MICROFILMED
FEB 12 1996

MAR-739-1.21	OHIO FHWA REGION 5	1 / 27

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
MAR-739-1.21
GREEN CAMP TOWNSHIP
MARION COUNTY

SURFACE TRANSPORTATION PROGRAM PID 5864

DESIGN DESIGNATION

Current A.D.T. (1993)	= 1788
Design Year A.D.T. (2013)	= 2499
D.H.V.	= 250
D	= 55 %
T	= 2 %
V	= 55 m.p.h.
Legal Speed	= 55 m.p.h.

Functional Classification = Major Collector (Rural)

DESIGN EXCEPTIONS

None

CONVENTIONAL SIGNS

County Line
Township Line
Section Line
Corporation Line or
Fence Line (existing) (proposed)
Center Line
Trees Stumps (to be removed)
Utility Poles: Telephone, Power, Light

Limited Access (only) LA
Right of Way (only) RW
Limited Access & Right of Way LA - RW
Existing Right of Way
Property Line (in existing fence)
Railroad or
Guardrail (existing) (proposed)

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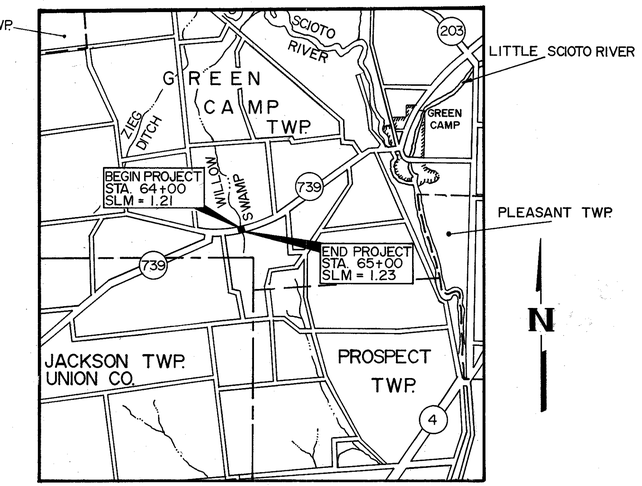


LOCATION MAP

0 1 2 3 4 5 6
Scale of Miles

Portion to be improved
State Route 739
U.S. Route 23
Other Roads

SCALES

Plan 0 10 20 40
Profile: Horizontal 0 10 20 40 Vertical 0 2 4
Cross Section: Horizontal 0 5 10 Vertical 0 5 10

1993 SPECIFICATIONS

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

I hereby approve these plans and declare that the making of this improvement will require the closing to traffic of the highway and that detours will be provided as indicated on the plans.

Approved
Date 4/22/94 District Deputy Director of Transportation

Approved B.D. Hankhammer/Stett
Date 4-22-94 Engineer, Bureau of Bridges and Structural Design

Approved Christopher L. Runyan
Date 6-29-94 Deputy Director, Design

Approved Jerry Wray
Date 6-29-94 Director, Department of Transportation

LINE DATA

				TOTAL
Begin Project				Sta. 64+00.00
End Project				Sta. 65+00.00
Length of Project				100.00 L.F. or 0.019 Mi.
Begin Work				Sta. 62+75.00
End Work				Sta. 66+25.00
Length of Work				350.00 L.F. or 0.066 Mi.

UNDERGROUND UTILITIES
2 WORKING DAYS BEFORE YOU DIG
CALL TOLL FREE 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

SUPPLEMENTAL SPECIFICATIONS		
802	4-13-90	
944	5-2-94	
942	3-18-92	
820	3-18-92	

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS							
BP-3.1	2-21-92	MC-11	8-1-78	AS-1-81	11-27-81		
		MC-4	7-26-76			MT-99.10	11-14-86
GR-1.1	5-6-91	TC-41.10	8-29-84	DBR-2-73	4-10-73	MT-101.60	7-1-92
GR-1.2	10-30-92	TC-41.20	3-26-79				
		TC-52.10	4-3-79	PSDB-1-81	6-20-89	MT-105.10	7-1-92
GR-2.1	5-6-91	TC-52.20	4-3-79			MT-105.11	7-1-92
GR-3.4	5-6-91						
GR-4.1	5-6-91						

STRUCTURE PLANS REVIEWED BY:
Burgess & Niple, Limited
Engineers and Architects

Plan Prepared By:
GARRISON CONSULTING ENGINEERS
638-A WAGNER AVENUE
GREENVILLE, OHIO 45331
513-548-1120

Project: MAR-739-1.21
Date Of Letting 12-13 1994 Contract No. 736

REVISED 8/24/94

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

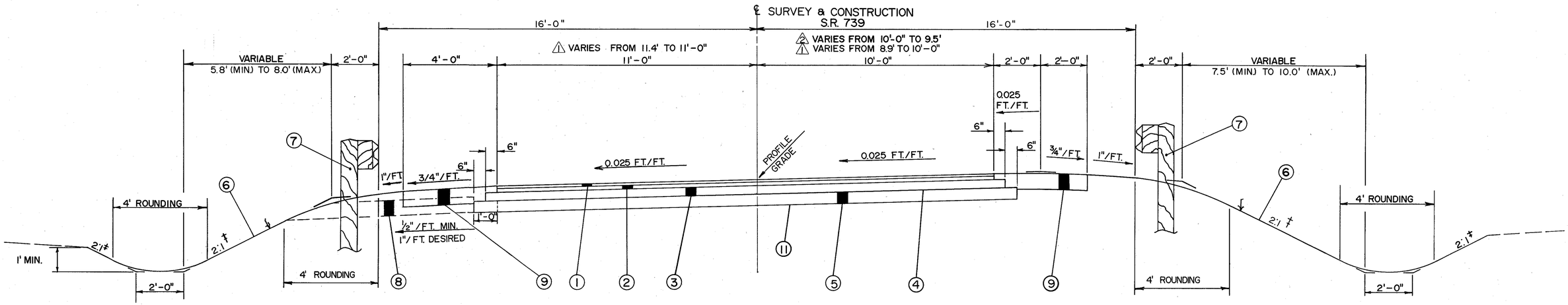
DIVISION ADMINISTRATOR DATE

TYPICAL SECTIONS

TYPE 404 ON 301

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

MARION COUNTY
MAR-739-1.21



CODE

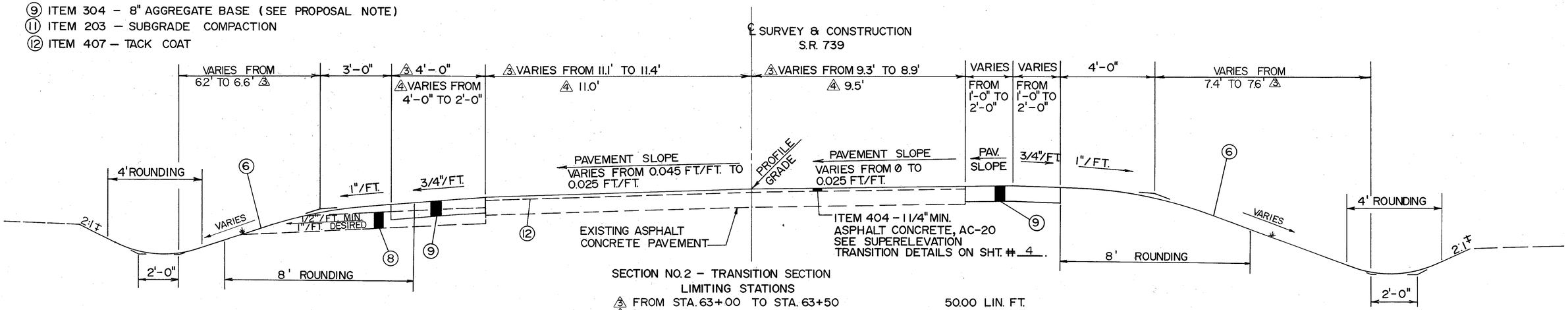
1. ITEM 404 – 1 1/4" ASPHALT CONCRETE, AC-20
2. ITEM 402 – 1 3/4" ASPHALT CONCRETE, AC-20
3. ITEM 301 – 4" BITUMINOUS AGGREGATE BASE, AC-20
4. ITEM 408 – BITUMINOUS PRIME COAT APPLIED AT THE RATE OF 0.40 GAL./SQ. YD.
5. ITEM 304 – 6" AGGREGATE BASE (SEE PROPOSAL NOTE)
6. ITEM 659 – SEEDING AND MULCHING (SEE GENERAL NOTE)
7. ITEM 606 – GUARDRAIL, TYPE 5
8. ITEM 605 – AGGREGATE DRAINS
9. ITEM 304 – 8" AGGREGATE BASE (SEE PROPOSAL NOTE)
11. ITEM 203 – SUBGRADE COMPACTION
12. ITEM 407 – TACK COAT

‡ UNLESS OTHERWISE SHOWN ON THE CROSS SECTIONS.

SECTION NO. 1 – SUPERELEVATED SECTION

LIMITING STATIONS

△1 FROM STA. 63+50 TO STA. 64+00	50.00 LIN. FT.	
FROM STA. 64+00 TO STA. 64+12.51	12.51 LIN. FT.	
FROM STA. 64+12.51 TO STA. 64+83.69	(MAR-739-0122 BRIDGE AND APPROACH SLAB LIMITS)	
FROM STA. 64+83.69 TO STA. 65+00	16.31 LIN. FT.	
△2 FROM STA. 65+00 TO STA. 65+50	50.00 LIN. FT.	
TOTAL =	128.82 LIN. FT.	



SECTION NO. 2 – TRANSITION SECTION

LIMITING STATIONS

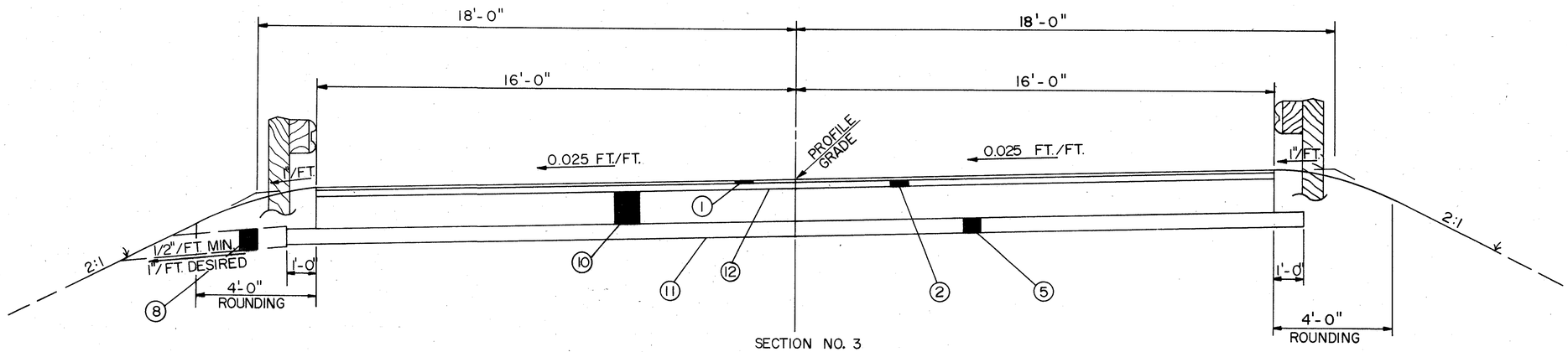
△3 FROM STA. 63+00 TO STA. 63+50	50.00 LIN. FT.
△4 FROM STA. 65+50 TO STA. 66+00	50.00 LIN. FT.
TOTAL =	100.00 LIN. FT.

TYPICAL SECTIONS

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

3
27

MARION COUNTY
MAR-739-1.21



SECTION NO. 3
BRIDGE APPROACH SLAB
LIMITING STATIONS

FROM STA. 64+12.51 TO STA. 64+32.51 = 20.00 LIN. FT.
FROM STA. 64+63.69 TO STA. 64+83.69 = 20.00 LIN. FT.

TOTAL = 40.00 LIN. FT.

1. ITEM 404 - 1 1/4" ASPHALT CONCRETE, AC-20
2. ITEM 402 - ASPHALT CONCRETE, AC-20 - THICKNESS VARIES FROM 1 3/4" AT APPROACH ROADWAY TO 2 1/4" AT BRIDGE LIMIT.
5. ITEM 304 - 6" AGGREGATE BASE (SEE PROPOSAL NOTE)
8. ITEM 605 - AGGREGATE DRAINS
10. ITEM 611 - REINFORCED CONCRETE APPROACH SLAB (T=13")
11. ITEM 203 - SUBGRADE COMPACTION
12. ITEM 407 - TACK COAT

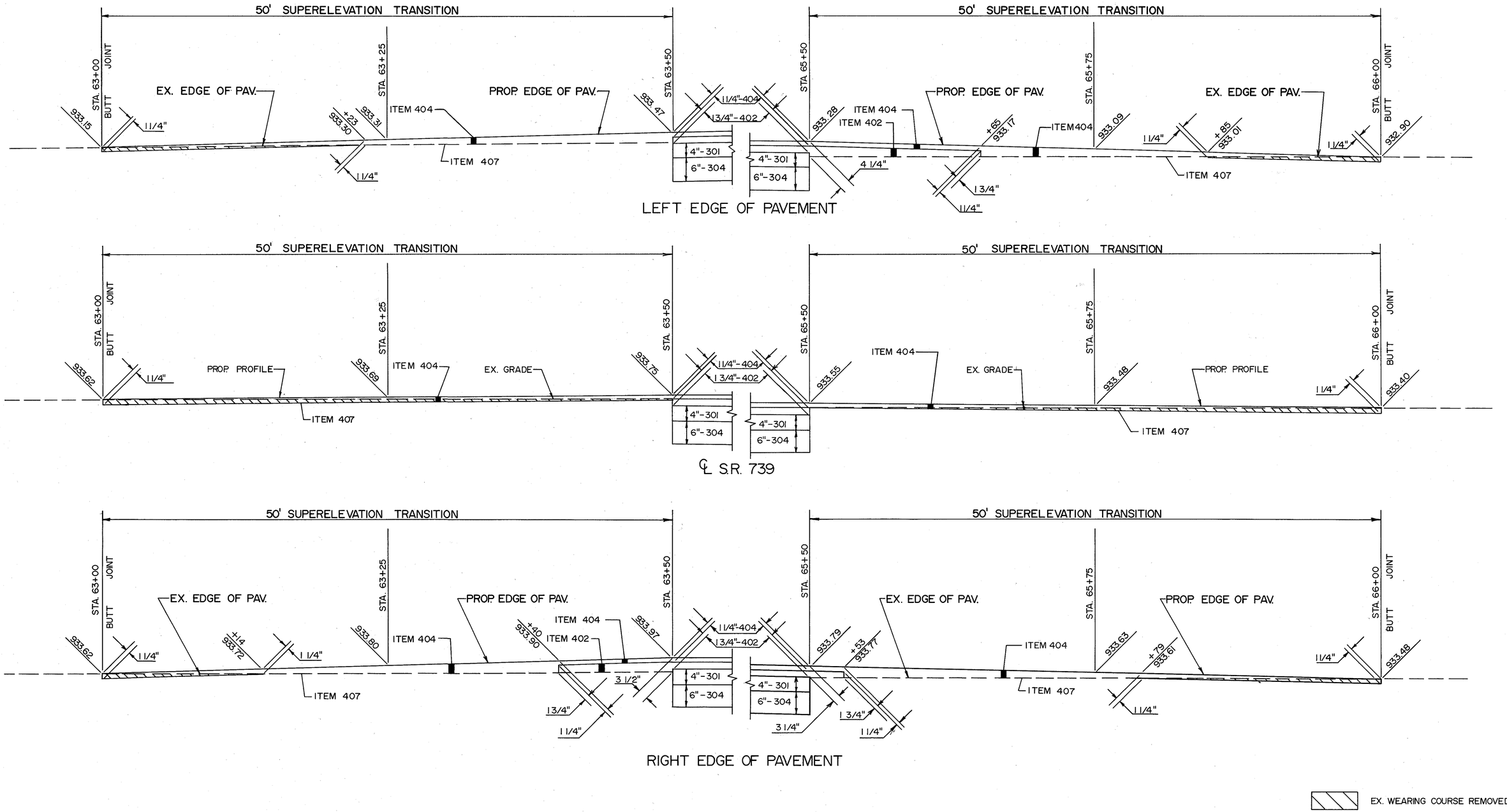
SUPERELEVATION TABLE

STATION	PROFILE GRADE	PAVEMENT WIDTH LT.	PAVEMENT SLOPE FT./FT.	EDGE OF PAVEMENT ELEVATION, LT.	PAVEMENT WIDTH RT.	PAVEMENT SLOPE FT./FT.	EDGE OF PAVEMENT ELEVATION, RT.
63+00.00	933.62	11.1'	0.042	933.15	9.3'	0	933.62
63+25.00	933.69	11.3'	0.034	933.31	9.1'	0.012	933.80
63+50.00	933.75	11.4'	0.025	933.47	8.9'	0.025	933.97
63+75.00	933.73	11.2'	0.025	933.45	9.5'	0.025	933.97
64+00.00	933.70	11'	0.025	933.43	10'	0.025	933.95
64+25.00	933.68	11'	0.025	933.41	10'	0.025	933.93
64+50.00	933.65	11'	0.025	933.38	10'	0.025	933.90
64+75.00	933.63	11'	0.025	933.36	10'	0.025	933.88
65+00.00	933.60	11'	0.025	933.33	10'	0.025	933.85
65+25.00	933.58	11'	0.025	933.31	9.8'	0.025	933.83
65+50.00	933.55	11'	0.025	933.28	9.5'	0.025	933.79
65+75.00	933.48	11'	0.035	933.09	9.5'	0.016	933.63
66+00.00	933.40	11'	0.045	932.90	9.5'	0.008	933.48

S.R. 739 TYPICAL SECTIONS & SUPERELEVATION TABLE

FHWA REGION	STATE	PROJECT	
5	OHIO		

MARION COUNTY
MAR-739-1.21



S.R. 739 SUPERELEVATION TRANSITION DETAILS

MAINTENANCE OF TRAFFIC

TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A SINGLE PERIOD NOT TO EXCEED 60 CONSECUTIVE CALENDAR DAYS, THROUGH TRAFFIC WILL BE DETOURED AS SHOWN ON SHEET NO. 6 . LIQUIDATED DAMAGES SHALL BE ASSESSED IN ACCORDANCE WITH SECTION 108.07 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR EACH CALENDAR DAY THAT THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT.

THE CONTRACTOR SHALL NOTIFY THE DISTRICT TRAFFIC ENGINEER AND THE MARION COUNTY ENGINEER IN WRITING A MINIMUM OF FOURTEEN (14) DAYS IN ADVANCE OF THE DATE THE DETOUR IS NEEDED. THE STATE OF OHIO WILL INSTALL, MAINTAIN, AND SUBSEQUENTLY REMOVE THE DETOUR SIGNING.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC MAINTENANCE AT ALL TIMES IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 614 - MAINTAINING TRAFFIC.

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS

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

UTILITY OWNERSHIP

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

ELECTRIC: OHIO EDISON
76 SOUTH MAIN STREET
AKRON, OHIO 44308
216-384-7920

TELEPHONE: G.T.E. NORTH
550 LEADER STREET
MARION, OHIO 43302
614-383-0548

UNDERGROUND UTILITIES

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

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

ELEVATION DATUM

ALL VERTICAL CONTROL ELEVATIONS ESTABLISHED FOR THIS PROJECT ARE BASED UPON U.S.C.&G.S. ELEVATION DATUM. THE PARENT U.S.C.&G.S. BENCH MARK USED TO ESTABLISH ELEVATIONS FOR ALL BENCH MARKS ON THIS PROJECT IS A STANDARD TABLET STAMPED "36 FPV 1959, 934" IN THE S.W. CORNER OF THE CONCRETE BRIDGE AT STA. 64+38, 18' RT.
ELEVATION = 934.210

DESCRIPTIONS AND ELEVATIONS OF INDIVIDUAL BENCH MARKS ESTABLISHED FOR THIS PROJECT ARE SHOWN ON THE PLAN AND PROFILE SHEET.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

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

207	TEMPORARY SEEDING AND MULCHING	244 SQ. YD.
207	FILTER FABRIC RENCE	200 LIN. FT.
207	STRAW OR HAY BALES	50 EACH

QUANTITIES CARRIED TO GENERAL SUMMARY

CONTINGENCY QUANTITIES

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

LOCATION OF GUARDRAIL

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

SEEDING

QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN TEN (10) FEET OUTSIDE THE WORK LIMITS, AS SHOWN ON THE CROSS SECTIONS, OR TO THE RIGHT-OF-WAY LINE OR TEMPORARY EASEMENT LINE, IF SUCH LINE IS LESS THAN TEN (10) FEET FROM THE WORK LIMITS.

WATERING PERMANENT SEEDED AREAS

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

659 WATER 2.0 M-GAL.
QUANTITY CARRIED TO THE GENERAL SUMMARY

ITEM 407 TACK COAT

THE RATE OF APPLICATION OF 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT, AS DIRECTED BY THE ENGINEER.

PLAN QUANTITIES INDICATE AVERAGE APPLICATION RATES OF 0.075 GALS./S.Y. OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

ITEM 605 AGGREGATE DRAINS

AGGREGATE DRAINS SHALL BE PLACED AT FIFTY (50) FOOT INTERVALS ON EACH SIDE OF NORMAL CROWNED SECTIONS, STAGGERED SO THAT EACH DRAIN IS 25 FEET FROM THE ADJACENT DRAIN ON THE OPPOSITE SIDE, AND AT TWENTY-FIVE (25) FOOT INTERVALS ON THE LOW SIDE ONLY OF SUPERELEVATED SECTIONS. AN AGGREGATE DRAIN SHALL BE PLACED AT THE LOW POINT OF EACH SAG VERTICAL CURVE.

REMOVAL OF TREES OR 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.

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.

EROSION CONTROL

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

CHANNEL EMBANKMENTS

PORTIONS OF THE EXISTING CHANNEL OUTSIDE THE ROADBED, SHALL BE FILLED AND SLOPED TO DRAIN, AS CALLED FOR ON THE PLANS. THE CONTRACTOR SHALL USE EITHER SUITABLE OR UNSUITABLE MATERIALS, TO THE EXTENT AVAILABLE, FOR CHANNEL EMBANKMENTS.

AREAS WHERE CHANNEL EMBANKMENTS ARE TO BE PLACED SHALL BE CLEARED OF WEEDS AND BRUSH.

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

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

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

PAYMENT FOR ALL THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 203, EMBANKMENT.

CONSTRUCTION INITIATION

THE CONTRACTOR WILL ADVISE THE DISTRICT COMMUNICATIONS OFFICER AT 614-363-1251 EXTENSION 261 OR BY FAX 614-469-0235 SEVEN DAYS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES. THE PROJECT ENGINEER WILL PROVIDE ASSISTANCE/CLARIFICATION FOR ANY QUESTIONS.

JOINT SEALERS

ALL REFERENCES TO 705.01 OR 705.02, APPEARING ON STANDARD DRAWINGS OR ON THE PLANS, SHALL BE CONSIDERED TO READ 705.04.

DESIGNATED LOCAL DETOUR ROUTE

IN ADDITION TO THE OFFICIAL, SIGNED DETOUR ROUTE, A LOCAL ROUTE HAS BEEN DETERMINED TO BE THE SECONDARY, UNSIGNED DETOUR ROUTE OR "DESIGNATED LOCAL DETOUR ROUTE". THIS ROUTE IS SHOWN ON SHEET NO. 6 . DURING THE TIME THAT TRAFFIC IS DETOURED, THE CONTRACTOR SHALL MAINTAIN THIS ROUTE IN A CONDITION WHICH IS REASONABLY SMOOTH AND FREE FROM HOLES, RUTS, RIDGES, BUMPS, DUST AND STANDING WATER. ONCE THE DETOUR IS REMOVED AND TRAFFIC RETURNED TO ITS NORMAL PATTERN, THE DESIGNATED LOCAL DETOUR ROUTE SHALL BE RESTORED TO A CONDITION THAT IS EQUIVALENT TO THAT WHICH EXISTED PRIOR TO ITS USE FOR THIS PURPOSE. ALL SUCH WORK SHALL BE PERFORMED WHEN AND AS DIRECTED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES ARE PROVIDED FOR USE AS DIRECTED BY THE ENGINEER TO MAINTAIN AND SUBSEQUENTLY RESTORE THE DESIGNATED LOCAL DETOUR ROUTE.

301 BITUMINOUS AGGREGATE BASE, AC-20	10	CU. YD.
~~304 AGGREGATE BASE~~		~~CU. YD.~~
404 ASPHALT CONCRETE, AC-20	300	CU. YD.
404 BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	25	CU. YD.
407 TACK COAT	100	GAL.
~~408 BITUMINOUS PRIME COAT~~		~~GAL.~~
~~616 WATER~~		~~M. GAL.~~
~~616 CALCIUM CHLORIDE~~		~~TON~~
617 COMPACTED AGGREGATE, TYPE A	25	CU. YD.
617 WATER	5	M. GAL.
642 CENTER LINE	1	MILE

FARM DRAINS

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE CONSTRUCTION LIMITS BY ITEM 603 CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL FIELD TILES WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY 603, TYPE E CONDUIT, AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

THE LOCATION, TYPE, SIZE AND GRADE OF REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS.

EROSION CONTROL PADS AND ANIMAL GUARDS SHALL BE PROVIDED AT THE OUTLET END OF ALL FARM DRAINS AS PER STANDARD CONSTRUCTION DRAWING MC-4, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE. PAYMENT FOR THE EROSION CONTROL PADS AND ANIMAL GUARDS AND ANY NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEM.

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

603 18" CONDUIT, TYPE B 50 LIN. FT.

603 12" CONDUIT, TYPE E 50 LIN. FT.

603 6" CONDUIT, TYPE F 50 LIN. FT.

601 ROCK CHANNEL PROTECTION TYPE C WITH FILTER 5 CU. YDS.

CALCULATIONS

CALC: BY: B.S.U. DATE: 1-93	MARION COUNTY MAR-739-1.21	OHIO
CHKD: BY: J.L.M. DATE: 1-93	STP - PID 5864	FHWA REGION 5 / FEDERAL PROJECT

ITEM 202, WEARING COURSE REMOVED

From Superelevation Transition Detail Sht. No. 4.
Sta. 63+00 to Sta. 63+50
14' x 9.30' ÷ 9 = 14.5 S.Y.
23' x 11.10' ÷ 9 = 28.4 S.Y.
27' x 11.10' x ½ ÷ 9 = 16.7 S.Y.
36' x 9.30' x ½ ÷ 9 = 18.6 S.Y.

Sta. 65+50 to Sta. 66+00
15' x 11.0' ÷ 9 = 18.3 S.Y.
21' x 9.5' ÷ 9 = 22.2 S.Y.
35' x 11.0' x ½ ÷ 9 = 21.4 S.Y.
29' x 9.5' x ½ ÷ 9 = 15.3 S.Y.

Total Carried to General Summary = 155 S.Y.

ITEM 203, SUBGRADE COMPACTION

From Typical Section No. 1 = 128.82 Lin. Ft.
50' x (20.3' + 21') ÷ 2 ÷ 9 = 114.7 S.Y.
12.51' x 21' ÷ 9 = 29.2 S.Y.
16.31' x 21' ÷ 9 = 38.1 S.Y.
50' x (21' + 20.5') ÷ 2 ÷ 9 = 115.3 S.Y.

From Typical Section No. 3 = 40.00 Lin. Ft.
40.00' x 32' ÷ 9 = 142.2 S.Y.

Total Carried to General Summary = 440 S.Y.

ITEM 301, BITUMINOUS AGGREGATE BASE, AC-20

From Typical Section No. 1 = 128.82 Lin. Ft.
50' x (21.3'+22') ÷ 2 x0.3333' (4") ÷ 27 = 13.4 C.Y.
12.51' x 22' x 0.3333' (4") ÷ 27 = 3.4 C.Y.
16.31' x 22' x 0.3333' (4") ÷ 27 = 4.4 C.Y.
50' x (22'+21.5')÷2 x 0.3333' (4")÷27 = 13.4 C.Y.

Total Carried to General Summary = 35 C.Y.

ITEM 304, AGGREGATE BASE (SEE PROPOSAL NOTE)

From Typical Section No. 1 = 128.82 Lin. Ft.
50' x (22.3'+23') ÷ 2 x 0.5' (6") ÷ 27 = 21.0 C.Y.
12.51' x 23' x 0.5' (6") ÷ 27 = 5.3 C.Y.
16.31 x 23' x 0.5' (6") ÷ 27 = 6.9 C.Y.
50' x (23'+22.5') ÷ 2 x 0.5' (6") ÷ 27 = 21.1 C.Y.

Berms Typical Section No. 1 = 128.82 Lin. Ft.
2×50'x[3'x.67'(8")+0.5'(6")x0.58'(7")+0.5'(6")x0.25'(3")]÷27= 9.0 C.Y.
2×12.51'x[3'x.67'(8")+0.5'(6")x0.58'(7")+0.5'(6")x0.25'(3")]÷27=2.2 C.Y.
2×16.31'x[3'x.67'(8")+0.5'(6")x0.58'(7")+0.5'(6")x0.25'(3")]÷27= 2.9 C.Y.
2×50'x[3'x.67'(8")+0.5'(6")x0.58'(7")+0.5'(6")x0.25'(3")]÷27= 9.0 C.Y.

From Typical Section No. 2 = 100.00 Lin. Ft.
50' x (8'+6') ÷ 2 x 0.67' (8") ÷ 27 = 8.7 C.Y.
50' x (8'+4') ÷ 2 x 0.67' (8") ÷ 27 = 7.4 C.Y.

From Typical Section No. 3 = 40.0 Lin. Ft.
40.0' x 34.0' x 0.5' (6") ÷ 27 = 25.2 C.Y.

Total Carried to General Summary = 119 C.Y.

ITEM 402, ASPHALT CONCRETE, AC-20

From Typical Section No. 1 = 128.82
50' x (20.3' + 21') ÷ 2 x .146' (1 3/4") ÷ 27 = 5.6 C.Y.
12.51' x 21' x .146' (1 3/4") ÷ 27 = 1.4 C.Y.
16.31' x 21' x .146' (1 3/4") ÷ 27 = 1.9 C.Y.
50' x (21' + 20.5') ÷ 2 x .146' (1 3/4") ÷ 27 = 5.6 C.Y.

From Superelevation Transition Detail Sht. No. 4.
Sta. 63+00 to Sta. 63+50
(10'+7.78')÷2×1.98'x[.146' (1 3/4")+.1875' (2¼") ÷ 2]÷ 27 = 0.1 C.Y.

Sta. 65+50 to Sta. 66+00
(3'+2.62')÷2×1.19'x[.146' (1 3/4")+.167' (2") ÷ 2]÷ 27 = 0.1 C.Y.
(15'+8.75')÷2×4.58'x[.146' (1 3/4")+0.25' (3") ÷ 2]÷ 27 = 0.4 C.Y.

From Typical Section No. 3 = 40.0 Lin. Ft.
40' x [.146' (1 3/4") + .188' (2¼")]÷ 2 x 32' ÷ 27 = 7.9 C.Y.

Total Carried to General Summary = 23 C.Y.

ITEM 404, ASPHALT CONCRETE, AC-20

From Typical Section No. 1 = 128.82 Lin. Ft.
50' x (20.3' + 21') ÷ 2 x .104' (1¼") ÷ 27 = 4.0 C.Y.
12.51' x 21' x .104' (1¼") ÷ 27 = 1.0 C.Y.
16.31' x 21' x .104' (1¼") ÷ 27 = 1.3 C.Y.
50' x (21' + 20.5') ÷ 2 x .104' (1¼") ÷ 27 = 4.0 C.Y.

From Superelevation Transition Details Sht. No. 4
Sta. 63+00 to Sta. 63+50
(11.1'+11.2') ÷ 2 x 23' x .104' (1¼") ÷ 27 = 1.0 C.Y.
11.2' x 27' x ½ x.104' (1¼") ÷ 27 = 0.6 C.Y.
11.4' x 27' x ½ x [.104' (1¼") + .25' (3")] ÷ 2 ÷ 27 = 1.0 C.Y.
(9.3' + 9.2') ÷ 2 x 14' x .104' (1¼") ÷ 27 = 0.5 C.Y.
9.2' x 36' x ½ x .104' (1¼") ÷ 27 = 0.6 C.Y.
8.9' x 10' x ½ x .104' (1¼") ÷ 27 = 0.2 C.Y.
(8.9'x36'x ½-8.9'x10'x ½)x[.104' (1¼") + .25' (3")]÷2÷27=0.8 C.Y.

Sta. 65+50 to Sta. 66+00
11.0' x 15' x .104' (1¼") ÷ 27 = 0.6 C.Y.
11.0' x 35' x ½ x .104' (1¼") ÷ 27 = 0.7 C.Y.
11.0' x 15' x ½ x .104' (1¼") ÷ 27 = 0.3 C.Y.
(11.0'x35'x ½-11.0x15'x ½)x[.104' (1¼")+0.25' (3")]÷2÷27=0.7 C.Y.
9.5' x 21' x .104' (1¼") ÷ 27 = 0.8 C.Y.
9.5' x 29' x ½ x .104' (1¼") ÷ 27 = 0.5 C.Y.
9.5' x 3' x ½ x .104' (¼") ÷ 27 = 0.1 C.Y.
(9.5'x29'x ½-9.5'x3'x ½)x[.104' (1¼")+.25' (3")]÷2÷27 = 0.8 C.Y.

From Typical Section No. 3 = 40.0 Lin. Ft.
40.0' x 32' x .104' (1¼") ÷ 27 = 4.9 C.Y.

Total Carried to General Summary = 24 C.Y.

ITEM 407, TACK COAT

From Typical Section No. 2 = 100.0 Lin. Ft.
50' x (20.4'+20.3') ÷ 2 ÷ 9 x 0.075 = 8.5 GAL.
50' x 20.5' ÷ 9 x 0.075 = 8.5 Gal.

From Typical Section NO. 3 = 40.00 Lin. Ft.
40' x 32' ÷ 9 x 0.075 = 10.7 Gal.

Total Carried To General Summary = 28 Gal.

ITEM 408, BITUMINOUS PRIME COAT

From Typical Section No. 1 = 128.82 Lin. Ft.
50' x (22.3'+23') ÷ 2 ÷ 9 x 0.40 = 50.3 Gal.
12.51' x 23' ÷ 9 x 0.40 = 12.8 Gal.
16.31' x 23' ÷ 9 x 0.40 = 16.7 Gal.
50' x (23'+22.5') ÷ 2 ÷ 9 x 0.40 = 50.6 Gal.

Total Carried to General Summary = 130 Gal.

ITEM 605, AGGREGATE DRAINS

From Typical Section No. 1 = 128.82 Lin. Ft.
128.82' ÷ 25' x 1 x 8' = 41.2 Lin. Ft.

From Typical Section No. 2 = 100.00 Lin. Ft.
100' ÷ 25' x 1 x 10.5' = 42.0 Lin. Ft.

From Typical Section No. 3 = 40.00 Lin. Ft.
40.00' ÷ 25' x 1 x 5.5' = 8.8 Lin. Ft.

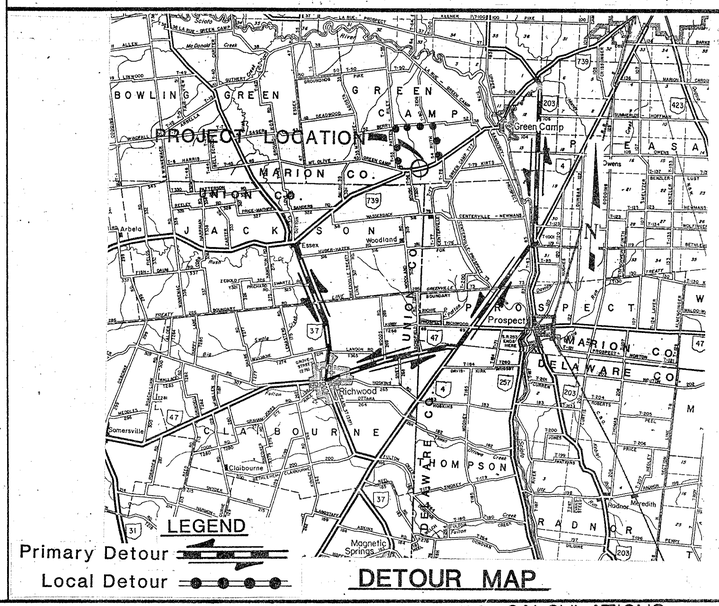
Total Carried to General Summary = 92 Lin. Ft.

ITEM 659, COMMERCIAL FERTILIZER

From General Summary:
Total Item 207 Temporary Seeding and Mulching = 244 S.Y.
Total Item 659 Seeding and Mulching = 1,220 S.Y.
Total Item 660 Sodding = 448 S.Y.
Total = 1,912 S.Y.

1912 x 9 ÷ 1000 x 20 ÷ 2000 = 0.17 Tons

Total Carried to General Summary = 0.17 Tons



DETOUR MAP

CALC. BY BSU	MARION COUNTY MAR-739-1.21	OHIO
DATE 1-93		F.H.W.A. REGION 5
CHKD. BY JLM	STP-PID 5864	FEDERAL PROJECT
DATE 1-93		

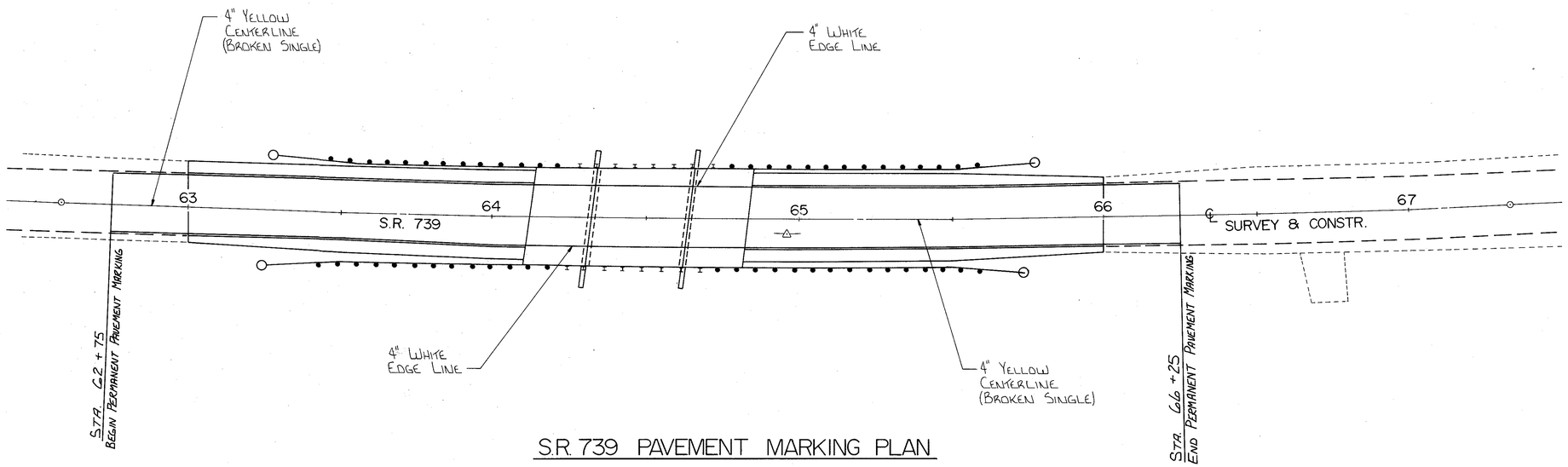
GENERAL SUMMARY

ITEM	ITEM EXT.	SHEET NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	AS PER PLAN SHT. NO.
																									ROADWAY	
201	11000					LUMP															201	11000	LUMP		CLEARING AND GRUBBING	
202	23500						155														202	23500	155	S.Y.	WEARING COURSE REMOVED	
202	38000										200										202	38000	200	LIN. FT.	GUARDRAIL REMOVED	
203	12000										365										203	12000	365	CU. YD.	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	
203	20000										135										203	20000	135	CU. YD.	EMBANKMENT	
203	50000						440														203	50000	440	SQ. YD.	SUBGRADE COMPACTION	
606	13000										312.5										606	13000	312.5	LIN FT.	GUARDRAIL, TYPE 5	
606	25000										4										606	25000	4	EACH	ANCHOR ASSEMBLY, TYPE A	
606	35140										4										606	35140	4	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 4	
																									EROSION CONTROL	
207	10000					244															207	10000	244	SQ. YD.	TEMPORARY SEEDING AND MULCHING	
207	30000					200															207	30000	200	LIN. FT.	FILTER FABRIC FENCE (SEE PROPOSAL NOTE)	
207	70000					50															207	70000	50	EACH	STRAW OR HAY BALES	
601	32200					5															601	32200	5	CU. YD.	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	
601	32300										85										601	32300	85	CU. YD.	ROCK CHANNEL PROTECTION, TYPE D WITH FILTER	
659	10000										1220										659	10000	1220	SQ. YD.	SEEDING AND MULCHING	
659	20000						0.17														659	20000	0.17	TON	COMMERCIAL FERTILIZER	
659	30000					2															659	35000	2	M. GAL	WATER	
660	30000										448										660	30000	448	SQ. YD.	SODDING	
																									DRAINAGE	
603	01500					50															603	01500	50	LIN. FT.	6" CONDUIT, TYPE F	
603	05100					50															603	05100	50	LIN. FT.	12" CONDUIT, TYPE E	
603	07400					50															603	07400	50	LIN. FT.	18" CONDUIT, TYPE B	
605	31100						92														605	31100	92	LIN. FT.	AGGREGATE DRAINS	
																									PAVEMENT	
301	10002					10	35														301	10002	45	CU. YD.	BITUMINOUS AGGREGATE BASE, AC-20	
304	20001						119														304	20000	119	CU. YD.	AGGREGATE BASE (SEE PROPOSAL NOTE)	
402	20000						23														402	20000	23	CU. YD.	ASPHALT CONCRETE, AC-20	
404	10000																									
404	20000					300	24														404	20000	324	CU. YD.	ASPHALT CONCRETE, AC-20	
407	10000					100	28														407	10000	128	GAL.	TACK COAT	
408	10000						130														408	10000	130	GAL.	BITUMINOUS PRIME COAT	
611	15000										142										611	15000	142	SQ. YD.	REINFORCED CONCRETE APPROACH SLAB (T=13")	
617	10100					25															617	10100	25	CU. YD.	COMPACTED AGGREGATE, TYPE A	
617	25000					5															617	25000	5	M. GAL	WATER	
																									TRAFFIC CONTROL	
642	00102									0.13											642	00102	0.13	MILE	EDGE LINE, TYPE 2	
642	00290					1.0															642	00290	1.0	MILE	CENTERLINE	
642	00302									0.07											642	00302	0.07	MILE	CENTERLINE, TYPE 2	
802	00100									6											802	00100	6	EACH	BARRIER REFLECTOR, TYPE A	

GENERAL SUMMARY

CALC. BY BSU DATE 1-93	MARION COUNTY MAR-739-1.21	OHIO
CHKD. BY JLM DATE 1-93	STP-PID 5864	F.H.W.A. REGION 5 / FEDERAL PROJECT

ITEM	ITEM EXT.	SHEET NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	AS PER PLAN SHT. NO.
																									MAINTENANCE OF TRAFFIC	
404	35000					25															404	35000	25	CU. YD.	BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	
614	21400									0.07											614	21400	0.07	MILE	TEMPORARY CENTERLINE, CLASS II	
616	10000																									
616	20000																									
614	11000					LUMP															614	11000	LUMP		MAINTAINING TRAFFIC	
619	15000																				619	15000	LUMP		FIELD OFFICE, TYPE A	
623	10000																				623	10000	LUMP		CONSTRUCTION LAYOUT STAKES	
624	10000																				624	10000	LUMP		MOBILIZATION	
																									FOR STRUCTURES 20 FT. SPAN AND OVER, SEE SHT. NO. 19	



S.R. 739 PAVEMENT MARKING PLAN

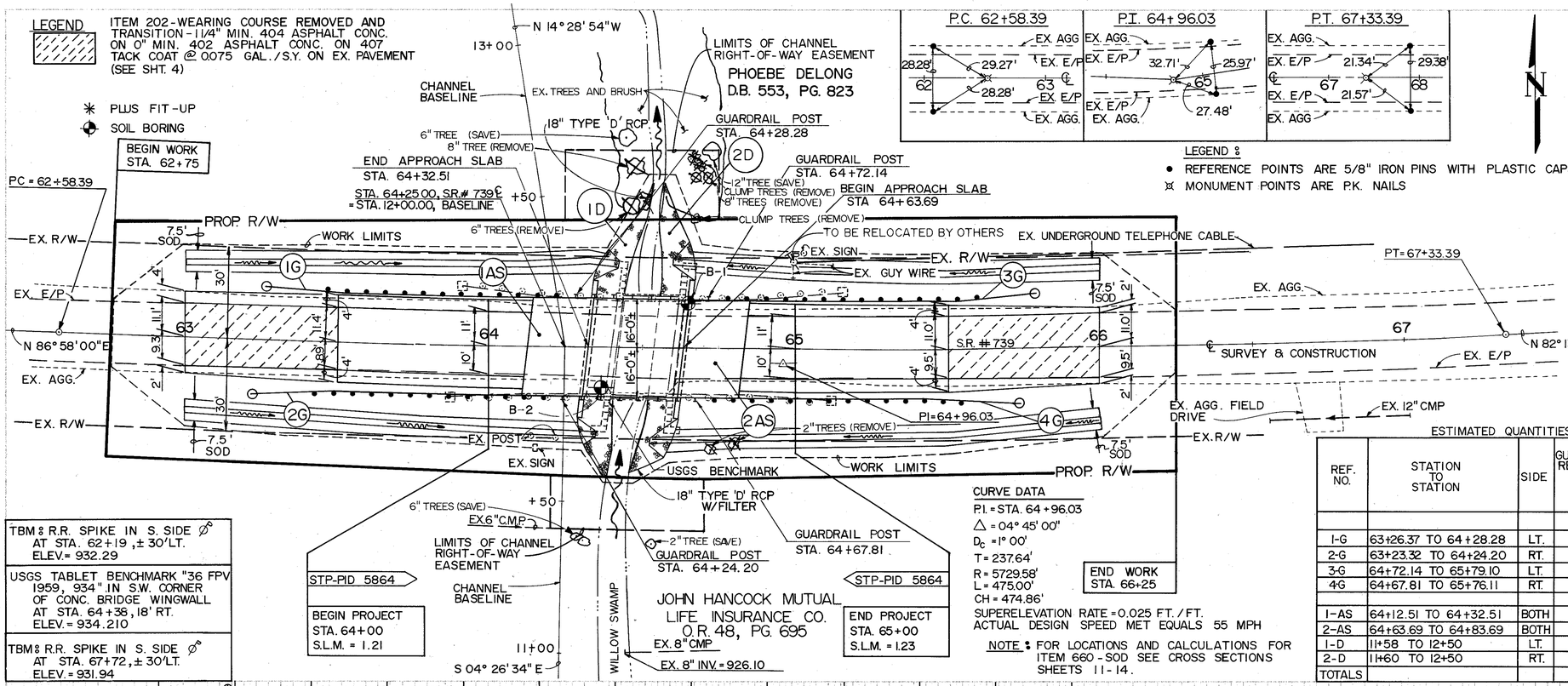
ESTIMATED PAVEMENT MARKING QUANTITIES								
	LOCATION AND STATION		SIDE	642 EDGE LINE, TYPE 2 (WHITE)	642 CENTERLINE, TYPE 2 (BROKEN SINGLE)	614 TEMPORARY CENTERLINE CLASS II	802 BARRIER REFLECTOR TYPE A	
	FROM	TO		LIN. FT.	LIN. FT.	LIN. FT.	EACH	
S.R. 739	62+75	66+25	RT.	350				
	62+75	66+25	℄		350	350		
	62+75	66+25	LT.	350				
	63+23.32	65+76.11	RT.				3	
	63+26.37	65+79.10	LT.				3	
TOTALS				700 LIN. FT. = 0.13 MI.	350 LIN. FT. = 0.07 MI.	350 LIN. FT. = 0.07 MI.	6 EACH	

LEGEND

ITEM 202-WEARING COURSE REMOVED AND TRANSITION-1 1/4" MIN. 404 ASPHALT CONC. ON 0" MIN. 402 ASPHALT CONC. ON 407 TACK COAT @ 0.075 GAL./S.Y. ON EX. PAVEMENT (SEE SHT. 4)

✳ PLUS FIT-UP

⊕ SOIL BORING



P.C. 62+58.39	P.I. 64+96.03	P.T. 67+33.39
EX. AGG.	EX. AGG.	EX. AGG.
28.28'	32.71'	21.34'
29.27'	25.97'	29.38'
EX. E/P	EX. E/P	EX. E/P
62	65	67
63		68
28.28'	27.48'	21.57'
EX. E/P	EX. E/P	EX. E/P
EX. AGG.	EX. AGG.	EX. AGG

LEGEND:

- REFERENCE POINTS ARE 5/8" IRON PINS WITH PLASTIC CAPS
- MONUMENT POINTS ARE P.K. NAILS

N

CALC. BY: B.S.U. DATE: 1-93	MAR-739-1.21	OHIO
CHKD. BY: J.L.M. DATE: 1-93		FHWA REGION 5

10 / 27

ITEM 601, ROCK CHANNEL PROTECTION, TYPE D WITH FILTER

LEFT SIDE

(1D)

STA. 11+58 TO 11+77 0'+12.2'÷2×19'×1.5'÷27 = 64 C.Y.
STA. 11+77 TO 11+84 10.5'×7'×1.5'÷27 = 4.1 C.Y.
STA. 11+84 TO 12+16 10.5'+9.7'÷2×32'×1.5'÷27 = 18.0 C.Y.
STA. 12+16 TO 12+22 9.7'+10.4'÷2×6'×1.5'÷27 = 3.4 C.Y.
STA. 12+22 TO 12+50 12.1'+0'÷2×28'×1.5'÷27 = 94 C.Y.
TOTAL = 41.3 C.Y.

RIGHT SIDE

(2D)

STA. 11+60 TO 11+65 0'+11'÷2×5'×1.5'÷27 = 1.5 C.Y.
STA. 11+65 TO 11+77 11'+12.2'÷2×12'×1.5'÷27 = 7.7 C.Y.
STA. 11+77 TO 11+84 10.5'×7'×1.5'÷27 = 4.1 C.Y.
STA. 11+84 TO 12+16 10.5'+9.7'÷2×32'×1.5'÷27 = 18.0 C.Y.
STA. 12+16 TO 12+22 9.7'+10.3'÷2×6'×1.5'÷27 = 3.3 C.Y.
STA. 12+22 TO 12+50 12.0'+0'÷2×28'×1.5'÷27 = 9.3 C.Y.
TOTAL = 43.9 C.Y.

ESTIMATED QUANTITIES (TOTALS CARRIED TO GENERAL SUMMARY SEE SHT. NO. 7)

REF. NO.	STATION TO STATION	SIDE	202 GUARDRAIL REMOVED		601 ROCK CHANNEL PROTECTION TYPE D W/FILTER		606 GUARDRAIL TYPE 5	606 ANCHOR ASSEMBLY TYPE A	606 BRIDGE TERMINAL ASSEMBLY TYPE 4	611 REINF. CONCRETE APPROACH SLAB (T=13")
			L.F.		L.F.		L.F.	EACH	EACH	S.Y.
1-G	63+26.37 TO 64+28.28	LT.	50				75	1	1	
2-G	63+23.32 TO 64+24.20	RT.	50				75	1	1	
3-G	64+72.14 TO 65+79.10	LT.	50				81.25	1	1	
4-G	64+67.81 TO 65+76.11	RT.	50				81.25	1	1	
1-AS	64+12.51 TO 64+32.51	BOTH								71
2-AS	64+63.69 TO 64+83.69	BOTH								71
1-D	11+58 TO 12+50	LT.			41.3					
2-D	11+60 TO 12+50	RT.			43.9					
TOTALS			200		85.2		312.5	4	4	142

TBM: R.R. SPIKE IN S. SIDE Ø AT STA. 62+19, ± 30' LT. ELEV. = 932.29

USGS TABLET BENCHMARK "36 FPV 1959, 934" IN S.W. CORNER OF CONC. BRIDGE WINGWALL AT STA. 64+38, 18' RT. ELEV. = 934.210

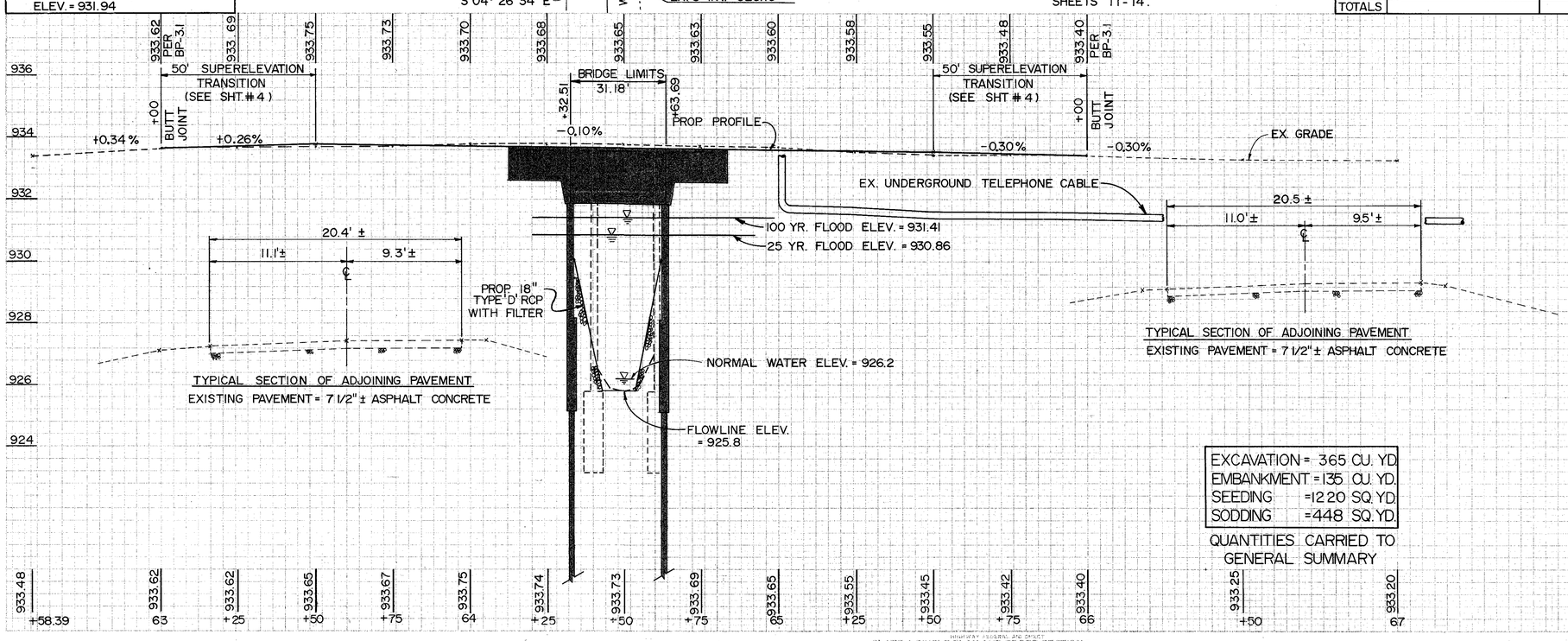
TBM: R.R. SPIKE IN S. SIDE Ø AT STA. 67+72, ± 30' LT. ELEV. = 931.94

CURVE DATA

P.I. = STA. 64+96.03
△ = 04° 45' 00"
D_C = 1° 00'
T = 237.64'
R = 5729.58'
L = 475.00'
CH = 474.86'
SUPERELEVATION RATE = 0.025 FT./FT.
ACTUAL DESIGN SPEED MET EQUALS 55 MPH

END WORK STA. 66+25

NOTE: FOR LOCATIONS AND CALCULATIONS FOR ITEM 660-SOD SEE CROSS SECTIONS SHEETS 11-14.



TYPICAL SECTION OF ADJOINING PAVEMENT
EXISTING PAVEMENT = 7 1/2" ± ASPHALT CONCRETE

TYPICAL SECTION OF ADJOINING PAVEMENT
EXISTING PAVEMENT = 7 1/2" ± ASPHALT CONCRETE

EXCAVATION	= 365 CU. YD.
EMBANKMENT	= 135 CU. YD.
SEEDING	= 1220 SQ. YD.
SODDING	= 448 SQ. YD.

QUANTITIES CARRIED TO GENERAL SUMMARY

EXISTING STRUCTURE

TYPE: REINFORCED CONCRETE SLAB ON REINFORCED CONCRETE ABUTMENTS.
SPAN: 18'-6"± CLEAR SPAN
WIDTH: 33'-6"± OUT TO OUT
SKEW: 7° L.F.
ROADWAY: 30'-0"± RAIL TO RAIL
ALIGNMENT: 1° LEFT CURVE
APPROACH SLABS: NONE
STRUCTURE FILE NO.: 5103665

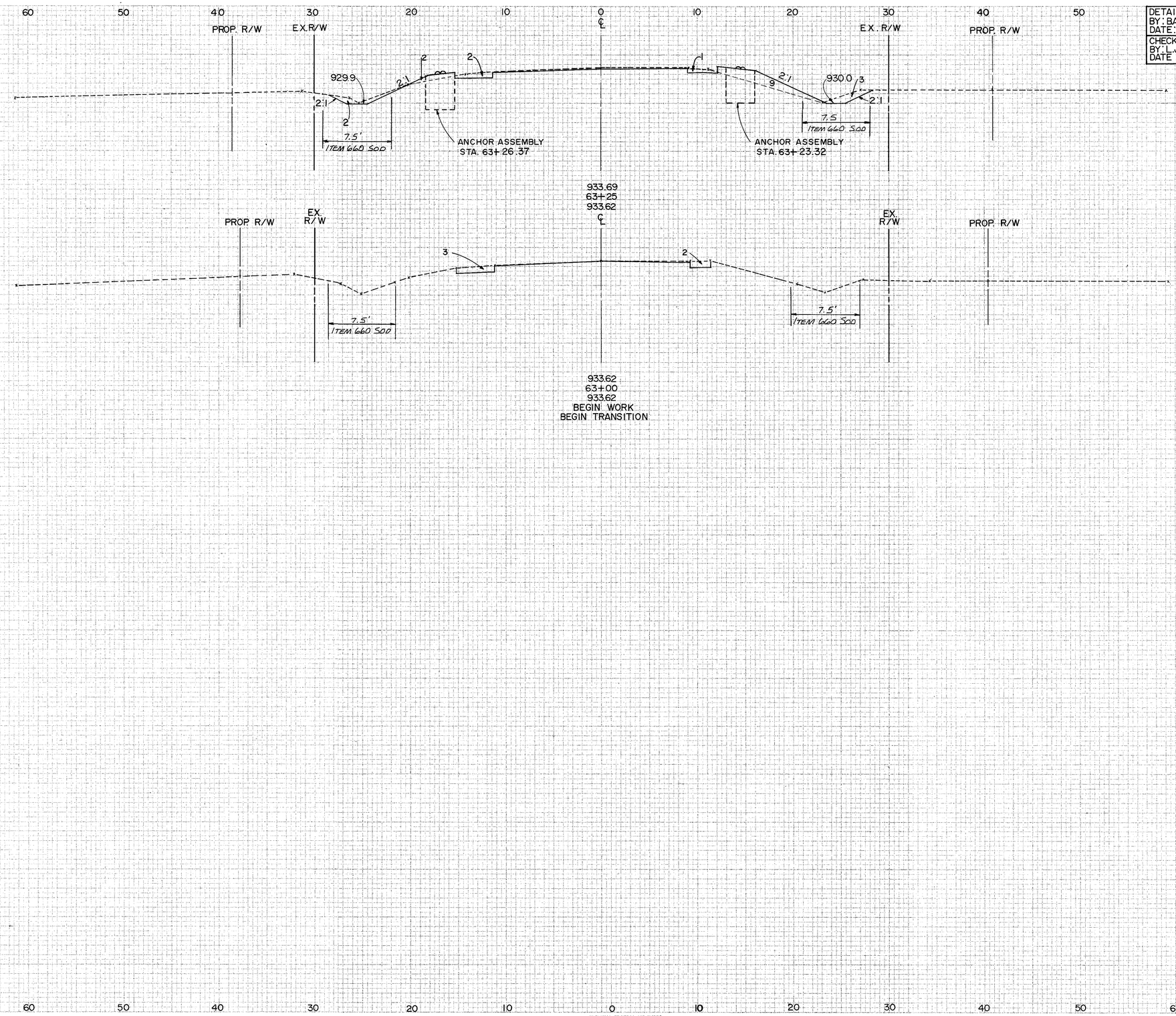
PROPOSED STRUCTURE

TYPE: SINGLE SPAN PRESTRESSED BOX BEAMS ON REINF. CONC. CAPPED PILE ABUTMENTS
SPAN: 30'-0" C/C BEARINGS (MEASURED ON REFERENCE CHORD)
ROADWAY: 32'-0" F/F GUARDRAIL
SKEW: 7° L.F. (TO REF. CHORD)
LOADING: HS 20-44 AND ALTERNATE MILITARY LOADING
WEARING SURFACE: 2-1/2" MIN. ACWS
APPROACH SLABS: AS-1-81, 20'-0" LONG
ALIGNMENT: PARALLEL TO REF. CHORD
SUPERELEVATION: 0.025 FT./FT.

PLATE 4-SINGLE PLAN AND CROSS SECTION-FULL LINE
HIGHWAY ENGINEERING CIRCUIT
TRISELENE
PRINTED IN U.S.A.

S.R. 739 PLAN & PROFILE STA. 63+00 TO 66+00

SEEDING END WIDTH	SEEDING SQ. YDS.
38	103
36	



DETAILED BY: BAC. DATE: 9-90
CHECKED BY: L.J.B. DATE: 3-93

FHWA REGION	STATE	PROJECT	
5	OHIO		

11
27

MARION COUNTY
MAR-739-1.21

STA. 63+00
AHEAD ONLY

	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
925	8	11		
			6	5
935	5	0		
925				

ORIGINAL SURVEY
FINAL SURVEY

PLATE 3-FULL CROSS SECTION-FULL LINE
MARYSVILLE
PRINTED IN U.S.A.

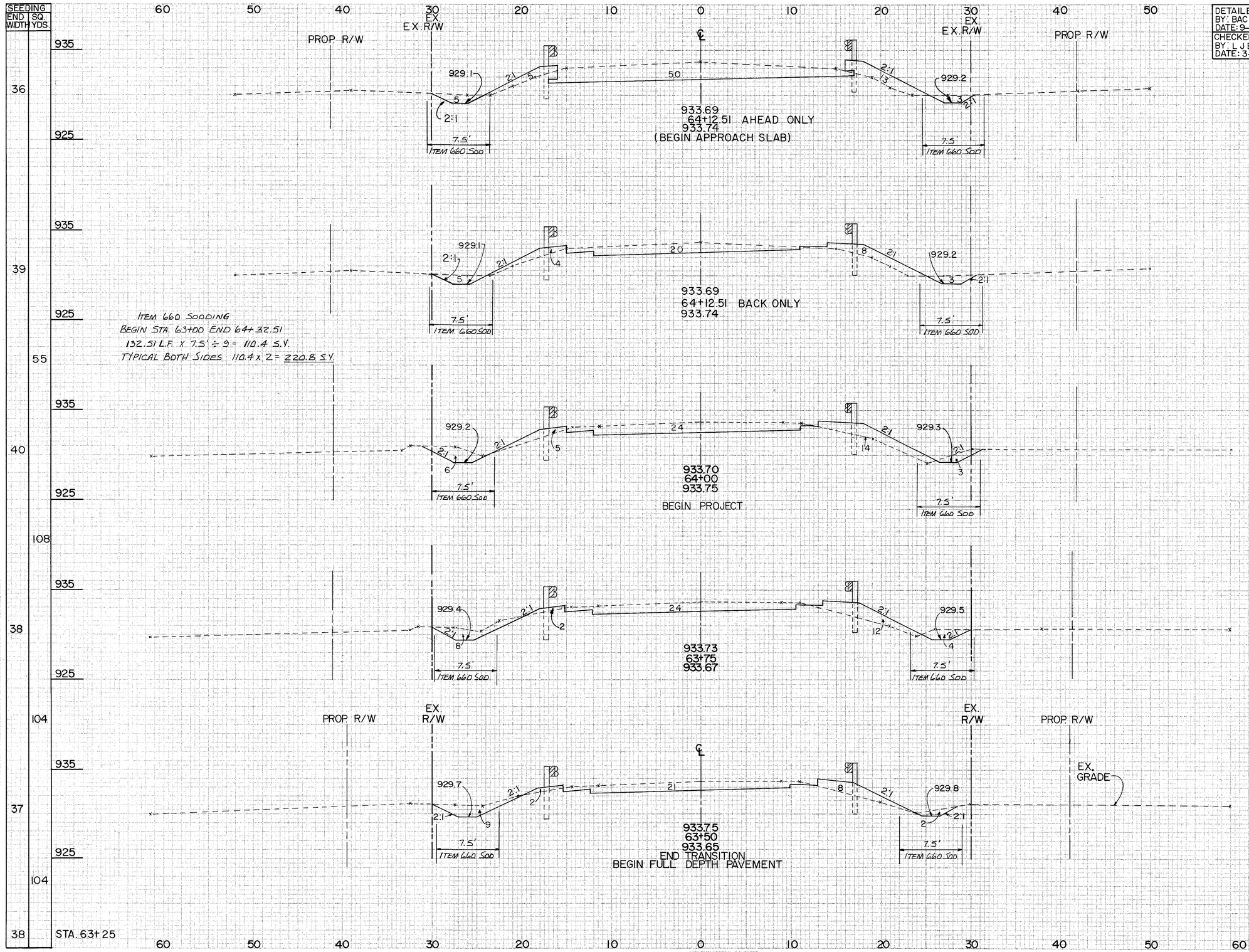
S.R. 739 CROSS SECTIONS STA. 63+00 TO STA. 63+25

DETAILED BY: BAC DATE: 9-90
CHECKED BY: L J B DATE: 3-93

FHWA REGION	STATE	PROJECT	
5	OHIO		

12 / 27

MARION COUNTY
MAR-739-1.21



	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
925	58	18		
935				
	28	12		
925				
			14	7
935				
	33	19		
925				
			32	15
935				
	36	14		
925				
			31	11
935				
	32	10		
925				
			19	10
STA. 63+25	8	11		

QUANTITIES CARRIED TO P & P SHT. (SHT. 10)	
EXCAVATION	= 147 C.Y.
EMBANKMENT	= 56 C.Y.
SEEDING	= 555 S.Y.
SODDING	= 221 S.Y.

S.R. 739 CROSS SECTIONS STA. 63+50 TO STA. 64+12.51

DETAILED BY: SRS DATE: 9-90	FHWA REGION	STATE	PROJECT		13 / 27
CHECKED BY: LJB DATE: 3-93	5	OHIO			

MARION COUNTY
MAR-739-1.21

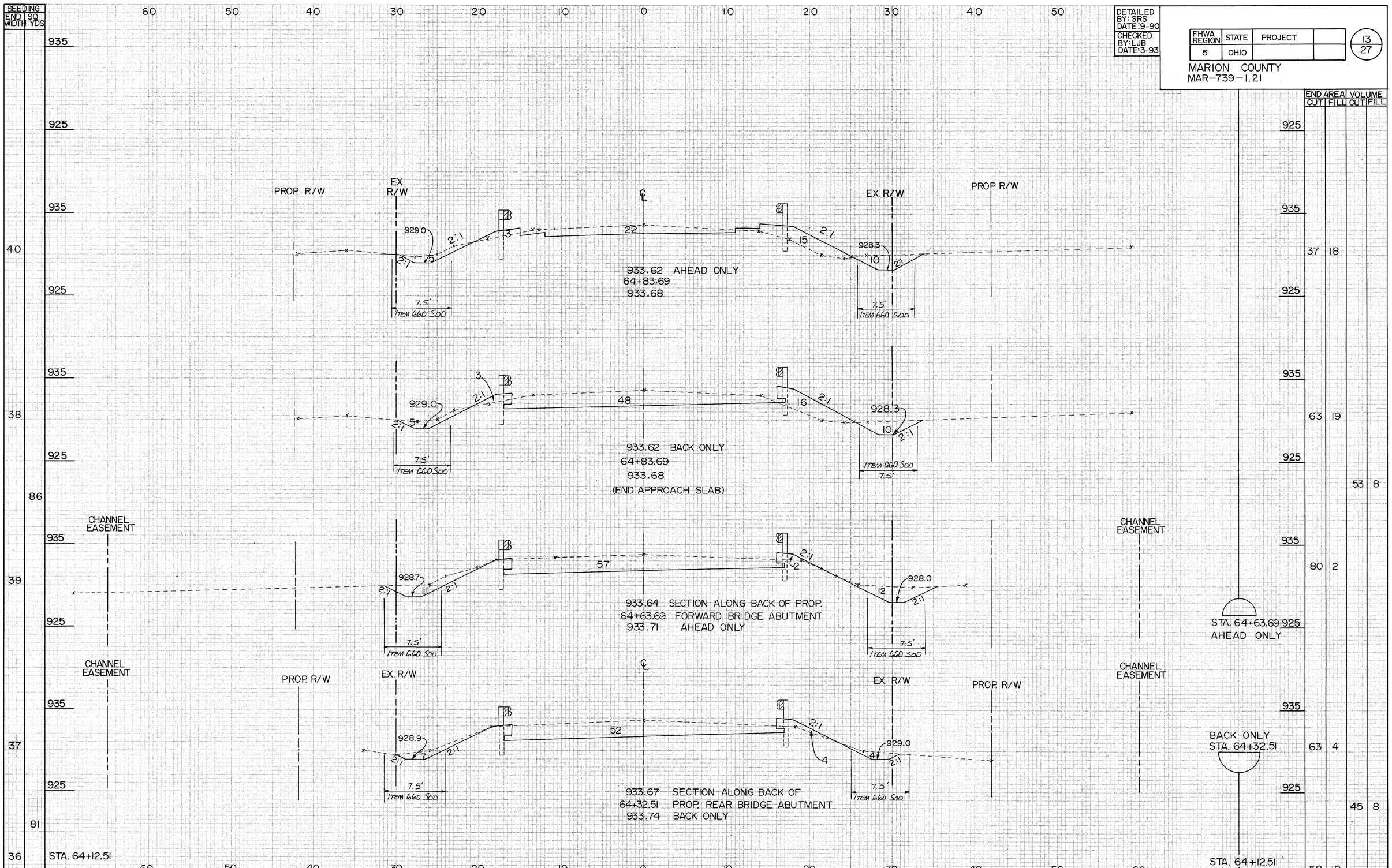


PLATE 3-FULL PAGES SECTION-FULL LINE

S.R. 739 CROSS SECTIONS STA. 64+32.51 TO STA. 64+83.69

DETAILED BY: SRS DATE: 9-90	FHWA REGION	STATE	PROJECT		14
CHECKED BY: L J B DATE: 3-93	5	OHIO			27

MARION COUNTY
MAR-739-1.21

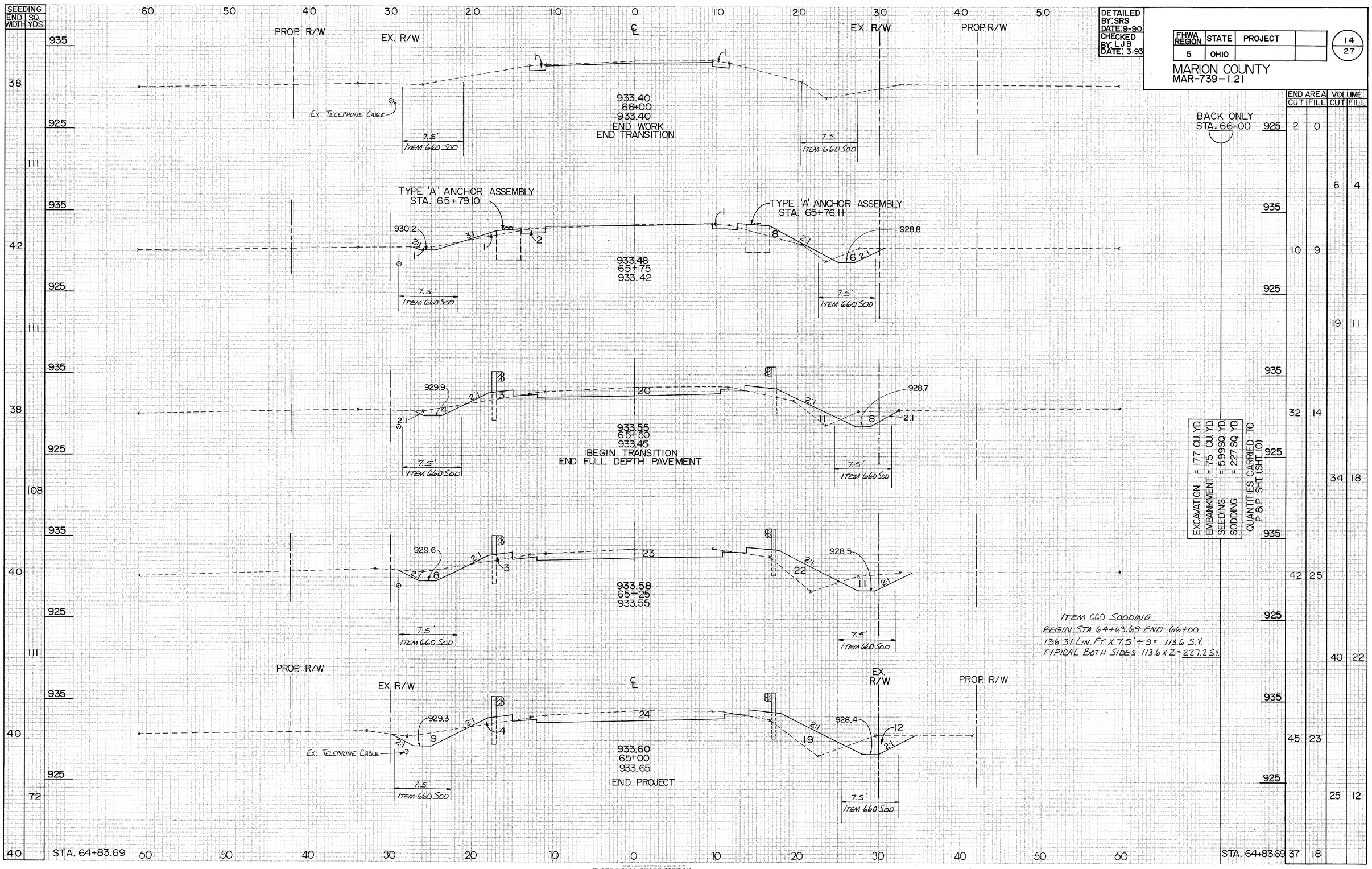
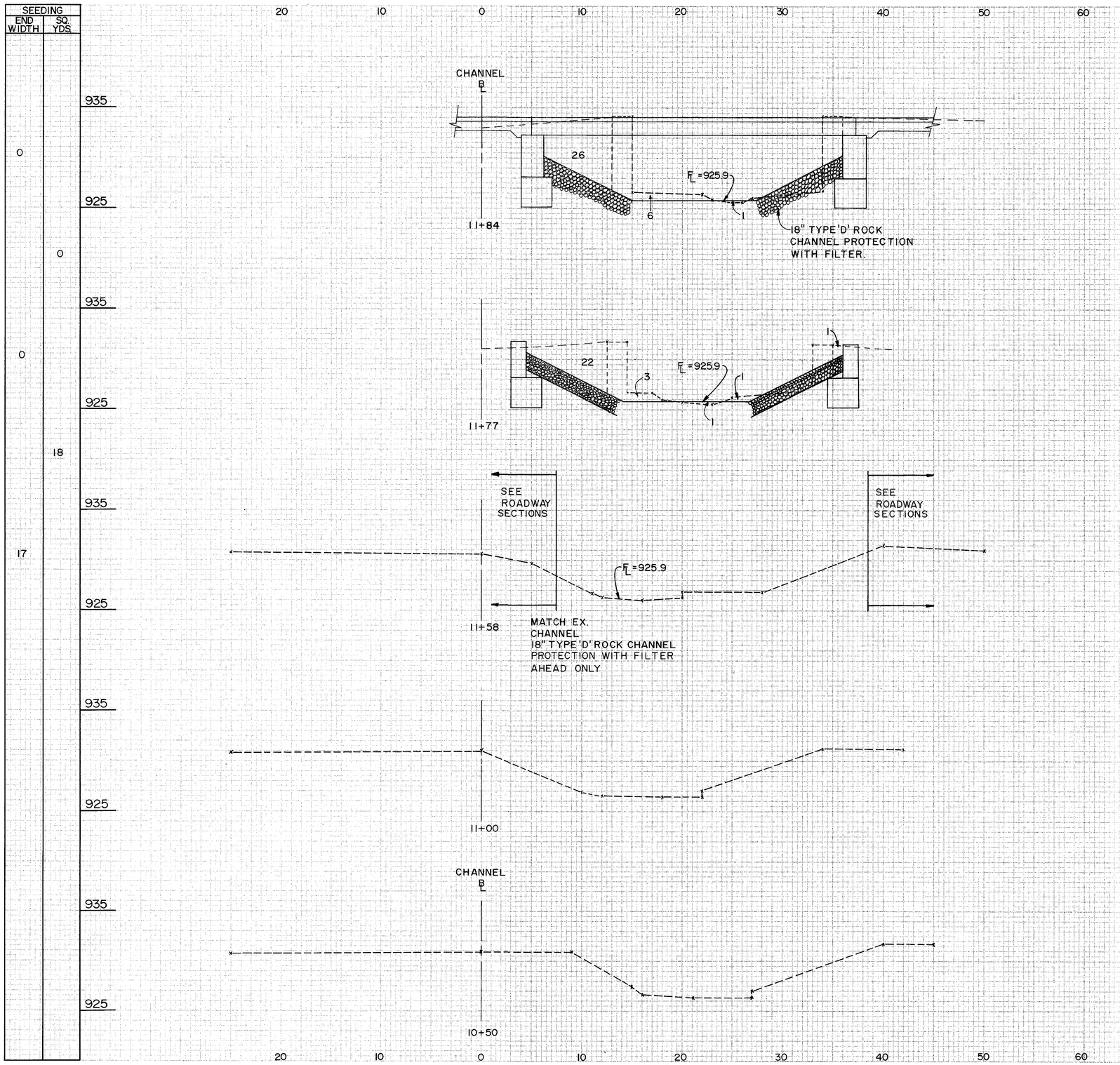


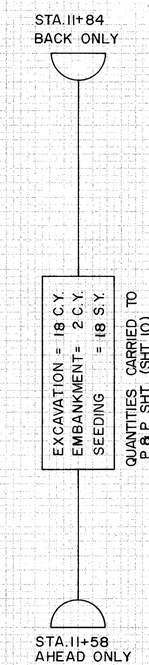
PLATE 3-FULL CROSS SECTION-FULL LINE

S.R. 739 CROSS SECTIONS STA. 65+00 TO STA. 66+00

DETAILED BY: SRS DATE: 9-90	FHWA REGION	STATE	PROJECT		15 / 27
CHECKED BY: JLM DATE: 3-93	5	OHIO			

MARION COUNTY
MAR 739-1.21





	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
935				
	32	1		
925				
			8	1
935				
	27	1		
925				
			10	1
935				
	0	0		
925				
935				
925				
935				
925				

S.R. 739 STREAM CROSS SECTIONS STA. 10+50 TO STA. 11+84

DETAILED BY: SRS DATE: 9-90	FHWA REGION	STATE	PROJECT		16 / 27
CHECKED BY: JLM DATE: 3-93	5	OHIO			

MARION COUNTY
MAR 739-1.21

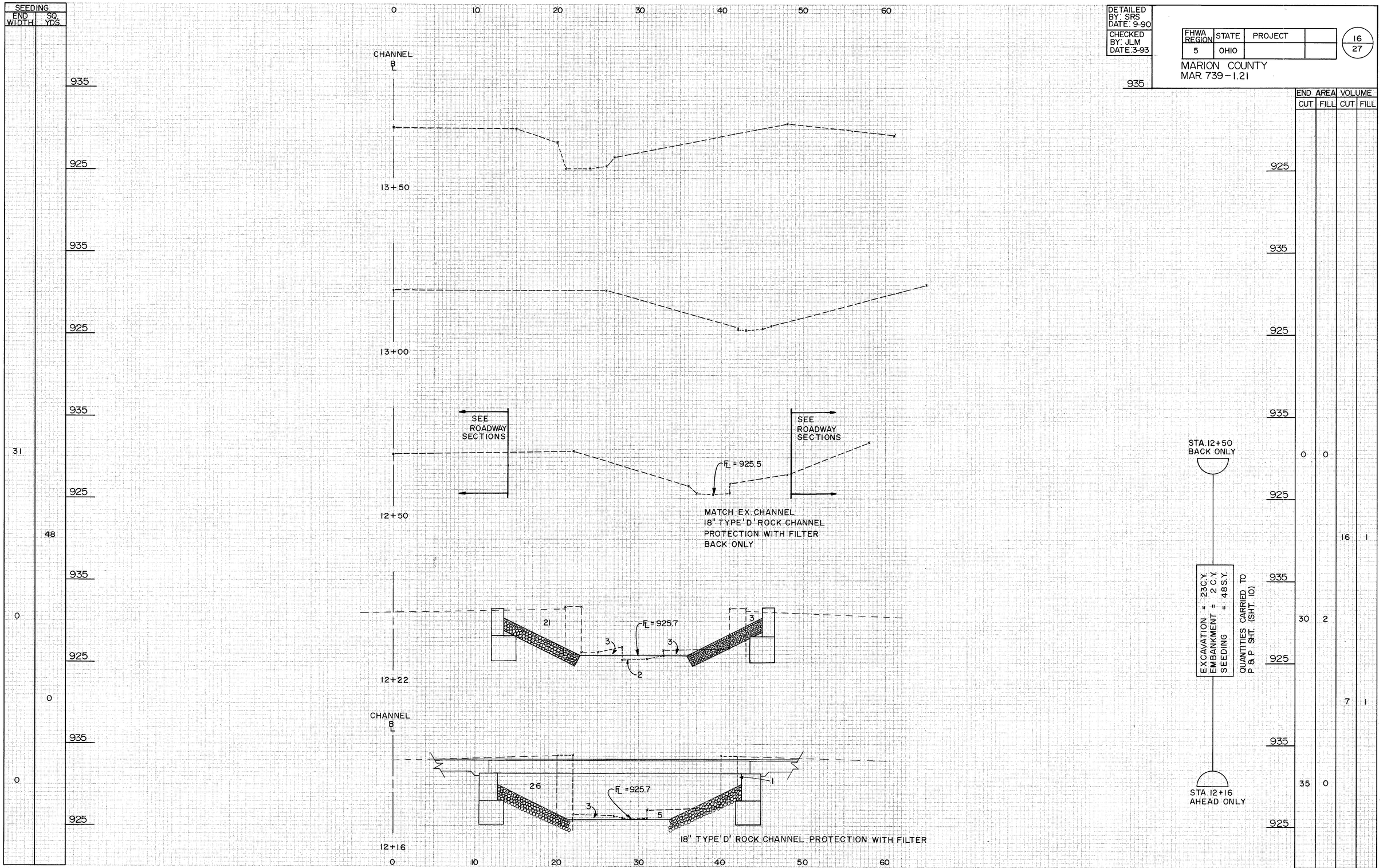


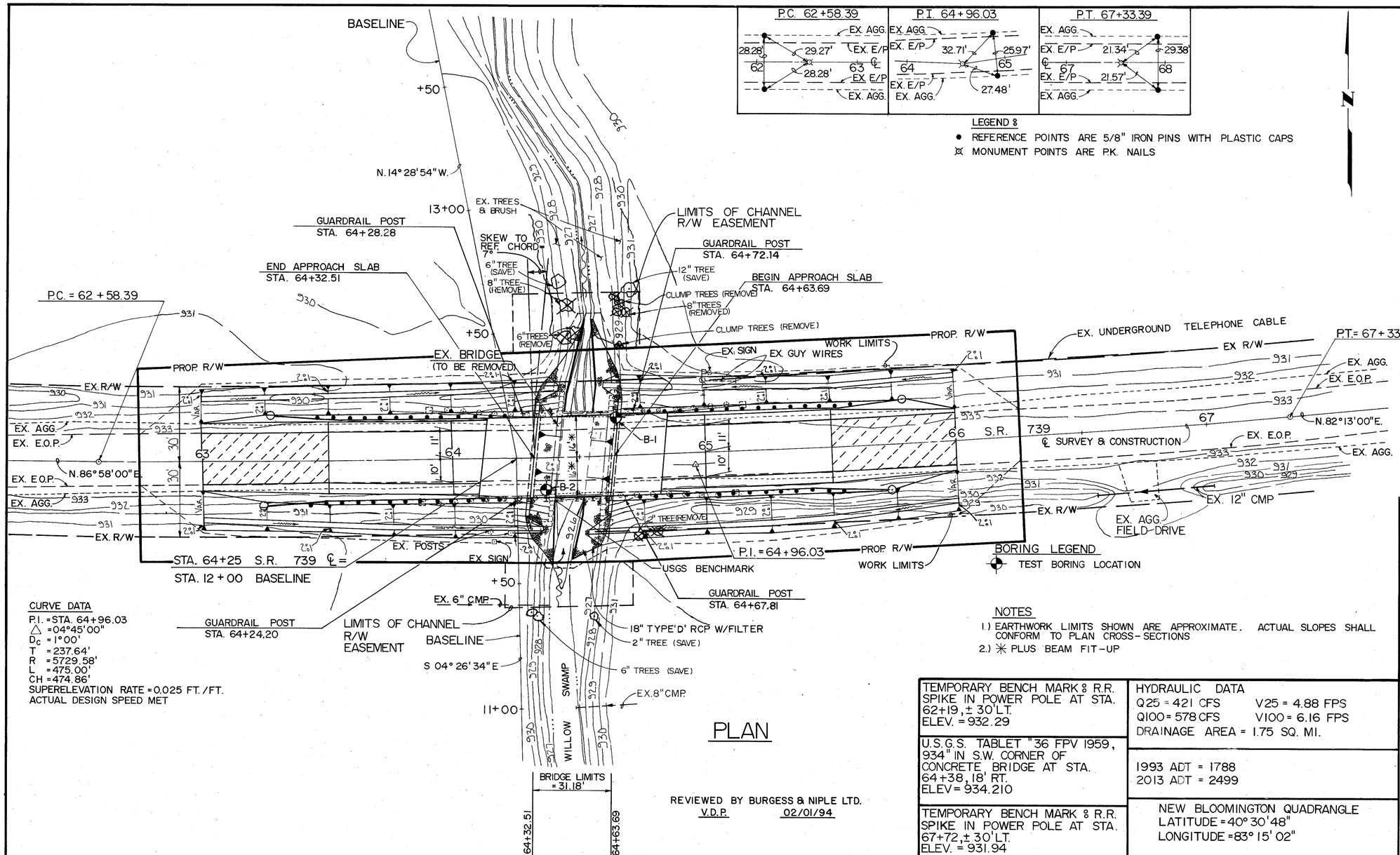
PLATE 3-FULL CROSS SECTION-FULL LINE

S.R. 739 STREAM CROSS SECTIONS STA. 12+16 TO STA. 13+50

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

17/27

MARION COUNTY
MAR-739-1.21



PLAN

CURVE DATA
P.I. = STA. 64+96.03
△ = 04°45'00"
D_c = 1°00'
T = 237.64'
R = 5729.58'
L = 475.00'
CH = 474.86'
SUPERELEVATION RATE = 0.025 FT./FT.
ACTUAL DESIGN SPEED MET

NOTES
1.) EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS-SECTIONS
2.) ⌘ PLUS BEAM FIT-UP

REVIEWED BY BURGESS & NIPLE LTD.
V.D.P. 02/01/94

TEMPORARY BENCH MARK & R.R. SPIKE IN POWER POLE AT STA. 62+19, ± 30' LT. ELEV. = 932.29

U.S.G.S. TABLET "36 FPV 1959, 934" IN S.W. CORNER OF CONCRETE BRIDGE AT STA. 64+38, 18' RT. ELEV = 934.210

TEMPORARY BENCH MARK & R.R. SPIKE IN POWER POLE AT STA. 67+72, ± 30' LT. ELEV. = 931.94

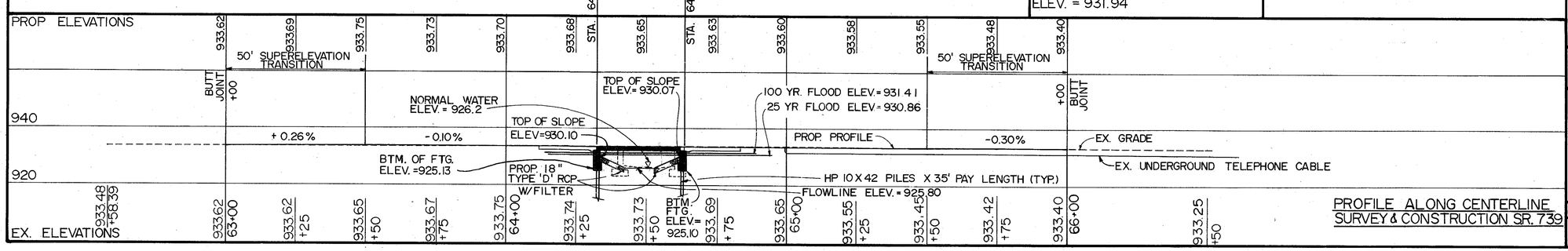
HYDRAULIC DATA
Q25 = 421 CFS V25 = 4.88 FPS
Q100 = 578 CFS V100 = 6.16 FPS
DRAINAGE AREA = 1.75 SQ. MI.

1993 ADT = 1788
2013 ADT = 2499

NEW BLOOMINGTON QUADRANGLE
LATITUDE = 40° 30' 48"
LONGITUDE = 83° 15' 02"

EXISTING STRUCTURE (TO BE REMOVED)
TYPE: REINFORCED CONCRETE SLAB ON REINFORCED CONCRETE ABUTMENTS
SPAN: 18'-6" ± CLEAR SPAN
WIDTH: 33'-6" ± OUT TO OUT
SKEW: 7° L.F.
ROADWAY: 30'-0" ± RAIL TO RAIL
ALIGNMENT: 1° LEFT CURVE
APPROACH SLABS: NONE
STRUCTURE FILE NO.: 5103665

PROPOSED STRUCTURE
TYPE: SINGLE SPAN PRESTRESSED BOX BEAMS ON REINF. CONC. CAPPED PILE ABUTMENTS
SPAN: 30'-0" C/C BEARINGS (MEASURED ON REFERENCE CHORD)
ROADWAY: 32'-0" F/F GUARDRAIL
SKEW: 7° L.F. (TO REF. CHORD)
LOADING: HS 20-44 AND ALTERNATE MILITARY LOADING
WEARING SURFACE: 2 1/2" MIN. ACWS
APPROACH SLABS: AS-1-81, 20'-0" LONG
ALIGNMENT: PARALLEL TO REF. CHORD
SUPERELEVATION: 0.025 FT./FT.



PROFILE ALONG CENTERLINE SURVEY & CONSTRUCTION SR. 739

GARRISON CONSULTING ENGINEERS
638-A Wagner Avenue
Greenville, Ohio 45331
(513) 548-1120

1/7

SITE PLAN

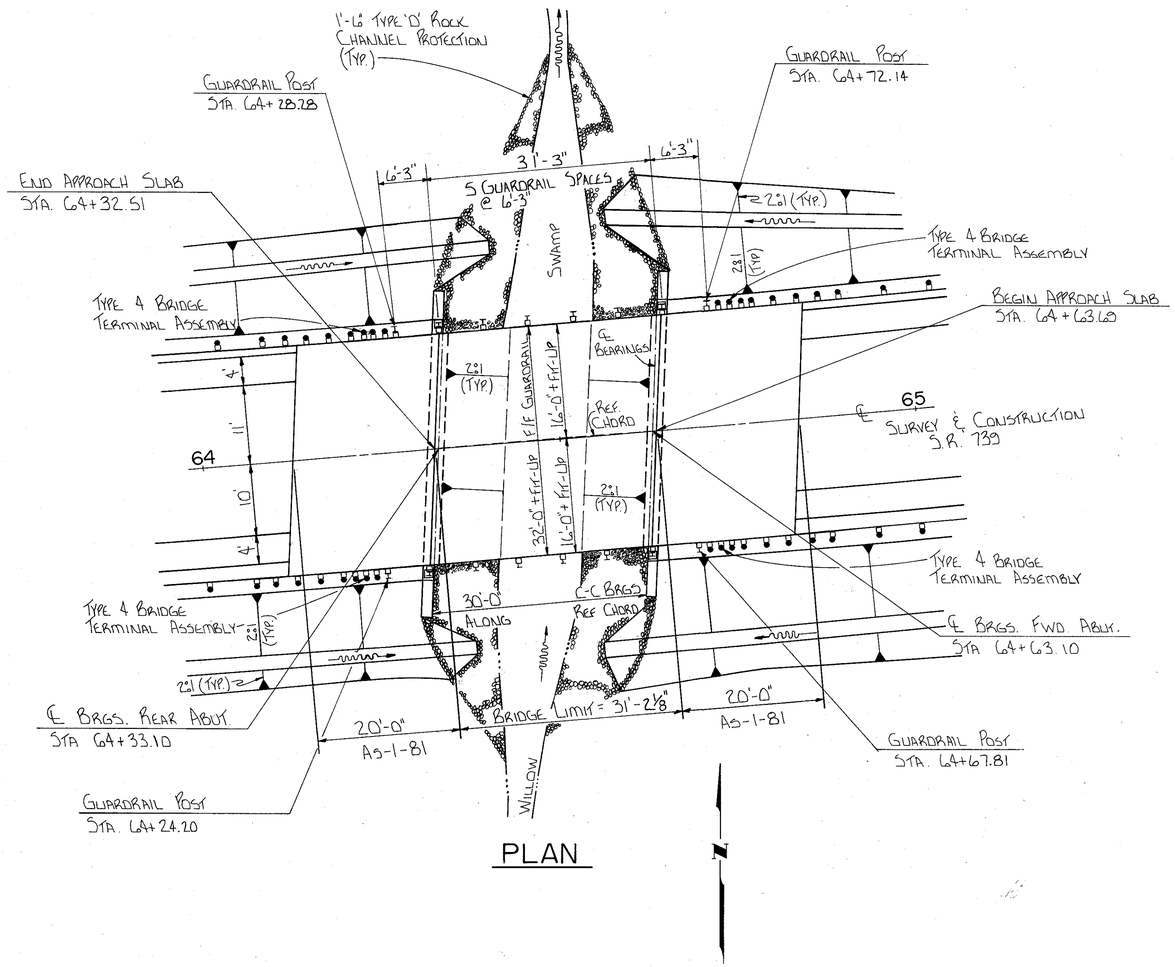
BRIDGE NO. MAR-739-0122
OVER WILLOW SWAMP

MARION COUNTY

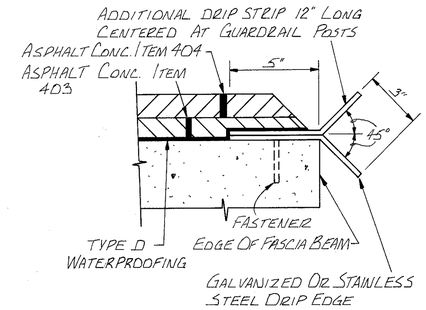
STA. 64+32.51 TO STA. 64+63.69

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
JLM	BAC	LJB	JRG	9-91	

CALC. BY: JLM DATE: 12-91	MARION COUNTY MAR-739-1.21	OHIO
CHKD. BY: J.R.G. DATE: 1-92		FHWA 5 REGION



PLAN

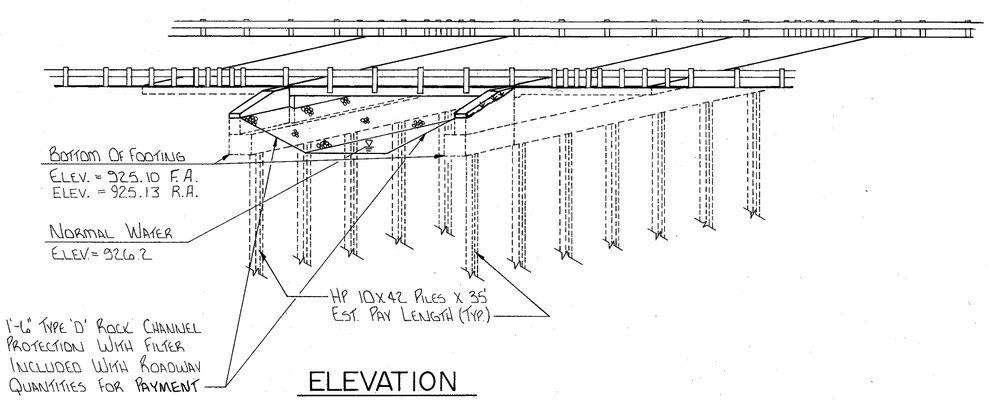


DRIP STRIP DETAIL

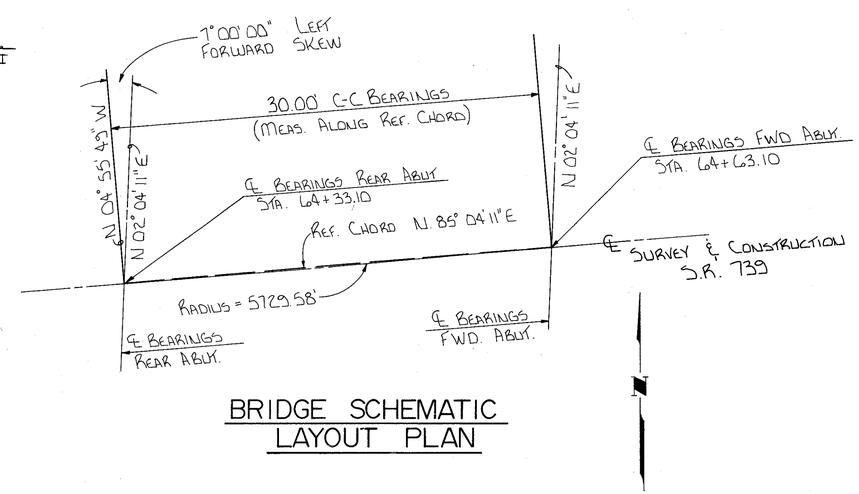
THE FINAL PAY QUANTITY SHALL BE THE ACTUAL OVERALL INSTALLATION LENGTH OF THE DRIP STRIP. LAPS AND ADDITIONAL STRIPS AT THE POSTS SHALL NOT BE MEASURED FOR PAYMENT.

DRIP STRIP:

PRIOR TO APPLYING THE TYPE D WATERPROOFING, A BENT DRIP STRIP SHALL BE INSTALLED ALONG THE EDGES OF THE BRIDGE DECK AS SHOWN. THE STRIPS SHALL BE FASTENED AT 1'-6" C/C MAXIMUM WITH 1 1/4" x 5/32" x 1/4" FLAT HEAD DRIVE PIN AND WASHER (LENGTH x SHANK DIA. x HEAD DIA.) OR #10 GALVANIZED SCREWS AND EXPANSION ANCHORS, SUBJECT TO THE APPROVAL OF THE ENGINEER. THE STRIPS SHALL BE PLACED THE FULL LENGTH OF THE DECK, ENDING AT THE FACE OF WINGWALL. WHERE SPLICES ARE REQUIRED, A 3" MIN. LAP SHALL BE USED WITH A FASTENER THROUGH THE LAP. STEEL FOR GALVANIZED STRIPS SHALL BE 8"x0.105" AND SHALL MEET THE REQUIREMENTS OF ASTM A568. GALVANIZING SHALL BE IN ACCORDANCE WITH 711.02. STAINLESS STEEL SHALL BE 20 GAUGE ASTM A167, TYPE 304, MILL FINISH. PAYMENT SHALL BE MADE AT CONTRACT PRICE BID FOR ITEM SPECIAL, SQUARE FEET, STEEL DRIP STRIP, WHICH SHALL INCLUDE ALL MATERIALS, LABOR, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE ITEM.



ELEVATION



BRIDGE SCHEMATIC LAYOUT PLAN

GARRISON CONSULTING ENGINEERS
638-A WAGNER AVE.
GREENVILLE, OHIO 45331
(513)-548-1120

2/7

GENERAL PLAN AND ELEVATION

BRIDGE NO: MAR-739-0122
OVER WILLOW SWAMP

MARION COUNTY

STA. 64+32.51 TO STA. 64+63.69

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
JLM	BAC	LJB	JRG	1-92	

FHWA REGION	STATE	PROJECT	
5	OHIO		

MARION COUNTY
MAR-739-1.21

ESTIMATED QUANTITIES

CALCULATED BY: B.S.U. 6/92
CHECKED BY: J.L.M. 7/92

ITEM	ITEM EXT	TOTAL	UNIT	DESCRIPTION	SUPER	ABUT.	GEN.
202	11000	LUMP	LUMP	STRUCTURE REMOVED			LUMP
403	20000	5	CU. YD.	ASPHALT CONCRETE (AC-20)	5		
404	20000	4	CU. YD.	ASPHALT CONCRETE (AC-20)	4		
503	11100	LUMP	LUMP	COFFERDAMS, CRIBS AND SHEETING			LUMP
503	21100	64	CU. YD.	UNCLASSIFIED EXCAVATION		64	
505	11100	LUMP	LUMP	PILE DRIVING EQUIPMENT MOBILIZATION		LUMP	
507	11100	490	LIN. FT.	STEEL PILES HP10 x 42		490	
507	93301	14	EACH	STEEL POINT (OR SHOE), AS PER PLAN		14	
509	15800	7331	LBS.	EPOXY COATED REINFORCING STEEL, GRADE 60		7331	
511	43500	58	CU. YD.	CLASS C CONCRETE, ABUTMENT INCLUDING FOOTING		58	
512	55800	127	SQ. YD.	TYPE D WATERPROOFING	127		
SPECIAL	51267500	13	SQ. YD.	SEALING OF CONCRETE SURFACES *	13		
SPECIAL	51267502	38	SQ. YD.	SEALING OF CONCRETE SURFACES (EPOXY)*		38	
515	53700	8	EACH	PRESTRESSED CONCRETE BOX BEAM (31' LENGTH) B17x48 *	8		
516	13600	89	SQ. FT.	1" PREFORMED EXPANSION JOINT FILLER	89		
516	31011	67	LIN. FT.	2" DEEP JOINT SEALER, AS PER PLAN	67		
SPECIAL	516 31200	65	LIN. FT.	SAWING AND SEALING BITUMINOUS CONCRETE JOINTS	65		
516	41100	16	EACH	1/8" PREFORMED BEARING PAD, (5"x7") 711.21	16		
516	43100	32	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE)(1"x5"x7")*	32		
517	72300	87.5	LIN. FT.	RAILING (DEEP BEAM RAIL WITH STEEL TUBULAR BACKUP AND TYPE 2 STEEL POSTS AND ANCHOR BOLTS)*	87.5		
518	21200	17	CU. YD.	POROUS BACKFILL WITH FILTER FABRIC		17	
SPECIAL	518 22200	42	SQ. FT.	STEEL DRIP STRIP	42		

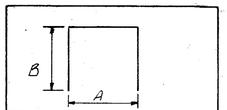
*SEE PROPOSAL NOTE

REINFORCING SCHEDULE (ABUTMENTS)

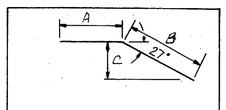
EPOXY

MARK	NO.	LENGTH	SERIES	SHAPE	WEIGHT
EA1001	16	21'-3"	-	ST.	1463
EA801	46	5'-4"	-	BT.	655
EA 701	16	24'-2"	-	ST.	790
EA 601	12	13'-3"	-	BT.	239
EA 602	14	12'-9"	-	BT.	268
EA 603	18	12'-3"	-	BT.	331
EA 501	6	14'-11"	-	BT.	93
EA 502	12	13'-3"	-	BT.	166
EA 503	4	10'-11"	-	BT.	46
EA 504	12	17'-4"	-	ST.	217
EA 505	12	23'-11"	-	ST.	299
EA 506	6	8'-3"	-	ST.	52
EA 507	6	7'-1"	-	ST.	44
EA 508	4	7'-2"	-	BT.	30
EA 509	4	5'-10"	-	BT.	24
EA 510	16	23'-11"	-	ST.	399
EA 511	248	7'-5"	-	BT.	1918
EA 512	8	4'-8"	-	ST.	39
EA 401	28	8'-10"	-	BT.	258
TOTAL WEIGHT (EPOXY) (LBS.)					7331

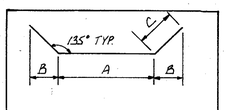
BENDING DIAGRAM



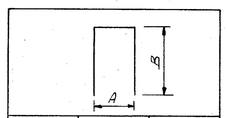
MARK	A	B
EA 511	2'-8"	2'-6"



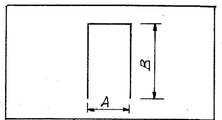
MARK	A	B	C
EA 508	2'-5"	4'-9"	2'-1 7/8"
EA 509	2'-5"	3'-5"	1'-6 5/8"



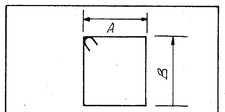
MARK	A	B	C
EA801	2'-8"	1'-0"	1'-5"



MARK	A	B
EA 501	1'-2"	7'-0"
EA 502	1'-2"	6'-2"
EA 503	1'-2"	5'-0"



MARK	A	B
EA 601	1'-11"	5'-10"
EA 602	1'-11"	5'-7"
EA 603	1'-11"	5'-4"



MARK	A	B
EA401	1'-9 3/8"	2'-4 3/4"

GENERAL NOTES

1. REFERENCE SHALL BE MADE TO STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS STANDARD DRAWINGS:

AS-1-81	DATED 11-27-81
DBR-2-73	DATED 04-10-73
PSBD-1-81 (4 SHEETS)	DATED 06-20-89

2. DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION FOR STATE HIGHWAY AND TRANSPORTATION OFFICIALS 1989, INCLUDING THE 1990 & 1991 INTERIM SPECIFICATIONS, AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

3. DESIGN DATA:

DESIGN LOADING - HS20-44 AND THE ALTERNATE MILITARY LOADING

CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 P.S.I. FOR SUBSTRUCTURE

CONCRETE FOR PRESTRESSED CONCRETE BEAMS - UNIT STRESS 2200 P.S.I. COMPRESSION 444 P.S.I. TENSION

REINFORCING STEEL (SUBSTRUCTURE) - ASTM A615, A616 OR A617 GRADE 60, MINIMUM YIELD STRENGTH 60,000 P.S.I.

REINFORCING STEEL (SUPERSTRUCTURE) - ASTM A615, A616 OR A617 - UNIT STRESS 20,000 P.S.I. GRADE 40 PERMITTED FOR BOX BEAM ONLY.

PRESTRESSING STRAND ASTM A416 - f's - 270,000 P.S.I. INITIAL STRESS - 0.70 f's

DECK PROTECTION METHOD - TYPE D WATERPROOFING, ASPHALT CONCRETE OVERLAY AND SEALING OF CONCRETE SURFACES

ABUTMENT PILING BENDING STRESS MAY APPROACH, REACH OR EXCEED YIELD STRESS

4. PILES DRIVEN TO BEDROCK:

PILES SHALL BE DRIVEN TO REFUSAL ON BEDROCK. REFUSAL SHALL BE CONSIDERED AS OBTAINED BY PENETRATING SOFT BEDROCK FOR SEVERAL INCHES WITH A MINIMUM RESISTANCE OF 20 BLOWS PER INCH OR REFUSAL SHALL BE CONSIDERED AS OBTAINED AFTER THE PILE HAS CONTACTED HARD BEDROCK AND THE PILE HAS THEN RECEIVED AT LEAST 20 BLOWS.

THE DESIGN LOAD IS 42 TONS PER PILE FOR THE ABUTMENT PILES.

5. SEALING OF CONCRETE SURFACES:

ABUTMENT BRIDGE SEATS AND BRIDGE SEAT BREAST WALLS DOWN TO THE GROUND LINE SHALL BE SEALED WITH AN EPOXY SEALER PRIOR TO PLACEMENT OF SUPERSTRUCTURE BEAMS AS SHOWN ON SHEET 4/7 SECTION A - A (DIMENSIONS). AFTER PLACEMENT OF THE SUPERSTRUCTURE AND AFTER ALL CONCRETE IS IN PLACE AND HAS RECEIVED ITS FINAL FINISH, ALL REMAINING ABUTMENT CONCRETE SURFACES EXPOSED ABOVE THE FINISHED GRADE SHALL RECEIVE AN EPOXY SEALER.

SUPERSTRUCTURE BEAM FASCIAS AND 6" MIN. UNDERDECK RETURNS SHALL BE SEALED WITH AN EPOXY OR NON-EPOXY SEALER AS SHOWN ON SHEET 6/7 , SECTION A - A.

SEE PROPOSAL NOTE FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

REINFORCING STEEL LAP LENGTH

BAR	EA1001	EA701	EA504	EA505	EA506	EA507	EA510
LAP	10'-3"	3'-0"	2'-5"	2'-5"	2'-5"	2'-5"	2'-5"

6. LAMINATED ELASTOMERIC BEARING:

ALL ELASTOMER FOR BEARINGS SHALL BE 60 HARDNESS DUROMETER.

BEARINGS HAVE BEEN DESIGNED FOR THE FOLLOWING REACTION:

DEAD LOAD	-	7.3 KIPS
LIVE LOAD *	-	8.8 KIPS
TOTAL	-	16.1 KIPS

*EXCLUDING IMPACT

DIMENSION TOLERANCES:

INDIVIDUAL ELASTOMER LAYER THICKNESS ± 20% OF DESIGN VALUE (NOT TO EXCEED ± 1/8").

PLAN DIMENSIONS	- 0	+ 1/4"
DESIGN THICKNESS	- 0	+ 1/8"
EDGE COVER OF EMBEDDED LAMINATES	- 0	+ 1/8"

FOR BEARING DETAIL SEE SHEET 6/7 .

7. APPEARANCE OF BRIDGE:

THE CONTRACTOR SHALL TAKE CARE TO PREVENT STAINING FROM FOREIGN MATERIAL SUCH AS WATERPROOFING, PRIMER OR OTHER ASPHALTIC MATERIALS ON THE FASCIA BEAMS AND/OR ABUTMENTS.

8. UTILITY LINES:

ALL EXPENSE INVOLVED IN RELOCATING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER(S). THE CONTRACTOR AND OWNER(S) ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

9. BEARING PAD SHIMS:

TWO 1/8" x 5" x 7" PREFORMED BEARING PADS PER BEAM ARE PROVIDED FOR USE AS SHIMS WHERE NEEDED FOR PROPER SEATING OF THE PRESTRESSED BEAMS. ANY UNUSED PADS SHALL BECOME THE PROPERTY OF THE STATE.

10. ITEM 507 - STEEL POINTS - AS PER PLAN:

STEEL PILE POINTS SHALL BE USED TO PROTECT THE TIPS OF THE PROPOSED PILING. THE STEEL POINTS SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORPORATION, 262 RUTHERFORD BOULEVARD, CLIFTON, NEW JERSEY 07014; INTERNATIONAL CONSTRUCTION EQUIPMENT, INC., 301 WAREHOUSE DRIVE, MATTHEWS, NORTH CAROLINA 28015; DOUGHERTY FOUNDATION PRODUCTS, INC., P.O. BOX 688, FRANKLIN LAKES, NEW JERSEY 07417; VERSA STEEL, INC., 3601 N.W. YEON AVENUE, P.O. BOX 10559, PORTLAND, OREGON 97210 OR BY A MANUFACTURER THAT CAN FURNISH A STEEL POINT THAT IS ACCEPTABLE TO THE DIRECTOR.

11. REMOVAL OF EXISTING STRUCTURE:

WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC, THE EXISTING STRUCTURE SHALL BE REMOVED. (SEE SECTION 202.03 OF THE "CONSTRUCTION AND MATERIAL SPECIFICATIONS.") SUITABLE WASTE MASONRY MAY BE PLACED AS BANK PROTECTION AS DIRECTED BY THE ENGINEER.

NOTE: BAR MARKS WITH THE LETTER "E" IN THE PREFIX (I.E. EA501) DENOTES EPOXY COATED BAR.

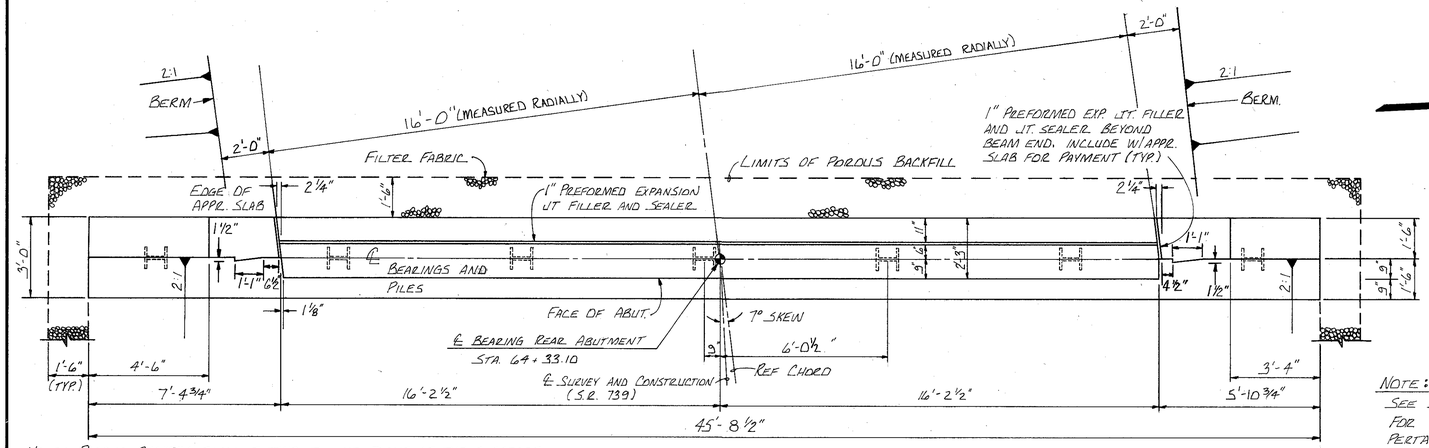
GARRISON CONSULTING ENG. 3/7
638 A. WAGNER AVE.
GREENVILLE, OHIO 45331

ESTIMATED QUANTITIES, GENERAL NOTES & REINFORCING SCHEDULE
BRIDGE NO. MAR-739-0122
OVER WILLOW SWAMP
MARION COUNTY
STA. 64+32.51 TO STA. 64+63.69

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
B.S.U.	M.T.B.	J.L.M.	JRG.	8-92	

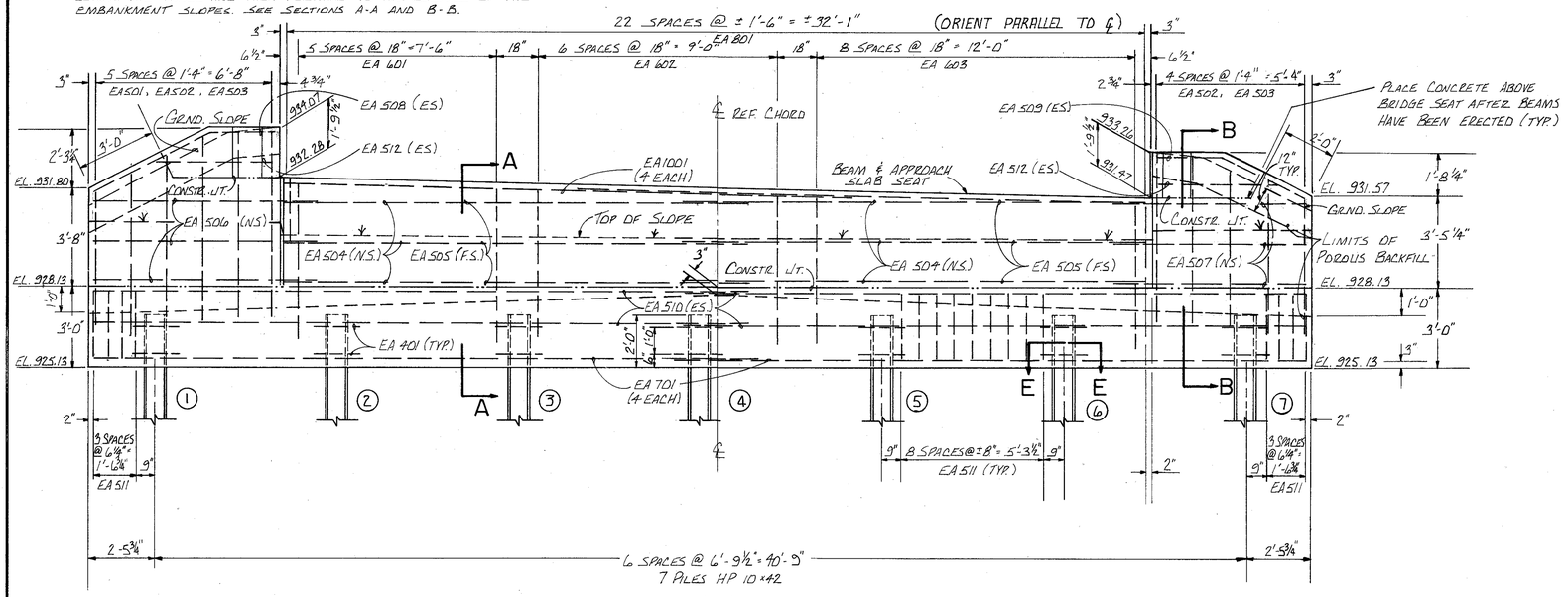
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

MARION COUNTY
MAR-739-1.21



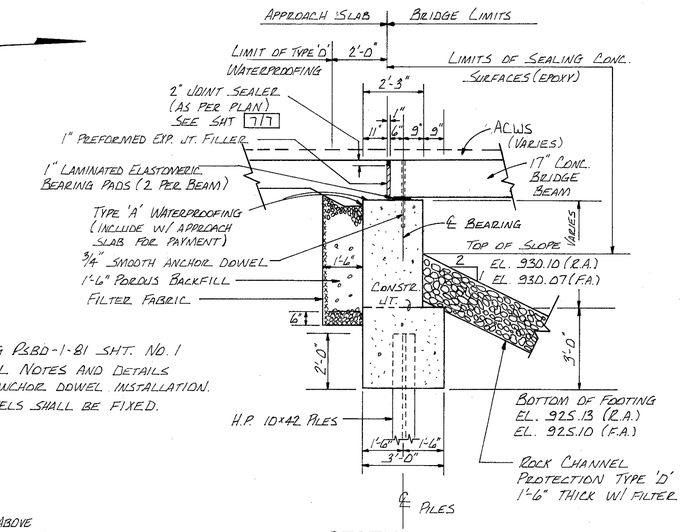
REAR ABUTMENT PLAN

Note: POROUS BACKFILL SHALL EXTEND TO THE PLANE OF THE SUBGRADE, TO 1 FOOT BELOW THE EMBANKMENT SURFACE AND LATERALLY 1'-6" BEYOND THE WINGS AND THEN FORWARD TO THE SURFACE OF THE EMBANKMENT SLOPES. SEE SECTIONS A-A AND B-B.

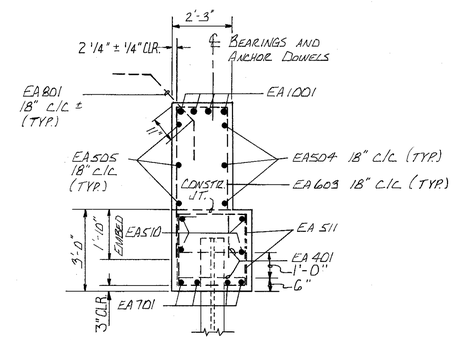


REAR ABUTMENT ELEVATION

Note: SEE STD. DRWG PSBD-1-81 SHT. NO. 1 FOR ADDITIONAL NOTES AND DETAILS PERTAINING TO ANCHOR DOWEL INSTALLATION. ALL ANCHOR DOWELS SHALL BE FIXED.



SECTION A-A
(Dimensions)



SECTION A-A
(Reinforcement)

SEE SHT. 5/7 FOR SECTION B-B AND E-E
SEE SHT. 3/7 FOR REINFORCING STEEL LAP LENGTHS

NOTES:

BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES.

BACKWALL AND WINGWALL CONCRETE ABOVE THE LEVEL OF THE BEAM SEAT SHALL NOT BE PLACED UNTIL AFTER THE BOX BEAMS HAVE BEEN ERECTED.

(P.E.J.F.) PREFORMED EXPANSION JOINT FILLER
(E.S.) DENOTES EACH SIDE
(F.S.) DENOTES FAR SIDE
(N.S.) DENOTES NEAR SIDE
(R.A.) DENOTES REAR ABUTMENT
(F.A.) DENOTES FORWARD ABUTMENT
(A.C.W.S.) DENOTES ASPHALT CONCRETE WEARING SURFACE

xxxxxxxxxxxxxxxx DENOTES FILTER FABRIC LIMITS.

GARRISON CONSULTING ENG. 4/7
638A WAGNER AVE.
GREENVILLE, OHIO 45331

REAR ABUTMENT PLAN AND ELEVATION
BRIDGE NO. MAR-739-01 22
OVER WILLOW SWAMP

MARION COUNTY STA. 64+32.51 TO STA. 64+63.69

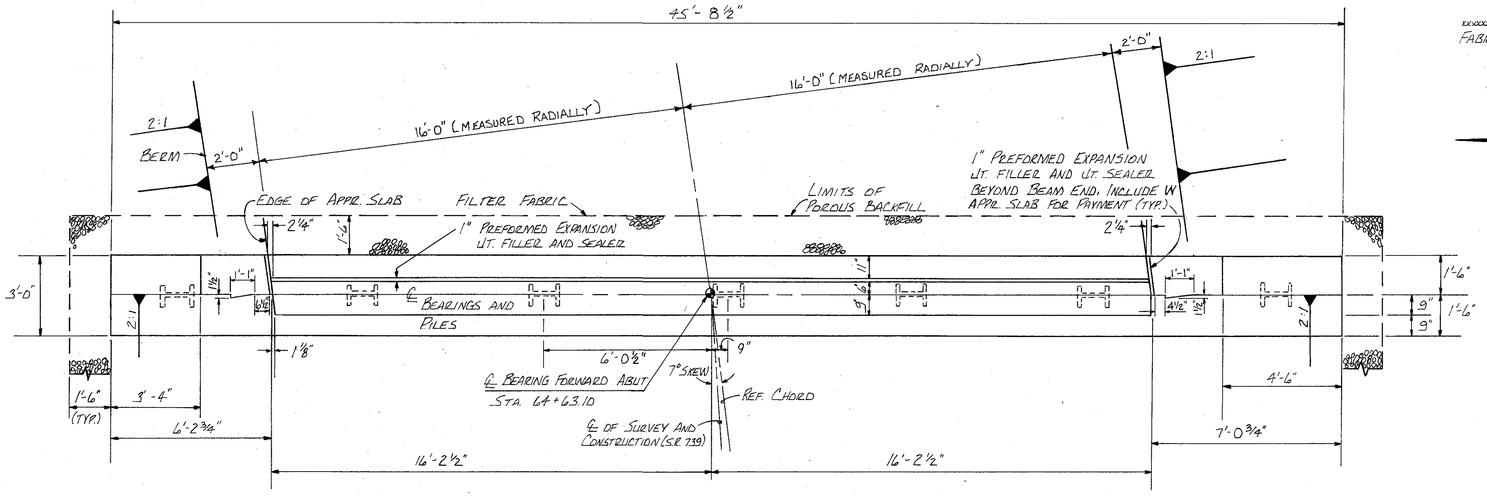
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
B.S.U.	M.T.B.	J.L.M.	J.R.G.	8-92	

FHWA REGION	STATE	PROJECT	
5	OHIO		

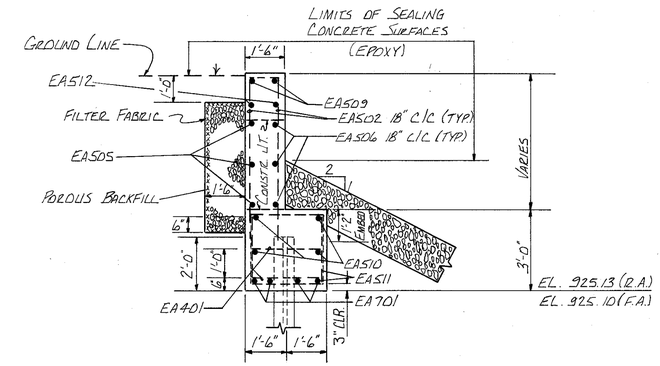
21 / 27

MARION COUNTY
MAR-739- 1.21

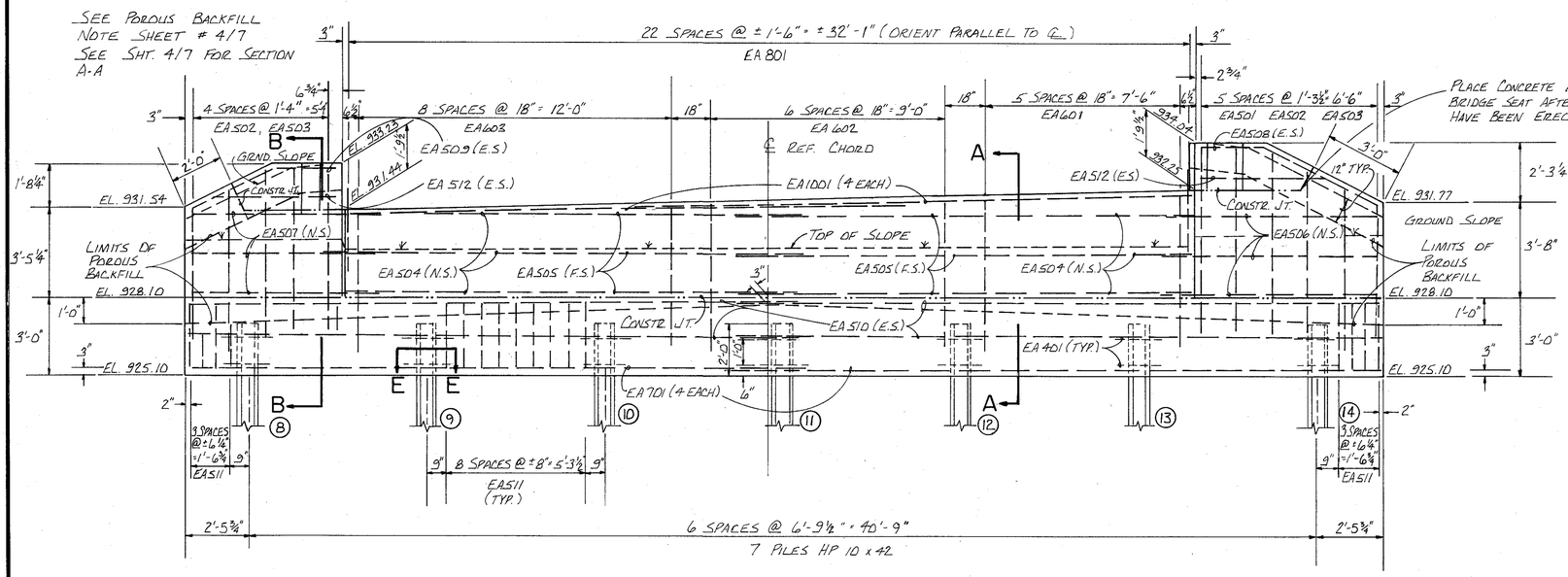
xxxxxxxxxxx DENOTES FILTER FABRIC LIMITS.



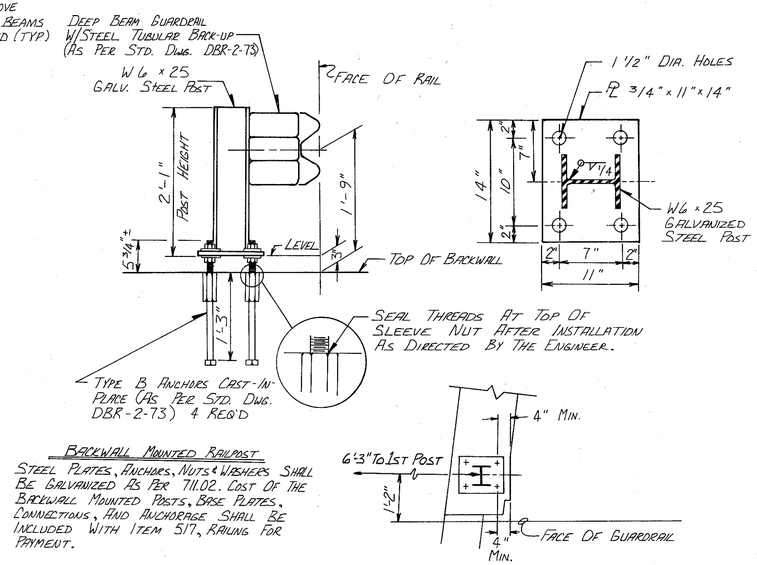
FORWARD ABUTMENT PLAN



SECTION B-B

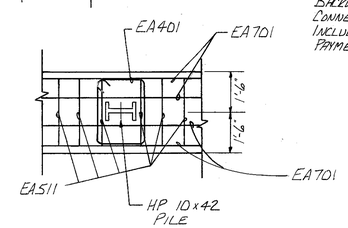


FORWARD ABUTMENT ELEVATION



BACKWALL MOUNTED RAILPOST

STEEL PLATES, ANCHORS, NUTS & WASHERS SHALL BE GALVANIZED AS PER 711.02. COST OF THE BACKWALL MOUNTED POSTS, BASE PLATES, CONNECTIONS, AND ANCHORAGE SHALL BE INCLUDED WITH ITEM 517, RAILING FOR PAYMENT.



SECTION E-E

NOTES:

BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES.

BACKWALL AND WINGWALL CONCRETE ABOVE THE LEVEL OF THE BEAM SEAT SHALL NOT BE PLACED UNTIL AFTER THE BOX BEAMS HAVE BEEN ERECTED.

FOR REINFORCING STEEL LAP LENGTHS REFER TO TABLE ON SHEET 3/7

(P.E.J.F.) PREFORMED EXPANSION JOINT FILLER
(E.S.) DENOTES EACH SIDE
(F.S.) DENOTES FAR SIDE
(N.S.) DENOTES NEAR SIDE
(R.A.) DENOTES REAR ABUTMENT
(F.A.) DENOTES FORWARD ABUTMENT
(A.C.W.S.) DENOTES ASPHALT CONCRETE WEARING SURFACE

GARRISON CONSULTING ENG. 5/7
638A WAGNER AVE.
GREENVILLE, OHIO 45331

FORWARD ABUTMENT PLAN & ELEVATION
BRIDGE NO. MAR-739-01 22
OVER WILLOW SWAMP

STA. 64+32.51
TO STA. 64+63.69

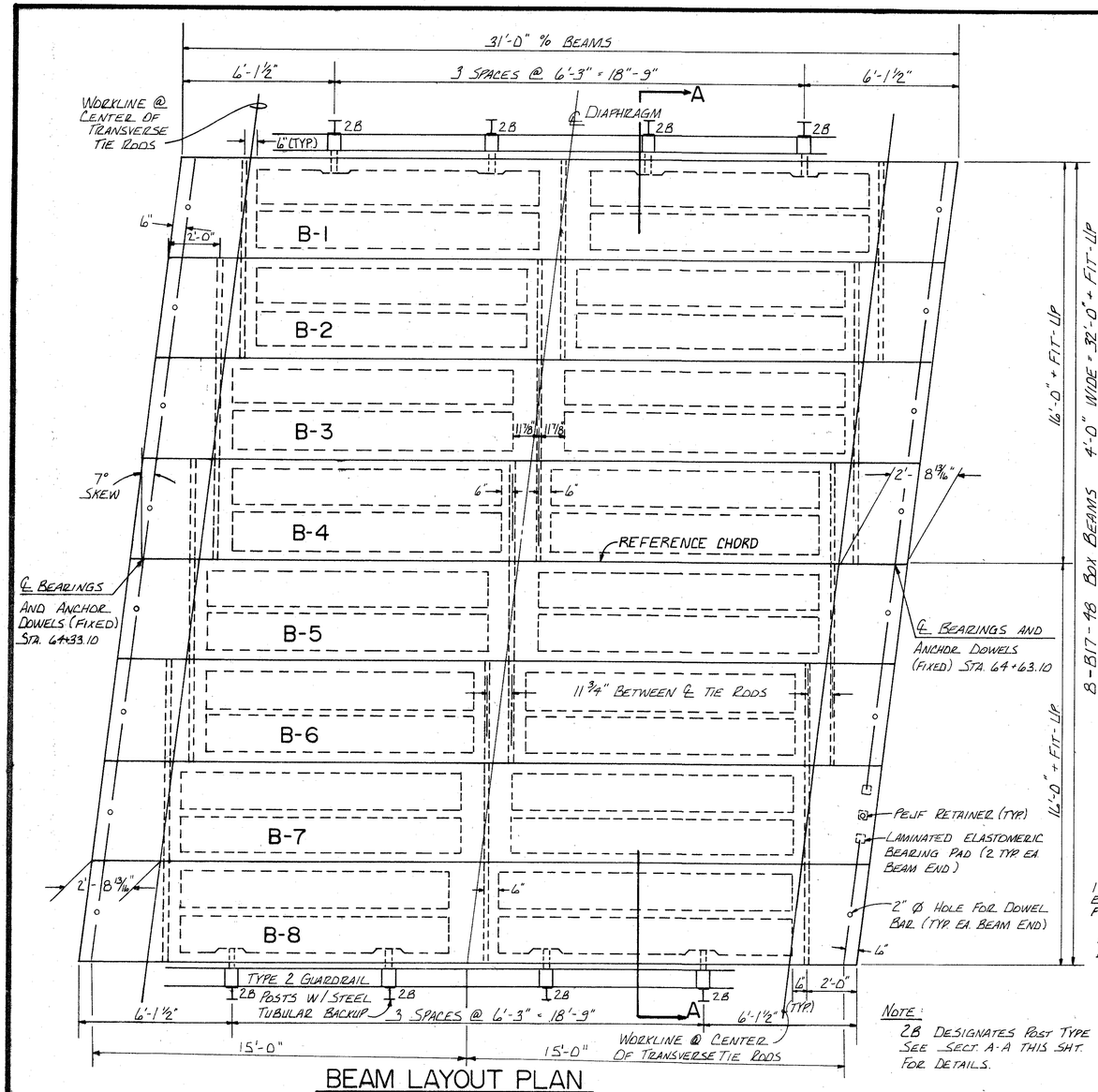
MARION COUNTY

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
B.S.U.	M.T.B.	J.L.M.	J.R.G.	8-92	

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

22/27

MARION COUNTY
MAR-739-1.21



BEAM LAYOUT PLAN

NOTE: 2B DESIGNATES POST TYPE SEE SECT. A-A THIS SHT. FOR DETAILS.

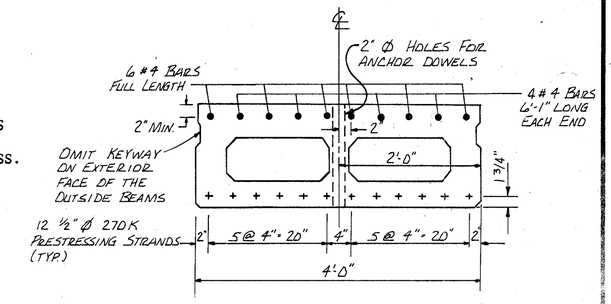
NOTES

CALCULATED CAMBER AT TIME OF PAVING, INCLUDING ALLOWANCE FOR CAMBER GROWTH DUE TO CREEP, IS 1".

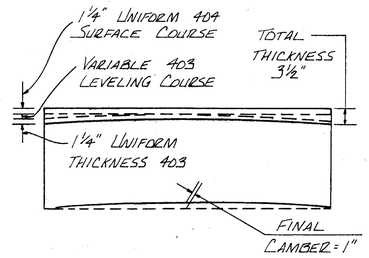
CALCULATED DEFLECTION DUE TO WEIGHT OF SURFACE COURSE AND RAILING IS 0".

NET FINAL CAMBER OF BEAMS IS 1". THIS IS 1" IN EXCESS OF THE AMOUNT REQUIRED TO PLACE THE TOP OF THE BEAM PARALLEL TO PROFILE GRADE. THIS EXCESS AMOUNT SHALL BE COMPENSATED FOR BY THICKENING THE 403 LEVELING COURSE FROM 1-1/4" AT THE CENTER OF THE SPAN TO 2-1/4" AT THE ENDS OF THE SPAN.

ASPHALT CONCRETE SURFACE COURSE SHALL CONSIST OF A VARIABLE THICKNESS OF 403 AND 1-1/4" THICKNESS OF 404. THE 403 SHALL BE PLACED IN TWO OPERATIONS. THE FIRST COURSE SHALL BE OF 1-1/4" UNIFORM THICKNESS. THE SECOND COURSE SHALL BE FEATHERED TO PLACE THE SURFACE PARALLEL TO AND 1-1/4" BELOW FINAL PAVEMENT SURFACE ELEVATION.



TYPICAL BOX BEAM CROSS SECTION B17-48



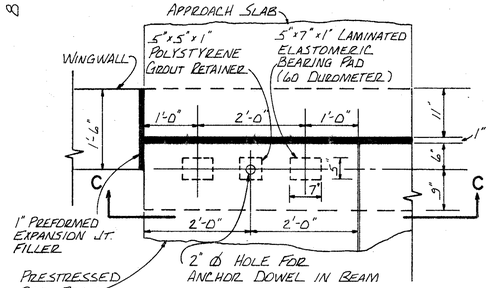
TOTAL ACWS THICKNESS		
COURSE	AT MIDSPAN	AT ENDS
403	1¼"	2¼"
404	1¼"	1¼"
TOTAL	2½"	3½"

BEAM CAMBER AND ASPHALT THICKNESS DIAGRAM

NOTES:
FABRICATOR'S SHOP DRAWINGS SHALL SHOW COMPLETE DETAILS OF BEAM REINFORCING.

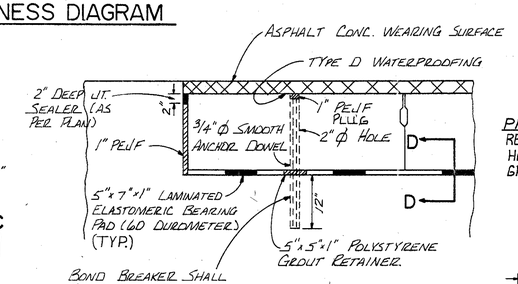
BEAM MANUFACTURER WILL TAKE EXTRA CARE IN STORING BEAMS PRIOR TO SHIPMENT TO SITE. THEY SHALL CORRESPOND WITH THEIR ERECTED POSITION.

FOR ADDITIONAL NOTES AND DETAILS NOT SHOWN, SEE STD. DRAWG. PSBD-1-81.



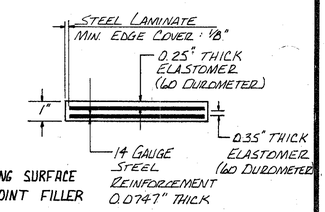
TYPICAL BEARING PAD DETAIL

NOTE: 2 LAMINATED ELASTOMERIC BEARING PADS ARE REQUIRED AT EACH BEAM END AS SHOWN. SEE GENERAL NOTES SHT. 3/7



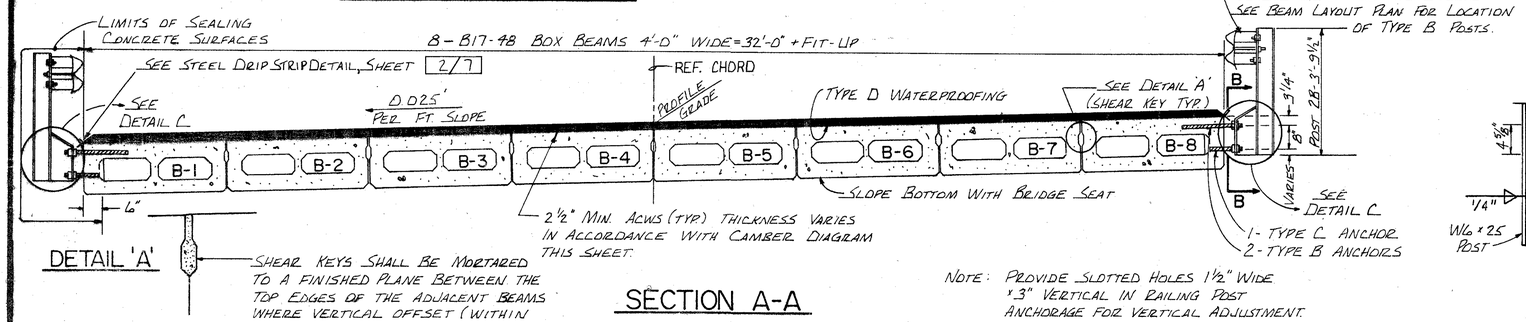
PROCEDURE: PLACE POLYSTYRENE RETAINER. DRILL AND CLEAN DOWEL HOLE. THEN PLACE NON-SHRINKING GROUT, DOWEL AND PEJF PLUG.

SECTION C-C



SECTION D-D

(ACWS) DENOTES ASPHALT CONCRETE WEARING SURFACE
(PEJF) DENOTES PREFORMED EXPANSION JOINT FILLER



DETAIL 'A'

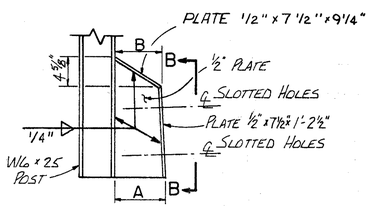
SHEAR KEYS SHALL BE MORTARED TO A FINISHED PLANE BETWEEN THE TOP EDGES OF THE ADJACENT BEAMS WHERE VERTICAL OFFSET (WITHIN TOLERANCE) OCCURS.

SECTION A-A

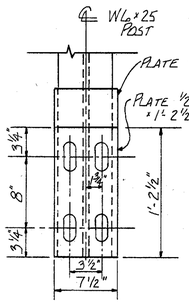
NOTE: PROVIDE SLOTTED HOLES 1½" WIDE x 3" VERTICAL IN RAILING POST ANCHORAGE FOR VERTICAL ADJUSTMENT.

SIDE	A	B
RIGHT SIDE	7-5/8"	8"
LEFT SIDE	8-3/8"	8"

DETAIL 'C'



DETAIL 'C'



VIEW B-B

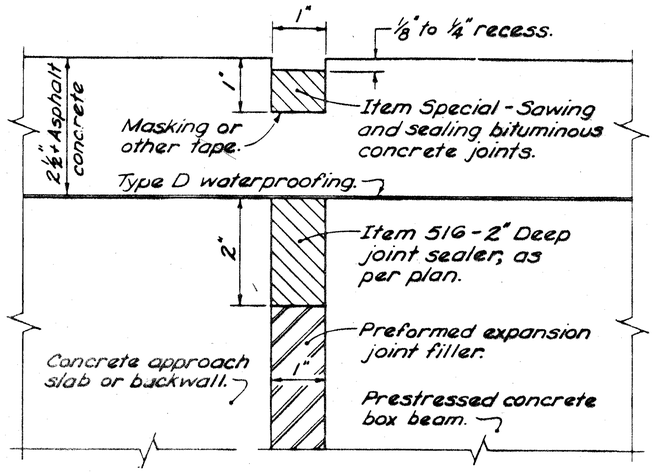
GARRISON CONSULTING ENG.
638-A WAGNER AVENUE
GREENVILLE, OHIO 45331

6/7

SUPERSTRUCTURE DETAILS
BRIDGE NO. MAR-739-0122
OVER WILLOW SWAMP

MARION COUNTY — STA. 64+32.51 TO STA. 64+63.69

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
B.S.U.	M.T.B.	J.L.M.	J.R.G.	8-92	



SEALING OF JOINTS AT ABUTMENTS

ITEM SPECIAL - SAWING AND SEALING BITUMINOUS CONCRETE JOINTS

1) Description:

This work shall consist of cutting and sealing transverse joints on the new bituminous concrete overlay of box beam bridges. Bituminous concrete joints shall be constructed directly over, and in line with, the existing underlying transverse abutment joint of the box beams.

2) Materials:

The joint sealant shall meet the requirements of ASTM Specification D3405, Joint sealants, Hot-poured, for Concrete and Aspalt Pavements. Acceptable alternate materials are:

Roof-Flex 176, polyurethane, as produced by the Carboline Company, 350 Hanley Industrial Court, St. Louis, Missouri 63144 (Roger Zubal, 614-877-3406); a silicone sealant meeting Federal Specifications TT-S-001543A Class A (one-part silicone sealants) and TT-S-00230C Class A (one-component sealants), such as those manufactured by General Electric, Silicone Products Division, 6155 Rockside Rd., Rockside Square I, Independence, Ohio 44131 (John Fromholtz, 216-447-1750) or Dow Corning, 3737 Park East, Beachwood, Ohio 44122 (Robert Ruppel, 216-464-2330); or Sof-Seal, a cold-applied, low-modulus, two-component polymeric compound horizontal sealant as manufactured by W. R. Meadows, Inc., P.O. Box 543, Elgin, Illinois 60121 (Robert Cameron, 312-683-4500). Sealant will be accepted on the basis of the manufacturer's certification that it conforms to the requirements of these specifications.

3) Construction Details:

A) General: The contractor shall conduct his operation so that the cutting, cleaning and sealing of transverse joints is a continuous operation that will be performed as soon as practical after the paving, but no later than four (4) days after placement of the asphalt concrete surface course. Traffic shall not be allowed to knead together or damage the joint cut prior to sealing.

B) Cutting of Transverse Joints: The contractor shall saw or rout transverse joints to the dimensions shown in the details on this sheet. The cut joints shall lie directly above each box beam abutment joint. The joint location shall be marked on the new asphalt surface with a chalk line, or by some other acceptable method, before cutting. Details of the method for locating and accurately marking the proposed cuts shall be subject to the approval of the Engineer prior to starting any surfacing or paving operations.

The blade or blades shall be of such size that the full width and depth of the cut can be made with one pass. Dry or wet cutting will be allowed. Joints shall extend the full width of the bridge.

C) Cleaning Joints: Dry sawed joints shall be thoroughly cleaned with a sufficient amount of compressed air to remove any dirt, dust, or deleterious matter. Wet sawed joints shall be washed clean of all cuttings by flushing with a jet of water and with other tools as necessary. After flushing, the joint shall be blown out with compressed air. When the surfaces are thoroughly clean and dry, and just prior to placing the joint sealer, compressed air having a pressure of at least 90 p.s.i. shall be used to blow out the joint and remove all traces of dust.

In the event freshly cut joints become contaminated before they are sealed, they shall be recleaned of all foreign material by high pressure water jet.

D) Sealing Joints: The joint shall be thoroughly dried before the sealant is placed. After cleaning and drying, a bond-breaker (tape) shall be applied to the bottom of the groove.

Hot-poured joint sealant material shall be heated in a kettle or melter constructed as a double boiler, with the space between the inner and outer shells filled with oil or other heat transfer medium. Positive temperature control and mechanical agitation shall be provided. Heating must be in strict accordance with the manufacturer's recommendation. Joint sealer material shall never be kept heated at the pouring temperature for more than four (4) hours and shall never be reheated. Sealer left in the applicator at the end of a day's work shall be removed and discarded.

Hot-poured sealant shall be applied immediately through a nozzle, which must project into the sawed joint, filling from the bottom up. The seal shall completely fill the joint in such a manner that, after cooling, the level of the sealer will not be higher than 1/8" below the pavement surface. Any depression in the cooled seal greater than 3/16" shall be brought up to the specified limit by further addition of hot-poured sealant. Care shall be taken in the sealing of the joints so that the final appearance will present a neat fine line.

The cold applied sealant materials (polyurethane, silicone, and polymeric compounds) shall be installed as per manufacturers' recommendations, or as directed by the Engineer. The sealant shall be installed when the ambient temperature is 40 degrees F or higher. Traffic shall not be allowed on the joint for one hour after application of the sealant.

4) Method of Measurement:

The quantity to be paid for under this item will be the number of linear feet of joints sawed and sealed as per the above requirements.

5) Basis of Payment:

The unit price per linear foot for Item Special - "Sawing and sealing bituminous concrete joints" shall include the cost of all labor, materials, and equipment necessary to complete the work, including the furnishing and placing of the joint sealer material.

ITEM 516 - 2" DEEP JOINT SEALER, AS PER PLAN

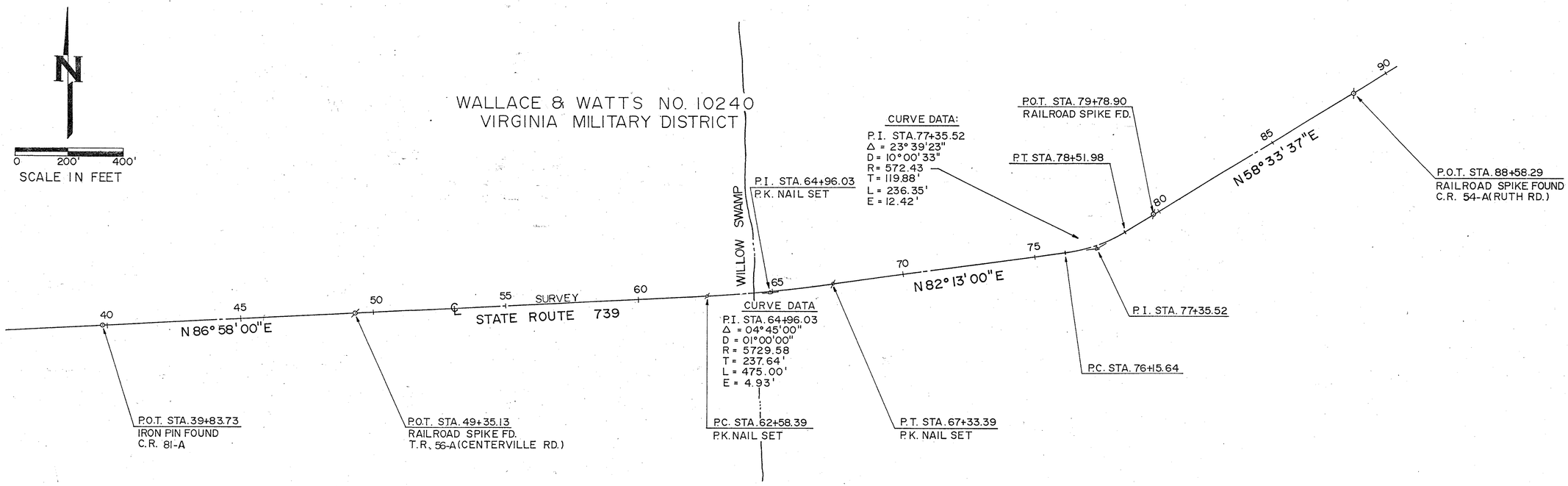
This item shall meet the material (para. 2) and sealing (para. 3D) specifications of Item Special - Sawing and sealing bituminous concrete joints.

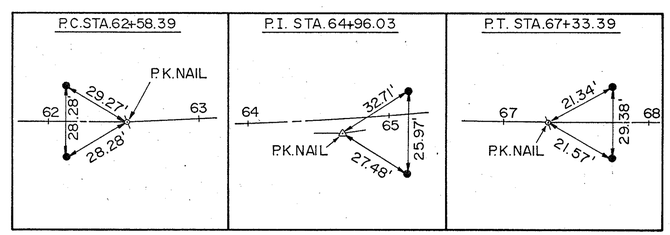
CALC. BY: LJB DATE: 8-92	MAR-739-1.21		OHIO
CHKD. BY: JLM DATE: 10-92			FHWA REGION 5
FEDERAL PROJECT	STP-PID 5864	STATE PROJECT	065 80(0)

24/27

1/4

CENTERLINE SURVEY PLAT
MAR-739-1.21
GREEN CAMP TOWNSHIP
MARION COUNTY, OHIO





REFERENCE POINTS

NOTE: REFERENCE POINTS (●) ARE 5/8" IRON PINS WITH PLASTIC CAPS.

REFERENCE: THE BASIS OF BEARING WAS A SURVEY MADE BY THE OHIO DEPARTMENT OF TRANSPORTATION IN 1939 FOR STATE ROUTE 739 ROADWAY IMPROVEMENTS.

STATE OF OHIO — LOUIS J. BERGMAN 7177 — REGISTERED PROFESSIONAL SURVEYOR

I hereby certify that this plat is true delineation of a survey made by Garrison Consulting Engineers in 1990 for the Ohio Department of Transportation.

Louis J. Bergman

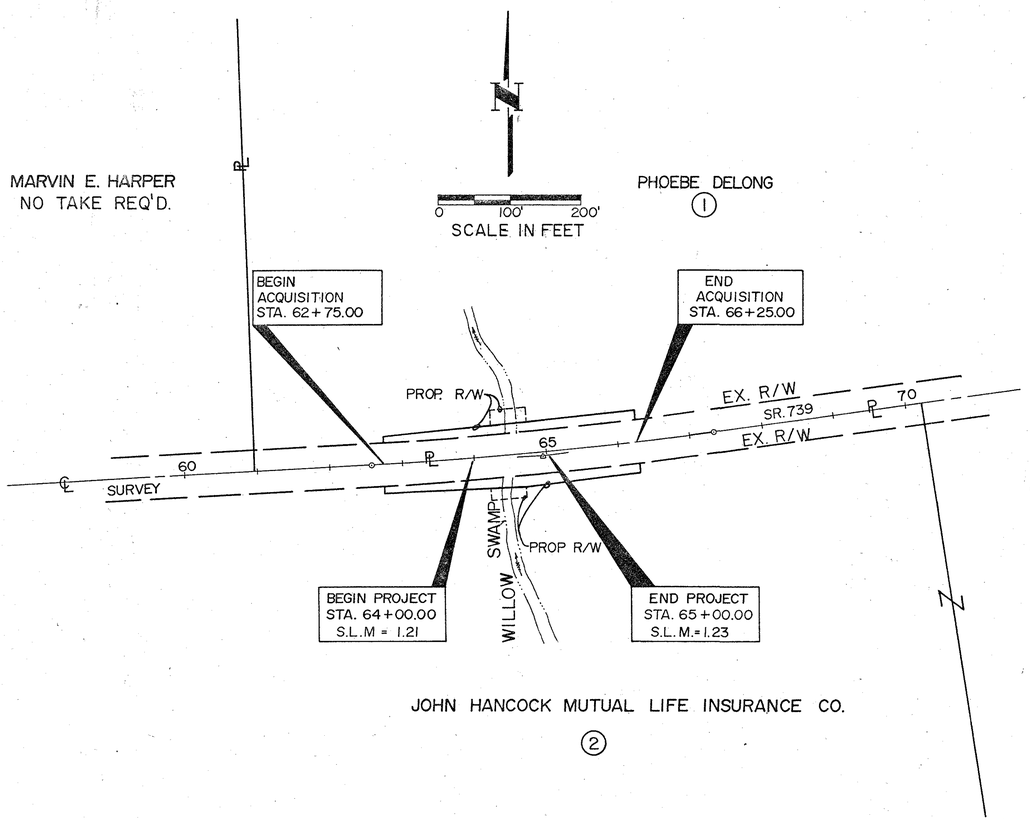
Louis J. Bergman Registered Surveyor No. 7177

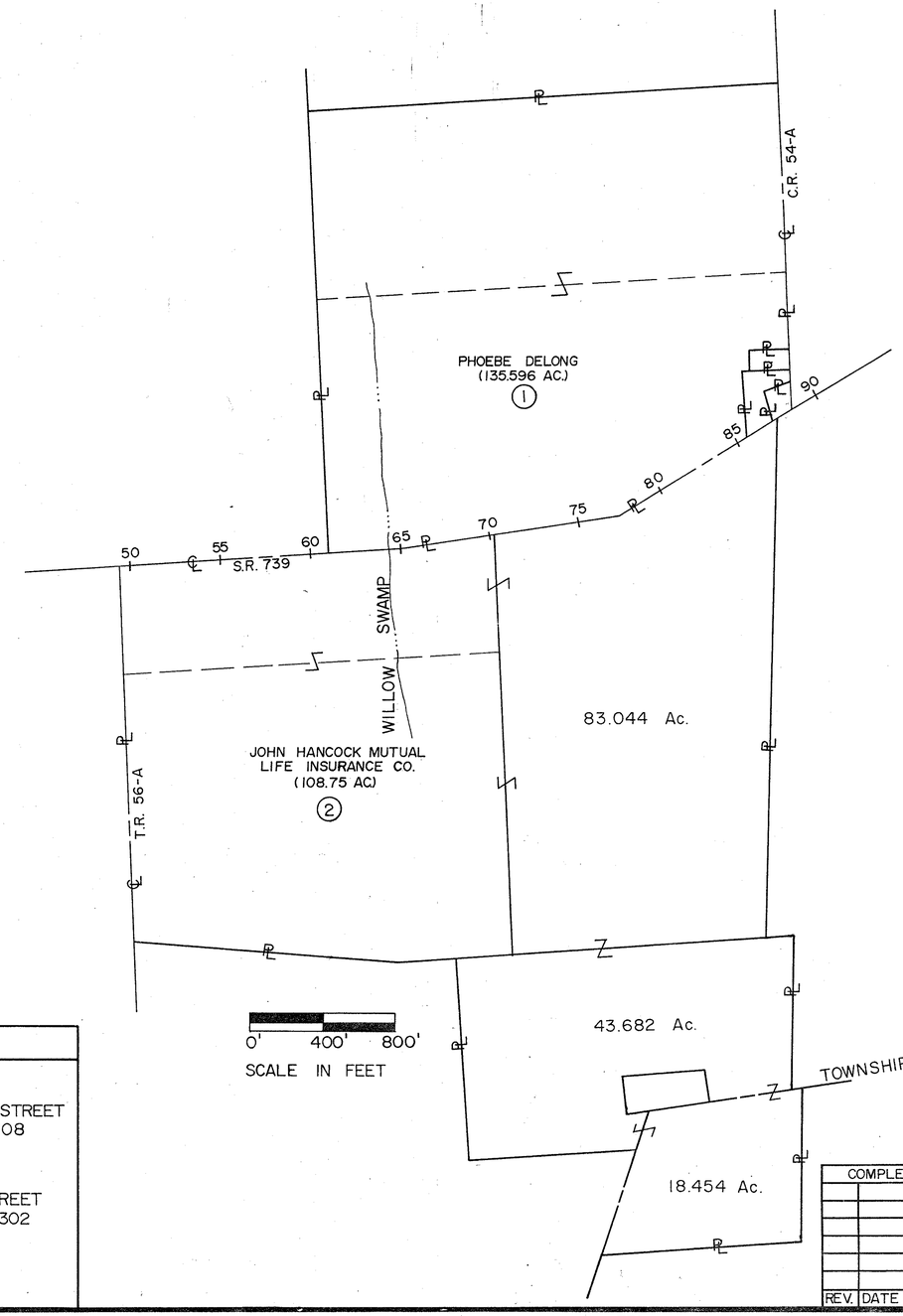
RECORDED
MARION COUNTY
Date: _____
Vol: _____
Page: _____

PROPERTY MAP

MARION COUNTY
GREENCAMP TOWNSHIP
WALLACE & WATTS SURVEY NO. 10240

CALC. BY: LJB DATE: 8-92	MAR-739-1.21	OHIO	25/27
CHKD. BY: JLM DATE 10-92		F.H.W.A. REGION 5	2/4
FEDERAL PROJECT	STP-PID 5864	STATE PROJECT	065 80(0)





UTILITY	OWNERSHIP
ELECTRIC:	OHIO EDISON 76 SOUTH MAIN STREET AKRON, OHIO 44308 (216) 384-7920
TELEPHONE:	GTE NORTH INC 550 LEADER STREET MARION, OHIO 43302 (614) 383-0509

The Location Of The Underground Utilities Shown On The Plans Are As Obtained From The Owners Of The Utility As Required By Section 153.64 ORC.

COMPLETION DATE		
REV.	DATE	DESCRIPTION

SR. 739 PROPERTY MAP

TOTAL NUMBER OF
2 OWNERSHIPS
0 TOTAL TAKES
0 OWNERSHIPS WITH STRUCTURES INVOLVED
0 OWNERSHIPS WITH "P" ITEMS

SUMMARY OF ADDITIONAL RIGHT OF WAY

CALC. BY: LJB DATE 8-92	MAR-739-1.21	OHIO	26 / 27
CHKD. BY: JLM DATE 10-92		FHWA REGION 5	
FEDERAL PROJECT STP-PID 5864	STATE PROJECT 06580 (0)		3 / 4

ALL AREAS IN ACRES

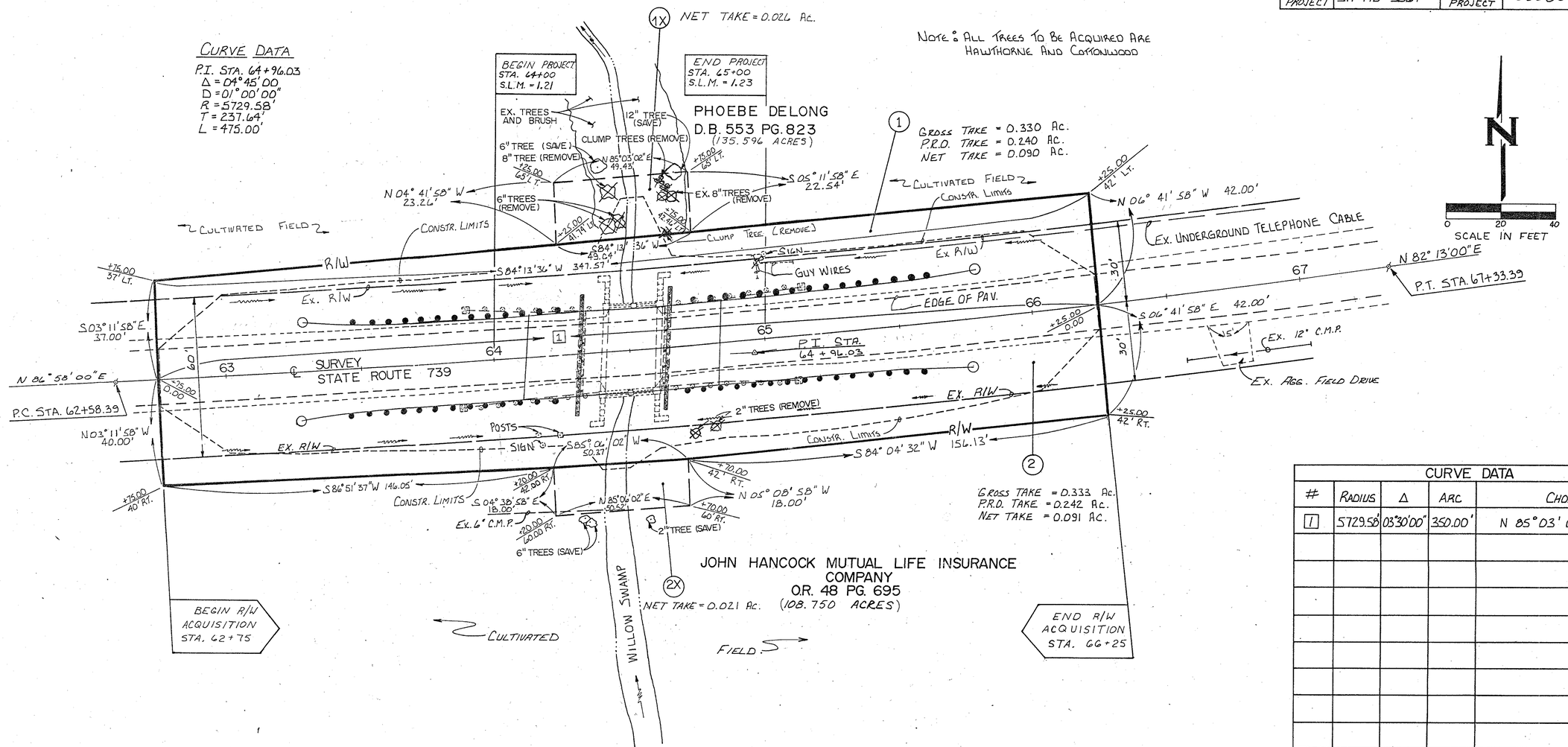
PARCEL	OWNER	AUDITORS PARCEL NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS AND PERSONALTY	AS ACQUIRED BOOK	AS ACQUIRED PAGE
1	PHOEBE DELONG	10-018000-3000	553	823	135.596	1.823	0.330	0.240	0.090	S	133.683		STATE	GRADING & WOODEN SIGN		
1X							0.026		0.026	NO			STATE	CHANNEL GRADING & SEEDING, EX.TREES		
2	JOHN HANCOCK MUTUAL LIFE INSURANCE CO.	10-018000-4300	O.R. 48	695	108.750	1.654	0.333	0.242	0.091	NO	107.005		STATE	GRADING, REMOVE TREES		
2X							0.021		0.021	NO			STATE	CHANNEL GRADING & SEEDING		

COMPLETION DATE:	REV.	DATE	DESCRIPTION

SR. 739 R/W SUMMARY SHEET

CALC. BY: L.J.B. DATE: 8-92	MAR - 739 - 1.21	OHIO	27 / 27
CHKD. BY: J.L.M. DATE: 10-92		FHWA REGION 5	
FEDERAL PROJECT	STP-PID SB64	STATE PROJECT	06580(0) 4 / 4

GREEN CAMP TOWNSHIP
WALLACE & WATTS NO. 10240



CURVE DATA				
#	RADIUS	Δ	ARC	CHORD
1	5729.58'	03°30'00"	350.00'	N 85° 03' 02" E 349.95'

COMPLETION DATE:	
DATE	REVISION DESCRIPTION

GARRISON CONSULTING ENGINEERS
638-A WAGNER AVENUE
GREENVILLE, OHIO 45331 (513) 548-1120

RIGHT-OF-WAY PLAN

BRIDGE NO. MAR-739-0122
OVER WILLOW SWAMP DITCH
STA. 63 + 00
STA. 67 + 00
MARION COUNTY

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
L. J. B.	L.J.B.	J. L. M.	J. R. G.	10-92	

Geology of the Site

The soil at the site consists of the typical glacially deposited soil found in the immediate area.

Exploration

The test borings were advanced using a CME-55 truck mounted rotary drill continuous flight auger soil's exploration rig. The borings were advanced "open hole" using 6 inch O.D. helical augers. Split spoon samples were secured by the standard penetration resistance method.

Cohesive (clay) samples were tested with a penetrometer and the result noted as Qp on the drilling logs. No Qp test indicates the split spoon sample is granular (non-cohesive) soil. The penetrometer test measures the shear strength of cohesive soil and is an approximation of soil bearing capacity.

Investigational Findings and Observations

The existing asphalt concrete pavement varied from four (4) to five (5) inches thick. There was no layer of base material under the pavement surface.

Road embankment fill material was encountered, varying from 6.0 to 7.5 feet deep. The fill material was variable with both granular (non-cohesive) and clay (cohesive) soil encountered. The fill material would not be rated an engineered compacted fill, as the fill material contained some topsoil and was not compacted to a uniform density or hardness.

Below the road embankment fill material, the original soil is the typical glacially deposited soil found in the immediate area.

Below the fill material, the predominant soil type is A-4a, grey clayey sandy silt. This formation, to 15 feet deep at Boring 1 and 18.5 feet deep at Boring 2, is in a very moist to wet and plastic to liquid condition.

At Boring 1, there were layers of granular (non-cohesive) soil from 15.0 to 24.0 feet deep.

The depth to soil with good bearing capacity, grey clayey sandy silt in a very stiff condition, is 24.0 feet at Boring 1 and 18.5 feet at Boring 2.

Refusal on bedrock was encountered, summarized as follows:

Table 1

Depth to Refusal on Bedrock

Boring	Depth, Feet
1	40.0
2	39.0

The bedrock consists of very hard grey limestone layers. At the surface of the bedrock, there was a weathered zone about 1 foot thick.

Initial ground water should be expected below 8 feet deep. Once encountered, there will be a large volume of ground water, which would have to be controlled by using temporary pumps during the construction period.

Excavations should be made at the site using conventional equipment. Once ground water is encountered, the flow of ground water into the excavation and the surface soil types would result in the soil becoming liquid or "quick".

If conventional footings are used, then piling would have to be driven to provide lateral support for the excavation. The design of excavation support protection piling is beyond the scope of this report.

Conventional footings should be a minimum of 24.0 feet deep at Boring 1 and 18.5 feet deep at Boring 2. Conventional footing excavations would require piling and a system of de-watering pumps.

Scour Analysis

Samples were secured and the D_{50} particle size was calculated, summarized as follows:

Table 2

Scour Samples

Boring	Sample	Sample Depth, Feet	Soil Type	D_{50} Size
1	SS-4	8.5-10.0	A-4a	0.038 m.m.
1	SS-5	10.0-11.5	A-4a	0.055 m.m.
1	SS-6	13.5-15.0	A-4a	0.018 m.m.
1	SS-7	15.0-16.5	A-3a	0.13 m.m.
2	SS-4	8.5-10.0	A-3a	0.14 m.m.
2	SS-5	10.0-11.5	A-4a	0.02 m.m.
2	SS-6	13.5-15.0	A-4a	0.05 m.m.
2	SS-7	15.0-16.5	A-4a	0.04 m.m.

Analysis and Recommendations

1) Excavations will be difficult due to the soil types and ground water.

2) The soil types will become unstable below the ground water depth due to the ground water flow.

3) If conventional footings are used, piling would have to be driven to provide lateral side support and a system of de-watering pumps would have to be installed.

4) Conventional footings would bear on grey clayey sandy silt at 24.0 feet deep at Boring 1 (minimum depth) and at 18.5 feet deep at Boring 2 (minimum depth). Conventional footings should be proportioned, based on 2.5 tons per square foot (5 kips per square foot) allowable bearing capacity.

5) Caisson foundations and grade beams could be used. The caissons would be to the depths described in 4 above. The caissons would be straight shaft and removable casing would be necessary. Belled caissons could not be used, due to ground water. The caissons should be proportioned based on 2.5 tons per square foot (5 kips per square foot) allowable bearing capacity. Following is a table of caisson sizes and the load one (1) caisson would support:

Table 3

Caisson Sizes

Caisson Diameter, Inches	Caisson Area, Square Feet	Load One Caisson Would Support Based on 5 K.S.F.
24	3.14	15 Kips
30	4.90	24 Kips
36	7.06	35 Kips
42	9.62	48 Kips
48	12.56	62 Kips
60	19.63	98 Kips

And

6) A driven H pile foundation could be used. The piles would be driven to refusal on bedrock at about 40 feet minimum depth. The piles should be proportioned, based on 10 tons per square foot (20 kips per square foot) end bearing, plus friction from 20 to 40 feet± deep at 500 pound per square foot.

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/Z — Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test
  - X = Number of Blows for First 6 inches
  - Y = Number of Blows for Second 6 inches
  - Z = Number of Blows for Third 6 inches
- 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 Mudstone or Claystone
- Mudstone or Claystone
- Weathered Shale
- Shale
- Weathered Siltstone
- Siltstone
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone
- Boulders or Cobbles

GENERAL INFORMATION

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Drive Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-7/8" 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 18 inches is considered the standard penetration test.

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 three 6-inch increments, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system-and gradation, plasticity, and moisture content determinations.

Additional Soil Information

All available soil and bedrock information which can be conveniently shown on the structure foundation investigation sheets has been so reported. Additional subsurface investigations may have been made to study some special aspect of the project. Copies of this data, if any, may be inspected in the District Deputy Director's Office, the Pavement and Soils Section of the Bureau of Location and Design or in the Bridge Bureau at 25 South Front Street, Columbus.

Particle Size Definitions

Boulders	12" Cobbles	3" Gravel	2.0mm. No. 10 sieve	Coarse Sand	0.42mm. No. 40 sieve	Fine Sand	0.074mm. No. 200 sieve	Silt	0.005 mm. Clay

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.

GARRISON CONSULTING ENGINEERS
638-A WAGNER AVENUE
GREENVILLE, OHIO 45331
513-548-1120

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. MAR-739-0122
MARION COUNTY

CHECKED BY:	REVIEWED BY:	DATE:
J.L.M.	J.R.G	11-9-90

MARION COUNTY
MAR-739-1.21

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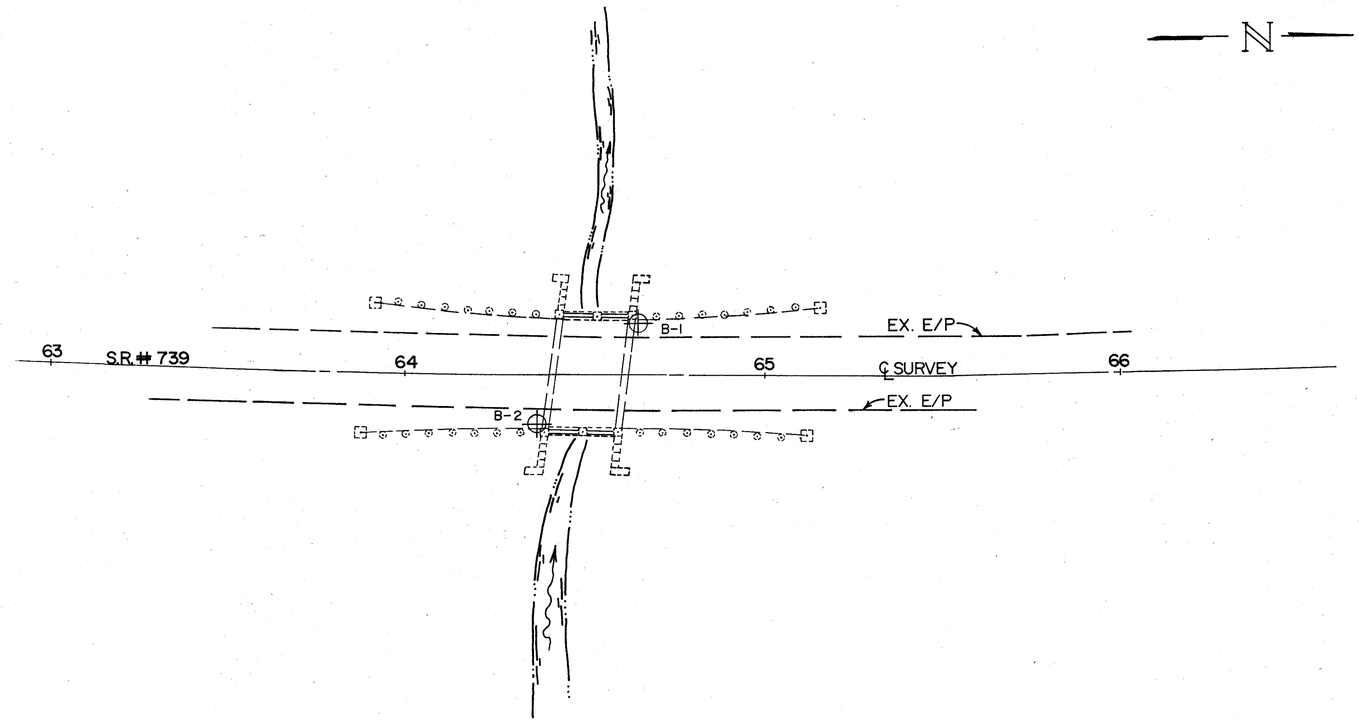

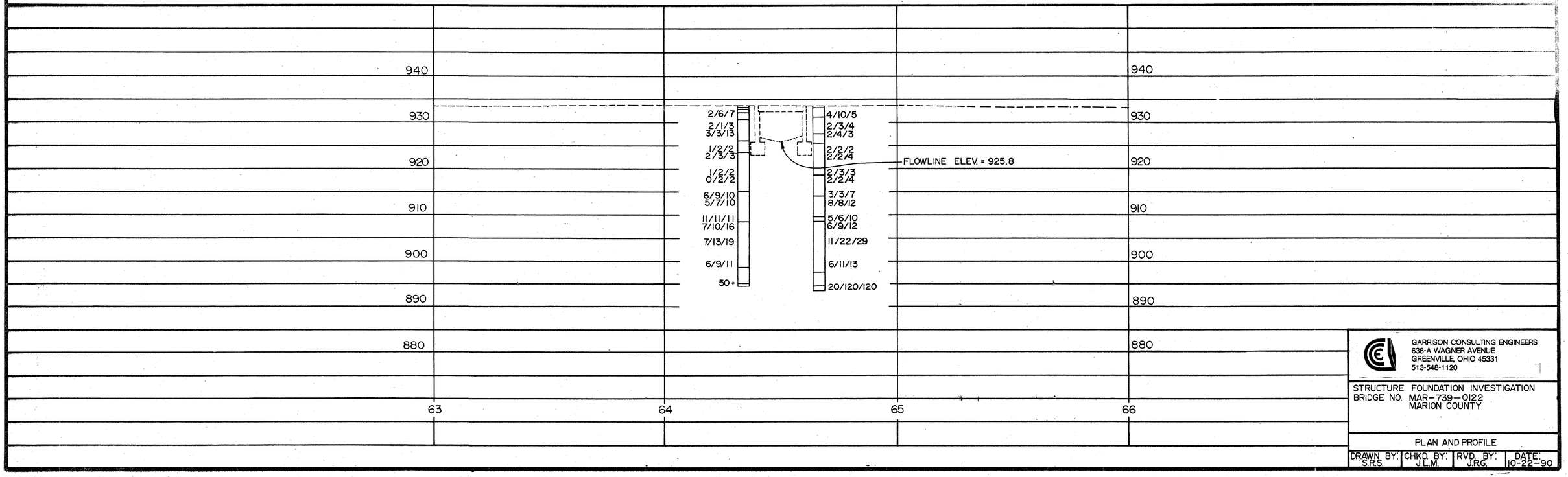

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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. MAR-739-0122
MARION COUNTY

PLAN AND PROFILE

DRAWN BY:	CHKD BY:	RVD. BY:	DATE:
S.R.S.	J.L.M.	J.R.G.	10-22-90

LOG OF BORING

Date Started 10-22-90
Date Completed 10-22-90
Boring No. B-1

Sampler Type _____ Dia. 6"
Casing:Length _____ Dia.
Station & Offset Sta. 64+65, 14' LT.

Water Elev. 925.9
Surface Elev. 932.9

Elev.	Depth	Std.Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% Sand	% Silt & Clay	% LL	% PL	% WC	SHTL Class
932.9	0				Asphalt Conc. Pavement								
932.48													
	1												
	2				Brown and Dark Brown Sandy Course to fine gravel with some silt	SS-1						9.8	
930.4	3	4/10/5											
	4				Brown, dark brown and grey silty clay with some sand								
	5	2/3/4				SS-2						25.6	
932.9	6												
	7	2/4/3			Original Dark grey clayey sandy silt	SS-3	1.6	27.3	71.1	23.2	20.7	25.9	A-4a
918.9	8												
	9												
	10	2/2/2				SS-4	2.4	31.3	66.3			22.9	A-4a
	11	2/2/4			Dark Grey Clayey Sand silt	SS-5	4.1	42.7	53.2	24.2	22.5	21.3	A-4a
	12												
	13												
	14												
	15	2/3/3				SS-6	1.8	25.4	72.8	24.6	19.5	25.0	A-4a
911.9	16	2/2/4			Grey silty coarse to fine sand	SS-7	1.2	66.9	31.9			21.4	A-3a
	17												
	18												
	19												
907.4	20	3/3/7				SS-8						6.2	
	21	8/8/12			Grey sandy coarse to fine gravel	SS-9						8.4	
	22												
	23												
902.9	24	5/6/10			Grey clayey sandy silt with a little gravel	SS-10	15.3	38.0	46.7	23.7	18.5	14.3	A-4a
901.9	25				Grey clayey sandy silt with a trace of gravel								
	26	6/9/12				SS-11						20.6	
	27												
	28												
	29												
	30	11/22/29				SS-12						19.5	
	31												
	32												
	33												
	34												
	35	6/11/13				SS-13	6.0	24.1	69.9	25.9	20.4	19.2	A-4a
890.9	36												
	37				Grey sandy gravelly clayey silt								
	38												
887.9	39												
		20/120/120			Grey broken limestone layers	SS-14							
886.9	40												

Refusal on hard grey limestone bedrock

LOG OF BORING

Date Started 10-23-90
Date Completed 10-23-90
Boring No. B-2

Sampler Type _____ Dia. 6"
Casing:Length _____ Dia.
Station & Offset Sta. 64+32, 14' RT.

Water Elev. 924.5
Surface Elev. 933.5

Elev.	Depth	Std.Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% Sand	% Silt & Clay	% LL	% PL	% WC	SHTL Class
933.5					Grey crushed limestone with fines								
933.08					Asphalt concrete pavement								
932.75	1				Brown and Dark Brown silty clay with some sand and gravel								
932.0	2	2/6/7			Brown sandy course to fine gravel with random cobbles and silt and clay	SS-1						9.1	
930.5	3												
	4				Brown and Dark brown silty clay with some sand and gravel								
	5	2/1/3				SS-2						26.2	
	6	3/3/13				SS-3						21.6	
	7												
926.0	8				Original brown to grey silty fine sand								
	9												
	10	1/2/2				SS-4	0.5	74.8	24.7			25.9	A-3a
923.5	11	2/3/3			Grey clayey sandy silt	SS-5	1.3	27.3	71.4	22.1	19.0	23.2	A-4a
	12												
	13												
	14												
	15	1/2/2				SS-6	0	44.9	55.1	21.6	21.3	25.2	A-4a
	16	0/2/2				SS-7	2.2	40.2	57.6	23.0	20.5	23.3	A-4a
	17												
	18												
915.0	19				Grey clayey sandy silt with a trace of gravel								
	20	6/9/10				SS-8							
	21	5/7/10				SS-9	7.3	49.9	42.8	23.7	19.7	15.9	A-4a
	22												
	23												
	24	11/11/11				SS-10							
908.5	25												
	26	7/10/16			Grey clayey very sandy silt	SS-11	0.2	63.6	36.2	27.8	20.3	19.7	A-4a
	27												
	28												
	29												
	30	7/13/19				SS-12						19.4	
	31												
	32												
	33												
	34												
	35	6/9/11				SS-13						19.6	
898.5	36												
	37				Grey sandy gravelly clayey silt								
	38												
895.0	39												
894.5		50+			Grey broken limestone layers	SS-14							

Refusal on hard grey limestone bedrock

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MARION COUNTY

BORING DATA

TYPED BY:	CHECKED BY	REVIEWED BY	DATE
L.S.K.	J.L.M.	J.R.G.	10-17-90