

DESIGN DESIGNATION  
(SEE SHEET 2)

DESIGN EXCEPTIONS: NONE  
APPROVAL DATE:

RAILROAD INVOLVEMENT  
CONRAIL RAILROAD

CONVENTIONAL SIGNS

County Line \_\_\_\_\_ Limited Access (only) \_\_\_\_\_ LA \_\_\_\_\_  
 Township Line \_\_\_\_\_ Right of Way (only) \_\_\_\_\_ RW \_\_\_\_\_  
 Section Line \_\_\_\_\_ Limited Access & Right of Way \_\_\_\_\_ LA & RW \_\_\_\_\_  
 Corporation Line \_\_\_\_\_ or \_\_\_\_\_ Existing Right of Way \_\_\_\_\_  
 Fence Line (existing) x-x- (proposed) x-x- Property Line \_\_\_\_\_ (in existing fence) x-x-  
 Center Line \_\_\_\_\_ 352 \_\_\_\_\_ 353 Railroad \_\_\_\_\_ or \_\_\_\_\_  
 Trees, Stumps (to be removed) \_\_\_\_\_ Guardrail (existing) o-o-a-a (proposed) •••••  
 Utility Poles: Telephone  $\phi$ , Power  $\phi$ , Light  $\phi$  Proposed Concrete Barrier \_\_\_\_\_  
 Existing Concrete Barrier \_\_\_\_\_  
 Existing Tower Lighting \_\_\_\_\_

INDEX OF SHEETS

TITLE SHEET	1
LOCATION MAP	2
TYPICAL SECTIONS	3-9, 5A, 9A
GENERAL NOTES	10-16
MAINTENANCE OF TRAFFIC	17-29, 25A, 26A, 27A
GENERAL SUMMARY	30-32, 32A
SUB-SUMMARY	33-42
STORMWATER POLLUTION PREVENTION PLAN	43
CALCULATIONS	44-49
PLAN AND PROFILE SHEETS	50-60
PAVEMENT DETAIL SHEETS	61-66
ROADWAY DETAIL SHEETS	67-69
DRAINAGE DETAIL SHEETS	70-73
TRAFFIC CONTROL	74-80
STRUCTURES	86-121, 89A
SHEETS DELETED	81-85

LINE DATA  
(SEE SHEET 2)

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
**MAH-76/80-6.95/0.00**  
JACKSON & AUSTINTOWN TOWNSHIPS  
MAHONING COUNTY

OHIO  
FHWA  
REGION 5  
FEDERAL  
PROJECT  
MAH-76/80-6.95/0.00  
IM-76-2(73)  
PID# 9810  
PROJECT DESCRIPTION

Existing 2.23 miles of existing interstate pavement shall be reconstructed with a full depth plain concrete section. The reconstruction of four mainline structures on existing substructures, two over Conrail R.R. and two over S.R. 45, shall also be included in this project. Additional work includes a barrier upgrade.

LIMITED ACCESS

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

1997 SPECIFICATIONS

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

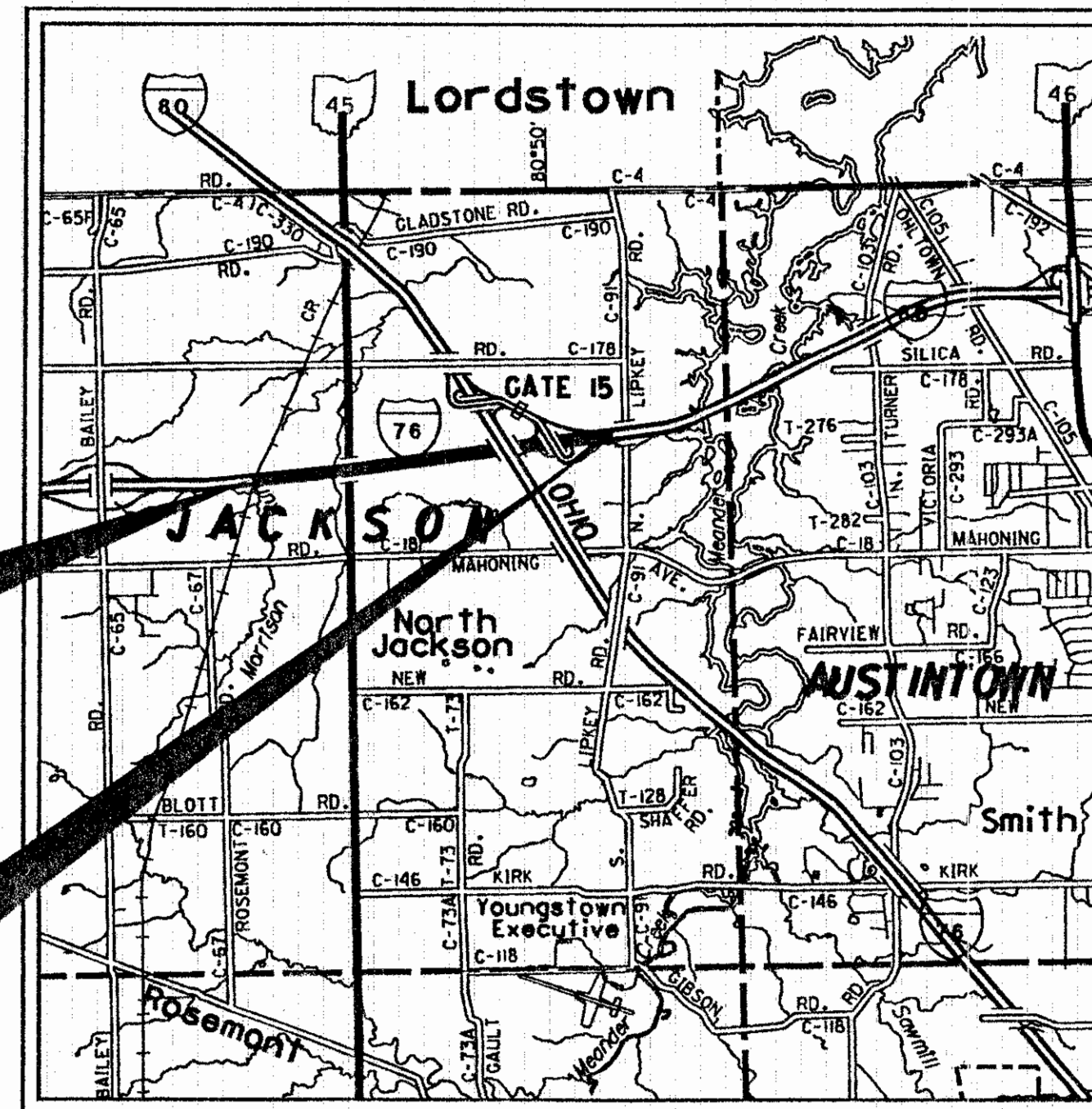
I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

Under authority of section 4511.21, division (I) of the revised code of Ohio, the revised prima facie speed limits as indicated herein are determined to be reasonable and safe, and are hereby established for the duration of this project. The prima facie speed limit or limits hereby established shall become effective when appropriate signs giving notice thereof are erected.

Approved: *David R. Draper*  
Date: 3-20-98 District Deputy Director  
of Transportation

Approved: *John J. King*  
Date: 4-16-98 Director, Department of  
Transportation

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
APPROVED:  
DIVISION ADMINISTRATOR DATE



BEGIN PROJECT  
STA. 367+00  
S.L.M. 6.95

END PROJECT  
STA. 483+54.46  
S.L.M. 0.54

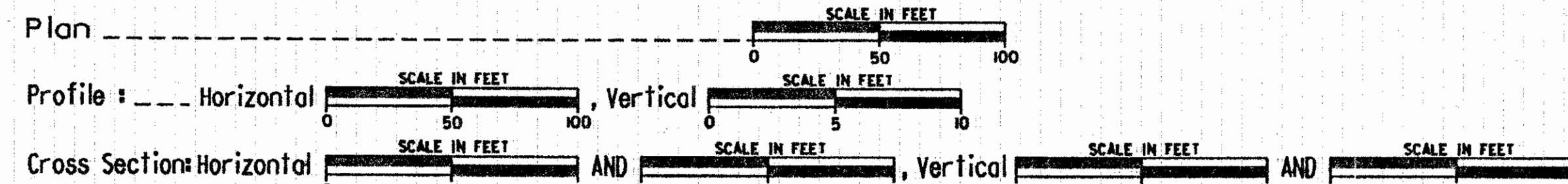
UNDERGROUND UTILITIES  
TWO WORKING DAYS  
BEFORE YOU DIG  
Call...800-362-2764 (Toll free)  
OHIO UTILITIES PROTECTION SERVICE  
NON-MEMBERS  
MUST BE CALLED DIRECTLY

Portion to be improved \_\_\_\_\_  
Interstate Routes \_\_\_\_\_  
State Routes \_\_\_\_\_  
Other Roads \_\_\_\_\_

LATITUDE N41°06'39"  
LONGITUDE W80°50'00"

SUPPLEMENTAL SPECIFICATIONS			
806	9/9/97	815	5/30/96
863	9/9/97		

SCALES



SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

AS-1-81	9/15/94	CB-3.1M	7/12/95	GR-5.1	10/30/92	MT-98.12	6/24/93	RM-4.3M	6/30/95	TC-52.20	4/03/79
BP-1.1	2/21/92	CB-3.2M	7/12/95	GR-5.2	10/30/92	MT-98.13	6/24/93	RM-4.5M	10/21/97	TC-65.10	7/7/95
BP-2.1M	4/8/97	CB-3.3M	7/12/95	GR-6.1M	1/3/96	MT-98.14	6/24/93	SD-1-69	6/12/69	TC-65.11	7/7/95
BP-2.2M	10/21/97	DM-1.1M	10/21/97	HL-30.11	5/01/87	MT-98.15	6/24/93	TC-7.65	3/1/79	TC-65.12	7/7/95
BP-2.3M	10/28/94	DM-4.3M	6/30/95	HL-50.11	5/01/87	MT-98.16	6/24/93	TC-21.10	9/1/92	TC-72.20	2/26/82
BP-2.5M	4/8/97	GR-1.1M	10/21/97	HL-50.21	5/01/87	MT-99.20	4/29/88	TC-21.20	9/01/92		
BP-3.1	2/21/92	GR-1.2M	1/3/96	HW-2.1M	7/12/95	MT-100.00	2/23/90	TC-22.10	9/1/92		
BP-5.1	10/28/94	GR-1.3	2/21/92	MC-7	10/15/76	MT-101.60	7/1/92	TC-22.20	9/1/92		
BP-6.1	2/21/92	GR-2.1M	10/21/97	MH-1	12/18/84	MT-102.20	8/25/89	TC-31.21	9/01/92		
BP-8.1M	4/8/97	GR-3.1M	10/21/97	MT-95.30	10/10/88	MT-105.10	7/01/92	TC-32.10	9/10/92		
BP-9.1M	2/18/96	GR-3.2M	10/21/97	MT-95.31	10/10/88	MT-105.11	7/01/92	TC-35.10	8/29/84		
BP-9.2M	2/18/96	GR-4.1	5/6/91	MT-95.32	8/25/89	RB-1-55	2/2/59	TC-41.10	8/29/84		
CB-1.1M	7/12/95	GR-4.2M	10/21/97	MT-95.41	10/1/92	RM-1.1M	4/8/97	TC-41.20	6/21/94		
CB-2.3M	7/12/95	GR-4.3M	10/21/97	MT-95.70	2/23/90	RM-4.1M	10/21/97	TC-52.10	4/03/79		

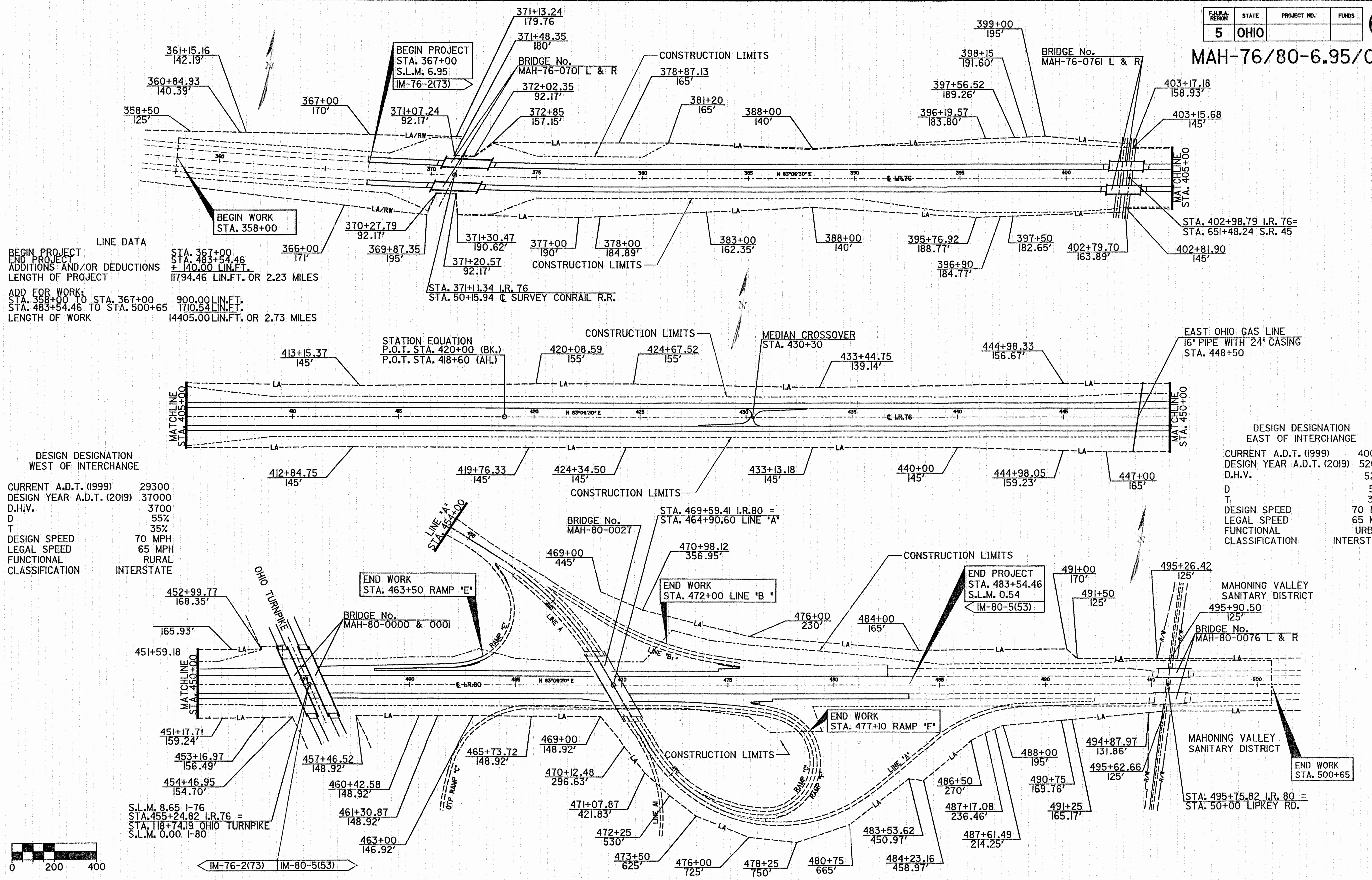
Plan Prepared By: \_\_\_\_\_  
Production Department  
OHIO Department of Transportation  
District 4

Project: MAH-76/80-7.01/0.00  
Date of Letting: \_\_\_\_\_, 19\_\_\_\_ Contract No. \_\_\_\_\_

MAH-76/80-6.95/0.00  
980444  
121PGS  
06-24-98  
DIST. 04



# MAH-76/80-6.95/0.00



**LINE DATA**  
 BEGIN PROJECT STA. 367+00  
 END PROJECT STA. 483+54.46  
 ADDITIONS AND/OR DEDUCTIONS + 140.00 LIN.FT.  
 LENGTH OF PROJECT 11794.46 LIN.FT. OR 2.23 MILES

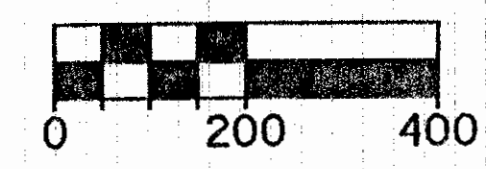
**ADD FOR WORK:**  
 STA. 358+00 TO STA. 367+00 900.00 LIN.FT.  
 STA. 483+54.46 TO STA. 500+65 170.54 LIN.FT.  
 LENGTH OF WORK 14405.00 LIN.FT. OR 2.73 MILES

**DESIGN DESIGNATION WEST OF INTERCHANGE**

CURRENT A.D.T. (1999)	29300
DESIGN YEAR A.D.T. (2019)	37000
D.H.V.	3700
D	55%
T	35%
DESIGN SPEED	70 MPH
LEGAL SPEED	65 MPH
FUNCTIONAL CLASSIFICATION	RURAL INTERSTATE

**DESIGN DESIGNATION EAST OF INTERCHANGE**

CURRENT A.D.T. (1999)	40030
DESIGN YEAR A.D.T. (2019)	52620
D.H.V.	5262
D	55%
T	35%
DESIGN SPEED	70 MPH
LEGAL SPEED	65 MPH
FUNCTIONAL CLASSIFICATION	URBAN INTERSTATE



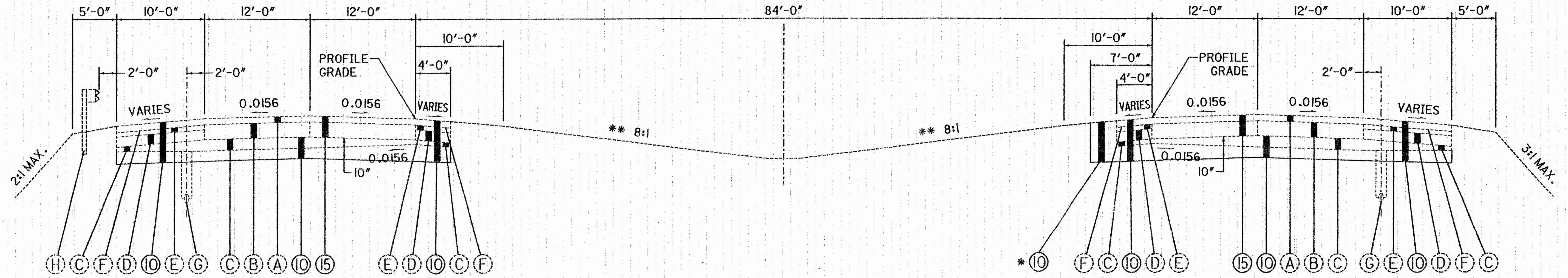
S.L.M. 8.65 I-76  
 STA. 455+24.82 I.R. 76 =  
 STA. 118+74.19 OHIO TURNPIKE  
 S.L.M. 0.00 I-80

STA. 495+75.82 I.R. 80 =  
 STA. 50+00 LIPKEY RD.



# EXISTING TYPICAL SECTIONS

CONSTRUCTION AND SURVEY I.R. 76/80



**NORMAL SECTION**

**BRIDGE LIMITS**

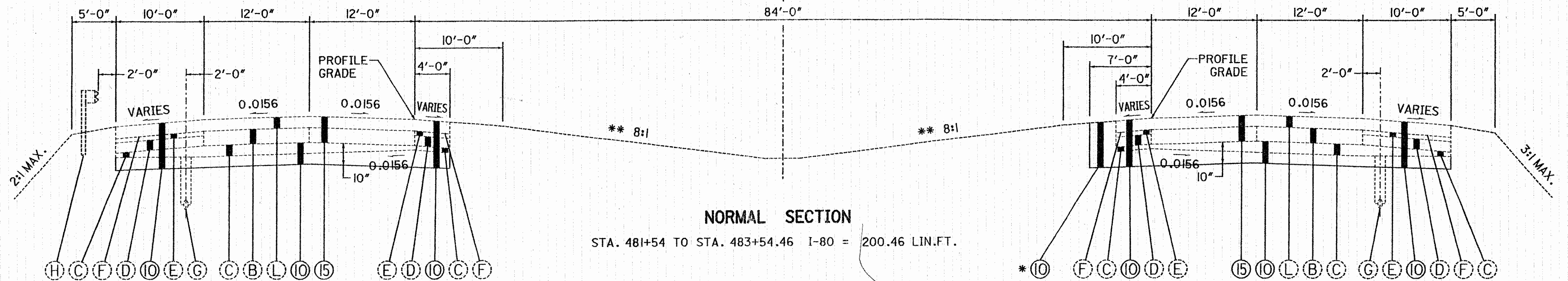
\* STATION EQUATION : STA. 420+00 BACK = STA. 418+60 AHEAD

\*\* IN GUARDRAIL LOCATIONS, SLOPE VARIES.

STA. 372+53.54 TO STA. 401+95.04 I-76 = 2941.50 LIN.FT.  
 STA. 403+58.55 TO STA. 420+00 (BK.) \* I-76 = 1641.45 LIN.FT.  
 STA. 418+60 (AH.) \* TO STA. 481+54 I-76 & I-80 = 6294.00 LIN.FT.  
 10876.95 LIN.FT.

STA. 370+32.46 TO STA. 372+53.54 I-76  
 STA. 401+95.04 TO STA. 403+58.55 I-76

CONSTRUCTION AND SURVEY I.R. 76/80



**NORMAL SECTION**

STA. 481+54 TO STA. 483+54.46 I-80 = 200.46 LIN.FT.

**EXISTING PAVEMENT LEGEND**

- |  |  |
|--|--|
| (A) - 4 1/4" ASPHALT CONCRETE PAVEMENT         | (I) - 4" ASPHALT CONCRETE PAVEMENT     |
| (B) - 10" REINFORCED CONCRETE PAVEMENT         | (J) - 9" REINFORCED CONCRETE PAVEMENT  |
| (C) - VARIABLE DEPTH SUBBASE                   | (K) - 6 3/4" ASPHALT CONCRETE PAVEMENT |
| (D) - VARIABLE DEPTH AGGREGATE BASE            | (L) - 8" ASPHALT CONCRETE PAVEMENT     |
| (E) - VARIABLE DEPTH WATERPROOF AGGREGATE BASE | (M) - 12" REINFORCED CONCRETE PAVEMENT |
| (F) - BITUMINOUS SURFACE TREATMENT             | (N) - CONCRETE BARRIER                 |
| (G) - 6" PIPE UNDERDRAIN                       | (O) - 10" PLAIN CONCRETE PAVEMENT      |
| (H) - GUARDRAIL                                |  |

\* ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION FOR PROPOSED 7'-0" EB INSIDE RIGID SHOULDER.

FOR PROPOSED PAVEMENT LEGEND, SEE SHEET 6.

Address # 444-1

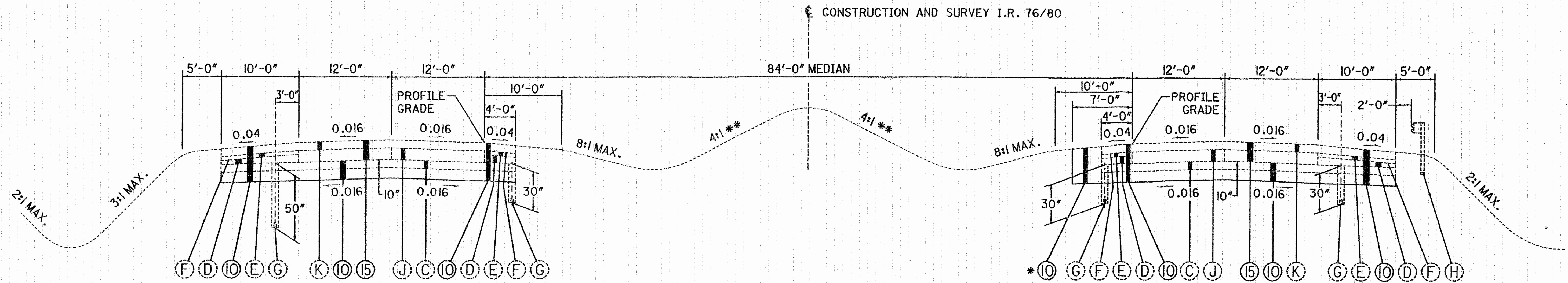


# EXISTING TYPICAL SECTIONS

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

4  
121

MAH-76/80-6.95/0.00



## NORMAL SECTION

STA. 367+00 TO STA. 370+32.46 I-76 = 332.46 LIN.FT

## BRIDGE LIMITS

STA. 370+32.46 TO STA. 372+53.54 I-76

\* ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION FOR PROPOSED 7'-0" EB INSIDE RIGID SHOULDER.

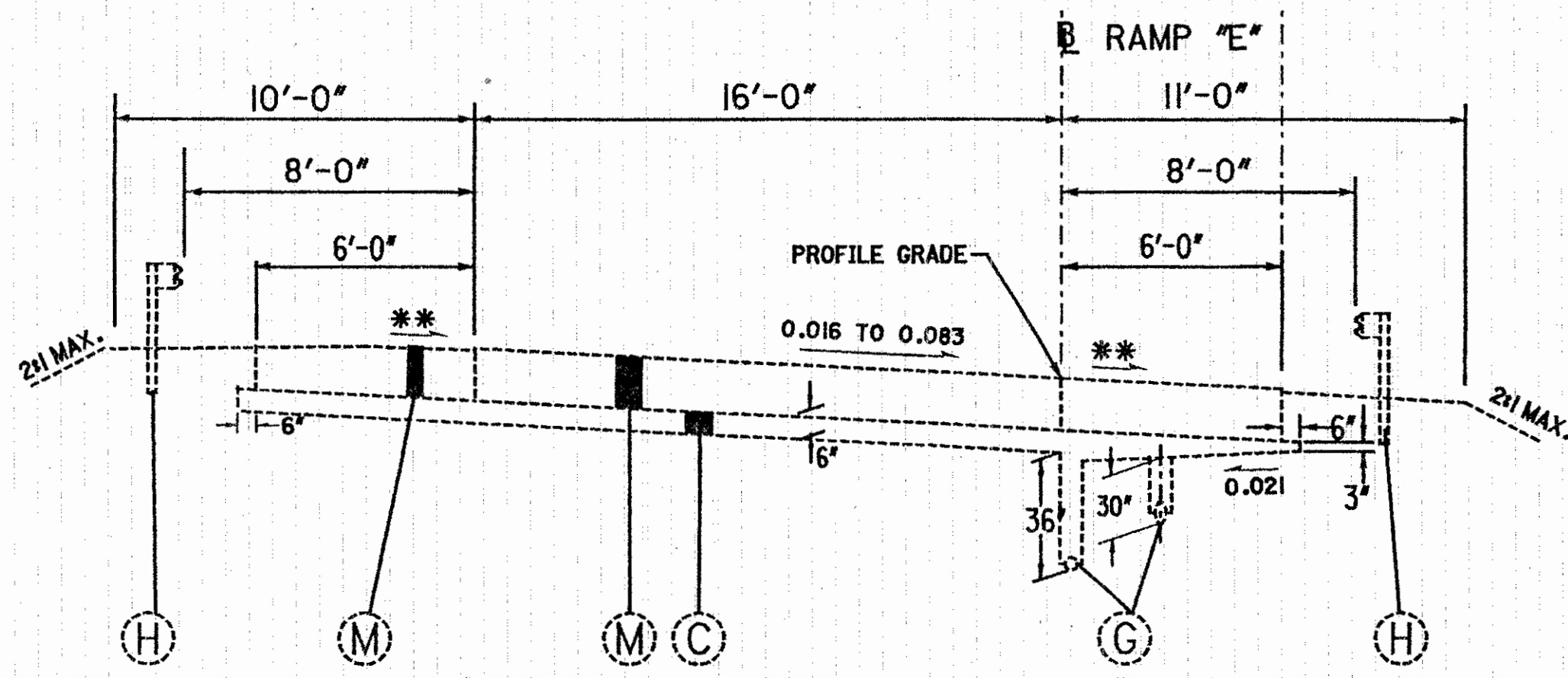
\*\* IN GUARDRAIL LOCATIONS, SLOPE VARIES.

FOR EXISTING PAVEMENT LEGEND, SEE SHEET 3.

FOR PROPOSED PAVEMENT LEGEND, SEE SHEET 6.

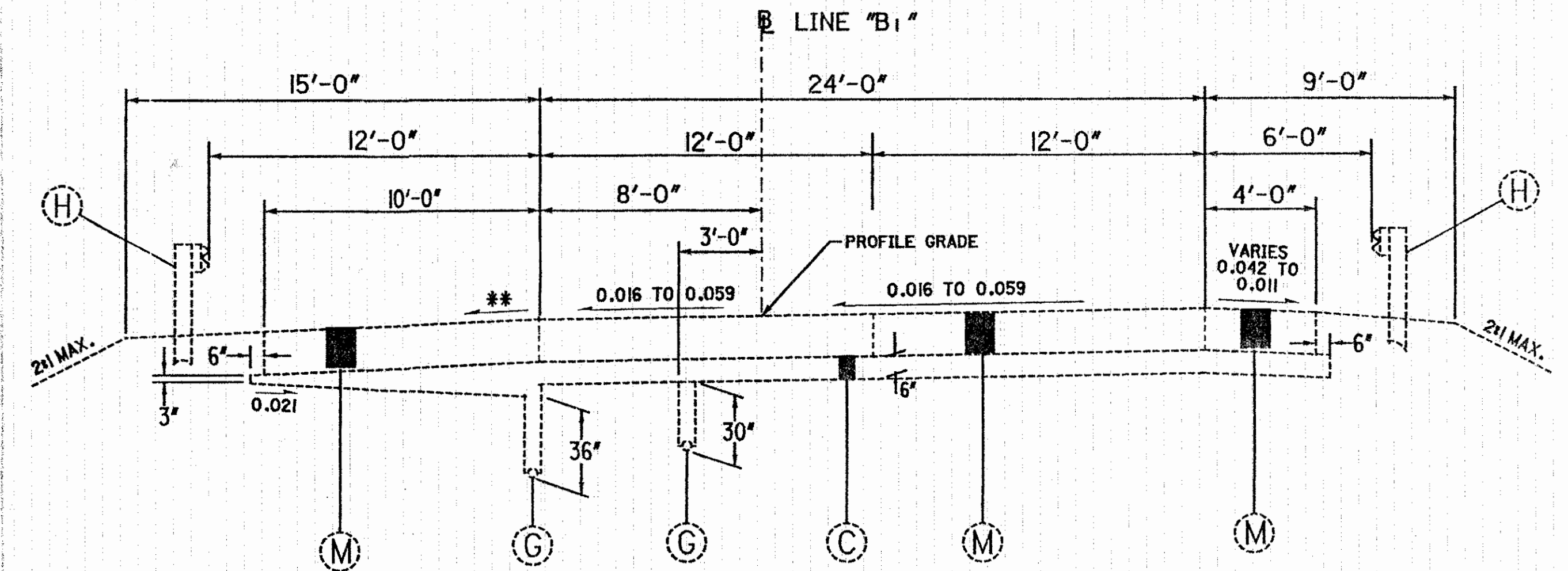


# EXISTING TYPICAL SECTIONS



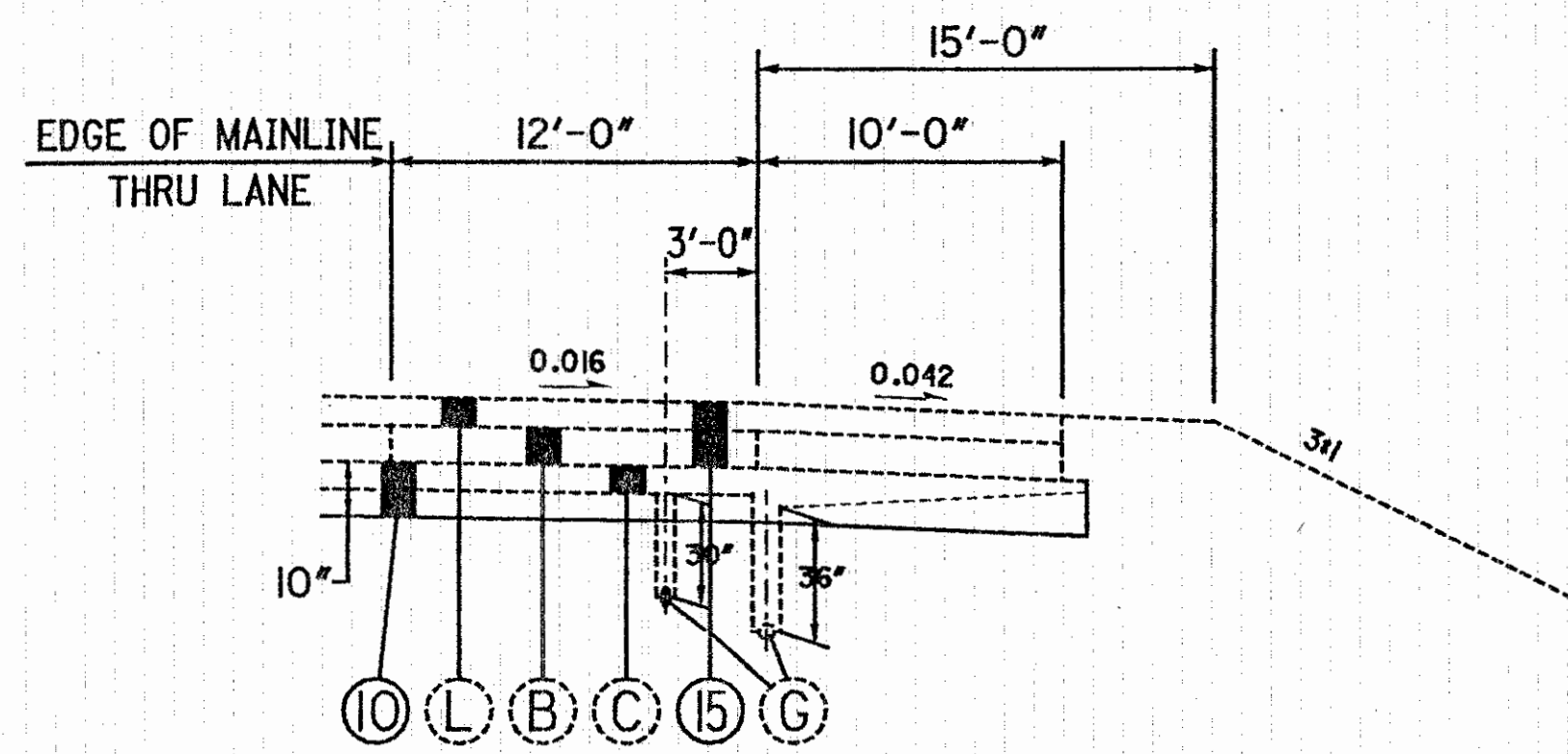
**MATCH SUPERELEVATED SECTION RAMP "E"**

RAMP "E" STA. 462+58.24



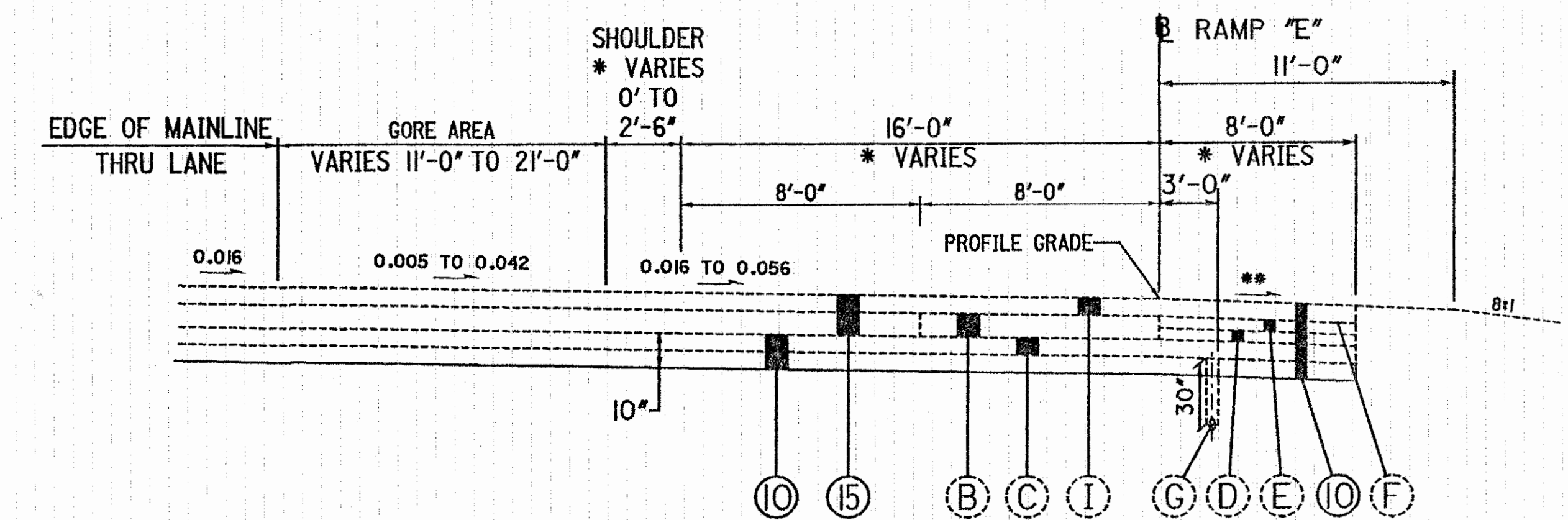
**MATCH SUPERELEVATED SECTION LINE "B1"**

LINE "B1" STA. 475+56.23/STA. 475+54.46 I.R. 80



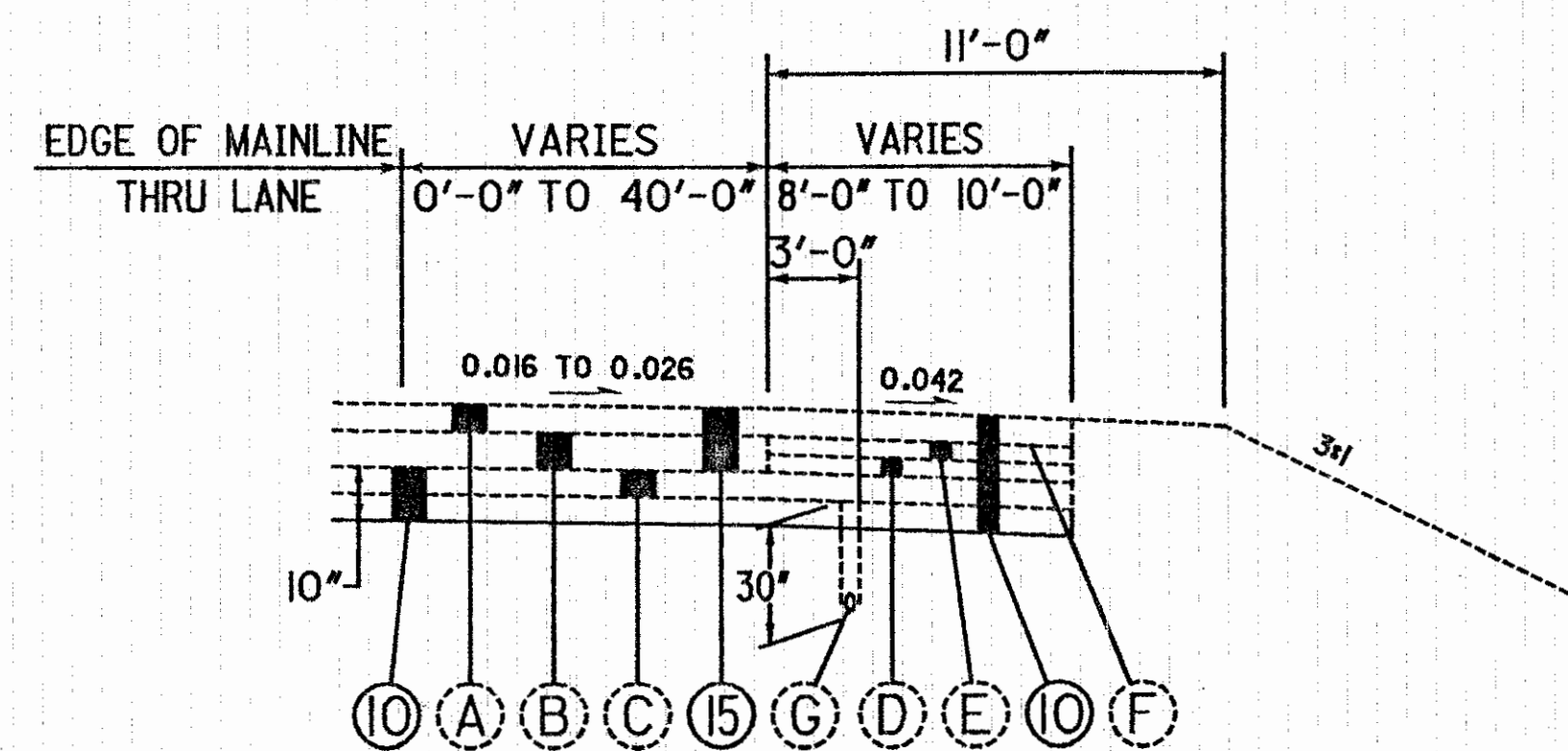
**SPEED CHANGE LANE**

STA. 482+54.46 TO STA. 483+54.46 (LINE "B1") = 100.00 LIN.FT.



**SUPERELEVATED SECTION RAMP "E"**

RAMP "E" STA. 458+33.24 TO STA. 462+58.24 = 425.00 LIN. FT.



**SPEED CHANGE LANE**

STA. 475+54.46 TO STA. 482+54.46 (LINE "B1") = 700.00 LIN.FT.  
 STA. 446+33.24 TO STA. 458+33.24 (RAMP "E") = 1200.00 LIN.FT.  
 1900.00 LIN.FT.

NOTE:  
 FOR ADDITIONAL INFORMATION, SEE PAVEMENT DETAIL SHEETS 61-64.  
 FOR PROPOSED PAVEMENT LEGEND, SEE SHEET 6.  
 FOR EXISTING PAVEMENT LEGEND, SEE SHEET 3.  
 \* SEE TABLE, THIS SHEET, FOR PAVEMENT AND SHOULDER TAPERS.  
 \*\* SAME SLOPE AS PAVEMENT, 0.042 MINIMUM.

LOCATION	VARIABLE OUTSIDE SHOULDER WIDTH	VARIABLE INSIDE SHOULDER WIDTH	VARIABLE LANE WIDTH
RAMP "E" STA. 458+33.24 RAMP "E" STA. 461+33.24			14'-0" TO 16'-0"
RAMP "E" STA. 461+33.24 RAMP "E" STA. 462+58.24	8'-0" TO 6'-0"		
RAMP "E" STA. 462+33.24 RAMP "E" STA. 462+58.24		2'-0" TO 2'-6"	

SEE PAVEMENT DETAIL SHEETS FOR LOCATIONS OF EXISTING LONGITUDINAL JOINTS IN AREAS OF VARIABLE LANE WIDTH.

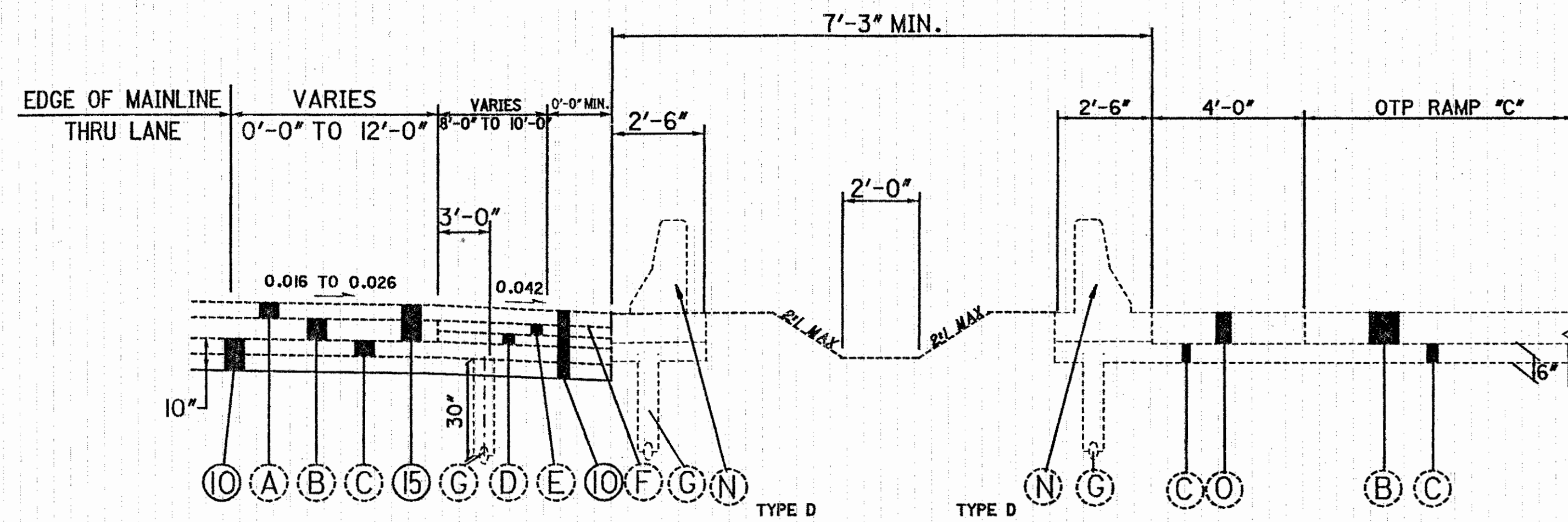


# EXISTING TYPICAL SECTION

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

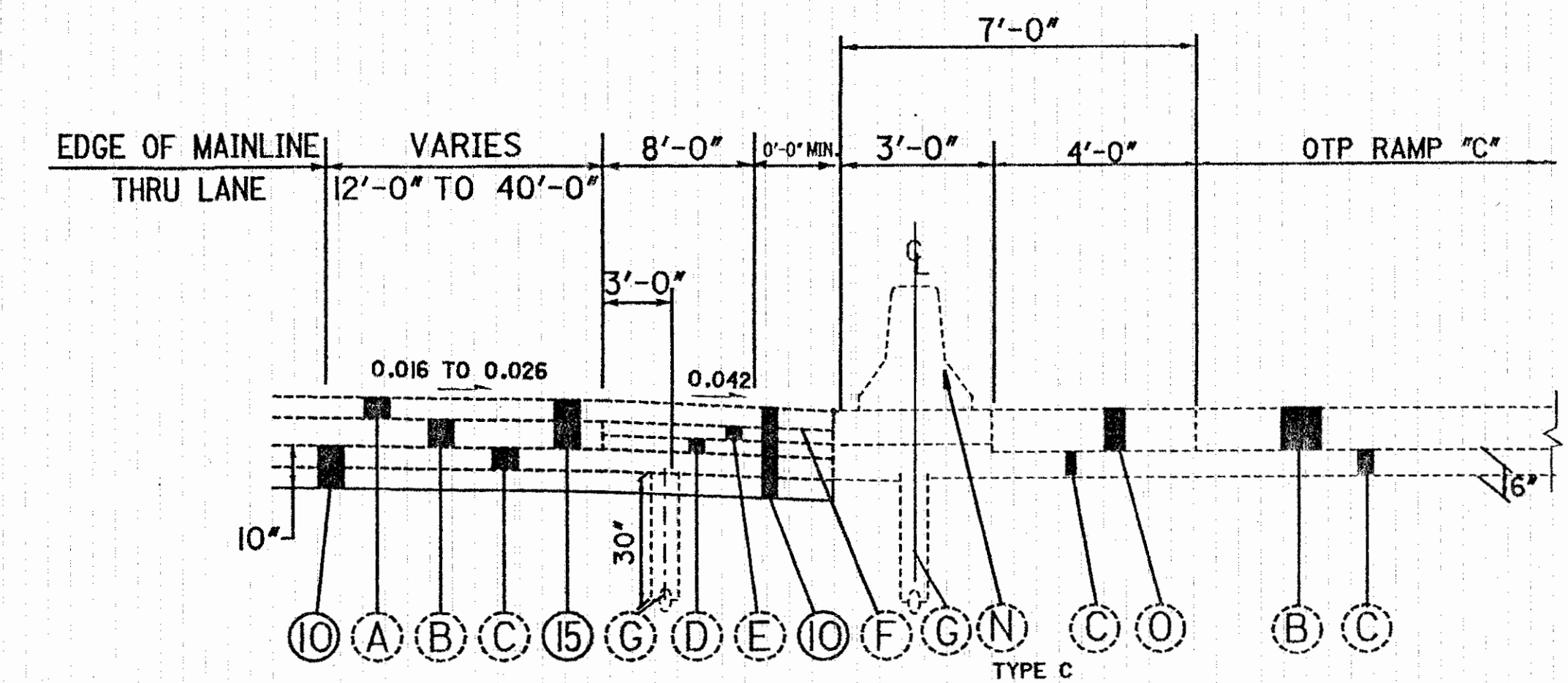
5A  
121

MAH-76/80-6.95/0.00



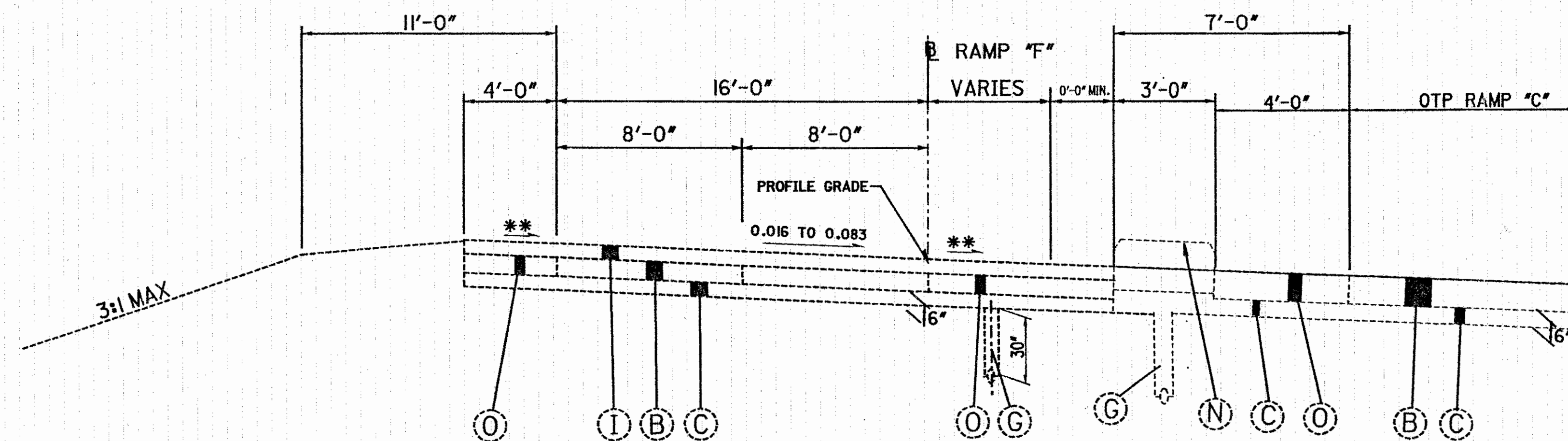
## SPEED CHANGE LANE RAMP "F"

STA. 468+11.59 TO STA. 469+66.48 (RAMP "F") = 154.89 LIN.FT.



## SPEED CHANGE LANE RAMP "F"

STA. 469+66.48 TO STA. 476+11.59 (RAMP "F") = 645.11 LIN.FT.



## MATCH SUPERELEVATED SECTION RAMP "F"

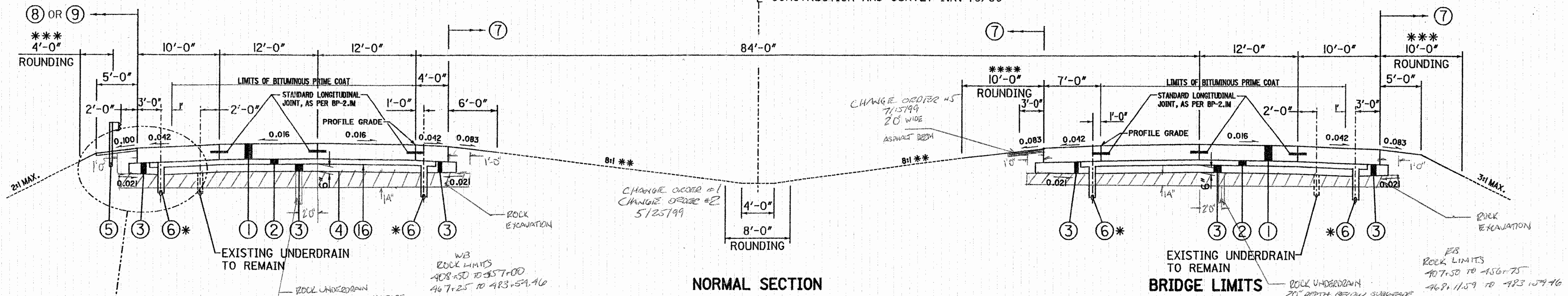
RAMP "F" STA. 476+09.93/STA. 476+11.59 I.R. 80

NOTE:  
FOR ADDITIONAL INFORMATION, SEE PAVEMENT DETAIL SHEETS 61-64.  
FOR PROPOSED PAVEMENT LEGEND, SEE SHEET 6.  
FOR EXISTING PAVEMENT LEGEND, SEE SHEET 3.  
\*\* SAME SLOPE AS PAVEMENT, 0.042 MINIMUM.



# PROPOSED TYPICAL SECTION

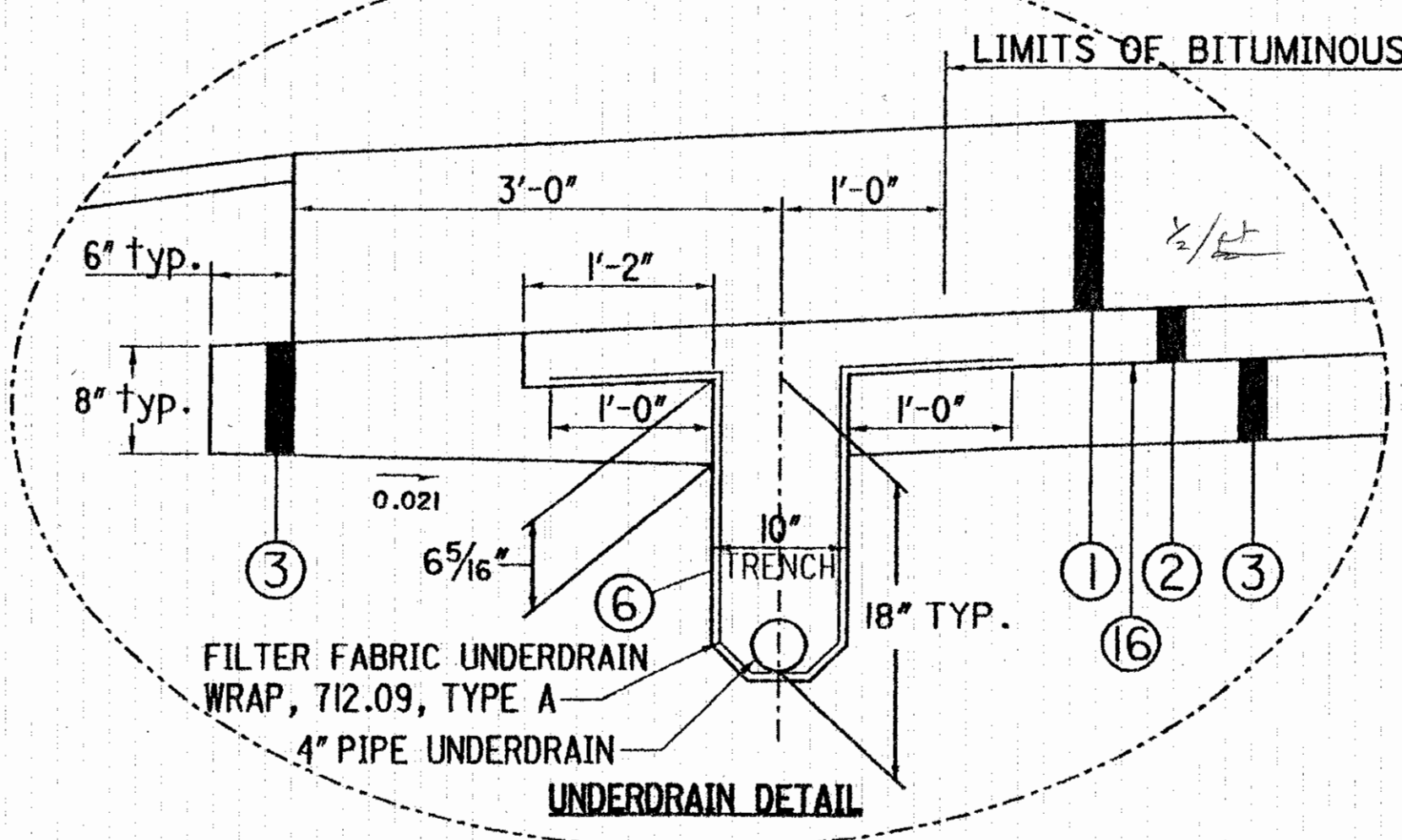
CONSTRUCTION AND SURVEY I.R. 76/80



\*STATION EQUATION: STA. 420+00 (BK.) = STA. 418+60 (AH.)

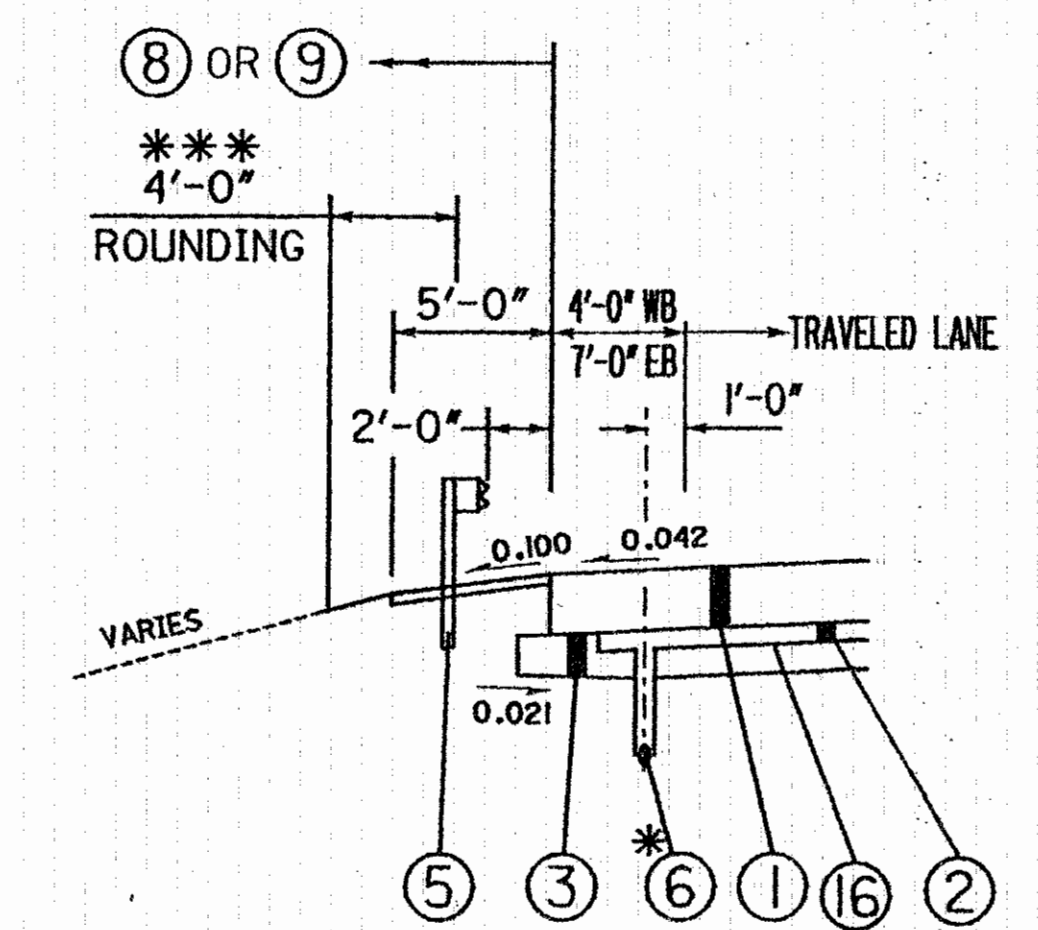
STA. 372+78.54 TO STA. 401+70.04	I-76	=	2891.50 L.F.
*STA. 403+83.55 TO STA. 420+00 (BK.)	I-76	=	1616.45 L.F.
*STA. 418+60 (AH.) TO STA. 483+54.46	I-76 & I-80	=	6494.46 L.F.
			11002.41 L.F.

STA. 370+32.46 TO STA. 372+53.54	I-76
STA. 401+95.04 TO STA. 403+58.55	I-76
STA. 495+23.82 TO STA. 496+67.32	I-80



- \* FOR LOCATIONS OF PROPOSED SHALLOW UNDERDRAINS AND OUTLET CONNECTION BETWEEN EXISTING UNDERDRAINS AND PROPOSED UNDERDRAINS, SEE SHEETS 40-42, 72-73.
- \*\* IN GUARDRAIL LOCATIONS, SLOPE VARIES.
- \*\*\* ROUNDING REQUIRED WHEN EXISTING FORESLOPES ARE STEEPER THAN 6:1. NO ROUNDING REQUIRED WHEN EXISTING FORESLOPES ARE 6:1 OR FLATTER.
- \*\*\*\* ROUNDING WILL BE REQUIRED REGARDLESS OF EXISTING FORESLOPES. ROUNDING SHALL BE NECESSARY TO TIE IN THE PROPOSED 7'-0" EB INSIDE RIGID SHOULDER.

## INSIDE SHOULDER WITH GUARDRAIL



## PROPOSED PAVEMENT LEGEND

- |  |  |
|--|--|
| ① ITEM 452 - Plain Concrete Pavement, Misc.: T=14", As Per Plan with ITEM 618 Rumble Strips, Type 3 (Inside and Outside Shoulders) | ⑨ ITEM 203 - Linear Grading, Method C  |
| ② ITEM 307 - 4" Non-stabilized Free Draining Base, TYPE IA   | ⑨A ITEM 203 - Linear Grading, Method D   |
| ③ ITEM 304 - Aggregate Base, Variable Depth  | ⑩ ITEM 203 - Excavation Not Including Embankment Construction                            |
| ④ ITEM 203 - Subgrade Compaction   | ⑪ ITEM 407 - Tack Coat (Applied at a rate of 0.075 Gal/S.Y.)                             |
| ⑤ ITEM 606 - Guardrail, Type 5   | ⑫ ITEM 611 - Reinforced Concrete Approach Slab (T=15"), As Per Plan (See Note, Sheet 13) |
| ⑥ ITEM 605 - 4" Shallow (Or Unclassified) Pipe Underdrain With Fabric Wrap, 707.31, As Per Plan (See Sheets 72-73)                 | ⑬ ITEM 304 - 6" Aggregate Base   |
| ⑦ ITEM 203 - Linear Grading, Method A  | ⑭ ITEM 609 - Curb, Type 4A   |
| ⑧ ITEM 203 - Linear Grading, Method B  | ⑮ ITEM 202 - Pavement Removed  |
|  | ⑯ ITEM 408 - Bituminous Prime Coat (Applied @ 0.40 Gal/Sy)                               |

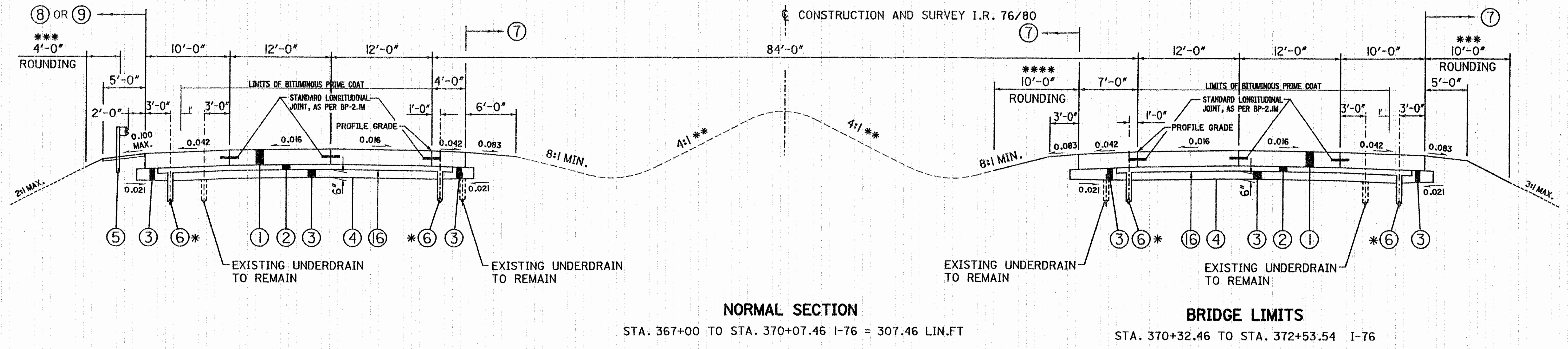


# PROPOSED TYPICAL SECTIONS

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

7  
121

MAH-76/80-6.95/0.00



- \* FOR LOCATIONS OF PROPOSED SHALLOW UNDERDRAINS AND OUTLET CONNECTION BETWEEN EXISTING UNDERDRAINS AND PROPOSED UNDERDRAINS, SEE SHEETS 40-42. ALSO, SEE UNDERDRAIN DETAIL, SHEETS 72-73.
- \*\* IN GUARDRAIL LOCATIONS, SLOPE VARIES.
- \*\*\* ROUNDING REQUIRED WHEN EXISTING FORESLOPES ARE STEEPER THAN 6:1. NO ROUNDING REQUIRED WHEN EXISTING FORESLOPES ARE 6:1 OR FLATTER.
- \*\*\*\* ROUNDING WILL BE REQUIRED REGARDLESS OF EXISTING FORESLOPES. ROUNDING SHALL BE NECESSARY TO TIE IN THE PROPOSED 7'-0" EB INSIDE RIGID SHOULDER.

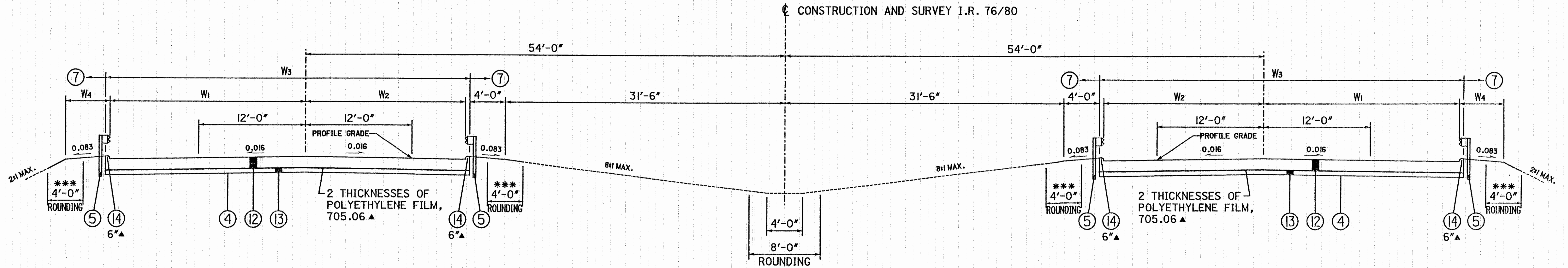
FOR PROPOSED PAVEMENT LEGEND, SEE SHEET 6.



# PROPOSED TYPICAL SECTION

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

MAH-76/80-6.95/0.00



STRUCTURE	W1	W2	W3	W4
MAH-76-0701 L&R	22'-0"	18'-0"	41'-0"	5'-0"
MAH-76-0761 L&R	24'-0"	18'-0"	43'-0"	3'-0"

## APPROACH SLAB

LIMITING STATIONS

STA. 370+07.46 TO STA. 370+32.46	= 25.00 LIN.FT.	} MAH-76-0701 L&R (STA. 370+32.46 TO STA. 372+53.54)
STA. 372+53.54 TO STA. 372+78.54	= 25.00 LIN.FT.	
STA. 401+70.04 TO STA. 401+95.04	= 25.00 LIN.FT.	} MAH-76-0761 L&R (STA. 401+95.04 TO STA. 403+58.55)
STA. 403+58.55 TO STA. 403+83.55	= 25.00 LIN.FT. 100.00 LIN.FT.	

NOTE:  
▲ COST OF TYPE 4A CURB AND POLYETHYLENE FILM IS TO BE INCLUDED FOR PAYMENT WITH ITEM 611 REINFORCED CONCRETE APPROACH SLAB, AS PER PLAN, AS PER SPEC. 611.08 OF CONSTRUCTION AND MATERIALS SPECIFICATIONS.

\*\*\* ROUNDING REQUIRED WHEN EXISTING FORESLOPES ARE STEEPER THAN 6:1. NO ROUNDING IS REQUIRED WHEN EXISTING FORESLOPES ARE FLATTER THAN 6:1.

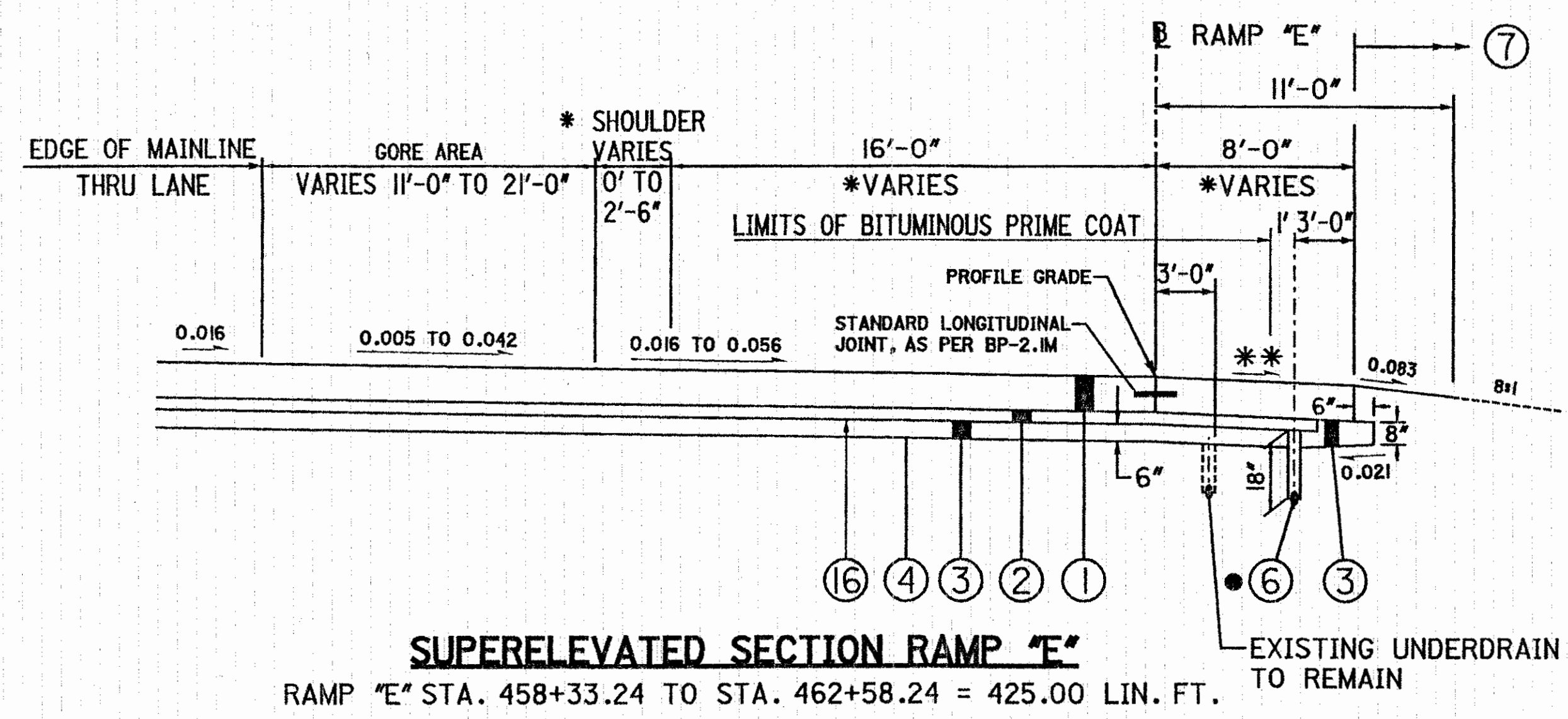
FOR PROPOSED PAVEMENT LEGEND, SEE SHEET 6.

ORIGINALLY CONSTRUCTED REINFORCED CONCRETE APPROACH SLAB (T=13") WAS 24'-0" WIDE AND 25'-0" LONG.



# PROPOSED TYPICAL SECTIONS

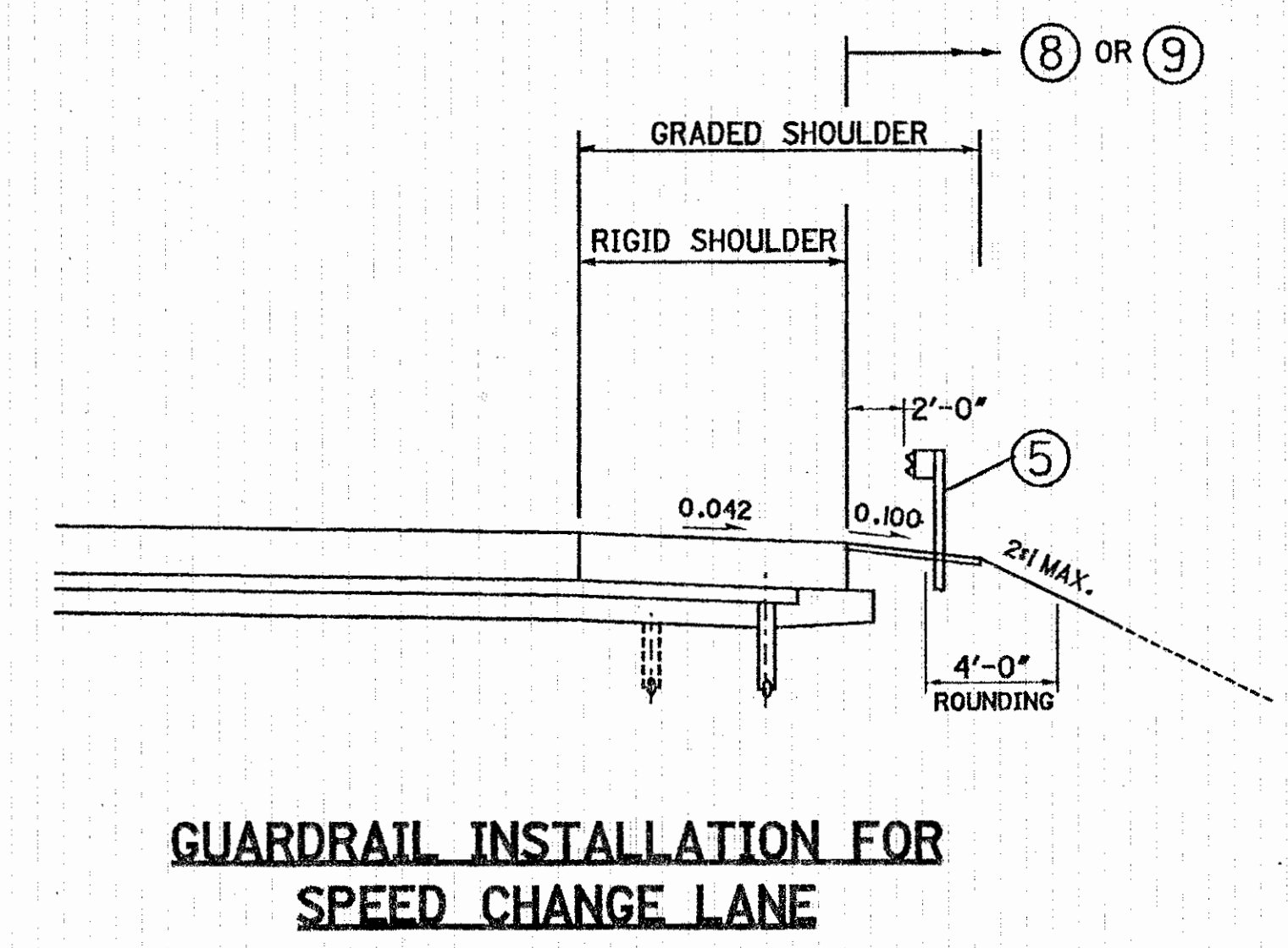
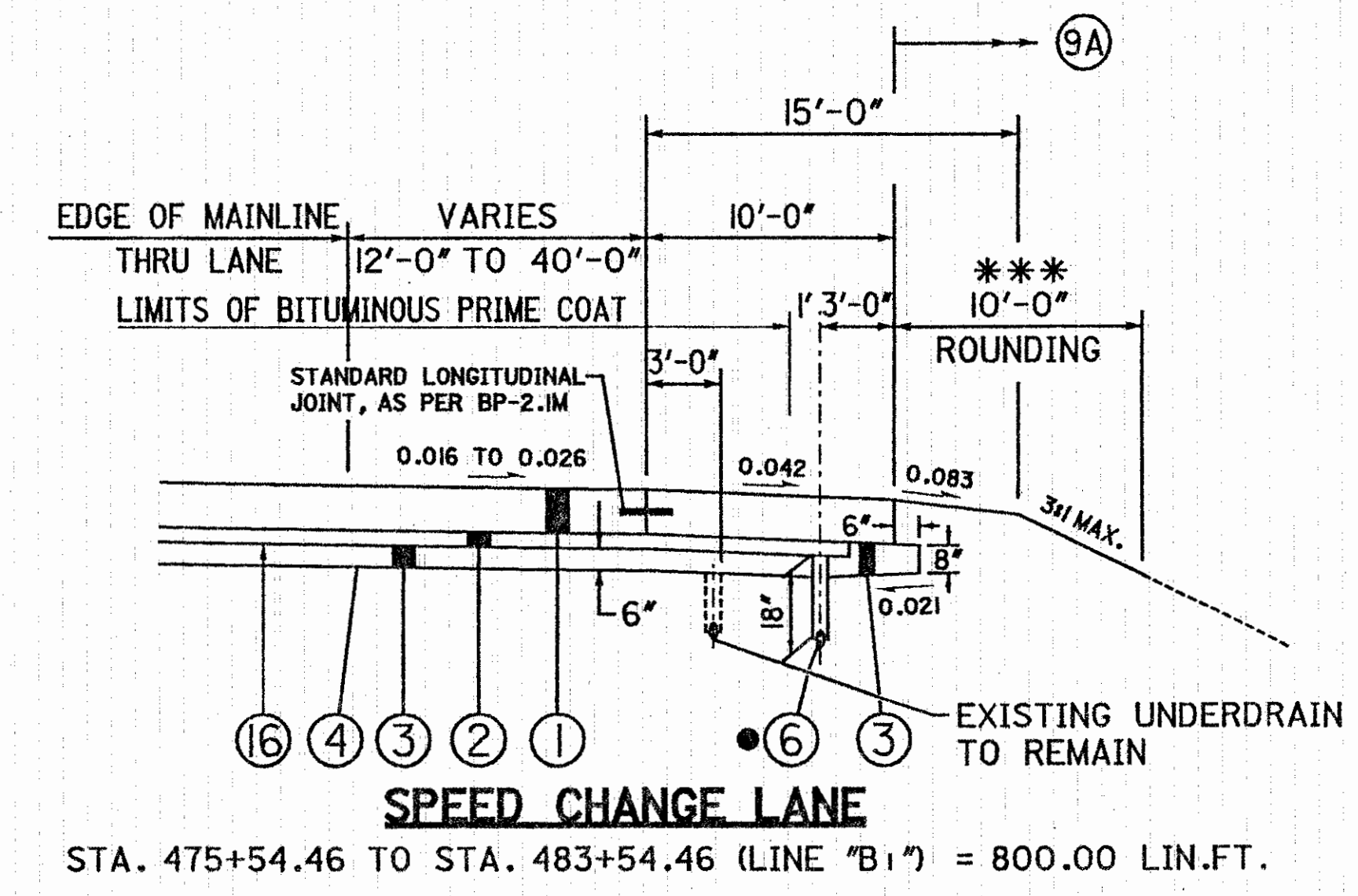
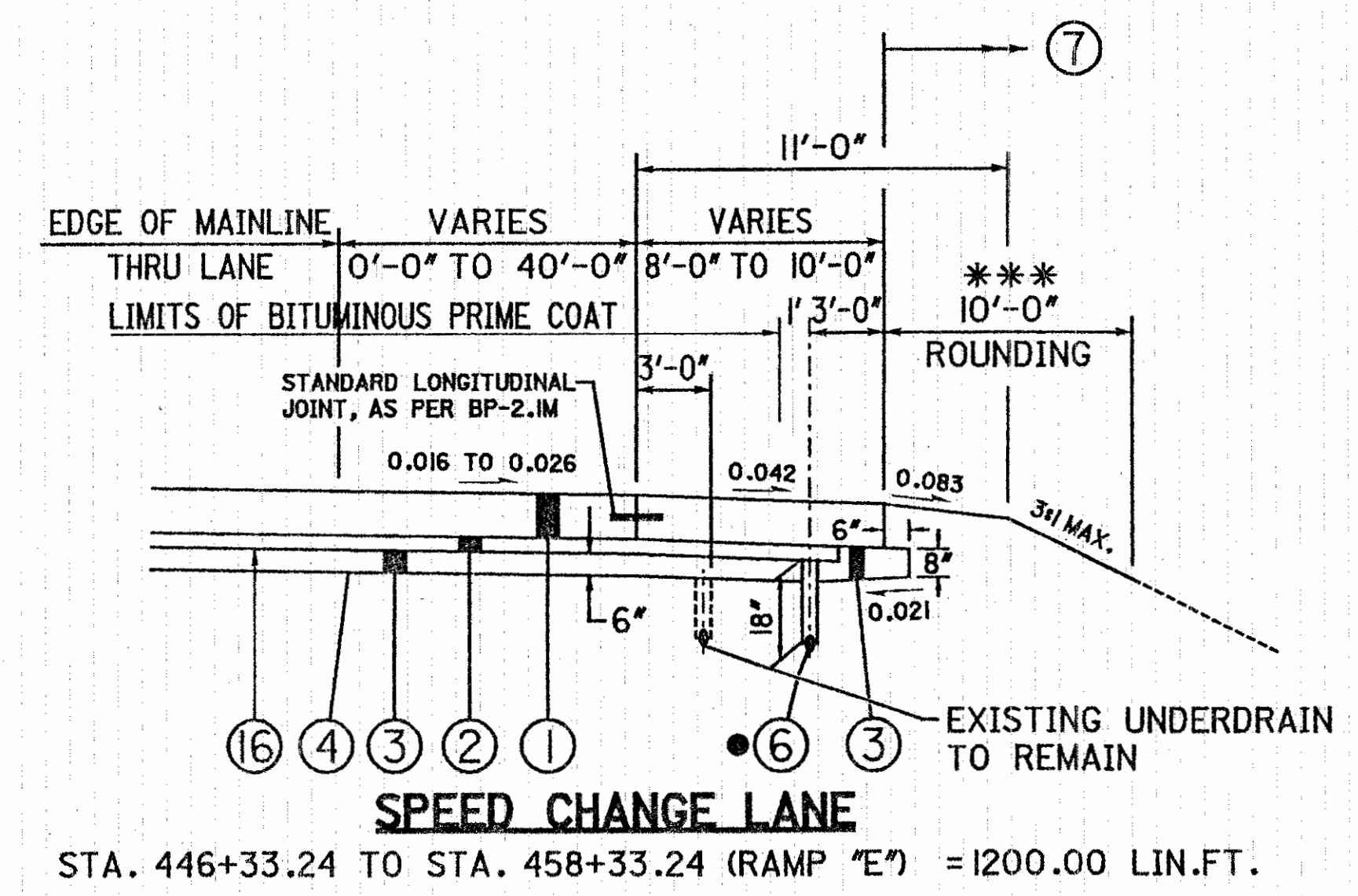
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LOCATION	VARIABLE OUTSIDE SHOULDER WIDTH	VARIABLE INSIDE SHOULDER WIDTH	VARIABLE LANE WIDTH
RAMP "E" STA. 458+33.24 RAMP "E" STA. 461+33.24			14'-0" TO 16'-0"
RAMP "E" STA. 461+33.24 RAMP "E" STA. 461+83.24	8'-0" TO 6'-0"		
RAMP "E" STA. 461+83.24 RAMP "E" STA. 462+58.24	6'-0"		
RAMP "E" STA. 462+33.24 RAMP "E" STA. 462+58.24		2'-0" TO 2'-6"	

SEE PAVEMENT DETAIL SHEETS FOR LOCATIONS OF EXISTING LONGITUDINAL JOINTS IN AREAS OF VARIABLE LANE WIDTH.

- NOTE:
- FOR ADDITIONAL INFORMATION, SEE PAVEMENT DETAIL SHEETS 61-64.
  - FOR PROPOSED PAVEMENT LEGEND, SEE SHEET 6.
  - FOR LOCATIONS OF PROPOSED SHALLOW UNDERDRAINS AND OUTLET CONNECTION BETWEEN EXISTING UNDERDRAINS AND PROPOSED UNDERDRAINS, SEE SHEETS 40-42. FOR UNDERDRAIN DETAIL, SEE SHEETS 72-73.
  - \* SEE TABLE, THIS SHEET, FOR PAVEMENT AND SHOULDER TAPERS.
  - \*\* SAME SLOPE AS PAVEMENT, 0.042 MINIMUM.
  - \*\*\* ROUNDING REQUIRED WHEN EXISTING FORESLOPES ARE STEEPER THAN 6:1. NO ROUNDING REQUIRED WHEN EXISTING FORESLOPES ARE 6:1 OR FLATTER.



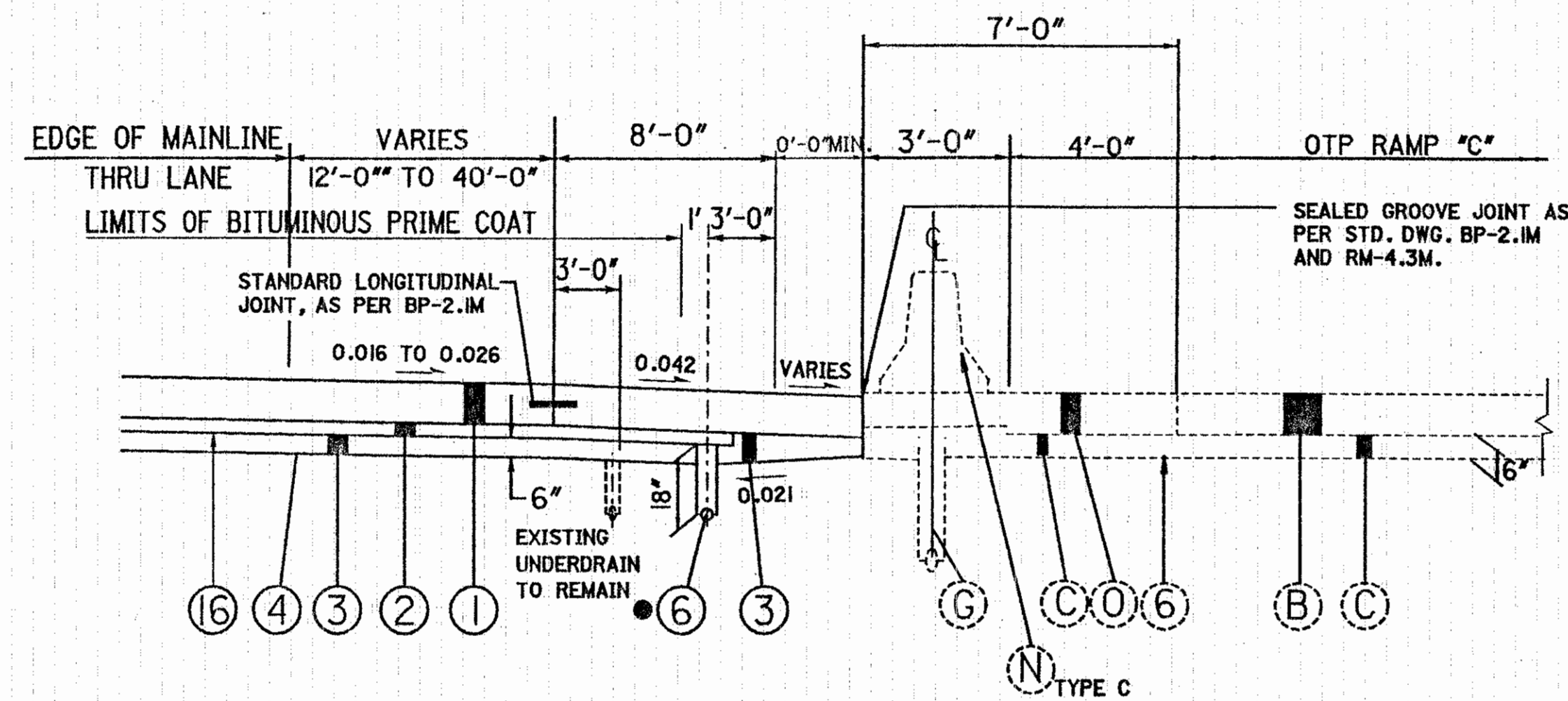


# PROPOSED TYPICAL SECTIONS

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

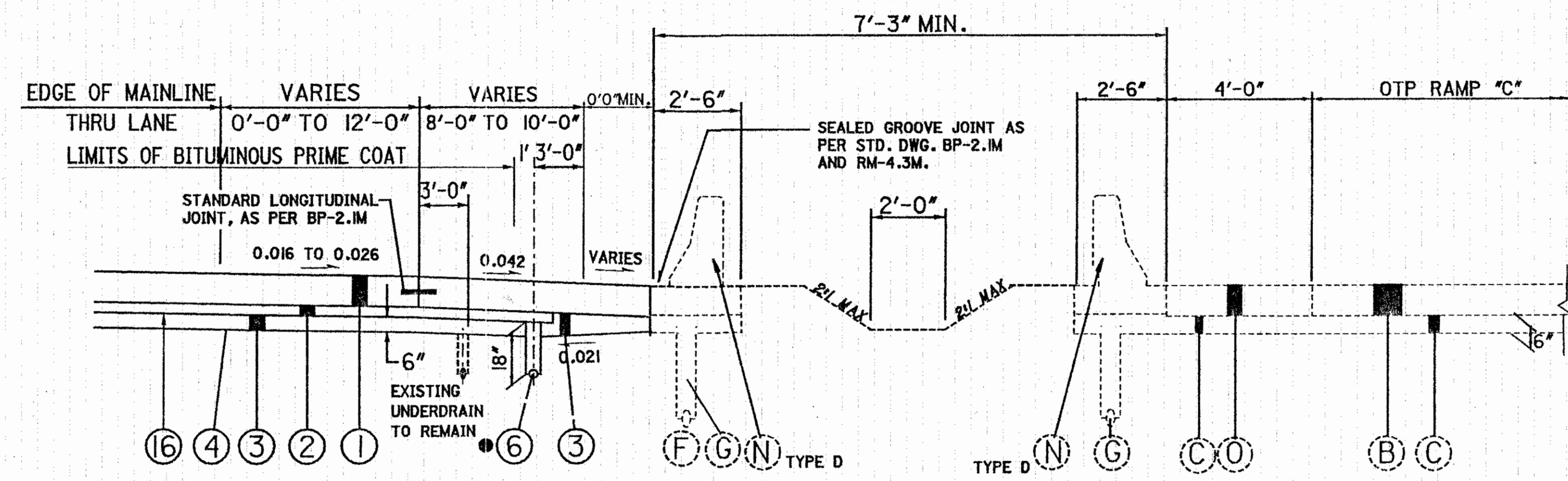
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MAH-76/80-6.95/0.00



**SPEED CHANGE LANE RAMP "F"**

STA. 469+66.48 TO STA. 476+11.59 (RAMP "F") = 645.11 LIN.FT.



**SPEED CHANGE LANE RAMP "F"**

STA. 468+11.59 TO STA. 469+66.48 (RAMP "F") = 154.89 LIN.FT.

**NOTE:**

FOR ADDITIONAL INFORMATION, SEE PAVEMENT DETAIL SHEETS 61-64.

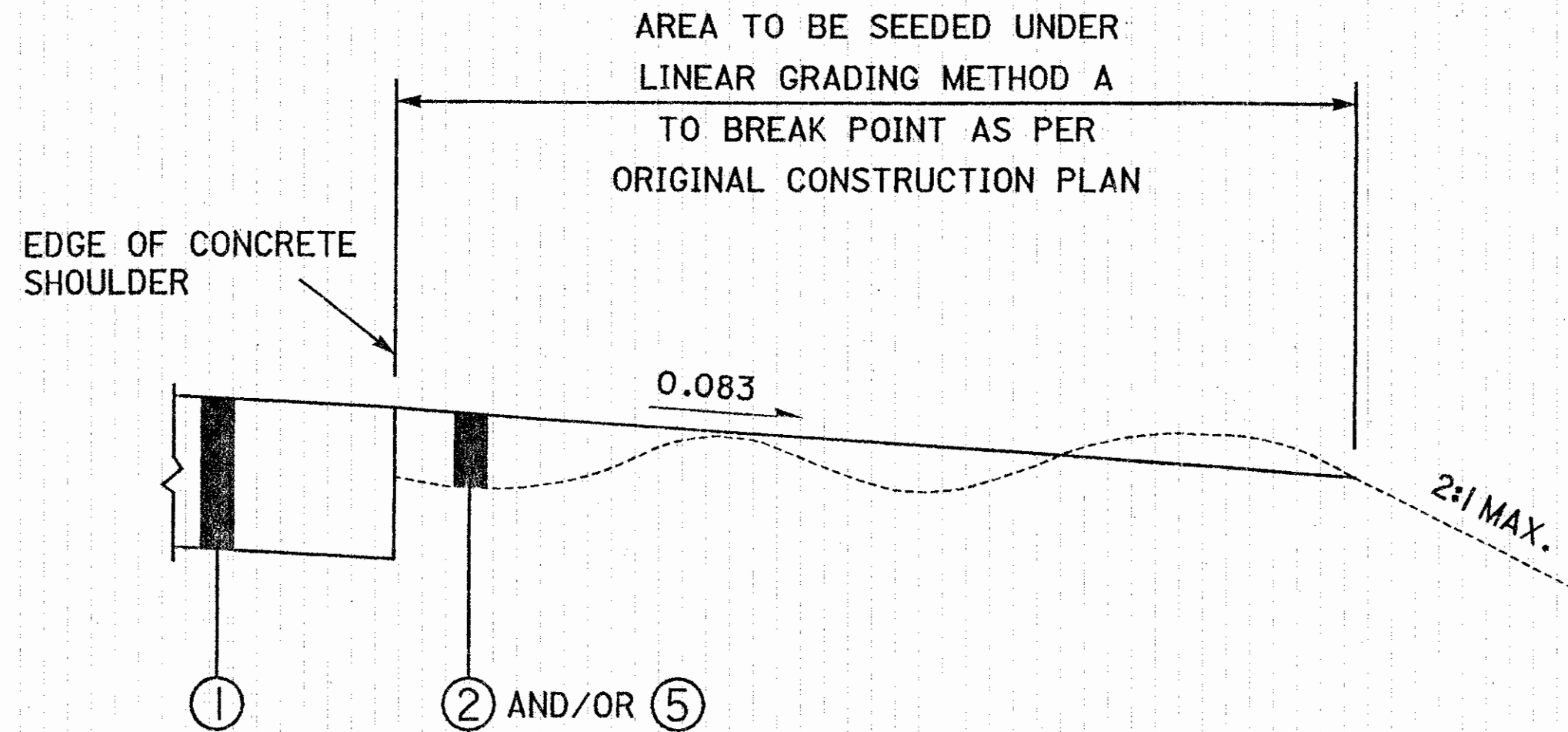
FOR PROPOSED PAVEMENT LEGEND, SEE SHEET 6.

- FOR LOCATIONS OF PROPOSED SHALLOW UNDERDRAINS AND OUTLET CONNECTION BETWEEN EXISTING UNDERDRAINS AND PROPOSED UNDERDRAINS, SEE SHEETS 40-42.
- FOR UNDERDRAIN DETAIL, SEE SHEETS 72-73.



# LINEAR GRADING

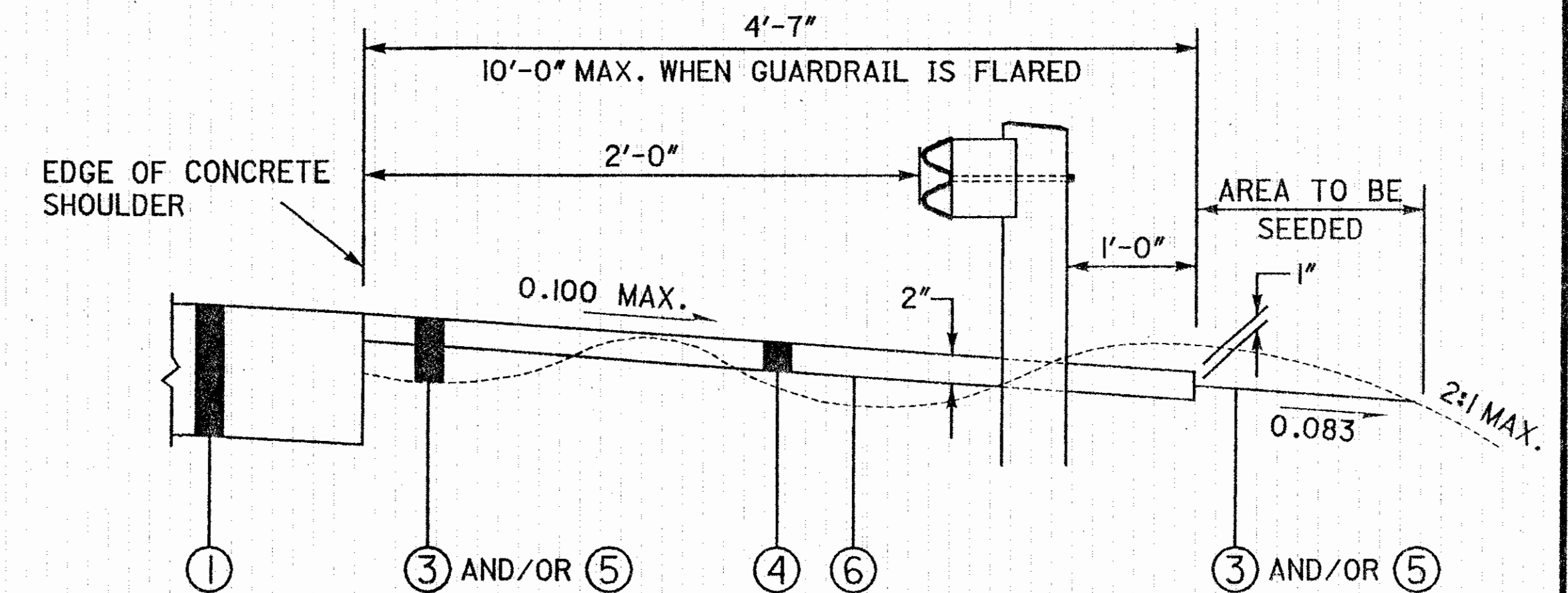
## METHOD A



## LEGEND

- |   |         |  |
|---|---------|--|
| ① | 452     | PLAIN CONCRETE PAVEMENT  |
| ② | 203     | LINEAR GRADING, METHOD A   |
| ③ | 203     | LINEAR GRADING, METHOD B   |
| ④ | 448     | ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I, UNDER GUARDRAIL, PG 64-22, AS PER PLAN |
| ⑤ | 203     | EMBANKMENT, AS PER PLAN (IF REQUIRED, SEE NOTE THIS SHEET)                           |
| ⑥ | SPECIAL | HERBICIDAL SPRAYING, MISC., APPLICATION UNDER ASPHALT                                |

## METHOD B



### ITEM 203 LINEAR GRADING, METHOD A

THIS WORK SHALL CONSIST OF REGRADING THE EXISTING SHOULDER IN NON-GUARDRAIL AREAS ON THE OUTSIDE AND INSIDE SHOULDERS AS INDICATED IN THE ABOVE DETAIL. REGRADING WILL BE ACCOMPLISHED BY REMOVING EXCESS TURF BETWEEN THE EDGES OF THE PROPOSED CONCRETE SHOULDER AND THE BREAK POINT USING A SLOPE OF APPROXIMATELY 0.083. EXCESS MATERIAL SHALL BE WINDROWED ON THE SHOULDER AND REMOVED BY THE CONTRACTOR. ANY VOIDS OR IRREGULARITIES BETWEEN THE EDGE OF THE CONCRETE SHOULDER AND THE BREAK POINT SHALL BE FILLED AND ADEQUATELY COMPACTED USING EXCESS MATERIAL. EXISTING RUTTED AREAS CAUSED BY SURFACE EROSION SHALL BE SCARIFIED PRIOR TO FILLING. ITEM 203 EMBANKMENT, AS PER PLAN SHALL BE PROVIDED WHERE WINDROWED MATERIAL IS NOT AVAILABLE. ADEQUATE QUANTITIES SHALL BE PROVIDED TO COMPLETE THE TYPICAL SECTION AS SHOWN. AFTER GRADING OPERATION IS COMPLETED THE DISTURBED AREA SHALL BE SEEDD AND MULCHED AS PER ITEM 659. ALL COMPACTION SHALL BE AS PER ITEM 203.

THE METHOD OF MEASUREMENT SHALL BE CONSIDERED AS ONE STATION EQUAL TO 100 LIN.FT. MEASURED SEPARATELY FOR EACH SIDE OF EACH DIRECTIONAL LANE AND SHALL INCLUDE ALL WORK REQUIRED AS DESCRIBED ABOVE INCLUDING THE NECESSARY SEEDD.

THE COST OF THE ABOVE OPERATION, EXCEPT FOR ITEM 203 EMBANKMENT, AS PER PLAN, SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 203 LINEAR GRADING, METHOD A.

ITEM 203 EMBANKMENT, AS PER PLAN SHALL MEET THE SPECIFICATIONS OF ITEM 203 EXCEPT THAT GRANULAR MATERIAL AS PER 203.02 SHALL BE EXCLUDED. THIS ITEM IS PROVIDED IN CASE WINDROWED MATERIAL IS NOT AVAILABLE NOR SUFFICIENT EMBANKMENT MAY BE OBTAINED FROM WITHIN THE EXISTING R/W AS APPROVED BY THE ENGINEER.

#### ESTIMATED QUANTITIES:

ITEM 203 LINEAR GRADING, METHOD A = SEE SHEETS 37-38 FOR LOCATIONS AND QUANTITIES  
 ITEM 203 EMBANKMENT, AS PER PLAN = 1335 CU.YD.

### ITEM 203 LINEAR GRADING, METHOD B

THIS ITEM SHALL CONSIST OF GRADING THE EXISTING OUTSIDE AND INSIDE SHOULDER BETWEEN THE PROPOSED CONCRETE SHOULDER AND BREAK POINT OF THE SHOULDER IN AREAS WHERE GUARDRAIL IS PROPOSED.

TOPSOIL SHALL BE EXCAVATED AND THE AREA RESHAPED TO PROVIDE A SUITABLE COMPACTED EMBANKMENT FOR THE 2" THICK COURSE OF ITEM 448 AS SHOWN IN THE ABOVE DETAIL. ALL COLLECTED DEBRIS AND TOPSOIL, INCLUDING RHIZOMES, ROOTS AND OTHER VEGETATIVE PLANT MATERIAL SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED IN SECTION 203.05 OF THE CONSTRUCTION AND MATERIALS SPECIFICATIONS.

ITEM 203 EMBANKMENT, AS PER PLAN HAS BEEN PROVIDED TO BE USED WHERE ADDITIONAL MATERIAL IS NECESSARY IN ORDER TO RESHAPE THE EXISTING SHOULDER. COMPACTION OF THE EMBANKMENT SHALL BE AS PER ITEM 203.

THE APPLICATION OF A HERBICIDE SUCH AS TREFLAN E.C. OR APPROVED EQUAL SHALL BE MADE ONLY WHEN THE FINAL GRADE IS ESTABLISHED AFTER ADDITIONS OF ANY EMBANKMENT. ALL PLANT MATERIAL SUCH AS RHIZOMES, ROOTS OR OTHER VEGETATIVE PLANT MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF EMBANKMENT. PAVING SHOULD FOLLOW HERBICIDE APPLICATIONS AS SOON AS POSSIBLE. THE CONTRACTOR SHALL BE PROPERLY LICENSED TO APPLY HERBICIDES AND ADHERE STRICTLY TO LABEL INSTRUCTIONS OF ANY HERBICIDE APPROVED FOR THIS USE.

PAYMENT FOR ALL LABOR AND MATERIAL REQUIRED TO APPLY THIS HERBICIDE SHALL BE INCLUDED IN THE PRICE PER SQUARE YARD BID FOR ITEM SPECIAL HERBICIDAL SPRAYING, MISC.: APPLICATION UNDER ASPHALT.

AREAS DISTURBED BEYOND THE ITEM 448 LIMIT SHALL BE GRADED TO MEET THE EXISTING BREAKPOINT AND SEEDD AND MULCHED AS PER 659.

THE METHOD OF MEASUREMENT SHALL BE CONSIDERED AS ONE STATION EQUAL TO 100 LIN.FT. OF GUARDRAIL PAVED UNDER AND SHALL INCLUDE ALL WORK REQUIRED AS DESCRIBED ABOVE EXCEPT FOR ITEM 448 ASPHALT CONCRETE, ITEM SPECIAL HERBICIDE AND ITEM 203 EMBANKMENT, AS PER PLAN. THE COST FOR THE ABOVE OPERATION SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 203 LINEAR GRADING, METHOD B.

ITEM 203 EMBANKMENT, AS PER PLAN SHALL MEET THE SPECIFICATIONS OF ITEM 203 EXCEPT THAT GRANULAR MATERIAL AS PER 203.02 SHALL BE EXCLUDED. EMBANKMENT MAY BE OBTAINED FROM WITHIN THE EXISTING R/W, AS APPROVED BY THE ENGINEER.

#### ESTIMATED QUANTITIES:

ITEM 203 LINEAR GRADING, METHOD B = SEE SHEETS 37-38 FOR LOCATIONS AND QUANTITIES  
 ITEM 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I, UNDER GUARDRAIL, PG 64-22, AS PER PLAN = 49 CU.YD.  
 ITEM SPECIAL HERBICIDAL SPRAYING, MISC.: APPLICATION UNDER ASPHALT = 866 SQ.YD.  
 ITEM 203 EMBANKMENT, AS PER PLAN = 14 CU.YD.







# LINEAR GRADING

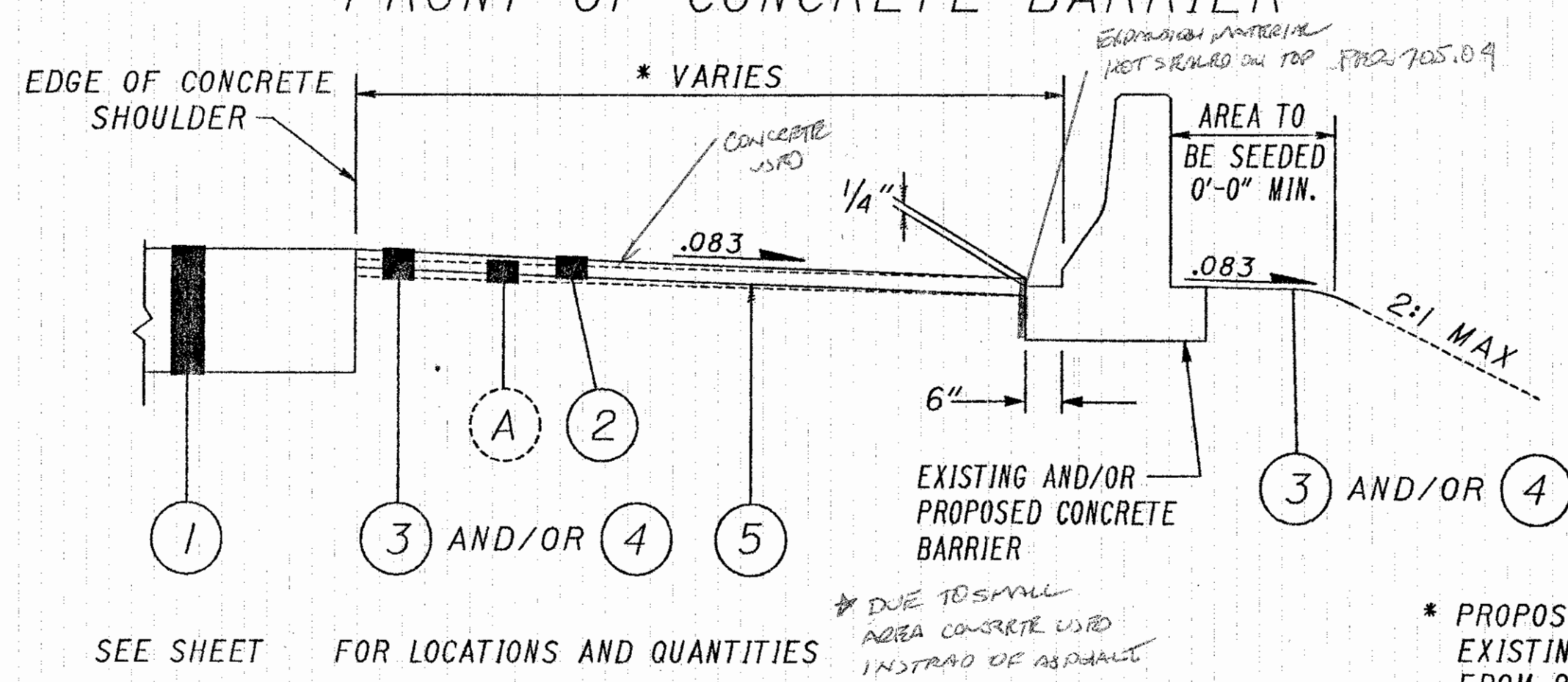
COMPLETED BY: SMM DATE: 2/95  
 CALCULATED BY: KMM DATE: 2/95  
 REVISED BY: KMM DATE: 1/98

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

12  
121

MAH-76/80-6.95/0.00

## ROADWAY MISC.: PAVING IN FRONT OF CONCRETE BARRIER



### LEGEND

- ① 452 PLAIN CONCRETE PAVEMENT
- ② 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I, UNDER GUARDRAIL, PG 64-22, AS PER PLAN
- ③ 203 ROADWAY, MISC.: PAVING IN FRONT OF CONCRETE BARRIER
- ④ 203 EMBANKMENT, AS PER PLAN
- ⑤ SPECIAL HERBICIDAL SPRAYING, MISC., APPLICATION UNDER ASPHALT
- Ⓐ EXISTING PAVING IN FRONT OF BARRIER

SEE SHEET FOR LOCATIONS AND QUANTITIES

### ROADWAY MISC.: PAVING IN FRONT OF CONCRETE BARRIER

THIS WORK SHALL CONSIST OF GRADING THE EXISTING OUTSIDE SHOULDER BETWEEN THE PROPOSED CONCRETE SHOULDER AND THE TOE OF THE PROPOSED AND/OR EXISTING CONCRETE BARRIER IN AREAS WHERE PAVING IN FRONT OF CONCRETE BARRIER EXISTS. IT SHALL CONSIST OF REMOVING THE EXISTING PAVING AND RESHAPING THE AREA TO PROVIDE A SUITABLE COMPACTED EMBANKMENT FOR THE 2" THICK COURSE OF ITEM 448 AS SHOWN IN THE ABOVE DETAIL.

THIS EXISTING PAVING SHALL BE REMOVED IN SUCH A MANNER AS TO LEAVE A STRAIGHT VERTICAL EDGE AND NOT DAMAGE THE CONCRETE SHOULDER. ANY DAMAGE TO THE CONCRETE SHOULDER SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE AS DIRECTED BY THE ENGINEER.

ITEM 203 - EMBANKMENT, AS PER PLAN HAS BEEN PROVIDED TO BE USED WHERE ADDITIONAL MATERIAL IS NECESSARY TO COMPLETE THE ABOVE DESCRIBED WORK. COMPACTION OF THE EMBANKMENT SHALL BE AS PER ITEM 203.

THE APPLICATION OF A HERBICIDE SUCH AS TREFLAN E.C. OR APPROVED EQUAL SHALL BE MADE ONLY WHEN THE FINAL GRADE IS ESTABLISHED AFTER ADDITIONS OF ANY EMBANKMENT. ALL PLANT MATERIAL SUCH AS RHIZOMES, ROOTS OR OTHER VEGETATIVE PLANT MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF EMBANKMENT. PAVING SHOULD FOLLOW HERBICIDE APPLICATIONS AS SOON AS POSSIBLE. THE CONTRACTOR SHALL BE PROPERLY LICENSED TO APPLY HERBICIDES AND ADHERE STRICTLY TO LABEL INSTRUCTIONS OF ANY HERBICIDE APPROVED FOR THIS USE.

PAYMENT FOR ALL LABOR AND MATERIAL REQUIRED TO APPLY THIS HERBICIDE SHALL BE INCLUDED IN THE PRICE PER SQUARE YARD BID FOR ITEM SPECIAL - HERBICIDE SPRAYING, MISC., APPLICATION UNDER ASPHALT.

AREAS DISTURBED BEYOND THE ITEM 448 LIMIT SHALL BE GRADED TO MEET THE EXISTING BREAK POINT AND SEEDED AND MULCHED AS PER 659.

THE METHOD OF MEASUREMENT SHALL BE CONSIDERED AS ONE STATION EQUAL TO 100 LIN.FT. OF PAVING IN FRONT OF CONCRETE BARRIER AND SHALL INCLUDE ALL WORK REQUIRED AS DESCRIBED ABOVE EXCEPT FOR ITEM 448 - ASPHALT CONCRETE, ITEM SPECIAL - HERBICIDE AND ITEM 203 - EMBANKMENT, AS PER PLAN. THE COST FOR THE ABOVE OPERATION SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 203 - ROADWAY, MISC.: PAVING IN FRONT OF CONCRETE BARRIER.

ITEM 203 - EMBANKMENT, AS PER PLAN SHALL MEET THE SPECIFICATIONS OF ITEM 203 EXCEPT THAT GRANULAR MATERIAL AS PER 203.02 SHALL BE EXCLUDED. THIS ITEM IS PROVIDED IN CASE WINDROWED MATERIAL IS NOT AVAILABLE NOR SUFFICIENT. EMBANKMENT MAY BE OBTAINED FROM WITHIN THE EXISTING R/W, AS APPROVED BY THE ENGINEER.

### ESTIMATED QUANTITIES:

- ITEM 203 - ROADWAY, MISC.: PAVING IN FRONT OF CONCRETE BARRIER = SEE SHTS. 37-38 FOR LOCATIONS AND QUANTITIES
- ITEM 448 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I, UNDER GUARDRAIL, PG 64-22, AS PER PLAN = 13 CU.YD.
- ITEM SPECIAL - HERBICIDAL SPRAYING, MISC., APPLICATION UNDER ASPHALT = 223 SQ.YD.
- ITEM 203 - EMBANKMENT, AS PER PLAN = 33 CU.YD.



COMPLETED BY: KMM DATE: 2/95  
CALCULATED BY: KMM DATE: 2/95  
REVISED BY: KMM DATE: 11/97

# GENERAL NOTES

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

13  
121

MAH-76/80-6.95/0.00

## UTILITIES:

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

ODOT  
705 OAKWOOD STREET  
RAVENNA, OHIO 44266  
ATTN: TRAFFIC ENGINEER  
PHONE: 330-297-0801

OHIO EDISON CO.  
730 SOUTH AVENUE  
YOUNGSTOWN, OHIO 44502  
ATTN: BILL SPEECE  
PHONE: 330-740-7635

MAHONING CO. SANITARY ENGINEER  
761 INDUSTRIAL RD.  
YOUNGSTOWN, OHIO 44509  
ATTN: JOE WARINO  
PHONE: 330-793-5514

BUCKEYE PIPE LINE CO.  
4911 EAST HIGH ST.  
P.O. BOX 542  
MANTUA, OHIO 44255  
ATTN: DAVID MCKEE  
PHONE: 330-274-2234

OHIO TURNPIKE COMMISSION  
682 PROSPECT STREET  
BEREA, OHIO 44017  
ATTN: DON DEPAULO  
PHONE: 440-234-7273

CONRAIL (CORPORATE)  
CONRAIL BLDG. SUITE 301  
HOLIDAY DRIVE  
PITTSBURGH, PA 15220  
ATTN: DIV ENGR.  
PHONE: 412-928-7255

ODOT EXISTING ELECTRICAL CONDUIT FOR EXISTING TOWER LIGHTING IS APPROXIMATELY 24" BELOW EXISTING GRADE. EXTRA CARE SHALL BE TAKEN IN ORDER TO PREVENT DAMAGE TO THE CONDUIT DURING MAINTENANCE OF TRAFFIC CROSSOVER CONSTRUCTION.

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

## WORK LIMITS:

WHEN WORK LIMITS ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF TEMPORARY 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 ELEVATIONS ARE BASED ON U.S.G.S. DATUM.

## PREVIOUS CONSTRUCTION PLANS:

THE FOLLOWING CONSTRUCTION PLANS ARE AVAILABLE FOR REFERENCE BY CONTACTING THE DISTRICT 4 OFFICE IN RAVENNA, OHIO:

### ORIGINAL CONSTRUCTION:

MAH-80S-7.01 / MAH-80-2.30 PRINTS #274  
MAH-80S-3.08 PRINTS #273

### PAVEMENT AND ROADWAY REHABILITATION:

MAH-76-7.01 / MAH-80-(0.00)(1.69) PRINTS #290  
MAH-76-6.78 / MAH-80-0.00 / TRU-80-0.00 PRINTS #257B  
MAH-76-7.00 / MAH-80-0.00 / TRU-80-0.00 MAINT. 1990  
MAH-76-7.01 / MAH-80-0.00 / TRU-80-0.00 MAINT. 1992

## REVIEW OF DRAINAGE FACILITIES:

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION 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 TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

ANY PAYMENT AS PER ITEM SPECIAL PIPE CLEANOUT SHALL BE BASED ON IN SITU CONDITIONS DURING THE INITIAL INSPECTION.

## SEQUENCE OF CONSTRUCTION:

UNDERDRAINS SHALL BE PLACED PRIOR TO THE PLACEMENT OF THE NON STABILIZED FREE DRAINING BASE. NSFDB SHALL BE PLACED PRIOR TO THE CONSTRUCTION OF MAINLINE PAVEMENT. EXCEPTIONS SHALL HAVE PRIOR APPROVAL OF THE ENGINEER.

## ITEM 611 REINFORCED CONCRETE APPROACH SLAB (T-15"), AS PER PLAN:

THE 18" DOWEL BARS AT 1'-0" c/c SPACING SHALL BE OMITTED ON STRUCTURE MAH-76-0701 L & R.

TWO SEPARATE THICKNESSES OF CLEAR OR OPAQUE POLYETHYLENE FILM, 705.06, SHALL BE PLACED ON THE PREPARED SUBBASE AND WHERE THE APPROACH SLAB IS TO BE CONSTRUCTED. THE POLYETHYLENE FILMS SHALL COMPLETELY COVER THE FULL LENGTH AND WIDTH OF THE SUBBASE BETWEEN THE SIDEWALL FORMS FOR THE APPROACH SLAB.

CURB, TYPE 4A AS PER STANDARD DRAWING BP-5.1 SHALL BE CONSTRUCTED INTEGRAL WITH THE PROPOSED APPROACH SLABS AS SHOWN ON STANDARD DRAWING AS-1-81.

ALL OTHER REQUIREMENTS OF STANDARD DRAWING AS-1-81 SHALL APPLY.

MATERIALS, LABOR AND INSTALLATION SHALL BE INCLUDED FOR PAYMENT IN THIS ITEM 611 REINFORCED CONCRETE APPROACH SLAB (T-15"), AS PER PLAN.

## ITEM 452 PLAIN CONCRETE PAVEMENT, AS PER PLAN:

THE PROPOSED PAVEMENT SHALL BE PLACED WITH 15 FT. CONTRACTION JOINT SPACING. ALL OTHER REQUIREMENTS OF CMS 452 AND STANDARD DRAWING BP-2.2M SHALL BE ADHERED TO. THE COST OF ALL MATERIALS AND LABOR NEEDED TO CONSTRUCT THE REQUIRED LONGITUDINAL AND TRANSVERSE JOINTS INCLUDING THE RETROFIT JOINTS DETAILED ON SHEET 66 SHALL BE CONSIDERED INCIDENTAL TO ITEM 452 PLAIN CONCRETE, AS PER PLAN.

## ITEM 407 TACK COAT:

THE RATE OF APPLICATION OF THE 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.075 GALLONS PER SQUARE YARD OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

## ITEM 407 TACK COAT FOR INTERMEDIATE COURSE:

THE RATE OF APPLICATION OF THE 407 TACK COAT FOR INTERMEDIATE COURSE SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.075 GALLONS PER SQUARE YARD OF TACK COAT FOR INTERMEDIATE COURSE FOR ESTIMATING PURPOSES ONLY.

## ITEM 407 TACK COAT, 702.13:

THE RATE OF APPLICATION OF THE 407 TACK COAT, 702.13, SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.04 GALLONS PER SQUARE YARD OF TACK COAT, 702.13, FOR ESTIMATING PURPOSES ONLY.



COMPLETED BY: KMM DATE: 2/95  
 CALCULATED BY: KMM DATE: 2/95  
 REVISED BY: KMM DATE: 11/97

# GENERAL NOTES

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

14  
121

MAH-76/80-6.95/0.00

## ITEM 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, UNDER GUARDRAIL, PG 64-22, AS PER PLAN:

THIS ITEM SHALL CONSIST OF PAVING UNDER GUARDRAIL AS SPECIFIED IN THE PLANS AND IN ACCORDANCE WITH THE FOLLOWING:

PAVING SHALL CONSIST OF PLACING ITEM 448 TO THE DEPTH SPECIFIED USING ONE OF THE FOLLOWING METHODS:

METHOD A: 1) SET GUARDRAIL POSTS  
2) PLACE ITEM 448

METHOD B: 1) PLACE ITEM 448  
2) BORE ASPHALT AT POST LOCATIONS (SEE NOTE 1)  
3) SET GUARDRAIL POSTS  
4) PATCH AROUND POSTS (SEE NOTE 2)

NOTE 1: BORING OF ASPHALT MAY BE EXCLUDED IF STEEL POSTS ARE TO BE USED.

NOTE 2: THE MATERIAL USED FOR PATCHING SHALL BE A BITUMINOUS CONCRETE APPROVED BY THE ENGINEER. PATCHING AREAS SHALL BE COMPACTED USING EITHER HAND OR MECHANICAL METHODS. FINISHED SURFACES SHALL BE SMOOTH AND SLOPED TO DRAIN AWAY FROM THE POSTS.

ALTERNATE METHODS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

ALL EQUIPMENT, MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE, WITH THE EXCEPTION OF SETTING GUARDRAIL POSTS, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 448 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, UNDER GUARDRAIL, PG 64-22, AS PER PLAN.

## ITEM 203 DITCH CLEANOUT:

THIS ITEM IS TO BE USED TO CLEAN EXISTING DITCHES, AS DIRECTED BY THE ENGINEER, IN AREAS WHERE OVERGROWN VEGETATION, FOREIGN MATTER, ETC. IMPEDES THE DRAINAGE SYSTEM. ALL MATERIAL SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH SECTION 203.05 OF THE CONSTRUCTION AND MATERIALS SPECIFICATION MANUAL. THIS PROCESS SHALL NOT ALTER THE ORIGINAL DITCH CROSS SECTION. ALSO, POSITIVE FLOW MUST BE MAINTAINED. ANY DAMAGE TO THE DITCH OR ITS SURROUNDING AREA AS A RESULT OF PERFORMING THE ABOVE WORK SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED IN ACCORDANCE WITH CMS 659. THIS COST SHALL BE CONSIDERED INCIDENTAL TO THE SAID ITEM. ALL WORK PERFORMED SHALL BE TO THE SATISFACTION OF THE ENGINEER.

THE FOOTAGE TO BE PAID SHALL BE THE ACTUAL NUMBER OF LINEAR FEET OF EXISTING DITCHES CLEANED OUT, AS DIRECTED BY THE ENGINEER. PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR REMOVAL AND DISPOSAL OF MATERIAL FOUND AND FURNISHING OF ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM. SEVERAL DITCHES HAVE ALREADY BEEN DESIGNATED FOR DITCH CLEANOUT. THEIR LOCATIONS AND QUANTITIES ARE LISTED ON SHEET 39. THE FOLLOWING ADDITIONAL QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY AND SHALL BE USED AS DIRECTED BY THE ENGINEER:

ITEM 203 DITCH CLEANOUT 500 LIN.FT.

## EXISTING FLEXIBLE REPAIRS:

THERE ARE EXISTING FLEXIBLE REPAIRS AS DETAILED ON SHEET 34 WITHIN THE PROJECT LIMITS. THE LOCATIONS ARE TABULATED ON SHEET 34. IN MANY INSTANCES THESE REPAIRS ARE DEEPER THAN THE PROPOSED SUBGRADE LEVEL. ADDITIONAL QUANTITIES HAVE BEEN PROVIDED BY ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION FOR THEIR REMOVAL. QUANTITIES HAVE ALSO BEEN PROVIDED BY ITEM 203 EMBANKMENT TO FILL THE RESULTING VOIDS WITH SUITABLE MATERIAL. ALL TRANSVERSE DRAINS SHALL BE REMOVED UNDER ITEM 202 PIPE REMOVED. THE QUANTITIES TO ACCOMPLISH THE ABOVE WORK ARE LISTED ON SHEET 34.

## ITEM 203 EMBANKMENT (EXISTING FLEXIBLE REPAIRS):

THE EXISTING FLEXIBLE REPAIRS ARE TO BE EXCAVATED BELOW THE PROPOSED SUBGRADE LEVEL. (PAYMENT FOR THE EXCAVATION PROCEDURE SHALL BE INCLUDED WITH ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION.) THIS ITEM SHALL BE USED TO BACKFILL THE RESULTING VOIDS WITH A SUITABLE MATERIAL AS PER 203.02. THE MATERIAL SHALL BE COMPACTED AS PER 203.09 AND ANY AREAS INACCESSIBLE TO ROLLERS SHALL BE COMPACTED AS PER SECTION 203.09 (f). THE REQUIRED TESTING SHALL BE PERFORMED SUCH THAT THE COMPACTION REQUIREMENTS OF THE SAID ITEM ARE ACHIEVED. ALL WORK PERFORMED SHALL BE TO THE SATISFACTION OF THE ENGINEER.

THE COST OF FURNISHING ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS SHALL BE INCLUDED WITH THE UNIT BID PRICE FOR ITEM 203 EMBANKMENT. ESTIMATED QUANTITIES ARE ON SHEET 34.

## ITEM SPECIAL PIPE CLEANOUT:

EXISTING CONDUIT WHICH IS TO REMAIN IN PLACE SHALL BE CLEANED OUT AS DIRECTED BY THE ENGINEER. THIS WORK SHALL CONSIST OF THE REMOVAL OF ALL MATERIAL FROM THE INSIDE OF THE EXISTING CONDUIT AND RELATED INLETS OR BASINS. THE MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 203.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS MANUAL.

THE LOCATION AND SIZE OF ALL EXISTING CONDUITS ARE SHOWN AS NEARLY AS THE AVAILABLE INFORMATION WILL PERMIT. THE STATE OF OHIO WILL NOT BE RESPONSIBLE FOR ANY VARIATION IN SIZES ENCOUNTERED DURING CONSTRUCTION. PAYMENT FOR ANY WORK REQUIRED TO DETERMINE EXACT SIZES AND LOCATIONS SHALL BE INCLUDED IN THE PRICE BID PER LINEAR FOOT FOR ITEM SPECIAL PIPE CLEANOUT. THE FOOTAGE TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF LINEAR FEET OF EXISTING CONDUIT CLEANED OUT, AS DIRECTED BY THE ENGINEER. PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR REMOVAL AND DISPOSAL OF MATERIAL FOUND AND FURNISHING OF ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS ITEM. SEVERAL CONDUITS HAVE ALREADY BEEN DESIGNATED FOR PIPE CLEANOUT. THEIR LOCATIONS AND QUANTITIES ARE LISTED ON SHEET 39. THE FOLLOWING ADDITIONAL QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY AND SHALL BE USED AS DIRECTED BY THE ENGINEER:

ITEM SPECIAL PIPE CLEANOUT 250 LIN.FT.

## ITEM SPECIAL - PRESSURE RELIEF JOINT, TYPE A, AS PER PLAN

THIS ITEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING BP-2.3M EXCEPT AS NOTED BELOW:

1) THE PRESSURE RELIEF JOINT, TYPE A, AS PER PLAN SHALL BE INSTALLED AT THE END OF THE APPROACH SLAB RATHER THAN A MINIMUM 10' AWAY. IT SHALL ALSO HAVE THE SAME SKEW AS THE APPROACH SLAB RATHER THAN 12:1 AS SHOWN.

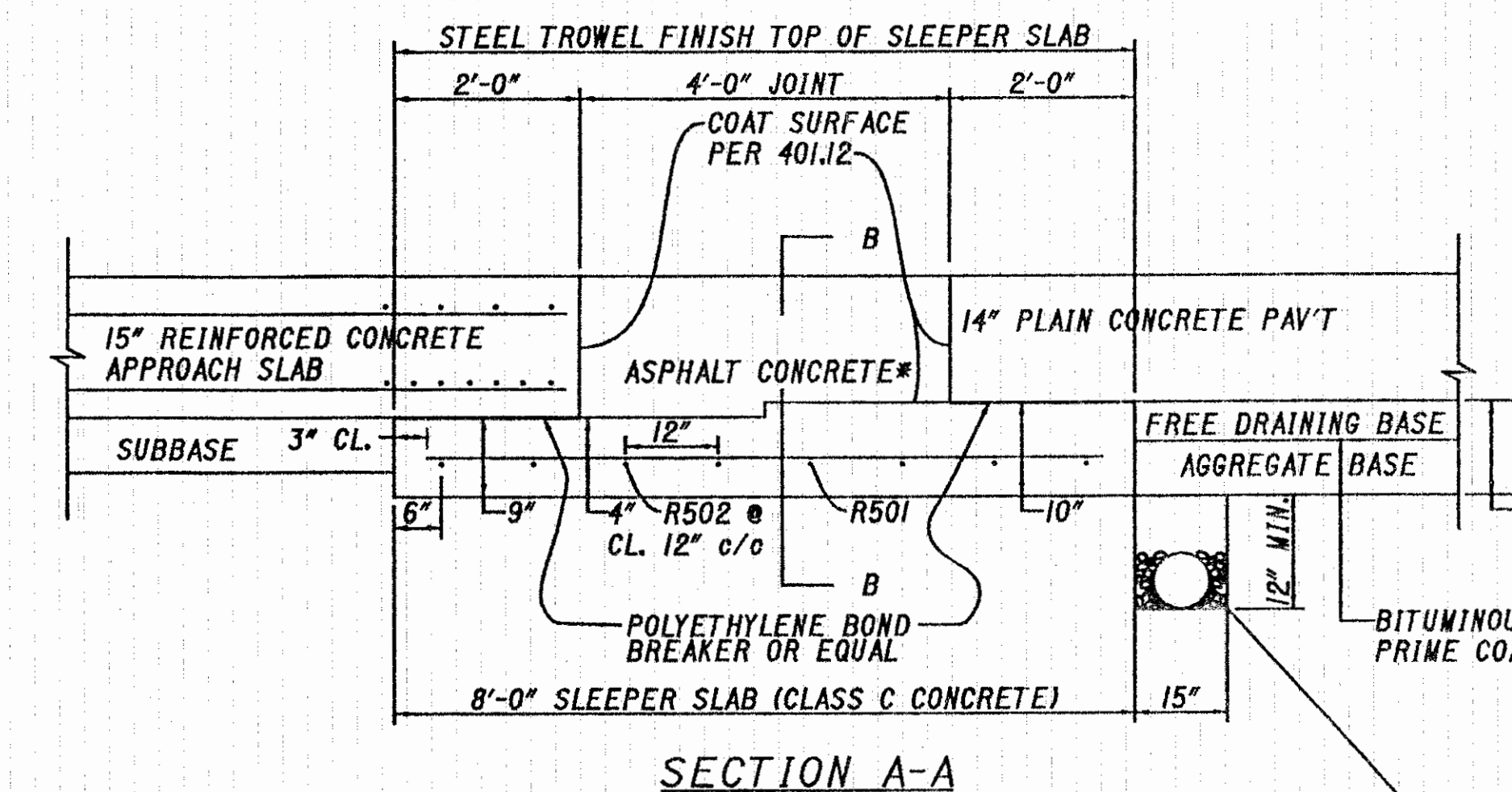
2) THE DETAIL SHOWN BELOW SHALL BE USED IN LIEU OF SECTION A-A AS SHOWN ON STANDARD DRAWING BP-2.3M.

3) OMIT R1503 REINFORCING BARS FROM SLEEPER SLAB.

UNDERDRAINS SHALL BE INSTALLED AS PER STD. DRWG. BP-2.3M AND SHALL BE OUTLETTED INTO A CATCH BASIN, THROUGH THE EMBANKMENT SLOPE OR TIED INTO THE PROPOSED LONGITUDINAL UNDERDRAIN SYSTEM. THE METHOD OF OUTLET SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER. WHEN UNDERDRAINS ARE OUTLET THROUGH THE EMBANKMENT SLOPE, AN ITEM 604 PRECAST REINFORCED CONCRETE OUTLET SHALL BE INSTALLED AS PER THE DETAIL ON STD. DGW. DM-1.1M.

THE FOLLOWING ESTIMATED QUANTITIES ARE INTENDED TO BE USED WITH TYPE A AND TYPE A, AS PER PLAN PRESSURE RELIEF JOINTS (SEE PLAN AND PROFILE SHEETS FOR EXACT LOCATION OF EACH TYPE PRESSURE RELIEF JOINT) AND HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE ABOVE WORK:

ITEM 605 4" SHALLOW PIPE UNDERDRAINS WITH FABRIC WRAP, 707.41, AS PER PLAN 304 LIN. FT.  
 ITEM 604 PRECAST REINFORCED CONCRETE OUTLET 8 EACH  
 ITEM 603 4" CONDUIT, TYPE F 120 LIN. FT.



\* BUILD-UP SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.

4" 605 SHALLOW PIPE UNDERDRAIN, PLACED ALONG UPGRADE SIDE OF SLEEPER SLAB

## ITEM 203 PROOF ROLLING:

AN ESTIMATED QUANTITY FOR THIS ITEM HAS BEEN PROVIDED FOR USE AS DIRECTED BY THE ENGINEER. THE GIVEN QUANTITY WAS BASED ON ONE HOUR OF ROLLER TIME FOR EACH 3000 SQ.YDS. OF ITEM 203 SUBGRADE COMPACTION.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 203 PROOF ROLLING 35 HOURS



COMPLETED BY: KMM DATE: 2/95  
CALCULATED BY: KMM DATE: 2/95  
REVISED BY: KMM DATE: 11/97

# GENERAL NOTES

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

15  
121

MAH-76/80-6.95/0.00

## ITEM 622 CONCRETE BARRIER, TYPE D, AS PER PLAN:

THIS ITEM SHALL BE USED TO CONSTRUCT A MODIFIED VERSION OF THE 14 FOOT LONG TRANSITION SECTION SHOWN ON STANDARD DRAWING RM-4.5M. (ANY EXISTING TRANSITION SECTIONS SHALL BE REMOVED AND PAID FOR SEPERATELY UNDER ITEM 202 CONCRETE BARRIER REMOVED.) THE NEW TRANSITION SECTION SHALL BE CONSTRUCTED PARALLEL TO THE ADJACENT PAVEMENT. DETAILS FOR THIS TRANSITION SECTION ARE ON SHEETS 67-69.

SIX (6) DOWEL HOLES SHALL BE DRILLED, AS PER CMS 510 USING NONSHRINKING, NONMETALLIC GROUT INTO THE EXISTING 40" FULL HEIGHT CONCRETE BARRIER AT THE LOCATIONS SHOWN ON SHEET 68. SIX (6) #5 EPOXY COATED DEFORMED REBARS THAT ARE 3'-11" IN LENGTH (SEE TYPE Y501 ON SHEET 69) AND THAT MEET THE REQUIREMENTS OF CMS 509 SHALL BE USED TO DOWEL THE NEW BARRIER TRANSITION SECTION INTO THE EXISTING 40" FULL HEIGHT CONCRETE BARRIER. ALL REINFORCING STEEL REQUIRED TO CONSTRUCT THE PROPOSED TRANSITION SECTION SHALL BE EPOXY COATED AND SHALL MEET THE REQUIREMENTS OF CMS 509.

THE COST OF FURNISHING AND PLACING OF ALL REINFORCING STEEL AND GROUT, CONSTRUCTING THE DOWEL HOLES, AND ALL OTHER EQUIPMENT, LABOR, TOOLS, MATERIALS, AND INCIDENTALS NEEDED OVER AND ABOVE THE COST OF STANDARD CONCRETE BARRIER, TYPE D TO CONSTRUCT THE ABOVE ITEM SHALL BE INCLUDED IN THE UNIT BID PRICE OF ITEM 622 CONCRETE BARRIER, TYPE D, AS PER PLAN.

## ITEM 202 CONCRETE BARRIER REMOVED:

AT AREAS DESIGNATED IN THE PLANS, THE EXISTING 40' LONG TAPERED END SECTIONS OF CONCRETE BARRIER SHALL BE REMOVED (INCLUDING THE FOOTER) TO ALLOW FOR CONSTRUCTION OF NEW TRANSITION SECTIONS. CARE SHALL BE TAKEN DURING THE REMOVAL OPERATION SO AS TO NOT DAMAGE THE PORTION OF THE CONCRETE BARRIER WHICH IS TO REMAIN. IF DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL MAKE A SAWCUT PRIOR TO BEGINNING THE REMOVAL OPERATION IN ORDER TO INSURE A CLEAN JOINT BETWEEN THE EXISTING AND PROPOSED CONCRETE BARRIER SECTIONS.

## ITEM 659 SEEDING AND MULCHING:

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS AND FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR ITEM 659 SEEDING AND MULCHING, ARE BASED ON SEEDING AND MULCHING THE MEDIAN, THE GRADED OUTSIDE SHOULDERS, THE DITCHES DESIGNATED FOR CLEANOUT UNDER ITEM SPECIAL DITCH CLEANOUT, AND OTHER DISTURBED AREAS WITHIN THE WORK LIMITS AS DIRECTED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 659 SEEDING AND MULCHING 185000 SQ.YD.

## EROSION CONTROL:

ITEM 601 IS PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE SHALL NOT BE REMOVED IN ORDER TO PLACE THIS ITEM. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES OF THIS ITEM WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION. IN ADDITION, THIS ITEM SHALL MEET THE REQUIREMENT OF 108.04.

## ITEM 606 ANCHOR ASSEMBLY, TYPE E:

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING AN ET-2000, OPTION "B", GUARDRAIL END TERMINAL AS MANUFACTURED BY SYRO STEEL COMPANY, 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 330-545-4373).

THE LENGTH OF THE ET-2000 SYSTEM IS CONSIDERED TO BE 50', INCLUSIVE OF TWO 25' LONG RAIL ELEMENTS. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND AT THE LOCATIONS SHOWN IN THE PLANS.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT BID PRICE FOR ITEM 606, EACH, ANCHOR ASSEMBLY, TYPE E AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED HARDWARE, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

THIS ITEM SHALL ALSO INCLUDE FURNISHING AND INSTALLING A REFLECTIVE COVER, AS MANUFACTURED BY SYRO STEEL, ON THE GUARDRAIL EXTRUDER TERMINAL (SEE GUIDELINES PROVIDED BY SYRO STEEL). THE REFLECTIVE COVER SHALL MEET THE APPLICABLE REQUIREMENTS OF CMS 626. ANY ADDITIONAL LABOR, TOOLS, EQUIPMENT, MATERIALS OR INCIDENTALS NECESSARY TO COMPLETE THIS WORK SHALL ALSO BE INCLUDED.

## ITEM 606 GUARDRAIL MISC.: TYPE SRT-350 ANCHOR ASSEMBLY

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING AN SRT-350, GUARDRAIL END TERMINAL AS MANUFACTURED BY SYRO STEEL COMPANY, 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 330-545-4373).

THE LENGTH OF THE SRT-350 SYSTEM IS CONSIDERED TO BE 37.5 FT. INCLUSIVE OF THREE 12.5 FT LONG RAIL ELEMENTS. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND AT THE LOCATIONS SHOWN IN THE PLANS. GRADING SHALL MEET THE REQUIREMENTS OF STANDARD DRAWING GR-4.3M.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT BID PRICE FOR ITEM 606, GUARDRAIL MISC.: TYPE SRT-350 ANCHOR ASSEMBLY, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

## GUARDRAIL REPLACEMENT:

NO HAZARD SHALL BE LEFT UNPROTECTED EXCEPT FOR THE ACTUAL TIME NECESSARY TO REMOVE THE EXISTING GUARDRAIL, PREPARE THE SITE, AND INSTALL NEW GUARDRAIL IN A CONTINUOUS OPERATION. THE REMOVAL OF ALL GUARDRAIL SHALL AT ALL TIMES BE AS DIRECTED BY THE ENGINEER. NO GUARDRAIL SHALL BE REMOVED UNTIL THE REPLACEMENT MATERIAL IS ON THE SITE, READY FOR INSTALLATION. FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL BE DEEMED SUFFICIENT CAUSE TO ORDER WORK SUSPENDED UNTIL SUCH TIME AS THE ENGINEER IS ASSURED OF COMPLIANCE.

ALL POST HOLES OR CAVITIES RESULTING FROM THE REMOVAL OF GUARDRAIL POSTS OR CONCRETE ANCHORS SHALL BE BACKFILLED WITH APPROVED MATERIAL THOROUGHLY COMPACTED IN 4" LIFTS, AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE DONE PRIOR THE INSTALLATION OF ANY PROPOSED BARRIER RUNS.

## ITEM SPECIAL AS-BUILT CONSTRUCTION PLANS:

### PROCEDURE:

THE CONTRACTOR SHALL ARRANGE FOR THE PREPARATION OF AS-BUILT PLANS, UNDER THE DIRECTION OF A PROFESSIONAL ENGINEER (PE) OR PROFESSIONAL SURVEYOR (PS) REGISTERED IN THE STATE OF OHIO. THE PE/PS SHALL BE IDENTIFIED FOR THE APPROVAL OF THE ENGINEER, PRIOR TO BEGINNING WORK ON THE PROJECT. TWO COMPLETE FULL SIZE SETS OF PRINTS WILL BE FURNISHED TO THE CONTRACTOR. ONE SET IS TO BE USED IN THE FIELD TO COLLECT AS-BUILT INFORMATION. THE SECOND SET SHALL REMAIN IN THE FIELD OFFICE AS A FINAL RECORD. DATA FROM THE FIELD SET SHALL BE TRANSCRIBED ONTO THE OFFICE SET AS SOON AS CHANGES ARE MADE.

CHANGES SHALL BE RECORDED AND DATED IN RED INDELIBLE INK (FELT TIPPED PENS AND MARKERS WILL NOT BE PERMITTED) ON THE OFFICE SET. WHERE APPROPRIATE, THE CHANGE OR EXTRA WORK ORDER NUMBER SHALL BE SHOWN ADJACENT TO THE CHANGES. THE PE/PS IN CHARGE OF THE OFFICE SET SHALL CERTIFY THE CORRECTNESS OF THE AS-BUILT PLAN AND, WHEN THE PLAN IS COMPLETED, SHALL SIGN, DATE AND SEAL THE TITLE SHEET OF THE OFFICE PLAN SET.

BOTH SETS OF AS-BUILT PLANS SHALL BE DELIVERED TO THE ENGINEER UPON COMPLETION ON THE WORK. THE ENGINEER WILL COMPARE THE OFFICE SET TO THE FIELD SET TO DETERMINE ACCURACY AND ACCEPTABILITY OF THE FINAL PLAN. ACCEPTANCE OF THESE PLANS IS REQUIRED PRIOR TO THE WORK BEING ACCEPTED AND THE FINAL ESTIMATE BEING APPROVED UNDER 109.09. THE ENGINEER WILL DELIVER THE APPROVED PLANS TO THE DISTRICT PRODUCTION ADMINISTRATOR.

### SCOPE OF PLAN COVERAGE:

THE FOLLOWING SHALL BE SHOWN ON THE AS-BUILT PLANS:

WHICH RESULT IN A CHANGE OF LOCATION, MATERIAL, TYPE OR SIZE OF ANY WORK.

PAVEMENTS, FOUNDATIONS OR OTHER MAJOR OBSTRUCTIONS DISCOVERED AND REMAINING IN PLACE WHICH ARE NOT SHOWN, OR DO NOT CONFORM TO LOCATIONS, OR DEPTHS SHOWN ON THE PLANS. UNDERGROUND FEATURES SHALL BE SHOWN ON THE AS-BUILT PLAN IN TERMS OF STATION, OFFSET AND DEPTH TO THE KNOWN LIMITS OF THE ITEM. AERIAL UTILITIES SHALL BE SHOWN ON THE PLANS IN TERMS OF STATION, OFFSET AND POLE NUMBER.

ITEMS WHICH ALLOW A MATERIAL OPTION UNDER THE SPECIFICATIONS (I.E., CULVERT, CONDUITS).

APPEARING ON THEM, AND EACH SHEET SHALL BE MARKED "REVISED".

### CONTROL OF THE WORK:

THE FIELD PLAN AND OFFICE PLAN SHALL BE AVAILABLE FOR REVIEW BY THE ENGINEER, UPON REQUEST. PAYMENT FOR ALL OF THE ABOVE WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL AS-BUILT CONSTRUCTION PLANS. PAYMENT WILL BE MADE AS FOLLOWS: 25% UPON APPROVAL OF THE CONTRACTOR'S AS-BUILT PLANS, 50% UPON DELIVERY OF BOTH PLANS TO THE ENGINEER AND 25% UPON ACCEPTANCE OF THE PLANS BY THE ENGINEER.



COMPLETED BY: KMM DATE: 2/95  
CALCULATED BY: KMM DATE: 2/95  
REVISED BY: KMM DATE: 11/97

# GENERAL NOTES

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

16  
121

MAH-76/80-6.95/0.00

## 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:

ITEM 207 STRAW OR HAY BALES 25 EACH  
ITEM 207 FILTER FABRIC FENCE 100 LIN. FT. + 4500 LIN. FT.  
ITEM 659 REPAIR SEEDING AND MULCHING 9252 SQ.YD. CHANGE ORDER 8-10-99

## ITEM 203 EMBANKMENT, AS PER PLAN:

AN ESTIMATED QUANTITY OF 125 CU. YDS. OF ITEM 203 EMBANKMENT, AS PER PLAN HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE WITHIN THE PROJECT LIMITS, AS DIRECTED BY THE ENGINEER.

ITEM 203 EMBANKMENT, AS PER PLAN SHALL MEET THE SPECIFICATIONS OF ITEM 203 EXCEPT THAT GRANULAR MATERIAL AS PER 203.02 SHALL BE EXCLUDED. THE METHOD OF MEASUREMENT SHALL BE AS DESCRIBED IN SECTION 203.15 (E) OF THE SPECIFICATIONS.

## ITEM 307 NON-STABILIZED DRAINING BASE:

THE TWO ITEMS BELOW SHALL BE CONSIDERED ALTERNATE BID ITEMS.

DESIGN A: ITEM 307 4" NON-STABILIZED DRAINING BASE, TYPE 'NJ'

DESIGN B: ITEM 307 4" NON-STABILIZED DRAINING BASE, TYPE 'IA'

SEE PROPOSAL NOTE FOR FURTHER DETAILS.

## ITEM 604 REFERENCE MONUMENT, AS PER PLAN

CARE SHALL BE TAKEN NOT TO DAMAGE CENTERLINE REFERENCE MONUMENTS DURING CONSTRUCTION. PARTICULAR CARE SHALL BE TAKEN WHILE CONSTRUCTING AND REMOVING THE PROPOSED MEDIAN CROSS-OVERS NEAR THE CENTERLINE REFERENCE MONUMENTS LOCATED AT STA. 356+00.00, STA. 363+81.77, STA. 466+37.01, STA. 476+34.21 AND STA. 486+78.20. IF IN THE OPINION OF THE ENGINEER ANY OF THE MONUMENTS ARE DAMAGED, THE MONUMENT SHALL BE REMOVED AND REPLACED. REPLACEMENT SHALL BE IN ACCORDANCE WITH ITEM 604 AND STANDARD DRAWING RM-1.I.M. SEE SHEETS 50 AND 57-59 FOR INFORMATION ON RE-ESTABLISHING THE MONUMENTS. RE-ESTABLISHMENT OF REFERENCE OR ELEVATION POINTS SHALL BE DETERMINED BY A LICENSED SURVEYOR. THE NAME OF THE SURVEYOR, HIS REGISTRATION NUMBER, AND A COPY OF THE ACTUAL FIELD NOTES USED IN THE PERFORMANCE OF THIS WORK BEARING THE LICENSED SURVEYOR'S PROFESSIONAL SEAL OR STAMP SHALL BECOME A PERMANENT RECORD FILED IN THE DISTRICT SURVEY OFFICE. ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE OPERATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 604 - REFERENCE MONUMENT, AS PER PLAN.

ITEM 604 - REFERENCE MONUMENT, AS PER PLAN 5 EACH

## CONTINGENCY QUANTITIES:

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK 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 FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

## REMOVAL OF OBSTRUCTIONS:

ALL TRENCHES, HOLES AND PITS RESULTING FROM THE REMOVAL OF OBSTRUCTIONS AS PAID UNDER ITEM 202 SHALL BE BACKFILLED WITH MATERIAL THAT MEETS THE SPECIFICATIONS OF ITEM 203 EXCEPT THAT GRANULAR MATERIAL AS PER 203.02 SHALL BE EXCLUDED. THIS INCLUDES, BUT IS NOT LIMITED TO THE REMOVAL OF GUARDRAIL, CONCRETE BARRIER, PIPE LINES, CURB, AND CONCRETE TRAFFIC ISLANDS. THE COST OF THE LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE ABOVE WORK SHALL BE CONSIDERED PART OF THE BID PRICE FOR EACH ITEM DESIGNATED FOR REMOVAL UNDER ITEM 202. ALL OTHER PERTINENT REQUIREMENTS OF ITEMS 202 AND 203 SHALL BE ADHERED TO.

## JOINT SEALERS:

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

## CONVERSION OF METRIC STANDARD DRAWINGS

THE METRIC STANDARD DRAWINGS REFERENCED IN THIS PLAN SHALL BE CONVERTED TO ENGLISH UNITS USING THE SI (METRIC) TO ENGLISH CONVERSION FACTORS PROVIDED IN SECTION 109.011 OF THE 1997 CONSTRUCTION AND MATERIALS SPECIFICATIONS. THE APPENDIX OF ASTM E 380 SHALL BE UTILIZED FOR ANY ADDITIONAL CONVERSION FACTORS REQUIRED. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL REFLECT STANDARD INDUSTRY ENGLISH VALUES WHERE SUITABLE.

ALL REFERENCES TO STANDARD DRAWING MH-1.I.M SHALL BE CONSIDERED TO READ MH-1 (ENGLISH STANDARD DRAWING).

## ITEM 604 CATCH BASIN GRATE:

AT EXISTING CATCH BASIN LOCATION, THE EXISTING GRATE IS NOT OF PROPER TYPE OR SIZE. THIS GRATE SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH CMS 202.02. THIS ITEM SHALL INCLUDE THE COST OF PROVIDING AND INSTALLING A NEW CATCH BASIN GRATE AS PER STANDARD DRAWING CB-1.I.M. SEE SHEET 39 FOR LOCATION.

## ITEM 623 CONSTRUCTION LAYOUT STAKES, AS PER PLAN

ALL PROVISIONS OF ITEM 623 SHALL APPLY WITH THE FOLLOWING ADDITIONS:

1. AFTER ALL NEW PAVING HAS BEEN COMPLETED, A REGISTERED SURVEYOR SHALL TAKE VERTICAL CLEARANCE MEASUREMENTS AT LOCATIONS INDICATED ON THE APPROVED O.D.O.T. VERTICAL CLEARANCE FORM (AVAILABLE IN THE DISTRICT HIGHWAY MANAGEMENT DEPARTMENT). THESE FINAL MEASUREMENTS SHALL BE RECORDED ON THE FORM AND SUBMITTED TO THE PROJECT ENGINEER AND THE DISTRICT HIGHWAY MANAGEMENT ADMINISTRATOR. THE RECORD SHALL BEAR THE SEAL OF THE LICENSED SURVEYOR WHO HAS TAKEN THE MEASUREMENTS. THE MEASUREMENT SHALL BE TAKEN AT THE FOLLOWING OVERHEAD STRUCTURES:

EAST OHIO GAS LINE @ STA 448+50  
MAH-80-0000 & 0001  
MAH-80-0027

## ITEM 604 MANHOLE COVER:

AT EXISTING MANHOLE LOCATION, THE EXISTING TOP IS NOT OF PROPER TYPE OR SIZE. THIS TOP SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH CMS 202.02. THIS ITEM SHALL INCLUDE THE COST OF PROVIDING AND INSTALLING A NEW MANHOLE COVER AS PER STANDARD DRAWING MH-1. SEE SHEET 39 FOR LOCATION.

## ITEM 606 ANCHOR ASSEMBLY REBUILT, TYPE E:

THIS ITEM SHALL CONSIST OF REBUILDING AN EXISTING ET-2000, OPTION "B", GUARDRAIL END TERMINAL AS MANUFACTURED BY SYRO STEEL COMPANY, 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 330-545-4373).

THE LENGTH OF THE ET-2000 SYSTEM IS CONSIDERED TO BE 50', INCLUSIVE OF TWO EXISTING 25' LONG RAIL ELEMENTS. ALL WORK NECESSARY TO REBUILD THE ANCHOR ASSEMBLY, TYPE E SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION AND AT THE LOCATIONS SHOWN IN THE PLANS.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT BID PRICE FOR ITEM 606, EACH, ANCHOR ASSEMBLY REBUILT, TYPE E AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO REBUILD A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL POSTS AND RELATED HARDWARE, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

THIS ITEM SHALL ALSO INCLUDE FURNISHING AND INSTALLING A REFLECTIVE COVER, AS MANUFACTURED BY SYRO STEEL, ON THE GUARDRAIL EXTRUDER TERMINAL (SEE GUIDELINES PROVIDED BY SYRO STEEL). THE REFLECTIVE COVER SHALL MEET THE APPLICABLE REQUIREMENTS OF CMS 626. ANY ADDITIONAL LABOR, TOOLS, EQUIPMENT, MATERIALS OR INCIDENTALS NECESSARY TO COMPLETE THIS WORK SHALL ALSO BE INCLUDED.



# MAINTENANCE OF TRAFFIC

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

17  
121

MAH-76/80-6.95/0.00

## MAINTENANCE OF TRAFFIC

THIS ITEM SHALL CONSIST OF MAINTENANCE OF TRAFFIC ON EXISTING OR PROPOSED ROADWAYS AND RAMPS IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, CURRENT EDITION LATEST REVISION, THE SPECIFICATIONS AND THE FOLLOWING.

TWO WAY DIRECTIONAL TRAFFIC SHALL BE MAINTAINED ON THE EXISTING PAVEMENT AT ALL TIMES WITHOUT INTERRUPTION DURING CONSTRUCTION OF THE WORK.

AT LEAST ONE 11 FT. LANE OF TRAFFIC IN EACH DIRECTION ON IR76, IR80 AND SR45 SHALL BE OPEN AT ALL TIMES. ONE 11' LANE FOR RAMP TRAFFIC MUST BE MAINTAINED AT ALL TIMES.

PRIOR TO OPENING TO TRAFFIC, EACH LANE SHALL BE IN A SAFE PASSABLE CONDITION, FREE FROM UNEVEN LONGITUDINAL JOINTS. ALL TRANSVERSE JOINTS SHALL EXTEND ACROSS THE FULL LANE AND SHOULDER WIDTH.

IN THE AREAS OF LANE CLOSURES THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING TRAFFIC AS SHOWN ON THE "DROPOFFS IN WORK ZONE" INSERT SHEET.

ONLY DURING OFF-PEAK PERIODS (i.e., ANY PERIOD OTHER THAN 7-9 A.M. AND 4-6 P.M.) SHALL THE CONTRACTOR INSTALL AND SUBSEQUENTLY RESET ALL TRAFFIC CONTROL NECESSARY FOR MAINTAINING TRAFFIC EACH CONSTRUCTION PHASE

THE CONTRACTOR SHALL ERECT, MAINTAIN AND SUBSEQUENTLY REMOVE "ROAD CONSTRUCTION NEXT 0.5 MILES" SIGNS PRIOR TO THE START OF CONSTRUCTION, AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL ALSO INSTALL OW-128-48 SIGNS [ROAD CONSTRUCTION AHEAD] WITH 1, 2 AND 5 MILE PLAQUES ATTACHED. THESE SIGNS SHALL BE PLACED ACCORDING TO THE MILEAGE STATED ON THE PLAQUE ON IR76 AND IR80, AS DIRECTED BY THE ENGINEER. ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614-MAINTAINING TRAFFIC.

CONES SHALL NOT BE ACCEPTABLE TRAFFIC CONTROL DEVICES FOR LANE RESTRICTIONS OR LANE REDUCTIONS THAT ARE IN OPERATION ONE-HALF HOUR AFTER SUNSET OR ONE-HALF HOUR BEFORE SUNRISE. ALL NIGHTTIME LANE RESTRICTIONS OR LANE REDUCTIONS SHALL REQUIRE DRUMS OR BARRICADES AT A MAXIMUM SPACING OF FIFTY (50) FEET.

ALL TRAFFIC CONTROL DEVICES REQUIRED SHALL BE FURNISHED, ERECTED, MAINTAINED, AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR.

THE CONTRACTOR SHALL DESIGNATE AN INDIVIDUAL, OTHER THAN THE SUPERINTENDENT AND SUBJECT TO THE APPROVAL OF THE ENGINEER, TO CONTINUOUSLY INSPECT ALL TRAFFIC CONTROL DEVICES WHENEVER CONSTRUCTION WORK IS BEING PERFORMED WITHIN THE WORK LIMITS OF THE PROJECT. THE DESIGNATED INDIVIDUAL SHALL ALSO INSPECT ALL TRAFFIC CONTROL DEVICES AT THE BEGINNING AND AT THE END OF EACH WORKDAY. THE DESIGNATED INDIVIDUAL OR A QUALIFIED REPRESENTATIVE, SHALL ALSO BE AVAILABLE ON AN AROUND THE CLOCK BASIS TO REPAIR AND/OR REPLACE DAMAGED OR MISSING TRAFFIC CONTROL DEVICES. THESE INDIVIDUALS NAMES AND PHONE NUMBERS SHALL BE GIVEN TO THE PROJECT ENGINEER AT THE PRECONSTRUCTION MEETING. THE DESIGNATED INDIVIDUAL SHALL HAVE NO OTHER CONSTRUCTION RELATED DUTIES. THE TRAFFIC CONTROL INSPECTOR SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC.

THE CONTRACTOR SHALL NOTIFY THE DISTRICT PUBLIC INFORMATION OFFICE (PIO) 330-297-0801 EXT 209 OR 211) 18 DAYS PRIOR TO ANY LANE WIDTH RESTRICTION. THE CONTRACTOR SHALL NOTIFY THE ODOT PIO AT THE PRE-CONSTRUCTION MEETING OF THE DATE WORK WILL BEGIN AND A TENTATIVE WORK SCHEDULE SO THEY PUBLIC CAN BE NOTIFIED. THE CONTRACTOR SHALL NOTIFY THE PIO FIVE (5) DAYS IN ADVANCE OF ANY CONSTRUCTION PHASE CHANGE. THE CONTRACTOR SHALL NOTIFY THE OHIO TURNPIKE COMMISSION (440-234-2081 EXT 287) SEVEN DAYS IN ADVANCE OF ANY PHASE CHANGE.

CHANGE ORDERS #4, #8

## DOUBLED FINES IN WORK ZONE SIGN (R-180)

THE SIGNS POSTED SHALL BE DUAL MOUNTED. THE FIRST SIGN SHALL BE PLACED BETWEEN THE "ROAD CONSTRUCTION AHEAD" (OW-128) SIGN AND THE NEXT SIGN IN THE SEQUENCE. SIGNS SHALL BE ERECTED ON EACH ENTRANCE RAMP AND EVERY TWO MILES THROUGH THE CONSTRUCTION WORK LIMITS.

THE SIGNS SHALL BE FURNISHED, ERECTED AND MAINTAINED IN GOOD CONDITION AND/OR REPLACED AS NECESSARY AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR. SIGNS SHALL BE MOUNTED AT THE APPROPRIATE OFFSETS AND ELEVATIONS AS PRESCRIBED BY THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THEY SHALL BE MAINTAINED ON SUPPORTS MEETING CURRENT SAFETY CRITERIA.

THE SIGNS SHALL BE COVERED OR REMOVED WHEN THE CONSTRUCTION ZONE IS DISCONTINUED FOR 30 DAYS OR MORE.

DOUBLED FINES IN WORK ZONE SIGNS AND SUPPORTS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGN AND NECESSARY SUPPORTS. IF A SIGN AND SUPPORT COMBINATION IS REMOVED AND RE-ERECTED AT ANOTHER LOCATION AS DIRECTED BY THE ENGINEER, IT SHALL BE CONSIDERED ANOTHER UNIT.

PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE, IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR FURNISHING, ERECTION, MAINTENANCE, COVERING DURING SUSPENSION OF WORK, AND REMOVAL OF THE SIGN AND SUPPORT.

ITEM	QTY.	UNIT	DESCRIPTION
614	10	EA	DOUBLED FINES IN WORK ZONE SIGN

## ITEM 615 TEMPORARY PAVEMENTS

ON THIS PROJECT THE TEMPORARY CLASS A PAVEMENT SHALL BE 18 FEET WIDE AND THE ROADWAY WIDTH SHALL NOT BE LESS THEN 22 FEET OUT TO OUT OF SHOULDERS. THE ALIGNMENT AND PAVEMENT TYPICAL SECTION SHALL BE AS DETAILED ON SHEETS 23,24 & 25.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED IN CONSTRUCTING THE TEMPORARY CLASS A PAVEMENT.

ITEM	DESCRIPTION	LUMP SUM
ITEM 615	TEMPORARY ROAD	
ITEM 615	TEMPORARY PAVEMENT, CLASS A	3300 S.Y.

UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL REMOVE THE TEMPORARY PAVEMENT INCLUDING ANY TEMPORARY DRAINAGE FACILITIES. THE AFFECTED EXISTING EARTH MEDIAN AND PAVED SHOULDERS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AS DIRECTED BY THE ENGINEER AND AS PER 615.08.

TEMPORARY PAVEMENTS SHALL NOT BE OPENED TO TRAFFIC UNTIL ALL TEMPORARY TRAFFIC CONTROL DEVICES, SIGNS, PAVEMENT MARKINGS AND PORTABLE CONCRETE BARRIERS HAVE BEEN ERECTED AND APPROVED BY THE ENGINEER.

ALTHOUGH ESTIMATES FOR TEMPORARY EXCAVATION, EMBANKMENT AND TEMPORARY DRAINAGE FACILITIES HAVE BEEN SHOWN ON THE PLAN DETAILS, THESE ITEMS SHALL BE CONSIDERED INCIDENTAL TO, AND INCLUDED WITH PAYMENT FOR LUMP SUM ITEM 615 TEMPORARY ROAD.

## SR 45 MAINTENANCE OF TRAFFIC

DURING THE DEMOLITION OF BRIDGE 076IR&L, TWO-WAY TRAFFIC SHALL BE MAINTAINED AS PER FIGURE C-22 IN THE OMUTCD, LATEST REVISION, NEWEST REVISION. THE GRASS MEDIAN ON SR45 ON EITHER SIDE OF THE BRIDGES SHALL NOT BE PAVED OVER. DURING THE CONSTRUCTION OF THE NEW BRIDGE DECKS THE CONTRACTOR SHALL MAINTAIN TWO 17' WIDE OPENINGS IN THE TEMPORARY PROTECTIVE STRUCTURE IN EACH DIRECTION. EACH OPENING SHALL ACCOMMODATE TWO INSTALLATIONS OF PORTABLE CONCRETE BARRIER, 32", A 1' SHY DISTANCE FROM THE BARRIER AND AN 11' LANE OF TRAFFIC. AN ESTIMATED QUANTITY OF 580 LIN. FT. OF ITEM 622 PORTABLE CONCRETE BARRIER, 32", HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THIS PURPOSE. ALL ENDS OF EACH BARRIER INSTALLATION SHALL INCLUDE A TAPERED END SECTION. THE BARRIER SHALL TAPER AWAY FROM ON-COMING TRAFFIC TO THE OPPOSITE SIDE OF THE GRASS MEDIAN @ A TAPER RATE OF 1:1.



# MAINTENANCE OF TRAFFIC

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

18  
121

MAH-76/80-6.95/0.00

## TEMPORARY PROTECTIVE STRUCTURES

IN ORDER TO PROTECT VEHICULAR TRAFFIC AND PAVEMENTS AGAINST DAMAGE FROM FALLING MATERIAL, DEBRIS AND OTHER DEMOLITION OPERATIONS, WHILE SUPERSTRUCTURE CONCRETE IS BEING REMOVED OR WHILE THE CONTRACTOR IS WORKING OVERHEAD, THE CONTRACTOR SHALL FINISH AND ERECT TEMPORARY PROTECTIVE STRUCTURE UNDER THE SPANS THAT ARE DIRECTLY OVER THE ROADWAY AND SHOULDER AREAS PLUS ENOUGH ADDITIONAL COVERAGE IN THE AREA TO PREVENT ANY FALLING MATERIAL FROM ANY SPAN FROM REACHING THESE AREAS.

IN ADDITION TO THE TEMPORARY PROTECTIVE STRUCTURE, THE CONTRACTOR SHALL PROVIDE PLASTIC SHEETING OR OTHER APPROVED METHODS TO CONTROL WATER USED IN THE SAW CUTTING OPERATION FROM FALLING ON VEHICULAR TRAFFIC.

THE PROTECTIVE STRUCTURES SHALL MEET WITH APPROVAL OF THE ENGINEER. THE FLOORING AND SIDING OF THE STRUCTURES SHALL HAVE NO CRACKS OR OPENINGS THROUGH WHICH MATERIAL PARTICLES MAY FALL. AS A MINIMUM, TWO LAYERS OF 3/4 INCH PLYWOOD WITH LAPPED JOINTS OR AN EQUIVALENT DESIGN SHALL BE PLACED BETWEEN THE LOWER FLANGES OF THE STRUCTURAL STEEL BEAMS ABOVE THE PAVEMENT AND SHOULDERS OF ROADWAYS ON WHICH VEHICULAR TRAFFIC IS BEING MAINTAINED ON THE EXISTING LANES OR BY PARTIAL LANE CLOSURES. THE PROTECTION IN ALL CASES SHALL EXTEND BEYOND THE EXISTING AND/OR NEW EXTERIOR STRUCTURAL BEAMS A SUFFICIENT DISTANCE TO PROTECT UNDER THE EXISTING AND PROPOSED PARAPETS, AND SHALL HAVE SIDE WALLS EXTENDING UP 4' MINIMUM.

SIDEWALLS SHALL BE BRACED SUBSTANTIALLY TO RESIST WIND LOADS. DURING SAW-CUTTING AND DECK REMOVAL OPERATIONS, TEMPORARY SHIELDS ATTACHED TO THE SIDE WALLS AND EXTENDING 1' ABOVE THE TOP OF PARAPET, SHALL BE INSTALLED TO LIMITS AS DIRECTED BY THE ENGINEER. TEMPORARY SHIELDS SHALL BE REMOVED IMMEDIATELY AFTER THEY HAVE SERVED THEIR PURPOSE. DEBRIS SHALL NOT BE PERMITTED TO COLLECT ON THE PROTECTIVE STRUCTURES.

WHEN SUPPORTING THE PROTECTIVE STRUCTURES FROM THE STEEL WORK OF THE BRIDGE(S), ALL CONNECTIONS THERETO SHALL BE MADE BY MEANS OF APPROVED CLAMPS ON BOTH SIDES OF THE BEAM FLANGE. THE DRILLING OF HOLES IN THE STEEL WORK, OR WELDING THERETO, FOR THIS PURPOSE WILL NOT BE PERMITTED. (IN NO INSTANCE SHALL THE UNDERCLEARANCE BE LESS THAN 14.5 FT, FOR STRUCTURE 0761 AND 22 FT FOR STRUCTURE 0701.) THE PROTECTIVE STRUCTURES FOR STRUCTURE 0761 SHALL ALSO MEET THE REQUIREMENTS IN THE NOTE "SR 45 MAINTENANCE OF TRAFFIC".

AFTER THE FALSEWORK, TEMPORARY BRACING AND PROTECTIVE STRUCTURES HAVE SERVED THEIR PURPOSE, AND WHEN SO DIRECTED BY THE ENGINEER, THEY SHALL BE REMOVED. PROTECTIVE STRUCTURES, INCLUDING SIDEWALLS, SHALL NOT BE REMOVED UNTIL THE PARAPETS ARE COMPLETED. ALL MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR AT HIS OWN EXPENSE.

DETAILS OF THE FALSEWORK, TEMPORARY BRACING AND PROTECTIVE STRUCTURES FOR CATCHING BROKEN CONCRETE AND OTHER MATERIALS SHALL BE SUBMITTED, IN QUADRUPEL, TO THE ENGINEER FOR APPROVAL. DETAILS SHALL INCLUDE THE EXISTING AND THE PROPOSED TEMPORARY UNDERCLEARANCES TO THE TRAVELED WAY.

TEMPORARY PROTECTIVE STRUCTURES, SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID FOR MAINTAINING ITEM 614, MAINTAINING TRAFFIC. THIS SHALL BE PAYMENT IN FULL FOR ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK.

## WINTER TRAFFIC LIMITATIONS

ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC BETWEEN NOV. 1, AND APRIL 1 OCT. 31, SHALL BE CONSIDERED TO CONSTITUTE AN INTERIM COMPLETION DATE AND LIQUIDATED DAMAGES IN THE AMOUNT OF \$10,000.00 PER DAY WILL BE ASSESSED FOR EACH CALENDAR DAY THAT THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT. NO POSTPONEMENT OF THE COMPLETION DATE DUE TO WEATHER OR SEASONAL CONDITIONS WILL BE PERMITTED.

## CONTRACTOR'S EQUIPMENT OPERATION AND STORAGE

THE CONTRACTOR'S EQUIPMENT SHALL BE OPERATED IN THE DIRECTION OF TRAFFIC, A QUALIFIED FLAGGER SHALL BE EMPLOYED WHERE THE CONTRACTOR'S EQUIPMENT MUST MERGE WITH THE TRAFFIC STREAM. THE CONTRACTOR'S EQUIPMENT SHALL MERGE IN THE DIRECTION OF TRAFFIC FLOW. THE CONTRACTOR'S EQUIPMENT SHALL BE EQUIPPED WITH AT LEAST ONE AMBER FLASHING LIGHT. THE EQUIPMENT SHALL BE STORED AT A STORAGE AREA, THE LOCATION OF WHICH SHALL HAVE PRIOR APPROVAL OF THE ENGINEER. PAVERS, ROLLERS AND OTHER EQUIPMENT MAY BE PARKED IN AREAS ALONG THE HIGHWAY WHEN PAVING OPERATIONS ARE SCHEDULED TO CONTINUE WITHIN THE NEXT WORKDAY. WHEN PARKING ALONG THE HIGHWAY THE EQUIPMENT SHALL BE PARKED EITHER FIFTY (50) FEET FROM THE EDGE OF PAVEMENT OR SIX (6) FEET BEHIND GUARDRAIL WITH A MINIMUM OF 125 FEET OF GUARDRAIL PRECEDING THE EQUIPMENT. NO EQUIPMENT SHALL BE PARKED IN THE MEDIAN OF THE HIGHWAY. ADEQUATE BARRICADES AND LIGHTS SHALL BE PLACED ON THE PAVEMENT SIDE OF THE EQUIPMENT TO IDENTIFY THE LIMITS OF THE EQUIPMENT. ALL OTHER EQUIPMENT, INCLUDING PRIVATE VEHICLES, SHALL BE STORED AT THE APPROVED CONTRACTOR'S STORAGE AREA.

## 614 WORK ZONE SPEED LIMIT SIGN

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN, COVER DURING SUSPENSION OF WORK, AND REMOVE WORK ZONE SPEED LIMIT SIGNS AND SUPPORTS (R-10-48) (55 MPH) WITHIN THE WORK LIMITS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE CONTRACTOR SHALL COVER OR REMOVE ANY EXISTING SPEED LIMIT OR MINIMUM SPEED SIGNS WITHIN THE REDUCED SPEED ZONE. THESE SIGNS SHALL BE RESTORED DURING SUSPENSION OR TERMINATION OF THE REDUCED SPEED LIMIT. THE EXPENSE OF COVERING OR REMOVAL AND RESTORATION OF EXISTING SPEED LIMIT OR MINIMUM SPEED SIGNS IS INCIDENTAL TO THE PAY ITEM FOR THE WORK ZONE SPEED LIMIT SIGNS.

THE WORK ZONE SPEED LIMIT SIGNS MAY BE ERECTED AND COVERED PRIOR TO STARTING WORK OR MAY BE ERECTED UNCOVERED NO MORE THAN 4 HOURS BEFORE THE ACTUAL START OF WORK. THE SIGNS SHALL BE REMOVED OR COVERED NO LATER THAN 4 HOURS FOLLOWING RESTORATION OF ALL LANES OF TRAFFIC WITH NO RESTRICTIONS OR SOONER AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL ERECT A WORK ZONE SPEED LIMIT SIGN IN ADVANCE OF ANY LANE RESTRICTION EXPECTED TO LAST AT LEAST 30 DAYS OR AS DIRECTED BY THE ENGINEER. THE SIGNS SHALL BE MOUNTED ON BOTH SIDES OF DIVIDED HIGHWAYS, 500 FEET IN ADVANCE OF THE LANE REDUCTION TAPER. THE SIGN SHALL BE MOUNTED ON THE RIGHT SIDE, 250 FEET IN ADVANCE OF THE LANE REDUCTION TAPER ON UN-DIVIDED HIGHWAYS. THE SIGN SHALL BE REPEATED, ON THE SIDE NEAREST TRAFFIC, EVERY 1 MILE FOR 55 MPH ZONES. THESE SIGNS SHALL ALSO BE ERECTED IMMEDIATELY AFTER EACH ENTRANCE RAMP WITHIN THE ZONE. A SIGN TO INDICATE THE RESUMPTION OF THE STATUTORY SPEED LIMIT SHALL BE ERECTED AT THE END OF ANY REDUCED SPEED ZONE. THIS SIGN SHALL BE A R-8 A.

THE CONTRACTOR MAY USE SIGNS AND SUPPORTS IN USED BUT GOOD CONDITION PROVIDED THE SIGNS MEET CURRENT ODOT SPECIFICATIONS. SIGN FACES SHALL BE REFLECTORIZED WITH TYPE G SHEETING COMPLYING WITH THE REQUIREMENTS OF 730.19 AND U.S. DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL SPECIFICATION FOR TYPE III SHEETING, FP-85. WORK ZONE SPEED LIMIT SIGNS SHALL BE MOUNTED ON TWO (2) ITEM 630 GROUND MOUNTED SUPPORTS, NO. 3 POSTS.

WORK ZONE SPEED LIMIT SIGN AND SUPPORTS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGN AND NECESSARY SUPPORTS. IF A SIGN AND SUPPORT COMBINATION IS REMOVED AND REERECTED AT ANOTHER LOCATION WITHIN THE PROJECT DUE TO CHANGES IN THE SPEED ZONE DIRECTED BY THE ENGINEER, IT SHALL BE CONSIDERED ANOTHER UNIT.

PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE, IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR FURNISHING, ERECTION, MAINTENANCE, COVERING DURING SUSPENSION OF WORK, AND REMOVAL OF THE SIGNS AND SUPPORTS.

ITEM	UNIT QTY	DESCRIPTION
614	24 EACH	WORK ZONE SPEED LIMIT SIGN



# MAINTENANCE OF TRAFFIC

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

19  
121

MAH-76/80-6.95/0.00

## TEMPORARY CROSS-OVER LIGHTING SYSTEM

THE TEMPORARY CROSS-OVER LIGHTING SYSTEM SHALL CONSIST OF FURNISHING, ERECTING, OPERATING, MAINTAINING AND REMOVING A TEMPORARY LIGHTING SYSTEM FOR A SINGLE CROSS-OVER OR OVERLAPPING A PAIR OF CROSSEOVERS ON A TWO-WAY, TWO-LANE OPERATION. THE SYSTEM SHALL BE AS SHOWN ON STANDARD CONSTRUCTION DRAWING MT-100.00. THE CONTRACTOR SHALL ARRANGE FOR AND PAY FOR POWER. ALL MATERIALS AND CONSTRUCTION SHALL COMPLY WITH APPLICABLE PORTIONS OF 625 AND 713 EXCEPT; THE PERFORMANCE TEST OF 625.22E, AND WORKING DRAWING REQUIREMENT OF 625.04 ARE WAIVED AND USED MATERIALS APPROVED BY THE PROJECT ENGINEER ARE ACCEPTABLE.

POLES SHALL BE LOCATED NO LESS THAN 30' FROM EDGE OF PAVEMENT OR 6.5' BEHIND THE FACE OF GUARDRAIL. ADDITIONAL POLES, CABLES AND APPURTENANCES NECESSARY TO FURNISH POWER SERVICE TO THE LIGHTING SYSTEM SHALL BE INCLUDED IN THIS ITEM. SERVICE POLES SHALL BE POSITIONED WITH THE SAME MINIMUM CONSTRAINTS AS A LIGHTING POLE.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID FOR EACH TEMPORARY CROSS-OVER LIGHTING SYSTEM INSTALLED WHEN THE CROSSEOVER ROADWAYS ARE USED.

ITEM 614 TEMPORARY CROSSEOVER LIGHTING SYSTEM EACH HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

## ITEM 622 PORTABLE CONCRETE BARRIER, 50",

### AS PER PLAN

THIS WORK SHALL CONSIST OF THE FURNISHING, INSTALLATION, MAINTENANCE AND SUBSEQUENT REMOVAL OF A 50" PORTABLE CONCRETE BARRIER AT THE LOCATIONS SHOWN ON THE PLANS. THE INDIVIDUAL SECTIONS SHALL NOT BE LESS THAN 10' IN LENGTH.

PORTABLE CONCRETE BARRIER, 32" WITH AN 18" MINIMUM HEIGHT GLARE SCREEN MAY BE USED AT THE OPTION OF THE CONTRACTOR. THE PORTABLE CONCRETE BARRIER, 32", SHALL BE CONSTRUCTED USING ONE (1) OF THE FOLLOWING SYSTEMS OR EQUAL APPROVED BY THE ENGINEER.

SYRO GLAREFOIL  
SYRO STEEL INC.  
1170 NORTH STATE STREET  
GIRARD, OHIO 44420  
(330) 545-4373

CARSONITE MODULAR GLARE SCREEN  
CARSONITE INTERNATIONAL  
2900 LOCKHEED WAY  
CARSON CITY, NEVADA 89701  
(702) 883-5104 (800) 648-7974

FORWARD GLARE SCREEN  
PROVEN PRODUCTS, INC.  
7560 S.W. LAVIEW DRIVE  
PORTLAND, OREGON 97219  
(503) 244-9185

PADDLE OR INTERMITTENT TYPE GLARE SCREEN SHALL BE DESIGNED USING A 20 DEGREE CUT-OFF ANGLE BASED ON TANGENT ALIGNMENT. THAT SPACING SHALL BE USED THROUGHOUT THE BARRIER LENGTH WITHOUT REGARD TO THE BARRIER CURVATURE. THE GLARE SCREEN SYSTEM ATTACHED TO THE 32" PORTABLE CONCRETE BARRIER SHALL BE SECURELY FASTENED USING THE HARDWARE AND PROCEDURES SPECIFIED BY THE MANUFACTURER.

PORTABLE CONCRETE BARRIER WHICH HAS BECOME DAMAGED BEYOND REPAIR BY TRAFFIC SHALL BE REPLACED BY THE CONTRACTOR WITHIN TWENTY-FOUR (24) HOURS OF THE INCIDENT WHICH CAUSED THE DAMAGE. REPLACEMENT BARRIER SHALL BE AS PER SECTION 622.04 OF THE SPECIFICATIONS.

PAYMENT SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO PERFORM THE WORK AND SHALL BE PAID FOR AT THE UNIT PRICE BID PER LINEAL FOOT FOR ITEM 622 - PORTABLE CONCRETE BARRIER, 50", AS PER PLAN.

## PORTABLE CONCRETE BARRIER

AN ESTIMATED QUANTITY OF 24240 LIN. FT. OF ITEM 622 PORTABLE CONCRETE BARRIER, 32", AND 2760 LIN. FT. OF ITEM 622 PORTABLE CONCRETE BARRIER, 50", AND 800 LIN. FT. OF ITEM 622 PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED, SHALL BE FURNISHED, INSTALLED, MAINTAINED AND SUBSEQUENTLY REMOVED BY THE CONTRACTOR. SEE STANDARD CONSTRUCTION DRAWINGS FOR ADDITIONAL DETAILS. THE PORTABLE CONCRETE BARRIER, BRIDGE MOUNTED, SHALL NOT BE PINNED TO THE DECK.

THIS ITEM SHALL BE PAID FOR BY THE ACTUAL LINEAL FEET OF ITEM 622 PORTABLE CONCRETE BARRIER (PCB) INSTALLED AT A PARTICULAR LOCATION.

## 614 - BARRIER REFLECTORS AND OBJECT MARKERS

BARRIER REFLECTORS AND OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE CONCRETE BARRIER USED FOR TRAFFIC CONTROL. BARRIER REFLECTORS, OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO PROPOSAL NOTE 642-92 AND ITEM 626 EXCEPT THAT THE SPACING SHALL BE 25 FEET. AN ESTIMATED QUANTITY OF 2184 EACH OF ITEM 614 BARRIER REFLECTOR, TYPE B, AND 2184 EACH OF ITEM 614 OBJECT MARKERS HAVE BEEN PROVIDED AND CARRIED TO THE GENERAL SUMMARY.

## BARRIER REFLECTORS, TYPE B, REPLACEMENT

THE FOLLOWING QUANTITY HAS BEEN INCLUDED IN THE MAINTENANCE OF TRAFFIC SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR REPLACEMENT OF DAMAGED OR MISSING REFLECTORS:

ITEM 614 REPLACEMENT BARRIER REFLECTORS, TYPE B 50 EACH

## SPECIAL REPLACEMENT SIGN

FLAT SHEET SIGNS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT SIGNS SHALL BE NEW. OTHER MATERIALS MAY BE IN USED BUT GOOD CONDITION SUBJECT TO APPROVAL BY THE ENGINEER.

PAYMENT FOR THE NEW SIGNS SHALL BE MADE AT THE BID PRICE PER SQUARE METER FOR "ITEM SPECIAL - REPLACEMENT SIGN" AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF DAMAGED SIGNS, HARDWARE AND SUPPORTS, AND PROVIDING THE NECESSARY REPLACEMENT HARDWARE, SUPPORTS, ETC.

AN ESTIMATED QUANTITY OF 100 SQUARE FEET HAS BEEN PROVIDED IN THE GENERAL SUMMARY.

## ITEM SPECIAL CELLULAR PHONE

THE CONTRACTOR SHALL SUPPLY PORTABLE CELLULAR PHONE COMMUNICATIONS TO THE STATE PERSONNEL FOR COMMUNICATION WITH THE CONTRACTOR'S FIELD CREWS AND OFFICE, AND WITH ODOT PERSONNEL OR FACILITIES. THE PHONES AND ALL RELATED COSTS SHALL BE INCLUDED IN THE CONTRACT BID FOR EACH ITEM SPECIAL CELLULAR PHONE.

ITEM SPECIAL CELLULAR PHONE 2 EACH



# MAINTENANCE OF TRAFFIC

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

20  
121

MAH-76/80-6.95/0.00

## COVERING OF SIGNS

WHERE THE PLANS CALL FOR A PERMANENT SIGN TO BE COVERED, THE CONTRACTOR SHALL DO SO IN SUCH A MANNER SO AS TO AVOID DAMAGING THE PERMANENT SIGN WHEN THE COVER IS REMOVED. THE COVER SHALL BE TOTALLY OPAQUE. THE USE OF ADHESIVE TAPE APPLIED DIRECTLY TO A SIGN FACE IS STRICTLY PROHIBITED.

## ITEM 614 PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN

THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN A CHANGEABLE MESSAGE SIGN AS DESCRIBED IN ITEMS 631 AND 731 AND AS MODIFIED IN THIS NOTE.

THE SIGN SHALL BE CAPABLE OF BEING PROGRAMMED IN THE FIELD TO DISPLAY ANY LEGEND THAT MAY BE NECESSARY. THE SIGN SHALL BE ABLE TO DISPLAY THREE LINES OF LEGEND WITH A MINIMUM OF EIGHT (8) CHARACTERS PER LINE OF LEGEND.

THE SIGN, WHEN ERECTED WITH OUTRIGGERS IN PLACE, SHALL BE CAPABLE OF WITHSTANDING WIND GUSTS OF 80 MPH.

THE SIGN SHALL BE CAPABLE OF BEING POWERED BY EITHER AN ELECTRICAL SERVICE DROP FROM THE LOCAL UTILITY COMPANY OR A TRAILER MOUNTED, PUSH-BUTTON ELECTRICAL START, DIESEL POWERED ELECTRICAL GENERATOR. THE GENERATOR SHALL BE CAPABLE OF AT LEAST THREE DAYS OF CONTINUOUS OPERATION WITHOUT REFILLING EITHER THE FUEL TANK OR OIL RESERVOIR.

THE SIGN SHALL BE MOUNTED ON A TRAILER OF SUFFICIENT SIZE AND STRENGTH.

THE SIGN AND TRAILER SHALL BE ABLE TO WITHSTAND TEMPERATURE RANGES FROM -40 F TO +140 F AND RELATIVE HUMIDITY RANGES FROM 20% TO 100%.

EACH CHARACTER IN EACH LINE OF LEGEND SHALL BE CLEARLY VISIBLE AND LEGIBLE FROM 800 FEET DURING BOTH DAYLIGHT AND NIGHT TIME CONDITIONS.

THE LEGEND SHALL BE CAPABLE OF BEING CHANGED IN THE FIELD USING A TYPEWRITER TYPE KEYBOARD WITH A DISPLAY TO SHOW THE PROPOSED MESSAGES.

PAYMENT FOR THE ABOVE ITEM OF WORK SHALL BE AT THE CONTRACT UNIT PRICE BID FOR EACH ITEM 614 PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN AND SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, SOFTWARE AND INCIDENTALS TO PERFORM THE ABOVE DESCRIBED WORK.

ITEM 614 PORTABLE CHANGEABLE MESSAGE SIGN, UNLIMITED MESSAGE, AS PER PLAN 2 EACH.

## SEQUENCE OF CONSTRUCTION

### MAINLINE

1. PRIOR TO CROSSING TRAFFIC OVER FOR THE EAST BOUND PHASE OF WORK, THE WEST BOUND OUTSIDE SHOULDER SHALL BE RECONSTRUCTED USING ITEM 301 BITUMINOUS AGGREGATE BASE, AS PER PLAN. THIS ITEM SHALL INCLUDE THE REMOVAL OF 6 INCHES OF MATERIAL, AND REPLACING IT WITH 6 INCHES OF ITEM 301. BETWEEN STATIONS 366+49.16 AND 481+50.84. 2200 CU. YDS. OF ITEM 301 BITUMINOUS AGGREGATE BASE, AS PER PLAN HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR THIS PURPOSE. ALL CROSSOVERS ARE TO BE CONSTRUCTED AND THE APPLICABLE MAINTENANCE OF TRAFFIC DEVICES IN PLACE, SEE PAGES 21-27A FOR DETAILS, PRIOR TO CROSSING TRAFFIC OVER.
2. THE EAST BOUND LANES CONSTRUCTED.
3. ALL WORK, EXCEPT THE PERMANENT STRIPING SHALL BE COMPLETED ON THE EAST BOUND LANES PRIOR TO MOVING TRAFFIC OVER ONTO THE NEW PAVEMENT AND BEGINNING WORK ON THE WESTBOUND LANES.
4. THE WEST BOUND LANES CONSTRUCTED.
5. RESTORE THE 4 LANE DIVIDED OPERATION AND REMOVE THE CROSSOVERS.
6. PLACE PERMANENT MARKINGS.

*CHANGE ORDER #9*

*NON PERFORM TYPE 3  
RUMBLE STRIP  
REPLACED WITH  
TYPE 2*

*BI DIRECTIONAL TRAFFIC  
CANT USE TYPE 3  
SEE D.O. #9*

## CO-OPERATION BETWEEN CONTRACTORS

THE CONTRACTOR SHALL BE ADVISED THAT OTHER PROJECTS MAY BE ONGOING IN AREAS IMMEDIATELY ADJACENT TO AND WITHIN THE PROJECTS LIMITS OF THIS PROJECT. THE CONTRACTOR SHALL SCHEDULE HIS WORK SO AS TO CAUSE A MINIMUM OF DELAY OR CONFLICT WITH THE OTHER PROJECT OR PROJECTS. IN ACCORDANCE WITH 106.07 THE CONTRACTOR SHALL ARRANGE WITH THE OTHER CONTRACTORS, A MUTUALLY ACCEPTABLE WORK SCHEDULE, SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL RECEIVE DAILY APPROVAL FROM THE ENGINEER PRIOR TO COMMENCING ANY OPERATION. ANY CONFLICT BETWEEN CONTRACTORS INVOLVING WORK SCHEDULES, WORK AND/OR CO-OPERATION SHALL BE RESOLVED BY THE ENGINEER. COMPENSATION FOR THE ABOVE CO-OPERATION SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS INCLUDED WITHIN THIS PROJECT.

## ITEM 614 LAW ENFORCEMENT OFFICER (WITH PATROL CAR)

IN ADDITION TO THE REQUIREMENTS OF 614 AND THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD), A UNIFORMED LAW ENFORCEMENT OFFICER (AND OFFICIAL PATROL CAR WITH WORKING TOP MOUNTED EMERGENCY FLASHING LIGHTS) SHALL BE PROVIDED FOR CONTROLLING TRAFFIC FOR THE FOLLOWING TASKS.

FOR LANE CLOSURES: DURING INITIAL SET-UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED.

DURING ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.

LAW ENFORCEMENT OFFICERS (LEO'S) SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED. THE LEO'S ARE CONSIDERED TO BE EMPLOYED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTIONS. ALTHOUGH THEY ARE EMPLOYED BY THE CONTRACTOR, THE PROJECT ENGINEER SHALL HAVE CONTROL OVER THEIR PLACEMENT. THE OFFICIAL PATROL CAR SHALL BE A PUBLIC SAFETY VEHICLE AS REQUIRED BY THE OHIO REVISED CODE.

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES:

THE OHIO HIGHWAY PATROL  
660 EAST MAIN STREET  
COLUMBUS, OHIO (614) 466-2300

LAW ENFORCEMENT OFFICERS (WITH PATROL CAR) REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614 LAW ENFORCEMENT OFFICER (WITH PATROL CAR). THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 614 LAW ENFORCEMENT OFFICER WITH PATROL CAR 200 HOURS

THE HOURS PAID SHALL INCLUDE MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

IF THE CONTRACTOR WISHES TO UTILIZE LEO'S FOR FLAGGING AND TRAFFIC CONTROL OTHER THAN FOR THAT REQUIRED IN THESE PLANS, HE MAY DO SO AT HIS OWN EXPENSE. PAYMENT FOR THE EXCESS ABOVE THE CONTRACT REQUIREMENTS WILL BE INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC.

## METHOD OF PAYMENT

PAYMENT FOR THE MAINTENANCE OF TRAFFIC ITEMS, UNLESS SPECIFIED SEPARATELY, SHALL BE AT THE LUMP SUM PRICE BID FOR ITEM 614 MAINTAINING TRAFFIC, WHICH SHALL INCLUDE ALL LABOR, EQUIPMENT AND INCIDENTALS TO COMPLETE THE WORK AS DETAILED IN THE PLANS.







# W.B PHASE

END PROJECT  
483+54.46

NOTE:  
THE CONTRACTOR MUST MAINTAIN  
ONE 11' LANE FOR RAMP TRAFFIC  
AT ALL TIMES

EXIT  
←

TEMPORARY  
CHANNELIZING  
LINE FROM STA  
487+75 TO 492+00

MAH-76/80-6.95/0.00

P.C. STA. 456+83.98 LINE "A" =  
STA. 463+15.71 BEGIN LINE "B"

S.L.M. 8.65 I-76  
STA. 455+24.82 I.R.76 =  
STA. 118+74.19 OHIO TURNPIKE  
S.L.M. 0.00 I-80

END WORK  
STA. 463+50  
RAMP "E"

STA. 458+33.24 I.R.80 9' LT. =  
STA. 458+33.24 RAMP "E"

NOTE:  
THE CONTRACTOR MUST MAINTAIN  
ONE 11' LANE FOR RAMP TRAFFIC  
AT ALL TIMES

EB TRAFFIC SHIFTED  
AS PER MT-102.20

STA. 469+59.41 I.R.80 =  
STA. 464+90.60 LINE "A"

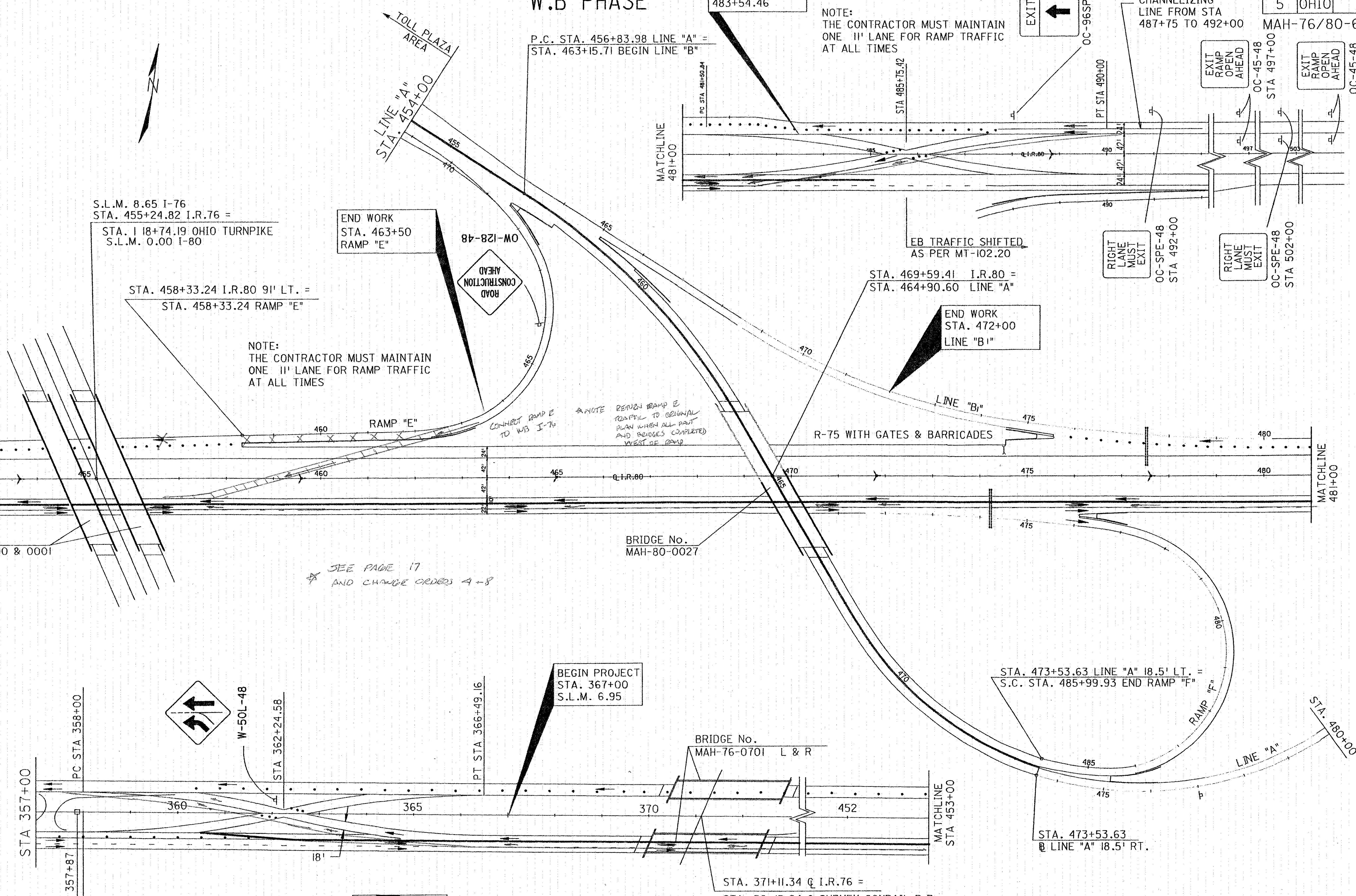
END WORK  
STA. 472+00  
LINE "B"

RIGHT  
LANE  
MUST  
EXIT  
OC-SPE-48  
STA 492+00

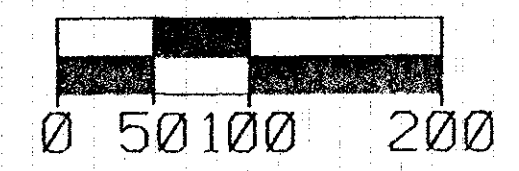
RIGHT  
LANE  
MUST  
EXIT  
OC-SPE-48  
STA 502+00

EXIT  
RAMP  
OPEN  
AHEAD  
OC-45-48  
STA 497+00

EXIT  
RAMP  
OPEN  
AHEAD  
OC-45-48  
STA 507+00



EB TRAFFIC SHIFTED  
AS PER MT-102.20



SEE MT-95.70 AND MT-100.00 FOR DETAILS



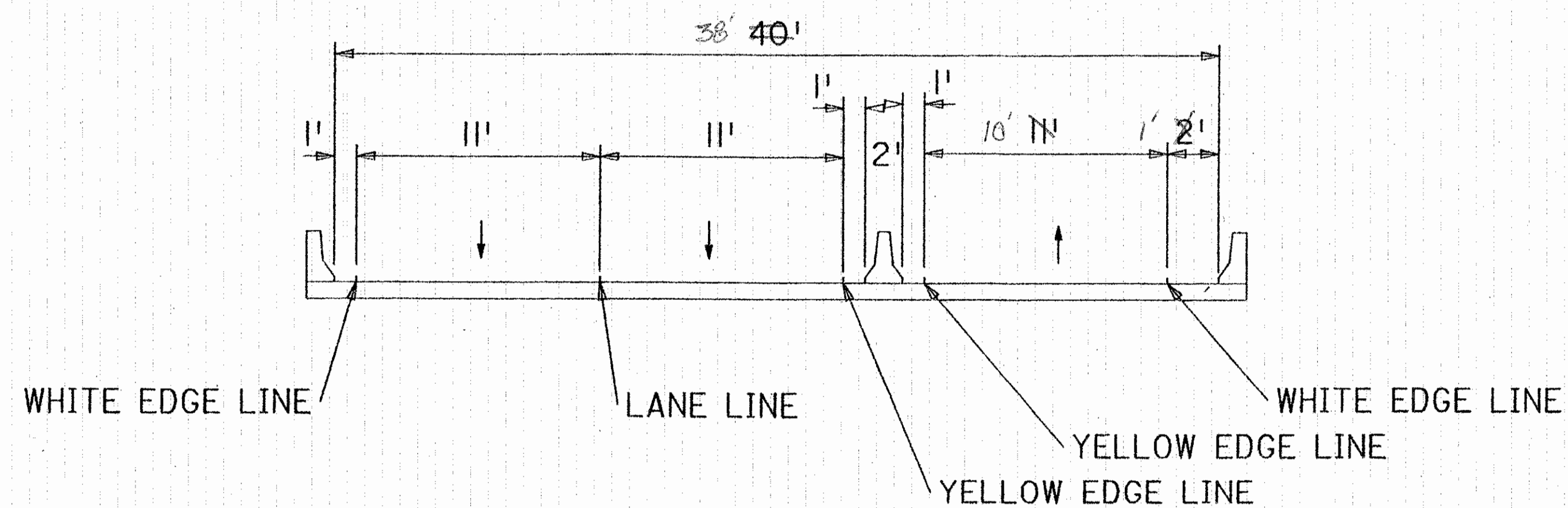
F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

22A  
121

MAH-76/80-6.95/0.00

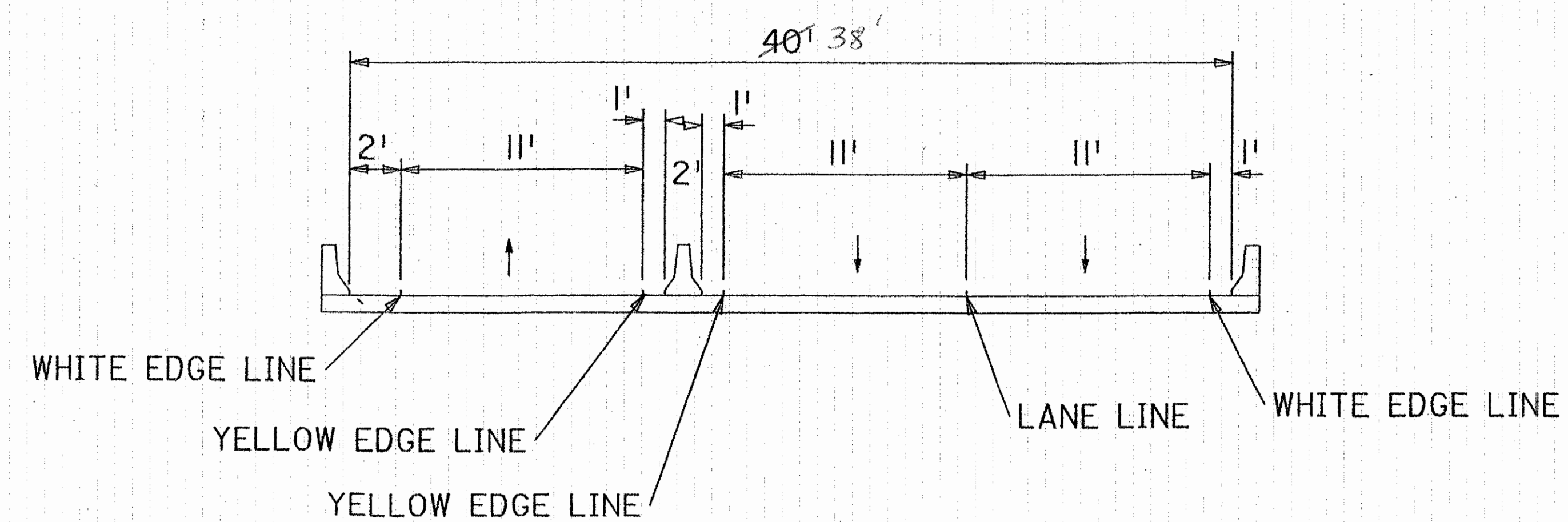
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BRIDGE-76-0701 LT

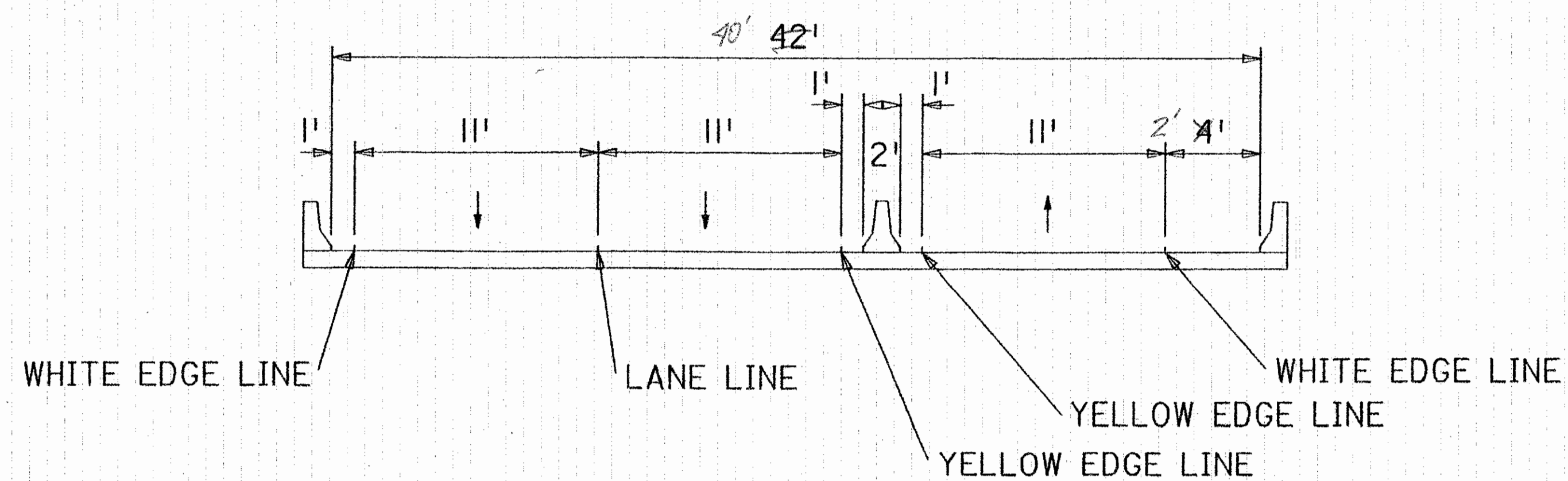


PHASE 3

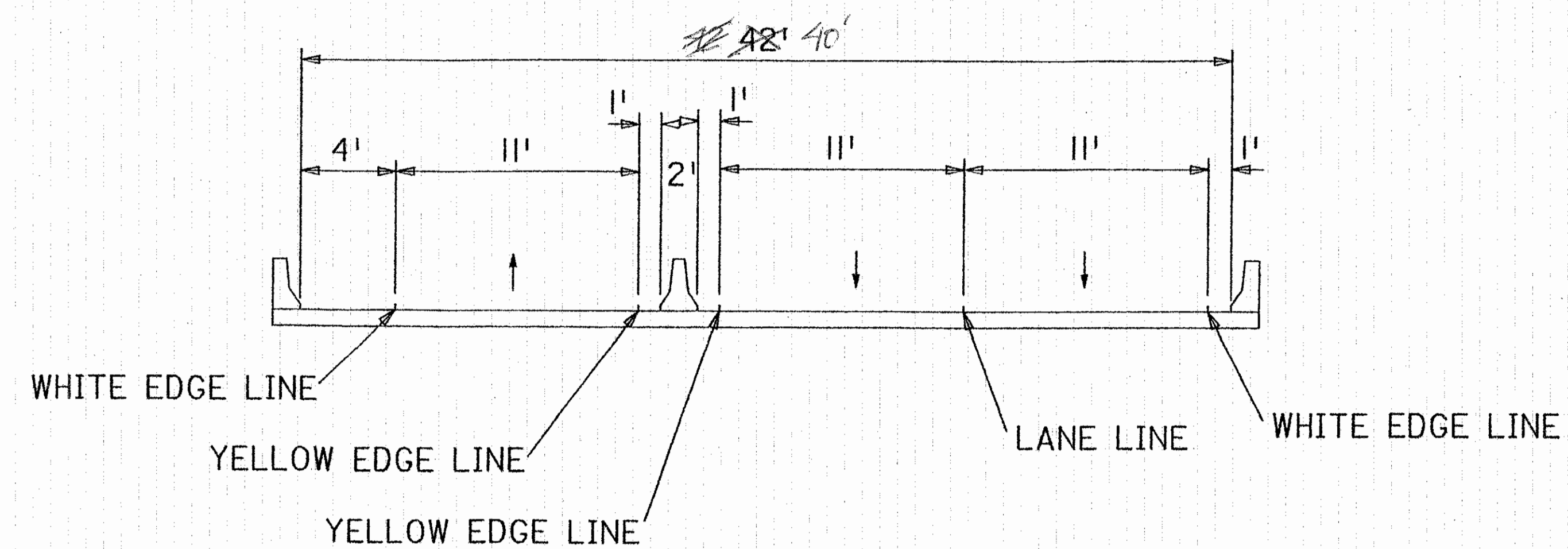
BRIDGE-76-0701 RT



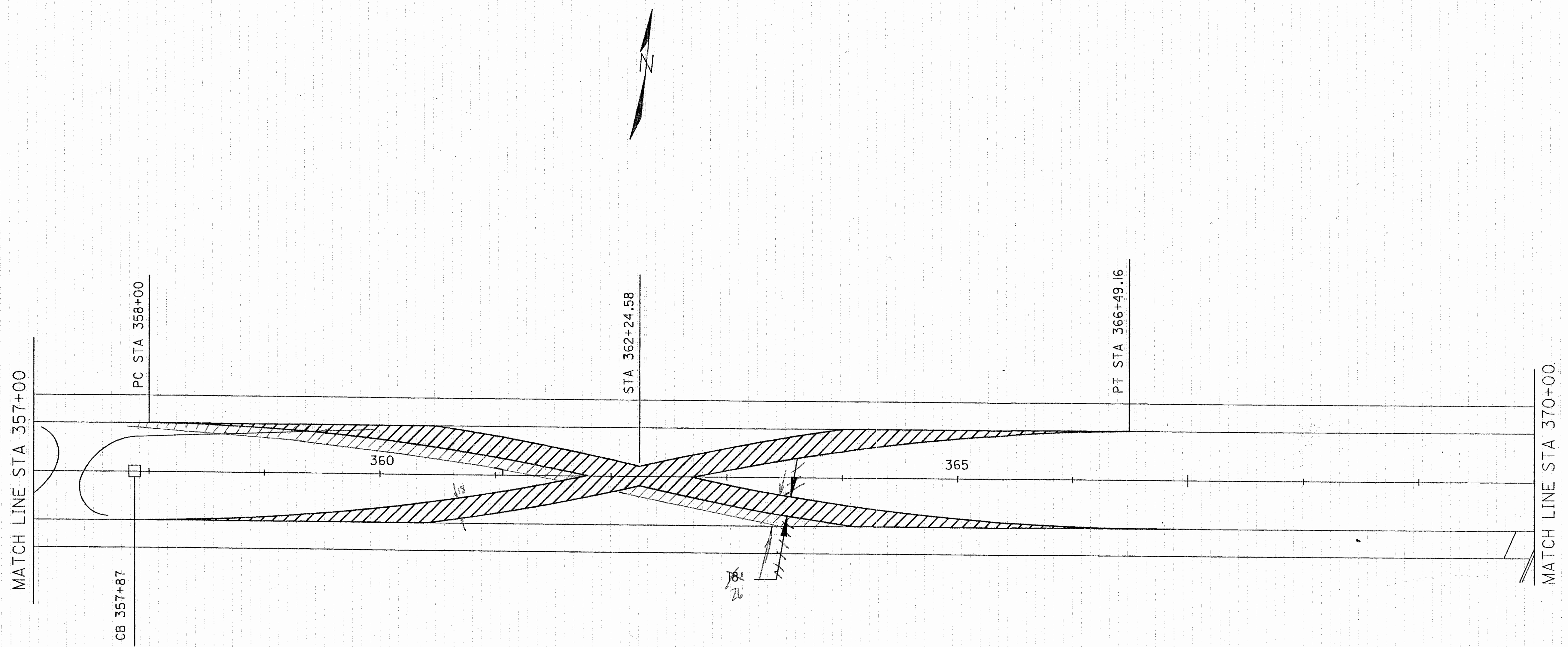
BRIDGE-76-0761 LT



BRIDGE-76-0761 RT

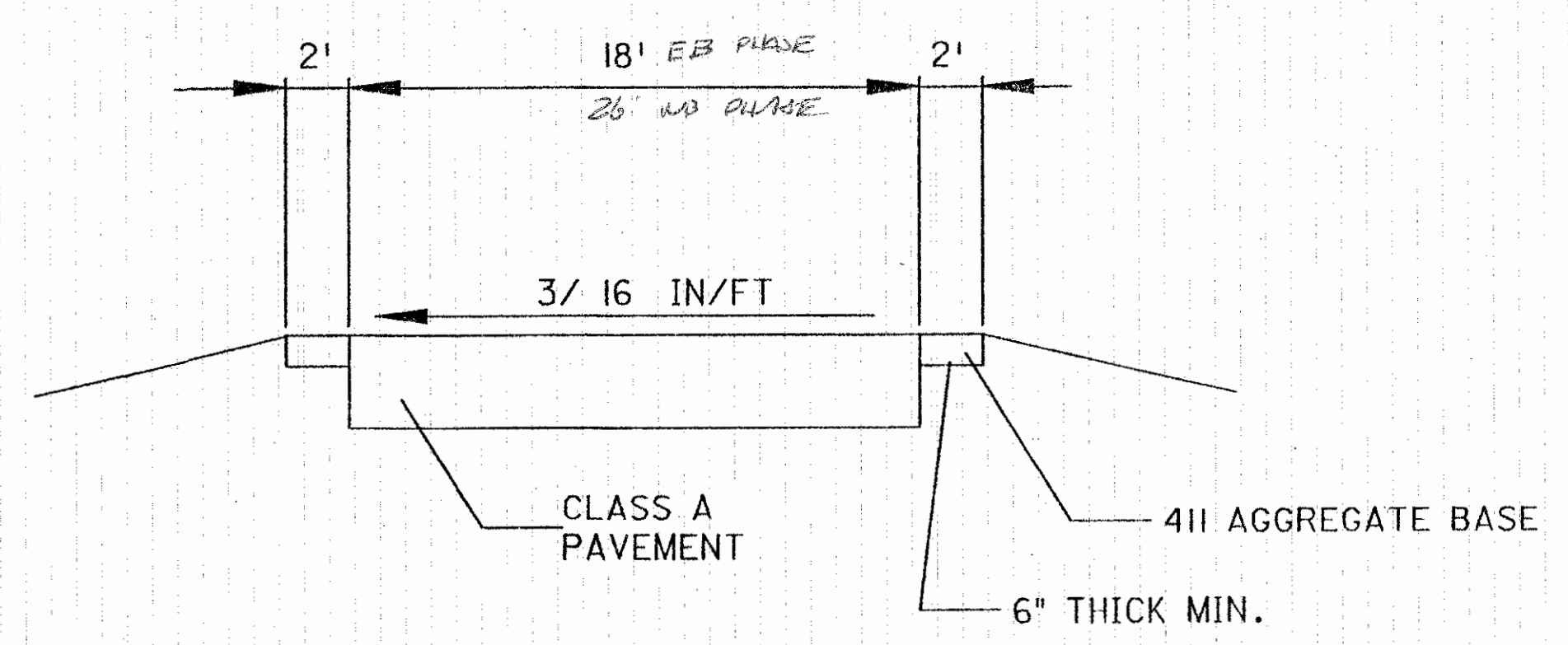
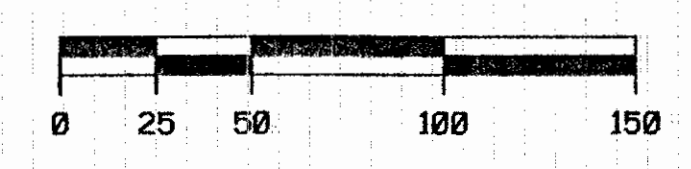
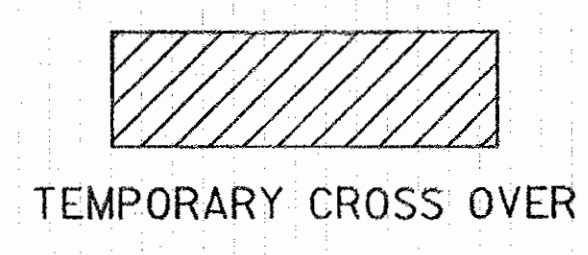






CURVE DATA FOR TEMPORARY PAVEMENT (CROSS OVER)

$\Delta = 12^\circ 44' 15''$   
 $D_c = 3^\circ 00' 00''$   
 $R = 1909.86'$   
 $L = 424.58'$   
 $T = 213.17'$   
 $E = 11.86'$



SEE MT-95.70 AND MT-100.00 FOR DETAILS

BEGIN SHEET 357+00 TO STA 373+00

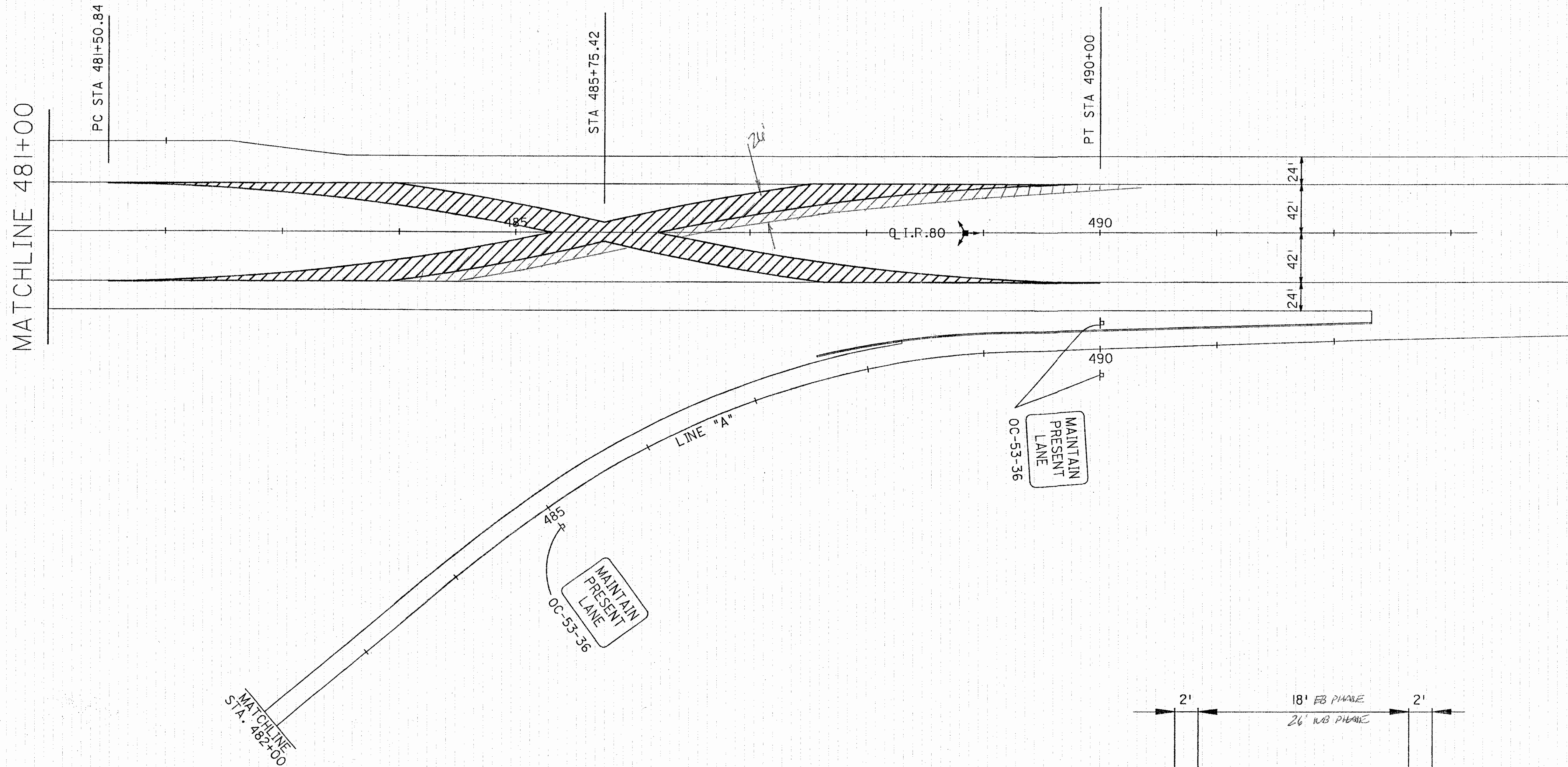


NOTE: EXTRA CARE SHOULD BE TAKEN WHEN CONSTRUCTING THE CROSSOVER AT THE MEDIAN SO THAT THE EXISTING ELECTRICAL CONDUIT IS NOT DAMAGED.

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

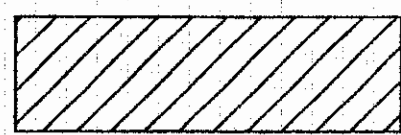
24  
121

MAH-76/80-6.95/0.00

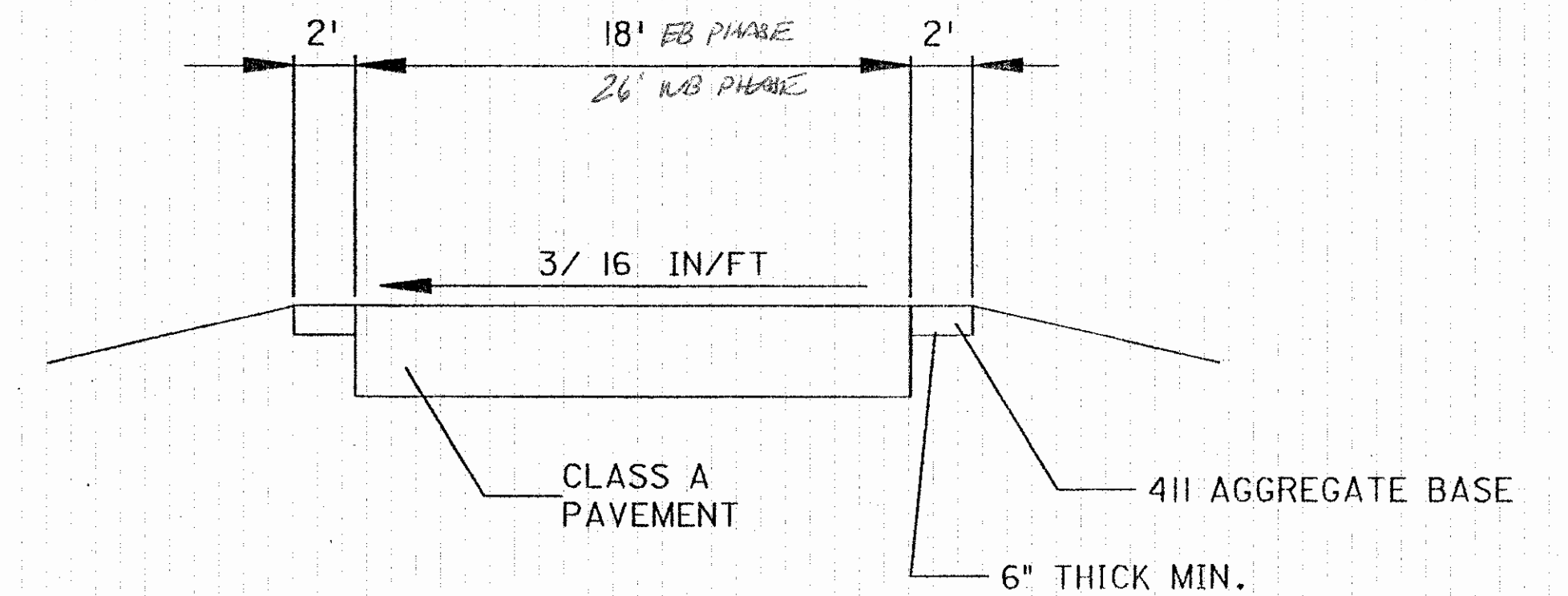


CURVE DATA FOR TEMPORARY PAVEMENT (CROSS OVER)

$\Delta$  = 12° 44' 15"  
 $D_c$  = 3° 00' 00"  
 $R$  = 1909.86'  
 $L$  = 424.58'  
 $T$  = 213.17'  
 $E$  = 11.86'



TEMPORARY CROSS OVER



SEE MT-95.70 FOR DETAILS

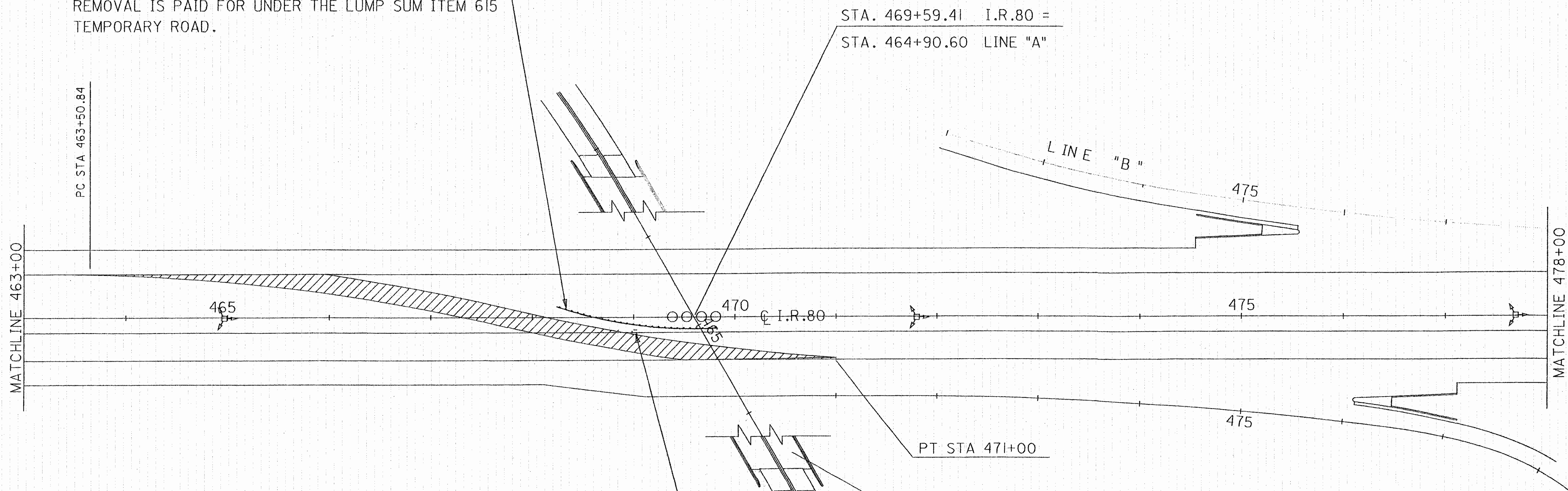


NOTE: EXTRA CARE SHOULD BE TAKEN WHEN CONSTRUCTING THE CROSSOVER AT THE MEDIAN SO THAT THE EXISTING ELECTRICAL CONDUIT IS NOT DAMAGED.

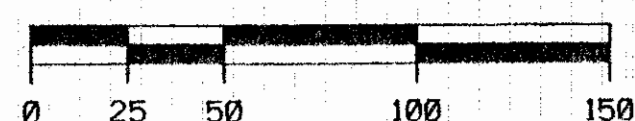
*\* NOT APPLICABLE*

*SEE PG 21/121*

ATTACH TEMPORARY GUARDRAIL, 150', WITH TYPE E AND TYPE T ENDS. THE ERECTION, MAINTENANCE AND REMOVAL IS PAID FOR UNDER THE LUMP SUM ITEM 615 TEMPORARY ROAD.

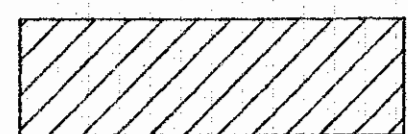


THE CONTRACTOR SHALL REMOVE THE GRATE ON THE EXISTING CATCH BASIN AND PLACE A STEEL PLATE OVER THE OPENING BEFORE CONSTRUCTING THE CROSSOVER. WHEN THE CROSSOVER IS REMOVED, THE CONTRACTOR SHALL REPLACE THE GRATE AT THE SAME ORIENTATION AND ELEVATION. ALL COSTS ASSOCIATED WITH THE REMOVAL AND REPLACEMENT OF THE GRATE SHALL BE PAID FOR UNDER THE LUMP SUM ITEM 615 TEMPORARY ROAD.

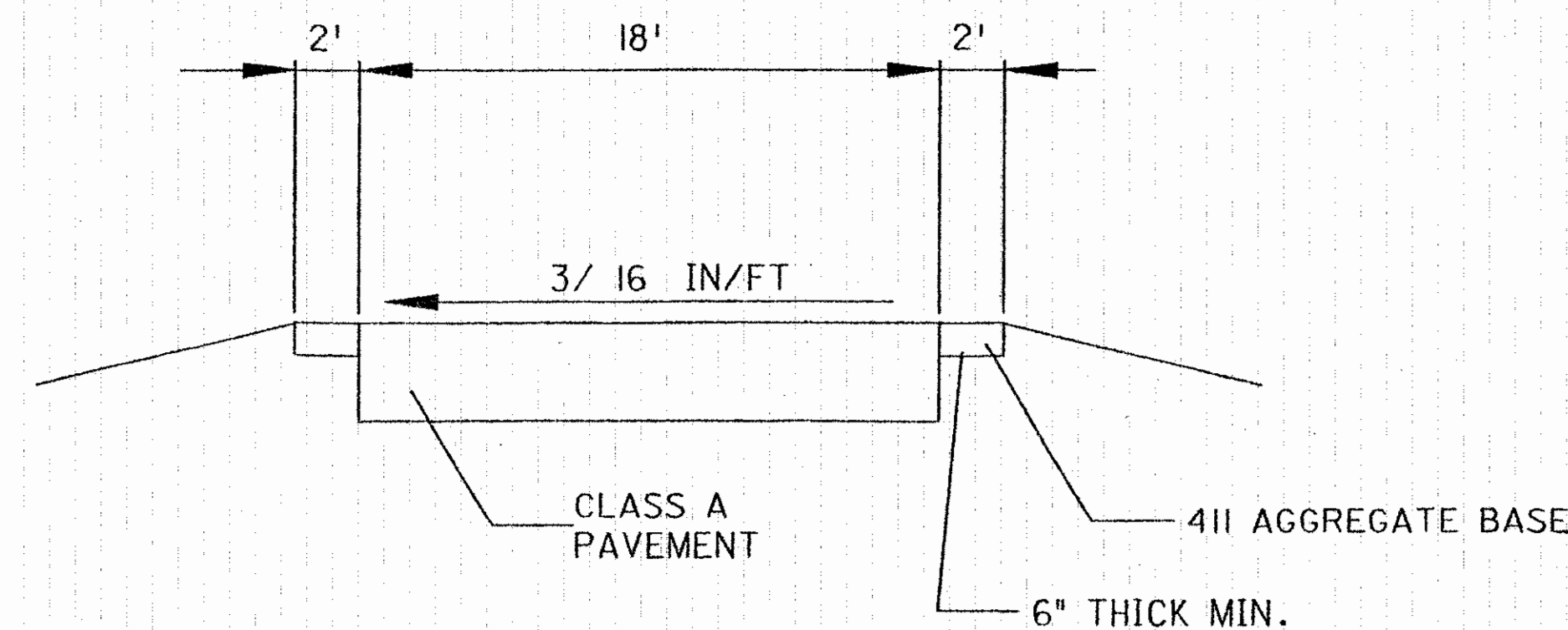


CURVE DATA FOR TEMPORARY PAVEMENT (CROSS OVER)

$\Delta = 12^\circ 44' 15''$   
 $D_c = 3^\circ 00' 00''$   
 $R = 1909.86'$   
 $L = 424.58'$   
 $T = 213.17'$   
 $E = 11.86'$



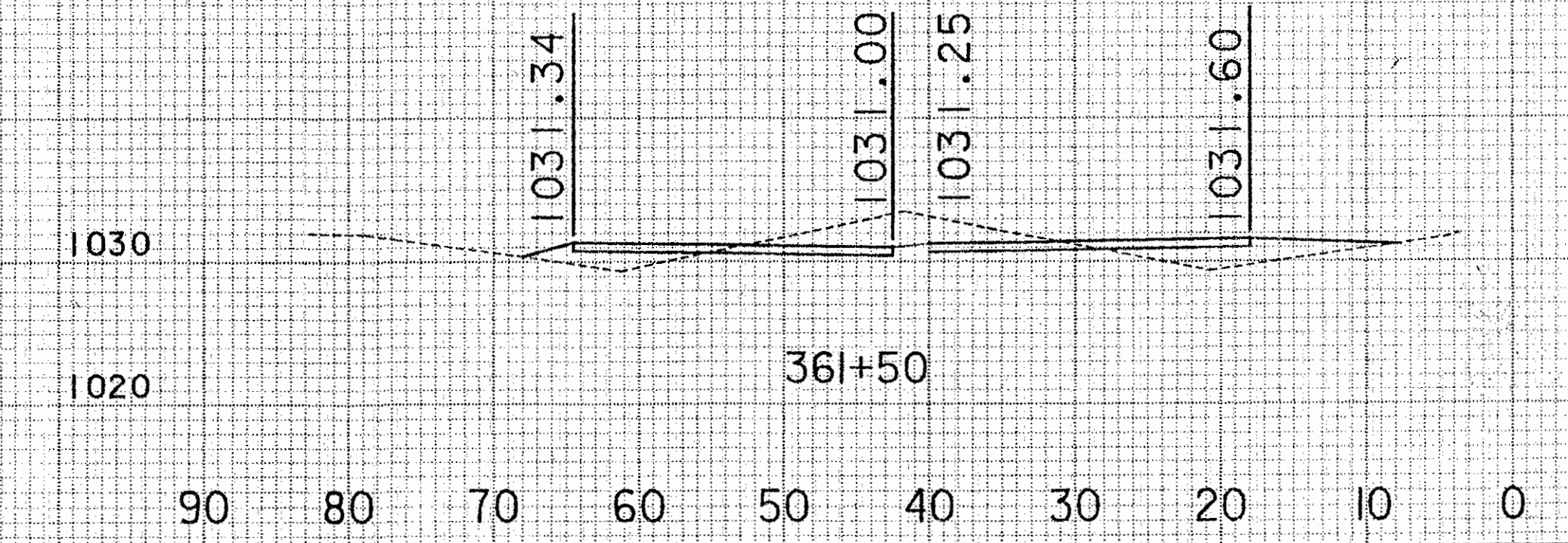
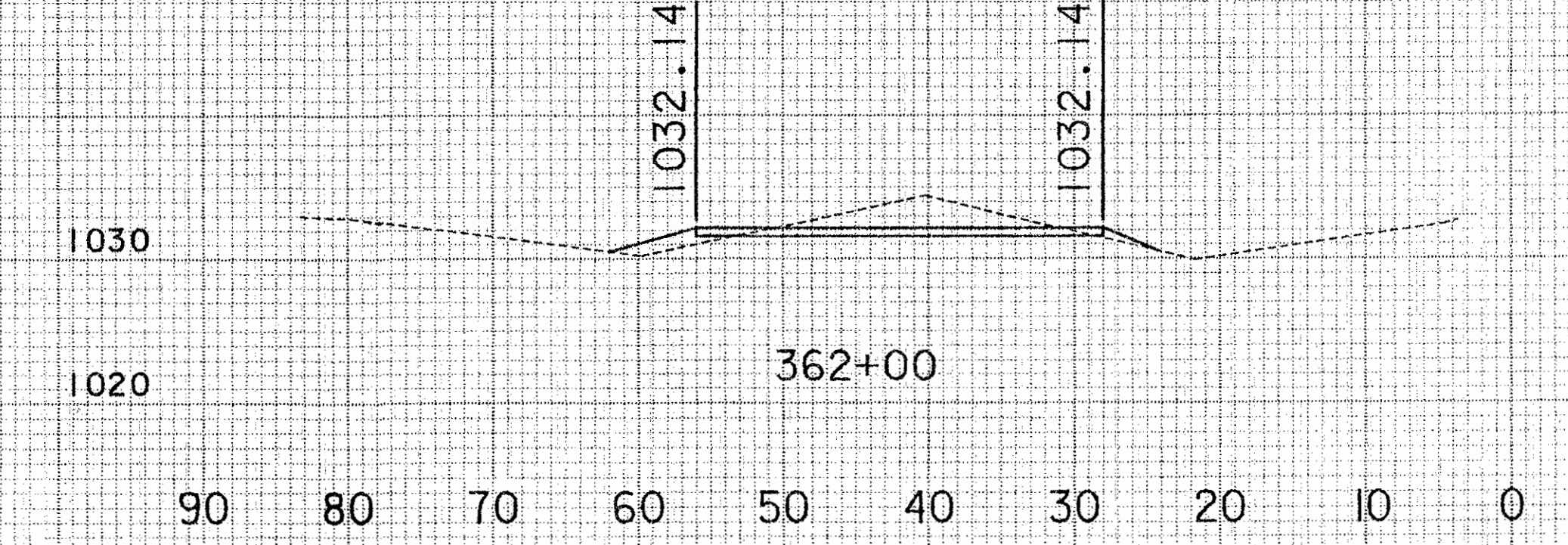
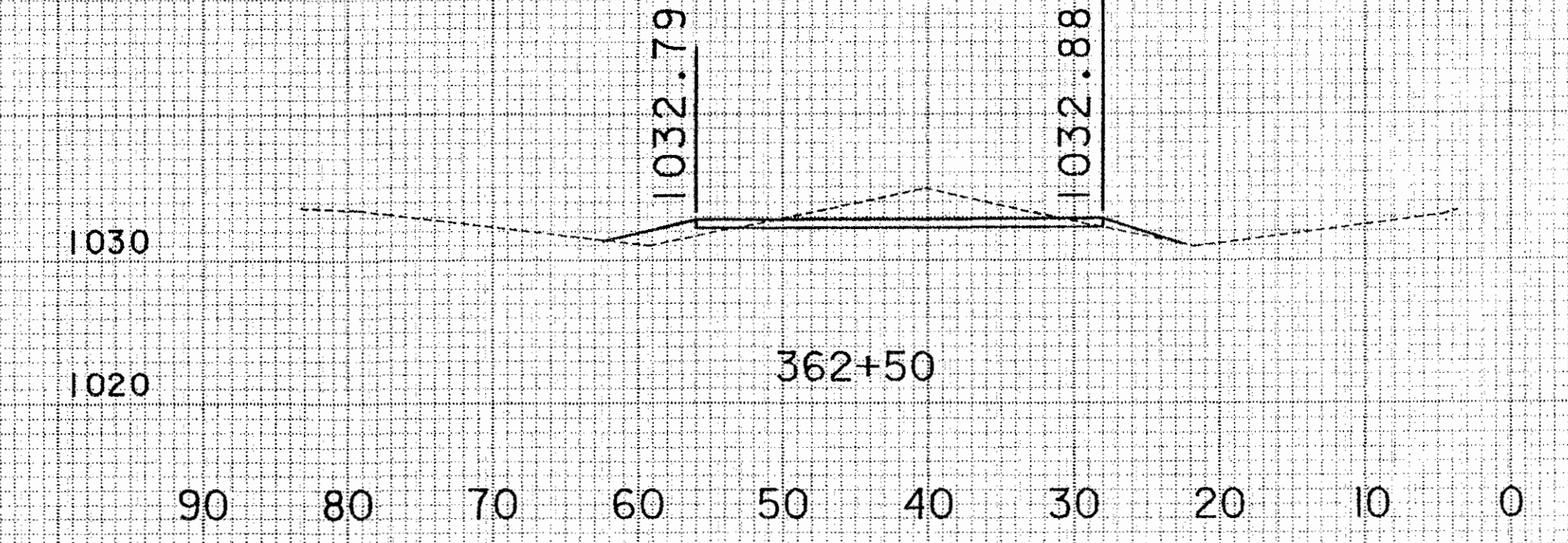
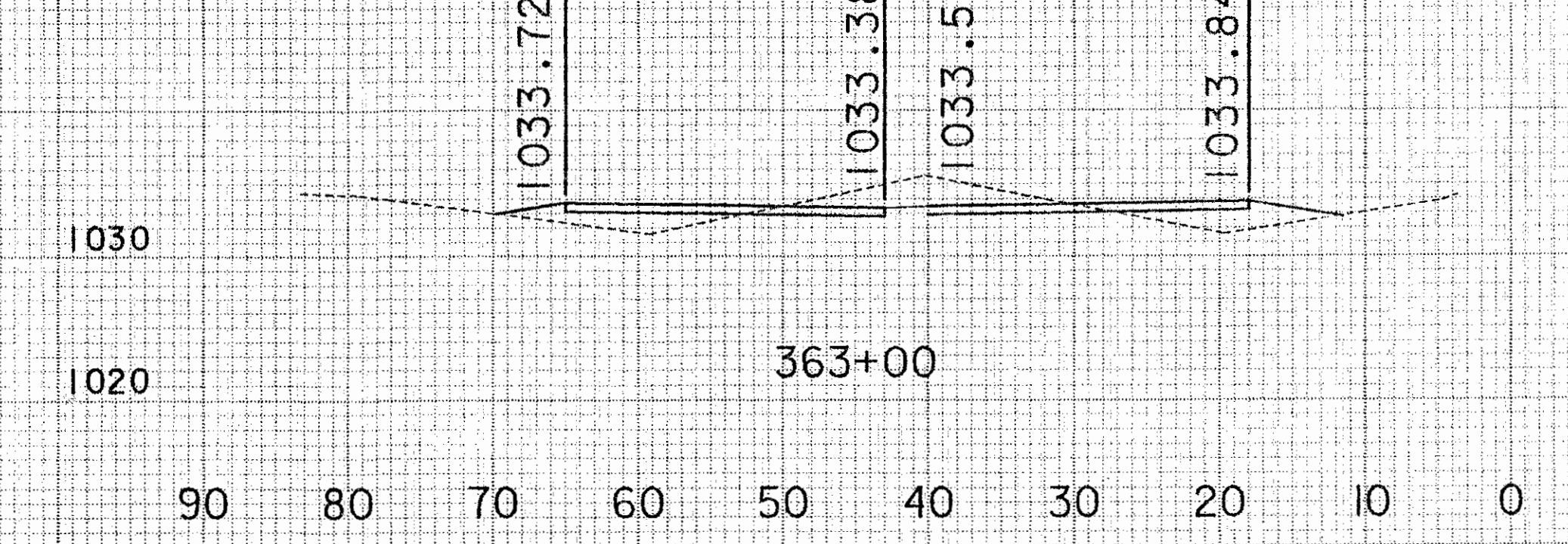
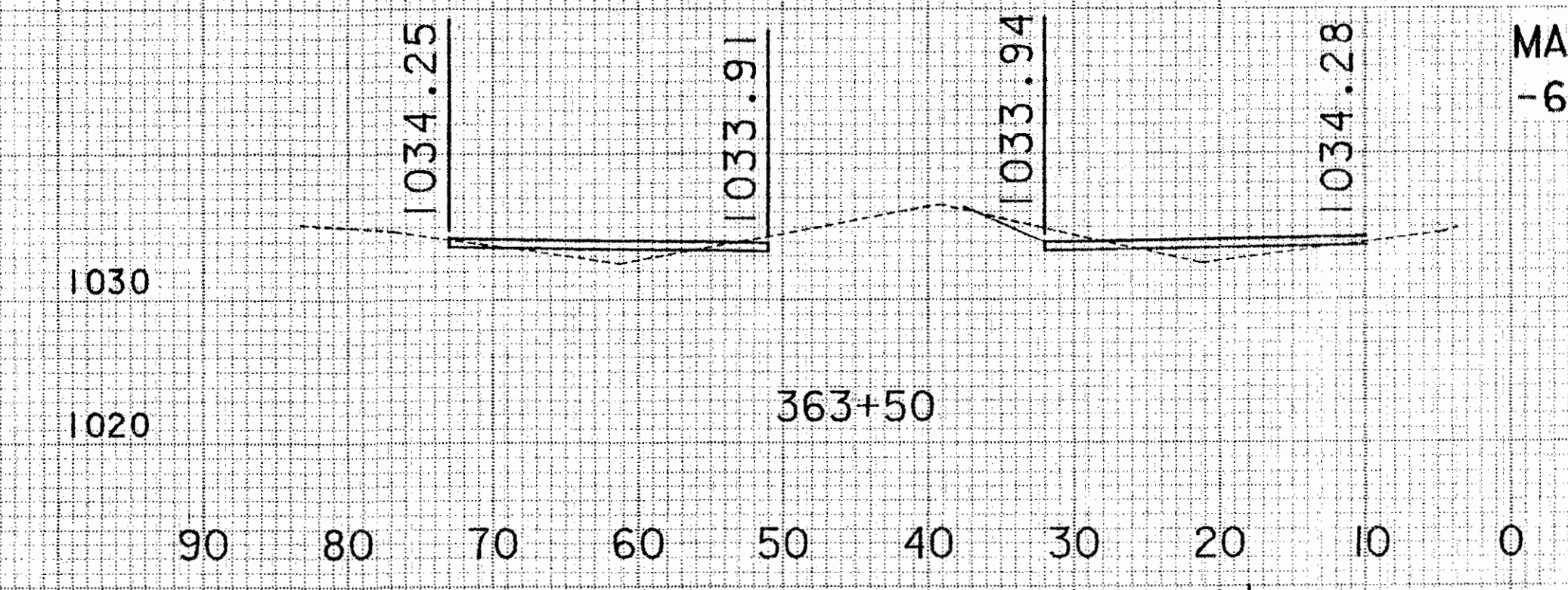
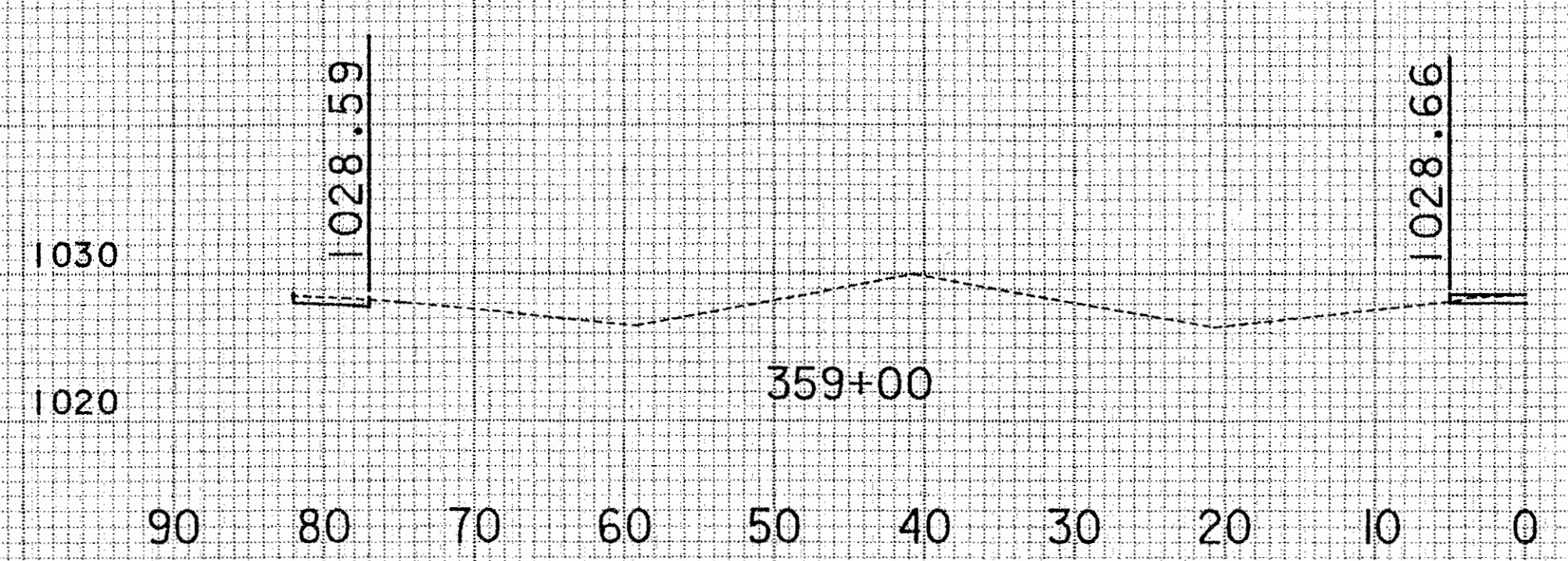
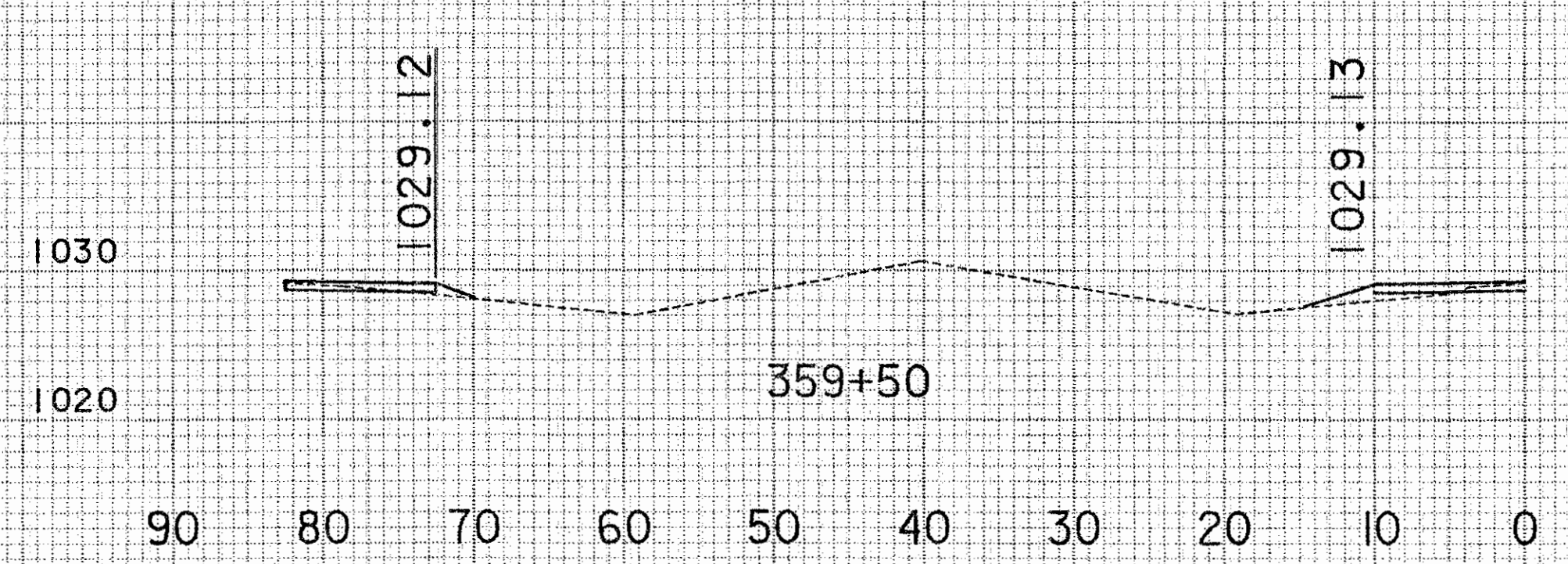
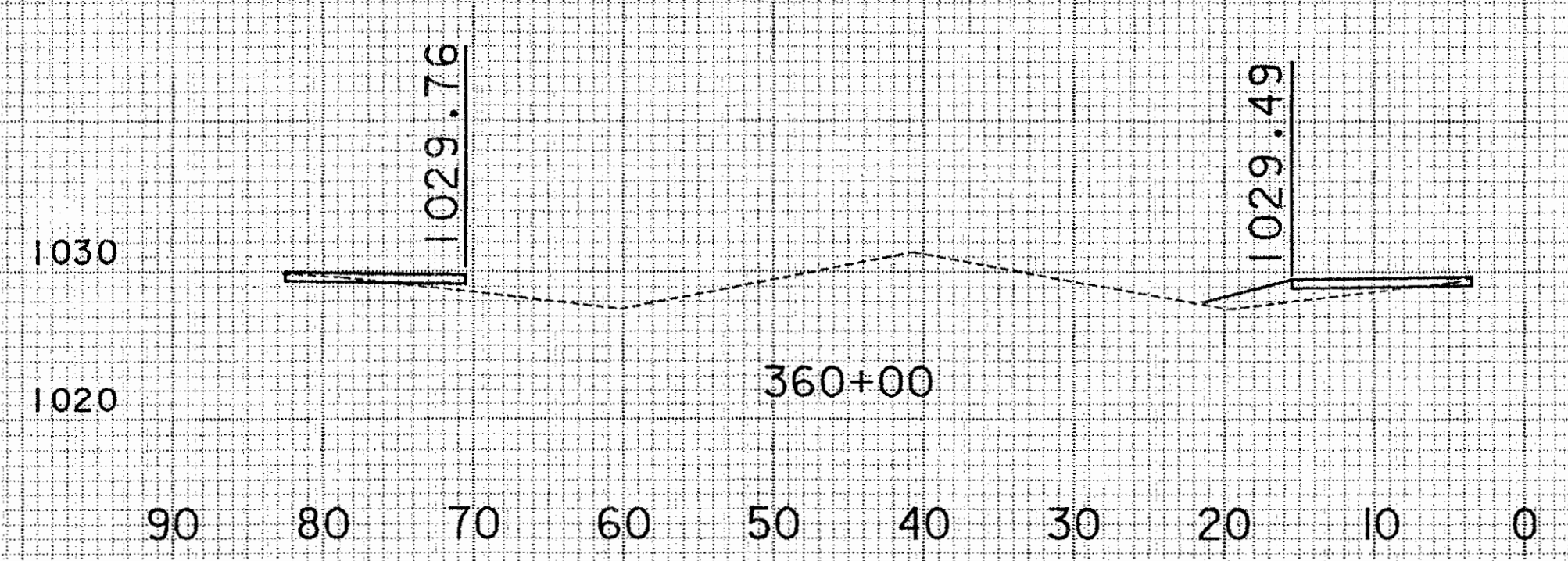
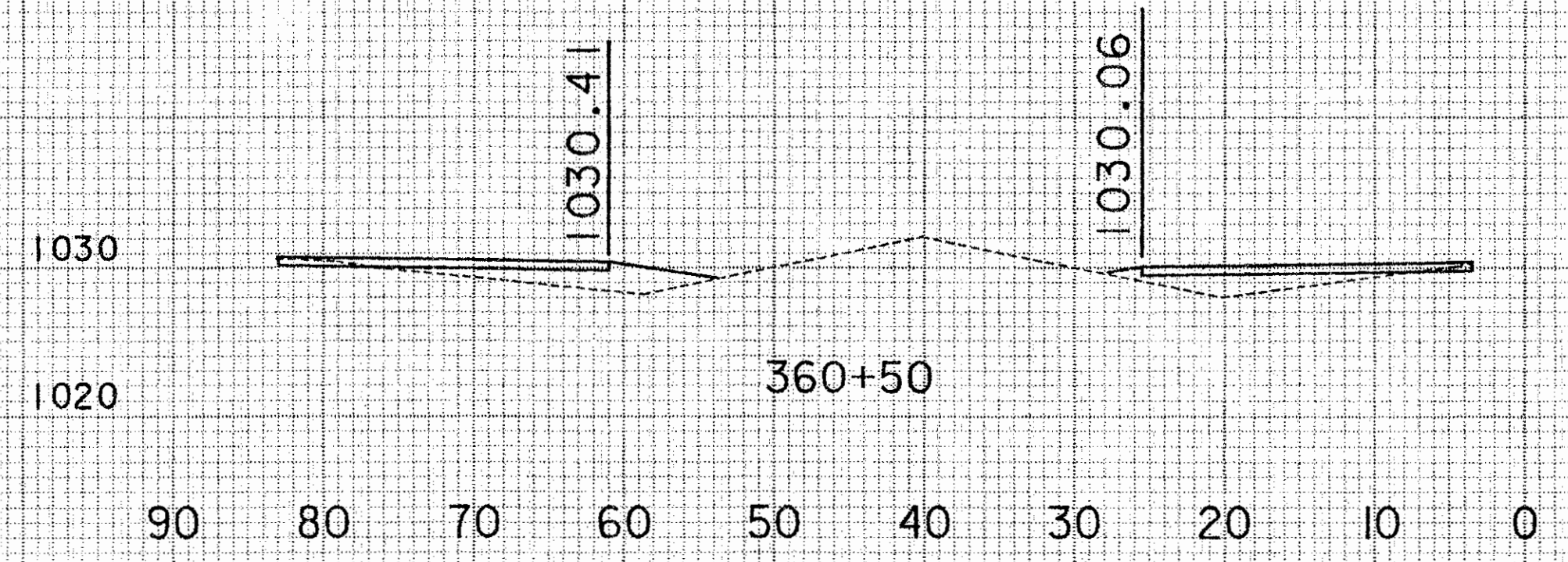
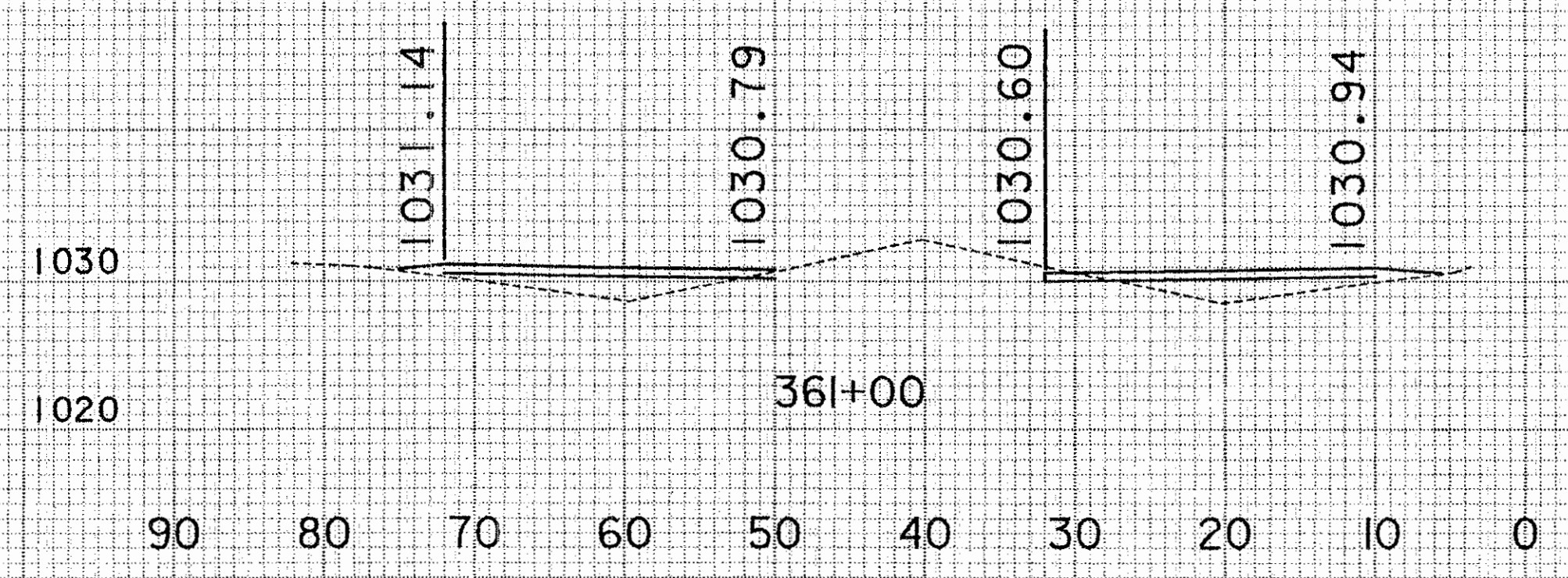
TEMPORARY CROSS OVER



SEE MT-95.30, MT-95.70 AND MT-100.00 FOR DETAILS

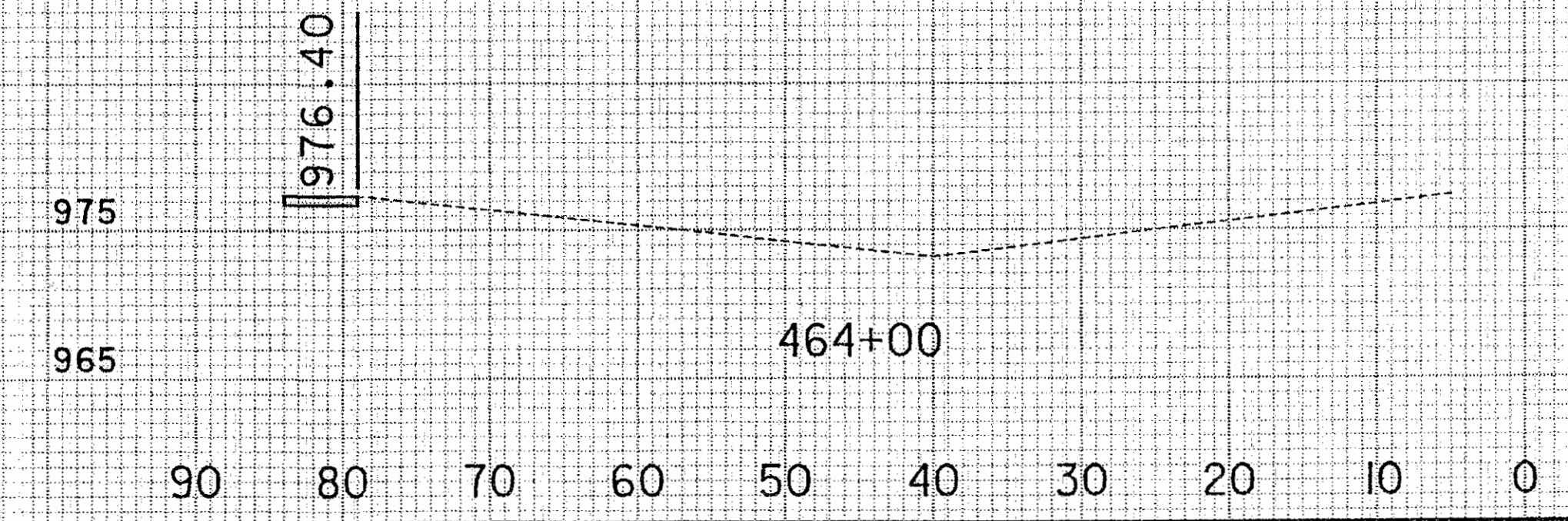
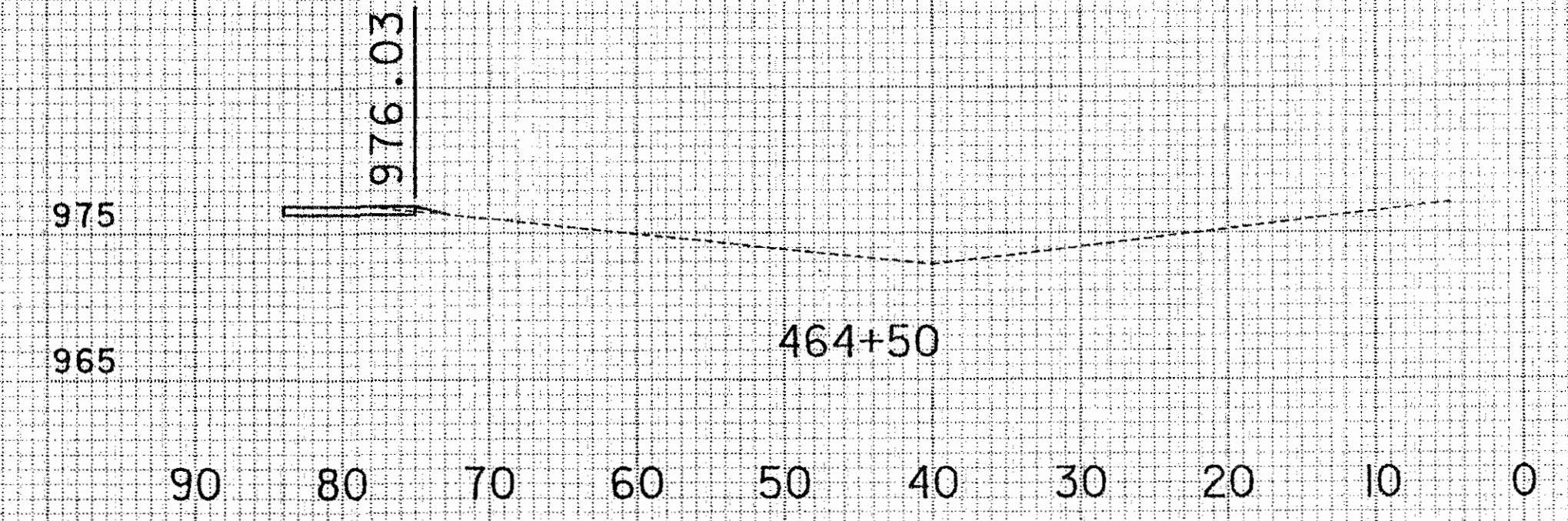
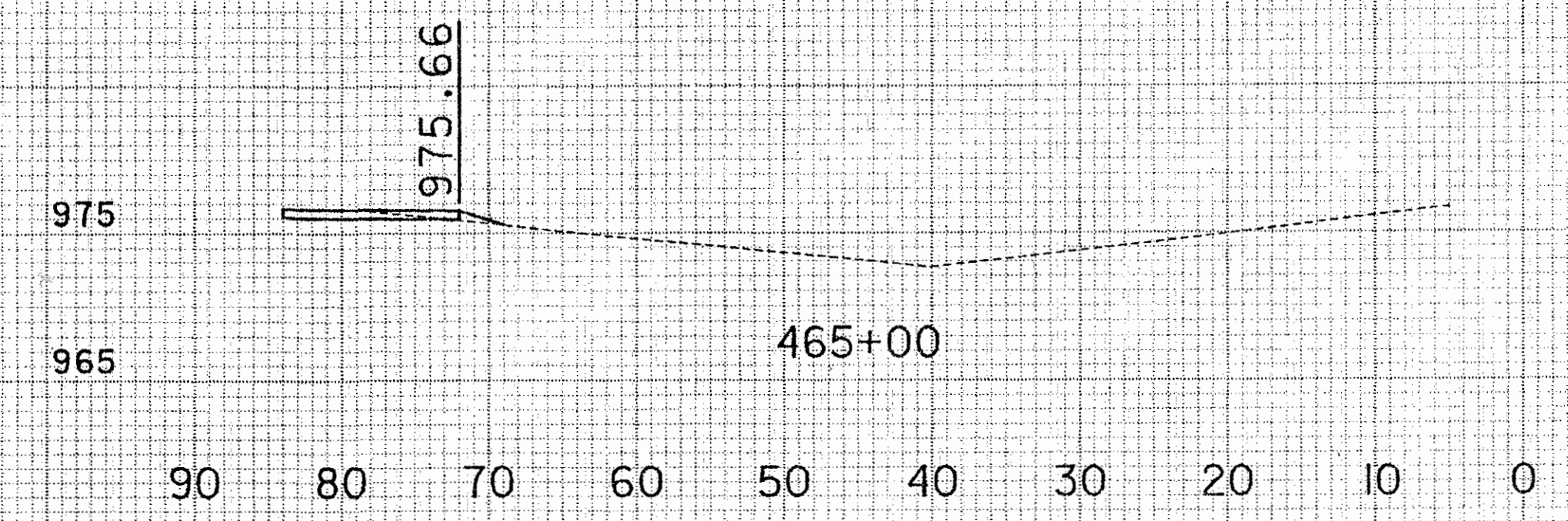
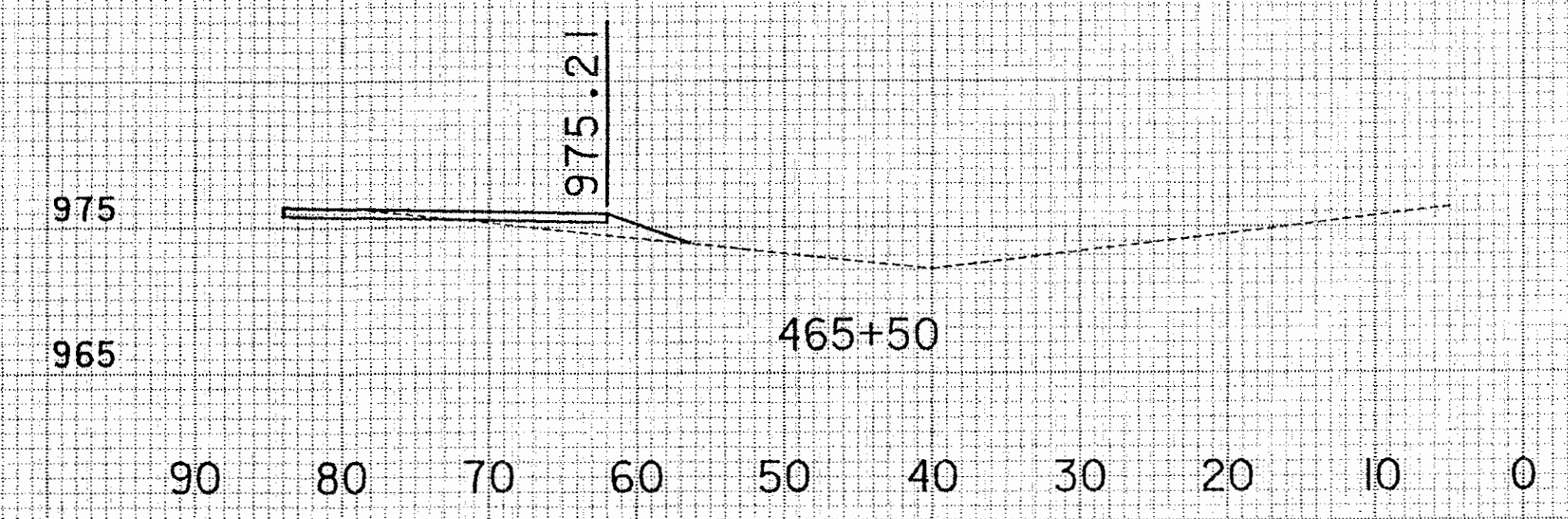
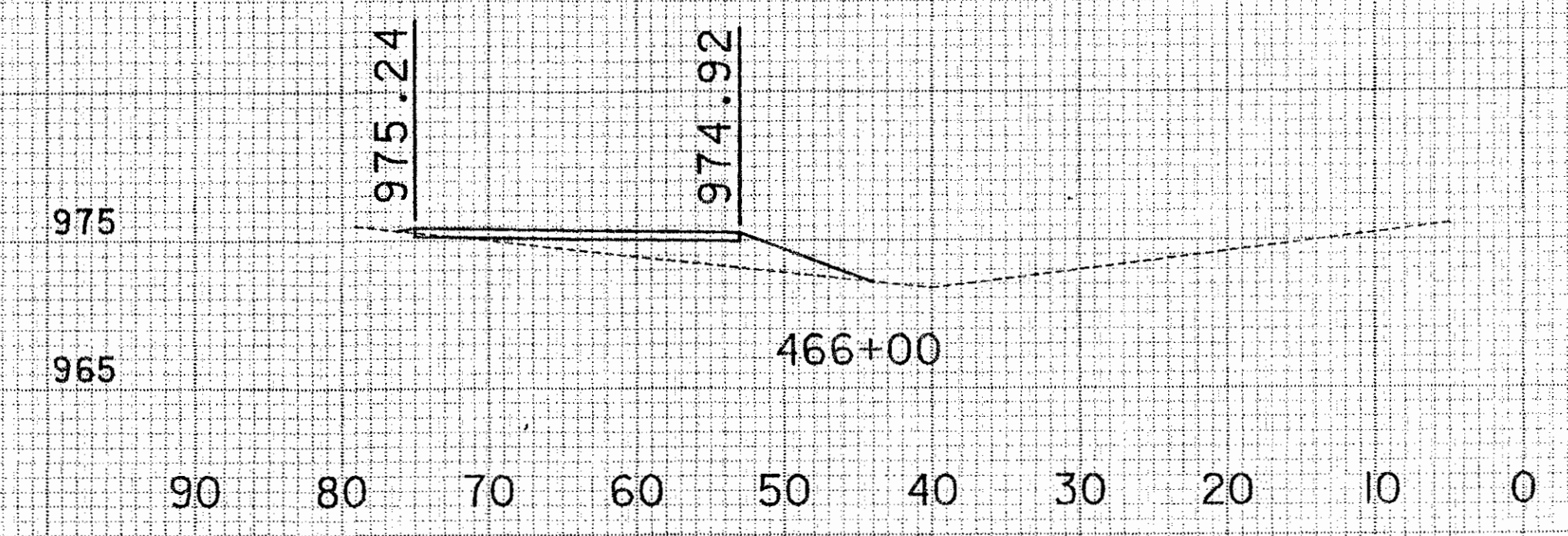
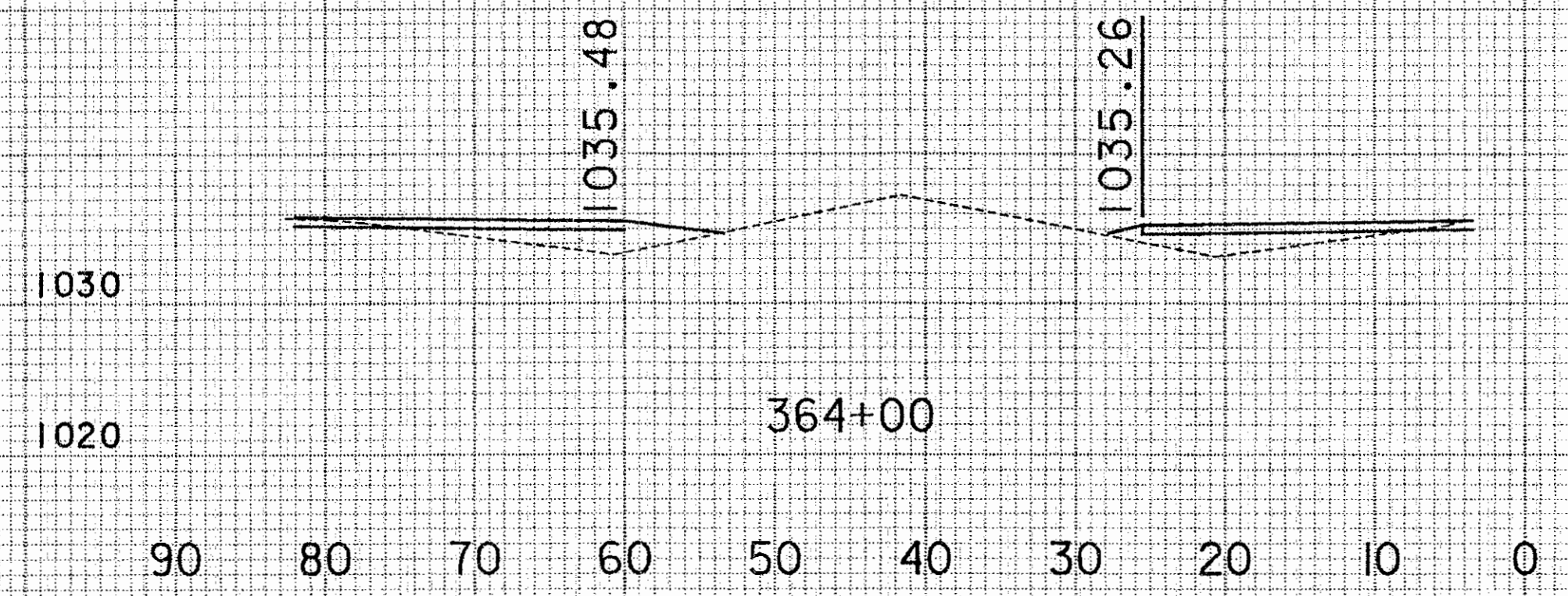
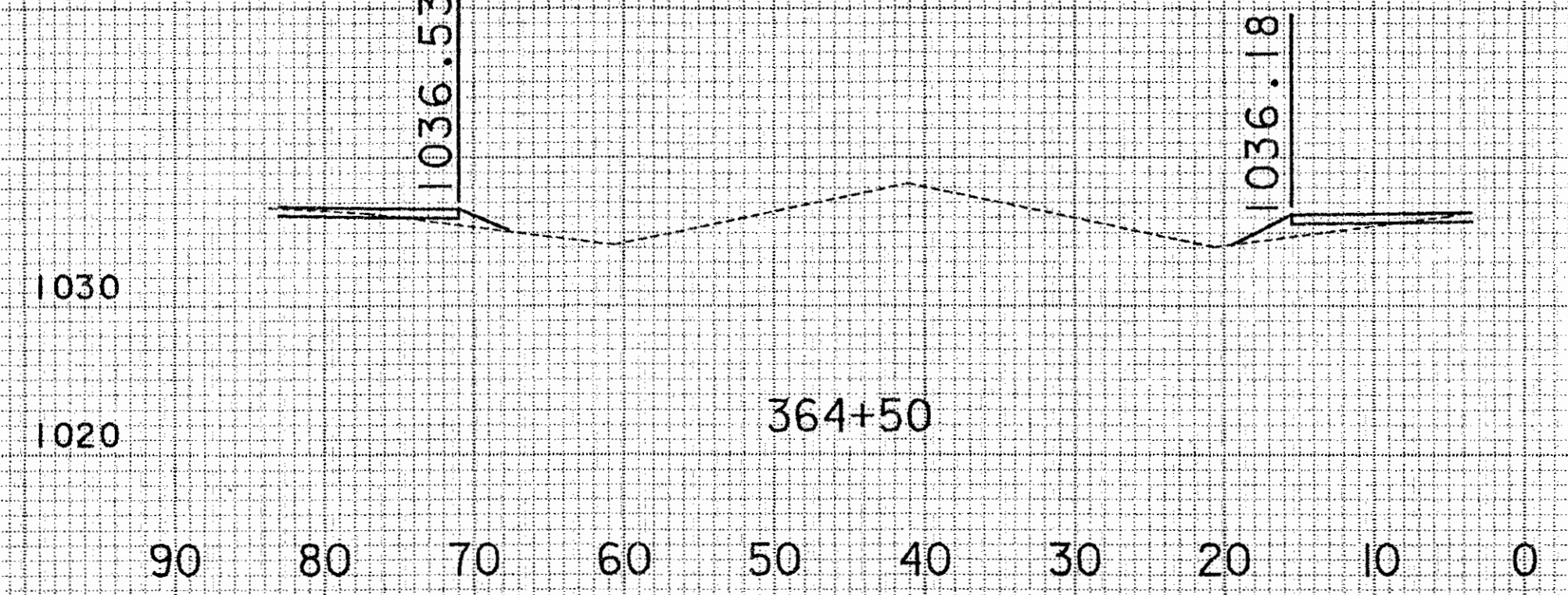
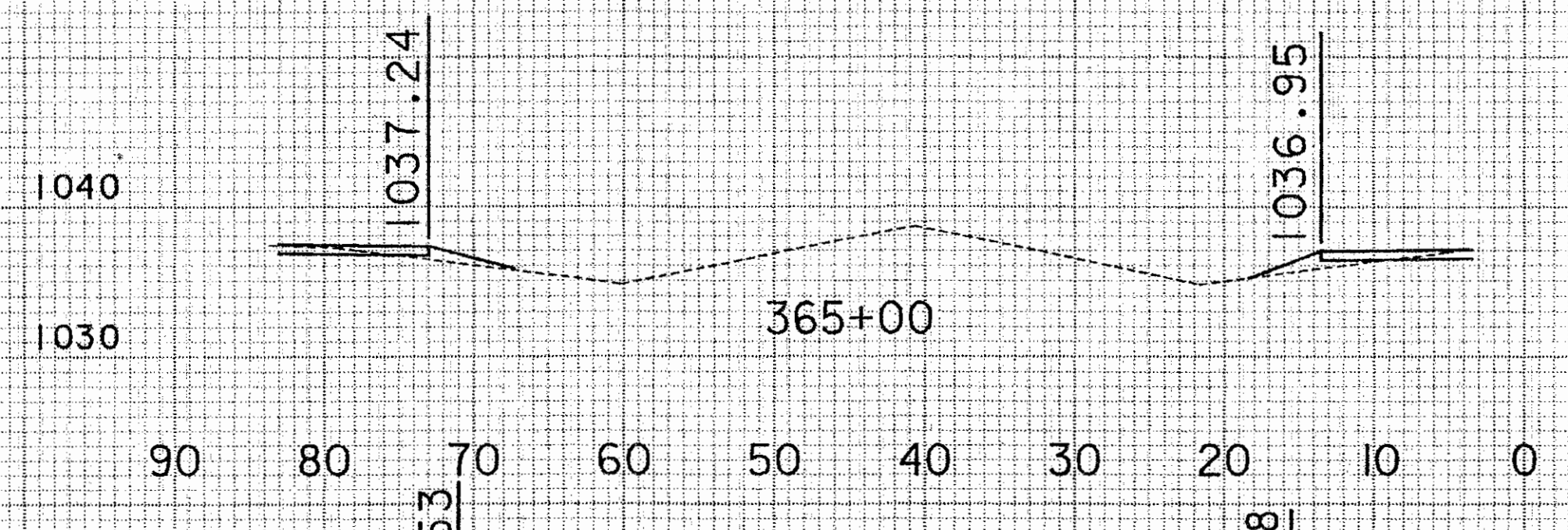
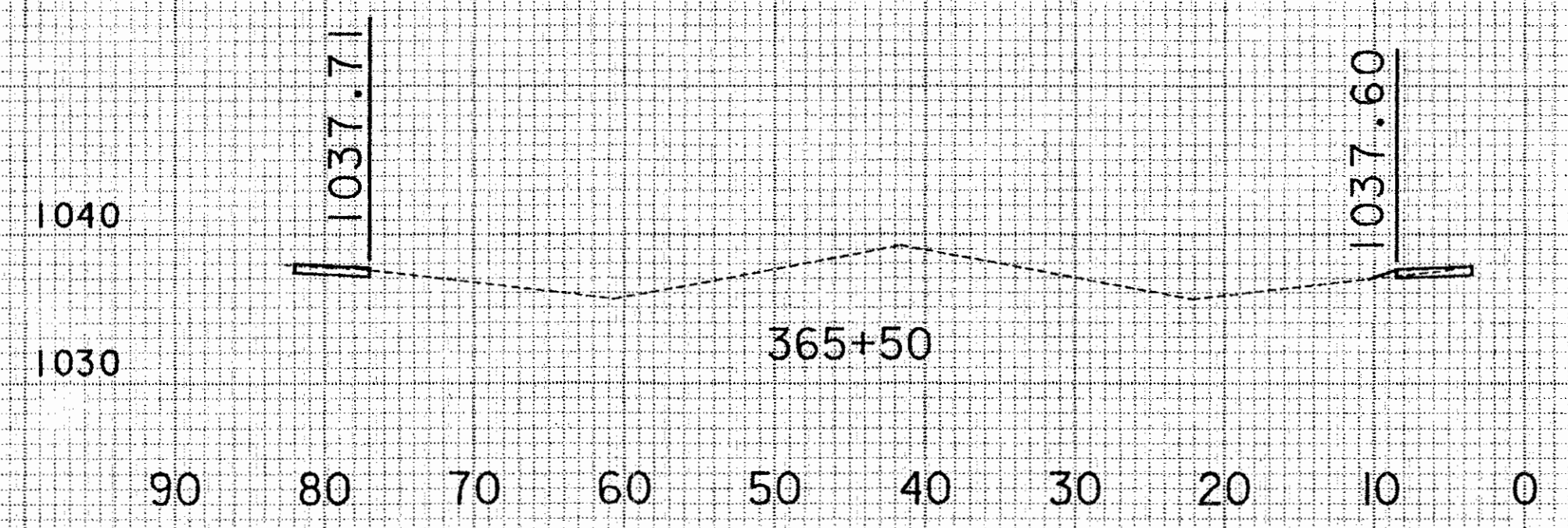


MAH-76/80  
-6.95/0.00



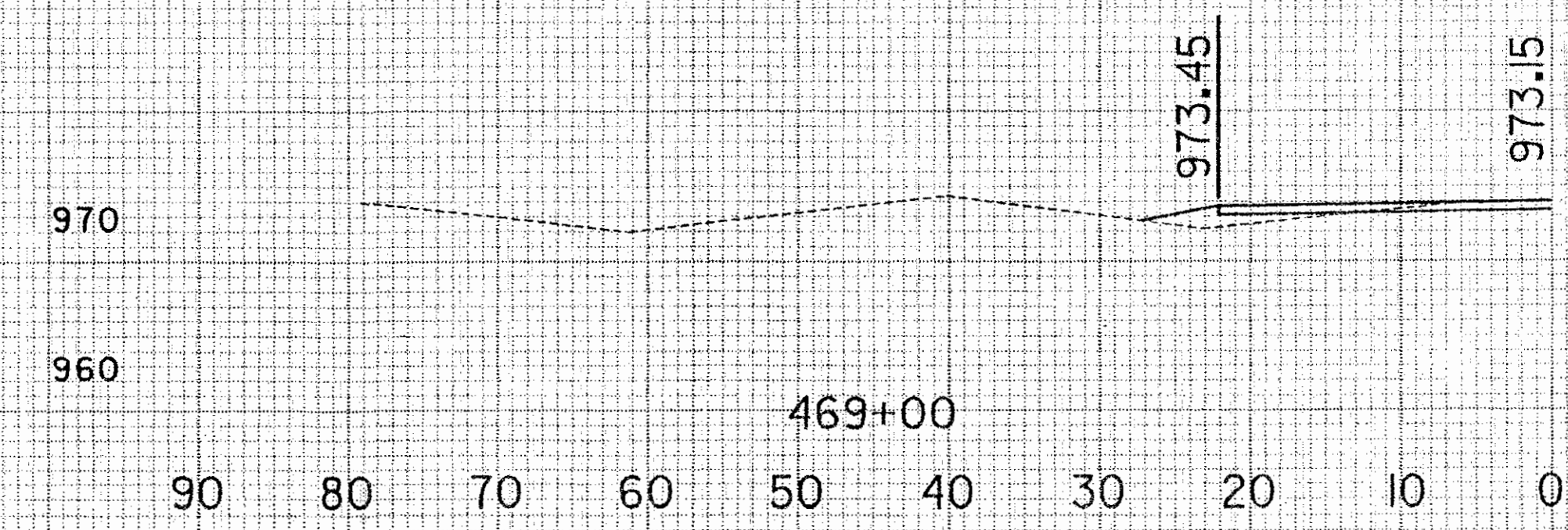
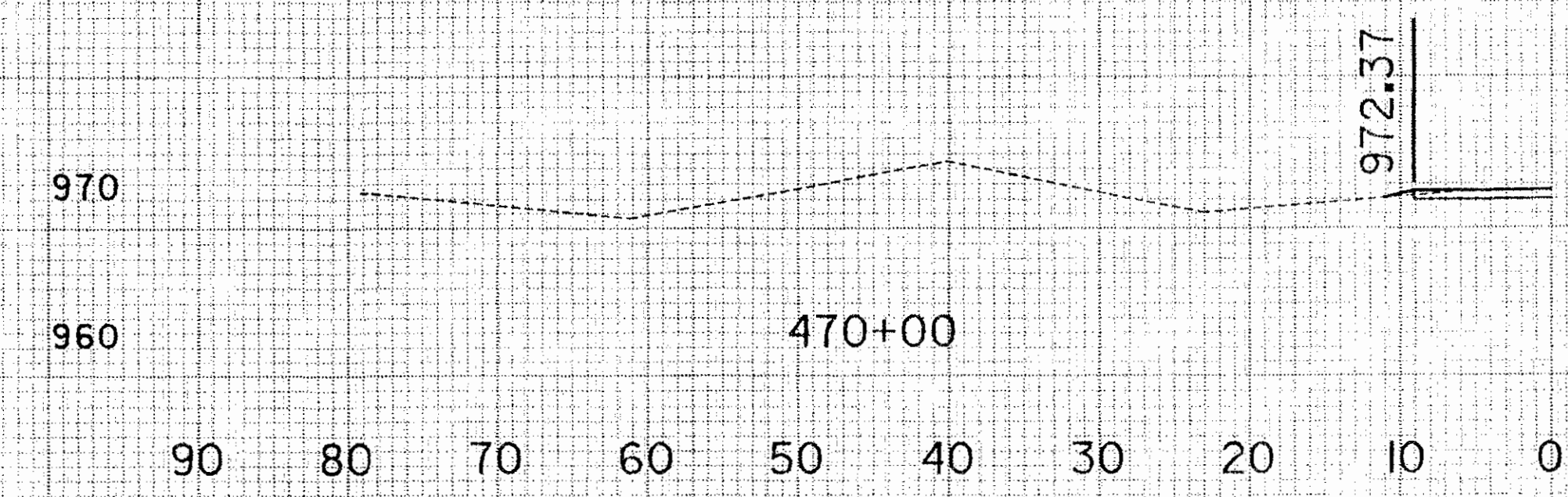
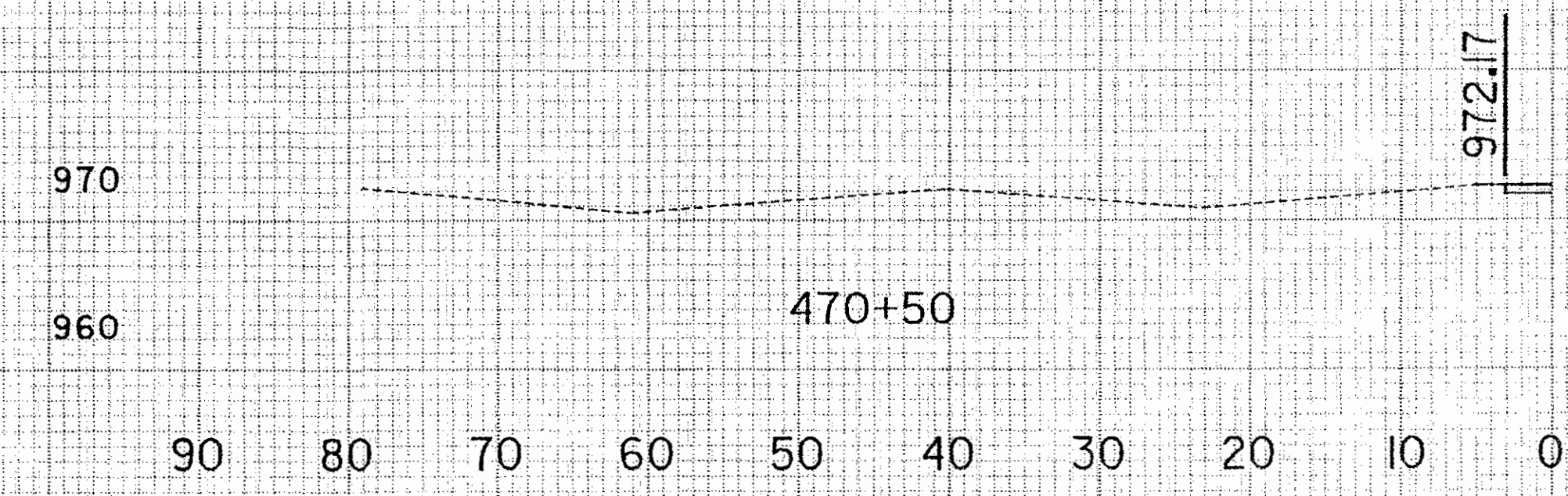
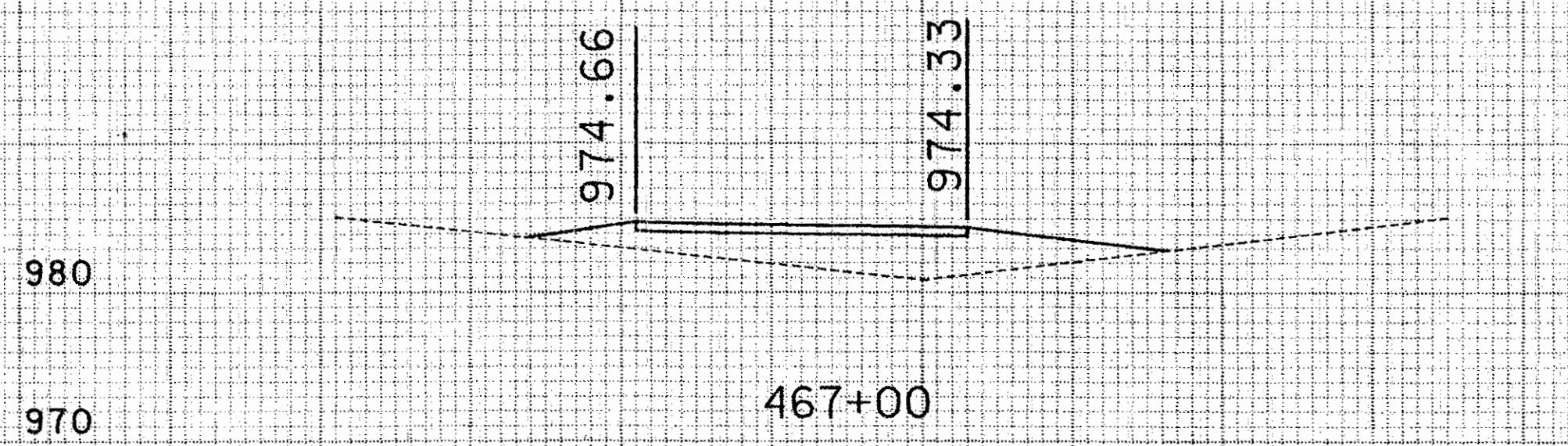
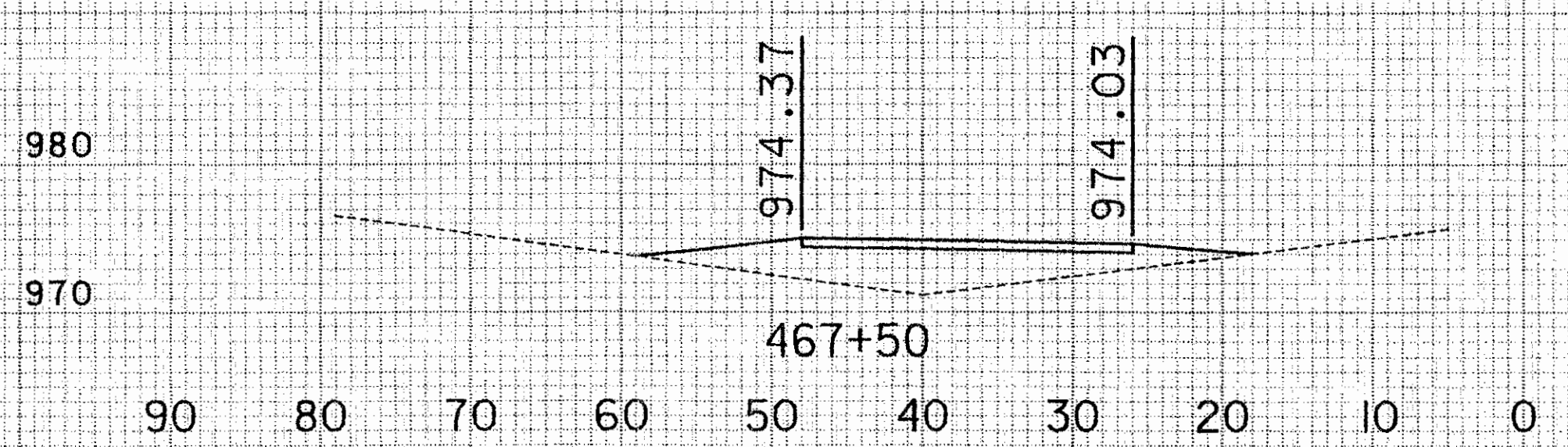
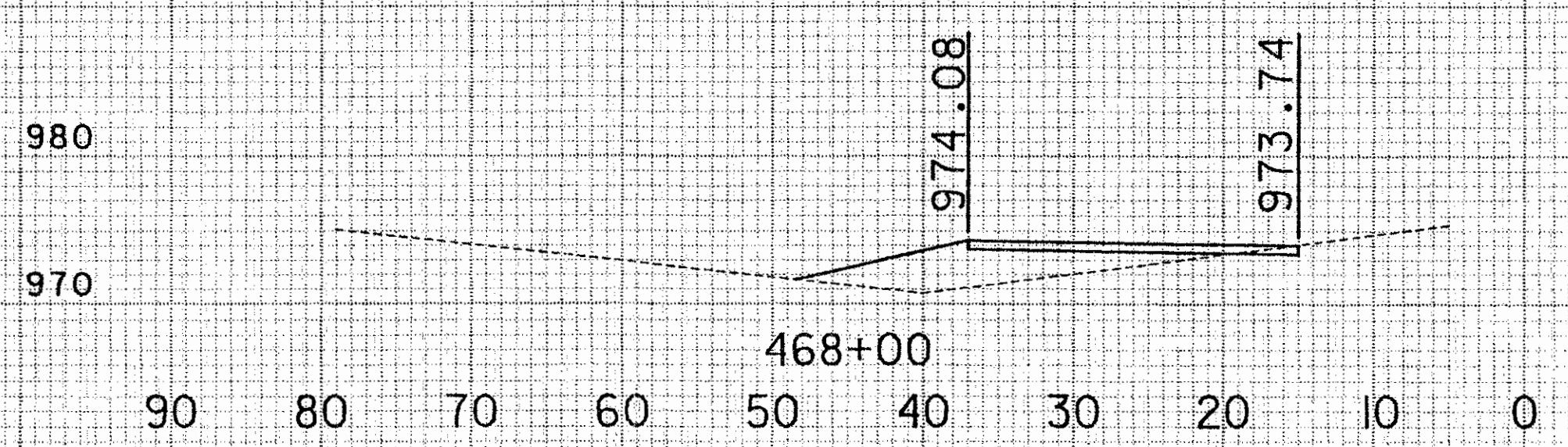
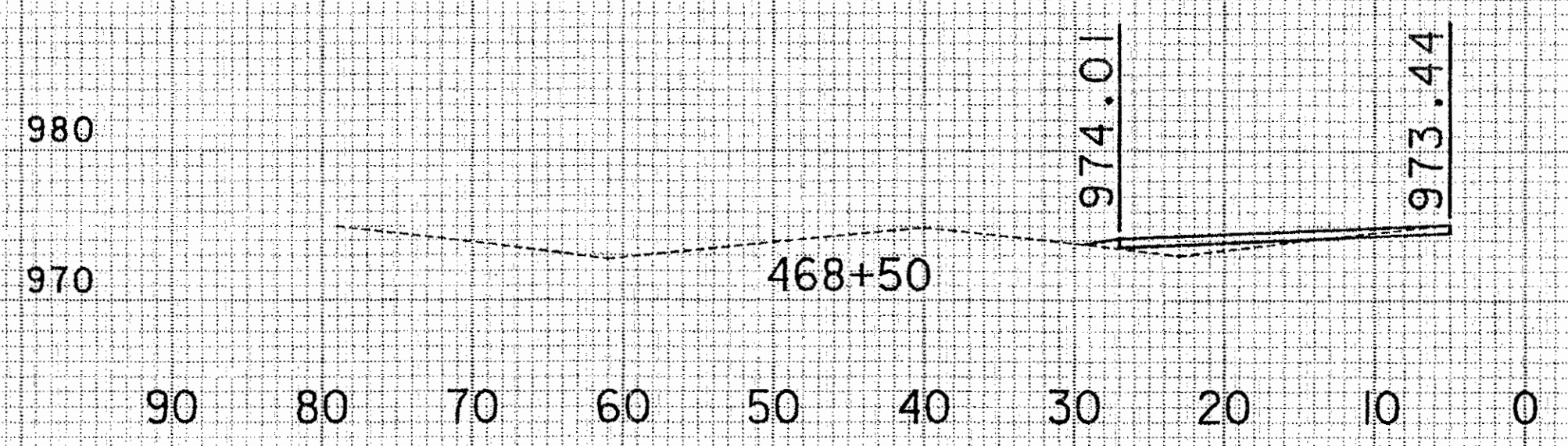


MAH-76/80  
-6.95/0.00



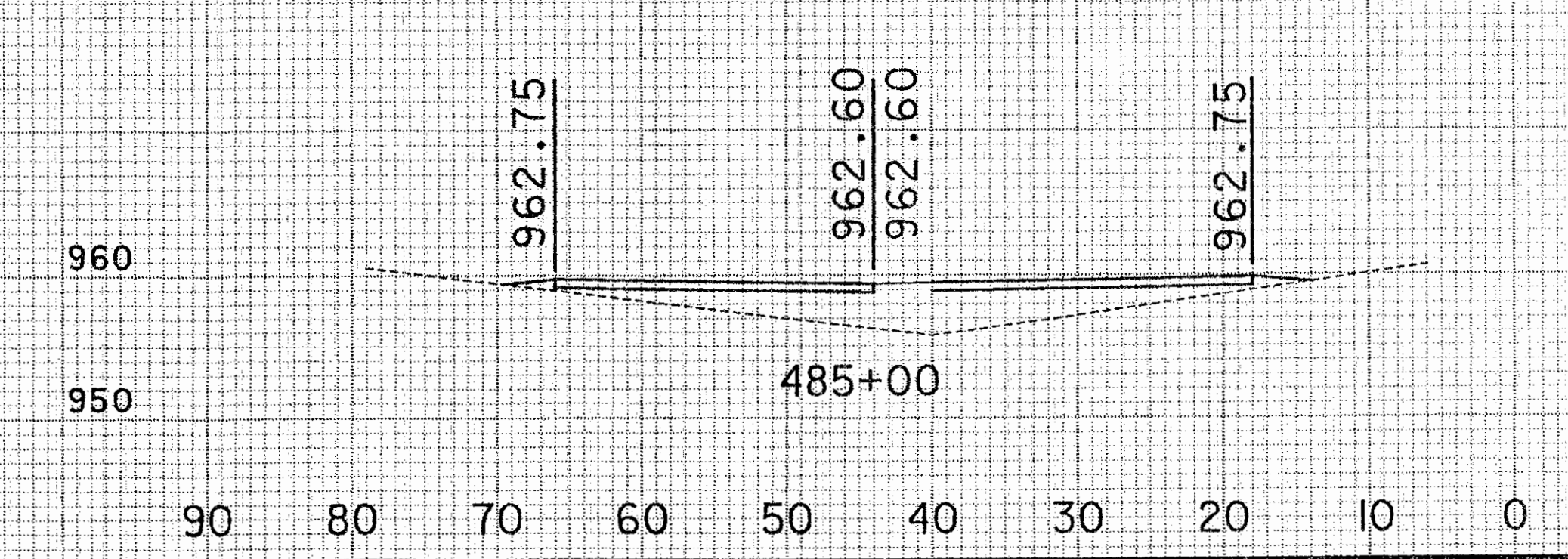
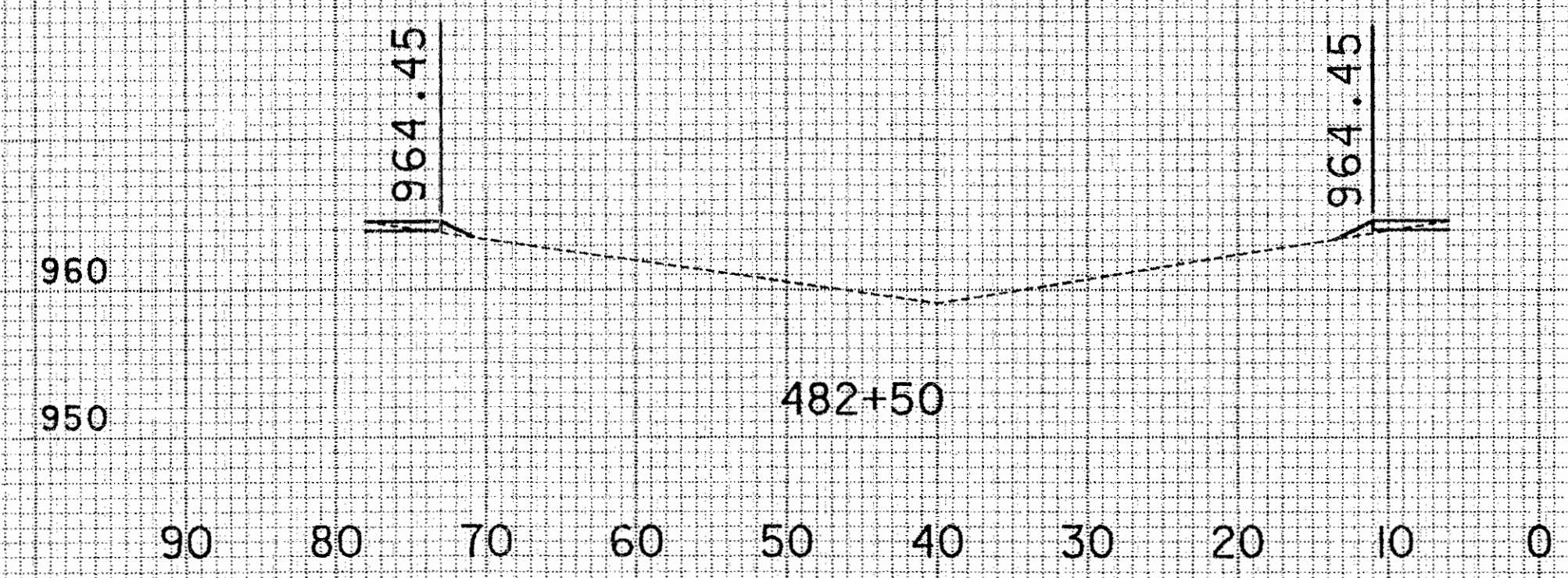
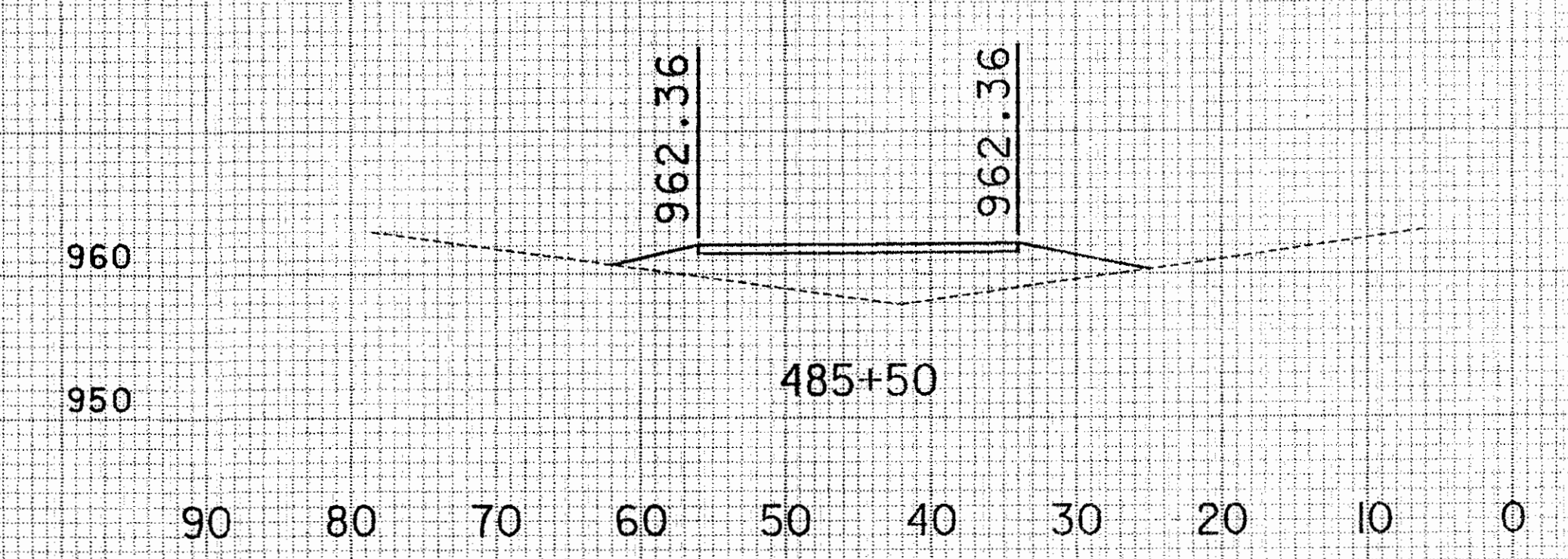
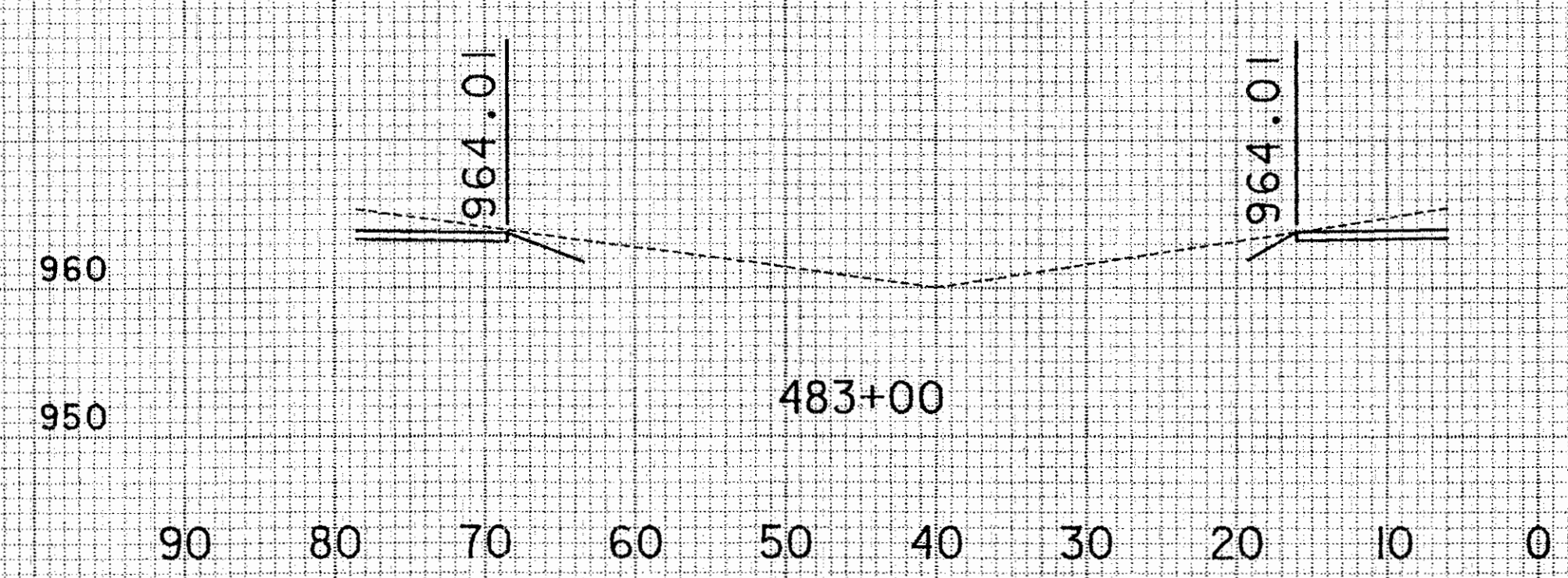
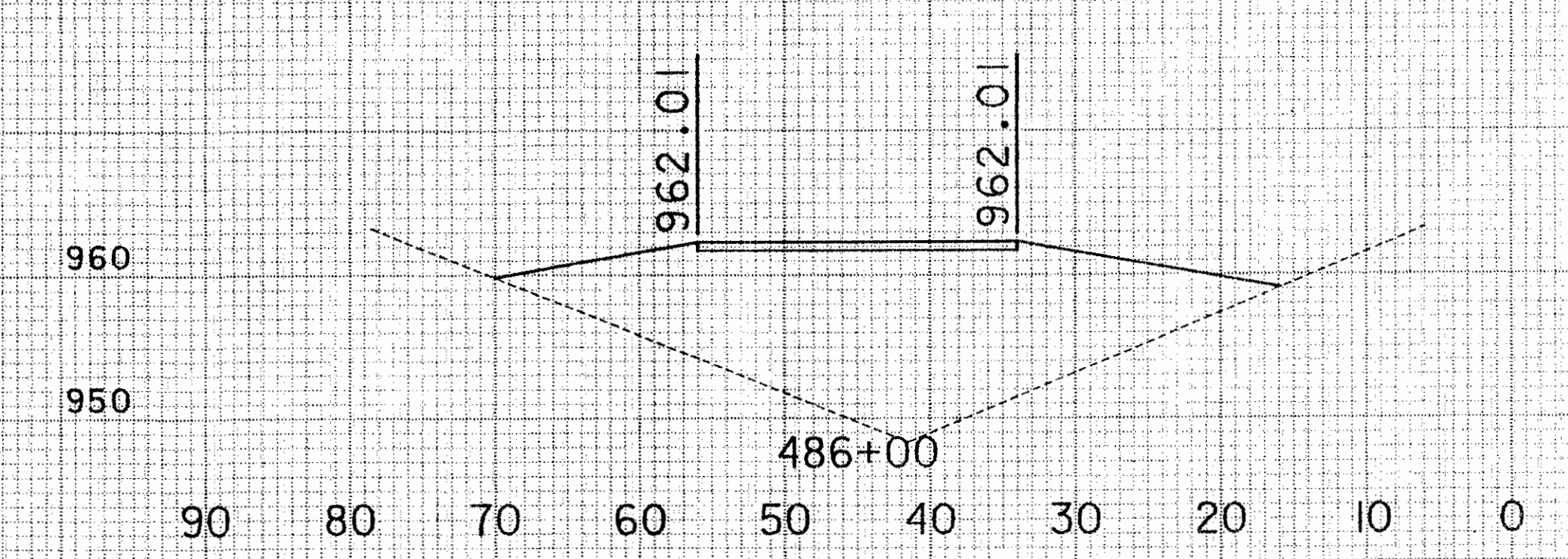
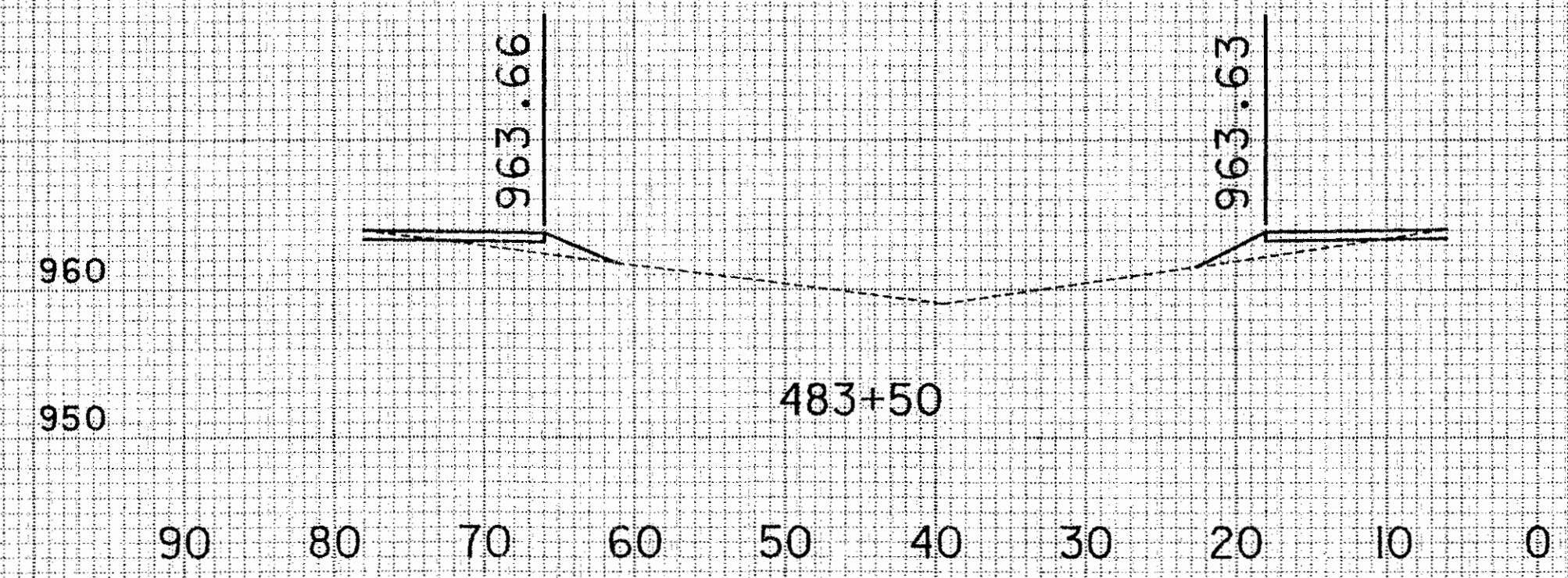
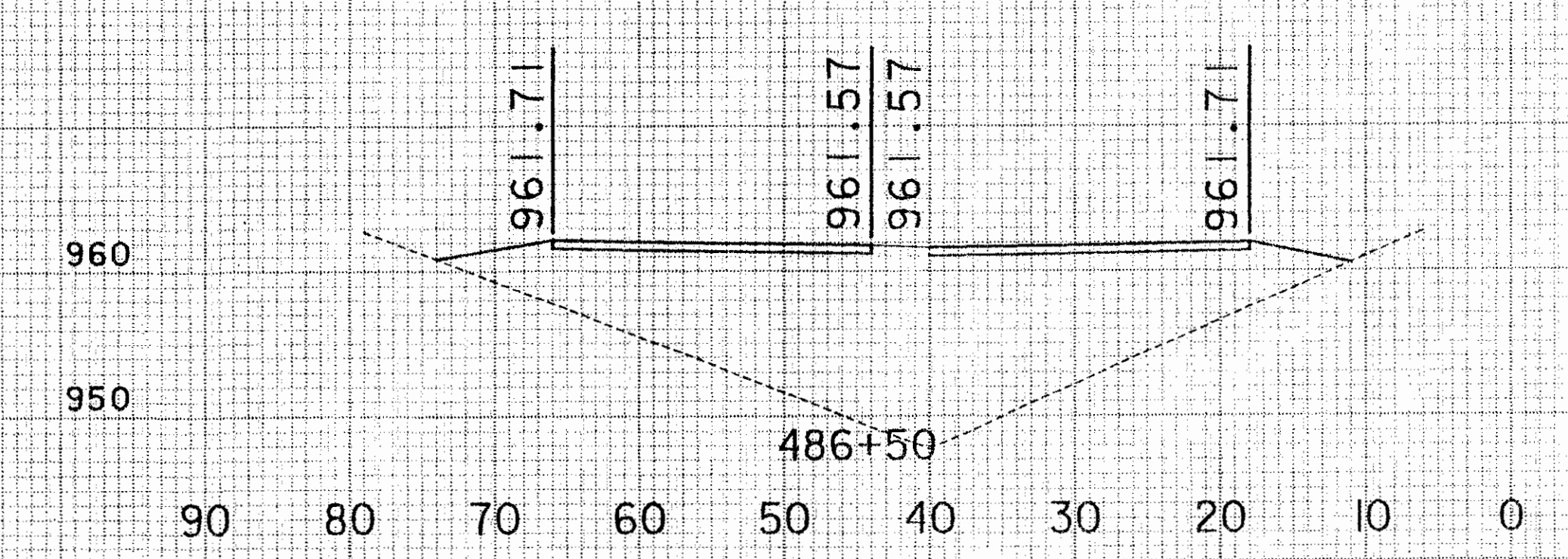
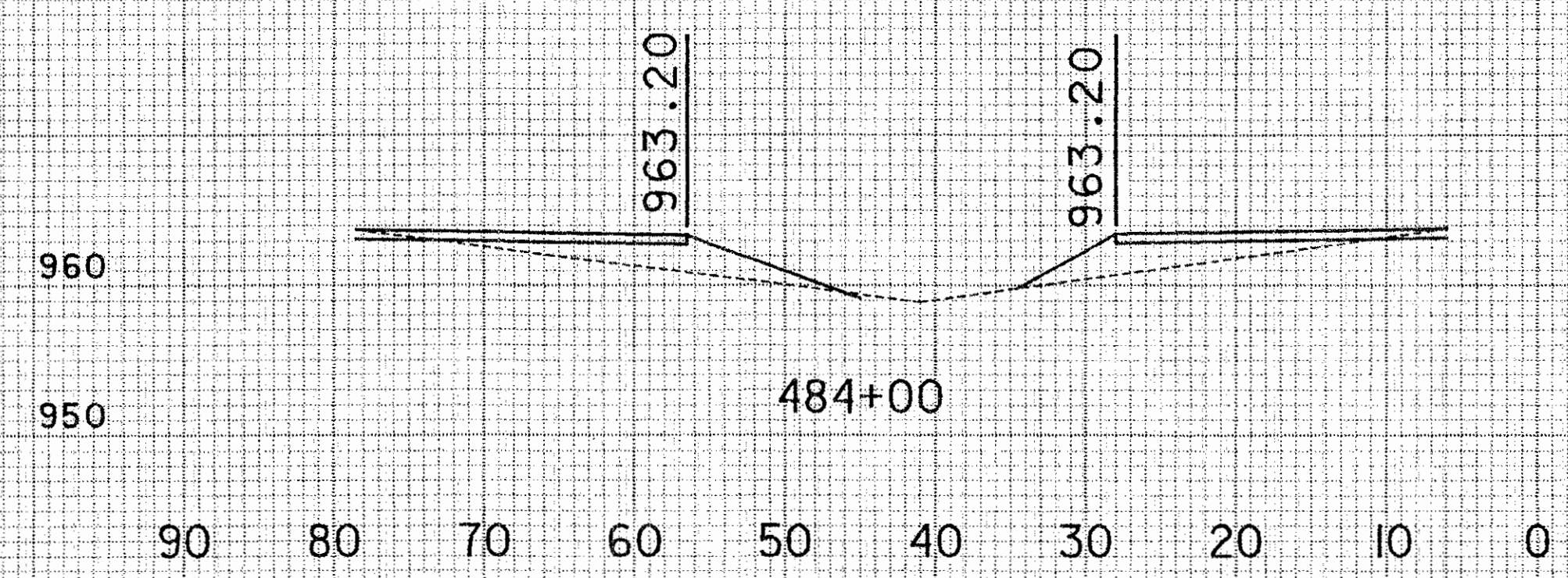
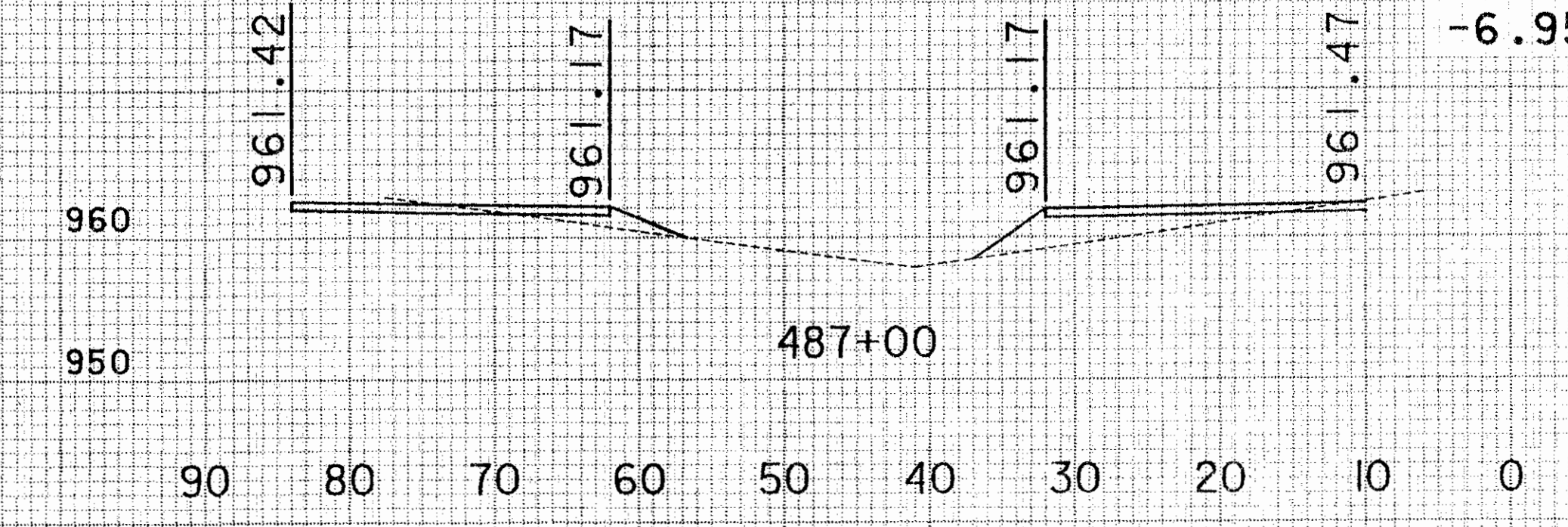
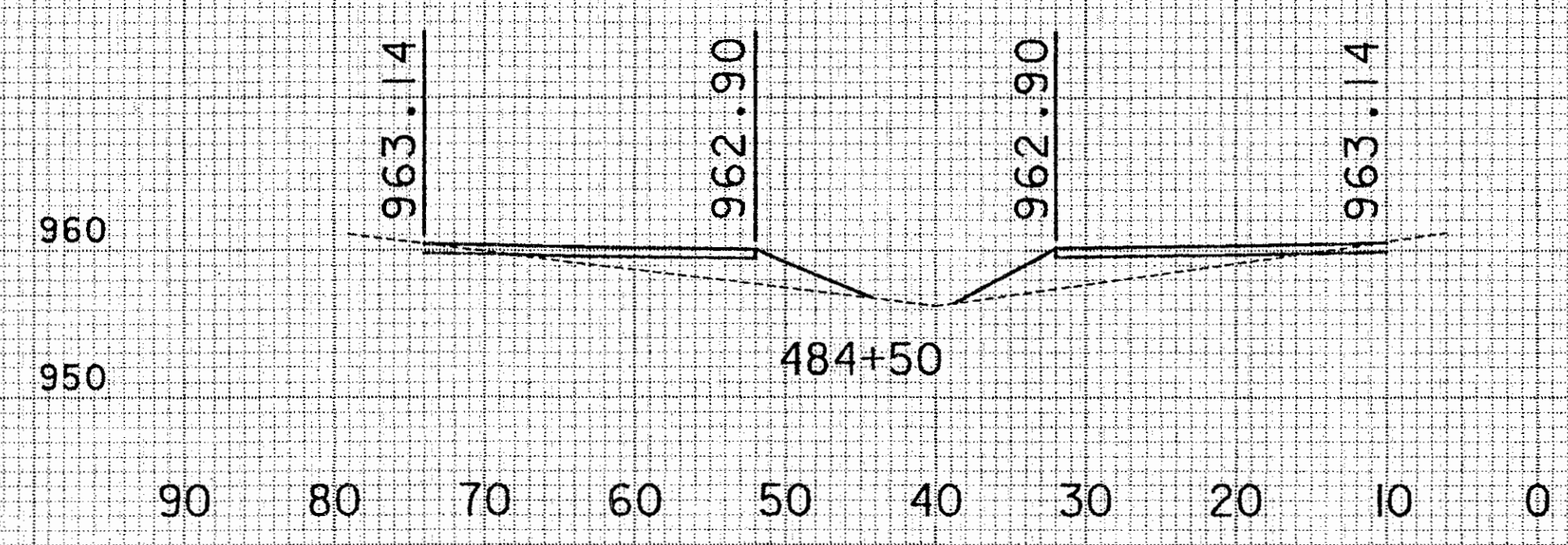


MAH-76/80  
-6.95/0.00





MAH-76/80  
-6.95/0.00

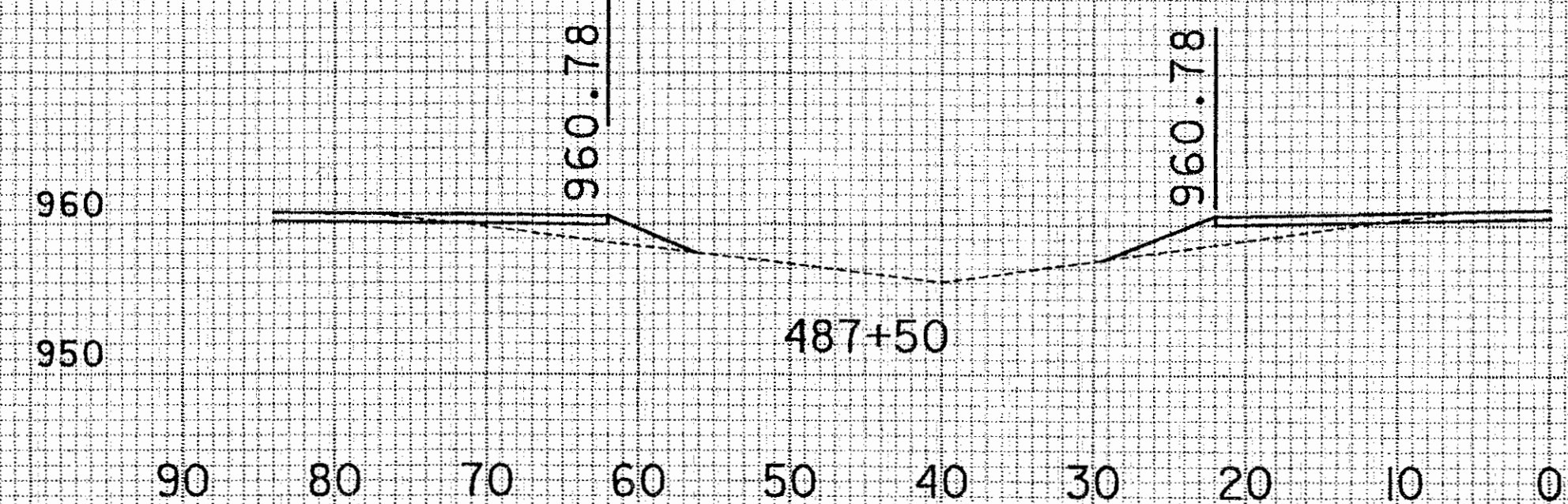
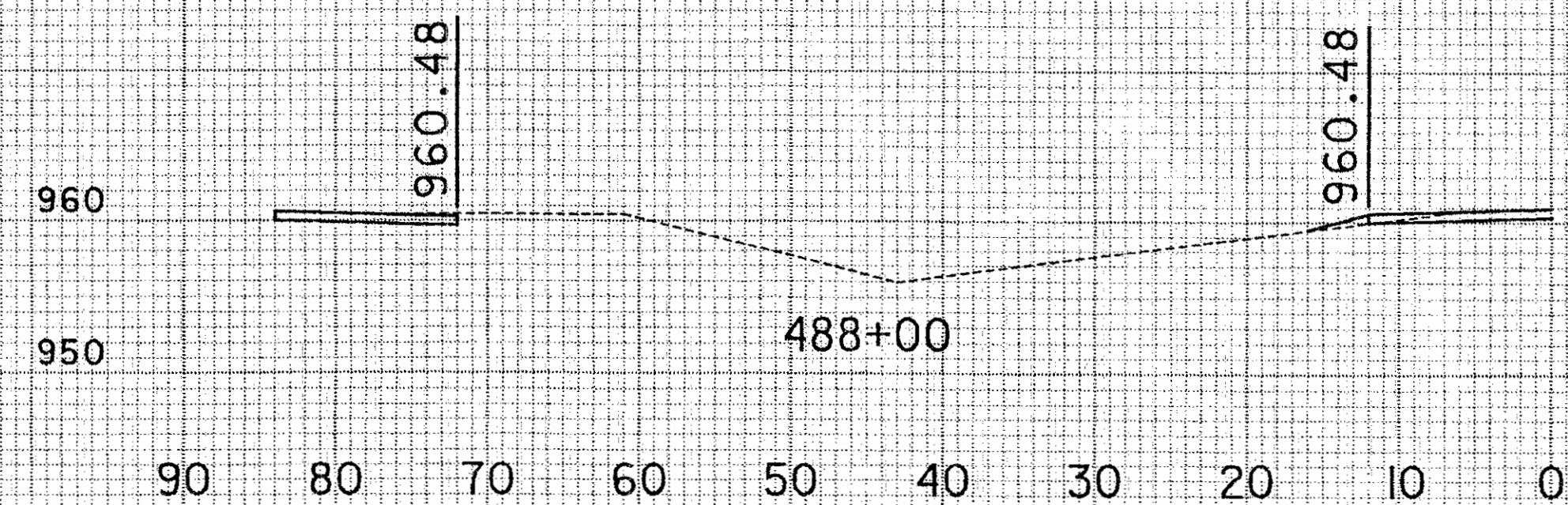
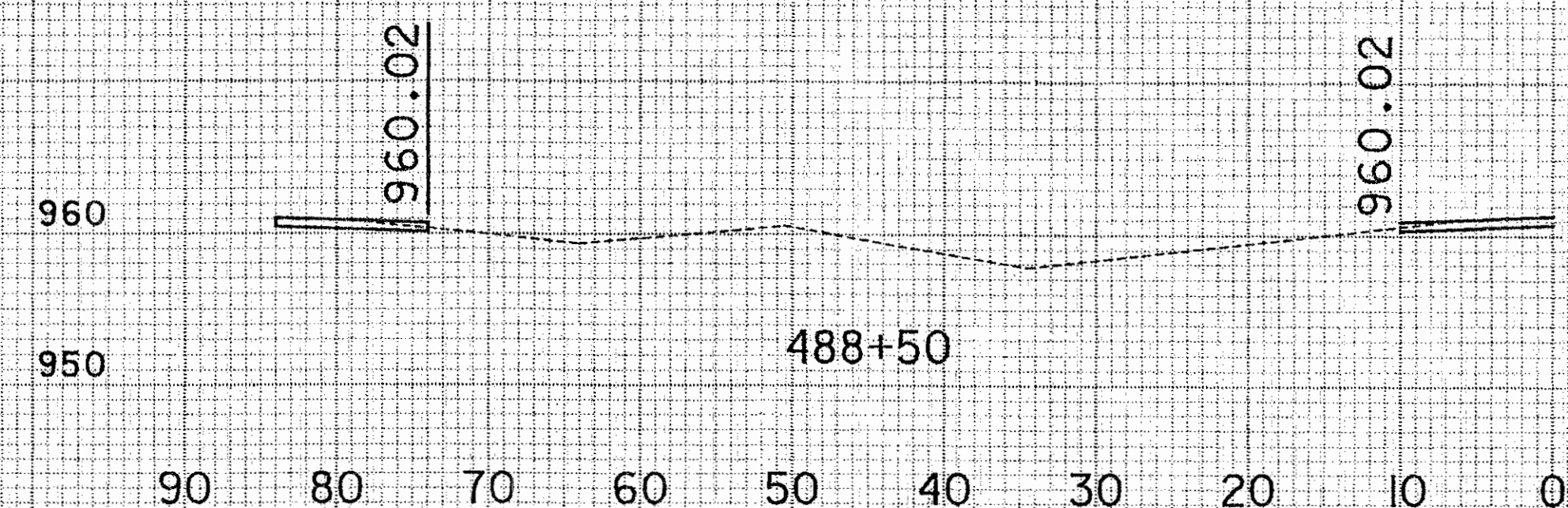
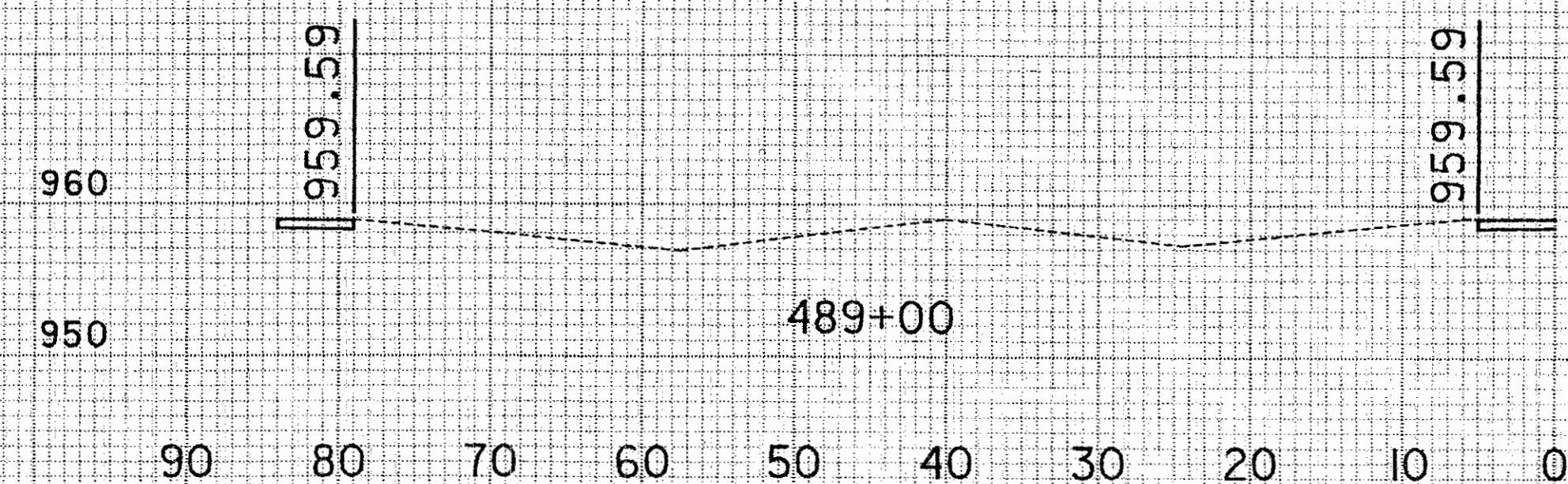




F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

27A  
121

MAH-76/80  
-6.95/0.00



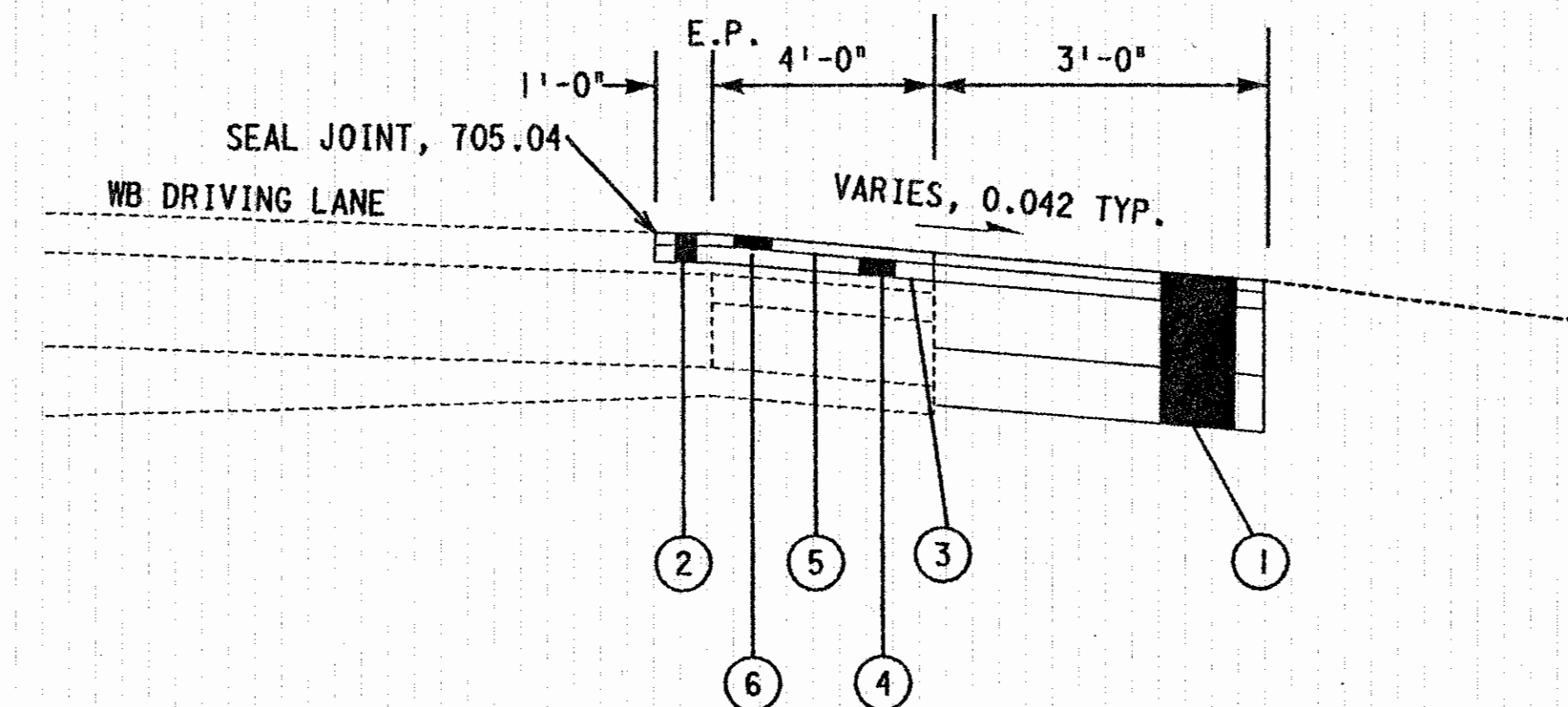


# TEMPORARY PAVEMENT MARKING SUB-SUMMARY

LOCATION	SIDE	STATION		614									
		FROM	TO	TEMP EDGE LINES, YELLOW, CLASS I	TEMP EDGE LINES, WHITE, CLASS I	TEMP LANE LINES, CLASS I	TEMP CHANNELIZING LINES, CLASS I		TEMP EDGE LINES, YELLOW, CLASS I 740.06, TYPE I	TEMP EDGE LINES, WHITE, CLASS I 740.06, TYPE I	TEMP LANE LINES, CLASS I 740.06, TYPE I	TEMP CHANNELIZING LINES, CLASS I 740.06, TYPE I	
				LN.FT	LN.FT	LN.FT	LN.FT	LN.FT	LN.FT	LN.FT	LN.FT	LN.FT	LN.FT
<b>CROSS-OVER DURING EB PHASE</b>													
WB TRAFFIC		353+74	363+92						1018	1018			1018
WB TRAFFIC		363+92	485+00	12108	12108	12108							
WB TRAFFIC		363+92	485+00						500	500	500		
WB TRAFFIC		490+00	498+50						850	850			850
EB TRAFFIC		330+70	358+00						2730				
EB TRAFFIC		356+51	360+41							390			
EB TRAFFIC		358+00	490+00	13200									
EB TRAFFIC		360+41	487+64		12723								
EB TRAFFIC		463+51	474+00	1049									
EB TRAFFIC		465+96	476+11		1015								
<b>WB LANES [COVER WINTER]</b>													
	RT	330+70	498+50	16780									
	LT	330+70	498+50		16780								
	Q	330+70	498+50			16780							
	LT	475+55	477+44					478					
	Q	477+44	480+44				300						
	Q	456+55	458+33					178					
RAMP 'E'	RT	458+33	460+24					191					
	LT	460+24	463+50	326									
	LT	458+33	463+50		517								
RAMP 'B1'	RT	472+00	475+55			355							
	LT	472+00	475+55	355									
<b>EB LANES [COVER WINTER]</b>													
	WB	358+00	490+00	12515									
	WB	358+00	490+00		12515								
	WB	358+00	490+00			12515							
	EB	471+50	473+71			221							
	EB	473+71	477+11					380					
	EB	473+71	476+11					240					
RAMP 'F'	RT	476+12	477+10		98								
	LT	476+12	477+10	98									
<b>CROSS-OVER DURING WB PHASE</b>													
EB TRAFFIC		350+80	358+00						720	720			720
EB TRAFFIC		358+00	485+06						12706	12706	12706		
EB TRAFFIC		485+06	492+26						720	720			
WB TRAFFIC		358+00	490+00						13200				
WB TRAFFIC		360+45	487+75							12730			
WB TRAFFIC		475+75	492+00										1625
TOTAL				56431	56111	41924		1461		32450	29640	13219	4213
TOTAL TO GENERAL SUMMARY				21.31 MI	7.94 MI		1461			11.76 MI	2.50 MI		4213

ITEM 615 TEMPORARY PAVEMENTS, CLASS A, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 615, THIS ITEM SHALL INCLUDE THE REMOVAL AND REPLACEMENT OF THREE INCHES OF EXISTING PAVEMENT AS DETAILED BELOW:



NOTE: FOR EXISTING SHOULDER AND PAVEMENT BUILD-UP REFER TO SHEETS 3 AND 4.

- ① - ITEM 615 TEMPORARY PAVEMENT, CLASS A
- ② - 3" ITEM 254 PAVEMENT PLANING
- ③ - ITEM 407 TACK COAT (APPLICATION RATE = 0.075 GAL/SY)
- ④ - 1 3/4" ITEM 448 ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2, PG-64-22
- ⑤ - ITEM 407 TACK COAT FOR INTERMEDIATE COURSE (APPLICATION RATE = 0.075 GAL/SY)
- ⑥ - 1 1/4" ITEM 448 ASPHALT CONCRETE, SURFACE COURSE, TYPE 1, PG -64-22

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE CONSIDERED INCIDENTAL TO AND INCLUDED WITH THE PAYMENT FOR THIS ITEM:

ITEM 254 - 3" PAVEMENT PLANING	6283 SQ.YD.
ITEM 407 - TACK COAT	471 GAL
ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE	471 GAL
ITEM 448 - 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG 64-28	305 CU.YD.
ITEM 448 - 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-28	218 CU.YD.
ITEM 615 - TEMPORARY PAVEMENT, CLASS A	3770 SQ. YD.

PAYMENT SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO PERFORM THE WORK AND SHALL BE PAID FOR AT THE UNIT PRICE BID PER SQUARE YARD FOR ITEM 615 TEMPORARY PAVEMENT, CLASS A, AS PER PLAN.

ITEM 615 TEMPORARY PAVEMENT, CLASS A, AS PER PLAN 3770 SQ.YD.



# PAVEMENT MARKINGS

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

MAH-76/80-6.95/0.00

## GENERAL

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING, INSTALLING, MAINTAINING, AND SUBSEQUENTLY REMOVING TEMPORARY RAISED PAVEMENT MARKERS (TRPM'S). THE MARKERS SHALL BE YELLOW OR WHITE, AS DESCRIBED IN THE PLAN.

## MATERIAL

ALL MARKERS SHALL BE OF SUFFICIENT STRENGTH AND PROPERLY SHAPED SO AS NOT TO BE DISLODGED OR BROKEN, OR THE REFLECTOR DISLODGED OR BROKEN, OR THE REFLECTOR DISLODGED OR DAMAGED BY IMPACTS FROM VEHICLES TIRES, INCLUDING THOSE OF HIGH PRESSURE TRUCK TIRES LOADED TO 4500 POUNDS.

RETROREFLECTORS SHALL BE PROVIDED IN ONE OR TWO DIRECTIONS ON EACH MARKER AS REQUIRED BY THE USAGE AND SHALL RETURN WHITE OR YELLOW LIGHT AS IS APPROPRIATE FOR THE APPLICATION.

THE REFLECTOR SHALL HAVE AN EFFECTIVE AREA OF 0.35 SQUARE INCHES FOR TYPE A OR 3.0 SQUARE INCHES FOR TYPE B. ITS BRIGHTNESS OR SPECIFIC INTENSITY (WHEN TESTED AT 0.2 DEGREE ANGLE OF OBSERVATION AND THE FOLLOWING ANGLES OF INCIDENCE) SHALL MEET OR EXCEED THE FOLLOWING:

INCIDENCE ANGLE (DEGREES)	SPECIFIC INTENSITY	
	TYPE A	
	WHITE	YELLOW
0	1.0	0.6
20	0.4	0.24
45	-	-
	TYPE B	
	WHITE	YELLOW
	0	3.0
20	1.2	0.72
45	0.3	0.2

ANGLE OF INCIDENCE FORMED BY A RAY FROM LIGHT SOURCE TO THE MARKER AND THE NORMAL TO THE LEADING EDGE OF THE MARKER FACE (ALSO HORIZONTAL ENTRANCE ANGLE).

ANGLE OF OBSERVATION FORMED BY A RAY FROM LIGHT SOURCE TO THE MARKER AND THE RETURNED RAY FROM THE MARKER TO THE MEASURING RECEPTOR.

SPECIFIC INTENSITY IS THE MEAN CANDLEPOWER OF THE REFLECTED LIGHT (AT GIVEN INCIDENCE AND DIVERGENCE ANGLES) FOR EACH FOOT-CANDLE AT THE REFLECTOR (ON A PLANE PERPENDICULAR TO THE INCIDENT LIGHT).

TYPE A MARKERS ARE INTENDED TO PROVIDE HIGH VISIBILITY BOTH DAY AND NIGHT. THEIR DAY TIME VISIBILITY SHALL BE ASSURED BY SIZE, SHAPE AND COLOR AS FOLLOWS:

1) THE MARKERS SHALL BE A HIGH VISIBILITY YELLOW OR WHITE COLOR WHICH WILL NOT DEGRADE SUBSTANTIALLY DUE TO TRAFFIC WEAR AND WHICH WILL MATCH THE COLOR OF THE REFLECTOR.

2) WHEN VIEWED FROM ABOVE, THE MARKERS SHALL HAVE A VISIBLE AREA OF NOT LESS THAN 14 SQUARE INCHES.

3) WHEN VIEWED FROM THE FRONT, PARALLEL TO THE PAVEMENT, AS FROM APPROACHING TRAFFIC, THE MARKER SHALL HAVE A WIDTH OF APPROXIMATELY 4 INCHES AND A VISIBLE AREA OF NOT LESS THAN 1.5 SQUARE INCHES.

TYPE B MARKERS ARE INTENDED TO PROVIDE HIGH VISIBILITY AT NIGHT BY RETROREFLECTING AUTOMOTIVE HEADLIGHT BACK TO DRIVER.

## INSTALLATION

TEMPORARY RAISED PAVEMENT MARKERS SHALL BE ATTACHED TO CLEAN, DRY PAVEMENT BY A BUTYL ADHESIVE PAD, A BITUMINOUS ADHESIVE OR OTHER CONSTRUCTION GRADE ADHESIVES (SUCH AS FRANKLIN PANEL AND METAL ADHESIVE) SUITABLE TO ANCHOR THE MARKER UNDER THE ABOVE CONDITIONS. WHEN IT IS NECESSARY TO ATTACH MARKERS TO NEW CONCRETE PAVEMENT WITH CURING COMPOUND REMAINING, THE CURING COMPOUND MEMBRANE SHALL BE REMOVED BY SANDBLASTING OR OTHER MECHANICAL CLEANING METHOD. MARKERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL IMMEDIATELY REPLACE, AT HIS EXPENSE, ANY MARKERS WHICH FAIL (BROKEN HOUSING, HOUSING WORN TO THE EXTENT THAT DAYTIME VISIBILITY IS SIGNIFICANTLY DIMINISHED OR OF AN UNACCEPTABLE COLOR, DETACHED OR BROKEN REFLECTOR, HOUSING DETACHED FROM ADHESIVE).

MARKERS ARE LIKELY TO BE REMOVED BY SNOW PLOWING OPERATIONS, THUS THEY ARE NOT CONSIDERED SUITABLE FOR USE DURING THE PERIOD FROM OCTOBER 15 UNTIL APRIL 30. THE CONTRACTOR IS ADVISED TO SCHEDULE HIS WORK AND/OR THE USE OF THESE DEVICES TO AVOID THIS PERIOD. SHOULD THE CONTRACTOR CHOOSE TO USE TRPM'S DURING THIS PERIOD AND THEY ARE SUBSEQUENTLY REMOVED OR DESTROYED BY SNOW AND ICE CONTROL ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY, AT HIS EXPENSE, PROVIDE A SUBSTITUTE TRAFFIC GUIDANCE SYSTEM EFFECTIVE DURING DAY AND NIGHT AND WHICH IS ACCEPTABLE TO THE ENGINEER.

THE MARKERS SHALL BE PLACED ACCURATELY TO DEPICT STRAIGHT OR UNIFORMLY CURVING LINES. WHEN USED TO SUPPLEMENT TEMPORARY PAVEMENT MARKINGS, THEY SHALL BE PLACED ON OR IMMEDIATELY ADJACENT TO THE PAVEMENT MARKING. LOCATIONS SHALL BE ADJUSTED UP TO ONE FOOT LONGITUDINALLY OR SIX INCHES LATERALLY TO AVOID PLACEMENT ON JOINTS, OR ON CRACKED OR DETERIORATED PAVEMENT. MARKERS SHALL NOT BE PLACED DIRECTLY ON PAVEMENT MARKINGS IF THIS DISTRACTS FROM THEIR ABILITY TO REMAIN ATTACHED TO THE PAVEMENT.

## APPLICATION

1) WHEN REQUIRED TO SUPPLEMENT PAVEMENT MARKING, TEMPORARY RAISED PAVEMENT MARKERS SHALL BE PLACED AS FOLLOWS:

LINE	TYPE	SPACING
EDGE LINE	A OR B	20'C/C
LANE LINE	A OR B	40'C/C*
CENTER LINE (SINGLE/BROKEN)	A OR B	40'C/C*
CENTER LINE (DOUBLE/SOLID)	A OR B	2 UNITS SIDE BY SIDE 4 INCHES APART 20'C/C
CHANNELIZING LINE (INCLUDES EXIT GORE NOSE)	A OR B	10'C/C

\* CENTERED IN GAP

2) WHEN USED TO SIMULATE (REPLACE) PAVEMENT MARKING, TEMPORARY RAISED PAVEMENT MARKERS SHALL BE PLACED AS FOLLOWS:

LINE	TYPE	SPACING
EDGE LINE	A	5' C/C
LANE LINE	A	3 UNITS 5' C/C (40' CYCLE)
CENTER LINE (DOUBLE/SOLID)	A	2 UNITS SIDE BY SIDE 5' C/C
CENTER LINE (SINGLE/BROKEN)	A	3 UNITS 5' C/C (40' CYCLE)
CHANNELIZING LINE (INCLUDES EXIT GORE NOSE)	A	5' C/C
EDGE LINE (TWO COLOR) (WHITE/YELLOW)	A	BACK TO BACK 5' C/C

YELLOW MARKERS USED TO SEPARATE OPPOSITE FLOWS OF TRAFFIC (CENTER LINES) SHALL INCLUDE REFLECTIONS FOR BOTH DIRECTIONS. ALL OTHER YELLOW AND WHITE MARKERS SHALL PROVIDE RETROREFLECTIVITY FOR ONE DIRECTION ONLY.

## REMOVAL

REMOVAL SHALL BE ACCOMPLISHED IN A MANNER THAT LITTLE OR NONE OF THE ADHESIVE REMAINS ON THE PAVEMENT. PERMANENT PAVEMENT SURFACES SHALL NOT BE SCARRED, BROKEN OR ROUGHENED SIGNIFICANTLY.

## PAVEMENT

BASIS OF PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE PER EACH MARKER AND SHALL INCLUDE ALL LABOR, EQUIPMENT, HARDWARE AND INCIDENTALS REQUIRED TO PERFORM THE WORK. IT SHALL ALSO INCLUDE REPLACEMENT AT NO ADDITIONAL COST OF ALL TEMPORARY RAISED PAVEMENT MARKERS WHICH, IN THE JUDGEMENT OF THE ENGINEER, FAIL FOR ANY REASON, EXCEPT DUE TO FAILURE OF THE PAVEMENT TO WHICH THEY ARE ATTACHED.

ITEM	UNIT	DESCRIPTION
614	EACH	TEMPORARY RAISED PAVEMENT MARKERS.

STATIONING			SPACING	TYPE A			TYPE B OR A			REMARKS
FROM	TO	SIDE	(FT)	W	Y	Y/Y	W	Y	Y/Y	(LINE TYPE)
WB 358+00	369+00	LT/RT	20'				55	55		EDGE LINE
481+50	490+00	LT/RT	20'				43	43		EDGE LINE
EB 354+70	366+50	RT/LT	20'				59	59		EDGE LINE
479+00	490+00	LT/RT	20'				55	55		EDGE LINE
TOTALS							424			

REVISED BY:	DATE:
210120	
614 TEMPORARY RAISED PAVEMENT MARKERS	DATE 03/30/88 03/23/90 03/28/90 07/03/90
PLAN INSERT SHEET	



# GENERAL SUMMARY

COMPLETED BY: SMM DATE: 3/95  
 CALCULATED BY: KMM DATE: 3/95  
 REVISED BY: KMM DATE: 6/98

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

30  
121

MAH-76/80-6.95/0.00

SHEET NUMBER																			ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
10	11	12	14	16	34	35	36	37	38	39	44	47	61	64	65	70	79							
																			201	11000	LUMP		CLEARING AND GRUBBING	
													534						202	22900	534	SQ YD	APPROACH SLAB REMOVED	
												67045							202	23000	67045	SQ YD	PAVEMENT REMOVED	
						487													202	30700	487	LIN FT	CONCRETE BARRIER REMOVED	
													26	26					202	30800	52	SQ YD	TRAFFIC ISLAND REMOVED	
													136	68					202	32000	204	LIN FT	CURB REMOVED	
						1836													202	34900	1836	LIN FT	PIPE REMOVED	
						10015.5													202	38000	10015.5	LIN FT	GUARDRAIL REMOVED	
						818.75													202	38200	818.75	LIN FT	GUARDRAIL REMOVED FOR REUSE	
						450													202	38300	450	LIN FT	GUARDRAIL REMOVED, BARRIER DESIGN	
																	100	100	202	54100	100	EACH	RAISED PAVEMENT MARKER REMOVED FOR STORAGE	
																			202	58500	1	EACH	CATCH BASIN ABANDONED	
			250							1125									SPECIAL	20270100	1375	LIN FT	PIPE CLEANOUT	14
						141							46328			20	11	203	12000	46500	CU YD	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION		
						141											24	203	20000	165	CU YD	EMBANKMENT		
1846	894	33		125														203	20001	2898	CU YD	EMBANKMENT, AS PER PLAN	10	
				35														203	45000	35	HOUR	PROOF ROLLING		
				500									106423			39		203	50000	106462	SQ YD	SUBGRADE COMPACTION		
										7119								203	55000	7619	LIN FT	DITCH CLEANOUT		
										334								203	60200	334	STATION	LINEAR GRADING, METHOD A		
										11								203	60204	11	STATION	LINEAR GRADING, METHOD B		
										90								203	60300	90	STATION	LINEAR GRADING, METHOD C		
										36								203	60400	36	STATION	LINEAR GRADING, METHOD D		
										9								203	98400	9	STATION	ROADWAY, MISC.: PAVING IN FRONT OF CONCRETE BARRIER		
				5														604	40501	5	EACH	REFERENCE MONUMENT, AS PER PLAN	16	
						10450.50												606	13000	10450.50	LIN FT	GUARDRAIL, TYPE 5		
						718.75												606	16000	718.75	LIN FT	GUARDRAIL REBUILT		
						70												606	18500	70	EACH	GUARDRAIL POST, 9 FT.		
						6												606	26100	6	EACH	ANCHOR ASSEMBLY, TYPE E	15	
						5												606	26500	5	EACH	ANCHOR ASSEMBLY, TYPE T		
						2												606	27850	2	EACH	ANCHOR ASSEMBLY REBUILT, TYPE E	16	
																		606	35000	11	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 1		
																		606	35010	1	EACH	BRIDGE TERMINAL ASSEMBLY REBUILT, TYPE 1		
																		606	35100	4	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 2		
																		606	98100	4	EACH	GUARDRAIL, MISC.: TYPE SRT-350 ANCHOR ASSEMBLY	15	
						56												622	24001	56	LIN FT	CONCRETE BARRIER, TYPE D, AS PER PLAN	15	
																		626	00100	121	EACH	BARRIER REFLECTOR, TYPE A		
										121								626	00200	27	EACH	BARRIER REFLECTOR, TYPE B		



# GENERAL SUMMARY

COMPLETED BY: SMM DATE: 3/95  
 CALCULATED BY: KMM DATE: 3/95  
 REVISED BY: KMM DATE: 6/98

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

31  
121

MAH-76/80-6.95/0.00

SHEET NUMBER																		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.			
10	11	12	14	15	16	20	33	39	42	43	45	47	48	49	65	70	71									
																						<b>PAVEMENT</b>				
												1565						414	5977	254	01000	1979	SQ YD	PAVEMENT PLANING, BITUMINOUS		
																		9	9	301	46000	9	CU YD	BITUMINOUS AGGREGATE BASE, PG64-22		
												19281	141					7	19459	304	20000	19429	CU YD	AGGREGATE BASE		
														94241					94182	307	10100	94241	SQ YD	4" NON-STABILIZED DRAINAGE BASE, TYPE 'IA'		
																		32	179	407	10000	150	GALLON	TACK COAT		
																			0	407	13900	63	GALLON	TACK COAT, 702.13		
																			0	407	14000	153	GALLON	TACK COAT FOR INTERMEDIATE COURSE		
																		35	29398	408	10000	32538	GALLON	BITUMINOUS PRIME COAT		
																		16	178	448	46010	55	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG64-28		
																		32522	210	448	46040	87	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28		
																		35	44	448	46050	35	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-22		
32	271	12																	334	448	46061	315	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, UNDER GUARDRAIL, PG64-22, AS PER PLAN	14	
																		17	19	448	47020	17	CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22		
																			163	SPECIAL	45130000	158	LIN FT	PRESSURE RELIEF JOINT, TYPE A	14	
																			134	SPECIAL	45130001	158	LIN FT	PRESSURE RELIEF JOINT, TYPE A, AS PER PLAN	14	
																			105093	452	17200	105405	SQ YD	PLAIN CONCRETE PAVEMENT, MISC.: T=14", AS PER PLAN	13	
																			240	609	26000	240	LIN FT	CURB, TYPE 6		
																			934	611	25001	935	SQ YD	REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN	13	
																			8.57 (miles)	618	40300	45240	LIN FT MI	RUMBLE STRIPS, TYPE 3 TYPE 2 (EXTRA WORK #9)		
																			0	803	45000	33	CU YD	RUBBERIZED OPEN GRADED ASPHALT FRICTION COURSE		
																			33							
561	4867	200																	5886	SPECIAL	81760200	5628	SQ YD	HERBICIDAL SPRAYING, MISC.: APPLICATION UNDER ASPHALT	10	
																						<b>DRAINAGE</b>				
																			0.3	602	20000	0.3	CU YD	CONCRETE MASONRY		
																			1392	671	00100	1392	LIN FT	4" CONDUIT, TYPE B, 707.33 OR 707.41 OR 707.42 OR 707.45		
																			40	0	00400	40	LIN FT	4" CONDUIT, TYPE E		
																			120	1524	00406	1850	LIN FT	4" CONDUIT, TYPE F		
																			1730	28	06700	37	LIN FT	15" CONDUIT TYPE F, 707.05 TYPE C		
																				0	604	01601	1	EACH	CATCH BASIN, NO. 5, AS PER PLAN	71
																				0	604	09900	1	EACH	CATCH BASIN GRATE	
																				0	604	33400	1	EACH	MANHOLE COVER	
																				46	604	36600	32	EACH	PRECAST REINFORCED CONCRETE OUTLET	
																				3	604	98000	4	EACH	DRAINAGE STRUCTURE, MISC.: CONCRETE APRON	
																				44491	605	05111	44491	LIN FT	4" SHALLOW PIPE UNDERDRAIN 707.31 WITH FABRIC WRAP, AS PER PLAN	14
																				1200	605	05211	1200	LIN FT	4" UNCLASSIFIED PIPE UNDERDRAIN 707.31 WITH FABRIC WRAP, AS PER PLAN	14
																				316	605	05111	558	LIN FT	4" SHALLOW PIPE UNDERDRAIN 707.41 WITH FABRIC WRAP, AS PER PLAN	73



# GENERAL SUMMARY

COMPLETED BY: SMM DATE: 3/95  
 CALCULATED BY: KMM DATE: 3/95  
 REVISED BY: KMM DATE: 6/98

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

MAH-76/80-6.95/0.00

32  
121

SHEET NUMBER														PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
15	16	17	18	19	20		28	29	43	49	70	71									
<b>EROSION CONTROL</b>																					
	100								100					2179	207	30000	200	LIN FT	FILTER FABRIC FENCE		
	25								90					50	207	70000	115	EACH	STRAW OR HAY BALES		
									5		15	2		42	601	32200	22	CU YD	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER		
181500											35			132.051	659	10000	181535	SQ YD	SEEDING AND MULCHING		
	9077													11,839	659	14000	9077	SQ YD	REPAIR SEEDING AND MULCHING		
											16.34			17.452	659	20000	16.34	TON	COMMERCIAL FERTILIZER		
											82.67			40.145	659	30000	82.67	TON	AGRICULTURAL LIMING		
											393			0	659	35000	393	M GAL	WATER		
<b>MAINTENANCE OF TRAFFIC</b>																					
					200									185.5	614	11100	200	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR		
			28											28	614	12470	28	EACH	WORK ZONE SPEED LIMIT SIGN		
		10												9	614	12480	10	EACH	DOUBLED FINES IN WORK ZONE SIGN		
				100										100	SPECIAL	61412500	100	SQ FT	REPLACEMENT SIGN	19	
				1										1	614	12756	1	EACH	TEMPORARY CROSSOVER LIGHTING SYSTEM		
									424					457	614	12800	424	EACH	TEMPORARY RAISED PAVEMENT MARKER		
														2211	614	13300	2184	EACH	BARRIER REFLECTOR, TYPE B		
														0	614	13300	50	EACH	BARRIER REFLECTOR, TYPE B, REPLACEMENT		
														2127	614	13350	2184	EACH	OBJECT MARKER		
					2									2	614	18501	2	EACH	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	20	
							7.94							2.81	614	20000	7.94	MILE	TEMPORARY LANE LINE, CLASS I		
							2.50							2.17	614	20200	2.50	MILE	TEMPORARY LANE LINE, CLASS I, 740.06, TYPE I		
							21.31							16.08	614	22000	21.31	MILE	TEMPORARY EDGE LINE, CLASS I		
							11.76							9.21	614	22200	11.76	MILE	TEMPORARY EDGE LINE, CLASS I, 740.06, TYPE I		
							1461							3472	614	23000	1461	LIN FT	TEMPORARY CHANNELIZING LINE, CLASS I		
							4213							675	614	23400	4213	LIN FT	TEMPORARY CHANNELIZING LINE, CLASS I, 740.06, TYPE I		
	LUMP													LS	615	10000	LUMP		TEMPORARY ROAD		
	3300													7931	615	20000	3300	SQ YD	TEMPORARY PAVEMENT, CLASS A		
														3682	615	20001	3770	SQ YD	TEMPORARY PAVEMENT, CLASS A, AS PER PLAN	28	
		580		24240										26708	622	40021	24820	LIN FT	PORTABLE CONCRETE BARRIER, 32", AS PER PLAN	19	
				2760										2134	622	40031	2760	LIN FT	PORTABLE CONCRETE BARRIER, 50", AS PER PLAN	19	
				800										0	622	40041	800	LIN FT	PORTABLE CONCRETE BARRIER, 32", BRIDGE MOUNTED, AS PER PLAN	19	
					2									2	SPECIAL	69086000	2	EACH	CELLULAR PHONE	19	











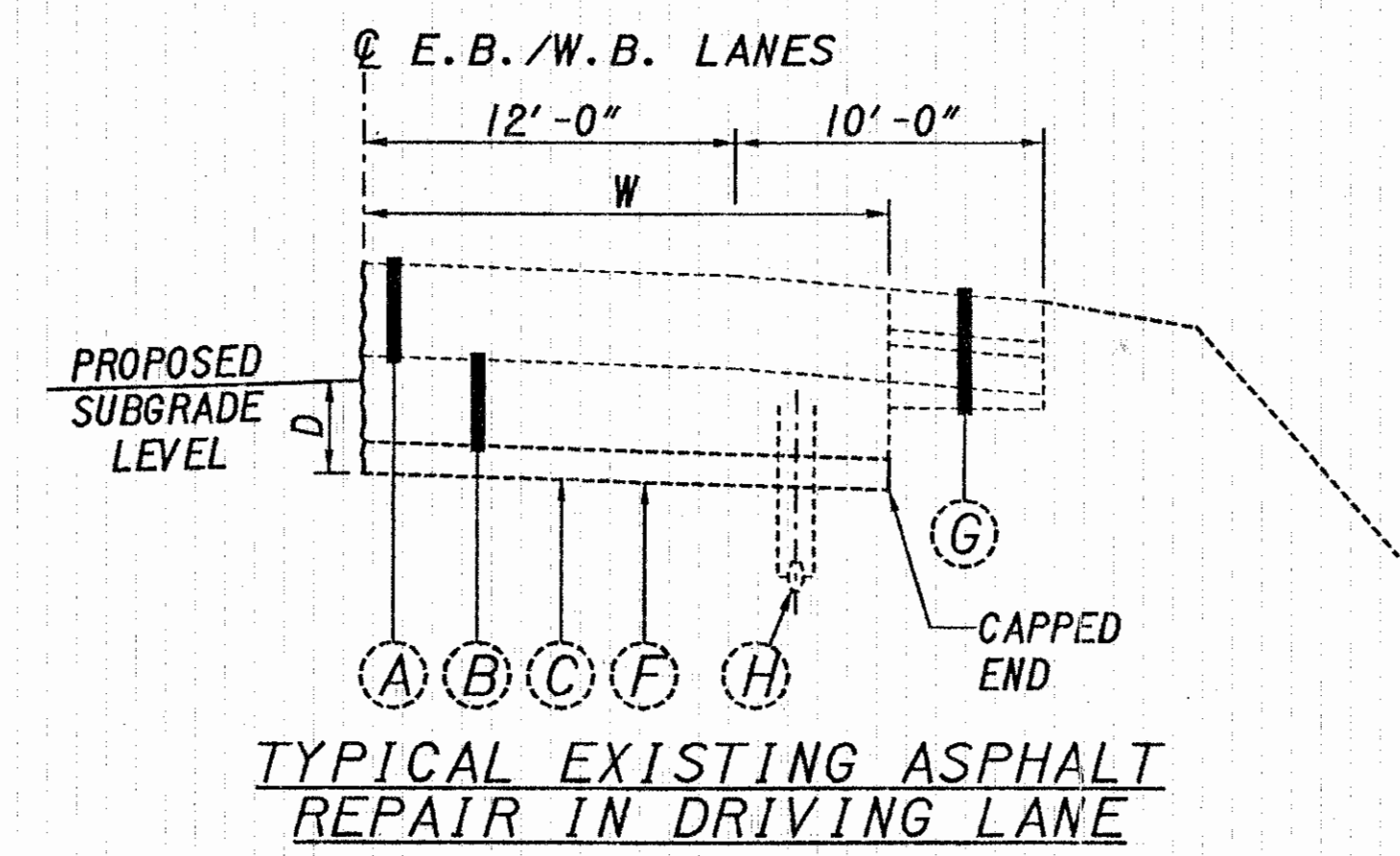
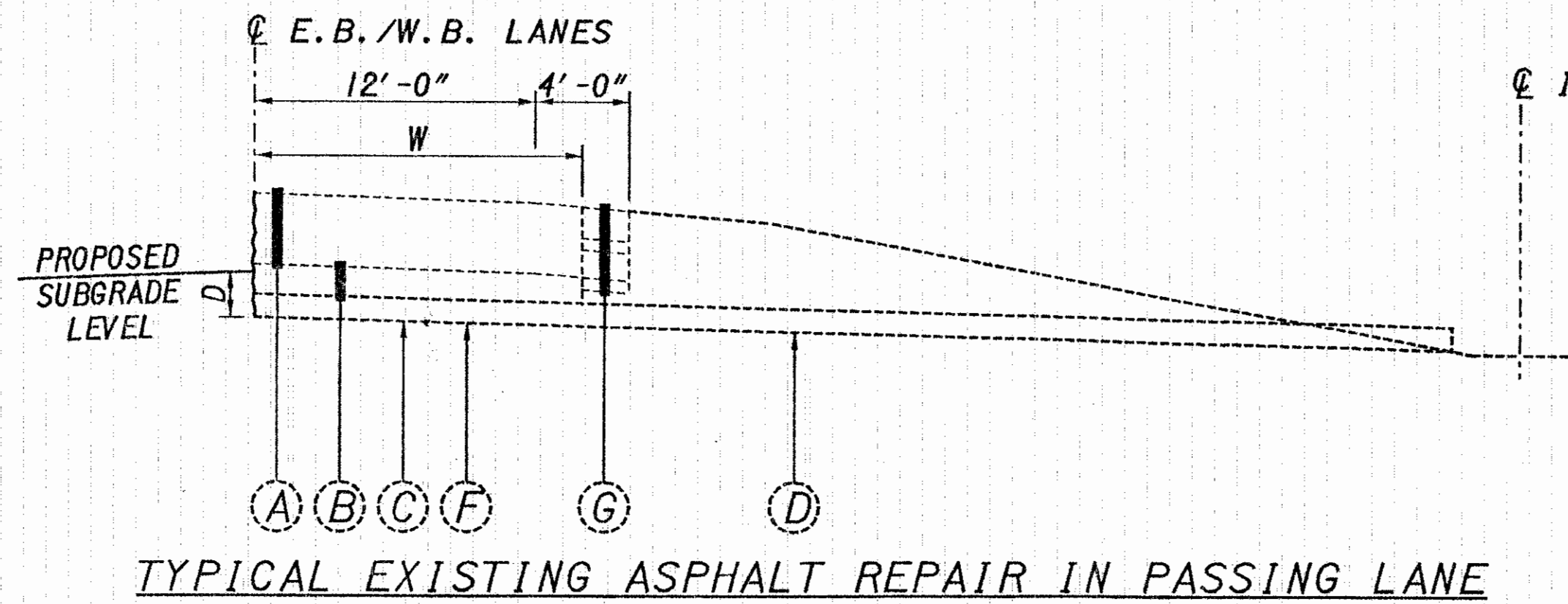
# SUBGRADE REPAIR DETAILS & SUB-SUMMARY

CALC. BY: KMM DATE: 3-95  
 CHKD. BY: RCB DATE: 3-95  
 REVISED BY: KMM DATE: 11-97

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

34  
121

MAH-76/80-6.95/0.00



## EASTBOUND PAVEMENT REPAIR SUMMARY

## WESTBOUND PAVEMENT REPAIR SUMMARY

STATION	LANE	LENGTH	WIDTH (W)	DEPTH (D)	203	203	202
					EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	EMBANKMENT	PIPE REMOVED
FROM	TO	FEET	FEET	FEET	CU YD	CU YD	LIN FT
372+79	373+31	DRIVING	51.75	14.4	*	*	14.0
372+95	373+30	PASSING	33.33	14.083	1.0	17.38	40.0
374+34	374+44	DRIVING	9.7	12.0	0.1	0.43	14.5
374+77	374+89	DRIVING	12.0	12.0	*	*	14.5
375+19	375+25	DRIVING	5.8	12.0	0.2	0.52	14.5
375+59	375+68	DRIVING	9.0	12.0	0.2	0.80	14.5
377+26	377+30	DRIVING	3.9	12.0	0.1	0.17	13.9
378+04	378+15	DRIVING	11.0	12.0	*	*	13.5
378+39	378+51	DRIVING	12.0	12.0	0.3	1.60	14.5
379+61	379+69	DRIVING	8.3	12.0	0.3	1.11	14.5
382+01	382+06	DRIVING	5.3	12.0	0.3	0.71	14.0
382+42	382+47	DRIVING	5.0	12.0	0.5	1.11	14.0
383+62	383+68	DRIVING	5.5	12.0	0.3	0.73	14.0
384+05	384+09	DRIVING	4.0	12.0	0.2	0.36	13.5
384+77	384+82	DRIVING	4.6	12.0	0.2	0.41	12.5
385+61	385+66	DRIVING	5.0	11.7	0.3	0.65	16.0
386+02	386+07	DRIVING	4.5	12.0	0.3	0.60	16.0
388+00	388+03	DRIVING	3.0	13.0	*	*	11.0
389+64	389+68	DRIVING	3.6	12.0	0.1	0.16	13.4
395+67	395+71	DRIVING	4.2	12.0	*	*	16.0
400+06	400+11	DRIVING	4.3	12.0	0.3	0.57	42.0
401+22	401+30	DRIVING	8.0	11.2	0.5	1.66	9.4
401+13	401+25	PASSING	12.0	12.0	0.4	2.13	53.0
404+56	404+59	DRIVING	3.3	12.0	0.1	0.15	13.2
404+84	405+36	DRIVING	51.7	13.3	*	*	54.0*
405+75	405+81	DRIVING	5.8	15.0	*	*	15.0
409+66	409+73	DRIVING	7.4	12.0	0.1	0.33	13.0
416+58	416+78	DRIVING	20.0	15.0	0.6	6.67	13.0
416+69	416+73	PASSING	3.75	14.67	0.8	1.63	42.0
420+05	420+21	DRIVING	15.4	12.0	*	*	13.5
430+69	430+74	PASSING	4.0	14.5	0.8	1.72	43.0
430+70	430+74	DRIVING	3.6	11.3	0.1	0.15	12.0
433+06	433+15	PASSING	8.29	12.08	*	*	45.0
440+66	440+79	DRIVING	12.8	11.5	0.4	2.18	12.6
440+69	440+83	PASSING	13.58	15.0	1.4	10.56	39.0
451+48	451+52	DRIVING	3.4	10.8	0.3	0.41	12.3
451+48	451+52	PASSING	3.83	15.0	0.8	1.70	39.0
460+25	460+34	PASSING	8.10	15.0	0.2	0.90	45.0
460+25	460+34	DRIVING	9.2	10.7	0.3	1.09	12.1
461+48	461+56	DRIVING	7.7	12.0	0.3	1.03	13.2
463+93	463+97	DRIVING	3.8	11.8	0.2	0.33	13.5
465+10	465+14	DRIVING	4.2	12.0	0.2	0.38	13.8
479+66	479+71	DRIVING	4.5	10.5	0.2	0.35	11.5
479+66	479+71	PASSING	4.6	15.0	0.2	0.51	46.0
480+48	480+53	DRIVING	4.7	12.0	0.6	1.25	13.2
<b>TOTALS EASTBOUND</b>					<b>62.4</b>	<b>62.4</b>	<b>948.1</b>

STATION	LANE	LENGTH	WIDTH (W)	DEPTH (D)	203	203	202
					EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	EMBANKMENT	PIPE REMOVED
FROM	TO	FEET	FEET	FEET	CU YD	CU YD	LIN FT
373+86	373+89	DRIVING	3.4	12.0	*	*	11.0
373+84	373+89	PASSING	4.5	15.0	0.2	0.50	68.5
385+00	385+15	DRIVING	14.8	12.0	0.2	1.32	13.8
389+00	389+04	PASSING	3.92	13.5	0.4	0.78	49.0
388+97	389+07	DRIVING	10.0	12.0	0.4	1.78	14.0
400+64	400+67	PASSING	2.25	14.0	0.2	0.23	45.0
400+64	400+66	DRIVING	2.4	12.0	0.5	0.53	12.0
404+74	404+77	PASSING	2.83	14.0	0.2	0.29	73.0
404+74	404+77	DRIVING	2.6	12.0	0.3	0.35	13.0
416+96	417+00	PASSING	3.58	14.67	0.2	0.39	44.0
416+99	417+03	DRIVING	2.5	12.5	0.7	0.81	12.0
426+91	426+95	PASSING	3.67	14.5	0.2	0.39	41.0
426+91	426+95	DRIVING	3.8	11.7	0.4	0.66	11.5
440+13	440+17	PASSING	3.67	14.0	0.7	1.33	43.5
440+13	440+16	DRIVING	2.9	12.0	0.5	0.64	14.0
452+51	452+56	PASSING	4.67	14.0	0.2	0.48	49.0
452+51	452+56	RAMP	4.6	17.1	0.5	1.46	12.5
452+14	452+56	DRIVING	41.8	12.1	0.7	13.11	12.0
470+91	470+94	DRIVING	2.92	11.83	0.5	0.64	14.0
470+91	470+94	PASSING	3.42	14.0	0.3	0.53	49.0
474+57	474+84	DRIVING	26.6	12.0	0.3	3.55	22.6
481+36	481+48	RAMP	11.5	13.0	0.5	2.77	13.0
481+86	481+89	RAMP	2.83	14.5	1.4	2.13	84.0
481+51	481+54	PASSING	2.83	11.5	0.3	0.36	46.5
481+42	481+89	DRIVING	47.2	12.0	0.3	6.29	22.5*
482+18	482+32	DRIVING	13.86	26.43	0.9	12.21	28.3
482+18	482+32	RAMP	14.0	24.0	0.9	11.20	28.3
482+69	483+38	DRIVING	68.67	12.9	0.4	13.12	40.0*
<b>TOTALS WESTBOUND</b>					<b>77.8</b>	<b>77.8</b>	<b>887</b>
<b>TOTALS EASTBOUND</b>					<b>62.4</b>	<b>62.4</b>	<b>948.1</b>
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>					<b>141</b>	<b>141</b>	<b>1836</b>

USED PLAN QUANTITY

### LEGEND

- (A) EXISTING VARIABLE ASPHALT CONCRETE PAVEMENT
- (B) EXISTING VARIABLE AGGREGATE BASE
- (C) EXISTING 4" PIPE UNDERDRAIN
- (D) EXISTING 6" CONDUIT, CLASS F
- (E) EXISTING FILTER FABRIC
- (G) EXISTING TYPICAL SHOULDER COMPOSITION, SEE TYPICAL SECTIONS SHEETS 3-5.
- (H) EXISTING 6" PIPE UNDERDRAIN

### NOTE:

• 2 INDIVIDUAL PIPE RUNS  
 \* THE DEPTH OF THIS ITEM IS SHALLOW AND THEREFORE, THE QUANTITY IS INCLUDED WITH THE CONSTRUCTION OF THE PROPOSED MAINLINE TYPICAL SECTION.

SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.



















# DRAINAGE SUB-SUMMARY & ELEVATION TABLE

CALC. BY: **KMM** DATE: **3-95**  
 CHKD. BY: **RCB** DATE: **3-95**  
 REVISED BY: **KMM** DATE: **11/97**

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
<b>5</b>	<b>OHIO</b>		

39  
121

MAH-76/80-6.95/0.00

SHT. NO.	REF. NO.	STATION		SIDE	EXISTING TYPE	EXISTING APRON	TOP OF GRATE ELEVATION	EXISTING PIPE E	202	SPECIAL *	203 *	604 **	604 **	604 *	604 *
									CATCH BASIN ABANDONED (AND PIPE THRU)▲	PIPE CLEANOUT	DITCH CLEANOUT	CATCH BASIN No. 5, AS PER PLAN	DRAINAGE STRUCTURE MISC.: CONCRETE APRON	MANHOLE COVER	CATCH BASIN GRATE
		EACH	LIN FT						LIN FT	EACH	EACH	EACH	EACH		
52	D-1	386+75		℄	CB-4	DOUBLE									
56	D-2	448+00		℄	CB-8	SINGLE									
57	D-3	454+50		RT	CB-5	SINGLE									
58	D-4	475+05		RT	MH-1										
59	D-5	492+00		℄	CB-4	SINGLE									
58	D-6	473+00		LT	CB-5	DOUBLE	967.76	27" E 963.55 @ C.B.							
58	D-7	475+52.67		LT	CB-6										
59	D-8	494+80		℄	CB-2-2-B										
52	D-9	381+20	395+00	LT ✓							1380				
53	D-10	395+00	401+95	LT ✓							695				
53	D-11	396+00	401+50	RT ✓							550				
54	D-12	411+50	412+50	℄							100				
56	D-13	448+00	453+00	LT							500				
57	D-14	453+00	458+33.24	LT							533.24				
57	D-15	458+33.24	463+50	RAMP "E"							516.76				
57	D-16	454+50	468+00	RT							1350				
58	D-18	472+00	475+56.23	LINE "B"							356.23				
58	D-19	475+54.46	480+00 481+70	LT							445.54				
59	D-20	494+00 493+87	495+50	LT							150-163				
59	D-21	494+80		℄							104				
58	D-22	475+05	476+18	RT							183				
53	D-24	397+50		℄							628				
53	D-25	UNDER S.R. 45		RT							122				
53	D-26	401+50		℄							88				
57	D-27	462+58 463+50	468+00 473+00	LT							542				
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>									1	1125	7119	1	4	1	1

▲ ITEM 202 CATCH BASIN ABANDONED (AND PIPED THRU)  
 THE EXISTING CATCH BASIN SHALL BE ABANDONED AND PIPED THROUGH ACCORDING TO CMS 202.09 AS SUCH, TO KEEP THE EXISTING DRAINAGE SYSTEM ACTIVE TO THE ENGINEER'S SATISFACTION. ANY ADDITIONAL LABOR, MATERIALS, OR INCIDENTALS NEEDED TO COMPLETE THIS ITEM SHALL BE INCLUDED WITH THE UNIT BID PRICE OF ITEM 202 CATCH BASIN ABANDONED (AND PIPED THRU).

MAH-980444 INSPECTOR'S REPORTS BACKUP SHEET

REF# 19 203E55000 DITCH CLEANOUT

Part# 01 EFW: 0

Report Date	LOCATION AND STATION	Report Quantity	Report ID
7/23/1999	STA 396+00 TO 401+50, RT	550.000	142B
7/28/1999	STA 395+00 TO 401+95, LT	695.000	144A
7/28/1999	STA 381+20 TO 395+00, LT (D-9)	1,380.000	144A
10/13/1999	STA 475+54.46 TO 481+70, LT	615.540	216B
10/13/1999	STA 475+54.46 TO 481+70, LT	615.540	216B
10/16/1999	STA 463+60 TO 473+00, LT	940.000	219A
11/18/1999	STA 493+87 TO 495+50, WB (LIPKEY)	163.000	246
11/18/1999	FFM ADJUSTMENT	-615.080	246

Part# 01 Plan Quantity: 7,619.000 LF

UNIT PRICE: \$6.00	PLAN: 7,619.000 LF	GRAND TOTAL: 4,344.000 LF
CHANGE ORDER: -3,275.000 LF	\$-19,650.00	FINAL:

Designed By Bulent Bligh, P.E. D-04 Rev. 12/97 Tuesday, November 23, 1999

NOTE: ITEMS DELETED: D-23, D-17  
 \* SEE GENERAL NOTES SHEETS 13-14 FOR ADDITIONAL DETAILS.  
 \*\* SEE DRAINAGE DETAILS SHEET 71 FOR ADDITIONAL INFORMATION.



COMPLETED BY: SMM DATE: 3/95  
 CHECKED BY: MBK DATE: 3/95  
 REVISED BY: KMM DATE: 11/97

# 4" SHALLOW PIPE UNDERDRAIN, AS PER PLAN DRAINAGE QUANTITIES

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		40 121

MAH-76/80-6.95/0.00

REF. NO.	SEE SHEET NO.	STATIONING	SIDE	SHALLOW UNDERDRAIN OUTLETS	OUTLET INTO EXISTING CATCH BASIN OR MANHOLE	603	603	605	605	605	604	FOR CONTRACTORS INFORMATION ONLY				
						4" CONDUIT, TYPE F	4" CONDUIT, TYPE B, 707.33 OR 707.41 OR 707.42 OR 707.45	4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31, AS PER PLAN	4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.41, AS PER PLAN	4" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31, AS PER PLAN	PRECAST REINFORCED CONCRETE OUTLET	PLUG	4"x4" TEE	4"x30"	4"x60"	4"x90"
						LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	EACH	EACH	
UD-1	51	367+00 TO 369+75.66	RT-O	367+00		15		276								
UD-2	51	367+00 TO 369+89.60	RT-M	367+00				290								
UD-3	51	367+00	RT						32							
UD-4	51	367+00 TO 370+25.32	LT-M	367+00				326								
UD-5	51	367+00 TO 370+39.26	LT-O	367+00		15		340								
UD-6	51	367+00	LT						32							
UD-7	51	372+46.74 TO 379+00	RT-O	379+00		15		654								
UD-8	51	372+60.68 TO 379+00	RT-M	379+00		35		640								
UD-9	51	372+96.40 TO 379+00	LT-M	379+00		35		604								
UD-10	51	373+10.34 TO 379+00	LT-O	379+00		15		590								
UD-11	51	379+00 TO 380+00	RT-O					100								
UD-12	51	379+00 TO 380+00	RT-M					100								
UD-13	51	379+00 TO 380+00	LT-M					100								
UD-14	51	379+00 TO 380+00	LT-O					100								
UD-1	52	380+00 TO 384+75	RT-O	384+75		15		475								
UD-2	52	380+00 TO 384+75	RT-M		384+75	45		475								
UD-3	52	380+00 TO 384+75	LT-M		384+75	45		475								
UD-4	52	380+00 TO 384+75	LT-O	384+75		15		475								
UD-5	52	384+75 TO 388+00	RT-O					325								
UD-6	52	384+75 TO 388+00	RT-M					325								
UD-7	52	384+75 TO 388+00	LT-M					325								
UD-8	52	384+75 TO 388+00	LT-O					325								
UD-5A	52	388+00 TO 391+00	RT-O							300						
UD-6A	52	388+00 TO 391+00	RT-M							300						
UD-7A	52	388+00 TO 391+00	LT-M							300						
UD-8A	52	388+00 TO 391+00	LT-O							300						
UD-9	52	391+00 TO 395+00	RT-O	391+00		15		400								
UD-10	52	391+00 TO 395+00	RT-M	391+00		35		400								
UD-11	52	391+00 TO 395+00	LT-M	391+00		35		400								
UD-12	52	391+00 TO 395+00	LT-O	391+00		15		400								
UD-1	53	395+00 TO 396+00	RT-O					100								
UD-2	53	395+00 TO 396+00	RT-M					100								
UD-3	53	395+00 TO 396+00	LT-M					100								
UD-4	53	395+00 TO 396+00	LT-O					100								
UD-5	53	396+00 TO 401+61.49	RT-O	396+00		15		562								
UD-6	53	396+00 TO 401+65.24	RT-M	396+00		35		566								
UD-7	53	396+00 TO 401+74.85	LT-M	396+00		35		575								
UD-8	53	396+00 TO 401+78.60	LT-O	396+00		15		579								
UD-9	53	403+75 TO 408+45.31	RT-O					471								
UD-10	53	408+45.31 TO 409+00	RT				62									
UD-11	53	403+78.75 TO 409+00	RT-M	409+00		35		522								
UD-12	53	403+88.35 TO 409+00	LT-M	409+00		35		512								
UD-13	53	408+45.31 TO 409+00	LT				62									
UD-14	53	403+92.10 TO 408+45.31	LT-O					454								
UD-15	53	408+45.31 TO 410+00	RT-O					155								
UD-16	53	409+00 TO 410+00	RT-M					100								
UD-17	53	409+00 TO 410+00	LT-M					100								
UD-18	53	408+45.31 TO 410+00	LT-O					155								
UD-1	54	410+00 TO 413+45.31	RT-O					346								
UD-2	54	413+45.31 TO 414+00	RT				62									
UD-3	54	410+00 TO 414+00	RT-M	414+00		35		400								
UD-4	54	410+00 TO 414+00	LT-M	414+00		35		400								
UD-5	54	413+45.31 TO 414+00	LT				62									
UD-6	54	410+00 TO 413+45.31	LT-O					346								
** TOTAL SHEET 40						590	248	15563	64	1200	20	18	26	4	4	2

LEGEND:  
 RT = RIGHT LANES  
 LT = LEFT LANES  
 M = MEDIAN SIDE  
 O = OUTSIDE

\*\* QUANTITIES CARRIED TO SHEET 42.



# 4" SHALLOW PIPE UNDERDRAIN, AS PER PLAN DRAINAGE QUANTITIES

MAH-76/80-6.95/0.00

COMPLETED BY: SMM DATE: 3/95  
 CHECKED BY: MBK DATE: 3/95  
 REVISED BY: KMM DATE: 11/97

REF. NO.	SEE SHEET NO.	STATIONING	SIDE	SHALLOW UNDERDRAIN OUTLETS	OUTLET INTO EXISTING CATCH BASIN OR MANHOLE	603		605		604		FOR CONTRACTORS INFORMATION ONLY					
						4" CONDUIT, TYPE F	4" CONDUIT, TYPE B, 707.33 OR 707.41 OR 707.42 OR 707.45	4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31, AS PER PLAN	4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.41, AS PER PLAN	PRECAST REINFORCED CONCRETE OUTLET	PLUG	4"x4" TEE	4"x30"	4"x60"	4"x90"		
						LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	EACH	EACH			
UD-7	54	413+45.31 TO 418+45.31	RT-O					500									
UD-8	54	418+45.31 TO 419+00	RT				62										
UD-9	54	414+00 TO 419+00	RT-M		419+00	45		500									
UD-10	54	414+00 TO 419+00	LT-M		419+00	45		500									
UD-11	54	418+45.31 TO 419+00	LT				62										
UD-12	54	413+45.31 TO 418+45.31	LT-O					500									
* UD-13	54	418+45.31 TO 423+45.31	RT-O					640									
UD-14	54	423+45.31 TO 424+00	RT				62										
* UD-15	54	419+00 TO 424+00	RT-M		424+00	45		640									
* UD-16	54	419+00 TO 424+00	LT-M		424+00	45		640									
UD-17	54	423+45.31 TO 424+00	LT				62										
* UD-18	54	418+45.31 TO 423+45.31	LT-O					640									
UD-19	54	423+45.31 TO 424+00	RT-O					55									
UD-20	54	423+45.31 TO 424+00	LT-O					55									
UD-1	55	424+00 TO 429+45.31	RT-O					546									
UD-2	55	429+45.31 TO 430+00	RT				62										
UD-3	55	424+00 TO 430+00	RT-M		430+00	50		600									
UD-4	55	424+00 TO 430+00	LT-M		430+00	40		600									
UD-5	55	429+45.31 TO 430+00	LT				62										
UD-6	55	424+00 TO 429+45.31	LT-O					546									
UD-7	55	429+45.31 TO 435+45.31	RT-O					600									
UD-8	55	435+45.31 TO 436+00	RT				62										
UD-9	55	430+00 TO 436+00	RT-M		436+00	45		600									
UD-10	55	430+00 TO 436+00	LT-M		436+00	45		600									
UD-11	55	435+45.31 TO 436+00	LT				62										
UD-12	55	429+45.31 TO 435+45.31	LT-O					600									
UD-13	55	435+45.31 TO 439+00	RT-O					355									
UD-14	55	436+00 TO 439+00	RT-M					300									
UD-15	55	436+00 TO 439+00	LT-M					300									
UD-16	55	435+45.31 TO 439+00	LT-O					355									
UD-1	56	439+00 TO 441+45.31	RT-O					246									
UD-2	56	441+45.31 TO 442+00	RT				62										
UD-3	56	439+00 TO 442+00	RT-M		442+00	45		300									
UD-4	56	439+00 TO 442+00	LT-M		442+00	45		300									
UD-5	56	441+45.31 TO 442+00	LT				62										
UD-6	56	439+00 TO 441+45.31	LT-O					246									
UD-7	56	441+45.31 TO 447+45.31	RT-O					600									
UD-8	56	447+45.31 TO 448+00	RT				62										
UD-9	56	442+00 TO 448+00	RT-M		448+00	35		600									
UD-10	56	442+00 TO 448+00	LT-M		448+00	45		600									
UD-11	56	447+35.68 TO 448+00	LT				74										
UD-12	56	441+45.31 TO 447+35.68	LT-O					591									
UD-13	56	447+45.31 TO 453+00	RT-O					555									
UD-14	56	448+00 TO 453+00	RT-M					500									
UD-15	56	448+00 TO 453+00	LT-M					500									
UD-16	56	447+35.68 TO 453+00	LT-O					565									
UD-1	57	453+00 TO 454+50	RT-O		454+50	25		150									
UD-2	57	453+00 TO 453+75	RT-M		453+75	45		75									
UD-3	57	453+00 TO 453+75	LT-M		453+75	45		75									
UD-4	57	453+00 TO 453+75	LT-O		453+75	10		75									
** TOTAL SHEET 41						655	756	16650				14	28	12	12	0	

LEGEND:  
 RT = RIGHT LANES  
 LT = LEFT LANES  
 M = MEDIAN SIDE  
 O = OUTSIDE

\* STATION EQUATION: STA. 420+00 (BK.) = STA. 418+60 (AH.)

\*\* QUANTITIES CARRIED TO SHEET 42.



# 4<sup>99</sup> SHALLOW PIPE UNDERDRAIN, AS PER PLAN DRAINAGE QUANTITIES

MAH-76/80-6.95/0.00

COMPLETED BY: SMM    DATE: 3/95  
 CHECKED BY: MBK    DATE: 3/95  
 REVISED BY: KMM    DATE: 11/97

REF. NO.	SEE SHEET NO.	STATIONING	SIDE	SHALLOW UNDERDRAIN OUTLETS	OUTLET INTO EXISTING CATCH BASIN OR MANHOLE	603	603	605	605	605	604	FOR CONTRACTORS INFORMATION ONLY				
						4" CONDUIT, TYPE F	4" CONDUIT, TYPE B, 707.33 OR 707.41 OR 707.42 OR 707.45	4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31, AS PER PLAN	4" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, 707.41, AS PER PLAN	4" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP, 707.31, AS PER PLAN	PRECAST REINFORCED CONCRETE OUTLET	PLUG	4"x4" TEE	4"x30"	4"x60"	4"x90"
						LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	EACH	EACH	
UD-5	57	454+50 TO 458+45.31	RT-0					396								
UD-6	57	458+45.31 TO 459+00	RT				62									
UD-7	57	453+75 TO 459+00	RT-M		459+00	25		525								
UD-8	57	453+75 TO 459+00	LT-M		459+00	60		525								
UD-9	57	453+75 TO 462+58.24	LT-0	463+50		100		884								
UD-10	57	462+58.24	LT						33							
UD-11	57	458+45.31 TO 463+45.31	RT-0					500								
UD-12	57	463+45.31 TO 464+00	RT				62									
UD-13	57	459+00 TO 464+00	RT-M		464+00	25		500								
UD-14	57	459+00 TO 464+00	LT-M		464+00	60		500								
UD-15	57	463+45.31 TO 464+00	LT				62									
UD-16	57	458+33.24 TO 463+45.31	LT-0					513								
UD-17	57	463+45.31 TO 468+00	RT-0					455								
UD-18	57	464+00 TO 468+00	RT-M					400								
UD-19	57	464+00 TO 468+00	LT-M					400								
UD-20	57	463+45.31 TO 468+00	LT-0					455								
UD-1	58	468+00 TO 468+36.25	RT-0					37								
UD-2	58	468+36.25 TO 469+00	RT				73									
UD-3	58	468+00 TO 469+00	RT-M		469+00	25		100								
UD-4	58	468+00 TO 469+00	LT-M		469+00	60		100								
UD-5	58	468+45.31 TO 469+00	LT				62									
UD-6	58	468+00 TO 468+45.31	LT-0					46								
UD-7	58	468+36.25 TO 476+11.59	RT-0	476+11.59			5	776								
UD-8	58	476+11.59	RT						34							
UD-9	58	469+00 TO 475+05	RT-M		475+05	25		605								
UD-10	58	469+00 TO 476+09.15	LT-M	476+10.89		35		710								
UD-11	58	475+54.46 TO 476+09.15	LT				62									
UD-12	58	468+45.31 TO 475+54.46	LT-0					710								
UD-13	58	475+54.46	LT						35							
UD-14	58	476+11.59 TO 483+00	RT-0					689								
UD-15	58	475+05 TO 483+00	RT-M					795								
UD-16	58	476+09.15 TO 483+00	LT-M					691								
UD-17	58	475+54.46 TO 483+00	LT-0					746								
UD-1	59	483+00 TO 483+54.46	RT-0					55								
UD-2	59	483+54.46	RT						32							
UD-3	59	483+00 TO 483+54.46	RT-M	483+54.46		35		55								
UD-4	59	483+00 TO 483+54.46	LT-M	483+54.46		35		55								
UD-5	59	483+54.46	LT						44							
UD-6	59	483+00 TO 483+54.46	LT-M					55								
TOTALS FROM SHEET #40						590	248	15563	64	1200	20	18	26	4	4	2
TOTALS FROM SHEET #41						655	756	16650	0	0	0	14	28	12	12	0
TOTALS FROM SHEET #42						485	388	12278	178	0	4	10	19	7	6	3
TOTALS CARRIED TO GENERAL SUMMARY						1730	1392	44491	242	1200	24	42	73	23	22	5

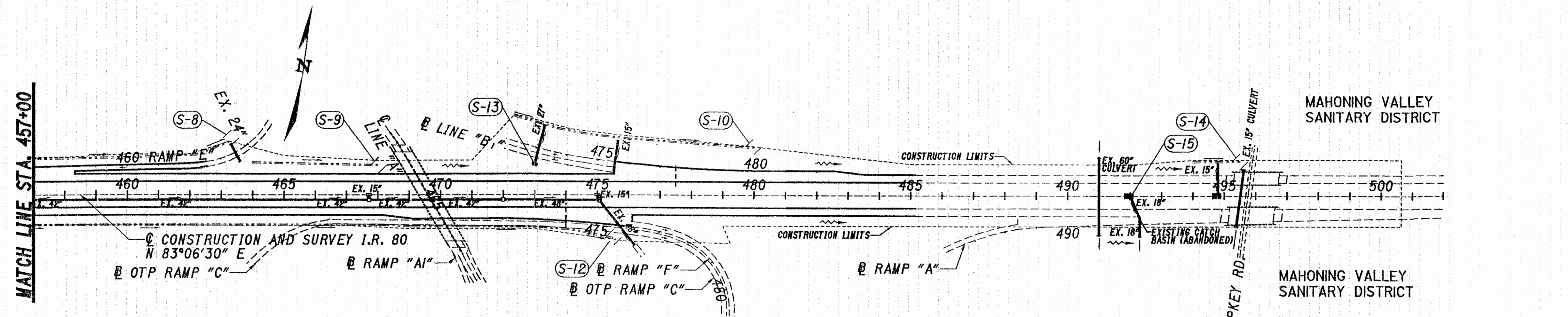
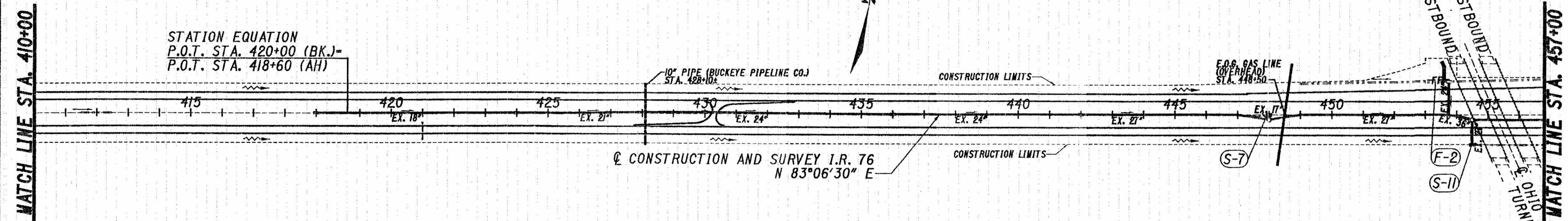
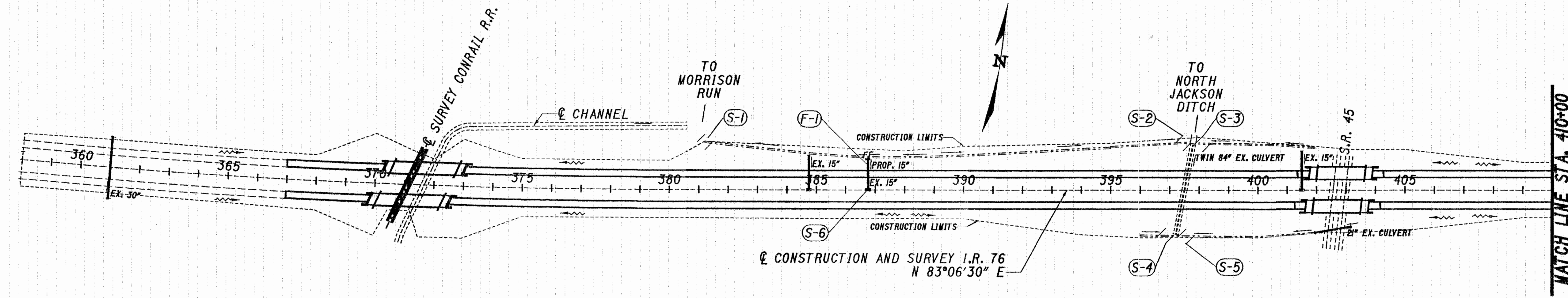
**LEGEND:**  
 RT = RIGHT LANES  
 LT = LEFT LANES  
 M = MEDIAN SIDE  
 O = OUTSIDE



MAH-76/80-6.95/0.00

PROJECT DESCRIPTION:

THE PROJECT CONSISTS OF FULL-DEPTH CONCRETE REPLACEMENT OF THE FOUR-LANE, DIVIDED LIMITED ACCESS INTERSTATE AND REDECKING THE BRIDGES OVER CONRAIL R.R. AND S.R. 45. THE PROPOSED ROADWAY SHALL MAINTAIN APPROXIMATELY THE SAME ALIGNMENTS AS THE EXISTING. WORK BEGINS APPROXIMATELY 1312 FEET WEST OF THE CONRAIL R.R. BRIDGE AND ENDS APPROXIMATELY 490 FEET EAST OF THE LIPKEY ROAD BRIDGE. THE LENGTH OF WORK ON THE EAST-WEST ROADWAY ENCOMPASSES 2.73 MILES.



- LEGEND**
- ◆ BALE DITCH CHECK (5 BALES EACH)
  - PROPOSED CATCH BASIN WORK (8 BALES EACH), SEE SHEET 39 FOR DRAINAGE QUANTITIES
  - EXISTING CATCH BASIN
  - DITCH CLEANOUT, SEE SHEET 39 FOR DRAINAGE QUANTITIES
  - |- FILTER FABRIC FENCE
  - PROPOSED MANHOLE WORK, SEE SHEET 39 FOR DRAINAGE QUANTITIES
  - EXISTING MANHOLE

PROJECT DATA	
TOTAL DISTURBED AREA (WITHIN CONSTRUCTION LIMITS) -	77 ACRES
PRE-CONSTRUCTION RUNOFF COEFFICIENT -	0.68
POST-CONSTRUCTION RUNOFF COEFFICIENT -	0.68
RECEIVING WATER -	MORRISON RUN & NORTH JACKSON DITCH
SUBSEQUENT RECEIVING WATER -	MEANDER CREEK RESERVOIR
USGS QUADRANT No.	538-4-SE, CANFIELD, OHIO
LONGITUDE:	N 41°-06'-39"
LATITUDE:	W 80°-50'-00"
NOTE:	LONGITUDE AND LATITUDE TO APPROXIMATE CENTER OF PROJECT.

ESTIMATED QUANTITIES						
REF NO.	STATION		SIDE	207	207	601
	FROM	TO		STRAW OR HAY BALES EACH	FILTER FABRIC FENCE LIN FT	ROCK CHANNEL PROTECTION TYPE C W/FILTER CU YD
S-1	381+20		LT	5		0.5
S-2	397+71		LT	5		0.5
S-3	397+88		LT	5		0.5
S-4	397+10		RT	5		0.5
S-5	397+33		RT	5		0.5
S-6	386+75		℄	8		
S-7	448+00		℄	8		
S-8	RAMP "E" 463+50		LT	5		0.5
S-9	462+58		LT	5		0.5
S-10	480+00		LT	5		0.5
S-11	454+50		RT	8		
S-12	475+50		RT	5		0.5
S-13	473+00		RT	8		
S-14	495+50		LT	5		0.5
S-15	492+00		℄	8		
F-1	386+50	387+00	LT		50	
F-2	453+34	453+84	LT		50	
TOTALS CARRIED TO GENERAL SUMMARY				90	100	5



COMPLETED BY SAJ DATE 12/94  
 CALCULATED BY KMM DATE 1/95  
 REVISED BY KMM DATE 11/97

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		44 121

MAH-76/80-6.95/0.00

# CALCULATIONS

\* STATION EQUATION:  
 STA. 420+00 (BK.)=  
 STA. 418+60 (AH.)

MAINLINE PAVEMENT AREAS:

W=48'-0" EASTBOUND & WESTBOUND  
 STA. 367+00 TO STA. 370+07.46 I-76  
 48' X 307.46' = 14758.08 SQ.FT.  
 STA. 372+78.54 TO STA. 401+70.04 I-76  
 48' X 2891.50' = 138792.00 SQ.FT.  
 STA. 403+83.55 TO STA. 420+00 (BK.)\* I-76  
 48' X 1616.45' = 77589.60 SQ.FT.  
 STA. 418+60 (AH.)\* TO STA. 483+54.46 I-76/80  
 48' X 6494.46' = 311734.08 SQ.FT.  
 TOTAL = 542873.76 SQ.FT.

MAINLINE OUTSIDE SHOULDER EASTBOUND:

STA. 367+00 TO STA. 370+07.46 I-76 = 307.46 LIN.FT.  
 STA. 372+78.54 TO STA. 401+70.04 I-76 = 2891.50 LIN.FT.  
 STA. 403+83.55 TO STA. 420+00 (BK.)\* I-76 = 1616.45 LIN.FT.  
 STA. 418+60 (AH.)\* TO STA. 468+11.59 I-76/80 = 4951.59 LIN.FT.  
 STA. 476+11.59 TO STA. 483+54.46 I-80 = 742.87 LIN.FT.  
 TOTAL = 10509.87 LIN.FT.

MAINLINE OUTSIDE SHOULDER WESTBOUND:

STA. 367+00 TO STA. 370+07.46 I-76 = 307.46 LIN.FT.  
 STA. 372+78.54 TO STA. 401+70.04 I-76 = 2891.50 LIN.FT.  
 STA. 403+83.55 TO STA. 420+00 (BK.)\* I-76 = 1616.45 LIN.FT.  
 STA. 418+60 (AH.)\* TO STA. 446+33.24 I-76 = 2773.24 LIN.FT.  
 STA. 462+58.24 TO STA. 475+54.46 I-80 = 1296.22 LIN.FT.  
 TOTAL = 8884.87 LIN.FT.

MAINLINE INSIDE SHOULDER EASTBOUND AND WESTBOUND:

STA. 367+00 TO STA. 370+07.46 I-76 = 307.46 LIN.FT.  
 STA. 372+78.54 TO STA. 401+70.04 I-76 = 2891.50 LIN.FT.  
 STA. 403+83.55 TO STA. 420+00 (BK.)\* I-76 = 1616.45 LIN.FT.  
 STA. 418+60 (AH.)\* TO STA. 483+54.46 I-76/80 = 6494.46 LIN.FT.  
 11309.87 LIN.FT.  
 TOTAL : 2 X 11309.87 = 22619.74 LIN.FT.

LINE "B1" PAVEMENT AREAS:

LINE "B1" DECEL LANE:

STA. 480+17.56 TO STA. 483+54.46  
 12' X 336.90' = 4042.80 SQ.FT.  
 STA. 475+54.46 TO STA. 480+17.56  
 $(12' + \frac{0'+28'}{2}) \times 463.10' = 12040.60 \text{ SQ.FT.}$   
 TOTAL = 16083.40 SQ.FT.

LINE "B1" DECEL LANE OUTSIDE SHOULDER:

STA. 475+54.46 TO STA. 482+54.46 = 700.00 LIN.FT.  
 STA. 482+54.46 TO STA. 483+54.46 = 100.00 LIN.FT.  
 TOTAL = 800.00 LIN.FT.

RAMP "E" PAVEMENT AREAS:

RAMP "E":

STA. 458+33.24 TO STA. 461+33.24  
 $\frac{14'+16'}{2} \times 300' = 4500.00 \text{ SQ.FT.}$   
 STA. 461+33.24 TO STA. 462+33.24  
 $\frac{16'+18'}{2} \times 100' = 1700.00 \text{ SQ.FT.}$   
 STA. 462+33.24 TO STA. 462+58.24  
 16' X 25' = 400.00 SQ.FT.  
 TOTAL = 6600.00 SQ.FT.

RAMP "E" OUTSIDE SHOULDER:

STA. 458+33.24 TO STA. 461+33.24 = 300.00 LIN.FT.  
 STA. 461+33.24 TO STA. 461+83.24 = 50.00 LIN.FT.  
 STA. 461+83.24 TO STA. 462+58.24 = 75.00 LIN.FT.  
 TOTAL = 425.00 LIN.FT.

RAMP "E" INSIDE SHOULDER:

STA. 458+33.24 TO STA. 462+33.24 = NO SHOULDER  
 STA. 462+33.24 TO STA. 462+58.24  
 $\frac{2'+2.5'}{2} \times 25' = 56.25 \text{ SQ.FT.}$   
 TOTAL = 56.25 SQ.FT.

RAMP "E" EXTRA AREAS:

STA. 458+33.24 TO STA. 462+58.24  
 $\frac{11'+21'}{2} \times 425' = 6800.00 \text{ SQ.FT.}$

RAMP "E" ACCEL LANE:

STA. 446+33.24 TO STA. 447+29.24  
 INCLUDED AS PART OF ACCEL LANE OUTSIDE SHOULDER  
 STA. 447+29.24 TO STA. 454+01.24  
 $\frac{2'+16'}{2} \times 672' = 6048.00 \text{ SQ.FT.}$   
 STA. 454+01.24 TO STA. 458+33.24  
 $(14' + \frac{2'+11'}{2}) \times 432' = 8856.00 \text{ SQ.FT.}$   
 TOTAL = 14904.00 SQ.FT.

RAMP "E" ACCEL LANE OUTSIDE SHOULDER:

(10' SHOULDER) STA. 446+33.24 TO STA. 447+29.24 = 96.00 LIN.FT.  
 (8' SHOULDER) STA. 447+29.24 TO STA. 458+33.24 = 1104.00 LIN.FT.  
 TOTAL = 1200.00 LIN.FT.

RAMP "F" PAVEMENT AREAS:

RAMP "F" DECEL LANE:

STA. 468+11.59 TO STA. 469+11.59  
 $\frac{0'+12'}{2} \times 100' = 600.00 \text{ SQ.FT.}$   
 STA. 469+11.59 TO STA. 471+56.86  
 12' X 245.27' = 2943.24 SQ.FT.  
 STA. 471+56.86 TO STA. 476+11.59  
 $(12 + \frac{0'+27'}{2}) \times 454.73 = 11595.62 \text{ SQ.FT.}$   
 TOTAL = 15138.86 SQ.FT.

RAMP "F" DECEL LANE OUTSIDE SHOULDER:

STA. 468+11.59 TO STA. 469+11.59 = 100.00 LIN.FT.  
 STA. 469+11.59 TO STA. 476+11.59 = 700.00 LIN.FT.  
 TOTAL = 800.00 LIN.FT.

ITEM 202 PAVEMENT REMOVED:

MAINLINE:

542873.76 SQ.FT. + 9 = 60319.31 SQ.YD.

LINE "B1" DECEL LANE:

16083.40 SQ.FT. + 9 = 1787.04 SQ.YD.

LINE "B1" DECEL LANE OUTSIDE SHOULDER:

STA. 482+54.46 TO STA. 483+54.46  
 10' X 100.00 LIN.FT. + 9 = 111.11 SQ.YD.

RAMP "E":

6600.00 SQ.FT. + 9 = 733.33 SQ.YD.

RAMP "E" EXTRA AREAS:

6800.00 SQ.FT. + 9 = 755.56 SQ.YD.

RAMP "E" ACCEL LANE:

14904.00 SQ.FT. + 9 = 1656.00 SQ.YD.

RAMP "F" DECEL LANE:

15138.86 SQ.FT. + 9 = 1682.10 SQ.YD.

TO GENERAL SUMMARY: 67045 SQ.YD.



# CALCULATIONS

\* SEE SHEET 49 FOR ADDITIONAL INFORMATION.

## ITEM 304 AGGREGATE BASE, VARIABLE DEPTH:

MAINLINE:  
 $6" \times \left(\frac{1}{12}\right) \times 542873.76 \text{ SQ.FT.} \div 27 = 10053.22 \text{ CU.YD.}$

MAINLINE OUTSIDE SHOULDER EASTBOUND:  
 $* 7.42' \times 6" \times \left(\frac{1}{12}\right) = 3.71 \text{ SQ.FT.}$   
 $* \text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 5.67 SQ.FT.  
 $5.67 \text{ SQ.FT.} \times 10509.87 \text{ LIN.FT.} \div 27 = 2207.07 \text{ CU.YD.}$

MAINLINE OUTSIDE SHOULDER WESTBOUND:  
 $7.42' \times 6" \times \left(\frac{1}{12}\right) = 3.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 5.67 SQ.FT.  
 $5.67 \text{ SQ.FT.} \times 8884.87 \text{ LIN.FT.} \div 27 = 1865.82 \text{ CU.YD.}$

MAINLINE INSIDE SHOULDER:  
 WB:  $* 1.42' \times 6" \times \left(\frac{1}{12}\right) = 0.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 2.67 SQ.FT.  
 $2.67 \text{ SQ.FT.} \times 11309.87 \text{ LIN.FT.} \div 27 = 1118.42 \text{ CU.YD.}$   
 EB:  $1.42' \times 6" \times \left(\frac{1}{12}\right) = 0.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 4.83 \text{ SQ.FT.} *$   
 CROSS SECTIONAL AREA = 5.54 SQ.FT.  
 $5.54 \text{ SQ.FT.} \times 11309.87 \text{ LIN.FT.} \div 27 = 2320.62 \text{ CU.YD.}$   
 $\text{ TOTAL VOLUME: } 1118.42 + 2320.62 = 3439.04 \text{ CU.YD.}$

LINE "B1" DECEL LANE:  
 $6" \times \left(\frac{1}{12}\right) \times 16083.40 \text{ SQ.FT.} \div 27 = 297.84 \text{ CU.YD.}$

LINE "B1" DECEL LANE OUTSIDE SHOULDER:  
 STA. 475+54.46 TO STA. 482+54.46  
 $7.42' \times 6" \times \left(\frac{1}{12}\right) = 3.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 5.67 SQ.FT.  
 $5.67 \text{ SQ.FT.} \times 700.00 \text{ LIN.FT.} \div 27 = 147.00 \text{ CU.YD.}$   
 STA. 482+54.46 TO STA. 483+54.46  
 $7.42' \times 6" \times \left(\frac{1}{12}\right) = 3.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 5.67 SQ.FT.  
 $5.67 \text{ SQ.FT.} \times 100.00 \text{ LIN.FT.} \div 27 = 21.00 \text{ CU.YD.}$   
 $\text{ TOTAL VOLUME: } 147.00 + 21.00 = 168.00 \text{ CU.YD.}$

RAMP "E":  
 $6" \times \left(\frac{1}{12}\right) \times 6600.00 \text{ SQ.FT.} \div 27 = 122.22 \text{ CU.YD.}$

RAMP "E" OUTSIDE SHOULDER:  
 STA. 458+33.24 TO STA. 461+33.24  
 $* 5.42' \times 6" \times \left(\frac{1}{12}\right) = 2.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 4.67 SQ.FT.  
 $4.67 \text{ SQ.FT.} \times 300.00 \text{ LIN.FT.} \div 27 = 51.89 \text{ CU.YD.}$   
 STA. 461+33.24 TO STA. 461+83.24  
 $\frac{5.42'+3.42'}{2} \times 6" \times \left(\frac{1}{12}\right) = 2.21 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 4.17 SQ.FT.  
 $4.17 \text{ SQ.FT.} \times 50.00 \text{ LIN.FT.} \div 27 = 7.72 \text{ CU.YD.}$   
 STA. 461+83.24 TO STA. 462+58.24  
 $* 3.42' \times 6" \times \left(\frac{1}{12}\right) = 1.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 3.67 SQ.FT.  
 $3.67 \text{ SQ.FT.} \times 75.00 \text{ LIN.FT.} \div 27 = 10.19 \text{ CU.YD.}$   
 $\text{ TOTAL VOLUME: } 51.89 + 7.72 + 10.19 = 69.80 \text{ CU.YD.}$

RAMP "E" INSIDE SHOULDER:  
 $6" \times \left(\frac{1}{12}\right) \times 56.25 \text{ SQ.FT.} \div 27 = 1.04 \text{ CU.YD.}$

RAMP "E" EXTRA AREAS:  
 $6" \times \left(\frac{1}{12}\right) \times 6800.00 \text{ SQ.FT.} \div 27 = 125.92 \text{ CU.YD.}$

RAMP "E" ACCEL LANE:  
 $6" \times \left(\frac{1}{12}\right) \times 14904.00 \text{ SQ.FT.} \div 27 = 276.00 \text{ CU.YD.}$

RAMP "E" ACCEL LANE OUTSIDE SHOULDER:  
 STA. 446+33.24 TO STA. 447+29.24  
 $7.42' \times 6" \times \left(\frac{1}{12}\right) = 3.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 5.67 SQ.FT.  
 $5.67 \text{ SQ.FT.} \times 96.00 \text{ LIN.FT.} \div 27 = 20.16 \text{ CU.YD.}$   
 STA. 447+29.24 TO STA. 458+33.24  
 $5.42' \times 6" \times \left(\frac{1}{12}\right) = 2.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 4.67 SQ.FT.  
 $4.67 \text{ SQ.FT.} \times 1104.00 \text{ LIN.FT.} \div 27 = 190.95 \text{ CU.YD.}$   
 $\text{ TOTAL VOLUME: } 20.16 + 190.95 = 211.11 \text{ CU.YD.}$

RAMP "F" DECEL LANE:  
 $6" \times \left(\frac{1}{12}\right) \times 15138.86 \text{ SQ.FT.} \div 27 = 280.35 \text{ CU.YD.}$

RAMP "F" DECEL LANE OUTSIDE SHOULDER:  
 STA. 468+11.59 TO STA. 469+11.59  
 $\frac{7.42'+5.42'}{2} \times 6" \times \left(\frac{1}{12}\right) = 3.21 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 5.17 SQ.FT.  
 $5.17 \text{ SQ.FT.} \times 100.00 \text{ LIN.FT.} \div 27 = 19.15 \text{ CU.YD.}$   
 STA. 469+11.59 TO STA. 476+11.59  
 $5.42' \times 6" \times \left(\frac{1}{12}\right) = 2.71 \text{ SQ.FT.}$   
 $\text{ END AREA} = 1.96 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 4.67 SQ.FT.  
 $4.67 \text{ SQ.FT.} \times 700.00 \text{ LIN.FT.} \div 27 = 121.07 \text{ CU.YD.}$   
 STA. 468+11.59 TO STA. 476+11.59 (EXTENSION OF OUTSIDE SHOULDER):  
 $2' \times 6" \times \left(\frac{1}{12}\right) = 1.00 \text{ SQ.FT.}$   
 $* \text{ END AREA} = 1.29 \text{ SQ.FT.}$   
 CROSS SECTIONAL AREA = 2.29 SQ.FT.  
 $2.29 \text{ SQ.FT.} \times 800.00 \text{ LIN.FT.} \div 27 = 67.85 \text{ CU.YD.}$   
 $\text{ TOTAL VOLUME: } 19.15 + 121.07 + 67.85 = 208.07 \text{ CU.YD.}$

(SUBTRACT)  
 PRESSURE RELIEF JOINT, TYPE A, AS PER PLAN:  
 MAINLINE:  
 $6" \times \left(\frac{1}{12}\right) \times 24' \times 4 \times 6 \text{ LIN.FT.} \div 27 = 10.67 \text{ CU.YD.}$

MAINLINE OUTSIDE SHOULDERS:  
 $5.67 \text{ SQ.FT.} \times 4 \times 6 \text{ LIN.FT.} \div 27 = 5.04 \text{ CU.YD.}$

MAINLINE INSIDE SHOULDERS:  
 WB:  $2.67 \text{ SQ.FT.} \times 2 \times 6 \text{ LIN.FT.} \div 27 = 1.19 \text{ CU.YD.}$   
 EB:  $4.17 \text{ SQ.FT.} \times 2 \times 6 \text{ LIN.FT.} \div 27 = 1.85 \text{ CU.YD.}$   
 $\text{ TOTAL} = 18.75 \text{ CU.YD.}$

(SUBTRACT)  
 PRESSURE RELIEF JOINT, TYPE A:  
 MAINLINE:  
 $6" \times \left(\frac{1}{12}\right) \times 24' \times 4 \times 8 \text{ LIN.FT.} \div 27 = 14.22 \text{ CU.YD.}$

MAINLINE OUTSIDE SHOULDERS:  
 $5.67 \text{ SQ.FT.} \times 4 \times 8 \text{ LIN.FT.} \div 27 = 6.72 \text{ CU.YD.}$

MAINLINE INSIDE SHOULDERS:  
 WB:  $2.67 \text{ SQ.FT.} \times 2 \times 8 \text{ LIN.FT.} \div 27 = 1.58 \text{ CU.YD.}$   
 EB:  $5.54 \text{ SQ.FT.} \times 2 \times 8 \text{ LIN.FT.} \div 27 = 3.28 \text{ CU.YD.}$   
 $\text{ TOTAL} = 25.80 \text{ CU.YD.}$

TO GENERAL SUMMARY: 19281 CU.YD.



# CALCULATIONS

MAH-76/80-6.95/0.00

\* SEE SHEET 49 FOR ADDITIONAL INFORMATION.

## ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION:

### MAINLINE:

$$10' \times \left(\frac{1}{12}\right) \times 542873.76 \text{ SQ.FT.} \div 27 = 16755.36 \text{ CU.YD.}$$

### MAINLINE OUTSIDE SHOULDER EASTBOUND:

$$7.42' \times 10' \times \left(\frac{1}{12}\right) = 6.18 \text{ SQ.FT.}$$

$$10' \times 14.25' \times \left(\frac{1}{12}\right) = 11.88 \text{ SQ.FT.}$$

\* END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 21.00 SQ.FT.

$$21.00 \text{ SQ.FT.} \times 10509.87 \text{ LIN.FT.} \div 27 = 8174.34 \text{ CU.YD.}$$

### MAINLINE OUTSIDE SHOULDER WESTBOUND:

$$7.42' \times 10' \times \left(\frac{1}{12}\right) = 6.18 \text{ SQ.FT.}$$

$$10' \times 14.25' \times \left(\frac{1}{12}\right) = 11.88 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 21.00 SQ.FT.

$$21.00 \text{ SQ.FT.} \times 8884.87 \text{ LIN.FT.} \div 27 = 6910.45 \text{ CU.YD.}$$

### MAINLINE INSIDE SHOULDERS:

WB:  $1.42' \times 10' \times \left(\frac{1}{12}\right) = 1.18 \text{ SQ.FT.}$

$4' \times 14.25' \times \left(\frac{1}{12}\right) = 4.75 \text{ SQ.FT.}$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 8.87 SQ.FT.

$$8.87 \text{ SQ.FT.} \times 11309.87 \text{ LIN.FT.} \div 27 = 3715.50 \text{ CU.YD.}$$

EB:  $1.42' \times 10' \times \left(\frac{1}{12}\right) = 1.18 \text{ SQ.FT.}$

$7' \times 14.25' \times \left(\frac{1}{12}\right) = 8.31 \text{ SQ.FT.}$

\*END AREA = 5.81 SQ.FT.

CROSS SECTIONAL AREA = 15.30 SQ.FT.

$$15.30 \text{ SQ.FT.} \times 11309.87 \text{ LIN.FT.} \div 27 = 6408.93 \text{ CU.YD.}$$

TOTAL VOLUME: 3715.50 + 6408.93 = 10124.43 CU.YD.

### LINE "B1" DECEL LANE:

$$10' \times \left(\frac{1}{12}\right) \times 16083.40 \text{ SQ.FT.} \div 27 = 496.40 \text{ CU.YD.}$$

### LINE "B1" DECEL LANE OUTSIDE SHOULDER:

STA. 475+54.46 TO STA. 482+54.46

$$7.42' \times 10' \times \left(\frac{1}{12}\right) = 6.18 \text{ SQ.FT.}$$

$$10' \times 14.25' \times \left(\frac{1}{12}\right) = 11.88 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 21.00 SQ.FT.

$$21.00 \text{ SQ.FT.} \times 700.00 \text{ LIN.FT.} \div 27 = 544.44 \text{ CU.YD.}$$

STA. 482+54.46 TO STA. 483+54.46

$$7.42' \times 10' \times \left(\frac{1}{12}\right) = 6.18 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 9.12 SQ.FT.

$$9.12 \text{ SQ.FT.} \times 100.00 \text{ LIN.FT.} \div 27 = 33.79 \text{ CU.YD.}$$

TOTAL VOLUME: 544.44 + 33.79 = 578.23 CU.YD.

### RAMP "E":

$$10' \times \left(\frac{1}{12}\right) \times 6600.00 \text{ SQ.FT.} \div 27 = 203.70 \text{ CU.YD.}$$

### RAMP "E" OUTSIDE SHOULDER:

STA. 458+33.24 TO STA. 461+33.24

$$8' \times 14.25' \times \left(\frac{1}{12}\right) = 9.50 \text{ SQ.FT.}$$

$$5.42' \times 10' \times \left(\frac{1}{12}\right) = 4.52 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 16.96 FT.

$$16.96 \text{ SQ.FT.} \times 300.00 \text{ LIN.FT.} \div 27 = 188.44 \text{ CU.YD.}$$

STA. 461+33.24 TO STA. 461+83.24

$$\frac{8'+6'}{2} \times 14.25' \times \left(\frac{1}{12}\right) = 8.31 \text{ SQ.FT.}$$

$$\frac{5.42'+3.42'}{2} \times 10' \times \left(\frac{1}{12}\right) = 3.68 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 14.93 SQ.FT.

$$14.93 \text{ SQ.FT.} \times 50.00 \text{ LIN.FT.} \div 27 = 27.65 \text{ CU.YD.}$$

STA. 461+83.24 TO STA. 462+58.24

$$6' \times 14.25' \times \left(\frac{1}{12}\right) = 7.12 \text{ SQ.FT.}$$

$$3.42' \times 10' \times \left(\frac{1}{12}\right) = 2.85 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 12.91 SQ.FT.

$$12.91 \text{ SQ.FT.} \times 75.00 \text{ LIN.FT.} \div 27 = 35.86 \text{ CU.YD.}$$

TOTAL VOLUME: 188.44 + 27.65 + 35.86 = 251.95 CU.YD.

### RAMP "E" INSIDE SHOULDER:

$$56.25 \text{ SQ.FT.} \times 14.25' \times \left(\frac{1}{12}\right) \div 27 = 2.47 \text{ CU.YD.}$$

### RAMP "E" EXTRA AREAS:

$$6800.00 \text{ SQ.FT.} \times 10' \times \left(\frac{1}{12}\right) \div 27 = 209.88 \text{ CU.YD.}$$

### RAMP "E" ACCEL LANE:

$$14904.00 \text{ SQ.FT.} \times 10' \times \left(\frac{1}{12}\right) \div 27 = 460.00 \text{ CU.YD.}$$

### RAMP "E" ACCEL LANE OUTSIDE SHOULDER:

STA. 446+33.24 TO STA. 447+29.24

$$10' \times 14.25' \times \left(\frac{1}{12}\right) = 11.88 \text{ SQ.FT.}$$

$$7.42' \times 10' \times \left(\frac{1}{12}\right) = 6.18 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 21.00 SQ.FT.

$$21.00 \text{ SQ.FT.} \times 96.00 \text{ LIN.FT.} \div 27 = 74.67 \text{ CU.YD.}$$

STA. 447+29.24 TO STA. 458+33.24

$$8' \times 14.25' \times \left(\frac{1}{12}\right) = 9.50 \text{ SQ.FT.}$$

$$5.42' \times 10' \times \left(\frac{1}{12}\right) = 4.52 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 16.96 SQ.FT.

$$16.96 \text{ SQ.FT.} \times 1104.00 \text{ LIN.FT.} \div 27 = 693.48 \text{ CU.YD.}$$

TOTAL VOLUME: 74.67 + 693.48 = 768.15 CU.YD.

### RAMP "F" DECEL LANE:

$$15138.86 \text{ SQ.FT.} \times 10' \times \left(\frac{1}{12}\right) \div 27 = 467.25 \text{ CU.YD.}$$

### RAMP "F" DECEL LANE OUTSIDE SHOULDER:

STA. 468+11.59 TO STA. 469+11.59

$$\frac{10'+8'}{2} \times 14.25' \times \left(\frac{1}{12}\right) = 10.69 \text{ SQ.FT.}$$

$$\frac{7.42'+5.42'}{2} \times 10' \times \left(\frac{1}{12}\right) = 5.35 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 18.98 SQ.FT.

$$18.98 \text{ SQ.FT.} \times 100.00 \text{ LIN.FT.} \div 27 = 70.30 \text{ CU.YD.}$$

STA. 469+11.59 TO STA. 476+11.59

$$8' \times 14.25' \times \left(\frac{1}{12}\right) = 9.50 \text{ SQ.FT.}$$

$$5.42' \times 10' \times \left(\frac{1}{12}\right) = 4.52 \text{ SQ.FT.}$$

END AREA = 2.94 SQ.FT.

CROSS SECTIONAL AREA = 16.96 SQ.FT.

$$16.96 \text{ SQ.FT.} \times 700.00 \text{ LIN.FT.} \div 27 = 439.70 \text{ CU.YD.}$$

STA. 468+11.59 TO STA. 476+11.59 (EXTENSION OF OUTSIDE SHOULDER):

$$2' \times 14.25' \times \left(\frac{1}{12}\right) = 2.38 \text{ SQ.FT.}$$

$$2' \times 10' \times \left(\frac{1}{12}\right) = 1.67 \text{ SQ.FT.}$$

END AREA = 1.29 SQ.FT.

CROSS SECTIONAL AREA = 5.34 SQ.FT.

$$5.34 \text{ SQ.FT.} \times 800.00 \text{ LIN.FT.} \div 27 = 158.22 \text{ CU.YD.}$$

TOTAL VOLUME: 70.30 + 439.70 + 158.22 = 668.22 CU.YD.

(CALCULATIONS FOR ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION ARE CONTINUED ON SHEET 47.)



# CALCULATIONS

ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION:  
 (CONTINUED)

NOTE: THE FOLLOWING QUANTITIES ARE IN ADDITION TO ITEM 202 APPROACH SLAB REMOVED. SEE APPROACH SLAB TYPICAL ON SHEET 8 FOR ADDITIONAL INFORMATION.

WEST OF MAH-76-0701 L & R:

$$[(24' \times 1\frac{1}{4}' \times \frac{1}{12}') + (10.5' \times 21' \times \frac{1}{12}') + 6.5' \times 21' \times \frac{1}{12}'] \times 21.5 \text{ LIN.FT.} \div 27 = 25.68 \text{ CU.YD.}$$

TOTAL: 25.68 CU.YD. X 2 = 51.36 CU.YD.

EAST OF MAH-76-0701 L & R:

$$[(24' \times 4' \times \frac{1}{12}') + (10.5' \times 21\frac{1}{4}' \times \frac{1}{12}') + (6.5' \times 21\frac{1}{4}' \times \frac{1}{12}')] \times 21.5 \text{ LIN.FT.} \div 27 = 30.34 \text{ CU.YD.}$$

TOTAL: 30.34 CU.YD. X 2 = 60.68 CU.YD.

MAH-76-0761 L & R:

$$[(24' \times 4' \times \frac{1}{12}') + (12.5' \times 21\frac{1}{4}' \times \frac{1}{12}') + (6.5' \times 21\frac{1}{4}' \times \frac{1}{12}')] \times 23.5 \text{ LIN.FT.} \div 27 = 36.25 \text{ CU.YD.}$$

TOTAL: 36.25 CU.YD. X 4 = 145.00 CU.YD.

TO GENERAL SUMMARY: 46328 CU.YD.

ITEM 203 SUBGRADE COMPACTION:

MAINLINE:

$$542873.76 \text{ SQ.FT.} \div 9 = 60319.31 \text{ SQ.YD.}$$

MAINLINE OUTSIDE SHOULDER EASTBOUND:

$$10' \times 10509.87 \text{ LIN.FT.} \div 9 = 11677.63 \text{ SQ.YD.}$$

MAINLINE OUTSIDE SHOULDER WESTBOUND:

$$10' \times 8884.87 \text{ LIN.FT.} \div 9 = 9872.08 \text{ SQ.YD.}$$

MAINLINE INSIDE SHOULDERS:

$$\text{EB: } 7' \times 11309.87 \text{ LIN.FT.} \div 9 = 8796.56 \text{ SQ.YD.}$$

$$\text{WB: } 4' \times 11309.87 \text{ LIN.FT.} \div 9 = 5026.61 \text{ SQ.YD.}$$

$$\text{TOTAL} = 13823.17 \text{ SQ.YD.}$$

LINE "B1" DECEL LANE:

$$16083.40 \text{ SQ.FT.} \div 9 = 1787.04 \text{ SQ.YD.}$$

LINE "B1" DECEL LANE OUTSIDE SHOULDER:

$$\text{STA. } 475+54.46 \text{ TO STA. } 482+54.46$$

$$10' \times 700.00 \text{ LIN.FT.} \div 9 = 777.78 \text{ SQ.YD.}$$

$$\text{STA. } 482+54.46 \text{ TO STA. } 483+54.46$$

$$10' \times 100.00 \text{ LIN.FT.} \div 9 = 111.11 \text{ SQ.YD.}$$

$$\text{TOTAL} = 888.89 \text{ SQ.YD.}$$

RAMP "E":

$$6600.00 \text{ SQ.FT.} \div 9 = 733.33 \text{ SQ.YD.}$$

RAMP "E" OUTSIDE SHOULDER:

STA. 458+33.24 TO STA. 461+33.24

$$8' \times 300.00 \text{ LIN.FT.} \div 9 = 266.67 \text{ SQ.YD.}$$

STA. 461+33.24 TO STA. 461+83.24

$$\frac{8'+6'}{2} \times 50.00 \text{ LIN.FT.} \div 9 = 38.89 \text{ SQ.YD.}$$

STA. 461+83.24 TO STA. 462+58.24

$$6' \times 75.00 \text{ LIN.FT.} \div 9 = 50.00 \text{ SQ.YD.}$$

$$\text{TOTAL} = 355.56 \text{ SQ.YD.}$$

RAMP "E" INSIDE SHOULDER:

$$56.25 \text{ SQ.FT.} \div 9 = 6.25 \text{ SQ.YD.}$$

RAMP "E" EXTRA AREAS:

$$6800.00 \text{ SQ.FT.} \div 9 = 755.56 \text{ SQ.YD.}$$

RAMP "E" ACCEL LANE:

$$14904.00 \text{ SQ.FT.} \div 9 = 1656.00 \text{ SQ.YD.}$$

RAMP "E" ACCEL LANE OUTSIDE SHOULDER:

$$\text{STA. } 446+33.24 \text{ TO STA. } 447+29.24$$

$$10' \times 96.00 \text{ LIN.FT.} \div 9 = 106.67 \text{ SQ.YD.}$$

$$\text{STA. } 447+29.24 \text{ TO STA. } 458+33.24$$

$$8' \times 1104.00 \text{ LIN.FT.} \div 9 = 981.33 \text{ SQ.YD.}$$

$$\text{TOTAL} = 1088.00 \text{ SQ.YD.}$$

RAMP "F" DECEL LANE:

$$15138.86 \text{ SQ.FT.} \div 9 = 1682.10 \text{ SQ.YD.}$$

RAMP "F" DECEL LANE OUTSIDE SHOULDER:

$$\text{STA. } 468+11.59 \text{ TO STA. } 469+11.59$$

$$\frac{10'+8'}{2} \times 100.00 \text{ LIN.FT.} \div 9 = 100.00 \text{ SQ.YD.}$$

$$\text{STA. } 469+11.59 \text{ TO STA. } 476+11.59$$

$$8' \times 700.00 \text{ LIN.FT.} \div 9 = 622.22 \text{ SQ.YD.}$$

$$\text{STA. } 468+11.59 \text{ TO STA. } 476+11.59 \text{ (EXTENSION OF OUTSIDE SHOULDER):}$$

$$2' \times 800.00 \text{ LIN.FT.} \div 9 = 177.77 \text{ SQ.YD.}$$

$$\text{TOTAL} = 899.92 \text{ SQ.YD.}$$

$$\text{MAH-76-0701 L \& R APPROACH SLABS:}$$

$$41' \times 23.5 \text{ LIN.FT.} \times 4 \div 9 = 428.22 \text{ SQ.YD.}$$

$$\text{MAH-76-0761 L \& R APPROACH SLABS:}$$

$$43' \times 23.5 \text{ LIN.FT.} \times 4 \div 9 = 449.12 \text{ SQ.YD.}$$

TO GENERAL SUMMARY: 106423 SQ.YD.

ITEM 304 6" AGGREGATE BASE:

$$\text{MAH-76-0701 L \& R:}$$

$$6'' \times \frac{1}{12}' \times 41' \times 21.5 \text{ LIN.FT.} \times 4 \div 27 = 65.29 \text{ CU.YD.}$$

$$\text{MAH-76-0761 L \& R:}$$

$$6'' \times \frac{1}{12}' \times 43' \times 23.5 \text{ LIN.FT.} \times 4 \div 27 = 74.85 \text{ CU.YD.}$$

TO GENERAL SUMMARY: 141 CU.YD.

ITEM 611 REINFORCED CONCRETE APPROACH SLAB (T=15"), AS PER PLAN:  
 MAH-76-0701 L & R:

$$41' \times 25 \text{ LIN.FT.} \times 4 \div 9 = 455.56 \text{ SQ.YD.}$$

MAH-76-0761 L & R:

$$43' \times 25 \text{ LIN.FT.} \times 4 \div 9 = 477.78 \text{ SQ.YD.}$$

TO GENERAL SUMMARY: 935 SQ.YD.

FEATHER PAVEMENT AREA:

EASTBOUND:

$$\text{STA. } 483+54.46 \text{ TO STA. } 485+14.46$$

$$38' \times 160 \text{ LIN.FT.} = 6080.00 \text{ SQ.FT.}$$

WESTBOUND:

$$\text{STA. } 483+54.46 \text{ TO STA. } 485+14.46$$

$$50' \times 160 \text{ LIN.FT.} = 8000.00 \text{ SQ.FT.}$$

$$\text{TOTAL} = 14080.00 \text{ SQ.FT.}$$

ITEM 254 4" PAVEMENT PLANING, BITUMINOUS:

$$\text{FEATHER: } 14080.00 \text{ SQ.FT.} \div 9 = 1564.44 \text{ SQ.YD.}$$

TO GENERAL SUMMARY: 1565 SQ.YD.

ITEM 407 TACK COAT (RATE = 0.075 GAL./SQ.YD.):

$$\text{FEATHER: } 14080.00 \text{ SQ.FT.} \div 9 \times 0.075 \text{ GAL./SQ.YD.} = 117.33 \text{ GAL.}$$

TO GENERAL SUMMARY: 118 GAL.

ITEM 407 TACK COAT FOR INTERMEDIATE COURSE (RATE=0.075 GAL/SQYD):

$$\text{FEATHER: } 14080.00 \text{ SQ.FT.} \div 9 \times 0.075 \text{ GAL./SQ.YD.} = 117.33 \text{ GAL.}$$

TO GENERAL SUMMARY: 118 GAL.

ITEM 407 TACK COAT, 702.13 (RATE = 0.04 GAL./SQ.YD.):

$$\text{FEATHER: } 14080.00 \text{ SQ.FT.} \div 9 \times 0.04 \text{ GAL./SQ.YD.} = 62.58 \text{ GAL.}$$

TO GENERAL SUMMARY: 63 GAL.

ITEM 448 2" ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2, PG 64-28:

$$\text{FEATHER: } 14080.00 \text{ SQ.FT.} \times 2'' \times \frac{1}{12}' \div 27 = 86.91 \text{ CU.YD.}$$

TO GENERAL SUMMARY: 87 CU.YD.

ITEM 448 1\frac{1}{4}" ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 1, PG 64-28:

$$\text{FEATHER: } 14080.00 \text{ SQ.FT.} \times 1\frac{1}{4}'' \times \frac{1}{12}' \div 27 = 54.32 \text{ CU.YD.}$$

TO GENERAL SUMMARY: 55 CU.YD.

ITEM 803 3\frac{3}{4}" RUBBERIZED OPEN GRADED ASPHALT FRICTION COURSE:

$$\text{FEATHER: } 14080.00 \text{ SQ.FT.} \times 3\frac{3}{4}'' \times \frac{1}{12}' \div 27 = 32.59 \text{ CU.YD.}$$

TO GENERAL SUMMARY: 33 CU.YD.

ITEM 202 APPROACH SLAB REMOVED:

$$\text{MAH-76-0701 L \& R:}$$

$$24' \times 25 \text{ LIN.FT.} \times 4 \div 9 = 266.67 \text{ SQ.YD.}$$

$$\text{MAH-76-0761 L \& R:}$$

$$24' \times 25 \text{ LIN.FT.} \times 4 \div 9 = 266.67 \text{ SQ.YD.}$$

TO GENERAL SUMMARY: 534 SQ.YD.



COMPLETED BY SAJ DATE 12/94  
 CALCULATED BY KMM DATE 1/95  
 REVISED BY KMM DATE 6/98

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

48  
121

MAH-76/80-6.95/0.00

# CALCULATIONS

\* SEE SHEET 49 FOR ADDITIONAL INFORMATION.

## ITEM 307 4" NON-STABILIZED FREE DRAINING BASE:

### MAINLINE:

$$542873.76 \div 9 = 60319.31 \text{ SQ.YD.}$$

### MAINLINE OUTSIDE SHOULDER EASTBOUND:

$$8.58' \times 10509.87 \text{ LIN.FT.} \div 9 = 10019.41 \text{ SQ.YD.}$$

### MAINLINE OUTSIDE SHOULDER WESTBOUND:

$$8.58' \times 8884.87 \text{ LIN.FT.} \div 9 = 8470.24 \text{ SQ.YD.}$$

### MAINLINE INSIDE SHOULDERS:

$$* 2.58' \times 22619.74 \text{ LIN.FT.} \div 9 = 6484.32 \text{ SQ.YD.}$$

### LINE "B1" DECEL LANE:

$$16083.40 \text{ SQ.FT.} \div 9 = 1787.04 \text{ SQ.YD.}$$

### LINE "B1" DECEL LANE OUTSIDE SHOULDERS:

STA. 475+54.46 TO STA. 482+54.46

$$8.58' \times 700.00 \text{ LIN.FT.} \div 9 = 667.33 \text{ SQ.YD.}$$

STA. 482+54.46 TO STA. 483+54.46

$$8.58' \times 100.00 \text{ LIN.FT.} \div 9 = 95.33 \text{ SQ.YD.}$$

$$\text{TOTAL} = 762.66 \text{ SQ.YD.}$$

### RAMP "E":

$$6600.00 \text{ SQ.FT.} \div 9 = 733.33 \text{ SQ.YD.}$$

### RAMP "E" OUTSIDE SHOULDER:

STA. 458+33.24 TO STA. 461+33.24

$$6.58' \times 300.00 \text{ LIN.FT.} \div 9 = 219.33 \text{ SQ.YD.}$$

STA. 461+33.24 TO STA. 461+83.24

$$\frac{6.58' + 4.58'}{2} \times 50.00 \text{ LIN.FT.} \div 9 = 31.00 \text{ SQ.YD.}$$

STA. 461+83.24 TO STA. 462+58.24

$$4.58' \times 75.00 \text{ LIN.FT.} \div 9 = 38.17 \text{ SQ.YD.}$$

$$\text{TOTAL} = 288.50 \text{ SQ.YD.}$$

### RAMP "E" INSIDE SHOULDER:

$$56.25 \text{ SQ.FT.} \div 9 = 6.25 \text{ SQ.YD.}$$

### RAMP "E" EXTRA AREAS:

$$6800.00 \text{ SQ.FT.} \div 9 = 755.56 \text{ SQ.YD.}$$

### RAMP "E" ACCEL LANE:

$$14904.00 \text{ SQ.FT.} \div 9 = 1656.00 \text{ SQ.YD.}$$

### RAMP "E" ACCEL LANE OUTSIDE SHOULDER:

STA. 446+33.24 TO STA. 447+29.24

$$8.58' \times 96.00 \text{ LIN.FT.} \div 9 = 91.52 \text{ SQ.YD.}$$

STA. 447+29.24 TO STA. 458+33.24

$$6.58' \times 1104.00 \text{ LIN.FT.} \div 9 = 807.15 \text{ SQ.YD.}$$

$$\text{TOTAL} = 898.67 \text{ SQ.YD.}$$

### RAMP "F" DECEL LANE:

$$15138.86 \text{ SQ.FT.} \div 9 = 1682.10 \text{ SQ.YD.}$$

### RAMP "F" DECEL LANE OUTSIDE SHOULDERS:

STA. 468+11.59 TO STA. 469+11.59

$$\frac{8.58' + 6.58'}{2} \times 100.00 \text{ LIN.FT.} \div 9 = 84.22 \text{ SQ.YD.}$$

STA. 469+11.59 TO STA. 476+11.59

$$6.58' \times 700.00 \text{ LIN.FT.} \div 9 = 511.78 \text{ SQ.YD.}$$

$$\text{TOTAL} = 596.00 \text{ SQ.YD.}$$

(SUBTRACT)  
PRESSURE RELIEF JOINT, TYPE A, AS PER PLAN:

### MAINLINE:

$$24' \times 4' \times 6 \text{ LIN.FT.} \div 9 = 64.00 \text{ SQ.YD.}$$

### MAINLINE OUTSIDE SHOULDERS:

$$8.58' \times 4' \times 6 \text{ LIN.FT.} \div 9 = 22.88 \text{ SQ.YD.}$$

### MAINLINE INSIDE SHOULDERS:

$$2.58' \times 4' \times 6 \text{ LIN.FT.} \div 9 = 6.88 \text{ SQ.YD.}$$

$$\text{TOTAL} = 93.76 \text{ SQ.YD.}$$

(SUBTRACT)  
PRESSURE RELIEF JOINT, TYPE A:

### MAINLINE:

$$24' \times 4' \times 8 \text{ LIN.FT.} \div 9 = 85.33 \text{ SQ.YD.}$$

### MAINLINE OUTSIDE SHOULDERS:

$$8.58' \times 4' \times 8 \text{ LIN.FT.} \div 9 = 30.51 \text{ SQ.YD.}$$

### MAINLINE INSIDE SHOULDERS:

$$2.58' \times 4' \times 8 \text{ LIN.FT.} \div 9 = 9.17 \text{ SQ.YD.}$$

$$\text{TOTAL} = 125.01 \text{ SQ.YD.}$$

TO GENERAL SUMMARY: 94241 SQ.YD.

## ITEM 452 14" PLAIN CONCRETE PAVEMENT, AS PER PLAN:

### MAINLINE:

$$542873.76 \text{ SQ.FT.} \div 9 = 60319.31 \text{ SQ.YD.}$$

### MAINLINE OUTSIDE SHOULDER EASTBOUND:

$$10' \times 10509.87 \text{ LIN.FT.} \div 9 = 11677.63 \text{ SQ.YD.}$$

### MAINLINE OUTSIDE SHOULDER WESTBOUND:

$$10' \times 8884.87 \text{ LIN.FT.} \div 9 = 9872.08 \text{ SQ.YD.}$$

### MAINLINE INSIDE SHOULDERS:

$$\text{WB: } 4' \times 11309.87 \text{ LIN.FT.} \div 9 = 5026.61 \text{ SQ.YD.}$$

$$\text{EB: } 7' \times 11309.87 \text{ LIN.FT.} \div 9 = 8796.56 \text{ SQ.YD.}$$

$$\text{TOTAL} = 13823.17 \text{ SQ.YD.}$$

### LINE "B1" DECEL LANE:

$$16083.40 \text{ SQ.FT.} \div 9 = 1787.04 \text{ SQ.YD.}$$

### LINE "B1" DECEL LANE OUTSIDE SHOULDERS:

STA. 475+54.46 TO STA. 482+54.46

$$10' \times 700.00 \text{ LIN.FT.} \div 9 = 777.78 \text{ SQ.YD.}$$

STA. 482+54.46 TO STA. 483+54.46

$$10' \times 100.00 \text{ LIN.FT.} \div 9 = 111.11 \text{ SQ.YD.}$$

### RAMP "E":

$$6600.00 \text{ SQ.FT.} \div 9 = 733.33 \text{ SQ.YD.}$$

$$\text{TOTAL} = 888.89 \text{ SQ.YD.}$$

### RAMP "E" OUTSIDE SHOULDER:

STA. 458+33.24 TO STA. 461+33.24

$$8' \times 300.00 \text{ LIN.FT.} \div 9 = 266.67 \text{ SQ.YD.}$$

STA. 461+33.24 TO STA. 461+83.24

$$\frac{8' + 6'}{2} \times 50.00 \text{ LIN.FT.} \div 9 = 38.89 \text{ SQ.YD.}$$

STA. 461+83.24 TO STA. 462+58.24

$$6' \times 75.00 \text{ LIN.FT.} \div 9 = 50.00 \text{ SQ.YD.}$$

$$\text{TOTAL} = 355.56 \text{ SQ.YD.}$$

### RAMP "E" INSIDE SHOULDER:

$$56.25 \text{ SQ.FT.} \div 9 = 6.25 \text{ SQ.YD.}$$

### RAMP "E" EXTRA AREAS:

$$6800.00 \text{ SQ.FT.} \div 9 = 755.56 \text{ SQ.YD.}$$

### RAMP "E" ACCEL LANE:

$$14904.00 \text{ SQ.FT.} \div 9 = 1656.00 \text{ SQ.YD.}$$

### RAMP "E" ACCEL LANE OUTSIDE SHOULDER:

STA. 446+33.24 TO STA. 447+29.24

$$10' \times 96.00 \text{ LIN.FT.} \div 9 = 106.67 \text{ SQ.YD.}$$

STA. 447+29.24 TO STA. 458+33.24

$$8' \times 1104.00 \text{ LIN.FT.} \div 9 = 981.33 \text{ SQ.YD.}$$

$$\text{TOTAL} = 1088.00 \text{ SQ.YD.}$$

### RAMP "F" DECEL LANE:

$$15138.86 \text{ SQ.FT.} \div 9 = 1682.10 \text{ SQ.YD.}$$

### RAMP "F" DECEL LANE OUTSIDE SHOULDER:

STA. 468+11.59 TO STA. 469+11.59

$$\frac{10' + 8'}{2} \times 100.00 \text{ LIN.FT.} \div 9 = 100.00 \text{ SQ.YD.}$$

STA. 469+11.59 TO STA. 476+11.59

$$8' \times 700.00 \text{ LIN.FT.} \div 9 = 622.22 \text{ SQ.YD.}$$

STA. 468+11.59 TO STA. 476+11.59 (EXTENSION OF OUTSIDE SHOULDER):

$$2' \times 800.00 \text{ LIN.FT.} \div 9 = 177.78 \text{ SQ.YD.}$$

$$\text{TOTAL} = 900.00 \text{ SQ.YD.}$$

### (SUBTRACT)

PRESSURE RELIEF JOINT, TYPE A, AS PER PLAN:

$$\text{WB: } 38' \times 2' \times 4 \text{ LIN.FT.} \div 9 = 33.78 \text{ SQ.YD.}$$

$$\text{EB: } 41' \times 2' \times 4 \text{ LIN.FT.} \div 9 = 36.44 \text{ SQ.YD.}$$

### (SUBTRACT)

PRESSURE RELIEF JOINT, TYPE A:

$$\text{WB: } 38' \times 2' \times 4 \text{ LIN.FT.} \div 9 = 33.78 \text{ SQ.YD.}$$

$$\text{EB: } 41' \times 2' \times 4 \text{ LIN.FT.} \div 9 = 36.44 \text{ SQ.YD.}$$

TO GENERAL SUMMARY: 105405 SQ.YD.



# CALCULATIONS

**ITEM 659 COMMERCIAL FERTILIZER (APPLICATION RATE = 20 LBS./1000 SQ.FT.):**

181535.00 SQ.YD. X 9 X .02 + 2000 = 16.34 TON  
 TO GENERAL SUMMARY: 16.34 TON

NOTE: REFER TO SHEETS 15 AND 70 FOR SQUARE YARDAGE CALCULATIONS.

**ITEM 659 AGRICULTURAL LIMING (APPLICATION RATE = 46 LBS./1000 SQ.FT.):**

181535.00 SQ.YD. X 9 X (46 / 1000) + 2000 X 2.20 = 82.67 TON  
 TO GENERAL SUMMARY: 82.67 TON

**ITEM 659 WATER (APPLICATION RATE = 2 APPLICATIONS @ 120 GAL./1000 SQ.FT.):**

181535.00 SQ.YD. X 9 X .12 X 2 + 1000 = 392.12 Mgal.  
 TO GENERAL SUMMARY: 393 Mgal.

**ITEM 408 BITUMINOUS PRIME COAT (APPLICATION RATE = 0.40 GAL/SY):**

**MAINLINE:**

542873.76 SQ.FT. + 9 X 0.40 = 24127.72 GAL.

**MAINLINE OUTSIDE SHOULDER:**

(10509.87 + 8884.87) LIN.FT. X 6' + 9 X 0.40 = 5171.93 GAL.

**LINE "B1" DECEL LANE:**

16083.40 SQ. FT. + 9 X 0.40 = 714.82 GAL.

**LINE "B1" DECEL LANE OUTSIDE SHOULDER:**

STA. 475+54.46 TO STA. 482+54.46  
 700 LIN. FT. X 6' + 9 X 0.40 = 186.67 GAL.

STA. 482+54.46 TO STA. 483+54.46  
 100 LIN. FT. X 6' + 9 X 0.40 = 26.67 GAL.

**RAMP "E":**

6600 SQ. FT. + 9 X 0.40 = 293.33 GAL.

**RAMP "E" OUTSIDE SHOULDER:**

STA. 458+33.24 TO STA. 461+33.24  
 300 LIN. FT. X 4' + 9 X 0.40 = 53.33 GAL.

STA. 461+33.24 TO STA. 461+83.24  
 50 LIN. FT. X  $\frac{4'+2'}{2}$  + 9 X 0.40 = 6.67 GAL.

STA. 461+83.24 TO STA. 462+58.24  
 75 LIN. FT. X 2' + 9 X 0.40 = 6.67 GAL.

**RAMP "E" INSIDE SHOULDER:**

56.25 SQ. FT. + 9 X 0.40 = 2.50 GAL.

**RAMP "E" EXTRA AREAS:**

6800 SQ. FT. + 9 X 0.40 = 302.22 GAL.

**RAMP "E" ACCEL LANE:**

14904 SQ. FT. + 9 X 0.40 = 662.40 GAL.

**RAMP "E" ACCEL LANE OUTSIDE SHOULDER:**

STA. 446+33.24 TO STA. 447+29.24  
 96 LIN. FT. X 6' + 9 X 0.40 = 25.60 GAL.

STA. 447+29.24 TO STA. 458+33.24  
 1104 LIN. FT. X 4' + 9 X 0.40 = 196.27 GAL.

**RAMP "F" DECEL LANE:**

15138.86 SQ. FT. + 9 X 0.40 = 672.84 GAL.

**RAMP "F" DECEL LANE OUTSIDE SHOULDER:**

STA. 468+11.59 TO STA. 469+11.59  
 100 LIN. FT. X  $\frac{6'+4'}{2}$  + 9 X 0.40 = 22.22 GAL.

STA. 469+11.59 TO STA. 476+11.59  
 700 LIN. FT. X 4' + 9 X 0.40 = 124.44 GAL.

**(SUBTRACT)**

**PRESSURE RELIEF JOINT, TYPE A, AS PER PLAN:**

**MAINLINE:**

24' X 6 LIN. FT. X 4 + 9 X 0.40 = 25.60 GAL.

**MAINLINE OUTSIDE SHOULDERS:**

6' X 6 LIN. FT. X 4 + 9 X 0.40 = 6.40 GAL.

**(SUBTRACT)**

**PRESSURE RELIEF JOINT, TYPE A:**

**MAINLINE:**

24' X 8 LIN. FT. X 4 + 9 X 0.40 = 34.13 GAL.

**MAINLINE OUTSIDE SHOULDERS:**

6' X 8 LIN. FT. X 4 + 9 X 0.40 = 8.53 GAL.

TO GENERAL SUMMARY: 32522 GAL.

**ITEM 618 RUMBLE STRIPS, TYPE 3:**

**MAINLINE INSIDE SHOULDERS:**

22619.74 LIN. FT.

**MAINLINE EASTBOUND OUTSIDE SHOULDER:**

10509.87 LIN. FT. + 30 LIN. FT. (PAVED GORE AREA AT RAMP "F") =

10539.87 LIN. FT.

**MAINLINE WESTBOUND OUTSIDE SHOULDER:**

8884.87 LIN. FT. + 30 LIN. FT. (PAVED GORE AREA AT LINE "B1") + 425 LIN. FT. (RAMP "E") + 30 LIN. FT. (PAVED GORE AREA AT RAMP "E") =

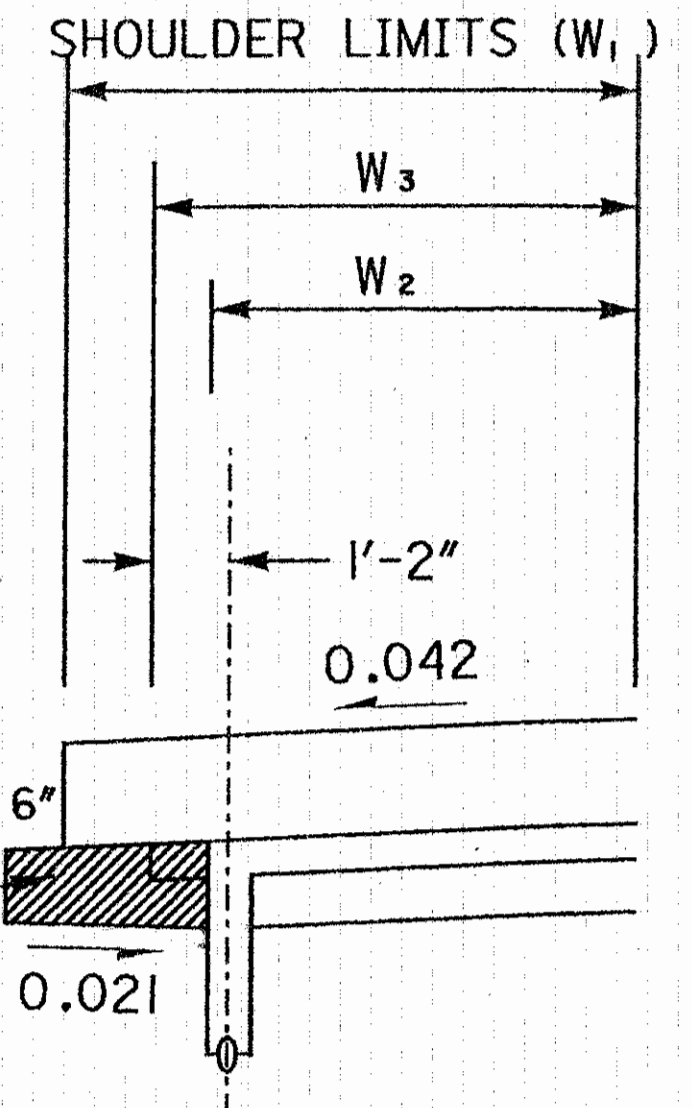
9369.87 LIN. FT.

**ACCEL/DECEL**

(1200.00 - 30) LIN. FT. RAMP "E" +  
 (800.00 - 30) LIN. FT. LINE "B1" +  
 (800.00 - 30) LIN. FT. RAMP "F" =

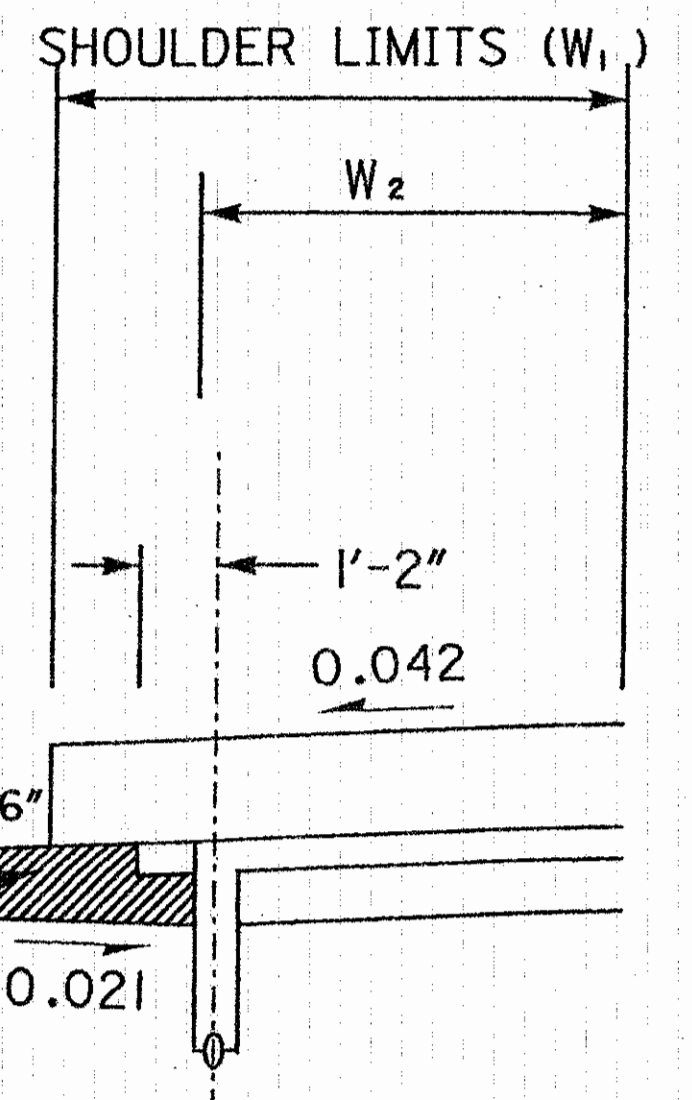
2710.00 LIN. FT.

TO GENERAL SUMMARY: 45240 LIN. FT.



IF  $W_1 = 10'-0"$ , THEN  $W_2 = 7.42$  FT,  $W_3 = 8.58$  FT  
 IF  $W_1 = 8'-0"$ , THEN  $W_2 = 5.42$  FT.,  $W_3 = 6.58$  FT  
 IF  $W_1 = 6'-0"$ , THEN  $W_2 = 3.42$  FT.,  $W_3 = 4.58$  FT  
 IF  $W_1 = 4'-0"$ , THEN  $W_2 = 1.42$  FT.,  $W_3 = 2.58$  FT  
 IF  $W_1 = 7'-0"$  (EB MAINLINE INSIDE SHOULDER ONLY),  
 THEN  $W_2 = 1.42$  FT,  $W_3 = 2.58$  FT

\* 1.29 SF FOR EXTENSION OF RAMP "F" OUTSIDE SHOULDER AND 5.81 SF FOR EB MAINLINE INSIDE SHOULDER



END AREA  
 \*\*1.96 SF

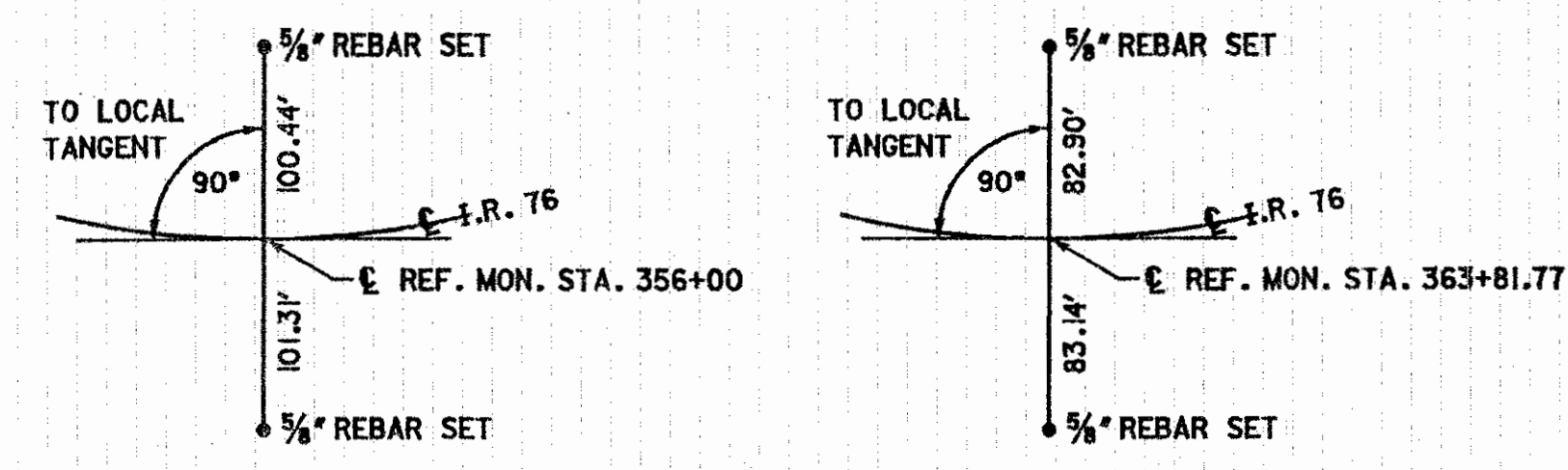
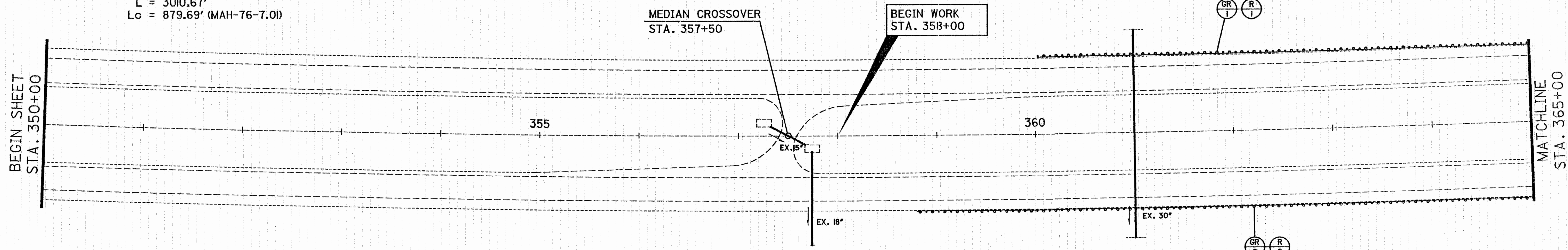
\*\* 4.83 SF FOR EB MAINLINE INSIDE SHOULDER,  $W_1 = 7'-0"$



FED. ROAD DIST. NO.	STATE	PROJECT NO.	PLANS
5	OHIO		50 121

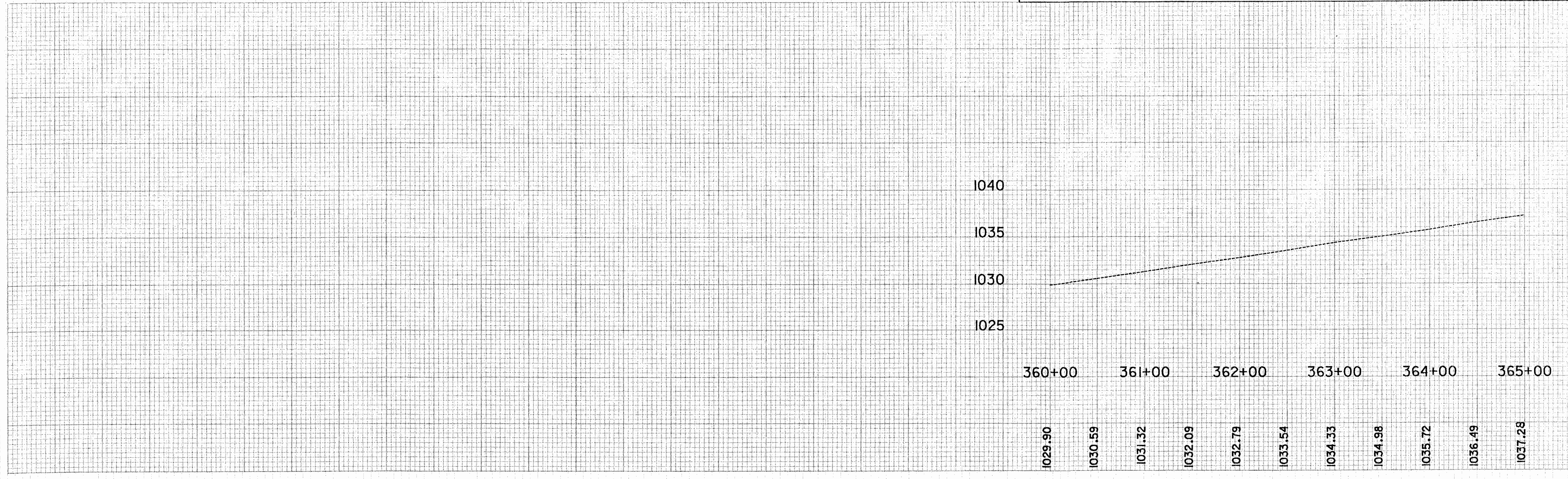
MAH-76/80-6.95/0.00

**CURVE DATA**  
P.C. STA. 348+76.46  
P.L. STA. 363+83.96  
P.T. STA. 378+87.13  
 $\Delta = 7^{\circ}31'36''$  LT.  
 $D_c = 0^{\circ}15'$   
 $R = 22,918.32'$   
 $T = 1507.50'$   
 $E = 49.53'$   
 $L = 3010.67'$   
 $L_c = 879.69'$  (MAH-76-7.01)



FOR GUARDRAIL QUANTITIES, SEE SHEET 35.  
FOR UNDERDRAIN QUANTITIES, SEE SHEETS 40-42.  
FOR LINEAR GRADING QUANTITIES, SEE SHEETS 37-38.

DESCRIPTION OF BENCHMARK		
DESIGNATION JACKSON RM# 1	STATE OHIO	COUNTY MAHONING
NEAREST TOWN AT NORTH JACKSON	COUNTY MAHONING	105-3
DISTANCE AND DIRECTION FROM NEAREST TOWN	CHARACTER OF MARK STANDARD REF. MARK DISK	STAMPING JACKSON NO 11950
ESTABLISHED BY U.S.G.S. & O.S.	DETAILED DESCRIPTION ABOUT 0.8 MILE EAST ALONG STATE HIGHWAY # 18 FROM THE CONRAIL RAILROAD STATION AT NORTH JACKSON OUTSIDE PARKING LOT OF THE NORTH JACKSON HIGH SCHOOL. IT IS 29 FEET NORTH OF THE CENTERLINE OF THE HIGHWAY, 4 FEET NORTHEAST OF POWER POLE # 323-20 AND 109.65 FEET EAST OF THE STATION MARK. A STANDARD REFERENCE MARK DISK SET IN TOP OF A CONCRETE POST WHICH IS FLUSH WITH THE GROUND. 14.5 FEET SOUTH OF CYCLONE FENCE ELEV. 1024.552	
		TEMP. BENCHMARK "A" STA. 357+52 129' RT. 3/4" REBAR SET 12 1/2" NORTH OF L/A FENCE EASTBOUND. ELEV. 1024.68

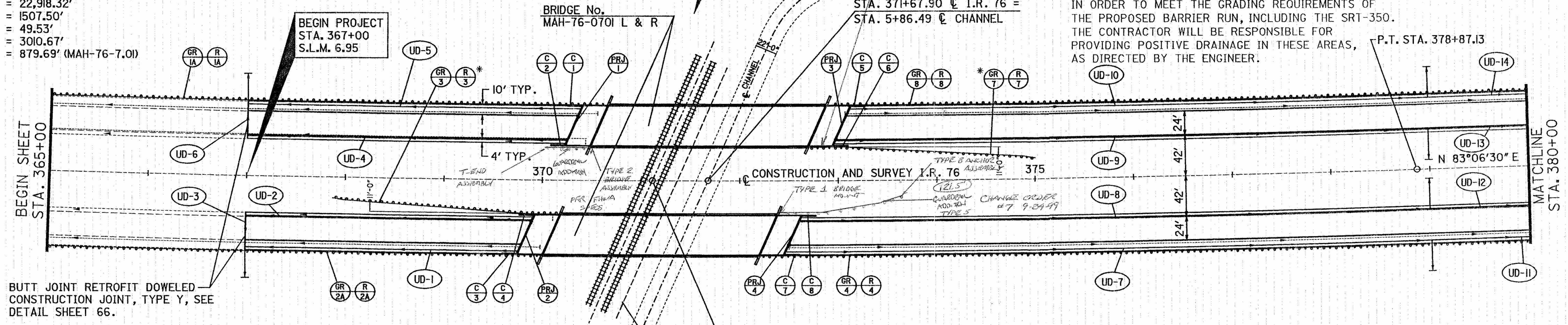


PLAN AND PROFILE STA. 350+00 TO STA. 365+00



MAH-76/80-6.95/0.00

**CURVE DATA**  
P.C. STA. 348+76.46  
P.I. STA. 363+83.96  
P.T. STA. 378+87.13  
 $\Delta = 7^{\circ}31'36''$  LT.  
 $D_c = 0^{\circ}15'$   
 $R = 22,918.32'$   
 $T = 1507.50'$   
 $E = 49.53'$   
 $L = 3010.67'$   
 $L_c = 879.69'$  (MAH-76-7.01)



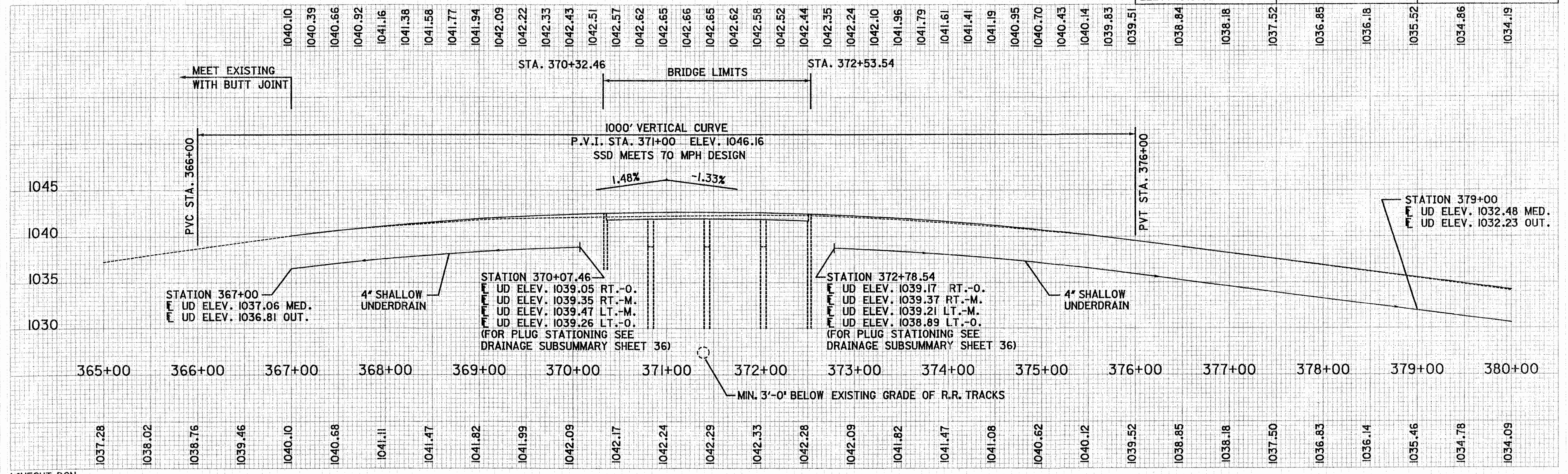
\* LINEAR GRADING, METHOD D HAS BEEN PROVIDED IN THESE AREAS TO REGRADE THE MEDIAN FROM EDGE OF PAVED SHOULDER TO THE DITCH LINE IN ORDER TO MEET THE GRADING REQUIREMENTS OF THE PROPOSED BARRIER RUN, INCLUDING THE SRT-350. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE IN THESE AREAS, AS DIRECTED BY THE ENGINEER.

BUTT JOINT RETROFIT DOWELED CONSTRUCTION JOINT, TYPE Y, SEE DETAIL SHEET 66.

FOR GUARDRAIL QUANTITIES, SEE SHEET 35.  
FOR UNDERDRAIN QUANTITIES, SEE SHEETS 40-42.  
FOR LINEAR GRADING QUANTITIES, SEE SHEETS 37-38.  
FOR ROADWAY QUANTITIES, SEE SHEET 33.

6" EASTERN STATES OIL & GAS LINE

TEMP. BENCHMARK "B" STA. 367+96 143' RT. 3/4" REBAR SET 40" NORTH OF L/A FENCE EASTBOUND. ELEV. 1013.86	TEMP. BENCHMARK "C" STA. 370+89 113' RT. S.E. BOLT ON OLD LIGHT SIGNAL BASE EAST OF TRACKS. ELEV. 1014.17	TEMP. BENCHMARK "D" STA. 377+44 149' RT. 3/4" REBAR SET 40" NORTH OF L/A FENCE EASTBOUND APPROX. 500' EAST OF BRIDGE OVER TRACKS. ELEV. 1005.45
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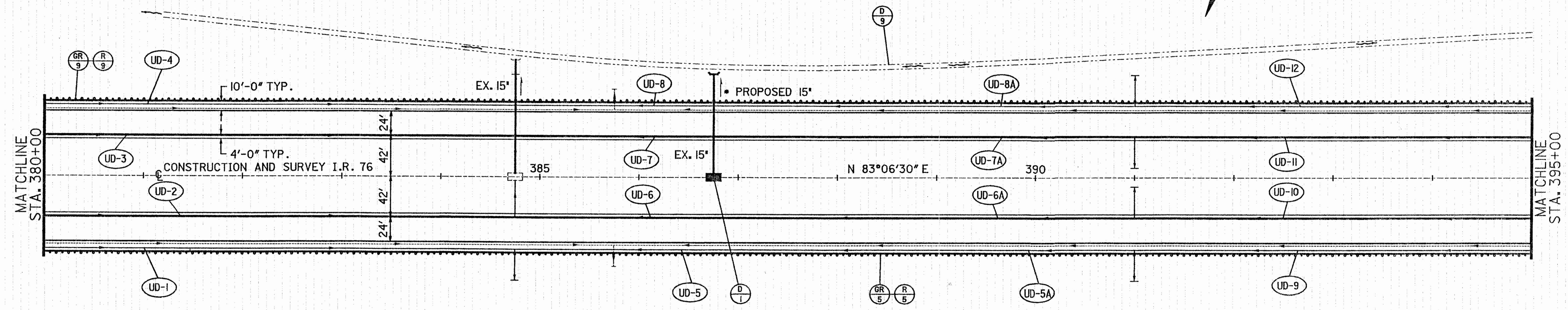




\* EX. PIPE SEPARATION. SEE DETAIL, SHEET 71, FOR PROPOSED WORK.

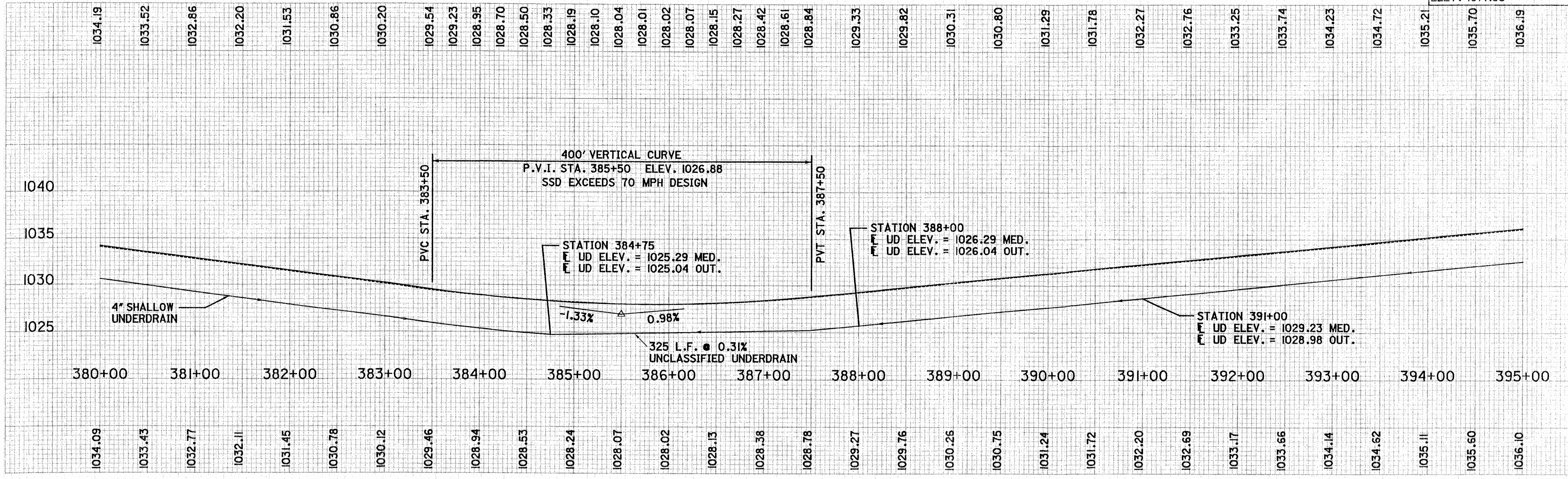


CHANNEL



FOR GUARDRAIL QUANTITIES, SEE SHEET 35.  
 FOR UNDERDRAIN QUANTITIES, SEE SHEETS 40-42.  
 FOR DRAINAGE QUANTITIES, SEE SHEET 39.  
 FOR LINEAR GRADING QUANTITIES, SEE SHEETS 37-38.

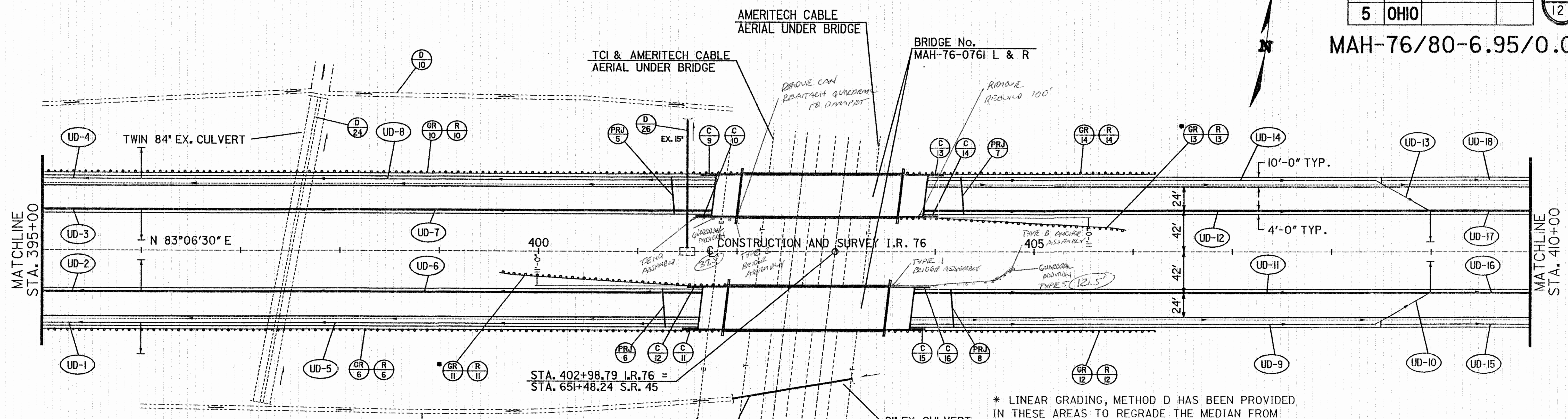
TEMP. BENCHMARK "E"  
 STA. 386+08 134' RT.  
 3/4" REBAR SET 20' NORTH OF L/A FENCE AT  
 WOODEN SUPPORT EASTBOUND APPROX. 1340'  
 EAST OF BRIDGE OVER TRACKS.  
 ELEV. 1014.35



PLAN AND PROFILE STA. 380+00 TO STA. 395+00



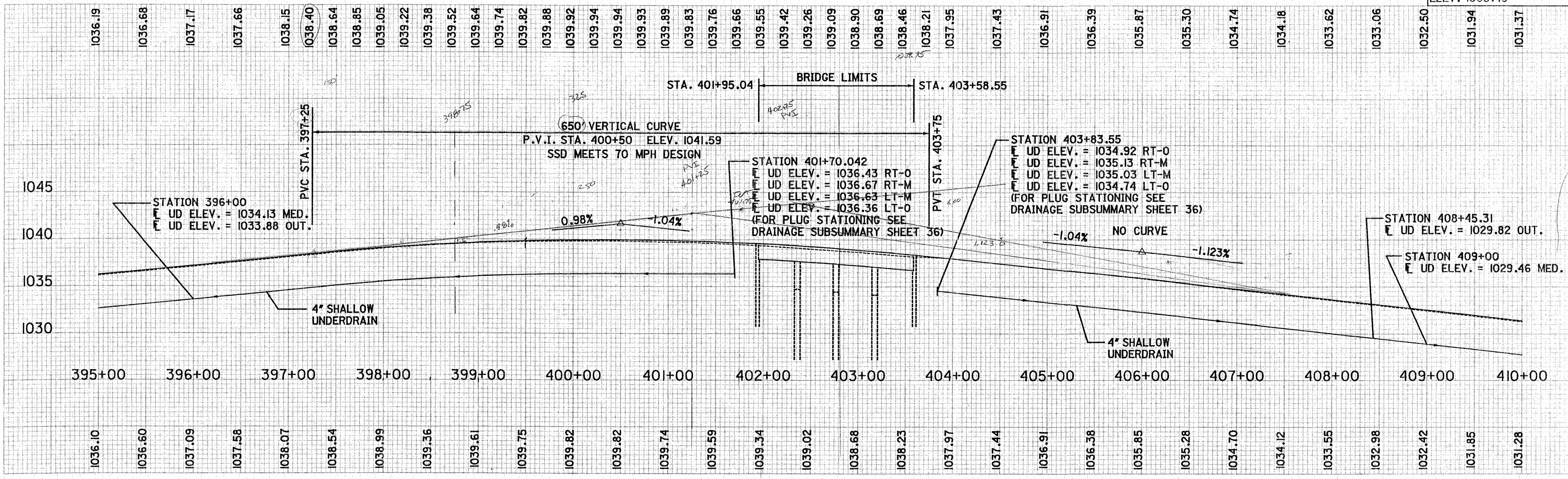
MAH-76/80-6.95/0.00



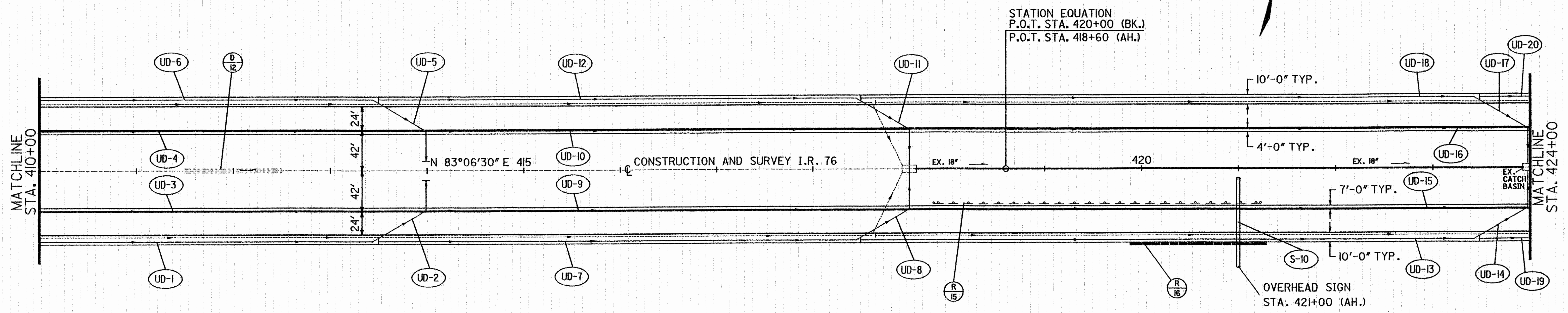
FOR GUARDRAIL QUANTITIES, SEE SHEET 35.  
 FOR UNDERDRAIN QUANTITIES, SEE SHEETS 40-42.  
 FOR DRAINAGE QUANTITIES, SEE SHEET 39.  
 FOR LINEAR GRADING QUANTITIES, SEE SHEETS 37-38.  
 FOR ROADWAY QUANTITIES, SEE SHEET 33.

\* LINEAR GRADING, METHOD D HAS BEEN PROVIDED IN THESE AREAS TO REGRADE THE MEDIAN FROM EDGE OF PAVED SHOULDER TO THE DITCH LINE IN ORDER TO MEET THE GRADING REQUIREMENTS OF THE PROPOSED BARRIER RUN, INCLUDING FOR THE SRT-350. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE IN THESE AREAS, AS DIRECTED BY THE ENGINEER.

TEMP. BENCHMARK "F"  
 STA. 396+81 148' RT.  
 3/4" REBAR SET 30" NORTH OF L/A FENCE,  
 30" WEST OF DOUBLE CULVERT PIPES UNDER  
 I-76 APPROX. 500' WEST OF S.R. 45 BRIDGE  
 EASTBOUND.  
 ELEV. 1005.49

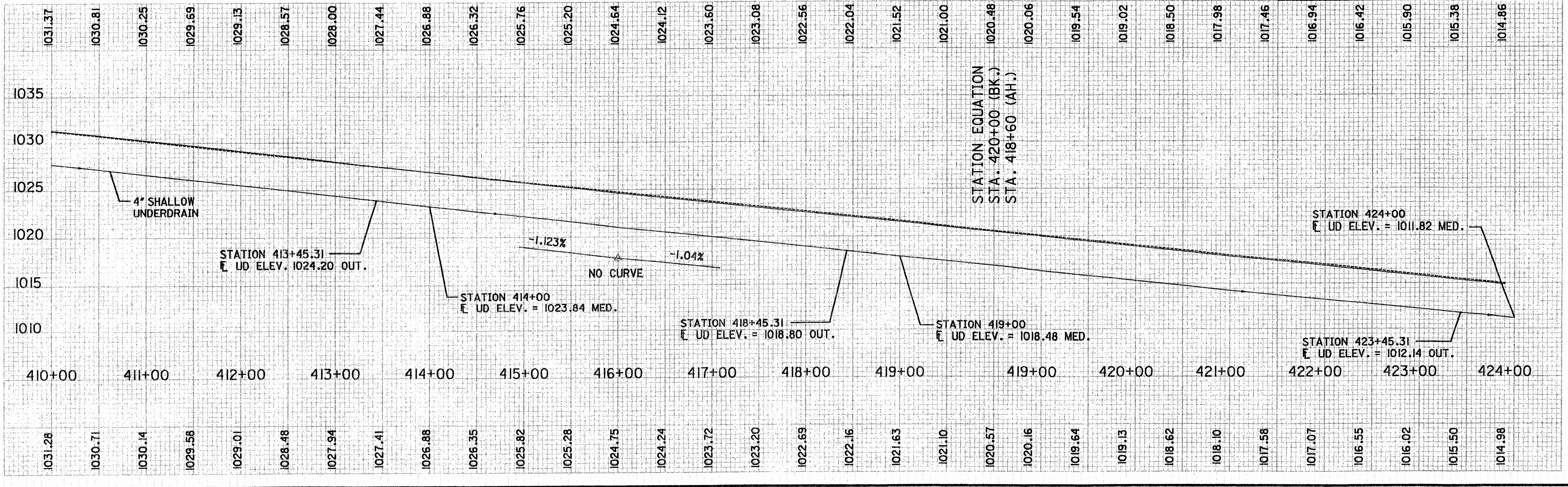






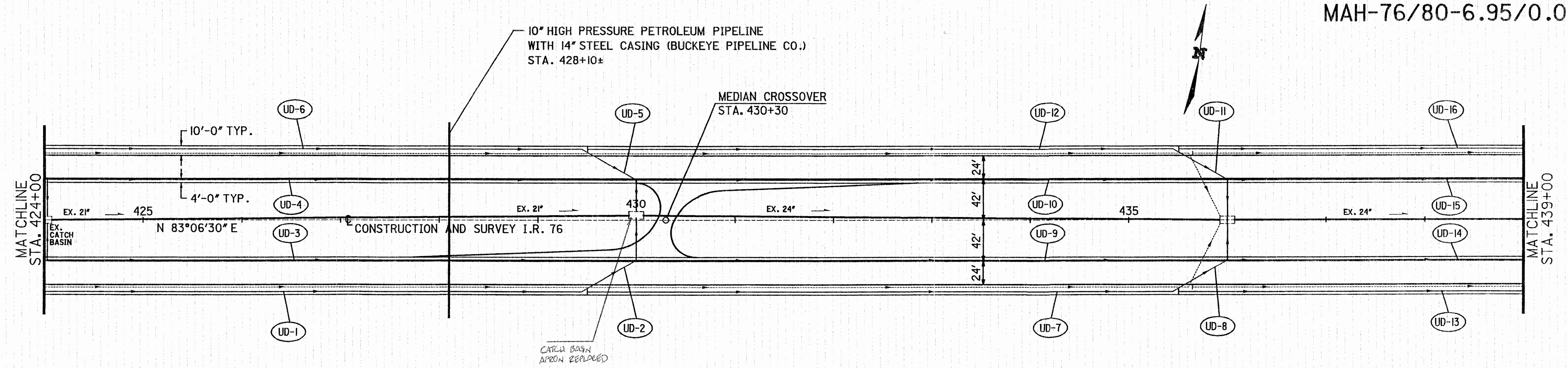
FOR GUARDRAIL QUANTITIES, SEE SHEET 35.  
FOR UNDERDRAIN QUANTITIES, SEE SHEETS 40-42.  
FOR DRAINAGE QUANTITIES, SEE SHEET 39.  
FOR LINEAR GRADING QUANTITIES, SEE SHEETS 37-38.  
FOR TRAFFIC CONTROL QUANTITIES, SEE SHEET 80A.

TEMP. BENCHMARK "G" STA. 411+95 132' RT. 3/4" REBAR SET 10" NORTH OF L/A FENCE AT 59 MILE MARKER. ELEV. 1039.00	TEMP. BENCHMARK "H" STA. 420+95 82' RT. CHISELED "C" S.W. CORNER OF MOST S.W. CONCRETE PAD OF OVERHEAD SIGN. ELEV. 1017.87
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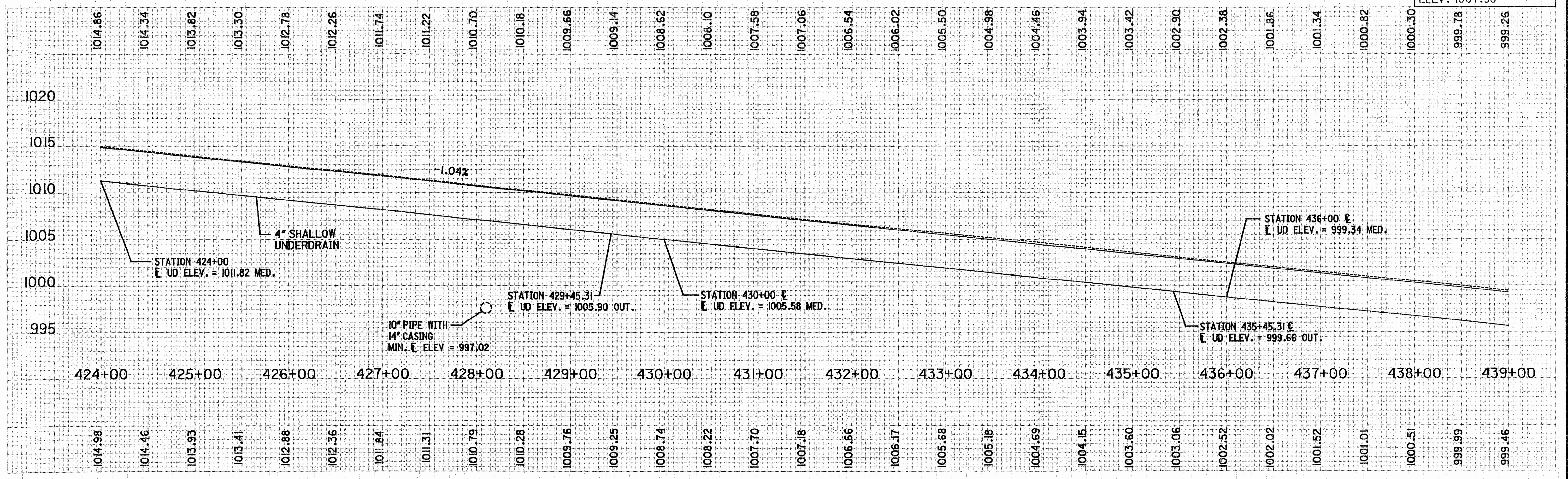


MAH-76/80-6.95/0.00



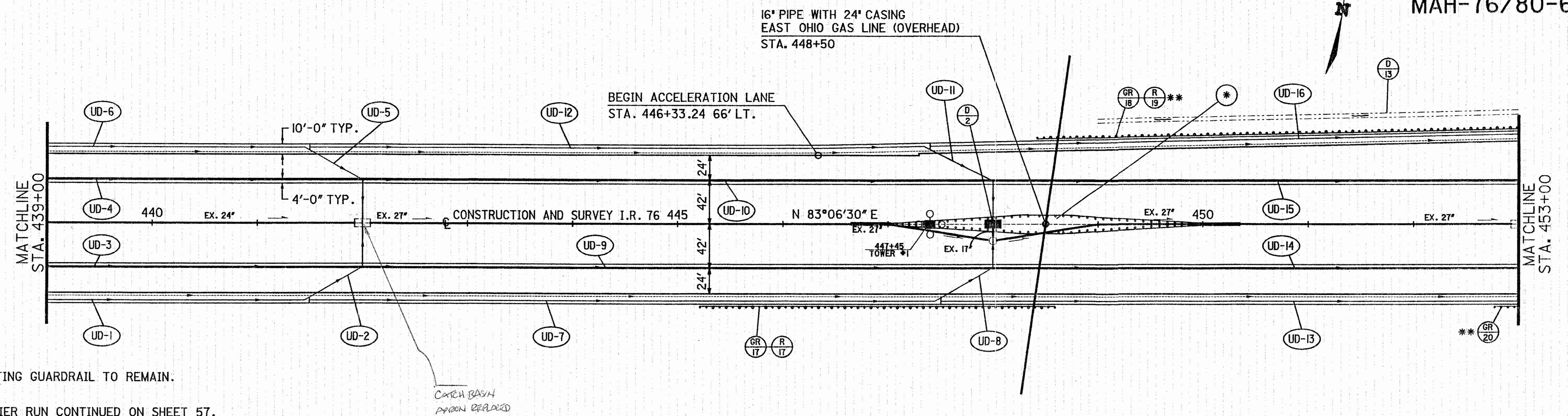
FOR UNDERDRAIN QUANTITIES, SEE SHEETS 40-42.  
 FOR LINEAR GRADING QUANTITIES, SEE SHEETS 37-38.  
 FOR MEDIAN CROSS OVER DETAILS AND QUANTITIES, SEE SHEET 65.

TEMP. BENCHMARK "T"  
 STA. 432+96 106' RT.  
 3/4" REBAR SET 30" SOUTH OF  
 EASTBOUND LANE EB.  
 ELEV. 1007.98



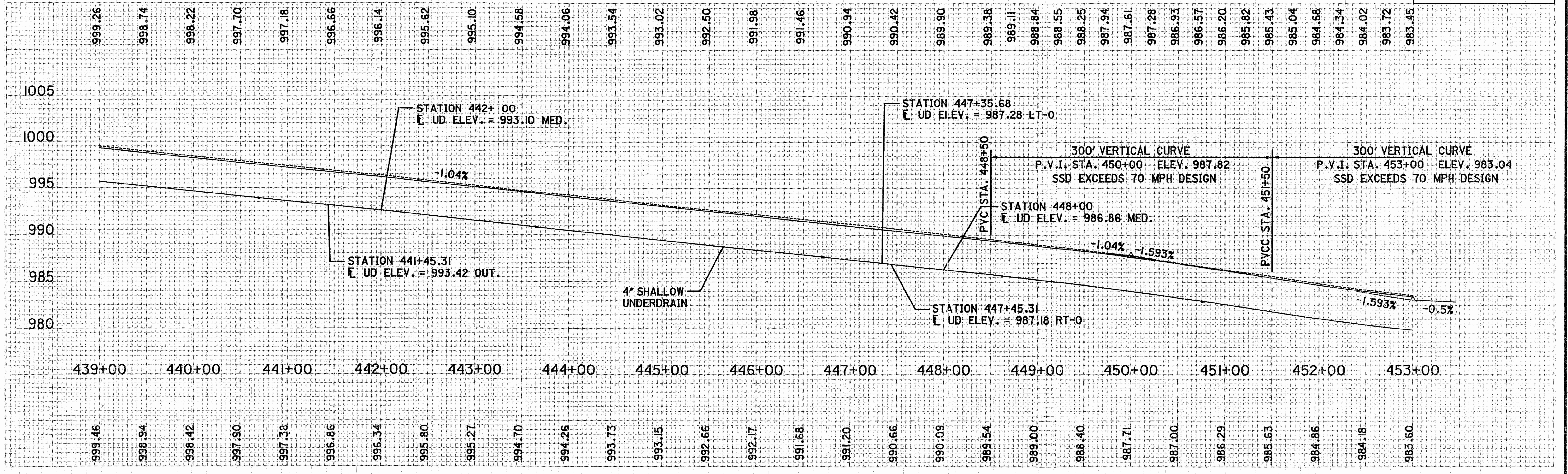
PLAN AND PROFILE STA. 424+00 TO STA. 439+00





- \* EXISTING GUARDRAIL TO REMAIN.
- \*\* BARRIER RUN CONTINUED ON SHEET 57.
- FOR GUARDRAIL QUANTITIES, SEE SHEET 35.
- FOR UNDERDRAIN QUANTITIES, SEE SHEETS 40-42.
- FOR DRAINAGE QUANTITIES, SEE SHEETS 39.
- FOR LINEAR GRADING QUANTITIES, SEE SHEETS 37-38.

TEMP. BENCHMARK "J"  
 STA. 442+93 108' RT.  
 3/4" REBAR SET 30" SOUTH OF  
 EASTBOUND LANE EB.  
 ELEV. 997.27

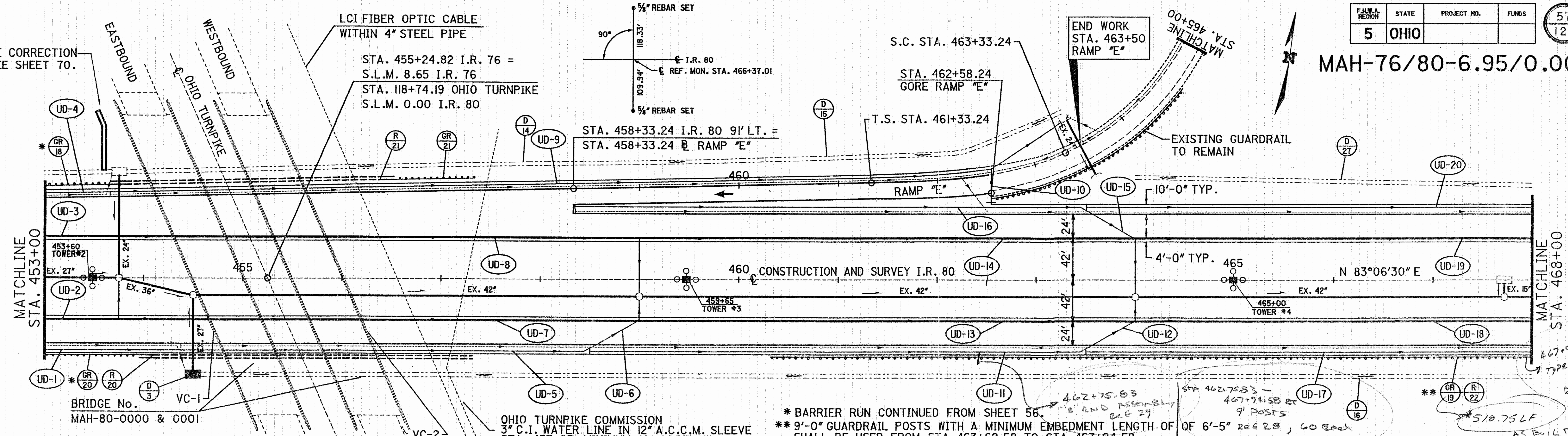


PLAN AND PROFILE STA. 439+00 TO STA. 453+00



MAH-76/80-6.95/0.00

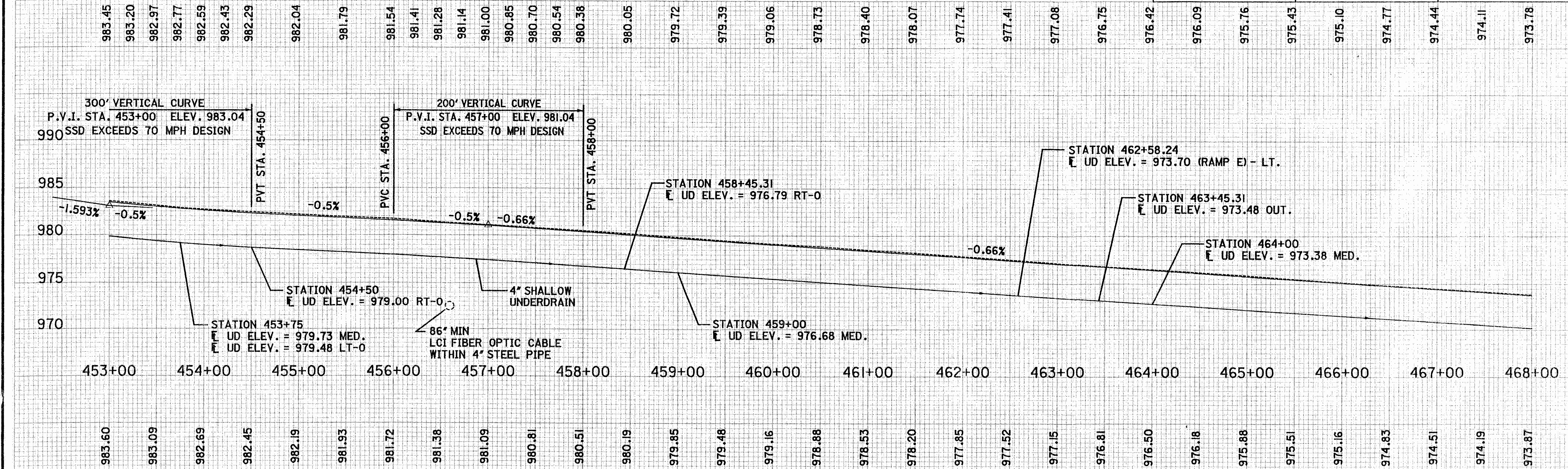
FOR SLOPE CORRECTION  
DETAIL, SEE SHEET 70.



STATION	EXISTING VERTICAL CLEARANCE	PROPOSED VERTICAL CLEARANCE
VC-1 STA. 454+81.19	16.23'	16.32'
VC-2 STA. 456+25.15	16.59'	16.68'

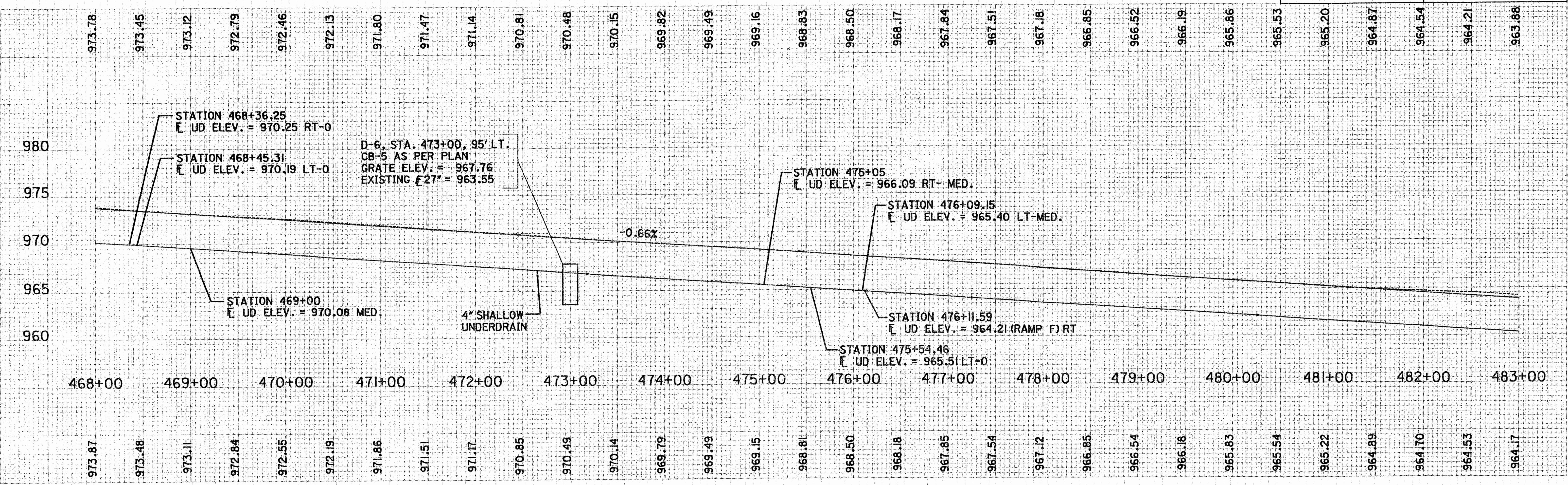
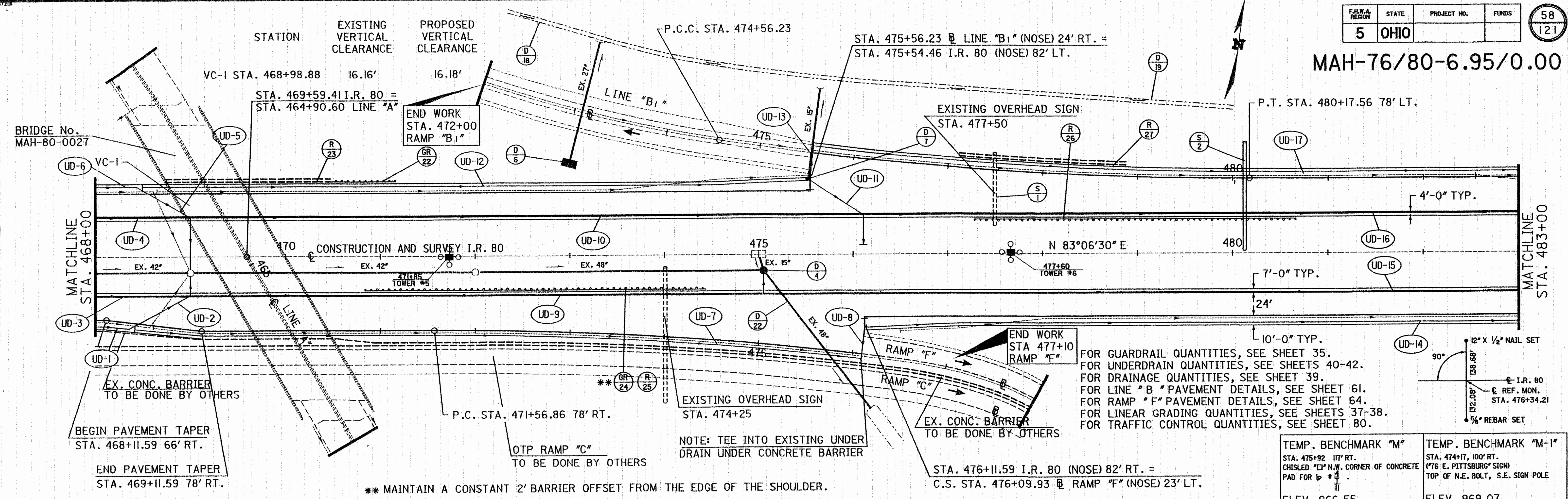
\* BARRIER RUN CONTINUED FROM SHEET 56.  
 \*\* 9'-0" GUARDRAIL POSTS WITH A MINIMUM EMBEDMENT LENGTH OF 6'-5" SHALL BE USED FROM STA 463+69.58 TO STA 467+94.58.  
 FOR GUARDRAIL QUANTITIES, SEE SHEET 35.  
 FOR UNDERDRAIN QUANTITIES, SEE SHEETS 40-42.  
 FOR DRAINAGE QUANTITIES, SEE SHEET 39.  
 FOR RAMP "E" PAVEMENT DETAILS, SEE SHEETS 62-63.  
 FOR RAMP "E" PLAN AND PROFILE VIEW, SEE SHEET 60.  
 FOR LINEAR GRADING QUANTITIES, SEE SHEETS 37-38.

TEMP. BENCHMARK "K"	TEMP. BENCHMARK "L"	TEMP. BENCHMARK "L-1"
STA. 454+31 83' RT. CHISELED "C" S.W. CORNER OF MOST S.W. CONCRETE PAD OF OVERHEAD SIGN. ELEV. 982.64	STA. 465+04 81' RT. CHISELED "C" S.W. CORNER OF CONCRETE PAD FOR P+T SIGN. ELEV. 974.92	STA. 465+04, 105' RT. TOP OF 3/4" REBAR 24" RT. OF P+T SIGN. ELEV. 976.35





MAH-76/80-6.95/0.00

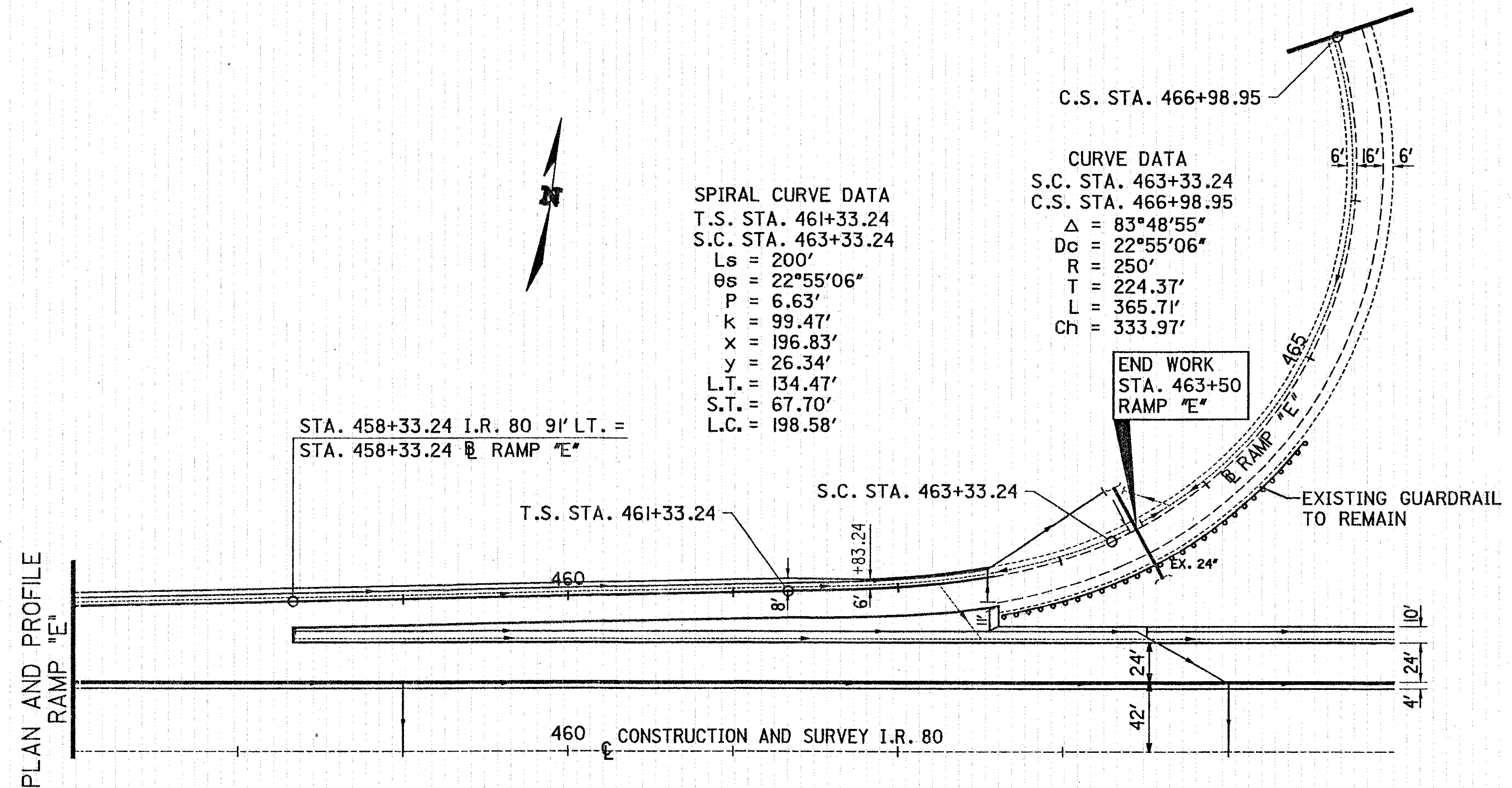




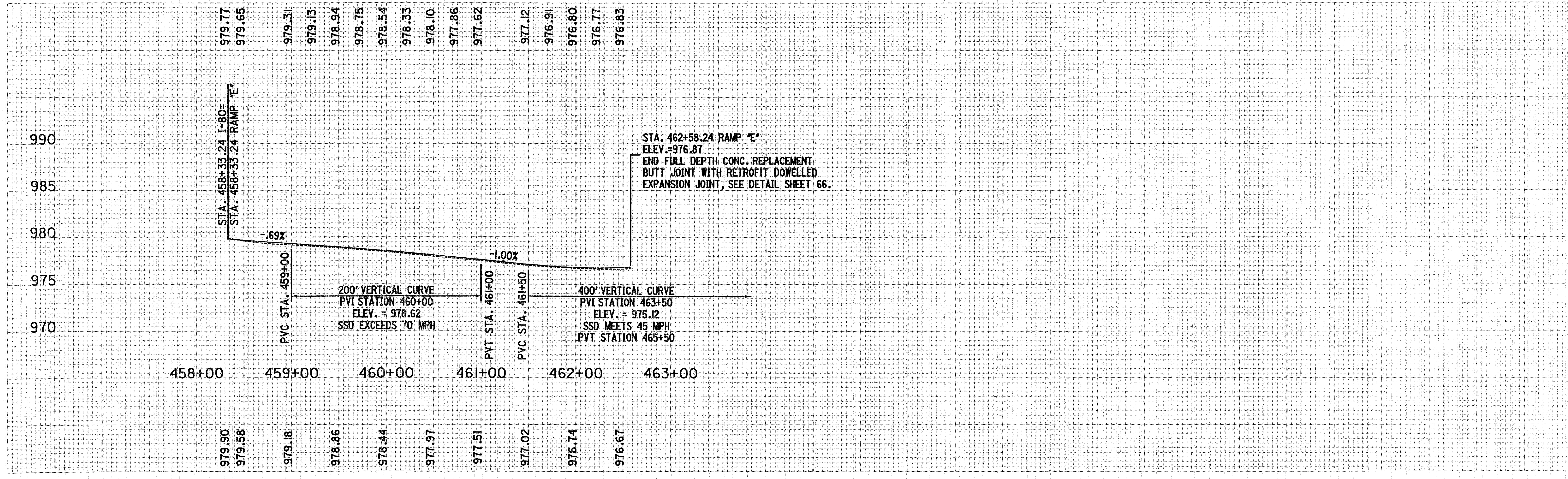




MAH-76/80-6.95/0.00



FOR PAVEMENT DETAILS, SEE SHEETS 62-63.  
FOR UNDERDRAIN QUANTITIES, SEE SHEETS 40-42.  
FOR LINEAR GRADING QUANTITIES, SEE SHEETS 37-38.



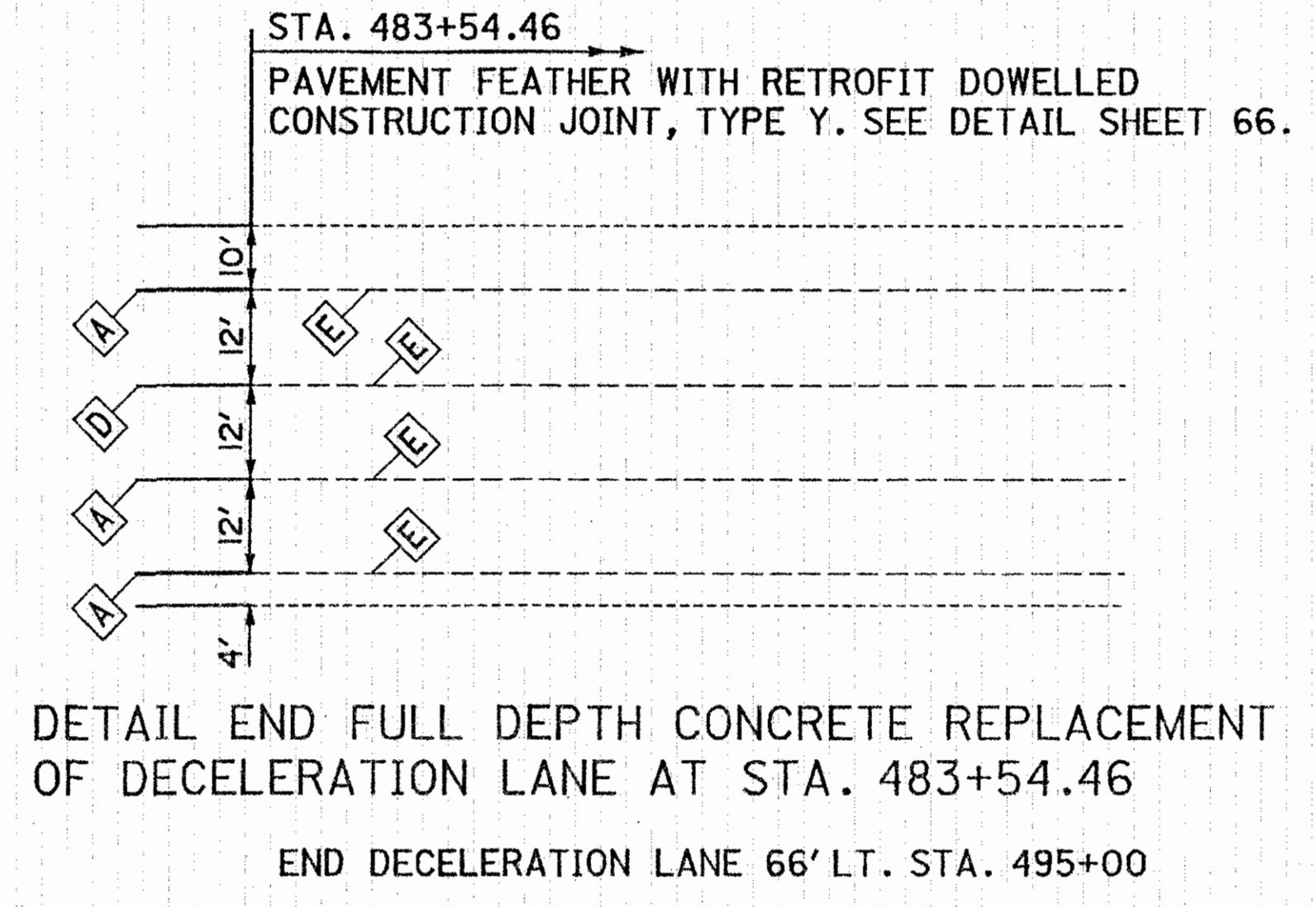
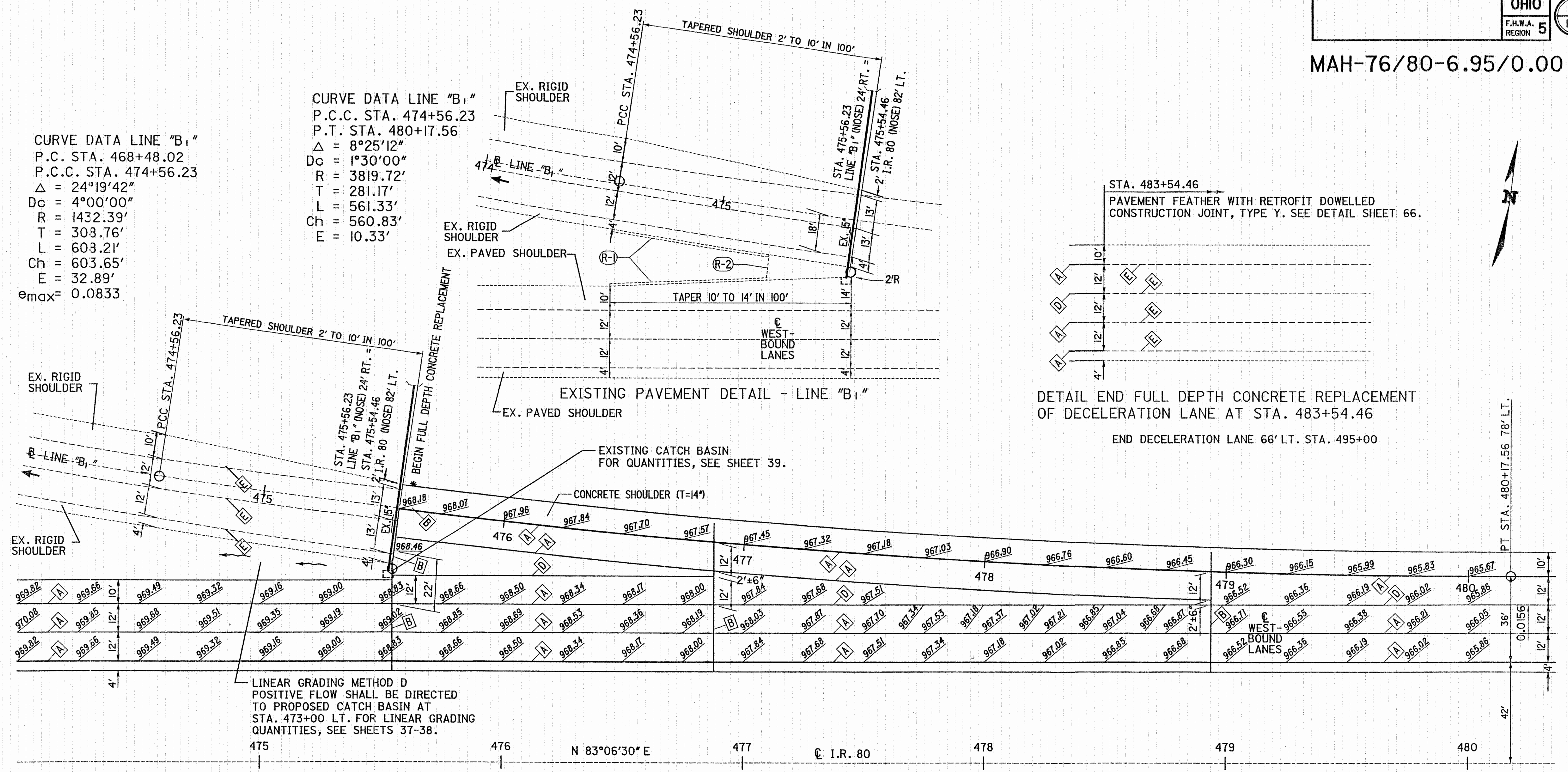
RAMP "E" PLAN AND PROFILE STA. 458+33.24 TO STA. 462+58.24



MAH-76/80-6.95/0.00

CURVE DATA LINE "B<sub>1</sub>"  
P.C. STA. 468+48.02  
P.C.C. STA. 474+56.23  
Δ = 24°19'42"  
Dc = 4°00'00"  
R = 1432.39'  
T = 308.76'  
L = 608.21'  
Ch = 603.65'  
E = 32.89'  
emax = 0.0833

CURVE DATA LINE "B<sub>1</sub>"  
P.C.C. STA. 474+56.23  
P.T. STA. 480+17.56  
Δ = 8°25'12"  
Dc = 1°30'00"  
R = 3819.72'  
T = 281.17'  
L = 561.33'  
Ch = 560.83'  
E = 10.33'



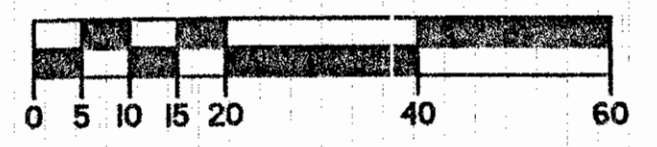
LINEAR GRADING METHOD D  
POSITIVE FLOW SHALL BE DIRECTED  
TO PROPOSED CATCH BASIN AT  
STA. 473+00 LT. FOR LINEAR GRADING  
QUANTITIES, SEE SHEETS 37-38.

MARK	STATION TO STATION	202 CURB REMOVED LIN. FT.	202 TRAFFIC ISLAND REMOVED SQ. YD.
R-1	474+56 TO 475+24	136.0	
R-2	475+28 TO 475+56		26.0
TOTALS CARRIED TO GENERAL SUMMARY.		136	26

- JOINT LEGEND**
- [A] LONGITUDINAL JOINT
  - [B] CONTRACTION JOINT
  - [C] RETROFIT DOWELED EXPANSION JOINT, SEE DETAIL SHEET 66.
  - [D] NON-TIED LONGITUDINAL JOINT
  - [E] EXISTING LONGITUDINAL JOINT

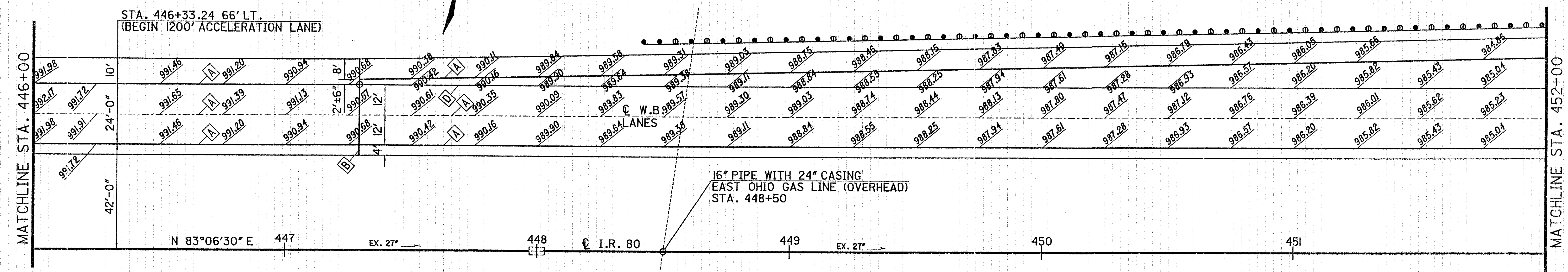
\* SEE SHEET 66 FOR DETAILS.

NOTE:  
NO WAIVER OF THE 15 FOOT CONTRACTION JOINT SPACING INDICATED BY ITEM 452 PLAIN CONCRETE, AS PER PLAN, IS INTENDED EVEN THOUGH SPECIFIC LOCATIONS OF TRANSVERSE JOINTS HAVE BEEN DESIGNATED BY THIS DETAIL.



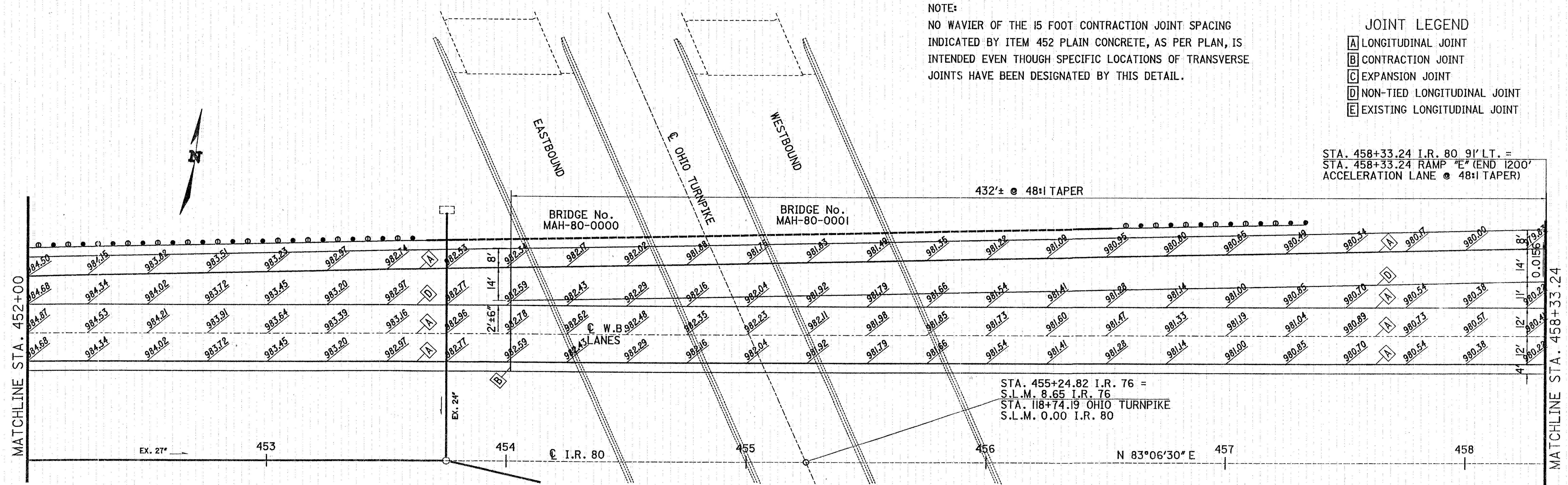


MAH-76/80-6.95/0.00



NOTE:  
 NO WAIVER OF THE 15 FOOT CONTRACTION JOINT SPACING INDICATED BY ITEM 452 PLAIN CONCRETE, AS PER PLAN, IS INTENDED EVEN THOUGH SPECIFIC LOCATIONS OF TRANSVERSE JOINTS HAVE BEEN DESIGNATED BY THIS DETAIL.

- JOINT LEGEND
- [A] LONGITUDINAL JOINT
  - [B] CONTRACTION JOINT
  - [C] EXPANSION JOINT
  - [D] NON-TIED LONGITUDINAL JOINT
  - [E] EXISTING LONGITUDINAL JOINT

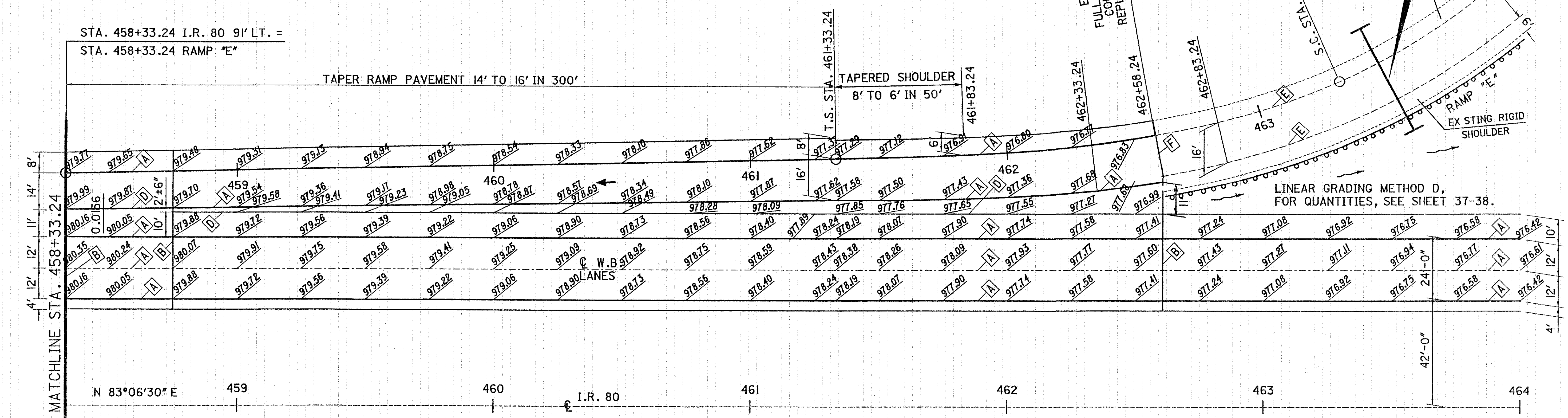




MAH-76/80-6.95/0.00

Ⓛ SPIRAL DATA RAMP "E"  
T.S. STA. 461+33.24  
S.C. STA. 463+33.24  
Ls = 200'  
θs = 22°55'06"  
P = 6.63'  
k = 99.47'  
x = 196.83'  
y = 26.34'  
L.T. = 134.47'  
S.T. = 67.70'  
L.C. = 198.58'

Ⓛ CURVE DATA RAMP "E"  
S.C. STA. 463+33.24  
C.S. STA. 466+98.95  
Δ = 83°48'55"  
Dc = 22°55'06"  
R = 250'  
T = 224.37'  
L = 365.71'  
Ch = 333.97'



MATCHLINE STA. 458+33.24

STA. 458+33.24 I.R. 80 91' LT. =  
STA. 458+33.24 RAMP "E"

TAPER RAMP PAVEMENT 14' TO 16' IN 300'

TAPERED SHOULDER  
8' TO 6' IN 50'

END WORK  
STA. 463+50  
RAMP "E"

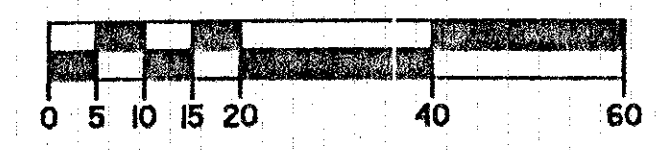
LINEAR GRADING METHOD D,  
FOR QUANTITIES, SEE SHEET 37-38.

N 83°06'30" E      459      460      I.R. 80      461      462      463      464

- JOINT LEGEND**
- [A] LONGITUDINAL JOINT
  - [B] CONTRACTION JOINT
  - [C] EXPANSION JOINT
  - [D] NON-TIED LONGITUDINAL JOINT
  - [E] EXISTING LONGITUDINAL JOINT
  - [F] RETROFIT DOWELED EXPANSION JOINT  
SEE DETAIL SHEET 66.

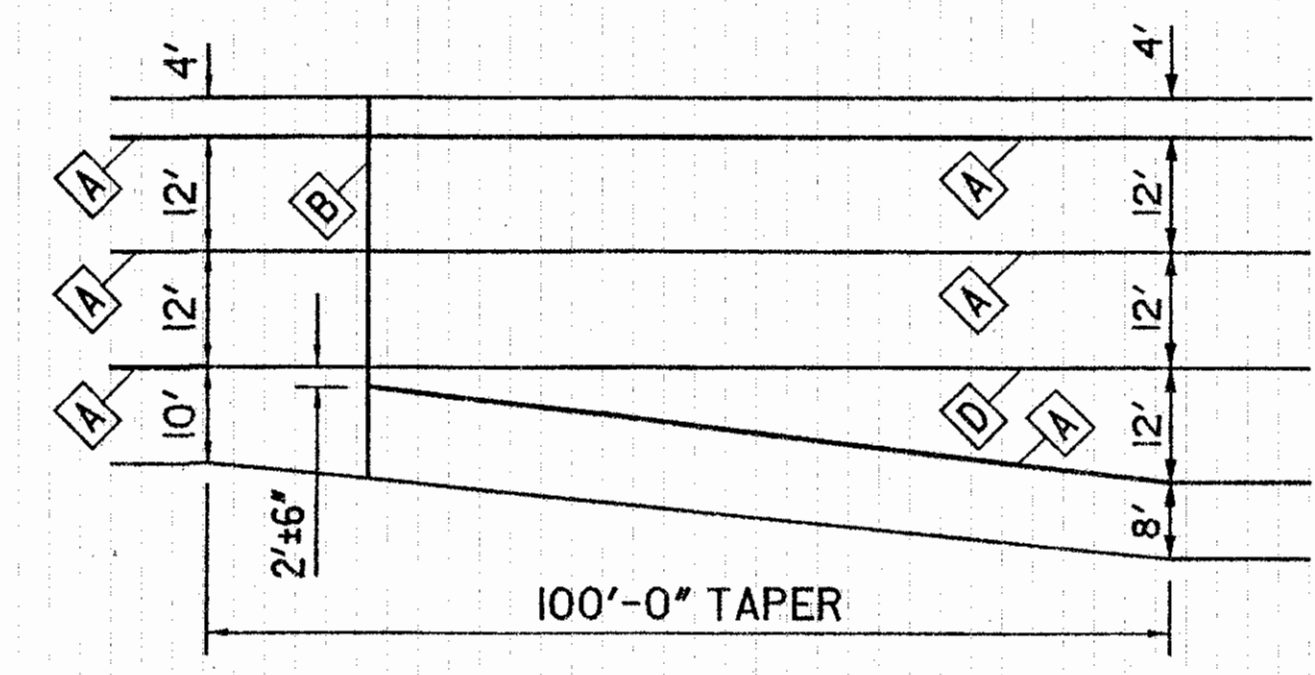
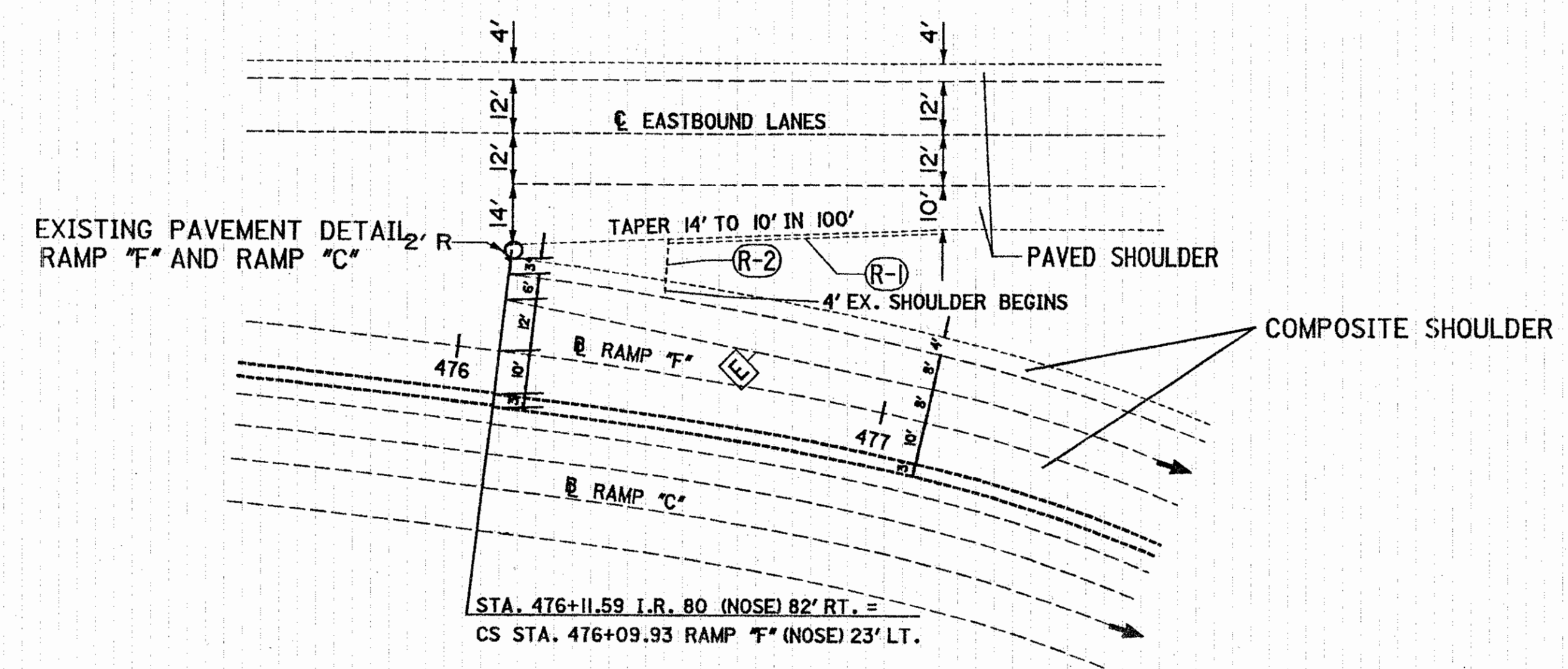
**NOTE:**  
EXISTING RAMP "E" SHOULDER WIDTH VARIES AS FOLLOWS:  
OUTSIDE SHOULDER  
STA. 461+33.24 TO STA. 462+58.24      8' TO 6'  
INSIDE SHOULDER  
STA. 462+33.24 TO STA. 462+58.24      2' TO 2'-6"  
STA. 462+58.24      6'

**NOTE:**  
NO WAIVER OF THE 15 FOOT CONTRACTION JOINT SPACING  
INDICATED BY ITEM 452 PLAIN CONCRETE, AS PER PLAN, IS  
INTENDED EVEN THOUGH SPECIFIC LOCATIONS OF TRANSVERSE  
JOINTS HAVE BEEN DESIGNATED BY THIS DETAIL.

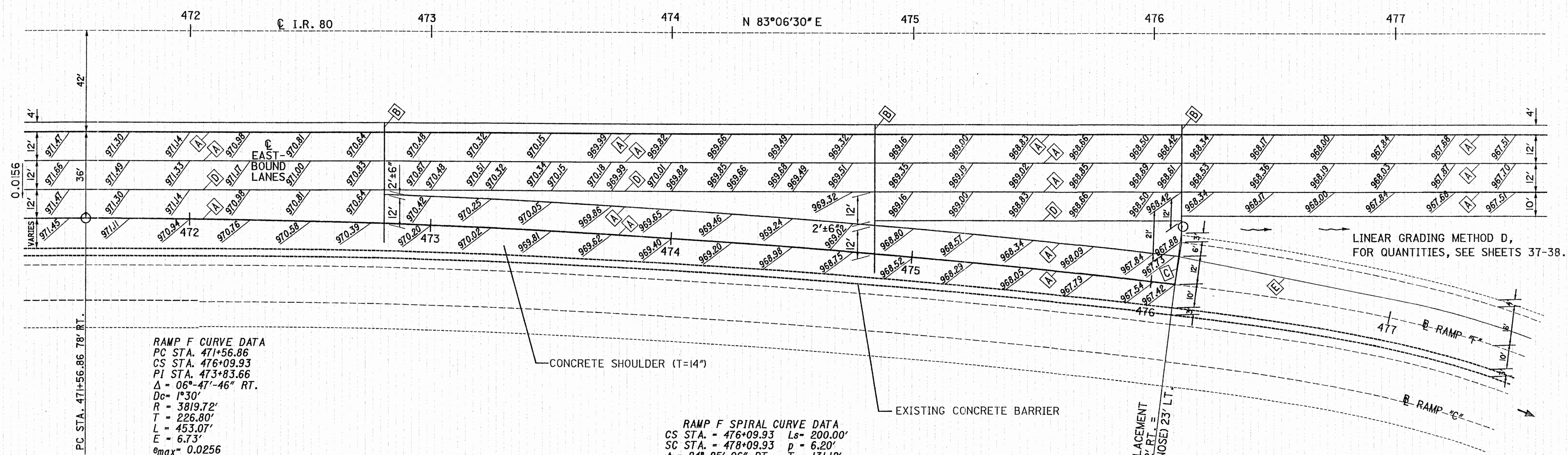




MAH-76/80-6.95/0.00



TAPER DETAIL BEGIN DECELERATION LANE  
BEGIN DECELERATION LANE 66' RT.  
STA. 468+11.59 (SEE SHEET 58)



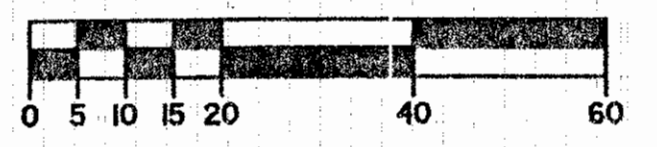
**RAMP F CURVE DATA**  
PC STA. 471+56.86  
CS STA. 476+09.93  
PI STA. 473+83.66  
 $\Delta = 06^\circ-47'-46''$  RT.  
 $D_c = 1^\circ30'$   
 $R = 3819.72'$   
 $T = 226.80'$   
 $L = 453.07'$   
 $E = 6.73'$   
 $e_{max} = 0.0256$

**RAMP F SPIRAL CURVE DATA**  
CS STA. = 476+09.93  $L_s = 200.00'$   
SC STA. = 478+09.93  $p = 6.20'$   
 $\Delta_1 = 24^\circ-25'-06''$  RT.  $T_1 = 131.12'$   
 $\Delta_2 = 01^\circ-30'-00''$  RT.  $T_2 = 72.04'$   
 $\Delta_3 = 22^\circ-55'-06''$  RT.  $e_1 = 0.0256'$   
 $R_1 = 3819.72'$   $e_2 = 0.0833'$   
 $R_2 = 250.00'$

MARK	STATION TO STATION	202 CURB REMOVED LIN. FT.	202 TRAFFIC ISLAND REMOVED SQ. YD.
R-1	476+42 TO 477+10	68.0	26.0
R-2	476+09.93 TO 476+35		
TOTALS CARRIED TO GENERAL SUMMARY.		68	26

- JOINT LEGEND**
- [A] LONGITUDINAL JOINT
  - [B] CONTRACTION JOINT
  - [C] RETROFIT DOWELED EXPANSION JOINT, SEE DETAIL SHEET 66.
  - [D] NON-TIED LONGITUDINAL JOINT
  - [E] EXISTING LONGITUDINAL JOINT

**NOTE:**  
NO WAIVER OF THE 15 FOOT CONTRACTION JOINT SPACING INDICATED BY ITEM 452 PLAIN CONCRETE, AS PER PLAN, IS INTENDED EVEN THOUGH SPECIFIC LOCATIONS OF TRANSVERSE JOINTS HAVE BEEN DESIGNATED BY THIS DETAIL.





COMPLETED BY SAJ DATE 12/94  
 CALCULATED BY KMM DATE 1/95  
 REVISED BY KMM DATE 6/98

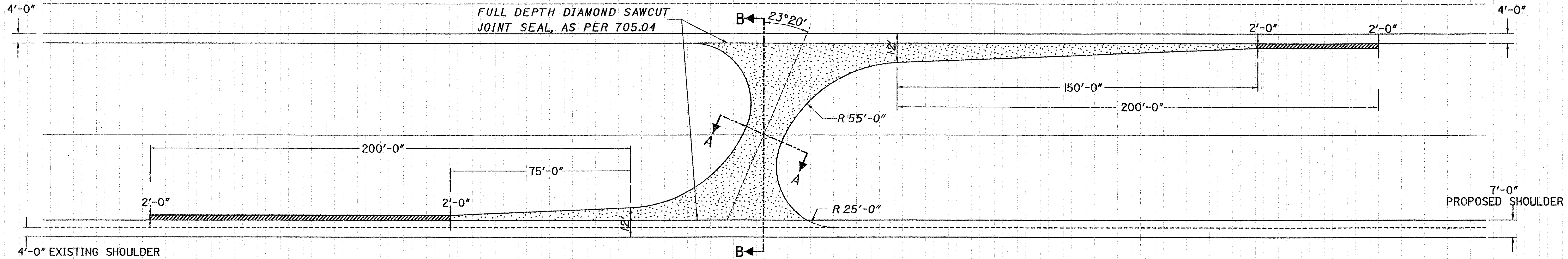
# MEDIAN CROSSOVER

STA. 430+30

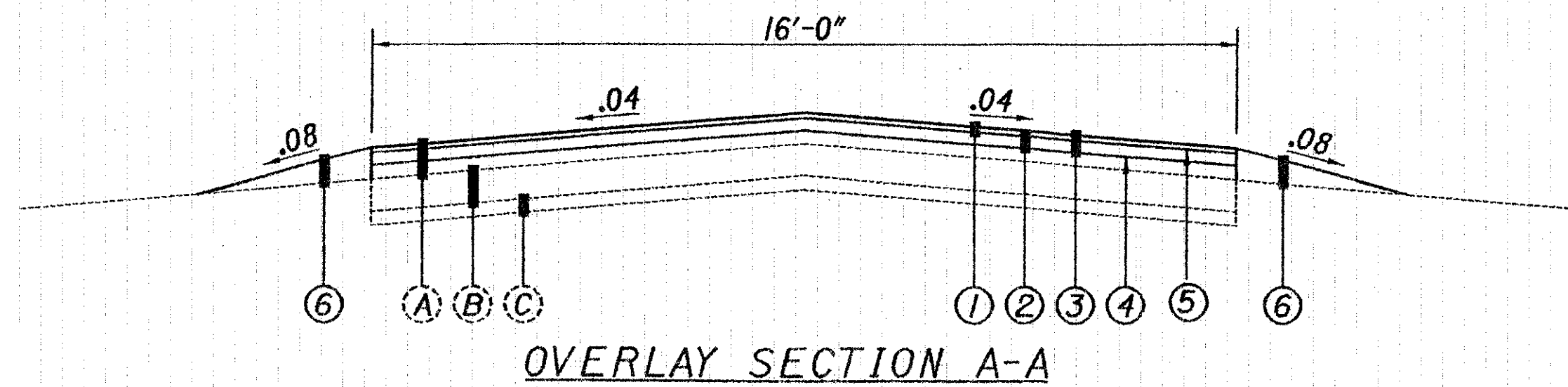
F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

65  
121

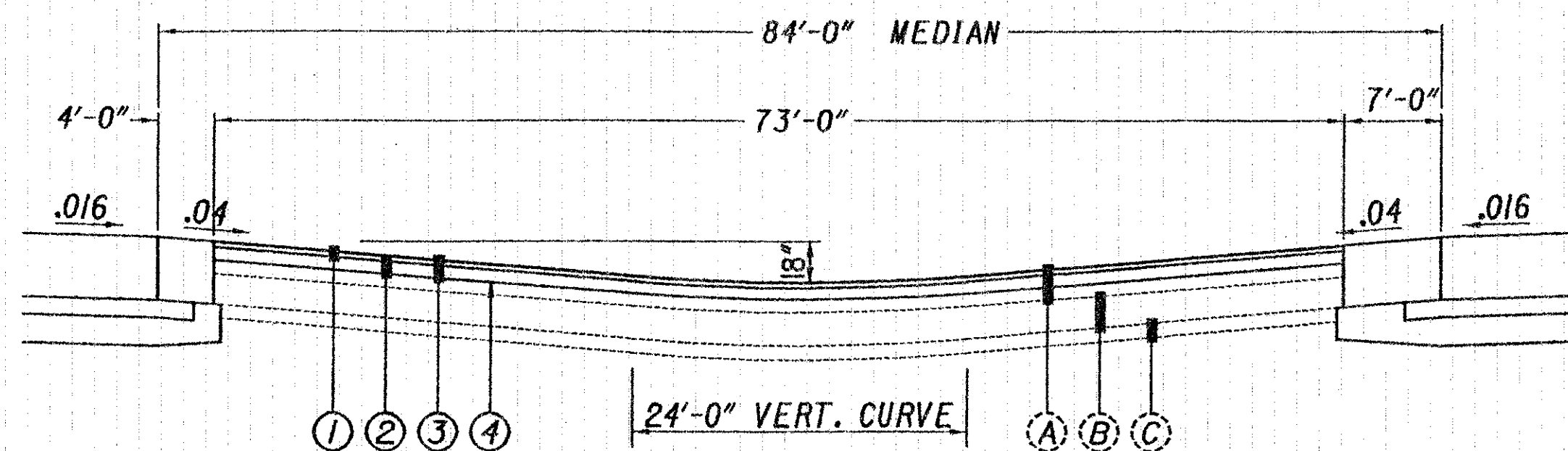
MAH-76/80-6.95/0.00



## MEDIAN CROSSOVER DETAIL



OVERLAY SECTION A-A



OVERLAY SECTION B-B

- ITEM 452 14" PLAIN CONCRET PAVEMENT, AS PER PLAN
- PROPOSED ASPHALT CONCRETE OVERLAY (USE ESTIMATED QUANTITIES THIS SHEET)
- FULL-DEPTH FLEXIBLE PAVEMENT (USE ESTIMATED QUANTITIES THIS SHEET)

### ESTIMATED QUANTITIES FOR FULL-DEPTH FLEXIBLE

ITEM 448 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-22	2 CU YD
ITEM 407 TACK COAT FOR INTERMEDIATE COURSE (RATE = 0.075 GAL/SY)	3 GAL
ITEM 448 2 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG 64-22	3 CU YD
ITEM 301 8" BITUMINIOUS AGGREGATE BASE, PG 64-22	9 CU YD
ITEM 408 PRIME COAT (RATE = 0.40 GAL/SY)	16 GAL
ITEM 304 6" AGGREGATE BASE	7 CU YD
ITEM 203 SUBGRADE COMPACTION	39 SQ YD
ITEM 203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION (18" TYP.)	20 CU YD

QUANTITIES CARRIED TO GENERAL SUMMARY.

### ESTIMATED QUANTITIES FOR OVERLAY

ITEM 448 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-22	15 CU YD
ITEM 448 2 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG 64-22	32 CU YD
ITEM 254 4" PAVEMENT PLANING, BITUMINIOUS	414 SQ YD
ITEM 407 TACK COAT (RATE = 0.075 GAL/SY)	32 GAL
ITEM 407 TACK COAT FOR INTERMEDIATE COURSE (RATE = 0.075 GAL/SY)	32 GAL

QUANTITIES CARRIED TO GENERAL SUMMARY.

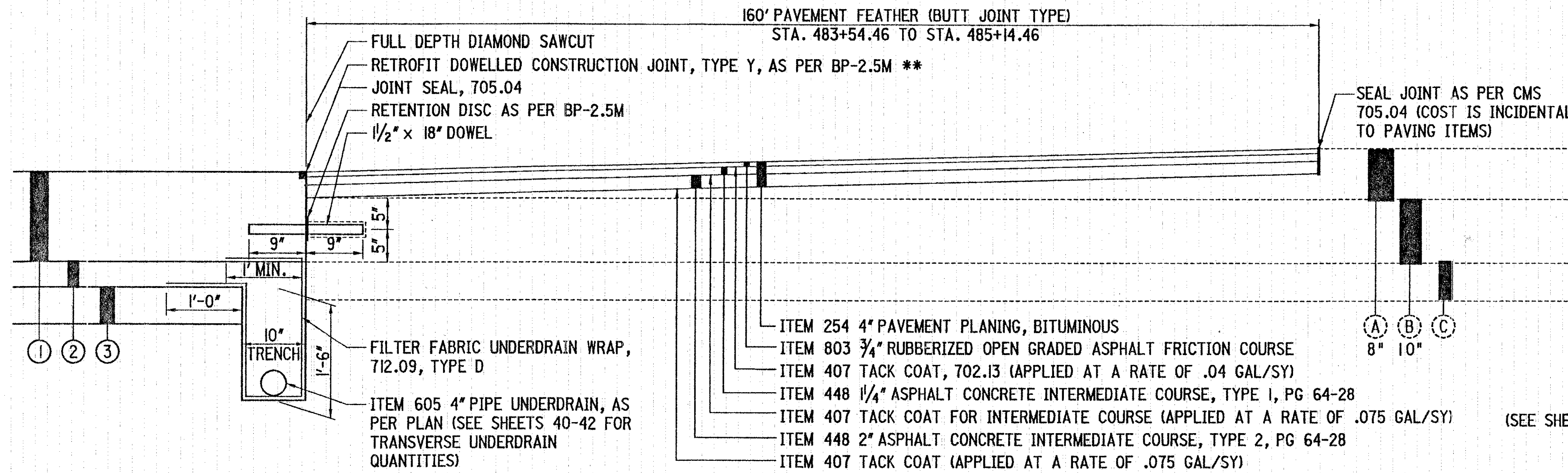
### LEGEND FOR OVERLAY

- ① 448 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 64-22
- ② 448 2 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG 64-22
- ③ 254 4" PAVEMENT PLANING, BITUMINIOUS
- ④ 407 TACK COAT (RATE = 0.075 GAL/SY)
- ⑤ 407 TACK COAT FOR INTERMEDIATE COURSE (RATE = 0.075 GAL/SY)
- ⑥ 203 LINEAR GRADING, METHOD A
- Ⓐ EXISTING 7" ASPHALT CONCRETE PAVEMENT
- Ⓑ EXISTING 7" AGGREGATE BASE
- Ⓒ EXISTING 3" SUBBASE

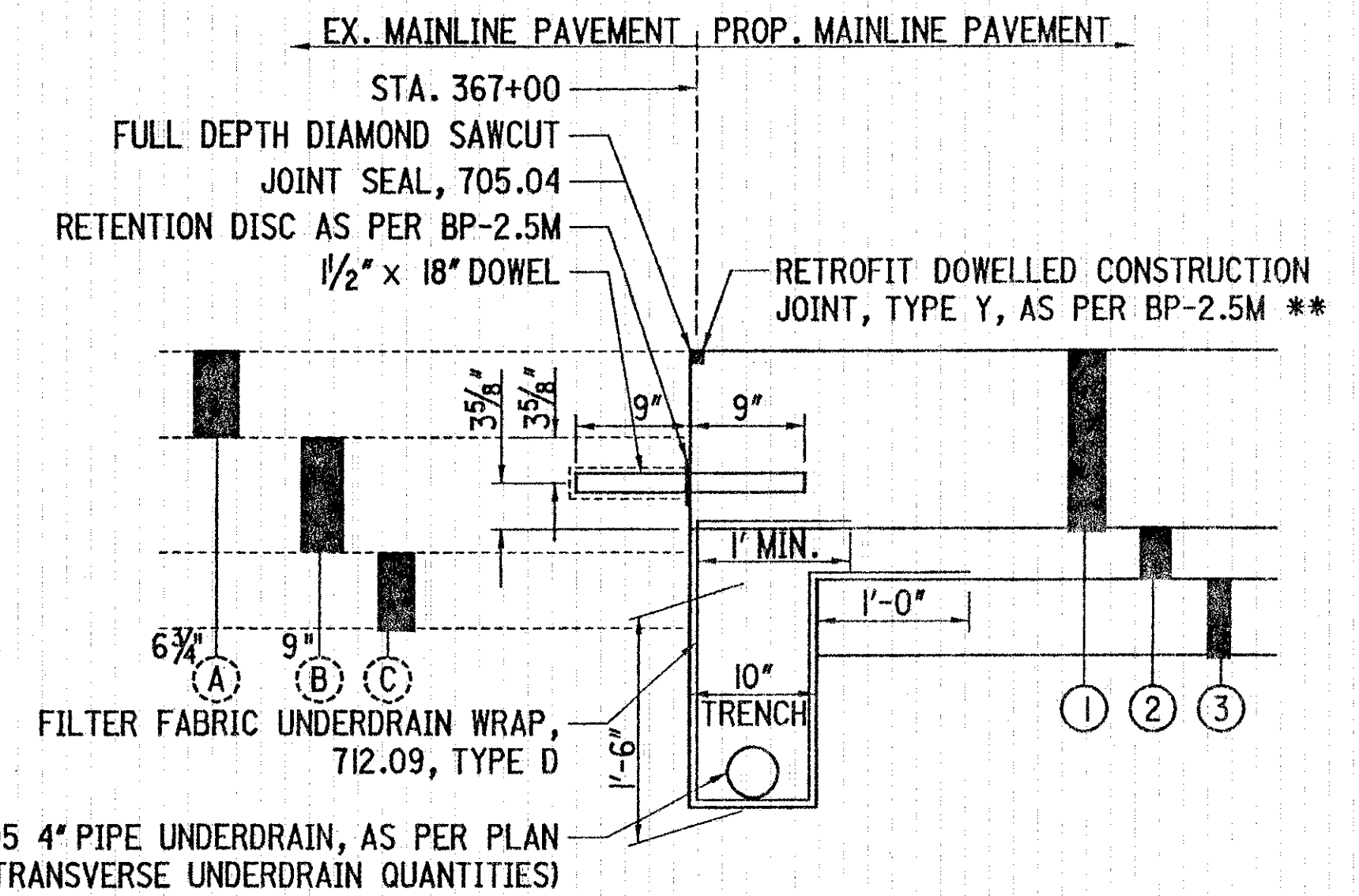


# PAVEMENT DETAILS

MAH-76/80-6.95/0.00



PAVEMENT FEATHER DETAIL I.R. 80 @ END PROJECT



BUTT JOINT DETAIL I.R. 76 AT BEGINNING OF PROJECT

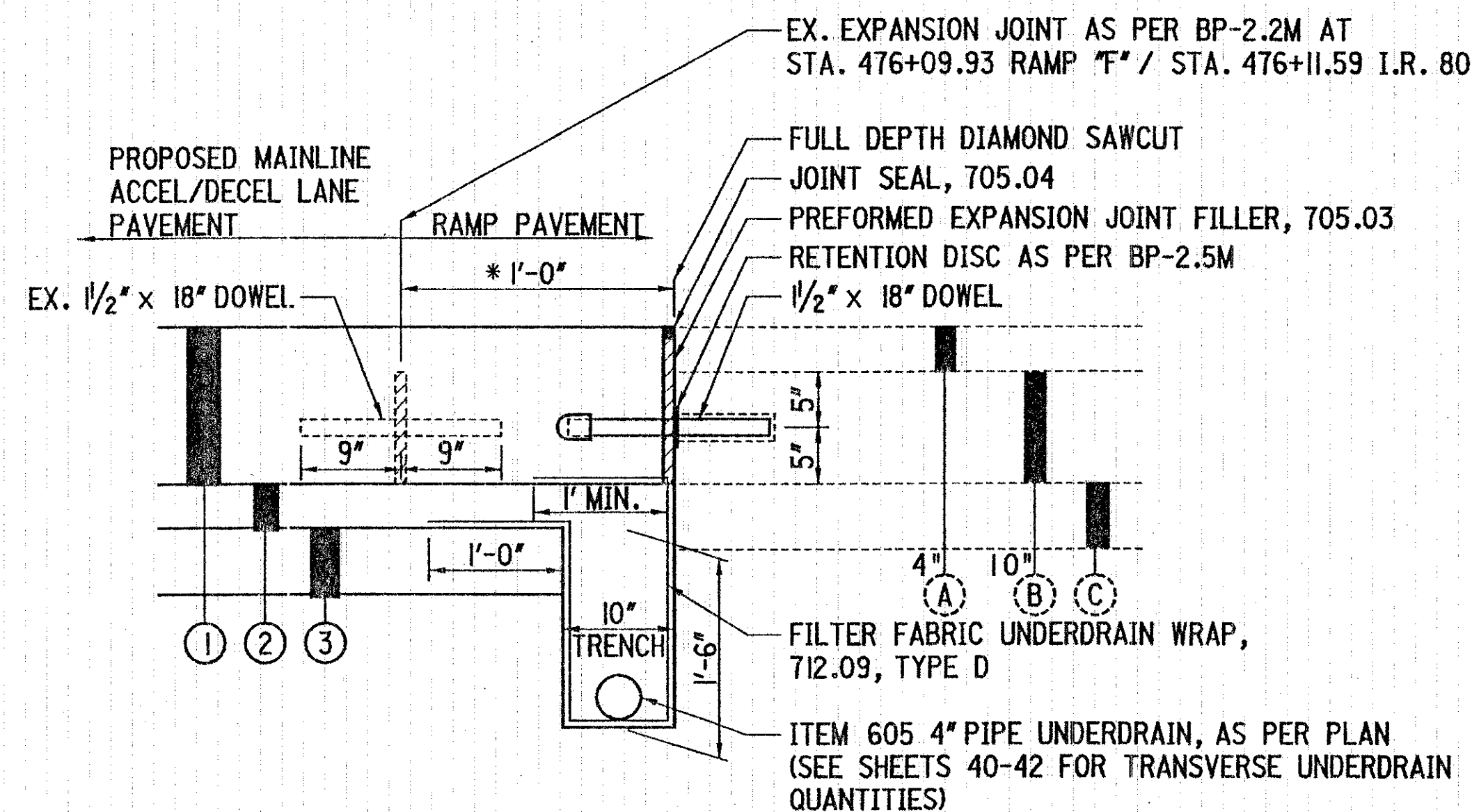
*\* DUE TO EXISTING CONDITIONS USE PAVEMENT FEATHER DETAIL*

**EXISTING LEGEND**

- (A) EXISTING ASPHALT CONCRETE PAVEMENT
- (B) EXISTING REINFORCED CONCRETE PAVEMENT
- (C) EXISTING SUBBASE

**PROPOSED LEGEND**

- (1) ITEM 452 14" PLAIN CONCRETE PAVEMENT, AS PER PLAN
- (2) ITEM 307 4" NONSTABILIZED FREE DRAINING BASE
- (3) ITEM 304 AGGREGATE BASE, VARIABLE DEPTH



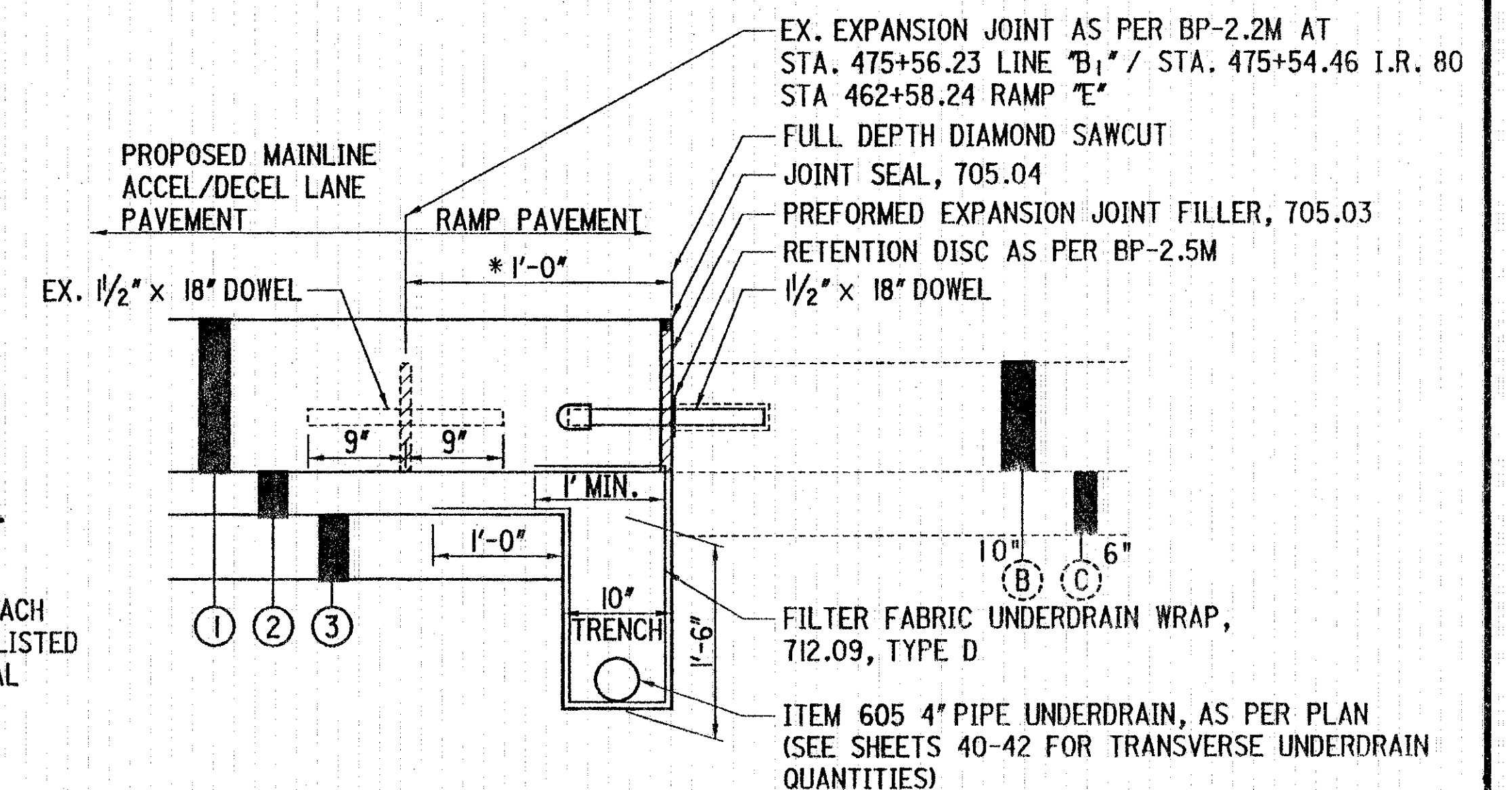
RETROFIT DOWELLED EXPANSION JOINT

**\* RETROFIT DOWELLED EXPANSION JOINT**

WHERE THE PROPOSED CONCRETE PAVEMENT MEETS THE EXISTING RAMP PAVEMENT, A RETROFIT DOWELLED EXPANSION JOINT SHALL BE PROVIDED. A DIAMOND SAW CUT SHALL BE MADE AT A MINIMUM OF 1'-0" PAST THE EXISTING JOINT. THIS LENGTH SHALL BE ADJUSTED BY THE ENGINEER TO ASSURE THAT ALL EXISTING EXPANSION JOINT DOWELS ARE REMOVED. 1/2" DOWEL HOLES SHALL BE DRILLED AND GROUTED AS PER CMS 255 IN THE CLEAN AND VERTICAL FACE OF THE EXISTING REINFORCED CONCRETE RAMP PAVEMENT AS SHOWN IN THE DETAIL. THE PROPOSED EXPANSION JOINT SHALL ALSO MEET THE PERTINENT REQUIREMENTS OF BP-2.2M INCLUDING DOWEL SPACING. ALL WORK AND MATERIALS REQUIRED TO PROVIDE THESE JOINTS SHALL BE CONSIDERED INCIDENTAL TO ITEM 452 PLAIN CONCRETE PAVEMENT, AS PER PLAN.

**\*\* RETROFIT DOWELLED CONSTRUCTION JOINT, TYPE Y**

WHERE THE PROPOSED CONCRETE PAVEMENT BUTTS INTO THE EXISTING PAVEMENT, A DOWELLED TYPE Y AS PER BP-2.5M SHALL BE PROVIDED EXCEPT THAT 1/2" X 18" DOWELS SHALL BE UTILIZED. GROUTING AND DRILLING REQUIREMENTS SHALL BE PER CMS 255 AND BP-2.5M EXCEPT THE REQUIREMENT THAT THE DRILLING DEVICE SHALL BE CAPABLE OF DRILLING THREE HOLES AT ONE TIME SHALL BE WAIVED AND THE DOWELS SHALL BE SPACED AT 12" CENTERS, BEGINNING 6" FROM EACH LONGITUDINAL JOINT AS PER BP-2.2M. (THIS PROPOSED SPACING SHALL OVERRIDE THAT WHICH IS LISTED ON BP-2.5M). ALL WORK AND MATERIALS REQUIRED TO PROVIDE THESE JOINTS SHALL BE INCIDENTAL TO ITEM 452 PLAIN CONCRETE PAVEMENT, AS PER PLAN.



RETROFIT DOWELLED EXPANSION JOINT



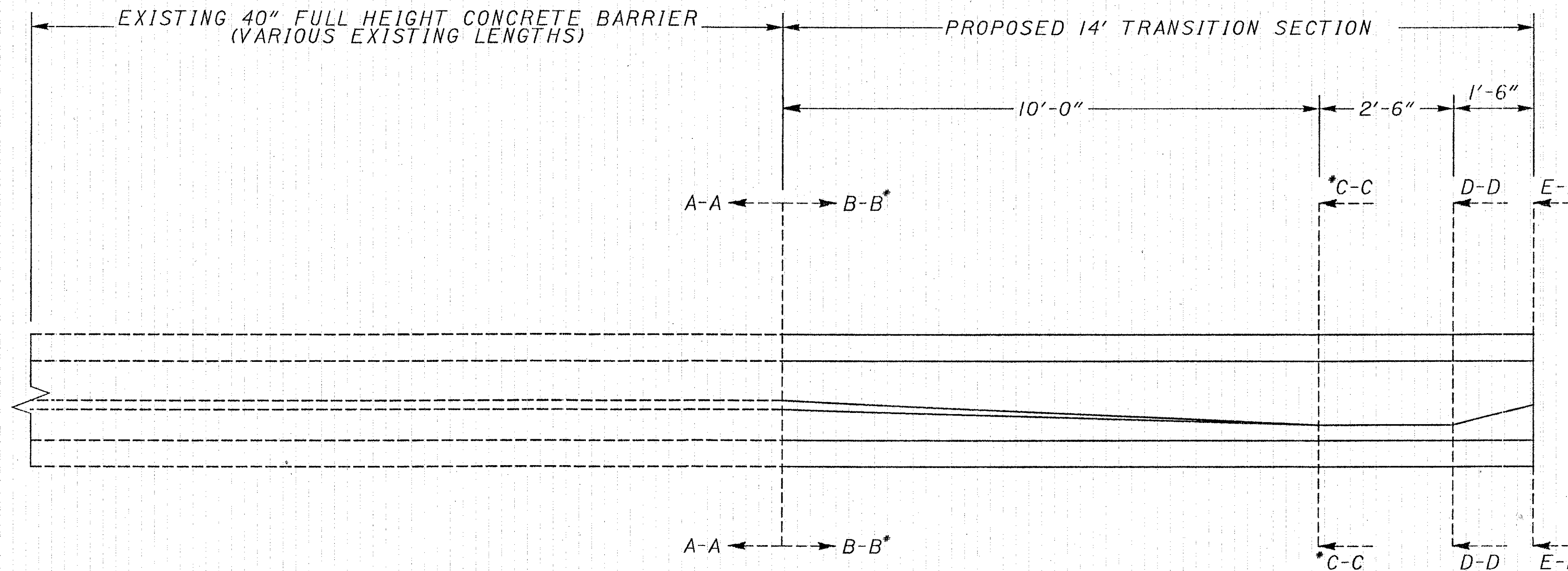
# CONCRETE BARRIER DETAILS

F.A.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

67  
121

MAH-76/80-6.95/0.00

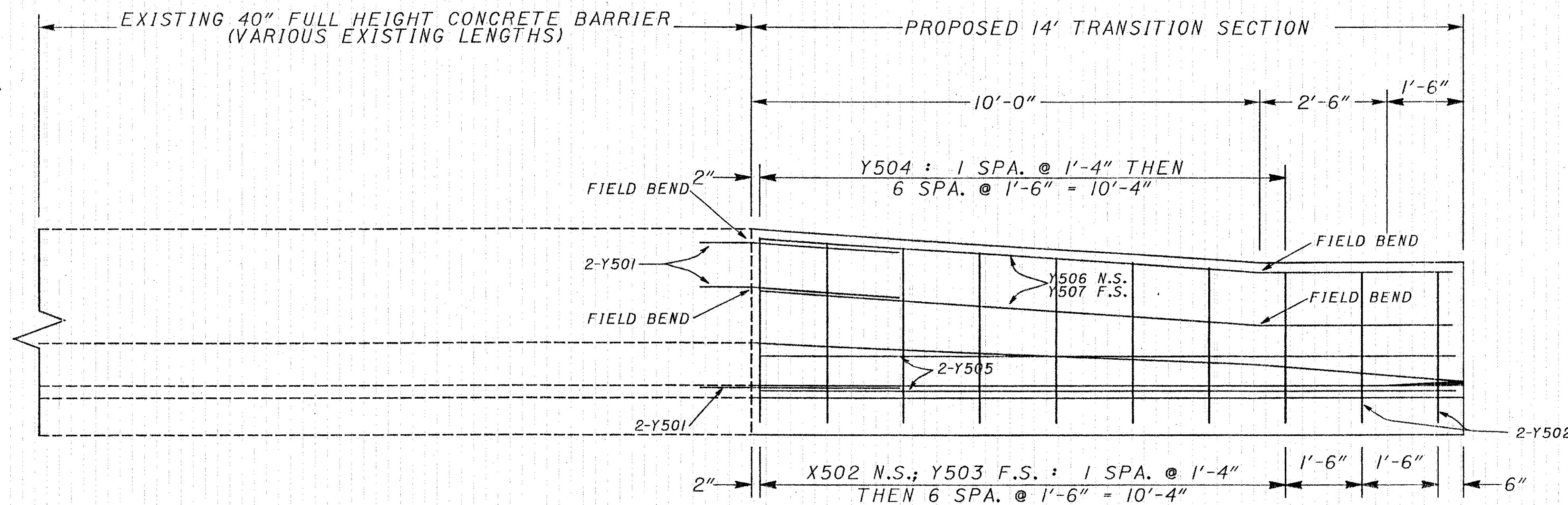
## PLAN VIEW



# NOTE: THERE IS AN EIGHT (8) INCH HEIGHT DIFFERENCE BETWEEN SECTION B-B AND SECTION C-C. DURING THE CONSTRUCTION PHASE, THIS HEIGHT DIFFERENTIAL SHALL BE COMPENSATED FOR WITHIN THE FIRST TEN (10) FEET OF THE PROPOSED TRANSITION SECTION AS SHOWN. A CONSTANT SLOPE OF 0.8" / FT SHALL BE USED TO MAKE THE TRANSITION FROM FORTY (40) INCH HIGH CONCRETE BARRIER TO THE STANDARD THIRTYTWO (32) INCH HIGH CONCRETE BARRIER.

NOTE: SEE SHEET 69 FOR TYPICAL INSTALLATION.

## PROFILE VIEW

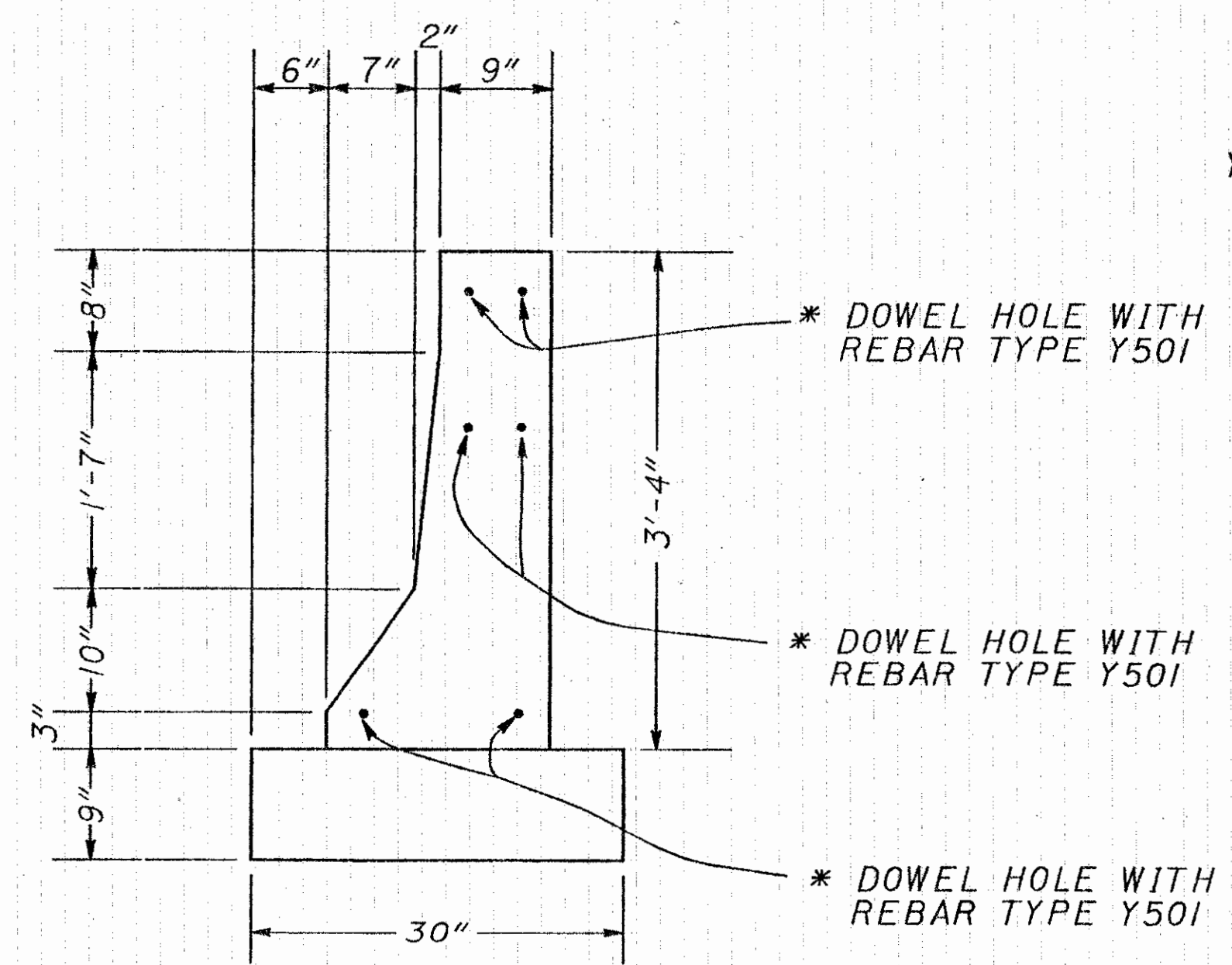




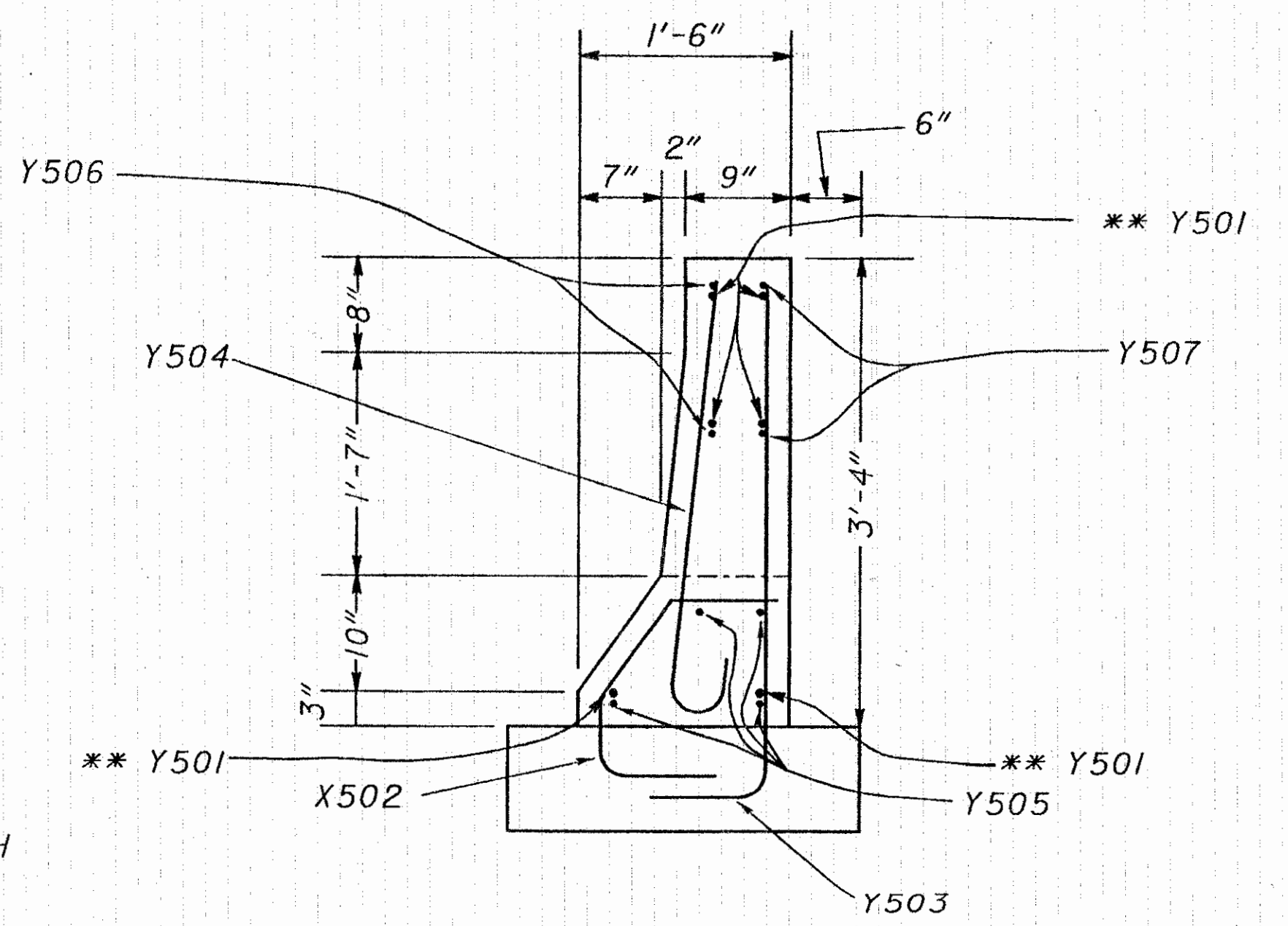
# CONCRETE BARRIER DETAILS

F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

MAH-76/80-6.95/0.00



EXISTING 40" FULL HEIGHT CONCRETE BARRIER  
SECTION A-A

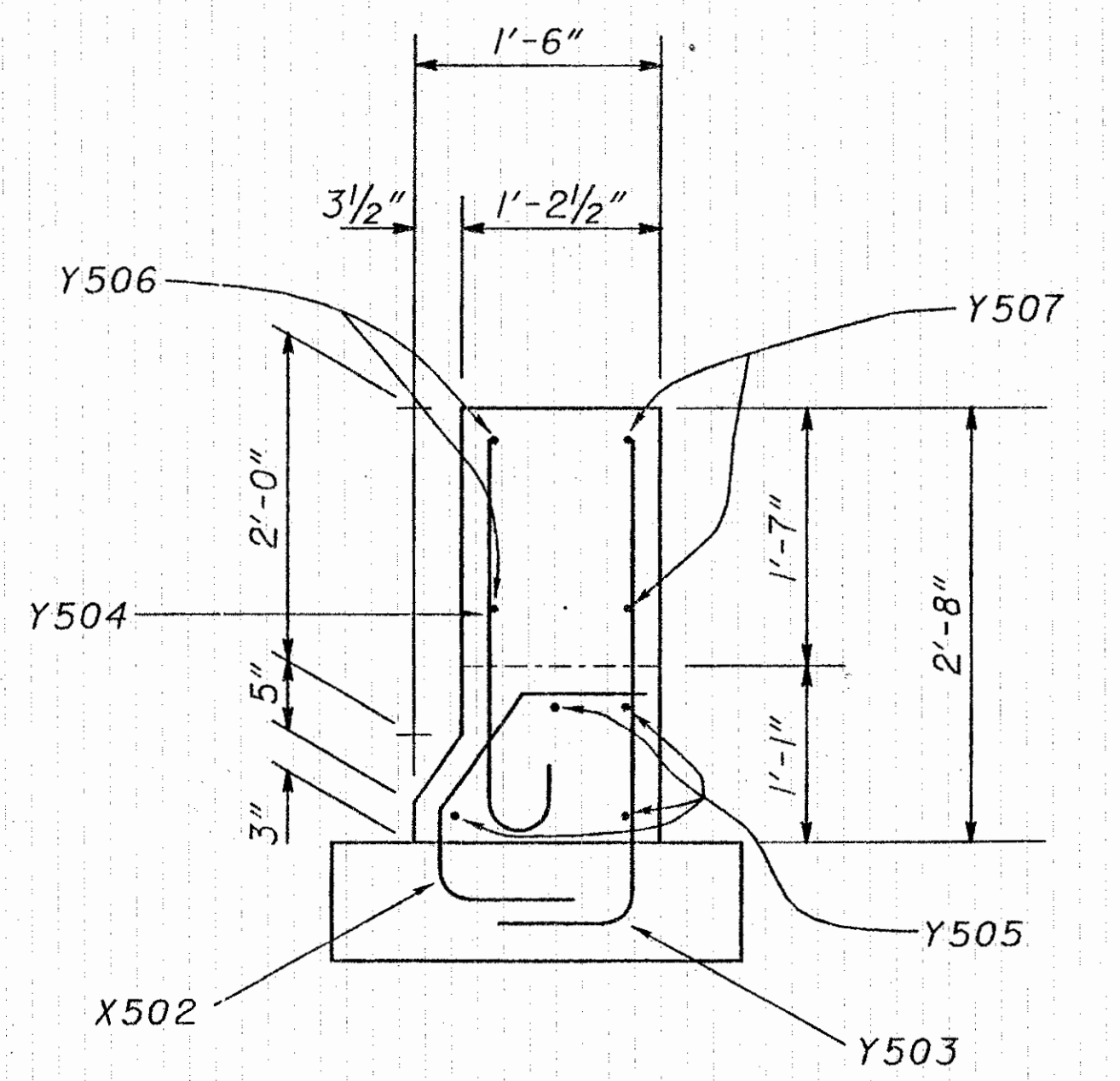


SECTION B-B

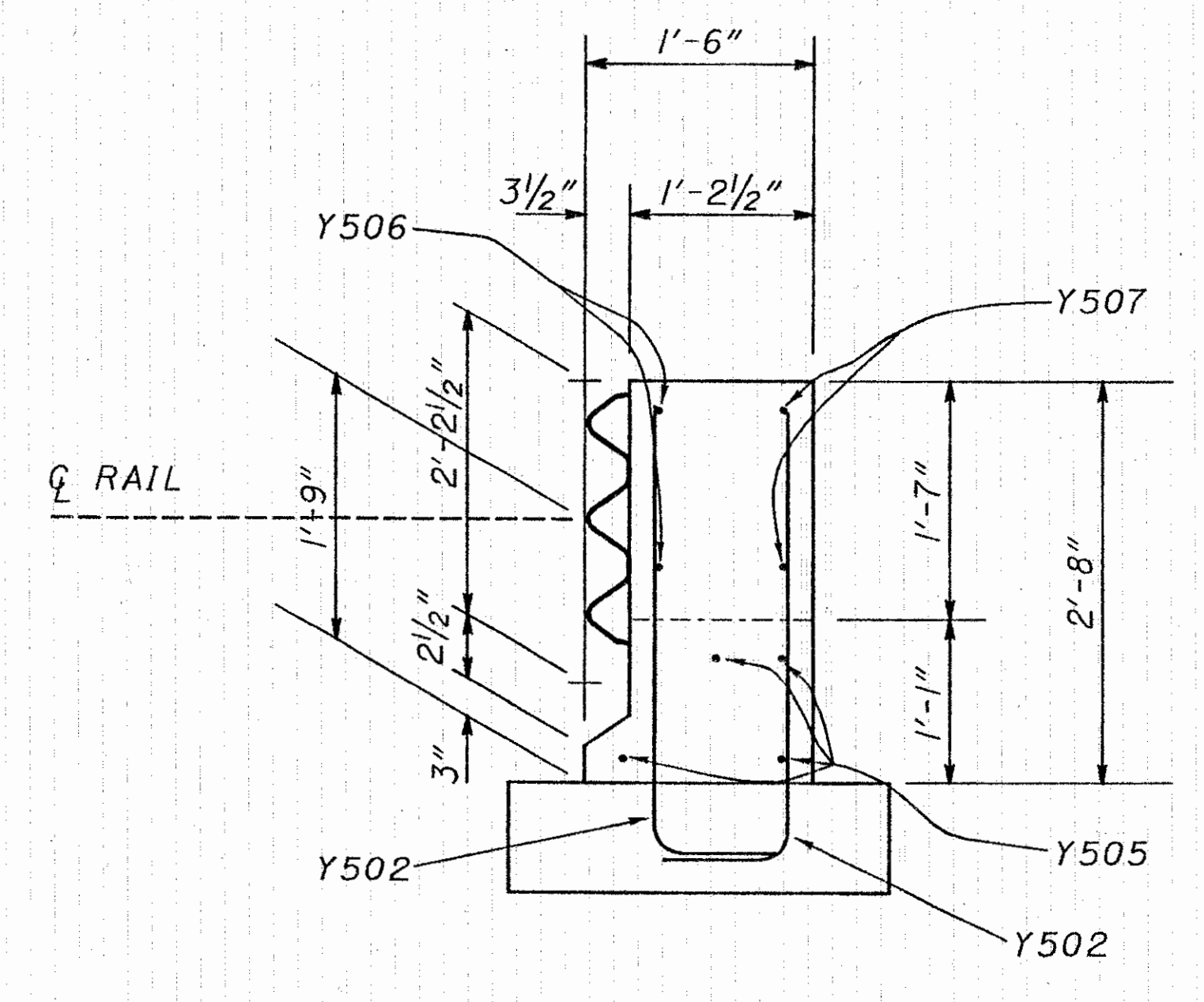
\* NOTE: SIX (6) DOWEL HOLES AS PER CMS 510 USING NON SHRINK, NON METALLIC GROUT, SHALL BE DRILLED INTO THE EXISTING 40" FULL HEIGHT CONCRETE BARRIER, SEE SECTION A-A FOR APPROXIMATE LOCATIONS. THE DOWEL HOLES SHALL BE A MINIMUM OF 12 1/4" IN DEPTH WITH A MINIMUM 2" EDGE DISTANCE. SIX (6) #5 DEFORMED EPOXY COATED REBARS 3'-11" IN LENGTH, TYPE Y501, SHALL BE FORCED INTO THE HOLES AND HELD IN PLACE WITH NON SHRINK, NON METALLIC GROUT ACCORDING TO CMS 705.20. FOR MORE INFORMATION SEE GENERAL NOTES SHEET 15.

\*\* NOTE: THE SIX (6) #5 EPOXY COATED REBARS, TYPE Y501, SHALL HAVE A MINIMUM LAP LENGTH OF 2'-9" AS REQUIRED BY CMS 509.08.

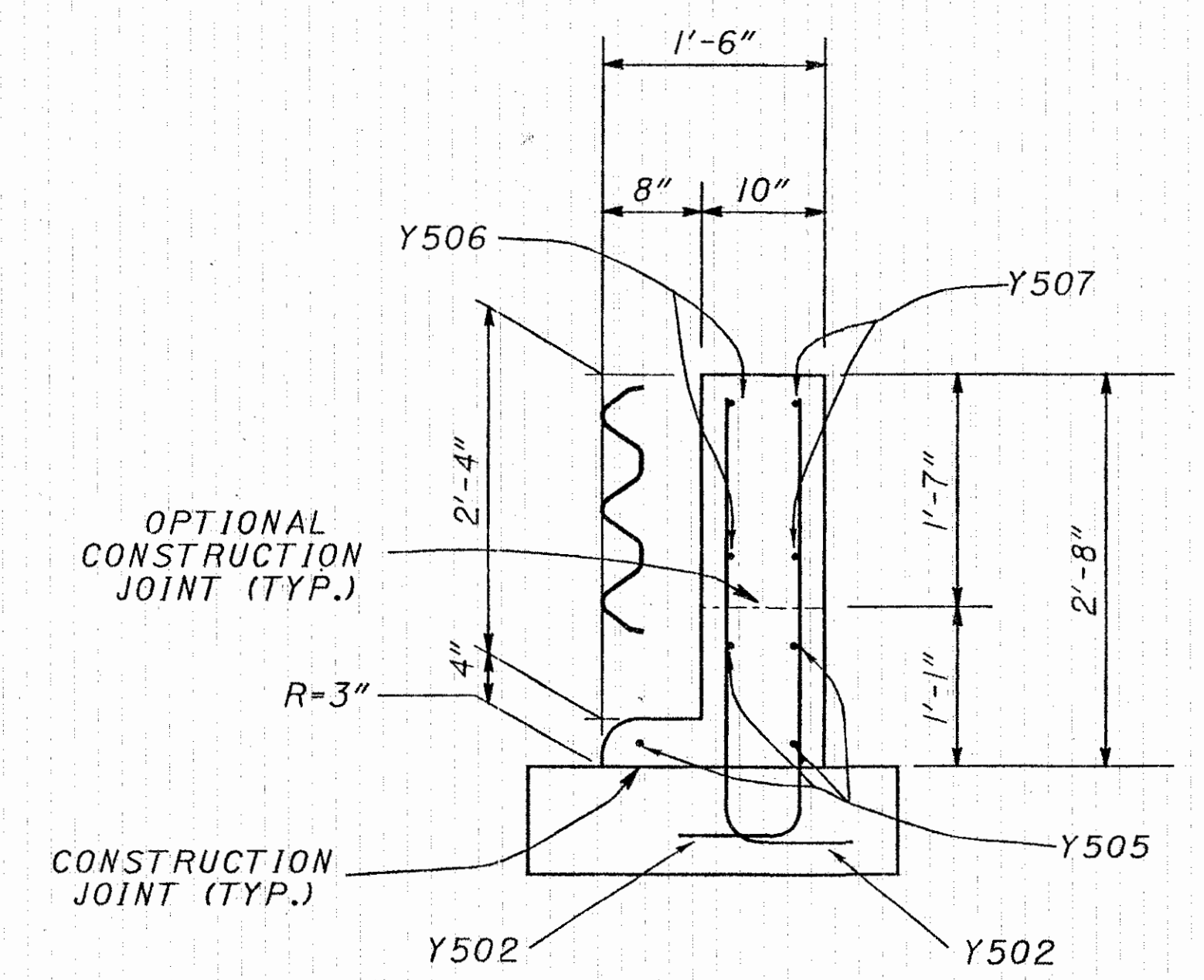
NOTE: FOR DETAILS OF REBARS SEE SHEET 69.



SECTION C-C



SECTION D-D



SECTION E-E

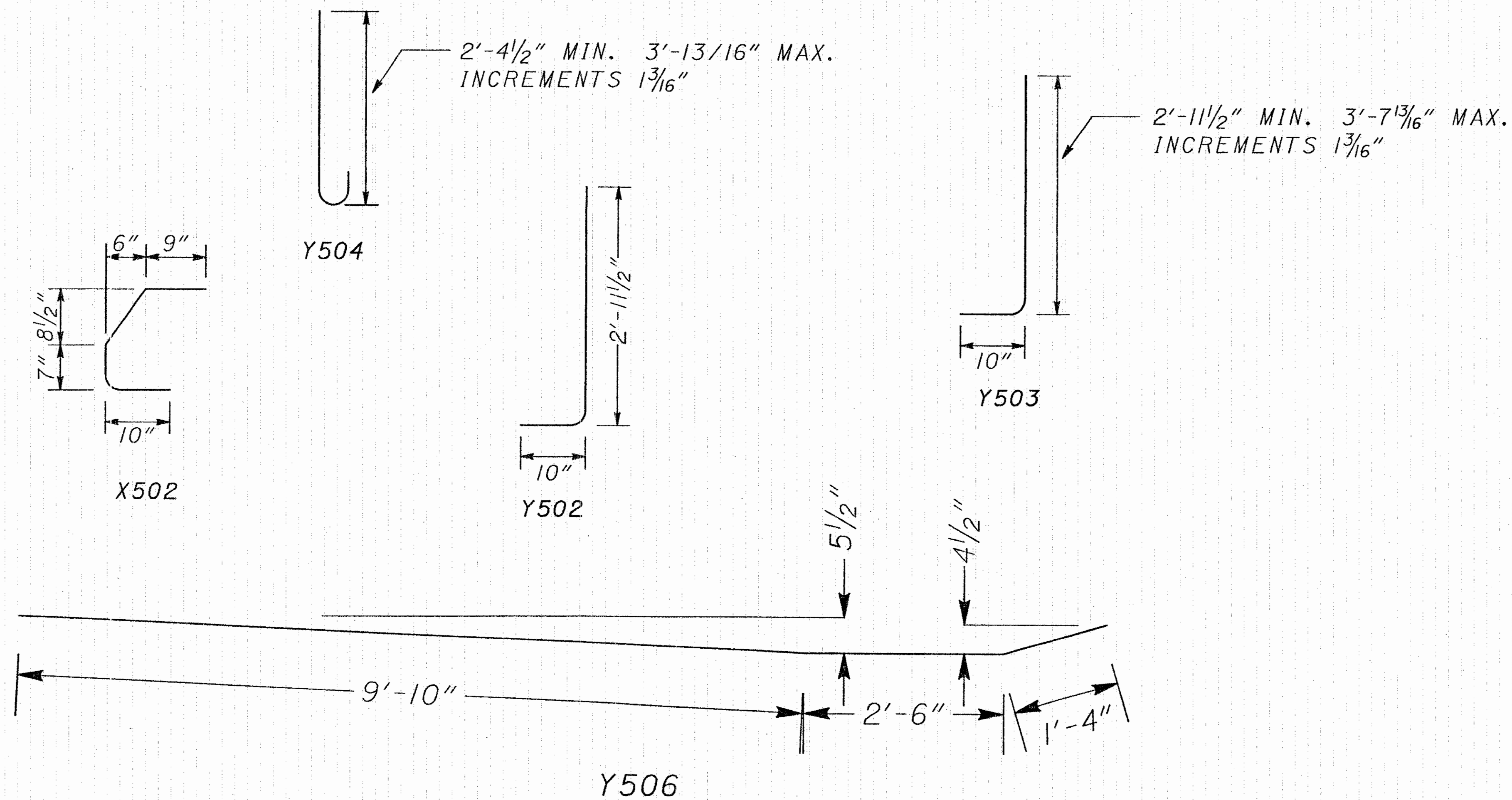


# CONCRETE BARRIER DETAILS

F.A.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

69  
121

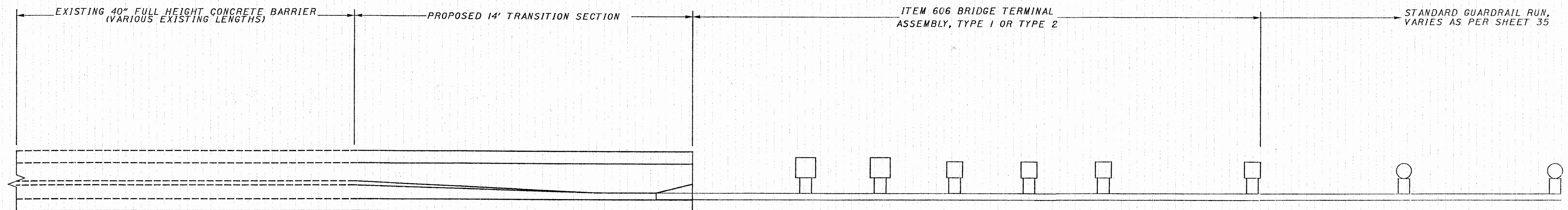
MAH-76/80-6.95/0.00



MARK	SHAPE	LENGTH	INCREMENT	NO.
X502	BENT	2'-10"		8
Y501	STRAIGHT	3'-11"		6
Y502	BENT	2'-11 1/2"		4
Y503	BENT	MIN 2'-11 1/2"	1 3/16"	8
Y504	BENT	MIN 2'-4 1/2"	1 3/16"	8
Y505	STRAIGHT	13'-8"		4
Y506	BENT	13'-8"		2
Y507	STRAIGHT	13'-8"		2

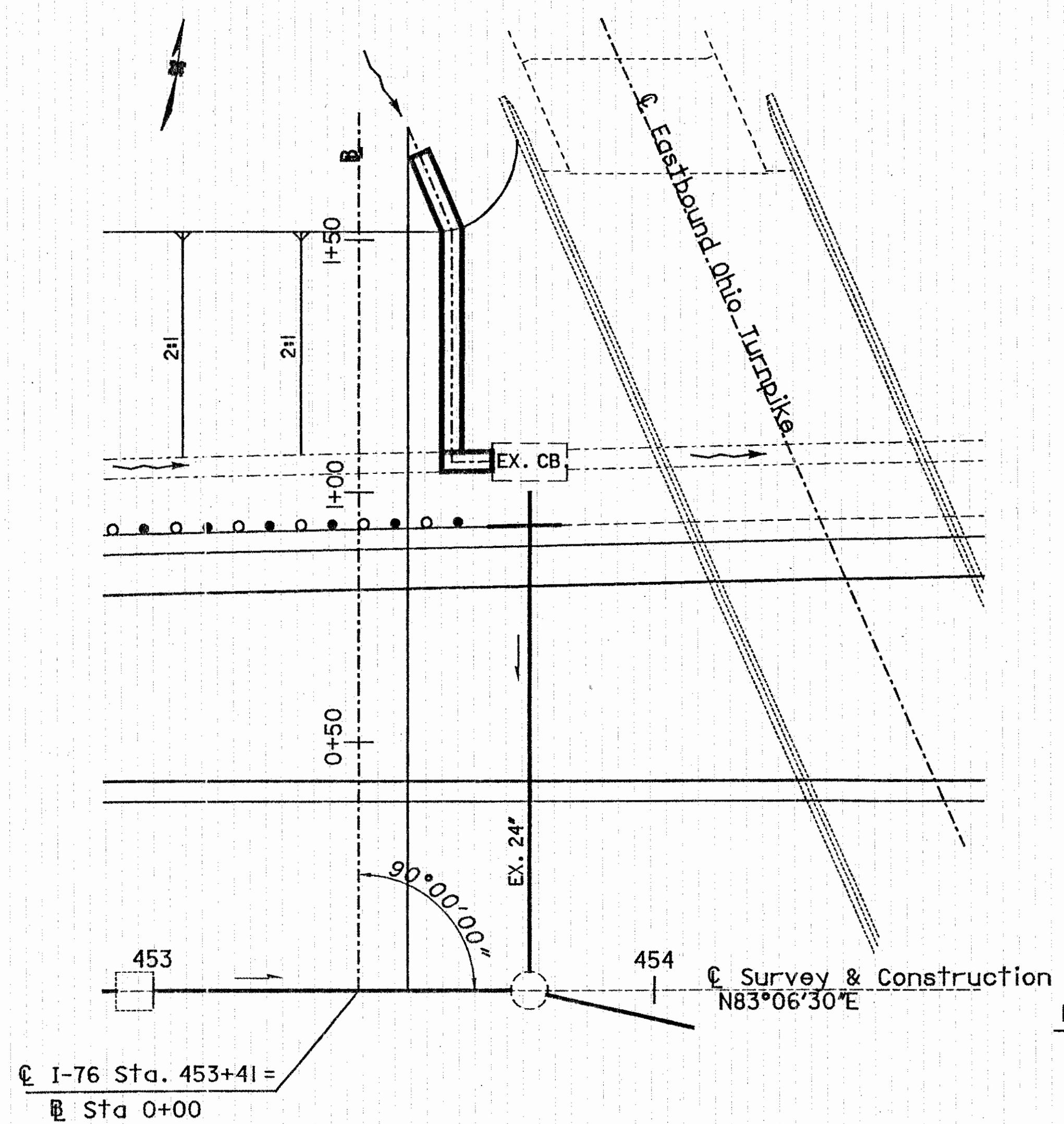
ALL REINFORCING BARS SHALL BE EPOXY COATED AND SHALL MEET THE REQUIREMENTS OF CMS 509.

## TYPICAL INSTALLATION ITEM 622 CONCRETE BARRIER, TYPE D, AS PER PLAN

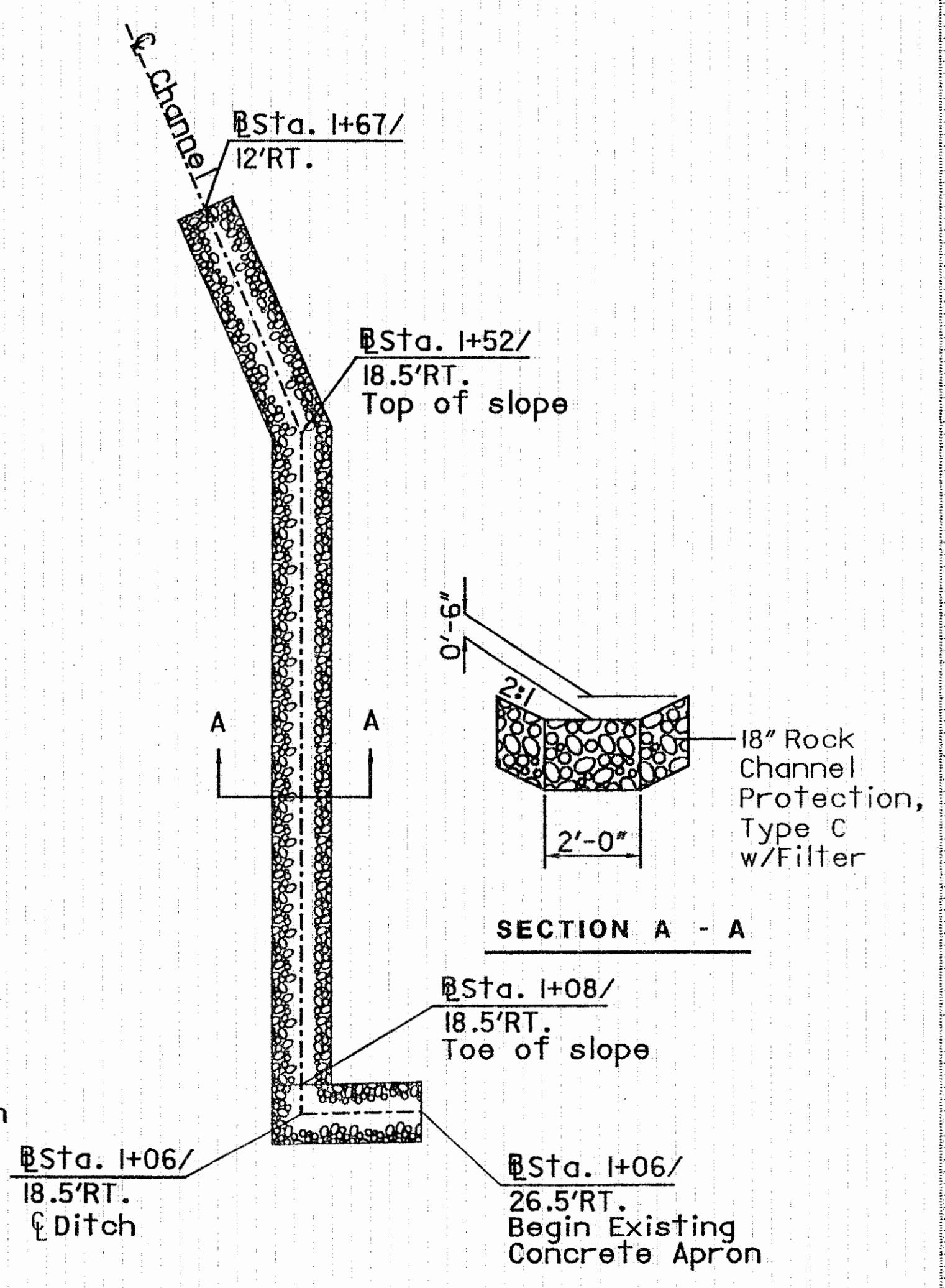




MAH-76/80-6.95/0.00

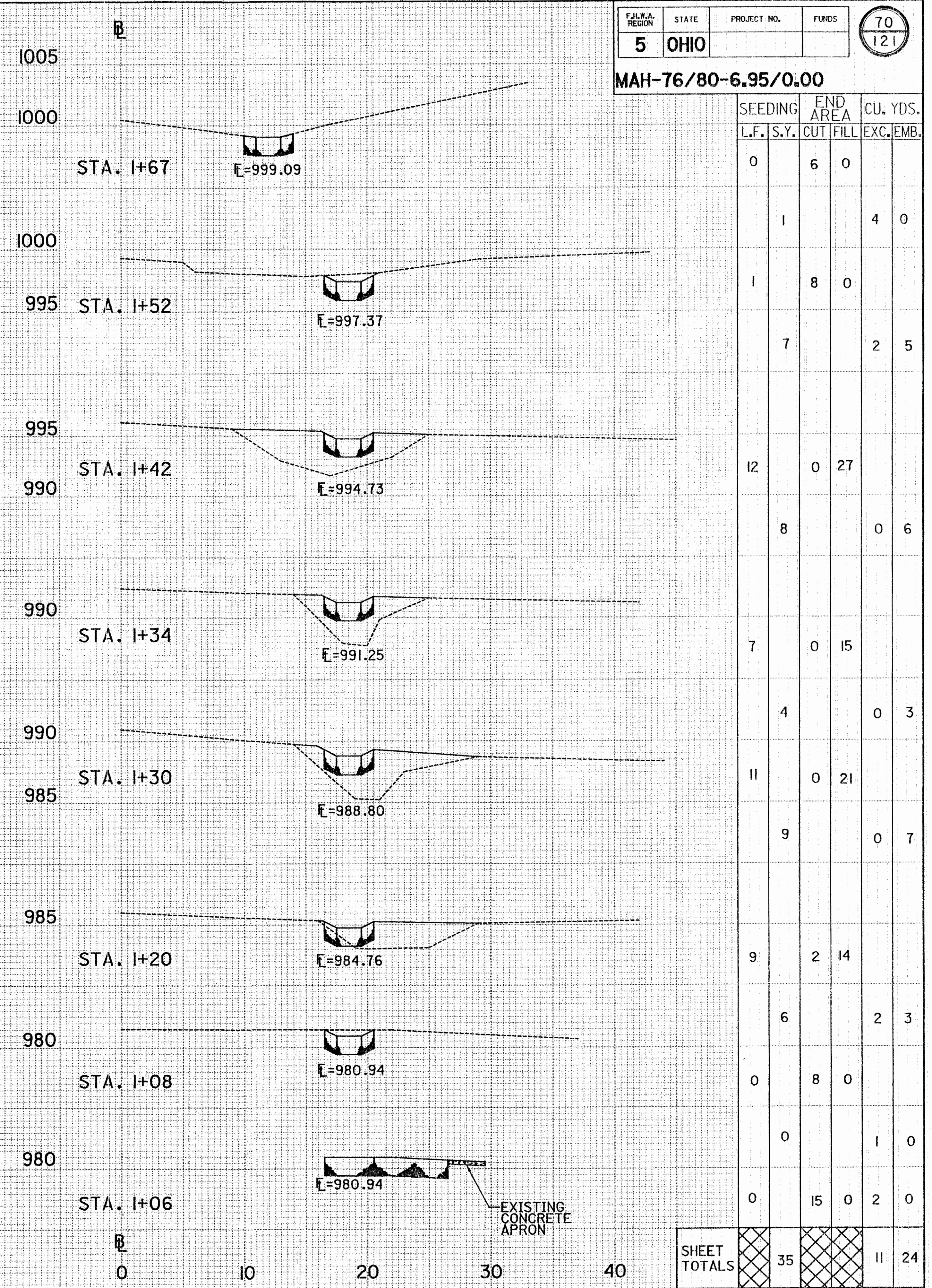


Site Plan



Channel Details

QUANTITIES	203	203	601	659
	EMBANKMENT	EXCAVATION NOT INCLD. EMBANKMENT CONSTRUCTION	ROCK CHANNEL PROTECTION TYPE C W/FILTER	SEEDING AND MULCHING
	CU. YD.	CU. YD.	CU. YD.	SQ. YD.
<b>Totals Carried to General Summary</b>	24	11	15	35



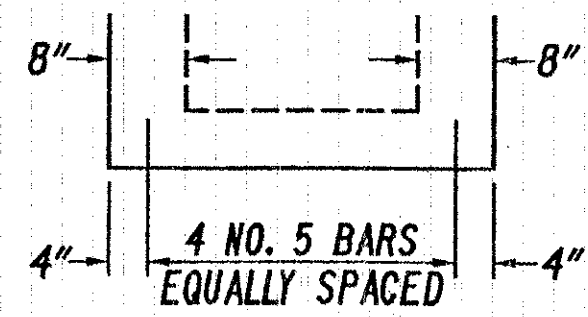


NOTE: THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL FLOW LINES IN THE CATCH BASINS. CARE SHALL BE TAKEN WHILE INSTALLING THE CUT-OFF WALL NOT TO DAMAGE THE EXISTING PIPE. THE 2' DEPTH OF THE CUT-OFF WALL CAN BE ADJUSTED BY THE ENGINEER TO AVOID DAMAGING THE EXISTING PIPE.

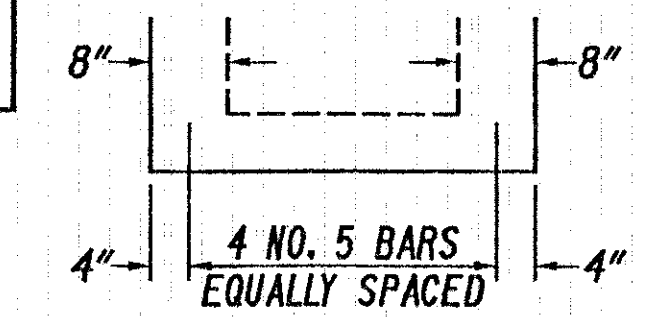
F.H.W.A. REGION	STATE	PROJECT NO.	FUNDS
5	OHIO		

71  
121

MAH-76/80-6.95/0.00

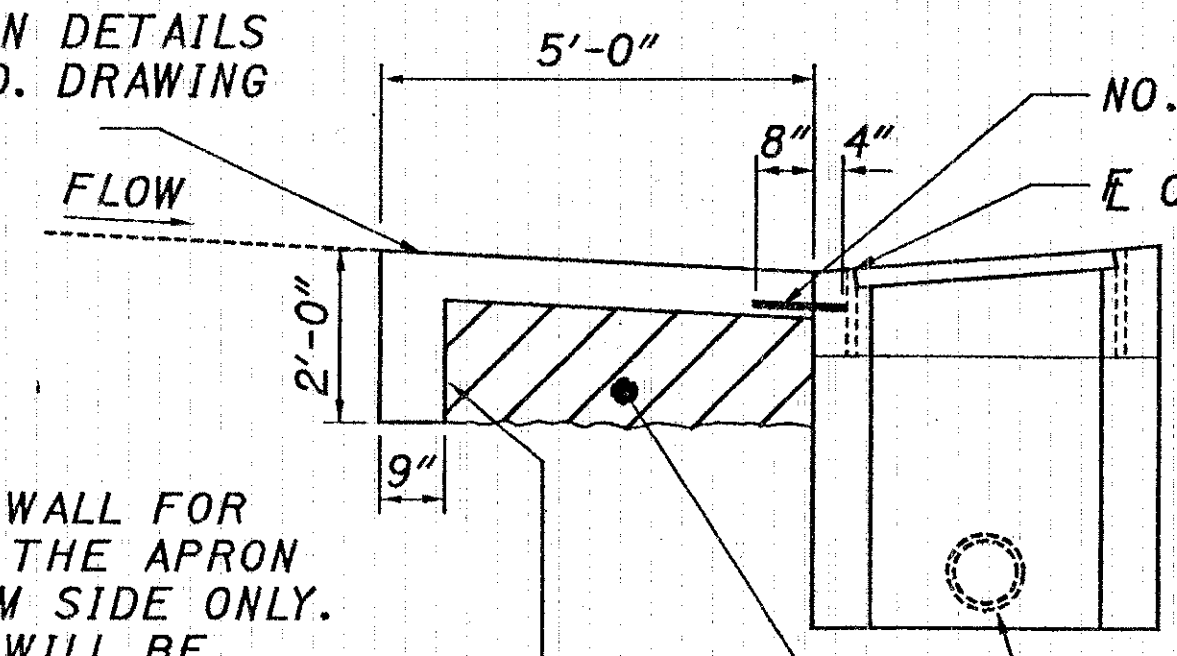


BAR LOCATION DETAIL (TOP VIEW)



BAR LOCATION DETAIL (TOP VIEW)

FOR CONCRETE APRON DETAILS NOT SHOWN, SEE STD. DRAWING CB-3.2M



PROVIDE A CUT-OFF WALL FOR THE FULL WIDTH OF THE APRON ALONG THE UPSTREAM SIDE ONLY. TWO CUT-OFF WALLS WILL BE REQUIRED FOR CATCH BASINS IN SAGS.

CATCH BASIN NO.	TOTAL # OF BARS FOR A	
	STD. APRON	SAG APRON
5	12	16

EXISTING OUTLET PIPE  
AREA TO BE BACKFILLED WITH GRANULAR MATERIAL AS PER ITEM 603

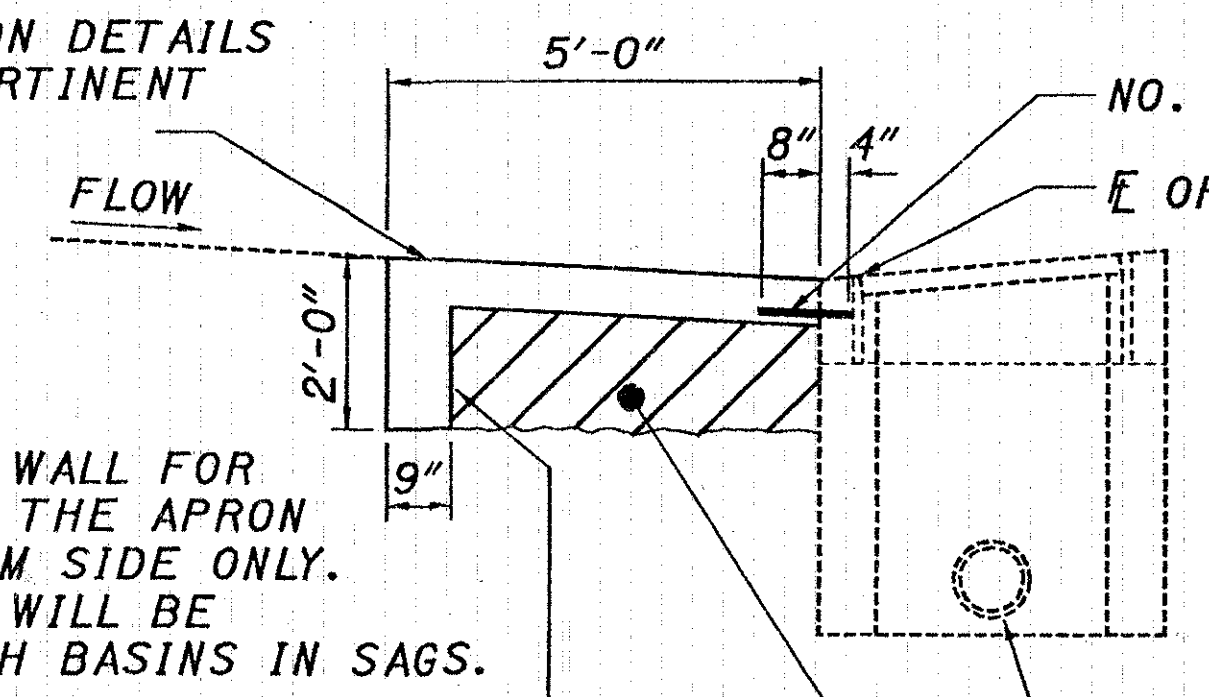
THE REQUIREMENTS OF ITEM 604 SHALL GOVERN THE REPLACEMENT OF THE EXISTING CATCH BASIN. THE WORK SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING CATCH BASIN AND ITS SUBSEQUENT REPLACEMENT. THE CONCRETE APRON SHALL BE REPLACED AND BACKFILLED AS SHOWN HERE AND IN STANDARD DRAWING CB-3.2M.

THE FURNISHING AND PLACING OF STEEL FOR THE 5/8" X 12" DOWEL BARS SHALL BE PER 509 REINFORCING STEEL. THE DOWEL BARS SHALL BE EPOXY COATED PER 509.10. THE DOWEL BARS SHALL BE INSTALLED PER 510 OR CAST INTO THE BASIN. BOLT IN INSERTS MAY BE USED. THE CATCH BASIN SHALL BE PRECAST OR CAST-IN-PLACE CONCRETE. BRICK OR CONCRETE BLOCK WILL NOT BE PERMITTED. THE 6" CONCRETE APRON SHALL BE REINFORCED PER 601.04(3).

PAYMENT FOR THE ABOVE WORK SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 604 CATCH BASIN, NO. 5, AS PER PLAN, AND SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING GRANULAR BACKFILL, LABOR, TOOLS, AND EQUIPMENT INCIDENTAL TO COMPLETE THIS ITEM OF WORK.

ITEM 604 CATCH BASIN, NO. 5, AS PER PLAN

FOR CONCRETE APRON DETAILS NOT SHOWN, SEE PERTINENT STD. DRAWING,



PROVIDE A CUT-OFF WALL FOR THE FULL WIDTH OF THE APRON ALONG THE UPSTREAM SIDE ONLY. TWO CUT-OFF WALLS WILL BE REQUIRED FOR CATCH BASINS IN SAGS.

CATCH BASIN NO.	TOTAL # OF BARS FOR A	
	STD. APRON	SAG APRON
8	12	16
4	7	14
5	12	16

EXISTING OUTLET PIPE  
AREA TO BE BACKFILLED WITH GRANULAR MATERIAL AS PER ITEM 603

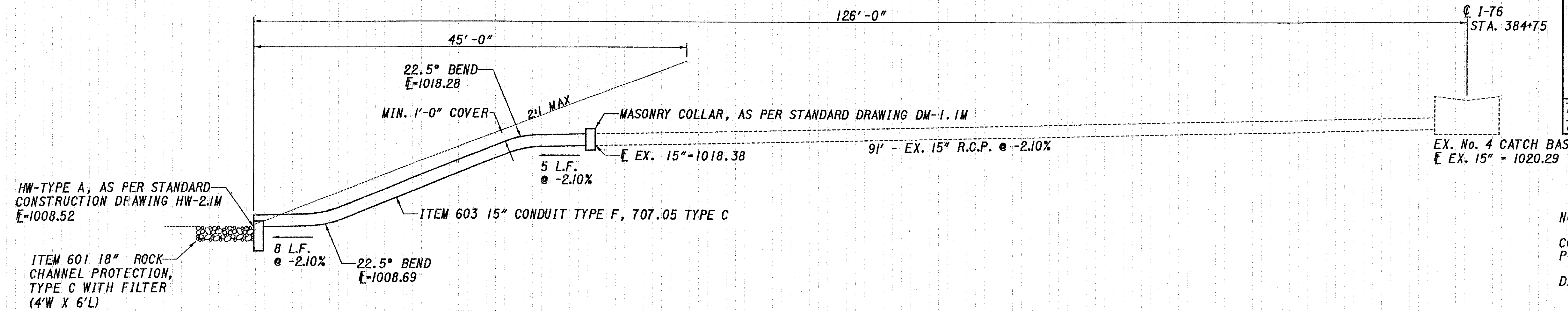
THIS WORK SHALL INCLUDE THE REMOVAL OF THE EXISTING CONCRETE APRONS AND THE SUBSEQUENT CONSTRUCTION OF NEW CONCRETE APRONS AT EXISTING CATCH BASINS. THE NEW CONCRETE APRONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAIL SHOWN ABOVE AND IN THE STANDARD DRAWING FOR THE PERTINENT CATCH BASIN.

THE FURNISHING AND PLACING OF STEEL FOR THE 5/8" X 12" DOWEL BARS SHALL BE PER 509 REINFORCING STEEL. THE DOWEL BARS SHALL BE EPOXY COATED PER 509.10. THE DOWEL BARS SHALL BE INSTALLED PER 510 INTO THE CONCRETE TOP SECTIONS OF THE EXISTING CATCH BASIN. THE 6" CONCRETE APRON SHALL BE REINFORCED PER 601.04(3).

THE CONTRACTOR MAY BE REQUIRED, AT THE DIRECTION OF THE ENGINEER, TO RE-MORTAR THE EXISTING CONCRETE TOP SECTION ONTO THE EXISTING BRICK CATCH BASIN PRIOR TO DOWEL INSTALLATION.

PAYMENT FOR THE ABOVE WORK SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 604 DRAINAGE STRUCTURE MISC.: CONCRETE APRON AND SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING GRANULAR BACKFILL, LABOR, TOOLS, AND EQUIPMENT INCIDENTAL TO COMPLETE THIS ITEM OF WORK.

ITEM 604 DRAINAGE STRUCTURE, MISC.: CONCRETE APRON



	601	602	603
	18" ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	CONCRETE MASONRY	15" CONDUIT TYPE F, 707.05 TYPE C
	CU YD	CU YD	LTN FT
TOTALS CARRIED TO THE GENERAL SUMMARY	2	0.3	37

EX. No. 4 CATCH BASIN  
E EX. 15" - 1020.29

NOTE:  
CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE TO OUTLET.  
DRAWING NOT TO SCALE.

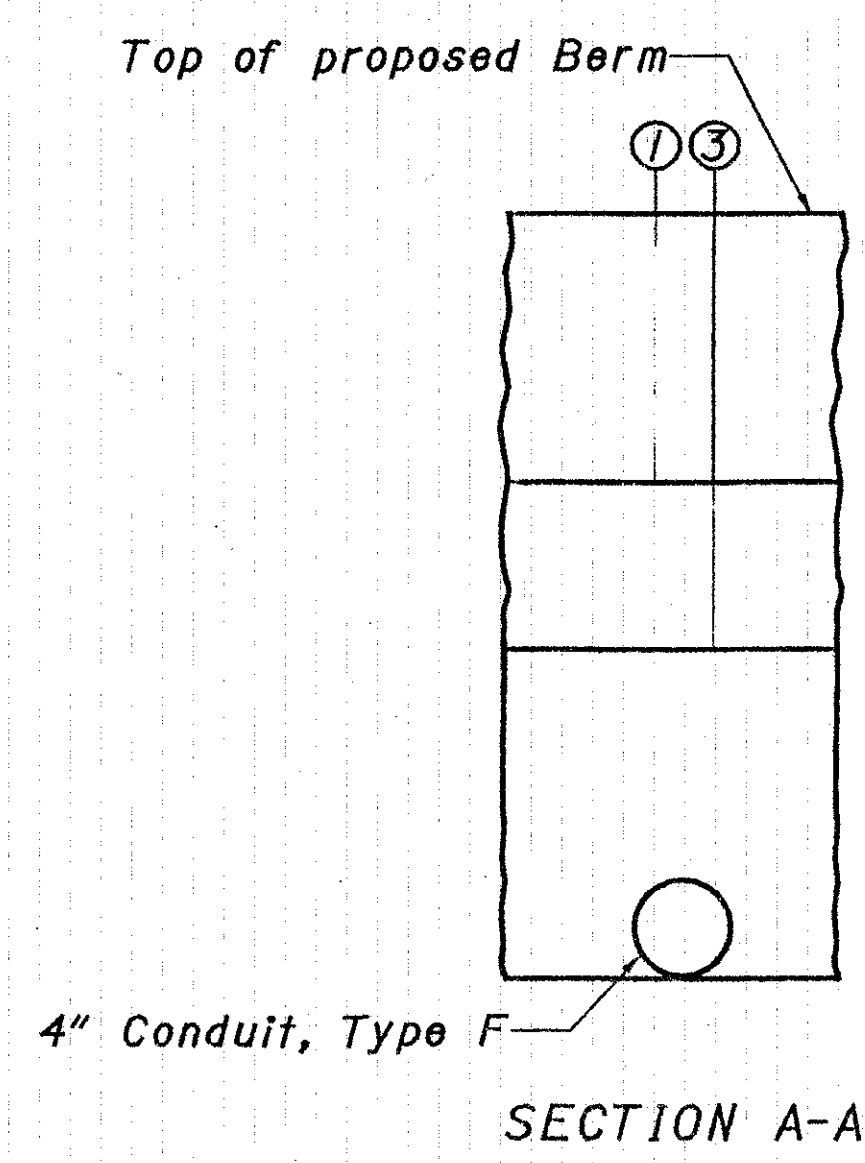
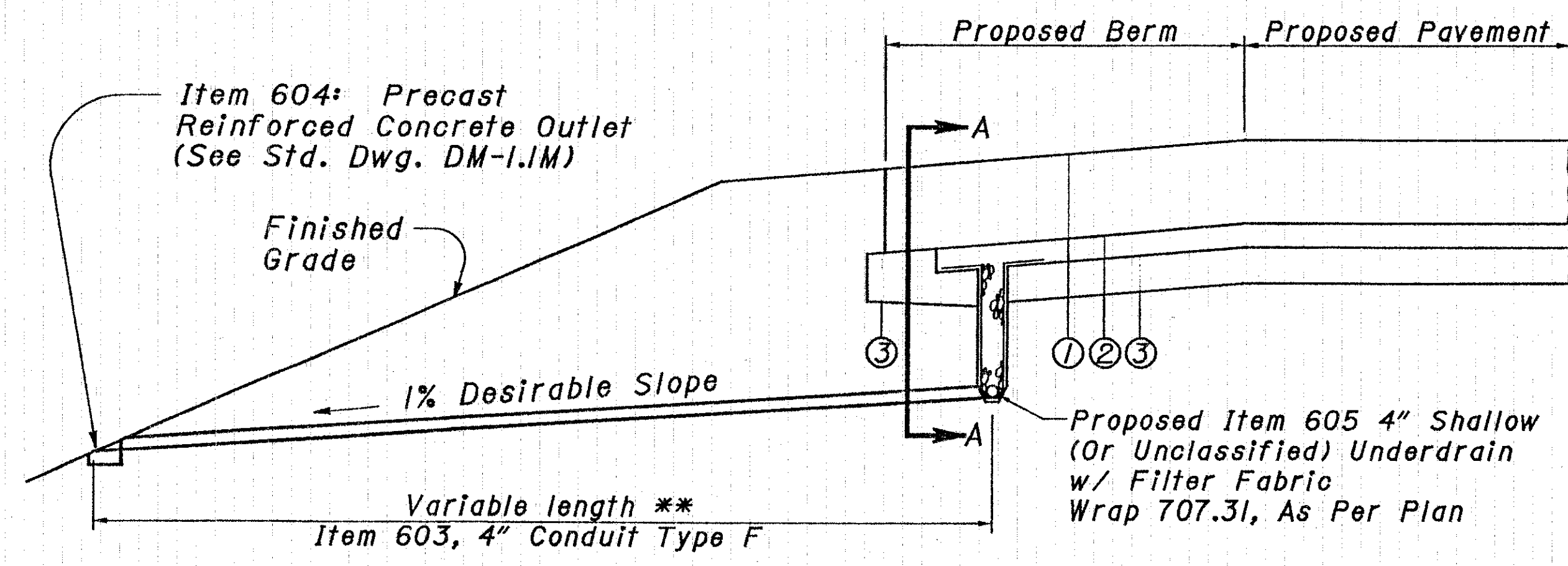


# UNDERDRAIN DETAILS

FHWA REGION	STATE	PROJECT	72
5	OHIO		121

MAH-76/80-6.95/0.00

## OUTLET DETAILS



NOTE: For underdrain outlets into catch basins or manholes 4" Type F Conduit shall be used entirely between the underdrain & catch basin or manhole.

\*\* See sheets 40-42 for Underdrain Subsummary for lengths.

- LEGEND**
- ① 14" Plain Concrete Pavement, As Per Plan
  - ② 4" Nonstabilized Free Draining Base
  - ③ Aggregate Base, Variable Depth
  - ④ 4" Shallow (Or Unclassified) Underdrain With Fabric Wrap, As Per Plan
  - ⑤ #8 Natural Aggregate Backfill

**DESCRIPTION:** This item shall consist of furnishing and installing a pipe underdrain system in accordance with the specifications, details as shown on the plans, and as directed by the Engineer.

**MATERIALS:** The underdrain shall be a pipe underdrain system per Item 605

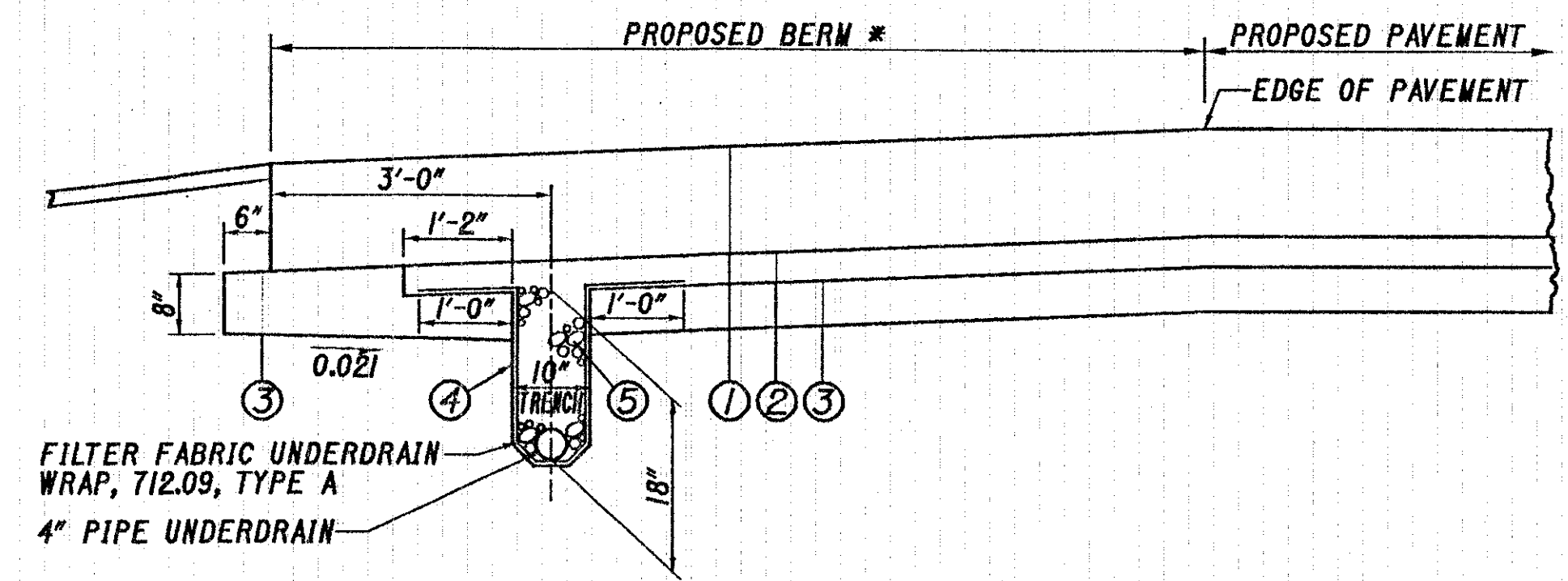
The outlets for the underdrain system shall be constructed as soon as possible after placement of the underdrain to drain the subbase & subgrade. All pipe bends & branches needed to connect the proposed underdrain to the proposed outlet shall be manufactured fittings.

**METHOD OF MEASUREMENT:** Completed and accepted underdrains will be measured by the linear foot in place.

**BASIS OF PAYMENT:** Work completed and accepted under this item and measured will be paid for at the contract unit price bid per linear foot for Item 605 4" Shallow (Or Unclassified) Pipe Underdrain 707.31, as per plan.

The price shall be full compensation for excavation and backfill; for furnishing materials, including material for outlet fittings, for all labor, tools, equipment, and incidentals necessary to complete the work.

## PIPE UNDERDRAIN DETAIL



\* Varies - Median Side Berm 4'-0", Outside Berm 10'-0".



# UNDERDRAIN DETAILS

## PLAN VIEW - PIPE UNDERDRAIN DETAIL FOR OUTLETTING UNDER ROADWAY

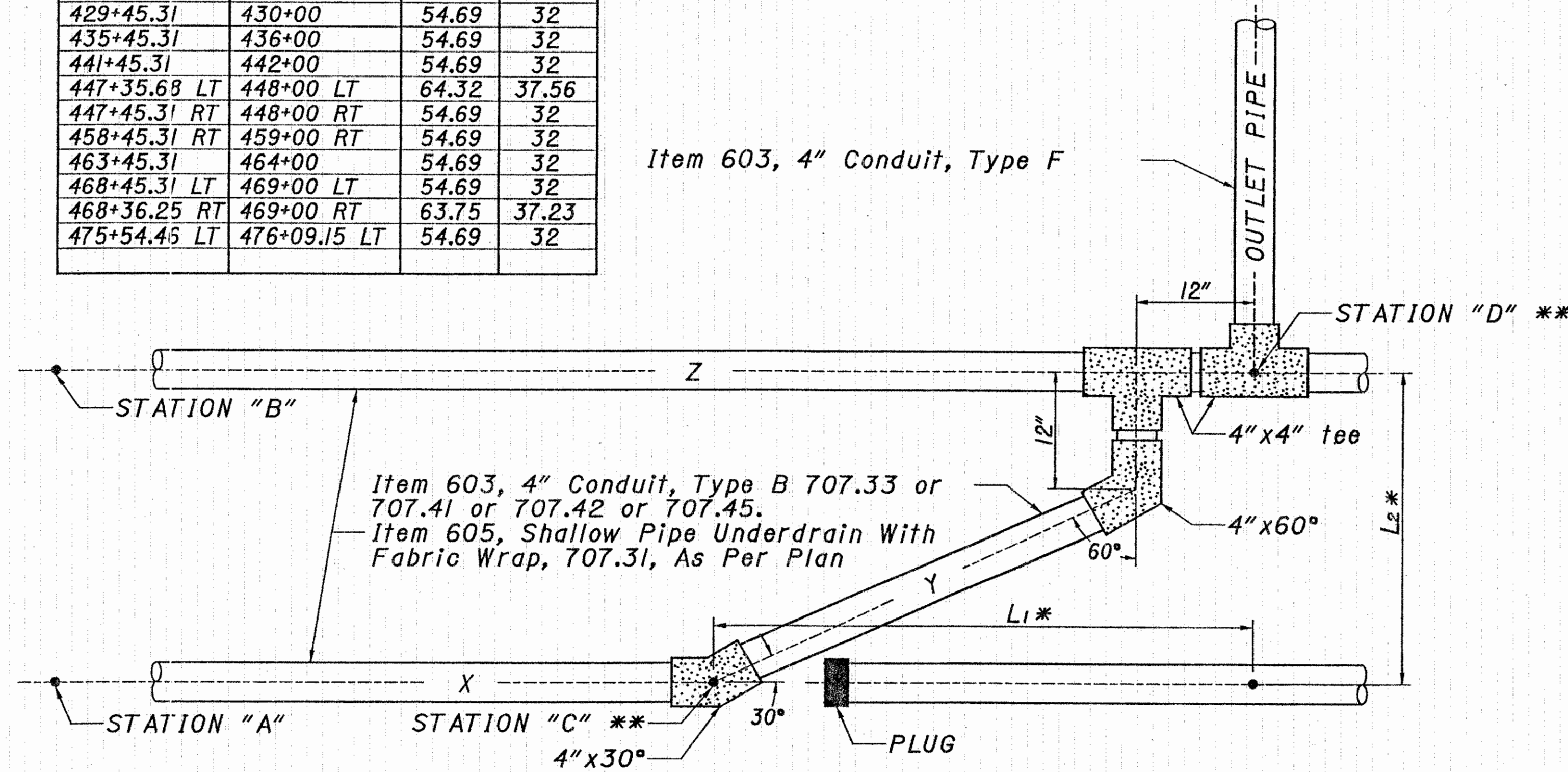
\*\* ELEVATIONS ARE GIVEN ON PROFILE FOR STATIONS D AND C.

STATION "C"	STATION "D"	L <sub>1</sub>	L <sub>2</sub>
408+45.31	409+00	54.69	32
413+45.31	414+00	54.69	32
418+45.31	419+00	54.69	32
423+45.31	424+00	54.69	32
429+45.31	430+00	54.69	32
435+45.31	436+00	54.69	32
441+45.31	442+00	54.69	32
447+35.68 LT	448+00 LT	64.32	37.56
447+45.31 RT	448+00 RT	54.69	32
458+45.31 RT	459+00 RT	54.69	32
463+45.31	464+00	54.69	32
468+45.31 LT	469+00 LT	54.69	32
468+36.25 RT	469+00 RT	63.75	37.23
475+54.45 LT	476+09.15 LT	54.69	32

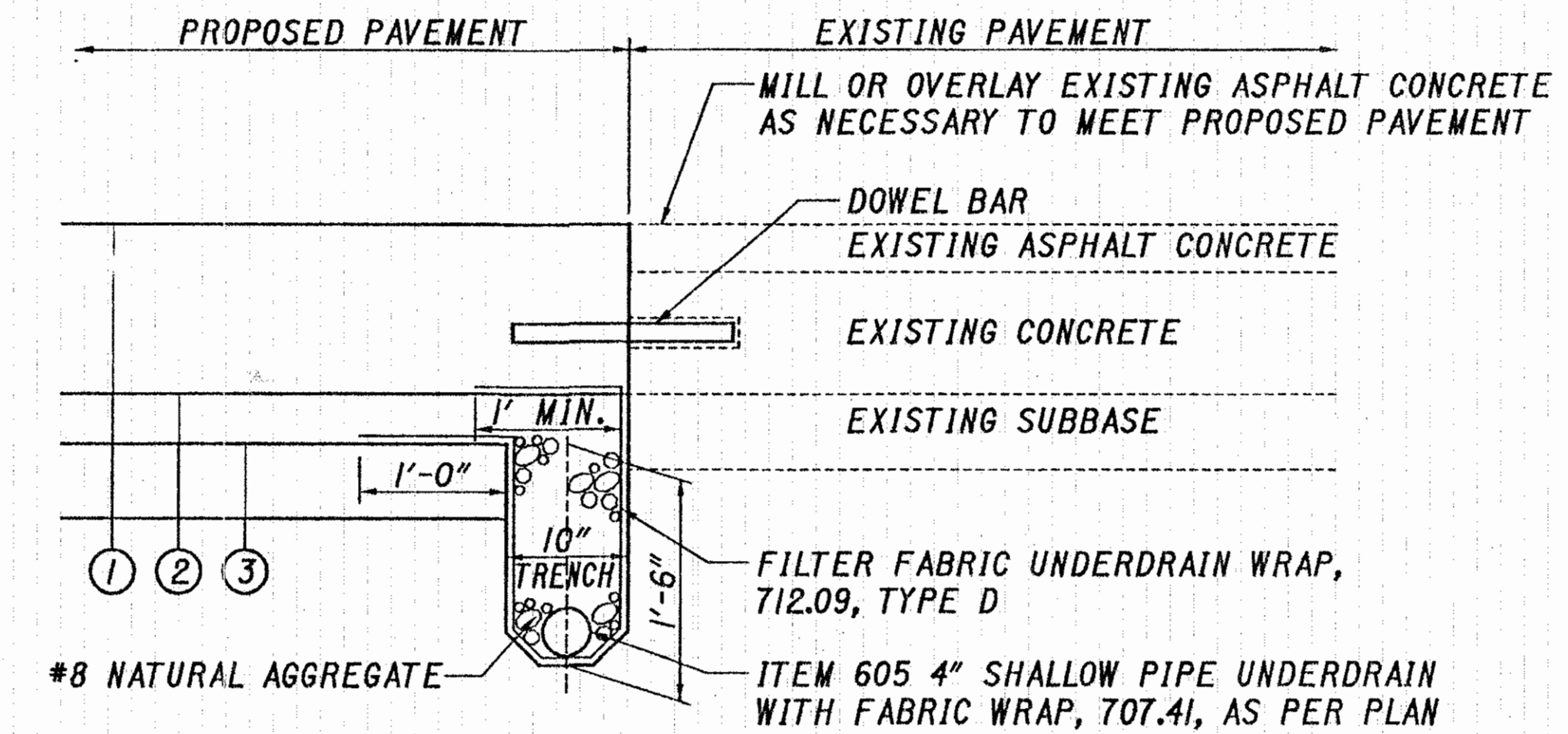
NOTE:  
STATIONING METHOD SHOWN BELOW REPRESENTS STATIONING ON UNDERDRAIN SUBSUMMARY.

UD-X STA. "A" TO STA. "C"  
UD-Y STA. "C" TO STA. "D"  
UD-Z STA. "B" TO STA. "D"

Item 603, 4" Conduit, Type F



## TRANSVERSE UNDERDRAIN DETAIL (MEETS EXISTING PAVEMENT)



### PROPOSED LEGEND

- ① ITEM 452 - 14" Plain Concrete Pavement, As Per Plan
- ② ITEM 307 - 4" Nonstabilized Free Draining Base
- ③ ITEM 304 - 6" Aggregate Base

NOTE:  
DETAIL APPLIES TO STATION LOCATIONS:

- STA. 367+00 RT & LT
- STA. 462+58.24 LT (RAMP E)
- STA. 475+54.46 LT (LINE B<sub>1</sub>)
- STA. 476+11.59 RT (RAMP F)
- STA. 483+54.46 RT & LT



# PAVEMENT MARKINGS

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

74  
121

MAH-76/80-6.95/0.00

## ITEM SPECIAL - PAVEMENT MARKING MISC.: EPOXY

### DESCRIPTION

THIS WORK SHALL CONSIST OF FURNISHING AND APPLYING EPOXY PAVEMENT MARKINGS IN ACCORDANCE WITH 641, 740, AND THE ADDITIONAL REQUIREMENTS DESCRIBED HEREIN.

### EQUIPMENT

EQUIPMENT FOR APPLYING THE EPOXY PAVEMENT MARKING SHALL BE CAPABLE OF MIXING THE COMPONENTS IN PROPORTIONS RECOMMENDED BY THE MANUFACTURER AND APPLYING GLASS BEADS AT THE TIME OF LINE PLACEMENT. THE MARKING EQUIPMENT SHALL BE CAPABLE OF APPLYING EPOXY MATERIAL AT THE SPECIFIED THICKNESS. THE CONTRACTOR SHALL PROVIDE A CALIBRATED MEASURING DEVICE ACCEPTABLE TO THE ENGINEER TO MEASURE THE EPOXY RESIN IN THE STRIPER TANKS.

IN GENERAL, THE APPLYING EQUIPMENT SHALL BE A MOBILE, TRUCK MOUNTED AND SELF CONTAINED PAVEMENT MARKING MACHINE, SPECIFICALLY DESIGNED TO APPLY RESIN MATERIALS AND REFLECTIVE GLASS SPHERES IN CONTINUOUS AND SKIP-LINE PATTERNS. THE APPLYING EQUIPMENT SHALL BE MANEUVERABLE TO THE EXTENT THAT THE STRAIGHT LINES CAN BE FOLLOWED AND NORMAL CURVES CAN BE MADE IN A TRUE ARC. IN ADDITION, THE TRUCK MOUNTED UNIT SHALL BE PROVIDED WITH ACCESSORIES TO ALLOW FOR MARKING OF LEGENDS, SYMBOLS, CROSSWALKS, AND OTHER SPECIAL PATTERNS.

THE ENGINEER AND THE MATERIAL MANUFACTURER TOGETHER MAY APPROVE THE USE OF A PORTABLE APPLICATOR IN LIEU OF TRUCK MOUNTED ACCESSORIES FOR USE IN APPLYING SPECIAL MARKING ONLY, PROVIDED SUCH EQUIPMENT CAN DEMONSTRATE SATISFACTORY APPLICATION OF REFLECTORIZED MARKINGS WITH THESE SPECIFICATIONS:

THE MOBILE APPLICATOR SHALL INCLUDE THE FOLLOWING FEATURES:

1. THE MOBILE APPLICATOR SHALL PROVIDE INDIVIDUAL MATERIAL RESERVOIRS, OR SPACE, FOR STORAGE OF PART A AND PART B OF THE RESIN COMPOSITION.
2. THE APPLICATOR SHALL BE EQUIPPED WITH HEATING EQUIPMENT OF THE SUFFICIENT CAPACITY TO MAINTAIN THE INDIVIDUAL RESIN COMPONENTS AT THE MANUFACTURER'S RECOMMENDED TEMPERATURE AND PRODUCE THE REQUIRED AMOUNT OF HEAT AT THE MIXING HEAD & GUN TIP AND MAINTAIN THOSE TEMPERATURES WITH THE TOLERANCES RECOMMENDED BY THE RESIN MANUFACTURER FOR SPRAY APPLICATION.
3. THE APPLICATOR SHALL BE EQUIPPED WITH ADEQUATE INDIVIDUAL TANKS FOR STORAGE AND DISPENSING OF SIZE I AND SIZE II GLASS SPHERES AND BLACK AGGREGATE.
4. THE APPLICATOR SHALL BE EQUIPPED WITH INDIVIDUAL DISPENSERS FOR THE SIMULTANEOUS APPLICATION OF SIZE I AND SIZE II GLASS SPHERES RESPECTIVELY. EACH DISPENSER SHALL BE CAPABLE OF APPLYING SPHERES AT A MINIMUM RATE OF 20 LBS. PER GALLON OF THE RESIN COMPOSITION. THE APPLIED COMBINED TOTAL OF BOTH TYPES OF BEADS SHOULD BE A OF MINIMUM OF 25 LBS. PER GALLON (12 TO 13 LBS OF EACH TYPE).
5. THE APPLICATOR SHALL BE EQUIPPED WITH INDIVIDUAL METERING DEVICES OR PRESSURE GAUGES, ON THE PROPORTIONING PUMPS (ONE INDICATOR PER PUMP) AS WELL AS STROKE COUNTERS TO MONITOR GALLON USAGE. ALL SUCH DEVICES SHALL BE VISIBLE TO THE ENGINEER.

6. THE APPLICATOR SHALL BE EQUIPPED WITH ALL NECESSARY SPRAY EQUIPMENT, MIXERS, COMPRESSORS AND OTHER APPURTENANCES TO ALLOW FOR THE PLACEMENT OF REFLECTORIZED PAVEMENT MARKING SYSTEM IN A SIMULTANEOUS SEQUENCE OF OPERATIONS.
7. EACH APPLICATION MUST HAVE A MINIMUM OF A 24" LONG STATIC MIXER UNIT AS MANUFACTURED BY KENICS COMPANY OF EQUAL FOR PROPER MIXING OF THE TWO COMPONENTS.
8. EACH MOBILE APPLICATOR MUST BE EQUIPPED WITH A COMPLETELY ENCLOSED FLUSH AND PURGE SYSTEM TO CLEAN THE LINES AND THE GUNS WITHOUT EXUDING ANY OF THE SOLUTION INTO THE ENVIRONMENT.

### PAVEMENT PREPARATION

CLEAN THE SURFACE TO REMOVE ALL DEBRIS, LAITANCE AND ANY OTHER CONTAMINANTS THAT MAY HINDER THE ADHESION OF THE SYSTEM TO THE SURFACE. WHENEVER GRINDING, SCARIFYING, SANDBLASTING, SHOTBLASTING OR OTHER OPERATIONS ARE PERFORMED, THE DEBRIS GENERATED MUST BE CONTAINED THROUGH VACUUM TYPE EQUIPMENT OR EQUIVALENT AND THE WORK SHALL BE CONDUCTED IN SUCH A MANNER THAT THE FINISHED PAVEMENT SURFACE IS NOT DAMAGED OR LEFT IN A PATTERN THAT WILL MISLEAD OR MISDIRECT THE MOTORIST. WHEN THESE OPERATIONS ARE COMPLETED THE PAVEMENT SURFACE SHALL FIRST BE POWER BROOMED AND THEN BLOWN OFF WITH COMPRESSED AIR TO REMOVE RESIDUE AND DEBRIS RESULTING FROM THE CLEANING WORK. ALL SUCH DEBRIS MUST BE PROPERLY CONTAINED ESPECIALLY WHEN REMOVING YELLOW PAINT LINES AND DISPOSED IN THE APPROPRIATE MANNER.

REMOVAL AND CLEANING WORK SHALL BE CONDUCTED IN SUCH A MANNER AS TO CONTROL AND MINIMIZE AIRBORNE DUST, AND SIMILAR DEBRIS SO AS TO PREVENT A HAZARD TO MOTOR VEHICLE OPERATION OR NUISANCE TO PROPERTY.

CARE SHALL BE TAKEN ON BITUMINOUS AND PORTLAND CEMENT CONCRETE SURFACES WHEN PERFORMING REMOVAL AND CLEANING WORK TO PREVENT DAMAGE TO TRANSVERSE AND LONGITUDINAL JOINT SEALERS.

### LIMITS OF WORK

CLEANING AND SURFACE PREPARATION WORK SHALL BE CONFINED TO THE SURFACE AREA SPECIFIED FOR THE APPLICATION OF THE PAVEMENT MARKING MATERIALS; OR THE SURFACE AREA OF EXISTING PAVEMENT MARKINGS THAT ARE SPECIFIED FOR REMOVAL ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

SURFACE PREPARATION WORK INCLUDES CLEANING FOR LINES OR CLEANING FOR LETTERS AND SYMBOLS. LINES WILL BE MEANT TO INCLUDE: SOLID LINES, BROKEN LINES, CHANNELIZING LINES, BARRIER LINES, STOP LINES CROSSWALK LINES AND CROSSBARS.

WHEN LINES ARE CLEANED, THE AREA OF PREPARATION WILL BE THE WIDTH OF THE NEW PAVEMENT MARKING, OR EXISTING LINE, PLUS 1" ON EACH SIDE. WHEN LETTERS AND SYMBOLS ARE CLEANED, THE AREA OF PREPARATION WILL BE SUFFICIENTLY LARGE TO ACCOMMODATE THE NEW MARKING, OR TO REMOVE THE EXISTING MARKING. NO NEW MARKING LINE OR SYMBOLS SHALL BE APPLIED ON ANY PAVEMENT THAT HAS NOT BEEN PROPERLY PREPARED AS PER THIS SPECIFICATION.

### REMOVAL OF CONCRETE CURING COMPOUNDS

ON NEW PORTLAND CEMENT CONCRETE PAVEMENTS, CLEANING OPERATIONS SHALL NOT BEGIN UNTIL A MINIMUM OF 30 DAYS AFTER THE PLACEMENT OF CONCRETE. THE EXTENT OF THE BLASTING WORK SHALL BE TO CLEAN AND PREPARE THE CONCRETE SURFACE SUCH THAT:

- A. THERE IS NOT VISIBLE EVIDENCE OF CURING COMPOUND ON THE PEAKS OF THE TEXTURED CONCRETE SURFACE.
- B. THERE ARE NO HEAVY PUDDLED DEPOSITS OF CURING COMPOUND IN THE VALLEYS OF THE TEXTURED CONCRETE SURFACE.
- C. ALL REMAINING CURING COMPOUND IS INTACT; ALL LOOSE AND FLAKING MATERIAL IS REMOVED.
- D. THE PEAKS OF THE TEXTURED PAVEMENT SURFACE ARE ROUNDED IN PROFILE AND FREE OF SHARP EDGES AND IRREGULARITIES.
- E. THE EXTENT OF THE REMOVAL SHOULD BE AS SUCH TO INSURE THE LAITANCE IS REMOVED ON BOTH OLD AS WELL AS NEW CONCRETE.

### REMOVAL OF EXISTING PAVEMENT MARKINGS

EXISTING PAVEMENT MARKINGS SHALL BE CLEANED FOR THE PURPOSE OF:

- A. PREPARING THE PAVEMENT SURFACE FOR THE APPLICATION OF NEW PAVEMENT MARKING IN THE SAME LOCATION AS THE EXISTING MARKINGS.
- B. TO REMOVE EXISTING MARKINGS THAT ARE IN GOOD CONDITION WHICH, IF ALLOWED TO REMAIN, WILL INTERFERE WITH OR OTHERWISE CONFLICT WITH NEWLY APPLIED MARKING PATTERNS.
- C. IT SHALL BE UNDERSTOOD THAT IN THIS CONTEXT, CLEANING MEANS THE REMOVAL OF AN EXISTING MARKING. IT IS NOT INTENDED THAT ALL DETERIORATED EXISTING PAVEMENT MARKINGS BE REMOVED. EXAMPLE: IF A NEW MARKING IS APPLIED TO AN UNMARKED "GAP" IN A BROKEN LINE AND THE EXISTING BROKEN LINE PATTERN IS WORN OR DETERIORATED, AS DETERMINED BY THE ENGINEER, TO THE EXTENT THAT IT IS NOT MISLEADING OR CONFUSING TO THE MOTORIST, THE EXISTING PAVEMENT MARKINGS DO NOT REQUIRE REMOVAL.
- D. PAVEMENT SHALL BE CLEANED TO THE EXTENT THAT 95% TO 100% OF THE EXISTING MARKING IS REMOVED. REMOVAL OPERATIONS SHALL BE CONDUCTED IN SUCH A MANNER THAT NO MORE THAN MODERATE COLOR AND/OR SURFACE TEXTURE CHANGE RESULTS ON THE SURROUNDING PAVEMENT SURFACE.
- E. THE DETERMINATION OF ACCEPTABLE REMOVAL WILL BE MADE BY JUDGEMENT OF THE ENGINEER AND WILL BE GUIDED BY THE DEPARTMENT'S PICTORIAL STANDARDS OF ACCEPTABLE MARKING REMOVAL. PICTORIAL STANDARDS ARE AVAILABLE.



# PAVEMENT MARKINGS

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

75  
121

MAH-76/80-6.95/0.00

## APPLICATION

EPOXY MARKING MATERIAL SHALL ONLY BE APPLIED WHEN THE SURFACE IS CLEAN AND DRY AND THE PAVEMENT AND AIR TEMPERATURES ARE ABOVE 50 DEGREES F. THE CONTRACTOR SHALL TRANSFER THE ENTIRE CONTENTS OF EACH MATERIAL CONTAINER TO THE STRIPER TANKS. THE MATERIAL SHALL BE THOROUGHLY MIXED AT ALL TIMES DURING APPLICATION. EPOXY MARKING MATERIAL, PLUS RESIN, SHALL BE APPLIED UNIFORMLY TO THE SURFACE TO BE MARKED AT THE FOLLOWING RATES:

GALLONS PER MILE OF LINE	WIDTH OF LINE (INCHES) (THICKNESS OF 20 MILS)				
	4	6	8	12	24
SOLID LINE	22	33	44	66	132
DASHED LINE	5.5	8.5	11	17	34
DOTTED LINE	7.3	11	14.6	22	44
SYMBOLS, WORDS	1 GAL. PER 80 SQ.FT.				

THINNING SHALL NOT BE PERMITTED

GLASS BEADS SHALL BE APPLIED TO THE UNCURED EPOXY MATERIAL IN SUFFICIENT QUANTITY SO THAT THE BEADS COMPLETELY FILL THE EPOXY FILM FROM THE FILM-PAVEMENT INTERFACE TO THE TOP SURFACE OF THE FILM TO THE EXTENT THAT THERE ARE LOOSE BEADS ON THE SURFACE OF THE UNCURED LINE. THE RATE OF APPLICATION SHALL NOT BE LESS THAN 25 LBS.(3 KG) OF GLASS BEADS PER GALLON (LITER) OF EPOXY MATERIAL APPLIED.

IF THE EPOXY MARKING DOES NOT DRY TO A NO-TRACKING CONDITION CONSISTENTLY AND SHOWS A CYCLICAL SOFT SPOT, THE CONTRACTOR SHALL CEASE THE MARKING APPLICATION UNTIL THE PROBLEM IS CORRECTED.

## CERTIFICATION OF COMPLIANCE

THE MANUFACTURER SHALL FURNISH A NOTARIZED CERTIFICATION THAT THE MATERIAL COMPLIES WITH THE PROVISIONS OF THIS SPECIFICATION. IT SHALL NOT BE INFERRED THAT THE PROVISIONS OF A CERTIFICATION OF COMPLIANCE WAIVES STATE INSPECTION, SAMPLING OR TESTING.

## LABORATORY SAMPLES

PROMPTLY AFTER EXECUTION OF THIS CONTRACT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE SOURCES OF MATERIAL HE EXPECTS TO USE. THE MATERIAL MANUFACTURER SHALL FURNISH SAMPLES OF THE EPOXY MATERIALS AS MAY BE REQUIRED BY THE ENGINEER, A MINIMUM OF TEN DAYS BEFORE THE DATE OF INTENDED USE OF THESE MATERIALS.

## INFRARED SPECTRA

A COPY OF THE INFRARED SPECTRA OF EACH COMPONENT OF EPOXY ON EACH LOT NUMBER SHALL BE SUPPLIED BY THE MANUFACTURER ALONG WITH CERTIFICATION PAPERS. THIS INFRARED SPECTRA WILL BE ON RECORD WITH THE OHIO DEPARTMENT OF TRANSPORTATION TO SERVE AS A QUALITY CONTROL MEASURE FOR THE FUTURE SUPPLY OF THIS SYSTEM TO THE STATE.

## QUALIFYING A MANUFACTURER

THE EPOXY MANUFACTURER MUST HAVE EXPERTISE REINFORCED WITH HISTORY IN THIS PARTICULAR FIELD TO QUALIFY SUCH AS:

1. PROOF OF SUCCESSFUL INSTALLATIONS OF AT LEAST 4 YEARS (4 PLOWING SEASONS), COVERING A MINIMUM OF 200,000 LIN.FT. IN THIS STATE WHERE THIS PROJECT IS TO BE BID, WITH RETROREFLECTIVITY NUMBERS EXCEEDING 150 ON WHITE AND 100 ON YELLOW, UTILIZING MICROLUX 12 OR EQUIVALENT
2. AMPLE PRODUCTION CAPACITY
3. PROPER FACILITY
4. COMPLIANCE WITH EPA REGULATIONS
5. A VERIFIABLE QUALITY CONTROL PROGRAM
6. MUST HAVE COMPLETED AND PASSED THE SERVICE TEST IN ACCORDANCE WITH SUPPLEMENT 1047

## QUALIFYING A CONTRACTOR

IN ORDER FOR AN INSTALLER OF EPOXY PAVEMENT MARKING MATERIAL TO BE APPROVED, THE FOLLOWING DOCUMENT MUST BE SUBMITTED:

A CERTIFICATE FROM A PRE-APPROVED MANUFACTURER OF SUCH EPOXY PAVEMENT MARKING MATERIALS, CERTIFYING THAT SUCH A CONTRACTOR HAS FUNCTIONAL, APPROPRIATE EQUIPMENT TO INSTALL THE EPOXY PAVEMENT MATERIAL STATED WITH THE TECHNOLOGY IN THIS SPECIFICATION AND HE HAS AND CONTINUES TO BE SUCCESSFUL AT PERFORMING THIS TYPE OF WORK.

## MATERIALS

THE EPOXY MATERIAL SUPPLIED SHALL BE A 2 PART HYBRIDIZED POLYMER SYSTEM CAPABLE OF BEING APPLIED AT AMBIENT TEMPERATURES DOWN TO 50 DEGREES F. THE MATERIAL SHALL BE CAPABLE OF RETAINING REFLECTIVE GLASS BEADS OF THE DROP-ON OR SPRAY-ON TYPE. THE HYBRIDIZED POLYMER SHALL ALSO COMPLY WITH THE FOLLOWING REQUIREMENTS:

### 1. GENERAL

THE EPOXY SHALL BE FORMULATED AS A LONG LIFE PAVEMENT MARKING SYSTEM FREE OF ANY PEROXIDES, AND/OR TMPTA (TRI-METHYLOL PROPANE TRI-ACRYLATE) AND OTHER SUCH MULTI-FUNCTIONAL MONOMERS. THE EPOXY SHOULD BE DESIGNED TO PROVIDE A SIMPLE VOLUMETRIC MIXING RATIO OF ITS COMPONENTS SUCH AS 2:1.

### 2. VISCOSITY

THE VISCOSITY OF THE PART 'A' WHITE SHALL BE BETWEEN 19,000 AND 20,000 CP AND PART 'A' YELLOW SHALL BE BETWEEN 25,000 AND 26,000 CP. THE VISCOSITY OF PART 'B' SHALL BE BETWEEN 1,950 AND 2,050 CP. AT THE POINT OF APPLICATION, THE VISCOSITIES SHALL BE WITHIN 10% OF EACH OTHER.

### 3. WEIGHT

THE WEIGHT OF PART 'A' WHITE 11.8 LBS/GAL  $\pm$  0.2 LBS/GAL AND YELLOW AT 12.8 LBS/GAL  $\pm$  0.2 LBS/GAL. THE WEIGHT OF PART 'B' SHALL BE 9.6 LBS/GAL  $\pm$  0.2 LBS/GAL.

### 4. EPOXIDE NUMBER

THE EPOXIDE NUMBER OF THE MATERIAL SHALL BE 0.51 0.05 AS DETERMINED BY ASTM D-1652 FOR BOTH WHITE AND YELLOW COMPONENT A ON A PIGMENT FREE BASIS.

### 5. AMINE NUMBER

THE AMINE NUMBER OF THE CURING AGENT (COMPONENT B) SHALL BE 375  $\pm$  50 AS PER ASTM D-2074.

### 6. TOXICITY

UPON HEATING TO APPLICATION TEMPERATURE, THE MATERIAL SHALL NOT EXUDE FUMES WHICH ARE TOXIC OR INJURIOUS TO PERSONS OR PROPERTY. UPON CURING, THE MATERIALS SHOULD BE COMPLETELY INERT WITH ALL COMPONENTS FULLY REACTED AND ENVIRONMENTALLY SAFE.

### 7. DRYING TIME (LABORATORY)

THE EPOXY PAVEMENT MARKING MATERIAL WHEN MIXED IN THE PROPER RATIO AND APPLIED AT THE APPROXIMATE PRESCRIBED WET FILM THICKNESS AT 75 DEGREES F  $\pm$  2 DEGREES F AND WITH PROPER SATURATION OF GLASS SPHERES SHALL EXHIBIT NO TRACKING TIME WHEN TESTED 40-45 MIN. ACCORDING TO ASTM D-711.

### 8. DRYING TIME (FIELD)

THE PAVEMENT MARKING MATERIAL SHALL HAVE A SETTING TIME TO A NO-TRACKING CONDITION OF NOT MORE THAN 35 MINUTES AT 75 DEGREES F  $\pm$  2 DEGREES F. THE LINE MUST BE PROTECTED FROM TRACKING DURING THE SETTING PERIOD BY CONING OFF THE WET LINE FROM TRAFFIC OR BY USING A CONVOY OF VEHICLES TO PREVENT TRAFFIC FROM CROSSING THE WET LINE OR WITH A SATURATION OF GLASS BEADS ON THE WET LINE TO PREVENT TRACKING.

### 9. CURING

THE EPOXY SHALL BE CAPABLE OF FULLY CURING UNDER A CONSTANT SURFACE TEMPERATURE OF 50 DEGREES F OR ABOVE.

### 10. ADHESION TO PAVEMENT (CONCRETE AND ASPHALT)

THE CURED PAVEMENT MARKING MATERIALS, WHEN TESTED ACCORDING TO ACI METHOD 503, SHALL HAVE SUCH A HIGHER DEGREE OF ADHESION TO THE SPECIFIED CONCRETE (COMPRESSIVE STRENGTH, 4,000 PSI MIN.) OR ASPHALT SURFACE SUCH THAT THERE SHALL BE 100% CONCRETE FAILURE IN THE PERFORMANCE OF THIS TEST. THE PREPARED SPECIMENS SHALL BE CONDITIONED AT ROOM TEMPERATURE (75 DEGREES F  $\pm$  2 DEGREES F) FOR A MINIMUM OF 24 HOURS AND A MAXIMUM OF 72 HOURS PRIOR TO THE PERFORMANCE OF THE TESTS INDICATED.



# PAVEMENT MARKINGS

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

76  
121

MAH-76/80-6.95/0.00

## 11. HARDNESS

THE PAVEMENT MARKING MATERIAL, WHEN TESTED ACCORDING TO ASTM D-224-75, SHALL HAVE A SHORE D HARDNESS BETWEEN 70 AND 90. SAMPLES SHALL BE ALLOWED TO CURE AT ROOM TEMPERATURE FOR A MINIMUM OF 24 HOURS AND A MAXIMUM OF 72 HOURS PRIOR TO PERFORMING THE INDICATED TEST.

## 12. TENSILE STRENGTH

WHEN TESTED ACCORDING TO ASTM D-638, THE EPOXY PAVEMENT MARKING MATERIAL SHALL HAVE A TENSILE STRENGTH OF NOT LESS THAN 5,000 POUNDS PER SQUARE INCH. THE TYPE IV SPECIMENS SHALL BE CAST IN A SUITABLE MOLD AND PULLED AT A RATE OF 0.25 INCHES PER MINUTE BY A SUITABLE DYNAMIC TESTING MACHINE. THE SAMPLES SHALL BE ALLOWED TO CURE AT ROOM TEMPERATURE FOR A MINIMUM OF 72 HOURS BEFORE PERFORMING THE INDICATED TESTS.

## 13. COMPRESSIVE STRENGTH

WHEN TESTED ACCORDING TO ASTM D-695, THE EPOXY PAVEMENT MARKING MATERIAL SHALL HAVE A COMPRESSIVE STRENGTH OF NOT LESS THAN 12,000 POUNDS PER SQUARE INCH. THE CAST SAMPLE SHALL BE CONDITIONED AT ROOM TEMPERATURE FOR A MINIMUM OF 72 HOURS BEFORE PERFORMING THE INDICATED TESTS. THE RATE OF COMPRESSION OF THESE SAMPLES SHALL BE NO MORE THAN 0.25 INCHES PER MINUTE.

## 14. ABRASION RESISTANCE

THE ABRASION RESISTANCE SHALL BE EVALUATED ON A TABER ABRADER WITH A 1000 GRAM LOAD AND CS-17 WHEELS. THE DURATION OF THE TEST SHALL BE 1000 CYCLES. THE WEAR INDEX SHALL BE CALCULATED BASED ON ASTM TEST METHOD C-501 AND THE WEAR INDEX FOR THE CATALYZED MATERIAL SHALL NOT BE MORE THAN 100 MG. THE TESTS SHALL BE RUN ON CURED SAMPLES OF MATERIAL WHICH HAVE BEEN APPLIED AT A FILM THICKNESS OF 20 ± 0.5 MIL TO CODE S-16 STAINLESS PLATES. THE SAMPLES SHALL BE ALLOWED TO CURE AT 75 DEGREES F ± 2 DEGREES F FOR A MINIMUM OF 24 HOURS AND A MAXIMUM OF 72 HOURS PRIOR TO PERFORMING THE INDICATED TESTS.

## 15. IMPACT STRENGTH

SAMPLE PREPARATION: PROPERLY MIXED MATERIAL SHALL BE APPLIED ON A MINIMUM OF 28 DAY OLD CLEAN CONCRETE AND SHALL BE ALLOWED TO CURE FOR 72 HOURS AT 75 DEGREES F ± 2 DEGREES F. FILM THICKNESS OF THE MATERIAL SHALL BE AT THE APPROPRIATELY PRESCRIBED THICKNESS. TESTING: AT A TEMPERATURE OF 75 DEGREES F ± 2 DEGREES F (25 DEGREES C), A 2 LB. ROUND STEEL BALL SHALL BE DROPPED FROM A HEIGHT OF 4 FT. ON THE CURED SAMPLE. NO CRACKING OR CHIPPING OF THE MATERIAL SHALL TAKE PLACE.

## 16. COLOR

THE MIXED HYBRIDIZED POLYMER COMPOUND, BOTH WHITE AND YELLOW, MUST BE APPLIED TO 2 SETS OF 3" X 6" ALUMINUM PANELS AT 20 MIL IN THICKNESS, ONE SET WITH NO GLASS SPHERES AND ONE SET WITH GLASS SPHERES AS SPECIFIED IN THIS SPECIFICATION SECTION 633.03.04, PARAGRAPH B (MUST ENSURE 50/50 DISTRIBUTION OF SIZE I AND SIZE II SPHERES FOR THIS WILL IMPACT THE RESULTS OF THIS TEST) AND EXPOSE THE PREPARED SAMPLES IN A Q.U.V. ENVIRONMENTAL TESTING CHAMBER, AS DESCRIBED IN ASTM G-53, AND THEY SHALL CONFORM TO THE FOLLOWING REQUIREMENTS. THE TEST SHALL BE CONDUCTED FOR 75 HOURS AT 122 DEGREES F, 4 HOURS HUMIDITY AND 4 HOURS U.V., IN ALTERNATING CYCLES. THE PREPARED PANELS SHALL BE CURED AT 77 DEGREES F FOR 72 HOURS PRIOR TO EXPOSURE. THE COLOR OF THE WHITE EPOXY MATERIAL SHALL NOT BE DARKER THAN FEDERAL STANDARD NO. 595A-17855. THE COLOR OF THE YELLOW EPOXY MATERIAL SHALL BE REASONABLY CLOSE TO FEDERAL STANDARD NO. 595A-13415.

## 17. ACCELERATED LIFE CYCLE AGING TEST

THE MATERIAL MUST NOT SHOW ANY EVIDENCE OF BLISTERING, BUBBLING, OR DELAMINATING WHEN SUBMITTED TO TEST METHOD ATR-931. INDEPENDENT TEST LABORATORIES SUCH AS PSI CAN BE CONTACTED TO PERFORM ATR-931. CLEVELAND OFFICE: (216) 447-1335, CONTACT JIM McCUE.

### REFLECTIVE MEDIA SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:

BOTH SIZE I AND SIZE II REFLECTIVE GLASS BEADS SHALL BE SIMULTANEOUSLY DISPENSED THROUGH INDIVIDUAL DISPENSING GUNS ON THE WET MATERIAL RESPECTIVELY AND THE COMBINED APPLICATION OF BOTH SIZES SHALL BE AT A MINIMUM RATE OF 25 LBS/GAL WITH EACH SIZE RANGING BETWEEN 12-13 LBS/GAL AND THE BEADS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

THE GLASS BEADS SHALL BE COLORLESS, CLEAN TRANSPARENT, FREE FROM MILKINESS OR EXCESSIVE AIR BUBBLES, AND ESSENTIALLY CLEAN FROM SURFACE SCARRING OR SCRATCHING.

SIZE I AND SIZE II GLASS BEADS SHALL BE SPHERICAL IN SHAPE AND AT LEAST 70% SHALL BE TRUE SPHERES. SIZE I SPHERES SHALL BE TESTED FOR ROUNDNESS ACCORDING TO THE PROCEDURAL DIRECTIVES OF THE MATERIALS BUREAU. SIZE II SPHERES SHALL BE TESTED IN ACCORDANCE WITH ASTM D-1155.

THE REFRACTIVE INDEX OF THE BEADS SHALL BE A MINIMUM OF 1.50 AS DETERMINED BY THE LIQUID IMMERSION METHOD AT 75 DEGREES F. THE SILICA CONTENT OF THE GLASS BEADS SHALL NOT BE LESS THAN 60%.

SIZE I GLASS BEADS SHALL BE COATED WITH SILANE TYPE ADHERENCE COATING TO ENHANCE ITS EMBEDMENT AND ADHERENCE TO APPLIED BINDER MATERIAL FILM. THE COATED BEADS SHALL EMIT A YELLOW-GREEN FLUORESCENCE WHEN TESTED BY THE DANSYL CHLORIDE TEST PROCEDURE. SIZE II GLASS BEADS SHALL BE TREATED WITH A MOISTURE PROOF COATING. GLASS BEADS SHALL SHOW NO TENDENCY TO ABSORB MOISTURE IN STORAGE AND SHALL REMAIN FREE OF CLUSTERS AND LUMPS. THEY SHALL FLOW FREELY FROM DISPENSING EQUIPMENT AT ANY TIME WHEN ATMOSPHERIC CONDITIONS ARE SATISFACTORY FOR MARKING OPERATIONS. THE MOISTURE RESISTANCE OF THE GLASS BEAD SHALL BE DETERMINED ON THE BASIS OF THE FOLLOWING TEST: PLACE 2 LBS OF BEADS IN A WASHED COTTON BAG HAVING A THREAD COUNT OF 50 PER SQUARE INCH (WARP AND WOOF) AND IMMERSE THE BAG IN A CONTAINER OF WATER FOR 30 SECONDS. REMOVE THE BAG AND FORCE EXCESS WATER FROM THE SAMPLE BY SQUEEZING THE BAG. SUSPEND AND ALLOW THE BAG TO DRAIN FOR 2 HOURS AT ROOM TEMPERATURE (70-72 DEGREES F). THEN MIX THE SAMPLE IN THE BAG SHAKING THOROUGHLY. TRANSFER A SAMPLE SLOWLY TO A CLEAN, DRY GLASS FUNNEL HAVING A STEM 4 INCHES IN LENGTH WITH A 3/8 INCH INSIDE DIAMETER STEM ENTRANCE OPENING AND A MINIMUM EXIT OPENING 1/4 INCH. THE ENTIRE SAMPLE SHALL FLOW FREELY THROUGH THE FUNNEL. IF THE BEADS CLOG WHEN FIRST INTRODUCED, THEN IT IS PERMISSIBLE LIGHTLY TAP THE FUNNEL TO INITIATE THE FLOW.

IN ADDITION TO THE REQUIREMENTS OF 740.10, THE FOLLOWING SHALL APPLY: INSPECTION SHALL BE DONE AT THE PROJECT SITE. RANDOM SAMPLES SHALL BE OBTAINED FROM THE MATERIAL DELIVERED TO THE PROJECT SITE OR AT OTHER LOCATIONS DESIGNATED BY THE LABORATORY.

GLASS BEADS FOR EPOXY MARKINGS SHALL HAVE THE FOLLOWING GRADATION WHEN TESTED IN ACCORDANCE WITH ASTM D-1214:

SIZE I			SIZE II		
U.S. STD. SIEVE NO.	% RETAINED	% PASSING	U.S. STD. SIEVE NO.	% RETAINED	% PASSING
10	0	100	20	0-5	95-100
12	0-5	95-100	30	5-20	80-95
14	5-20	80-95	50	30-75	9-42
16	40-80	10-40	80	9-32	0-10
18	10-40	0-5	100	0-5	-
20	0-5	0-2	PAN	0-2	-
PAN	0-2				

### PERFORMANCE REQUIREMENTS

THE SYSTEM SHALL PROVIDE EFFECTIVE DELINEATION ON CONCRETE AS WELL AS ASPHALT FOR THE SPECIFIED PERIOD AND PROVIDE THE FOLLOWING INITIAL RETROREFLECTIVITY REQUIREMENTS:

	SPECIFIC LUMINAIRE (MILLICANDELAS/SQ.FT./FT. CANDLE)-MICROLUX 12
WHITE LINE, SYMBOLS AND LEGENDS	250 MIN.
YELLOW LINE	175 MIN.



# PAVEMENT MARKINGS

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



MAH-76/80-6.95/0.00

## RE-APPLYING

THE RE-APPLICATION SHALL BE APPLIED OVER THE EXISTING BINDER WITH THE PROPER SURFACE PREPARATION AS STATED IN 641.05. THE RATES OF

RE-APPLICATION SHALL BE AS FOLLOWS:

LINE WIDTH	WET FILM THICKNESS	BINDER	REFLECTORIZED SPHERES
4"	10 MILS	481 FT./GAL. 10.97 GAL./MILE	25 LBS./GAL. 274.25 LBS./MILE

## METHOD OF MEASUREMENT

IN ADDITION TO THE REQUIREMENTS OF 641.12, THE FOLLOWING SHALL APPLY:

- A. THE CONTRACTOR MUST SUBMIT CERTIFIED DOCUMENTS FROM THE MANUFACTURER OF THE AMOUNT OF GALLONS AND POUNDS OF BEADS SHIPPED FOR A PARTICULAR PROJECT.
- B. IN THE FIELD, THE CONTRACTOR SHALL FURNISH A CALIBRATED MEASURING DEVICE TO BE USED TO MEASURE THE QUANTITY OF MATERIAL USED SUCH AS STROKE COUNTERS MOUNTED ON THE DISPENSING PUMPS. STROKE COUNTER READINGS MUST BE TAKEN AT THE BEGINNING AND END OF EACH DAY BY THE STATE AUTHORIZED INSPECTOR. CAUTION MUST BE TAKEN WHILE RECIRCULATING THE MATERIAL TO TURN OFF THE STROKE COUNTER ON THE PUMP. (USING "DIPPING THE TANK" METHOD AS THE ONLY MEASURE IS NOT SUFFICIENT)
- C. THE RATE OF APPLICATION OF MATERIALS SHALL BE VERIFIED BY COMPARING THE AMOUNT OF MATERIAL USED WITH THE COMPUTED AMOUNT NEEDED FOR EACH SECTION. WHERE SHORT SECTIONS ARE INVOLVED AND IT IS NOT PRACTICAL OR FEASIBLE TO DETERMINE THE QUANTITIES USED ON EACH AND EVERY SHORT SECTION, SUCH SECTIONS MAY BY AGREEMENT BETWEEN THE ENGINEER AND CONTRACTOR, BE GROUPED TOGETHER TO VERIFY THE QUANTITIES USED.
- D. CONTRACT PRICE ADJUSTMENT FOR EACH SECTION WILL BE BASED ON THE FOLLOWING PERCENT OF BINDER AND BEADS USED FOR EACH SECTION VERSUS THE CALCULATED QUANTITIES, WITH PAYMENT DETERMINED USING THE LOW BAND IF THERE IS A DIFFERENT BAND FOR BEADS AND BINDER. WHERE SHORT SECTIONS ARE GROUPED TOGETHER FOR VERIFICATION OF QUANTITIES, THE BAND DETERMINED ON THE BASIS OF A SINGLE RATE APPLICATION VERIFICATION SHALL APPLY TO ALL SECTIONS OF THE GROUP.

100% TO 95%  
94.9% TO 90%  
89.9% TO 80%  
79.9% AND LESS

BAND 1  
BAND 2  
BAND 3  
BAND 4

## BASIS OF PAYMENT

FOR THE NUMBER MILES OF LINE APPLIED, GROUPED INTO EACH BAND, THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE, ADJUSTED IN ACCORD WITH THE FOLLOWING SCHEDULE:

BAND 1	100% OF CONTRACT UNIT PRICE
BAND 2	90% OF CONTRACT UNIT PRICE
BAND 3	80% OF CONTRACT UNIT PRICE
BAND 4	RE-APPLY

PAYMENT WILL BE MADE FOR:

<u>ITEM</u>	<u>UNIT</u>	<u>DESCRIPTION</u>
SPEC	MILE	PAVEMENT MARKING MISC.: EPOXY EDGE LINE
SPEC	MILE	PAVEMENT MARKING MISC.: EPOXY LANE LINE
SPEC	LIN FT	PAVEMENT MARKING MISC.: EPOXY TRANSVERSE LINE
SPEC	LIN FT	PAVEMENT MARKING MISC.: EPOXY CHANNELIZING LINE

[QUANTITIES ARE GIVEN ON SHEET 78J]







# RAISED PAVEMENT MARKER SUBSUMMARY

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

79  
121

MAH-76/80-6.95/0.00

## RAISED PAVEMENT MARKER CASTING, INSTALLATION ONLY, AS PER PLAN

The Department will supply the bare RPM castings for item 621, Raised Pavement Marker Castings, Installation Only, As Per Plan. The Contractor shall furnish the retro-reflectors and all other materials required to complete this item.

The Contractor will be informed at the pre-construction conference as to the location in Columbus of the Department supplied RPM materials. When specified, additional RPM materials will be stored within the District for use on this project. The Contractor shall pick up Department supplied materials at the specified location(s) for transport to the work site or to the Contractor's storage facility. An authorization for pick-up form will be furnished by the District Construction Engineer to the Contractor at the pre-construction conference. The Contractor shall notify the District and/or the parties listed on the authorization form in writing at least 5 working days prior to pick-up of Department supplied materials. The materials shall be stored without damage or contamination with foreign matter. A deduction in the amount of the actual cost to the Department shall be made for the materials damaged by the Contractor or for castings received by the Contractor which were not installed or were not returned to the Department.

All castings shall be placed the same working day that the RPM slots are cut into the pavement. The Engineer may allow RPM placement for recently resurfaced roadway to begin as soon as the permanent pavement marking for that section is completed and dry.

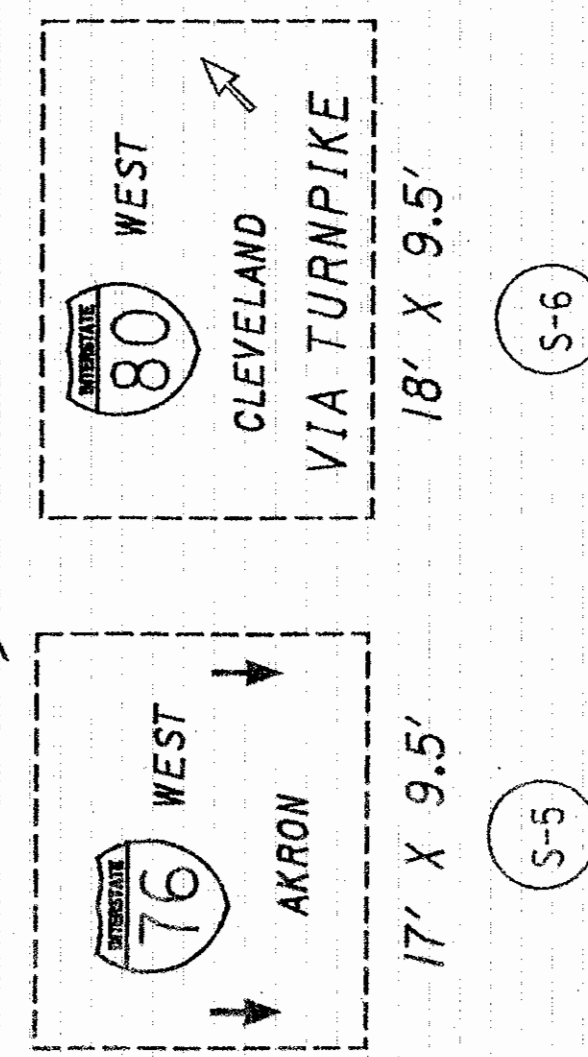
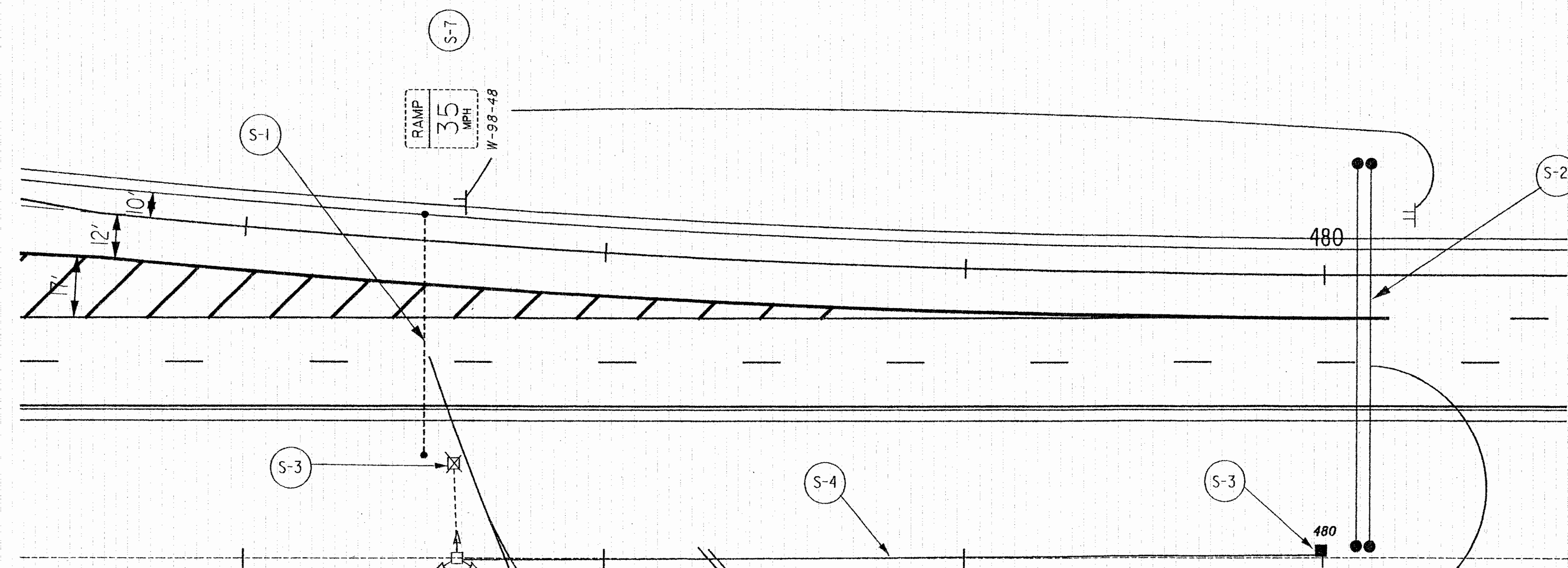
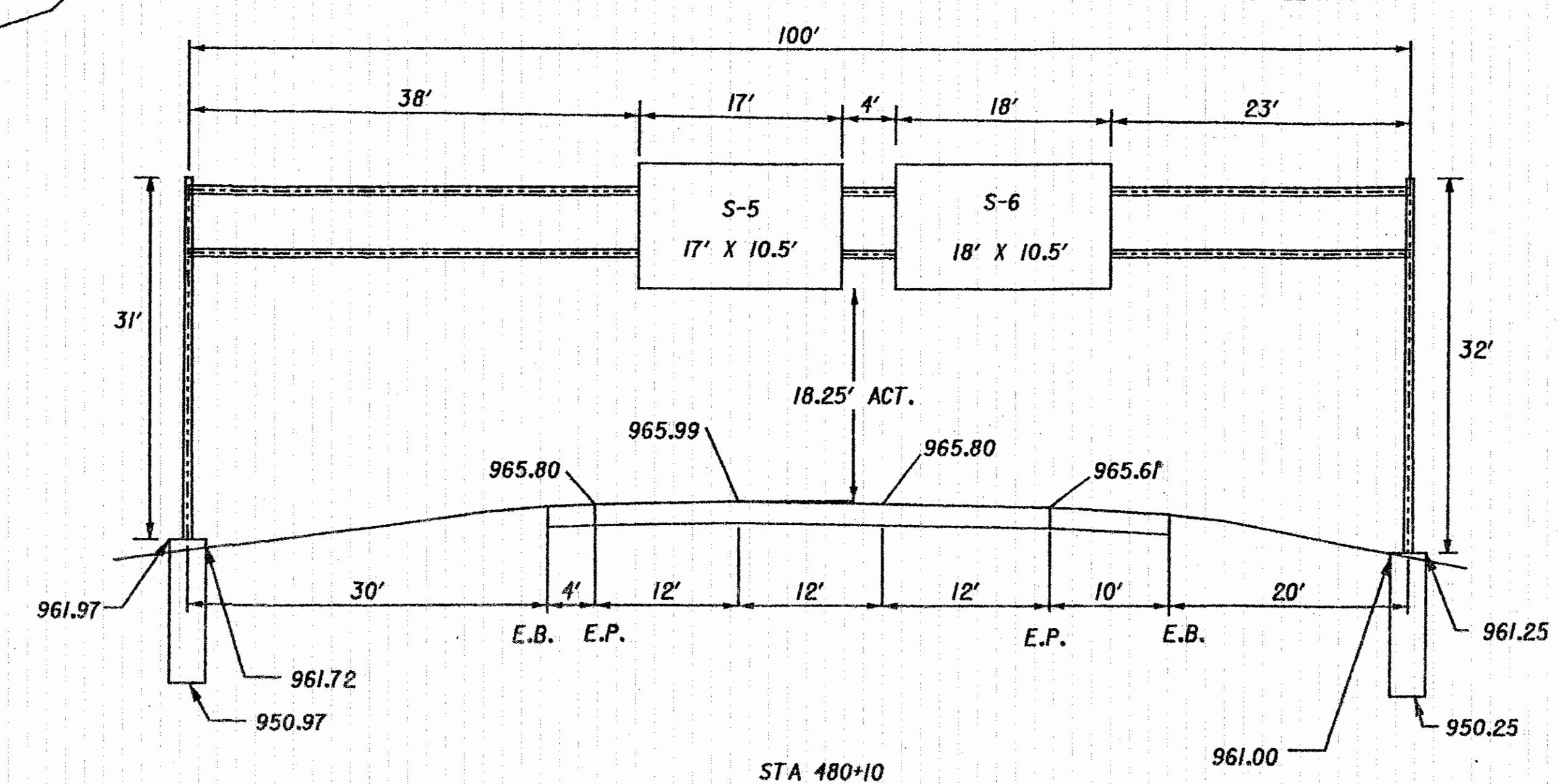
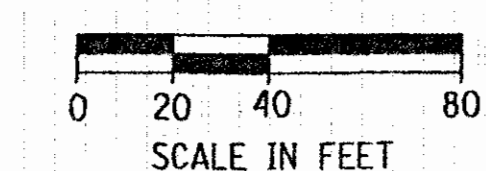
RPMs shall not be installed when the ambient air temperature and the pavement surface temperature are less than 40° F. Both parts A and B of the RPM casting epoxy shall be heated to 100°\*10°F. during installation between 40° and 50° F. RPMs installed when temperatures are below 50°F. shall be protected from traffic a minimum of 60 minutes.

## RPM REPLACEMENT / REMOVAL

NOTE TO INSPECTOR:  
PLEASE REVISE AND SEND "AS BUILT" TO DISTRICT 4 PRODUCTION

LOCATION				ITEM 202	ITEM 621					REMARKS	
COUNTY	ROUTE	STATION		RPM REMOVED FOR STORAGE	INSTALLATION ONLY		PRISMATIC RETRO-REFLECTOR				
		FROM	TO		RPM WITH YELLOW/YELLOW REFLECTOR	RPM CASTING	ONE-WAY		TWO-WAY		
						WHITE	YELLOW	WHITE/WHITE	YELLOW/RED		WHITE/RED
MAH	76	367+00	455+24			152	152				LANE LINE @120'
MAH	76	456+91	462+58 RAMP 'E'			10			6	4	GORE AREA ON RAMP 'E'
MAH	80	455+24	485+15			54	54				LANE LINE @ 120'
MAH	80	473+71	476+11			14				14	GORE AREA FOR OFF RAMP 'F'
MAH	80	475+55	480+17			26				26	GORE AREA FOR OFF RAMP 'B'
TOTALS				100		256	206		6	44	<b>TOTALS CARRIED TO GENERAL SUMMARY</b>



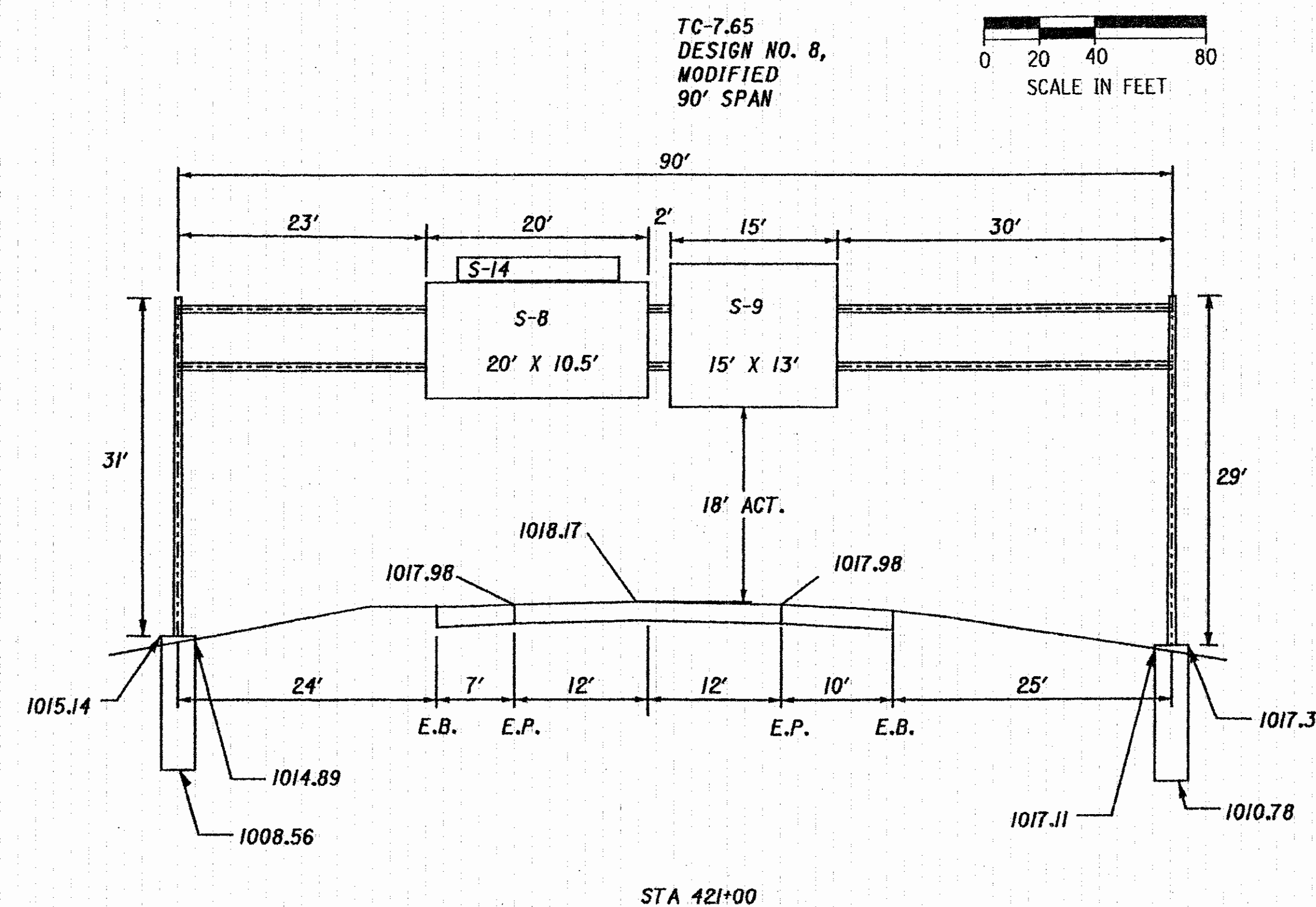
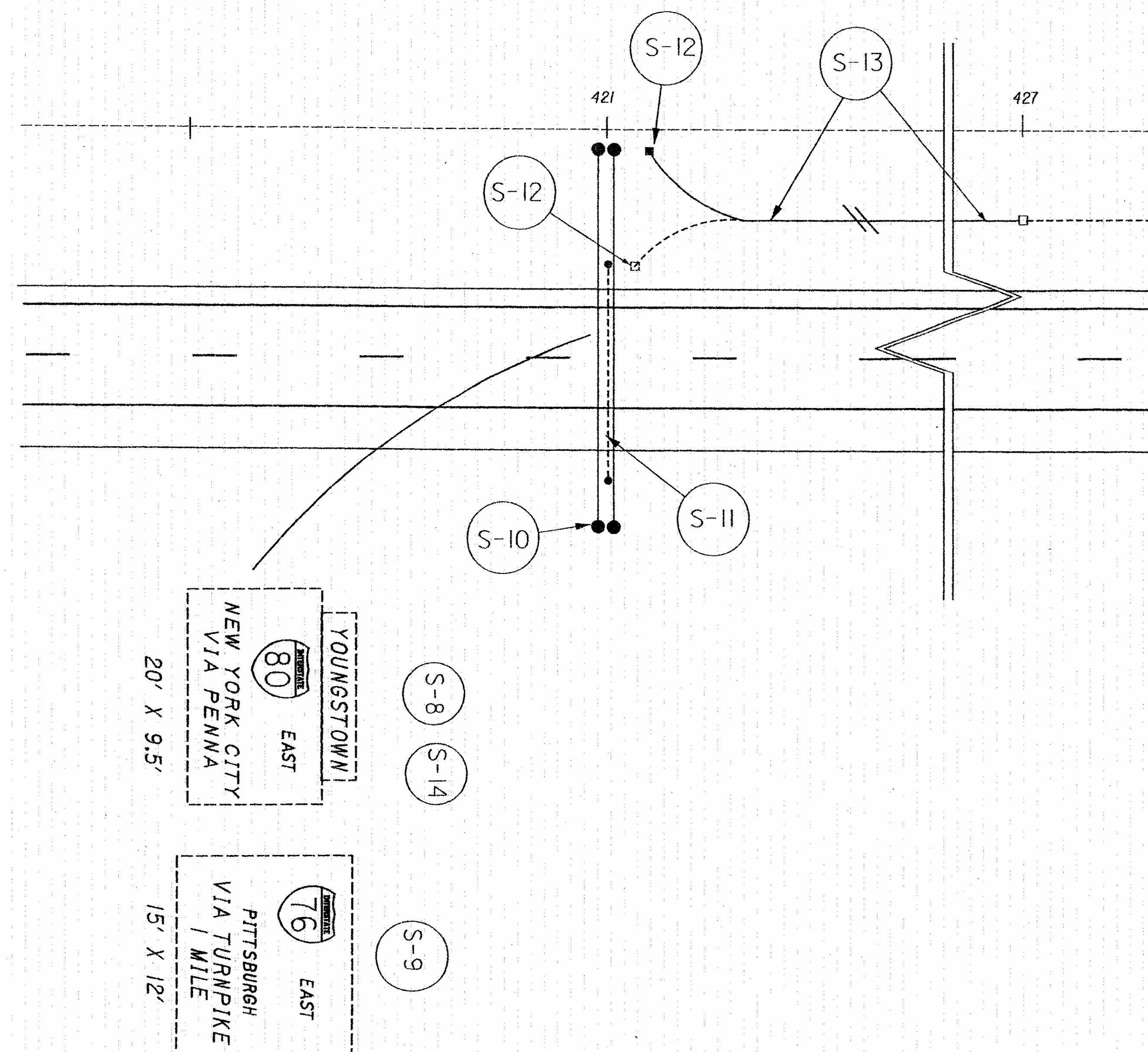

 TC-7.65  
 DESIGN NO. 8,  
 MODIFIED  
 100' SPAN


REFERENCE	STATION TO STATION	625					SPECIAL		630					631					
		TRENCH	1/2" DUCT CABLE WITH 2 NO. 2 AWG. 5000 VOLT CABLES	PULL BOX, MISC. REUSE OF PULL BOX	CABLE SPLICING KIT	GROUND ROD	PLASTIC CAUTION TAPE	GROUND MOUNTED SUPPORT, #3 POST	RIGID OVERHEAD SIGN SUPPORT FOUNDATION	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8, MODIFIED, 100' SPAN	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	SIGN WIRED	SIGN SERVICE	REMOVAL OF LUMINAIRE AND REERECTION	REMOVAL OF DISCONNECT SWITCH AND REERECTION	REMOVAL OF SIGNS WIRED
		LIN.FT.	LIN.FT.	EACH	EACH	EACH	LIN.FT.	LIN.FT.	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
S-1	477+50																		
S-2	480+10					1			2	1				2	1			1	
S-3	477+60			1															
S-4	477+60 TO 480+00	240	250				240												
S-5	477+50 REERECTED AT 480+10				3					2							2	1	
S-6	477+50 REERECTED AT 480+10						15/15						1	2			2	1	
S-7	477+60 REERECTED AT 480+20																		
TOTALS CARRIED TO GENERAL SUMMARY		240	250	1	3	1	240	30	2	1	2	1	1	2	2	1	4	1	2

**ITEM SPECIAL - PLASTIC CAUTION TAPE**

THE LOCATION OF UNDERGROUND CONDUIT AND BURIED ELECTRICAL CABLES SHALL BE MARKED BY THE USE OF A CONTINUOUS IDENTIFYING TAPE BURIED IN THE TRENCH ABOVE THE LINE. THE IDENTIFYING TAPE SHALL BE AN INERT MATERIAL, APPROXIMATELY 6 INCHES WIDE COMPOSED OF POLYETHYLENE PLASTIC, HIGHLY RESISTANT TO ALKALIS, ACIDS, OR OTHER CHEMICAL COMPONENTS LIKELY TO BE ENCOUNTERED IN SOILS. THE TAPE SHALL BE BRIGHT RED WITH IDENTIFYING PRINTING "ELECTRIC" IN BLACK LETTERS, ONE SIDE ONLY. TAPE SHALL BE SUPPLIED IN CONTINUOUS ROLLS WITH THE IDENTIFYING LETTERING REPEATED CONTINUOUSLY THE FULL LENGTH OF THE TAPE. IDENTIFYING TAPE SHALL BE BURIED ON THE ELECTRIC LINE TRENCH WITH ONE STRIP APPROXIMATELY 6 TO 10 INCHES BELOW THE FINAL FINISHED GRADE. THE TAPE SHALL BE PLACED IN THE TRENCH WITH THE PRINTED SIDE UP AND SHALL BE ESSENTIALLY PARALLEL WITH THE FINISHED SURFACE. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO INSURE THAT THE TAPE IS NOT PULLED, DISTORTED, OR OTHERWISE MISPLACED IN COMPLETING THE TRENCH BACKFILL. THE TAPE SHALL BE PAID FOR PER METER OF ITEM SPECIAL - "PLASTIC CAUTION TAPE" COMPLETE AND IN PLACE.





REFERENCE	STATION TO STATION	202		625			SPECIAL		630				631			
		PULL BOX, MISC.; REUSE OF PULL BOX	TRENCH	1/2" DUCT CABLE WITH 2 NO. 2 AWG, 5000 VOLT CABLES	CABLE SPLICING KIT	GROUND ROD	PLASTIC CAUTION TAPE	RIGID OVERHEAD SIGN SUPPORT FOUNDATION	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8, MODIFIED, 90' SPAN	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	SIGN WIRED	SIGN SERVICE	REMOVAL OF LUMINAIRE AND REERECTION	REMOVAL OF DISCONNECT SWITCH AND REERECTION	REMOVAL OF SIGNS WIRED
		EACH	LIN.FT.	LIN.FT.	EACH	EACH	LIN.FT.	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
S-8	421+00														3	1
S-9	421+00					1									2	1
S-10	421+00							2	1							
S-11	421+00				3							1			1	
S-12	421+10	1	590	600	3		590									
S-13	421+10 TO 427+00															
S-14	421+00															
TOTALS CARRIED TO GENERAL SUMMARY		1	590	600	6	1	590	2	1	3	1	2	1	5	1	2

UNDERDRAINS FOR PULLBOXES

REFERENCE IS MADE TO STANDARD DRAWING HL-30.11 FOR DETAILS OF DRAINING PULLBOXES. UNDERDRAINS FOR PULLBOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED APPROXIMATELY 40 FEET. AN ESTIMATED QUANTITY OF 40 FEET. OF ITEM 603, 4" CONDUIT TYPE E IS INCLUDED IN THE GENERAL SUMMARY FOR THIS PURPOSE.

625- PULL BOX, MISC.; REUSE OF PULL BOX

IN ADDITION TO 202.02 AND 625.11, THE PULL BOX SHALL BE CAREFULLY REMOVED AND PLACED AT THE NEW LOCATION. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR REMOVING AND REINSTALLING EACH PULL BOX.



# BRIDGE NOTES

F.H.W.A. REGION	STATE	PROJECT	FUNDS	86
5	OHIO			121

MAH-76/80-6.95/0.00

## REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

AS-1-81	9-15-94	SD-1-69	6-12-69
BP-5.1	2-21-92	RB-1-55	2-2-59
GR-1.1M	10-21-97		
GR-1.2M	1-3-96		
GR-3.1M	10-21-97		
GR-3.2M	10-21-97		

## DESIGN SPECIFICATIONS:

THIS STRUCTURE MODIFICATION CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1992, AND THE OHIO SUPPLEMENT TO THESE SPECIFICATIONS.

## DESIGN DATA:

### MAH-76-0701 L&R

DESIGN LOADING HS20-44 CASE I, AND THE ALTERNATE MILITARY LOADING.

### MAH-76-0761 L&R

DESIGN LOADING HS20-44 AND THE ALTERNATE MILITARY LOADING.

## DESIGN STRESSES:

CONCRETE, CLASS S - COMPRESSIVE STRENGTH 4500 P.S.I.  
 CONCRETE, CLASS C - COMPRESSIVE STRENGTH 4000 P.S.I.  
 REINFORCING STEEL - ASTM A615, A616 OR A617 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 P.S.I.  
 STRUCTURAL STEEL - ASTM A36 UNIT STRESS 20,000 P.S.I.

DECK PROTECTION METHOD - EPOXY COATED REINFORCING STEEL, BOTH MATS, MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1" THICK.

## SOIL BORINGS:

THIS PLAN DOES NOT CONTAIN STRUCTURE FOUNDATION INVESTIGATION DRAWINGS, THIS INFORMATION MAY BE INSPECTED AT THE BUREAU OF BRIDGES AND STRUCTURAL DESIGN IN COLUMBUS, OHIO OR IN THE DISTRICT OFFICE IN RAVENNA, OHIO.

## EXISTING STRUCTURE VERIFICATION:

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURES HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURES AND/OR FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02, 501.02 AND 513.02.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PRE-BID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, ALL PROJECT WORK SHALL BE BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED BY THE CONTRACTOR IN THE FIELD.

EXISTING BRIDGE PLANS MAY BE INSPECTED AT THE BUREAU OF BRIDGES AND STRUCTURAL DESIGN IN COLUMBUS, OHIO OR IN THE DISTRICT OFFICE IN RAVENNA, OHIO.

FOR TRAFFIC MAINTENANCE, SEE ROADWAY PLAN GENERAL NOTES UNDER MAINTENANCE OF TRAFFIC.

## REINFORCING STEEL BENDING:

FIELD BENDING AND CUTTING OF ANY NEW OR EXISTING REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ITEM 509 AND SHALL BE INCLUDED IN THE CORRESPONDING BASE UNIT PRICE FOR ITEM 511 CONCRETE FOR STRUCTURES.

## REPLACEMENT OF EXISTING REINFORCING STEEL:

ANY EXISTING REINFORCING BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND WHICH ARE MADE UNUSABLE BY THE CONTRACTOR'S CONCRETE REMOVAL OPERATIONS SHALL BE REPLACED WITH NEW STEEL AT THE CONTRACTOR'S COST.

## BENCHMARKS:

NEW BENCHMARK DISKS SHALL BE FURNISHED BY O.D.O.T. AND SET IN PLACE ON A HORIZONTAL SURFACE OF THE ABUTMENT OR WINGWALL BY THE CONTRACTOR. THE PLACEMENT OF THE DISK SHALL BE IN SUCH A MANNER AS TO MAXIMIZE ACCESSIBILITY WHILE MINIMIZING VERTICALLY INSTABILITY. THE DISK SHALL NOT BE PLACED IN AN AREA THAT IS SUBJECT TO ROADWAY DRAINAGE OR FUTURE RESURFACING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE ELEVATION OF THE MARK AFTER PLACEMENT AND FOR PROVIDING O.D.O.T. WITH A LEGIBLE COPY OF ALL NOTES AND CALCULATIONS USED IN DETERMINING THE ELEVATION.

ALL COSTS FOR THE ABOVE DESCRIBED WORK SHALL BE INCIDENTAL TO AND INCLUDED IN THE UNIT PRICE BID FOR ITEM 511 CLASS C CONCRETE, ABUTMENTS

## DOWEL HOLES

ALL DOWEL HOLES SHALL USE NONMETALLIC GROUT AND SHALL CONFORM TO ITEM 510 AND 705.20 OF THE CMS. THE DRILLING OF DOWEL HOLES AND THE PLACING OF THE GROUT SHALL BE INCLUDED IN THE CORRESPONDING BASE UNIT PRICE FOR ITEM 511 CONCRETE FOR PAYMENT.

## INSPECTION OF STRUCTURAL STEEL: (MAH-76-0701 L&R)

THE ENGINEER SHALL VISUALLY INSPECT ALL EXISTING BUTT-WELDED SPLICES AND/OR TOP FLANGE COVER PLATE FILLET WELDS TO ENSURE THAT THEY ARE FREE OF DEFECTS. THE DECK SLAB HAUNCH FORMS IMMEDIATELY ADJACENT TO SUCH WELDS SHALL NOT BE ERECTED UNTIL AFTER THE ENGINEER HAS COMPLETED THIS INSPECTION. THIS INSPECTION SHALL NOT TAKE PLACE UNTIL AFTER THE TOP FLANGES ARE CLEANED AS SPECIFIED IN 511.08, BUT IT SHALL BE DONE BEFORE THE DECK SLAB REINFORCEMENT IS INSTALLED. THE COST ASSOCIATED WITH THIS INSPECTION SHALL BE INCLUDED WITH ITEM 511, CLASS S CONCRETE SUPERSTRUCTURE, AS PER PLAN FOR PAYMENT.

## CONCRETE PARAPETS

WITHIN 48 HOURS AFTER PLACEMENT OF PARAPET CONCRETE SAWCUT 1 INCH DEEP JOINTS INTO THE CONCRETE PARAPET AT LOCATIONS AS DETAILED IN THE PLANS. THE SAW CUT SHALL BE MADE IN THE COMPLETE CIRCUMFERENCE OF THE PARAPET, STARTING AND ENDING AT THE ELEVATION OF THE CONCRETE DECK, AND THE COMPLETED SAWCUT SHALL BE FILLED WITH A CAULKING MATERIAL CONFORMING TO FEDERAL SPECIFICATION TT-S-00227E. THE BOTTOM HALF INCH OF THE ONE INCH DEEP SAWED JOINT IN BOTH THE INSIDE AND OUTSIDE FACES OF THE PARAPET SHOULD BE LEFT UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

## ITEM SPECIAL PATCHING CONCRETE STRUCTURES WITH TROWABLE MORTAR:

THE PLANS CALL FOR THE BACKWALLS OF STRUCTURES MAH-76-0701 L&R TO BE REMOVED TO APPROXIMATELY 1 (ONE) INCH BELOW PROPOSED FINAL GRADE. ITEM SPECIAL PATCHING CONCRETE STRUCTURES WITH TROWABLE MORTAR SHALL BE USED AS DIRECTED BY THE ENGINEER TO REPAIR REMOVAL SURFACES TO PROPOSED GRADES.

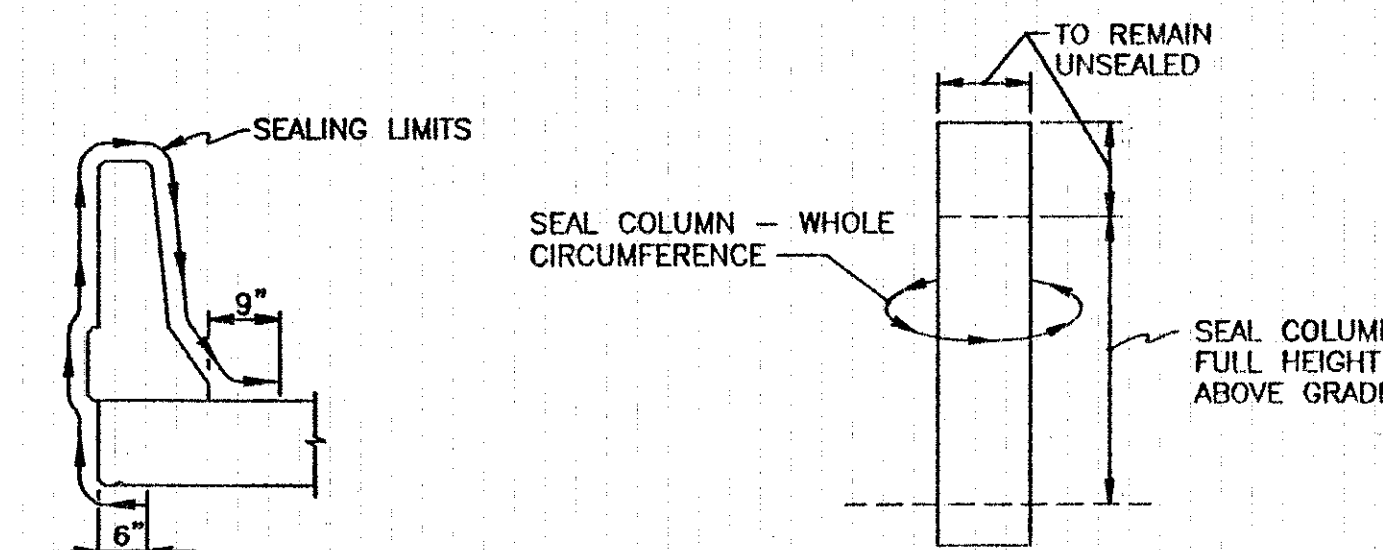
THIS ITEM SHALL ALSO BE USED TO REPAIR DISINTEGRATED CONCRETE SURFACES ON STRUCTURES MAH-76-0701 L&R AND MAH-76-0761 L&R AS DIRECTED BY THE ENGINEER AFTER FIELD EXAMINATION. FINAL EXPOSED SURFACES SHALL HAVE A SMOOTH FINISH AND SHALL MATCH AS NEARLY AS PRACTICABLE THE SURROUNDING CONCRETE. ALL EXISTING REINFORCING STEEL SHALL HAVE AT LEAST 1 (ONE) INCH COVER AFTER PATCHING HAS BEEN COMPLETED.

THE ESTIMATED QUANTITIES GIVEN ON SHEETS <sup>(89)</sup>121 AND <sup>(89A)</sup>121 FOR THIS ITEM HAVE BEEN INCREASED BY 10 PERCENT TO ALLOW FOR ADDITIONAL DETERIORATION WHICH HAS OCCURED DURING THE TIME BETWEEN THE ORIGINAL INSPECTION AND THE SUBSEQUENT INSPECTIONS PERFORMED BY O.D.O.T. PROJECT PERSONNEL.

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE PLANS AND PROPOSAL NOTE FOR: ITEM SPECIAL PATCHING CONCRETE STRUCTURES WITH TROWABLE MORTAR.

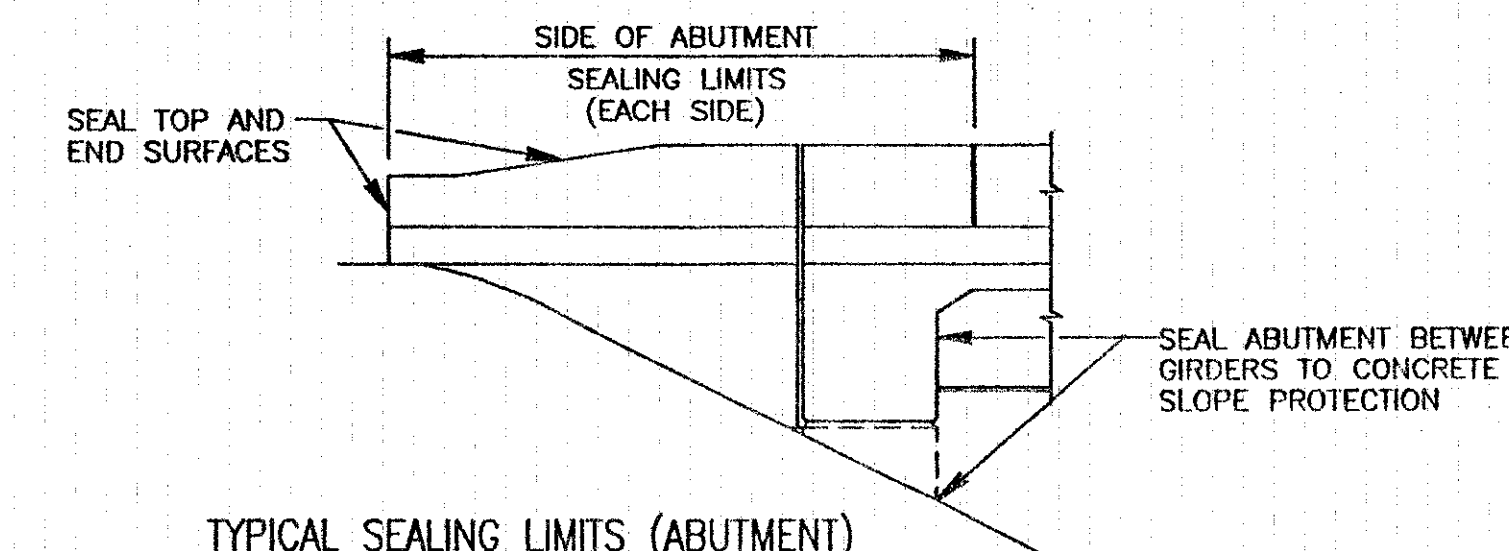
## ITEM SPECIAL - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

NEW ABUTMENT AND PARAPET CONCRETE SURFACES AND EXISTING PIER CONCRETE SURFACES SHALL BE SEALED USING MATERIALS SPECIFIED IN THE PROPOSAL, SEE DETAILS BELOW FOR LIMITS. REFER TO THE PROPOSAL NOTE FOR SURFACE PREPARATION REQUIREMENTS FOR NEW AND EXISTING SURFACES, APPLICATION RATES, MATERIAL REQUIREMENTS, APPLICATION PROCEDURES, MEASUREMENT OF QUANTITIES AND PAYMENT.



TYPICAL SEALING LIMITS (PARAPET)

TYPICAL SEALING LIMITS (PIER)



TYPICAL SEALING LIMITS (ABUTMENT)

## ITEM SPECIAL REMOVAL OF WELDED ATTACHMENTS TO EXISTING BEAMS:

AFTER THE EXISTING CONCRETE DECK HAS BEEN REMOVED FROM STRUCTURES MAH-76-0701 L&R, ANY WELDED ATTACHMENTS TO THE TOP FLANGE (OR MOMENT PLATE) OF THE EXISTING BEAMS SHALL BE REMOVED FROM THE AREAS DESIGNATED AS "TENSION" (SEE SHEET 116/119). WELDED ATTACHMENTS TO BE REMOVED MAY INCLUDE, BUT NOT BE LIMITED TO, FINISHING MACHINE SUPPORTS, SCREED SUPPORTS, GUTTER AND SCUPPERSUPPORTS AND FORM SUPPORTS. REMOVAL SHALL BE MADE IN SUCH A MANNER AS TO AVOID GOUGING OR OTHERWISE DAMAGING THE BEAM. THE SURFACE OF THE BEAM AFTER REMOVAL SHALL BE FLUSH AND SMOOTH. ANY GRINDING SHALL BE IN THE LONGITUDINAL AXIS OF THE BEAM.

ALL MATERIAL, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE ALL OF THE ABOVE WORK ARE INCLUDED UNDER ITEM SPECIAL, LUMP SUM, REMOVAL OF WELDED ATTACHMENTS TO EXISTING BEAMS.

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						
BRIDGE NOTES						
BRIDGE NO. MAH-76-0701 L & R BRIDGE NO. MAH-76-0761 L & R						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	



# BRIDGE NOTES

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

87  
121

MAH-76/80-6.95/0.00

## ITEM 202 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

THIS WORK SHALL CONSIST OF THE REMOVAL OF PORTIONS OF THE EXISTING ABUTMENTS AND WINGWALLS, DECK, PARAPETS AND OTHER ITEMS DETAILED OR NOTED ON THE PLANS. THE FOLLOWING SHALL BE REMOVED:

- 1) ALL ALUMINUM RAILINGS, TUBE RAILS AND ALL ALUMINUM ANCHOR POST CASTINGS SHALL BE REMOVED AND SAFELY STORED ON THE PROJECT FOR PICKUP BY STATE FORCES.
- 2) ALL SCUPPERS AND ASSOCIATED HARDWARE, BULB ANGLES AND END DAM ARMOR SHALL BE REMOVED AND BECOME THE PROPERTY OF THE CONTRACTOR.
- 3) ALL ELECTRICAL WIRING, CONDUIT, AND JUNCTION BOXES SHALL BE REMOVED AND BECOME THE PROPERTY OF THE CONTRACTOR.

CARE SHALL BE TAKEN DURING REMOVALS TO PROTECT PORTIONS OF SUCH SYSTEMS THAT ARE TO BE SALVAGED AND INCORPORATED INTO THE PROPOSED STRUCTURE. IN THIS RESPECT, THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE RAM TYPE OF EQUIPMENT IS PROHIBITED. CONCRETE MAY BE REMOVED BY CUTTING AND BY MEANS OF HAND OPERATED PNEUMATIC HAMMERS EMPLOYING POINTED OR BLUNTED CHISEL TYPE TOOLS. FOR REMOVALS ABOVE STEEL MEMBERS, A HAMMER HEAVIER THAN 35 POUNDS BUT NOT TO EXCEED 90 POUNDS MAY BE USED AT THE APPROVAL OF THE ENGINEER, TO ENSURE ADEQUATE DEPTH CONTROL AND TO PREVENT NICKING OR GOUGING THE PRIMARY STEEL MEMBERS.

BEFORE DECK SLAB CUTTING IS PERMITTED, THE OUTLINE OF PRIMARY STEEL MEMBERS IN CONTACT WITH THE BOTTOM OF THE DECK SHALL BE DRAWN ON THE SURFACE OF THE DECK. SMALL DIAMETER PILOT HOLES SHALL BE DRILLED 2 INCHES OUTSIDE THESE LINES TO CONFIRM THE LOCATION OF THE FLANGE EDGES. DECK CUTS OVER OR WITHIN 2 INCHES OF FLANGE EDGES SHALL NOT EXTEND LOWER THAN THE BOTTOM LAYER OF DECK SLAB REINFORCING STEEL. CUTS MADE OUTSIDE 2 INCHES OF FLANGE EDGES MAY EXTEND THE FULL DEPTH OF THE DECK. DURING CUTTING OF THE DECK SLAB, CARE SHALL BE TAKEN NOT TO DAMAGE STEEL MEMBERS THAT ARE TO BE INCORPORATED INTO THE PROPOSED STRUCTURE.

DUE TO THE POSSIBLE PRESENCE OF WELDED ATTACHMENTS TO EXISTING STRUCTURAL STEEL (FINISHING MACHINE, SCUPPER AND FORM SUPPORTS, ETC.), CARE SHALL BE TAKEN DURING DECK REMOVAL TO AVOID DAMAGING STRINGERS WHICH ARE TO REMAIN. STRINGERS DAMAGED BY THE CONTRACTOR'S REMOVAL OPERATIONS SHALL, AT NO COST TO THE PROJECT, BE REPLACED OR REPAIRED. PROPOSED REPAIRS, DEVELOPED BY A REGISTERED PROFESSIONAL ENGINEER, SHALL BE SUBMITTED IN WRITING FOR REVIEW AND APPROVAL BY THE DIRECTOR.

NO PART OF THE STRUCTURE SHALL BE SUBJECTED TO UNIT STRESSES THAT EXCEED 136.5% OF THE ALLOWABLE UNIT STRESSES GIVEN IN THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DUE EITHER TO DEMOLITION, ERECTION OR CONSTRUCTION METHODS, OR TO THE USE OR MOVEMENT OF DEMOLITION OR ERECTION EQUIPMENT ON OR ACROSS THE STRUCTURE. STRUCTURAL ANALYSIS COMPUTATIONS, BY A REGISTERED PROFESSIONAL ENGINEER, SHOWING THE ALLOWABLE STRESSES AND MAXIMUM STRESSES PRODUCED BY THE CONTRACTOR'S METHODS OR EQUIPMENT SHALL BE SUBMITTED TO THE DIRECTOR FOR REVIEW AND APPROVAL AT LEAST TWO WEEKS PRIOR TO THE START OF THE WORK.

ALL WORK SHALL CONFORM TO THE REQUIREMENTS AND MEET THE APPROVAL OF THE CONSOLIDATED RAIL CORPORATION.

THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN CONFORMANCE WITH THESE REQUIREMENTS, WITH PERTINENT PROVISIONS OF 202, AND TO THE SATISFACTION OF THE ENGINEER.

## ITEM 516 JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN

(MAH-76-0701 L&R)

THIS ITEM SHALL CONSIST OF FURNISHING ALL NECESSARY LABOR, MATERIALS, AND EQUIPMENT TO RAISE AND/OR REPOSITION THE EXISTING STRUCTURE TO THE DIMENSIONS AND REQUIREMENTS DEFINED IN THE PROJECT PLANS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN, INSTALLATION AND OPERATION OF AN ADEQUATE JACKING SYSTEM, INCLUDING ANY TEMPORARY OR PERMANENT SUPPORTS NECESSARY TO PERFORM THE WORK DESCRIBED IN THE PROJECT PLANS. SEVEN (7) SETS OF JACKING PLANS, WHICH INCLUDE THE INFORMATION DESCRIBED IN THIS NOTE, SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL IN AT LEAST THIRTY (30) DAYS OR AS DESCRIBED IN 501.06 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS DAYS BEFORE ACTUAL WORK IS TO BEGIN. FOUR (4) ADDITIONAL SETS OF JACKING PLANS SHALL BE A SUBMITTED TO THE CONSOLIDATED RAIL CORPORATION FOR APPROVAL IN A TIMELY MANNER AS DESCRIBED IN 501.06 OF THE CMS BEFORE WORK IS TO BEGIN. ALL SUPPORT PLANS, PROCEDURES, AND CALCULATIONS SHALL BE PREPARED AND STAMPED BY A REGISTERED ENGINEER. JACKING SUBMITTALS SHALL INCLUDE AT LEAST THE FOLLOWING:

1. THE SIGNATURE AND NUMBER, OR PROFESSIONAL SEAL, OF THE REGISTERED PROFESSIONAL ENGINEER WHO PREPARED THE SUBMITTAL.
2. CALCULATIONS AND ANALYSIS OF STRUCTURE TO DETERMINE AND DEFINE THE ACTUAL LOADING APPLIED AT THE CONTRACTOR'S SELECTION JACKING POINTS.
3. A DRAWING SHOWING THE PHYSICAL AND DIMENSIONAL POSITION OF THE JACKS WITH RESPECT TO THE STRUCTURE INCLUDING CLEARANCES AND CENTER OF LIFT.
4. A SCHEMATIC LAYOUT OF JACKS, CHECK VALVES, PUMPS WITH 3 WAY RETRACTOR VALVE, PRESSURE GAGES, FLOW CONTROL VALVES, ETC. IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ALL JACKS FOR EACH ABUTMENT OR PIER SHALL BE CONNECTED TOGETHER. ALL JACKS AT EACH ABUTMENT OR PIER SHALL BE THE SAME SIZE.
5. ANALYSIS AND CALCULATIONS OF THE STRESSES INDUCED OR CREATED IN THE STRUCTURE AND ANY TEMPORARY OR PERMANENT SUPPORTS. DESIGN CALCULATIONS FOR ANY TEMPORARY OR PERMANENT SUPPORTS.
6. PHYSICAL DIMENSIONS, MATERIALS, AND FABRICATION DETAILS OF ANY TEMPORARY OR PERMANENT SUPPORTS. HORIZONTAL AND VERTICAL MOVEMENT RESTRAINT SHALL BE PROVIDED.
7. A STEP BY STEP PROCEDURE DETAILING ALL STEPS IN THE JACKING OPERATION.
8. METHOD OF ATTACHMENT TO STRUCTURAL MEMBERS. WELDING TO TENSION AREAS WILL NOT BE PERMITTED.

THE ENTIRE SYSTEM INCLUDING JACKS SHALL HAVE 20% MORE CAPACITY THAN REQUIRED BASED ON CALCULATED LOADS.

## ITEM 516 JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN (CON'T)

FOR LIFTS GREATER THAN 1", JACKS SHALL HAVE LOCKING NUTS TO POSITIVELY LOCK AND SUPPORT THE STRUCTURE DURING THE LIFT.

JACKS SHALL HAVE A SWIVEL LOAD CAP, A DOMED PISTON HEAD OR SOME OTHER DEVICE TO PROTECT AGAINST THE EFFECTS OF SIDE LOAD ON THE JACK.

JACKS ALONE SHALL NOT BE USED TO SUPPORT LOADS EXCEPT DURING THE ACTUAL JACKING OPERATION. TEMPORARY SUPPORTS, BLOCKING OR OTHER METHODS APPROVED BY THE DIRECTOR SHALL BE USED.

SINGLE ACTING RAMS WITH NO OTHER-TRAVEL PROTECTION SYSTEM SHALL NOT BE USED.

SPARE EQUIPMENT SHALL BE AVAILABLE ON SITE FOR THE REQUIRED STRUCTURE RAISING TO PROCEED IN THE EVENT OF BREAKDOWN. A LIST OF SPARE EQUIPMENT SHALL BE PROVIDED TO THE ENGINEER.

AT A MINIMUM, A JACKING OPERATION SHALL LIFT ALL BEAMS AT ANY ONE ABUTMENT OR PIER SIMULTANEOUSLY.

MAXIMUM DIFFERENTIAL JACKING HEIGHT BETWEEN ANY ADJACENT SUBSTRUCTURE UNITS SHALL BE 1" OR LESS; MAXIMUM DIFFERENTIAL JACKING HEIGHT BETWEEN ANY ADJACENT BEARINGS SHALL BE 1/4" OR LESS.

IF, DURING THE JACKING OPERATIONS DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, THE JACKING OPERATION SHALL IMMEDIATELY CEASE AND APPROVED SUPPORTS SHALL BE INSTALLED. THE CONTRACTOR SHALL THEN ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. COST OF THIS CORRECTION OR OTHER RE

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						
BRIDGE NOTES						
BRIDGE NO. MAH-76-0701 L & R BRIDGE NO. MAH-76-0761 L & R						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	



# BRIDGE NOTES

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

88  
121

MAH-76/80-6.95/0.00

## ITEM 863 STRUCTURAL STEEL, MEMBERS, MISCELLANEOUS LEVEL, FABRICATION

ON STRUCTURES MAH-76-0701 L&R THE EXISTING BEAMS AND CROSSFRAMES SHALL HAVE CLIP ANGLES INSTALLED WHERE INDICATED ON THE FRAMING PLAN AND DETAIL ON SHEET 19/19. BOLT HOLES IN THE CLIP ANGLES SHALL BE DRILLED IN THE SHOP AND USED AS A TEMPLATE FOR DRILLING THE HOLES IN THE BEAMS. THE WELDS ON THE EXISTING WEB SHALL BE GROUND FLUSH WHERE THE CLIP ANGLES ARE TO BE INSTALLED. THE GRINDING SHALL BE DONE IN THE DIRECTION OF THE LONGITUDINAL AXIS OF THE BEAM. THE CLIP ANGLES SHALL FIT FLAT AGAINST THE SURFACE OF THE BEAM. AFTER THE HOLES ARE DRILLED IN THE BEAM, BUT BEFORE FINAL ASSEMBLY, THE CONTACT SURFACES BETWEEN BEAM, CLIP ANGLES, AND CROSSFRAMES SHALL BE PREPARED AND GIVEN THE PRIME COAT AS PER SYSTEM OZEU.

CROSSFRAME RETROFITS ARE PREVENTATIVE MEASURES FOR FATIGUE CRACKING. PRIOR TO THIS CONSTRUCTION, A VISUAL INSPECTION SHALL BE PERFORMED ON EVERY CROSSFRAME CONNECTION TO THE LOWER PORTION OF THE WEB FOR EACH ENTIRE STRUCTURE BY THE PROJECT ENGINEER. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE PROJECT ENGINEER TO MAKE THIS INSPECTION. NO WORK SHALL BE DONE ON THE EXISTING CROSSFRAME CONNECTIONS AND PROPOSED RETROFITS WITHOUT PRIOR APPROVAL OF THE PROJECT ENGINEER FOLLOWING THE VISUAL INSPECTION.

THE WORK WILL BE PAID FOR AT THE LUMP SUM FOR ITEM 863 STRUCTURAL STEEL, MEMBERS, MISCELLANEOUS LEVEL, FABRICATION. THE CONTRACT BID PRICE FOR THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE WORK AND INSPECTION.

## ITEM 863 STRUCTURAL STEEL, MEMBERS, LEVEL ONE (1) FABRICATION:

THE EXISTING BEAMS ON STRUCTURES MAH-76-0701 L&R SHALL HAVE SPLICE PLATES INSTALLED ON THE TOP FLANGE AT THE ENDS OF THE MOMENT PLATES. BOLT HOLES IN THE SPLICE PLATES SHALL BE DRILLED IN THE SHOP AND THE PLATES SHALL BE USED FOR A TEMPLATE FOR DRILLING THE HOLES IN THE BEAMS. THE WELDS IN THE EXISTING BEAM ON THE TOP FLANGE SHALL BE GROUND FLUSH WHERE THE SPLICE PLATES ARE TO BE INSTALLED. THE GRINDING SHALL BE IN THE DIRECTION OF THE LONGITUDINAL AXIS OF THE BEAM. SPLICE PLATES SHALL FIT FLAT AGAINST THE SURFACE OF THE BEAM AND FILL PLATES SHALL BE USED TO COMPENSATE FOR ANY MISALIGNMENT OF MORE THAN 1/16". AFTER HOLES ARE DRILLED IN THE BEAM, BUT BEFORE FINAL ASSEMBLY, THE CONTACT SURFACES BETWEEN BEAM AND SPLICE PLATES SHALL BE PREPARED AND GIVEN THE PRIME COAT AS PER SYSTEM OZEU, AND 863.29 OF ITEM 863.

THE WORK WILL BE PAID FOR AT THE LUMP SUM BID FOR FLANGE SPLICES COMPLETE IN PLACE AND ACCEPTED. THE CONTRACT PRICE BID FOR THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE WORK.

## ITEM 516 ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES (8 1/2"x12"x2 2/3") AND LOAD PLATE (10 3/4"x13"x1 1/2") (NEOPRENE), AS PER PLAN:

THIS ITEM SHALL INCLUDE ALL THE WORK AND MATERIALS NECESSARY TO FABRICATE AND INSTALL THE BEARINGS AS PER DETAILS ON THE PLANS FOR STRUCTURES MAH-76-0701 L&R. SEE SHEET [18/19] FOR DETAILS.

THE FABRICATION SHALL CONSIST OF A 8 1/2"x12"x2 2/3" LAMINATED ELASTOMERIC BEARING VULCANIZED BONDED TO A 10 3/4"x13"x1 1/2" TOP STEEL LOAD PLATE. AFTER VULCANIZATION AN HP10X42 STEEL SUPPORT SECTION SHALL BE WELDED TO THE TOP LOAD PLATE. ALSO INCLUDED IN THIS ITEM IS THE FIELD DRILLING OF 2" DIAMETER VENT HOLES IN THE BOTTOM FLANGE OF THE EXISTING STEEL BEAM.

ALL STEEL SHALL BE ASTM A36 (CVN) AND SHALL MEET THE REQUIREMENTS OF PROPOSAL NOTE 863.

PAYMENT FOR THE ABOVE SHALL BE AT THE UNIT BID PRICE PER EACH FOR THIS ITEM WHICH SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PROOF AND LOAD TESTING AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN PLACE.

## SURFACE PREPARATION AND FIELD PAINTING OF EXISTING STEEL WITH SYSTEM OZEU:

ON STRUCTURES MAH-76-0701 L&R THE SURFACE AREA HAS BEEN CALCULATED FOR BEAMS AND CROSSFRAMES AND HAS BEEN INCREASED BY 1% TO ACCOUNT FOR ALL INCIDENTALS SUCH AS BEARING ASSEMBLIES, STIFFENERS AND PLATES.

ANY EXISTING STEEL SPANNING THE RAILROAD TRAVELWAY SHALL BE SOLVENT CLEANED TO REMOVE ANY GREASE OR OIL.

## ITEM 815 CAULKING:

ON STRUCTURES MAH-76-0701 L&R A CONTINGENCY QUANTITY OF 12 LINEAR FEET HAS BEEN PROVIDED ON THIS PROJECT TO BE USED AS DIRECTED BY THE PROJECT ENGINEER/SUPERVISOR. SEE PROPOSAL NOTE FOR SPECIFICATIONS.

## ITEM 511 CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN (MAH-76-0701 L&R)

INSTALL A 3 FOOT WIDE STRIP, 3/32 INCH THICK, GENERAL PURPOSE, HEAVY DUTY NEOPRENE SHEET WITH NYLON FABRIC REINFORCEMENT AT LOCATIONS SHOWN IN THE PLANS. SECURE THE 3 FOOT WIDE NEOPRENE SHEETING TO THE CONCRETE WITH 1 1/4" x 3/32" x 1/4" (LENGTH x SHANK DIAMETER x HEAD DIAMETER) #10 GALVANIZED SCREWS THROUGH A 1 INCH OUTSIDE DIAMETER, #10 GAGE GALVANIZED WASHER. MAXIMUM FASTENER SPACING IS 9 INCHES. OTHER SIMILAR DEVICES WHICH WILL NOT DAMAGE EITHER THE NEOPRENE OR THE CONCRETE MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER. CENTER THE NEOPRENE STRIPS ON ALL JOINTS. FOR HORIZONTAL JOINTS, SECURE THE HORIZONTAL NEOPRENE STRIP BY USING A SINGLE LINE OF FASTENERS, STARTING AT 6 INCHES (+/-) FROM THE TOP OF THE NEOPRENE STRIP. FOR THE VERTICAL JOINTS SECURE THE VERTICAL NEOPRENE STRIP BY USING A SINGLE VERTICAL LINE OF FASTENERS, STARTING AT 6 INCHES (+/-) FROM THE VERTICAL EDGE OF THE NEOPRENE STRIP NEAREST TO THE CENTERLINE OF ROADWAY. FOR VERTICAL JOINTS, INSTALL 2 ADDITIONAL FASTENERS AT 6 INCHES CENTER TO CENTER ACROSS THE TOP HALF OF THE NEOPRENE STRIP ON THE SIDE OF THE NEOPRENE STRIP AS THE SINGLE VERTICAL ROW OF FASTENERS.

THE VERTICAL NEOPRENE STRIPS SHOULD COMPLETELY OVERLAP THE HORIZONTAL STRIPS. LAPS IN THE LENGTH OF THE HORIZONTAL STRIPS DUE TO MATERIAL MANUFACTURING SHALL BE AT LEAST ONE FOOT IN LENGTH, IF NOT VULCANIZED OR ADHESIVED, OR 6 INCHES IN LENGTH IF THE LAP IS VULCANIZED OR ADHESIVED. NO LAPS ARE ACCEPTABLE IN VERTICALLY INSTALLED NEOPRENE STRIPS.

THE EXPANDED POLYSTYRENE SHALL BE INSTALLED AS DETAILED IN THE PLANS. IN ADDITION, INSTALL A 3 INCH THICKNESS OF POLYSTYRENE SHEETING BETWEEN THE ABUTMENT BACK WALL AND THE POROUS BACKFILL AT LOCATIONS AS SHOWN IN THE PLANS.

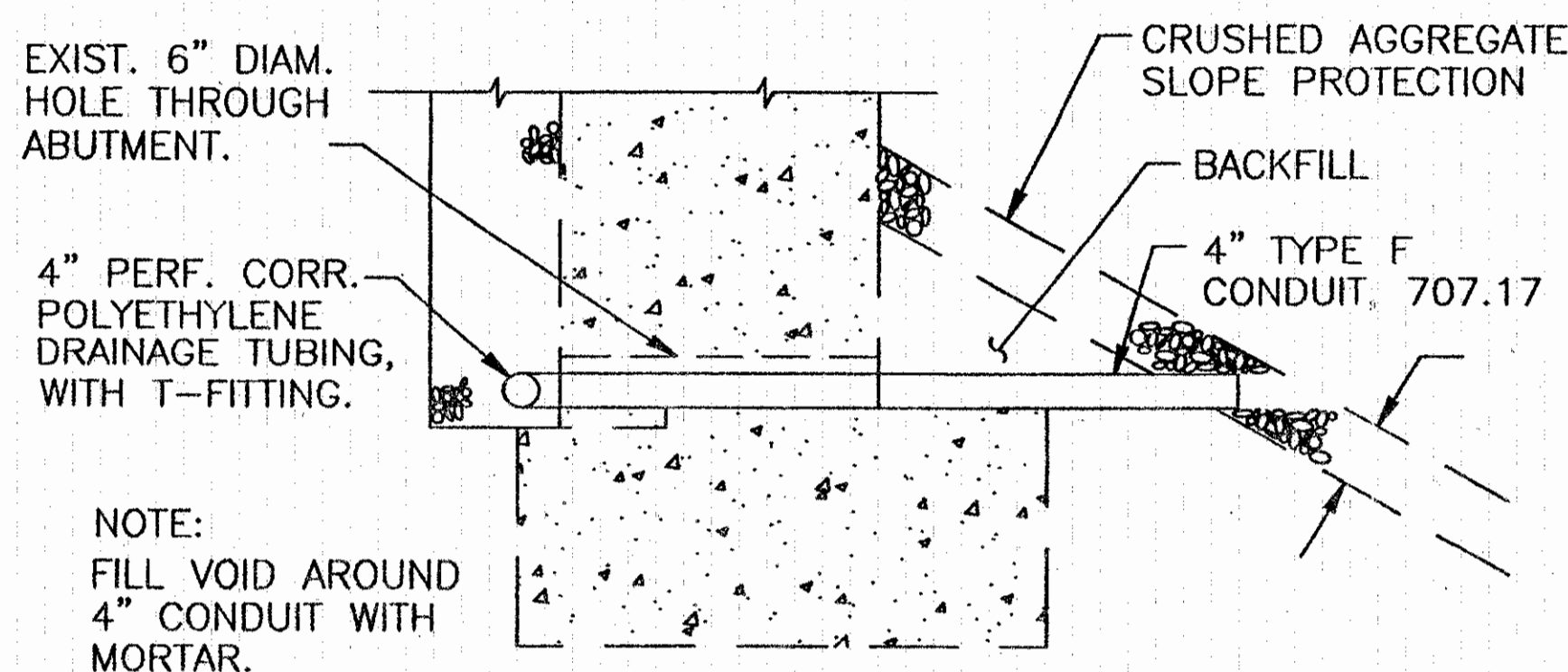
PAYMENT FOR LABOR, MATERIALS AND INSTALLATION OF THESE ITEMS SHALL BE INCLUDED IN ITEM 511 CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN.

## ITEM 518 STRUCTURE DRAINAGE, MISC.: FOOTER DRAIN REPLACEMENT:

THIS ITEM SHALL BE PERFORMED AT ALL EXISTING FOOTER DRAIN LOCATIONS ON STRUCTURES MAH-76-0701 L&R. THIS ITEM SHALL INCLUDE THE REMOVAL OF THE EXISTING PIPE, PLACEMENT OF A NEW NON-PERFORATED 4" TYPE F CONDUIT, 707.17, STANDARD T-FITTING, MORTAR, BACKFILL, AND SLOPE PROTECTION.

ALL MATERIALS, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK AS DETAILED ARE INCLUDED UNDER ITEM 518, L.F., STRUCTURE DRAINAGE MISC.: FOOTER DRAIN REPLACEMENT.

A QUANTITY OF 140 L.F. HAS BEEN INCLUDED ON SHEET (89/121) FOR THIS ITEM.



FOOTER DRAIN REPLACEMENT DETAIL

## ITEM 518 POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN:

THIS ITEM SHALL INCLUDE THE REMOVAL AND DISPOSAL OF EXISTING POROUS BACKFILL AND THE PLACING OF NEW POROUS BACKFILL, TO THE LIMITS SHOWN ON THE PLANS. PRIOR TO PLACING POROUS BACKFILL, FILTER FABRIC MEETING THE REQUIREMENTS OF 712.09, TYPE A, SHALL BE INSTALLED BETWEEN THE POROUS BACKFILL AND EXISTING GROUND.

FOR STRUCTURES MAH-76-0701 PERFORATED CORRUGATED POLYETHYLENE DRAINAGE TUBING MEETING THE REQUIREMENTS OF 707.15 SHALL BE INSTALLED AS SHOWN ON THE PLANS AND SHALL EXTEND TO THE HORIZONTAL LIMITS SHOWN ON THE PLANS. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 518. PAYMENT FOR THE ABOVE WORK, INCLUDING EXCAVATION, POROUS BACKFILL, FILTER FABRIC, DRAINAGE TUBING AND ALL INCIDENTALS SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 518 POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN.

## ASBESTOS NOTIFICATION

AN ASBESTOS SURVEY OF THE IR 76 BRIDGES OVER CONRAIL AND MORRISON RUN AND OVER SR 45 SCHEDULED FOR RENOVATION WERE CONDUCTED BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST. THE SURVEYS DETERMINED THAT NO ASBESTOS IS PRESENT ON THE BRIDGES.

A COPY OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NOTIFICATION OF DEMOLITION AND RENOVATION FORM, PARTIALLY COMPLETED AND SIGNED BY THE BRIDGE OWNER, WILL BE PROVIDED TO THE SUCCESSFUL BIDDER. THE CONTRACTOR SHALL COMPLETE THE FORM AND SUBMIT IT TO:

MAHONING-TRUMBULL AIR POLLUTION CONTROL  
9 WEST FRONT ST. ROOM 107  
YOUNGSTOWN, OHIO 44503  
ROBERT RAMHOFF, DIRECTOR  
(330) 744-1928  
FAX: (330) 744-1928

AT LEAST TEN (10) WORKING DAYS PRIOR TO THE START OF THE DEMOLITION OF THE BRIDGE. THE CONTRACTOR SHALL PROVIDE A COPY OF THE COMPLETED FORM TO THE ENGINEER. INFORMATION REQUIRED ON THE FORM WILL INCLUDE: 1) THE CONTRACTORS NAME AND ADDRESS, 2) THE SCHEDULED DATES FOR THE START AND COMPLETION OF THE BRIDGE REMOVAL AND 3) A DESCRIPTION OF THE PLANNED DEMOLITION WORK AND THE METHOD(S) TO BE USED. A COPY OF THE OEPA FORM IS AVAILABLE FOR INSPECTION AT THE ODOT DISTRICT 4 OFFICE, 705 OAKWOOD STREET, RAVENNA, OHIO, 44266.

BASIS FOR PAYMENT-THE CONTRACTOR SHALL FURNISH ALL FEES, LABOR, AND MATERIAL NECESSARY TO COMPLETE AND SUBMIT THE OEPA NOTIFICATION FORM. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN ITEM 202-STRUCTURE REMOVED OVER 20 FT SPAN, AS PER PLAN.

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						
<b>BRIDGE NOTES</b>						
BRIDGE NO. MAH-76-0701 L & R BRIDGE NO. MAH-76-0761 L & R						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	



MAH-76/80-6.95/0.00

**BRIDGE ESTIMATED QUANTITIES MAH-76-0701 LEFT SFN 5003008**

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	WING-WALLS	ABUT.S	PIERS	SUPER.	GEN.	SEE SHEET NO.
202	11203	LUMP		PORTIONS OF STRUCTURES REMOVED OVER 20 FOOT SPAN, AS PER PLAN					LUMP	87
511	46000	2	CU.YD.	CLASS C CONCRETE	2					
511	32203	368	CU.YD.	CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN				368		88
516	44101	12	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (8-1/2"x12"x2-2/3") AND LOAD PLATE (10-3/4"x13"x1-1/2")(NEOPRENE), AS PER PLAN				12		88,107
516	46900	18	EACH	BEARING DEVICE, MISC.: PIER BEARING SEAT MODIFICATIONS			18			107
516	47001	LUMP		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN				LUMP		87
518	21201	48	CU.YD.	POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN		48				88
518	62100	70	LIN.FT.	STRUCTURE DRAINAGE, MISC.: FOOTER DRAIN REPLACEMENT		70				88
815	00050	13081	SQ.FT.	SURFACE PREPARATION OF EXISTING STEEL, SYSTEM OZEU				13081		
815	00056	13081	SQ.FT.	FIELD PAINTING OF EXISTING STEEL, PRIME COAT, SYSTEM OZEU				13081		
815	00060	13081	SQ.FT.	FIELD PAINTING OF EXISTING STEEL, INTERMEDIATE COAT, SYSTEM OZEU				13081		
815	00066	13081	SQ.FT.	FIELD PAINTING OF EXISTING STEEL, FINISH COAT, SYSTEM OZEU				13081		
815	00500	6	LIN.FT.	CAULKING				6		
815	00504	54	MAN HOUR	GRINDING FINIS, TEARS, SLIVERS				54		
863	20000	3228	EACH	WELDED STUD SHEAR CONNECTORS				3228		
863	10000	LUMP		STRUCTURAL STEEL MEMBERS, MISCELLANEOUS LEVEL FABRICATION				LUMP		88,108
863	10020	LUMP		STRUCTURAL STEEL MEMBERS, LEVEL ONE (1) FABRICATION				LUMP		88,108
SPECIAL	51267510	1024	SQ.YD.	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (SEE PROPOSAL NOTE)			528	496		
SPECIAL	51911502	250	SQ.FT.	PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR (SEE PROPOSAL NOTE)		250				
SPECIAL	53000200	LUMP		STRUCTURE, MISC.: REMOVAL OF WELDED ATTACHMENTS TO EXISTING BEAMS				LUMP		

**BRIDGE ESTIMATED QUANTITIES MAH-76-0701 RIGHT SFN 5003032**

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	WING-WALLS	ABUT.S	PIERS	SUPER.	GEN.	SEE SHEET NO.
202	11203	LUMP		PORTIONS OF STRUCTURES REMOVED OVER 20 FOOT SPAN, AS PER PLAN					LUMP	87
511	46000	2	CU.YD.	CLASS C CONCRETE	2					
511	32203	368	CU.YD.	CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN				368		88
516	44101	12	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (8-1/2"x12"x2-2/3") AND LOAD PLATE (10-3/4"x13"x1-1/2")(NEOPRENE), AS PER PLAN				12		88,107
516	46900	18	EACH	BEARING DEVICE, MISC.: PIER BEARING SEAT MODIFICATIONS			18			107
516	47001	LUMP		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN				LUMP		87
518	21201	48	CU.YD.	POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN		48				88
518	62100	70	LIN.FT.	STRUCTURE DRAINAGE, MISC.: FOOTER DRAIN REPLACEMENT		70				88
815	00050	13081	SQ.FT.	SURFACE PREPARATION OF EXISTING STEEL, SYSTEM OZEU				13081		
815	00056	13081	SQ.FT.	FIELD PAINTING OF EXISTING STEEL, PRIME COAT, SYSTEM OZEU				13081		
815	00060	13081	SQ.FT.	FIELD PAINTING OF EXISTING STEEL, INTERMEDIATE COAT, SYSTEM OZEU				13081		
815	00066	13081	SQ.FT.	FIELD PAINTING OF EXISTING STEEL, FINISH COAT, SYSTEM OZEU				13081		
815	00500	6	LIN.FT.	CAULKING				6		
815	00504	54	MAN HOUR	GRINDING FINIS, TEARS, SLIVERS				54		
863	20000	3228	EACH	WELDED STUD SHEAR CONNECTORS				3228		
863	10000	LUMP		STRUCTURAL STEEL MEMBERS, MISCELLANEOUS LEVEL FABRICATION				LUMP		88,108
863	10020	LUMP		STRUCTURAL STEEL MEMBERS, LEVEL ONE (1) FABRICATION				LUMP		88,108
SPECIAL	51267510	1024	SQ.YD.	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (SEE PROPOSAL NOTE)			528	496		
SPECIAL	51911502	310	SQ.FT.	PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR (SEE PROPOSAL NOTE)		310				
SPECIAL	53000200	LUMP		STRUCTURE, MISC.: REMOVAL OF WELDED ATTACHMENTS TO EXISTING BEAMS				LUMP		

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

**ESTIMATED QUANTITIES**

BRIDGE NO. MAH-76-0701 L & R  
OVER CONRAIL R.R.



MAH-76/80-6.95/0.00

BRIDGE ESTIMATED QUANTITIES MAH-76-0761 LEFT SFN 5003067									
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	ABUT.S	PIERS	SUPER.	GEN.	SEE SHEET NO.
202	11203	LUMP		PORTIONS OF STRUCTURES REMOVED OVER 20 FOOT SPAN, AS PER PLAN				LUMP	87
511	45700	4	CU.YD.	CLASS C CONCRETE, ABUTMENT	4				
511	32202	520	CU.YD.	CLASS S CONCRETE, SUPERSTRUCTURE			520		
518	21201	48	CU.YD.	POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN	28				88
SPECIAL	51267510	749	SQ.YD.	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (SEE PROPOSAL NOTE)		349	400		
SPECIAL	51911502	40	SQ.FT.	PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR (SEE PROPOSAL NOTE)	30	10			

BRIDGE ESTIMATED QUANTITIES MAH-76-0761 RIGHT SFN 5003091									
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	ABUT.S	PIERS	SUPER.	GEN.	SEE SHEET NO.
202	11203	LUMP		PORTIONS OF STRUCTURES REMOVED OVER 20 FOOT SPAN, AS PER PLAN				LUMP	87
511	45700	5	CU.YD.	CLASS C CONCRETE, ABUTMENT	5				
511	32202	520	CU.YD.	CLASS S CONCRETE, SUPERSTRUCTURE			520		
518	21201	48	CU.YD.	POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN	28				88
SPECIAL	51267510	749	SQ.YD.	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (SEE PROPOSAL NOTE)		349	400		

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						
ESTIMATED QUANTITIES						
BRIDGE NO. MAH-76-0761 L & R OVER S.R. 45						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	3/98



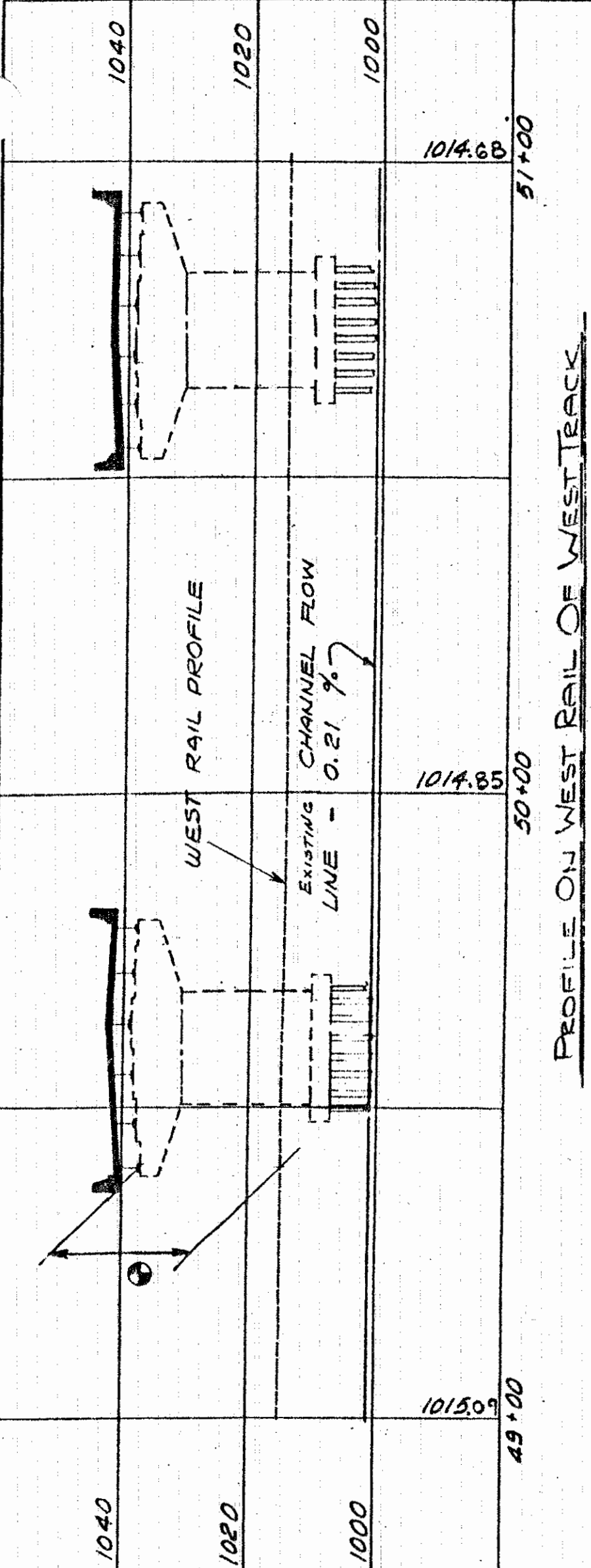
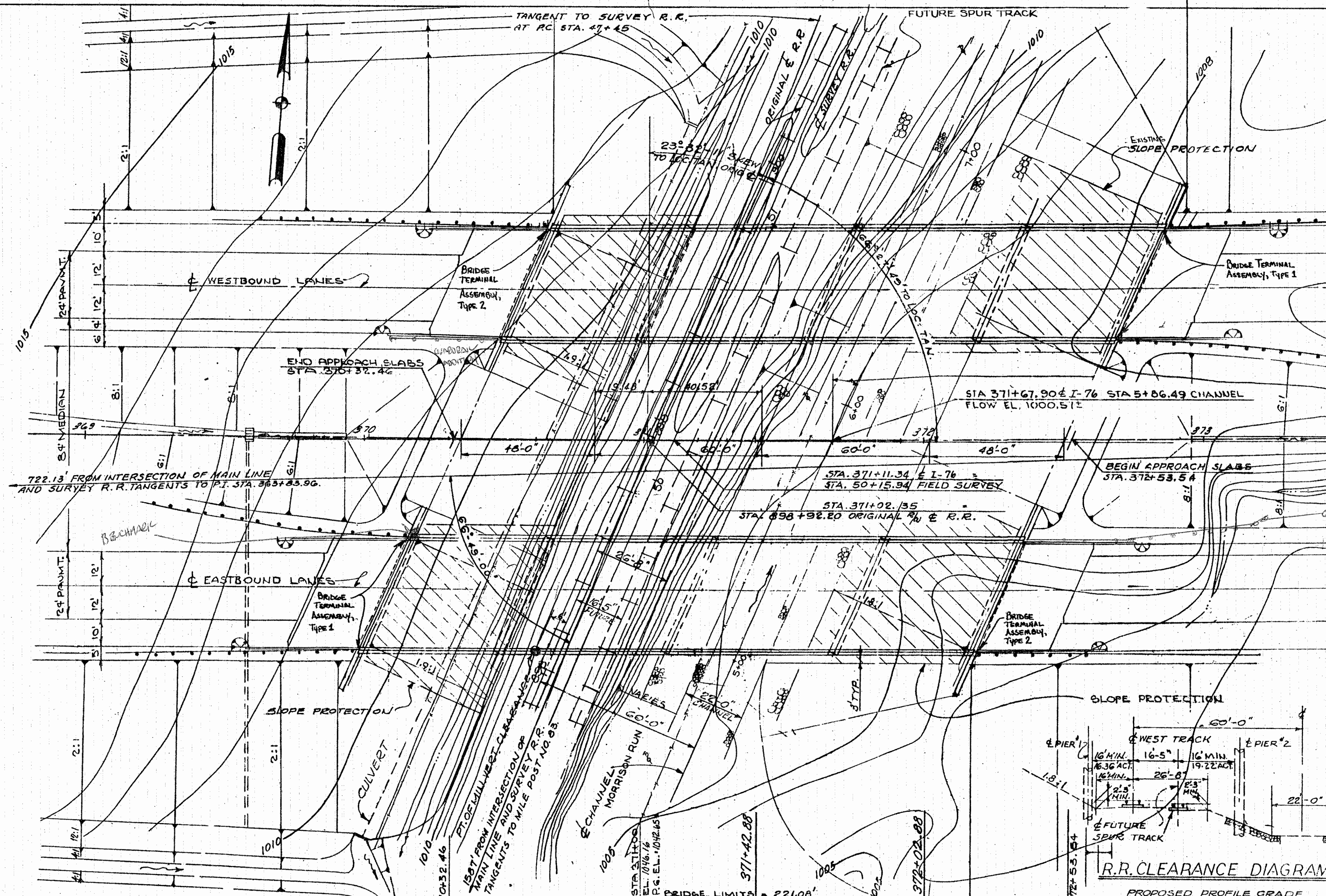
F.H.W.A. REGION	STATE	PROJECT	FUNDS
5	OHIO		

90  
121

MAH-76/80-6.95/0.00

**DRAINAGE DATA**  
 DRAINAGE AREA = 1845 ACRES.  
 OPENING REQUIRED = 174 SQ. FT.  
 OPENING PROVIDED = 174 SQ. FT.  
 EST. 50YR. HIGH WATER = 1006.07  
 50 YR. FREQUENCY = 940 C.F.S.

RAILROAD STRUCTURE LOCATION AND CLASSIFICATION	
RAILROAD	CONRAIL
R/R LINE ID	LORDSTOWN SECONDARY
R/R MILEPOST	0018.87
MAP #	544 983 K

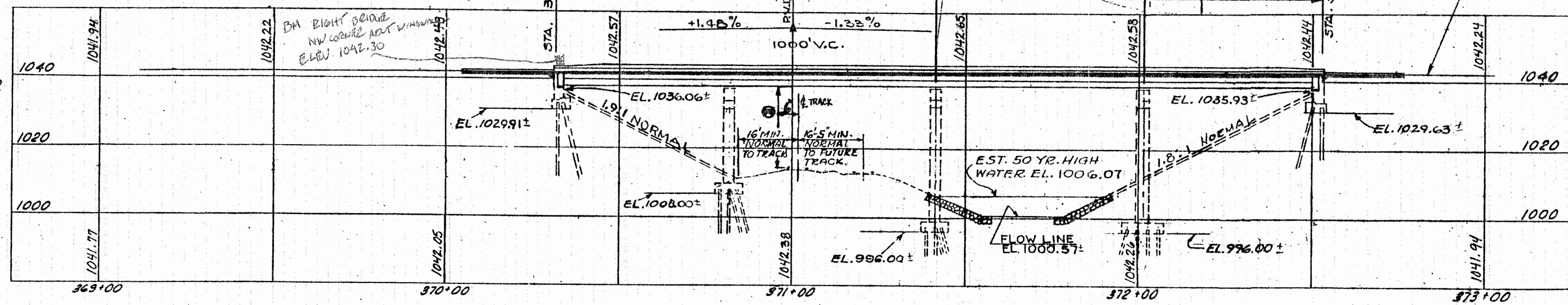


VERTICAL CLEARANCE:  
 DESIGN = 23.21'  
 ACTUAL = 23.36'

**CURVE DATA**

**I-76**  
 P.I. STA. 363+83.92 Δ = 9°-11'  
 Δ = 7°-31'-36" LT. D = 1°-00'-00"  
 D = 00°-15'-00" L = 913.35'  
 T = 1507.50' R = 5729.65'  
 L = 3010.67' P.C. STA. 396+56.00  
 E = 49.53' P.T. STA. 905+74.35  
 R = 22918.32'

**FIELD SURVEY**  
 Δ = 10°-00'-00"  
 D = 1°-00'-00"  
 L = 1000.00'  
 R = 5729.58'  
 P.C. STA. 47+45.00  
 P.T. STA. 57+45.00



**EXISTING STRUCTURE**  
 STRUCTURE FILE NO. 5003008  
 5003032  
 TYPE: CONTINUOUS STEEL BEAMS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURES.  
 SPANS: 48'-60'-60'-48' c/c BEARINGS  
 ROADWAY: 40'-0" f/i PARAPETS  
 LOAD FREQUENCY: CF=2000 ADEQUATE FOR A.A.S.H.O. ALTERNATE LOADING  
 SKEW: 23'-32'-11" BETWEEN LOCAL TANGENTS L.F.  
 WEARING SURFACE: 1" MONOLITHIC CONCRETE  
 APPROACH SLABS: 25' LONG  
 ALIGNMENT: 0'-15'-00" CURVE LT.  
 SLOPE PROTECTION: CRUSHED AGGR.

**PROPOSED STRUCTURE**  
 TYPE: CONTINUOUS STEEL BEAMS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURES.  
 SPANS: 48'-60'-60'-48' c/c BEARINGS  
 ROADWAY: 40'-0" f/i PARAPET CURBS  
 LOADING: HS20-44 CASE 1 AND ALTERNATE MILITARY LOADING  
 SKEW: 23'-32'-11" BETWEEN LOCAL TANGENTS L.F.  
 WEARING SURFACE: MONOLITHIC CONCRETE  
 APPROACH SLABS: 25' LONG (T=15")  
 ALIGNMENT: 0'-15'-00" CURVE LT.  
 SUPERELEVATION: NONE

STATE OF OHIO  
 DEPARTMENT OF HIGHWAYS  
 BUREAU OF BRIDGES

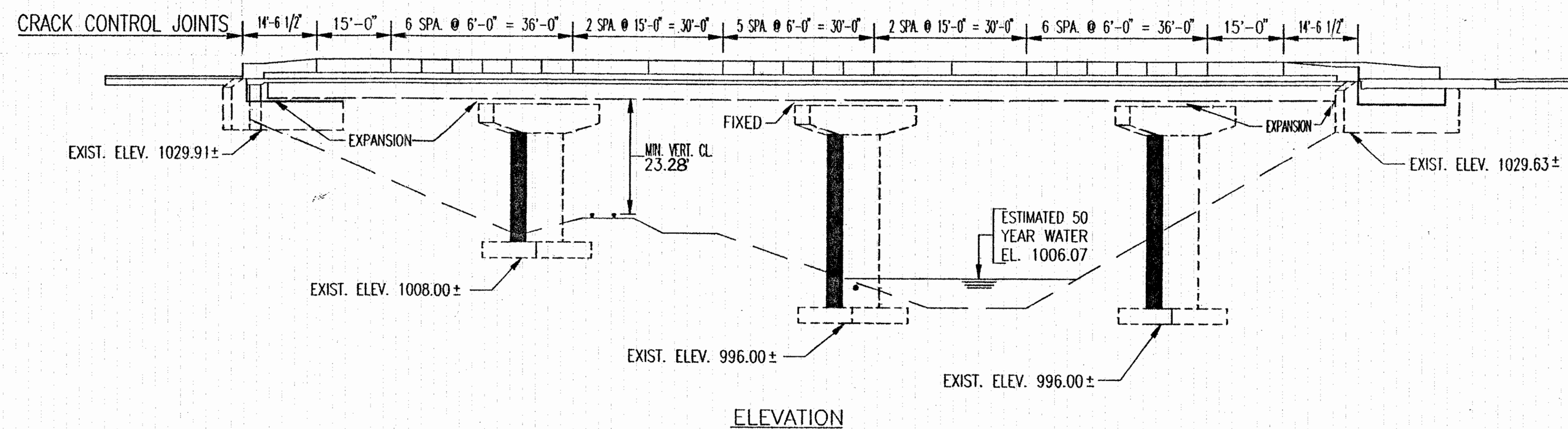
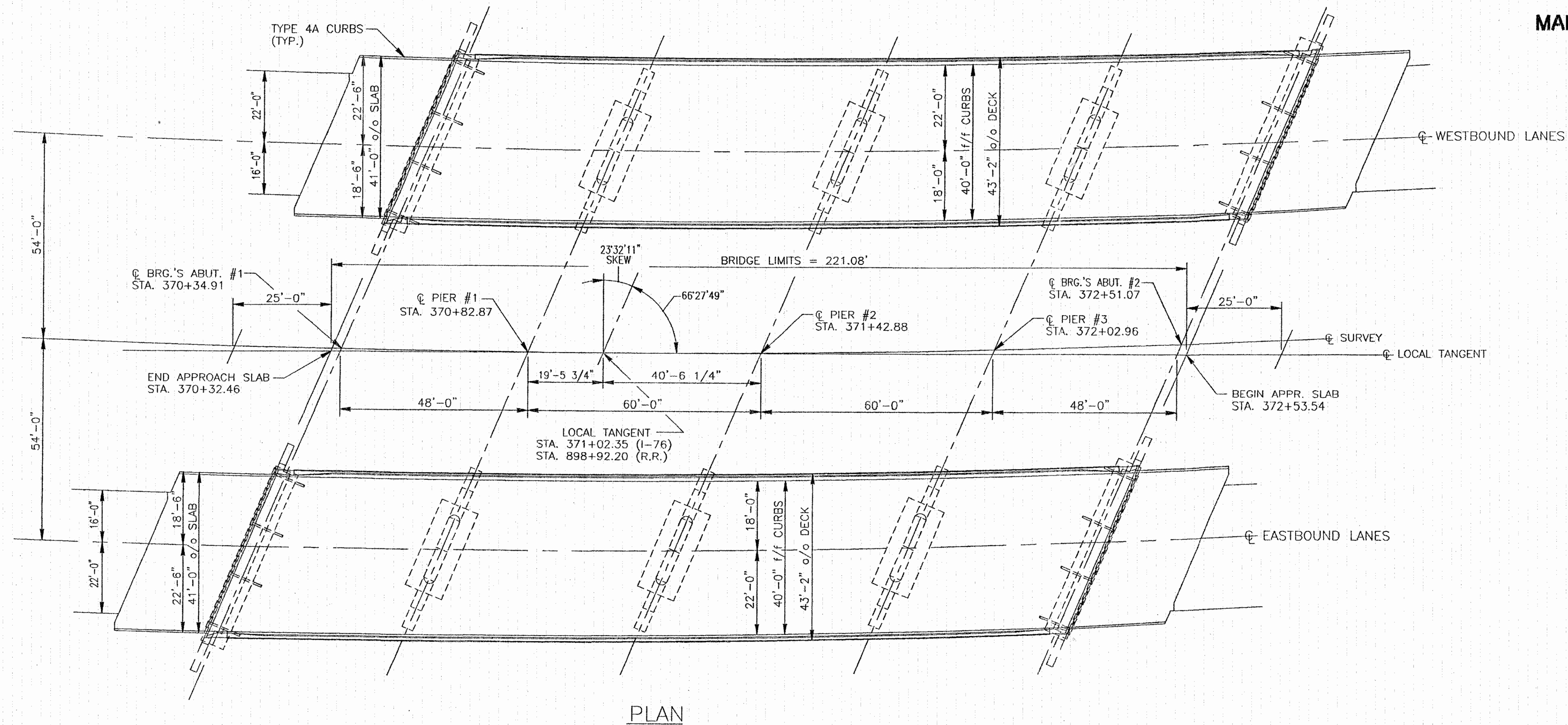
**SITE PLAN**

BRIDGE NO. MAH-76-0701 L&R  
 OVER CONRAIL R.R.  
 MAHONING COUNTY  
 STA 371+02.35

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	JWW		DES	JAM	6/5/92	



MAH-76/80-6.95/0.00



STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

2/19

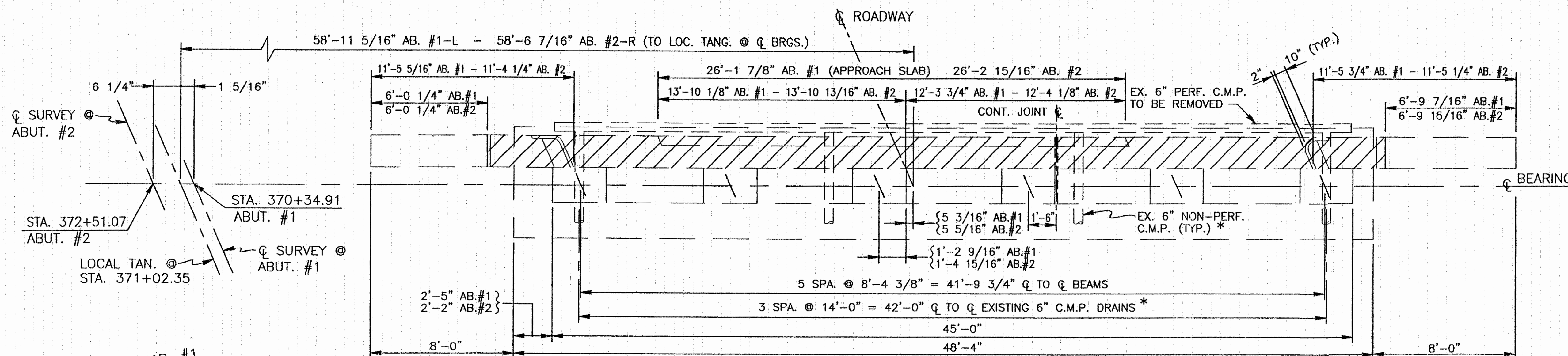
**GENERAL PLAN AND ELEVATION**

BRIDGE NO. MAH-76-0701 L&R  
OVER CONRAIL RAILROAD

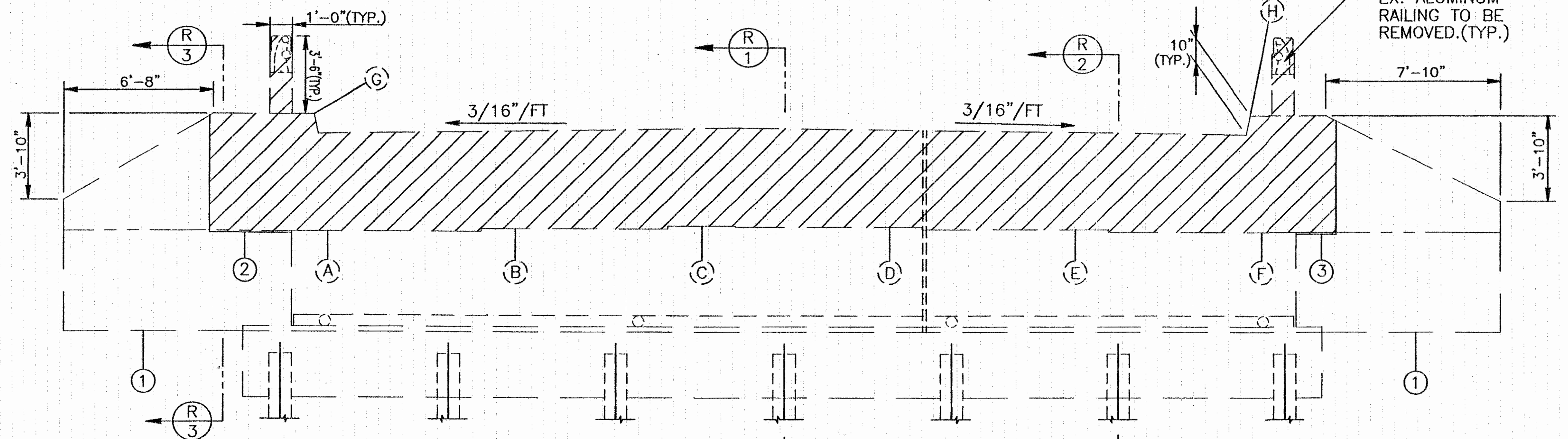
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	2/95



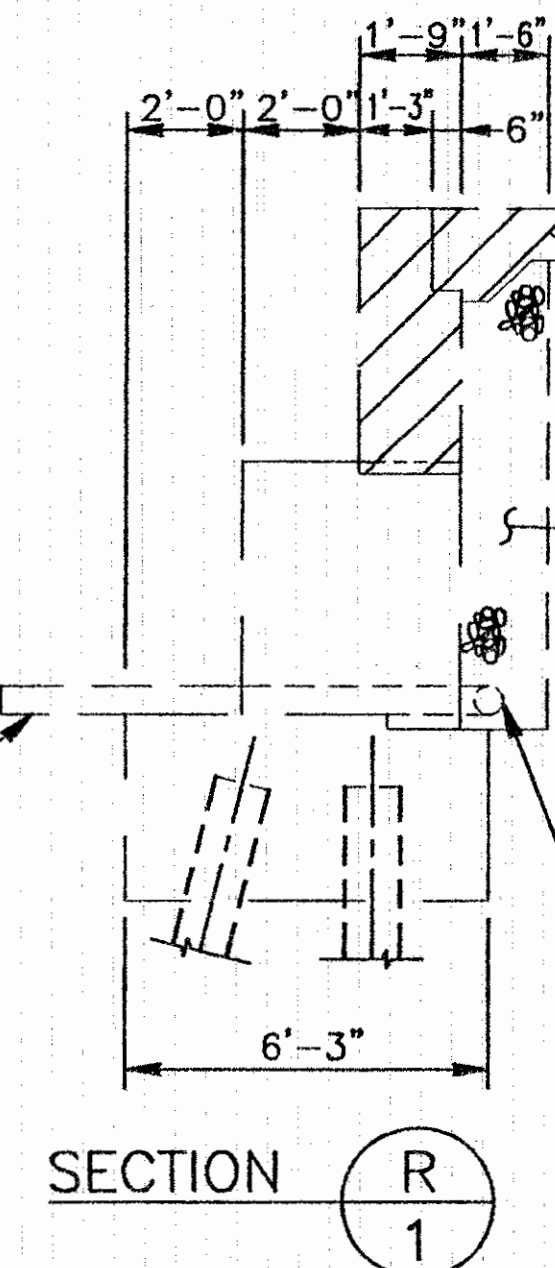
MAH-76/80-6.95/0.00



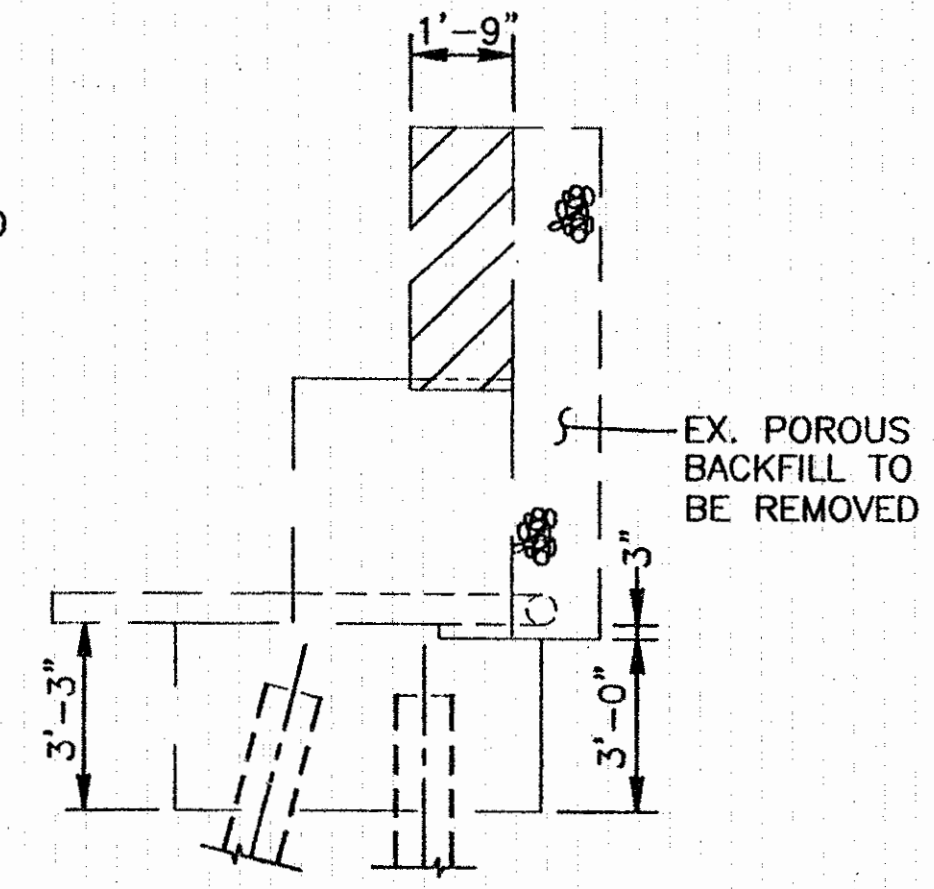
PLAN ABUTMENT NO. 2 - RIGHT SHOWN  
ABUTMENT NO. 1 - LEFT SIMILAR EXCEPT AS NOTED



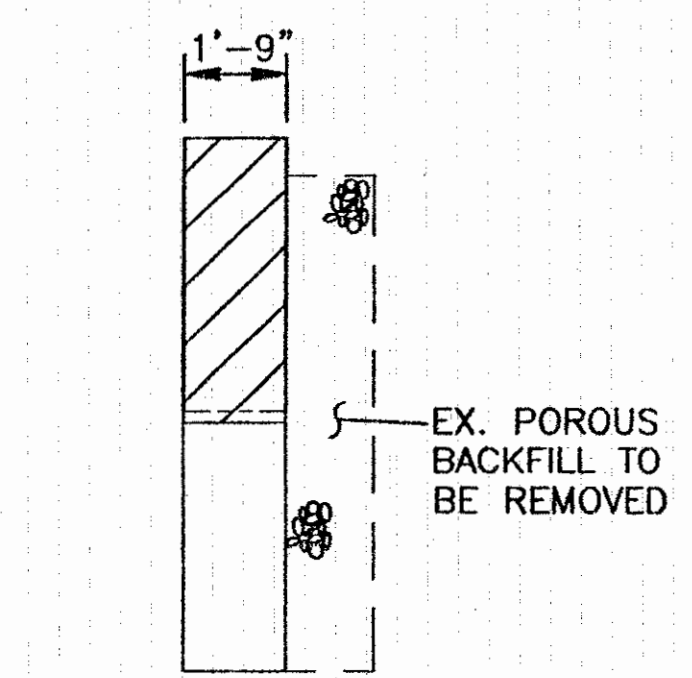
ELEVATION



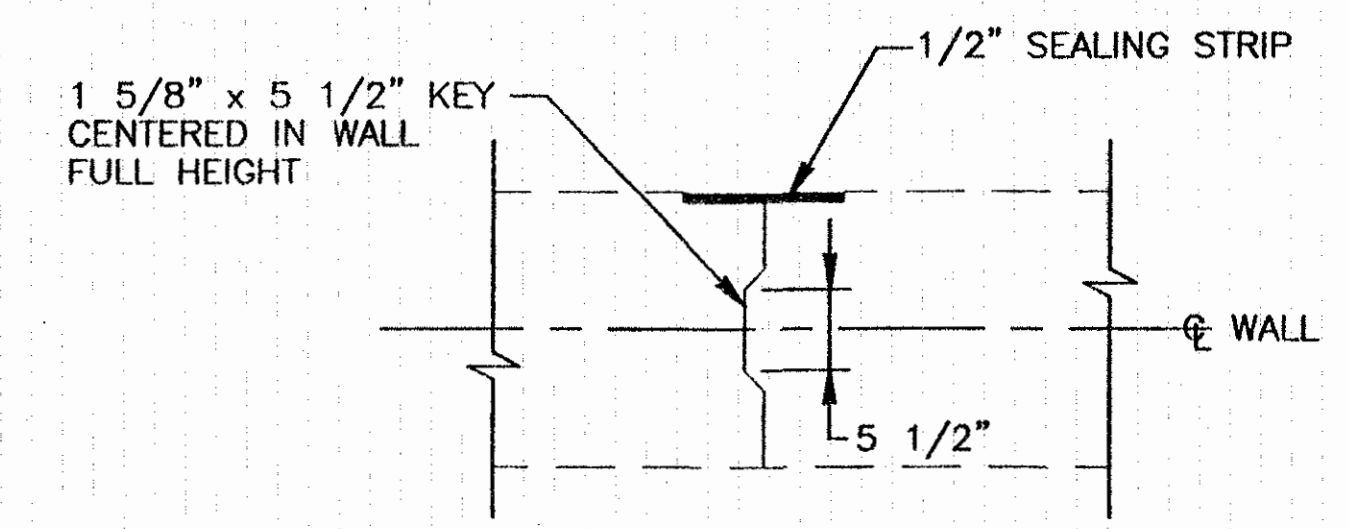
SECTION R-1



SECTION R-2



SECTION R-3



EXISTING CONTRACTIONAL JOINT DETAIL

EXISTING BEAM SEAT ELEVATIONS		
LOCATION	AB. #1-L	AB. #2-R
(A)	1037.66	1037.5554
(B)	1037.7678	1037.6866
(C)	1037.8889	1037.8078
(D)	1037.8103	1037.7674
(E)	1037.6871	1037.6561
(F)	1037.5861	1037.5551

EXISTING BACKWALL ELEVATIONS		
LOCATION	AB. #1-L	AB. #2-R
(G)	1042.87±	1042.81±
(H)	1042.84±	1042.79±

**LEGEND**

- CONCRETE REMOVAL AREA

AB. = ABUTMENT

C.M.P. = CORRUGATED METAL PIPE

EX. = EXISTING

NOTE: REMOVE EXISTING BACKWALL TO AN ELEVATION 1 INCH BELOW THE TOP OF EXIST. ABUTMENT OR RAISED BEAM SEAT WHICHEVER IS HIGHER.

\* FOR PROPOSED TREATMENT SEE BRIDGE NOTES SHEET 88/121.

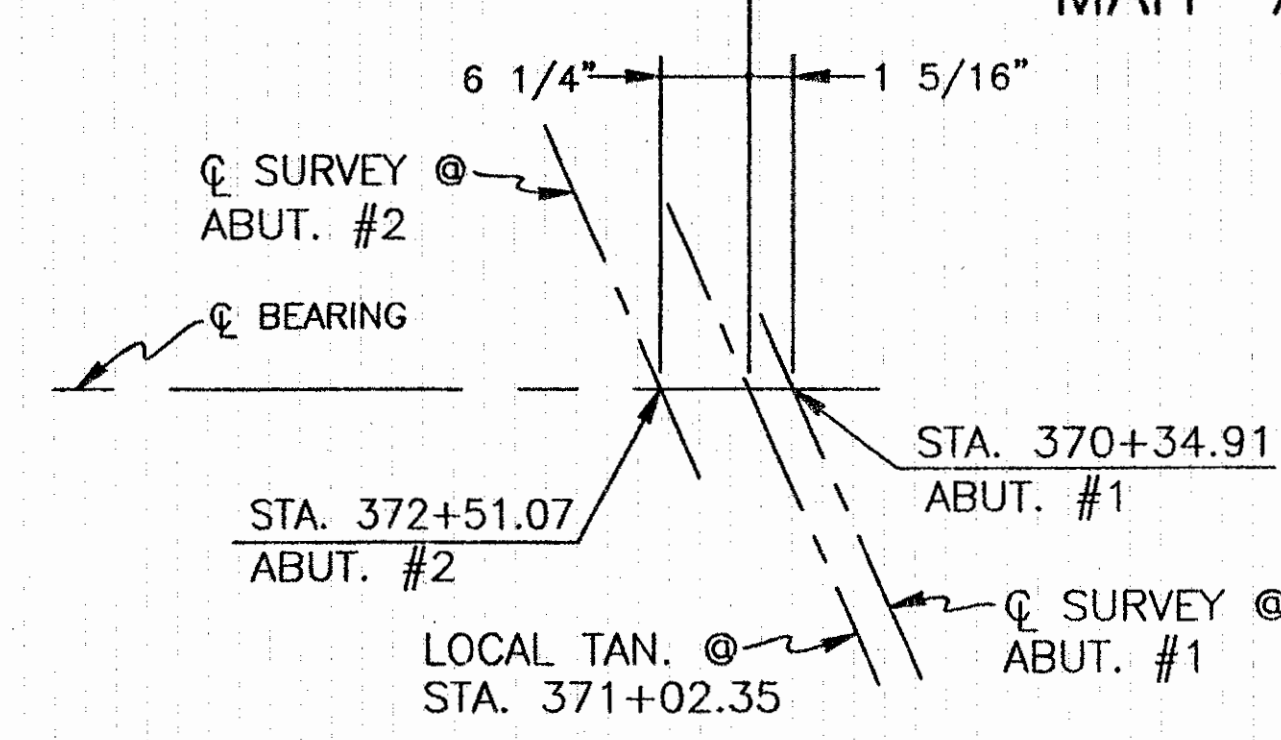
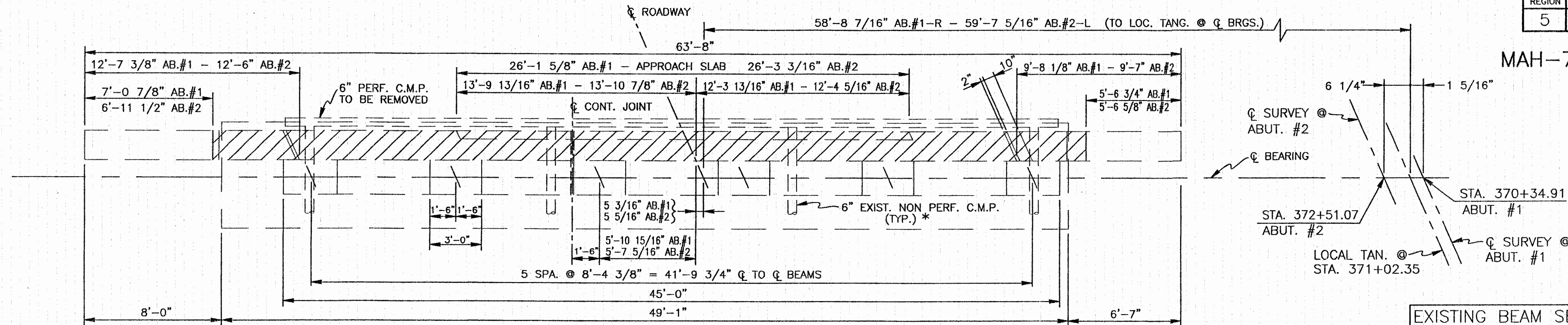
FOR KEY PLAN SEE SHEET 4/19.

FOR PROPOSED ELEVATIONS SEE TABLE SHEET 8/19.

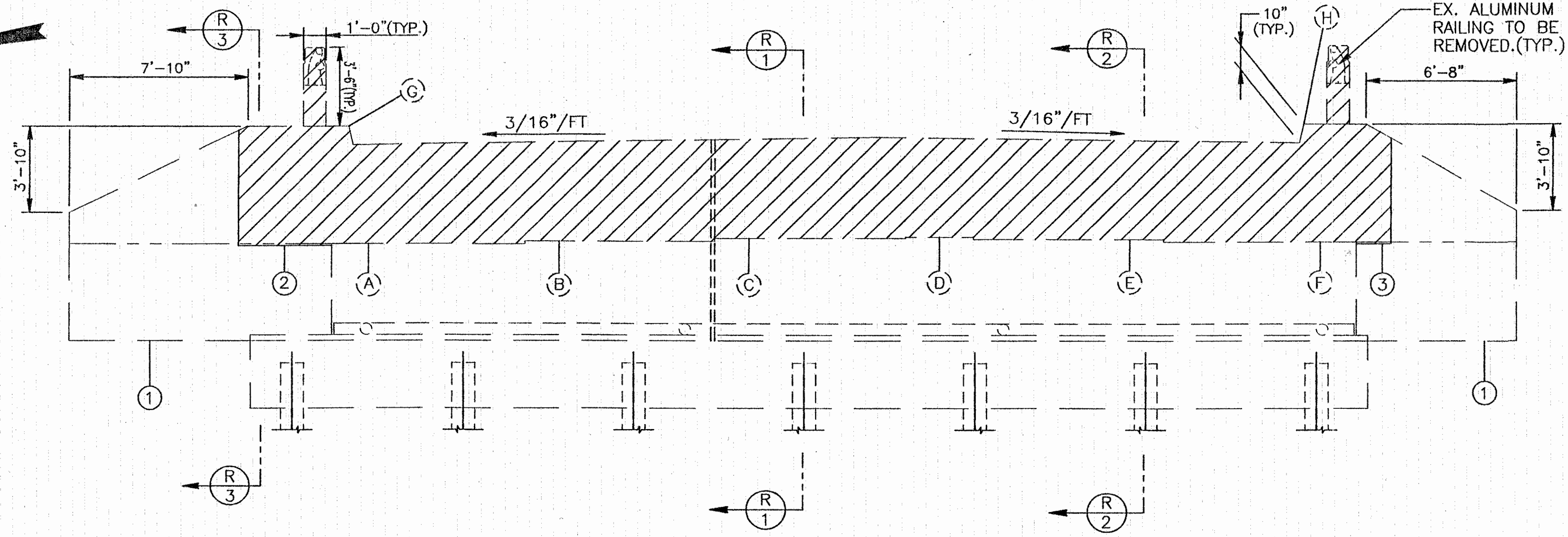
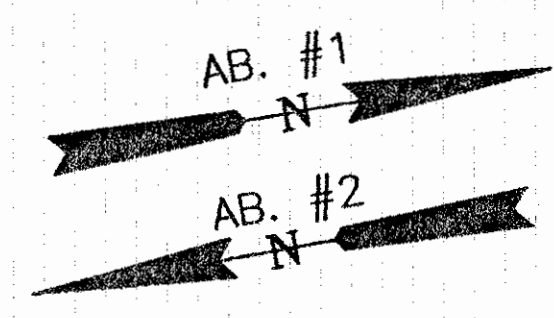
STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES				3/19	
<b>ABUTMENT REMOVAL DETAILS</b>					
BRIDGE NO. MAH-76-0701 L&R OVER CONRAIL R.R.					
DESIGNED JBH	DRAWN SMM	TRACED	CHECKED DES	REVIEWED JAM 6/5/92	DATE 8/94



MAH-76/80-6.95/0.00



PLAN ABUTMENT NO. 2 - LEFT SHOWN  
ABUTMENT NO. 1 - RIGHT SIMILAR EXCEPT AS NOTED



ELEVATION

EXISTING BEAM SEAT ELEVATIONS		
LOCATION	AB. #1-R	AB. #2-L
(A)	1037.4546	1037.3025
(B)	1037.5558	1037.4342
(C)	1037.6074	1037.5552
(D)	1037.7879	1037.8159
(E)	1037.6868	1037.5049
(F)	1037.5858	1037.4139

EXISTING BACKWALL ELEVATIONS		
(C)	1042.68 ±	1042.52 ±
(H)	1042.80 ±	1042.65 ±

**LEGEND**

- CONCRETE  
REMOVAL AREA

AB. = ABUTMENT  
C.M.P. = CORRUGATED METAL PIPE  
EX. = EXISTING

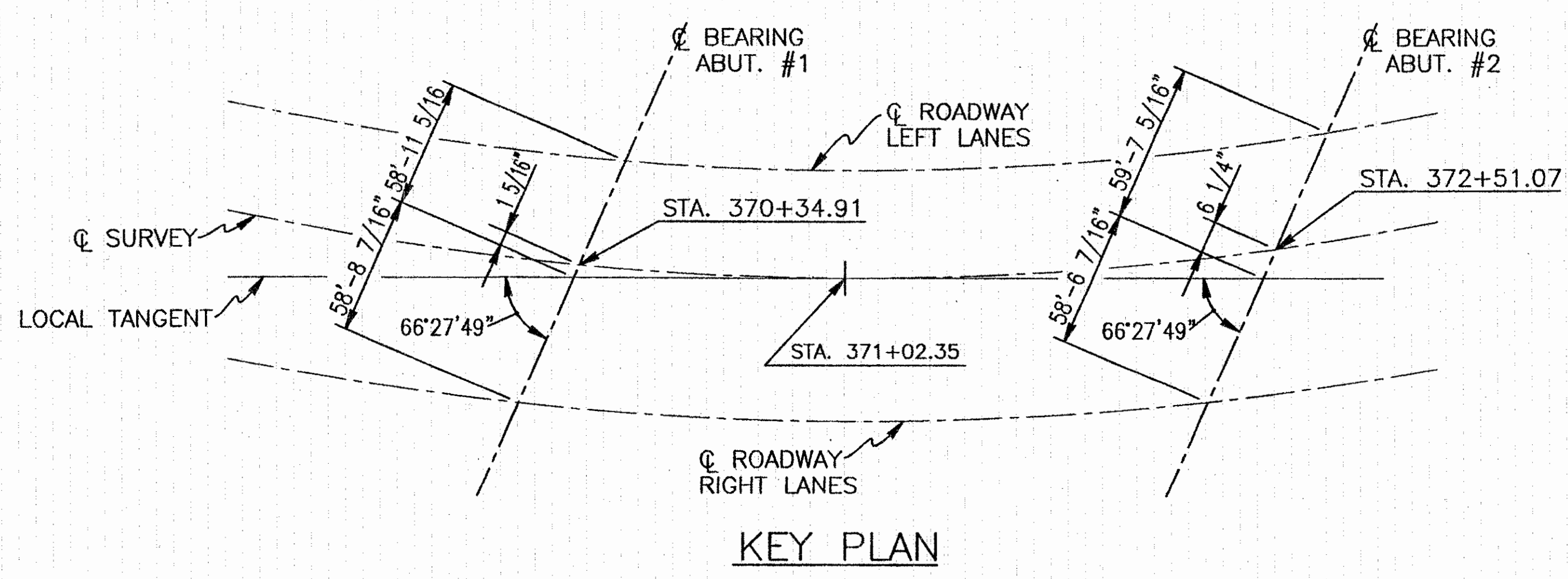
NOTE: REMOVE EXISTING BACKWALL TO AN ELEVATION 1 INCH BELOW THE TOP OF EXIST. ABUTMENT OR RAISED BEAM SEAT WHICHEVER IS HIGHER.

FOR PROPOSED ELEVATIONS SEE TABLE SHEET 8/19.

\* FOR PROPOSED TREATMENT SEE BRIDGE NOTES SHEET 88/121.

FOR EXISTING CONTRACTUAL JOINT DETAIL SEE SHEET 3/19.

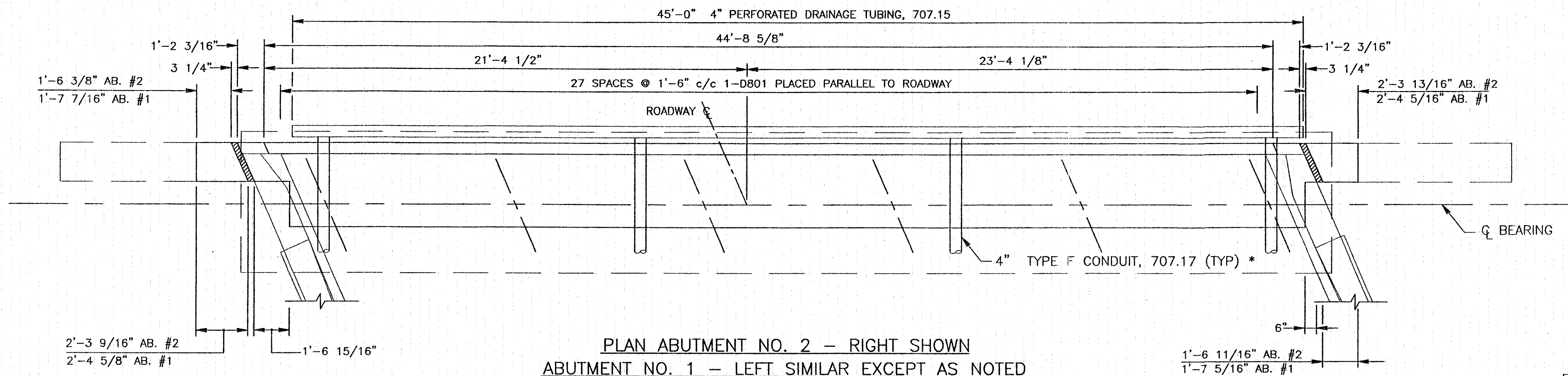
FOR SECTION DETAILS SEE SHEET 3/19.



KEY PLAN

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						4/19
<b>ABUTMENT REMOVAL DETAILS</b>						
BRIDGE NO. MAH-76-0701 L&R OVER CONRAIL R.R.						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	8/94





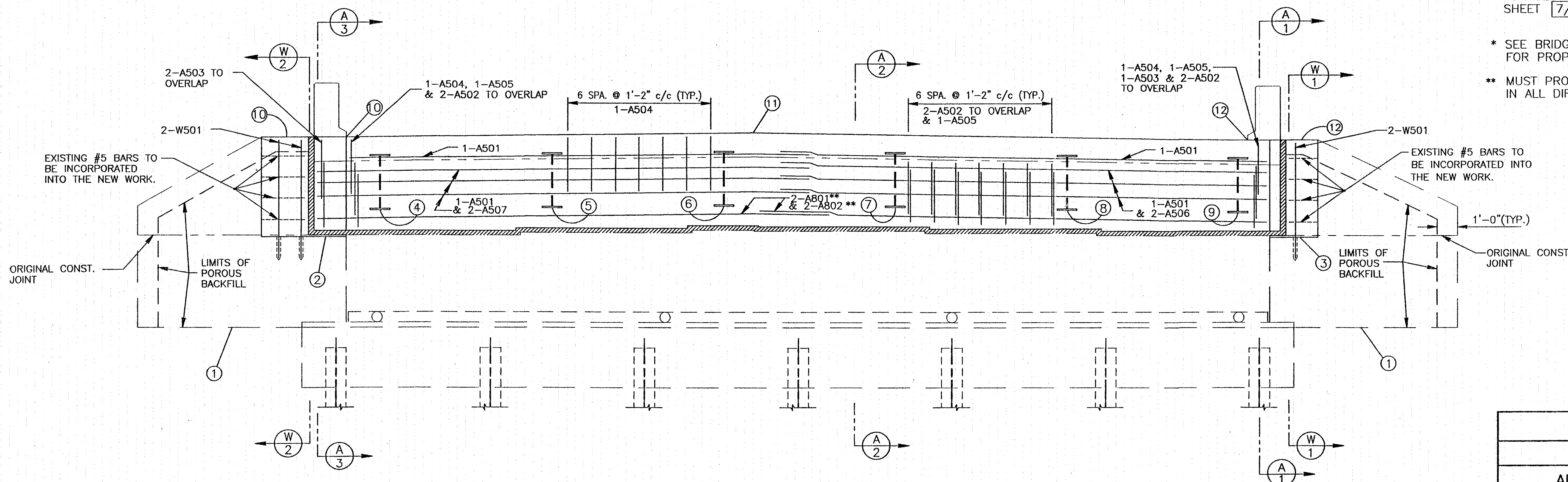
PLAN ABUTMENT NO. 2 - RIGHT SHOWN  
 ABUTMENT NO. 1 - LEFT SIMILAR EXCEPT AS NOTED

FOR ELEVATIONS SEE TABLE SHEET 8/19.

FOR SECTION DETAILS SEE SHEET 7/19 AND 8/19.

\* SEE BRIDGE NOTES SHEET 88/121 FOR PROPOSED WORK.

\*\* MUST PROVIDE 3" CLEARANCE IN ALL DIRECTIONS.



ELEVATION

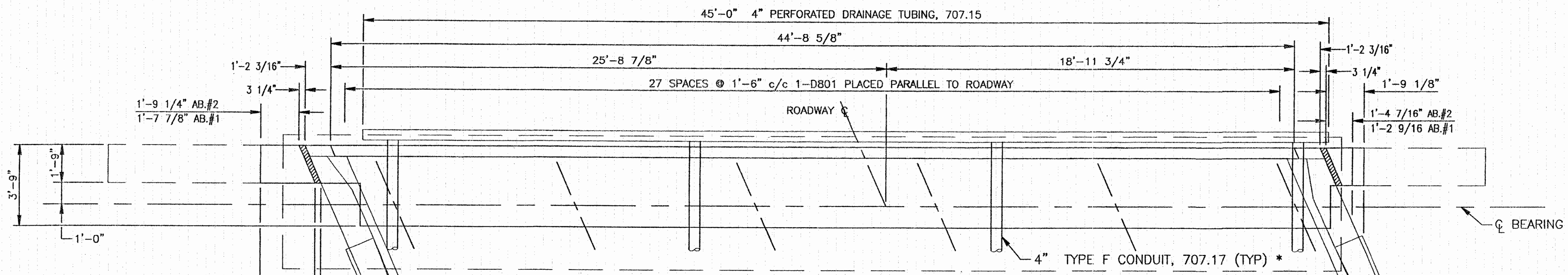
SPLICE LENGTH #8 BARS = 4'-0"  
 SPLICE LENGTH #5 BARS = 2'-6"

ABUTMENT DETAILS

BRIDGE NO. MAH-76-0701 L&R  
 OVER CONRAIL R.R.



MAH-76/80-6.95/0.00



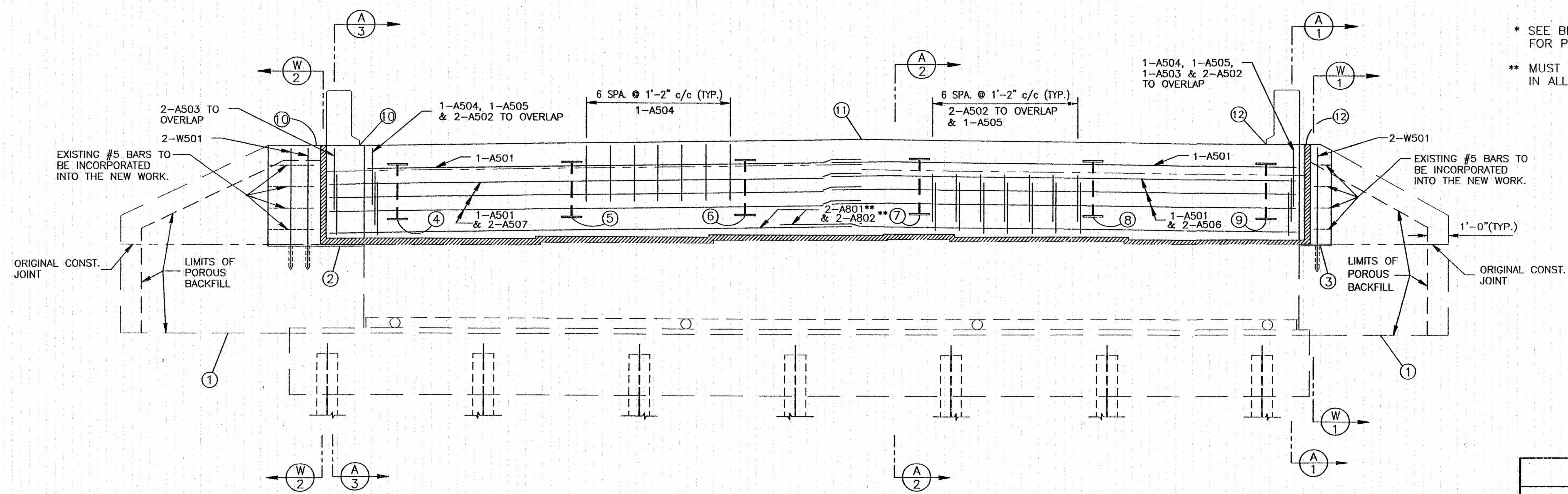
PLAN ABUTMENT NO. 2 - LEFT SHOWN  
ABUTMENT NO. 1 - RIGHT SIMILAR EXCEPT AS NOTED

FOR ELEVATIONS SEE TABLE SHEET 8/19.

FOR SECTION DETAILS SEE SHEET 7/19 AND 8/19.

\* SEE BRIDGE NOTES SHEET 88/121 FOR PROPOSED WORK.

\*\* MUST PROVIDE 3" CLEARANCE IN ALL DIRECTIONS.



ELEVATION

SPLICE LENGTH #8 BARS = 4'-0"  
SPLICE LENGTH #5 BARS = 2'-6"

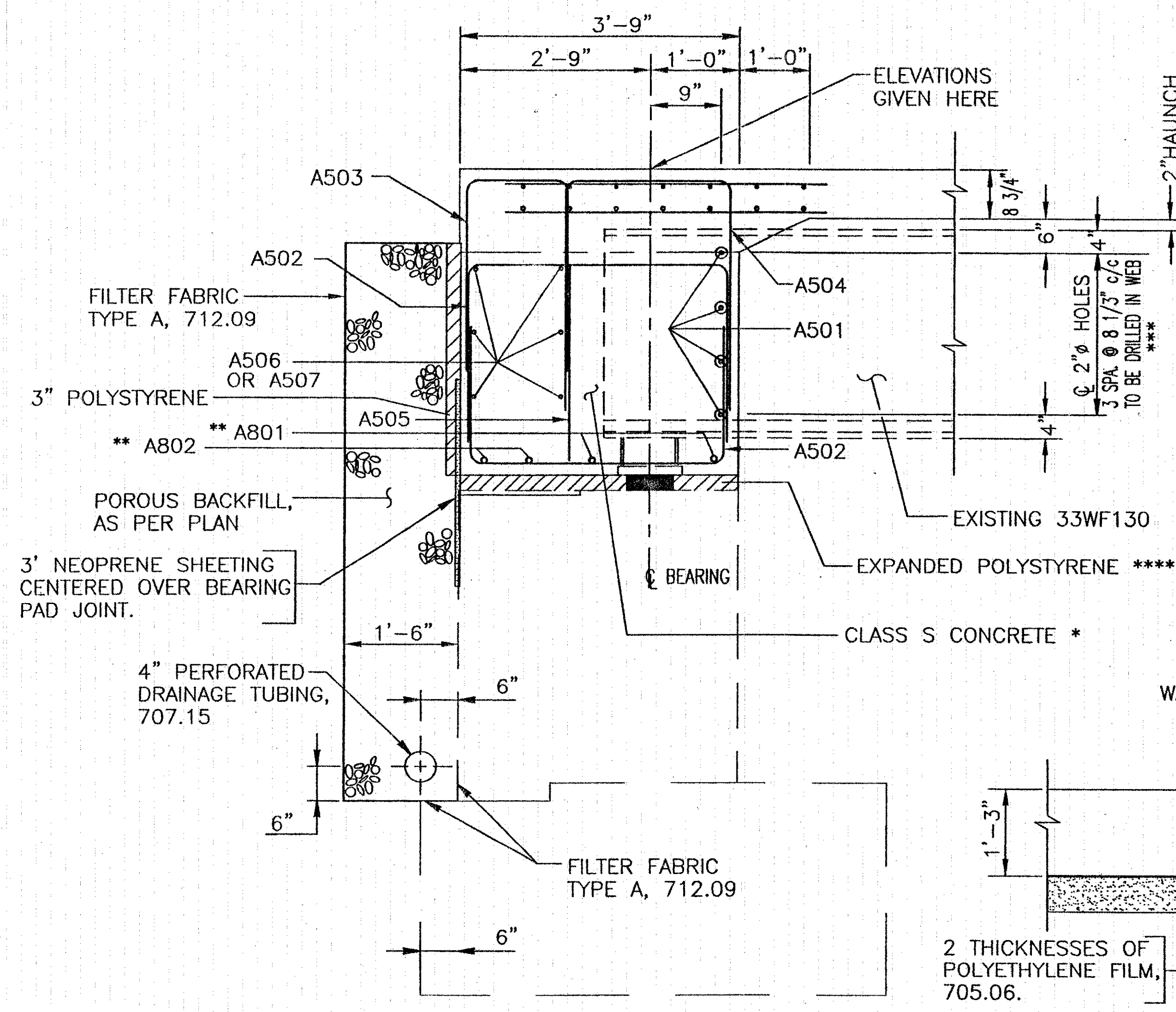
ABUTMENT DETAILS

BRIDGE NO. MAH-76-0701 L&R  
OVER CONRAIL R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	8/94



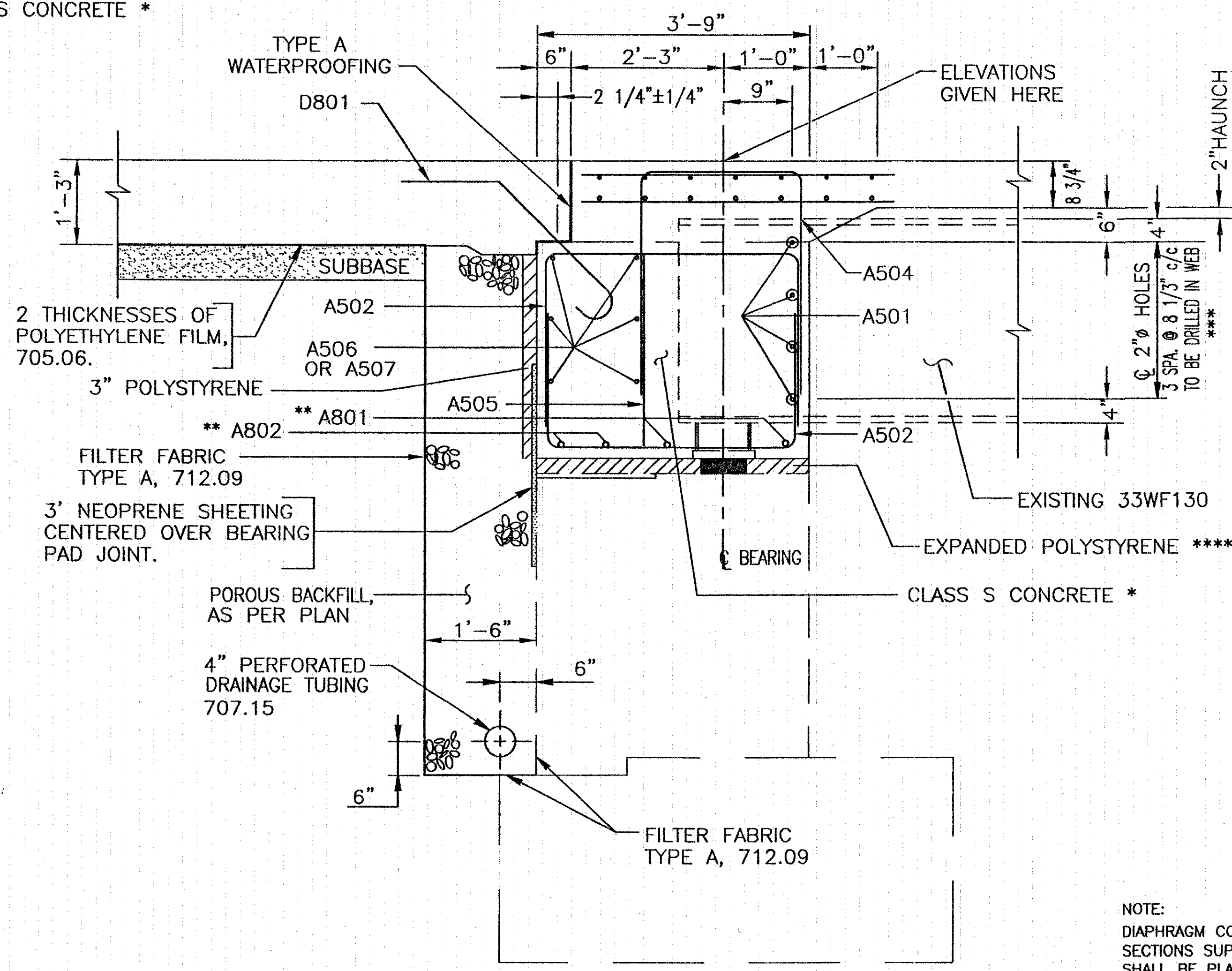
MAH-76/80-6.95/0.00



SECTION A-1

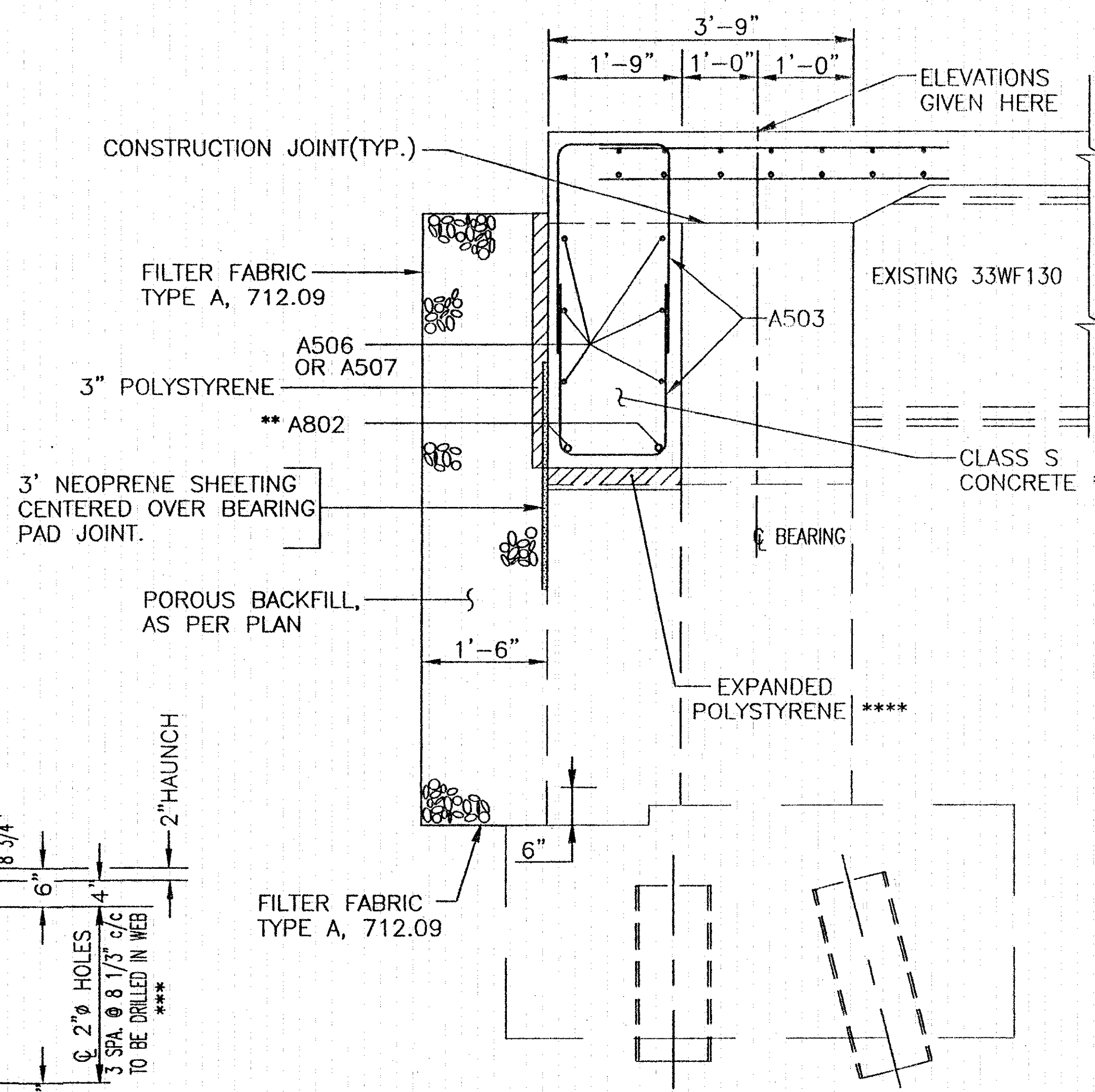
LEGEND	
	NEOPRENE SHEETING, SEE BRIDGE NOTES FOR MORE DETAILS.
	EXPANDED POLYSTYRENE
	SUBBASE

- \* CONCRETE INCLUDED IN ITEM 511, CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN FOR PAYMENT.
- \*\* MUST PROVIDE 3" CLEARANCE IN ALL DIRECTIONS.
- \*\*\* PAYMENT INCLUDED IN ITEM 511, CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN FOR DRILLING HOLES IN EXISTING BEAMS.
- \*\*\*\* EXPANDED POLYSTYRENE INCLUDED IN ITEM 511 CLASS S CONCRETE SUPERSTRUCTURE, AS PER PLAN FOR PAYMENT.



SECTION A-2

NOTE:  
DIAPHRAGM CONCRETE ENCASING THE STRUCTURAL MEMBER SECTIONS SUPPORTED IN THE SEMI-INTEGRAL ABUTMENTS SHALL BE PLACED AT LEAST 48 HOURS BEFORE THE ACTUAL DECK CONCRETE IS PLACED.



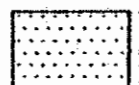
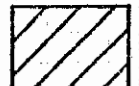

SECTION A-3

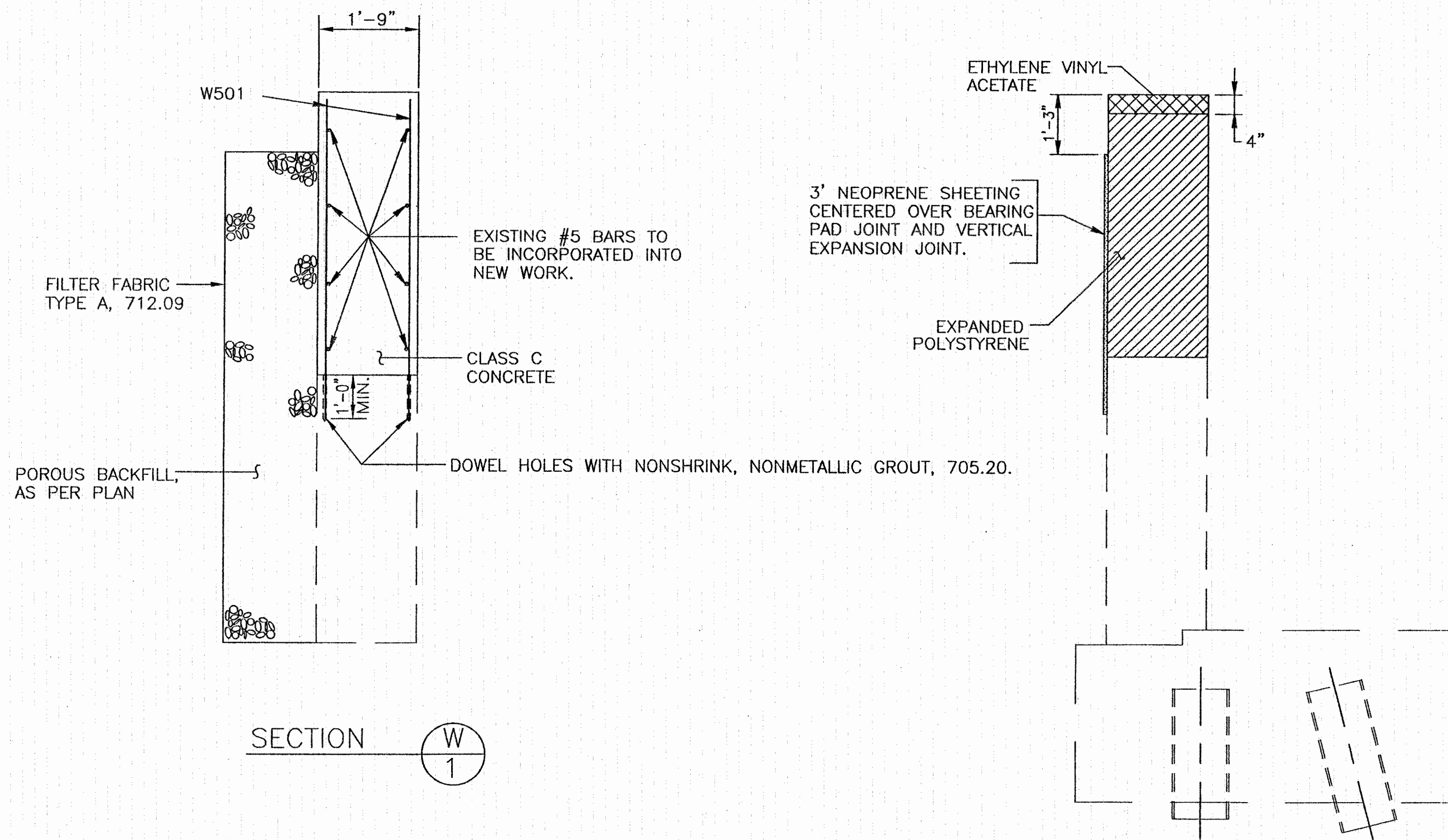
FOR BEARING DETAILS SEE SHEET 18/19.  
FOR WINGWALL SECTION DETAILS SEE SHEET 8/19.  
FOR ABUTMENT PLAN AND ELEVATION DETAILS SEE SHEETS 5/19 AND 6/19.

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						7/19
<b>ABUTMENT DETAILS</b>						
BRIDGE NO. MAH-76-0701 L&R OVER CONRAIL R.R.						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	7/94



PROPOSED ABUTMENT ELEVATIONS				
LOCATION	AB. #1-R	AB. #2-R	AB. #1-L	AB. #2-L
①	1033.30±	1033.02±	1033.28±	1032.99±
②	1037.37±	1037.47±	1037.58±	1037.22±
③	1037.48±	1037.47±	1037.51±	1037.33±
④	1038.63	1038.73	1038.84	1038.51
⑤	1038.77	1038.85	1038.97	1038.65
⑥	1038.90	1038.96	1039.10	1038.79
⑦	1038.97	1039.02	1039.04	1038.85
⑧	1038.86	1038.88	1038.91	1038.75
⑨	1038.75	1038.75	1038.80	1038.63
⑩	1042.28	1042.40	1042.48	1042.15
⑪	1042.66	1042.70	1042.78	1042.54
⑫	1042.40	1042.39	1042.46	1042.29

LEGEND	
	NEOPRENE SHEETING, SEE BRIDGE NOTES FOR MORE DETAILS.
	EXPANDED POLYSTYRENE
	ETHYLENE VINYL ACETATE



NOTE:  
 AT THE OPTION OF THE CONTRACTOR, THE EXPANDED POLYSTYRENE IN THE VERTICAL PLANE BETWEEN THE END BLOCK AND THE WINGWALL AND THE 4" ETHYLENE VINYL ACETATE CAN BE REPLACED WITH 2 (TWO)" PREFORMED EXPANSION JOINT FILLER, FROM THE TOP OF THE HORIZONTAL EXPANDED POLYSTYRENE TO THE TOP OF THE PROPOSED WINGWALL. THE NEOPRENE SHEETING WOULD BE PLACED IN THE VERTICALLY AS NOTED PREVIOUSLY IN THE PLANS. THE ADJUSTMENT IN JOINT MATERIAL WIDTH WOULD BE ALLEVIATED BY EXTENDING THE WINGWALL HORIZONTALLY AN ADDITIONAL 1 1/4"±. THE COST THE PREFORMED EXPANSION JOINT FILLER, ADDITIONAL CONCRETE, AND ANY INCIDENTALS SHALL BE AT NO ADDITIONAL COST TO THE STATE AND AT THE APPROVAL OF THE ENGINEER.

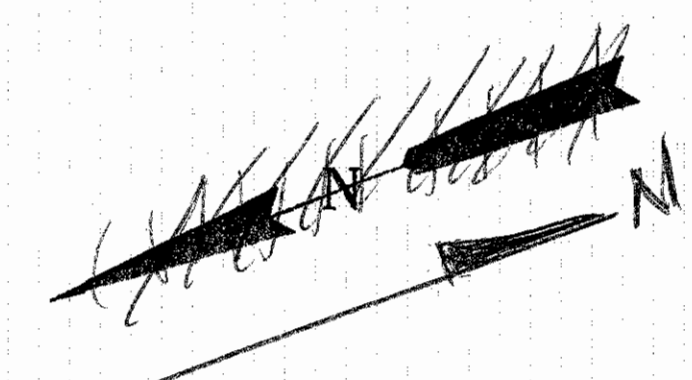
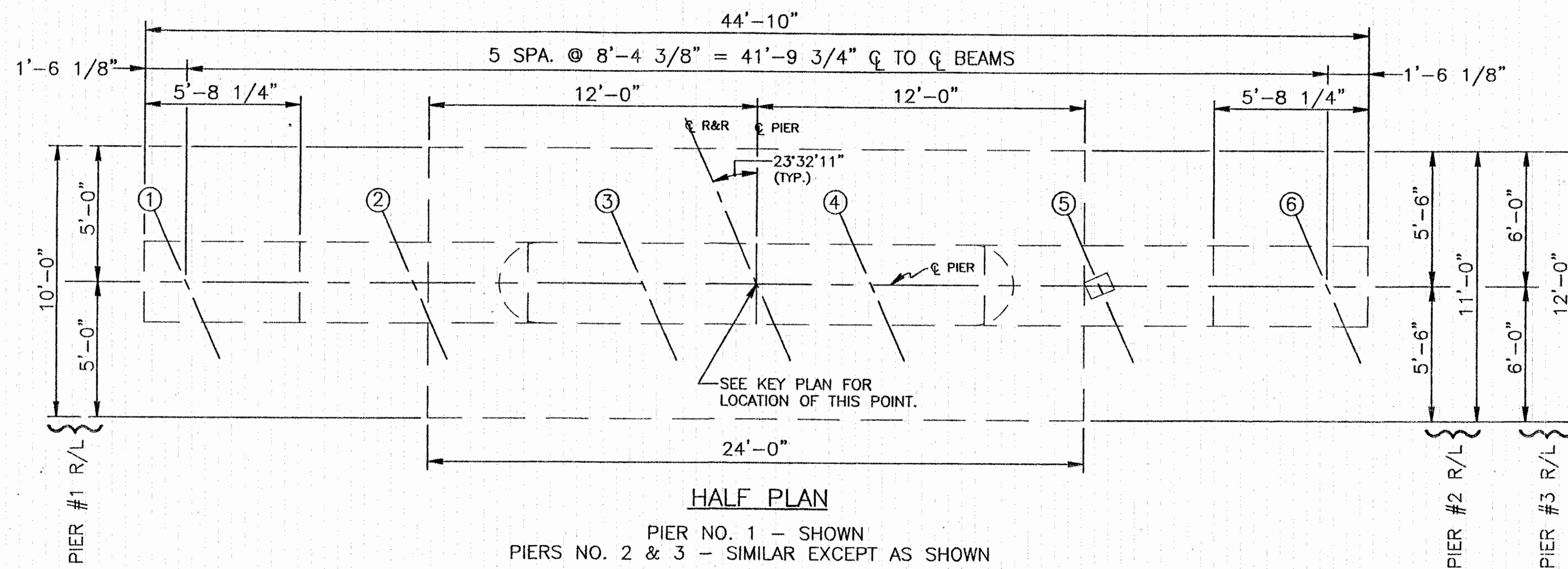
FOR ABUTMENT SECTION DETAILS  
 SEE SHEET 7/19.

FOR ABUTMENT PLAN AND ELEVATION  
 DETAILS SEE SHEETS 5/19 AND 6/19.

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						8/19
<b>ABUTMENT ELEVATIONS          AND          WINGWALL DETAILS</b>						
BRIDGE NO. MAH-76-0701 L&R OVER CONRAIL R.R.						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	7/94



MAH-76/80-6.95/0.00



PIER #1 (EXPANSION)

BEAM NO.	EXIST. BEARING SIZE	PROP. SEAT ELEV. RT.	EXIST. SEAT ELEV. RT.	T* RT.		PROP. SEAT ELEV. LT.	EXIST. SEAT ELEV. LT.	T* LT.	
				FT.	IN.			FT.	IN.
1	R-150	1037.61	1037.30	.31	3 3/4	1037.75	1037.44	.31	3 3/4
2	R-150	1037.74	1037.44	.30	3 5/8	1037.87	1037.56	.31	3 3/4
3	R-150	1037.87	1037.59	.28	3 3/8	1038.00	1037.68	.32	3 7/8
4	R-150	1037.94	1037.63	.31	3 3/4	1037.92	1037.62	.30	3 5/8
5	R-150	1037.84	1037.53	.31	3 3/4	1037.80	1037.50	.30	3 5/8
6	R-150	1037.70	1037.42	.28	3 3/8	1037.69	1037.40	.29	3 1/2

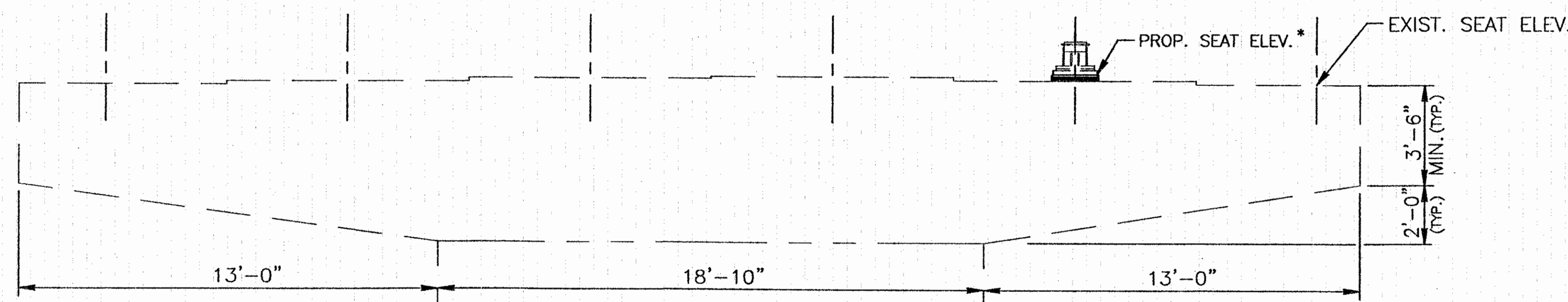
PIER #2 (FIXED)

BEAM NO.	EXIST. BEARING SIZE	PROP. SEAT ELEV. RT.	EXIST. SEAT ELEV. RT.	T* RT.		PROP. SEAT ELEV. LT.	EXIST. SEAT ELEV. LT.	T* LT.	
				FT.	IN.			FT.	IN.
1	B-150	1037.70	1037.38	.32	3 7/8	1037.74	1037.41	.33	4
2	B-150	1037.82	1037.52	.30	3 5/8	1037.86	1037.54	.32	3 7/8
3	B-150	1037.94	1037.64	.30	3 5/8	1037.98	1037.66	.32	3 7/8
4	B-150	1038.00	1037.70	.30	3 5/8	1037.90	1037.59	.31	3 3/4
5	B-150	1037.87	1037.58	.29	3 1/2	1037.78	1037.45	.33	4
6	B-150	1037.75	1037.44	.31	3 3/4	1037.65	1037.33	.32	3 7/8

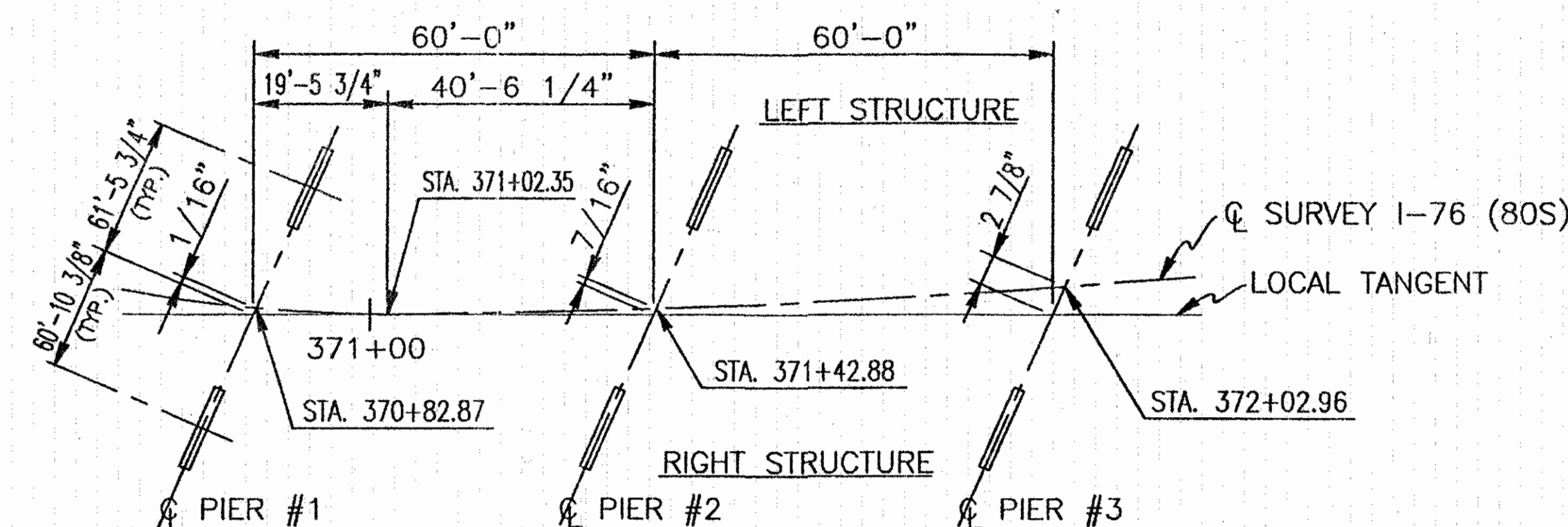
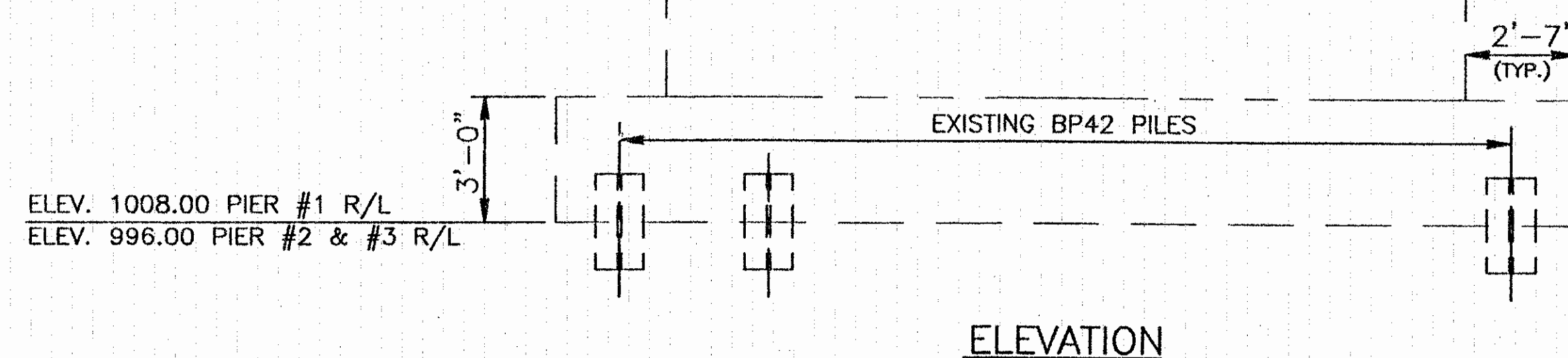
PIER #3 (EXPANSION)

BEAM NO.	EXIST. BEARING SIZE	PROP. SEAT ELEV. RT.	EXIST. SEAT ELEV. RT.	T* RT.		PROP. SEAT ELEV. LT.	EXIST. SEAT ELEV. LT.	T* LT.	
				FT.	IN.			FT.	IN.
1	R-150	1037.66	1037.36	.30	3 5/8	1037.64	1037.34	.30	3 5/8
2	R-150	1037.79	1037.50	.29	3 1/2	1037.75	1037.45	.30	3 5/8
3	R-150	1037.90	1037.62	.28	3 3/8	1037.86	1037.57	.29	3 1/2
4	R-150	1037.96	1037.68	.28	3 3/8	1037.79	1037.50	.29	3 1/2
5	R-150	1037.83	1037.55	.28	3 3/8	1037.65	1037.36	.29	3 1/2
6	R-150	1037.70	1037.40	.30	3 5/8	1037.52	1037.21	.31	3 3/4

\* DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO PREPARATION OF SHOP DRAWING.



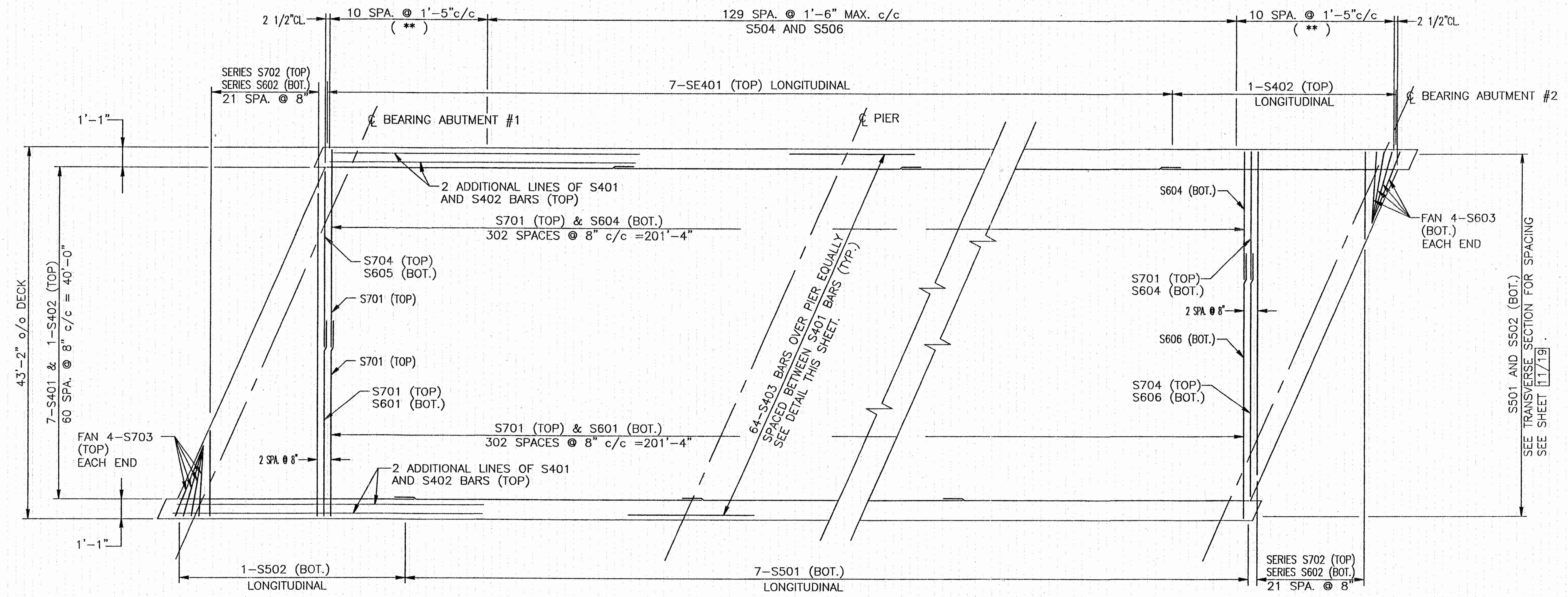
\* FOR BEARING SEAT MODIFICATION DETAILS SEE SHEET 18/19.



PIER DETAILS  
BRIDGE NO. MAH-76-0701 L&R  
OVER CONRAIL R.R.



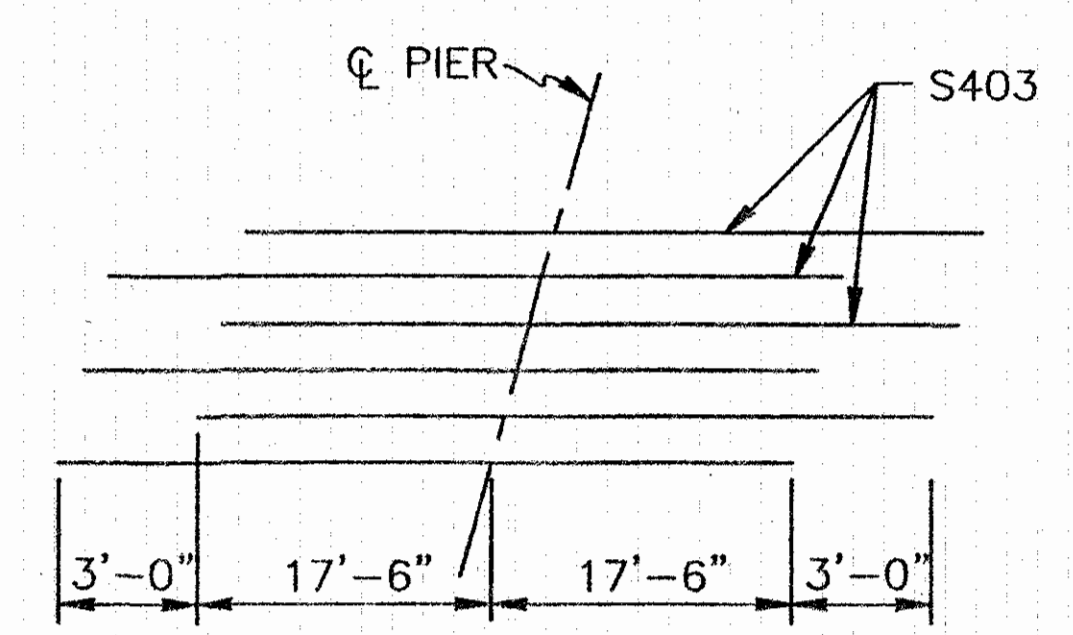
( \*\* ) FOR REINFORCING STEEL DETAILS  
SEE SHEET 12/19.



**PARTIAL DECK REINFORCING PLAN**

LEFT & RIGHT DECK PLANS ARE SIMILAR

- SPLICE LENGTH #4 BAR = 1'-3"
- SPLICE LENGTH #5 BAR = 1'-10"
- SPLICE LENGTH #6 BAR = 2'-8"
- SPLICE LENGTH #7 BAR = 3'-6"



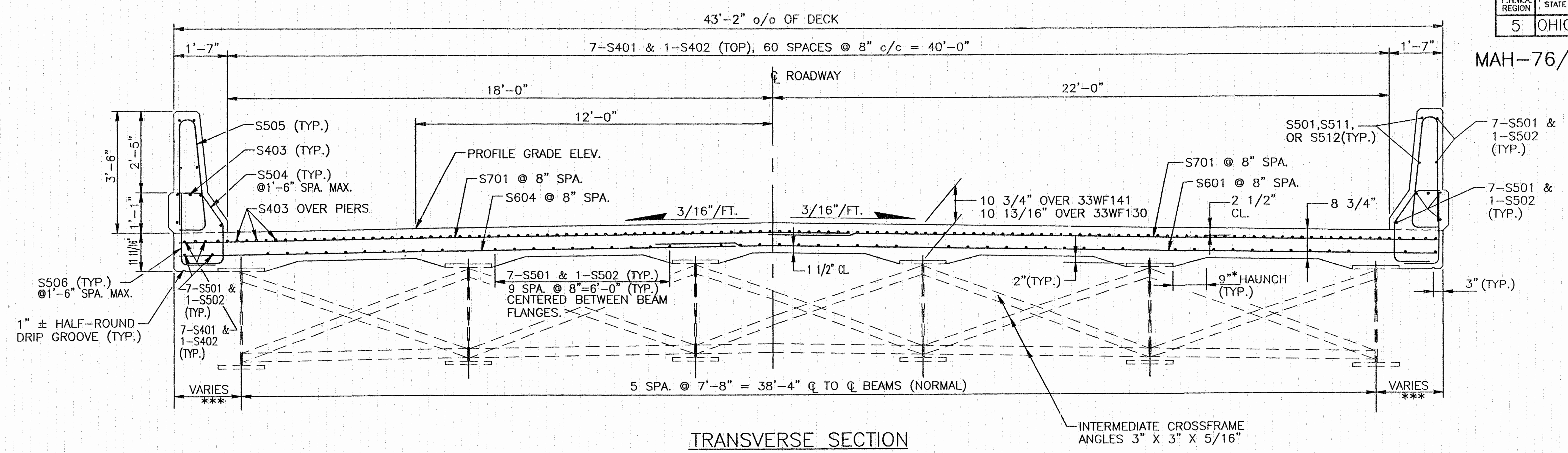
**STAGGER OF S403 BARS OVER PIERS**

**DECK REINFORCING PLAN**  
BRIDGE NO. MAH-76-0701 L&R OVER CONRAIL R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	



MAH-76/80-6.95/0.00



**TRANSVERSE SECTION**

LEFT & RIGHT DECKS ARE SIMILIAR

DECK SLAB DEPTH: THE DISTANCE SHOWN FROM TOP OF DECK SLAB TO TOP OF STEEL BEAM IS THE DESIGN DIMENSION. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED ON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE BEAM MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISH GRADE.

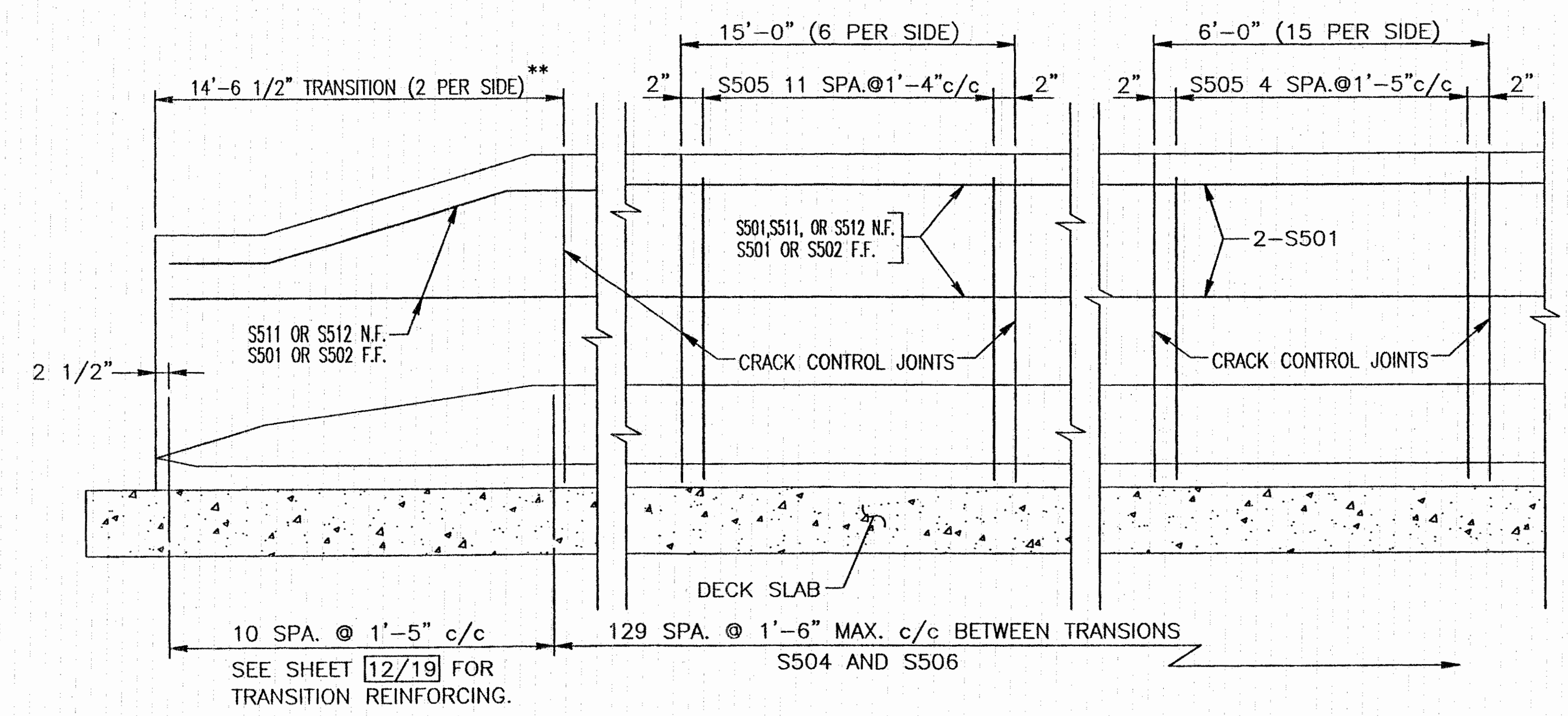
\* A HAUNCH WIDTH OF 9" SHALL BE USED FOR COMPUTING QUANTITY OF CONCRETE. HOWEVER, THE HAUNCH WIDTH MAY VARY BETWEEN 6" AND 12" (PROVIDED THAT THE SLOPE SHALL BE NOT MORE THAN 1:4 FOR A HAUNCH LESS THAN 9" WIDTH.)

SHEAR CONNECTORS ARE NOT SHOWN ON THE TRANSVERSE SECTION, SEE SHEET 17/19 FOR LOCATIONS AND DETAILS.

\*\*\* SEE SHEET 14/19 FOR DECK OVERHANG DIMENSIONS.

SEE SHEET 16/19 AND 19/19 FOR PROPOSED CROSSFRAME WORK.

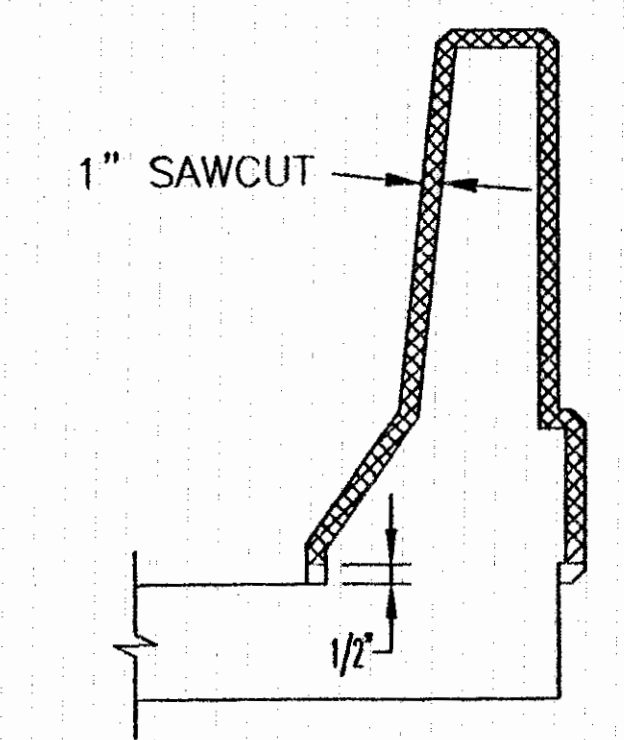
SEE SHEET 10/19 FOR DECK REINFORCEMENT PLAN.



**PARAPET PANEL DETAILS**  
(INSIDE ELEVATION SHOWN)

FOR COMPLETE CRACK CONTROL JOINT SPACING SEE GENERAL PLAN AND ELEVATION, SHEET 2/19.

\*\* FOR COMPLETE PARAPET TRANSITION DETAILS SEE SHEET 12/19.



**SECTION THROUGH CRACK CONTROL JOINT**

— CAULKING MATERIAL CONFORMING TO FEDERAL SPECIFICATION TT-S-00227E.

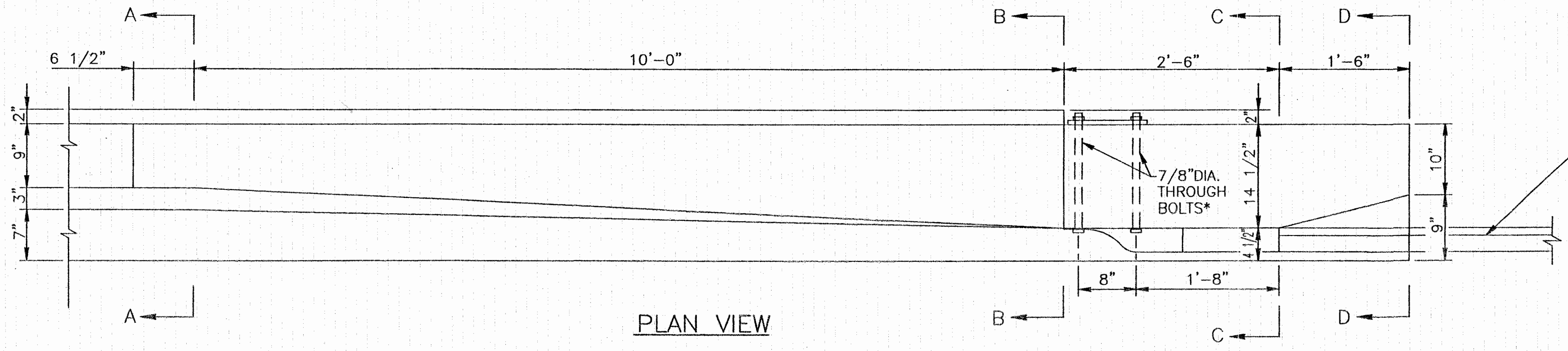
STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES			11/19
<b>TRANSVERSE SECTION &amp; PARAPET PANEL DETAILS</b>			
BRIDGE NO. MAH-76-0701 L&R OVER CONRAIL R.R.			
DESIGNED	DRAWN	TRACED	CHECKED
REVIEWED	DATE	REVISED	
JBH	SMM	DES	MP
	6/5/92	7/94	



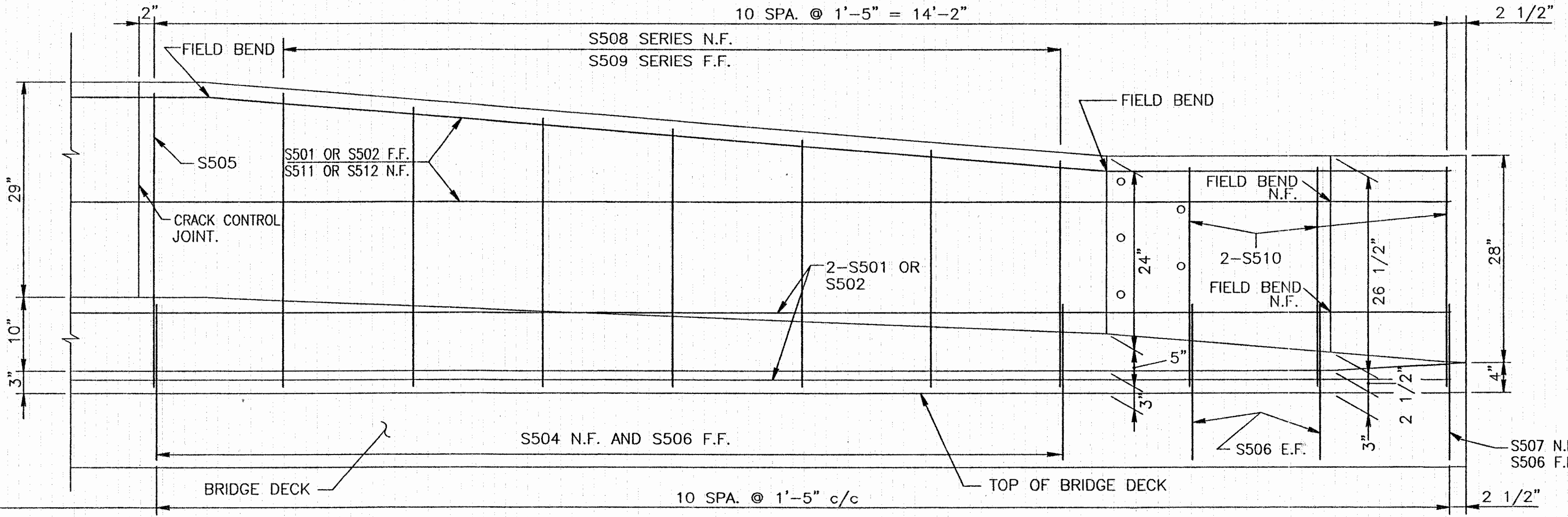
F.H.W.A. REGION	STATE	PROJECT	FUNDS
5	OHIO		

101  
121

MAH-76/80-6.95/0.00



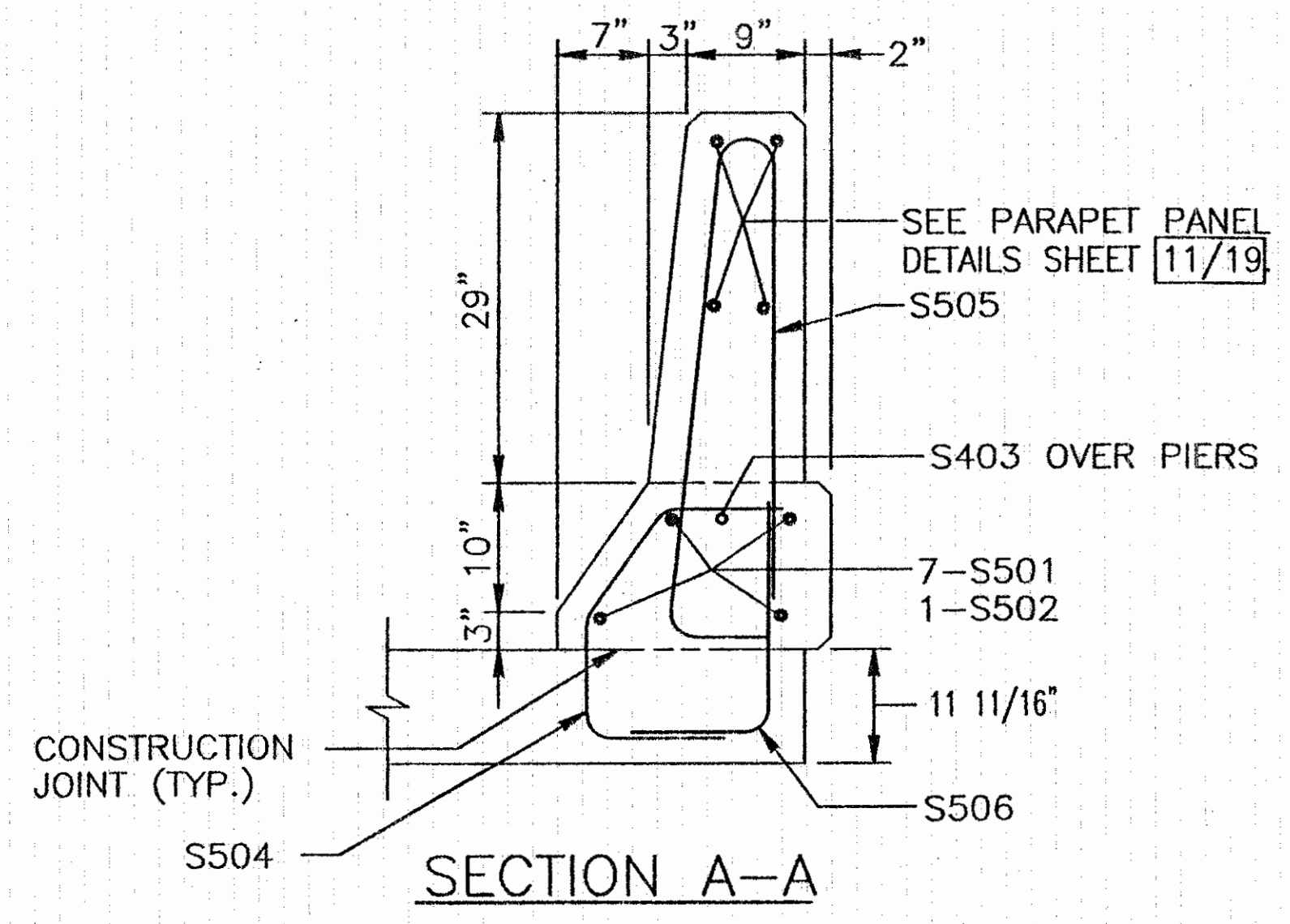
BRIDGE TERMINAL ASSEMBLY, TYPE 1 (APPROACH ENDS) OR TYPE 2 (TRAILING ENDS). SEE SHEET 1/19  
\* FOR EXACT LOCATION OF 7/8" DIA. THROUGH BOLTS AND ADDITIONAL DETAILS SEE STANDARD CONSTRUCTION DRAWING GR-3.1M OR GR-3.2M.



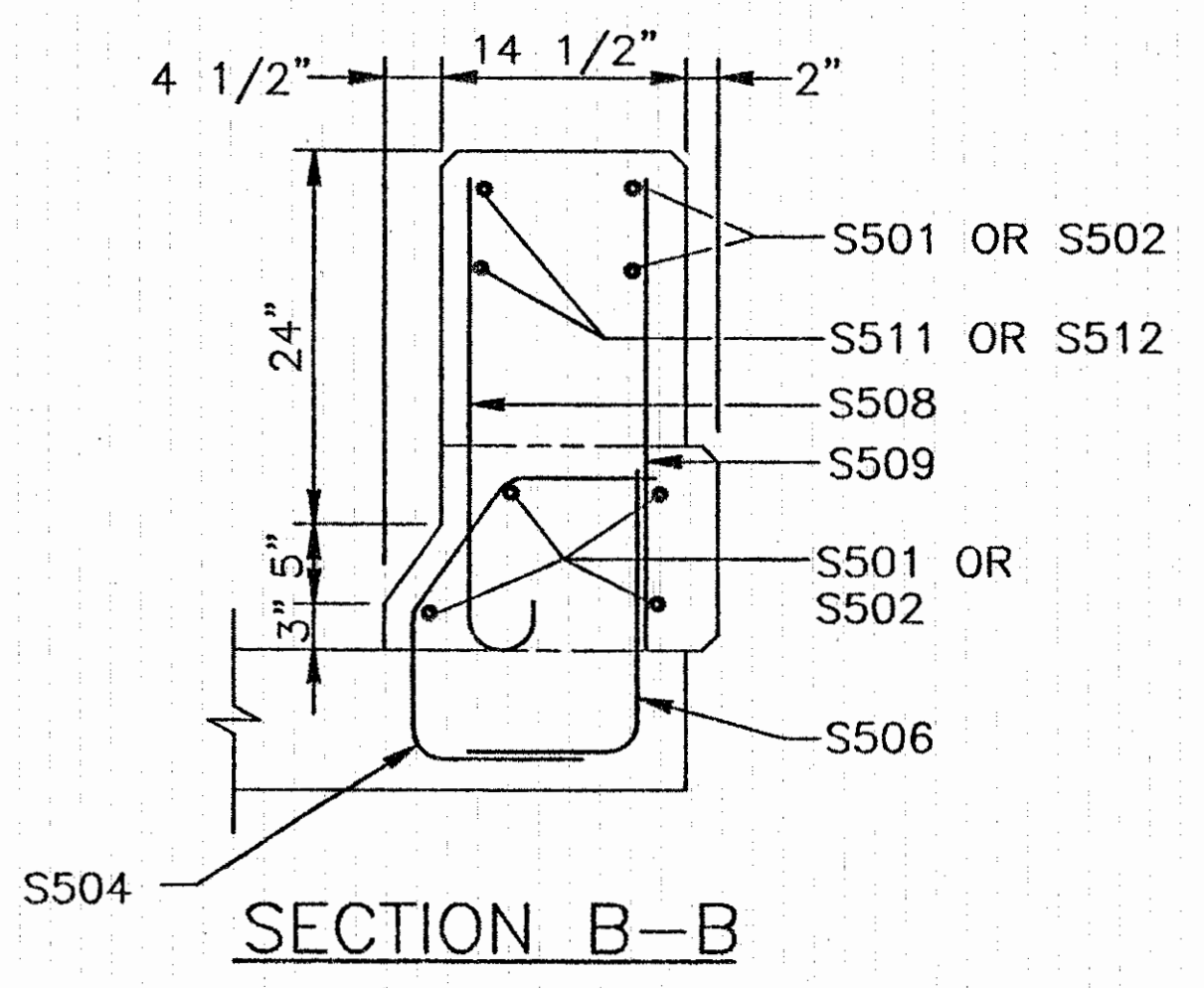
FOR COMPLETE CRACK CONTROL JOINT SPACING SEE GENERAL PLAN AND ELEVATION, SHEET 2/19  
FOR MORE CRACK CONTROL JOINT DETAILS AND OTHER PARAPET DETAILS SEE SHEET 11/19

PROFILE VIEW

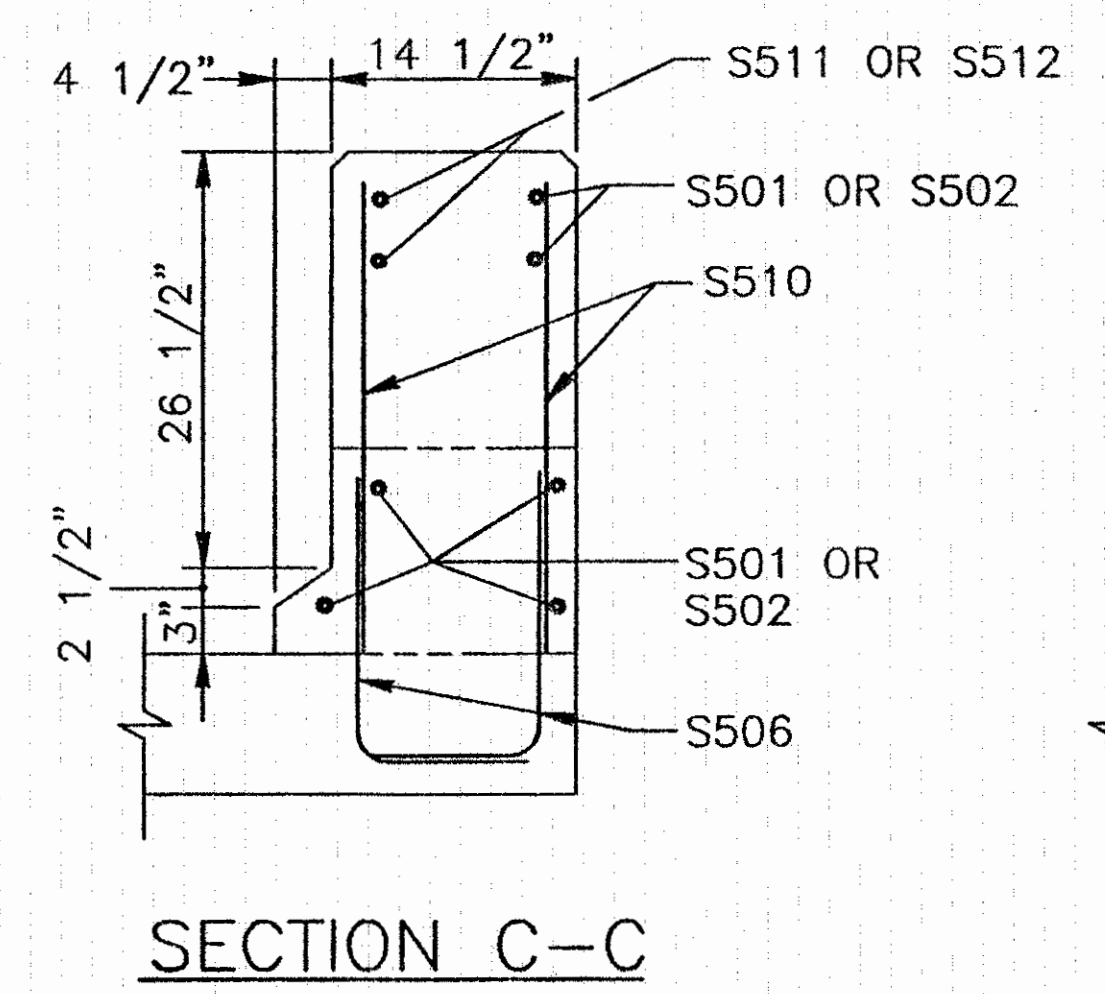
N.F. = NEAR FACE  
F.F. = FAR FACE  
E.F. = EACH FACE



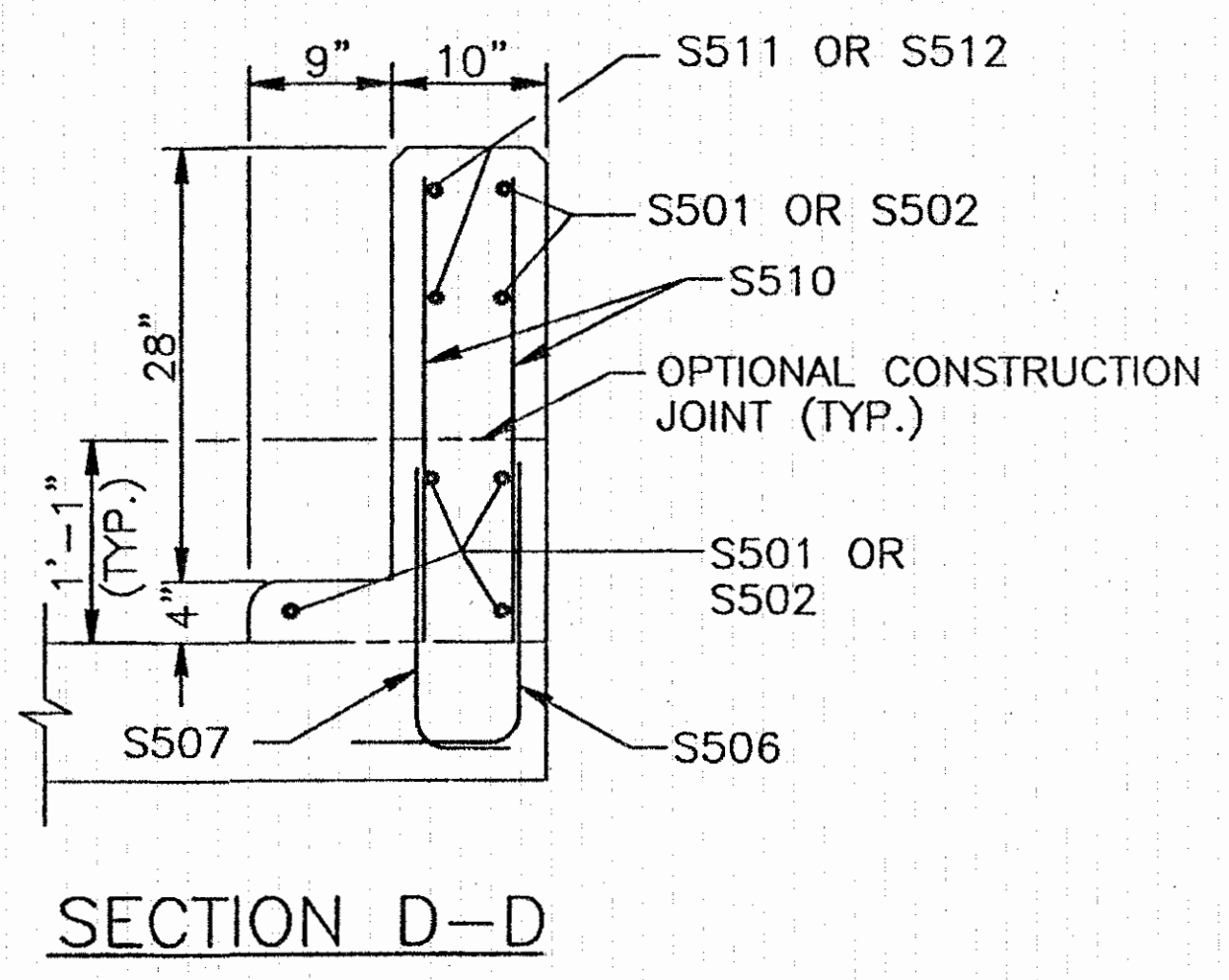
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

12/19

PARAPET TRANSITION DETAILS

BRIDGE NO. MAH-76-0701 L&R  
OVER CONRAIL R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	7/94



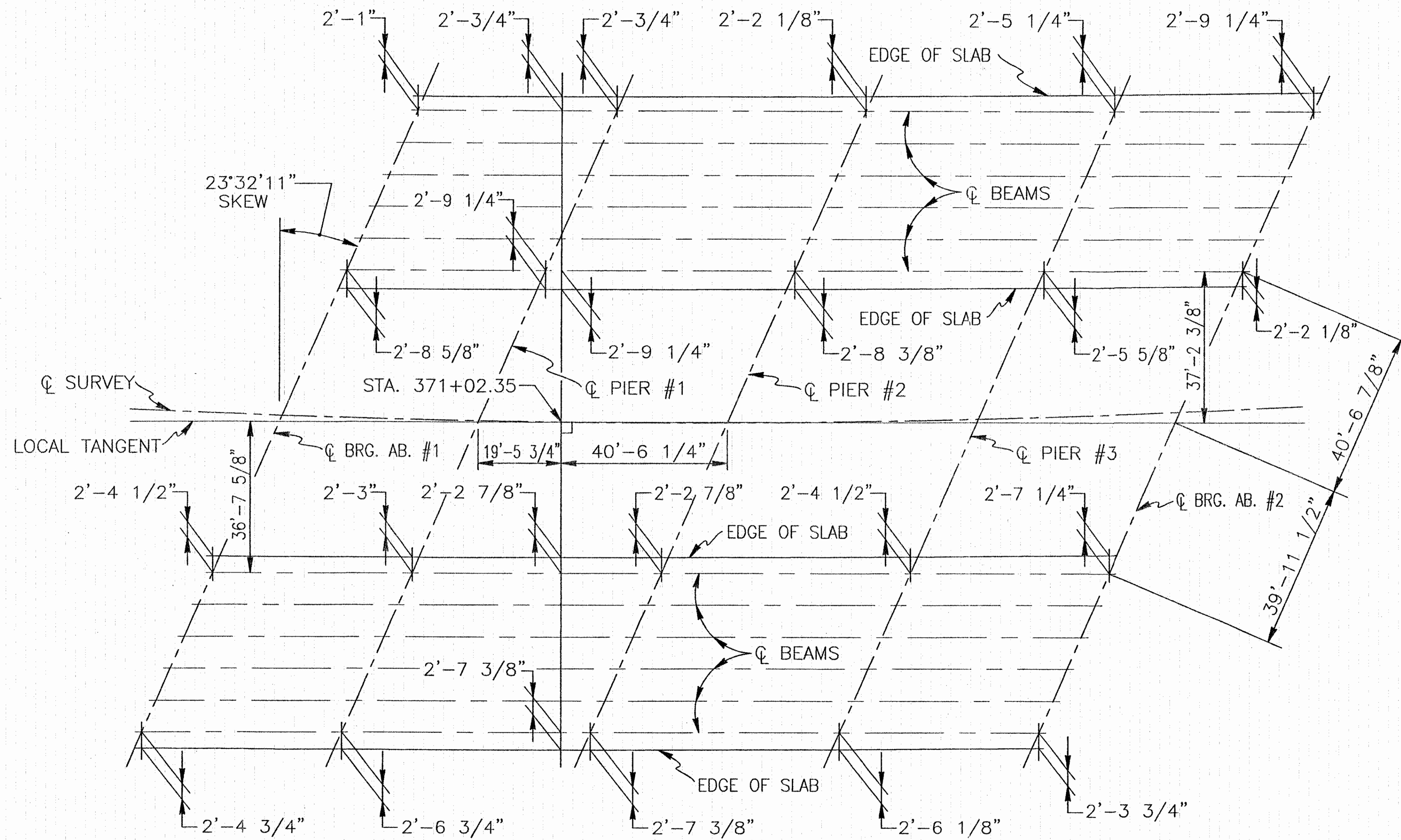




F.H.W.A. REGION	STATE	PROJECT	FUNDS
5	OHIO		

103  
121

MAH-76/80-6.95/0.00



PLAN FOR BOTH STRUCTURES  
SHOWING OFFSETS FROM LOCAL TANG.  
& SLAB OVERHANG DIMENSIONS

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

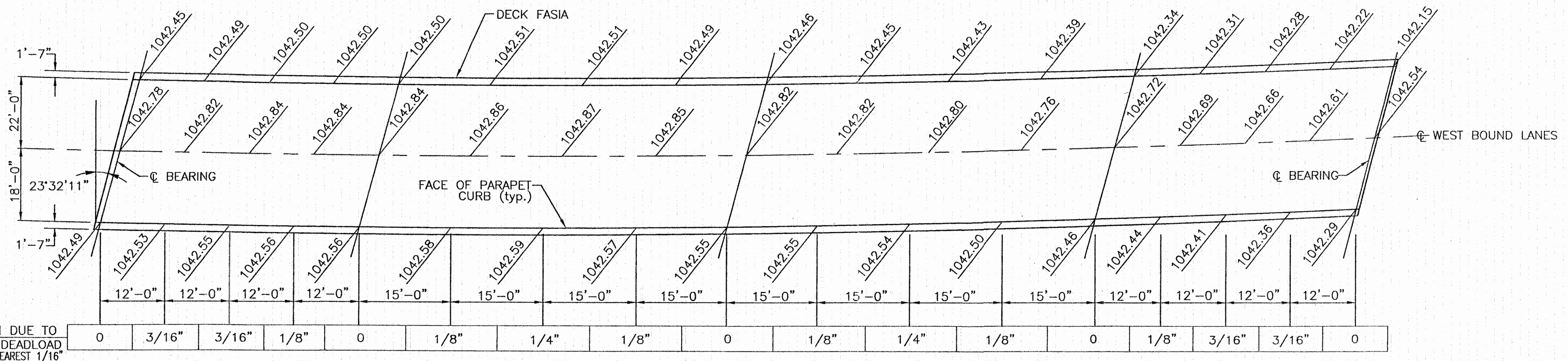
14/19

DECK OVERHANG  
BRIDGE NO. MAH-76-0701 L&R  
OVER CONRAIL R.R.

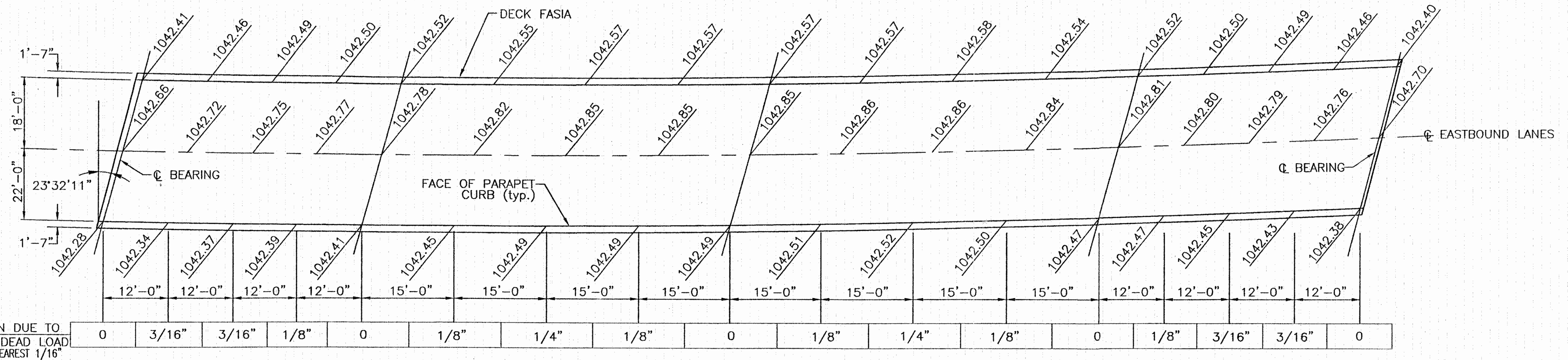
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	



MAH-76/80-6.95/0.00



\* DEFLECTION DUE TO CONCRETE DEADLOAD ROUNDED TO NEAREST 1/16"

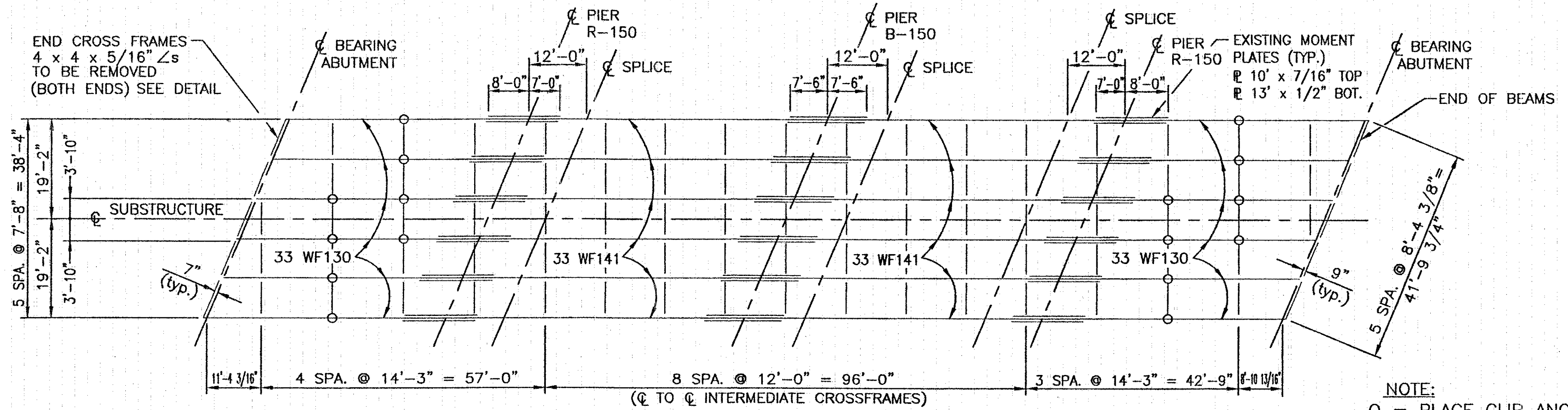
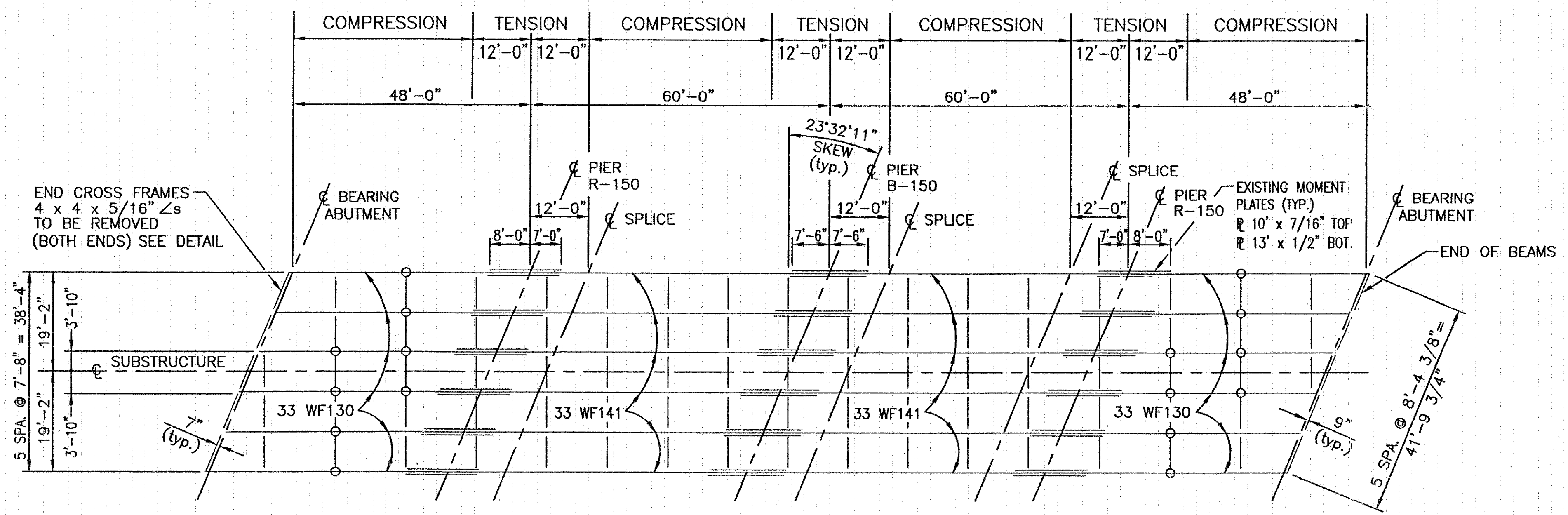


\* DEFLECTION DUE TO CONCRETE DEAD LOAD ROUNDED TO NEAREST 1/16"

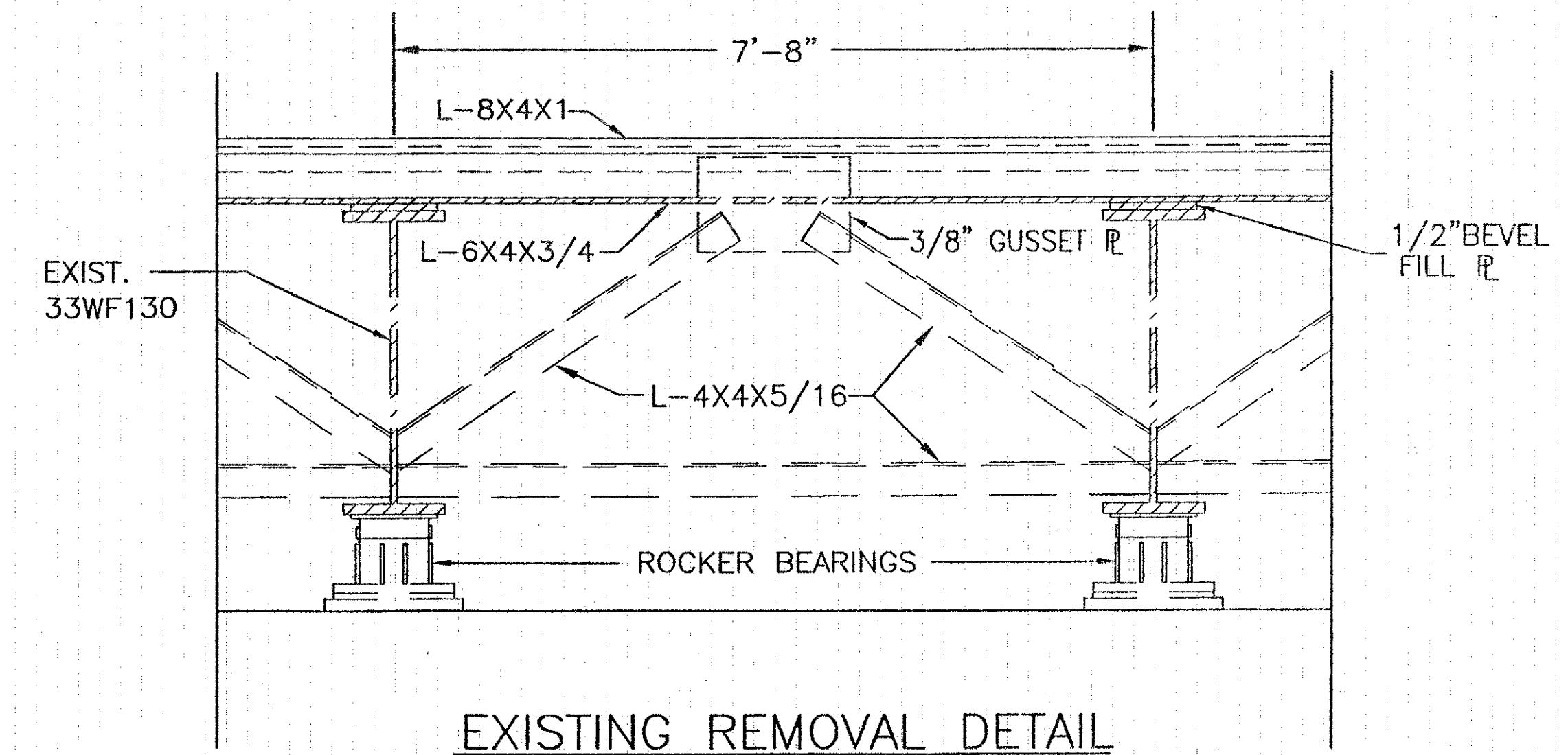
\* ELEVATIONS REFLECT THE DEFLECTION DUE TO CONCRETE DEADLOAD ONLY.

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						15/19
<b>SCREED ELEVATIONS</b>						
BRIDGE NO. MAH-76-0701 L&R OVER CONRAIL R.R.						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	8/94





FRAMING PLAN



EXISTING REMOVAL DETAIL  
(TYPICAL BAY AT ABUTMENTS)

REMOVE ALL CROSSFRAME ANGLES, END DAM ARMOR, BEVEL FILL PLATES AND BEARINGS. PAYMENT IS INCLUDED WITH ITEM 202 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

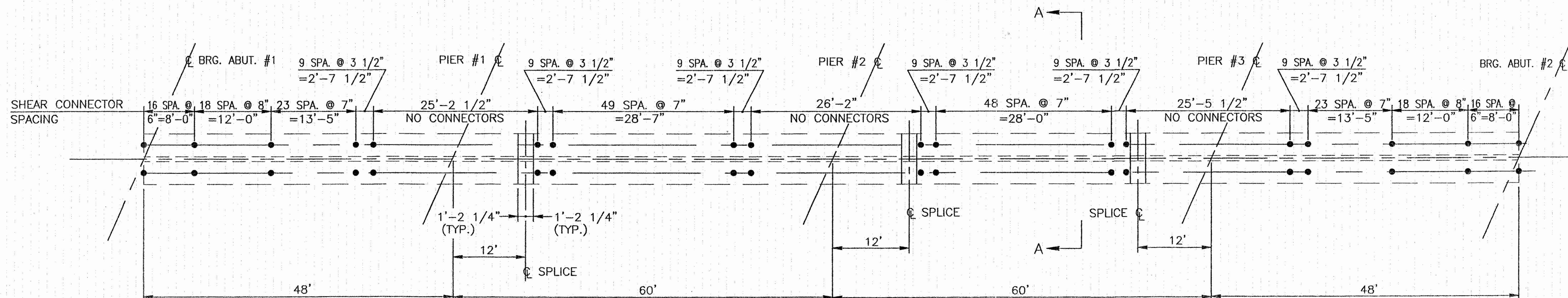
NOTE:  
O = PLACE CLIP ANGLES AT THESE CROSSFRAME AND WEB LOCATIONS. SEE CLIP ANGLE DETAIL SHEET 19/19.

WELDED ATTACHMENTS: WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL NOT BE CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO/AWS.

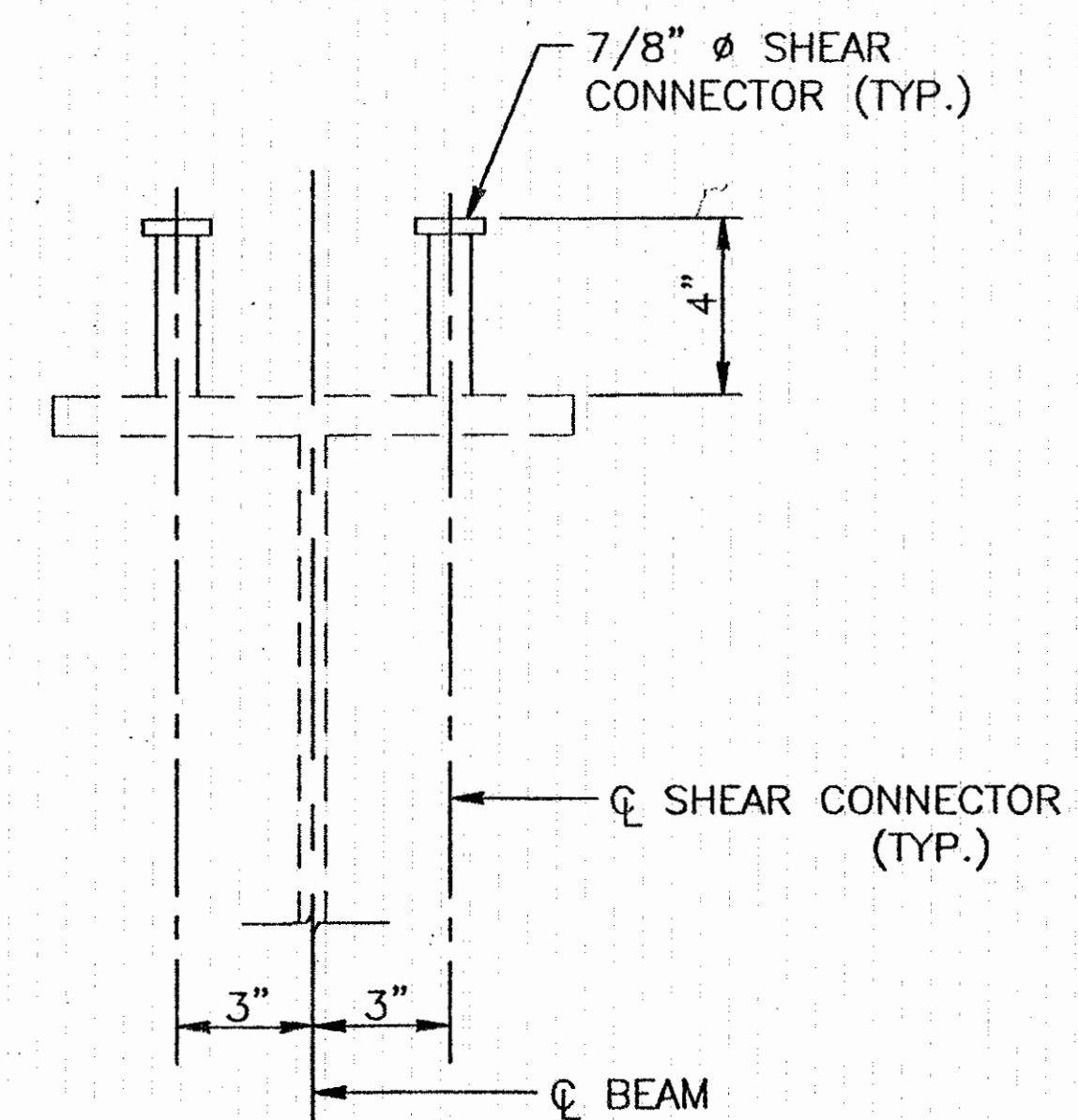


# SHEAR CONNECTOR LAYOUT

MAH-76/80-6.95/0.00



BEAM PLAN  
SHEAR CONNECTOR SPACING  
(ALL BEAMS)



SECTION A-A

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES 17/19

SUPERSTRUCTURE DETAILS  
BRIDGE NO. MAH-76-0701 L&R  
OVER CONRAIL R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	



# PIER BEARINGS

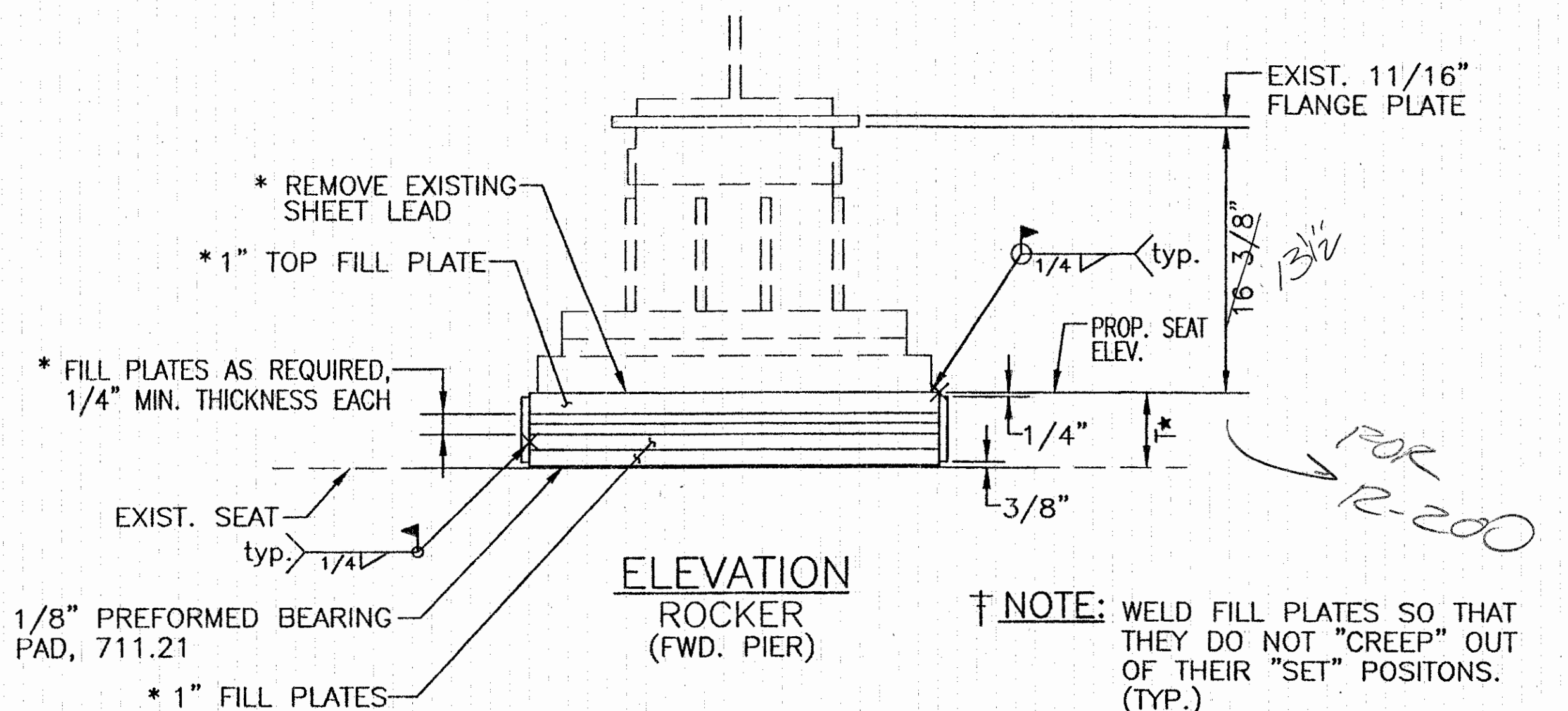
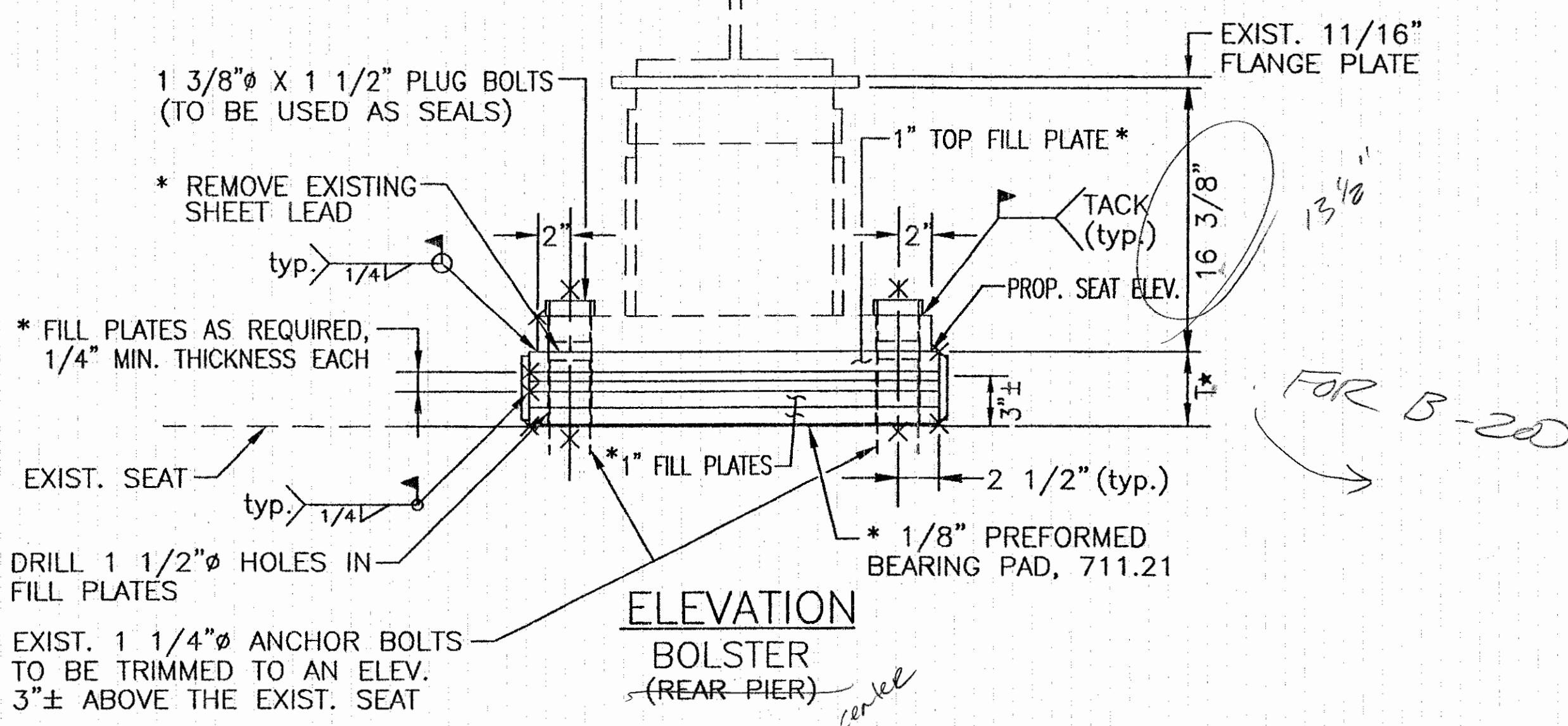
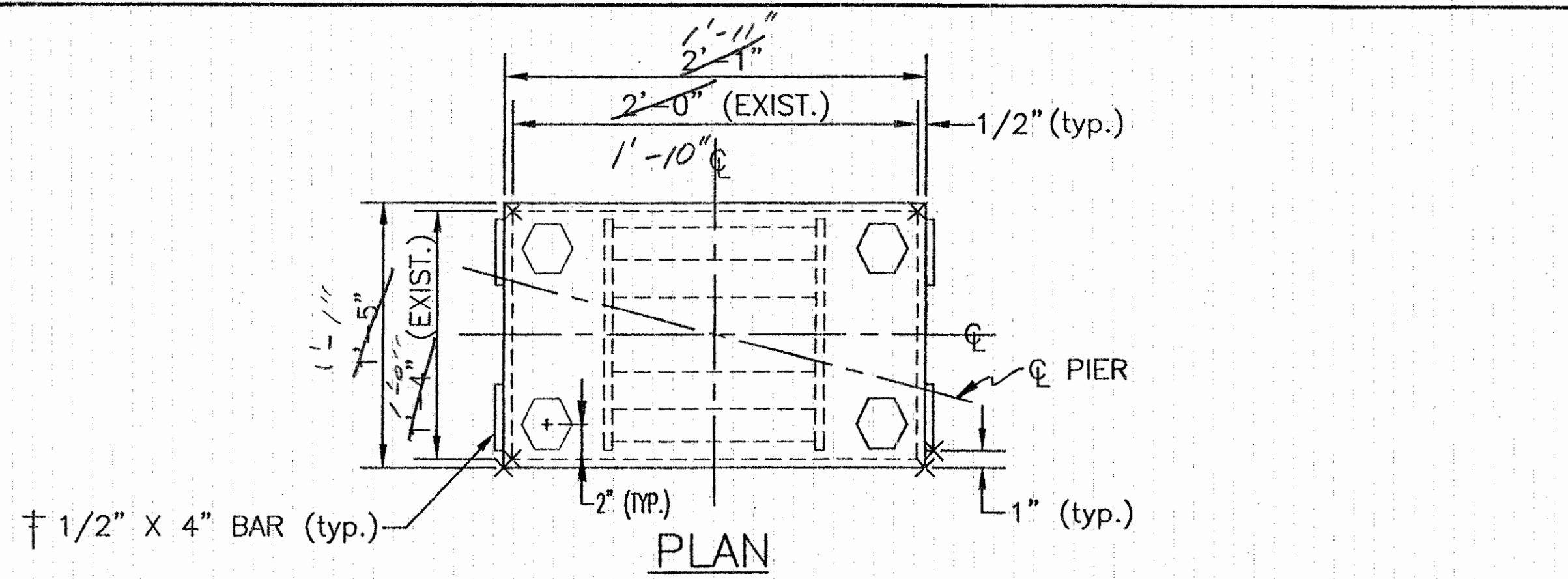
ITEM 516 BEARING DEVICE, MISC.: PIER BEARING SEAT MODIFICATION

# ABUTMENT BEARINGS

F.H.W.A. REGION	STATE	PROJECT	FUNDS	107 121
5	OHIO			

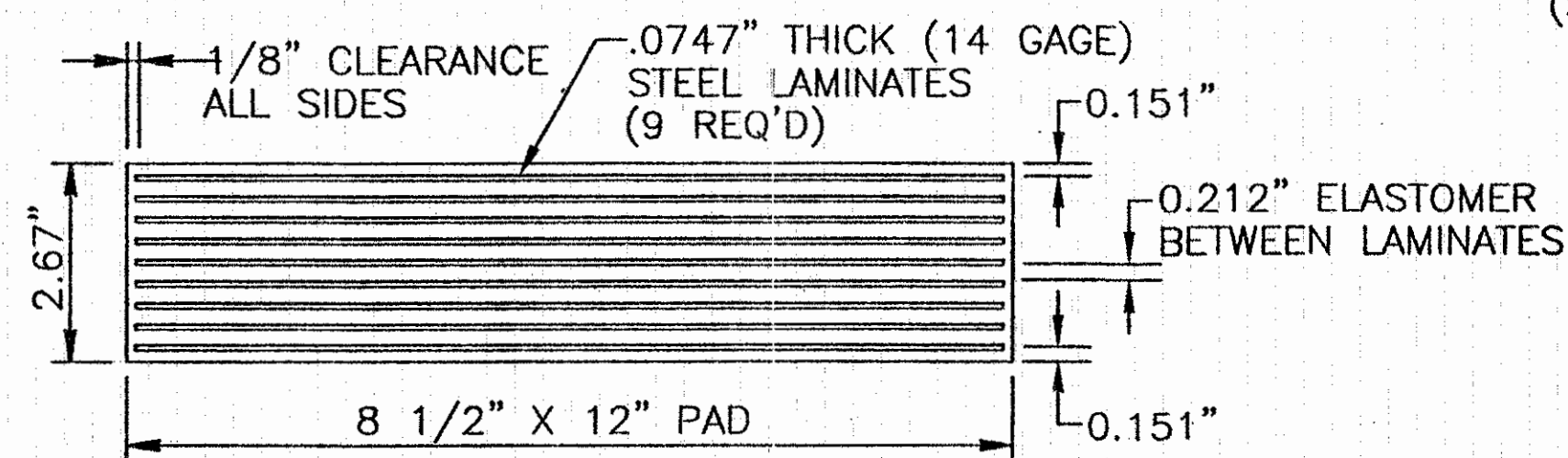
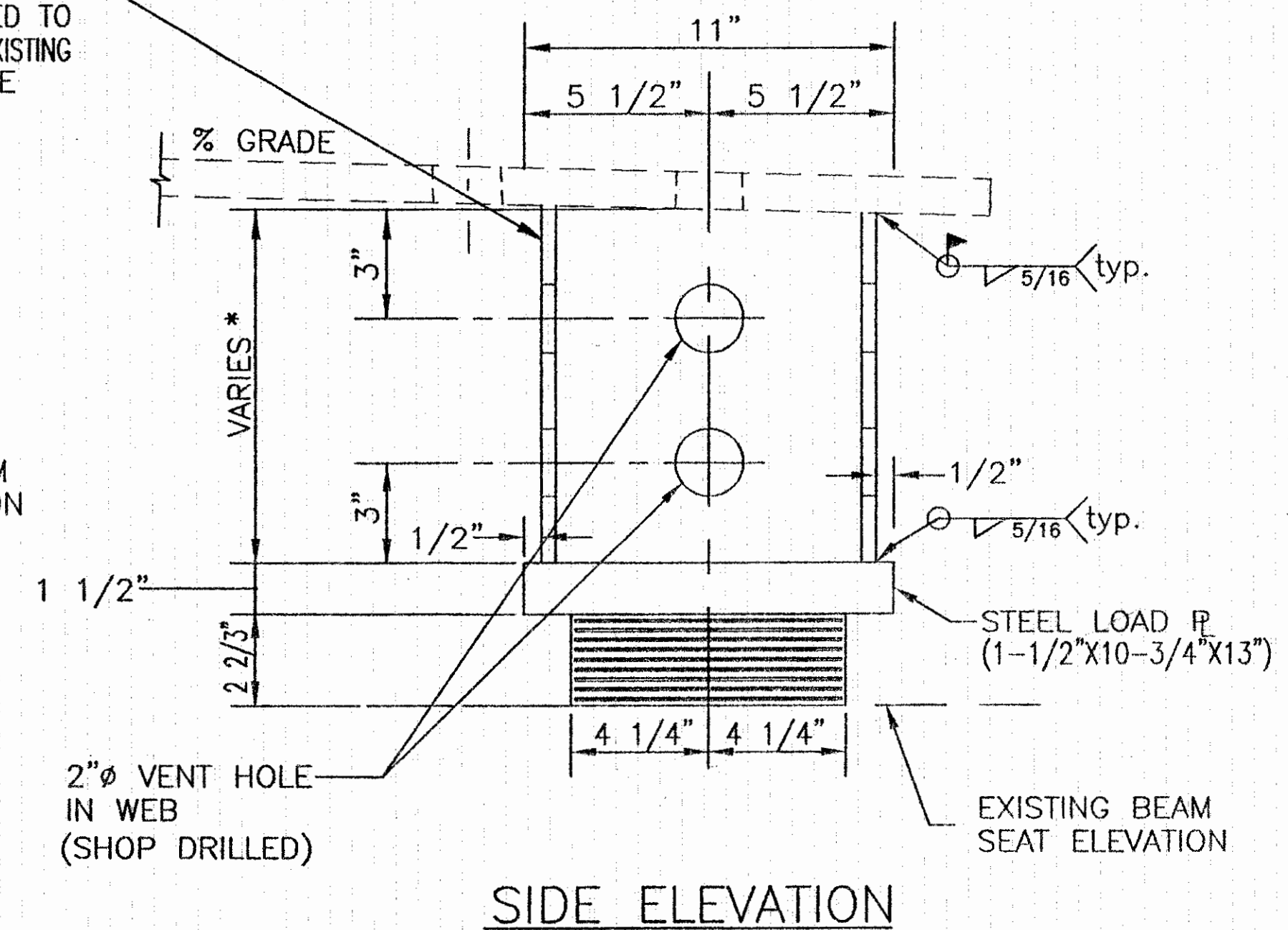
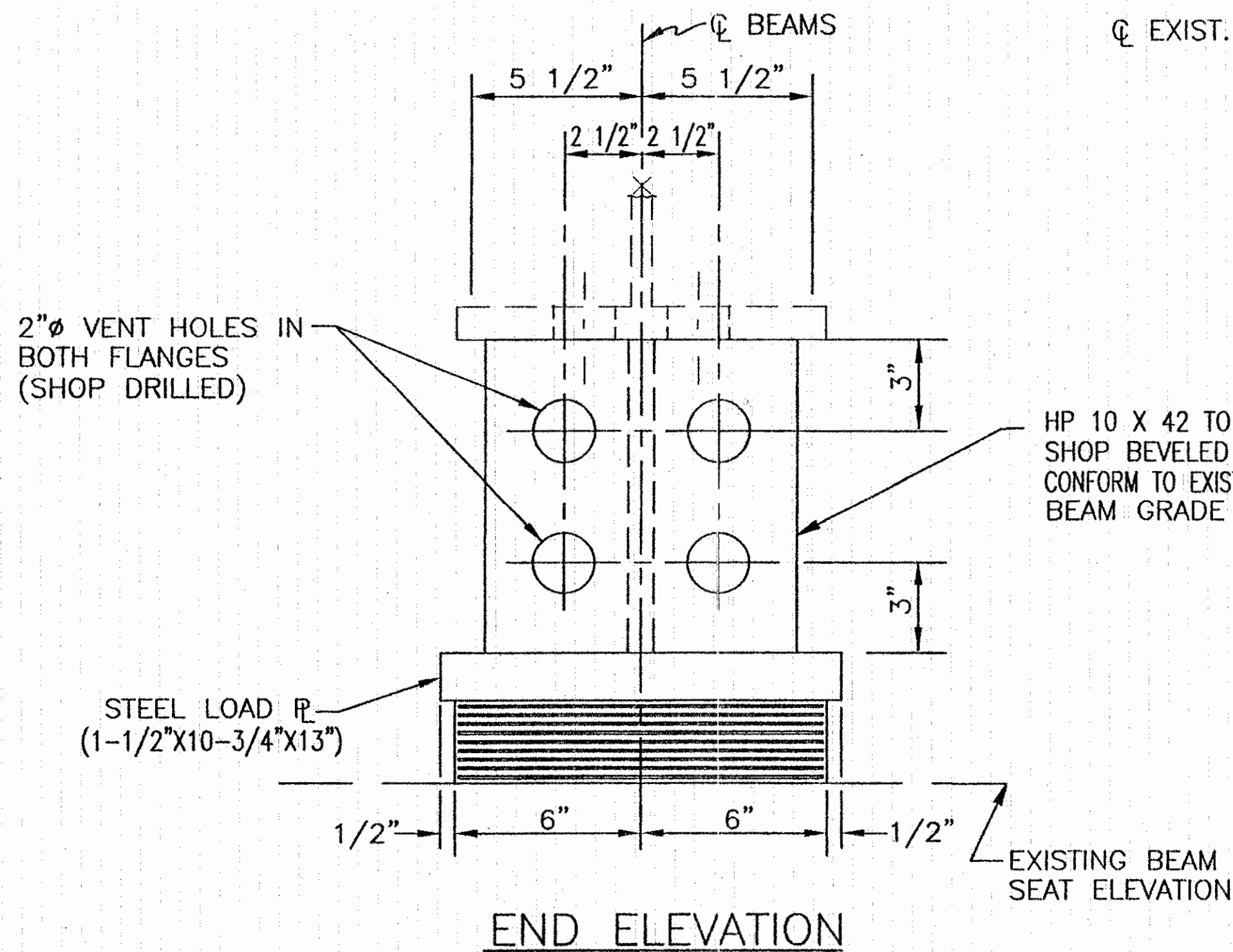
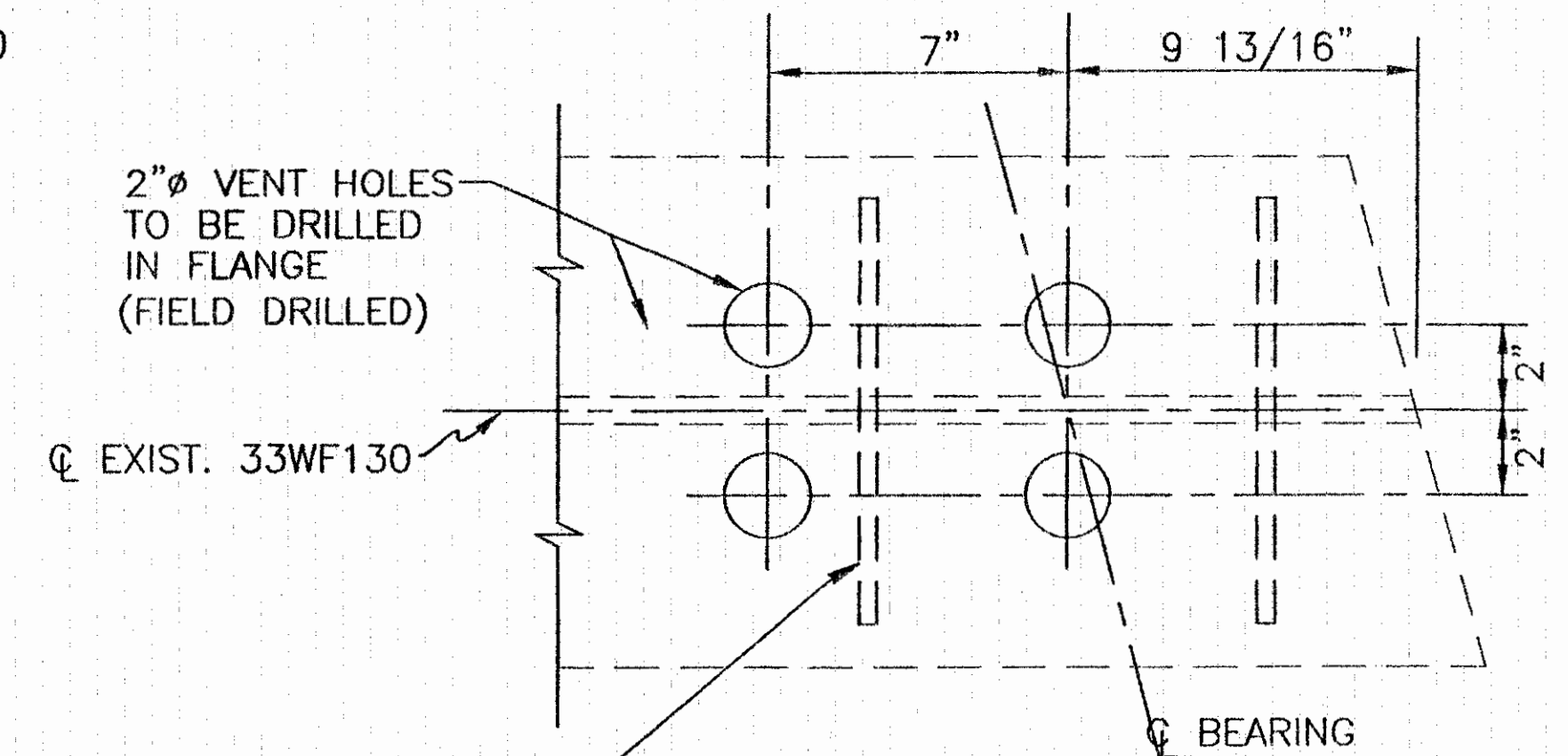
MAH-76/80-6.95/0.00

NOTE:  
BEARING REPOSITIONING: IF DECK CONCRETE IS PLACED AT AN AMBIENT TEMPERATURE HIGHER THAN 80° F AND BEARING SHEAR DEFLECTION EXCEEDS ONE-SIXTH OF THE BEARING HEIGHT AT 60° ± 10° F, THE BEAMS SHALL BE RAISED TO ALLOW THE BEARINGS TO RETURN TO THEIR UNDEFORMED SHAPE AT 60° F ± 10° F.



NOTE: WELD FILL PLATES SO THAT THEY DO NOT "CREEP" OUT OF THEIR "SET" POSITIONS. (TYP.)

\* INCLUDE WITH ITEM 516 BEARING DEVICE, MISC.: PIER BEARING SEAT MODIFICATIONS FOR PAYMENT.  
\* FOR DIMENSIONS SEE TABLES SHEET 9/19.  
SEE STANDARD DRAWING RB-1-55 FOR COMPLETE DETAILS FOR EXISTING ROCKERS AND BOLSTER.



NOTE:  
WELDING SHALL BE CONTROLLED SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE DOES NOT EXCEED 300°F AS DETERMINED BY USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.

## LAMINATED ELASTOMERIC BEARING, ITEM 711.23

50 DUROMETER  
A MINIMUM LOW TEMPERATURE GRADE 3 ELASTOMER SHALL BE USED.  
(LOAD PLATE NOT SHOWN)  
MAXIMUM DESIGN LOAD IS 100 KIPS PER BEARING.

\* AFTER BEAM SEAT ELEVATIONS ARE VERIFIED BY THE CONTRACTOR ALL DIMENSIONS OF EACH HP 10 X 42 SHALL BE SHOWN ON THE SHOP DRAWINGS. PLAN ELEVATIONS ARE GIVEN AT THE CENTERLINE OF BEARINGS.

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES 18/19

### SUPERSTRUCTURE DETAILS

BRIDGE NO. MAH-76-0701 L&R OVER CONRAIL R.R.

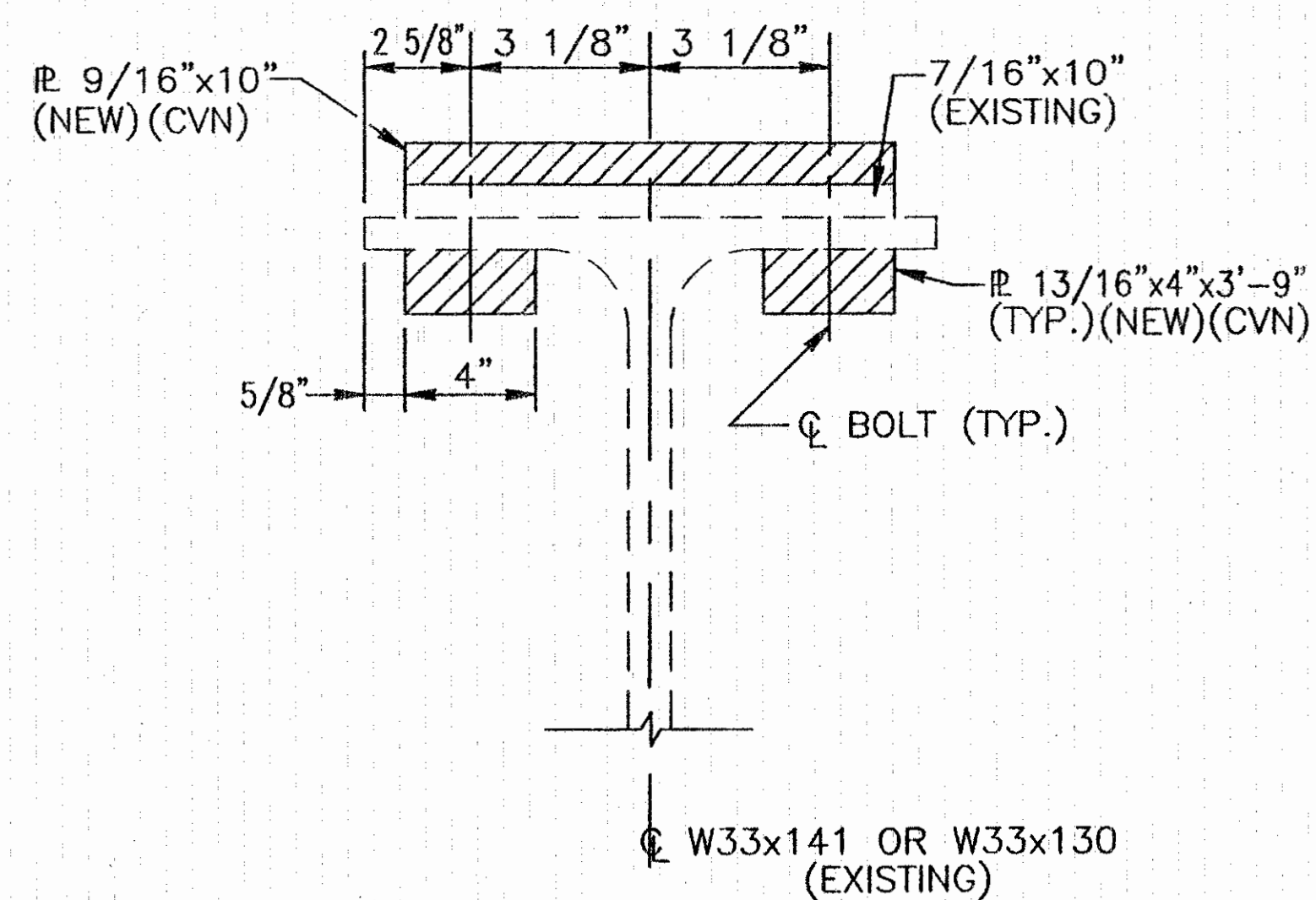
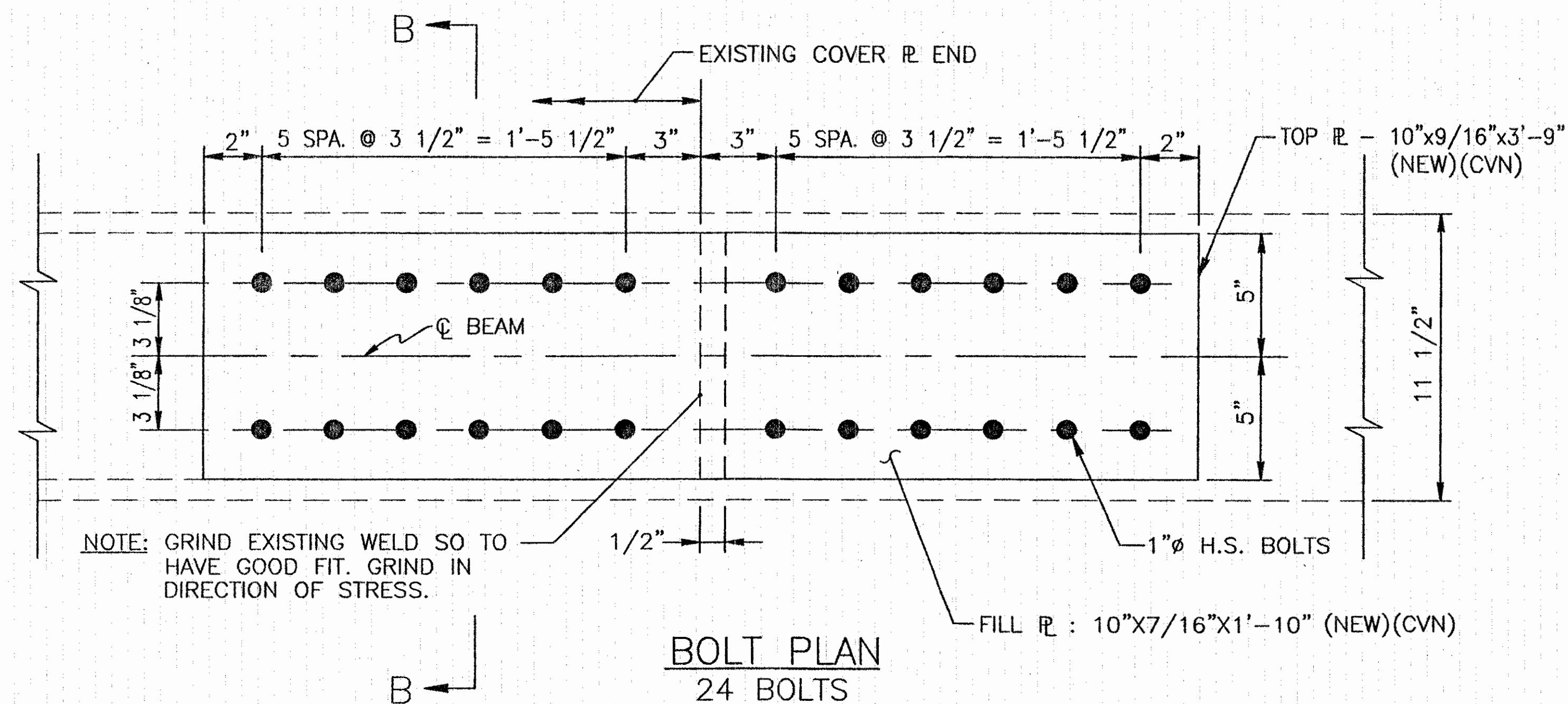
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	8/94



# FATIGUE RETROFIT DETAILS

(TOP MOMENT PLATES)

ITEM 863 STRUCTURAL STEEL MEMBERS, LEVEL ONE (1) FABRICATION



## NOTES

PAINT FROM PLANNED BEAM, MOMENT PLATE AND CROSSFRAME SURFACE AREAS SHALL BE REMOVED PRIOR TO THE ADDITION OF RETROFIT PLATES AND CLIP ANGLES. AREAS SHALL BE BLASTED TO NEAR WHITE METAL (Sa 2 1/2) ACCORDING TO ASTM D 2200 OR SS PC-SP-10. THE FINAL APPEARANCE OF THE BLASTED SURFACES SHALL BE EQUAL TO VISUAL STANDARDS SS PC-VIS 1 OR SWEDISH PICTORIAL D Sa 2 1/2. THE PROFILE HEIGHT OF THE BLASTED SURFACES SHALL BE 1 TO 2 MILS.

AFTER THE PLATES AND CLIP ANGLES HAVE BEEN INSTALLED, THEIR EXPOSED SURFACES, WELDS AND BOLT HEADS SHALL BE FIELD PAINTED WITH SYSTEM OZEU PAINT ALONG WITH THE EXISTING STEEL ACCORDING TO THE SUPPLEMENTAL SPECIFICATION 815.

HIGH STRENGTH BOLTS SHALL BE 1" DIAMETER ASTM A325 UNLESS OTHERWISE NOTED. SEE STANDARD CONSTRUCTION DRAWING SD-1-69 AND SUPPLEMENTAL SPECIFICATION 863 FOR REQUIRED DIMENSIONS.

STEEL NOTCH TOUGHNESS REQUIREMENT (CHARPY V-NOTCH) WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01 OF CMS.

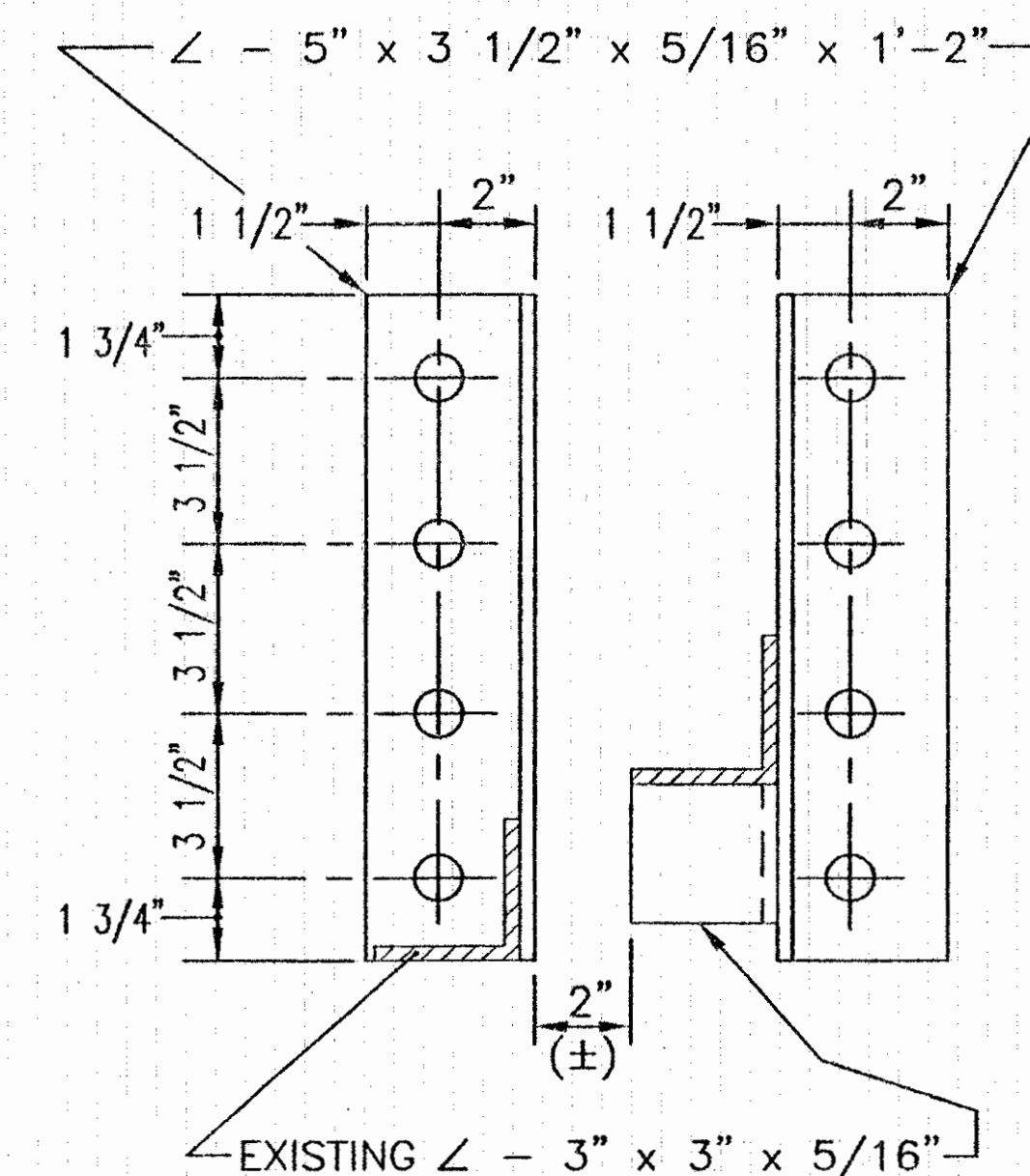
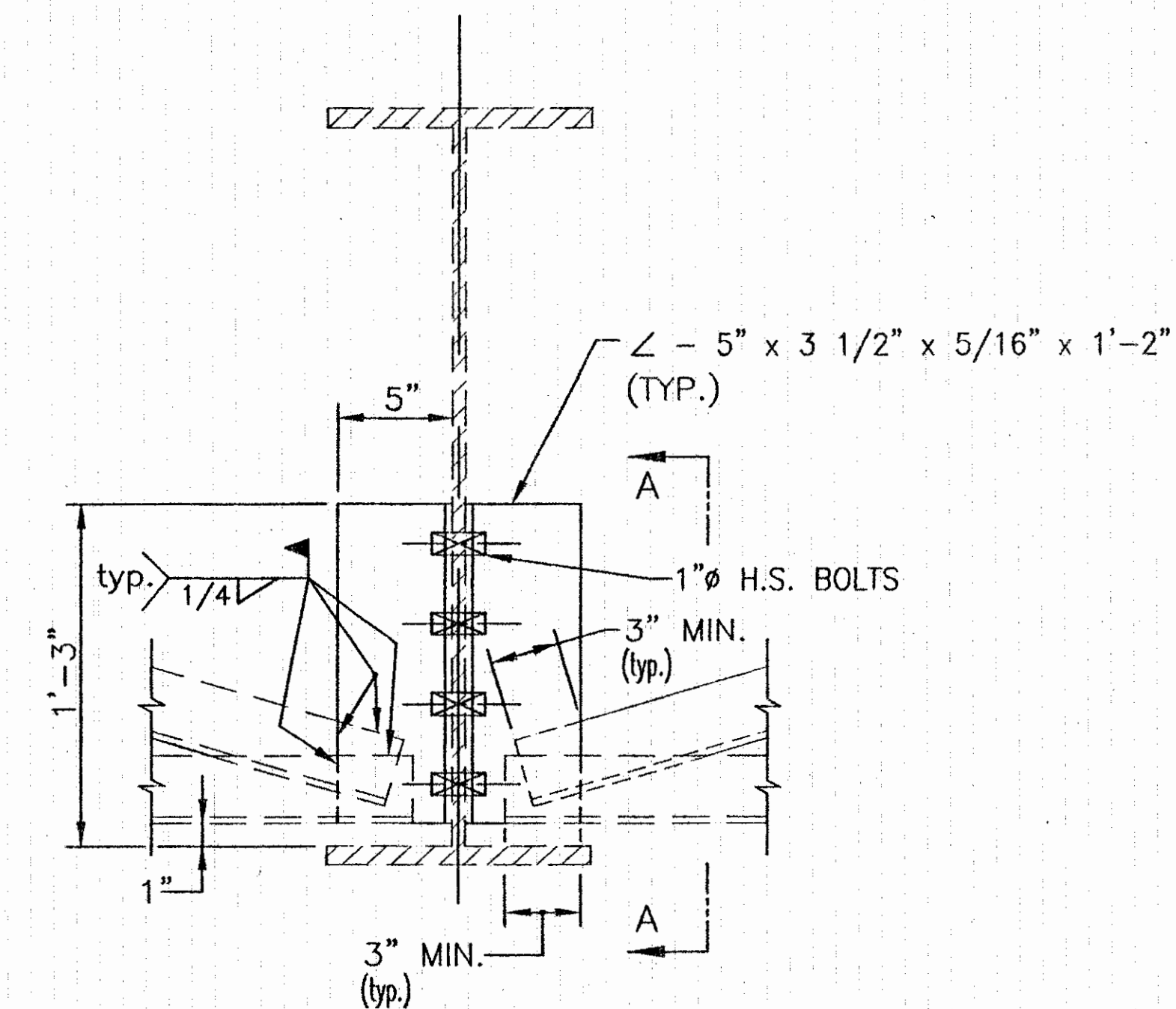
SEE BRIDGE NOTES SHEET 88/121 FOR ADDITIONAL NOTES.

F.H.W.A. REGION	STATE	PROJECT	FUNDS	108 121
5	OHIO			

MAH-76/80-6.95/0.00

# CROSSFRAME CLIP ANGLE DETAILS

ITEM 863 STRUCTURAL STEEL MEMBERS, MISCELLANEOUS LEVEL FABRICATION



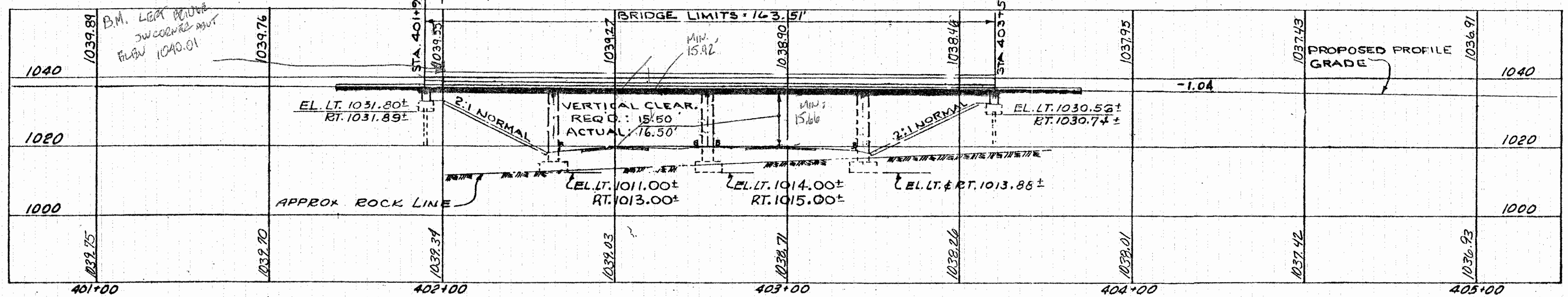
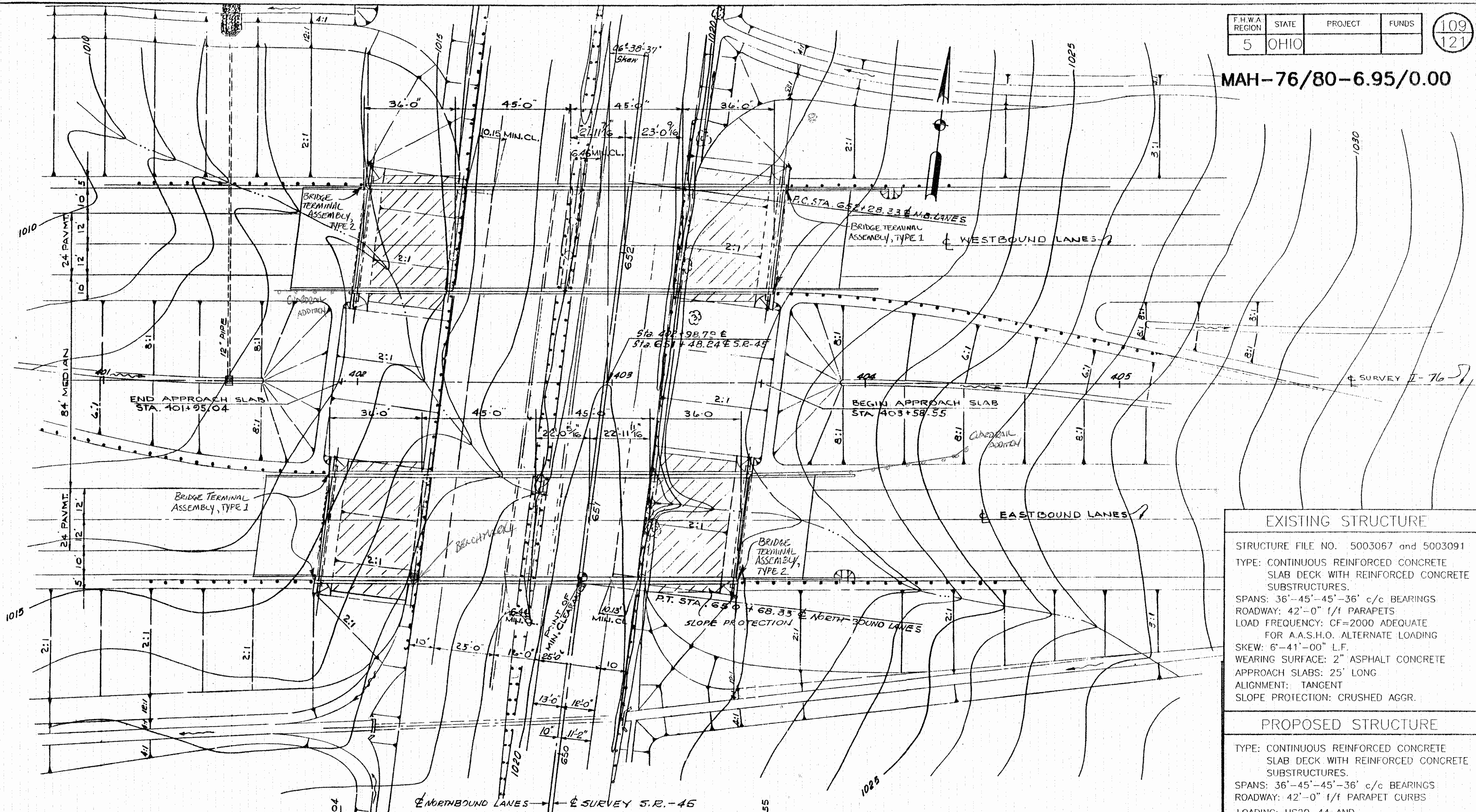
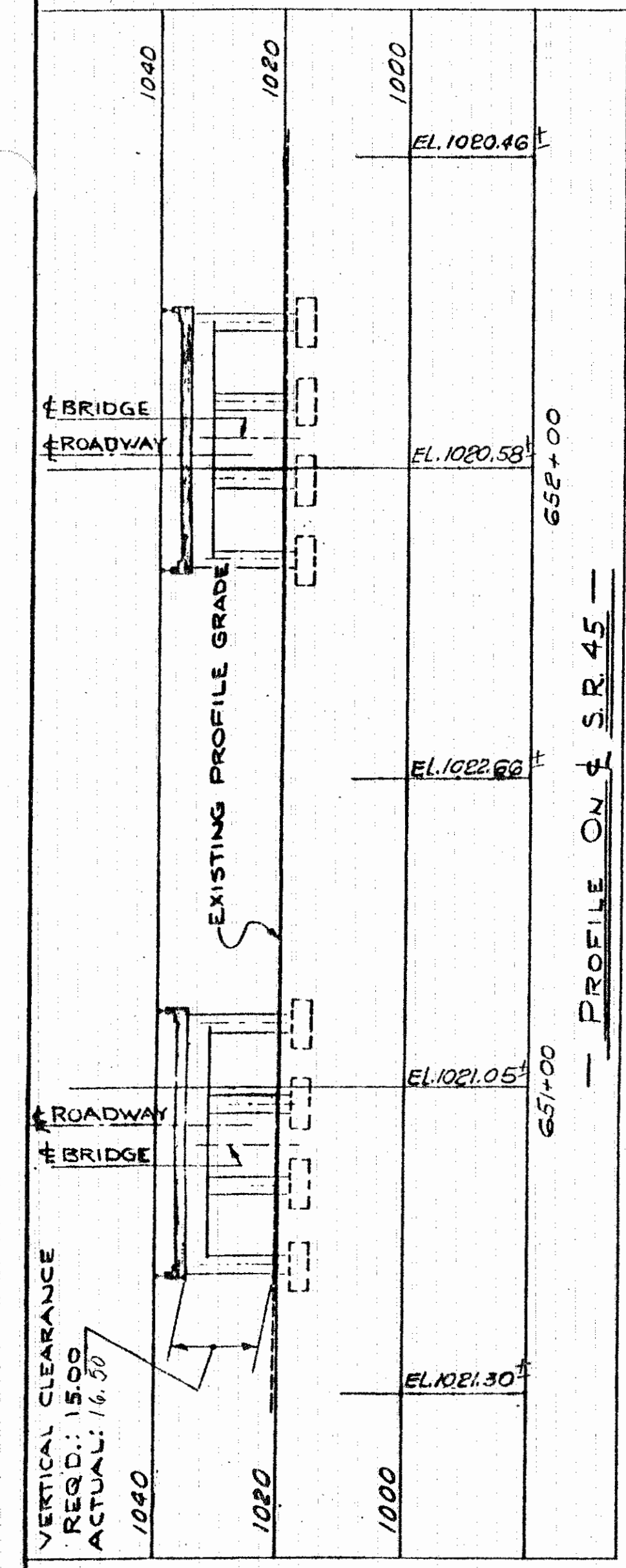
STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES			19/19
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**SUPERSTRUCTURE DETAILS**  
BRIDGE NO. MAH-76-0701 L&R  
OVER CONRAIL R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	6/5/92	6/97



MAH-76/80-6.95/0.00



**EXISTING STRUCTURE**

STRUCTURE FILE NO. 5003067 and 5003091  
 TYPE: CONTINUOUS REINFORCED CONCRETE SLAB DECK WITH REINFORCED CONCRETE SUBSTRUCTURES.  
 SPANS: 36'-45'-45'-36' c/c BEARINGS  
 ROADWAY: 42'-0" f/f PARAPETS  
 LOAD FREQUENCY: CF=2000 ADEQUATE FOR A.A.S.H.O. ALTERNATE LOADING  
 SKEW: 6'-41'-00" L.F.  
 WEARING SURFACE: 2" ASPHALT CONCRETE  
 APPROACH SLABS: 25' LONG  
 ALIGNMENT: TANGENT  
 SLOPE PROTECTION: CRUSHED AGGR.

**PROPOSED STRUCTURE**

TYPE: CONTINUOUS REINFORCED CONCRETE SLAB DECK WITH REINFORCED CONCRETE SUBSTRUCTURES.  
 SPANS: 36'-45'-45'-36' c/c BEARINGS  
 ROADWAY: 42'-0" f/f PARAPET CURBS  
 LOADING: HS20-44 AND ALTERNATE MILITARY LOADING  
 SKEW: 6'-41'-00" L.F.  
 WEARING SURFACE: MONOLITHIC CONCRETE  
 APPROACH SLABS: 25' LONG (T=15")  
 ALIGNMENT: TANGENT  
 SUPERELEVATION: NONE

STATE OF OHIO  
 DEPARTMENT OF HIGHWAYS  
 BUREAU OF BRIDGES

**SITE PLAN**

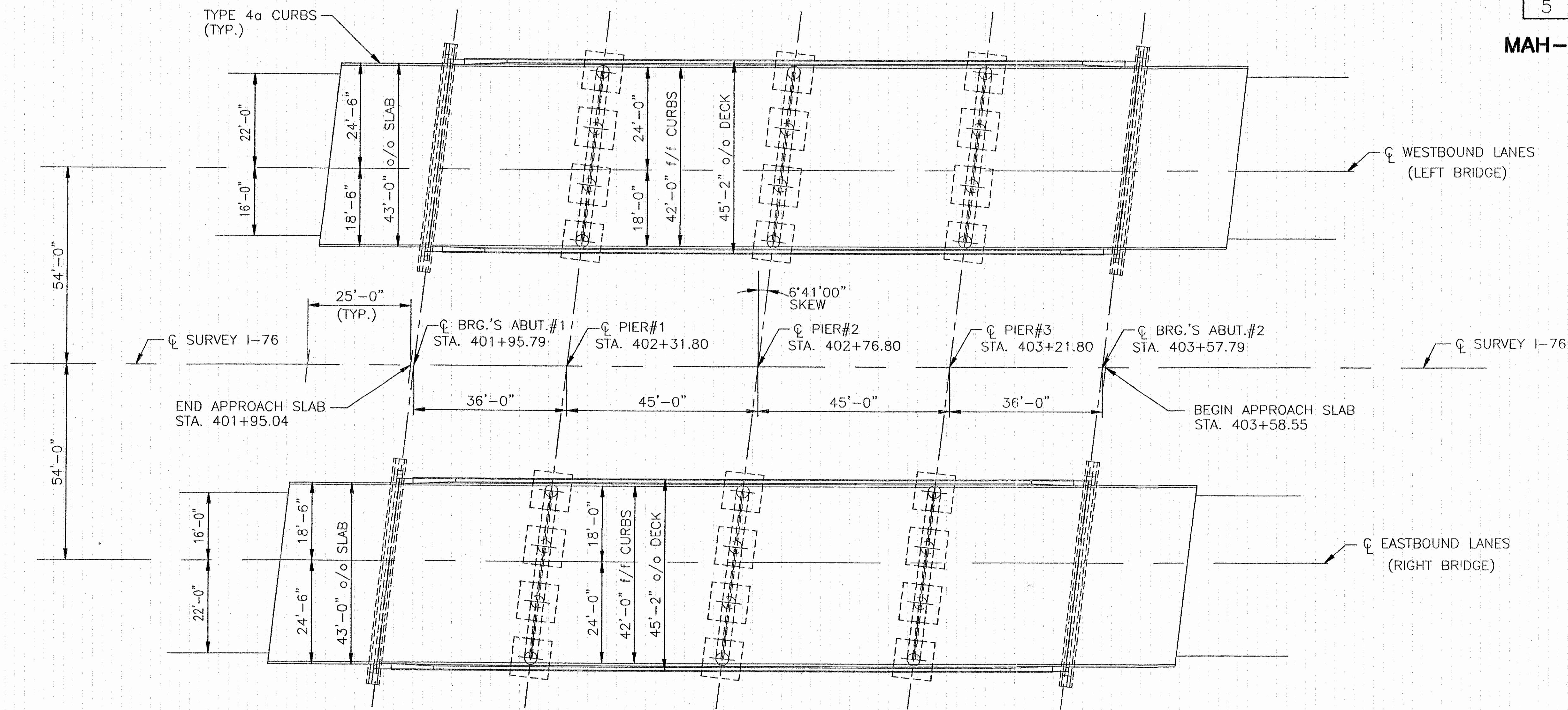
BRIDGE NO. MAH-76-0761 L&R  
 OVER S.R. 45  
 MAHONING COUNTY  
 STA 401+95.04

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH			DES	JAM	12/29/92	

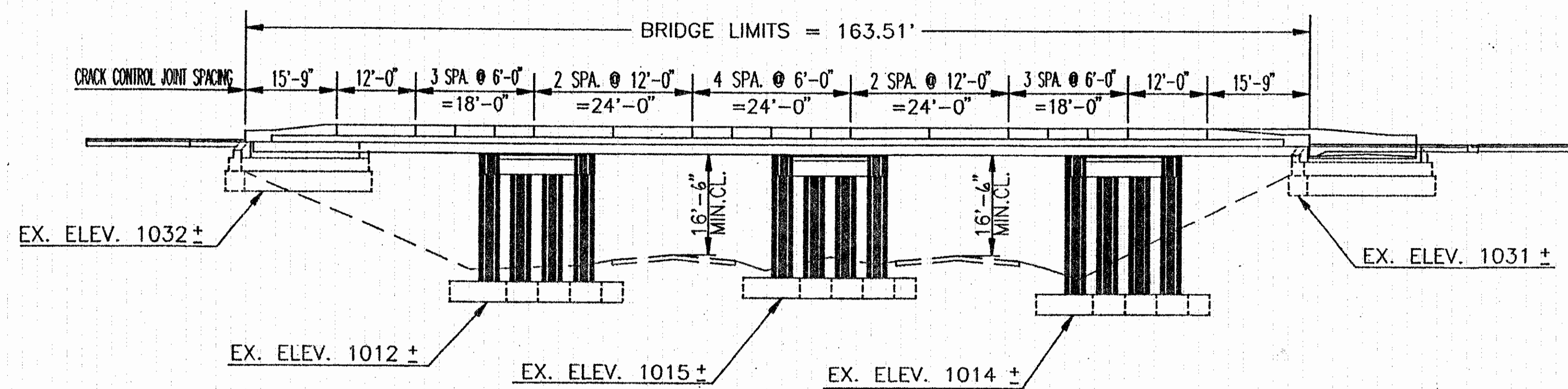


F.H.W.A. REGION	STATE	PROJECT	FUNDS	110 121
5	OHIO			

MAH-76/80-6.95/0.00



PLAN



ELEVATION

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES				2/13
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**GENERAL PLAN AND ELEVATION**

BRIDGE NO. MAH-76-0761 L&R  
OVER S.R. 45

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	JBH		DES			2/95



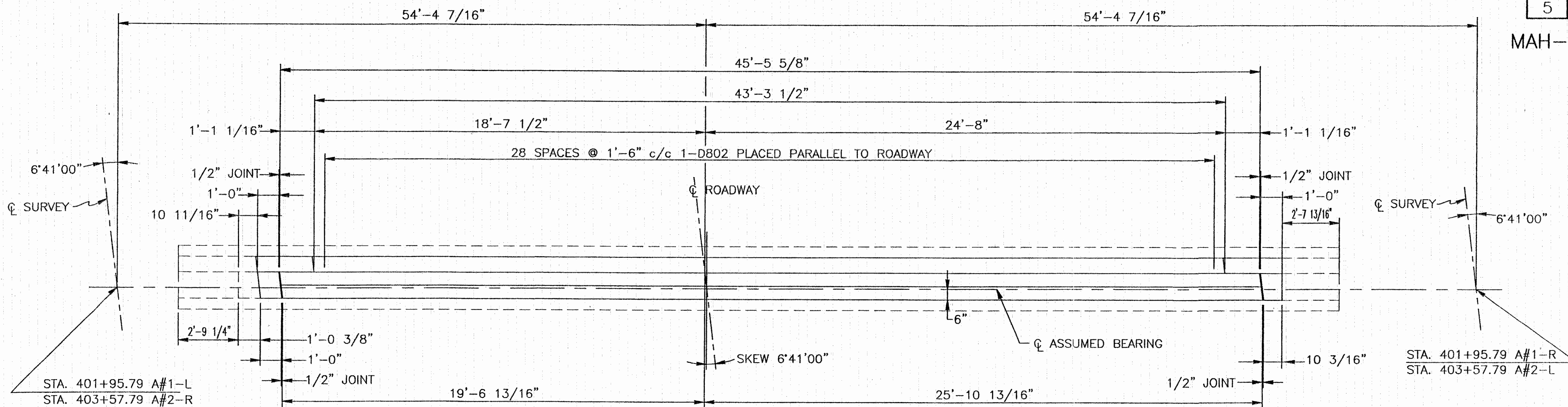




F.H.W.A. REGION	STATE	PROJECT	FUNDS
5	OHIO		

112  
121

MAH-76/80-6.95/0.00

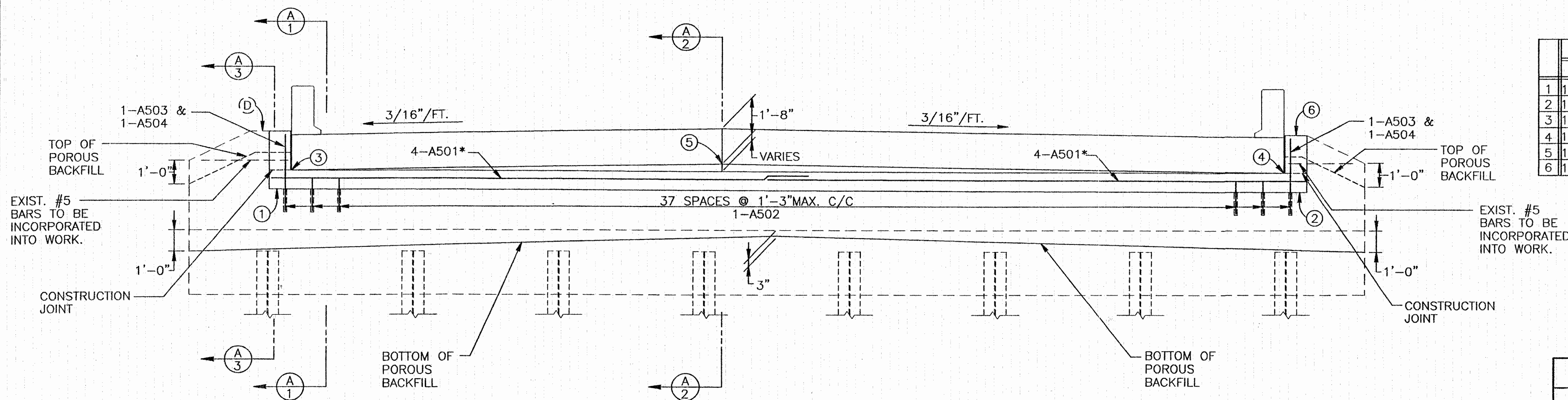


**PLAN**

ABUT. #1-L AS SHOWN  
 ABUT. #1-R & #2-L OPP. HAND (EXCEPT AS NOTED)  
 ABUT. #2-R SIMILAR (EXCEPT AS NOTED)

FOR SECTION DETAILS SEE SHEET 5/13

FOR EXISTING ELEVATIONS SEE SHEET 3/13



**ELEVATION**

\*LAP SPLICE A501 BARS 1'-10"

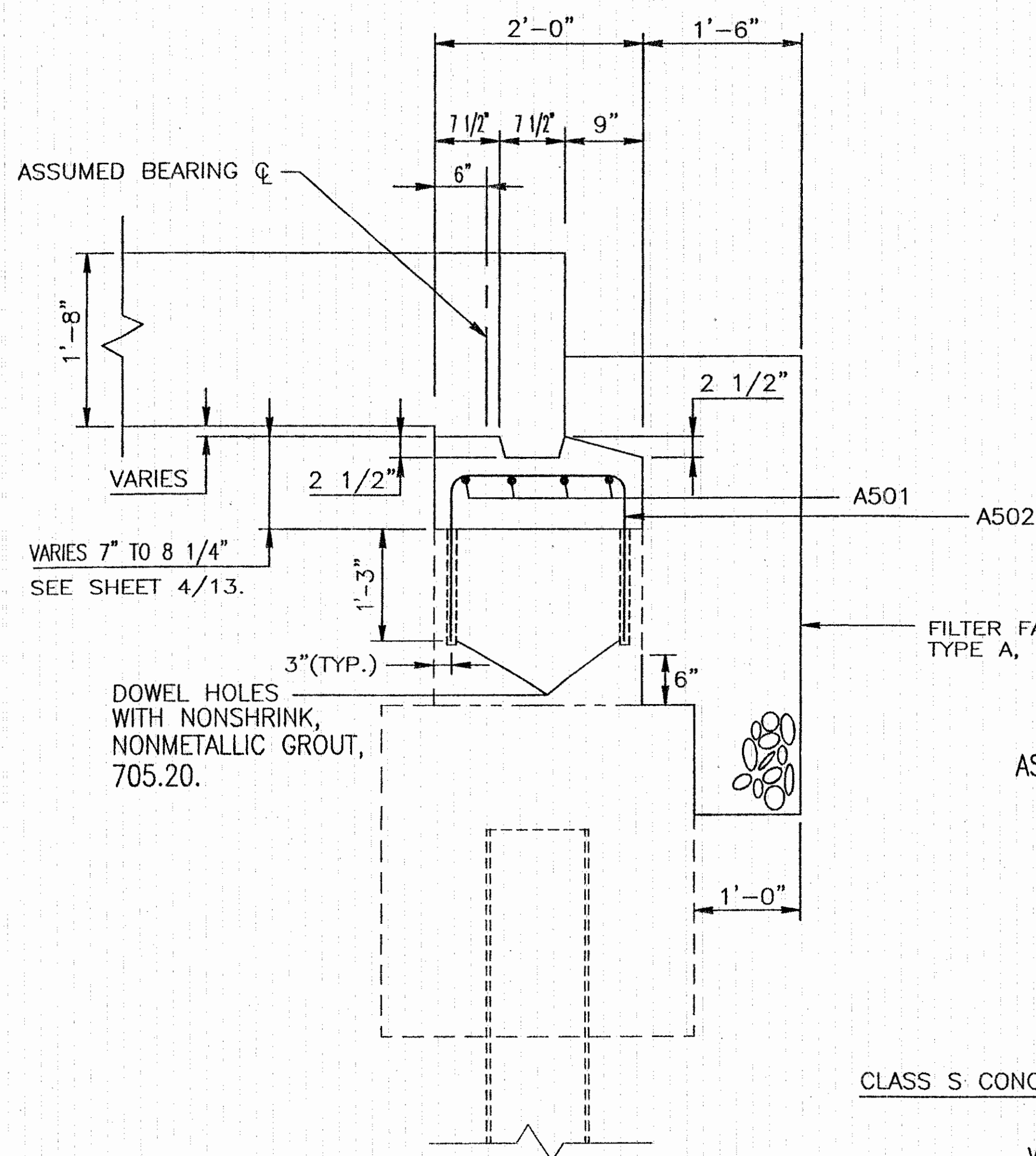
PROPOSED ELEVATIONS				
	1-L	2-L	1-R	2-R
1	1037.11	1035.83	1037.10	1035.97
2	1037.02	1035.96	1037.12	1035.91
3	1037.77	1036.41	1037.74	1036.65
4	1037.65	1036.56	1037.81	1036.59
5	1038.06	1036.84	1038.12	1036.97
6	1039.76	1038.70	1039.86	1038.65

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES				4/13	
<b>ABUTMENT DETAILS</b>					
BRIDGE NO. MAH-76-0761 L&R OVER S.R. 45					
DESIGNED JBH	DRAWN SMM	TRACED	CHECKED DES	REVIEWED JAM 12/29/92	REVISED

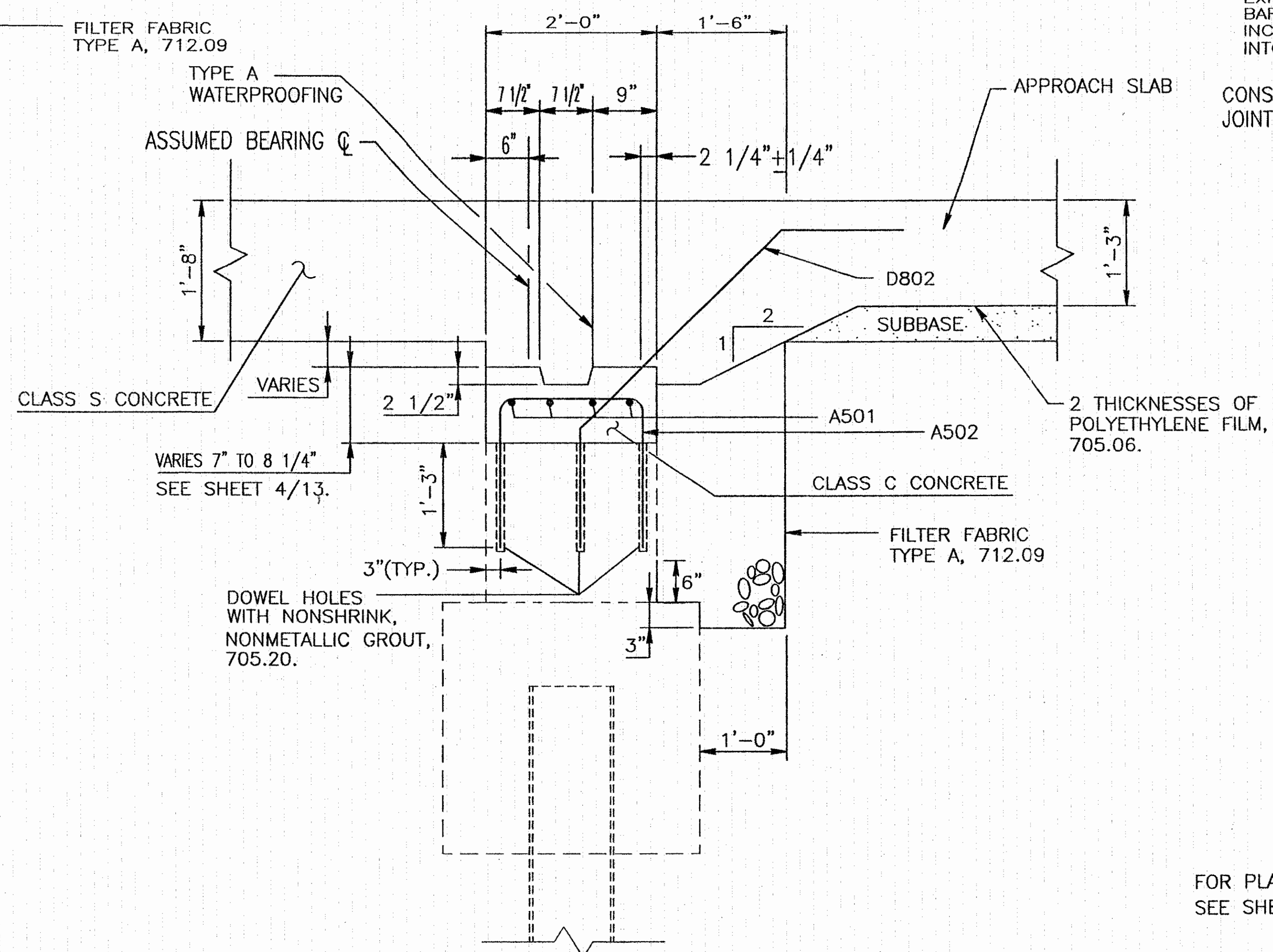


F.H.W.A. REGION	STATE	PROJECT	FUNDS	113 121
5	OHIO			

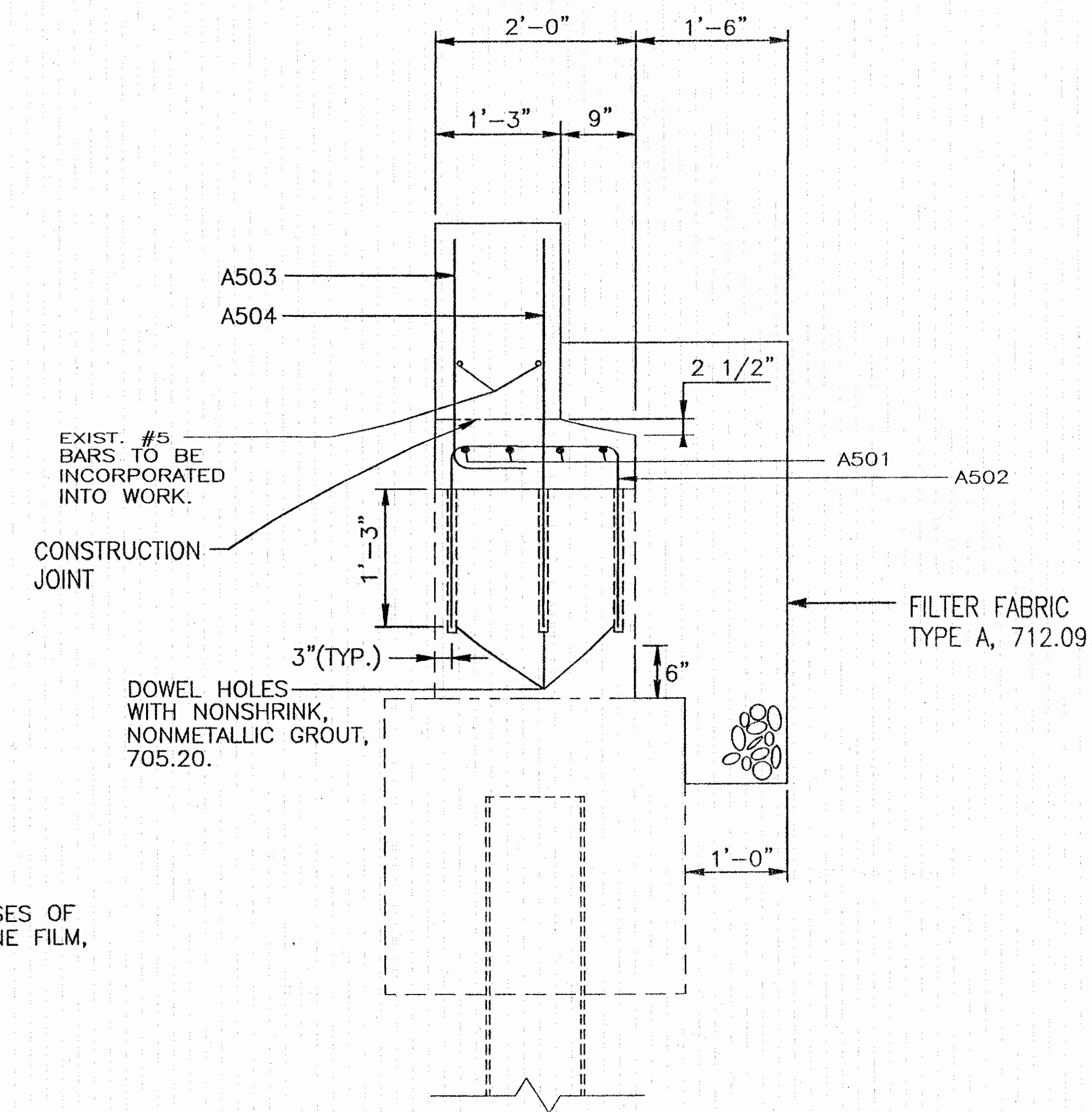
MAH-76/80-6.95/0.00



SECTION **A**  
1



SECTION **A**  
2



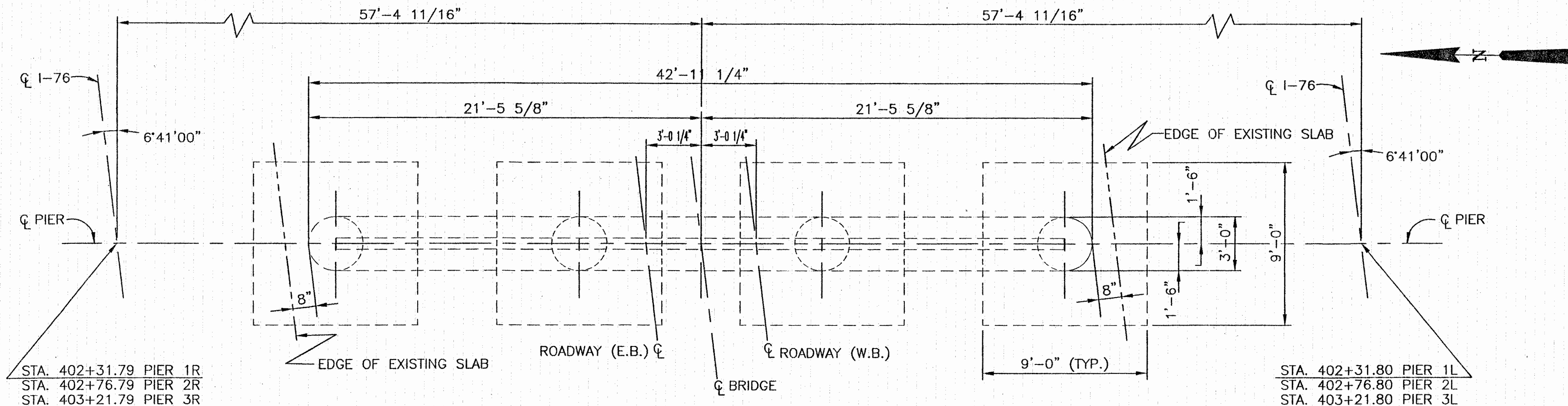
SECTION **A**  
3

FOR PLAN AND ELEVATION DETAILS  
SEE SHEET 4/13.

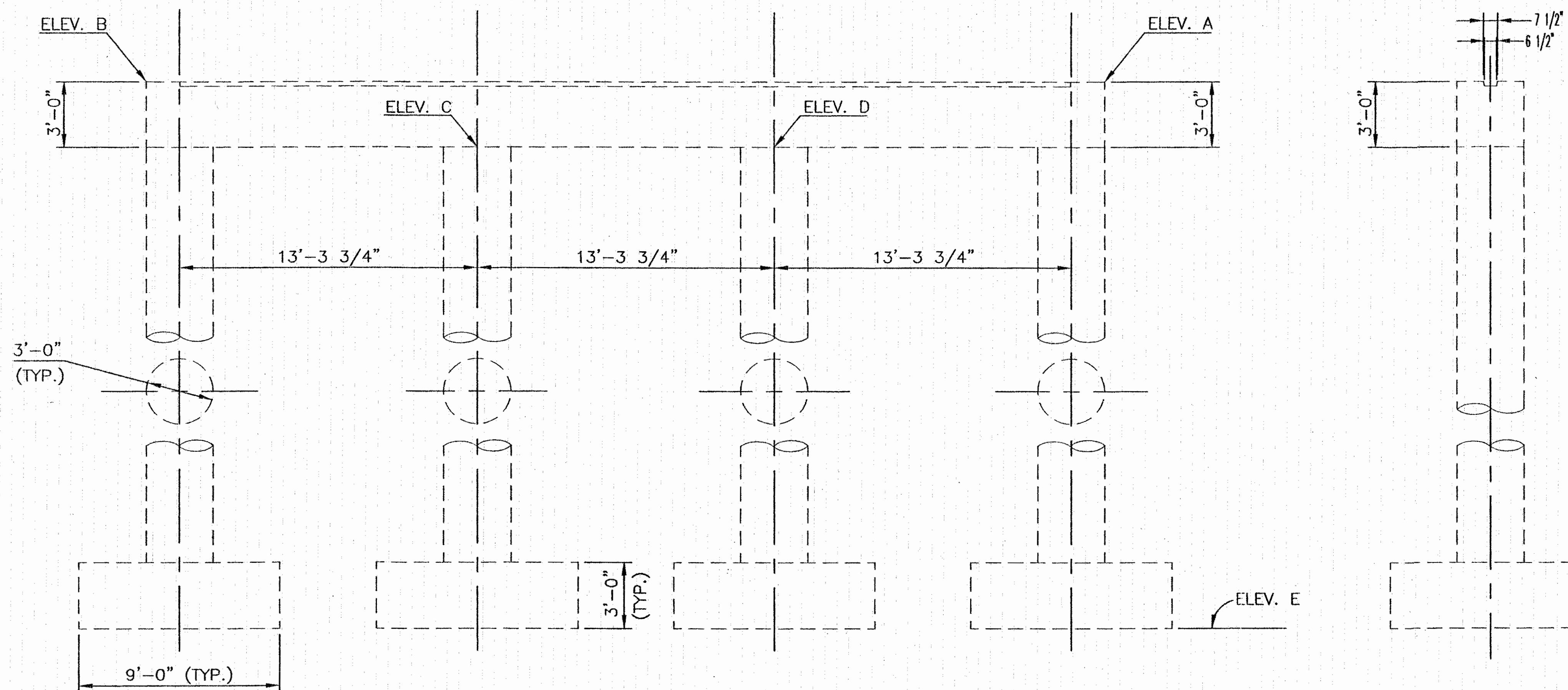
STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						5/13
<b>ABUTMENT DETAILS</b>						
BRIDGE NO. MAH-76-0761 L&R OVER S.R. 45						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	12/29/92	8/94



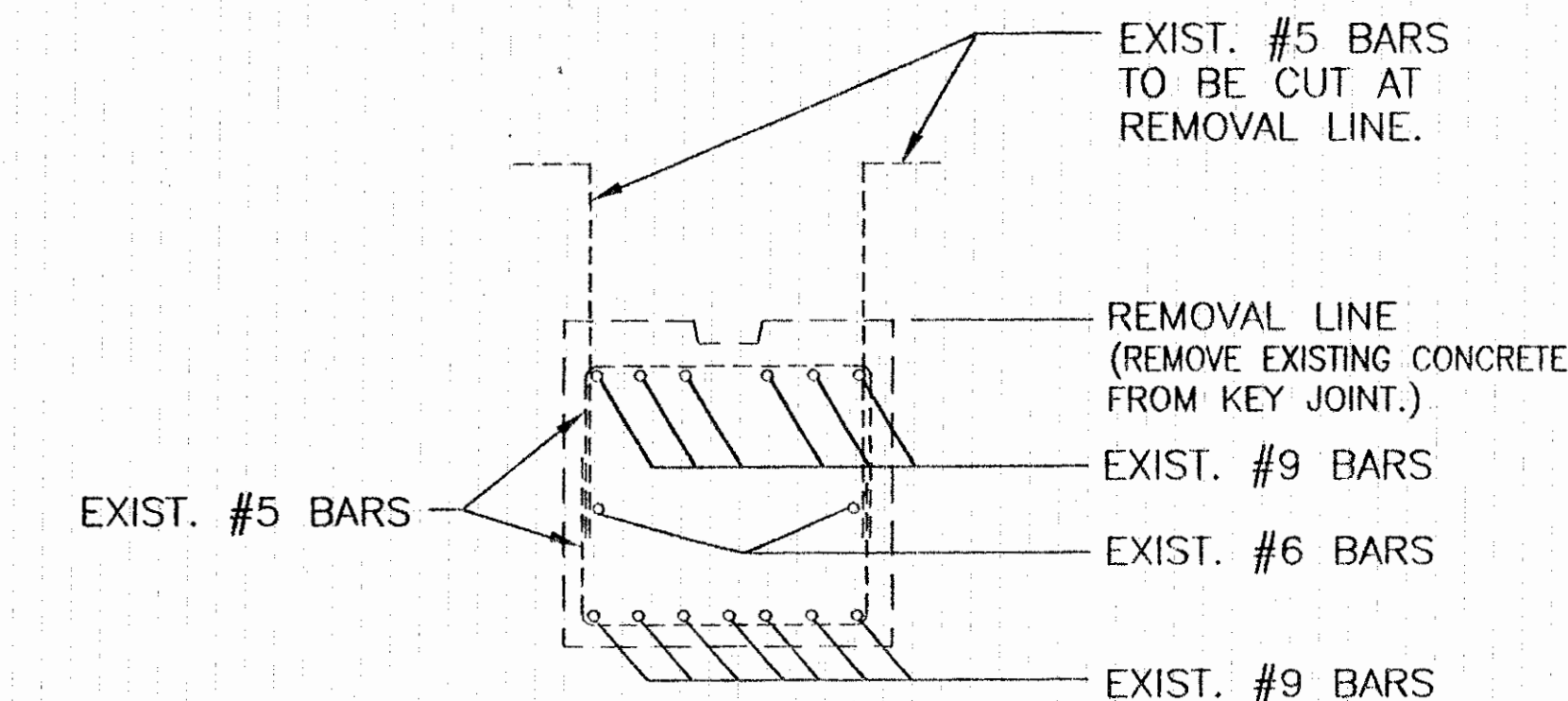
MAH-76/80-6.95/0.00



**PLAN**



**ELEVATION**



**EXISTING REINFORCEMENT DETAIL**

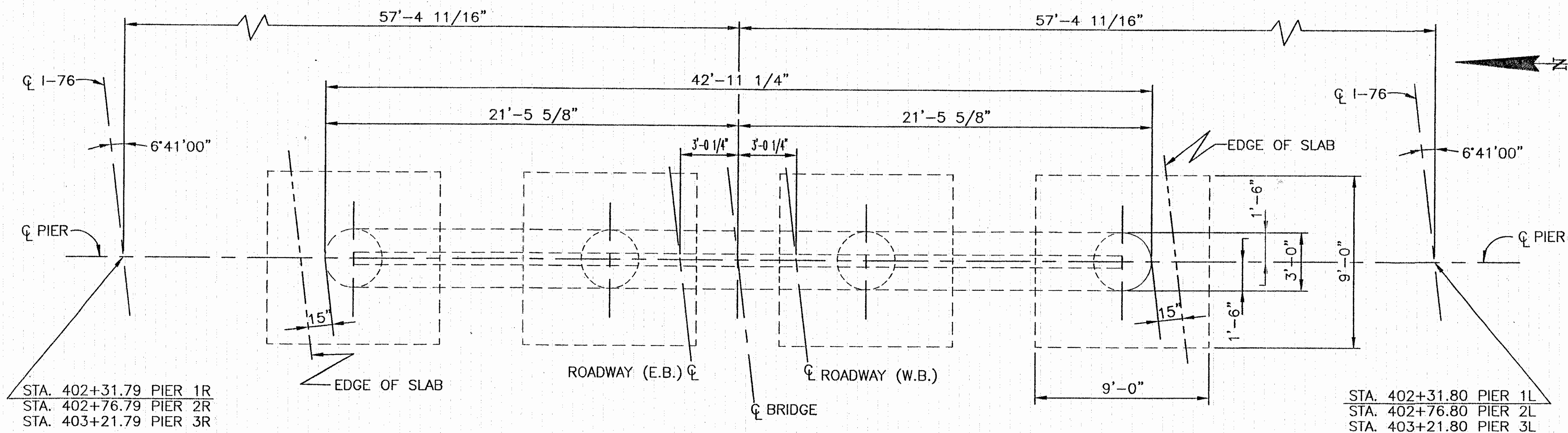
PIER	EXISTING ELEVATIONS				
	A	B	C	D	E(±)
1-L	1037.19	1037.07	1034.12	1034.16	1011.00
2-L	1036.85	1036.76	1033.86	1033.90	1014.00
3-L	1036.53	1036.44	1033.56	1033.62	1013.88
1-R	1037.18	1037.22	1034.26	1034.24	1013.00
2-R	1036.89	1036.98	1033.98	1033.96	1015.00
3-R	1036.56	1036.58	1033.59	1033.57	1013.88

**EXISTING PIER  
REMOVAL DETAILS**

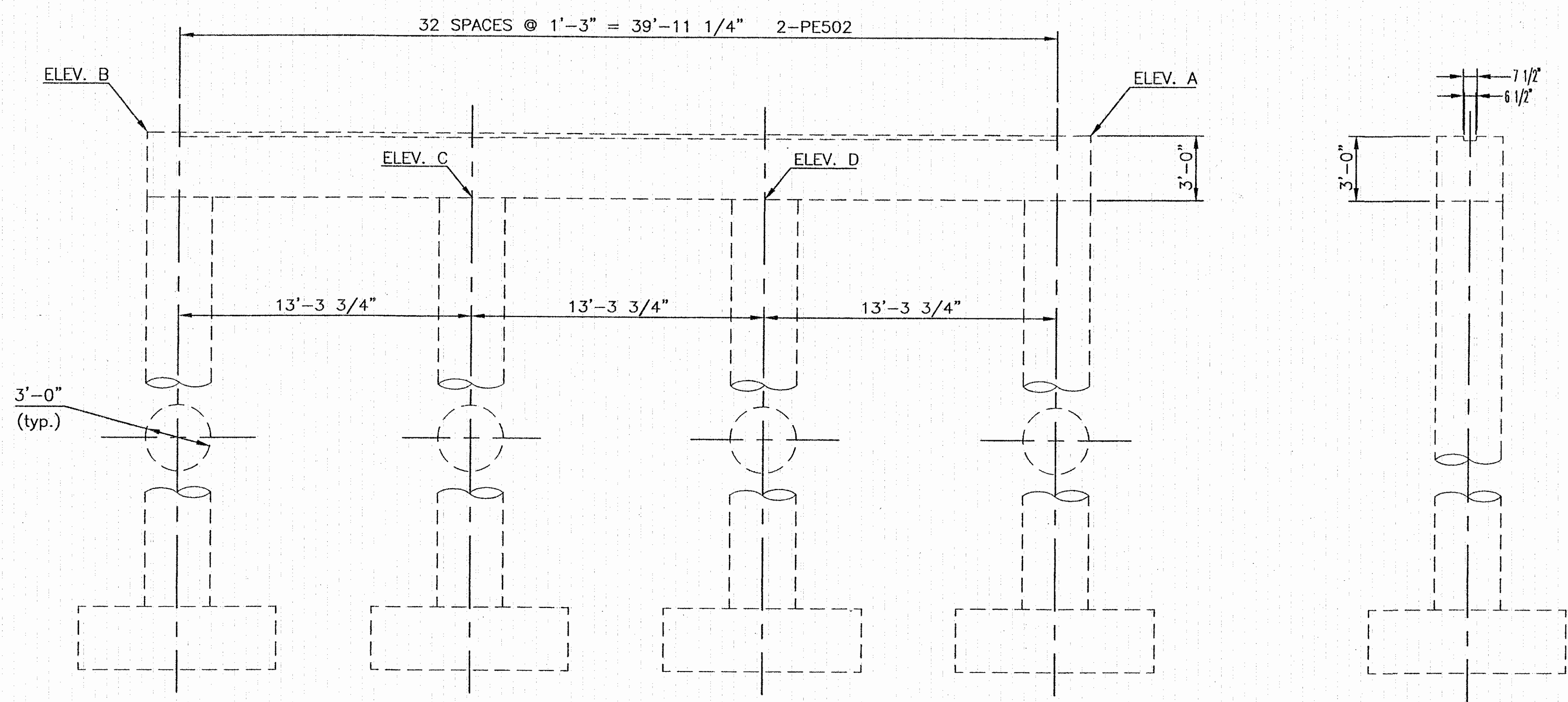
BRIDGE NO. MAH-76-0761 L&R  
OVER S.R. 45



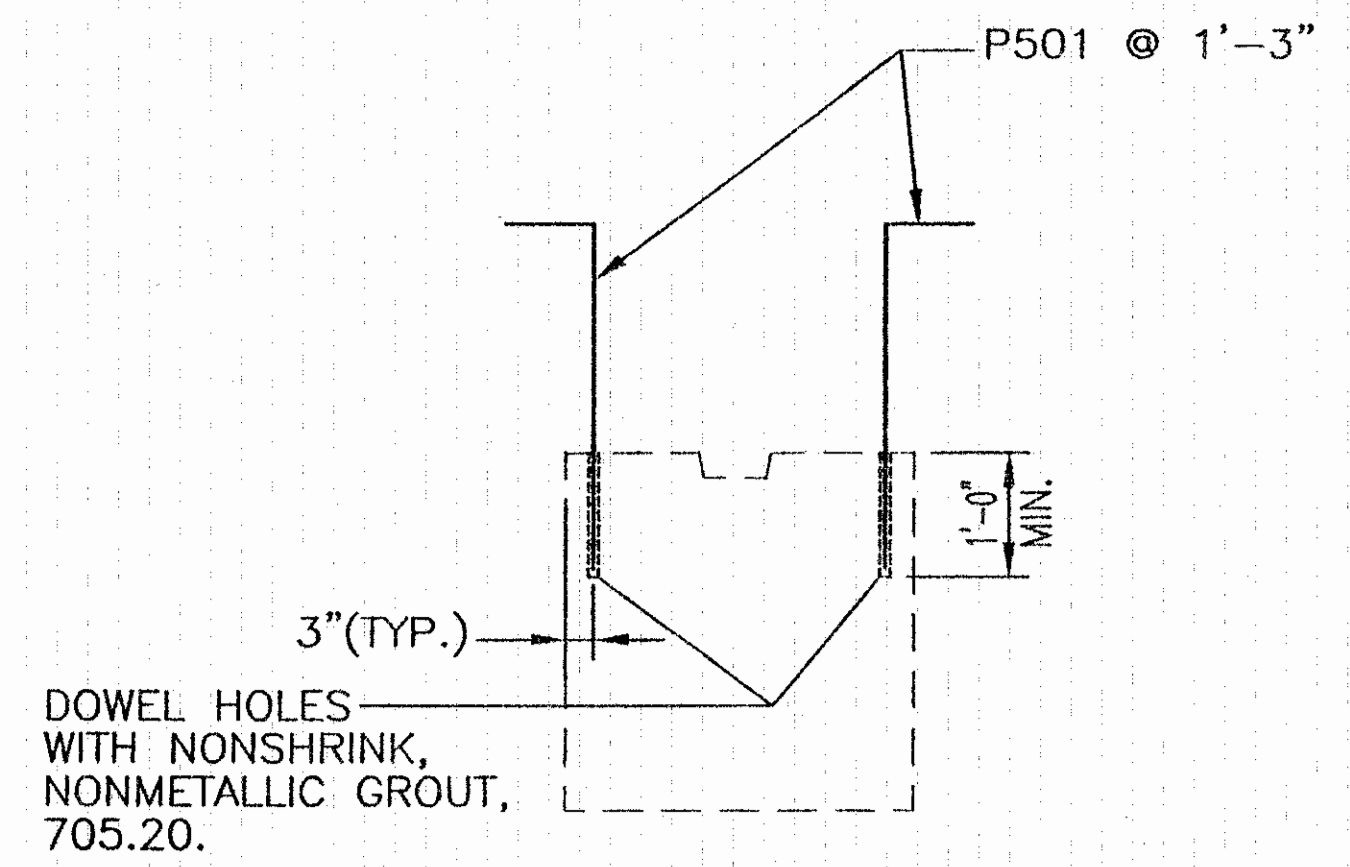
MAH-76/80-6.95/0.00



**PLAN**



**ELEVATION**



**REINFORCING STEEL DETAIL**

PIER	EXISTING ELEVATIONS				
	A	B	C	D	E(±)
1-L	1037.19	1037.07	1034.12	1034.16	1011.00
2-L	1036.85	1036.76	1033.86	1033.90	1014.00
3-L	1036.53	1036.44	1033.56	1033.62	1013.88
1-R	1037.18	1037.22	1034.26	1034.24	1013.00
2-R	1036.89	1036.98	1033.98	1033.96	1015.00
3-R	1036.56	1036.58	1033.59	1033.57	1013.88

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

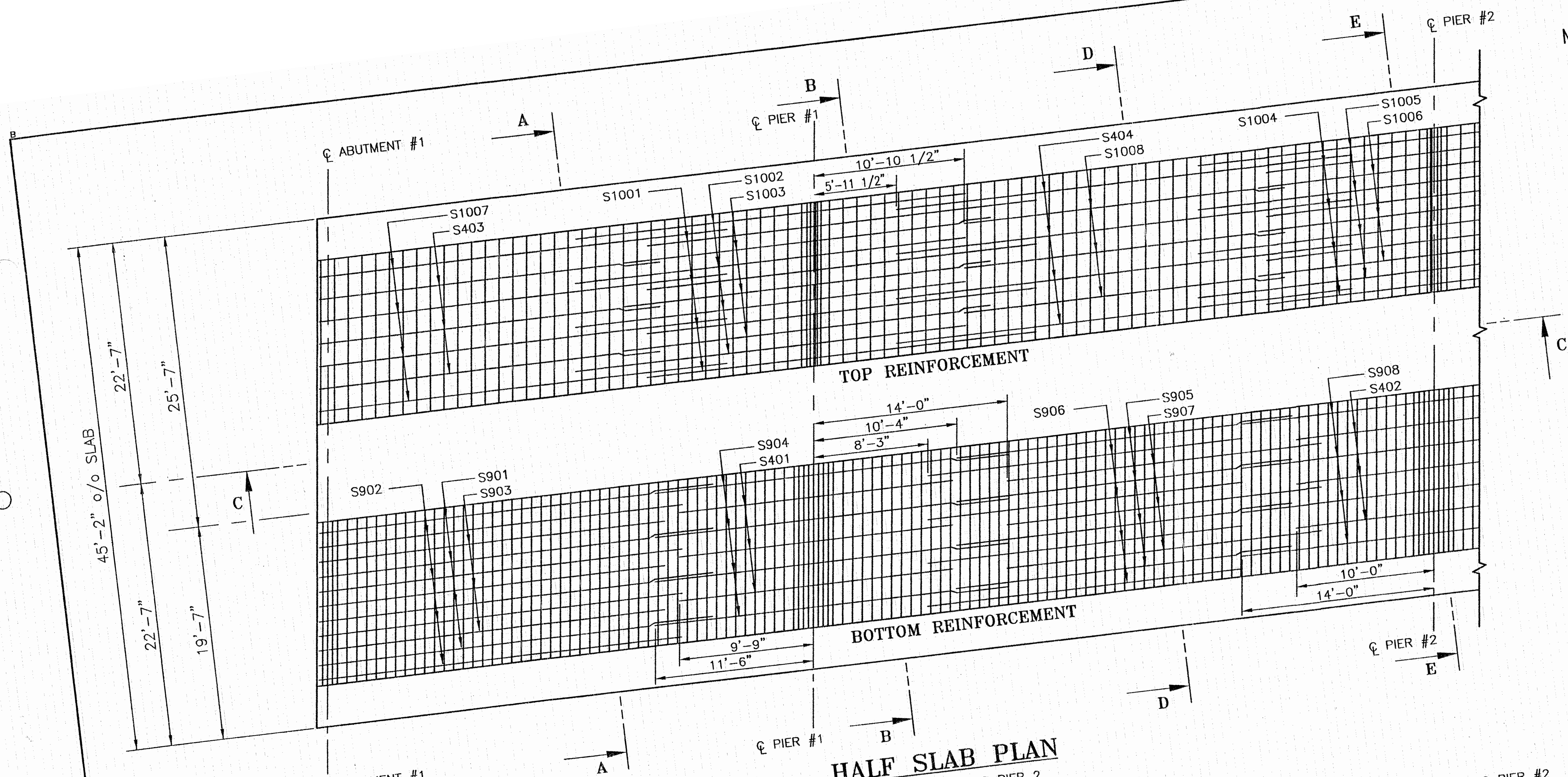
7/13

**PIER DETAILS**

BRIDGE NO. MAH-76-0761 L&R  
OVER S.R. 45

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	12/29/92	8/94





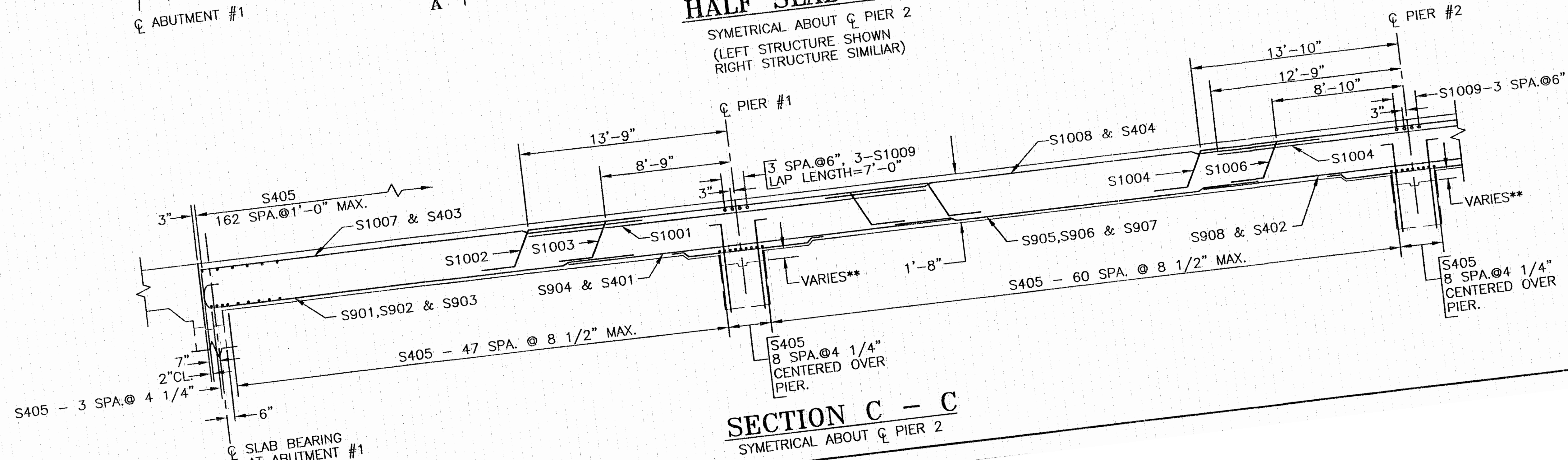
**HALF SLAB PLAN**

SYMMETRICAL ABOUT  $\phi$  PIER 2  
 (LEFT STRUCTURE SHOWN  
 RIGHT STRUCTURE SIMILAR)

FOR DECK TYPICAL SECTIONS  
 SEE SHEET 10/13.

FOR REMAINING SECTION  
 DETAILS SEE SHEET 9/13.

\*\* SEE DETAIL SHEET 12/13.



**SECTION C - C**

SYMMETRICAL ABOUT  $\phi$  PIER 2

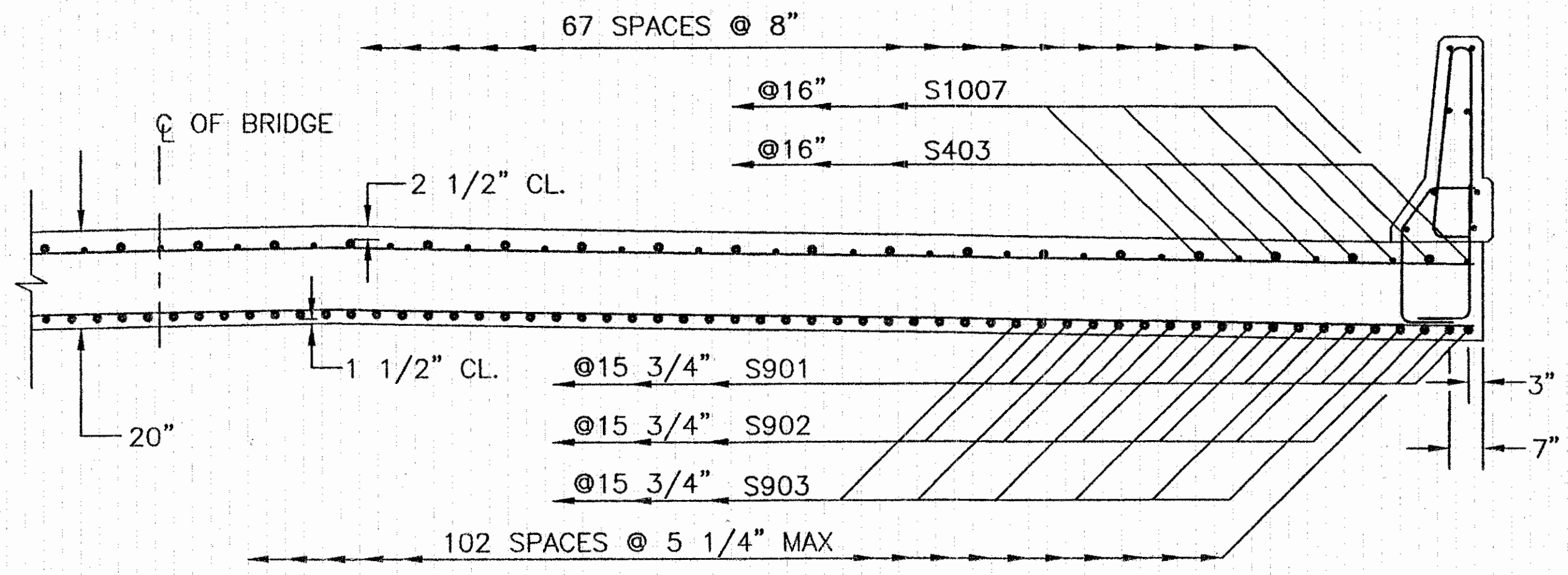
STATE OF OHIO  
 DEPARTMENT OF HIGHWAYS  
 BUREAU OF BRIDGES 8/13

**SUPERSTRUCTURE DETAILS**  
 BRIDGE NO. MAH-76-0761 L & R  
 OVER S.R. 45

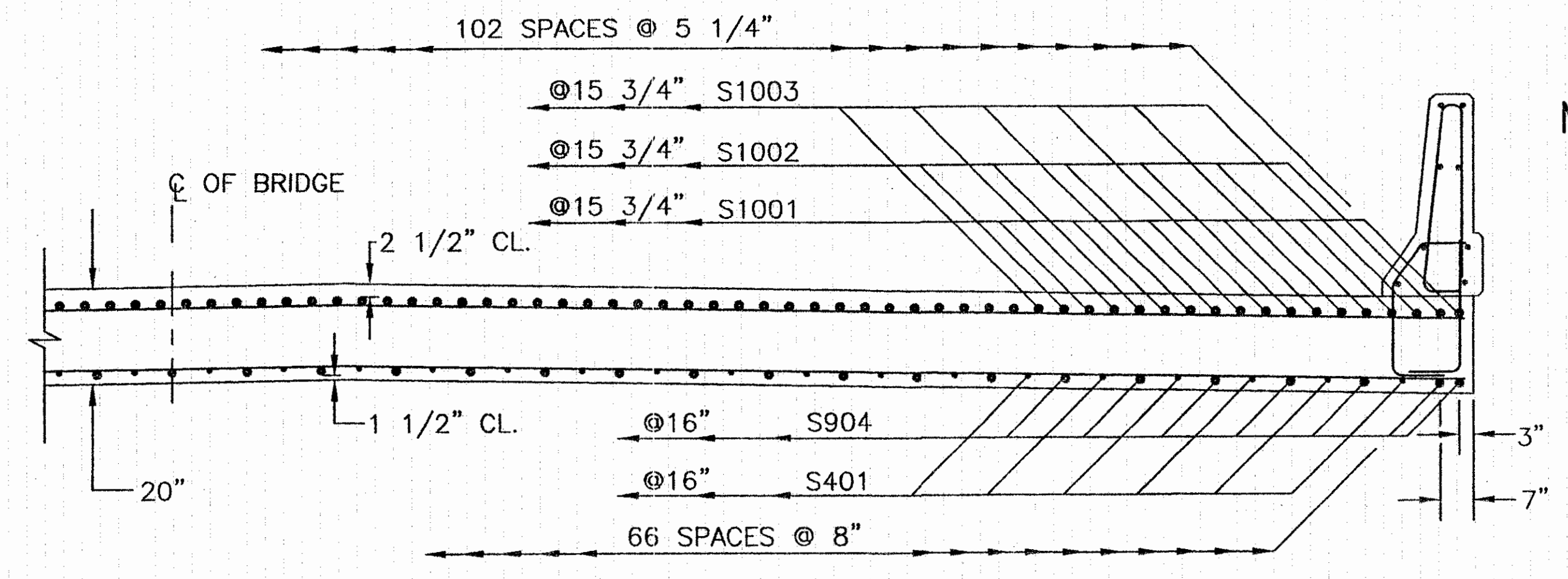
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
JBH	JBH		DES	JAM	12/29/92	



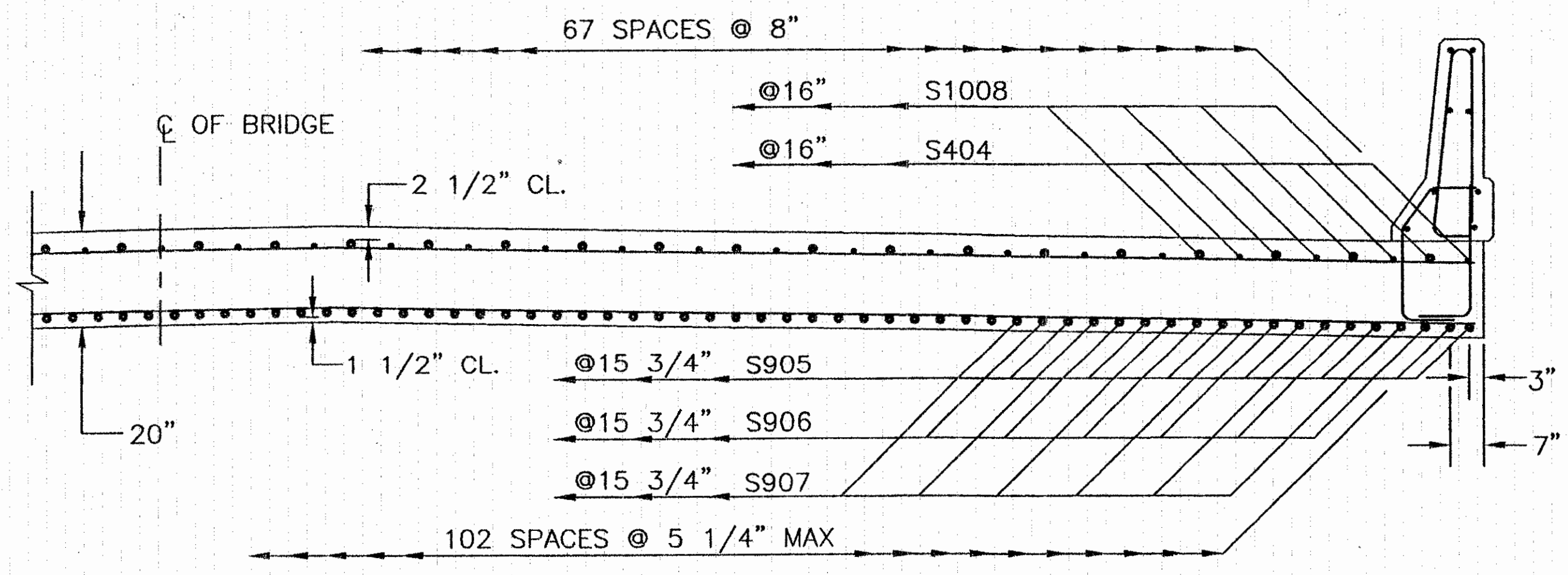
MAH-76/80-6.95/0.00



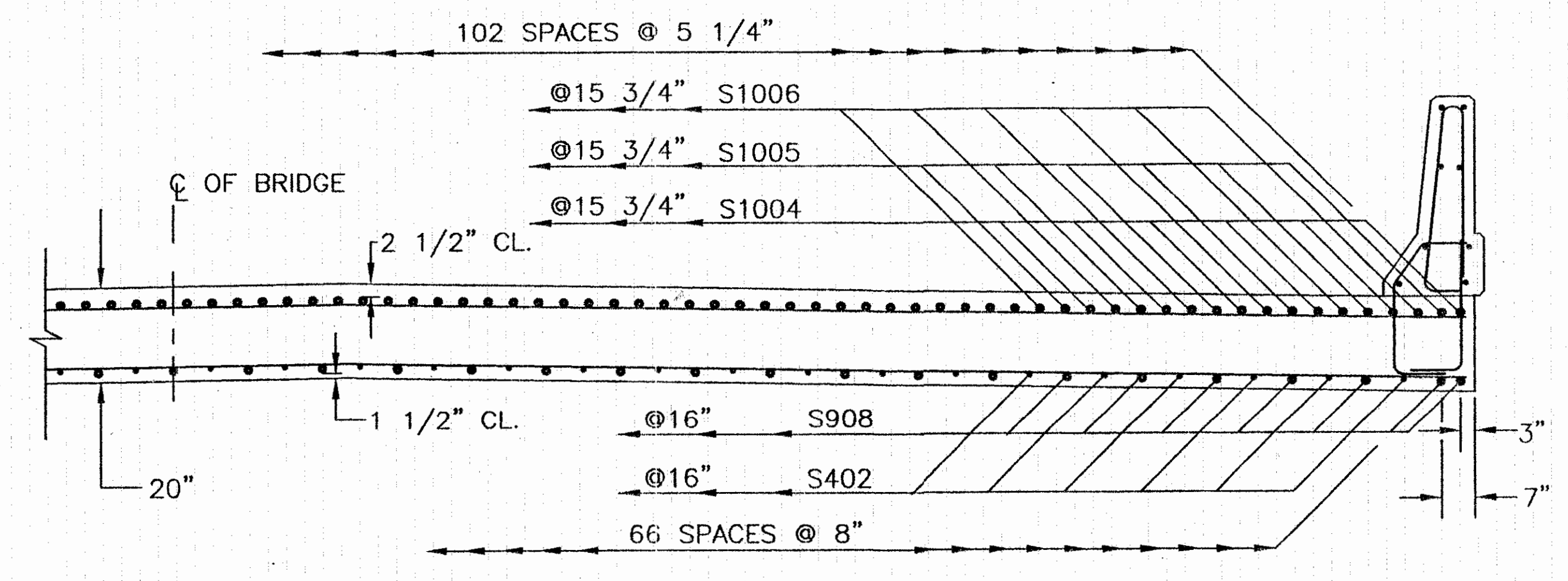
SECTION A - A



SECTION B - B

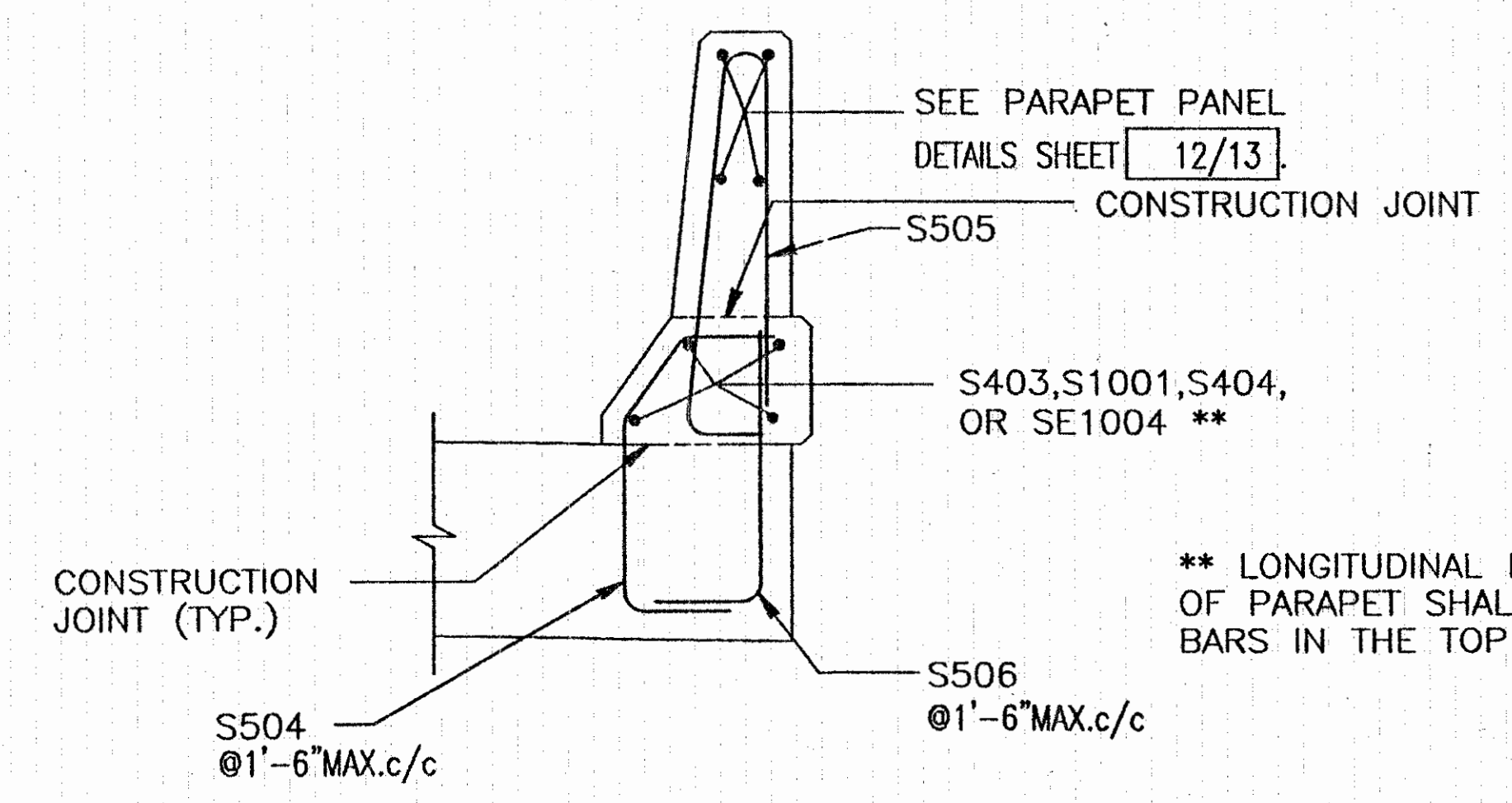
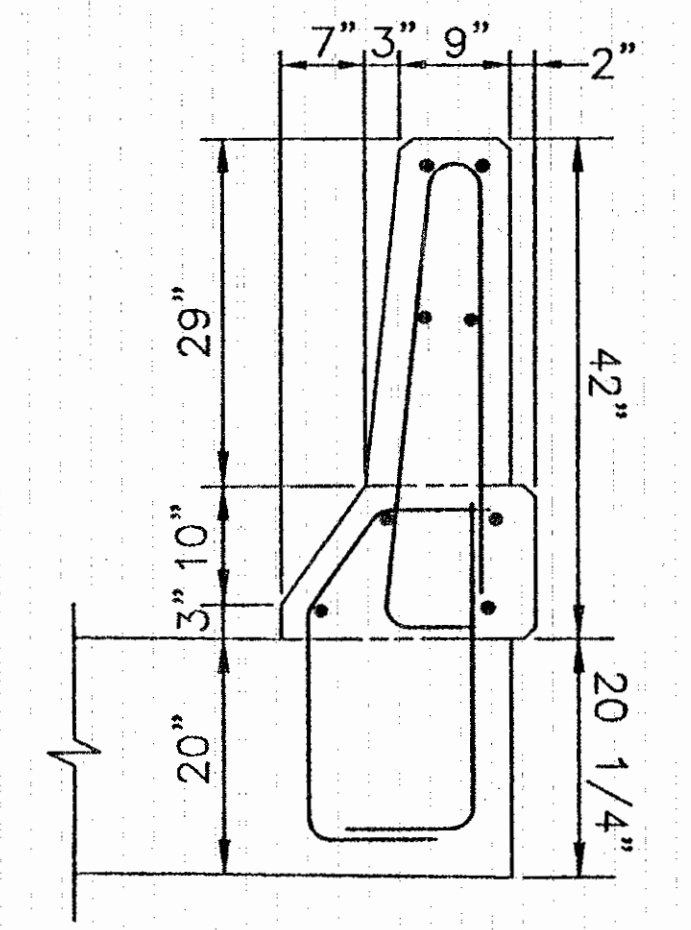


SECTION D - D



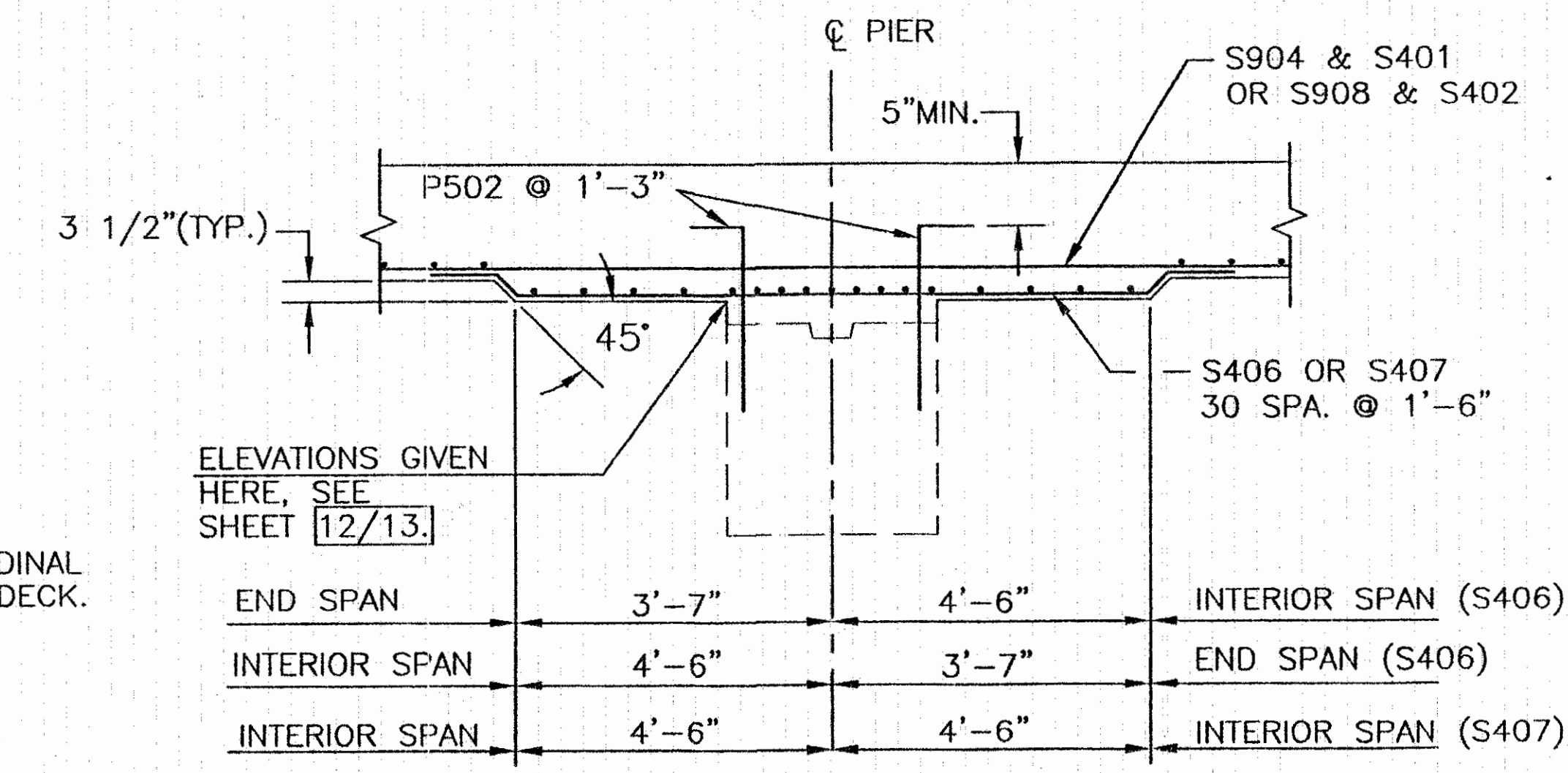
SECTION E - E

FOR DECK TYPICAL SECTIONS SEE SHEET 10/13.  
FOR HALF SLAB PLAN AND OTHER SECTION DETAILS SEE SHEET 8/13.



**PARAPET DETAILS**  
FOR COMPLETE PARAPET DETAILS SEE SHEETS 11/13 AND 12/13

\*\* LONGITUDINAL BARS IN LOWER PART OF PARAPET SHALL MATCH THE LONGITUDINAL BARS IN THE TOP MAT OF THE BRIDGE DECK.



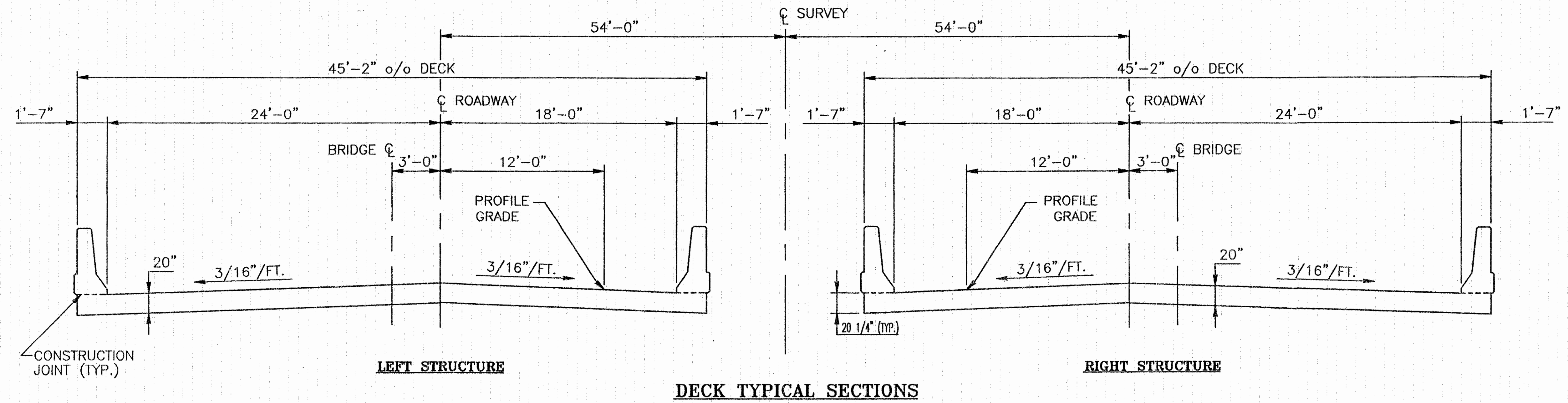
ELEVATIONS GIVEN HERE, SEE SHEET 12/13.			
END SPAN	3'-7"	4'-6"	INTERIOR SPAN (S406)
INTERIOR SPAN	4'-6"	3'-7"	END SPAN (S406)
INTERIOR SPAN	4'-6"	4'-6"	INTERIOR SPAN (S407)

**TYPICAL SLAB HAUNCH AT PIER**

STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						9/13
<b>SUPERSTRUCTURE DETAILS</b>						
BRIDGE NO. MAH-76-0761 L & R OVER S.R. 45						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	JBH		DES	JAM	12/29/92	8/94



MAH-76/80-6.95/0.00

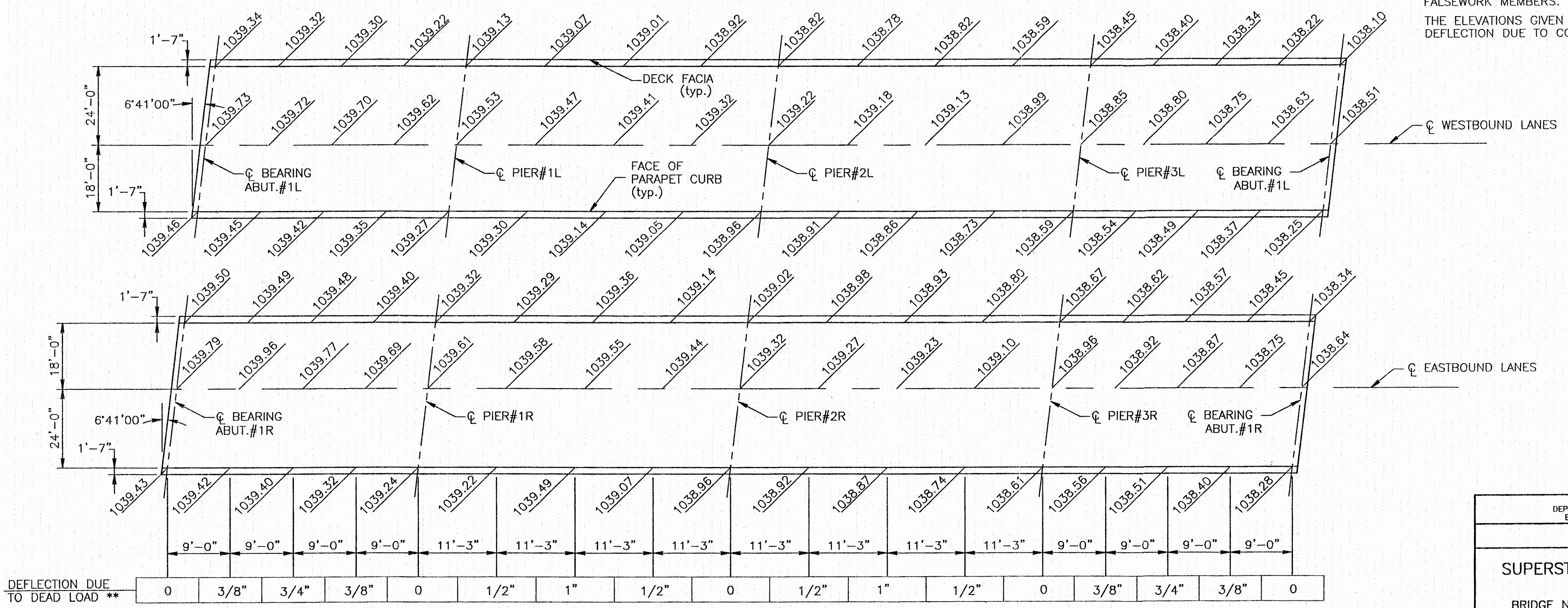


DECK TYPICAL SECTIONS

**\*\* CAMBER**

THE REQUIRED CAMBER SHALL BE 3/4" FOR SPANS 1 AND 4 (36'SPANS) AND 1" FOR SPANS 2 AND 3 (45'SPANS) (IN ADDITION TO ANY REQUIRED CONFORMANCE WITH THE PROFILE OF THE HIGHWAY) TO ALLOW FOR DEAD LOAD DEFLECTION. THIS IS THE AMOUNT OF CAMBER REQUIRED BEFORE FALSEWORK IS RELEASED. PROPER ALLOWANCE SHALL BE MADE FOR THE DEFLECTION OF FALSEWORK MEMBERS.

THE ELEVATIONS GIVEN REFLECT ONLY THE DEFLECTION DUE TO CONCRETE DEAD LOAD.



SCREENED ELEVATIONS

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

10/13

**SUPERSTRUCTURE DETAILS**

BRIDGE NO. MAH-76-0761 L&R  
OVER S.R. 45

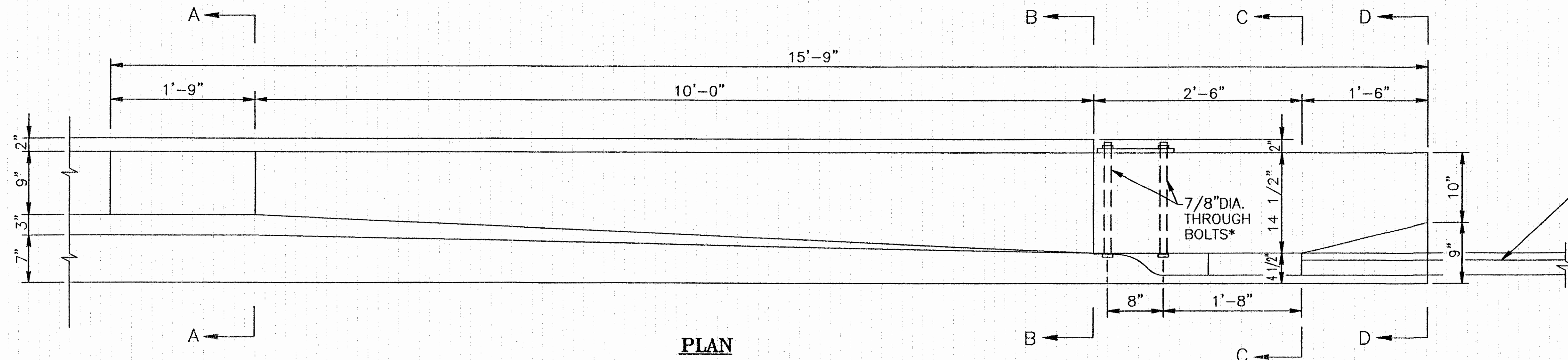
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	JBH		DES	JAM	12/29/92	9/94



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

119  
121

MAH-76/80-6.95/0.00



**PLAN**

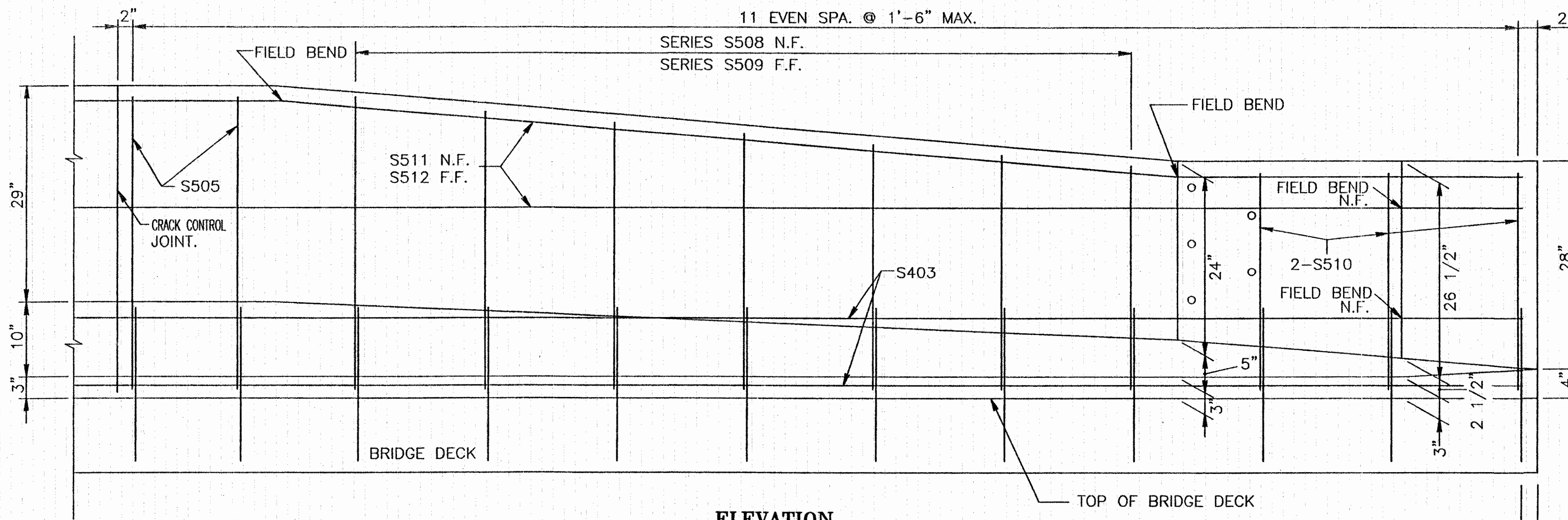
BRIDGE TERMINAL ASSEMBLY, TYPE 1 (APPROACH ENDS) OR TYPE 2 (TRAILING ENDS). SEE SHEET 1/13

\* FOR EXACT LOCATION OF 7/8" DIA. THROUGH BOLTS AND ADDITIONAL DETAILS SEE STANDARD CONSTRUCTION DRAWING GR-3.1M OR GR-3.2M.

FOR COMPLETE CRACK CONTROL JOINT SPACING SEE GENERAL PLAN AND ELEVATION, SHEET 2/13

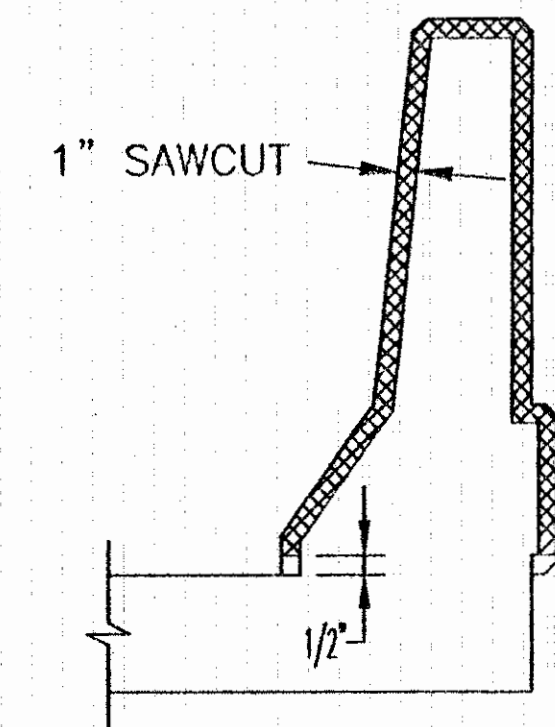
FOR OTHER PARAPET DETAILS SEE SHEET 9/13

FOR PARAPET PANEL DETAILS SEE SHEET 12/13



**ELEVATION**

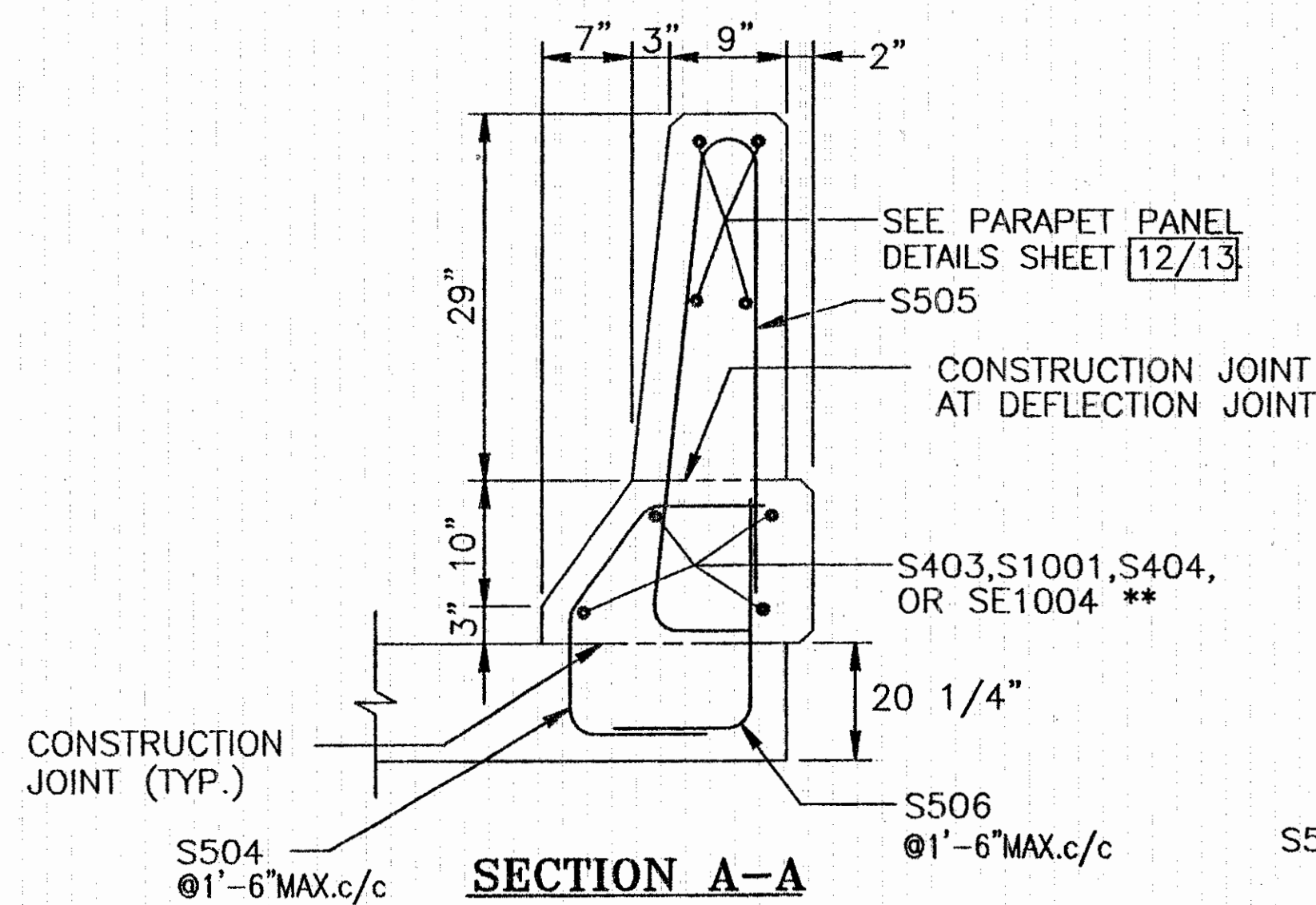
N.F.= NEAR FACE  
F.F.= FAR FACE



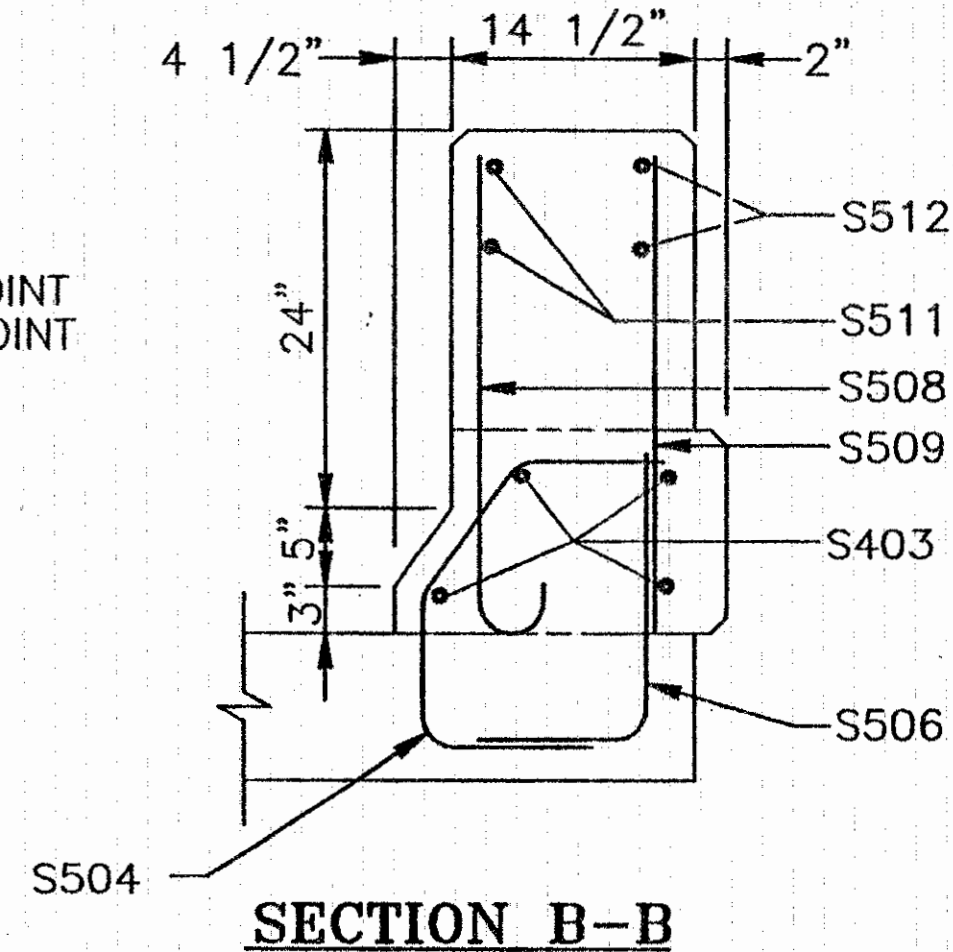
**SECTION THROUGH CRACK CONTROL JOINT**

CAULKING MATERIAL CONFORMING TO FEDERAL SPECIFICATION TT-S-00227E.

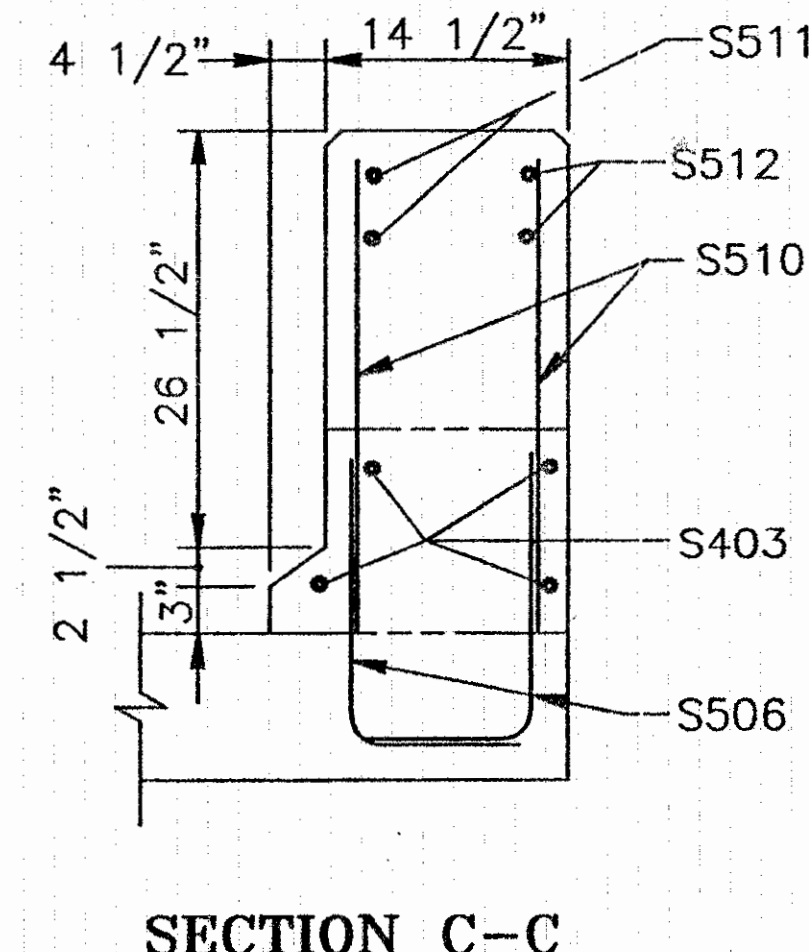
\*\* LONGITUDINAL BARS IN LOWER PART OF PARAPET SHALL MATCH THE LONGITUDINAL BARS IN THE TOP MAT OF THE BRIDGE SLAB.



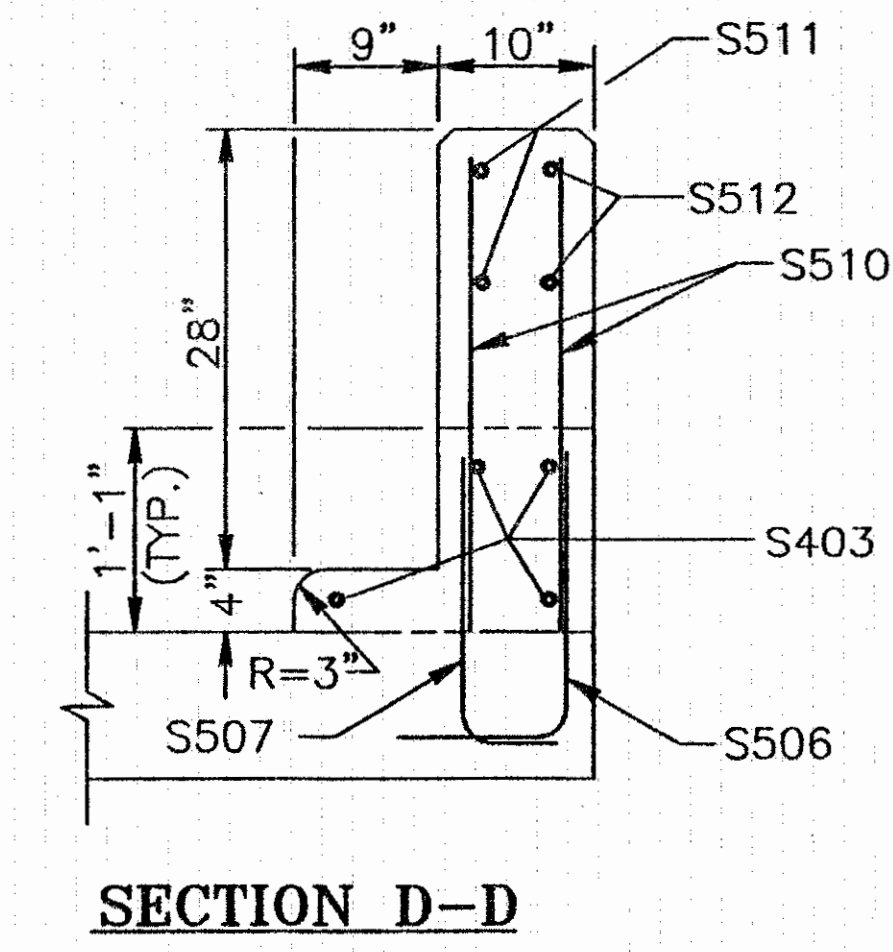
**SECTION A-A**



**SECTION B-B**



**SECTION C-C**



**SECTION D-D**

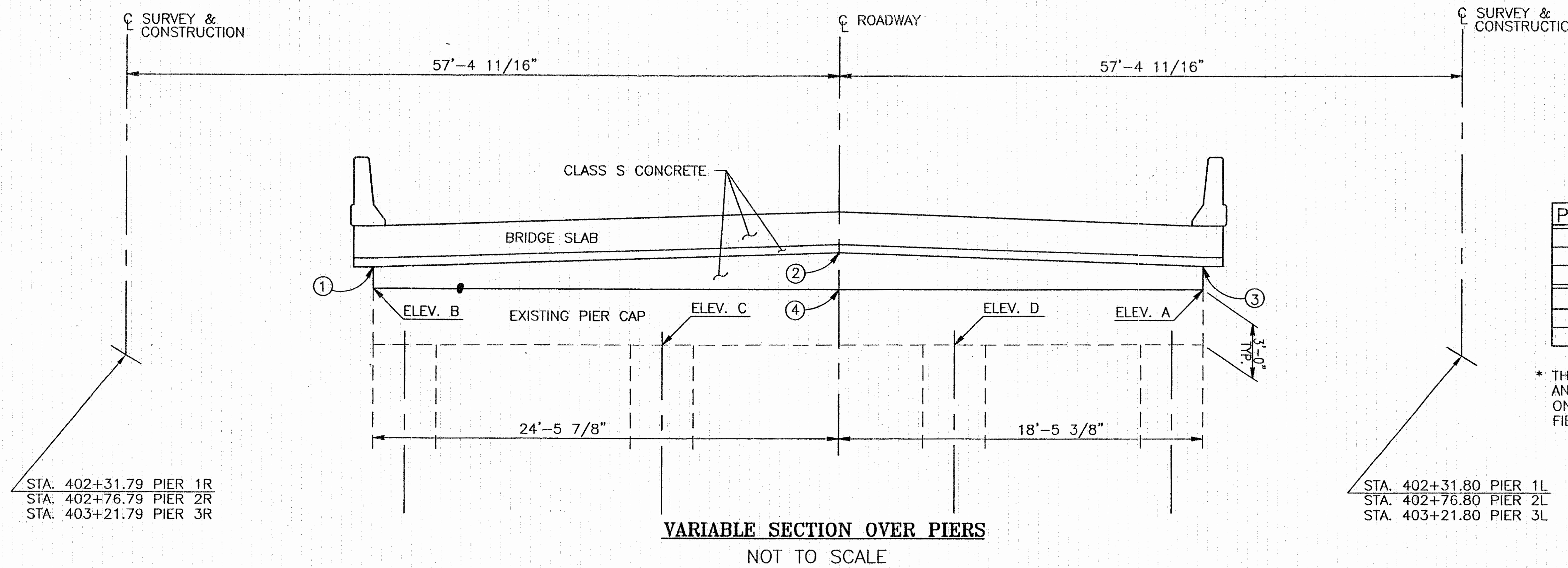
STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES						11/13
<b>PARAPET TRANSITION DETAILS</b>						
BRIDGE NO. MAH-76-0761 L&R OVER S.R. 45						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	12/29/92	



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

120  
121

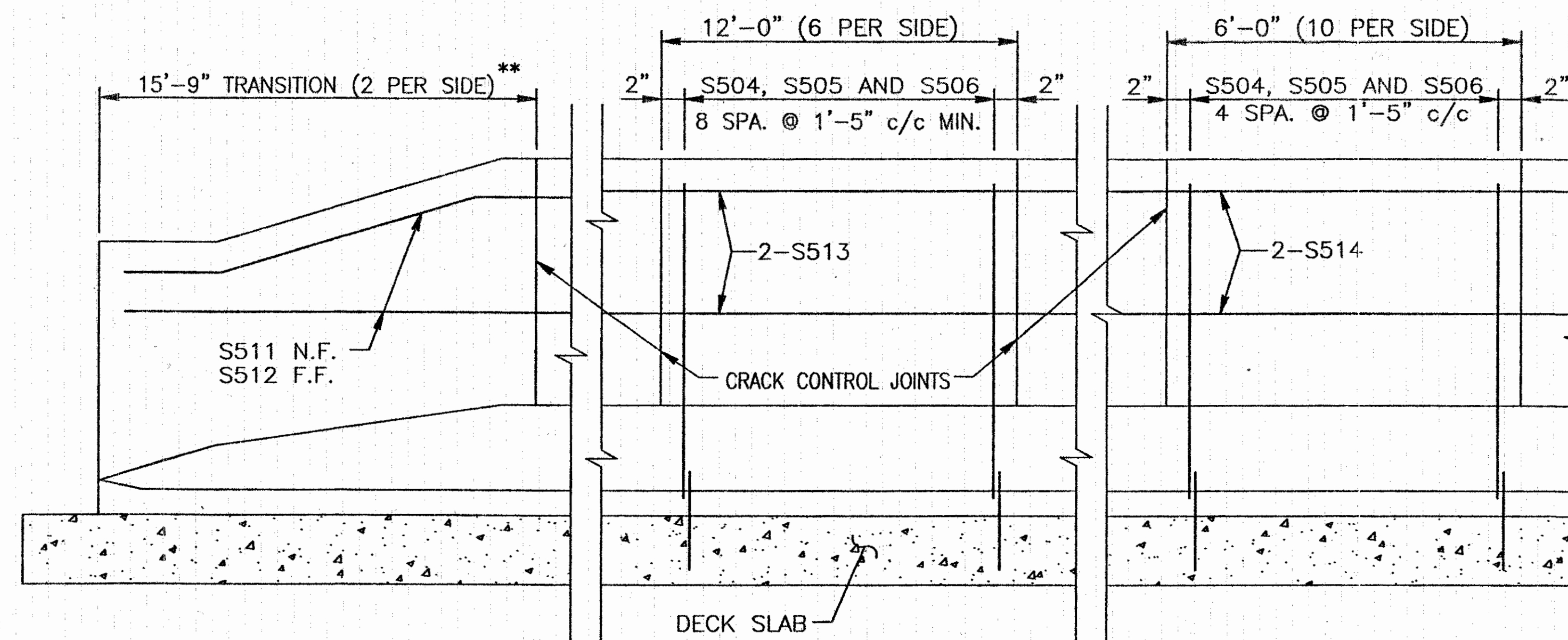
MAH-76/80-6.95/0.00



PIER No.	ELEVATIONS			
	1	2	3	4*
1 L	1037.17	1037.57	1037.31	1037.14±
2 L	1036.86	1037.26	1037.00	1036.81±
3 L	1036.49	1036.89	1036.63	1036.49±
1 R	1037.36	1037.65	1037.28	1037.20±
2 R	1037.06	1037.36	1037.00	1036.94±
3 R	1036.71	1037.00	1036.65	1036.57±

\* THESE ELEVATIONS WERE DETERMINED GRAPHICALLY AND ARE INTENDED FOR QUANTITY ESTIMATION PURPOSES ONLY, THEY ARE NOT TO BE CONSIDERED THE ACTUAL FIELD ELEVATIONS.

**VARIABLE SECTION OVER PIERS**  
NOT TO SCALE



**PARAPET PANEL DETAILS**  
(INSIDE ELEVATION SHOWN)

FOR COMPLETE CRACK CONTROL JOINT SPACING  
SEE GENERAL PLAN AND ELEVATION, SHEET 2/13

FOR CRACK CONTROL JOINT DETAILS SEE SHEET 11/13

\*\* FOR COMPLETE PARAPET TRANSITION DETAILS SEE SHEET 11/13

FOR OTHER PARAPET DETAILS SEE SHEET 9/13

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
BUREAU OF BRIDGES

12/13

**PARAPET PANEL DETAILS**

BRIDGE NO. MAH-76-0761 L&R  
OVER S.R. 45

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JBH	SMM		DES	JAM	12/29/92	2/95



