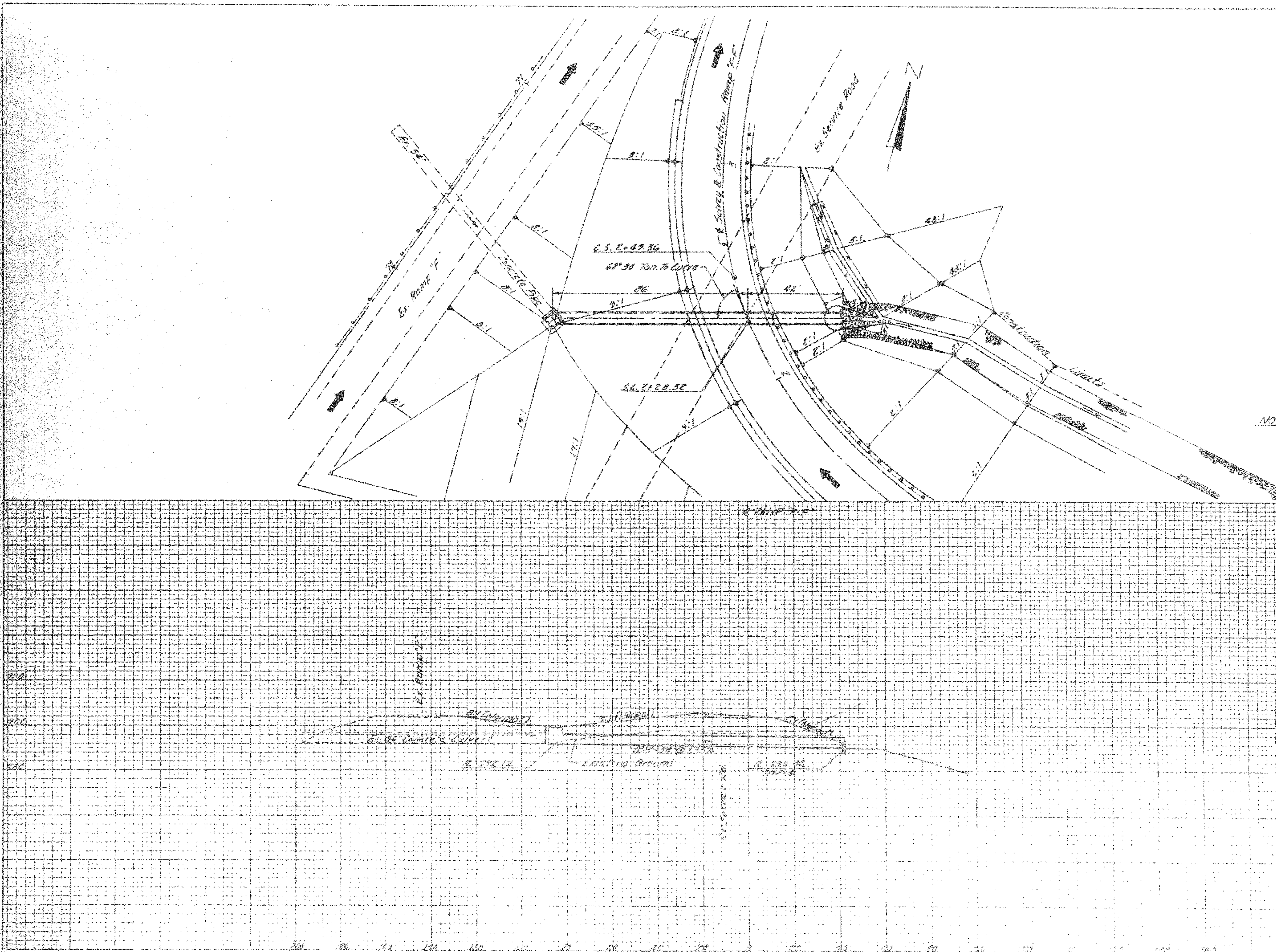


COLUMBUS ENGINEERING CONSULTANTS, LTD.

STORM SEWER P

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04



Area = 80 Acres
Q50 = 130
Design H.W. Elev. = 697.0

NOTE: Quantities carried o

2	OHIO		

FRANKLIN COUNTY
FRA-104-8.04

WATER MAINS & SANITARY SEWERS

CONNECTIONS TO EXISTING PIPE

AT PLACES WHERE THE PLANS PROVIDE FOR PROPOSED PIPE TO BE CONNECTED TO EXISTING PIPE, 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 PIPE. THE COST OF THIS OPERATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT PIPE ITEM.

LINES TO BE ABANDONED

WATER MAINS AND SEWERS TO BE ABANDONED NEED ONLY BE REMOVED TO THE LIMITS NECESSARY FOR THE CONTRACTOR TO COMPLETE HIS WORK, EXCEPT AS OTHERWISE SHOWN ON THE ROADWAY PLANS.

PIPE REMOVAL

PAYMENT FOR THE REMOVAL OF ANY EXISTING PIPE RELATED TO THE WATER MAIN AND/OR SANITARY FORCE MAIN CONSTRUCTION SHALL BE INCLUDED IN THE PRICE BID PER LINEAR FOOT FOR PIPE ITEM INVOLVED.

ALTERATION OF PROPOSED PROFILE ELEVATIONS

IN THE EVENT AN ADJUSTMENT OF THE PROPOSED WATER MAIN OR SEWER ELEVATIONS IS ORDERED BY THE PROJECT ENGINEER OR UNSUITABLE MATERIAL IS ENCOUNTERED, PAYMENT SHALL BE MADE IN ACCORDANCE WITH 603.03 OF THE OHIO DEPARTMENT OF HIGHWAYS CONSTRUCTION AND MATERIAL SPECIFICATIONS.

EXISTING UTILITIES

ALL EXISTING SURFACE, SUBSURFACE OR OVERHEAD STRUCTURES ARE NOT NECESSARILY SHOWN ON THE WATER MAIN OR SEWER DRAWINGS. THE STATE OF OHIO MAKES NO GUARANTEES AS TO THEIR ACCURACY OR COMPLETENESS.

THE CONTRACTOR SHALL MAKE SUCH INVESTIGATIONS AS ARE NECESSARY TO DETERMINE THE EXTENT TO WHICH EXISTING SURFACE, SUBSURFACE, OR OVERHEAD STRUCTURES MAY INTERFERE WITH THE PROSECUTION OF THE WORKS.

BLOCKING, BACKING AND ENCASEMENT

NO SEPARATE PAYMENTS WILL BE MADE FOR REINFORCING STEEL, STEEL PIPE STRAPS, STEEL BACKING PLATES OR TIMBER BLOCKING, AS CALLED FOR IN DETAILS. COST SHALL BE INCLUDED WITH THE UNIT PRICE BID FOR CLASS "E" CONCRETE (CITY OF COLUMBUS SPECIFICATIONS).

HYDROSTATIC TESTS

CITY OF COLUMBUS CONSTRUCTION AND MATERIALS SPECIFICATIONS, SECTION 801.10, 3RD PARAGRAPH TO BE CHANGED FROM "7.94 U.S. GALLONS" TO "3.97 U.S. GALLONS."

TRENCH BACKFILLING

BACKFILLING OF WATER MAIN AND SANITARY SEWER TRENCHES IN AREAS UNDER PAVEMENTS SHALL BE MADE USING GRANULAR MATERIAL MEETING REQUIREMENTS OF 310, GRADING "A" EXCEPT THAT 100 PER CENT SHALL PASS 1/2" SCREEN

PAYMENT FOR EXTRA FITTINGS

ADDITIONAL FITTINGS NEEDED TO COMPLETE THE WORK AND WHICH ARE NOT CALLED FOR ON THE PLANS SHALL BE FURNISHED AND INSTALLED AS ORDERED IN ACCORDANCE WITH CITY OF COLUMBUS, CONSTRUCTION AND MATERIALS SPECIFICATIONS, SECTION 801. PAYMENT SHALL BE BASED UPON NET BODY WEIGHT OF THE REQUIRED FITTINGS BUT SHALL INCLUDE FURNISHING AND INSTALLING ALL NECESSARY JOINTING MATERIALS AND ACCESSORIES.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER POUND FOR "ITEM 801 - EXTRA FITTINGS." AN ESTIMATED QUANTITY IS SHOWN IN THE GENERAL SUMMARY BUT NO "ADDITIONAL FITTINGS" SHALL BE ORDERED UNLESS AUTHORIZED BY THE PROJECT ENGINEER.

ITEM SPECIAL AIR RELEASE OUTLETS

THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO FURNISH AND INSTALL THE AIR RELEASE OUTLETS OF THE SIZE AND AT THE LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER.

THE CORPORATION STOPS SHALL HAVE A MUELLER THREAD INLET AND A COPPER SERVICE OUTLET AND SHALL BE MUELLER H-15000 OR APPROVED EQUAL. THE CURB STOPS SHALL BE DESIGNED FOR USE WITH COPPER TUBING AND SHALL BE MUELLER H-15200 OR EQUAL. THE CURB BOXES SHALL BE BUFFALO TYPE WITH A 2 1/2" I.D. THEY SHALL BE ADJUSTABLE IN HEIGHT FROM 36" TO 54" AND SHALL HAVE THE WORD "WATER" CAST NEATLY AND LEGIBLY ON THE LID WHICH SHALL BE HELD IN PLACE BY A BRONZE OR BRASS STANDARD BOLT. CURB BOXES SHALL BE MUELLER H-10350 SIZE 94-C OR EQUAL.

PAYMENT FOR ALL WORK UNDER THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE COMPLETE INSTALLATION OF THE CORPORATION STOP, CURB STOP, CURB BOX, COPPER TUBING AND FITTINGS, EXCAVATION AND BACKFILL AND SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM SPECIAL AIR RELEASE OUTLETS.

WATER MAINS

WATER MAIN RELOCATION SPECIFICATIONS

ALL WATER MAIN RELOCATIONS SHALL BE MADE IN ACCORDANCE WITH CITY OF COLUMBUS, OHIO, CONSTRUCTION AND MATERIAL SPECIFICATIONS, SECTION 800 - WATER SUPPLY AND DISTRIBUTION - DATED JANUARY 1, 1967, UNLESS OTHERWISE NOTED. COPIES ARE ON FILE AT THE OFFICE OF CONTRACT SALES, STATE OF OHIO, DEPARTMENT OF HIGHWAYS, COLUMBUS, OHIO AND ALSO THE OFFICE OF PUBLIC SERVICE DIRECTOR, CITY HALL, COLUMBUS, OHIO.

IN ALL CASES OF CONFLICT, THESE GENERAL NOTES AND PLAN SHEET DETAILS SHALL SUPERSEDE SECTION 800 SPECIFICATIONS.

COORDINATION

ALL INSTRUCTIONS RELATED TO WATER MAIN WORK SHALL BE COORDINATED THROUGH THE PROJECT ENGINEER.

THE DATE AND HOUR FOR WORK RELATED TO HYDROSTATIC TESTING AND CHLORINATING NEW MAINS AND ALSO CONNECTING TO EXISTING MAINS, WHERE OUT OF SERVICE TIME IS REQUIRED, SHALL BE AS APPROVED BY THE CHIEF ENGINEER, DIVISION OF WATER.

THE CITY OF COLUMBUS, DIVISION OF WATER SHALL BE PERMITTED TO OBSERVE WATER MAIN CONSTRUCTION. CONSTRUCTION AND MATERIALS MUST MEET THE APPROVAL OF THE DIVISION OF WATER AND THE PROJECT ENGINEER.

CONNECTIONS

THE CHIEF ENGINEER, DIVISION OF WATER SHALL BE NOTIFIED 48 HOURS (TWO WORKING DAYS) IN ADVANCE OF CONNECTION WORK REQUIRING OUT OF SERVICE TIME ON EXISTING MAINS. CONNECTION WORK SHALL BE COORDINATED TO REQUIRE A MAXIMUM OUT OF SERVICE TIME OF FOUR HOURS FOR EACH LOCATION BUT NOT NECESSARILY CONCURRENT TIMES.

WATER MAIN PIPE DEPTH

PIPE DEPTH FOR NEW WATER MAINS SHALL BE A MINIMUM OF 4'-6" BETWEEN PIPE HORIZONTAL CENTERLINE AND EXISTING GROUND OR FINISHED GRADE, WHICHEVER IS LOWER, OR AS CALLED FOR ON DRAWINGS.

ITEM SPECIAL - FIRE HYDRANT - REMOVED AND RESET

WHERE CALLED FOR ON THE PLANS, FIRE HYDRANTS SHALL BE REMOVED AND RESET. WORK CONSISTING OF EXCAVATION, REMOVAL OF FIRE HYDRANT, HAULING AND RESETTING FIRE HYDRANT SHALL CONFORM TO APPLICABLE PROVISIONS OF 801 AND 809 (CITY OF COLUMBUS). ALL LABOR, MATERIALS, SMALL TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL - FIRE HYDRANT - REMOVED AND RESET.

RESETTING INSTALLATION TO BE IN ACCORDANCE WITH DETAIL TITLED "TYPICAL HYDRANT SETTING."

THE COLUMBUS FIRE DEPARTMENT HYDRANT SUPERVISOR, 221-3182 EXT. 430, SHALL BE NOTIFIED 48 HOURS BEFORE THE EXISTING HYDRANT IS REMOVED FROM SERVICE, AND HE SHALL BE NOTIFIED IMMEDIATELY AS SOON AS THE HYDRANT HAS BEEN RETURNED TO SERVICE.

METER PIT

WATER METER PIT TO BE CONSTRUCTED AT THE LOCATION SHOWN ON THE PLAN SHEET AND IN ACCORDANCE WITH "STANDARD METER PIT" - DETAIL 0-6317(8) SHOWN ON DETAIL SHEET AND ALSO SPECIFICATION NOTES WHICH FOLLOW.

BRICK AND BLOCK MASONRY AND REINFORCED CONCRETE MATERIALS AND CONSTRUCTION SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF 602. (OHIO DEPARTMENT OF HIGHWAYS CONSTRUCTION AND MATERIAL SPECIFICATIONS).

PIPE AND FITTINGS MATERIALS AND CONSTRUCTION SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF 802 (CITY OF COLUMBUS).

METER PIT (cont'd)

RISING STEM GATE VALVES WITH HANDWHEELS SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF 802 (CITY OF COLUMBUS).

PROVIDE SUMP AS SHOWN ON METER PIT DETAIL IN LIEU OF PIPE DRAIN.

WORK SEQUENCE SHALL BE COORDINATED SO THAT THE METER PIT STRUCTURE, PIPING AND VALVES ARE INSTALLED ON THE COMPLETED 4" WATER MAIN AND READY FOR SERVICE. THE METER WILL BE INSTALLED AFTER THE NEW MAIN IS IN SERVICE. VALVES ON NEW MAIN ALIGNMENT AT OMITTED METER SHALL BE BLOCKED DURING PRESSURE TEST TO PRECLUDE THRUST MOVEMENT.

PIPING ARRANGEMENT WITHIN THE NEW METER PIT SHALL BE THE SAME AS THAT FOR EXISTING METER PIT LOCATED AT STATION 35+90, 100' RIGHT.

THE 4" BY-PASS LINE SHALL BE ON THE WEST SIDE OF THE MAIN LINE. THE FITTING AT THE SOUTH WALL SHALL BE A 8" FLANGED CROSS WITH A BLIND FLANGE BOLTED TO EAST OUTLET.

THE METER AND REDUCER FITTING FROM THE EXISTING METER PIT (LOCATED AT STATION 35+80, 100' RT.) SHALL BE REMOVED WHEN THE WATER MAIN IS REMOVED FROM SERVICE. THE EXISTING METER SHALL BE INSTALLED IN THE NEW METER PIT CONNECTING TO THE MAIN LINE VALVE FLANGES WITH FITTINGS AND PIPING AS REQUIRED. CONNECTIONS SHALL EMPLOY TIED OR RESTRAINED JOINT CONSTRUCTION.

PAYMENT SHALL BE MADE AT THE LUMP SUM PRICE BID FOR ITEM SPECIAL - METER PIT, COMPLETE, AS PER PLAN. SUCH PRICE SHALL INCLUDE THE MASONRY STRUCTURE, PIPE, FITTINGS, VALVES, MANHOLE FRAME AND COVER, STEPS, C.I. GRATE, FLOOR SUMP, 6" CMP DRAIN, TIMBER VALVE SUPPORTS, AND EXISTING METER REMOVAL AND INSTALLATION. PAYMENT LIMITS FOR PIPING UNDER THIS ITEM SHALL BE TAKEN TO THE OUTSIDE WALL FACES OF THE COMPLETED STRUCTURE.

WATER SERVICE LINE

STEEL PIPE FOR SERVICE LINE SHALL MEET THE REQUIREMENTS OF A DESIGNATION A 120 AND BE HOT-DIPPED ZINC COATED (GALVANIZED). FITTINGS TO BE MALLEABLE IRON WITH THREADED ENDS AND/OR COUPLINGS EQUAL TO DRESSER--STYLE 38 OR SMITH-BLAIR--411 OR AN APPROVED EQUAL.

STEEL PIPE MAY BE FIELD BENT A MAXIMUM OF 25°; PAINT OUTSIDE FACE WITH KOPPERS 50 OR GILSONITE 2" EACH WAY FROM BEND POINT.

CORP STOP SHALL BE IN ACCORDANCE WITH 805.03 (CITY OF COLUMBUS) EXCEPT THE REFERENCE NUMBER SHALL BE MUELLER H-10283 (I.P.) OR EQUAL.

WATER MAIN AND SANITARY SEWER PLANS PREPARED BY
ATKINS & MERCER, LTD.

SANITARY SEWERS

SEWAGE FORCE MAIN RELOCATION SPECIFICATIONS

SEWAGE FORCE MAIN CONSTRUCTION SHALL BE MADE IN ACCORDANCE WITH CITY OF COLUMBUS, OHIO, CONSTRUCTION AND MATERIAL SPECIFICATIONS, SECTION 300 AS MENTIONED IN THE "WATER MAIN RELOCATION SPECIFICATIONS" NOTE FOR THESE PLANS.

COORDINATION

ALL INSTRUCTIONS RELATED TO SEWER AND SEWAGE FORCE MAIN WORK SHALL BE COORDINATED THROUGH THE PROJECT ENGINEER.

THE DATE AND HOUR FOR WORK RELATED TO HYDROSTATIC TESTING NEW FORCE MAIN AND CONNECTION TO EXISTING FORCE MAIN SHALL BE APPROVED BY THE PRINCIPAL CIVIL ENGINEER FOR CONSTRUCTION, DIVISION OF SEWERAGE AND DRAINAGE.

THE CITY OF COLUMBUS, DIVISION OF SEWERAGE AND DRAINAGE SHALL BE PERMITTED TO OBSERVE SEWER CONSTRUCTION. CONSTRUCTION AND MATERIALS MUST MEET THE APPROVAL OF THE DIVISION OF SEWERAGE AND DRAINAGE AND THE PROJECT ENGINEER.

PIPE COVER

PIPE COVER SHALL BE A MINIMUM OF 4'-0" BETWEEN TOP OF PIPE AND EXISTING GROUND OR FINISHED GRADE, WHICHEVER IS LOWER, OR AS CALLED FOR ON DRAWINGS.

CONNECTIONS

THE CHIEF OF MAINTENANCE (PHONE 461-5661), DIVISION OF SEWERAGE AND DRAINAGE SHALL BE NOTIFIED 48 HOURS (TWO WORKING DAYS) IN ADVANCE OF CONNECTION WORK REQUIRING OUT OF SERVICE TIME ON THE EXISTING SANITARY FORCE MAIN. A MAXIMUM OUT OF SERVICE TIME OF TWO HOURS WILL BE PERMITTED AT ANY ONE TIME AS SCHEDULED DURING LOW FLOW PERIODS OF THE DAY.

MAINTENANCE OF SEWER FLOWS

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO AS TO MAINTAIN AT ALL TIMES SEWER FLOWS THROUGH EXISTING FACILITIES TO REMAIN IN PLACE AND THROUGH EXISTING FACILITIES TO BE REPLACED UNTIL NEW FACILITIES ARE COMPLETED AND PLACED IN USE.

PAYMENT FOR ANY ADDITIONAL COSTS INVOLVED IN MAINTAINING THESE FLOWS BY PUMPING OR BY ANY OTHER MEANS APPROVED BY THE ENGINEER SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE RESPECTIVE ITEMS OF 801 DUCTILE IRON PIPE.

WATER MAIN AND SANITARY SEWER PLANS PREPARED BY
ATKINS & MERCER, LTD.

Quantities by JGLL 10/70
Checked by: JMG 10/70

OHIO
FRANKLIN COUNTY
FRA-104-8.04

GENERAL SUMMARY

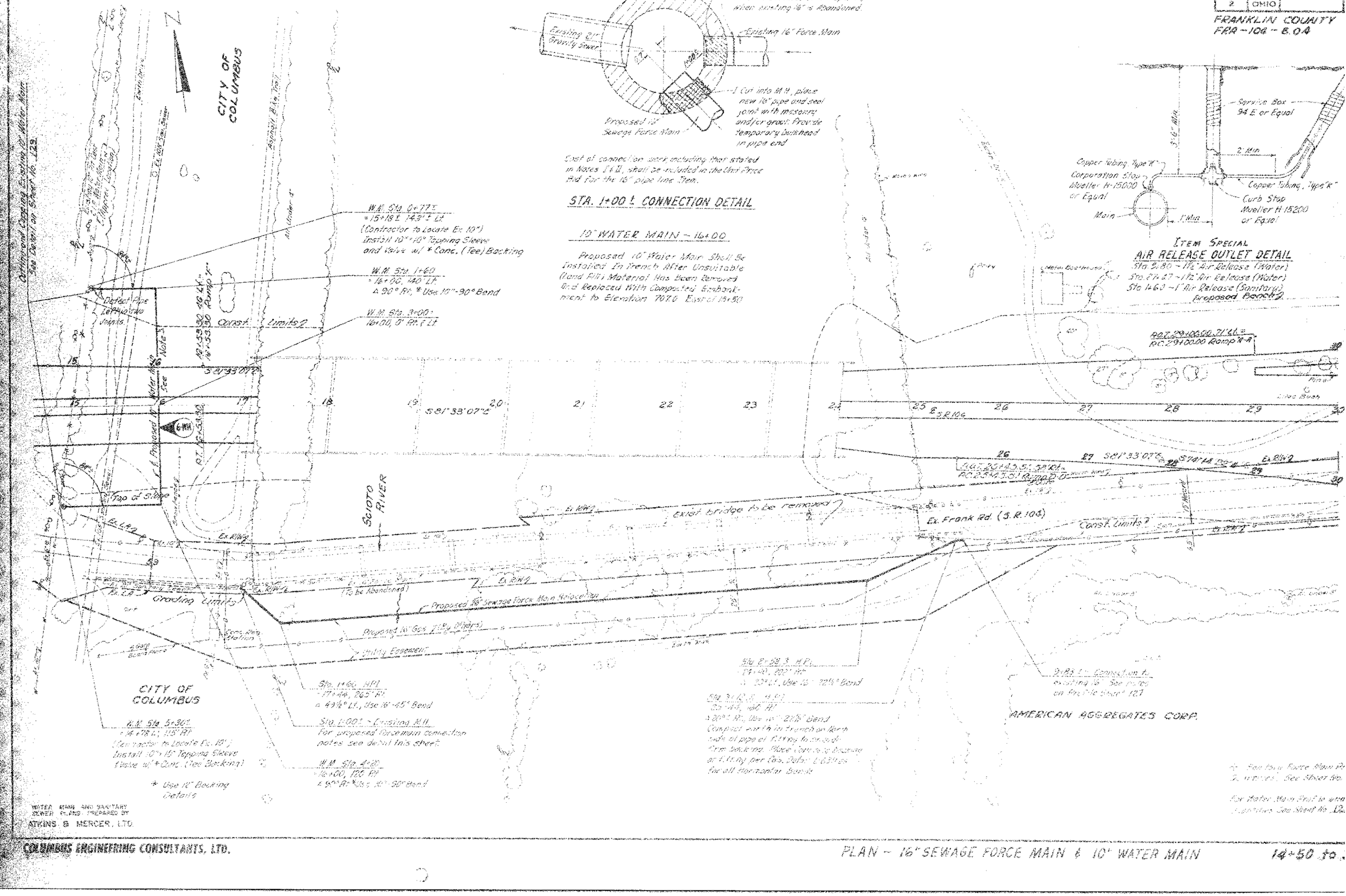
All Items this sheet - State & City Participation

SHEET NUMBERS								ITEM	QUANTITY TOTAL	UNIT	DESCRIPTION
		41	83	127	128	129					WATER MAIN
					92			SPECIAL	62	LIN. FT.	4" DUCTILE IRON WATER PIPE A.S.A. CLASS 3 CEMENT LI
					5			SPECIAL	5	LIN. FT.	6" DUCTILE IRON WATER PIPE A.S.A. CLASS 4 CEMENT LI
					1090			SPECIAL	1090	LIN. FT.	8" DUCTILE IRON WATER PIPE A.S.A. CLASS 4 CEMENT LI
						460		SPECIAL	460	LIN. FT.	10" DUCTILE IRON WATER PIPE A.S.A. CLASS 4 CEMENT LI
					1.55	5		SPECIAL	6.55	CU. YDS.	CONCRETE BACKING CLASS "E"
					1000			SPECIAL	1000	POUNDS	EXTRA FITTINGS
					1			SPECIAL	1	EACH	4" GATE VALVE
					1			SPECIAL	1	EACH	6" GATE VALVE
					2			SPECIAL	2	EACH	8" GATE VALVE
						2		SPECIAL	2	EACH	10" x 10" TAPPING SLEEVE & VALVE
					466	340		SPECIAL	806	POUNDS	IRON CASTINGS
						2		SPECIAL	2	EACH	CUTTING AND CAPPING OF 10" WATER MAINS
					1			SPECIAL	1	EACH	12" FIRE HYDRANT EXTENSION
					30			SPECIAL	30	LIN FT	2" WATER SERVICE LINE UNDER RAILROAD, as per
					1			SPECIAL	1	EACH	2" CURB STOP
					365			SPECIAL	365	LIN. FT	2" WATER SERVICE LINE, AS PER PLAN
					1			SPECIAL	1	EACH	METER PIT, AS PER PLAN
					1			SPECIAL	1	EACH	FIRE HYDRANT REMOVE & RESET, AS PER PLAN
						1		SPECIAL	1	EACH	1" AIR RELEASE OUTLET, AS PER PLAN
			1					SPECIAL	1	EACH	WATER VALVE BOXES ADJUSTED TO GRA
											SANITARY SEWER
				340				SPECIAL	340	LIN. FT.	16" DUCTILE IRON PIPE A.S.A. CLASS 4 CEMENT LINE
											ENCASED IN CONCRETE, AS PER PLAN
					20			SPECIAL	20	CU. YDS.	CLASS "E" CONCRETE
					1760			SPECIAL	1760	LIN. FT.	16" DUCTILE IRON PIPE A.S.A. CLASS 4 CEMENT L
					600			SPECIAL	600	POUNDS	EXTRA FITTINGS
					2			SPECIAL	2	EACH	1½" AIR RELEASE OUTLET, AS PER PLAN
					30			SPECIAL	30	LIN FT	16" DUCTILE IRON PIPE A.S.A. CLASS 4 CE
											CASED UNDER RAILROAD, AS PER PLAN
		2	2					SPECIAL	4	EACH	MANHOLE ADJUSTED TO GRADE

@ See Note on sheet 12

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA - 104 - 8.04



Cost of connection work including that stated in Notes I & II, shall be included in the Unit Price Bid for the 16" pipe line Item.

STA. 1+00 ± CONNECTION DETAIL

10" WATER MAIN - 16+00

Proposed 10" Water Main Shall Be Installed In Trench After Unsuitable (Land Fill) Material Has Been Removed And Replaced With Compacted Embankment to Elevation 707.0 East of 15+50

ITEM SPECIAL

AIR RELEASE OUTLET DETAIL

Sta. 5+80 ~ 1½" Air Release (Water)
Sta. 27+27 ~ 1½" Air Release (Water)
Sta. 1+63 ~ 1" Air Release (Sanitary)

WATER MAIN AND SANITARY SEWER PLANS PREPARED BY
ATKINS & MERCER, LTD.

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PLAN ~ 16" SEWAGE FORCE MAIN & 10" WATER MAIN 14+50 to

FED. RD. DIVISION	STATE	PROJECT
3	OHIO	

FRANKLIN COUNTY
FRA - 104 - 4.04

NOTE Ⓐ: Connection Work-Trench excavation west of 16" "Y" Branch installed under FRA-34-6.73 to be restricted to top of pipe depth for 10' west of pipe end to preclude blocking failure. 16" Main to be constructed no farther than these limits prior to hydrostatic testing of new force main. At the approved time for connection, the work and pipe installation work shall be using a 16" M.J. Sleeve. Cost of all work to be included in the Unit Price for the 16" Pipe Line Item.

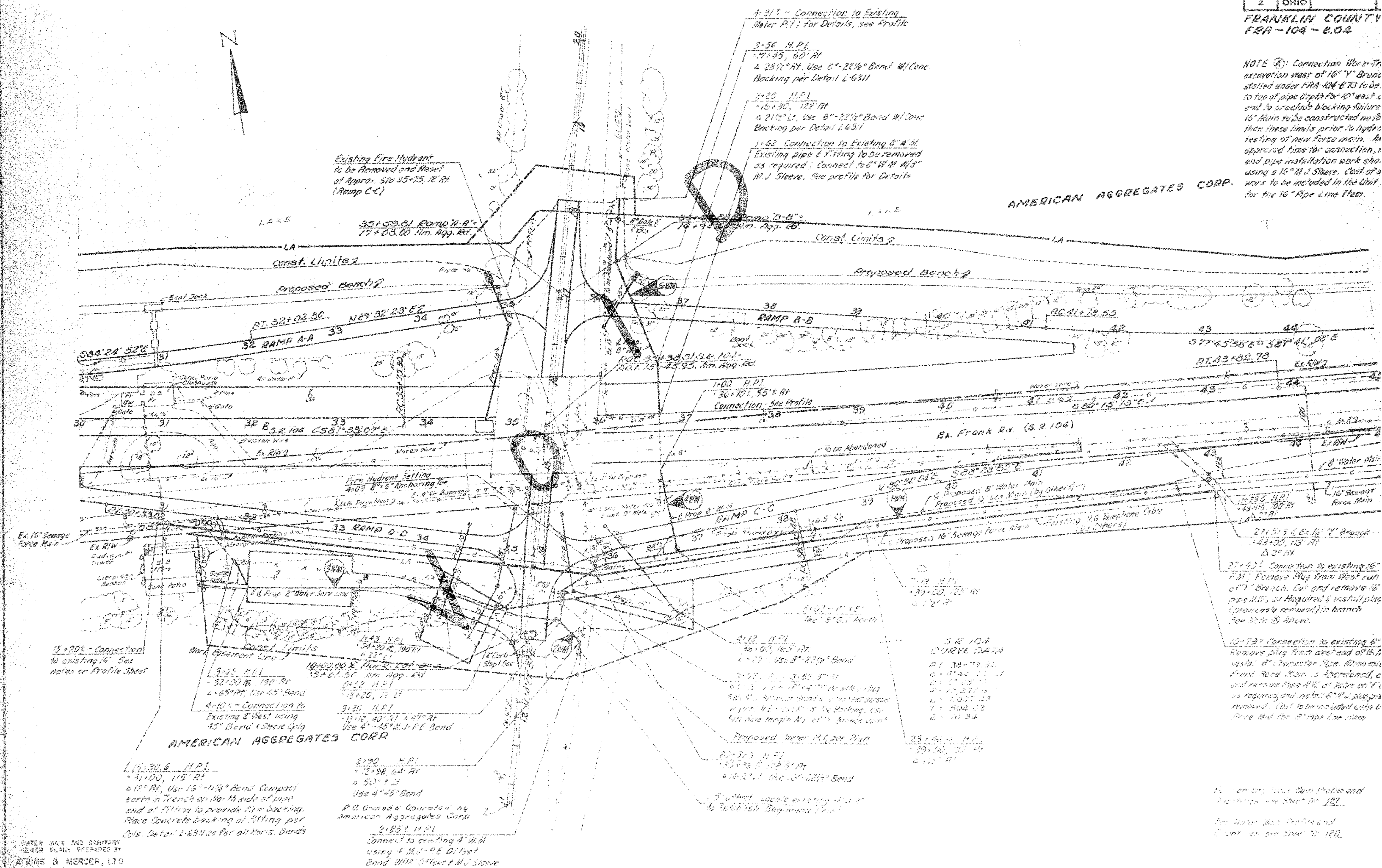
WATER MAIN AND SAN. SEW. COVER PLANS PREPARED BY
... MERCER, LTD.
... ENGINEERING CONSULTANTS, LTD.

PLAN - SEWAGE FORCE MAIN & WATER MAIN RELOCATIONS 30+00 to 45+

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-6.04

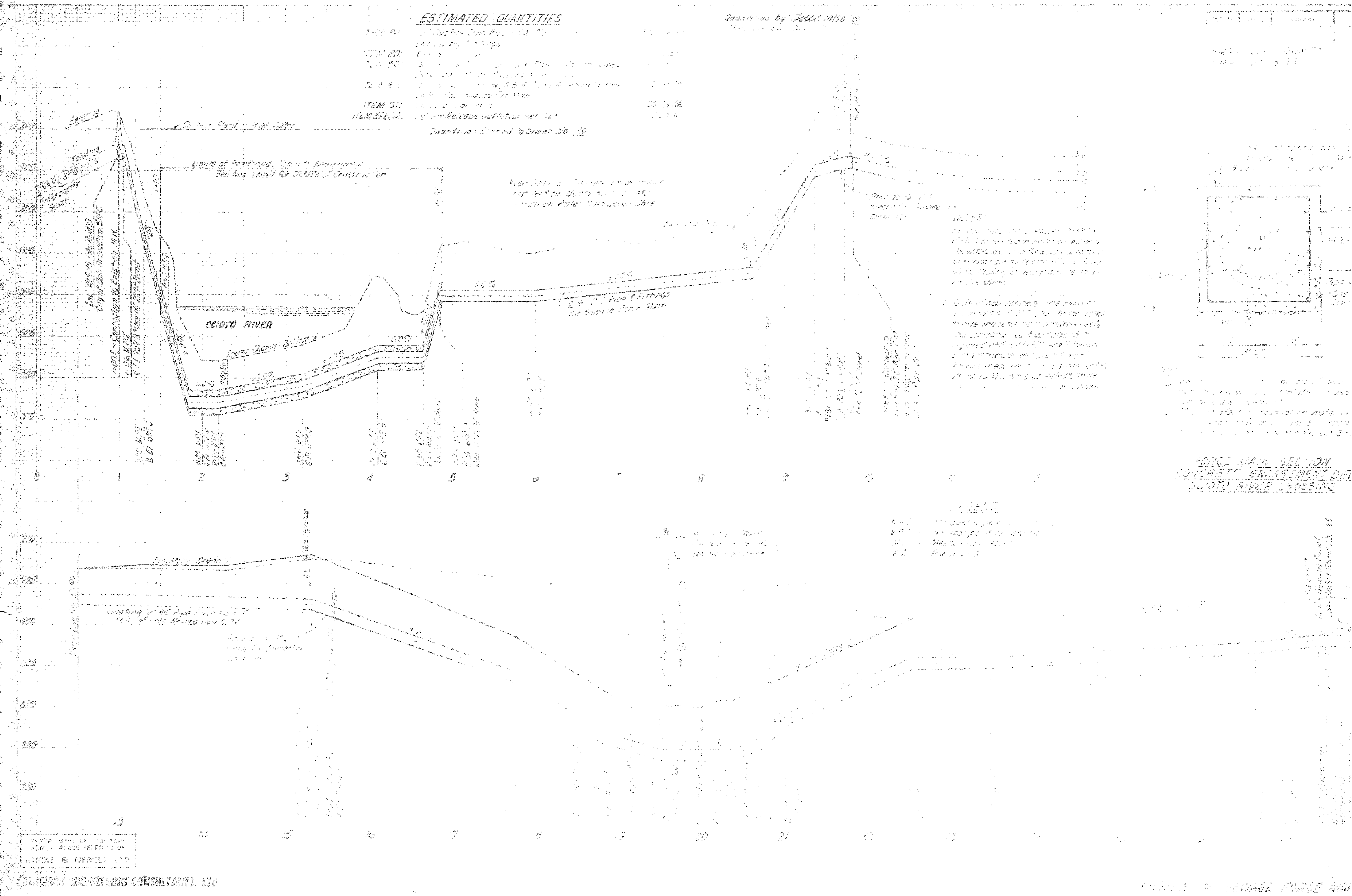
NOTE (A): Connection Work-Tr... excavation west of 16" "Y" Branc... stalled under FRA-104-6.73 to be... to top of pipe depth for 10' west ... end to preclude blocking failure... 16" Main to be constructed no f... than these limits prior to hydro... testing of new force main. A... approved time for connection, ... and pipe installation work sho... using a 16" M J Sleeve. Cost of ... work to be included in the Unit ... for the 16" Pipe Line Item.



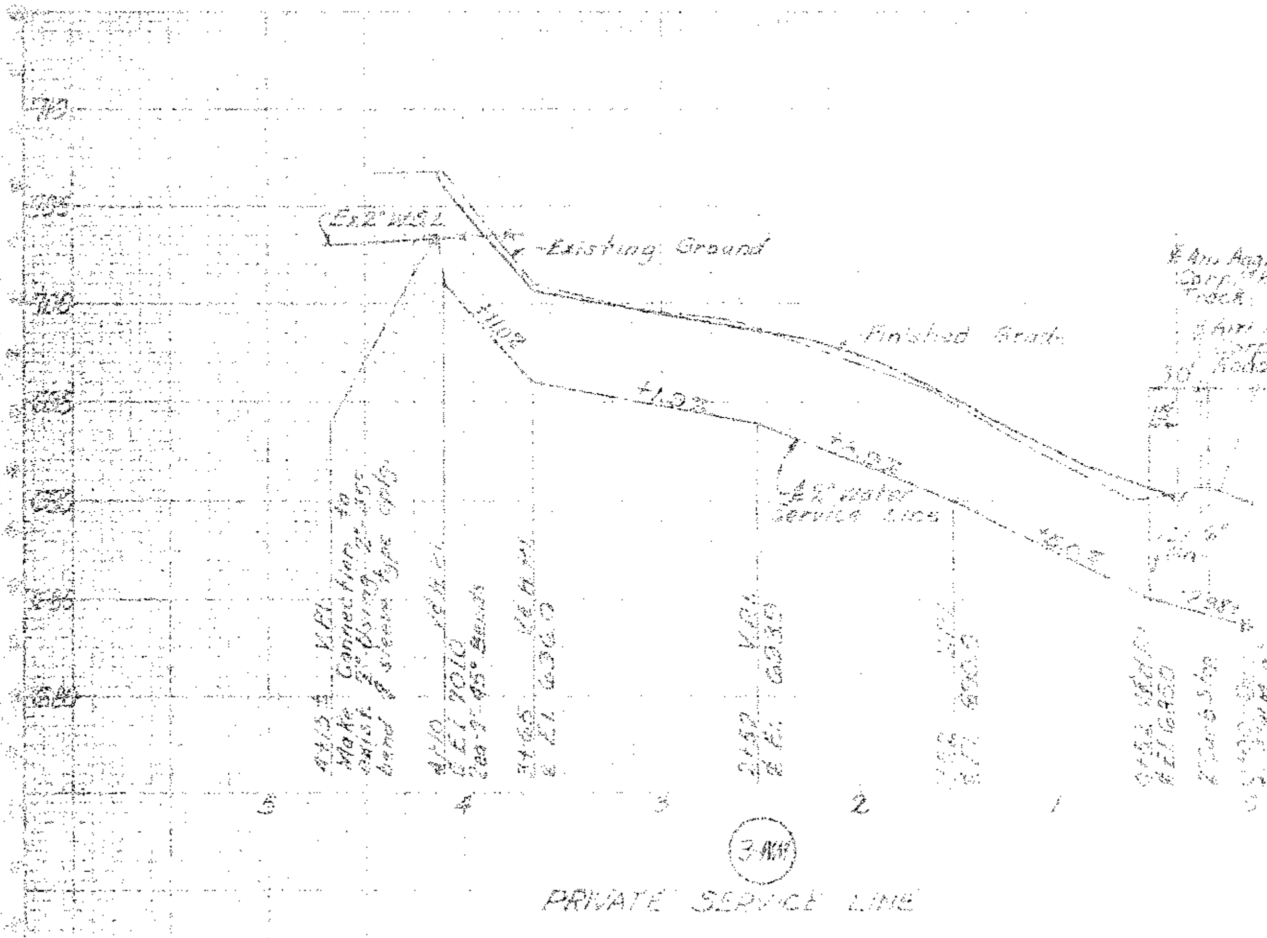
N
4+31± ~ Connection to Existing Meter Pit; For Details, see Profile
3+56 H.P.I. 17+45, 60' Rt. Δ 28½° Rt. Use 8"-22½° Bend W/Conc. Backing per Detail L-6311
2+25 H.P.I. 15+30, 122' Rt. Δ 21½° Lt. Use 8"-22½° Bend W/Conc. Backing per Detail L6311
1+68 Connection to Existing 8" W.M. Existing pipe & fitting to be removed as required; Connect to 8" W.M. W/8" M.J. Sleeve. See profile for Details
Existing Fire Hydrant to be Removed and Reset at Approx. Sta 35+75, 12' Rt. (Ramp C-C)
AMERICAN AGGREGATES CORP.
LAKE
35+59.81 Ramp "A-A" = 17+03.00 Am. Agg. Rd.
Ramp "B-B" = 14+93 Am. Agg. Rd.
Const. Limits
Proposed Bench
RAMP A-A
RAMP B-B
RAMP C-C
RAMP D-D
N83°32'23"E
P.T. 32+02.50
S84°24'52"E
P.C. 41+78.63
S77°45'58"E
P.T. 43+82.78
1+00 H.P.I. 36+70, 55' Rt. Connection: See Profile
S.R. 104 C S81°33'07"E
Ex. Frank Rd. (S.R. 104)
S88°28'52"E
Fire Hydrant Setting 4+03 8"x6" Anchoring Tee
Proposed 8" Water Main
Proposed 16" San. Main (By Others)
Proposed 16" Sewage Force Main
Existing U.S. Telephone Cable (By Others)
Ex. 16" Sewage Force Main
Ex. R/W
15+20± ~ Connection to existing 16". See notes on Profile Sheet
3+65 H.P.I. 32+00, 190' Rt. Δ 45° Rt. Use 45° Bend
4+10± ~ Connection to Existing 8" West using 45° Bend & Sleeve Splg
AMERICAN AGGREGATES CORP.
15+30.6 H.P.I. 31+00, 115' Rt. Δ 12° Rt. Use 16"-11¼° Bend. Compact earth in Trench on North side of pipe and at Fitting to provide firm backing. Place Concrete backing at fitting per Cols. Detail L-6314 as for all Horiz. Bends
2+90 H.P.I. 13+90, 64' Rt. Δ 50° Lt. Use 4"-45° Bend
Ex. 8" Owned & Operated by American Aggregates Corp.
2+85± H.P.I. Connect to existing 4" W.M. using 4" M.J.-P.E. 0° Conn. Bend With Offset & M.J. Sleeve
3+20 H.P.I. 13+12, 40' Rt. Δ 41° Rt. Use 4"-45° M.J.-P.E. Bend
Proposed Water Pit per Plan
S.R. 104 CURVE DATA
37+51.9 & Ex. 16" "Y" Branch
33+43± Connection to existing 16" F.M.
15+73± Connection to existing 8" W.M.
WATER MAIN AND SANITARY SEWER PLANS PREPARED BY ATKINS & MERCER, LTD

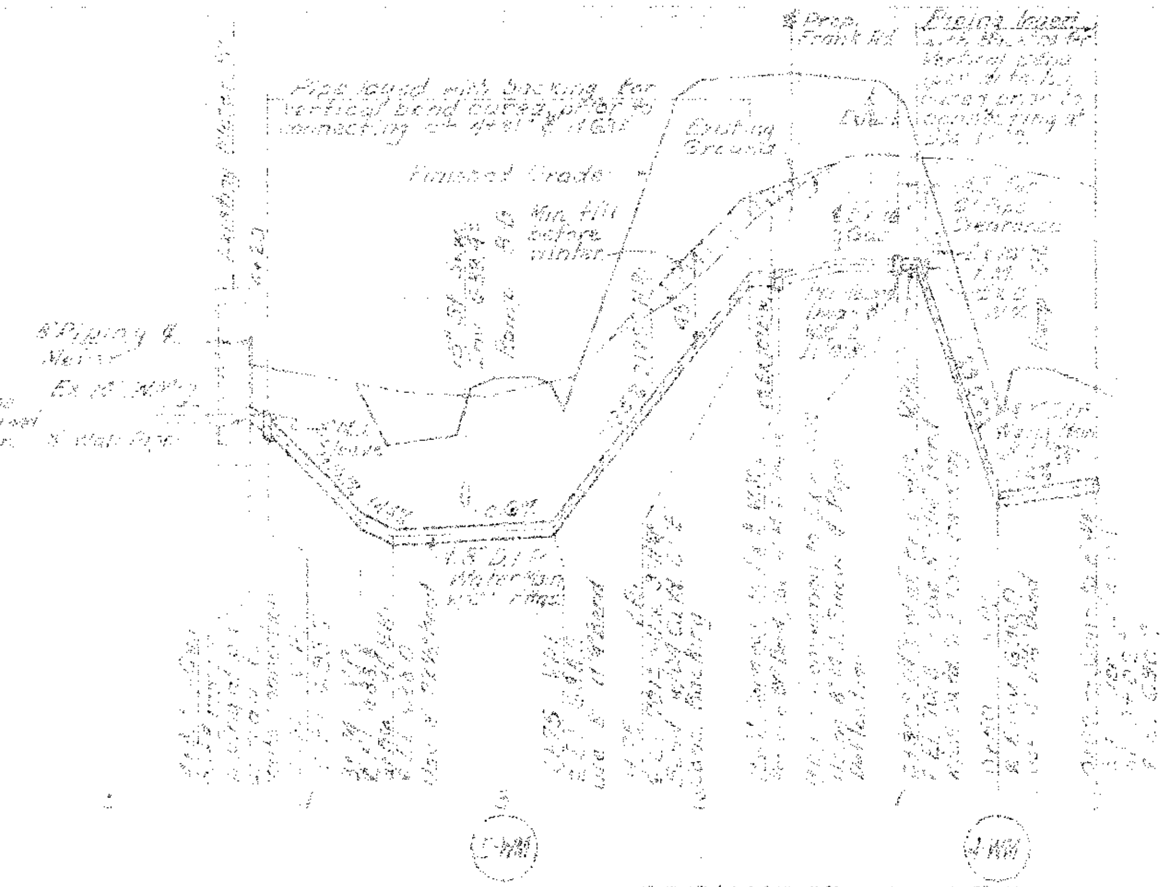
COLUMBUS ENGINEERING CONSULTANTS, LTD.

PLAN ~ SEWAGE FORCE MAIN & WATER MAIN RELOCATIONS 30+00 to 45


ESTIMATED QUANTITIES
ITEM 511
SCIOTO RIVER
Existing Grade
SEWAGE FORCE MAIN

FRANKLIN COUNTY
FRA - 104 - 8.04





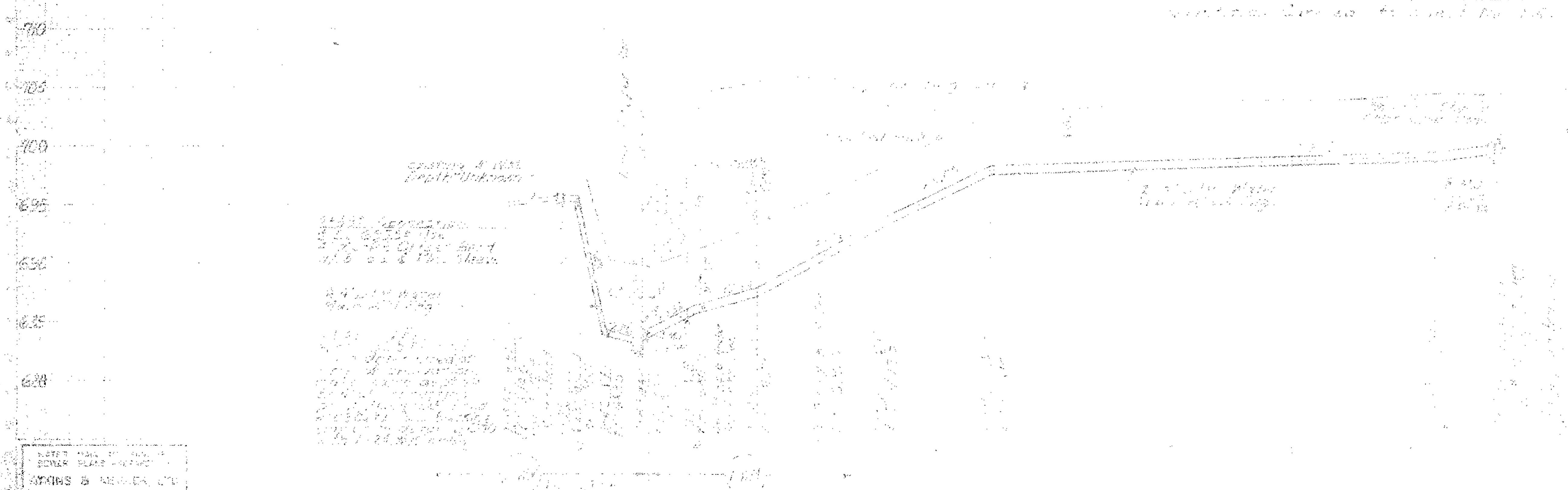
LEGEND

H.P.I. ~ Horizontal point of in...
V.P.I. ~ Vertical point of in...
M.J. ~ Mechanical Joint
P.E. ~ Plain End

Quantities by: ...
Checked by: ...

ESTIMATED QUANTITIES

Pipe Ref.	Item 6?? Water Main			Item 6?? Gate Valves			Item 6?? Casings	Item 808 Curb Stop & Service Box	Item 6?? Water Service	Spec.	Item 6?? Concrete Backing Class C	Item 6?? Water Main Meter	Item 6?? Fire Hydrant Relocate & Reset	Item 6?? Fire Hydrant Extension
				8"	6"	4"				2"				
	Lin. Ft.	Lin. Ft.	Lin. Ft.	Ea.	Ea.	Ea.	Lin. Ft.	Ea.	Lin. Ft.	Lin. Ft.	Cu. Yd.	Ea.	Ea.	Ea.
3-WM	[illegible]	[illegible]					212				0.23		1	1
2-W											0.17	1		
2-W							42	1	28	30				
3-W	[illegible]			1			107				0.09			
4-W	[illegible]			1			33				0.25			
Total	[illegible]	[illegible]		[illegible]			394	1	28	30	0.74	1	1	1

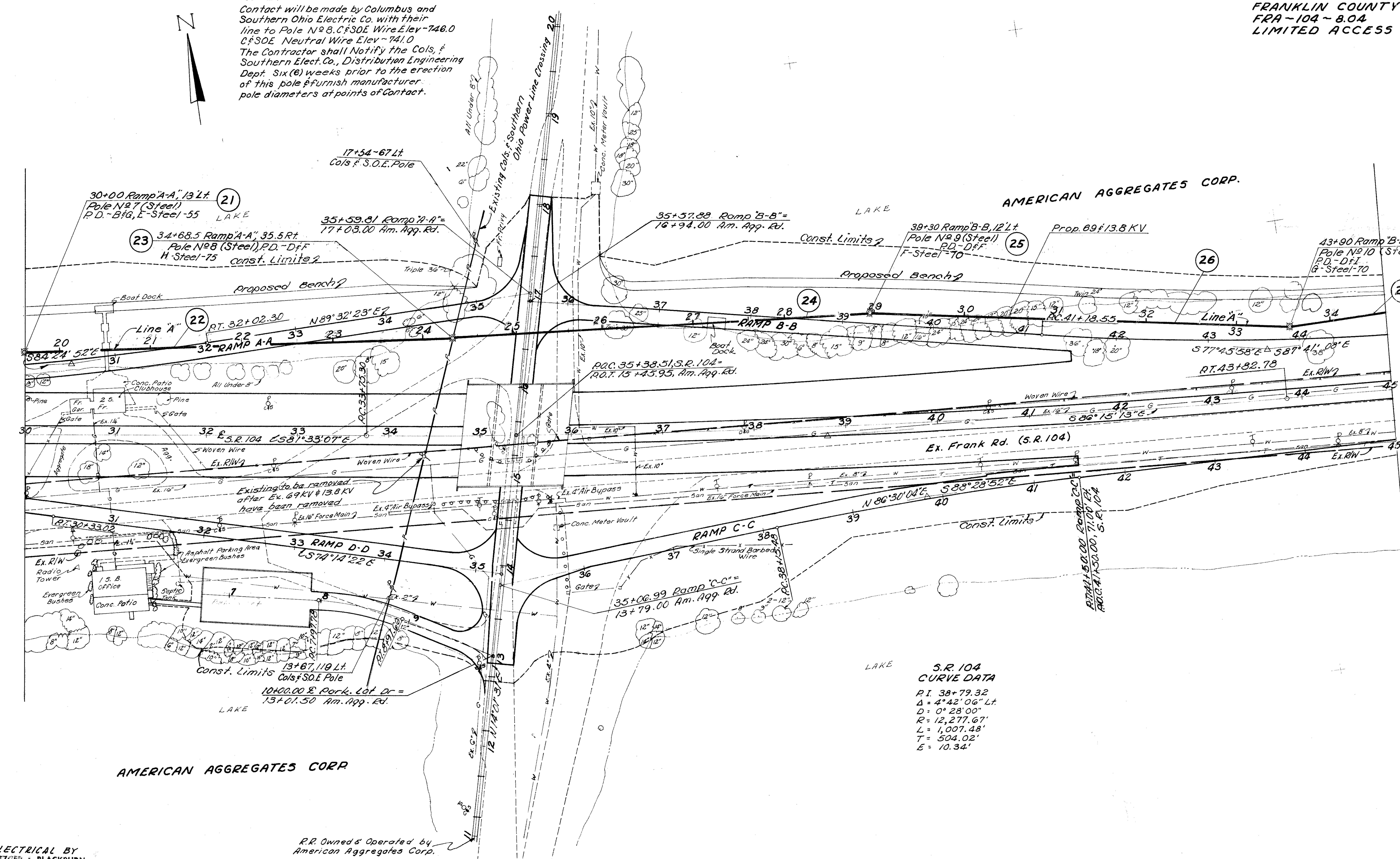


WATER MAIN & SEWER PLANS
ADKINS & ...

COLUMBUS ENGINEERING CONSULTANTS, OH.

PROFILES - WATER MAIN REL...

NOTE:
Contact will be made by Columbus and Southern Ohio Electric Co. with their line to Pole Nº 8. C&SOE Wire Elev-746.0
C&SOE Neutral Wire Elev-741.0
The Contractor shall Notify the Cols. & Southern Elect. Co., Distribution Engineering Dept. Six (6) weeks prior to the erection of this pole & furnish manufacturer pole diameters at points of Contact.



N
AMERICAN AGGREGATES CORP.
LAKE
17+54-67 Lt. Cols & S.O.E. Pole
30+00 Ramp "A-A", 13' Lt. Pole Nº 7 (Steel) P.D.-B&G, E-Steel-55
34+68.5 Ramp "A-A", 35.5 Rt. Pole Nº 8 (Steel), P.D.-D&F H-Steel-75
35+59.81 Ramp "A-A" = 17+03.00 Am. Agg. Rd.
35+57.88 Ramp "B-B" = 16+94.00 Am. Agg. Rd.
39+30 Ramp "B-B", 12' Lt. Pole Nº 9 (Steel) P.D.-D&F F-Steel-70
Prop. 69 & 13.8 KV
43+90 Ramp "B-B", 14' Lt. Pole Nº 10 (Steel) P.D.-D&I G-Steel-70
Existing Cols. & Southern Ohio Power Line Crossing
Const. Limits
Proposed Bench
Boat Dock
Line "A"
P.T. 32+02.30
N 89° 32' 23" E
RAMP A-A
RAMP B-B
P.C. 41+18.55
S 84° 24' 52" E
S 77° 45' 58" E
S 87° 41' 08" E
P.C. 35+38.51, S.R. 104 = P.O.T. 15+45.95, Am. Agg. Rd.
P.T. 43+82.78
Ex. R/W
Woven Wire
S.R. 104 S 81° 33' 07" E
S 86° 15' 13" E
Ex. Frank Rd. (S.R. 104)
Conc. Patio Clubhouse
P.C. 33+73.30
Existing to be removed after Ex. 69 KV & 13.8 KV have been removed
Ex. 4" Air Bypass
Ex. 16" Force Main
Conc. Meter Vault
S 88° 28' 52" E
N 86° 30' 04" E
P.T. 30+33.02
RAMP D-D
S 74° 14' 22" E
RAMP C-C
Single Strand Barbed Wire
Asphalt Parking Area
Evergreen Bushes
Radio Tower
I.S.B. Office
Conc. Patio
Septic Tank
35+06.99 Ramp "C-C" = 13+79.00 Am. Agg. Rd.
P.C. 38+15.48
P.T. 41+50.00 Ramp "C-C" P.O.C. 41+50.00, 71.00' Rt. S.R. 104
13+67, 11.9 Lt. Cols & S.O.E. Pole
10+00.00 Park. Lot Dr = 13+01.50 Am. Agg. Rd.
AMERICAN AGGREGATES CORP.
R.R. Owned & Operated by American Aggregates Corp.

S.R. 104 CURVE DATA
P.I. 38+79.32
Δ = 4° 42' 06" Lt.
D = 0° 28' 00"
R = 12,277.67'
L = 1,007.48'
T = 504.02'
E = 10.34'

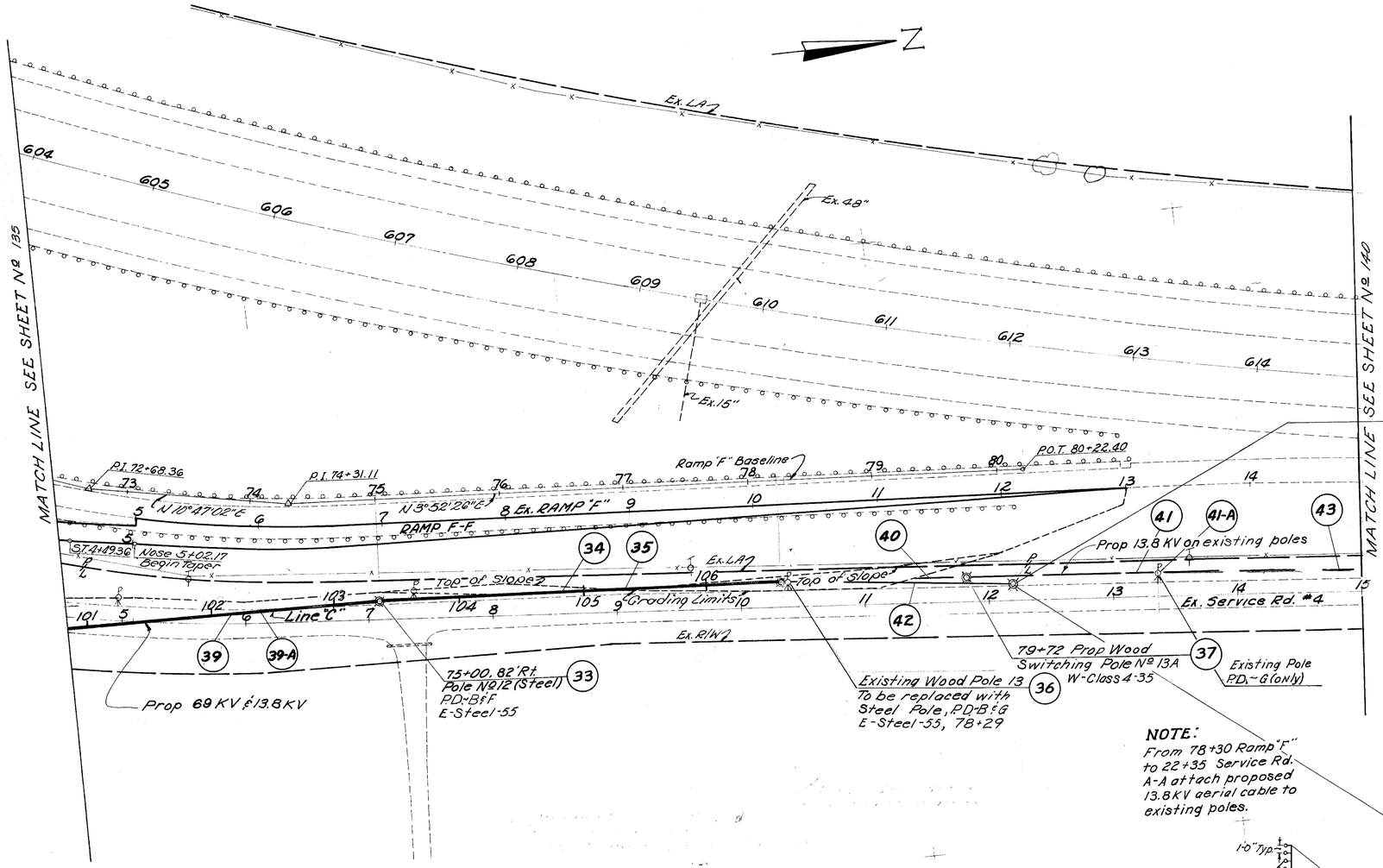
ELECTRICAL BY
METZGER & BLACKBURN
CONSULTING ENGINEERS
71 E. LIVINGSTON AVENUE
COLUMBUS, OHIO 43215

FED. RD. DIVISION 2
STATE OHIO
PROJECT
138
239
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04
LIMITED ACCESS
N
Pole No 11 ~ 47+00, 98' Lt
Temporarily Coil 13.8KV Aerial Cables to be Connected to Existing Pole at Station 48+89 by the City
Temporary Pole ~ 48+68, 123' Lt.
Temporary 60' Wood Pole W/ 5/8" Eyebolts For Dead Ending the 69KV Conductors Until "Hot Cut Over." Leave Sufficent Wire Coiled to Reach the Existing Pole Sta. 48+89. Contractor shall Remove Pole After cutover
Temporary 60' Wood Pole W/ 5/8" Eye Bolt
1'-0" Typ
48+68, 123' Lt.
AMERICAN AGGREGATES CORP.
Existing Pole 48+89, 110' Lt
New 5/8 x Length Req'd Eyebolt For New Messenger. Locate 2" Above Existing Messenger. Extend and tie new Aerial Cable Messenger to above Eyebolt.
* W-Class 3-60 Temporary
Prop 69KV & 13.8 KV
30
48+68, 123' Lt.
Temporary Pole & Down Guy for 69KV Conductors *
31
29
47+00, 98' Lt.
Pole No 11 (Wood)
PD-DG
W-Class 2-80
32
COLUMBUS FEEDER ~ OHIO & ERIE CANAL (ABANDONED)
MICHAEL B. GRIFFITH, TRUSTEE
Service Station
Gas Pumps
Ex. R/W
Service Road A
Ex. L.A.
69 & 13.8 KV Existing
Const. Limits
Proposed Bench
Line "A"
P.T. 46+14.82 Ramp "B"
R.O.T. 46+14.82, 61.37' Lt. & S.R. 104
Temporary Line by City (Existing)
48+89, 110 Lt
Ex. Wood Pole (65')
A.T. 52+35.48
N 87°36'17" E
RAMP A
S 87°41'08" E
Temporary Line by City (Existing)
59+24.40 & S.R. 104
19+97.57 & U.S. 23
86° 34' 55"
WESTBOUND S.R. 104
Ex. 16"
Ex. 20"
& S.R. 104
S 86°15'13" E
Ex. Frank Rd. (S.R. 104)
EASTBOUND S.R. 104
HIGH ST.
Ex. 8"
S 88°23'52" E
Ex. R/W
Toe of Slope
P.C. 45+17.25
Grading Limits
P.T. 48+84.88
S 81° 07' 43" E
R.O.T. 49+42.21 Back = R.O.T. 49+40.68 Ahead
Ex. Ramp B
Ex. Utility Easement (20')
Existing Columbus & Southern Beatty-Canal Line 138 KV
Ex. 16" Force Main
San.
1 St. Conc. Blk. Comm.
1 St. Fr. Comm.
2 St. Fr. Res.
CARL FISCHER, SR. & CARL A. FISCHER, JR.
AMERICAN AGGREGATES CORP.
Service Road B
Gas Regulator Station
ELECTRICAL BY
METZGER & BLACKBURN
CONSULTING ENGINEERS
71 E. LIVINGSTON AVENUE
COLUMBUS, OHIO 43215

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

(139) 239

FRANKLIN COUNTY
FRA - 104 - 8.04



80+08, 92' Rt. (38)
Temporary Pole
W-Class 3-65

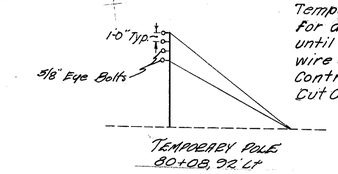
75+00, 82' Rt. (33)
Pole No 12 (Steel)
PD-B&F
E-Steel-55

Existing Wood Pole 13 (36)
To be replaced with
Steel Pole, PD-B&G
E-Steel-55, 78+29

79+72 Prop Wood (37)
Switching Pole No 13A
W-Class 4-35

Existing Pole
PD.-G (ONLY)

NOTE:
From 78+30 Ramp "F" to 22+35 Service Rd. A-A attach proposed 13.8 KV aerial cable to existing poles.



Temporary Pole - 80+08, 92' Rt. W-Class 3-65

Temporary 65' Wood Pole w/ 5/8" Eye Bolt for dead ending the 69 KV Conductor until "Hot Cut Over." Leave sufficient wire coiled to reach the next Pole North. Contractor shall remove Pole after Cut Over.

NOTE:
13.8 KV Aerial Cable on this Sheet is State & City Participation
All other items are 100% City Participation

ELECTRICAL BY
METZGER & BLACKBURN
CONSULTING ENGINEERS
71 E. LIVINGSTON AVENUE
COLUMBUS, OHIO 43215

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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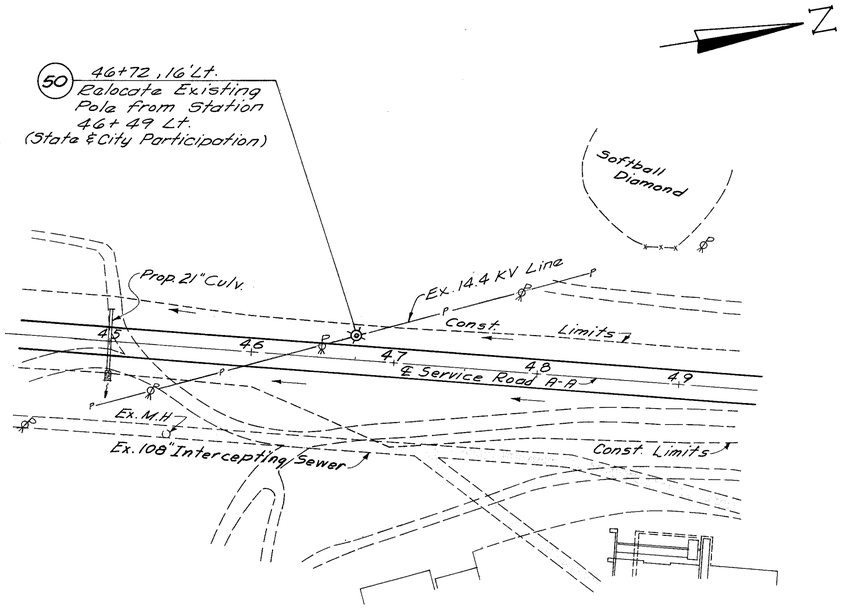
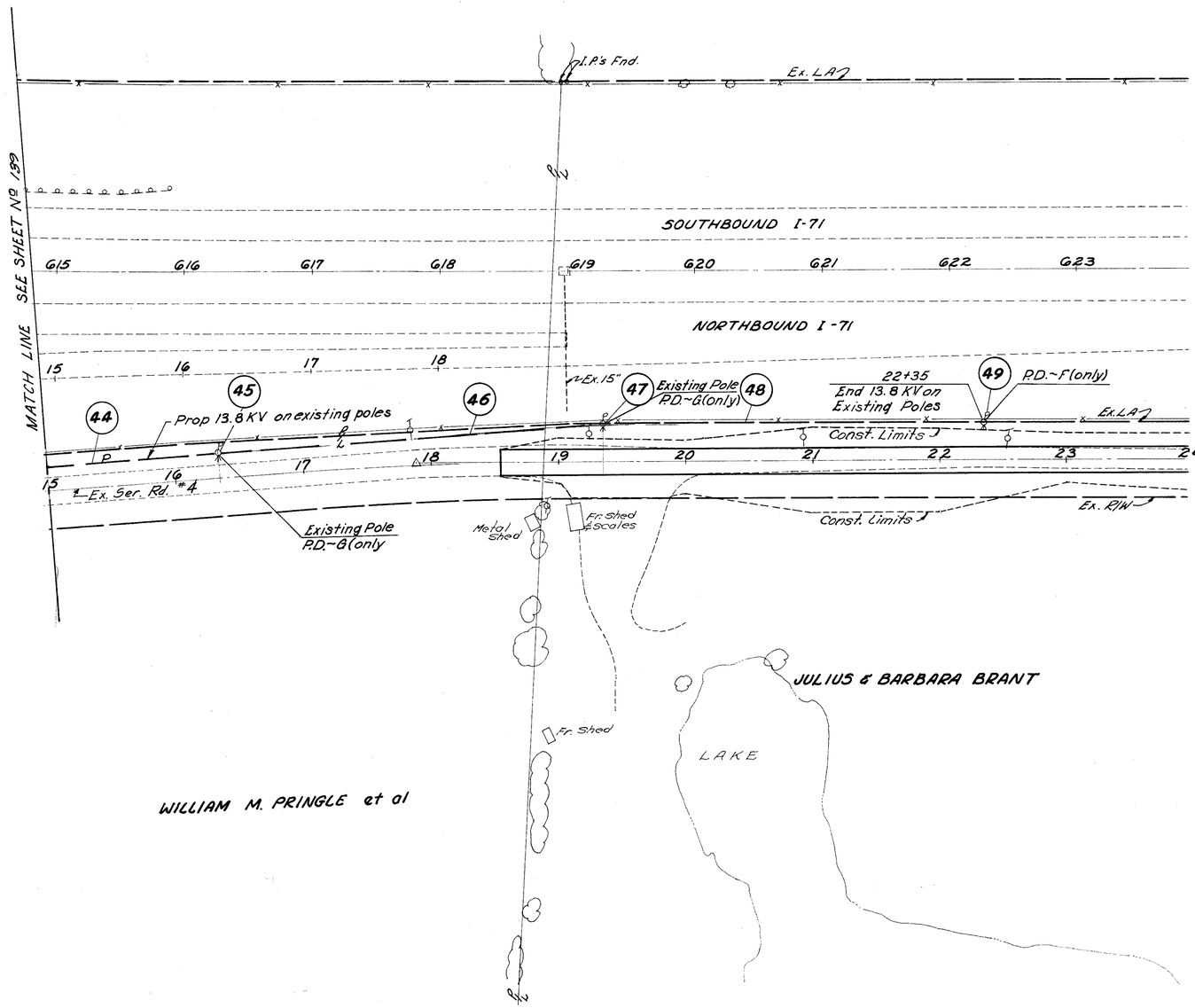
239

FRANKLIN COUNTY
FRA-104-8.04



14.4 KV CROSSING AT
46+25 SERVICE ROAD "A-A"



ELECTRICAL BY
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71 E. LIVINGSTON AVENUE
COLUMBUS, OHIO 43215

FRANKLIN COUNTY
FRA-104-8.04

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Note:
Contractor must maintain a 5'-0" Minimum Separation between the lowest 69 KV. Conductor and the Aerial Cable Messenger.

505' | 170' | 415' | 380' | 300' | 475' | 465'

Proposed contact by Columbus & Southern Ohio Electric Co. Phase Wires El. 746.0

Light Pole 2W-93, 115 Ft.

Proposed contact by Columbus & Southern Ohio Electric Co. Neutral Wire El. 741.0

Light Pole 2W-64, 2 Ft.

Light Pole 6-46, 17 Ft.

Light Pole 4-87, 12 Ft.

Light Pole 11-30, 12 Ft.

Initial Sag (Aerial Cable), 60°F

Lowest allowable elevation = 725.5

Lowest allowable elevation = 737.5

Lowest allowable elevation = 737.5

Final Sag (Aerial Cable) 0°F ~ 4#/S.F. Wind ~ ½" Ice

28' Min

20' Min

27' Min

42' Min

Ramp "A-A"

Ramp "B-B"

American Aggregates Haul Road

6' Deep

Class 3

Scioto River

Ground Profile after Construction

LINE "A"

720 | 710 | 700 | 690 | 680

To Pole #12

L Bracket Detail 'I'

Detail "A" Dead End Bracket Detail "H"

13.8 KV HENDRIX ONLY

From Pole #3

To Pole #1

AL To AL Connectors 13.8 KV Only.

Details B & F

Details C & I

Details B & G

Details B & G

Details B & G

Cross @ 0° Tan

Cross & Southern Line

74°

0° Tan

Details D & F

6°

Details D & F

Pole No. 1 (Steel) 65.0' Ht.
2+10, 140 Rt. Ramp "A"
Ground 694.8
Found. 696.0

Pole No. 2 (Steel) 55.0' Ht.
15+30, 190 Lt. S.R. 104
Ground 708.9
Found. 709.2

Guy No. 3 (Wood) 35.0' Ht.
16+34, 90 Lt. S.R. 104
Swithing Pole

Pole No. 4 (Steel) 55.0' Ht.
19+10, 70 Lt. S.R. 104
Ground 713.5
Found. 714.0

Pole No. 5 (Steel) 55.0' Ht.
21+20, 70 Lt. S.R. 104
Ground 692.5
Found. 714.0

Pole No. 6 (Steel) 55.0' Ht.
23+00, 70 Lt. S.R. 104
Ground 714.4
Found. 714.5

Pole No. 7 (Steel) 55.0' Ht.
24+08, 310 Rt. Ramp "A-A"
Ground 711.5
Found. 713.0

Pole No. 8 (Steel) 75.0' Ht.
24+25, 55 Rt. Ramp "A-A"
Ground 694.5
Found. 696.0

Pole No. 9 (Steel) 70.0' Ht.
29+36, 12 Lt. Ramp "B-B"
Ground 704.2
Found. 705.7

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

ELECTRICAL BY
METZGER & BLACKBURN
CONSULTING ENGINEERS
71 E. LIVINGSTON AVENUE
COLUMBUS, OHIO 43215

FINAL SURVEY

ORIGINAL SURVEY

DATE | BY

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PLAT — CROSS SECTION PAPER STANDARD
NATIONAL TRACING PAPER DIVISION

PROFILES

MUNICIPAL POWER RELOCATION

FRANKLIN COUNTY
FRA-104-8.04
142
239

LIGHT POLE 29+64, 2 Lt.
460'
LIGHT POLE 31+55, 4.5 Lt.
OVERHEAD SIGN 33+76, 5 Lt. TOP SHAFT 732.6
310'
210'
325'
STRAIN POLE 95+25, 45 Lt.
LIGHT POLE 96+36, 17 Rt.
LIGHT POLE 96+98, 24 Lt.
480'
340'
330'
150'
40'
205'
STRAIN WIRE 51+54, El. 731.8
STRAIN WIRE 51+89, El. 731.8
STRAIN WIRE 52+19, 5 Lt.

NOTE:
Contractor must maintain a 5'-0" Minimum Separation between the lowest 69 KV. Conductor and the Aerial Cable Messanger.

760 / 750 / 740 / 730 / 720 / 710 / 700 / 690

45' min
49' min
35' min
10' DEEP Class 2 Pole
EXIST 65.0' WOOD POLE
32' min
25' min
S.R. 104
22' min Ramp "F-F"
Initial Sag (Aerial Cable) 60°F
Final Sag (Aerial Cable) 0°F-4"S.F. Wind-½" Ice
Ground Profile after Construction
29' min
26' min
26' min
Continue 13.8 KV Aerial Cable on Existing Poles To Station 22+35 Jer. Rd "A-A"
8' DEEP Class 3 Pole
Signal Strain Wires
30' min
S.R. 104
T' DEEP Class 3 Pole

LINE "A"
LINE "B"
LINE "C"
LINE "D"

6° From Pole #8 Details D&F
10° Detail D&I
To Exist Pole
0° Details D&G
0° From Pole #2
Dead End Detail "H" Attach Messenger to Steel Pole
To Pole #13
To Pole #14 13.8 KV
58°
AL to AL Connectors 13.8 KV Only
13.8 KV Only
13° From Pole #2
Angle Bracket Detail "I"
To Pole #1
13.8 KV To Pole #1
L Bracket Detail "I"
To Pole #12
97°
112°
Detail "A"
From Pole #3
Dead End Bracket Detail "H"
Details B&F From Pole #2
Detail B&G To Exist Pole
Exist Pole
Detail Pole #14
Dead End Bracket Detail "H"
To Pole #14
From Pole #2
58°
13°
L Bracket Detail "I"
From Pole #1
To Pole #15

Pole No. 9 (Steel) 70.0' Ht.
39+18.18 Lt. Ramp "B-B"
Ground 704.2
Found. 705.7

ELECTRICAL BY
METZGER & BLACKBURN
CONSULTING ENGINEERS
71 E. LIVINGSTON AVENUE
COLUMBUS, OHIO 43215

Pole No. 10 (Steel) 70.0' Ht.
43+90.14 Lt. Ramp "B-B"
Ground 706.5
Found. 708.0

Pole No. 11 (Wood) 60.0' Ht.
47+00.90 Lt. S.R. 104
Ground 695.0

Ex. 65' Wood Pole
46+89.10 Lt. S.R. 104

Ex. Pole No. 15 (Wood) 45.0' Ht.
Ground 700.0
97+30.30 Rt. S.R. 104 N.B.

Pole No. 5 (Steel) 80.0' Ht.
100+37.34 Rt. S.R. 104 N.B.
Ground 694.5
Found. 699.0

Pole No. 6 (Steel) 65.0' Ht.
76+00.74 Rt. Ramp "F-"
Ground 694.4
Found. 696.0

Pole No. 12 (Steel) 53.0' Ht.
79+00.82 Rt. Ramp "F-"
Ground 694.2
Found. 694.5

Pole No. 13 (Steel) 53.0' Ht.
Replace Ex. Wooden Pole
With Steel Pole
Ground 696.0
Found. 696.3
78+29.83 Rt. Ramp "F"

Pole No. 13-A (Wood) 35' Ht.
79+72.85 Rt. Ramp F
Switching Pole

Existing Pole 40.0' Ht.
Pole No. 16 (Wood)
79+62.25 Rt. S.R. 104
Ground 704.3

Pole No. 8 (Steel) 60.0' Ht.
100+37.34 Rt. S.R. 104 N.B.
Ground 694.5
Found. 699.0

30 31 32 33 34 35 36 93 94 95 96 97 98 99 100 101 102 103 104 105 106 50 51 52

PLATE 3—CROSS SECTION OF P.R.&R.E. STANDARD
100% RAG - PAPER MFG. CO. U.S.A.
NATIONAL TRACING PAPER DIVISION
P.R.&R. CO. INC. INDIANAPOLIS INDIANA

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PROFILES
MUNICIPAL POWER RELOCATION

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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Quantities By: RWF 10/70
Checked By: ~~RWM~~ 10/70

FRANKLIN COUNTY
FRA-104-8.04

Sheet No.	Reference No.	Side	Station	Station	POWER POLE: A-Steel-40	B-Steel-65	C-Steel-55	H-Steel-75	D-Steel-55	E-Steel-55	F-Steel-70	G-Steel-70	W-Class 2-80	W-Class 3-60	W-Class 3-35	W-Class 3-65 Temporary	W-Class 3-60 Temporary	CONDUCTORS: Strand Copper No 4/0-7	Strand Copperweld No 2A-3	Aerial Cable & Messenger	Rebuild Existing Pole, as per plan	POWER POLE FOUNDATIONS: 42"×21'-0" & 60"×20'-0"	60"×16'-0"	60"×19'-0"	60"×27'-0"	60"×32'-0"	Removal of Ex. Poles Switches & Conductors	Tangent Bracket for Aerial on Ex. Poles	Removal of Ex. Poles Switches & Conductors	Temporary Service
					Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	L.F.	L.F.	L.F.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Lump	Ea.	Lump	Lump
							100 % CITY PARTICIPATION																				Sum		Sum	Sum
135	1	L	Ex. Pole	7+64										1						55										
↑	2	L	7+64																											
	3	L&R	100+57 S.R.104 NB	72+00 Ramp "F"														1320	440	440										
	4	L&R	7+64 S.R. 104	100+57 S.R.104 NB														615	205	205										
	5	R	97+30 S.R.104 N.B.	100+57 S.R.104 N.B.														1005	335	335										
	6	R	100+57 S.R.104 N.B.		1																		1							
	7	R	97+30 S.R.104 N.B.																		1									
	8	R	72+00 Ramp "F"			1																			1					
↓	9	R	72+00 Ramp "F"	15+00 S.R. 104														1380	460	460										
135	10	R	72+00 Ramp "F"	72+56 Ramp "F"														285	95											
			TOTAL SHEET 135 100 % CITY PARTICIPATION		1	1								1				4605	1535	1495	1			1		1	Lump		Lump	Lump
139	33	R	75+00 Ramp "F"							1													1						
139	34	R	75+00 Ramp "F"	78+29 Ramp "F"														1020	340											
139	36	R	78+29 Ramp "F"							1													1						
139	37	R	79+72 Ramp "F"												1															
139	38	R	80+08 Ramp "F"													1														
139	39	R	72+56 Ramp "F"	75+00 Ramp "F"														795	265											
139	42	R	78+29 Ramp "F"	80+08 Ramp "F"														930	310											
			TOTAL SHEET 139 100 % CITY PARTICIPATION							2				1	1			2745	915				2				Lump		Lump	
					STATE & CITY PARTICIPATION																									
136	11	L	15+00	15+50														195	65	65										
↑	12	L	15+50		1																			1						
	13	L	15+50	17+10														540	180											
	13A	L	15+50	16+34																105										
136	13B	L	16+34	17+10																90										
136	14	L	16+34												1															
↑	15	L	17+10						1																1					
	16	L	17+10	21+20														1260	420	420										
↓	17	L	21+20							1												1								
136	18	L	21+20	25+00														1170	390	390										
136	19	L	25+00							1													1						
136	20	L	25+00	30+00 Ramp "A-A"														1530	510	510										
136	21	L	30+00 Ramp "A-A"							1													1						
			TOTAL SHEET 136 STATE & CITY PARTICIPATION		1		1			3				1				4695	1565	1580		1	2	1	1		Lump		Lump	
135	10A	R	72+00 Ramp "F"	72+76 Ramp "F"																95										
			TOTAL SHEET 135 STATE & CITY PARTICIPATION																	95										

COLUMBUS ENGINEERING CONSULTANTS, LTD.

MUNICIPAL POWER LINE SUB-SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

144/239

Quantities By: RWF 10/70
Checked By: RWM 10/70

FRANKLIN COUNTY
FRA-104-8.04

Sheet No.	Reference No.	Side	Station	Station	POWER POLE: A-Steel-40	B-Steel-65	C-Steel-55	H-Steel-75	D-Steel-55	E-Steel-55	F-Steel-70	G-Steel-70	W-Class 2-80	W-Class 3-60	W-Class 3-35	W-Class 3-65 Temporary	W-Class 3-60 Temporary	CONDUCTORS: Strand Copper No 4/0-7	Strand Copper No 2A-3 Strand Copperweld	Aerial Cable & Messenger	Rebuild Existing Pole, as per plan	POWER POLE FOUNDATIONS: 42"x 21'-0" & 60"x 20'-0"	60"x 16'-0"	60"x 19'-0"	60"x 27'-0"	60"x 32'-0"	Removal of Ex. Poles Switches & Conductors	Tangent Bracket for Aerial on Ex. Poles	Removal of Ex. Poles Switches & Conductors	Temporary Service	Relocate Ex. Pole
					Ea	Ea.	Ea	Ea	Ea		Ea	Ea	Ea	Ea	Ea	Ea	Ea	L.F.	L.F.	L.F.	Ea	Ea.	Ea.	Eq.	Eq.	Ea.	Lump	Ea.	Lump	Lump	Ea
									STATE & CITY PARTICIPATION																	Sum		Sum	Sum	
137	22	L	30+00 Ramp "A-A"	34+68.5 Ramp "A-A"														1455	485	485											
↕	23	L	34+68.5 Ramp "A-A"					1																	1						
	24	L	34+68.5 Ramp "A-A"	39+30 Ramp "B-B"														1425	475	475											
↕	25	L	39+30 Ramp "B-B"								1														1						
137	26	L	39+30 Ramp "B-B"	43+90 Ramp "B-B"														1425	475	475											
137	27	L	43+90 Ramp "B-B"									1													1						
137	28	L	43+90 Ramp "B-B"	45+00														360	120	120											
			TOTAL SHEET 137					1				1	1					4665	1555	1555					3			Lump		Lump		
			STATE & CITY PARTICIPATION																												
138	29	L	47+00										1																		
↕	30	L	48+68														1														
	31	L	45+00	47+00														630	210	210											
138	32	L	47+00	48+68														600	200	200											
			TOTAL SHEET 138										1				1	1230	410	410								Lump		Lump		
			STATE & CITY PARTICIPATION																												
139	35	R	75+00 Ramp "F"	78+29 Ramp "F"																340											
↕	40	R	78+29 Ramp "F"	79+72 Ramp "F"																155											
	41	L&R	79+72 Ramp "F"	13+37 Ex. Ser. Rd. "4																165											
	41A	L	13+37 Ex. Ser. Rd. "4																						1						
↕	43	L	13+37 Ex. Ser. Rd. "4	15+00 Ex. Ser. Rd. "4																175											
139	39A	R	72+76 Ramp "F"	75+00 Ramp "F"																265											
			TOTAL SHEET 139																	1100					1						
			STATE & CITY PARTICIPATION																												
140	44	L	15+00 Ex. Ser. Rd. "4	16+35 Ex. Ser. Rd. "4																145											
↕	45	L	16+35 Ex. Ser. Rd. "4																						1						
	46	L	16+35 Ex. Ser. Rd. "4	19+35 Ser. Rd. "A-A"																315											
↕	47	L	19+35 Ser. Rd. "A-A"																						1						
140	48	L	19+35 Ser. Rd. "A-A"	22+35 Ser. Rd. "A-A"																310											
140	49	L	22+35 Ser. Rd. "A-A"																						1						
140	50	L	46+72 Ser. Rd. A-A																											1	
			TOTAL SHEET 140																	770					3			Lump		Lump	1
			STATE & CITY PARTICIPATION																												

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA-104-8.04

69 KV POLE TRIMMING ITEMS & QUANTITIES

ITEM #	DESCRIPTION	MANUFACTURER'S #	QUANTITY				
			POLE DETAIL A	POLE DETAIL B	POLE DETAIL C	POLE DETAIL D	POLE DETAIL E
1	HORIZONTAL POST INSULATOR	LAPP 29090-70	-	3	3	3	-
2	HORIZONTAL POST INSULATOR	LAPP 4766-70	-	-	-	-	3
3	SUSPENSION INSULATOR	LAPP 8100T-70	30	-	-	-	-
4	LOAD LIMITER CLAMP	LAPP 98253-73	-	3	3	3	-
5	PHASE WIRE CLAMP	LAPP 47102BK	-	-	-	-	3
6	STATIC WIRE GROUND BRACKET	LAPP 91526 (STEEL)	-	1	1	1	-
7	STATIC WIRE GROUND BRACKET	LAPP 78571 (WOOD)	-	-	-	-	1
8	STATIC WIRE CLAMP	LAPP 47101	-	1	1	1	1
9	1/2" SHACKLES	JOSLYN J2742	12	-	-	-	-
10	STRAIN CLAMP 2/A COPPERWELD	LAPP 25111	2	-	-	-	-
11	STRAIN CLAMP 4/0 COPPER	LAPP 25212	6	-	-	-	-
12	SLEEVE CONNECTORS 4/0 COPPER	BLACKBURN TYPE "H"	3	-	-	-	-
13	SLEEVE CONNECTORS 2/A COPPERWELD	BLACKBURN TYPE "H"	1	-	-	-	-
14	5/8" EYE BOLTS, LENGTH AS REQUIRED, WITH NUTS	LINE MATERIAL DF2E	8	-	-	-	-
15	5/8" MACHINE BOLTS, LENGTH AS REQUIRED, WITH NUTS	LINE MATERIAL DF3B	-	2	2	2	1
16	5/8" WASHERS (ROUND) (STEEL POLE)	⊛	16	2	2	2	-
17	5/8" WASHERS (SQUARE) (WOOD POLE)	⊛	-	-	-	-	3
18	DOWN LEAD BRACKET, FIBERGLASS	EMPIRE #260-12	-	-	-	-	2
19	#4 GROUND WIRE, LENGTH AS REQUIRED	SEE POWERLINE NOTES	-	-	-	-	1
20	HALF ROUND MOULDING 8'-0" LONG	LINE MATERIAL W-DN3U1	-	-	-	-	1
21	MOLDING STAPLES	⊛	-	-	-	-	3
22	1" x 10' COPPERWELD GROUND RODS		2	2	2	2	2
23	GROUND CONNECTORS	CADWELD TYPE GR	1	1	1	1	1

Equals approved by the City of Columbus, Division of Electricity may be substituted for the above Manufacturer's Number.

DESIGN DATA AT BASE OF POLE

POLE NO.	POLE DESIGN NO.	DESIGN MOMENT KIP. FT.	DESIGN SHEAR KIPS	RESISTING MOMENT BASED ON YIELD STRENGTH KIP. FT.	YIELD STRENGTH P.S.I.
1	A-STEEL-40	772	19.65	850	55,000
2	B-STEEL-65	2643	43.01	3081	60,000
3	C-STEEL-55	1371	36.65	1497	60,000
4	D-STEEL-55	722	18.87	892	55,000
5, 6, 7, 12 & 13	E-STEEL-55	487	11.72	513	55,000
8	H-STEEL-75	1879	32.34	2128	60,000
9	F-STEEL-70	1462	25.05	1652	60,000
10	G-STEEL-70	1136	20.04	1219	55,000

ELECTRICAL BY
METZGER & BLACKBURN
CONSULTING ENGINEERS
71 E. LIVINGSTON AVENUE
COLUMBUS, OHIO 43215

13.8 KV POLE TRIMMING ITEMS & QUANTITIES

ITEM #	DESCRIPTION	MANUFACTURER'S #	QUANTITY			
			POLE DETAIL F	POLE DETAIL G	POLE DETAIL H	POLE DETAIL I
1	TANGENT BRACKET	HENDRIX BM-14	1	1	-	-
2	MESSENGER CLAMP	HENDRIX MC-1	1	1	-	-
3	TANGENT BRACKET STIRRUP	HENDRIX TS-1	1	-	-	-
4	AERIAL CABLE SPACER	HENDRIX LLD-7 30'-0" SPACING	1	1	AS REQD	AS REQD
5	DEAD END BRACKET	HENDRIX BD-15	-	-	1	-
6	ANGLE BRACKET	HENDRIX BA-3-35	-	-	-	1
7	ADAPTOR PLATE	HENDRIX 21P	-	-	-	3
8	STEEL INSULATOR PIN 5/8" x 6 1/4"	LINE MATERIAL DP159	-	-	-	6
9	PIN TYPE INSULATOR 15KV	LINE MATERIAL NP10D2	-	-	-	6
10	SUSPENSION INSULATOR	LAPP 6815-70	-	-	6	-
11	THIMBLE CLEVIS	LINE MATERIAL DM4C1	-	-	3	-
12	SHACKLE CLEVIS	JOSLYN J2742	-	-	3	-
13	PREFORMED GRIP (MESSENGER)	RELIABLE 7600 SERIES	2	-	1	2
14	PREFORMED GRIP (CONDUCTOR)	RELIABLE 7600 SERIES	-	-	3	-
15	INSULATOR TIE WIRE, LENGTHS AS REQUIRED	NO.6 SOFT DRAWN ALUMINUM	-	-	-	6
16	5/8" EYE BOLTS WITH NUTS, LENGTHS AS REQUIRED	LINE MATERIAL DF2E	2	-	1	2
17	3/4" MACHINE BOLTS WITH NUTS	LINE MATERIAL DF4B	2	2	2	2
18	ROUND WASHER - (STEEL POLES)	⊛	4	2	3	4
19	SQUARE WASHERS 2 1/4 x 2 1/4 x 3/16 (WOOD POLES)	⊛	-	AS REQD	-	-
20	PRESSURE CONNECTORS ALUM. TO ALUMINUM	SOMERSET SERIES HIA33	1	-	-	1
21	RING TIE	HENDRIX RT-3 (MESSANGER)	*	*	—	—
22	RING TIE	HENDRIX RT-5 (CONDUCTORS)	*	*	—	—

Equals approved by the City of Columbus, Division of Electricity may be substituted for the above Manufacturer's Number.

* As required - To be placed on all Clamp Spacers.

⊛ As Recommanded by the Manufacturer and as Approved by the Engineer.

NOTE:
See Pole Trimming Detail Sheets. Item Numbers in Pole Trimming Quantity Tables refer to number shown in circles on Pole Trimming Detail Sheets.

13.8 KV OPEN CONSTRUCTION (CROSS ARM) POLE TRIMMING ITEMS & QUANTITIES

ITEM #	DESCRIPTION	MANUFACTURER'S #	QUANTITY			
			POLE 3A	POLE 13A	POLE 14	POLE 15
1	3 1/2 x 4 1/2 x 10'-0" CROSS ARMS	SEE POWERLINE NOTES	2	2	4	2
2	CROSS ARM BRACES	HUBBARD -4683 (1/2" BOLT)	4	4	8	4
3	STEEL INSULATOR PIN 5/8"x 10 3/4"	LINE MATERIAL DP2S1	2	2	-	1
4	PIN TYPE INSULATOR - 15 KV	LINE MATERIAL NP10D2	2	2	-	1
5	SUSPENSION INSULATOR	LAPP 6815-70	12	12	12	12
6	BOLT DBL ARM - 5/8" AS REQUIRED	LINE MATERIAL DF2D	3	3	6	3
7	5/8" BOLT EYE NUT	LINE MATERIAL D62E3	6	6	6	6
8	5/8" NUTS	⊛	14	14	30	16
9	5/8" SQUARE WASHERS 2 1/4" x 2 1/4" x 3/16"	⊛	14	14	30	16
10	THIMBLE CLEVIS	LINE MATERIAL DM4C1	6	6	3	6
11	DEAD END CLAMP	LAPP 25111	-	-	3	3
12	PREFORMED GRIPS	RELIABLE 7600 SERIES	6	6	4	4
13	5/8 EYE BOLT, LENGTH AS REQUIRED, WITH NUTS	LINE MATERIAL DF2E	-	-	1	1
14	ANGLE HUB EYE	LINE MATERIAL WDG11E1	-	-	1	1
15	COMPRESSION CONNECTORS - AL TO CU	BURNDY TYPE-YYT	6	6	3	3
16	3/8" C.W. MESSENGER (GUY CABLE)	COPPERWELD	-	-	1	1
17	ANCHOR ROD	BLACKBURN GAR 1008D	-	-	1	1
18	ANCHOR (GROUND)	BLACKBURN 1042001	-	-	1	1
19	3 POLE SWITCH LB 3 (400 AMP)	WESTINGHOUSE 633A239A01	1	1	-	-
20	LIGHTNING ARRESTORS	WESTINGHOUSE 367C300A10	6	6	-	-
21	#4 GROUND WIRE, LENGTH AS REQUIRED	SEE POWERLINE NOTES	1	1	-	-
22	GROUND ROD 1" x 10' COPPERWELD	SEE POWERLINE NOTES	2	2	-	-
23	PREFORMED GRIP 3/8" C.W.	RELIABLE #5202	-	-	2	2
24	HALF ROUND MOULDING 8'-0"	LINE MATERIAL	1	1	—	—
25	MOULDING STAPLES	⊛	3	3	—	—

Equals approved by the City of Columbus, Division of Electricity may be substituted for the above Manufacturer's Number.

MECHANICAL PROPERTIES FOR STEEL POLES

POLE NO.	POLE DESIGN NO.	BASE PLATE DIA. INCHES	BASE PLATE THICKNESS INCHES	TAPER * PER FOOT INCHES	OUTSIDE DIAMETER BASE INCHES	OUTSIDE DIAMETER TOP INCHES	LENGTH FEET	NO. & SIZE ANCHOR BOLTS	BOLT CIRCLE DIAM "
1	A-STEEL-40	35"	2.25"	0.14	21.33	15.73	40'-0"	8-2 1/2" x 114"	27.75
2	B-STEEL-65	53	3.00	0.25	34.80	19.81	65'-0"	16-2 1/2" x 114"	42.75
3	C-STEEL-55	43.25	2.25	0.25	26.87	13.62	55'-0"	12-2 1/4" x 96"	34.0
4	D-STEEL-55	39.25	2.25	0.25	23.00	9.89	55'-0"	8-2 1/4" x 96"	34.25
5	E-STEEL-55	35.50	1.75	0.25	24.25	10.86	55'-0"	6-2" x 90"	30.75
6	E-STEEL-55	35.50	1.75	0.25	24.25	10.86	55'-0"	6-2" x 90"	30.75
7	E-STEEL-55	35.50	1.75	0.25	24.25	10.86	55'-0"	6-2" x 90"	30.75
8	H-STEEL-75	49.50	2.50	0.25	31.87	14.63	75'-0"	16-2 1/4" x 96"	39.00
9	F-STEEL-70	42.50	2.50	0.25	26.87	10.25	70'-0"	14-2 1/4" x 96"	33.00
10	G-STEEL-70	41.50	3.00	0.14	24.20	15.90	70'-0"	10-2 1/4" x 96"	34.25
12	E-STEEL-55	35.50	1.75	0.25	24.25	10.86	55'-0"	6-2" x 90"	30.75
13	E-STEEL-55	35.50	1.75	0.25	24.25	10.86	55'-0"	6-2" x 90"	30.75

POLE DESIGN NO. A-STEEL-40
Pole Design
Height of Pole

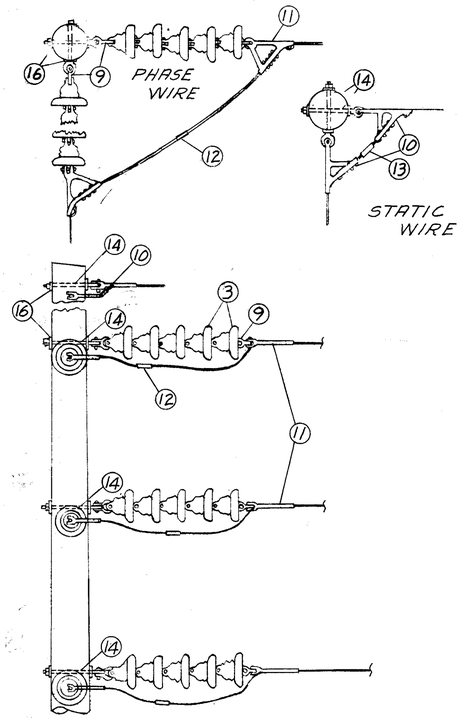
* Measured as change in diameter

MECHANICAL PROPERTIES FOR STEEL POLES & POLE TRIMMING QUANTITY REQUIREMENTS

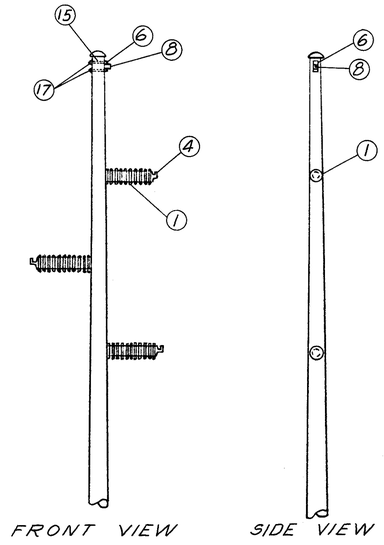
FED RD DIVISION	STATE	PROJECT	
2	OHIO		

146/239

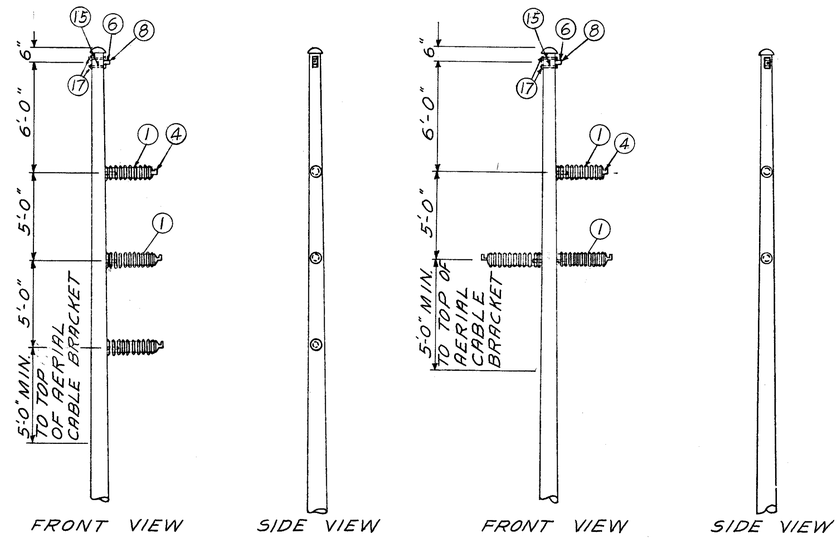
FRANKLIN COUNTY
FRA-104-8.04



POLE DETAIL "A"
POLE 2



POLE DETAIL "B"
POLES 3, 5, 6, 7, 12 & 13

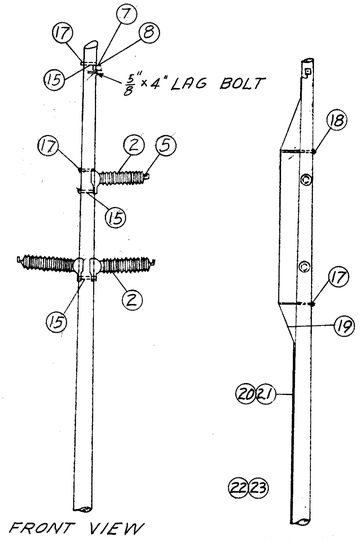


POLE DETAIL "C"
POLE 4

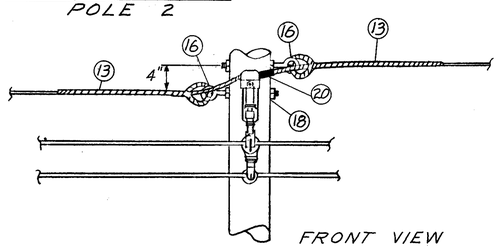
POLE DETAIL "D"
POLES 8, 9 & 10

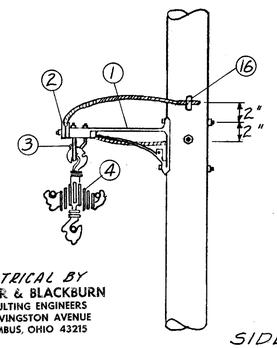
STEEL POLE 69 K.V. HORIZONTAL POST INSULATORS

CONTRACTOR SHALL FURNISH COMPANION FLANGES FOR THE INSULATORS TO THE POLE MANUFACTURER FOR WELDING TO THE POLES AND GALVANIZING IN THE SHOP.



POLE DETAIL "E"
POLE 11 (WOOD)
CLASS 2





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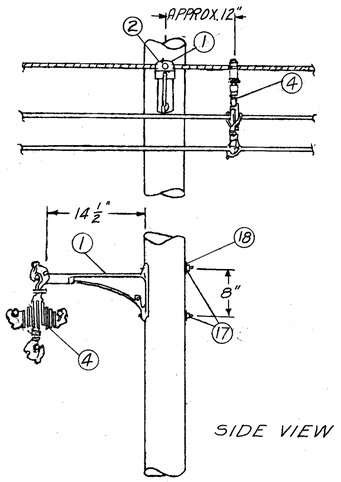
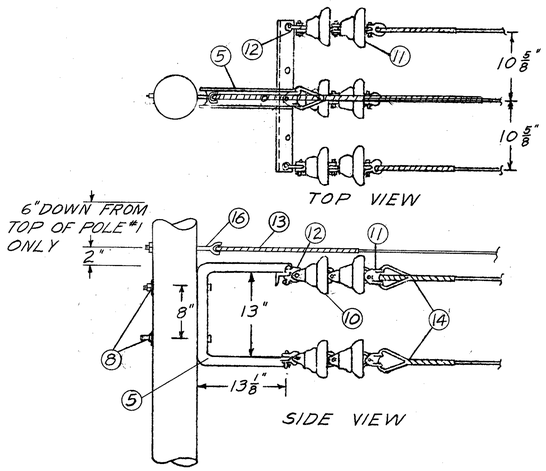
COLUMBUS, OHIO 43215

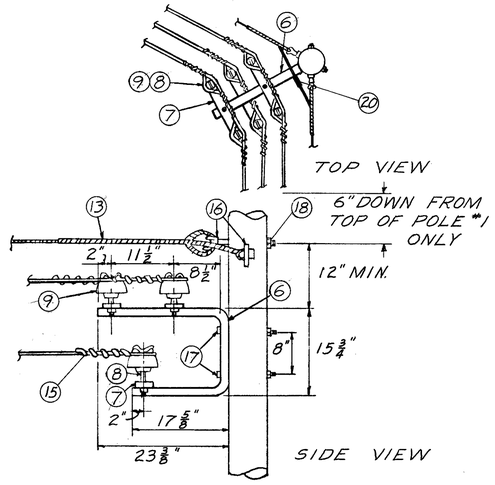
POLE DETAIL "F"
POLES 3, 8, 9 & 12 & EX. POLE 22+35 SER. RD. "A-A"



POLE DETAIL "G"
POLES 5, 6, 7, 11, 13 & EXISTING WOOD POLES NORTH, TO STATION 19+35 SERVICE RD. "A-A"



POLE DETAIL "H"
POLES 1 & 2



POLE DETAIL "I"
POLES 1, 2, 4 & 10

POLE TRIMMING DETAILS
FOR MUNICIPAL POWER LINE

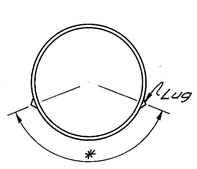
COLUMBUS ENGINEERING CONSULTANTS, LTD.

MUNICIPAL POWER LINE DETAILS

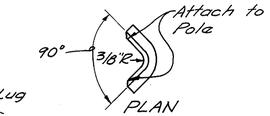
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

147
239

FRANKLIN COUNTY
FRA-104-8.04



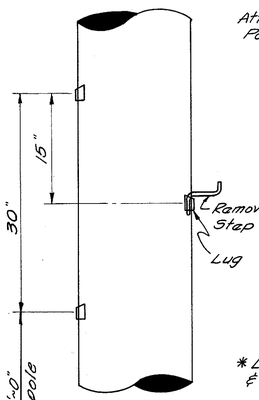
PLAN



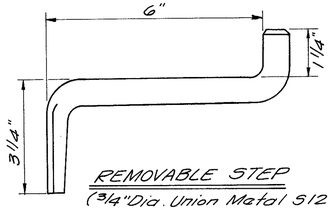
PLAN

ELEVATION

LUG DETAIL (1¼" Union Metal 56 or approved equal.)



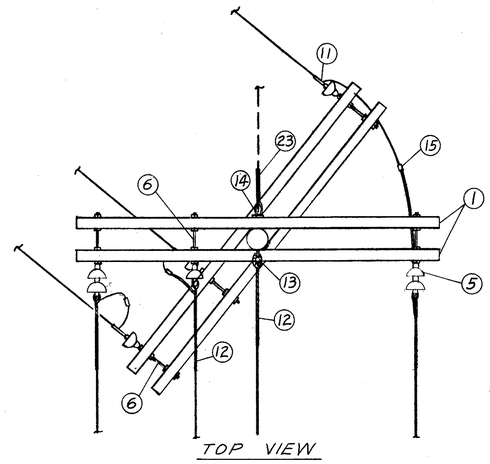
ELEVATION



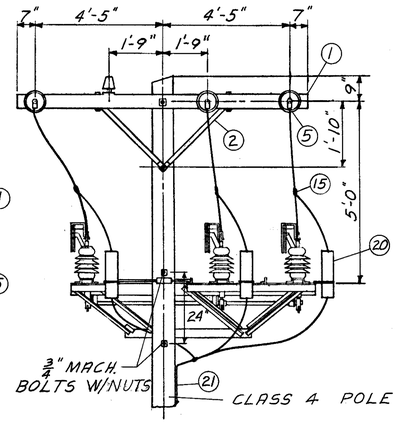
REMOVABLE STEP
(¾"Dia. Union Metal 512 Forged Steel or approved equal.)

* Lugs Welded @ 180° (To 16¼"Dia. Tube) & 25½" Max. Arc Length (Over 16¼"Dia. Tube)

REMOVABLE POLE STEPS AND LUGS

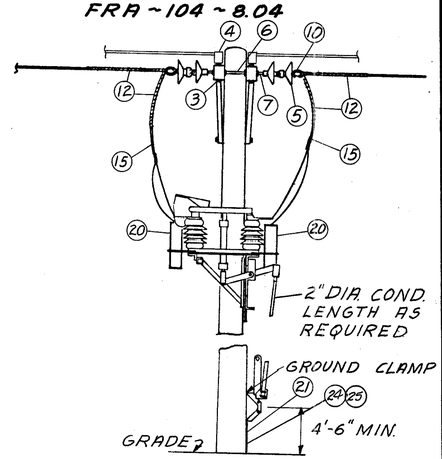


TOP VIEW

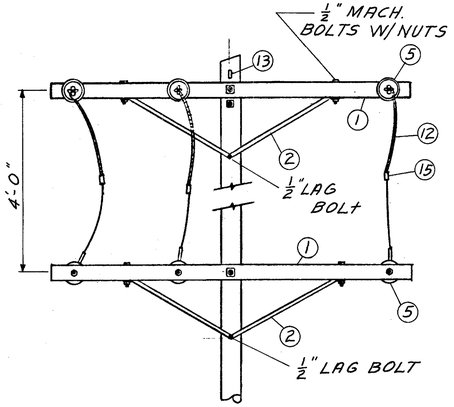


FRONT VIEW

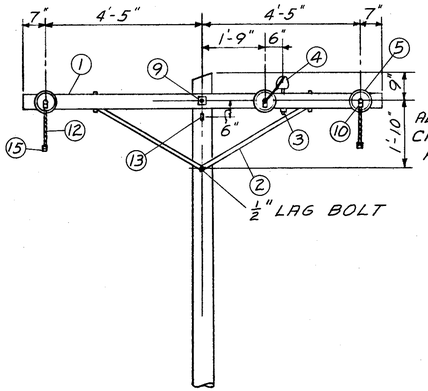
POLE #3A & #13A



SIDE VIEW

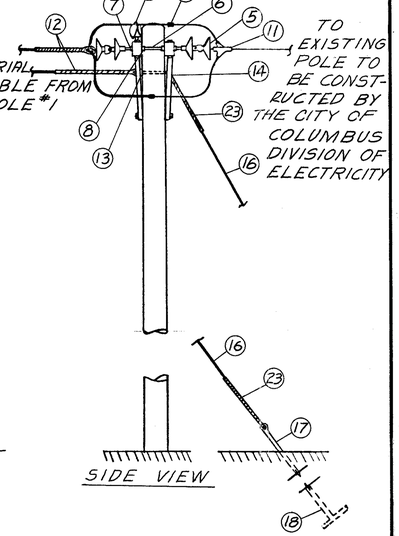


FRONT VIEW

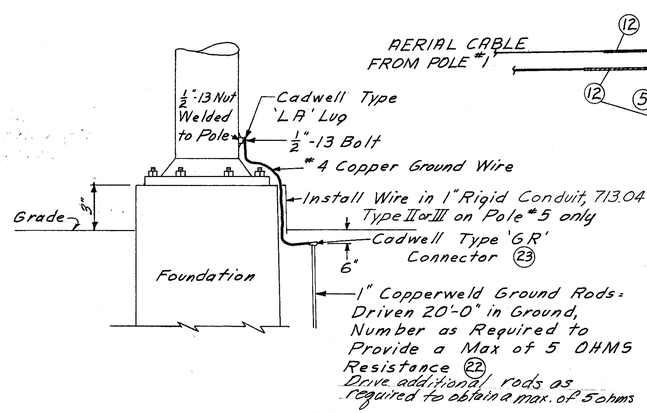


FRONT VIEW

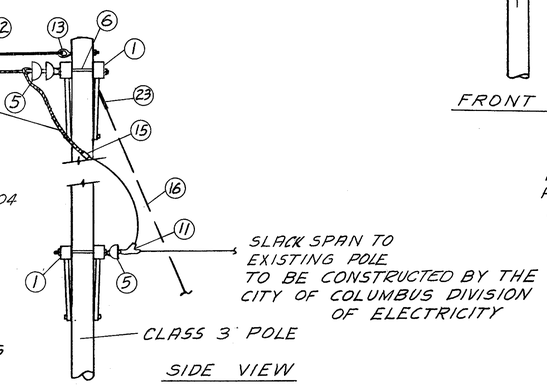
POLE #15
EXISTING CLASS 3 POLE. TO BE REBUILT AS SHOWN.



SIDE VIEW



TYPICAL GROUNDING DETAIL
(Steel Poles)



SIDE VIEW

POLE #14

ELECTRICAL BY
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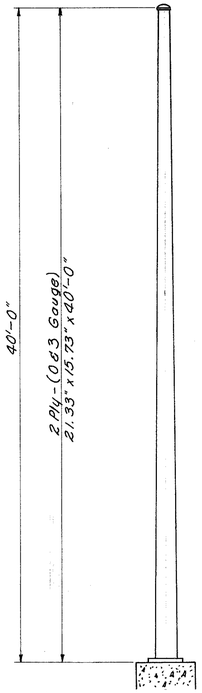
71 E. LIVINGSTON AVENUE
COLUMBUS, OHIO 43215

POLE TRIMMING DETAILS FOR MUNICIPAL POWER LINE

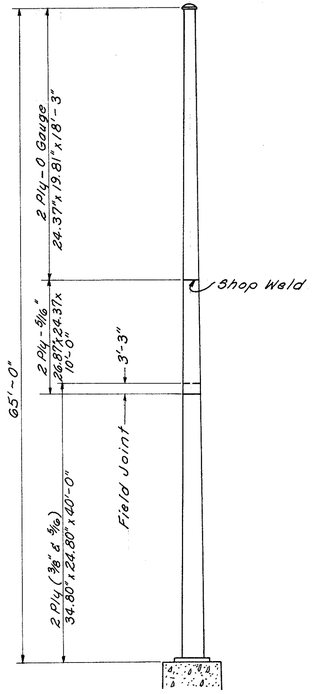
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

148
239

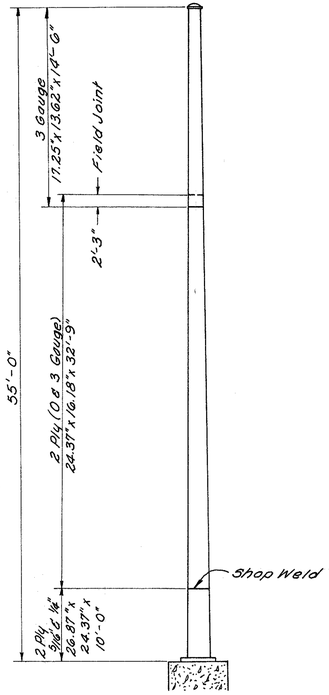
FRANKLIN COUNTY
FRA-104-8.04



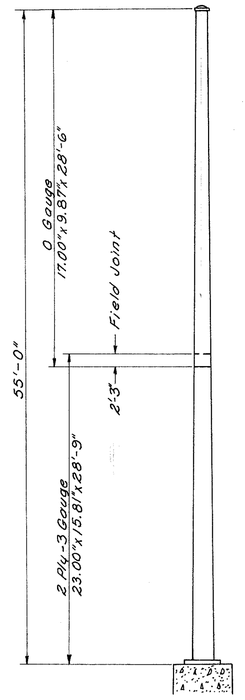
POLE Nº 1



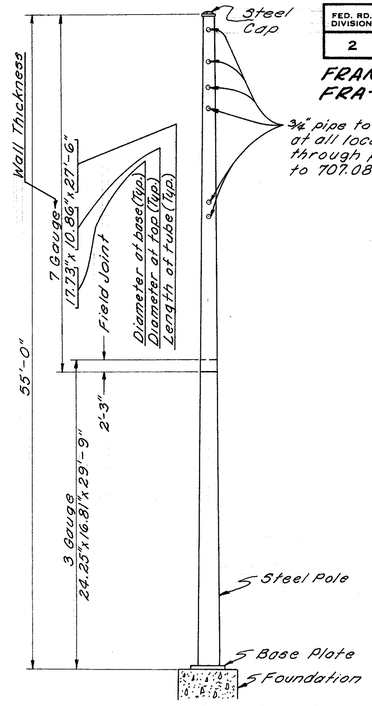
POLE Nº 2



POLE Nº 3



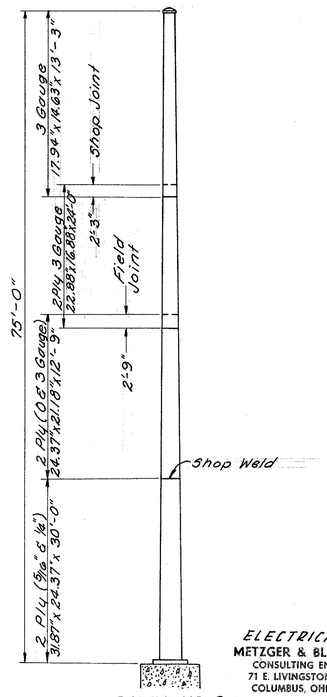
POLE Nº 4



POLE Nºs 5, 6, 7, 12 & 13

NOTES

1. See sheet Nº 145 for bolt circles, anchor bolt sizes, pole tapers and Design Data of base of pole
2. See sheet Nº 146 for pole trimming details



POLE Nº 8

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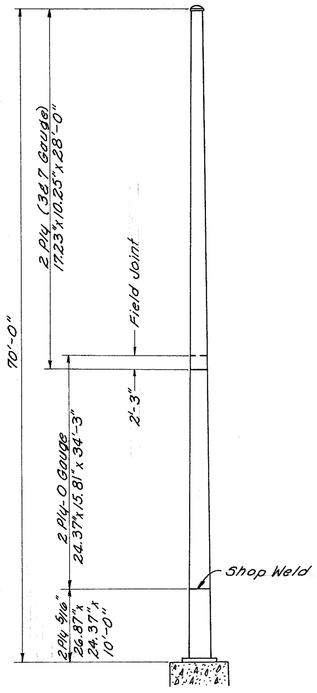
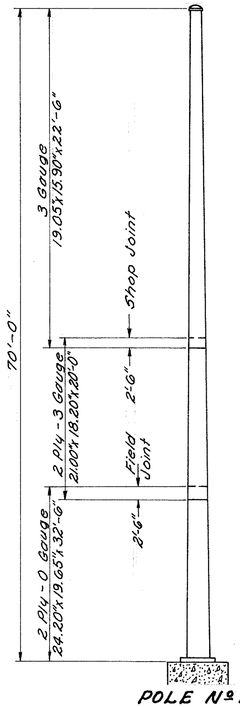
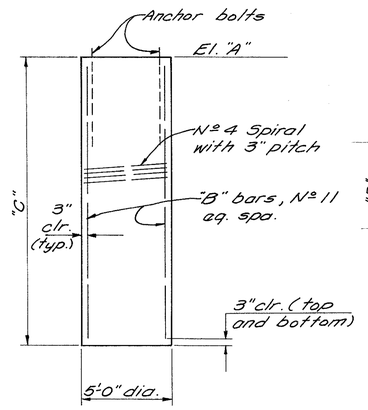
CONSULTING ENGINEERS
71 E. LIVINGSTON AVENUE
COLUMBUS, OHIO 43215



POLE Nº 9

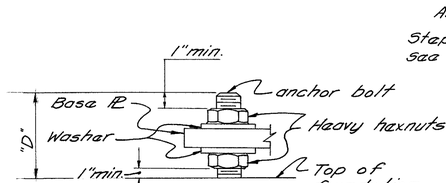


POLE Nº 10

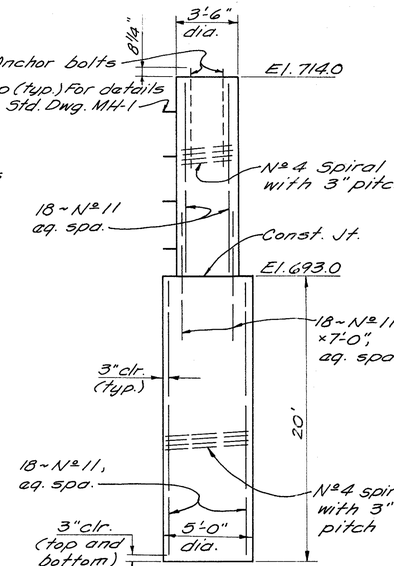


Pole Nº	1	2	3	4	6	7	8	9	10	12	13
El. "A"	699.0	696.0	709.2	714.0	714.5	713.0	696.0	705.7	708.0	696.5	696.3
"B"	18	48	32	18	18	18	32	32	32	18	18
"C"	19'	32'	27'	19'	16'	16'	27'	27'	27'	16'	16'
"D"	9 3/4"	10 1/2"	9 1/4"	9 1/4"	8 1/4"	8 1/4"	9 1/2"	9 1/2"	10"	8 1/4"	8 1/4"

FOUNDATION DETAILS
POLES 1 THRU 4, 6 THRU 10, 12, 13



ANCHOR BOLT DETAIL



FOUNDATION DETAILS
POLE Nº 5

COLUMBUS ENGINEERING CONSULTANTS, LTD.

FOUNDATION AND STEEL POLE DETAILS

GENERAL TRAFFIC CONTROL QUANTITIES

Quantities by: RWF 8-70
Checked by: FJJ 10-70

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

FRANKLIN COUNTY
FRA - 104 - 8.04

149/239

Line No	Totals 100% State	Totals State & City				Project	Item	Unit	Description
1		1				1	816	Ea.	Overhead Sign Support, No 7.5 Design No 2 Modified,
2									End Frames 23'-0" & 26'-0" Span 79'-0"
3		1				1	816	Ea.	Overhead Sign Support, No 7.5 Design No 2 Modified,
4									End Frames 22'-0" & 25'-0" Span 77'-0"
5		1				1	816	Ea.	Overhead Sign Support, No 9.12 Design No 1 Modified,
6									Pole 8" x 5.90" x 15'-0", 7 Ga. Arm 4" Sch. 40 Pipe x 7'-0"
7		1				1	816	Ea.	Overhead Sign Support, No 12.24 Design No 5 Modified,
8									Pole 28'-0" & Arm 23'-0", Span 23'-0"
9	1					1	816	Ea.	Overhead Sign Support, No 12.24 Design No 1 Modified, Pole 25'-0", Span 16'-0"
10	1					1	816	Ea.	Overhead Sign Support, No 15.8 Design No 5 Modified,
11									End Frames 26'-0" & 27'-0", Span 126'-0"
12									
13	88	45				133	816	L.F.	Structural Supports 41b. Steel Drive Post
14	230	127				357	816	L.F.	Structural Supports 61b. Beam
15	17					17	816	L.F.	Structural Supports 81b. Beam
16		32				32	816	L.F.	Structural Supports 61b. Beam as per plan
17	32					32	816	L.F.	Structural Supports 81b. Beam as per plan
18									
19									
20									
21	2.1	1.6				3.7	816	C.Y.	Concrete for Ground Mounted Sign Support Foundations
22	12.8	35.4				48.2	816	C.Y.	Concrete for Overhead Sign Support Foundations
23									
24									
25									
26	570	623				1193	815	S.F.	Sign Erection Overhead Extrusheet
27									
28	18	60				78	815	S.F.	Sign Erection Ground Mounted Extrusheet Type
29	258	83				341	815	S.F.	Sign Erection Ground Mounted Flat Sheet Type
30									
31	100					100	815	S.F.	Interim Covering for Signs
32									
33	1	2				3	625	Ea.	Sign Switch with Type "Y" Enclosure
34	2	2				4	625	Ea.	Sign Switch with Type "Z" Enclosure
35	6	7				13	625	Ea.	Sign Wired Complete
36									
37	1	1				2	625	Ea.	0.25 K.V.A. Transformer, Type I
38		1				1	625	Ea.	0.75 K.V.A. Transformer, Type III
39		2				2	625	Ea.	1.00 K.V.A. Transformer, Type IV
40	2					2	625	Ea.	1.50 K.V.A. Transformer, Type V
41									
42	3	4				7	625	Ea.	Ground Rod
43									
44	2	2				4	625	Ea.	Ballast, Type "A"
45		3				3	625	Ea.	Ballast, Type "B"
46	4	2				6	625	Ea.	Ballast, Type "D"
47									
48	2	7				9	625	Ea.	72" Lighting Fixture with HO Lamp
49		1				1	625	Ea.	96" Lighting Fixture with HO Lamp
50	8	4				12	625	Ea.	72" Lighting Fixture with SHO Lamp
51									
52	3	4				7	625	Ea.	Sign Service
53									
54									
55									
56	1.08	3.88				4.96	621	Miles	4" Edge Lines
57	0.18	0.99				1.17	621	Miles	4" Lane Lines
58	1094	1922				3016	621	L.F.	8" Channelizing Lines
59	99	168				267	621	L.F.	24" Stop Lines
60	504	932				1436	621	L.F.	Broad Transverse Stripes, 24"
61	177	693				870	621	L.F.	Curb Marking
62	3070					3070	621	S.F.	Island Marking
63	26					26	621	Ea.	Lane Arrow
64									
65									
66	26	58				84	620	Ea.	Delineator, Type "C2", Post Mounted
67		2				2	620	Ea.	Delineator, Type "C2", Bracket Mounted
68									
69	Lump					Lump	202	Lump	Removal of Existing Sign Installations, as per plan
70									

Line No	Totals 100% State	Totals State & City				Project	Item	Unit	Description
71									TRAFFIC SIGNALS
72									
73	5					5	625	Ea.	Traffic Signal Head, 3 Sections, 12" Lenses, One-way
74	3					3	625	Ea.	Traffic Signal Head, 3 Sections, 12" Lenses, One-way with Arrow
75									
76									
77	6					6	625	Ea.	Pull Boxes, 18" Circular, 713.09
78									
79	237					237	625	L.F.	Messenger Wire 3/8", 7 Strand with Accessories
80									
81	86					86	625	L.F.	Signal Cable, #14 AWG, 5/C, 600V, IMSA 19-1-1967
82	340					340	625	L.F.	Signal Cable, #14 AWG, 7/C, 600V, IMSA 19-1-1967
83									
84	3					3	625	Ea.	Cable Support Assembly
85									
86	706					706	625	L.F.	Loop Detector Wire, #14 AWG, RHW/600 V. (Stranded) 1/C
87	732					732	625	L.F.	Loop Detector Lead-in Cable, #12 AWG, 2/C UF
88									
89	262					262	625	L.F.	Loop Detector Pavement Cutting
90									
91	177					177	625	L.F.	Power Cable, # 8 AWG, 3/C RHW
92									
93	1					1	625	Ea.	Circuit Breaker, 30 Amp, 2P-SN
94									
95	50					50	625	L.F.	Conduit, 1", 713.04, Type II or III
96	263					263	625	L.F.	Conduit, 2", 713.04, Type II or III
97	522					522	625	L.F.	Conduit, 3", 713.04, Type II or III
98									
99	778					778	625	L.F.	Trench
100									
101	5					5	625	Ea.	Ground Rod
102	1					1	625	Ea.	Controller Cabinet, 38.0 C.F., Furnished Complete
103	1					1	625	Ea.	Signal Controller, 5 Phase, Installation Only
104									
105	8					8	625	Ea.	Covering of Traffic Signal Heads
106	Lump					Lump	625	Lump	Maintaining Existing Traffic Signals
107									
108	1					1	816	Ea.	Signal Strain Pole (3 Gage, 13.0" x 8.80" x 30'-0")
109	1					1	816	Ea.	Signal Strain Pole (0 Gage, 13.0" x 8.52" x 32'-0")
110	1					1	816	Ea.	Signal Strain Pole (0 Gage, 13.0" x 8.24" x 34'-0")
111									
112	9.4					9.4	816	C.Y.	Concrete for Signal Support Foundations
113									
114	1.3					1.3	816	C.Y.	Concrete for Controller Foundation

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

FRANKLIN COUNTY
FRA-104-8.04

OVERHEAD SIGN LOCATION SUMMARY

Quantites by : RWF 8-70
Checked by :

REFERENCE NUMBER	816								815				625																		
																	TRANSFORMERS						BALLAST				FIXTURES				
	N° 7.5 Design N° 2 Modified, End Frames 23'-0" & 26'-0", Span 79'-0"	N° 7.5 Design N° 2 Modified, End Frames 22'-0" & 25'-0", Span 77'	N° 9.12 Design N° 1 Mod. Pole 8"×5.90"×15'-0", 7 Ga. Arm 4" Sch. 40 Pipe × 7'-0"	N° 12.24 Design N° 5 Modified, Pole 28'-0" & Arm 23'-0", Span 23'-0"	N° 12.24 Design N° 1 Modified, Pole 25'-0", Span 16'-0"	N° 15.8 Design N° 5 Modified End Frames 26'-0" & 27'-0", Span 126'-0"		Concrete for Overhead Sign Support Foundation	Sign Erection Overhead Extrusheet					Sign Switch With Type "Y" Enclosure	Sign Switch With Type "Z" Enclosure	Signs Wired Complete	0.25 KVA, Type I		0.75 KVA, Type III	1.00 KVA, Type IV	1.50 KVA, Type V	Ground Rods	Type "A"	Type "B"	Type "D"		72" T12/CW/ho	96" T12/CW/ho	72" T12/CW/sho		Sign Service
	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.		C.Y.	S.F.					Ea.	Ea.	Ea.	Ea.		Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.		Ea.	Ea.	Ea.		Ea.
										STATE & CITY																					
5	1							14.3	204						1	2				1		1		1	1		2		2		1
6		1						14.4	237						1	3				1		1	1	2			4	1			1
7				1				3.8	114					1		1			1			1			1				2		1
8					1			2.9	67.5					1		1	1					1	1				1				1
Total	1	1		1	1			35.4	622.5					2	2	7	1		1	2		4	2	3	2		7	1	4		4
								TOTAL ~ STATE & CITY TO SHEET							149																
										100% STATE																					
1			1					1.7	42					1		1	1					1	1				1				1
3						1		11.1	528						2	5					2	2	1		4		1		8		2△
Total			1			1		12.8	570					1	2	6	1				2	3	2		4		2		8		3
								TOTAL ~ 100% STATE TO SHEET							149																

△ Service for signs over W.B. lanes to be from pullbox at Sta. 13+83 Lt. Service for signs over E.B. lanes to be from pullbox at Sta. 14+03 Rt.

GROUND MOUNTED SIGN LOCATION SUMMARY

Quantites by : RWF 8-70
Checked by : F.T.J. 10-70

REFERENCE NUMBER	816														815		
	STEEL DRIVE POST								STRUCT. BEAMS								STANDARD SIGNS
	ONE POST					TWO POSTS			TWO POSTS								
	4#	6#Beam	8#Beam	6#Beam as per plan	8#Beam as per plan	4#Beam	6#Beam							Conc. for ground mounted sign support fdn.	Sign erection ground mounted Extrusheet Type	Sign erection ground mounted Flat sheet Type	
	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.							C.Y.	S.F.	S.F.	
									STATE & CITY								
25	15													0.1		3.9	R-2-36
26							32							0.2	30		N-12-72
27		16												0.1		9	W-49-36
28				16										0.1		15	R-41B-36,R-43R-36, R-43L-36
29		15												0.1		11.5	R-1-36, R-41B-24
30		15												0.1		11.5	R-1-36, R-41B-24
31				16										0.1		15	R-41B-36,R-43R-36, R-43L-36
32		17												0.1		9	W-49-36
33							32							0.2	30		N-12-72
34	15													0.1		3.9	R-2-36
35	15													0.1		3.9	R-2-36
Total	45	63		32			64							1.3	60	82.7	
						TOTAL ~ STATE & CITY TO SHEET									149		
									100 % STATE								
2		17												0.1		35.2	M-45-42
9		15												0.1		7.5	R-1-36
10		16												0.1		9	W-47-36
11		16												0.1		11	M-17-24, M-5-36
12					16									0.1		14.5	R-1-36, R-41B-24 R-43R-36
13		15												0.1		9	W-49-36
14		15												0.1		9	R-31R-36 (modified)
15	7*						26							0.2		27.5	M-39-36, M-2-36, M-24-30, D-11-72
16		31												0.2		18	W-47-36
17						26								0.2		6	D-2-48
18		16												0.1		17.5	M-45-42
19						26								0.2		6	D-2-48
20		16												0.1		17.5	M-45-42
21							33							0.2	18		GK
22			17											0.1		20	W-98-48
36					16									0.1		19	R-31R-36 (modified), R-41B-24, R-43L-36, R-43R-36
23	14													0.1		6.3	R-32R-30
24	15													0.1		3.9	R-2-36
37		15												0.1		10.5	R-37A-36
Total	36	172	17		32	52	59							2.4	18	257.4	
						TOTAL ~ 100 % STATE TO SHEET									149		

* Indicates 4# post used for sign attachment

Quantites by: RWF 8-70
Checked by: FJJ 10-70

DELINEATORS ITEM 620

Station to Station		Side	Interval L.F.	Type C-2 Ea.
	POST MOUNTED			
	S.R. 104 RELOC.			
25+00		R		1
25+00	29+00	L	100	5
46+70	49+70	L	100	4
	RAMP "A"			
50+70	57+70	L	100	8
	RAMP "B-B"			
36+70	45+70	L	100	10
	RAMP "C-C"			
36+40	48+40	R	100	13
	RAMP "D-D"			
26+00	34+00	R	100	9
	RAMP "A-A"			
30+00	35+00	L	100	6
	S.R. 104 (N.B.) & SURVEY & CONST.			
95+00	100+00	R	100	©6
	RAMP "F-F"			
13+10	14+10	L	100	©2
15+10	16+10	L	100	2
0+41	1+41	R	100	©2
1+41		L		©1
2+01	2+91	L	30	©4
3+51		L		©1
3+51	4+51	R	100	©2
73+58*	80+58*	R	100	©8
TOTAL 100% STATE ©				26
TOTAL STATE & CITY ·				58
TOTALS TO SHEET				149
	BRACKET MOUNTED			
	S.R. 104 RELOC.			
24+00		R		1
24+00		L		1
TOTAL STATE & CITY ·				2
TOTAL TO SHEET 149				

* & Survey & Const.

OR - Outside Right
OL - Outside Left
IR - Inside Right
IL - Inside Left
R - Right
L - Left

100% STATE ©
STATE & CITY ·

Quantities by: RWF 8-70
Checked by: FJJ 10-70

PAVEMENT MARKING ITEM 621

Station to Station		Side	Number of Lines	4" Edge Lines L.F.	4" Lane Lines L.F.	8" Channelizing Line L.F.	24" Stop Lines L.F.	24" Broad Traverse Stripes L.F.	Curb Marking L.F.	Island Marking S.F.	Lane Arrows E.A.
	S.R. 104 RELOC.										
5+00	7+80	IR	1	©280							
8+90	14+79	IR	1	©589							
14+79	49+00	IR	1	3421							
5+00	7+82	IL	1	©282							
8+92	14+79	IL	1	©587							
14+79	49+00	IL	1	3421							
5+00	7+53	OR	1	©253							
9+40	14+79	OR	1	©539							
14+79	25+46	OR	1	1067							
30+00	44+10	OR	1	1410							
5+00	8+58	OL	1	©358							
8+92	12+29	OL	1	©337							
16+53	29+00	OL	1	1247							
29+00	41+50	OL	1	1250							
46+15	50+00	OL	1	185							
26+40	29+00	L	1	260							
44+80	50+00	L	1	520							
5+00	7+80	IR	1		©105						
6+25	7+30	OR	1			©105					
9+40	14+79	R	2		©404						
14+79	45+00	R	2		2266						
45+00	49+00	IR	1		150						
44+80	47+20	L	1		90						
5+00	7+82	L	1		©106						
8+92	14+79	L	1		©220						
14+20	14+79	OL	1		©22						
14+79	49+00	L	2		2566						
26+10	27+21	R	1		42						
26+40	27+60	L	1		45						
6+85	7+80	R	1			©95					
27+21	30+00	R	2			558					
43+11	43+96	OL	1		32						
8+92	12+00	L	1			©308					
12+29	14+20	L	2			©382					
27+60	29+00	L	1			140					
41+50	43+11	L	2			322					
47+20	50+00	L	1			280					
47+00	49+41	R	2			482					
7+30	8+07	R	2			©170					
7+82		R	1				©37				
8+90		L	1				©37				
7+30	8+07	R	-					©194			
27+21	30+00	R	-					470			
12+29	14+20	L	-					©310			
41+50	43+11	L	-					142			
47+00	49+41	R	-					320			
6+70	7+82	-	-						©448		
8+90	12+75	-	-						©2310		

Station to Station		Side	Number of Lines	4" Edge Lines L.F.	4" Lane Lines L.F.	8" Channelizing Line L.F.	24" Stop Lines L.F.	24" Broad Traverse Stripes L.F.	Curb Marking L.F.	Island Marking S.F.	Lane Arrows E.A.
	S.R. 104 RELOC. CONT.										
6+64	7+50	R	-							©6	
6+37	7+23	OR	-							©2	
9+20	11+46	L	-							©12	
	RAMP "D-D"										
30+00	35+08	L	1	508							
25+46	35+08	R	1	962							
35+10		-	1				68				
	RAMP "C-C"										
35+82	40+50	L	1	468							
35+82	49+42	R	1	360							
38+62	41+50	L	-						288		
41+50	42+90	L	-				140				
42+90	44+10	L	-		45						
	RAMP "B-B"										
35+77	41+50	R	1	573							
35+77	46+15	L	1	1038							
35+75		-	1				100				
	RAMP "A-A"										
30+00	35+00	R	1	500							
29+00	35+00	L	1	600							
29+00	32+00	R	-						300		
	RAMP "F-F"										
0+28	4+02	L	1	©374							
0+28	5+02	R	1	©474							
73+08*	81+08*	R	1	©800							
3+25	5+02	L	-						©177		
12+23	14+77	L	1	©254							
14+77	16+53	L	1	176							
	RAMP "A"										
51+00	58+00	R	1	700							
50+00	58+00	L	1	800							
50+00	53+75	R	-						375		
	S.R. 104 N.B.										
94+95	100+51	R	1	©556							
98+50	100+51	L	1		©75						
100+53		-	1				©25				
99+75	100+53	-	-							©312	
98+46	100+12	-	-								©6
100+31	100+65	OL	1			©34					
TOTAL 100% STATE ©				5683	932	1094	99	504	177	3070	26
OR IN MILES				1.08	0.18						
TOTAL STATE & CITY ·				20466	5236	1922	168	932	963	—	—
OR IN MILES				3.88	0.99						
TOTALS TO SHEET 149											

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA - 104 - 8.04

TRAFFIC CONTROL GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

202 REMOVAL OF EXISTING SIGN INSTALLATIONS, AS PER PLAN

THIS WORK SHALL CONSIST OF THE REMOVAL OF ALL EXISTING SIGN INSTALLATIONS ON MAIN ROADWAY, RAMPS AND APPROACH ROADWAYS WITHIN WORK LIMITS OF THIS PROJECT.

WORK SHALL ALSO INCLUDE REMOVAL OF SIGN SUPPORTS AND FOUNDATIONS AS REQUIRED IN SECTION 202.

ALL SIGNS, SUPPORTS, AND ACCESSORIES REMOVED SHALL BE STORED NEATLY WITHIN THE LIMITS OF THE PROJECT AT LOCATIONS APPROVED BY THE ENGINEER FOR REMOVAL BY STATE FORCES. THIS WORK SHALL INCLUDE DISPOSAL OF ALL WASTE MATERIAL.

TO ASSURE MAINTENANCE OF ADEQUATE TRAFFIC CONTROL AT ALL TIMES, NO SIGNS ARE TO BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

PAYMENT FOR REMOVAL OF EXISTING SIGNS SHALL INCLUDE ALL NECESSARY LABOR AND EQUIPMENT REQUIRED TO PERFORM THE REQUIRED WORK AS INDICATED ABOVE.

1. BASIS OF PAYMENT SHALL BE AS FOLLOWS FOR SIGNS (40) SQUARE FEET OR GREATER:
   REMOVAL OF EXISTING MAJOR SIGN INSTALLATIONS AS PER PLAN AT THE CONTRACT PRICE PER EACH.

2. BASIS OF PAYMENT SHALL BE AS FOLLOWS FOR ALL OTHER SIGNS:
   REMOVAL OF EXISTING SIGN INSTALLATIONS AS PER PLAN AT THE CONTRACT LUMP SUM PRICE.

815 INTERIM COVERING FOR SIGNS

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING AN INTERIM COVER AND ATTACHMENT MATERIALS FOR SIGNS SO INDICATED IN THE PLANS OR AS DIRECTED BY THE ENGINEER. THIS ITEM SHALL ALSO INCLUDE THE SUBSEQUENT REMOVAL OF COVERS WHEN DIRECTED BY THE ENGINEER.

MATERIAL FOR COVERING SHALL BE PLASTIC COATED BURLAP BLANKETS IN CONFORMANCE WITH 705.09.

THE ENGINEER SHALL APPROVE THE METHOD PROPOSED FOR ATTACHING INTERIM COVERS TO SIGNS PRIOR TO INSTALLATION OF COVERS.

WORK SHALL INCLUDE ALL NECESSARY MATERIAL, HARDWARE, LABOR, AND EQUIPMENT REQUIRED TO PERFORM THE REQUIRED ITEM OF WORK.

BASIS OF PAYMENT SHALL BE INTERIM COVERING FOR SIGNS, PER SQUARE FOOT.

AN ADDITIONAL QUANTITY OF 100 SQ. FT. FOR ITEM 815, INTERIM COVERING FOR SIGNS, HAVE BEEN INCLUDED TO COVER SIGNS AS DIRECTED BY THE ENGINEER.

815 SIGN ERECTION, EXTRUSHEET OR FLAT SHEET TYPE

THE CONTRACTOR SHALL ERECT SIGN PANELS AS INDICATED ON THE SCHEMATIC SIGNING PLAN SHEET NUMBERS 158 & 159. THE PANELS WILL BE FURNISHED BY OTHERS AND SHALL BE MOUNTED ON THE BRACKETS OR BEAM SUPPORTS PROVIDED IN THE PLANS.

ALL SIGN MATERIAL AND ACCESSORIES WILL BE FURNISHED AND TRANSPORTED BY OTHERS TO A DELIVERY POINT DESIGNATED BY THE CONTRACTOR ON OR NEAR THE SUBJECT PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE HANDLING, PROTECTION AND STORAGE OF THE SIGN PANELS AND ACCESSORIES FROM THE TIME OF UNLOADING BY OTHERS AT THE DELIVERY POINT.

LARGE GUIDE SIGNS (OVER 8 FEET IN HEIGHT) MAY BE DELIVERED UNASSEMBLED. WORK SHALL ALSO CONSIST OF ASSEMBLY OF THESE PANELS INCLUDING ATTACHMENT OF DEMOUNTABLE SIGN LEGEND, WHERE NECESSARY, AND ERECTION OF SIGNS IN CONFORMANCE WITH THE SCHEMATIC SIGN PLAN.

THE CONTRACTOR SHALL SUBMIT, IN THREE COPIES, A SCHEDULE FOR SIGN ERECTION TO THE ENGINEER AT LEAST 120 CALENDAR DAYS PRIOR TO THE START OF ANY SCHEDULED ERECTION WORK. THE SCHEDULE SHALL INCLUDE PROPOSED DATES, SIGN NUMBERS, AND DELIVERY POINT. THE ENGINEER WILL FURNISH COPIES OF THE SCHEDULE TO THE DIVISION TRAFFIC ENGINEER AND TO THE ENGINEER OF DESIGN SERVICES, 25 SOUTH FRONT STREET, COLUMBUS, OHIO, 43215.

THE PRICE BID PER SQUARE FOOT FOR "ITEM 815, SIGN ERECTION, BY TYPE", SHALL INCLUDE PAYMENT FOR ALL NECESSARY EQUIPMENT, LABOR, AND TOOLS TO STORE, ASSEMBLE, AND ERECT THE SIGNS AS SPECIFIED.

816 CONSTRUCTION LAYOUT STAKES FOR SIGNS

THE CONTRACTOR SHALL STAKE OUT ALL SIGNS IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 816 PRIOR TO INSTALLATION OF ANY FOUNDATIONS OR SUPPORTS.

AFTER STAKEOUT THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF SEVEN (7) DAYS IN ADVANCE OF SCHEDULED WORK. SUPPORT LOCATIONS FOR EACH SUPPORT WILL BE FIELD CHECKED AND APPROVED BY THE ENGINEER WHO SHALL COORDINATE WITH THE DIVISION AND CITY TRAFFIC ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION WORK REQUIRED.

IF BOTH MAJOR AND MINOR TYPE SUPPORTS ARE INCLUDED WITHIN THE PROJECT IT WILL BE PERMISSIBLE TO PERFORM THE CONSTRUCTION STAKE-OUT AND FIELD INSPECTION IN TWO (2) STAGES, ONE FOR MAJOR SUPPORTS AND ONE FOR MINOR SUPPORTS.

COST FOR THIS ITEM OF WORK WILL BE INCIDENTAL TO THE VARIOUS 816 ITEMS OF WORK CONTAINED IN THE PROJECT.

816 CONCRETE FOUNDATIONS, FOR SIGN SUPPORTS

PAYMENT FOR THIS ITEM SHALL BE BASED ON PLAN DIMENSIONS (OR DIMENSIONS AS MODIFIED BY THE ENGINEER IN LIEU OF PLAN QUANTITIES) AS REQUIRED IN SUPPLEMENTAL SPECIFICATION 816.

PAYMENT FOR REINFORCING STEEL AND INSTALLATION ONLY OF CONDUIT ELLS SHALL BE INCLUDED IN THE COST OF CONCRETE FOUNDATIONS FOR OVERHEAD SIGN SUPPORTS. CONCRETE SHALL BE CLASS "C".

BASIS OF PAYMENT SHALL BE AS FOLLOWS:

1. CONCRETE FOR OVERHEAD SIGN SUPPORT FOUNDATIONS, PER CUBIC YARD.

2. CONCRETE FOR GROUND MOUNTED SIGN SUPPORT FOUNDATIONS, PER CUBIC YARD.

816 OVERHEAD SIGN SUPPORT, BY TYPE

ALL COMPONENT PARTS OF THE OVERHEAD SIGN SUPPORTS SHALL BE STEEL, EXCEPT FOR THE TRUSS AND COMPONENTS FOR THE NUMBER 7 SERIES WHICH SHALL BE ALUMINUM. FOR SPECIFIC DETAILS AND MATERIALS, SEE SHEET NUMBERS 170 THROUGH 174.

COST OF FURNISHING AND INSTALLING THE SIGN BRACKETS AND THE FIXTURE SUPPORT ARM, LENGTH "G", WITH MOUNTING HOLES AND HARDWARE SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.

MODIFYING SUPPLEMENTAL SPECIFICATION 816 SWITCH ENCLOSURE MOUNTING BRACKETS INCLUDING MOUNTING BOLTS AND DRILLED HOLES SHALL BE FURNISHED AND INSTALLED UNDER PAYMENT FOR 816 OVERHEAD SIGN SUPPORT STRUCTURES AT THE CONTRACT PRICE PER OVERHEAD SIGN SUPPORT, BY TYPE.

PAYMENT FOR THIS ITEM SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH OVERHEAD SIGN SUPPORT, BY TYPE, INSTALLED IN PLACE AND ACCEPTED, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL ANCHOR BOLTS, 2" AND 3/4" ET CONDUIT ELLS (FOR INSTALLATION UNDER 816 CONCRETE FOUNDATIONS, FOR SIGN SUPPORTS), AND FOR FURNISHING AND INSTALLING EACH OVERHEAD SIGN SUPPORT STRUCTURE SHOWN ON SHEETS 161 THRU 162 INCLUDING FIXTURE SUPPORT ARMS, SWITCH ENCLOSURE MOUNTING BRACKET, SIGN BRACKETS AND ALL COMPONENT PARTS NECESSARY TO MAKE A COMPLETE WORKABLE INSTALLATION READY FOR SIGN ERECTION, INSTALLATION OF DISCONNECT SWITCH AND ENCLOSURE, GROUND ROD AND WIRE CONNECTIONS AND SIGN WIRING.

ERECTION OF THESE SUPPORTS SHALL BE ACCOMPLISHED IN A MANNER MEETING THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 816.

816 ALTERNATE DESIGNS FOR OVERHEAD SIGN SUPPORTS

IF THE CONTRACTOR DESIRES TO FURNISH AN ALTERNATE DESIGN FOR OVERHEAD SIGN SUPPORTS, THE ALTERNATE DESIGNS MUST BE SUBMITTED TO THE STATE AT LEAST 21 DAYS PRIOR TO OPENING OF BIDS. THE BIDDER WILL BE NOTIFIED AS TO ACCEPTANCE OR REJECTION OF ALTERNATE DESIGN AT LEAST 7 DAYS BEFORE BIDS ARE TO BE OPENED. ALTERNATE DESIGNS MUST UTILIZE TUBULAR STRUCTURAL MEMBERS. SUBMISSIONS SHALL BE MADE TO OHIO DEPARTMENT OF HIGHWAYS, OFFICE OF DESIGN SERVICES, 25 SOUTH FRONT STREET, COLUMBUS, OHIO 43215.

ERECTION OF OVERHEAD SPAN TYPE SIGN SUPPORTS (7 SERIES)

IN ALL CASES, SPAN TYPE OVERHEAD SIGN SUPPORTS AND SIGNS SHALL BE ERECTED CONCURRENTLY. AT NO TIME SHALL THE BOX TRUSSES BE ERECTED WITHOUT THE SIGN BEING IN PLACE WITHIN EIGHT (8) HOURS.

816 STRUCTURAL SUPPORTS, STEEL BEAM (TYPE)

THE STRUCTURAL STEEL BEAM SUPPORTS INCLUDING 8 AND 6 POUND BEAMS, 4 POUND POST AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123 AND A-153 RESPECTIVELY.

QUANTITIES FOR ITEM 816 "STRUCTURAL SUPPORTS, STEEL BEAM (TYPE)", APPEARING IN THE QUANTITY TABLES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT SUPPORT LENGTHS PRIOR TO FABRICATION AND GALVANIZING OF SUPPORTS. PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE BID PER LIN. FT. WHICH PRICE AND PAYMENT SHALL INCLUDE ALL COSTS IN CONNECTION WITH THE EMBEDMENT OF THE SUPPORTS.

THE COST OF THE CONCRETE USED FOR EMBEDMENT WILL BE A SEPARATE PAY ITEM.

816 STRUCTURAL SUPPORTS, 6 LB. BEAM, AS PER PLAN

THIS ITEM SHALL CONSIST OF THE FURNISHING, ASSEMBLY, AND INSTALLATION OF TWO (2) 3 LB. PER FOOT DRIVE POSTS (6 LB. BEAM) IN COMBINATION WITH A SQUARE SEAMLESS TUBULAR POST EXTENSION SPLICED TO THE TOP OF THE 6 LB. BEAM. DETAILS ARE SHOWN ON SHEET 178.

SQUARE SEAMLESS TUBULAR POST MATERIAL SHALL BE MILD STEEL CONFORMING TO ASA 1020 STEEL, MINIMUM YIELD STRENGTH 35,000 PSI, ULTIMATE YIELD 55,000 PSI.

WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND HARDWARE NECESSARY TO PERFORM THE REQUIRED ITEM OF WORK.

BASIS OF PAYMENT SHALL BE FOR STRUCTURAL SUPPORTS, 6 LB. BEAM, AS PER PLAN PER LINEAR FOOT MEASURED BY TOTAL LENGTH OF COMBINATION BEAM FROM END TO END.

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816 STRUCTURAL SUPPORTS, 8 LB. BEAM, AS PER PLAN

THIS ITEM SHALL CONSIST OF THE FURNISHING, ASSEMBLY, AND INSTALLATION OF TWO (2) 4 LB. PER FOOT DRIVE POSTS (8 LB. BEAM) IN COMBINATION WITH A SQUARE SEAMLESS TUBULAR POST EXTENSION SPLICED TO THE TOP OF THE 8 LB. BEAM. DETAILS ARE SHOWN ON SHEET 178,

SQUARE SEAMLESS TUBULAR POST MATERIAL SHALL BE MILD STEEL CONFORMING TO ASA 1020 STEEL, MINIMUM YIELD STRENGTH 35,000 PSI, ULTIMATE YIELD 55,000 PSI.

WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS AND HARDWARE NECESSARY TO PERFORM THE REQUIRED ITEM OF WORK.

BASIS OF PAYMENT SHALL BE FOR STRUCTURAL SUPPORTS, 8 LB. BEAM, AS PER PLAN PER LINEAR FOOT MEASURED BY TOTAL LENGTH OF COMBINATION BEAM FROM END TO END.

CERTIFICATION AND APPROVAL OF SIGN SUPPORT AND SIGN LIGHTING ITEMS

THE CONTRACTOR SHALL SUBMIT THROUGH PROPER CHANNELS THE DRAWINGS, INFORMATION AND SAMPLES AS REQUIRED BELOW:

A. 8 COPIES OF SHOP DRAWINGS AND MATERIAL LISTS FOR APPROVAL:

   1. OVERHEAD SIGN SUPPORTS
   2. BREAKAWAY SIGN SUPPORTS
   3. SIGN LIGHTING LAYOUT PLAN AND DETAILS FOR WIRING, CONDUIT SIZE AND PLACEMENT FROM SIGN DISCONNECT SWITCH TO FIXTURE.

B. 8 COPIES OF CATALOG CUTS DESCRIPTIONS OF SAMPLES OF FABRICATORS STANDARD ITEMS AS SHOWN IN THE PLANS OR THEIR EQUALS FOR APPROVAL OF THEIR USE.

C. CERTIFICATIONS AND/OR SAMPLES FOR ALL MATERIAL WHICH HAVE BEEN APPROVED ABOVE UNDER "A" AND "B".

D. APPROVAL OF ITEMS UNDER "A" AND "B" SHALL BE IN THE HAND OF THE CONTRACTOR PRIOR TO ANY PURCHASE OR INSTALLATION.

E. CERTIFICATIONS OF SAMPLES UNDER "C" MUST BE IN HAND AND APPROVED PRIOR TO CONTRACT COMPLETION.

ELECTRICAL - GENERAL

THIS ITEM SHALL CONSIST OF FURNISHING ALL NECESSARY MATERIAL, LABOR AND FACILITIES REQUIRED TO COMPLETE THE ELECTRICAL INSTALLATION IN ACCORDANCE WITH THE DESIGNS, DIMENSIONS AND DETAILS SHOWN IN THE PLANS AND DESCRIBED IN THE SPECIFICATIONS.

ALL MATERIAL, WORKMANSHIP AND CONSTRUCTION METHODS, EXCEPT AS MODIFIED HEREIN, SHALL CONFORM TO THE GENERAL REQUIREMENTS OF THE STATE OF OHIO, DEPARTMENT OF HIGHWAYS, CONSTRUCTION AND MATERIALS SPECIFICATIONS, JANUARY 1, 1969.

625 SIGN SERVICE

THIS ITEM SHALL CONSIST OF THE COMPLETION OF THE ELECTRICAL SYSTEM AND COMPONENTS FROM THE CONNECTORS IN THE PULL BOX (INCLUDED WITHIN THE ROADWAY LIGHTING QUANTITIES) TO THE PRIMARY SIDE OF THE DISCONNECT SWITCH.

WORK WILL INCLUDE THE FURNISHING AND INSTALLING (INCLUDING TRENCHING AND BACKFILLING) OF THE 2 INCH GALVANIZED STEEL CONDUIT AND COUPLINGS FROM THE PULL BOX TO THE CONDUIT ELL IN THE SIGN SUPPORT FOUNDATION.

THIS ITEM WILL ALSO INCLUDE THE FURNISHING AND INSTALLING OF THE 1/C 600 VOLT SERVICE WIRE FROM THE CONNECTORS TO THE DISCONNECT SWITCH.

BASIS OF PAYMENT FOR THIS ITEM SHALL BE AT CONTRACT UNIT PRICE PER EACH, WHICH SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

625 WIRE AND CABLE

WIRE AND CABLE INSTALLATION SHALL CONFORM TO SECTION 625.14 OF THE CONSTRUCTION AND MATERIALS SPECIFICATIONS AND SHALL BE OF THE SIZES AND TYPES SHOWN ON THE PLANS.

WIRE OR CABLE INSTALLED IN CONDUIT ON OR WITH SIGN STRUCTURES SHALL BE #12 THHN/THWN, 600 VOLT STANDARD COPPER WIRE.

CABLE INSTALLED UNDERGROUND LEADING FROM THE PULLBOX TO THE DISCONNECT SWITCH SHALL BE #4 OR 6 SINGLE CONDUCTOR CIRCUIT CABLE.

625 DISCONNECT SWITCH WITH TYPE "Y" OR "Z" ENCLOSURE

THIS ITEM SHALL INCLUDE FURNISHING OF A 30 AMP, 600 VOLT FUSED DISCONNECT SWITCH OF TYPE AND MAKE AS INDICATED ON SHEET 169 AND SHALL BE MOUNTED IN A NEMA 4 STAINLESS STEEL ENCLOSURE TYPE "Y" OR "Z" AND ATTACHED TO EACH SIGN SUPPORT BY MEANS OF A MOUNTING BRACKET AS DESCRIBED IN DETAIL ON THE ABOVE SHEET.

EACH SWITCH ENCLOSURE SHALL BE FURNISHED WITH ONE PADLOCK. PADLOCKS SHALL HAVE A BRASS BODY AND WROUGHT IRON SHACKLE EQUAL TO RUSSWIN NO. 2882 KA OR MASTER NO. 4 KA OR APPROVED EQUAL.

BASIS OF PAYMENT FOR THIS ITEM SHALL BE PER EACH AT CONTRACT UNIT PRICE, WHICH SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT TO COMPLETE THIS ITEM AT WORK.

625 TRANSFORMER, BY TYPE

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING TRANSFORMERS AS DETAILED AND SPECIFIED ON SHEET 169,

BASIS OF PAYMENT FOR THIS ITEM SHALL BE AT CONTRACT UNIT PRICE PER EACH, WHICH SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THIS COMPLETE ITEM OF WORK.

625 BALLAST, BY TYPE

BALLAST FOR FIXTURES SHALL BE WEATHER-PROOF OUTDOOR TYPE FOR A 120 VOLT 60 CYCLE SYSTEM AND SHALL PROVIDE LAMP STARTING AT AN AMBIENT TEMPERATURE OF -20 DEGREES F.

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING ALL BALLAST TYPES A THROUGH D AS DETAILED AND SPECIFIED ON SHEET 168,

BASIS OF PAYMENT FOR THIS ITEM SHALL BE AT CONTRACT UNIT PRICE PER EACH, FURNISHED TO THE JOB FOR INSTALLATION UNDER ITEM 625 "SIGNS WIRED, COMPLETE".

625 LIGHT FIXTURE WITH LAMP, BY TYPE AND SIZE

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING ALL LIGHT FIXTURES AND LAMPS, TYPES AND SIZES AS SPECIFIED ON SHEET 168,

BASIS OF PAYMENT FOR THIS ITEM SHALL BE AT CONTRACT UNIT PRICE PER EACH, FURNISHED TO THE JOB FOR INSTALLATION UNDER ITEM 625 SIGNS WIRED, COMPLETE.

625 SIGNS WIRED, COMPLETE

THIS ITEM SHALL CONSIST OF THE COMPLETION OF THE ELECTRICAL SIGN LIGHTING SYSTEM FOR EACH ILLUMINATED SIGN.

WORK SHALL INCLUDE INSTALLATION OF LIGHT FIXTURES AND BALLASTS, AND FURNISHING AND INSTALLATION OF ALL RIGID AND FLEXIBLE CONDUIT, CONDULETS, JUNCTION BOXES, CABLE, FASTENERS, HARDWARE, AND ALL OTHER ITEMS REQUIRED TO ENERGIZE THE SIGN LIGHTING SYSTEM. SEE DETAILS ON SHEETS 167,168 & 169,

THE COST OF FURNISHING AND INSTALLING CABLE, CABLE GRIPS, CABLE SPLICE UNITS, AND NECESSARY FASTENERS FROM THE DISCONNECT SWITCH TO THE SIGNS (OR BETWEEN SIGNS) WITHIN SIGN SUPPORT MEMBERS SHALL BE INCLUDED IN THIS ITEM OF WORK.

BASIS OF PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE PER EACH SIGN WIRED WHICH PRICE SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND OTHER INCIDENTALS TO PROVIDE A COMPLETE AND ACCEPTED ITEM OF WORK.

ILLUMINATED SIGNS REQUIRING TWO (2) BALLASTS SHALL BE CONSIDERED AS AN EQUIVALENT OF TWO (2) SEPARATE SIGNS FOR DETERMINATION OF PAYMENT QUANTITIES.

625 INSPECTION AND TESTING OF SIGN LIGHTING

THE CONTRACTOR SHALL FURNISH ALL LABOR, ELECTRICAL POWER, AND EQUIPMENT NECESSARY TO DEMONSTRATE TO THE ENGINEER THAT NO SHORT CIRCUITS AND UNSPECIFIED GROUNDS EXIST AND THAT THE SIGN CIRCUITS ARE PROPERLY CONNECTED AND OPERABLE PRIOR TO ACCEPTANCE.

THIS DEMONSTRATION SHALL INCLUDE A MEGGARING TEST TO SHOW THAT THE POWER CONDUCTORS ARE NOT GROUNDED AND THAT THE RESISTANCE TO GROUND FOR THE GROUND CONDUCTOR IS NOT MORE THAN 25 OHMS. WHERE RESISTANCE EXCEEDS 25 OHMS, ADDITIONAL LENGTH AND/OR NUMBERS OF RODS SHALL BE INSTALLED PER REQUIREMENTS OF 625.10.

A VOLTAGE AND AMPERAGE MEASUREMENT SHALL BE MADE AT THE SIGN SUPPORT SWITCH.

WHERE A LOW VOLTAGE TAP TRANSFORMER IS USED THE VOLTAGE MEASUREMENT SHALL BE USED TO DETERMINE THE APPLICABLE TAP.

AFTER THE SIGN LIGHTING SYSTEM IS COMPLETED, THE ENTIRE SYSTEM SHALL BE OPERATED CONTINUOUSLY EACH NIGHT UNTIL SEVEN (7) CONSECUTIVE DAYS ELAPSE WITHOUT FAILURE OR DEFECT. THE CONTRACTOR SHALL RECORD AND SUBSEQUENTLY CORRECT ANY DEFECTS WHICH MAY DEVELOP AT NO EXTRA COST TO THE STATE.

DURING THE TEST PERIOD, ADJUSTMENTS TO FIXTURE ARMING ANGLES SHALL BE MADE TO OBTAIN MAXIMUM UNIFORMITY AS DIRECTED BY THE ENGINEER.

THE ABOVE MEASUREMENTS, VOLTAGE TAP SELECTION NOTATIONS, AND METHODS OF DEFECT CORRECTION SHALL BE RECORDED AND DELIVERED TO THE ENGINEER FOR INCLUSION IN THE PROJECT RECORDS.

INSPECTION AND TESTING OF THE SIGN LIGHTING SYSTEM SHALL BE CONSIDERED A SUBSIDIARY WORK ITEM AND PAYMENT THEREFOR SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE RESPECTIVE ITEMS TESTED.

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I. GENERAL

A. SCOPE OF WORK

THE CONTRACTOR SHALL INSTALL TRAFFIC SIGNALS AT THE INTERSECTION SHOWN IN THE PLANS.

THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY SO THAT THE TRAFFIC SIGNALS WILL BE COMPLETE, ACCEPTED AND READY FOR SERVICE.

B. GENERAL

ANY ITEMS OF LABOR, MATERIALS, AND EQUIPMENT REQUIRED, BUT NOT SHOWN AS A SEPARATE PAY ITEM IN THE PROPOSAL SHALL BE FURNISHED AND INSTALLED AS INCIDENTAL TO THE CONTRACT.

THE REFERENCE TO ANY NAME, MAKE AND MODEL NUMBER IS INTENDED TO BE DESCRIPTIVE AND NOT RESTRICTIVE AND IS TO INDICATE TO BIDDERS THE DESIGN THAT WILL BE ACCEPTABLE. BIDS ON OTHER NAMES, MAKES AND NUMBERS WILL BE CONSIDERED. BEFORE ANY EQUIPMENT IS ORDERED OR INSTALLATION OF A TRAFFIC SIGNAL SYSTEM IS BEGUN, A COMPLETE SCHEDULE OF MATERIALS AND EQUIPMENT SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER. THE SCHEDULE SHALL INCLUDE EIGHT (8) SETS OF CATALOG CUTS, DIAGRAMS, DRAWINGS, BROCHURES, DATA SHEETS, MANUFACTURER'S CERTIFICATES OF COMPLIANCE OR OTHER DESCRIPTIVE DATA AS MAY BE REQUIRED AND SHALL INCLUDE COMPLETE DESCRIPTIVE DATA ON THE SIGNALS, WIRING DIAGRAMS, COMPLETE CABLE DESCRIPTIONS, TEST DATA, MAKE AND CAPACITY OF ALL APPARATUS. THE CONTRACTOR SHALL IDENTIFY THE ITEM ON EACH SHEET AND SHALL MARK ALL PRINTS "RECORD DRAWING". ONE COPY WILL BE RETURNED MARKED "APPROVED", IF FOUND SATISFACTORY. IN THE EVENT ANY ITEMS OF MATERIAL OR EQUIPMENT CONTAINED IN THE SCHEDULE FAIL TO COMPLY WITH THE SPECIFICATION REQUIREMENTS, SUCH ITEMS WILL BE REJECTED.

ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THESE SPECIFICATIONS SHALL BE NEW, FIRST QUALITY, OF THE LATEST DESIGN, AND FREE FROM DEFECTS AND POOR WORKMANSHIP.

ALL MAJOR ITEMS OF EQUIPMENT SUCH AS CONTROLLERS, SIGNALS, DETECTORS, POLES, TYPES OF CABLES, ETC, SHALL BE OF THE SAME MANUFACTURE AND SAME TYPE IN ORDER TO ASSURE UNIFORMITY, INTERCHANGEABILITY OF COMPONENTS, SINGLE RESPONSIBILITY AND MOST SATISFACTORY SERVICE.

II. SIGNAL SPECIFICATIONS

A. INSTALLATION

1. THE CONTRACTOR SHALL CONFORM TO THE NATIONAL ELECTRIC CODE AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS IN PERFORMING CONTRACT WORK. HE SHALL OBSERVE THE REGULATIONS OF UTILITIES IN THE AREA OF THEIR EQUIPMENT AND EXERCISE DUE CAUTION IN CONSTRUCTION WORK NEAR THEIR FACILITIES.

2. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT ALL UTILITIES HAVING INSTALLATIONS IN THE AREA TO SECURE AND AFFIRM DATA ON UTILITY LOCATIONS. THESE AGENCIES AND UTILITIES SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO ANY EXCAVATION IN AREAS CONTAINING THEIR INSTALLATIONS.

3. THE CONTRACTOR SHALL INSTALL THE POWER TO THE CONTROLLER CABINET AND PROVIDE 120/240 VOLTS, 30 AMP SERVICE AS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING AND PROVIDING THE POWER IN THE MANNER SHOWN IN THE PLANS THROUGH THE CITY OF COLUMBUS, DIVISION OF ELECTRICITY. THE COST OF OBTAINING THE POWER SHALL BE INCLUDED IN THE BID PRICE FOR "POWER CABLE, BY TYPE."

4. TRAFFIC SIGNAL CABLE SHALL ENTER THE CONTROLLER CABINETS AND RUN CONTINUOUSLY FROM SIGNAL HEAD TO SIGNAL HEAD WITHOUT SPLICES. PRESSURE TYPE CONNECTORS WILL BE USED TO MAKE CONNECTIONS INSIDE THE CONTROLLER CABINET. CABLE ENTRANCES SHALL BE PROTECTED BY A SUITABLE WEATHER HEAD AND DRIP LOOP WHEN ENTERING TRAFFIC FIXTURES.

5. ALL WIRES IN THE CONTROLLER CABINET SHALL BE LABELED, NEATLY LASHED AND FASTENED TO THE CABINET WITH CLAMPS. THIS SHALL INCLUDE WIRES TO THE DETECTORS, SIGNAL HEADS AND ALL MISCELLANEOUS EQUIPMENT.

6. ALL SPLICES IN PULL BOXES SHALL BE OF THE WEATHER-PROOF POURED TYPE.

7. ALL CURRENT CARRYING WIRES SHALL BE COPPER UNLESS OTHERWISE SPECIFIED.

8. NO SPLICES SHALL BE PERMITTED IN ANY ELECTRICAL CONDUCTOR WITH THE EXCEPTION OF DETECTOR LOOP WIRE TO DETECTOR LEAD-IN CABLE SPLICES IN PULL BOXES.

B. EQUIPMENT

ALL EQUIPMENT SHALL BE FURNISHED WITH TWO WIRING DIAGRAMS, SERVICE MANUAL AND INSTRUCTIONS ON INSTALLATION AND MAINTENANCE.

MESSENGER WIRE BY SIZE 7-STRAND WITH ACCESSORIES

MESSENGER WIRE SHALL BE UTILITY GRADE GALVANIZED STEEL AS PER ASTM A-363-65. IT SHALL CONSIST OF SEVEN STRAND (3/8" NOMINAL DIAMETER WITH A BREAKING LOAD OF 11,500 LBS.) GALVANIZED STEEL LASHING RODS SHALL BE USED TO SUSPEND THE SIGNAL CABLE FROM THE MESSENGER WIRE, TIGHTLY SECURED. WET-PORCELAIN STRAIN INSULATORS (600 VOLT), GUY CLAMPS, AND GALVANIZED PERFORMED GUY GRIP DEAD ENDS, THIMBLES, AND BULL RINGS (WHEN REQUIRED) WITH A RATED LOADING STRENGTH EQUAL TO OR GREATER THAN THE BREAKING LOAD OF THE MESSENGER WIRE SHALL BE INSTALLED AS SHOWN ON THE PLANS AND/OR SPECIFIED BY THE ENGINEER. THE MESSENGER WIRE SHALL BE INSTALLED SO THAT THE ENTIRE LOAD OF THE SIGNAL EQUIPMENT WILL NOT CAUSE SAG TO EXCEED A MAXIMUM OF 5% OR A MINIMUM OF 3% OF THE SPAN.

PAYMENT FOR ITEM 625 "MESSENGER WIRE (BY SIZE) 7 STRAND WITH ACCESSORIES" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT (MEASURED TO CENTER OF POLE OR AERIAL CORNERS) COMPLETELY ASSEMBLED IN ACCORDANCE WITH THE TYPICAL SIGNAL INSTALLATION DETAILS AND SHALL INCLUDE MESSENGER WIRE, LASHING RODS, STRAIN INSULATORS, PREFORMED GUY GRIPS, THIMBLES, GUY CLAMPS, AND AERIAL CORNER BULL RINGS, AS DESCRIBED ABOVE AND SHOWN ON THE DETAILS ON SHEET 164.

MARKING OF CABLE

ALL CABLES SHALL BE MARKED OR TAGGED AT ALL PULL BOXES, SIGNAL SUPPORTS, AND CONTROLLERS WITH TAG, SO AS TO BE INDIVIDUALLY IDENTIFIED.

THE TAG SHALL BE NOT LESS THAN 0.031" THICK COPPER, BRASS OR PLASTIC, AND SHALL BE EMBOSSED OR ENGRAVED WITH LETTERS OR NUMBERS OF NOT LESS THAN 1/4" HIGH. IT SHALL BE SECURELY ATTACHED WITH AN AWG #14 COPPER WIRE. MARKINGS SHALL CONSIST OF THE FOLLOWING OR VARIATIONS THEREOF: GROUND, GRD.; PHASE A, Ø A; COMMON, COM; PHASE A DETECTOR, DET-A; POWER, AC+ OR AC-; ETC.

PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO THE INSTALLATION OF THE VARIOUS CABLES.

CAPPING OF CONDUIT

ALL CONDUIT IN FOUNDATIONS WHICH WILL NOT HAVE WIRE OR CABLE PULLED INTO IT DURING CONSTRUCTION SHALL HAVE THE ENDS CLOSED WITH CAPPED BUSHINGS OR OTHERWISE SEALED IN AN APPROVED MANNER TO COMPLETELY KEEP ALL MOISTURE AND FOREIGN MATTER OUT OF THE CONDUIT.

625 SIGNAL CABLE, #14 AWG, BY TYPE

TRAFFIC SIGNAL CABLE SHALL BE WEATHERPROOF AND SHALL CONSIST OF THE NUMBER OF CONDUCTORS AS SPECIFIED ON THE PLANS. ALL CONDUCTORS SHALL BE AWG #14. CABLES SHALL BE INSULATED, JACKETED, RATED 600 VOLTS FOR USE IN UNDERGROUND CONDUIT OR AS AERIAL CABLE SUPPORTED BY A MESSENGER. IT SHALL BE COLOR CODED AND IN EVERY RESPECT FOLLOW THE INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION SPECIFICATION NUMBER 19-1-1967. WIRES MAY BE SOLID OR STRANDED.

PAYMENT FOR ITEM 625 "TRAFFIC SIGNAL CABLE #14 AWG" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT BY TYPE, IN PLACE, COMPLETED AND ACCEPTED, INCLUDING WIRING, TERMINALS, CONNECTIONS, TESTING, AND ALL INCIDENTALS NECESSARY.

625 CABLE SUPPORT ASSEMBLY

A CABLE SUPPORT ASSEMBLY FOR EACH TRAFFIC SIGNAL CABLE PASSING THROUGH THE WIRE OUTLET NEAR THE TOP OF POLE SHALL BE ATTACHED TO THE "J" HOOK AS SHOWN IN THE PLANS AND SHALL CONSIST OF THE FOLLOWING MAJOR ITEMS:

1. ONE PIECE OF THREE-STRAND COPPER-CLAD MESSENGER, LENGTH AS REQUIRED.
2. TWO COPPER-CLAD THIMBLES.
3. TWO #6 COPPER-CLAD SPLIT BOLT CONNECTORS.
4. ONE BRONZE CABLE GRIP, DOUBLE EYE LUFFING TYPE.
5. ALL OTHER MISCELLANEOUS ITEMS THAT MAY BE NECESSARY TO MAKE THE ASSEMBLY COMPLETE.

THE MESSENGER SHALL BE 0.164 INCHES IN DIAMETER CONSISTING OF THREE STRANDS OF 0.075 COPPER-COVERED STEEL WIRES TWISTED IN THE FORM OF A CABLE. THE CABLE GRIP FOR SUPPORTING CABLES INSIDE POLES SHALL BE BRONZE OR COPPER-CLAD STEEL CONSTRUCTION. THEY SHALL HAVE A DOUBLE EYE LUFFING ARRANGEMENT TO PERMIT EASY INSTALLATION OF THE CABLE. THE GRIPS SHALL BE OF THE PROPER SIZE TO FIT THE CABLE AND SHALL BE THE DOUBLE WEAVE TYPE APPROXIMATELY 18" LONG. GUY THIMBLES SHALL BE GROOVED TO FIT THE GUY STRAND AND BENT TO THE PROPER RADIUS TO PREVENT THE STRAND FROM BEING SHARPLY BENT. THE UNIT SHALL BE MADE OF STEEL WITH A COPPER-CLAD OR BRONZE FINISH.

PAYMENT FOR ITEM 625 CABLE SUPPORT ASSEMBLY WILL BE MADE AT THE CONTRACT UNIT PRICE EACH, COMPLETELY ASSEMBLED IN PLACE AND ACCEPTED.

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625 TRAFFIC SIGNAL HEADS, BY TYPE

THIS WORK SHALL CONSIST OF FURNISHING AND INSTALLING VEHICULAR TRAFFIC SIGNAL HEADS OF THE TYPE AND SIZE SHOWN ON THE PLANS AND INSTALLING THEM AS SHOWN ON THE DETAIL SHEET NO. 160 AND AS HEREIN SPECIFIED.

ALL TRAFFIC SIGNALS SHALL MEET THE LATEST ITE (INSTITUTE OF TRAFFIC ENGINEERS) STANDARDS FOR "ADJUSTABLE FACE TRAFFIC CONTROL SIGNAL HEAD STANDARDS". THE TRAFFIC SIGNALS SHALL ALSO MEET THE FOLLOWING REQUIREMENTS:

1. TWELVE (12") TRAFFIC SIGNAL SECTIONS SHALL BE INSTALLED WITH A COMBINATION TUNNEL TYPE HOOD TWELVE (12") INCHES LONG, WITH AN OPEN SLOT AT THE BOTTOM OF THE HOOD.

2. REFLECTORS SHALL BE HIGHLY POLISHED ALZAK TYPE.

3. ALL TRAFFIC SIGNALS SHALL BE ARRANGED FOR SPAN WIRE MOUNTING.

4. GLASS LENSES, NUMBER AND SIZE, SHALL BE AS INDICATED ON THE INTERSECTION DRAWING. THESE LENSES SHALL MEET THE LATEST ITE STANDARDS FOR LENSES.

5. ALL SIGNAL OPTICAL UNITS SHALL PRODUCE STANDARD (ITE DEFINITION) LIGHT DISTRIBUTIONS.

6. ALL TRAFFIC SIGNALS AND SIGNAL SERVICE ENTRANCE FIXTURES SHALL BE PAINTED ACCORDING WITH THE FOLLOWING:

   FINISH ON BODY OF SIGNAL, OUTSIDE OF HOOD, DOORS AND SERVICE ENTRANCE FIXTURE - FEDERAL YELLOW,
   FINISH ON INSIDE OF HOOD - FLAT BLACK.

   PAINT REQUIREMENTS:

   1ST COAT (ALL SURFACES) - EPON OXIDE BAKING PRIMER, FEDERAL SPEC. TT-P-636,
   2ND COAT (ALL SURFACES) - MEDIUM GRAY ALKYD UREA EXTERIOR BAKING ENAMEL, FEDERAL SPEC. TT-E-480B,
   3RD COAT (YELLOW SURFACE) - FEDERAL YELLOW ALKYD UREA EXTERIOR BAKING ENAMEL, FEDERAL SPEC. TT-E-489B, COLOR 13538,
   3RD COAT (FLAT BLACK SURFACES) - ALKYD UREA BLACK SYNTHETIC, HEAT-RESISTING GLYCERYL PHTHALATE TYPE 4, INSTRUMENT BLACK, MILITARY SPEC. E-5557.

7. STAINLESS STEEL LATCHING DEVICES AND SPAN WIRE HANGERS SHALL NOT BE PAINTED.

8. BALANCE ADJUSTORS SHALL BE INSTALLED IF NECESSARY TO MAINTAIN THE TRAFFIC SIGNALS IN A VERTICAL POSITION.

9. TRAFFIC SIGNAL HEAD, 3 SECTION, 12" LENSES, ONE-WAY

   A COMPLETED ONE-WAY THREE-SECTION TRAFFIC SIGNAL ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENT PARTS FOR SPAN WIRE MOUNTING:

   A. GALVANIZED SPAN WIRE HANGER WITH SUSPENSION FITTING FOR MESSENGER WIRE,
   B. SIX (6) TERMINAL DISCONNECT BLOCK,
   C. ONE, TWELVE INCH, THREE-SECTION SIGNAL INCLUDING RED, YELLOW AND GREEN LENSES WITH ALL REQUIRED COMPONENTS TO LOCK THE SIGNALS IN PLACE AND PROVIDE A WATER AND DUST TIGHT INSTALLATION,
   D. ALL OTHER INCIDENTALS NECESSARY TO MAKE THE INSTALLATION COMPLETE.

   TRAFFIC SIGNAL HEAD, 3 SECTION, 12" LENSES, ONE-WAY WITH ARROW

   A COMPLETED ONE-WAY THREE-SECTION TRAFFIC SIGNAL WITH ARROW SHALL CONSIST OF THE SAME COMPONENTS AS THE PRECEEDING SIGNAL HEAD, EXCEPT THAT A TWELVE INCH GREEN ARROW LENS SHALL BE SUBSTITUTED FOR THE REGULAR GREEN LENS.

10. THE CONTRACTOR SHALL FURNISH AND INSTALL A TRAFFIC SIGNAL LAMP IN EACH TRAFFIC SIGNAL SECTION. SIGNAL LAMPS SHALL CONFORM TO THE REQUIREMENTS OF "A STANDARD FOR TRAFFIC SIGNAL LAMPS" AS APPROVED BY THE INSTITUTE OF TRAFFIC ENGINEERS (ITE) BOARD OF DIRECTION ON DECEMBER 26, 1967 WITH THE FOLLOWING EXCEPTIONS AND QUALIFICATIONS:

    A. BRASS SCREW BASES SHALL BE REQUIRED,
    B. LAMP SIZES SHALL BE AS FOLLOWS:

	WATTS	RATED LIFE HOURS	LIGHT CENTER LENGTH
(1) 12" DIAMETER RED, GREEN, GREEN ARROW	150	6000	3"
(2) 12" DIAMETER YELLOW	69	6000	3"

    LAMPS SHALL BE INSTALLED WITH THE OPEN PORTION OF THE FILAMENT IN THE UPWARD POSITION.

    COST OF FURNISHING AND INSTALLING LAMPS SHALL BE INCLUDED IN THE BID PRICE OF EACH ITEM REQUIRING LAMPS.

PAYMENT FOR ITEM 625 "TRAFFIC SIGNALS" WILL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH SIGNAL ASSEMBLY (BY TYPE) MOUNTED IN PLACE, TESTED AND ACCEPTED.

LOOP DETECTOR WIRE AND LEAD-IN CABLE

LOOP DETECTOR WIRE SHALL CONSIST OF SINGLE CONDUCTOR, INSULATED, NO. 14 AWG RHW (OR RHW TYPE) 600 V. STRANDED COPPER WIRE, AND BE INSTALLED IN ACCORDANCE WITH THE TYPICAL LOOP DETECTOR DETAIL. EACH WIRE LOOP SHALL CONSIST OF THE NUMBER OF TURNS AS REQUIRED BY THE MANUFACTURER OF THE LOOP DETECTOR. THE LOOP WIRE SHALL RUN CONTINUOUSLY TO THE ADJACENT PULL BOX WHERE IT SHALL BE SPLICED TO THE LOOP DETECTOR LEAD-IN CABLE.

PAYMENT FOR ITEM 625 "LOOP DETECTOR WIRE" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT IN PLACE FOR #14 DETECTOR WIRE AND SHALL INCLUDE DETECTOR WIRE, INSTALLATION, JACKET, CONDUIT FROM ROADWAY EDGE TO PULL BOX, SPLICE AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION. THE ESTIMATED QUANTITIES OF LOOP DETECTOR WIRE SHOWN ON THE PLANS IS BASED ON AN ANTICIPATED REQUIRED NUMBER OF TURNS. PAYMENT WILL BE BASED ON THE ACTUAL LINEAL FEET INSTALLED AS THIS IS CONTROLLED BY THE DETECTOR MANUFACTURER'S REQUIREMENTS FOR LOOPS.

PAYMENT FOR ITEM 625 "LOOP DETECTOR LEAD-IN CABLE" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT IN PLACE FOR #12 AWG TWO CONDUCTOR UF WIRE, INCLUDING SOLDERED WATERPROOF POURED SPLICE AND SHIELDING, IF REQUIRED BY THE DETECTOR MANUFACTURER.

LOOP DETECTOR PAVEMENT CUTTING

LOOP DETECTOR PAVEMENT CUTTING SHALL CONSIST OF A 1-1/2 INCH TO 2-1/2 INCH X 1/4 INCH WIDE SAW CUT IN ACCORDANCE WITH TYPICAL LOOP DETECTOR INSTALLATION DETAIL. THE SAW CUT SHALL BE FILLED WITH A JOINT SEALER AFTER THE WIRE HAS BEEN INSTALLED. THE JOINT SEALER SHALL BE AS SPECIFIED ON SHEET 165.

PAYMENT FOR ITEM 625 "LOOP DETECTOR PAVEMENT CUTTING" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT FOR SAW CUTTING AND TREATMENT INCLUDING JOINT SEALER.

POWER CABLE 3/C #8 AWG - RHW (OR RHW TYPE) STRANDED

POWER CABLE SHALL BE WEATHERPROOF AND SHALL BE 3 CONDUCTOR AWG #8 RHW (OR RHW TYPE) STRANDED COPPER. POWER CABLE SHALL BE INSTALLED FROM THE CONTROLLER CABINET THROUGH THE APPROPRIATE CONDUIT, SIGNAL POLE, AND WEATHERHEAD. IT SHALL BE ATTACHED BY THE CITY OF COLUMBUS, DIVISION OF ELECTRICITY TO THE SERVICE CABLE WITH PRESSURE CONNECTORS COVERED WITH MASTIC INSULATION.

PAYMENT FOR ITEM 625 "POWER CABLE" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT, IN PLACE, COMPLETE AND ACCEPTED, INCLUDING WIRING, TERMINALS, CONNECTIONS, TESTING, AND ALL INCIDENTALS NECESSARY AND SHALL ALSO INCLUDE ANY COSTS INCURRED TO ARRANGE THE SERVICE INSTALLATION BY THE CITY OF COLUMBUS, DIVISION OF ELECTRICITY IN CONFORMANCE WITH THE PLANS.

SIGNAL CONTROLLER, BY TYPE, INSTALLATION ONLY

SIGNAL CONTROL EQUIPMENT SHALL BE FURNISHED BY THE STATE ASSEMBLED AND PREWIRED IN EACH SIGNAL CONTROL CABINET PREVIOUSLY FURNISHED TO THE ENGINEER BY THE CONTRACTOR.

THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER BY LETTER (IN QUADRUPLICATE) 90 DAYS PRIOR TO THE DESIRED DELIVERY DATE OF THE PREWIRED CABINET. THE DISTRIBUTION OF THE FOUR LETTER COPIES SHALL BE: (1) PROJECT ENGINEER, (2) DIVISION TRAFFIC ENGINEER, (3) OFFICE OF DESIGN SERVICES, 25 SOUTH FRONT ST., COLUMBUS, OHIO, (4) BUREAU OF TRAFFIC, ELECTRICAL SECTION, 450 EAST TOWN ST., COLUMBUS, OHIO. THE NOTIFICATION SHALL CONTAIN THE FOLLOWING: LOCATION TO WHICH CABINET IS TO BE DELIVERED ON PROJECT SITE, DATE OF DELIVERY (CABINET WILL BE DELIVERED BETWEEN 8:00 AM AND 5:00 PM OF THE DAY SPECIFIED EXCEPT SATURDAYS, SUNDAYS AND HOLIDAYS). THE CABINET SUPPLIED AS A PART OF THIS CONTRACT SHALL BE AVAILABLE FOR PICK-UP BY THE STATE AT THE SAME LOCATION AND TIME. THE CONTRACTOR SHALL FURNISH ALL LABOR AND EQUIPMENT REQUIRED TO UNLOAD AND LOAD THE CABINETS.

THE CONTRACTOR SHALL MOUNT THE CONTROLLER WITH CABINET ON ITS FOUNDATION AND MAKE THE NECESSARY FIELD WIRING CONNECTIONS TO PROVIDE A SIGNAL CONTROLLER COMPLETE AND OPERABLE IN ACCORDANCE WITH THE SIGNAL OPERATION SHOWN IN THE PLANS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE CONTROLLER AND EQUIPMENT FROM THE TIME OF DELIVERY BY THE STATE FOR INSTALLATION.

PAYMENT FOR ITEM 625 "SIGNAL CONTROLLER, BY TYPE, INSTALLATION ONLY" SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH SIGNAL CONTROLLER INSTALLED WHICH PRICE SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR THE COMPLETE ITEM OF WORK INCLUDING MOUNTING THE CABINET.

TRAFFIC SIGNAL SPECIFICATIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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625 CONTROLLER CABINET (38.000 CU. FT.)

THE CABINET SHALL BE CLEAN-CUT IN DESIGN AND APPEARANCE AND SHALL CONFORM TO THE FOLLOWING:

IT SHALL BE MADE OF 14 GAUGE COPPER BEARING STEEL. IT SHALL BE OF ALL WELDED CONSTRUCTION.

THE MINIMUM USABLE INSIDE DIMENSIONS SHALL BE HEIGHT 72" WIDTH 37" AND DEPTH 24".

THE CABINET SHALL CONTAIN AT LEAST 38.0 CUBIC FEET OF USABLE VOLUME.

HINGED DOOR, WITH POLICE PANEL, SHALL BE PROVIDED ON THE FRONT OF THE CABINET WHICH SHALL INCLUDE SUBSTANTIALLY THE FULL AREA OF THE FRONT OF THE CABINET.

ALL DOORS SHALL BE FULLY GASKETED WITH ELASTOMERIC GASKETING MATERIAL SO THAT WHEN CLOSED THEY SHALL FIT CLOSELY TO THE GASKETING MATERIAL, MAKING THE CABINET WEATHER RESISTANT AND DUST TIGHT. THREE POINT LATCHING SHALL BE PROVIDED FOR THIS PURPOSE.

THE DOOR SHALL BE PROVIDED WITH AN ACCEPTABLE STRONG LOCK COVERED BY A WEATHER-PROOF TAB AND BOTH THE DOOR LOCK AND THE POLICE PANEL SHALL BE PROVIDED WITH TWO KEYS.

AN ELBOW VENT SHALL BE MOUNTED ON BOTH SIDES OF THE CABINET BASE AND SHALL BE MECHANICALLY SCREENED AND BAFFLED TO PROTECT AGAINST RAIN, DUST AND ALL TYPES OF FOREIGN OBJECTS.

THERE SHALL BE A DOOR STOP AT APPROXIMATELY 90° AND ONE AT 120°.

THE DOOR PINS SHALL BE GREASE LUBRICATED AND FABRICATED OF A NON-CORRODING MATERIAL.

CABINET SHALL CONTAIN FIVE METAL SHELVES FOR SUPPORT OF TRAFFIC SIGNAL CONTROL EQUIPMENT. THE SHELVES SHALL BE FULL WIDTH OF CABINET AND SHALL BE ADJUSTABLE ON A MINIMUM OF 1-1/2" CENTERS FROM A MINIMUM OF 10" FROM THE TOP OF THE CABINET TO THE BOTTOM OF THE CABINET.

CABINET SHALL BE EQUIPPED WITH SIX 3-1/2" KNOCK OUTS LOCATED ALONG A REMOVABLE COVER LOCATED AT THE BOTTOM REAR OF THE CABINET.

THE CABINET SHALL BE EQUIPPED WITH A POLICE PANEL DOOR AND THE FOLLOWING EQUIPMENT:

1 EACH SUITABLE LIGHTNING ARRESTER TO PROTECT TRAFFIC CONTROL EQUIPMENT FOR CONNECTING ACROSS THE LINE AFTER THE FUSE AND BEFORE FLASHER FILTERS, MOUNTED USING 150 VOLT MINIMUM BREAKDOWN INSULATED HOLLOW RIVET USING S8-32 SCREWS.

10 EACH 12 WIRE TERMINAL BLOCK (PENN UNION #6012 OR MARATHON #6012 OR APPROVED EQUAL).

3 EACH 4 PDT 10 AMPERE 250 VOLT A.C. SWITCH (CUTLER-HAMMER #7665-KA, CARLING ELECTRIC IL 253 OR APPROVED EQUAL).

1 EACH GROUND BUS BAR WITH 15 GROUND TERMINAL POINTS.

THE CABINET SHALL BE BASE MOUNTED AND FURNISHED WITH FOUR 3/4" x 16" ANCHOR BOLTS FOR KEYING TO A CONCRETE FOUNDATION. A DRAWING SHOWING PROPER CONSTRUCTION OF THE CABINET FOUNDATION AND METHOD OF MOUNTING THE CABINET SHALL BE FURNISHED.

THE CABINET SHALL BE EQUIPPED WITH A TOP MOUNTED VENTILATING FAN 134 C.F.M. AT 0.160" OF WATER STATIC PRESSURE AND WITH A SEPARATE ADJUSTABLE THERMOSTAT.

THE OUTGOING TRAFFIC CONTROL SIGNAL CIRCUITS SHALL BE OF THE SAME POLARITY AS THE LINE SIDE OF THE POWER SUPPLY; THE COMMON RETURN OF THE SIGNAL CIRCUIT SHALL BE OF THE SAME POLARITY AS THE GROUND SIDE OF THE POWER SUPPLY.

THE GROUNDED SIDE OF THE POWER SUPPLY SHALL BE GROUNDED TO THE CONTROLLER CABINET IN AN APPROVED MANNER.

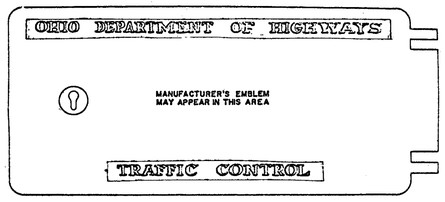
THE POLICE DOOR SHALL HAVE CAST ON ITS FACE AS PER ATTACHED COPY OHIO DEPARTMENT OF HIGHWAYS - TRAFFIC CONTROL.

ALL CAST PIECES SHALL BE CLEAN, SMOOTH AND FREE FROM FLAWS, CRACKS, BLOWHOLES AND OTHER IMPERFECTIONS.

AN ACCEPTABLE FLEXIBLE PLASTIC OR OTHER INSULATING MATERIAL TO BE MOUNTED WITH SHEET METAL SCREWS TO COVER SWITCHES ON THE POLICE PANEL.

THE CABINET AND FAN HOUSING SHALL BE PRIME COATED AND SHALL BE FINISHED WITH TWO COATS OF YELLOW ENAMEL PAINT USING FEDERAL STANDARD 595, COLOR 13655, A SAMPLE OF COLOR CODE 13655 IS AVAILABLE FOR EXAMINATION AT THE ELECTRICAL DEVICES SECTION, BUREAU OF TRAFFIC, 450 EAST TOWN ST., COLUMBUS, OHIO.

PAYMENT SHALL BE MADE AT THE UNIT PRICE BID PER EACH, ITEM 625, CONTROLLER CABINET, 38.00 CUBIC FEET, FURNISHED COMPLETE.



POLICE PANEL
CONTROLLER HOUSING
38.0

TESTING OF TRAFFIC SIGNALS

THE CONTRACTOR SHALL FURNISH ALL PERSONNEL, EQUIPMENT AND APPLIANCES REQUIRED TO SUCCESSFULLY TEST THE COMPLETED INSTALLATIONS.

THE CONTRACTOR SHALL TEST AND DEMONSTRATE TO THE SATISFACTION OF THE ENGINEER OR HIS AUTHORIZED REPRESENTATIVE, THAT THE CIRCUITS ARE PROPERLY CONNECTED, CONTINUOUS AND FREE FROM SHORT CIRCUITS, CROSSES AND UNSPECIFIED GROUNDS, AND THAT THEY ARE CONNECTED IN ACCORDANCE WITH THE WIRING INSTRUCTIONS AND THAT EACH CIRCUIT IS OPERABLE CORRECTLY AND INDEPENDENTLY OF ANY OTHER CIRCUIT.

THE CONTRACTOR SHALL TEST EACH UNGROUNDED CIRCUIT AND SPARE WIRES TERMINATING AT THE TRAFFIC CONTROLLER CABINET FOR RESISTANCE TO GROUND. THIS RESISTANCE TO GROUND SHALL BE NOT LESS THAN TEN (10) MEGOHMS. THE CONTRACTOR SHALL FURNISH A COMPLETE REPORT OF ALL MEGOHM READINGS OF EACH CIRCUIT AND SPARE CONDUCTORS IN CABLES APPEARING AT THE CONTROLLER BASE. THE GROUND ROD AT THE TRAFFIC CONTROLLER SHALL HAVE A RESISTANCE OF NOT MORE THAN 15 OHMS TO GROUND.

AFTER ALL CIRCUITS AND SPARE CONDUCTORS HAVE BEEN TESTED THE CONTRACTOR WILL MOUNT THE TRAFFIC CONTROLLER WITH CABINET AND CONNECT THE FIELD WIRING TO THE TERMINAL CONTACTS OF THE TRAFFIC CONTROLLER. THE COMPLETED INSTALLATION SHALL OPERATE CONTINUOUSLY FOR A PERIOD OF ONE WEEK WITHOUT INTERRUPTION OR FAILURE ATTRIBUTABLE TO POOR WORKMANSHIP OR DEFECTIVE MATERIAL PRIOR TO ACCEPTANCE AND AFTER ANY DEFECTIVE PARTS HAVE BEEN REPLACED AND ALL FAULTS CORRECTED.

THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY OF CORRECTING MALFUNCTIONS OF THE INSTALLATION. POWER FOR THE TEST WILL BE FURNISHED FROM THE SERVICE INSTALLED AS A PART OF THIS CONTRACT. THE COST OF THE POWER TO CONDUCT THE TEST WILL BE BORNE BY THE CONTRACTOR. COSTS OF CONDUCTING TESTS BY THE CONTRACTOR SHALL BE INCLUDED IN THE BID PRICE FOR THE ITEM TESTED.

625 COVERING OF TRAFFIC SIGNAL HEADS

ALL TRAFFIC SIGNAL HEADS ERECTED AT LOCATIONS WHERE TRAFFIC WILL BE MAINTAINED PRIOR TO ENERGIZING OF THE SIGNAL, SHALL BE COVERED.

THE COVERING SHALL BE PLASTIC COATED BURLAP BLANKETS AS PER ITEM 705.09. THEY SHALL BE FIRMLY ATTACHED AND COMPLETELY COVER THE SIGNAL HEAD WITHOUT DAMAGE TO THE HEAD. THE COVERING SHALL BE MAINTAINED IN PLACE AT ALL TIMES WHILE TRAFFIC IS USING THE AREA AND THE SIGNAL IS NOT IN OPERATION.

PAYMENT SHALL BE AT THE UNIT PRICE BID PER EACH FOR ITEM 625 COVERING OF TRAFFIC SIGNAL HEADS WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO ERECT, MAINTAIN AND REMOVE THE COVERING.

TRAFFIC SIGNAL SPECIFICATIONS

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2	OHIO		

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625 MAINTAINING EXISTING TRAFFIC SIGNALS

EXISTING TRAFFIC SIGNALS AT RAMPS G, F, S.R. 104 AND FRANK RD. SHALL BE MAINTAINED BY THE CONTRACTOR AT ALL TIMES DURING CONSTRUCTION, UNTIL THE NEW SIGNALS ARE COMPLETE AND ACCEPTED.

THE CONTRACTOR SHALL NOTIFY THE STATE 48 HOURS PRIOR TO CHANGING THE OPERATION OF THE TRAFFIC AT THE INTERSECTIONS. ALL ADJUSTMENTS TO THE SIGNAL CONTROLLER (EXISTING OR NEW) SHALL BE MADE BY THE STATE OF OHIO.

PAYMENT FOR ITEM 625 "MAINTAINING EXISTING TRAFFIC SIGNALS" WILL BE ON A LUMP SUM BID AND WILL INCLUDE ALL TEMPORARY POLES, SPAN WIRES AND ACCESSORIES, AND ALL LABOR NECESSARY TO RELOCATE AND MAINTAIN THE SIGNALS TO PROPERLY CONTROL INTERSECTION TRAFFIC.

816 CONSTRUCTION LAYOUT STAKES FOR CONTROLLER AND TRAFFIC SIGNALS

THE CONTRACTOR SHALL STAKE OUT ALL TRAFFIC SIGNAL SUPPORTS AND THE CONTROLLER IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 816 PRIOR TO INSTALLATION OF ANY FOUNDATIONS OR SUPPORTS.

AFTER STAKEOUT THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF SEVEN (7) DAYS IN ADVANCE OF SCHEDULED WORK. SUPPORT LOCATIONS FOR EACH SUPPORT WILL BE FIELD CHECKED AND APPROVED BY THE ENGINEER WHO SHALL COORDINATE WITH THE DIVISION TRAFFIC ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION WORK REQUIRED.

IF BOTH MAJOR AND MINOR TYPE SUPPORTS ARE INCLUDED WITHIN THE PROJECT IT WILL BE PERMISSIBLE TO PERFORM THE CONSTRUCTION STAKE-OUT AND FIELD INSPECTION IN TWO (2) STAGES, ONE FOR MAJOR SUPPORTS AND ONE FOR MINOR SUPPORTS.

COST FOR THIS ITEM OF WORK WILL BE INCIDENTAL TO THE VARIOUS 816 ITEMS OF WORK CONTAINED IN THE PROJECT.

816 CONCRETE FOR SIGNAL SUPPORT FOUNDATIONS

TRAFFIC SIGNAL POLE FOUNDATIONS SHALL BE CONSTRUCTED AS SHOWN IN THE PLANS. THE CONTRACTOR SHALL STAKE THE LONGITUDINAL AND LATERAL LOCATION AND THE ELEVATION OF THE TOP OF EACH FOUNDATION SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER ELEVATION, OFFSET AND LEVEL OF EACH FOUNDATION. EXCAVATIONS SHALL BE MADE TO THE DIMENSIONS SHOWN ON THE PLANS AND SHALL BE PERFORMED BY MEANS OF AN EARTH AUGER OF THE SPECIFIED DIAMETER UNLESS OTHERWISE DIRECTED BY THE ENGINEER. WHERE SUBSURFACE OBSTRUCTIONS ARE ENCOUNTERED, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO REMOVE THE OBSTRUCTION OR TO REPLACE THE EXCAVATED MATERIAL AND RELOCATE THE FOUNDATION. IF CAVING OF THE FOUNDATION OCCURS, THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH, MAINTAINING THE SIDEWALLS AS NEARLY VERTICAL AS POSSIBLE. NO PAYMENT SHALL BE MADE FOR ANY EXCAVATION, CONCRETE OR REINFORCING STEEL USED IN EXCESS OF THE PLANNED QUANTITIES.

PORTLAND CEMENT CONCRETE SHALL BE USED AND SHALL CONFORM WITH CLASS "C" OF THE CURRENT CONSTRUCTION AND MATERIAL SPECIFICATIONS BY THE DEPARTMENT OF HIGHWAYS OF THE STATE OF OHIO. THE CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL OR COMPACTED EMBANKMENT. THE FOUNDATION SHALL HAVE ANCHOR BOLTS AND CONDUIT ACCURATELY HELD IN POSITION WITH A TEMPLET WHEN CONCRETE IS POURED. FORMS SHALL BE USED FOR THE UPPER PORTION OF ALL FOUNDATIONS AND NO BACKFILLING SHALL BE PERMITTED FROM THE BOTTOM TO WITHIN 6 INCHES BELOW GROUND LEVEL. NO GROUTING OF CONCRETE SHALL BE PERMITTED BETWEEN THE FOUNDATION AND THE STEEL POLE.

PAYMENT FOR ITEM 816 "CONCRETE FOR SIGNAL SUPPORT FOUNDATIONS" SHALL BE MADE PER CUBIC YARD FOR EACH FOUNDATION CONSTRUCTED IN ACCORDANCE WITH THE TYPICAL FOUNDATION DETAILS AND SHALL INCLUDE CONCRETE, REINFORCING STEEL, EXCAVATION AND BACKFILL.

816 SIGNAL STRAIN POLE

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND ERECTION OF POLES AS SHOWN AND SPECIFIED IN THE PLANS.

SHAFTS SHALL BE TAPERED TUBES.

EACH POLE SHALL BE GALVANIZED AND INCLUDE THE FURNISHING OF ANCHOR BOLTS, TYPE II OR III RIGID FERROUS METAL 3" CONDUIT ELL AND A 3/4" ELECTRICAL METALLIC TUBING ELL FOR GROUNDING LEAD FOR INSTALLATION IN FOUNDATIONS PLUS HANDHOLE WITH COVER, "J" HOOK, POLE CLAMP, AND CABLE SERVICE ENTRANCE WITH BLIND HALF-COUPLING FOR EACH POLE IN ACCORDANCE WITH DETAILS ON SHEET 163.

THE POLES SHALL BE INSTALLED AND ADJUSTED TO THE PROPER RAKE SO THAT THE WEIGHT OF THE SIGNAL INSTALLATION WILL NOT CAUSE THE POLES TO BE OFF VERTICAL ALIGNMENT BY MORE THAN 1%.

BASIS OF PAYMENT SHALL BE AT THE CONTRACT BID PRICE PER EACH 816 SIGNAL STRAIN POLE, BY SIZE, INCLUDING ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS RELATED TO THIS ITEM OF WORK.

816 CONCRETE FOR CONTROLLER FOUNDATION

CONTROLLER FOUNDATIONS SHALL BE CONSTRUCTED AS SHOWN IN THE PLAN. THE CONTRACTOR SHALL STAKE THE LONGITUDINAL AND LATERAL LOCATION AND ELEVATION OF THE TOP OF EACH FOUNDATION SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER ELEVATION, OFFSET AND LEVEL OF EACH FOUNDATION. EXCAVATIONS SHALL BE MADE TO THE DIMENSIONS SHOWN ON THE PLANS. WHERE SUBSURFACE OBSTRUCTIONS ARE ENCOUNTERED, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO REMOVE THE OBSTRUCTION OR TO REPLACE THE EXCAVATED MATERIAL AND RELOCATE THE FOUNDATION. IF CAVING OF THE EXCAVATION OCCURS, THE CONTRACTOR SHALL EXCAVATE TO THE SPECIFIED DEPTH, MAINTAINING THE SIDEWALLS AS NEARLY VERTICAL AS POSSIBLE. NO PAYMENT SHALL BE MADE FOR ANY EXCAVATION OR CONCRETE USED IN EXCESS OF THE PLANNED QUANTITIES.

PORTLAND CEMENT CONCRETE SHALL BE USED AND SHALL CONFORM WITH CLASS "C" OF THE CURRENT CONSTRUCTION AND MATERIAL SPECIFICATIONS PREPARED BY THE DEPARTMENT OF HIGHWAYS OF THE STATE OF OHIO. THE CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL OR COMPACTED EMBANKMENT. THE FOUNDATION SHALL HAVE ANCHOR BOLTS AND CONDUIT ACCURATELY HELD IN POSITION WITH A TEMPLET WHEN CONCRETE IS POURED. FORMS SHALL BE USED FOR THE UPPER PORTION OF ALL FOUNDATIONS AND NO BACKFILLING SHALL BE PERMITTED FROM THE BOTTOM TO WITHIN 6 INCHES BELOW GROUND LEVEL.

CONCRETE FOR SERVICE STEP IN FRONT OF CONTROLLER AS SHOWN IN DETAIL ON SHEET NO. 164 WILL BE INCLUDED IN THE ABOVE DESCRIBED CONCRETE.

PAYMENT FOR ITEM 816 "CONCRETE FOR CONTROLLER FOUNDATION" SHALL BE MADE PER CUBIC YARD FOR EACH FOUNDATION CONSTRUCTED IN ACCORDANCE WITH THE TYPICAL FOUNDATION DETAILS AND SHALL INCLUDE CONCRETE, EXCAVATION AND BACKFILL.

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FRANKLIN COUNTY
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D-2-48
SOUTH (71) NORTH
(19) 69+00 ℄

(24) R-2-36 YIELD
100+18 ℄ Survey & Const.

HARMON AVE

(18) 3.5"x5.0" M-45-42 NORTH (71)
46+10

(16) W-47-36 SIGNAL AHEAD
44+00

Existing Signalized Intersection

EX FRANK RD (E.B)
EX FRANK RD R/W (B)

(23) R-36R-30 RIGHT LANE MUST TURN RIGHT 6+50

D-2-48
EAST (104)
(17) SOUTH
46+10

SOUTHBOUND I-71
NORTHBOUND I-71

Replace ex. stop sign with special One-Way See Sheet 178

(12) R-1-30 STOP

(12) R-41B-24 DO NOT ENTER
R-43R-36 ONE WAY
94+94 ℄ Survey & Const. SR. 104 S.B.
Make sign ⊥ to S.R. 104 S.B.

EL RAMP G
SR 104 (S.B.)
SR 104 (N.B.)

(10) W-47-36 SIGNAL AHEAD
9+50 Service Rd.
℄ Service Rd.
93+10 ℄ Survey & Const. S.R. 104 N.B. Make sign ⊥ to Ramp "G"

(11) JCT (71) M-17-24 M-5-36-2
93+75 ℄ Survey & Const. S.R. 104 N.B.

(13) MERGING TRAFFIC W-49-36
Existing W-47-36 to be removed
96+32 ℄ Survey & Const. S.R. 104 N.B.

(14) R-3 R-36 (Modified) ONLY
97+32 ℄ Survey & Const. S.R. 104 N.B.
(36) 100+50 ℄ Survey & Const. S.R. 104 N.B.

(36) R-41B-24 DO NOT ENTER
100+50 ℄ Survey & Const.
R-43R-36 ONE WAY

(37) R-37A-36 KEEP RIGHT
EX RAMP F

(1) 7+45 9+06 (71) NORTH Columbus

(2) 7+45 SOUTH (104)
Back to Back
3.5"x5.0" M-45-42 SOUTH (104)

48+62.00 Back (Back) 545.82 (Ahead)

Proposed Signalized Intersection

3.5"x5.0" M-45-42 NORTH (71) 12+19
(20)

W-98-48 RAMP 2.5 MPH 14+43
(22)

FRANKLIN TOWNSHIP
CITY OF COLUMBUS

(21) 14+75 Columbus Corp Limit
GK 6'x3'

RIVER

℄ Proposed S.R. 104

SCIOTO

14+72.08

(15) EAST (104) SOUTH
M-39-36
M-2-36
M-24-30
FRANK RD. D-11-72
99+00 ℄ survey & const.

100% State Participation | State & City Participation

(3) 14'x8.5' (71) NORTH Columbus ONLY
12'x8.5' (71) SOUTH Cincinnati ½ MILE 13+93
6'x6' (104) SOUTH
13+93 (23) High St. EXIT ½ MILE
13'x7' Haul Road RIGHT LANE

(5) 12'x8.5' (23) High St. EXIT ONLY
27+63 Haul Road 15'x5'

MATCH LINE 28+00 SEE SHEET N° 159

COLUMBUS ENGINEERING CONSULTANTS, LTD.

TRAFFIC CONTROL (SIGN LOCATIONS)

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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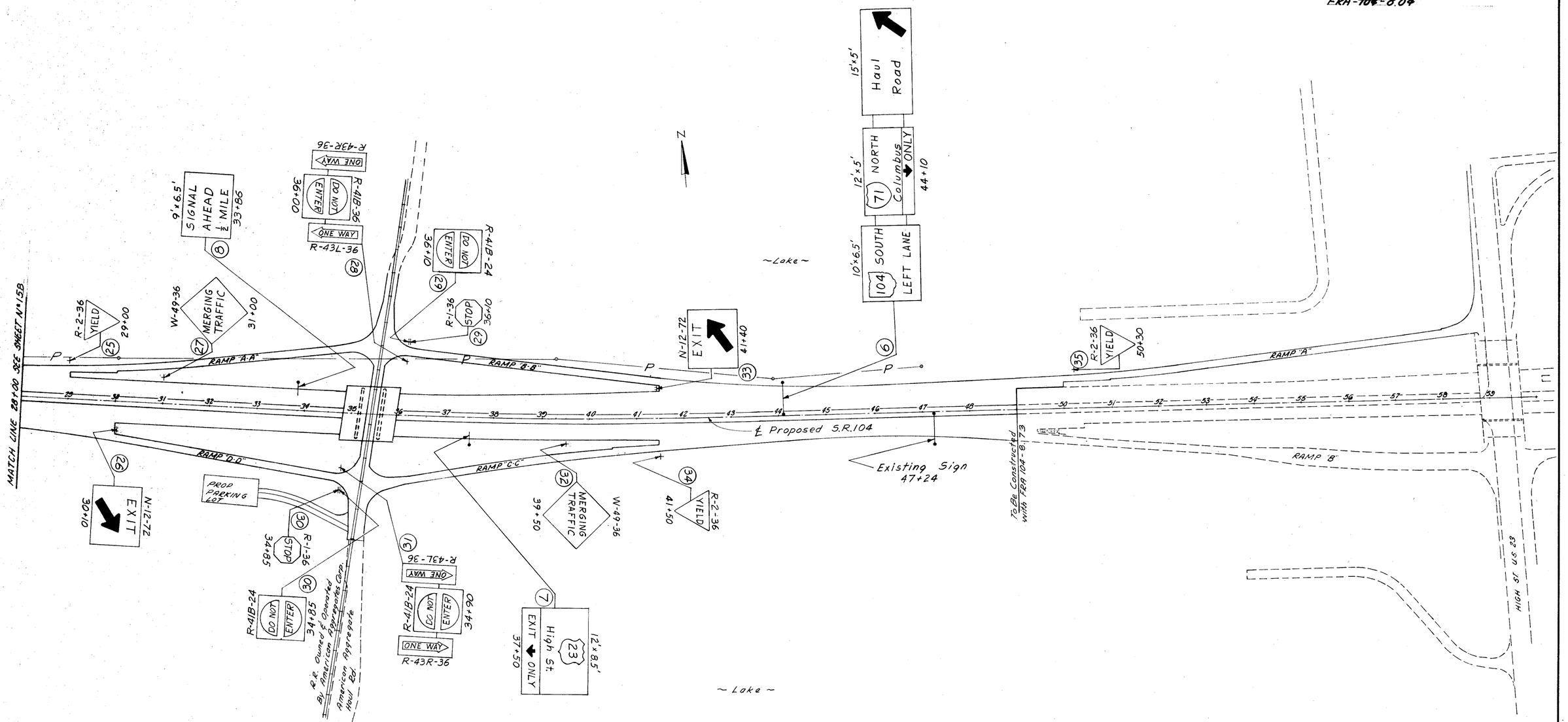
FRANKLIN COUNTY
ERA-~~104~~-8.04



COLUMBUS ENGINEERING CONSULTANTS, LTD.

TRAFFIC CONTROL (SIGN LOCATIONS)

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
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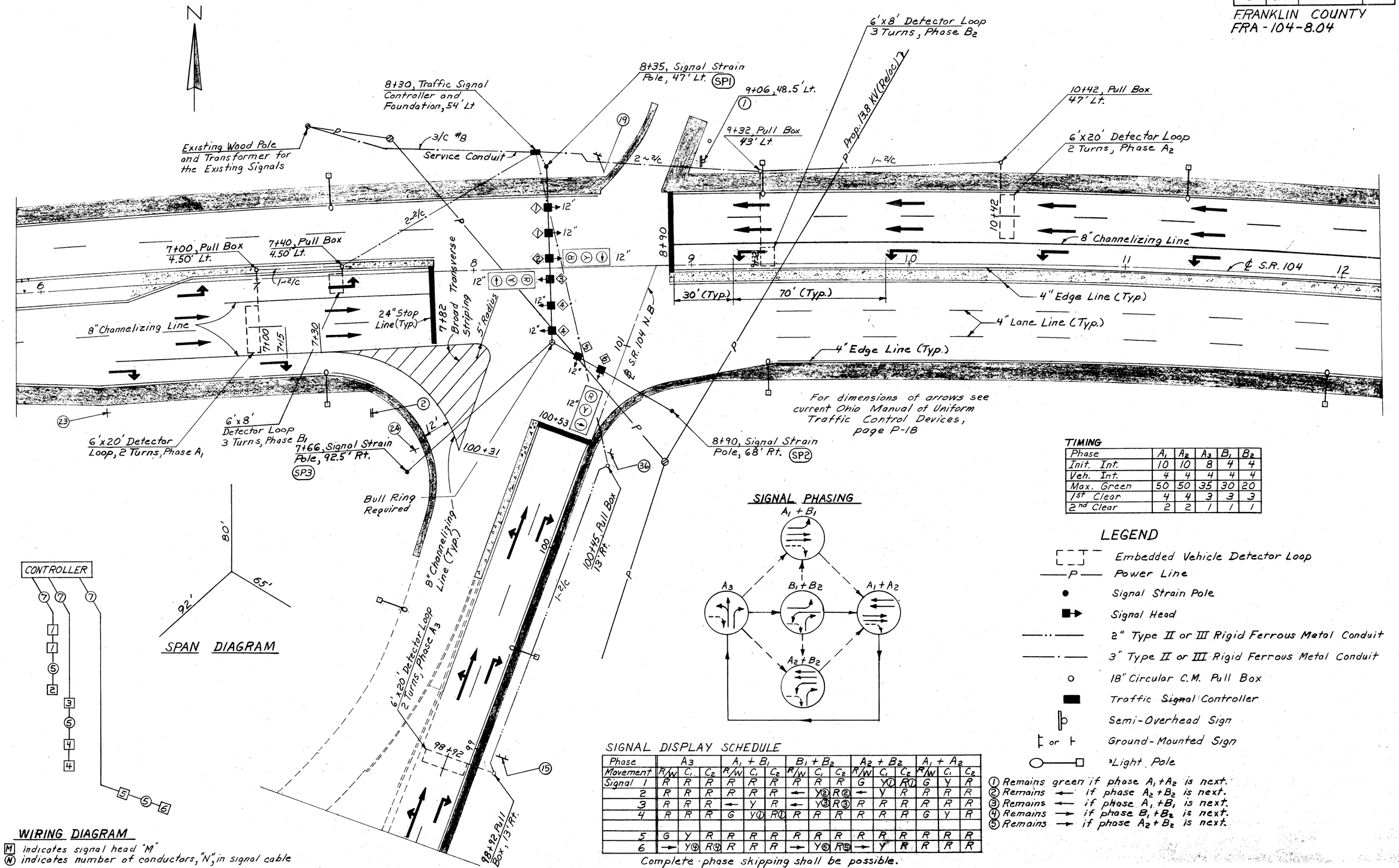

SIGNAL PHASING

SIGNAL DISPLAY SCHEDULE

Phase	A3			A1 + B1			B1 + B2			A2 + B2			A1 + A2		
Movement	R/W	C1	C2	R/W	C1	C2	R/W	C1	C2	R/W	C1	C2	R/W	C1	C2
Signal 1	R	R	R	R	R	R	R	R	R	G	Y①	R①	G	Y	R
2	R	R	R	R	R	R	←	Y②	R②	←	Y	R	R	R	R
3	R	R	R	←	Y	R	←	Y③	R③	R	R	R	R	R	R
4	R	R	R	G	Y④	R④	R	R	R	R	R	R	G	Y	R
5	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R
6	→	Y⑤	R⑤	R	R	R	→	Y⑤	R⑤	→	Y	R	R	R	R

Complete phase skipping shall be possible.

TIMING

Phase	A1	A2	A3	B1	B2
Init. Int.	10	10	8	4	4
Veh. Int.	4	4	4	4	4
Max. Green	50	50	35	30	20
1st Clear	4	4	3	3	3
2nd Clear	2	2	1	1	1

LEGEND

- Embedded Vehicle Detector Loop
- P — Power Line
- Signal Strain Pole
- Signal Head
- 2" Type II or III Rigid Ferrous Metal Conduit
- 3" Type II or III Rigid Ferrous Metal Conduit
- 18" Circular C.M. Pull Box
- Traffic Signal Controller
- Semi-Overhead Sign
- ⊢ or ⊢ Ground-Mounted Sign
- Light Pole

① Remains green if phase A1+A2 is next.
② Remains ← if phase A2+B2 is next.
③ Remains ← if phase A1+B1 is next.
④ Remains → if phase B1+B2 is next.
⑤ Remains → if phase A2+B2 is next.

TRAFFIC CONTROL DETAILS

FED. RD. DIVISION	STATE	PROJECT	
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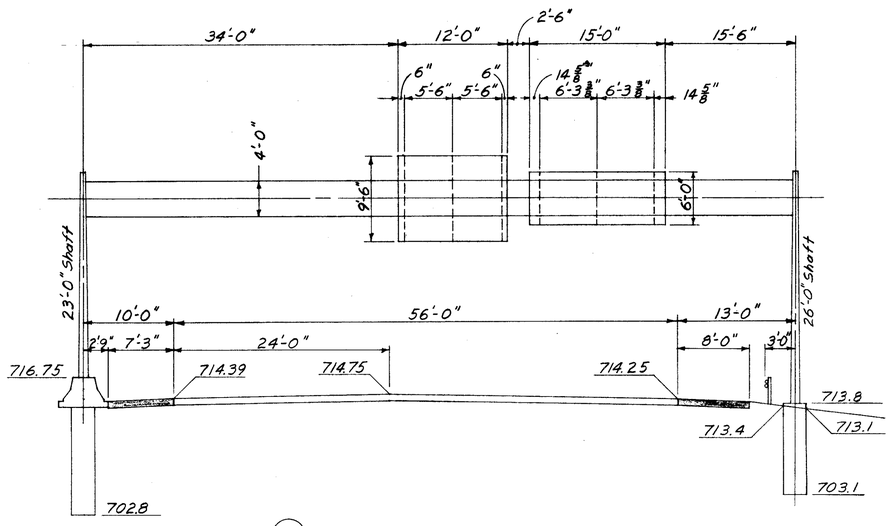
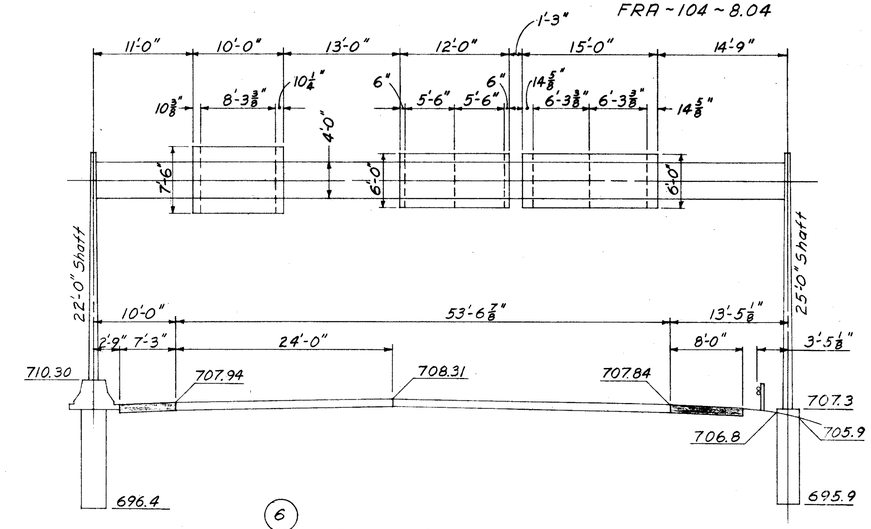


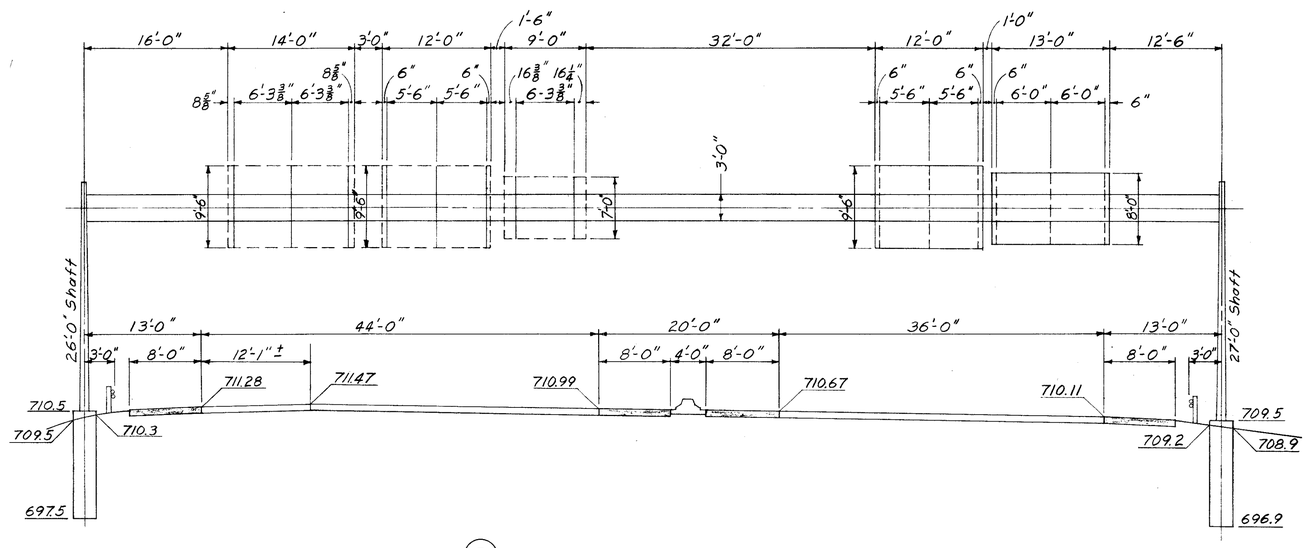
5

STA. 27+93 EB S.R.104
3-9'-6" Ya Brackets, 3-6'-0" Xa Brackets
816 N° 7.5 Design N° 2
Modified, Span 79'-0"
End Frames 23'-0" & 26'-0"



6

STA. 44+10 WB S.R.104
2-7'-6" Ya Brackets, 6-6'-0" Xa Brackets
816 N° 7.5 Design N° 2
Modified, Span 77'-0"
End Frames 22'-0" & 25'-0"



3

STA. 13+93 S.R.104 Looking East
9-9'-6" Ys Brackets, 3-8'-0" Ys Brackets,
2-7'-0" Ys Brackets 816 N° 15.8
Design N° 5 Modified, Span 126'-0"
End Frames 26'-0" & 27'-0"

OVERHEAD SIGN DETAILS

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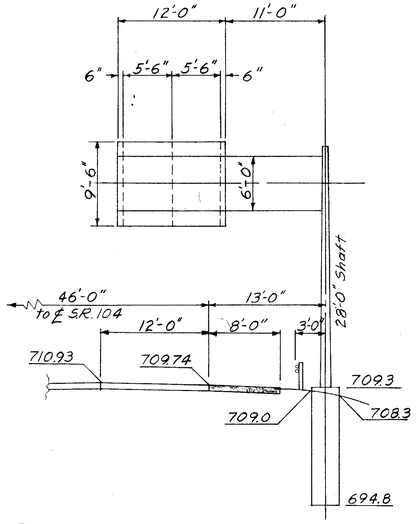
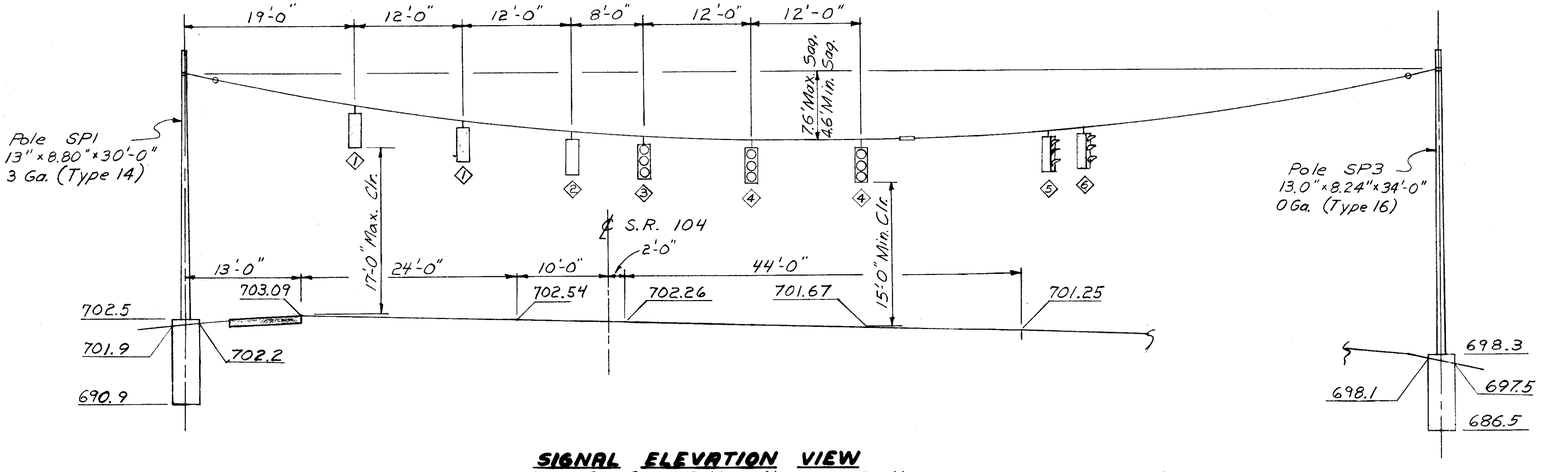
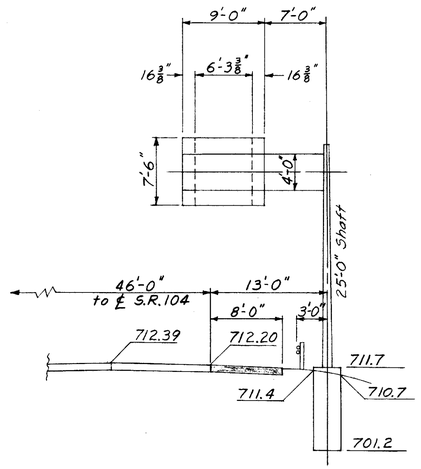


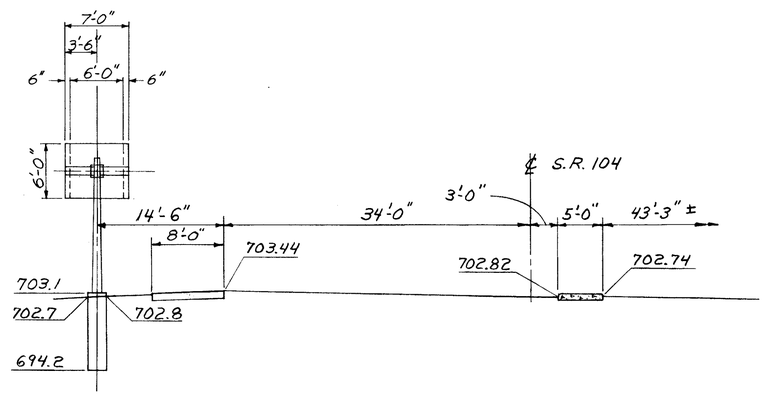
⑦ **STA. 37+50 EB S.R.104**
3-9'-6" Ys Brackets
816 N°12.24 Design N°5
Modified, Pole 28'-0"
Arm 23'0"



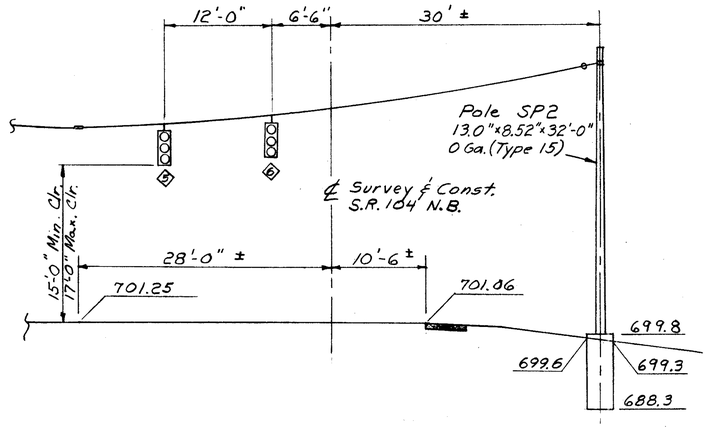
SIGNAL ELEVATION VIEW
STA. 8+35 S.R. 104 (Looking East)
(Signals 5 & 6 and Pole SP3 are shown
but are not at Sta. 8+35)
See Sheet 160 for location of poles



⑧ **STA. 33+86 WB S.R.104**
2-7'-6" Xs Brackets
816 N°12.24 Design N°1
Modified, Pole 25'0"



① **STA 9+06 S.R. 104 LOOKING EAST**
2 - 6'-0" Ys Brackets
816 No. 9.12, Design No. 1 Modified
Pole Size 8" x 5.90" x 15'-0", 7 ga., Arm 4" Sch. 40 Pipe x 7'-0"



SIGNAL ELEVATION VIEW
100+79 ℄ S.R. 104 N.B. (Looking North)
See Sheet 160 for location of pole.

OVERHEAD SIGN AND SIGNAL SUPPORT DETAILS

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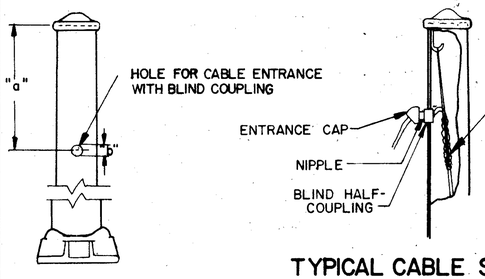
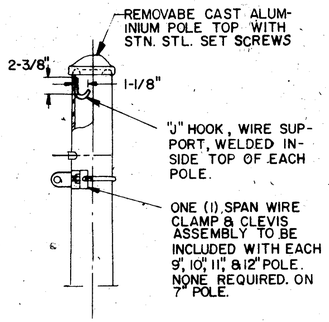


TYPICAL CABLE STRAIN RELIEF & ENTRANCE CAP DETAILS



POLE TOP DETAILS

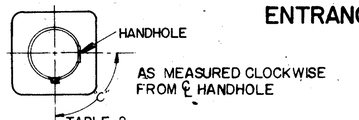
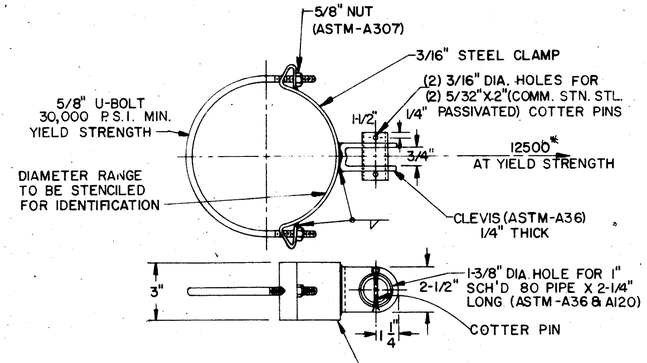


TABLE 2

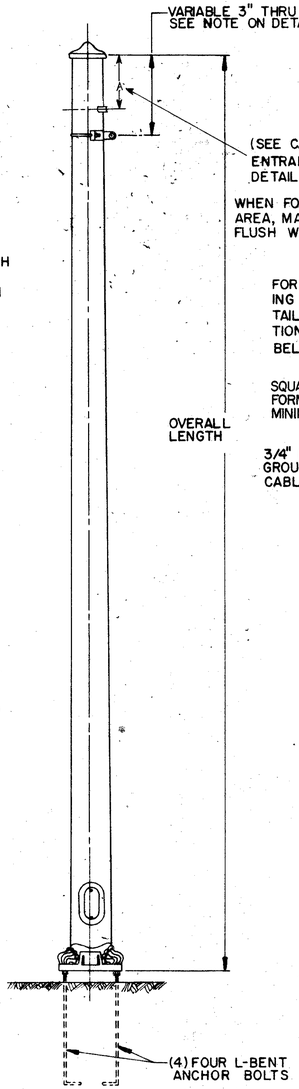
CONFIG.	"a"	"b"	"c"
A	30"	2"	90°
B	30"	2"	180°
C	30"	2"	270°
D	48"	2"	90°
E	48"	2"	180°
F	48"	2"	270°
G	NO HOLE REQUIRED		

CABLE ENTRANCE LOCATION DETAIL

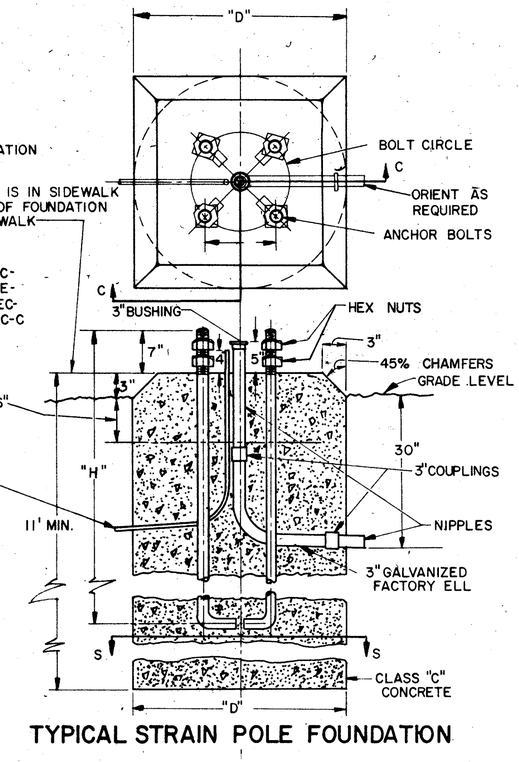


TYPE	CLAMP RANGE MIN.	MAX.
I	3.1"	3.6"
II	3.6"	4.4"
III	4.4"	5.2"
IV	5.2"	5.8"
V	5.8"	6.8"
VI	6.8"	7.9"
VII	7.9"	9.0"
VIII	9.0"	10.1"
IX	10.1"	11.3"
X	11.3"	12.1"
XI	12.1"	13.4"
XII	13.4"	14.5"
XIII	14.5"	15.5"
XIV	15.5"	16.5"

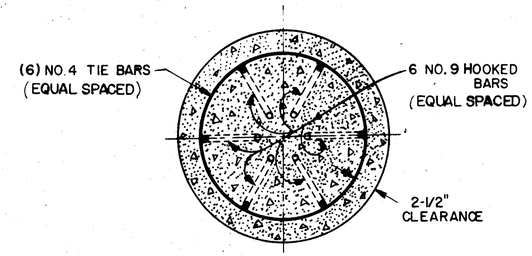
SPAN WIRE CLAMP DETAILS



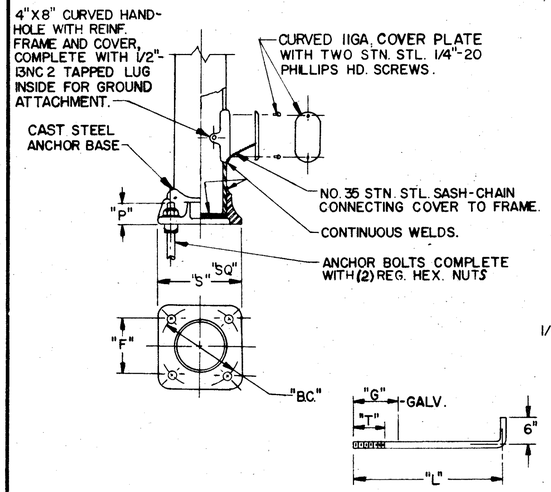
STEEL STRAIN POLE



TYPICAL STRAIN POLE FOUNDATION

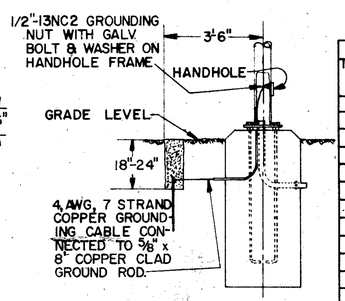


SECTION - S-S



ANCHOR BASE DATA					ANCHOR BOLT DATA			
POLE DIA.	"BC."	"F"	"S"	"P"	SIZE	"L"	"T"	"G"
7"	10"	7 1/16	10 1/2"	2 1/4"	1"-14 X 48"	42"	8"	10"
9"	12-1/2"	8-7/8"	12-3/4"	3"	1 1/2"-6 X 60"	54"	9"	11"
10"	13-1/2"	9-9/16"	14-1/8"	3-3/8"	1-1/2"-6 X 60"	54"	9"	11"
11"	15"	10-5/8"	15-5/8"	3-5/8"	1-3/4"-5 X 90"	84"	9"	11"
12"	16"	11-5/16"	17"	4"	1-3/4"-5 X 90"	84"	9"	11"
13"	18"	12-3/4"	18-1/2"	4-1/4"	2"-4 1/2 X 96"	90"	9"	11"

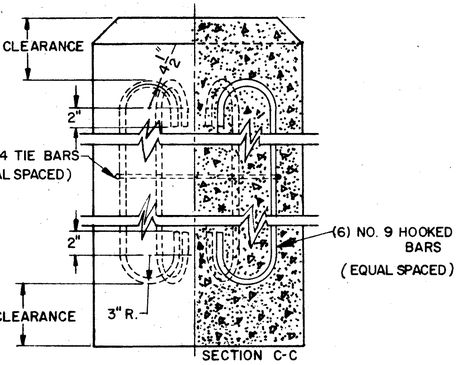
TYPICAL HANDHOLE, ANCHOR BASE & ANCHOR BOLT DETAILS



TYPICAL GROUND ROD DETAIL

TYPE	POLE DIA.	OVERALL LENGTH	WALL THICKNESS	DESIGN DATA FOR TRANSVERSE LOAD AT 18" DOWN FROM TOP ELAS. DEFL. RATE	ULD. AT YIELD STRENGTH	"H"	"D"
1	7.0"	42.0'	(3 GA.) .250"	.59"/100#	2135#	42"	24"
2	9.0"	36.0'		.64"/100#	2730#	54"	24"
3	10.0"	36.0'		.44"/100#	3400#	54"	24"
4	11.0"	36.0'		.32"/100#	4140#	84"	30"
5	12.0"	36.0'		.24"/100#	4960#	84"	36"
6	9.0"	50.0'		.84"/100#	2520#	54"	24"
7	10.0"	36.0'		.54"/100#	3140#	54"	24"
8	11.0"	28.0'		.41"/100#	3850#	84"	30"
9	12.0"	28.0'		.31"/100#	4590#	84"	36"
10	9.0"	48.0'		.110"/100#	2350#	54"	24"
11	10.0	30.0'		.74"/100#	2920#	54"	24"
12	11.0"	30.0'		.53"/100#	3560#	84"	30"
13	12.0"	30.0'		.39"/100#	4260#	84"	36"
14	13.0"	30.0'		.30"/100#	5030#	90"	36"
15	13.0"	32.0'	(0 GA.) .3125"	.31"/100#	5800#	90"	36"
16	13.0"	34.0'		.38"/100#	5440#	90"	36"

STEEL STRAIN POLE



SECTION C-C

TYPICAL REINFORCING STEEL SECTIONS

NOTES:

MATERIAL SPECIFICATIONS

1. TAPERED TUBES(S.A.E.-1020 STEEL PROCESSED TO MINIMUM YIELD STRESS OF 55,000 P.S.I.
2. CAST ANCHOR BASE & HANDHOLE FRAME - ASTM-A27-GRADE 65-35.
3. HANDHOLE COVER PLATE - 11 GA. STEEL SAE-1015
4. CAST ALUMINUM POLE TOP - ALUMINUM ALLOY 43
5. SPAN WIRE CLAMP - LOW ALLOY, HIGH STRENGTH STEEL ASTM-A242- OR 375, LOAD PRODUCING DISTORTION 12,500 LBS. DIRECT TENSION
6. ALL BOLTS & NUTS LESS THAN 5/8" DIA. PASSIVATED STAINLESS STEEL AISI-300 SERIES - COMMERCIAL GRADE.
7. ALL OTHER NUTS & BOLTS 5/8" DIA. & OVER - ASTM-A307 AND GALVANIZED IN ACCORDANCE WITH ASTM-A153
8. ANCHOR BASE & U-BOLTS - HIGH STRENGTH STEEL - MINIMUM YIELD STRESS 55,000 LBS. SQ. IN. - MIN. ULTIMATE 90,000 P.S.I.
9. WELDING ROD - ASTM-A233 - CLASS E60XX OR 70XX.
10. GALVANIZING - WHEN SPECIFIED - ASTM-A123.
11. PAINTING - WHEN SPECIFIED - INSIDE OF POLES RED LEAD PRIMER AS PER 708.06. OUTSIDE OF POLES - ZINC CHROMATE, IRON OXIDE PRIMER AS PER 708.09.

TRAFFIC SIGNAL POLE FOUNDATIONS

THE CONTRACTOR SHALL STAKE THE LONGITUDINAL AND LATERAL LOCATION, AND THE ELEVATION OF THE TOP OF EACH FOUNDATION SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER ELEVATION, OFFSET, AND LEVEL OF EACH FOUNDATION. THE FOUNDATION LOCATIONS MAY BE CHANGED AS DIRECTED BY THE ENGINEER, IN CASE OF SLOPE OR SUBSURFACE DIFFICULTIES.

EXCAVATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 503. EXCAVATION SHALL BE TO THE DIMENSIONS SHOWN ON THE PLANS, AND SHALL BE PERFORMED BY MEANS OF AN EARTH AUGER OF THE SPECIFIED DIA. UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

WHERE SUBSURFACE OBSTRUCTIONS ARE ENCOUNTERED, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO REMOVE THE OBSTRUCTION OR TO REPLACE THE EXCAVATED MATERIAL AND RELOCATE THE FOUNDATION.

IF CAVING OF THE EXCAVATION OCCURS, THE CONTRACTOR SHALL EXCAVATE THE SPECIFIED DEPTH MAINTAINING THE THE SIDES AS NEARLY VERTICAL AS POSSIBLE. NO PAYMENT SHALL BE MADE FOR ANY EXCAVTION, CONCRETE, OR REINFORCING STEEL USED IN EXCESS OF THE PLAN QUANTITES.

CONCRETE, CLASS C, SHALL BE PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 511, AND SHALL BE PLACED AGAINST UNDISTURBED SOIL OR COMPACTED EMBANKMENT. STEEL REINFORCEMENT BARS, WHERE REQUIRED, SHALL BE POSITIONED AS SHOWN ON THE PLANS AND PLACED IN ACCORDANCE WITH ITEM 509.

CYLINDRICAL ANCHOR BASE TYPE FOUNDATIONS FOR TRAFFIC SIGNAL POLES SHALL HAVE ANCHOR BOLTS AND CONDUIT ACCURATELY HELD IN POSITION WITH A TEMPLET WHILE CONCRETE IS PLACED. FORMS SHALL BE USED FOR THE UPPER PORTIONS OF ALL FOUNDATIONS AND NO BACKFILLING SHALL BE PERMITTED FROM THE BOTTOM TO SIX INCHES BELOW THE GRADE LEVEL. NO GROUTING OF CONCRETE SHALL BE PERMITTED BETWEEN THE FOUNDATION TOP AND THE POLE BASE.

TRAFFIC SIGNAL POLE

WHERE A WIRE ENTRANCE IS REQUIRED, THE SERVICE ENTRANCE HEAD SHALL BE LOCATED APPROXIMATELY 12" BELOW SPAN WIRE CLAMP. IF GALVANIZED POLES ARE NOT SPECIFIED TWO FIELD COATS OF 708.10 GREEN ENAMEL OR A PAINT APPROVED BY THE DIRECTOR, SHALL BE APPLIED IN ACCORDANCE WITH 514, AFTER ERECTION.

GROUND ROD

GROUND ROD SHALL BE IN ACCORDANCE WITH TYPICAL GROUND ROD DETAIL AND TESTED IN ACCORDANCE WITH 625.22 "CONSTRUCTION AND MATERIAL SPECIFICATIONS."

BUREAU OF TRAFFIC

OHIO DEPARTMENT OF HIGHWAYS

STEEL STRAIN POLE & FOUNDATION DETAILS

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ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
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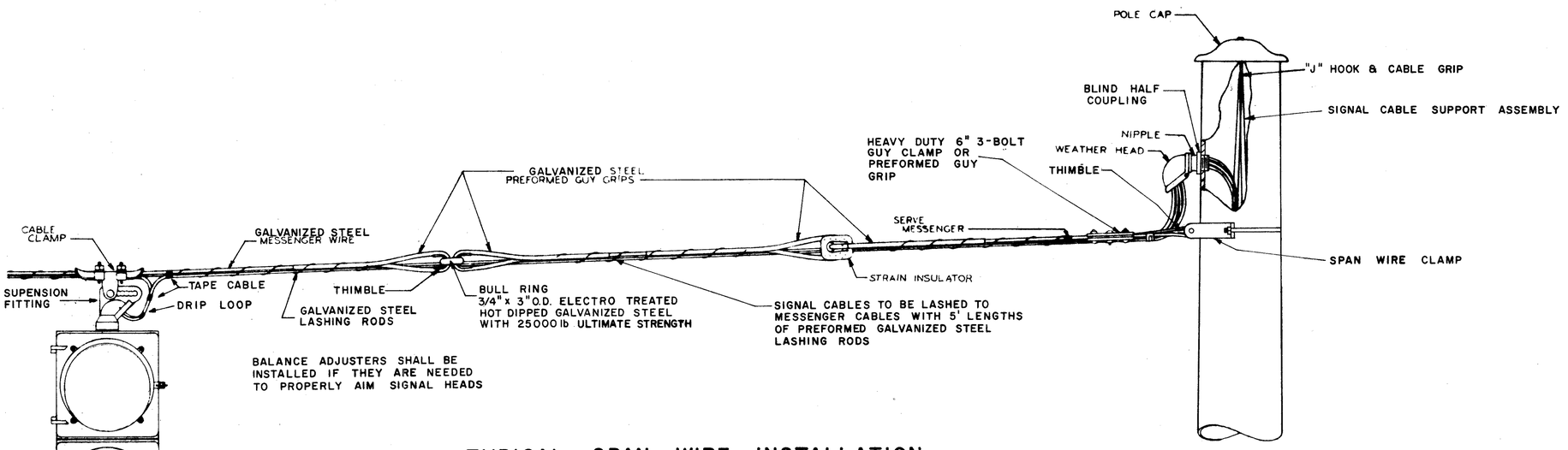
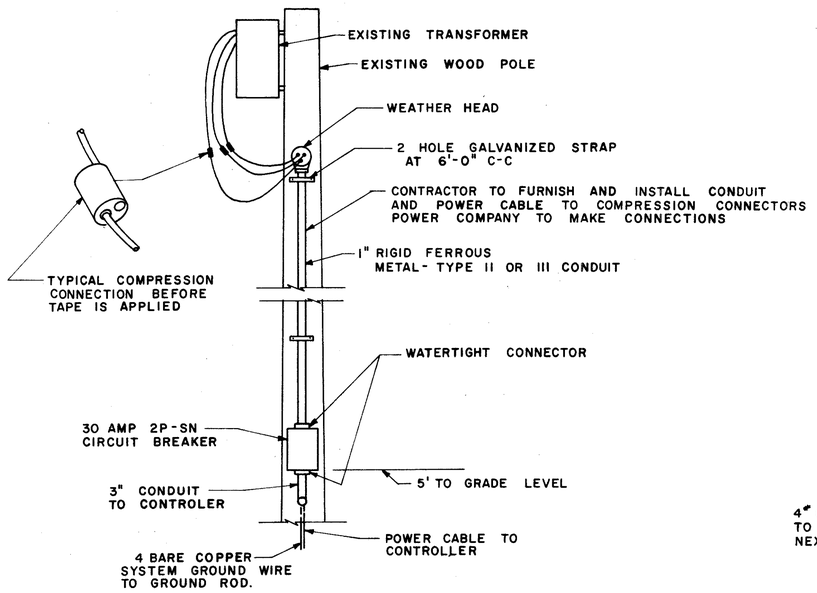


TYPICAL SPAN WIRE INSTALLATION

FOR DETAILS OF STRAIN POLES AND STRAIN POLE FOUNDATIONS SEE SHEET



SERVICE DETAIL ON EXISTING POLE

NOTE: ALL CIRCUIT CABLES SHALL EXTEND A MINIMUM OF 8FT. BEYOND TOP OF CONCRETE FOUNDATION AND SUITABLY PROTECTED (SEE GENERAL NOTES - TRAFFIC SIGNALS, SIGNAL CONTROLLER, BY TYPE, INSTALLATION ONLY)

TYPICAL FOUNDATION FOR 038.0 CONTROLLER HOUSING

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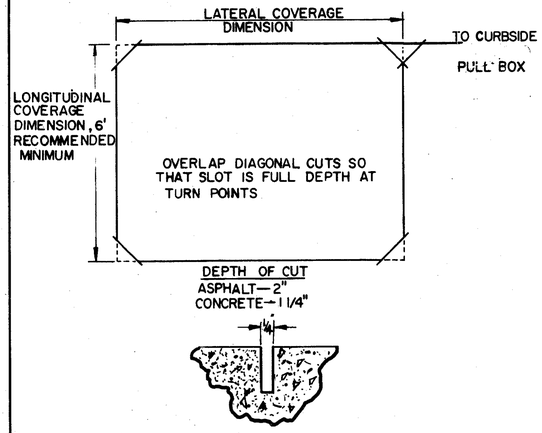


SOLID LINES SHOW SAW CUTS USED TO ACCOMODATE ROADWAY WIRE LOOP. DOTTED LINES SHOW UNUSED SAW CUTS.

FIGURE 1
TYPICAL LOOP SLOT CONSTRUCTION

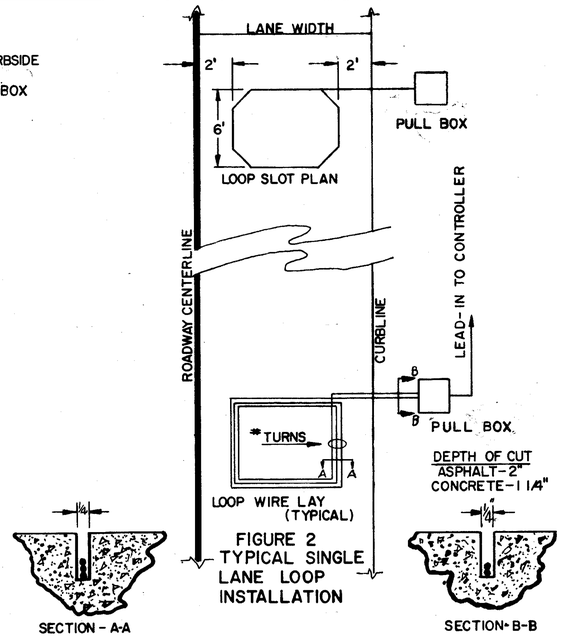


FIGURE 2
TYPICAL SINGLE LANE LOOP INSTALLATION

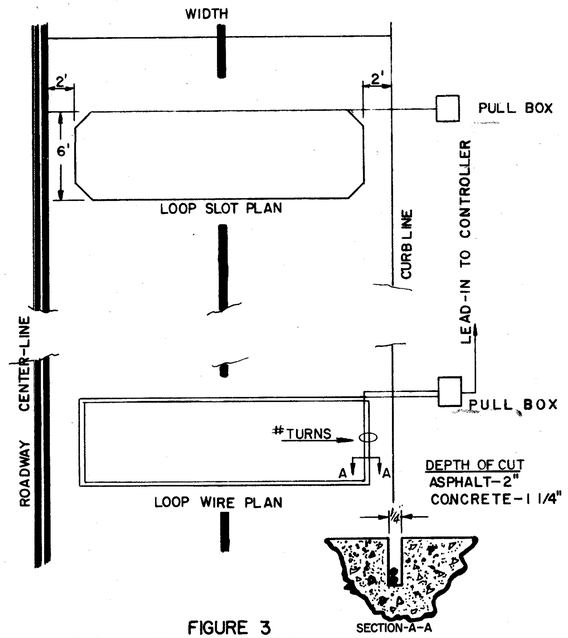


FIGURE 3
TYPICAL TWO LANE LOOP INSTALLATION

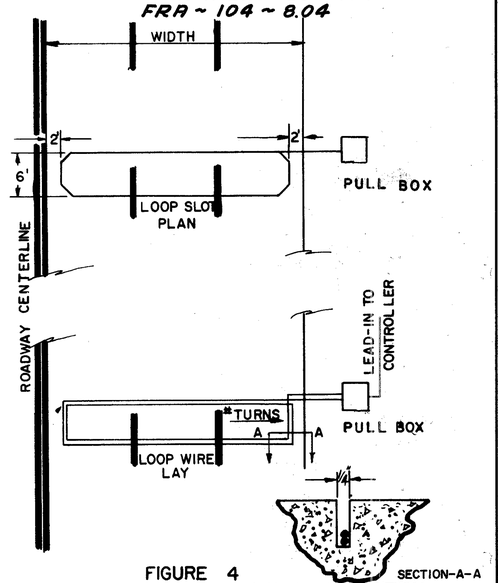


FIGURE 4
TYPICAL THREE LANE LOOP INSTALLATION

TABLE-1 ROADWAY LOOP CONSTRUCTION

LOOP PERIMETER	NO. OF TURNS
UP TO 40 FEET	3
40 TO 160 FEET	2
160 AND UP	1

MAINTAIN 6' MINIMUM DIMENSION IN DIRECTION OF TRAVEL.

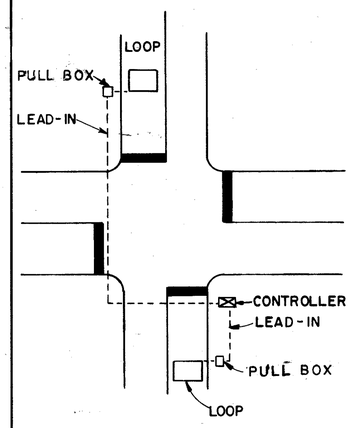


FIGURE 5
TYPICAL LEAD-IN DETAIL

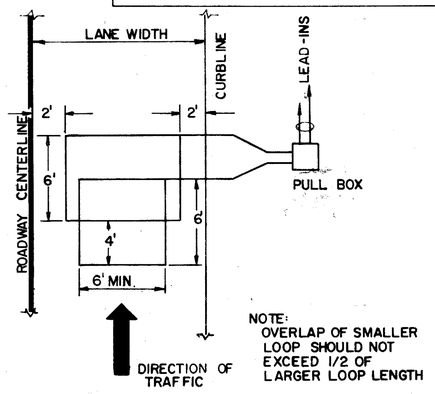


FIGURE 6
TYPICAL DIRECTIONAL DETECTION LOOP INSTALLATION (OVERLAPPED)

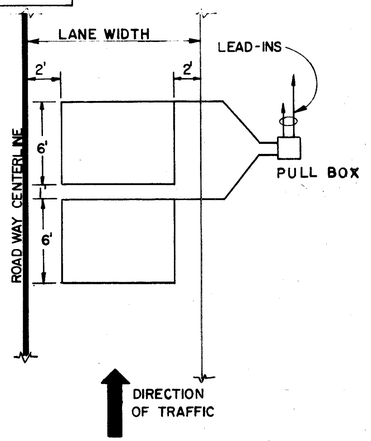
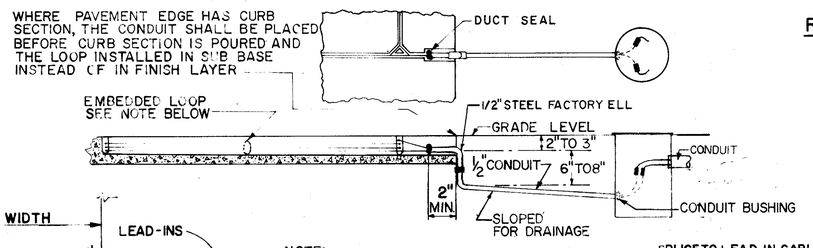


FIGURE 7
TYPICAL DIRECTIONAL DETECTION LOOP INSTALLATION (ADJACENT)



NOTE:
IT IS EXTREMELY IMPORTANT THAT THE SAWED SLOT BE THOROUGHLY CLEANED AND COMPLETELY DRY BEFORE APPLYING SLOT SEALER

SPLICE TO LEAD IN CABLE BY SOLDERING AND APPLYING WATERPROOF SPLICING KIT

FIGURE 8
INTERFACE BETWEEN EMBEDDED LOOP AND ROAD SIDE PULL BOX

ROADWAY LOOP INSTALLATION

THE ROADWAY WIRE LOOP IS POSITIONED IN THE PAVEMENT IN A SAWED SLOT THAT OUTLINES THE REQUIRED DETECTION AREA. THE SLOT SHOULD BE 1/4" WIDE AND FROM 1 1/4" TO 2" DEEP. IN THE IDEAL INSTALLATION, RIGHT ANGLE TURNS SHOULD BE CHAMFERED TO PREVENT SHARP BENDS OF WIRE (SEE FIG. 1). THE SLOT MUST BE BRUSHED AND BLOWN CLEAN OF ALL LOOSE MATERIAL. THE LOOP WIRE MUST BE CAREFULLY PUSHED INTO THE SLOT WITH A BLUNT STICK TO AVOID DAMAGING ITS INSULATION. RESISTANCE OF THE WIRE LOOP TO GROUND SHOULD BE CHECKED AFTER THE WIRE IS PLACED IN THE SLOT, BOTH BEFORE AND AFTER THE SLOT IS SEALED. THIS IS ESPECIALLY IMPORTANT IF THE ROADWAY WIRE LOOP IS SPLICED TO LEAD-IN CABLE AT CURBSIDE JUNCTION BOX; A RESISTANCE OF LESS THAN 10 MEGOHMS INDICATES A FAULTY SPLICE OR WIRE INSTALLATION WHICH MUST BE CORRECTED BEFORE THE ROADWAY LOOP IS SEALED IN PLACE.

SEALING

A FLEXIBLE EMBEDDING SEALANT NO. 491-H.P. MANUFACTURED BY EUCLID CHEMICAL CO. OF CLEVELAND, OHIO OR SP-10 MANUFACTURED BY BAIRD DYNAMICS COMPANY OF BRIDGEPORT, CONNECTICUT OR EQUIVALENT. SHALL BE MIXED ACCORDING TO DIRECTIONS, POURED INTO THE SAW SLOTS AND LEFT UNDISTURBED UNTIL CURED INTO A SOLID MASS.

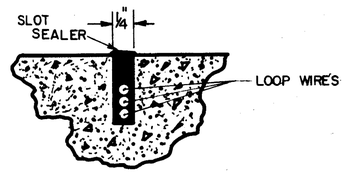


FIGURE 9
TYPICAL SLOT SEALING DETAIL

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

EMBEDDED VEHICLE DETECTOR LOOP DETAILS

Rev. 11-3-67

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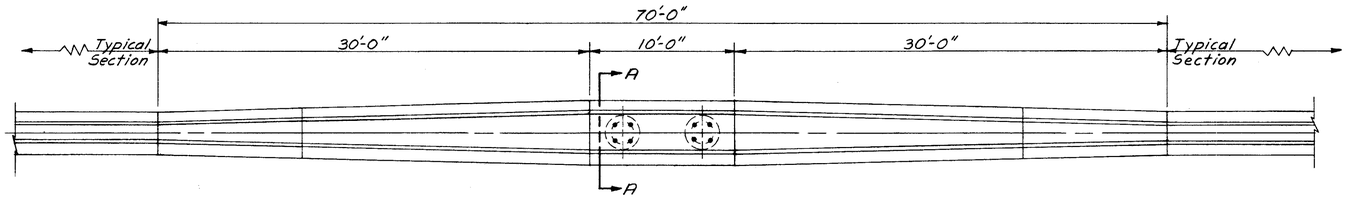
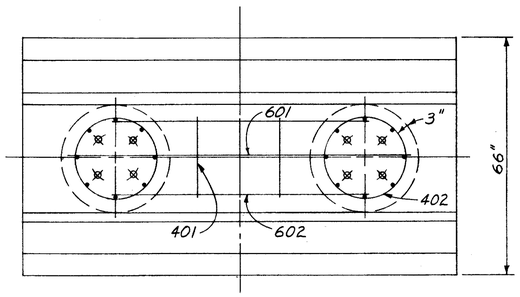
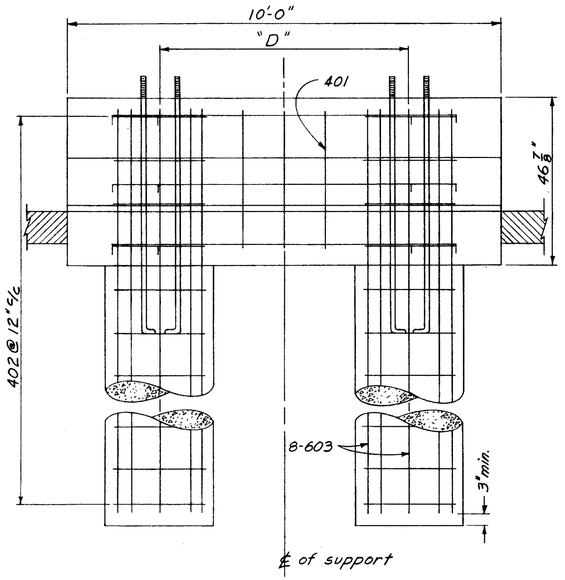
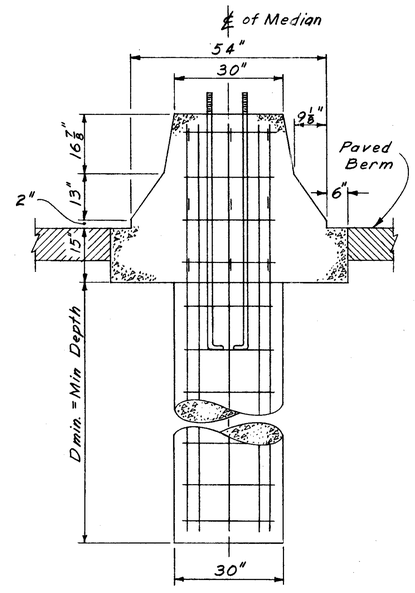
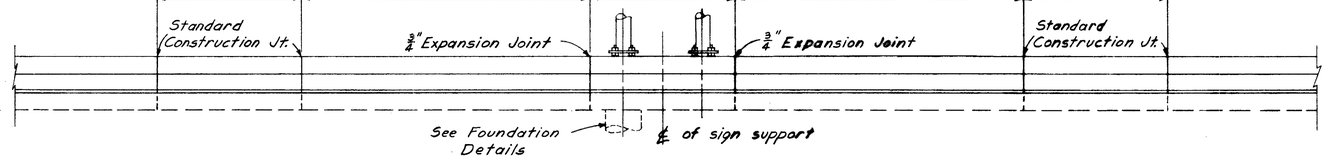


STANDARD BARRIER MEDIAN FLARE
(Flare shall be 40:1 taper)



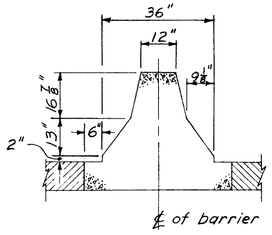




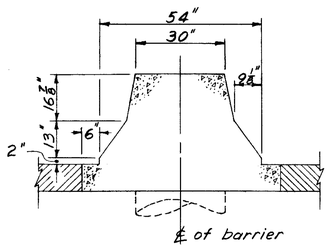


CONSTRUCTION JOINT LOCATIONS

NOTE:
Payment for the ten(10) foot foundation section of the barrier median will be included in Item 816 "Concrete for Overhead Sign Support Foundations" the flare sections will be included in the regular Roadway quantites for the barrier median. Item 622 Concrete barrier.



TYPICAL SECTION



SECTION A-A

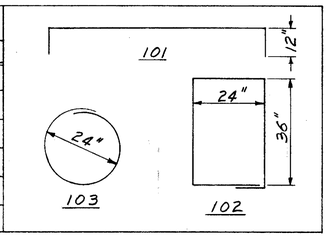
BARRIER MEDIAN FLARE DETAILS
FOR
OVERHEAD SIGN SUPPORT

For dimension "D" see 75 series overhead sign support drawings

FOUNDATION DETAILS

REINFORCEMENT SCHEDULE

Mark	Nº	Length	Type
401	12" c/c	10'-6"	102
402	12" c/c	7'-6"	103
601	3	D+48"	101
602	6	D+24"	101
603	16	Dmin+38"	Str.



FOUNDATION DETAILS
FOR
CONCRETE MEDIAN BARRIER

MISCELLANEOUS DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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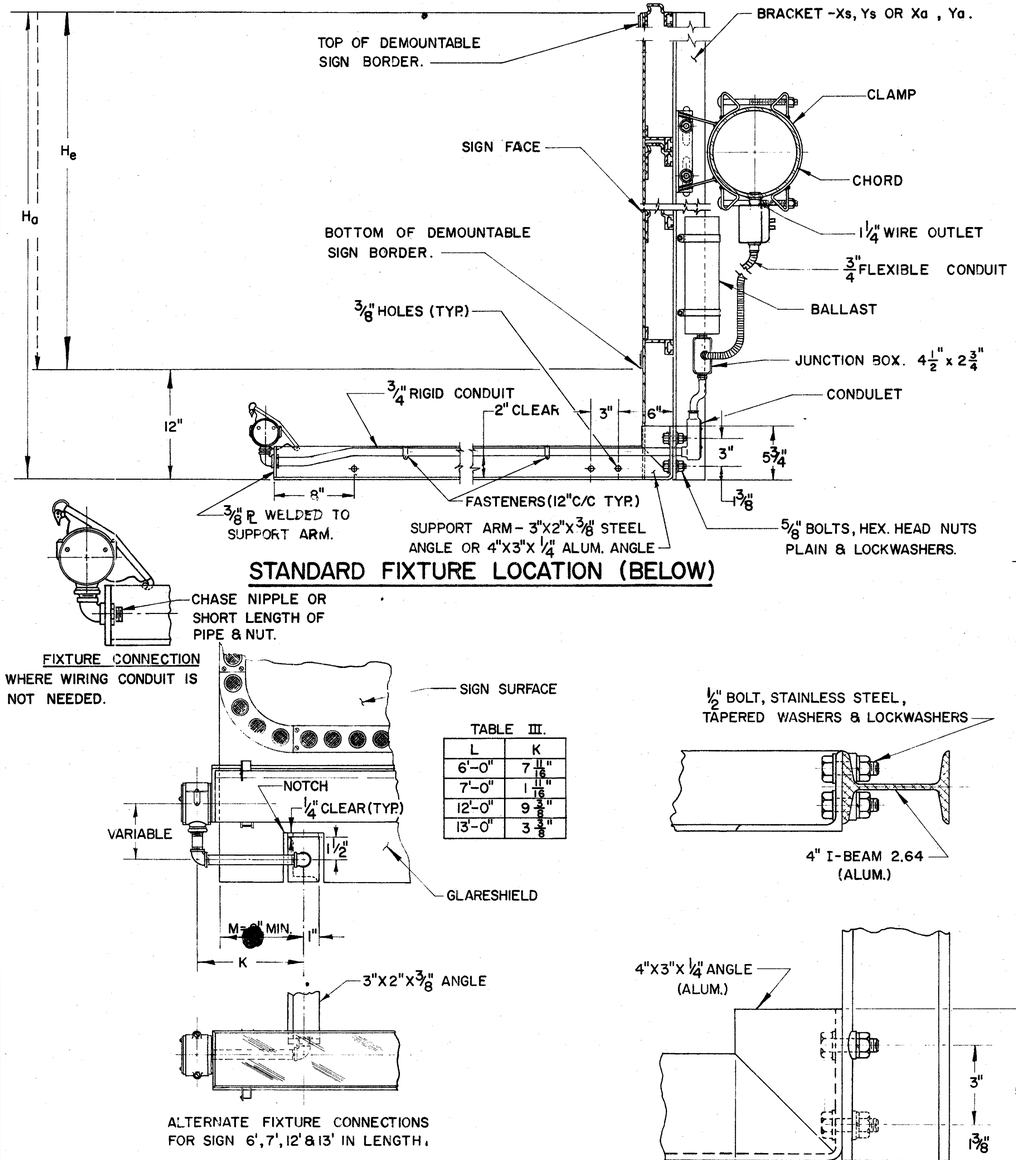
239

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

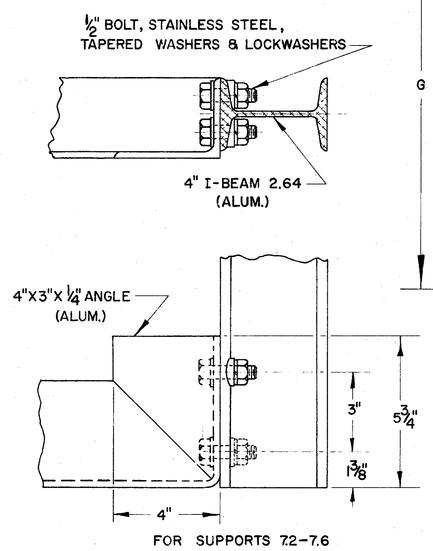


STANDARD FIXTURE LOCATION (BELOW)

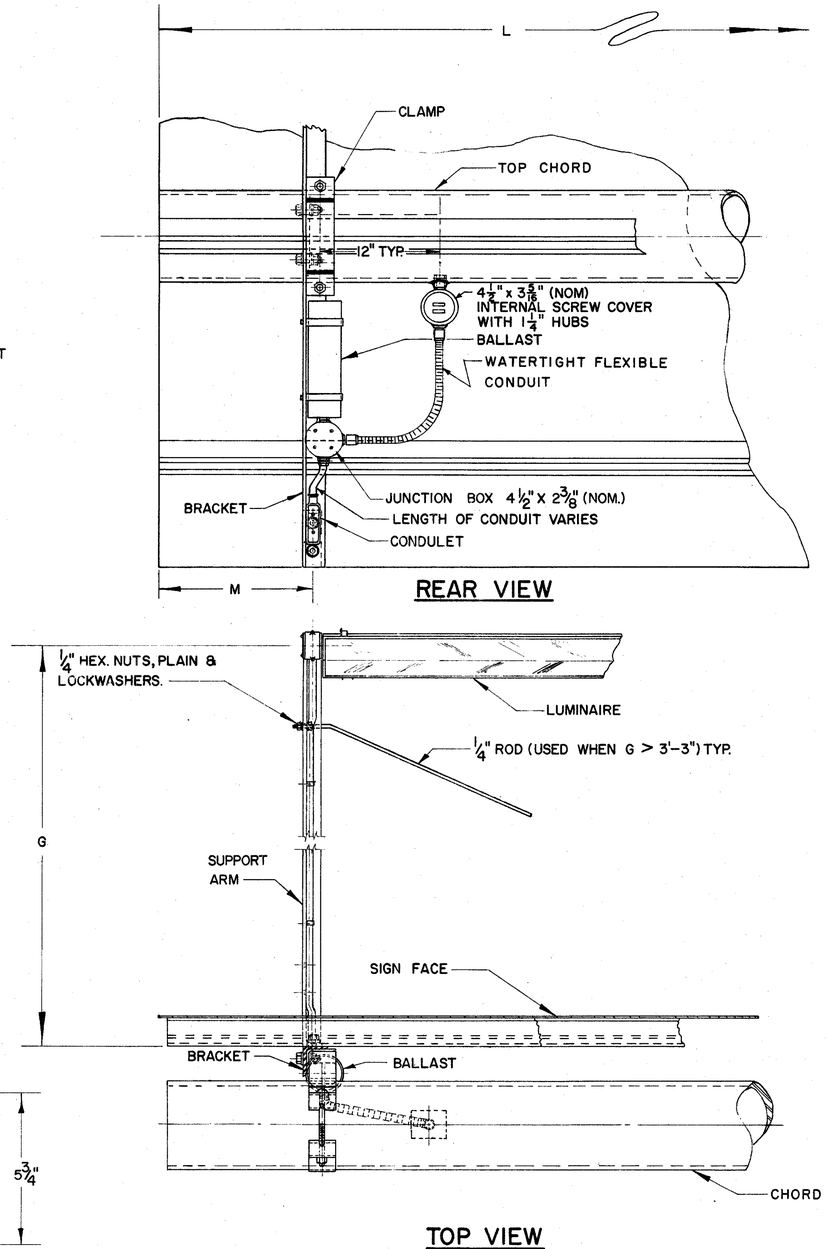
L	K
6'-0"	7 11/16"
7'-0"	1 11/16"
12'-0"	9 3/8"
13'-0"	3 3/8"

TABLE III.

DETAIL A.



DETAIL B.



REAR VIEW

TOP VIEW

FABRICATION — ALL STRUCTURAL COMPONENTS SHOWN ON THIS SHEET SHALL CONFORM TO SUPPLEMENT SPECIFICATIONS 816.

MATERIALS — THE MATERIALS USED IN THE COMPONENTS SHOWN ON THIS SHEET SHALL BE IN CONFORMANCE WITH THE MATERIALS USED IN THE SIGN SUPPORT

TABLE I.

"L" SIGN LENGTH		NUMBER OF FIXTURES		"M" EDGE DISTANCE				NO. BALLAST
				A		B		
A	B	75 FIXT.	99 FIXT.	LT.	RT.	LT.	RT.	
6'-0"	7'-0"	1		6"	6"	6"	6"	1
8'-0"	9'-0"	1		10 3/8"	10 1/4"	16 3/8"	16 1/4"	1
10'-0"	11'-0"		1	10 3/8"	10 1/4"	16 3/8"	16 1/4"	1
12'-0"	13'-0"	2		6"	6	6	6	1
14'-0"	15'-0"	2		8 5/8"	8 5/8"	14 3/8"	14 5/8"	1
16'-0"	17'-0"	1	1	8 5/8"	8 5/8"	14 3/8"	14 5/8"	1
18'-0"	19'-0"		2	8 5/8"	8 5/8"	14 3/8"	14 5/8"	1
20'-0"	21'-0"	3		7"	6 7/8"	13	12 7/8"	2
22'-0"	23'-0"	2	1	7"	6 7/8"	13	12 7/8"	2
24'-0"	25'-0"	1	2	7"	6 7/8"	13	12 7/8"	2
26'-0"	27'-0"		3	7"	6 7/8"	13	12 7/8"	2

Sn = Nominal Fixture Length, 72" & 96" respectively.
Sa = Actual Fixture Length, for mounting purposes, 75⅜" and 99⅛" respectively. (Slight variation for different manufacturers.)
M = Distance from edge of sign to ℄ of notch, min. 6". When the length of the sign minus 1'-0" is less than the sum of the actual fixture lengths, an offset "K" is used. For additional details see detail A and table III.

TABLE II

MAX. BRACKET SPACING FOR EXTERNALLY ILLUMINATED SIGNS

ACTUAL SIGN HEIGHT "Ha"	SUPPORT TYPES: 9.12, 11.08, 13.2, 7.2 — SINGLE TUBE DOUBLE TUBE LESS 36" C/C	SUPPORT TYPES: 9.24, 10.48, 12.24, 14.5, 15.8, 7.2 to 7.6 — DOUBLE TUBE C/C 36"-42"	DOUBLE TUBE C/C 48"-54"	DOUBLE TUBE C/C 60"-72"
	MAXIMUM BRACKET SPACING			
to 5'-0"	6'-4" with X, 8'-4" with Y	8'-4" with X	8'-4" with X	8'-4" with X
5'-6" to 8'-0"	6'-4" with Y	4'-2" with X, 6'-4" with Y	6'-4" with X, 8'-4" with Y	8'-4" with X
8'-6" to 10'-0"	3'-2" with X, 4'-2" with Y	6'-4" with Y	6'-4" with Y	8'-4" with Y
10'-6" to 12'-0"	———	4'-2" with Y	6'-4" with Y	6'-4" with Y
12'-6" to 14'-0"	———	3'-2" with Y	3'-2" with Y	4'-2" with Y

Ha = ACTUAL SIGN HEIGHT
He = EFFECTIVE SIGN HEIGHT
BRACKET SIZE: Xs = 3½" X 2½" X 5/16" — L @ 6.1 LB. STEEL; Ys = 4" X 3 1/16" X ¼" — Z @ 8.2 LB. STEEL } 9.12, 10.48, 11.08, 12.24, 14.5 & 15.8
Xa = 3" X 2 11/16" X ¼" — Z @ 2.33 LB. ALUM.; Ya = 4" X 2 29/32" X 3/16" — I @ 2.64 LB. ALUM. } 7.2 Thru 7.6

WHEN MAX. ALLOWABLE SPACING IS LESS THAN ACTUAL FIXTURE LENGTHS, Sa, ADDITIONAL STANDARD BRACKETS MUST BE FURNISHED, EQUAL IN HEIGHT TO "Ha".

SUPPORTS 7.2 THROUGH 7.6 SHALL HAVE AN ALUMINUM FIXTURE ARM, 4"X3"X¼" ANGLE. SEE DETAIL B. BOLTS AND ACCESSORIES SHALL BE STAINLESS STEEL.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

STRUCTURAL DETAILS FOR EXTERNALLY ILLUMINATED SIGNS

EI-1

APPROVED Fred C. Tarboe
ENGINEER OF TRAFFIC

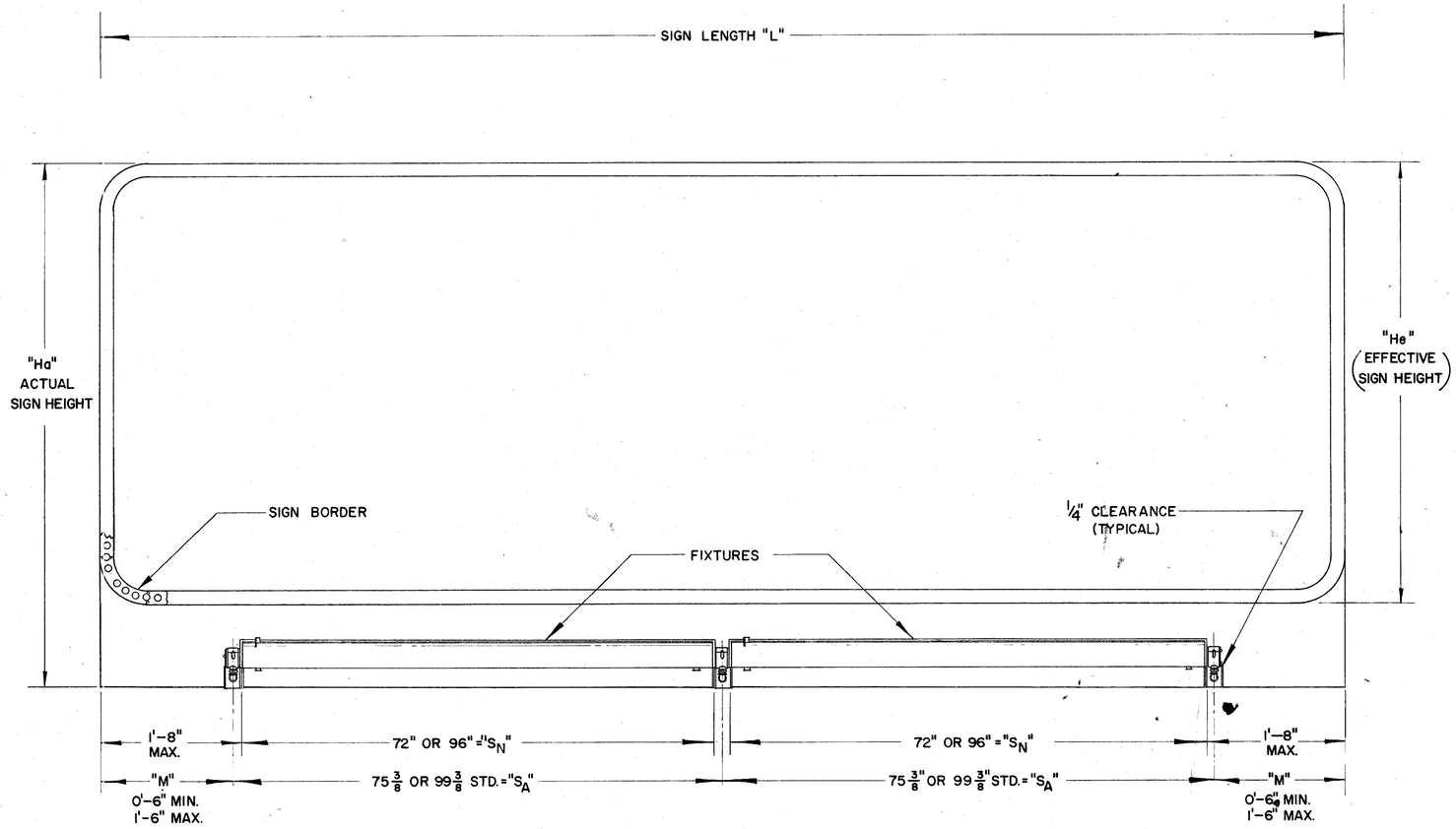
DATE 03-29-67

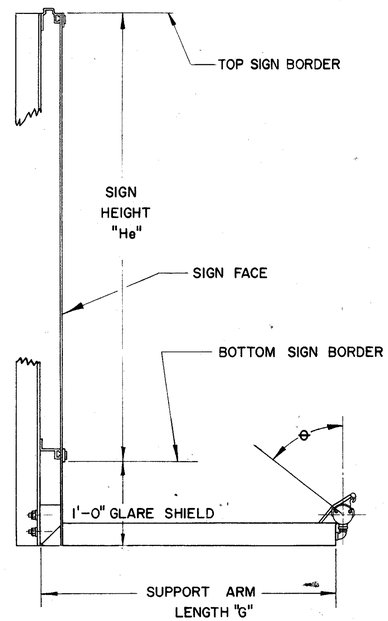
STRUCTURAL DETAILS FOR EXTERNALLY ILLUMINATED SIGNS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

168
239

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04





SIGN LIGHTING NOTES

SIGN ILLUMINATION

SIGN ILLUMINATION SHALL BE BY ATTACHED FLUORESCENT FIXTURES AS SHOWN ON ILLUMINATED SIGN DETAIL SHEETS.

LAMPS

LAMPS SHALL BE TYPE F72 OR F96-T12/CW/HO AS MANUFACTURED BY WESTINGHOUSE, GENERAL ELECTRIC OR APPROVED EQUAL FOR SIGNS TO A MAXIMUM HEIGHT OF 6'-6". LAMP TYPE SHALL BE F72 OR F96-T12/CW/SHO AS MANUFACTURED BY WESTINGHOUSE, F72 OR F96-T12/CW/1500 AS MANUFACTURED BY GENERAL ELECTRIC OR APPROVED EQUAL FOR SIGNS THAT ARE 7'-0" OR GREATER IN HEIGHT.

LAMP FIXTURES

LIGHTING FIXTURES SHALL BE CONSTRUCTED OF CORROSION RESISTANT MATERIALS OR WITH HIGH QUALITY CORROSION RESISTANT FINISH. ALL FIXTURES SHALL BE SPECIFICALLY DESIGNED FOR OUTDOOR SIGN LIGHTING SERVICE. MAJOR COMPONENTS SHALL INCLUDE WEATHERPROOF CAST ALUMINUM MOUNTING HUBS DESIGNED TO SECURELY LOCK THE FIXTURES AT ANY ANGLE THROUGH 360 DEGREES. INDICATORS IN 10 DEGREE INCREMENTS SHALL BE STAMPED OR CAST INTO THE HUB TO FACILITATE PROPER AIMING OF THE FIXTURE. FINAL ADJUSTMENT OF FIXTURE SHALL BE DONE AT NIGHT UNDER THE PROJECT ENGINEER'S DIRECTION.

THE BODY DESIGN OF THE FIXTURE SHALL PROVIDE AN ASYMMETRIC SPECULAR ALZAK REFLECTOR TO GIVE A HIGH LEVEL OF UNIFORM ILLUMINATION AND SHALL PROVIDE A WIREWAY FROM END TO END. WHEN ADJACENT FIXTURES ARE WIRED TOGETHER THROUGH THE WIREWAY, WIRE BETWEEN FIXTURES SHALL BE ENTIRELY ENCLOSED.

EXTERIOR FINISH OF THE FIXTURE BODY SHALL BE INTERSTATE GREEN COLOR, HEAT RESISTANT BAKED ENAMEL AS #8950 UNIVERSAL PAINT AND VARNISH INC., OR MIDWESTERN COLOR WORKS, OR APPROVED EQUAL. REFLECTOR, LAMP AND SOCKETS SHALL BE PROTECTED BY A HINGED DOOR OF CLEAR ACRYLIC PLASTIC WITH ALUMINUM OR STAINLESS STEEL FRAME AND NEOPRENE GASKETING.

BALLASTS

BALLASTS FOR FIXTURES SHALL BE WEATHER-PROOF OUTDOOR TYPE FOR A 120 VOLT 60 CYCLE SYSTEM AND SHALL PROVIDE LAMP STARTING AT AN AMBIENT TEMPERATURE OF -20°F. BALLASTS SHALL BE MOUNTED ON SIGN BRACKET ONLY. WIRING SHALL BE ACCOMPLISHED IN SUCH A MANNER THAT THE SIGN MAY BE REMOVED WITHOUT DISTURBING THE ELECTRICAL WIRING.

EFFECTIVE SIGN HEIGHT "H"	SUPPORT ARM LENGTH "G"	APPROX. AIMING ANGLE ⊖
3'-0" to 5'-0"	2'-9"	25°
5'-0" to 6'-6"	3'-3"	25°
7'-0" to 10'-0"	4'-3"	17°
10'-6" to 13'-0"	5'-9"	23°

"L" SIGN LENGTH	NO. OF FIXTURES			He=3'-0" to 6'-6" LAMP=T12/cw/ho			He=7'-0" to 13'-0" LAMP=T12/cw/sho		
	72	96		BALLAST NO.	BALLAST TYPE	WATTAGE PER SIGN	BALLAST NO.	BALLAST TYPE	WATTAGE PER SIGN
6'-0" to 7'-0"	1			1	A	190	1	C	250
8'-0" to 9'-0"	1			1	A	190	1	C	250
10'-0" to 11'-0"		1		1	A	190	1	C	250
12'-0" to 13'-0"	2			1	B	250	1	D	425
14'-0" to 15'-0"	2			1	B	250	1	D	425
16'-0" to 17'-0"	1	1		1	B	250	1	D	425
18'-0" to 19'-0"		2		1	B	250	1	D	425
20'-0" to 21'-0"	3			2	A&B	440	2	C&D	675
22'-0" to 23'-0"	2	1		2	A&B	440	2	C&D	675
24'-0" to 25'-0"	1	2		2	A&B	440	2	C&D	675
26'-0" to 27'-0"		3		2	A&B	440	2	C&D	675

BALLASTS

TYPE	MANUFACTURERS		WATTAGE
	G.E.	JEFFERSON	
A	GG 3583	257-321	190
B	GG 3535	257-331	250
C	GG 3585	257-361	250
D	GG 3588	257-371	425

BALLASTS SHALL BE GENERAL ELECTRIC, JEFFERSON AS SPECIFIED ABOVE OR EQUAL.

TRANSFORMERS

TYPE	MANUFACTURERS		OUTPUT K.V.A.	SWITCH TRANSFORMER ENCLOSURE
	G.E.	JEFFERSON		
I	9T51Y7	220-241	.25	Y
II	9T51Y8	220-251	.50	Y
III	9T51Y9	220-261	.75	Y
IV	9T51Y10	220-071-100	1.00	Z
V	9T51Y11	220-081-100	1.50	Z
VI	9T51Y12	220-091-100	2.00	Z
VII	9T51Y13	221-102	3.00	Z

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

ELECTRICAL DETAILS FOR EXTERNALLY ILLUMINATED SIGNS

EI-2

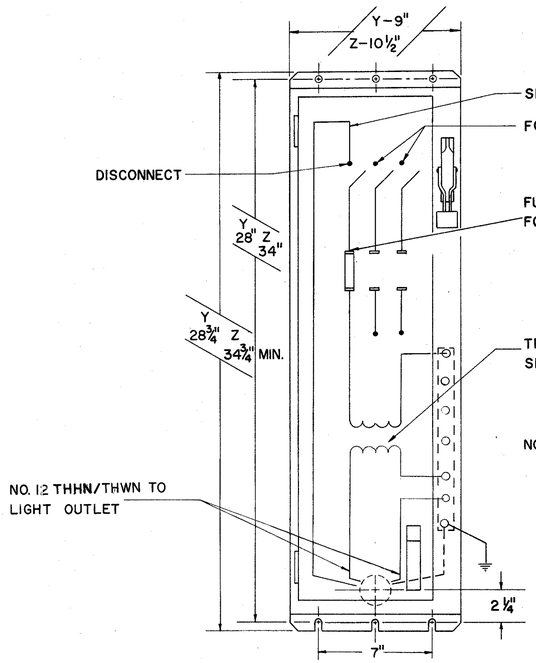
DATE
10-31-63
5-6-64
10-29-64
03-29-67

APPROVED Fred O Talbot
ENGINEER OF TRAFFIC

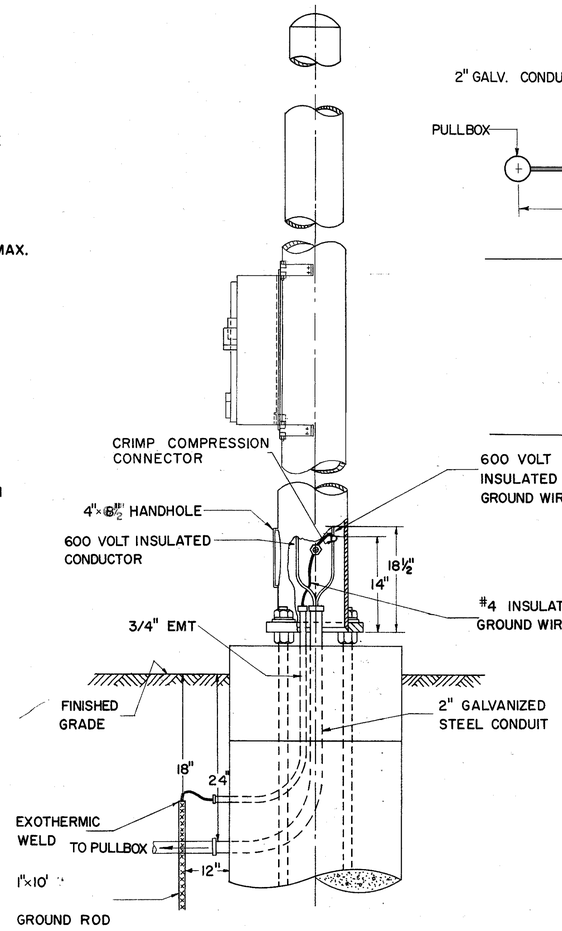
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

169
239

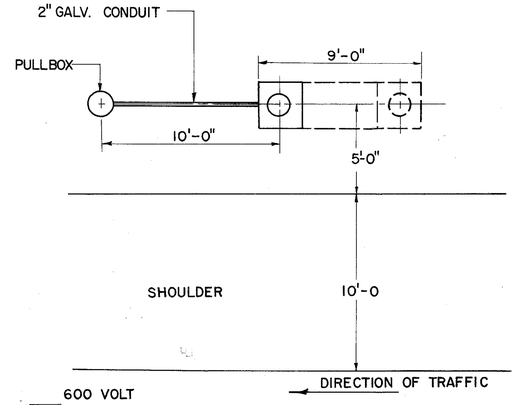
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04



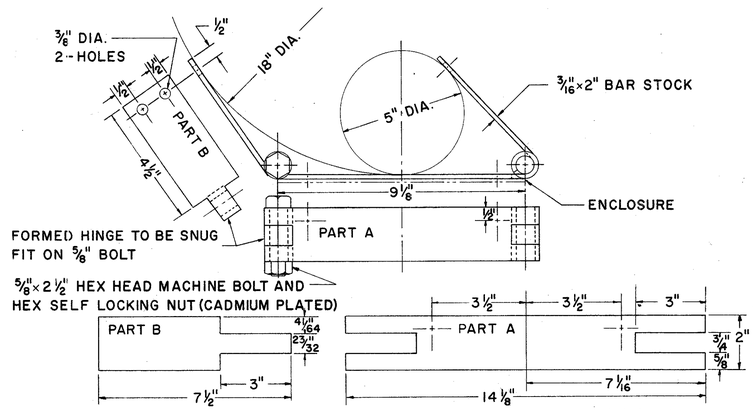
TYPICAL ENCLOSURE DETAIL
480 VOLT SIGN LIGHTING SERVICE



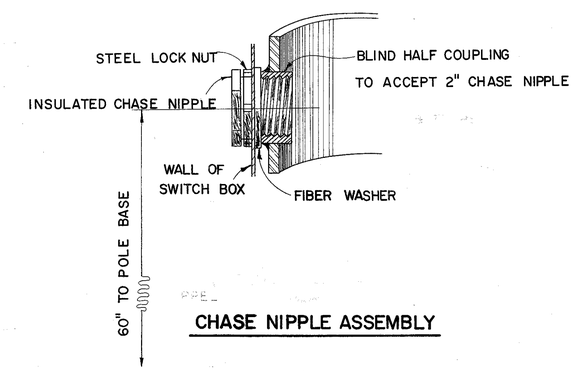
SIGN SUPPORT DETAIL FOR ILLUMINATED SIGNS



PULLBOX LOCATION



ENCLOSURE MOUNTING BRACKET



CHASE NIPPLE ASSEMBLY

NOTES

GENERAL

DETAILS OF THIS SHEET SHALL APPLY TO EACH OVERHEAD SIGN STRUCTURE TO SUPPORT EXTERNALLY ILLUMINATED SIGNS.

SERVICE

ELECTRIC SERVICE SHALL ENTER THROUGH A 2" GALVANIZED RIGID STEEL CONDUIT INSTALLED IN STRUCTURE FOUNDATION AS PER DETAIL. SIGN SERVICE OR CIRCUITRY SHALL BE CONTROLLED AS REQUIRED BY THE SYSTEM DESIGN AT THE PRIMARY SOURCE.

SERVICE CONDUCTORS SHALL BE THE SIZE AND TYPE AS SPECIFIED.

COMBINATION SWITCH AND TRANSFORMER

(TYPE Y OR Z ENCLOSURE REQUIRED AS PER SCHEDULE ON THIS SHEET)

THIS COMBINATION SHALL BE A 30 OR 60 AMPERE 600 VOLT SWITCH WITH A .25 TO 3.0 KVA TRANSFORMER. THE COMBINATION AND ENCLOSURE SHALL BE AS SQUARE D CLASS 9421, COLUMBUS ELECTRIC WORKS CLASS 101, PANALS INCORPORATED–CLASS 9400, OR APPROVED EQUAL.

TRANSFORMER

THE TRANSFORMER SHALL BE DRY TYPE SINGLE PHASE 240/480 VOLT PRIMARY 120/240 VOLT SECONDARY, THE TYPE AND CAPACITY AS SPECIFIED IN DETAILED SCHEDULE ON THIS SHEET.

ENCLOSURE

THE ENCLOSURE SHALL BE NEMA #4 WATER TIGHT .063 GAGE STAINLESS STEEL ASTA 302–303. A DISCONNECT HANDLE SHALL BE FLANGE MOUNTED AND CAPABLE OF BEING LOCKED IN EITHER POSITION. THE ENCLOSURE SHALL BE EQUIPPED WITH A DOOR LOCKING MECHANISM WITH A DEFEATER THAT NECESSITATES TWO HANDS TO OPERATE MECHANISM WITH THE SWITCH IN OFF POSITION. SPACE FOR A 2" INSULATED CHASE NIPPLE SHALL BE PROVIDED APPROXIMATELY 2 1/4" ABOVE THE CENTER LINE OF THE LOWER MOUNTING SLOT. THIS ENCLOSURE AND STRUCTURE SHALL BE FIELD DRILLED AND TAPPED FOR THE REQUIRED NIPPLE AS SHOWN ON THE DETAIL ON THIS SHEET.

THIS ENCLOSURE SHALL BE FLANGE MOUNTED ON BRACKETS WITH 5/16–18x3/4" HEX HEAD CADMIUM PLATED MACHINE BOLTS. ENCLOSURES SHALL BE TYPE Y OR Z AS SPECIFIED AND DIMENSIONED ON THIS SHEET.

ENCLOSURE MOUNTING BRACKET

THE ENCLOSURE MOUNTING BRACKET SHALL BE FABRICATED THEN GALVANIZED BEFORE ASSEMBLY. THE BRACKET SHALL BE FIELD MOUNTED WITH 5/16" HEX HEAD SELF TAPPING CADMIUM PLATED SCREWS. THE SIGN SUPPORT SHALL BE FIELD DRILLED, AS PER DETAIL.

WIRE AND CABLE

ALL WIRE AND CABLE SHALL BE 600 VOLT AND CONFORM TO SECTION 713.02

GROUNDING

EACH SIGN SUPPORT OR STRUCTURE SHALL BE GROUNDED WITH A #4 INSULATED CONDUCTOR. THE GROUNDING CONDUCTOR SHALL BE CONNECTED TO THE SWITCH THEN TO THE COMPRESSION CONNECTOR IN THE SIGN SUPPORT THEN TO A 1"x10' GROUND ROD. GROUND CONDUCTOR SHALL BE EXOTHERMICALLY WELDED TO GROUND ROD AND THEN TAPED WITH PLASTIC ELECTRICAL TAPE AT EACH EXPOSED PORTION OF CONDUCTOR. THE WELDED CONNECTION AND TAPED PORTION SHALL BE PAINTED 2 COATS OF INSULATING ENAMEL.

TRANSFORMERS

TYPE	MANUFACTURERS G.E.	MANUFACTURERS JEFFERSON	OUTPUT K.V.A.	SWITCH TRANSFORMER ENCLOSURE
I	9T51Y7	220–241	.25	Y
II	9T51Y8	220–251	.50	Y
III	9T51Y9	220–261	.75	Y
IV	9T51Y10	220–071–100	1.00	Z
V	9T51Y11	220–081–100	1.50	Z
VI	9T51Y12	220–091–100	2.00	Z
VII	9T51Y13	221–102	3.00	Z

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

ELECTRICAL SIGN SERVICE DETAILS 480 VOLT SYSTEM

ES-3A

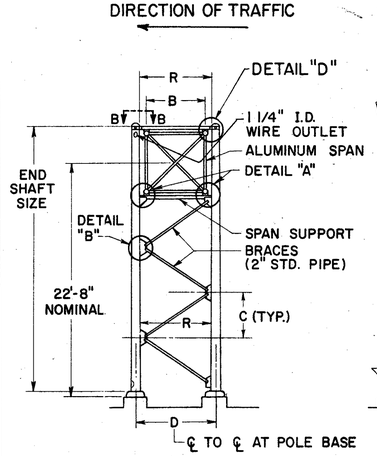
DATE 6-18-64 9-15 7-31-70

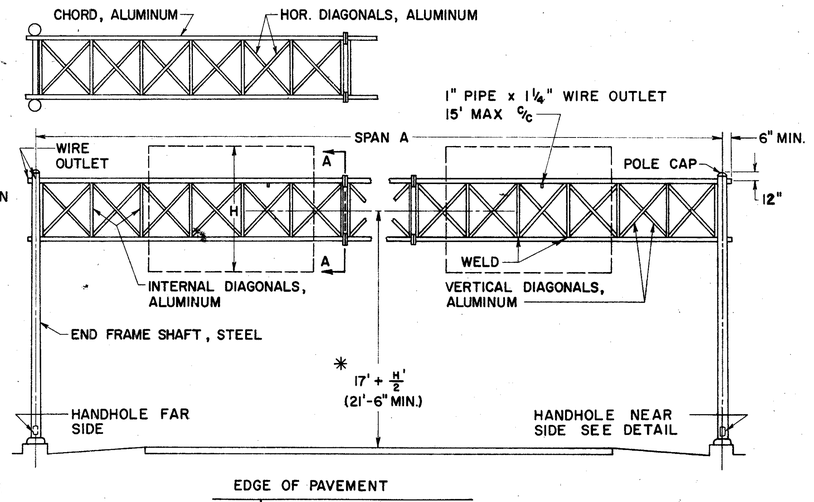
APPROVED _____
ENGINEER OF TRAFFIC

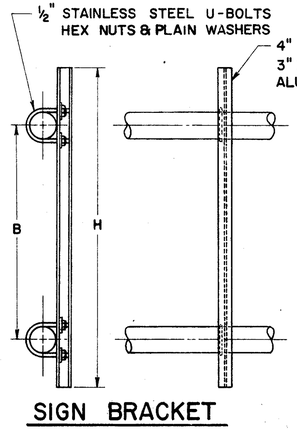
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

170
239

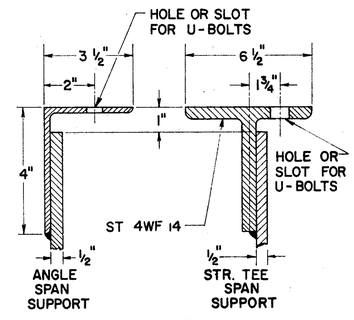
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04







SIGN BRACKET



SECTION D-D

NOTES

MATERIALS

THE OVERHEAD SPAN TRUSS SHALL BE ALUMINUM AND THE END FRAMES SHALL BE STEEL.

SPAN TRUSS AND END FRAMES, INCLUDING HARDWARE, SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 816 UNLESS OTHERWISE NOTED.

STEEL POLE BASES AND GUSSETS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A-373.

AFTER FABRICATION THE TAPERED POLES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

FABRICATION

THE ENTIRE STEEL END FRAME SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SEC. 711.02

MAXIMUM LENGTH OF SPAN SECTIONS IS 30 FT.

ERECTION

USE A MINIMUM OF 1" CAMBER IN SPAN TRUSS MEMBER FOR A 50' SPAN; ADD 1/4" OF CAMBER FOR EACH 5' OF INCREASE IN SPAN OVER 50'.

PAYMENT

PAYMENT FOR THE GALVANIZED CONDUIT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.

SOILS

THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY).

FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL

COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 816 CONCRETE FOR SIGN SUPPORT FOUNDATIONS.

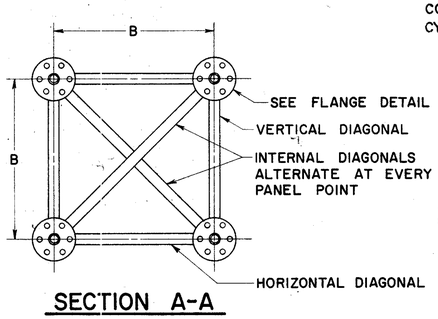
BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATE THE BAR SIZE NUMBER.

*FOUNDATION ELEVATION

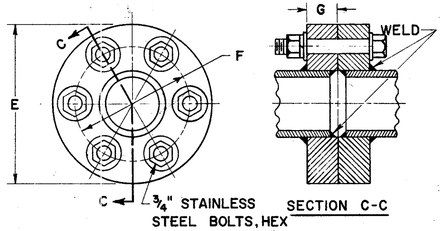
ELEVATION OF TOPS OF FOUNDATIONS SHALL BE BUILT UP SO THAT 17' CLEARANCE IS MAINTAINED OVER THE ENTIRE WIDTH OF PAVEMENT AND SHOULDERS.

DESIGN

THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

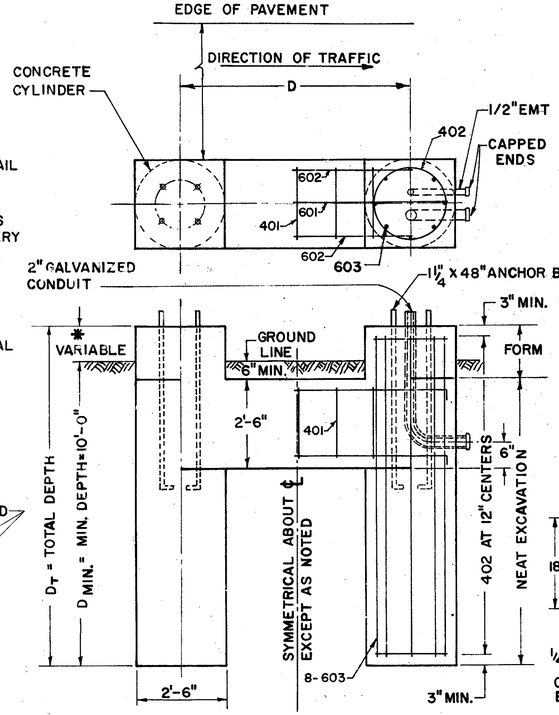


SECTION A-A



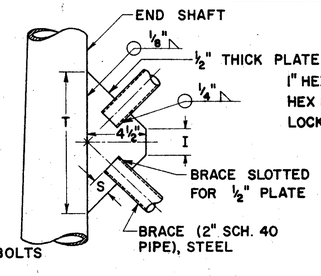
CAST FLANGE, B-26 ALLOY SG 70A-T7 (356-T7)

FLANGE DETAIL

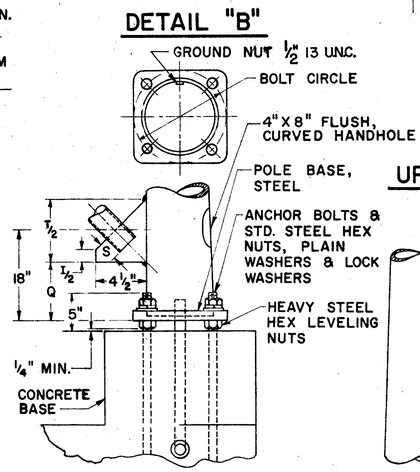


FOUNDATION DETAIL

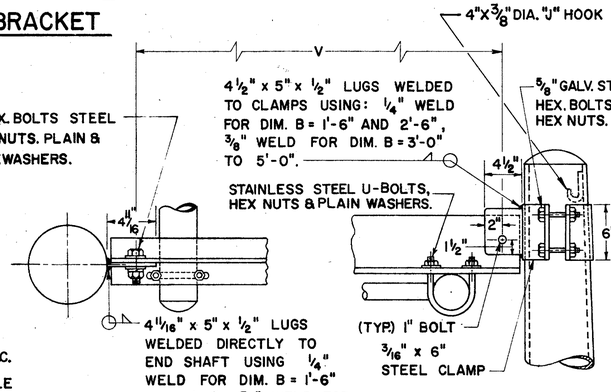
(RIGHT HAND SHOWN — LEFT HAND OPPOSITE)



DETAIL "B"



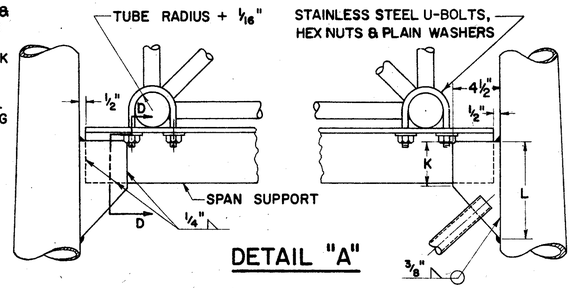
POLE BASE DETAIL



VIEW B-B

DETAIL "D"

UPPER SPAN SUPPORT (ALTERNATE METHODS)

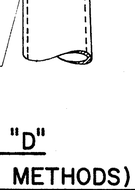


DETAIL "A"

LOWER SPAN SUPPORT

DESIGN NO.	SPAN A	B	C	D	E	END SHAFT	BRACE LENGTH	F	G	I	K	L	P	Q	R	S	T	U BOLTS	V	BOLT CIRCLE	SPAN SUPPORT SECTION D-D	CHORDS	HORIZONTAL AND INTERNAL DIAGONAL	VERTICAL DIAGONAL
1	50' THRU 70'	3'-0"	4'-11 3/4"	4'-5"	9 1/4"	8"X4.5"X 25'-0", 3GA	5'-10 3/16"	7 7/16"	1 3/8"	3 1/2"	4 3/4"	8"	12"	6 5/8"	3'-9"	1 1/2"	10"	5/8"	3'-3 5/8"	11"	SPLIT TEE 3'—8"	4 3/4"X.188"	1.900"X.145"	1.660"X.140"
2	71' THRU 80'	4'-0"	4'-10 1/4"	5'-7"	9 1/4"	8"X6.22"X25'-6", 3GA	6'-7 1/8"	7 7/16"	1 3/8"	5/8"	4 3/8"	7 3/4"	12"	6 1/4"	4'-11"	1 1/2"	9 1/2"	5/8"	4'-5 5/8"	11"	SPLIT TEE 4'—10"	4 3/4"X.188"	2" X.188"	1.900"X.145"
3	81' THRU 86'	4'-0"	4'-10 1/4"	5'-7"	11"	8"X6.22"X25'-6", 3GA	6'-7 1/8"	8 1/2"	1 1/2"	5/8"	4 3/8"	7 3/4"	12"	6 1/4"	4'-11"	1 1/2"	9 1/2"	5/8"	4'-5 5/8"	11"	SPLIT TEE 4'—10"	5 1/2"X.250"	2" X.188"	1.900"X.145"
4	86' THRU 110'	5'-0"	4'-8 1/2"	6'-7"	11"	8"X6.18"X26'-0", 3GA	7'-3 1/4"	8 1/2"	1 1/2"	—	3 1/2"	7 3/4"	12"	7 1/4"	5'-11"	1 3/4"	11 1/4"	3/4"	5'-5 5/8"	11"	SPLIT TEE 5'—10"	5 1/2"X.250"	2 1/2"X.188"	2 1/2"X.188"

REINFORCEMENT SCHEDULE			
MARK	NO.	LENGTH	TYPE
401	12"C/C	8'—6"	102
402	12"C/C	7'—6"	103
601	4	D+4'—0"	101
602	8	D+2'—0"	101
603	32	D_T — 6"	STR.



BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORTS

816 No. 7.5

DATE
5-2-62
7-25-62
4-29-64
6-20-66

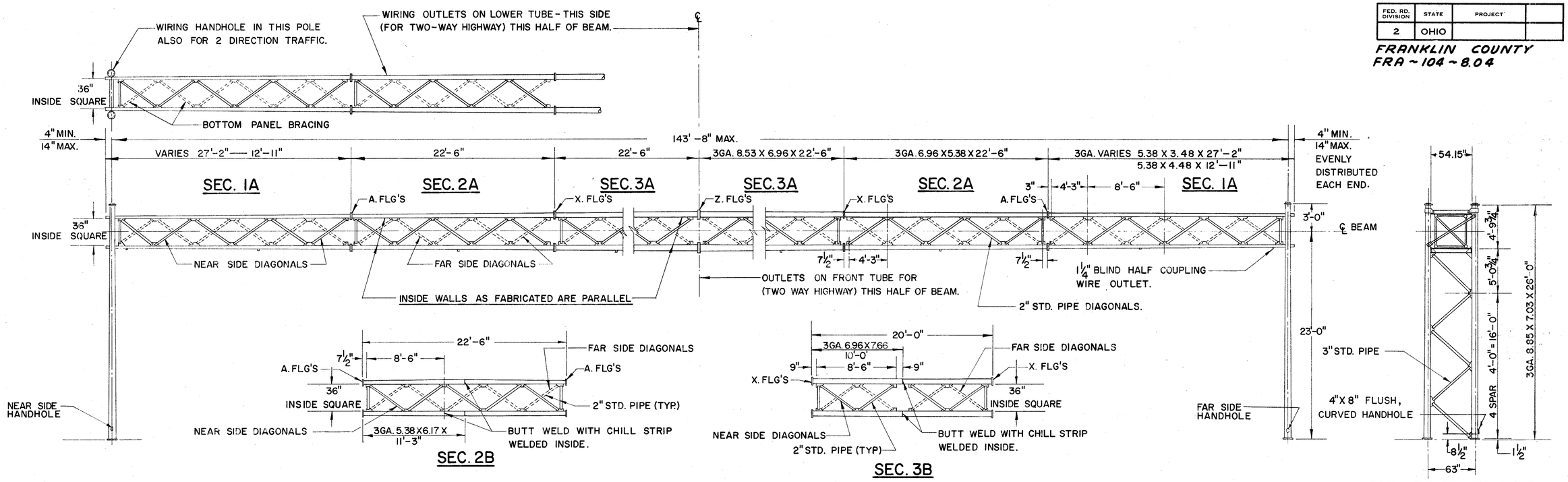
APPROVED Robert L. Comer
ENGINEER OF TRAFFIC

500 SQ. FT. SIGN AREA OVERHEAD SIGN SUPPORT, 816 NO. 7.5

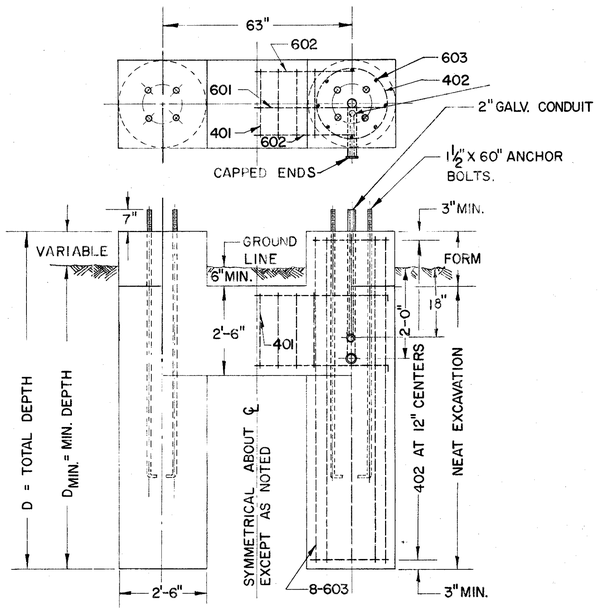
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

171
239

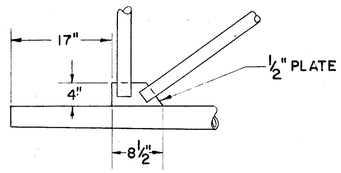
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04



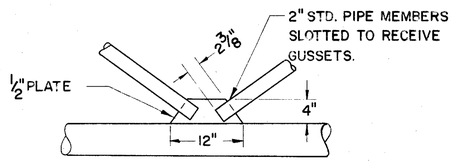
BOTH END FRAMES ALIKE
UNLESS OTHERWISE NOTED



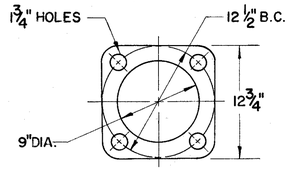
FOUNDATION DETAIL



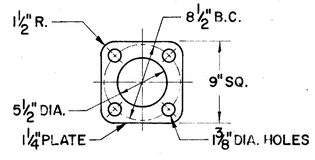
END JOINT DETAIL



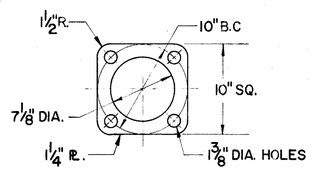
TYPICAL JOINT
DIAGONAL TRUSS MEMBER



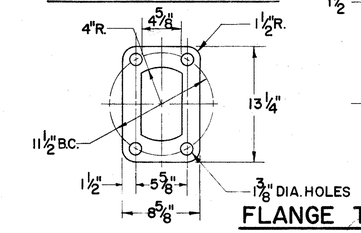
POLE BASE DETAIL

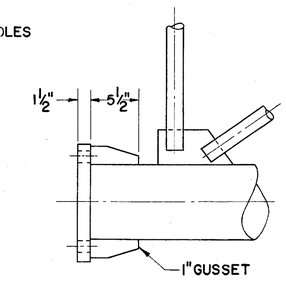


FLANGE TYPE A.
FOR SEC. 1-A, 2-A, & 2-B

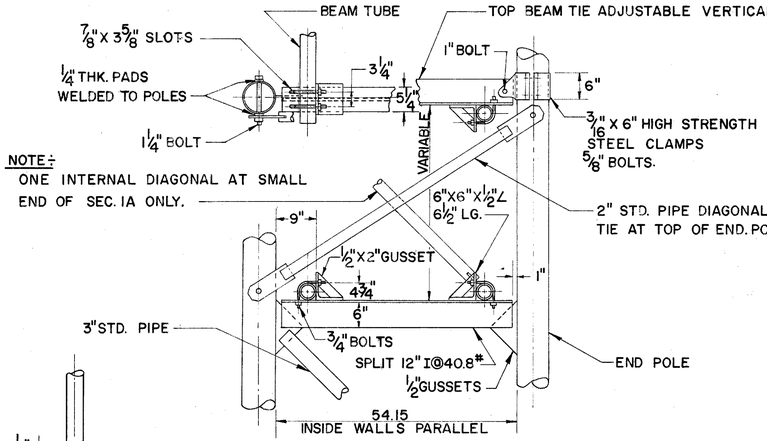


FLANGE TYPE X.
FOR SEC. 2-A, 3-A & 3-B





FLANGE TYPE Z.
FOR SEC. 3-A



BOTTOM BEAM SUPPORT & END POLE FRAME TIE.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORT	816 15.8	DATE 6-24-64 7-1-66

APPROVED _____ ENGINEER OF TRAFFIC

OVERHEAD SIGN SUPPORT, 816 NO. 15.8

SUPPORT						ACTUAL SIGN AREA	SIGN AREA SPREAD	ALLOWABLE DESIGN SIGN AREA	ACTUAL MAX. SIGN HEIGHT	END SECTION				INTERNAL SECTION				CENTER SECTION				END OVER-HANG	LEFT END FRAME				RIGHT END FRAME			
NO.	STATION	LOCATION	TYPE	DESIGN	SPAN					NO.	GA.	SIZE	LENGTH	NO.	GA.	SIZE	LENGTH	NO.	GA.	SIZE	LENGTH		NO.	GA.	SIZE	LENGTH	NO.	GA.	SIZE	LENGTH
3	13+93	S.R.104	816 Nº 15.8	5	126'-0"	528 sq.ft.	97'-6"	800 sq.ft.	9'-6"	2	3	5.38×4.05	19'-0"	2	3	6.96×5.38	22'-6"	2	3	8.53×6.96	22'-6"	1'-0"	1	3	8.85×7.03	26'-0"	1	3	8.85×6.96	27'-0"

NOTES

DESIGN

THE DESIGN OF OVERHEAD SUPPORTS SHALL BE IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 13, 1961.

FOUNDATION

THE TOP ELEVATION OF FOUNDATIONS SHALL BE VARIED SO AS TO MAINTAIN A MINIMUM CLEARANCE OF 17' BETWEEN THE BOTTOM OF THE SIGN AND THE HIGHWAY CROWN.

SOILS

THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY OR STIFF CLAY). FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

FINISH

ALL STRUCTURAL PORTIONS OF THE SIGN SUPPORTS, SIGN BRACKETS, HARDWARE AND CONDUIT SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH S.S. 816.02 (EXCEPT AS OTHERWISE SHOWN).

MATERIALS

ALL MATERIALS TO BE FURNISHED SHALL BE IN ACCORDANCE WITH S.S. 816.02 WITH THE FOLLOWING ADDITIONS:

TAPERED TUBES SHALL BE STEEL, SAE 1015 AND COLD ROLLED TO OBTAIN A MINIMUM YIELD STRENGTH OF 48,000 PSI.

STEEL PIPE: 4" DIAMETER AND UNDER SHALL BE STEEL-ASTM-A120. OVER 4" DIAMETER SHALL BE ASTM-A53, GRADE B.

ANCHOR BOLTS SHALL BE HIGH STRENGTH STEEL-ASTM-A107, GRADE C-1035.

HIGH STRENGTH CLAMPS SHALL BE STEEL ASTM-A242.

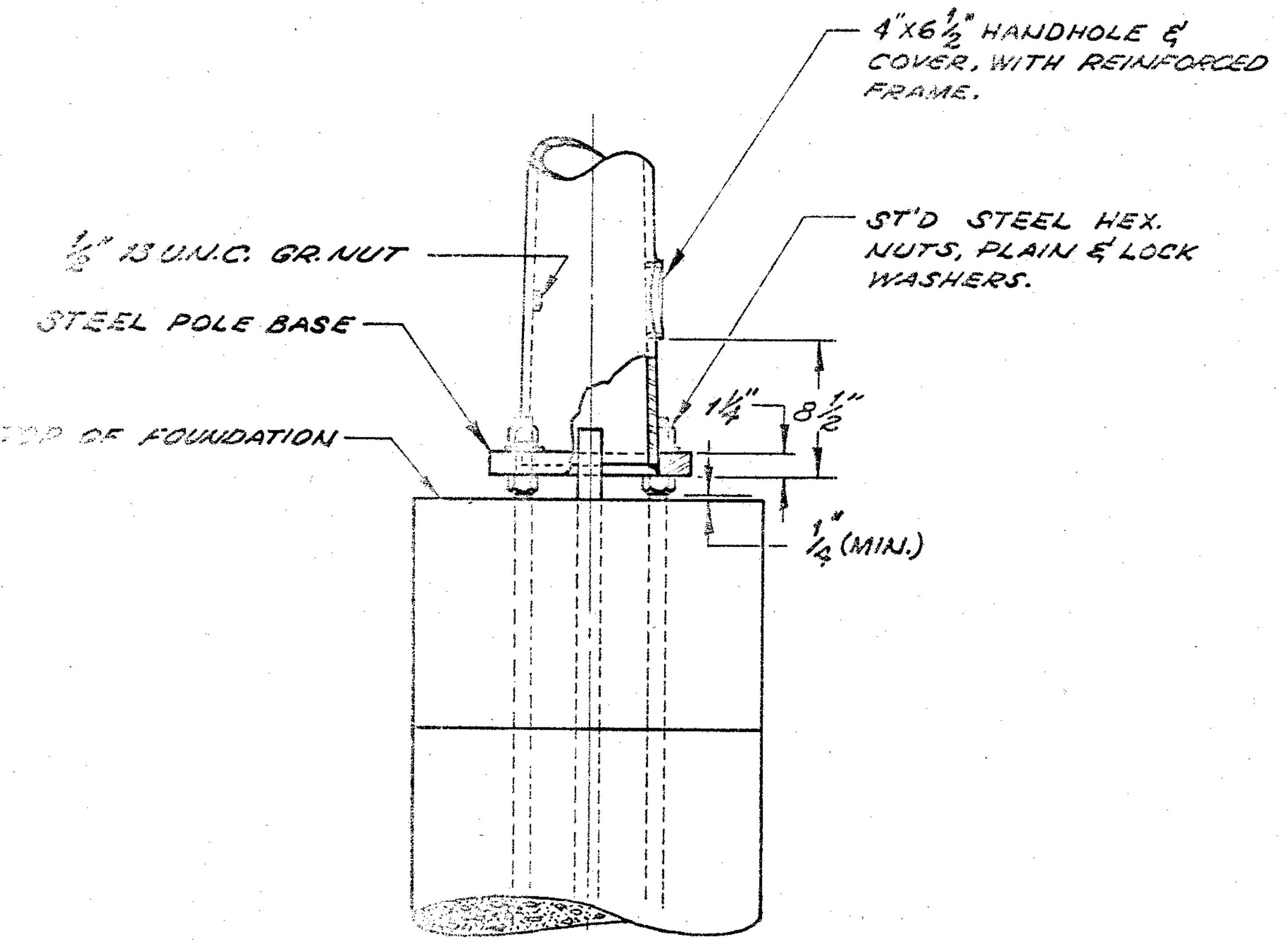
REINFORCING STEEL

COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 816 CONCRETE FOR SIGN SUPPORT FOUNDATIONS.

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATE THE BAR SIZE NUMBER.

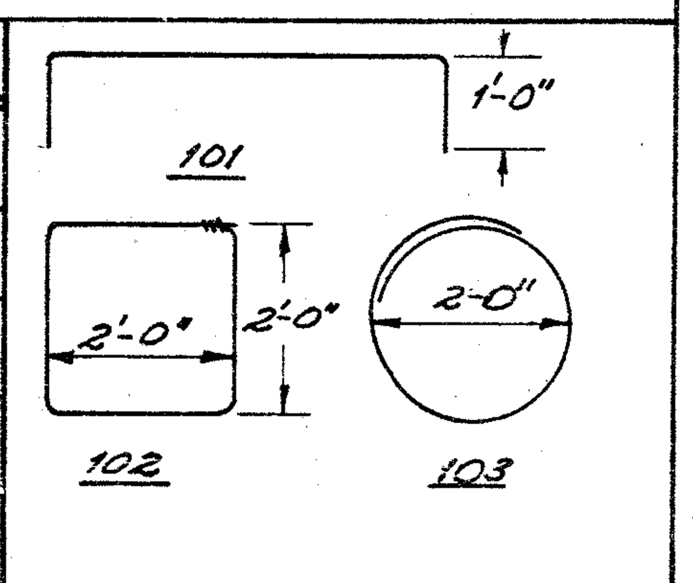
PAYMENT FOR CONDUIT

PAYMENT FOR THE GALVANIZED CONDUIT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.



REINFORCEMENT SCHEDULE

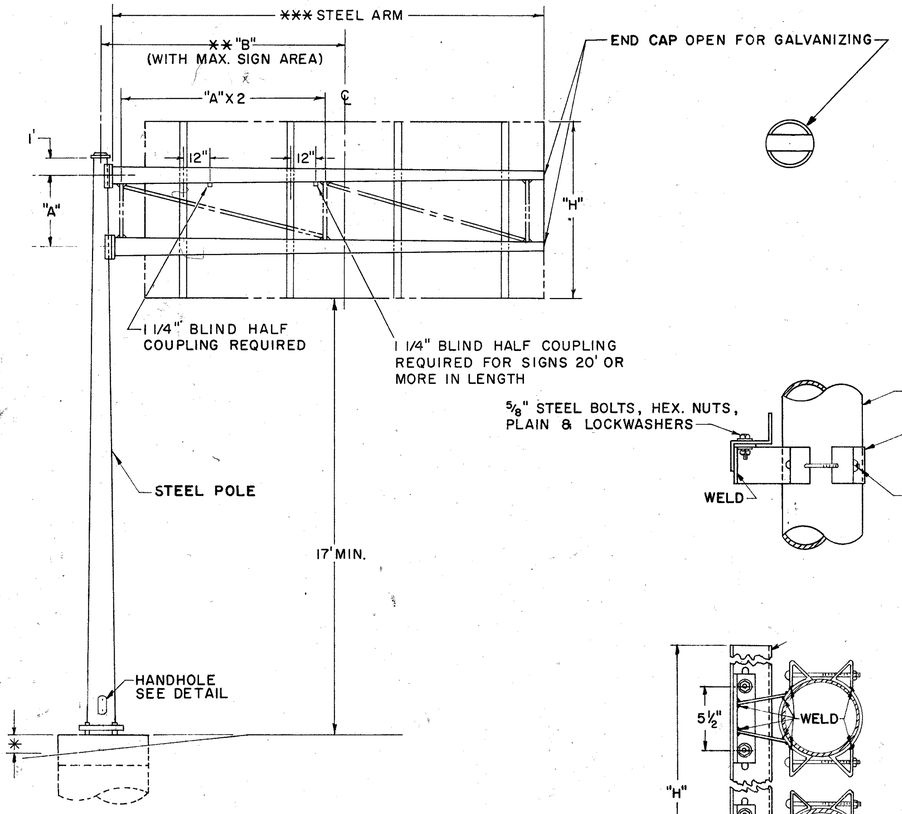
MARK	NO.	LENGTH	TYPE
401	12" c/c	8'-6"	102
402	12" c/c	7'-6"	103
601	4	D+4'-0"	101
602	8	D+2'-0"	101
603	32	D_T-6"	STR.



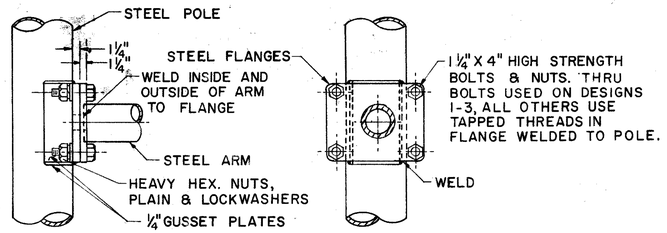
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

173
232

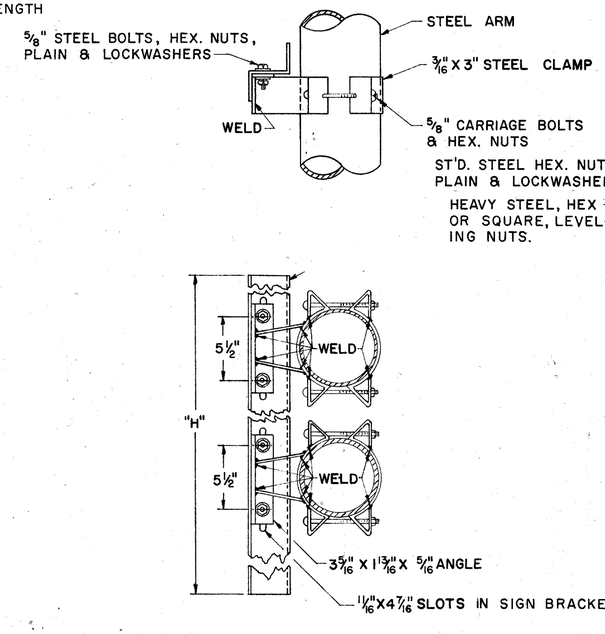
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

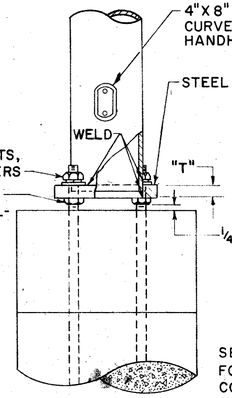


NOTE:
THE 12" DIMENSION SHOWN FOR BLIND HALF COUPLINGS MAY BE INCREASED OR DECREASED WHEN NECESSARY TO TO PREVENT INTERFERENCE WITH OTHER MEMBERS.

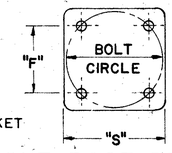


ARM ATTACHMENT

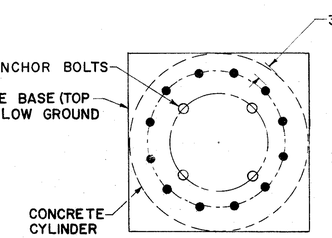


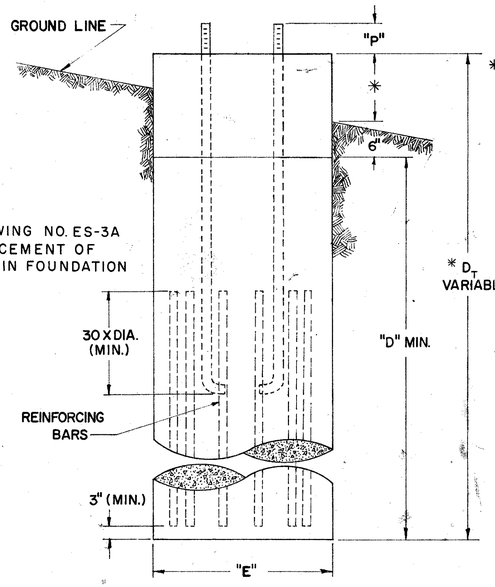


SEE DRAWING NO. ES-3A FOR PLACEMENT OF CONDUIT IN FOUNDATION



POLE BASE DETAIL





FOUNDATION DETAIL

SIGN ATTACHMENT DETAIL

DESIGN NO.	POLE SIZE	*** ARM SIZE	DIM A	DIM ** B	DIM "D" MIN.	DIM E	DIM F	DIM P	DIM * S	DIM T	BOLT CIRCLE	ANCHOR BOLT SIZE	MAX SIGN AREA	REINF. BARS SIZE	REINF. BARS # REQ'D
1	3 Ga, 12" X 8.78" X 23'-0"	7Ga, 6.9" X 4.66" X 16'-0"	4'	12'	9'	3'-0"	11 5/16"	7 3/4"	17"	2"	16"	1 3/4" X 90"	80	3/4"	12
2	3 Ga, 12" X 8.78" X 23'-0"	7 Ga, 8" X 5.2" X 20'-0"	4'	16'	9'	3'-0"	11 5/16"	7 3/4"	17"	2"	16"	1 3/4" X 90"	80	3/4"	12
3	3 Ga, 15" X 11.5" X 25'-0"	7 Ga, 8.3" X 6.06" X 16'-0"	4'	12'	11'	3'-0"	15 1/2"	8 3/8"	23"	2"	22"	2" X 96"	120	1"	12
4	3 Ga, 16" X 12.5" X 25'-0"	3 Ga, 9.2" X 6.40" X 20'-0"	4'	16'	11'	3'-0"	16 5/16"	8 3/8"	24 1/2"	2"	23 1/2"	2" X 96"	120	1"	12
5	0 Ga, 18" X 14.36" X 26'-0"	7 Ga, 11" X 7.92" X 22'-0"	6'	14'	13'	3'-0"	18"	9 3/8"	26 1/2"	2 1/2"	25 1/2"	2 1/4" X 120"	180	1 1/8"	12
6	0 Ga, 18" X 14.36" X 26'-0"	7 Ga, 12.5" X 8.86" X 26'-0"	6'	18'	13'	3'-0"	18"	9 3/8"	26 1/2"	2 1/2"	25 1/2"	2 1/4" X 120"	180	1 1/8"	12
7	2 PLY 7 Ga, 18" X 14.36" X 26'-0"	7 Ga, 12.5" X 9.14" X 24'-0"	6'	14'	13'	3'-0"	18"	9 3/4"	26 1/2"	2 1/2"	25 1/2"	2 1/2" X 144"	240	1 1/4"	12
8	2 PLY 1/4", 18" X 14.36" X 26'-0"	3 Ga, 12.5" X 8.58" X 28'-0"	6'	18'	13'	3'-0"	18"	11 1/4"	26 1/2	3"	25 1/2"	3" X 144"	240	1 1/4"	12

NOTES

FABRICATION - ALL PORTIONS OF THE SIGN SUPPORT, INCLUDING SIGN ATTACHMENTS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF A.S.T.M. DESIGNATIONS A-123 AND A-153. THE CONDUIT SHALL BE GALVANIZED IN ACCORDANCE WITH SEC. 625.13 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS FOR PAYMENT.

* FOUNDATION - THE TOP ELEVATION OF FOUNDATIONS SHALL BE VARIED SO AS TO MAINTAIN A MINIMUM CLEARANCE OF 17' BETWEEN THE BOTTOM OF THE SIGN AND THE HIGHWAY CROWN.

** ERECTION - VALUES OF "B" MAY BE EXCEEDED PROVIDED THE PRODUCT OF ACTUAL SIGN AREA TIMES THE DISTANCE FROM ℄ OF POLE TO ℄ OF SIGN DOES NOT EXCEED THE MAX. SIGN AREA TIMES "B".

*** ARMS 20' LONG OR LONGER ARE TO BE TRUSS TYPE WITH 3" X 3" X 3/8" ANGLES WELDED TO GUSSET PLATES.

MATERIAL - STEEL POLE BASES, FLANGES, AND END CAPS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A 30 GRADE B. HIGH STRENGTH STEEL BOLTS SHALL CONFORM TO ASTM SPECIFICATION A 193 GRADE B7. AFTER FABRICATION TAPERED POLES AND ARMS SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

SOILS - THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY). FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL - REINFORCING STEEL AS SHOWN IN TABLE SHALL BE INSTALLED WHEN "D_T" EXCEEDS THE ANCHOR BOLT LENGTH BY MORE THAN 3 FT. THE COST AND PLACEMENT OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 816 CONCRETE FOR SIGN SUPPORT FOUNDATIONS.

DESIGN

THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORT — 816 No. 12.24

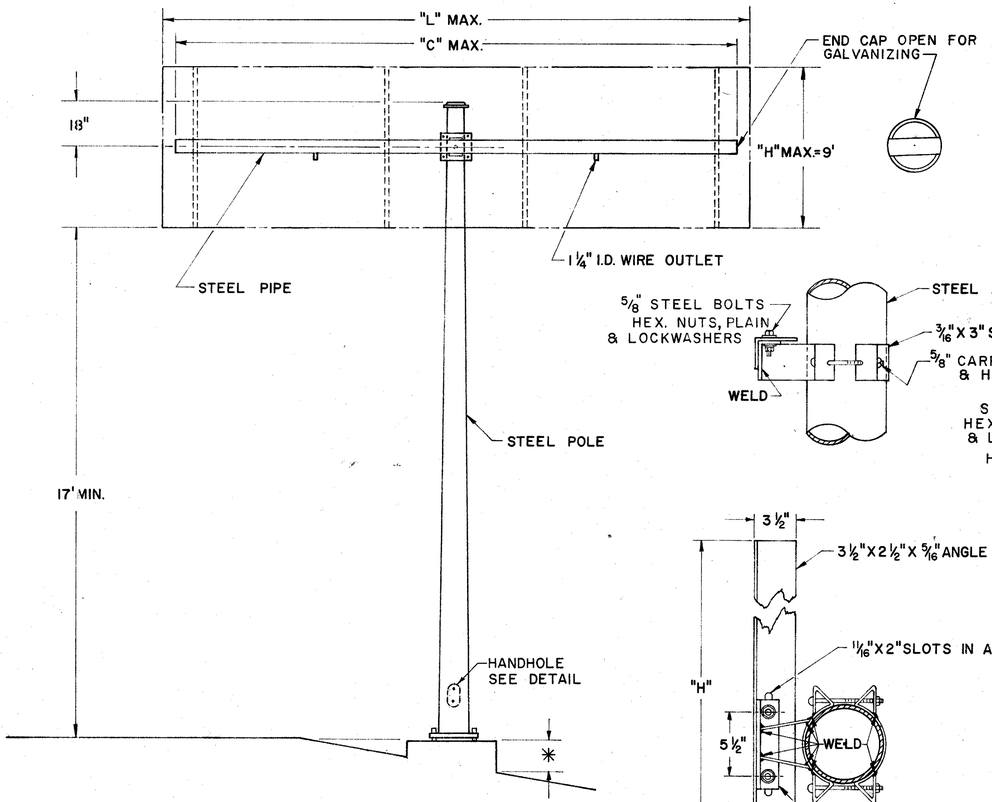
DATE 8-18-61, 4-17-62, 4-18-67

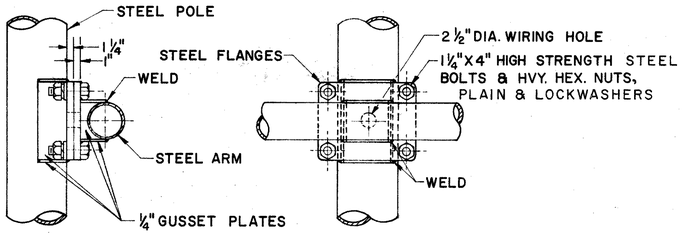
APPROVED Robert E. Lounsbury
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

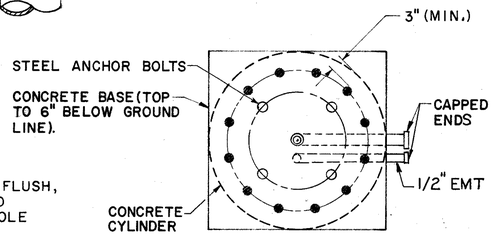
174
239

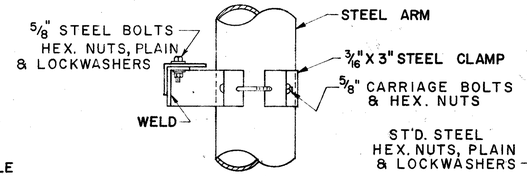
FRANKLIN COUNTY
FRA-104-8.04

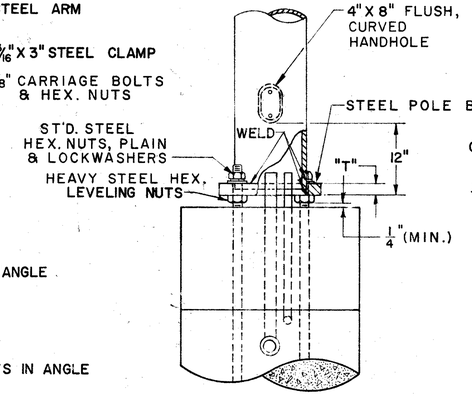


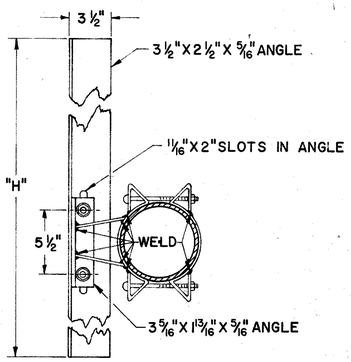


ARM ATTACHMENT

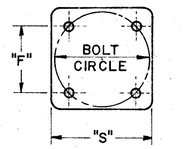




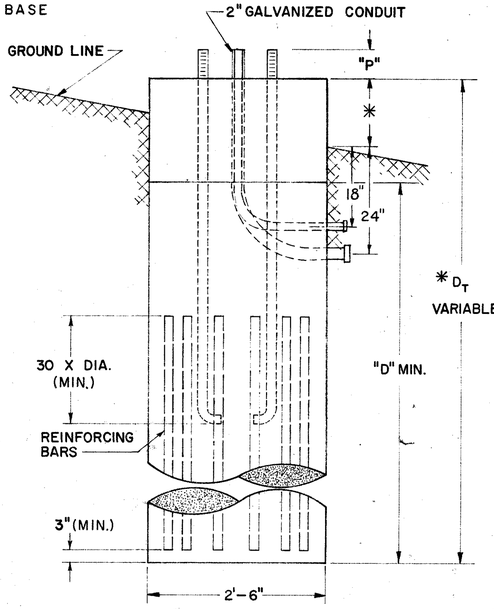




SIGN ATTACHMENT DETAIL



POLE DETAIL



FOUNDATION DETAIL

DESIGN NO.	POLE SIZE	PIPE SIZE	DIM C	DIM F	DIM P	DIM S	DIM T	BOLT CIRCLE	ANCHOR BOLT SIZE	MAX SIGN AREA	MAX. "L" WITH MAX. SIGN AREA	"D" MIN.	REINF. BARS TYPE	REINF. BARS NO.
1	7ga,11"X 7.99 X 21'-6"	4"SCH.40 GRADE A	18'	10 5/8"	6½"	15 5/8"	1½"	15"	1½"X60"	60	24'-9"	7'-0"	#6	8
2	3ga,13"X 9.99 X 21'-6"	4"SCH.80 GRADE A	14'	12¾"	7¾"	18½"	2"	18"	1¾"X90"	120	16'-9"	8'-6"	#7	12
3	3ga,13"X 9.99 X 21'-6"	6"SCH.40 GRADE A	20'	12¾"	7¾"	18½"	2"	18"	1¾"X90"	120	24'-0"	9'-0"	#7	12

NOTES

FABRICATION – ALL PORTIONS OF THE SIGN SUPPORT, INCLUDING SIGN ATTACHMENTS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF A.S.T.M. DESIGNATIONS A-123 AND A-153. THE CONDUIT SHALL BE GALVANIZED IN ACCORDANCE WITH SEC. 625.13 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS FOR PAYMENT.

* FOUNDATION – THE TOP ELEVATION OF FOUNDATIONS SHALL BE VARIED SO AS TO MAINTAIN A MINIMUM CLEARANCE OF 17' BETWEEN THE BOTTOM OF THE SIGN AND THE HIGHWAY CROWN.

MATERIAL – STEEL POLE BASES, FLANGES, AND END CAPS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A 30 GRADE B. HIGH STRENGTH STEEL BOLTS SHALL CONFORM TO ASTM SPECIFICATION A 193 GRADE B7. AFTER FABRICATION TAPERED POLES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

SOILS – THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY). FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL – REINFORCING STEEL AS SHOWN IN TABLE SHALL BE INSTALLED WHEN "D_T" EXCEEDS THE ANCHOR BOLT LENGTH BY MORE THAN 3 FT. THE COST AND PLACEMENT OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR 816 CONCRETE FOR SIGN SUPPORT FOUNDATION.

DESIGN
THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORT	816 No.9.12	DATE 1-19-62 3-30-62

APPROVED Robert E. Comer
ENGINEER OF TRAFFIC

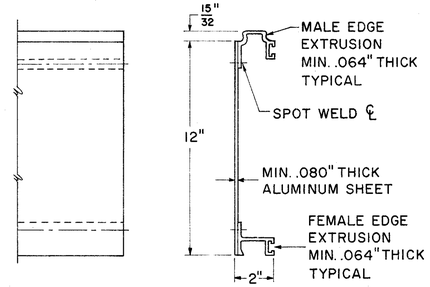
OVERHEAD SIGN SUPPORT, 816 No.9.12

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

175/239

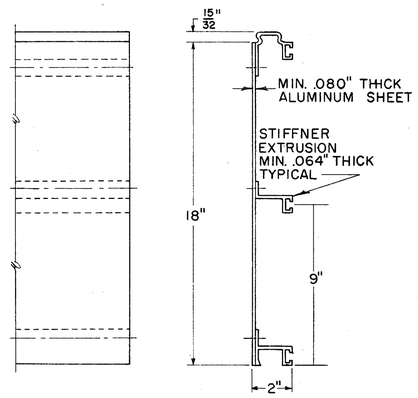
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

12" EXTRUSHEET PANEL



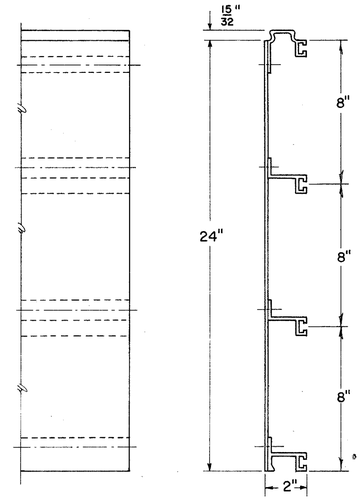
FRONT VIEW SIDE VIEW

18" EXTRUSHEET PANEL



FRONT VIEW SIDE VIEW

24" EXTRUSHEET PANEL



FRONT VIEW SIDE VIEW

NOTES:

EXTRUSHEET PANELS SHALL BE ALUMINUM; SPOT WELDING AND ALL MATERIALS SHALL CONFORM WITH SUPPLEMENTAL SPECIFICATION 815

COMBINATIONS OF 12", 18", AND 24" PANELS ARE USED TO ATTAIN REQUIRED SIGN HEIGHT.

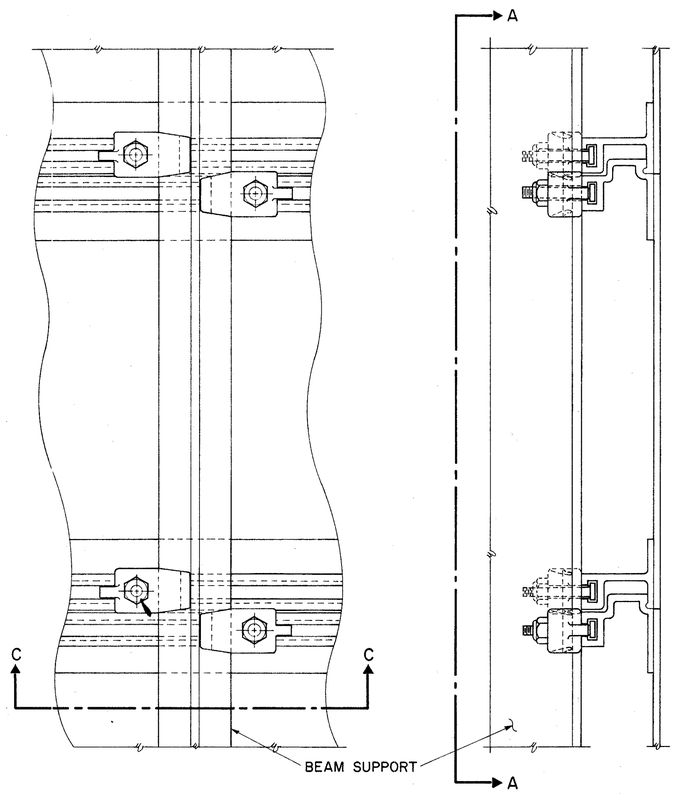
INDIVIDUAL PANELS SHALL BE THE SAME LENGTH AS THE HORIZONTAL LENGTH OF SIGN WITH NO SPLICES.

PANELS SHALL BE INTERLOCKED AND ERECTED WITH THE MALE EXTRUSION LOCATED AT THE TOP EDGE OF THE SIGN.

EXTRUSHEET PANELS SHALL BE FASTENED TO EACH VERTICAL SUPPORT MEMBER WITH MOUNTING CLIPS; ALTERNATELY AT EACH HORIZONTAL EXTRUSION; BOTH SIDES AT EACH JOINT, AND ON BOTH SIDES AT TOP AND BOTTOM EDGE OF SIGN.

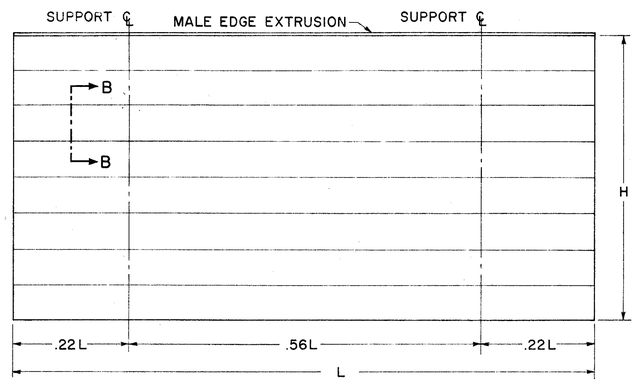
THE PANELS SHALL BE DESIGNED TO WITHSTAND A WIND LOAD OF 35 POUNDS PER SQUARE FOOT, IN ACCORDANCE WITH THE A.A.S.H.O. SPECIFICATION FOR DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS.

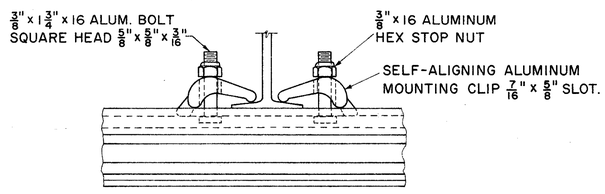
THE MAXIMUM SIGN LENGTH FOR TWO SUPPORTS IS 19'-0".
THE MAXIMUM SIGN LENGTH FOR THREE SUPPORTS IS 29'-0".



SECTION A-A SECTION B-B

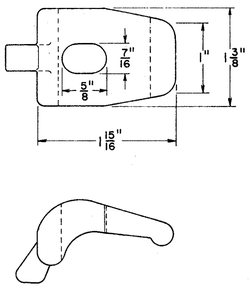
GENERAL ARRANGEMENT





SECTION C-C

CLIP DETAIL



SPOT WELDS

PANEL SIZE	MAXIMUM SPOT WELD SPACING	
	CENTER TO CENTER	BETWN ROWS
12 INCH	4 INCH	10 INCH
18 & 24 INCH	4 INCH	8 INCH

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

ALUMINUM EXTRUSHEET PANEL SIGN

ECD 1

DATE
9-25-63
5-19-64
10-21-65
5-24-67

APPROVED Fred C Garber
ENGINEER OF TRAFFIC

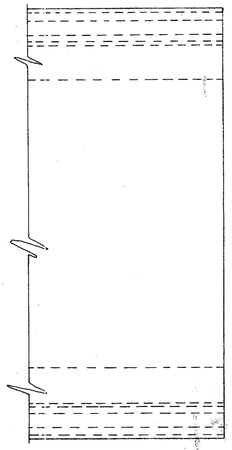
ALUMINUM EXTRUSHEET PANEL SIGN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

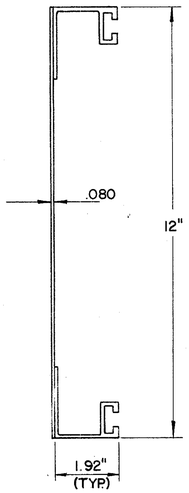
176
239

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

12" BOLTED-EXTRUSHEET PANEL

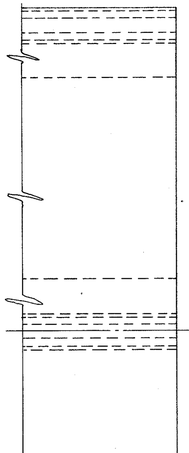


FRONT VIEW

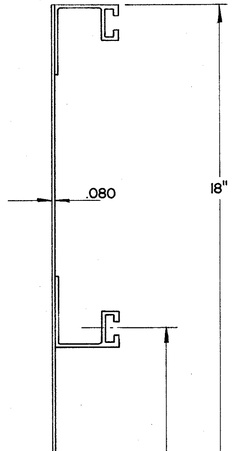


SIDE VIEW

18" BOLTED-EXTRUSHEET PANEL

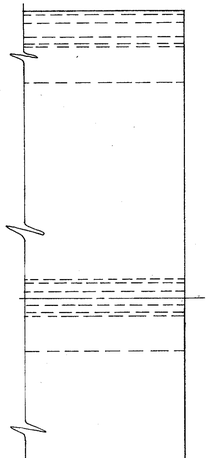


FRONT VIEW

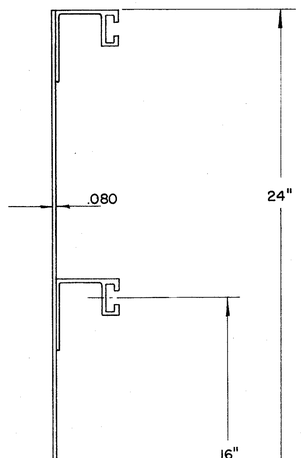


SIDE VIEW

24" BOLTED-EXTRUSHEET PANEL



FRONT VIEW



SIDE VIEW

NOTES

EXTRU-SHEET PANELS SHALL BE ALUMINUM; SPOT WELDING, MATERIALS AND HARDWARE SHALL CONFORM WITH SPECIFICATION NO. 815

COMBINATIONS OF 12", 18" AND 24" PANELS ARE TO BE USED TO ATTAIN REQUIRED SIGN HEIGHT.

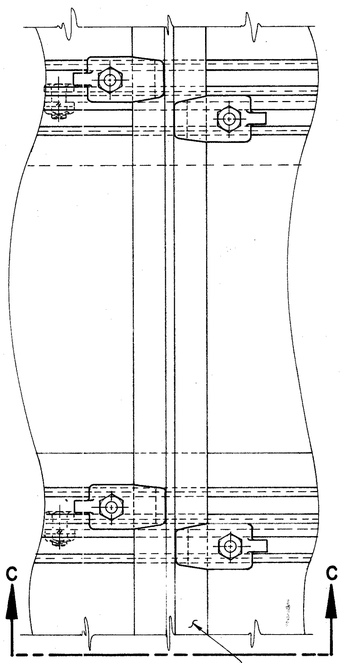
INDIVIDUAL PANELS SHALL BE THE SAME LENGTH AS THE HORIZONTAL LENGTH OF SIGN, WITH NO SPLICES.

THE PANELS SHALL BE ERECTED HORIZONTALLY AND BOLTED ON 24" CENTERS.

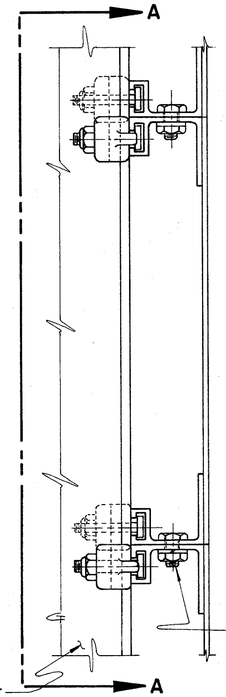
THE PANELS SHALL BE FASTENED TO EACH VERTICAL SUPPORT MEMBER WITH MOUNTING CLIPS; ALTERNATELY AT EACH HORIZONTAL EXTRUSION; BOTH SIDES AT EACH JOINT, AND BOTH SIDES AT TOP AND BOTTOM EDGES OF SIGN.

THE PANELS SHALL BE DESIGNED IN ACCORDANCE WITH THE A.A.S.H.O SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, BASE ON A WIND LOAD OF 35#/SQ.FT.

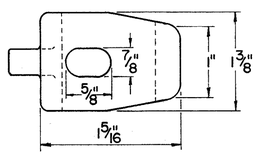
THE MAXIMUM SIGN LENGTH FOR TWO SUPPORTS IS 19'-0". THE MAXIMUM SIGN LENGTH FOR THREE SUPPORTS IS 29'-0".

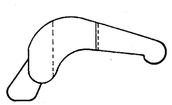


SECTION A-A

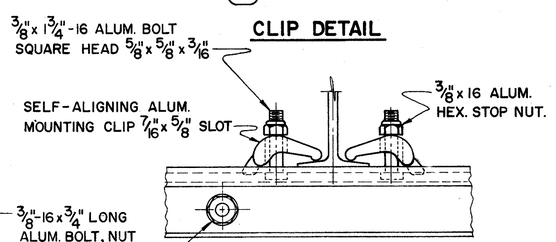


SECTION B-B

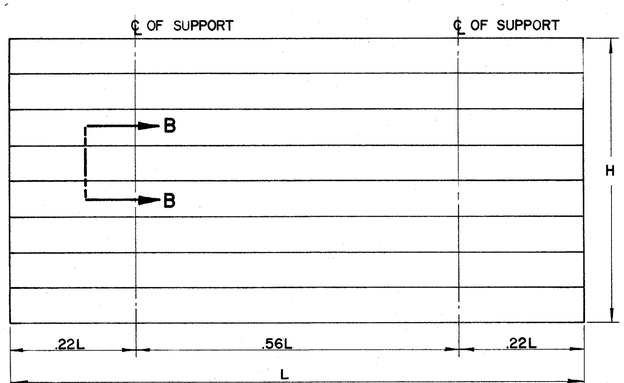




CLIP DETAIL



SECTION C-C



GENERAL ARRANGEMENT

SPOT WELDS

PANEL SIZE	MAXIMUM SPOT WELD SPACING	
	CENTER TO CENTER	BETWN ROWS
12 INCH	4 INCH	10 INCH
18 & 24 INCH	4 INCH	8 INCH

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

ALUMINUM BOLTED EXTRUSHEET PANEL SIGN

ECD 2

DATE 10-14-65

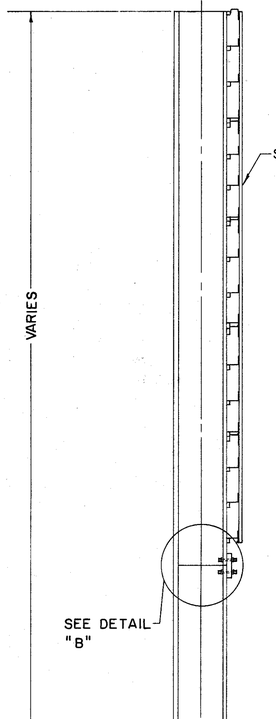
APPROVED Fred C. Talbot
ENGINEER OF TRAFFIC

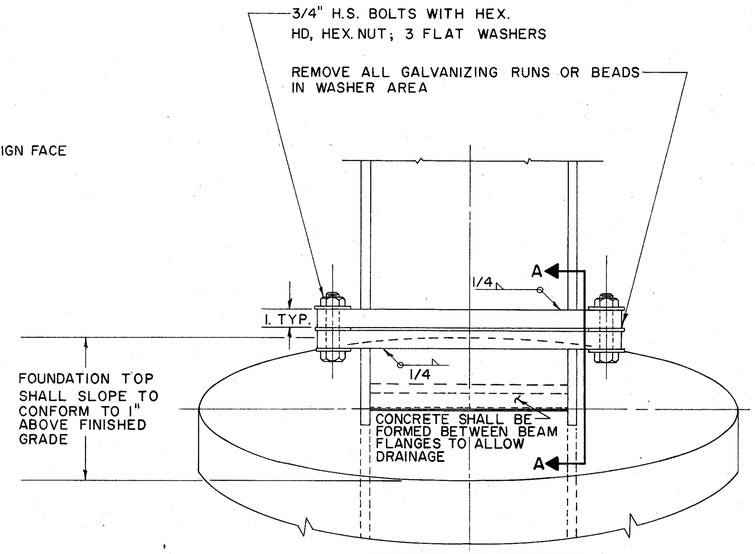
ALUMINUM BOLTED-EXTRUSHEET PANEL SIGN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

177
239

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04



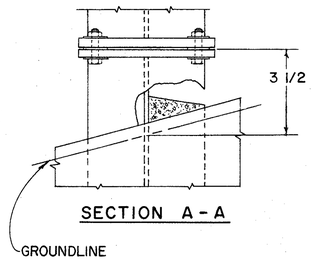


BOLTING PROCEDURE

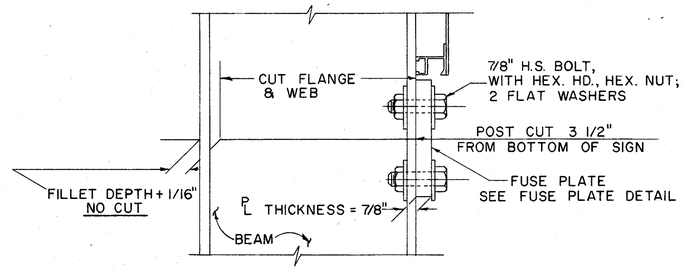
1. ASSEMBLE POST TO STUB W/BOLTS & ONE FLAT WASHER ON EACH BOLT BETWEEN PLATES.
2. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE W/12" TO 15" WRENCH TO BED & TO CLEAN BOLT THREADS. LOOSEN EACH BOLT IN TURN & RETIGHTEN BOLTS IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE OF 750 IN. LBS.
3. BURR THREADS AT JUNCTION W/NUT USING A CENTER PUNCH TO PREVENT NUT LOOSENING.

NOTE: TIGHTEN THE H.S. BOLTS IN THE BASE CONNECTION ONLY TO GIVEN TORQUE DO NOT OVER TIGHTEN

VIEW "A" ROTATED 180°



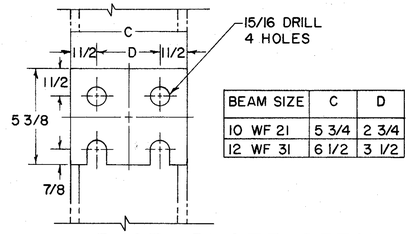
SECTION A-A



FABRICATOR NOTE: ALL FRICTION FUSE BOLTS SHALL BE TIGHTENED IN THE SHOP FOLLOWING A METHOD APPROVED BY THE ENGINEER. TIGHTENING SHALL BE TO SUCH A DEGREE AS TO OBTAIN MINIMUM RESIDUAL TENSION IN EACH BOLT OF 36,050 LBS.

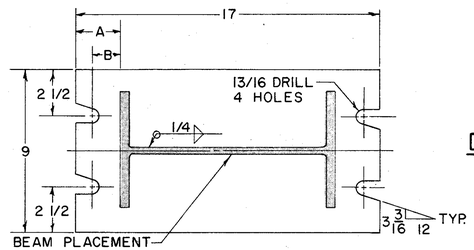
NOTE: INSTALL FUSE PLATE WITH NOTCHES TOWARD BASE

DETAIL "B"



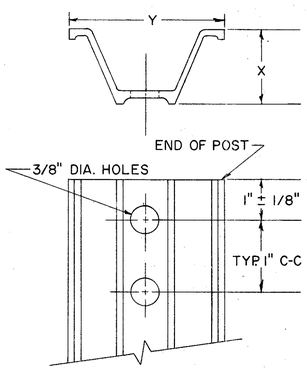
BEAM SIZE	C	D
10 WF 21	5 3/4	2 3/4
12 WF 31	6 1/2	3 1/2

FUSE PLATE DETAIL



BEAM SIZE	A	B
10 WF 21	3 1/2	2 5/8
12 WF 31	2 1/2	1 5/8

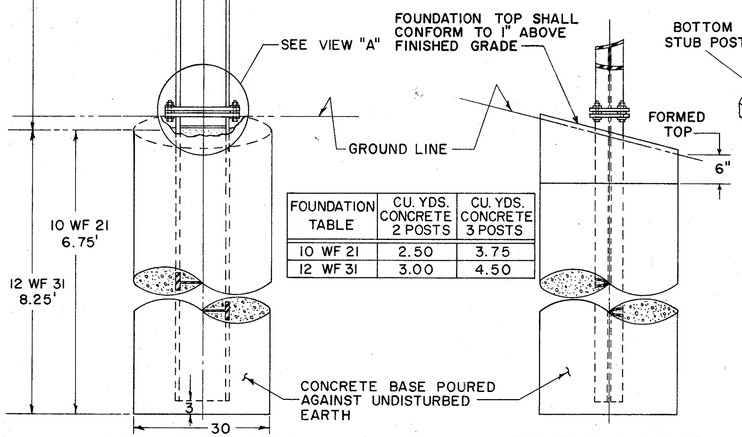
BASE PLATE DETAIL
(TOP VIEW)



WEIGHT PER FOOT	X ± 3/32"	Y ± 1/8"
2.00 #	1 15/32"	3 1/16"
3.00 #	1 7/8"	3 1/2"
4.00 #	2"	3 5/8"

DRIVE POST DETAIL

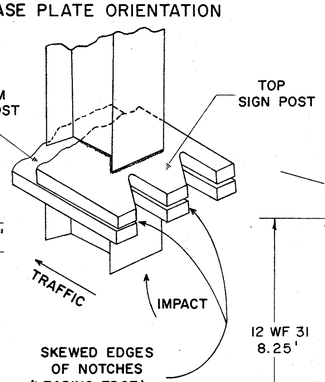
NOTE: THE FOUNDATION FOR 4# DRIVE POST IS SIMILAR TO THE FOUNDATION SHOWN FOR 6# & 8# BEAM

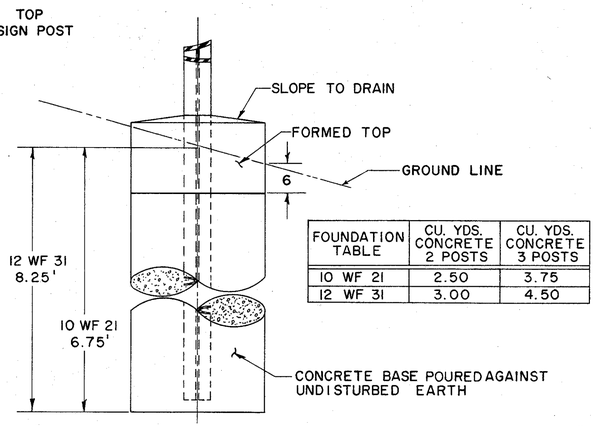


FOUNDATION TABLE	CU. YDS. CONCRETE 2 POSTS	CU. YDS. CONCRETE 3 POSTS
10 WF 21	2.50	3.75
12 WF 31	3.00	4.50

BREAK-AWAY SUPPORT

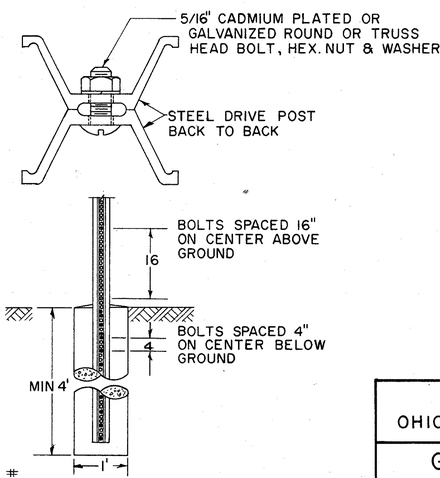
BREAKAWAY SIGN SUPPORT BASE PLATE ORIENTATION





FOUNDATION TABLE	CU. YDS. CONCRETE 2 POSTS	CU. YDS. CONCRETE 3 POSTS
10 WF 21	2.50	3.75
12 WF 31	3.00	4.50

FRONT ELEVATION
STANDARD SUPPORT



6# & 8# BEAM DETAIL

NOTES: ALL MATERIALS SHALL CONFORM TO THE STATE OF OHIO, CONSTRUCTION & MATERIALS SPECIFICATIONS OR AS OTHERWISE SPECIFIED

1) 511 FOUNDATIONS
2) 711.01 STRUCTURAL STEEL SHAPES & PLATES
3) 711.09 H.S. STEEL BOLTS, NUTS & WASHERS

ALL DIMENSIONS IN INCHES UNLESS OTERWISE SHOWN

STRUCTURAL SUPPORTS

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

GROUND MOUNTED SIGN SUPPORTS

GMSS

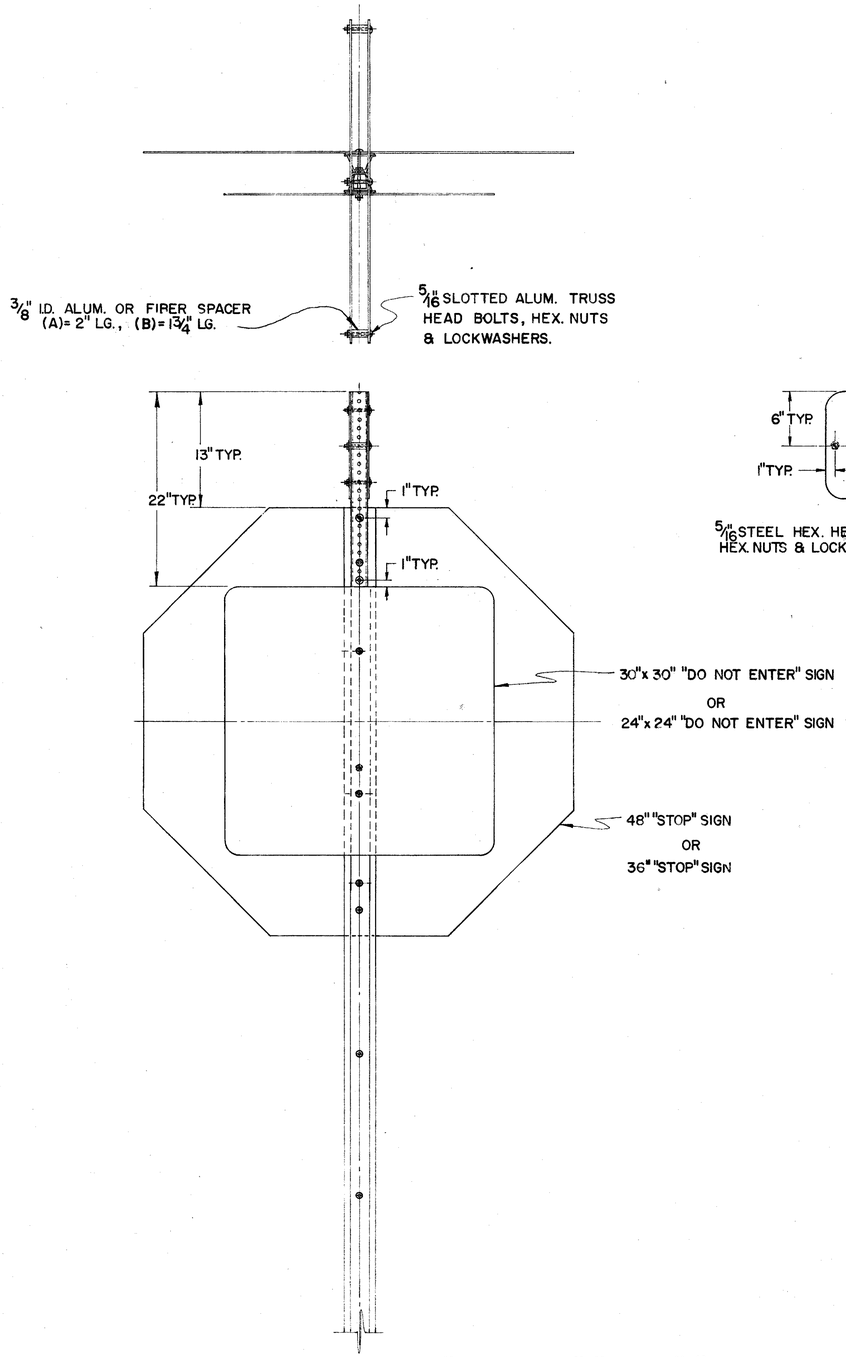
DATE
5-10-68
7-12-68
5-23-69
9-16-69

APPROVED _____
ENGINEER OF TRAFFIC

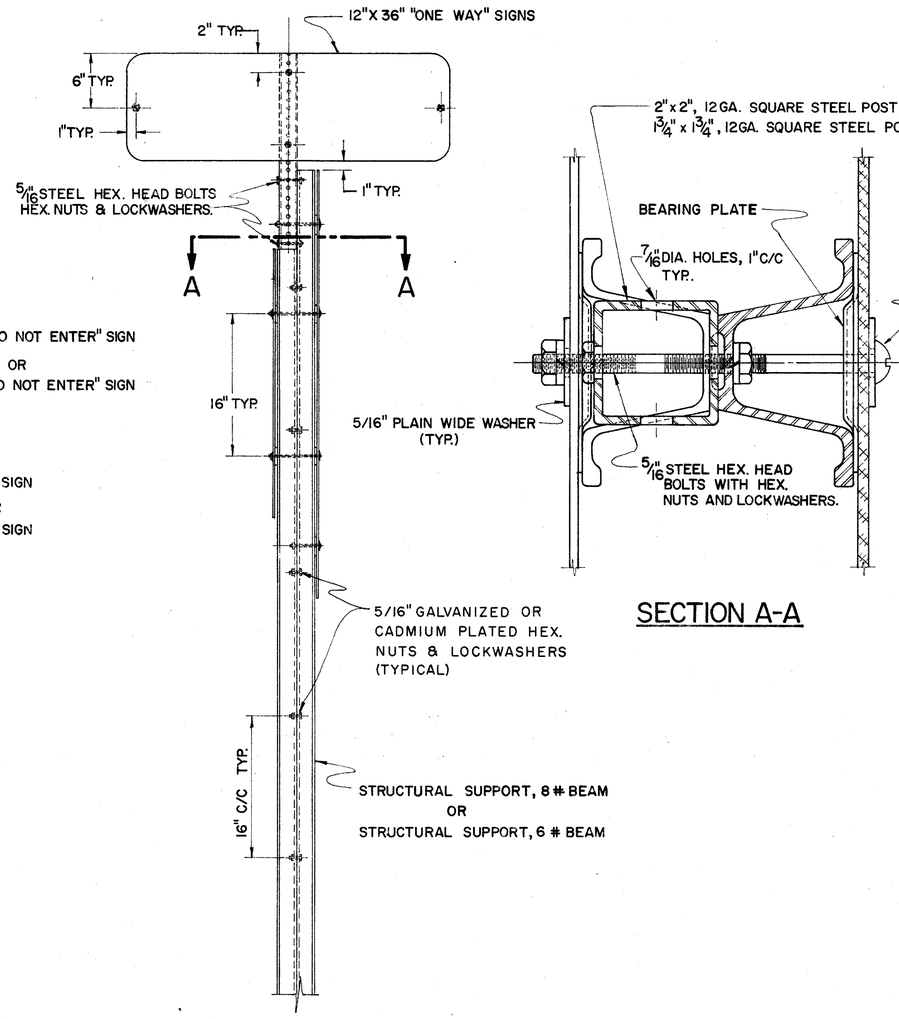
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

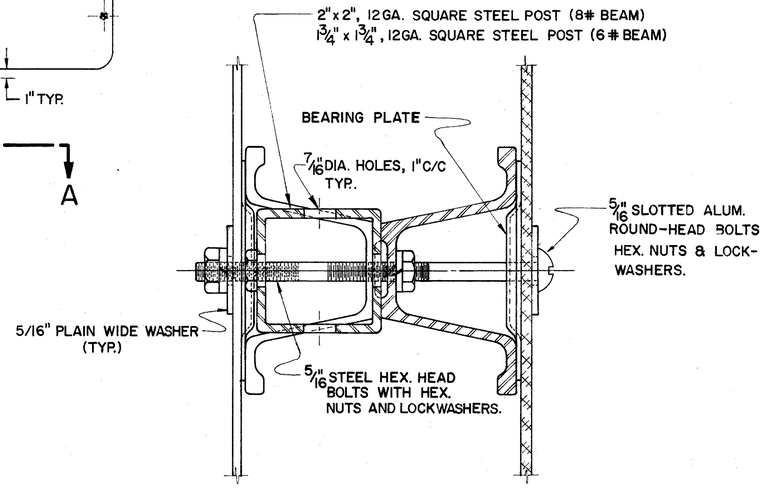
178
239

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04



"ONE WAY", "STOP", "DO NOT ENTER",
SIGN INSTALLATION.





SECTION A-A

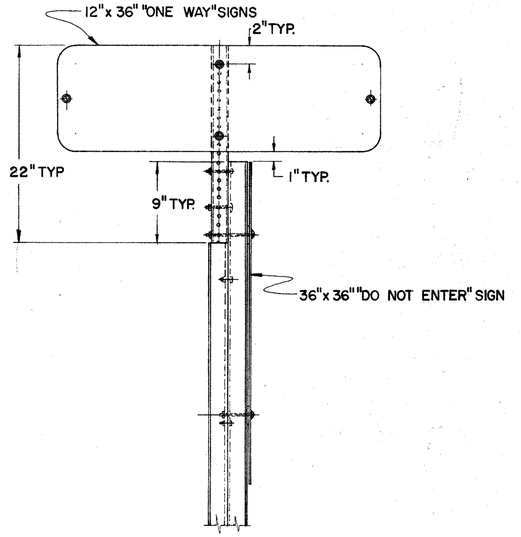
NOTES

MATERIALS

ALL SIGN MATERIALS SHALL BE IN ACCORDANCE WITH SUPPLEMENT SPECIFICATION 815.

ALL STRUCTURAL MATERIALS SHALL BE IN ACCORDANCE WITH SUPPLEMENT SPECIFICATION 816.

FOR SPECIFICATIONS FOR THE 2" & 1 3/4" SQUARE STEEL POST SEE GENERAL NOTES, SHEET NO. 152 & 153.



"ONE WAY", "DO NOT ENTER"
SIGN INSTALLATION

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

SPECIAL "ONE WAY" SIGN SUPPORT DETAILS	SOW	DATE 2-7-66 4-18-67

APPROVED _____ ENGINEER OF TRAFFIC

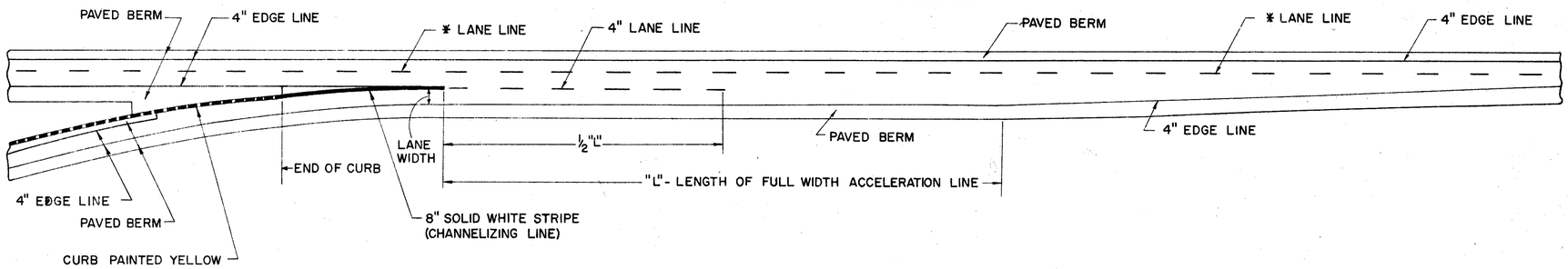
SPECIAL "ONE WAY" SIGN SUPPORT DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

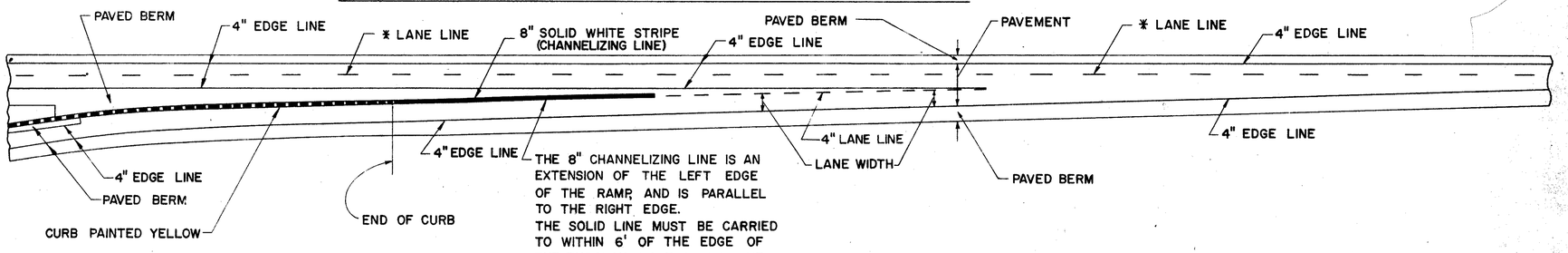
179
239

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

ENTRANCE TERMINAL - PARALLEL ACCELERATION LANE



ENTRANCE TERMINAL - TAPERED ACCELERATION LANE



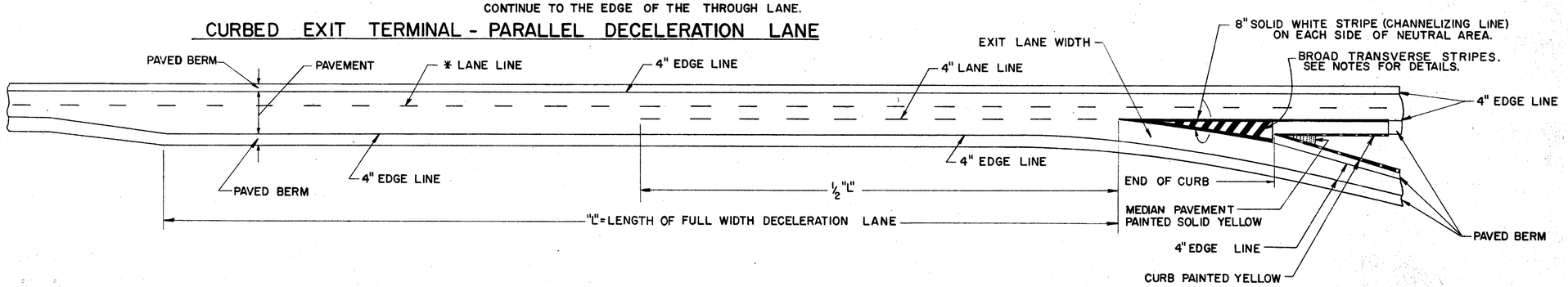
THE 8" CHANNELIZING LINE IS AN EXTENSION OF THE LEFT EDGE OF THE RAMP, AND IS PARALLEL TO THE RIGHT EDGE. THE SOLID LINE MUST BE CARRIED TO WITHIN 6' OF THE EDGE OF THE THROUGH LANE, OR TO THE END OF THE RAMP CURVE IF CLOSER. THE 4" DASHED LINE SHOULD CONTINUE TO THE EDGE OF THE THROUGH LANE.

NOTES

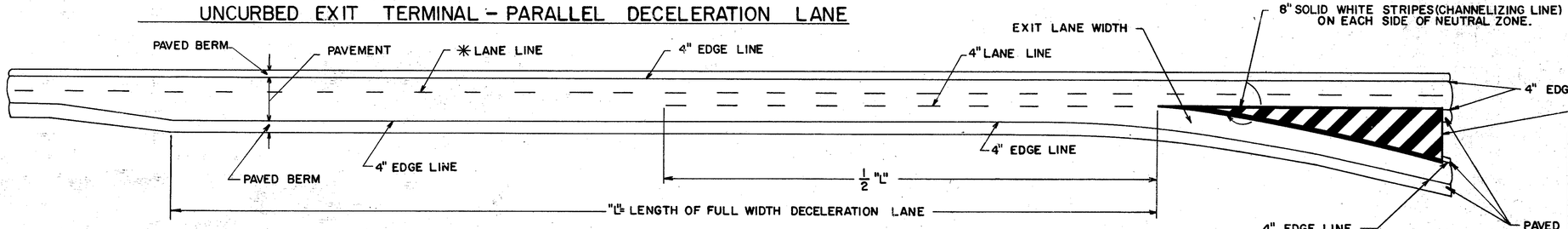
DIAGONAL STRIPES AT EXIT RAMPS SHALL BE 24" BROAD TRANSVERSE STRIPES, 62'-11", WITH A 6' SPACE BETWEEN STRIPES.

* 6" LANE LINE ON INTERSTATE HIGHWAYS ONLY.
4" LANE LINE ON ALL OTHER HIGHWAYS.

CURBED EXIT TERMINAL - PARALLEL DECELERATION LANE



UNCURBED EXIT TERMINAL - PARALLEL DECELERATION LANE



BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

PAVEMENT MARKING | 621

DATE
7-17-61
4-6-62
5-24-65
9-22-67
4-17-68

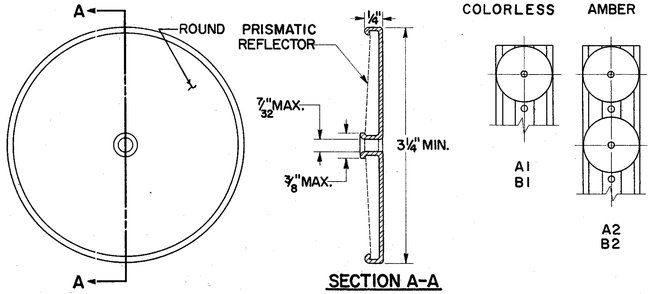
APPROVED Robert E. Lower
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

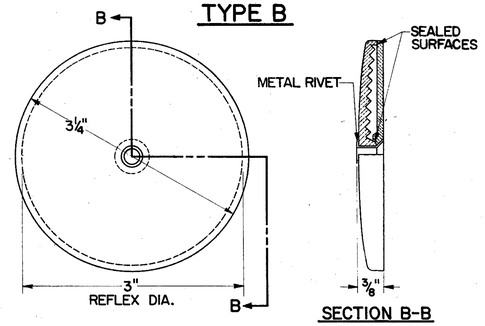
180
239

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

TYPE A



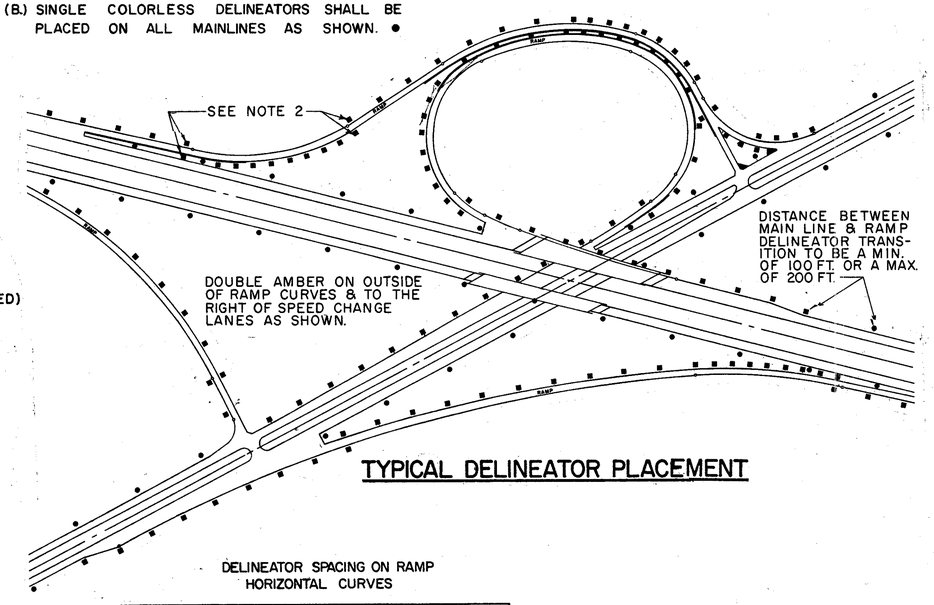
TYPE B



NOTE:

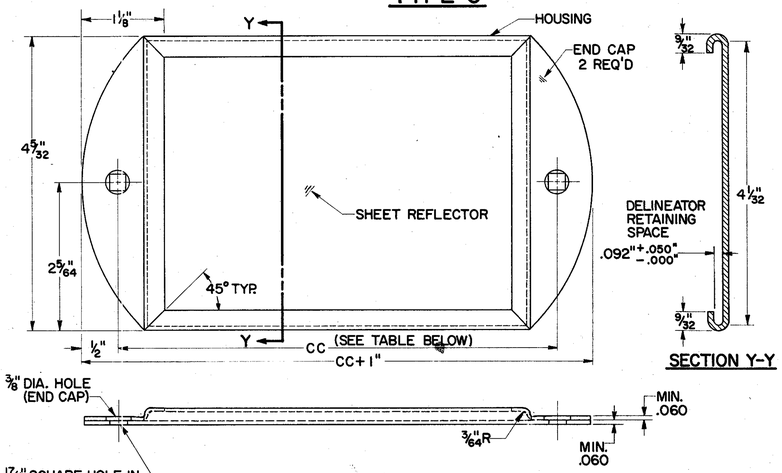
(A.) DOUBLE AMBER DELINEATORS SHALL BE PLACED ON ALL RAMPS AS SHOWN. ■

(B.) SINGLE COLORLESS DELINEATORS SHALL BE PLACED ON ALL MAINLINES AS SHOWN. ●



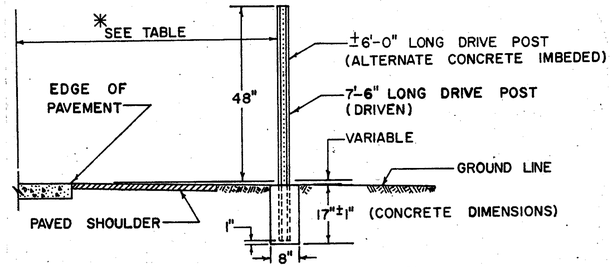
TYPICAL DELINEATOR PLACEMENT

TYPE C



TYPE	DIM. CC
C1 – SINGLE COLORLESS	6"
C2 – DOUBLE AMBER	11"

LATERAL PLACEMENT OF DELINEATORS



* TABLE

TYPE DELINEATOR	NO GUARDRAIL	GUARDRAIL
SINGLE COLORLESS	12'-6"	6" OUTSIDE
DOUBLE AMBER RIGHT SIDE	** 8'-6"	6" OUTSIDE
DOUBLE AMBER LEFT SIDE	4'-6"	6" OUTSIDE

** THIS DIMENSION SHALL VARY ON SPEED CHANGE LANES TO MAINTAIN MINIMUM DISTANCE OF 2'-6" FROM EDGE OF PAVED SHOULDER.

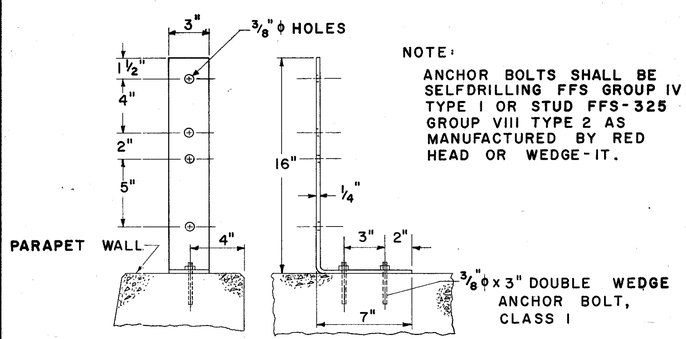
DELINEATOR SPACING ON RAMP HORIZONTAL CURVES

RADII, FT. FROM	RADII, FT. TO	SPACING ON CURVE	* TRANSITION SPACING	
TANGENT	1,801	100'	100'	100'
1,800	1,401	80'	100'	100'
1,400	1,001	70'	100'	100'
1,000	751	60'	100'	100'
750	551	50'	80'	100'
550	326	40'	70'	100'
325	——	30'	60'	100'

* SUCH AS 40' TO 70' TO 100' OR 100' TO 80' TO 50' OR ANY OTHER COMBINATION SHOWN ABOVE.

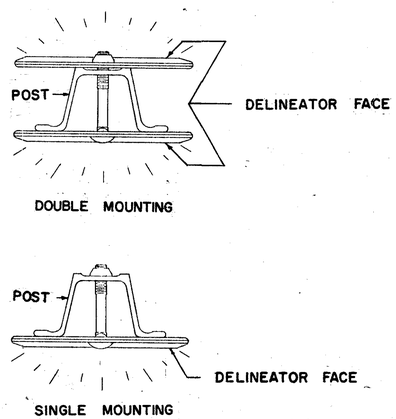
NOTES

1. TYPE A1 OR B1 DELINEATORS ON THE RIGHT OF THE THROUGH ROADWAY ARE TO BE SPACED AT 200 FT. INTERVALS THROUGHOUT, REGARDLESS OF CURVES.
2. WHEN CROSSING FROM LEFT TO RIGHT OR FROM RIGHT TO LEFT ON THE RAMPS, THE DELINEATORS AT THE POINT OF CROSSOVER ARE TO BE AT THE SAME STATION ON EACH SIDE.
3. NO DELINEATORS ARE TO BE PLACED IN PAVED BERM
4. WHEN RADII OF CURVE ON RAMPS REQUIRE 100' SPACING THE DELINEATORS SHALL BE PLACED ON THE RIGHT IN RELATION TO THE FLOW OF TRAFFIC.

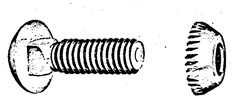


NOTE:
ANCHOR BOLTS SHALL BE SELFDRILLING FFS GROUP IV, TYPE I OR STUD FFS-325 GROUP VIII TYPE 2 AS MANUFACTURED BY RED HEAD OR WEDGE-IT.

DELINEATOR BRIDGE PARAPET BRACKET

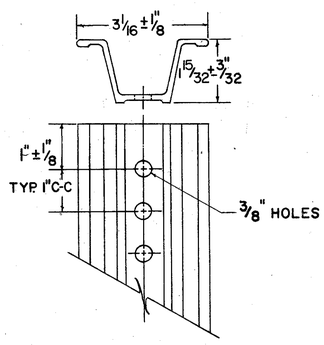


DELINEATOR MOUNTING



TAMPER RESISTANT FASTENERS SHALL BE USED TO FASTEN DELINEATORS TO POST AS/OR SIMILAR TO ONE SHOWN ABOVE.

TAMPER RESISTANT FASTENERS



2 LB./FT. DELINEATOR DRIVE POST

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

DELINEATOR DETAILS	620	DATE 9-25-62 5-24-65 9-12-67

APPROVED Robert L. Lomax
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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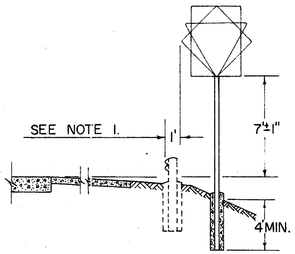
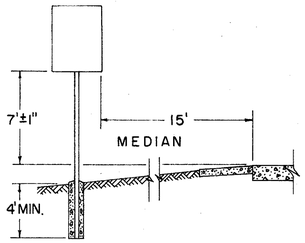
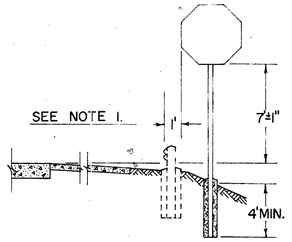
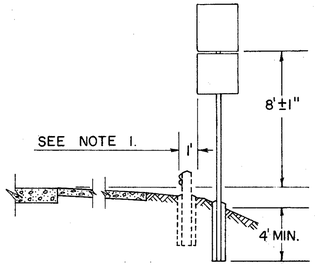
239

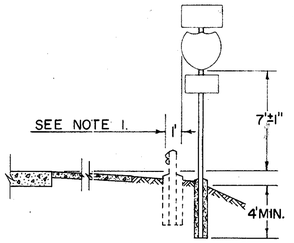
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

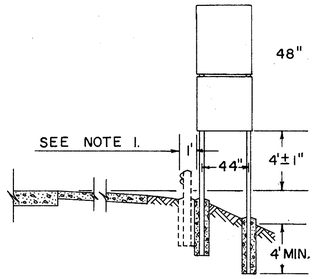


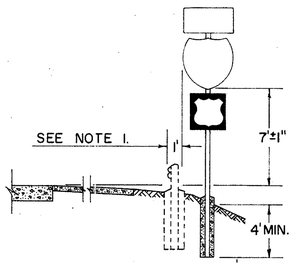


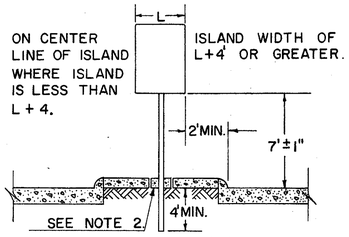


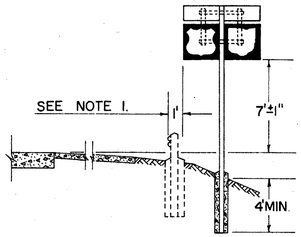


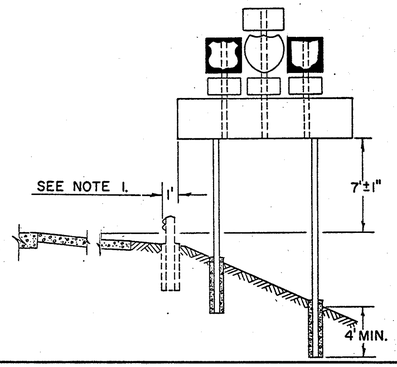


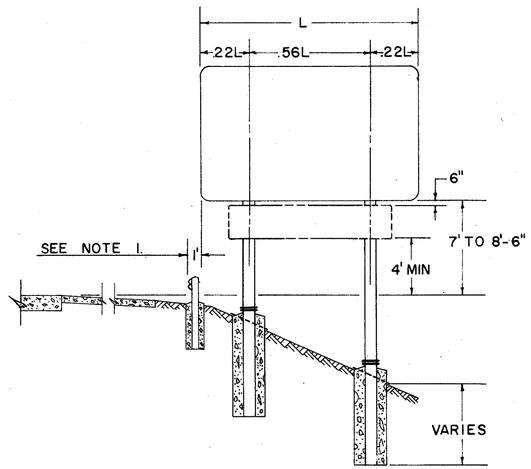


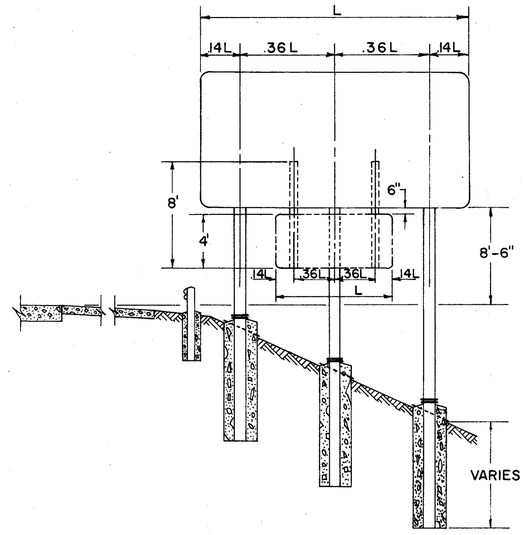


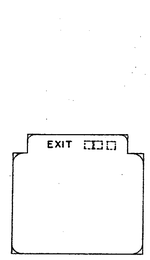


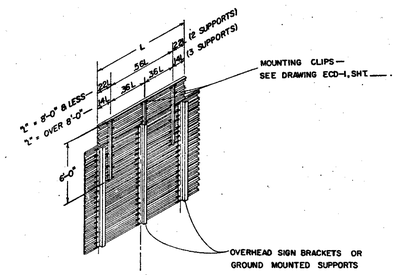




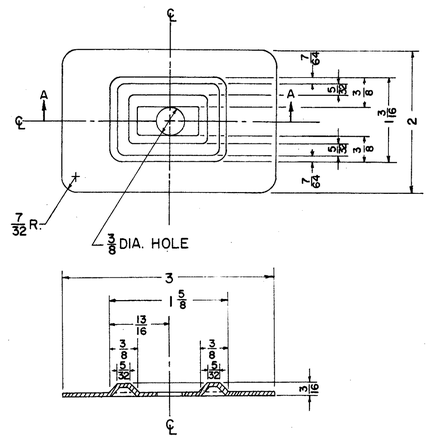








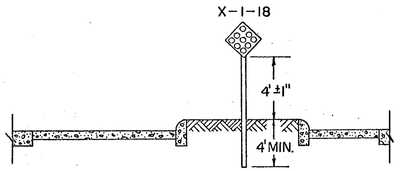
"EXIT" SIGN ATTACHMENT DETAIL



SECTION AA

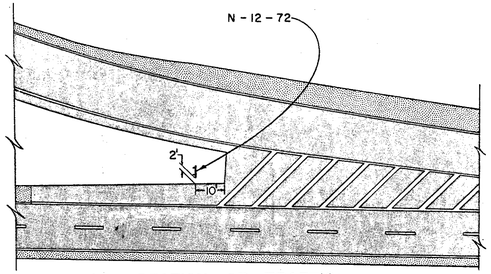
NOTE:
THE PLATE IS SYMMETRICAL ABOUT EITHER CENTERLINE.
METAL SHALL BE 16 GAUGE STEEL.
ALL DIMENSIONS ARE IN INCHES.

BEARING PLATE DETAIL



SIGN SUPPORT SPACING

L=FT	2 SUPPORTS .22	2 SUPPORTS .56	3 SUPPORTS .14	3 SUPPORTS .36	L=FT	2 SUPPORTS .22	2 SUPPORTS .56	3 SUPPORTS .14	3 SUPPORTS .36
5.0	1.10	2.80	0.70	1.80	17.0	3.74	9.52	2.38	6.12
6.0	1.32	3.36	0.84	2.16	18.0	3.96	10.08	2.52	6.48
7.0	1.54	3.92	0.98	2.52	19.0	4.18	10.64	2.66	6.84
8.0	1.76	4.48	1.12	2.88	20.0			2.80	7.20
9.0	1.98	5.04	1.26	3.24	21.0			2.94	7.56
10.0	2.20	5.60	1.40	3.60	22.0			3.08	7.92
11.0	2.42	6.16	1.54	3.96	23.0			3.22	8.28
12.0	2.64	6.72	1.68	4.32	24.0			3.36	8.64
13.0	2.86	7.28	1.82	4.68	25.0			3.50	9.00
14.0	3.08	7.84	1.96	5.04	26.0			3.64	9.36
15.0	3.30	8.40	2.10	5.40	27.0			3.78	9.72
16.0	3.52	8.96	2.24	5.76	28.0			3.92	10.08



DIRECTION OF TRAFFIC

NOTES

1. THE NEAR EDGE OF ALL MAIN LINE SIGNS, EXCEPT GORE INSTALLATIONS, SHALL BE LOCATED ONE FOOT (1') BACK OF GUARD RAIL FACE. THIS DIMENSION SHALL BE DETERMINED BY ROADWAY TYPICAL SECTION & USED WHETHER OR NOT GUARD RAIL IS PRESENT.
   ON RAMPS THE NEAR EDGE OF SIGNS SHALL BE LOCATED ONE FOOT (1') BACK OF GUARD RAIL FACE. THIS DIMENSION WILL BE DETERMINED AND USED AS FOR MAIN LINE ABOVE.
   ON APPROACHES THE NEAR EDGE OF SIGNS SHALL BE
   (A) ONE FOOT (1') BEHIND EXISTING GUARD RAIL
   (B) TWO FEET (2') FROM THE EDGE OF PAVED OR TRAVELED SHOULDER WITH A MINIMUM OF 6' FROM EDGE OF ROADWAY PAVEMENT.

2. POSTS PLACED IN CONCRETE MEDIANS SHALL BE INSTALLED BY DRIVING THROUGH A 6" SLEEVE OR CORE DRILLED HOLE. THE HOLE SHALL BE FILLED WITH ASPHALT OR PORTLAND CONCRETE AFTER THE POST IS IN THE PROPER POSITION.

3. HORIZONTAL BACK BRACING SHALL ALWAYS BE MOUNTED ON THE FRONT FLANGE OF THE SUPPORT EXCEPT WHERE SIGNS ARE MOUNTED BACK TO BACK. BACK BRACING SHALL NEVER EXTEND ABOVE TOP EDGE OF UPPERMOST SIGN PLATE AND SHALL BE ATTACHED TO SUPPORTS USING 5/16" GALVANIZED STEEL BOLTS.

4. SCREWS, NUTS, AND WASHERS FOR SIGN ERECTION SHALL BE ALUMINUM EXCEPT AS NOTED ABOVE. 5/16" TRUSS HEAD SLOTTED MACHINE SCREWS WITH HEX. NUTS PLAIN AND LOCKWASHERS SHALL BE USED. PLAIN WASHERS SHALL BE 5/16" "WIDE", USED ON SIGN FACE ONLY

5. SIGN INSTALLATIONS SHALL BE PLACED SO THAT SUPPORTS ARE NOT PLACED IN DRAINAGE DITCHES.

6. HORIZONTAL CLEARANCES SHOWN PERTAIN TO NON-CURBED SECTIONS. SECTIONS WITH UNMOUNTABLE CURB SHALL HAVE A HORIZONTAL CLEARANCE OF 2'-0" MINIMUM FROM THE CURB FACE TO THE SIGN EDGE.

7. VERTICAL AND HORIZONTAL CLEARANCE BETWEEN SIGNS ON ONE ASSEMBLY SHALL BE A MAXIMUM OF 2" AND A MINIMUM OF 1".

8. GALVANIZED STEEL BEARING PLATES SHALL BE INCLUDED BETWEEN ALL SHEET ALUMINUM SIGNS ATTACHED TO VERTICAL SUPPORTS AT EACH SIGN BOLT LOCATION.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

TYPICAL PLACEMENT OF SIGNS

TPS-1

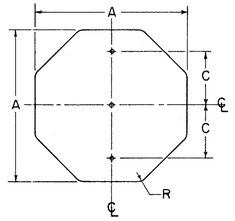
DATE
9-27-67
7-12-68
5-13-69

APPROVED _____
ENGINEER OF TRAFFIC

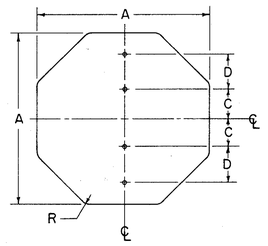
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

182
239

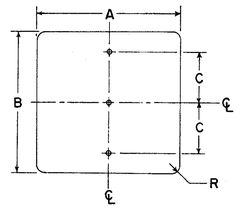
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04



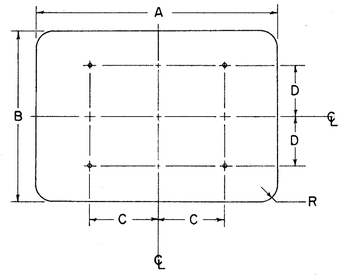
A	C	R	GAUGE
30	8	1 1/2	.080
36	8	1 1/2	.080



A	C	D	R	GAUGE
48	8	10	1 1/2	.100

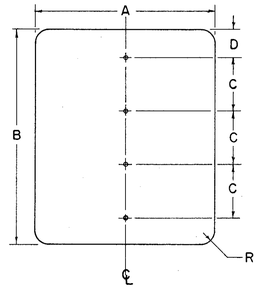


A	B	C	R	GAUGE
24	30	8	1 1/2	.063
24	48	15	1 1/2	.100
30	36	11	1 1/2	.080
30	42	12	1 1/2	.080
36	36	11	1 1/2	.080
36	42	15	1 1/2	.080
36	48	15	1 1/2	.080
48	24	10	3	.100
48	36	13	3	.100

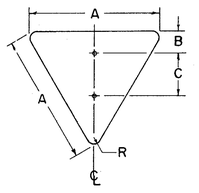


A	B	C	D	R	GAUGE
48	48	22	16	3	.100
48	60	22	22	3	.100

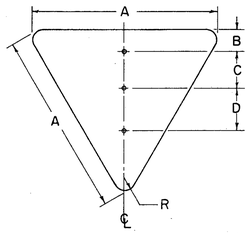
SPEED LIMIT SIGNS ON TWO SUPPORTS



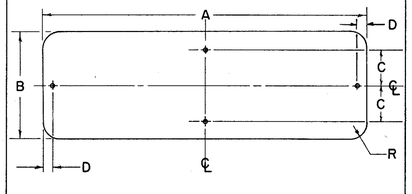
A	B	C	D	R	GAUGE
48	48	12	6	3	.100
48	60	15	7 1/2	3	.100



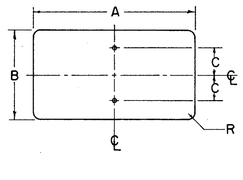
A	B	C	R	GAUGE
36	3	16	2 1/2	.080



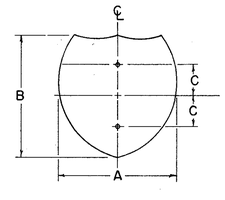
A	B	C	D	R	GAUGE
48	4	10	15	3	.100
60	5	10	15	4	.100



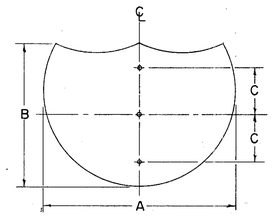
A	B	C	D	R	GAUGE
36	12	4	1	1 1/2	.080
72	12	—	16	1 1/2	.100
60	12	—	13	1 1/2	.100



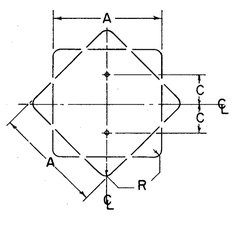
A	B	C	R	GAUGE
12	6	1 1/2	1 1/2	.063
20	15	6	1 1/2	.063
24	12	4 1/2	1 1/2	.063
24	18	7 1/2	1 1/2	.063
8	26	8	1	.063
36	18	7 1/2	1 1/2	.080



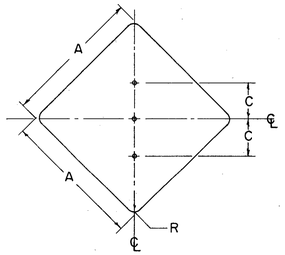
A	B	C	GAUGE
24	24	8	.063
30	24	8	.080



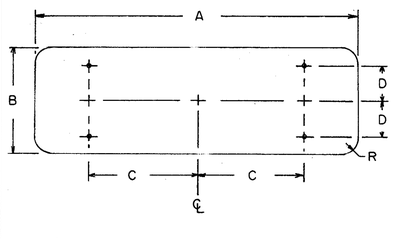
A	B	C	GAUGE
36	36	11	.080
48	36	11	.100



A	C	R	GAUGE
18	7 1/2	1 1/2	.063
24	8	1 1/2	.063
30	8	1 1/2	.080

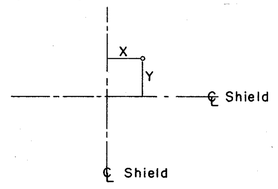


A	C	R	GAUGE
36	12	1 1/2	.080
48	14	3	.100



A	B	C	D	R	GAUGE
72	18	20	6	1 1/2	.100
72	24	20	8	1 1/2	.100
60	30	17	10	1 1/2	.100
96	18	27	6	1 1/2	.100

Location of holes on "Demountable Shields" (attached to guide signs)



SIZE	NO. HOLES	X	Y
(26) 24X24	4	7	7
30X24	4	8	8
(39) 36X36	4	10	10
		0	10
48X36	6	15	10

For notes on fastening see drawing for miscellaneous "Signing Items" sheet.

NOTES:

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN.

MATERIAL

FLAT SIGN BLANKS SHALL BE FURNISHED IN ALUMINUM ALLOY 6061-T6, (ASTM-B209, GSIIA-T6) WITH MILL FINISH.

BOLT HOLES

THE BOLT HOLES SHALL BE 3/8" IN DIAMETER, AND MAY BE DRILLED, BLANKED OR PUNCHED TO FINISHED SIZE.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

SIGN BLANK DETAILS

SBD

DATE
4-14-67
5-10-68
10-1-68
5-27-69
6-18-69

APPROVED_____
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
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FRANKLIN COUNTY
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GENERAL LIGHTING QUANTITIES

For Sub-Summaries, See Sheet Nos. 191, 192, 193 & 194
Quantities by: FJO 10-16-70
Checked by: [illegible] 10-16-70

LINE No.	TOTALS: STRUCTURES State-City Participation		ROADWAY 100% State Participation		ROADWAY State-City Participation				SUB-TOTALS State-City Participation	SUB-TOTALS 100% State Participation	PROJECT TOTAL	ITEM	UNIT	DESCRIPTION
Sheet No.	FRA-104-0820	FRA-104-0854	187		187	188	189	190						
1						3	6	5	14		14	625	Ea.	Light Pole, Design 7A12 BB40
2	4								4		4	625	Ea.	Light Pole, Design 7A15B40
3			6			2	1		3	6	9	625	Ea.	Light Pole, Design 7AT15B40
4			3			1	1	1	3	3	6	625	Ea.	Light Pole, Design 7T15B40
5			2					2	2	2	4	625	Ea.	Light Pole, Design 11AT12B34.2
6								2	2		2	625	Ea.	Light Pole, Design 11T12B34.2
7			1							1	1	625	Ea.	Light Pole, Design 11T15B34.2
8														
9														
10						3	6	5	14		14	625	Ea.	Median Light Pole Foundation 24"x 8'
11			9			3	2	1	6	9	15	625	Ea.	Light Pole Foundation 24"x 8'
12			3					4	4	3	7	625	Ea.	Light Pole Foundation 24"x 6'
13														
14	4		9			9	14	11	38	9	47	625	Ea.	Luminaire Type III 700 Watt, 713.11
15			3					4	4	3	7	625	Ea.	Luminaire Type II 400 Watt, 713.11
16												625	Ea.	Luminaire Type III 400 Watt, 713.11
17	4		9			9	14	11	38	9	47	625	Ea.	Mercury Vapor Lamp 700 Watt, 713.14
18			3					4	4	3	7	625	Ea.	Mercury Vapor Lamp 400 Watt, 713.14
19														
20			12			6	8	10	24	12	36	625	Ea.	Ground Rod
21						5			5		5	625	Ea.	Pull Box 24" Diameter, 713.09
22			6			3	9		12	6	18	625	Ea.	Pull Box 18" Diameter, 713.09
23							1		1		1	625	Ea.	Median Pull Box
24														
25	1482	271				132			1885		1885	625	L.F.	Conduit, 2" 713.04, Type II or III
26			101			409	378		787	101	888	625	L.F.	Conduit, 3" 713.04, Type II or III
27														
28			79							79	79	625	L.F.	Conduit, 3" Jacked Under Pavement, 713.04, Type II or III
29														
30	45	40	1793		42	1389	995	640	3151	1793	4944	625	L.F.	Trench, 24" Deep
31														
32						102	1237	1203	2542		2542	625	L.F.	Barrier 4" Raceway, PVC Conduit, 713.07
33			1832		42	1101	2661	1943	5747	1832	7579	625	L.F.	Duct Cable with 2-1/c No 4 AWG Cables
34						1271	147		1418		1418	625	L.F.	Duct Cable with 2-1/c No 2 AWG Cables
35														
36														
37	3084	582	420			1074	994		5734	420	6154	625	L.F.	No 4 AWG, 600 Volt 1/c Distribution Circuit Cable
38	3084					1056			4140		4140	625	L.F.	No 2 AWG, 600 Volt 1/c Distribution Circuit Cable
39	440		1269			786	1132	1242	3600	1269	4869	625	L.F.	No 10 AWG, 600 Volt 1/c Pole and Bracket Cable, 19 Strand
40														
41			4			8	20		28	4	32	625	Ea.	Connector Kit, Type I
42	4		12			6	8	10	28	12	40	625	Ea.	Connector Kit, Type II
43	4		12			6	8	10	28	12	40	625	Ea.	Connector Kit, Type III
44			8			10	8		18	8	26	625	Ea.	Connector Kit, Type VII B or C
45	8					34	2		44		44	625	Ea.	Connector Kit, Type VII A
46							4		4		4	625	Ea.	Median Pull Box Anchor "L" Bolt 1¼"x 40"
47	1								1		1	625	Ea.	Structure Grounding System, Bridge No FRA-104-0820
48		1							1		1	625	Ea.	Structure Grounding System, Bridge No FRA-104-0854
49	4								4		4	625	Ea.	Structure Junction Box, 16"x12"x6"
50	8								8		8	625	Ea.	Light Pole Anchor "U" Bolt For Structures, 713.01
51														
52						Lump			Lump		Lump	625	Lump	Control Center
53						Lump			Lump		Lump	625	Lump	Service Pole, as per plan
54												607	L.F.	8' CL Fence, as per plan, See General Summary
55												607	Ea.	CL Gate, as per plan, See General Summary

GENERAL LIGHTING NOTES

SPECIFICATIONS

These notes are supplemental to Items 625 and 713 of the State of Ohio Department of Highways Construction and Material Specifications dated January 1, 1969.

Reference shall be made to Standard Construction Drawings HL-1, HL-2, HL-3, and HL-4.

In lieu of pertinent details shown on the standard construction drawings, the tops of light pole foundations and of pull boxes shall not exceed 1 inch above the surrounding ground elevation at the high point of the surrounding ground.

REVISION OF LIGHT POLE AND PULL BOX OFFSETS

In lieu of the respective details shown on Standard Construction Drawings HL-1 and HL-3 the normal trench alignment on this project shall be parallel to the controlling pavement edge or baseline and direct from pole to pole unless otherwise shown. The special conduit elbows in the pole foundation, shall be in a vertical plane along the pole alignment, and the normal offset distance of the poles and pull boxes from face of guardrail shall be 36 inches.

Light poles on the barrier median are on the centerline of S.R. 104. Light pole offsets on the bridges shall be as shown on the Bridge Lighting Details. The distance from the edge of pavement to the centerline of outside light poles (not on bridges) shall be 13'-0" on S.R. 104 and Ramp F-F and 11'-0" on Ramp A, S.R. 104 N.B. and S.R. 104 S.B.

TRANSFORMER BASE POLES

For pole designs with a base type letter designation of AT, the transformer base shall be cast aluminum as detailed in these plans. Where the base type letter is T, the transformer bases furnished may, at the option of the Contractor, be either of cast aluminum or of steel materials meeting the requirements of these plans and the general specifications.

625.03 - GENERAL

The power supplying agency for this project is:

The City of Columbus
Division of Electricity
City Hall
Columbus, Ohio 43215

625.07 - 713.11 LUMINAIRES, EXCEPT UNDERPASS LUMINAIRES

400-watt luminaires shall have dual rated 240/480 volt integral regulator ballasts and shall be General Electric M-400, Westinghouse OV-25, McGraw-Edison "Unistyle", or equal approved by the Engineer.

700-watt luminaires shall have single rated 480-volt 700-watt integral regulator ballasts and shall be General Electric M-1000, Westinghouse OV-50, McGraw-Edison "unistyle", or equal approved by the Engineer.

Luminaires predominantly illuminating a main line roadway shall be positioned perpendicularly thereto.

625.08 - 713.14 LAMPS

Mercury lamps shall be General Electric "Bonus Line", Westinghouse "Lifeguard", Sylvania "Pough Service", or equal approved by the Engineer.

625.11 - PULL BOXES

Anchoring of air bells specified for this item may be accomplished by the use of 4 polypropylene ropes. The ropes, if used, shall be knotted at one end. The other ends shall enter the box through each of 4 equally-spaced holes around the upper circumference of the box. The entering ends of each two opposing ropes shall be pulled tight and tied together over the air bell to hold it securely in place.

In addition to the requirements of this item, a treated 1" x 2" wood stake or 3/8" diameter aluminum or steel pin at least 30 inches long shall be driven into the center of the pull box. The connector kits in the box shall be securely taped to the top of the stake or pin in such a manner that all parts of the kits are suspended within the air bell above the elevation of the uppermost opening or notch cut into the lower circumference of the air bell.

Openings or notches may be field cut in the bell to match the lower openings in the pull box if necessary to secure a firm seating for the bell. This operation, however, must not reduce the size of the air chamber below that required for suspension of the connector kits above the upper elevation of the lower edge of the bell in place.

Payment for the above work shall be included in the unit price bid for each pull box.

625.12 - TRENCH

Excavation for trenches shall not exceed twelve (12) inches in width without prior approval of the Engineer.

625.14 - 625.15 CABLE AND DUCT-CABLE IDENTIFICATION

All cables, except structure grounding system cable, entering an accessible enclosure such as a pull box, junction box, handhole, transformer base, or device housing, etc., for the purpose of being terminated or connected to another cable shall be identified in such enclosure with tags or bands as described in 713.18.

No cable splices will be permitted between terminations. Exothermically welded joints in structure grounding systems are not considered as splices.

Payment for the above shall be included in the unit prices bid for the respective cable items.

625.13 - 713.04 CONDUIT

All conduit shall be rigid ferrous metal Type II or Type III.

625.24 - 625.25 METHOD OF MEASUREMENT, BASIS OF PAYMENT

Payment for junction boxes in Type B Raceway conduit on structures shall include the 1-1/2" diameter conduit from the junction box to the pole as shown on Sheet No. 195

713.01 STEEL LIGHT POLES

A 4 inch x 8 inch handhole conforming to the details shown on Sheet No. 195 may be provided in lieu of the handhole shown on Standard Construction Drawing HL-2.

625.17 - 713.15 CABLE CONNECTORS AND CONNECTOR KITS

In lieu of the fuse amperage rating shown on Standard Construction Drawing HL-3, the following shall apply to this project:

No. of Lamps Served	Lamp Rating (Watts)	Fuse Rating (Amps)
1	400	6
1	700	10
2	700	15

713.17 - STRUCTURE GROUND CABLE

In lieu of the provisions of Paragraph 2 of this section, structure ground cable shall be size 1/0 AWG, 7-strand, soft or annealed bare copper cable conforming to ASTM B8, Class "A".

PROTECTION OF COMPLETED WORK

Conduit and/or duct cable terminals shall be sealed, as required by 625.13, immediately upon completion of installation.

Empty conduits shall be capped or otherwise closed immediately upon installation until pull wire or cable is installed and final sealing completed.

Light pole hand holes and openings of transformer base poles shall have covers installed immediately upon erection of pole.

All cable connector kits and exposed cable ends shall be adequately protected by enclosing in plastic bags, taping, or other approved means, until cable connections have been completed.

Payment for this work shall be included in the unit prices bid for each of the respective items.

ANCHOR BOLTS FOR LIGHT POLES ON BRIDGES AND PULL BOXES IN THE MEDIAN BARRIER

Anchor Bolts for mounting light poles on bridges and pull boxes in the median barrier shall conform to the requirements of 713.01 and details shown on the plans and standard drawings for the respective poles to be placed thereon. Payment shall be made at the unit price bid for each U or L bolt of the size specified 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-200 with bonding jumper BJ-1520-14, Crouse-Hinds XJ-64, Appleton Type XJ-200-4 with bonding jumper XBJ-4-125-20, or equal approved by the Engineer for Bridge No. FRA-104-0854 and OZ Type EX-200 with bonding jumper BJ-1520-24, Crouse-Hinds XJ-681, Appleton Type XJ-8 with bonding jumper, or equal approved by the Engineer for Bridge No. FRA-104-0820.

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GENERAL LIGHTING NOTES

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.

STRUCTURE STYLE

STRUCTURES SHALL HAVE NEW SAFETY CURB USING TYPE "B" RACEWAY. SEE LIGHTING DETAIL SHEET NO. 195, AND STANDARD CONSTRUCTION DRAWING HL-4.

ITEM 625 - CONDUIT JACKED UNDER PAVEMENT, AS PER PLAN

THIS ITEM SHALL CONSIST OF 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.

SERVICE LINE AND CONTROL CENTER

HIGH VOLTAGE FUSE CUTOUTS, LIGHTNING ARRESTORS, POWER SERVICE CABLE AND STEP DOWN TRANSFORMER FOR LOW VOLTAGE SUPPLY IS TO BE FURNISHED BY THE CITY OF COLUMBUS. THE CONTRACT UNIT PRICE BID FOR ITEM 625 "SERVICE LINE AND CONTROL CENTER" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS (INCLUDING CONDUIT, CONCRETE ENCASEMENT, PULL BOXES, SECONDARY WIRE AND ALL INCIDENTALS SUCH AS HARDWARE, ETC.) AND LABOR NECESSARY TO MAKE A COMPLETE AND WORKABLE INSTALLATION.

THE CONTRACT UNIT PRICE BID FOR ITEM 607 FENCE TYPE CL AND ITEM 607 GATE TYPE CL SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS SHOWN ON DRAWINGS, INCLUDING LABOR AND INCIDENTALS NECESSARY TO MAKE A COMPLETE INSTALLATION.

LIGHT CONTROL CENTERS ARE TO BE COMBINATION ACROSS THE LINE MAGNETIC CONTACTOR TYPE. (TWO ARE REQUIRED AT THE CONTROL CENTER LOCATION.)

ONE CONTROL CENTER SHALL BE SIMILAR TO SQUARE D CLASS 8903 TYPE #W939FA610A-60A/SP SWITCH AND CONTROLLER, AND ONE SHALL BE SIMILAR TO SQUARE D CLASS 8903 TYPE #W939FA609A-30A/SP SWITCH AND CONTROLLER, WITH EACH CENTER HAVING S/N BAR, CONTROL TRANSFORMER AND EXTRA SPACE, FLANGE MOUNTING, WITH COVER LOCKING MECHANISM (OR EQUAL OF COLUMBUS ELECTRICAL WORKS, GENERAL ELECTRIC OR WESTINGHOUSE).

THE CONTRACT UNIT PRICE BID FOR ITEM 625 LIGHTING "CONTROL CENTER" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS SHOWN ON THE DRAWINGS INCLUDING LABOR AND INCIDENTALS NECESSARY TO MAKE A COMPLETE AND WORKABLE INSTALLATION.

MECHANICAL PROPERTIES FOR LIGHT POLES

Ref. Letter	Pole Design Number	Shaft Size	Taper Inches/Foot	Gauge	Foundation Anchor Bolts: Size	Anchor Bolts: Dia. bolt circle, in.	Anchor Bolts: Proj. above foundation	Arm length	Nominal mtg. height	Elastic def'n. per 100 lbs.	At 2/3 of Yield Stress: Load @ down from top, lbs.	At 2/3 of Yield Stress: Total def'n. inches	At 2/3 of Yield Stress: Perm. set inches	At Yield Stress: Load @ down from top, lbs.	At Yield Stress: Total def'n. inches	At Yield Stress: Perm. set inches	Transformer base type	Foundation size
A	7A12BB40	9.00"×5.90" ×31'-0" ◐	.10	7	1¼"×80"	18"×8"	1'-7"	12	40	1.96	895	18.1	0.5	1340	29.5	3.1	Spec.	24"× 8'-0" median
B	7A15B40	9.00"×5.92" ×30'-10" ◐	.10	7	1¼"×85"	12.5"	0'-3"	15	40	1.96	895	18.1	0.5	1340	29.5	3.1	BRIDGE	
C	7AT15B40	9.00"×5.82" ×31'-10" ◐	.10	7	1"×40"	17.25"	0'-3½"	15	40	1.96	895	18.1	0.5	1340	29.5	3.1	AT-C	24" ×8'-0"
D	7T15B40	9.00"×5.82" ×31'-10" ◐	.10	7	1"×40"	17.25"	0'-3½"	15	40	1.96	895	18.1	0.5	1340	29.5	3.1	AT-C	24" ×8'-0"
E	11AT12B34.2	9.00"×4.87" ×29'-6"	.14	11	1"×40"	17.25"	0'-3½"	12	34.2	2.16	659	14.73	0.5	989	24.0	2.64	AT-C	24" ×6'-0"
F	11T12B34.2	9.00"×4.87" ×29'-6"	.14	11	1"×40"	17.25"	0'-3½"	12	34.2	2.16	659	14.73	0.5	989	24.0	2.64	AT-C	24" ×6'-0"
G	11T15B34.2	9.00"×4.87" ×29'-6"	.14	11	1"×40"	17.25"	0'-3½"	10	34.2	2.16	659	14.73	0.5	989	24.0	2.64	AT-C	24" ×6'-0"

Pole Design Number
7 A 12BB 40
- Mounting height (Top of foundation to center of arm of luminaire)
- Bracket arm length ~ BB denotes double arm (B denotes single arm)
- Base type (A~Anchor type base)(AT~Aluminum transformer type base) (T~Aluminum or cast iron transformer type base)
- Gauge of pole

◐ Mechanical properties based on 9.0"×5.65"×33'-6" shaft prior to cutting

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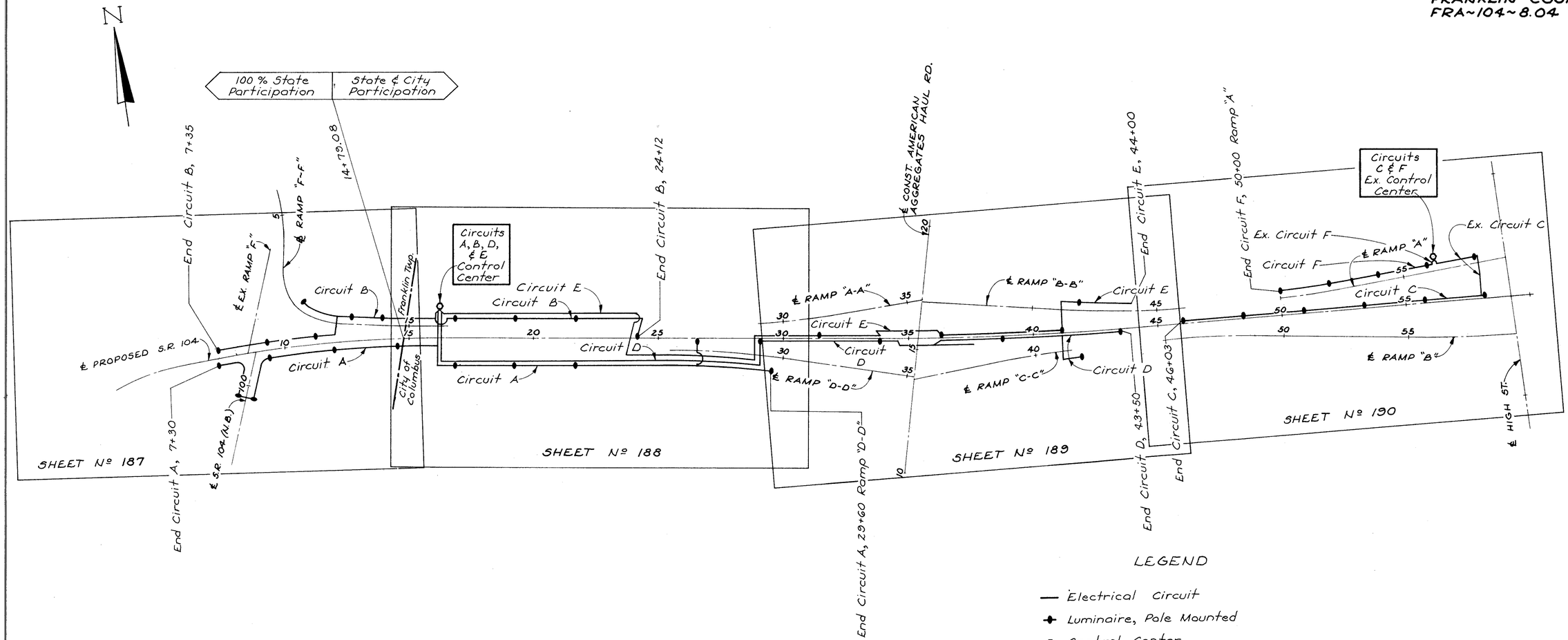

LEGEND

— Electrical Circuit
✦ Luminaire, Pole Mounted
o Control Center

SCHEMATIC
LIGHTING PLAN

COLUMBUS ENGINEERING CONSULTANTS, LTD.

LIGHTING PLAN

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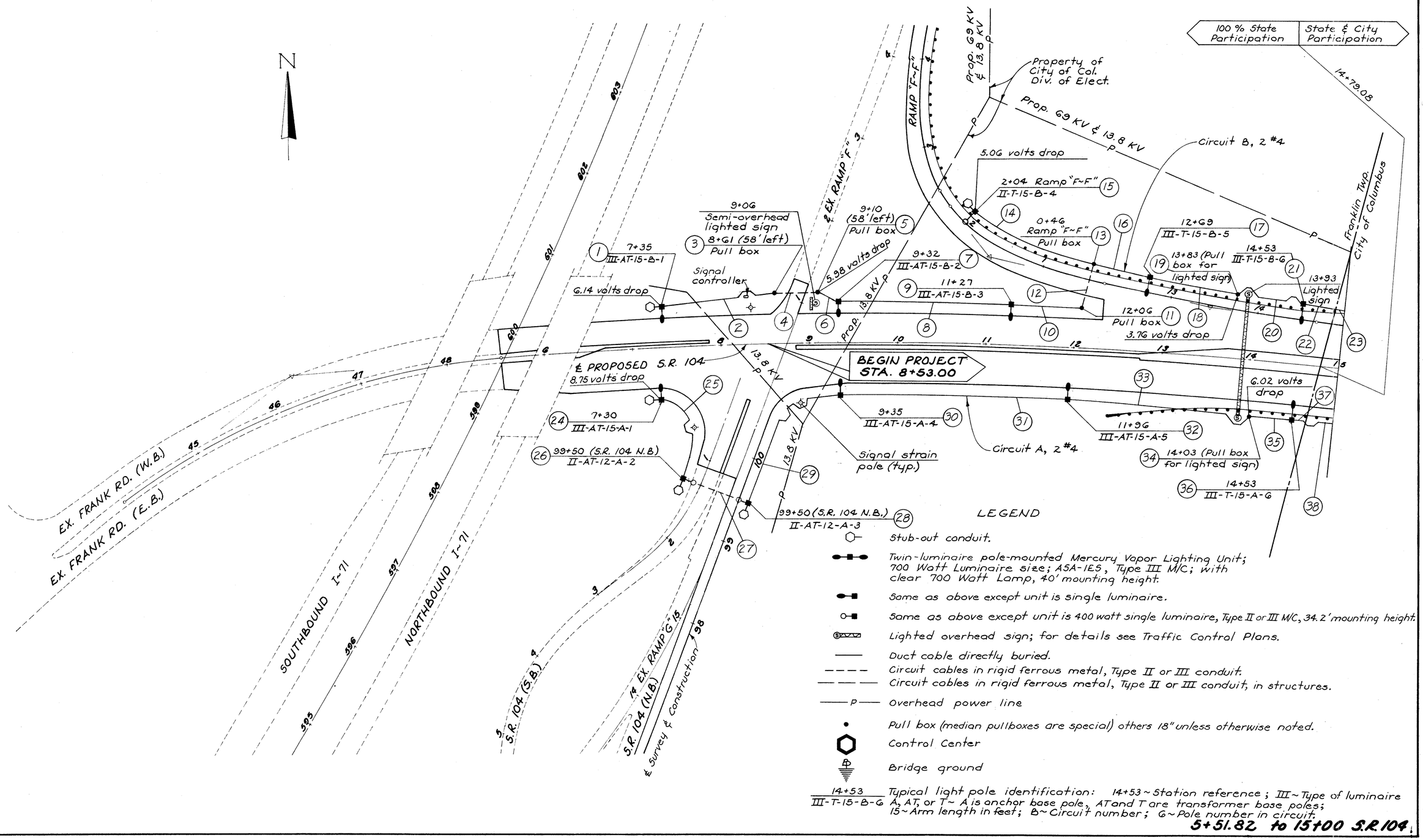
Quantities are on Sheet № 191

100 % State Participation | State & City Participation



LEGEND

- Stub-out conduit.
- Twin-luminaire pole-mounted Mercury Vapor Lighting Unit; 700 Watt Luminaire size; ASA-IES, Type III M/C; with clear 700 Watt Lamp, 40' mounting height.
- Same as above except unit is single luminaire.
- Same as above except unit is 400 watt single luminaire, Type II or III M/C, 34.2' mounting height.
- Lighted overhead sign; for details see Traffic Control Plans.
- Duct cable directly buried.
- Circuit cables in rigid ferrous metal, Type II or III conduit.
- Circuit cables in rigid ferrous metal, Type II or III conduit, in structures.
- —P— Overhead power line
- Pull box (median pullboxes are special) others 18" unless otherwise noted.
- Control Center
- Bridge ground
- 14+53 / III-T-15-B-G — Typical light pole identification: 14+53 ~ Station reference; III ~ Type of luminaire A, AT, or T ~ A is anchor base pole, AT and T are transformer base poles; 15 ~ Arm length in feet; B ~ Circuit number; G ~ Pole number in circuit.

5+51.82 to 15+00 S.R.104

COLUMBUS ENGINEERING CONSULTANTS, LTD.

LIGHTING PLAN

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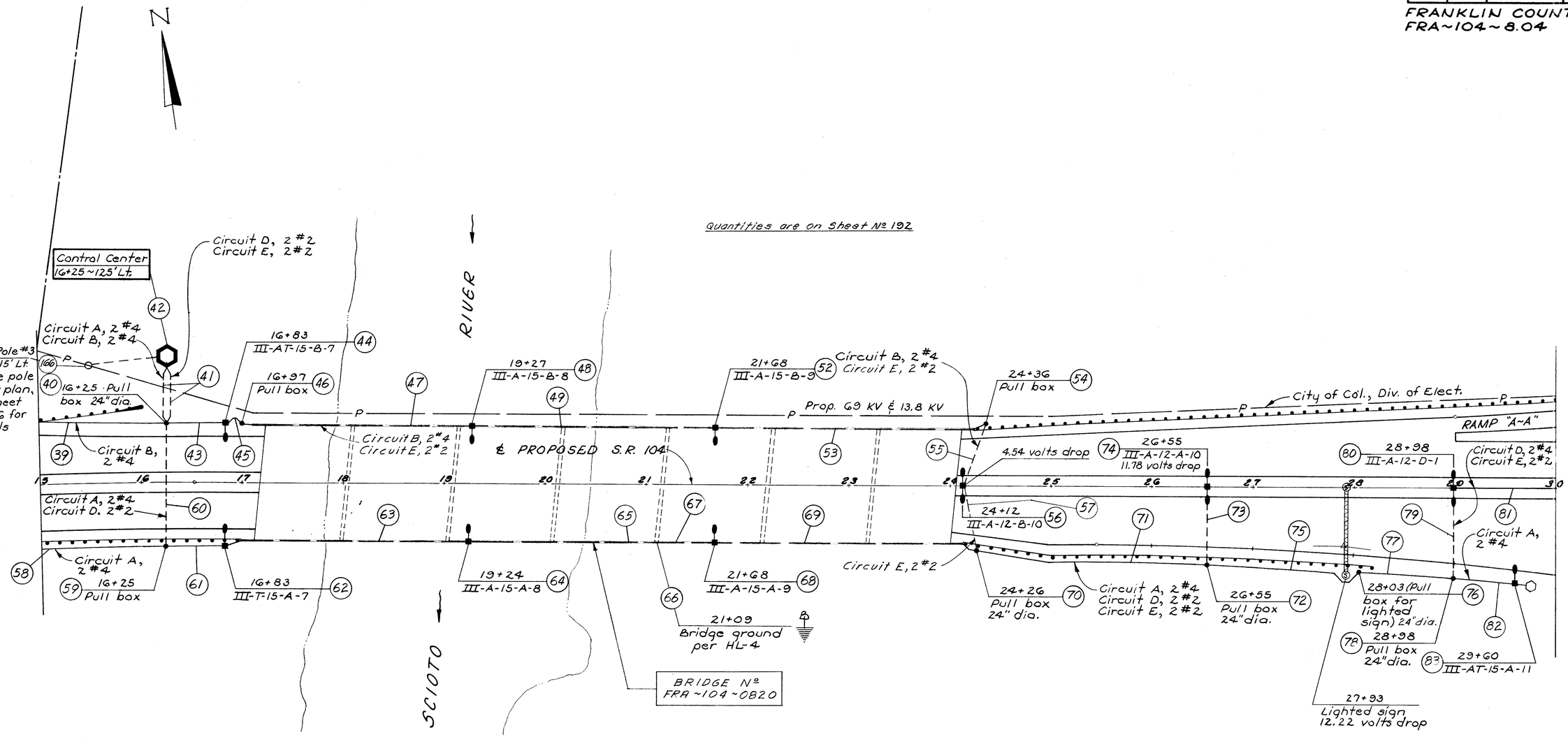

Reference Nºs. (50) (51) and (84) not used.

15+00 to 30+00 S.R. 104

LIGHTING PLAN

COLUMBUS ENGINEERING CONSULTANTS, LTD.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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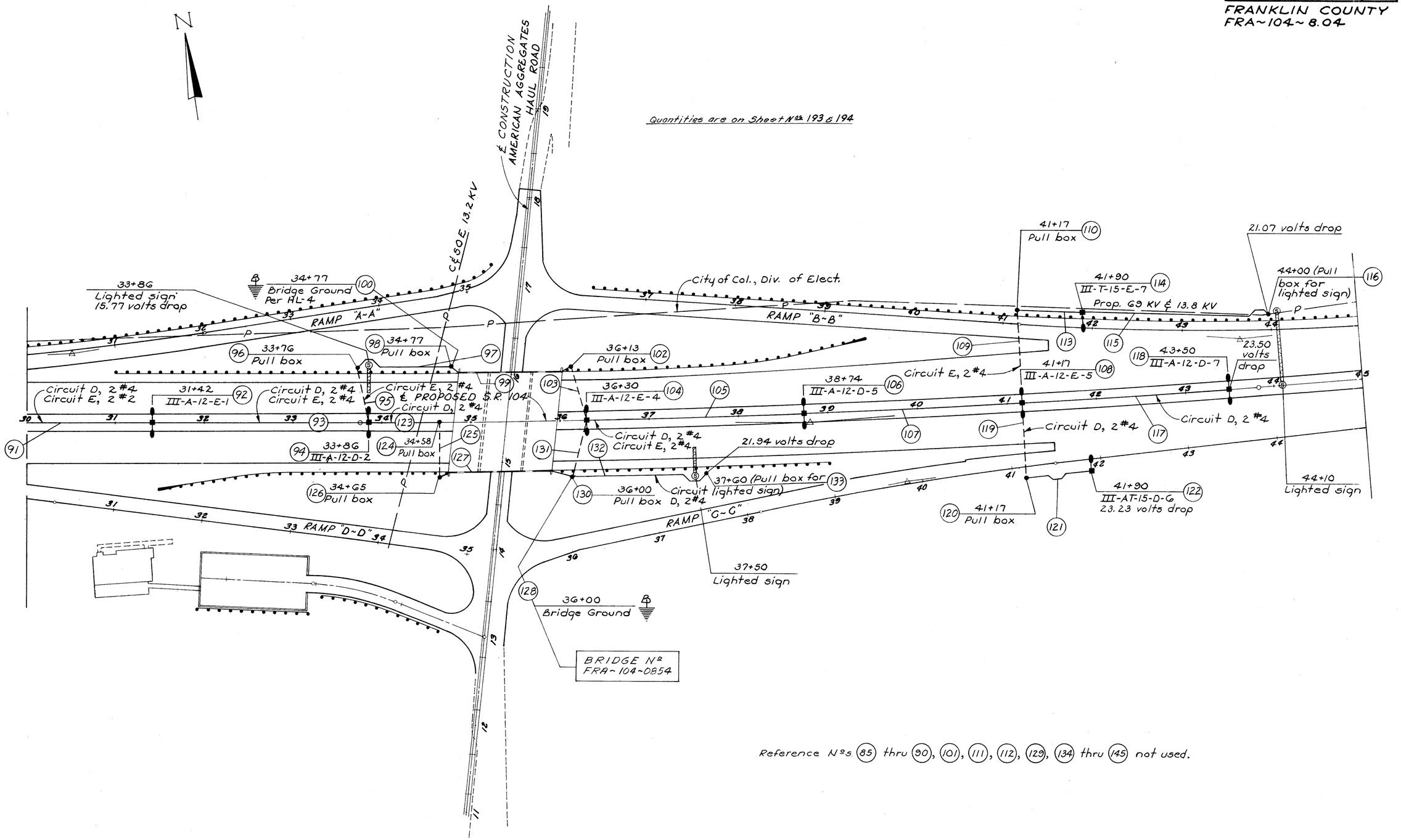
FRANKLIN COUNTY
FRA~104~8.04



Reference Nºs (85) thru (90), (101), (111), (112), (129), (134) thru (145) not used.

30+00 to 45+00 S.R. 104

LIGHTING PLAN

COLUMBUS ENGINEERING CONSULTANTS, LTD.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA-104-8.04

N

Quantities are on Sheet No 194

C & SOE, 138 KV Beatty Canal Line

2.60 volts drop

Ex. Control Center
5G+30, 58' Lt.
Ramp "A"

(165) 50+00 III-T-15-F-4

(163) 52+00 Ramp "A" II-T-12-F-3

(161) 54+00 Ramp "A" II-T-12-F-2

(159) 5G+00 Ramp "A" II-AT-12-F-1

(157) 57+96 Ramp "A" II-AT-12-C-7

58+06 Ramp "A" Ex. Pull box

HIGH ST.

℄ Const.

City of Col. Div. of Elect.

Prop. 69 KV ℄ 13.8 KV

Ex. 69 KV ℄ 13.8 KV

Ex. Circuit F, 2 #4

Ex. Circuit C, 2 #4

5G+30 Ramp "A" Ex. Pull box

RAMP "A"

Circuit F, 2 #4

58+06 Ramp "A" Ex. Pull box

58+06 Ex. Pull box

℄ PROPOSED S.R. 104

(148) 48+46 III-A-12-C-2

(150) 50+89 III-A-12-C-3

(152) 53+32 III-A-12-C-4

(154) 55+75 III-A-12-C-5

Circuit C, 2 #4

58+18 Ex. Light C-G

(146) 46+03 III-A-12-C-1

15.95 volts drop

47+34 Ex. Pull box

47+24 Ex. Lighted sign

49+01 Ex. Light

51+01 Ex. Light

53+01 Ex. Light

54+81 Ex. Light

55+35 Ex. Pull box

5G+61 Ex. Light

58+06 Ex. Pull box

58+10 Ramp "B" Ex. Pull box

RAMP "B"

58+41 Ex. Light

45+00 to 60+00 S.R. 104

LIGHTING PLAN

COLUMBUS ENGINEERING CONSULTANTS, LTD.

QUANTITIES SUB-SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA-104 ~ 8.04

Quantities Carried to Sheet Nº 183
Quantities by: EJO 10/16/70
Checked by: JWM 10-16-70

Sheet Nº	Reference Nº	Side	Station	Station	LIGHT POLE: Design 7A12BB40	Design 7A15B40	Design 7AT15B40	Design 7T15B40	Design 11AT12B34.2	Design 11T12B34.2	Design 11T15B34.2	Design 11T15B34.2	Median Light Pole Foundation 24"x8"	Light Pole Foundation 24"x8"	Light Pole Foundation 24"x6"	LUMINAIRE: Type III 700W 713.11	Type II 400W 713.11	Type III 400W 713.11	LAMP: Mercury Vapor 700W, 713.14	Mercury Vapor 400W, 713.14	Ground Rod	Pull Box (24" Diameter) 713.09	Pull Box (18" Diameter) 713.09	Median Pull Box	CONDUIT TYPE II OR III: 2" 713.04	3" 713.04	3" Jacked Under Pavement 713.04	Trench, 24" Deep	Barrier 4" Raceway PVC Conduit, 713.07	Duct Cable with Nº4 AWG Cables 2-½	Duct Cable with Nº2 AWG Cables 2-½	Nº4 AWG, 600V ½ Dist. Circuit Cable	Nº2 AWG, 600V ½ Dist. Circuit Cable	Nº10 AWG 600V ½ Pole & Bracket Cable, 19 Strand	CONNECTOR KIT: Type I	Type II	Type III	Type III B or C	Type VIII A	Median Pull Box Anchor "L" Bolt ¼"x40"	Structure Grounding System, FRA-104-0820	Structure Grounding System, FRA-104-0854	Structure Junction Box	Light Pole Anchor "U" Bolt to Structures, 7A301		Control Center		Service Pole, as per plan		
			ALL STATIONS ARE S.R.104 UNLESS OTHERWISE NOTED		Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.		Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.		Lump		Lump		
							100% STATE PARTICIPATION ROADWAY																																													
187	1	Lt.	7+35				1							1		1			1			1															1	1												
	2	Lt.	7+35	8+61																								126		136																				
	3	Lt.	8+61																				1													2													
	4	Lt.	8+61	9+10																						49		49				118																	
	5	Lt.	9+10																				1													2													
	6	Lt.	9+10	9+32																								25		35																				
	7	Lt.	9+32				1							1		1			1			1															1	1												
	8	Lt.	9+32	11+27																								195		205																				
	9	Lt.	11+27				1							1		1			1			1															1	1												
	10	Lt.	11+27	12+06																								79		89																				
	11	Lt.	12+06																				1													2													
	12	Lt. & Rt.	12+06	0+46 Ramp F-F																						52		52				124																		
	13	Rt.	0+46 Ramp F-F																				1													2													
	14	Rt.	0+46 Ramp F-F	2+04 Ramp F-F																								158		168																				
	15	Rt	2+04 Ramp F-F							1					1		1			1			1															1	1												
	16	Rt. & Lt.	0+46 Ramp F-F	12+69																								64		74																				
	17	Lt.	12+69					1						1		1			1			1															1	1												
	18	Lt.	12+69	13+83																								114		124																				
	19	Lt.	13+83																				1													2													
	20	Lt	13+83	14+53																								70		80																				
	21	Lt	14+53					1						1		1			1			1															1	1												
	22	Lt.	14+53	14+79																								26		31																				
	24	Rt.	7+30				1							1		1			1			1															1	1												
	25	Rt. & Lt.	7+30	99+50 S.R. 104 N.B.																								108		118																				
	26	Lt.	99+50 S.R. 104 N.B.					1							1		1			1			1															1	1												
	27	Lt. & Rt.	99+50 S.R. 104 N.B.	99+50 S.R. 104 N.B.																								79				178																		
	28	Rt.	99+50 S.R. 104 N.B.					1							1		1			1			1															1	1												
	29	Rt.	99+50 S.R. 104 N.B.	9+35																								183		193																				
	30	Rt.	9+35				1							1		1			1			1															1	1												
	31	Rt.	9+35	11+96																								261		271																				
	32	Rt.	11+96				1							1		1			1			1															1	1												
	33	Rt.	11+96	14+03																								207		217																				
	34	Rt.	14+03																				1													2													
	35	Rt.	14+03	14+53																								50		60																				
	36	Rt.	14+53					1						1		1			1			1															1	1												
187	37	Rt.	14+53	14+79																								26		31																				
TOTAL SHEET Nº 187 100% STATE PARTICIPATION							6	3	2		1			9	3	9	3		9	3		12		6			101		79	1793		1832			420		1269		4	12	12	8							
							STATE-CITY PARTICIPATION ROADWAY																																													
187	23	Lt.	14+79	15+00																										21		21																				
187	38	Rt.	14+79	15+00																										21		21																		
TOTAL SHEET Nº 187 STATE-CITY PARTICIPATION																														42		42																		

QUANTITIES SUB-SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA-104-8.04

Quantities Carried to Sheet Nº 183
Quantities by: FJJ 10/16/70
Checked by: Gjom 10-16-70

Sheet Nº	Reference Nº	Side	Station	Station	LIGHT POLE: Design 7A12B40	Design 7A15B40	Design 7AT15B40	Design 7T15B40	Design IIA12B34.2	Design II12B34.2	Design II15B34.2	Median Light Pole Foundation 24"x8'	Light Pole Foundation 24"x8'	Light Pole Foundation 24"x6'	LUMINAIRE: Type III 700W 713.11	Type II 400W 713.11	Type III 400W 713.11	LAMP: Mercury Vapor 700W, 713.14	Mercury Vapor 400W, 713.14	Ground Rod	Pull Box (24" Diameter) 713.09	Pull Box (18" Diameter) 713.09	Median Pull Box	CONDUIT TYPE II OR III: 2" 713.04	3" 713.04	3" Jacked Under Pavement, 713.04	Trench, 24" Deep	Barrier 4" Raceway PVC Conduit, 713.07	Duct Cable with 2-№4 AWG Cables	Duct Cable with 2-№2 AWG Cables	№4 AWG, 600V Yc Dist. Circuit Cable	№2 AWG, 600V Yc Dist. Circuit Cable	№10 AWG, 600V Yc Pole & Bracket Cable, 19 strand	CONNECTOR KIT: Type I	Type II	Type III	Type VIII B or C	Type VIII A	Median Pull Box Anchor "L" Bolt 1¼ x 40"	Structure Grounding System, FRA-104-0820	Structure Grounding System, FRA-104-0854	Structure Junction Box	Light Pole Anchor "U" Bolt for Structures, 71301	Control Center	Service Pole, as per plan
			ALL STATIONS ARE S.R. 104		Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	L.F.	L.F.		L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Lump	Lump
			UNLESS OTHERWISE NOTED	STATE-CITY PARTICIPATION ROADWAY																																									
188	166	Lt.	15+50 (115 Lt.)																																										Lump
	39	Lt.	15+00	16+25																							125		130															
	40	Lt.	16+25																		1													2			2	4						
	41	Lt.	16+25 (59' Lt.)	16+25 (125' Lt.)																				132			66				304	304											
	42	Lt.	16+25 (125' Lt.)																																								Lump	
	43	Lt.	16+25	16+83																							58		68	68													
	44	Lt.	16+83				1						1		1			1		1													110		1	1		2					
	45	Lt.	16+83	16+97																							14		24	24													
	46	Lt.	16+97																			1												2			2						
	54	Lt.	24+36																			1												2			2						
	55	Lt. to Ctr.	24+36	24+12																					66		66				152	152										
	56	Ctr.	24+12		1							1			2			2		1												152		1	1		2					
	57	Ctr. to Rt.	24+12	24+26																					64		64					148										
	58	Rt.	15+00	16+25																							125		130														
	59	Rt.	16+25																			1															2	2						
	60	Lt. to Rt.	16+25 (59' Lt.)	16+25 (59' Rt.)																					118		118				256	256											
	61	Rt.	16+25	16+83																							58		68	68													
	62	Rt.	16+83					1					1		1			1		1													110		1	1		2					
	70	Rt.	24+26																		1													2				4					
	71	Rt.	24+26	26+55																							229		239	478													
	72	Rt.	26+55																		1															2	4						
	73	Rt. to Ctr.	26+55	26+55																					73		73				166												
	74	Ctr.	26+55		1							1			2			2		1												152		1	1								
	75	Rt.	26+55	28+03																							148		158	316													
	76	Rt.	28+03																		1															2	4						
	77	Rt.	28+03	28+98																							95		105	210													
	78	Rt.	28+98																		1															2	4						
	79	Rt. to Ctr.	28+98	28+98																					88		88				196	196											
	80	Ctr.	28+98		1							1			2			2		1												152		1	1		2					
	81	Ctr.	28+98	30+00																								102	107	107													
	82	Rt.	28+98	29+60																							62		72														
188	83	Rt.	29+60				1						1		1			1		1												110		1	1								
	TOTAL SHEET Nº 188			STATE-CITY PARTICIPATION	3		2	1				3	3		9			9		6	5	3		132	409		1389	102	1101	1271	1074	1056	786	8	6	6	10	34				Lump	Lump
				STATE-CITY PARTICIPATION STRUCTURE																																								
188	47	Lt.	16+97	19+27																				230			10				480	480											
	48	Lt.	19+27			1									1			1															110		1	1		2			1	2	
	49	Lt.	19+27	21+68																				241							502	502											
	52	Lt.	21+68			1									1			1															110		1	1		2			1	2	
	53	Lt.	21+68	24+36																				268			10				556	556											
	63	Rt.	16+83	19+24																				241			15				502	502											
	64	Rt.	19+24			1									1			1															110		1	1		2			1	2	
	65	Rt.	19+24	21+09																				185							380	380											
	66	Rt.	21+09																																				1				
	67	Rt.	21+09	21+68																				59							128	128											
	68	Rt.	21+68			1									1			1															110		1	1		2			1	2	
188	69	Rt.	21+68	24+26																				258			10				536	536											
	TOTAL FRA-104-0820			STATE-CITY PARTICIPATION	4										4			4						1482			45				3084	3084	440		4	4		8		1		4	8	

QUANTITIES SUB-SUMMARY

Quantities Carried to Sheet No 183
Quantities by: FJJ 10/16/70
Checked by: [illegible] 10-16-70

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

FRANKLIN COUNTY
FRA-104-8.04

Sheet No	Reference No	Side	Station	Station	LIGHT POLE: Design 7A12BB40	Design 7A15B40	Design 7AT15B40	Design 7T15B40	Design 11AT12B34.2	Design 11T12B34.2	Design 11T15B34.2	Median Light Pole Foundation 24"x8'	Light Pole Foundation 24"x8'	Light Pole Foundation 24"x6'	LUMINAIRE: Type III 700W 713.11	Type II 400W 713.11	Type III 400W 713.11	LAMP: Mercury Vapor 700W, 713.14	Mercury Vapor 400W, 713.14	Ground Rod	Pull Box (24" Diameter) 713.09	Pull Box (18" Diameter) 713.09	Median Pull Box	CONDUIT TYPE II OR III: 2" 713.04	3" 713.04	3" Jacked Under Pavement, 713.04	Trench, 24" Deep	Barrier 4" Raceway PVC Conduit 713.07	Duct Cable with No 4 AWG Cables 2-½	Duct Cable with No 2 AWG Cables 2-½	No 4 AWG, 600V 1/c Dist. Circuit Cable	No 2 AWG, 600V 1/c Dist. Circuit Cable	No 10 AWG, 600V 1/c Pole & Bracket Cable, 19 strand	CONNECTOR KIT: Type I	Type II	Type III	Type VIII B or C	Type VII A	Median Pull Box Anchor "L" Bolt 1¼"x40"	Structure Grounding System, FRA-104-0820	Structure Grounding System, FRA-104-0854	Structure Junction Box	Light Pole Anchor "U" Bolt for Structures, 713.01	Control Center	Service Pole, as per plan
			ALL STATIONS	ARE S.R. 104	Ea.	Ea	Ea	Ea.	Ea.	Ea.	Ea	Ea.	Ea.	Ea.	Ea	Ea.	Ea.	Ea.	Ea	Ea.	Ea.	Ea.	Ea.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Lump	Lump
			UNLESS OTHER	WISE NOTED			STATE-CITY PARTICIPATION ROADWAY																																						
189	91	Ctr.	30+00	31+42																								142	147	147															
	92	Ctr.	31+42		1							1			2			2		1													152		1	1		2							
	93	Ctr.	31+42	33+86																								244	508																
	94	Ctr.	33+86		1							1			2			2		1													152	2	1	1									
	95	Ctr. to Lt.	33+86	33+76																					60		60				140														
	96	Lt.	33+76																			1															2								
	97	Lt.	33+76	34+77																							101		111																
	98	Lt.	34+77																			1															2								
	102	Lt.	36+13																			1												2											
	103	Lt. to Ctr.	36+13	36+30																					61		61				142														
	104	Ctr.	36+30		1							1			2			2		1													152	2	1	1									
	105	Ctr.	36+30	38+74																								244	508																
	106	Ctr.	38+74		1							1			2			2		1													152	2	1	1									
	107	Ctr.	38+74	41+17																								243	506																
	108	Ctr.	41+17		1							1			2			2		1													152	2	1	1									
	109	Ctr. to Lt.	41+17	41+17																					103		103				226														
	110	Lt.	41+17																			1												2											
	113	Lt.	41+17	41+90																							73		83																
	114	Lt.	41+90					1					1		1			1		1													110		1	1									
	115	Lt.	41+90	44+00																							210		220																
	116	Lt.	44+00																			1												2											
	117	Ctr.	41+17	43+50																								233	243																
	118	Ctr.	43+50		1							1			2			2		1													152		1	1									
	119	Ctr. to Rt.	41+17	41+17																					88		88				196														
	120	Rt.	41+17																			1												2											
	121	Rt.	41+17	41+90																							73		83																
	122	Rt.	41+90				1						1		1			1		1													110		1	1									
	123	Ctr.	33+86	34+58																								72	82																
	124	Ctr.	34+58																				1											2					4						
	125	Ctr. to Rt.	34+58	34+65																								59			138														
	126	Rt.	34+65																			1															2								
	130	Rt	36+00																			1															2								
	131	Rt. to Ctr.	36+00	36+30																					66		66				152														
	132	Rt.	36+00	37+60																							160		170																
189	133	Rt.	37+60																			1												2											
TOTAL SHEET No 189				STATE-CITY PARTICIPATION	6		1	1				6	2		14			14		8		9	1		378		995	1237	2661	147	994		1132	20	8	8	8	2	4						

QUANTITIES SUB-SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA-104-8.04

Quantities Carried to Sheet Nº 183
Quantities by: Dunn 10-16-70
Checked by: EJJ 10/16/70

Sheet Nº	Reference Nº	Side	Station	Station	LIGHT POLE: Design 7A12BB40	Design 7A15B40	Design 7AT15B40	Design 7T15B40	Design 11AT12B34.2	Design 11T12B34.2	Design 11T15B34.2			Median Light Pole Foundation 24"x8'	Light Pole Foundation 24"x8'	Light Pole Foundation 24"x6'	LUMINAIRE: Type III 700W 7.13.11	Type II 400W 7.13.11	Type III 400W 7.13.11	LAMP: Mercury Vapor 700W, 7.13.14	Mercury Vapor 400W, 7.13.14		Ground Rod	Pull Box (24" Diameter) 7.13.09	Pull Box (18" Diameter) 7.13.09	Median Pull Box	CONDUIT TYPE II OR III: 2" 7.13.04	3" 7.13.04	3" Jacked Under Pavement, 7.13.04	Trench, 24" Deep	Barrier 4" Raceway PVC Conduit 7.13.07	Duct Cable with Nº 4 AWG Cables 2-½	Duct Cable with Nº 2 AWG Cables 2-½		Nº 4 AWG, 600V ½ Dist. Circuit Cable	Nº 2 AWG, 600V ½ Dist. Circuit Cable	Nº 10 AWG, 600V & Pole & Bracket Cable, 19 strand	CONNECTOR KIT: Type I	Type II	Type III	Type III B or C	Type VII A	Median Pull Box Anchor "L" Bolt ¾"x40"	Structure Grounding System, FRA-104-0820	Structure Grounding System, FRA-104-0854	Structure Junction Box	Light Pole Anchor "U" Bolt for Structures, 7.13.01		Control Center		Service Pole, as per plan			
			ALL STATIONS	ARE S.R. 104	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.			Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.		Ea.	Ea.	Ea.	Ea.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.		L.F.	L.F.	L.F.		Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.		Lump		Lump			
			UNLESS OTHERWISE NOTED				STATE-CITY PARTICIPATION										STRUCTURE																																	
189	99	Lt.	34+77	36+13																						136			20					292															
↑	100	Lt.	34+77																																							½									
	127	Rt.	34+65	36+00																						135			20					290															
189	128	Rt.	36+00																																						½									
TOTAL			FRA-104-0854	STATE-CITY PARTICIPATION																						271			40					582								1									
										STATE-CITY PARTICIPATION							ROADWAY																																					
190	146	Ctr.	46+03		1									1			2			2			1												152				1	1									
↑	147	Ctr.	46+03	48+46																											243	253																	
	148	Ctr.	48+46		1									1			2			2			1												152				1	1									
	149	Ctr.	48+46	50+89																											243	253																	
	150	Ctr.	50+89		1									1			2			2			1												152				1	1									
	151	Ctr.	50+89	53+32																											243	253																	
	152	Ctr.	53+32		1									1			2			2			1												152				1	1									
	153	Ctr.	53+32	55+75																											243	253																	
	154	Ctr.	55+75		1									1			2			2			1												152				1	1									
	155	Ctr.	55+75	58+06																											231	241																	
	156	Lt.	57+96 Ramp "A"	58+06 Ramp "A"																											10		20																	
	157	Lt.	57+96 Ramp "A"					1								1			1			1			1												93				1	1									
	158	Lt.	56+00 Ramp "A"	56+30 Ramp "A"																											30		40																	
	159	Lt.	56+00 Ramp "A"					1								1			1			1			1												93				1	1									
	160	Lt.	54+00 Ramp "A"	56+00 Ramp "A"																											200		210																	
	161	Lt.	54+00 Ramp "A"						1							1			1			1			1												93				1	1									
	162	Lt.	52+00 Ramp "A"	54+00 Ramp "A"																											200		210																	
	163	Lt.	52+00 Ramp "A"						1							1			1			1			1												93				1	1									
↓	164	Lt.	50+00 Ramp "A"	52+00 Ramp "A"																											200		210																	
190	165	Lt.	50+00				1								1			1			1			1												110				1	1									
TOTAL			SHEET Nº 190	STATE-CITY PARTICIPATION	5		1	2	2					5	1	4	11	4		11	4		10									640	1203	1943								1242			10	10					

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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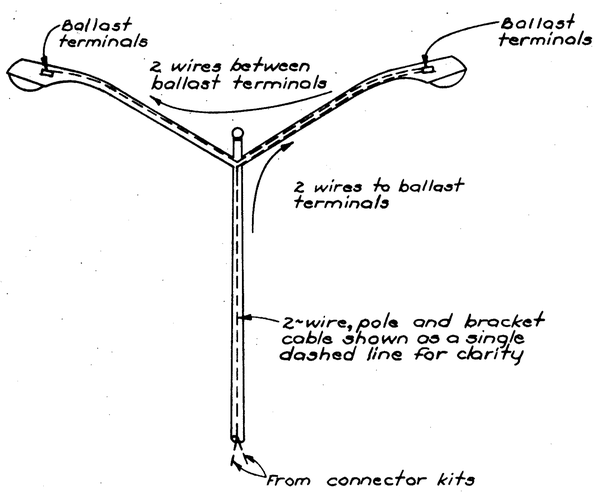
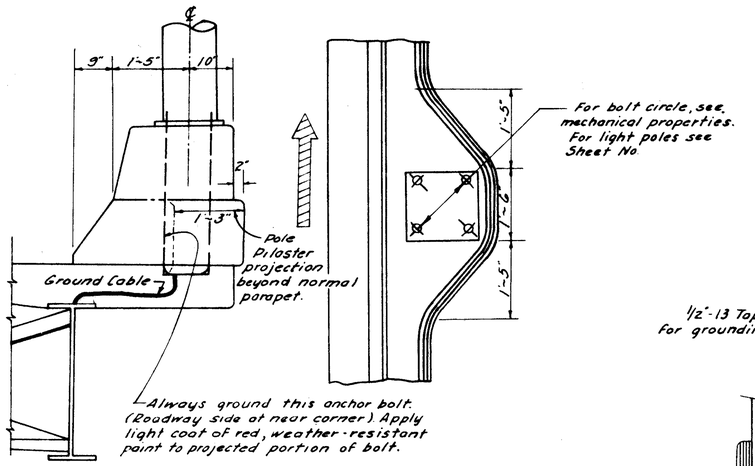
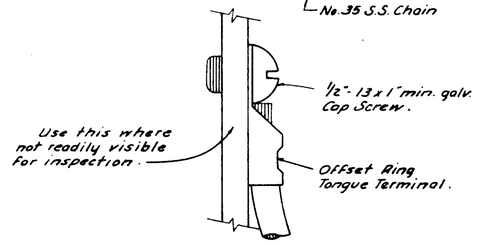


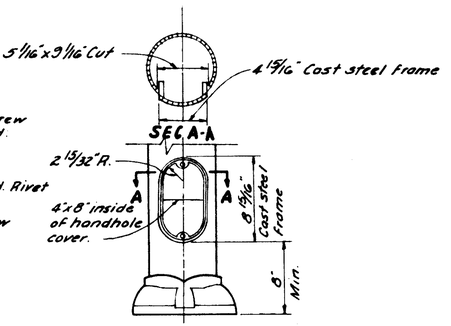
WIRING IN TWIN LUMINAIRE POLES



FOUNDATION FOR LIGHT POLES MOUNTED ON BRIDGES WITH SAFETY CURB



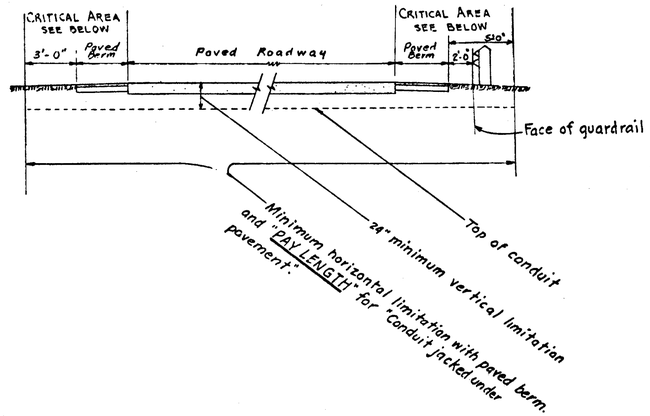
GROUND WIRE TERMINAL



4"x8" CURVED HANDHOLE FRAME AND COVER DETAIL

(This handhole may be used as an alternate to that shown on the HL-2 Drawing.)

ALTERNATE LIGHT POLE HANDHOLE AND GROUNDING

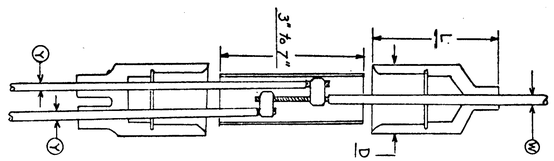


Access (push) pits or trenches for setting up drilling or jacking equipment shall be located outside horizontal limitation.

CRITICAL AREA: When undermining in this location provide 3/4" thick steel surface plates, corrugated pipe sleeves, shoring & other approved means to prevent cave-in.

LIMITATIONS FOR INSTALLING CONDUIT UNDER EXISTING PAVEMENT

VII A CONNECTOR KIT = IN-LINE CABLE CONNECTION WITH BOTH END HOUSINGS SAME AS SHOWN ON RIGHT SIDE BELOW.
VII B CONNECTOR KIT = Y-TYPE CABLE CONNECTION SAME AS SHOWN BELOW.
VII C CONNECTOR KIT = 4-WAY CABLE CONNECTION WITH BOTH END HOUSINGS SAME AS SHOWN ON LEFT SIDE BELOW

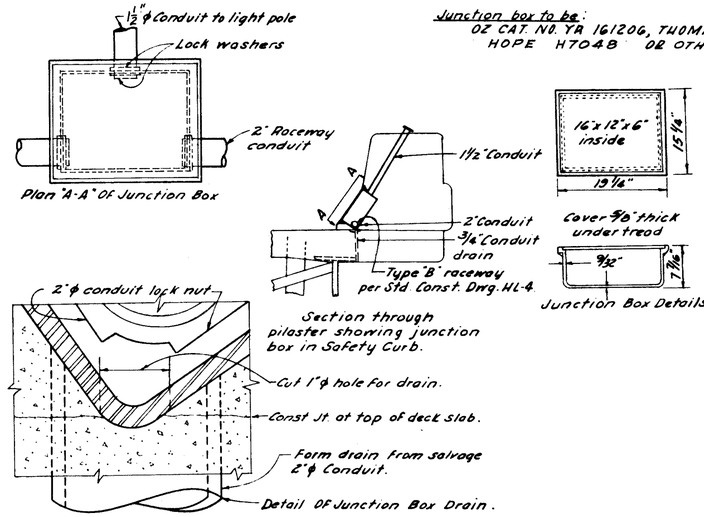


D	L	CABLE DIAMETER Min.	CABLE DIAMETER Max.	SYMBOL FOR Ⓨ	SYMBOL FOR Ⓦ	AWG 600V CABLE PER 713.02
1 23/32"	4 1/16"	.320"	.430"	D	D	No. 6 & No. 4
"	"	.420"	.565"	E	E	No. 2 & No. 2/0
"	"	.515"	.735"	F	F	No. 3/0 - 250 MCM
"	"	.775"	.985"	N.A.	G	300 MCM - 400 MCM
"	4 3/16"	.975"	1.185"	N.A.	H	500 MCM
"	4 5/16"	1.175"	1.385"	N.A.	J	600 MCM - 750 MCM

N.A. = NOT AVAILABLE

Ⓨ NOTE: BOTH WIRES WITH SYMBOL Ⓨ MUST BE OF EQUAL SIZE FOR A GIVEN CONNECTION.

CABLE CONNECTOR KITS TYPE VII



Junction box to be:
OZ CAT. NO. YR 161206, THOMAS AND BETTS 10998, HOPE H704B OR OTHER APPROVED EQUAL.

STRUCTURE JUNCTION BOX DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
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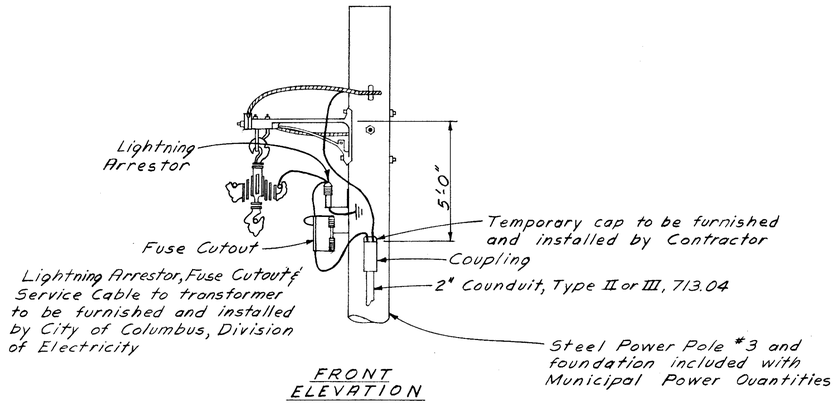
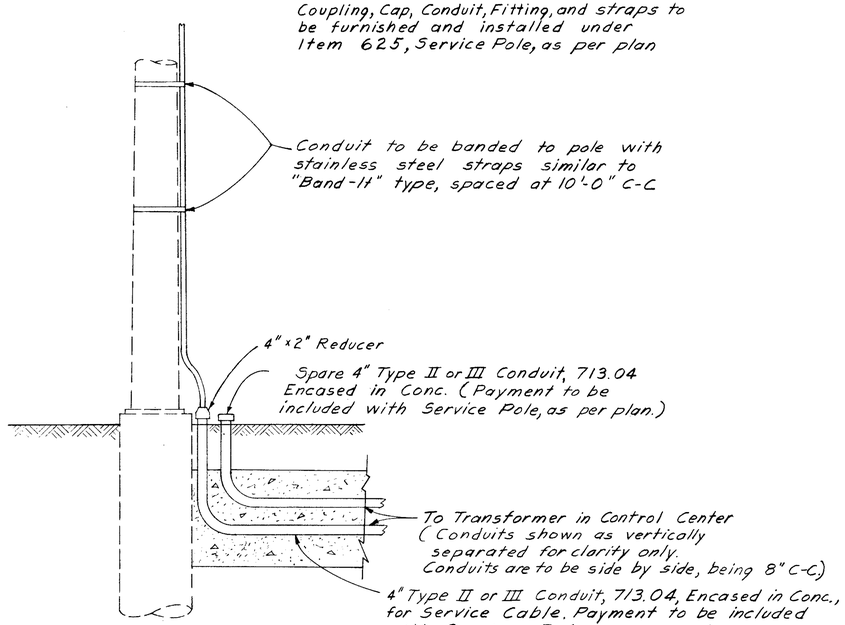


FRONT ELEVATION

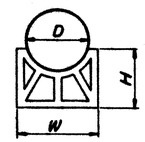


SIDE ELEVATION

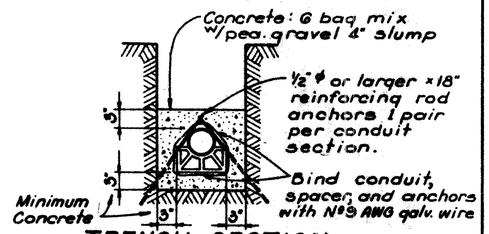
SERVICE POLE DETAILS

* To be as manufactured by
1. McGRAW EDISON
2. FORMEX MFG. INC.
3. JOHNS MANVILLE
Or an approved equal

SPACERS		
D	H	W
2"	3⅝"	5½"
3"	3⅝"	6½"
4"	4⅛"	7⅝"

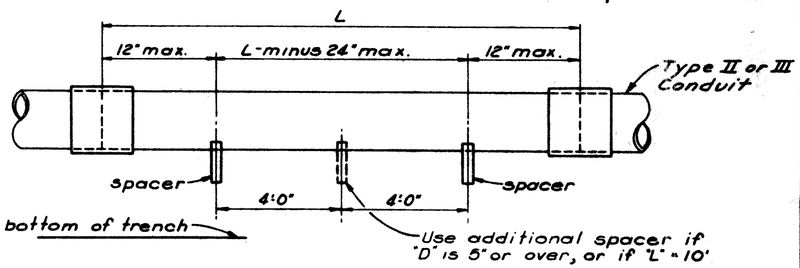


*SPACER



TRENCH SECTION

Note:
Delete anchors and binding wire when using steel conduit.



SIDE ELEVATION

CONDUIT-CONCRETE ENCASED

LIGHTING DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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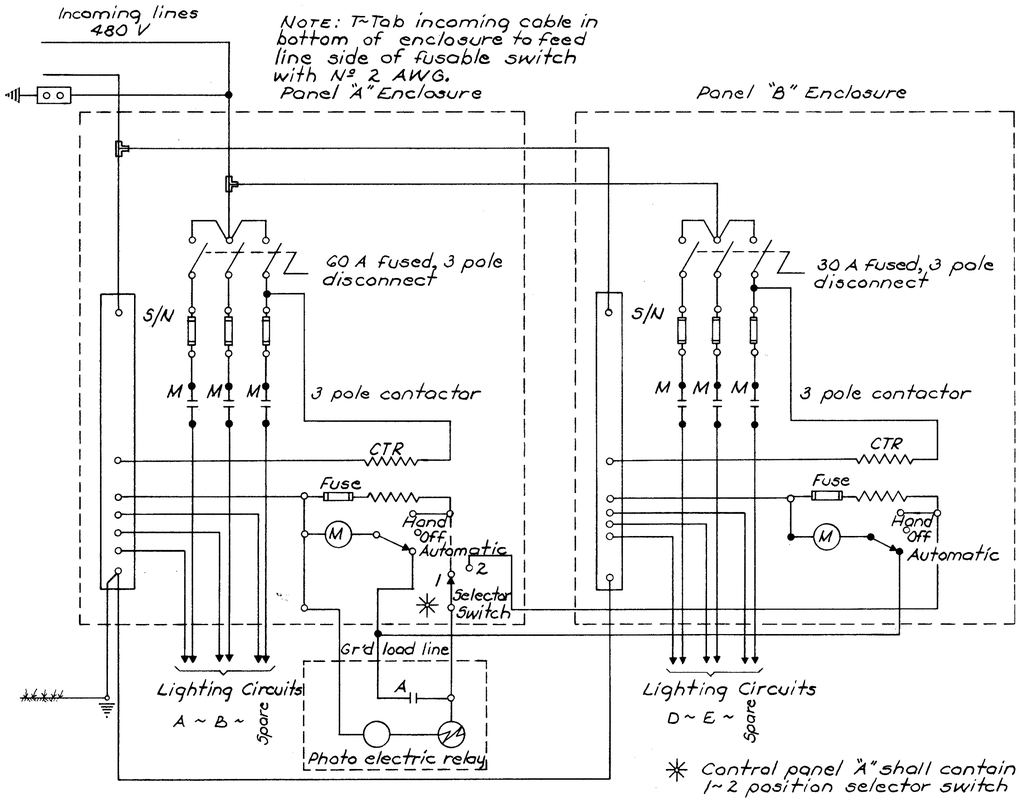
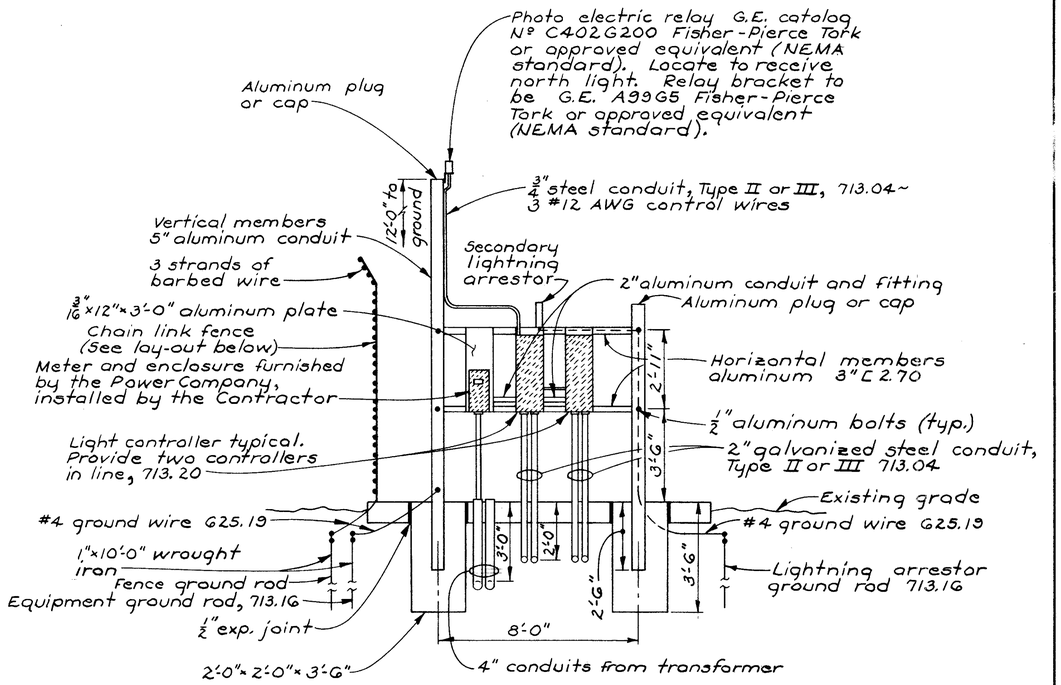
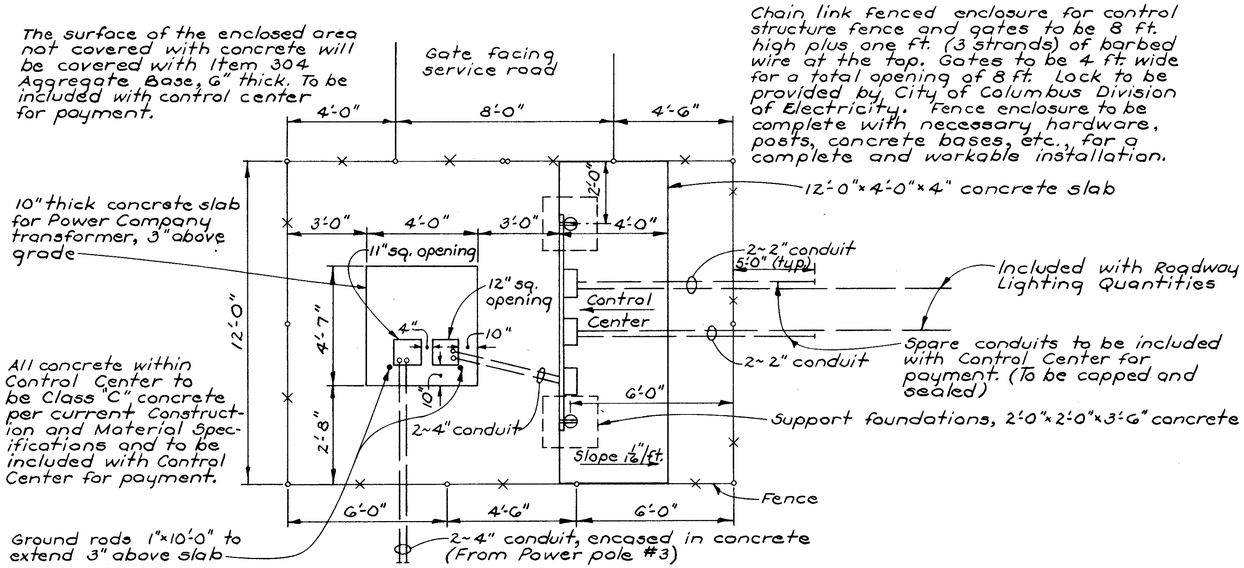
FRANKLIN COUNTY
FRA-104-8.04



SCHEMATIC WIRING DIAGRAM ~ CONTROLLER



CONTROL CENTER WITH ONE 60 AMP
ONE 30 AMP CONTROLLER



CHAIN LINK FENCE LAY-OUT

CONTROL CENTER DETAILS
LIGHTING DETAILS

FED. RD. DIVISION	STATE	PROJECT		
2	OHIO			

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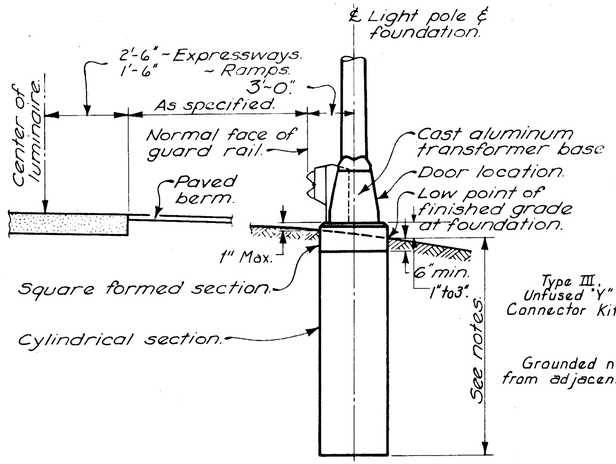
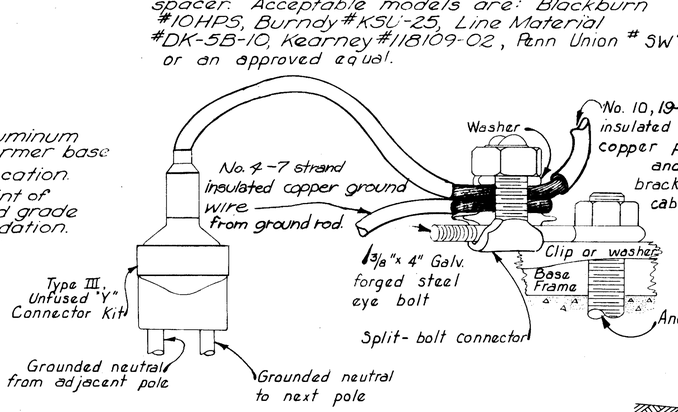
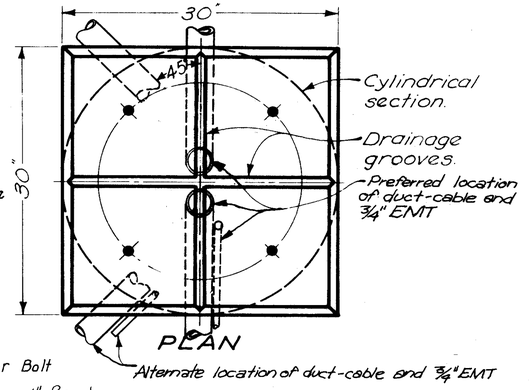
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

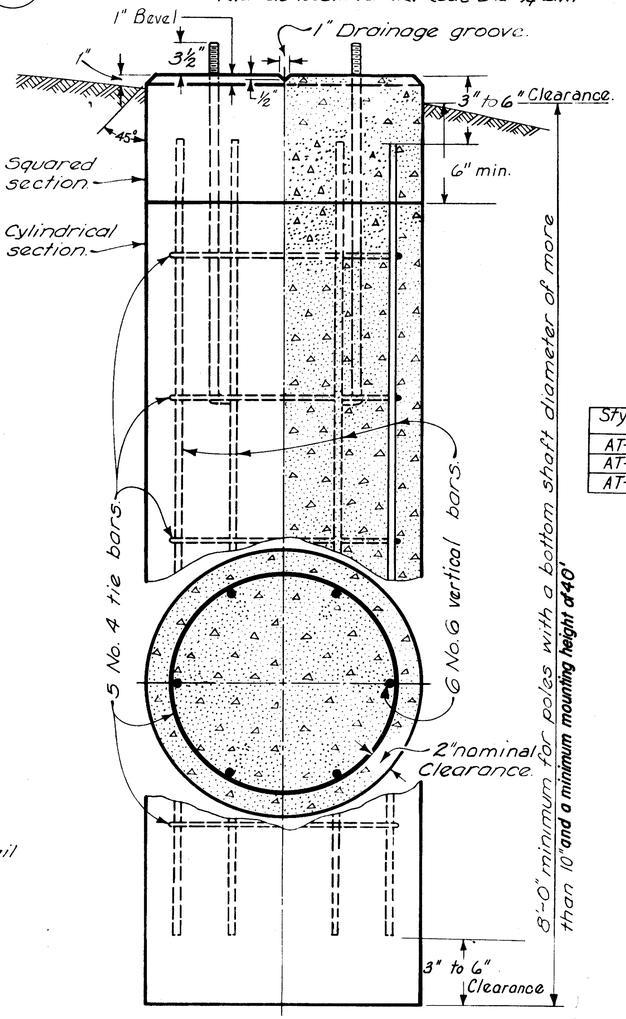




POLE GROUNDING DETAIL
(2-Wire Grounded Neutral System Only)



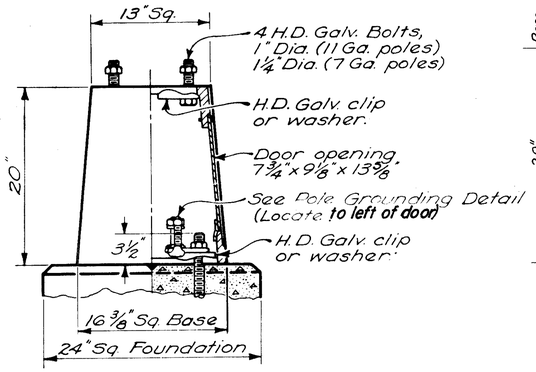
PLAN



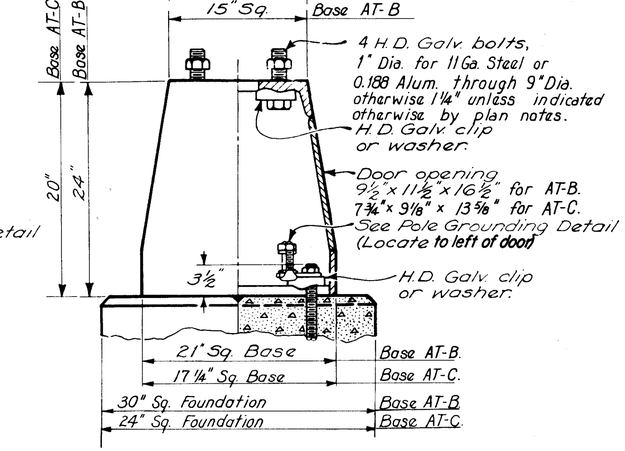
ELEVATION

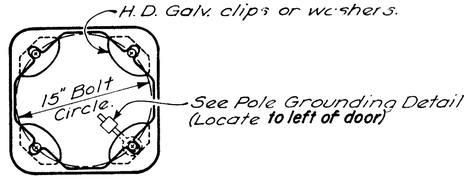
30" FOUNDATION

LOCATION OF POLE WITH OR WITHOUT ALUMINUM TRANSFORMER BASES
(Supersedes "Location of Light Pole Foundation" shown on Standard Drawing HL-1).



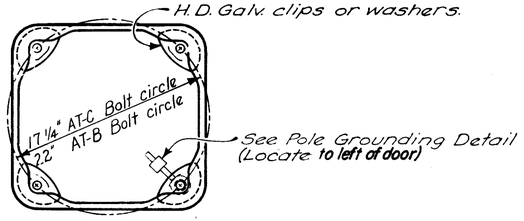
ELEVATION





BASE FRAME

BASE AT-A



BASE FRAME

BASES AT-B AND AT-C

CAST ALUMINUM TRANSFORMER BASES

NOTES

ANCHOR BOLTS: For anchor bolt sizes see drawing HL-3.

FOUNDATION: Foundations for light poles shall be poured-in-place concrete (vibrated and spaded 511.09). Each foundation must meet minimum depths as specified, but additional depth may be required by the Engineer because of existing soil conditions. The 30" foundation (detailed hereon) shall be used for light poles having a bottom shaft diameter of more than 10" through 12". The 24" foundation (detailed on Standard Drawing HL-1) shall be used for all light poles having a bottom shaft diameter of 6.0" through 10". See HL-1 for Foundation depth. Rotate reinforcing bars to clear conduit.

Drainage grooves on foundation top, as detailed hereon, shall be required on all foundations even though they do not appear on Standard Drawing HL-1.

ALUMINUM TRANSFORMER BASES: All bases shall be cast from ASTM B-26 or B-108 Alloy SG 70A-T6.

Base AT-A shall be used with anchor base poles of 6" through 9.2" dia. inclusive, thru 34'-6" Mtg. Hgt. Base AT-B shall be used for anchor base poles above 10" through 12" diameter. Base AT-C shall be used for anchor base poles with bottom diameter 9" through 10."*

The transformer bases shall be capable of resisting the following moments in foot pounds with load applied at a distance of 20' feet above the top of the base without collasping or rupturing.

Style	Bolt Circle	Base Height	Moment-Foot Pounds	Arm Length
AT-A	15"	20"	37,000	15' Max.
AT-C	17 1/4"	20"	56,000	10' to 25'
AT-B	22"	24"	52,000	10' to 25'

Both the bottom of the cast steel pole base and the top of the aluminum transformer base shall be coated or painted with a heavy film of zinc rich paint (Federal Specification TT-P-641-Type II) to reduce galvanic action between the two dissimilar metals.

PAYMENT: 30" Light Pole Foundations shall be paid for at the unit price bid per each foundation.

Aluminum base complete with hardware, bolts, lugs, washers, etc, zinc rich paint, and installation shall be included with ground-mounted poles for payment.

* AT-C Base can be used with 8" or 8 1/2" dia. base poles, if desired, in order to reduce maintenance items.

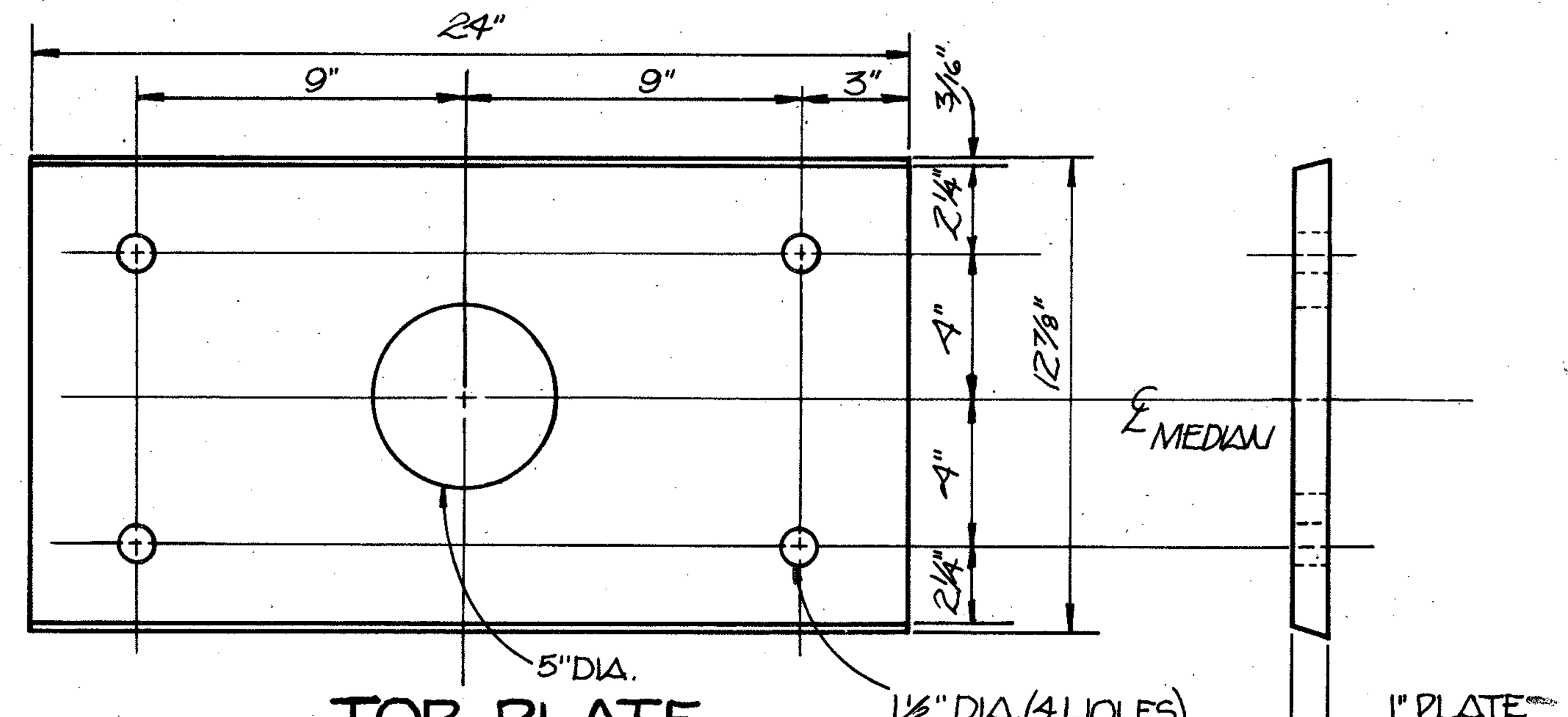
Revised: 7-1-69 Revised: 11-10-69
Revised: 1-24-69 Revised: 2-10-70
Revised: 5-16-68 Revised: 5-19-70
Issued: 11-6-67 Revised: 6-1-70
Revised: 7-1-70

Design Services Sketch No. RL-SK-186

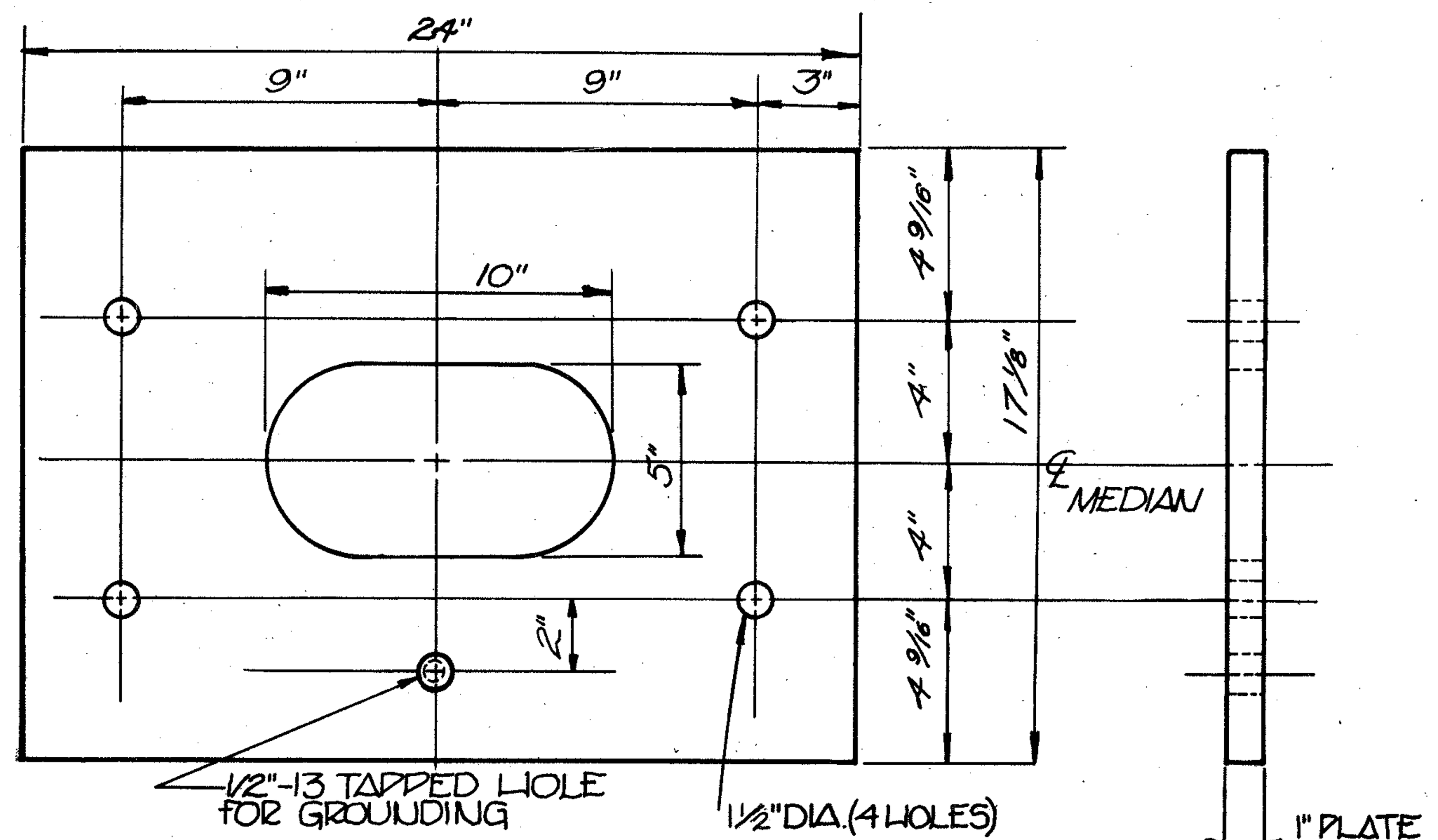
ALUMINUM TRANSFORMER BASE DETAILS

FED. RD. DIVISION	STATE	PROJECT		
2	OHIO			

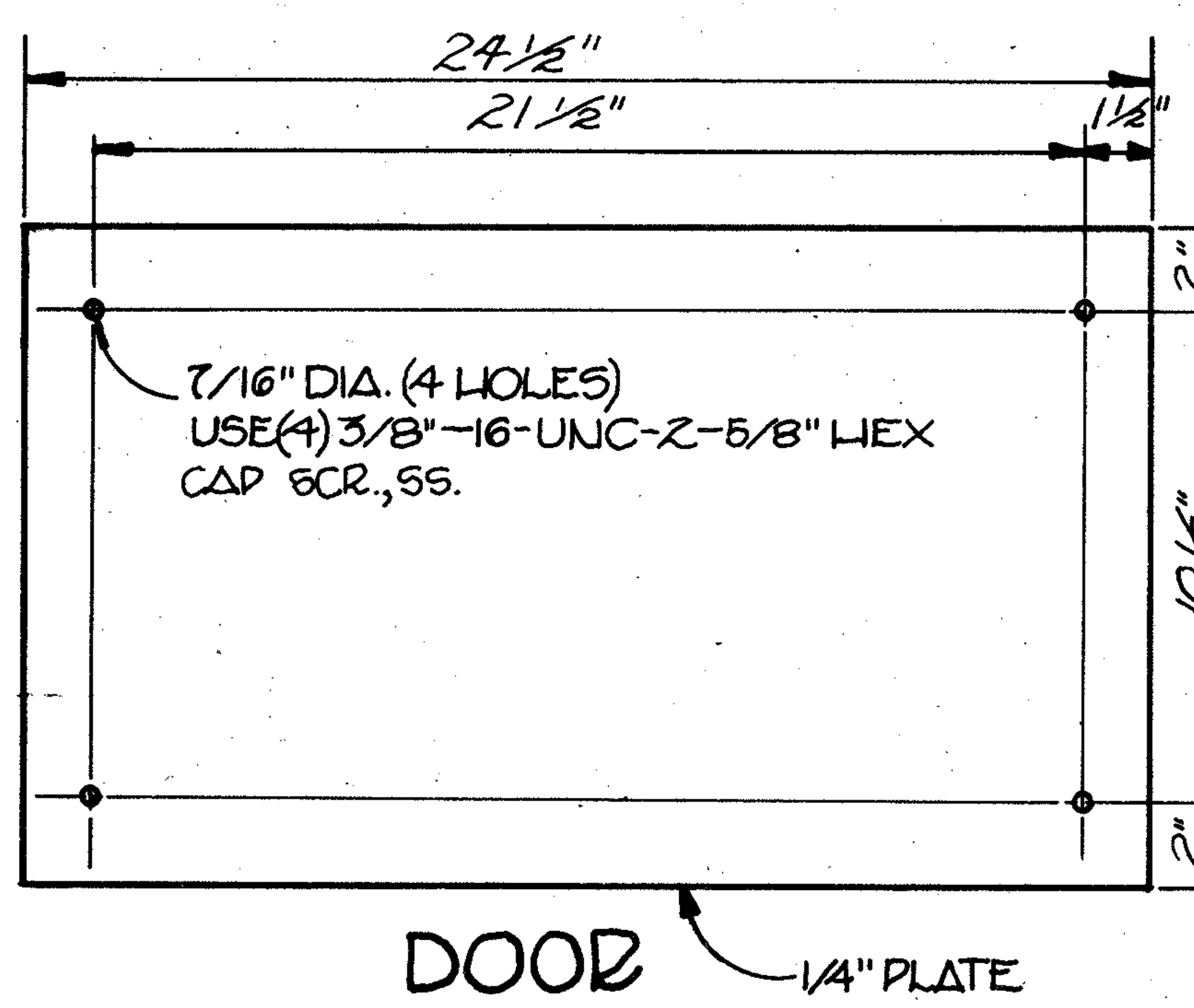
FRANKLIN COUNTY
FRA-104-8.04



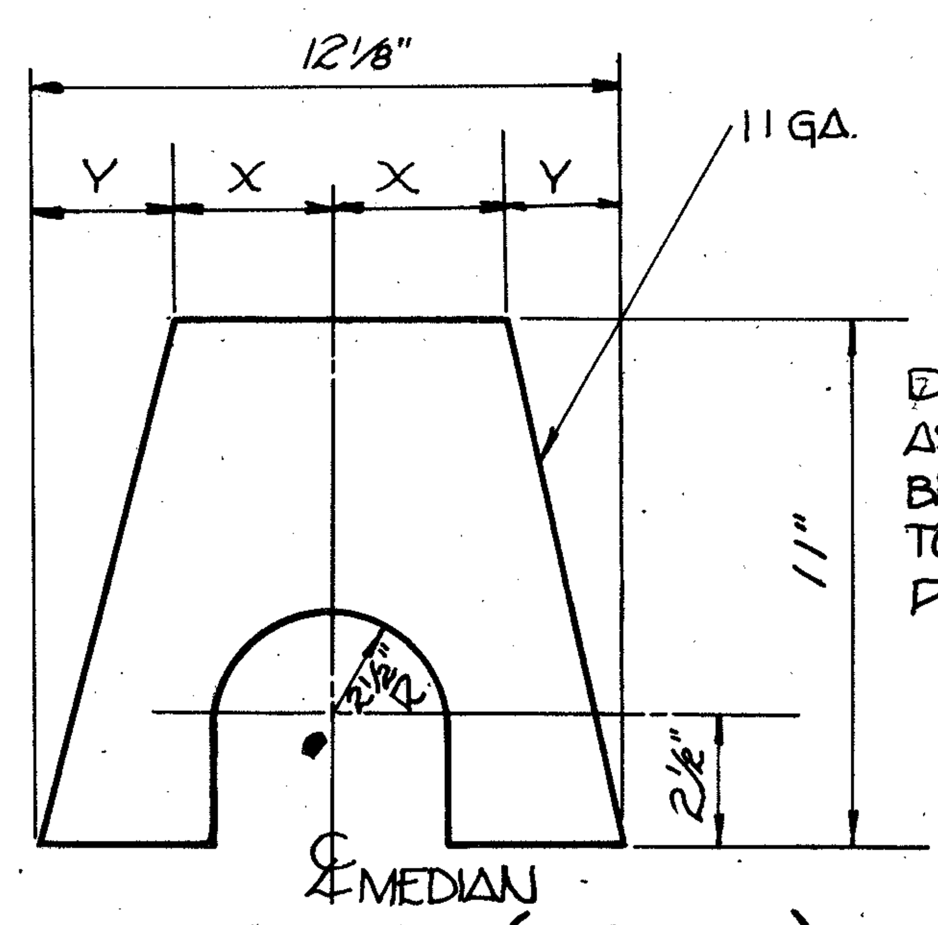
TOP PLATE



BOTTOM PLATE

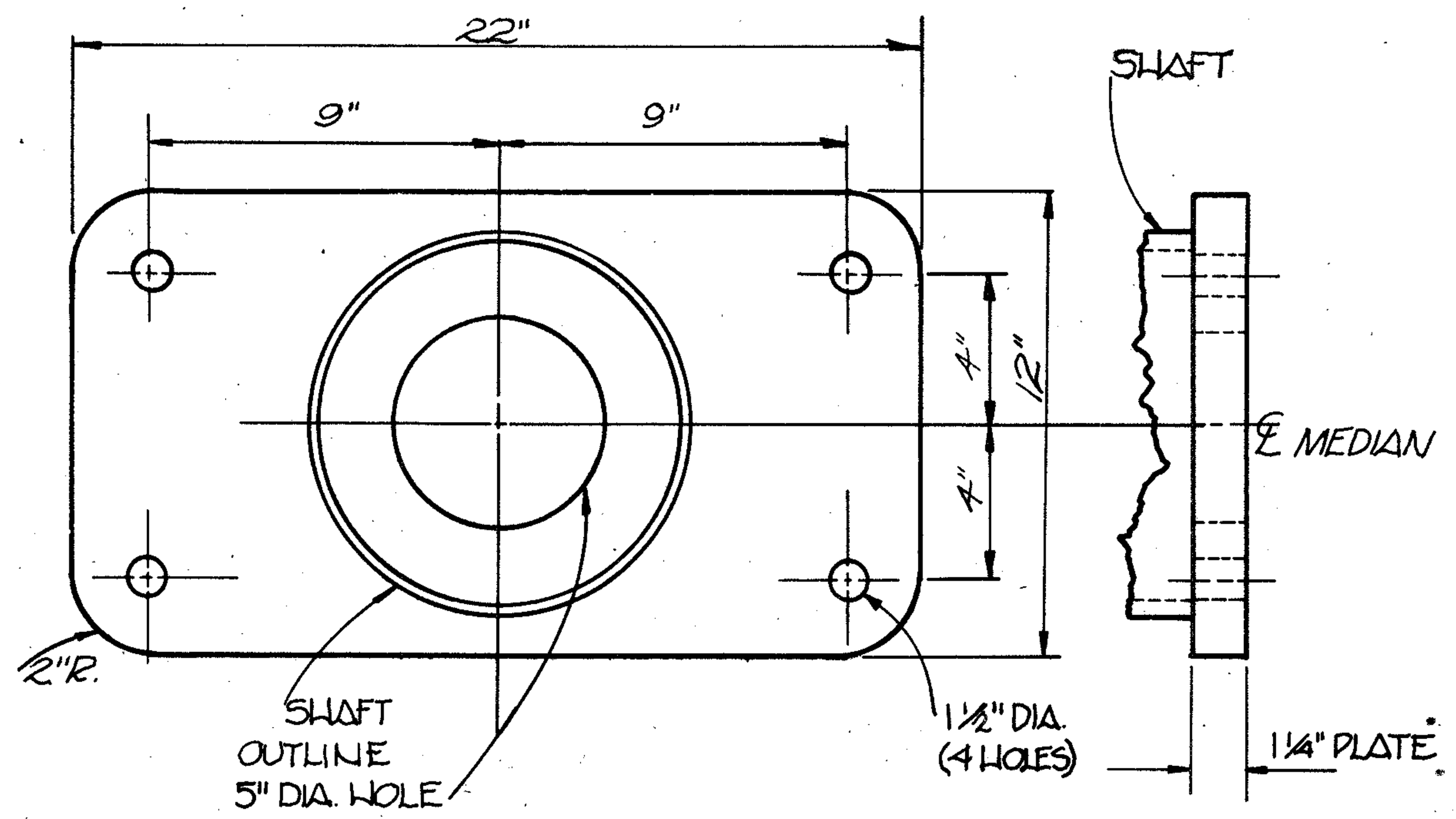


DOOR

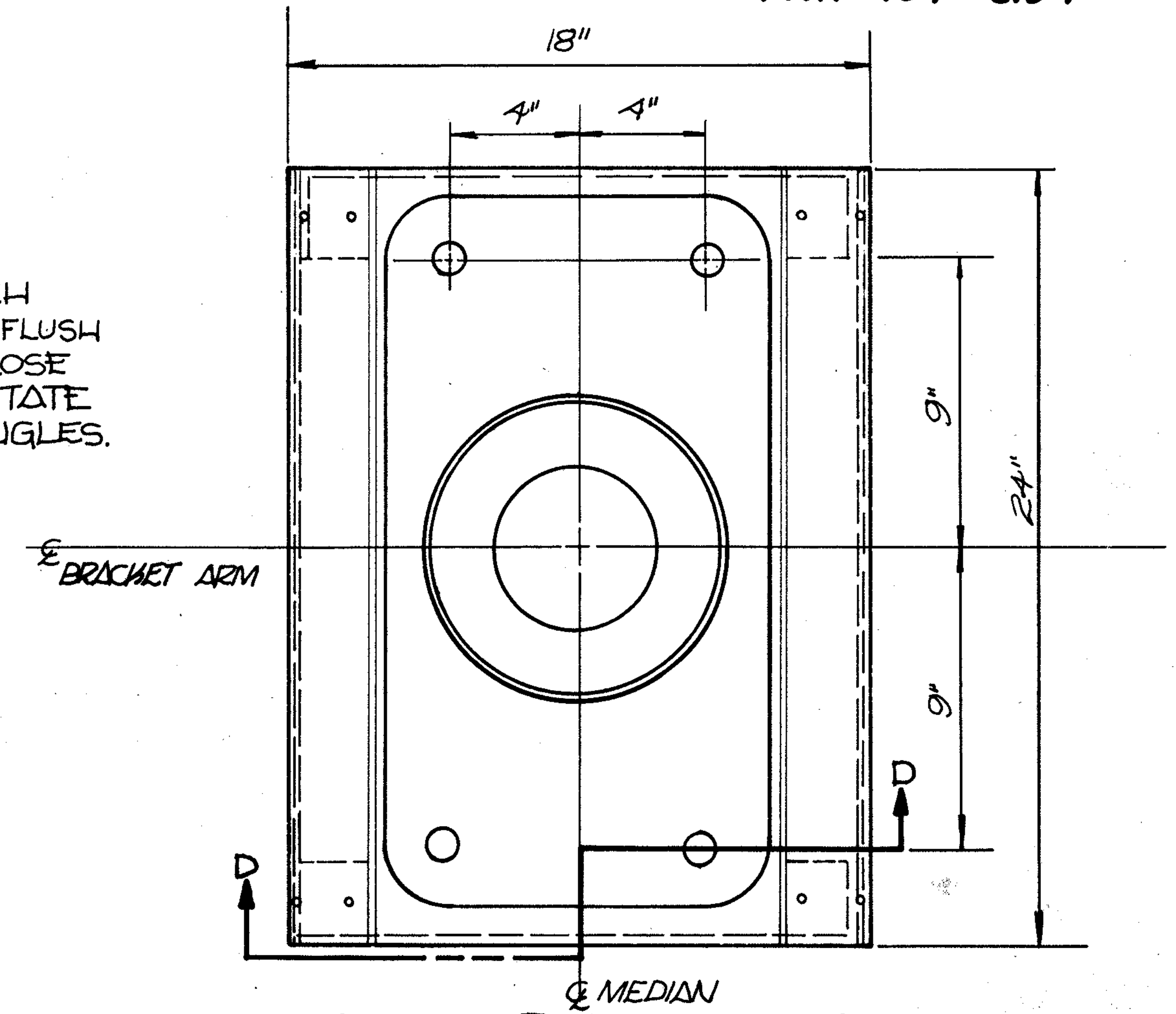


SIDE PLATE (2 REQ'D)

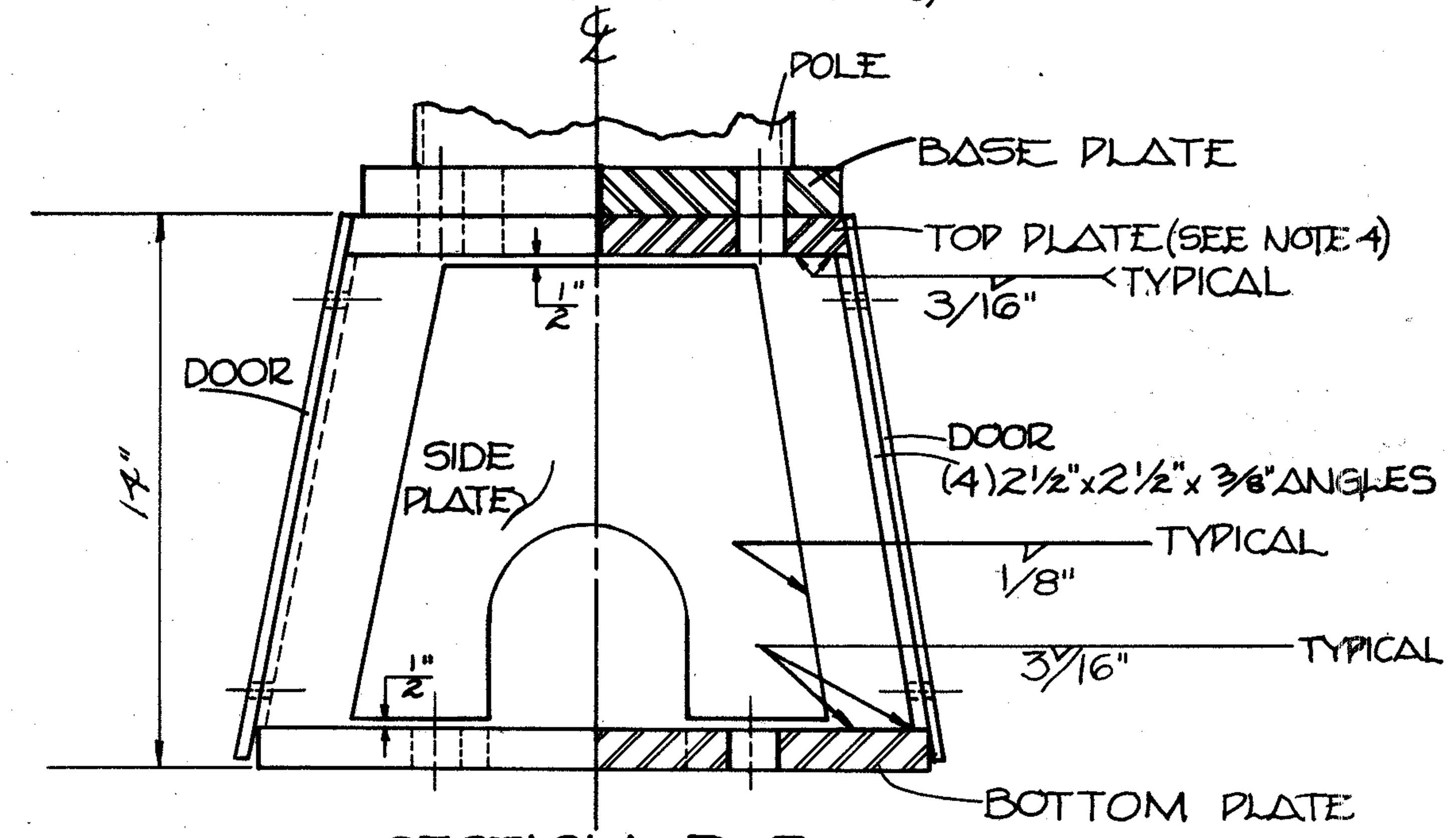
DIMENSIONS "X" & "Y" SHALL BE SUCH AS TO PERMIT THE PLATES TO SET FLUSH BETWEEN THE ANGLES WITH CLOSE TOLERANCES HELD TO FACILITATE PROPER WELDING TO THE ANGLES.



POLE BASE PLATE
(NOT PART OF TRANSFORMER BASE)



MEDIAN TRANSFORMER BASE
(TOP VIEW)
(INC. POLE OUTLINE)



SECTION D-D

NOTES:

1. ALL WELDS 1-PASS UNLESS NOTED.
2. FABRICATED BASE SHALL BE HOT DIP GALVANIZED AS PER ASTM A123.
3. BOTH FABRICATION AND GALVANIZING SHALL BE DONE IN SUCH A MANNER SO AS TO NOT LEAVE ANY SHARP EDGES OR UNEVEN SURFACES THAT WOULD TEAR OR CUT EITHER CABLE INSULATION OR PROTECTIVE RUBBER GLOVES.
4. WHEN TRANSFORMER BASE IS USED AS A PULL BOX SEE NOTE ⑥ ON RL-SK-251

OFFICE of DESIGN SERVICES - LIGHTING SECTION
OHIO DEPARTMENT OF HIGHWAYS

HIGHWAY
LIGHTING

Δ	DATE
	10/17/69
	12/10/69

MEDIAN TRANSFORMER BASE AND PULLBOX DETAILS
APPROVED [signature]
RL-SK-264

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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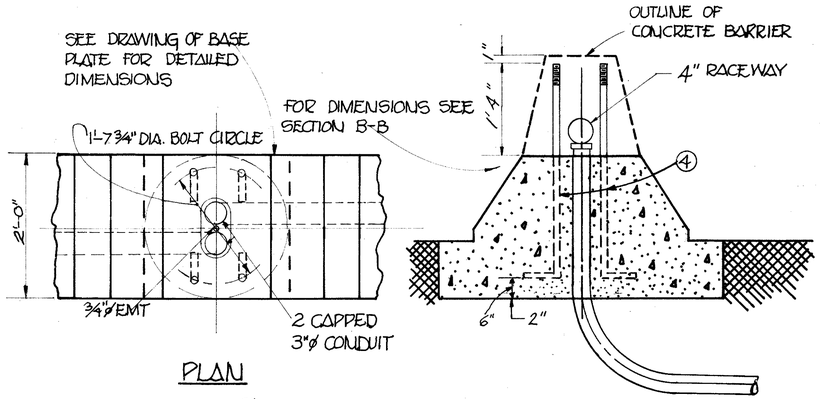
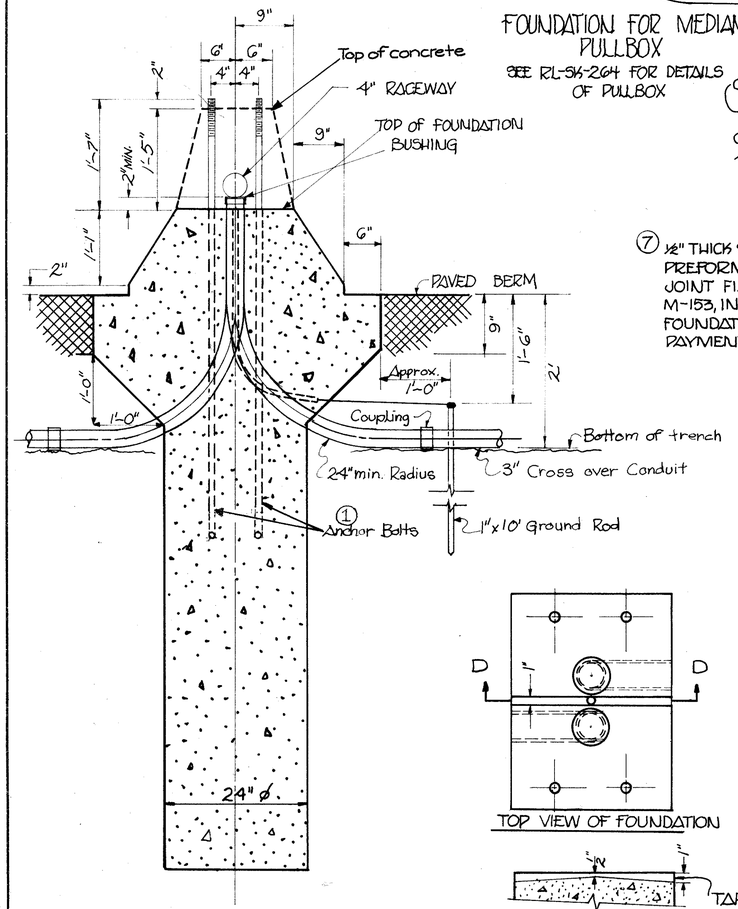
FRANKLIN COUNTY
FRA ~ 104 ~ 8.04



PLAN

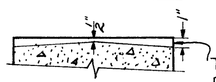
FOUNDATION FOR MEDIAN PULLBOX

SEE RL-5\6-264 FOR DETAILS OF PULLBOX



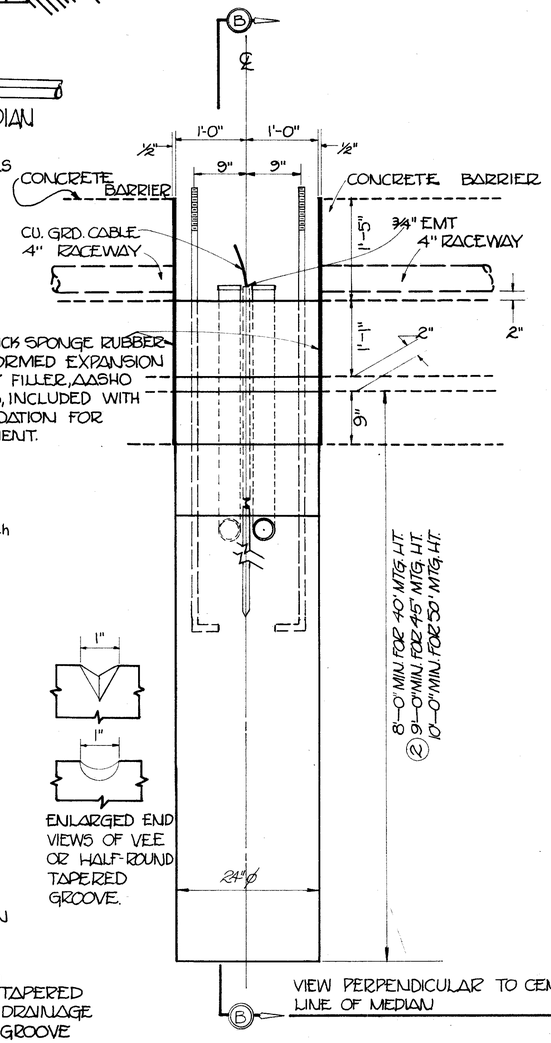
ELEV. B-B

TOP VIEW OF FOUNDATION



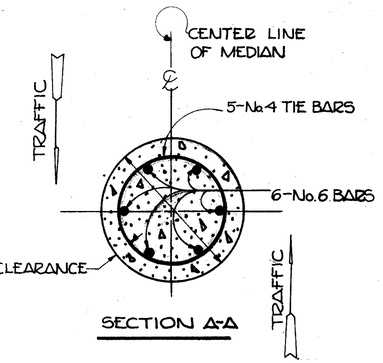
SEC. D-D

TAPERED DRAINAGE GROOVE

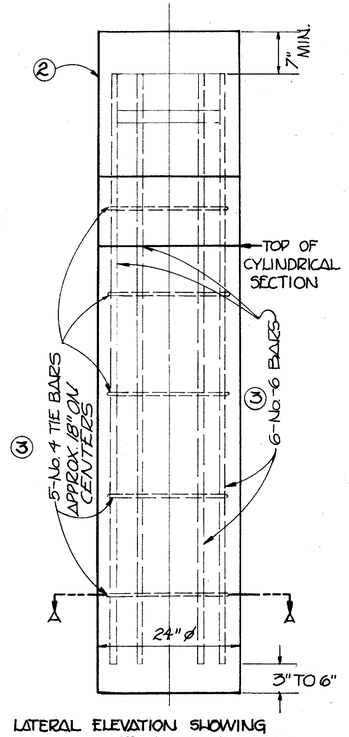


1" ENLARGED END VIEWS OF VEE OR HALF-ROUND TAPERED GROOVE.

VIEW PERPENDICULAR TO CENTER LINE OF MEDIAN



SECTION A-A



LATERAL ELEVATION SHOWING REINFORCING STEEL

NOTES

1. ANCHOR BOLTS 1¼" DIA. X 80" LONG INCLUDING 6" L-BEND.
2. FOUNDATION TO BE CAST-IN-PLACE CLASS C CONCRETE.
3. REINFORCING TO COMPLY WITH AND BE PLACED IN ACCORDANCE WITH 509.
4. ANCHOR BOLTS 1¼" DIA. X 40" LONG INCLUDING 6" L-BEND FOR PULLBOX FOUNDATION.
5. LIGHT POLE ANCHOR BOLTS SHALL BE THREADED 8".
6. WHEN TRANSFORMER BASE IS USED AS A PULL BOX IT SHALL HAVE A 24" X 12 13/16" X 3/16" THICK, GALVANIZED STEEL PLATE BOLTED TO THE TOP PLATE OF THE BASE TO COVER THE 5" DIAMETER HOLE IN THE TOP PLATE.
7. INSTALLATION OF THIS FILLER IS RESPONSIBILITY OF THE MEDIAN BARRIER ERECTOR AND MAY OR MAY NOT BE INSTALLED. IT IS SHOWN ON THIS DRAWING FOR THE CONVENIENCE OF THE HIGHWAY LIGHTING CONTRACTOR.
8. CONCRETE ON THE TOP OF FOUNDATION SHALL BE FINISHED SMOOTH AND LEVEL WITH DRAINAGE GROOVES AS SHOWN. CARE SHALL BE TAKEN IN LEVELING SO THAT A MINIMUM OF SHIMMING IS REQUIRED TO PLUMB POLE WHEN SHIMS ARE SPECIFIED TO BE USED.

OFFICE OF DESIGN SERVICES - LIGHTING SECTION
OHIO DEPARTMENT OF HIGHWAYS

HIGHWAY LIGHTING

D
DATE
10/17/69
12/10/69
5/13/70

FOUNDATION DETAILS
MEDIAN MOUNTED
LIGHT POLES APPROVED

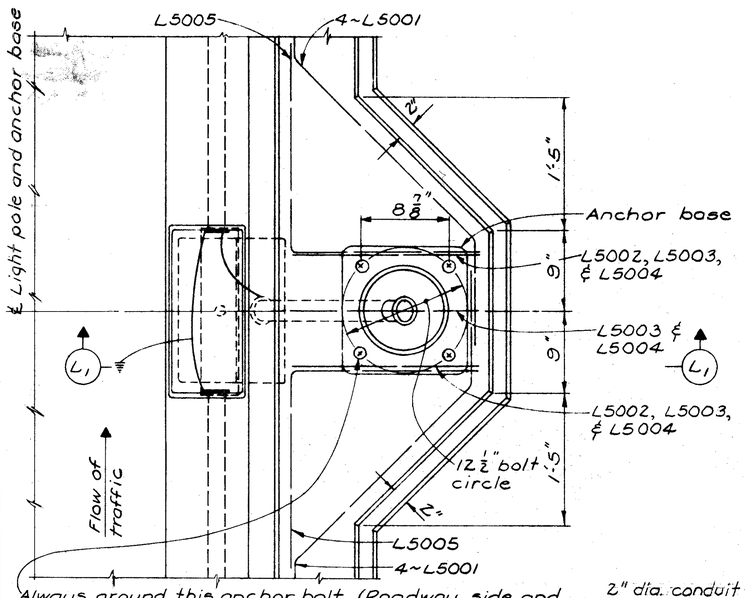
RL-5\6-251

FED. RD. DIVISION	STATE	PROJECT		
2	OHIO			

201/239

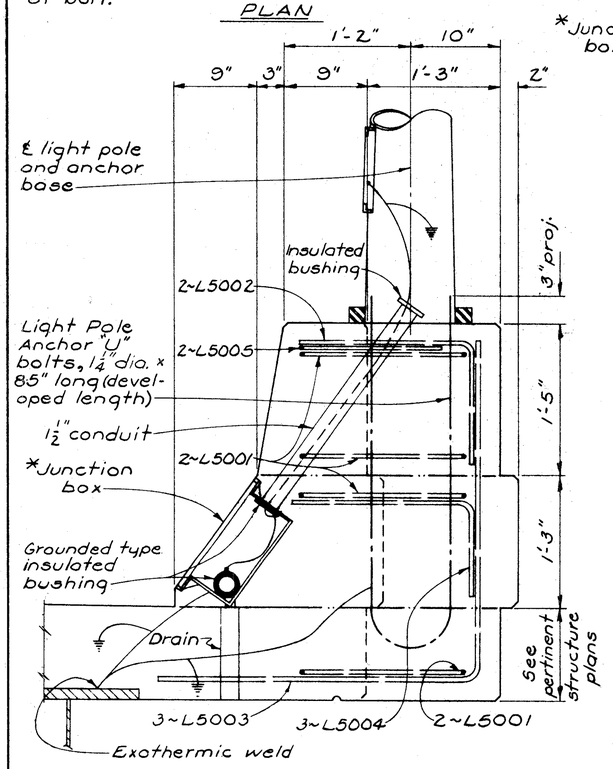
FRANKLIN COUNTY
FRA-104-8.04

Reinforcing Steel List (One Light Pole Support)										
Mark	No	Length	Weight	Type	A	B	C	D	E	Shp.
L5001	8	4-10	40	12	1-4	1-8	1-8	1-4		bt.
L5002	2	2-9	6	1	1-8	1-3				bt.
L5003	3	6-0	19	1	3-1	3-1				bt.
L5004	3	2-11	9	1	2-0	1-1				bt.
L5005	2	3-0	6	1	1-7	1-7				bt.



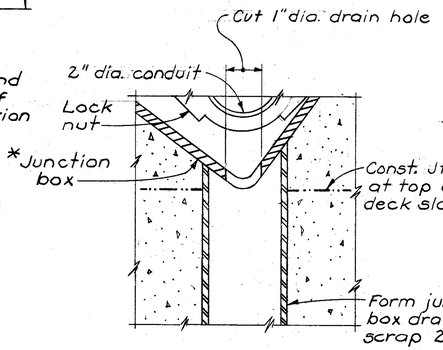
Always ground this anchor bolt. (Roadway side and opposite to flow of traffic) Apply light coat of red, weather-resistant paint to projected portion of bolt.

PLAN

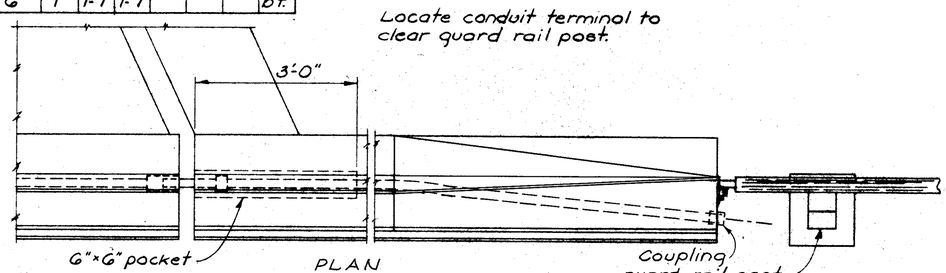


SECT. L1-L1

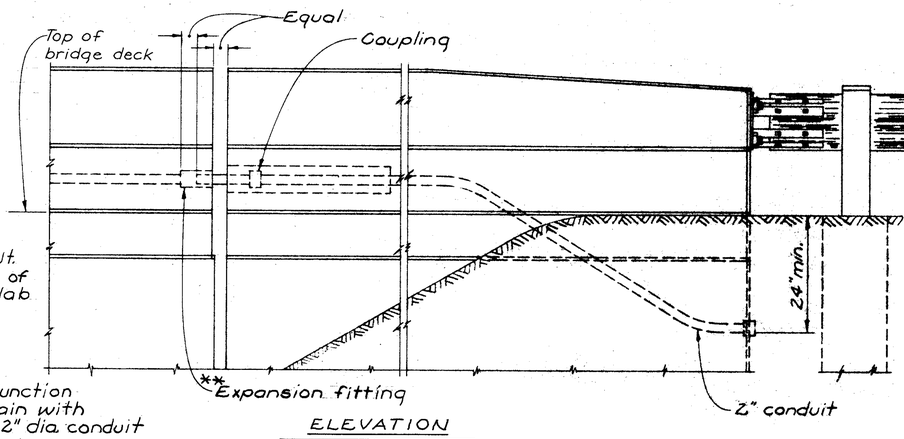
TYPE B BRIDGE RACEWAY WITH JUNCTION BOX



JUNCTION BOX DRAIN

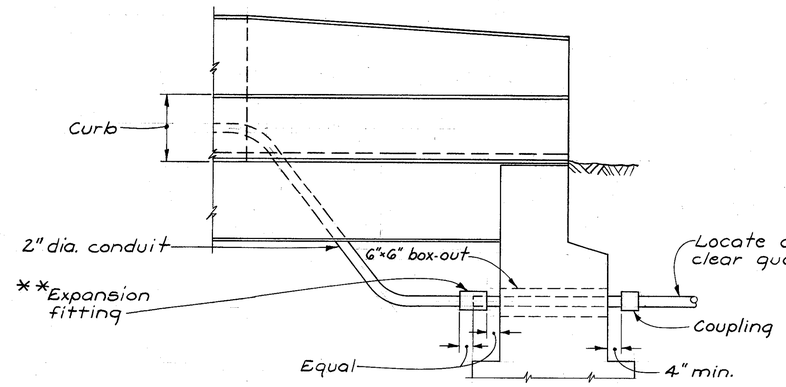


PLAN



ELEVATION

DETAIL OF LIGHTING CONDUIT IN ABUTMENT WITH TURNBACK WING WALLS



DETAIL OF LIGHTING CONDUIT IN ABUTMENT WITH STRAIGHT WING WALLS

Notes

Bridge Lighting: Item 625 includes the installation of all electrical equipment on the bridge and wingwall to the adjacent Roadway Pullbox. For additional details and notes see Highway Lighting Details and Notes and Std. Dwg. HL-4.

Quantities: The reinforcing steel for each light pole support is included with the bar list and is included with the structure quantities for payment. For detail listing of quantities see General Lighting Summary, sheet 183/239.

Conduit: All conduit shall be steel, galvanized inside and out in accordance with 711.02.

**Expansion fitting shall have Underwriters Laboratory approved internal bonding or external bonding jumper.

Light pole anchor bolts to be included with Item 625 for payment.

*See Lighting Sheet 195/239 for details of junction box.

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BRIDGE LIGHTING DETAILS

FRANKLIN COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TLV	10/29/10	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

202
239

FRANKLIN COUNTY
FRA-104-8.04

FLOODING DATA

Drainage Area: 1624 sq. miles
50 Year Discharge: 65,500 c.f.s.
High Water: 707.9
Velocity: 5.9 f.p.s.

Highest Flood of Record (Current flood plain and channel conditions)
January 22, 1959
High Water: 709.8
Discharge = 68,000 c.f.s.
Velocity = 5.5 f.p.s.

All existing utility lines, which are mounted on the existing bridge shall be removed and disposed of after they have been taken out of service by the owner.

The cost of removal shall be included in Lum Sum price bid for the removal of the existing bridge.

*Elevations marked with an asterisk are at top of slope at face of abutment.

EXISTING STRUCTURE

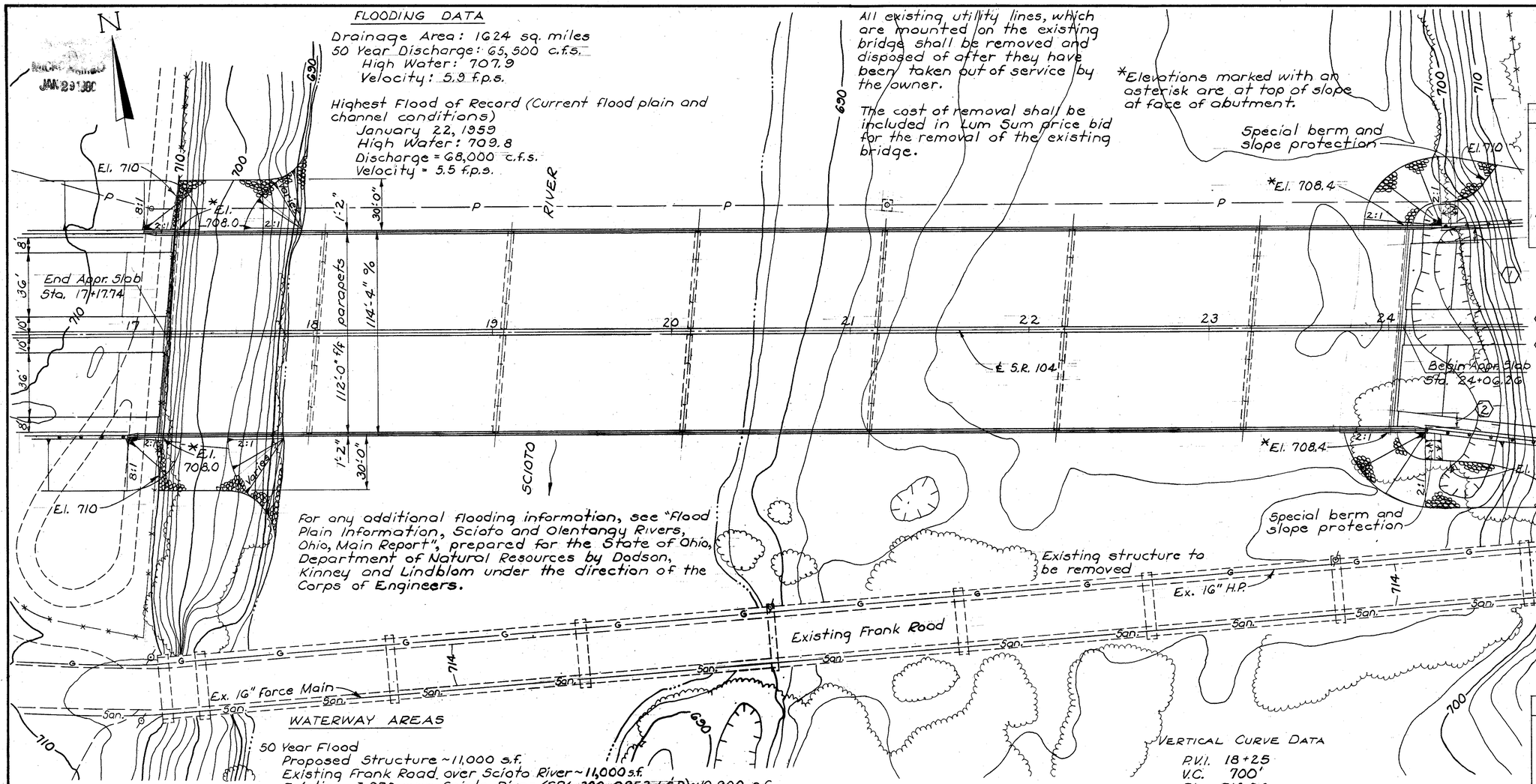
TYPE~Filled spandrel reinforced concrete arch
SPANS~7 @ 100' clear between concrete piers or between the face of concrete abutment and adjacent pier
ROADWAY~23' f/f of 5.5' concrete sidewalks
CONDITION~Poor

Earthwork limits shown are schematic. Actual slopes shall conform to plan cross-sections.

(1) Actual horiz. clr. 8.71'
Required horiz. clr. 8.00'
(2) Actual horiz. clr. 8.06'
Required horiz. clr. 8.00'

Abutment piles shall be 10BP42.
Pier piles shall be 12BP53.
Estimated average pay lengths:

Rear Abutment	35'
Piers 1 thru 3	30'
Pier 4	40'
Piers 5 & 6	45'
Forward Abutment	40'



For any additional flooding information, see "Flood Plain Information, Scioto and Olentangy Rivers, Ohio, Main Report", prepared for the State of Ohio, Department of Natural Resources by Dodson, Kinney and Lindblom under the direction of the Corps of Engineers.

WATERWAY AREAS

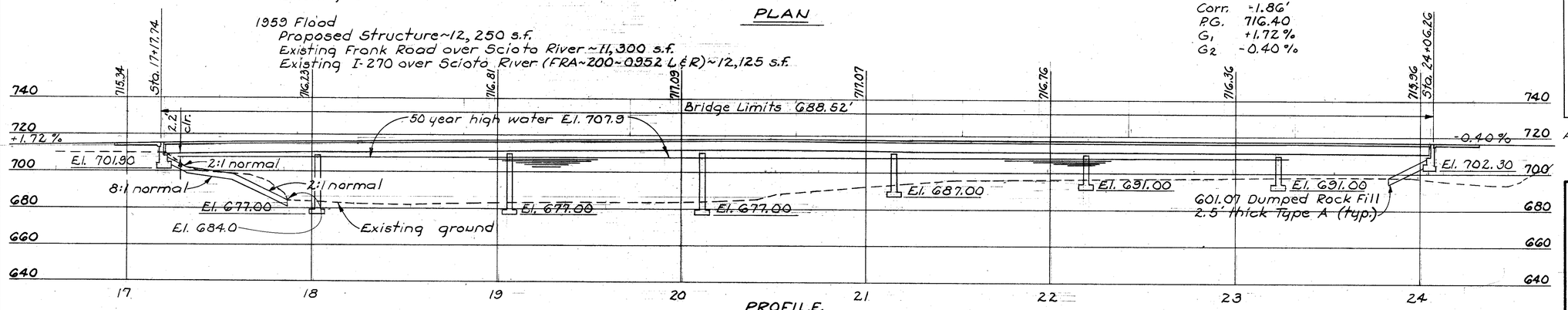
50 Year Flood
Proposed Structure~11,000 s.f.
Existing Frank Road over Scioto River~11,000 s.f.
Existing I-270 over Scioto River (FRA-200-0952 L&R)~10,900 s.f.

1959 Flood
Proposed Structure~12,250 s.f.
Existing Frank Road over Scioto River~11,300 s.f.
Existing I-270 over Scioto River (FRA-200-0952 L&R)~12,125 s.f.

VERTICAL CURVE DATA

P.V.I.	18+25
V.C.	700'
E.L.	718.26
Corr.	-1.86'
P.G.	716.40
G_1	+1.72 %
G_2	-0.40 %

PROFILE



(Piles not shown)

PROPOSED STRUCTURE

TYPE~Continuous steel girder (A588 steel) with reinforced concrete deck and substructure
SPANS~82'-0"~5 @ 104'-0"~82'-0"
ROADWAY~112'-0" f/f parapet with barrier railing and barrier median
LOADING~HS 20-44
WEARING SURFACE~1" monolithic concrete
SKEW~5°00' left forward
ALIGNMENT~Tangent
APPROACH SLABS~25'-0" long, see AS-1-67

ADT = 57,000 (1990)

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SITE PLAN

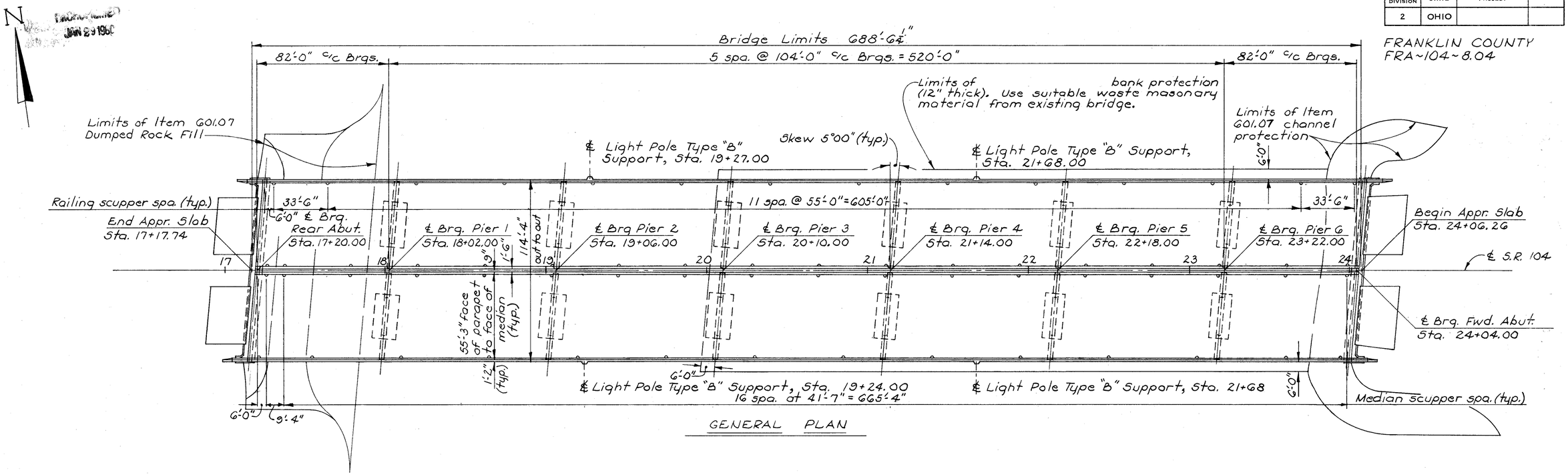
BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	TLL	10/29/70	

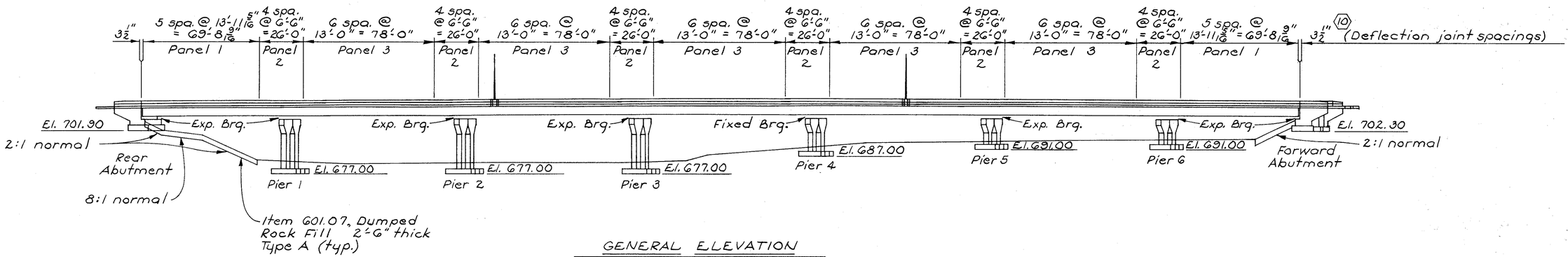
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

203
239

FRANKLIN COUNTY
FRA-104-8.04



GENERAL PLAN



GENERAL ELEVATION

(Piles not shown)

NOTES

Scupper spacings shown are ℄c along curb line of railing or median. Scupper spacings may be changed slightly from that shown in order to maintain 6" clear from crossframes.

PREFORMED EXPANSION JOINT FILLER in the parapet deflection joints may be either ¼" gray sponge rubber or ¼" gray cellular polyvinyl chloride (PVC) sponge. Either material shall meet the requirements of AASHO M-153, Type I, except the density of the PVC sponge shall not be less than 20 lb. per cubic foot.

(10) Median parapet deflection joints are spaced along ℄ S.R. 104. Railing parapet deflection joints are spaced along face of parapet.

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GENERAL PLAN AND ELEVATION
BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	JLV	10/29/70	

JAN 23 1980

FED. ROAD DIVISION	STATE	PROJECT		204 / 239
2	OHIO			

FRANKLIN CO.
FRA-104-8.04

REFERENCES:

STANDARD DRAWINGS:

SUPERSTRUCTURE DETAILS	SD-1-69	SHEETS 1 & 2 DATED 6-12-69
RAILING	BR-1-67	SHEET 1 DATED 2-1-68
ROCKERS & BOLSTERS	RB-1-55	REVISED 2-2-59
APPROACH SLABS	AS-1-67	REVISED 6-12-69
HIGHWAY LIGHTING	HL-4	DATED 1-1-66

SUPPLEMENTAL SPECIFICATIONS:

CHEMICAL ADMIXTURES FOR CONCRETE	808	DATED 11-14-69
EXAMINATION OF WELDS, PARTS I & II	811	REVISED 1-1-69
CONCRETE CURING AND PROTECTIVE MEMBRANE	836	DATED 6-17-69
SPECIAL PILE TESTS	838	DATED 3-18-70

BRIDGE LIGHTING DETAILS:

CONDUIT THROUGH ABUTMENT
LIGHT POLE SUPPORT AND BRIDGE RACEWAY

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, 1969, INCLUDING THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS AND THE 1970 INTERIM SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS.

DESIGN DATA:

DESIGN LOADING: HS 20-44

CONCRETE CLASS C: UNIT STRESS 1200 P.S.I. FOR SUPERSTRUCTURE.

UNIT STRESS 1333 P.S.I. FOR SUBSTRUCTURE.

STRUCTURAL STEEL, ASTM A588 MEETING REQUIREMENT S1 OF AASHO M222, UNIT STRESS 27,000 P.S.I.

HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL BE MADE FROM A STEEL WHICH MEETS ALL THE MECHANICAL PROPERTIES OF ASTM A325 AND HAS WEATHERING CHARACTERISTICS COMPARABLE AND COMPATIBLE TO ASTM 588. UNIT STRESS - 13,500 P.S.I. SHEAR.

REINFORCING STEEL, ASTM A615, A616 OR A617 UNIT STRESS 20,000 P.S.I.

REMOVAL OF EXISTING STRUCTURE: WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC, THE EXISTING STRUCTURE SHALL RE REMOVED ACCORDING TO ITEM 202.03. SUITABLE WASTE MASONRY SHALL BE PLACED AS BANK PROTECTION AS DIRECTED BY THE ENGINEER. THIS MATERIAL CAN BE USED ALSO AS DUMPED ROCK FILL IF IT QUALIFIES ACCORDING TO THE SIZE SPECIFICATIONS.

EMBANKMENT CONSTRUCTION: THE EMBANKMENTS SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF THE ABUTMENTS. EXCAVATION SHALL THEN BE MADE FOR THE ABUTMENTS.

IF THE RUBBISH IN THE REAR EMBANKMENT AREA IS REMOVED OR CONSOLIDATED, THIS PROCEDURE SHOULD BE FINISHED BEFORE STARTING CONSTRUCTION OF THE REAR ABUTMENT.

PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 35 TONS PER PILE FOR THE ABUTMENTS AND 50 TONS PER PILE FOR THE PIERS.

STRUCTURAL STEEL IS NOT TO BE PAINTED. THE EXPOSED NORTHERN SURFACES OF GIRDER No. 1 AND THE EXPOSED SOUTHERN SURFACES OF GIRDER No. 12 ARE TO BE SANDBLASTED. NO OTHER SURFACES ARE TO BE SANDBLASTED. SANDBLASTING TO BE INCLUDED WITH ITEM 513 FOR PAYMENT.

STRUCTURAL STEEL USED IN AN EXPOSED UNPAINTED APPLICATION SHALL BE WELDED WITH THE ELECTRODES AND FLUX-ELECTRODE COMBINATIONS LISTED IN THE TABLE BELOW.

WELDING PROCESS

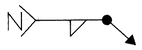
SHIELDED METAL ARC	SUBMERGED ARC	GAS METAL ARC	FLUX CORED ARC
AWS A5.5			
E8016 OR 18-G[A,B]	AWS A5.17[C]	AWS A5.18[C]	AWS A5.20[C]
E8016 OR 18-B1[B]	F71, F72, F73	E70S-1B, 2, 3,	E70T-1, 5, 6
E8016 OR 18-B2[B]	OR F-74-EXXXX	6, OR E70U-1	OR
E8016 OR 18-C1	OR	OR	GRADE E80T[B,C]
E8016 OR 18-C2	GRADE F80[B,C]	GRADE E80S[B,C]	
E8016 OR 18-C3			

(A) DEPOSITED WELD METAL SHALL HAVE A CHEMICAL COMPOSITION (PERCENT) OF 0.12 MAX. C, 0.50/1.10 MN, 0.03 MAX. P, 0.04 MAX. S, 0.35/0.80 SI, 0.30/0.75 CU, 0.40/0.80 NI, AND 0.45/0.70 CR.

(B) DEPOSITED WELD METAL SHALL HAVE AN IMPACT STRENGTH, MIN., CHARPY V-NOTCH OF 20 FT-LB AT 0°F.

(C) DEPOSITED WELD METAL SHALL HAVE A CHEMICAL COMPOSITION THE SAME AS THAT FOR ANY ONE OF THE WELD METALS OBTAINED WITH THE SHIELDED METAL-ARC ELECTRODES LISTED IN THIS TABLE.

WELDS ON NON-STRESS-CARRYING MEMBERS ARE SHOWN THUS:



THE EXPOSED SURFACES OF THE ABUTMENTS AND PIERS SHALL BE PROTECTED AGAINST DRAINAGE STAINS FROM THE STRUCTURAL STEEL DURING CONSTRUCTION.

SCUPPERS ARE TO BE A588 STEEL AND ARE NOT TO BE PAINTED OR SANDBLASTED.

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Abut.	Pier	Supers.	General
202	LUMP	SUM	EXISTING STRUCTURE REMOVED				LUMP *
503	LUMP	SUM	COFFERDAMS, CRIBS AND SHEETING				LUMP
503	1480	C.Y.	UNCLASSIFIED EXCAVATION	559	921		
505	LUMP	SUM	FIRST TEST PILE				LUMP
506	LUMP	SUM	FIRST PILE TEST LOAD				LUMP
506	1	EACH	SUBSEQUENT PILE TEST LOAD				1
507	3375	L.F.	STEEL PILES, 10BP42	3375			
507	10,340	L.F.	STEEL PILES, 12BP53		10,340		
509	969,595	LB.	REINFORCING STEEL	30,958	197,786	740,851	
511	2,551	C.Y.	CLASS "C" CONCRETE, SUPERSTRUCTURE			2,551	
511	1,069	C.Y.	CLASS "C" CONCRETE, PIERS ABOVE FOOTINGS		1069		
511	254	C.Y.	CLASS "C" CONCRETE, ABUTMENTS ABOVE FOOTINGS	254			
511	586	C.Y.	CLASS "C" CONCRETE, FOOTINGS	180	406		
512	20	L.F.	PREMOLDED SEALING STRIP	20			
513	1967500	LB.	STRUCTURAL STEEL (A588 STEEL)			1967500	
516	62	S.F.	1" PREFORMED EXPANSION JOINT FILLER	62			
518	158	C.Y.	POROUS BACKFILL	158			
518	218	L.F.	6" PERFORATED HELICAL CORRUGATED METAL PIPE, 707.01	218			
518	62	L.F.	6" NON-PERFORATED HELICAL CORRUGATED METAL PIPE, INCLUDING SPECIALS, 707.01	62			
518	64	EACH	SCUPPERS, INCLUDING SUPPORTS (A588 STEEL)			64	
601	1870	C.Y.	DUMPED ROCK FILL, TYPE A	1870			
625			SEE SHEET 183/239 FOR LIGHTING SUMMARY				
808	2551	UNITS	CHEMICAL ADMIXTURE FOR CONCRETE, TYPE A, B OR D			2551	
838	3	HOUR	SPECIAL PILE TESTS				3

* The approximate quantities of removal are as follows: Substructure concrete: 738 cu. yds, superstructure concrete: 2903 cu. yds. and slag fill: 2553 cu. yds.

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GENERAL NOTES AND ESTIMATED QUANTITIES
BRIDGE Nº FRA-104-0820
S.R. 104 over SCIOTO RIVER
FRANKLIN COUNTY STA. 17+17.74 STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TLV	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA-104-8.04

NOTES

(6) Elevation shown is at ℄ and top of 2" edge bar at curb line.

(7) Elevation shown is at ℄ and top of 2" edge bar at crown of roadway.

POROUS BACKFILL shall extend up to the sub-grade or to the finished ground surface. Excavation in excess of that required for abutment construction shall be included in the bid price per cubic yard of porous backfill.

(8) For limits and details of expansion joint see sheet 6 | 15.

For details of lighting conduit in abutment parapet see Bridge Lighting Details, sheet 201/239.

Field bending of abutment reinforcing to be included with Item 509 for payment.

For guard rail connections and additional details of 6'-0" parapet transition see Std. Dwg. BR-1-67, sheet 1 of 3.

Reinforcing Steel Location:
N.S. indicates near side
F.S. indicates far side

All piles shall be 10 BP 42 steel piles.
Vertical piles
Battered piles 1:4

REAR ABUTMENT Z — Z FORWARD ABUTMENT

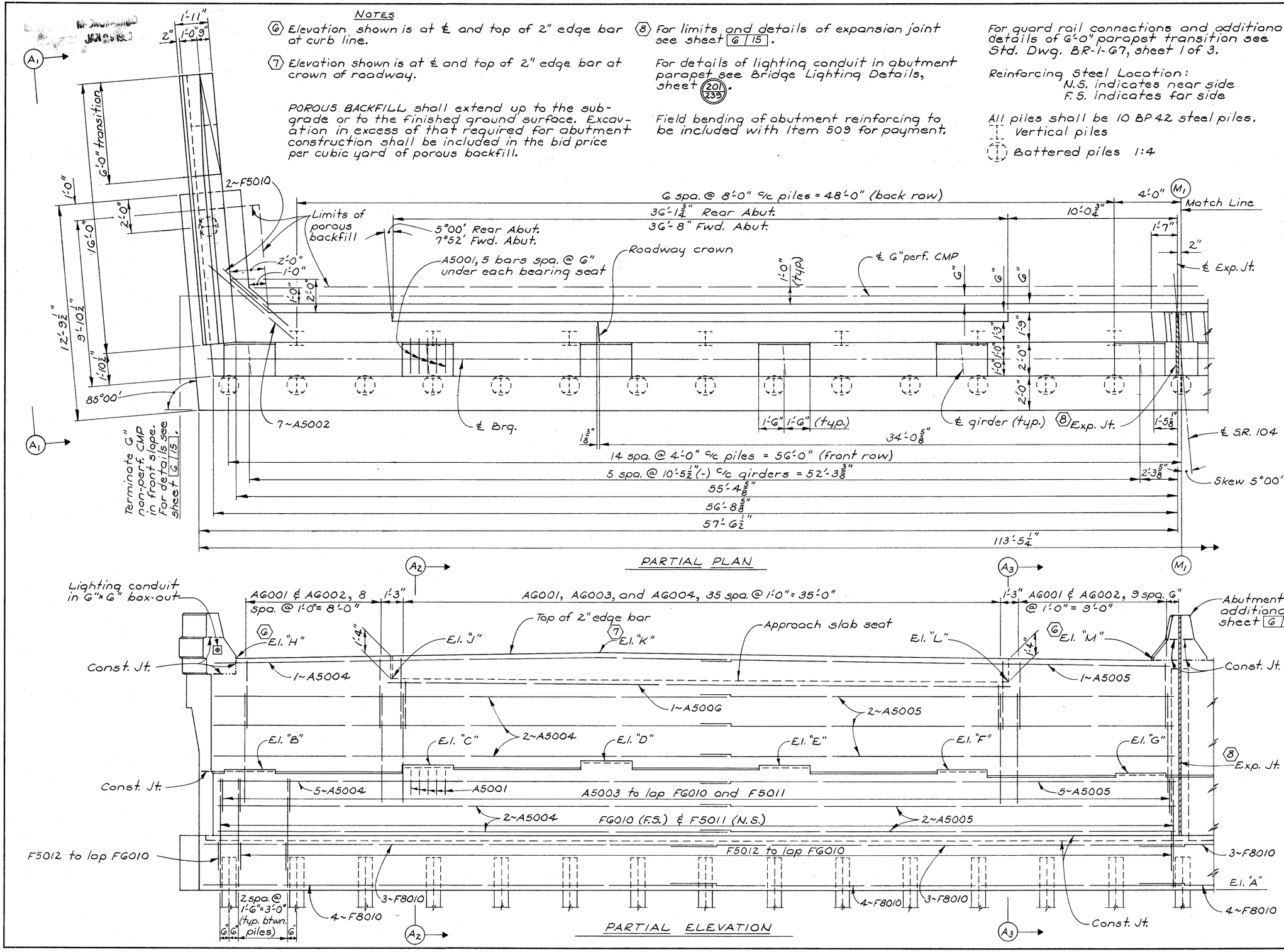
NOTES (Continued)

Adjustable type elbows meeting specification requirements for gage and coating are acceptable for making bends in non-perforated corrugated metal pipe.

Only that portion of the CMP located in the porous backfill shall be perforated.

For additional details see sheets 5, 6 | 15.

For end dam details at the median see sheet 14 | 15.



PARTIAL PLAN

PARTIAL ELEVATION

TABLE OF ELEVATIONS

Elev.	Rear Abutment	Forward Abutment
"A"	701.90	702.30
"B"	709.12	709.55
"C"	709.29	709.71
"D"	709.45	709.87
"E"	709.30	709.71
"F"	709.15	709.55
"G"	708.99	709.39
"H"	715.52	715.96
"J"	714.34	714.77
"K"	715.88	716.30
"L"	714.18	714.60
"M"	715.40	715.80

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ABUTMENT DETAILS

BRIDGE Nº FRA-104-0820
S.R. 104 over SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	FTJ	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA-104-8.04

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NOTES

For additional notes see sheet 4 / 15.

For additional details see sheets 4, 6 / 15.

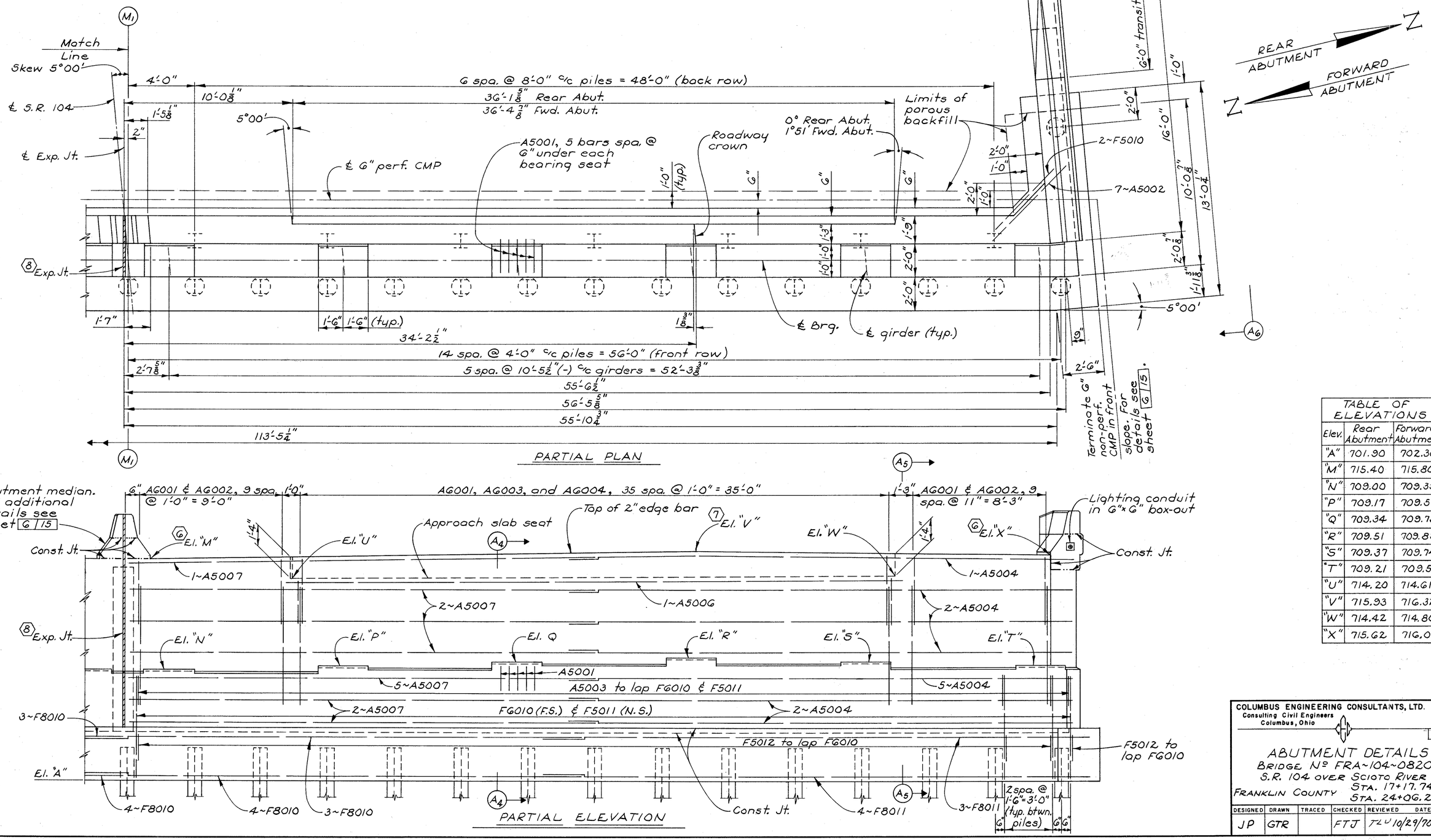

TABLE OF ELEVATIONS		
Elev.	Rear Abutment	Forward Abutment
"A"	701.90	702.30
"M"	715.40	715.80
"N"	709.00	709.39
"P"	709.17	709.56
"Q"	709.34	709.73
"R"	709.51	709.89
"S"	709.37	709.74
"T"	709.21	709.59
"U"	714.20	714.61
"V"	715.93	716.32
"W"	714.42	714.80
"X"	715.62	716.00

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ABUTMENT DETAILS

BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	FTJ	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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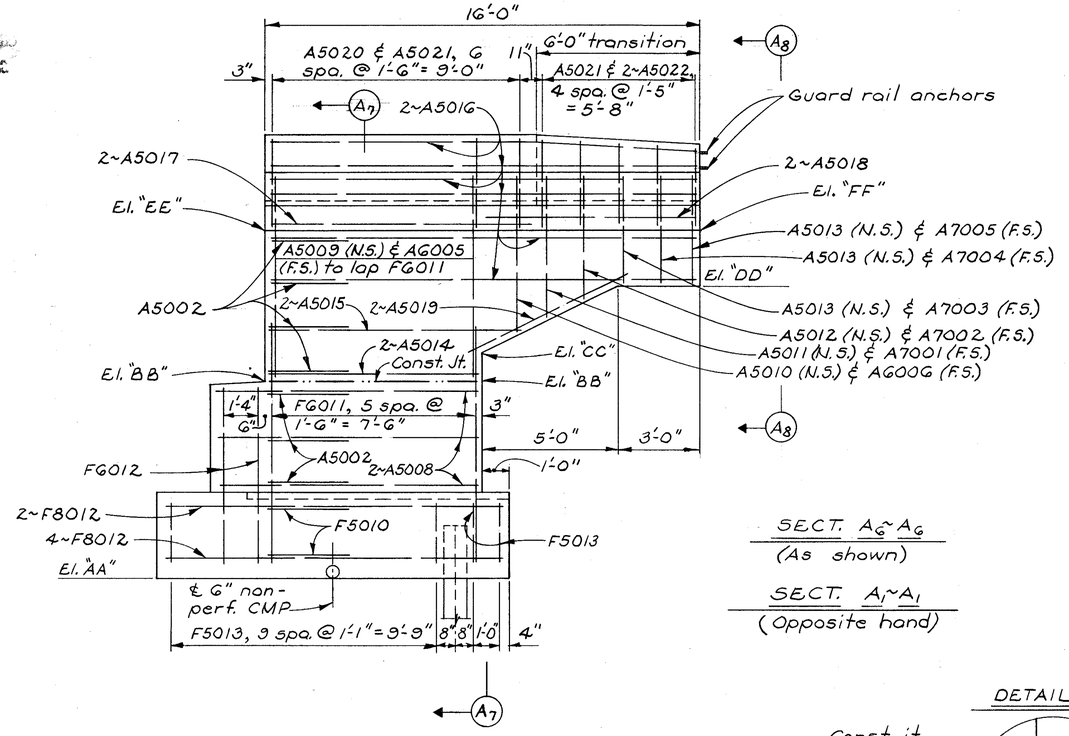
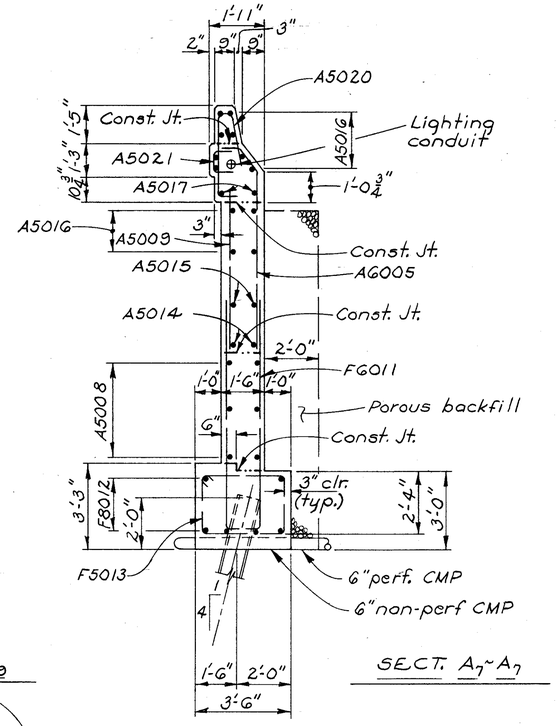
239

FRANKLIN COUNTY
FRA-104-8.04

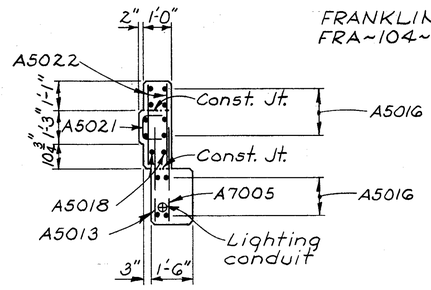


SECT. A_6~A_6
(As shown)

SECT. A_1~A_1
(Opposite hand)



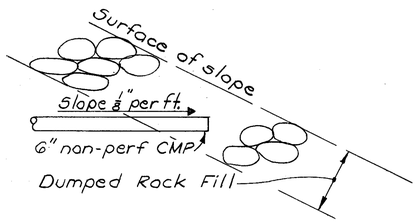
SECT. A_7~A_7



Guard rail anchors not shown

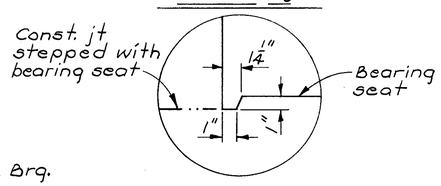
VIEW A_8~A_8

TABLE OF ELEVATIONS				
	E.B. Rear	W.B. Rear	E.B. Fwd.	W.B. Fwd.
"AA"	701.90	701.90	702.30	702.30
"BB"	709.04	709.13	709.51	709.47
"CC"	709.86	709.96	710.43	710.39
"DD"	712.36	712.46	712.93	712.89
"EE"	714.63	714.73	715.10	715.06
"FF"	714.46	714.56	715.03	714.99

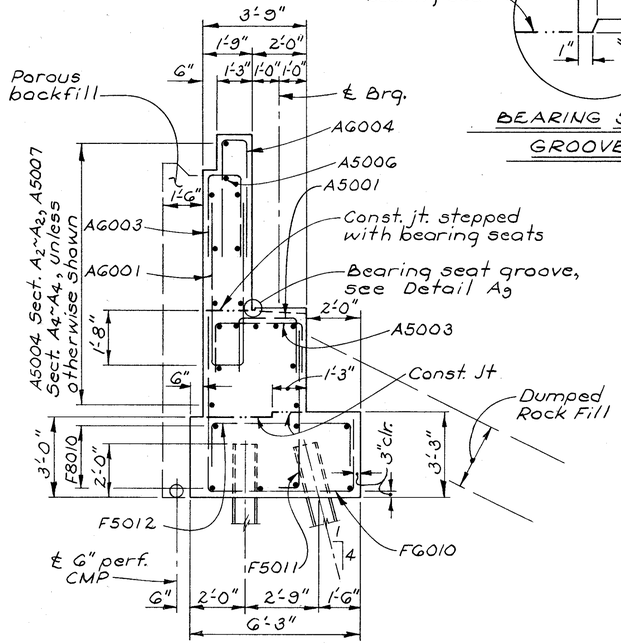


FRONT SLOPE TERMINATION

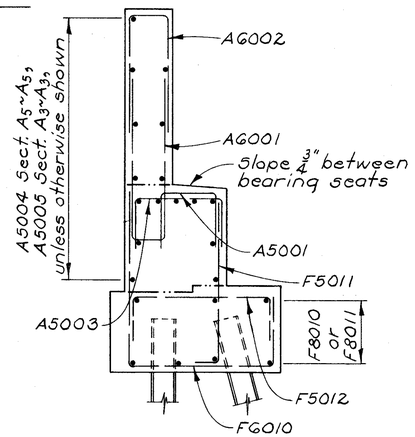
DETAIL A_9



BEARING SEAT GROOVE

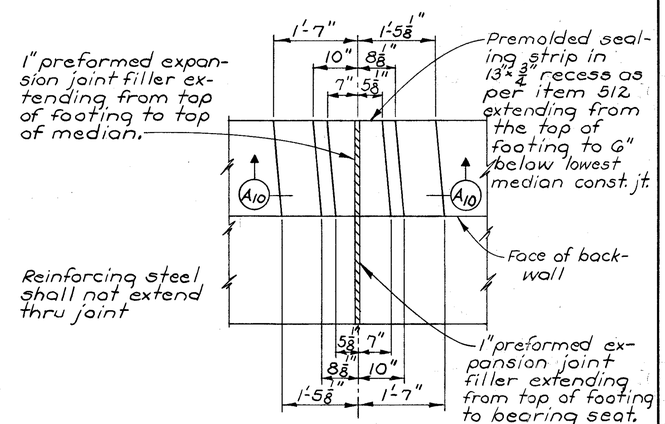


SECT. A_2~A_2 SECT. A_4~A_4

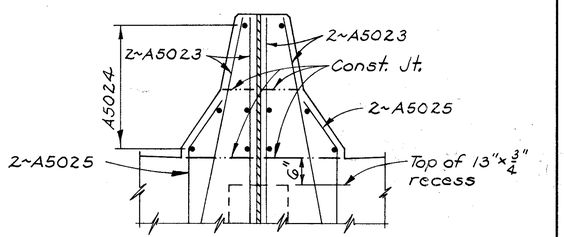


SECT. A_3~A_3 SECT. A_5~A_5

For details not shown see Sect. A_2~A_2, A_4~A_4



DETAIL OF ABUTMENT MEDIAN



SECT. A_{10}~A_{10}

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ABUTMENT DETAILS

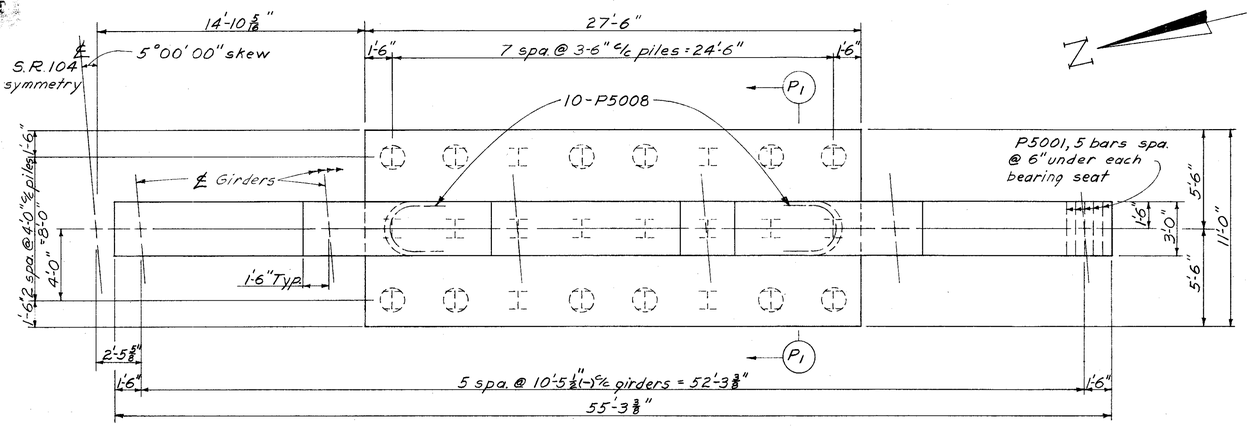
BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	FTJ	10/29/70	

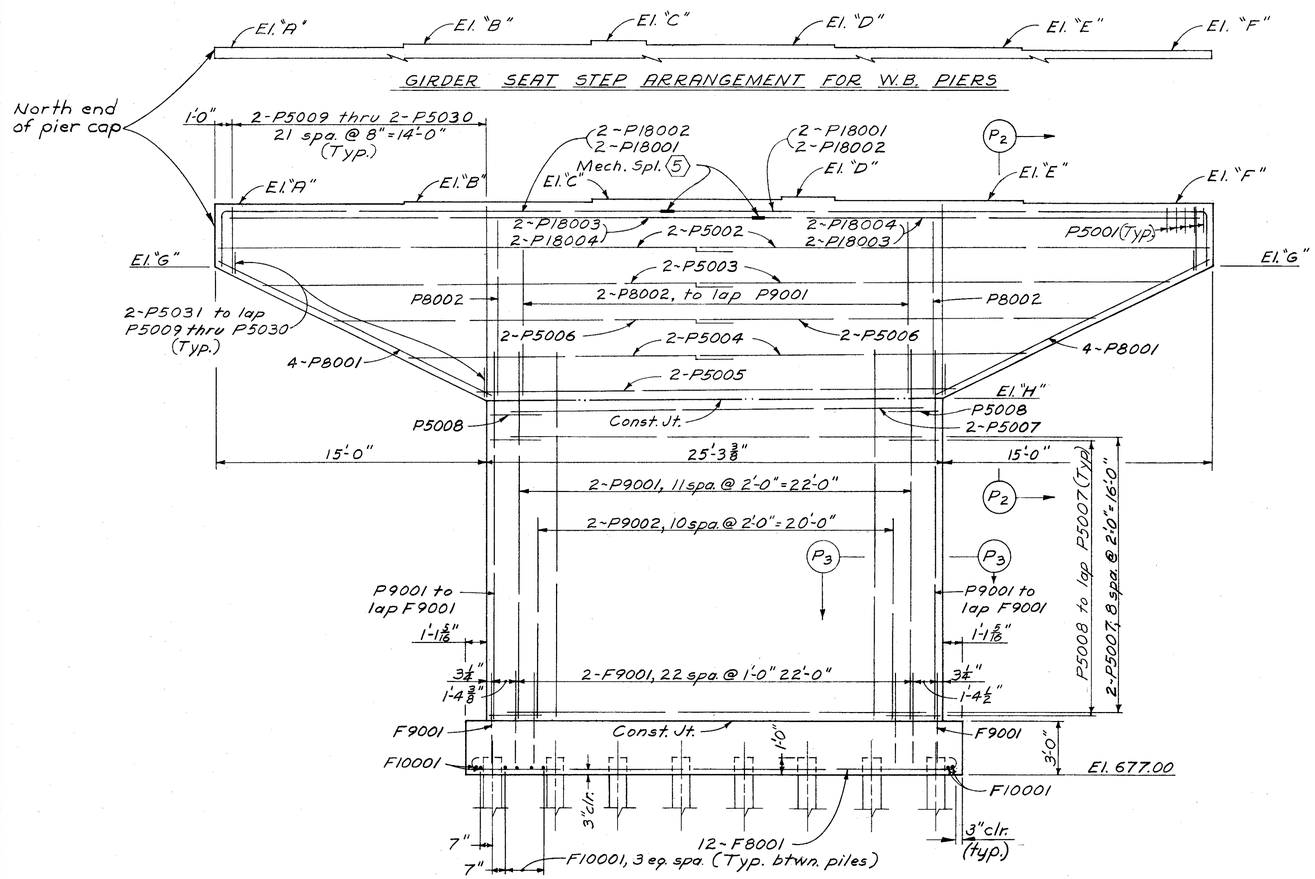
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

208
239

FRANKLIN COUNTY
FRA-104-8.04



PLAN
(E.B. Piers)



ELEVATION
(Girder step arrangement for E.B. Piers)

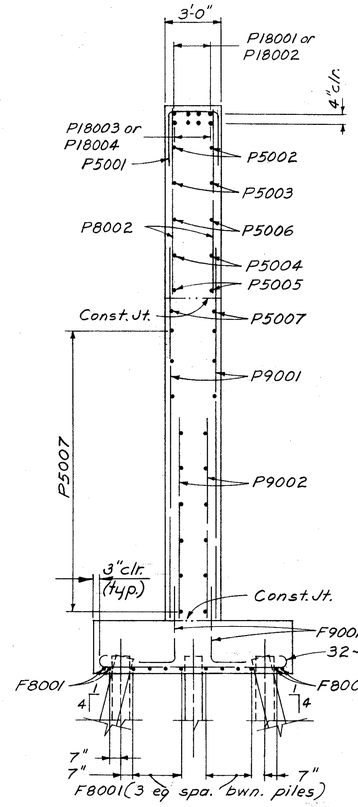
TABLE OF ELEVATIONS

	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
W.B. Pier 1	709.30	709.46	709.61	709.44	709.27	709.10	705.59	698.09
E.B. Pier 1	709.09	709.25	709.41	709.56	709.40	709.23	705.60	698.10
W.B. Pier 2	709.87	710.03	710.18	710.02	709.85	709.68	706.18	698.68
E.B. Pier 2	709.68	709.84	710.00	710.16	710.00	709.83	706.18	698.68
W.B. Pier 3	710.12	710.29	710.44	710.28	710.11	709.95	706.45	698.95
E.B. Pier 3	709.95	710.11	710.27	710.43	710.28	710.12	706.45	698.95

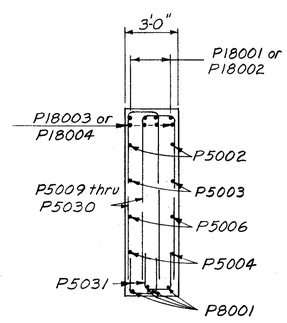
NOTES:

All piles shall be 12 BP 53 steel piles
Vertical piles Battered piles 1:4

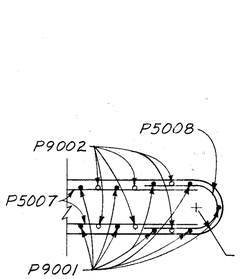
Splices in N°18 size bars shall be made by an approved positive mechanical method designed to develop 125% of the yield strength of the bar.



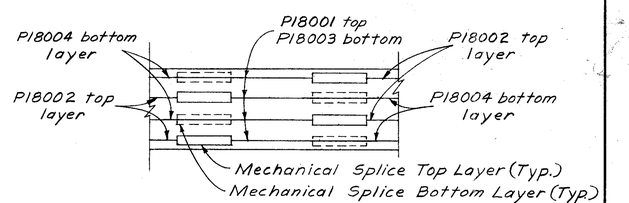
SECT P_1-P_1



SECT P_2-P_2



SECT P_3-P_3



(5) Arrangement of Mechanical Splices

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PIERS 1, 2 & 3 E.B. & W.B.
BRIDGE N°FRA-104-0820
S.R 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	RWF		JP	FTJ	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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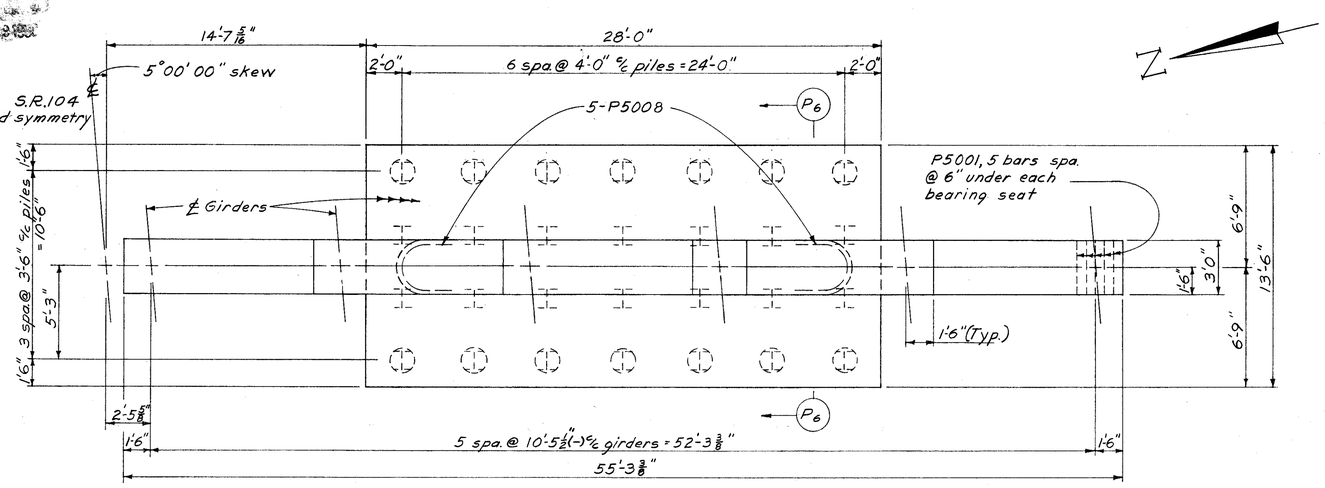
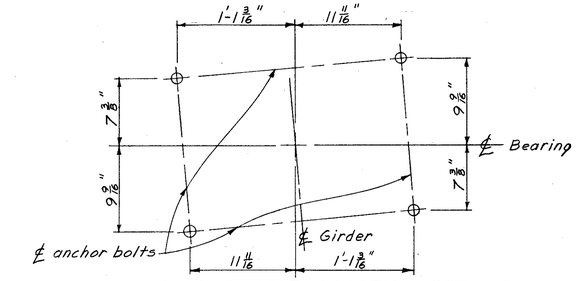
239

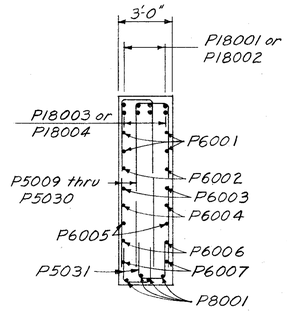
FRANKLIN COUNTY
FRA~104~8.04



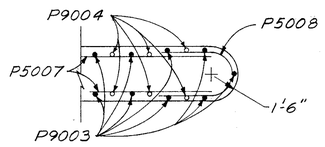
PLAN



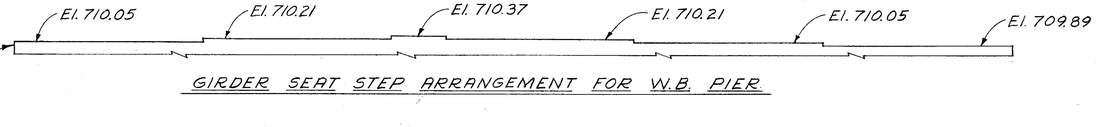
ANCHOR BOLT LOCATION DETAILS



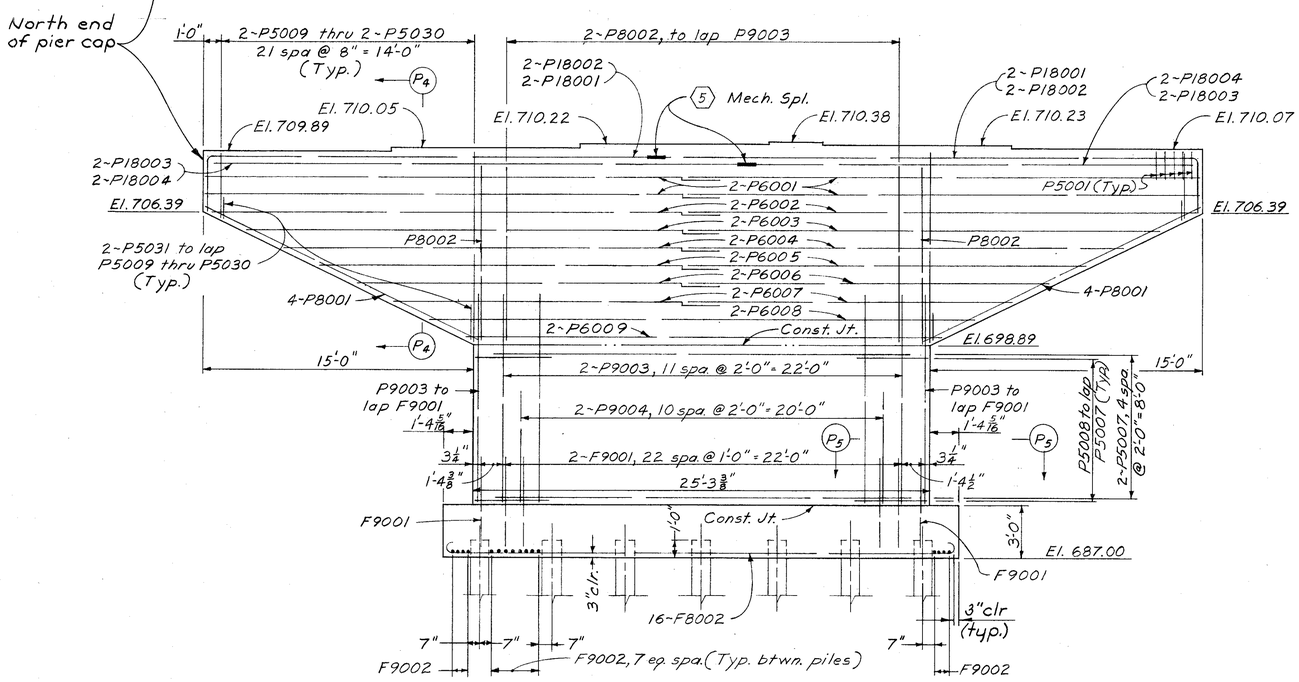
SECT. P_4~P_4



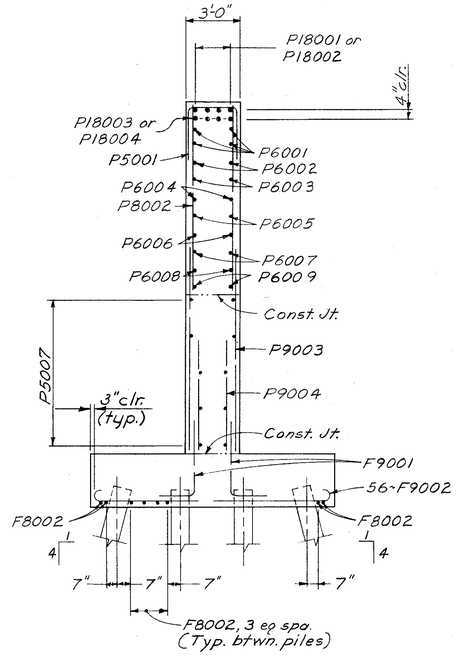
SECT. P_5~P_5



GIRDER SEAT STEP ARRANGEMENT FOR W.B. PIER



ELEVATION
(Girder step arrangement for E.B. Pier)



SECT. P_6~P_6

NOTES:

Superstructure Ground shall be embedded according to Standard Dwg. HL-4 in Pier 4 E.B.

(5) For arrangement of mechanical splice see sheet 7/15

For additional notes see sheet 7/15

Bridge Seat Reinforcing: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seat so as to avoid interference with the drilling of anchor bolt holes.

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PIER 4 E.B. & W.B.

BRIDGE Nº FRA~104~0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA 17+17.74
STA 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	RWF		JP	FTJ	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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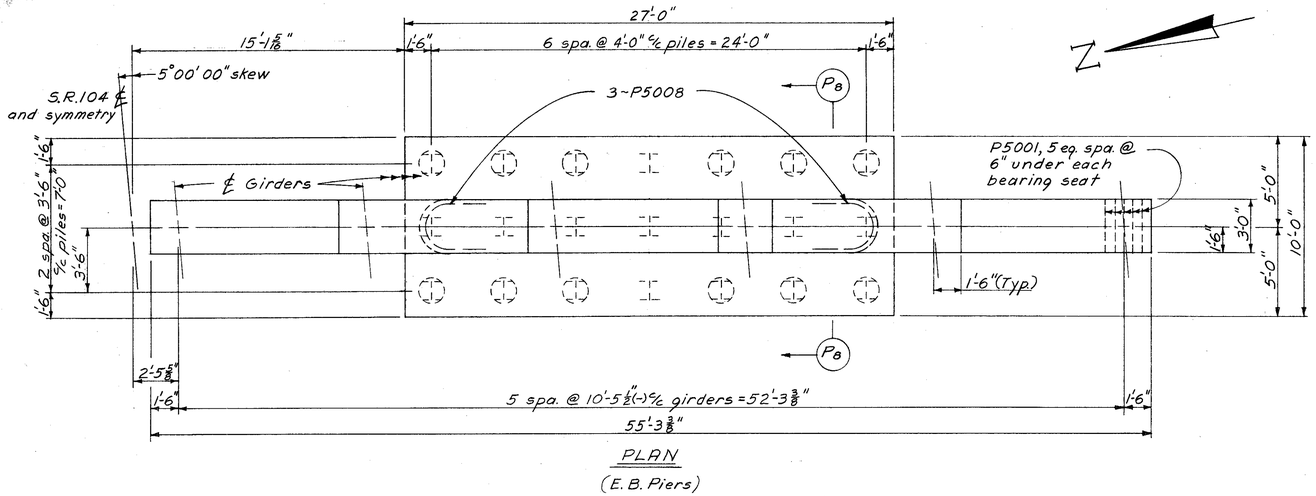
239

FRANKLIN COUNTY
FRA-104-8.04



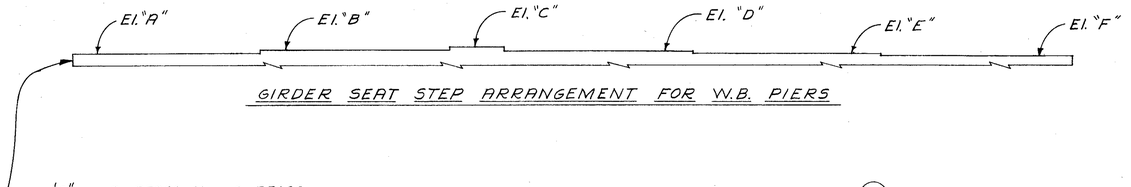
PLAN
(E. B. Piers)

TABLE OF ELEVATIONS								
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
W.B. Pier 5	709.68	709.85	710.00	709.85	709.69	709.53	706.03	698.53
E.B. Pier 5	709.53	709.70	709.86	710.03	709.88	709.72	706.03	698.53
W.B. Pier 6	709.28	709.44	709.60	709.44	709.28	709.12	705.62	698.12
E.B. Pier 6	709.12	709.29	709.46	709.62	709.47	709.31	705.62	698.12

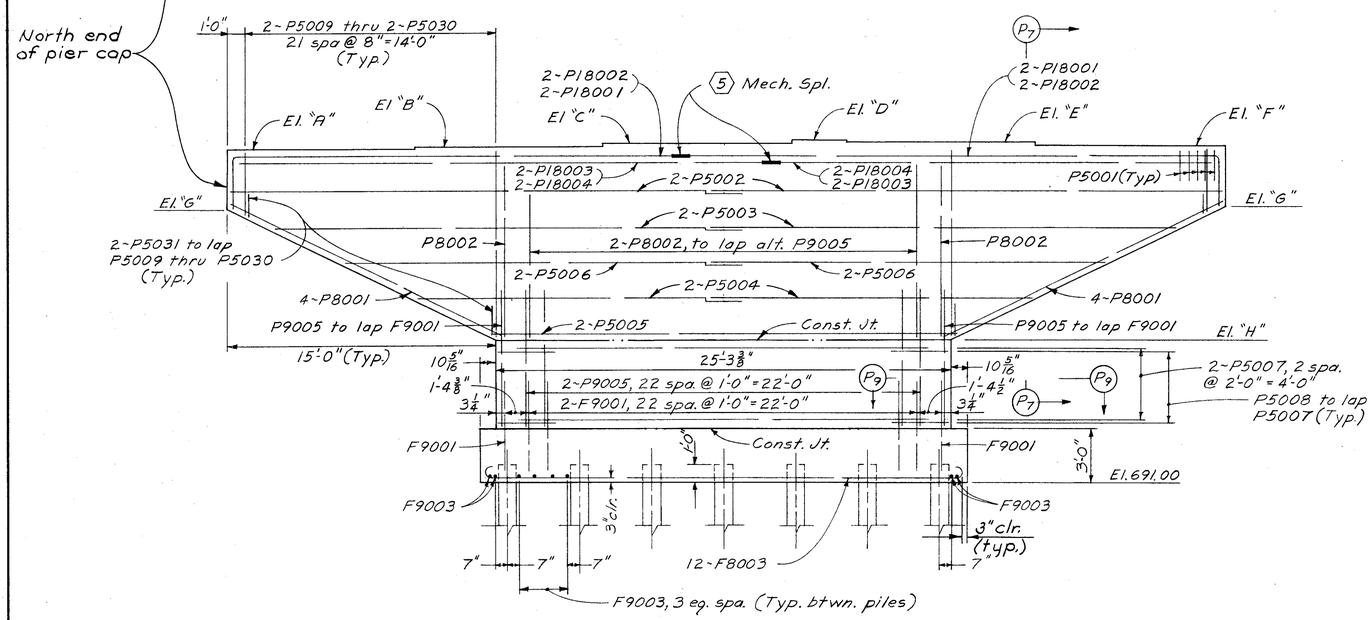
NOTES:

(5) For arrangement of mechanical splice see sheet 7/15

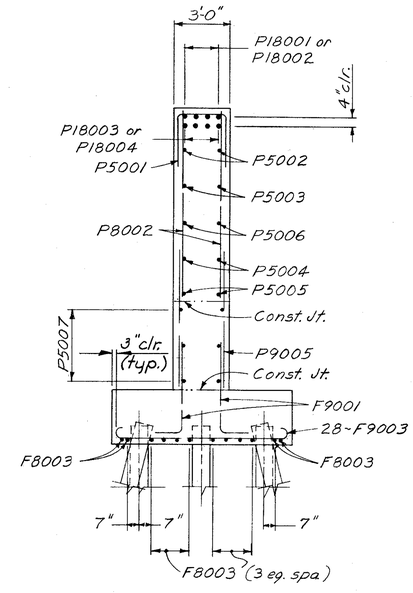
For additional notes see sheet 7/15



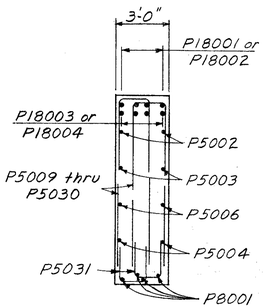
GIRDER SEAT STEP ARRANGEMENT FOR W.B. PIERS



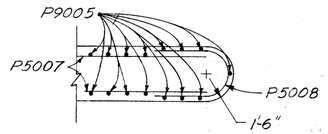
ELEVATION
(Girder step arrangement for E.B. Piers)



SECT. P_8-P_8



SECT. P_7-P_7



SECT. P_9-P_9

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PIERS 5 & 6 E.B. & W.B.
BRIDGE N° FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	RWF		JP	TLW	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA-104-8.04

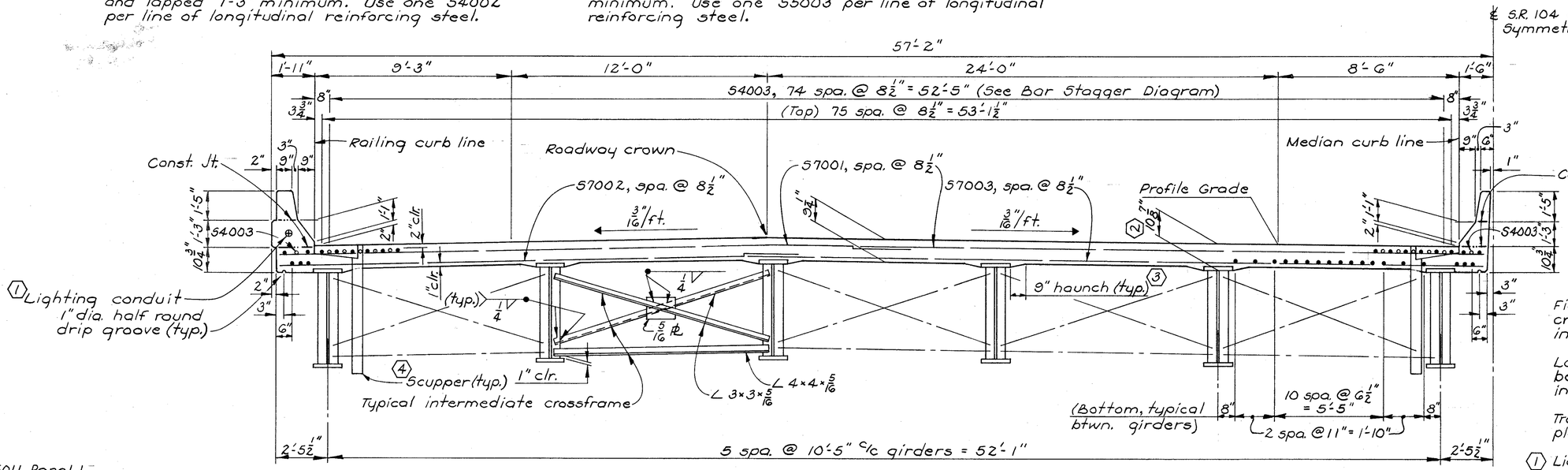
JAN 2 1970

NOTES

Top longitudinal slab reinforcing steel shall be S4001 or S4002 except as otherwise shown and lapped 1'-3" minimum. Use one S4002 per line of longitudinal reinforcing steel.

Bottom longitudinal slab reinforcing steel shall be S5002 or S5003 and lapped 1'-7" minimum. Use one S5003 per line of longitudinal reinforcing steel.

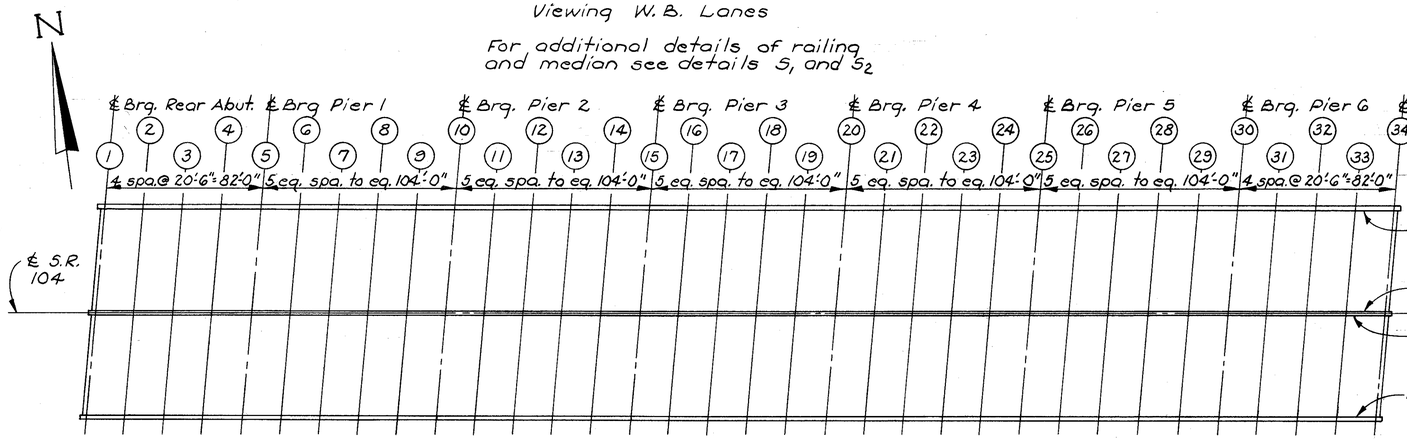
Slab thickness shown includes 1" monolithic wearing surface.



HALF TRANSVERSE SECTION

Viewing W. B. Lanes

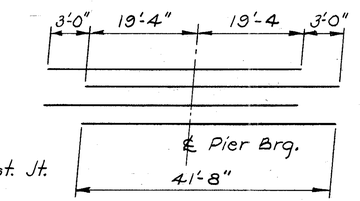
For additional details of railing and median see details S_1 and S_2



Elevations shown are at curb line and top of slab and are those which are required before the concrete slab is placed. Proper allowance has been made for the dead load deflections caused by the weight of concrete.

TABLE OF SCREED ELEVATIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Line "A"	715.63	715.86	716.05	716.19	716.32	716.48	716.64	716.75	716.83	716.90	717.00	717.10	717.15	717.16	717.16	717.19	717.22
Line "B"	715.41	715.64	715.83	715.97	716.11	716.28	716.43	716.55	716.63	716.71	716.81	716.91	716.96	716.97	716.98	717.02	717.04
Line "C"	715.41	715.64	715.83	715.97	716.11	716.28	716.43	716.55	716.63	716.71	716.81	716.91	716.96	716.97	716.98	717.02	717.04
Line "D"	715.54	715.77	715.96	716.11	716.25	716.42	716.58	716.70	716.78	716.86	716.97	717.07	717.12	717.14	717.15	717.19	717.22
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Line "A"	717.20	717.15	717.08	717.05	717.01	716.93	716.82	716.71	716.65	716.59	716.51	716.40	716.30	716.23	716.17	716.09	715.97
Line "B"	717.03	716.98	716.91	716.89	716.85	716.77	716.66	716.55	716.49	716.43	716.35	716.24	716.14	716.07	716.02	715.93	715.81
Line "C"	717.03	716.98	716.92	716.89	716.85	716.77	716.66	716.56	716.49	716.43	716.35	716.24	716.14	716.07	716.02	715.93	715.81
Line "D"	717.21	717.16	717.10	717.08	717.04	716.97	716.86	716.75	716.68	716.63	716.54	716.44	716.33	716.27	716.21	716.13	716.01



BAR STAGGER DIAGRAM

Showing stagger of S4003 bars over piers

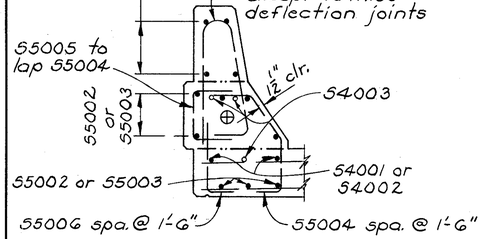
NOTES (Continued)

Field bend transverse bars to fit crown. Field bending to be included in Item 509 for payment.

Longitudinal reinforcing steel shall be field cut as necessary to avoid interference with scuppers.

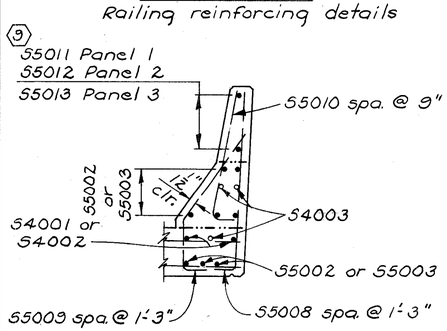
Transverse reinforcing steel shall be placed parallel to ℄ bearings.

1. Lighting conduit shall be placed a minimum of 1" clear above construction joint at top of slab.
2. 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 conformation required to place it parallel to the finished grade. Deduction shall be made for volume of encased steel plates as per 511.19.
3. 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.
4. For details of scupper see sheet 14/15.
9. For location of panels see General Elevation sheet 2/15.



DETAIL S_1

Railing reinforcing details



DETAIL S_2

Median reinforcing details
All vertical steel to miss deflection joints

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SUPERSTRUCTURE DETAILS

BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTA RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	TLH	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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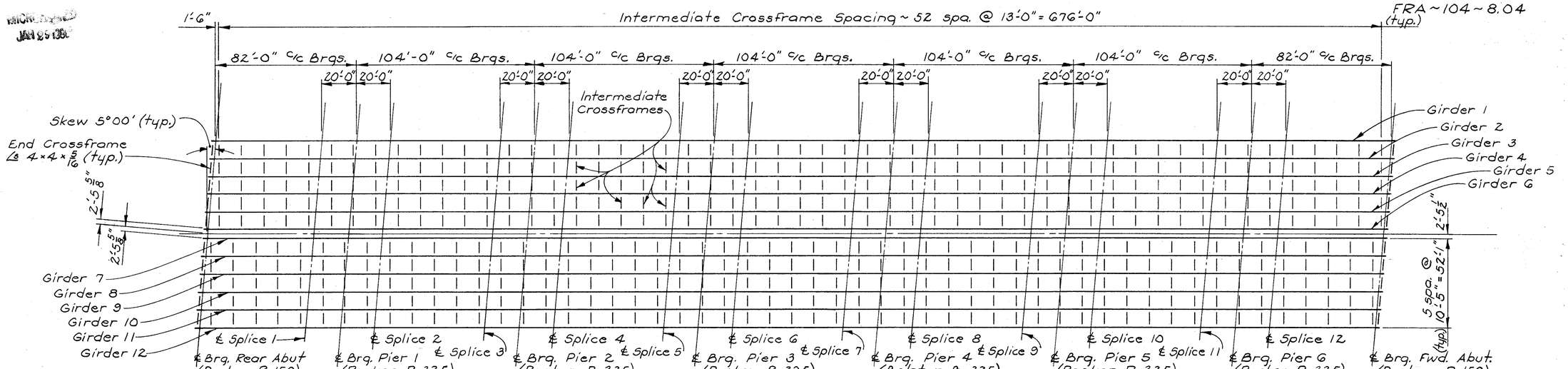
FRANKLIN COUNTY
FRA~104~8.04
(typ.)

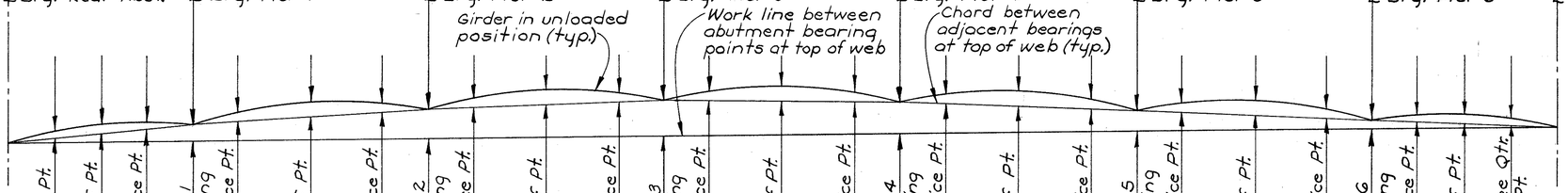
NOTE

Transverse ℄ of bearing devices shall be placed normal to girders.

For additional details see sheets 12, 13 | 15.



FRAMING PLAN



CAMBER AND BLOCKING

CAMBER

		Qtr. Pt.	Half Pt.	Splice Pt.	Pier 1 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 2 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 3 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 4 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 5 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 6 Blocking	Splice Pt.	Half Pt.	Three Qtr. Pt.
Deflections due to weight of steel	Girders 1, 6, 7, & 12	1/8"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/8"
	Girders 2 thru 5, 8 thru 11	1/8"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/8"
Deflections due to remaining dead load	Girders 1, 6, 7, & 12	7/16"	1/2"	5/16"		4/16"	9/16"	5/16"		4/16"	11/16"	5/16"		5/16"	11/16"	5/16"		5/16"	11/16"	5/16"		4/16"	9/16"	4/16"		2 1/16"	2 1/16"	7/16"
	Girders 2 thru 5, 8 thru 11	9/16"	5/8"	4/16"		5/16"	3/4"	4/16"		5/16"	13/16"	4/16"		6/16"	13/16"	5/16"		6/16"	13/16"	5/16"		5/16"	3/4"	4/16"		2 2/16"	2 2/16"	9/16"
Adjustment required for vertical curve	Girders 1, 6, 7, & 12	3/16"	5/16"	3/16"		5/16"	1/2"	5/16"		5/16"	1/2"	5/16"		5/16"	1/2"	6/16"		6/16"	1/2"	6/16"		6/16"	1/2"	6/16"		6/16"	1/2"	6/16"
	Girders 2 thru 5, 8 thru 11	3/16"	5/16"	3/16"		5/16"	1/2"	5/16"		5/16"	1/2"	5/16"		5/16"	1/2"	6/16"		6/16"	1/2"	6/16"		6/16"	1/2"	6/16"		6/16"	1/2"	6/16"
Required shop camber	Girders 1, 6, 7, & 12	3/4"	15/16"	7/16"		5/8"	1 3/16"	9/16"		5/8"	1 5/16"	11/16"		11/16"	1 5/16"	11/16"		5/8"	1 1/8"	7/16"		1/4"	11/16"	5/16"		1/4"	5/16"	9/16"
	Girders 2 thru 5, 8 thru 11	7/8"	1 1/16"	1/2"		11/16"	1 3/8"	5/8"		11/16"	1 1/2"	3/4"		3/4"	1 1/2"	3/4"		11/16"	1 5/16"	1/2"		5/16"	7/8"	3/8"		1/16"	3/4"	11/16"

BLOCKING

	Grdr. 1	Grdr. 2	Grdr. 3	Grdr. 4	Grdr. 5	Grdr. 6	Grdr. 7	Grdr. 8	Grdr. 9	Grdr. 10	Grdr. 11	Grdr. 12
Pier 1	7 13/16"	7 13/16"	7 13/16"	7 13/16"	7 13/16"	7 13/16"	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"
Pier 2	1'-2 1/8"	1'-2 3/16"	1'-2 3/16"	1'-2 3/16"	1'-2 1/4"	1'-2 1/4"	1'-2 1/4"	1'-2 5/16"	1'-2 5/16"	1'-2 5/16"	1'-2 5/16"	1'-2 3/16"
Pier 3	1'-4 9/16"	1'-4 5/8"	1'-4 5/8"	1'-4 11/16"	1'-4 11/16"	1'-4 3/4"	1'-4 3/4"	1'-4 3/4"	1'-4 13/16"	1'-4 13/16"	1'-4 7/8"	1'-4 7/8"
Pier 4	1'-3 1/16"	1'-3 1/8"	1'-3 1/8"	1'-3 3/16"	1'-3 1/4"	1'-3 1/4"	1'-3 5/16"	1'-3 5/16"	1'-3 3/8"	1'-3 7/16"	1'-3 1/2"	1'-3 1/2"
Pier 5	10 1/16"	10 1/16"	10 1/8"	10 1/8"	10 3/16"	10 1/4"	10 1/4"	10 5/16"	10 5/16"	10 3/8"	10 7/16"	10 7/16"
Pier 6	4 7/16"	4 7/16"	4 7/16"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 9/16"	4 9/16"	4 9/16"	4 5/8"	4 5/8"

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SUPERSTRUCTURE DETAILS

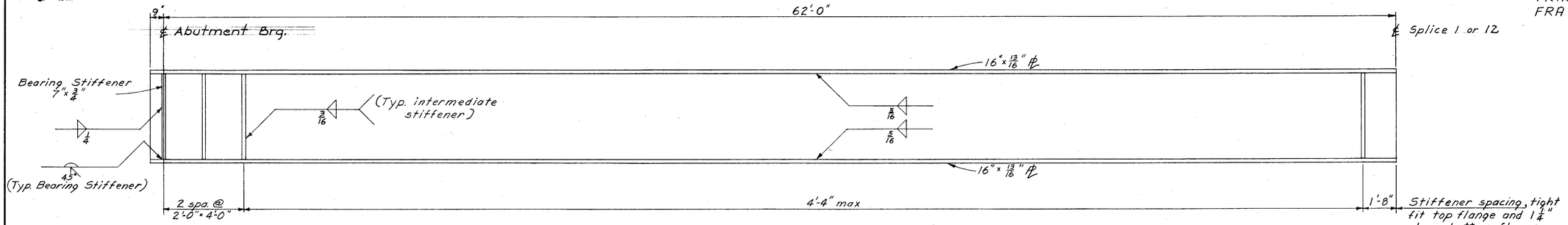
BRIDGE Nº FRA~104~0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

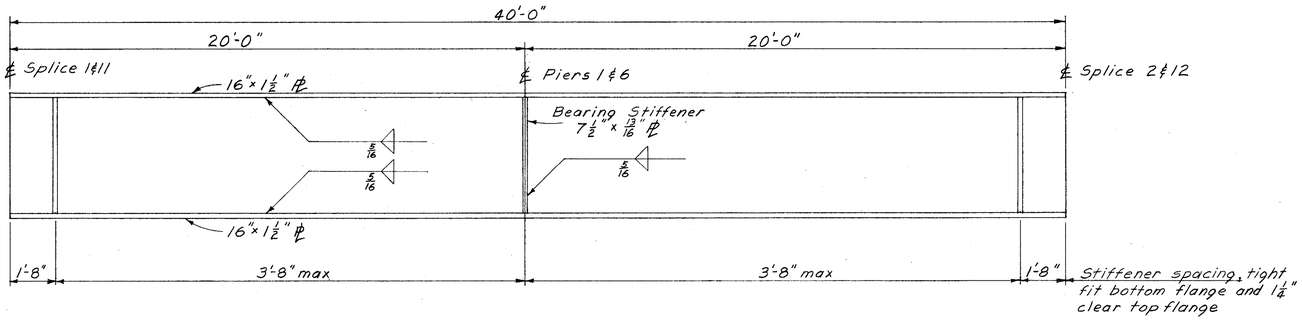
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	JLU	10/29/90	

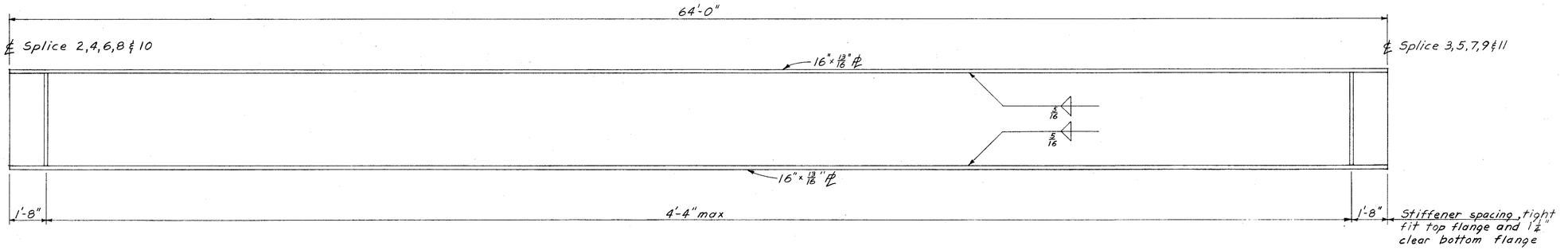
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

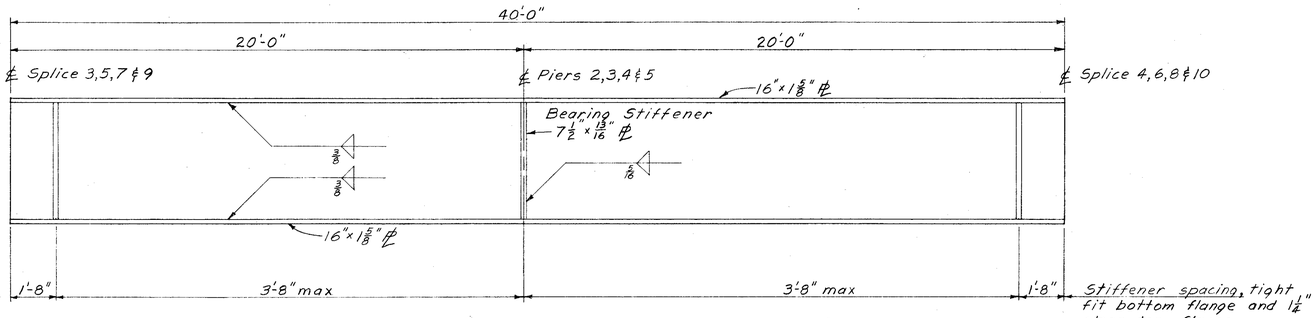
213
239

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04









NOTES:

All bearing stiffeners shall be a tight fit against the top flange.

Optional shop welded web and flange splices may be introduced with the approval of the Engineer.

For splice details see sheet 13/15

Clip interior corners of all stiffeners 1/2"

All intermediate stiffeners are 5"x 5/16" and shall be placed in pairs.

All web plates are 52"x 3/8"

All splices shown are designed for field bolted connections. However, Splice Nos. 1, 3, 5, 7, 9 and 11 may be optionally shop welded if the larger shop fabricated pieces can be delivered to the job site.

For additional notes and details see sheets 10, 11, 13/15.

COLUMBUS ENGINEERING CONSULTANTS, LTD.
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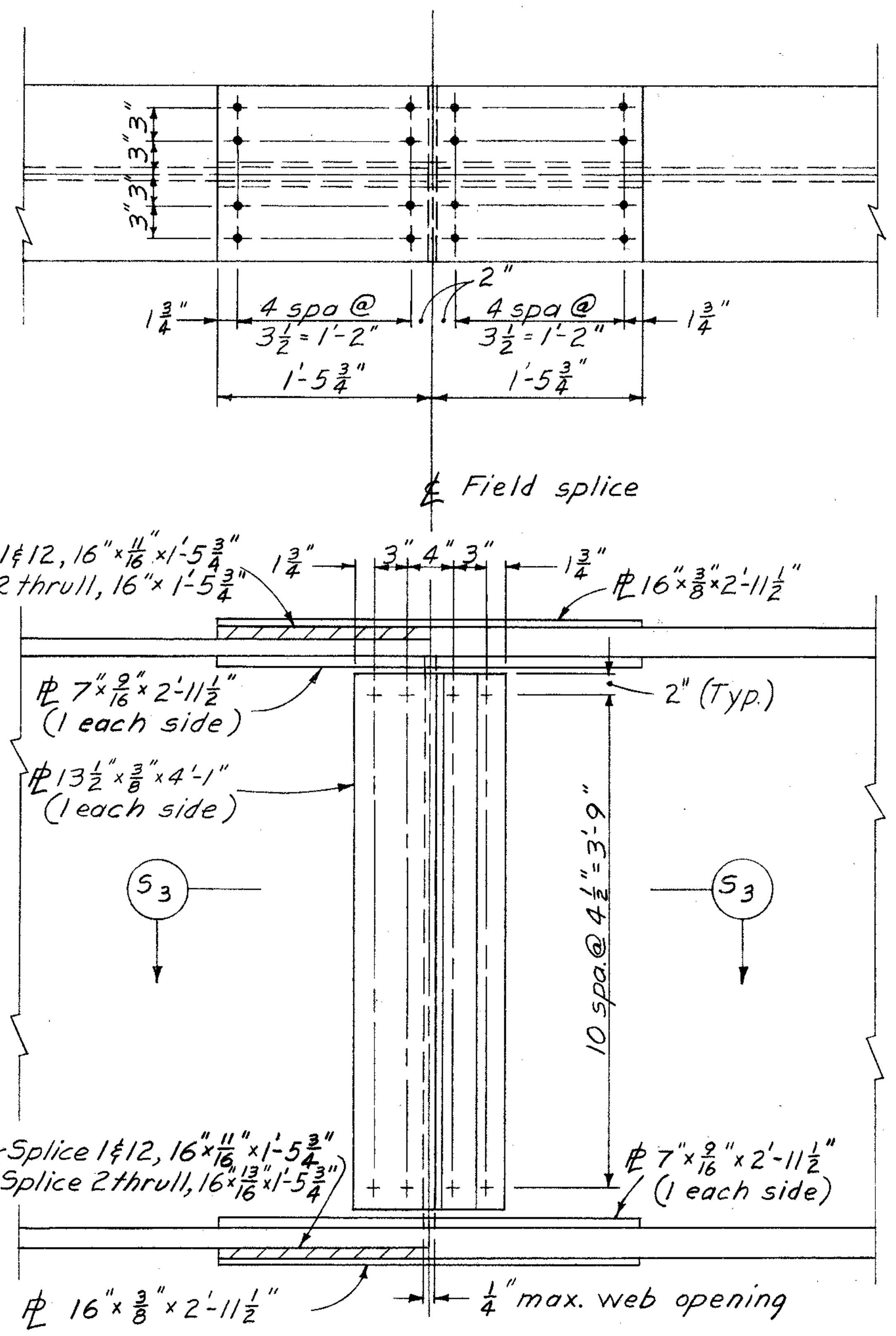
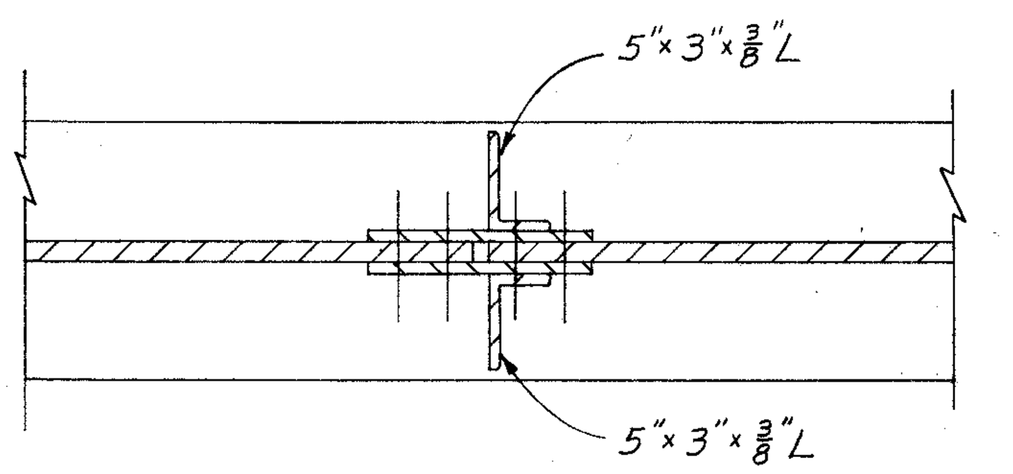
GIRDER DETAILS

BRIDGE Nº FRA~104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

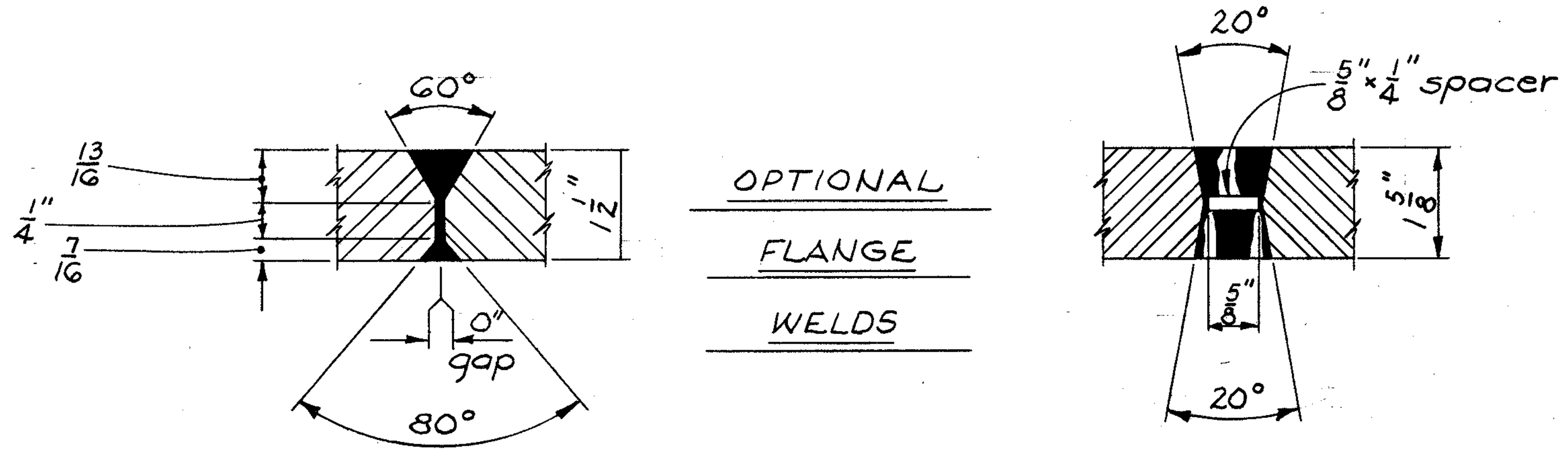
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	RWF		FTJ	TLW	10/29/90	

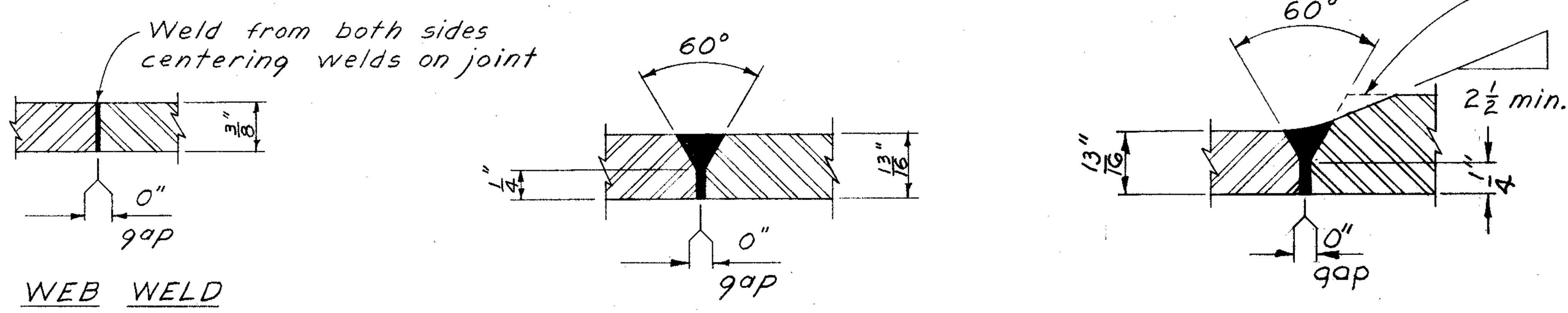




SECT. S3-S3

FIELD SPLICE DETAIL
All bolts to be 1"φ high strength





WEB WELD

REGULAR FLANGE WELD

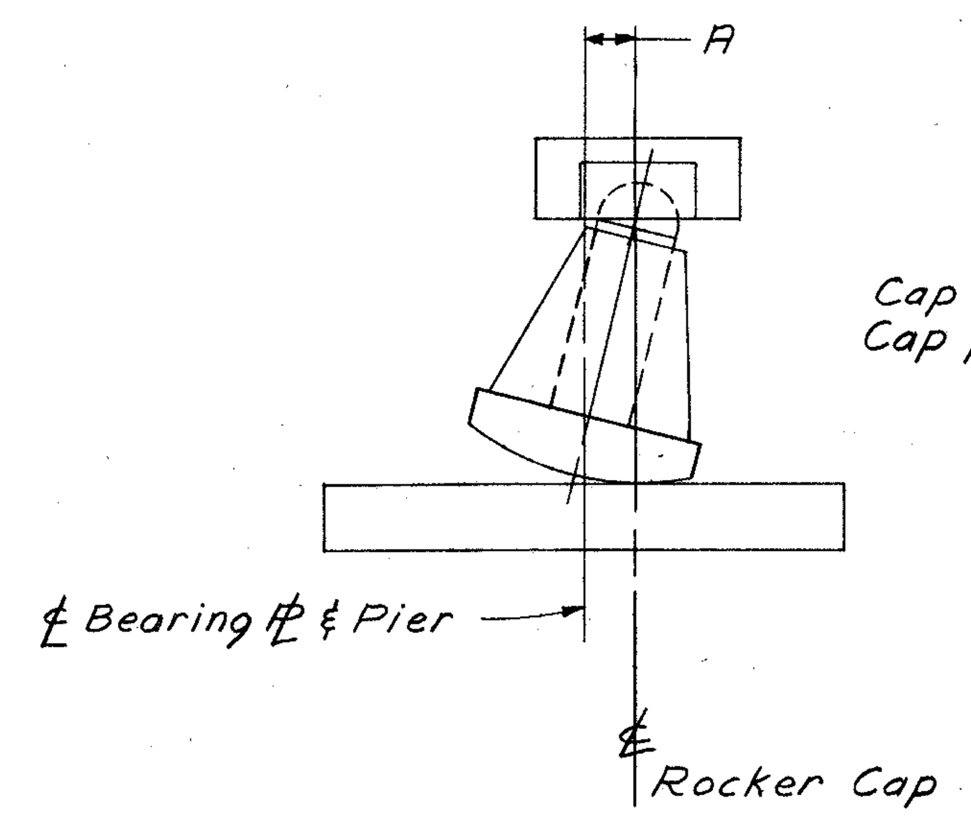
OPTIONAL FLANGE WELD AT SPLICE POINT
(See Note, Sheet 12/15)

JOINT PREPARATION FOR SUBMERGED ARC WELDMENTS

NOTES:

All full penetration welds shall be back-gauged and welded after welding far side.

Butt welds on flange plates shall be ground flush, the finish grinding being parallel to the direction of stress.



Cap placement to East is positive
Cap placement to West is negative

ROCKER SETTINGS					
Dimension "A" (inches)					
℄ Bearing	40°F	50°F	60°F	70°F	80°F
Rear. Abut.	+5/32	-1/8	-13/32	-11/16	-31/32
Pier #1	+1/8	-3/32	-5/16	-9/16	-25/32
Pier #2	+3/32	-1/16	-7/32	-3/8	-1/2
Pier #3	+1/32	-1/32	-3/32	-3/16	-1/4
Pier #5	-1/32	+1/32	+3/32	+3/16	+1/4
Pier #6	-3/32	+1/16	+7/32	+3/8	+1/2
Fwd. Abut.	-1/8	+3/32	+5/16	+1/2	+23/32

For temperatures not shown interpolate between tabulated values

ROCKER AND BOLSTER (12)

Bolster No.	Rocker No.	Dimensions (inches)													Weight each (lb)		Maximum Load (lb)
		A	B	C	D	F	G	H	K	L	M	R	T	Y	Bolster	Rocker	
B-325	R-325	3½	21	3¾	3½	¾	13	19⅞	15	29	26	13	3	1 11/16	960	1205	325,000

(12) For additional dimensions and details see Standard Drawing RB-1-55

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GIRDER DETAILS
BRIDGE Nº FRA.~ 104 ~ 0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	RWF		FTJ	TLW	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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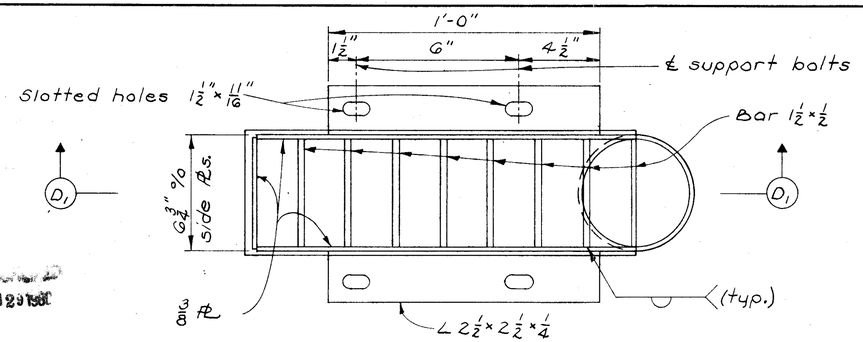
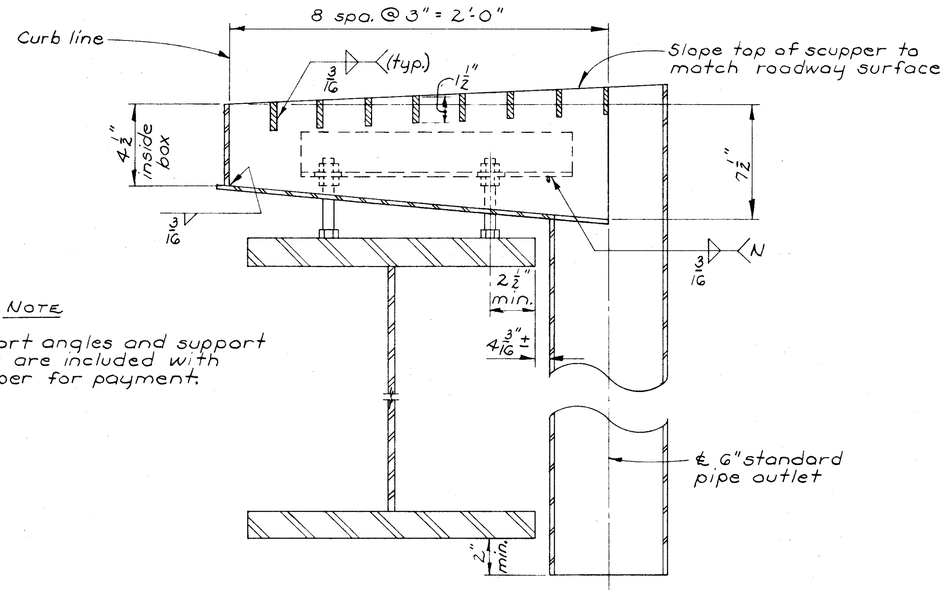
FRANKLIN COUNTY
FRA-104-8.04



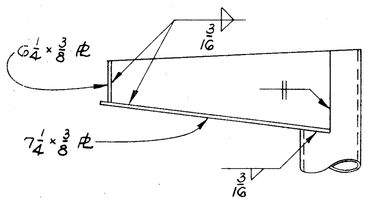
SCUPPER PLAN



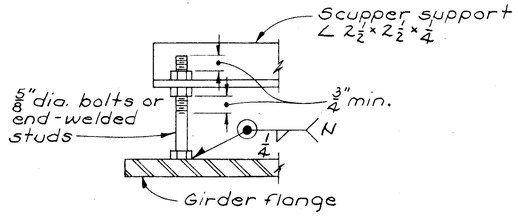
NOTE

Support angles and support bolts are included with scupper for payment.

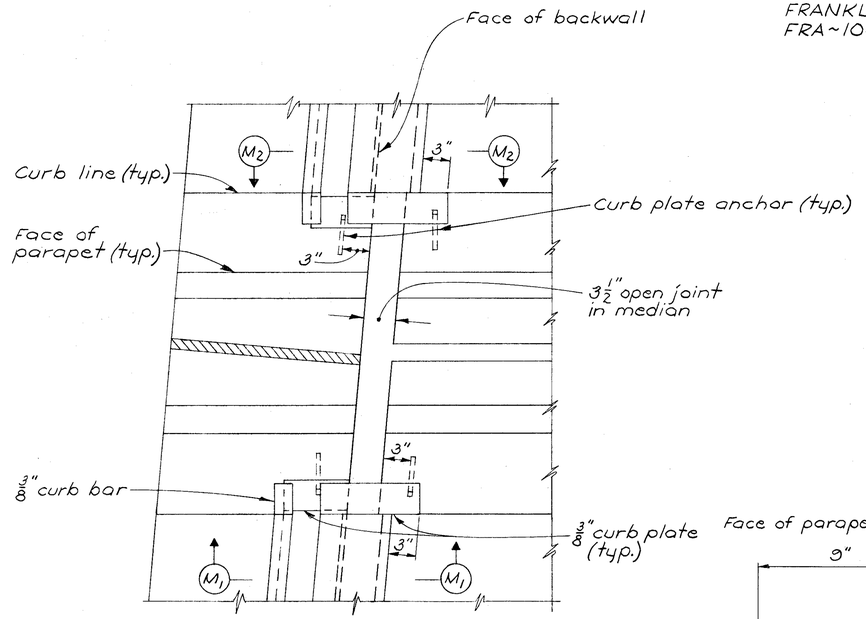
SECT. D_1-D_1



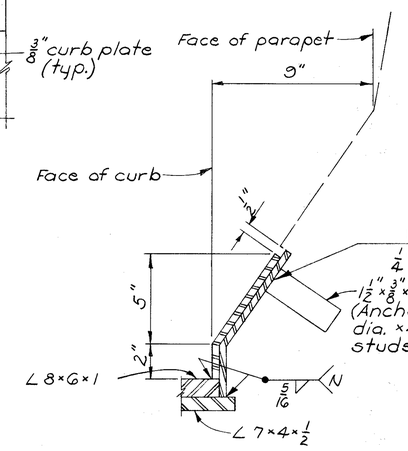
SCUPPER ELEVATION



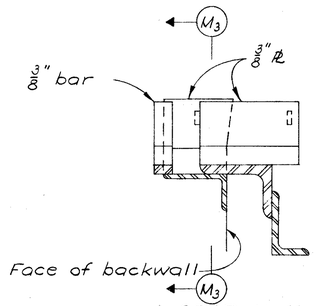
SUPPORT ON FLANGE



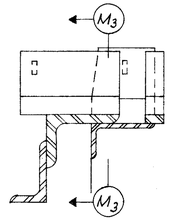
MEDIAN CURB PLATE DETAILS



SECT. M_3-M_3



SECT. M_1-M_1



SECT. M_2-M_2

For details not shown see Sect. M_1-M_1

COLUMBUS ENGINEERING CONSULTANTS, LTD.
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MISCELLANEOUS DETAILS

BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
STA. 17+17.74
FRANKLIN COUNTY STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	TLV	10/29/90	

REINFORCING STEEL LIST

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
		SUPERSTRUCTURE								
S4001	3680	30-0	73,747							st.
S4002	160	24-3	2592							st.
S4003	972	41-8	27,055							st.
S5002	4186	30-0	130,980							st.
S5003	182	31-11	6059							st.
S5004	914	3-1	2939	11	0-9	0-9	0-11½	0-9	0-6	bt.
S5005	914	2-0	1907	1		0-7½	1-0	0-7½		bt.
S5006	914	2-1	1986	1	0-6	1-9				bt.
S5007	914	5-4	5084	10	2-2	0-2¼	2-5	0-7½		bt.
S5008	1098	3-7	4103	12	0-6	0-2	3-3			bt.
S5009	1098	2-10	3245	11		1-0	1-5	0-9	0-6	bt.
S5010	1830	2-9	5248	5	0-5	2-4	0-6			bt.
S5011	120	13-7	1700							st.
S5012	288	6-2	1852							st.
S5013	360	12-8	4756							st.
S7001	3872	29-6	233,474							st.
S7002	1936	24-4	96,291							st.
S7003	1936	34-9	137,512							st.
		ABUTMENTS								
A5001	120	4-11	615	1		1-6	2-2	1-6		bt.
A5002	28	6-0	175							st.
A5003	172	7-4	1315	1		2-1	3-5	2-1		bt.
A5004	64	30-0	2003							st.
A5005	32	28-7	954							st.
A5006	4	36-8	153							st.
A5007	32	28-5	948							st.
A5008	24	9-6	238							st.
A5009	24	7-2	179							st.
A5010	4	5-7	23							st.
A5011	4	4-10	20							st.
A5012	4	4-1	17							st.
A5013	12	3-5	43							st.
A5014	8	7-8	64							st.
A5015	8	9-3	77							st.
A5016	48	15-8	784							st.
A5017	8	9-10	82							st.
A5018	8	7-6	63							st.
A5019	8	6-8	56							st.
A5020	28	6-5	187	13	2-5	0-2½	3-3	0-7½		bt.
A5021	48	2-0	100	1		0-7½	1-0	0-7½		bt.

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
		ABUTMENTS (CONT.)								
A5022	40	2-11	122							st.
A5023	16	4-6	75							st.
A5024	20	1-5	30							st.
A5025	8	2-9	23	11		0-9	0-11½	1-9		bt.
A6001	222	12-5	4140	1		5-8	1-5	5-8		bt.
A6002	78	9-9	1142	1		4-4	1-5	4-4		bt.
A6003	144	7-1	1532	1		3-0	1-5	3-0		bt.
A6004	144	9-3	2001	1		4-4	0-11	4-4		bt.
A6005	24	8-4	300	11	0-9	0-9	0-11½	6-7		bt.
A6006	4	6-7	40	11	0-9	0-9	0-11½	4-10		bt.
A7001	4	6-1	50	11	0-9	0-9	0-11½	4-4		bt.
A7002	4	5-3	43	11	0-9	0-6	0-11½	3-7		bt.
A7003	4	4-6	37	11	0-9	0-4	0-11½	2-11		bt.
A7004	4	4-6	37	11	0-9	0-2½	0-11½	2-11		bt.
A7005	4	3-10	31							st.
F5010	8	5-0	42							st.
F5011	172	7-4	1315	1	1-0	6-6				bt.
F5012	172	8-3	1480	1		1-7	5-4	1-7		bt.
F5013	48	10-9	538	14	2-2	3-0	2-2	3-0		bt.
F6010	172	14-1	3638	1		2-6	5-4	6-7		bt.
F6011	24	18-2	655	1		8-8	1-2	8-8		bt.
F6012	8	13-4	160	1		6-3	1-2	6-3		bt.
F8010	42	30-0	3364							st.
F8011	14	34-2	1277							st.
F8012	24	12-4	790							st.

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
		PIERS								
P5001	360	5-7	2096	1		1-7	2-8	1-7		bt.
P5002	40	28-5	1186							st.
P5003	40	26-2	1092							st.
P5004	40	18-2	758							st.
P5005	20	26-6	553							st.
P5006	40	22-2	925							st.
P5007	164	22-3	3806							st.
P5008	164	6-11	1183	7	1-7	1-2¼				bt.
P5009 thru P5030	48	9-9 thru 23-9 Δ	18,448	1		3-8 thru 10-8 Δ	2-8	3-8 thru 10-8 Δ		bt.
P5031	1056	5-11	6517	1		1-9	2-8	1-9		bt.
P6001	16	28-7	687							st.
P6002	8	28-5	341							st.
P6003	8	26-5	317							st.
P6004	8	24-5	293							st.
P6005	8	22-5	269							st.
P6006	8	20-5	245							st.
P6007	8	18-5	221							st.
P6008	4	30-6	183							st.
P6009	4	26-6	159							st.
P8001	96	16-7	4251							st.
P8002	312	10-0	8330							st.
P9001	156	21-6	11,404							st.
P9002	132	12-8	5685							st.
P9003	52	11-5	2019							st.
P9004	44	6-11	1035							st.
P9005	192	7-1	4624							st.
P18001	48	32-6	21,216	1	3-2	30-0				bt.
P18002	48	27-5	17,898	1	3-2	24-11				bt.
P18003	48	30-0	19,584							st.
P18004	48	24-11	16,266							st.

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
		PIERS (CONT.)								
F8001	72	29-2	5607	4	27-0					bt.
F8002	32	29-8	2535	4	27-6					bt.
F8003	48	28-8	3674	4	26-6					bt.
F9001	576	6-7	12,892	1	1-3	5-7				bt.
F9002	112	15-6	5902	4	13-0					bt.
F9003	112	12-0	4570	4	9-6					bt.
F10001	192	13-4	11,015	4	10-6					bt.
		LIGHT POLE REINFORCEMENT								
L5001	32	4-10	161	12	1-4	1-8	1-8	1-4		bt.
L5002	8	2-9	23	1	1-8	1-3				bt.
L5003	12	6-0	75	1	3-1	3-1				bt.
L5004	12	2-11	37	1	2-0	1-1				bt.
L5005	8	3-0	25	1	1-7	1-7				bt.
		REPLACEMENT STEEL								
RE4001	6	6-3								st.
RE5001	11	6-7								st.
REG001	1	6-11								st.
RE7001	24	7-3								st.
RE8001	2	7-6								st.
RE9001	3	7-11								st.
RE10001	1	8-3								st.
RE18001	4	2-6								st.

Δ = Indicates length varies by tabulated amount.

Splices in Nº 18 size bars shall be made by approved positive mechanical method designed to develop 125 % of the yield strength of the bar.

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FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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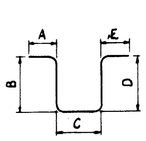
FRANKLIN COUNTY
FRA-104-8.04

Bending Diagram



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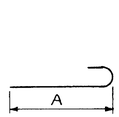

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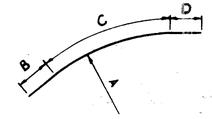

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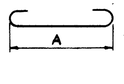

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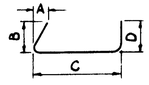
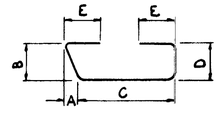


TYPE 5



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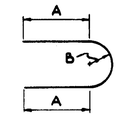

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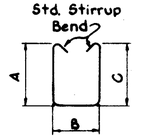

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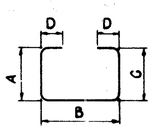

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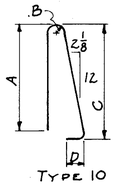

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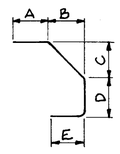

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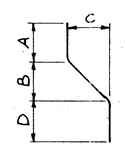

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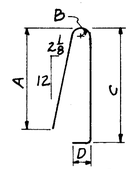

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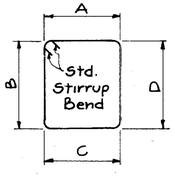

TYPE 14

NOTE: In the reinforcing steel bar marks, the first digit where four digits are used and the first two where five are used is the bar number which indicates the size of the bar.

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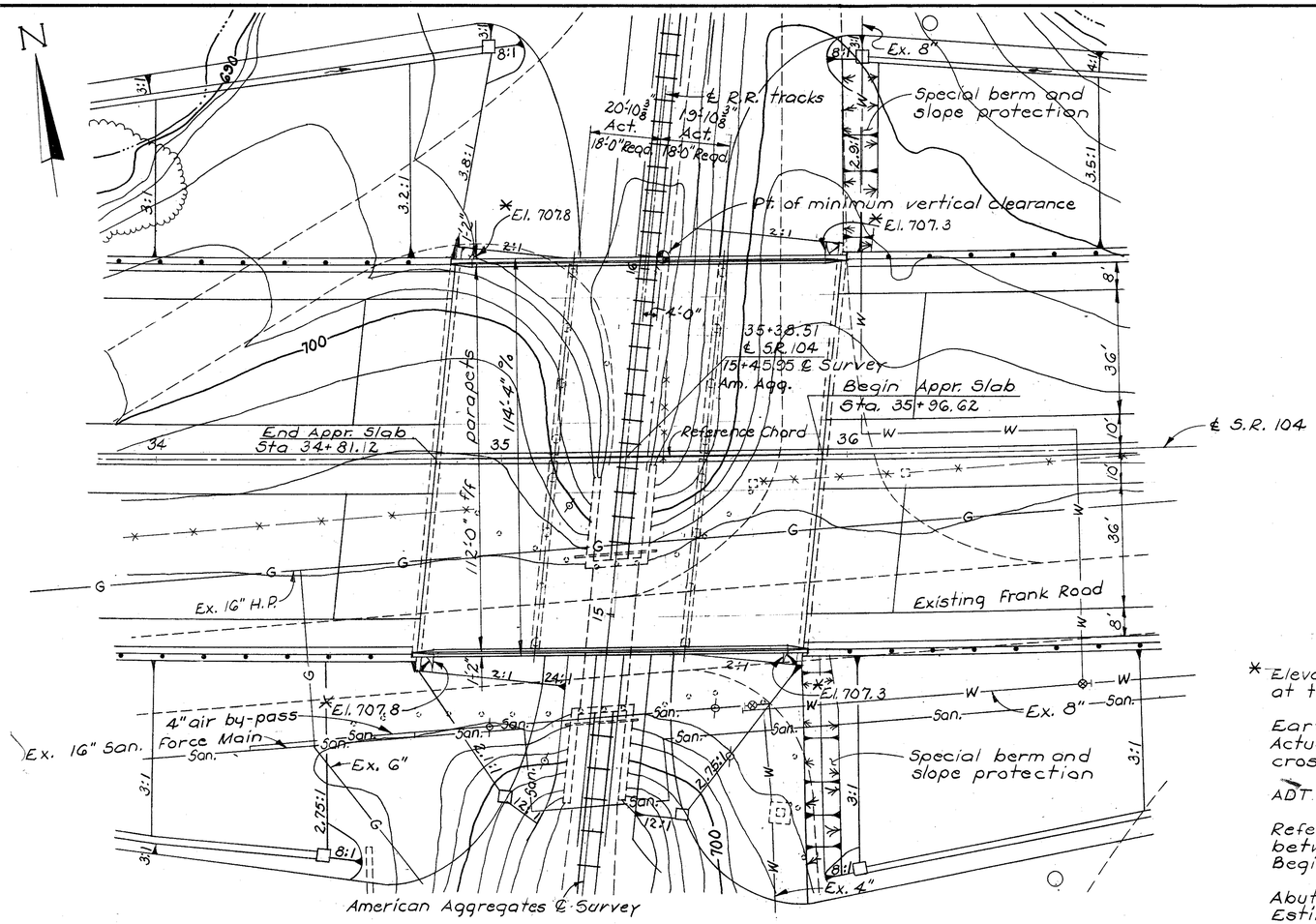
REINFORCING STEEL LIST

BRIDGE Nº FRA-104-0820
S.R. 104 over SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

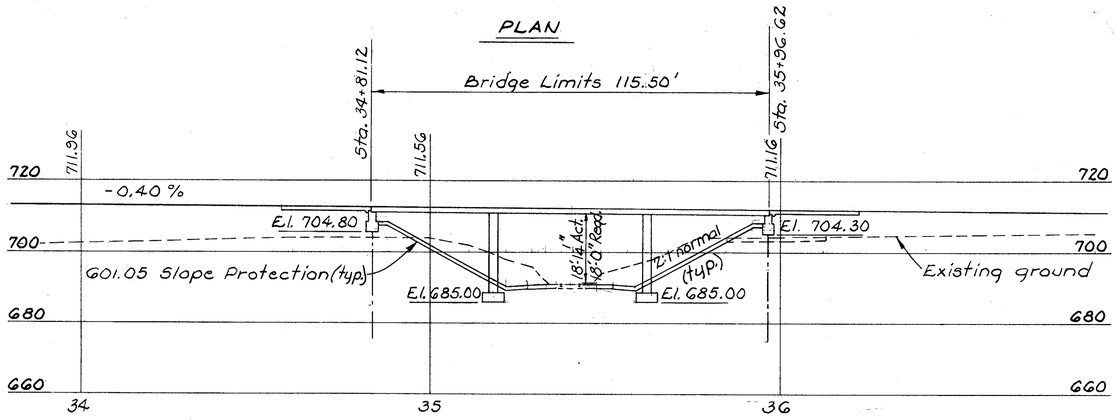
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TLV	10/29/90	

FED. RD. DIVISION	STATE	PROJECT		217 / 239
2	OHIO			

FRANKLIN COUNTY
FRA-104-8.04



PLAN



PROFILE

NOTES

*Elevations marked with an asterisk are at top of bench at abutment.

Earthwork limits shown are schematic. Actual slopes shall conform to plan cross-sections.

ADT = 57,000 (1990)

Reference Chord is a straight line between End Approach Slab and Begin Approach Slab stations.

Abutment piles shall be 10BP42. Estimated average pay length is 35' for both abutments.

PROPOSED STRUCTURE

TYPE~ Continuous reinforced concrete slab with reinforced concrete substructure
SPANS~35'-0"~44'-0"~35'-0" c/c bearings along ℄ roadway
ROADWAY~112'-0" f/f parapets with barrier railing and barrier median
LOADING~HS 20-44
WEARING SURFACE~1" monolithic concrete
SKEW~6°20'27" left forward with respect to the reference chord
ALIGNMENT~0°28' curve left
APPROACH SLABS~AS-1-67 25'-0" long

EXISTING STRUCTURE

TYPE~Reinforced concrete slab with reinforced concrete cantilever abutments and wingwalls
SPAN~14' f/f abutments
ROADWAY~24' width

S.R. 104

HORIZONTAL CURVE DATA

P.I. 38+79.32
$\Delta = 4°42'06"$ Lt.
$D_c = 0°28'00"$
$R = 12,277.67$
$T = 504.02'$
$L = 1007.48'$
$E = 10.34'$

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SITE PLAN
BRIDGE Nº FRA-104-0854
S.R. 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY STA. 34+81.12 STA. 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	TLD	10/29/90	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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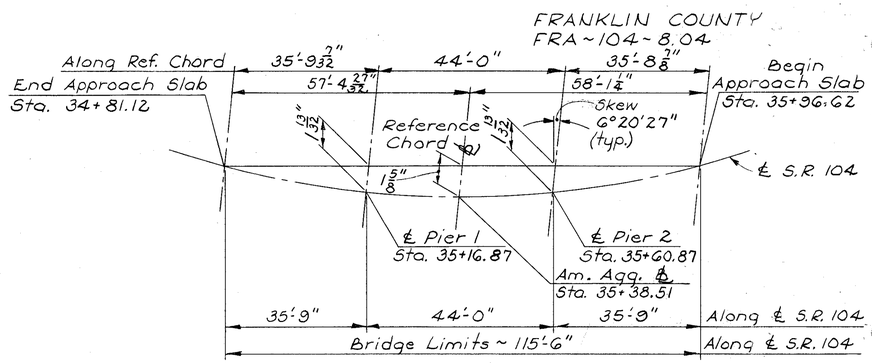
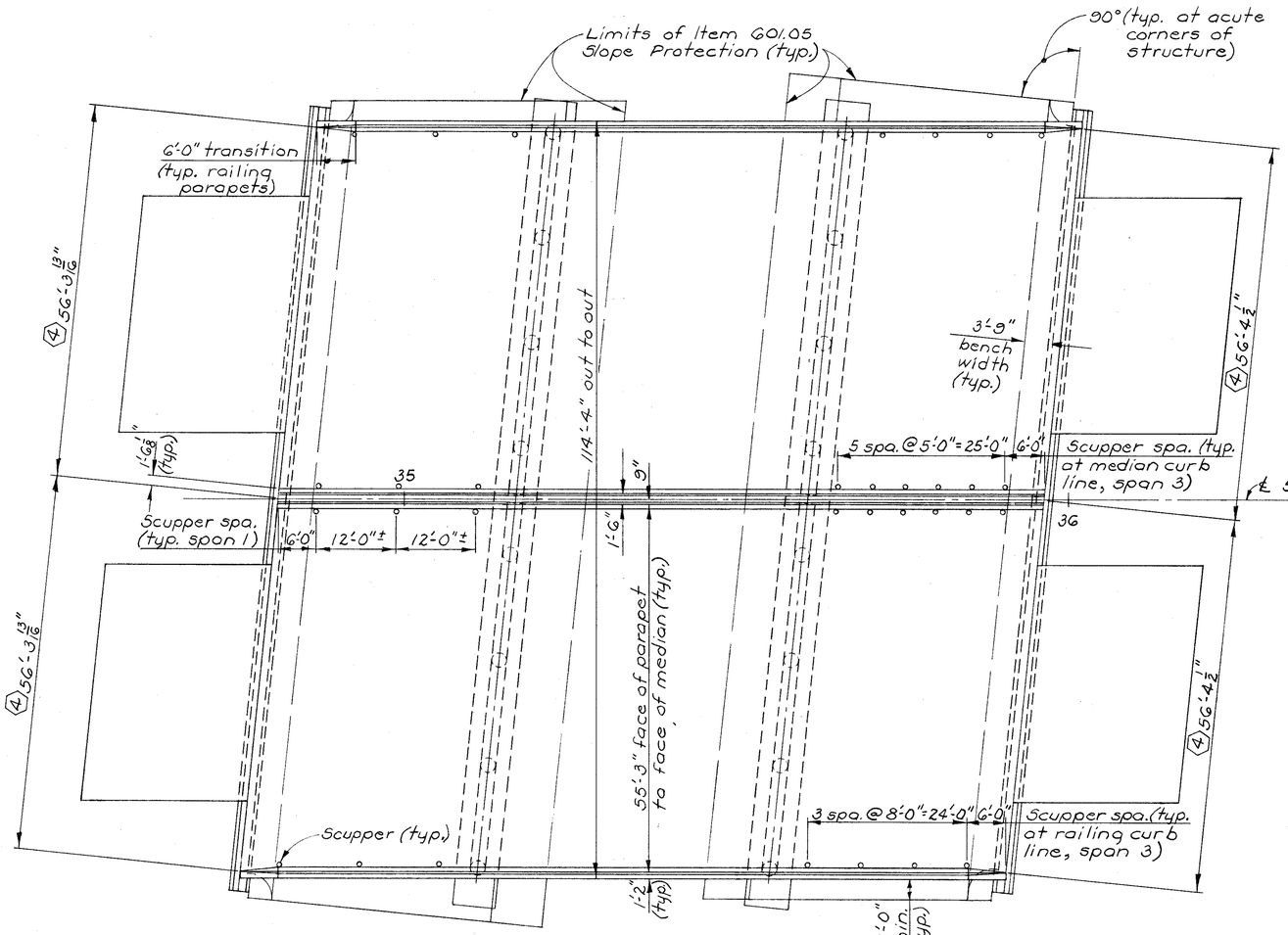
239

FRANKLIN COUNTY
FRA-104-8.04

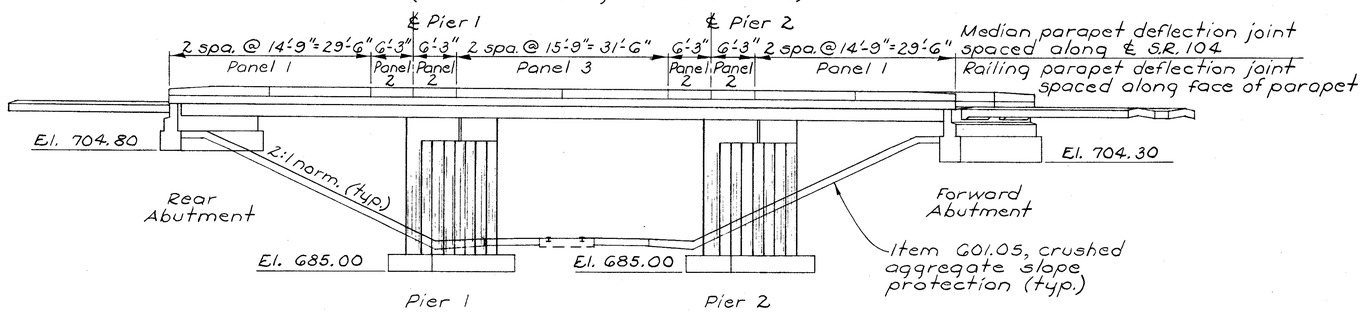


SCHEMATIC LAY-OUT



GENERAL PLAN

(See schematic lay-out for stations)



GENERAL ELEVATION

(Abutment piles not shown)

NOTES

④ Distance from reference chord to curb line along edge of slab.

Scupper spacings shown are ℄c along curb line.

Preformed expansion joint filler in the parapet deflection joints may be either ¼" gray sponge rubber or ½" gray cellular polyvinyl chloride (PVC) sponge. Either material shall meet the requirements of AASHO M-153, Type I, except the density of the PVC sponge shall not be less than 20 lb. per cubic foot.

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GENERAL PLAN AND ELEVATION
BRIDGE Nº FRA-104-0854
S.R. 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY STA. 34+81.12 STA. 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TLV	10/29/90	

JAN 29 1971

FED. AID DIVISION	STATE	PROJECT		
2	OHIO			

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FRANKLIN CO.
FRA-104-8.04

REFERENCES

STANDARD DRAWINGS:

RAILING	BR-1-67	SHEET 1 DATED 2-1-68
APPROACH SLABS	AS-1-67	REVISED 6-12-69
HIGHWAY LIGHTING	HL-4	DATED 1-1-66

SUPPLEMENTAL SPECIFICATIONS:

CHEMICAL ADMIXTURES FOR CONCRETE	808	DATED 11-14-69
CONCRETE CURING AND PROTECTIVE MEMBRANE	836	DATED 6-17-69

BRIDGE LIGHTING DETAILS:

CONDUIT THROUGH ABUTMENT

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, 1969, INCLUDING THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS AND THE 1970 INTERIM SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS.

DESIGN DATA:

DESIGN LOADING: HS 20-44

CONCRETE CLASS C: UNIT STRESS 1200 P.S.I. FOR SUPERSTRUCTURE
UNIT STRESS 1333 P.S.I. FOR SUBSTRUCTURES

REINFORCING STEEL, ASTM, A615, A616 OR A617 - UNIT STRESS 20,000 P.S.I.
SPIRAL REINFORCEMENT SHALL BE PLAIN BARS ASTM A306 OR A499

REMOVAL OF EXISTING STRUCTURE: WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC, THE EXISTING STRUCTURE SHALL BE REMOVED. ABUTMENTS SHALL BE REMOVED TO A MINIMUM OF ONE FOOT BELOW THE PROPOSED PAVEMENT SUBGRADE FOR AMERICAN AGGREGATES DRIVE.

EMBANKMENT CONSTRUCTION: THE EMBANKMENTS SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF THE ABUTMENTS. EXCAVATION SHALL THEN BE MADE FOR THE ABUTMENTS AND THE BENCHES.

ABUTMENT EXCAVATION QUANTITY, IN ADDITION TO 503.10, INCLUDES THE REMOVAL OF EMBANKMENT ABOVE THE BENCH.

PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 35 TONS PER PILE FOR THE ABUTMENTS.

FOUNDATION BEARING PRESSURE: PIER FOOTINGS ARE DESIGNED FOR A MAXIMUM BEARING PRESSURE OF 2.5 TONS PER SQUARE FOOT.

CONSTRUCTION CLEARANCE OF 14'-0" VERTICALLY ABOVE THE TOP OF RAILS AND 7'-0" HORIZONTALLY FROM THE CENTER OF TRACKS SHALL BE MAINTAINED AT ALL TIMES.

CONSTRUCTION SEQUENCE: THE WESTBOUND STRUCTURE SHALL BE CONSTRUCTED FIRST SO THAT TWO-WAY TRAFFIC MAY BE MAINTAINED. SEE TRAFFIC MAINTENANCE PLANS.

ESTIMATED QUANTITIES - 100% Special Participation

Item	Total	Unit	Description	Abut.	Pier	Supers.	General
202	LUMP	SUM	EXISTING STRUCTURE REMOVED				LUMP
503	LUMP	SUM	COFFERDAMS, CRIBS AND SHEETING				LUMP
503	763	C.Y.	UNCLASSIFIED EXCAVATION	239	524		
505	LUMP	SUM	FIRST TEST PILE				LUMP
507	1400	L.F.	STEEL PILES, 10BP42	1400			
509	246,009	LB.	REINFORCING STEEL	13,602	56,531	175,876	
511	855	C.Y.	CLASS "C" CONCRETE, SUPERSTRUCTURE			855	
511	167	C.Y.	CLASS "C" CONCRETE, PIERS ABOVE FOOTINGS		167		
511	36	C.Y.	CLASS "C" CONCRETE, ABUTMENTS ABOVE FOOTINGS	36			
511	214	C.Y.	CLASS "C" CONCRETE, FOOTINGS	79	135		
512	4	L.F.	PREMOLDED SEALING STRIP	4			
516	16	S.F.	1" PREFORMED EXPANSION JOINT FILLER	16			
518	58	C.Y.	POROUS BACKFILL	58			
518	32	EACH	SCUPPERS, 4" DIA. GALVANIZED STEEL PIPE			32	
601	1300	S.Y.	CRUSHED AGGREGATE SLOPE PROTECTION	1300			
625			SEE SHEET 183/239 FOR LIGHTING SUMMARY				
808	855	UNITS	CHEMICAL ADMIXTURE FOR CONCRETE, TYPE A, B OR D			855	

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GENERAL NOTES AND ESTIMATED QUANTITIES

BRIDGE Nº FRA-104-0854
S.R 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY STA. 34+81.12
STA. 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TZU	10/29/70	

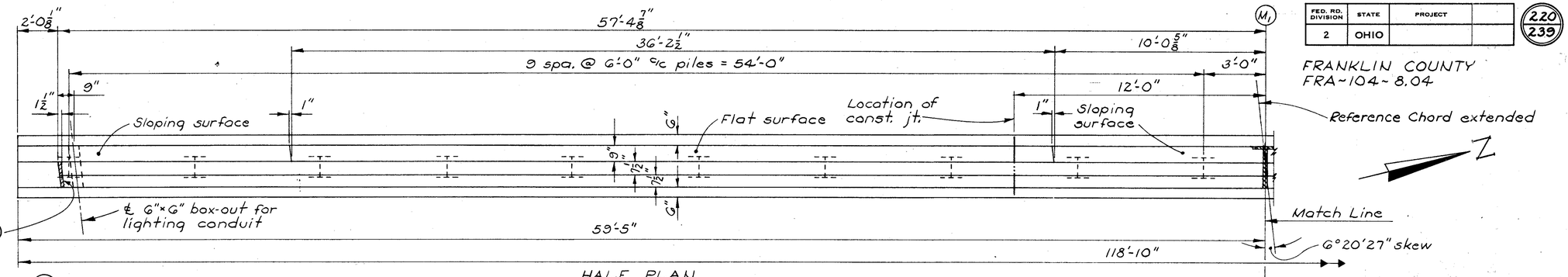
JAN 23 1990

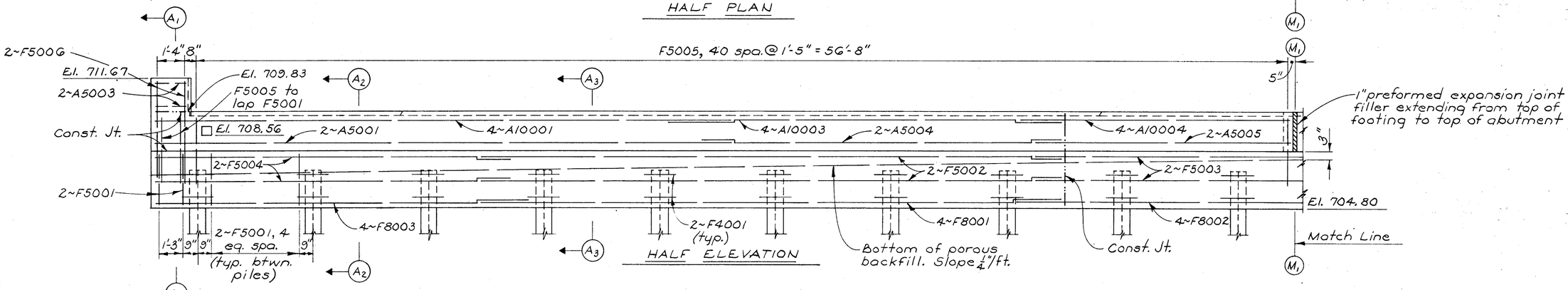
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

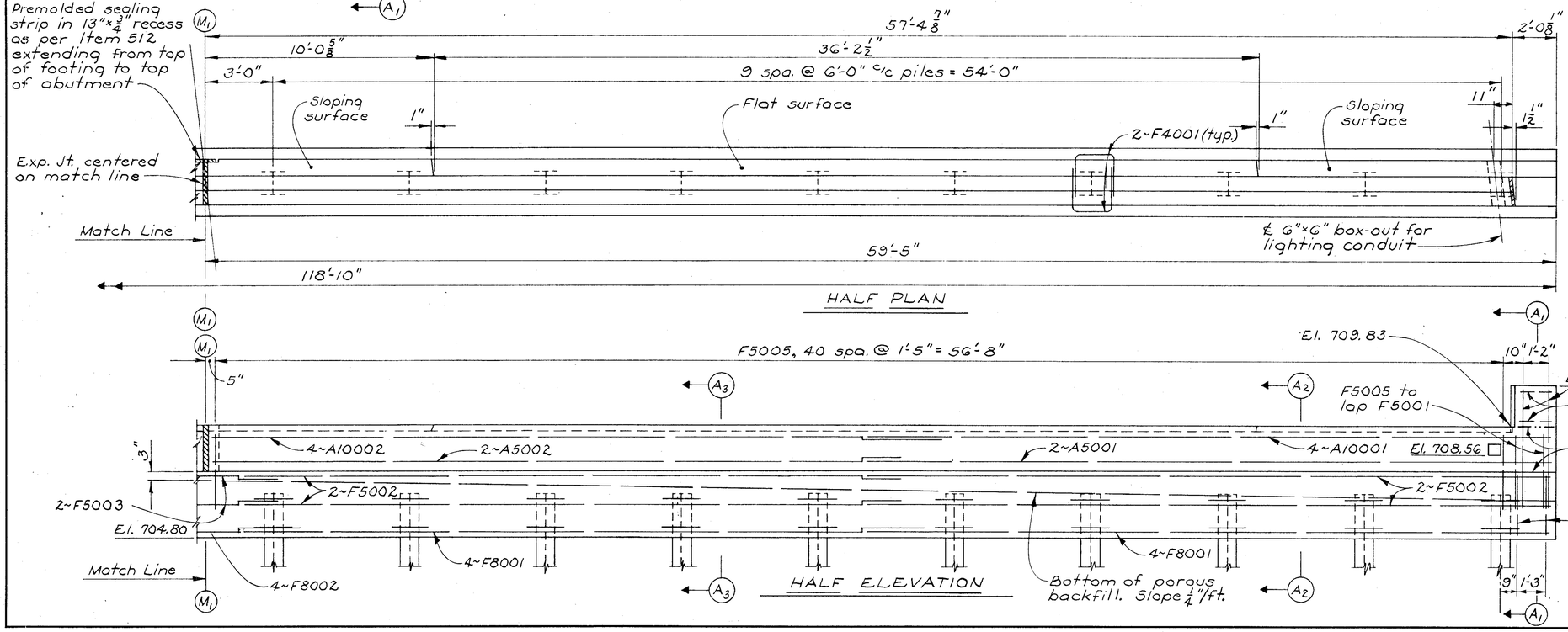
220
239

FRANKLIN COUNTY
FRA-104-8.04

For Sections A_1~A_1, A_2~A_2 and A_3~A_3 see sheet 5/10.







NOTES

Porous backfill shall extend upward to the approach slab and to the surface of the earth shoulders, and outward to the surface of the embankment slopes. Excavation therefor, in excess of that required for the footing, shall be considered as paid for in the bid price per cubic yard paid for porous backfill.

For detail of lighting conduit thru abutment backwall, see Bridge Lighting Details sheet 201/239

All piles shall be 10 BP 42 steel piles vertically driven.

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REAR ABUTMENT DETAILS

BRIDGE Nº FRA-104-0854
S.R. 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY STA. 34+81.12 STA 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	FTJ	10/29/90	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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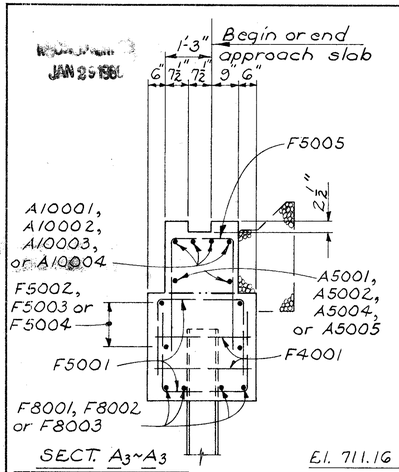
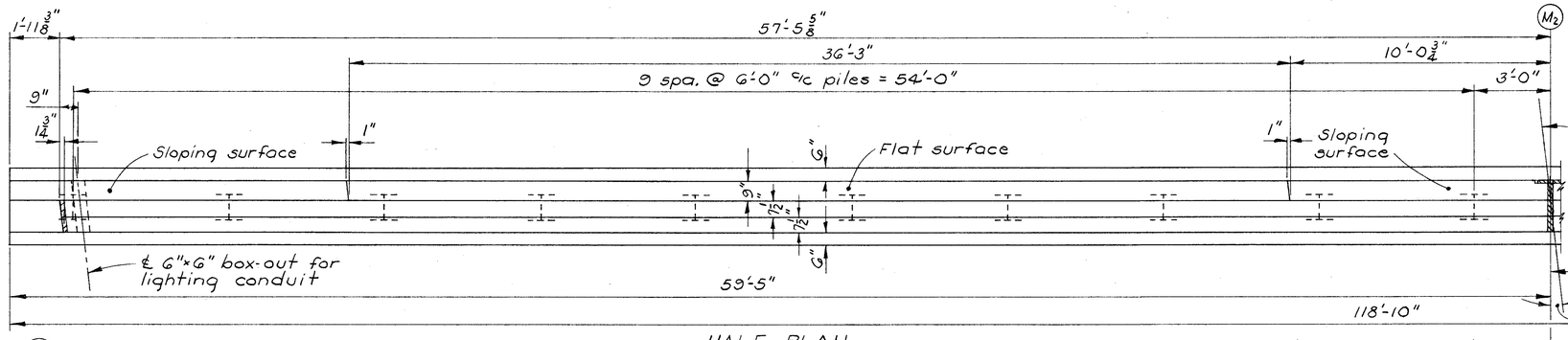
FRANKLIN COUNTY
FRA-104-8.04

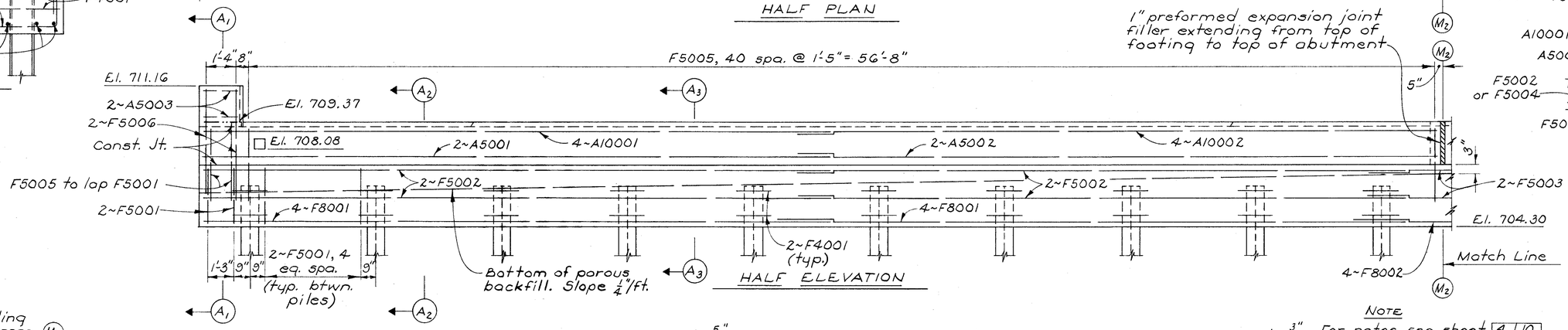
JAN 25 1971



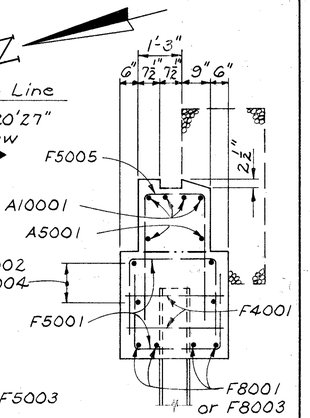
SECT. A3-A3



HALF PLAN

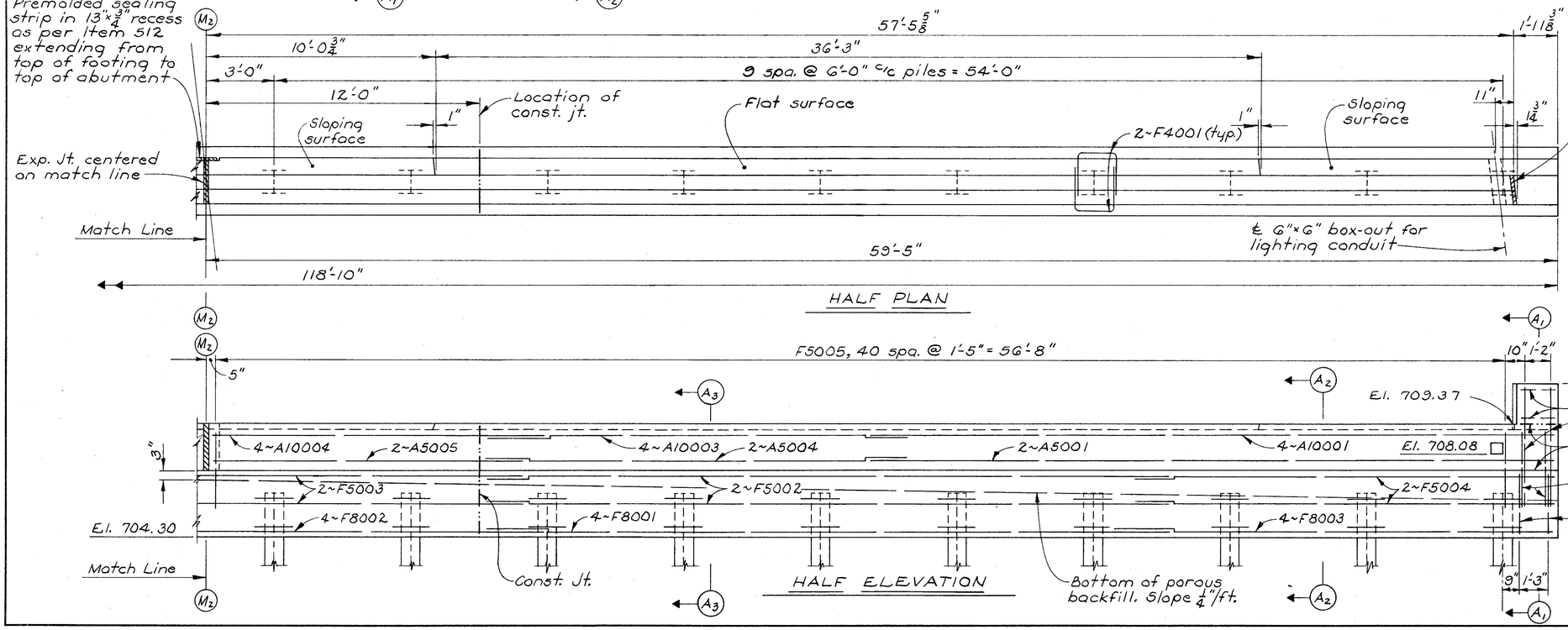


HALF ELEVATION



SECT. A2-A2

NOTE
For notes see sheet 4 10.



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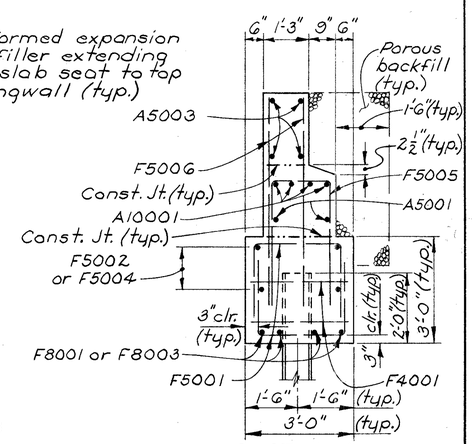

SECT. A1-A1

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FORWARD ABUTMENT DETAILS

BRIDGE Nº FRA-104-0854
S.R. 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY STA. 34+81.12
STA 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	JLV	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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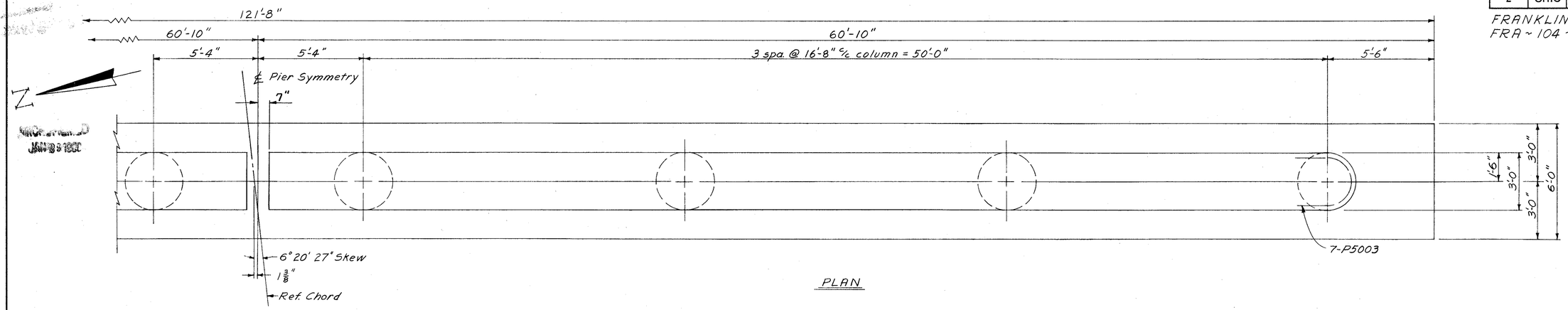
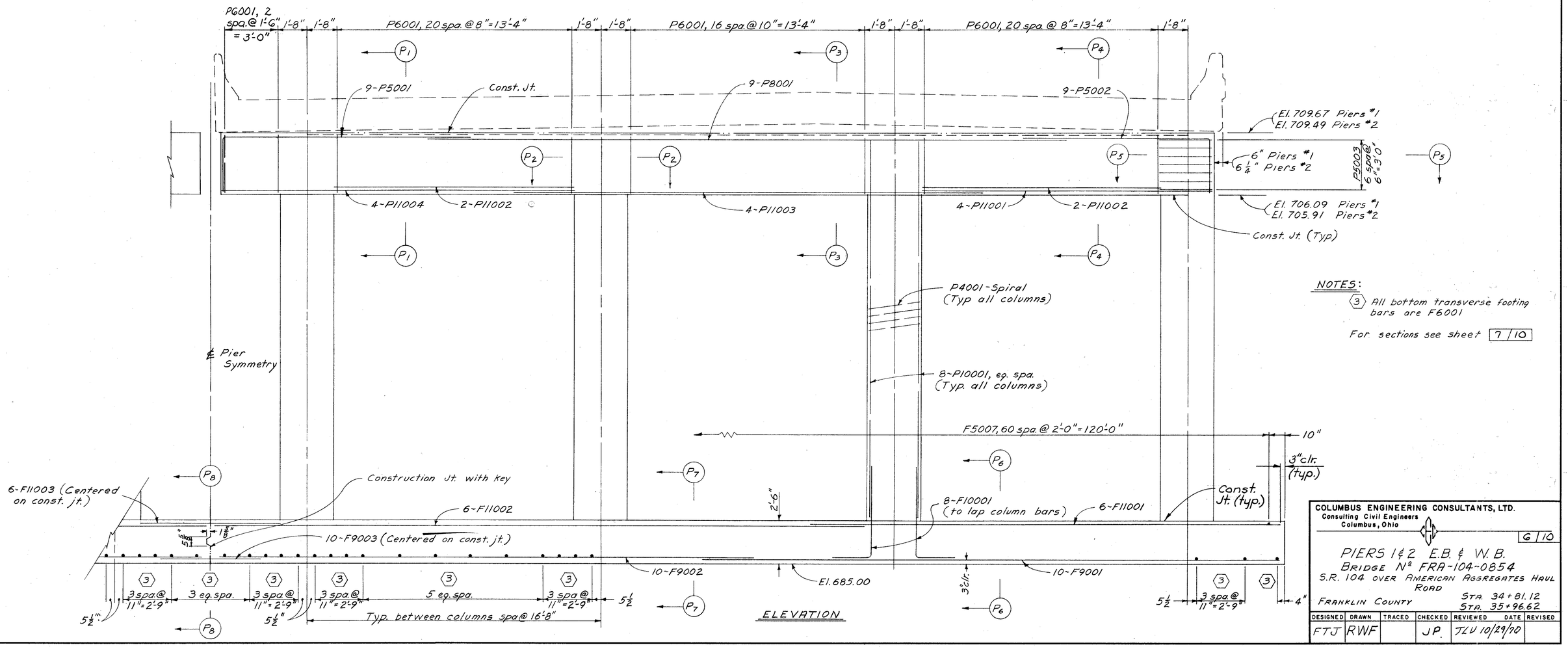
239

FRANKLIN COUNTY
FRA-104-8.04



PLAN



ELEVATION

NOTES:

(3) All bottom transverse footing bars are F6001

For sections see sheet 7/10

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PIERS 1 & 2 E.B. & W.B.
BRIDGE Nº FRA-104-0854
S.R. 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY
STA. 34+81.12
STA. 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	RWF		JP.	JLV	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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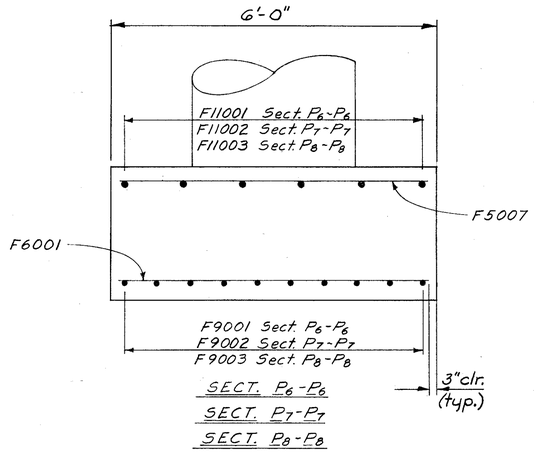
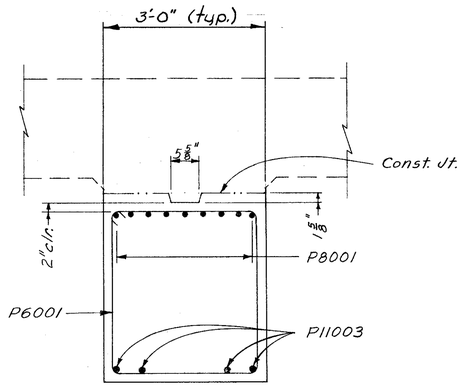
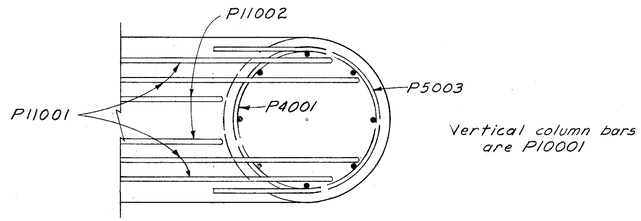
FRANKLIN COUNTY
FRA-104-8.04



SECT. P6-P6
SECT. P7-P7
SECT. P8-P8

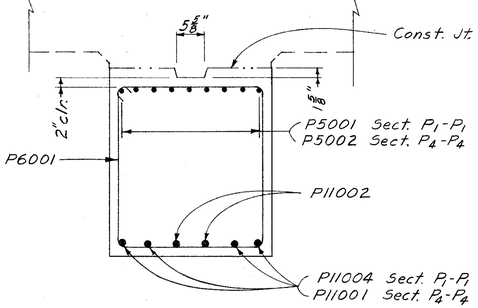


SECT. P3-P3

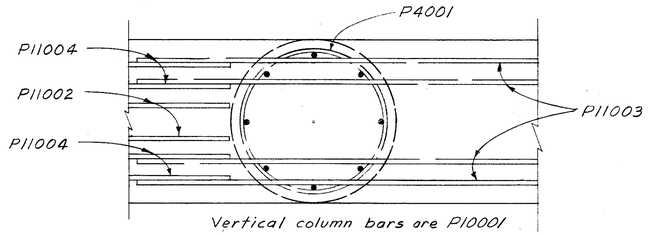


Vertical column bars are P10001

SECT. P5-P5



SECT. P1-P1
SECT. P4-P4



Vertical column bars are P10001

SECT. P2 P2

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PIERS 1 & 2 E.B. & W.B.
BRIDGE Nº FRA-104-0854
S.R. 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY
STA. 34+81.12
STA. 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	RWF		JP	TLV	10/29/90	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
FRA~104~8.04

NOTES

Transverse reinforcing shall be placed parallel to piers and abutments.

Slab thickness shown includes 1" monolithic wearing surface.

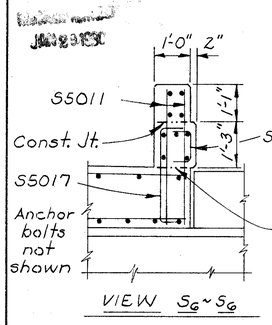
Field bend transverse bars to fit crown. Field bending to be included with Item 509 for payment.

Scuppers may be moved and/or tilted a maximum of 1" to clear reinforcing steel.

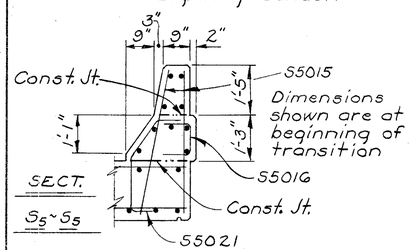
For additional slab reinforcing details see sheet 9/10.

(1) Lighting conduit shall be placed a minimum of 1" clear above construction at top of slab.

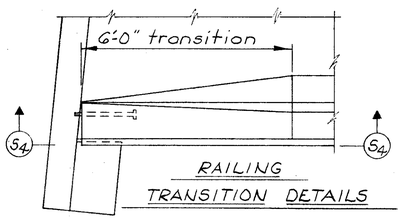
(7) For location of panels see General Plan sheet 2/10.



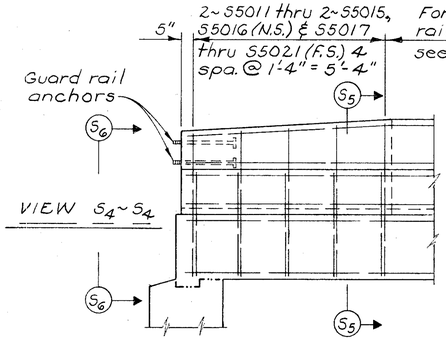
VIEW S_6~S_6



SECT. S_5~S_5

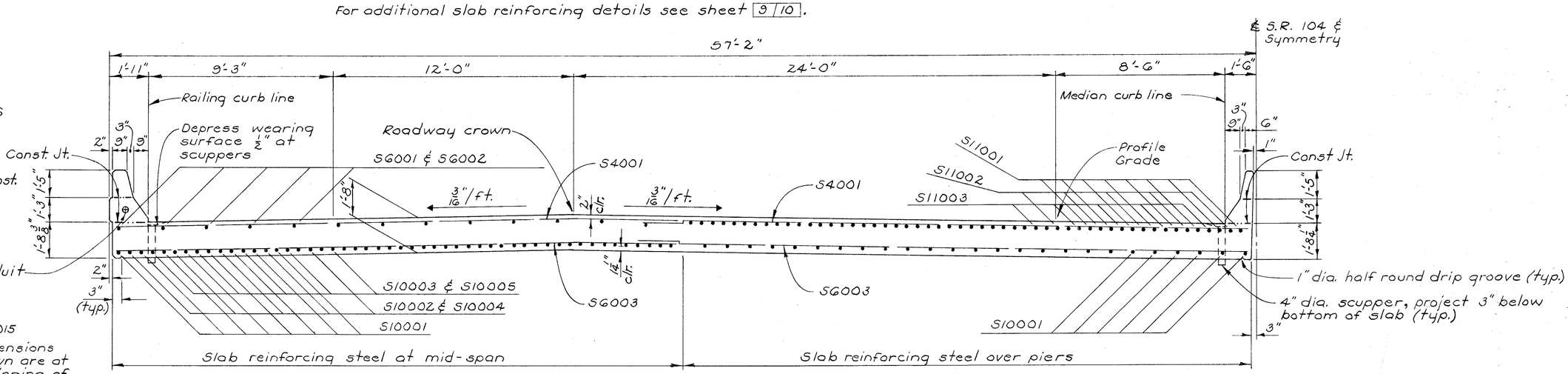


RAILING TRANSITION DETAILS



VIEW S_4~S_4

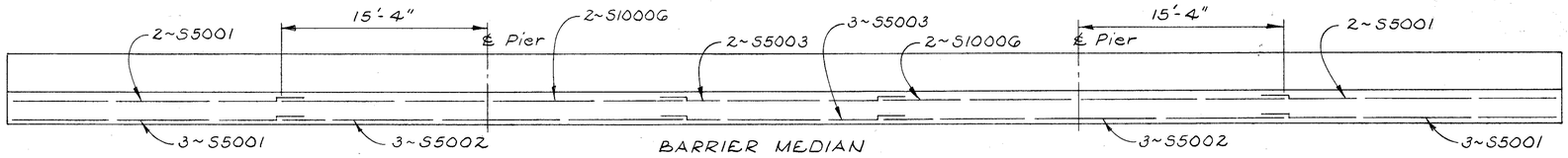
For additional notes and details of railing transition see Std. Dwg. BR-1-67, sheet 1 of 3.



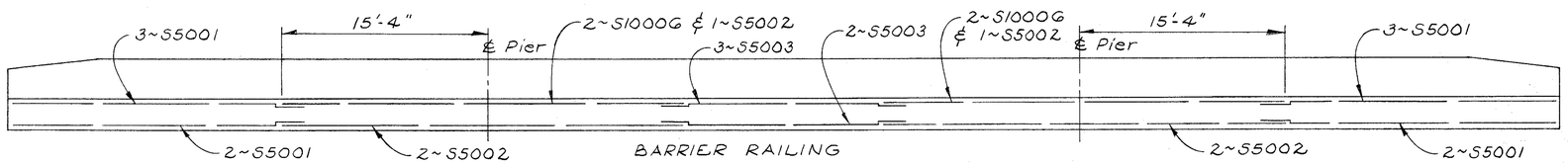
HALF TRANSVERSE SECTION

Viewing W.B. Lanes

For additional details of railing and median see details S_2 & S_3



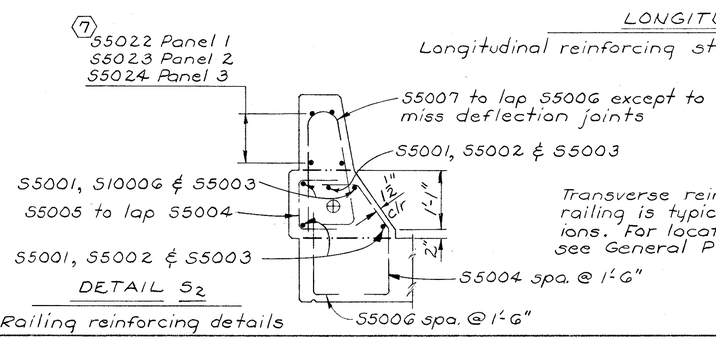
BARRIER MEDIAN



BARRIER RAILING

LONGITUDINAL VIEW OF PARAPET

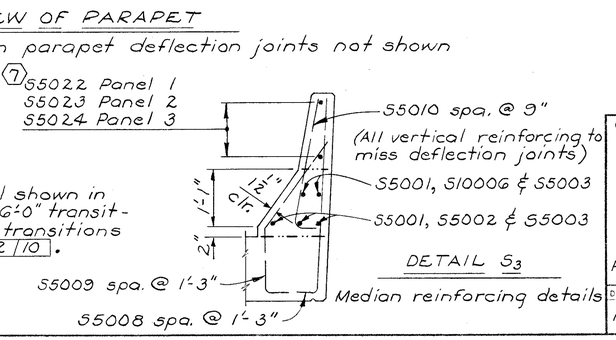
Longitudinal reinforcing steel between parapet deflection joints not shown



DETAIL S_2

Railing reinforcing details

Transverse reinforcing steel shown in railing is typical between 6'-0" transitions. For location of 6'-0" transitions see General Plan sheet 2/10.



DETAIL S_3

Median reinforcing details

COLUMBUS ENGINEERING CONSULTANTS, LTD.
Consulting Civil Engineers
Columbus, Ohio

8/10

SUPERSTRUCTURE DETAILS

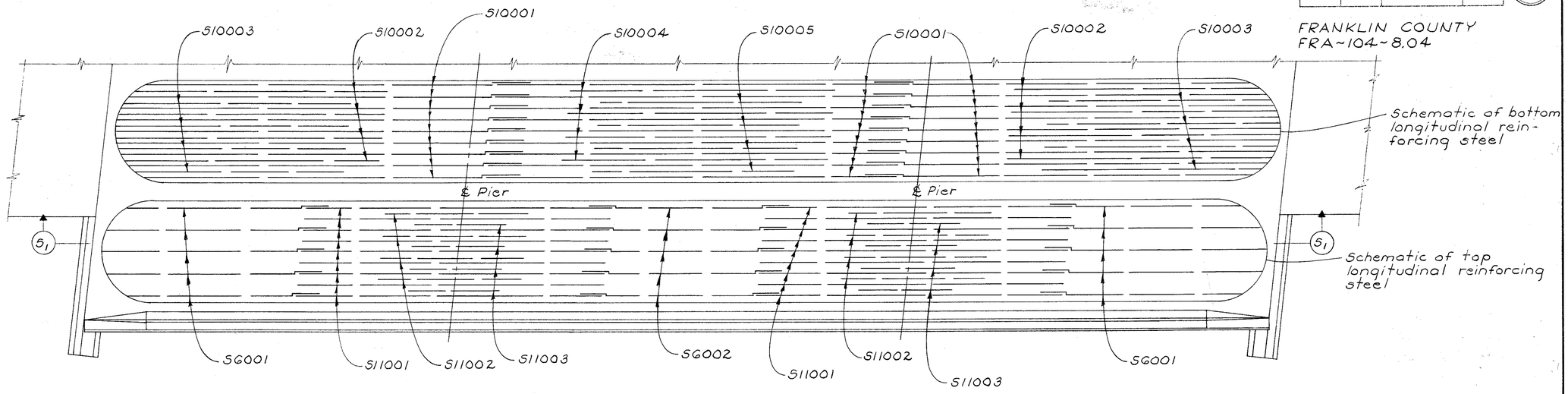
BRIDGE Nº FRA~104~0854
S.R. 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY STA. 34+81.12 STA. 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TLU	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

225
239

FRANKLIN COUNTY
FRA-104-8.04

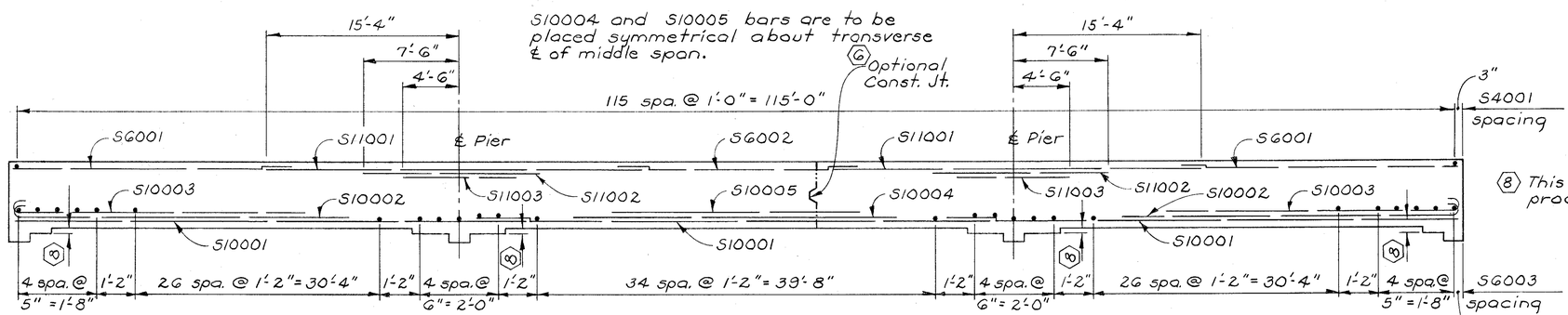


PARTIAL SLAB PLAN

REINFORCING STEEL DATA			
Bar Nº	(2)	Bar spacing	Nº of bar spaces
S6001	3"	2'-2"	26
S6002	3"	2'-2"	26
S10001	3"	1'-1½"	50
S10002	9¾"	2'-3"	24
S10003	1'-11¼"	2'-3"	24
S10004	9¾"	2'-3"	24
S10005	1'-11¼"	2'-3"	24
S11001	3"	1'-1"	52
S11002	9½"	2'-2"	25
S11003	1'-10½"	2'-2"	25

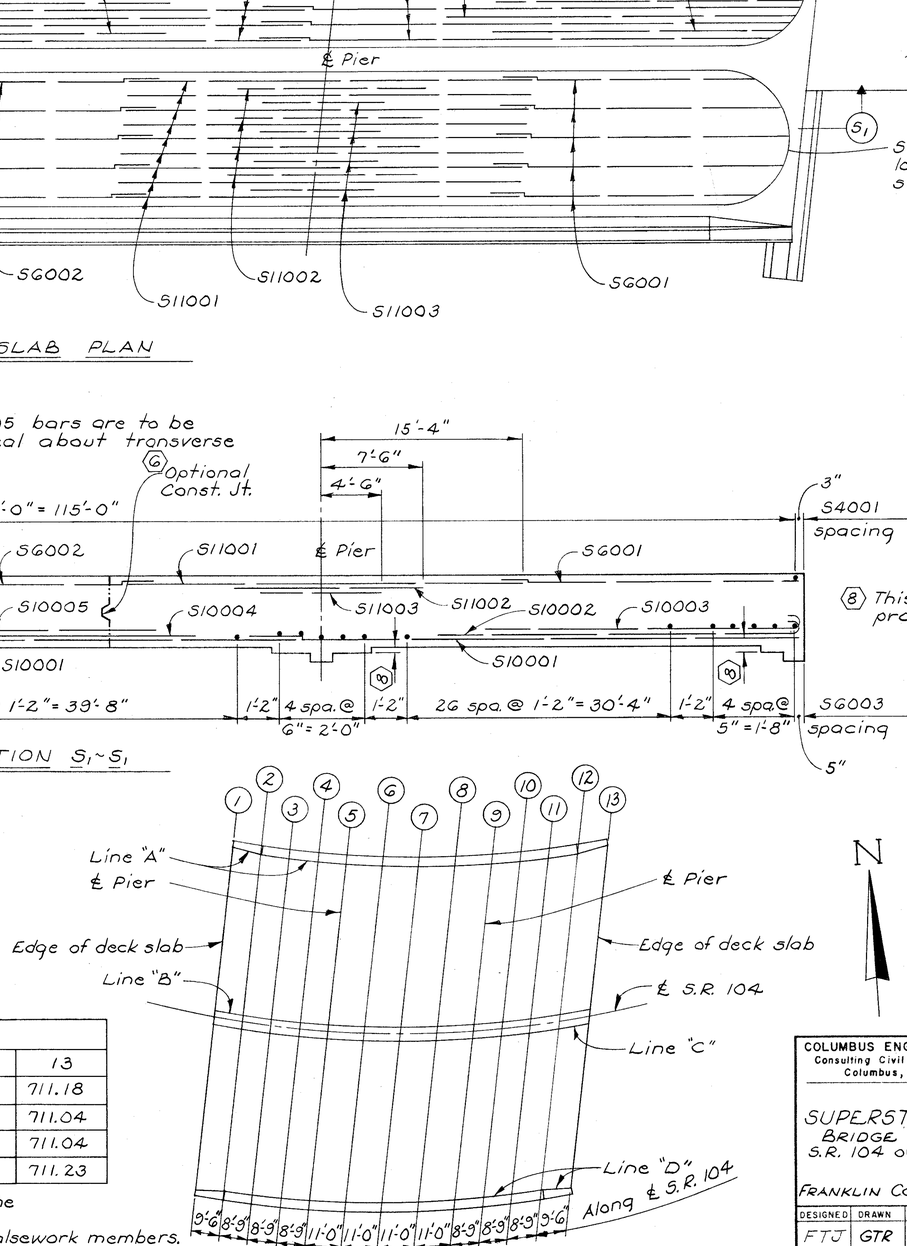
(2) The dimension shown is from exterior face of deck slab to first bar of series.

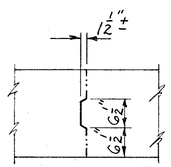
S10004 and S10005 bars are to be placed symmetrical about transverse ℄ of middle span.



(8) This dimension varies to produce correct crown.

SECTION S1-S1





OPTIONAL CONSTRUCTION JOINT DETAIL

(2) One construction joint will be permitted on the transverse centerline of the middle span or 1'-0" ± off the transverse centerline if necessary to miss tranverse reinforcing bars. One longitudinal joint, on the centerline of lanes, will be permitted.

TABLE OF SCREED ELEVATIONS													
	1	2	3	4	5	6	7	8	9	10	11	12	13
Line "A"	711.64	711.63	711.59	711.55	711.51	711.48	711.44	711.39	711.33	711.30	711.28	711.24	711.18
Line "B"	711.50	711.47	711.44	711.40	711.36	711.32	711.29	711.24	711.18	711.15	711.12	711.09	711.04
Line "C"	711.50	711.47	711.44	711.40	711.36	711.33	711.29	711.24	711.18	711.15	711.13	711.09	711.04
Line "D"	711.69	711.67	711.64	711.60	711.56	711.52	711.49	711.44	711.38	711.35	711.33	711.29	711.23

Elevations shown are at curb line and top of slab and are those which are required before the concrete slab is placed. Proper allowance has been made for the dead load deflections caused by the weight of concrete. Proper allowance shall be added for the deflection of falsework members.

COLUMBUS ENGINEERING CONSULTANTS, LTD.
Consulting Civil Engineers
Columbus, Ohio

9 | 10

SUPERSTRUCTURE DETAILS

BRIDGE Nº FRA-104-0854
S.R. 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY STA. 34+81.12
STA. 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TLV	10/29/70	

REINFORCING STEEL LIST

FED. RD. DESIGNATION	STATE	PROJECT		
2	OHIO			

226
239

FRANKLIN COUNTY
FRA-104-8.04

SUPERSTRUCTURE

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
S4001	464	29-2	9041							st.
S5001	40	21-10	911							st.
S5002	24	29-10	747							st.
S5003	20	18-2	379							st.
S5004	140	3-10	560	11	0-9	0-9	0-11½	1-7	0-6	bt.
S5005	140	2-0	292	1		0-7½	1-0	0-7½		bt.
S5006	140	2-10	414	1	0-6	2-6				bt.
S5007	140	5-4	779	10	2-2	0-2½	2-5	0-7½		bt.
S5008	188	4-4	850	12	0-6	0-2	4-0			bt.
S5009	188	3-7	703	11		1-0	1-5	1-7	0-6	bt.
S5010	310	2-9	889	5	0-5	2-4	0-6			bt.
S5011	8	3-8								st.
thru		Δ=0-1	160							
S5015	8	4-0								st.
S5016	20	2-0	42	1		0-7½	1-0	0-7½		bt.
S5017	4	3-6		11	0-9	0-0	0-11½	1-7	0-6	bt.
thru		Δ=0-1	77			Δ=0-2				
S5021	4	3-10		11	0-9	0-8	0-11½	1-7	0-6	bt.
S5022	48	14-4	718							st.
S5023	48	5-10	292							st.
S5024	24	15-4	384							st.
S6001	108	22-5	3636							st.
S6002	54	19-4	1568							st.
S6003	436	29-5	19,264							st.
S10001	306	40-6	53,327							st.
S10002	100	28-2	12,120	2	26-9					bt.
S10003	100	24-8	10,614	2	23-3					bt.
S10004	50	25-9	5540							st.
S10005	50	19-9	4249							st.
S10006	16	29-10	2054							st.
S11001	212	29-10	33,603							st.
S11002	104	13-11	7690							st.
S11003	104	9-0	4973							st.

ABUTMENTS

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
A5001	8	30-0	250							st.
A5002	4	30-8	128							st.
A5003	16	1-6	25							st.
A5004	4	18-10	79							st.
A5005	4	13-7	57							st.
A10001	16	30-0	2065							st.
A10002	8	32-9	1127							st.
A10003	8	21-0	723							st.
A10004	8	15-6	534							st.
F4001	160	5-3	561	1		1-10	1-9	1-10		bt.
F5001	396	6-7	2719	1		2-2	2-6	2-2		bt.
F5002	24	30-0	751							st.
F5003	8	16-8	139							st.
F5004	8	19-0	159							st.
F5005	172	8-1	1450	1		3-4	1-8	3-4		bt.
F5006	16	5-6	92							st.
F8001	24	30-0	1922							st.
F8002	8	18-9	401							st.
F8003	8	19-8	420							st.

PIERS

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
P5001	36	16-10	632	1	3-0	14-0				bt.
P5002	36	13-5	504	1	3-0	10-7				bt.
P5003	28	7-4	214	7	1-7	1-3½				bt.
P6001	248	11-11	4439	14	2-8	3-1	2-8	3-1		bt.
P8001	36	35-3	3388							st.
P10001	128	21-7	11,887							st.
P11001	16	16-6	1403							st.
P11002	16	13-8	1162							st.
P11003	16	26-8	2267							st.
P11004	16	19-10	1686							st.
F5007	122	5-6	700							st.
F6001	184	5-6	1520							st.
F9001	40	31-8	4307							st.
F9002	40	31-9	4318							st.
F9003	20	5-8	385							st.
F10001	128	6-7	3626	1	1-5	5-6				bt.
F11001	24	26-1	3326							st.
F11002	24	37-2	4739							st.
F11003	12	7-8	489							st.

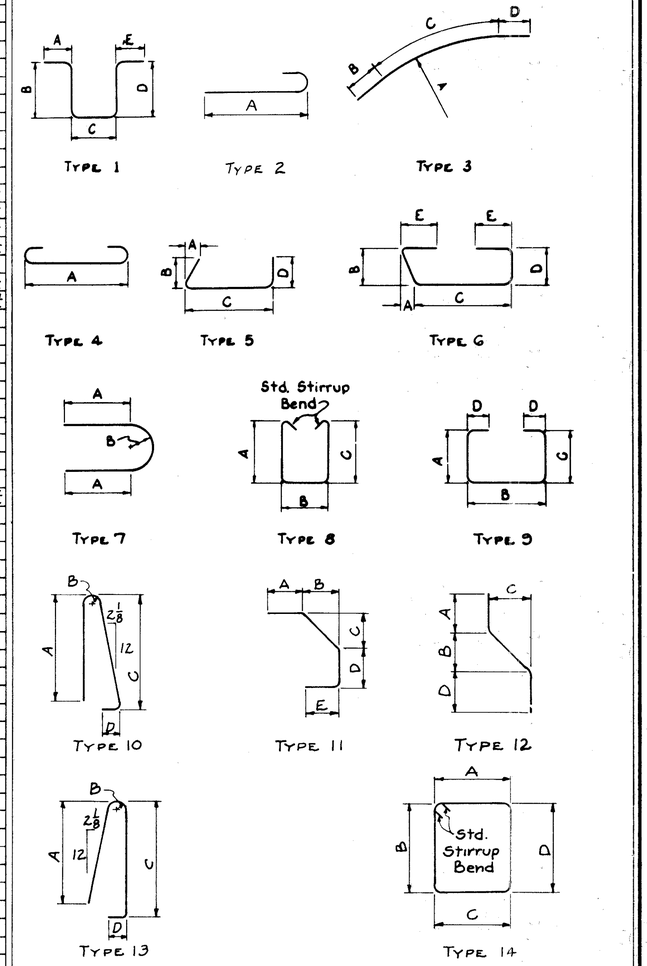
REPLACEMENT STEEL

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
RE4001	1	6-3								st.
RE5001	1	6-7								st.
RE6001	2	6-11								st.
RE8001	1	7-6								st.
RE9001	1	7-10								st.
RE10001	6	8-8								st.
RE11001	4	8-7								st.

REPLACEMENT STEEL FOR SPIRALS

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
RE4002	1	6-3		3	1-3½		6-3			bt.

Bending Diagram



NOTE: In the reinforcing steel bar marks, the first digit where four digits are used and the first two where five are used is the bar number which indicates the size of the bar.

Δ = Indicates length varies by tabulated amount.

Spirals

The "Length" shown in the steel list for the spiral bars is the distance out-to-out of coils, including finishing turns at the top and bottom.

Spiral reinforcing bars shall not have deformations but shall in other respects conform to Item 509, 1½ closed coils shall be provided at the ends of each spiral unit. Four steel channel, tee or angle spacers weighing approximately 0.80 lb. per lin. ft. of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The number of pounds of these spacers, based on 0.80 lb. per lin ft, will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

SPIRALS

Mark	Nº	Length (Height)	Weight	Shp.	Bending Diagrams
Spirals - Core Diam. 32" % - Pitch 4½" c/c - Other details in accordance with CRSI standard practice					
P4001	16	18-5	5539	bt.	

Mark	Nº	Length (Height)	Weight	Shp.	Bending Diagrams

Mark	Nº	Length (Height)	Weight	Shp.	Bending Diagrams

COLUMBUS ENGINEERING CONSULTANTS, LTD.
Consulting Civil Engineers
Columbus, Ohio

10/10

REINFORCING STEEL LIST

BRIDGE Nº FRA-104-0854
S.R. 104 OVER AMERICAN AGGREGATES HAUL ROAD
FRANKLIN COUNTY STA. 34+81.12
STA. 35+96.62

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TLV	10/29/70	

THIS IMPROVEMENT HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY FROM STATION 8+53.00 TO STATION 49+00.00, BY ACTION OF THE DIRECTOR OF HIGHWAYS AND RECORDED IN VOLUME 53 , PAGE 198 OF THE DIRECTOR'S JOURNAL PURSUANT TO LAW

CENTER LINE SURVEY PLAT

FRA – 104 – 8.04

FRANKLIN TOWNSHIP AND CITY OF COLUMBUS

FRANKLIN COUNTY, OHIO

VIRGINIA MILITARY SURVEY NO'S 4208&424

CONGRESS LANDS T.4 R.22 SECTION NO'S 4&5

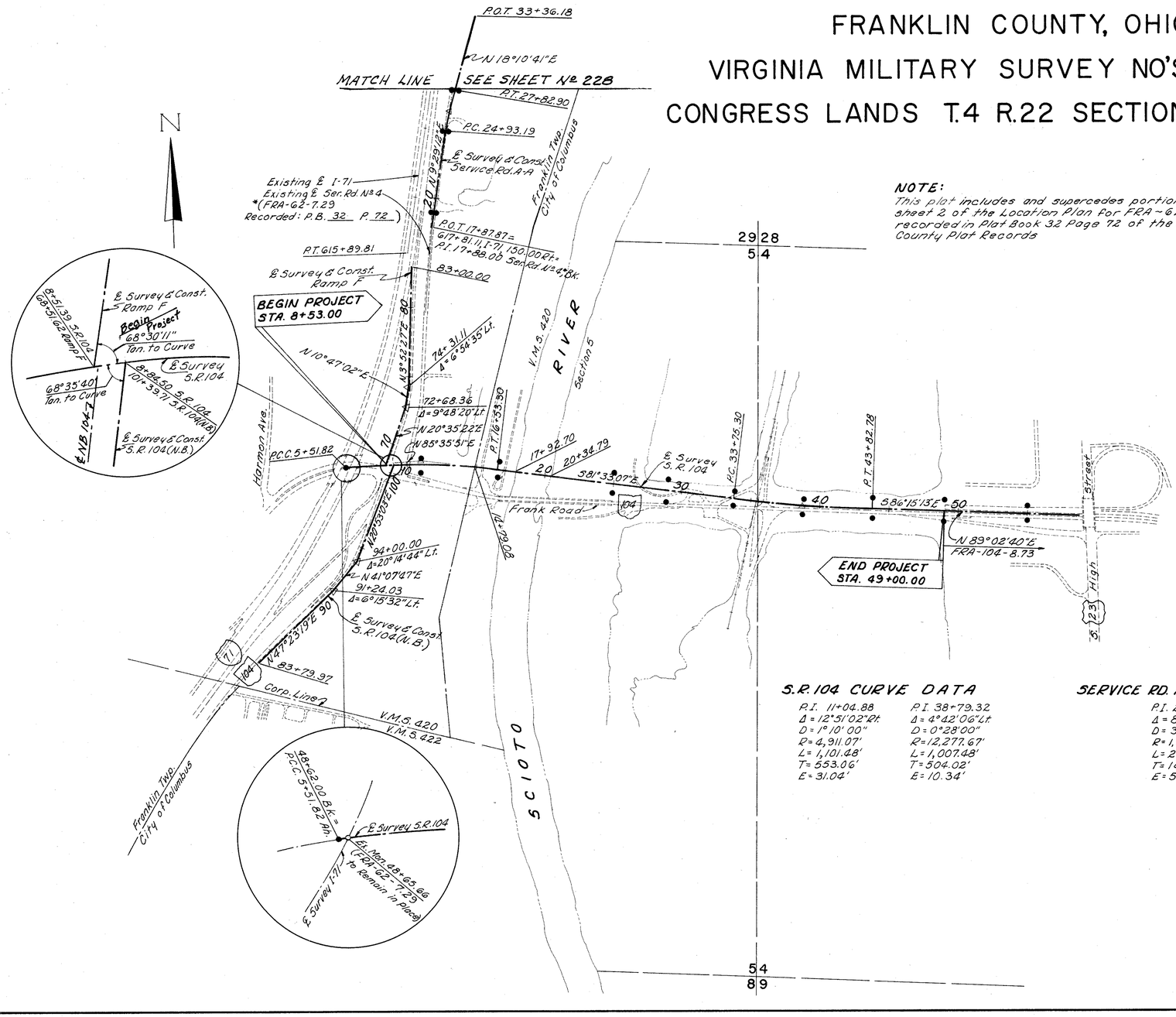
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

227/299

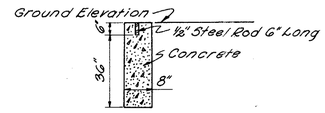
FRANKLIN COUNTY
FRA-104-8.04
LIMITED ACCESS

1/13

Reference Monuments to be placed during or following construction.



NOTE:
This plat includes and supercedes portions of sheet 2 of the Location Plan for FRA-62-7.29 recorded in Plat Book 32 Page 72 of the Franklin County Plat Records



REFERENCE MONUMENT SECTION

S.R. 104 CURVE DATA

P.I. 11+04.88	P.I. 38+79.32
Δ = 12°51'02"Rt.	Δ = 4°42'06"Lt.
D = 1°10'00"	D = 0°28'00"
R = 4,911.07'	R = 12,277.67'
L = 1,101.48'	L = 1,007.48'
T = 553.06'	T = 504.02'
E = 31.04'	E = 10.34'

SERVICE RD. A-A CURVE DATA

P.I. 26+38.32
Δ = 8°41'29" Rt.
D = 3°00'00"
R = 1,909.86'
L = 289.71'
T = 145.13'
E = 5.51'

Signed Richard D Jackson
Date 10-26-70 Division Deputy Director

REFERENCE MONUMENTS S.R. 104					
	STATION	OFFSET Lt.	OFFSET Rt.	100% STATE	STATE - CITY
P.C.C.	5+51.82	B		1	
P.O.C.	11+02.56 ①	44'	55'	2	
P.O.T.	16+60.00	55'	55'		2
P.O.T.	25+00.00	60'	63'		2
P.O.T.	29+00.00	80'	84'		2
P.C.	33+75.30	55'	55'		2
P.O.C.	38+79.04 ①	60'	55'		2
P.T.	43+82.78	74'	69'		2
P.O.T.	49+00.00	77'	75'		2
P.O.T.	55+00.00	57'	45'		2
SERVICE ROAD A-A					
P.O.T.	19+00.01 ②	14'	14'	2	
P.C.	24+93.19	14'	14'	2	
P.T.	27+82.90	16'	16'	2	
Total				9	16
Total From Sheet No. 228				2	22
Total To Summary Sheet No. 17				11	38

0 400 800 1200 1600
Scale in Feet

① Mid-Point of Circular Curve
② Existing P.T. - Service Rd. No. 4 - FRA-62-7.29

I HEREBY CERTIFY THAT THIS PLAT IS A TRUE DELINEATION OF A SURVEY MADE FOR THE OHIO DEPARTMENT OF HIGHWAYS IN 1970 BY Columbus Engineering Consultants, Ltd.
Roger D Miller DATE 10-20-70
Registered Surveyor No. 5118

BRUNING 44-560 10943

CENTER LINE SURVEY PLAT

FRA-104-8.04

FRANKLIN TOWNSHIP AND CITY OF COLUMBUS

FRANKLIN COUNTY, OHIO

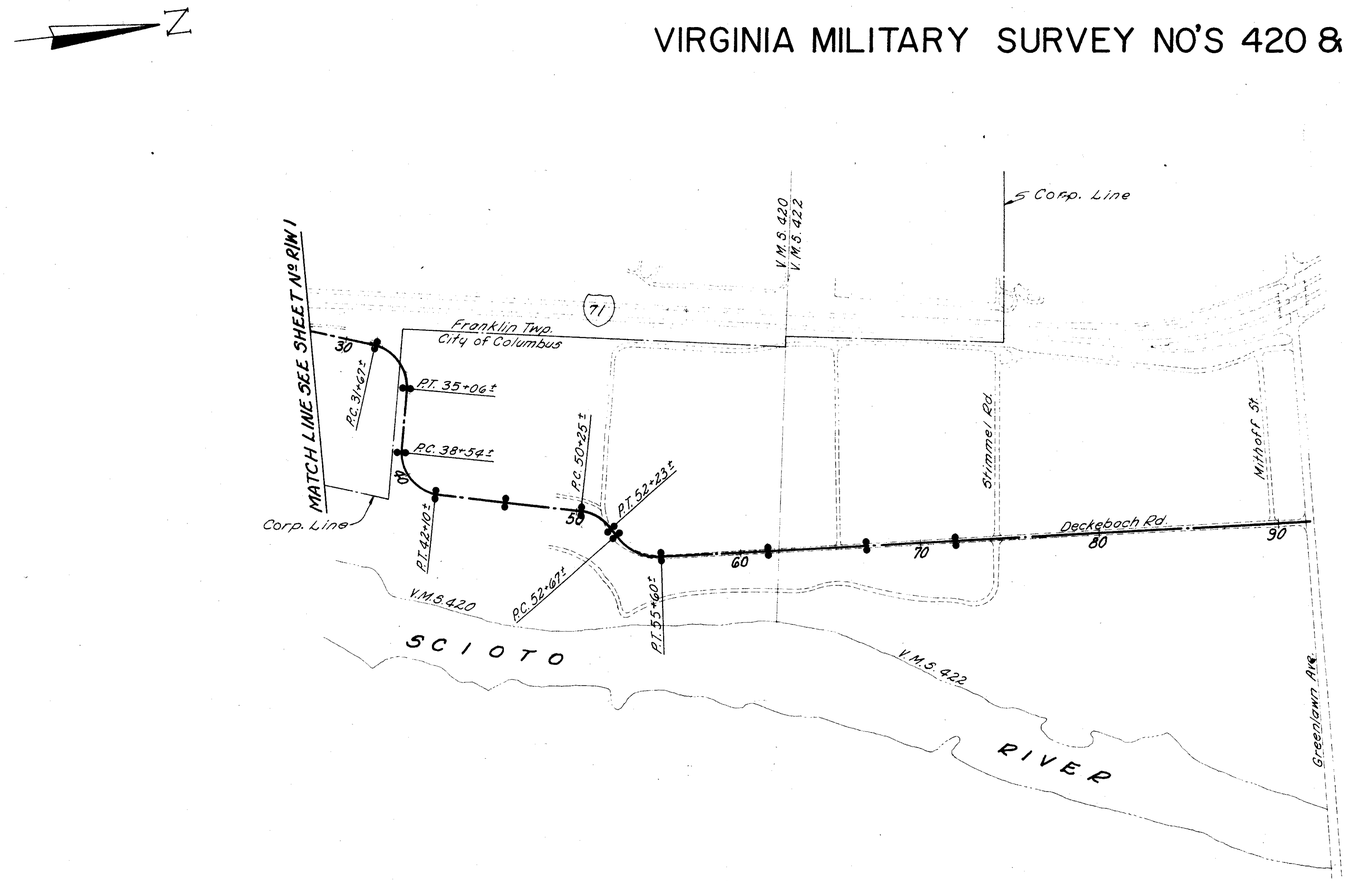
VIRGINIA MILITARY SURVEY NO'S 420 & 422

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

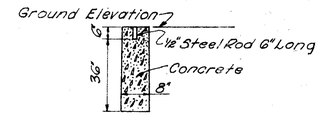
(228) 239

FRANKLIN COUNTY
FRA-104-8.04
LIMITED ACCESS

2/13



Reference Monuments to be placed during or following construction.



REFERENCE MONUMENT SECTION

REFERENCE MONUMENTS SERVICE ROAD A-A					
	STATION	OFFSET LT.	OFFSET RT.	100% STATE	STATE - CITY
P.C.	31+67± ①	16'	16'	2	
P.T.	35+06± ①	16'	16'		2
P.C.	38+54± ①	16'	16'		2
P.T.	42+10± ①	16'	16'		2
P.O.T.	46+00.00	14'	14'		2
P.C.	50+25± ①	16'	16'		2
P.T.	52+23± ①	16'	16'		2
P.C.	52+67± ①	16'	16'		2
P.T.	55+60± ①	16'	16'		2
P.O.T.	61+50.00	14'	14'		2
P.O.T.	67+00.00	14'	14'		2
P.O.T.	72+00.00	14'	14'		2
Total Carried to Sheet No 227				2	22

Quantities By: PWE 10-26-70
Checked By: jam 10-26-70

① Exact P.C. and P.T. stations to be furnished by the State subsequent to the sale date for this project. See General Note Sheet No 12

0 400 800 1200 1600
Scale in Feet

I HEREBY CERTIFY THAT THIS PLAT IS A TRUE DELINEATION OF A SURVEY MADE FOR THE OHIO DEPARTMENT OF HIGHWAYS IN 1970 BY Columbus Engineering Consultants, Ltd.

_____ DATE _____

Registered Surveyor No. 5118

BRUNING 44-560 10943

COLUMBUS ENGINEERING CONSULTANTS, LTD.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

229/239

3/13

FRANKLIN COUNTY
FRA-104-8.04
LIMITED ACCESS

PROPERTY PLAN

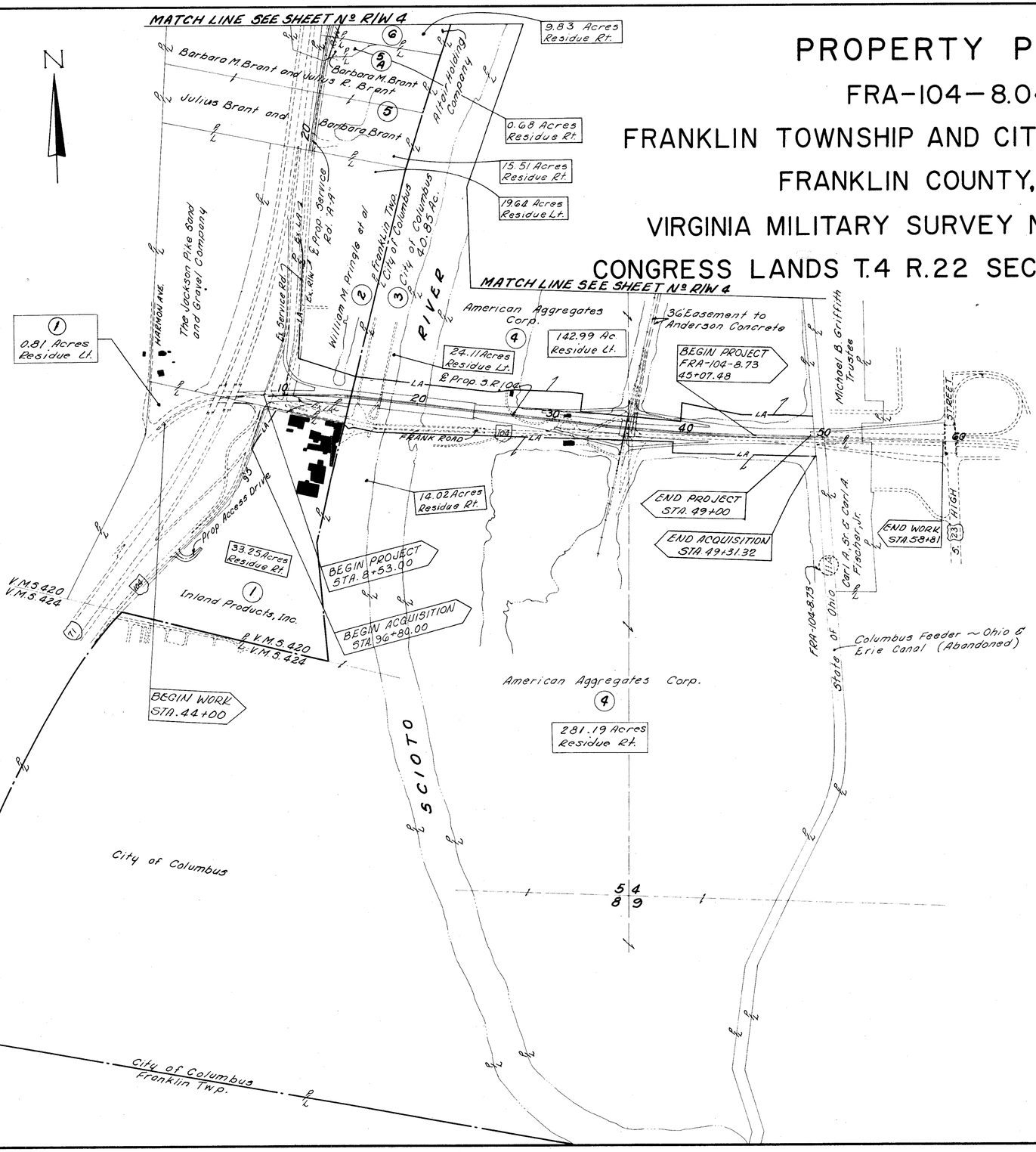
FRA-104-8.04

FRANKLIN TOWNSHIP AND CITY OF COLUMBUS

FRANKLIN COUNTY, OHIO

VIRGINIA MILITARY SURVEY NO'S 420 & 424

CONGRESS LANDS T.4 R.22 SECTION NO'S 4 & 5



LEGEND

- Proposed S.R. 104
- (23) U.S. Highway
- (104) State Highway
- (71) Interstate Highway
- 5/8 4/9 Section Corner
- R/W
- LA Existing R/W
- LA Proposed R/W

UTILITY COMPANIES AFFECTED

Columbus & Southern Ohio Electric Company
Columbia Gas of Ohio, Inc.
Ohio Bell Telephone Company
City of Columbus (Power, Water, Sanitary, Storm)

0 400 800 1200 1600
Scale in Feet

REV.	DATE	DESCRIPTION	BY

Rev. 11-20-70

BRUNING 44-560 10943

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PROPERTY PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

230/239

FRANKLIN COUNTY
FRA-104-8.04
LIMITED ACCESS

4/13

PROPERTY PLAN

FRA-104-8.04

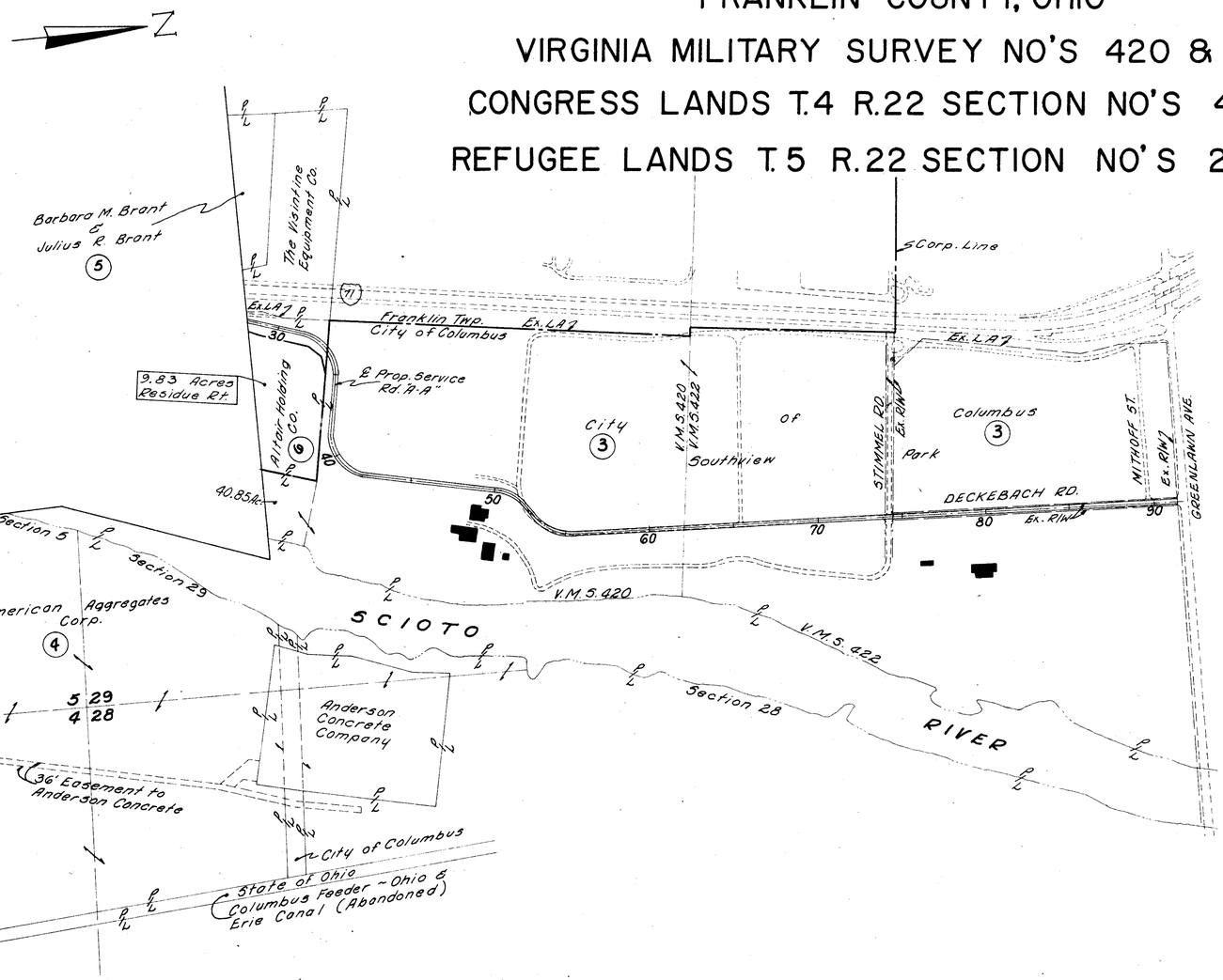
FRANKLIN TOWNSHIP AND CITY OF COLUMBUS

FRANKLIN COUNTY, OHIO

VIRGINIA MILITARY SURVEY NO'S 420 & 422

CONGRESS LANDS T.4 R.22 SECTION NO'S 4 & 5

REFUGEE LANDS T.5 R.22 SECTION NO'S 28 & 29



LEGEND

- ═══ Proposed Service Rd.
- (71) Interstate Highway
- 5/29 4/28 Section Corner

UTILITY COMPANIES AFFECTED

Columbus and Southern Ohio Electric Co.
Columbia Gas of Ohio, Inc.
Ohio Bell Telephone Company
City of Columbus (Power, Water, Sanitary, Storm)

0 400 800 1200 1600
Scale in Feet

REV.	DATE	DESCRIPTION	BY

BRUNING 44-550 10943

COLUMBUS ENGINEERING CONSULTANTS, LTD.

PROPERTY PLAN

SUMMARY OF ADDITIONAL R/W REQUIRED

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

FRANKLIN COUNTY
FRA-104-8.04

231
239

5
13

TOTAL NO. OWNERS — 6 | TOTAL NO. COMPLETE TAKES — 0 | TOTAL PARCELS WITH STRUCTURES INVOLVED — 1 | TOTAL NO. OF LANDLOCKED PARCELS — 0 | STATE JOB Nº 06016(0)

PARCEL NO.	AUDITOR'S PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TOTAL P.R.O.	TOTAL TAKE	P.R.O. IN TAKE	NET TAKE	NET RES. LT.	NET RES. RT.	BLDG'S TO BE ACQ'D	SHEET NO.	REMARKS	TYPE FUND
1-LA	97	Inland Products, Inc.	1510	278	62.00	27.81				0.81	33.25	0	6	Eliminate Access Point at Ex. Frank Rd. Sta. 55+50	
1-LA-1	97	" " "					0.13	0	0.13			0	6		
1-U	97	" " "					0.20	0	0.20			0	6		
1-T	97	" " "					0.10	0	0.10			0	6	Construct Roadway Slopes	
1-T-1	331	" " "					0.91	0	0.91			0	7	Construct Drive	
2-WL	319	William M. Pringle, Mabel Jane Judson, Ann Pringle Gleichner,	3049	433	28.016 *	2.85	3.68	0.97	2.71	19.64		0	6, 8	* Corrected to 25.20 (Calculated)	E
		Marilyn Roof, Mary Sue Anderson					0.40	0	0.40			0	6		
2-U	319	" " " "													
3-WL	95230	City of Columbus	390 392	609 122	40.85	0.51	2.72	0.51	2.21	24.11	14.02	0	9		
3-U	95230	" " "	392 392	261 264			0.36	0	0.36			0	9		
3-T	95230	" " "					0.74	0	0.74			0	9	Construct Bike Trail Turnaround	
4-WL	768 572	American Aggregates Corporation	See List	Below	447.20*	5.33	23.02	5.33	17.69	142.99	281.19	3	9, 10, 11	*Contiguous, N. & E. of Scioto River, West of State of	
4-U	572	" " "					1.03	0	1.03			0	9	Ohio (canal land), S. of Anderson Concrete & City of Cols.	
4-S	572	" " "					0.13	0	0.13			0	10		A
4-S-1	572	" " "					0.10	0	0.10			0	10		
4-X	768	" " "					0.17	0	0.17			0	11		
4-T	572	" " "					1.30	0	1.30			0	10	Const. Parking Lot & Appurtenances, Roadway Slopes	
4-T-1	768	" " "					0.19	0	0.19			0	10	Construct Roadway Slopes	
5-WD	4531	Julius Brant and Barbara Brant	2012	28	15.66*	0	0.15	0	0.15	—	15.51	0	13	* Calculated (E. of I-71)	
		AKA Julius R. Brant and Barbara M. Brant	729	594											
5-T	4531 2106	" " " "					0.42	0	0.42			0	12, 13	Construct Roadway Slopes	T
5A-WD	4531	Barbara M. Brant	2229	425	1.02	0	0.34	0	0.34	—	0.68	0	13		
6-WD	7158	Altair Holding Company	2724	200	11.628	0	1.80	0	1.80	—	9.83	0	13		S

American Aggregates Deed Record Book

N. of Exist. Frank Rd.		S. of Exist. Frank Rd.			
D.B.	P.	D.B.	P.	D.B.	P.
848	29	871	331	886	530
858	387	871	333	1072	361
744	471	1081	17	1091	127
744	139	1049	348	1091	131
		886	527	1081	163
Total	159.88 Ac.	Total		287.32 Ac.	

The acreage for parcel Nos. 4 U-1, 4 U-2, 4 T, 4 T-1 & 4 WL will be revised at a latter date.

Rev. 11-20-70

BRUNING 44-560 10943

COLUMBUS ENGINEERING CONSULTANTS, LTD.

SUMMARY OF ADDITIONAL R/W REQUIRED

Franklin County, Franklin Township
Virginia Military Survey 420

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

FRANKLIN COUNTY
FRA-104-8.04
LIMITED ACCESS

232/239

G/13

S.R.104 CURVE DATA

P.I. 11+04.88
Δ = 12°51'02" Rt.
D = 1°10'00"
R = 4,911.07'
L = 1,101.48'
T = 553.06'
E = 31.04'

MATCH LINE SEE SHEET Nº R/W 8

MATCH LINE SEE SHEET Nº R/W 7

MATCH LINE SEE SHEET Nº R/W 9

THE JACKSON PIKE SAND & GRAVEL COMPANY

HARMON AVE.

Aggregate
1 S. fr. Res.
Fr. Gar.
Trailer
Asphalt
Aggregate
Pump Island
Aband. Conc. Blk. Service Station
Telephone Booth

Ex. LA
Ex. 16"
Ex. 15"
Ex. 54"
Ex. 24"
Ex. 30"
Ex. 18"
Ex. 8"
Ex. 10" Storm Sewer
Ex. 12" Storm Sewer
Ex. 6" Storm Sewer
Ex. Service Rd. #4
Ex. Ramp "G"
Ex. Ramp "F"
Ex. Curb Inlet
Ex. Catch Basin
Ex. Manhole
Ex. Gate
Ex. Conc. Hdw.
Ex. Conc. Pvt.
Ex. Septic Tank Cover
Ex. Top of Slope
Ex. R/W
Ex. Grade
Ex. Woven Wire
Ex. Barbed Wire
Ex. Aggregate Parking Lot
Ex. T.S. Pole
Ex. Fence
Ex. Steel Storage Tanks
Ex. Steel Metal Shed
Ex. Septic Tank Cover 15 Ft. Lab.
Ex. 15" Brick & Sluice Office
Ex. 13" Brick Maintenance Bldg.
Ex. Conc. Blk. Foundation
Ex. 2 S. Brick
Ex. Conc. Blk.
Ex. Acres

48+62.00 Back = 5+51.82 Ahead

8+84.50 S.R.104 = 101+39.71 S.R.104 (N.B.)

8+51.39 S.R.104 = 68+51.92 Ramp F

Prop. 15"
Prop. 30"
Prop. 54"
Prop. 15" Ex. LA-1
Prop. 15" Ex. Service Rd. #4

Const. Limits

Ch. = N12°09'45"E, 289.89'
Arc = 290.92'
R = 999.93'

7+94.35
66.35' Rt.

Grading Limits
Construct R/W Fence on LA Line

12+35.00
150.93' Rt.
N 8°51'21"E, 41.70'

11+94.17
159.41' Rt.

End Ser. Rd.

Prop. 13.8 kV and 69 kV Power Line (City of Col.)

2 U Cont. = 0.40 Ac.
S67°26'49"E, 430.94'
N13°59'36"E, 17.50'
S72°12'33"E, 459.16'
N72°12'33"W, 422.70'

LA

Top of Slope
Ex. R/W
7+76.78
161.42' Rt.

WILLIAM M. PRINGLE et al

2 Const. Limits
TAPA
11+65.16 Lt.

2 WL Proposed Bench
Cont. = 2.71 Ac.
P.R.O. = 0.97 Ac.
Total = 3.68 Ac.

RAMP F-F

14+00.12 Lt.
1422'

Exist. Pt. of Access
Service Rd. Sta. 0+83.1
110' Width Jobs Eliminated

S15°34'14"W, 270.02'

20°38'52" Tan. to Curve

E S.R.104

80°50'42" Tan. to Curve

N68°14'24"W, 261.64' Calc. (261.73' Deed)

Aggregate Parking Lot
N75°02'52"W, 264.71' Calc. (264.00' Deed)

Ex. LA

Asphalt

Ex. 8" Asphalt

Top of Slope

Ex. 10" Storm Sewer

Ex. 12" Storm Sewer

Ex. 6" Storm Sewer

Ex. FRANK RD. (S.R.104)

Fence 14+47, 200' Rt.

Corp. Line

Franklin Twp. Prop. Cor. 1844.21' — City of Columbus Prop. Cor.

15+06.30
175.00' Lt.

15+06.89
152.37' Lt.

S15°34'14"W, 42.90'

Ex. FRANK RD. (W.B.) 45 N53°12'12"E
Ex. FRANK RD. (E.B.)

BEGIN WORK STA. 44+00.00

BEGIN PROJECT STA. 8+53.00

BEGIN ACQUISITION STA. 96+80.00

96+80.00
38.40' Rt.
N69°06'57"W, 26.60'

96+80.00
65.00' Rt.

N20°30'30"E, 20.00'

Begin Fence LAPA
97+00.00
43.18' Rt.

Prop. 13.8 kV Power Line (City of Col.)

LA-1

Exist. Pt. of Private Access 55+50 ~ 60' Width to be eliminated

Fence

Steel Storage Tanks

Conc. Blk. Foundation

Conc. Pvt.

Gate

Asphalt

Conc. Blk.

2 S. Brick

Septic Tank Cover

Septic Tank Cover 15 Ft. Lab.

15" Brick & Sluice Office

13" Brick Maintenance Bldg.

Aggregate Parking Lot

Ex. Curb Inlet

Ex. Conc. Hdw.

Ex. Catch Basin

Ex. Manhole

Ex. Gate

Ex. Conc. Pvt.

Ex. Septic Tank Cover

Ex. Top of Slope

Ex. R/W

Ex. Grade

Ex. Woven Wire

Ex. Barbed Wire

Ex. T.S. Pole

Ex. Fence

Ex. Steel Storage Tanks

Ex. Steel Metal Shed

Ex. Septic Tank Cover 15 Ft. Lab.

Ex. 15" Brick & Sluice Office

Ex. 13" Brick Maintenance Bldg.

Ex. Conc. Blk. Foundation

Ex. 2 S. Brick

Ex. Conc. Blk.

Ex. Acres

Grading Limits

1-T
100+43.93
90.00' Rt.

U
9+18.75
155.00' Rt.

100+41.19
70.00' Rt.

1 LA
12+34.42
82.82' Rt.

Ex. Service Rd. #4

Ex. Ramp "F"

Ex. Ramp "G"

Ex. Curb Inlet

Ex. Catch Basin

Ex. Manhole

Ex. Gate

Ex. Conc. Hdw.

Ex. Conc. Pvt.

Ex. Septic Tank Cover

Ex. Top of Slope

Ex. R/W

Ex. Grade

Ex. Woven Wire

Ex. Barbed Wire

Ex. T.S. Pole

Ex. Fence

Ex. Steel Storage Tanks

Ex. Steel Metal Shed

Ex. Septic Tank Cover 15 Ft. Lab.

Ex. 15" Brick & Sluice Office

Ex. 13" Brick Maintenance Bldg.

Ex. Conc. Blk. Foundation

Ex. 2 S. Brick

Ex. Conc. Blk.

Ex. Acres

Const. Limits

Ex. R/W

Ex. Grade

Ex. Woven Wire

Ex. Barbed Wire

Ex. T.S. Pole

Ex. Fence

Ex. Steel Storage Tanks

Ex. Steel Metal Shed

Ex. Septic Tank Cover 15 Ft. Lab.

Ex. 15" Brick & Sluice Office

Ex. 13" Brick Maintenance Bldg.

Ex. Conc. Blk. Foundation

Ex. 2 S. Brick

Ex. Conc. Blk.

Ex. Acres

Const. Limits

Ex. R/W

Ex. Grade

Ex. Woven Wire

Ex. Barbed Wire

Ex. T.S. Pole

Ex. Fence

Ex. Steel Storage Tanks

Ex. Steel Metal Shed

Ex. Septic Tank Cover 15 Ft. Lab.

Ex. 15" Brick & Sluice Office

Ex. 13" Brick Maintenance Bldg.

Ex. Conc. Blk. Foundation

Ex. 2 S. Brick

Ex. Conc. Blk.

Ex. Acres

SOUTHBOUND I-71

NORTHBOUND I-71

E Survey & Const. Ramp F

E Survey & Const. S.R.104 (N.B.)

E Survey & Const. S.R.104 (S.B.)

Ex. Ramp F

Ex. Ramp "G"

S.R.104 (N.B.)

S.R.104 (S.B.)

Ex. Service Rd. #4

Ex. LA-1

Ex. LA

Ex. R/W

Ex. Grade

Ex. Woven Wire

Ex. Barbed Wire

Ex. T.S. Pole

Ex. Fence

Ex. Steel Storage Tanks

Ex. Steel Metal Shed

Ex. Septic Tank Cover 15 Ft. Lab.

Ex. 15" Brick & Sluice Office

Ex. 13" Brick Maintenance Bldg.

Ex. Conc. Blk. Foundation

Ex. 2 S. Brick

Ex. Conc. Blk.

Ex. Acres

Const. Limits

Ex. R/W

Ex. Grade

Ex. Woven Wire

Ex. Barbed Wire

Ex. T.S. Pole

Ex. Fence

Ex. Steel Storage Tanks

Ex. Steel Metal Shed

Ex. Septic Tank Cover 15 Ft. Lab.

Ex. 15" Brick & Sluice Office

Ex. 13" Brick Maintenance Bldg.

Ex. Conc. Blk. Foundation

Ex. 2 S. Brick

Ex. Conc. Blk.

Ex. Acres

DATA PARCEL 1-T

1. N 24°48'50"E, 36.62'
2. S 76°55'54"E, 108.42'
3. S 19°14'45"W, 42.06'
4. N 73°52'01"W, 111.51'

LEGEND

I.P. Fnd.~ Iron Pin Found
Mon. Fnd.~ Monument Found
Type 47 R/W Fence

INLAND PRODUCTS, INC.

1

1 LA-1 Cont. = 0.13 Ac.
1 T Cont. = 0.10 Ac.
1 U Cont. 0.20 Ac.
1 T-1 Cont. = 0.91 Ac.

0 50 100 200
Scale in Feet

REV.	DATE	DESCRIPTION	BY
		Completion Date 10-2-70	

COLUMBUS ENGINEERING CONSULTANTS, LTD.

96+80.00 S.R. 104 (N.B.) to 14+79.08 R/W

Franklin County, Franklin Township
Virginia Military Survey 420

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

233/239

FRANKLIN COUNTY
FRA-104-8.04

7/13

SOUTHBOUND I-71

NORTHBOUND I-71

582 583 584 585 586 587 588 589 590 591 592 593 594

0 1 2 3 4 5 6 7 8 9 10 11 12 13

Ex. 24"

Ex. 15"

Ex. 18"

Ex. Ramp G"

MATCH LINE SEE SHEET N19 RIW G

Ex. L A

Ex. 4"

Ex. R/W

23 24 17 25 16 84 15 85 26 86 27 14 87 28 13 88 29 12 89 30 11 31 10 90 9 8 91 32 7 92 33 6 93 34 35 95 36 96 37

S.R. 104 (S.B.)

S.R. 104 (N.B.)

N47°23'19"E

N47°30'30"E, 315.00'
℄ Inland Products Drive

P.I. 91+24.03

N41°07'47"E

P.I. 94+00.00

N20°53'03"E

Const. Limits

Ex. L A

Ex. 4"

Ex. L A

BEGIN WORK
STA. 86+60.00

86+95.00
38.69' Rt.

N42°36'41"W, 122.31'

1
T-1

Cont. = 0.91 Ac.

Const. Limits

S47°23'19"W, 315.00'

S42°36'41"E, 125.65'

86+95.00
165.00' Rt.

90+10.00
39.35' Rt.

90+10.00
165.00' Rt.

SEWAGE PLANT DRIVE

CITY OF COLUMBUS

Sewage Treatment Plant

INLAND PRODUCTS, INC.

1

0 50 100 200
Scale in Feet

REV.	DATE	DESCRIPTION	BY
		Completion Date 12-2-70	

BRUNING 44-560 10943

COLUMBUS ENGINEERING CONSULTANTS, LTD.

86+95 S.R.104(N.B.) to 96+40 S. R. 104 (N.B.) R/W

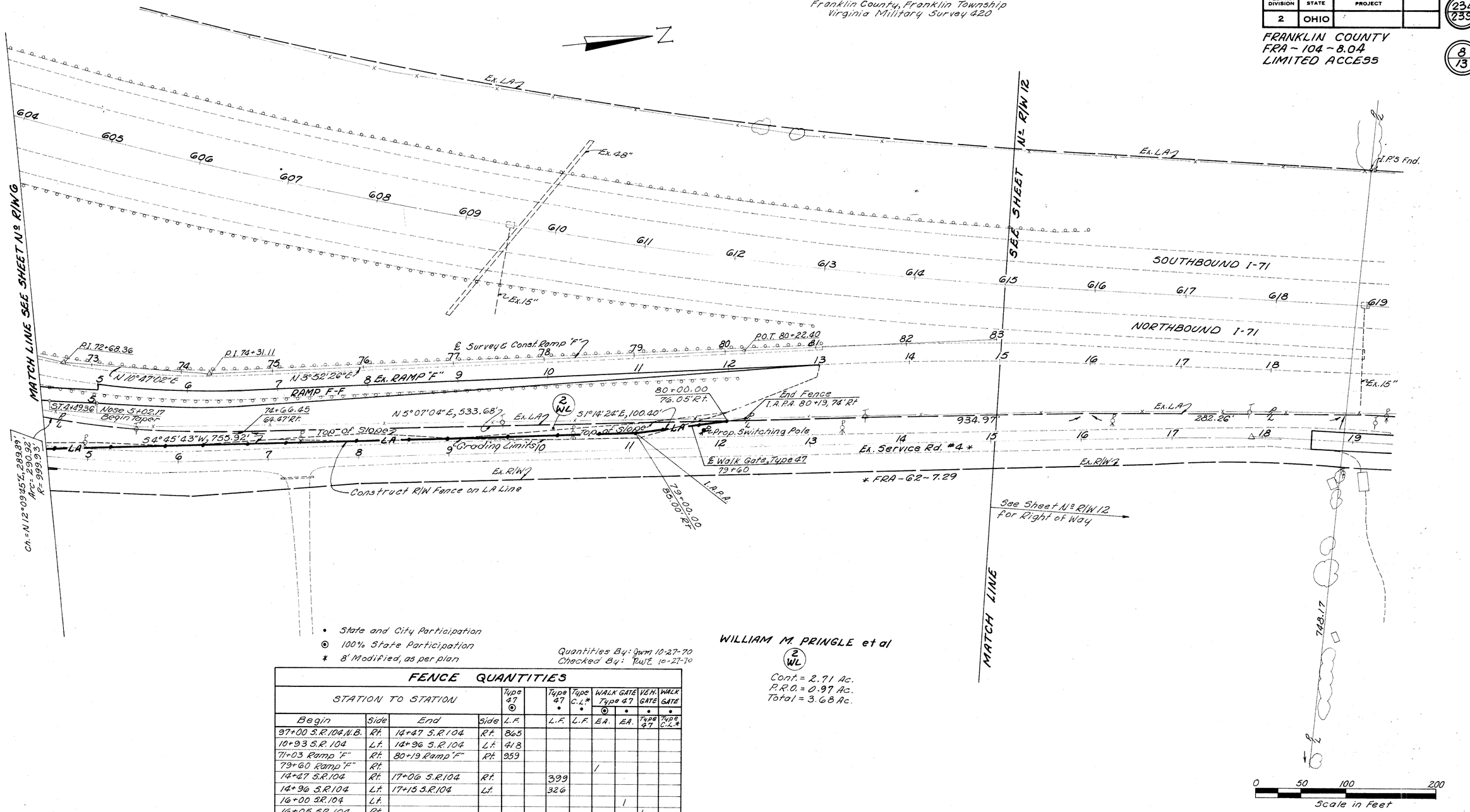
Franklin County, Franklin Township
Virginia Military Survey 420

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

234/239

FRANKLIN COUNTY
FRA-104-8.04
LIMITED ACCESS

8/13



- • State and City Participation
- ⊙ 100% State Participation
- * 8' Modified, as per plan

Quantities By: Gwm 10-27-70
Checked By: PWE 10-27-70

FENCE QUANTITIES

STATION TO STATION				Type 47 ⊙		Type 47 •	Type C.L.* •	WALK GATE Type 47 ⊙	GATE 47 •	VEH. GATE •	WALK GATE •
Begin	Side	End	Side	L.F.		L.F.	L.F.	EA.	EA.	Type 47	Type C.L.*
97+00 S.R.104 N.B.	Rt.	14+47 S.R.104	Rt.	865							
10+93 S.R.104	Lt.	14+36 S.R.104	Lt.	418							
71+03 Ramp "F"	Rt.	80+19 Ramp "F"	Rt.	959							
79+60 Ramp "F"	Rt.							1			
14+47 S.R.104	Rt.	17+06 S.R.104	Rt.			399					
14+96 S.R.104	Lt.	17+15 S.R.104	Lt.			326					
16+00 S.R.104	Lt.								1		
16+05 S.R.104	Rt.									1	
16+25 S.R.104	Lt.						49				1
24+22 S.R.104	Lt.	35+07 S.R.104	Lt.			1,093					
24+10 S.R.104	Rt.	34+78 S.R.104	Rt.			1,105					
26+40 S.R.104	Rt.									1	
36+05 S.R.104	Lt.	48+93.71 S.R.104	Lt.			1,294					
35+57 S.R.104	Rt.	49+31.32 S.R.104	Rt.			1,387					
Totals to Sheet No. 17				2,242		5,606	49	1	1	2	1

WILLIAM M. PRINGLE et al
2 WL

Cont. = 2.71 Ac.
P.R.O. = 0.97 Ac.
Total = 3.68 Ac.

REV.	DATE	DESCRIPTION	BY
		Completion Date 10-2-70	

BRUNING 44-560 10943

COLUMBUS ENGINEERING CONSULTANTS, LTD.

72+40 RAMP F to 80+00 RAMP F R/W

Franklin County, City of Columbus
Virginia Military Survey No 420
Sec. No 5, T4, R22, Congress Lands

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

FRANKLIN COUNTY
FRA-104-8.04
LIMITED ACCESS

CITY OF COLUMBUS
③

AMERICAN AGGREGATES CORP.
④

DATA FOR PARCELS 3-WL & 3-U

① S 15°34'25"W, 29.00'
② S 17°14'05"W, 51.81'
③ N 86°11'49"W, 51.88'
④ N 60°05'32"W, 229.08'
⑤ N 80°43'28"E, 54.83'
⑥ S 77°54'36"E, 50.06'
⑦ S 75°02'52"E, 140.85'
⑧ S 86°15'16"E, 34.40'

3-WL Cont. = 2.21 Ac.
P.R.O. = 0.51 Ac.
Total = 2.72 Ac.

3-U Cont. = 0.36 Ac.

4-WL Cont. = 17.69 Ac.
P.R.O. = 5.33 Ac.
Total = 23.02 Ac.

4-U Cont. = 1.03 Ac.

0 50 100 200
Scale in Feet

		Completion Date 10-7-70	
REV.	DATE	DESCRIPTION	BY

COLUMBUS ENGINEERING CONSULTANTS, LTD.

14+79.08 to 30+00 R/W

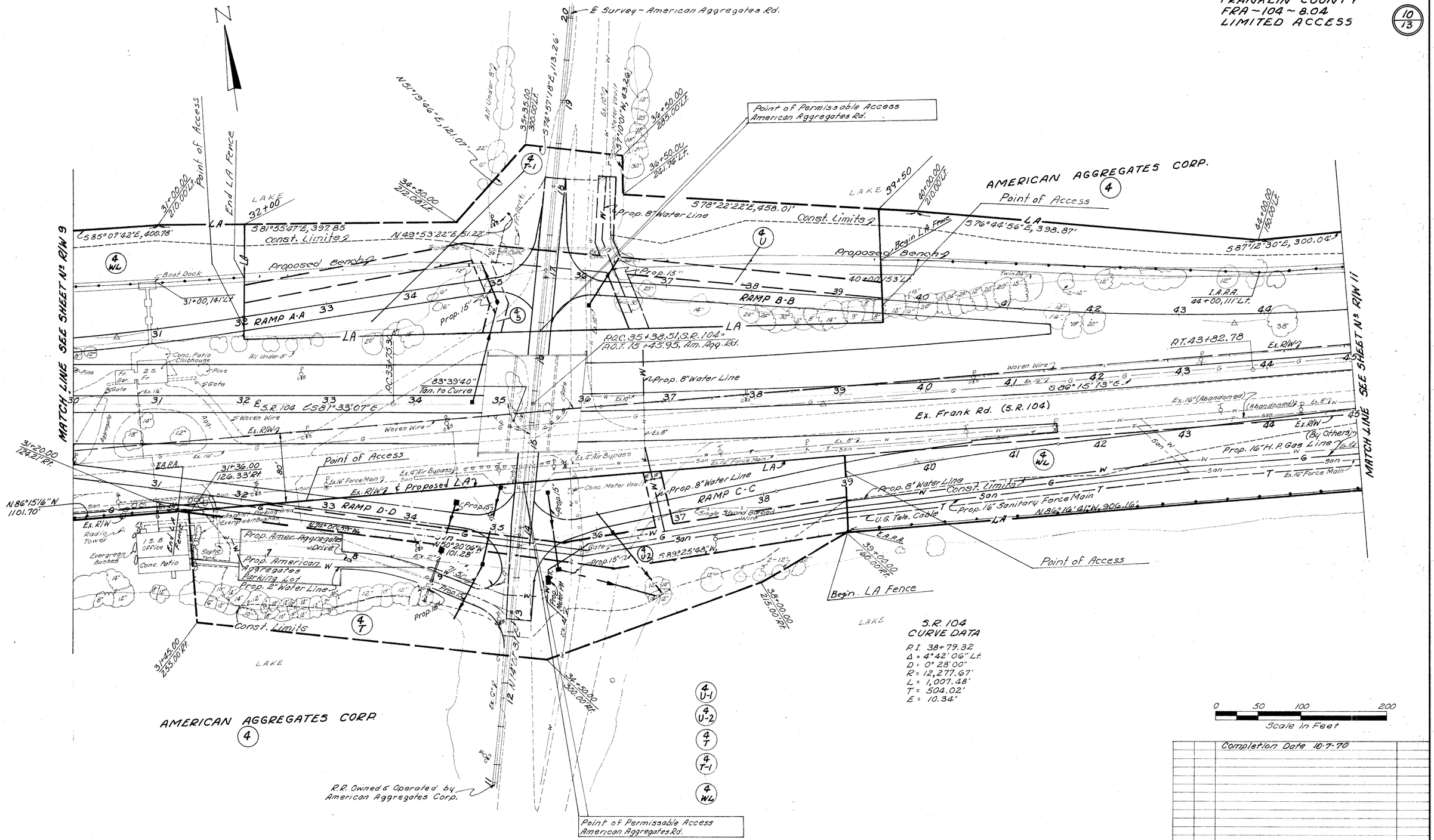
Franklin County, City of Columbus
Sec. Nos 455, T4, R22, Congress Lands

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

236/239

FRANKLIN COUNTY
FRA-104-8.04
LIMITED ACCESS

10/13



S.R. 104
CURVE DATA

P.I. 38+79.32
Δ = 4°42'06" Lt.
D = 0°28'00"
R = 12,277.67'
L = 1,007.48'
T = 504.02'
E = 10.34'

0 50 100 200
Scale in Feet

REV.	DATE	DESCRIPTION	BY
		Completion Date 10-7-70	

Rev. 11-20-70

COLUMBUS ENGINEERING CONSULTANTS, LTD.

30+00 to 45+00 R/W

BRUNING 44.560 10943

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

237/239

11/13

FRANKLIN COUNTY
FRA-104-8.04
LIMITED ACCESS

Franklin County, City of Columbus
Section №4, T4, R22, Congress Lands

* See Sheet ⑤ ~ Plot of Columbus Feeder to Ohio & Erie Canal Dept. of Public Works, Columbus, Ohio

Parcel numbers shown dashed have been acquired with FRA-104-8.73

N

40'

146+25.53

℄ Survey*

AMERICAN AGGREGATES CORP.
④

COLUMBUS FEEDER ~ OHIO & ERIE CANAL (ABANDONED)

Mallard St. P.B. 4 P. 32

MICHAEL B. GRIFFITH, TRUSTEE
② WL

Ex. R/W ℄

Ex. LA ℄

℄ Service Road A

Service Station

Gas Pumps

Ex. LA ℄

48+92.70
215.00' Lt.
S 2°24'31"E, 65.38'
47+80.00
215.00' Lt.
S 86°15'13"E, 112.70'
N 3°44'49"E, 62.00'
N 34°49'10"W, 119.75'
47+80.00
153.00 Lt.
S 84°49'10"E, 199.78'
47+00.00
155.00' Lt.
S 87°12'30"E, 300.04'

④X

48+99.71
150.00 Lt.
Ex. LA ℄
Ex. R/W Fence
Ex. LA ℄
Type 1 Crossing

LA
LA
Const. Limits ℄
Proposed Bench ℄
④WL

END PROJECT
STA. 49+00.00

End Fence E.P.A.

I.A.P.A.
48+00.11 Lt.

RAMP A

END WORK
STA. 58+81.00

59+24.40 ℄ S.R. 104
19+97.57 ℄ U.S. 23

36° 34'55"

S 2°24'31"E, 294.76' ℄

83°50'42"

Ex. R/W ℄

WESTBOUND S.R. 104

℄ S.R. 104
S 86°15'13"E

Ex. 16" ℄
Ex. 20" ℄

150+19.19 ℄ Spike Fnd.
150+61.89 ℄ Spike Fnd.

EASTBOUND S.R. 104

Ex. Frank Rd. (S.R. 104)

Ex. 8" ℄

Ex. R/W

Toe of Slope ℄

Prop. 16" H.P. Gas Line (By Others)

Ex. 8" ℄

Ex. 16" San Force Main ℄

Grading Limits

Ex. Underground Tele. Cable

N 89°16'44"W, 131.50'

N 86°16'41"W, 906.16'

Ex. R/W Fence
Ex. LA ℄

Ex. Ramp B

Ex. Utility Easement (20')

Ex. LA ℄

48+00.00
150.00 Rt.

49+31.32
145.06 Rt.

I.A.P.A.

End Fence E.P.A.

Ex. 16" Force Main

Ex. 16" ℄

Ex. 12" ℄

Ex. 16" ℄

Ex. 12" ℄

Ex. 16" ℄

Ex. 16" ℄

Ex. 12" ℄

Ex. 16" ℄

Ex. LA ℄

1 St. Conc. Blk. Comm.

1 St. Fr. Comm.

2 St. Fr. Res.

Ex. LA ℄

HIGH ST.

END ACQUISITION
STA. 49+31.32

STATE OF OHIO

CARL FISCHER, SR.
&
CARL A. FISCHER, JR.
11 WL

AMERICAN AGGREGATES CORP.
④ WL Cont. = 17.69 Ac.
R.R.O. = 5.33 Ac.
Total = 23.02 Ac.

④X Cont. = 0.17 Ac.

℄ Service Road B

Ex. R/W ℄

Gas Regulator Station

71.68'

156+18.89

MATCH LINE SEE SHEET №2 R/W 10

0 50 100 200
Scale in Feet

REV.	DATE	DESCRIPTION	BY
		Completion Date 10-7-70	

BRUNING 44.560 10943

COLUMBUS ENGINEERING CONSULTANTS, LTD.

45+00 to 49+31.32 R/W

Franklin County, Franklin Township
Virginia Military Survey Nº 420

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

238
239

12
13

FRANKLIN COUNTY
FRA-104-8.04

N

Ex. LA

I.P's Fnd.

Ex. LA

SEE SHEET Nº R/W 8

2-Ex. 48"

G09 G10 G11 G12 G13 G14 G15 G16 G17 G18 G19 G20 G21 G22 G23

SOUTHBOUND I-71

NORTHBOUND I-71

2-Ex. 15"

℄ Survey & Const. Ramp "F"

77 78 79 80 81 82 83

9 10 Ex. Ramp "F" 11 12 13 14 15 16 17 18

2-Ex. 15"

+87.23

87°14'35

Ex. LA

Const. Limits

℄ Service Rd. A-A

9 10 11 12 Ex. Service Rd. #4 * ℄ 13 14 15 16 17 △18 19 20 21 22 23 24

Ex. LA

N 9°29'12"E

30.07

N 9°29'12"E, 640.30'

Ex. R/W

Const. Limits

Ex. R/W

* FRA-62-7.29

18+85.79
30.04 Rt.

Metal Shed

Fr. Shed & Scales

P.C. 16+75.84

19+00.01
30.00 Rt.

P.T. 19+00.01

BEGIN WORK
STA. 18+55.00

5°16'08"03"W, 215.66'

21+00.00
55.00 Rt.

S 9°29'12"W, 448.38'

5-7

Cont. = 0.42 Ac.

MATCH LINE

MATCH LINE SEE SHEET Nº R/W 13

Ex. R/W

18+85.79
30.04 Rt.

R=2834.79
Arc = 14.22'
Chord = N 9°20'31"E, 14.22'

5°16'08"03"W, 215.66'

N 9°29'12"E, 640.30'

See Sheet Nº R/W 8
for Right of Way

WILLIAM M. PRINGLE et al

JULIUS & BARBARA BRANT

5

Fr. Shed

LAKE

0 50 100 200
Scale in Feet

REV.	DATE	DESCRIPTION	BY
		Completion Date 9-21-70	

COLUMBUS ENGINEERING CONSULTANTS, LTD.

18+55 to 24+00 SERVICE RD. A-A R/W

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

239
239

13
13

FRANKLIN COUNTY
FRA ~ 104 ~ 8.04

Franklin County, Franklin Township & City of Columbus
Virginia Military Survey Nº 420

SEE SHEET Nº 12

MATCH LINE

Ex. L.A.

Ex. R/W

SOUTHBOUND I-71

NORTHBOUND I-71

Ex. 15"

Ex. 36"

142.0'

G30+73.00 BK. = G29+12.68 AHD

N 9°29'12"E, 103.58'

See Detail "A"

N88°56'46"W, 56.95'

70°36'34" Tan. to Curve

N 9°29'12"E

448.38'

N 9°29'12"E, 640.30'

N 78°48'36"W, 35.82'

25+41.06 / 29.41' Rt.

25+50.00 / 54.18' Rt.

25+50.00 / 92.00' Rt.

26+34.99 / 44.27' Rt.

26+49.38 / 85.00' Rt.

N85°06'17"E, 42.24'

N 5°39'49"W, 94.95'

N 5°39'49"W, 93.30'

N 5°29'31"W, 48.53'

130.0'

643.04'

100.0'

N 5°29'31"W, 438.20'

R.T. 27+82.90

27+86.85 / 58.45' Rt.

29+00.00 / 65.00' Rt.

SERVICE RD. A-A
CURVE DATA
P.I. 26+38.32
Δ = 8°41'29" Rt.
D = 3°00'00"
R = 1,909.86'
L = 289.71'
T = 145.13'
E = 5.51'

Exist Channel Easement

JULIUS & BARBARA BRANT

5 WD
Cont. = 0.15 Ac.

5 T
Cont. = 0.42 Ac.

BARBARA M. BRANT

5A WD
Cont. = 0.34 Ac.

ALTAIR HOLDING CO.

6

25+33.17 / 30.43' Lt.

Ex. L.A.

Ex. R/W

N 9°29'12"E, 103.58'

N 53°56'55"W, 4.12'

N 88°56'46"W, 56.95'

25+31.43 / 29.72' Lt.

DETAIL "A"

22+34.89 / 35.36' Lt.

N 9°29'12"E, 149.00'

27+79.68 / 82.04' Lt.

I.P. Fnd.

N 9°30'27"E, 123.66'

29+01.83 / 70.68' Lt.

Conc. Mon. Fnd.

N 26°37'36"E, 101.34' (Meas.), 101.25' (Deed)

Conc. Mon. Fnd.

30+02.07 / 55.79' Lt.

Cont. = 1.80 Ac.

33+04.36 / 101.54' Lt.

I.P. Fnd.

N 9°34'23"E, 305.73' (Meas.) (306.27' Deed)

S 77°44'51"E, 308.18'

Franklin Twp.
City of Columbus

Ex. L.A.

E. Service Rd. "A-A"

N 78°40'41"E

N 75°34'42"W, 110.72'

S 21°29'31"W, 113.34'

Const. Limits

S 18°10'41"W, 290.00'

P.C.

31+90.00 (Tan.) / 65.00' Rt.

S 45°56'12"W, 107.35'

32+85.00 (Tan.) / 115.00' Rt.

S 78°33'15"W, 103.53'

33+36.18 (Tan.) / 205.00' Rt.

P.T.

Franklin Twp.
City of Columbus

Const. Limits

Const. Limits

To prop. cor.

968.01'

CITY OF COLUMBUS

SOUTHVIEW PARK

24 25 26 27 28 29 30 31 32 33 34 35 36 37

G24 G25 G26 G27 G28 G29 G30 G30 G31 G32 G33 G34 G35 G36 G37

0 50 100 200
Scale in Feet

Completion Date 9-21-70

REV.	DATE	DESCRIPTION	BY

COLUMBUS ENGINEERING CONSULTANTS, LTD.

24+00 to 37+00 SERVICE RD. A-A R/W

TE 95
400 B 64

GENERAL INFORMATION

INTRODUCTION

THE PROJECT CONSISTS OF THE CONSTRUCTION OF 1.63 MILES OF USR 33 AND 1 MILE OF IR 70, BEGINNING AT EXISTING USR 33, APPROXIMATELY 1 MILE NORTHWEST OF THE USR 33-GRANDVIEW AVENUE INTERSECTION, EXTENDING SOUTHWARD TO SOUTHEASTWARD, WITH A MAJOR PORTION OF THE ALIGNMENT TRAVERSING THE AMERICAN AGGREGATE LAKE (GRAVEL PIT) AND A SLUDGE LAGOON (ABANDONED GRAVEL PIT) AND TERMINATING AT THE SCIOTO RIVER, APPROXIMATELY 500 FEET SOUTH OF EXISTING USR 33. INCLUDED IN THIS REPORT ARE SOIL PROFILES OF RELOCATED GRANDVIEW AVENUE, THE RELOCATED GRANDVIEW INTERCHANGE RAMPS A, B, C, AND D, AND THE SCIOTO RIVER CHANNEL RELOCATION.

FOR MAXIMUM PROPOSED CUTS AND FILL EMBANKMENTS, SEE THE PROJECT INDEX ON THIS SHEET.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

THE ALIGNMENT OF THE PROJECT TRAVERSES THE RELATIVELY BROAD FLOODPLAIN OF THE SCIOTO RIVER, IN AN AREA WHERE GLACIAL DRIFT VARIES IRREGULARLY FROM THIN TO MODERATELY DEEP, AND OVERLIES LIMESTONE AND SHALE BEDROCK, OF DEVONIAN AGE. AREAS FILLED WITH CONSTRUCTION DEBRIS WERE OBSERVED BETWEEN RELOCATED USR 33 STATIONS 309+00 AND 313+00, AND PROPOSED IR 70 STATIONS 380+00 AND 382+50. A LAND FILL AREA CONTAINING CINDERS, BRICKBATS AND RUBBISH IS LOCATED IMMEDIATELY EAST OF GRANDVIEW AVENUE, IN THE VICINITY OF THE GRANDVIEW AVENUE INTERCHANGE.

EXPLORATION

EXPLORATORY BORINGS WERE MADE BY MEANS OF TRUCK-MOUNTED MECHANICAL SOIL AUGER, HAND AUGER (IN DIFFICULT ACCESS AREAS), AND PEAT SAMPLER, BETWEEN JULY 5 AND 11, AND SEPTEMBER 11 AND 24, 1967. INCLUDED IN THIS REPORT ARE LOGS OF BORINGS MADE FOR THE STRUCTURE FOUNDATION INVESTIGATIONS ON THIS PROJECT.

INVESTIGATIONAL FINDINGS

MATERIALS ENCOUNTERED IN THE GRAVEL PIT AREAS CONSISTED OF SEDIMENT-LIKE SILTS, SILT CLAYS AND CLAYS, VARYING IN DEPTH FROM 1' TO 17'. MATERIALS ENCOUNTERED IN THE AREA WEST OF GRANDVIEW AVENUE WERE PREDOMINANTLY SANDY GRAVELS (A-1-b AND A-2-4) AND SILT CLAYS (A-6a), GENERALLY HAVING LOW MOISTURE CONTENTS AND MOISTURE CONTENTS IN THE LOWER PORTIONS OF THE PLASTIC RANGE, WHILE THE MATERIALS ENCOUNTERED EAST OF GRANDVIEW AVENUE WERE COMPRISED OF CINDERS, BRICKBATS AND RUBBISH, VARYING FROM 5' TO 16' IN DEPTH. THE FILL MATERIAL ENCOUNTERED ON THE LEVEES WAS COMPRISED OF SANDY SILT (A-4a) AND SILT CLAYS (A-6a) WITH OCCASIONAL BOULDERY ZONES.

WET MATERIALS WERE ENCOUNTERED THROUGHOUT THE MAJORITY OF USR 33, AT IR 70 STATIONS 365+00 TO 379+15, AND 393+00 TO 416+00, AND RELOCATED GRANDVIEW AVENUE STATIONS 112+00, 118+00, AND 125+00, RAMP C STATIONS 396+00 AND 395+09.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS— 198 SAMPLES TESTED

DESCRIPTION	H.R.B. CLASS	OHIO CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
GRAVEL	A-1-a(0)	A-1-a	69	6	12	7	6	24	3	9	5
GRAVEL WITH SAND	A-1-b(0)	A-1-b	58	12	10	11	9	23	4	11	8
COARSE AND FINE SAND	-----	A-3a	10	23	42	-	25	-	NP	NP	16	3
GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT	A-2-4(0)	A-2-4	52	11	11	13	13	28	8	10	15
GRAVEL OR STONE FRAGMENTS WITH SAND, SILT, AND CLAY	A-2-6(1)	A-2-6	52	7	10	14	17	34	15	15	4
SANDY SILT	A-4(3)	A-4a	22	6	20	28	24	28	6	22	47
SILT	A-4(8)	A-4b	9	4	11	52	24	24	4	31	10
SILT AND CLAY	A-6(6)	A-6a	23	4	11	29	33	34	12	22	78
SILTY CLAY	A-6(6)	A-6b	32	3	11	25	29	38	17	17	7
ELASTIC CLAY	A-7-5(10)	A-7-5	22	2	7	27	42	46	15	33	1
CLAY	A-7-6(12)	A-7-6	20	2	7	30	41	46	20	38	20
LIMESTONE	BOULDERY ZONE			VISUAL CLASSIFICATION							-
RANDOM FILL				VISUAL CLASSIFICATION							-
VARIOUS OTHER MATERIALS				VISUAL CLASSIFICATION							-

AUGER BORING-PLAN VIEW.

DRIVE SAMPLE AND/OR CORE BORING-PLAN VIEW.

AUGER BORING PLOTTED TO VERTICAL SCALE ONLY.

DRIVE SAMPLE AND/OR CORE BORING PLOTTED TO VERTICAL SCALE ONLY.

WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT.

INDICATES A NON-PLASTIC MATERIAL WITH A HIGH WATER CONTENT.

FREE WATER.

NUMBER OF BLOWS FOR "STANDARD PENETRATION" TEST.
X=NUMBER OF BLOWS FOR FIRST 6 INCHES.
Y=NUMBER OF BLOWS FOR SECOND 6 INCHES.

NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT. E.G. 15

SOIL PROFILE
FRANKLIN COUNTY
FRA-70-10.83 N

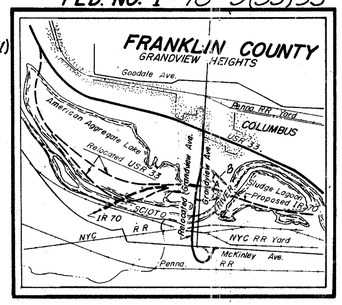
1/16 — 1/7

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.

FED. NO. I-70-3(33)95

West Freeway I-70-3(33)95
Grandview Ave (CR73) US-USG-1548(1)
McKinley Ave (CR10) US-1508(2)



LOCATION MAP

Recon- J.F.S- 6/27/67
Drilling- Auger- L.M.D.
7/5/67 to 7/11/67 and
9/11/67 to 9/24/67
Drafting- W.F.N., D.E.N., A.F. 11/21/67

PROJECT INDEX

STATIONS FROM	STATIONS TO	PLAN VIEW SHEET	PROFILE SHEET	CUT MAX.	FILL EMB. MAX.
RELOCATED USR 33					
306+00	383+00	3	3	0'	42'
RELOCATED USR 33 (NORTHBOUND LANES)					
338+00	362+00	4	5	0'	76'
RELOCATED USR 33 (SOUTHBOUND LANES)					
333+00	365+00	4	5	0'	43'
PROPOSED IR 70					
365+00	397+00	3	3	0'	41'
GRANDVIEW INTERCHANGE					
RELOCATED GRANDVIEW AVENUE					
88+00	120+00	4	4	1'	57'
120+00	132+00	5	5	0'	20'
RAMP A					
384+00	393+00	6	7	0'	15'
RAMP B					
381+00	400+00	6	7	0'	32'
RAMP C					
381+00	399+00	6	7	2'	40'
RAMP D					
381+00	393+00	6	7	0'	37'

SOIL PROFILE

FRANKLIN COUNTY
FRA-70-10.83N

2/16

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23. OHIO

2/7

SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON-PLASTIC.
*DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

RELOCATED USR 33

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
306+00	40'Lt	0.0-3.0	27	16	12	20	24	26	7	8	A-4a *
		3.0-6.5	28	5	11	21	35	36	17	17	A-6b
310+00	20'Lt	0.0-2.0	38	3	11	22	26	37	16	13	A-6b *
		2.0-4.0	33	1	18	21	27	34	12	16	A-6a
312+60	50'Rt	0.0-2.0	51	15	8	15	11	25	4	4	A-2-4
313+25	50'Lt	0.0-2.0	32	12	14	23	19	24	6	7	A-4a
315+00	100'Lt	0.0-4.0	15	2	5	45	33	33	11	40	A-6a
315+00	CL	0.0-1.3	0	4	25	49	22	NP	NP	31	A-4a
315+00	100'Rt	0.0-2.4	0	4	14	40	33	32	11	51	A-6a
317+50	CL	0.0-3.2	13	2	9	47	29	28	11	31	A-6a
319+50	100'Lt	0.0-1.6	9	7	28	26	30	28	9	28	A-4a
319+50	100'Rt	0.0-0.9	8	11	30	27	24	24	7	23	A-4a
319+55	10'Rt	0.0-1.0	3	4	22	35	36	36	14	35	A-6a
322+50	CL	0.0-4.5	13	8	7	41	31	30	11	45	A-6a
325+00	100'Lt	0.0-2.1	5	1	2	38	54	36	13	49	A-6a
325+00	CL	0.0-2.9	11	6	16	31	36	28	11	30	A-6a
327+50	CL	0.0-2.3	8	4	18	42	28	27	6	59	A-4a
328+00	70'Rt	0.0-5.0	23	1	13	29	34	40	16	15	A-6b
		5.0-10.0	20	0	14	29	37	38	14	15	A-6a
		10.0-13.0	52	2	8	16	22	36	17	14	A-6b
		13.0-19.5	29	1	20	27	23	28	8	17	A-4a
		19.5-25.0	42	3	15	17	23	27	6	31	A-4a
		25.0-28.0	26	3	20	34	17	30	7	29	A-4a
330+00	100'Lt	0.0-3.1	15	6	10	30	39	33	11	39	A-6a
330+00	CL	0.0-3.2	16	4	12	37	31	30	11	31	A-6a
332+50	CL	0.0-5.5	20	4	19	31	26	27	9	33	A-4a

RELOCATED USR 33 (NORTHBOUND LANES)

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
337+50	BL	0.0-2.8	26	1	14	28	31	31	11	37	A-6a
338+04	35'Lt	0.0-3.3	23	2	13	31	31	32	11	38	A-6a
340+00	100'Lt	0.0-2.4	23	7	25	21	24	25	7	29	A-4a
340+00	BL	0.0-3.1	16	3	20	32	29	29	11	29	A-6a
342+50	BL	0.0-2.3	20	5	7	30	38	35	11	39	A-6a
345+00	100'Lt	0.0-4.2	13	0	2	56	29	NP	NP	82	A-4b
345+00	BL	0.0-1.7	16	6	16	24	38	36	14	33	A-6a
345+00	100'Rt	0.0-0.9	19	2	8	34	37	33	12	44	A-6a
350+00	100'Lt	0.0-2.4	30	10	11	18	31	-	-	38	A-6a
350+00	BL	0.0-4.6	18	4	6	31	41	34	11	50	A-6a
350+00	100'Rt	0.0-4.7	7	1	4	32	56	-	-	55	A-6a
352+50	BL	0.0-5.3	9	1	2	31	57	-	-	64	A-6a
355+00	100'Lt	0.0-3.5	2	3	52	18	25	-	-	18	A-4a
355+00	BL	0.0-4.1	11	4	19	26	40	32	11	37	A-6a
355+00	100'Rt	0.0-3.9	4	2	26	33	35	-	-	39	A-6a
357+50	BL	0.0-1.6	23	12	10	21	34	38	16	25	A-6b
360+00	100'Lt	0.0-5.4	16	1	5	38	40	30	11	47	A-6a
360+00	BL	0.0-5.1	8	1	1	38	52	37	12	61	A-6a
360+00	100'Rt	0.0-5.1	11	3	8	37	41	31	11	44	A-6a

RELOCATED USR 33 (SOUTHBOUND LANES)

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
335+00	50'Lt	0.0-3.6	16	5	17	30	32	30	11	31	A-6a
335+00	BL	0.0-2.8	13	3	16	35	33	31	11	34	A-6a
337+05	10'Lt	0.0-1.8	14	0	21	32	36	28	8	37	A-4a
340+00	25'Rt	0.0-3.0	49	7	12	15	17	26	6	8	A-2-4
		3.0-8.0	36	6	11	22	25	35	10	12	A-4a
		8.0-14.0	38	5	10	21	26	39	14	15	A-6a
		14.0-18.0	39	4	17	23	17	23	6	16	A-4a
		18.0-24.5	36	2	17	22	23	30	10	22	A-4a

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
345+00	40'Rt	0.0-5.0	32	2	14	23	29	21	7	15	A-4a
		5.0-10.0	34	2	13	22	29	NP	NP	19	A-4a
		10.0-13.0	33	3	13	21	30	38	13	21	A-6a
		13.0-14.5	20	1	24	27	28	38	10	23	A-4a
		14.5-19.5	28	3	22	27	20	27	8	16	A-4a
350+00	30'Rt	0.0-5.0	45	3	10	20	22	32	13	14	A-6a *
		5.0-10.0	25	5	18	27	25	32	13	15	A-6a
		10.0-14.0	30	2	16	23	29	35	14	17	A-6a
		14.0-19.0	15	4	26	30	25	26	9	16	A-4a
		19.0-24.0	61	3	11	13	12	24	5	21	A-1-b
		24.0-27.5	59	10	9	12	10	24	6	15	A-1-b
362+72	130'Lt	0.0-5.9	16	1	1	33	49	36	11	69	A-6a
365+05	BL	0.0-1.7	14	7	7	37	35	33	11	37	A-6a

PROPOSED IR 70

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
365+00	100'Lt	0.0-11.5	19	0	0	39	42	36	11	54	A-6a
365+00	CL	0.0-1.8	28	5	4	27	36	40	16	52	A-6b
367+50	100'Lt	0.0-4.6	18	2	1	46	33	32	11	37	A-6a
367+50	CL	0.0-4.6	26	1	1	28	44	41	17	58	A-7-6
367+50	100'Rt	0.0-1.3	13	12	15	33	27	28	6	29	A-4a
370+00	90'Lt	0.0-14.8	10	0	29	47	14	NP	NP	28	A-4a
370+00	CL	0.0-6.9	17	1	1	34	47	40	14	52	A-6a
370+00	100'Rt	0.0-5.2	28	3	2	26	41	38	12	55	A-6a
372+50	100'Lt	0.0-12.4	19	0	0	39	42	35	12	49	A-6a
372+50	CL	0.0-9.2	24	0	1	28	47	42	16	64	A-7-6
372+50	100'Rt	0.0-2.6	20	11	10	24	35	36	11	40	A-6a
375+00	100'Lt	0.0-17.1	11	0	3	66	20	NP	NP	32	A-4b
375+00	CL	0.0-12.6	10	0	0	41	49	36	13	51	A-6a
375+00	100'Rt	0.0-7.4	29	2	7	26	36	36	15	47	A-6a
376+00	100'Rt	0.0-16.1	10	0	0	57	24	NP	NP	25	A-4b
379+15	CL	1.0-3.0	24	0	0	35	41	38	11	35	A-6a
		3.0-4.5	0	1	13	68	18	NP	NP	25	A-4b
		4.5-10.0	24	25	33	- 18 -		NP	NP	13	A-3a
380+00	CL	0.0-4.0	43	8	10	17	22	33	12	15	A-6a
		4.0-8.0	(60	11	10	10	9	NP	NP	13)	
			CINDERS AND BRICKBATS								VISUAL
		8.0-12.5	(50	15	11	14	10	NP	NP	-)	
			CINDERS, BRICKBATS AND CONCRETE BLOCKS								VISUAL
382+75	CL	0.0-5.0	33	5	7	26	29	38	11	17	A-6a
		5.0-8.0	43	21	8	15	13	29	9	8	A-2-4
386+00	CL	0.0-6.0	(45	10	11	19	15	39	12	17)	
			CINDERS AND BRICKBATS								VISUAL
		6.0-9.0	19	4	23	40	14	NP	NP	15	A-4a
		9.0-14.0	30	1	9	27	33	40	14	22	A-6a
		14.0-18.0	23	4	10	28	35	40	12	23	A-6a
		18.0-22.5	34	3	9	25	29	41	15	25	A-6a
389+50	CL	0.0-5.0	(30	4	21	23	22	33	7	24)	
			BRICKBATS AND CINDERS								VISUAL
		5.0-10.5	(74	5	5	8	8	-	-	12)	
			BRICKBATS AND PAPER								VISUAL
		10.5-13.0	35	1	9	26	29	41	12	18	A-7-6
		13.0-18.0	28	1	31	21	21	29	11	19	A-6a
		18.0-23.0	0	1	39	25	35	30	11	19	A-6a
392+30	CL	0.0-5.0	61	11	10	7	11	30	10	8	A-2-4 *
		5.0-7.0	44	12	13	13	18	31	10	7	A-2-4 *
		7.0-9.0	36	10	16	19	19	29	7	9	A-4a
395+00	CL	0.0-0.8	25	15	19	22	19	NP	NP	19	A-4a
400+00	100'Rt	0.0-1.3	4	5	29	21	41	NP	NP	61	A-4a
402+50	CL	0.0-2.6	7	2	9	45	37	41	20	59	A-7-6
404+70	135'Rt	0.0-2.5	45	18	11	10	16	24	5	5	A-2-4
405+50	CL	0.0-1.2	17	22	19	24	18	NP	NP	20	A-4a
406+50	100'Rt	0.0-6.5	9	4	10	39	38	27	11	62	A-6a
407+50	CL	0.0-2.7	14	3	12	37	34	26	7	42	A-4a
408+00	100'Rt	0.0-1.5	17	7	12	34	30	31	11	31	A-6a
410+00	CL	0.0-5.1	19	11	18	24	28	27	9	25	A-4a
410+00	75'Rt	0.0-0.7	18	11	12	30	29	34	13	31	A-6a

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
413+30	CL	0.0-5.0	29	5	8	29	29	38	18	13	A-6b
		5.0-11.0	28	1	9	27	35	44	23	21	A-7-6
		11.0-16.0	17	3	21	33	26	29	10	21	A-4a
414+50	100'Rt	0.0-3.3	12	3	9	28	48	52	27	79	A-7-6
415+00	CL	0.0-2.6	13	3	9	16	50	72	50	94	A-7-6
415+75	80'Rt	0.0-2.5	11	3	14	37	35	49	24	63	A-7-6
416+30	CL	0.0-5.0	59	8	7	13	13	33	13	11	A-2-6 *
		5.0-8.5	28	17	11	24	20	32	10	7	A-4a

GRANDVIEW AVENUE INTERCHANGE

RELOCATED GRANDVIEW AVENUE

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
90+00	30'Rt	0.0-2.0	(34	11	12	19	24	36	11	19)	
			CINDERS AND SOIL								VISUAL *
		2.0-4.5	46	5	9	15	25	34	14	16	A-6a *
94+30	CL	0.0-2.0	(33	8	9	20	30	43	16	20)	
			CINDERS AND SOIL								VISUAL
		2.0-6.0	51	2	11	14	12	27	3	17	A-2-4
99+45	CL	0.0-2.0	(54	6	7	14	18	42	13	23)	
			CINDERS AND SOIL								VISUAL
		2.0-6.0	34	1	11	24	30	41	17	21	A-7-6
		6.0-10.0	32	2	15	28	23	37	17	22	A-6b
		10.0-14.0	66	5	7	13	9	24	4	13	A-1-b
103+75	30'Rt	0.0-2.0	(21	9	21	24	25	33	10	20)	
			CINDERS, GLASS, AND PAPER								VISUAL
		2.0-5.0	31	1	14	19	35	36	15	19	A-6a
		5.0-11.0	61	2	8	16	13	26	8	11	A-2-4
109+50	CL	0.0-6.0	35	9	15	20	21	28	10	9	A-4a
		6.0-9.0	68	2	12	11	7	23	6	14	A-1-b
112+00	30'Lt	0.0-4.0	42	13	10	15	15	27	6	6	A-2-4
		4.0-7.5	80	6	3	6	5	25	6	5	A-1-a
112+00	50'Rt	0.0-4.0	19	2	24	24	31	23	11	15	A-6a
		4.0-8.0	46	3	16	17	18	29	11	16	A-2-6
		8.0-12.0	0	2	30	27	41	32	13	21	A-6a
		12.0-14.0	18	2	12	28	40	44	22	22	A-7-6
		14.0-16.0	29	3	21	21	26	32	13	17	A-6a
		16.0-20.0	0	2	34	28	36	29	10	26	A-4a
		20.0-24.0	14	2	32	30	22	26	9	24	A-4a
115+00	80'Lt	0.0-4.5	64	10	7	10	9	31	8	6	A-2-4
115+00	CL	0.0-4.0	45	18	12	13	12	22	6	6	A-1-b
		4.0-8.0	66	12	6	9	7	21	4	7	A-1-b
		8.0-10.5	40	8	6	20	26	30	11	28	A-6a
		10.5-15.0	35	2	4	22	37	46	17	28	A-7-5
		15.0-19.0	22	2	7	27	42	46	15	33	A-7-5
120+00	50'Lt	0.0-5.0	51	7	10	15	17	32	10	8	A-2-4
		5.0-9.0	46	5	10	18	21	33	11	8	A-6a
		9.0-11.0	26	1	6	29	38	42	13	22	A-7-6
		11.0-14.0	32	0	19	24	25	31	9	20	A-4a
		14.0-17.0	29	1	18	24	28	32	12	22	A-6a
122+00	50'Rt	0.0-2.5	35	1	10	24	30	33	10	19	A-4a
		2.5-4.0	37	7	9	13	29	34	13	20	A-6a
		4.0-9.0	47	7	7	19	20	36	15	17	A-6a
		9.0-14.0	48	0	10	22	20	30	11	23	A-6a
125+00	60'Rt	0.0-2.0	60	8	6	13	13	27	8	6	A-2-4
		2.0-6.0	38	2	7	21	32	43	20	21	A-7-6
		6.0-9.0	41	3	5	22	29	43	20	26	A-7-6
		9.0-14.0	25	1	10	28	36	40	19	22	A-6b
		14.0-19.0	50	1	10	21	18	28	10	28	A-4a
130+40	30'Rt	0.0-2.0	(49	9	10	17	15	29	6	6)	
			GRAY CINDERS AND SOIL								VISUAL *
		2.0-7.0	56	6	7	10	21	41	22	16	A-2-7 *

RAMP A

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
389+00	BL	0.0-7.0	(64	7	6	10	13	-	-	12)	
			PAPER, METAL, WOOD, AND SOME SOIL								VISUAL
		7.0-13.0	(54	6	10	14	16	-	-	32)	
			PAPER AND SOIL WITH GARBAGE								VISUAL
		13.0-15.0	0	2	4	40	54	49	16	24	A-7-6
		15.0-21.0	14	1	4	37	44	41	12	27	A-7-6
		21.0-26.5	73	6	11	- 10 -		NP	NP	9	A-1-a

RAMP B

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
385+00	CL	0.0-5.0	(25	19	20	17	19	28	8	14)	
			BRICKBATS, CINDERS, GRAVEL, AND WOOD								VISUAL
		5.0-10.0	(37	11	31	11	10	-	-	13)	
			CINDERS, SOIL, BRICKBATS, WOOD, GRAVEL, AND GARBAGE								VISUAL
		10.0-16.0	(47	6	8	16	23	39	15	21)	
			BRICKS, SAND, AND SOIL								VISUAL
		16.0-18.0	17	8	13	28	34	35	13	23	A-6a
		18.0-23.0	17	2	6	35	40	41	15	26	A-7-6
389+50	BL	0.0-6.0	(56	8	9	14	13	NP	NP	20)	
			RAGS, GARBAGE, PAPER, AND SOIL								VISUAL
		6.0-14.0	(35	16	16	19	14	-	-	19)	
			PAPER, WOOD, BRICKBATS, RAGS, AND SOIL								VISUAL
		14.0-16.0	0	1	5	38	56	48	19	33	A-7-6
		16.0-21.0	0	0	4	46	50	43	17	26	A-7-6
392+75	BL	0.0-5.0	34	4	18	28	16	28	9	8	A-4a *
		5.0-10.0	9	4	23	41	23	30	10	16	A-4a
		10.0-12.0	51	4	10	17	18	36	14	16	A-6a
		12.0-14.0	28	2	14	29	27	36	13	16	A-6a
		14.0-16.0	0	3	30	41	26	27	8	19	A-4a
		16.0-19.5	39	5	19	24	13	23	6	18	A-4a

RAMP C

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
383+35	75'Lt	0.0-3.0	43	6	8	20	23	37	13	14	A-6a
		3.0-9.0	40	7	7	21	25	34	15	13	A-6a
		9.0-11.0	20	2	5	32	41	41	25	26	A-7-6
		11.0-16.0	12	2	15	32	39	38	12	13	A-6a
		16.0-21.0	16	2	15	29	38	36	12	30	A-6a
		21.0-25.0	55	1	8	16	20	37	12	30	A-6a
384+00	70'Rt	0.0-2.0	19	6	13	37	25	23	8	15	A-4a
		2.0-7.0	0	1	10	57	32	24	5	16	A-4b
		7.0-11.0	0	1	11	55	33	23	2	17	A-4b
		11.0-14.0	0	3	38	31	28	24	8	19	A-4a
		14.0-20.5	75	2	8	9	6	23	5	9	A-1-a
386+00	CL	0.0-6.0	(35	13	13	21	18	32	11	11)	
			BRICKBATS, STONE FRAGMENTS, WOOD, AND SOIL								VISUAL
		6.0-8.0	22	3	16	30	29	34	11	21	A-6a
		8.0-12.0	0	21	50	17	12	NP	NP	15	A-3a
		12.0-16.0	7	24	41	- 28 -		NP	NP	21	A-3a
		16.0-20.5	55	11	18	- 15 -		NP	NP	11	A-1-a
391+50	BL	0.0-5.0	30	11	11	26	22	35	11	8	A-6a *
		5.0-9.5	30	14	9	24	23	31	8	6	A-4a
395+09	27'Lt	0.0-1.3	11	2	13	45	29	36	15	51	A-6a

RAMP D

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
389+00	BL	0.0-5.0	0	9	24	55	12	NP	NP	19	A-4b
		5.0-7.0	9	9	21	54	7	NP	NP	17	A-4b
		7.0-11.0	0	1	36	32	31	26	12	17	A-6a
		11.0-15.0	22	16	31	15	16	25	6	19	A-2-4
		15.0-21.0	61	5	18	8	8	24	4	12	A-1-a

RELOCATED SCIOTO RIVER

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
49+30	CL	0.0-6.0	37	4	9	29	21	NP	NP	8	A-4a
52+00	CL	0.0-4.2	38	3	9	24	26	36	11	19	A-6a
61+75	CL	0.0-2.0	42	16	11	17	14	27	7	15	A-2-4
		2.0-4.5	77	5	5	6	6	31	8	20	A-2-4
70+00	CL	0.0-2.5	28	40	15	- 16 -		NP	NP	7	A-1-b
		2.5-5.5	39	10	9	20	22	NP	NP	20	A-4a
78+00	CL	0.0-4.0	47	9	9	17	18	32	12	15	A-2-6
		4.0-6.5	63	8	8	12	9	NP	NP	4	A-1-b

DRIVE SAMPLE SOIL TEST DATA

RELOCATED USR 33 (SOUTHBOUND LANES)

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
354+17	37'Rt	5.3-5.8	GRAY SAND		-	-	-	-	-	19	VISUAL
355+23	24'Rt	2.5-3.5	6	3	12	41	38	37	14	17	A-6a
		5.0-6.0	5	3	14	37	41	36	11	17	A-6a
		7.5-8.5	6	3	15	36	40	34	11	16	A-6a
		10.0-11.0	0	1	10	43	46	39	11	17	A-6a
		12.5-13.5	0	1	11	48	40	40	12	20	A-6a
		15.0-16.0	0	0	7	45	48	44	20	15	A-7-6
		17.5-18.5	0	0	18	44	38	35	11	20	A-6a
		20.0-21.0	0	2	29	40	29	29	7	20	A-4a
		22.5-23.5	0	15	45	19	21	NP	NP	22	A-4a
		25.0-26.0	0	21	48	16	15	NP	NP	46	A-3a
		30.0-31.0	60	13	11	- 16 -		NP	NP	6	A-1-b

RELOCATED GRANDVIEW AVENUE

STATION & OFFSET		DEPTH FROM TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
99+36	30'Rt	2.5-3.5	14	11	12	27	36	37	11	24	A-6a
		5.0-6.0	59	2	8	15	16	33	12	22	A-2-6
		7.5-8.5	49	10	11	20	10	NP	NP	12	A-2-4
		10.0-10.5	56	12	10	15	7	NP	NP	7	A-1-b
		15.0-16.0	52	18	9	14	7	NP	NP	11	A-1-b
		17.5-17.7	(26	10	14	27	23	-	-	7)	
			GRAY SANDY GRAVELLY SILT WITH BOULDERS								VISUAL
		20.0-21.0	29	8	16	24	23	23	7	8	A-4a
		25.0-26.0	0	2	3	28	67	44	23	27	A-7-5
		30.0-30.6	32	11	10	13	34	43	24	26	A-7-6
		35.0-36.0	46	12	8	8	26	45	27	32	A-7-5
		40.0-41.0	31	8	13	15	33	45	28	14	A-7-6
100+60	32'Lt	2.5-3.5	21	6	13	27	33	42	22	23	A-7-6
		5.0-6.0	35	5	12	25	23	32	12	21	A-6a
		7.5-8.5	47	8	11	23	11	NP	NP	14	A-2-4
		10.0-11.0	53	12	10	17	8	NP	NP	8	A-1-b
		12.5-12.9	56	11	10	16	7	NP	NP	7	A-1-b
		15.0-15.2	72	8	7	- 13 -		NP	NP	3	A-1-a
		17.5-18.0	64	15	10	- 11 -		NP	NP	8	A-1-a
		25.0-26.0	49	4	3	7	37	66	42	35	A-7-6
118+00	CL	5.0-6.0	24	8	13	28	27	31	12	17	A-6a
		7.5-8.5	25	10	5	30	30	36	15	21	A-6a
		10.0-11.0	59	10	9	12	10	23	6	8	A-1-b
		12.5-13.0	73	9	6	6	6	NP	NP	8	A-1-a
		15.0-15.5	53	17	11	11	8	NP	NP	21	A-1-b
		17.5-18.0	63	11	7	11	8	NP	NP	4	A-1-b
		20.0-21.0	32	25	21	13	9	NP	NP	15	A-1-b
		22.5-23.0	66	10	8	10	6	NP	NP	6	A-1-b
		25.0-25.5	50	38	5	- 7 -		NP	NP	12	A-1-a
		30.0-31.0	75	10	4	7	4	NP	NP	10	A-1-a
		35.0-36.0	71	15	6	- 8 -		NP	NP	10	A-1-a
		40.0-41.0	0	1	78	- 21 -		NP	NP	32	A-3a
		45.0-46.0	0	1	86	- 13 -		NP	NP	20	A-3a
		50.0-51.0	0	1	87	- 12 -		NP	NP	22	A-3a
		55.0-56.0	40	18	31	- 11 -		NP	NP	14	A-1-b

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1500-12-66

SOIL PROFILE
FRANKLIN COUNTY
FRA-70-10.83 N

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OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS, OHIO 43223

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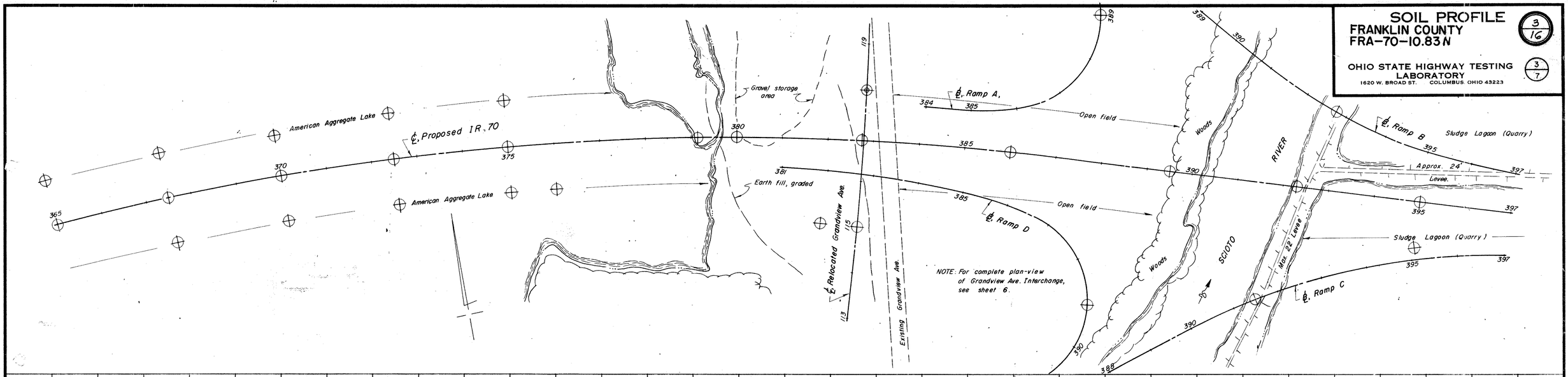

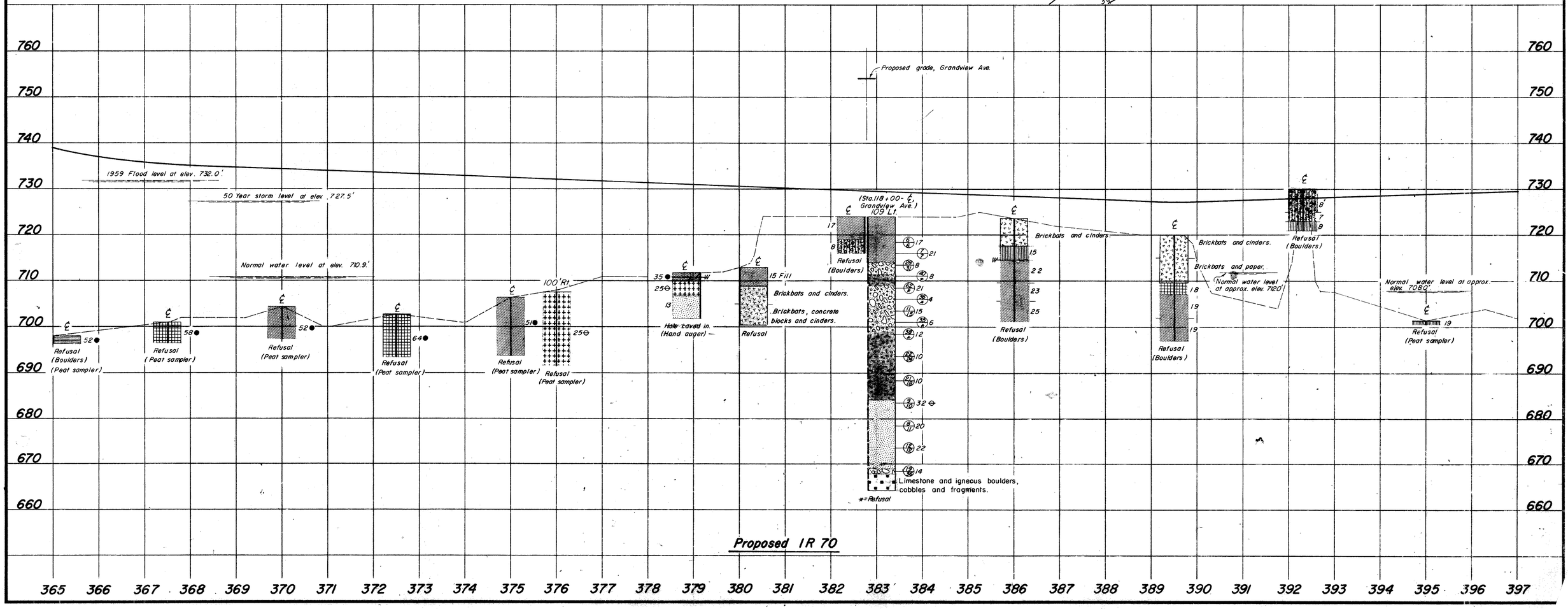

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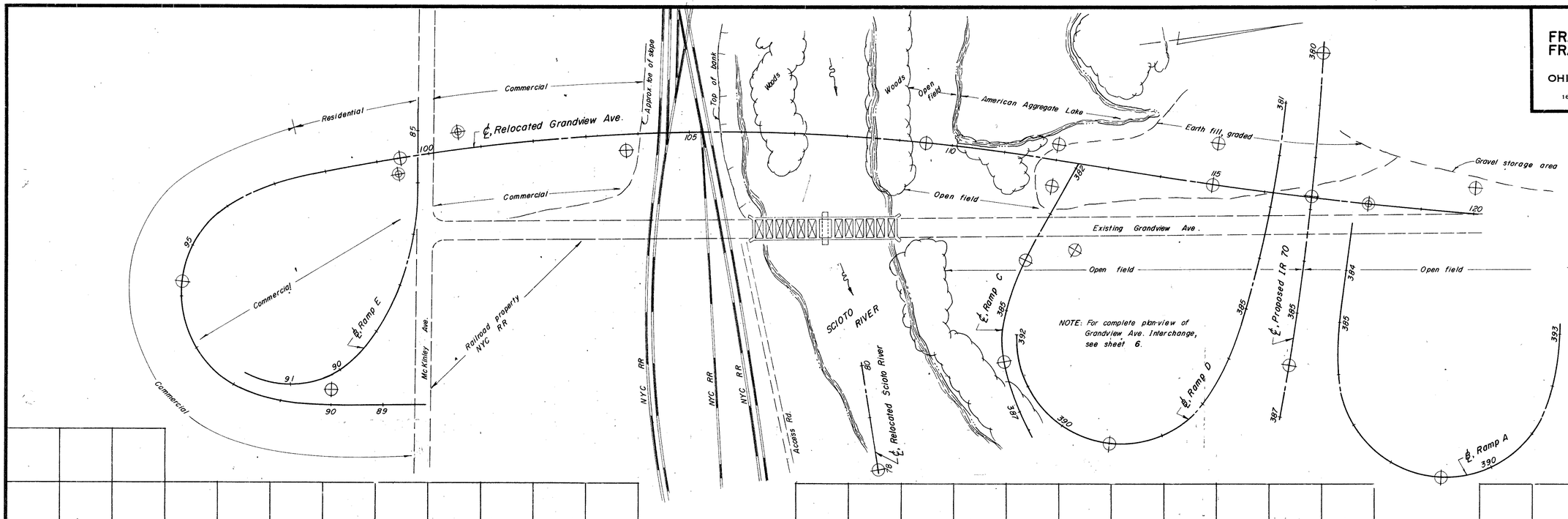
1500-12-66

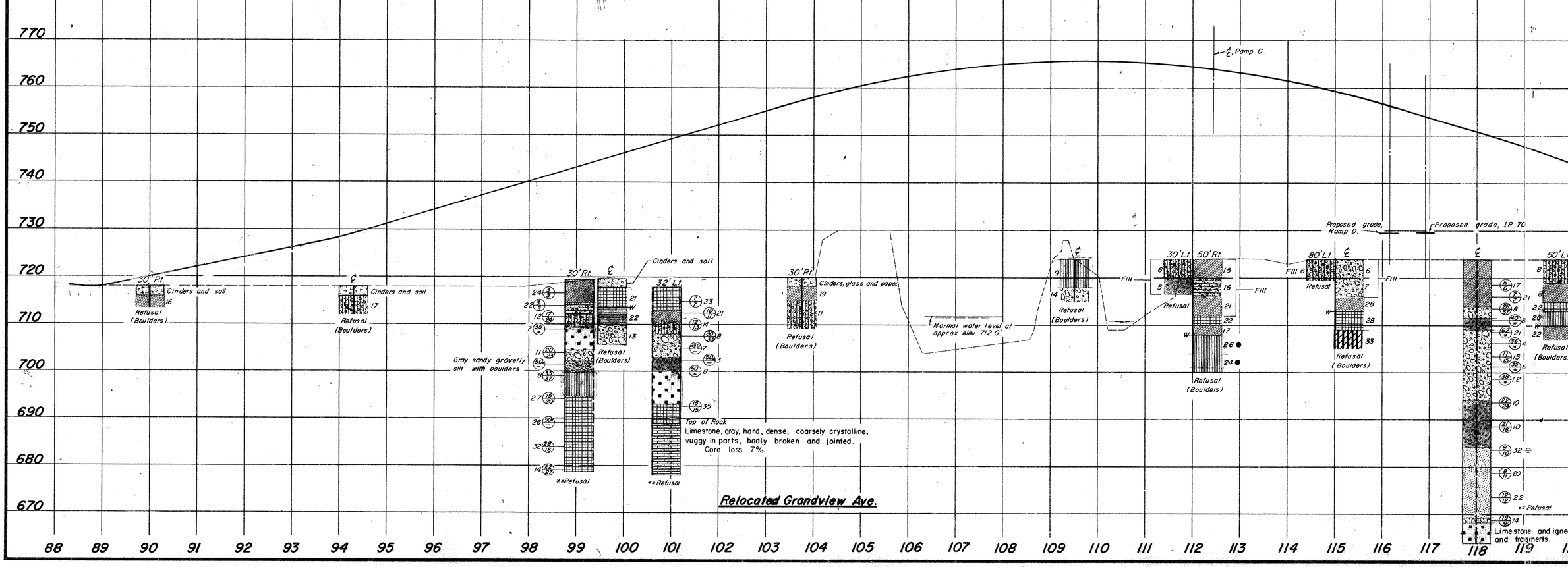
SOIL PROFILE

FRANKLIN COUNTY
FRA-70-10.83 N

(4/16)

OHIO STATE HIGHWAY TESTING LABORATORY (4/7)
1620 W. BROAD ST. COLUMBUS, OHIO 43223





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1000-12-66

SOIL PROFILE

FRANKLIN COUNTY
FRA-70-10.83 N

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OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS, OHIO 43223

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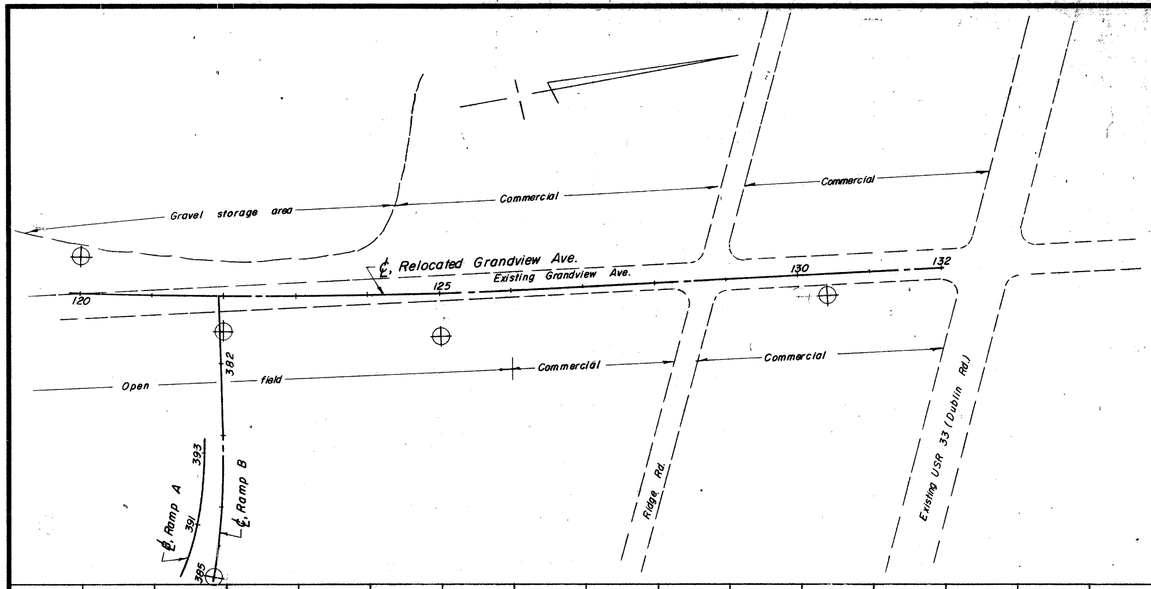

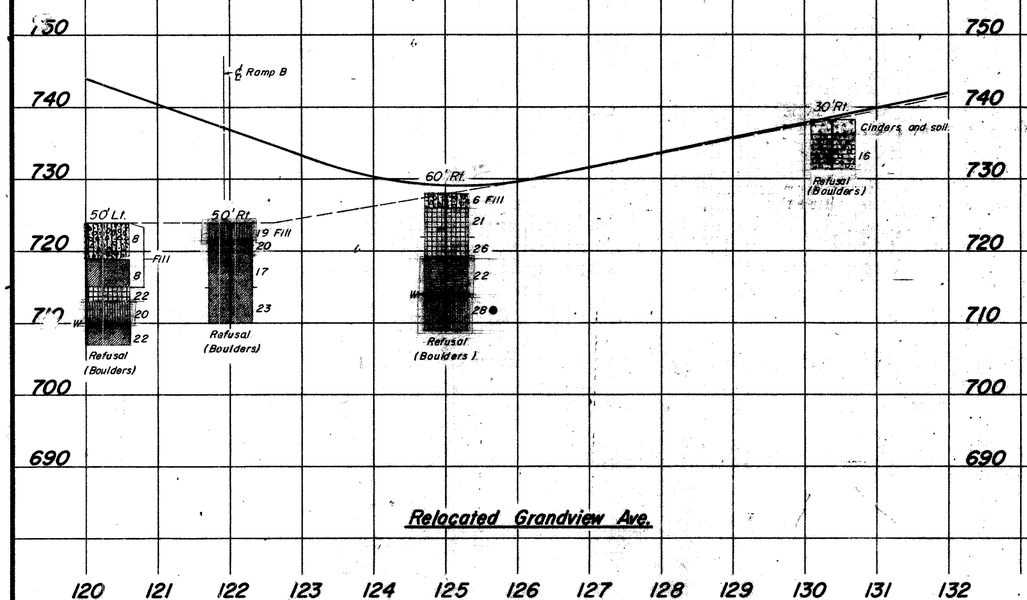

SOIL PROFILE
FRANKLIN COUNTY
FRA-70-10.83N

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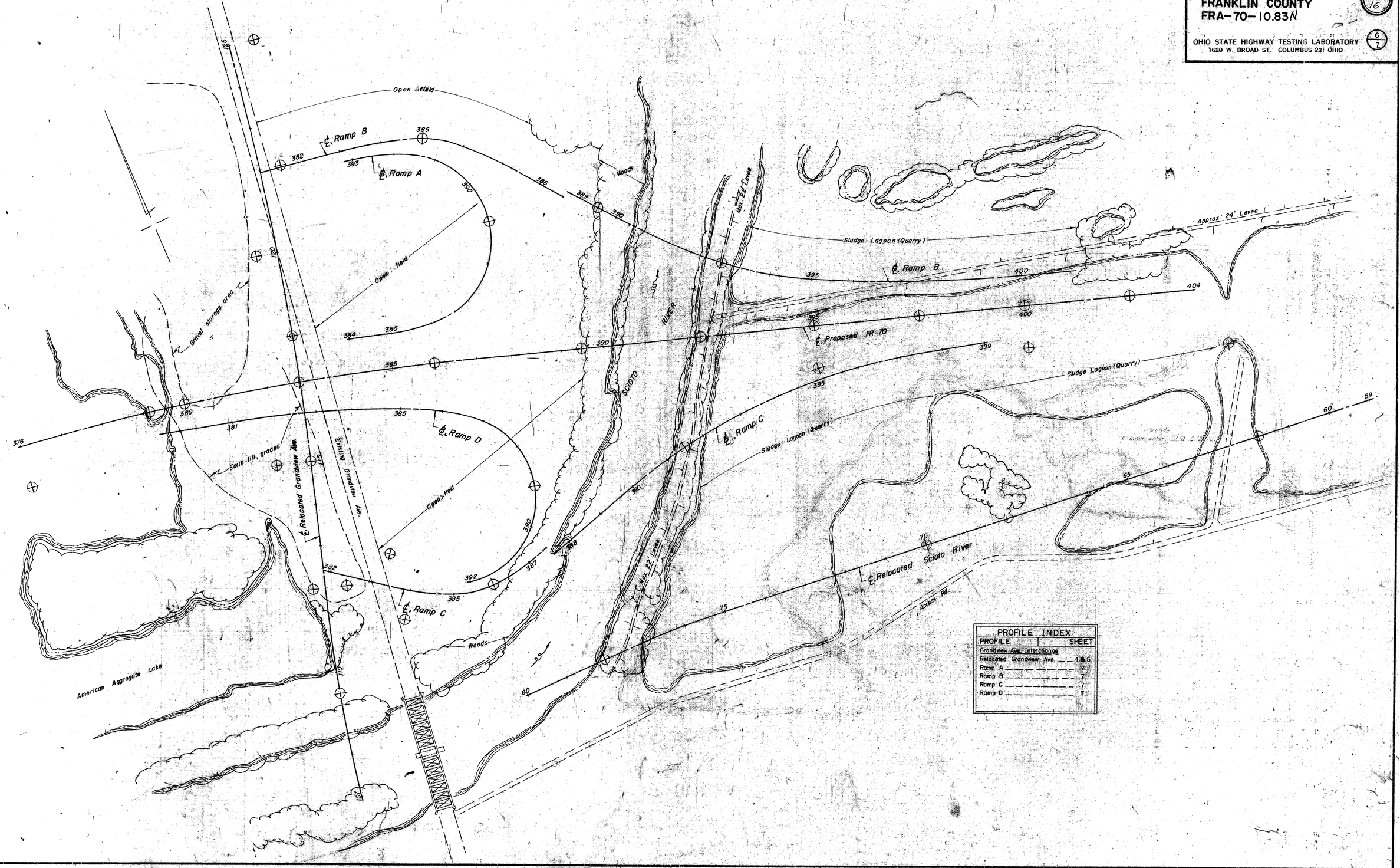
OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

(6/7)



PROFILE INDEX

PROFILE	SHEET
Grandview Ave. Interchange	
Relocated Grandview Ave.	4 & 5
Ramp A	7
Ramp B	7
Ramp C	7
Ramp D	7

SOIL PROFILE

FRANKLIN COUNTY
FRA-70-10.83N

(7/16)

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23. OHIO

(7/7)

Ramp A

℄ Relocated Grandview Ave.

(Sta. 386+00-℄ Proposed IR 70)

92' Rt.
Cinders and brickbats.
15
W
22
23
25
Refusal (Boulders)

(Sta. 385+00-℄ Ramp B)
42' Rt.
Brickbats, cinders, gravel, and wood.
Cinders, soil, brickbats, wood, gravel and garbage.
Bricks, sand, and soil.
23
W
26
Refusal (Boulders)

Paper, metal, wood, and some soil.
Paper and soil with garbage.
24
27
9
Refusal (Boulders)

Brickbats, cinders, gravel, and wood.
Cinders, soil, brickbats, wood, garbage, and gravel.
Bricks, sand, and soil.
23
W
26
Refusal (Boulders)

Ramp B

Rags, garbage, paper, and soil
Paper, wood, brickbats, and soil.
33
W
26
Refusal (Boulders)

Normal water level at approx. elev. 712.0'

8
16
16
16
19
W
18
Refusal (Boulders)

Proposed grade, IR 70

Normal water level at approx. elev. 708.0'

Ramp C

℄ Relocated Grandview Ave.

(Sta. 112+00-50' Rt. Grandview Ave.)
23' Rt.
15
16
21
22
W
26
24
Refusal (Boulders)
Fill

75' Lt.
14
13
26
13
W
30
Refusal (Boulders)

70' Rt.
15
16
17
19
W
9
Refusal (Boulders)

Brickbats, stone fragments, wood, and soil.
15
21
W
11
Refusal (Boulders)

Normal water level at approx. elev. 712.0'

8
6
Refusal (Boulders) (Hole caved in)

Normal water level at approx. elev. 708.0'

27' Lt.
51
Refusal (Peat sampler)

Ramp D

Proposed grade, Relocated Grandview Ave.

Proposed grade, IR 70

(Sta. 382+75-℄ Proposed IR 70)
72' Lt.
17
8
Refusal (Boulders)

(Sta. 386+00-℄ Proposed IR 70)
113' Lt.
Cinders and brickbats.
15
W
22
23
25
Refusal (Boulders)

19 Fill
17
17
W
19
12
Refusal (Boulders)

(Sta. 386+00-℄ Ramp C)
Lt.
Brickbats, stone fragments wood, and soil.
21
15
W
21
11
Refusal (Boulders)

TE - 118
600 - 4 - 66

8
16
1
2

FRANKLIN COUNTY
FRA-70 -(10.83N)

GEOLOGY OF THE SITE
THE STRUCTURE SITE IS LOCATED IN THE GLACIATED MISSISSIPPI VALLEY PLAIN REGION, ON MAN-MADE FILL ADJACENT TO THE SCIOTO RIVER, IN AN AREA WHERE MODERATELY DEEP GLACIAL-DERIVED SOILS OVERLIE LIMESTONE BEDROCK, OF DEVONIAN AGE.

EXPLORATION
THE EXPLORATION CONSISTED OF ONE DRIVE SAMPLE BORING AND ONE DRIVE SAMPLE-CORE BORING, MADE BETWEEN JULY 11 AND 13, 1967.

INVESTIGATIONAL FINDINGS
THE BORINGS ENCOUNTERED UNSTRATIFIED INTERVALS OF LOOSE AND VERY DENSE SANDY GRAVELS, SANDS, SILTS AND NUMEROUS BOULDERS TO BEDROCK SURFACE ENCOUNTERED IN BORING B-4 AT 29-FOOT DEPTH, ELEVATION 689 FEET. BORING B-1, WAS TERMINATED AT 42-FOOT DEPTH, ELEVATION 679 FEET, AFTER PENETRATING IN EXCESS OF 30 FEET OF MATERIAL REQUIRING IN EXCESS OF 30 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST. BORING B-4, WAS TERMINATED AT 40-FOOT DEPTH, ELEVATION 678 FEET AFTER PENETRATING 11 FEET BELOW BEDROCK SURFACE.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — 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.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Boulders
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8"	3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm

LOG OF BORING

Date Started 7-11-67 — Sampler Type SS — Dia. 1 3/8" — Water Elev. ____
Date Completed 7-11-67 — Casing: Length 20' — Dia. 3 1/2"
Boring No. B-1 — Station & Offset 99+36, 30' Rt. (Rear Abutment) — Surface Elev. 719.5'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
719.5	0														
717.0	2														
	4	3/3			Gray Sandy Clay	1	14	11	12	27	36	37	11	24	A-6a
714.5	6	3/3			Gray Clayey Gravel	2	59	2	8	15	16	33	12	22	A-2-6
712.0	8	17/24			Gray Silty Sandy Gravel with Boulders	3	49	10	11	20	10	NP	NP	12	A-2-4
709.5	10	35/*			Gray Silty Sandy Gravel with Boulders	4	56	12	10	15	7	NP	NP	7	A-1-b
707.0	12				No Sample Recovered - Boulders(Driller's Description)		V	I		S		U	A	L	
704.5	14														
	16	20/23			Brown Silty Sandy Gravel	5	52	18	9	14	7	NP	NP	11	A-1-b
702.0	18														
699.5	20	50* (0.2)			Gray Sandy Gravelly Silt with Boulders	6	26	10	14	27	23	-	-	7	-
	22	35/37			Gray Sandy Gravelly Silt	7	29	8	16	24	23	23	7	8	A-4a
694.5	24														
	26	15/20			Gray Clay	8	0	2	3	28	67	44	23	27	A-7-6
689.5	28														
	30	50* (0.6)			Brown Sandy Gravelly Clay	9	32	11	10	13	34	43	24	26	A-7-6
684.5	34														
	36	28/16			Brown Clayey Sandy Gravel	10	46	12	8	8	26	45	27	32	A-7-6
	38														
679.5	40				BOTTOM OF BORING										
678.5		22/7"			Brown Sandy Gravelly Clay	11	31	8	13	15	33	45	28	14	A-7-6

*Refusal

LOG OF BORING

Date Started 7-12-67 — Sampler Type SS — Dia. 1 3/8" — Water Elev. ____
Date Completed 7-13-67 — Casing: Length 27' — Dia. 3 1/2"
Boring No. B-4 — Station & Offset 100+60, 32' Lt. (Forward Abutment) — Surface Elev. 718.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
718.0	0														
715.5	2														
	4	7/7			Brown Sandy Gravelly Clay	1	21	6	13	27	33	42	22	23	A-7-6
713.0	6	10/11			Brown Sandy Gravelly Clay	2	35	5	12	25	23	32	12	21	A-6a
710.5	8														
	10	12/13			Brown Silty Sandy Gravel	3	47	8	11	23	11	NP	NP	14	A-2-4
708.0	12	30/33			Gray Silty Sandy Gravel	4	53	12	10	17	8	NP	NP	8	A-1-b
705.5	14														
	16	30* (0.4)			Gray Silty Sandy Gravel	5	56	11	10	16	7	NP	NP	7	A-1-b
703.0	18	50* (0.2)			Gray Silty Gravel with Boulders	6	72	8	7	13	-	NP	NP	3	A-1-a
700.5	20	50/*			Gray Silty Sandy Gravel	7	64	15	10	11	-	NP	NP	8	A-1-a
698.0	22				No Sample Recovered - Boulders(Driller's Des.)		V		I		S	U	A	L	
	24														
693.0	26	15/15			Brown Clay with Stone Fragments	8	49	4	3	7	37	66	42	35	A-7-6
689.0	28														
	30		1.0	0.0	TOP OF ROCK										
	32														
	34		4.2	0.8	Limestone, gray, hard, dense, coarsely crystalline, vuggy in part, badly broken and jointed. Core Loss 7%.										
	36														
	38		5.0	0.0											
678.0	40				BOTTOM OF BORING										

*Refusal

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

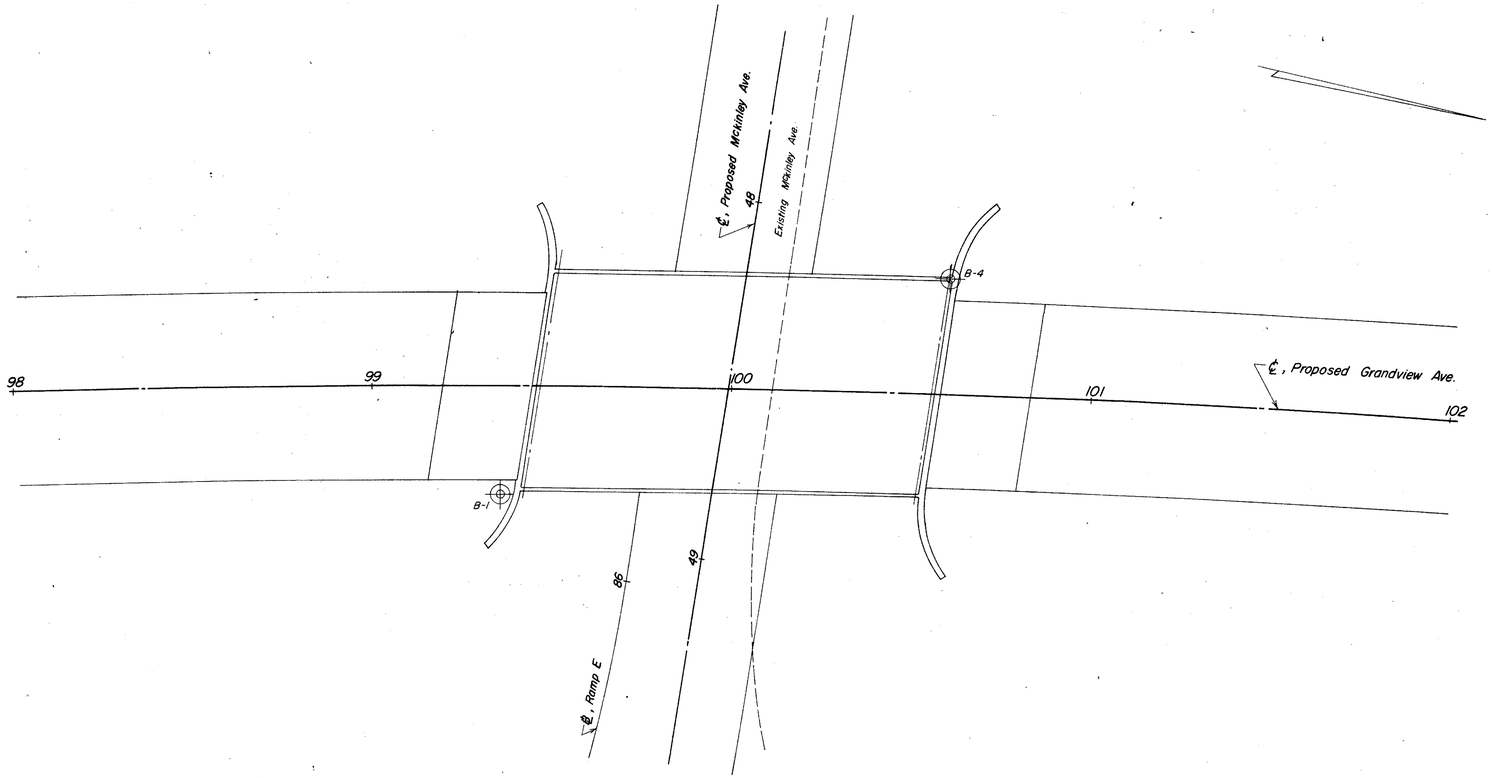
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. FRA-
RELOC. GRANDVIEW AVE. OVER McKINLEY AVE.
SEC. FRA-70 -(10.83N)

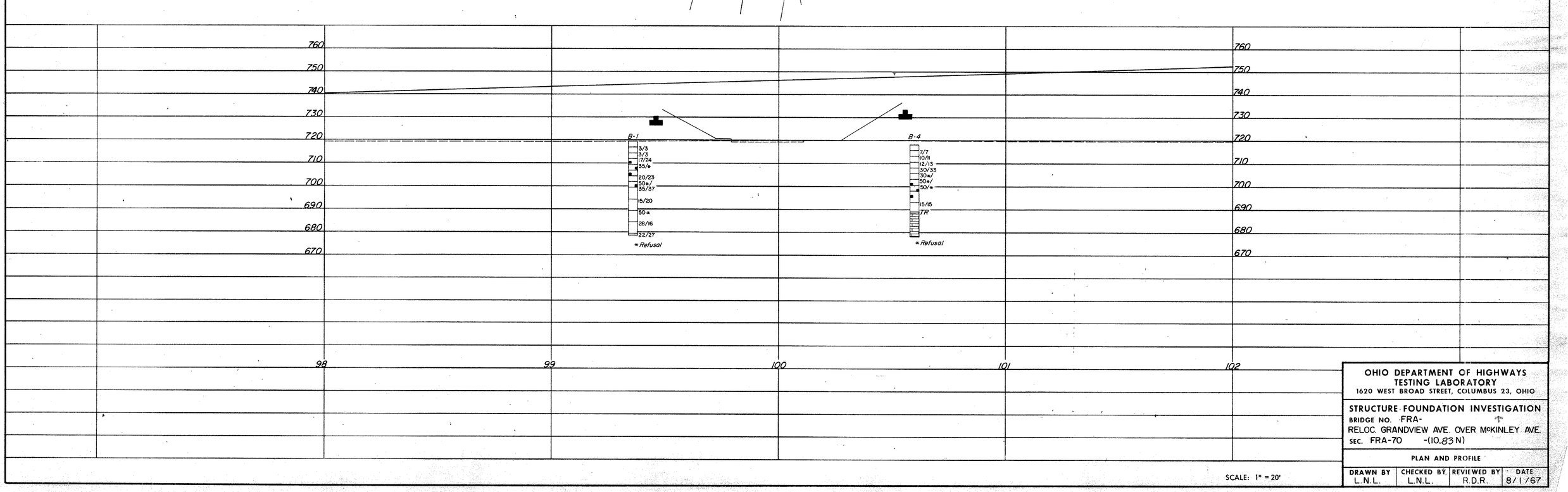
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	8/1/67

TE - 119
1000 - 4 - 66

9
16
2

FRA-70 -(10.83 N)





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. FRA-
RELOC. GRANDVIEW AVE. OVER McKINLEY AVE.
SEC. FRA-70 -(10.83 N)

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
L.N.L.	L.N.L.	R.D.R.	8/1/67

TE - 118
600 - 4 - 66

10
16
1
4

FRA-70 —(10.83N)

GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED IN THE GLACIATED MISSISSIPPI VALLEY PLAIN REGION, ON THE TERRACED PORTION OF THE SCIOTO RIVER AND OVER THE SCIOTO RIVER, IN AN AREA WHERE MODERATELY DEEP TO SHALLOW GLACIAL-DERIVED SOILS OVERLIE LIMESTONE BEDROCK, OF DEVONIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF FOUR DRIVE SAMPLE-CORE BORINGS, MADE BETWEEN JULY 13 AND AUGUST 22, 1967, AND THREE DRIVE ROD PENETRATION TESTS, MADE ON JULY 11 AND 12, 1967.

INVESTIGATIONAL FINDINGS

THE BORINGS ENCOUNTERED UNSTRATIFIED INTERVALS OF LOOSE AND DENSE SANDY GRAVELS, SANDS, SILTS, AND BOULDERS TO IRREGULAR BEDROCK SURFACE, ENCOUNTERED AT 21 AND 42-FOOT DEPTHS, ELEVATIONS 685 AND 683 FEET, AT THE SECOND AND FOURTH PIER LOCATIONS, AND AT 64-FOOT DEPTH, ELEVATION 638 FEET, AT THE THIRD PIER. BORING B-6, AT THE FIRST PIER DID NOT ENCOUNTER BEDROCK SURFACE, AND WAS TERMINATED AT 40-FOOT DEPTH, ELEVATION 689 FEET, AFTER PENETRATING 14 FEET OF BOULDERS. BORINGS B-8, B-9, AND B-11 WERE TERMINATED AT 31 TO 71-FOOT DEPTHS, ELEVATIONS 675 TO 629 FEET, AFTER PENETRATING 8 AND 10 FEET BELOW BEDROCK SURFACE.

THE ROD SOUNDINGS ENCOUNTERED GRADUAL, GENERALLY ERRATIC INCREASE IN PENETRATION RESISTANCE WITH INCREASE IN DEPTH AND WERE TERMINATED UPON ENCOUNTER WITH REFUSAL AND NEAR-REFUSAL TO PENETRATION AT 27 TO 36-FOOT DEPTHS, ELEVATIONS 693 TO 688 FEET, CONSIDERED TO BE VERY DENSE MATERIALS OR BOULDERS, AS REVEALED BY THE BORINGS.

NO FREE WATER WAS ENCOUNTERED IN ANY OF THE ROD SOUNDING HOLES.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- *TR* Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y 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.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z Indicates Final Measurement of Penetration, in Inches.
- W— Indicates Free Water Elevation.
- ▼— Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Boulders
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8"	3" / 2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)		0.074mm (No. 200 sieve)	0.005mm

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. FRA-
RELOC. GRANDVIEW AVE OVER SCIOTO RIVER, N.Y.C. RR and C.C.C. & ST. L. RR
SEC. FRA-70 -(10.83N)

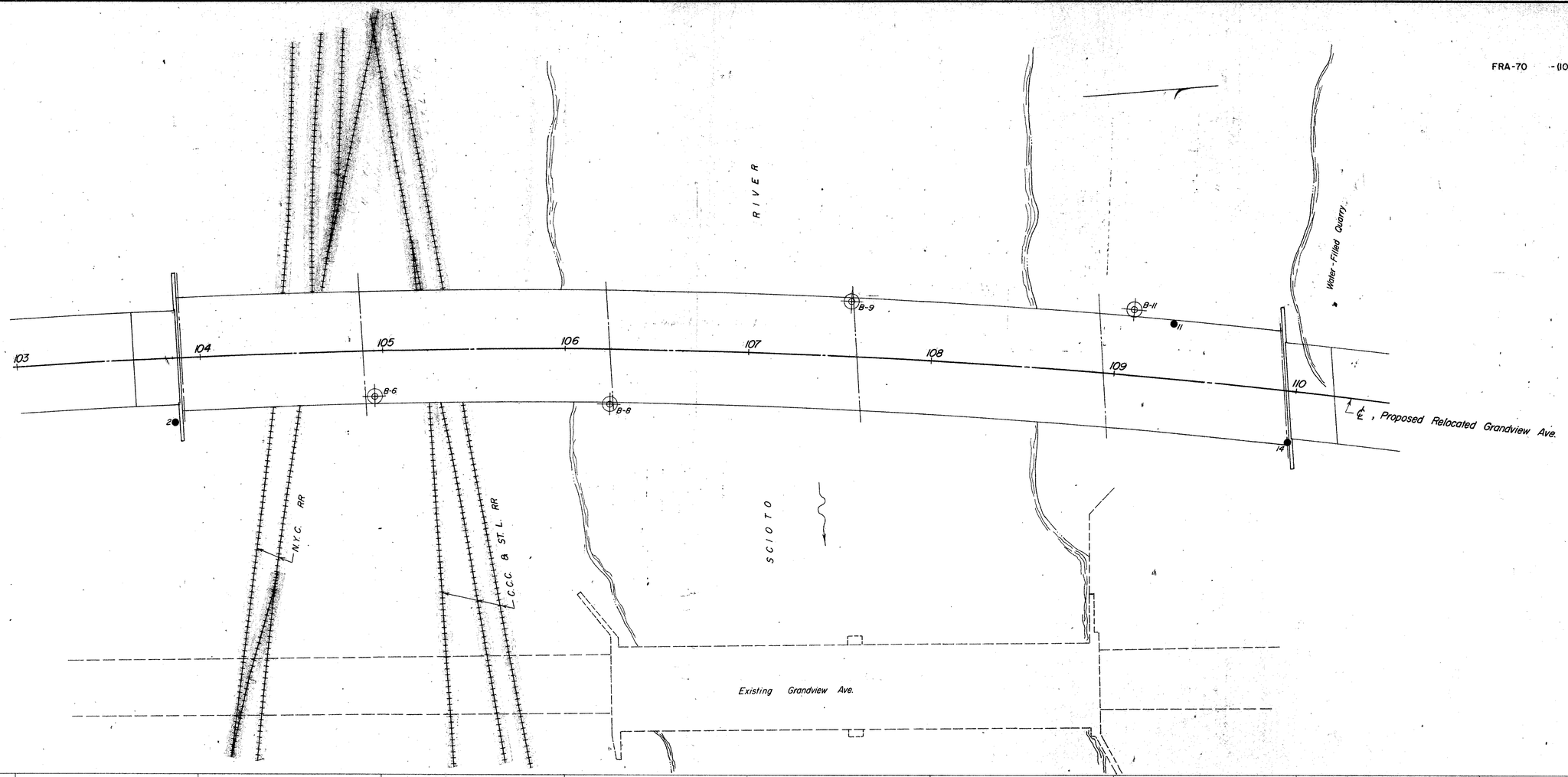
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	9/11/67

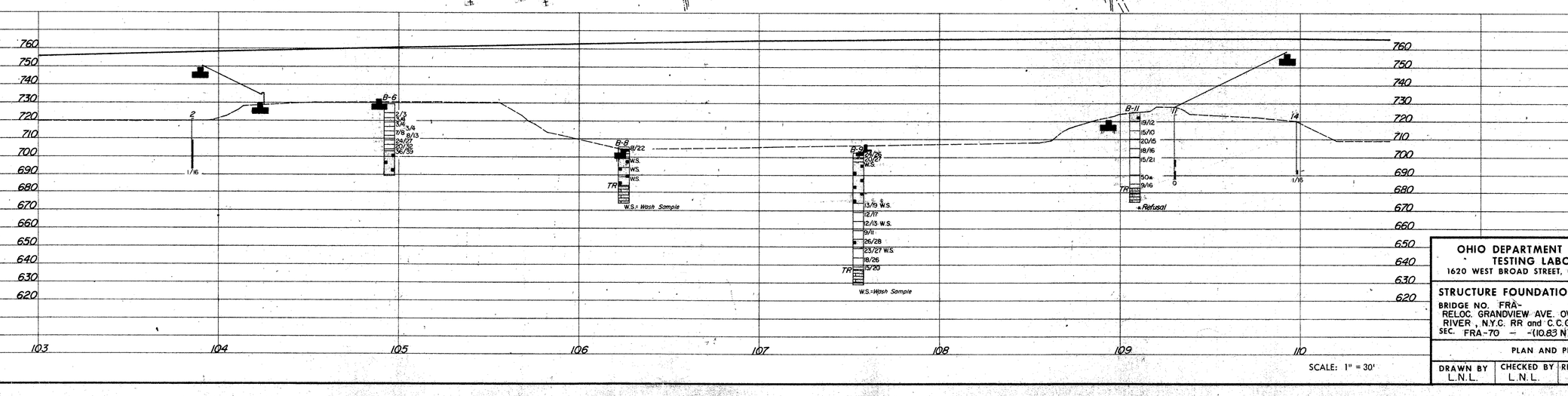
TE - 120
200 - 11 - 64

11/16

2/4

FRA-70 -(10.83N)





SCALE: 1" = 30'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. FRA-
RELOC. GRANDVIEW AVE. OVER SCIOTO RIVER, N.Y.C. RR and C.C.C. & ST. L. RR
SEC. FRA-70 — -(10.83 N)

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
L.N.L.	L.N.L.	R.D.R.	9/11/67

TE - 122
600 - 11 - 64

FRA-70 --(10.33N)

12/16 3/4

LOG OF BORING

Date Started 7-13-67 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 7-17-67 | Casing: Length 25' | Dia. 3 1/2" | Surface Elev. 729.4'
Boring No. B-6 | Station & Offset 104+95, 25' Rt.(1st Pier)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
729.4	0				Fill Material										
	2														
	4														
724.4	6	2/3			Gray Silty Gravelly Sand	1	25	27	20	16	12	NP	NP	14	A-2-4
721.9	8	3/4			Gray Gravelly Sand	2	32	41	20	- 7 -		NP	NP	38	A-1-b
719.4	10	3/4			Cinders - (Driller's Description)			V		I	S	U	A	L	
717.9	12														
716.9	14	3/4													
714.4	16	7/8			Brown Sandy Gravelly Silt	3	28	5	14	36	17	27	7	13	A-4a
711.9	18	8/13			Brown Silty Sandy Gravel	4	41	10	16	22	11	21	4	11	A-2-4
709.4	20	24/37			Brown Silty Sandy Gravel	5	46	14	12	18	10	27	10	6	A-2-4
706.9	22														
	24	20/32			Brown Silty Sandy Gravel	6	36	17	14	20	13	23	6	6	A-2-4
704.4	26	36/39			Brown Silt and Stone Fragments	7	68	8	7	10	7	NP	NP	3	A-1-b
703.4	28		1.3	3.7											
	30				Limestone boulders.										
	32		1.4	3.6											
	34														
	36														
	38		2.0	3.0											
689.4	40				BOTTOM OF BORING										

LOG OF BORING

Date Started 8-7-67 | Sampler Type SS | Dia. 1 3/8" | Water Elev. 709.4
Date Completed 8-16-67 | Casing: Length 70' | Dia. 3 1/2"
Boring No. B-9 | Station & Offset 107+55, 30' Lt. (3rd Pier) | Surface Elev. 709.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
709.4	0														
	2	24/26			Gray Silty Gravel	1	54	4	10	-32-		NP	NP	10	A-2-4
699.4	4	20/27			Gray Silty Gravel	2	63	1	3	-33-		NP	NP	4	A-2-4
696.9	6				Gray Silty Gravelly Sand (Wash Sample)	3	26	25	18	-31-		NP	NP	15	A-2-4
694.4	8														
691.9	10														
	12				No Sample Recovered - Boulders(Driller's Des.)		V	I		S	U	A	L		
689.4	14				No Sample Recovered - Boulders(Driller's Des.)		V	I		S	U	A	L		
686.9	16				No Sample Recovered - Boulders(Driller's Des.)		V	I		S	U	A	L		
684.4	18				No Sample Recovered - Boulders(Driller's Des.)		V	I		S	U	A	L		
	20														
	22														
679.4	24				No Sample Recovered - Boulders(Driller's Des.)		V	I		S	U	A	L		
	26														
674.4	28	13/19			Gray Silty Sand	4	9	50	19	-22-		NP	NP	22	A-3a
	30														
	32														
669.4	34	12/17			Brown Sandy Gravel	5	60	22	7	-11-		NP	NP	10	A-1-a
	36														
664.4	38	12/13			Brown Silty Gravelly Sand	6	16	49	14	-21-		NP	NP	27	A-1-b
	40														
	42														
659.4	44	9/11			Brown Sandy Gravel	7	66	18	9	- 7 -		NP	NP	18	A-1-a
	46														
654.4	48	26/28			Gray Sandy Gravel	8	68	27	4	-1-		NP	NP	28	A-1-a
	50														
	52														
649.4	54	23/27			Gray Silty Sand	9	0	66	20	-14-		NP	NP	17	A-1-b
	56														
644.4	58	18/26			Brown Silty Sand	10	0	67	16	-17-		NP	NP	13	A-1-b
	60														
639.4	62														
637.8	64	15/20			Brown Sand	11	1	82	12	- 5 -		NP	NP	11	A-1-b
	66		2.0	2.0	TOP OF ROCK										
	68				Limestone, gray, hard, dense, crystalline, slightly fossiliferous, badly broken and jointed. Core Loss 7%.										
	70		4.2	0.8											
629.4	72				BOTTOM OF BORING										

LOG OF BORING

Date Started 8-17-67 | Sampler Type SS | Dia. 1 3/8" | Water Elev. 709.7'
Date Completed 8-18-67 | Casing: Length 22' | Dia. 3 1/2"
Boring No. B-8 | Station & Offset 106+25, 30' Rt. (2nd Pier) | Surface Elev. 705.8'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
705.8	0	8/22			Gray Silty Sandy Gravel	1	55	9	10	19	7	NP	NP	13	A-2-4
	2														
	4														
699.7	6				Gray Silty Gravelly Sand With Boulders(Wash Sample)	2	16	57	15	-12-		NP	NP	23	A-1-b
	8														
	10														
694.7	12				Gray Silty Gravelly Sand with Boulders(Wash Sample)	3	19	50	15	-16-		NP	NP	24	A-1-b
	14														
689.7	16				Gray Silty Gravelly Sand with Boulders(Wash Sample)	4	17	47	18	-18-		NP	NP	29	A-1-b
	18														
684.7	20														
	22				TOP OF ROCK										
	24		4.6	0.4											
	26				Limestone, hard, gray, dense, vuggy, finely-crystalline, broken. Core Loss 5%.										
	28		4.9	0.1											
674.7	30				BOTTOM OF BORING										

LOG OF BORING

Date Started 8-22-67 | Sampler Type SS | Dia. 1 3/8" | Water Elev. —
Date Completed 8-22-67 | Casing: Length 40' | Dia. 3 1/2"
Boring No. B-11 | Station & Offset 109+08, 36' Lt. (4th Pier) | Surface Elev. 725.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
725.1	0														
	2														
	4														
720.1	6	10/12			Brown Silty Sandy Gravel	1	70	13	7	-10-		NP	NP	9	A-1-a
	8														
715.1	10	15/10			Brown Silty Gravelly Sand	2	21	43	15	-21-		NP	NP	21	A-1-b
	12														
	14														
710.1	16	20/15			Brown Silty Sandy Gravel	3	69	8	9	15	5	---	---	9	A-1-a
	18														
705.1	20	18/16			Brown Silty Sandy Gravel	4	52	17	10	-21-		NP	NP	11	A-1-b
	22														
	24														
700.1	26	15/21			Grayish Gravel	5	87	6	3	-4-		NP	NP	9	A-1-a
	28														
695.1	30				No Sample Recovered - Boulder(Driller's Description)										
	32														
	34														
690.1	36	50* (0.8)			Gray Silty Sandy Gravel	6	61	3	14	-22-		NP	NP	9	A-1-b
	38														
685.1	40														
683.1	42	9/16			Red & Gray Clay	7	0	1	3	17	79	50	26	37	A-7-5
	44		2.7	0.3	TOP OF ROCK										
	46				Limestone, hard, gray, dense, vuggy in part, finely-crystalline, broken. Core Loss 1%.										
	48		5.0	0.0											
675.1	50				BOTTOM OF BORING										

*Refusal

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. FRA-
RELOC. GRANDVIEW AVE. OVER SCIOTO RIVER, N.Y.C. RR and C.C.C. & ST. L. RR
SEC. FRA-70 - (10.33N)

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
S.A.J.	R.C.	R.D.R.	9/11/67

TE-114
1000-1-64

Elevation scale: 728, 724, 720, 716, 712, 708, 704, 700, 696, 692, 688, 684

Test Location No. ______
Station & Offset ______
Surface Elev. ______ Water Elev. ______
Piling ______
Hammer ______
Formula ______
Reference ______
Rod Condition ______

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. ______
Station & Offset ______
Surface Elev. ______ Water Elev. ______
Piling ______
Hammer ______
Formula ______
Reference ______
Rod Condition ______

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. ______
Station & Offset ______
Surface Elev. ______ Water Elev. ______
Piling ______
Hammer ______
Formula ______
Reference ______
Rod Condition ______

10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. ______
Station & Offset ______
Surface Elev. ______ Water Elev. ______
Piling ______
Hammer ______
Formula ______
Reference ______
Rod Condition ______

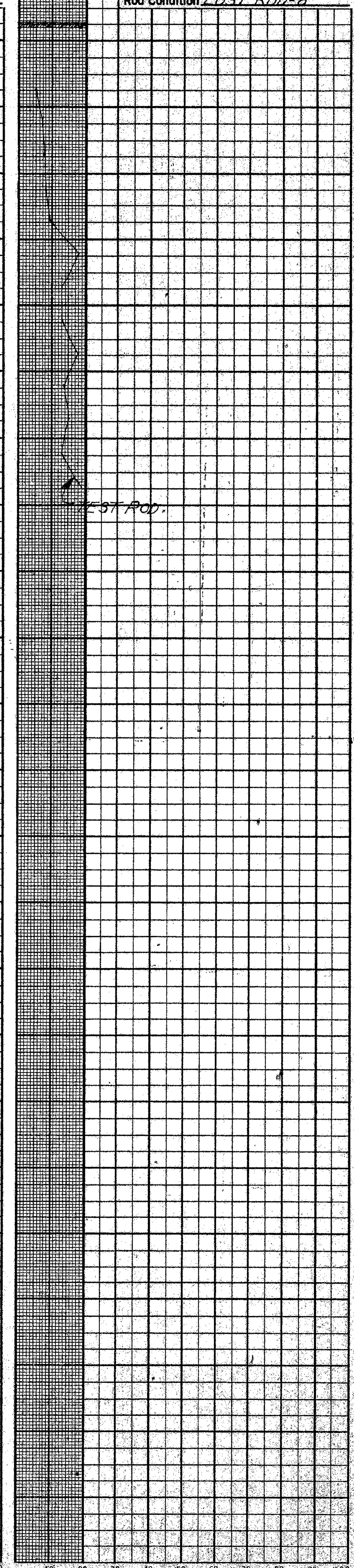
10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Elevation scale: 720, 716, 712, 708, 704, 700, 696, 692, 688, 684

Test Location No. ______
Station & Offset ______
Surface Elev. ______ Water Elev. ______
Piling ______
Hammer ______
Formula ______
Reference ______
Rod Condition ______

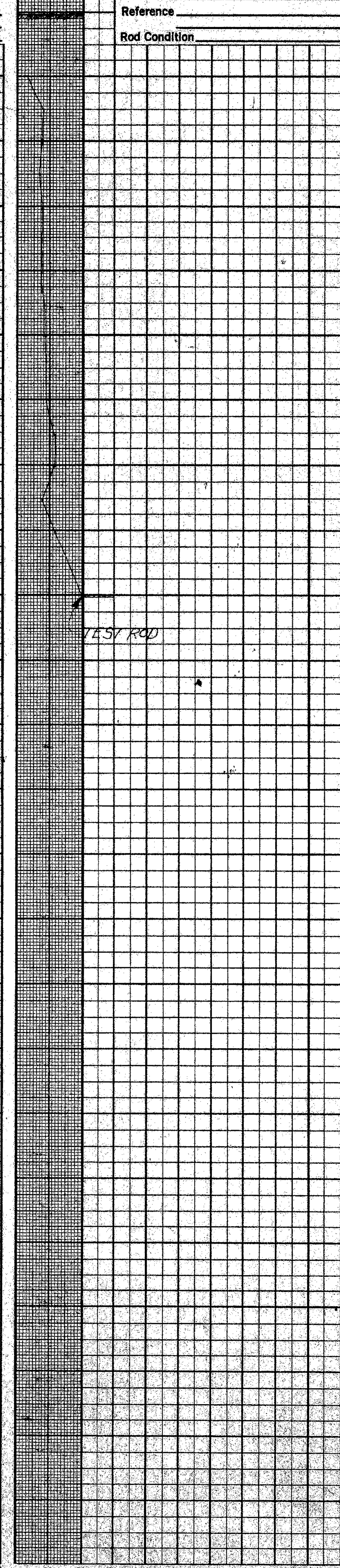
10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 2
Station & Offset 103+85, 35' RT
REAR ABUTMENT
Surface Elev. 721.1' Water Elev. ______
Piling ______
Hammer ______
Formula ______
Reference ______
Rod Condition LOST ROD-8'



10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 11
Station & Offset 109+30, 30' LT
FOURTH PIER
Surface Elev. 723.9' Water Elev. ______
Piling ______
Hammer ______
Formula ______
Reference ______
Rod Condition ______



10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

Test Location No. 14
Station & Offset 109+98, 28' RT
FORWARD ABUTMENT
Surface Elev. 720.0' Water Elev. ______

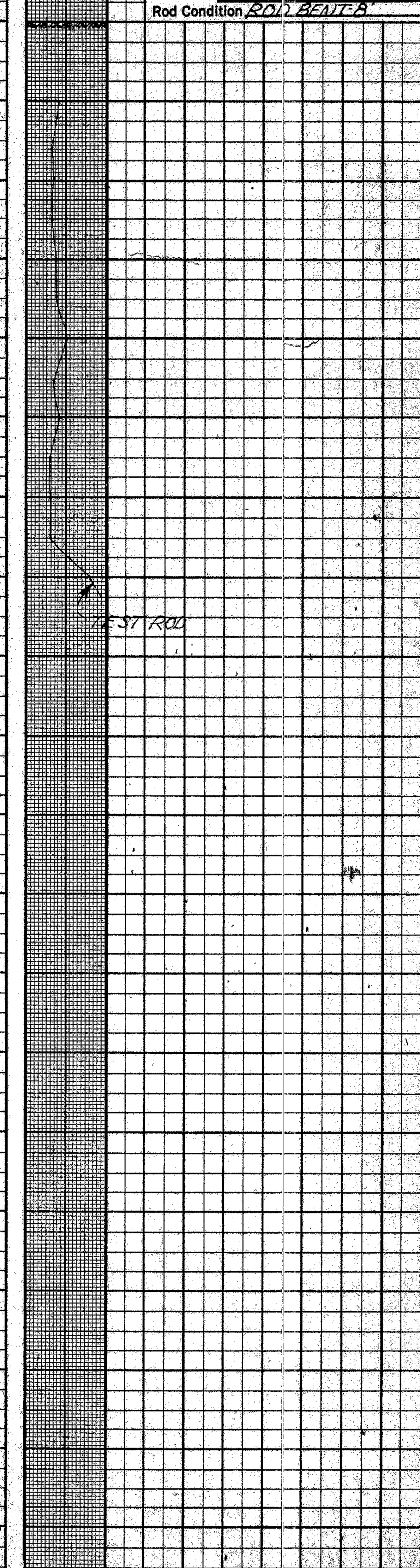
13/16

FRA-70 -(10.83N)

4/4

Piling ______
Hammer ______
Formula ______
Reference ______
Rod Condition ROD BENT-8'

Elevation scale: 720, 716, 712, 708, 704, 700, 696, 692, 688, 684



10 20 30 40 50 60 70 80 90 100
Capacity "R" in Thousands of Pounds

OHIO STATE HIGHWAY TESTING LABORATORY
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. FRA-
RELOC. GRANDVIEW AVE. OVER SCIOTO RIVER, N.Y.C. RR and C.C.C. & ST. L. RR
SEC. FRA-70 (10.83N)

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	9/11/67

FRANKLIN COUNTY
FRA-70 -(10.83N)

GEOLOGY OF THE SITE
THE STRUCTURE SITE IS LOCATED IN THE GLACIATED MISSISSIPPI VALLEY PLAIN REGION, ON MAN-MADE FILL ADJACENT TO THE SCIOTO RIVER, IN AN AREA WHERE MODERATELY DEEP GLACIAL-DERIVED SOILS OVERLIE BEDROCK, OF DEVONIAN AGE.

EXPLORATION
THE EXPLORATION CONSISTED OF TWO DRIVE SAMPLE BORINGS, MADE BETWEEN JUNE 29 AND JULY 7, 1967, AND THREE DRIVE ROD PENETRATION TESTS, MADE ON JULY 5 AND 6, 1967.

INVESTIGATIONAL FINDINGS
THE BORINGS ENCOUNTERED UNSTRATIFIED INTERVALS OF LOOSE AND VERY DENSE SANDY GRAVELS, SANDS, SILTS AND NUMEROUS BOULDERS. THE BORINGS WERE TERMINATED AT 46 AND 60-FOOT DEPTHS, ELEVATIONS 678 AND 664 FEET, AFTER PENETRATING IN EXCESS OF 30 FEET OF MATERIAL REQUIRING IN EXCESS OF 30 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST.

ROD SOUNDINGS GENERALLY ENCOUNTERED GRADUAL, ERRATIC, INCREASE IN PENETRATION RESISTANCE WITH INCREASE IN DEPTH, AND WERE TERMINATED UPON ENCOUNTER WITH HIGH RESISTANCE TO PENETRATION AT 49 TO 54-FOOT DEPTHS, ELEVATIONS 675 TO 671 FEET, CONSIDERED TO BE IN VERY DENSE GRAVELS AND BOULDERS, AS REVEALED BY THE BORINGS.

NO FREE WATER WAS ENCOUNTERED IN ANY OF THE ROD SOUNDING HOLES.

NO TEST PENETRATED TO BEDROCK SURFACE.

LEGEND

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — 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.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Boulders

LOG OF BORING

Date Started 6-29-67 — Sampler Type SS — Dia. 1 3/8" — Water Elev. —
Date Completed 7-5-67 — Casing: Length 45' — Dia. 3 1/2" — Surface Elev. 724.4'
Boring No. B-1 — Station & Offset 115+65, 43' Lt. (Rear Abutment)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
724.4	0				Boulders										
	2														
	4														
719.4	6	3/8			Brown Silty Sandy Gravel	1	48	30	10	-12	-	NP	NP	7	A-1-b
716.9	8	3/4			Brown Sand	2	14	55	23	- 8	-	NP	NP	19	A-1-b
714.4	10	30/10			Brown Silty Sandy Gravel	3	56	18	9	8	9	NP	NP	16	A-1-b
711.9	12														
	14	7/10			Brown Silty Sandy Gravel	4	70	14	6	-10	-	NP	NP	8	A-1-a
709.4	16	20/25			Brown Silty Sandy Gravel	5	73	12	5	-10	-	NP	NP	11	A-1-a
706.9	18	25/31			Brown Sandy Gravel	6	67	18	6	- 9	-	NP	NP	9	A-1-a
704.4	20	25/25			Brown Sandy Gravel	7	75	11	4	-10	-	NP	NP	11	A-1-a
701.9	22	24/30			Gray Sandy Gravel	8	74	16	4	- 6	-	NP	NP	7	A-1-a
699.4	24	40/*			Gray Silty Sandy Gravel	9	67	15	6	6	6	NP	NP	8	A-1-a
	26														
694.4	28	12/33			Gray Silty Gravelly Sand	10	35	16	35	-14	-	NP	NP	15	A-1-b
	30														
	32														
689.4	34	17/20*			Gray Silty Sand	11	0	0	81	-19	-	NP	NP	21	A-3a
	36														
684.4	38														
	40	16/18			Gray Silty Sand	12	0	1	59	25	15	NP	NP	19	A-4a
	42														
679.4	44				BOTTOM OF BORING										
678.4	46	26/25			Gray Silty Sandy Gravel	13	66	12	7	9	6	NP	NP	7	A-1-a

*Refusal

LOG OF BORING

Date Started 7-5-67 — Sampler Type SS — Dia. 1 3/8" — Water Elev. —
Date Completed 7-7-67 — Casing: Length 56' — Dia. 3 1/2" — Surface Elev. 724.0'
Boring No. B-6 — Station & Offset 118+00, CL. (Forward Abutment)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
724.0	0														
	2														
	4														
719.0	6	6/6			Brown Sandy Gravelly Clay	1	24	8	13	28	27	31	12	17	A-6a
716.5	8														
	10	7/7			Brown Gravelly Clay	2	25	10	5	30	30	36	15	21	A-6a
714.0	12	28/31			Brown Silty Sandy Gravel	3	59	10	9	12	10	23	6	8	A-1-b
711.5	14	40/*			Brown Silty Sandy Gravel	4	73	9	6	6	6	NP	NP	8	A-1-a
709.0	16	62/*			Brown Silty Sandy Gravel	5	53	17	11	11	8	NP	NP	21	A-1-b
706.5	18	36/*			Brown Silty Sandy Gravel	6	63	11	7	11	8	NP	NP	4	A-1-b
704.0	20	11/15			Brown Silty Gravel	7	32	25	21	13	9	NP	NP	15	A-1-b
701.5	22														
	24	35/*			Brown Silty Sandy Gravel	8	66	10	8	10	6	NP	NP	6	A-1-b
699.0	26	38/*			Brown Sandy Gravel	9	50	38	5	- 7	-	NP	NP	12	A-1-a
	28														
694.0	30	22/24			Brown Silty Gravel	10	75	10	4	7	4	NP	NP	10	A-1-a
	32														
	34														
689.0	36	21/18			Brown Sandy Gravel	11	71	15	6	- 8	-	NP	NP	10	A-1-a
	38														
684.0	40														
	42	9/10			Gray Silty Sand	12	0	1	78	-21	-	NP	NP	32	A-3a
	44														
679.0	46	8/11			Gray Silty Sand	13	0	1	86	-13	-	NP	NP	20	A-3a
	48														
674.0	50	12/12			Gray Silty Sand	14	0	1	87	-12	-	NP	NP	22	A-3a
	52														
	54														
669.0	56	19/36			Gray Silty Gravelly Sand with Boulders	15	40	18	31	-11	-	NP	NP	14	A-1-b
668.0	58														
			1.8	2.2	Limestone and igneous boulders, cobbles and fragments.										
664.0	60				BOTTOM OF BORING										

*Refusal

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140 - pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
	8" / 3"	2.0mm (No. 10 sieve)	0.42mm (No. 40 sieve)	0.074mm (No. 200 sieve)	0.005mm	

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

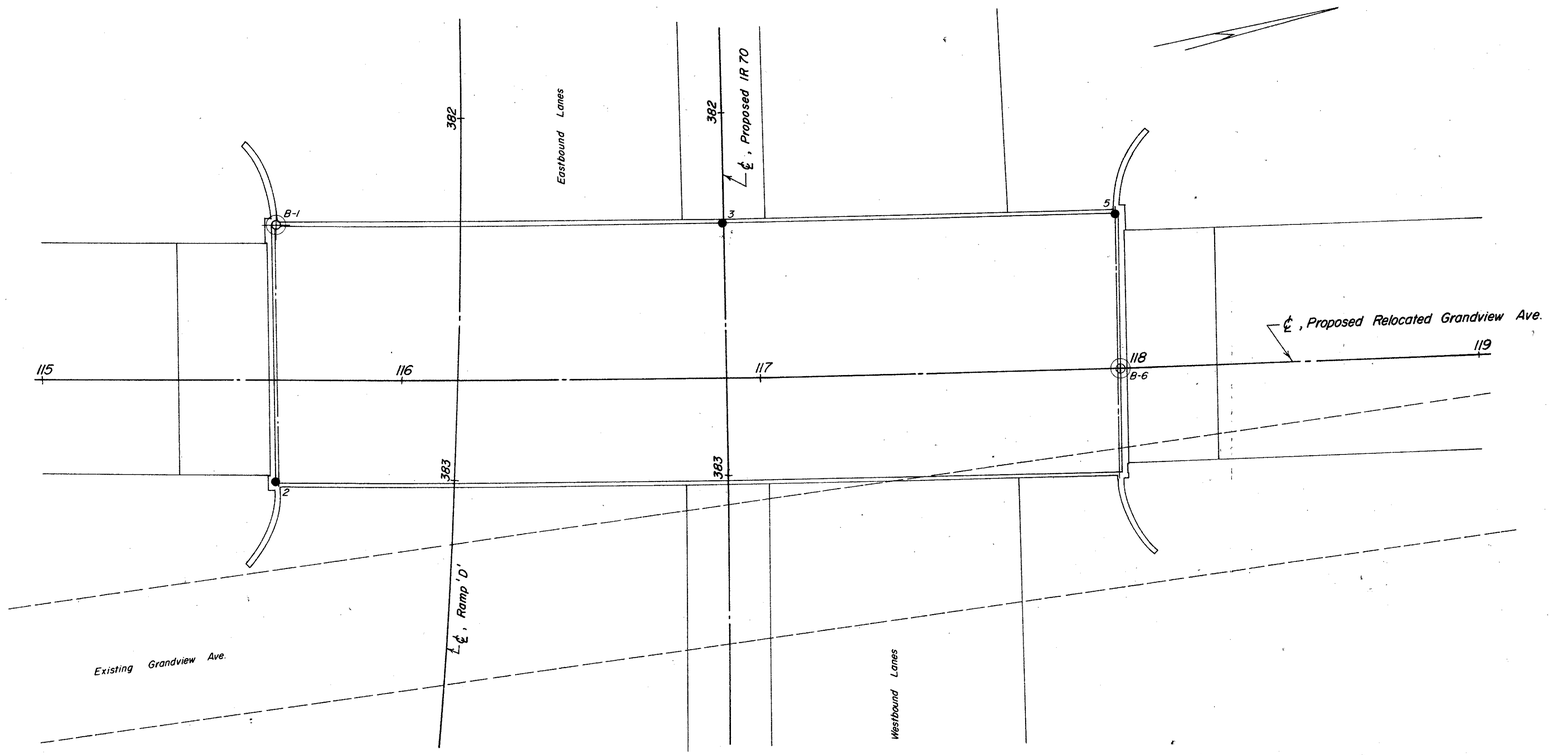
STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. FRA-70-1090
UNDER RELOCATED GRANDVIEW AVE.
SEC. FRA-70 — (10.83N)

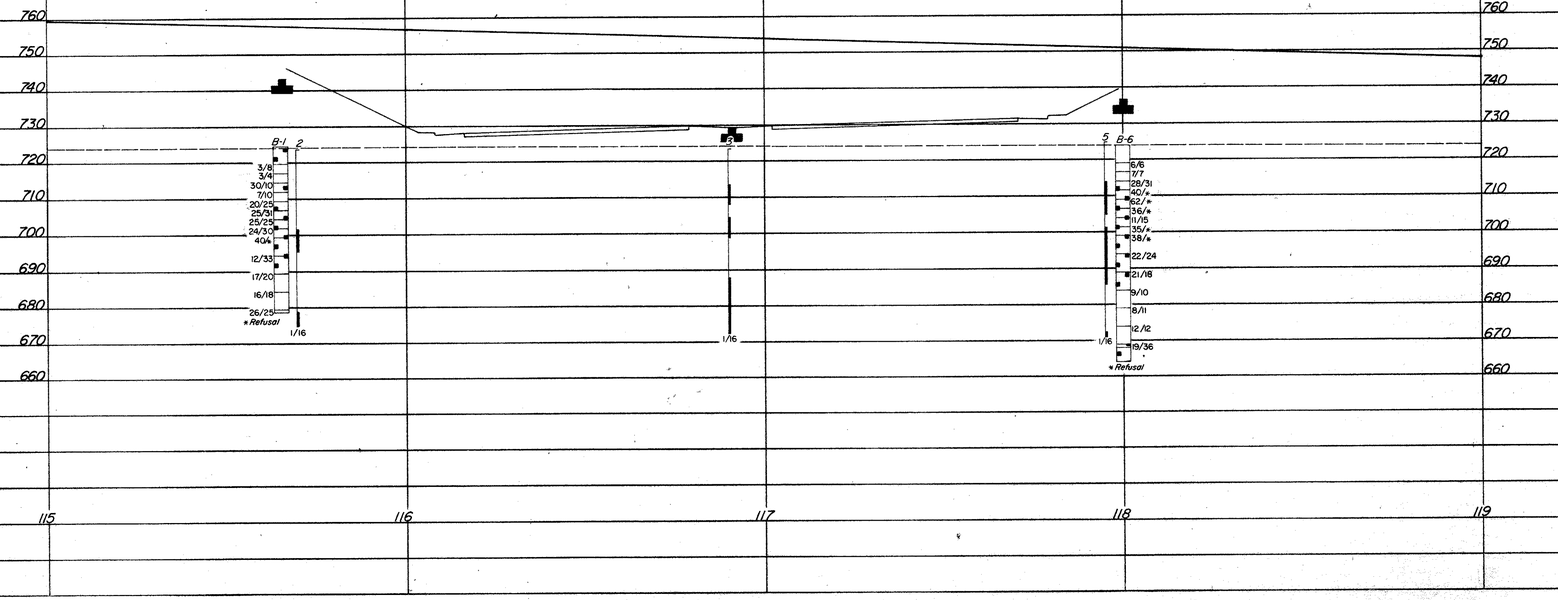
CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	7/31/67

TE - 119
1000 - 4 - 66

15
16
2
3

FRA-70 — (10.83 N)





SCALE: 1" = 20'

OHIO DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. FRA-70-1090
UNDER RELOCATED GRANDVIEW AVE.
SEC. FRA-70 -(10.83N)

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
L.N.L.	L.N.L.	F.D.R.	7/31/67

Test Location No.	Test Location No.	Test Location No.	Test Location No.	Test Location No.	Test Location No. 2	Test Location No. 3	Test Location No. 5
Station & Offset	Station & Offset	Station & Offset	Station & Offset	Station & Offset	Station & Offset 115+65, 28' RT REAR ABUTMENT	Station & Offset 116+90, 43' LT PIER	Station & Offset 118+00, 43' LT FORWARD ABUTMENT
Surface Elev. / Water Elev.	Surface Elev. / Water Elev.	Surface Elev. / Water Elev.	Surface Elev. / Water Elev.	Surface Elev. / Water Elev.	Surface Elev. 723.8' / Water Elev.	Surface Elev. 723.3' / Water Elev.	Surface Elev. 724.9' / Water Elev.
Piling	Piling	Piling	Piling	Piling	Piling	Piling	Piling
Hammer	Hammer	Hammer	Hammer	Hammer	Hammer	Hammer	Hammer
Formula	Formula	Formula	Formula	Formula	Formula	Formula	Formula
Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Rod Condition	Rod Condition	Rod Condition	Rod Condition	Rod Condition	Rod Condition GOOD	Rod Condition POINT ROD BENT	Rod Condition GOOD

FRA-70 —(10.83N)

16/16

3/3

OHIO STATE HIGHWAY TESTING LABORATORY

1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION

BRIDGE NO. FRA-70-1090

UNDER RELOCATED GRANDVIEW AVE.

SEC. FRA-70 -(10.83 N)

DRIVE ROD PENETRATION RESISTANCE DATA

PLOTTED BY	CHECKED BY	REVIEWED BY	DATE
R.C.	L.N.L.	R.D.R.	7/31/67

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

202
239

FRANKLIN COUNTY
FRA-104-8.04

FLOODING DATA

Drainage Area: 1624 sq. miles
50 Year Discharge: 65,500 c.f.s.
High Water: 707.9
Velocity: 5.9 f.p.s.

Highest Flood of Record (Current flood plain and channel conditions)
January 22, 1959
High Water: 709.8
Discharge = 68,000 c.f.s.
Velocity = 5.5 f.p.s.

All existing utility lines, which are mounted on the existing bridge shall be removed and disposed of after they have been taken out of service by the owner.

The cost of removal shall be included in Lum Sum price bid for the removal of the existing bridge.

*Elevations marked with an asterisk are at top of slope at face of abutment.

EXISTING STRUCTURE

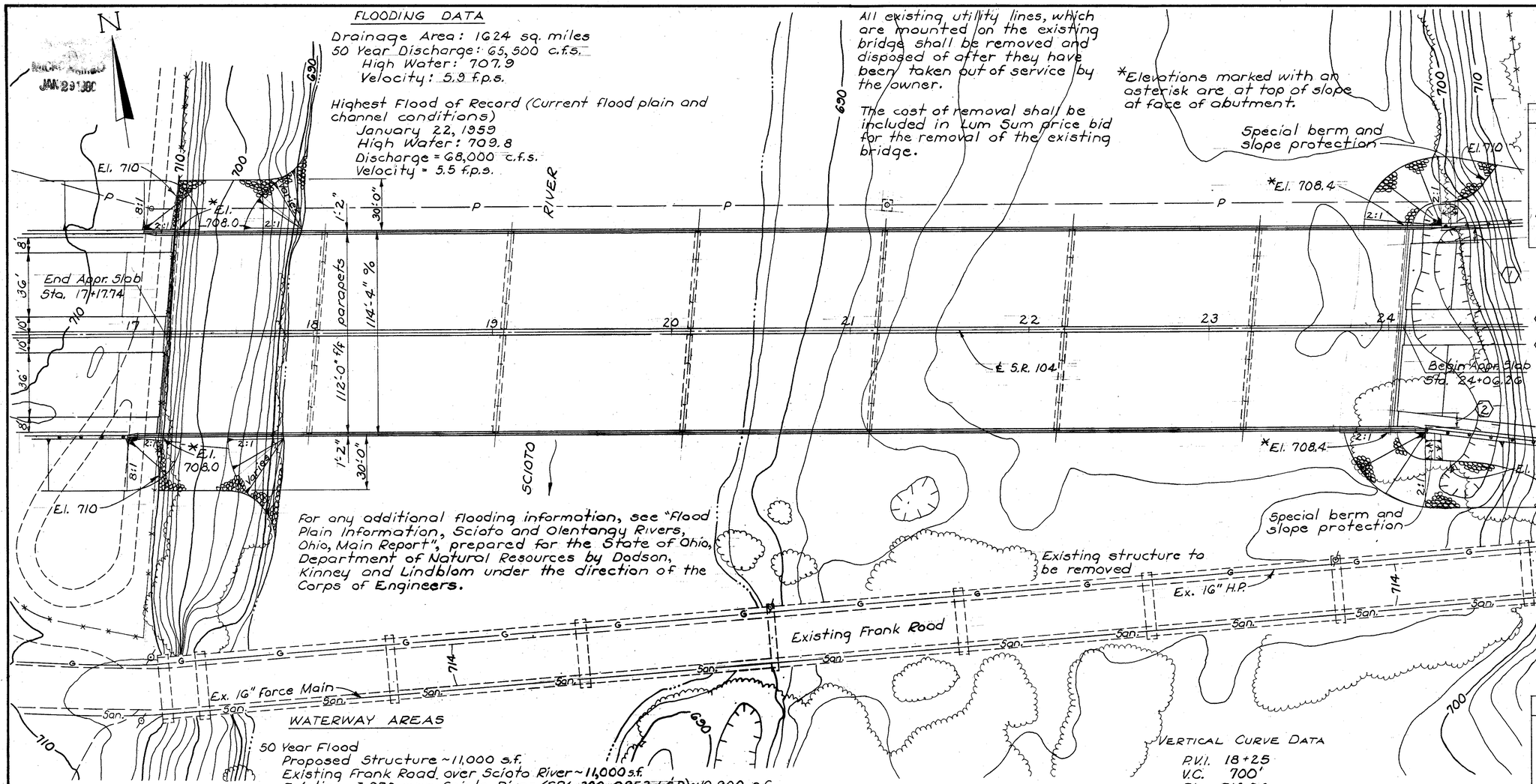
TYPE~Filled spandrel reinforced concrete arch
SPANS~7 @ 100' clear between concrete piers or between the face of concrete abutment and adjacent pier
ROADWAY~23' f/f of 5.5' concrete sidewalks
CONDITION~Poor

Earthwork limits shown are schematic. Actual slopes shall conform to plan cross-sections.

(1) Actual horiz. clr. 8.71'
Required horiz. clr. 8.00'
(2) Actual horiz. clr. 8.06'
Required horiz. clr. 8.00'

Abutment piles shall be 10BP42.
Pier piles shall be 12BP53.
Estimated average pay lengths:

Rear Abutment	35'
Piers 1 thru 3	30'
Pier 4	40'
Piers 5 & 6	45'
Forward Abutment	40'



For any additional flooding information, see "Flood Plain Information, Scioto and Olentangy Rivers, Ohio, Main Report", prepared for the State of Ohio, Department of Natural Resources by Dodson, Kinney and Lindblom under the direction of the Corps of Engineers.

WATERWAY AREAS

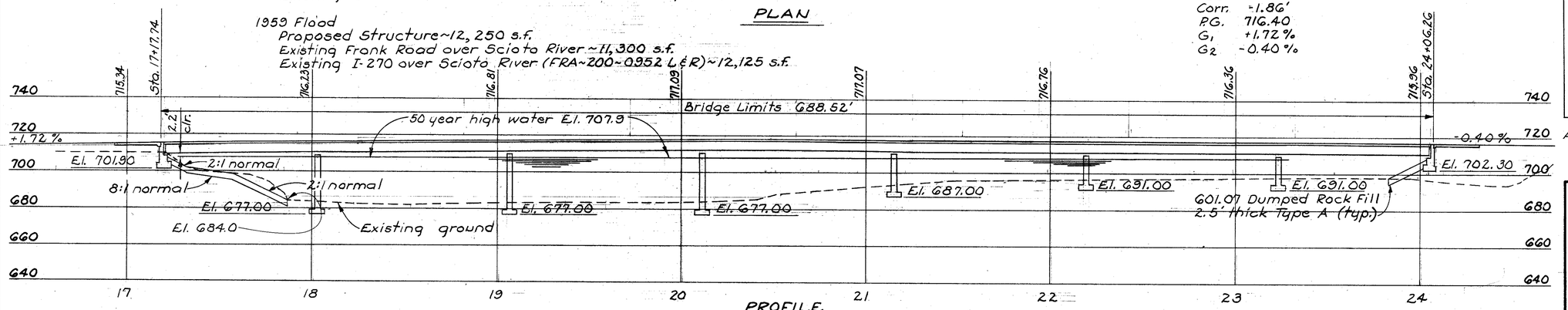
50 Year Flood
Proposed Structure~11,000 s.f.
Existing Frank Road over Scioto River~11,000 s.f.
Existing I-270 over Scioto River (FRA-200-0952 L&R)~10,900 s.f.

1959 Flood
Proposed Structure~12,250 s.f.
Existing Frank Road over Scioto River~11,300 s.f.
Existing I-270 over Scioto River (FRA-200-0952 L&R)~12,125 s.f.

VERTICAL CURVE DATA

P.V.I.	18+25
V.C.	700'
E.L.	718.26
Corr.	-1.86'
P.G.	716.40
G_1	+1.72 %
G_2	-0.40 %

PROFILE



(Piles not shown)

PROPOSED STRUCTURE

TYPE~Continuous steel girder (A588 steel) with reinforced concrete deck and substructure
SPANS~82'-0"~5 @ 104'-0"~82'-0"
ROADWAY~112'-0" f/f parapet with barrier railing and barrier median
LOADING~HS 20-44
WEARING SURFACE~1" monolithic concrete
SKEW~5°00' left forward
ALIGNMENT~Tangent
APPROACH SLABS~25'-0" long, see AS-1-67

ADT = 57,000 (1990)

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SITE PLAN

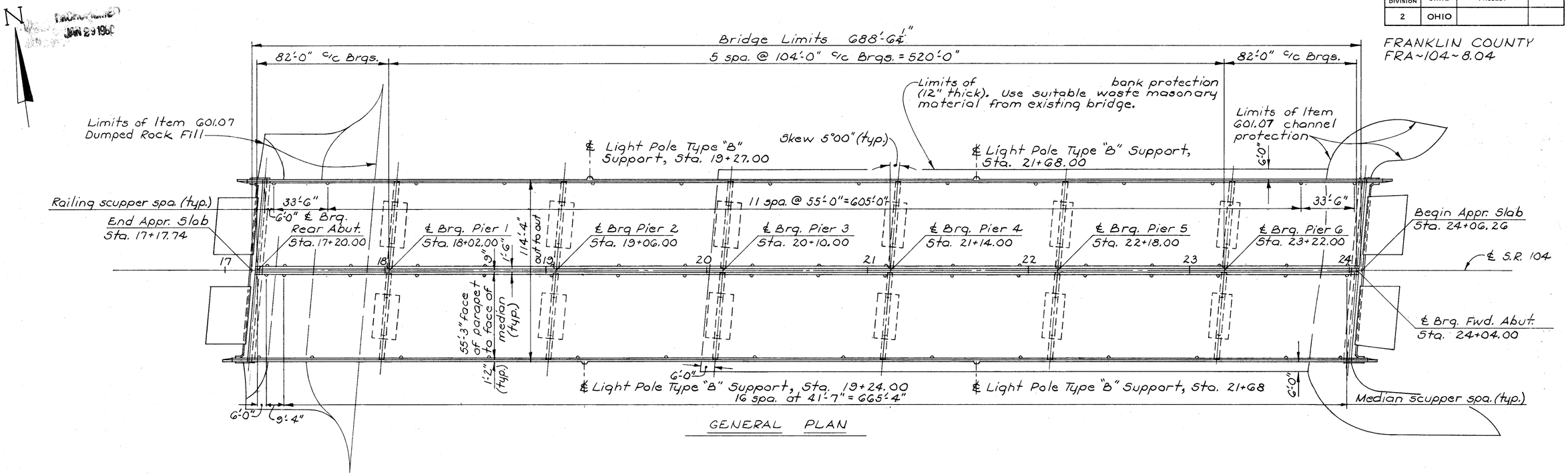
BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	TLL	10/29/70	

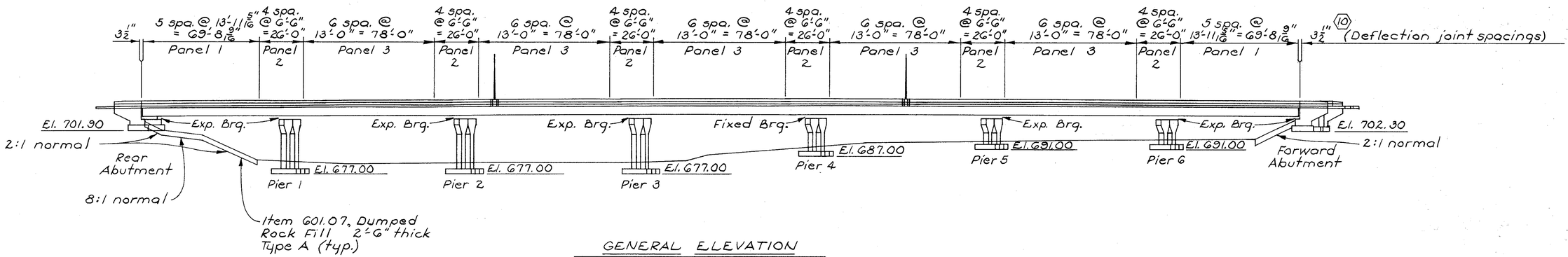
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

203
239

FRANKLIN COUNTY
FRA-104-8.04



GENERAL PLAN



GENERAL ELEVATION

(Piles not shown)

NOTES

Scupper spacings shown are ℄c along curb line of railing or median. Scupper spacings may be changed slightly from that shown in order to maintain 6" clear from crossframes.

PREFORMED EXPANSION JOINT FILLER in the parapet deflection joints may be either ¼" gray sponge rubber or ¼" gray cellular polyvinyl chloride (PVC) sponge. Either material shall meet the requirements of AASHO M-153, Type I, except the density of the PVC sponge shall not be less than 20 lb. per cubic foot.

(10) Median parapet deflection joints are spaced along ℄ S.R. 104. Railing parapet deflection joints are spaced along face of parapet.

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GENERAL PLAN AND ELEVATION
BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	JLV	10/29/70	

JAN 23 1980

FED. ROAD DIVISION	STATE	PROJECT		204 / 239
2	OHIO			

FRANKLIN CO.
FRA-104-8.04

REFERENCES:

STANDARD DRAWINGS:

SUPERSTRUCTURE DETAILS	SD-1-69	SHEETS 1 & 2 DATED 6-12-69
RAILING	BR-1-67	SHEET 1 DATED 2-1-68
ROCKERS & BOLSTERS	RB-1-55	REVISED 2-2-59
APPROACH SLABS	AS-1-67	REVISED 6-12-69
HIGHWAY LIGHTING	HL-4	DATED 1-1-66

SUPPLEMENTAL SPECIFICATIONS:

CHEMICAL ADMIXTURES FOR CONCRETE	808	DATED 11-14-69
EXAMINATION OF WELDS, PARTS I & II	811	REVISED 1-1-69
CONCRETE CURING AND PROTECTIVE MEMBRANE	836	DATED 6-17-69
SPECIAL PILE TESTS	838	DATED 3-18-70

BRIDGE LIGHTING DETAILS:

CONDUIT THROUGH ABUTMENT
LIGHT POLE SUPPORT AND BRIDGE RACEWAY

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, 1969, INCLUDING THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS AND THE 1970 INTERIM SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS.

DESIGN DATA:

DESIGN LOADING: HS 20-44

CONCRETE CLASS C: UNIT STRESS 1200 P.S.I. FOR SUPERSTRUCTURE.

UNIT STRESS 1333 P.S.I. FOR SUBSTRUCTURE.

STRUCTURAL STEEL, ASTM A588 MEETING REQUIREMENT S1 OF AASHO M222, UNIT STRESS 27,000 P.S.I.

HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL BE MADE FROM A STEEL WHICH MEETS ALL THE MECHANICAL PROPERTIES OF ASTM A325 AND HAS WEATHERING CHARACTERISTICS COMPARABLE AND COMPATIBLE TO ASTM 588. UNIT STRESS - 13,500 P.S.I. SHEAR.

REINFORCING STEEL, ASTM A615, A616 OR A617 UNIT STRESS 20,000 P.S.I.

REMOVAL OF EXISTING STRUCTURE: WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC, THE EXISTING STRUCTURE SHALL RE REMOVED ACCORDING TO ITEM 202.03. SUITABLE WASTE MASONRY SHALL BE PLACED AS BANK PROTECTION AS DIRECTED BY THE ENGINEER. THIS MATERIAL CAN BE USED ALSO AS DUMPED ROCK FILL IF IT QUALIFIES ACCORDING TO THE SIZE SPECIFICATIONS.

EMBANKMENT CONSTRUCTION: THE EMBANKMENTS SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF THE ABUTMENTS. EXCAVATION SHALL THEN BE MADE FOR THE ABUTMENTS.

IF THE RUBBISH IN THE REAR EMBANKMENT AREA IS REMOVED OR CONSOLIDATED, THIS PROCEDURE SHOULD BE FINISHED BEFORE STARTING CONSTRUCTION OF THE REAR ABUTMENT.

PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 35 TONS PER PILE FOR THE ABUTMENTS AND 50 TONS PER PILE FOR THE PIERS.

STRUCTURAL STEEL IS NOT TO BE PAINTED. THE EXPOSED NORTHERN SURFACES OF GIRDER No. 1 AND THE EXPOSED SOUTHERN SURFACES OF GIRDER No. 12 ARE TO BE SANDBLASTED. NO OTHER SURFACES ARE TO BE SANDBLASTED. SANDBLASTING TO BE INCLUDED WITH ITEM 513 FOR PAYMENT.

STRUCTURAL STEEL USED IN AN EXPOSED UNPAINTED APPLICATION SHALL BE WELDED WITH THE ELECTRODES AND FLUX-ELECTRODE COMBINATIONS LISTED IN THE TABLE BELOW.

WELDING PROCESS

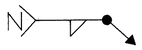
SHIELDED METAL ARC	SUBMERGED ARC	GAS METAL ARC	FLUX CORED ARC
AWS A5.5			
E8016 OR 18-G[A,B]	AWS A5.17[C]	AWS A5.18[C]	AWS A5.20[C]
E8016 OR 18-B1[B]	F71, F72, F73	E70S-1B, 2, 3,	E70T-1, 5, 6
E8016 OR 18-B2[B]	OR F-74-EXXXX	6, OR E70U-1	OR
E8016 OR 18-C1	OR	OR	GRADE E80T[B,C]
E8016 OR 18-C2	GRADE F80[B,C]	GRADE E80S[B,C]	
E8016 OR 18-C3			

(A) DEPOSITED WELD METAL SHALL HAVE A CHEMICAL COMPOSITION (PERCENT) OF 0.12 MAX. C, 0.50/1.10 MN, 0.03 MAX. P, 0.04 MAX. S, 0.35/0.80 SI, 0.30/0.75 CU, 0.40/0.80 NI, AND 0.45/0.70 CR.

(B) DEPOSITED WELD METAL SHALL HAVE AN IMPACT STRENGTH, MIN., CHARPY V-NOTCH OF 20 FT-LB AT 0°F.

(C) DEPOSITED WELD METAL SHALL HAVE A CHEMICAL COMPOSITION THE SAME AS THAT FOR ANY ONE OF THE WELD METALS OBTAINED WITH THE SHIELDED METAL-ARC ELECTRODES LISTED IN THIS TABLE.

WELDS ON NON-STRESS-CARRYING MEMBERS ARE SHOWN THUS:



THE EXPOSED SURFACES OF THE ABUTMENTS AND PIERS SHALL BE PROTECTED AGAINST DRAINAGE STAINS FROM THE STRUCTURAL STEEL DURING CONSTRUCTION.

SCUPPERS ARE TO BE A588 STEEL AND ARE NOT TO BE PAINTED OR SANDBLASTED.

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Abut.	Pier	Supers.	General
202	LUMP	SUM	EXISTING STRUCTURE REMOVED				LUMP *
503	LUMP	SUM	COFFERDAMS, CRIBS AND SHEETING				LUMP
503	1480	C.Y.	UNCLASSIFIED EXCAVATION	559	921		
505	LUMP	SUM	FIRST TEST PILE				LUMP
506	LUMP	SUM	FIRST PILE TEST LOAD				LUMP
506	1	EACH	SUBSEQUENT PILE TEST LOAD				1
507	3375	L.F.	STEEL PILES, 10BP42	3375			
507	10,340	L.F.	STEEL PILES, 12BP53		10,340		
509	969,595	LB.	REINFORCING STEEL	30,958	197,786	740,851	
511	2,551	C.Y.	CLASS "C" CONCRETE, SUPERSTRUCTURE			2,551	
511	1,069	C.Y.	CLASS "C" CONCRETE, PIERS ABOVE FOOTINGS		1069		
511	254	C.Y.	CLASS "C" CONCRETE, ABUTMENTS ABOVE FOOTINGS	254			
511	586	C.Y.	CLASS "C" CONCRETE, FOOTINGS	180	406		
512	20	L.F.	PREMOLDED SEALING STRIP	20			
513	1967500	LB.	STRUCTURAL STEEL (A588 STEEL)			1967500	
516	62	S.F.	1" PREFORMED EXPANSION JOINT FILLER	62			
518	158	C.Y.	POROUS BACKFILL	158			
518	218	L.F.	6" PERFORATED HELICAL CORRUGATED METAL PIPE, 707.01	218			
518	62	L.F.	6" NON-PERFORATED HELICAL CORRUGATED METAL PIPE, INCLUDING SPECIALS, 707.01	62			
518	64	EACH	SCUPPERS, INCLUDING SUPPORTS (A588 STEEL)			64	
601	1870	C.Y.	DUMPED ROCK FILL, TYPE A	1870			
625			SEE SHEET 183/239 FOR LIGHTING SUMMARY				
808	2551	UNITS	CHEMICAL ADMIXTURE FOR CONCRETE, TYPE A, B OR D			2551	
838	3	HOUR	SPECIAL PILE TESTS				3

* The approximate quantities of removal are as follows: Substructure concrete: 738 cu. yds, superstructure concrete: 2903 cu. yds. and slag fill: 2553 cu. yds.

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GENERAL NOTES AND ESTIMATED QUANTITIES
BRIDGE Nº FRA-104-0820
S.R. 104 over SCIOTO RIVER
FRANKLIN COUNTY STA. 17+17.74 STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TLV	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

205 / 239

FRANKLIN COUNTY
FRA-104-8.04

NOTES

(6) Elevation shown is at ℄ and top of 2" edge bar at curb line.

(7) Elevation shown is at ℄ and top of 2" edge bar at crown of roadway.

POROUS BACKFILL shall extend up to the sub-grade or to the finished ground surface. Excavation in excess of that required for abutment construction shall be included in the bid price per cubic yard of porous backfill.

(8) For limits and details of expansion joint see sheet 6 | 15.

For details of lighting conduit in abutment parapet see Bridge Lighting Details, sheet 201/239.

Field bending of abutment reinforcing to be included with Item 509 for payment.

For guard rail connections and additional details of 6'-0" parapet transition see Std. Dwg. BR-1-67, sheet 1 of 3.

Reinforcing Steel Location:
N.S. indicates near side
F.S. indicates far side

All piles shall be 10 BP 42 steel piles.
Vertical piles
Battered piles 1:4

REAR ABUTMENT Z — Z FORWARD ABUTMENT

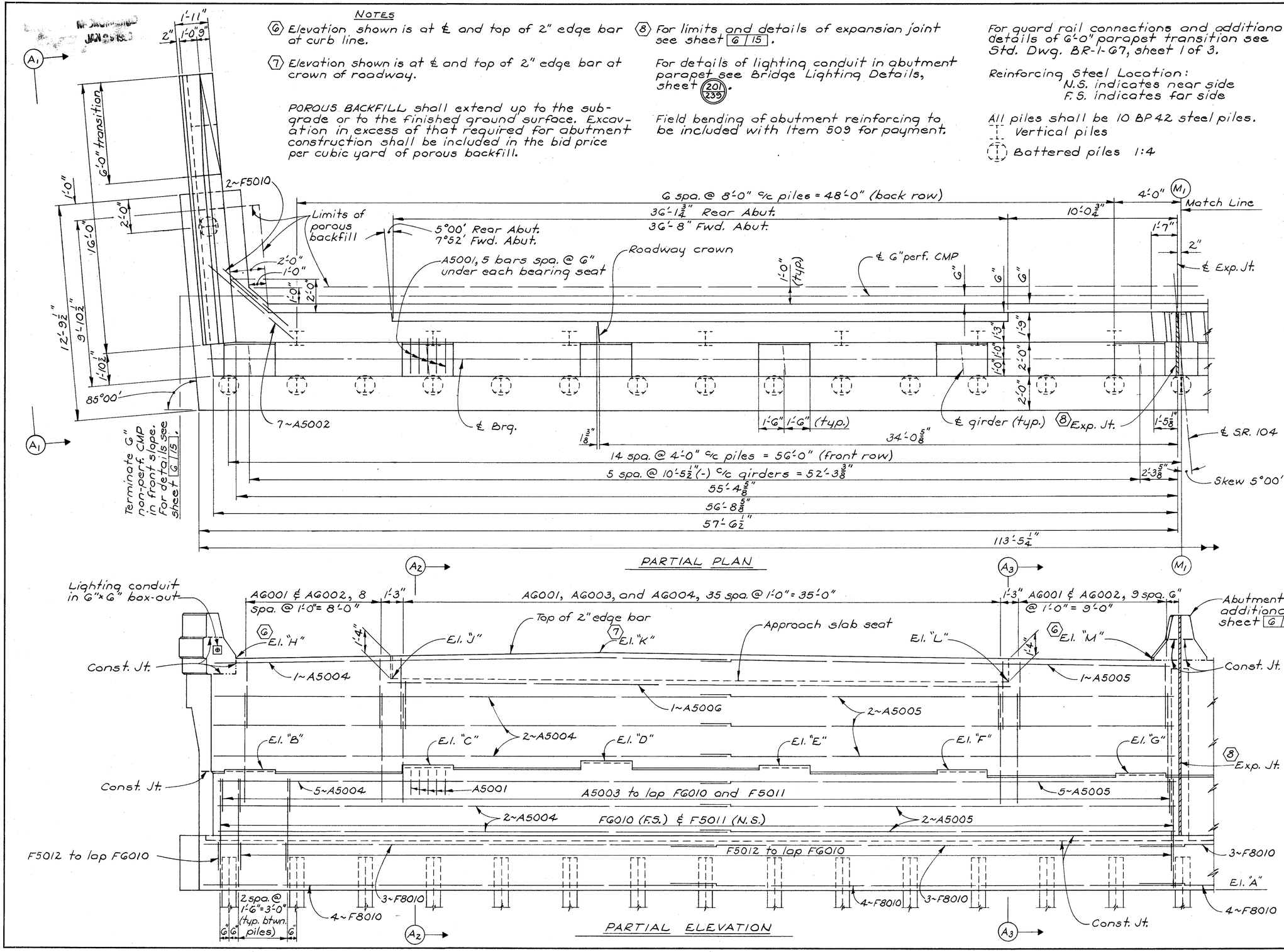
NOTES (Continued)

Adjustable type elbows meeting specification requirements for gage and coating are acceptable for making bends in non-perforated corrugated metal pipe.

Only that portion of the CMP located in the porous backfill shall be perforated.

For additional details see sheets 5, 6 | 15.

For end dam details at the median see sheet 14 | 15.



PARTIAL PLAN

PARTIAL ELEVATION

TABLE OF ELEVATIONS

Elev.	Rear Abutment	Forward Abutment
"A"	701.90	702.30
"B"	709.12	709.55
"C"	709.29	709.71
"D"	709.45	709.87
"E"	709.30	709.71
"F"	709.15	709.55
"G"	708.99	709.39
"H"	715.52	715.96
"J"	714.34	714.77
"K"	715.88	716.30
"L"	714.18	714.60
"M"	715.40	715.80

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ABUTMENT DETAILS

BRIDGE Nº FRA-104-0820
S.R. 104 over SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	FTJ	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

206
239

FRANKLIN COUNTY
FRA-104-8.04

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NOTES

For additional notes see sheet 4 / 15.

For additional details see sheets 4, 6 / 15.

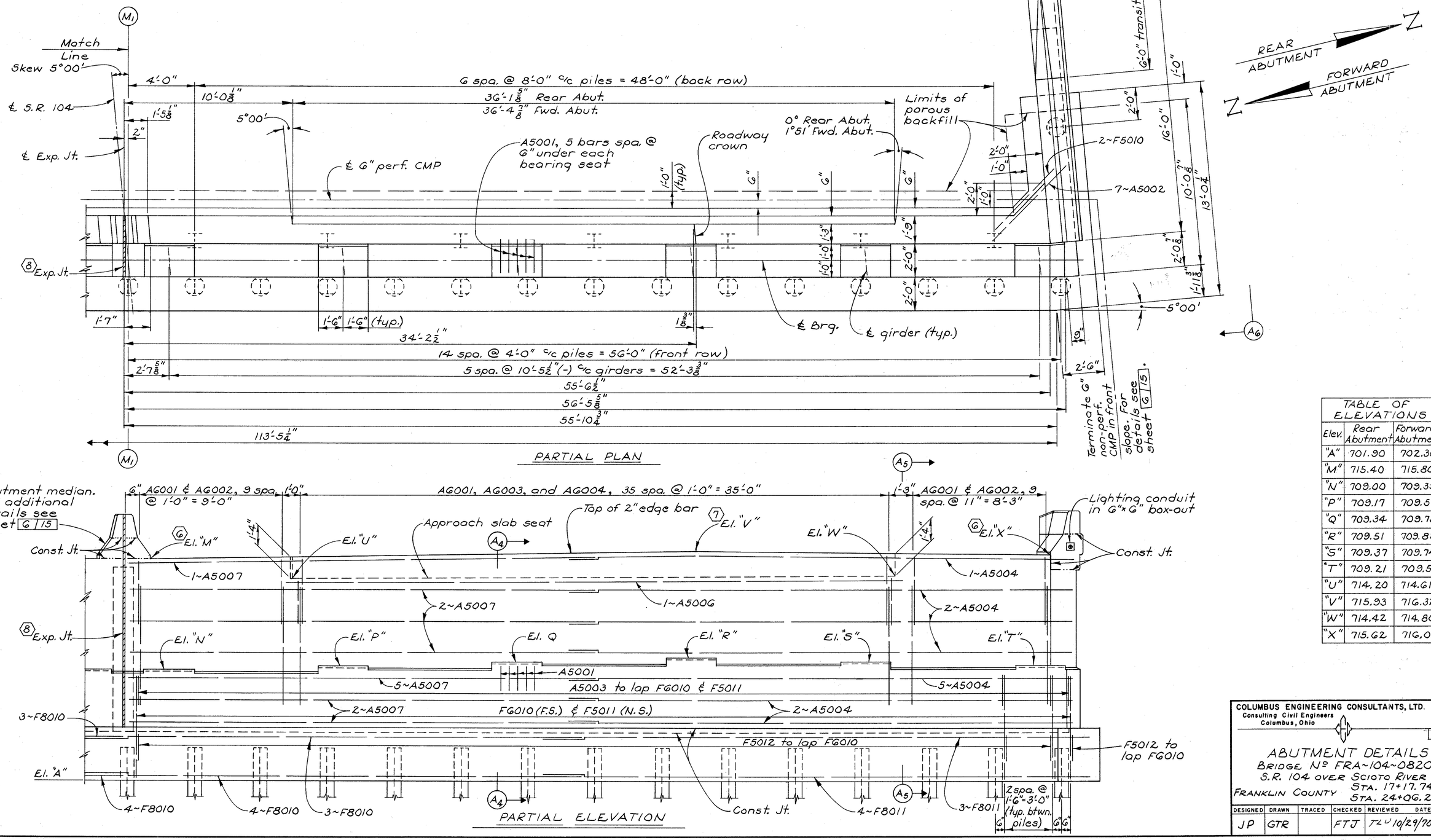

TABLE OF ELEVATIONS

Elev.	Rear Abutment	Forward Abutment
"A"	701.90	702.30
"M"	715.40	715.80
"N"	709.00	709.39
"P"	709.17	709.56
"Q"	709.34	709.73
"R"	709.51	709.89
"S"	709.37	709.74
"T"	709.21	709.59
"U"	714.20	714.61
"V"	715.93	716.32
"W"	714.42	714.80
"X"	715.62	716.00

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ABUTMENT DETAILS

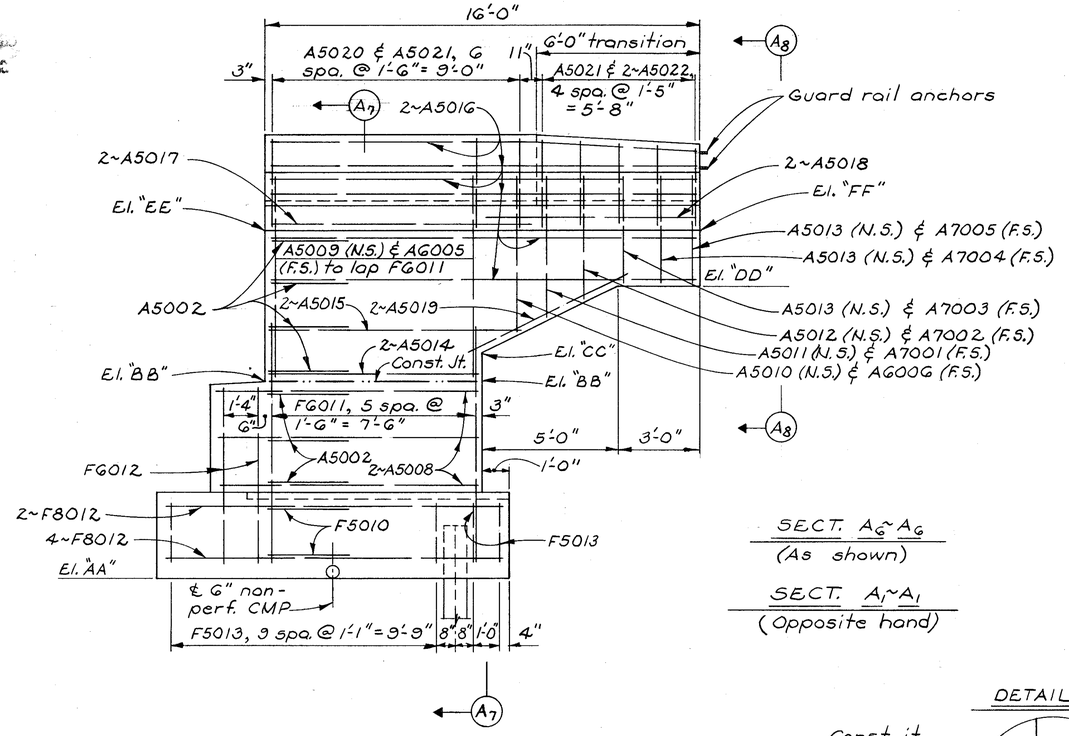
BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	FTJ	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

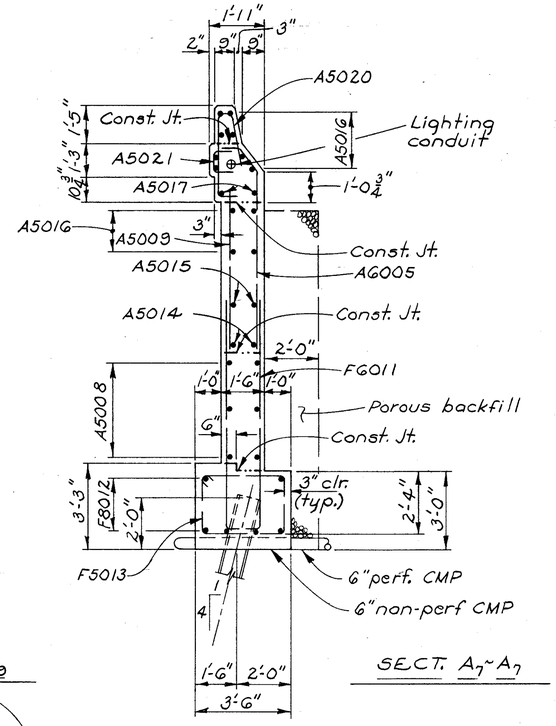
207
239

FRANKLIN COUNTY
FRA-104-8.04

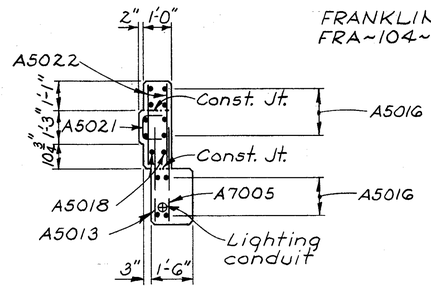


SECT. A_6~A_6
(As shown)

SECT. A_1~A_1
(Opposite hand)



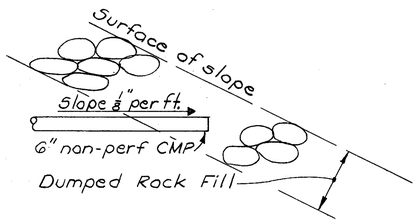
SECT. A_7~A_7



Guard rail anchors not shown

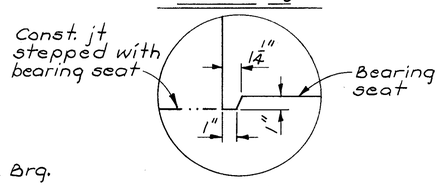
VIEW A_8~A_8

TABLE OF ELEVATIONS				
	E.B. Rear	W.B. Rear	E.B. Fwd.	W.B. Fwd.
"AA"	701.90	701.90	702.30	702.30
"BB"	709.04	709.13	709.51	709.47
"CC"	709.86	709.96	710.43	710.39
"DD"	712.36	712.46	712.93	712.89
"EE"	714.63	714.73	715.10	715.06
"FF"	714.46	714.56	715.03	714.99

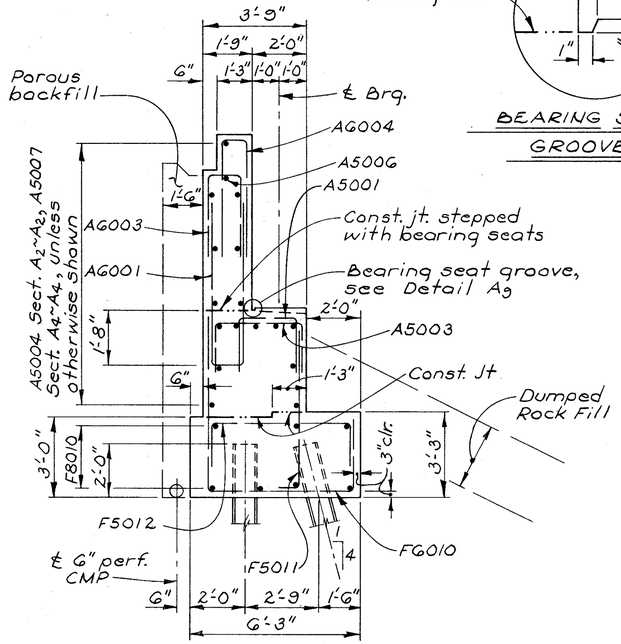


FRONT SLOPE TERMINATION

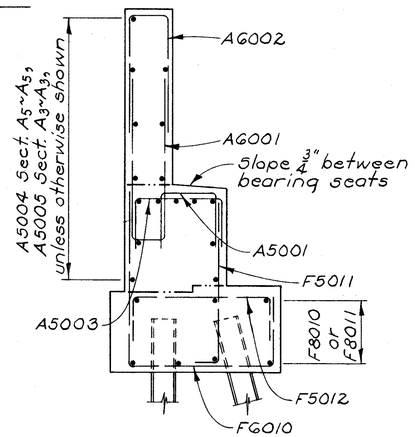
DETAIL A_9



BEARING SEAT GROOVE

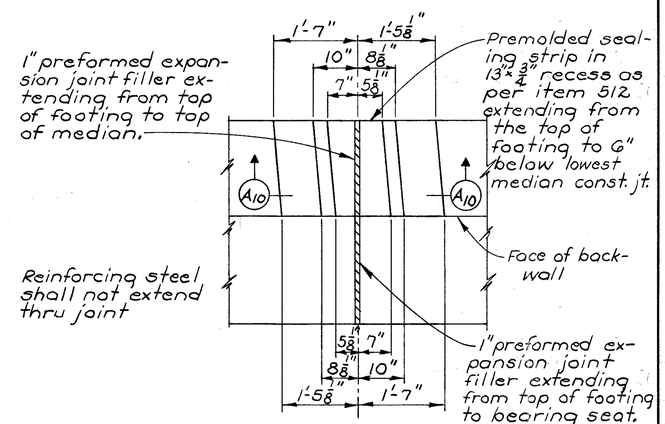


SECT. A_2~A_2 SECT. A_4~A_4

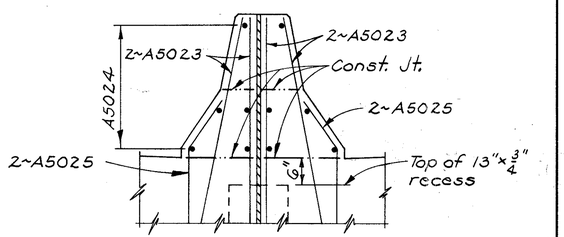


SECT. A_3~A_3 SECT. A_5~A_5

For details not shown see Sect. A_2~A_2, A_4~A_4



DETAIL OF ABUTMENT MEDIAN



SECT. A_{10}~A_{10}

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ABUTMENT DETAILS

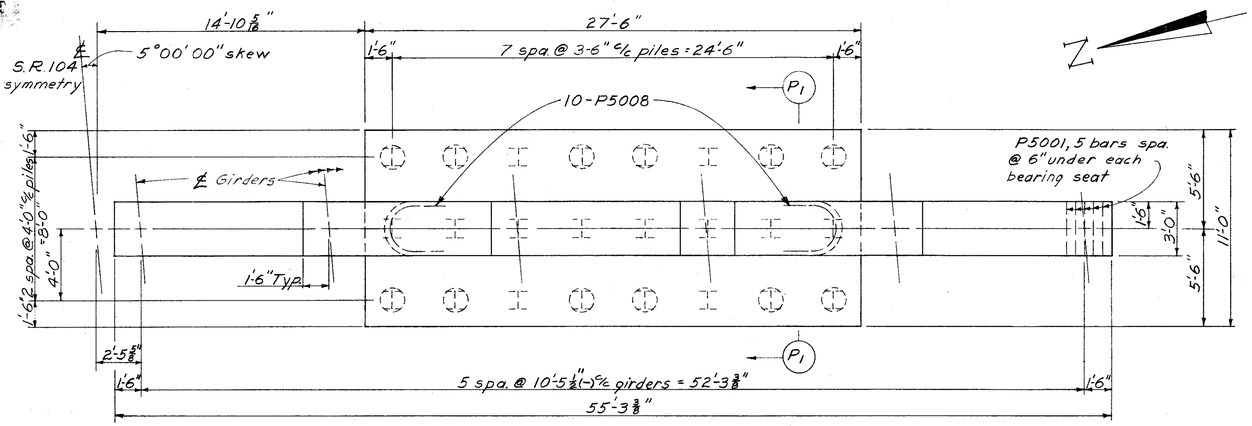
BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	FTJ	10/29/70	

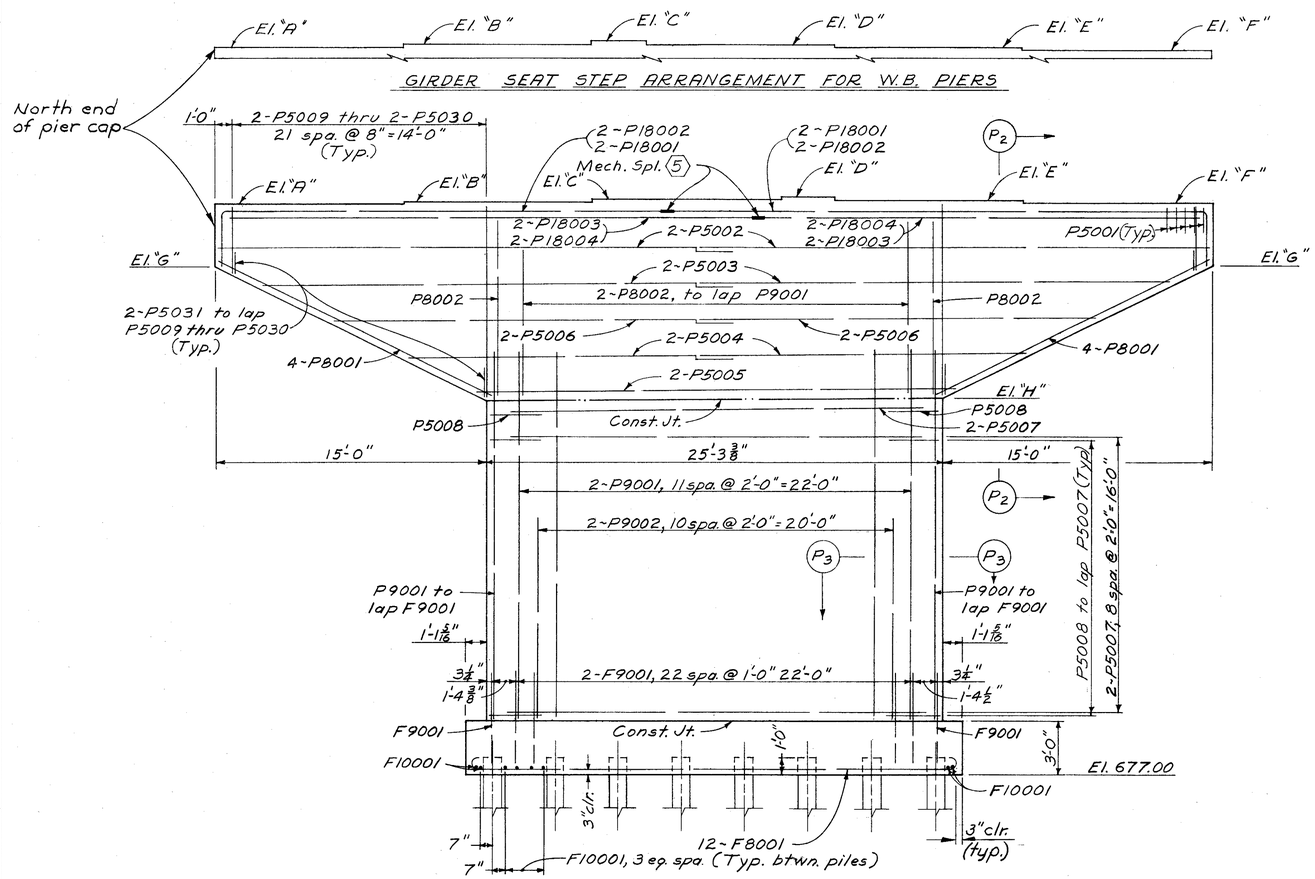
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

208
239

FRANKLIN COUNTY
FRA-104-8.04



PLAN
(E.B. Piers)



ELEVATION
(Girder step arrangement for E.B. Piers)

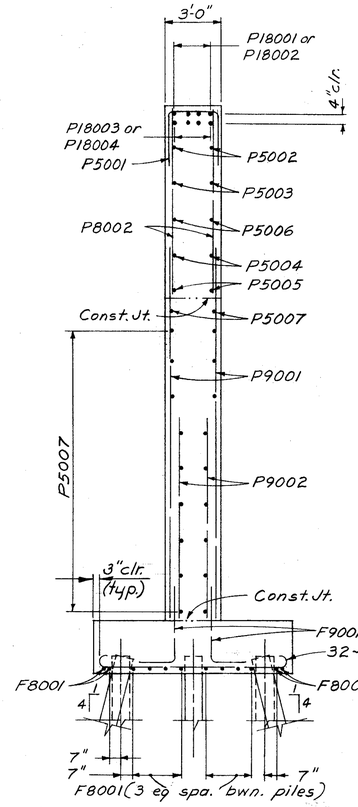
TABLE OF ELEVATIONS

	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
W.B. Pier 1	709.30	709.46	709.61	709.44	709.27	709.10	705.59	698.09
E.B. Pier 1	709.09	709.25	709.41	709.56	709.40	709.23	705.60	698.10
W.B. Pier 2	709.87	710.03	710.18	710.02	709.85	709.68	706.18	698.68
E.B. Pier 2	709.68	709.84	710.00	710.16	710.00	709.83	706.18	698.68
W.B. Pier 3	710.12	710.29	710.44	710.28	710.11	709.95	706.45	698.95
E.B. Pier 3	709.95	710.11	710.27	710.43	710.28	710.12	706.45	698.95

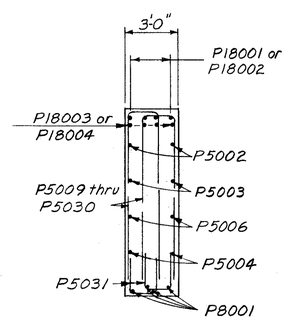
NOTES:

All piles shall be 12 BP 53 steel piles
Vertical piles Battered piles 1:4

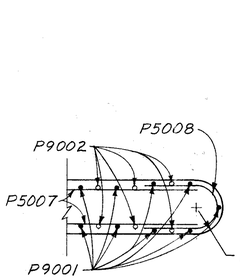
Splices in N°18 size bars shall be made by an approved positive mechanical method designed to develop 125% of the yield strength of the bar.



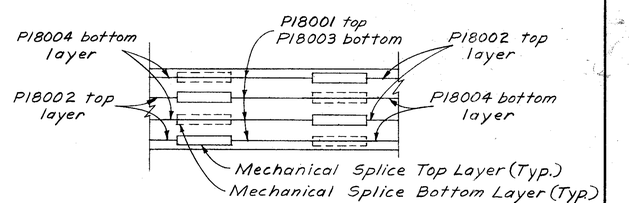
SECT P_1-P_1



SECT P_2-P_2



SECT P_3-P_3



(5) Arrangement of Mechanical Splices

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PIERS 1, 2 & 3 E.B. & W.B.
BRIDGE N°FRA-104-0820
S.R 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	RWF		JP	FTJ	10/29/70	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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FRANKLIN COUNTY
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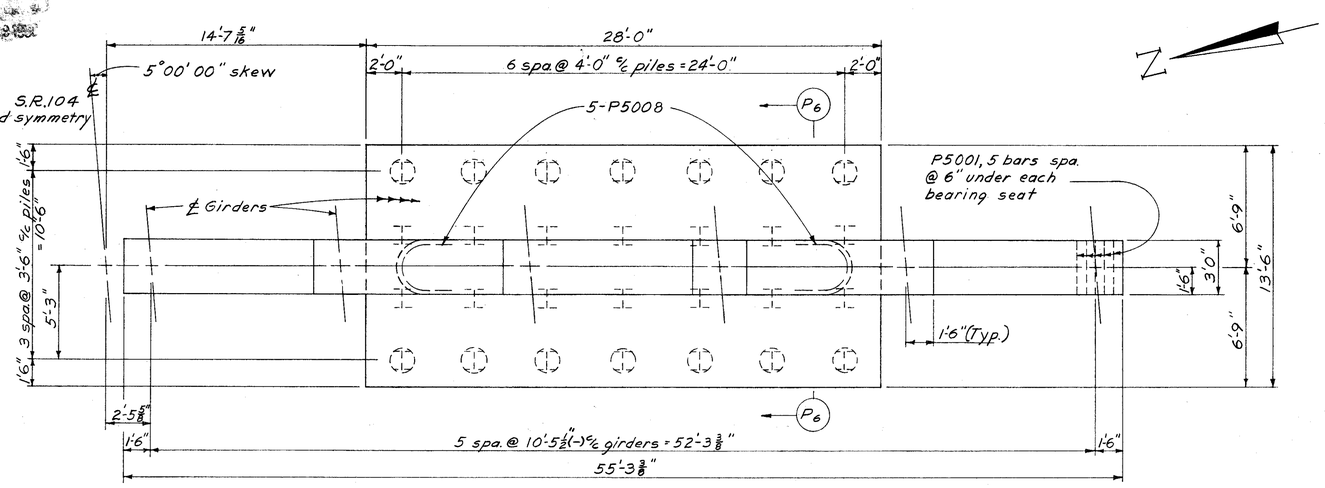
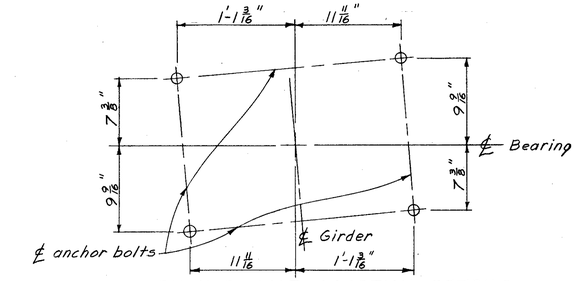
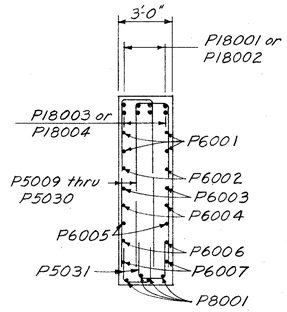


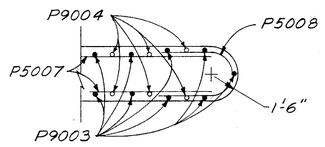
PLAN



ANCHOR BOLT LOCATION DETAILS



SECT. P_4~P_4



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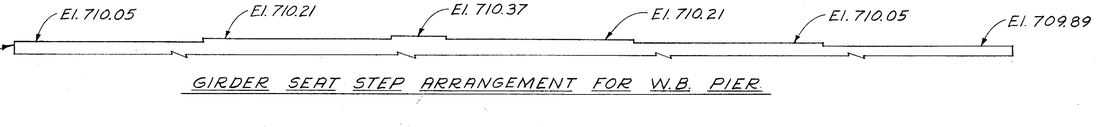
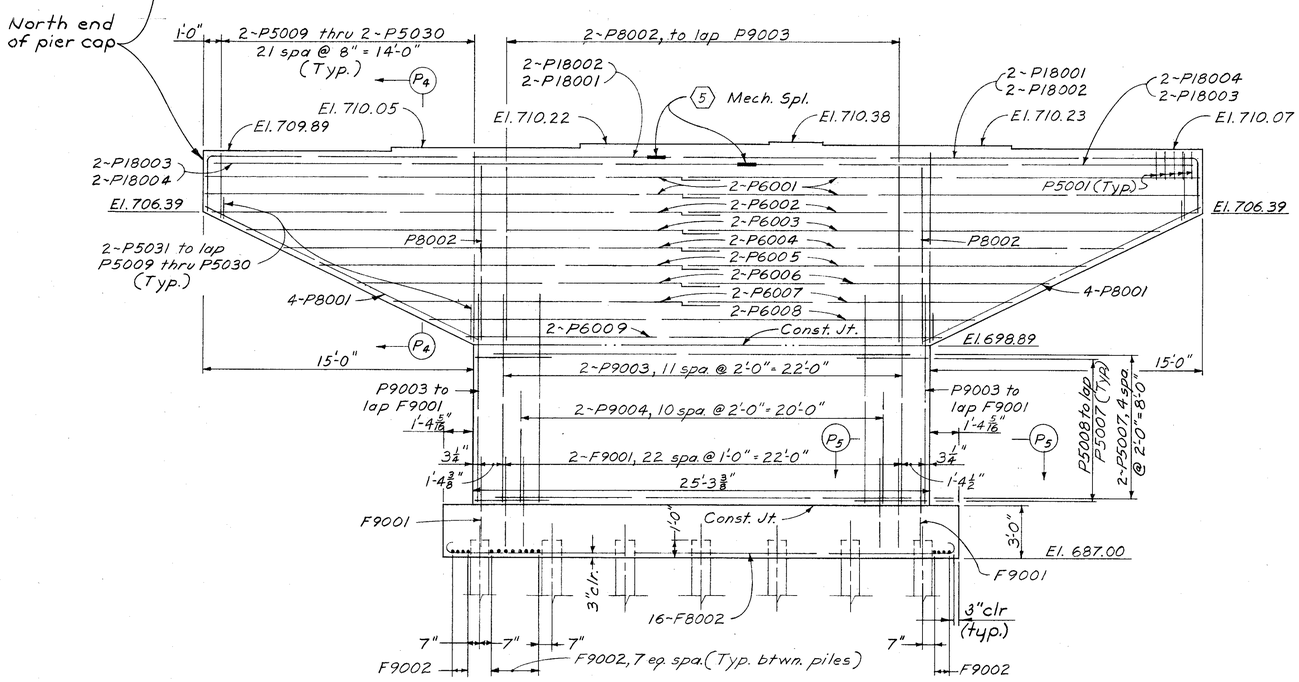
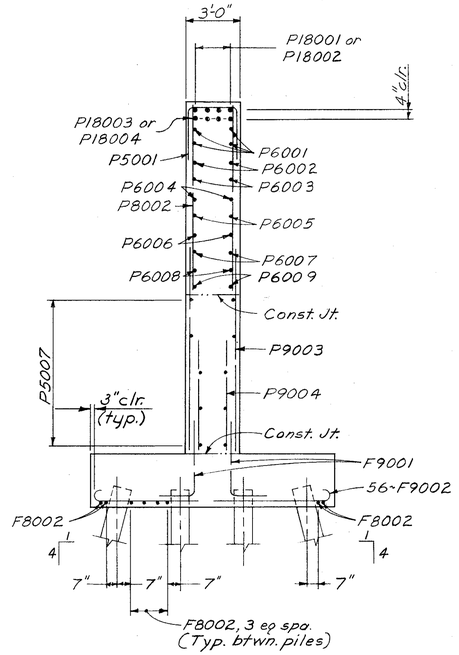


GIRDER SEAT STEP ARRANGEMENT FOR W.B. PIER



ELEVATION
(Girder step arrangement for E.B. Pier)



SECT. P_6~P_6

NOTES:

Superstructure Ground shall be embedded according to Standard Dwg. HL-4 in Pier 4 E.B.

(5) For arrangement of mechanical splice see sheet 7/15

For additional notes see sheet 7/15

Bridge Seat Reinforcing: Special care shall be taken in placing reinforcing steel in the vicinity of the bridge seat so as to avoid interference with the drilling of anchor bolt holes.

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PIER 4 E.B. & W.B.

BRIDGE Nº FRA~104~0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA 17+17.74
STA 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
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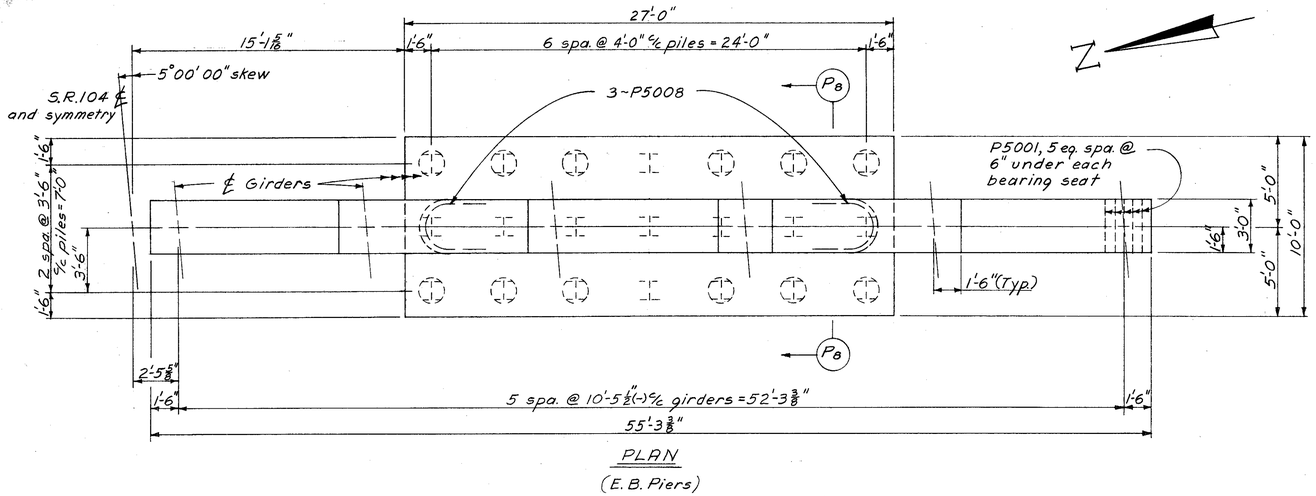


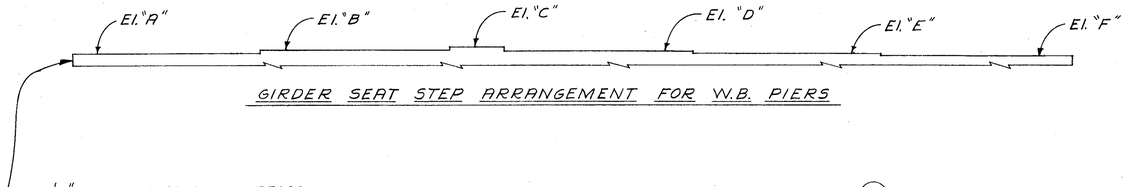
PLAN
(E. B. Piers)

TABLE OF ELEVATIONS								
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
W.B. Pier 5	709.68	709.85	710.00	709.85	709.69	709.53	706.03	698.53
E.B. Pier 5	709.53	709.70	709.86	710.03	709.88	709.72	706.03	698.53
W.B. Pier 6	709.28	709.44	709.60	709.44	709.28	709.12	705.62	698.12
E.B. Pier 6	709.12	709.29	709.46	709.62	709.47	709.31	705.62	698.12

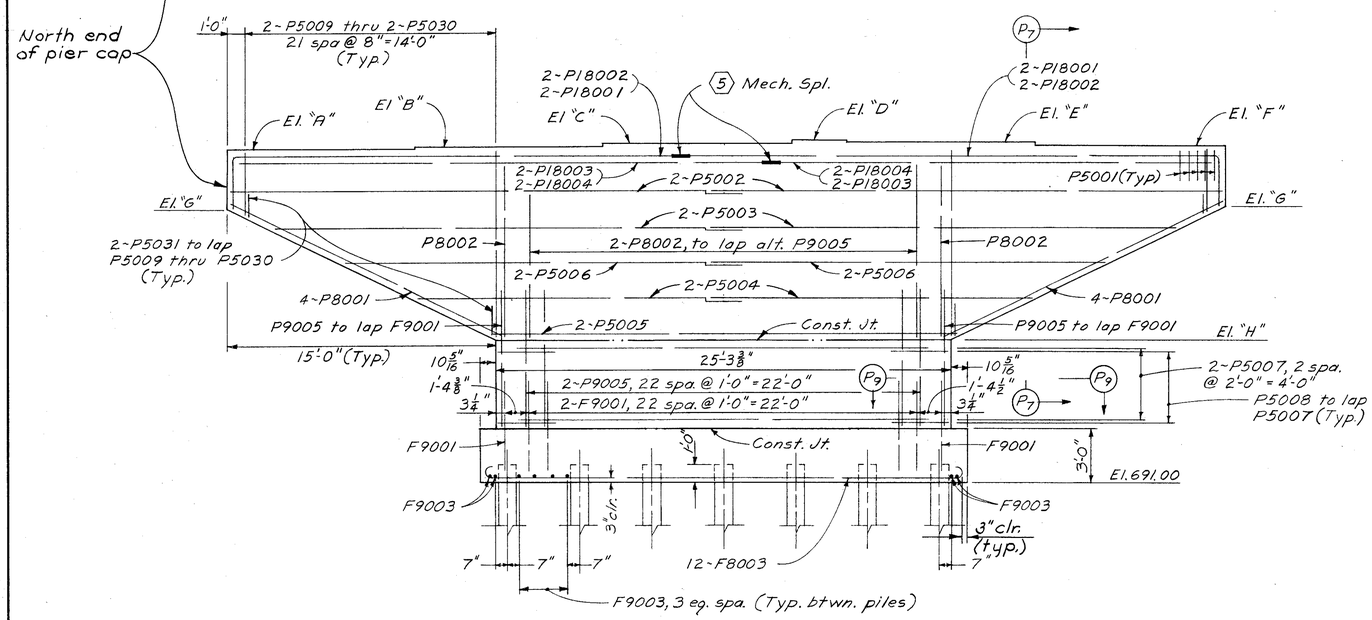
NOTES:

(5) For arrangement of mechanical splice see sheet 7/15

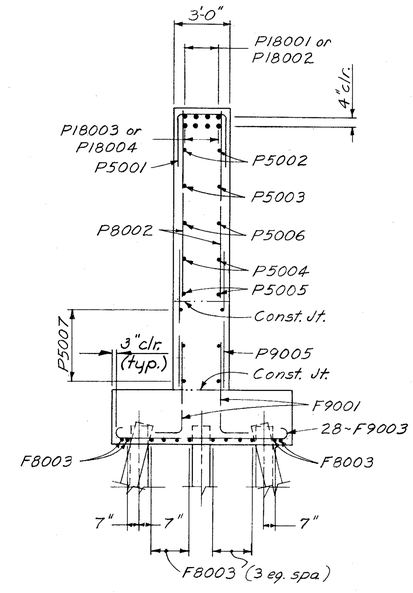
For additional notes see sheet 7/15



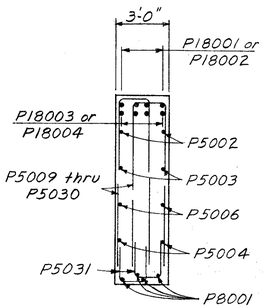
GIRDER SEAT STEP ARRANGEMENT FOR W.B. PIERS



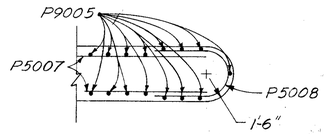
ELEVATION
(Girder step arrangement for E.B. Piers)



SECT. P_8-P_8



SECT. P_7-P_7



SECT. P_9-P_9

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PIERS 5 & 6 E.B. & W.B.
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S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	RWF		JP	TLW	10/29/70	

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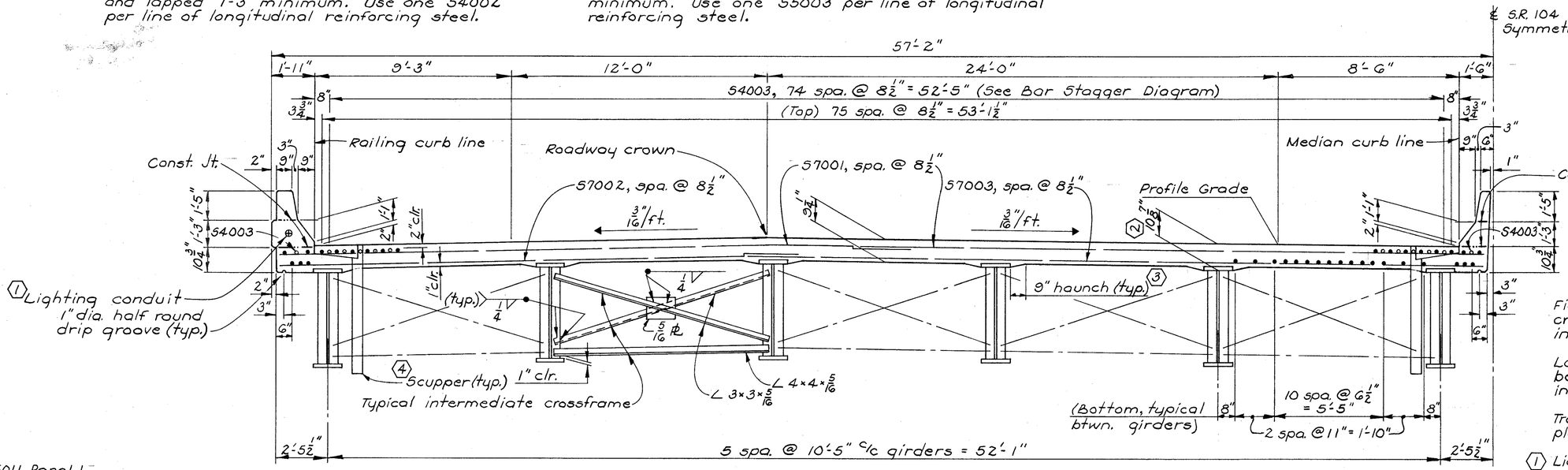
NOTES

Top longitudinal slab reinforcing steel shall be S4001 or S4002 except as otherwise shown and lapped 1'-3" minimum. Use one S4002 per line of longitudinal reinforcing steel.

Bottom longitudinal slab reinforcing steel shall be S5002 or S5003 and lapped 1'-7" minimum. Use one S5003 per line of longitudinal reinforcing steel.

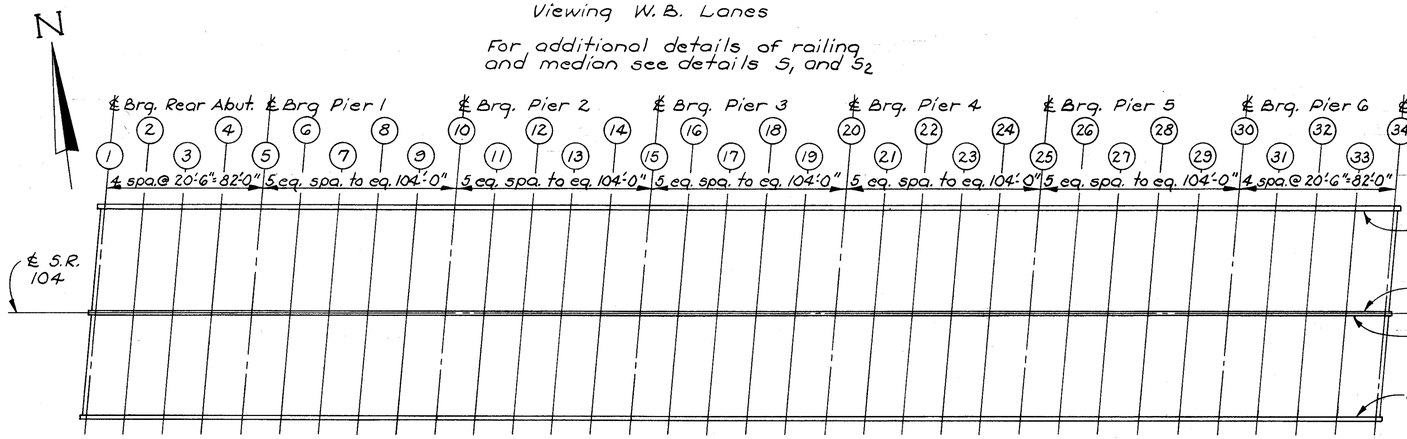
Slab thickness shown includes 1" monolithic wearing surface.



HALF TRANSVERSE SECTION

Viewing W. B. Lanes

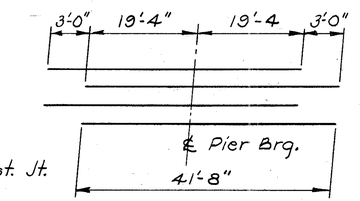
For additional details of railing and median see details S_1 and S_2



Elevations shown are at curb line and top of slab and are those which are required before the concrete slab is placed. Proper allowance has been made for the dead load deflections caused by the weight of concrete.

TABLE OF SCREED ELEVATIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Line "A"	715.63	715.86	716.05	716.19	716.32	716.48	716.64	716.75	716.83	716.90	717.00	717.10	717.15	717.16	717.16	717.19	717.22
Line "B"	715.41	715.64	715.83	715.97	716.11	716.28	716.43	716.55	716.63	716.71	716.81	716.91	716.96	716.97	716.98	717.02	717.04
Line "C"	715.41	715.64	715.83	715.97	716.11	716.28	716.43	716.55	716.63	716.71	716.81	716.91	716.96	716.97	716.98	717.02	717.04
Line "D"	715.54	715.77	715.96	716.11	716.25	716.42	716.58	716.70	716.78	716.86	716.97	717.07	717.12	717.14	717.15	717.19	717.22
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Line "A"	717.20	717.15	717.08	717.05	717.01	716.93	716.82	716.71	716.65	716.59	716.51	716.40	716.30	716.23	716.17	716.09	715.97
Line "B"	717.03	716.98	716.91	716.89	716.85	716.77	716.66	716.55	716.49	716.43	716.35	716.24	716.14	716.07	716.02	715.93	715.81
Line "C"	717.03	716.98	716.92	716.89	716.85	716.77	716.66	716.56	716.49	716.43	716.35	716.24	716.14	716.07	716.02	715.93	715.81
Line "D"	717.21	717.16	717.10	717.08	717.04	716.97	716.86	716.75	716.68	716.63	716.54	716.44	716.33	716.27	716.21	716.13	716.01



BAR STAGGER DIAGRAM

Showing stagger of S4003 bars over piers

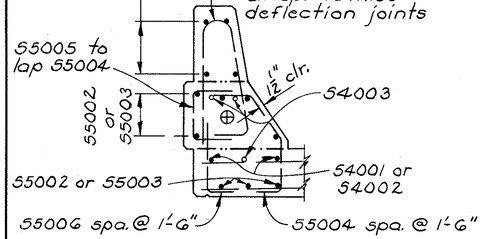
NOTES (Continued)

Field bend transverse bars to fit crown. Field bending to be included in Item 509 for payment.

Longitudinal reinforcing steel shall be field cut as necessary to avoid interference with scuppers.

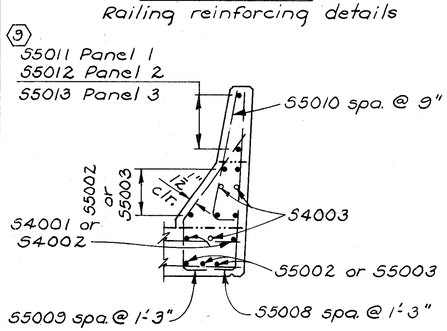
Transverse reinforcing steel shall be placed parallel to ℄ bearings.

1. Lighting conduit shall be placed a minimum of 1" clear above construction joint at top of slab.
2. 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 conformation required to place it parallel to the finished grade. Deduction shall be made for volume of encased steel plates as per 511.19.
3. 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.
4. For details of scupper see sheet 14/15.
9. For location of panels see General Elevation sheet 2/15.



DETAIL S_1

Railing reinforcing details



DETAIL S_2

Median reinforcing details
All vertical steel to miss deflection joints

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SUPERSTRUCTURE DETAILS

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S.R. 104 OVER SCIOTA RIVER
FRANKLIN COUNTY
STA. 17+17.74
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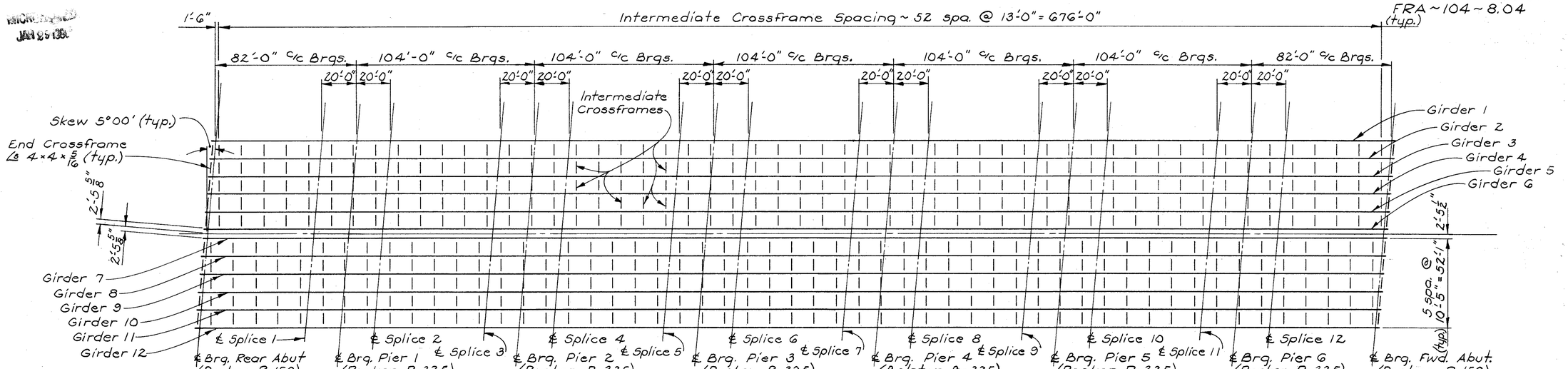
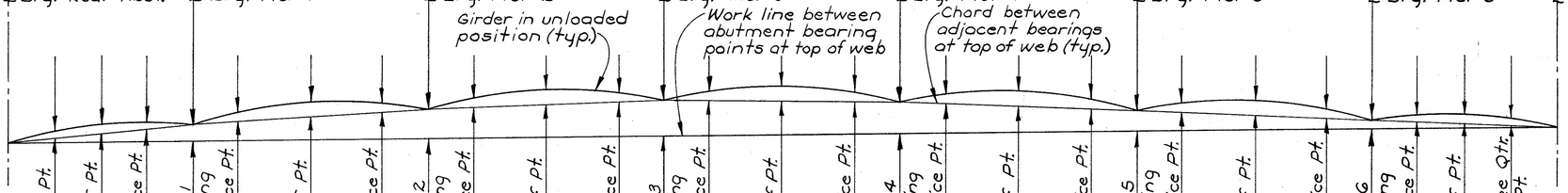
NOTE

Transverse ℄ of bearing devices shall be placed normal to girders.

For additional details see sheets 12, 13 | 15.



FRAMING PLAN



CAMBER AND BLOCKING

CAMBER

		Qtr. Pt.	Half Pt.	Splice Pt.	Pier 1 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 2 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 3 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 4 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 5 Blocking	Splice Pt.	Half Pt.	Splice Pt.	Pier 6 Blocking	Splice Pt.	Half Pt.	Three Qtr. Pt.
Deflections due to weight of steel	Girders 1, 6, 7, & 12	1/8"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/8"
	Girders 2 thru 5, 8 thru 11	1/8"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/16"		1/16"	1/8"	1/8"
Deflections due to remaining dead load	Girders 1, 6, 7, & 12	7/16"	1/2"	5/16"		4/16"	9/16"	5/16"		4/16"	11/16"	5/16"		5/16"	11/16"	5/16"		5/16"	11/16"	5/16"		4/16"	9/16"	4/16"		2 1/16"	2 1/16"	7/16"
	Girders 2 thru 5, 8 thru 11	9/16"	5/8"	4/16"		5/16"	3/4"	4/16"		5/16"	13/16"	4/16"		6/16"	13/16"	5/16"		6/16"	13/16"	5/16"		5/16"	3/4"	4/16"		2 2/16"	2 2/16"	9/16"
Adjustment required for vertical curve	Girders 1, 6, 7, & 12	3/16"	5/16"	3/16"		5/16"	1/2"	5/16"		5/16"	1/2"	5/16"		5/16"	1/2"	6/16"		6/16"	1/2"	6/16"		6/16"	1/2"	6/16"		6/16"	1/2"	6/16"
	Girders 2 thru 5, 8 thru 11	3/16"	5/16"	3/16"		5/16"	1/2"	5/16"		5/16"	1/2"	5/16"		5/16"	1/2"	6/16"		6/16"	1/2"	6/16"		6/16"	1/2"	6/16"		6/16"	1/2"	6/16"
Required shop camber	Girders 1, 6, 7, & 12	3/4"	15/16"	7/16"		5/8"	1 3/16"	9/16"		5/8"	1 5/16"	11/16"		11/16"	1 5/16"	11/16"		5/8"	1 1/8"	7/16"		1/4"	11/16"	5/16"		1/4"	5/16"	9/16"
	Girders 2 thru 5, 8 thru 11	7/8"	1 1/16"	1/2"		11/16"	1 3/8"	5/8"		11/16"	1 1/2"	3/4"		3/4"	1 1/2"	3/4"		11/16"	1 5/16"	1/2"		5/16"	7/8"	3/8"		1/16"	3/4"	11/16"

BLOCKING

	Grdr. 1	Grdr. 2	Grdr. 3	Grdr. 4	Grdr. 5	Grdr. 6	Grdr. 7	Grdr. 8	Grdr. 9	Grdr. 10	Grdr. 11	Grdr. 12
Pier 1	7 13/16"	7 13/16"	7 13/16"	7 13/16"	7 13/16"	7 13/16"	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"	7 7/8"
Pier 2	1'-2 1/8"	1'-2 3/16"	1'-2 3/16"	1'-2 3/16"	1'-2 1/4"	1'-2 1/4"	1'-2 1/4"	1'-2 5/16"	1'-2 5/16"	1'-2 5/16"	1'-2 5/16"	1'-2 3/16"
Pier 3	1'-4 9/16"	1'-4 5/8"	1'-4 5/8"	1'-4 11/16"	1'-4 11/16"	1'-4 3/4"	1'-4 3/4"	1'-4 3/4"	1'-4 13/16"	1'-4 13/16"	1'-4 7/8"	1'-4 7/8"
Pier 4	1'-3 1/16"	1'-3 1/8"	1'-3 1/8"	1'-3 3/16"	1'-3 1/4"	1'-3 1/4"	1'-3 5/16"	1'-3 5/16"	1'-3 3/8"	1'-3 7/16"	1'-3 1/2"	1'-3 1/2"
Pier 5	10 1/16"	10 1/16"	10 1/8"	10 1/8"	10 3/16"	10 1/4"	10 1/4"	10 5/16"	10 5/16"	10 3/8"	10 7/16"	10 7/16"
Pier 6	4 7/16"	4 7/16"	4 7/16"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 9/16"	4 9/16"	4 9/16"	4 5/8"	4 5/8"

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SUPERSTRUCTURE DETAILS

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FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

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FED. RD. DIVISION	STATE	PROJECT	
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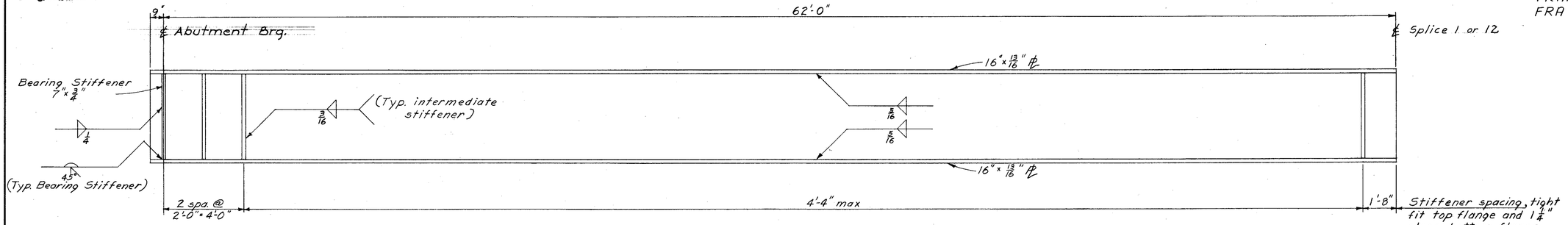

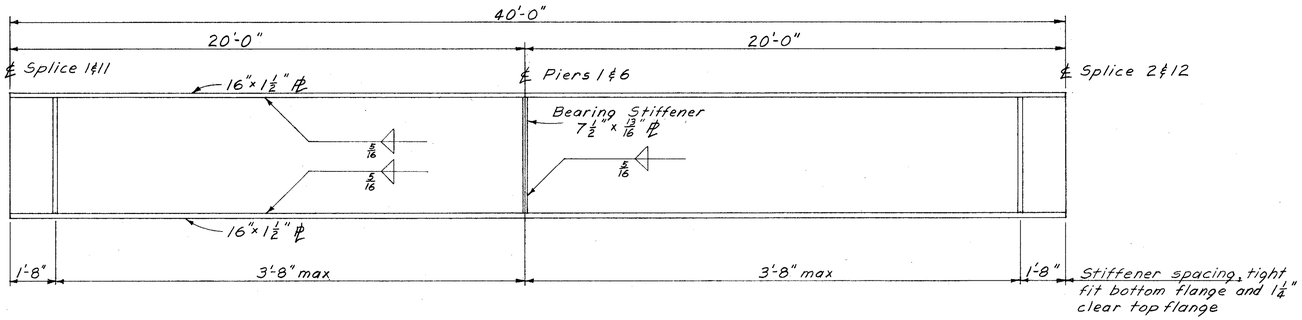

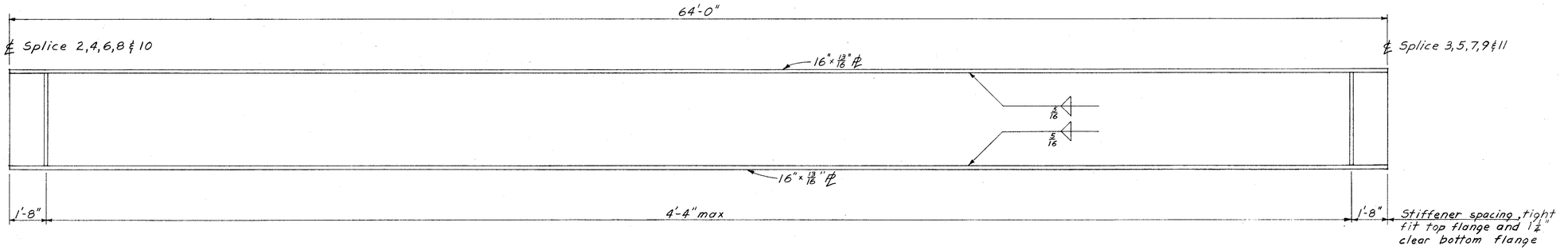

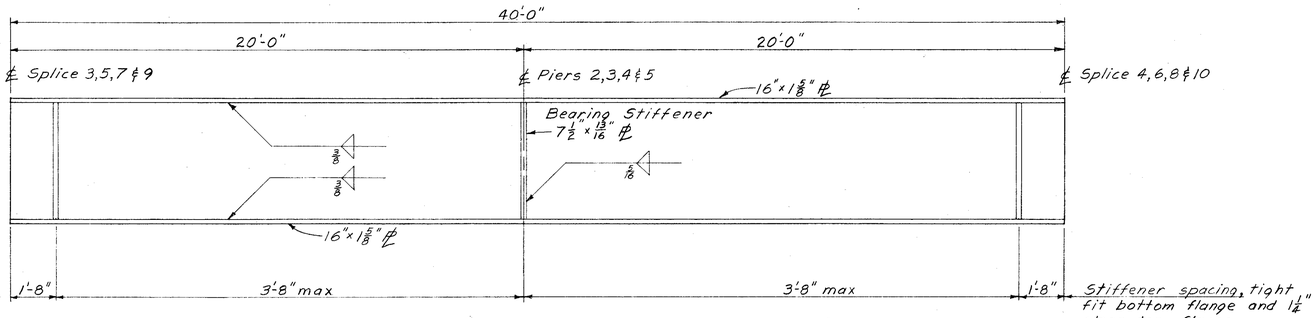

NOTES:

All bearing stiffeners shall be a tight fit against the top flange.

Optional shop welded web and flange splices may be introduced with the approval of the Engineer.

For splice details see sheet 13/15

Clip interior corners of all stiffeners 1/2"

All intermediate stiffeners are 5"x 5/16" and shall be placed in pairs.

All web plates are 52"x 3/8"

All splices shown are designed for field bolted connections. However, Splice Nos. 1, 3, 5, 7, 9 and 11 may be optionally shop welded if the larger shop fabricated pieces can be delivered to the job site.

For additional notes and details see sheets 10, 11, 13/15.

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GIRDER DETAILS

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FRANKLIN COUNTY
STA. 17+17.74
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JP	RWF		FTJ	TLW	10/29/90	

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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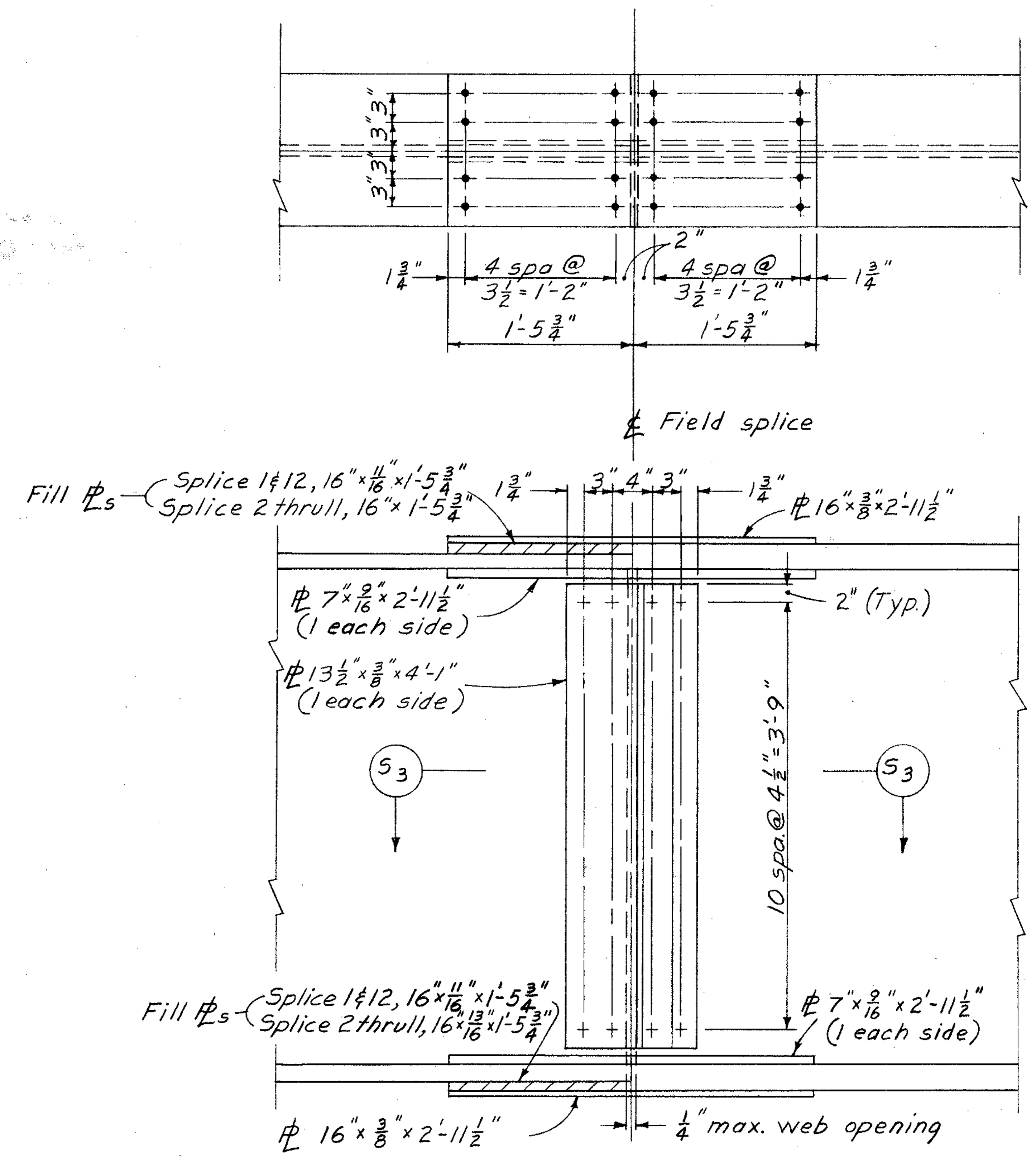
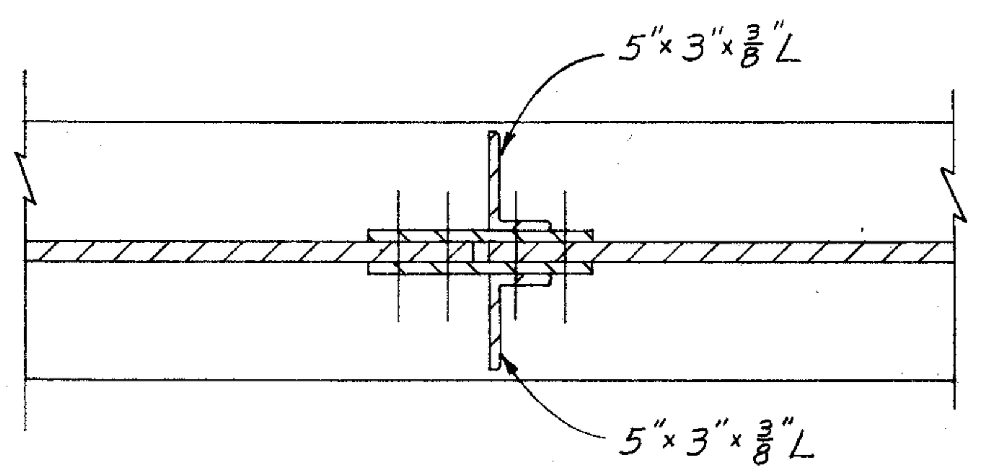
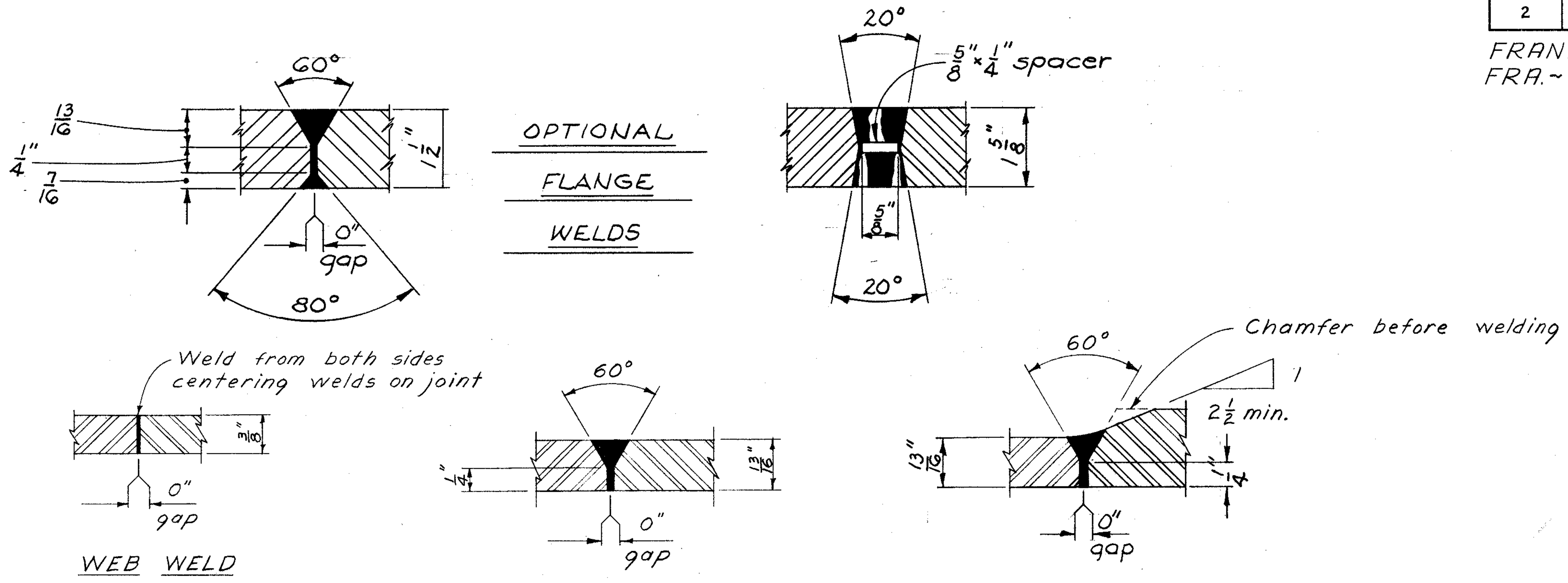




SECT. S_3-S_3

FIELD SPLICE DETAIL
All bolts to be 1" φ high strength



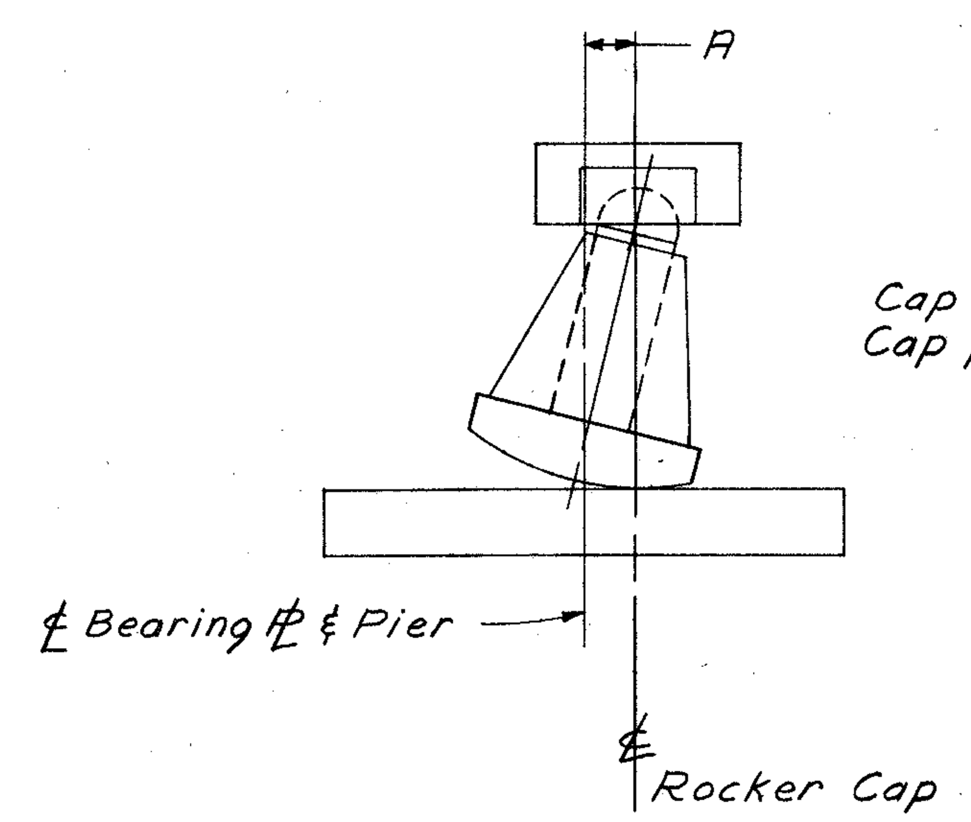
(See Note, Sheet 12/15)

JOINT PREPARATION FOR SUBMERGED ARC WELDMENTS

NOTES:

All full penetration welds shall be back-gauged and welded after welding far side.

Butt welds on flange plates shall be ground flush, the finish grinding being parallel to the direction of stress.



Cap placement to East is positive
Cap placement to West is negative

ROCKER SETTINGS					
Dimension "A" (inches)					
℄ Bearing	40°F	50°F	60°F	70°F	80°F
Rear. Abut.	+5/32	-1/8	-13/32	-11/16	-31/32
Pier #1	+1/8	-3/32	-5/16	-9/16	-25/32
Pier #2	+3/32	-1/16	-7/32	-3/8	-1/2
Pier #3	+1/32	-1/32	-3/32	-3/16	-1/4
Pier #5	-1/32	+1/32	+3/32	+3/16	+1/4
Pier #6	-3/32	+1/16	+7/32	+3/8	+1/2
Fwd. Abut.	-1/8	+3/32	+5/16	+1/2	+23/32

For temperatures not shown interpolate between tabulated values

ROCKER AND BOLSTER (12)																	
Bolster No.	Rocker No.	Dimensions (inches)													Weight each (lb)		Maximum Load (lb.)
		A	B	C	D	F	G	H	K	L	M	R	T	Y	Bolster	Rocker	
B-325	R-325	3½	21	3¾	3½	¾	13	19⅞	15	29	26	13	3	1 11/16	960	1205	325,000

(12) For additional dimensions and details see Standard Drawing RB-1-55

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Columbus, Ohio

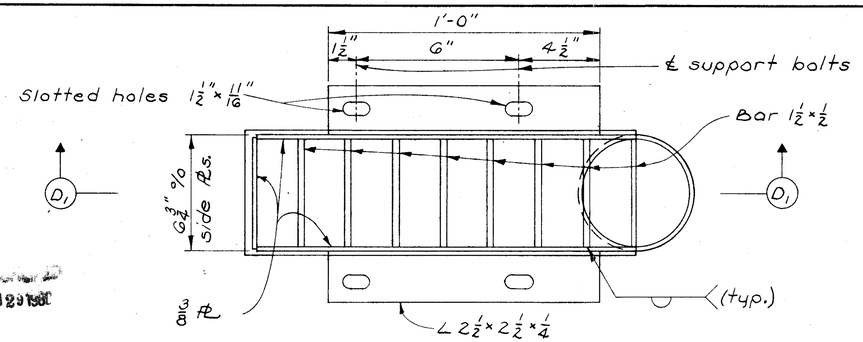
GIRDER DETAILS
BRIDGE Nº FRA.~ 104 ~ 0820
S.R. 104 OVER SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	RWF		FTJ	TLW	10/29/70	

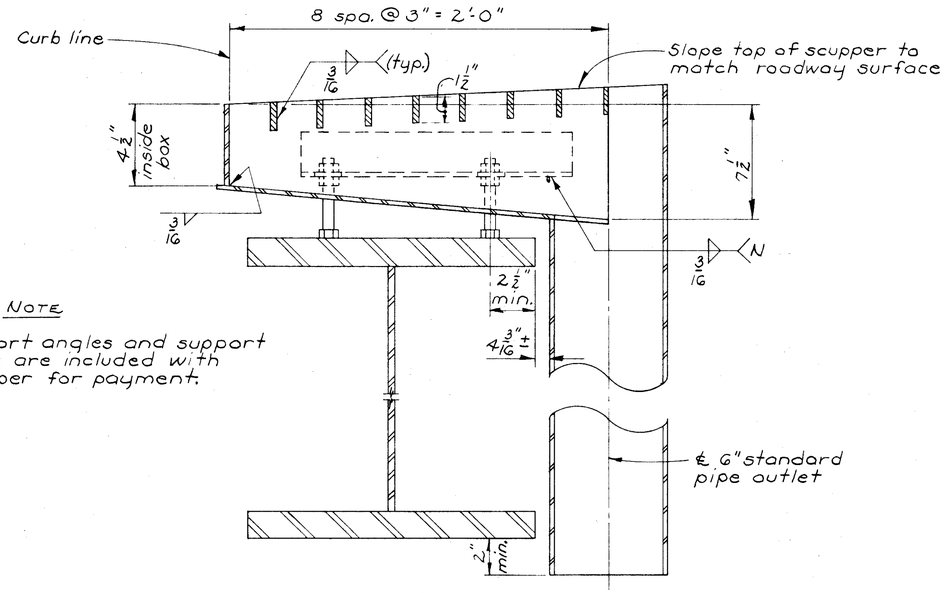
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

215
239

FRANKLIN COUNTY
FRA-104-8.04



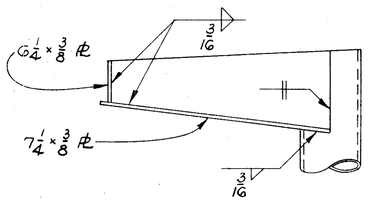
SCUPPER PLAN



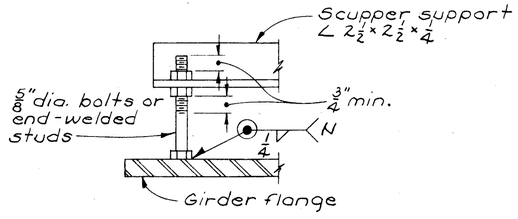
NOTE

Support angles and support bolts are included with scupper for payment.

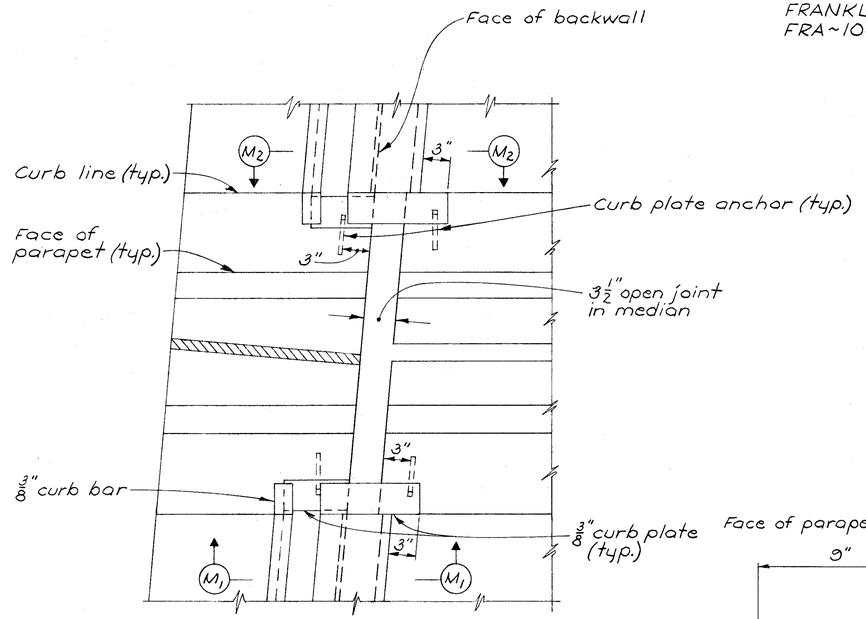
SECT. D_1-D_1



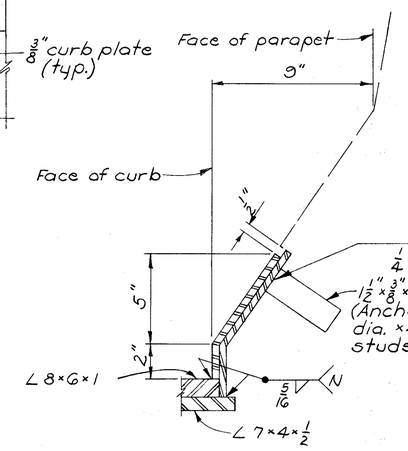
SCUPPER ELEVATION



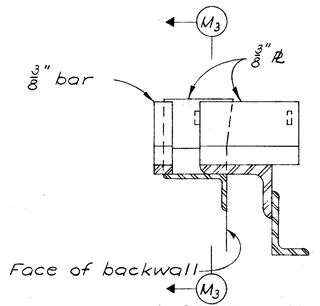
SUPPORT ON FLANGE



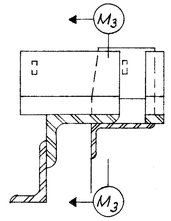
MEDIAN CURB PLATE DETAILS



SECT. M_3-M_3



SECT. M_1-M_1



SECT. M_2-M_2

For details not shown see Sect. M_1-M_1

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MISCELLANEOUS DETAILS

BRIDGE Nº FRA-104-0820
S.R. 104 OVER SCIOTO RIVER
STA. 17+17.74
FRANKLIN COUNTY STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JP	GTR		FTJ	TLV	10/29/90	

REINFORCING STEEL LIST

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
		SUPERSTRUCTURE								
S4001	3680	30-0	73,747							st.
S4002	160	24-3	2592							st.
S4003	972	41-8	27,055							st.
S5002	4186	30-0	130,980							st.
S5003	182	31-11	6059							st.
S5004	914	3-1	2939	11	0-9	0-9	0-11½	0-9	0-6	bt.
S5005	914	2-0	1907	1		0-7½	1-0	0-7½		bt.
S5006	914	2-1	1986	1	0-6	1-9				bt.
S5007	914	5-4	5084	10	2-2	0-2¼	2-5	0-7½		bt.
S5008	1098	3-7	4103	12	0-6	0-2	3-3			bt.
S5009	1098	2-10	3245	11		1-0	1-5	0-9	0-6	bt.
S5010	1830	2-9	5248	5	0-5	2-4	0-6			bt.
S5011	120	13-7	1700							st.
S5012	288	6-2	1852							st.
S5013	360	12-8	4756							st.
S7001	3872	29-6	233,474							st.
S7002	1936	24-4	96,291							st.
S7003	1936	34-9	137,512							st.
		ABUTMENTS								
A5001	120	4-11	615	1		1-6	2-2	1-6		bt.
A5002	28	6-0	175							st.
A5003	172	7-4	1315	1		2-1	3-5	2-1		bt.
A5004	64	30-0	2003							st.
A5005	32	28-7	954							st.
A5006	4	36-8	153							st.
A5007	32	28-5	948							st.
A5008	24	9-6	238							st.
A5009	24	7-2	179							st.
A5010	4	5-7	23							st.
A5011	4	4-10	20							st.
A5012	4	4-1	17							st.
A5013	12	3-5	43							st.
A5014	8	7-8	64							st.
A5015	8	9-3	77							st.
A5016	48	15-8	784							st.
A5017	8	9-10	82							st.
A5018	8	7-6	63							st.
A5019	8	6-8	56							st.
A5020	28	6-5	187	13	2-5	0-2½	3-3	0-7½		bt.
A5021	48	2-0	100	1		0-7½	1-0	0-7½		bt.

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
		ABUTMENTS (CONT.)								
A5022	40	2-11	122							st.
A5023	16	4-6	75							st.
A5024	20	1-5	30							st.
A5025	8	2-9	23	11		0-9	0-11½	1-9		bt.
A6001	222	12-5	4140	1		5-8	1-5	5-8		bt.
A6002	78	9-9	1142	1		4-4	1-5	4-4		bt.
A6003	144	7-1	1532	1		3-0	1-5	3-0		bt.
A6004	144	9-3	2001	1		4-4	0-11	4-4		bt.
A6005	24	8-4	300	11	0-9	0-9	0-11½	6-7		bt.
A6006	4	6-7	40	11	0-9	0-9	0-11½	4-10		bt.
A7001	4	6-1	50	11	0-9	0-9	0-11½	4-4		bt.
A7002	4	5-3	43	11	0-9	0-6	0-11½	3-7		bt.
A7003	4	4-6	37	11	0-9	0-4	0-11½	2-11		bt.
A7004	4	4-6	37	11	0-9	0-2½	0-11½	2-11		bt.
A7005	4	3-10	31							st.
F5010	8	5-0	42							st.
F5011	172	7-4	1315	1	1-0	6-6				bt.
F5012	172	8-3	1480	1		1-7	5-4	1-7		bt.
F5013	48	10-9	538	14	2-2	3-0	2-2	3-0		bt.
F6010	172	14-1	3638	1		2-6	5-4	6-7		bt.
F6011	24	18-2	655	1		8-8	1-2	8-8		bt.
F6012	8	13-4	160	1		6-3	1-2	6-3		bt.
F8010	42	30-0	3364							st.
F8011	14	34-2	1277							st.
F8012	24	12-4	790							st.

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
		PIERS								
P5001	360	5-7	2096	1		1-7	2-8	1-7		bt.
P5002	40	28-5	1186							st.
P5003	40	26-2	1092							st.
P5004	40	18-2	758							st.
P5005	20	26-6	553							st.
P5006	40	22-2	925							st.
P5007	164	22-3	3806							st.
P5008	164	6-11	1183	7	1-7	1-2¼				bt.
P5009 thru P5030	48	9-9 thru 23-9 Δ	18,448	1		3-8 thru 10-8 Δ	2-8	3-8 thru 10-8 Δ		bt.
P5031	1056	5-11	6517	1		1-9	2-8	1-9		bt.
P6001	16	28-7	687							st.
P6002	8	28-5	341							st.
P6003	8	26-5	317							st.
P6004	8	24-5	293							st.
P6005	8	22-5	269							st.
P6006	8	20-5	245							st.
P6007	8	18-5	221							st.
P6008	4	30-6	183							st.
P6009	4	26-6	159							st.
P8001	96	16-7	4251							st.
P8002	312	10-0	8330							st.
P9001	156	21-6	11,404							st.
P9002	132	12-8	5685							st.
P9003	52	11-5	2019							st.
P9004	44	6-11	1035							st.
P9005	192	7-1	4624							st.
P18001	48	32-6	21,216	1	3-2	30-0				bt.
P18002	48	27-5	17,898	1	3-2	24-11				bt.
P18003	48	30-0	19,584							st.
P18004	48	24-11	16,266							st.

Mark	Nº	Length	Weight	Type	"A"	"B"	"C"	"D"	"E"	Shp
		PIERS (CONT.)								
F8001	72	29-2	5607	4	27-0					bt.
F8002	32	29-8	2535	4	27-6					bt.
F8003	48	28-8	3674	4	26-6					bt.
F9001	576	6-7	12,892	1	1-3	5-7				bt.
F9002	112	15-6	5902	4	13-0					bt.
F9003	112	12-0	4570	4	9-6					bt.
F10001	192	13-4	11,015	4	10-6					bt.
		LIGHT POLE REINFORCEMENT								
L5001	32	4-10	161	12	1-4	1-8	1-8	1-4		bt.
L5002	8	2-9	23	1	1-8	1-3				bt.
L5003	12	6-0	75	1	3-1	3-1				bt.
L5004	12	2-11	37	1	2-0	1-1				bt.
L5005	8	3-0	25	1	1-7	1-7				bt.
		REPLACEMENT STEEL								
RE4001	6	6-3								st.
RE5001	11	6-7								st.
REG001	1	6-11								st.
RE7001	24	7-3								st.
RE8001	2	7-6								st.
RE9001	3	7-11								st.
RE10001	1	8-3								st.
RE18001	4	2-6								st.

Δ = Indicates length varies by tabulated amount.

Splices in Nº 18 size bars shall be made by approved positive mechanical method designed to develop 125 % of the yield strength of the bar.

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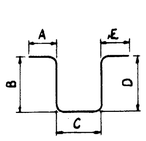
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

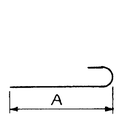
216 / 239

FRANKLIN COUNTY
FRA-104-8.04

Bending Diagram



TYPE 1



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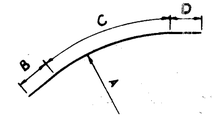

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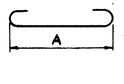

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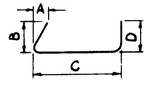

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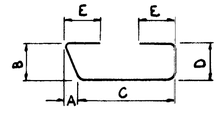

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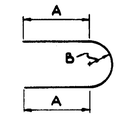

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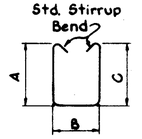

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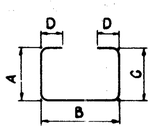

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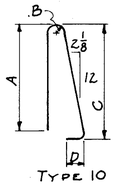

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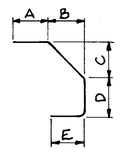

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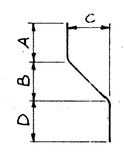

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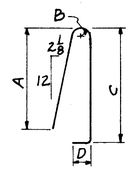
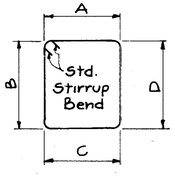


TYPE 13



TYPE 14

NOTE: In the reinforcing steel bar marks, the first digit where four digits are used and the first two where five are used is the bar number which indicates the size of the bar.

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Columbus, Ohio

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REINFORCING STEEL LIST

BRIDGE Nº FRA-104-0820
S.R. 104 over SCIOTO RIVER
FRANKLIN COUNTY
STA. 17+17.74
STA. 24+06.26

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
FTJ	GTR		JP	TLV	10/29/90	