

NOTES:

EARTHWORK LIMITS ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

FOR BENCHMARK SEE SHEET 3744.

FOR SUPERELEVATION TRANSITION DETAIL SEE SHEET 2744.

FOR ABBREVIATIONS SEE GENERAL NOTE SHEET 7744.

ESTIMATED AVERAGE PILE PAY LENGTHS ARE 30 FEET AT RA AND 50 FEET AT FA. FOR PIER PAY LENGTHS SEE PIER DETAILS.

LEGEND:

◆ - BRIDGE BORING LOCATION

| TRAFFIC DATA (I-76)      |        |
|--------------------------|--------|
| CURRENT YEAR ADT (2002): | 22,590 |
| DESIGN YEAR ADT (2022):  | 27,250 |
| DESIGN YEAR ADTT (2022): | 10,900 |

EXISTING STRUCTURE

TYPE: CONTINUOUS STEEL GIRDERS WITH HINGES AND REINFORCED CONCRETE DECK.

SUBSTRUCTURE: REINFORCED CONCRETE ABUTMENTS & PIER CAP ON 14" BPI17 PILES

SPANS: 93'-0", 16 SPANS @ 119'-00", 93'-0"

ROADWAY: 30'-0" ± F/F CURB (2'-0" SAFETY CURB)

LOAD FREQUENCY: CF-2000 ADEQUATE FOR AASHTO ALTERNATE LOADING

SKEW: NONE

WEARING SURFACE: ASPHALT W.S.

ALIGNMENT: TANGENT CROWN: 3/16"/FT

SUPERELEVATION: TRANSITION START @ 68+28.80

YEAR BUILT: 1967

APPROACH SLABS: 25'-0" ± (AS-I-54)

STRUCTURE FILE NUMBER: 5002702(L) 5002737(R)

- PROPOSED WORK
1. WIDEN THE SUBSTRUCTURE AND ERECT NEW GIRDERS ON EACH SIDE OF EXISTING EXTERIOR GIRDERS.
  2. REMOVE THE EXISTING DECK AND REPLACE IT WITH THE NEW WIDENED COMPOSITE REINF. CONCRETE DECK AND PROVIDE NEW SCUPPERS.
  3. REPLACE/REHABILITATE ALL INTERMEDIATE EXPANSION JOINT STEEL AND INSTALL NEW STRIP SEAL JOINT AT ALL LOCATIONS.
  4. REMOVE REAR ABUTMENT BACKWALL DOWN TO BEAM SEAT AND FORWARD ABUTMENT BACKWALL AND BREASTWALL. INSTALL NEW STRIP SEAL JOINT AND NEW END CROSSFRAME ANGLES.
  5. REMOVE AND REPLACE APPROACH SLAB.
  6. REHABILITATE MISC. STRUCTURAL STEEL ITEMS AS PER PLAN NOTES AND DETAILS.
  7. REPLACE/REHABILITATE AND RESET BEARINGS AND INTERMEDIATE EXPANSION JOINT ROLLERS.
  8. METALIZE EXISTING & PROPOSED SUPERSTRUCTURE STEEL AND EXISTING PILES. GALVANIZE PROPOSED PILES.
  9. REPLACE EXISTING DETERIORATED AREAS OF SLOPE PROTECTION AND INSTALL NEW SLOPE PROTECTION IN THE WIDENED SECTION.
  10. PATCH AND SEAL CONCRETE SURFACES, AS PER THE DETAILS OF THESE PLANS.
  11. FINISH OTHER ITEMS OF WORK WHICH ARE SPECIFIED IN THESE PLANS TO COMPLETE THE REHABILITATION.
- (IT IS NOT INTENDED THAT THE ABOVE WORK WILL OCCUR IN THE SEQUENTIAL ORDER LISTED)

PROPOSED STRUCTURE

TYPE: 18 SPAN CONTINUOUS STEEL GIRDERS (A36) WITH HINGES AND COMPOSITE REINF. CONC. DECK SUPPORTED ON REINF. CONC. CAP & STEEL PILE PIERS AND REINF. CONC. ABUTMENTS.

SPANS: 93'-0", 16 SPANS @ 119'-00", 93'-0"

ROADWAY: 52'-0" TOE TO TOE PARAPET

DESIGN LOADING: HS-20 CASE I AND THE ALTERNATE MILITARY LOADING

SKEW: NONE

WEARING SURFACE: MONOLITHIC CONCRETE

ALIGNMENT: TANGENT CROWN: 3/16"/FT

SUPERELEVATION: TRANSITION START @ 68+23.00

APPROACH SLABS: AS-I-81 (25'-0" LONG)

LATITUDE: 41°-06'-20" N

LONGITUDE: 81°-58'-45" W

BARR ENGINEERING, INC.  
 8748 BRECKSVILLE ROAD, SUITE 130  
 BRECKSVILLE, OHIO 44141  
 (440) 526-6455 FAX (440) 526-6457

MAHONING COUNTY  
 STA. 48+22.75  
 STA. 69+17.25

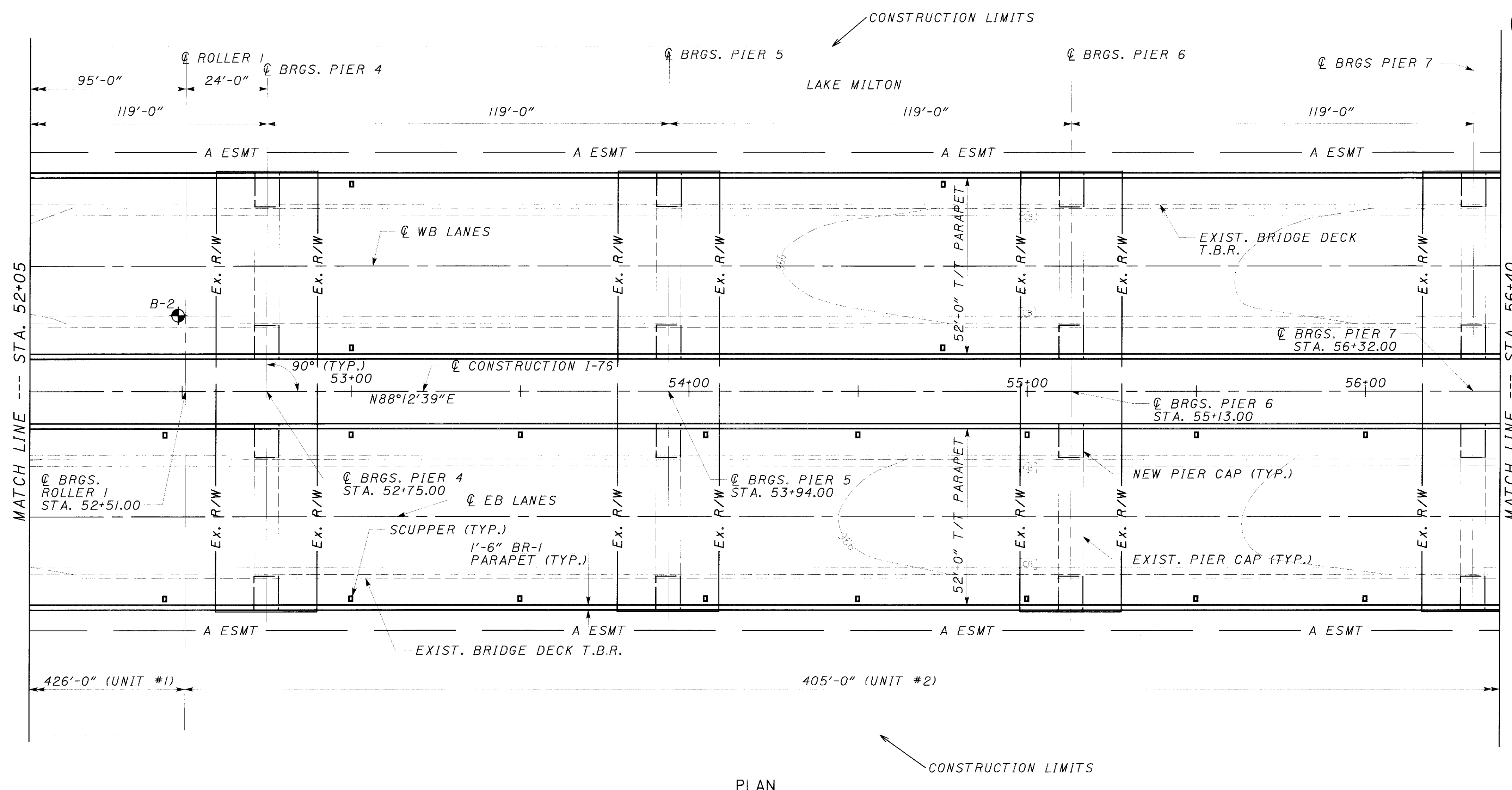
SITE PLAN  
 BRIDGE NO.: MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

MAH-76-0.86

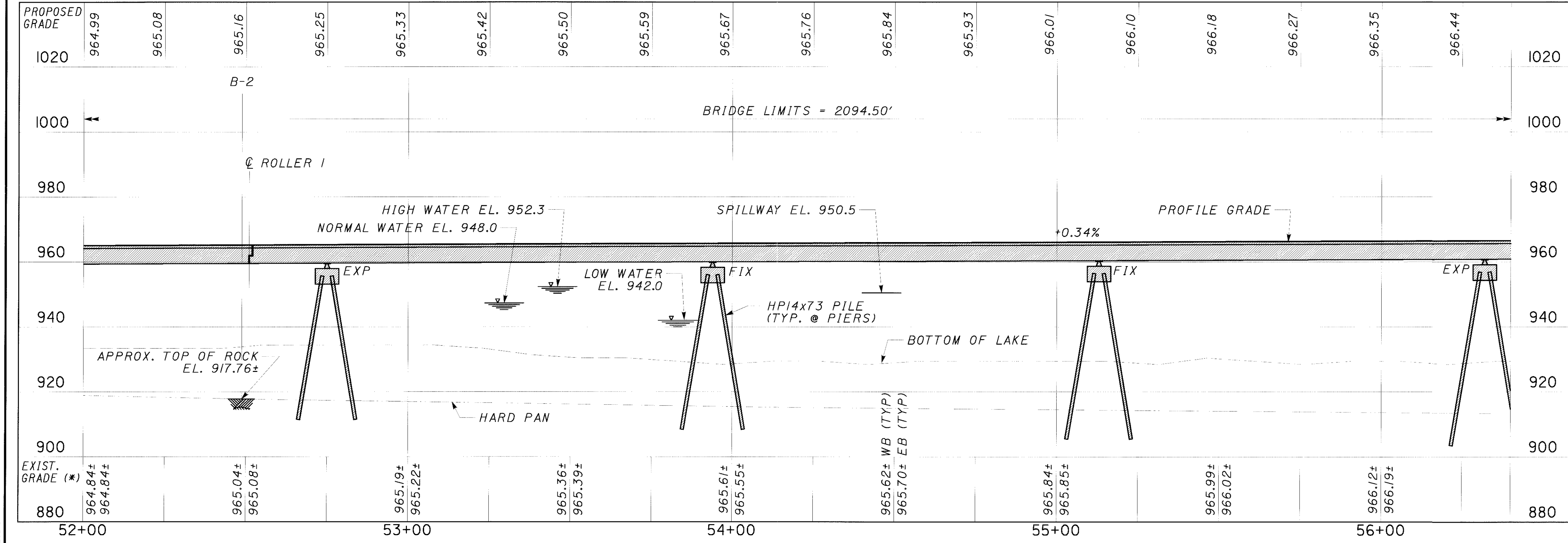
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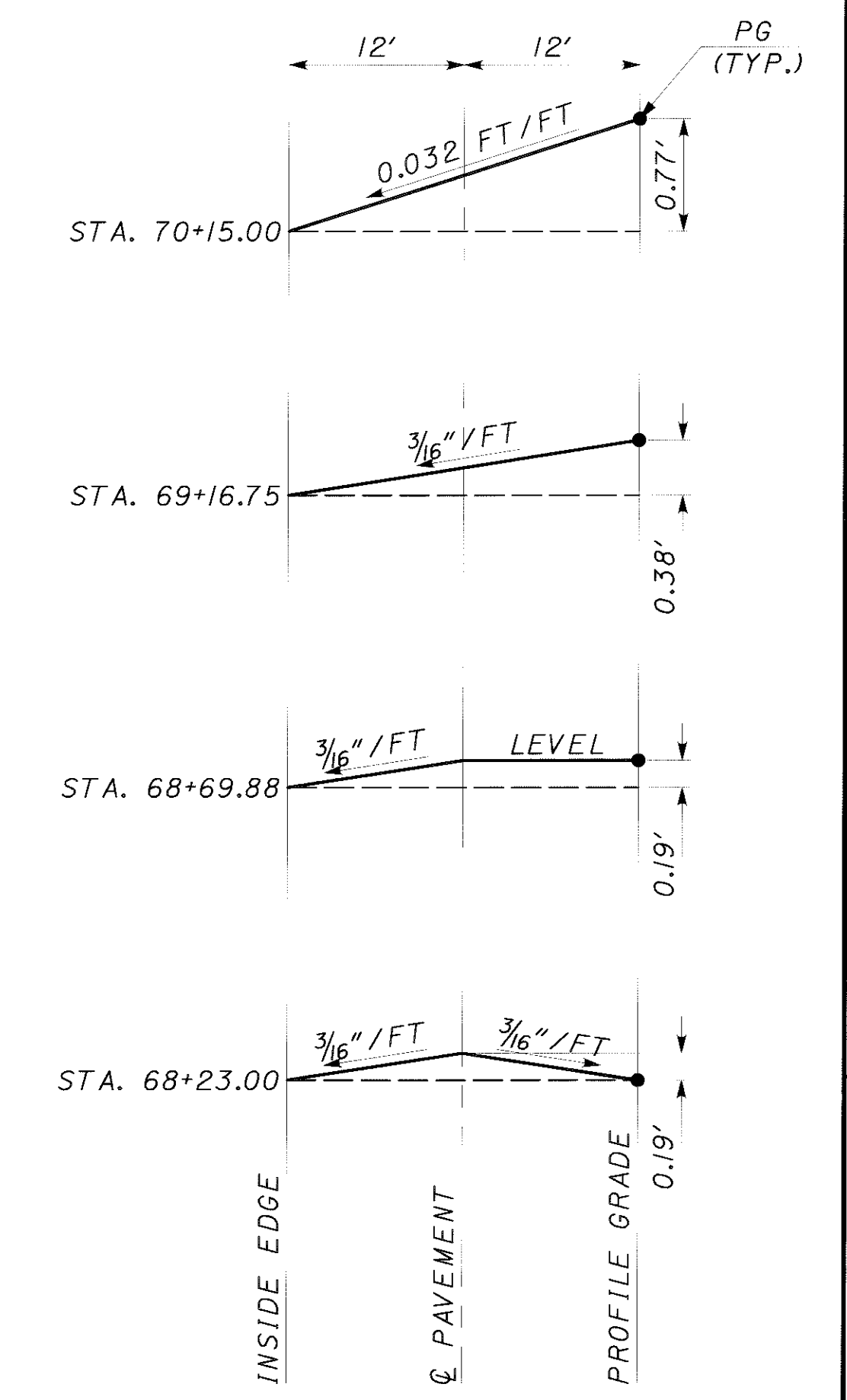
STEEL OPTION



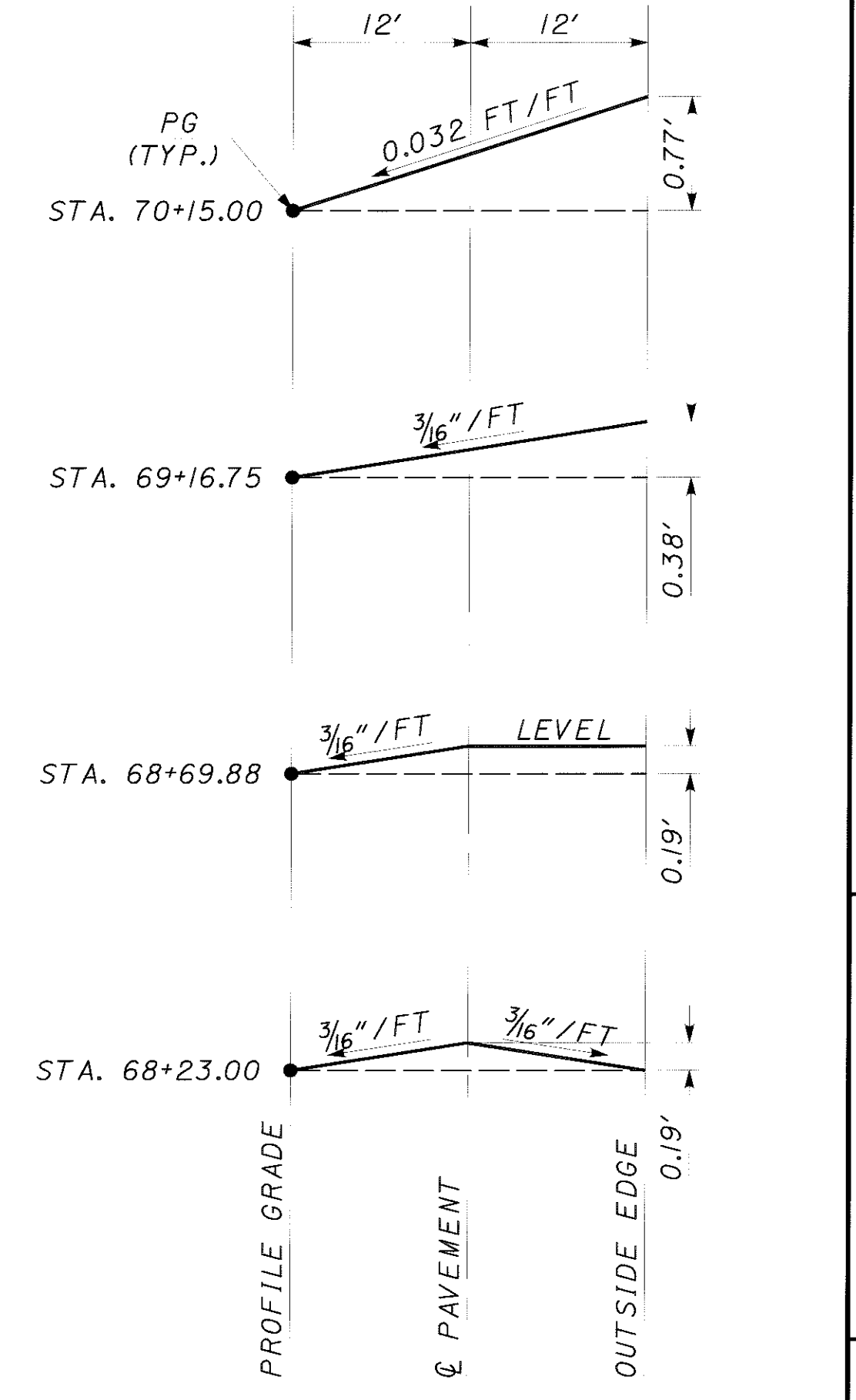
PLAN



PROFILE ALONG @ CONSTRUCTION I-75



PAVEMENT TRANSITION DETAIL (LEFT STRUCTURE)



PAVEMENT TRANSITION DETAIL (RIGHT STRUCTURE)

STEEL OPTION

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(440) 526-6455 FAX (440) 526-6457

DATE: 11/30/2000  
DRAWN: TJP  
CHECKED: KVB  
REVISION: 5002702(L), 5002731(R)

MAHONING COUNTY  
STA. 48+22.75  
STA. 69+17.25

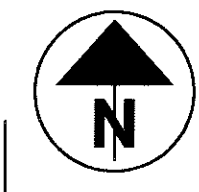
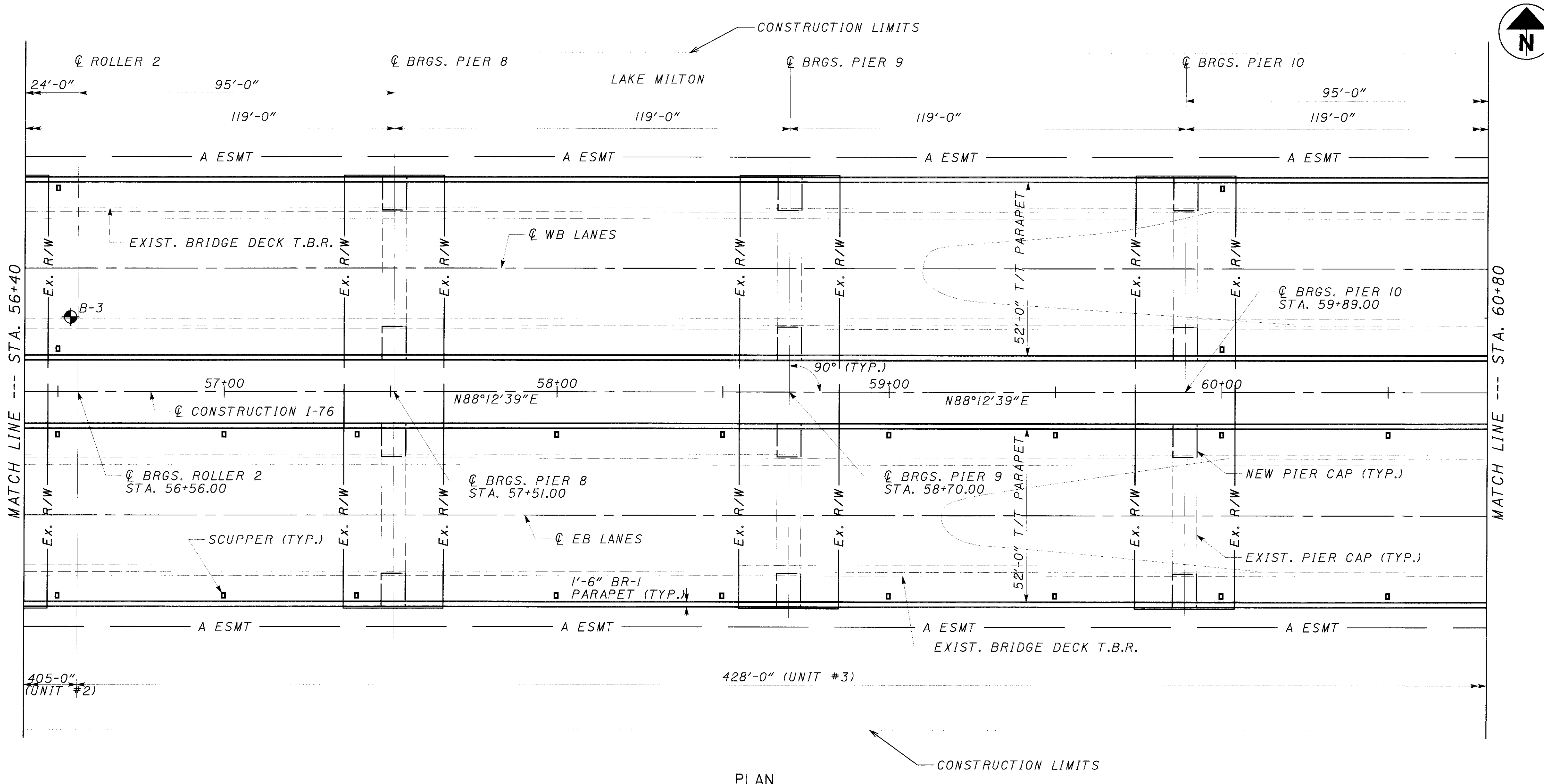
SITE PLAN  
BRIDGE NO.: MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

MAH-76-0.86

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54  
102

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FOR NOTES SEE SHEET 1/44

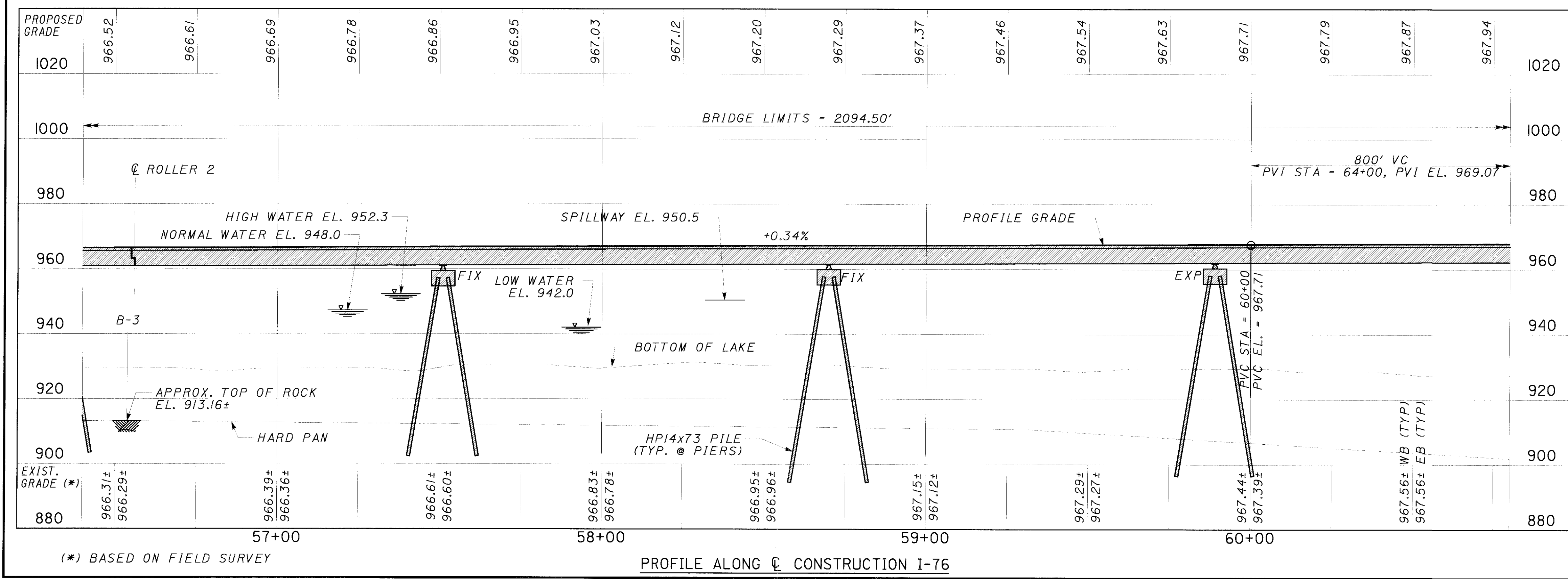
SCUPPER LOCATIONS AT EACH CURB FOR LEFT BRIDGE

| STATION  |
|----------|
| 49+50.00 |
| 51+25.00 |
| 53+00.00 |
| 54+75.00 |
| 56+50.00 |
| 58+25.00 |
| 60+00.00 |
| 66+00.00 |
| 68+00.00 |

SCUPPER LOCATIONS AT EACH CURB FOR RIGHT BRIDGE

| STATION  |
|----------|
| 48+50.00 |
| 49+00.00 |
| 49+50.00 |
| 50+00.00 |
| 50+50.00 |
| 51+00.00 |
| 51+45.00 |
| 52+00.00 |
| 52+45.00 |
| 53+00.00 |
| 53+50.00 |
| 54+05.00 |
| 54+50.00 |
| 55+00.00 |
| 55+50.00 |
| 56+00.00 |
| 56+50.00 |
| 57+00.00 |
| 57+40.00 |
| 58+00.00 |
| 58+50.00 |
| 59+00.00 |
| 59+50.00 |
| 60+00.00 |
| 60+50.00 |
| 60+94.00 |
| 61+50.00 |
| 62+00.00 |
| 62+50.00 |
| 63+00.00 |
| 65+00.00 |
| 65+50.00 |
| 66+00.00 |
| 66+50.00 |
| 66+94.00 |
| 67+50.00 |
| 68+00.00 |
| 68+50.00 |
| 69+00.00 |

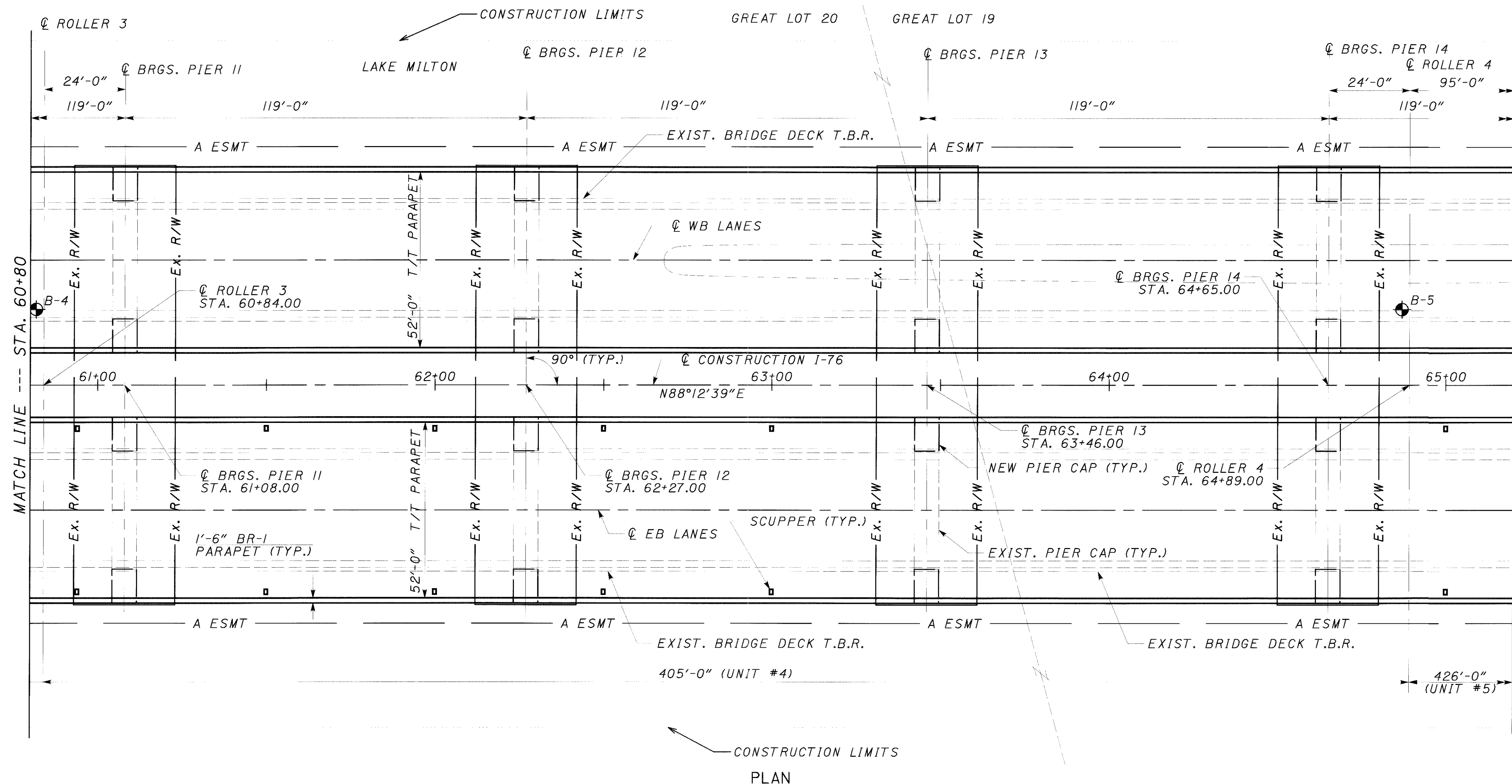
PLAN CONSTRUCTION LIMITS



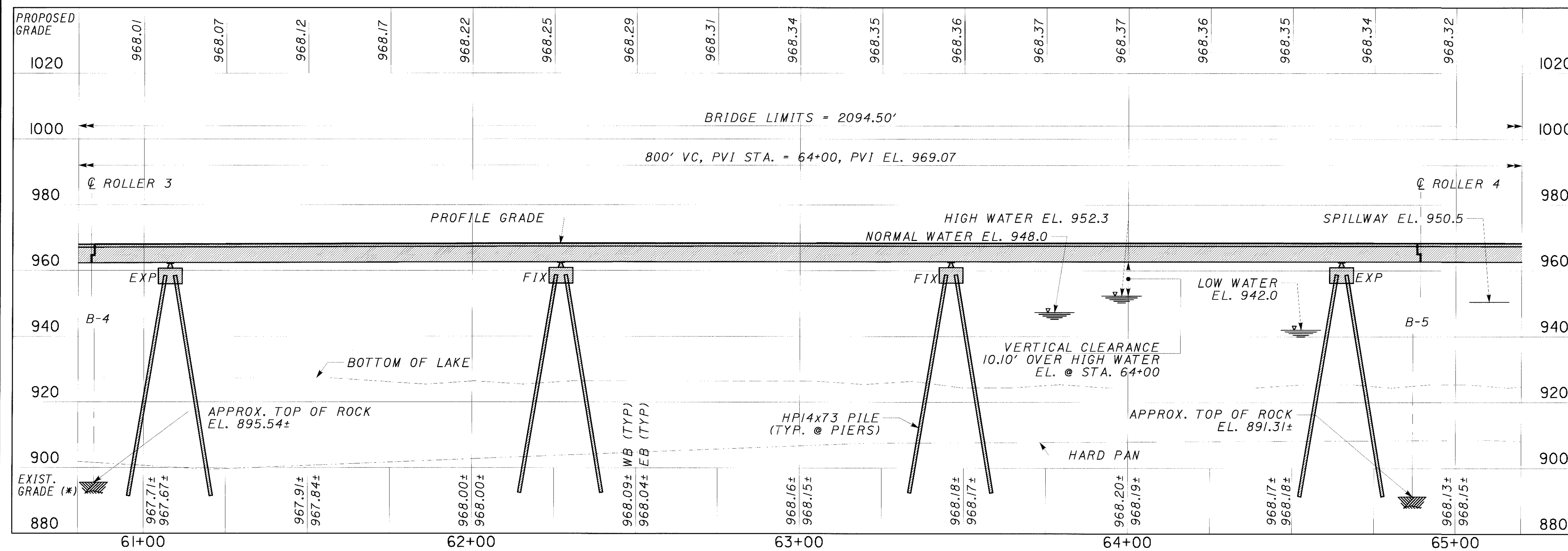
BENCHMARKS

|         |               |                           |
|---------|---------------|---------------------------|
| TBM #1: | IRON PIN ON C | STA. 48+14.36, EL. 962.65 |
| TBM #2: | IRON PIN ON C | STA. 48+00.00, EL. 961.93 |
| TBM #3: | IRON PIN ON C | STA. 69+25.00, EL. 965.31 |
| TBM #4: | IRON PIN ON C | STA. 69+42.80, EL. 964.14 |

DESIGN AGENCY: BARR ENGINEERING, INC., 8748 BRECKSVILLE ROAD, SUITE 130, BRECKSVILLE, OHIO 44141, (440) 526-6455  
 DATE: 11/30/2000  
 REVIEWER: ASB  
 STRUCTURE FILE NUMBER: 5002702(L), 5002737(R)  
 DRAWN: TJP  
 CHECKED: KVB  
 MAHONING COUNTY STA. 48+22.75 STA. 69+17.25  
 SITE PLAN BRIDGE NO. MAH-76-0091 L & R I-76 OVER LAKE MILTON  
**MAH-76-0.86**  
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 55 / 102  
 STEEL OPTION



CONSTRUCTION LIMITS  
PLAN



PROFILE ALONG C CONSTRUCTION I-76

(\* ) BASED ON FIELD SURVEY

BARR ENGINEERING, INC.  
8748 BRECKSVILLE ROAD, SUITE 130  
BRECKSVILLE, OHIO 44141  
(440) 526-6455 FAX (440) 526-6457

DATE: 11/30/2000  
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DESIGNED BY: TJP  
CHECKED BY: KVB

MAHONING COUNTY  
STA. 48+22.75  
STA. 69+17.25

S I T E P L A N  
BRIDGE NO.: MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

**MAH-76-0.86**

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56  
102

STEEL OPTION



# STRUCTURE GENERAL NOTES

**REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:**

|          |         |          |
|----------|---------|----------|
| AS-1-81  | REVISED | 09-15-94 |
| BR-1     | REVISED | 01-06-99 |
| EXJ-4-87 | REVISED | 02-14-97 |
| GSD-1-96 | DATED   | 02-12-97 |
| PCB-91   | REVISED | 07-06-99 |
| RB-1-55  | REVISED | 02-02-59 |

**AND TO SUPPLEMENTAL SPECIFICATIONS:**

|     |       |          |
|-----|-------|----------|
| 842 | DATED | 1-06-99  |
| 843 | DATED | 05-05-98 |
| 844 | DATED | 1-06-99  |
| 846 | DATED | 9-09-97  |
| 848 | DATED | 6-30-98  |
| 863 | DATED | 10-12-99 |
| 894 | DATED | 10-12-99 |
| 954 | DATED | 9-9-97   |

**DESIGN SPECIFICATIONS:**

THE MODIFIED PORTION OF THESE STRUCTURES CONFORM TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1996 INCLUDING ALL INTERIM SPECIFICATIONS THRU 1999 AND THE ODOT BRIDGE DESIGN MANUAL.

**DESIGN LOADING:**

HS20, CASE 1 AND THE ALTERNATE MILITARY LOADING AND A FWS OF 60 PSF.

**DESIGN DATA:**

HIGH PERFORMANCE CONCRETE - COMPRESSIVE STRENGTH 4500 PSI (SUPERSTRUCTURE)  
 CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)  
 REINFORCING STEEL - ASTM A615, A616, OR A617.  
 GRADE 60 MINIMUM YIELD STRENGTH, 60 KSI.  
 STRUCTURAL STEEL - ASTM - A36/A709 GRADE 36 - YIELD STRENGTH 36 KSI

FOR DESIGN CALCULATIONS A36 STEEL WAS ASSUMED. HOWEVER, THE CONTRACTOR MAY SUBSTITUTE A572-50 STEEL FOR A36 STEEL ON THE ENTIRE PROJECT.

**DECK PROTECTION METHOD:**

EPOXY COATED REINFORCING STEEL AND 2 1/2" CONCRETE COVER.

**MONOLITHIC WEARING SURFACE:**

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

**EXISTING STRUCTURE VERIFICATION:**

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND 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 REFERED TO CMS SECTIONS 102.05, 105.02 AND 513.02/863.07.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID 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 STRUCTURE PLANS:**

THE ORIGINAL DESIGN PLANS MAY BE EXAMINED BY PROSPECTIVE BIDDERS AT THE DEPARTMENT OF TRANSPORTATION, DISTRICT 4 OFFICE, 705 OAKWOOD STREET, RAVENNA, OHIO 44266 (330) 297-0801.

**ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN**

**DESCRIPTION:** THIS WORK SHALL CONSIST OF THE REMOVAL OF CONCRETE DECKS INCLUDING REMOVAL OF ASPHALT WEARING SURFACE, SIDEWALK, PARAPETS, RAILINGS, DECK JOINTS AND OTHER APPURTENANCES FROM STEEL SUPPORTING SYSTEMS (BEAMS, GIRDERS, CROSS FRAMES, ETC.), ABUTMENT BACKWALLS, DETERIORATED STEEL AT INTERMEDIATE EXPANSION JOINTS, END AND INTERMEDIATE CROSSFRAME ANGLES AND MEMBERS, DETERIORATED CONCRETE SLOPE PROTECTION, AND THE REMOVAL OF SIGN SUPPORTS AND LIGHT SUPPORT CHANNELS ETC. IN GENERAL, IT INCLUDES THE REMOVAL OF ALL ELEMENTS AS DETAILED OR DESCRIBED IN THESE PLANS TO CONSTRUCT THE PROPOSED DESIGN. CARE SHALL BE TAKEN DURING DECK 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.

THE CONTRACTOR IS ADVISED THAT THE ORIGINAL CONSTRUCTION PLANS FOR THE EXISTING STRUCTURE SHOW A BULB ANGLE IN THE CONCRETE DECK. REGARDLESS OF HOW THE BULB ANGLE IS ATTACHED TO THE SUPERSTRUCTURE, ITS REMOVAL WILL BE INCLUDED IN THE LUMP SUM BID FOR ITEM - 202 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN

**PROTECTION OF TRAFFIC:** PRIOR TO DEMOLITION OF ANY PORTIONS OF THE EXISTING SUPERSTRUCTURE, THE CONTRACTOR SHALL SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, PEDESTRIAN, AND BOAT) ADJACENT TO AND/OR UNDER THE STRUCTURE TO THE DIRECTOR FOR APPROVAL. THESE PLANS SHALL INCLUDE PROVISIONS FOR ANY DEVICES AND STRUCTURES THAT MAY BE NECESSARY TO ENSURE SUCH PROTECTION. TEMPORARY VERTICAL CLEARANCES SPECIFIED ON THE PLANS OR IN THE PROPOSAL SHALL BE MAINTAINED AT ALL TIMES EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR.

**PROTECTION OF STEEL SUPPORT SYSTEMS:** 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 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.

**REMOVAL METHODS:** 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.

**DECK REMOVALS:** 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 OPERATION 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.

**EXTRANEIOUS MEMBERS:** EXISTING EXTRANEIOUS MEMBERS (I.E., FINISHING MACHINE AND FORM SUPPORTS, ETC.), AND THE SUPPORT FOR SCUPPERS AND BULB ANGLES WHICH ARE TO BE REMOVED) ATTACHED BY WELDED CONNECTIONS TO PORTIONS OF THE TOP FLANGES DESIGNATED "TENSION" SHALL BE REMOVED AND THE FLANGE SURFACES GROUND SMOOTH. GRINDING SHALL BE CAREFULLY DONE AND BE PARALLEL TO THE FLANGES.

**LOADING LIMITATIONS:** 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 THE 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.

**SUBSTRUCTURE CONCRETE REMOVAL** SHALL BE BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. HYDRAULIC HOE-RAM TYPE HAMMERS WILL NOT BE PERMITTED. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 35 POUNDS FOR REMOVAL WITHIN 18 INCHES OF PORTIONS TO BE PRESERVED. OUTSIDE THE 18-INCH LIMIT, HAMMERS NOT EXCEEDING 90 POUNDS, MAY BE USED WITH THE APPROVAL OF THE ENGINEER. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE.

**CUT LINE CONSTRUCTION JOINT PREPARATION:** SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 1 INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. WHERE PRACTICABLE, THE EXISTING REINFORCING STEEL WHERE REQUIRED IN THE PLANS SHALL BE LEFT IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT ABRASIVELY CLEAN JOINT SURFACE AND EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THE JOINT SURFACE AND EXPOSED REINFORCEMENT SHALL BE THOROUGHLY CLEANED OF ALL DIRT, DUST, OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. CONCRETE BONDING SURFACES SHALL BE WET WITHOUT FREE WATER AS CONCRETE IS PLACED.

**PAYMENT:** THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID, FOR 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.

**ASBESTOS NOTIFICATION:**

AN ASBESTOS SURVEY OF THE 1R 76 TWIN BRIDGES OVER LAKE MILTON SCHEDULED FOR REHABILITATION WAS CONDUCTED BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST. THE SURVEY DETERMINED THAT NO ASBESTOS IS PRESENT ON THE BRIDGE.

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 STREET, ROOM 107  
 YOUNGSTOWN, OHIO 44503  
 ROBERT RAMHOFF, DIRECTOR  
 PH: (330) 744-1928  
 FX: (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 CONTRACTOR'S 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 - PORTIONS OF STRUCTURE REMOVED, OVER 20-FOOT SPAN, AS PER PLAN.

**IN LAKE WORK:** IN LAKE WORK WILL BE LIMITED WHERE PRACTICABLE AND ONLY CLEAN NON-ERODIBLE MATERIAL WILL BE USED FOR FORDS OR COFFERDAMS. THIS TEMPORARY PLACED MATERIAL WILL BE REMOVED AND THE LAKE BOTTOM RESTORED TO NEAR-NATURAL CONDITIONS WHEN THE WORK IS COMPLETED.

**DEMOLITION DEBRIS:** THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID AND/OR LIMIT DEMOLITION DEBRIS FROM ENTERING THE LAKE. ANY MATERIAL THAT DOES FALL INTO THE LAKE SHALL BE REMOVED AS SOON AS POSSIBLE.

STEEL OPTION

|   |   |
|---|---|
| <p><b>STRUCTURE GENERAL NOTES</b></p> <p>BRIDGE NO. MAH-76-0091 L &amp; R</p> <p>1-76 OVER LAKE MILTON</p>                  | <p><b>MAH-76-0.86</b></p>                                       |
| DESIGN AGENCY<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>11/30/00  |
| DRAWN<br>CLH  | REVISIONS<br>GEA<br>STRUCTURE #77 NUMBER<br>5002702L & 5002737R |
| CHECKED<br>KVB<br>ASB   | REVISIONS<br>ASB  |
| 6 / 44  | 58<br>102   |

# STRUCTURE GENERAL NOTES (CONTINUED)

**ITEM 503, UNCLASSIFIED EXCAVATION, AS PER PLAN:**

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH 503 EXCEPT THAT THE BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE 203 MATERIAL PLACED IN 6" LIFTS.

**PILES DRIVEN TO BEDROCK:**

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

**PILE DESIGN LOADS (ULTIMATE BEARING VALUE):** THE ULTIMATE BEARING VALUE IS 70 TONS PER PILE FOR THE ABUTMENT PILES. THE ULTIMATE BEARING VALUE IS 110 TONS PER PILE FOR THE PIER PILES.

**REAR ABUTMENT PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 12X53 PILES 30 FEET LONG, ESTIMATED LENGTH
- 8-HP 12X53 PILES OF ORDER LENGTH 30 FEET LONG
- 4 SPLICES

**PIER 1 PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 14X73 PILES 35 FEET LONG, ESTIMATED LENGTH
- 8-HP 14X73 PILES OF ORDER LENGTH 35 FEET LONG
- 4 SPLICES

**PIER 2 PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 14X73 PILES 40 FEET LONG, ESTIMATED LENGTH
- 8-HP 14X73 PILES OF ORDER LENGTH 40 FEET LONG
- 4 SPLICES

**PIER 3 PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 14X73 PILES 45 FEET LONG, ESTIMATED LENGTH
- 8-HP 14X73 PILES OF ORDER LENGTH 45 FEET LONG
- 4 SPLICES

**PIER 4, PIER 5 & PIER 6 PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 14X73 PILES 50 FEET LONG, ESTIMATED LENGTH
- 8-HP 14X73 PILES OF ORDER LENGTH 50 FEET LONG
- 4 SPLICES

**PIER 7 PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 14X73 PILES 55 FEET LONG, ESTIMATED LENGTH
- 8-HP 14X73 PILES OF ORDER LENGTH 55 FEET LONG
- 4 SPLICES

**PIER 8 & PIER 17 PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 14X73 PILES 60 FEET LONG, ESTIMATED LENGTH
- 8-HP 14X73 PILES OF ORDER LENGTH 60 FEET LONG
- 4 SPLICES

**PIER 9, PIER 10, PIER 15 & PIER 16 PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 14X73 PILES 65 FEET LONG, ESTIMATED LENGTH
- 8-HP 14X73 PILES OF ORDER LENGTH 60 FEET LONG
- 8-HP 14X73 PILES OF ORDER LENGTH 5 FEET LONG
- 8 SPLICES

**PIER 11, PIER 12, PIER 13 & PIER 14 PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 14X73 PILES 70 FEET LONG, ESTIMATED LENGTH
- 8-HP 14X73 PILES OF ORDER LENGTH 60 FEET LONG
- 8-HP 14X73 PILES OF ORDER LENGTH 10 FEET LONG
- 8 SPLICES

**FORWARD ABUTMENT PILES (LEFT/RIGHT BRIDGE):**

- 8-HP 12X53 PILES 50 FEET LONG, ESTIMATED LENGTH
- 8-HP 12X53 PILES OF ORDER LENGTH 50 FEET LONG
- 4 SPLICES

**ITEM 507, STEEL PILES HP14x73, FURNISHED, AS PER PLAN:**

THE NEW PIER PILES SHALL BE SHOP GALVANIZED AS PER 711.02. THE GALVANIZING COATING MINIMUM THICKNESS SHALL BE 4 MILS. GOUGES, SCRAPES, SCRATCHES OR OTHER SURFACE IMPERFECTIONS CAUSED BY HANDLING OR DRIVING OF THE PILES SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER. AFTER GALVANIZING THE PILES STRAIGHTNESS ALONG X-AXIS AND Y-AXIS WILL BE WITHIN  $\frac{3}{8}$ " TOLERANCE. THE COST OF GALVANIZING OF NEW PIER PILES SHALL BE INCLUDED WITH ITEM 507 - STEEL PILES HP14x73, FURNISHED, AS PER PLAN.

**ITEM 507, STEEL POINTS, AS PER PLAN:**

STEEL PILE POINTS SHALL BE USED TO PROTECT THE TIPS OF THE PROPOSED STEEL "H" PILING. THE STEEL POINTS SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORPORATION, 262 RUTHERFORD BLVD, CLIFTON, NEW JERSEY 07014; INTERNATIONAL CONSTRUCTION EQUIPMENT, INC., 301 WAREHOUSE DRIVE, MATTHEWS, NORTH CAROLINA 28015; DOUGHERTY FOUNDATION PRODUCTS, INC., P.O. BOX 688, FRANKLIN LAKES, NEW JERSEY 07417; VERSA STEEL INC, 3601 N.W. YEON AVE., P.O. BOX 10559, PORTLAND, OREGON 97210; PILING ACCESSORIES, NC, 3467 GRIBBLE ROAD, MATHEWS, NORTH CAROLINA 28105; OR BY A MANUFACTURER THAT CAN FURNISH A STEEL POINT THAT IS ACCEPTABLE TO THE DIRECTOR. THE MATERIAL USED FOR THE MANUFACTURING OF PILE POINTS SHALL CONFORM TO ASTM A27 65/35-CLASS 2-HEAT TREATED OR AASHTO M103 65/35-HEAT TREATED. WELDING OF THE PILE POINTS TO THE PILE SHALL BE IN ACCORDANCE WITH AWS D1.5 OR THE MANUFACTURER'S WRITTEN WELDING PROCEDURE SUPPLIED TO THE ENGINEER BEFORE THE WELDING IS PERFORMED. A NOTARIZED COPY OF THE MILL TEST REPORT SHALL BE SUBMITTED TO THE ENGINEER.

**ITEM 516, JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN:**

THIS ITEM SHALL CONSIST OF FURNISHING ALL NECESSARY LABOR, MATERIALS, AND EQUIPMENT TO RAISE OR REPOSITION ANY EXISTING STRUCTURES TO THE DIMENSIONS AND REQUIREMENTS DEFINED IN THE PROJECT PLANS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE 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. THREE (3) SETS OF JACKING PLANS, WHICH INCLUDE THE INFORMATION DESCRIBED IN THE NOTE, SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL AT LEAST THIRTY (30) DAYS BEFORE ACTUAL WORK IS TO BEGIN. THE PLANS SHALL BE PREPARED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER. SEE SHEET 31744 FOR GIRDER REACTIONS AT INTERMEDIATE EXPANSION JOINTS.

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 THE 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.

FOR LIFTS GREATER THAN 1 INCH, 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 OVER-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. THE ONLY EXCEPTION IS THE SITUATION WHERE THE WORK INVOLVES REPLACING OR REHABILITATING THE INDIVIDUAL BEARINGS; NO PERMANENT SHIMMING IS REQUIRED AND THE HEIGHT OF LIFT SHALL NOT EXCEED  $\frac{1}{4}$  INCH.

MAXIMUM DIFFERENTIAL JACKING HEIGHT BETWEEN ANY ADJACENT ABUTMENTS OR PIERS SHALL BE 1 INCH OR LESS.

IF, DURING THE JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK FROM THE STEEL STRINGERS, OR OTHER 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. ANY BEAMS THAT SEPARATE FROM THE DECK SHALL BE EPOXY INJECTED FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH THE PROPOSAL NOTE "CONCRETE REPAIR BY EPOXY INJECTION". COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS SHALL BE BORNE BY THE CONTRACTOR.

THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER THAT THE BRIDGE BEARINGS ARE FULLY SEATED BETWEEN ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUITABLE MEANS OF REPAIR, SUBJECT TO THE APPROVAL OF THE ENGINEER, WILL BE REQUIRED AT THE CONTRACTOR'S EXPENSE.

THE JACKING OPERATION SHALL BE DIRECTED BY A PROFESSIONAL ENGINEER EMPLOYED BY THE CONTRACTOR. FAILURE TO HAVE A PROFESSIONAL ENGINEER PRESENT SHALL BE CAUSE FOR CEASING JACKING OPERATIONS.

PAYMENT SHALL BE MADE AT THE LUMP SUM PRICE BID FOR ITEM 516, JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN AND SHALL INCLUDE ALL NECESSARY TOOLS, LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THIS ITEM OF WORK.

**ITEM 601- CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN:**

FIELD INSPECTION HAS REVEALED THE LOSS OF CRUSHED AGGREGATE PROTECTION AT EXISTING ABUTMENT SLOPES. CRUSHED AGGREGATE, MATCHING THE EXISTING TYPE, SHALL BE ADDED TO FILL THE VOIDED AREAS OF THE SLOPES. A FRESH LAYER (3" +/- THICK) OF CRUSHED AGGREGATE SHALL THEN BE PLACED ON ALL EXISTING SLOPE PROTECTION AREAS. ABUTMENT EXTENSIONS SHALL RECEIVE 1' (+) THICK CRUSHED AGGREGATE OF THE SAME TYPE TO PROVIDE A CONTINUAL UNIFORM SURFACE FOR THE ENTIRE AREA OF SLOPE PROTECTION. ALL LABOR, MATERIALS AND INCIDENTAL COSTS TO ACCOMPLISH THIS WORK SHALL BE COVERED UNDER ITEM 601- CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN USING CUBIC YARD AS THE UNIT FOR PAYMENT.

|                    |  |                   |   |  |
|--------------------|--|-------------------|---|--|
| <b>MAH-76-0.86</b> | STRUCTURE GENERAL NOTES<br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON | SCALE<br>11/30/00 | DESIGNED BY<br>KVB                                      | CHECKED BY<br>ASB  |
| 7 / 44             | 59<br>102  | DATE<br>11/30/00  | DRAWN BY<br>CLH   | REVISION<br>5002702L & 5002737R  |
|                    |  | REVISION<br>GEA   | REGISTERED PROFESSIONAL ENGINEER<br>5002702L & 5002737R | DESIGN COMPANY<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX |

STEEL OPTION

# STRUCTURE GENERAL NOTES (CONTINUED)

## EXIST. STEEL REHABILITATIONS

EXISTING STEEL SHALL BE REHABILITATED USING THE DETAILS AND NOTES OF THESE PLANS. IT SHALL INCLUDE THE REPLACEMENT OF SOME AND THE REFURBISHING OF THE OTHER GIRDER HINGE BEARINGS, THE REPLACEMENT OF DIAPHRAGMS AND DECK JOINTS AT HINGE LOCATIONS, REPLACEMENT OF END CROSSFRAMES AND END DAMS AND THE REHABILITATION OF SOME STIFFENERS. THE WORK IS DESCRIBED USING VARIOUS PAY ITEMS AS LISTED BELOW:

### ITEM 516-BEARING DEVICE MISC.: REPLACE ROLLER BEARINGS INCLUDING TOP AND BOTTOM BEARING PLATES

ROLLER BEARINGS ALONG WITH TOP AND BOTTOM BEARING PLATES SHALL BE REPLACED AT EACH HINGE LOCATION OF EXIST. EXTERIOR GIRDERS AS PER THE DETAILS OF THESE PLANS. BEFORE INSTALLING, ALL BEARING SURFACES SHALL BE LUBRICATED. SOME BOLT HOLES IN THE GIRDER PLATES MAY HAVE TO BE REDRILLED OR REAMED TO ALLOW THE NEW BEARING DEVICES TO BE SET VERTICALLY AT 60° F. IN SOME CASES, THE BEARINGS HAVE BEEN PREVIOUSLY RESET WITH THE BEARING PLATES WELDED IN PLACE. IN SUCH CASES, ALL WELD MATERIAL ON THE GIRDER PLATES SHALL BE REMOVED AND GROUND SMOOTH PRIOR TO INSTALLING NEW BEARINGS. ALL LABOR, MATERIALS AND INCIDENTAL COSTS TO REPLACE THE ROLLER BEARINGS SHALL BE COVERED UNDER ITEM 516-BEARING DEVICE, MISC.: REPLACE ROLLER BEARINGS WITH TOP AND BOTTOM BEARING PLATES USING "EACH" AS THE UNIT OF PAYMENT. A CONTINGENCY QUANTITY OF FOUR ADDITIONAL INTERIOR ROLLER BEARING PER BRIDGE REPLACEMENTS, TO BE USED AS DIRECTED BY THE ENGINEER, IS INCLUDED. JACKING OF THE SUPERSTRUCTURE AND INSTALLING TEMPORARY SUPPORT TO ACCOMPLISH THE REPLACEMENT OF HINGE BEARINGS SHALL BE COVERED UNDER ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE. ALL REMOVALS ASSOCIATED WITH ITEM 516 SHALL BE COVERED UNDER ITEM 202.

### ITEM 516- REFURBISHING BEARING DEVICE, AS PER PLAN A

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY TO DISASSEMBLE HINGE JOINT BEARINGS (OTHER THAN THOSE BEING REPLACED ENTIRELY) ALONG WITH TOP AND BOTTOM BEARING PLATES, HAND TOOL CLEANING (GRINDING IF NECESSARY), ADJUSTMENT OF BEARING PLATES TO VERTICALLY ALIGN THE ROLLER BEARINGS AT 60° F LUBRICATING SLIDING SURFACES AND THE REATTACHMENT OF BEARING PLATES USING NEW A325 BOLTS OF THE SAME SIZE AS THE EXISTING. IN SOME CASES, THE BEARING PLATES HAVE PREVIOUSLY BEEN REALIGNED AND WELDED IN PLACE. IN SUCH CASES, ALL WELD MATERIAL FROM THE CONNECTING SURFACES SHALL BE REMOVED AND GROUND SMOOTH AND NEW HOLES DRILLED IN THE GIRDER PLATES TO ACCEPT THE REALIGNED BEARING PLATES. AT THE OPTION OF THE CONTRACTOR AND AT NO ADDITIONAL COST TO THE STATE, NEW BEARINGS OF THE SAME TYPE AS THE EXISTING MAY BE INSTALLED INSTEAD OF REFURBISHING THE BEARINGS. PAYMENT FOR THE ABOVE DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID UNDER ITEM 516 - REFURBISHING BEARING DEVICES, AS PER PLAN A. JACKING OF THE SUPERSTRUCTURE AND THE INSTALLATION OF TEMPORARY SUPPORT TO ACCOMPLISH THE REFURBISHING OF HINGE BEARINGS SHALL BE COVERED UNDER ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN. A CONTINGENT QUANTITY IS PROVIDED IN THE ESTIMATED QUANTITIES TABLE TO BE ONLY USED AT THE DIRECTION OF THE ENGINEER.

### ITEM 516- REFURBISHING BEARING DEVICE, AS PER PLAN B

THIS ITEM SHALL INCLUDE ALL WORK NECESSARY FOR DETACHING (FROM THE EXISTING GIRDERS), DISASSEMBLING, CLEANING, LUBRICATING AND THE REATTACHMENT OF ABUTMENT BEARINGS TO ACHIEVE A VERTICAL ALIGNMENT AT 60° F. IRREGULAR SURFACES RESULTING FROM THE ROCKER REMOVAL SHALL BE GROUND SMOOTH. AT THE OPTION OF THE CONTRACTOR AND AT NO ADDITIONAL COST TO THE STATE, NEW BEARINGS OF THE SAME TYPE AS THE EXISTING MAY BE INSTALLED INSTEAD OF REFURBISHING THE BEARINGS. PAYMENT FOR THE ABOVE DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID UNDER ITEM 516 - REFURBISHING BEARING DEVICES, AS PER PLAN B. JACKING OF THE SUPERSTRUCTURE AND THE INSTALLATION OF TEMPORARY SUPPORT TO ACCOMPLISH THE REFURBISHING OF ABUTMENT BEARINGS SHALL BE COVERED UNDER ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN. A CONTINGENT QUANTITY IS PROVIDED IN THE ESTIMATED QUANTITIES TABLE TO BE ONLY USED AT THE DIRECTION OF THE ENGINEER.

### ITEM 516- RESET BEARING, AS PER PLAN

RESETTING OF THE EXISTING ROCKERS AT PIERS IS COVERED UNDER THIS ITEM AS FOLLOWS: NO RESETTING OF ROCKERS IS CONSIDERED NECESSARY. HOWEVER, A CONTINGENT QUANTITY OF 8 BEARING RESETTINGS PER BRIDGE IS INCLUDED IN THE ESTIMATED QUANTITIES TO BE USED AS NEEDED AT THE DIRECTION OF THE ENGINEER.

A LOOSE ANCHOR BOLT AT BOLSTER UNDER GIRDER G9 ON PIER 8 OF RIGHT STRUCTURE SHALL BE TIGHTENED. THIS REPAIR WORK WILL BE INCIDENTAL TO ITEM 202.

### ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL -INTERMEDIATE EXPANSION JOINT

ALL EXISTING DECK JOINTS AT HINGE LOCATIONS SHALL BE REPLACED WITH STRIP SEAL EXPANSION JOINTS AS PER THE DETAILS AND NOTES OF SHEET 31744 AND STD. DWG. EXJ-4-87. REMOVAL OF THE EXISTING JOINTS WILL BE COVERED UNDER ITEM 202. ALL LABOR, MATERIALS AND INCIDENTAL COSTS FOR THE INSTALLATION OF THE NEW JOINTS WILL BE PAID UNDER ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL-INTERMEDIATE EXPANSION JOINT.

THIS ITEM INCLUDES ALL STEEL PARTS OF JOINT ASSEMBLY (CHANNELS, SUPPORT ANGLES, ANCHOR BARS, RETAINERS, ETC.), STRIP SEAL AND OTHER JOINT ACCESSORIES. METALLIZING OF JOINT STEEL, AS PER STD. DWG. EXJ-4-87, IS INCLUDED WITH THIS ITEM.

### ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL-ABUTMENT EXPANSION JOINT

ALL EXISTING DECK JOINTS AT ABUTMENTS SHALL BE REPLACED WITH STRIP SEAL EXPANSION JOINTS AS PER THE DETAILS AND NOTES OF SHEET 35744. REMOVAL OF THE EXISTING JOINTS WILL BE COVERED UNDER ITEM 202. ALL LABOR, MATERIALS AND INCIDENTAL COSTS FOR THE INSTALLATION OF THE NEW JOINTS WILL BE PAID UNDER ITEM 516 - STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL-ABUTMENT EXPANSION JOINT. THIS ITEM INCLUDES ALL STEEL PARTS OF JOINT ASSEMBLY (CHANNELS, SUPPORT ANGLES, ANCHOR BARS, RETAINERS, ETC.), STRIP SEAL AND OTHER JOINT ACCESSORIES. METALLIZING OF JOINT STEEL, AS PER STD. DWG. EXJ-4-87, IS INCLUDED WITH THIS ITEM.

### ITEM 863 - STRUCTURAL STEEL MISC.: REHABILITATION OF STIFFENER

EXIST. STIFFENERS HAVE SUFFERED A SIGNIFICANT LOSS OF SECTION NEAR THE BOTTOM FLANGE AT THE INTERMEDIATE EXPANSION JOINTS AND AT A FEW LOCATIONS ALONG THE GIRDERS. THE STIFFENER REHABILITATION DETAIL SHOWN ON SHEET 31744, SHALL BE USED TO REHABILITATE THE STIFFENERS AT THE INTERMEDIATE EXPANSION JOINTS AS WELL AS FOR THE REHABILITATION OF THE INTERMEDIATE STIFFENERS ELSEWHERE ALONG THE GIRDER. THE STIFFENERS WHICH HAVE A SECTION LOSS IN EXCESS OF ONE-THIRD OF THEIR ORIGINAL AREA SHALL BE CONSIDERED FOR REHABILITATION AS PER THE DETAIL SHOWN ON SHEET 31744. AFTER THE PAINT REMOVAL AND COMPLETE CLEANING OF THE SURFACES, THE CONTRACTOR WILL MEASURE PLATE THICKNESS OF THE STIFFENERS WHICH VISUALLY APPEAR TO HAVE LOST ONE-THIRD OR MORE OF THEIR ORIGINAL AREA AND WILL REPORT TO THE ENGINEER. THE STIFFENERS WITH THE SECTION LOSS LESS THAN ONE-THIRD DO NOT REQUIRE ANY REHABILITATION WORK. THE ENGINEER WILL DECIDE THE LOCATIONS WHERE REHABILITATIONS ARE NECESSARY. THE NEW PLATES WILL MATCH THE EXISTING. A QUANTITY OF 20 STIFFENER REHABILITATIONS PER BRIDGE IS INCLUDED FOR THIS ITEM. THE PAYMENT FOR LABOR, MATERIALS AND OTHER INCIDENTAL COSTS FOR THIS WORK WILL BE MADE UNDER ITEM 863 - STRUCTURAL STEEL MISC.: REHABILITATION OF STIFFENER. EACH STIFFENER REHABILITATION WILL BE CONSIDERED AS ONE FOR PAYMENT UNDER THIS ITEM USING "EACH" AS UNIT OF PAYMENT.

### ITEM 863 - STRUCTURAL STEEL MEMBERS, MISC. LEVEL FABRICATION, AS PER PLAN

ALL SECTIONS OF SS 863 APPLY EXCEPT AS REVISED HEREIN. THE ENGINEER IS RESPONSIBLE FOR ENSURING ANY SHOP OR FIELD FABRICATED STEEL SUPPLIED UNDER THIS BID ITEM IS ACCEPTABLE. THE REQUIREMENTS FOR SUBMITTAL OF SHOP DRAWINGS TO THE OFFICE OF STRUCTURAL ENGINEERING IS WAIVED. AT THE ENGINEER'S OPTION, THE CONTRACTOR SHALL EITHER SUPPLY THE ENGINEER WITH SHOP DRAWINGS, REQUIRED IN SECTION 863.08, PRIOR TO ANY INCORPORATION OF SHOP FABRICATED STEEL AT THE PROJECT, OR SUPPLY THE ENGINEER WITH "AS FABRICATED" DRAWINGS, MEETING 863.08, AFTER COMPLETION OF FIELD FABRICATION. THE ENGINEER SHALL ASSURE THE SUBMITTED DRAWINGS MATCH THE FINAL AS BUILT STEEL INCORPORATED INTO THE WORK. IF THE ENGINEER IS SATISFIED WITH THE DRAWINGS AND THE DELIVERED MATERIALS, THE CONTRACTOR SHALL SUPPLY A COPY SET, STAMPED AND DATED AS PER 863.08, TO THE OFFICE OF STRUCTURAL ENGINEERING FOR RECORD PURPOSES. SUBMITTAL REQUIREMENTS UNDER 863.09, MATERIALS, SHALL BE MADE TO THE ENGINEER. THE CONTRACTOR SHALL FURNISH A COPY OF THE WRITTEN LETTER OF ACCEPTANCE, 863.09, TO THE OFFICE OF STRUCTURAL ENGINEERING.

THE ENGINEER, AT OR BEFORE THE PRE-CONSTRUCTION MEETING MAY CHOOSE TO REQUEST ASSISTANCE, AS REQUIRED, FROM THE OFFICE OF STRUCTURAL ENGINEERING.

STEEL MEMBERS INCLUDED IN THIS ITEM INCLUDE ALL INTERMEDIATE CROSSFRAMES BETWEEN EXISTING AND NEW GIRDERS, END CROSSFRAMES AND CROSSFRAMES AT INTERMEDIATE EXPANSION JOINTS.

### ITEM 842 - CLASS C CONCRETE, PIER CAP AS PER PLAN

### ITEM 842 - CLASS C CONCRETE, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN

### ITEM 842 - CLASS C CONCRETE, FOOTING, AS PER PLAN

EPOXY GROUT FOR ALL DOWEL HOLES SHALL BE PER 705.20. IN OTHER RESPECTS, DOWEL HOLES SHALL CONFORM WITH 510. DOWEL BARS, DOWEL HOLES, GROUT AND WORK RELATED TO PLACING THEM ARE PAID WITH CONCRETE.

## ABBREVIATIONS:

|                              |                                   |
|------------------------------|-----------------------------------|
| A-ESMT - AERIAL EASEMENT     | NPCPP - NON-PERFORATED CORRUGATED |
| ABUT(S).- ABUTMENT(S)        | PLASTIC PIPE                      |
| APPR. - APPROACH             | O/O - OUT TO OUT                  |
| B - BOTTOM                   | PCPP - PERFORATED CORRUGATED      |
| BRG(S). - BEARING(S)         | PLASTIC PIPE                      |
| C/C - CENTER TO CENTER       | R - PLATE                         |
| Q - CENTERLINE               | PEJF - PREFORMED EXPANDED JOINT   |
| CIPRC - CAST-IN-PLACE        | FILLER                            |
| REINFORCED CONCRETE          | PROP. - PROPOSED                  |
| CONST. - CONSTRUCTION        | RA - REAR ABUTMENT                |
| EB - EASTBOUND               | RT. - RIGHT                       |
| EF - EACH FACE               | SER. - SERIES                     |
| EL. - ELEVATION              | SPA. - SPACING(S)                 |
| EXIST. - EXISTING            | STA - STATION                     |
| FA - FORWARD ABUTMENT        | T - TOP                           |
| FF - FAR FACE                | T.B.R. - TO BE REMOVED            |
| FS - FIELD SPLICE            | TEMP. - TEMPORARY                 |
| FWD. - FORWARD               | T/T - TOE TO TOE                  |
| FWS - FUTURE WEARING SURFACE | TYP. - TYPICAL                    |
| INTM. - INTERMEDIATE         | UNO - UNLESS NOTED OTHERWISE      |
| JT. - JOINT                  | WB - WESTBOUND                    |
| LT. - LEFT                   | W.R.T. - WITH RESPECT TO          |
| MAX. - MAXIMUM               |                                   |
| MIN. - MINIMUM               |                                   |
| NF - NEAR FACE               |                                   |

STRUCTURE GENERAL NOTES  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON  
 MAH-76-0.86  
 8 / 44  
 60  
 102

DRAWN BY: CLH  
 CHECKED BY: ASB  
 DATE: 11/30/00  
 SCALE: AS SHOWN  
 PROJECT NO.: 5002702L & 500273TR  
 DESIGNER: BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX



# ESTIMATED QUANTITIES

CALC. BY CLH    CHKD. BY KVB  
DATE 11/15/00    DATE 12/04/00

| ITEM        | ITEM EXT.         | UNIT               | DESCRIPTION   | LEFT BRIDGE |                 |        |           |                  | RIGHT BRIDGE |                 |        |           |                  | AS PER PLAN SHEET NO. |
|-------------|-------------------|--------------------|---|-------------|-----------------|--------|-----------|------------------|--------------|-----------------|--------|-----------|------------------|-----------------------|
|             |                   |                    |   | GENERAL     | SUPER-STRUCTURE | PIERS  | ABUTMENT  | TOTAL LT. BRIDGE | GENERAL      | SUPER-STRUCTURE | PIERS  | ABUTMENT  | TOTAL RT. BRIDGE |                       |
| 202         | 11203             |                    | PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN   |             | LUMP            |        | LUMP      | LUMP             |              | LUMP            |        | LUMP      | LUMP             | 6 OF 44               |
| 503         | 11100             |                    | COFFERDAMS, CRIBS AND SHEETING  | LUMP        |                 |        |           | LUMP             | LUMP         |                 |        |           | LUMP             | 7 OF 44               |
| 503         | 21301             |                    | UNCLASSIFIED EXCAVATION, AS PER PLAN  |             |                 |        | LUMP      | LUMP             |              |                 |        | LUMP      | LUMP             |                       |
| 505         | 11100             |                    | PILE DRIVING EQUIPMENT MOBILIZATION   | LUMP        |                 |        |           | LUMP             | LUMP         |                 |        |           | LUMP             |                       |
| 507         | 00200             | LIN. FT.           | STEEL PILES HPI2x53, FURNISHED  |             |                 |        | 640       | 640              |              |                 |        | 640       | 640              |                       |
| 507         | 00250             | LIN. FT.           | STEEL PILES HPI2x53, DRIVEN   |             |                 |        | 640       | 640              |              |                 |        | 640       | 640              |                       |
| 507         | 00301             | LIN. FT.           | STEEL PILES HPI4x73, FURNISHED, AS PER PLAN   |             |                 | 7880   |           | 7,880            |              | 7880            |        | 7880      | 7,880            | 7 OF 44               |
| 507         | 00350             | LIN. FT.           | STEEL PILES HPI4x73, DRIVEN   |             |                 | 7880   |           | 7,880            |              | 7880            |        | 7880      | 7,880            |                       |
| 507         | 50500             | EACH               | STEEL PILE SPLICES  |             |                 | 100    | 8         | 108              |              | 100             | 8      | 108       | 108              |                       |
| 507         | 93301             | EACH               | STEEL POINT (OR SHOE), AS PER PLAN  |             |                 | 136    | 16        | 152              |              | 136             | 16     | 152       | 152              | 7 OF 44               |
| SPECIAL 512 | 51267510<br>44400 | SQ. YD.<br>SQ. YD. | SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (SEE PROPOSAL NOTE)<br>TYPE B WATERPROOFING   |             | 4,844           | 2,424  | 156<br>38 | 7,424<br>38      |              | 4,844           | 2,424  | 156<br>38 | 7,424<br>38      |                       |
| 516         | 11210             | LIN. FT.           | STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL - ABUTMENT EXPANSION JOINT  |             |                 |        | 107       | 107              |              |                 |        | 107       | 107              |                       |
| 516         | 11210             | LIN. FT.           | STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL - INTERMEDIATE EXPANSION JOINT  |             | 214             |        |           | 214              |              | 214             |        |           | 214              |                       |
| 516         | 13900             | SQ. FT.            | 2" PREFORMED EXPANSION JOINT FILLER   |             |                 |        |           | -                |              |                 |        | 79        | 79               |                       |
| 516         | 45305             | EACH               | REFURBISHING BEARING DEVICES, AS PER PLAN A   |             | 8               |        |           | 8                |              | 8               |        |           | 8                | 8 OF 44               |
| 516         | 45305             | EACH               | REFURBISHING BEARING DEVICES, AS PER PLAN B   |             | 10              |        |           | 10               |              | 10              |        |           | 10               | 8 OF 44               |
| 516         | 46001             | EACH               | BEARING DEVICE, BOLSTER, AS PER PLAN - PIER   |             |                 | 20     |           | 20               |              |                 | 20     |           | 20               | 29 OF 44              |
| 516         | 46201             | EACH               | BEARING DEVICE, ROCKERS, AS PER PLAN - ABUTMENT   |             |                 |        | 4         | 4                |              |                 | 4      |           | 4                | 29 OF 44              |
| 516         | 46201             | EACH               | BEARING DEVICE, ROCKERS, AS PER PLAN - PIER   |             |                 | 14     |           | 14               |              | 14              |        |           | 14               | 29 OF 44              |
| 516         | 46701             | EACH               | RESET BEARING, AS PER PLAN  |             |                 | 8      |           | 8                |              |                 | 8      |           | 8                | 8 OF 44               |
| 516         | 46900             | EACH               | BEARING DEVICE MISC.: REPLACE ROLLER BEARINGS INCLUDING TOP AND BOTTOM BOTTOM BEARING PLATES  | 12          |                 |        |           | 12               | 12           |                 |        |           | 12               | 8 OF 44               |
| 516         | 46900             | EACH               | BEARING DEVICE, MISC.: NEW ROLLER BEARING ASSEMBLY  |             | 8               |        |           | 8                |              | 8               |        |           | 8                | 31 OF 44              |
| 516         | 47001             |                    | JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN  | LUMP        |                 |        |           | LUMP             | LUMP         |                 |        |           | LUMP             | 7 OF 44               |
| 518         | 12301             | EACH               | SCUPPER, INCLUDING SUPPORTS, AS PER PLAN  |             | 18              |        |           | 18               |              | 18              |        |           | 18               | 35 OF 44              |
| 518         | 21200             | CU. YD.            | POROUS BACKFILL WITH FILTER FABRIC  |             |                 |        | 94        | 94               |              |                 |        | 95        | 95               |                       |
| 518         | 40000             | LIN. FT.           | 6" PERFORATED CORRUGATED PLASTIC PIPE   |             |                 |        | 155       | 155              |              |                 |        | 155       | 155              |                       |
| 518         | 40010             | LIN. FT.           | 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS   |             |                 |        | 20        | 20               |              |                 |        | 20        | 20               |                       |
| SPECIAL     | 53000400          | EACH               | STRUCTURE MISC.: EXIST. DECK, CURB, PARAPET AND RAIL MODIFICATIONS FOR INSTALLING BATTERED PILES AT PIER EXTENSIONS & RECONSTRUCTING THE RAIL | 34          |                 |        |           | 34               | 34           |                 |        |           | 34               | 12 & 13 OF 44         |
| SPECIAL     | 53000600          | SQ. FT.            | STRUCTURE MISC.: METALLIZING AND SEALING THE EXIST. STEEL PIER PILES  |             |                 | 26,010 |           | 26,010           |              |                 | 26,010 |           | 26,010           | 38-41 OF 44           |
| SPECIAL     | 53000600          | SQ. FT.            | STRUCTURE MISC.: SURFACE PREPARATION OF EXISTING STEEL PIER PILES   |             |                 | 26,010 |           | 26,010           |              |                 | 26,010 |           | 26,010           | 38-41 OF 44           |
| SPECIAL     | 53000500          | PIER PILE SURFACES | STRUCTURE MISC.: GRINDING FINS, TEARS & SLIVERS - EXIST. STEEL PIER PILE SURFACES   |             |                 | 50     |           | 50               |              |                 | 50     |           | 50               | 38-41 OF 44           |
| SPECIAL     | 53000600          | SQ. FT.            | STRUCTURE MISC.: METALLIZING AND SEALING THE EXIST. SUPERSTRUCTURE STEEL SURFACES   |             | 193,349         |        |           | 193,349          |              | 193,349         |        |           | 193,349          | 38-41 OF 44           |
| SPECIAL     | 53000600          | SQ. FT.            | STRUCTURE MISC.: SURFACE PREPARATION OF EXISTING SUPERSTRUCTURE STEEL   |             | 193,349         |        |           | 193,349          |              | 193,349         |        |           | 193,349          | 38-41 OF 44           |
| SPECIAL     | 53000500          | PIER PILE SURFACES | STRUCTURE MISC.: GRINDING FINS, TEARS & SLIVERS - EXIST. SUPERSTRUCTURE STEEL SURFACES  |             | 200             |        |           | 200              |              | 200             |        |           | 200              | 39-41 OF 44           |
| 601         | 20501             | CU. YD.            | CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN   | 210         |                 |        |           | 210              | 210          |                 |        |           | 210              | 7 OF 44               |
| 601         | 34000             | CU. YD.            | ROCK CHANNEL PROTECTION, TYPE A WITHOUT FILTER  | 325         |                 |        |           | 325              | 325          |                 |        |           | 325              |                       |
| 842         | 42501             | CU. YD.            | CLASS C CONCRETE, PIER CAP, AS PER PLAN   |             |                 | 404    |           | 404              |              |                 | 401    |           | 401              | 8 OF 44               |
| 842         | 44101             | CU. YD.            | CLASS C CONCRETE, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN   |             |                 |        | 111       | 111              |              |                 | 112    |           | 112              | 8 OF 44               |
| 842         | 46501             | CU. YD.            | CLASS C CONCRETE, FOOTING, AS PER PLAN  |             |                 |        | 37        | 37               |              |                 | 37     |           | 37               | 8 OF 44               |
| 843         | 50000             | SQ. FT.            | PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR   |             |                 | 5 (Δ)  | 3         | 8                |              |                 | 5 (Δ)  | 12        | 17               |                       |
| 863         | 10201             | POUND              | STRUCTURAL STEEL MEMBERS, MISCELLANEOUS LEVEL FABRICATION, AS PER PLAN  |             | 84,970          |        |           | 84,970           |              | 84,970          |        |           | 84,970           | 8 & 29 OF 44          |
| 863         | 10281             | POUND              | STRUCTURAL STEEL MEMBERS, LEVEL FOUR (4) FABRICATION, AS PER PLAN   |             | 1,189,496       |        |           | 1,189,496        |              | 1,189,496       |        |           | 1,189,496        | 29 OF 44              |
| 863         | 20000             | EACH               | WELDED STUD SHEAR CONNECTOR   |             | 31,584          |        |           | 31,584           |              | 31,584          |        |           | 31,584           |                       |
| 863         | 21001             | EACH               | TRIMMING OF BEAM END, AS PER PLAN   |             | 4               |        |           | 4                |              | 4               |        |           | 4                | 31 OF 44              |
| 863         | 95030             | EACH               | STRUCTURAL STEEL MISC.: REHABILITATION OF STIFFENERS  |             | 20              |        |           | 20               |              | 20              |        |           | 20               | 8 OF 44               |
| 894         | 10000             | CU. YD.            | HIGH PERFORMANCE CONCRETE, FOR BRIDGE DECK WITH WARRANTY  |             | 3,689           |        |           | 3,689            |              | 3,689           |        |           | 3,689            |                       |

( Δ ) INDICATES CONTINGENCY QUANTITY TO BE USED AS DIRECTED BY THE ENGINEER

STEEL OPTION

BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0307 FAX

DATE  
12/04/00

RELEASED  
5002702L & 5002737R

DRAWN  
CLH

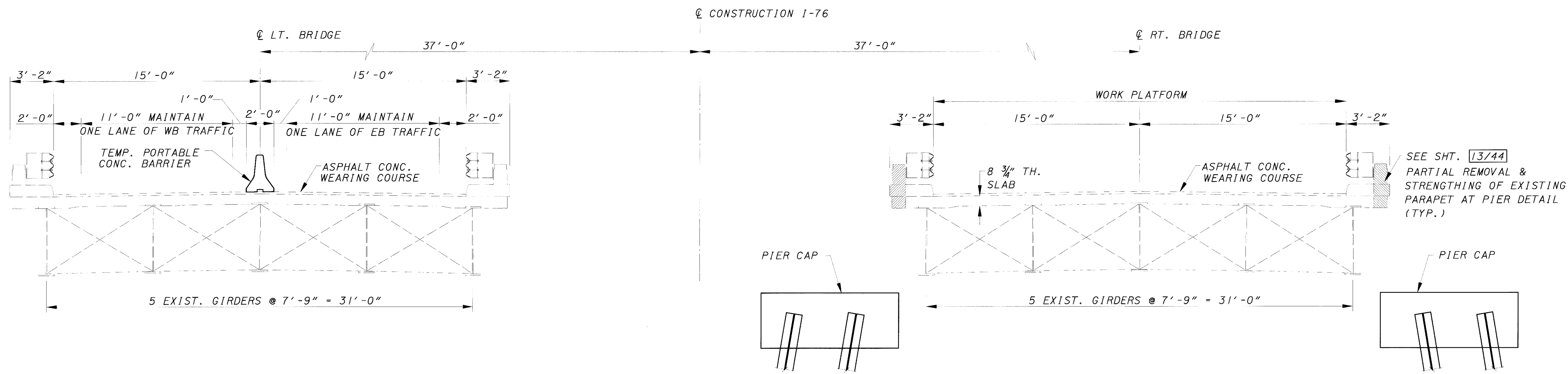
CHECKED  
ASB

ESTIMATED QUANTITIES  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

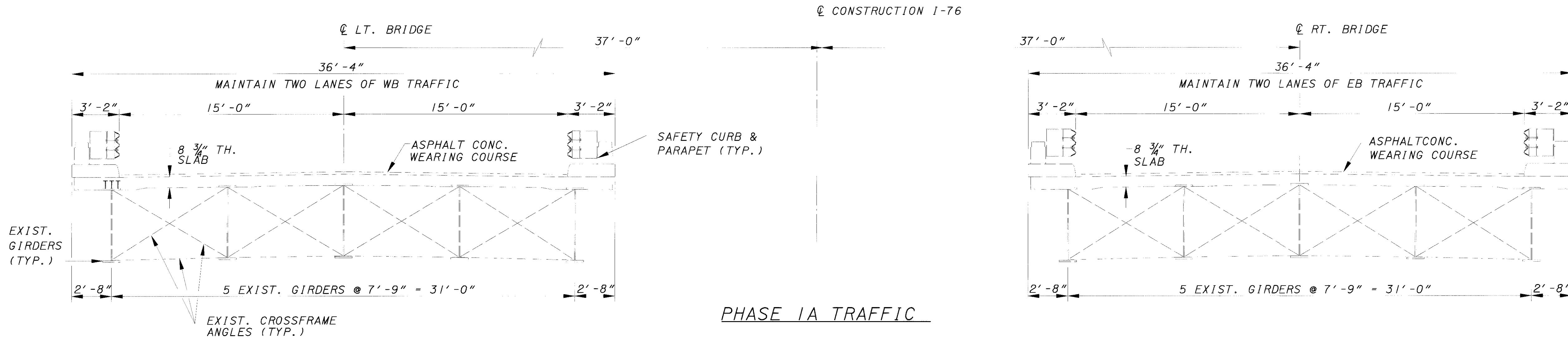
**MAH-76-0.86**

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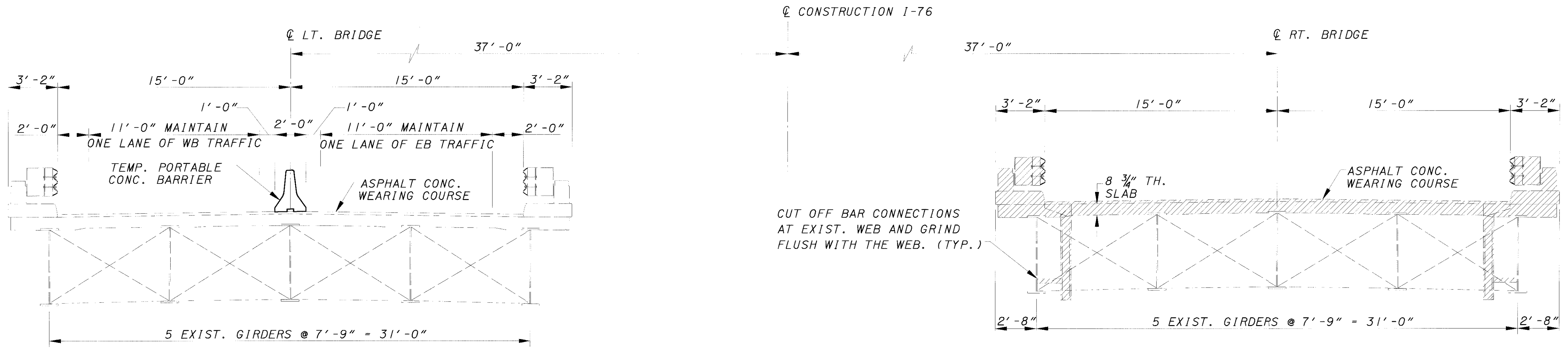
61



PHASE I CONSTRUCTION - DRIVING OF PILES AND PIER CAP CONSTRUCTION FOR RT. BRIDGE



PHASE 1A TRAFFIC

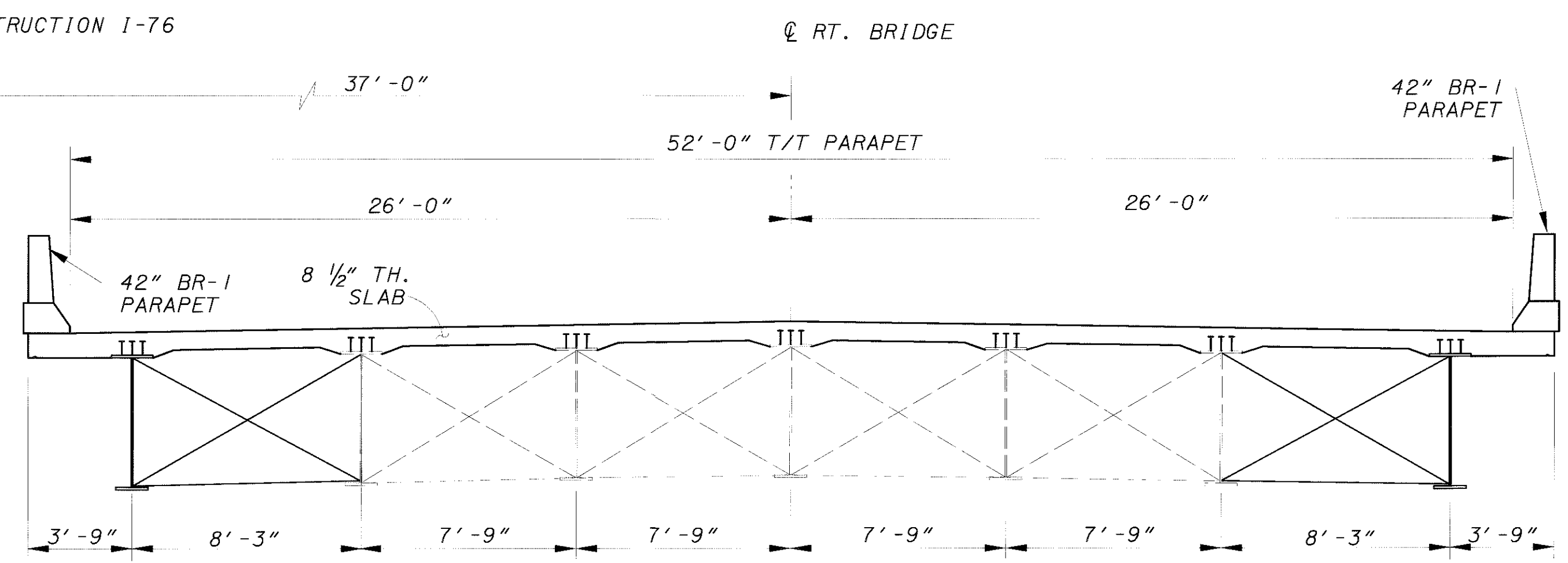
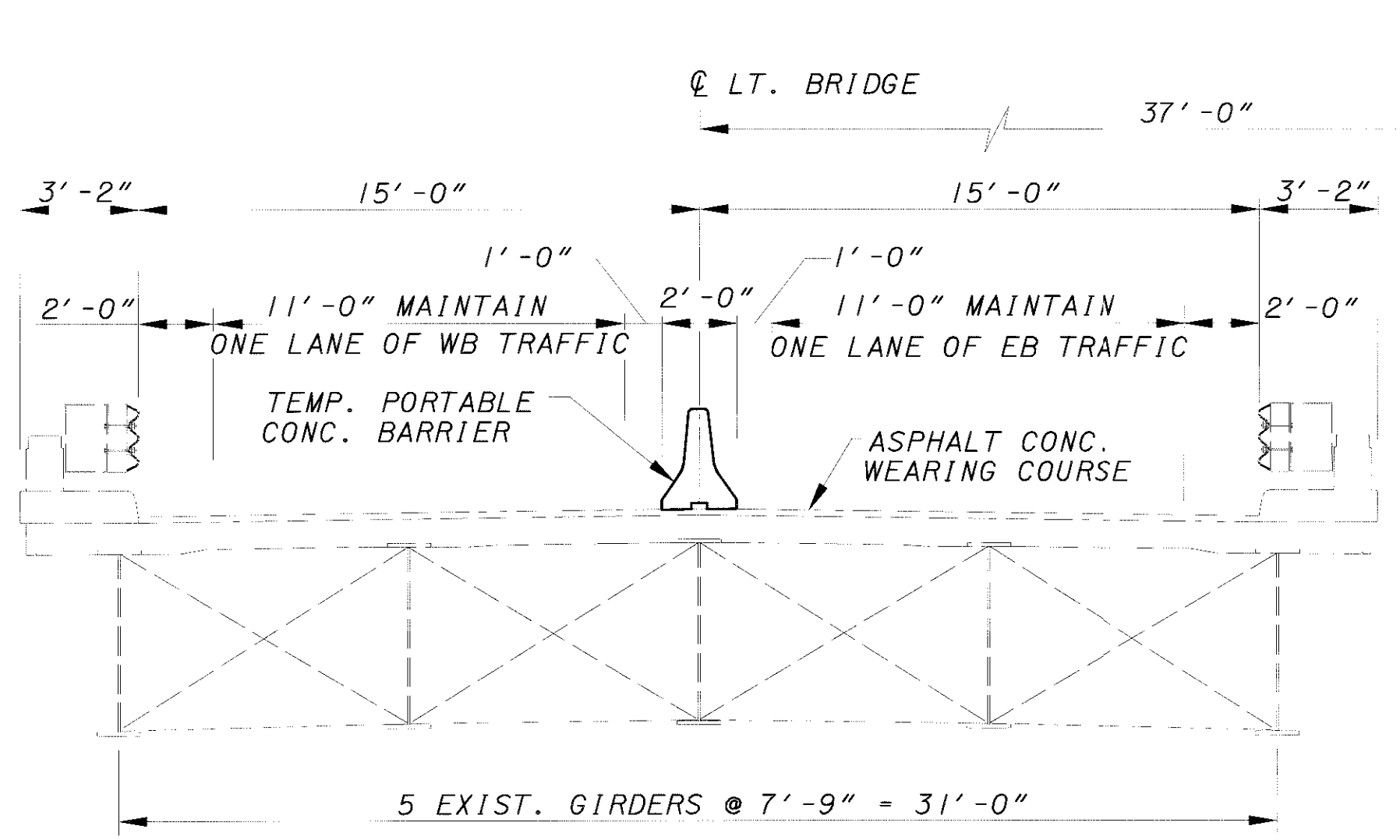


PHASE 2 - DECK REMOVAL

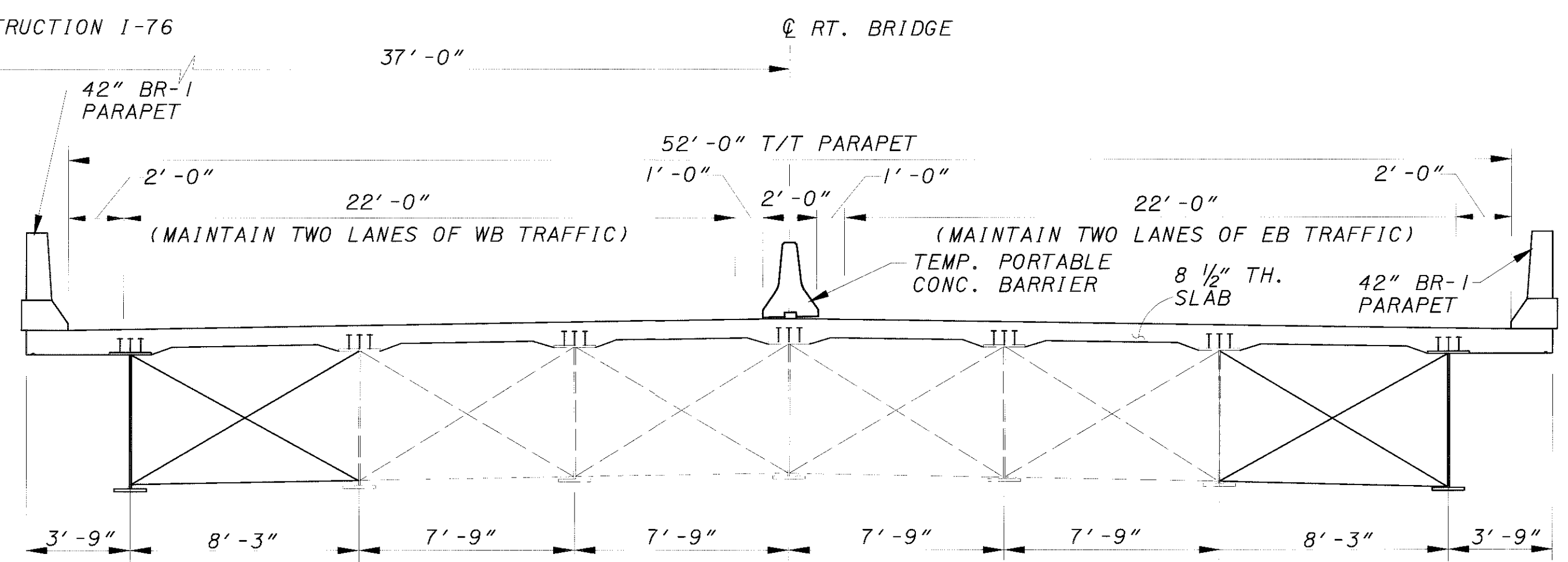
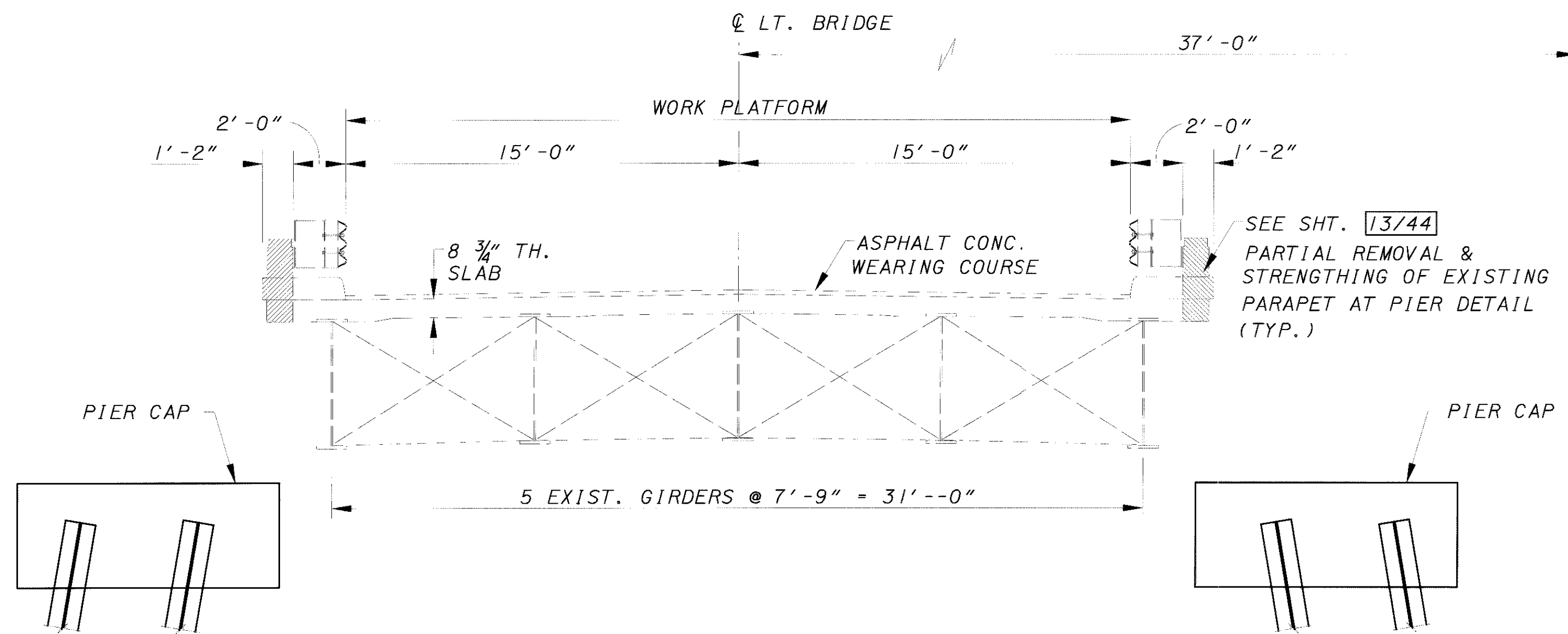
**LEGEND**  
 INDICATES AREA TO BE REMOVED UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED

STEEL OPTION

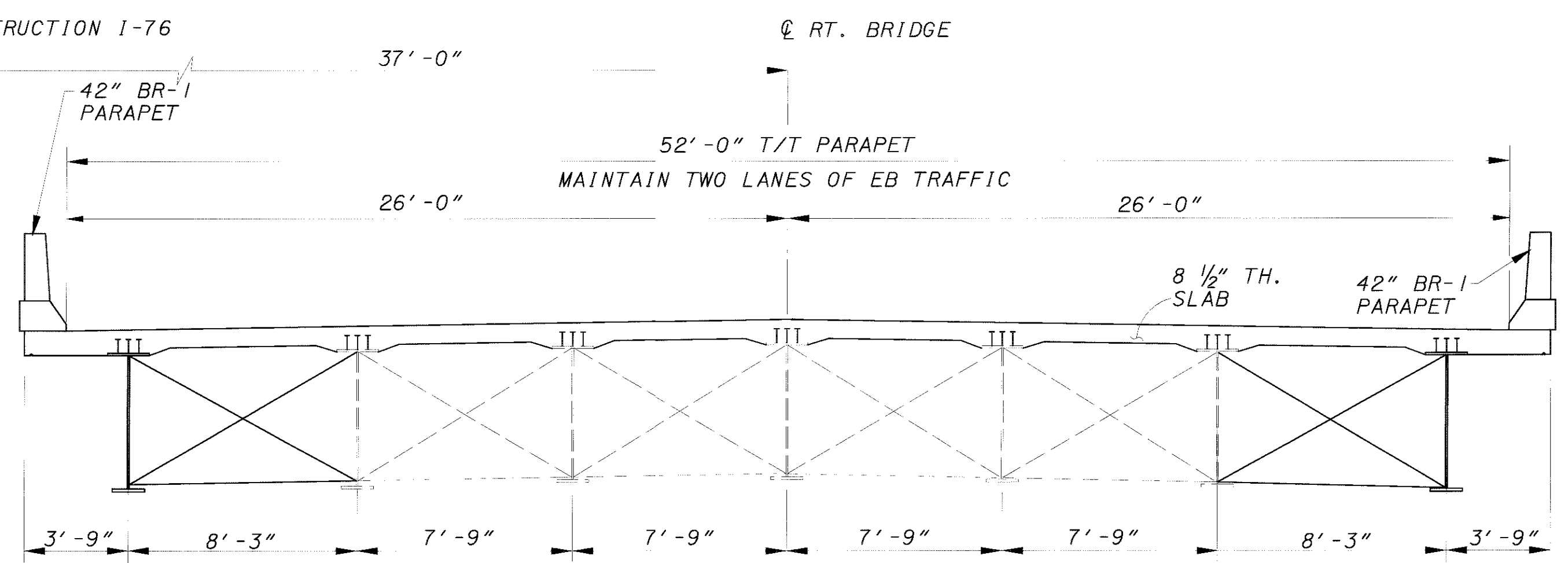
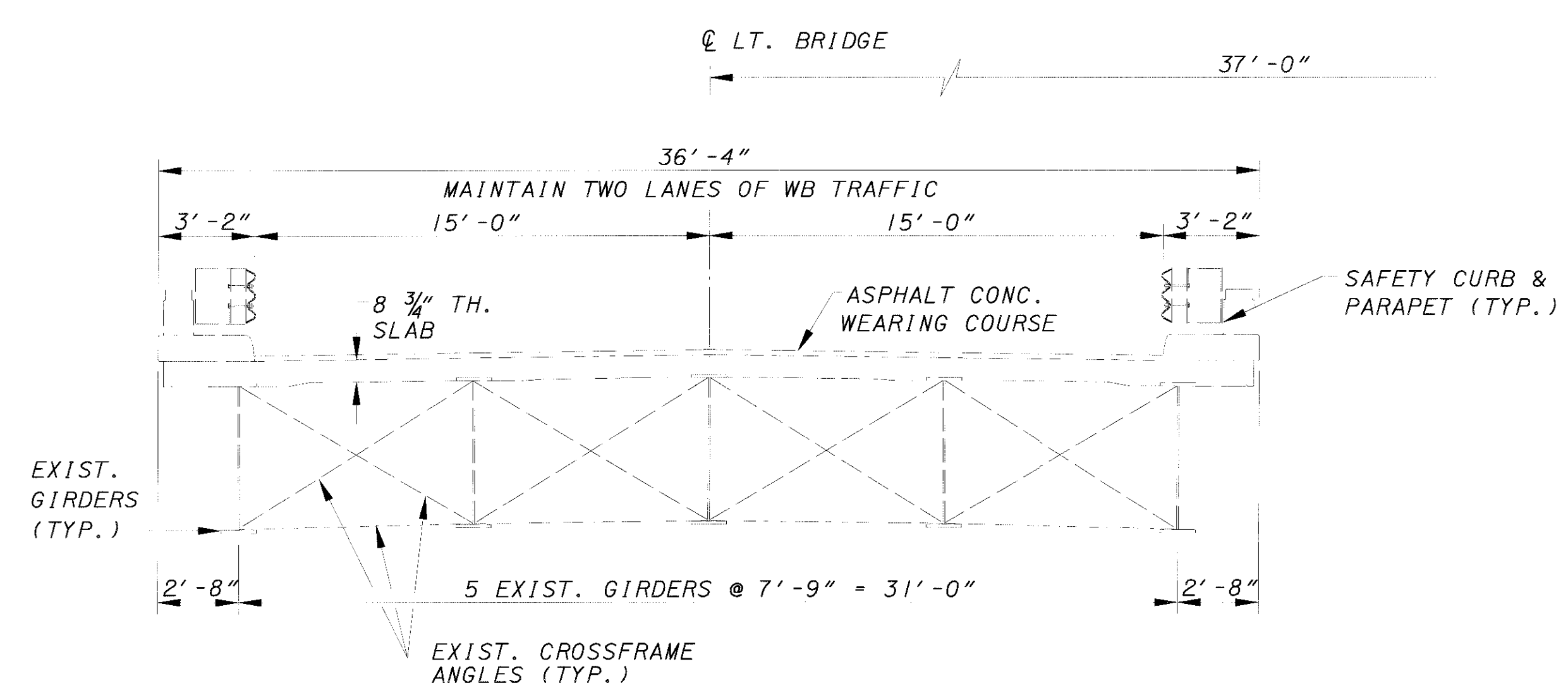
|   |                  |                 |              |                |                                    |
|---|------------------|-----------------|--------------|----------------|------------------------------------|
| DESIGN/ISSUED BY<br><b>BARR ENGINEERING, INC.</b><br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>11/30/00 | REVIEWED<br>GEA | DRAWN<br>CLH | CHECKED<br>KVB | PROJECT NO.<br>5002702L & 5002737R |
| <b>PHASE CONSTRUCTION DETAILS</b><br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON  |                  |                 |              |                |                                    |
| <b>MAH-76-0.86</b>  |                  |                 |              |                |                                    |
| 10 / 44   |                  |                 |              |                |                                    |
| 62<br>102   |                  |                 |              |                |                                    |



PHASE 2 CONSTRUCTION



PHASE 3 - CONSTRUCTION



PHASE 3A TRAFFIC

STEEL OPTION

BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

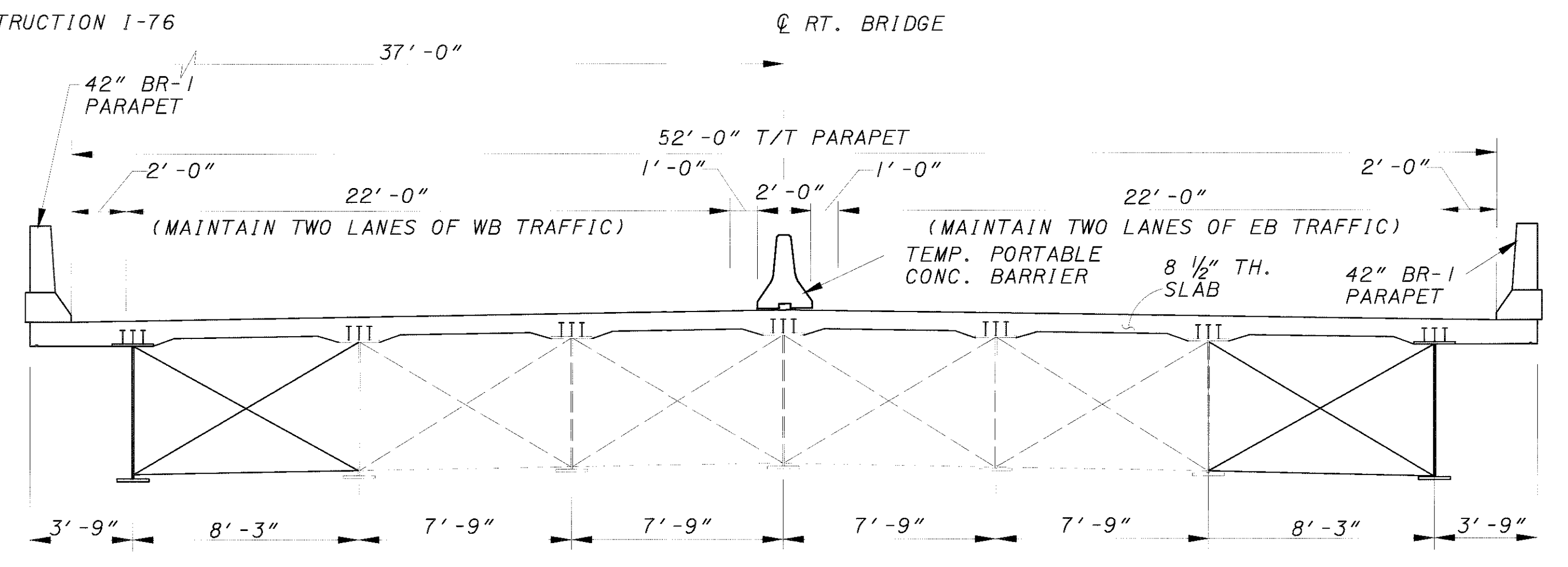
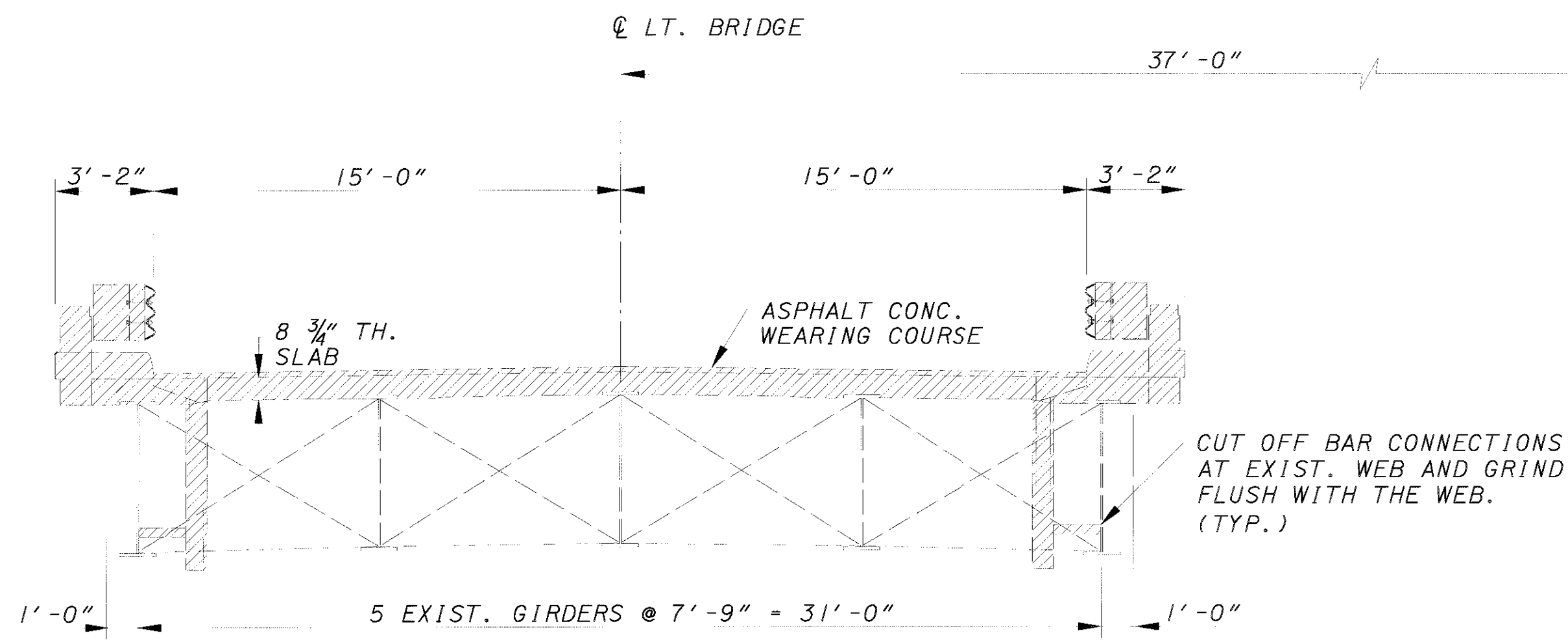
|           |                     |
|-----------|---------------------|
| DATE      | 11/30/00            |
| REVISIONS | GEA                 |
| DRAWN     | FIB                 |
| CHECKED   | KVB                 |
| APPROVED  | ASB                 |
| PROJECT   | 5002702L & 5002737R |

PHASE CONSTRUCTION DETAILS  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

**MAH-76-0.86**

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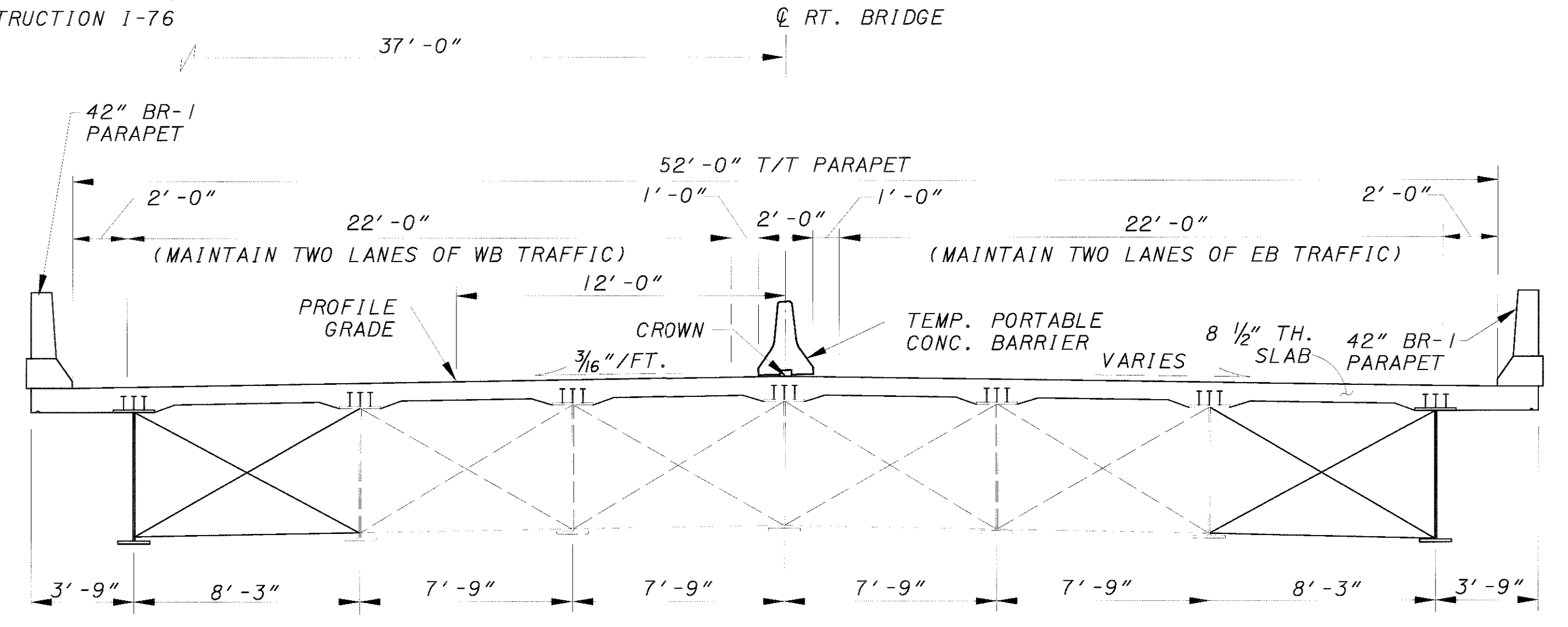
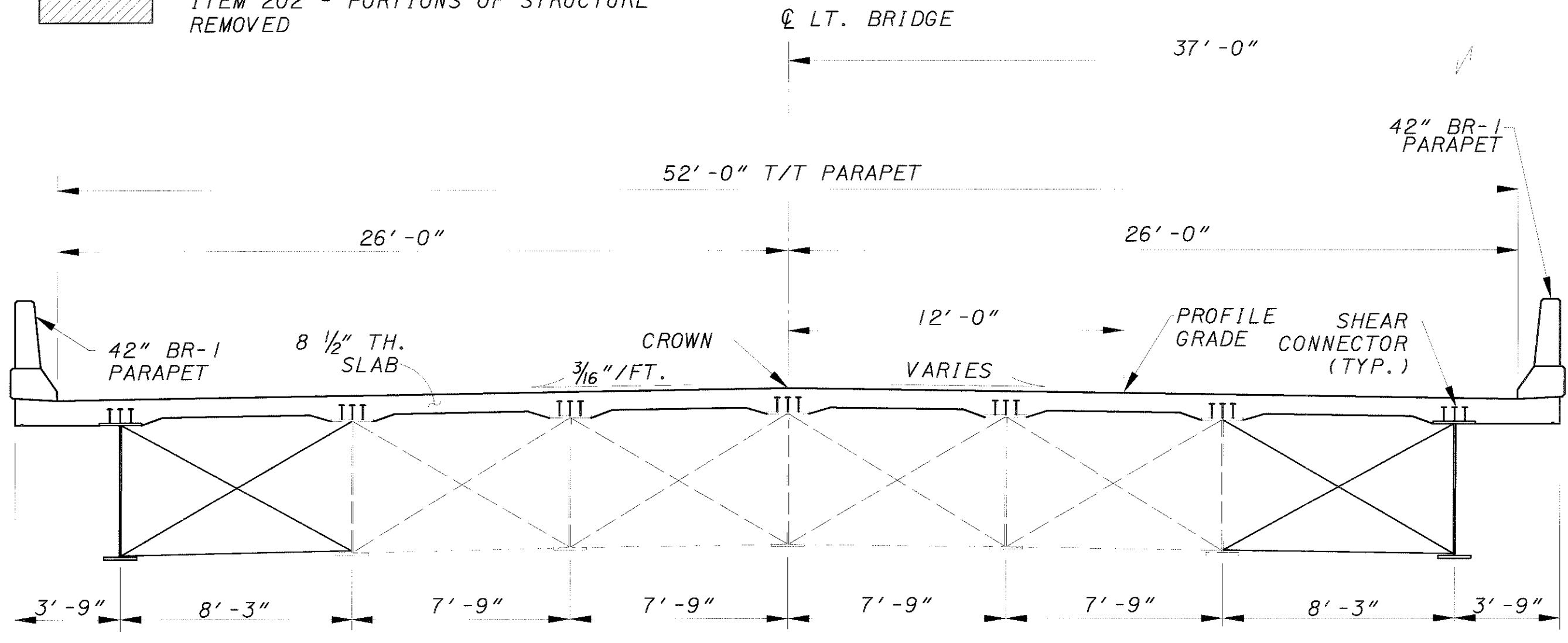
63  
 102



PHASE 4 - DECK REMOVAL

**LEGEND**

INDICATES AREA TO BE REMOVED UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED



PHASE 4 CONSTRUCTION

**SEQUENCE OF CONSTRUCTION**

- INSTALL PORTABLE CONCRETE BARRIER ON LT. BRIDGE AS SHOWN IN PHASE 1 CONSTRUCTION DIAGRAM, TO MAINTAIN 1 LANE OF TRAFFIC IN EACH DIRECTION. CLOSE RT. BRIDGE TO USE AS WORK PLATFORM. REMOVE PORTIONS OF EXISTING PARAPET AND RAIL AT PIERS FOR PILE DRIVING CONVENIENCE AT PIER EXTENSIONS. DRIVE ALL PIER PILES AND CONSTRUCT PIER CAPS FOR RT. BRIDGE. RECONSTRUCT RAIL. FOR EXISTING DECK, CURB, PARAPET AND RAIL MODIFICATIONS NEEDED TO DRIVE BATTERED PIER PILES, SEE SHT. 13/44.
- REOPEN BOTH EXISTING BRIDGES TO 2-LANE TRAFFIC IN EACH DIRECTION FROM 11/05/01 TO 3/15/02 AS SHOWN IN PHASE 1A TRAFFIC DIAGRAM.
- MAINTAIN 1 LANE OF TRAFFIC IN EACH DIRECTION ON LT. BRIDGE. CLOSE RT. BRIDGE AND REMOVE DECK ON RT. BRIDGE AS SHOWN IN PHASE 2 DECK REMOVAL DIAGRAM.
- ERECT PROPOSED GIRDERS AND CONSTRUCT NEW SLAB AND PARAPET ON RT. BRIDGE AS SHOWN IN PHASE 2 CONSTRUCTION DIAGRAM.
- MAINTAIN 2 LANES OF TRAFFIC IN EACH DIRECTION ON RT. BRIDGE, AS SHOWN IN PHASE 3 CONSTRUCTION DIAGRAM. CLOSE LT. BRIDGE TO USE AS A WORK PLATFORM. REMOVE PORTIONS OF EXISTING PARAPET AND RAIL AT PIERS FOR PILE DRIVING CONVENIENCE AT PIER EXTENSIONS. DRIVE ALL PIER PILES AND CONSTRUCT PIER CAPS FOR LT. BRIDGE. RECONSTRUCT RAIL. FOR EXISTING DECK, CURB, PARAPET AND RAIL MODIFICATIONS NEEDED TO DRIVE BATTERED PIER PILES, SEE SHT. 13/44.
- REOPEN NEW RT. BRIDGE AND EXISTING LT. BRIDGE TO 2-LANE TRAFFIC IN EACH DIRECTION FROM 11/15/02 TO 3/15/03, AS SHOWN IN PHASE 3A TRAFFIC DIAGRAM. METALIZE THE EXISTING PIER PILES DURING LOW WATER ELEVATION DURING PHASE 3A (WINTER MONTHS) SEE SHEET 38/44.
- INSTALL PORTABLE CONCRETE BARRIER ON NEWLY CONSTRUCTED SLAB ON RT. BRIDGE DECK. MAINTAINING 2 LANES OF TRAFFIC IN EACH DIRECTION ON RT. BRIDGE, CLOSE LT. BRIDGE AND REMOVE DECK ON LT. BRIDGE AS SHOWN IN PHASE 4 DECK REMOVAL DIAGRAM.
- ERECT PROPOSED GIRDERS AND CONSTRUCT NEW SLAB AND PARAPET ON LT. BRIDGE AS SHOWN IN PHASE 4 CONSTRUCTION DIAGRAM.
- REMOVE PORTABLE CONCRETE BARRIER FROM RT. BRIDGE AND OPEN BOTH BRIDGES TO NORMAL OPERATION, 2 LANES IN EACH DIRECTION.
- METALIZE SUPERSTRUCTURE STEEL IN CONFORMANCE WITH THESE PLANS.
- FINISH ALL CONTRACT ITEMS TO COMPLETE THE PROJECT.

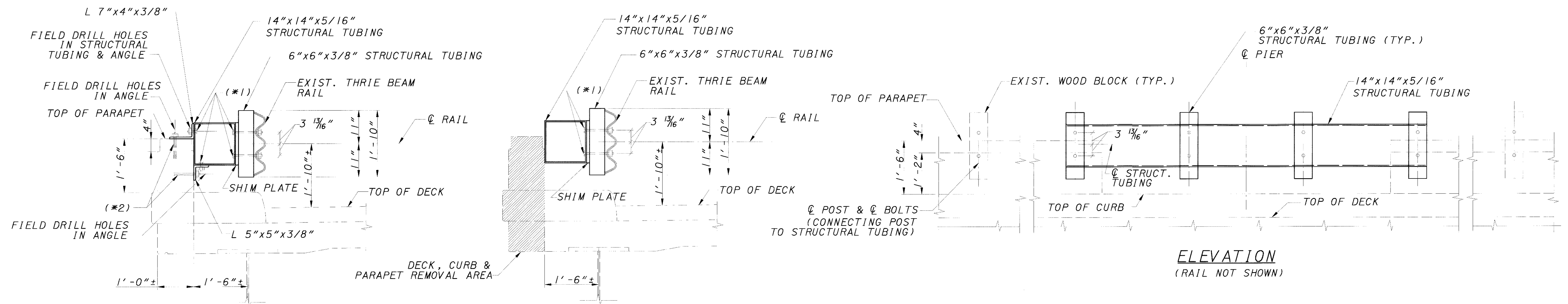
**NOTES:**

- PAYMENT FOR PORTABLE CONCRETE BARRIER IS CARRIED IN THE ROADWAY PLANS.
- FOR ADDITIONAL MAINTENANCE-OF-TRAFFIC DETAILS, SEE ROADWAY PLANS.
- FOR ADDITIONAL PORTABLE CONCRETE BARRIER DETAILS, SEE STANDARD DRAWING PCB-91.
- FOR ABUTMENT REMOVAL DETAILS, SEE SHEETS 14/44 AND 15/44.

STEEL OPTION

DESIGN: BARR ENGINEERING, INC. 5 EAST LONG STREET, COLUMBUS, OHIO 43215  
 DATE: 11/30/00  
 DRAWN: CLH  
 CHECKED: ASB  
 PROJECT: MAH-76-086  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON  
 MAH-76-0.86  
 12/44  
 64  
 102  
 (614) 224-1941, (614) 224-0907 FAX

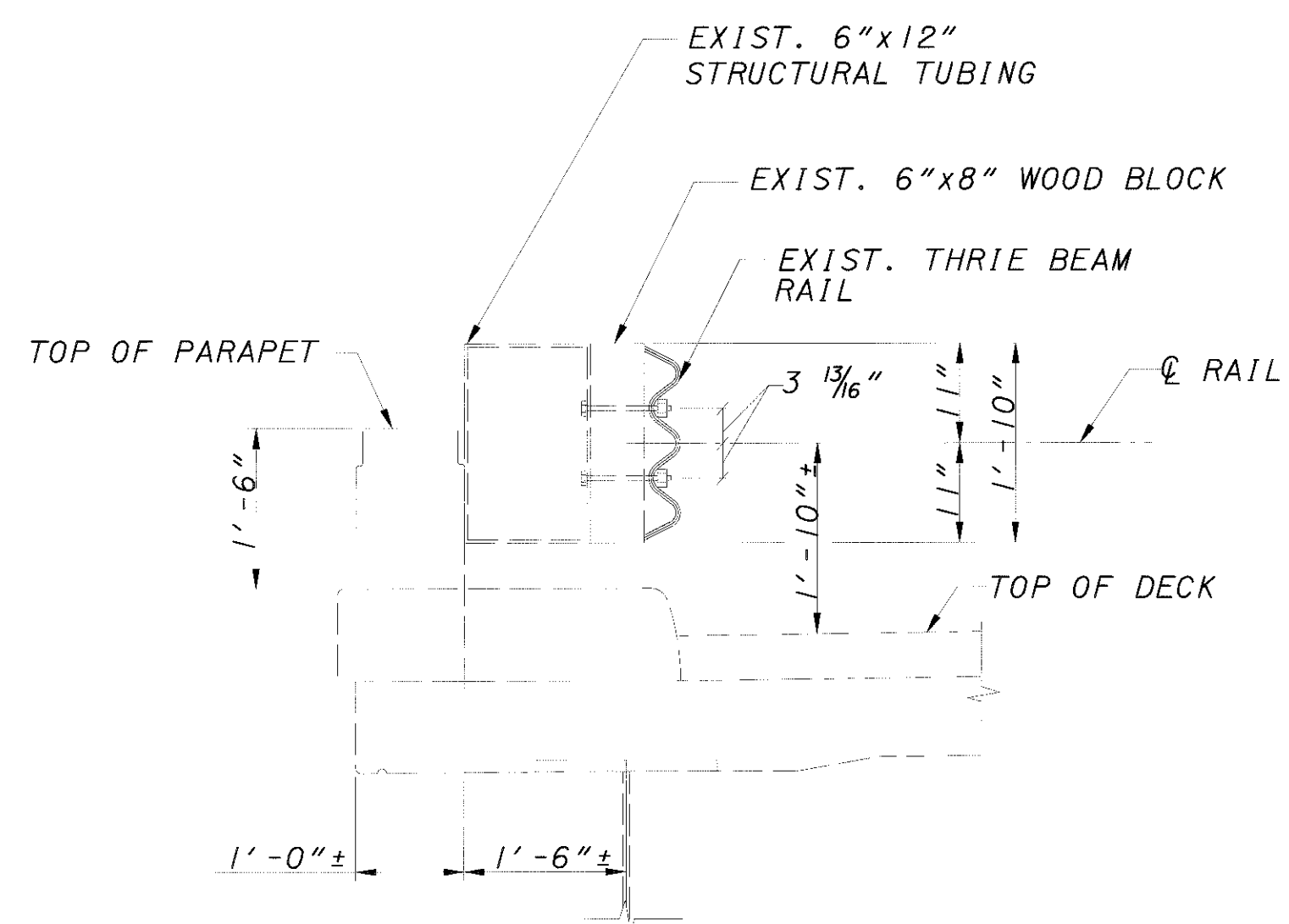
EXIST. DECK, CURB, PARAPET AND RAIL MODIFICATION DETAILS FOR INSTALLING BATTERED PILES  
AT PIER EXTENSIONS & RECONSTRUCTING THE RAIL.



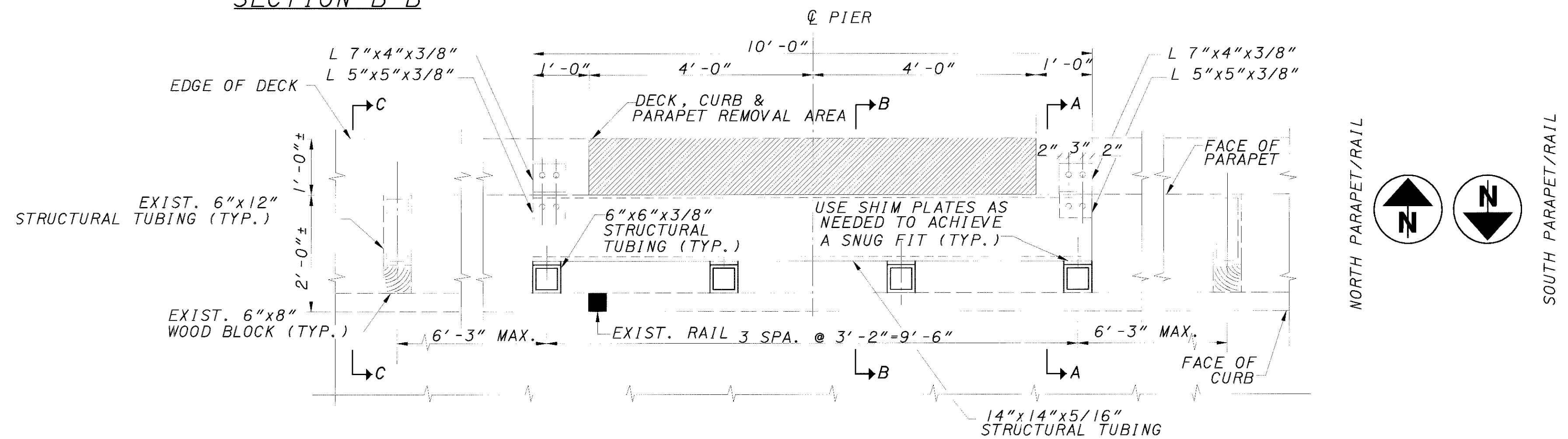
SECTION A-A

SECTION B-B

ELEVATION  
(RAIL NOT SHOWN)



SECTION C-C



PLAN

(NORTH PARAPET/RAIL SHOWN; SOUTH PARAPET/RAIL OPPOSITE HAND)

**NOTES:**

IN ORDER TO ELIMINATE THE INTERFERENCE WITH THE DRIVING OF BATTERED PILES (CLOSEST TO THE DECK), PARTS OF EXIST. DECK AND PARAPET WILL BE REMOVED AT EACH PIER. EXIST. RAIL AND POST SHALL BE DISMANTLED IN THE VICINITY OF EACH PIER FOR CONVENIENCE OF PILE DRIVING.

AFTER THE COMPLETION OF THE PIER EXTENSIONS, THE DISMANTLED SECTIONS OF RAIL WILL BE RECONSTRUCTED AS PER THE DETAILS OF THIS SHEET. ALL LABOR, MATERIALS AND INCIDENTAL COSTS ASSOCIATED WITH THIS TASK WILL BE PAID UNDER, ITEM SPECIAL - STRUCTURE MISC.; EXIST. DECK, CURB, PARAPET AND RAIL MODIFICATIONS FOR INSTALLING BATTERED PILES AT PIER EXTENSIONS & RECONSTRUCTING THE RAIL.

STRUCTURAL TUBING AND ANGLES SHALL BE A36 OR A572 STEEL.

(\*1) 5/8" DIA. A325 BOLTS WITH NUTS & WASHERS.

(\*2) 5/8" DIA. A325 ANCHOR BOLTS TO BE DOWELLED IN TO PARAPET A MINIMUM OF 8", AS PER ITEM 510.

STEEL OPTION

PERSON AGENCY  
BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

DATE 11/30/00  
GEA 5002702L & 5002737R

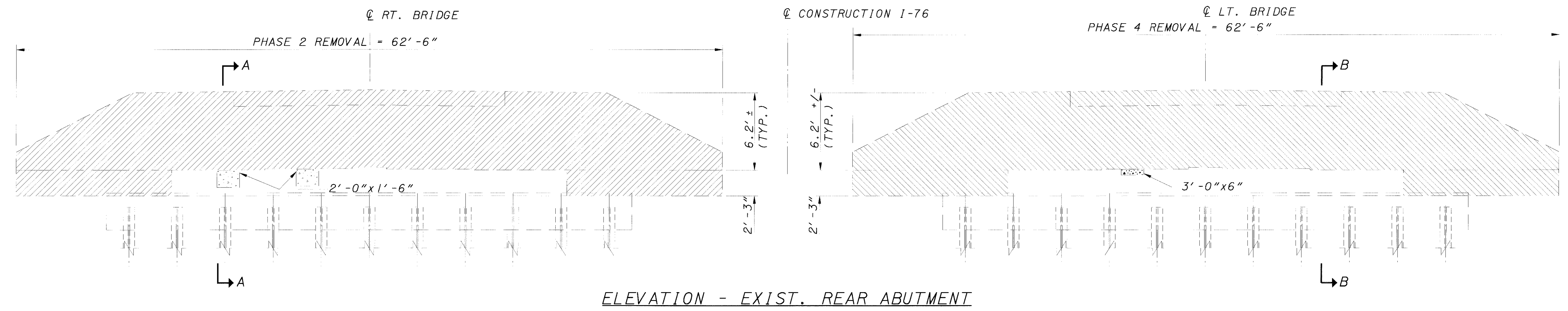
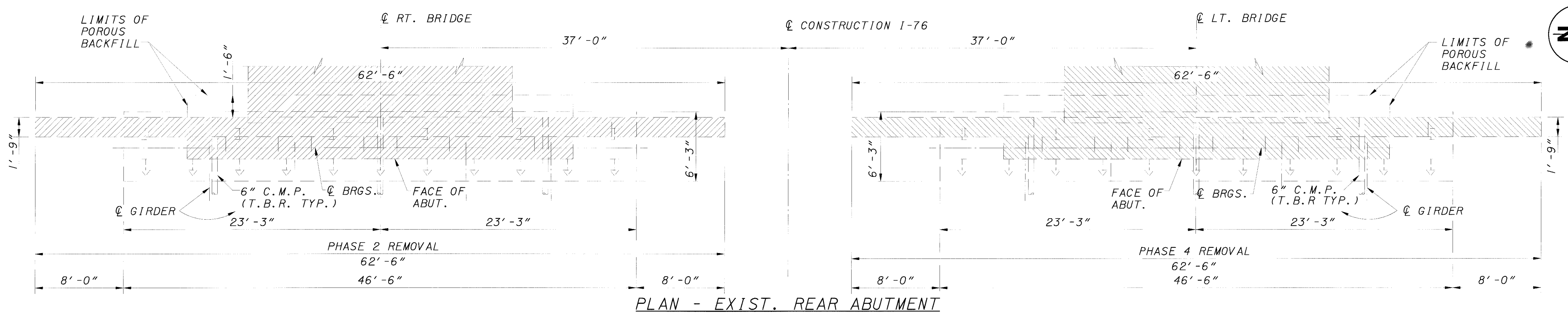
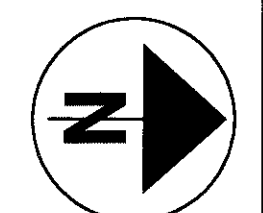
DESIGNED BY KVB  
CHECKED BY ASB

PHASE CONSTRUCTION DETAILS  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

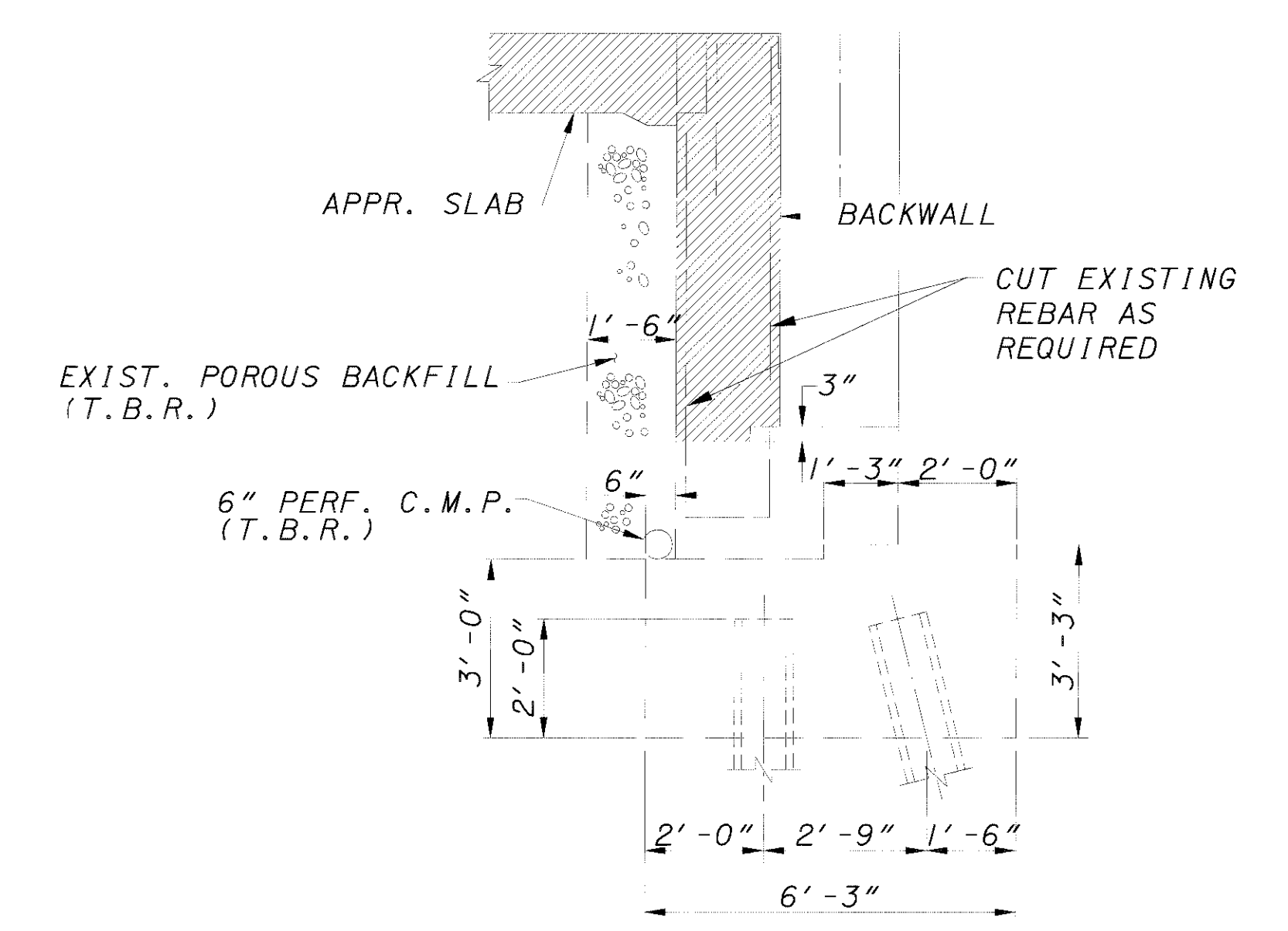
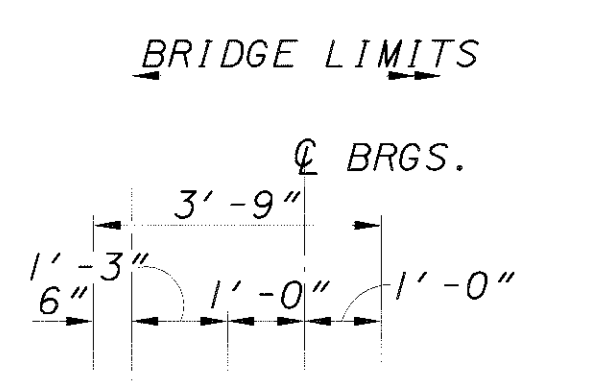
MAH-76-0.86

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102



ELEVATION - EXIST. REAR ABUTMENT



SECTION A-A SHOWN  
(SECTION B-B SIMILAR)

| SUMMARY OF PATCHING QUANTITIES |              |              |
|--------------------------------|--------------|--------------|
| LOCATION                       | MEASURED     | ESTIMATED    |
| LEFT BRIDGE                    | 1.5 SQ. FT.  | 3.0 SQ. FT.  |
| RIGHT BRIDGE                   | 6.0 SQ. FT.  | 12.0 SQ. FT. |
| TOTAL                          | 7.50 SQ. FT. | 15.0 SQ. FT. |

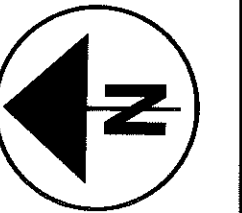
PHYSICAL INVENTORY OF MEASURED QUANTITIES OF  
DETERIORATION WAS PERFORMED IN APRIL 1999.

NOTE:  
ALL SURFACES TO BE PATCHED AND THE EXPOSED REINFORCING STEEL WITHIN SHALL BE THOROUGHLY CLEANED BY ABRASIVE BLASTING PRIOR TO THE CLEANING SPECIFIED BY 519.04. CLEANING SHALL PRECEDE APPLICATION OF THE PATCHING MATERIAL OR ERECTION OF THE FORMS BY NOT MORE THAN 24 HOURS.

- LEGEND**
- EXISTING 12BP53 PILES, VERTICAL
  - EXISTING 12BP53 PILES, BATTERED 4:1
  - INDICATES CONC. AREAS TO BE REMOVED IN PHASE 4
  - INDICATES CONC. AREAS TO BE REMOVED IN PHASE 2
  - INDICATES AREAS TO BE PATCHED PER ITEM 519 - PATCHING CONCRETE STRUCTURE WITH TROWELABLE MORTAR (SEE NOTE)

REGIONAL OFFICE  
**BARR ENGINEERING, INC.**  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

DATE: 11/30/00  
 DRAWN BY: CLH  
 CHECKED BY: ASB  
 PROJECT NO.: MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON  
**MAH-76-0.86**  
 14 / 44  
 66 / 102  
 STEEL OPTION

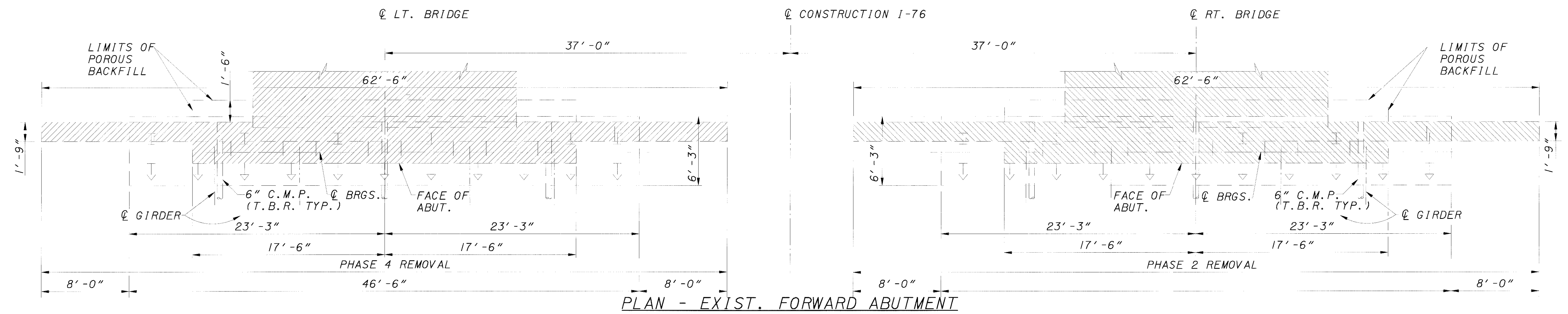


BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

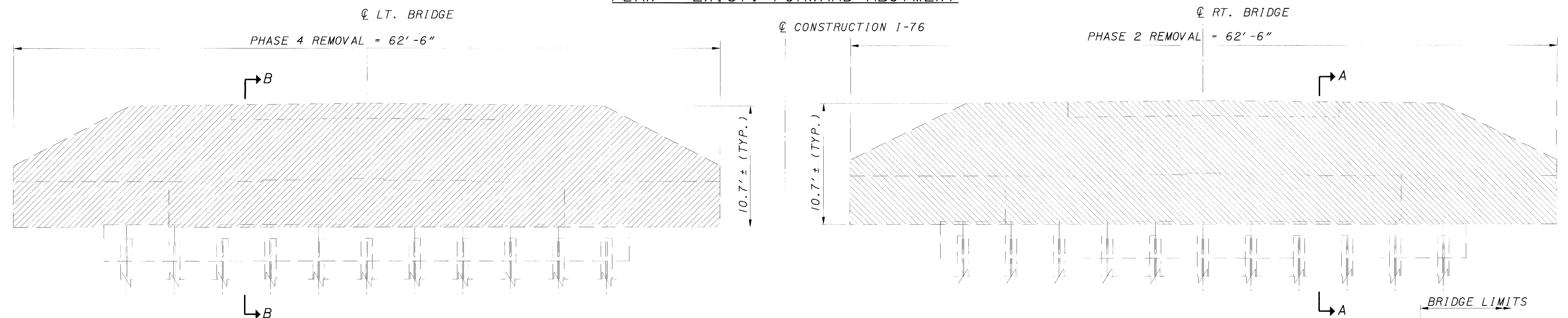
DATE: 11/30/00  
REVIEWED: GEA  
DRAWN: CLH  
CHECKED: ASB  
PROJECT NO.: MAH-76-0091 L & R  
STRUCT. DRAW. NUMBER: 5002702L & 5002737R

ABUTMENT REMOVAL DETAILS  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

MAH-76-0.86  
15 / 44  
67  
102  
STEEL OPTION



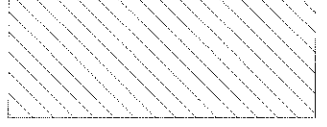
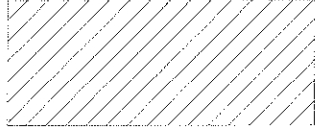


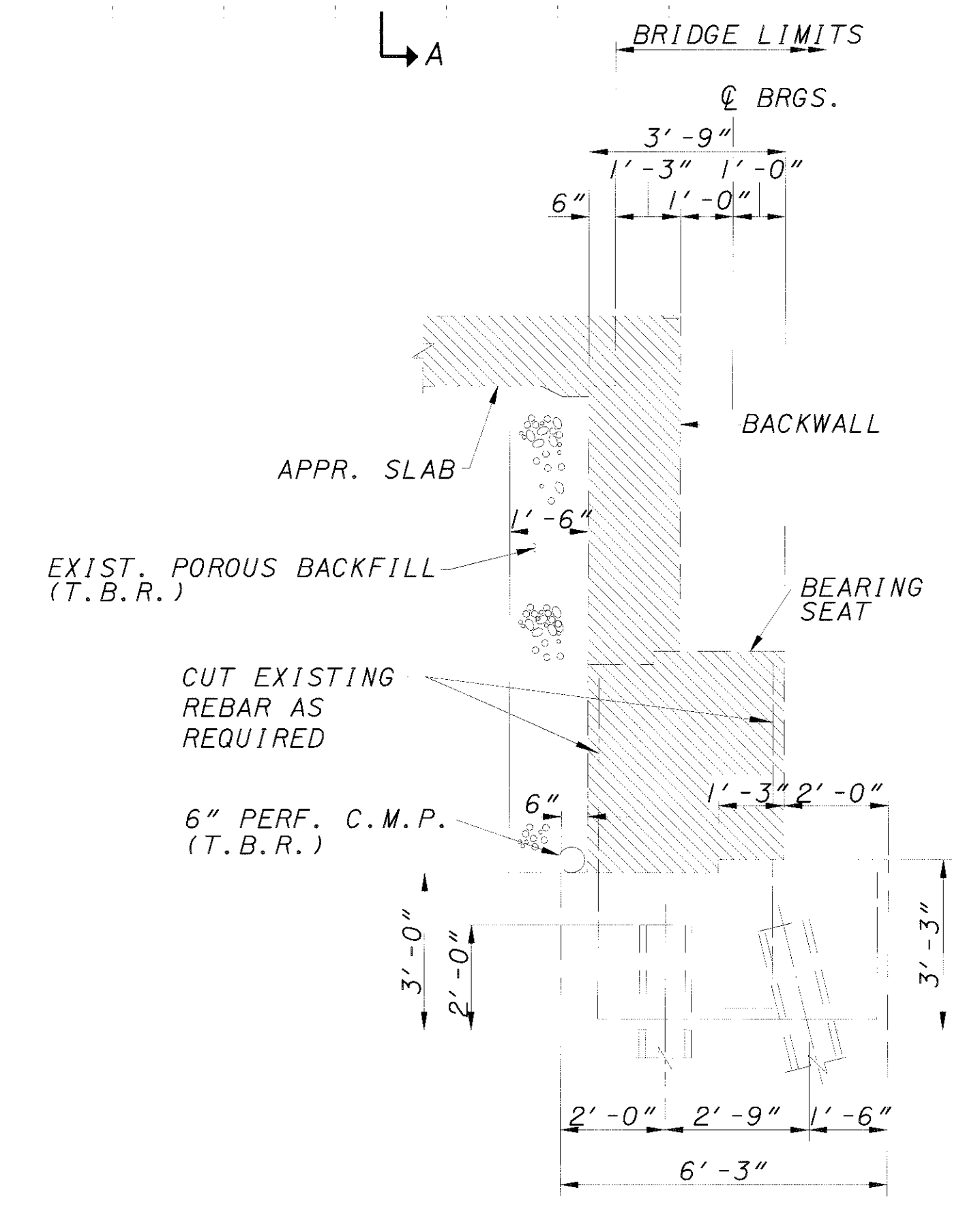
PLAN - EXIST. FORWARD ABUTMENT



ELEVATION - EXIST. FORWARD ABUTMENT

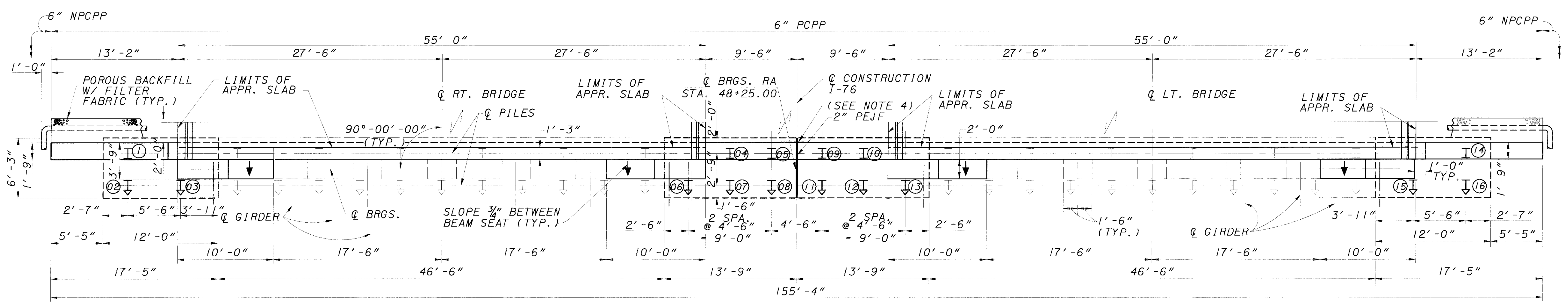
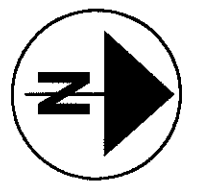
**LEGEND**

-  EXISTING I2BP53 PILES, VERTICAL
-  EXISTING I2BP53 PILES, BATTERED 4:1
-  INDICATES CONC. AREAS TO BE REMOVED IN PHASE 2
-  INDICATES CONC. AREAS TO BE REMOVED IN PHASE 4



SECTION A-A SHOWN  
(SECTION B-B SIMILAR)

PUBLISHED VIEW = 2.01 SCALE =



**PLAN - REAR ABUTMENT**

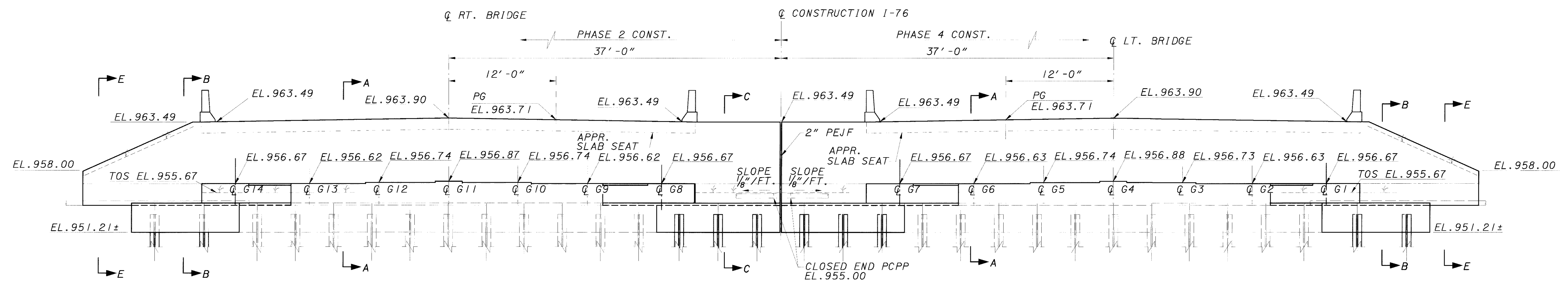
NOTE: SEE FRAMING PLAN SHEET [24/44] FOR GIRDER SPACING.

**LEGEND**

- ↓ EXISTING 12BP53 PILES BATTERED
- ⊥ EXISTING 12BP53 PILES VERTICAL
- ⊥ PROPOSED HPI2X53 PILES BATTERED
- ⊥ PROPOSED HPI2X53 PILES VERTICAL
- ⊗ PILE NUMBERS

**NOTES:**

1. FOR NOTES AND ABUTMENT SECTIONS SEE SHEET [9/44].
2. BRIDGE SEAT ELEVATIONS ARE GIVEN AT THE Q BRGS. AND BACKWALL AND WINGWALL ELEVATIONS ARE GIVEN ALONG FRONT FACE OF WALL.
3. 6" DIA. NPCPP AT ENDS SPLICED TO PCPP AND OUTLET AS SHOWN IN PIPE TERMINATION DETAIL ON SHEET [9/44].
4. 3' WIDE TYPE B WATERPROOFING PLACED SYMMETRICAL ABOUT THE JOINT FROM TOP OF FTG. TO 1' BELOW THE TOP OF BACKWALL.



**ELEVATION - REAR ABUTMENT**

NOTE: FOR REINFORCEMENT DETAIL SEE SHEET [8/44].

DESIGNER: BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

DATE: 11/30/00  
 DRAWN BY: CLH  
 CHECKED BY: ASB

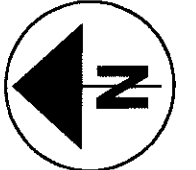
PROJECT: MAH-76-0091 L & R  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

ABUTMENT DETAILS  
 MAH-76-0.86

16 / 44  
 68  
 102

STEEL OPTION





BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

DATE: 11/30/00  
REVIEWED: GEA  
DRAWN: CLH  
CHECKED: KVB  
DESIGNED: ASB

PROJECT: MAH-76-086  
STRUCTURE: BRIDGE NO. MAH-76-0091 L & R  
DRAWING NO.: 5002737R

ABUTMENT DETAILS  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

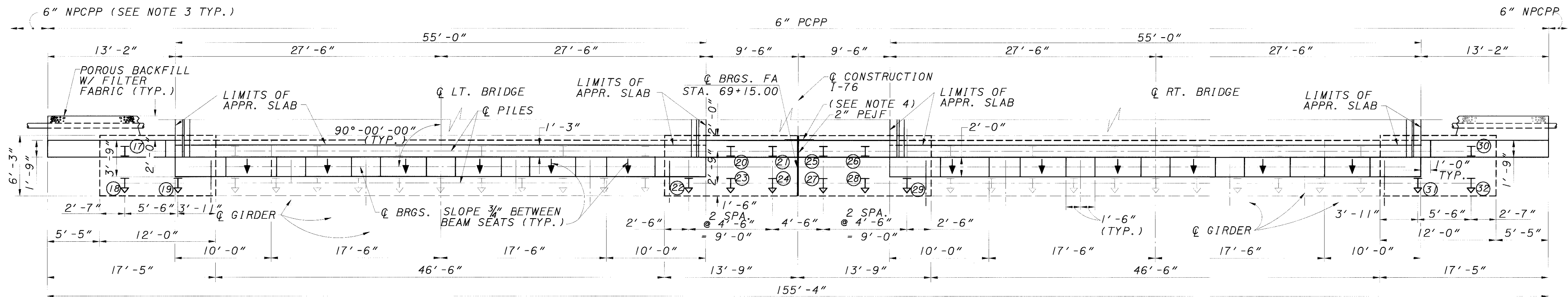
MAH-76-086

17 / 44

69  
102

STEEL OPTION

STEEL OPTION



**PLAN - FORWARD ABUTMENT**

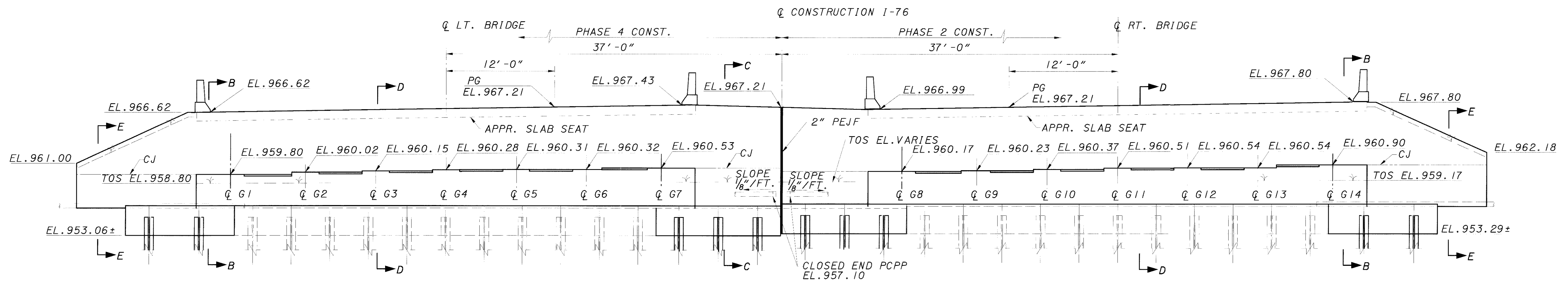
NOTE: SEE FRAMING PLAN SHEET 28744 FOR GIRDER SPACING.

**NOTES:**

1. FOR NOTES AND ABUTMENT SECTIONS SEE SHEET 19744.
2. BRIDGE SEAT ELEVATIONS ARE GIVEN AT THE Q BRGS., AND BACKWALL AND WINGWALL ELEVATIONS ARE GIVEN ALONG FRONT FACE OF WALL.
3. 6" DIA. NPCPP AT ENDS SPLICED TO PCPP AND OUTLET AS SHOWN IN PIPE TERMINATION DETAIL ON SHEET 19744.
4. 3' WIDE TYPE B WATERPROOFING PLACED SYMMETRICAL ABOUT THE JOINT FROM TOP OF FTG. TO 1' BELOW THE TOP OF BACKWALL.

**LEGEND**

- EXISTING I2BP53 PILES BATTERED
- EXISTING I2BP53 PILES VERTICAL
- ▤ PROPOSED HP12X53 PILES BATTERED
- ▤ PROPOSED HP12X53 PILES VERTICAL
- ⊗ PILE NUMBERS

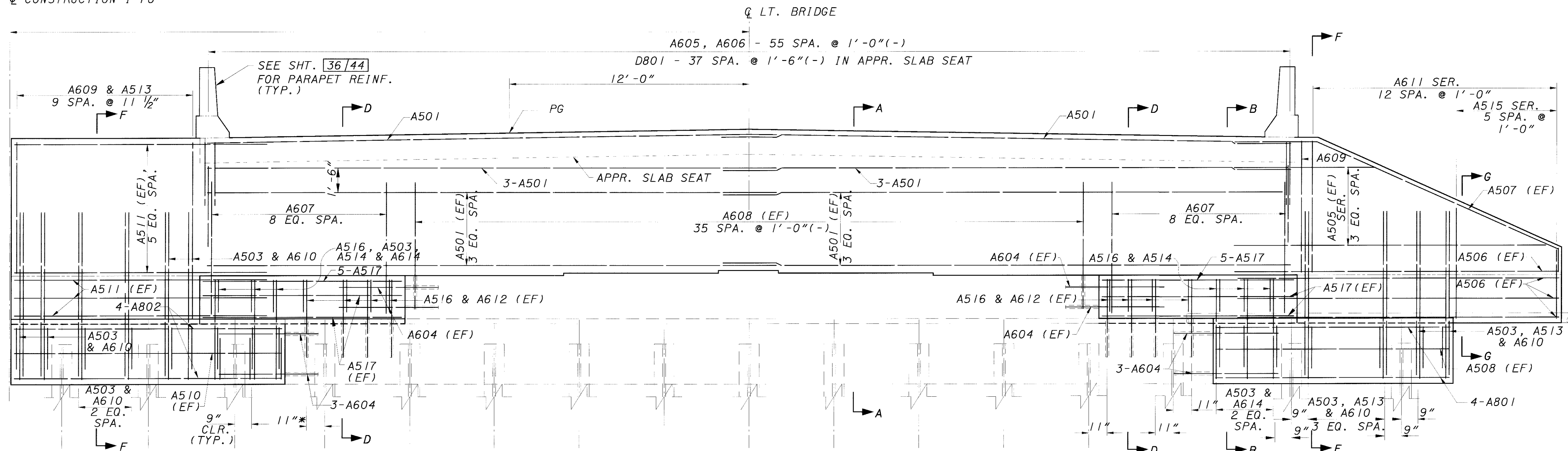


**ELEVATION - FORWARD ABUTMENT**

NOTE: FOR REINFORCEMENT DETAIL SEE SHEET 18744.

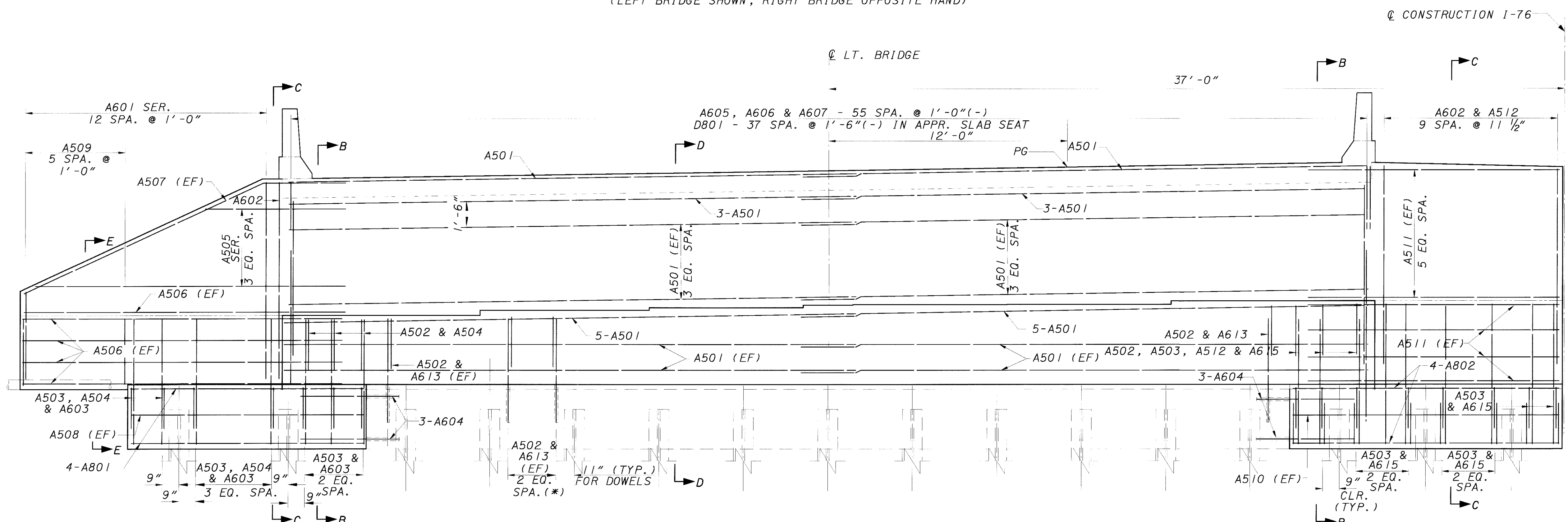
STEEL OPTION

CONSTRUCTION I-76



\* TYPICAL BETWEEN EXIST. PILES

REAR ABUTMENT - REINFORCEMENT DETAIL  
(LEFT BRIDGE SHOWN, RIGHT BRIDGE OPPOSITE HAND)



\* TYPICAL BETWEEN EXIST. PILES

FORWARD ABUTMENT - REINFORCEMENT DETAIL  
LEFT BRIDGE - AS SHOWN  
RIGHT BRIDGE - SIMILAR

NOTE:

FOR NOTES, SECTIONS AND DOWEL HOLE LOCATIONS, SEE SHEET 19744.

BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0807 FAX

DATE: 11/30/00

DESIGNED BY: CECA

DRAWN BY: CLH

CHECKED BY: KVB

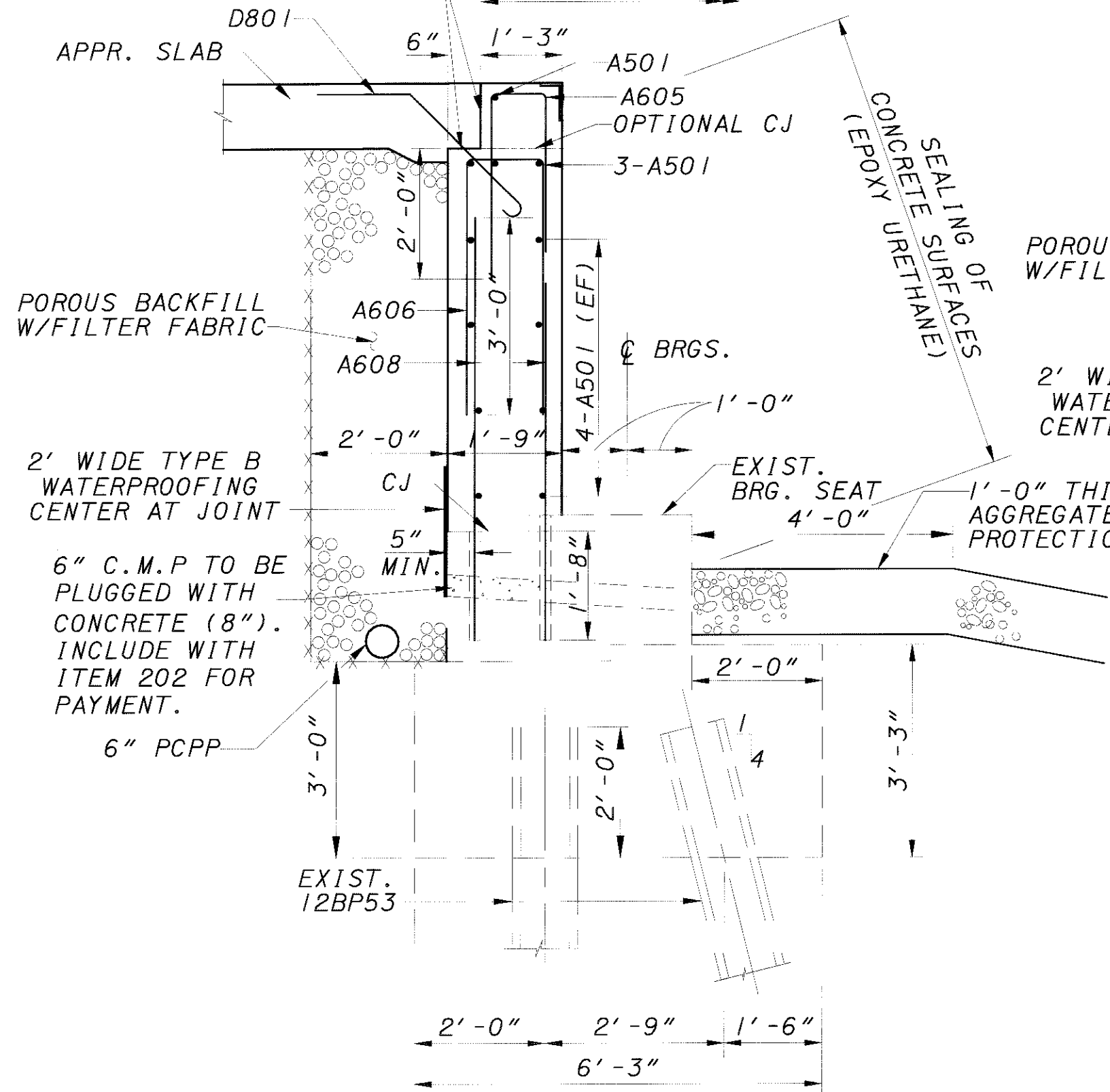
REVISED BY: ASB

ABUTMENT DETAILS  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

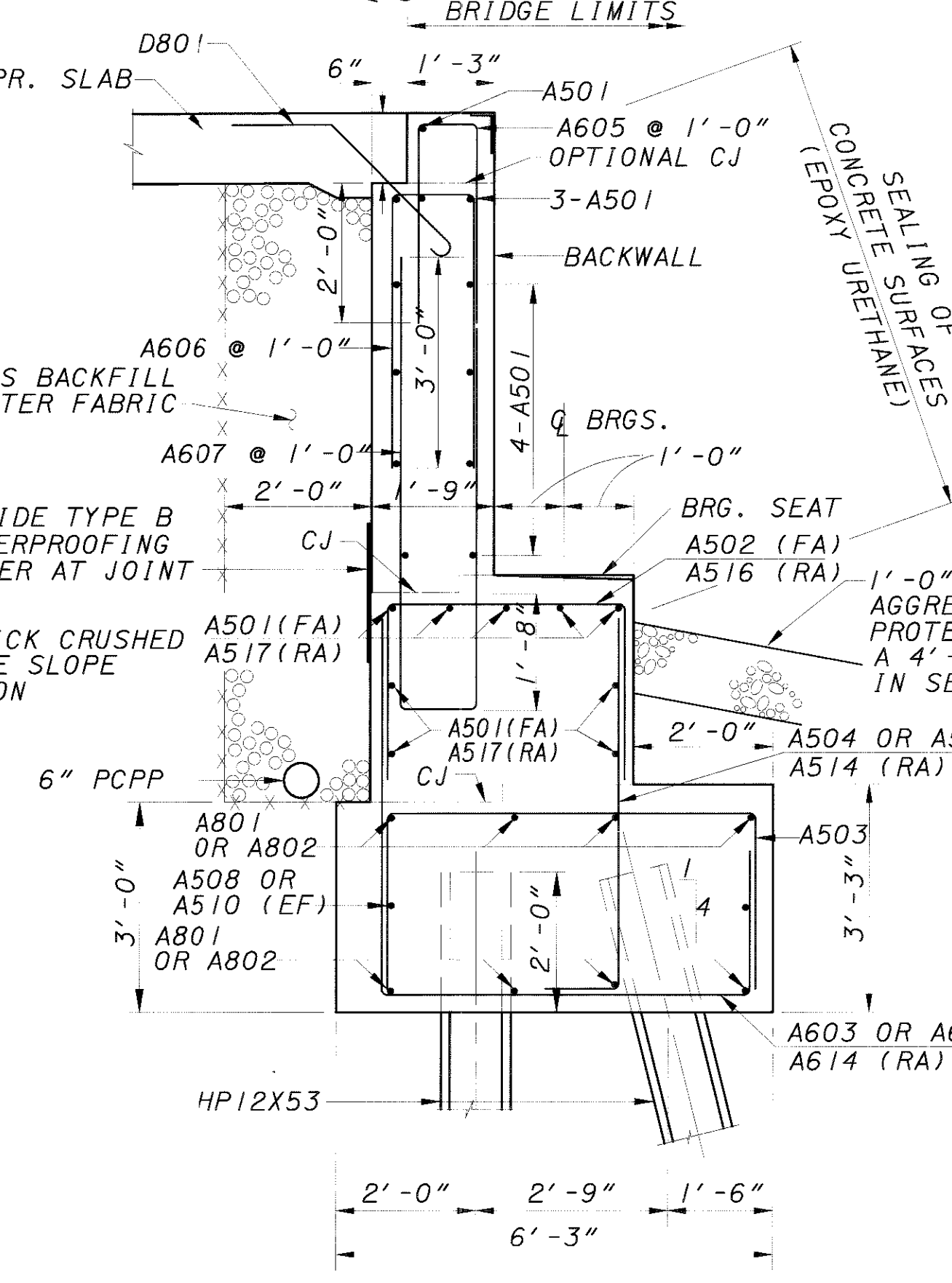
MAH-76-0.86

STEEL OPTION

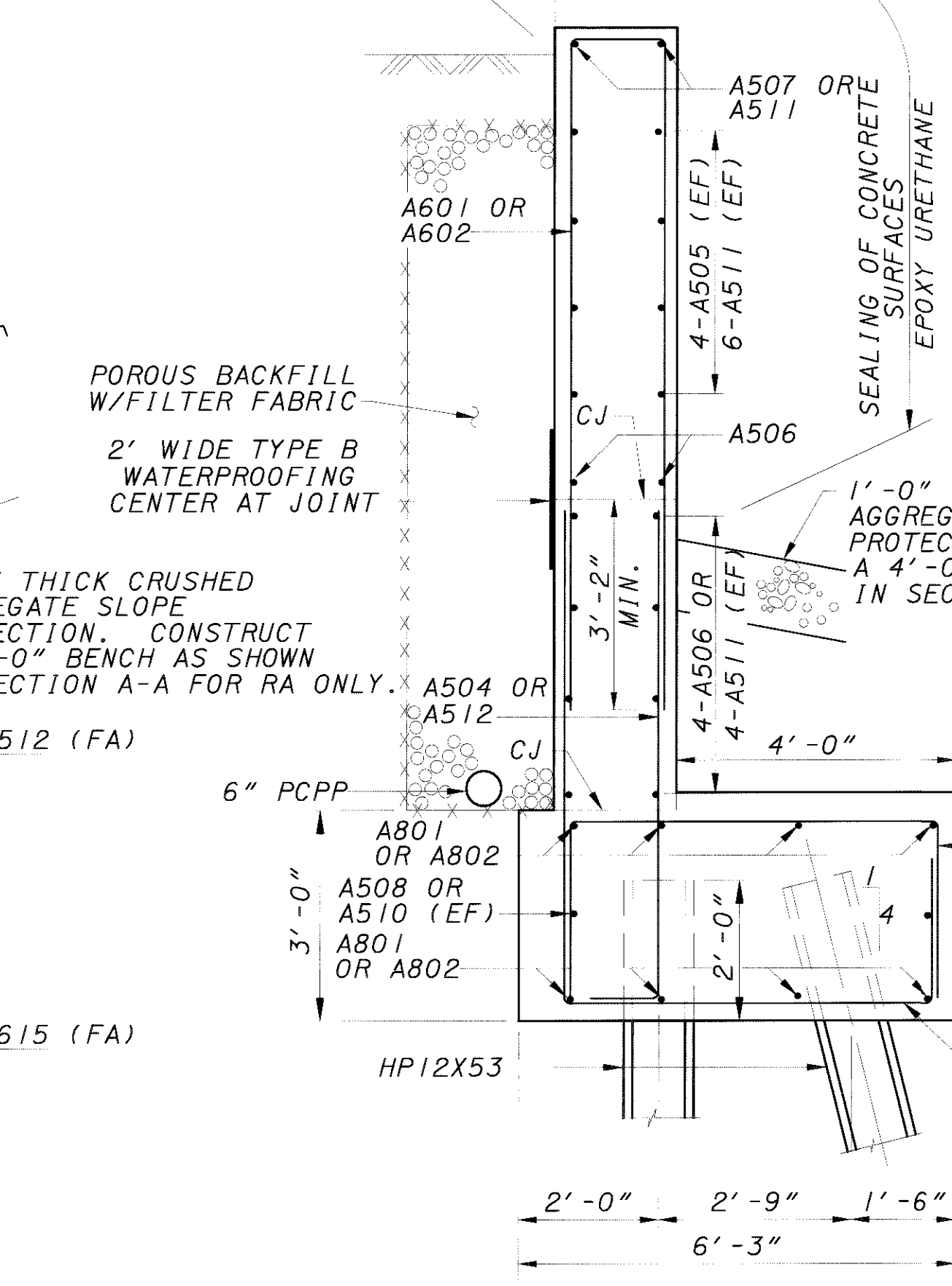
TYPE A WATERPROOFING INCLUDE W/APPR. SLAB FOR PAYMENT (TYP.)



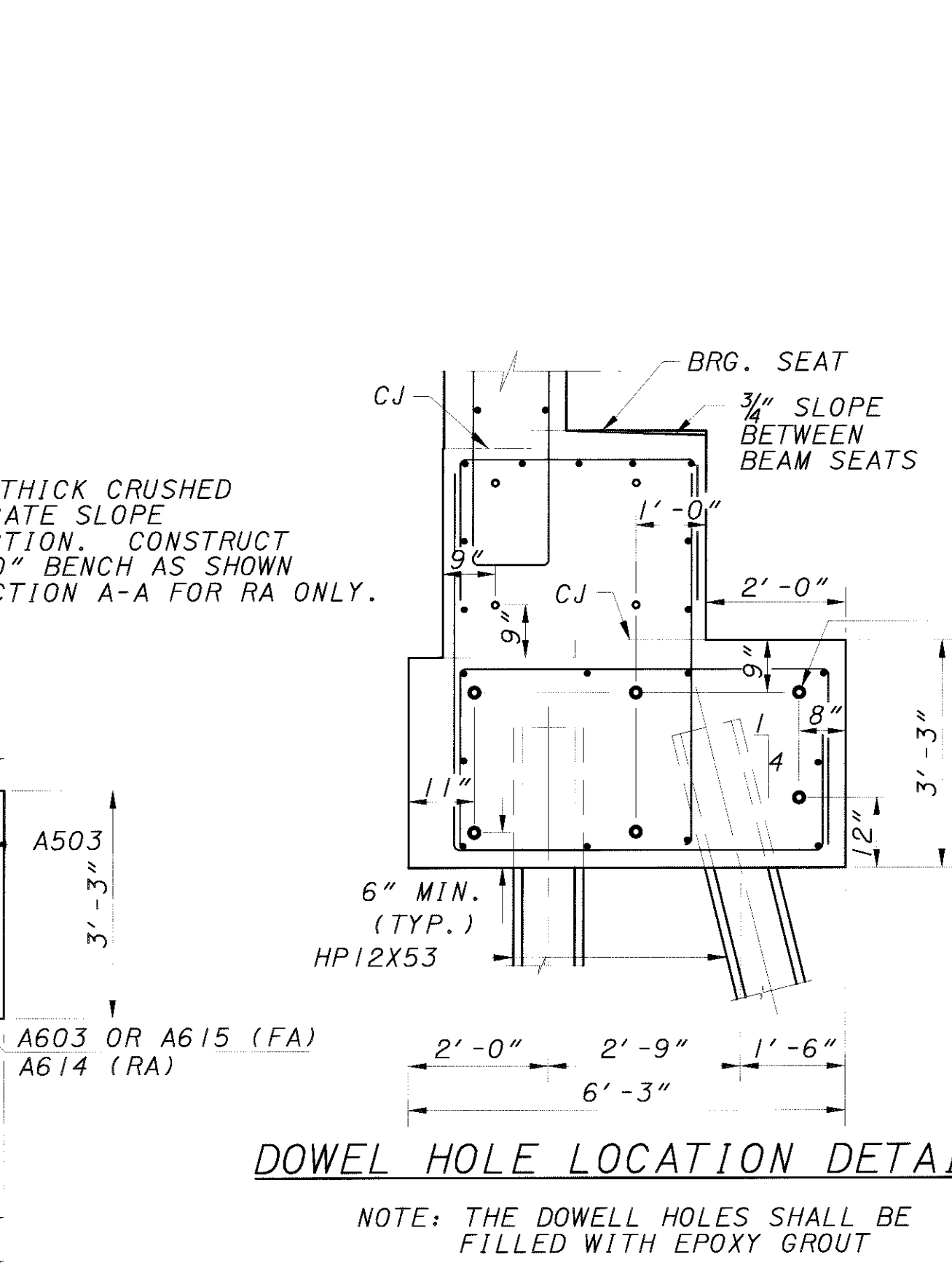
SECTION A-A



SECTION B-B

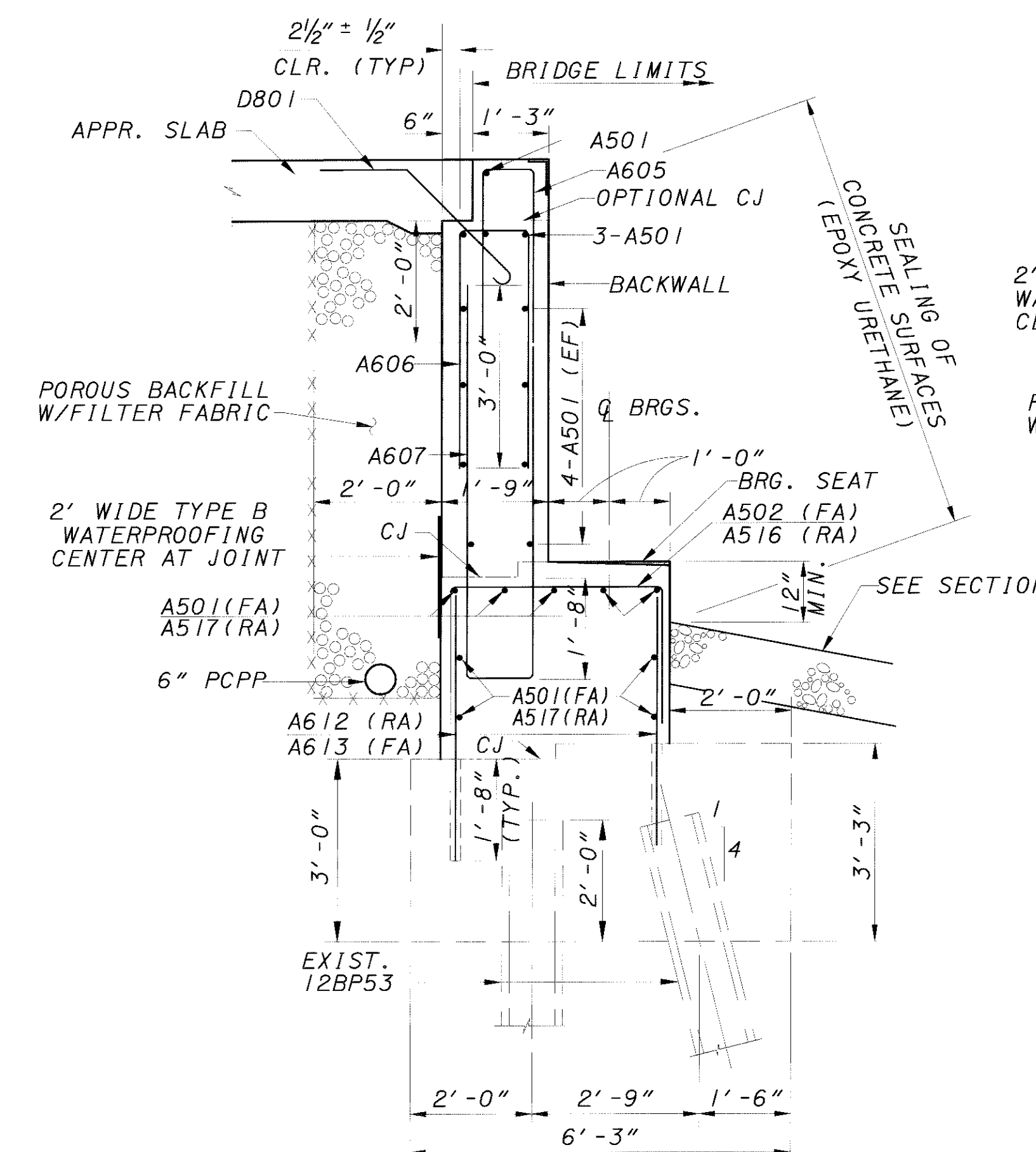


SECTION C-C

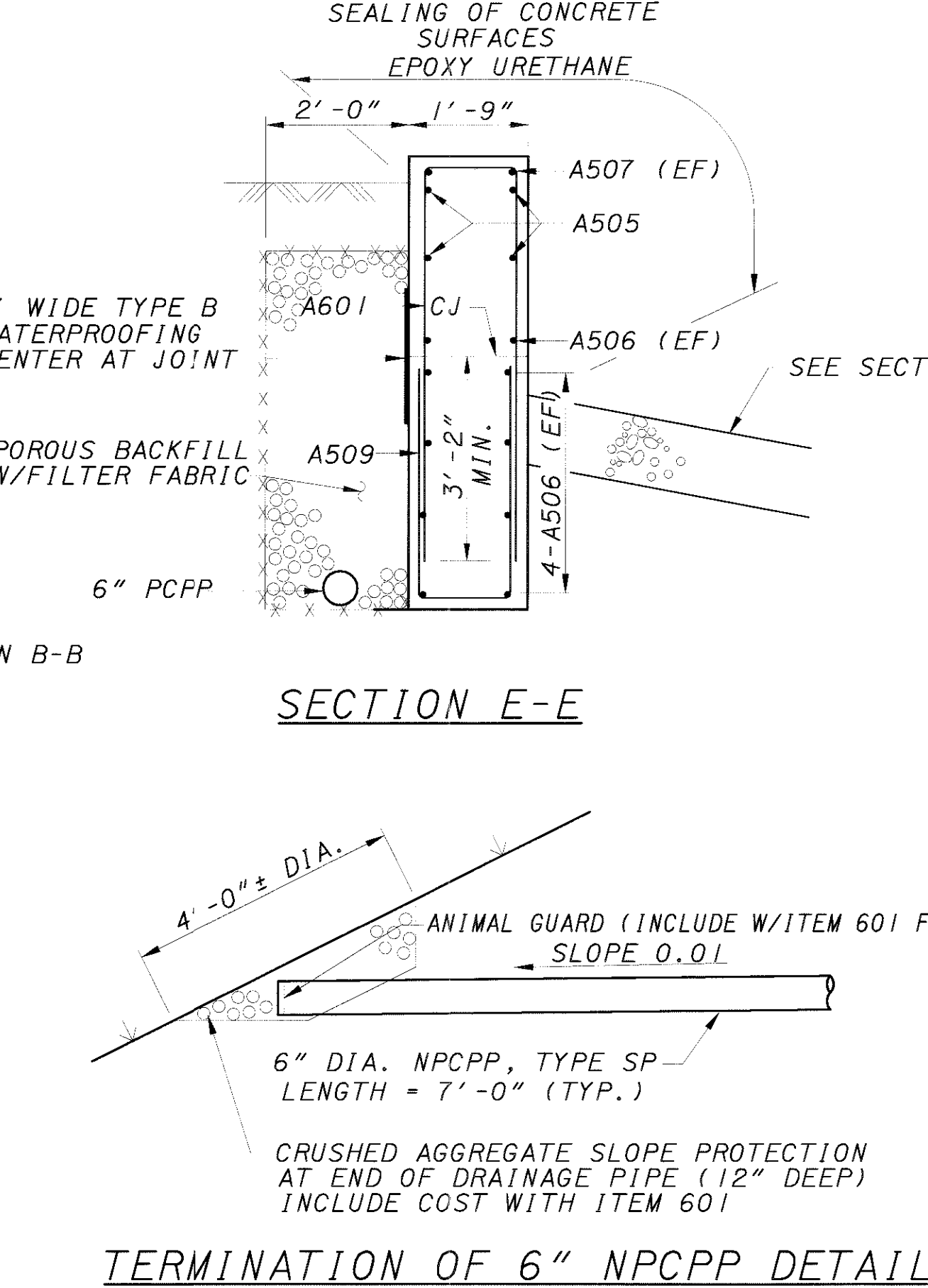


DOWEL HOLE LOCATION DETAIL

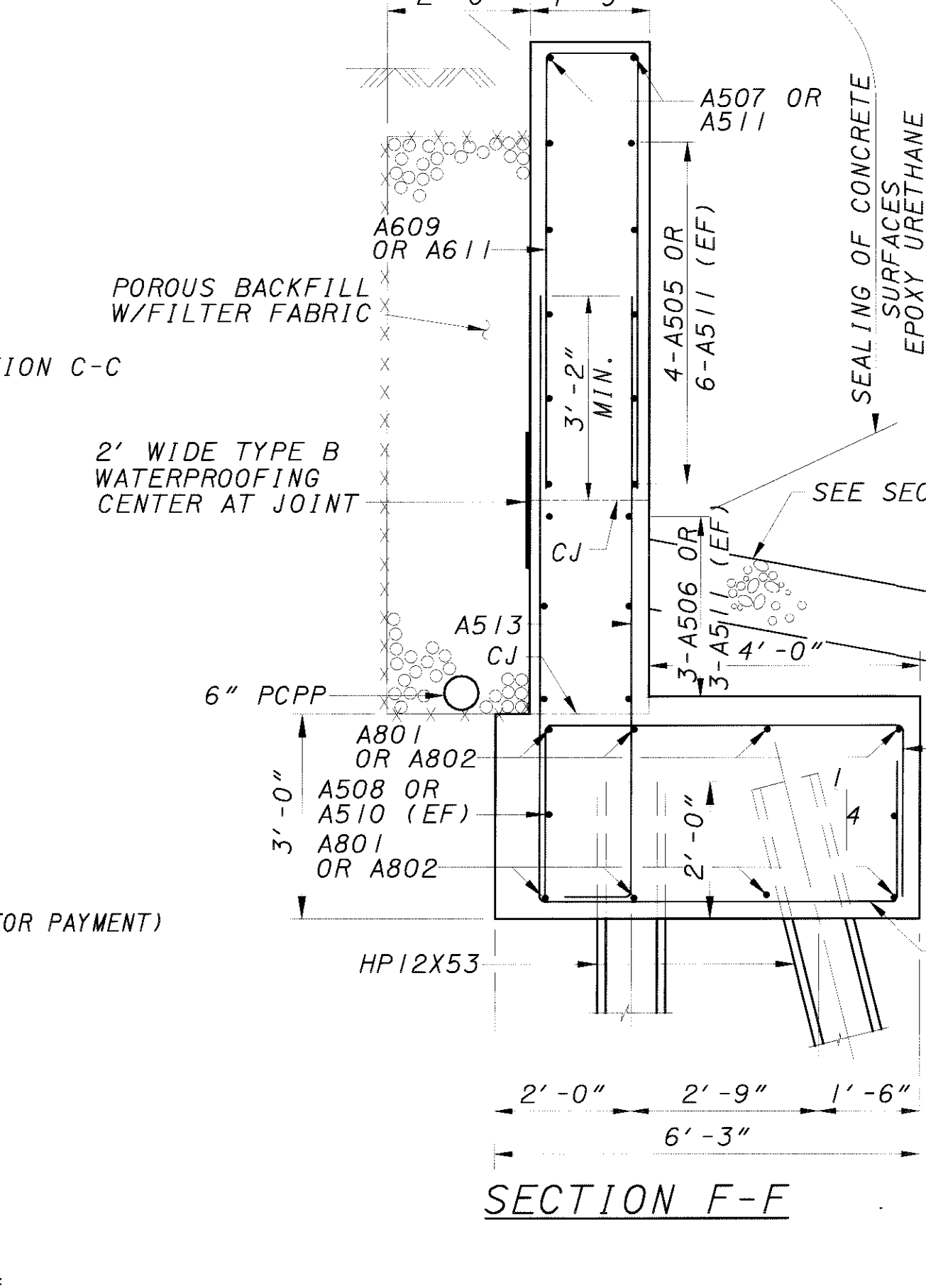
NOTE: THE DOWEL HOLES SHALL BE FILLED WITH EPOXY GROUT



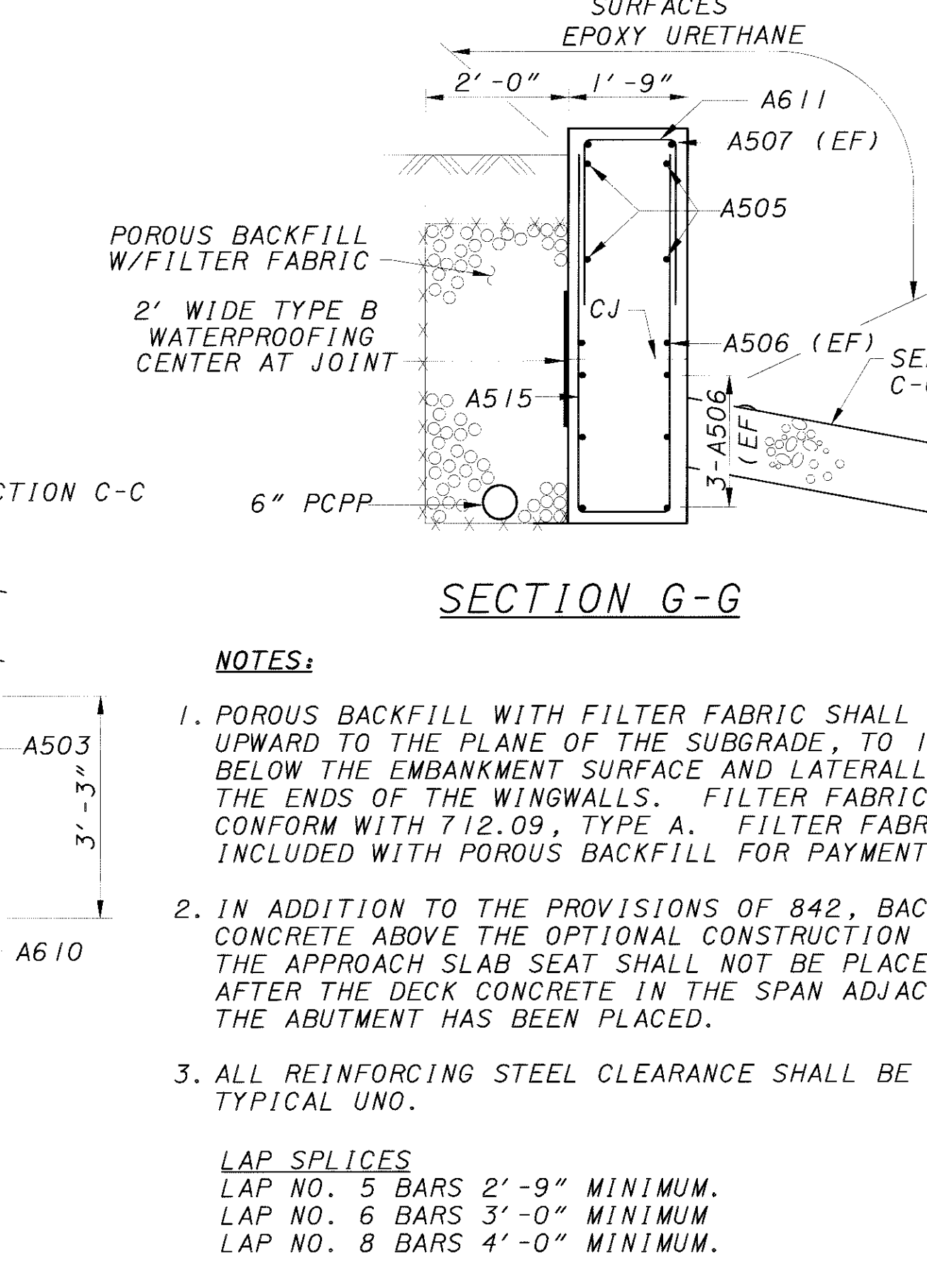
SECTION D-D



TERMINATION OF 6" NPCPP DETAIL



SECTION F-F

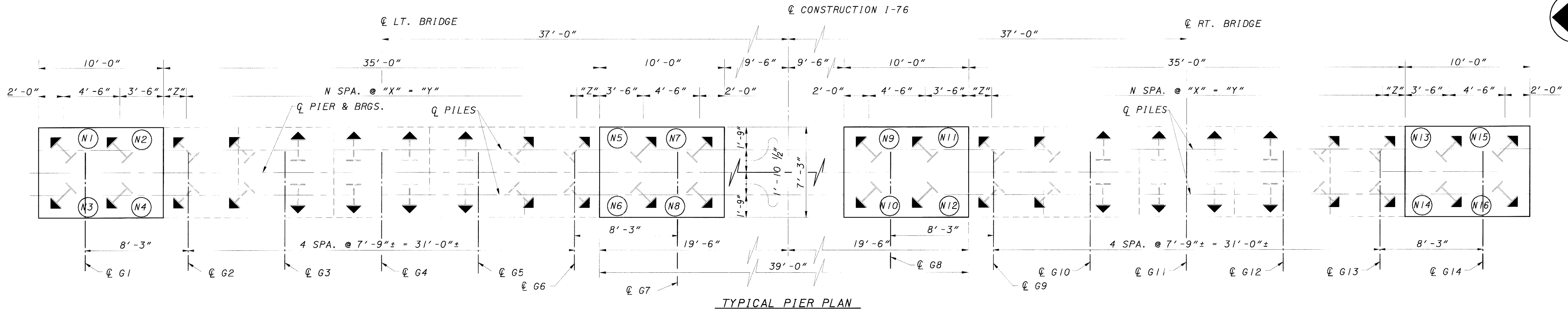
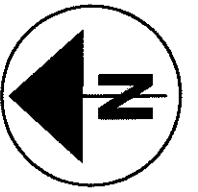


SECTION G-G

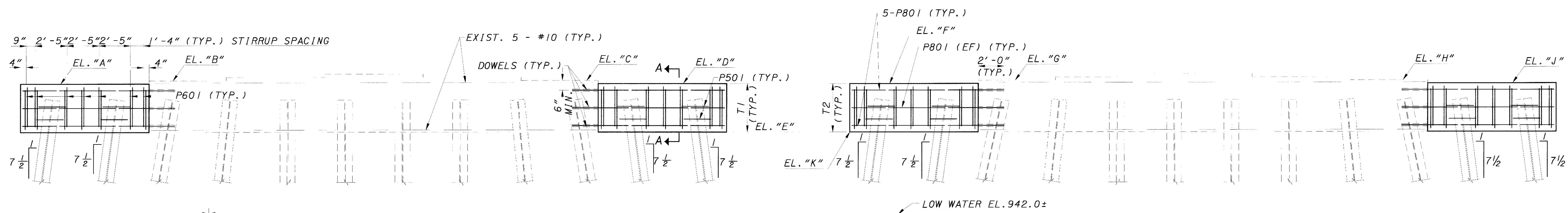
- NOTES:**
1. POROUS BACKFILL WITH FILTER FABRIC SHALL EXTEND UPWARD TO THE PLANE OF THE SUBGRADE, TO 1'-0" BELOW THE EMBANKMENT SURFACE AND LATERALLY TO THE ENDS OF THE WINGWALLS. FILTER FABRIC SHALL CONFORM WITH 712.09, TYPE A. FILTER FABRIC IS INCLUDED WITH POROUS BACKFILL FOR PAYMENT.
  2. IN ADDITION TO THE PROVISIONS OF 842, BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTIL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.
  3. ALL REINFORCING STEEL CLEARANCE SHALL BE 2" TYPICAL UNO.
- LAP SPLICES**  
 LAP NO. 5 BARS 2'-9" MINIMUM.  
 LAP NO. 6 BARS 3'-0" MINIMUM.  
 LAP NO. 8 BARS 4'-0" MINIMUM.

STEEL OPTION

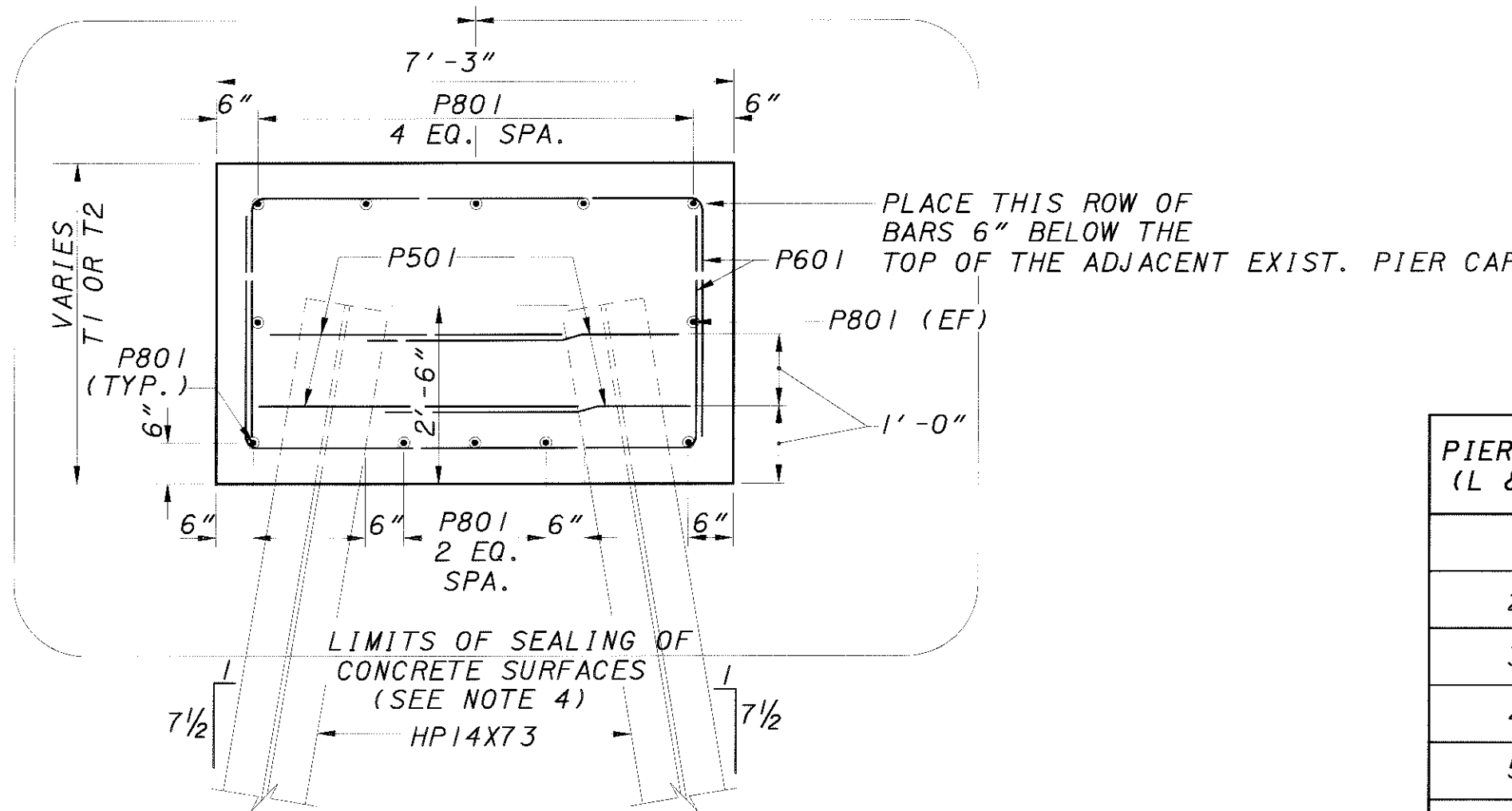
|  |             |              |                          |
|--|-------------|--------------|--------------------------|
| DESIGNED BY  | KVB         | CHECKED BY   | ASB                      |
| DRAWN BY   | CLH         | REVIEWED BY  |                          |
| DATE   | 11/30/00    | PROJECT NO.  | 5002702L & 5002737R      |
| SCALE  | GEA         | CONTRACT NO. |                          |
| PROJECT  | MAH-76-0.86 | CLIENT       | OHIO TURNPIKE COMMISSION |
| ABUTMENT DETAILS<br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON                                  |             |              |                          |
| BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX |             |              |                          |



TYPICAL PIER PLAN



TYPICAL PIER ELEVATION



SECTION A-A

| PIER TYPE | PIER NOS. (L&R)              | "N" | "X"    | "Y"    | "Z"    |
|-----------|------------------------------|-----|--------|--------|--------|
| "A"       | 3 & 4                        | 6   | 5'-3"  | 31'-6" | 1'-9"  |
| "B"       | 1, 2, 7, 10, 11, 14, 15 & 17 | 7   | 4'-6"  | 31'-6" | 1'-9"  |
| "C"       | 5, 6, 8, 9, 12, 13 & 16      | 8   | 3'-11" | 31'-4" | 1'-10" |

| PIER NO. (L & R) | ESTIMATED PILE LENGTH | ELEVATION "A" | PILE NUMBERS N1 THRU N16 | EXISTING ELEVATION "B" (±) | EXISTING ELEVATION "C" (±) | ELEVATION "D" | ELEVATION "E" | ELEVATION "F" | EXISTING ELEVATION "G" (±) | EXISTING ELEVATION "H" (±) | ELEVATION "J" | ELEVATION "K" | DIMENSION "T1" | DIMENSION "T2" |
|------------------|-----------------------|---------------|--------------------------|----------------------------|----------------------------|---------------|---------------|---------------|----------------------------|----------------------------|---------------|---------------|----------------|----------------|
| 1                | 35'                   | 956.31        | (1) THRU (16)            | 956.37                     | 956.37                     | 956.31        | 951.87        | 956.31        | 956.38                     | 956.38                     | 956.31        | 951.88        | 4'-5 1/4"      | 4'-5 1/8"      |
| 2                | 40'                   | 956.71        | (17) THRU (32)           | 956.81                     | 956.81                     | 956.71        | 952.31        | 956.71        | 956.90                     | 956.90                     | 956.71        | 952.40        | 4'-4 3/4"      | 4'-3 3/4"      |
| 3                | 45'                   | 957.12        | (33) THRU (48)           | 957.24                     | 957.24                     | 957.12        | 952.74        | 957.12        | 957.24                     | 957.24                     | 957.12        | 952.74        | 4'-4 1/2"      | 4'-4 1/2"      |
| 4                | 50'                   | 957.50        | (49) THRU (64)           | 957.70                     | 957.70                     | 957.50        | 953.20        | 957.50        | 957.71                     | 957.71                     | 957.50        | 953.21        | 4'-3 1/2"      | 4'-3 1/2"      |
| 5                | 50'                   | 957.90        | (65) THRU (80)           | 958.10                     | 958.10                     | 957.90        | 953.60        | 957.90        | 958.07                     | 958.07                     | 957.90        | 953.57        | 4'-3 1/2"      | 4'-4"          |
| 6                | 50'                   | 958.31        | (81) THRU (96)           | 958.46                     | 958.46                     | 958.31        | 953.96        | 958.31        | 958.46                     | 958.46                     | 958.31        | 953.96        | 4'-4 1/4"      | 4'-4 1/4"      |
| 7                | 55'                   | 958.71        | (97) THRU (112)          | 958.86                     | 958.86                     | 958.71        | 954.36        | 958.71        | 958.86                     | 958.86                     | 958.71        | 954.36        | 4'-4 1/4"      | 4'-4 1/4"      |
| 8                | 60'                   | 959.14        | (113) THRU (128)         | 959.20                     | 959.20                     | 959.14        | 954.70        | 959.14        | 959.28                     | 959.28                     | 959.14        | 954.78        | 4'-5 1/4"      | 4'-4 1/4"      |
| 9                | 65'                   | 959.54        | (129) THRU (144)         | 959.61                     | 959.61                     | 959.54        | 955.11        | 959.54        | 959.67                     | 959.67                     | 959.54        | 955.17        | 4'-5 1/8"      | 4'-4 1/2"      |
| 10               | 65'                   | 959.95        | (145) THRU (160)         | 959.96                     | 959.96                     | 959.95        | 955.46        | 959.95        | 960.08                     | 960.08                     | 959.95        | 955.58        | 4'-5 7/8"      | 4'-4 1/2"      |
| 11               | 70'                   | 960.28        | (161) THRU (176)         | 960.30                     | 960.30                     | 960.28        | 955.80        | 960.28        | 960.32                     | 960.32                     | 960.28        | 955.82        | 4'-5 3/4"      | 4'-5 1/2"      |
| 12               | 70'                   | 960.51        | (177) THRU (192)         | 960.52                     | 960.52                     | 960.51        | 956.02        | 960.51        | 960.52                     | 960.52                     | 960.51        | 956.02        | 4'-5 7/8"      | 4'-5 7/8"      |
| 13               | 70'                   | 960.62        | (193) THRU (208)         | 960.65                     | 960.65                     | 960.62        | 956.15        | 960.62        | 960.70                     | 960.70                     | 960.62        | 956.20        | 4'-5 5/8"      | 4'-5"          |
| 14               | 70'                   | 960.60        | (209) THRU (224)         | 960.61                     | 960.61                     | 960.60        | 956.11        | 960.60        | 960.65                     | 960.65                     | 960.60        | 956.15        | 4'-5 7/8"      | 4'-5 3/8"      |
| 15               | 65'                   | 960.48        | (225) THRU (240)         | 960.48                     | 960.48                     | 960.48        | 955.98        | 960.48        | 960.50                     | 960.50                     | 960.48        | 956.00        | 4'-6"          | 4'-5 3/4"      |
| 16               | 65'                   | 960.21        | (241) THRU (256)         | 960.29                     | 960.29                     | 960.21        | 955.79        | 960.21        | 960.31                     | 960.31                     | 960.21        | 955.81        | 4'-5"          | 4'-4 3/4"      |
| 17               | 60'                   | 959.83        | (257) THRU (272)         | 959.87                     | 959.87                     | 959.83        | 955.37        | 959.83        | 959.85                     | 959.85                     | 959.83        | 955.35        | 4'-5 1/2"      | 4'-5 3/4"      |

NOTES

- ALL EXISTING PILES SHALL BE METALLIZED AS PER THE METALLIZING NOTES ON SHEETS 38 THROUGH 41.
- ALL NEW PILES SHALL BE GALVANIZED AS PER 711.02 FOR FULL LENGTH FURNISHED.
- IT IS ANTICIPATED THAT THE DRIVING OF PILES FOR THE WESTERN MOST PIERS WILL BE DIFFICULT THEREFORE SUBJECT TO THE APPROVAL OF THE DISTRICT DIRECTOR, SOME PREBORING MAY BE PERMITTED AT THE CONTRACTORS EXPENSE.
- THE ENTIRE LENGTH OF THE PIER CAP, BOTH EXISTING AND NEW WILL BE SEALED.

LEGEND

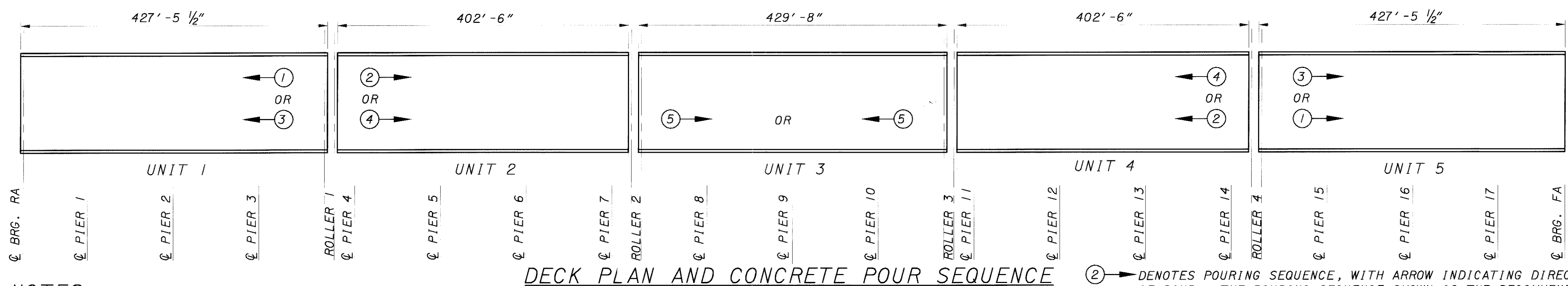
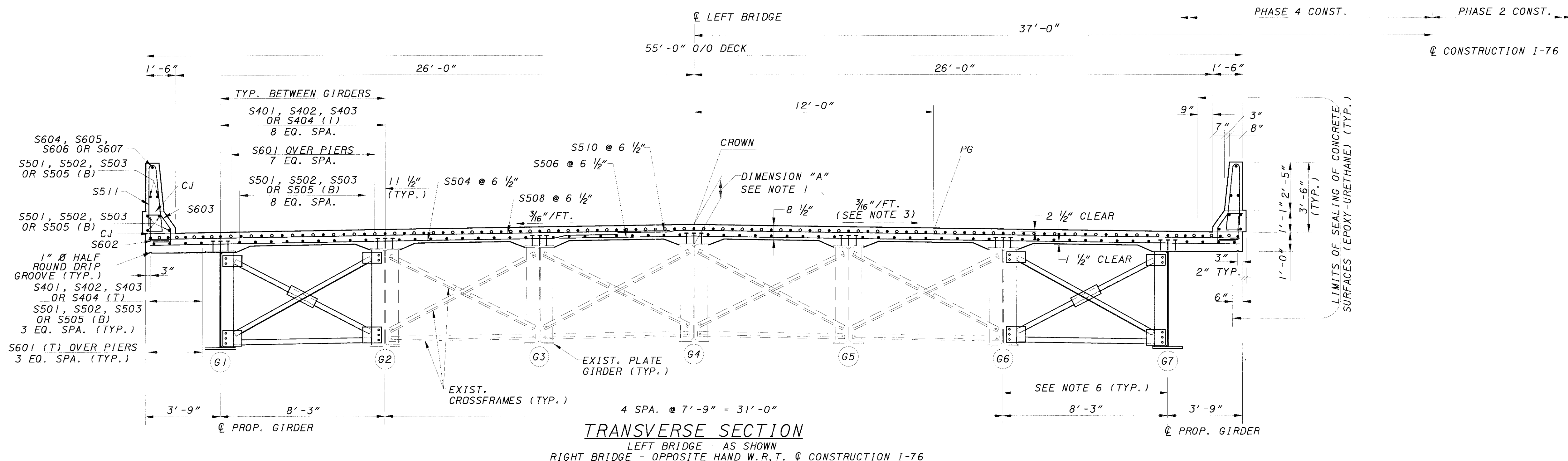
- EXISTING 14BP117 PILES BATTERED (Symbol: circle with X)
- PILE NUMBER (Symbol: circle with number)
- PROPOSED HP14X73 PILES BATTERED (Symbol: downward arrow)

BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

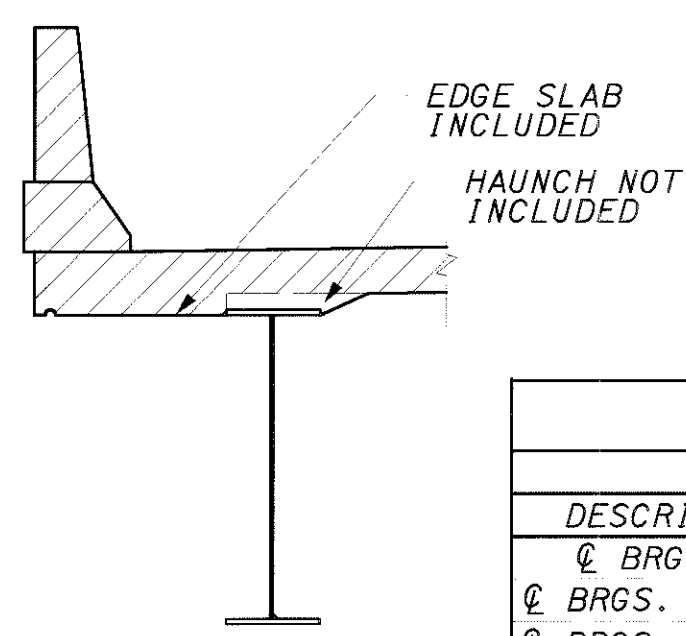
DATE: 11/30/00  
 DRAWN: CLH  
 CHECKED: KVB  
 DESIGNED: KVB  
 PROJECT: MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON  
 SHEET: 20 / 44  
 FILE NUMBER: 5002702L & 5002737R

MAH-76-0.86

STEEL OPTION

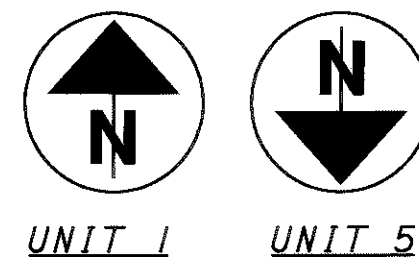


- NOTES:**
- DECK SLAB DEPTH FOR CONCRETE QUANTITY  
 THE DIMENSION "A" FROM THE TOP OF THE CONCRETE DECK TO THE TOP OF THE FLANGE, IS SHOWN IN TABLE OF DIMENSION "A". A DECK THICKNESS OF 8 1/2" HAS BEEN USED FOR COMPUTING THE DECK CONCRETE QUANTITIES. CONCRETE REQUIRED TO FILL THE HAUNCHES INCLUDING ADDITIONAL OR LESS MATERIAL REQUIRED DUE TO HAUNCH CONSTRUCTION TOLERANCES, SHALL BE CONSIDERED AS INCIDENTAL AND ARE NOT INCLUDED IN THE QUANTITY CALCULATIONS FOR PAYMENT. ADDITIONAL CONCRETE IN THE FACIA EDGE SLAB IS INCLUDED IN QUANTITY.
  - CONCRETE DECK HAUNCH WIDTH  
 A HAUNCH WIDTH OF 9" SHALL BE USED. HOWEVER, THE HAUNCH WIDTH MAY VARY BETWEEN 6" AND 12".
  - THE CROSS SLOPE VARIES FROM -3/16"/FT. AT STA. 68+23.00 TO +3/16"/FT. DUE TO SUPERELEVATION TRANSITION. SEE SITE PLAN SHEET [2740] AND ROADWAY PLAN FOR SUPERELEVATION DETAILS.
  - MINIMUM LAP LENGTHS  
 LAP NO. 4 BARS 2'-2"  
 LAP NO. 5 BARS 2'-7"  
 LAP NO. 6 BARS 3'-3"
  - FOR DECK REINFORCING PLANS, PARAPET REINFORCING DETAILS, AND BAR STAGGER DIAGRAM OVER PIERS SEE SHEET [22/44] & [23/44].
  - FOR PROP. INTM. CROSSFRAME DETAIL, SEE SHEET [29/44].

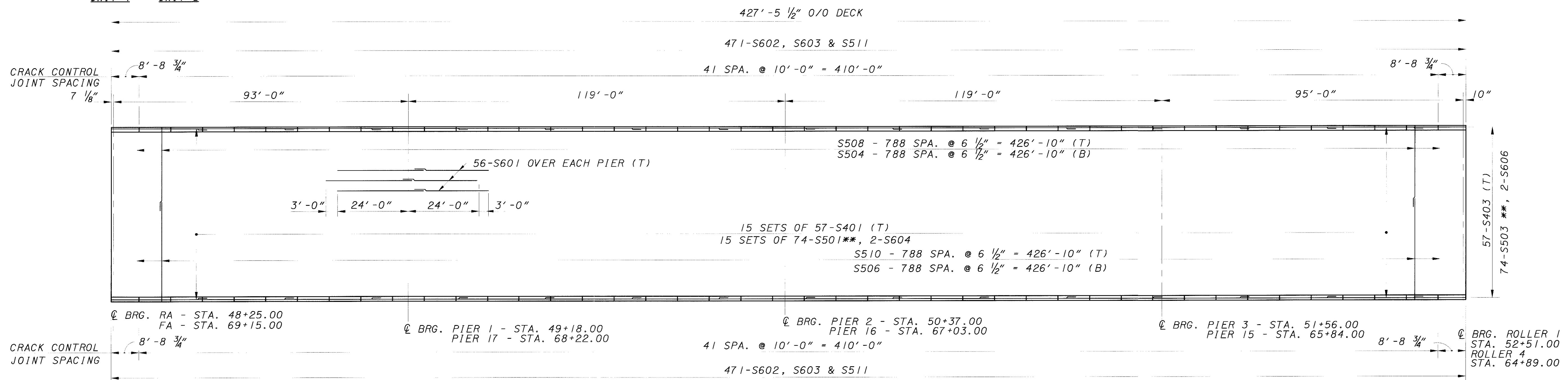


② DENOTES POURING SEQUENCE, WITH ARROW INDICATING DIRECTION OF POUR. THE POURING SEQUENCE SHOWN IS THE RECOMMENDED METHOD, BUT ALTERNATIVE SCHEMES WILL BE CONSIDERED. THE CONTRACTOR SHALL SUBMIT TO THE ODOT DISTRICT ENGINEER FOR APPROVAL ANY CHANGES HE WANTS TO MAKE. THE ADJACENT PREVIOUS POURS SHALL ATTAIN A STRENGTH OF AT LEAST 3000 PSI BEFORE THE NEXT POUR IS MADE.

| DESCRIPTION   | LEFT BRIDGE |           |           |           |           |           |          | RIGHT BRIDGE |           |           |           |           |           |           |
|---------------|-------------|-----------|-----------|-----------|-----------|-----------|----------|--------------|-----------|-----------|-----------|-----------|-----------|-----------|
|               | GIRDER 1    | GIRDER 2  | GIRDER 3  | GIRDER 4  | GIRDER 5  | GIRDER 6  | GIRDER 7 | GIRDER 8     | GIRDER 9  | GIRDER 10 | GIRDER 11 | GIRDER 12 | GIRDER 13 | GIRDER 14 |
| BRGS. RA      | 11 1/8"     | 1'-0 3/4" | 1'-0 3/4" | 1'-0 5/8" | 1'-0 3/4" | 1'-0 3/4" | 11 1/8"  | 11 1/8"      | 1'-0 5/8" | 1'-0 3/4" | 1'-0 1/2" | 1'-0 3/8" | 1'-0 5/8" | 11 1/8"   |
| BRGS. PIER 1  | 10 3/4"     | 1'-0"     | 1'-0 1/8" | 11 1/8"   | 1'-0 1/8" | 1'-0"     | 10 3/4"  | 10 3/4"      | 11 1/8"   | 1'-0"     | 1'-0 1/8" | 1'-0"     | 11 1/8"   | 10 3/4"   |
| BRGS. PIER 2  | 10 3/4"     | 11 5/8"   | 11 5/8"   | 11 3/4"   | 11 5/8"   | 11 5/8"   | 10 3/4"  | 10 3/4"      | 10 1/2"   | 10 5/8"   | 10 1/2"   | 10 1/2"   | 10 3/4"   | 10 3/4"   |
| BRGS. PIER 3  | 10 3/4"     | 11 1/4"   | 11 1/4"   | 11 1/8"   | 11 1/4"   | 11 1/4"   | 10 3/4"  | 10 3/4"      | 11 1/4"   | 11 3/8"   | 11 3/8"   | 11 1/4"   | 10 3/4"   | 10 3/4"   |
| BRGS. PIER 4  | 10 1/2"     | 10 7/8"   | 11"       | 11 3/8"   | 11"       | 10 7/8"   | 10 1/2"  | 10 1/2"      | 10 3/4"   | 10 3/4"   | 10 5/8"   | 10 3/4"   | 10 3/4"   | 10 1/2"   |
| BRGS. PIER 5  | 10 1/2"     | 10 3/4"   | 10 5/8"   | 10 3/4"   | 10 5/8"   | 10 3/4"   | 10 1/2"  | 10 1/2"      | 11"       | 11 1/8"   | 11 1/8"   | 11"       | 10 1/2"   | 10 1/2"   |
| BRGS. PIER 6  | 10 1/2"     | 11 1/4"   | 11 1/4"   | 11 3/8"   | 11 1/4"   | 10 1/4"   | 10 1/2"  | 10 1/2"      | 11 1/4"   | 11 1/2"   | 11 3/8"   | 11 1/2"   | 11 1/4"   | 10 1/2"   |
| BRGS. PIER 7  | 10 1/2"     | 11 1/2"   | 11 1/2"   | 11 3/4"   | 11 1/2"   | 11 1/2"   | 10 1/2"  | 10 1/2"      | 11 1/2"   | 11 1/2"   | 11 1/2"   | 11 1/2"   | 11 1/2"   | 10 1/2"   |
| BRGS. PIER 8  | 10 3/4"     | 1'-0"     | 1'-0"     | 1'-0 1/8" | 1'-0"     | 1'-0"     | 10 3/4"  | 10 3/4"      | 11 1/8"   | 11 1/4"   | 11 1/8"   | 11 1/4"   | 11 1/8"   | 10 3/4"   |
| BRGS. PIER 9  | 10 3/4"     | 1'-0"     | 1'-0 1/2" | 1'-0 3/8" | 1'-0 1/2" | 1'-0"     | 10 3/4"  | 10 3/4"      | 11 1/4"   | 11 1/8"   | 11 1/8"   | 11 1/4"   | 11 1/8"   | 10 3/4"   |
| BRGS. PIER 10 | 10 3/4"     | 1'-0 3/8" | 11 1/2"   | 11 1/2"   | 11 1/2"   | 1'-0 3/8" | 10 3/4"  | 10 3/4"      | 11 1/4"   | 11 1/4"   | 11 3/8"   | 11 1/4"   | 11 3/4"   | 10 3/4"   |
| BRGS. PIER 11 | 10 1/2"     | 1'-1"     | 1'-1 1/8" | 1'-1 1/4" | 1'-1 1/8" | 1'-1"     | 10 1/2"  | 10 1/2"      | 1'-0 7/8" | 1'-1 1/4" | 1'-1 1/8" | 1'-1 1/4" | 1'-0 1/8" | 10 1/2"   |
| BRGS. PIER 12 | 10 1/2"     | 1'-0 7/8" | 1'-1"     | 1'-1 1/8" | 1'-1"     | 1'-0 7/8" | 10 1/2"  | 10 1/2"      | 1'-0 7/8" | 1'-1 1/8" | 1'-1 1/8" | 1'-1 1/8" | 1'-0 7/8" | 10 1/2"   |
| BRGS. PIER 13 | 10 1/2"     | 1'-0 5/8" | 1'-0 1/2" | 1'-0 1/2" | 1'-0 1/2" | 1'-0 5/8" | 10 1/2"  | 10 1/2"      | 1'-0"     | 1'-0"     | 1'-0 1/4" | 1'-0"     | 1'-0"     | 10 1/2"   |
| BRGS. PIER 14 | 10 1/2"     | 1'-1 1/8" | 1'-1 1/8" | 1'-1 1/8" | 1'-1 1/8" | 1'-1 1/8" | 10 1/2"  | 10 1/2"      | 1'-0 3/4" | 1'-0 3/4" | 1'-0 3/4" | 1'-0 3/4" | 1'-0 3/4" | 10 1/2"   |
| BRGS. PIER 15 | 10 3/4"     | 1'-0 3/4" | 1'-0 1/4" | 11 1/4"   | 1'-0 1/4" | 1'-0 3/4" | 10 3/4"  | 10 3/4"      | 1'-0 1/2" | 1'-0 1/2" | 1'-0 1/2" | 1'-0 1/2" | 1'-0 1/2" | 10 3/4"   |
| BRGS. PIER 16 | 10 3/4"     | 11 7/8"   | 11 7/8"   | 11 3/4"   | 11 7/8"   | 11 7/8"   | 10 3/4"  | 10 3/4"      | 11 5/8"   | 11 5/8"   | 11 3/8"   | 11 5/8"   | 11 5/8"   | 10 3/4"   |
| BRGS. PIER 17 | 10 3/4"     | 1'-0 1/4" | 1'-0 3/8" | 1'-0 1/4" | 1'-0 3/8" | 1'-0 1/4" | 10 3/4"  | 10 3/4"      | 1'-0 1/2" | 1'-0 3/8" | 1'-0 3/8" | 1'-0 1/2" | 1'-0 1/2" | 10 3/4"   |
| BRGS. FA      | 11 1/8"     | 9 1/2"    | 9 3/8"    | 9 3/8"    | 10 3/8"   | 11 3/8"   | 11 1/8"  | 11 1/8"      | 11 3/8"   | 11 1/4"   | 11"       | 1'-0"     | 1'-1 3/8" | 11 1/8"   |

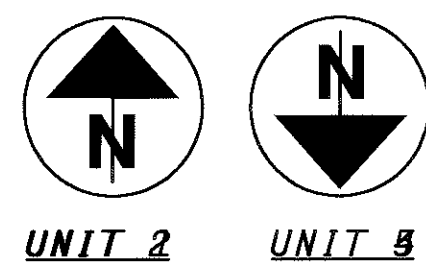


UNIT 1      UNIT 5

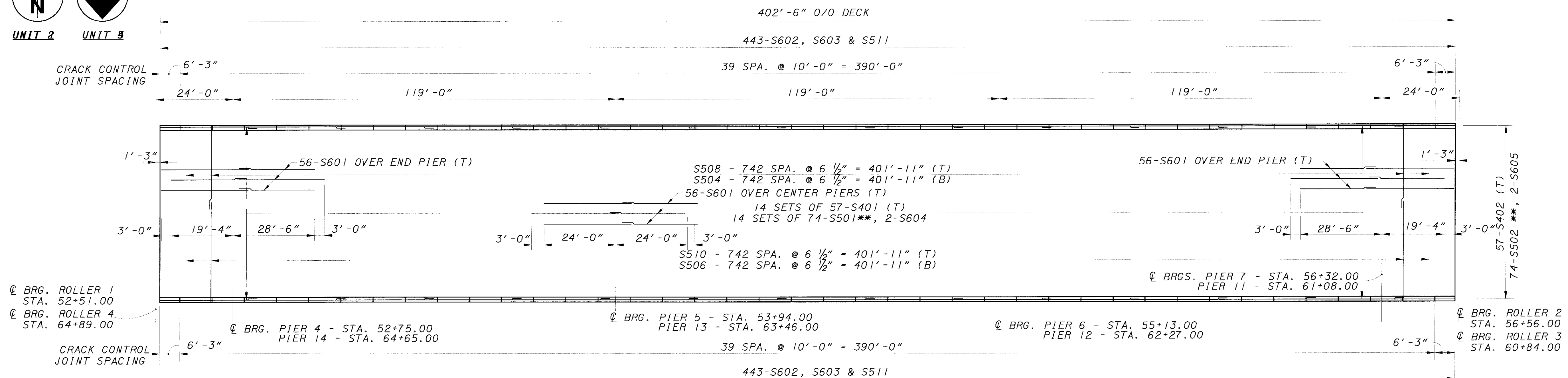


DECK REINFORCING PLAN - UNITS 1 & 5  
\*\* 62-S501 OR S503 IN BOTTOM MAT

NOTE:  
FOR TRANSVERSE SECTION & NOTES  
SEE SHEET 27744.



UNIT 2      UNIT 4



DECK REINFORCING PLAN - UNITS 2 & 4  
\*\*62-S501 OR S502 IN BOTTOM MAT

BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0307 FAX

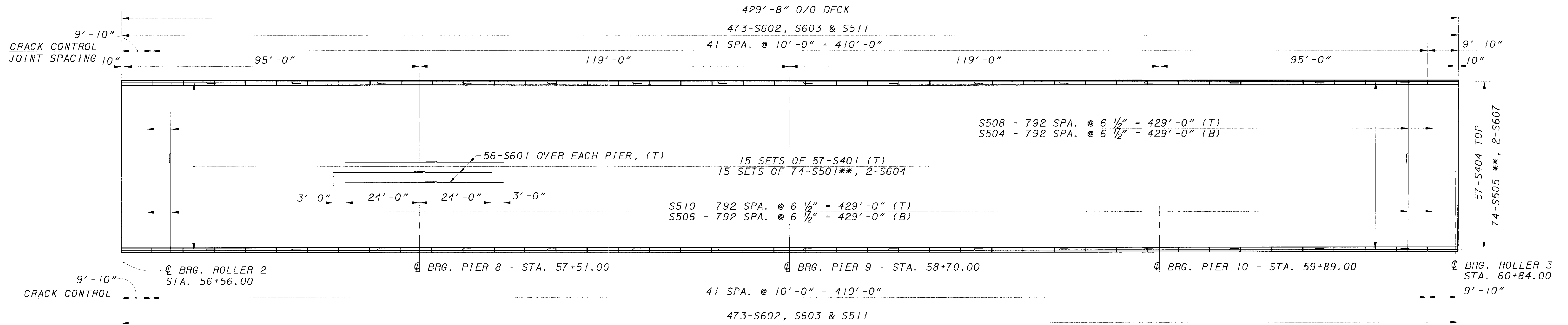
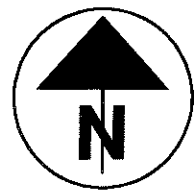
|             |                     |
|-------------|---------------------|
| DATE        | 11/30/00            |
| DESIGNED BY | KVB                 |
| CHECKED BY  | ASB                 |
| DRAWN BY    | CLH                 |
| SCALE       | AS SHOWN            |
| PROJECT NO. | 5002702L & 5002737R |

SUPERSTRUCTURE DETAILS  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

MAH-76-0.86

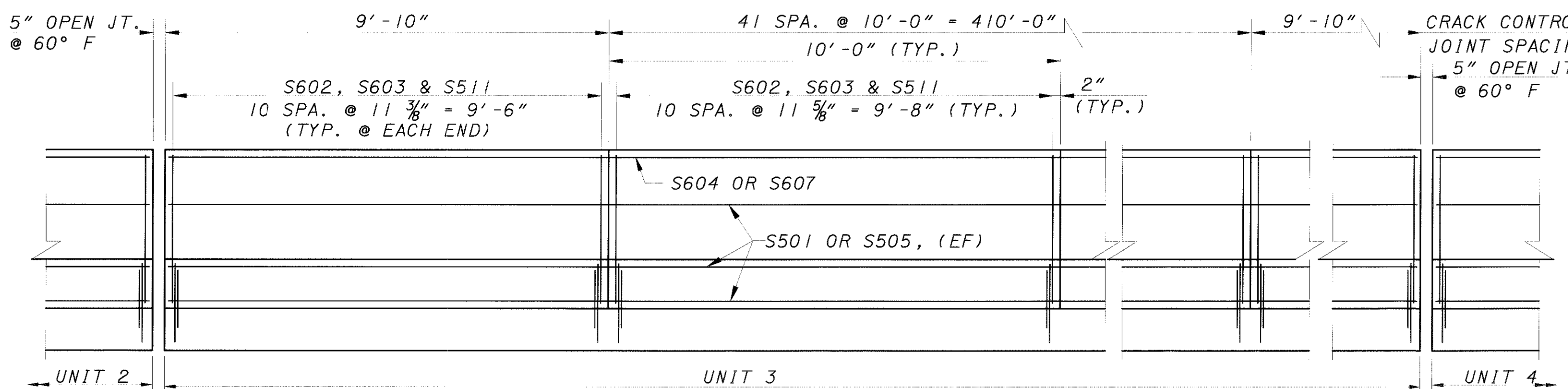
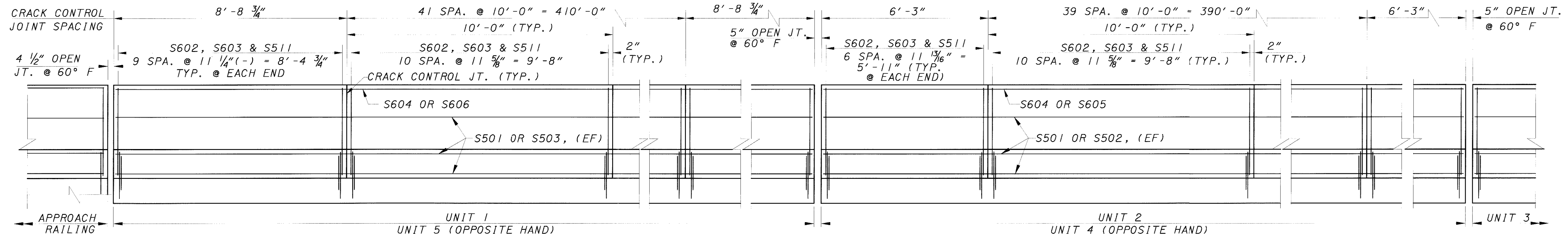
STEEL OPTION

MAH-76-SCB-DGN



**DECK REINFORCING PLAN - UNIT 3**

\*\* 62-S501 OR S505 IN BOTTOM MAT

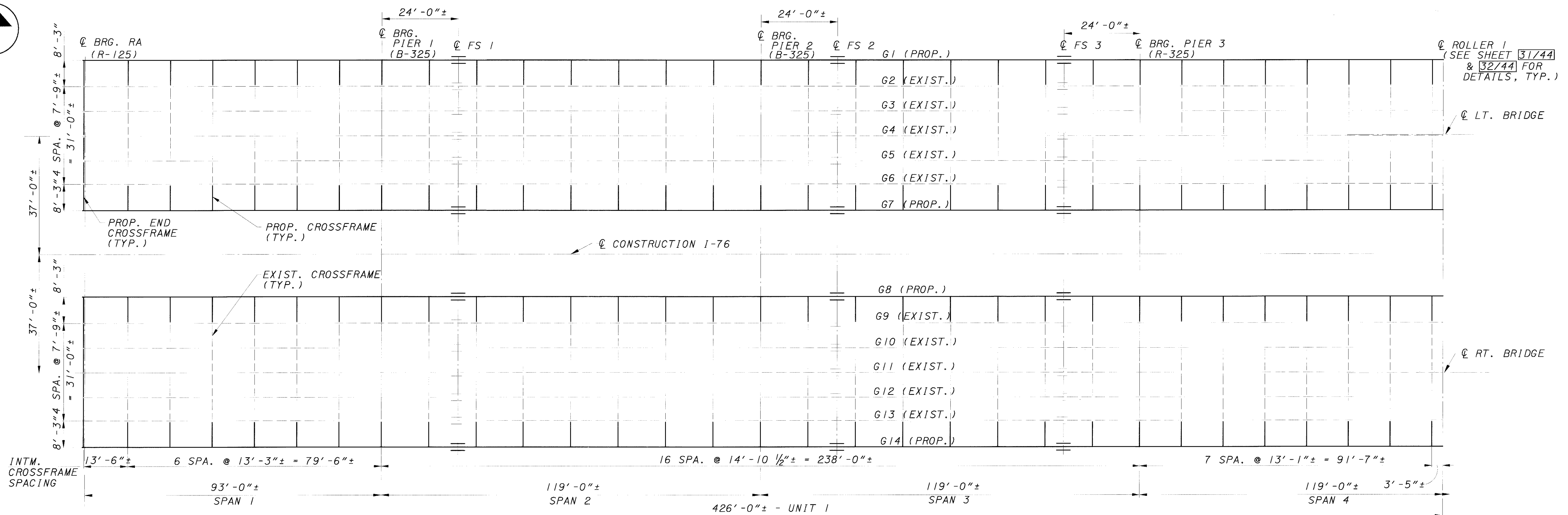
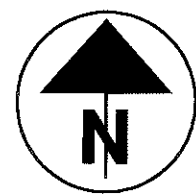


**PARAPET REINFORCING DETAIL**

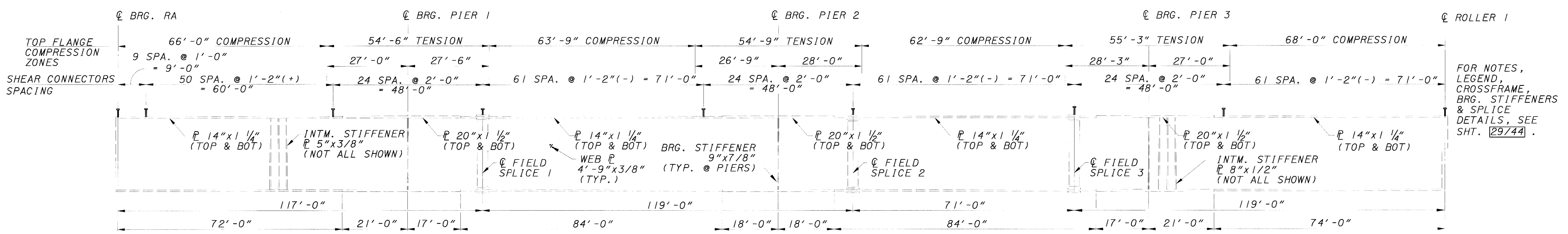
- NOTES:**
1. FOR CRACK CONTROL JOINT DETAILS, SEE STD. DWG. BR-1.
  2. FOR TRANSVERSE SECTION SEE SHEET 21744.

|  |  |
|--|--|
| <p><b>MAH-76-0.86</b></p>  | <p><b>STEEL OPTION</b></p>   |
| <p>23 / 44</p>   | <p>75 / 102</p>  |
| <p><b>SUPERSTRUCTURE DETAILS</b><br/>BRIDGE NO. MAH-76-0091 L &amp; R<br/>I-76 OVER LAKE MILTON</p>                  |  |
| <p>DESIGNED BY: KVB<br/>CHECKED BY: ASB</p>  | <p>DATE: 11/30/00<br/>STRUCTURE FILE NUMBER: 5002702L &amp; 5002737R</p> |
| <p>BARR ENGINEERING, INC.<br/>5 EAST LONG STREET<br/>COLUMBUS, OHIO 43215<br/>(614) 224-1941, (614) 224-0907 FAX</p> |  |

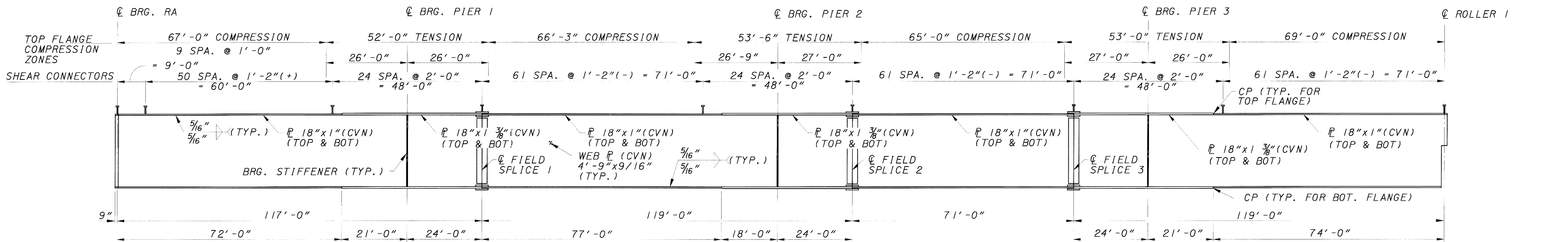
MAH76-086.DGN



FRAMING PLAN - UNIT I



TYP. EXISTING GIRDER ELEVATION - UNIT I



TYP. PROPOSED GIRDER ELEVATION - UNIT I

FOR NOTES, LEGEND, CROSSFRAME, BRG. STIFFENERS & SPLICE DETAILS, SEE SHT. 29744.

DESIGN BY  
BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

DATE  
11/30/00  
GEA  
5002702L & 5002737R

DRAWN  
CLH  
CHECKED  
ASB

SUPERSTRUCTURE DETAILS  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

MAH-76-0.86

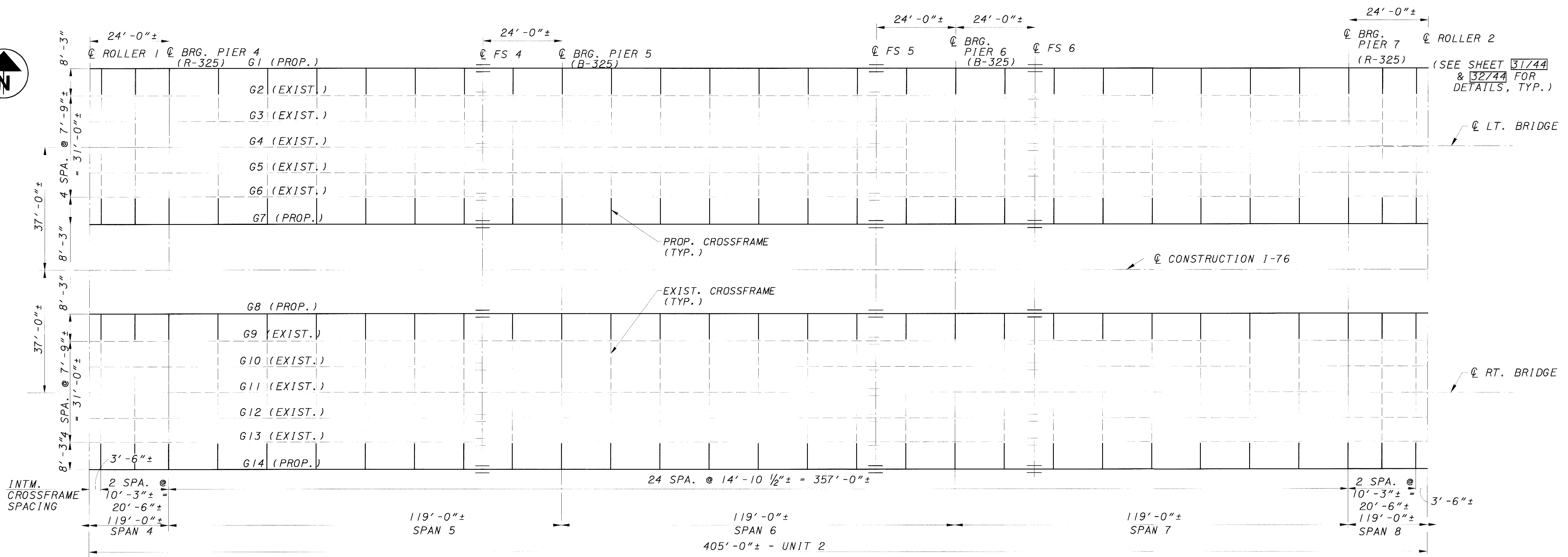
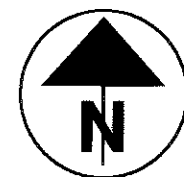
24 / 44

76  
102

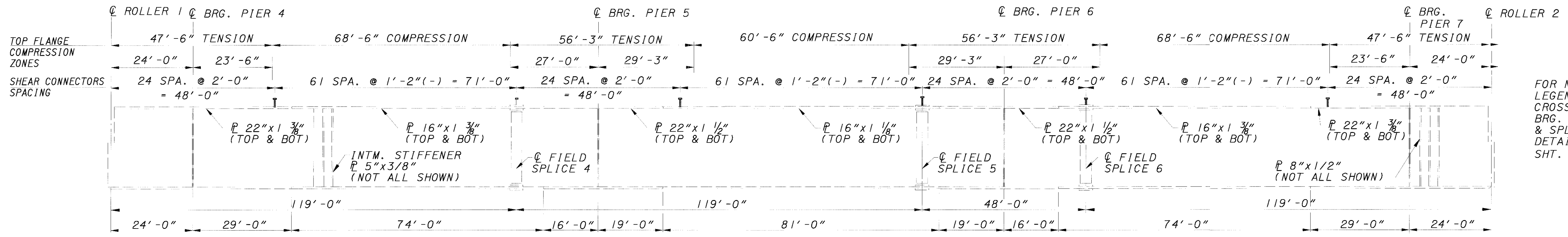
STEEL OPTION

MAHTGSC10.176N

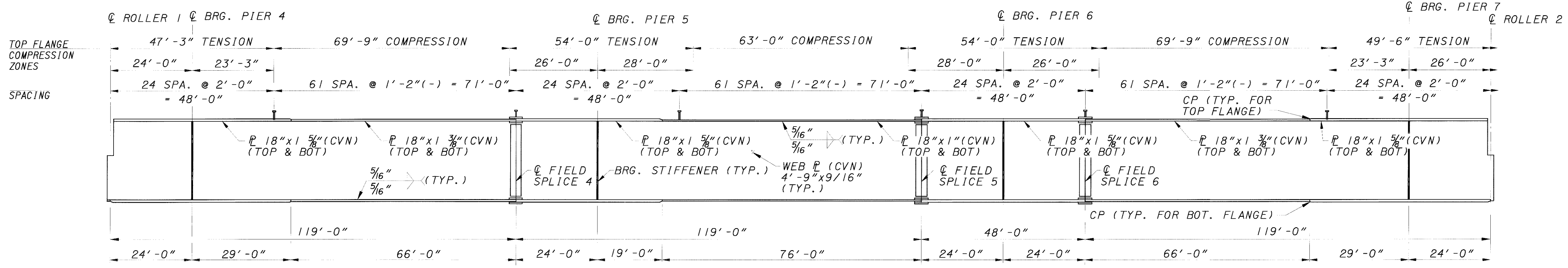




FRAMING PLAN - UNIT 2



TYP. EXISTING GIRDER ELEVATION - UNIT 2



TYP. PROPOSED GIRDER ELEVATION - UNIT 2

FOR NOTES, LEGEND, CROSSFRAME, BRG. STIFFENERS & SPLICE DETAILS, SEE SHT. 29/44.

DESIGN OFFICE  
BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0307 FAX

DATE: 11/30/00  
DRAWN BY: CLH  
CHECKED BY: ASB  
PROJECT NO.: 5002702L & 5002737R

SUPERSTRUCTURE DETAILS  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

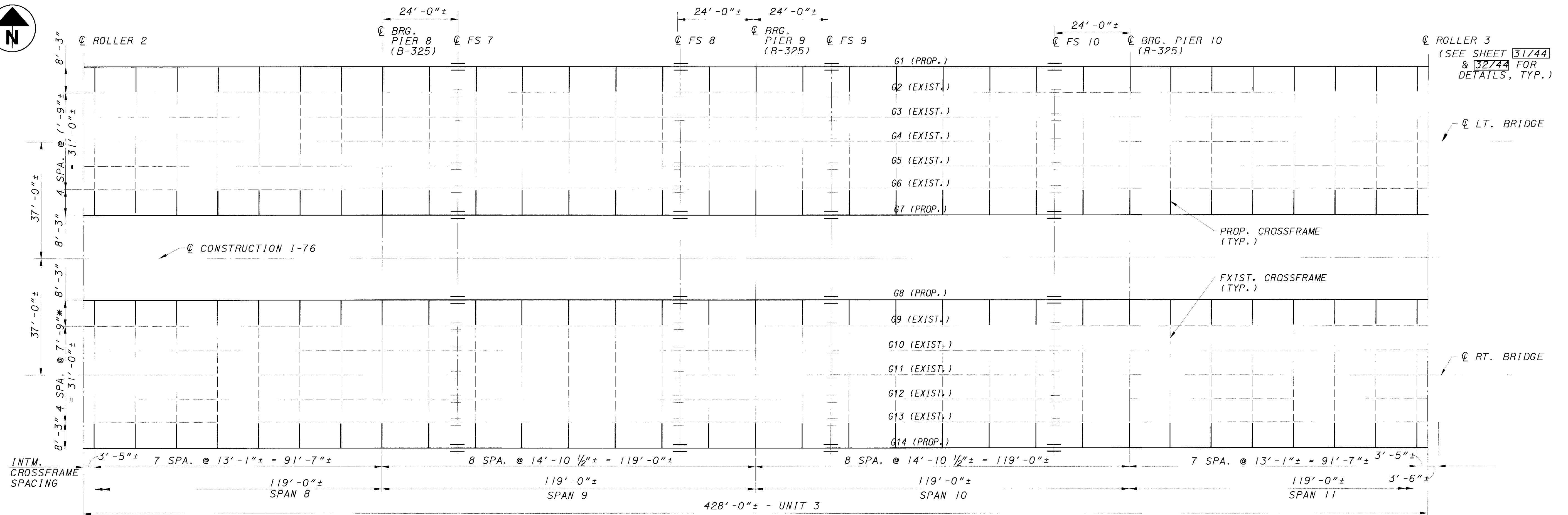
MAH-76-0.86

25 / 44

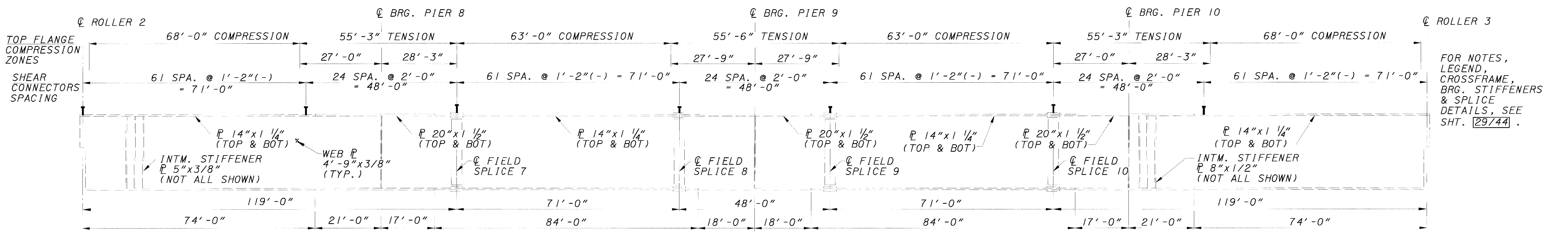
77  
102

STEEL OPTION

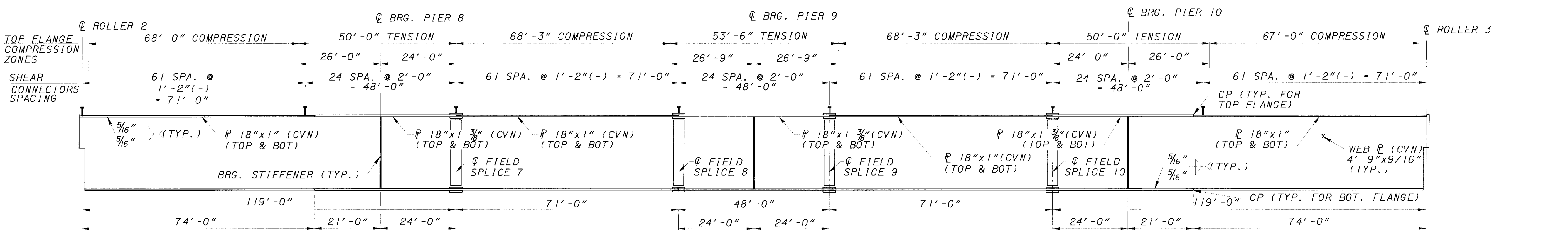
MAH76SC6.DGN



FRAMING PLAN - UNIT 3



TYP. EXISTING GIRDER ELEVATION - UNIT 3



TYP. PROPOSED GIRDER ELEVATION - UNIT 3

REVISIONS  
 DATE 11/30/00  
 BY GEA  
 DRAWN CLH  
 CHECKED KVB  
 APPROVED ASB

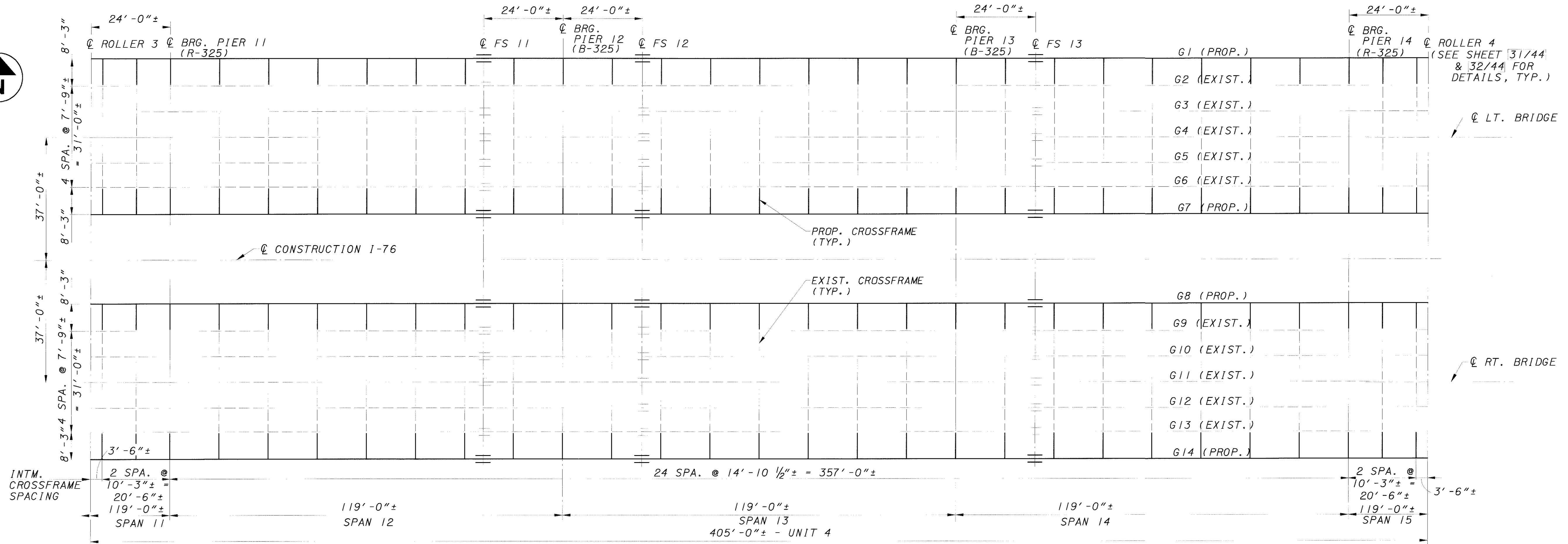
PROJECT  
 MAH-76-0091 L & R  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

CONTRACT NO. 5002702L & 5002737R  
 CONTRACTOR  
 BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

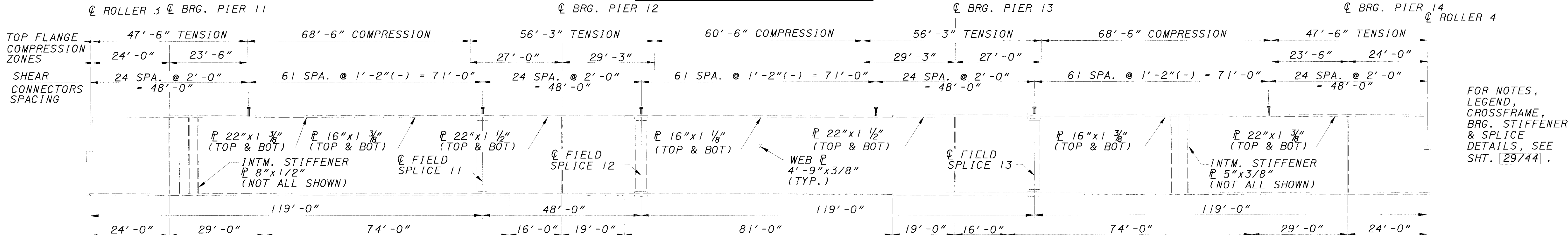
78  
 102

26 / 44  
 STEEL OPTION

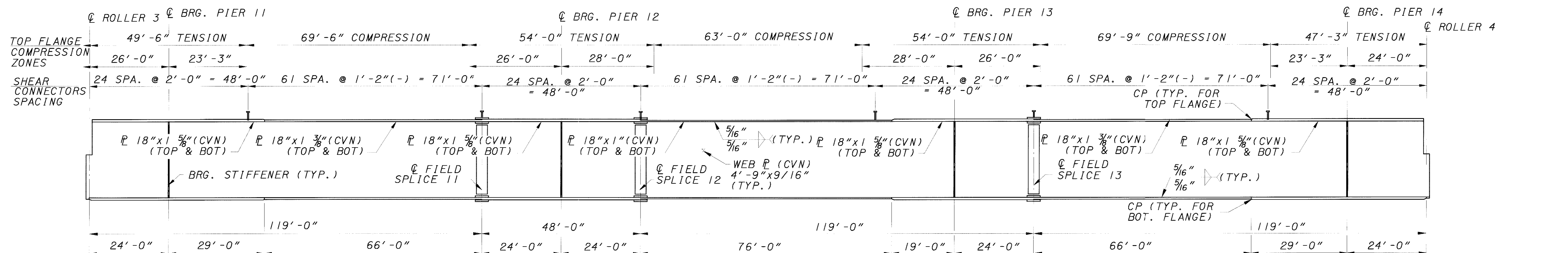
MAH76SC11.DGN



**FRAMING PLAN - UNIT 4**



**TYP. EXISTING GIRDER ELEVATION - UNIT 4**



**TYP. PROPOSED GIRDER ELEVATION - UNIT 4**

FOR NOTES, LEGEND, CROSSFRAME, BRG. STIFFENERS & SPLICE DETAILS, SEE SHT. 29/44.

DESIGNED BY: KVB  
 CHECKED: ASB  
 DRAWN: CLH  
 REVISIONS: GEA 11/30/00  
 DATE: 11/30/00  
 PROJECT: 5002702L & 5002737R

REVISIONS: GEA 11/30/00  
 DATE: 11/30/00  
 PROJECT: 5002702L & 5002737R

DESIGNED BY: KVB  
 CHECKED: ASB  
 DRAWN: CLH  
 REVISIONS: GEA 11/30/00  
 DATE: 11/30/00  
 PROJECT: 5002702L & 5002737R

**SUPERSTRUCTURE DETAILS**  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

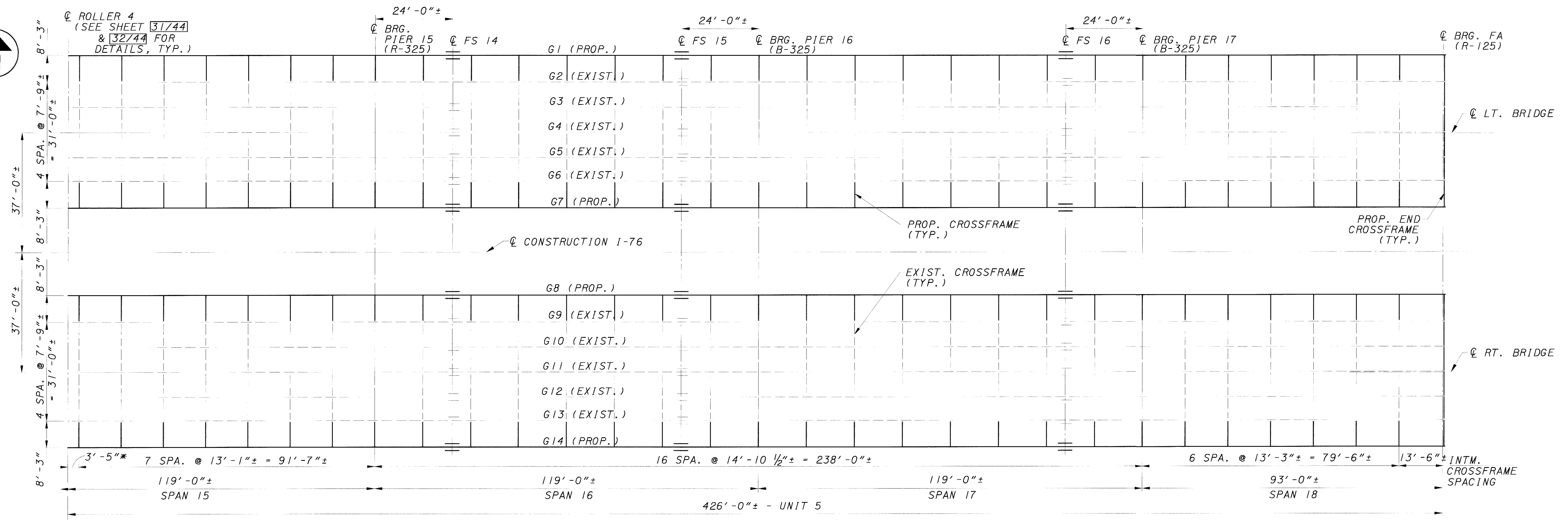
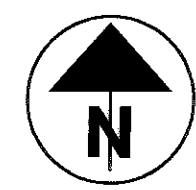
MAH-76-0.86

27 / 44

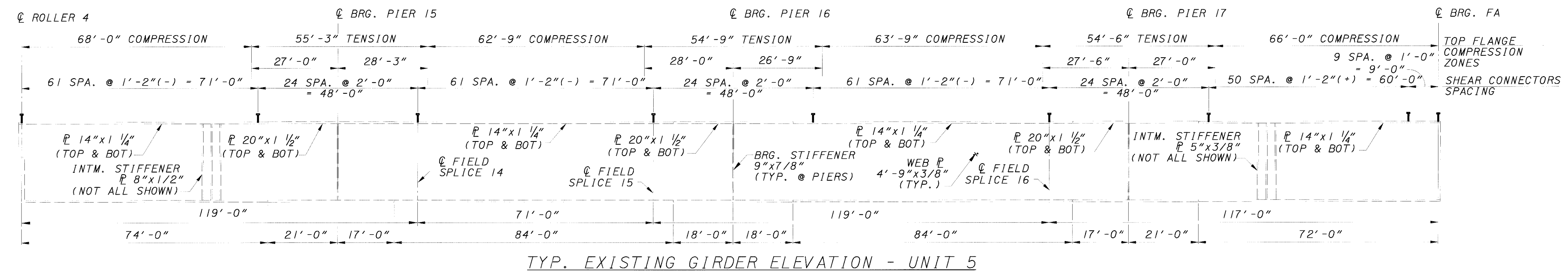
79  
102

STEEL OPTION

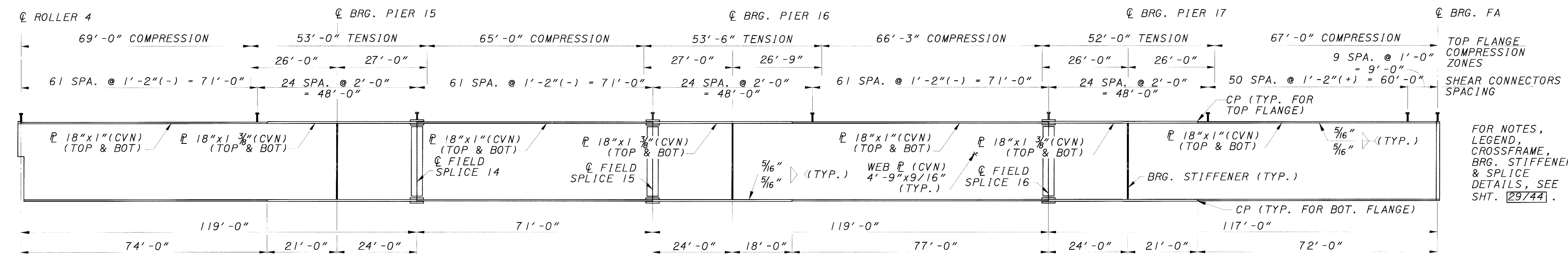
MAH-76-SC7.DSN



FRAMING PLAN - UNIT 5



TYP. EXISTING GIRDER ELEVATION - UNIT 5



TYP. PROPOSED GIRDER ELEVATION - UNIT 5

STEEL OPTION

DESIGNER: BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

|                       |                     |
|-----------------------|---------------------|
| DATE                  | 11/30/00            |
| REVISION              | GEA                 |
| DRAWN                 | CLH                 |
| CHECKED               | KVB                 |
| APPROVED              | ASB                 |
| STRUCTURE FILE NUMBER | 5002702L & 5002737R |

SUPERSTRUCTURE DETAILS  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

**MAH-76-0.86**

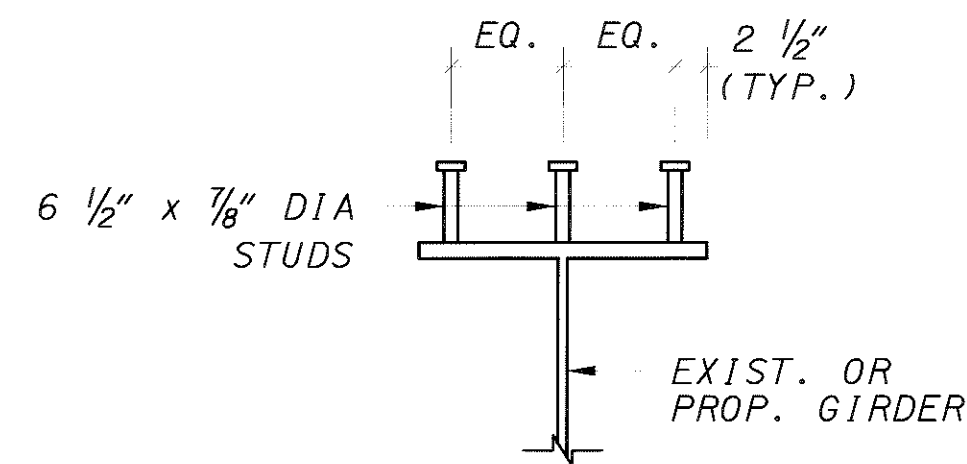
28 / 44

80  
102

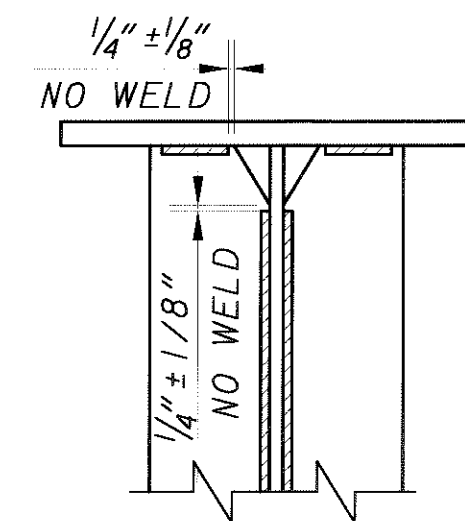
MAH76SC1P.DGN

**NOTES:**

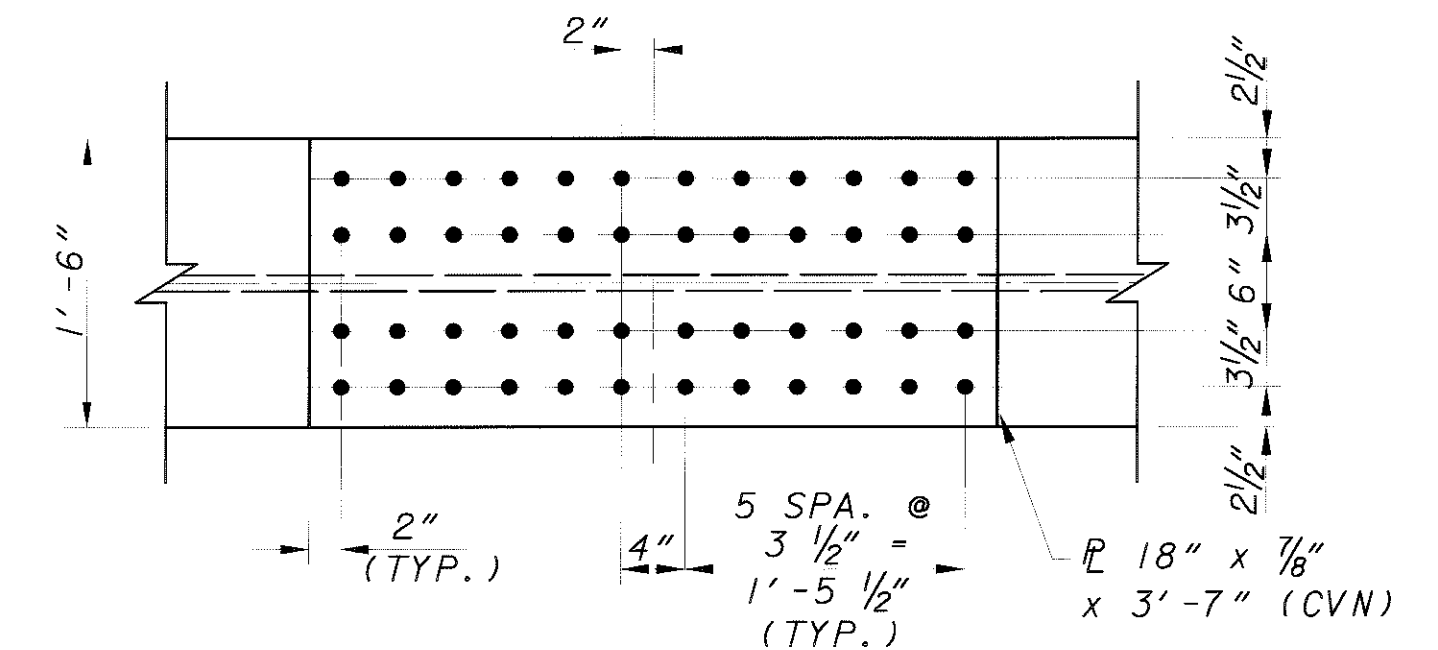
- WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 7.11.01. ALL FLANGE AND WEB PLATES OF PLATE GIRDERS AND ALL SPLICE PLATES SHALL BE CVN.
- HIGH STRENGTH BOLTS SHALL BE 1" DIAMETER A-325 TYPE 1 UNLESS OTHERWISE NOTED.
- EXISTING BEARINGS SHALL BE RESET OR REFURBISHED. SEE GENERAL NOTES SHEET 8744 FOR MORE DETAILS.
- THE ROCKER BEARING FOR PROPOSED GIRDERS SHALL BE R125 AT ABUTMENTS PER STD. DWG. RB-1-55. THE ROCKER & BOLSTER BEARINGS AT PIERS, R325 OR B325, SHALL ALSO BE PER STD. DWG. RB-1-55 WITH THE FOLLOWING DIMENSIONS (INCHES): A=3 1/2, B=21, C=3 1/2, D=3 1/4, F=1, G=13, H=19 7/8, K=15, L=29, M=26, R=13, T=3 1/4, Y=1 11/16. PAYMENT FOR THIS ITEM WILL BE MADE UNDER BEARING DEVICE, ROCKER OR BOLSTER, AS PER PLAN.
- EXISTING END CROSS-FRAMES SHALL BE REMOVED AND REPLACED. THE PROPOSED END CROSS-FRAMES SHALL BE AS PER STD. DWG. GSD-1-96.
- FOR ROLLER BEARING SUPPORT DETAILS AT INTERMEDIATE EXPANSION JOINT SEE SHEET 31744.
- THE EXISTING DECK JOINTS AND JOINT SUPPORTS AT ALL INTERMEDIATE EXPANSION JOINTS SHALL BE REMOVED AND REPLACED AS PER DETAILS ON SHEET 31744 AND 32744.
- ALL NEW STRUCTURAL STEEL SHALL BE PAID UNDER ITEM 863 - STRUCTURAL STEEL MEMBERS, LEVEL FOUR (4) FABRICATION, AS PER PLAN EXCEPT THE STEEL FOR ALL NEW CROSSFRAMES. IT WILL BE PAID UNDER ITEM 863 - STRUCTURAL STEEL MEMBERS, MISCELLANEOUS LEVEL FABRICATION, AS PER PLAN.
- EXISTING AND NEW STRUCTURAL STEEL SHALL BE METALLIZED. METALLIZING OF NEW STEEL WILL BE INCLUDED WITH ITEM 863 FOR STRUCTURAL STEEL AND ITEM 516 FOR ROCKER AND BOLSTERS AS APPROPRIATE. FOR DETAILED DESCRIPTION, SEE SHEETS 38 THROUGH 44.
- WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL NOT BE CLOSER THAN 1" FROM THE EDGE OF THE FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.



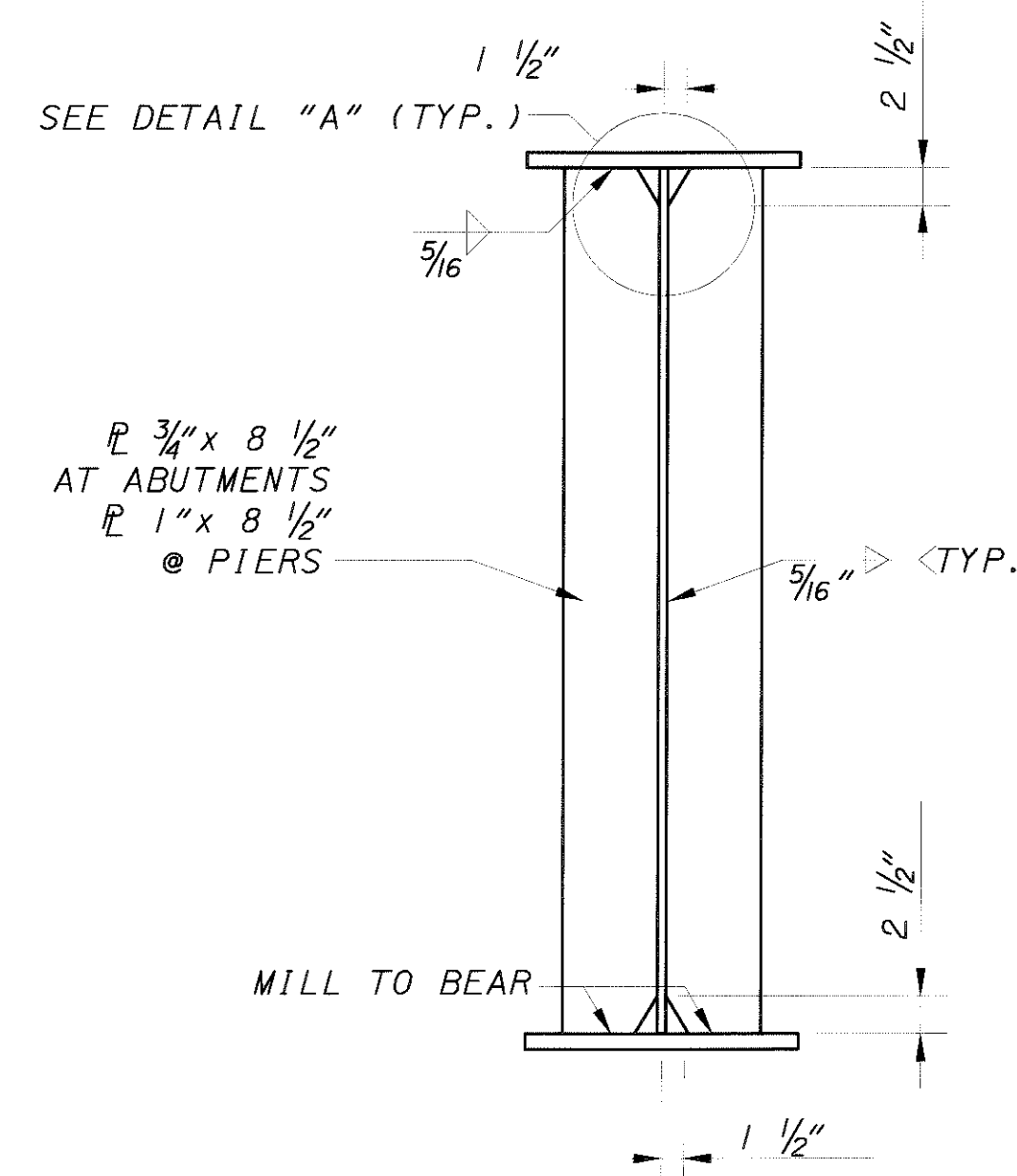
**SHEAR CONNECTOR DETAIL**



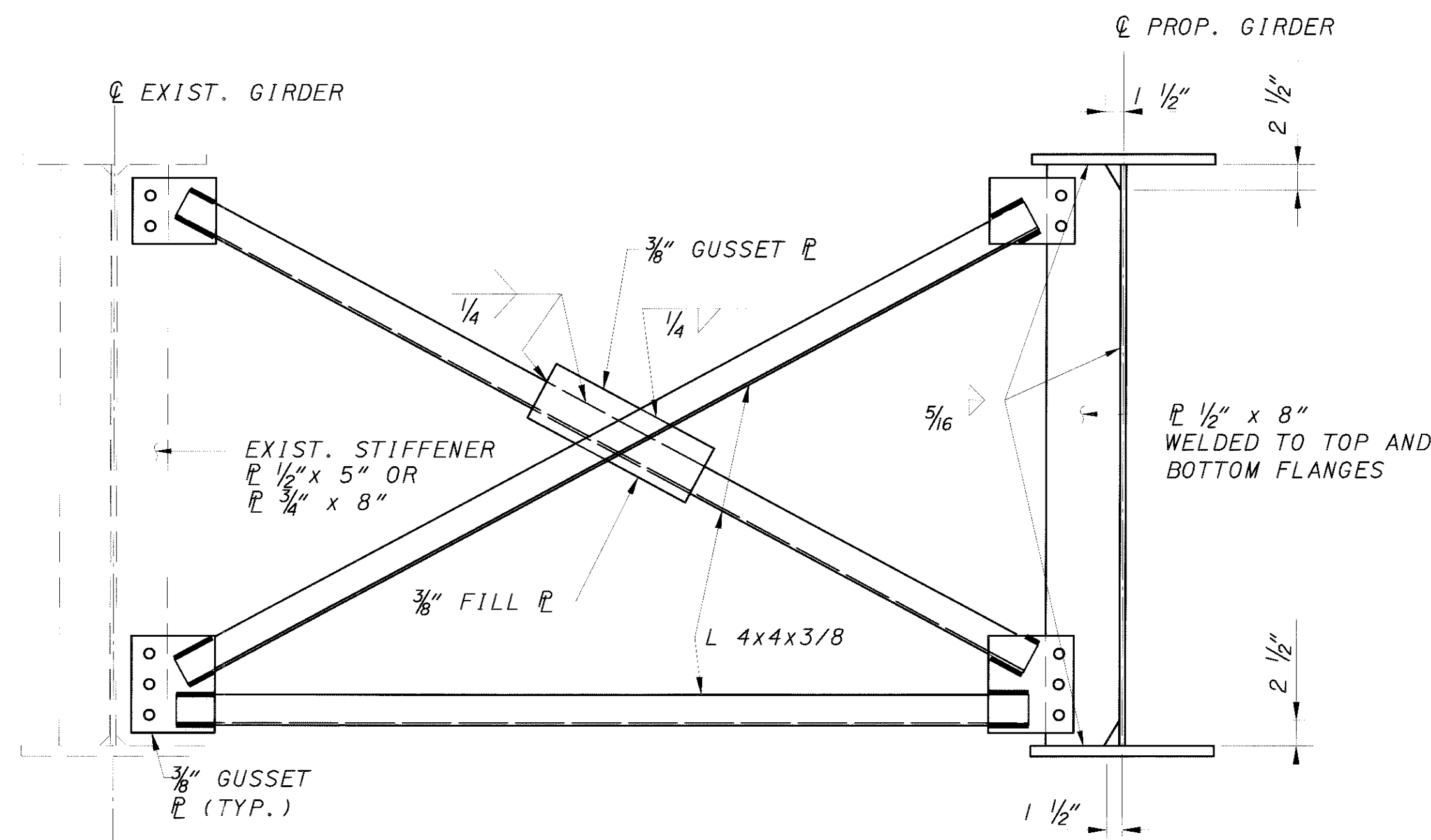
**DETAIL "A"**



**TOP & BOTTOM FLANGE PLAN**



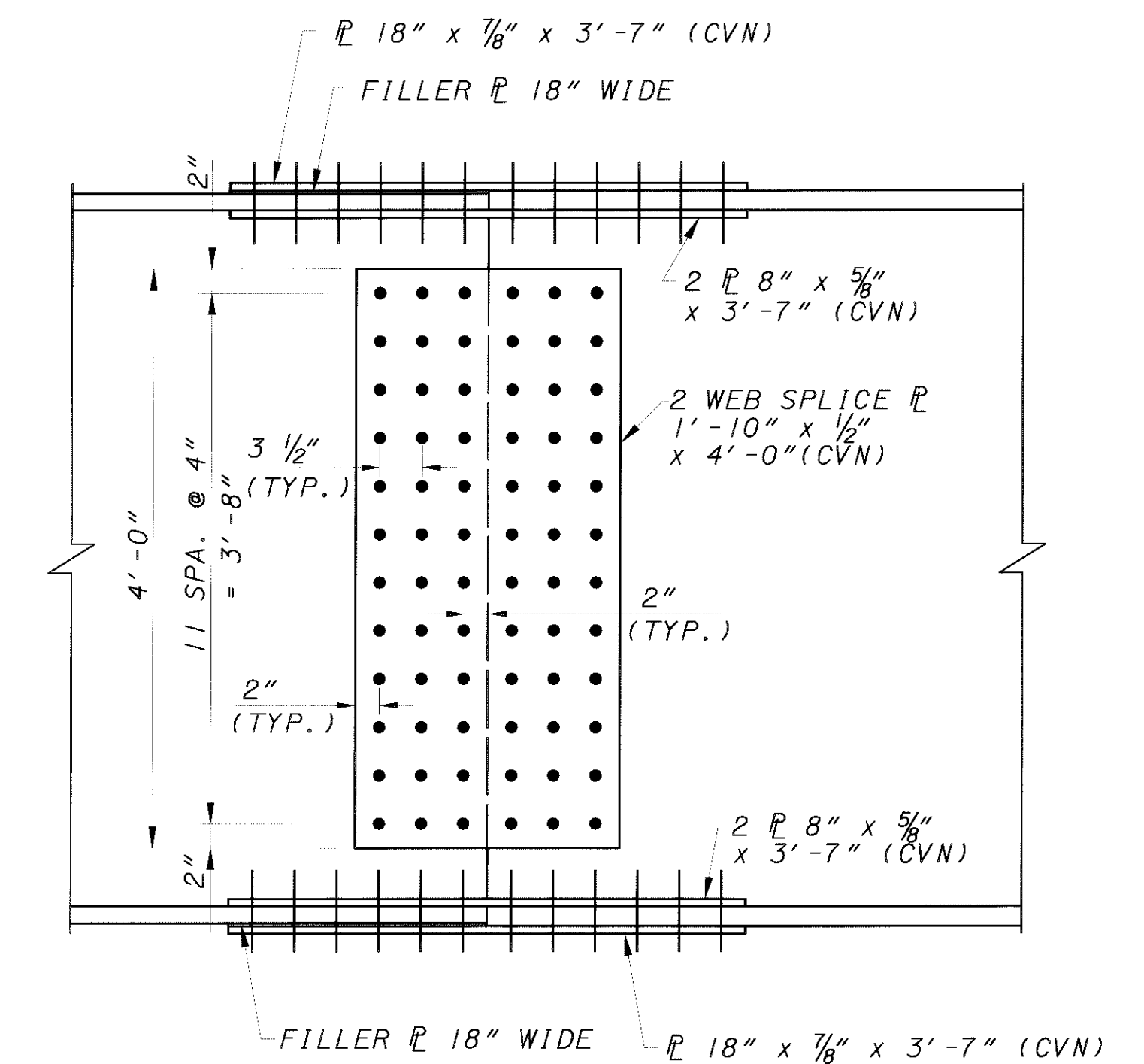
**BEARING STIFFENER PLATE DETAIL**



**INTERMEDIATE CROSSFRAME DETAIL**

**NOTES:**

- SYMBOLS MARKED (—) THUS SHOW 6" LONG (MIN.) 1/4" FILLET WELDS
- CROSSFRAME STIFFENER CONNECTION BOLTS ARE A325 7/8" DIA. AND SHALL HAVE AN EDGE DISTANCE OF 1 1/2" MIN. AND 2 1/2" MAX.
- USE EQUAL SPACINGS WHERE MORE THAN 2 BOLTS ARE IN A LINE.



**TYPICAL FIELD SPLICE DETAIL**

MAH/6SCB.DCN

BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

DATE: 11/30/00  
DRAWN: CLH  
CHECKED: ASB  
PROJECT NO.: 500273TR  
SHEET NO.: 5002702L & 500273TR

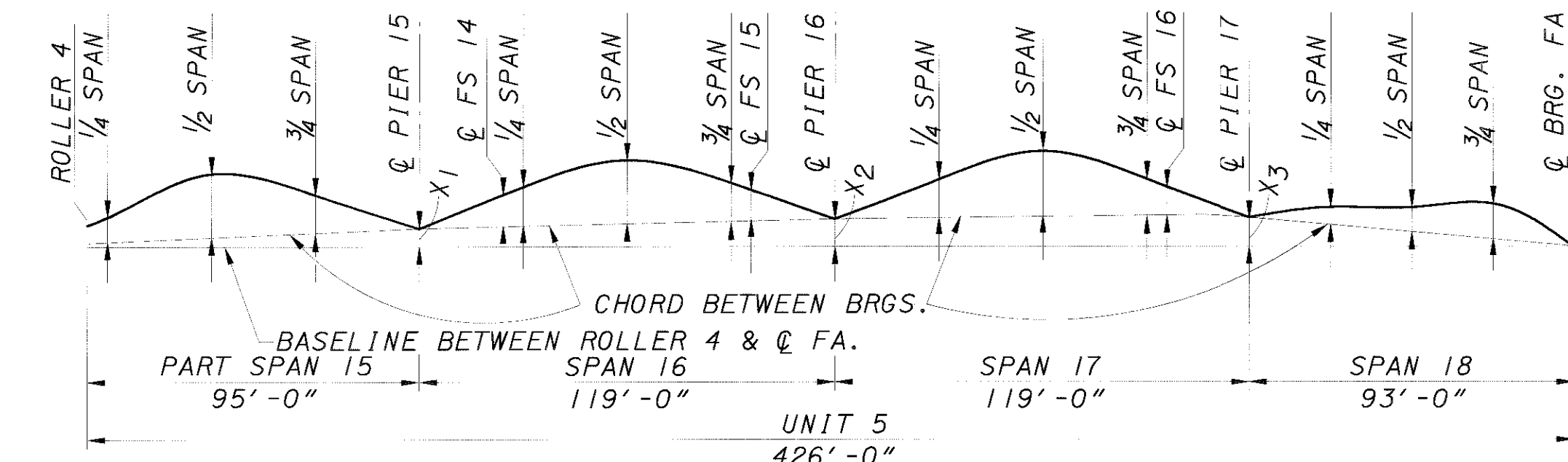
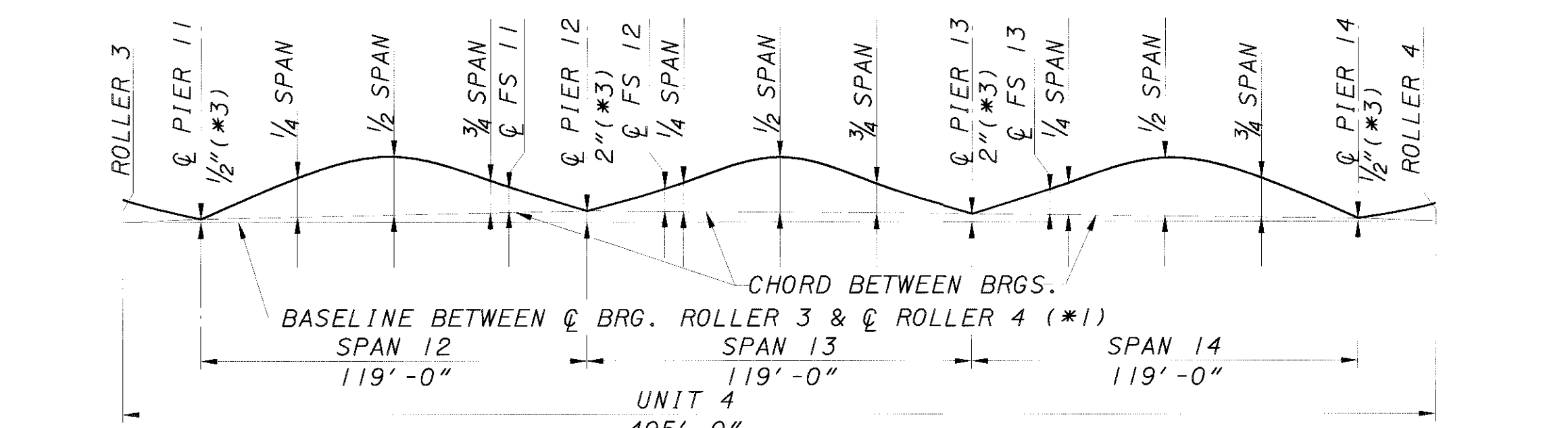
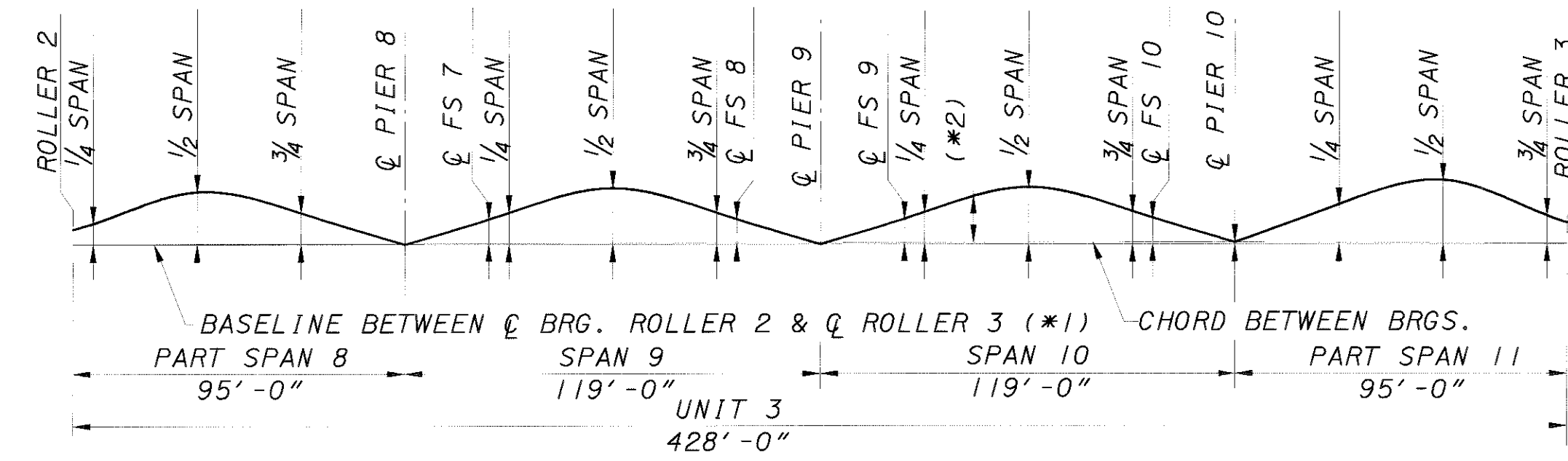
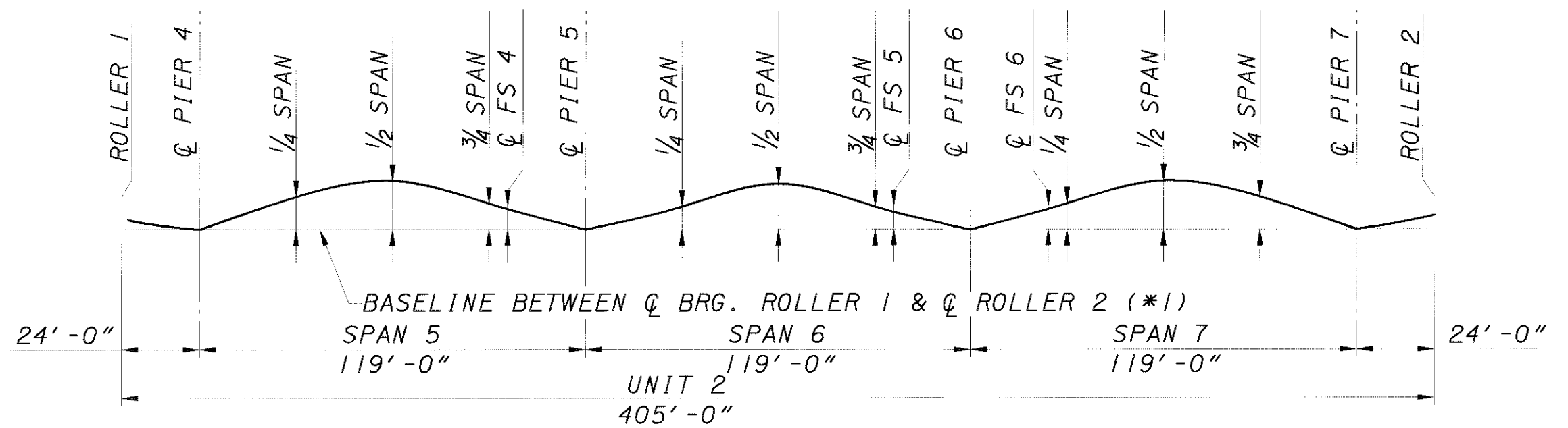
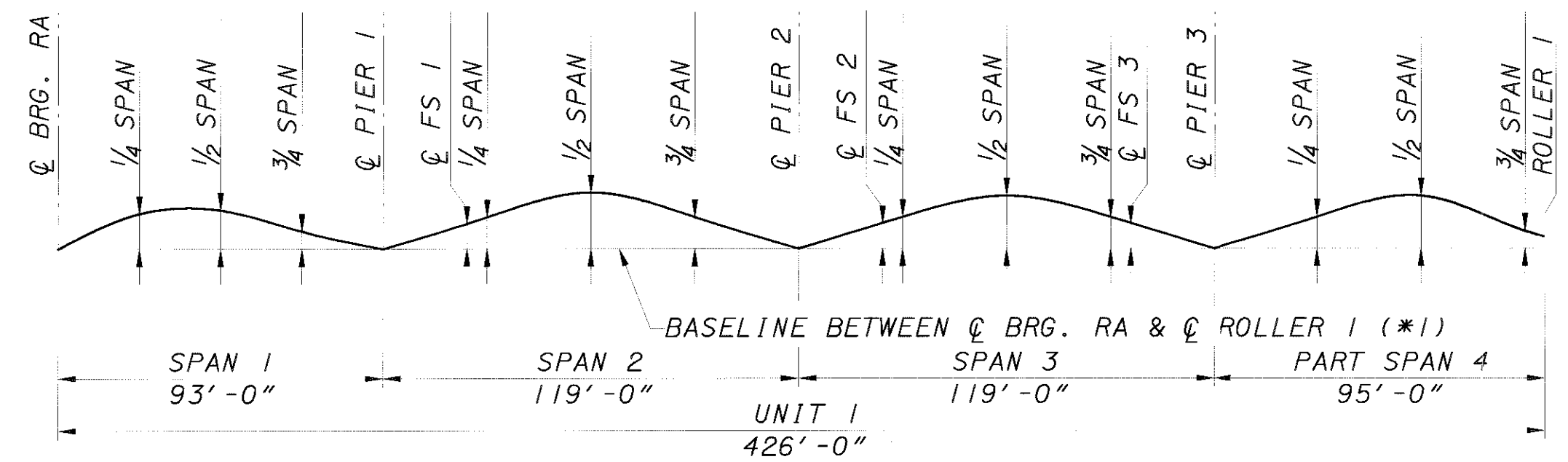
SUPERSTRUCTURE DETAILS  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

MAH-76-0.86

29 / 44

81 / 102

STEEL OPTION



**CAMBER DIAGRAMS**

- (\*1) LINE BETWEEN  $\phi$  BRGS. COINCIDES WITH BASELINE FOR TANGENT GRADE UNITS.
- (\*2) REQUIRES SHOP CAMBER
- (\*3) BLOCKING DIMENSION

| LEFT BRIDGE |          |          |          |          |          |          |          |
|-------------|----------|----------|----------|----------|----------|----------|----------|
| DIMENSION   | GIRDER 1 | GIRDER 2 | GIRDER 3 | GIRDER 4 | GIRDER 5 | GIRDER 6 | GIRDER 7 |
| X1          | 2 1/2"   | 2 1/2"   | 2 1/2"   | 2 1/2"   | 1 7/8"   | 1 1/4"   | 5/8"     |
| X2          | 4 1/4"   | 4 1/4"   | 4 1/4"   | 4 1/4"   | 2 3/4"   | 1 3/8"   | 1/8"     |
| X3          | 4 5/8"   | 4 5/8"   | 4 5/8"   | 4 1/2"   | 2 3/8"   | 1/8"     | 3/4"     |

| RIGHT BRIDGE |          |          |           |           |           |           |           |
|--------------|----------|----------|-----------|-----------|-----------|-----------|-----------|
| DIMENSION    | GIRDER 8 | GIRDER 9 | GIRDER 10 | GIRDER 11 | GIRDER 12 | GIRDER 13 | GIRDER 14 |
| X1           | 5/8"     | 1 1/4"   | 1 1/8"    | 2 1/2"    | 2 1/2"    | 2 1/2"    | 2 1/2"    |
| X2           | 1/8"     | 1 3/8"   | 2 3/4"    | 4 1/4"    | 4 1/4"    | 4 1/4"    | 4 1/4"    |
| X3           | 3/4"     | 1/8"     | 2 3/8"    | 4 1/2"    | 4 5/8"    | 4 5/8"    | 4 5/8"    |

| DEFLECTION & CAMBER TABLE (G1, G7, G8 & G14) |    |          |          |          |        |      |          |          |          |        |      |          |          |          |      |        |          |          |          |          |        |          |          |          |      |        |          |          |          |      |        |
|--|----|----------|----------|----------|--------|------|----------|----------|----------|--------|------|----------|----------|----------|------|--------|----------|----------|----------|----------|--------|----------|----------|----------|------|--------|----------|----------|----------|------|--------|
| LOCATION                                     | RA | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | PIER 1 | FS 1 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | PIER 2 | FS 2 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | FS 3 | PIER 3 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | ROLLER 1 | PIER 4 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | FS 4 | PIER 5 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | FS 5 | PIER 6 |
| DEFLECTION DUE TO WEIGHT OF STEEL (IN.)      | 0  | 1/8      | 1/8      | 1/16     | 0      | 1/16 | 1/8      | 3/16     | 1/8      | 0      | 1/16 | 1/8      | 3/16     | 1/8      | 1/16 | 0      | 1/8      | 3/16     | 0        | 0        | 0      | 3/16     | 1/4      | 1/8      | 1/8  | 0      | 1/16     | 1/8      | 1/16     | 1/16 | 0      |
| DEFLECTION DUE TO REMAINING DEAD LOAD (IN.)  | 0  | 1/2      | 3/16     | 1/4      | 0      | 3/8  | 7/16     | 1/16     | 1/16     | 0      | 5/16 | 7/16     | 3/4      | 7/16     | 5/16 | 0      | 7/16     | 3/4      | 5/16     | 1/8"     | 0      | 7/16     | 1/16     | 3/8      | 5/16 | 0      | 3/8      | 3/4      | 3/8      | 5/16 | 0      |
| ADJUSTMENT FOR VERTICAL CURVE (IN.)          | 0  | 0        | 0        | 0        | 0      | 0    | 0        | 0        | 0        | 0      | 0    | 0        | 0        | 0        | 0    | 0      | 0        | 0        | 0        | 0        | 0      | 0        | 0        | 0        | 0    | 0      | 0        | 0        | 0        | 0    | 0      |
| REQUIRED SHOP CAMBER (IN.)                   | 0  | 5/8      | 1/16     | 5/16     | 0      | 7/16 | 9/16     | 1        | 9/16     | 0      | 3/8  | 9/16     | 15/16    | 9/16     | 3/8  | 0      | 9/16     | 15/16    | 5/16     | 1/8"     | 0      | 5/8      | 15/16    | 1/2      | 7/16 | 0      | 7/16     | 7/8      | 7/16     | 3/8  | 0      |

| DEFLECTION & CAMBER TABLE (G1, G7, G8 & G14) |      |          |          |          |        |          |          |          |          |        |      |          |          |          |      |        |      |          |          |          |       |         |          |          |          |          |         |          |          |          |
|--|------|----------|----------|----------|--------|----------|----------|----------|----------|--------|------|----------|----------|----------|------|--------|------|----------|----------|----------|-------|---------|----------|----------|----------|----------|---------|----------|----------|----------|
| LOCATION                                     | FS 6 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | PIER 7 | ROLLER 2 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | PIER 8 | FS 7 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | FS 8 | PIER 9 | FS 9 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | FS 10 | PIER 10 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | ROLLER 3 | PIER 11 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN |
| DEFLECTION DUE TO WEIGHT OF STEEL (IN.)      | 1/8  | 1/8      | 1/4      | 3/16     | 0      | 0        | 1/16     | 3/16     | 1/8      | 0      | 1/16 | 1/8      | 3/16     | 1/8      | 1/16 | 0      | 1/16 | 1/8      | 3/16     | 1/8      | 1/16  | 0       | 1/8      | 3/16     | 1/16     | 0        | 0       | 3/16     | 1/4      | 1/8      |
| DEFLECTION DUE TO REMAINING DEAD LOAD (IN.)  | 5/16 | 3/8      | 1/16     | 7/16     | 0      | 1/8      | 9/16     | 3/4      | 7/16     | 0      | 5/16 | 7/16     | 13/16    | 7/16     | 5/16 | 0      | 5/16 | 7/16     | 13/16    | 7/16     | 5/16  | 0       | 7/16     | 3/4      | 5/16     | 0        | 0       | 7/16     | 1/16     | 3/8      |
| ADJUSTMENT FOR VERTICAL CURVE (IN.)          | 0    | 0        | 0        | 0        | 0      | 0        | 0        | 0        | 0        | 0      | 0    | 0        | 0        | 0        | 0    | 0      | 0    | 0        | 0        | 0        | 0     | 0       | 0        | 0        | 0        | 0        | 0       | 0        | 0        | 0        |
| REQUIRED SHOP CAMBER (IN.)                   | 7/16 | 1/2      | 15/16    | 5/8      | 0      | 1/8      | 3/8      | 15/16    | 9/16     | 0      | 3/8  | 9/16     | 1        | 9/16     | 3/8  | 0      | 3/8  | 9/16     | 1        | 9/16     | 3/8   | 0       | 1/16     | 1/8      | 1/2      | 0        | 0       | 3/4      | 1 1/8    | 5/8      |

| DEFLECTION & CAMBER TABLE (G1, G7, G8 & G14) |       |         |       |          |          |          |         |       |          |          |          |         |          |          |          |          |         |       |          |          |          |       |         |          |          |          |       |         |          |          |          |    |
|--|-------|---------|-------|----------|----------|----------|---------|-------|----------|----------|----------|---------|----------|----------|----------|----------|---------|-------|----------|----------|----------|-------|---------|----------|----------|----------|-------|---------|----------|----------|----------|----|
| LOCATION                                     | FS 11 | PIER 12 | FS 12 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | PIER 13 | FS 13 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | PIER 14 | ROLLER 4 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | PIER 15 | FS 14 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | FS 15 | PIER 16 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | FS 16 | PIER 17 | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | FA |
| DEFLECTION DUE TO WEIGHT OF STEEL (IN.)      | 1/8   | 0       | 1/16  | 1/16     | 1/8      | 1/16     | 0       | 1/8   | 1/2      | 1/4      | 3/16     | 0       | 0        | 0        | 3/16     | 1/8      | 0       | 1/16  | 1/2      | 3/16     | 1/8      | 1/16  | 0       | 1/2      | 3/16     | 1/8      | 1/16  | 0       | 1/16     | 1/8      | 1/8      | 0  |
| DEFLECTION DUE TO REMAINING DEAD LOAD (IN.)  | 5/16  | 0       | 5/16  | 3/8      | 3/4      | 3/8      | 0       | 5/16  | 3/8      | 1/16     | 7/16     | 0       | 1/8      | 5/16     | 3/4      | 7/16     | 0       | 5/16  | 7/16     | 3/4      | 7/16     | 5/16  | 0       | 7/16     | 13/16    | 7/16     | 3/8   | 0       | 1/4      | 9/16     | 1/2      | 0  |
| ADJUSTMENT FOR VERTICAL CURVE (IN.)          | 3/16  | 0       | 1/8   | 1/8      | 3/16     | 1/8      | 0       | 1/16  | 1/8      | 3/16     | 1/8      | 0       | 1/8      | 1/8      | 3/16     | 1/8      | 0       | 1/8   | 1/8      | 3/16     | 1/8      | 1/8   | 0       | 1/8      | 3/16     | 1/8      | 0     | 0       | 0        | 0        | 0        |    |
| REQUIRED SHOP CAMBER (IN.)                   | 5/8   | 0       | 1/2   | 9/16     | 1 1/16   | 9/16     | 0       | 1/2   | 5/8      | 1 1/8    | 3/4      | 0       | 1/4      | 7/16     | 1 1/8    | 1/16     | 0       | 1/2   | 1/16     | 1 1/8    | 1/16     | 1/2   | 0       | 1/16     | 1 3/16   | 1/16     | 7/16  | 0       | 5/16     | 1/16     | 5/8      | 0  |

STEEL OPTION

BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0307 FAX

DATE: 11/30/00  
DRAWN: CLH  
CHECKED: ASB  
REVISION: 500273TR

**SUPERSTRUCTURE DETAILS**  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

**MAH-76-0.86**

30 / 44

82  
102

MAH76SC4.DGN

CROSSFRAMES NOT SHOWN.  
SEE SECTIONS E-E & F-F,  
SHT. 32/44

**NOTES:**

(\*1) THIS DIMENSION BETWEEN THE ENDS OF EXISTING GIRDER IS TAKEN FROM THE EXISTING PLANS. AN 1/8th OF AN INCH ADJUSTMENT SHALL BE MADE FOR EACH 10° CHANGE IN TEMPERATURE. CONTRACTOR SHALL MEASURE THIS DIMENSION AND REPORT TO THE ENGINEER. IF THE REQUIRED OPENING IS MORE THAN 1/2" GREATER THAN THE ACTUAL OPENING, THEN THE END OF THE SUPPORTED GIRDER SHALL BE TRIMMED. PAYMENT FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO TRIM THE GIRDER END SHALL BE MADE UNDER ITEM 863 - TRIMMING OF BEAM END, AS PER PLAN. FOR SITUATIONS WHERE ACTUAL OPENING IS MORE THAN 1" GREATER THAN THE REQUIRED OPENING, THE ENGINEER SHALL CONSULT THE OFFICE OF STRUCTURAL ENGINEERING TO DETERMINE IF FIELD CHANGES IN THIS PROPOSED DESIGN ARE NECESSARY AND WILL TAKE AN APPROPRIATE ACTION.

ITEM 516-BEARING DEVICE, MISC.:  
NEW ROLLER BEARING ASSEMBLY THIS ITEM INCLUDES ROLLER, SIDE BARS, TOP AND BOTTOM BEARING PLATES AND BOLTS.

ITEM 863 - TRIMMING OF BEAM END, AS PER PLAN - GIRDER END "A" WILL BE TRIMMED WHEN THE JOINT OPENING IS LESS THAN ACCEPTABLE

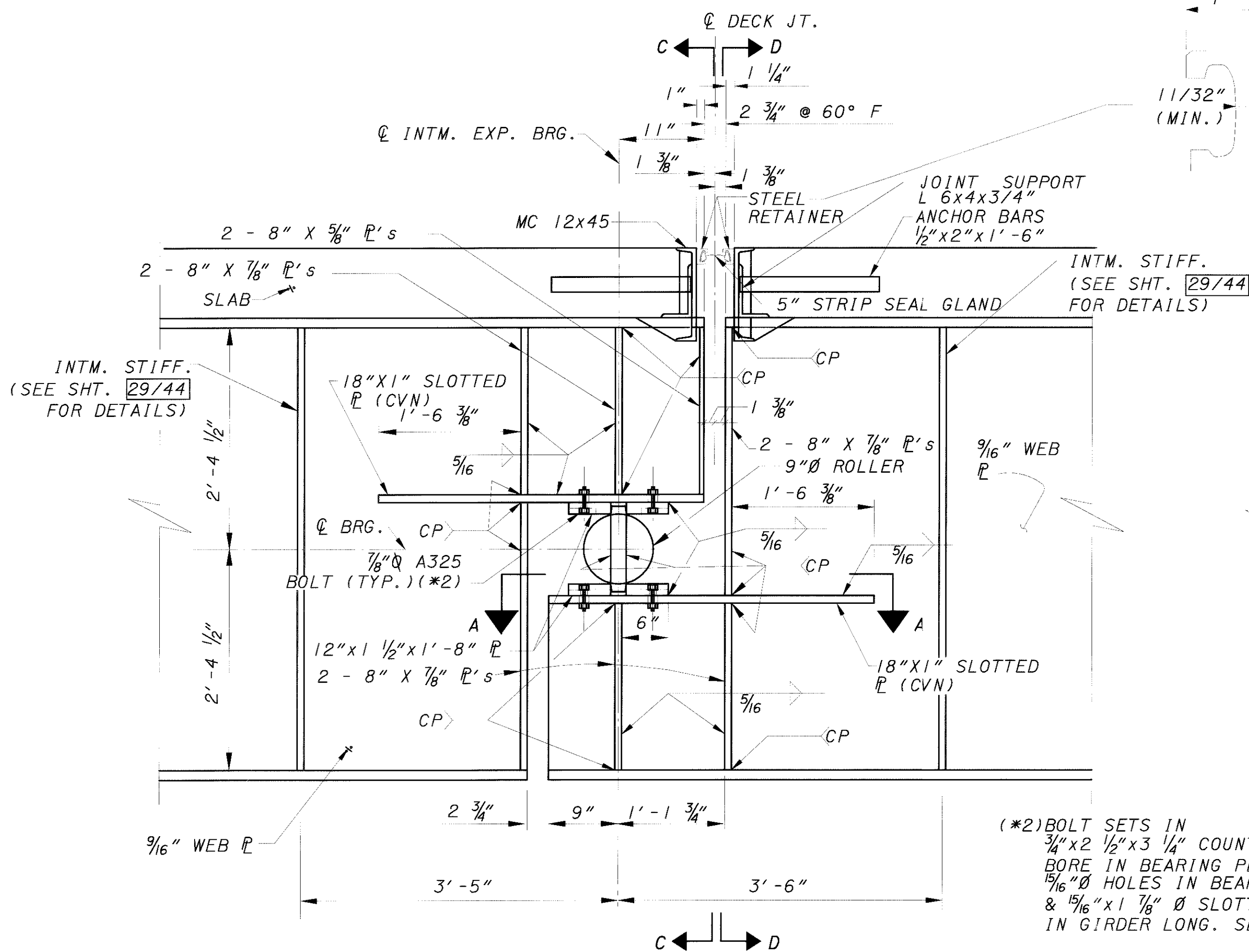
FOR SECTIONS C-C, D-D, E-E & F-F, SEE SHEET 32/44

EXISTING DECK JOINTS AND JOINT SUPPORTS SHALL BE REPLACED WITH NEW DECK JOINTS & JOINT SUPPORTS AS SHOWN ON THIS SHEET AND SHEET 32/44.

FOR REMOVAL OF EXISTING DECK JOINTS AND JOINT SUPPORTS AT INTERMEDIATE EXPANSION JOINTS, SEE SHEET 32/44.

FOR ADDITIONAL DECK JOINT DETAILS AND NOTES, REFER TO STD. DWG. EXJ 4-87 AND NOTE TITLED "ITEM 516-STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL - INTERMEDIATE EXPANSION JOINT" ON SHEET 8/44.

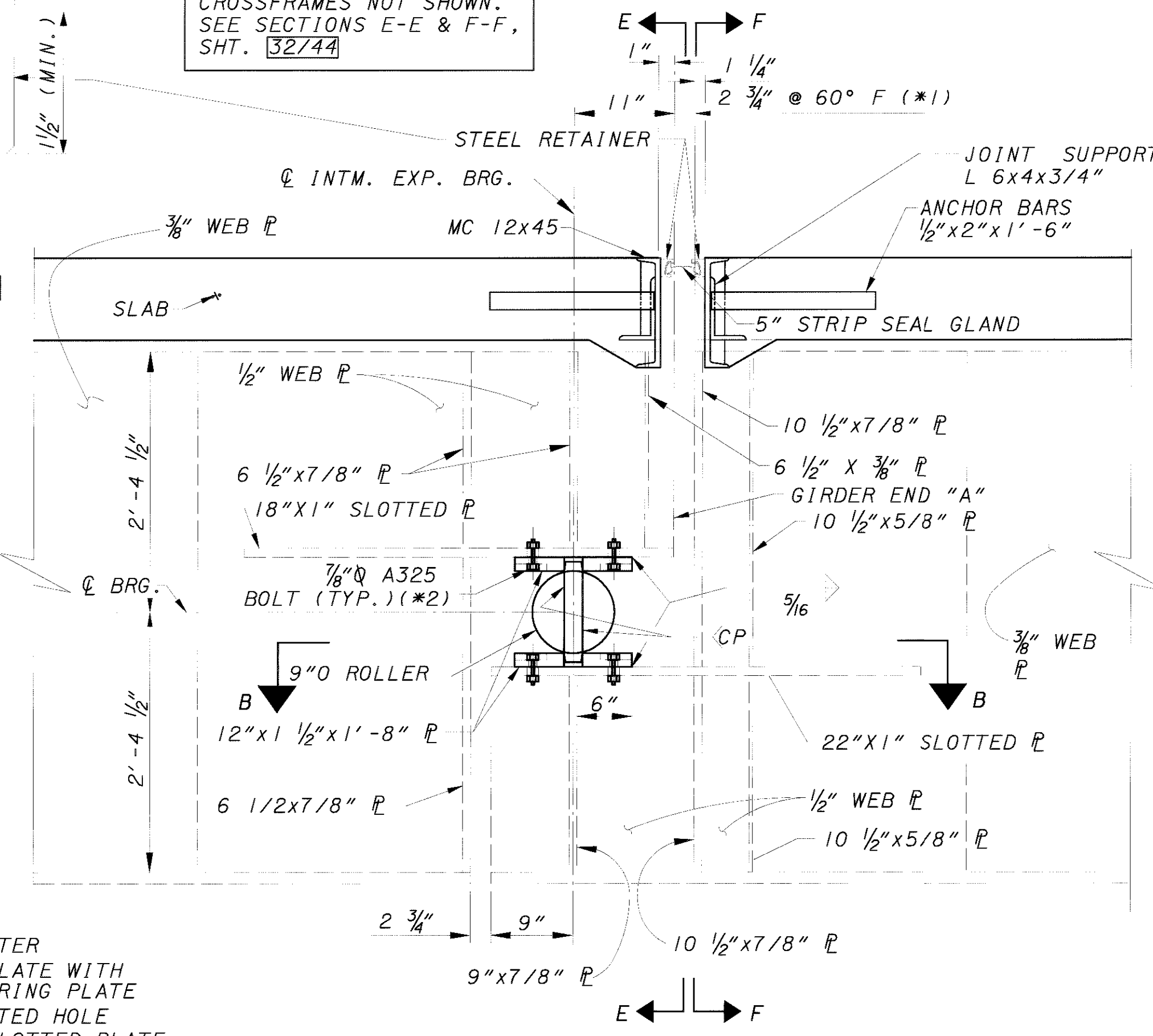
DEAD LOAD REACTION AT ROLLER BEARINGS:  
DUE TO STEEL ONLY = 13 KIPS  
DUE TO STEEL AND CONCRETE DECK = 47 KIPS



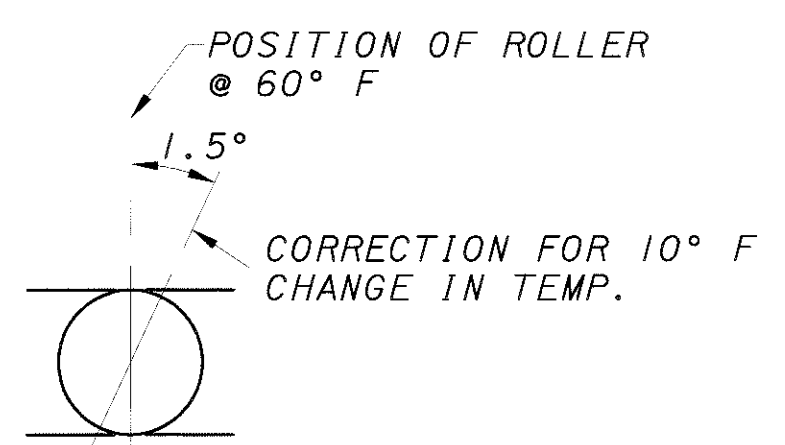
**INTERMEDIATE EXPANSION JOINT DETAILS**  
(FOR NEW GIRDERS)

**INTERMEDIATE EXPANSION JOINT REHABILITATION DETAILS**

(SHOWING GIRDER LOCATIONS WHERE ROLLER BEARING & BEARING PLATES ARE BEING REPLACED AS PER ITEM 516 - BEARING DEVICE, MISC.: REPLACE ROLLER BEARINGS W/TOP & BOTTOM BEARING PLATE, AS PER PLAN).

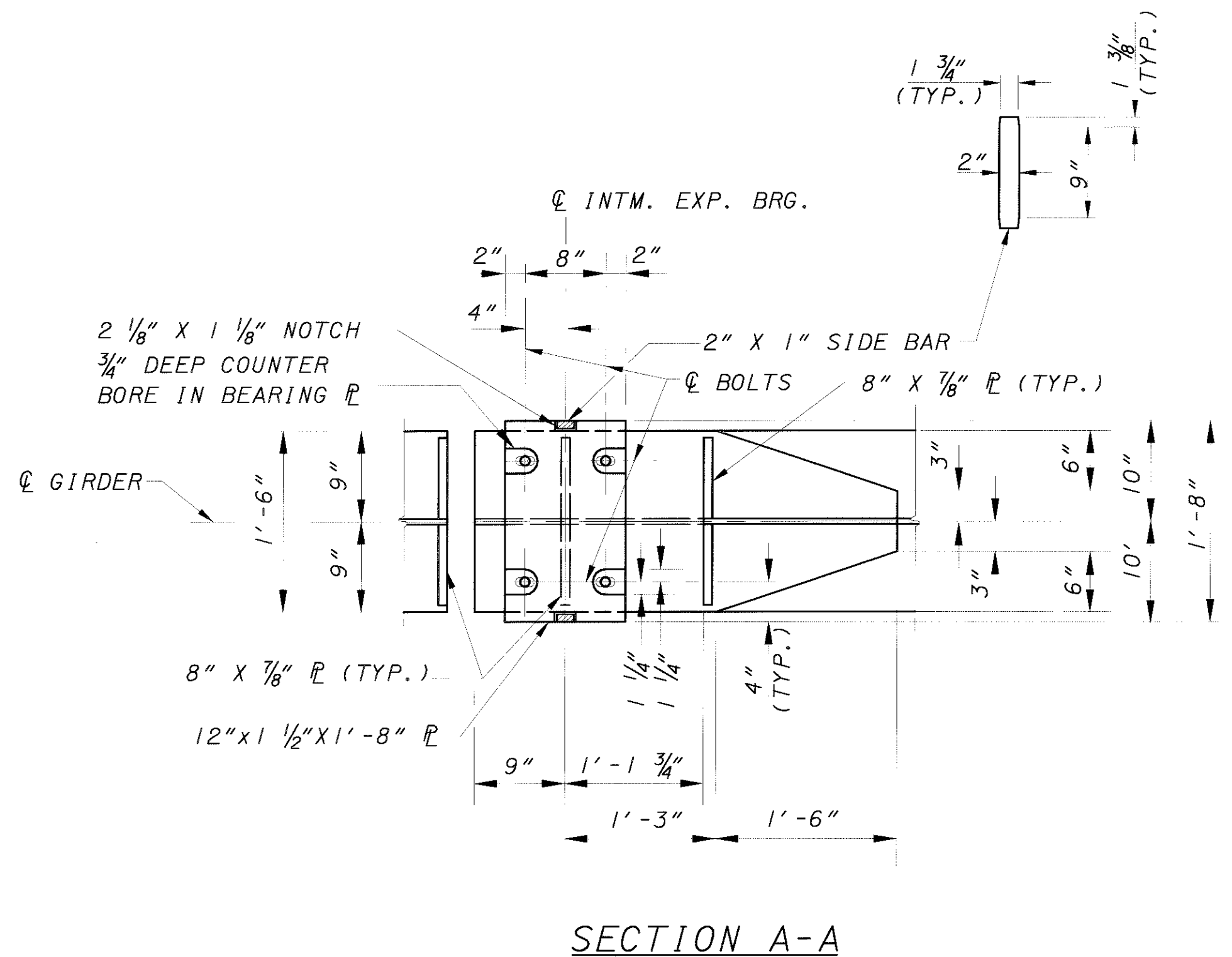


(\*2) BOLT SETS IN 3/4" x 2 1/2" x 3 1/4" COUNTER BORE IN BEARING PLATE WITH 5/16" Ø HOLES IN BEARING PLATE & 15/16" x 1 7/8" Ø SLOTTED HOLE IN GIRDER LONG. SLOTTED PLATE.

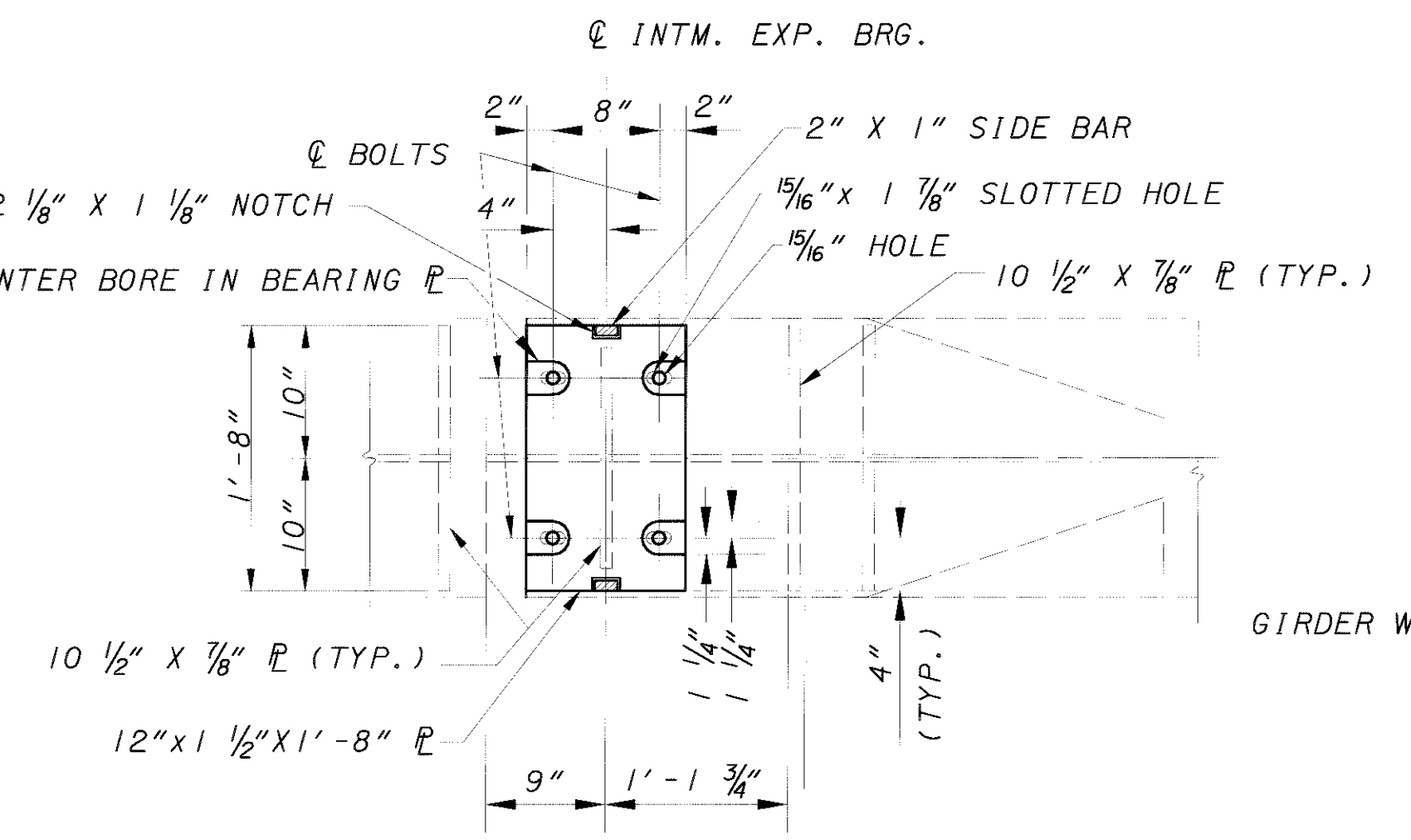


**CORRECTION DUE TO TEMP. FOR EXPANSION ROLLER AND JOINT PLACEMENT**

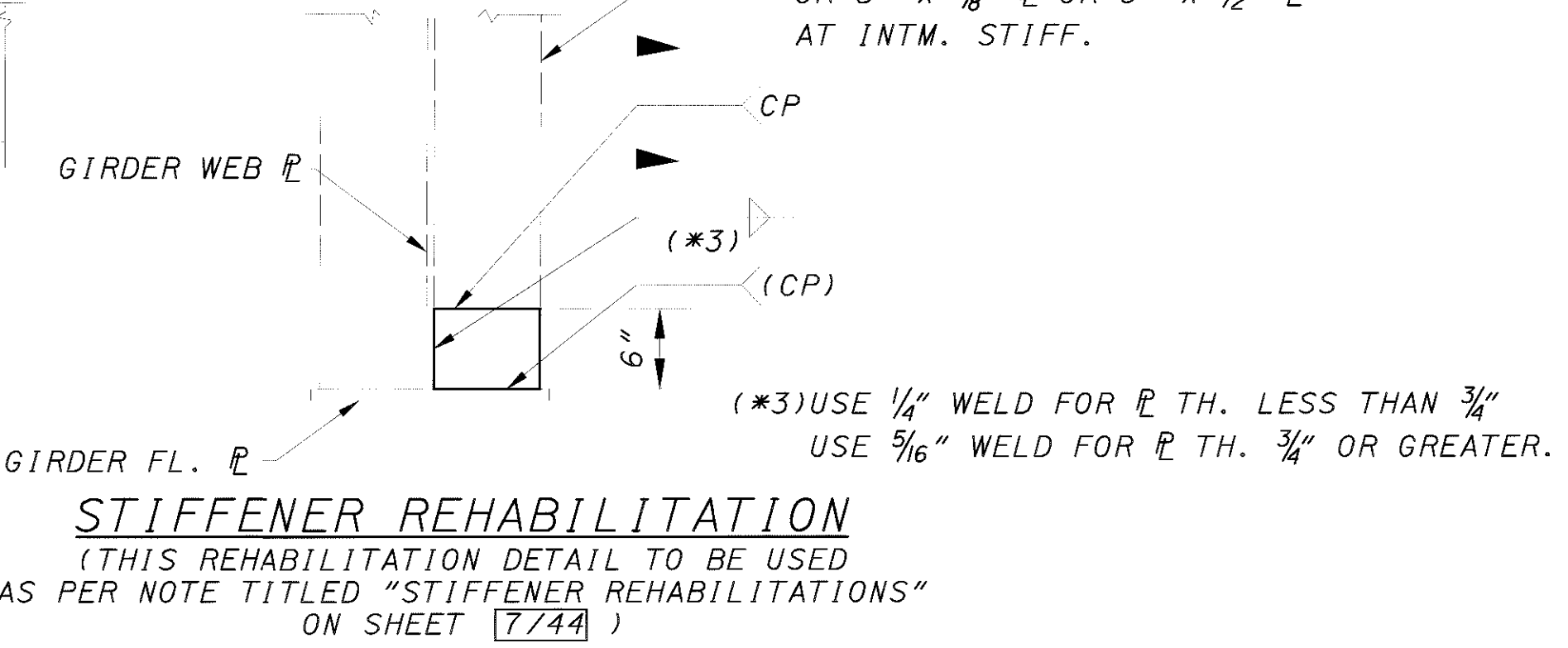
10 1/2" x 5/8" PL OR 10 1/2" x 7/8" PL OR 9" x 7/8" PL OR 5" x 3/8" PL OR 8" x 1/2" PL AT INTM. EXP. JT.



**SECTION A-A**

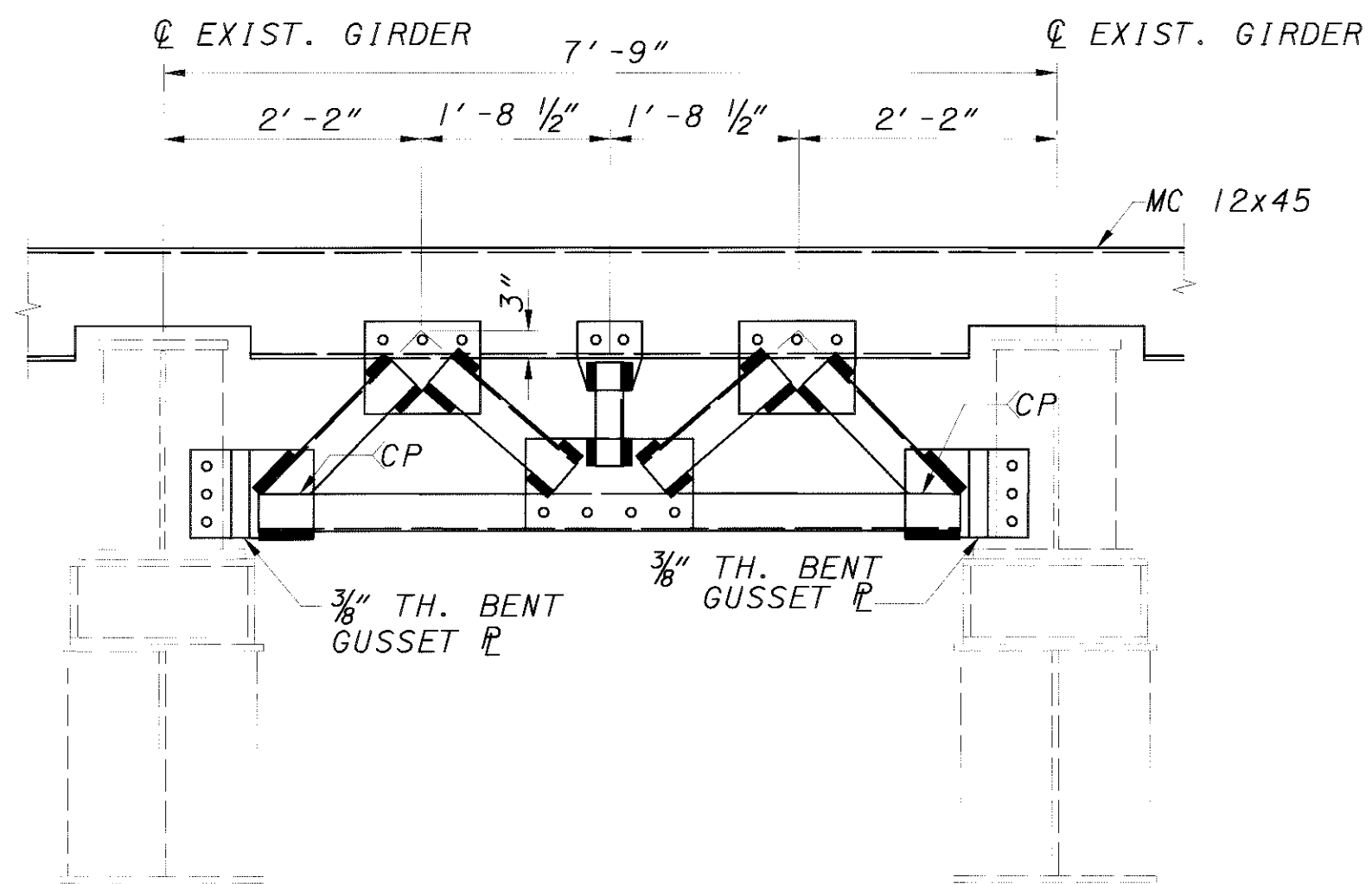


**SECTION B-B**

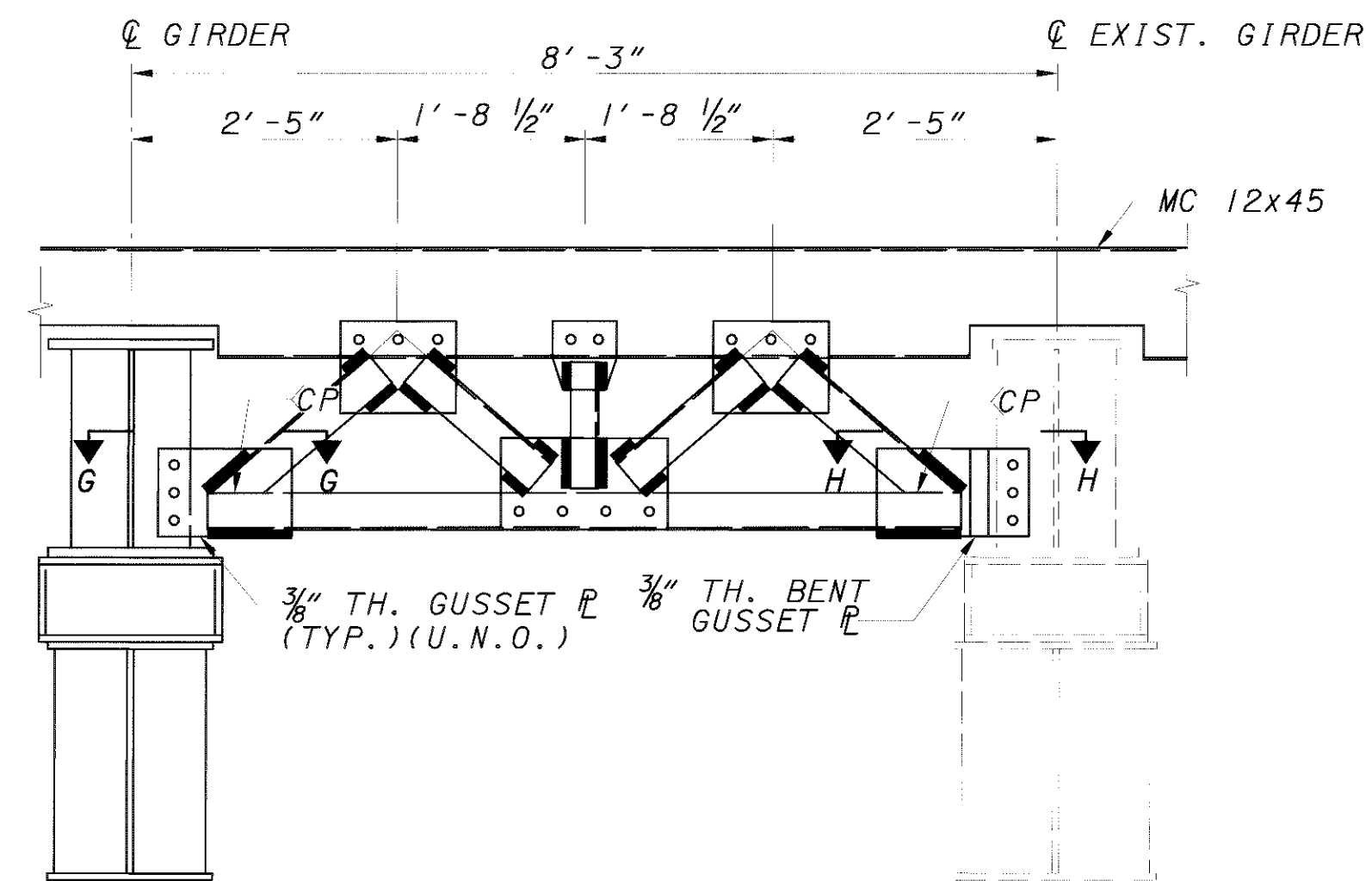


**STIFFENER REHABILITATION**  
(THIS REHABILITATION DETAIL TO BE USED AS PER NOTE TITLED "STIFFENER REHABILITATIONS" ON SHEET 7/44)

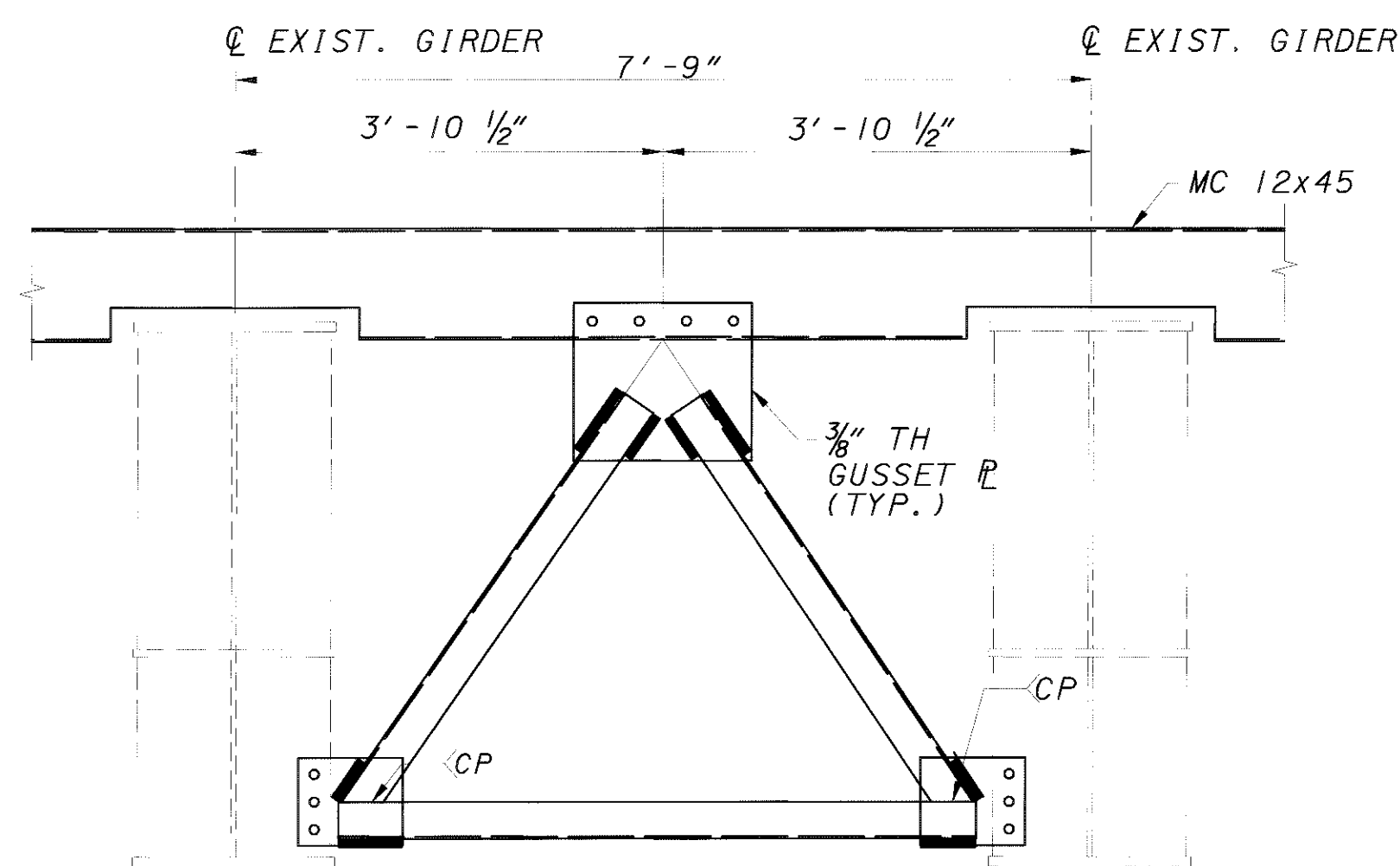
MAHT:GSD:J. DGN



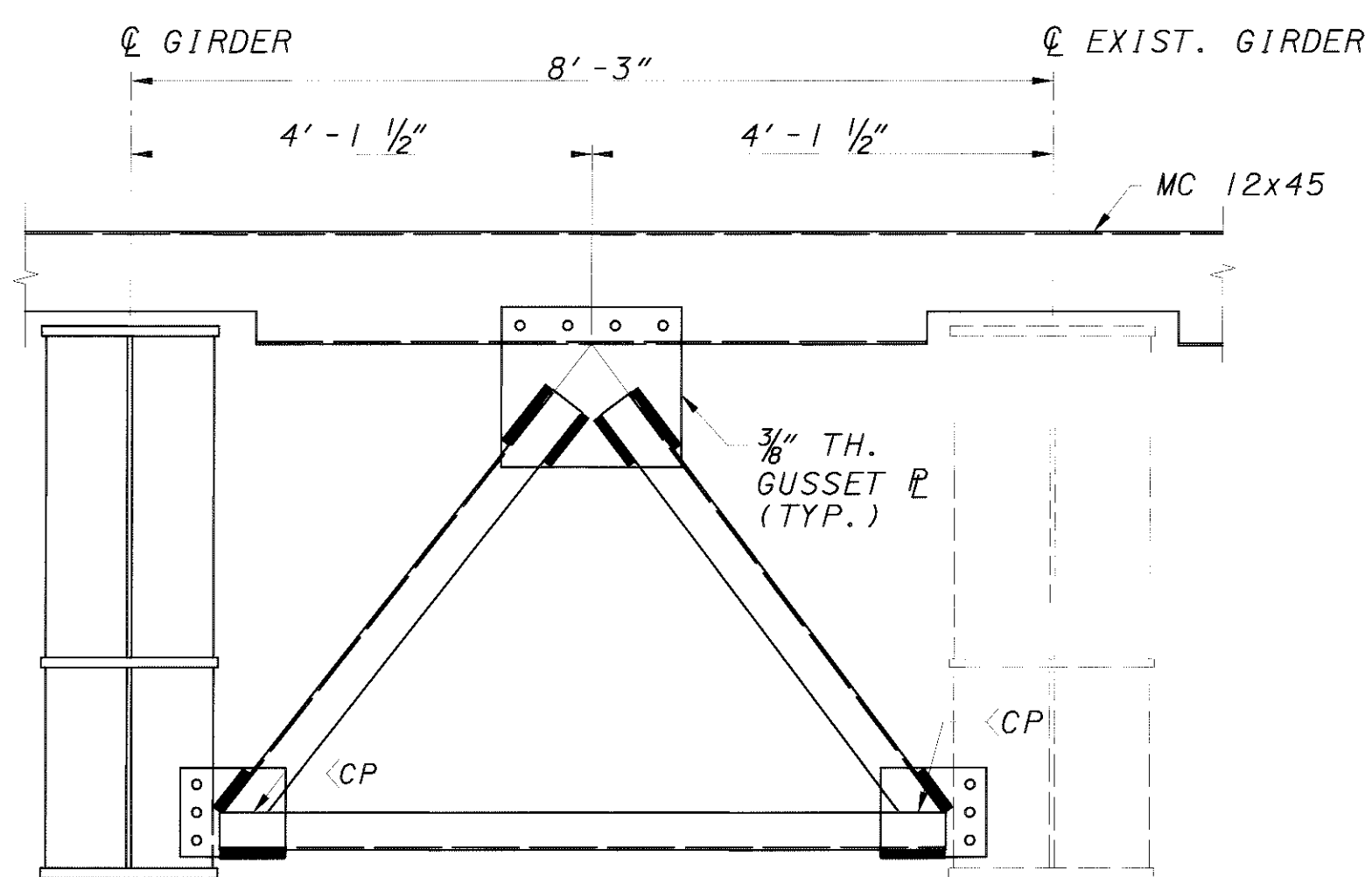
SECTION E-E



SECTION C-C

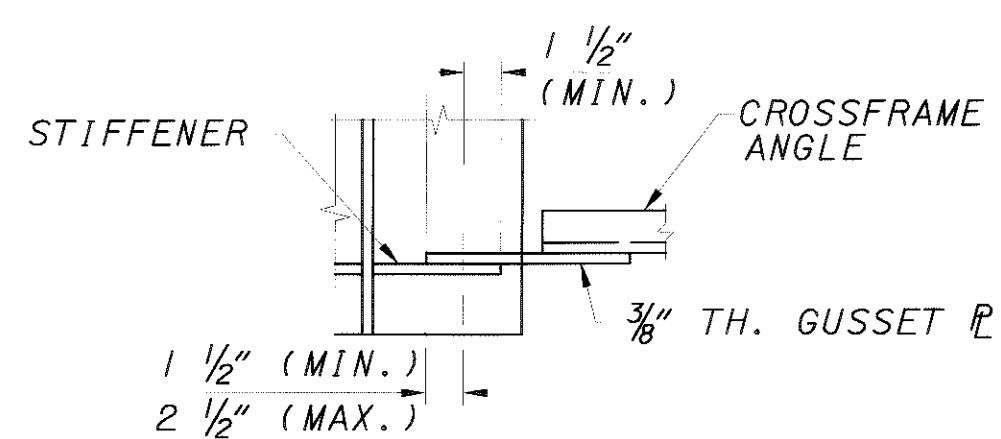


SECTION F-F



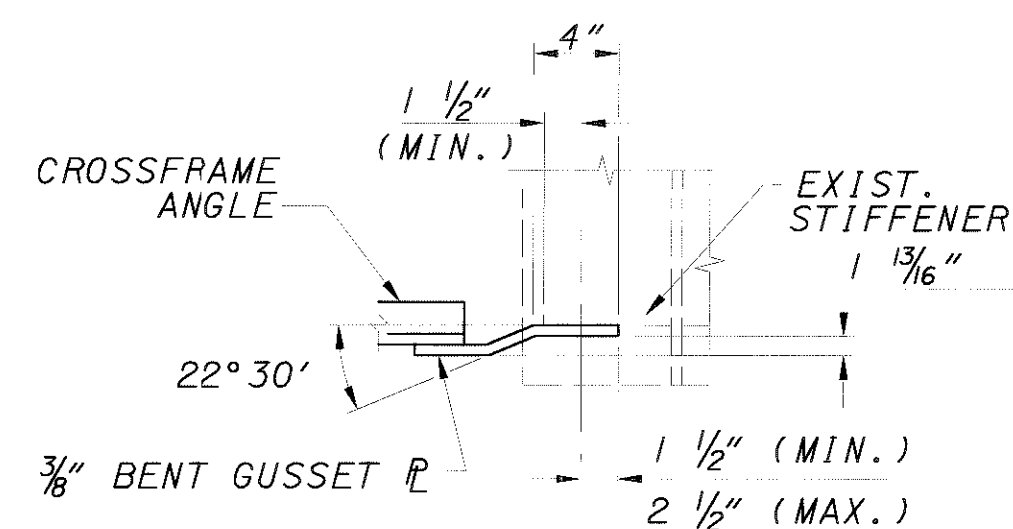
SECTION D-D

- NOTES:**
1. ALL GUSSET PLATES ARE  $\frac{3}{8}$ " THICK.
  2. ALL ANGLES ARE L 4x4x3/8".
  3. ALL BOLTS SHALL BE A325  $\frac{7}{8}$ " DIA..
  4. 1" DIA. HOLES FOR BOLTS SHALL BE FIELD DRILLED.
  5. WHERE MORE THAN TWO BOLTS ARE USED, USE EQUAL SPACINGS.
  6. EDGE DISTANCE FROM  $\odot$  BOLT TO AN EDGE OF PLATE, ANGLE OR CHANNEL SHALL BE  $1\frac{1}{2}$ " MINIMUM BUT SHALL NOT EXCEED  $2\frac{1}{2}$ ".
  7. USE  $\frac{3}{16}$ " SHOP FILLET WELD FOR ANGLE-GUSSET PLATE CONNECTIONS FOR CROSSFRAMES SHOWN IN SECTIONS C-C & E-E. FILLET WELD LOCATIONS ARE IDENTIFIED THUS (—). MINIMUM WELD LENGTH SHALL BE 4".
  8. USE  $\frac{1}{4}$ " SHOP FILLET WELD FOR ANGLE-GUSSET PLATE CONNECTIONS FOR CROSSFRAMES SHOWN IN SECTIONS D-D & F-F. FILLET WELD LOCATIONS ARE IDENTIFIED THUS (—). MINIMUM WELD LENGTH SHALL BE 6".
  9. REFER TO STD. DWG. EXJ-4-87 FOR ADDITIONAL DETAILS.



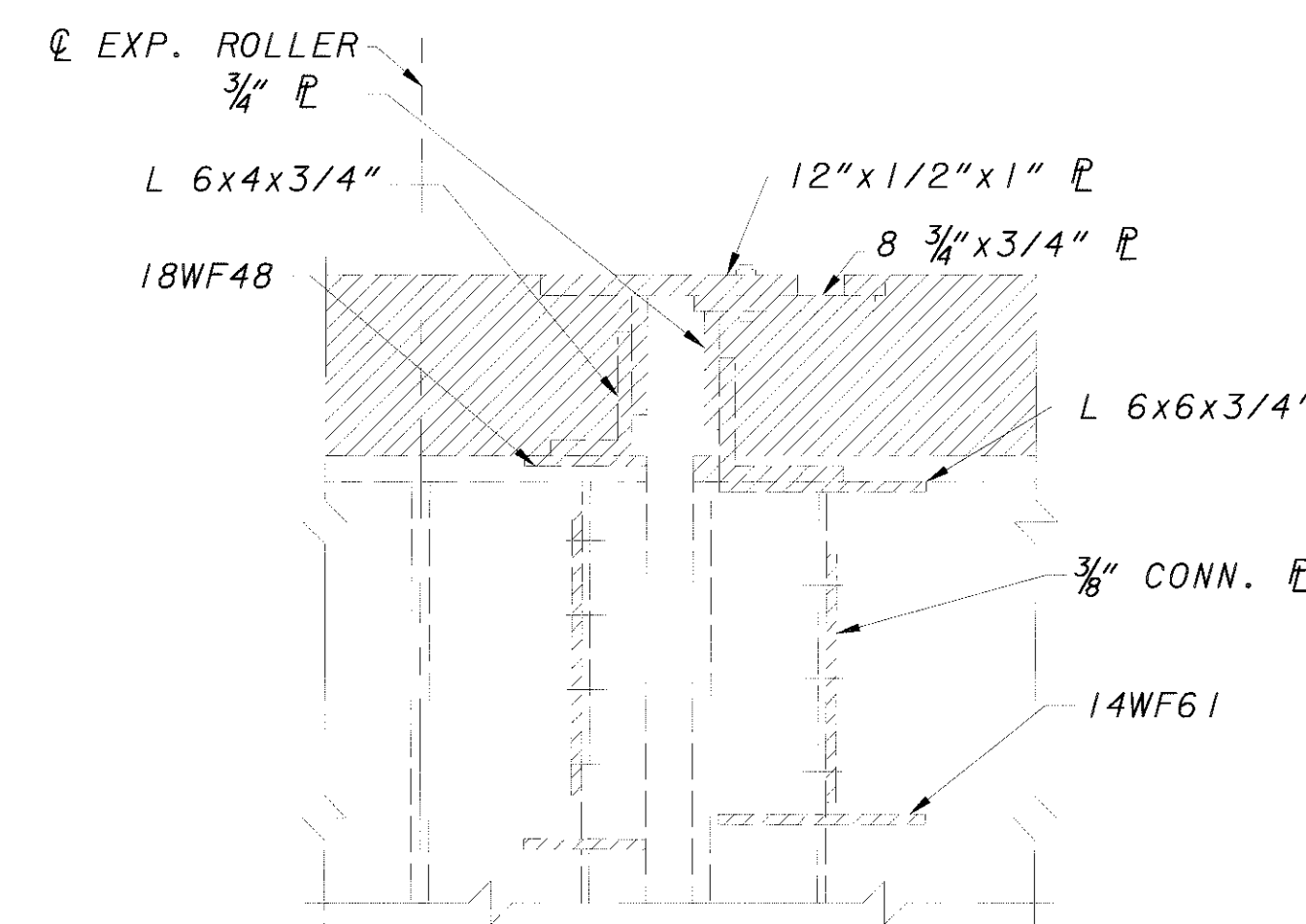
SECTION G-G

(SHOWING CROSSFRAME - STIFFENER CONNECTION USING STRAIGHT GUSSET PLATE) CONNECTION AT NEW GIRDER SHOWN. CROSSFRAME-STIFFENER CONNECTION AT EXISTING GIRDERS SIMILAR.



SECTION H-H

(SHOWING CROSSFRAME - STIFFENER CONNECTION USING BENT GUSSET PLATE) THIS DETAIL APPLIES TO ALL LOCATIONS IDENTIFIED WITH BENT GUSSET PLATES IN SECTIONS C-C & E-E.



EXISTING INTERMEDIATE DECK EXPANSION JOINT REMOVAL DETAIL

- NOTES:**
- PAYMENT FOR REMOVAL OF EXISTING DECK JOINTS AND JOINT SUPPORTS IS INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN.

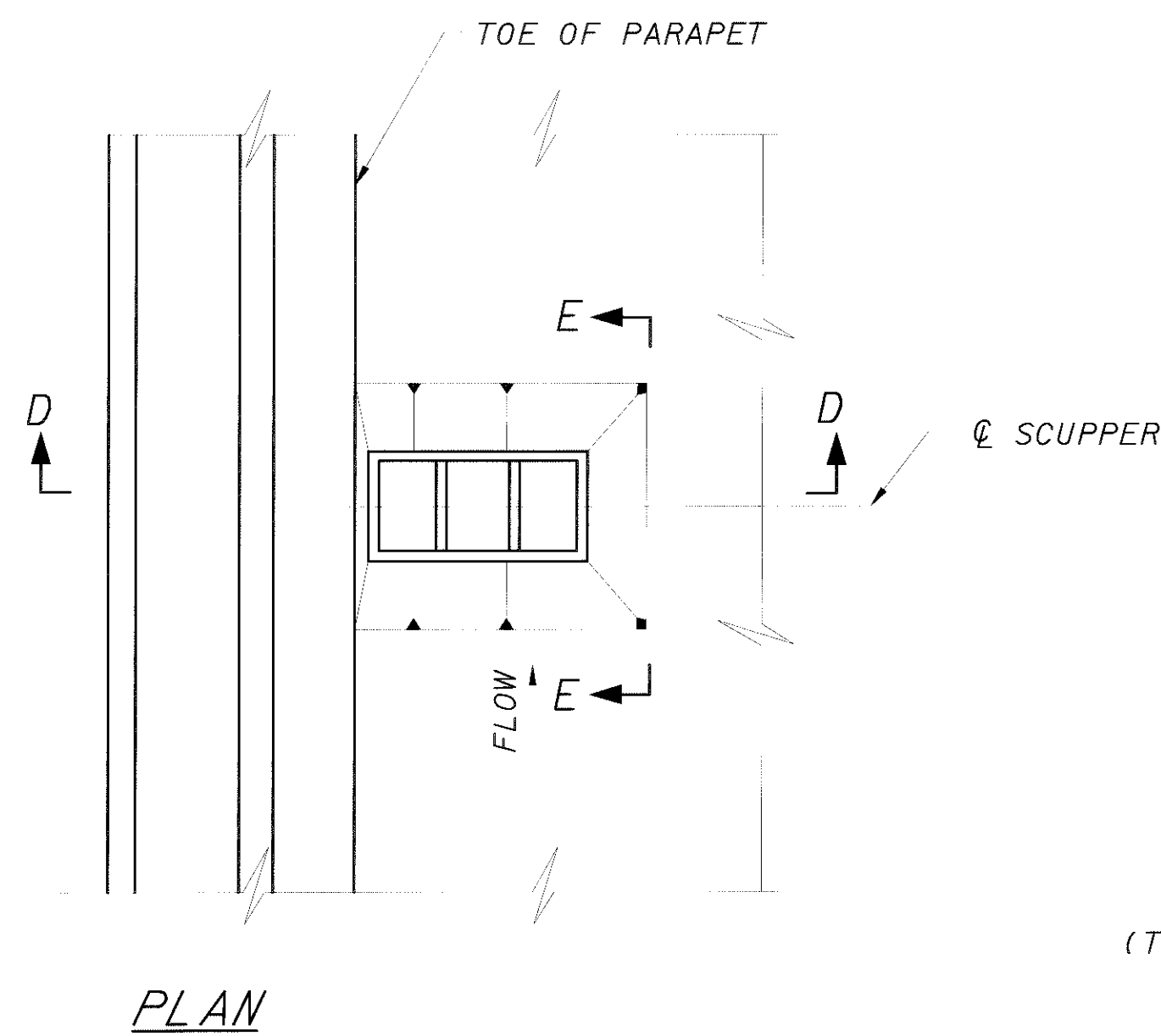
MAH-76-SSDT-001

|                        |                     |
|------------------------|---------------------|
| DATE:                  | 11/30/00            |
| REVIEWED:              | CEA                 |
| DRAWN:                 | CLH                 |
| DESIGNED:              | KVB                 |
| CHECKED:               | ASB                 |
| STRUCTURE FILE NUMBER: | 5002T02L & 5002T3TR |

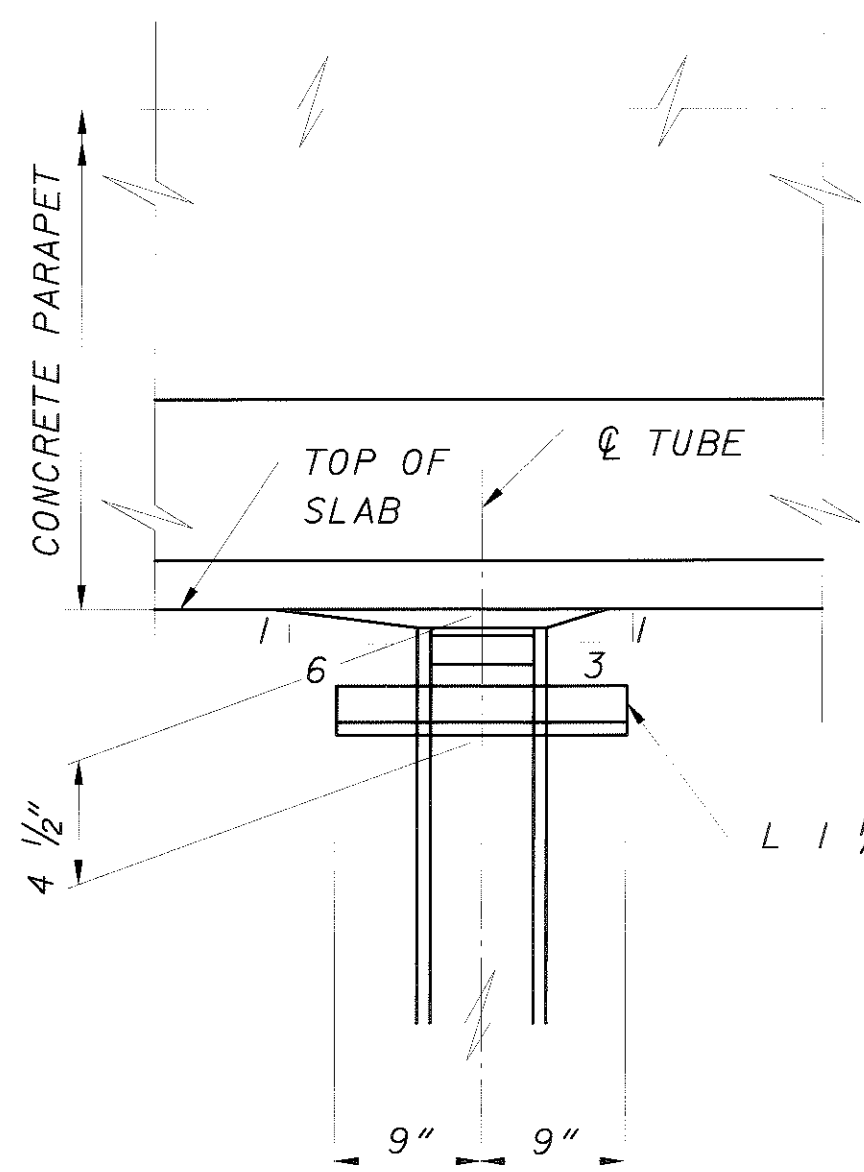




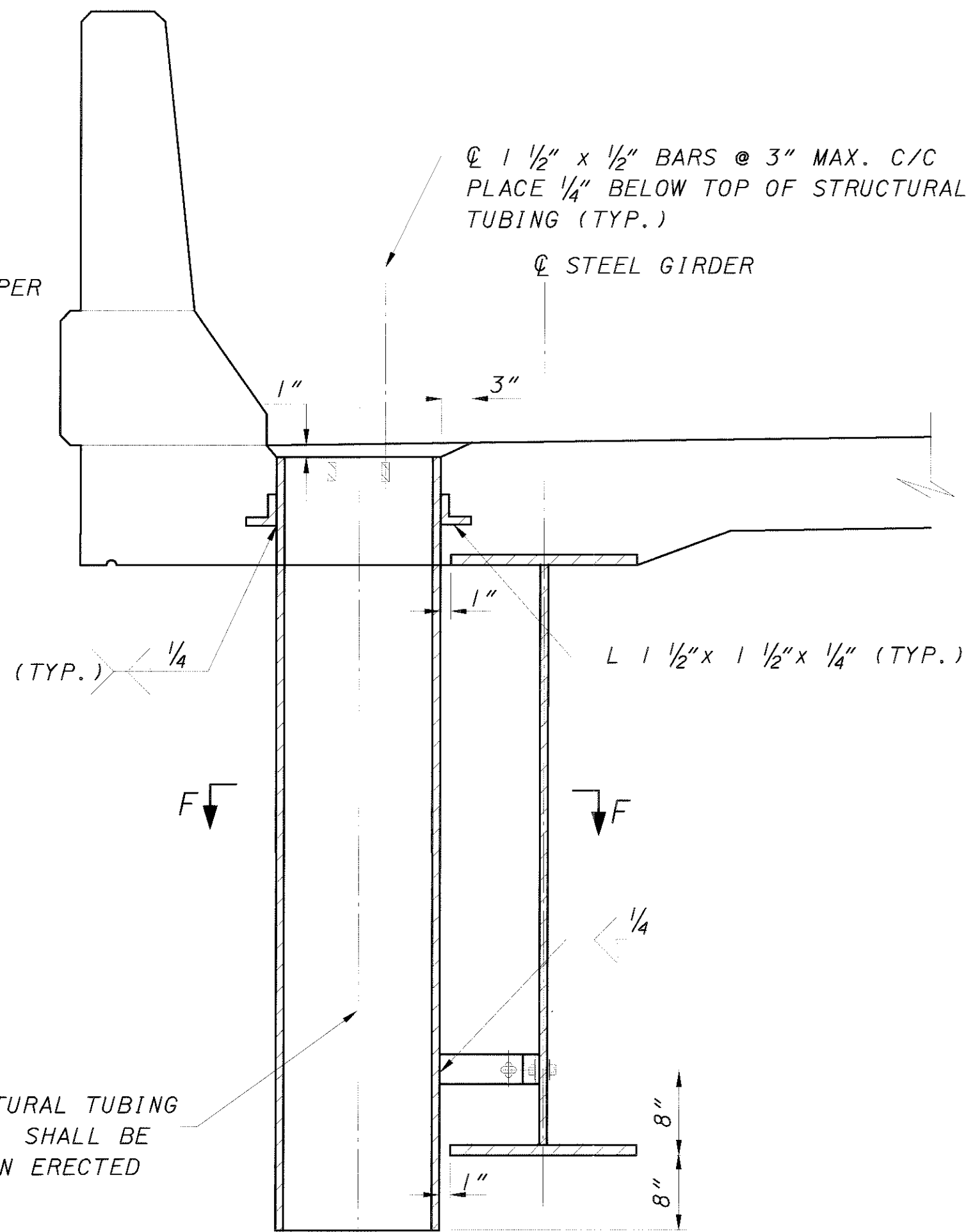




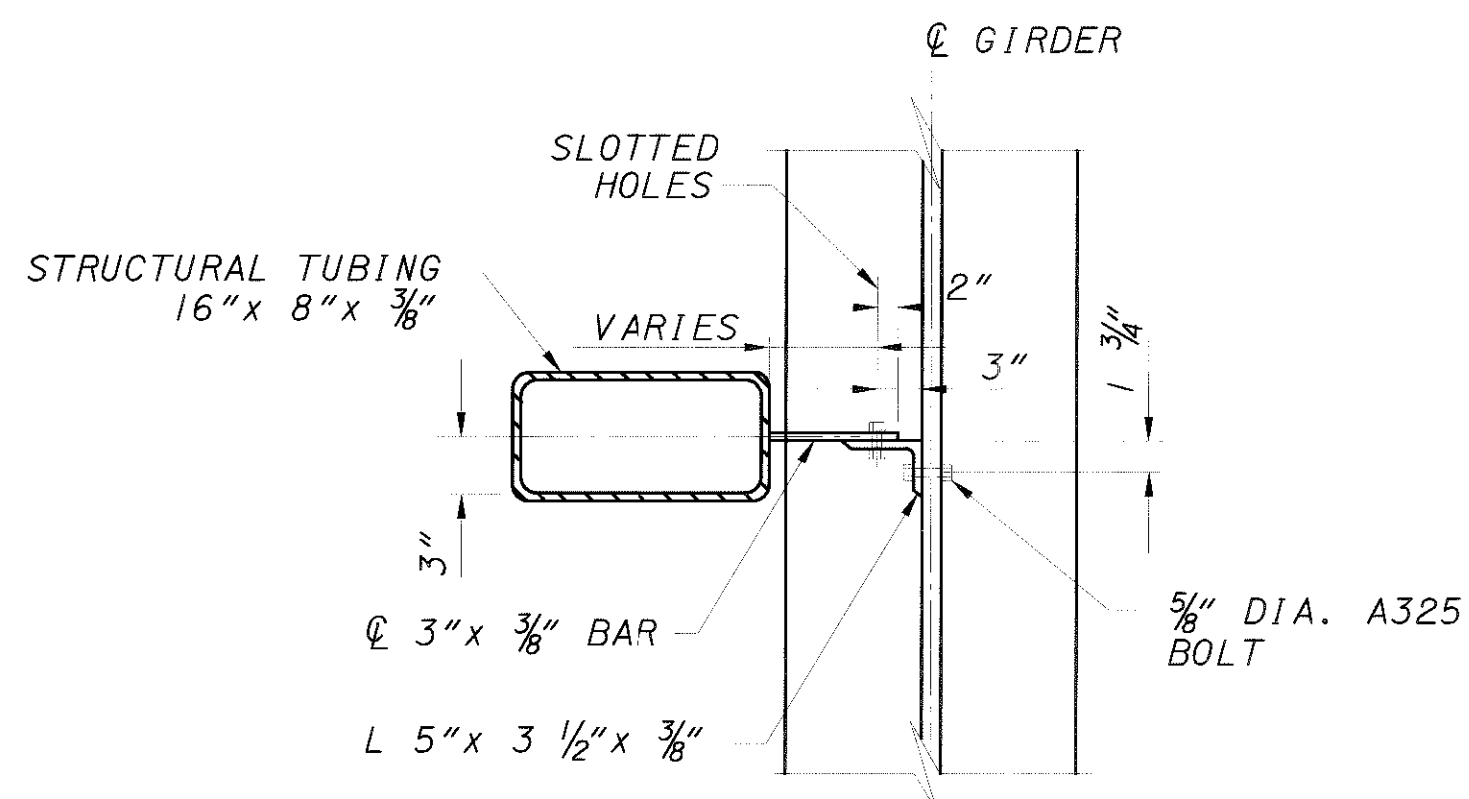
PLAN



SECTION E-E



SECTION D-D

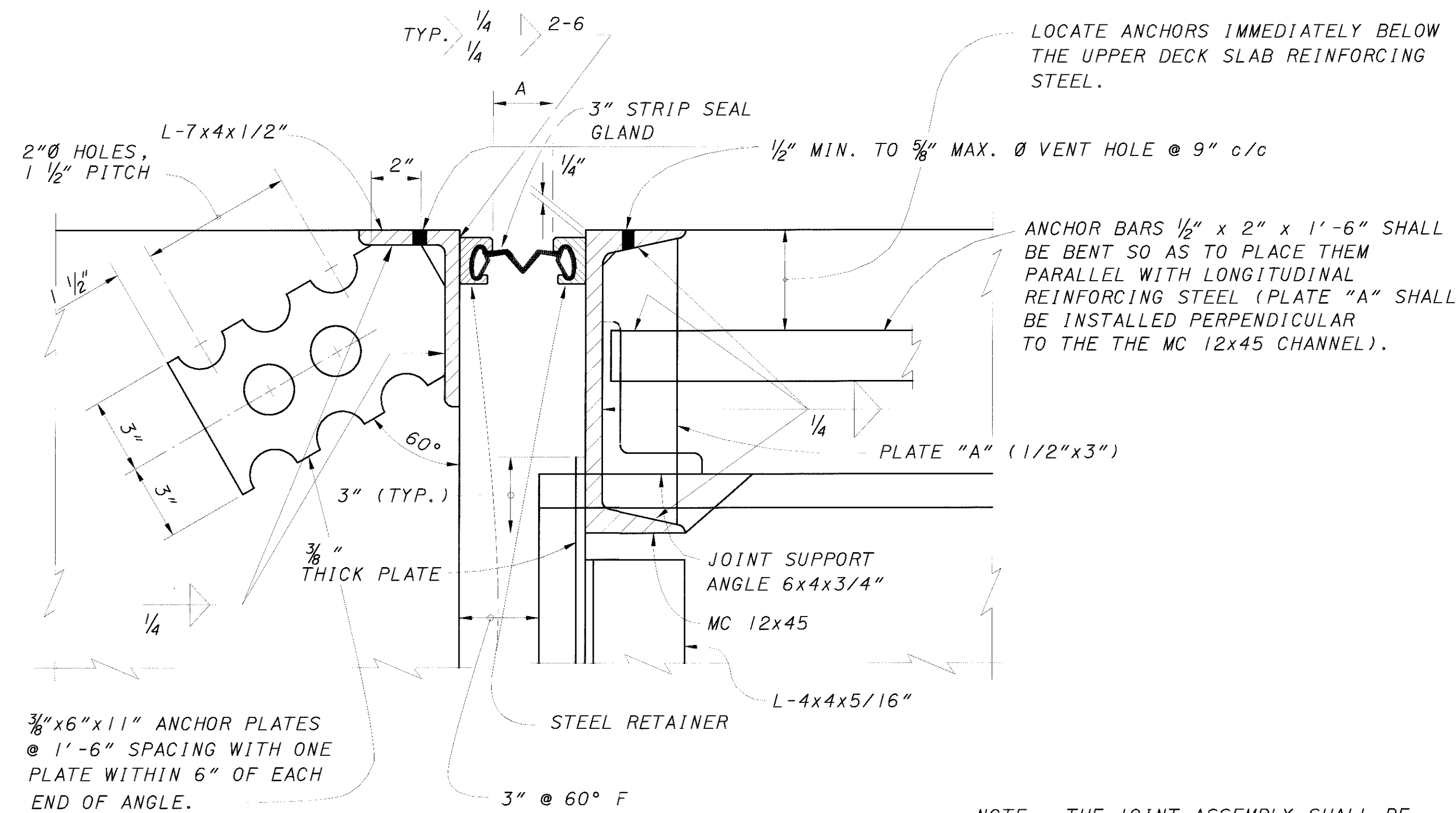


SECTION F-F

**NOTES:**

1. SEE SITE PLAN SHEETS [1/44] THRU [5/44] FOR SCUPPER LOCATIONS.
2. FOR ADDITIONAL DETAILS SEE STANDARD DRAWING GSD-1-96.

SCUPPER DETAILS



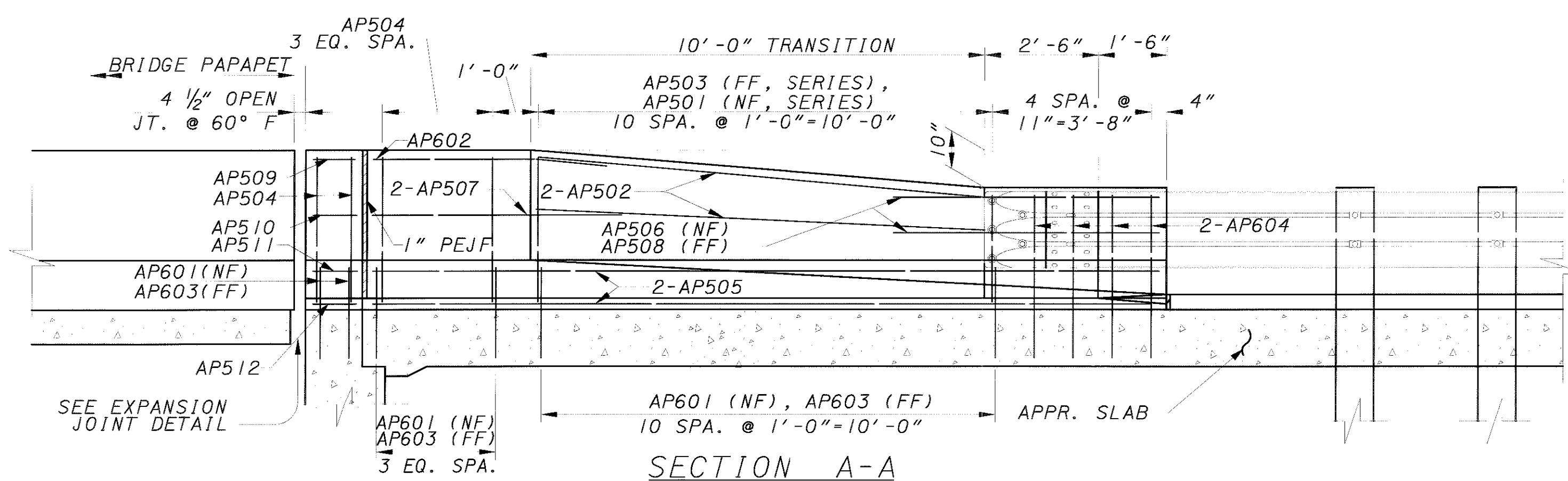
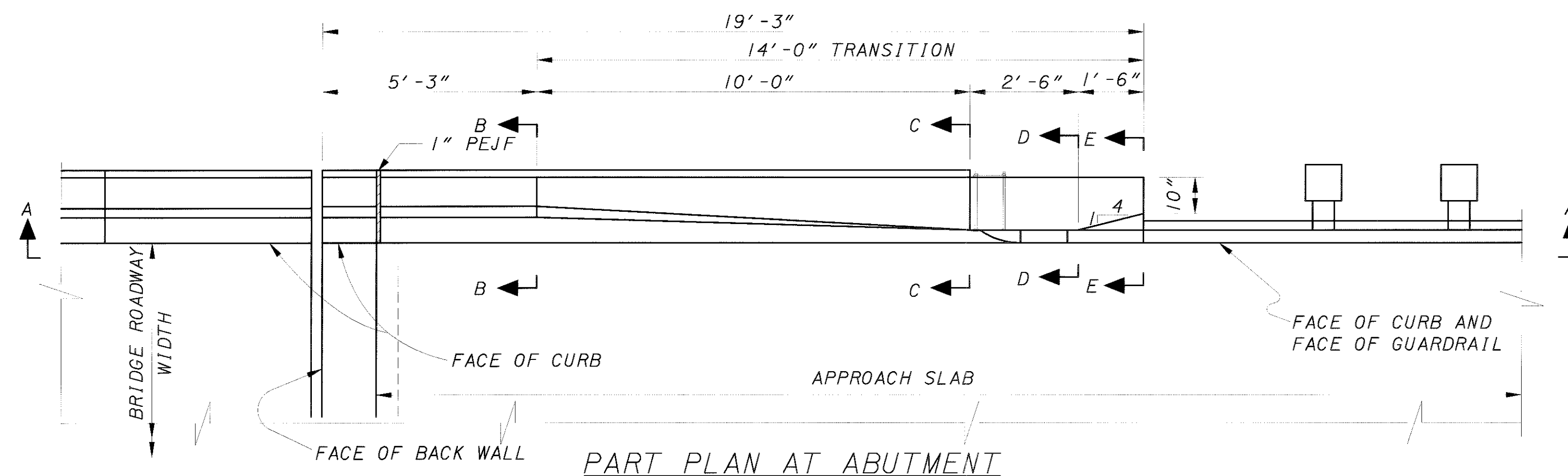
**NOTES:**

FOR ADDITIONAL DECK JOINT DETAILS AND NOTES, REFER TO STD. DWG. EXJ 4-87 AND NOTE TITLED "ITEM 516-STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL - INTERMEDIATE EXPANSION JOINT" ON SHEET [8/44].

| TEMPERATURE | DIMENSION "A" |
|-------------|---------------|
| 30°         | 1 13/16       |
| 40°         | 1 3/4         |
| 50°         | 1 11/16       |
| 60°         | 1 5/8         |
| 70°         | 1 9/16        |
| 80°         | 1 1/2         |
| 90°         | 1 7/16        |

ABUTMENT EXPANSION JOINT DETAIL

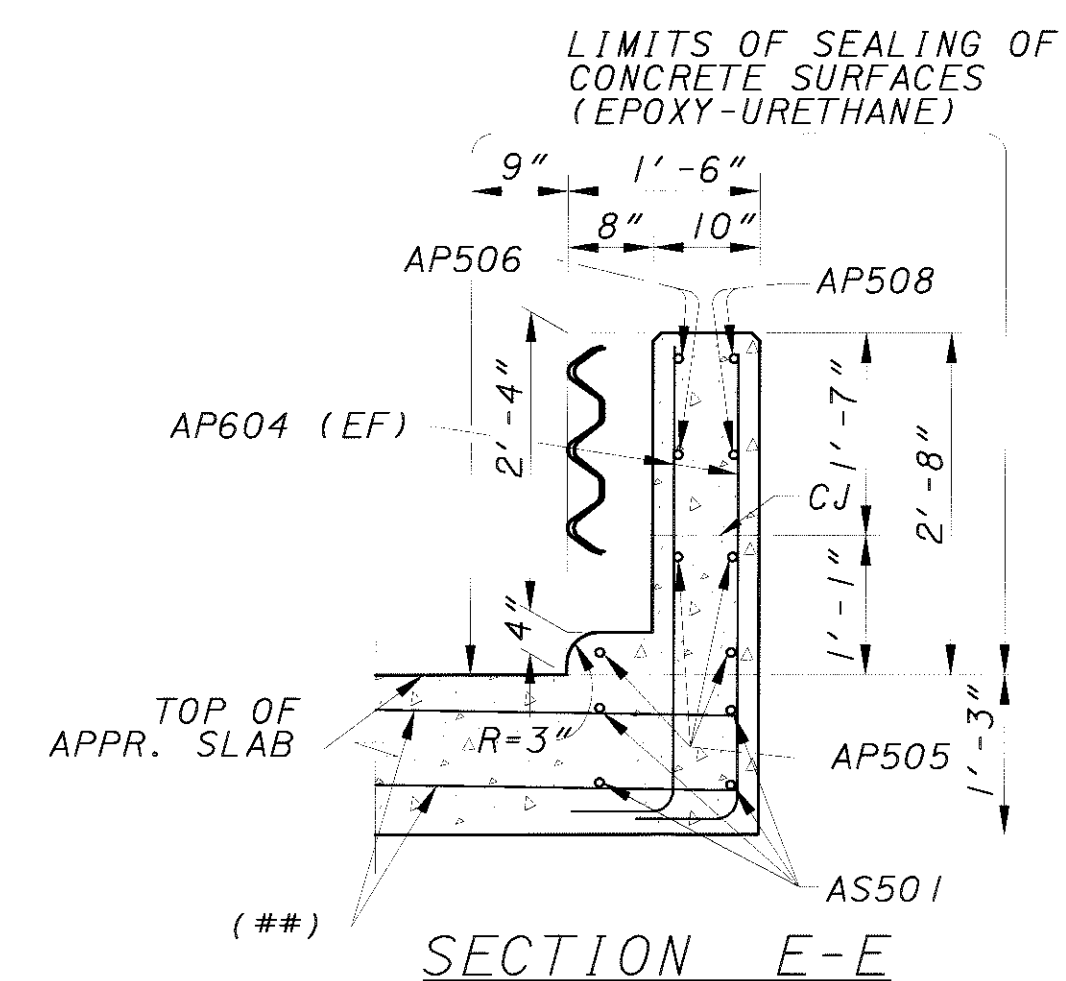
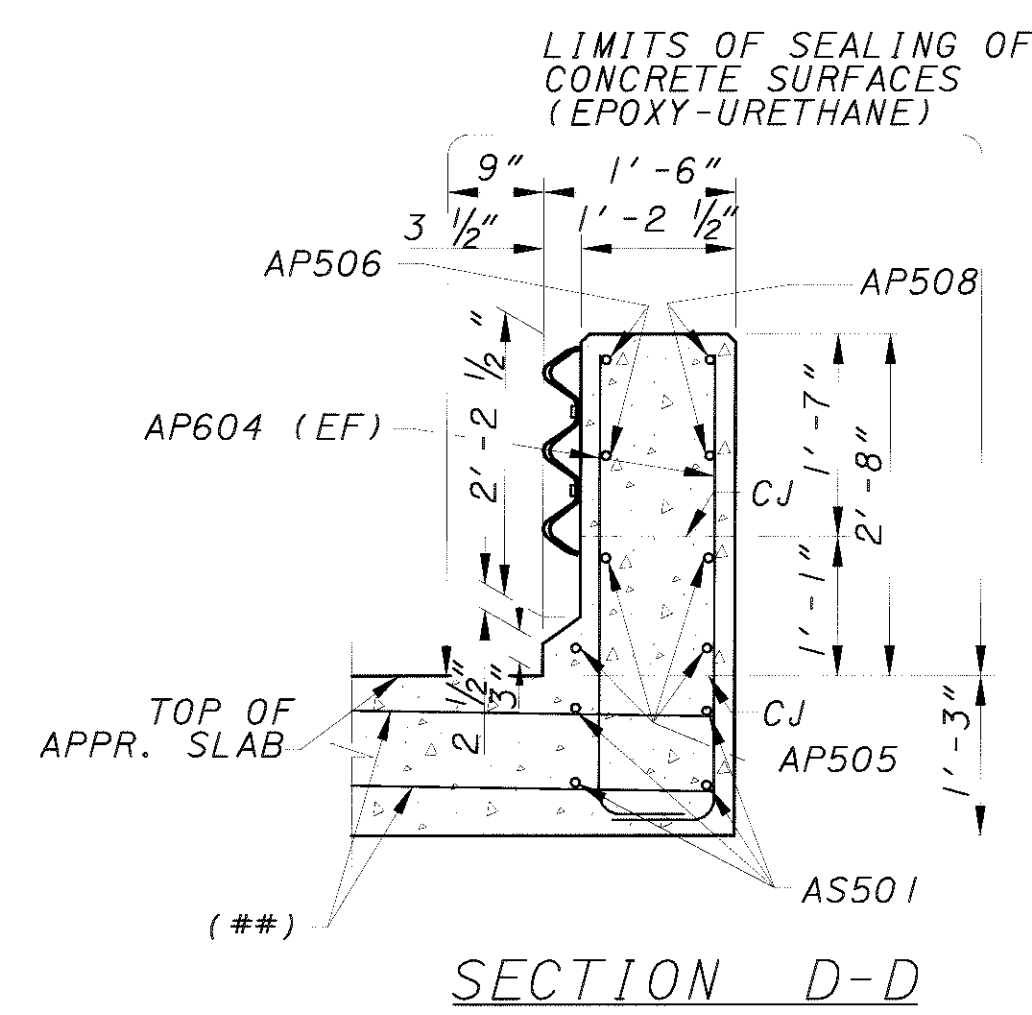
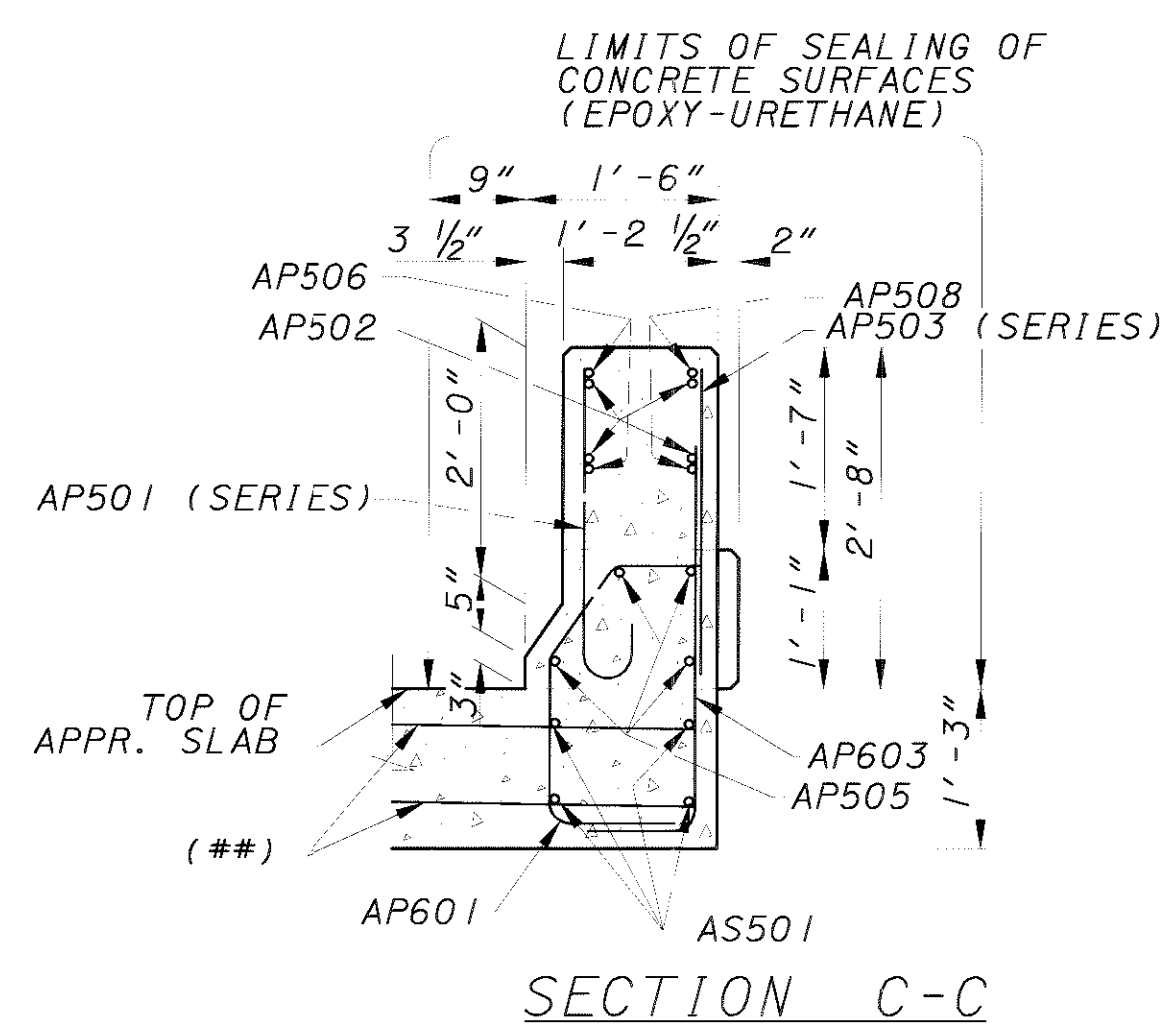
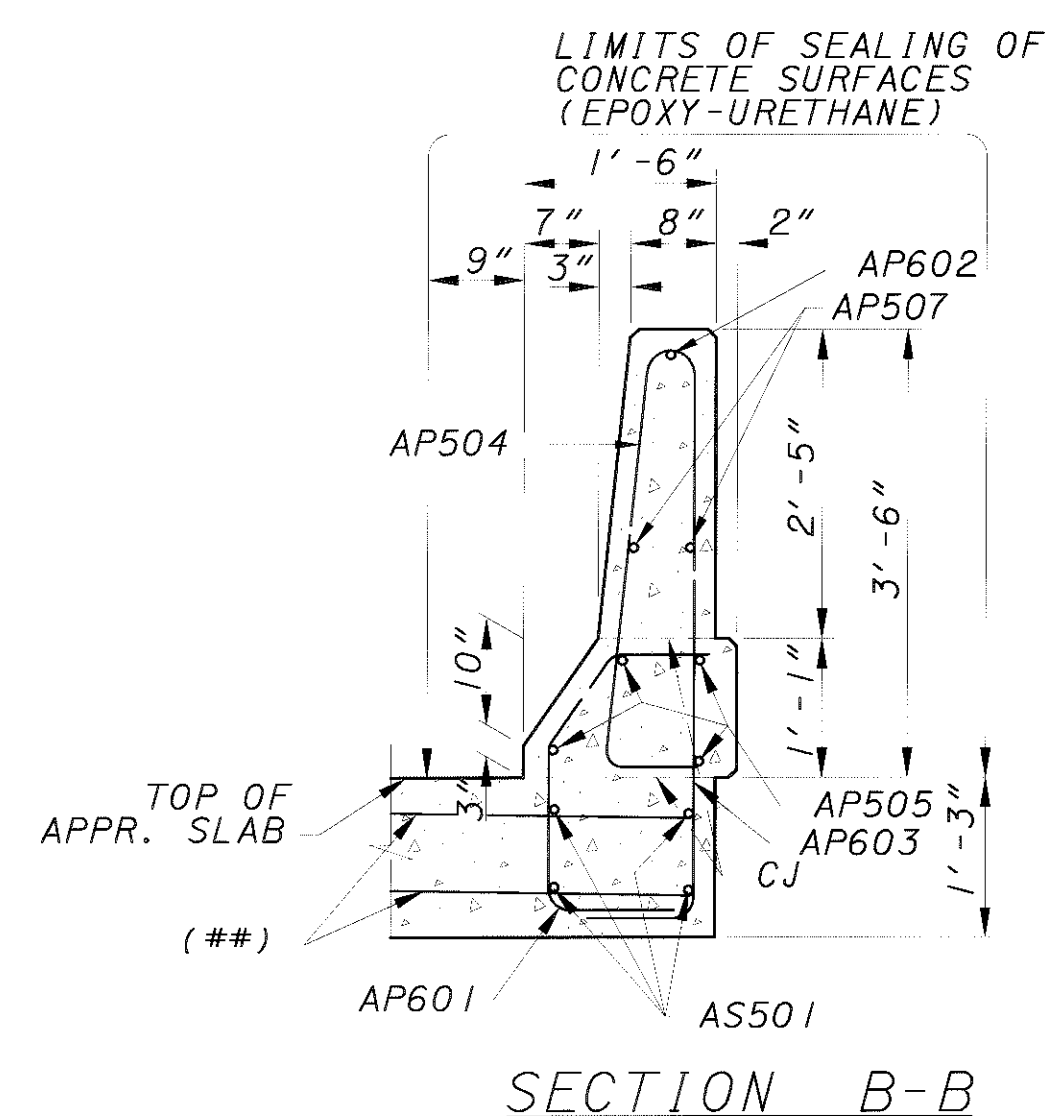
NOTE: THE JOINT ASSEMBLY SHALL BE PLACED SO THAT THE 7x4x1/2" ANGLE AND THE MC 12x45 CHANNEL REMAIN PARALLEL TO EACH OTHER AND PERPENDICULAR TO THE ROADWAY GRADIENT.



| MINIMUM LAP LENGTHS |          |
|---------------------|----------|
| #5                  | = 2'-5"  |
| #6                  | = 2'-11" |

**NOTES:**

1. FOR DETAILS NOT SHOWN REFER TO STD. DWG. BR-1.
  2. ALL LONGITUDINAL BARS IN PARAPET PORTION OF SECTIONS B-B AND C-C ARE S516 BARS UNO.
  3. SEE SECTIONS FOR SEALING OF CONCRETE SURFACES LIMITS.
  4. ALL REINFORCEMENT CLEARANCE SHALL BE 2" MINIMUM.
  5. AS501 BARS IN APPROACH SLAB BELOW PARAPET SHALL BE 17'-8" LONG. INCLUDE PAYMENT WITH ROADWAY ITEM 611 - REINFORCED CONCRETE APPROACH SLAB, AS PER PLAN.
  6. PARAPET ON APPROACH SLAB SHALL BE HIGH PERFORMANCE CONCRETE AS PER ITEM 894. INCLUDE PAYMENT OF APPROACH SLAB PARAPET CONCRETE, SEALING AND REINFORCEMENT WITH ITEM 611 - REINFORCED CONCRETE APPROACH SLAB, AS PER PLAN.
- ## EXTEND APPROACH SLAB TRANSVERSE BARS AS REQUIRED. INCLUDE PAYMENT WITH ITEM 611 - REINFORCED CONCRETE APPROACH SLAB, AS PER PALN.

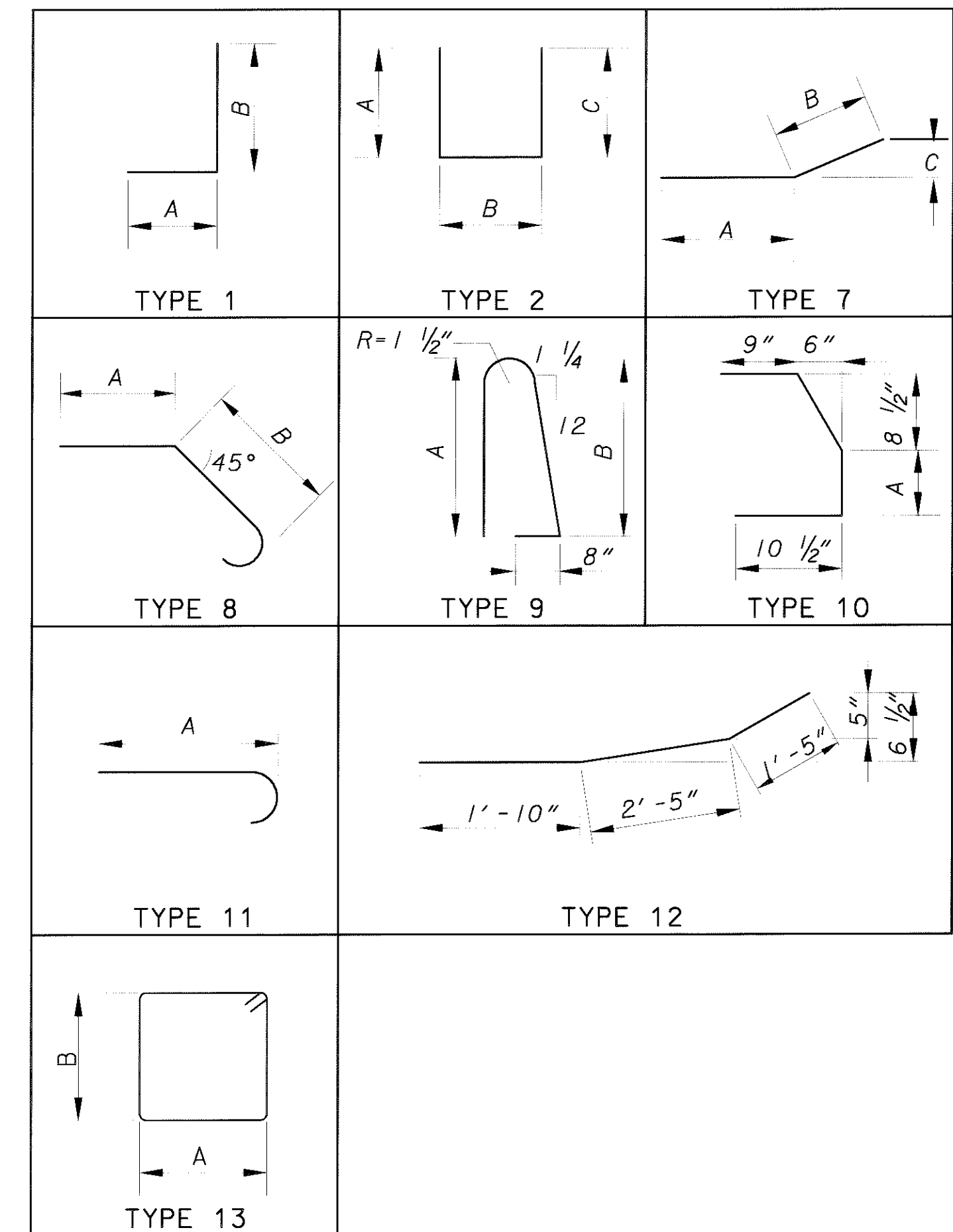


# REINFORCING STEEL LIST

## BENDING DIAGRAMS

| MARK   | REAR | FWD. | TOTAL | LENGTH  | WEIGHT | TYPE | A      | B      | C      | INCR.     |
|--|------|------|-------|---------|--------|------|--------|--------|--------|-----------|
| <b>ABUTMENTS - LEFT BRIDGE</b>                     |      |      |       |         |        |      |        |        |        |           |
| A501   | 24   | 42   | 66    | 28'-8"  | 1973   | STR  |        |        |        |           |
| A502   |      | 38   | 38    | 9'-2"   | 363    | 2    | 3'-0"  | 3'-5"  | 3'-0"  |           |
| A503   | 19   | 19   | 38    | 10'-4"  | 410    | 2    | 2'-7"  | 5'-5"  | 2'-7"  |           |
| A504   |      | 9    | 9     | 6'-9"   | 63     | 1    | 0'-10" | 6'-1"  |        |           |
|  | 2    | 2    | 4     | 7'-0"   |        |      |        |        |        |           |
| A505   | S.O. | S.O. | S.O.  | T0      | 188    | STR  |        |        |        | 2'-10"    |
|  | 4    | 4    | 4     | 15'-6"  |        |      |        |        |        |           |
| A506   | 8    | 10   | 18    | 16'-0"  | 300    | STR  |        |        |        |           |
| A507   | 2    | 2    | 4     | 18'-8"  | 78     | 7    | 13'-2" | 4'-0"  | 1'-9"  |           |
| A508   | 2    | 2    | 4     | 11'-8"  | 49     | STR  |        |        |        |           |
| A509   |      | 6    | 6     | 8'-0"   | 50     | 2    | 3'-5"  | 1'-5"  | 3'-5"  |           |
| A510   | 2    | 2    | 4     | 13'-3"  | 55     | STR  |        |        |        |           |
| A511   | 18   | 20   | 38    | 12'-6"  | 495    | STR  |        |        |        |           |
| A512   |      | 13   | 13    | 7'-5"   | 101    | 1    | 0'-10" | 6'-9"  |        |           |
| A513   | 16   |      | 16    | 8'-11"  | 149    | 1    | 0'-10" | 8'-2"  |        |           |
| A514   | 6    |      | 6     | 5'-6"   | 34     | 1    | 0'-10" | 4'-9"  |        |           |
|  | 1    |      | 1     | 7'-10"  |        |      | 3'-4"  |        | 3'-4"  |           |
| A515   | S.O. | S.O. | S.O.  | T0      | 62     | 2    | T0     | 1'-5"  | T0     | 0'-5"     |
|  | 6    |      | 6     | 12'-0"  |        |      | 5'-5"  |        | 5'-5"  |           |
| A516   | 14   |      | 14    | 6'-8"   | 97     | 2    | 1'-9"  | 3'-5"  | 1'-9"  |           |
| A517   | 18   |      | 18    | 9'-8"   | 181    | STR  |        |        |        |           |
|  |      | 1    | 1     | 9'-3"   |        |      | 4'-1"  |        | 4'-1"  |           |
| A601   |      | S.O. | S.O.  | T0      | 298    | 2    | T0     | 1'-5"  | T0     | 0'-6"     |
|  |      | 13   | 13    | 21'-3"  |        |      | 10'-1" |        | 10'-1" |           |
| A602   |      | 11   | 11    | 21'-1"  | 348    | 2    | 10'-0" | 1'-5"  | 10'-0" |           |
| A603   |      | 9    | 9     | 13'-8"  | 185    | 2    | 6'-1"  | 5'-5"  | 2'-6"  |           |
| A604   | 20   | 12   | 32    | 5'-0"   | 240    | STR  |        |        |        |           |
| A605   | 56   | 56   | 112   | 6'-9"   | 1136   | 2    | 3'-1"  | 0'-11" | 3'-1"  |           |
| A606   | 56   | 56   | 112   | 8'-10"  | 1486   | 2    | 3'-10" | 1'-5"  | 3'-10" |           |
| A607   | 18   | 56   | 74    | 15'-2"  | 1686   | 2    | 7'-0"  | 1'-5"  | 7'-0"  |           |
| A608   | 92   |      | 92    | 7'-0"   | 967    | STR  |        |        |        |           |
| A609   | 11   |      | 11    | 14'-2"  | 234    | 2    | 6'-6"  | 1'-5"  | 6'-6"  |           |
| A610   | 13   |      | 13    | 15'-11" | 311    | 2    | 8'-4"  | 5'-5"  | 2'-6"  |           |
|  | 1    |      | 1     | 3'-5"   |        |      | 1'-2"  |        | 1'-2"  |           |
| A611   | S.O. | S.O. | T0    |         | 172    | 2    | T0     | 1'-5"  | T0     | 0'-5 1/2" |
|  | 13   |      | 13    | 14'-3"  |        |      | 6'-8"  |        | 6'-8"  |           |
| A612   | 16   |      | 16    | 3'-8"   | 88     | STR  |        |        |        |           |
| A613   |      | 64   | 64    | 4'-10"  | 465    | STR  |        |        |        |           |
| A614   | 6    |      | 6     | 12'-4"  | 111    | 2    | 4'-9"  | 5'-5"  | 2'-6"  |           |
| A615   |      | 10   | 10    | 14'-4"  | 215    | 2    | 6'-9"  | 5'-5"  | 2'-6"  |           |
| TOTAL FOR LEFT BRIDGE ABUTMENTS = 14,652 POUNDS ** |      |      |       |         |        |      |        |        |        |           |
| <b>PIERS - LEFT BRIDGE</b>                         |      |      |       |         |        |      |        |        |        |           |
| P501   |      |      | 272   | 10'-11" | 3097   | 2    | 4'-6"  | 2'-2"  | 4'-6"  |           |
| P601   |      |      | 476   | 12'-1"  | 8639   | 2    | 3'-0"  | 6'-5"  | 3'-0"  |           |
| P801   |      |      | 408   | 11'-9"  | 12800  | STR  |        |        |        |           |
| TOTAL FOR LEFT BRIDGE PIERS = 24,536 POUNDS **     |      |      |       |         |        |      |        |        |        |           |

| MARK   | REAR | FWD. | TOTAL | LENGTH  | WEIGHT | TYPE | A      | B      | C     | INCR. |
|--|------|------|-------|---------|--------|------|--------|--------|-------|-------|
| <b>SUPERSTRUCTURE - LEFT BRIDGE</b>                      |      |      |       |         |        |      |        |        |       |       |
| S401   |      |      | 4161  | 30'-0"  | 83,386 | STR  |        |        |       |       |
| S402   |      |      | 114   | 12'-6"  | 1035   | STR  |        |        |       |       |
| S403   |      |      | 114   | 9'-7"   | 794    | STR  |        |        |       |       |
| S404   |      |      | 57    | 11'-10" | 451    | STR  |        |        |       |       |
| S405   |      |      | 36    | 3'-0"   | 72     | STR  |        |        |       |       |
| TOTAL FOR LEFT BRIDGE SUPERSTRUCTURE = 879,892 POUNDS ** |      |      |       |         |        |      |        |        |       |       |
| <b>APPROACH PARAPET - LEFT BRIDGE</b>                    |      |      |       |         |        |      |        |        |       |       |
| AP501  | S.O. | S.O. | S.O.  | T0      | 157    | 11   |        | 2'-5"  |       | 1"    |
|  | 11   | 11   | 11    | 3'-10"  |        |      |        |        | 3'-3" |       |
| AP502  | 8    | 8    | 16    | 10'-0"  | 167    | STR  |        |        |       |       |
|  | 2    | 2    | 4     | 2'-5"   |        |      |        |        |       |       |
| AP503  | S.O. | S.O. | S.O.  | T0      | 130    | STR  |        |        |       | 1"    |
|  | 11   | 11   | 11    | 3'-3"   |        |      |        |        |       |       |
| AP504  | 12   | 12   | 24    | 7'-1"   | 177    | 9    | 3'-0"  | 3'-3"  |       |       |
| AP505  | 8    | 8    | 16    | 17'-8"  | 295    | STR  |        |        |       |       |
| AP506  | 4    | 4    | 8     | 5'-8"   | 44     | 12   |        |        |       |       |
| AP507  | 4    | 4    | 8     | 6'-3"   | 52     | STR  |        |        |       |       |
| AP508  | 4    | 4    | 8     | 5'-8"   | 44     | STR  |        |        |       |       |
| AP509  | 2    | 2    | 4     | 1'-4"   | 6      | 2    | 0'-4"  | 0'-11" | 0'-4" |       |
| AP510  | 2    | 2    | 4     | 3'-4"   | 14     | 13   | 0'-11" | 0'-6"  |       |       |
| AP511  | 2    | 2    | 4     | 3'-10"  | 16     | 13   | 0'-11" | 0'-9"  |       |       |
| AP512  | 2    | 2    | 4     | 4'-8"   | 19     | 13   | 0'-11" | 1'-2"  |       |       |
| TOTAL FOR LEFT BRIDGE APPROACH PARAPETS = 2080 POUNDS ** |      |      |       |         |        |      |        |        |       |       |
| TOTAL FOR LEFT BRIDGE = 921,160 POUNDS **                |      |      |       |         |        |      |        |        |       |       |



**NOTES:**

1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, S501 IS A NO. 5 BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE NOTED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.

2. ALL REINFORCING STEEL SHALL BE EPOXY COATED. PAYMENT FOR REINFORCING BARS SHALL BE INCLUDED WITH APPROPRIATE ITEM 842 OR 894 CONCRETE ITEMS. PAYMENT OF APPROACH PARAPET REINFORCING BARS SHALL BE INCLUDED WITH ROADWAY ITEM 611 REINFORCED CONCRETE APPROACH SLAB, AS PER PLAN.

3. "STR" IN THE TYPE COLUMN INDICATES STRAIGHT BARS.

4. S.O. DENOTES SERIES OF.

5. REFER TO C.M.S. SECTION 509.05 FOR STANDARD BEND DIMENSIONS.

6. ALL REINFORCING STEEL CLEARANCES ARE 2" UNLESS OTHERWISE NOTED.

\*\* FOR INFORMATION PURPOSE ONLY.

REINFORCEMENT GIVEN IS FOR LEFT BRIDGE. REINFORCEMENT FOR RIGHT BRIDGE IS SAME AS LEFT BRIDGE EXCEPT FOR SCUPPER REINFORCEMENT. FOR RIGHT BRIDGE NUMBER OF S405 BARS IS 156.

**REINFORCING STEEL LIST**

BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

**MAH-76-0.86**

37 / 44

89  
102

STEEL OPTION

# ITEM SPECIAL - STRUCTURE, MISC.: METALLIZING THE EXISTING STEEL

## DESCRIPTION

THIS ITEM SHALL CONSIST OF FURNISHING ALL MATERIALS, LABOR AND INCIDENTALS FOR METALLIZING THE EXISTING STEEL SURFACES AS SPECIFIED HEREIN. IT INCLUDES THE METALLIZING AND SEALING OF ALL EXPOSED SURFACES OF EXISTING PIER PILES (FROM LOW WATER ELEVATION TO BOTTOM OF PIER CAPS) AND ALL SUPERSTRUCTURE STEEL TO REMAIN EXCEPT THE SURFACES OF TOP GIRDER FLANGES (TOP AND SIDES) TO BE ENCASED IN CONCRETE. THE AREAS OF TOP GIRDER FLANGES TO BE ENCASED IN CONCRETE WILL NOT BE METALLIZED. THE CONSTRAINT TO METALLIZE THE EXISTING PILES DOWN TO LOW WATER ELEVATION OF 942.0 +/-, WHICH ONLY OCCURS DURING THE PERIOD (JANUARY 1 TO MARCH 15) MAY NECESSITATE THAT METALLIZING OF EXISTING STEEL PILES AND SUPERSTRUCTURE BE PERFORMED IN TWO SEPARATE OPERATIONS.

ALL METALLIZING WORK SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A QUALITY CONTROL SPECIALIST (QCS) EXPERIENCED IN THE FIELD OF METALLIZING. PRIOR TO THE PRE-CONSTRUCTION MEETING OR THE BEGINNING OF ANY WORK ON THIS PROJECT, THE CONTRACTOR SHALL SUBMIT WRITTEN DOCUMENTATION OF THE QCS'S SUCCESSFUL METALLIZING EXPERIENCES WITH BRIDGE STRUCTURAL STEEL IN THE FIELD, INCLUDING: NAME OF FIRM DOING METALLIZING, NUMBER AND LOCATION OF JOBS COMPLETED, AND NUMBER OF YEARS OF EXPERIENCE. HE SHALL POSSESS KNOWLEDGE AND EXPERIENCE IN ALL AREAS OF THE METALLIZING WORK, INCLUDING SURFACE PREPARATION, METALLIZING, AND CLEAR PHENOLIC TOP COAT APPLICATION REQUIRED BY THIS SPECIFICATION. THIS DOCUMENTATION MUST BE REVIEWED, VERIFIED, AND APPROVED BY THE OFFICE OF STRUCTURAL ENGINEERING PRIOR TO BEGINNING THE WORK ON THIS PROJECT.

THE CONTRACTOR IS ADVISED THAT HEATED ENCLOSURES AND WINTER PROTECTION SHALL BE REQUIRED TO PERFORM THE REQUIRED PIER PILE METALLIZING AS DETAILED ON PLAN PAGE 40/44 AND 38/44. THIS REQUIREMENT INCIDENTAL TO THE UNIT BID PROVIDED IN THE PLANS FOR THE METALLIZATION PROCESS OF EXISTING STEEL.

### THE FOLLOWING IS A PARTIAL LIST OF COMPANIES EXPERIENCED IN METALLIZING:

LONG PAINTING CO.  
8025 TENTH AVENUE S.  
SEATTLE, WA 98108

CANNON/SLINE, INC.  
5600 WOODLAND AVENUE  
PHILADELPHIA, PA 19143

POWER SPRAY  
1409 AIR RAIL AVENUE  
VIRGINIA BEACH, VA 23455

NATIONAL THERMAL SPRAY  
117 BROOK AVENUE  
DEER PARK, NY 44301

METALLIZING MASTERS, INC.  
15255 GAZELL DRIVE N.E.  
ALLIANCE, OH 44601

NEWSOME & WORK METALLIZING CO.  
P.O. BOX 2791  
AKRON, OH 44301

TRI-STATE METAL SPRAY & BLASTING, INC.  
5676 ERIE AVENUE N.W.  
CANAL FULTON, OH 44614

### MATERIAL AND SPECIFICATIONS

#### WIRE

THE WIRE USED FOR THE METALLIZING SHALL BE 100% ZINC

#### THICKNESS

THE THICKNESS OF THE METALLIZED COATING SHALL BE 8 - 10 MILS.

#### MANUFACTURER

SUFFICIENT IDENTIFIABLE CHARACTERISTICS OTHER THAN TRADE OR BRAND NAME OR DESIGNATED NUMBER OR SYMBOL SHOULD BE PROVIDED TO PERMIT LABORATORY TEST VERIFICATION OF METAL IDENTITY. EACH CONTAINER OR COIL WRAPPING SHALL BE EXAMINED TO VERIFY THE PRESENCE OF A PROPER LABEL IDENTIFYING COMPONENT TYPE, SUPPLIER, SIZE, BATCH NUMBER AND WIRE LOT NUMBER.

#### MATERIALS, HANDLING & USE

EACH CONTAINER OR COIL SHALL BE EXAMINED FOR DAMAGE. BROKEN OR BENT COILS SHALL BE MARKED, SEGREGATED FOR RETURN AND REMOVED FROM THE MATERIAL AREA. MATERIALS SHALL BE PROMPTLY STOCKED AND/OR ARRANGED IN THE CONTROLLED STORAGE UNIT.

#### PRIOR INSPECTION OF WORK

PROSPECTIVE BIDDERS ARE REQUIRED TO MAKE AN INSPECTION OF THE BRIDGE IN THE FIELD AND TO REVIEW THE PLANS AND SPECIFICATIONS BEFORE SUBMITTING BIDS. SEE SECTION 102.05 OF THE "CONSTRUCTION AND MATERIALS SPECIFICATION".

#### SURFACE PREPARATION

THIS WORK SHALL CONSIST OF SOLVENT CLEANING (IF REQUIRED) AND ABRASIVE CLEANING OF EACH STRUCTURE.

#### SOLVENT CLEANING

IF EVIDENCE OF OIL, GREASE OR OTHER OIL BASED CONTAMINANTS EXISTS, THE BRIDGE SHALL BE SOLVENT CLEANED TO REMOVE ALL TRACES OF ASPHALTIC CEMENT, OIL GREASE, DIESEL FUEL DEPOSITS AND OTHER SOLUBLE CONTAMINANTS (SEE SSPC-SP 1, SOLVENT CLEANING FOR RECOMMENDED PRACTICES). UNDER NO CIRCUMSTANCES SHALL ANY ABRASIVE BLASTING BE DONE TO AREAS WITH ASPHALTIC CEMENT, OIL, GREASE OR DIESEL FUEL DEPOSITS. ALL SOLVENT CLEANED AREAS SHALL BE SUBSEQUENTLY WASHED BEFORE ABRASIVE BLASTING AS DETAILED BELOW.

WASHING SHALL BE ACCOMPLISHED WITH POTABLE WATER HAVING A NOZZLE PRESSURE OF AT LEAST 1000 PSI AND A DELIVERY RATE OF NOT LESS THAN 4 GALLONS PER MINUTE. THE CONTRACTOR SHALL PROVIDE EQUIPMENT SPECIFICATIONS TO VERIFY THE ABOVE.

THE EQUIPMENT SHALL ALSO BE EQUIPPED WITH GAUGES TO VERIFY THE PRESSURE. THE NOZZLE SHALL BE HELD AT A MAXIMUM OF TWELVE (12) INCHES FROM THE SURFACE BEING WASHED.

## CONTAINMENT/WASTE DISPOSAL

WASTE MATERIAL GENERATED BY ABRASIVE BLASTING OPERATIONS SHALL BE HANDLED AS STATE. FOLLOWS:

1. CONTAINED
2. COLLECTED
3. STORED
4. EVALUATED
5. PROPERLY DISPOSED

ALL EQUIPMENT SHALL BE PARKED ON GROUND COVERS FREE OF CUTS, TEARS OR HOLES TO PREVENT CONTAMINATION OF PAVEMENT OR SOIL AND TO PROTECT AREA UNDER AND AROUND EQUIPMENT.

THE CONTRACTOR SHALL ERECT AN ENCLOSURE TO COMPLETELY SURROUND (AROUND AND UNDER) THE BLASTING OPERATIONS. THE GROUND CANNOT BE USED AS THE BOTTOM OF THE ENCLOSURE UNLESS COMPLETELY COVERED WITH PLASTIC OR TARPS.

THE ENCLOSURE SHALL BE CONSTRUCTED OF FLEXIBLE MATERIALS SUCH AS TARPAULINS OR CONTAINMENT SCREENS (SPECIFICALLY DESIGNED FOR THIS PURPOSE), OR OF RIGID MATERIALS SUCH AS PLYWOOD. ALL MATERIALS SHALL BE MAINTAINED FREE OF TEARS, CUTS OR HOLES; HOWEVER, FLEXIBLE MATERIAL USED FOR THE SIDES OF THE ENCLOSURE ONLY MAY BE WOVEN TO CONTAIN A MAXIMUM OF 15% HOLES AND A MINIMUM OF 85% MATERIAL. ALL SEAMS SHALL BE OVERLAPPED A MINIMUM OF 6" AND FASTENED TOGETHER AT 12" CENTERS, OR FASTENED AND OVERLAPPED IN A MANNER THAT INSURES A SEAL WHICH DOES NOT ALLOW OPENINGS BETWEEN THE SCREENS IN THE CONTAINMENT. THE VERTICAL SIDES OF THE ENCLOSURE SHALL EXTEND COMPLETELY UP TO THE BOTTOM OF THE DECK ON A STEEL BEAM BRIDGE AND UP TO AND OVER TOP OF A TRUSS BRIDGE. BULKHEADS SHALL BE USED BETWEEN BEAMS TO ENCLOSE THE BLASTING AREA.

ALL DEBRIS COLLECTED BY THIS OPERATION, REMOVED FROM EQUIPMENT OR FILTERS, OR THAT HAS FALLEN TO THE GROUND, SHALL BE COLLECTED AND STORED AT THE BRIDGE SITE, IF PRACTICAL, FOR TESTING, EVALUATION AND DISPOSAL. IF NOT PRACTICAL, AN ALTERNATE LOCATION SHALL BE MUTUALLY AGREED UPON BY THE ENGINEER AND CONTRACTOR. ADDITIONALLY, CENTRALIZED CLEANING STATIONS FOR RECYCLABLE STEEL GRIT (IF USED) SHALL BE SET UP AT A LOCATION MUTUALLY AGREED UPON BY THE CONTRACTOR AND ENGINEER. STORAGE SHALL BE IN STEEL CONTAINERS WHICH SHALL HAVE LIDS WHICH SHALL BE LOCKED AT THE END OF EACH WORKDAY.

THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A TESTING LABORATORY TO OBTAIN DIRECTLY FROM THE PROJECT SITE AND EVALUATE A COMPOSITE REPRESENTATIVE SAMPLE OF THE ABRASIVE BLASTING DEBRIS FOR EACH BRIDGE SITE.

THE COMPOSITE SAMPLE SHALL CONSIST OF INDIVIDUAL SAMPLES TAKEN FROM ALL CONTAINERS THAT ARE ON THE SITE AT THE TIME OF THE SAMPLING. THESE INDIVIDUAL SAMPLES SHALL BE BLENDED TOGETHER TO COMPRISE ONE COMPOSITE SAMPLE. THE INDIVIDUAL SAMPLES SHALL BE OF EQUAL SIZE. THERE SHALL BE ONE INDIVIDUAL SAMPLE TAKEN FROM EACH DRUM AND FOUR RANDOMLY SPACED INDIVIDUAL SAMPLES TAKEN FROM EACH CONTAINER OTHER THAN DRUMS.

THE INDIVIDUAL SAMPLES SHALL BE TAKEN WITH STAINLESS STEEL TOOLS AND PLACED INTO EITHER CLEAN GLASS OR PLASTIC CONTAINERS.

ALL SAMPLING SHALL BE DONE IN THE PRESENCE OF THE ENGINEER. IN ADDITION TO THE ABOVE MENTIONED REQUIREMENTS, THE SAMPLING SHALL ALSO COMPLY WITH THE REQUIREMENTS OF U.S. EPA PUBLICATION SW 846.

A CHAIN OF CUSTODY MUST ALSO ACCOMPANY ALL COMPOSITE SAMPLES. INCLUDED IN THIS DOCUMENT SHALL BE THE NAME OF THE PERSON TAKING THE SAMPLE, THE COMPANY FOR WHICH HE WORKS, THE DATE AND TIME THAT THE SAMPLE WAS TAKEN, THE BRIDGE FROM WHICH IT WAS TAKEN, THE TOWNSHIP AND MUNICIPALITY WHERE THE BRIDGE IS LOCATED, AND SIGNATURES OF ALL PERSONS INVOLVED IN THE CHAIN OF CUSTODY, INCLUDING DATES OF POSSESSION.

THE SAMPLING SHALL BE DONE WITHIN THE FIRST WEEK OF PRODUCTION BLASTING. IF THE SAMPLING IS NOT DONE WITHIN THE TIME ALLOTTED ABOVE, ALL BLASTING AND COATING OPERATIONS ON THE BRIDGE FROM WHICH WASTE WAS GENERATED SHALL PROMPTLY CEASE.

THE COMPOSITE SAMPLE SHALL BE TESTED FOR LEAD AND CHROMIUM IN ACCORDANCE WITH U.S. EPA PUBLICATION SW 846. THE TEST RESULTS AND CHAIN OF CUSTODY RECORDS SHALL IMMEDIATELY BE FORWARDED TO THE DIRECTOR. IF THE MATERIAL IS HAZARDOUS, THE CONTRACTOR SHALL ALSO FORWARD THE NAMES OF THE HAULER AND TREATMENT FACILITY TO THE DIRECTOR. ANY ADDITIONAL TESTING REQUIRED BY THE HAULER, TREATMENT FACILITY OR LANDFILL WILL BE PAID FOR BY CONTRACTOR.

ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL PROTECTION LAWS, REGULATIONS AND ORDINANCES INCLUDING, BUT NOT LIMITED TO, AIR QUALITY, WASTE CONTAINMENT AND WASTE REMOVAL MUST BE OBSERVED DURING THE PERFORMANCE OF THIS CONTRACT.

IN RESPECT TO ENFORCEMENT OF THE ABOVE MENTIONED LAWS, BIDDERS ARE ADVISED THAT VARIOUS GOVERNMENTAL BODIES HAVE THIS RESPONSIBILITY. IT IS THE RESPONSIBILITY OF THE BIDDERS TO COMPLY WITH THOSE LAWS AS ENFORCED BY THOSE VARIOUS GOVERNMENTAL BODIES.

THE EXISTING PAINT BEING REMOVED FROM THESE BRIDGES MAY CONTAIN LEAD OR CHROMIUM. THE CONTRACTOR IS RESPONSIBLE TO ASSURE THAT WORKERS TAKE PROPER SAFETY PRECAUTIONS WHEN WORKING IN THIS ENVIRONMENT (SEE BID PROPOSAL NOTE ENTITLED "SAFETY").

|  |          |           |                     |
|--|----------|-----------|---------------------|
| REVISIONS  | DATE     | BY        | DESCRIPTION         |
| GEA  | 11/30/00 | CLH       | 5002702L & 5002737R |
| CLH  |          |           |                     |
| KVB  |          |           |                     |
| ASB/CLH  |          |           |                     |
| <b>METALLIZING THE EXISTING STEEL-PLAN NOTES</b> |          |           |                     |
| BRIDGE NO. MAH-76-0091 L & R                     |          |           |                     |
| I-76 OVER LAKE MILTON                            |          |           |                     |
| <b>MAH-76-0.86</b>                               |          |           |                     |
| 38 / 44  |          | 90<br>102 |                     |
| <b>STEEL OPTION</b>                              |          |           |                     |

BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

# ITEM SPECIAL - STRUCTURE, MISC.: METALLIZING THE EXISTING STEEL (CONT.)

## HAZARDOUS WASTE

IF THE TESTS REVEAL THAT THE MAXIMUM CONCENTRATION OF EITHER LEAD OR CHROMIUM EXCEEDS 5.0 MILLIGRAMS PER LITER, THE WASTE SHALL BE TREATED AS A HAZARDOUS WASTE AND THE STEEL CONTAINERS SHALL BE LABELED AS A HAZARDOUS WASTE. THE DIRECTOR WILL THEN OBTAIN A GENERATOR NUMBER ASSIGNED TO THE STATE.

ALL CONTAINERS OF WASTE MATERIAL WHICH HAVE BEEN CLASSIFIED AS HAZARDOUS SHALL BE STORED IN A SECURED LOCATION UNTIL PROPER DISPOSAL. THE STORAGE SITE SHALL BE SURROUNDED WITH 5'-0" HIGH CHAIN LINK FENCE FABRIC SUPPORTED BY TRAFFIC SIGN DRIVE POSTS AT 10' C/C. DRIVE POSTS SHALL BE EMBEDDED INTO THE GROUND AT LEAST 2'-0" DEEP. THE FENCING SHALL BE SECURED WITH PADLOCKS AT THE END OF EACH DAY. SIGNS SHALL BE POSTED IN OBVIOUS LOCATIONS ON THE ENCLOSURE WARNING OF THE HAZARDOUS MATERIAL.

THE CONTRACTOR SHALL THEN ARRANGE FOR HAULING, TREATING AND DISPOSAL OF ALL HAZARDOUS WASTE. ALL HAZARDOUS WASTE SHALL BE DISPOSED OF AFTER THE DIRECTOR HAS OBTAINED A GENERATOR NUMBER. IN EVERY CASE, ANY AND ALL HAZARDOUS WASTE SHALL BE DISPOSED OF WITHIN SIXTY DAYS AFTER IT IS GENERATED. FAILURE TO COMPLY WITH THE SIXTY (60) DAY DISPOSAL REQUIREMENT SHALL BE CONSIDERED BY THE DEPARTMENT AS A BREACH OF CONTRACT BY THE CONTRACTOR AND ALL ABRASIVE BLASTING AND COATING OF STRUCTURAL STEEL ON THE PROJECT SHALL IMMEDIATELY CEASE UNTIL THE HAZARDOUS WASTE IS PROPERLY DISPOSED. UPON SUCH BREACH, THE DEPARTMENT SHALL CEASE PROCESSING ALL PAY ESTIMATES AND NOTIFICATION OF THE BREACH SHALL BE SENT TO THE CONTRACTOR'S SURETY. FURTHER, ANY FINES OR LIENS ACCESSED BY ANY GOVERNMENTAL AGENCY WHICH HAS JURISDICTION OVER THE DISPOSAL OF THIS MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE HAULING AND DISPOSAL SHALL BE BY A FIRM LICENSED BY U.S. EPA AND WHO SHALL ALSO BE RESPONSIBLE FOR PROVIDING THE UNIFORM HAZARDOUS WASTE MANIFEST (EPA FORM 8700-22A).

THE CONTRACTOR SHALL DECONTAMINATE OR DISPOSE OF ALL COLLECTION/CONTAINMENT EQUIPMENT IN ACCORDANCE WITH EPA GUIDELINES.

## NON-HAZARDOUS SOLID WASTE

IF THE WASTE IS DETERMINED TO BE NON-HAZARDOUS AS VERIFIED BY TEST RESULTS WHICH HAVE BEEN REVIEWED BY THE DIRECTOR, IT SHALL BE HAULED AND DISPOSED OF AT A FACILITY WHICH IS LICENSED TO ACCEPT NON-HAZARDOUS SOLID WASTE. PRIOR TO DISPOSAL OF ANY MATERIAL, THE CONTRACTOR SHALL SUBMIT THE TEST RESULTS AND THE NAME AND ADDRESS OF THE PROPOSED DISPOSAL FACILITY TO THE DIRECTOR FOR APPROVAL. THE CONTRACTOR SHALL OBTAIN AND PROVIDE THE ENGINEER WITH A RECEIPT DOCUMENTING DISPOSAL OF WASTE MATERIAL AT THE APPROVED LANDFILL.

## ABRASIVE BLASTING

ALL STEEL TO BE COATED SHALL BE BLAST-CLEANED ACCORDING TO SSPS-SP10 AND AS SHOWN SSPC-VIS 1-89 (PICTORIAL SURFACE PREPARATION STANDARDS FOR PAINTING STEEL SURFACES). STEEL SHALL BE MAINTAINED IN A BLAST-CLEANED CONDITION UNTIL IT HAS BEEN METALLIZED.

THE BACK SIDES OF END CROSS FRAME ASSEMBLIES WHICH ARE 3" OR CLOSER TO BACKWALLS MAY BE COMMERCIAL BLAST-CLEANED ACCORDING TO SSPC-SP6.

GALVANIZED STEEL (INCLUDING CORRUGATED STEEL BRIDGE FLOORING), ADJACENT CONCRETE WHICH HAS BEEN COATED OR SEALED, AND OTHER SURFACES NOT INTENDED TO BE COATED, SHALL BE COVERED AND PROTECTED TO PREVENT DAMAGE FROM BLASTING AND METALLIZING OPERATIONS. ANY ADJACENT COATINGS DAMAGED DURING THE BLASTING OPERATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

THE ABRASIVE SHALL BE A RECYCLABLE STEEL GRIT. AFTER EACH USE AND PRIOR TO REUSE, THE STEEL GRIT SHALL BE CLEANED OF PAINT CHIPS, RUST, MILL SCALE AND OTHER FOREIGN MATERIAL BY EQUIPMENT SPECIFICALLY DESIGNED FOR SUCH CLEANING.

ABRASIVES SHALL ALSO BE CHECKED FOR OIL CONTAMINATION BEFORE USE. A SMALL SAMPLE OF ABRASIVES SHALL BE ADDED TO ORDINARY TAP WATER. ANY DETECTION OF AN OIL FILM ON THE SURFACE OF THE WATER SHALL BE CAUSE FOR REJECTION. THIS TEST SHALL BE CONDUCTED ON EACH LOAD OF ABRASIVES DELIVERED TO THE JOB SITE.

THE RESULTANT SURFACE PROFILE SHALL BE A MINIMUM OF TWO (2) MILS AND A MAXIMUM OF THREE AND ONE HALF (3.5) MILS. ABRASIVES OF A SIZE SUITABLE TO DEVELOP THE REQUIRED SURFACE PROFILE SHALL BE USED. ANY ABRASIVE BLASTING WHICH IS DONE WHEN THE STEEL TEMPERATURE IS LESS THAN 5 DEGREES ABOVE THE DEW POINT SHALL BE REBLASTED WHEN THE STEEL TEMPERATURE IS AT LEAST 5 DEGREES ABOVE THE DEW POINT. DEW POINT SHALL BE DEFINED AS THE TEMPERATURE AT WHICH MOISTURE CONDENSES ON THE STEEL SURFACES.

WHILE CONTAINMENT ENCLOSURES ARE IN PLACE, ALL ABRASIVES AND RESIDUE SHALL BE REMOVED FROM SURFACES TO BE METALLIZED BY DOUBLE BLOWING. DOUBLE BLOWING SHALL CONSIST OF TWO COMPLETELY SEPARATE PASSES. THE TOP SURFACES OF ALL STRUCTURAL STEEL, INCLUDING TOP AND BOTTOM FLANGES, LONGITUDINAL STIFFENERS, SPLICE PLATES, HANGERS, ETC., SHALL THEN BE VACUUMED. THE VACUUM SYSTEM SHALL BE EQUIPPED WITH A BRUSH TYPE CLEANING TOOL. ALL STEEL BLAST-CLEANED IN ANY ONE DAY SHALL BE KEPT DUST FREE AND COATED THE SAME DAY. FAILURE TO COAT THE SAME DAY WILL REQUIRE REBLASTING BEFORE COATING. NO DUST OR ABRASIVES FROM ADJACENT WORK SHALL BE LEFT ON THE FINISH COAT.

THE COMPRESSED AIR SOURCE SHALL BE TESTED TO INSURE THAT THE AIR IS NOT CONTAMINATED: BLOW AIR FROM THE NOZZLE FOR THIRTY (30) SECONDS ONTO A WHITE CLOTH OR BLOTTER HELD IN A RIGID FRAME. IF ANY OIL OR OTHER CONTAMINANTS ARE PRESENT ON THE CLOTH OR BLOTTER, ABRASIVE BLASTING SHALL BE SUSPENDED UNTIL

THE PROBLEM IS CORRECTED AND THE OPERATION IS VERIFIED BY ANOTHER TEST. THIS TEST SHALL BE DONE AT THE START OF EACH SHIFT AND AT FOUR (4) HOUR INTERVALS. THE ABRASIVE SHALL BE TESTED FOR OIL CONTAMINATION AT THE SAME TIME.

THE MATERIAL SAFETY DATA SHEET (MSDS) SHALL BE PROVIDED AT THE PRECONSTRUCTION MEETING FOR ALL ABRASIVES TO BE USED ON THIS PROJECT. NO WORK SHALL START UNTIL THE MSDS HAS BEEN SUBMITTED.

## FINES, TEARS, SLIVERS

ALL FINES, TEARS, SLIVERS OR ANY OTHER BURRED OR SHARP EDGES THAT BECOME EVIDENT AFTER ABRASIVE BLASTING SHALL BE REMOVED BY GRINDING. ALL GROUND SURFACES SHALL BE RETEXTURED TO PRODUCE A PROFILE OF 2 TO 3.5 MILS.

## JOB SITE VISUAL STANDARDS

JOB SITE VISUAL STANDARDS INCLUDE PREPARATION OF TEST SECTION, SUBSEQUENT TEST SECTION, AND PHOTOGRAPHS OF APPROVED TEST SECTION. JOB SITE VISUAL STANDARDS SHALL BE USED IN ADDITION TO THE SSPC-VIS-1-89 STANDARD FOR BLASTING. BEFORE ANY ABRASIVE BLASTING IS STARTED, THE CONTRACTOR WILL PREPARE A TEST SECTION ON THE FIRST BRIDGE TO BE COATED. THE TEST SECTION WILL BE A REPRESENTATIVE AREA TO BE BLAST-CLEANED (APPROXIMATELY 20 - 30 SQ. FT.). THE TEST SECTION AREA SHALL BE PHOTOGRAPHED AND THE STEEL SURFACE CHECKED FOR THE PROPER PROFILE AFTER THE ENGINEER AND THE CONTRACTOR AGREE THAT THE AREA HAS BEEN BLAST-CLEANED ACCORDING TO PLAN REQUIREMENTS. ONLY AFTER A TEST SECTION AREA HAS BEEN APPROVED AND DOCUMENTED BY PHOTOGRAPHS AND REPLICA TAPE MAY THE CONTRACTOR PROCEED WITH HIS BLAST-CLEANING OPERATIONS. THE JOB SITE VISUAL STANDARDS (PHOTOGRAPHS) SHALL BE USED IN ADDITION TO PLAN SPECIFICATIONS TO DETERMINE ACCEPTANCE OF BLAST-CLEANING PROCEDURES, BUT IN ALL CASES OF DISPUTE, THE SSPC-VIS-1-89 STANDARD SHALL GOVERN. IF, IN THE OPINION OF THE CONTRACTOR OR ENGINEER, A SUBSEQUENT BRIDGE IS NOT INDICATIVE OF THE BRIDGE ON WHICH THE TEST SECTION WAS PERFORMED, HE MAY REQUEST ANOTHER TEST SECTION.

## TESTING EQUIPMENT

THE CONTRACTOR SHALL PROVIDE THE ENGINEER THE FOLLOWING TESTING EQUIPMENT IN GOOD WORKING ORDER, FOR THE DURATION FOR THE PROJECT. WHEN THE CONTRACTOR'S PEOPLE ARE WORKING AT DIFFERENT LOCATIONS SIMULTANEOUSLY, ADDITIONAL TEST EQUIPMENT SHALL BE PROVIDED FOR EACH CREW FOR THE TYPE OF WORK BEING PERFORMED. WHEN NO TEST EQUIPMENT IS AVAILABLE, NO WORK SHALL BE PERFORMED.

1. A CAMERA WITH THE FOLLOWING FEATURES AND 5 (UNLESS OTHERWISE SPECIFIED ON PLANS) ROLLS OF COLOR FILM
  - A) USES SELF DEVELOPING COLOR PRINT FILM
  - B) LENS WITH AUTO FOCUS SYSTEM
  - C) FOCUSES FROM TWO (2) FEET TO INFINITY
  - D) BUILT-IN FULL FLASH
2. ONE (1) SPRING MICROMETER AND 1 ROLL OF COARSE AND 3 (UNLESS OTHERWISE SPECIFIED ON PLANS) ROLLS OF EXTRA COARSE REPLICA TAPE
3. ONE (1) POSITECTOR 2000 OR 6000, QUANIX 2200, OR ELCOMETER A345FB11, AND THE CALIBRATION PLATES AS PER THE NBS CALIBRATION STANDARDS IN ACCORDANCE WITH ASTM D-1186
4. ONE (1) SLING PSYCHROMETER INCLUDING PSYCHROMETRIC TABLES, USED TO CALCULATE RELATIVE HUMIDITY AND DEW POINT TEMPERATURE
5. TWO (2) STEEL SURFACE THERMOMETERS, ACCURATE WITHIN TWO DEGREES OR ONE PORTABLE INFRARED THERMOMETER AVAILABLE FROM:
 

MODEL: RAYNGER ST SERIES (-18°C TO 400°C)  
MANUFACTURER: RLAYTEK, INC.  
SANTA CRUZ, CA

OR APPROVED EQUAL
6. FLASHLIGHT 2-D CELL
7. SSPC VISUAL STANDARD FOR ABRASIVE BLAST-CLEANED STEEL SSPC-VIS-1-89
8. RECORDER THERMOMETER WITH 12 HOUR CAPACITY

## INSPECTION ACCESS

IN ADDITION TO THE REQUIREMENTS OF 105.11, THE CONTRACTOR SHALL FURNISH, ERECT, AND MOVE SCAFFOLDING AND OTHER APPROPRIATE EQUIPMENT TO PERMIT THE INSPECTOR THE OPPORTUNITY TO INSPECT (CLOSELY OBSERVE) ALL AFFECTED SURFACES. THIS OPPORTUNITY SHALL BE PROVIDED TO THE INSPECTOR DURING ALL PHASES OF THE WORK AND CONTINUE FOR A PERIOD OF AT LEAST TEN (10) WORKING DAYS AFTER EACH STRUCTURE HAS BEEN COMPLETELY COATED.

WHEN SCAFFOLDING OR THE HANGERS ATTACHED TO THE SCAFFOLDING ARE SUPPORTED BY HORIZONTAL WIRE ROPES, OR WHEN SCAFFOLDING IS PLACED DIRECTLY UNDER THE SURFACE TO BE COATED, THE FOLLOWING REQUIREMENTS SHALL BE COMPLIED WITH:

WHEN SCAFFOLDING IS SUSPENDED FORTY-THREE INCHES OR MORE BELOW THE SURFACE TO BE COATED, TWO GUARDRAILS SHALL BE PLACED ON ALL SIDES OF THE SCAFFOLDING. ONE GUARDRAIL SHALL BE PLACED AT FORTY-TWO INCHES ABOVE THE SCAFFOLDING AND THE OTHER GUARDRAIL AT TWENTY INCHES ABOVE THE SCAFFOLDING.

WHEN THE SCAFFOLDING IS SUSPENDED AT LEAST TWENTY-ONE INCHES, BUT LESS THAN FORTY-THREE INCHES, BELOW THE SURFACE TO BE COATED, ONE GUARDRAIL SHALL BE PLACED ON ALL SIDES OF THE SCAFFOLDING AT TWENTY INCHES ABOVE THE SCAFFOLDING.

TWO GUARDRAILS SHALL BE PLACED ON ALL SIDES OF SCAFFOLDING NOT PREVIOUSLY MENTIONED. THE GUARDRAILS SHALL BE PLACED AT FORTY-TWO AND TWENTY INCHES ABOVE SCAFFOLDING, AS PREVIOUSLY MENTIONED.

ALL SCAFFOLDING MUST BE AT LEAST TWENTY-FOUR INCHES WIDE WHEN GUARDRAIL IS USED, AND TWENTY-EIGHT INCHES WIDE WHEN THE SCAFFOLDING IS SUSPENDED LESS THAN TWENTY-ONE INCHES BELOW THE SURFACE TO BE PAINTED AND GUARDRAIL IS NOT USED. IF TWO OR MORE SCAFFOLDING ARE LAID PARALLEL TO ACHIEVE THE PROPER WIDTH, THEY MUST BE RIGIDLY ATTACHED TO EACH OTHER TO PRECLUDE ANY DIFFERENTIAL MOVEMENT.

|   |                  |   |              |                           |  |             |         |           |
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| PERSON AGENCY<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>11/30/00 | REVISIONS<br>GEA<br>5002702L & 5002737R | DRAWN<br>CLH | CHECKED<br>KVB<br>ASB/CLH | METALLIZING THE EXISTING STEEL-PLAN NOTES<br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON | MAH-76-0.86 | 39 / 44 | 91<br>102 |
|---|------------------|---|--------------|---------------------------|--|-------------|---------|-----------|

# ITEM SPECIAL - STRUCTURE, MISC.: METALLIZING THE EXISTING STEEL (CONT.)

ALL GUARDRAIL SHALL BE CONSTRUCTED AS A SUBSTANTIAL BARRIER WHICH IS SECURELY FASTENED IN PLACE AND IS FREE FROM PROTRUDING OBJECTS SUCH AS NAILS, SCREWS AND BOLTS. THERE SHALL BE AN OPENING IN THE GUARDRAIL, PROPERLY LOCATED, TO ALLOW THE INSPECTOR ACCESS ONTO THE SCAFFOLDING.

THE RAILS AND UPRIGHTS SHALL BE EITHER METAL OR WOOD. IF PIPE RAILING IS USED, THE RAILING SHALL HAVE A NOMINAL DIAMETER OF NO LESS THAN ONE AND ONE-HALF INCHES. IF STRUCTURAL STEEL RAILING IS USED, THE RAILS SHALL BE 2" X 2" X 3/8" STEEL ANGLES OR OTHER METAL SHAPES OF EQUAL OR GREATER STRENGTH. IF WOOD RAILING IS USED, THE RAILING SHALL BE 2" X 4" (NOMINAL) STOCK. ALL UPRIGHTS SHALL BE SPACED AT NO MORE THAN 8 FEET ON CENTER. IF WOOD UPRIGHTS ARE USED, THE UPRIGHTS SHALL BE 2" X 4" (NOMINAL) STOCK.

WHEN THE SURFACE TO BE INSPECTED IS MORE THAN FIFTEEN FEET ABOVE THE GROUND OR WATER, AND THE SCAFFOLDING IS SUPPORTED FROM THE STRUCTURE BEING PAINTED, THE CONTRACTOR SHALL PROVIDE THE INSPECTOR WITH A SAFETY HARNESS (NOT A SAFETY BELT) AND LIFELINE. THE LIFELINE SHALL NOT ALLOW A FALL GREATER THAN SIX FEET. THE CONTRACTOR SHALL PROVIDE A METHOD OF ATTACHING THE LIFELINE TO THE STRUCTURE INDEPENDENT OF THE SCAFFOLDING, CABLES, OR BRACKETS SUPPORTING THE SCAFFOLDING.

WHEN SCAFFOLDING IS MORE THAN TWO AND ONE-HALF FEET ABOVE THE GROUND, THE CONTRACTOR SHALL PROVIDE A LADDER FOR ACCESS ONTO THE SCAFFOLDING. THE LADDER AND ANY EQUIPMENT USED TO ATTACH THE LADDER TO THE STRUCTURE SHALL BE CAPABLE OF SUPPORTING 250 POUNDS WITH A SAFETY FACTOR OF AT LEAST FOUR (4). ALL RUNGS, STEPS, CLEATS OR TREADS SHALL HAVE UNIFORM SPACING AND SHALL NOT EXCEED TWELVE INCHES ON CENTER. AT LEAST ONE SIDE RAIL SHALL EXTEND AT LEAST THIRTY-SIX INCHES ABOVE THE LANDING NEAR THE TOP OF THE LADDER.

AN ADDITIONAL LANDING SHALL BE REQUIRED WHEN THE DISTANCE FROM THE LADDER TO THE POINT WHERE THE SCAFFOLDING MAY BE ACCESSED EXCEEDS TWELVE INCHES. THE LANDING SHALL BE A MINIMUM OF AT LEAST TWENTY-FOUR INCHES WIDE AND TWENTY-FOUR INCHES LONG. IT SHALL ALSO BE OF ADEQUATE SIZE AND SHAPE SO THAT THE DISTANCE FROM THE LANDING TO THE POINT WHERE THE SCAFFOLDING IS ACCESSED DOES NOT EXCEED TWELVE INCHES. THE LANDING SHALL BE RIGID AND FIRMLY ATTACHED TO THE LADDER; HOWEVER, IT SHALL NOT BE SUPPORTED BY THE LADDER. THE SCAFFOLDING SHALL BE CAPABLE OF SUPPORTING A MINIMUM OF ONE THOUSAND POUNDS.

IN ADDITION TO THE AFOREMENTIONED REQUIREMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE TO OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS, ORDINANCES, REGULATIONS, ORDERS AND DECREES.

THE CONTRACTOR SHALL FURNISH ALL NECESSARY TRAFFIC CONTROL TO PERMIT INSPECTION DURING AND AFTER ALL PHASES OF THE PROJECT.

**APPLICATION**  
BEFORE ANY METALLIZING IS DONE, THE CONTRACTOR SHALL PREPARE A TEST SECTION FOR EACH WIRE COIL SUPPLIED. THE CONTRACTOR SHALL SUBMIT TO THE PROJECT ENGINEER A STEEL PLATE APPROXIMATELY 12" X 12" TO WHICH THE METAL HAS BEEN DEPOSITED TO THE SPECIFIED THICKNESS, AS CHECKED WITH A MAGNETIC OR EDDY CURRENT GAUGE, FOR ACCEPTANCE BY THE ENGINEER AS TO GRAIN SIZE AND TEXTURE OF THE SPRAYED METAL. THE TEST PLATE WILL BE USED TO DETERMINE THE ACCEPTANCE OF THE FINISHED JOB. IN THE EVENT THE CONTRACTOR'S COATING IS INFERIOR TO THE SAMPLE, HE SHALL BE REQUIRED TO CORRECT THE COATING BY AN ACCEPTABLE REPAIR METHOD AND DO A JOB COMPARABLE TO THE SPECIMEN SUBMITTED. IF THE SURFACE IS DEGRADED OR CONTAMINATED SUBSEQUENT TO SURFACE PREPARATION AND PRIOR TO METALLIZING, THE SURFACE SHALL BE RESTORED BEFORE METALLIZING. ALL SURFACE CLEANING SHALL BE APPROVED BY THE ENGINEER PRIOR TO METALLIZING. IN ORDER TO PREVENT THE DEGRADATION OR CONTAMINATION OF CLEANED SURFACES, THE METALLIZING SHALL BE APPLIED THE SAME DAY THE SURFACE HAS BEEN CLEANED. THE SEAL COAT SHALL ALSO BE APPLIED THE SAME DAY AS THE METALLIZING.

EACH SPRAY OPERATOR SHALL DEMONSTRATE TO THE ENGINEER HIS ABILITY TO METALLIZE AS SPECIFIED. ANY OPERATOR WHO DOES NOT DEMONSTRATE THIS ABILITY SHALL NOT SPRAY.

THE METALLIZING UNIT SHALL BE A GUN MANUFACTURED BY AN ESTABLISHED DOMESTIC COMPANY (SUCH AS METCO OR Tafa). THE GAS OR ARC-TYPE ARE ACCEPTABLE AND RECOMMENDED. THE EQUIPMENT SHALL BE USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. NO SURFACE SHALL BE SPRAYED WHICH SHOWS ANY SIGN OF RUST, SCALE OR MOISTURE. AT LEAST ONE SINGLE LAYER OF THE COATING MUST BE APPLIED WITHIN A MAXIMUM OF FOUR HOURS OF THE BLASTING. SPRAYING SHALL BE DONE IN A BLOCK PATTERN NOT TO EXCEED TWO FEET SQUARE.

TO PRODUCE THE REQUIRED THICKNESS AND UNIFORMITY, TWO PASSES ARE REQUIRED, OVERLAPPING AND AT RIGHT ANGLES TO EACH OTHER. THE GUN SHALL BE HELD AT SUCH A DISTANCE FROM THE WORK SURFACES THAT THE METAL IS STILL PLASTIC ON IMPACT (USUALLY 5" TO 9"). THE COATING SHALL BE FIRMLY ADHERENT AND FREE FROM UNCOATED SPOTS, LUMPS OR BLISTERS, AND HAVE A FINE SPRAYED TEXTURE.

THE CONTRACTOR IS REQUIRED TO PROVIDE FACILITIES TO PROTECT THE FINISHED METALLIZED SURFACE FROM DAMAGE DURING THE BLASTING AND THERMAL SPRAYING WORK OPERATIONS ON ADJACENT AREAS. ALL DAMAGED COATED AREAS SHALL BE PROPERLY REPAIRED BY THE CONTRACTOR. SURFACES NOT INTENDED TO BE METALLIZED SHALL BE SUITABLY PROTECTED FROM THE EFFECTS OF CLEANING AND METALLIZING OPERATIONS.

## TEMPERATURE

METALLIZING SHALL NOT BE APPLIED WHEN THE TEMPERATURE OF THE STEEL IS BELOW 40° F OR WHEN THE AIR TEMPERATURE IS BELOW 40° F. METALLIZING SHALL NOT BE APPLIED TO STEEL WHICH IS AT A TEMPERATURE THAT WILL CAUSE BLISTERING, POROSITY OR OTHERWISE DETRIMENTAL TO THE LIFE OF THE METALLIZING.

## MOISTURE

METALLIZING SHALL NOT BE APPLIED IN RAIN, WIND, SNOW, FOG OR MIST, OR WHEN THE STEEL SURFACE TEMPERATURE IS LESS THAN 5° F ABOVE THE DEW POINT. METALLIZING SHALL NOT BE APPLIED TO WET, DAMP OR FROSTED SURFACES. METALLIZING SHALL NOT BE APPLIED WHEN THE RELATIVE HUMIDITY IS ABOVE 85%.

## DAMAGE

DAMAGED AREAS OF METALLIZING WHICH ARE DETRIMENTAL TO THE SERVICE LIFE SHALL BE REMOVED. THE SURFACE SHALL AGAIN BE PREPARED AND RE-METALLIZED AS BEFORE.

## CONTINUITY

TO THE MAXIMUM EXTENT PRACTICE, METALLIZING SHALL BE APPLIED AS A CONTINUOUS FILM OF UNIFORM THICKNESS FREE OF PORES. ALL THIN SPOTS OR AREAS MISSED IN THE APPLICATION SHALL BE RE-METALLIZED.

## METALLIC COAT APPLICATION AND THICKNESS

THE CONTRACTOR'S QUALITY CONTROL SPECIALIST (QCS) SHALL RECORD THE TIME BETWEEN BLASTING AND APPLICATION OF THE METALLIZING. THE QCS SHALL RECORD THE AMBIENT TEMPERATURE AND DEW POINT NO MORE THAN ONE (1) HOUR BEFORE APPLICATION OF THE METALLIZING. ENVIRONMENTAL CONDITIONS SHALL BE MONITORED EVERY FOUR (4) HOURS DURING THE METALLIZING OPERATION.

GAUGES SHALL BE CALIBRATED ON THE STEEL SURFACE BEING METALLIZED. THICKNESS SHALL BE DETERMINED BY USE OF TYPE 2 MAGNETIC GAUGE IN ACCORDANCE WITH THE FOLLOWING:

FIVE (5) SEPERATE SPOT MEASUREMENTS MUST BE MADE, SPACED EVENLY OVER EACH 100 SQUARE FEET OF METALLIZED SURFACE AREA. THREE (3) GAUGE READINGS MUST BE MADE FOR EACH SPOT MEASUREMENT. THE GAUGE MUST BE MOVED A DISTANCE OF ONE TO THREE INCHES FOR EACH NEW GAUGE READING. ANY UNUSUALLY HIGH OR LOW GAUGE READING THAT CANNOT BE REPEATED CONSISTENTLY MUST BE DISCARDED. THE AVERAGE (MEAN) OF THE THREE (3) GAUGE READINGS MUST BE USED AS THE SPOT MEASUREMENT. THE AVERAGE OF FIVE (5) SPOT MEASUREMENTS FOR EACH SUCH 100 SQUARE FOOT AREA MUST NOT BE LESS THAN THE SPECIFIED THICKNESS. NO SINGLE SPOT MEASUREMENT IN ANY 100 SQUARE AREA MUST BE LESS THAN 80% OF THE SPECIFIED MINIMUM THICKNESS. ANY ONE OF THE THREE (3) READINGS WHICH ARE AVERAGED TO PRODUCE EACH SPOT MEASUREMENT MAY UNDER-RUN BY A GREATER AMOUNT. THE FIVE (5) SPOT MEASUREMENTS MUST BE MADE FOR EACH 100 SQUARE FEET OF AREA.

## INSPECTION

ALL WORK AND MATERIALS SUPPLIED UNDER THIS SPECIFICATION SHALL BE SUBJECT TO TIMELY INSPECTION BY THE ENGINEER. THE CONTRACTOR SHALL CORRECT SUCH WORK OR REPLACE SUCH MATERIAL THAT IS FOUND DEFECTIVE UNDER THE SPECIFICATION.

THE CONTRACTOR SHALL FURNISH AND ERECT SCAFFOLDING MEETING THE APPROVAL OF THE ENGINEER TO PERMIT INSPECTION OF THE STEEL PRIOR TO AND AFTER COATING.

THE ENGINEER SHALL PERFORM THE FOLLOWING TEST FOR ADHESION. HE (OR SHE) SHALL CUT THROUGH THE COATING WITH A KNIFE OR CHISEL. IF THE COATING OR ANY PART OF IT CAN BE LIFTED FROM THE BASE 1/4" OR MORE AHEAD OF CUTTING BLADE WITHOUT ACTUALLY CUTTING THE METAL, THE SURFACE PREPARATION SHALL BE DEEMED IMPROPER AND THE COATING SHALL BE CONSIDERED UNSATISFACTORY.

## SAFETY REQUIREMENTS AND PRECAUTIONS

THE CONTRACTOR IS REQUIRED TO MEET THE APPLICABLE SAFETY REQUIREMENTS OF THE OHIO INDUSTRIAL COMMISSION.

## PROTECTION OF PERSONS AND PROPERTY

THE CONTRACTOR SHALL COLLECT, REMOVE AND DISPOSE OF ALL DISCARDED MATERIALS, LEAVING THE JOB SITE IN A CLEAN CONDITION. THE CONTRACTOR SHALL PROTECT AGAINST DAMAGE ALL PORTIONS OF THE STRUCTURE WHICH ARE TO BE METALLIZED.

## TOP COAT

AN APPROVED CLEAR PHENOLIC SEALER SHALL BE APPLIED OVER THE METALLIZING AS PER THE MANUFACTURER REQUIREMENTS AND INCLUDED WITH THE METALLIZING FOR PAYMENT.

## POLLUTION CONTROL

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO COMPLY WITH POLLUTION CONTROL LAWS, RULES OR REGULATIONS OF FEDERAL, STATE OR LOCAL AGENCIES AND AS REQUIRED IN THIS SPECIFICATION.

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| DESIGN AGENCY<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>11/30/00 | REVISION<br>GEA | STRUCTURE FILE NUMBER<br>5002702L & 5002737R |
| <b>METALLIZING THE EXISTING STEEL-PLAN NOTES</b>  |                  |                 |  |
| BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON   |                  |                 |  |
| <b>MAH-76-0.86</b>  |                  |                 |  |
| 40 / 44   |                  |                 |  |
| 92<br>102   |                  |                 |  |



# ITEM SPECIAL - STRUCTURE, MISC.: METALLIZING THE EXISTING STEEL (CONT.)

**METHOD OF MEASUREMENT**

FIELD METALLIZING OF EXISTING STRUCTURAL STEEL IS BASED ON A SQUARE FOOT PAY ITEM. ALL FIELD METALLIZING WILL INCLUDE METALLIZING AND A SEAL COAT.

THE SUMMARY OF STRUCTURAL STEEL SURFACE AREAS TO BE METALLIZED AND SEALED:

**SUPERSTRUCTURE**

- STEEL GIRDER EXCLUDING TOP AND SIDES OF TOP FLANGES = 283,162 SQ. FT.
- STIFFNERS = 52,890 SQ. FT.
- INTERMEDIATE AND END CROSSFRAMES = 36,488 SQ. FT.
- MISC. ITEMS INCLUDING  
 BEARINGS, DIAPHRAGMS AT EXPANSION JOINTS, ETC.  
 ESTIMATED @ 5% OF THE STEEL GIRDER QUANTITY = 14,158 SQ. FT.
- TOTAL SUPERSTRUCTURE STEEL QUANTITY = 386,698 SQ. FT.

**PIER PILES**

- EXPOSED AREAS OF EXISTING STEEL PILES  
 (ABOVE LOW WATER EL. OF 942.0) = 52,020 SQ. FT.

IN THE CASE OF A QUANTITY DISPUTE, EXACT FIELD MEASUREMENTS OF ALL METALLIZED SURFACES AND/OR CALCULATIONS WILL GOVERN.

GRINDING FINS, TEARS, SLIVERS IS BASED ON THE MAN-HOURS EXPENDED ONLY BY THE WORKMEN WHO ARE ACTUALLY DOING THE GRINDING AND WILL INCLUDE ALL THE TIME WHEN THE WORKMEN ARE PERFORMING GRINDING AND REPAIRING METALLIC COAT AND NOT LIMITED TO THE ACTUAL GRINDING DURATION (I.E. ALL HOURS OF THE WORKMEN WHEN ASSIGNED TO GRINDING REGARDLESS OF ACTUAL GRINDING TIME). A QUANTITY FOR 500 MAN HOURS (400 HOURS FOR SUPERSTRUCTURE AND 100 HOURS FOR PILES) IS PROVIDED IN THE ESTIMATED QUANTITY TABLE ON SHEET 9/44 TO PERFORM THIS TASK.

SURFACE PREPARATION: THIS SQUARE FOOT ITEM INCLUDES ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO: CONTAIN, COLLECT, STORE, EVALUATE, SHIP, TREAT AND DISPOSE OF ALL WASTE MATERIALS GENERATED BY THIS PROJECT AND TO PREPARE THE SURFACE AS REQUIRED BY THESE SPECIFICATIONS INCLUDING SOLVENT CLEANING, PRIOR TO APPLYING THE METALLIZING COAT.

**BASIS OF PAYMENT**

PAYMENT FOR FIELD METALLIZING OF EXISTING STRUCTURAL STEEL WILL BE MADE AT THE CONTRACT PRICES FOR:

| ITEM    | UNIT    | DESCRIPTION   |
|---------|---------|---|
| SPECIAL | SQ. FT. | STRUCTURE MISC.: METALLIZING AND SEALING THE EXISTING STEEL PIER PILES                      |
| SPECIAL | SQ. FT. | STRUCTURE MISC.: SURFACE PREPARATION OF EXISTING STEEL PIER PILES                           |
| SPECIAL | HOURL   | STRUCTURE MISC.: GRINDING FINS, TEARS & SLIVERS FROM EXISTING STEEL PIER PILE SURFACES      |
| SPECIAL | SQ. FT. | STRUCTURE MISC.: METALLIZING AND SEALING THE EXISTING SUPERSTRUCTURE STEEL                  |
| SPECIAL | SQ. FT. | STRUCTURE MISC.: SURFACE PREPARATION OF EXISTING SUPERSTRUCTURE STEEL                       |
| SPECIAL | HOURL   | STRUCTURE MISC.: GRINDING FINS, TEARS & SLIVERS FROM EXISTING SUPERSTRUCTURE STEEL SURFACES |

|   |                  |                |                    |                |   |                    |
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| DESIGN NUMBER<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>11/30/00 | REVISED<br>GEA | DRAWN<br>CLH       | CHECKED<br>KVB | <b>METALLIZING THE EXISTING STEEL-PLAN NOTES</b><br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON | <b>MAH-76-0.86</b> |
| STRUCTURE ITEM NUMBER<br>5002702L & 5002737R  | REVISED          | REVISED        | CHECKED<br>ASB/CLH |                |   |                    |

# METALLIZING THE NEW STEEL

## DESCRIPTION

THIS NOTE ESTABLISHES SPECIFICATION REQUIREMENTS FOR THE APPLICATION OF A METALLIZED COATING IN THE FABRICATION SHOP FOR ALL NEW STRUCTURAL STEEL.

IN ADDITION TO THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 863, THIS ITEM SHALL CONSIST OF FURNISHING ALL NECESSARY LABOR, MATERIALS AND EQUIPMENT TO CLEAN, APPLY A 100% ZINC METALLIZED COATING AND SEAL THE METALLIZED COATING ON ALL NEW STRUCTURAL STEEL SURFACES INCLUDING GIRDERS, BEARINGS, DIAPHRAGMS AT INTERMEDIATE JOINTS AND CROSS FRAMES. SURFACES OF THE EXPANSION JOINT STEEL ARE NOT INCLUDED. METALLIZING OF JOINT STEEL IS PAID UNDER ITEM 516 FOR EXPANSION JOINTS.

THE METALLIC COATING SYSTEM SHALL BE APPLIED IN A STRUCTURAL STEEL FABRICATION SHOP QUALIFIED FOR SUPPLEMENTAL SPECIFICATION 863 (SS 863) AND HAVING PERMANENT BUILDINGS AS PER SUPPLEMENTAL SPECIFICATION 863.07. SECTIONS 863.29 AND 863.30 SHALL NOT APPLY.

THE CONTRACTOR MAY SELECT AN INDEPENDENT METALLIZER WITH APPROVAL BY THE DIRECTOR. THE CONTRACTOR SHALL REQUEST SUCH APPROVAL IN WRITING. THE DIRECTOR'S APPROVAL IS BASED ON A FACILITY INSPECTION VERIFYING A METALLIZING FACILITY WITH PERMANENT BUILDINGS OF ADEQUATE SIZE WITH EQUIPMENT, HEATING, LIGHTING AND EXPERIENCED PERSONNEL TO SATISFACTORILY PERFORM ALL SPECIFIED OPERATIONS. THE FABRICATOR'S QCPS (QUALITY CONTROL PAINT SPECIALIST) REQUIRED UNDER SS 863, IS RESPONSIBLE FOR ALL SPECIFIED QUALITY CONTROL REQUIREMENTS AT THE INDEPENDENT METALLIZING FACILITY.

THIS ITEM SHALL ALSO INCLUDE GALVANIZING, PER 711.02, OF ALL NUTS, WASHERS, BOLTS AND ANCHOR BOLTS.

## PRE-FABRICATION MEETING

IN ADDITION TO THE PRE-FABRICATION MEETING REQUIREMENTS UNDER SS 863.081, BOTH THE FABRICATOR'S QUALITY CONTROL SPECIALIST (QCPS), AND METALLIZING APPLICATOR SHALL PRESENT AND DISCUSS METHODS OF OPERATION, INCLUDING REPAIRS, TO ACCOMPLISH ALL PHASES OF THE PREPARATION AND COATING WORK REQUIRED BY THIS SPECIFICATION. ATTENDANCE AT THIS MEETING AND INITIAL ACCEPTANCE OF METHODS DISCUSSED DOES NOT ELIMINATE THE APPLICATOR QUALIFICATION REQUIREMENTS LISTED IN THIS SPECIFICATION.

## APPLICATION AND SPECIFICATION CHANGES

THE METALLIZED COATING SYSTEM SHALL CONFORM TO THE REQUIREMENTS OF THIS SPECIFICATION. IF THE FABRICATOR AND/OR APPLICATOR PROPOSE VARIATIONS FROM THE SPECIFICATION, SUCH AS BLAST PROFILE, BLAST MEDIUM, TIME BETWEEN OPERATIONS AND THICKNESS OF METALLIZING PASSES, THOSE VARIATIONS SHALL BE SUBMITTED BEFORE SHOP DRAWINGS, PER SS 863.08, ARE APPROVED. APPROVAL OF THE VARIATIONS WILL BE BASED ON COMPARISON OF QUALIFICATION TESTS PLATES PREPARED PER THIS SPECIFICATION AND PLATES PREPARED WITH THE PROPOSED VARIATIONS TO THE SPECIFICATION. THE TEST PLATES REPRESENTING THE PROPOSED SPECIFICATION VARIATIONS SHALL EQUAL OR EXCEED THE ADHESION AND BEND TEST VALUES OF THE TEST PLATES REPRESENTING THE SPECIFICATION REQUIREMENTS.

## QUALITY CONTROL

### QUALITY CONTROL SPECIALIST

THE FABRICATOR'S QCPS (QUALITY CONTROL PAINT SPECIALIST) REQUIRED UNDER SS 863, IS RESPONSIBLE FOR ALL QUALITY CONTROL REQUIREMENTS OF THIS SPECIFICATION. THE QCPS SHALL HAVE THE TESTING EQUIPMENT SPECIFIED PER SS 863.29.

### QUALITY CONTROL POINTS (QCP)

QUALITY CONTROL POINTS (QCP) ARE POINTS IN TIME WHEN ONE PHASE OF THE WORK IS COMPLETE AND READY FOR INSPECTION BY THE FABRICATOR'S QCPS AND THE DEPARTMENT'S QA REPRESENTATIVE. THE NEXT OPERATIONAL STEP MUST NOT PROCEED UNLESS THE QCP HAS BEEN ACCEPTED OR QA INSPECTION WAIVED BY THE DEPARTMENT'S QA REPRESENTATIVE. AT THESE POINTS, THE FABRICATOR MUST AFFORD ACCESS TO INSPECT ALL AFFECTED SURFACES. IF INSPECTION INDICATES A DEFICIENCY, THAT PHASE OF THE WORK MUST BE CORRECTED IN ACCORDANCE WITH THESE SPECIFICATIONS PRIOR TO BEGINNING THE NEXT PHASE OF WORK. DISCOVERY OF DEFECTIVE WORK OR MATERIAL AFTER A QUALITY CONTROL POINT IS PAST OR FAILURE OF THE FINAL PRODUCT BEFORE FINAL ACCEPTANCE, MUST NOT IN ANY WAY PREVENT REJECTION OR OBLIGATE THE DEPARTMENT TO FINAL ACCEPTANCE.

### QUALITY CONTROL POINTS

| QUALITY CONTROL POINTS (QCP)               | PURPOSE  |
|--|--|
| 1. QUALIFICATION OF OPERATOR AND EQUIPMENT | TO ASSURE THE PROPOSED EQUIPMENT AND OPERATORS CAN PERFORM THE WORK.   |
| 2. SOLVENT CLEANING                        | REMOVE ASPHALTIC CEMENT, OIL, GREASE, SALT, DIRT, ETC.   |
| 3. EDGE GRINDING                           | REMOVE SHARP CORNERS PER AWS.  |
| 4. ABRASIVE BLASTING                       | BLASTED SURFACE TO RECEIVE METALLIC COATING, INCLUDING REPAIR OF FINS, TEARS, SLIVERS OR SHARP EDGES, PER AWS. |
| 5. METALLIZED COAT APPLICATION             | CHECK SURFACE CLEANLINESS, APPLY METALLIZING, CHECK COATING THICKNESS.   |
| 6. ADHESION                                | CHECK ADHESION OF METALLIZING.   |
| 7. SEAL COAT APPLICATION                   | CHECK SURFACE CLEANLINESS, APPLY SEAL COAT, CHECK COATING THICKNESS.   |
| 8. FIELD REVIEW                            | VISUAL INSPECTION OF THE SYSTEM FOR ACCEPTANCE.  |

## QUALIFICATION OF OPERATOR AND EQUIPMENT (QCP #1)

THE QCPS SHALL WITNESS AND RECORD OPERATOR AND EQUIPMENT QUALIFICATION TESTS AND ASSURE THE TESTS ARE PERFORMED AS PER THE REQUIREMENTS. THE QA INSPECTOR SHALL BE PRESENT TO WITNESS THE TESTS.

EACH EQUIPMENT OPERATOR MUST DEMONSTRATE THE ABILITY TO ADEQUATELY SET UP AND OPERATE THE EQUIPMENT AND PRODUCE AN ACCEPTABLE COATING. ACCEPTANCE SHALL BE BASED ON THE OPERATOR PRODUCING ADHESION AND BEND TEST PLATES MEETING THE MINIMUM VALUES REQUIRED IN THIS SPECIFICATION.

THE QCPS MUST RECORD THAT EACH OPERATOR DEMONSTRATED THE ABILITY TO APPLY THE METALLIZED COATING AS SPECIFIED.

## ADHESION TEST PLATES

IN THE PRESENCE OF THE QCPS AND QA INSPECTORS, THE APPLICATOR MUST PREPARE AND METALLIZE, PER THIS SPECIFICATION, A 4" X 12" X 1/2" STEEL PLATE OF THE SAME MATERIAL AS THE STRUCTURAL STEEL TO BE METALLIZED. AN ADHESION TEST SHALL BE RUN IN ACCORDANCE WITH ASTM D-4541 AND THE MINIMUM ACCEPTABLE VALUE SHALL BE 750 PSI. IF A TEST PLATE FAILS, THE OPERATOR WILL ADJUST THE PROCEDURE AND RE-RUN THE TEST PLATE. THE MAXIMUM NUMBER OF TEST PLATES PER OPERATOR SHALL BE THREE. NO METALLIZING WORK MUST BE PERFORMED PRIOR TO THE APPROVAL OF THE ADHESION TEST PLATE.

## BEND TEST PLATES

IN THE PRESENCE OF THE QCPS AND QA INSPECTORS, THE APPLICATOR MUST PREPARE AND METALLIZE, AS PREVIOUSLY SPECIFIED, A 2" X 8" X 1/8" COUPON OF A606 OR A588 LOW CARBON STEEL. THE METALLIZING MUST BE THE SAME THICKNESS AS PREVIOUSLY SPECIFIED. ONCE SPRAYED, THE COUPONS MUST BE COLD BENT 180 DEGREES AROUND A 1/2 INCH DIAMETER MANDREL. THE METALLIZING MUST BE ON THE OUTSIDE OF THE COUPON. NO DELAMINATION OF THE COATING IS PERMITTED. CRACKING OF THE COATING IS PERMITTED, PROVIDED THE COATING ADHERES TO THE COUPON. THE COATING MUST ADHERE TO THE FACE OF THE COUPON. THE BEND TEST FAILS IF THE COATING CAN BE PICKED OFF WITH A KNIFE BLADE.

## SOLVENT CLEANING (QCP #2)

THE STEEL MUST BE SOLVENT CLEANED WHERE NECESSARY TO REMOVE ALL TRACES OF ASPHALTIC CEMENT, OIL, GREASE, DIESEL FUEL DEPOSITS, AND OTHER SOLUBLE CONTAMINANTS PER SSPC-SP 1. UNDER NO CIRCUMSTANCES MUST ANY ABRASIVE BLASTING BE DONE TO AREAS WITH ASPHALTIC CEMENT, OIL, GREASE OR DIESEL FUEL DEPOSITS. THE STEEL MUST BE ALLOWED TO DRY BEFORE BLAST CLEANING BEGINS. THE QCPS SHALL CHECK AND DOCUMENT THE PERFORMANCE OF THE SOLVENT CLEANING AND THAT DEFECTS ON EXPOSED SURFACES ARE CORRECTED PRIOR TO RELEASE TO THE METALLIZING PROCESS.

## GRINDING EDGES (QCP #3)

ALL CORNERS OF THERMALLY CUT OR SHEARED EDGES MUST HAVE A 1/16 INCH RADIUS OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE. THERMALLY CUT MATERIAL THICKER THAN 1 1/2 INCH MUST HAVE THE SIDES GROUND TO REMOVE THE HEAT AFFECTED ZONE, AS NECESSARY TO ACHIEVE THE SPECIFIED SURFACE CLEANING. THE QCPS MUST VISUALLY INSPECT AND DOCUMENT THAT THE GRINDING CONFORMS TO THIS SPECIFICATION AND PROVIDE A COVER LETTER LISTING EACH MAIN MEMBER INSPECTED.

## ABRASIVE BLASTING (QCP #4)

ABRASIVES SHALL BE CHECKED FOR OIL CONTAMINATION BEFORE USE. A SMALL SAMPLE OF ABRASIVES SHALL BE ADDED TO ORDINARY TAP WATER. ANY DETECTION OF AN OIL FILM ON THE SURFACE OF THE WATER IS CAUSE FOR REJECTION. THE QCPS MUST PERFORM AND RECORD THIS TEST AT THE START OF EACH SHIFT. THE QCPS SHALL RECORD THE SURFACE PROFILE WITH REPLICA TAPE ASTM D4417-93 METHOD C.

FOR AUTOMATED BLASTING PROCESS: FIVE (5) EACH RECORDED READINGS AT RANDOM LOCATIONS ON ONE MEMBER FOR 20% OF THE MAIN MEMBERS OR ONE (1) BEAM PER SHIFT (WHICH EVER IS GREATER) AND ONE (1) RECORDED READING FOR 10% OF ALL SECONDARY MATERIAL.

FOR MANUAL BLASTING PROCESS: FIVE (5) EACH RECORDED READINGS AT RANDOM LOCATIONS FOR EACH MAIN MEMBER AND ONE (1) RECORDED READING FOR 25% OF ALL SECONDARY MATERIAL.

THE QCPS SHALL PERFORM AND RECORD THE FOLLOWING TEST TO ENSURE THE COMPRESSED AIR IS NOT CONTAMINATED: BLOW AIR FROM THE NOZZLE FOR 30 SECONDS ONTO A WHITE CLOTH OR BLOTTER HELD IN A RIGID FRAME. IF ANY OIL OR OTHER CONTAMINANTS ARE PRESENT ON THE CLOTH OR BLOTTER, ABRASIVE BLASTING SHALL BE SUSPENDED UNTIL THE PROBLEM IS CORRECTED AND THE OPERATION IS VERIFIED BY A REPEATED TEST. THIS TEST SHALL BE DONE PRIOR TO BLOWING, AT THE START OF EACH SHIFT.

ALL FINS, TEARS, SLIVERS AND BURRED OR SHARP EDGES THAT APPEAR AFTER THE BLASTING OPERATION MUST BE CONDITIONED PER ASTM A6 AND THE AREA RE-BLASTED TO PROVIDE THE SPECIFIED SURFACE PROFILE.

ALL STRUCTURAL STEEL SURFACES MUST BE BLAST-CLEANED ACCORDING TO SSPC-SP5. THE APPEARANCE OF THE BLAST-CLEANED SURFACE SHALL MATCH THE PICTORIAL STANDARDS OF SSPC-VIS 1-89. STEEL MUST BE MAINTAINED IN A BLAST-CLEANED CONDITION UNTIL IT HAS RECEIVED A METALLIC COATING.

ANY ABRASIVE BLASTING WHICH IS DONE WHEN THE STEEL TEMPERATURE IS LESS THAN 5° F ABOVE THE DEW POINT MUST BE RE-BLASTED WHEN THE STEEL TEMPERATURE IS AT LEAST 5° F ABOVE THE DEW POINT.

**METALLIZING THE NEW STEEL-PLAN NOTES**  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON  
 DESIGN AGENCY  
 BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX  
 DATE 11/30/00  
 REVISED  
 GE 11/30/00  
 DRAWN  
 CLH  
 CHECKED  
 KVB  
 ASB/CLH  
 STRUCTURAL FILE NUMBER  
 5002702L & 500273TR

**MAH-76-0.86**  
 42 / 44  
 94  
 102  
 STEEL OPTION

# METALLIZING THE NEW STEEL (CONT.)

THE ABRASIVE MUST BE RECYCLABLE STEEL GRIT PRODUCING A MINIMUM ANGULAR SURFACE PROFILE OF THREE (3) MILS. PRIOR TO REUSE, THE ABRASIVE MUST BE CLEANED OF PAINT CHIPS, RUST, MILL SCALE AND OTHER FOREIGN MATERIAL BY EQUIPMENT SPECIFICALLY DESIGNED FOR SUCH CLEANING.

ALL ABRASIVES AND RESIDUE MUST BE REMOVED FROM ALL SURFACES TO BE METALLIZED WITH A VACUUM CLEANER EQUIPPED WITH A BRUSH-TYPE CLEANING TOOL, OR BY DOUBLE BLOWING.

ALL CORNERS OF THERMALLY CUT OR SHEARED EDGES MUST HAVE A 1/16 INCH RADIUS OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE. PRIOR TO BLASTING, THERMALLY CUT MATERIAL MUST HAVE THE SIDES GROUND AS NECESSARY TO REMOVE THE HARDENED EDGES.

#### METALLIC COAT APPLICATION AND THICKNESS (QCP #5)

THE QCPS SHALL RECORD THE TIME BETWEEN BLASTING AND APPLICATION OF THE METALLIZING. THE QCPS SHALL RECORD THE AMBIENT TEMPERATURE AND DEW POINT NO MORE THAN ONE (1) HOUR BEFORE APPLICATION OF THE METALLIZING. ENVIRONMENTAL CONDITIONS SHALL BE MONITORED EVERY FOUR (4) HOURS DURING THE METALLIZING OPERATION.

GAUGES SHALL BE CALIBRATED ON THE STEEL SURFACE BEING METALLIZED. THICKNESS SHALL BE DETERMINED BY USE OF TYPE 2 MAGNETIC GAUGE IN ACCORDANCE WITH THE FOLLOWING:

FIVE (5) SEPARATE SPOT MEASUREMENTS MUST BE MADE, SPACED EVENLY OVER EACH 100 SQUARE FEET OF METALLIZED SURFACE AREA. THREE (3) GAUGE READINGS MUST BE MADE FOR EACH SPOT MEASUREMENT. THE GAUGE MUST BE MOVED A DISTANCE OF ONE TO THREE INCHES FOR EACH NEW GAUGE READING. ANY UNUSUALLY HIGH OR LOW GAUGE READING THAT CANNOT BE REPEATED CONSISTENTLY MUST BE DISCARDED. THE AVERAGE (MEAN) OF THE THREE (3) GAUGE READINGS MUST BE USED AS THE SPOT MEASUREMENT. THE AVERAGE OF FIVE (5) SPOT MEASUREMENTS FOR EACH SUCH 100 SQUARE FOOT AREA MUST NOT BE LESS THAN THE SPECIFIED THICKNESS. NO SINGLE SPOT MEASUREMENT IN ANY 100 SQUARE AREA MUST BE LESS THAN 80% OF THE SPECIFIED MINIMUM THICKNESS. ANY ONE OF THE THREE (3) READINGS WHICH ARE AVERAGED TO PRODUCE EACH SPOT MEASUREMENT MAY UNDER-RUN BY A GREATER AMOUNT. THE FIVE (5) SPOT MEASUREMENTS MUST BE MADE FOR EACH 100 SQUARE FEET OF AREA.

#### GENERAL

THE METALLIZING MUST COAT ALL SURFACES OF THE STRUCTURAL STEEL FABRICATED UNDER SS 863, STRUCTURAL STEEL MEMBERS. METALLIZING AND WELDING IN THE VICINITY OF PREVIOUSLY COATED (METALLIZED, SEALED OR OTHER) SURFACES MUST BE CONDUCTED IN A MANNER THAT PREVENTS MOLTEN METAL FROM STRIKING THE COATING AND OTHERWISE MINIMIZES COATING DAMAGE. COATINGS DAMAGED BY WELDING OR METALLIZING OPERATIONS MUST BE REPAIRED IN ACCORDANCE WITH THIS SPECIFICATION.

PRIOR TO APPLICATION OF THE METALLIC COATING, THE STEEL SURFACE TO BE METALLIZED MUST MEET THE REQUIREMENTS FOR SURFACE PREPARATION DESCRIBED HEREIN.

THE METALLIZING MUST NOT BE APPLIED TO A SURFACE WHICH SHOWS ANY SIGN OF SURFACE MOISTURE. THERMAL SPRAYING MUST NOT BE PERFORMED WHEN THE STEEL TEMPERATURE IS LESS THAN 5° F ABOVE THE DEW POINT. IF FLAME SPRAY EQUIPMENT IS USED, THE INITIAL STARTING AREA MUST BE PRE-HEATED TO 250° F BEFORE APPLICATION OF THE METALLIZED COATING. EACH TIME THE OPERATOR STOPS THE COATING OPERATION THE PRE-HEAT NEEDS TO BE RE-DONE. THE MINIMUM APPLICATION TEMPERATURE IS 0° F.

#### EQUIPMENT AND TECHNIQUES

THE METALLIZING MAY BE APPLIED USING EITHER COMBUSTION FLAME SPRAYING EQUIPMENT OR BY ELECTRIC ARC SPRAYING EQUIPMENT OPERATED IN ACCORDANCE WITH THE MANUFACTURER'S LATEST WRITTEN INSTRUCTIONS, INCLUDING BUT NOT LIMITED TO AIR PRESSURE AND GUN ANGLE RELATIVE TO THE WORK SURFACE.

THERMAL SPRAY OPERATORS MUST APPLY THE METALLIZING IN A MANNER THAT PREVENTS DISCONTINUITY OF THE APPLIED COATING. SPRAYING MUST BE PERFORMED IN A BLOCK PATTERN, TYPICALLY TWO TO THREE FEET SQUARE. THE METALLIZING MUST OVERLAP FIFTY PERCENT (50%) ON EACH PASS TO ENSURE UNIFORM COVERAGE. THE REQUIRED COATING THICKNESS MUST BE OBTAINED IN MULTIPLE LAYERS. EACH LAYER MUST BE APPLIED AT RIGHT ANGLES TO THE PREVIOUS LAYER. SPRAYING DISTANCE SHOULD BE BETWEEN 6 AND 8 INCHES FROM THE WORK SURFACE TO ENSURE THE METAL IS PLASTIC ON IMPACT. ANY DEFECTS MUST BE IMMEDIATELY CORRECTED.

STARTUP AND ADJUSTMENT OF THERMAL SPRAY EQUIPMENT MUST BE DONE OFF THE SURFACE BEING METALLIZED.

#### METALLIZING THICKNESS

THE METALLIZING MUST BE APPLIED TO A THICKNESS OF 12 MILS. IN GENERAL, ANY PASS MUST NOT DEPOSIT MORE THAN FOUR (4) MILS. THE TOP OF THE TOP FLANGE MUST RECEIVE A COAT NOT LESS THAN 0.5 MILS NOR MORE THAN 1.5 MILS.

METALLIZING TO THE SPECIFIED THICKNESS MUST BE COMPLETED WITHIN TWELVE (12) HOURS OF BLASTING AND BEFORE DETERIORATION OF THE STEEL FROM THE SPECIFIED SURFACE CLEANLINESS. THE TIME BETWEEN METALLIZING PASSES MUST BE FOUR (4) HOURS.

METALLIZING WIRE  
100% ZINC

#### ADHESION (QCP #6)

BEFORE SEALING, THE QCPS MUST TEST FOR ADHESION IN ACCORDANCE WITH ASTM D 4541. THE QCPS MUST PERFORM FIVE (5) TESTS AT RANDOM LOCATIONS SELECTED BY THE QA INSPECTOR ON THE FIRST MAIN MEMBER, INCLUDING SPLICE PLATES. THEREAFTER, TEN PERCENT (10%) OF THE MAIN MATERIAL MUST BE TESTED IN THE SAME MANNER. FIVE PERCENT (5%) OF ALL SECONDARY MATERIAL MUST BE TESTED AT A RATE OF ONE (1) RECORDED READING. THE MINIMUM ACCEPTABLE ADHESION VALUE SHALL BE 750 PSI.

#### SEAL COAT APPLICATION AND THICKNESS (QCP #7)

#### SEALER MATERIAL

AN AIR DRIED CLEAR PHENOLIC, EITHER "METALLIZING SEALER #9876 OR #9127", MANUFACTURED BY KEELER AND LONG (PPG), P.O. BOX 460, WATERTOWN, CT 06795, OR "METCO AP" MANUFACTURED BY METCO, OR EQUAL TO "METCO AP" MANUFACTURED BY AKRON PAINT & VARNISH.

#### SEALERS

ALL SEALER MUST BE DELIVERED TO THE FABRICATOR IN ORIGINAL, UNOPENED CONTAINERS WITH LABELS INTACT. MINOR DAMAGE TO CONTAINER IS ACCEPTABLE PROVIDED THE CONTAINER HAS NOT BEEN PUNCTURED.

SEALER MUST BE STORED AT THE TEMPERATURE RECOMMENDED BY THE MANUFACTURER TO PREVENT SEALER DETERIORATION.

THE APPLICATOR MUST PROVIDE THERMOMETERS CAPABLE OF MONITORING THE MAXIMUM HIGH AND LOW TEMPERATURES WITHIN THE STORAGE FACILITY. THE APPLICATOR IS RESPONSIBLE FOR PROPERLY DISPOSING OF ALL UNUSED SEALER AND SEALER CONTAINERS.

THE QCPS MUST RECORD THE STORAGE TEMPERATURE, LOT AND STOCK NUMBERS, AND DATE OF MANUFACTURE OF THE SEALANT.

ALL CONTAINERS OF SEALER MUST REMAIN UNOPENED UNTIL USE. THE LABEL INFORMATION MUST BE LEGIBLE AND CHECKED AT THE TIME OF USE. SOLVENT USED FOR CLEANING EQUIPMENT IS EXEMPT FROM THE ABOVE REQUIREMENTS.

EACH CONTAINER OF SEALER MUST BE CLEARLY MARKED OR LABELED TO SHOW SEALER IDENTIFICATION, COMPONENT, LOT NUMBER, STOCK NUMBER, DATE OF MANUFACTURE, AND INFORMATION AND WARNINGS AS MAY BE REQUIRED BY FEDERAL AND STATE LAWS.

SEALER WHICH HAS LIVERED, GELLED OR OTHER WISE DETERIORATED DURING STORAGE MUST NOT BE USED. THE OLDEST SEALER OF EACH KIND MUST BE USED FIRST. NO SEALER MUST BE USED WHICH HAS SURPASSED ITS SHELF LIFE.

#### ENVIRONMENTAL CONDITIONS

SEALER MUST NOT BE APPLIED WHEN THE METALLIZING STEEL SURFACE IS LESS THAN 5° F ABOVE THE DEW POINT. THE SURFACES TO BE SEALED MUST BE DRY. SEALERS SHALL NOT BE APPLIED IN RAIN, SNOW, FOG OR MIST, OR TO FROSTED OR ICE-COATED SURFACES. THE AMBIENT TEMPERATURE MUST BE PER THE SEALER MANUFACTURER'S RECOMMENDATIONS.

#### EQUIPMENT AND TECHNIQUES

SEALER MUST BE APPLIED BY SPRAY METHODS. SPRAY EQUIPMENT MUST BE KEPT CLEAN SO DIRT, DRIED SEALER AND OTHER FOREIGN MATERIALS ARE NOT DEPOSITED IN THE SEALER FILM. ANY SOLVENT LEFT IN THE EQUIPMENT MUST BE COMPLETELY REMOVED BEFORE USING.

THE QCPS MUST DOCUMENT THAT ALL SPRAY EQUIPMENT USED FOLLOWS THE SEALER MANUFACTURER'S EQUIPMENT RECOMMENDATIONS. EQUIPMENT MUST BE SUITABLE FOR USE WITH THE SPECIFIED SEALER TO AVOID SEALER APPLICATION PROBLEMS.

IF AIR SPRAY IS USED, TRAPS OR SEPARATORS MUST BE PROVIDED TO REMOVE OIL AND CONDENSED WATER FROM THE AIR. THE TRAPS OR SEPARATORS MUST BE OF ADEQUATE SIZE AND MUST BE DRAINED PERIODICALLY DURING OPERATIONS.

THE SEAL COAT THICKNESS MUST BE A MINIMUM OF 1 MIL. OVER THE SURFACE AND PEAKS OF THE METALLIZING. THIS THICKNESS SHALL BE VERIFIED BY THE QCPS. PINHOLING MUST BE AVOIDED BY METHOD OF APPLICATION.

THE APPLICATOR MUST TAKE PRECAUTIONS TO PREVENT CONTAMINATION OF SURFACES THAT HAVE BEEN PREPARED FOR SEALING AND SURFACES FRESHLY SEALED. THE SURFACE TO BE SEALED SHALL BE CLEAN AND DRY. THE SEALER MUST BE APPLIED WITHIN EIGHT (8) HOURS OF THE COMPLETION OF THE METALLIZING.

THE SEALER MUST BE APPLIED IN THE SHOP. THE STEEL MUST NOT BE HANDLED UNNECESSARILY OR REMOVED FROM THE SHOP UNTIL THE SEALER HAS DRIED SUFFICIENTLY TO RESIST BEING MARRED IN HANDLING AND SHIPPING.

THE QCPS MUST RECORD THE TIME BETWEEN METALLIZING AND SEAL COAT APPLICATION. THE QCPS MUST RECORD THE AMBIENT TEMPERATURE AND HUMIDITY NO MORE THAN ONE (1) HOUR BEFORE APPLICATION OF THE SEAL COAT. ENVIRONMENTAL CONDITIONS MUST BE MONITORED EVERY FOUR (4) HOURS DURING THE SEALING OPERATION.

|   |                  |              |                                    |
|---|------------------|--------------|------------------------------------|
| DESIGN/ISSUANCE<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>11/30/00 | SCALE<br>GEA | PROJECT NO.<br>5002702L & 500273TR |
| <b>METALLIZING THE NEW STEEL-PLAN NOTES</b>   |                  |              |                                    |
| BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON   |                  |              |                                    |
| <b>MAH-76-0.86</b>  |                  |              |                                    |
| 43  | 44               |              |                                    |
| 95  |                  |              |                                    |
| 102   |                  |              |                                    |

# METALLIZING THE NEW STEEL (CONT.)

THE SAME TEST FOR ABRASIVE BLASTING AIR CONTAMINATION MUST BE MADE BY THE SEALER APPLICATOR AND VERIFIED BY THE QCPS TO ENSURE THAT THE TRAPS OR SEPARATORS ARE WORKING PROPERLY. THIS IS NOT REQUIRED FOR AN AIRLESS SPRAYER.

#### FIELD REVIEW (QCP #8)

WHILE APPROVAL OF THE SHOP METALLIZED COATING IS REQUIRED BEFORE SHIPMENT, THERE WILL BE POSSIBLE DAMAGE TO THE METALLIZED COATING AND THE SEALER DUE TO FIELD ERECTION AND CONSTRUCTION OPERATIONS.

SPECIFIED AREAS OF FIELD WELDING MUST REQUIRE THE REMOVAL OF THE METALLIZED COATING BY GRINDING OR OTHER METHODS ACCEPTABLE TO THE ENGINEER.

APPLICATION OF WELDED SHEAR STUDS WILL REQUIRE WELDING THROUGH A THIN LAYER OF ZINC COATING SIMILAR TO INORGANIC ZINC PAINT. THE WELDING OF THE STUDS WILL NOT REQUIRE REMOVAL OF THE METALLIZED COATING, BUT STUD WELDING PROCEDURES MAY REQUIRE ADJUSTMENT TO MEET THE PRODUCTION CONTROL REQUIREMENTS, SECTION 7.7 OF AWS D1.5 BRIDGE WELDING CODE. OTHER AREAS OF FIELD WELDING WILL REQUIRE REMOVAL OF THE METALLIZED COATING. REMOVAL LIMITS SHOULD BE MINIMIZED TO WHERE THE WELDING IS APPLIED.

SMALL AREAS OF METALLIZING LESS THAN ONE (1) SQUARE FOOT THAT ARE REMOVED, MARRED, DAMAGED, OR REJECTED MUST BE REPAIRED ACCORDING TO ASTM A780, ANNEX 1 OR 3. LARGER AREAS OF METALLIZING MUST BE REPAIRED BY REMOVAL AND REPLACEMENT AS SPECIFIED HEREIN. THE COATING AT THE WELDED SHEAR STUD LOCATIONS WILL NOT REQUIRE REPAIR. AT THE COMPLETION OF CONSTRUCTION, THE METALLIZED COATING MUST BE UNDAUNAGED AND THE SURFACES FREE FROM GREASE, OIL, CHALK MARKS, PAINT, CONCRETE SPLATTER OR OTHER SOILAGE.

THE ENGINEER MUST VISUALLY INSPECT THE METALLIZING TO ESTABLISH THAT FIELD WELDED AND DAMAGED AREAS ARE REPAIRED AS PER THIS SPECIFICATION.

#### HANDLING AND SHIPPING

REASONABLE CARE MUST BE EXERCISED IN HANDLING THE METALLIZED STEEL DURING SHIPPING, ERECTION, AND SUBSEQUENT CONSTRUCTION OF THE BRIDGE. THE STEEL MUST BE INSULATED FROM THE BINDING CHAINS BY SOFTENERS. HOOKS AND SLINGS USED TO HOIST STEEL MUST BE PADDED. DIAPHRAGMS AND SIMILAR PIECES MUST BE SPACED IN SUCH A WAY THAT NO RUBBING WILL OCCUR DURING SHIPMENT THAT MAY DAMAGE THE METALLIZING. THE STEEL MUST BE STORED ON PALLETS AT THE JOB SITE, OR BY OTHER MEANS, SO THAT IT DOES NOT REST ON THE GROUND OR SO THAT COMPONENTS DO NOT FALL OR REST ON EACH OTHER.

#### SAFETY REQUIREMENTS AND PRECAUTIONS

THE CONTRACTOR IS REQUIRED TO MEET THE SAFETY REQUIREMENTS OF THE OHIO INDUSTRIAL COMMISSION AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), IN ADDITION TO THE SCAFFOLDING REQUIREMENTS BELOW.

#### SCAFFOLDING

RUBBER ROLLERS, OR OTHER PROTECTIVE DEVICES MEETING THE APPROVAL OF THE ENGINEER, MUST BE USED ON SCAFFOLD FASTENINGS. METAL ROLLERS OR CLAMPS AND OTHER TYPES OF FASTENINGS THAT WILL MAR OR DAMAGE COATED SURFACES MUST NOT BE USED.

#### INSPECTION ACCESS FOR FIELD REPAIR

IN ADDITION TO THE REQUIREMENT OF 105.11, THE CONTRACTOR MUST FURNISH, ERECT, AND MOVE SCAFFOLDING AND OTHER APPROPRIATE EQUIPMENT, TO PERMIT THE INSPECTOR THE OPPORTUNITY TO INSPECT (CLOSELY OBSERVE) ALL AFFECTED SURFACES. THIS OPPORTUNITY MUST BE PROVIDED TO THE INSPECTOR DURING ALL PHASES OF THE WORK AND CONTINUE FOR A PERIOD OF AT LEAST TEN (10) WORKING DAYS AFTER THE TOUCH-UP WORK HAS BEEN COMPLETED. WHEN SCAFFOLDING IS USED, IT MUST BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS. WHEN SCAFFOLDING, OR THE HANGERS ATTACHED TO THE SCAFFOLDING, ARE SUPPORTED BY HORIZONTAL WIRE ROPES, OR WHEN SCAFFOLDING IS PLACED DIRECTLY UNDER THE SURFACE TO BE COATED, THE FOLLOWING REQUIREMENTS MUST BE COMPLIED WITH:

WHEN SCAFFOLDING IS SUSPENDED 43" OR MORE BELOW THE COATED SURFACE TO BE REPAIRED, TWO ROWS OF GUARDRAIL MUST BE PLACED ON ALL SIDES OF THE SCAFFOLDING. ONE ROW OF GUARDRAIL MUST BE PLACED AT 42" ABOVE THE SCAFFOLDING AND THE OTHER ROW AT 20" ABOVE THE SCAFFOLDING.

WHEN THE SCAFFOLDING IS SUSPENDED AT LEAST 21", BUT LESS THAN 43" BELOW THE COATED SURFACE TO BE REPAIRED, A ROW OF GUARDRAIL MUST BE PLACED ON ALL SIDES OF THE SCAFFOLDING AT 20" ABOVE THE SCAFFOLDING.

TWO ROWS OF GUARDRAIL MUST BE PLACED ON ALL SIDES OF SCAFFOLDING NOT PREVIOUSLY MENTIONED. THE ROWS OF GUARDRAIL MUST BE PLACED AT 42" AND 20" ABOVE SCAFFOLDING, AS PREVIOUSLY MENTIONED.

ALL SCAFFOLDING MUST BE AT LEAST 24" WIDE WHEN GUARDRAIL IS USED AND 28" WIDE WHEN THE SCAFFOLDING IS SUSPENDED LESS THAN 21" BELOW THE COATED SURFACE TO

BE REPAIRED AND GUARDRAIL IS NOT USED. IF TWO OR MORE SCAFFOLDING ARE LAID PARALLEL TO ACHIEVE THE PROPER WIDTH, THEY MUST BE RIGIDLY ATTACHED TO EACH OTHER TO PRECLUDE ANY DIFFERENTIAL MOVEMENT.

ALL GUARDRAIL MUST BE CONSTRUCTED AS A SUBSTANTIAL BARRIER WHICH IS SECURELY FASTENED IN PLACE AND IS FREE FROM PROTRUDING OBJECTS SUCH AS NAILS, SCREWS AND BOLTS. THERE MUST BE AN OPENING IN THE GUARDRAIL, PROPERLY LOCATED, TO ALLOW THE INSPECTOR ACCESS ONTO THE SCAFFOLDING.

THE RAILS AND UPRIGHTS MUST BE EITHER METAL OR WOOD. IF PIPE RAILING IS USED, THE RAILING MUST HAVE A NOMINAL DIAMETER OF NO LESS THAN ONE AND ONE HALF INCHES. IF STRUCTURAL STEEL RAILING IS USED, THE RAILS MUST BE 2" X 2" X 3/8" STEEL ANGLES OR OTHER METAL SHAPES OF EQUAL OR GREATER STRENGTH. IF WOOD RAILING IS USED, THE RAILING MUST BE 2" X 4" (NOMINAL) STOCK. ALL UPRIGHTS MUST BE SPACED AT NO MORE THAN 8 FEET ON CENTER. IF WOOD UPRIGHTS ARE USED, THE UPRIGHTS MUST BE 2" X 4" (NOMINAL) STOCK.

WHEN THE SURFACE TO BE INSPECTED IS MORE THAN 15 FEET ABOVE THE GROUND OR WATER, AND THE SCAFFOLDING IS SUPPORTED FROM THE STRUCTURE BEING COATED, THE CONTRACTOR MUST PROVIDE THE INSPECTOR WITH A SAFETY BELT AND LIFELINE. THE LIFELINE MUST NOT ALLOW A FALL GREATER THAN 6 FEET. THE CONTRACTOR MUST PROVIDE A METHOD OF ATTACHING THE LIFELINE TO THE STRUCTURE INDEPENDENT OF THE SCAFFOLDING, CABLES, OR BRACKETS SUPPORTING THE SCAFFOLDING.

WHEN SCAFFOLDING IS MORE THAN TWO AND ONE HALF FEET ABOVE THE GROUND, THE CONTRACTOR MUST PROVIDE A LADDER FOR ACCESS ONTO THE SCAFFOLDING. THE LADDER AND ANY EQUIPMENT USED TO ATTACH THE LADDER TO THE STRUCTURE MUST BE CAPABLE OF SUPPORTING 250 POUNDS WITH A SAFETY FACTOR OF AT LEAST FOUR (4). ALL RUNGS, CLEATS, OR TREADS MUST HAVE UNIFORM SPACING AND MUST NOT EXCEED 12" ON CENTER. AT LEAST ONE SIDE RAIL MUST EXTEND AT LEAST 36" ABOVE THE LANDING NEAR THE TOP OF THE LADDER.

AN ADDITIONAL LANDING MUST BE REQUIRED WHEN THE DISTANCE FROM THE LADDER TO THE POINT WHERE THE SCAFFOLDING MAY BE ACCESSED EXCEEDS 12". THE LANDING MUST BE A MINIMUM OF AT LEAST 24" WIDE AND 24" LONG. IT MUST ALSO BE OF ADEQUATE SIZE AND SHAPE SO THAT THE DISTANCE FROM THE LANDING TO THE POINT WHERE THE SCAFFOLDING IS ACCESSED DOES NOT EXCEED 12". THE LANDING MUST BE RIGID AND FIRMLY ATTACHED TO THE LADDER; HOWEVER, IT MUST NOT BE SUPPORTED BY THE LADDER. THE SCAFFOLDING MUST BE CAPABLE OF SUPPORTING A MINIMUM OF 1000 POUNDS.

IN ADDITION TO THE AFOREMENTIONED REQUIREMENTS, THE CONTRACTOR IS STILL RESPONSIBLE TO OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS, ORDINANCES, REGULATIONS, ORDERS AND DECREES.

THE CONTRACTOR MUST FURNISH ALL NECESSARY TRAFFIC CONTROL TO PERMIT INSPECTION DURING AND AFTER ALL PHASES OF THE PROJECT.

#### PROTECTION OF PERSONS AND PROPERTY

THE CONTRACTOR MUST INSTALL AND MAINTAIN SUITABLE SHIELDS OR ENCLOSURES TO PREVENT DAMAGE TO ADJACENT BUILDINGS, PARKED CARS, TRUCKS, BOATS, OR VEHICLES TRAVELING ON, OVER OR UNDER STRUCTURES HAVING GALVANIZED REPAIRS. THEY MUST BE SUITABLY ANCHORED AND REINFORCED TO PREVENT INTERFERING WITH NORMAL TRAFFIC OPERATIONS IN THE OPEN LANES. PAYMENT FOR THE SHIELDS MUST BE INCLUDED AS INCIDENTAL TO THE APPLICABLE FIELD COATING OPERATION. WORK MUST BE SUSPENDED WHEN DAMAGE TO ADJACENT BUILDINGS, MOTOR VEHICLES, BOATS OR OTHER PROPERTY IS OCCURRING.

WHEN OR WHERE ANY DIRECT OR INDIRECT DAMAGE OR INJURY IS DONE TO PUBLIC OR PRIVATE PROPERTY THE CONTRACTOR MUST RESTORE, AT HIS OWN EXPENSE, SUCH PROPERTY, TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE.

#### POLLUTION CONTROL

THE CONTRACTOR MUST TAKE ALL NECESSARY PRECAUTIONS TO COMPLY WITH POLLUTION CONTROL LAWS, RULES OR REGULATIONS OF FEDERAL, STATE OR LOCAL AGENCIES.

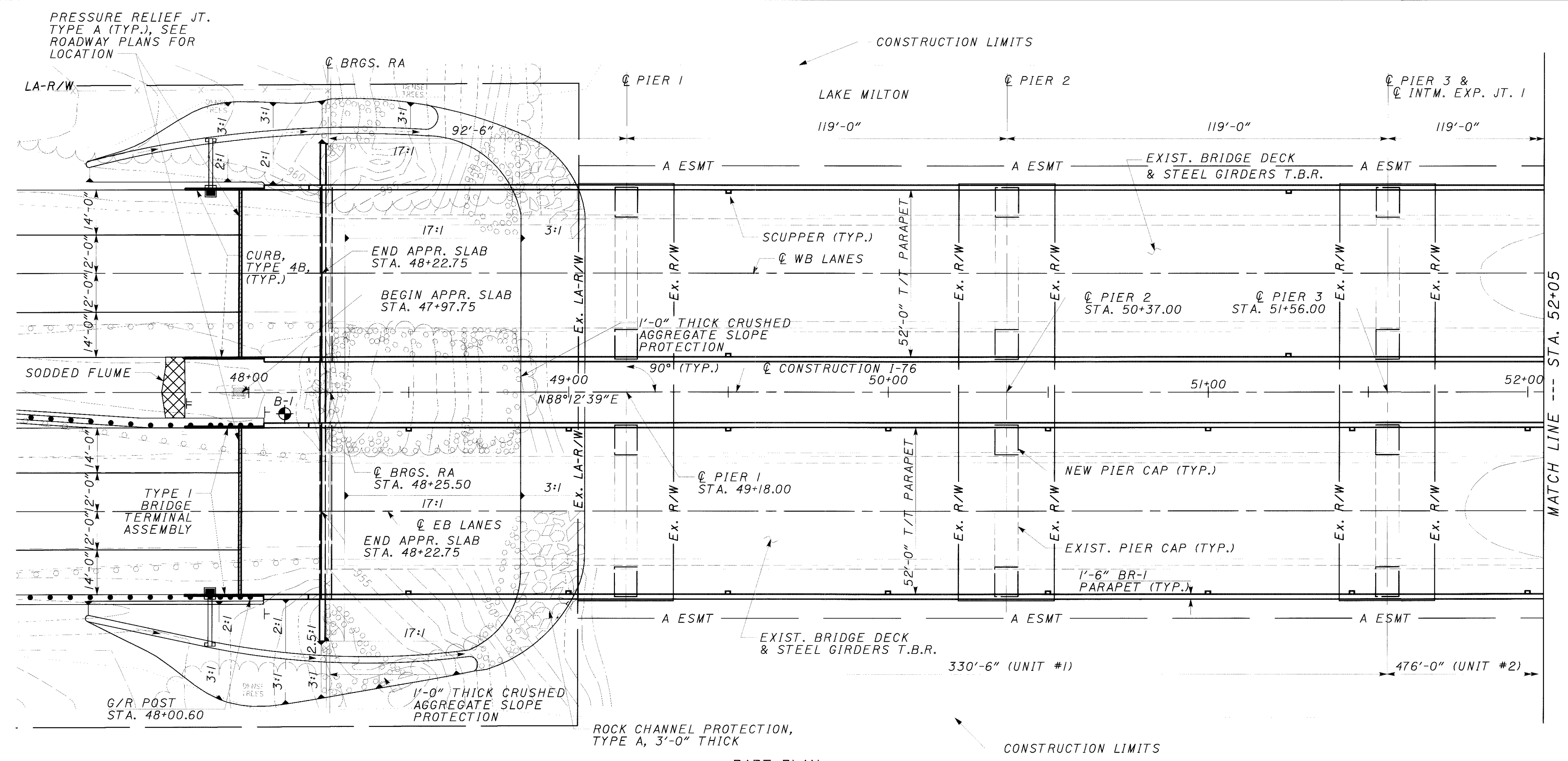
#### COATING IDENTIFICATION

THE COMPLETION DATE (MONTH AND YEAR) OF THE COATING AND THE LETTERS METALLIZED SHALL BE STENCILED ON THE STEEL IN 4" LETTERS WITH A BLACK URETHANE PAINT. THIS DATE SHALL BE APPLIED AT FOUR (4) LOCATIONS NEAR THE END OF EACH OUTSIDE GIRDER ON THE OUTSIDE WEB VISIBLE FROM THE ROAD OR AS DIRECTED BY THE ENGINEER.

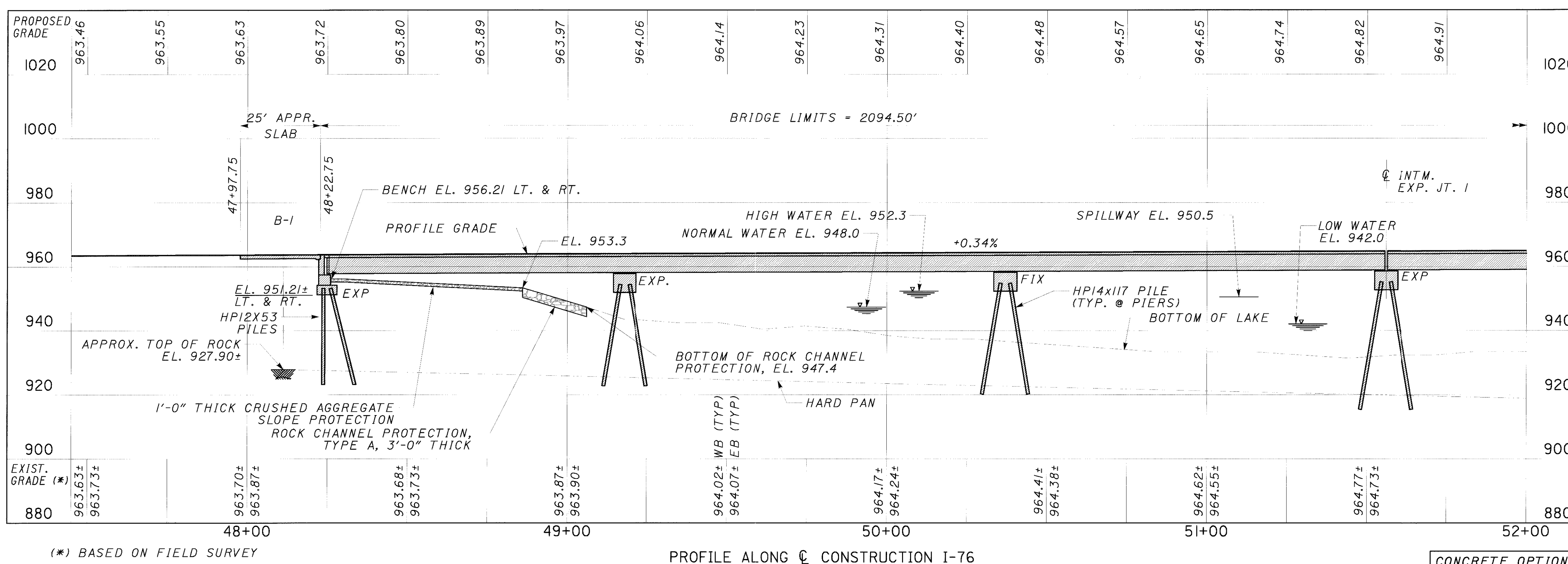
#### BASIS OF PAYMENT

PAYMENT FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO METALLIZE AND SEAL NEW SUPERSTRUCTURE STEEL INCLUDING GIRDERS, BEARINGS, DIAPHRAGMS AND CROSSFRAMES SHALL BE INCLUDED WITH APPROPRIATE 863 ITEMS FOR STRUCTURAL STEEL OR 516 ITEMS FOR BEARINGS.

|   |                  |                                      |              |                 |                    |   |             |
|---|------------------|--------------------------------------|--------------|-----------------|--------------------|---|-------------|
| DESIGN AGENCY<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>11/30/00 | REVISIONS<br>GEA 5002702L & 500273TR | DRAWN<br>CLH | DESIGNED<br>KVB | CHECKED<br>ASB/CLH | METALLIZING THE NEW STEEL-PLAN NOTES<br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON | MAH-76-0.86 |
| 44 / 44   | 96<br>102        |                                      |              |                 |                    |   |             |



PART PLAN



PROFILE ALONG C CONSTRUCTION I-76

NOTES:  
 EARTHWORK LIMITS ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.  
 FOR BENCHMARKS SEE SHEET [374].  
 FOR SUPERELEVATION TRANSITION DETAILS SEE SHEET [274].  
 FOR ABBREVIATIONS SEE GENERAL NOTE SHEET [774].  
 ESTIMATED AVERAGE PILE PAY LENGTHS ARE 30 FEET AT RA AND 50 FEET AT FA. FOR PIER PAY LENGTHS SEE PIER DETAILS.

LEGEND:  
 [Symbol] - BRIDGE BORING LOCATION

| TRAFFIC DATA (I-76)      |        |
|--------------------------|--------|
| CURRENT YEAR ADT (2002): | 22,590 |
| DESIGN YEAR ADT (2022):  | 27,250 |
| DESIGN YEAR ADTT (2022): | 10,900 |

**EXISTING STRUCTURE**  
 TYPE: CONTINUOUS STEEL GIRDERS WITH HINGES AND REINFORCED CONCRETE DECK.  
 SUBSTRUCTURE: REINFORCED CONCRETE ABUTMENTS & PIER CAP ON 14" BPI17 PILES  
 SPANS: 93'-0", 16 SPANS @ 119'-00", 93'-0"  
 ROADWAY: 30'-0" ± F/F CURB (2'-0" SAFETY CURB)  
 LOAD FREQUENCY: CF-2000 ADEQUATE FOR AASHTO ALTERNATE LOADING  
 SKEW: NONE  
 WEARING SURFACE: ASPHALT W.S.  
 ALIGNMENT: TANGENT CROWN: 3/16"/FT  
 SUPERELEVATION: TRANSITION START @ 68+28.80  
 YEAR BUILT: 1967  
 APPROACH SLABS: 25'-0" ± (AS-I-54)  
 STRUCTURE FILE NUMBER: 5002702(L) 5002737(R)

- PROPOSED WORK**
1. WIDEN THE SUBSTRUCTURE, REMOVE EXISTING STEEL AND ERECT NEW PRESTR. CONC. I-BEAMS.
  2. REMOVE THE EXISTING DECK AND STEEL GIRDERS AND REPLACE WITH THE NEW WIDENED COMPOSITE REINF. CONCRETE DECK AND PRESTRESSED CONC. BEAMS AND PROVIDE NEW SCUPPERS.
  3. INSTALL STRIP SEAL JOINT AT LOCATIONS SPECIFIED IN THESE PLANS.
  4. REMOVE REAR ABUTMENT AND FORWARD ABUTMENT ABOVE FOOTINGS. INSTALL NEW STRIP SEAL JOINT.
  5. REMOVE AND REPLACE APPROACH SLABS.
  6. METALIZE EXISTING PILES AND GALVANIZE PROPOSED PILES.
  7. REPLACE EXISTING DETERIORATED AREAS OF SLOPE PROTECTION AND INSTALL NEW SLOPE PROTECTION IN THE WIDENED SECTION.
  8. PATCH AND SEAL CONCRETE SURFACES, AS PER THE DETAILS OF THESE PLANS.
  9. FINISH OTHER ITEMS OF WORK WHICH ARE SPECIFIED IN THESE PLANS TO COMPLETE THE REHABILITATION.
  10. MAINTAIN TRAFFIC AS NOTED.  
 (IT IS NOT INTENDED THAT THE ABOVE WORK WILL OCCUR IN THE SEQUENTIAL ORDER LISTED.)

**PROPOSED STRUCTURE**  
 TYPE: 18 SPAN CONTINUOUS PRESTRESSED CONC. I- BEAMS WITH INTM. EXP. JTS. AND COMPOSITE REINF. CONC. DECK SUPPORTED ON REINF. CONC. CAP & STEEL PILE PIERS AND REINF. CONC. ABUTMENTS.  
 SPANS: 92'-6", 16 SPANS @ 119'-00", 92'-6" C/C SUPPORTS  
 ROADWAY: 52'-0" TOE TO TOE PARAPET  
 DESIGN LOADING: HS-25 AND THE ALTERNATE MILITARY LOADING  
 SKEW: NONE  
 WEARING SURFACE: MONOLITHIC CONCRETE  
 ALIGNMENT: TANGENT CROWN: 3/16"/FT  
 SUPERELEVATION: TRANSITION START @ 68+23.00  
 APPROACH SLABS: AS-I-81 (25'-0" LONG)  
 LATITUDE: 41°-06'-20" N  
 LONGITUDE: 81°-58'-45" W

BARR ENGINEERING, INC.  
 8748 BRECKSVILLE ROAD, SUITE 130  
 BRECKSVILLE, OHIO 44141  
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MAHONING COUNTY  
 STA. 48+22.75  
 STA. 69+17.25

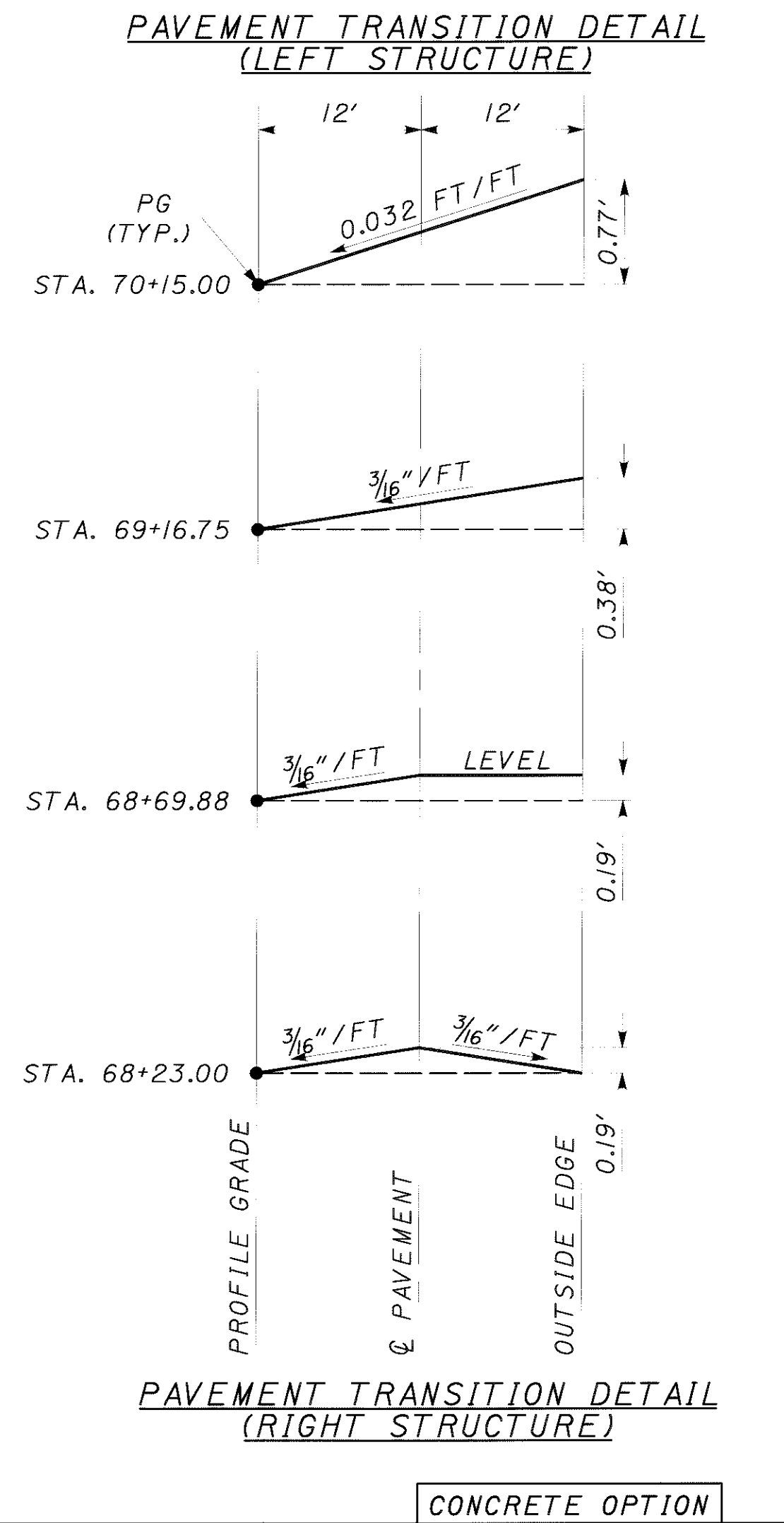
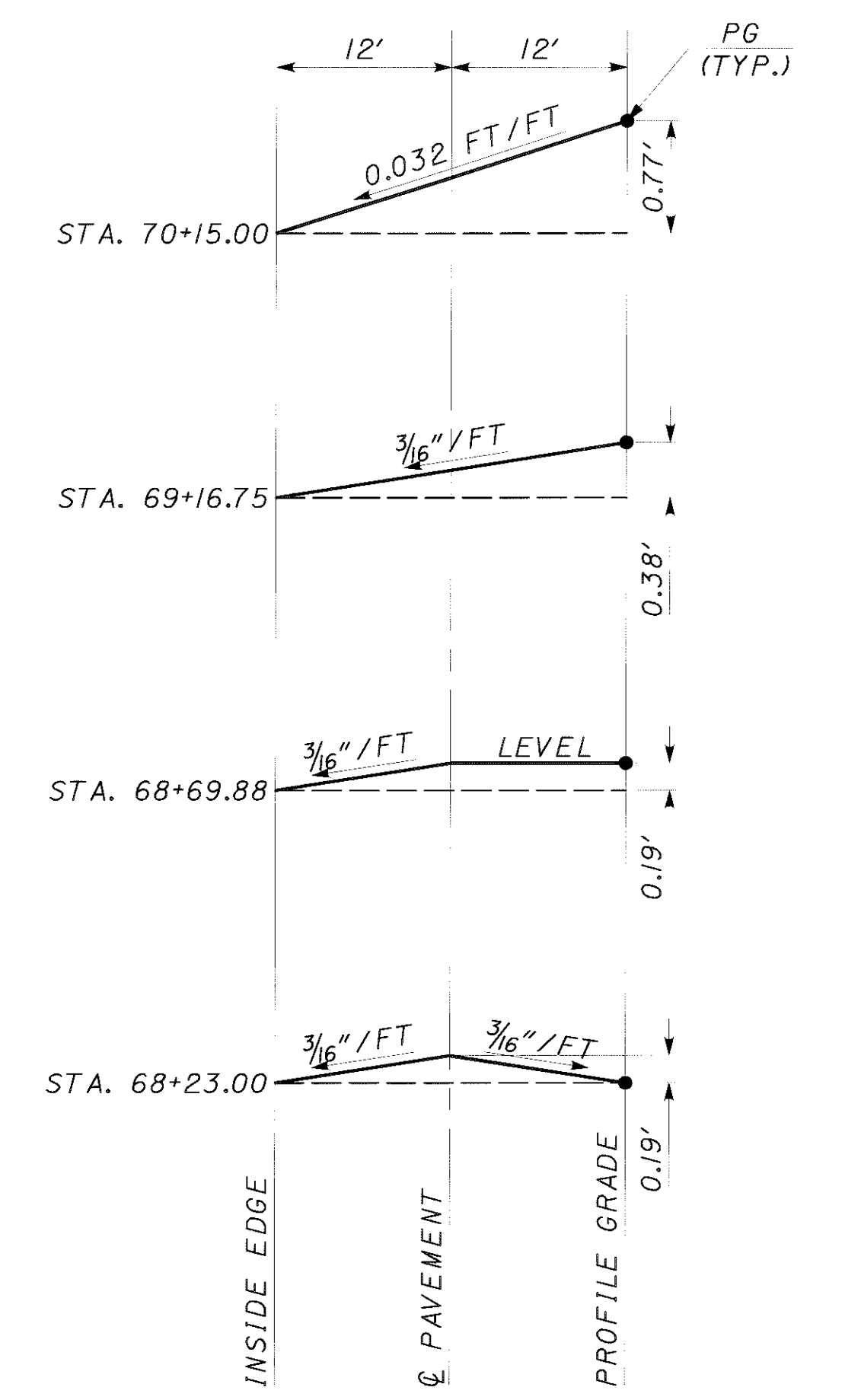
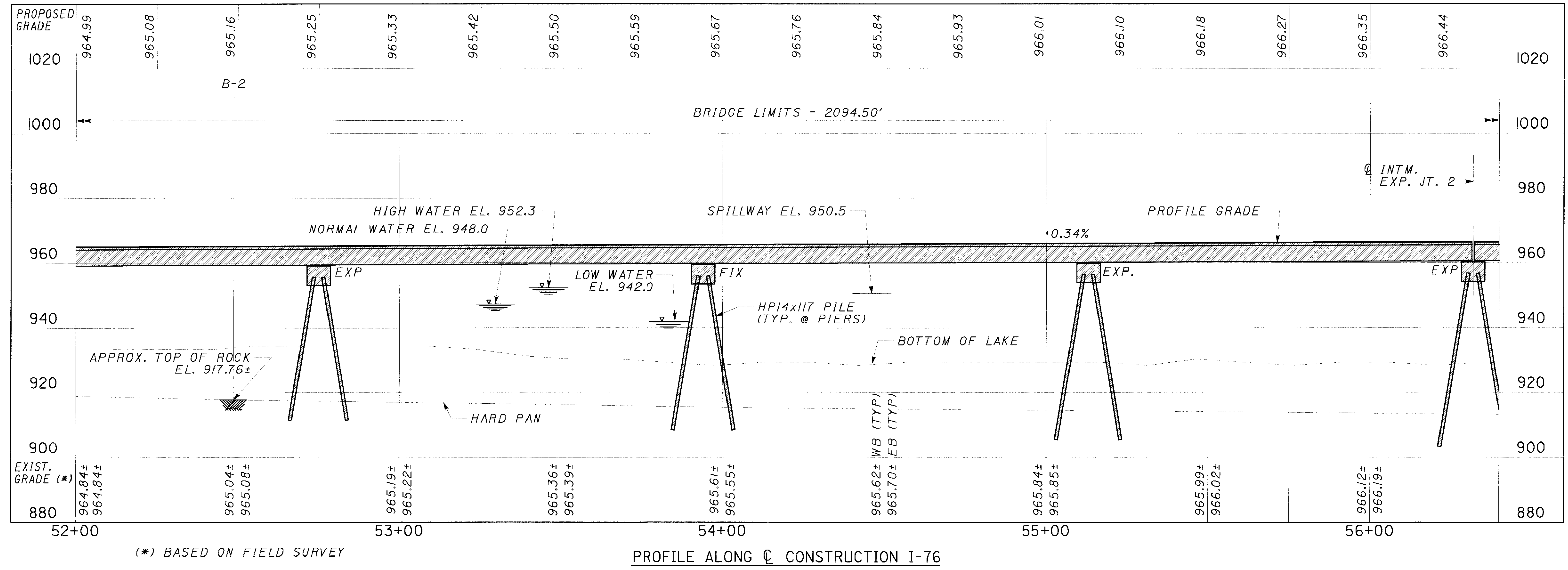
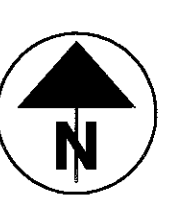
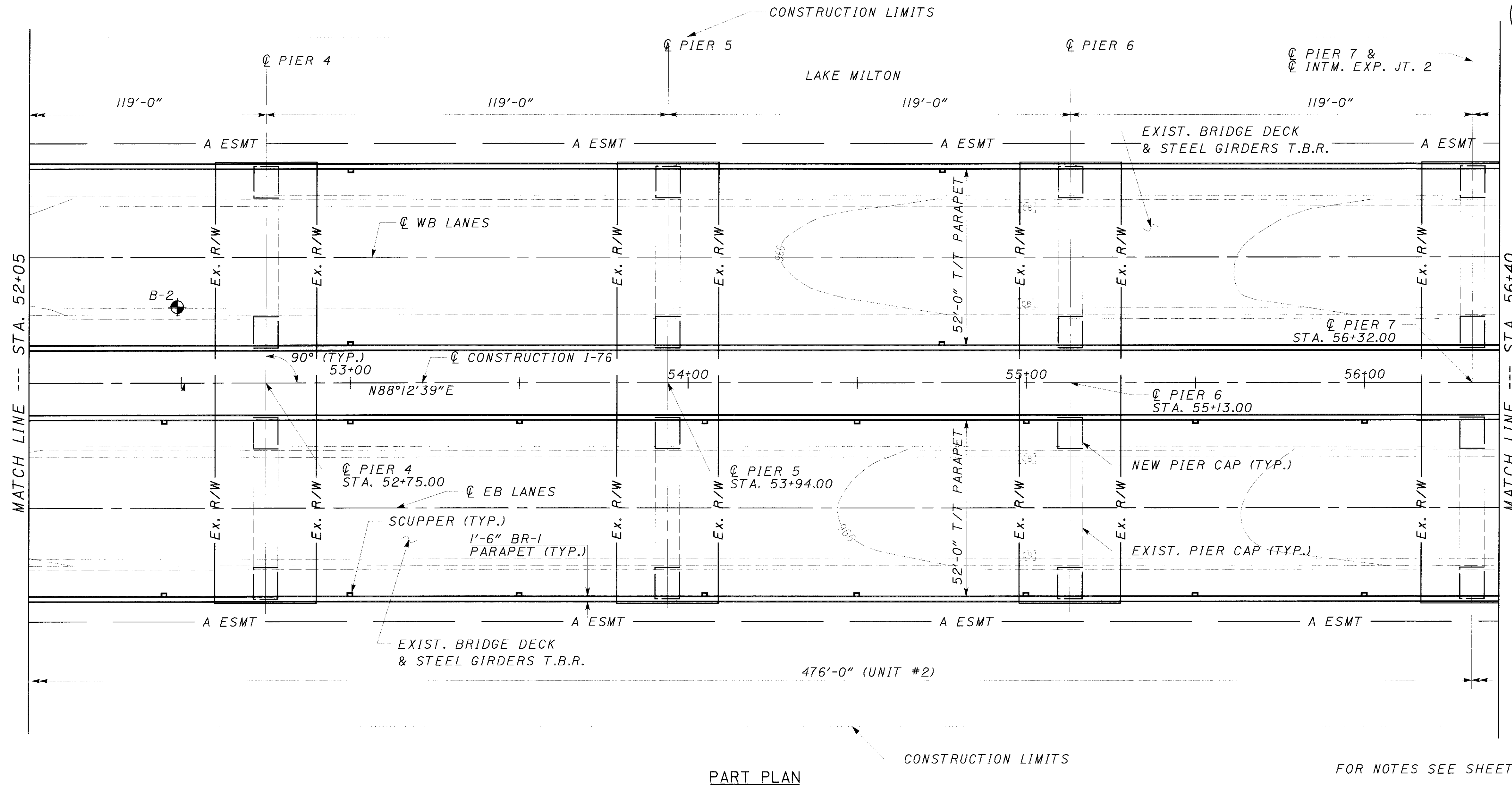
MAH-76-0.86  
 I-76 OVER LAKE MILTON

DATE: 04/06/01  
 DRAWN: CLH  
 DESIGNED: KVB  
 CHECKED: ASB

PROJECT NO.: 5002702(L), 5002737(R)

SPOI.DGN

1/41  
96A  
102



DESIGN AGENCY  
**BARR ENGINEERING, INC.**  
 8748 BRECKSVILLE ROAD, SUITE 150  
 BRECKSVILLE, OHIO 44144  
 (440) 526-6455 FAX (440) 526-6457

DATE  
 04/06/01

REVIEWED  
 CLH

DRAWN  
 CLH

CHECKED  
 KVB

ASB

PROJECT NO.  
 5002T02(L), 5002T3(R)

MAHONING COUNTY  
 STA. 48+22.75  
 STA. 69+17.25

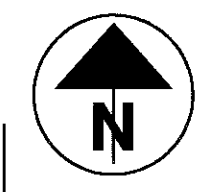
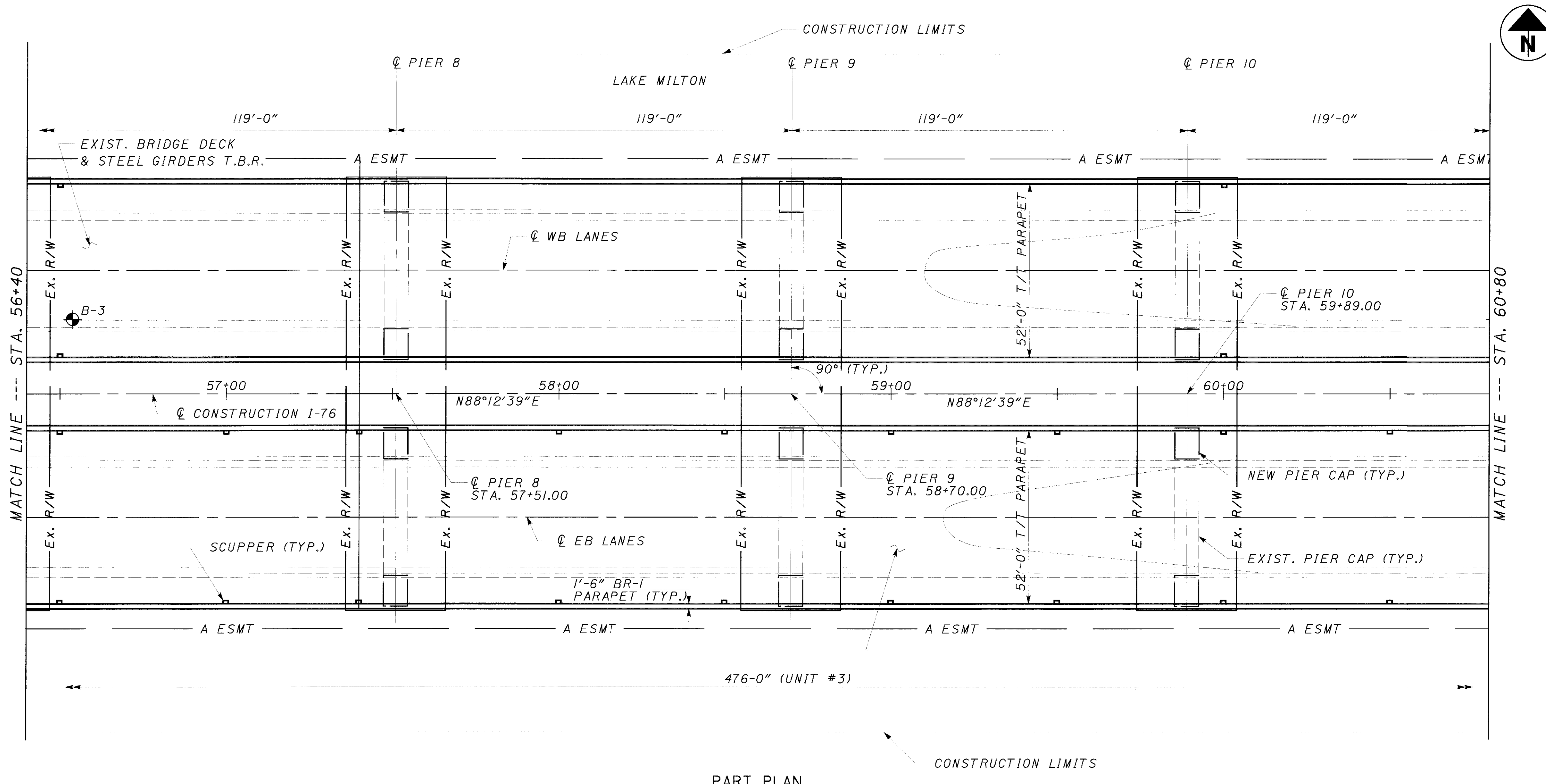
S I T E P L A N  
 BRIDGE NO.: MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

MAH-76-0.86

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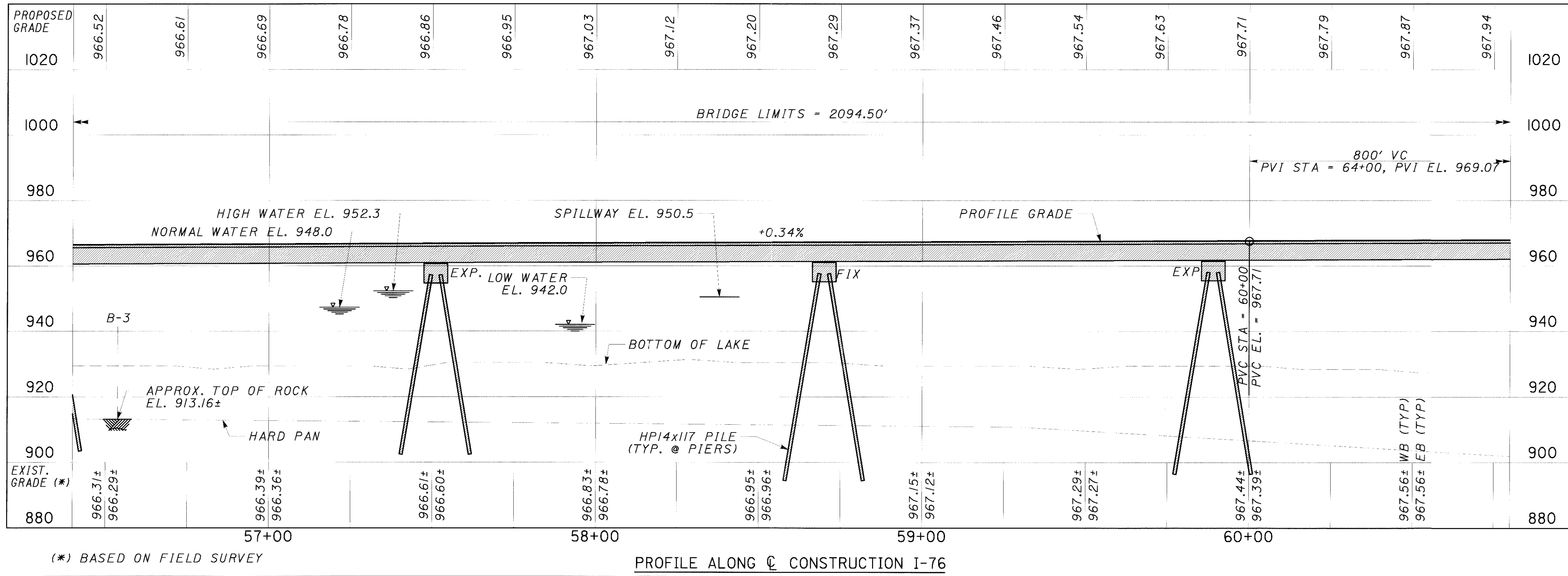


FOR NOTES SEE SHEET 1/41

| SCUPPER LOCATIONS AT EACH CURB FOR LEFT BRIDGE |  |
|--|--|
| STATION  |  |
| 49+50.00                                       |  |
| 51+25.00                                       |  |
| 53+00.00                                       |  |
| 54+75.00                                       |  |
| 56+50.00                                       |  |
| 58+25.00                                       |  |
| 60+00.00                                       |  |
| 66+00.00                                       |  |
| 68+00.00                                       |  |

| SCUPPER LOCATIONS AT EACH CURB FOR RIGHT BRIDGE |  |
|---|--|
| STATION   |  |
| 48+50.00  |  |
| 49+00.00  |  |
| 49+50.00  |  |
| 50+00.00  |  |
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| 66+50.00  |  |
| 66+94.00  |  |
| 67+50.00  |  |
| 68+00.00  |  |
| 68+50.00  |  |
| 69+00.00  |  |

PART PLAN



| BENCHMARKS |  |
|------------|--|
| TBM #1:    | IRON PIN ON C<br>STA. 48+14.36, EL. 962.65 |
| TBM #2:    | IRON PIN ON C<br>STA. 48+00.00, EL. 961.93 |
| TBM #3:    | IRON PIN ON C<br>STA. 69+25.00, EL. 965.31 |
| TBM #4:    | IRON PIN ON C<br>STA. 69+42.80, EL. 964.14 |

CONCRETE OPTION

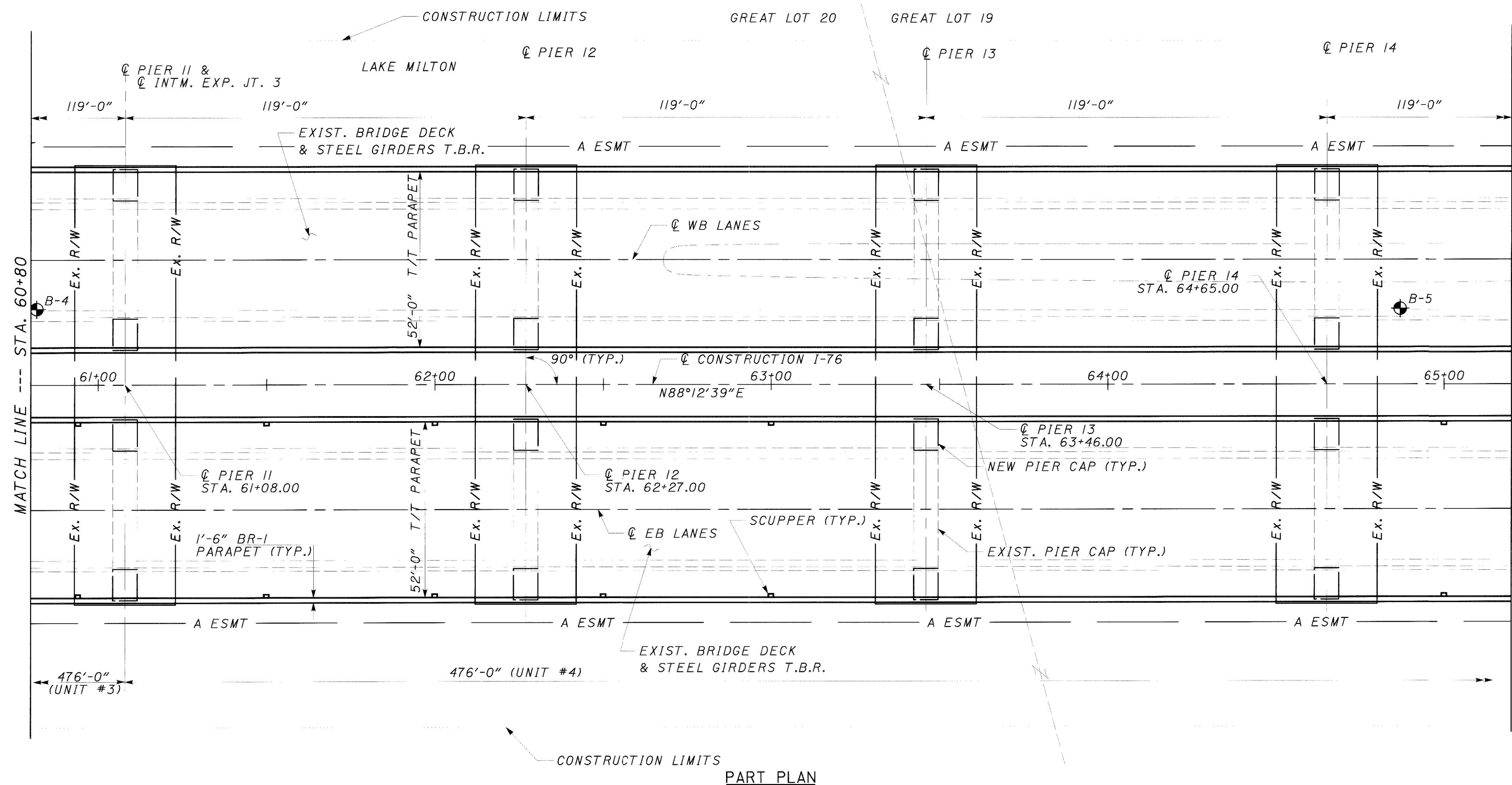
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 BRECKSVILLE, OHIO 44141  
 (440) 526-6455

MAHONING COUNTY  
 STA. 48+22.75  
 STA. 69+17.25

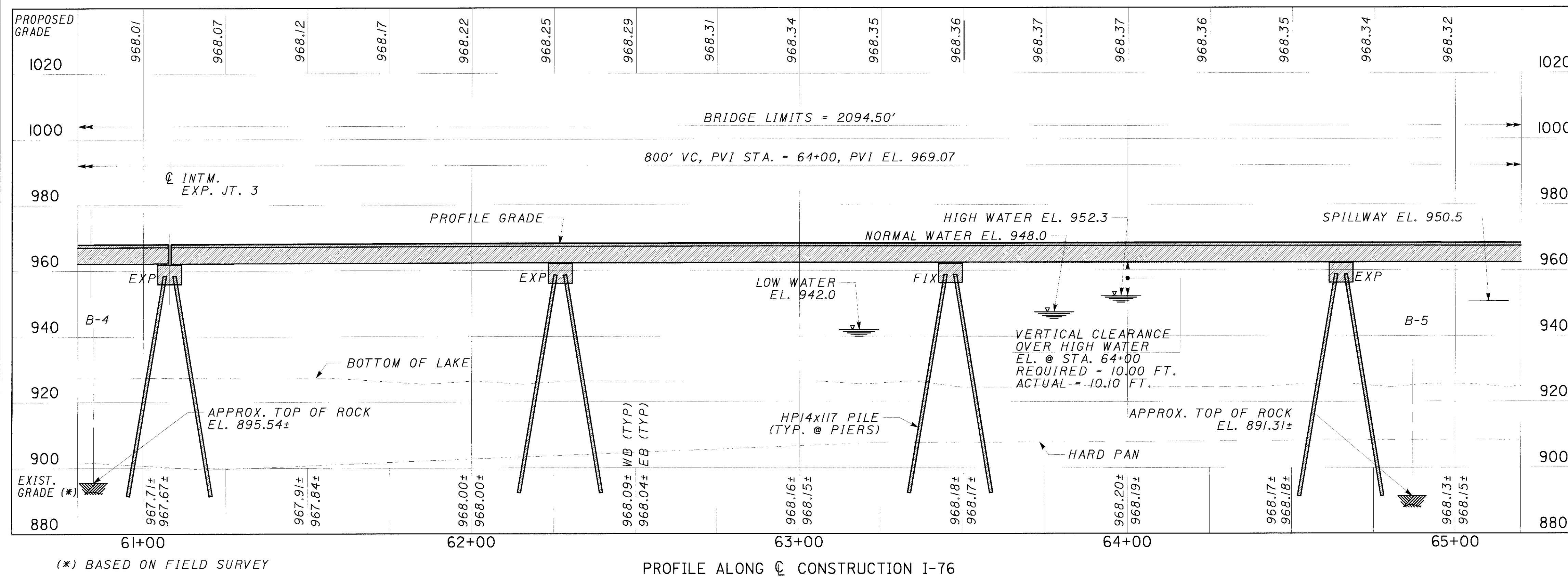
MAH-76-0.86  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

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96C  
 102



PART PLAN



PROFILE ALONG @ CONSTRUCTION I-76

(\* ) BASED ON FIELD SURVEY

CONCRETE OPTION

DESIGN AGENCY: BARR ENGINEERING, INC.  
 8746 BRECKSVILLE ROAD, SUITE 130  
 BRECKSVILLE, OHIO 44141  
 (440) 526-6455 FAX (440) 526-6457

DATE: 04/06/01  
 REFERENCE: GEA 5002702U, 5002731R  
 DESIGNER: KVB  
 CHECKED: ASB  
 DRAWN: CLH  
 MAHONING COUNTY  
 STA. 48+22.75  
 STA. 69+17.25

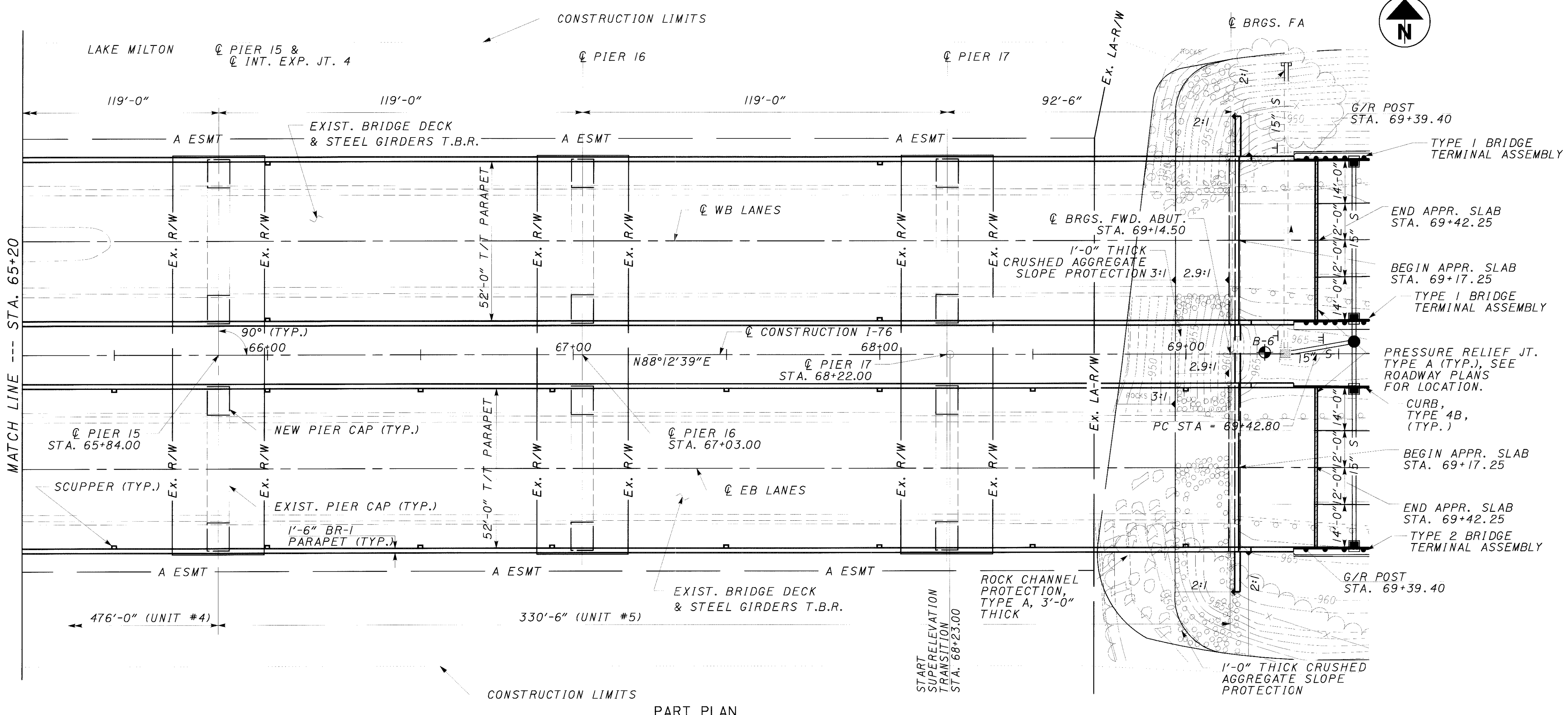
SITE PLAN  
 BRIDGE NO.: MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

**MAH-76-0.86**

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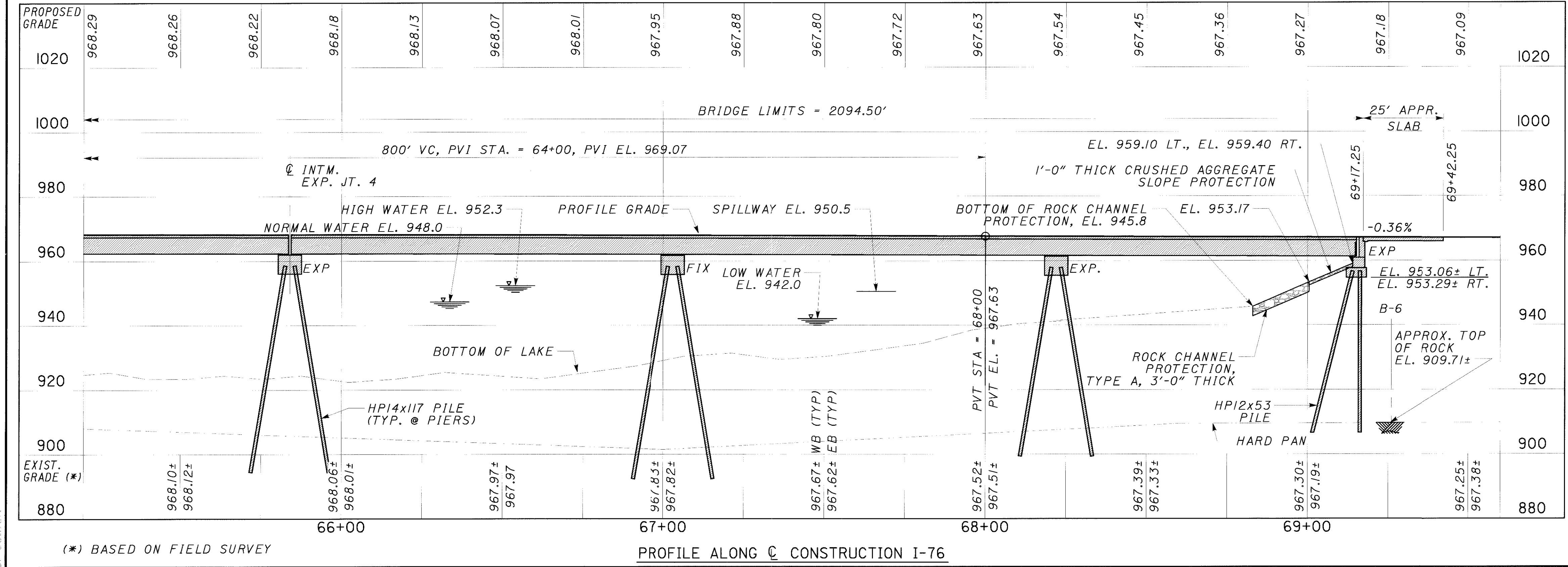
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 102





FOR NOTES SEE SHEET **1741**

**PART PLAN**



**PROFILE ALONG @ CONSTRUCTION I-76**

(\* ) BASED ON FIELD SURVEY

**CONCRETE OPTION**

DESIGN AGENCY  
**BARR ENGINEERING, INC.**  
 8748 BRECKSVILLE ROAD, SUITE 130  
 BRECKSVILLE, OHIO 44141  
 (440) 526-6455 FAX (440) 526-6457

DATE  
 04/06/01

REVISIONS  
 GE 50027020(L), 50027313(R)

DESIGNED  
 KVB

CHECKED  
 ASB

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**S I T E P L A N**  
 BRIDGE NO.: MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

**MAH-76-0.86**

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 102

# STRUCTURE GENERAL NOTES

**REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:**

|           |         |          |
|-----------|---------|----------|
| AS-1-81   | REVISED | 09-15-94 |
| BR-1      | REVISED | 01-06-99 |
| EXJ-6-95M | REVISED | 03-18-97 |
| PCB-91    | REVISED | 07-06-99 |
| PSID-1-99 | REVISED | 10-20-00 |
| GSD-1-96  | DATED   | 02-12-97 |

**AND TO SUPPLEMENTAL SPECIFICATIONS:**

|     |       |          |
|-----|-------|----------|
| 842 | DATED | 1-06-99  |
| 843 | DATED | 05-05-98 |
| 844 | DATED | 1-06-99  |
| 846 | DATED | 9-09-97  |
| 848 | DATED | 6-30-98  |
| 863 | DATED | 10-12-99 |
| 864 | DATED | 7-11-00  |
| 865 | DATED | 2-22-00  |
| 894 | DATED | 10-12-99 |
| 899 | DATED | 10-21-98 |
| 953 | DATED | 6-14-95  |
| 954 | DATED | 9-9-97   |

**DESIGN SPECIFICATIONS:**

THE MODIFIED PORTION OF THESE STRUCTURES CONFORM TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1996 INCLUDING ALL INTERIM SPECIFICATIONS THRU 1999 AND THE ODOT BRIDGE DESIGN MANUAL.

**DESIGN LOADING:**

HS25 AND THE ALTERNATE MILITARY LOADING AND A FWS OF 60 PSF.

**DESIGN DATA:**

HIGH PERFORMANCE CONCRETE - COMPRESSIVE STRENGTH 4500 PSI (SUPERSTRUCTURE & DIAPHRAGMS)  
 CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 PSI (SUBSTRUCTURE)  
 CONCRETE FOR PRESTRESSED I-BEAMS

COMPRESSIVE STRENGTH = 7000 psi (28 DAY)  
 COMPRESSIVE STRENGTH = 5000 psi (RELEASE)  
 UNIT STRESS - 2800 psi COMPRESSION  
 502 psi TENSION

REINFORCING STEEL - ASTM A615, A616, OR A617.  
 GRADE 60 MINIMUM YIELD STRENGTH, 60 KSI.  
 STRUCTURAL STEEL (FOR CROSSFRAMES) - A36 / A709, GRADE 36 - YIELD STRENGTH 36,000 psi.

PRESTRESSING STRANDS - ASTM A416 GRADE 270, 1/2" DIA. SEVEN WIRE,  
 UNCOATED LOW-RELAXATION STRANDS  
 NOMINAL STRAND AREA = 0.167 SQ. IN.  
 F's = 270,000 psi  
 INITIAL STRESS = 0.75 F's

**DECK PROTECTION METHOD:**

EPOXY COATED REINFORCING STEEL AND 2 1/2" CONCRETE COVER.

**MONOLITHIC WEARING SURFACE:**

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

**EXISTING STRUCTURE VERIFICATION:**

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND 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 REFERED TO CMS SECTIONS 102.05, 105.02 AND 513.02/863.07.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID 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 STRUCTURE PLANS:**

THE ORIGINAL DESIGN PLANS MAY BE EXAMINED BY PROSPECTIVE BIDDERS AT THE DEPARTMENT OF TRANSPORTATION, DISTRICT 4 OFFICE, 705 OAKWOOD STREET, RAVENNA, OHIO 44266 (330) 297-0801.

**ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN**

**DESCRIPTION:** THIS WORK SHALL CONSIST OF THE REMOVAL OF CONCRETE DECKS INCLUDING REMOVAL OF ASPHALT WEARING SURFACE, SIDEWALK, PARAPETS, RAILINGS, DECK JOINTS AND STEEL SUPPORTING SYSTEMS (GIRDERS, CROSS FRAMES, ETC.), ABUTMENTS ABOVE FOOTINGS EXPANSION JOINTS, END AND INTERMEDIATE CROSSFRAME ANGLES AND MEMBERS, DETERIORATED CONCRETE SLOPE PROTECTION, AND THE REMOVAL OF SIGN SUPPORTS AND LIGHT SUPPORT CHANNELS ETC. IN GENERAL, IT INCLUDES THE REMOVAL OF ALL ELEMENTS AS DETAILED OR DESCRIBED IN THESE PLANS TO CONSTRUCT THE PROPOSED DESIGN. CARE SHALL BE TAKEN DURING DECK & GIRDER 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.

**BULB ANGLES:** THE CONTRACTOR IS ADVISED THAT THE ORIGINAL CONSTRUCTION PLANS FOR THE EXISTING STRUCTURE SHOW A BULB ANGLE IN THE CONCRETE DECK. REGARDLESS OF HOW THE BULB ANGLE IS ATTACHED TO THE SUPERSTRUCTURE, ITS REMOVAL WILL BE INCLUDED IN THE LUMP SUM BID FOR ITEM - 202 PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN.

**PROTECTION OF TRAFFIC:** PRIOR TO DEMOLITION OF ANY PORTIONS OF THE EXISTING SUPERSTRUCTURE, THE CONTRACTOR SHALL SUBMIT PLANS FOR THE PROTECTION OF TRAFFIC (VEHICULAR, PEDESTRIAN, AND BOAT) ON OR UNDER THE STRUCTURE TO THE DIRECTOR FOR APPROVAL. THESE PLANS SHALL INCLUDE PROVISIONS FOR ANY DEVICES AND STRUCTURES THAT MAY BE NECESSARY TO ENSURE SUCH PROTECTION. EXISTING VERTICAL CLEARANCES SHALL BE MAINTAINED AT ALL TIMES EXCEPT AS OTHERWISE APPROVED BY THE DIRECTOR.

**REMOVAL METHODS:** PORTIONS OF THE EXISTING STRUCTURE MAY BE REMOVED BY ANY SUITABLE MEANS THAT WILL NOT DAMAGE THOSE PORTIONS OF THE EXISTING STRUCTURE TO BE USED AS PART OF THE PROPOSED STRUCTURE.

**DEMOLITION DEBRIS:** THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID AND/OR LIMIT DEMOLITION DEBRIS FROM ENTERING THE LAKE. ANY MATERIAL THAT DOES FALL INTO THE LAKE SHALL BE REMOVED AS SOON AS POSSIBLE.

**LOADING LIMITATIONS:** 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 THE 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.

**SUBSTRUCTURE CONCRETE REMOVAL** SHALL BE BY MEANS OF APPROVED PNEUMATIC HAMMERS EMPLOYING POINTED AND BLUNT CHISEL TOOLS. HYDRAULIC HOE-RAM TYPE HAMMERS WILL NOT BE PERMITTED. THE WEIGHT OF THE HAMMER SHALL NOT BE MORE THAN 35 POUNDS FOR REMOVAL WITHIN 18 INCHES OF PORTIONS TO BE PRESERVED. OUTSIDE THE 18-INCH LIMIT, HAMMERS NOT EXCEEDING 90 POUNDS, MAY BE USED WITH THE APPROVAL OF THE ENGINEER. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE.

**CUT LINE CONSTRUCTION JOINT PREPARATION:** SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 1 INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. WHERE PRACTICABLE, THE EXISTING REINFORCING STEEL WHERE REQUIRED IN THE PLANS SHALL BE LEFT IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT ABRASIVELY CLEAN JOINT SURFACE AND EXPOSED REINFORCEMENT TO REMOVE LOOSE AND DISINTEGRATED CONCRETE AND LOOSE RUST. THE JOINT SURFACE AND EXPOSED REINFORCEMENT SHALL BE THOROUGHLY CLEANED OF ALL DIRT, DUST, OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. CONCRETE BONDING SURFACES SHALL BE WET WITHOUT FREE WATER AS CONCRETE IS PLACED.

**ASBESTOS NOTIFICATION:** AN ASBESTOS SURVEY OF THE I-76 TWIN BRIDGES OVER LAKE MILTON SCHEDULED FOR REHABILITATION WAS CONDUCTED BY A CERTIFIED ASBESTOS HAZARD EVALUATION SPECIALIST. THE SURVEY DETERMINED THAT NO ASBESTOS IS PRESENT ON THE BRIDGE.

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 STREET, ROOM 107  
 YOUNGSTOWN, OHIO 44503  
 ROBERT RAMHOFF, DIRECTOR  
 PH: (330) 744-1928  
 FX: (330) 744-1928

AT LEAST TEN (10) WORKING DAYS PRIOR TO THE START OF THE BRIDGE REMOVALS, THE CONTRACTOR SHALL PROVIDE A COPY OF THE COMPLETED FORM TO THE ENGINEER. INFORMATION REQUIRED ON THE FORM WILL INCLUDE: 1) THE CONTRACTOR'S NAME AND ADDRESS; 2) THE SCHEDULED DATES FOR THE START AND COMPLETION OF THE BRIDGE REMOVALS; AND 3) A DESCRIPTION OF THE PLANNED REMOVAL 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 - PORTIONS OF STRUCTURE REMOVED, OVER 20-FOOT SPAN, AS PER PLAN.

**PAYMENT:** THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID, FOR WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE REMOVAL WORK IN CONFORMANCE WITH THESE REQUIREMENTS, WITH PERTINENT PROVISIONS OF 202, AND TO THE SATISFACTION OF THE ENGINEER.

**IN LAKE WORK:** IN LAKE WORK WILL BE LIMITED WHERE PRACTICABLE AND ONLY CLEAN NON-ERODIBLE MATERIAL WILL BE USED FOR FORDS OR COFFERDAMS. THIS TEMPORARY PLACED MATERIAL SHALL BE REMOVED AND THE LAKE BOTTOM RESTORED TO NEAR-NATURAL CONDITIONS WHEN THE WORK IS COMPLETED.

|  |                  |                                   |              |                    |   |
|--|------------------|-----------------------------------|--------------|--------------------|---|
| DESIGN AGENCY<br><b>BARR ENGINEERING, INC.</b><br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>04/01/01 | NUMBER<br>GEA 5002702L & 500273TR | DRAWN<br>CLH | CHECKED<br>KVB ASB | <b>STRUCTURE GENERAL NOTES</b><br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON |
| <b>MAH-76-0.86</b>   |                  |                                   |              |                    |   |
| 6 / 41   |                  |                                   |              |                    |   |
| 96F<br>102   |                  |                                   |              |                    |   |

CONCRETE OPTION

# STRUCTURE GENERAL NOTES (CONTINUED)

**ITEM 503, UNCLASSIFIED EXCAVATION, AS PER PLAN:**

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH 503 EXCEPT THAT THE BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE 203 GRANULAR MATERIAL AS PER 203.02 PLACED IN 6" LIFTS.

**PILES DRIVEN TO BEDROCK:**

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

**PILE DESIGN LOADS (ULTIMATE BEARING VALUE):** THE ULTIMATE BEARING VALUE IS 80 TONS PER PILE FOR THE ABUTMENT PILES. THE ULTIMATE BEARING VALUE IS 130 TONS PER PILE FOR THE PIER PILES.

**REAR ABUTMENT PILES (LEFT OR RIGHT BRIDGE):**

8-HP 12X53 PILES 30 FEET LONG, ESTIMATED LENGTH  
8-HP 12X53 PILES OF ORDER LENGTH 30 FEET LONG  
4 SPLICES

**PIER 1 PILES (LEFT OR RIGHT BRIDGE):**

8-HP 14X117 PILES 35 FEET LONG, ESTIMATED LENGTH  
8-HP 14X117 PILES OF ORDER LENGTH 35 FEET LONG  
4 SPLICES

**PIER 2 PILES (LEFT OR RIGHT BRIDGE):**

8-HP 14X117 PILES 40 FEET LONG, ESTIMATED LENGTH  
8-HP 14X117 PILES OF ORDER LENGTH 40 FEET LONG  
4 SPLICES

**PIER 3 PILES (LEFT OR RIGHT BRIDGE):**

8-HP 14X117 PILES 45 FEET LONG, ESTIMATED LENGTH  
8-HP 14X117 PILES OF ORDER LENGTH 45 FEET LONG  
4 SPLICES

**PIER 4, PIER 5 & PIER 6 PILES (LEFT OR RIGHT BRIDGE):**

8-HP 14X117 PILES 50 FEET LONG, ESTIMATED LENGTH  
8-HP 14X117 PILES OF ORDER LENGTH 50 FEET LONG  
4 SPLICES

**PIER 7 PILES (LEFT OR RIGHT BRIDGE):**

8-HP 14X117 PILES 55 FEET LONG, ESTIMATED LENGTH  
8-HP 14X117 PILES OF ORDER LENGTH 55 FEET LONG  
4 SPLICES

**PIER 8 & PIER 17 PILES (LEFT OR RIGHT BRIDGE):**

8-HP 14X117 PILES 60 FEET LONG, ESTIMATED LENGTH  
8-HP 14X117 PILES OF ORDER LENGTH 60 FEET LONG  
4 SPLICES

**PIER 9, PIER 10, PIER 15 & PIER 16 PILES (LEFT OR RIGHT BRIDGE):**

8-HP 14X117 PILES 65 FEET LONG, ESTIMATED LENGTH  
8-HP 14X117 PILES OF ORDER LENGTH 60 FEET LONG  
8-HP 14X117 PILES OF ORDER LENGTH 5 FEET LONG  
8 SPLICES

**PIER 11, PIER 12, PIER 13 & PIER 14 PILES (LEFT OR RIGHT BRIDGE):**

8-HP 14X117 PILES 70 FEET LONG, ESTIMATED LENGTH  
8-HP 14X117 PILES OF ORDER LENGTH 60 FEET LONG  
8-HP 14X117 PILES OF ORDER LENGTH 10 FEET LONG  
8 SPLICES

**FORWARD ABUTMENT PILES (LEFT OR RIGHT BRIDGE):**

8-HP 12X53 PILES 50 FEET LONG, ESTIMATED LENGTH  
8-HP 12X53 PILES OF ORDER LENGTH 50 FEET LONG  
4 SPLICES

**ITEM 507, STEEL PILES HPI4x117, FURNISHED, AS PER PLAN:**

THE NEW PIER PILES SHALL BE SHOP GALVANIZED AS PER 711.02. THE GALVANIZING COATING MINIMUM THICKNESS SHALL BE 4 MILS. GOUGES, SCRAPES, SCRATCHES OR OTHER SURFACE IMPERFECTIONS CAUSED BY HANDLING OR DRIVING OF THE PILES SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER. AFTER GALVANIZING THE PILES STRAIGHTNESS ALONG X-AXIS AND Y-AXIS WILL BE WITHIN 3/8" TOLERANCE. THE COST OF GALVANIZING OF NEW PIER PILES SHALL BE INCLUDED WITH ITEM 507 - STEEL PILES HPI4x117, FURNISHED, AS PER PLAN.

**ITEM 507, STEEL POINTS, AS PER PLAN:**

STEEL PILE POINTS SHALL BE USED TO PROTECT THE TIPS OF THE PROPOSED STEEL "H" PILING. THE STEEL POINTS SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORPORATION, 262 RUTHERFORD BLVD, CLIFTON, NEW JERSEY 07014; INTERNATIONAL CONSTRUCTION EQUIPMENT, INC., 301 WAREHOUSE DRIVE, MATTHEWS, NORTH CAROLINA 28015; DOUGHERTY FOUNDATION PRODUCTS, INC., P.O. BOX 688, FRANKLIN LAKES, NEW JERSEY 07417; VERSA STEEL INC, 3601 N.W. YEON AVE., P.O. BOX 10559, PORTLAND, OREGON 97210; PILING ACCESSORIES, NC, 3467 GRIBBLE ROAD, MATHEWS, NORTH CAROLINA 28105; OR BY A MANUFACTURER THAT CAN FURNISH A STEEL POINT THAT IS ACCEPTABLE TO THE DIRECTOR. THE MATERIAL USED FOR THE MANUFACTURING OF PILE POINTS SHALL CONFORM TO ASTM A27 65/35-CLASS 2-HEAT TREATED OR AASHTO M103 65/35-HEAT TREATED. WELDING OF THE PILE POINTS TO THE PILE SHALL BE IN ACCORDANCE WITH AWS D1.5 OR THE MANUFACTURER'S WRITTEN WELDING PROCEDURE SUPPLIED TO THE ENGINEER BEFORE THE WELDING IS PERFORMED. A NOTARIZED COPY OF THE MILL TEST REPORT SHALL BE SUBMITTED TO THE ENGINEER.

**ITEM 601- CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN:**

FIELD INSPECTION HAS REVEALED THE LOSS OF CRUSHED AGGREGATE PROTECTION AT EXISTING ABUTMENT SLOPES. CRUSHED AGGREGATE, MATCHING THE EXISTING TYPE, SHALL BE ADDED TO FILL THE VOIDED AREAS OF THE SLOPES. A FRESH LAYER (3" +/- THICK) OF CRUSHED AGGREGATE SHALL THEN BE PLACED ON ALL EXISTING SLOPE PROTECTION AREAS. ABUTMENT EXTENSIONS SHALL RECEIVE 1' (+) THICK CRUSHED AGGREGATE OF THE SAME TYPE TO PROVIDE A CONTINUAL UNIFORM SURFACE FOR THE ENTIRE AREA OF SLOPE PROTECTION. ALL LABOR, MATERIALS AND INCIDENTAL COSTS TO ACCOMPLISH THIS WORK SHALL BE COVERED UNDER ITEM 601- CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN USING CUBIC YARD AS THE UNIT FOR PAYMENT.

**ITEM 842 - CLASS C CONCRETE, PIER CAP AS PER PLAN**

**ITEM 842 - CLASS C CONCRETE, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN**

**ITEM 842 - CLASS C CONCRETE, FOOTING, AS PER PLAN**

EPOXY GROUT FOR ALL DOWEL HOLES SHALL BE PER 705.20. IN OTHER RESPECTS, DOWEL HOLES SHALL CONFORM WITH 510. DOWEL BARS, DOWEL HOLES, GROUT AND WORK RELATED TO PLACING THEM ARE PAID WITH CONCRETE.

**EXTENSION CONSTRUCTION JOINTS:**

EXISTING CONCRETE SURFACES AGAINST WHICH NEW CONCRETE WILL BE CAST, SHALL BE SCARIFIED AT LEAST 1/4" DEEP AND AS NECESSARY TO REMOVE DETERIORATED OR UNSOUND CONCRETE. THE SURFACES THUS EXPOSED SHALL BE ROUGH AND IRREGULAR WITH AN AMPLITUDE OF 1/4" OR MORE. WHERE SPECIFIED, KEYS SHALL BE CUT TO THE DIMENSIONS GIVEN ON THE PLANS. HIGH PRESSURE WATER BLAST OR OTHER APPROVED METHODS SHALL BE USED TO REMOVE DUST, DIRT, LOOSE AND DISINTEGRATED CONCRETE AND FOREIGN MATERIAL FROM JOINT SURFACES. JOINT SURFACES SHALL BE FLUSHED WITH WATER AND BE ALLOWED TO DRY TO A SATURATED SURFACE DRY CONDITION IMMEDIATELY PRIOR TO CONCRETE PLACEMENT.

**MAINTENANCE OF TRAFFIC:**

FOR MAINTENANCE OF TRAFFIC NOTES SEE SHEET 11741 AND ROADWAY PLANS.

**CONVERSION OF STANDARD BRIDGE DRAWINGS**

SOME OF THE STANDARD BRIDGE DRAWINGS REFERENCED IN THIS PLAN ARE METRIC. ANY CONVERSION OF DIMENSIONS REQUIRED TO CONSTRUCT THE ITEMS SHOWN ON THE STANDARDS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONVERSION SHALL BE MADE USING THE SI (METRIC) TO ENGLISH CONVERSION FACTORS PROVIDED IN SECTION 109.011 OF THE 1997 CONSTRUCTION AND MATERIALS SPECIFICATIONS. THE APPENDIX OF ASTM E380 SHALL BE UTILIZED FOR ANY ADDITIONAL CONVERSION FACTORS REQUIRED. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL REFLECT STANDARD INDUSTRY ENGLISH VALUES WHERE SUITABLE.

**ABBREVIATIONS:**

|   |  |
|---|--|
| A-ESMT - AERIAL EASEMENT                  | NPCPP - NON-PERFORATED CORRUGATED PLASTIC PIPE |
| ABUT(S).- ABUTMENT(S)                     | O/O - OUT TO OUT                               |
| APPR. - APPROACH                          | PCPP - PERFORATED CORRUGATED PLASTIC PIPE      |
| B - BOTTOM                                | P - PLATE                                      |
| BRG(S). - BEARING(S)                      | PC - PRESTRESSED CONCRETE                      |
| C/C - CENTER TO CENTER                    | PEJF - PREFORMED EXPANDED JOINT FILLER         |
| CL - CENTERLINE                           | PROP. - PROPOSED                               |
| CIPRC - CAST-IN-PLACE REINFORCED CONCRETE | RA - REAR ABUTMENT                             |
| CJ - CONSTRUCTION JOINT                   | REQ'D - REQUIRED                               |
| C.M.P. - CORRUGATED METAL PIPE            | RT. - RIGHT                                    |
| CONST. - CONSTRUCTION                     | SER. - SERIES                                  |
| DWLS. - DOWELS                            | SPA. - SPACING(S)                              |
| EB - EASTBOUND                            | STA - STATION                                  |
| EF - EACH FACE                            | T - TOP  |
| EL. - ELEVATION                           | T.B.R. - TO BE REMOVED                         |
| EXIST. - EXISTING                         | TEMP. - TEMPORARY                              |
| FA - FORWARD ABUTMENT                     | TH. - THICK                                    |
| FF - FAR FACE                             | T/T - TOE TO TOE                               |
| FS - FIELD SPLICE                         | TYP. - TYPICAL                                 |
| FWD. - FORWARD                            | UNO - UNLESS NOTED OTHERWISE                   |
| FWS - FUTURE WEARING SURFACE              | WB - WESTBOUND                                 |
| INTM. - INTERMEDIATE                      | W.R.T. - WITH RESPECT TO                       |
| JT. - JOINT                               |  |
| LT. - LEFT                                |  |
| MAX. - MAXIMUM                            |  |
| MIN. - MINIMUM                            |  |
| NF - NEAR FACE                            |  |

DESIGN AGENCY: BARR ENGINEERING, INC. 5 EAST LONG STREET COLUMBUS, OHIO 43215 (614) 224-1941, (614) 224-0907 FAX  
 DATE: 04/06/01  
 REVIEWER: GE 5002702L & 500273TR  
 DRAWN: CLH  
 CHECKED: ASB  
**STRUCTURE GENERAL NOTES**  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON  
**MAH-76-0.86**  
 7 / 41  
 96G  
 102

CONCRETE OPTION

# ESTIMATED QUANTITIES

CALC. BY CLH      CHKD. BY KVB  
DATE 04/04/01      DATE 04/06/01

|         |           |          |   | LEFT BRIDGE |                 |        |          |                  | RIGHT BRIDGE |                 |        |          |                  |                       |
|---------|-----------|----------|---|-------------|-----------------|--------|----------|------------------|--------------|-----------------|--------|----------|------------------|-----------------------|
| ITEM    | ITEM EXT. | UNIT     | DESCRIPTION   | GENERAL     | SUPER-STRUCTURE | PIERS  | ABUTMENT | TOTAL LT. BRIDGE | GENERAL      | SUPER-STRUCTURE | PIERS  | ABUTMENT | TOTAL RT. BRIDGE | AS PER PLAN SHEET NO. |
| 202     | 11203     |          | PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN   |             | LUMP            |        | LUMP     | LUMP             |              | LUMP            |        | LUMP     | LUMP             | 6 OF 41               |
| 503     | 11100     |          | COFFERDAMS, CRIBS AND SHEETING  | LUMP        |                 |        |          | LUMP             | LUMP         |                 |        |          | LUMP             | 7 OF 41               |
| 503     | 21301     |          | UNCLASSIFIED EXCAVATION, AS PER PLAN  |             |                 |        | LUMP     | LUMP             |              |                 |        | LUMP     | LUMP             |                       |
| 505     | 11100     |          | PILE DRIVING EQUIPMENT MOBILIZATION   | LUMP        |                 |        |          | LUMP             | LUMP         |                 |        |          | LUMP             |                       |
| 507     | 00200     | LIN. FT. | STEEL PILES HP12x53, FURNISHED  |             |                 |        | 640      | 640              |              |                 |        | 640      | 640              |                       |
| 507     | 00250     | LIN. FT. | STEEL PILES HP12x53, DRIVEN   |             |                 |        | 640      | 640              |              |                 |        | 640      | 640              |                       |
| 507     | 00371     | LIN. FT. | STEEL PILES HP14x117, FURNISHED, AS PER PLAN  |             |                 | 7,880  |          | 7,880            |              |                 | 7,880  |          | 7,880            | 7 OF 41               |
| 507     | 00380     | LIN. FT. | STEEL PILES HP14x117, DRIVEN  |             |                 | 7,880  |          | 7,880            |              |                 | 7,880  |          | 7,880            |                       |
| 507     | 50500     | EACH     | STEEL PILE SPLICES  |             |                 | 100    | 8        | 108              |              |                 | 100    | 8        | 108              |                       |
| 507     | 93301     | EACH     | STEEL POINT (OR SHOE), AS PER PLAN  |             |                 | 136    | 16       | 152              |              |                 | 136    | 16       | 152              | 7 OF 41               |
| SPECIAL | 51267510  | SQ. YD.  | SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (SEE PROPOSAL NOTE)   |             | 10,146          | 2,796  | 156      | 13,098           |              | 10,146          | 2,796  | 156      | 13,098           |                       |
| 512     | 44400     | SQ. YD.  | TYPE B WATERPROOFING  |             |                 |        | 36       | 36               |              |                 |        | 36       | 36               |                       |
| 516     | 11210     | LIN. FT. | STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL - ABUTMENT EXPANSION JOINT  |             | 109             |        |          | 109              |              | 109             |        |          | 109              |                       |
| 516     | 11210     | LIN. FT. | STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL - INTERMEDIATE EXPANSION JOINT  |             | 218             |        |          | 218              |              | 218             |        |          | 218              |                       |
| 516     | 13900     | SQ. FT.  | 2" PREFORMED EXPANSION JOINT FILLER   |             |                 |        |          | -                |              |                 |        | 76       | 76               |                       |
| 516     | 43201     | EACH     | ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE, 2 <sup>3</sup> / <sub>4</sub> "x16"x16"), AS PER PLAN   |             |                 | 156    |          | 156              |              |                 | 156    |          | 156              | 21 OF 41              |
| 516     | 43401     | EACH     | ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE, 4 <sup>1</sup> / <sub>2</sub> "x14 <sup>3</sup> / <sub>4</sub> "x14 <sup>3</sup> / <sub>4</sub> "), AS PER PLAN |             |                 |        | 12       | 12               |              |                 |        | 12       | 12               | 21 OF 41              |
| 516     | 43401     | EACH     | ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE, 4 <sup>5</sup> / <sub>16</sub> "x16"x16"), AS PER PLAN  |             |                 | 48     |          | 48               |              |                 | 48     |          | 48               | 21 OF 41              |
| 518     | 12300     | EACH     | SCUPPER, INCLUDING SUPPORTS   |             | 18              |        |          | 18               |              | 78              |        |          | 78               |                       |
| 518     | 21200     | CU. YD.  | POROUS BACKFILL WITH FILTER FABRIC  |             |                 |        | 94       | 94               |              |                 |        | 95       | 95               |                       |
| 518     | 40000     | LIN. FT. | 6" PERFORATED CORRUGATED PLASTIC PIPE   |             |                 |        | 155      | 155              |              |                 |        | 155      | 155              |                       |
| 518     | 40010     | LIN. FT. | 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS   |             |                 |        | 20       | 20               |              |                 |        | 20       | 20               |                       |
| SPECIAL | 53000400  | EACH     | STRUCTURE MISC.: EXIST. DECK, CURB, PARAPET AND RAIL MODIFICATIONS FOR INSTALLING BATTERED PILES AT PIER EXTENSIONS & RECONSTRUCTING THE RAIL                               | 34          |                 |        |          | 34               | 34           |                 |        |          | 34               | 11 & 12 OF 41         |
| SPECIAL | 53000600  | SQ. FT.  | STRUCTURE MISC.: METALLIZING AND SEALING THE EXIST. STEEL PIER PILES  |             |                 | 26,010 |          | 26,010           |              |                 | 26,010 |          | 26,010           | 39-41 OF 41           |
| SPECIAL | 53000600  | SQ. FT.  | STRUCTURE MISC.: SURFACE PREPARATION OF EXISTING STEEL PIER PILES   |             |                 | 26,010 |          | 26,010           |              |                 | 26,010 |          | 26,010           | 39-41 OF 41           |
| SPECIAL | 53000500  | HOOR     | STRUCTURE MISC.: GRINDING FINS, TEARS & SLIVERS - EXIST. STEEL PIER PILE SURFACES   |             |                 | 50     |          | 50               |              |                 | 50     |          | 50               | 39-41 OF 41           |
| 601     | 20501     | CU. YD.  | CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN   | 210         |                 |        |          | 210              | 210          |                 |        |          | 210              | 7 OF 41               |
| 601     | 34000     | CU. YD.  | ROCK CHANNEL PROTECTION, TYPE A WITHOUT FILTER  | 325         |                 |        |          | 325              | 325          |                 |        |          | 325              |                       |
| 842     | 42501     | CU. YD.  | CLASS C CONCRETE, PIER CAP, AS PER PLAN   |             |                 | 681    |          | 681              |              |                 | 681    |          | 681              | 7 OF 41               |
| 842     | 44101     | CU. YD.  | CLASS C CONCRETE, ABUTMENT NOT INCLUDING FOOTING, AS PER PLAN   |             |                 |        | 132      | 132              |              |                 |        | 134      | 134              | 7 OF 41               |
| 842     | 46501     | CU. YD.  | CLASS C CONCRETE, FOOTING, AS PER PLAN  |             |                 |        | 37       | 37               |              |                 |        | 37       | 37               | 7 OF 41               |
| 843     | 50000     | SQ. FT.  | PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR   |             |                 | 5 (Δ)  |          | 5                |              |                 | 5 (Δ)  |          | 5                |                       |
| 865     | 15030     | EACH     | DRAPED STRAND PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, LEVEL 3, TYPE 4 MOD. (60")  |             | 108             |        |          | 108              |              | 108             |        |          | 108              |                       |
| 865     | 16000     | EACH     | PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, MISC. DIAPHRAGMS  |             | 270             |        |          | 270              |              | 270             |        |          | 270              |                       |
| 894     | 10000     | CU. YD.  | HIGH PERFORMANCE CONCRETE, FOR BRIDGE DECK WITH WARRANTY  |             | 4,500           |        |          | 4,500            |              | 4,500           |        |          | 4,500            |                       |

( Δ ) INDICATES CONTINGENCY QUANTITY TO BE USED AS DIRECTED BY THE ENGINEER

CONCRETE OPTION

DESIGN AGENCY: BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

DATE: 04/06/01  
 STRUCTURE FULL NUMBER: 5002702L & 5002737R

DRAWN BY: CLH  
 REVISION:

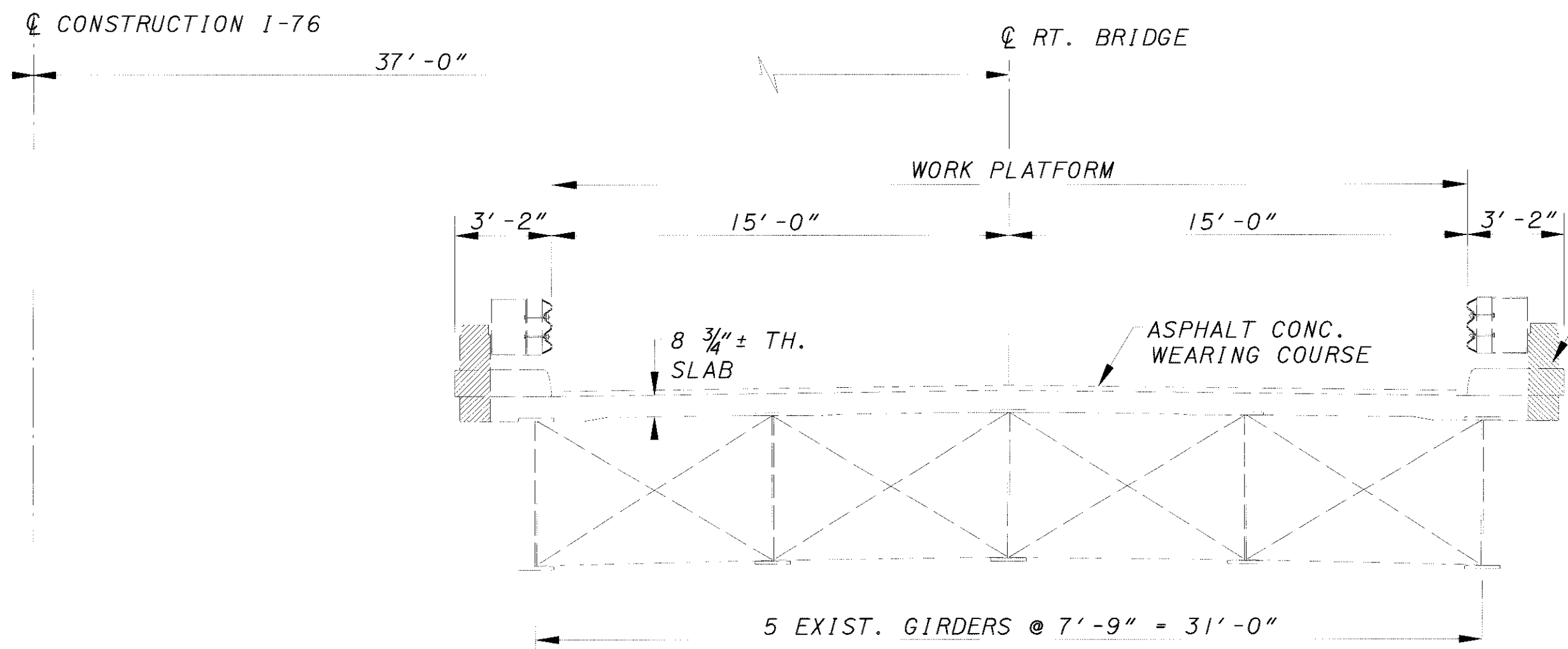
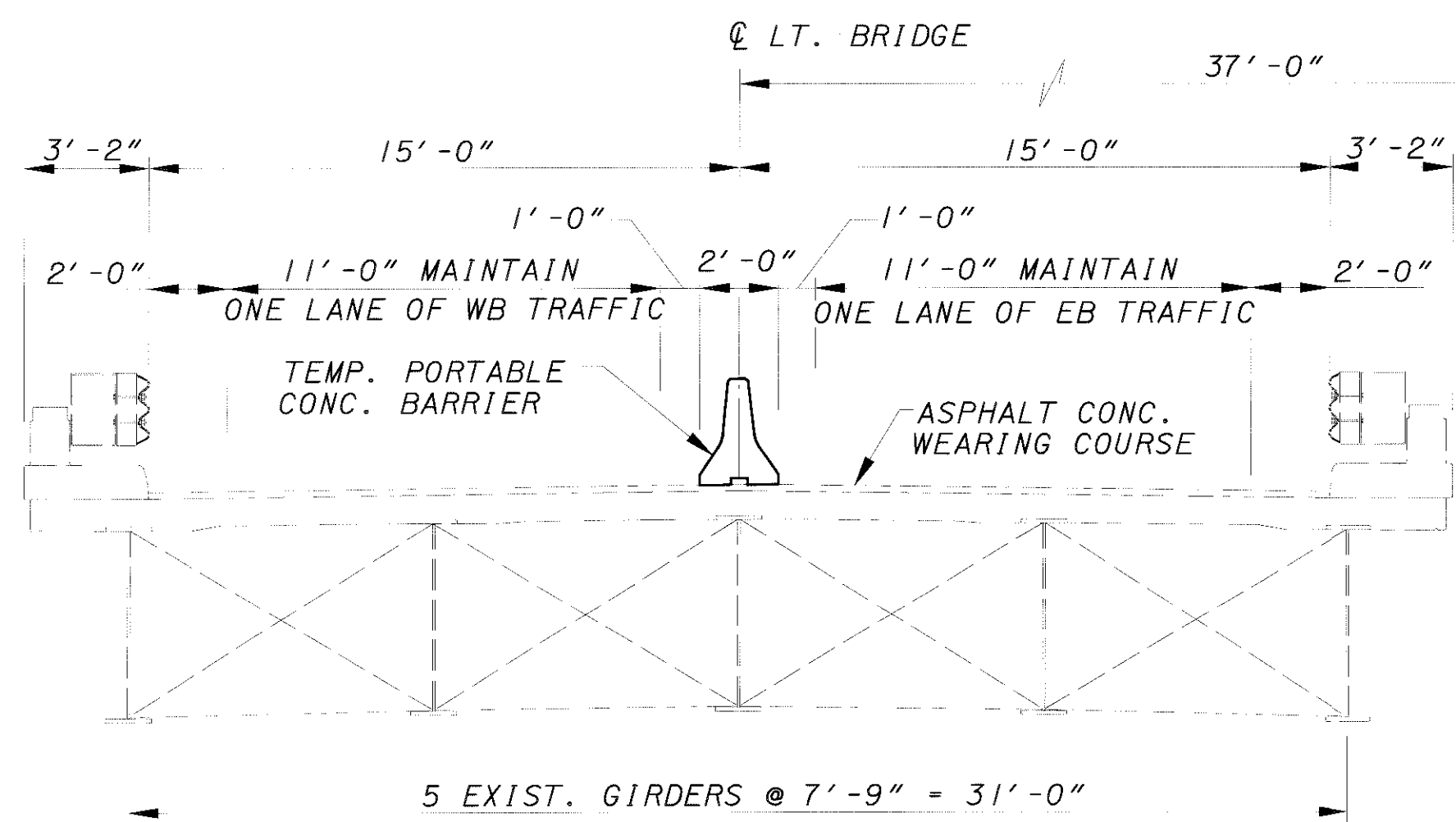
CHECKED BY: KVB  
 ASB

**ESTIMATED QUANTITIES**  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

**MAH-76-0.86**

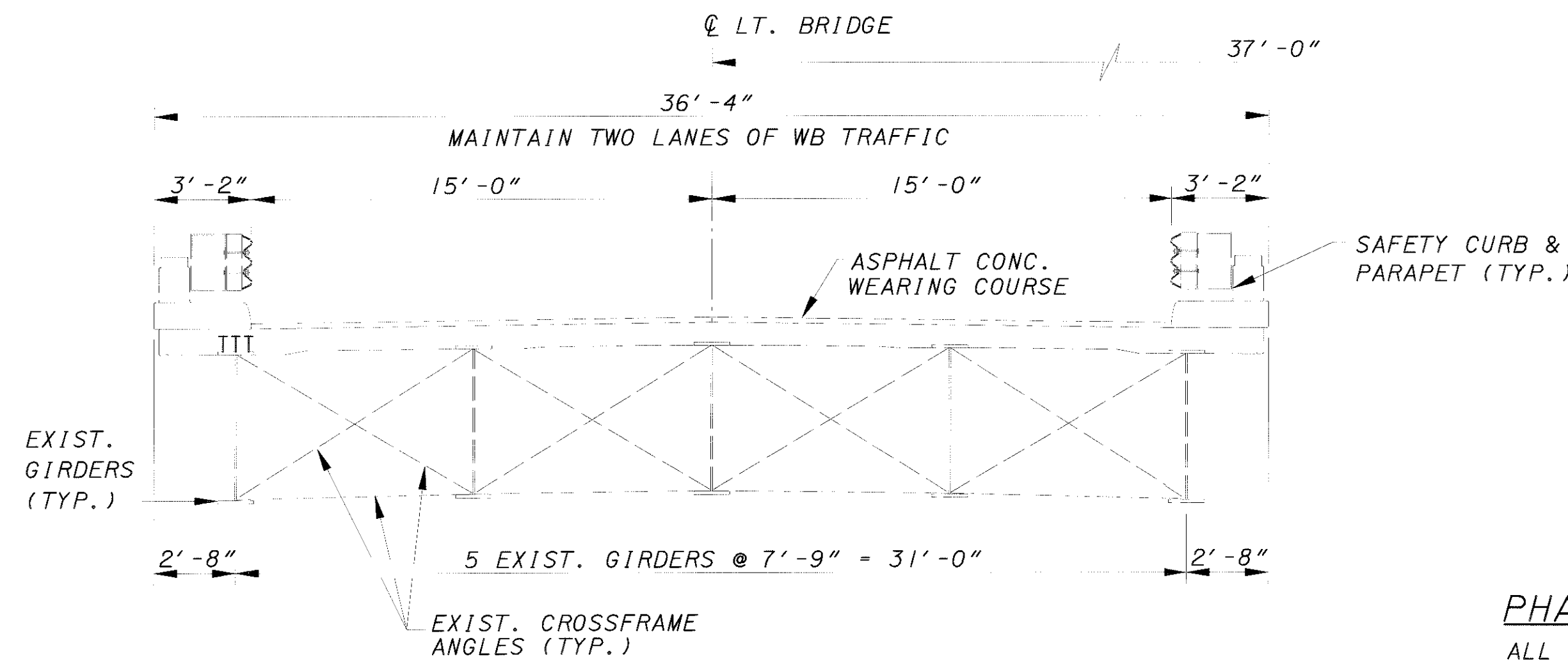
8 / 41

96H  
 102

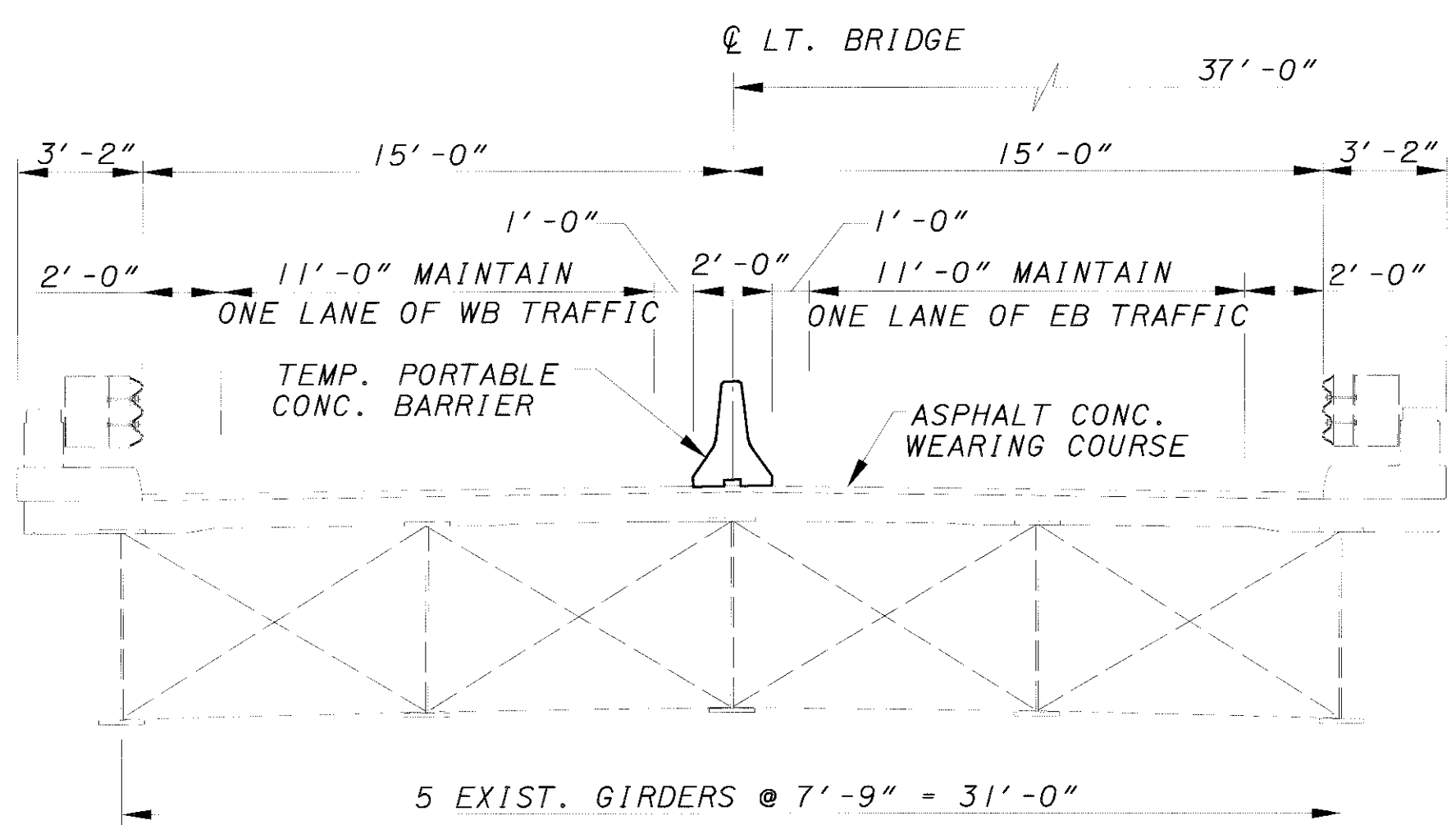
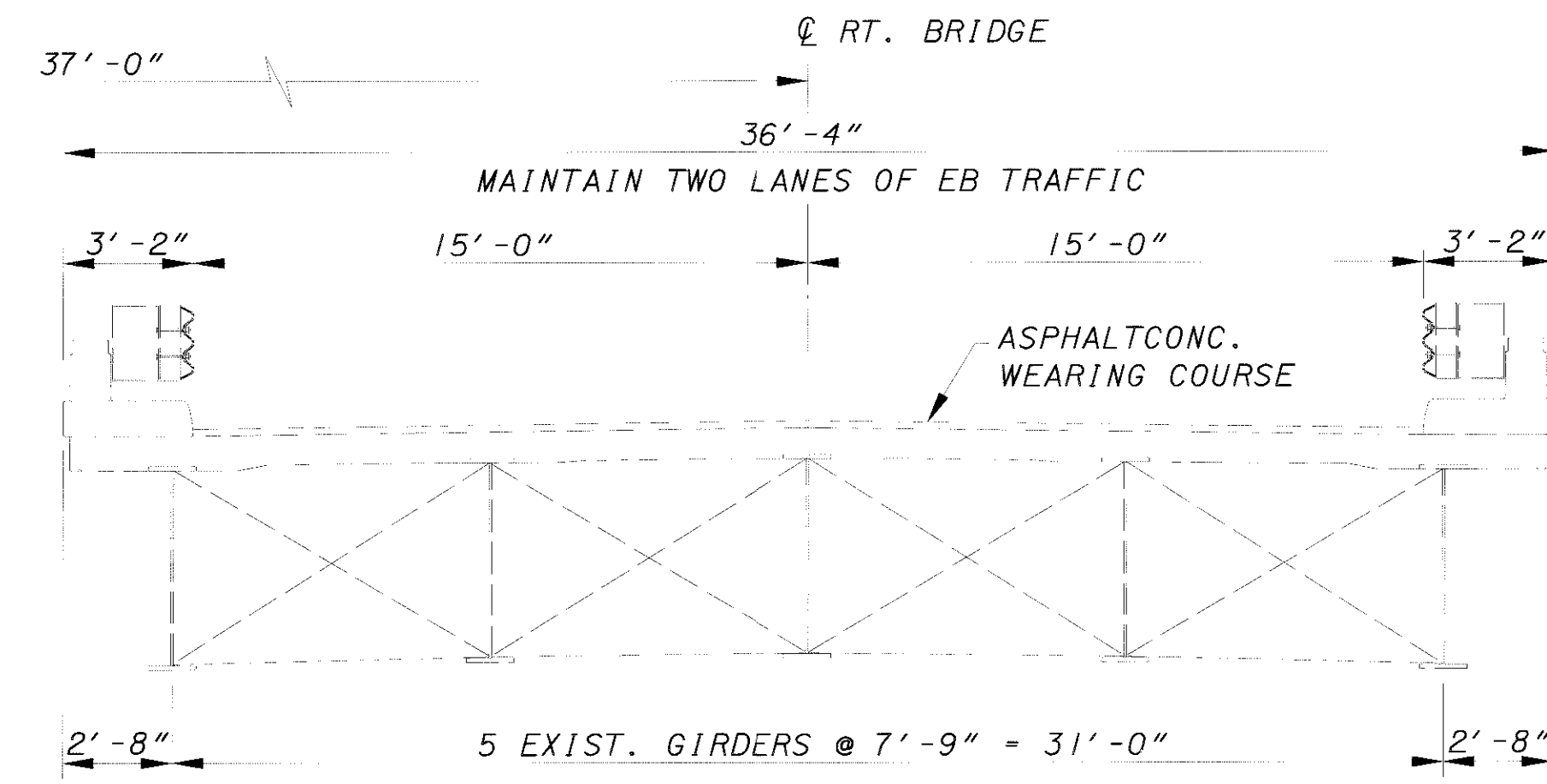


SEE SHT. 12741  
PARTIAL REMOVAL &  
STRENGTHENING OF EXISTING  
PARAPET AT PIER DETAIL  
(TYP.)

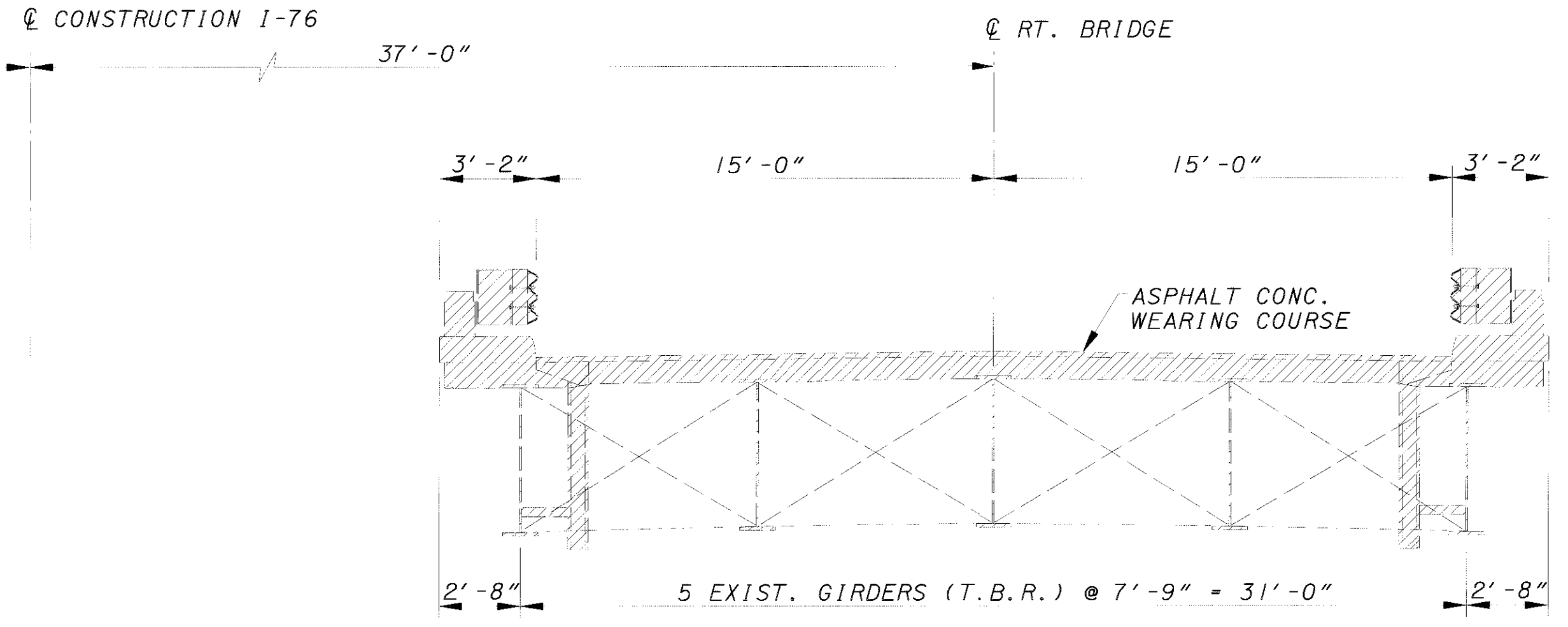
**PHASE I CONSTRUCTION - DRIVING OF PILES FOR RT. BRIDGE**  
ALL EXISTING DIMENSIONS ±



**PHASE 1A TRAFFIC**  
ALL EXISTING DIMENSIONS ±



**PHASE 2 - SUPERSTRUCTURE REMOVAL**  
ALL EXISTING DIMENSIONS ±

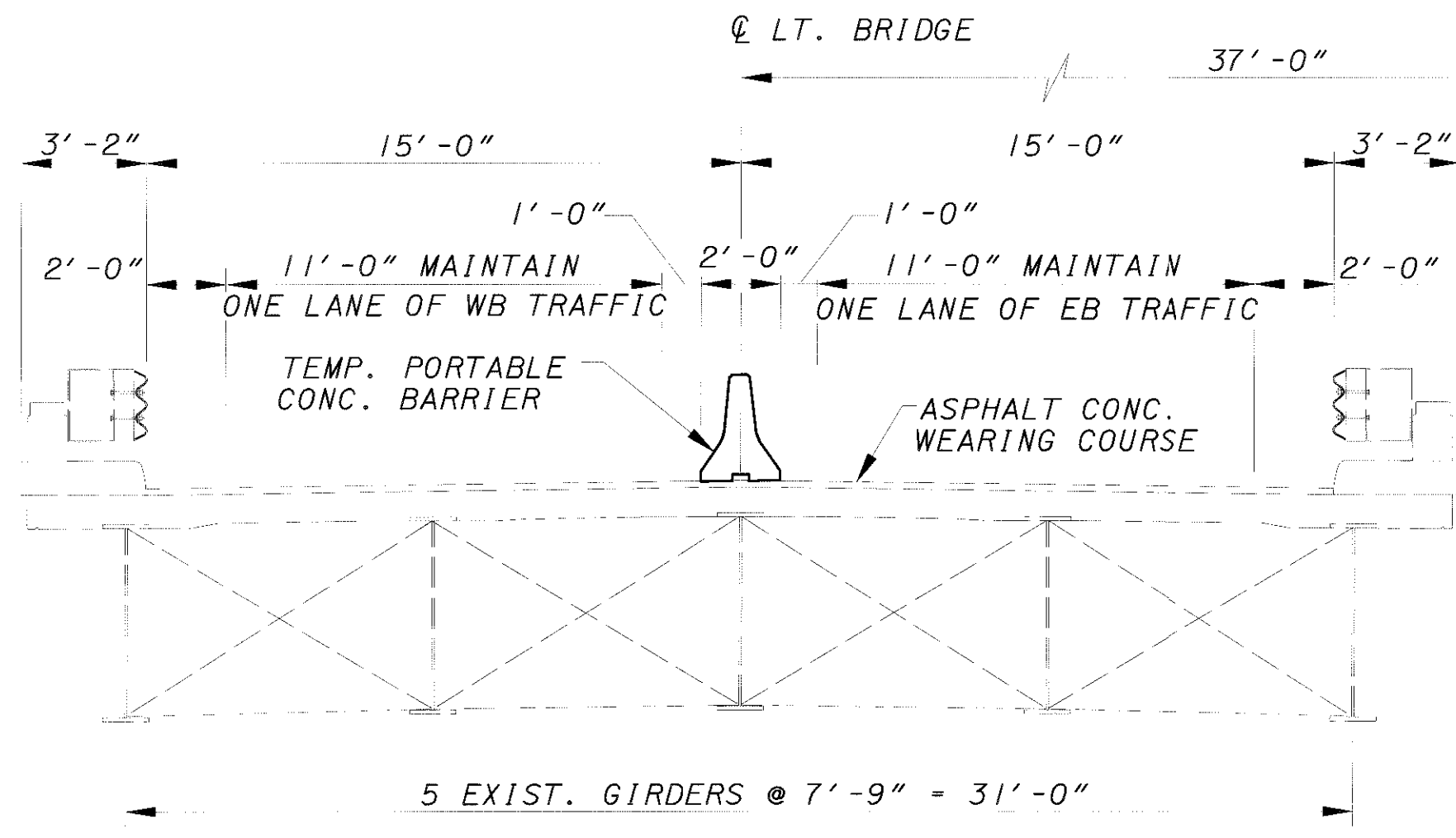


**LEGEND**

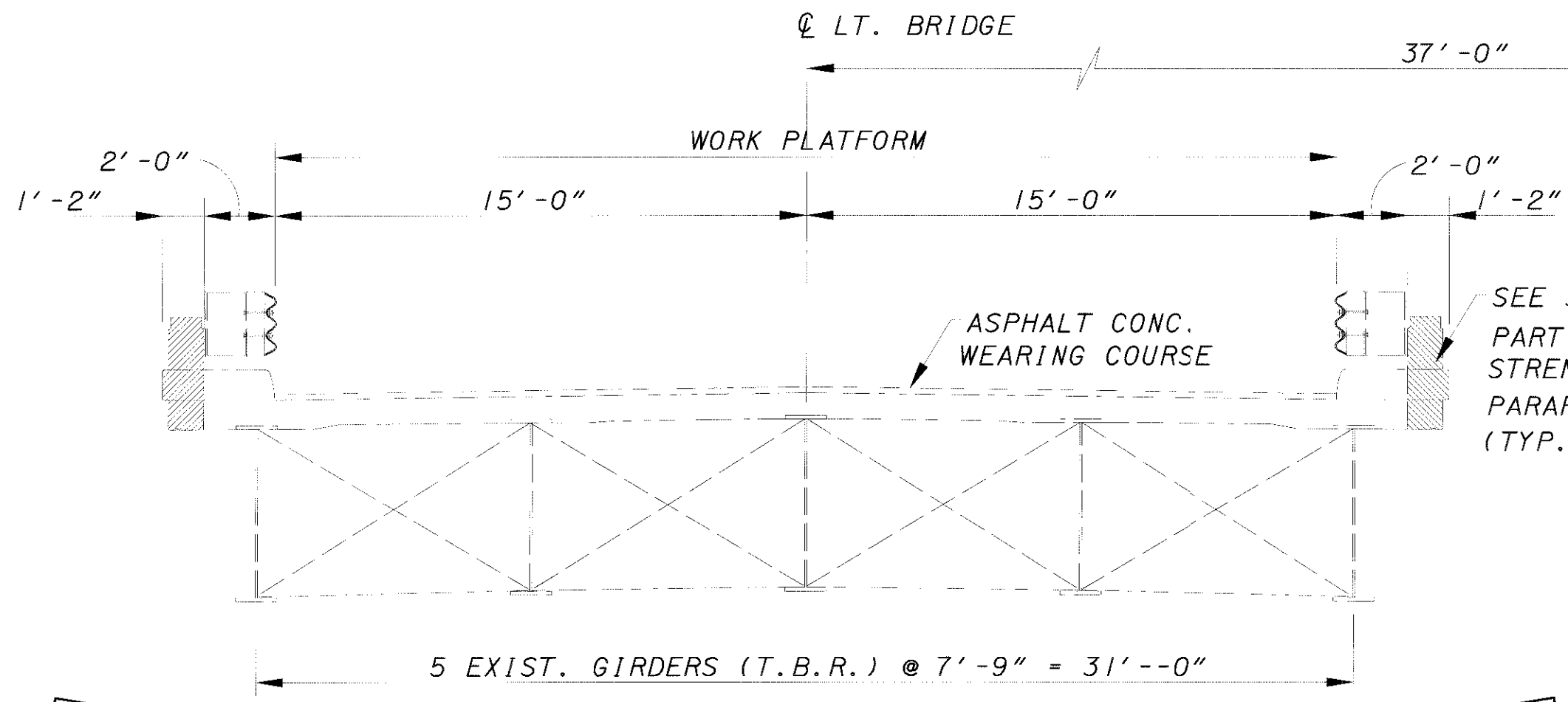
 INDICATES AREA TO BE REMOVED UNDER  
ITEM 202 - PORTIONS OF STRUCTURE  
REMOVED INCLUDING GIRDERS AND  
CROSS-FRAME MEMBERS

CONCRETE OPTION

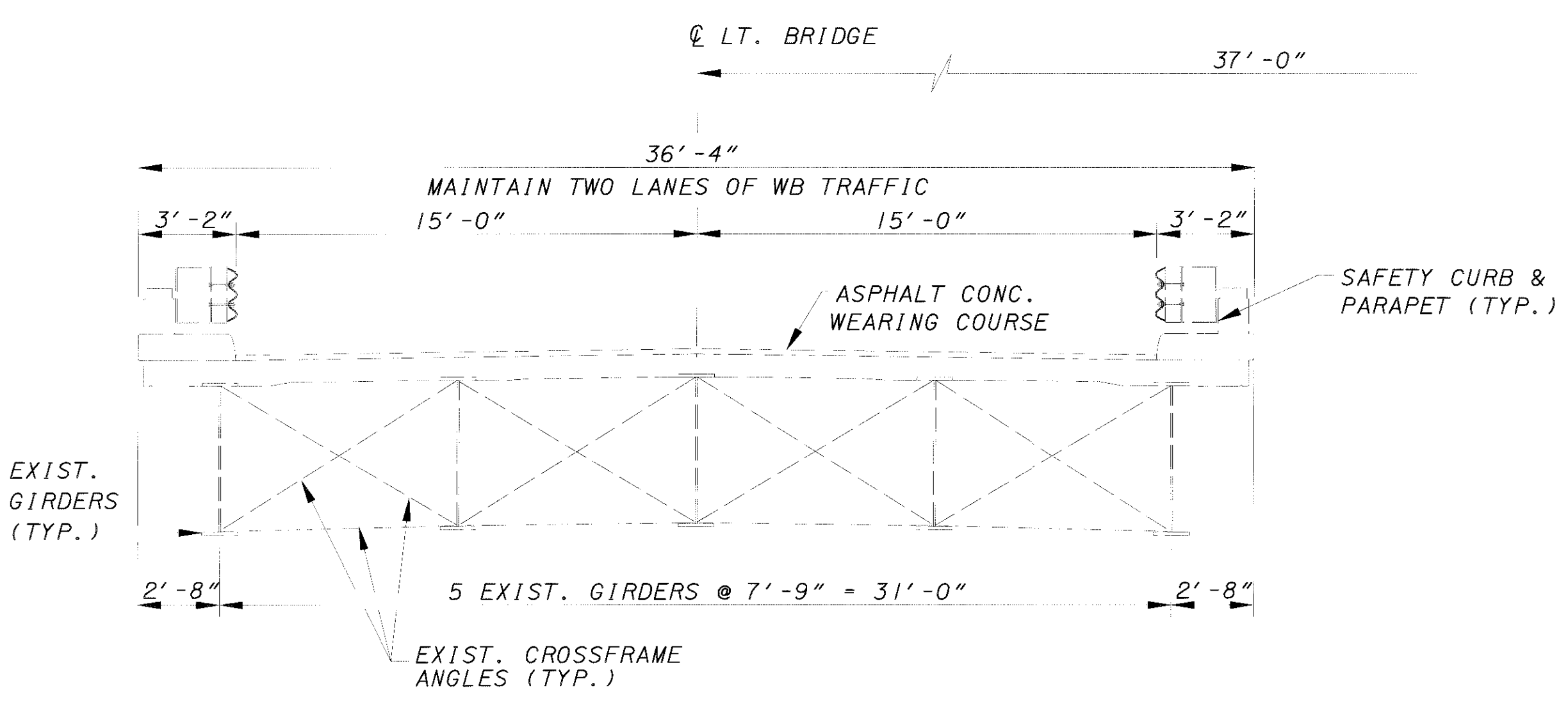
|   |                  |                                      |              |                |   |
|---|------------------|--------------------------------------|--------------|----------------|---|
| PERSON AGENCY<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>04/06/01 | REVISIONS<br>GEA 5002702L & 5002737R | DRAWN<br>CLH | CHECKED<br>ASB | PHASE CONSTRUCTION DETAILS<br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON |
| <b>MAH-76-0.86</b>  |                  |                                      |              |                |   |
| 9 / 41  |                  |                                      |              |                | 961<br>102  |



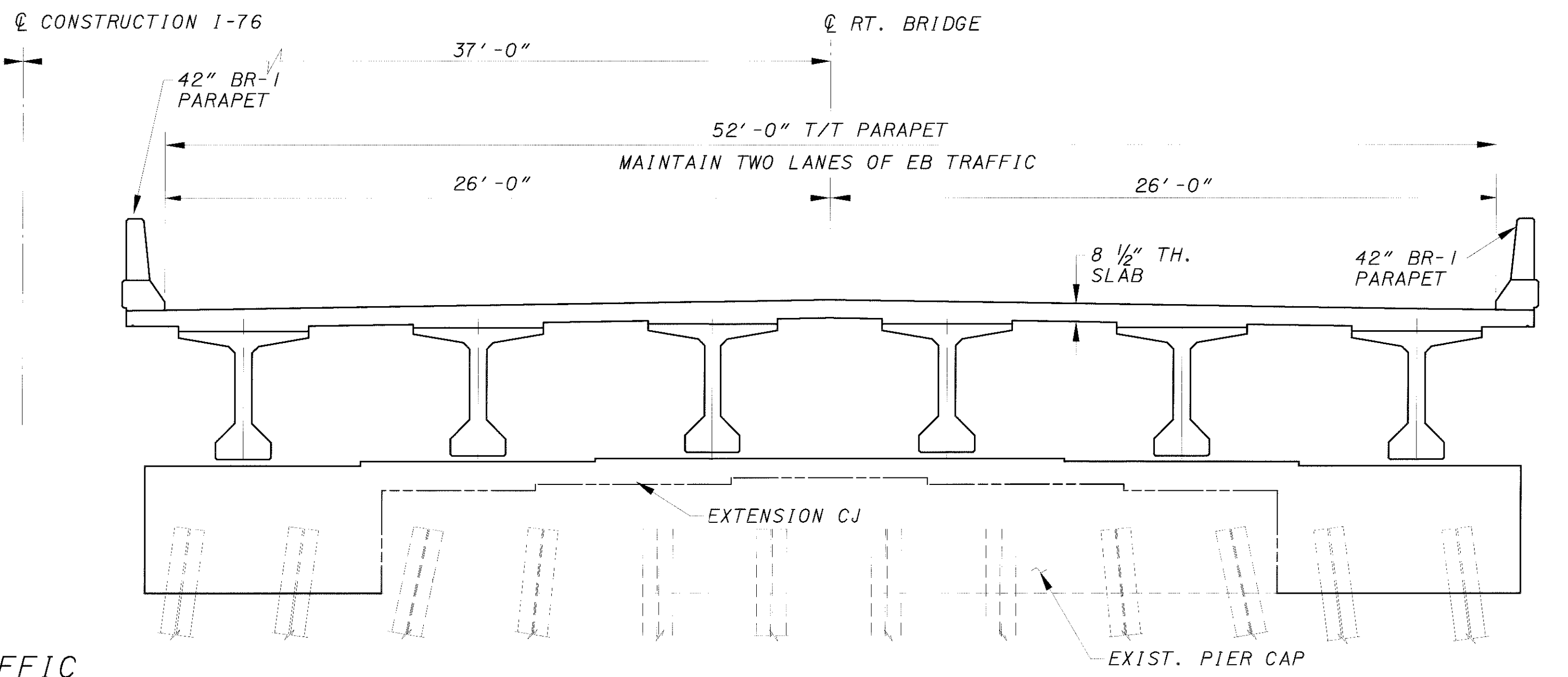
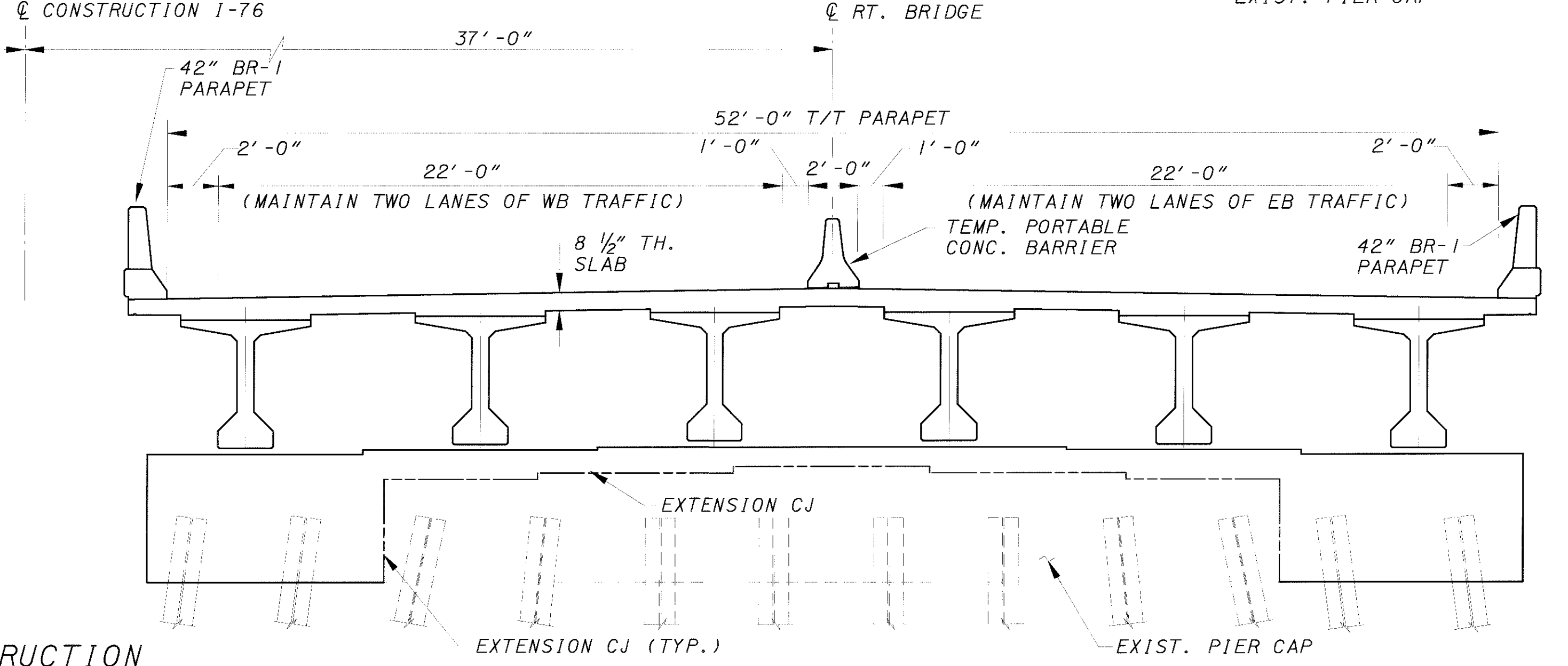
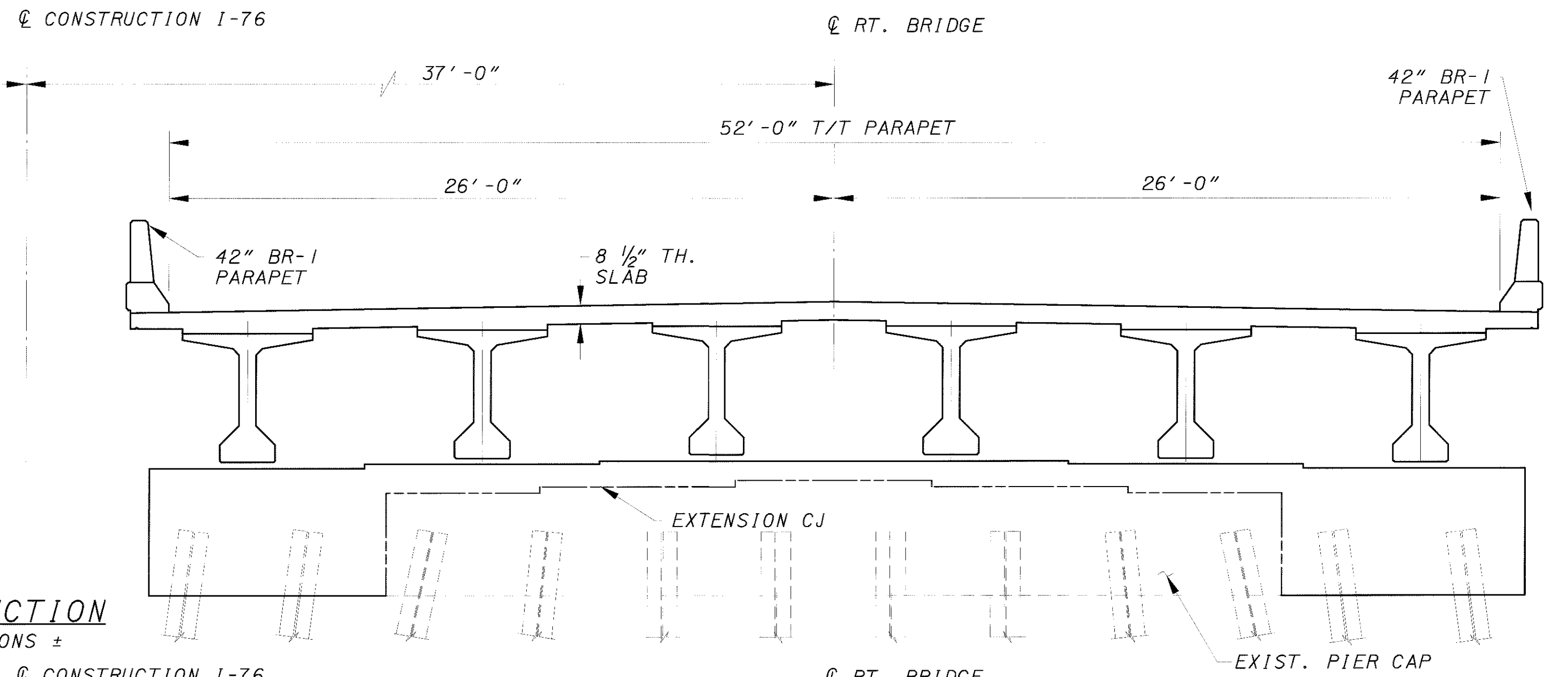
**PHASE 2 CONSTRUCTION**  
ALL EXISTING DIMENSIONS ±



**PHASE 3 - CONSTRUCTION**  
ALL EXISTING DIMENSIONS ±

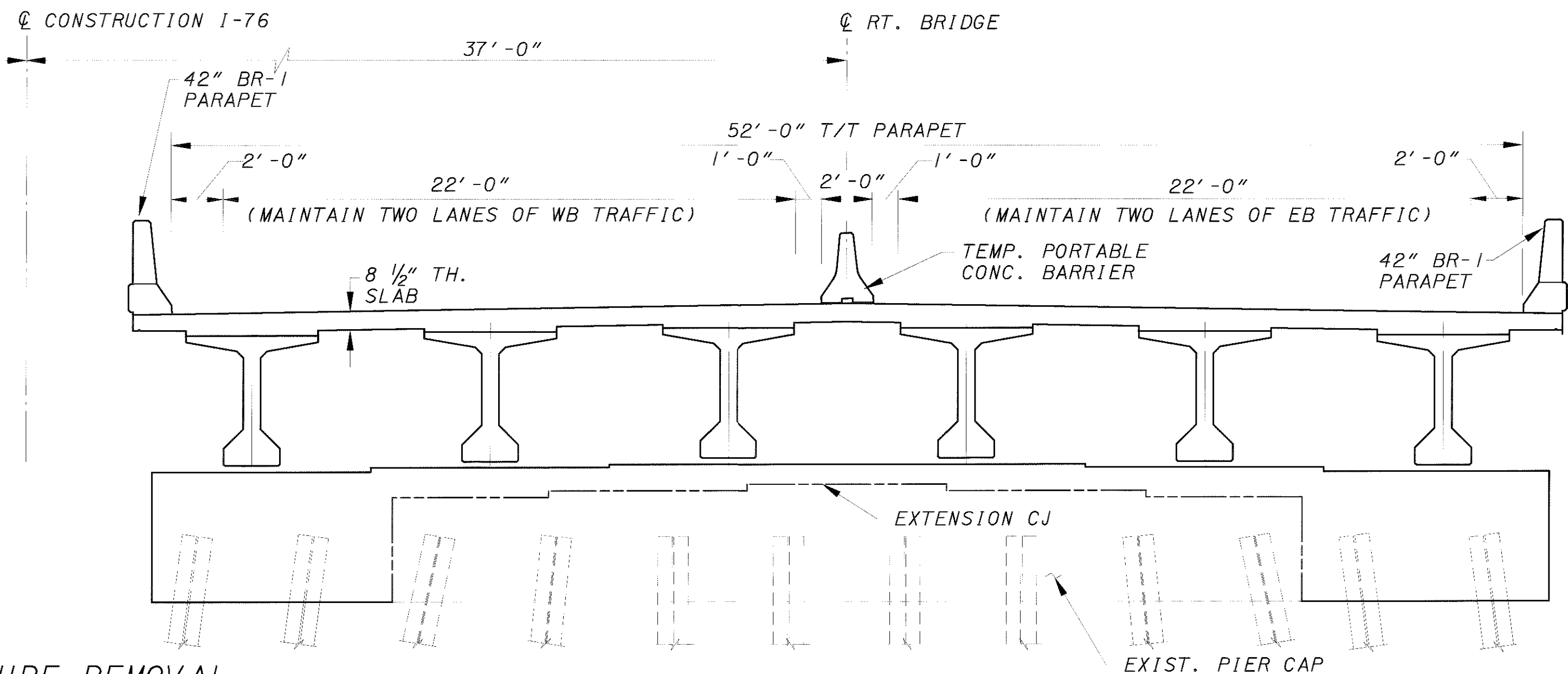
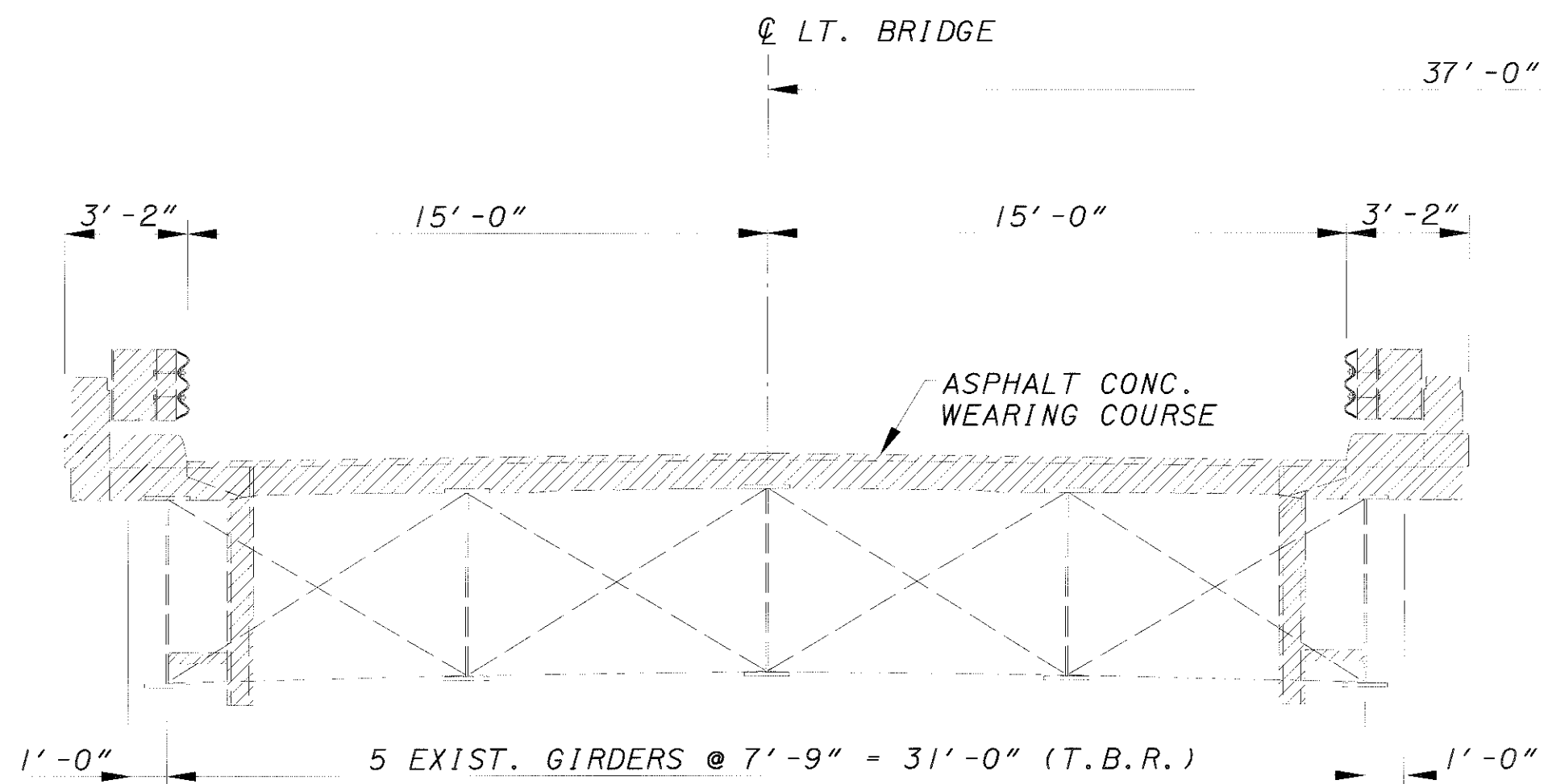


**PHASE 3A TRAFFIC**  
ALL EXISTING DIMENSIONS ±



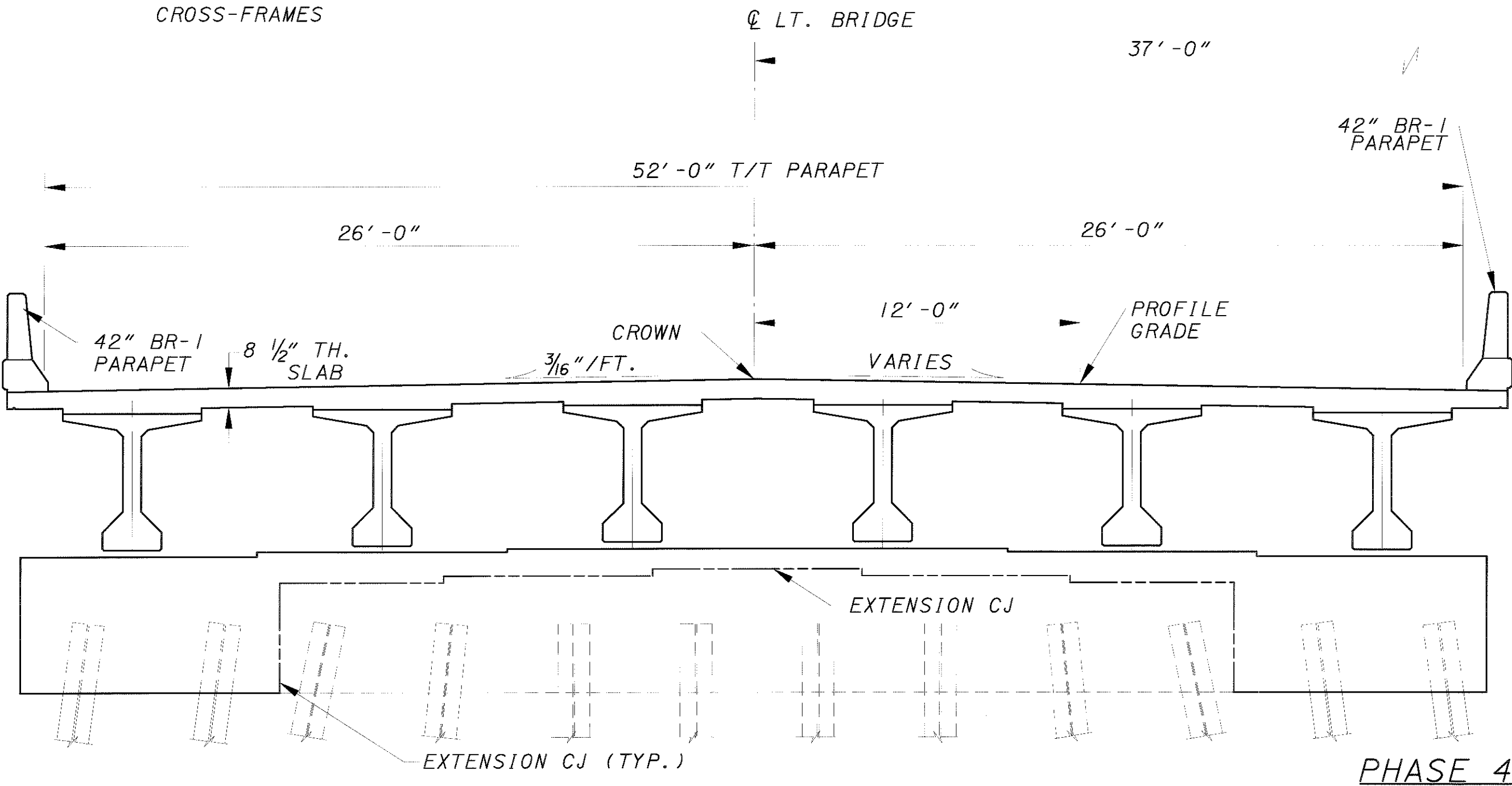
CONCRETE OPTION

|  |                          |   |
|--|--------------------------|---|
| DESIGN AGENCY<br><b>BARR ENGINEERING, INC.</b><br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br><b>04/06/01</b>  | PROJECT NO.<br><b>5002702L &amp; 5002737R</b> |
| DESIGNED BY<br><b>KVB</b>  | CHECKED BY<br><b>ASB</b> | DRAWN BY<br><b>FIB</b>                        |
| <b>PHASE CONSTRUCTION DETAILS</b><br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON   |                          |   |
| <b>MAH-76-0.86</b>   |                          |   |
| 10 / 41  |                          |   |
| 96J<br>102   |                          |   |

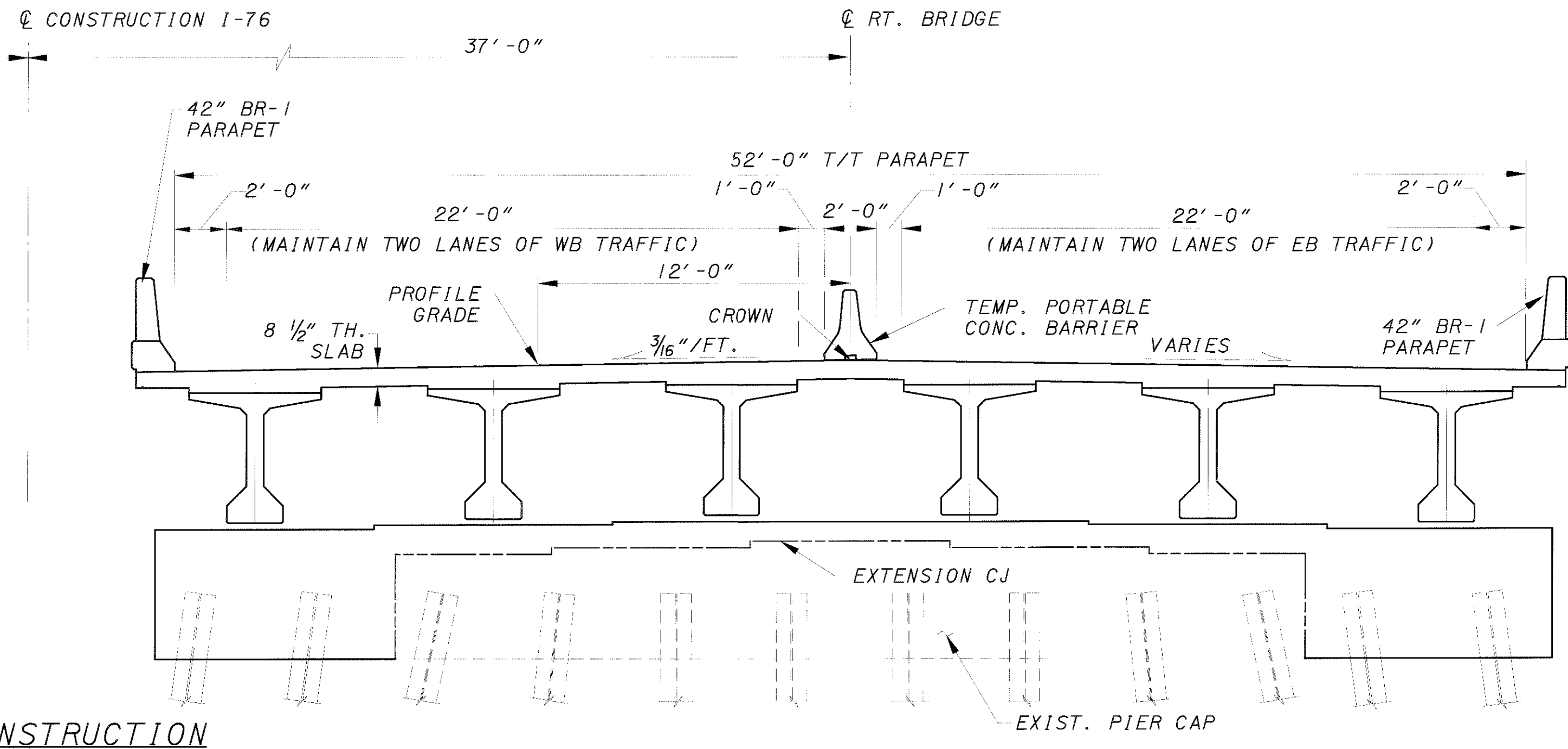


**PHASE 4 - SUPERSTRUCTURE REMOVAL**  
ALL EXISTING DIMENSIONS ±

**LEGEND**  
 INDICATES AREA TO BE REMOVED UNDER ITEM 202 - PORTIONS OF STRUCTURE REMOVED INCLUDING GIRDERS & CROSS-FRAMES



**PHASE 4 CONSTRUCTION**



**SEQUENCE OF CONSTRUCTION**

1. INSTALL PORTABLE CONCRETE BARRIER ON LT. BRIDGE AS SHOWN IN PHASE 1 CONSTRUCTION DIAGRAM, TO MAINTAIN 1 LANE OF TRAFFIC IN EACH DIRECTION. CLOSE RT. BRIDGE TO USE AS WORK PLATFORM. REMOVE PORTIONS OF EXISTING PARAPET AND RAIL AT PIERS FOR PILE DRIVING CONVENIENCE AT PIER EXTENSIONS. DRIVE ALL PIER PILES FOR RT. BRIDGE. RECONSTRUCT RAIL. FOR EXISTING DECK, CURB, PARAPET AND RAIL MODIFICATIONS NEEDED TO DRIVE BATTERED PIER PILES, SEE SHT. 12/41.
2. REOPEN BOTH EXISTING BRIDGES TO 2-LANE TRAFFIC IN EACH DIRECTION FROM 11/05/01 TO 3/15/02 AS SHOWN IN PHASE 1A TRAFFIC DIAGRAM.
3. MAINTAIN 1 LANE OF TRAFFIC IN EACH DIRECTION ON LT. BRIDGE. CLOSE RT. BRIDGE AND REMOVE DECK ON RT. BRIDGE AS SHOWN IN PHASE 2 SUPERSTRUCTURE REMOVAL DIAGRAM.
4. CONSTRUCT PIER CAP AND ABUTMENT ADDITIONS. INSTALL ELASTOMERIC BEARINGS. ERECT PROPOSED PSC 1 BEAMS AND CONSTRUCT NEW SLAB INCLUDING DIAPHRAGMS AND PARAPET ON RT. BRIDGE AS SHOWN IN PHASE 2 CONSTRUCTION DIAGRAM.

5. MAINTAIN 2 LANES OF TRAFFIC IN EACH DIRECTION ON RT. BRIDGE, AS SHOWN IN PHASE 3 CONSTRUCTION DIAGRAM. CLOSE LT. BRIDGE TO USE AS A WORK PLATFORM. REMOVE PORTIONS OF EXISTING PARAPET AND RAIL AT PIERS FOR PILE DRIVING CONVENIENCE AT PIER EXTENSIONS. DRIVE ALL PIER PILES FOR LT. BRIDGE. RECONSTRUCT RAIL. FOR EXISTING DECK, CURB, PARAPET AND RAIL MODIFICATIONS NEEDED TO DRIVE BATTERED PIER PILES, SEE SHT. 12/41.
6. REOPEN NEW RT. BRIDGE AND EXISTING LT. BRIDGE TO 2-LANE TRAFFIC IN EACH DIRECTION FROM 11/15/02 TO 3/15/03, AS SHOWN IN PHASE 3A TRAFFIC DIAGRAM. METALIZE THE EXISTING PIER PILES DURING LOW WATER ELEVATION DURING PHASE 3A (WINTER MONTHS) SEE SHEET 39/41.
7. INSTALL PORTABLE CONCRETE BARRIER ON NEWLY CONSTRUCTED SLAB ON RT. BRIDGE DECK. MAINTAINING 2 LANES OF TRAFFIC IN EACH DIRECTION ON RT. BRIDGE, CLOSE LT. BRIDGE AND REMOVE DECK ON LT. BRIDGE AS SHOWN IN PHASE 4 DECK REMOVAL DIAGRAM.
8. CONSTRUCT PIER CAP AND ABUTMENT ADDITIONS. INSTALL ELASTOMERIC BEARINGS. ERECT PROPOSED PSC 1 BEAMS AND CONSTRUCT NEW SLAB INCLUDING DIAPHRAGMS AND PARAPET ON LT. BRIDGE AS SHOWN IN PHASE 4 CONSTRUCTION DIAGRAM.

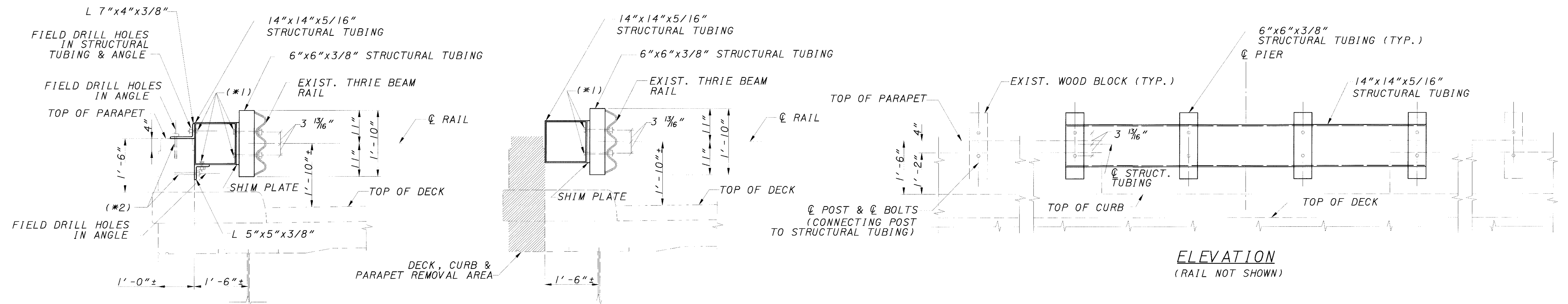
9. REMOVE PORTABLE CONCRETE BARRIER FROM RT. BRIDGE AND OPEN BOTH BRIDGES TO NORMAL OPERATION, 2 LANES IN EACH DIRECTION.
10. METALIZE EXISTING PIER PILES IN CONFORMANCE WITH THESE PLANS.
11. FINISH ALL CONTRACT ITEMS TO COMPLETE THE PROJECT.

- NOTES:**
1. PAYMENT FOR PORTABLE CONCRETE BARRIER IS CARRIED IN THE ROADWAY PLANS.
  2. FOR ADDITIONAL MAINTENANCE-OF-TRAFFIC DETAILS, SEE ROADWAY PLANS.
  3. FOR ADDITIONAL PORTABLE CONCRETE BARRIER DETAILS, SEE STANDARD DRAWING PCB-91.
  4. FOR ABUTMENT REMOVAL DETAILS, SEE SHEETS 13/41 AND 14/41.

CONCRETE OPTION

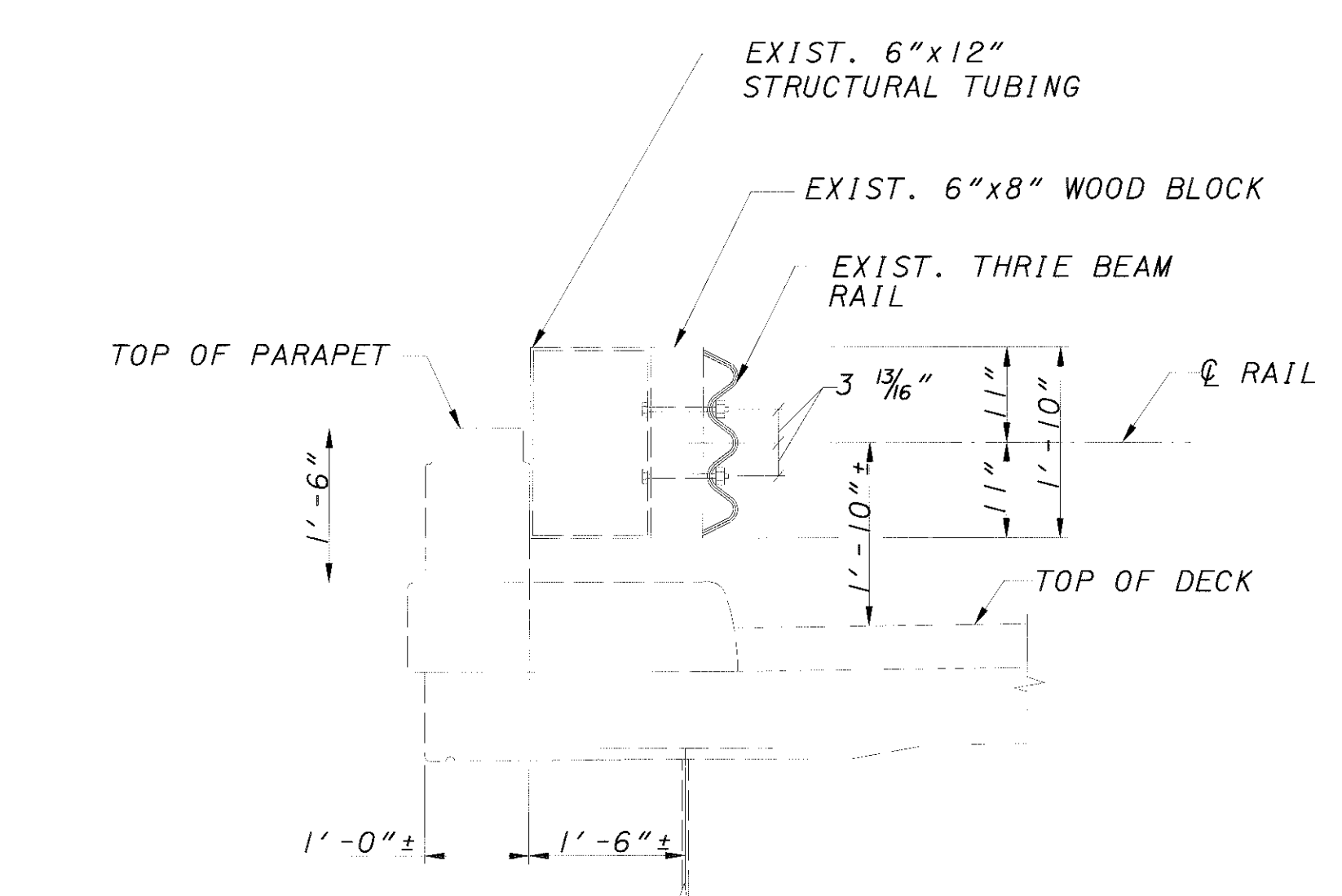
DESIGN: BARRY BARR ENGINEERING, INC. 5 EAST LONG STREET, COLUMBUS, OHIO 43215 (614) 224-1941, (614) 224-0907 FAX  
 DATE: 04/06/01  
 REVIEWER: GEA 5002702L & 5002737R  
 DRAWN: CLH  
 CHECKED: KVB  
 ASB  
**PHASE CONSTRUCTION DETAILS**  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON  
**MAH-76-0.86**  
 11 / 41  
 96K  
 102

EXIST. DECK, CURB, PARAPET AND RAIL MODIFICATION DETAILS FOR INSTALLING BATTERED PILES  
AT PIER EXTENSIONS & RECONSTRUCTING THE RAIL.

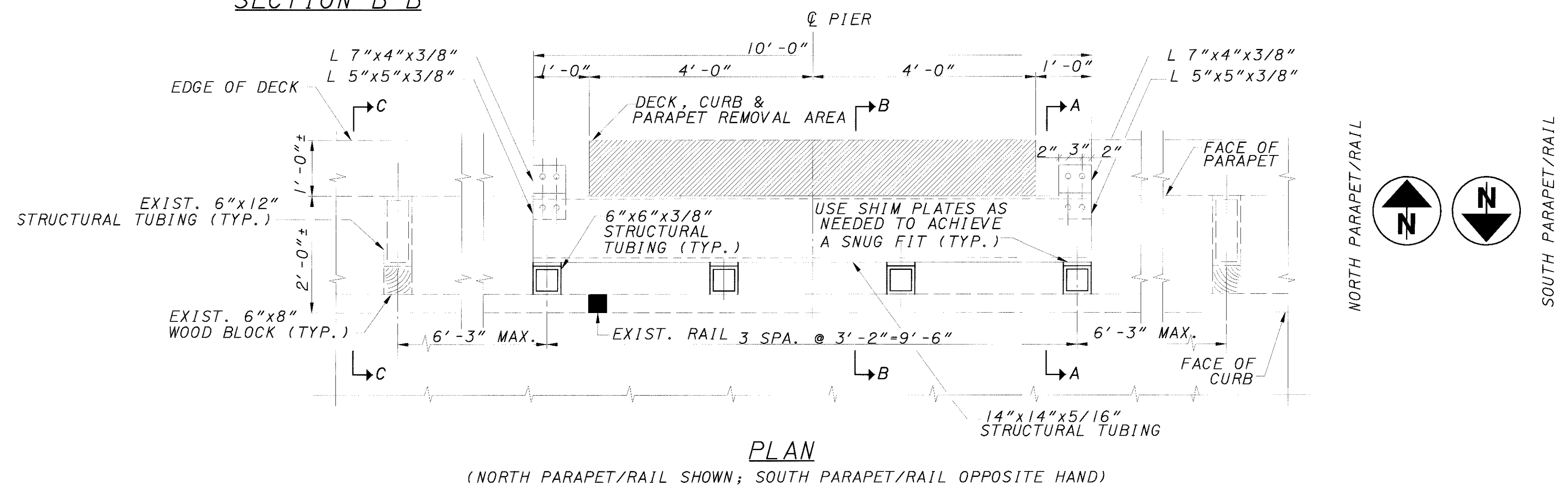


SECTION A-A

SECTION B-B



SECTION C-C



PLAN  
(NORTH PARAPET/RAIL SHOWN; SOUTH PARAPET/RAIL OPPOSITE HAND)

**NOTES:**

IN ORDER TO ELIMINATE THE INTERFERENCE WITH THE DRIVING OF BATTERED PILES (CLOSEST TO THE DECK), PARTS OF EXIST. DECK AND PARAPET WILL BE REMOVED AT EACH PIER. EXIST. RAIL AND POST SHALL BE DISMANTLED IN THE VICINITY OF EACH PIER FOR CONVENIENCE OF PILE DRIVING.

AFTER THE COMPLETION OF THE PIER EXTENSIONS, THE DISMANTLED SECTIONS OF RAIL WILL BE RECONSTRUCTED AS PER THE DETAILS OF THIS SHEET. ALL LABOR, MATERIALS AND INCIDENTAL COSTS ASSOCIATED WITH THIS TASK WILL BE PAID UNDER ITEM SPECIAL - STRUCTURE MISC.: EXIST. DECK, CURB, PARAPET AND RAIL MODIFICATIONS FOR INSTALLING BATTERED PILES AT PIER EXTENSIONS & RECONSTRUCTING THE RAIL.

STRUCTURAL TUBING AND ANGLES SHALL BE A36 OR A572 STEEL.

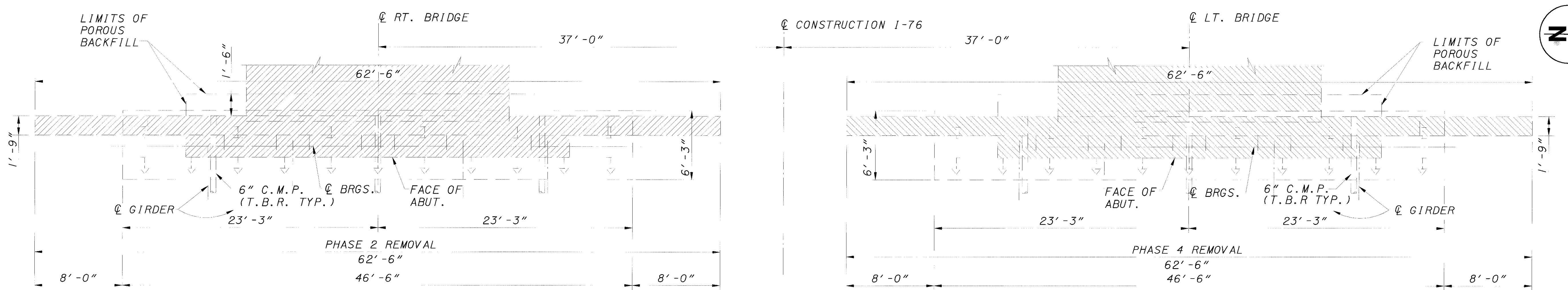
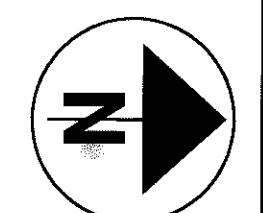
(\*1) 5/8" DIA. A325 BOLTS WITH NUTS & WASHERS.

(\*2) 5/8" DIA. A325 ANCHOR BOLTS TO BE DOWELLED IN TO PARAPET A MINIMUM OF 8", AS PER ITEM 510.

CONCRETE OPTION

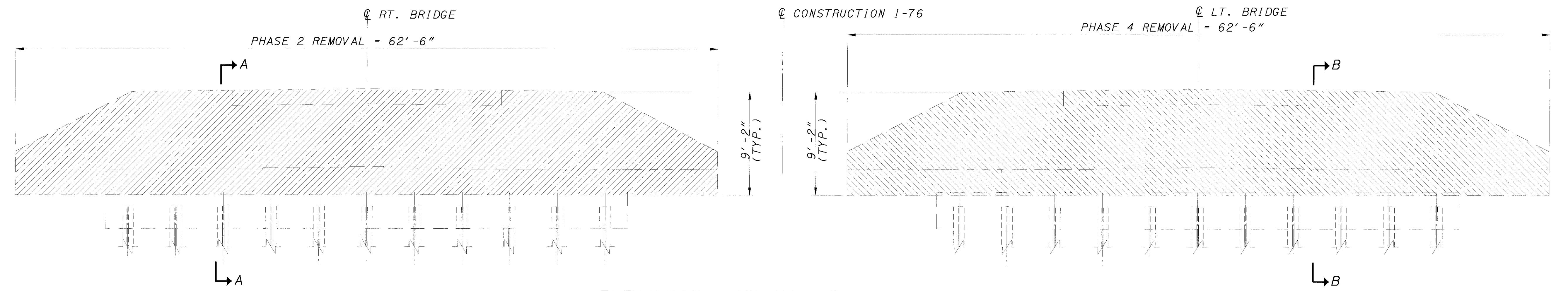
|  |   |
|--|---|
| BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE: 04/06/01<br>SHEET NO.: 5002702L & 5002737R<br>PROJECT: MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON |
| DESIGNED: KVB<br>CHECKED: ASB  | DRAWN: FIB<br>RELEASED:   |
| PHASE CONSTRUCTION DETAILS<br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON                        |   |
| MAH-76-0.86  |   |
| 12 / 41  |   |
| 96L<br>102   |   |





PLAN - EXIST. REAR ABUTMENT

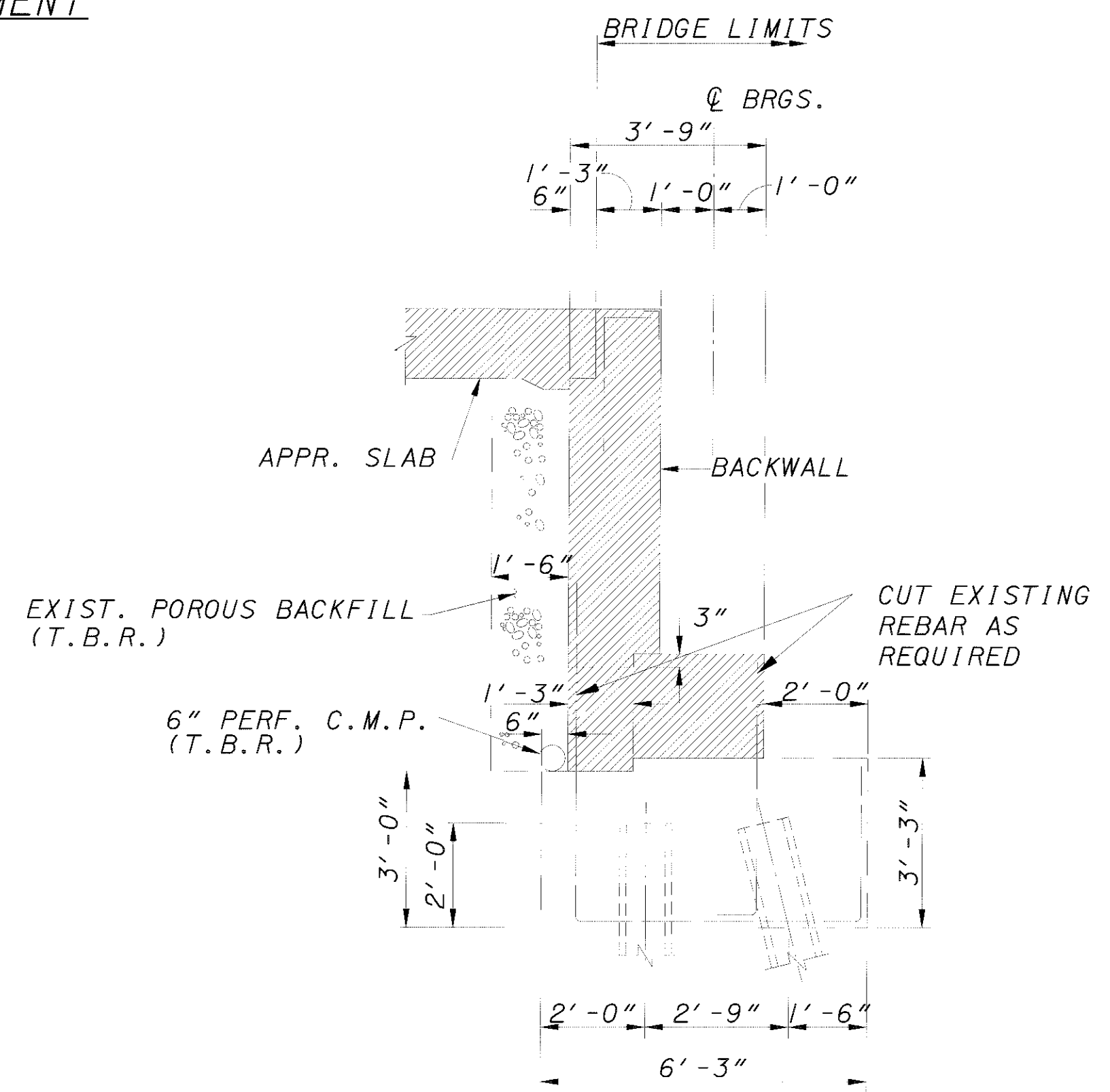
ALL EXISTING DIMENSIONS ±



ELEVATION - EXIST. REAR ABUTMENT

ALL EXISTING DIMENSIONS ±

- LEGEND**
- EXISTING 12BP53 PILES, VERTICAL
  - EXISTING 12BP53 PILES, BATTERED 4:1
  - INDICATES CONC. AREAS TO BE REMOVED IN PHASE 4
  - INDICATES CONC. AREAS TO BE REMOVED IN PHASE 2



SECTION A-A SHOWN

(SECTION B-B SIMILAR)  
ALL EXISTING DIMENSIONS ±

CONCRETE OPTION

BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

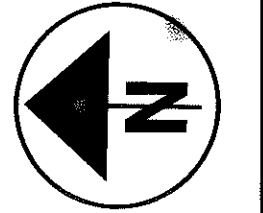
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| DATE           | 04/06/01            |
| DESIGNED BY    | KVB                 |
| DRAWN BY       | CLH                 |
| CHECKED BY     | ASB                 |
| PROJECT NUMBER | 5002702L & 5002737R |

**ABUTMENT REMOVAL DETAILS**  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

**MAH-76-0.86**

13 / 41

96M  
 102



BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0307 FAX

DATE 04/06/01  
DRAWN BY CLH  
CHECKED BY ASB  
PROJECT NO. MAH-76-0091 L & R

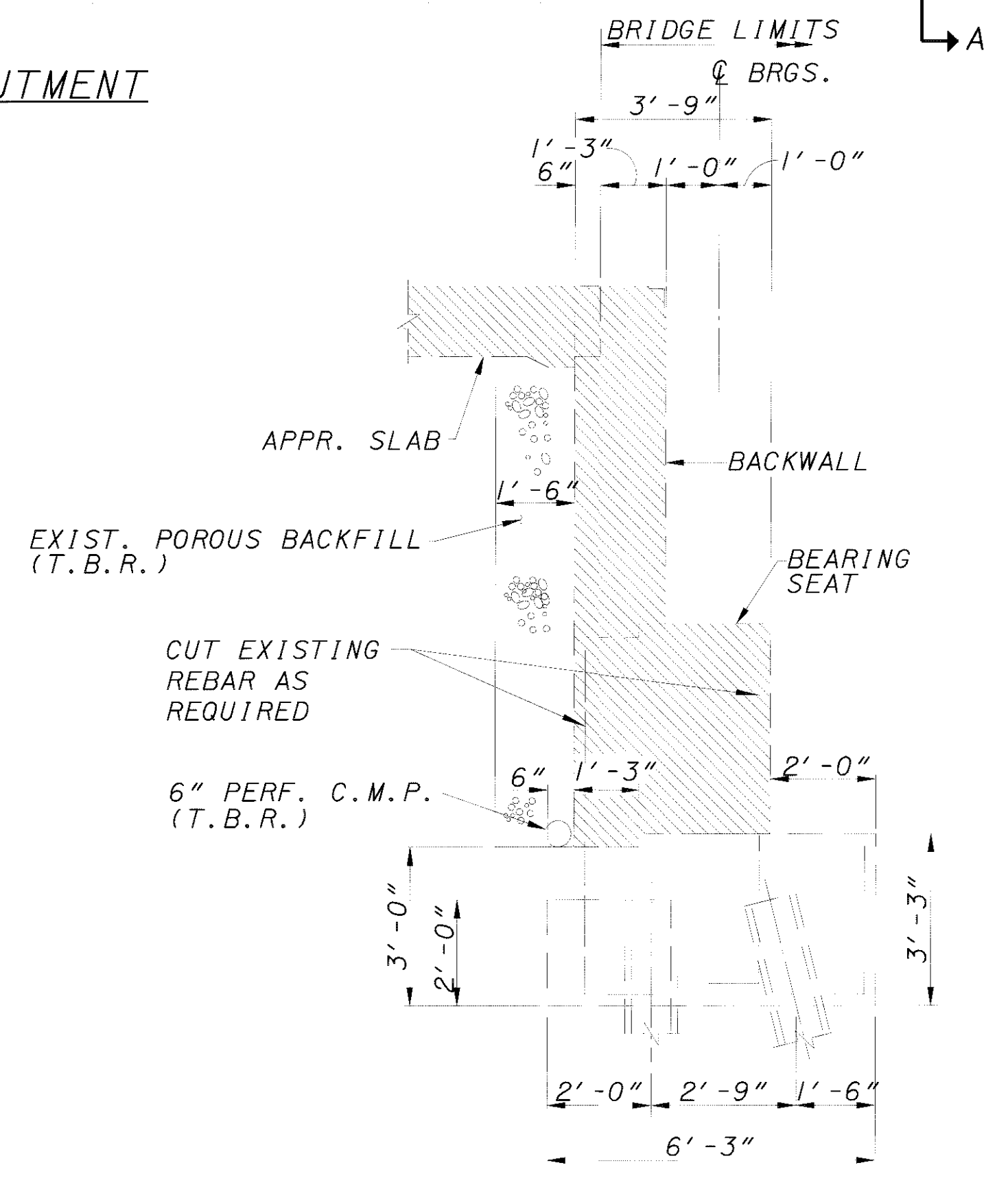
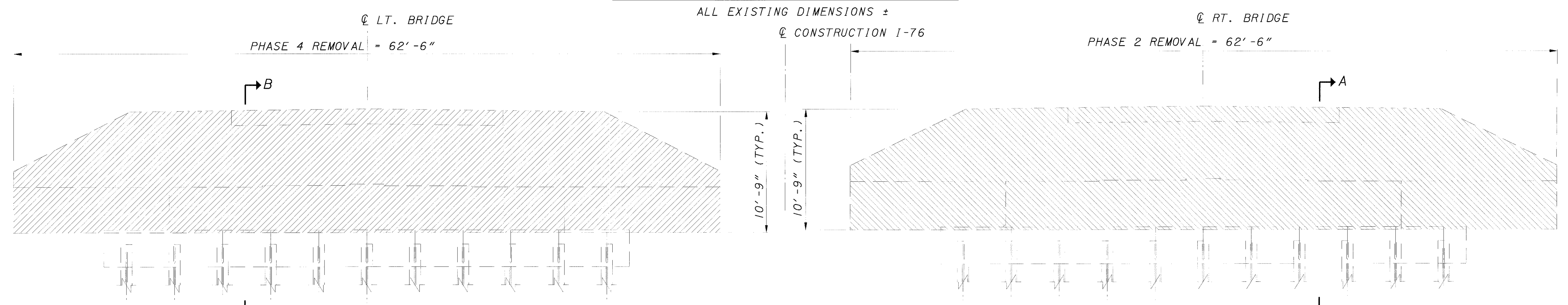
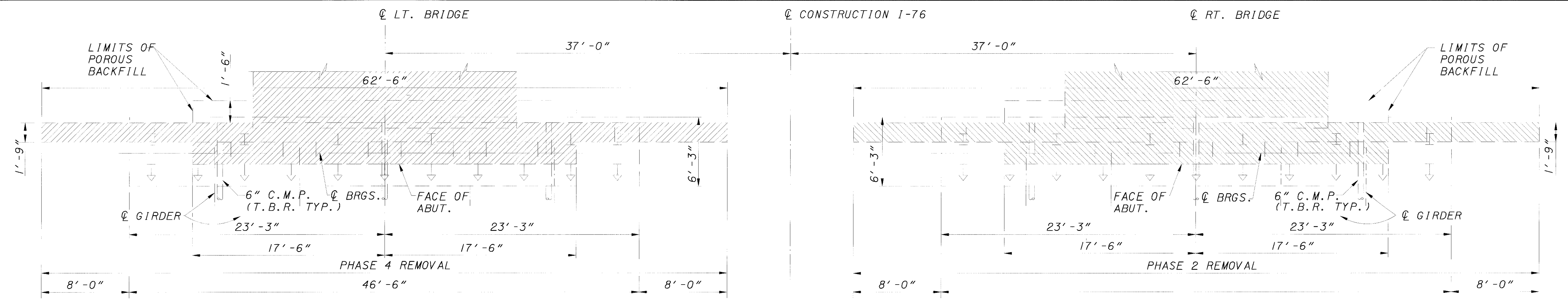
DESIGNED BY KVB  
APPROVED BY ASB

ABUTMENT REMOVAL DETAILS  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

MAH-76-0.86

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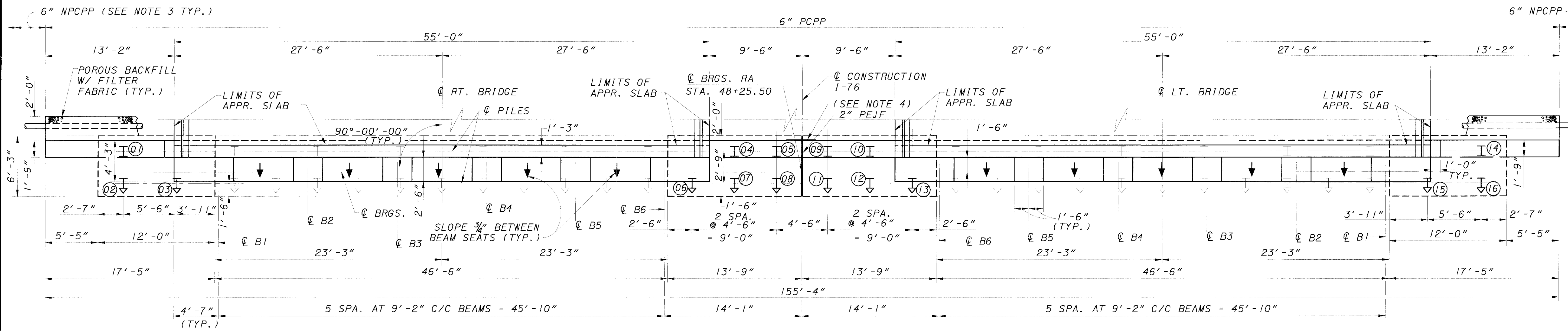
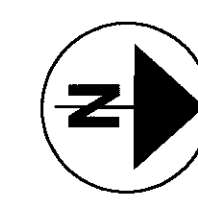
96N  
102



- LEGEND**
- EXISTING 12BP53 PILES, VERTICAL
  - EXISTING 12BP53 PILES, BATTERED 4:1
  - INDICATES CONC. AREAS TO BE REMOVED IN PHASE 2
  - INDICATES CONC. AREAS TO BE REMOVED IN PHASE 4

PLOTTED VIEW =  
SCALE =  
DATE =

CONCRETE OPTION



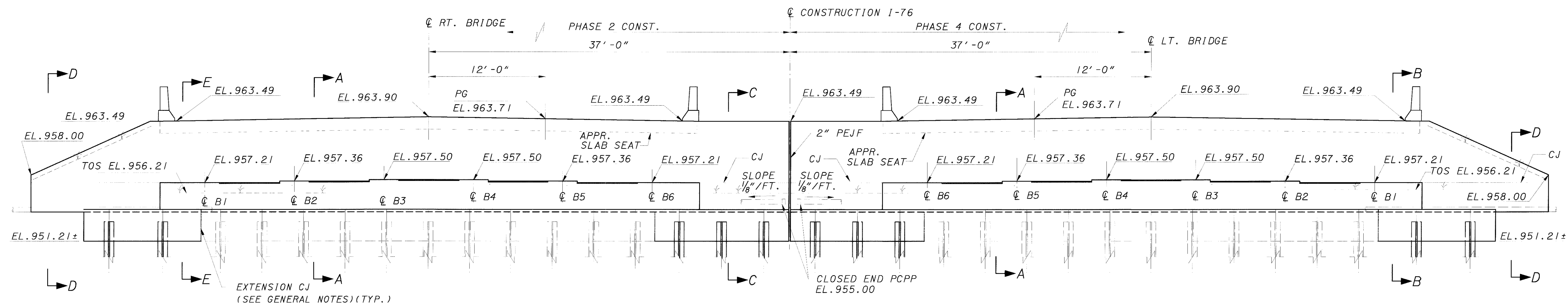
PLAN - REAR ABUTMENT

NOTES:

1. FOR NOTES AND ABUTMENT SECTIONS SEE SHEET [18/41].
2. BRIDGE SEAT ELEVATIONS ARE GIVEN AT THE  $\phi$  BRGS., AND BACKWALL AND WINGWALL ELEVATIONS ARE GIVEN ALONG FRONT FACE OF WALL.
3. 6" DIA. NPCPP AT ENDS SPLICED TO PCPP AND OUTLET AS SHOWN IN PIPE TERMINATION DETAIL ON SHEET [18/41].
4. 3' WIDE TYPE B WATERPROOFING PLACED SYMMETRICAL ABOUT THE JOINT FROM TOP OF FTG. TO 1' BELOW THE TOP OF BACKWALL.
5. FOR ABUTMENT DIAPHRAGM DETAILS SEE SHEET [30/41].
6. FOR ELASTOMERIC BEARING DETAILS SEE SHEET [21/41].

LEGEND

- ↓ EXISTING 12BP53 PILES BATTERED
- EXISTING 12BP53 PILES VERTICAL
- ↓ PROPOSED HP12X53 PILES BATTERED
- ↓ PROPOSED HP12X53 PILES VERTICAL
- ⊗ PILE NUMBERS



ELEVATION - REAR ABUTMENT

NOTE: FOR REINFORCEMENT DETAIL SEE SHEET [17/41].

BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

|          |                     |
|----------|---------------------|
| DATE     | 04/06/01            |
| REVISION | 5002702L & 5002737R |
| DESIGNED | ASB                 |
| CHECKED  | CLH                 |
| APPROVED | CEA                 |

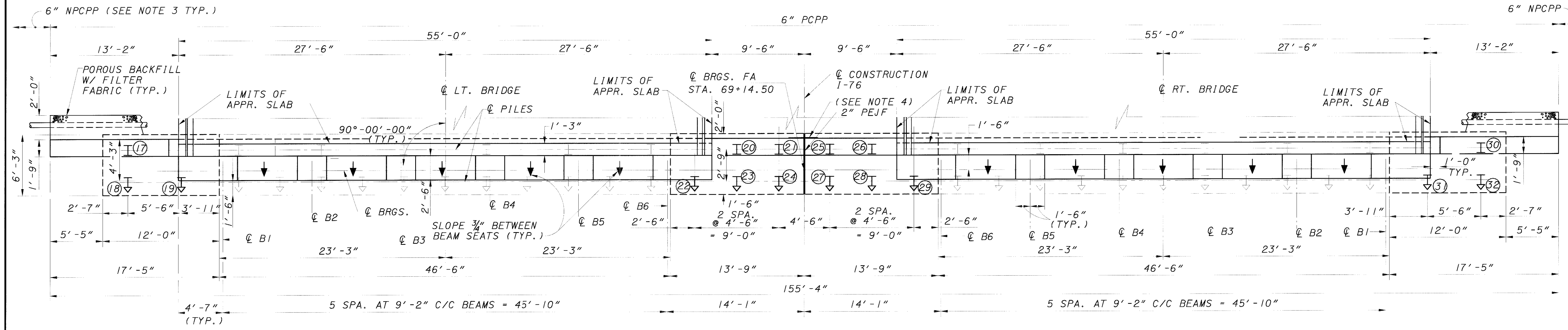
**ABUTMENT DETAILS**  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

**MAH-76-0.86**

15 / 41

960  
 102

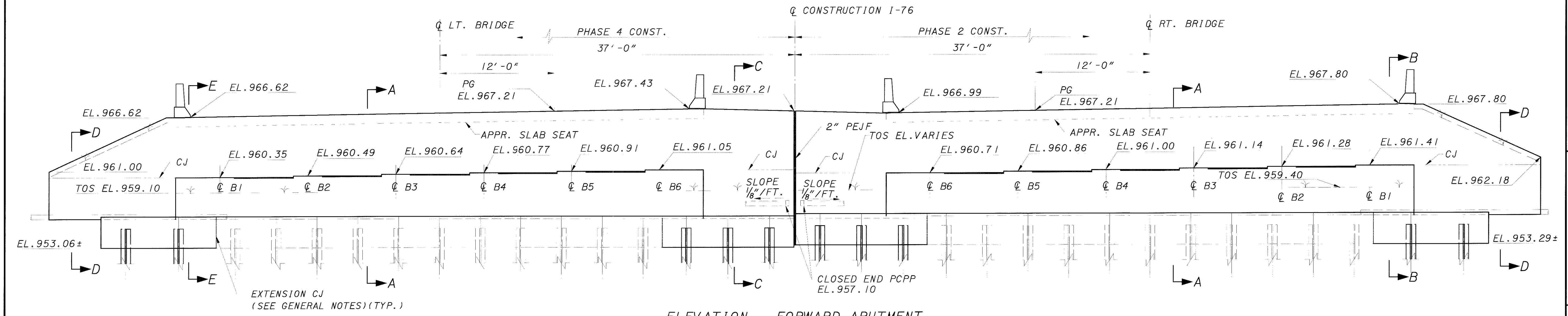
CONCRETE OPTION



PLAN - FORWARD ABUTMENT

- NOTES:**
1. FOR NOTES AND ABUTMENT SECTIONS SEE SHEET [18/4].
  2. BRIDGE SEAT ELEVATIONS ARE GIVEN AT THE  $\phi$  BRGS., AND BACKWALL AND WINGWALL ELEVATIONS ARE GIVEN ALONG FRONT FACE OF WALL.
  3. 6" DIA. NPCPP AT ENDS SPLICED TO PCPP AND OUTLET AS SHOWN IN PIPE TERMINATION DETAIL ON SHEET [18/4].
  4. 3' WIDE TYPE B WATERPROOFING PLACED SYMMETRICAL ABOUT THE JOINT FROM TOP OF FTG. TO 1' BELOW THE TOP OF BACKWALL.
  5. FOR ABUTMENT DIAPHRAGM DETAILS SEE SHEET [30/4].
  6. FOR ELASTOMERIC BEARING DETAILS SEE SHEET [21/4].

- LEGEND**
- EXISTING 12BP53 PILES BATTERED
  - EXISTING 12BP53 PILES VERTICAL
  - PROPOSED HP12X53 PILES BATTERED
  - PROPOSED HP12X53 PILES VERTICAL
  - PILE NUMBERS

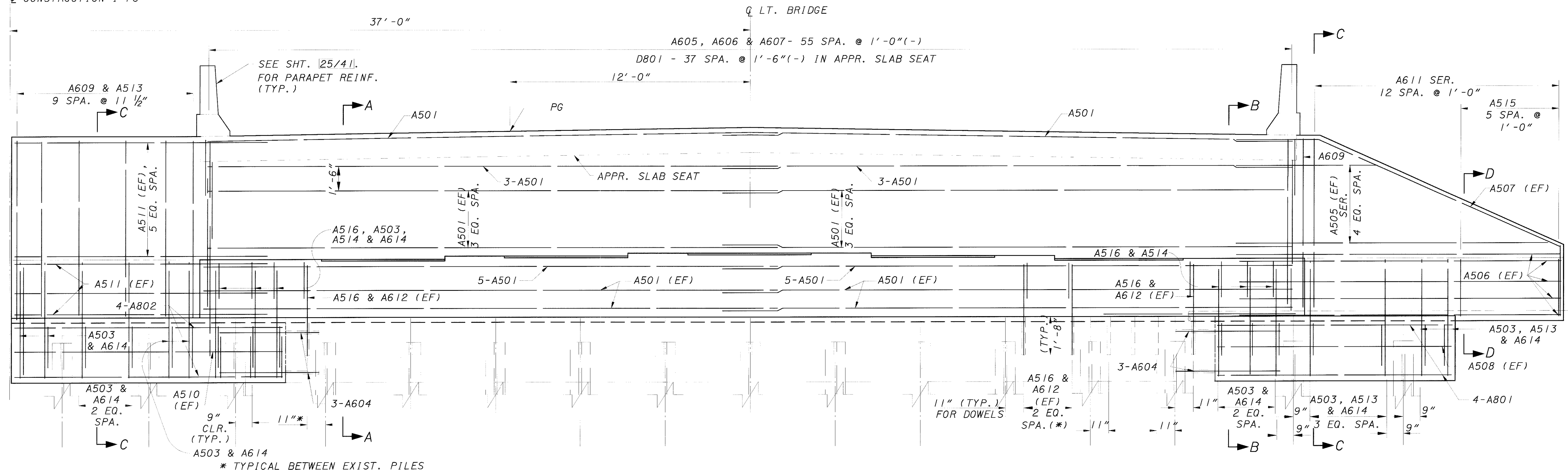


ELEVATION - FORWARD ABUTMENT

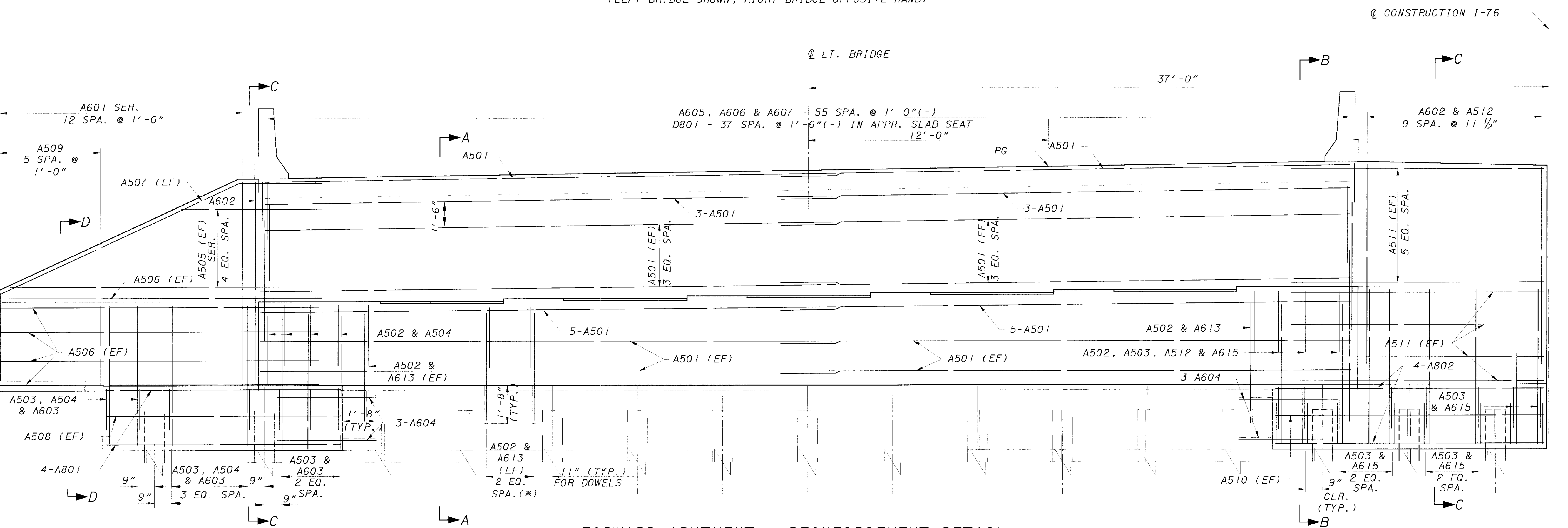
NOTE: FOR REINFORCEMENT DETAIL SEE SHEET [17/4].

DESIGN AGENCY: BARR ENGINEERING, INC. 5 EAST LONG STREET COLUMBUS, OHIO 43215 (614) 224-1941, (614) 224-0907 FAX  
 DATE: 04/06/01  
 REVISION: GEA 04/06/01  
 DRAWN: CLH  
 CHECKED: KVB  
 DESIGNED: ASB  
 PROJECT: MAH-76-086  
 ABUTMENT DETAILS  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON  
 16 / 41  
 96P  
 102  
 CONCRETE OPTION

CONSTRUCTION 1-76



REAR ABUTMENT - REINFORCEMENT DETAIL  
(LEFT BRIDGE SHOWN, RIGHT BRIDGE OPPOSITE HAND)



FORWARD ABUTMENT - REINFORCEMENT DETAIL  
LEFT BRIDGE - AS SHOWN  
RIGHT BRIDGE - SIMILAR

NOTE:  
FOR NOTES, SECTIONS AND DOWEL HOLE LOCATIONS,  
SEE SHEET 18741.

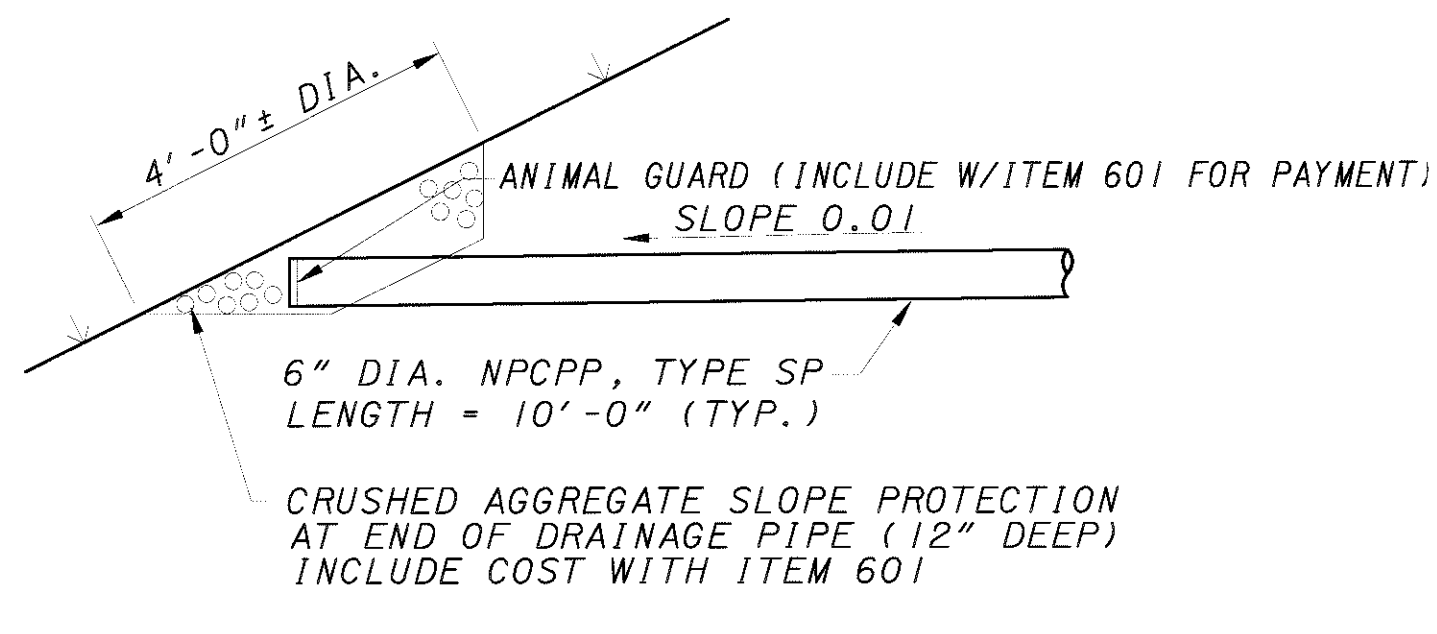
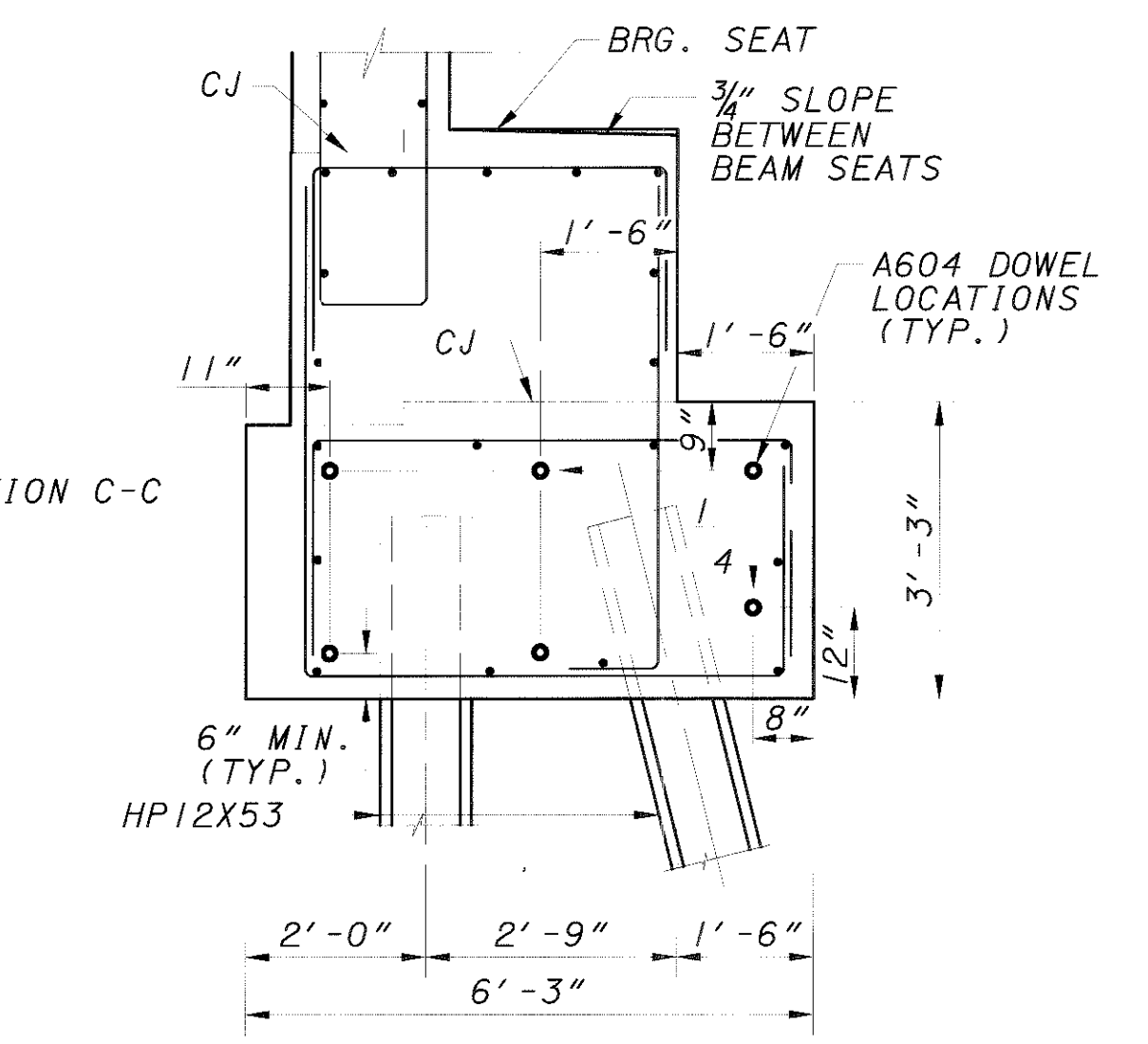
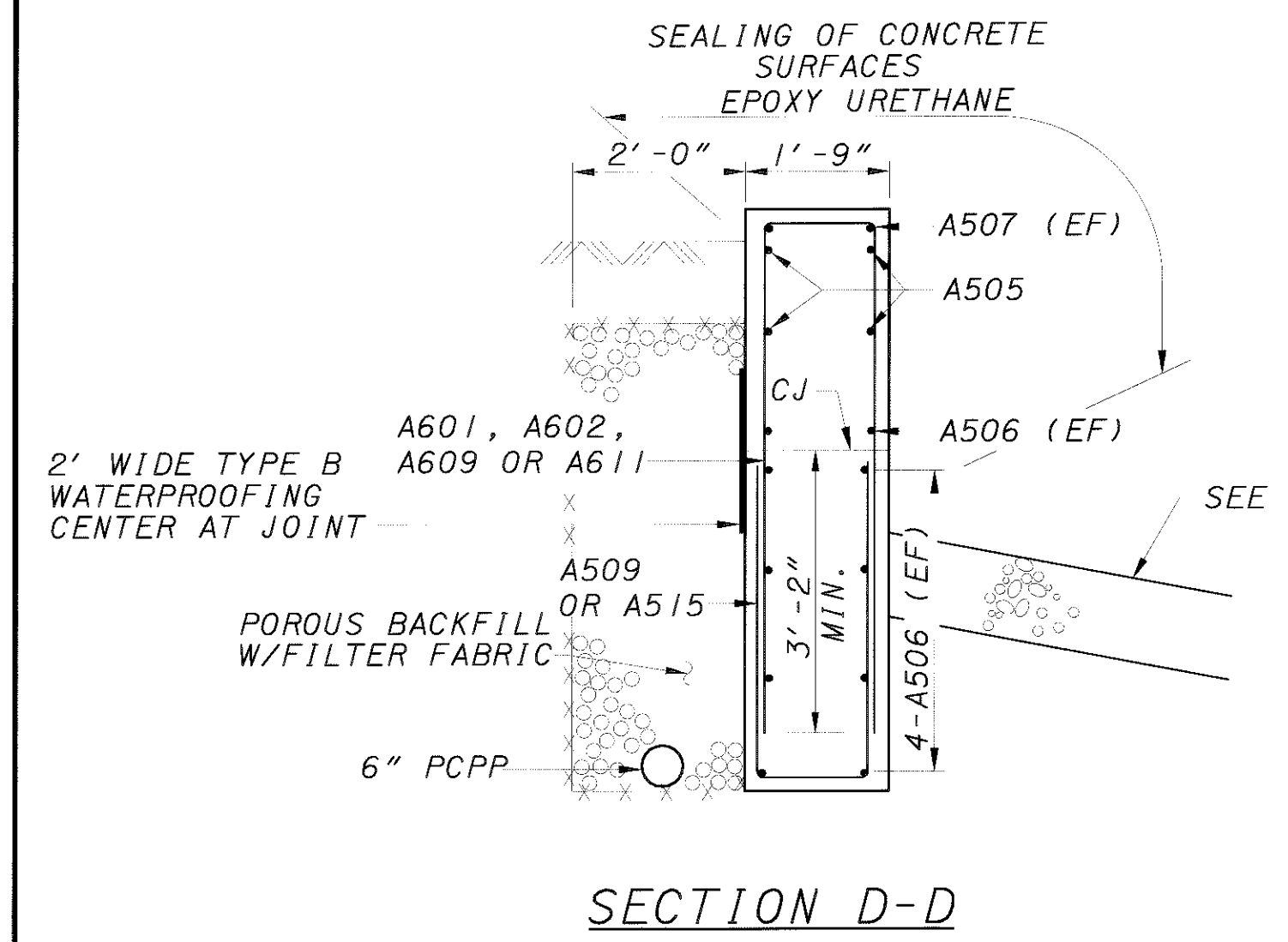
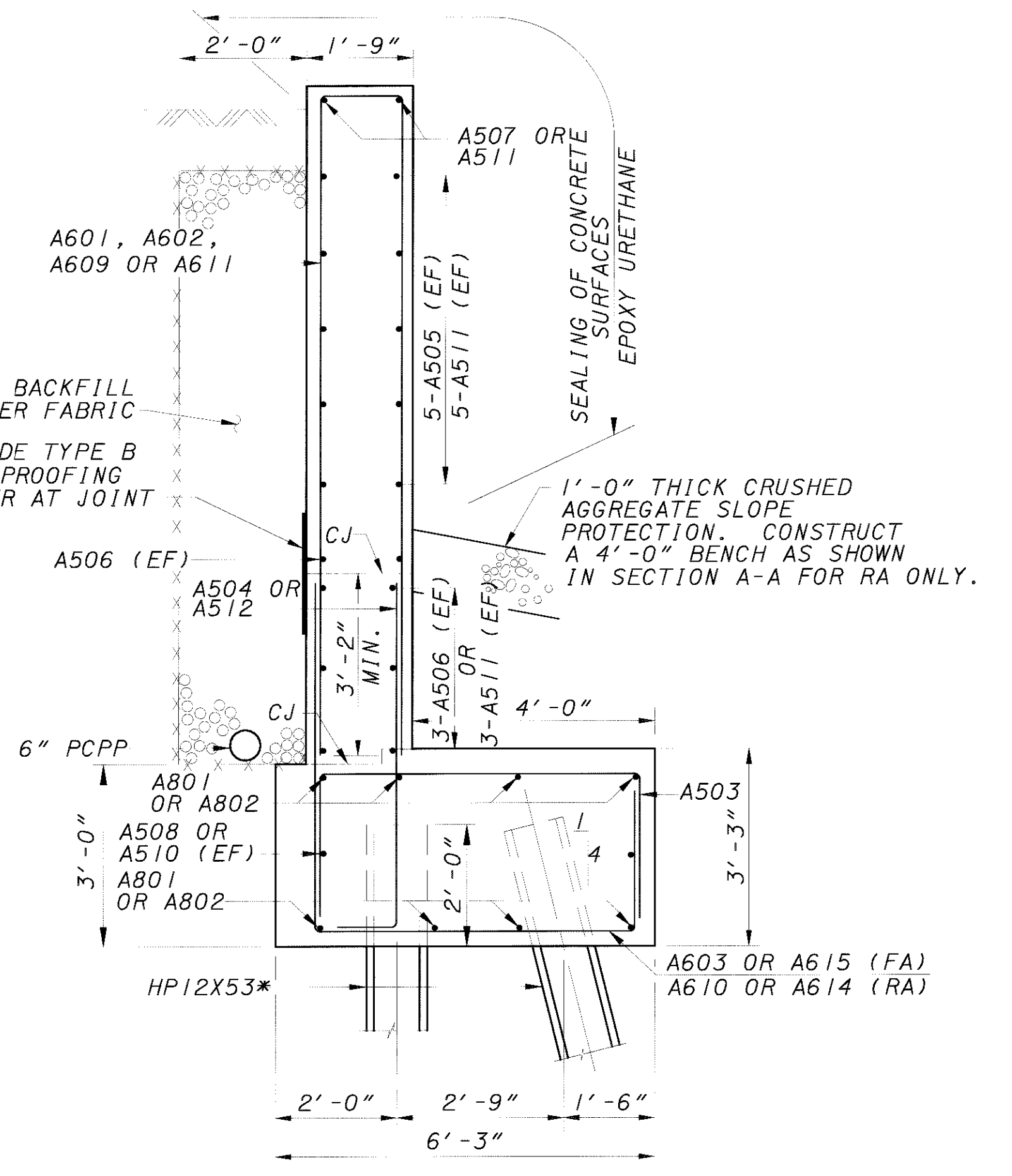
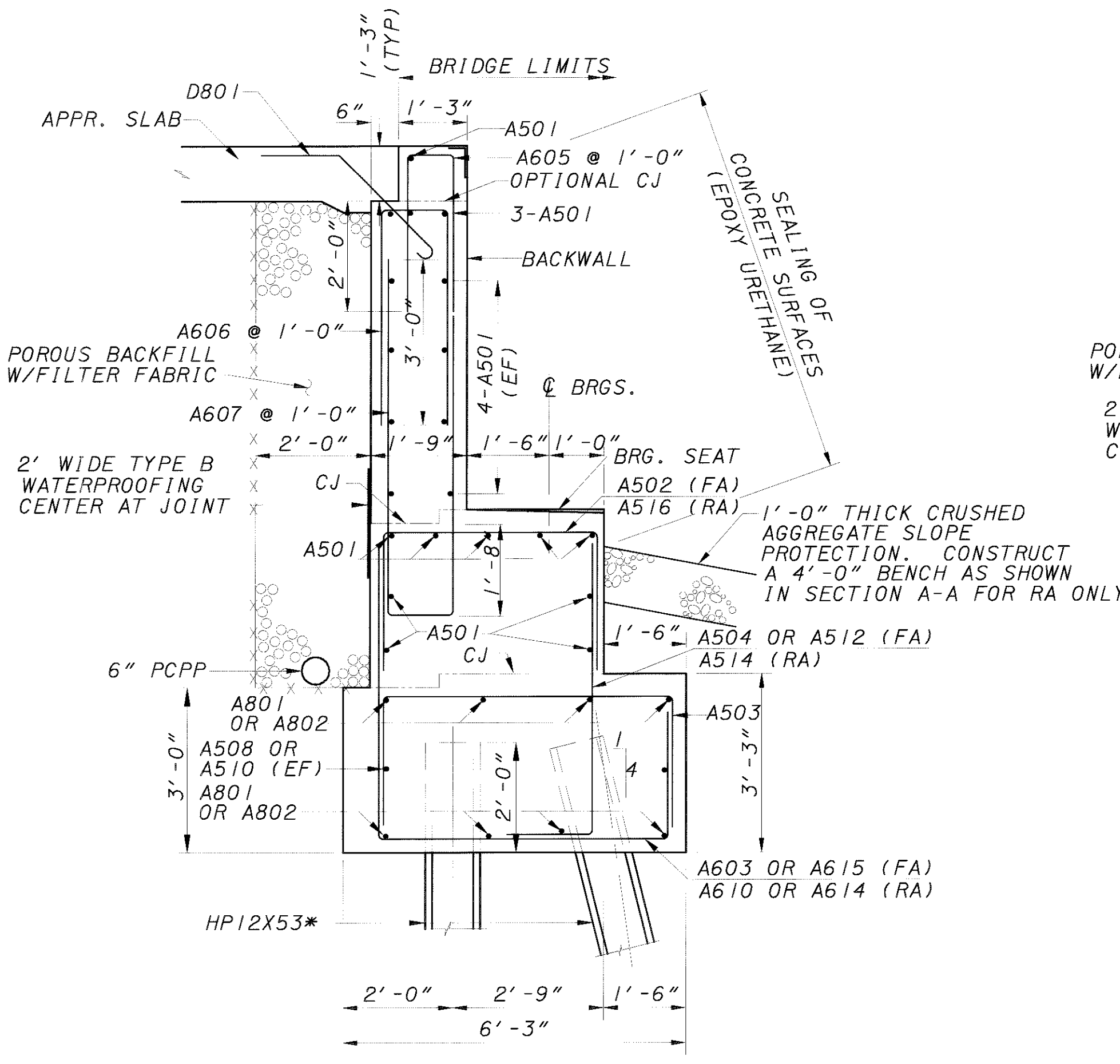
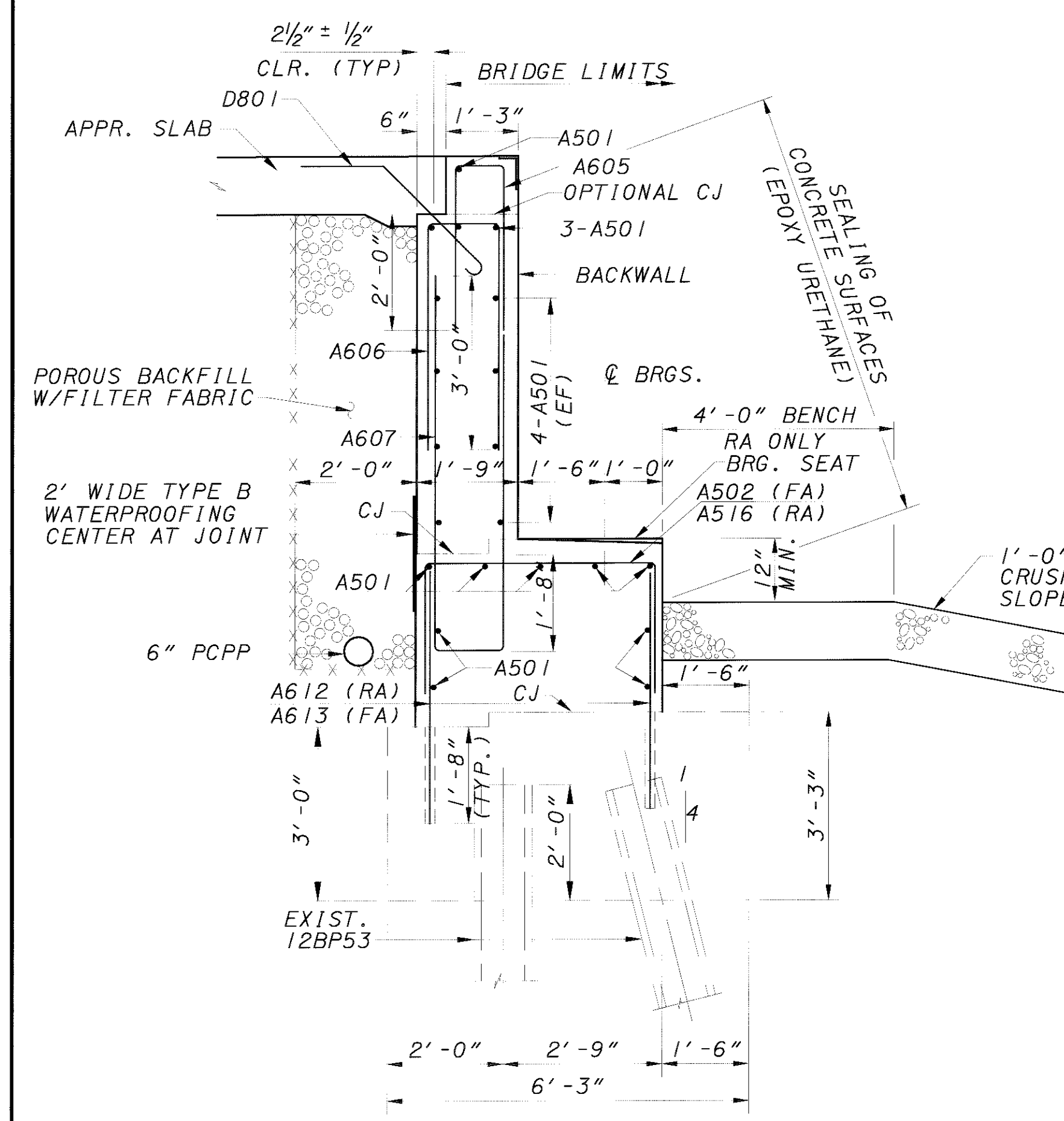
CONCRETE OPTION

|             |      |         |
|-------------|------|---------|
| DESIGNED BY | DATE | PROJECT |
| REVIEWED BY | DATE | PROJECT |
| DRAWN BY    | DATE | PROJECT |
| CHECKED BY  | DATE | PROJECT |
| APPROVED BY | DATE | PROJECT |

MAH-76-0.86  
 ABUTMENT DETAILS  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

17 / 41  
 960  
 102



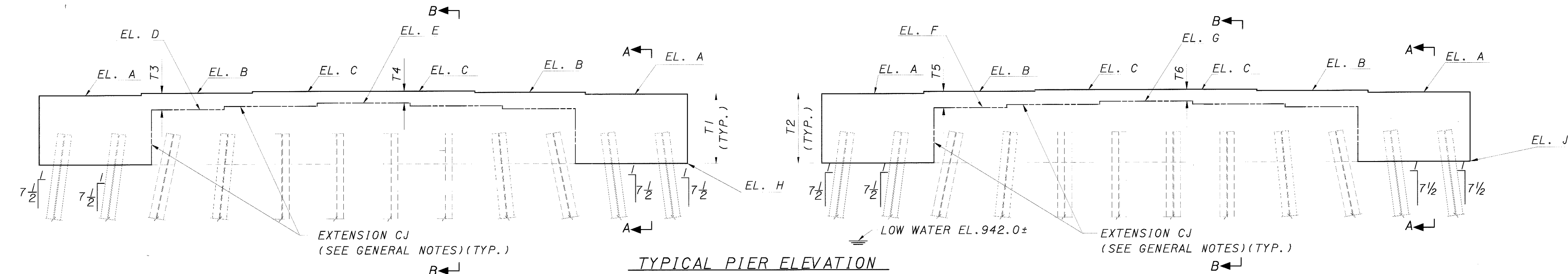
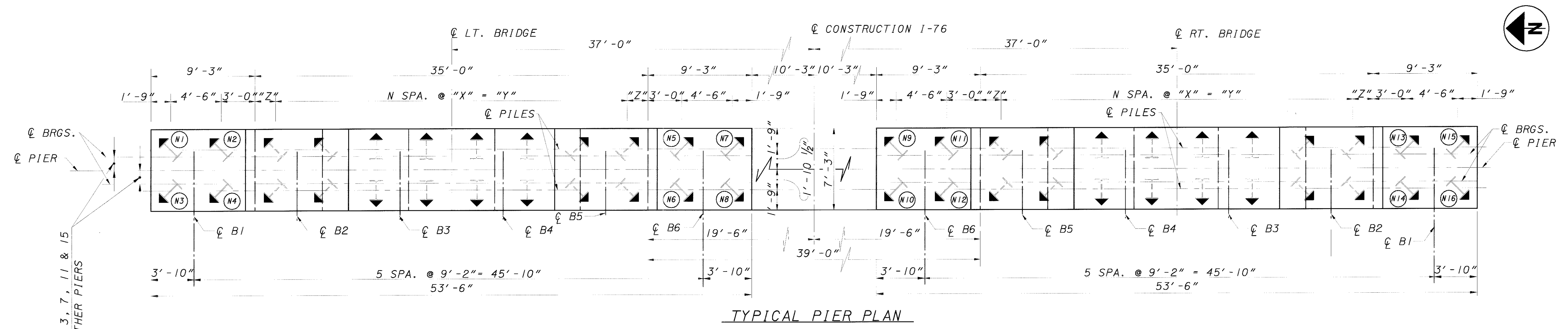
- NOTES:**
- POROUS BACKFILL WITH FILTER FABRIC SHALL EXTEND UPWARD TO THE PLANE OF THE SUBGRADE, TO 1'-0" BELOW THE EMBANKMENT SURFACE AND LATERALLY TO THE ENDS OF THE WINGWALLS. FILTER FABRIC SHALL CONFORM WITH 712.09, TYPE A. FILTER FABRIC IS INCLUDED WITH POROUS BACKFILL FOR PAYMENT.
  - IN ADDITION TO THE PROVISIONS OF 842, BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTIL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.
  - ALL REINFORCING STEEL CLEARANCE SHALL BE 2" TYPICAL UNO.
- LAP SPLICES**  
LAP NO. 5 BARS 2'-9" MINIMUM.  
LAP NO. 6 BARS 3'-0" MINIMUM  
LAP NO. 8 BARS 4'-0" MINIMUM.
- ALL EXISTING DIMENSIONS ±.
  - ABUTMENT DIAPHRAGM NOT SHOWN. FOR ABUTMENT DIAPHRAGM DETAILS SEE SHEET 30/41.

NOTE: ANCHOR DOWELS IN HOLES WITH EPOXY GROUT

\* SEE ABUTMENT PLAN VIEW FOR NUMBER OF PILES AND SPACING.

|  |   |          |
|--|---|----------|
| DESIGN AGENCY<br><b>BARR ENGINEERING, INC.</b><br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE  | 04/06/01 |
|  | REVISION<br>CLH<br>5 INCH SCALE NUMBER<br>5002702L & 500273TR | 04/06/01 |
| DRAWN<br>CLH   | REVIEWED  | GEA      |
|  | CHECKED   | ASB      |
| RECORDED   | KVB   |          |
| <b>ABUTMENT DETAILS</b>  |   |          |
| BRIDGE NO. MAH-76-0091 L & R   |   |          |
| I-76 OVER LAKE MILTON  |   |          |
| <b>MAH-76-0.86</b>   |   |          |
|  |   | 18 / 41  |
| 96R<br>102   |   |          |

CONCRETE OPTION



NOTES

- FOR SECTIONS A-A & B-B AND REINFORCEMENT DETAILS SEE SHEET 20741
- ALL EXISTING PILES SHALL BE METALLIZED AS PER THE METALLIZING NOTES ON SHEETS 39 THROUGH 41.
- ALL NEW PILES SHALL BE GALVANIZED AS PER 711.02 FOR FULL LENGTH FURNISHED.
- IT IS ANTICIPATED THAT THE DRIVING OF PILES FOR THE WESTERN MOST PIERS WILL BE DIFFICULT THEREFORE SUBJECT TO THE APPROVAL OF THE DISTRICT DIRECTOR, SOME PREBORING MAY BE PERMITTED AT THE CONTRACTORS EXPENSE.
- ALL SURFACES OF BOTH THE EXISTING AND PROPOSED PIER CAPS SHALL BE SEALED FOR THE ENTIRE LENGTH INCLUDING THE ENDS.
- ALL EXISTING DIMENSIONS ARE ±

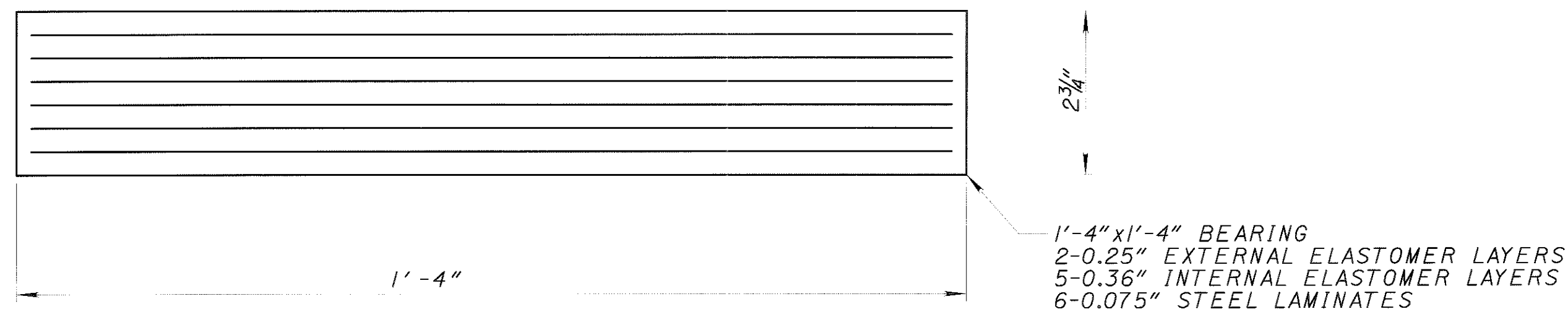
| PIER NO. (L & R) | ESTIMATED PILE LENGTH | PILE NUMBERS N1 THRU N16 | ELEVATION "A" | ELEVATION "B" | ELEVATION "C" | EXISTING ELEVATION "D" (±) | EXISTING ELEVATION "E" (±) | EXISTING ELEVATION "F" (±) | EXISTING ELEVATION "G" (±) | EXISTING ELEVATION "H" (±) | EXISTING ELEVATION "J" (±) | DIMENSION "T1" | DIMENSION "T2" | DIMENSION "T3" (±) | DIMENSION "T4" (±) | DIMENSION "T5" (±) | DIMENSION "T6" (±) |
|------------------|-----------------------|--------------------------|---------------|---------------|---------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------|----------------|--------------------|--------------------|--------------------|--------------------|
| 1                | 35'                   | (1) THRU (16)            | 957.61        | 957.75        | 957.90        | 956.37                     | 956.63                     | 956.38                     | 956.60                     | 951.87                     | 951.88                     | 5'-8 7/8"      | 5'-8 3/4"      | 1'-4 1/2"          | 1'-3 1/4"          | 1'-4 1/2"          | 1'-3 5/8"          |
| 2                | 40'                   | (17) THRU (32)           | 957.96        | 958.11        | 958.25        | 956.81                     | 957.04                     | 956.90                     | 957.13                     | 952.31                     | 952.40                     | 5'-7 3/4"      | 5'-6 3/4"      | 1'-3 5/8"          | 1'-2 1/2"          | 1'-2 1/2"          | 1'-1 1/2"          |
| 3                | 45'                   | (33) THRU (48)           | 958.19        | 958.33        | 958.47        | 957.24                     | 957.50                     | 957.24                     | 957.48                     | 952.74                     | 952.74                     | 5'-5 3/8"      | 5'-5 3/8"      | 1'-1 1/8"          | 1 1/8"             | 1'-1 1/8"          | 1 1/8"             |
| 4                | 50'                   | (49) THRU (64)           | 958.77        | 958.92        | 959.06        | 957.70                     | 957.90                     | 957.71                     | 957.96                     | 953.20                     | 953.21                     | 5'-6 7/8"      | 5'-6 3/4"      | 1'-2 5/8"          | 1'-1 7/8"          | 1'-2 1/2"          | 1'-2 1/4"          |
| 5                | 50'                   | (65) THRU (80)           | 959.23        | 959.37        | 959.52        | 958.10                     | 958.34                     | 958.07                     | 958.30                     | 953.60                     | 953.57                     | 5'-7 1/2"      | 5'-7 7/8"      | 1'-3 1/4"          | 1'-2 1/8"          | 1'-3 5/8"          | 1'-2 5/8"          |
| 6                | 50'                   | (81) THRU (96)           | 959.58        | 959.72        | 959.87        | 958.46                     | 958.69                     | 958.46                     | 958.67                     | 953.96                     | 953.96                     | 5'-7 1/2"      | 5'-7 1/2"      | 1'-3 1/8"          | 1'-2 1/8"          | 1'-3 1/8"          | 1'-2 3/8"          |
| 7                | 55'                   | (97) THRU (112)          | 959.80        | 959.95        | 960.09        | 958.86                     | 959.08                     | 958.86                     | 959.10                     | 954.36                     | 954.36                     | 5'-5 1/4"      | 5'-5 1/4"      | 1'-1 1/8"          | 1'-0 1/8"          | 1'-1 7/8"          | 1 1/8"             |
| 8                | 60'                   | (113) THRU (128)         | 960.39        | 960.53        | 960.68        | 959.20                     | 959.44                     | 959.28                     | 959.52                     | 954.70                     | 954.78                     | 5'-8 1/4"      | 5'-7 3/8"      | 1'-4"              | 1'-2 7/8"          | 1'-3"              | 1'-1 7/8"          |
| 9                | 65'                   | (129) THRU (144)         | 960.85        | 960.99        | 961.13        | 959.61                     | 959.82                     | 959.67                     | 959.92                     | 955.11                     | 955.17                     | 5'-8 7/8"      | 5'-8 1/8"      | 1'-4 1/2"          | 1'-3 3/4"          | 1'-3 7/8"          | 1'-2 1/2"          |
| 10               | 65'                   | (145) THRU (160)         | 961.22        | 961.36        | 961.50        | 959.96                     | 960.30                     | 960.08                     | 960.31                     | 955.46                     | 955.58                     | 5'-9 1/8"      | 5'-7 5/8"      | 1'-4 3/4"          | 1'-2 3/8"          | 1'-3 3/8"          | 1'-2 1/4"          |
| 11               | 70'                   | (161) THRU (176)         | 961.39        | 961.53        | 961.67        | 960.30                     | 960.53                     | 960.32                     | 960.54                     | 955.80                     | 955.82                     | 5'-7 1/8"      | 5'-6 7/8"      | 1'-2 3/4"          | 1'-1 5/8"          | 1'-2 1/2"          | 1'-1 1/2"          |
| 12               | 70'                   | (177) THRU (192)         | 961.80        | 961.94        | 962.09        | 960.52                     | 960.75                     | 960.52                     | 960.75                     | 956.02                     | 956.02                     | 5'-9 3/8"      | 5'-9 3/8"      | 1'-5"              | 1'-4 1/8"          | 1'-5"              | 1'-4 1/8"          |
| 13               | 70'                   | (193) THRU (208)         | 961.96        | 962.10        | 962.24        | 960.65                     | 960.87                     | 960.70                     | 960.93                     | 956.15                     | 956.20                     | 5'-9 3/4"      | 5'-9 1/8"      | 1'-5 3/8"          | 1'-4 1/2"          | 1'-4 3/4"          | 1'-3 3/4"          |
| 14               | 70'                   | (209) THRU (224)         | 961.89        | 962.03        | 962.17        | 960.61                     | 960.86                     | 960.65                     | 960.92                     | 956.11                     | 956.15                     | 5'-9 3/8"      | 5'-8 7/8"      | 1'-5"              | 1'-3 3/4"          | 1'-4 1/2"          | 1'-3"              |
| 15               | 65'                   | (225) THRU (240)         | 961.56        | 961.71        | 961.85        | 960.48                     | 960.85                     | 960.50                     | 960.75                     | 955.98                     | 956.00                     | 5'-7"          | 5'-6 3/4"      | 1'-2 3/4"          | 1'-0"              | 1'-2 1/2"          | 1'-1 1/4"          |
| 16               | 65'                   | (241) THRU (256)         | 961.48        | 961.62        | 961.77        | 960.29                     | 960.54                     | 960.31                     | 960.57                     | 955.79                     | 955.81                     | 5'-8 1/4"      | 5'-8"          | 1'-4"              | 1'-2 3/4"          | 1'-3 3/4"          | 1'-2 3/8"          |
| 17               | 60'                   | (257) THRU (272)         | 961.15        | 961.29        | 961.43        | 959.87                     | 960.11                     | 959.85                     | 960.08                     | 955.37                     | 955.35                     | 5'-9 3/8"      | 5'-9 5/8"      | 1'-5"              | 1'-3 7/8"          | 1'-5 1/4"          | 1'-4 1/4"          |

| PIER TYPE | PIER NOS. (L&R)              | "N" | "X"    | "Y"    | "Z"    |
|-----------|------------------------------|-----|--------|--------|--------|
| "A"       | 3 & 4                        | 6   | 5'-3"  | 31'-6" | 1'-9"  |
| "B"       | 1, 2, 7, 10, 11, 14, 15 & 17 | 7   | 4'-6"  | 31'-6" | 1'-9"  |
| "C"       | 5, 6, 8, 9, 12, 13 & 16      | 8   | 3'-11" | 31'-4" | 1'-10" |

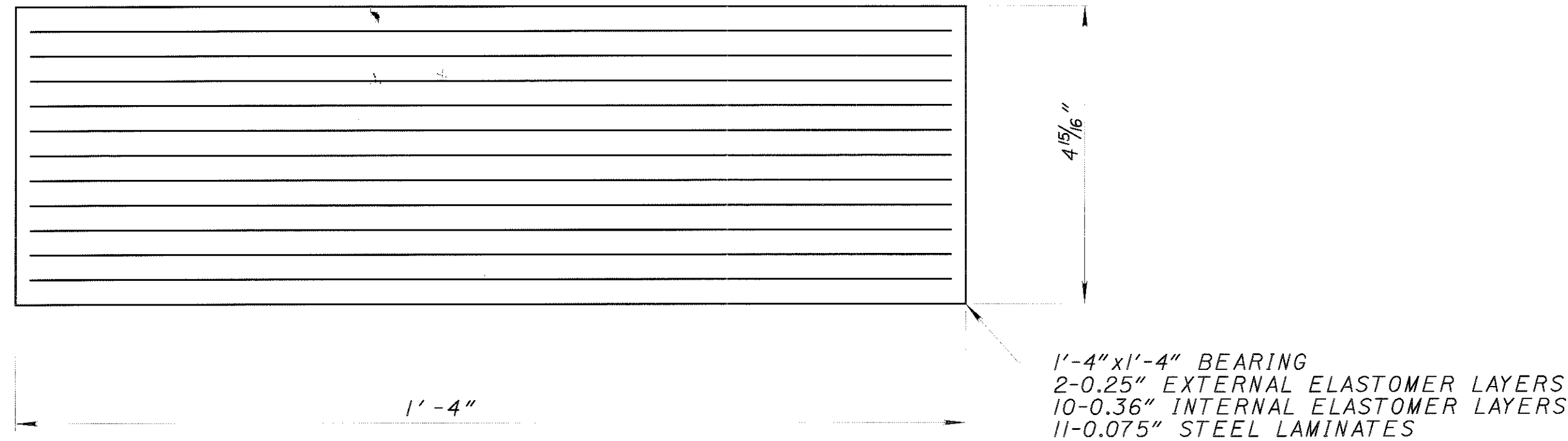
CONCRETE OPTION



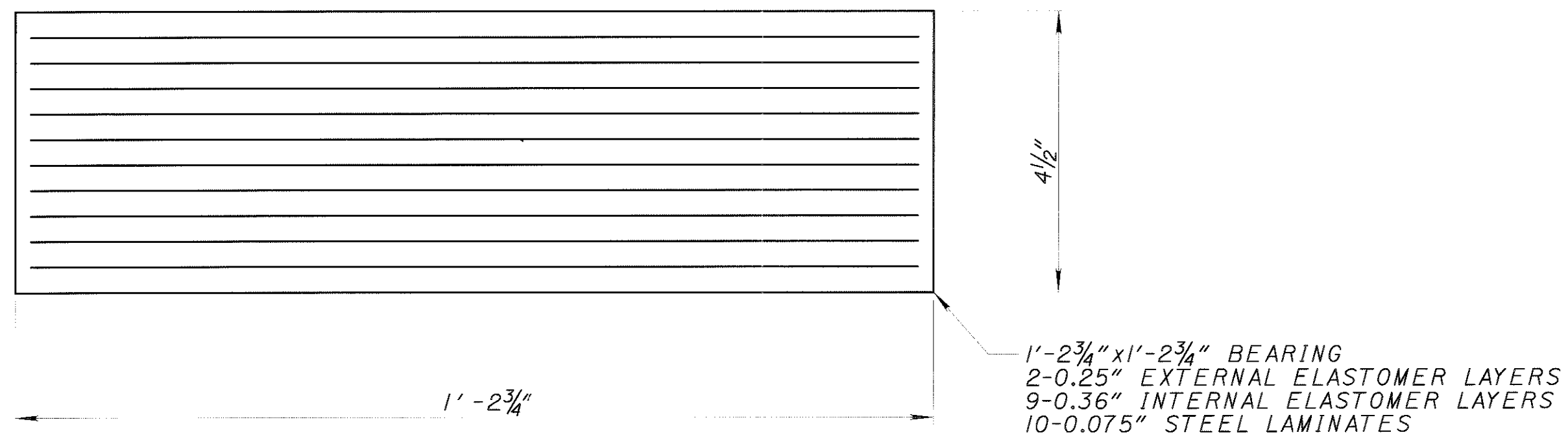




**TYPE 1 BEARING**  
 @ PIERS 1,2,4,5,6,8,9,10,12,13,14,16,17  
 (312 REQ'D)



**TYPE 2 BEARING**  
 @ PIERS 3,7,11,15  
 (96 REQ'D)



**TYPE 3 BEARING**  
 @ ABUTMENTS  
 (24 REQ'D)

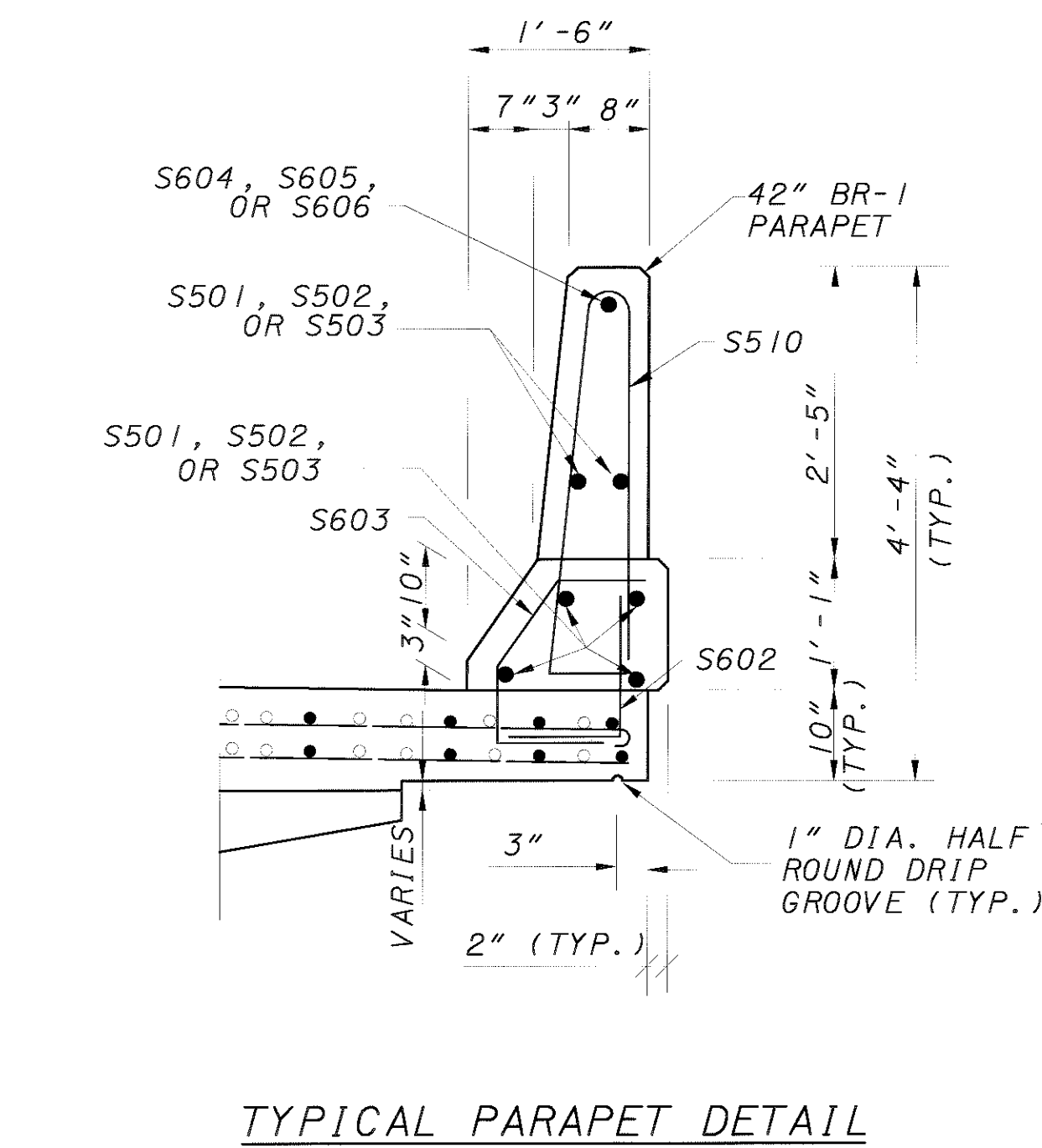
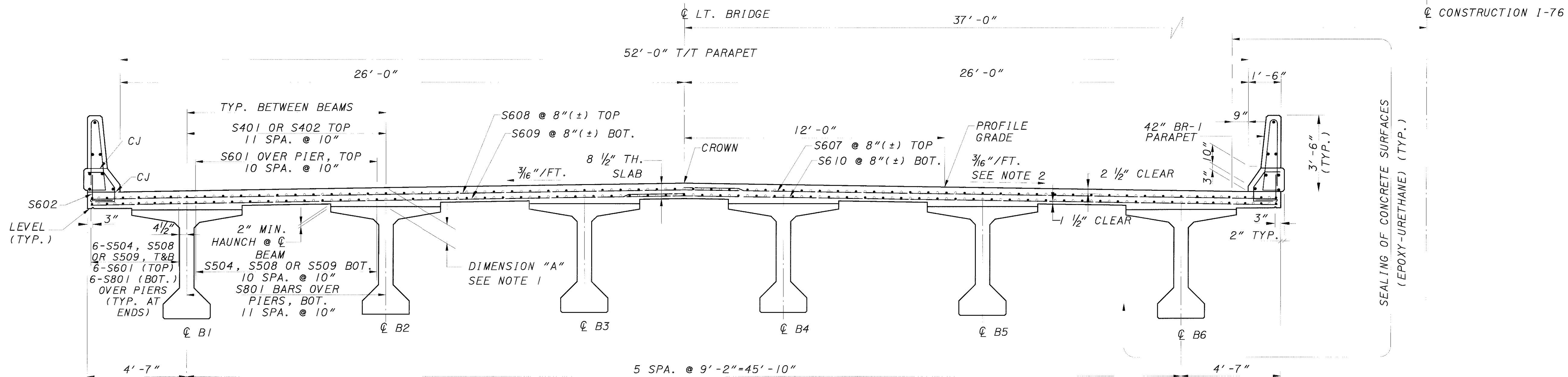
**BEARING MANUFACTURER:** THE ELASTOMERIC BEARINGS FOR THIS PROJECT SHALL BE PROVIDED BY THE D.S. BROWN COMPANY OF NORTH BALTIMORE, OHIO; SEISMIC ENERGY PRODUCTS CORPORATION OF ATHENS, TEXAS; SCOUHAL RUBBER CORPORATION OF SEATTLE, WASHINGTON; OR OTHER MANUFACTURER THAT HAS NOT PROVIDED BEARINGS FOR OHIO BRIDGES AFTER 1997 THAT HAD TO BE REPLACED BECAUSE OF UNACCEPTABLE MATERIAL QUALITY OR MANUFACTURING DEFECTS.

**ELASTOMERIC BEARINGS** SHALL COMPLY WITH ITEM 516 AND AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, SECTION 18, BEARINGS, DIVISION II, CONSTRUCTION, ARTICLES 18.4.5.1 AND 18.5.6.2. BEARINGS SHALL BE GRADE 3, 50 DUROMETER NEOPRENE, AND SHALL BE SUBJECTED TO THE LOAD TESTING REQUIREMENTS DEFINED IN ARTICLE 18.7.4.5 OF THE AASHTO DOCUMENT LISTED ABOVE. BEARINGS WERE DESIGNED UNDER SECTION 14.6.6 OF SECTION 14, BEARINGS, DIVISION I, DESIGN. TESTING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE BEARINGS, EACH.

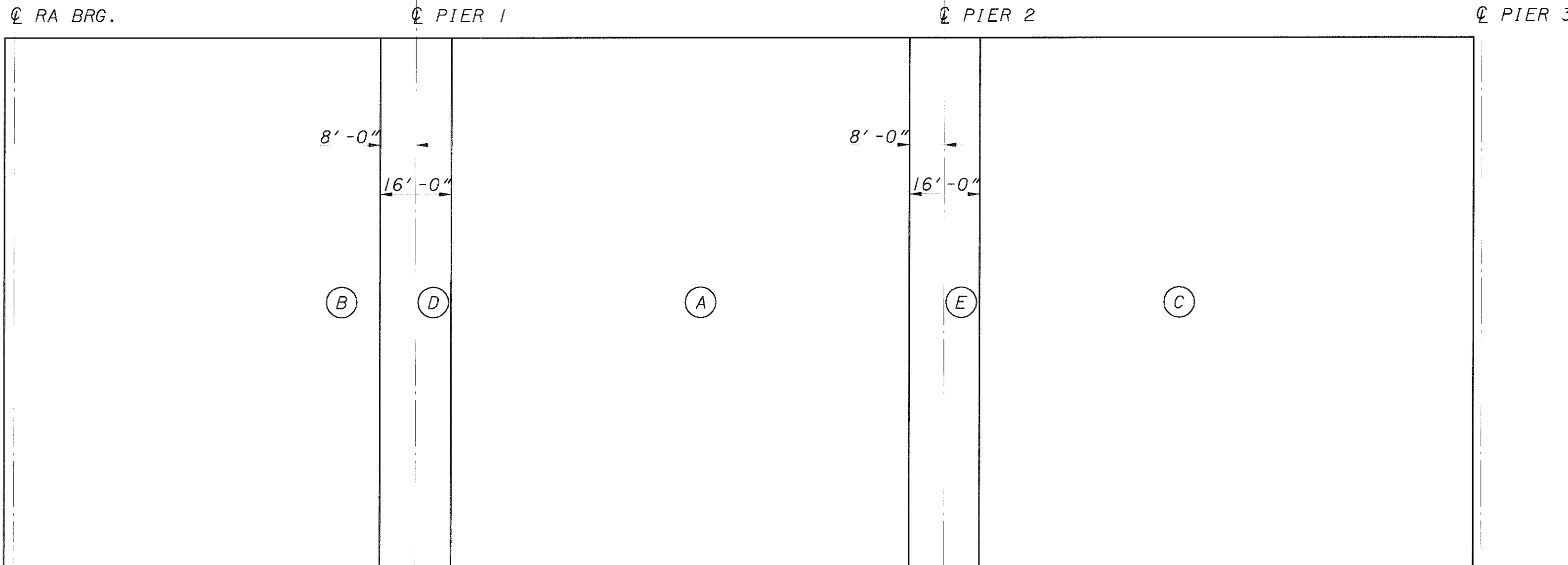
**DESIGN LOADING:**  
 BEARINGS ARE DESIGNED FOR THE FOLLOWING MAXIMUM SERVICE LOADS (KIPS):

|                        | PIERS<br>1,2,4,5,6,8,9,10,<br>12,13,14,16,17<br>(TYPE 1) | PIERS<br>3,7,11,15<br>(TYPE 2) | ABUTS.<br>(TYPE 3) |
|------------------------|--|--------------------------------|--------------------|
| DEAD LOAD              | 178  | 166                            | 130                |
| LIVE LOAD (W/O IMPACT) | 71   | 77                             | 75                 |
| TOTAL DESIGN LOAD      | 249  | 243                            | 205                |

CONCRETE OPTION



LEFT BRIDGE- AS SHOWN  
RIGHT BRIDGE - OPPOSITE HAND W.R.T.  $\phi$  CONSTRUCTION I-76



SLAB POUR SEQUENCE  
UNIT 1 SHOWN, OTHER UNITS SIMILAR

**NOTES:**

- SEE SHEET [31/41] FOR DIMENSION "A" AND DECK THICKNESS DIAGRAMS.
- THE CROSS SLOPE IS  $-3/16"/ft.$  UP TO STA. 68+23.00. IT VARIES AHEAD OF STA 68+23.00 DUE TO SUPERELEVATION TRANSITION. SEE SITE PLAN SHEET [27/41] AND ROADWAY PLAN FOR SUPERELEVATION DETAILS.
- MINIMUM LAP LENGTHS  
LAP NO. 4 BARS 2'-2"  
LAP NO. 5 BARS 2'-7"  
LAP NO. 6 BARS 3'-3"
- FOR DECK REINFORCING PLANS, PARAPET REINFORCING DETAILS, AND BAR STAGGER DIAGRAM OVER PIERS SEE SHEET [23/41] THROUGH [25/41].
- FOR INTM. DIAPHRAGM AND SCUPPER DETAILS, SEE SHEET [34/41].

**SLAB POUR NOTES**

- CONCRETE DIAPHRAGMS AT MOVEABLE DECK JOINTS SHALL BE COMPLETED AT LEAST 48 HOURS BEFORE DECK PLACEMENT BEGINS.
- DIAPHRAGMS AT PIERS 1,2,4,5,6,8,9,10,12,13,14,16, & 17 SHALL NOT BE PLACED UNTIL AFTER DECK SEGMENTS (A), (B) & (C) HAVE BEEN PLACED
- AREAS (A), (B), & (C), MAY BE PLACED IN ANY ORDER OR SIMULTANEOUSLY.
- AREAS (A), (B), & (C), SHALL BE PLACED BEFORE AREAS (D) & (E).
- AREAS (D) & (E) MAY BE PLACED IN ANY ORDER OR SIMULTANEOUSLY.
- THE PIER DIAPHRAGMS CONCRETE AT (D) & (E) SHALL BE PLACED MONOLITHICALLY WITH THE DECK SLAB.
- CONTRACTOR HAS THE OPTION TO POUR THE ENTIRE DECK INCLUDING DIAPHRAGMS IN ONE CONTINUOUS POUR WITH NO CONSTRUCTION JOINT BETWEEN DECK AND PIER DIAPHRAGMS.
- ALL CONSTRUCTION JOINTS IN THE DECK SHALL BE SEALED WITH HIGH MOLECULAR WEIGHT METHACRYLATE (HMWM) RESIN 2'-0" WIDE, CENTERED OVER THE JOINT, PER SUPPLEMENTAL SPECIFICATION 846. COSTS FOR THE HMWM RESIN AND PLACEMENT SHALL BE INCLUDED WITH ITEM 894, CLASS S CONCRETE, FOR BRIDGE DECKS WITH WARRANTY, FOR PAYMENT.
- REFER TO STANDARD DRAWING PSID-1-99, SHEET 8/8 FOR ADDITIONAL REQUIREMENTS.

CONCRETE OPTION

DESIGN AGENCY: BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

DATE: 04/06/01  
REVIEWED: GEA  
DESIGNED: KVB  
DRAWN: CLH  
CHECKED: ASB

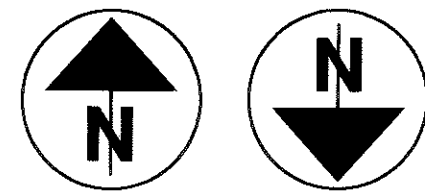
STRUCTURE FILE NUMBER: 5002702L & 5002737R

TRANSVERSE SECTION  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

MAH-76-0.86

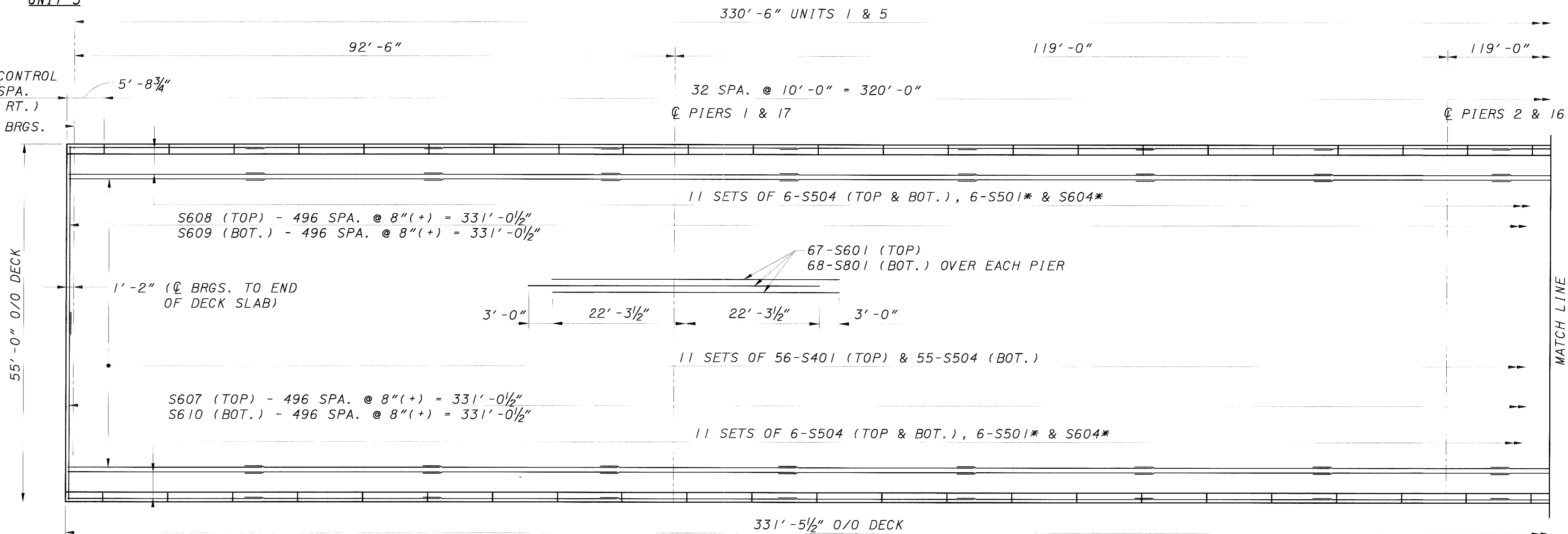
22 / 41

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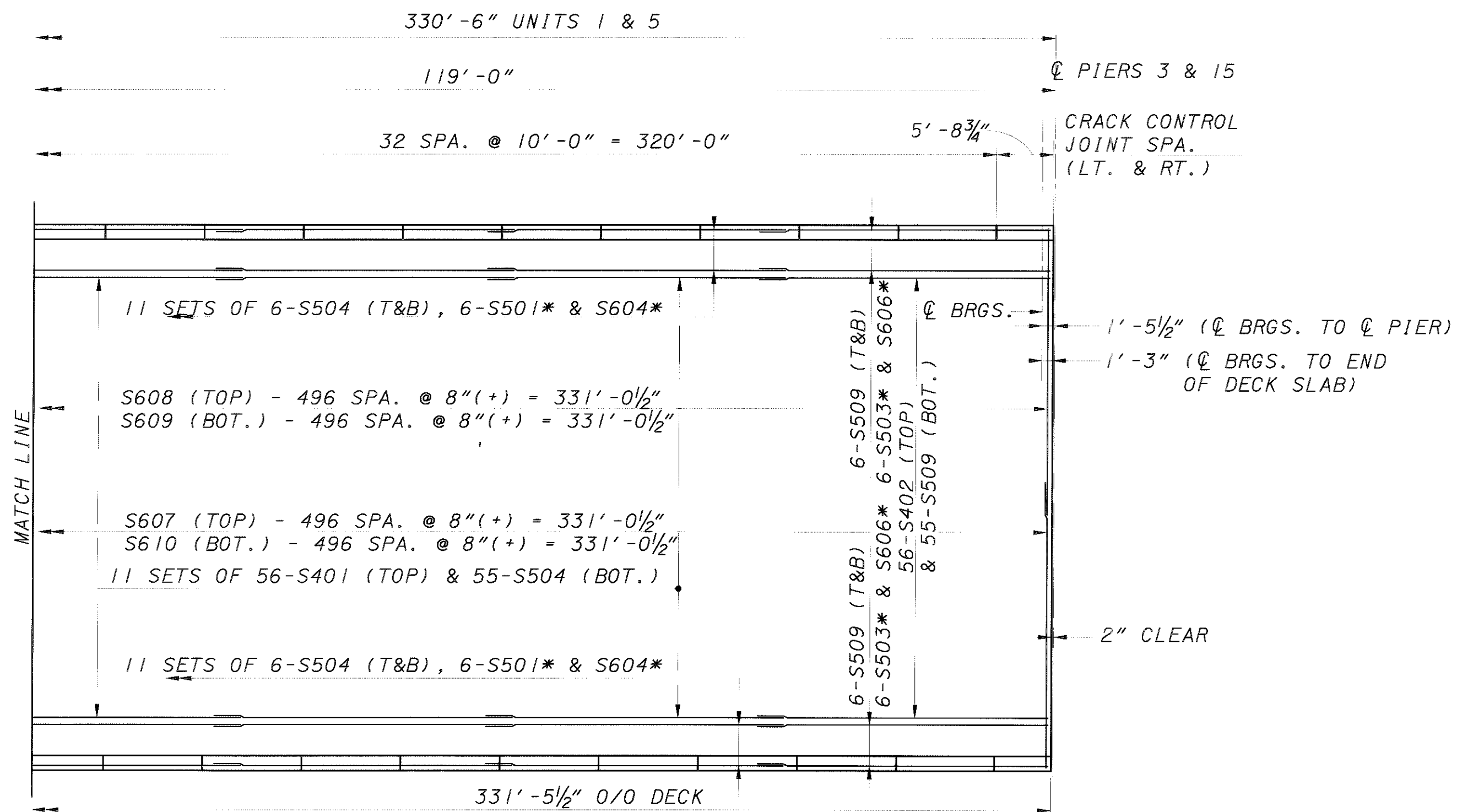


UNIT 1      UNIT 5

CRACK CONTROL  
JOINT SPA.  
(LT. & RT.)  
@ ABUT. BRGS.



**DECK REINFORCING PLAN**  
UNIT 1 SHOWN, UNIT 5 OPPOSITE HAND



**DECK REINFORCING PLAN**  
UNIT 1 SHOWN, UNIT 5 OPPOSITE HAND

**NOTE:**  
FOR TRANSVERSE SECTION & NOTES  
SEE SHEET 22741.  
\* DENOTES PARAPET REBARS.

DESIGN AGENCY  
BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

DATE 04/06/01  
REVIEWED CEA  
STRUCTURE FILE NUMBER 5002T02L & 5002T3TR

DRAWN CLH  
DESIGNED KVB  
CHECKED ASB

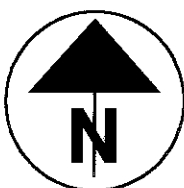
**DECK REINFORCING PLAN - UNITS 1 & 5**  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

**MAH-76-0.86**

23 / 41

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102

CONCRETE OPTION



DESIGN AGENCY  
 BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

DATE 04/06/01  
 REVIEWED GEA  
 STRUCTURE FILE NUMBER 5002702L & 5002737R

DESIGNED KVB  
 CHECKED ASB  
 DRAWN CLH  
 REVISED

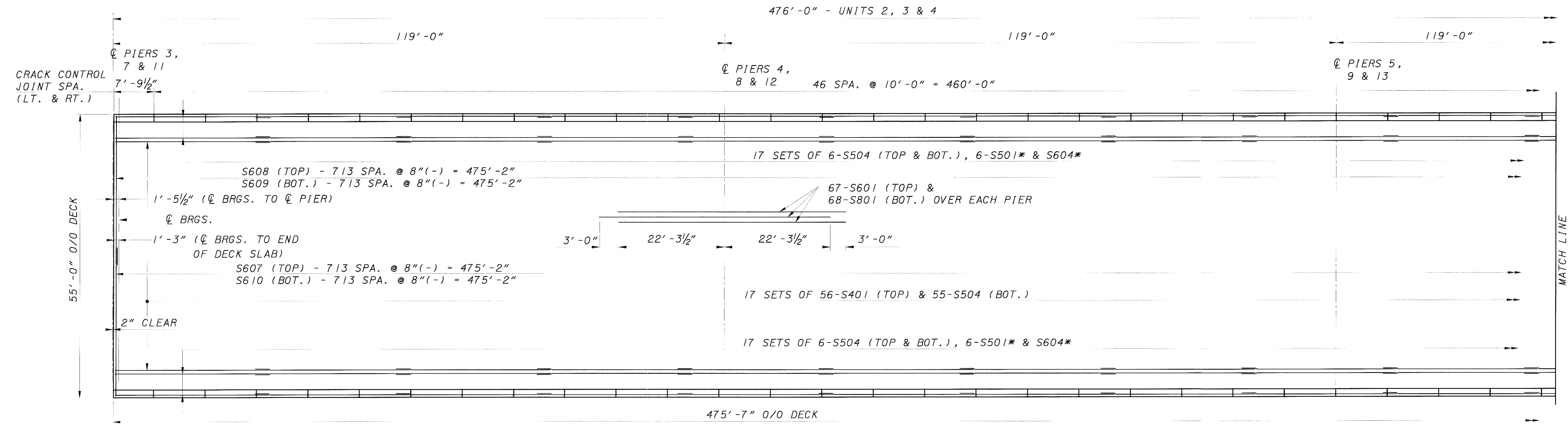
FRAMING PLAN - UNITS 2, 3 & 4  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

MAH-76-0.86

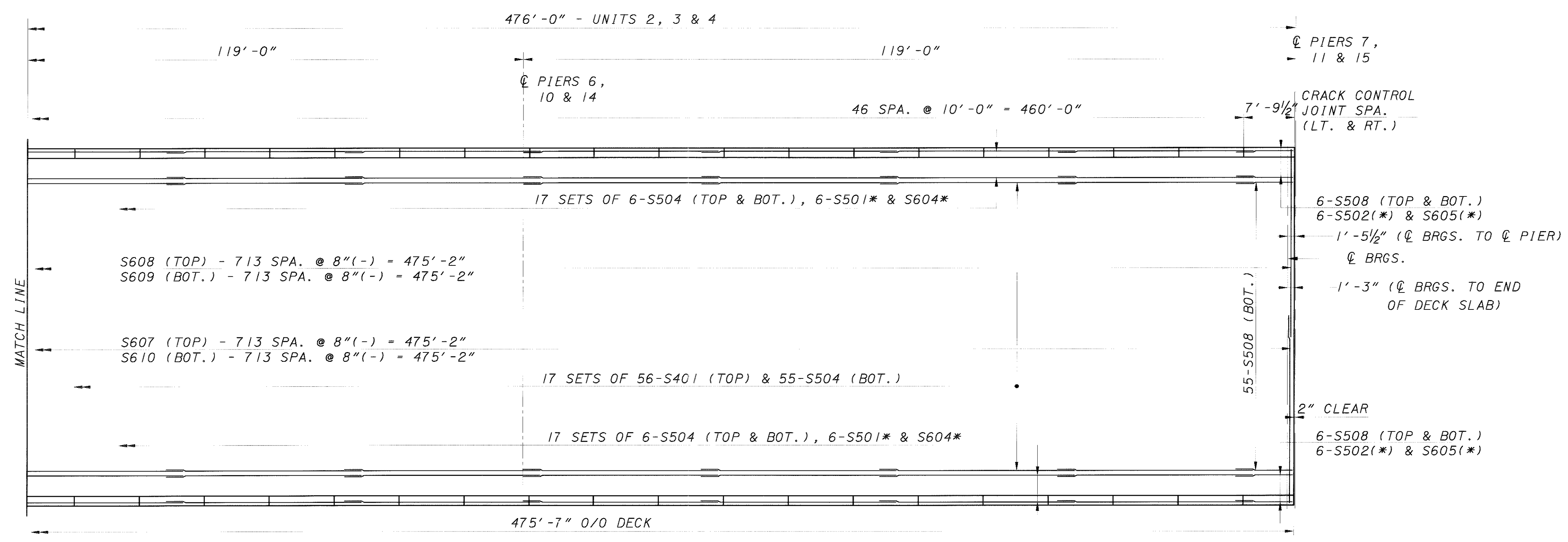
24 / 41

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 102

CONCRETE OPTION

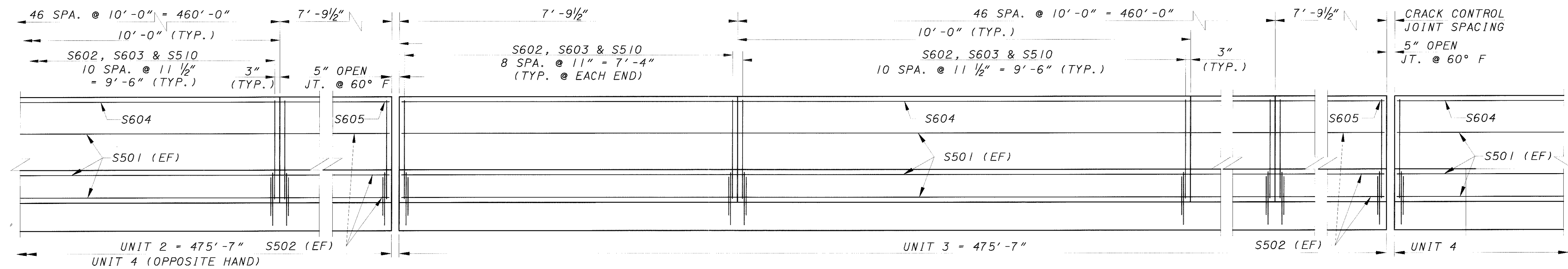
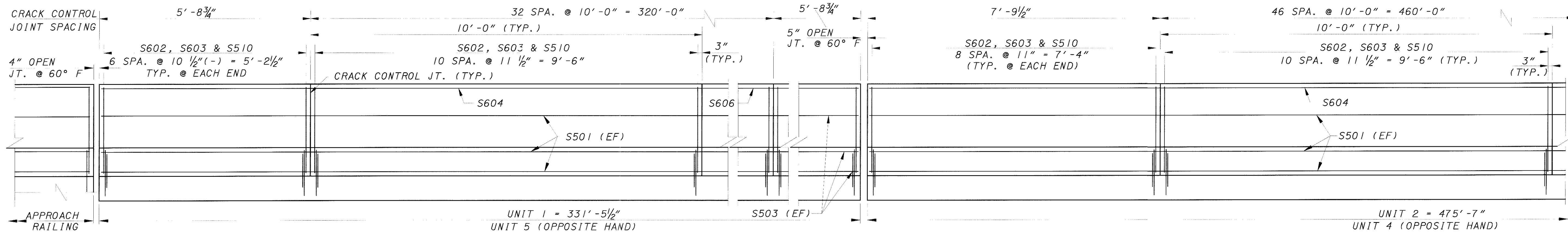


DECK REINFORCING PLAN  
 UNITS 2, 3 & 4



DECK REINFORCING PLAN  
 UNITS 2, 3 & 4

NOTE:  
 FOR TRANSVERSE SECTION & NOTES SEE SHEET 22741.  
 \* DENOTES PARAPET REBARS.



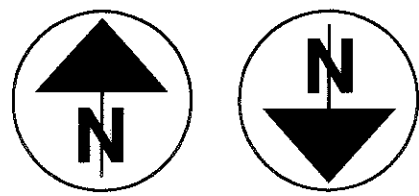
PARAPET REINFORCING DETAIL

NOTES:

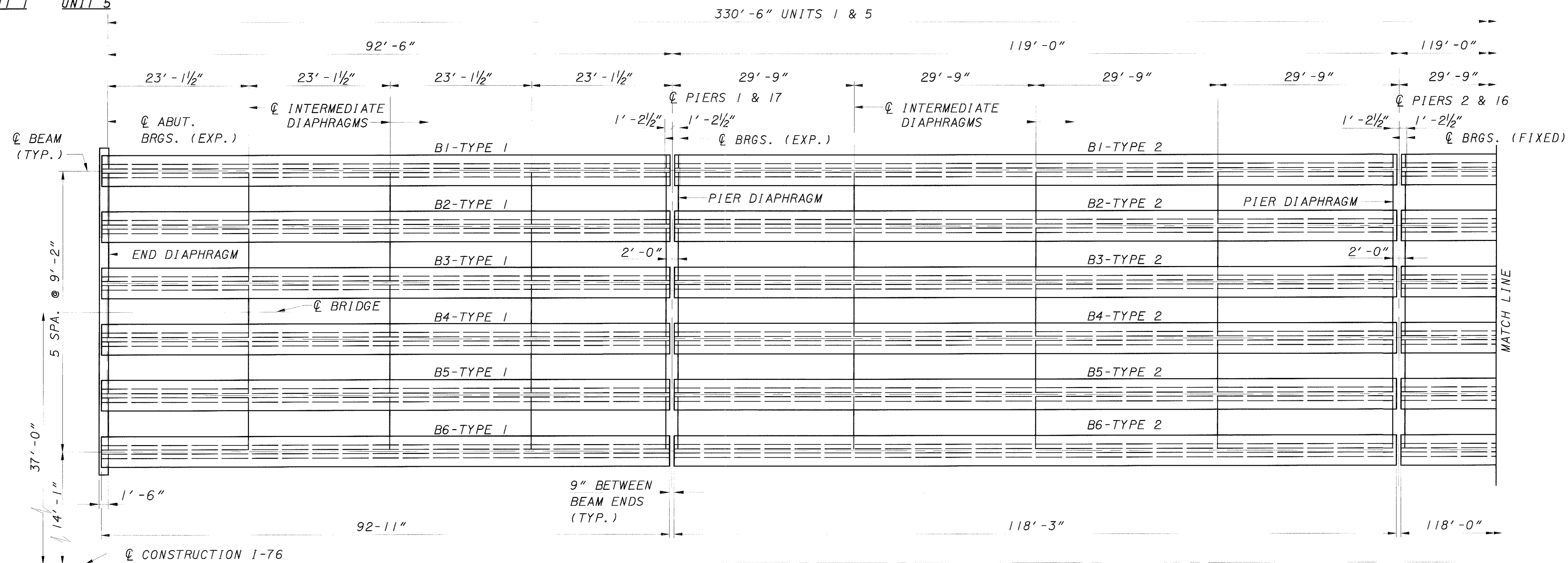
1. FOR CRACK CONTROL JOINT DETAILS, SEE STD. DWG. BR-1.
2. FOR TRANSVERSE SECTION SEE SHEET [22/41].

CONCRETE OPTION

|  |                  |
|--|------------------|
| BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0307 FAX |                  |
| DATE<br>04/06/01   | DRAWN<br>CLH     |
| CHECKED<br>KVB   | REVISIONS<br>ASB |
| PROJECT NO. 5002702L & 5002737R  |                  |
| SUPERSTRUCTURE DETAILS<br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON                            |                  |
| MAH-76-0.86  |                  |
| 25 / 41  | 96Y<br>102       |

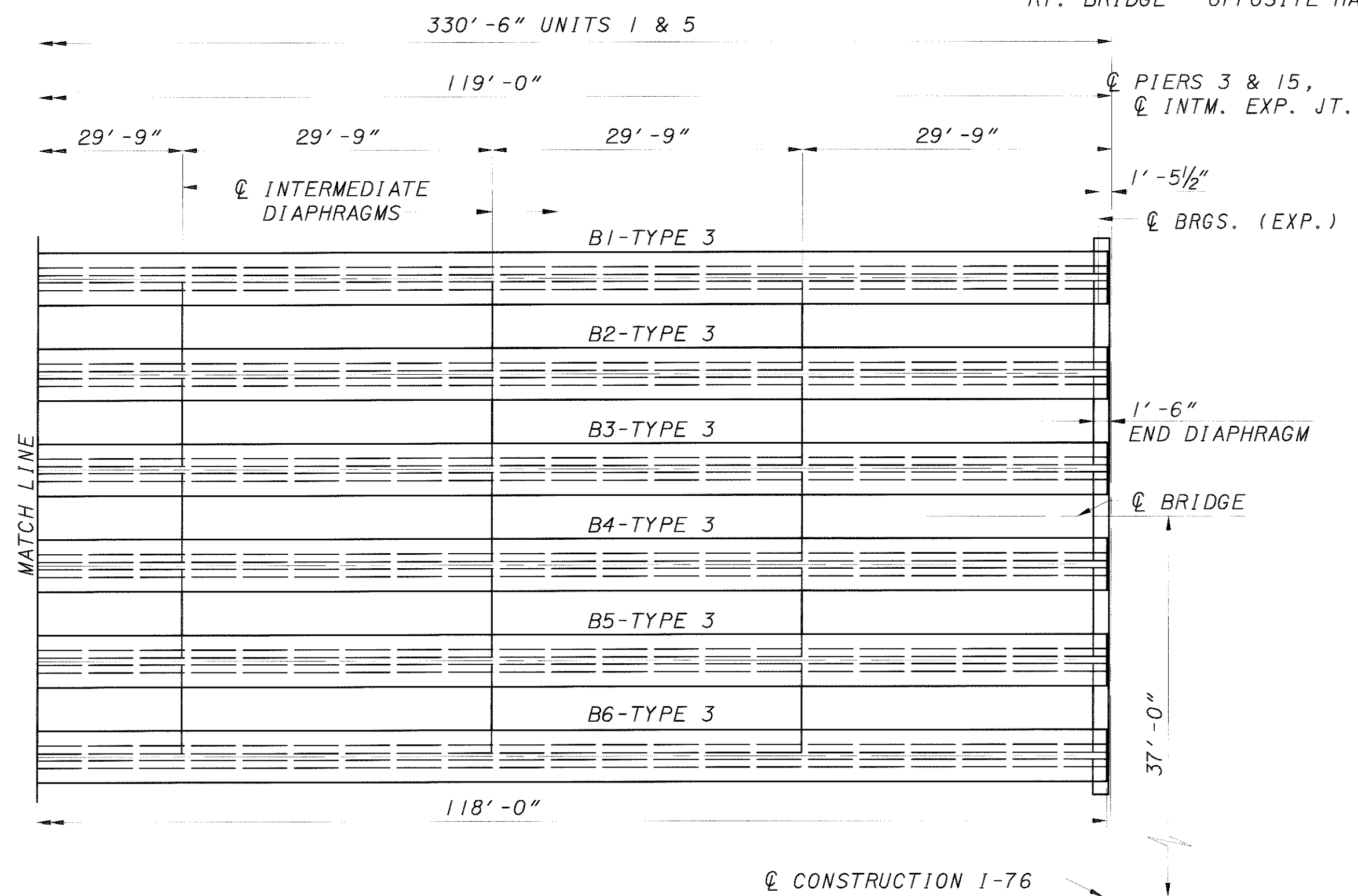


UNIT 1    UNIT 5



FRAMING PLAN - UNIT 1 SHOWN, UNIT 5 OPPOSITE HAND

LT. BRIDGE - AS SHOWN  
RT. BRIDGE - OPPOSITE HAND



FRAMING PLAN - UNIT 1 SHOWN, UNIT 5 OPPOSITE HAND

LT. BRIDGE - AS SHOWN  
RT. BRIDGE - OPPOSITE HAND

LEGEND:  
B1 = BEAM NUMBER  
TYPE 3 = TYPE OF BEAM

NOTES:  
1. FOR SECTION PROPERTIES AND PSC BEAM DETAILS, SEE SHEET 28/41.  
2. FOR DIAPHRAGM DETAILS SEE SHEET 30/41 & 34/41.

DESIGN AGENCY  
BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

|                       |                     |
|-----------------------|---------------------|
| DATE                  | 04/06/01            |
| REVIEWED              | GEA                 |
| DESIGNED              | KVB                 |
| DRAWN                 | CLH                 |
| CHECKED               | ASB                 |
| STRUCTURE FILE NUMBER | 5002702L & 5002737R |

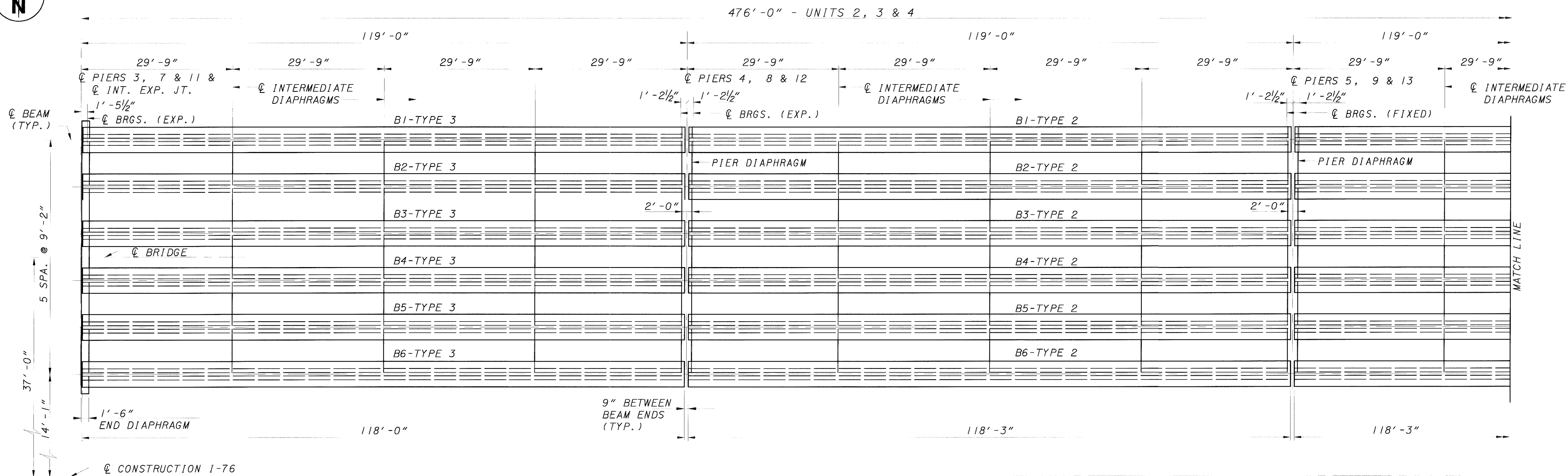
FRAMING PLAN - UNITS 1 & 5  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

MAH-76-0.86

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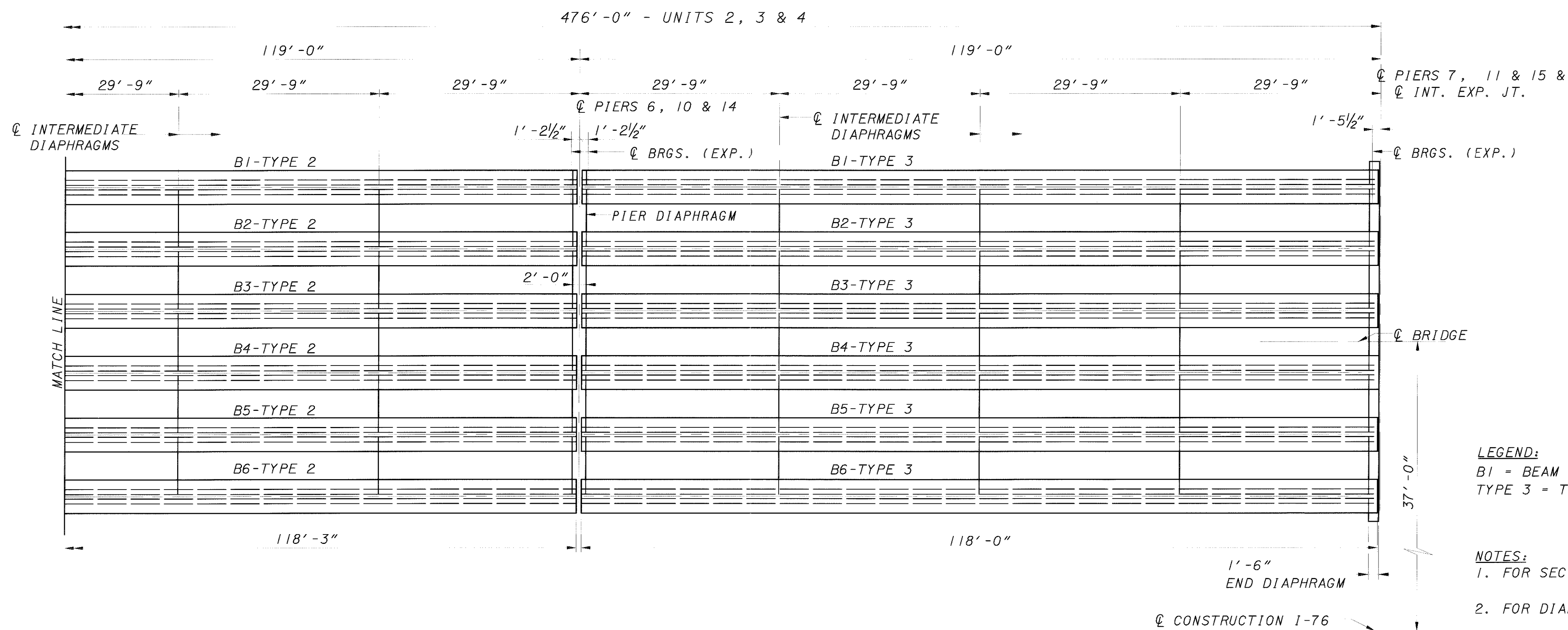
96Z  
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CONCRETE OPTION



**FRAMING PLAN - UNITS 2, 3 & 4**

LT. BRIDGE - AS SHOWN  
RT. BRIDGE - OPPOSITE HAND



**FRAMING PLAN - UNITS 2, 3 & 4**

LT. BRIDGE - AS SHOWN  
RT. BRIDGE - OPPOSITE HAND

**LEGEND:**  
B1 - BEAM NUMBER  
TYPE 3 - TYPE OF BEAM

**NOTES:**  
1. FOR SECTION PROPERTIES AND PSC BEAM DETAILS, SEE SHEET 28/41.  
2. FOR DIAPHRAGM DETAILS SEE SHEET 30/41 & 34/41.

|               |  |                       |                     |
|---------------|--|-----------------------|---------------------|
| DESIGNED      | KVB  | CHECKED               | ASB                 |
| DRAWN         | CLH  | REVISED               |                     |
| REVIEWED      | CEA  | STRUCTURE FILE NUMBER | 5002702L & 5002737R |
| DATE          | 04/06/01   |                       |                     |
| DESIGN AGENCY | BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0307 FAX |                       |                     |

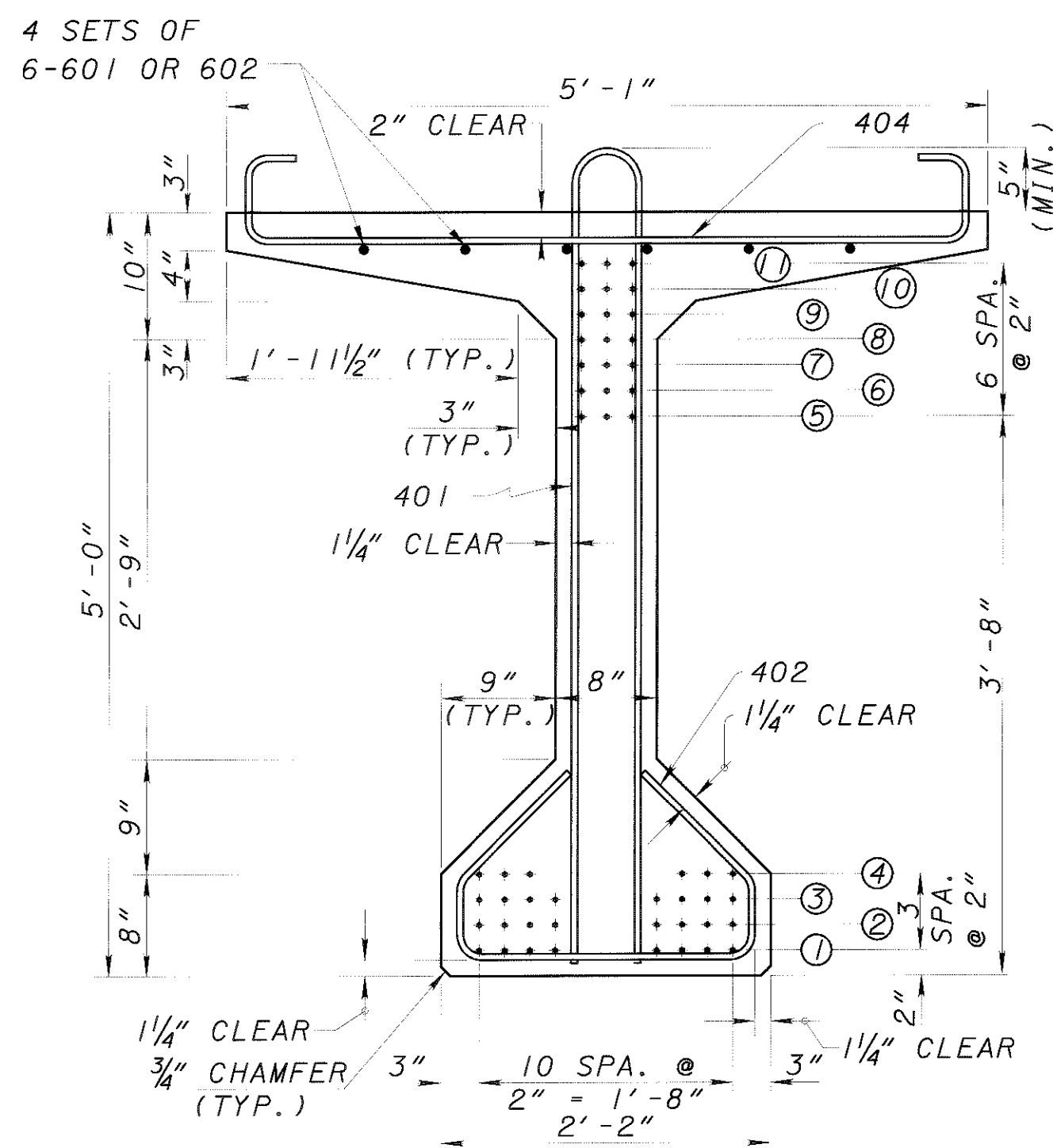
**FRAMING PLAN - UNITS 2, 3 & 4**  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

**MAH-76-0.86**

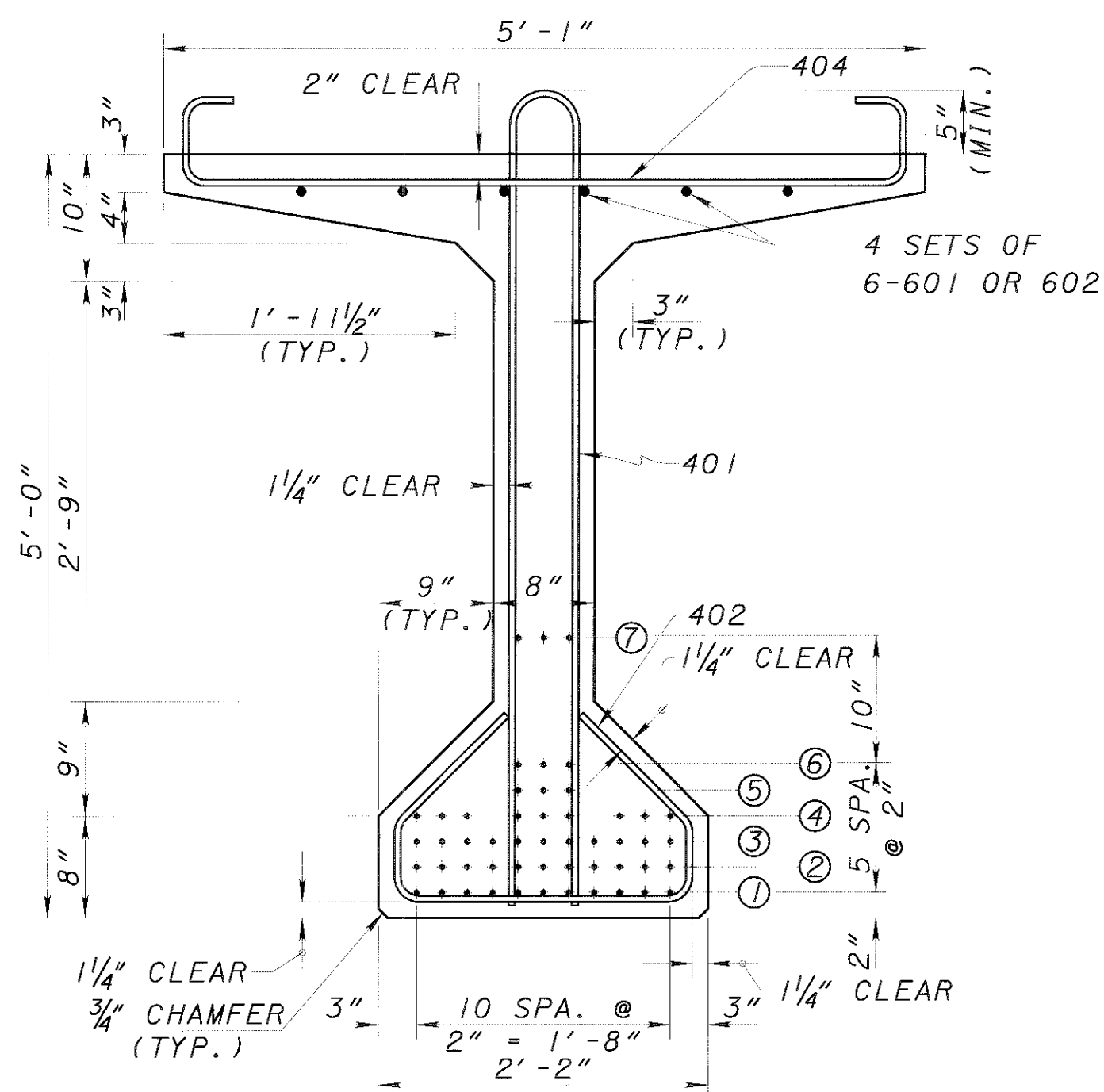
27 / 41

96AA  
102

CONCRETE OPTION

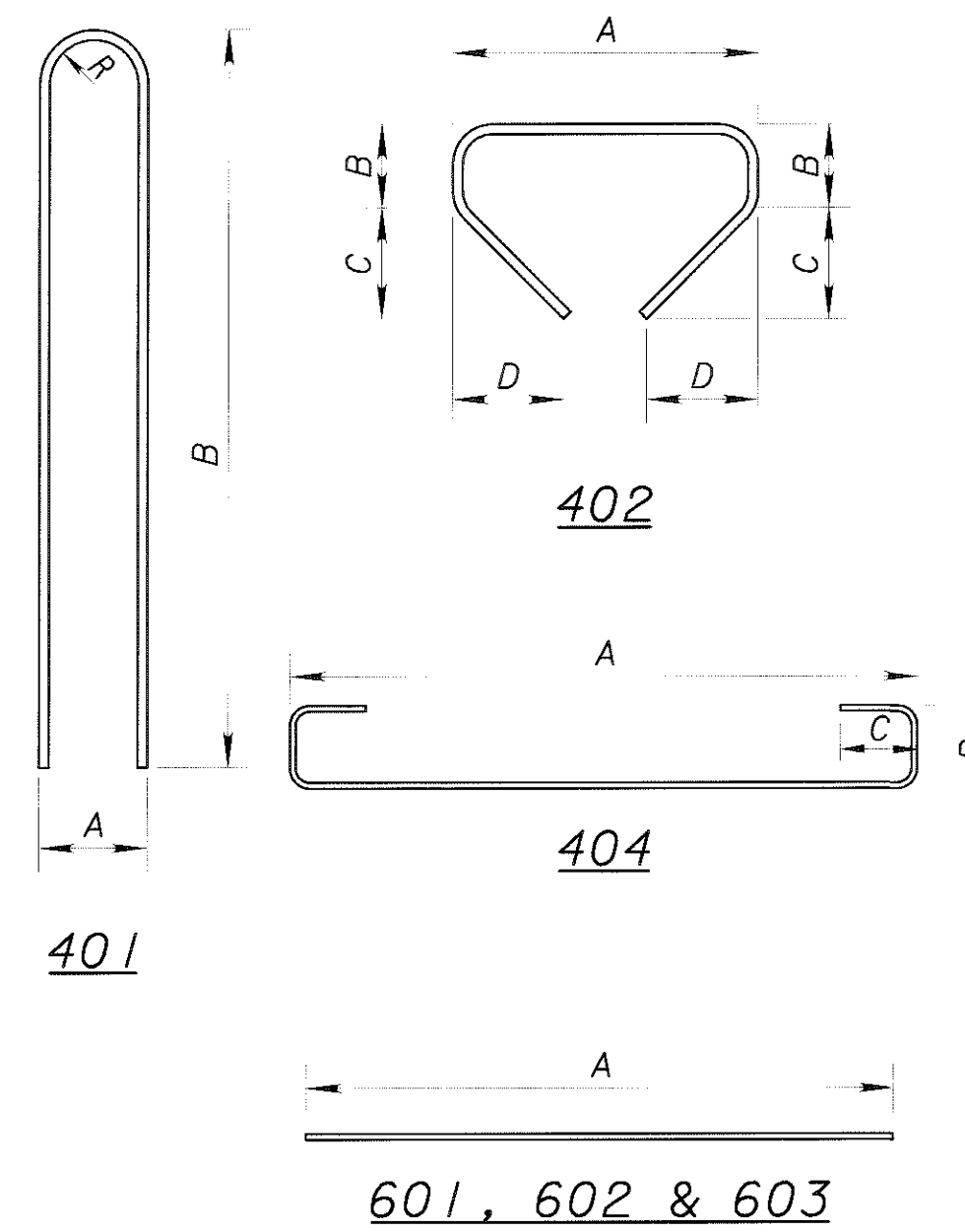


AT ENDS



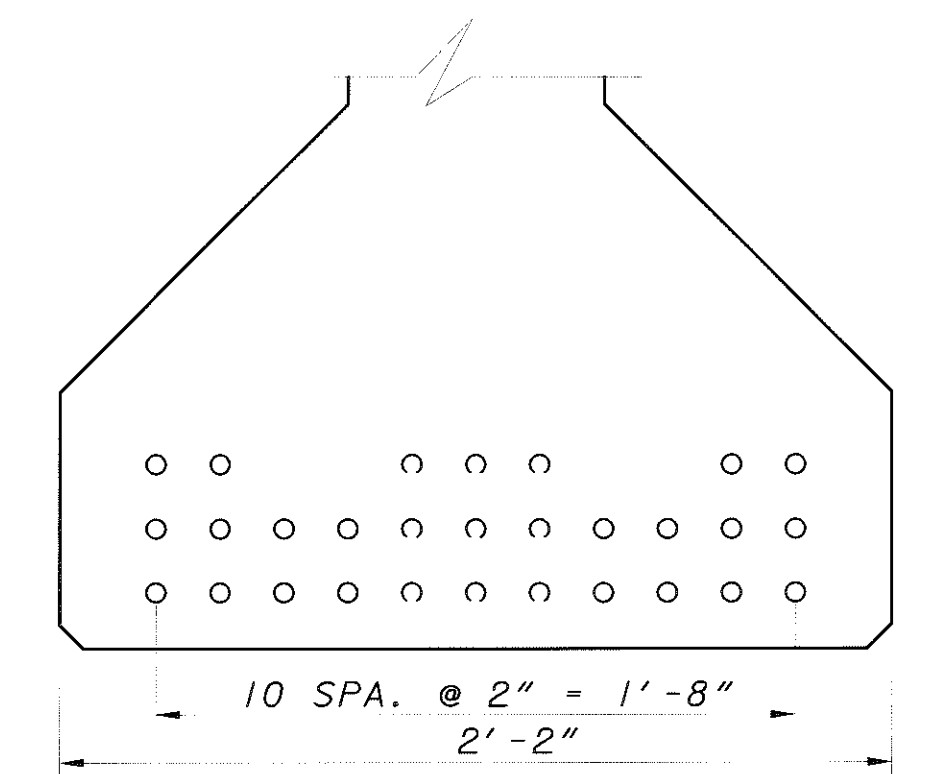
AT MID-SPAN

**PRESTRESSED CONCRETE BEAM SECTIONS**  
TYPE 3 SHOWN

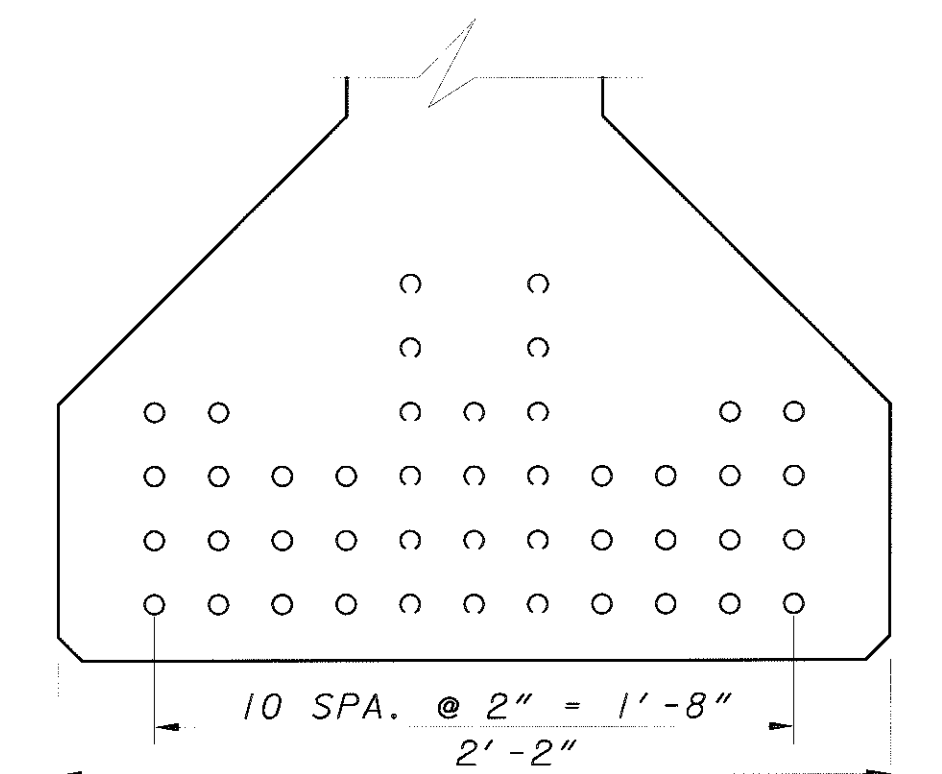


BENDING DIAGRAMS  
(ALL DIMENSIONS ARE OUT-TO-OUT)

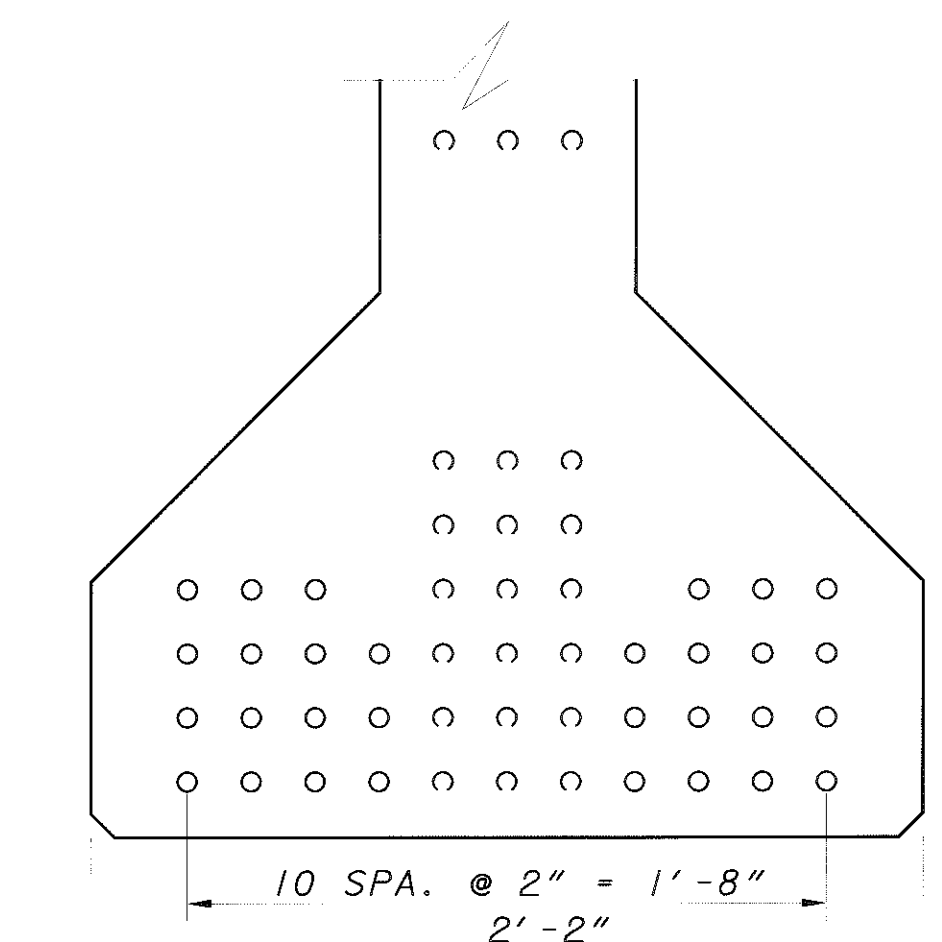
| MARK | DIMENSIONS |        |        |        |        |
|------|------------|--------|--------|--------|--------|
|      | A          | B      | C      | D      | R      |
| 401  | 5 1/2"     | 5'-4"  |        |        | 2 1/4" |
| 402  | 1'-11 1/2" | 6 1/4" | 8 1/2" | 8 1/2" |        |
| 404  | 4'-9"      | 7"     | 8"     |        |        |
| 601  | 31'-8"     |        |        |        |        |
| 602  | 25'-4"     |        |        |        |        |
| 603  | 4'-8 1/2"  |        |        |        |        |



LEGEND  
○ - DRAPED STRANDS  
○ - STRAIGHT STRANDS  
STRAND DRAPE DETAIL - TYPE 1



LEGEND  
○ - DRAPED STRANDS  
○ - STRAIGHT STRANDS  
STRAND DRAPE DETAIL - TYPE 2



LEGEND  
○ - DRAPED STRANDS  
○ - STRAIGHT STRANDS  
STRAND DRAPE DETAIL - TYPE 3

| SECTION PROPERTIES                      |                |                  |                      |                      |                       |                                    |                                    |               |
|---|----------------|------------------|----------------------|----------------------|-----------------------|------------------------------------|------------------------------------|---------------|
| SECTION                                 | AREA (SQ. IN.) | WEIGHT (LB./FT.) | Y <sub>b</sub> (IN.) | Y <sub>t</sub> (IN.) | I (IN. <sup>4</sup> ) | S <sub>b</sub> (IN. <sup>3</sup> ) | S <sub>t</sub> (IN. <sup>3</sup> ) | VOL/SUR (IN.) |
| MODIFIED AASHTO TYPE 4 WITH WIDE FLANGE | 988.2          | 1029             | 32.43                | 27.57                | 475,675               | 14,668                             | 17,253                             | 3.83          |

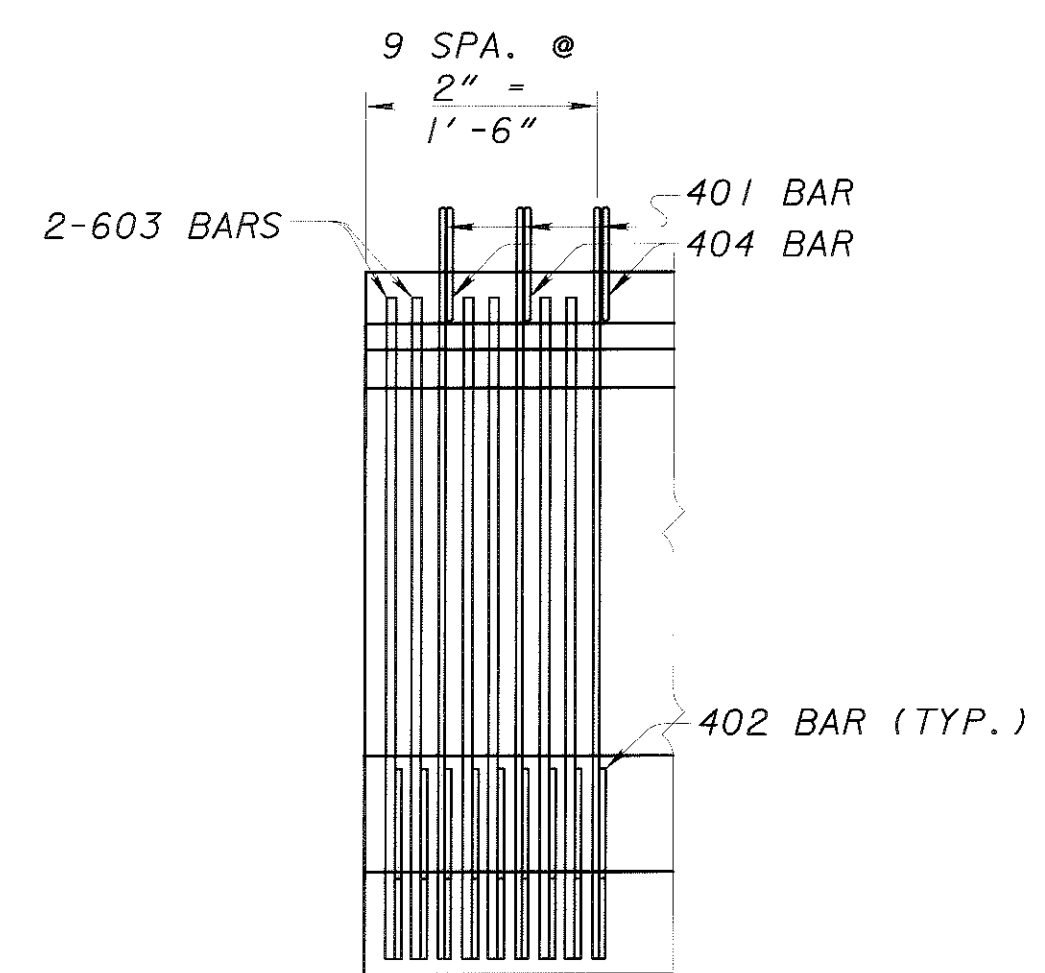
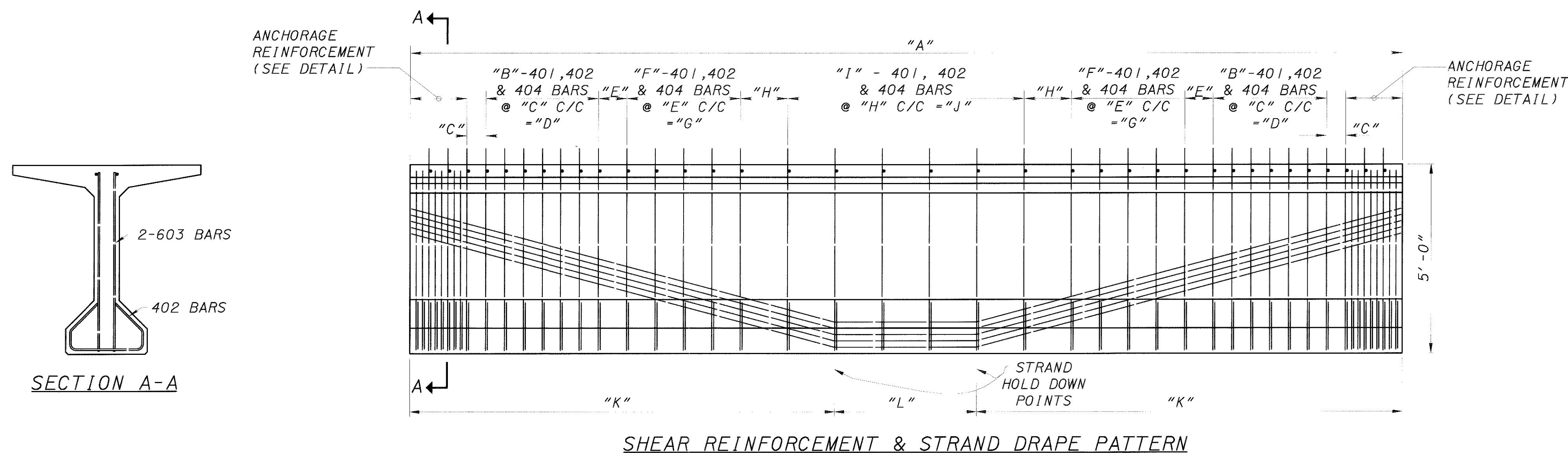
NOTES:  
FOR ADDITIONAL PC BEAM DETAILS AND NOTES SEE SHEET [2974].

| BEAM TYPE | NUMBER OF STRANDS PER ROW |   |   |   |   |   |   |   |   |   |             |    |    |    |   |   |   |   |   |   | TOTAL STRANDS | CONCRETE STRENGTHS |      | 401 BARS REQ'D. | 402 BARS REQ'D. | 404 BARS REQ'D. | 601 BARS REQ'D. | 602 BARS REQ'D. | 603 BARS REQ'D. | BEAM LENGTH |
|-----------|---------------------------|---|---|---|---|---|---|---|---|---|-------------|----|----|----|---|---|---|---|---|---|---------------|--------------------|------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------|
|           | END SECTION               |   |   |   |   |   |   |   |   |   | MID SECTION |    |    |    |   |   |   |   |   |   |               | f'ci               | f'c  |                 |                 |                 |                 |                 |                 |             |
|           | ①                         | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ①           | ②  | ③  | ④  | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ |               |                    |      |                 |                 |                 |                 |                 |                 |             |
| TYPE 1    | 8                         | 8 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 3           | 11 | 11 | 7  | 0 | 0 | 0 | 0 | 0 | 0 | 29            | 5000               | 7000 | 106             | 118             | 106             | 0               | 24              | 24              | 92'-11"     |
| TYPE 2    | 8                         | 8 | 8 | 4 | 0 | 3 | 3 | 3 | 3 | 2 | 2           | 11 | 11 | 11 | 7 | 2 | 2 | 0 | 0 | 0 | 44            | 5000               | 7000 | 192             | 204             | 192             | 24              | 0               | 24              | 118'-3"     |
| TYPE 3    | 8                         | 8 | 8 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 3           | 11 | 11 | 11 | 9 | 3 | 3 | 3 | 0 | 0 | 51            | 5000               | 7000 | 149             | 161             | 149             | 24              | 0               | 24              | 118'-0"     |

INITIAL PRESTRESSING LOAD: 33,818 LB/STRAND

CONCRETE OPTION





ANCHORAGE REINFORCEMENT DETAIL

NOTES:

1. SURFACE FINISH OF TOP FLANGE OF PC BEAMS TO BE INCORPORATED INTO DECK CONCRETE SHALL BE INTENTIONALLY ROUGHENED TO AN AMPLITUDE OF APPROXIMATELY 1/4" BEFORE THE CONCRETE HAS REACHED ITS INITIAL SET. ALL LATIENCE SHALL BE REMOVED.
2. CONCRETE INTERMEDIATE DIAPHRAGMS ARE NOT ALLOWED.
3. DEPTH LIMITATION: DUE TO ENVIORNMENTAL CONSTRAINTS ON THE RESERVOIR, THE DEPTH OF PC BEAMS IS LIMITED TO 60 INCHES. ODOT WILL NOT ACCEPT ANY ALTERNATE DESIGN USING PC BEAMS GREATER THAN 60 INCHES DEEP.
4. PC BEAM WEB THICKNESS: THE DESIGN WEB THICKNESS OF PC BEAMS USED IN THE PROJECT PLANS IS 8 INCHES. AT NO EXPENSE TO THE PROJECT AND UPON WRITTEN ACCEPTATANCE AND APPROVAL FROM OF THE DIRECTOR, THE CONTRACTOR MAY USE PC BEAMS WITH 7 INCHES WEB THICKNESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVISION OF THE PROJECT PLANS. DESIGN AND PLAN MODIFICATIONS SHALL BE DONE AT THE CONTRACTOR'S EXPENSE. THE DEPARTEMENT SHALL HAVE 30 DAYS TO APPROVE THE ALTERNATE DESIGNS AND REVISIONS.
5. FOR ADDITIONAL NOTES, SEE STANDARD DRAWING PSID-1-99.

| BEAM TYPE | LT. BRIDGE NO. REQ'D | RT. BRIDGE NO. REQ'D | BEAM DIMENSIONS |    |    |        |     |    |        |          |    |         |            |        | APPROXIMATE WEIGHT (LBS) |
|-----------|----------------------|----------------------|-----------------|----|----|--------|-----|----|--------|----------|----|---------|------------|--------|--------------------------|
|           |                      |                      | DIMENSIONS      |    |    |        |     |    |        |          |    |         |            |        |                          |
|           |                      |                      | A               | B  | C  | D      | E   | F  | G      | H        | I  | J       | K          | L      |                          |
| TYPE 1    | 12                   | 12                   | 92'-11"         | 11 | 8" | 6'-8"  | 10" | 11 | 8'-4"  | 1'-0"(-) | 56 | 54'-11" | 37'-2"     | 18'-7" | 95,612                   |
| TYPE 2    | 48                   | 48                   | 118'-3"         | 52 | 5" | 21'-3" | 8"  | 17 | 10'-8" | 1'-0"(+) | 48 | 47'-3"  | 47'-4"     | 23'-7" | 121,680                  |
| TYPE 3    | 48                   | 48                   | 118'-0"         | 20 | 6" | 9'-6"  | 8"  | 14 | 8'-8"  | 1'-0"(+) | 75 | 74'-4"  | 47'-2 1/2" | 23'-7" | 121,422                  |

CONCRETE OPTION

DESIGN AGENCY: BARR ENGINEERING, INC.  
 5 EAST LONG STREET  
 COLUMBUS, OHIO 43215  
 (614) 224-1941, (614) 224-0907 FAX

DATE: 04/06/01  
 STRUCTURE FILE NUMBER: 5002702L & 5002737R

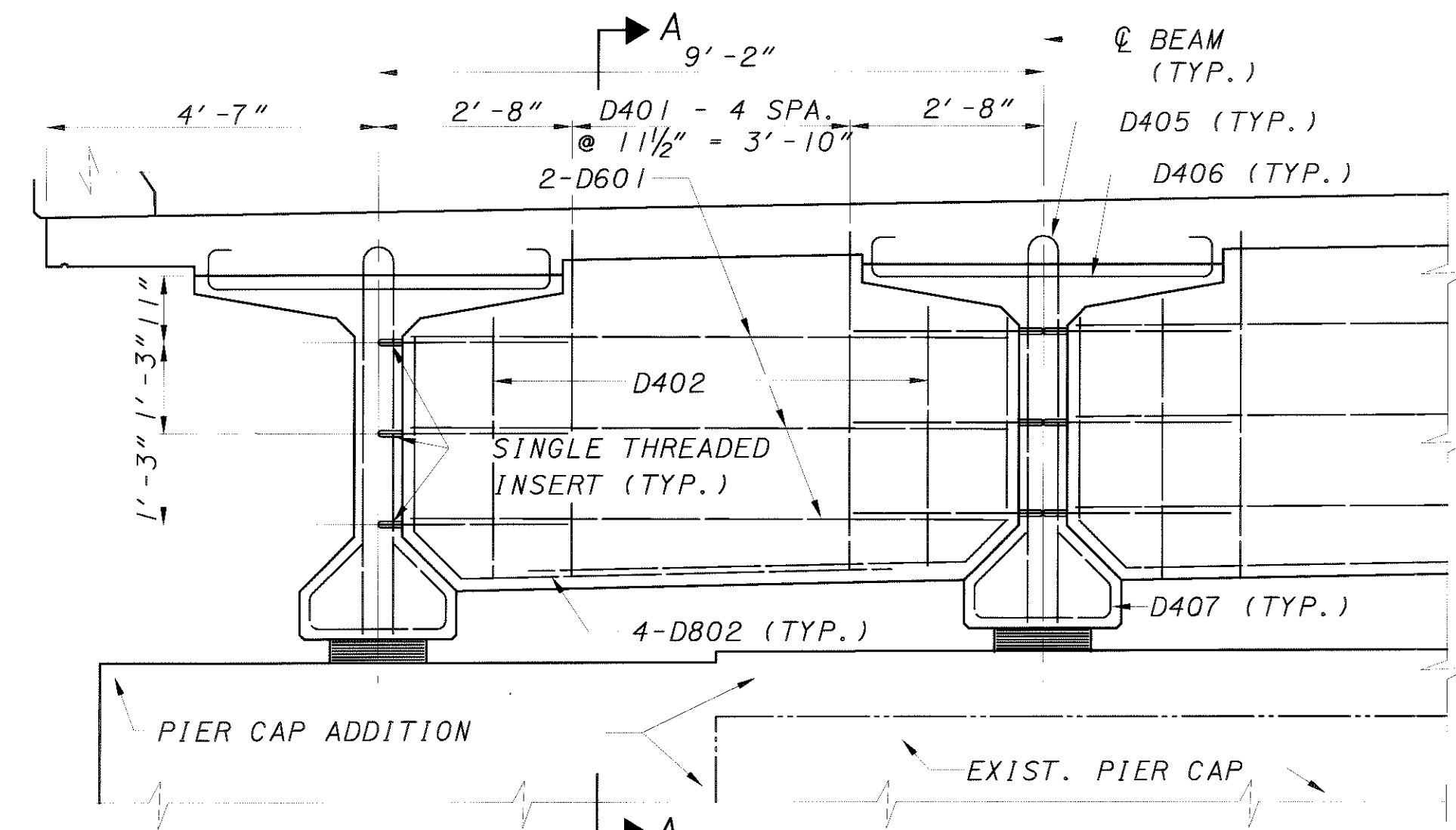
REVIEWED: GEA  
 DRAWN: CLH  
 DESIGNED: KVB  
 CHECKED: ASB

PRESTRESSED CONCRETE BEAM DETAILS  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

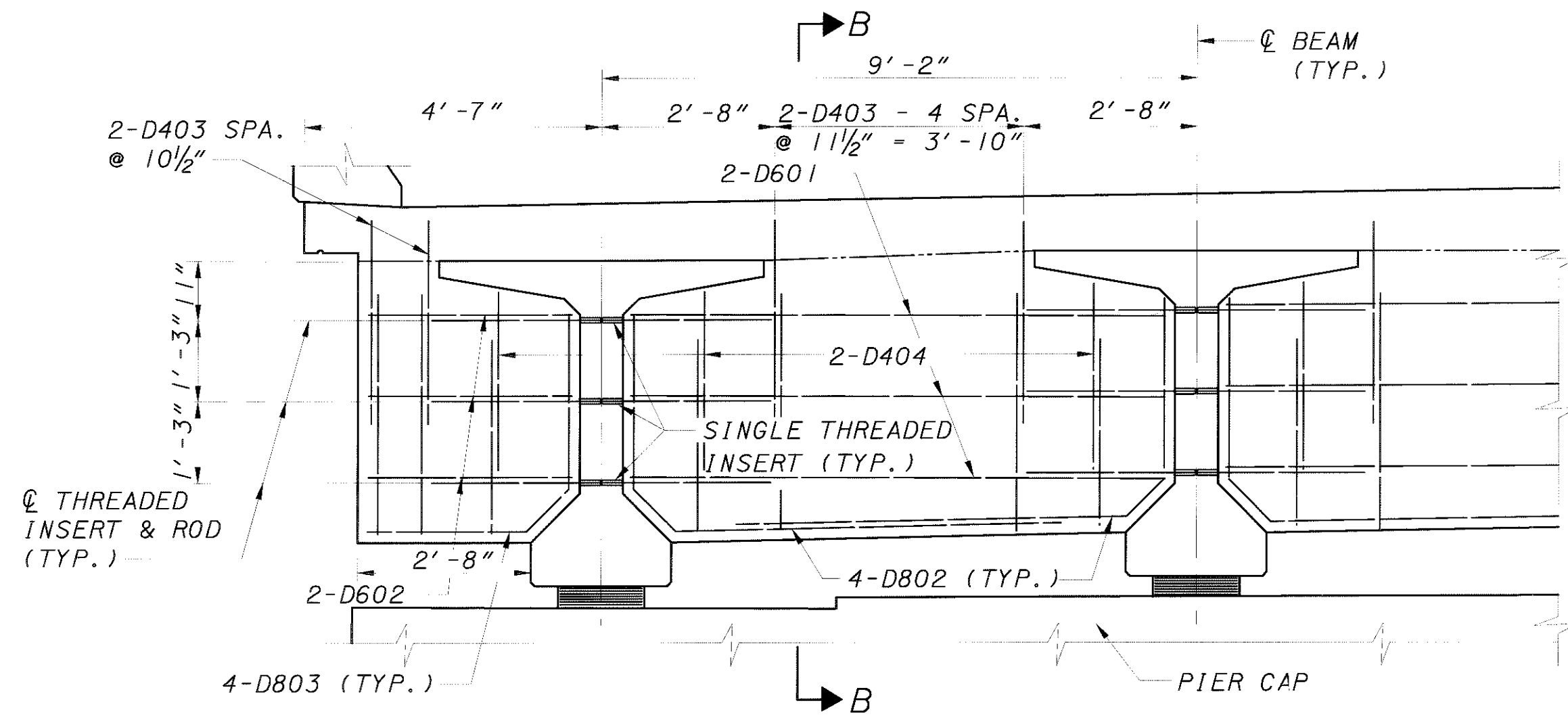
MAH-76-0.86

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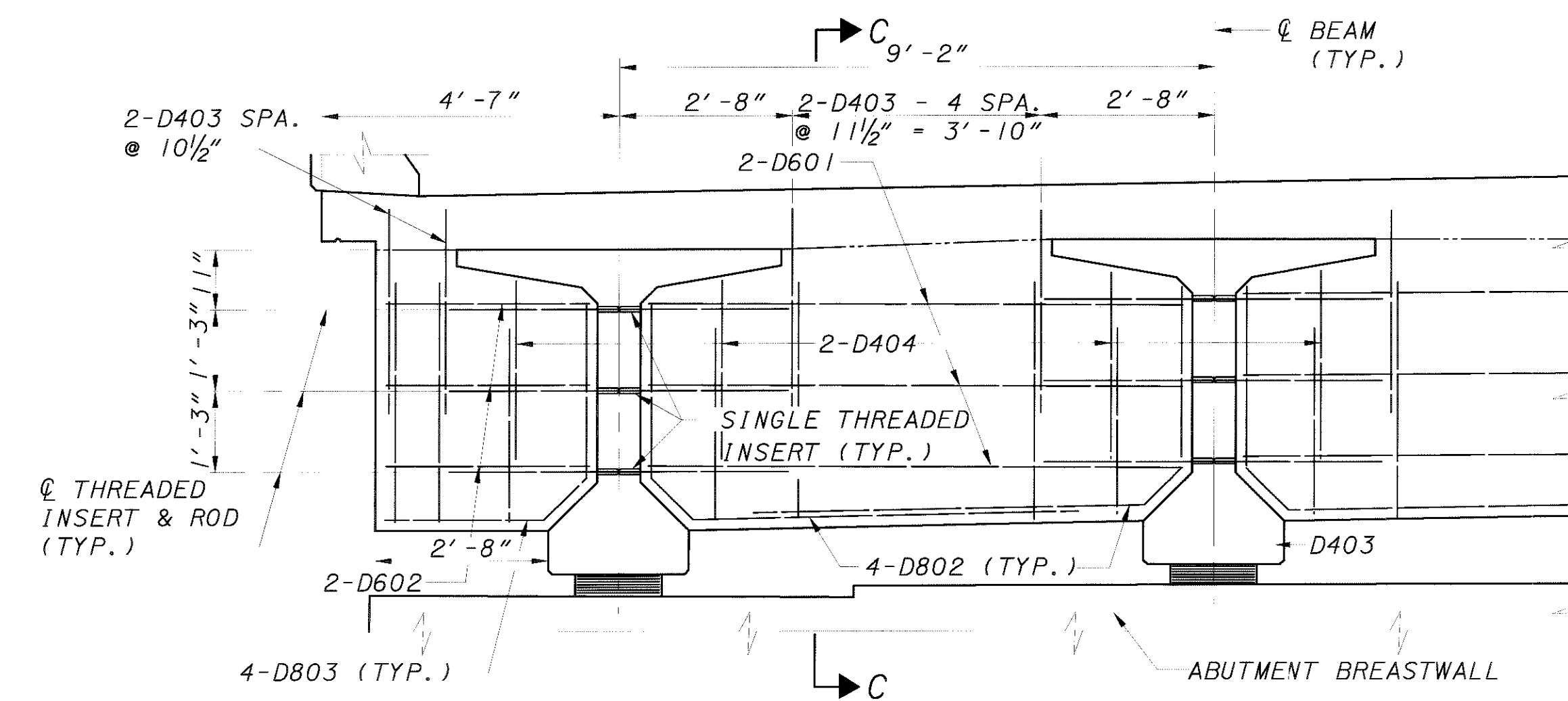
96AC  
 102



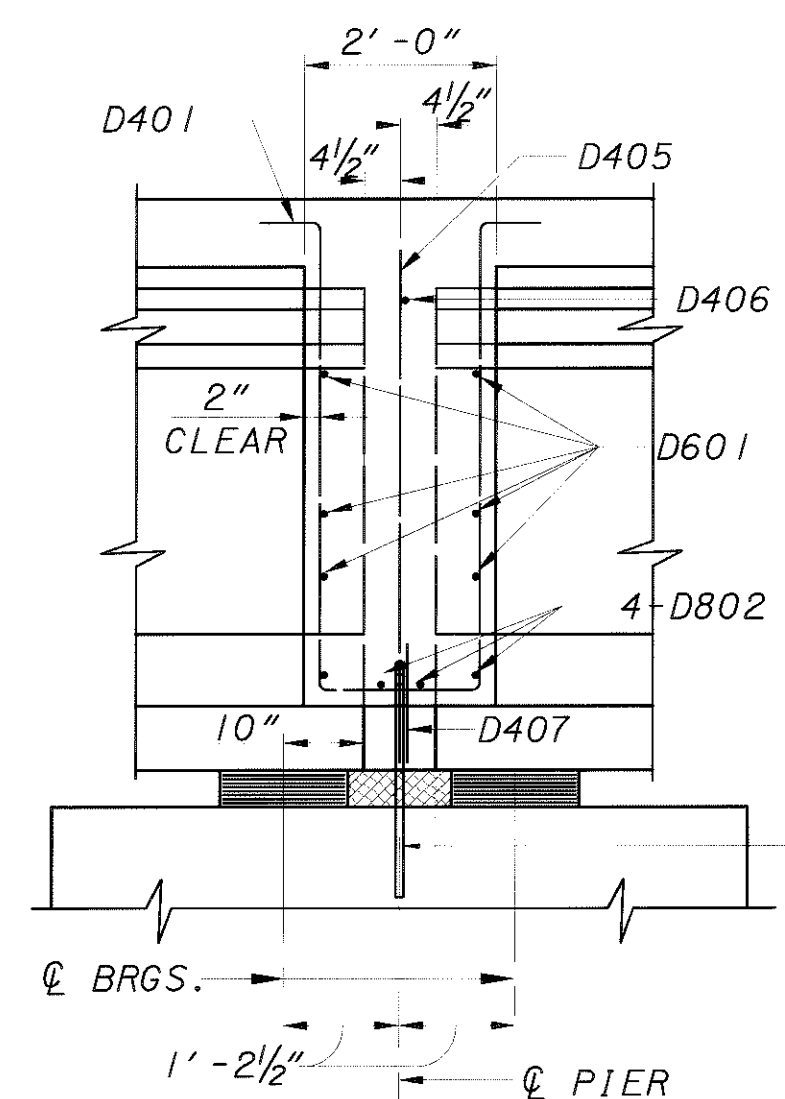
**PIER DIAPHRAGM**  
(PIERS 1, 2, 4, 5, 6, 8, 9, 10, 12, 13, 14, 16 & 17)



**PIER DIAPHRAGM AT INTERMEDIATE EXPANSION JOINT**  
(PIERS 3, 7, 11 & 15)

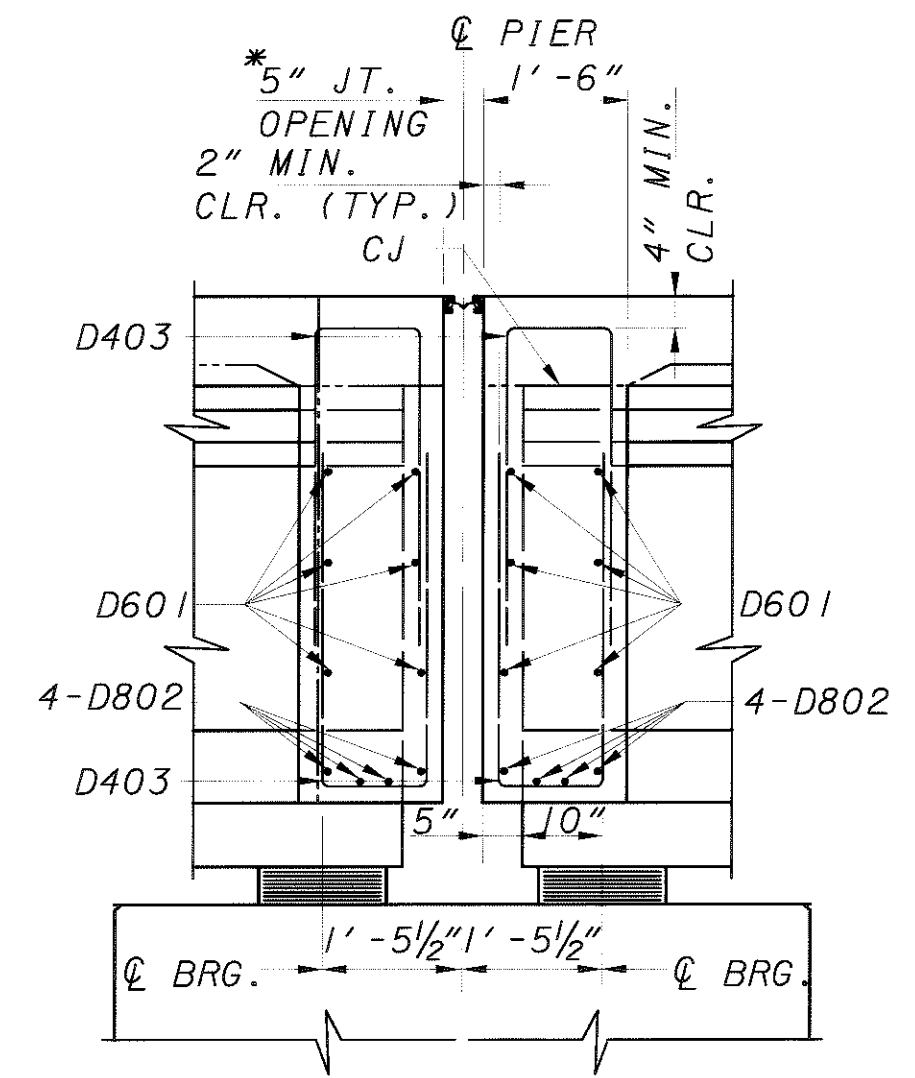


**ABUTMENT DIAPHRAGM**

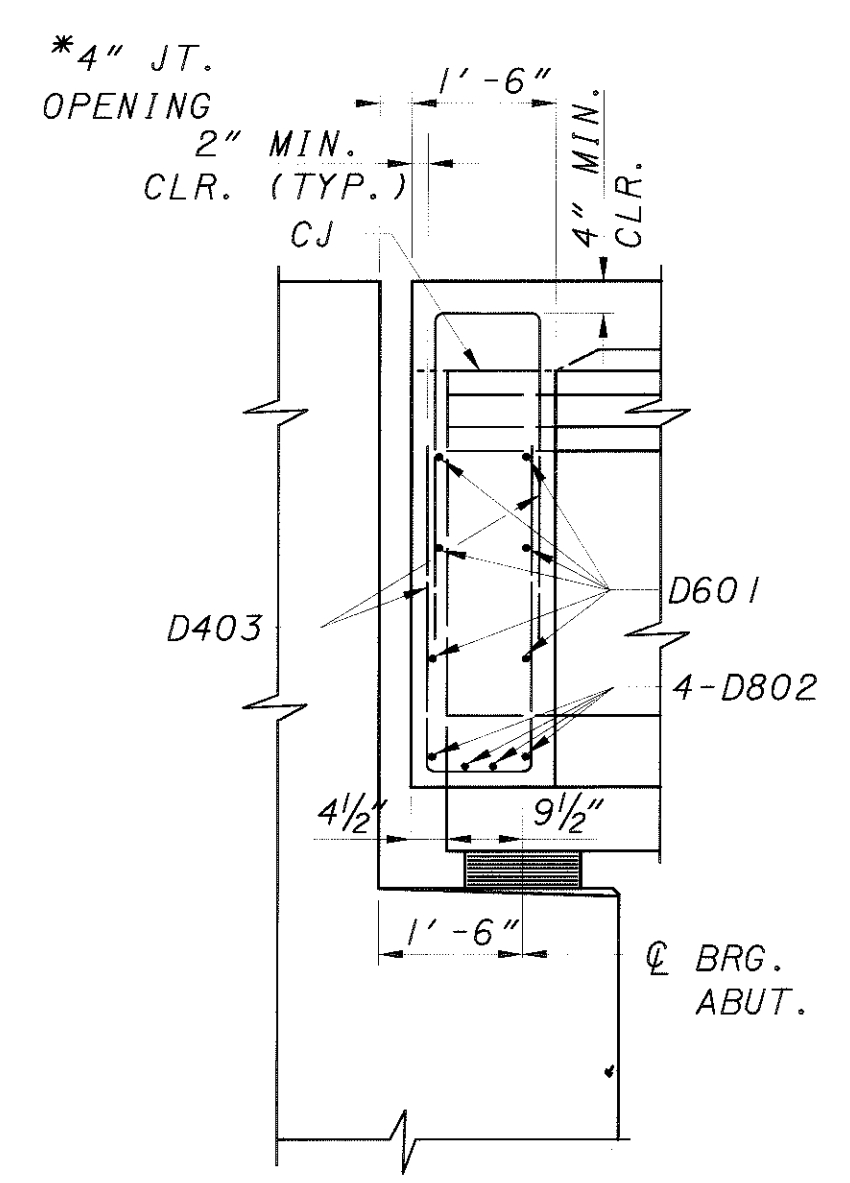


**SECTION A-A**

2 - 1" DIA. SMOOTH DOWEL BAR WITH SLEEVE SPA. @ 1'-0" C/C. (INSTALL DOWEL ACCORDING TO ITEM 510 DOWEL HOLES WITH NON-SHRINK, NON METALLIC GROUT.) (EACH BEAM @ PIERS 2, 5, 9, 13 & 16 ONLY)



**SECTION B-B**



**SECTION C-C**

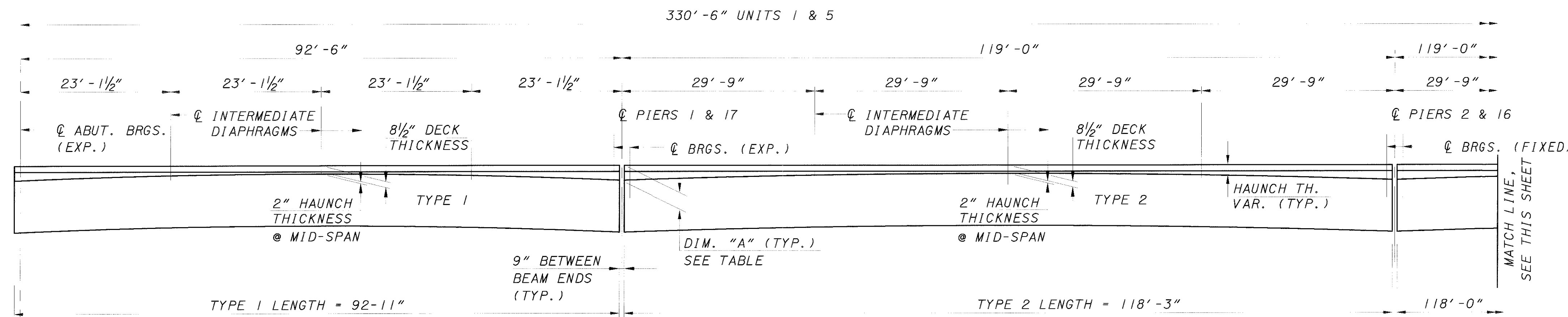
**NOTES:**

1. FOR BEARING DETAILS SEE SHEET 21/41.
2. SEE FRAMING PLAN SHEETS 26/41 & 27/41 FOR DIAPHRAGM LAYOUT.
3. DIAPHRAGM SHOWN IS TYPICAL FOR LEFT AND RIGHT BRIDGE.
4. DIAPHRAGM CONCRETE SHALL BE HIGH PERFORMANCE CONCRETE. ALL DIAPHRAGM CONCRETE QUANTITY HAS BEEN INCLUDED WITH ITEM 894, HIGH PERFORMANCE CONCRETE, FOR BRIDGE DECK WITH WARRANTY.
5. VENT HOLES:  
TO ACHIEVE SOLID FILLING OF DIAPHRAGM CONCRETE UNDER TOP BEAM FLANGES, 2-2" DIA. VERTICAL VENT HOLES SHALL BE PROVIDED ADJACENT TO ENDS OF BEAMS AT MOVABLE DECK JOINTS. HOLES SHALL BE LOCATED ADJACENT TO BEAM WEBS AND MIDWAY BETWEEN ENDS ON BEAMS AND SURFACES OF END DIAPHRAGMS. IF NECESSARY TO ACHIEVE SOLID FILLING OF CONCRETE UNDER BEAM FLANGES, HAND PACKING OF CONCRETE IN THESE AREAS MAY BE NECESSARY.

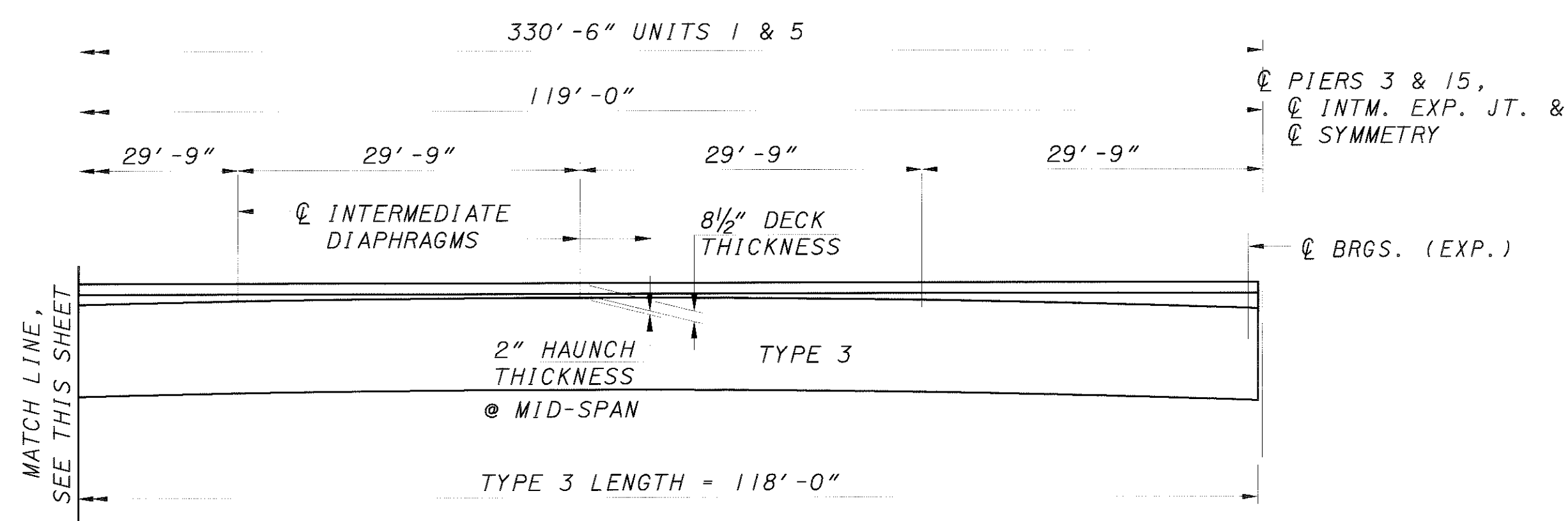
(\* ) - AT 60° F

CONCRETE OPTION

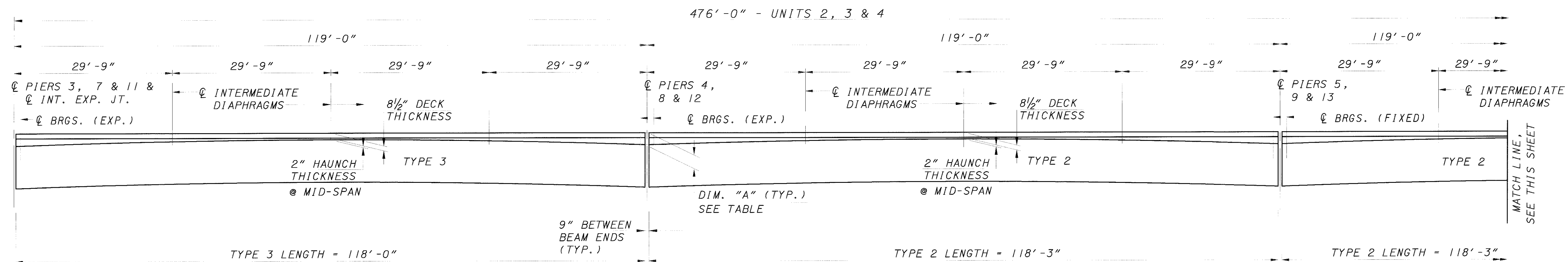
|   |                 |
|---|-----------------|
| DESIGN AGENCY<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX |                 |
| DATE<br>04/06/01  | REVIEWED<br>CEA |
| STRUCTURE FILE NUMBER<br>5002702L & 5002737R  | CLH<br>REVISED  |
| DESIGNED<br>KVB   | CHECKED<br>ASB  |
| <b>PRESTRESSED CONCRETE BEAM DIAPHRAGM DETAILS</b>  |                 |
| BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON   |                 |
| <b>MAH-76-0.86</b>  |                 |
| 30  | 41              |
| 96AD<br>102   |                 |



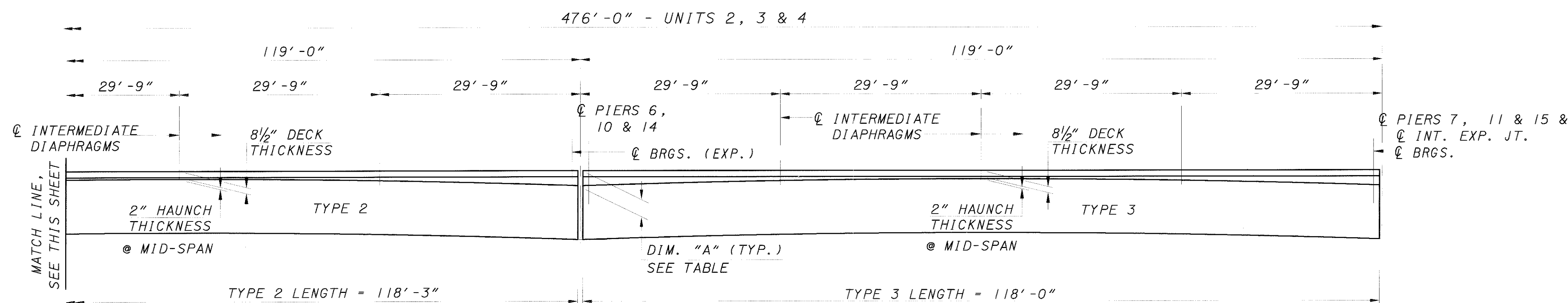
ANTICIPATED DECK THICKNESS DIAGRAM - UNIT 1 SHOWN, UNIT 5 OPPOSITE HAND



ANTICIPATED DECK THICKNESS DIAGRAM - UNIT 1 SHOWN, UNIT 5 OPPOSITE HAND



APPROXIMATE DECK THICKNESS DIAGRAM - UNITS 2, 3 & 4



APPROXIMATE DECK THICKNESS DIAGRAM - UNITS 2, 3 & 4

| LOCATION    | SLAB DEPTH OVER BEAMS DIM. "A" |
|-------------|--------------------------------|
| CL BRGS. RA | 11 1/2"                        |
| CL PIER 1   | 1'-0 1/4"                      |
| CL PIER 2   | 1'-0 7/8"                      |
| CL PIER 3   | 1'-0 7/8"                      |
| CL PIER 4   | 1'-0 7/8"                      |
| CL PIER 5   | 1'-0 1/4"                      |
| CL PIER 6   | 1'-0 7/8"                      |
| CL PIER 7   | 1'-0 7/8"                      |
| CL PIER 8   | 1'-0 7/8"                      |
| CL PIER 9   | 1'-0 1/4"                      |
| CL PIER 10  | 1'-0 5/8"                      |
| CL PIER 11  | 1'-0 5/8"                      |
| CL PIER 12  | 1'-0 5/8"                      |
| CL PIER 13  | 1'-0 1/16"                     |
| CL PIER 14  | 1'-0 5/8"                      |
| CL PIER 15  | 1'-0 5/8"                      |
| CL PIER 16  | 1'-0 5/8"                      |
| CL PIER 17  | 1'-0 1/16"                     |
| CL BRGS. FA | 11 1/2"                        |

NOTE:  
DECK SLAB DEPTHS SHOWN ARE NOMINAL DIMENSIONS. THE PAY QUANTITY FOR DECK CONCRETE SHALL BE BASED ON THE DESIGN SLAB THICKNESS AND THE AVERAGE OF THE NOMINAL HAUNCH THICKNESS AT MID-SPAN AND AT THE BEAM BEARINGS. THE HAUNCH THICKNESS IS DECK SLAB DEPTHS MINUS THE DESIGN SLAB THICKNESS. DEVIATION FROM THIS AVERAGE MAY OCCUR BECAUSE THE TOP OF THE BEAM MAY NOT HAVE THE CAMBER ANTICIPATED BY DESIGN DUE TO CONTRACTOR'S TIME OF ERECTION, MIX DESIGN, AND OTHER FABRICATION FACTORS. ONCE ALL BEAMS ARE SET IN THEIR FINAL POSITION, THE CONTRACTOR SHALL RECORD THE TOP OF BEAM ELEVATIONS AT EACH BEARING AND AT MID-SPAN. THE ACTUAL CAMBER FOR EACH MEMBER SHALL BE THE MEASURED ELEVATION AT MID-SPAN MINUS THE AVERAGE ELEVATION AT EACH BEARING. THE ACTUAL HAUNCH THICKNESS AT MID-SPAN SHALL BE THE NOMINAL DECK SLAB DEPTH DIMENSION PLUS OR MINUS THE DIFFERENCE BETWEEN THE ACTUAL AND ANTICIPATED CAMBER.

DESIGN AGENCY: BARR ENGINEERING, INC.  
5 EAST LONG STREET  
COLUMBUS, OHIO 43215  
(614) 224-1941, (614) 224-0907 FAX

DATE: 04/06/01  
REVIEWED: GEA  
DRAWN: CLH  
DESIGNED: KVB  
CHECKED: ASB

STRUCTURE FILE NUMBER: 5002702L & 5002737R

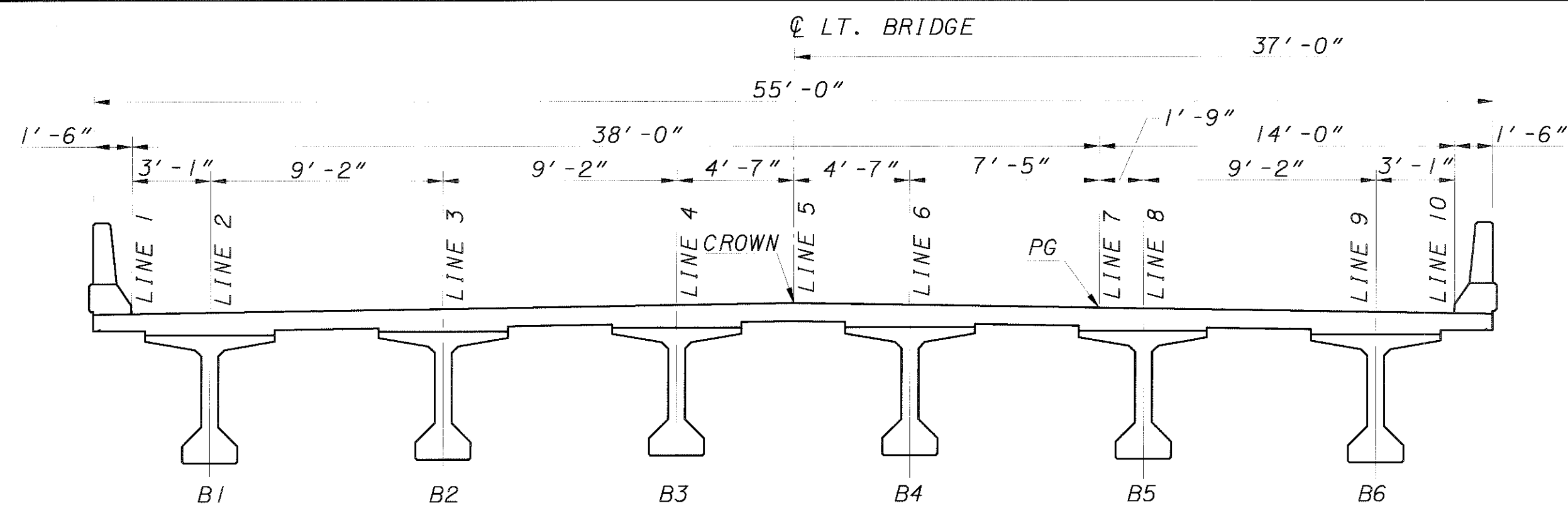
**SUPERSTRUCTURE DETAILS**  
BRIDGE NO. MAH-76-0091 L & R  
I-76 OVER LAKE MILTON

**MAH-76-0.86**

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102

CONCRETE OPTION



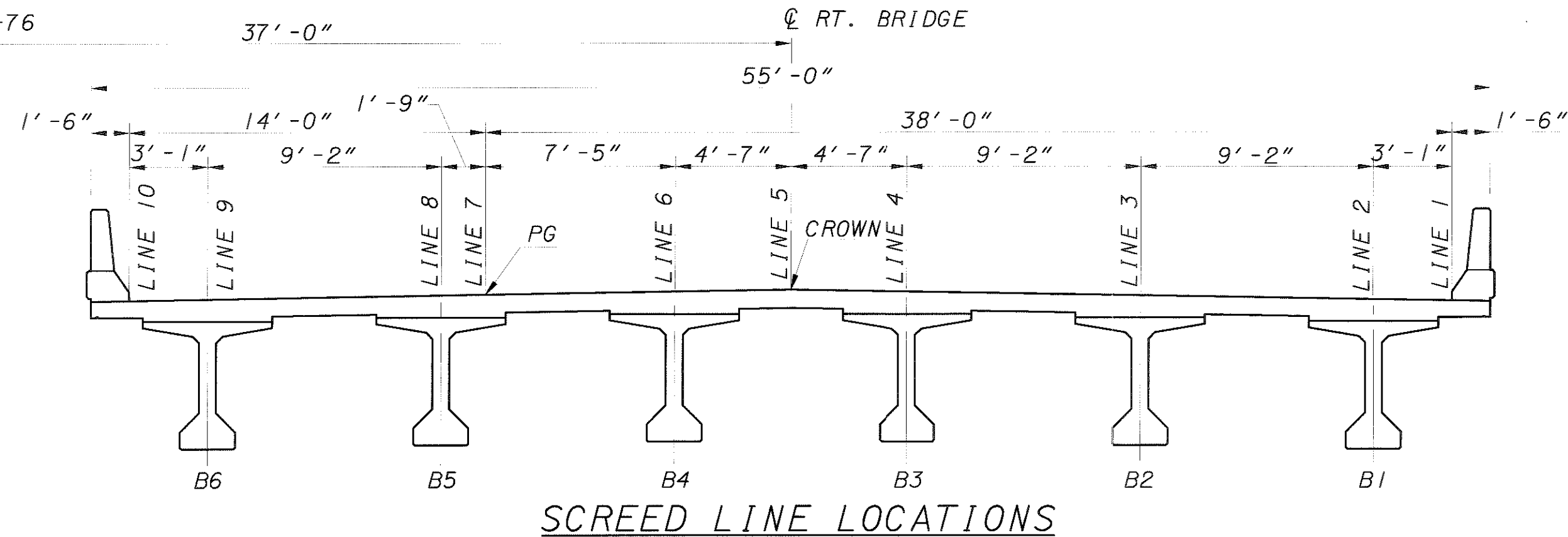
**SCREED LINE LOCATIONS**

**SCREED ELEVATION TABLE**

| SPAN NO.    | LOCATION  | STATION  | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 |
|-------------|-----------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| SPAN NO. 1  | Q BRG. RA | 48+25.50 | 963.50 | 963.55 | 963.69 | 963.83 | 963.90 | 963.83 | 963.72 | 963.69 | 963.55 | 963.50  |
|             | 0.25 L    | 48+48.63 | 963.62 | 963.67 | 963.81 | 963.95 | 964.03 | 963.95 | 963.84 | 963.81 | 963.67 | 963.62  |
|             | 0.50 L    | 48+71.75 | 963.72 | 963.77 | 963.91 | 964.05 | 964.12 | 964.05 | 963.94 | 963.91 | 963.77 | 963.72  |
| SPAN NO. 2  | Q PIER 1  | 49+18.00 | 963.81 | 963.86 | 964.00 | 964.15 | 964.22 | 964.15 | 964.03 | 964.00 | 963.86 | 963.81  |
|             | 0.25 L    | 49+47.75 | 964.02 | 964.07 | 964.22 | 964.36 | 964.43 | 964.36 | 964.24 | 964.22 | 964.07 | 964.02  |
|             | 0.50 L    | 49+77.50 | 964.18 | 964.23 | 964.37 | 964.51 | 964.58 | 964.51 | 964.40 | 964.37 | 964.23 | 964.18  |
| SPAN NO. 3  | Q PIER 2  | 50+37.00 | 964.22 | 964.27 | 964.41 | 964.55 | 964.62 | 964.55 | 964.44 | 964.41 | 964.27 | 964.22  |
|             | 0.25 L    | 50+66.75 | 964.43 | 964.48 | 964.62 | 964.77 | 964.84 | 964.77 | 964.65 | 964.62 | 964.48 | 964.43  |
|             | 0.50 L    | 50+96.50 | 964.59 | 964.63 | 964.78 | 964.92 | 964.99 | 964.92 | 964.80 | 964.78 | 964.63 | 964.59  |
| SPAN NO. 4  | Q PIER 3  | 51+56.00 | 964.62 | 964.67 | 964.81 | 964.96 | 965.03 | 964.96 | 964.84 | 964.81 | 964.67 | 964.62  |
|             | 0.25 L    | 51+85.75 | 964.84 | 964.88 | 965.03 | 965.17 | 965.24 | 965.17 | 965.05 | 965.03 | 964.88 | 964.84  |
|             | 0.50 L    | 52+15.50 | 964.99 | 965.04 | 965.18 | 965.33 | 965.40 | 965.33 | 965.21 | 965.18 | 965.04 | 964.99  |
| SPAN NO. 5  | Q PIER 4  | 52+75.00 | 965.03 | 965.07 | 965.22 | 965.36 | 965.43 | 965.36 | 965.25 | 965.22 | 965.07 | 965.03  |
|             | 0.25 L    | 53+04.75 | 965.24 | 965.29 | 965.43 | 965.57 | 965.64 | 965.57 | 965.46 | 965.43 | 965.29 | 965.24  |
|             | 0.50 L    | 53+34.50 | 965.39 | 965.44 | 965.58 | 965.72 | 965.80 | 965.72 | 965.61 | 965.58 | 965.44 | 965.39  |
| SPAN NO. 6  | Q PIER 5  | 53+94.00 | 965.43 | 965.48 | 965.62 | 965.77 | 965.84 | 965.77 | 965.65 | 965.62 | 965.48 | 965.43  |
|             | 0.25 L    | 54+23.75 | 965.64 | 965.69 | 965.83 | 965.98 | 966.05 | 965.98 | 965.86 | 965.83 | 965.69 | 965.64  |
|             | 0.50 L    | 54+53.50 | 965.80 | 965.84 | 965.99 | 966.13 | 966.20 | 966.13 | 966.01 | 965.99 | 965.84 | 965.80  |
| SPAN NO. 7  | Q PIER 6  | 55+13.00 | 965.84 | 965.88 | 966.03 | 966.17 | 966.24 | 966.17 | 966.05 | 966.03 | 965.88 | 965.84  |
|             | 0.25 L    | 55+42.75 | 966.05 | 966.10 | 966.24 | 966.38 | 966.46 | 966.38 | 966.27 | 966.24 | 966.10 | 966.05  |
|             | 0.50 L    | 55+72.50 | 966.20 | 966.25 | 966.40 | 966.54 | 966.61 | 966.54 | 966.42 | 966.40 | 966.25 | 966.20  |
| SPAN NO. 8  | Q PIER 7  | 56+32.00 | 966.24 | 966.29 | 966.43 | 966.57 | 966.65 | 966.57 | 966.46 | 966.43 | 966.29 | 966.24  |
|             | 0.25 L    | 56+61.75 | 966.45 | 966.50 | 966.65 | 966.79 | 966.86 | 966.79 | 966.67 | 966.65 | 966.50 | 966.45  |
|             | 0.50 L    | 56+91.50 | 966.61 | 966.66 | 966.80 | 966.94 | 967.01 | 966.94 | 966.83 | 966.80 | 966.66 | 966.61  |
| SPAN NO. 9  | Q PIER 8  | 57+51.00 | 966.65 | 966.69 | 966.84 | 966.98 | 967.05 | 966.98 | 966.86 | 966.84 | 966.69 | 966.65  |
|             | 0.25 L    | 57+80.75 | 966.86 | 966.90 | 967.05 | 967.19 | 967.26 | 967.19 | 967.07 | 967.05 | 966.90 | 966.86  |
|             | 0.50 L    | 58+10.50 | 967.01 | 967.06 | 967.20 | 967.34 | 967.41 | 967.34 | 967.23 | 967.20 | 967.06 | 967.01  |
| SPAN NO. 10 | Q PIER 9  | 58+70.00 | 967.05 | 967.10 | 967.24 | 967.38 | 967.46 | 967.38 | 967.27 | 967.24 | 967.10 | 967.05  |
|             | 0.25 L    | 58+99.75 | 967.26 | 967.31 | 967.45 | 967.59 | 967.67 | 967.59 | 967.48 | 967.45 | 967.31 | 967.26  |
|             | 0.50 L    | 59+29.50 | 967.41 | 967.46 | 967.60 | 967.75 | 967.82 | 967.75 | 967.63 | 967.60 | 967.46 | 967.41  |
| SPAN NO. 11 | Q PIER 10 | 59+89.00 | 967.45 | 967.50 | 967.65 | 967.79 | 967.86 | 967.79 | 967.67 | 967.65 | 967.50 | 967.45  |
|             | 0.25 L    | 60+18.75 | 967.67 | 967.72 | 967.86 | 968.00 | 968.07 | 968.00 | 967.89 | 967.86 | 967.72 | 967.67  |
|             | 0.50 L    | 60+48.50 | 967.81 | 967.86 | 968.00 | 968.15 | 968.22 | 968.15 | 968.03 | 968.00 | 967.86 | 967.81  |
| SPAN NO. 12 | Q PIER 11 | 61+08.00 | 967.81 | 967.86 | 968.00 | 968.14 | 968.21 | 968.14 | 968.03 | 968.00 | 967.86 | 967.81  |
|             | 0.25 L    | 61+37.75 | 967.99 | 968.04 | 968.18 | 968.32 | 968.40 | 968.32 | 968.21 | 968.18 | 968.04 | 967.99  |
|             | 0.50 L    | 61+67.50 | 968.11 | 968.15 | 968.30 | 968.44 | 968.51 | 968.44 | 968.32 | 968.30 | 968.15 | 968.11  |
| SPAN NO. 13 | Q PIER 12 | 62+27.00 | 968.04 | 968.09 | 968.23 | 968.37 | 968.44 | 968.37 | 968.26 | 968.23 | 968.09 | 968.04  |
|             | 0.25 L    | 62+56.75 | 968.19 | 968.23 | 968.38 | 968.52 | 968.59 | 968.52 | 968.40 | 968.38 | 968.23 | 968.19  |
|             | 0.50 L    | 62+86.50 | 968.27 | 968.32 | 968.46 | 968.60 | 968.67 | 968.60 | 968.49 | 968.46 | 968.32 | 968.27  |
| SPAN NO. 14 | Q PIER 13 | 63+46.00 | 968.14 | 968.19 | 968.34 | 968.48 | 968.55 | 968.48 | 968.36 | 968.34 | 968.19 | 968.14  |
|             | 0.25 L    | 63+75.75 | 968.26 | 968.31 | 968.45 | 968.60 | 968.67 | 968.60 | 968.48 | 968.45 | 968.31 | 968.26  |
|             | 0.50 L    | 64+05.50 | 968.31 | 968.36 | 968.50 | 968.65 | 968.72 | 968.65 | 968.53 | 968.50 | 968.36 | 968.31  |
| SPAN NO. 15 | Q PIER 14 | 64+65.00 | 968.13 | 968.17 | 968.32 | 968.46 | 968.53 | 968.46 | 968.35 | 968.32 | 968.17 | 968.13  |
|             | 0.25 L    | 64+94.75 | 968.22 | 968.26 | 968.41 | 968.55 | 968.62 | 968.55 | 968.43 | 968.41 | 968.26 | 968.22  |
|             | 0.50 L    | 65+24.50 | 968.24 | 968.29 | 968.43 | 968.57 | 968.64 | 968.57 | 968.46 | 968.43 | 968.29 | 968.24  |
| SPAN NO. 16 | Q PIER 15 | 65+84.00 | 967.99 | 968.03 | 968.18 | 968.32 | 968.39 | 968.32 | 968.20 | 968.18 | 968.03 | 967.99  |
|             | 0.25 L    | 66+13.75 | 968.04 | 968.09 | 968.23 | 968.38 | 968.45 | 968.38 | 968.26 | 968.23 | 968.09 | 968.04  |
|             | 0.50 L    | 66+43.50 | 968.03 | 968.08 | 968.23 | 968.37 | 968.44 | 968.37 | 968.25 | 968.23 | 968.08 | 968.03  |
| SPAN NO. 17 | Q PIER 16 | 67+03.00 | 967.72 | 967.77 | 967.91 | 968.05 | 968.13 | 968.05 | 967.94 | 967.91 | 967.77 | 967.72  |
|             | 0.25 L    | 67+32.75 | 967.74 | 967.79 | 967.94 | 968.08 | 968.15 | 968.08 | 967.96 | 967.94 | 967.79 | 967.74  |
|             | 0.50 L    | 67+62.50 | 967.70 | 967.75 | 967.89 | 968.04 | 968.11 | 968.04 | 967.92 | 967.89 | 967.75 | 967.70  |
| SPAN NO. 18 | Q PIER 17 | 68+22.00 | 967.33 | 967.38 | 967.52 | 967.67 | 967.74 | 967.67 | 967.55 | 967.52 | 967.38 | 967.33  |
|             | 0.25 L    | 68+45.13 | 967.20 | 967.25 | 967.39 | 967.54 | 967.61 | 967.54 | 967.42 | 967.40 | 967.25 | 967.20  |
|             | 0.50 L    | 68+68.25 | 967.05 | 967.10 | 967.24 | 967.38 | 967.45 | 967.45 | 967.34 | 967.34 | 967.10 | 967.05  |
| SPAN NO. 19 | Q BRG. FA | 69+14.50 | 966.63 | 966.68 | 966.83 | 966.97 | 967.04 | 966.97 | 966.86 | 966.83 | 966.68 | 966.63  |
|             | 0.25 L    | 69+44.25 | 966.84 | 966.89 | 967.03 | 967.17 | 967.24 | 967.17 | 967.06 | 967.04 | 966.89 | 966.84  |
|             | 0.50 L    | 69+74.00 | 967.00 | 967.05 | 967.19 | 967.33 | 967.40 | 967.33 | 967.22 | 967.20 | 967.05 | 967.00  |

**SCREED ELEVATION TABLE**

| SPAN NO.    | LOCATION  | STATION  | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 |
|-------------|-----------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| SPAN NO. 10 | Q PIER 9  | 58+70.00 | 967.05 | 967.10 | 967.24 | 967.38 | 967.46 | 967.38 | 967.27 | 967.24 | 967.10 | 967.05  |
|             | 0.25 L    | 58+99.75 | 967.26 | 967.31 | 967.45 | 967.59 | 967.67 | 967.59 | 967.48 | 967.45 | 967.31 | 967.26  |
|             | 0.50 L    | 59+29.50 | 967.41 | 967.46 | 967.60 | 967.75 | 967.82 | 967.75 | 967.63 | 967.60 | 967.46 | 967.41  |
| SPAN NO. 11 | Q PIER 10 | 59+89.00 | 967.45 | 967.50 | 967.65 | 967.79 | 967.86 | 967.79 | 967.67 | 967.65 | 967.50 | 967.45  |
|             | 0.25 L    | 60+18.75 | 967.67 | 967.72 | 967.86 | 968.00 | 968.07 | 968.00 | 967.89 | 967.86 | 967.72 | 967.67  |
|             | 0.50 L    | 60+48.50 | 967.81 | 967.86 | 968.00 | 968.15 | 968.22 | 968.15 | 968.03 | 968.00 | 967.86 | 967.81  |
| SPAN NO. 12 | Q PIER 11 | 61+08.00 | 967.81 | 967.86 | 968.00 | 968.14 | 968.21 | 968.14 | 968.03 | 968.00 | 967.86 | 967.81  |
|             | 0.25 L    | 61+37.75 | 967.99 | 968.04 | 968.18 | 968.32 | 968.40 | 968.32 | 968.21 | 968.18 | 968.04 | 967.99  |
|             | 0.50 L    | 61+67.50 | 968.11 | 968.15 | 968.30 | 968.44 | 968.51 | 968.44 | 968.32 | 968.30 | 968.15 | 968.11  |
| SPAN NO. 13 | Q PIER 12 | 62+27.00 | 968.04 | 968.09 | 968.23 | 968.37 | 968.44 | 968.37 | 968.26 | 968.23 | 968.09 | 968.04  |
|             | 0.25 L    | 62+56.75 | 968.19 | 968.23 | 968.38 | 968.52 | 968.59 | 968.52 | 968.40 | 968.38 | 968.23 | 968.19  |
|             | 0.50 L    | 62+86.50 | 968.27 | 968.32 | 968.46 | 968.60 | 968.67 | 968.60 | 968.49 | 968.46 | 968.32 | 968.27  |
| SPAN NO. 14 | Q PIER 13 | 63+46.00 | 968.14 | 968.19 | 968.34 | 968.48 | 968.55 | 968.48 | 968.36 | 968.34 | 968.19 | 968.14  |
|             | 0.25 L    | 63+75.75 | 968.26 | 968.31 | 968.45 | 968.60 | 968.67 | 968.60 | 968.48 | 968.45 | 968.31 | 968.26  |
|             | 0.50 L    | 64+05.50 | 968.31 | 968.36 | 968.50 | 968.65 | 968.72 | 968.65 | 968.53 | 968.50 | 968.36 | 968.31  |
| SPAN NO. 15 | Q PIER 14 | 64+65.00 | 968.13 | 968.17 | 968.32 | 968.46 | 968.53 | 968.46 | 968.35 | 968.32 | 968.17 | 968.13  |
|             | 0.25 L    | 64+94.75 | 968.22 | 968.26 | 968.41 | 968.55 | 968.62 | 968.55 | 968.43 | 968.41 | 968.26 | 968.22  |



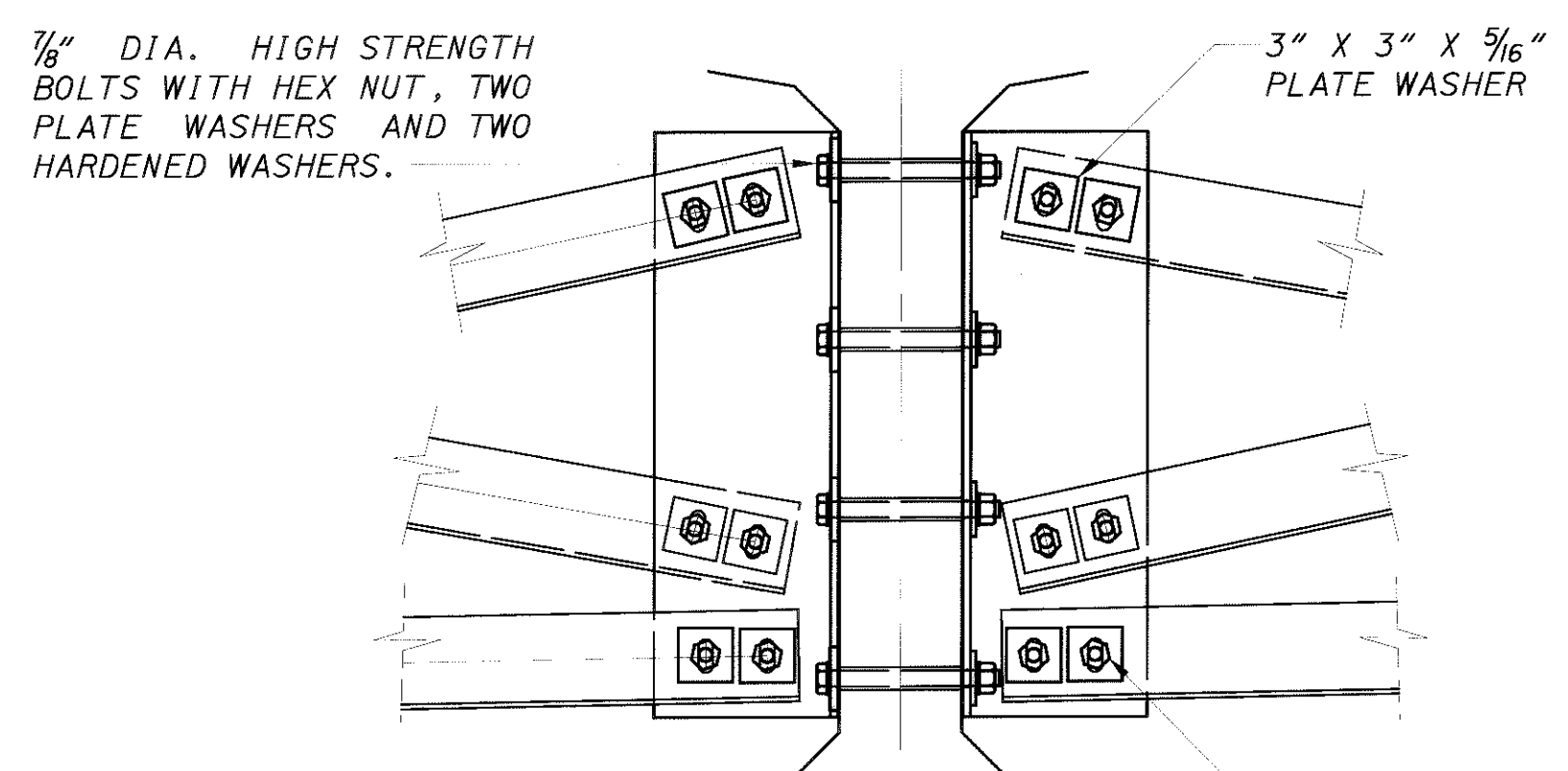
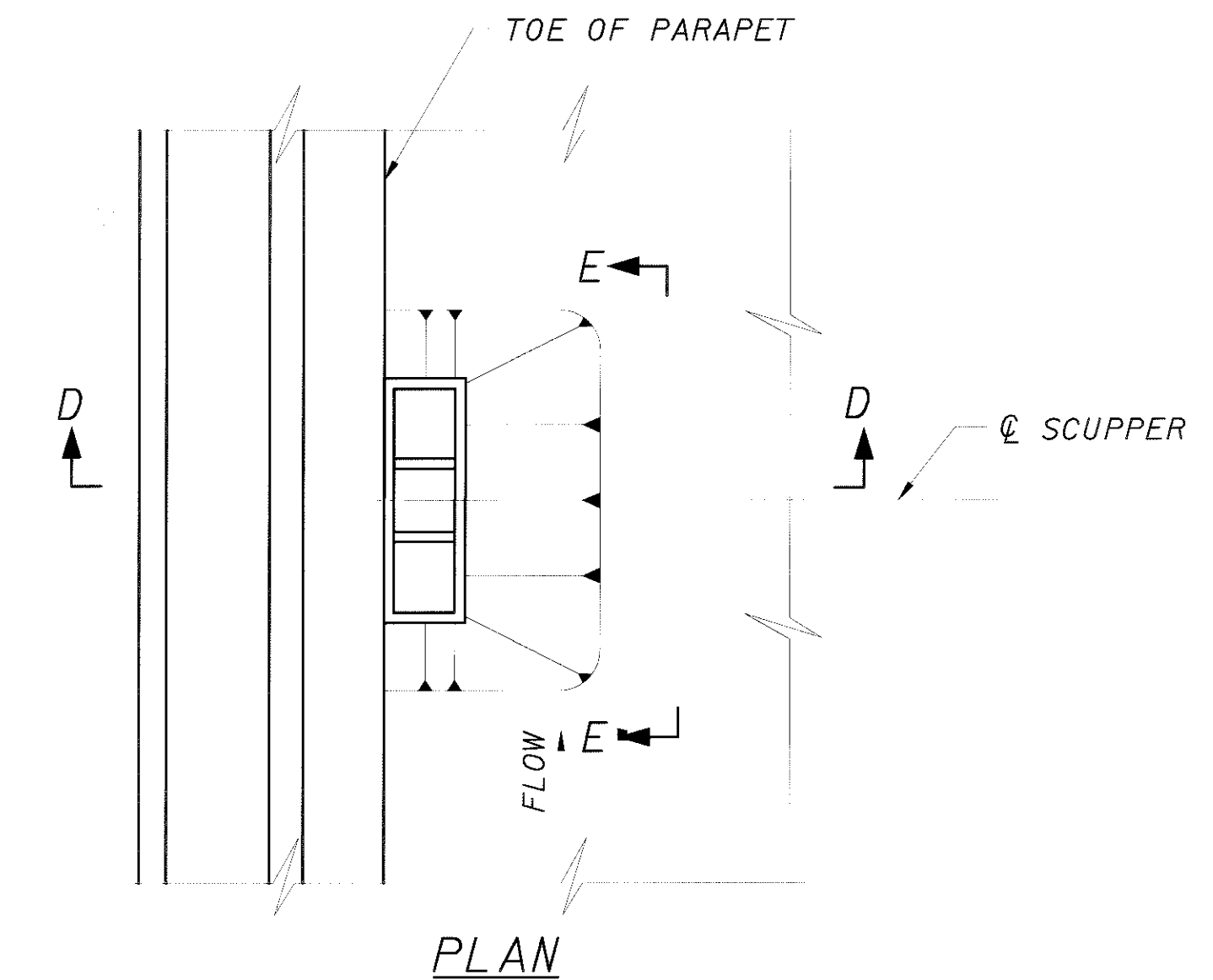
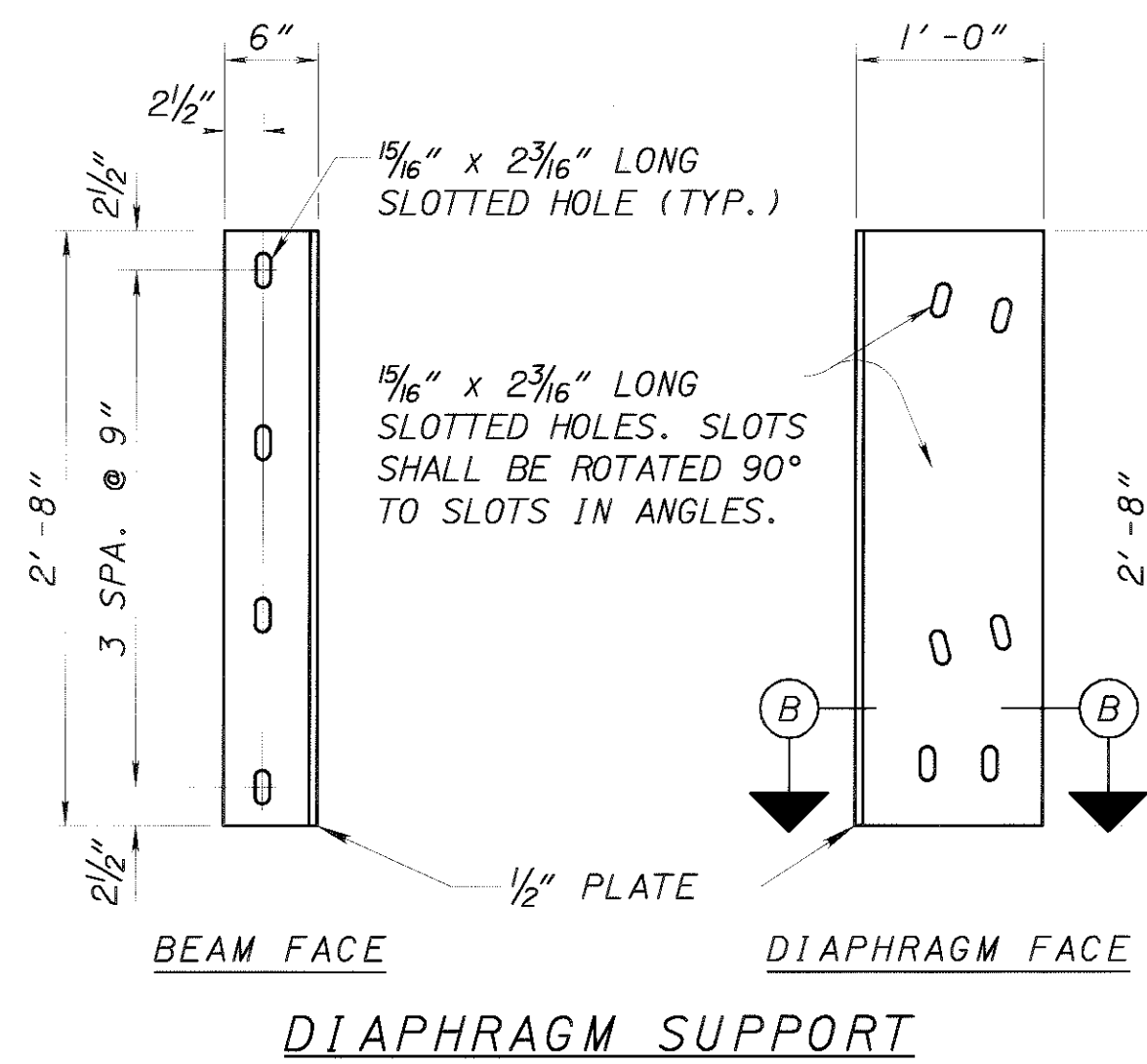
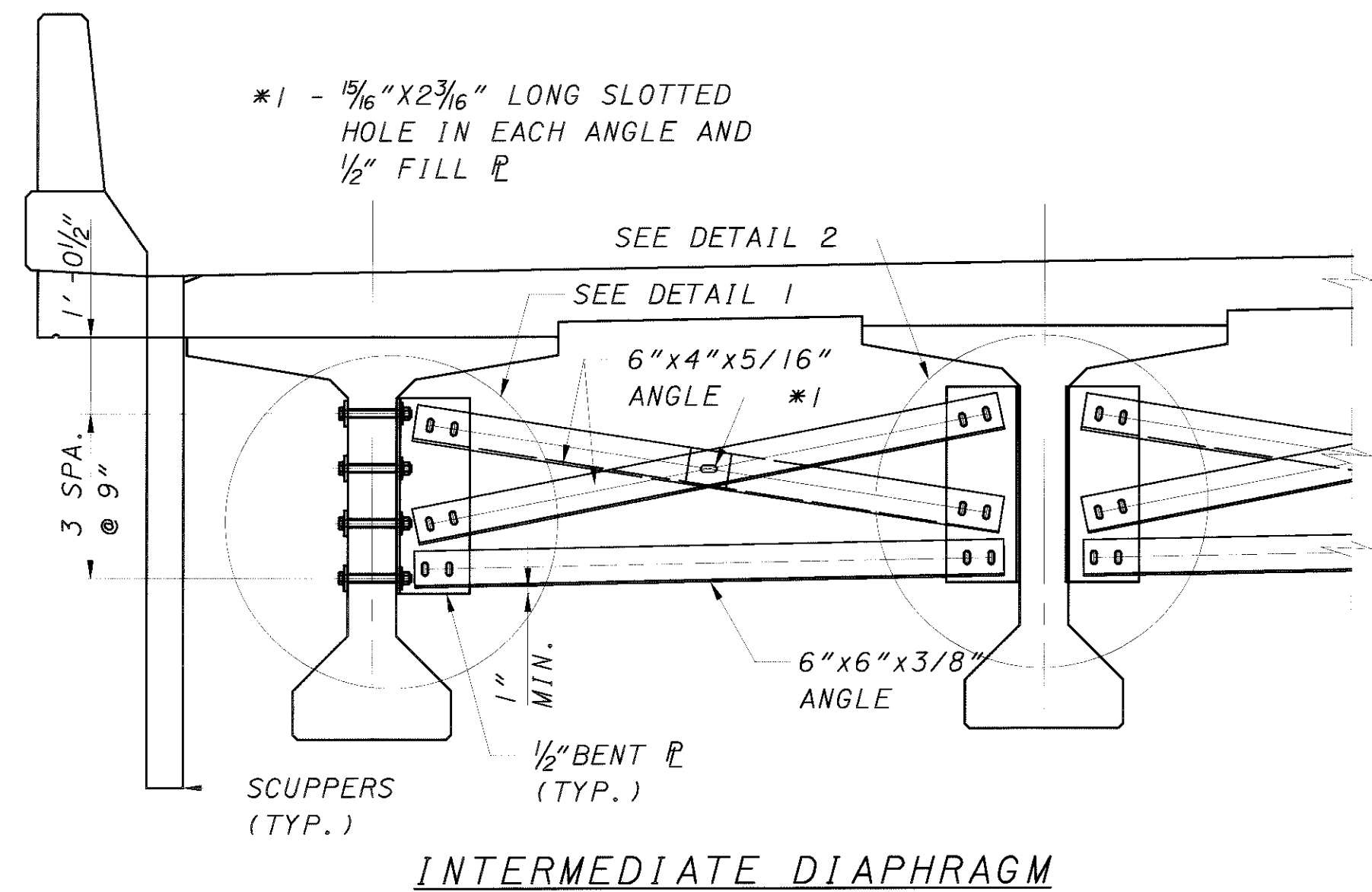
SCREED LINE LOCATIONS

SCREED ELEVATION TABLE

| SPAN NO.    | LOCATION  | STATION  | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 |
|-------------|-----------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| SPAN NO. 1  | Q BRG. RA | 48+25.50 | 963.50 | 963.55 | 963.69 | 963.83 | 963.90 | 963.83 | 963.72 | 963.69 | 963.55 | 963.50  |
|             | 0.25 L    | 48+48.63 | 963.62 | 963.67 | 963.81 | 963.95 | 964.03 | 963.95 | 963.84 | 963.81 | 963.67 | 963.62  |
|             | 0.50 L    | 48+71.75 | 963.72 | 963.77 | 963.91 | 964.05 | 964.12 | 964.05 | 963.94 | 963.91 | 963.77 | 963.72  |
| SPAN NO. 2  | Q PIER 1  | 49+18.00 | 963.81 | 963.86 | 964.00 | 964.15 | 964.22 | 964.15 | 964.03 | 964.00 | 963.86 | 963.81  |
|             | 0.25 L    | 49+47.75 | 964.02 | 964.07 | 964.22 | 964.36 | 964.43 | 964.36 | 964.24 | 964.22 | 964.07 | 964.02  |
|             | 0.50 L    | 49+77.50 | 964.18 | 964.23 | 964.37 | 964.51 | 964.58 | 964.51 | 964.40 | 964.37 | 964.23 | 964.18  |
| SPAN NO. 3  | Q PIER 2  | 50+37.00 | 964.22 | 964.27 | 964.41 | 964.55 | 964.62 | 964.55 | 964.44 | 964.41 | 964.27 | 964.22  |
|             | 0.25 L    | 50+66.75 | 964.43 | 964.48 | 964.62 | 964.77 | 964.84 | 964.77 | 964.65 | 964.62 | 964.48 | 964.43  |
|             | 0.50 L    | 50+96.50 | 964.59 | 964.63 | 964.78 | 964.92 | 964.99 | 964.92 | 964.80 | 964.78 | 964.63 | 964.59  |
| SPAN NO. 4  | Q PIER 3  | 51+56.00 | 964.62 | 964.67 | 964.81 | 964.96 | 965.03 | 964.96 | 964.84 | 964.81 | 964.67 | 964.62  |
|             | 0.25 L    | 51+85.75 | 964.84 | 964.88 | 965.03 | 965.17 | 965.24 | 965.17 | 965.05 | 965.03 | 964.88 | 964.84  |
|             | 0.50 L    | 52+15.50 | 964.99 | 965.04 | 965.18 | 965.33 | 965.40 | 965.33 | 965.21 | 965.18 | 965.04 | 964.99  |
| SPAN NO. 5  | Q PIER 4  | 52+75.00 | 965.03 | 965.07 | 965.22 | 965.36 | 965.43 | 965.36 | 965.25 | 965.22 | 965.07 | 965.03  |
|             | 0.25 L    | 53+04.75 | 965.24 | 965.29 | 965.43 | 965.57 | 965.64 | 965.57 | 965.46 | 965.43 | 965.29 | 965.24  |
|             | 0.50 L    | 53+34.50 | 965.39 | 965.44 | 965.58 | 965.72 | 965.80 | 965.72 | 965.61 | 965.58 | 965.44 | 965.39  |
| SPAN NO. 6  | Q PIER 5  | 53+94.00 | 965.43 | 965.48 | 965.62 | 965.77 | 965.84 | 965.77 | 965.65 | 965.62 | 965.48 | 965.43  |
|             | 0.25 L    | 54+23.75 | 965.64 | 965.69 | 965.83 | 965.98 | 966.05 | 965.98 | 965.86 | 965.83 | 965.69 | 965.64  |
|             | 0.50 L    | 54+53.50 | 965.80 | 965.84 | 965.99 | 966.13 | 966.20 | 966.13 | 966.01 | 965.99 | 965.84 | 965.80  |
| SPAN NO. 7  | Q PIER 6  | 55+13.00 | 965.84 | 965.88 | 966.03 | 966.17 | 966.24 | 966.17 | 966.05 | 966.03 | 965.88 | 965.84  |
|             | 0.25 L    | 55+42.75 | 966.05 | 966.10 | 966.24 | 966.38 | 966.46 | 966.38 | 966.27 | 966.24 | 966.10 | 966.05  |
|             | 0.50 L    | 55+72.50 | 966.20 | 966.25 | 966.40 | 966.54 | 966.61 | 966.54 | 966.42 | 966.40 | 966.25 | 966.20  |
| SPAN NO. 8  | Q PIER 7  | 56+32.00 | 966.24 | 966.29 | 966.43 | 966.57 | 966.65 | 966.57 | 966.46 | 966.43 | 966.29 | 966.24  |
|             | 0.25 L    | 56+61.75 | 966.45 | 966.50 | 966.65 | 966.79 | 966.86 | 966.79 | 966.67 | 966.65 | 966.50 | 966.45  |
|             | 0.50 L    | 56+91.50 | 966.61 | 966.66 | 966.80 | 966.94 | 967.01 | 966.94 | 966.83 | 966.80 | 966.66 | 966.61  |
| SPAN NO. 9  | Q PIER 8  | 57+51.00 | 966.65 | 966.69 | 966.84 | 966.98 | 967.05 | 966.98 | 966.86 | 966.84 | 966.69 | 966.65  |
|             | 0.25 L    | 57+80.75 | 966.86 | 966.90 | 967.05 | 967.19 | 967.26 | 967.19 | 967.07 | 967.05 | 966.90 | 966.86  |
|             | 0.50 L    | 58+10.50 | 967.01 | 967.06 | 967.20 | 967.34 | 967.41 | 967.34 | 967.23 | 967.20 | 967.06 | 967.01  |
| SPAN NO. 10 | Q PIER 9  | 58+70.00 | 967.05 | 967.10 | 967.24 | 967.38 | 967.46 | 967.38 | 967.27 | 967.24 | 967.10 | 967.05  |
|             | 0.25 L    | 58+99.75 | 967.26 | 967.31 | 967.45 | 967.59 | 967.67 | 967.59 | 967.48 | 967.45 | 967.31 | 967.26  |
|             | 0.75 L    | 59+29.50 | 967.41 | 967.46 | 967.60 | 967.75 | 967.82 | 967.75 | 967.63 | 967.60 | 967.46 | 967.41  |
| SPAN NO. 11 | Q PIER 10 | 59+59.25 | 967.46 | 967.51 | 967.65 | 967.80 | 967.87 | 967.80 | 967.68 | 967.65 | 967.51 | 967.46  |
|             | 0.25 L    | 59+89.00 | 967.45 | 967.50 | 967.65 | 967.79 | 967.86 | 967.79 | 967.67 | 967.65 | 967.50 | 967.45  |
|             | 0.75 L    | 60+18.75 | 967.67 | 967.72 | 967.86 | 968.00 | 968.07 | 968.00 | 967.89 | 967.86 | 967.72 | 967.67  |
| SPAN NO. 12 | Q PIER 11 | 60+48.50 | 967.81 | 967.86 | 968.00 | 968.15 | 968.22 | 968.15 | 968.03 | 968.00 | 967.86 | 967.81  |
|             | 0.25 L    | 60+78.25 | 967.84 | 967.89 | 968.04 | 968.18 | 968.25 | 968.18 | 968.06 | 968.04 | 967.89 | 967.84  |
|             | 0.75 L    | 61+8.00  | 967.81 | 967.86 | 968.00 | 968.14 | 968.21 | 968.14 | 968.03 | 968.00 | 967.86 | 967.81  |
| SPAN NO. 13 | Q PIER 12 | 61+37.75 | 967.99 | 968.04 | 968.18 | 968.32 | 968.40 | 968.32 | 968.21 | 968.18 | 968.04 | 967.99  |
|             | 0.25 L    | 61+67.50 | 968.11 | 968.15 | 968.30 | 968.44 | 968.51 | 968.44 | 968.32 | 968.30 | 968.15 | 968.11  |
|             | 0.75 L    | 61+97.25 | 968.11 | 968.15 | 968.30 | 968.44 | 968.51 | 968.44 | 968.32 | 968.30 | 968.15 | 968.11  |
| SPAN NO. 14 | Q PIER 13 | 62+27.00 | 968.04 | 968.09 | 968.23 | 968.37 | 968.44 | 968.37 | 968.26 | 968.23 | 968.09 | 968.04  |
|             | 0.25 L    | 62+56.75 | 968.19 | 968.23 | 968.38 | 968.52 | 968.59 | 968.52 | 968.40 | 968.38 | 968.23 | 968.19  |
|             | 0.50 L    | 62+86.50 | 968.27 | 968.32 | 968.46 | 968.60 | 968.67 | 968.60 | 968.49 | 968.46 | 968.32 | 968.27  |
| SPAN NO. 15 | Q PIER 14 | 63+16.25 | 968.24 | 968.29 | 968.43 | 968.58 | 968.65 | 968.58 | 968.46 | 968.43 | 968.29 | 968.24  |
|             | 0.25 L    | 63+46.00 | 968.14 | 968.19 | 968.34 | 968.48 | 968.55 | 968.48 | 968.36 | 968.34 | 968.19 | 968.14  |
|             | 0.50 L    | 63+75.75 | 968.26 | 968.31 | 968.45 | 968.60 | 968.67 | 968.60 | 968.48 | 968.45 | 968.31 | 968.26  |
| SPAN NO. 16 | Q PIER 15 | 64+05.50 | 968.31 | 968.36 | 968.50 | 968.65 | 968.72 | 968.65 | 968.53 | 968.50 | 968.36 | 968.31  |
|             | 0.25 L    | 64+35.25 | 968.25 | 968.30 | 968.44 | 968.59 | 968.66 | 968.59 | 968.47 | 968.44 | 968.30 | 968.25  |
|             | 0.75 L    | 64+65.00 | 968.13 | 968.17 | 968.32 | 968.46 | 968.53 | 968.46 | 968.35 | 968.32 | 968.17 | 968.13  |
| SPAN NO. 17 | Q PIER 16 | 64+94.75 | 968.22 | 968.26 | 968.41 | 968.55 | 968.62 | 968.55 | 968.43 | 968.41 | 968.26 | 968.22  |
|             | 0.25 L    | 65+24.50 | 968.24 | 968.29 | 968.43 | 968.57 | 968.64 | 968.57 | 968.46 | 968.43 | 968.29 | 968.24  |
|             | 0.75 L    | 65+54.25 | 968.15 | 968.19 | 968.34 | 968.48 | 968.55 | 968.48 | 968.36 | 968.34 | 968.19 | 968.15  |
| SPAN NO. 18 | Q PIER 17 | 66+43.50 | 968.03 | 968.08 | 968.23 | 968.37 | 968.44 | 968.37 | 968.25 | 968.23 | 968.08 | 968.03  |
|             | 0.25 L    | 66+73.25 | 967.91 | 967.96 | 968.10 | 968.24 | 968.32 | 968.24 | 968.13 | 968.10 | 967.96 | 967.91  |
|             | 0.75 L    | 66+03.00 | 967.72 | 967.77 | 967.91 | 968.05 | 968.13 | 968.05 | 967.94 | 967.91 | 967.77 | 967.72  |
| SPAN NO. 19 | Q PIER 18 | 67+32.75 | 967.74 | 967.79 | 967.94 | 968.08 | 968.15 | 968.08 | 967.96 | 967.94 | 967.79 | 967.74  |
|             | 0.25 L    | 67+62.50 | 967.70 | 967.75 | 967.89 | 968.04 | 968.11 | 968.04 | 967.92 | 967.89 | 967.75 | 967.70  |
|             | 0.75 L    | 67+92.25 | 967.55 | 967.60 | 967.74 | 967.88 | 967.95 | 967.88 | 967.77 | 967.74 | 967.60 | 967.55  |
| SPAN NO. 20 | Q BRG. FA | 68+22.00 | 967.33 | 967.38 | 967.52 | 967.67 | 967.74 | 967.67 | 967.55 | 967.52 | 967.38 | 967.33  |
|             | 0.25 L    | 68+45.13 | 967.48 | 967.51 | 967.58 | 967.66 | 967.70 | 967.63 | 967.51 | 967.48 | 967.34 | 967.29  |
|             | 0.50 L    | 68+68.25 | 967.62 | 967.62 | 967.63 | 967.63 | 967.63 | 967.63 | 967.56 | 967.45 | 967.42 | 967.23  |
| SPAN NO. 21 | 0.75 L    | 68+91.38 | 967.72 | 967.69 | 967.63 | 967.56 | 967.53 | 967.46 | 967.34 | 967.32 | 967.17 | 967.13  |
|             | 0.25 L    | 69+14.50 | 967.79 | 967.75 | 967.61 | 967.47 | 967.41 | 967.33 | 967.22 | 967.19 | 967.05 | 967.00  |

SCREED ELEVATION TABLE

| SPAN NO.    | LOCATION  | STATION  | LINE 1 | LINE 2 | LINE 3 | LINE 4 | LINE 5 | LINE 6 | LINE 7 | LINE 8 | LINE 9 | LINE 10 |
|-------------|-----------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| SPAN NO. 10 | Q PIER 9  | 58+70.00 | 967.05 | 967.10 | 967.24 | 967.38 | 967.46 | 967.38 | 967.27 | 967.24 | 967.10 | 967.05  |
|             | 0.25 L    | 58+99.75 | 967.26 | 967.31 | 967.45 | 967.59 | 967.67 | 967.59 | 967.48 | 967.45 | 967.31 | 967.26  |
|             | 0.50 L    | 59+29.50 | 967.41 | 967.46 | 967.60 | 967.75 | 967.82 | 967.75 | 967.63 | 967.60 | 967.46 | 967.41  |
| SPAN NO. 11 | Q PIER 10 | 59+59.25 | 967.46 | 967.51 | 967.65 | 967.80 | 967.87 | 967.80 | 967.68 | 967.65 | 967.51 | 967.46  |
|             | 0.25 L    | 59+89.00 | 967.45 | 967.50 | 967.65 | 967.79 | 967.86 | 967.79 | 967.67 | 967.65 | 967.50 | 967.45  |
|             | 0.75 L    | 60+18.75 | 967.67 | 967.72 | 967.86 | 968.00 | 968.07 | 968.00 | 967.89 | 967.86 | 967.72 | 967.67  |
| SPAN NO. 12 | Q PIER 11 | 60+48.50 | 967.81 | 967.86 | 968.00 | 968.15 | 968.22 | 968.15 | 968.03 | 968.00 | 967.86 | 967.81  |
|             | 0.25 L    | 60+78.25 | 967.84 | 967.89 | 968.04 | 968.18 | 968.25 | 968.18 | 968.06 | 968.04 | 967.89 | 967.84  |
|             | 0.75 L    | 61+8.00  | 967.81 | 967.86 | 968.00 | 968.14 | 968.21 | 968.14 | 968.03 | 968.00 | 967.86 | 967.81  |
| SPAN NO. 13 | Q PIER 12 | 61+37.75 | 967.99 | 968.04 | 968.18 | 968.32 | 968.40 | 968.32 | 968.21 | 968.18 | 968.04 | 967.99  |
|             | 0.25 L    | 61+67.50 | 968.11 | 968.15 | 968.30 | 968.44 | 968.51 | 968.44 | 968.32 | 968.30 | 968.15 | 968.11  |
|             | 0.75 L    | 61+97.25 | 968.11 | 968.15 | 968.30 | 968.44 | 968.51 | 968.44 | 968.32 | 968.30 | 968.15 | 968.11  |
| SPAN NO. 14 | Q PIER 13 | 62+27.00 | 968.04 | 968.09 | 968.23 | 968.37 | 968.44 | 968.37 | 968.26 | 968.23 | 968.09 | 968.0   |



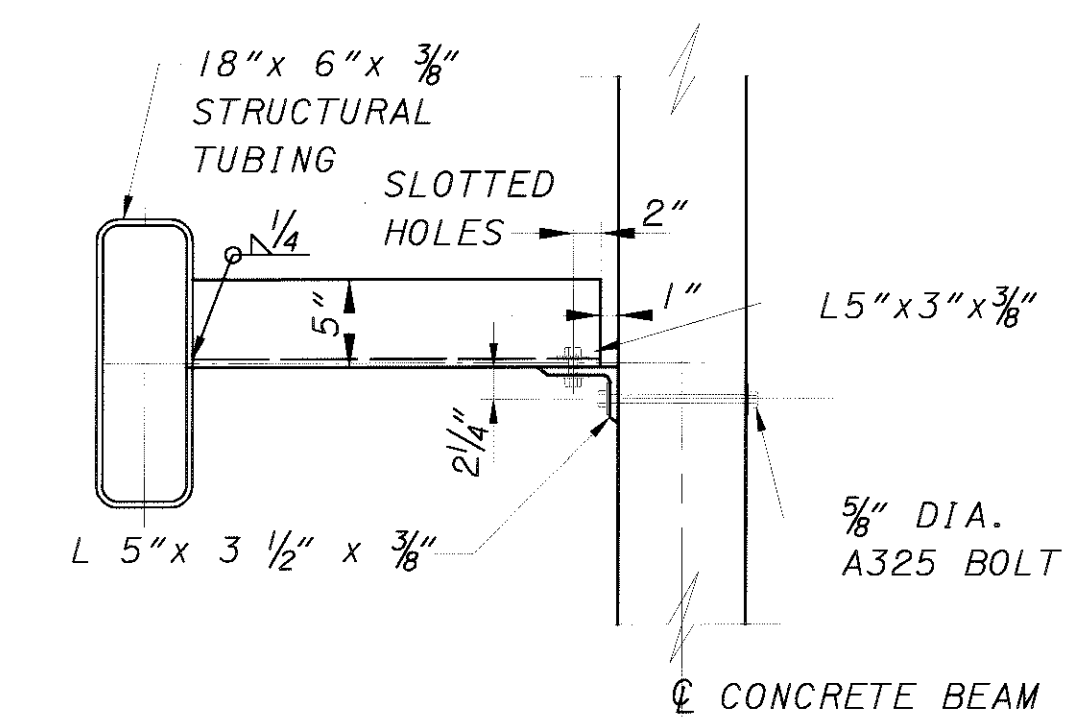
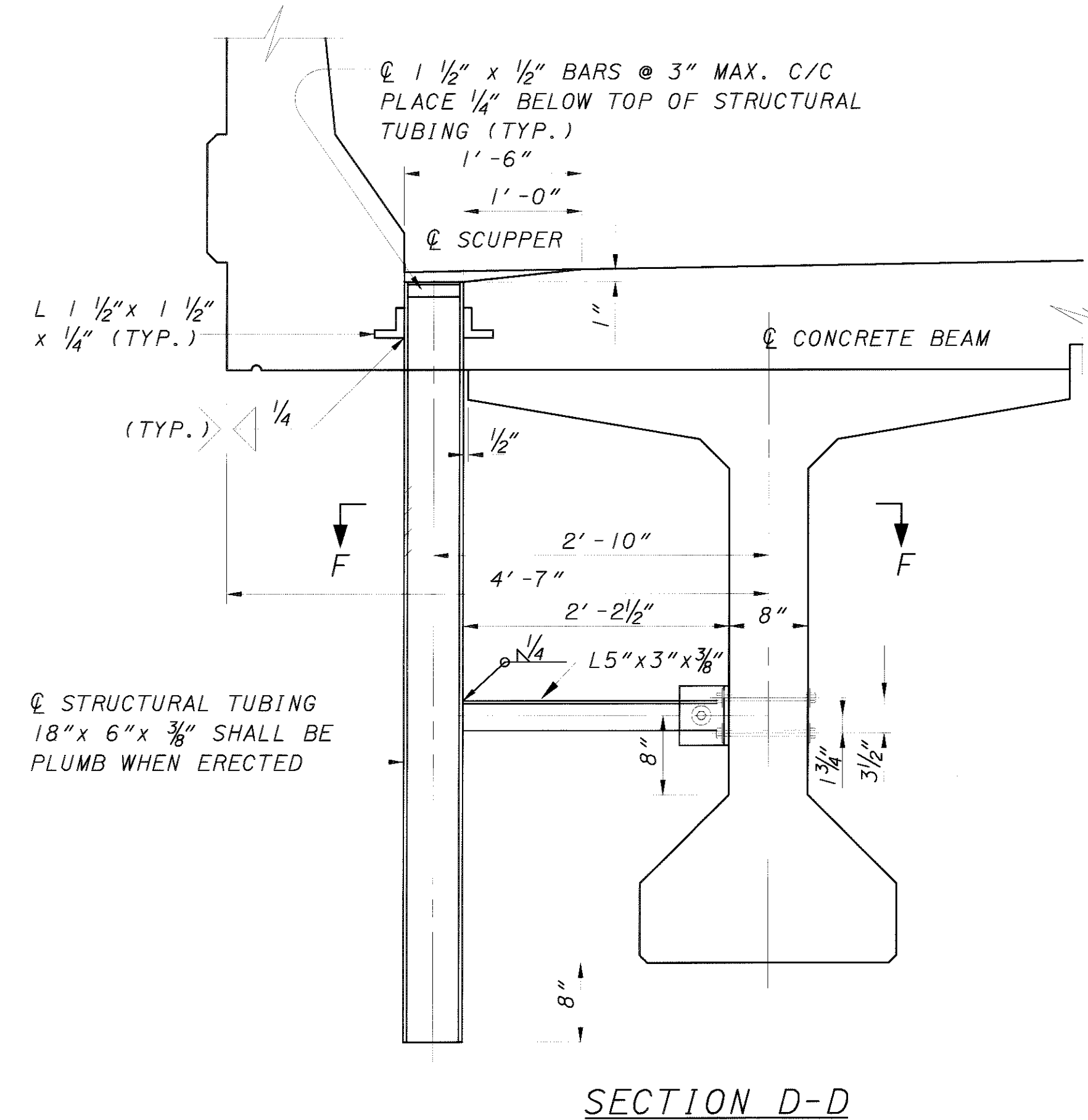
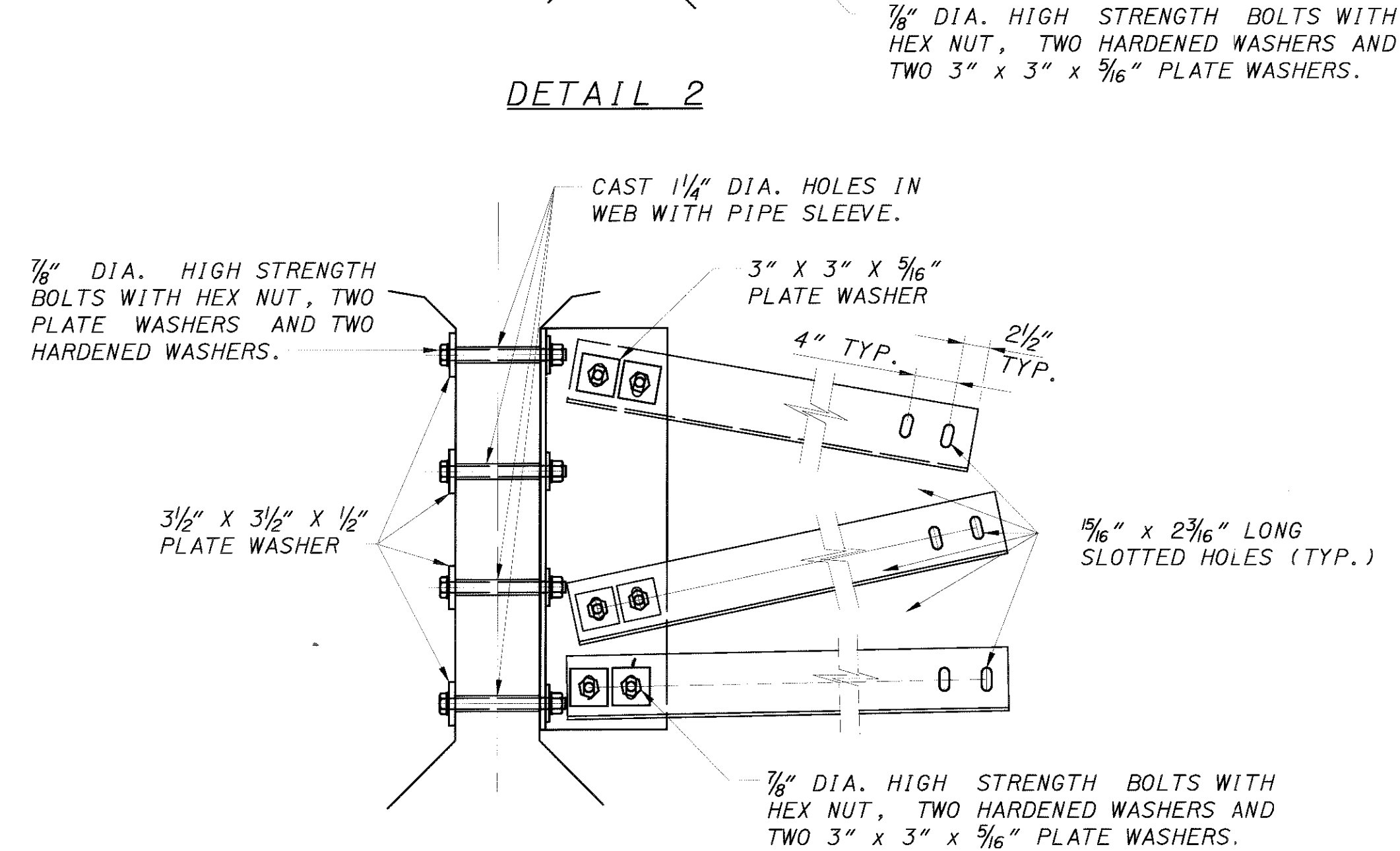
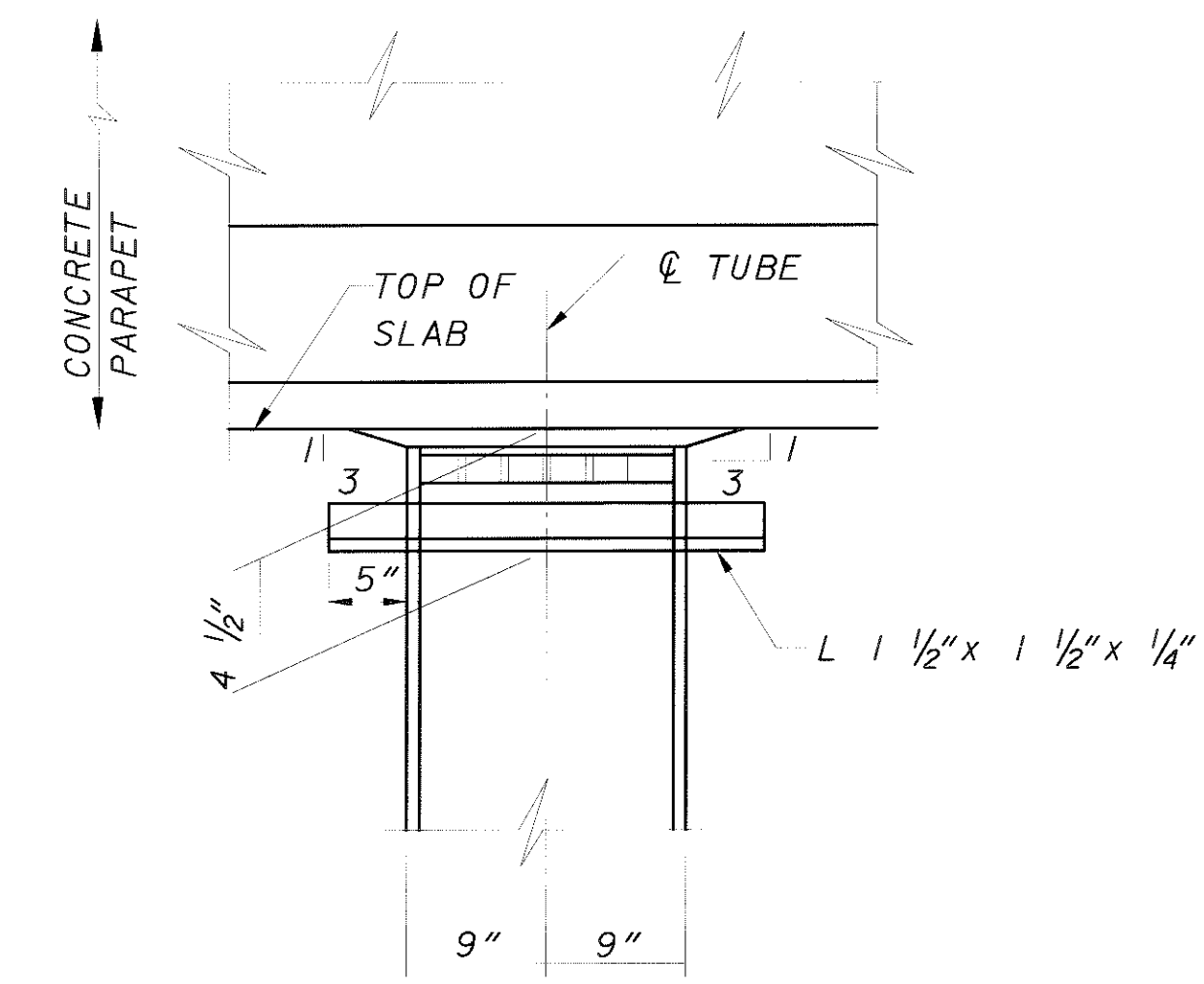
**CROSS FRAME NOTES**

ALL STRUCTURAL STEEL, INCLUDING BOLTS, NUTS AND WASHERS SHALL MEET THE FABRICATION AND ERECTION REQUIREMENTS SPECIFIED IN SS863, BUT SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 865 - PRESTRESSED CONCRETE BRIDGE I-BEAM MEMBERS, MISC.: DIAPHRAGMS.

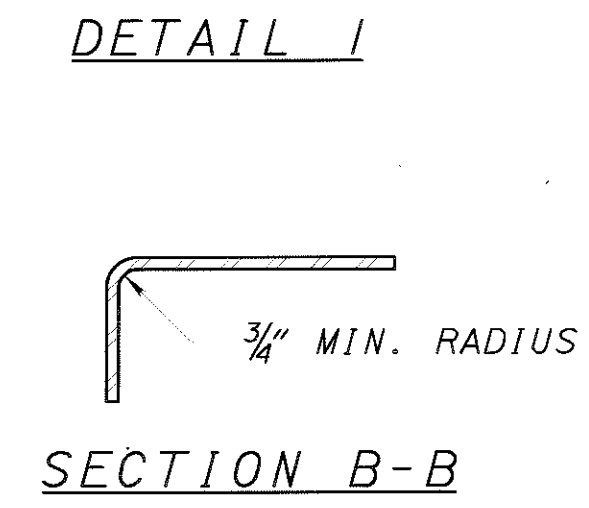
ALL STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36 OR 50, GALVANIZED AS PER 711.02.

ALL BOLTS ARE 7/8" DIA. ASTM A325 TYPE 1. ALL BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AS PER 711.02.

BOLT HOLES IN THE I-BEAM WEBS SHALL BE LOCATED TO AVOID PRESTRESSING STRANDS.

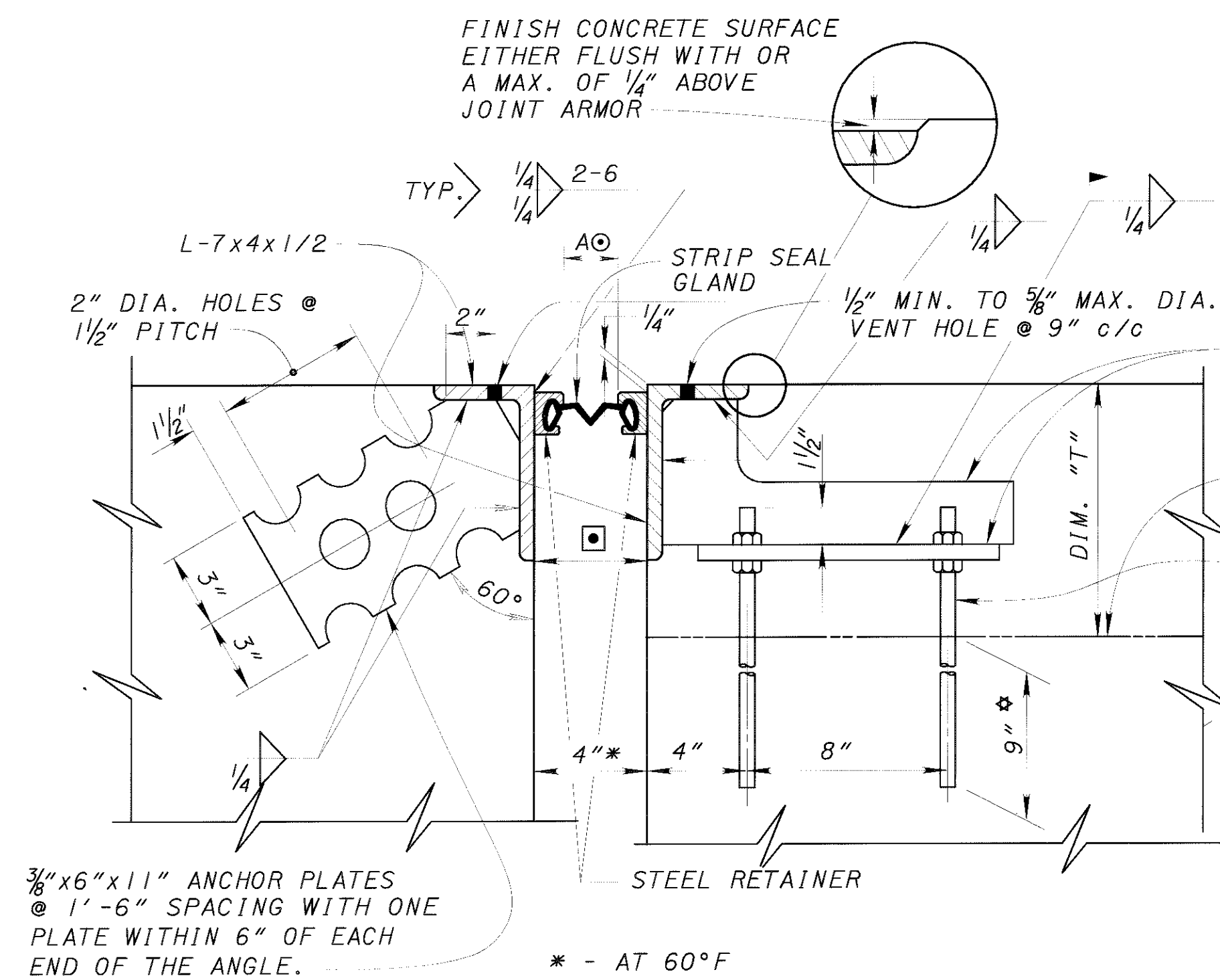


- SCUPPER NOTES:**
- SEE SITE PLAN SHEETS [V74] THRU [574] FOR SCUPPER LOCATIONS.
  - FOR ADDITIONAL DETAILS SEE STANDARD DRAWING GSD-1-96, SHEET [3/3].
  - ALL STRUCTURAL STEEL, INCLUDING BOLTS, NUTS AND WASHERS SHALL MEET THE FABRICATION AND ERECTION REQUIREMENTS SPECIFIED IN SS863.
  - ALL STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36 OR 50, GALVANIZED AS PER 711.02.
  - ALL BOLTS ARE 7/8" DIA. ASTM A325 TYPE 1. ALL BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AS PER 711.02.



**SCUPPER DETAILS**

CONCRETE OPTION



ABUTMENT EXPANSION JOINT DETAIL

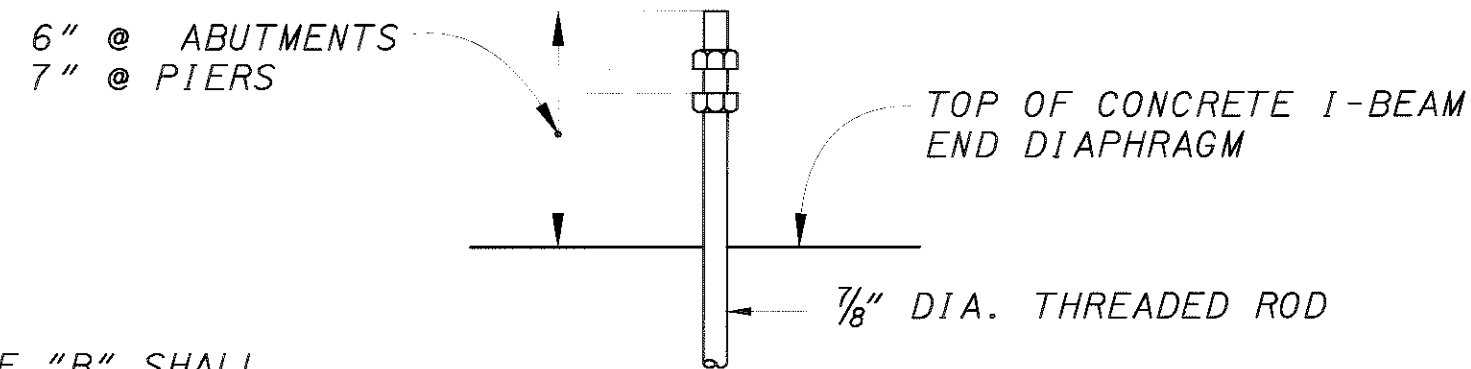
PLATE "A" AND PLATE "B" SHALL BE INSTALLED PARALLEL TO THE CONCRETE I-BEAMS.

TOP OF END DIAPHRAGM AND CONSTRUCTION JOINT

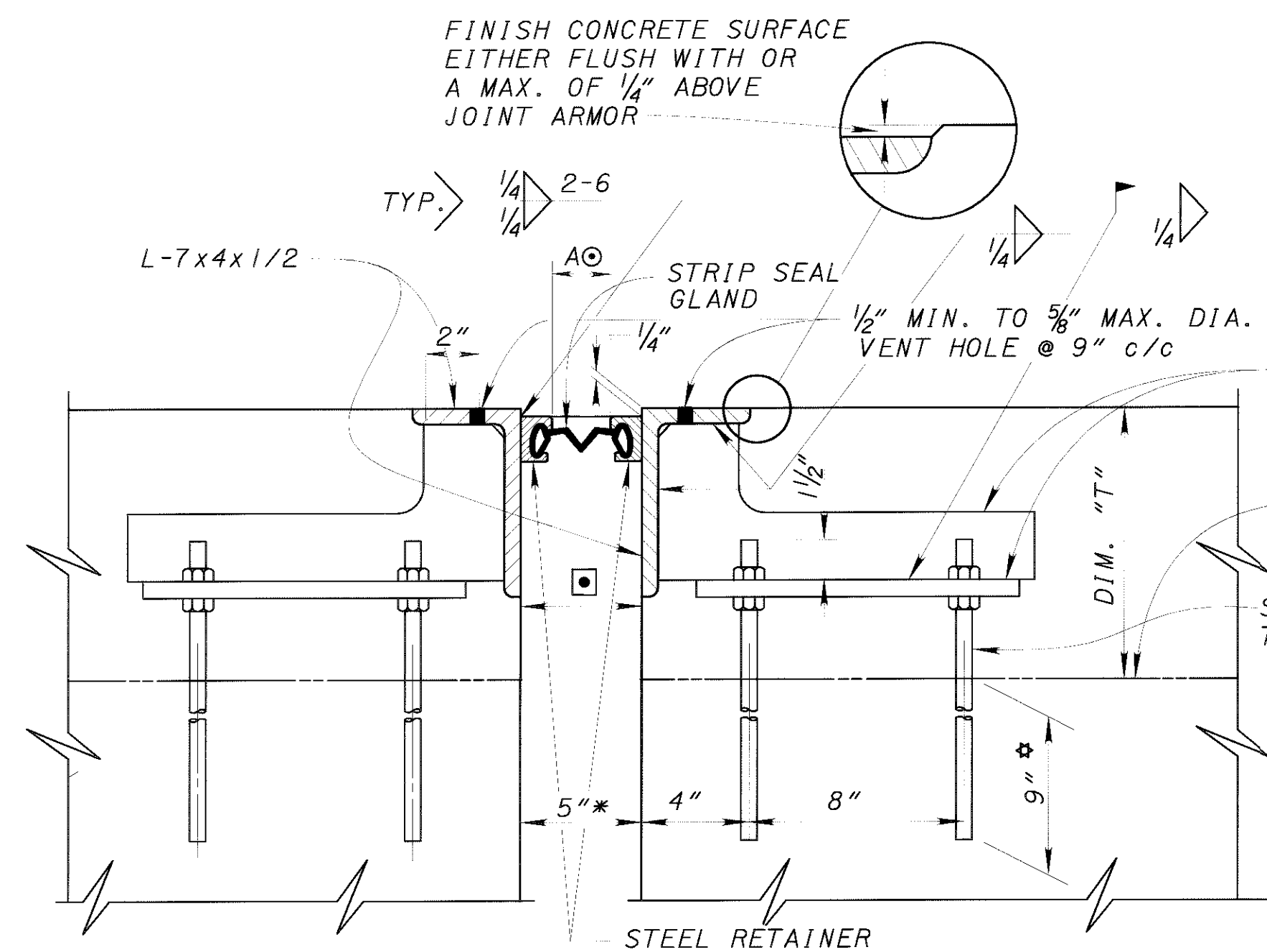
SEE DETAIL "A" ON THIS SHEET

NOTE: THE JOINT ASSEMBLY SHALL BE PLACED SO THAT THE 7x4x1/2 ANGLES REMAIN PARALLEL TO EACH OTHER AND PERPENDICULAR TO THE ROADWAY GRADIENT.

| TEMPERATURE °F | DIMENSION "A" |
|----------------|---------------|
| 30°            | 2"            |
| 40°            | 1 7/8"        |
| 50°            | 1 3/4"        |
| 60°            | 1 5/8"        |
| 70°            | 1 1/2"        |
| 80°            | 1 3/8"        |
| 90°            | 1 1/4"        |



DETAIL A



PIER EXPANSION JOINT DETAIL

PLATE "A" AND PLATE "B" SHALL BE INSTALLED PARALLEL TO THE CONCRETE I-BEAMS.

TOP OF END DIAPHRAGM AND CONSTRUCTION JOINT

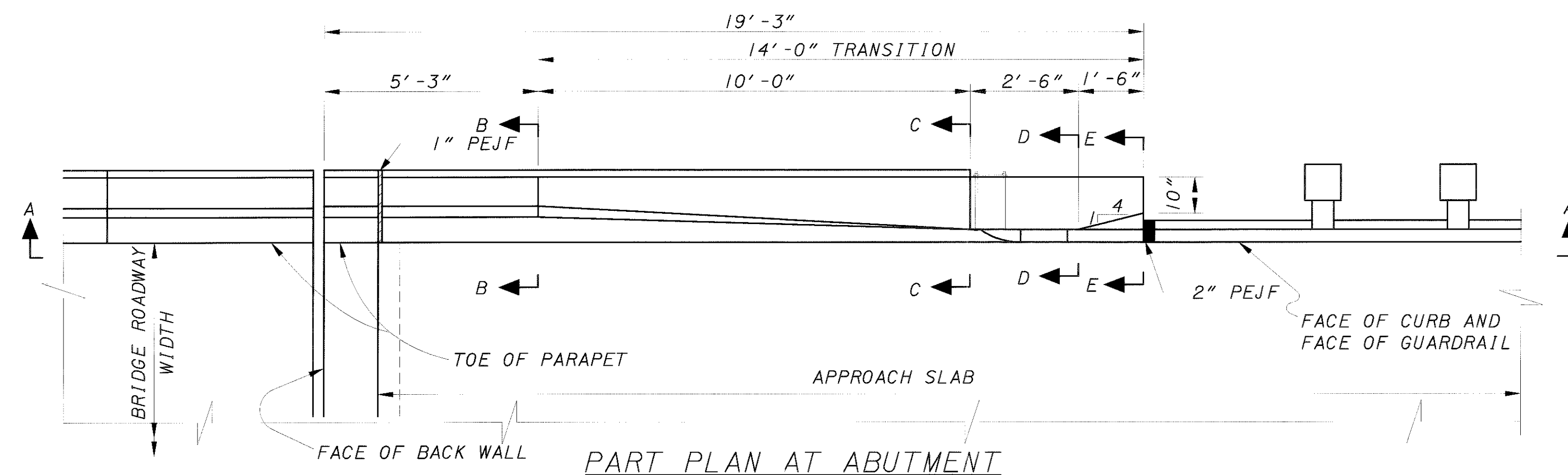
SEE DETAIL "A" ON THIS SHEET

NOTE: THE JOINT ASSEMBLY SHALL BE PLACED SO THAT THE 7x4x1/2 ANGLES REMAIN PARALLEL TO EACH OTHER AND PERPENDICULAR TO THE ROADWAY GRADIENT.

| TEMPERATURE °F | DIMENSION "A" |              |
|----------------|---------------|--------------|
|                | PIERS 7 & 11  | PIERS 3 & 15 |
| 30°            | 3 3/16"       | 3"           |
| 40°            | 2 7/8"        | 2 3/4"       |
| 50°            | 2 9/16"       | 2 1/2"       |
| 60°            | 2 1/4"        | 2 1/4"       |
| 70°            | 1 5/16"       | 2"           |
| 80°            | 1 5/8"        | 1 3/4"       |
| 90°            | 1 5/16"       | 1 1/2"       |

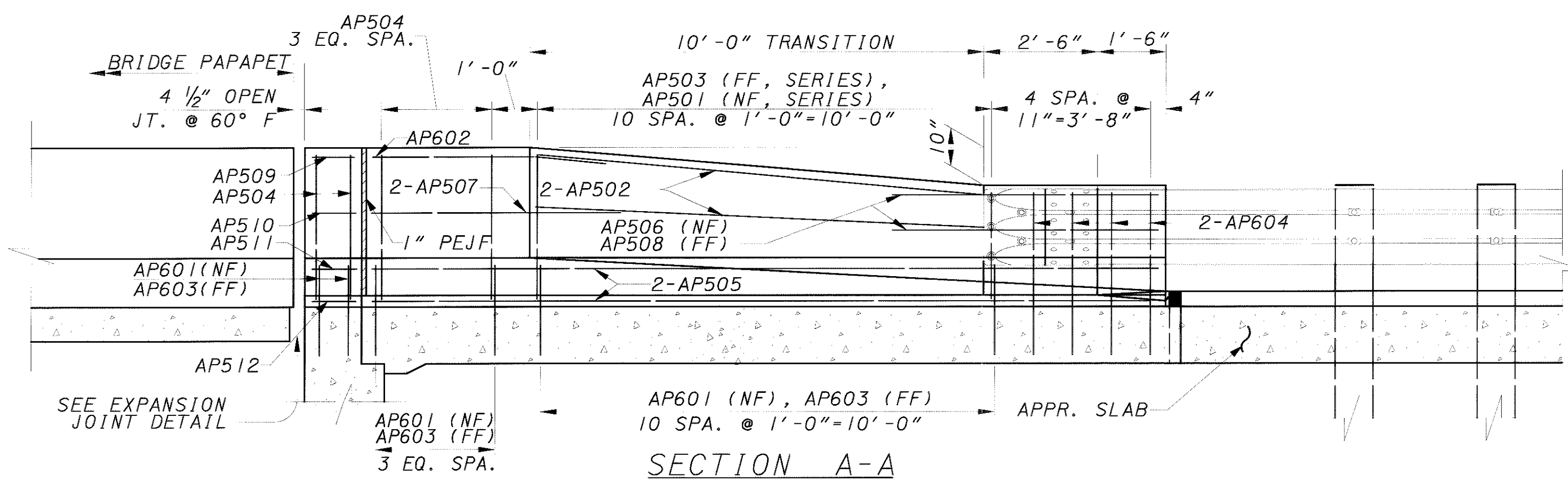
NOTES:

- FOR ADDITIONAL DECK JOINT DETAILS AND NOTES, REFER TO STD. DWG. EXJ 6-96M.
- STRIP SEAL GLAND SIZE SHALL BE 3 INCHES AT ABUTMENTS AND 5 INCHES AT PIERS.
- END DAM SUPPORTS:  
SUPPORT PLATES "B" SHALL BE LOCATED MIDWAY BETWEEN BEAMS AND ADJACENT TO EACH OF END DAM ANGLES. PLATE "B" ANCHOR BOLTS SHALL BE LOCATED AT LEAST 5 INCHES FROM END DIAPHRAGM SURFACES. FOR BEAMS WITH WIDE FLANGES IT MAY BE NECESSARY TO PROVIDE 2" DIA. FIELD DRILLED HOLES THROUGH FASCIA BEAM FLANGES TO PERMIT PLACEMENT OF END SUPPORT ANCHOR BOLTS. CARE SHALL BE TAKEN TO FILL VOIDS BETWEEN FLANGE HOLES AND BOLTS WITH CEMENT GROUT WHILE DIAPHRAGM CONCRETE IS BEING PLACED. INCLUDE COST FOR THIS WORK WITH ITEM 516 EXPANSION JOINTS FOR PAYMENT.
- DIM. "T" SHALL MATCH SLAB DEPTH OVER BEAMS (DIM. "A") GIVEN IN SHEET 31/41.

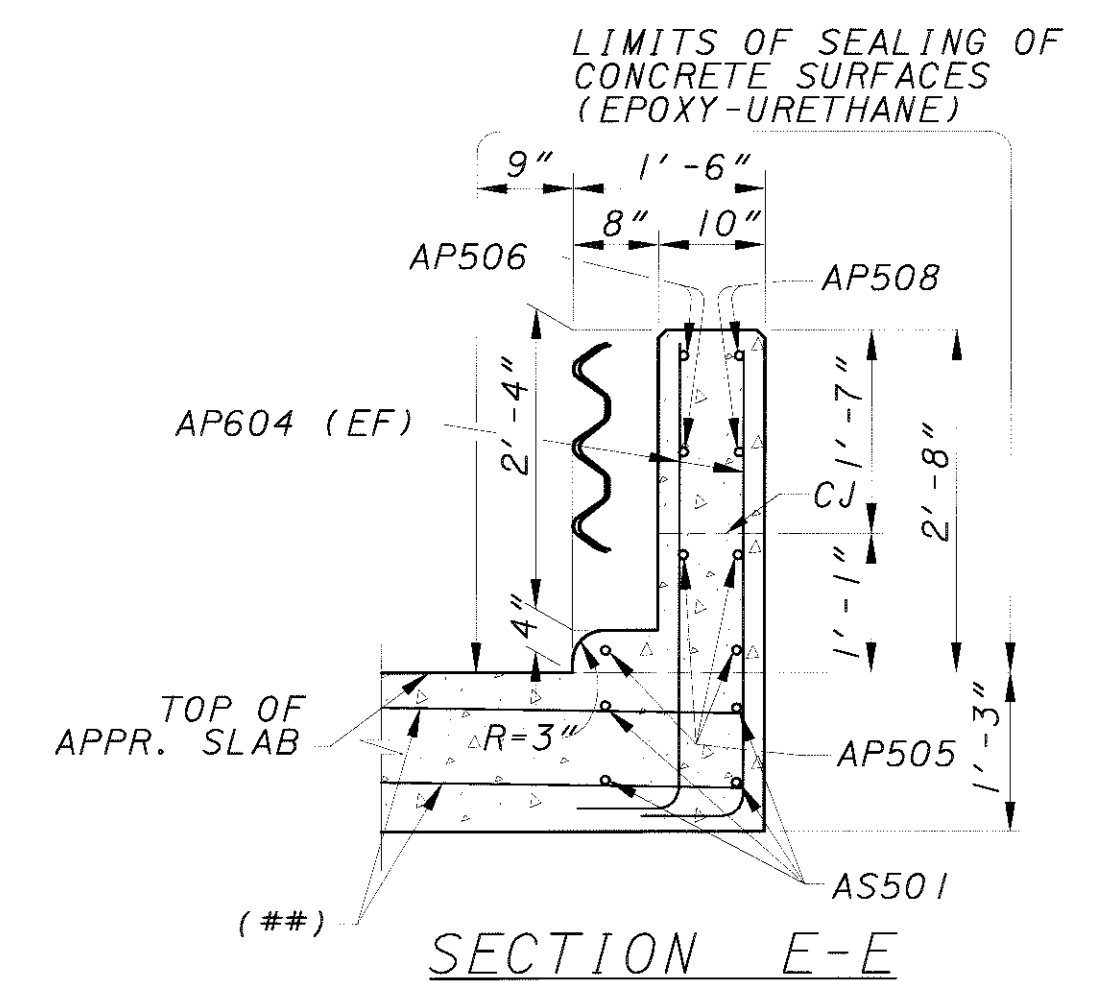
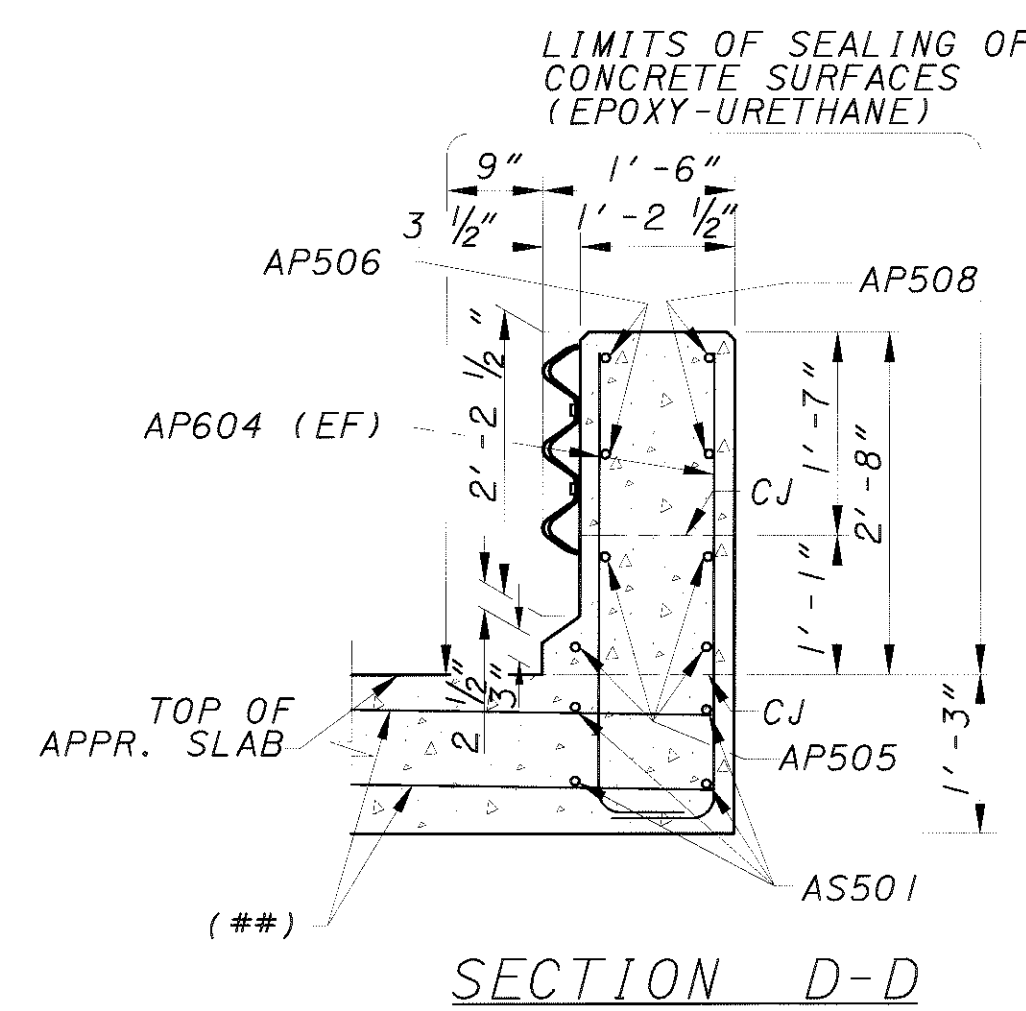
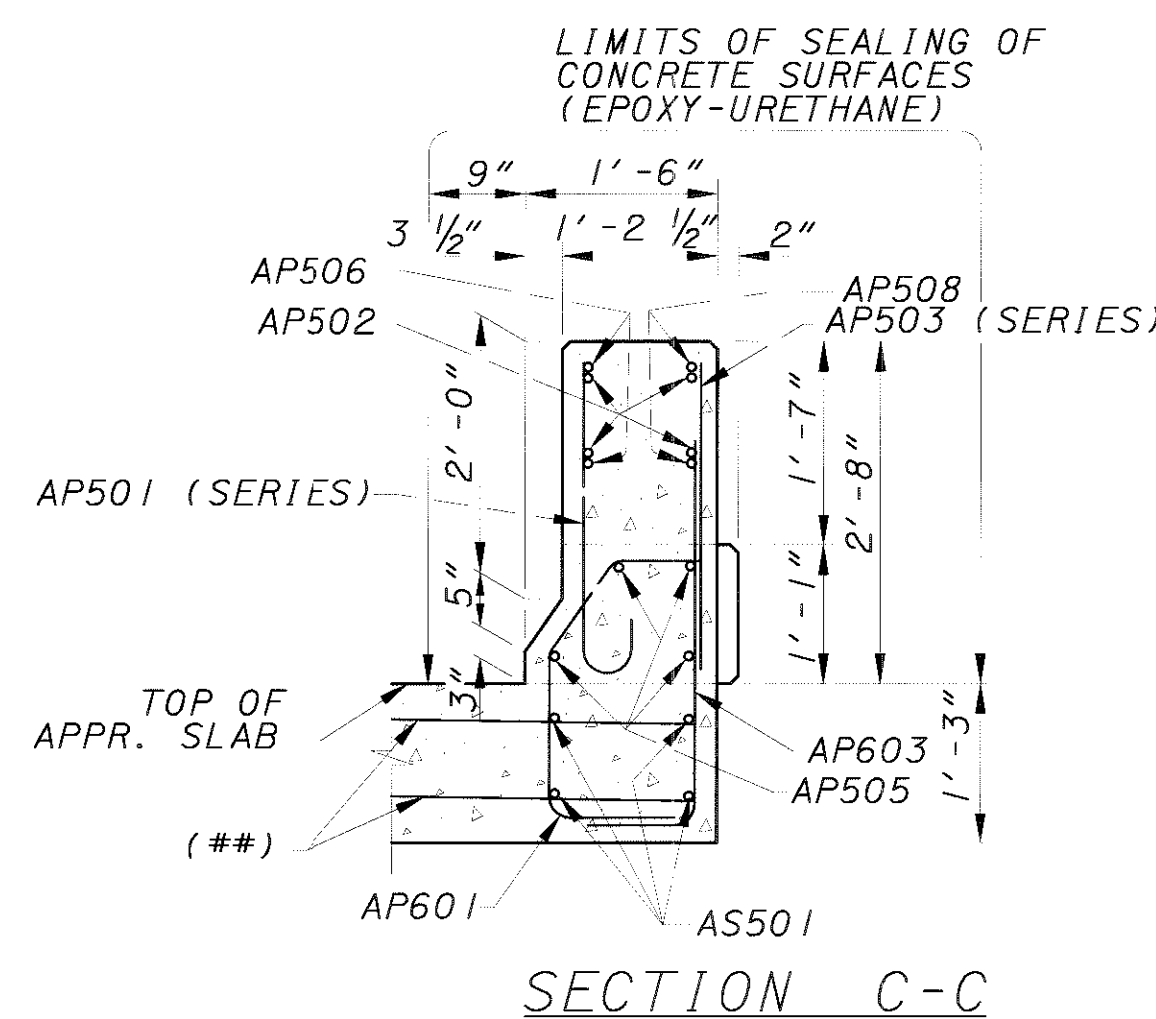
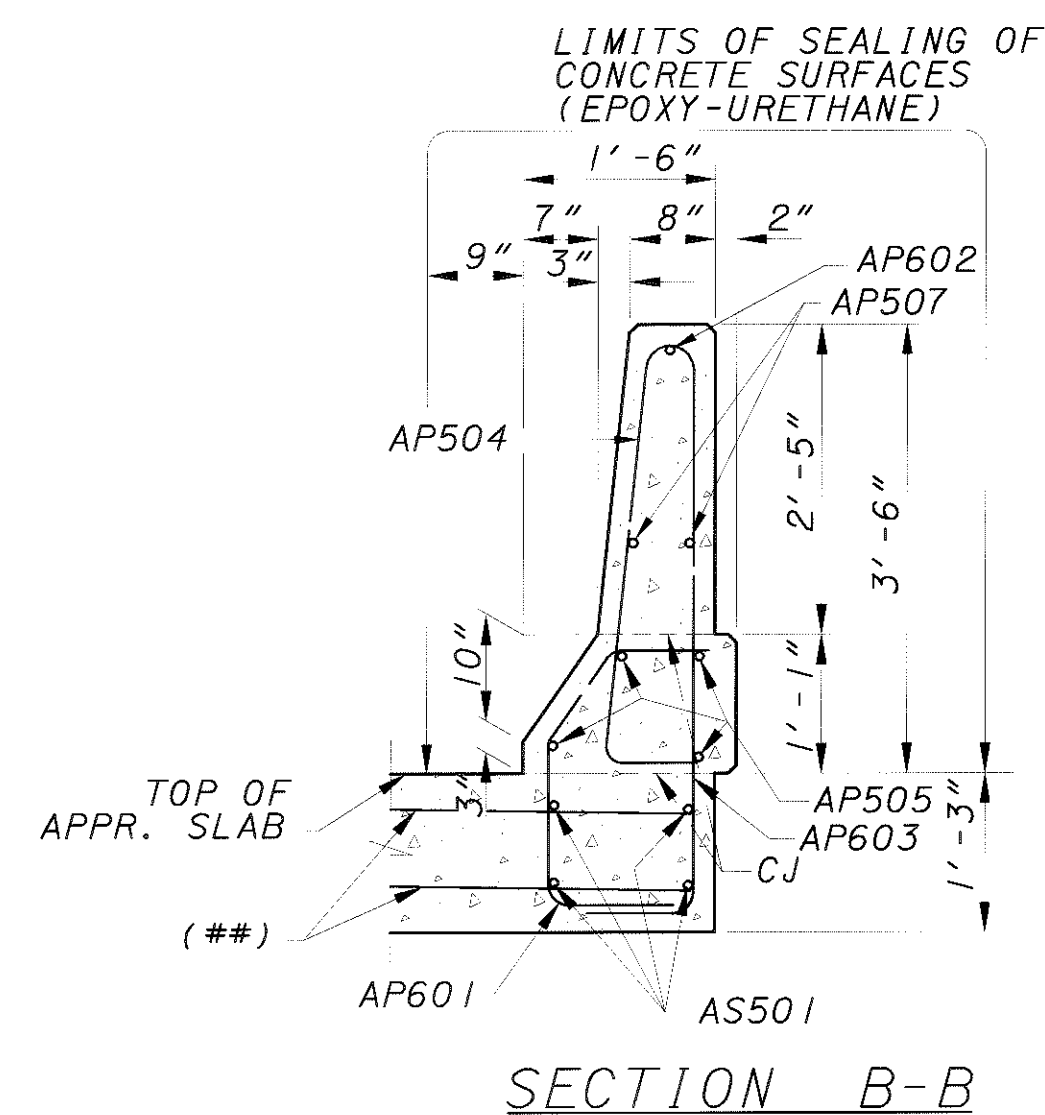


**NOTES:**

1. FOR DETAILS NOT SHOWN REFER TO STD. DWG. BR-1.
  2. ALL LONGITUDINAL BARS IN PARAPET PORTION OF SECTIONS B-B AND C-C ARE S516 BARS UNO.
  3. SEE SECTIONS FOR SEALING OF CONCRETE SURFACES LIMITS.
  4. ALL REINFORCEMENT CLEARANCE SHALL BE 2" MINIMUM.
  5. AS501 BARS IN APPROACH SLAB BELOW PARAPET SHALL BE 17'-8" LONG. INCLUDE PAYMENT WITH ROADWAY ITEM 611 - REINFORCED CONCRETE APPROACH SLAB, AS PER PLAN.
  6. PARAPET ON APPROACH SLAB SHALL BE HIGH PERFORMANCE CONCRETE AS PER ITEM 894. INCLUDE PAYMENT OF APPROACH SLAB PARAPET CONCRETE, SEALING AND REINFORCEMENT WITH ITEM 611 - REINFORCED CONCRETE APPROACH SLAB, AS PER PLAN.
- ## EXTEND APPROACH SLAB TRANSVERSE BARS AS REQUIRED. INCLUDE PAYMENT WITH ITEM 611 - REINFORCED CONCRETE APPROACH SLAB, AS PER PALN.



| MINIMUM LAP LENGTHS |          |
|---------------------|----------|
| #5                  | = 2'-5"  |
| #6                  | = 2'-11" |







# REINFORCING STEEL LIST

| MARK  | NO. | LENGTH | WEIGHT | TYPE | A          | B      | C      | INCR. |
|---|-----|--------|--------|------|------------|--------|--------|-------|
| <b>PIER DIAPHRAGM - LEFT BRIDGE</b><br>(PIERS 1, 2, 4, 5, 6, 8, 9, 10, 12, 13, 14, 16, 17)  |     |        |        |      |            |        |        |       |
| D401  | 325 | 12'-3" | 2659   | 14   | 0'-8"      | 4'-10" | 1'-8"  |       |
| D402  | 130 | 8'-6"  | 738    | 2    | 3'-6"      | 1'-8"  | 3'-6"  |       |
| D405  | 78  | 11'-0" | 573    | 18   | 5 1/2"     | 5'-4"  |        |       |
| D406  | 78  | 6'-11" | 360    | 17   | 4'-9"      | 0'-7"  | 0'-8"  |       |
| D407  | 78  | 4'-9"  | 247    | 16   | 1'-11 1/2" | 6 1/4" | 8 1/2" |       |
| D601  | 390 | 8'-2"  | 4783   | STR  |            |        |        |       |
| D802  | 520 | 9'-9"  | 13,588 | 15   | 0'-8"      | 3'-3"  | 5'-8"  |       |
| <b>PIER DIAPHRAGM AT INTERMEDIATE EXP. JT. - LEFT BRIDGE</b><br>(PIERS 3, 7, 11, 15)  |     |        |        |      |            |        |        |       |
| D403  | 464 | 7'-8"  | 2376   | 2    | 3'-4"      | 1'-2"  | 3'-4"  |       |
| D404  | 192 | 6'-6"  | 834    | 2    | 2'-9"      | 1'-2"  | 2'-9"  |       |
| D601  | 240 | 8'-2"  | 2944   | STR  |            |        |        |       |
| D602  | 96  | 3'-1"  | 445    | STR  |            |        |        |       |
| D802  | 320 | 9'-9"  | 8330   | 15   | 0'-8"      | 3'-3"  | 5'-8"  |       |
| D803  | 64  | 6'-8"  | 1139   | 15   | 0'-8"      | 3'-3"  | 2'-6"  |       |
| <b>ABUTMENT DIAPHRAGM - LEFT BRIDGE</b>   |     |        |        |      |            |        |        |       |
| D403  | 116 | 7'-8"  | 594    | 2    | 3'-4"      | 1'-2"  | 3'-4"  |       |
| D404  | 48  | 6'-6"  | 208    | 2    | 2'-9"      | 1'-2"  | 2'-9"  |       |
| D601  | 60  | 8'-2"  | 736    | STR  |            |        |        |       |
| D602  | 24  | 3'-1"  | 111    | STR  |            |        |        |       |
| D802  | 80  | 9'-9"  | 2083   | 15   | 0'-8"      | 3'-3"  | 5'-8"  |       |
| D803  | 16  | 6'-8"  | 285    | 15   | 0'-8"      | 3'-3"  | 2'-6"  |       |
| LT. BRIDGE DIAPHRAGMS = 43,033<br>LT. BRIDGE ABUTMENTS = 15,249<br>LT. BRIDGE PIERS = 45,950<br>LT. BRIDGE APPR. PARAPETS = 2080<br>LT. BRIDGE SUPERSTRUCTURE = 1,104,321<br><br><b>TOTAL FOR LEFT BRIDGE = 1,210,633 POUNDS **</b> |     |        |        |      |            |        |        |       |

**NOTES:**

1. FOR BAR BENDING DIAGRAMS AND NOTES SEE SHEET [37/41].

\*\* FOR INFORMATION PURPOSE ONLY.

|   |  |   |             |                 |
|---|--|---|-------------|-----------------|
| REINFORCING STEEL LIST<br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON | MAH-76-0.86  | 38 / 41   | 96AL<br>102 | CONCRETE OPTION |
| DESIGNED: KVB<br>CHECKED: ASB<br>DRAWN: CLH<br>REVISED:                         | DATE: 04/06/01<br>REVISED: CEA<br>STRUCTURE FILE NUMBER: 5002T02L & 5002T3TR | PROJECT: BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0507 FAX |             |                 |

# ITEM SPECIAL - STRUCTURE, MISC.: METALLIZING THE EXISTING STEEL PILES

## DESCRIPTION

THIS ITEM SHALL CONSIST OF FURNISHING ALL MATERIALS, LABOR AND INCIDENTALS FOR METALLIZING THE EXISTING STEEL SURFACES AS SPECIFIED HEREIN. IT INCLUDES THE METALLIZING AND SEALING OF ALL EXPOSED SURFACES OF EXISTING PIER PILES (FROM LOW WATER ELEVATION TO BOTTOM OF PIER CAPS) LOW WATER ELEVATION OF 942.0 +/- WHICH ONLY OCCURS DURING THE PERIOD (JANUARY 1 TO MARCH 15).

ALL METALLIZING WORK SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A QUALITY CONTROL SPECIALIST (QCS) EXPERIENCED IN THE FIELD OF METALLIZING. PRIOR TO THE PRE-CONSTRUCTION MEETING OR THE BEGINNING OF ANY WORK ON THIS PROJECT, THE CONTRACTOR SHALL SUBMIT WRITTEN DOCUMENTATION OF THE QCS'S SUCCESSFUL METALLIZING EXPERIENCES WITH BRIDGE STRUCTURAL STEEL IN THE FIELD, INCLUDING: NAME OF FIRM DOING METALLIZING, NUMBER AND LOCATION OF JOBS COMPLETED, AND NUMBER OF YEARS OF EXPERIENCE. HE SHALL POSSESS KNOWLEDGE AND EXPERIENCE IN ALL AREAS OF THE METALLIZING WORK, INCLUDING SURFACE PREPARATION, METALLIZING, AND CLEAR PHENOLIC TOP COAT APPLICATION REQUIRED BY THIS SPECIFICATION. THIS DOCUMENTATION MUST BE REVIEWED, VERIFIED, AND APPROVED BY THE OFFICE OF STRUCTURAL ENGINEERING PRIOR TO BEGINNING THE WORK ON THIS PROJECT.

THE CONTRACTOR IS ADVISED THAT HEATED ENCLOSURES AND WINTER PROTECTION SHALL BE REQUIRED TO PERFORM THE REQUIRED PIER PILE METALLIZING AS DETAILED ON PLAN PAGE 41/41 AND 39/41. THIS REQUIREMENT INCIDENTAL TO THE UNIT BID PROVIDED IN THE PLANS FOR THE METALLIZATION PROCESS OF EXISTING STEEL.

THE FOLLOWING IS A PARTIAL LIST OF COMPANIES EXPERIENCED IN METALLIZING:

|  |  |   |
|--|--|---|
| LONG PAINTING CO.<br>8025 TENTH AVENUE S.<br>SEATTLE, WA 98108 | CANNON/SLINE, INC.<br>5600 WOODLAND AVENUE<br>PHILADELPHIA, PA 19143 | NATIONAL THERMAL SPRAY<br>117 BROOK AVENUE<br>DEER PARK, NY 44301 |
|--|--|---|

|   |  |
|---|--|
| POWER SPRAY<br>1409 AIR RAIL AVENUE<br>VIRGINIA BEACH, VA 23455 | NEWSOME & WORK METALLIZING CO.<br>P.O. BOX 2791<br>AKRON, OH 44301 |
|---|--|

|  |   |
|--|---|
| METALLIZING MASTERS, INC.<br>15255 GAZELL DRIVE N.E.<br>ALLIANCE, OH 44601 | TRI-STATE METAL SPRAY & BLASTING, INC.<br>5676 ERIE AVENUE N.W.<br>CANAL FULTON, OH 44614 |
|--|---|

## MATERIAL AND SPECIFICATIONS

### WIRE

THE WIRE USED FOR THE METALLIZING SHALL BE 100% ZINC

### THICKNESS

THE THICKNESS OF THE METALLIZED COATING SHALL BE 8 - 10 MILS.

### MANUFACTURER

SUFFICIENT IDENTIFIABLE CHARACTERISTICS OTHER THAN TRADE OR BRAND NAME OR DESIGNATED NUMBER OR SYMBOL SHOULD BE PROVIDED TO PERMIT LABORATORY TEST VERIFICATION OF METAL IDENTITY. EACH CONTAINER OR COIL WRAPPING SHALL BE EXAMINED TO VERIFY THE PRESENCE OF A PROPER LABEL IDENTIFYING COMPONENT TYPE, SUPPLIER, SIZE, BATCH NUMBER AND WIRE LOT NUMBER.

### MATERIALS, HANDLING & USE

EACH CONTAINER OR COIL SHALL BE EXAMINED FOR DAMAGE. BROKEN OR BENT COILS SHALL BE MARKED, SEGREGATED FOR RETURN AND REMOVED FROM THE MATERIAL AREA. MATERIALS SHALL BE PROMPTLY STOCKED AND/OR ARRANGED IN THE CONTROLLED STORAGE UNIT.

### PRIOR INSPECTION OF WORK

PROSPECTIVE BIDDERS ARE REQUIRED TO MAKE AN INSPECTION OF THE BRIDGE IN THE FIELD AND TO REVIEW THE PLANS AND SPECIFICATIONS BEFORE SUBMITTING BIDS. SEE SECTION 102.05 OF THE "CONSTRUCTION AND MATERIALS SPECIFICATION".

### SURFACE PREPARATION

THIS WORK SHALL CONSIST OF SOLVENT CLEANING (IF REQUIRED) AND ABRASIVE CLEANING OF PIER PILES OF EACH STRUCTURE.

### SOLVENT CLEANING

IF EVIDENCE OF OIL, GREASE OR OTHER OIL BASED CONTAMINANTS EXISTS, THE SURFACES SHALL BE SOLVENT CLEANED TO REMOVE ALL TRACES OF ASPHALTIC CEMENT, OIL GREASE, DIESEL FUEL DEPOSITS AND OTHER SOLUBLE CONTAMINANTS (SEE SSPC-SP 1, SOLVENT CLEANING FOR RECOMMENDED PRACTICES). UNDER NO CIRCUMSTANCES SHALL ANY ABRASIVE BLASTING BE DONE TO AREAS WITH ASPHALTIC CEMENT, OIL, GREASE OR DIESEL FUEL DEPOSITS. ALL SOLVENT CLEANED AREAS SHALL BE SUBSEQUENTLY WASHED BEFORE ABRASIVE BLASTING AS DETAILED BELOW.

WASHING SHALL BE ACCOMPLISHED WITH POTABLE WATER HAVING A NOZZLE PRESSURE OF AT LEAST 1000 PSI AND A DELIVERY RATE OF NOT LESS THAN 4 GALLONS PER MINUTE. THE CONTRACTOR SHALL PROVIDE EQUIPMENT SPECIFICATIONS TO VERIFY THE ABOVE.

THE EQUIPMENT SHALL ALSO BE EQUIPPED WITH GAUGES TO VERIFY THE PRESSURE. THE NOZZLE SHALL BE HELD AT A MAXIMUM OF TWELVE (12) INCHES FROM THE SURFACE BEING WASHED.

### CONTAINMENT/WASTE DISPOSAL

WASTE MATERIAL GENERATED BY ABRASIVE BLASTING OPERATIONS SHALL BE HANDLED AS FOLLOWS:

1. CONTAINED
2. COLLECTED
3. STORED
4. EVALUATED
5. PROPERLY DISPOSED

ALL EQUIPMENT SHALL BE PARKED ON GROUND COVERS FREE OF CUTS, TEARS OR HOLES TO PREVENT CONTAMINATION OF PAVEMENT OR SOIL AND TO PROTECT AREA UNDER AND AROUND EQUIPMENT.

THE CONTRACTOR SHALL ERECT ENCLOSURES TO COMPLETELY SURROUND (AROUND AND UNDER) THE BLASTING OPERATIONS. THE GROUND AND WATER SURFACE CANNOT BE USED AS THE BOTTOM OF THE ENCLOSURE UNLESS COMPLETELY COVERED WITH PLASTIC OR TARPS.

ENCLOSURES SHALL BE CONSTRUCTED OF FLEXIBLE MATERIALS SUCH AS TARPULINS OR CONTAINMENT SCREENS (SPECIFICALLY DESIGNED FOR THIS PURPOSE), OR OF RIGID MATERIALS SUCH AS PLYWOOD. ALL MATERIALS SHALL BE MAINTAINED FREE OF TEARS, CUTS OR HOLES; HOWEVER, FLEXIBLE MATERIAL USED FOR THE SIDES OF THE ENCLOSURE ONLY MAY BE WOVEN TO CONTAIN A MAXIMUM OF 15% HOLES AND A MINIMUM OF 85% MATERIAL. ALL SEAMS SHALL BE OVERLAPPED A MINIMUM OF 6" AND FASTENED TOGETHER AT 12" CENTERS, OR FASTENED AND OVERLAPPED IN A MANNER THAT INSURES A SEAL WHICH DOES NOT ALLOW OPENINGS BETWEEN THE SCREENS IN THE CONTAINMENT. THE VERTICAL SIDES OF THE ENCLOSURE SHALL EXTEND COMPLETELY UP TO THE BOTTOM OF THE DECK ON A STEEL BEAM BRIDGE AND UP TO AND OVER TOP OF A TRUSS BRIDGE. BULKHEADS SHALL BE USED BETWEEN BEAMS TO ENCLOSE THE BLASTING AREA.

ALL DEBRIS COLLECTED BY THIS OPERATION OR REMOVED FROM EQUIPMENT OR FILTERS, SHALL BE COLLECTED AND STORED AT THE BRIDGE SITE, IF PRACTICAL FOR TESTING, EVALUATION AND DISPOSAL. IF NOT PRACTICAL, AN ALTERNATE LOCATION SHALL BE MUTUALLY AGREED UPON BY THE ENGINEER AND CONTRACTOR. ADDITIONALLY, CENTRALIZED CLEANING STATIONS FOR RECYCLABLE STEEL GRIT (IF USED) SHALL BE SET UP AT A LOCATION MUTUALLY AGREED UPON BY THE CONTRACTOR AND ENGINEER. STORAGE SHALL BE IN STEEL CONTAINERS WHICH SHALL HAVE LIDS WHICH SHALL BE LOCKED AT THE END OF EACH WORKDAY.

THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A TESTING LABORATORY TO OBTAIN DIRECTLY FROM THE PROJECT SITE AND EVALUATE A COMPOSITE REPRESENTATIVE SAMPLE OF THE ABRASIVE BLASTING DEBRIS FOR EACH BRIDGE SITE.

THE COMPOSITE SAMPLE SHALL CONSIST OF INDIVIDUAL SAMPLES TAKEN FROM ALL CONTAINERS THAT ARE ON THE SITE AT THE TIME OF THE SAMPLING. THESE INDIVIDUAL SAMPLES SHALL BE BLENDED TOGETHER TO COMPRISE ONE COMPOSITE SAMPLE. THE INDIVIDUAL SAMPLES SHALL BE OF EQUAL SIZE. THERE SHALL BE ONE INDIVIDUAL SAMPLE TAKEN FROM EACH DRUM AND FOUR RANDOMLY SPACED INDIVIDUAL SAMPLES TAKEN FROM EACH CONTAINER OTHER THAN DRUMS.

THE INDIVIDUAL SAMPLES SHALL BE TAKEN WITH STAINLESS STEEL TOOLS AND PLACED INTO EITHER CLEAN GLASS OR PLASTIC CONTAINERS.

ALL SAMPLING SHALL BE DONE IN THE PRESENCE OF THE ENGINEER. IN ADDITION TO THE ABOVE MENTIONED REQUIREMENTS, THE SAMPLING SHALL ALSO COMPLY WITH THE REQUIREMENTS OF U.S. EPA PUBLICATION SW 846.

A CHAIN OF CUSTODY MUST ALSO ACCOMPANY ALL COMPOSITE SAMPLES. INCLUDED IN THIS DOCUMENT SHALL BE THE NAME OF THE PERSON TAKING THE SAMPLE, THE COMPANY FOR WHICH HE WORKS, THE DATE AND TIME THAT THE SAMPLE WAS TAKEN, THE BRIDGE FROM WHICH IT WAS TAKEN, THE TOWNSHIP AND MUNICIPALITY WHERE THE BRIDGE IS LOCATED, AND SIGNATURES OF ALL PERSONS INVOLVED IN THE CHAIN OF CUSTODY, INCLUDING DATES OF POSSESSION.

THE SAMPLING SHALL BE DONE WITHIN THE FIRST WEEK OF PRODUCTION BLASTING. IF THE SAMPLING IS NOT DONE WITHIN THE TIME ALLOTTED ABOVE, ALL BLASTING AND COATING OPERATIONS ON THE BRIDGE FROM WHICH WASTE WAS GENERATED SHALL PROMPTLY CEASE.

THE COMPOSITE SAMPLE SHALL BE TESTED FOR LEAD AND CHROMIUM IN ACCORDANCE WITH U.S. EPA PUBLICATION SW 846. THE TEST RESULTS AND CHAIN OF CUSTODY RECORDS SHALL IMMEDIATELY BE FORWARDED TO THE DIRECTOR. IF THE MATERIAL IS HAZARDOUS, THE CONTRACTOR SHALL ALSO FORWARD THE NAMES OF THE HAULER AND TREATMENT FACILITY TO THE DIRECTOR. ANY ADDITIONAL TESTING REQUIRED BY THE HAULER, TREATMENT FACILITY OR LANDFILL WILL BE PAID FOR BY CONTRACTOR.

ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL PROTECTION LAWS, REGULATIONS AND ORDINANCES INCLUDING, BUT NOT LIMITED TO, AIR QUALITY, WASTE CONTAINMENT AND WASTE REMOVAL MUST BE OBSERVED DURING THE PERFORMANCE OF THIS CONTRACT.

IN RESPECT TO ENFORCEMENT OF THE ABOVE MENTIONED LAWS, BIDDERS ARE ADVISED THAT VARIOUS GOVERNMENTAL BODIES HAVE THIS RESPONSIBILITY. IT IS THE RESPONSIBILITY OF THE BIDDERS TO COMPLY WITH THOSE LAWS AS ENFORCED BY THOSE VARIOUS GOVERNMENTAL BODIES.

THE EXISTING PAINT BEING REMOVED FROM THIS BRIDGE MAY CONTAIN LEAD OR CHROMIUM. THE CONTRACTOR IS RESPONSIBLE TO ASSURE THAT WORKERS TAKE PROPER SAFETY PRECAUTIONS WHEN WORKING IN THIS ENVIRONMENT (SEE BID PROPOSAL NOTE ENTITLED "SAFETY").

### HAZARDOUS WASTE

IF THE TESTS REVEAL THAT THE MAXIMUM CONCENTRATION OF EITHER LEAD OR CHROMIUM EXCEEDS 5.0 MILLIGRAMS PER LITER, THE WASTE SHALL BE TREATED AS A HAZARDOUS WASTE AND THE STEEL CONTAINERS SHALL BE LABELED AS A HAZARDOUS WASTE. THE DIRECTOR WILL THEN OBTAIN A GENERATOR NUMBER ASSIGNED TO THE STATE.

ALL CONTAINERS OF WASTE MATERIAL WHICH HAVE BEEN CLASSIFIED AS HAZARDOUS SHALL BE STORED IN A SECURED LOCATION UNTIL PROPER DISPOSAL. THE STORAGE SITE SHALL BE SURROUNDED WITH 5'-0" HIGH CHAIN LINK FENCE FABRIC SUPPORTED BY TRAFFIC SIGN DRIVE POSTS AT 10' C/C. DRIVE POSTS SHALL BE EMBEDDED INTO THE GROUND AT LEAST 2'-0" DEEP. THE FENCING SHALL BE SECURED WITH PADLOCKS AT THE END OF EACH DAY. SIGNS SHALL BE POSTED IN OBVIOUS LOCATIONS ON THE ENCLOSURE WARNING OF THE HAZARDOUS MATERIAL.

CONCRETE OPTION

|  |                  |               |              |                |                 |                     |
|--|------------------|---------------|--------------|----------------|-----------------|---------------------|
| SECTION AGENCY<br>BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>04/06/01 | RETIRED<br>GE | DRAWN<br>CLH | CHECKED<br>KVB | DESIGNED<br>ASB | 5002702L & 5002737R |
| METALLIZING THE EXISTING STEEL PILES-PLAN NOTES<br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON                     |                  |               |              |                |                 |                     |
| MAH-76-0.86  |                  |               |              |                |                 |                     |
| 39 / 41  |                  |               |              |                |                 |                     |
| 96AM<br>102  |                  |               |              |                |                 |                     |

# ITEM SPECIAL - STRUCTURE, MISC.: METALLIZING THE EXISTING STEEL PILES (CONT.)

THE CONTRACTOR SHALL THEN ARRANGE FOR HAULING, TREATING AND DISPOSAL OF ALL HAZARDOUS WASTE. ALL HAZARDOUS WASTE SHALL BE DISPOSED OF AFTER THE DIRECTOR HAS OBTAINED A GENERATOR NUMBER. IN EVERY CASE, ANY AND ALL HAZARDOUS WASTE SHALL BE DISPOSED OF WITHIN SIXTY DAYS AFTER IT IS GENERATED. FAILURE TO COMPLY WITH THE SIXTY (60) DAY DISPOSAL REQUIREMENT SHALL BE CONSIDERED BY THE DEPARTMENT AS A BREACH OF CONTRACT BY THE CONTRACTOR AND ALL ABRASIVE BLASTING AND COATING OF STRUCTURAL STEEL ON THE PROJECT SHALL IMMEDIATELY CEASE UNTIL THE HAZARDOUS WASTE IS PROPERLY DISPOSED. UPON SUCH BREACH, THE DEPARTMENT SHALL CEASE PROCESSING ALL PAY ESTIMATES AND NOTIFICATION OF THE BREACH SHALL BE SENT TO THE CONTRACTOR'S SURETY. FURTHER, ANY FINES OR LIENS ACCESSED BY ANY GOVERNMENTAL AGENCY WHICH HAS JURISDICTION OVER THE DISPOSAL OF THIS MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE HAULING AND DISPOSAL SHALL BE BY A FIRM LICENSED BY U.S. EPA AND WHO SHALL ALSO BE RESPONSIBLE FOR PROVIDING THE UNIFORM HAZARDOUS WASTE MANIFEST (EPA FORM 8700-22A).

THE CONTRACTOR SHALL DECONTAMINATE OR DISPOSE OF ALL COLLECTION/CONTAINMENT EQUIPMENT IN ACCORDANCE WITH EPA GUIDELINES.

## NON-HAZARDOUS SOLID WASTE

IF THE WASTE IS DETERMINED TO BE NON-HAZARDOUS AS VERIFIED BY TEST RESULTS WHICH HAVE BEEN REVIEWED BY THE DIRECTOR, IT SHALL BE HAULED AND DISPOSED OF AT A FACILITY WHICH IS LICENSED TO ACCEPT NON-HAZARDOUS SOLD WASTE. PRIOR TO DISPOSAL OF ANY MATERIAL, THE CONTRACTOR SHALL SUBMIT THE TEST RESULTS AND THE NAME AND ADDRESS OF THE PROPOSED DISPOSAL FACILITY TO THE DIRECTOR FOR APPROVAL. THE CONTRACTOR SHALL OBTAIN AND PROVIDE THE ENGINEER WITH A RECEIPT DOCUMENTING DISPOSAL OF WASTE MATERIAL AT THE APPROVED LANDFILL.

## ABRASIVE BLASTING

ALL STEEL TO BE COATED SHALL BE BLAST-CLEANED ACCORDING TO SSPS-SPI0 AND AS SHOWN SSPC-VIS 1-89 (PICTORIAL SURFACE PREPARATION STANDARDS FOR PAINTING STEEL SURFACES). STEEL SHALL BE MAINTAINED IN A BLAST-CLEANED CONDITION UNTIL IT HAS BEEN METALLIZED.

GALVANIZED STEEL (INCLUDING CORRUGATED STEEL BRIDGE FLOORING), ADJACENT CONCRETE WHICH HAS BEEN COATED OR SEALED, AND OTHER SURFACES NOT INTENDED TO BE COATED, SHALL BE COVERED AND PROTECTED TO PREVENT DAMAGE FROM BLASTING AND METALLIZING OPERATIONS. ANY ADJACENT COATINGS DAMAGED DURING THE BLASTING OPERATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

THE ABRASIVE SHALL BE A RECYCLABLE STEEL GRIT. AFTER EACH USE AND PRIOR TO REUSE, THE STEEL GRIT SHALL BE CLEANED OF PAINT CHIPS, RUST, MILL SCALE AND OTHER FOREIGN MATERIAL BY EQUIPMENT SPECIFICALLY DESIGNED FOR SUCH CLEANING.

ABRASIVES SHALL ALSO BE CHECKED FOR OIL CONTAMINATION BEFORE USE. A SMALL SAMPLE OF ABRASIVES SHALL BE ADDED TO ORDINARY TAP WATER. ANY DETECTION OF AN OIL FILM ON THE SURFACE OF THE WATER SHALL BE CAUSE FOR REJECTION. THIS TEST SHALL BE CONDUCTED ON EACH LOAD OF ABRASIVES DELIVERED TO THE JOB SITE.

THE RESULTANT SURFACE PROFILE SHALL BE A MINIMUM OF TWO (2) MILS AND A MAXIMUM OF THREE AND ONE HALF (3.5) MILS. ABRASIVES OF A SIZE SUITABLE TO DEVELOP THE REQUIRED SURFACE PROFILE SHALL BE USED. ANY ABRASIVE BLASTING WHICH IS DONE WHEN THE STEEL TEMPERATURE IS LESS THAN 5 DEGREES ABOVE THE DEW POINT SHALL BE REBLASTED WHEN THE STEEL TEMPERATURE IS AT LEAST 5 DEGREES ABOVE THE DEW POINT. DEW POINT SHALL BE DEFINED AS THE TEMPERATURE AT WHICH MOISTURE CONDENSES ON THE STEEL SURFACES.

WHILE CONTAINMENT ENCLOSURES ARE IN PLACE, ALL ABRASIVES AND RESIDUE SHALL BE REMOVED FROM SURFACES TO BE METALLIZED BY DOUBLE BLOWING. DOUBLE BLOWING SHALL CONSIST OF TWO COMPLETELY SEPARATE PASSES. THE SURFACES OF ALL STRUCTURAL STEEL TO BE METALLIZED SHALL THEN BE VACUUMED. THE VACUUM SYSTEM SHALL BE EQUIPPED WITH A BRUSH TYPE CLEANING TOOL. ALL STEEL BLAST-CLEANED IN ANY ONE DAY SHALL BE KEPT DUST FREE AND COATED THE SAME DAY. FAILURE TO COAT THE SAME DAY WILL REQUIRE REBLASTING BEFORE COATING. NO DUST OR ABRASIVES FROM ADJACENT WORK SHALL BE LEFT ON THE FINISH COAT.

THE COMPRESSED AIR SOURCE SHALL BE TESTED TO INSURE THAT THE AIR IS NOT CONTAMINATED: BLOW AIR FROM THE NOZZLE FOR THIRTY (30) SECONDS ONTO A WHITE CLOTH OR BLOTTER HELD IN A RIGID FRAME. IF ANY OIL OR OTHER CONTAMINANTS ARE PRESENT ON THE CLOTH OR BLOTTER, ABRASIVE BLASTING SHALL BE SUSPENDED UNTIL

THE PROBLEM IS CORRECTED AND THE OPERATION IS VERIFIED BY ANOTHER TEST. THIS TEST SHALL BE DONE AT THE START OF EACH SHIFT AND AT FOUR (4) HOUR INTERVALS. THE ABRASIVE SHALL BE TESTED FOR OIL CONTAMINATION AT THE SAME TIME.

THE MATERIAL SAFETY DATA SHEET (MSDS) SHALL BE PROVIDED AT THE PRECONSTRUCTION MEETING FOR ALL ABRASIVES TO BE USED ON THIS PROJECT. NO WORK SHALL START UNTIL THE MSDS HAS BEEN SUBMITTED.

## FINS, TEARS, SLIVERS

ALL FINS, TEARS, SLIVERS OR ANY OTHER BURRED OR SHARP EDGES THAT BECOME EVIDENT AFTER ABRASIVE BLASTING SHALL BE REMOVED BY GRINDING. ALL GROUND SURFACES SHALL BE RETEXTURED TO PRODUCE A PROFILE OF 2 TO 3.5 MILS.

## JOB SITE VISUAL STANDARDS

JOB SITE VISUAL STANDARDS INCLUDE PREPARATION OF TEST SECTION, SUBSEQUENT TEST SECTION, AND PHOTOGRAPHS OF APPROVED TEST SECTION. JOB SITE VISUAL STANDARDS SHALL BE USED IN ADDITION TO THE SSPC-VIS-1-89 STANDARD FOR BLASTING. BEFORE ANY ABRASIVE BLASTING IS STARTED, THE CONTRACTOR WILL PREPARE A TEST SECTION ON THE FIRST BRIDGE TO BE COATED. THE TEST SECTION WILL BE A REPRESENTATIVE AREA TO BE BLAST-CLEANED (APPROXIMATELY 20 - 30 SQ. FT.). THE TEST SECTION AREA SHALL BE PHOTOGRAPHED AND THE STEEL SURFACE CHECKED FOR THE PROPER PROFILE AFTER THE ENGINEER AND THE CONTRACTOR AGREE THAT THE AREA HAS BEEN BLAST-CLEANED ACCORDING TO PLAN REQUIREMENTS. ONLY AFTER A TEST SECTION AREA HAS BEEN APPROVED AND DOCUMENTED BY PHOTOGRAPHS AND REPLICA TAPE MAY THE

CONTRACTOR PROCEED WITH HIS BLAST-CLEANING OPERATIONS. THE JOB SITE VISUAL STANDARDS (PHOTOGRAPHS) SHALL BE USED IN ADDITION TO PLAN SPECIFICATIONS TO DETERMINE ACCEPTANCE OF BLAST-CLEANING PROCEDURES, BUT IN ALL CASES OF DISPUTE, THE SSPC-VIS-1-89 STANDARD SHALL GOVERN. IF, IN THE OPINION OF THE CONTRACTOR OR ENGINEER, A SUBSEQUENT BRIDGE IS NOT INDICATIVE OF THE BRIDGE ON WHICH THE TEST SECTION WAS PERFORMED, HE MAY REQUEST ANOTHER TEST SECTION.

## TESTING EQUIPMENT

THE CONTRACTOR SHALL PROVIDE THE ENGINEER THE FOLLOWING TESTING EQUIPMENT IN GOOD WORKING ORDER, FOR THE DURATION FOR THE PROJECT. WHEN THE CONTRACTOR'S PEOPLE ARE WORKING AT DIFFERENT LOCATIONS SIMULTANEOUSLY, ADDITIONAL TEST EQUIPMENT SHALL BE PROVIDED FOR EACH CREW FOR THE TYPE OF WORK BEING PERFORMED. WHEN NO TEST EQUIPMENT IS AVAILABLE, NO WORK SHALL BE PERFORMED.

- A CAMERA WITH THE FOLLOWING FEATURES AND 5 (UNLESS OTHERWISE SPECIFIED ON PLANS) ROLLS OF COLOR FILM
  - USES SELF DEVELOPING COLOR PRINT FILM
  - LENS WITH AUTO FOCUS SYSTEM
  - FOCUSES FROM TWO (2) FEET TO INFINITY
  - BUILT-IN FULL FLASH
- ONE (1) SPRING MICROMETER AND 1 ROLL OF COARSE AND 3 (UNLESS OTHERWISE SPECIFIED ON PLANS) ROLLS OF EXTRA COARSE REPLICA TAPE
- ONE (1) POSITECTOR 2000 OR 6000, QUANIX 2200, OR ELCOMETER A345FB11, AND THE CALIBRATION PLATES AS PER THE NBS CALIBRATION STANDARDS IN ACCORDANCE WITH ASTM D-1186
- ONE (1) SLING PSYCHROMETER INCLUDING PSYCHROMETRIC TABLES, USED TO CALCULATE RELATIVE HUMIDITY AND DEW POINT TEMPERATURE
- TWO (2) STEEL SURFACE THERMOMETERS, ACCURATE WITHIN TWO DEGREES OR ONE PORTABLE INFRARED THERMOMETER AVAILABLE FROM:
 

MODEL: RAYNGER ST SERIES (-18°C TO 400°C)  
MANUFACTURER: RLAYTEK, INC.  
SANTA CRUZ, CA

OR APPROVED EQUAL
- FLASHLIGHT 2-D CELL
- SSPC VISUAL STANDARD FOR ABRASIVE BLAST-CLEANED STEEL SSPC-VIS-1-89
- RECORDER THERMOMETER WITH 12 HOUR CAPACITY

## INSPECTION ACCESS

IN ADDITION TO THE REQUIREMENTS OF 105.11, THE CONTRACTOR SHALL FURNISH, ERECT, AND MOVE SCAFFOLDING AND OTHER APPROPRIATE EQUIPMENT TO PERMIT THE INSPECTOR THE OPPORTUNITY TO INSPECT (CLOSELY OBSERVE) ALL AFFECTED SURFACES. THIS OPPORTUNITY SHALL BE PROVIDED TO THE INSPECTOR DURING ALL PHASES OF THE WORK AND CONTINUE FOR A PERIOD OF AT LEAST TEN (10) WORKING DAYS AFTER EACH STRUCTURE HAS BEEN COMPLETELY COATED.

WHEN SCAFFOLDING OR THE HANGERS ATTACHED TO THE SCAFFOLDING ARE SUPPORTED BY HORIZONTAL WIRE ROPES, OR WHEN SCAFFOLDING IS PLACED DIRECTLY UNDER THE SURFACE TO BE COATED, THE FOLLOWING REQUIREMENTS SHALL BE COMPLIED WITH:

WHEN SCAFFOLDING IS SUSPENDED FORTY-THREE INCHES OR MORE BELOW THE SURFACE TO BE COATED, TWO GUARDRAILS SHALL BE PLACED ON ALL SIDES OF THE SCAFFOLDING. ONE GUARDRAIL SHALL BE PLACED AT FORTY-TWO INCHES ABOVE THE SCAFFOLDING AND THE OTHER GUARDRAIL AT TWENTY INCHES ABOVE THE SCAFFOLDING.

WHEN THE SCAFFOLDING IS SUSPENDED AT LEAST TWENTY-ONE INCHES, BUT LESS THAN FORTY-THREE INCHES, BELOW THE SURFACE TO BE COATED, ONE GUARDRAIL SHALL BE PLACED ON ALL SIDES OF THE SCAFFOLDING AT TWENTY INCHES ABOVE THE SCAFFOLDING.

TWO GUARDRAILS SHALL BE PLACED ON ALL SIDES OF SCAFFOLDING NOT PREVIOUSLY MENTIONED. THE GUARDRAILS SHALL BE PLACED AT FORTY-TWO AND TWENTY INCHES ABOVE SCAFFOLDING, AS PREVIOUSLY MENTIONED.

ALL SCAFFOLDING MUST BE AT LEAST TWENTY-FOUR INCHES WIDE WHEN GUARDRAIL IS USED, AND TWENTY-EIGHT INCHES WIDE WHEN THE SCAFFOLDING IS SUSPENDED LESS THAN TWENTY-ONE INCHES BELOW THE SURFACE TO BE PAINTED AND GUARDRAIL IS NOT USED. IF TWO OR MORE SCAFFOLDING ARE LAID PARALLEL TO ACHIEVE THE PROPER WIDTH, THEY MUST BE RIGIDLY ATTACHED TO EACH OTHER TO PRECLUDE ANY DIFFERENTIAL MOVEMENT.

ALL GUARDRAIL SHALL BE CONSTRUCTED AS A SUBSTANTIAL BARRIER WHICH IS SECURELY FASTENED IN PLACE AND IS FREE FROM PROTRUDING OBJECTS SUCH AS NAILS, SCREWS AND BOLTS. THERE SHALL BE AN OPENING IN THE GUARDRAIL, PROPERLY LOCATED, TO ALLOW THE INSPECTOR ACCESS ONTO THE SCAFFOLDING.

THE RAILS AND UPRIGHTS SHALL BE EITHER METAL OR WOOD. IF PIPE RAILING IS USED, THE RAILING SHALL HAVE A NOMINAL DIAMETER OF NO LESS THAN ONE AND ONE-HALF INCHES. IF STRUCTURAL STEEL RAILING IS USED, THE RAILS SHALL BE 2" X 2" X 3/8" STEEL ANGLES OR OTHER METAL SHAPES OF EQUAL OR GREATER STRENGTH. IF WOOD RAILING IS USED, THE RAILING SHALL BE 2" X 4" (NOMINAL) STOCK. ALL UPRIGHTS SHALL BE SPACED AT NO MORE THAN 8 FEET ON CENTER. IF WOOD UPRIGHTS ARE USED, THE UPRIGHTS SHALL BE 2" X 4" (NOMINAL) STOCK.

|  |                                     |
|--|-------------------------------------|
| DESIGN AGENCY<br><b>BARR ENGINEERING, INC.</b><br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215<br>(614) 224-1941, (614) 224-0907 FAX | DATE<br>04/06/01                    |
|  | REVISIONS<br>GE 50027021 & 5002737R |
| DRAWN<br>CLH   | CHECKED<br>ASB                      |
| <b>METALLIZING THE EXISTING STEEL PILES-PLAN NOTES</b><br>BRIDGE NO. MAH-76-0091 L & R<br>I-76 OVER LAKE MILTON                    |                                     |
| <b>MAH-76-0.86</b>   |                                     |
| 40 / 41  |                                     |
| 96AN<br>102  |                                     |

CONCRETE OPTION

# ITEM SPECIAL - STRUCTURE, MISC.: METALLIZING THE EXISTING STEEL PILES (CONT.)

WHEN THE SURFACE TO BE INSPECTED IS MORE THAN FIFTEEN FEET ABOVE THE GROUND OR WATER, AND THE SCAFFOLDING IS SUPPORTED FROM THE STRUCTURE BEING PAINTED, THE CONTRACTOR SHALL PROVIDE THE INSPECTOR WITH A SAFETY HARNESS (NOT A SAFETY BELT) AND LIFELINE. THE LIFELINE SHALL NOT ALLOW A FALL GREATER THAN SIX FEET. THE CONTRACTOR SHALL PROVIDE A METHOD OF ATTACHING THE LIFELINE TO THE STRUCTURE INDEPENDENT OF THE SCAFFOLDING, CABLES, OR BRACKETS SUPPORTING THE SCAFFOLDING.

WHEN SCAFFOLDING IS MORE THAN TWO AND ONE-HALF FEET ABOVE THE GROUND, THE CONTRACTOR SHALL PROVIDE A LADDER FOR ACCESS ONTO THE SCAFFOLDING. THE LADDER AND ANY EQUIPMENT USED TO ATTACH THE LADDER TO THE STRUCTURE SHALL BE CAPABLE OF SUPPORTING 250 POUNDS WITH A SAFETY FACTOR OF AT LEAST FOUR (4). ALL RUNGS, STEPS, CLEATS OR TREADS SHALL HAVE UNIFORM SPACING AND SHALL NOT EXCEED TWELVE INCHES ON CENTER. AT LEAST ONE SIDE RAIL SHALL EXTEND AT LEAST THIRTY-SIX INCHES ABOVE THE LANDING NEAR THE TOP OF THE LADDER.

AN ADDITIONAL LANDING SHALL BE REQUIRED WHEN THE DISTANCE FROM THE LADDER TO THE POINT WHERE THE SCAFFOLDING MAY BE ACCESSED EXCEEDS TWELVE INCHES. THE LANDING SHALL BE A MINIMUM OF AT LEAST TWENTY-FOUR INCHES WIDE AND TWENTY-FOUR INCHES LONG. IT SHALL ALSO BE OF ADEQUATE SIZE AND SHAPE SO THAT THE DISTANCE FROM THE LANDING TO THE POINT WHERE THE SCAFFOLDING IS ACCESSED DOES NOT EXCEED TWELVE INCHES. THE LANDING SHALL BE RIGID AND FIRMLY ATTACHED TO THE LADDER; HOWEVER, IT SHALL NOT BE SUPPORTED BY THE LADDER. THE SCAFFOLDING SHALL BE CAPABLE OF SUPPORTING A MINIMUM OF ONE THOUSAND POUNDS.

IN ADDITION TO THE AFOREMENTIONED REQUIREMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE TO OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS, ORDINANCES, REGULATIONS, ORDERS AND DECREES.

THE CONTRACTOR SHALL FURNISH ALL NECESSARY TRAFFIC CONTROL TO PERMIT INSPECTION DURING AND AFTER ALL PHASES OF THE PROJECT.

## APPLICATION

BEFORE ANY METALLIZING IS DONE, THE CONTRACTOR SHALL PREPARE A TEST SECTION FOR EACH WIRE COIL SUPPLIED. THE CONTRACTOR SHALL SUBMIT TO THE PROJECT ENGINEER A STEEL PLATE APPROXIMATELY 12" X 12" TO WHICH THE METAL HAS BEEN DEPOSITED TO THE SPECIFIED THICKNESS, AS CHECKED WITH A MAGNETIC OR EDDY CURRENT GAUGE, FOR ACCEPTANCE BY THE ENGINEER AS TO GRAIN SIZE AND TEXTURE OF THE SPRAYED METAL. THE TEST PLATE WILL BE USED TO DETERMINE THE ACCEPTANCE OF THE FINISHED JOB. IN THE EVENT THE CONTRACTOR'S COATING IS INFERIOR TO THE SAMPLE, HE SHALL BE REQUIRED TO CORRECT THE COATING BY AN ACCEPTABLE REPAIR METHOD AND DO A JOB COMPARABLE TO THE SPECIMEN SUBMITTED. IF THE SURFACE IS DEGRADED OR CONTAMINATED SUBSEQUENT TO SURFACE PREPARATION AND PRIOR TO METALLIZING, THE SURFACE SHALL BE RESTORED BEFORE METALLIZING. ALL SURFACE CLEANING SHALL BE APPROVED BY THE ENGINEER PRIOR TO METALLIZING. IN ORDER TO PREVENT THE DEGRADATION OR CONTAMINATION OF CLEANED SURFACES, THE METALLIZING SHALL BE APPLIED THE SAME DAY THE SURFACE HAS BEEN CLEANED. THE SEAL COAT SHALL ALSO BE APPLIED THE SAME DAY AS THE METALLIZING.

EACH SPRAY OPERATOR SHALL DEMONSTRATE TO THE ENGINEER HIS ABILITY TO METALLIZE AS SPECIFIED. ANY OPERATOR WHO DOES NOT DEMONSTRATE THIS ABILITY SHALL NOT SPRAY.

THE METALLIZING UNIT SHALL BE A GUN MANUFACTURED BY AN ESTABLISHED DOMESTIC COMPANY (SUCH AS METCO OR TAFE). THE GAS OR ARC-TYPE ARE ACCEPTABLE AND RECOMMENDED. THE EQUIPMENT SHALL BE USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. NO SURFACE SHALL BE SPRAYED WHICH SHOWS ANY SIGN OF RUST, SCALE OR MOISTURE. AT LEAST ONE SINGLE LAYER OF THE COATING MUST BE APPLIED WITHIN A MAXIMUM OF FOUR HOURS OF THE BLASTING. SPRAYING SHALL BE DONE IN A BLOCK PATTERN NOT TO EXCEED TWO FEET SQUARE.

TO PRODUCE THE REQUIRED THICKNESS AND UNIFORMITY, TWO PASSES ARE REQUIRED, OVERLAPPING AND AT RIGHT ANGLES TO EACH OTHER. THE GUN SHALL BE HELD AT SUCH A DISTANCE FROM THE WORK SURFACES THAT THE METAL IS STILL PLASTIC ON IMPACT (USUALLY 5" TO 9"). THE COATING SHALL BE FIRMLY ADHERENT AND FREE FROM UNCOATED SPOTS, LUMPS OR BLISTERS, AND HAVE A FINE SPRAYED TEXTURE.

THE CONTRACTOR IS REQUIRED TO PROVIDE FACILITIES TO PROTECT THE FINISHED METALLIZED SURFACE FROM DAMAGE DURING THE BLASTING AND THERMAL SPRAYING WORK OPERATIONS ON ADJACENT AREAS. ALL DAMAGED COATED AREAS SHALL BE PROPERLY REPAIRED BY THE CONTRACTOR. SURFACES NOT INTENDED TO BE METALLIZED SHALL BE SUITABLY PROTECTED FROM THE EFFECTS OF CLEANING AND METALLIZING OPERATIONS.

## TEMPERATURE

METALLIZING SHALL NOT BE APPLIED WHEN THE TEMPERATURE OF THE STEEL IS BELOW 40° F OR WHEN THE AIR TEMPERATURE IS BELOW 40° F. METALLIZING SHALL NOT BE APPLIED TO STEEL WHICH IS AT A TEMPERATURE THAT WILL CAUSE BLISTERING, POROSITY OR OTHERWISE DETRIMENTAL TO THE LIFE OF THE METALLIZING.

## MOISTURE

METALLIZING SHALL NOT BE APPLIED IN RAIN, WIND, SNOW, FOG OR MIST, OR WHEN THE STEEL SURFACE TEMPERATURE IS LESS THAN 5° F ABOVE THE DEW POINT. METALLIZING SHALL NOT BE APPLIED TO WET, DAMP OR FROSTED SURFACES. METALLIZING SHALL NOT BE APPLIED WHEN THE RELATIVE HUMIDITY IS ABOVE 85%.

## DAMAGE

DAMAGED AREAS OF METALLIZING WHICH ARE DETRIMENTAL TO THE SERVICE LIFE SHALL BE REMOVED. THE SURFACE SHALL AGAIN BE PREPARED AND RE-METALLIZED AS BEFORE.

## CONTINUITY

TO THE MAXIMUM EXTENT PRACTICE, METALLIZING SHALL BE APPLIED AS A CONTINUOUS FILM OF UNIFORM THICKNESS FREE OF PORES. ALL THIN SPOTS OR AREAS MISSED IN THE APPLICATION SHALL BE RE-METALLIZED.

## METALLIC COAT APPLICATION AND THICKNESS

THE CONTRACTOR'S QUALITY CONTROL SPECIALIST (QCS) SHALL RECORD THE TIME BETWEEN BLASTING AND APPLICATION OF THE METALLIZING. THE QCS SHALL RECORD THE AMBIENT TEMPERATURE AND DEW POINT NO MORE THAN ONE (1) HOUR BEFORE APPLICATION OF THE METALLIZING. ENVIRONMENTAL CONDITIONS SHALL BE MONITORED EVERY FOUR (4) HOURS DURING THE METALLIZING OPERATION.

GAUGES SHALL BE CALIBRATED ON THE STEEL SURFACE BEING METALLIZED. THICKNESS SHALL BE DETERMINED BY USE OF TYPE 2 MAGNETIC GAUGE IN ACCORDANCE WITH THE FOLLOWING: FIVE (5) SEPERATE SPOT MEASUREMENTS MUST BE MADE, SPACED EVENLY OVER EACH 100 SQUARE FEET OF METALLIZED SURFACE AREA. THREE (3) GAUGE READINGS MUST BE MADE FOR EACH SPOT MEASUREMENT. THE GAUGE MUST BE MOVED A DISTANCE OF ONE TO THREE INCHES FOR EACH NEW GAUGE READING. ANY UNUSUALLY HIGH OR LOW GAUGE READING THAT CANNOT BE REPEATED CONSISTENTLY MUST BE DISCARDED. THE AVERAGE (MEAN) OF THE THREE (3) GAUGE READINGS MUST BE USED AS THE SPOT MEASUREMENT. THE AVERAGE OF FIVE (5) SPOT MEASUREMENTS FOR EACH SUCH 100 SQUARE FOOT AREA MUST NOT BE LESS THAN THE SPECIFIED THICKNESS. NO SINGLE SPOT MEASUREMENT IN ANY 100 SQUARE AREA MUST BE LESS THAN 80% OF THE SPECIFIED MINIMUM THICKNESS. ANY ONE OF THE THREE (3) READINGS WHICH ARE AVERAGED TO PRODUCE EACH SPOT MEASUREMENT MAY UNDER-RUN BY A GREATER AMOUNT. THE FIVE (5) SPOT MEASUREMENTS MUST BE MADE FOR EACH 100 SQUARE FEET OF AREA.

## INSPECTION

ALL WORK AND MATERIALS SUPPLIED UNDER THIS SPECIFICATION SHALL BE SUBJECT TO TIMELY INSPECTION BY THE ENGINEER. THE CONTRACTOR SHALL CORRECT SUCH WORK OR REPLACE SUCH MATERIAL THAT IS FOUND DEFECTIVE UNDER THE SPECIFICATION.

THE CONTRACTOR SHALL FURNISH AND ERECT SCAFFOLDING MEETING THE APPROVAL OF THE ENGINEER TO PERMIT INSPECTION OF THE STEEL PRIOR TO AND AFTER COATING.

THE ENGINEER SHALL PERFORM THE FOLLOWING TEST FOR ADHESION. HE (OR SHE) SHALL CUT THROUGH THE COATING WITH A KNIFE OR CHISEL. IF THE COATING OR ANY PART OF IT CAN BE LIFTED FROM THE BASE 1/4" OR MORE AHEAD OF CUTTING BLADE WITHOUT ACTUALLY CUTTING THE METAL, THE SURFACE PREPARATION SHALL BE DEEMED IMPROPER AND THE COATING SHALL BE CONSIDERED UNSATISFACTORY.

## SAFETY REQUIREMENTS AND PRECAUTIONS

THE CONTRACTOR IS REQUIRED TO MEET THE APPLICABLE SAFETY REQUIREMENTS OF THE OHIO INDUSTRIAL COMMISSION.

## PROTECTION OF PERSONS AND PROPERTY

THE CONTRACTOR SHALL COLLECT, REMOVE AND DISPOSE OF ALL DISCARDED MATERIALS, LEAVING THE JOB SITE IN A CLEAN CONDITION. THE CONTRACTOR SHALL PROTECT AGAINST DAMAGE ALL PORTIONS OF THE STRUCTURE WHICH ARE TO BE METALLIZED.

## TOP COAT

AN APPROVED CLEAR PHENOLIC SEALER SHALL BE APPLIED OVER THE METALLIZING AS PER THE MANUFACTURER REQUIREMENTS AND INCLUDED WITH THE METALLIZING FOR PAYMENT.

## POLLUTION CONTROL

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO COMPLY WITH POLLUTION CONTROL LAWS, RULES OR REGULATIONS OF FEDERAL, STATE OR LOCAL AGENCIES AND AS REQUIRED IN THIS SPECIFICATION.

## METHOD OF MEASUREMENT

FIELD METALLIZING OF EXISTING STRUCTURAL STEEL IS BASED ON A SQUARE FOOT PAY ITEM. ALL FIELD METALLIZING WILL INCLUDE METALLIZING AND A SEAL COAT.

THE SUMMARY OF STRUCTURAL STEEL SURFACE AREAS TO BE METALLIZED AND SEALED:

### PIER PILES

- EXPOSED AREAS OF EXISTING STEEL PILES  
(ABOVE LOW WATER EL. OF 942.0) = 52,020 SQ. FT.

IN THE CASE OF A QUANTITY DISPUTE, EXACT FIELD MEASUREMENTS OF ALL METALLIZED SURFACES AND/OR CALCULATIONS WILL GOVERN.

GRINDING FINS, TEARS, SLIVERS IS BASED ON THE MAN-HOURS EXPENDED ONLY BY THE WORKMEN WHO ARE ACTUALLY DOING THE GRINDING AND WILL INCLUDE ALL THE TIME WHEN THE WORKMEN ARE PERFORMING GRINDING AND REPAIRING METALLIC COAT AND NOT LIMITED TO THE ACTUAL GRINDING DURATION (I.E. ALL HOURS OF THE WORKMEN WHEN ASSIGNED TO GRINDING REGARDLESS OF ACTUAL GRINDING TIME). A QUANTITY FOR 100 MAN HOURS IS PROVIDED IN THE ESTIMATED QUANTITY TABLE ON SHEET 8/41 TO PERFORM THIS TASK.

SURFACE PREPARATION: THIS SQUARE FOOT ITEM INCLUDES ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO: CONTAIN, COLLECT, STORE, EVALUATE, SHIP, TREAT AND DISPOSE OF ALL WASTE MATERIALS GENERATED BY THIS PROJECT AND TO PREPARE THE SURFACE AS REQUIRED BY THESE SPECIFICATIONS INCLUDING SOLVENT CLEANING, PRIOR TO APPLYING THE METALLIZING COAT.

## BASIS OF PAYMENT

PAYMENT FOR FIELD METALLIZING OF EXISTING STRUCTURAL STEEL WILL BE MADE AT THE CONTRACT PRICES FOR:

| ITEM    | UNIT    | DESCRIPTION   |
|---------|---------|---|
| SPECIAL | SQ. FT. | STRUCTURE MISC.: METALLIZING AND SEALING THE EXISTING STEEL PIER PILES                  |
| SPECIAL | SQ. FT. | STRUCTURE MISC.: SURFACE PREPARATION OF EXISTING STEEL PIER PILES                       |
| SPECIAL | HOOR    | STRUCTURE MISC.: GRINDING FINS, TEARS & SLIVERS FROM EXISTING STEEL PIER PILE SURFACES. |

CONCRETE OPTION

**MAH-76-0.86**  
 METALLIZING THE EXISTING STEEL PILES-PLAN NOTES  
 BRIDGE NO. MAH-76-0091 L & R  
 I-76 OVER LAKE MILTON

|                |  |         |          |
|----------------|--|---------|----------|
| DESIGNED       | KVB  | CHECKED | ASB      |
| DRAWN          | CLH  | REVISED |          |
| REVIEWED       | GEA  | DATE    | 04/06/01 |
| DESIGN AGENCY  | BARR ENGINEERING, INC.<br>5 EAST LONG STREET<br>COLUMBUS, OHIO 43215 |         |          |
| PROJECT NUMBER | 5002702L & 5002737R  |         |          |
| PHONE          | (614) 224-1941   |         |          |
| FAX            | (614) 224-0907   |         |          |

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