

**DESIGN DESIGNATION**

Current ADT (1985) = 1400  
 Design Year ADT (2005) = 3780  
 OHV = 605  
 D = 60%  
 T = 9%  
 V = 30 M.P.H.  
 Legal Speed = 55 M.P.H. \*

\*Design Exceptions Noted on Sheet 2

MICROFILMED  
 APR 29 1992

**STATE OF OHIO  
 DEPARTMENT OF TRANSPORTATION  
 BEL-148-14.03  
 WASHINGTON TOWNSHIP  
 BELMONT COUNTY**

| FHWA REGION | STATE | PROJECT   |
|-------------|-------|-----------|
| 5           | OHIO  | BRF-25(6) |

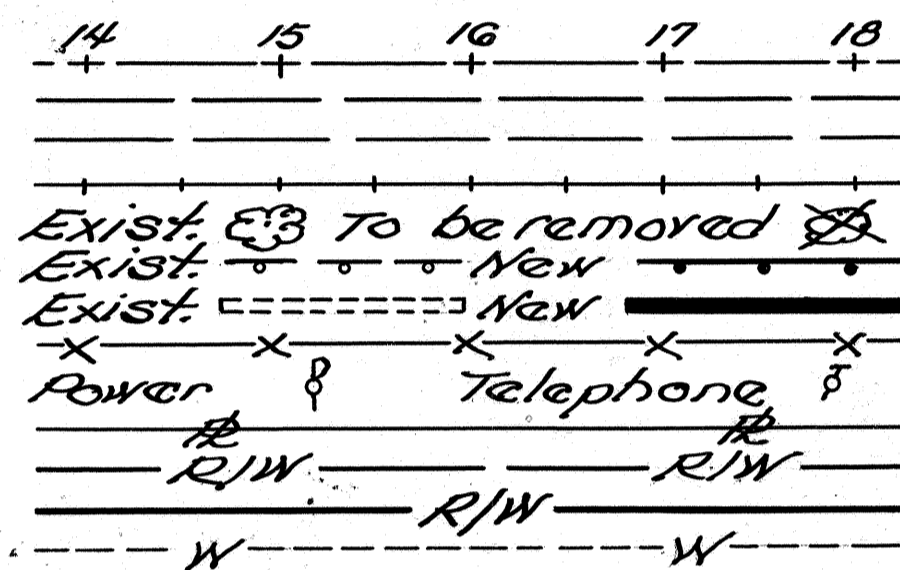
1/27

BRF-25(6)

MICROFILMED  
 FEB 25 1992

**CONVENTIONAL SIGNS**

- Center Line
- Township Line
- Section Line
- Railroad
- Trees and Stumps
- Guardrail
- Drain Pipe
- Fence Line
- Pole Line
- Property Line
- Existing Right of Way Line
- Proposed Right of Way Line
- Water Line



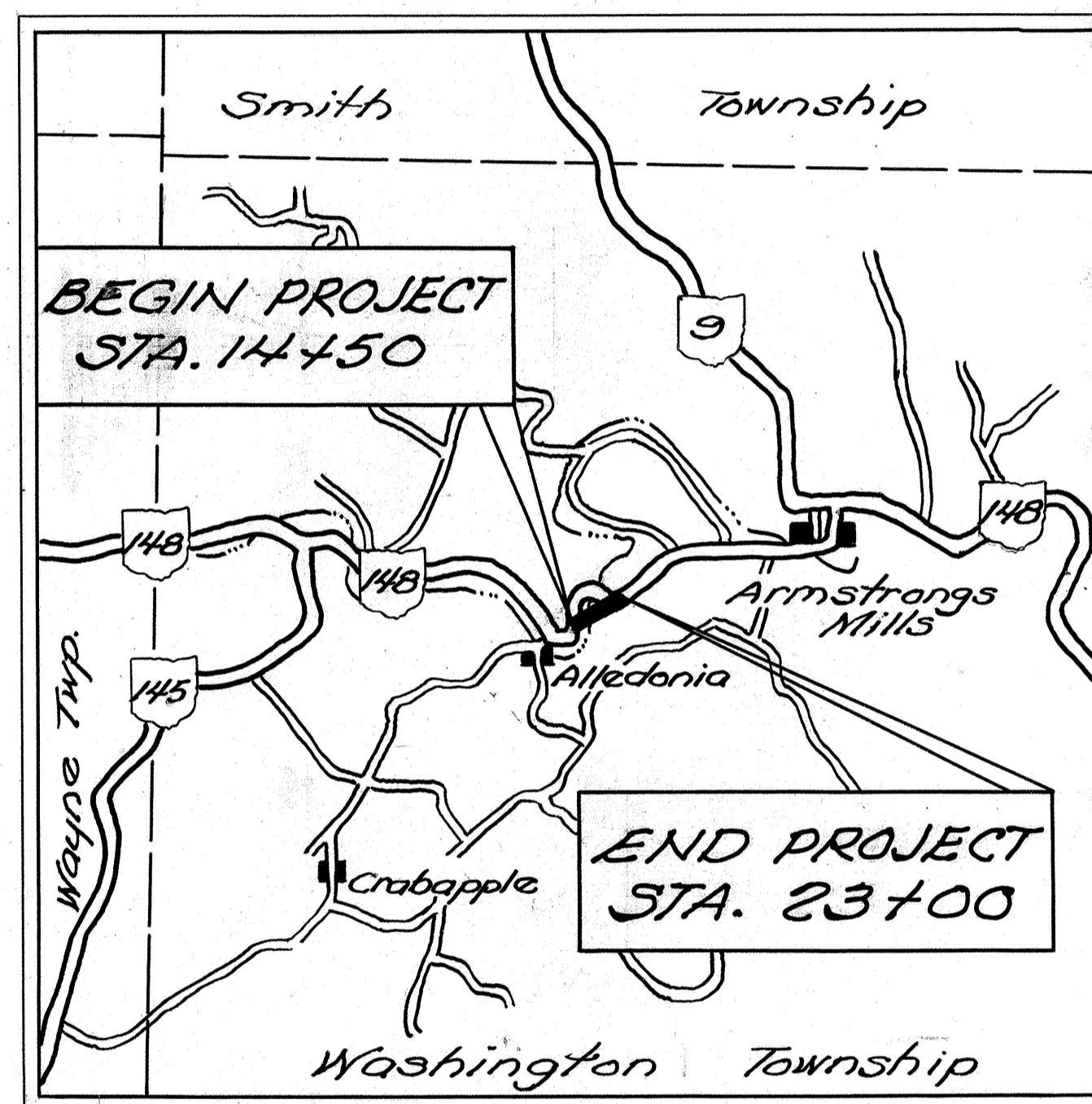
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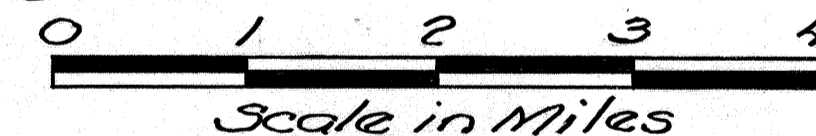
**LINE DATA**

Begin Project Sta. 14+50  
 End Project Sta. 23+00  
 Length of Project 850 Lin. Ft. or 0.161 Miles

Begin Work Sta. 13+50  
 End Work Sta. 24+00  
 Add for Sign Locations Sta. 8+35 to Sta. 8+60  
 Sta. 2+85 to Sta. 2+10  
 Length of Work 1100 Lin. Ft. or 0.208 Miles



**LOCATION MAP**



**SCALES**

|                    |             |
|--------------------|-------------|
| Plan               | 0' 30' 100' |
| Profile-Horizontal | 0' 50' 100' |
| Profile-Vertical   | 0' 10' 20'  |
| Cross Sections     | 0' 10' 20'  |

**1987 SPECIFICATIONS**

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

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

Approved: *[Signature]*  
 Date 3/10/88 District Deputy Director of Transportation

Approved: *[Signature]*  
 Date 12-12-86 Engineer, Bureau of Bridges & Structural Design

Approved: *[Signature]*  
 Date 4-2-87 Chief Engineer, Planning and Design

Approved: *[Signature]*  
 Date 4-9-87 Director, Department of Transportation

**UNDERGROUND UTILITIES**  
 TWO WORKING DAYS  
 BEFORE YOU DIG  
 Call 800-362-2784 (Toll Free)  
 Ohio Utilities Protection Service  
 Non Members  
 Must Be Called Directly

Plan Prepared By  
 District II  
 Ohio Department of Transportation

|                 |               |
|-----------------|---------------|
| FILE NO.        | BEL-148-14.03 |
| DATE OF LETTING | 198           |
| CONTRACT NO.    |               |

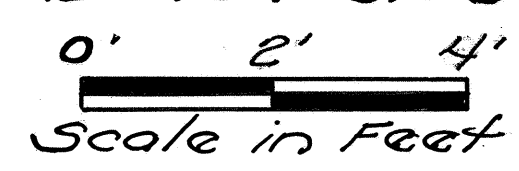
| STANDARD DRAWINGS |         |          |         |          |          |
|-------------------|---------|----------|---------|----------|----------|
| BP-2              | 1-11-85 | LA-1     | 6-1-79  | TC-52.10 | 4-3-79   |
| BP-5              | 1-11-85 |          |         | AS-1-81  | 11-27-81 |
| BP-6              | 6-1-85  | HW-4A    | 4-1-80  | DBR-2-73 | 4-10-73  |
| GR-1              | 1-11-85 | HW-4B    | 4-1-80  | FB-1-82  | 5-10-82  |
| GR-2B             | 2-5-82  | MC-10    | 5-1-76  | RB-1-55  | 2-2-59   |
| GR-3              | 1-21-85 | MC-4     | 7-26-76 | SD-1-69  | 6-12-69  |
| GR-4              | 2-5-82  | MC-11    | 8-1-78  | EXJ-2-51 | 4-2-84   |
| TC-41.20          | 3-26-79 | TC-42.20 | 3-26-79 | TC-52.20 | 4-3-79   |

| SUPPLEMENTAL SPECIFICATIONS |          |
|-----------------------------|----------|
| 814                         | 1-1-69   |
| 824                         | 10-8-82  |
| 836                         | 11-12-85 |
| 849                         | 12-24-85 |
| 949                         | 9-26-86  |
| 847                         | 10-17-83 |
| 947                         | 10-17-83 |

DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 APPROVED:  
 DIVISION ADMINISTRATOR DATE

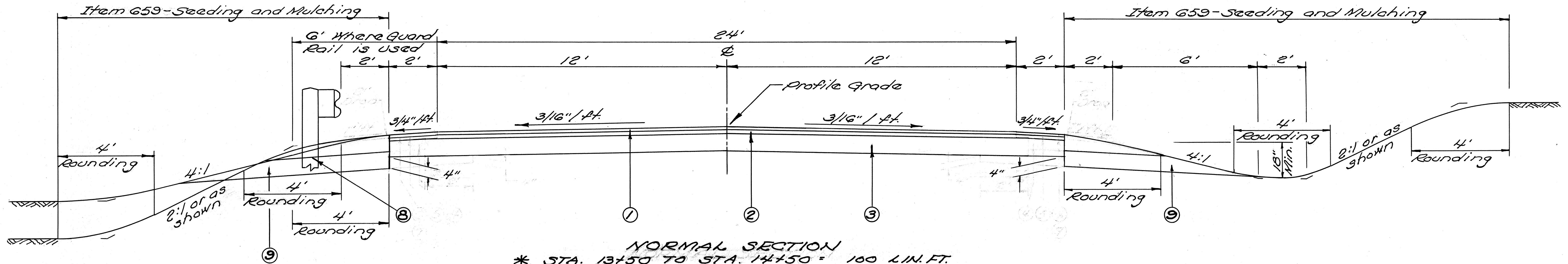
# TYPICAL SECTIONS

TYPE 404 ON 301

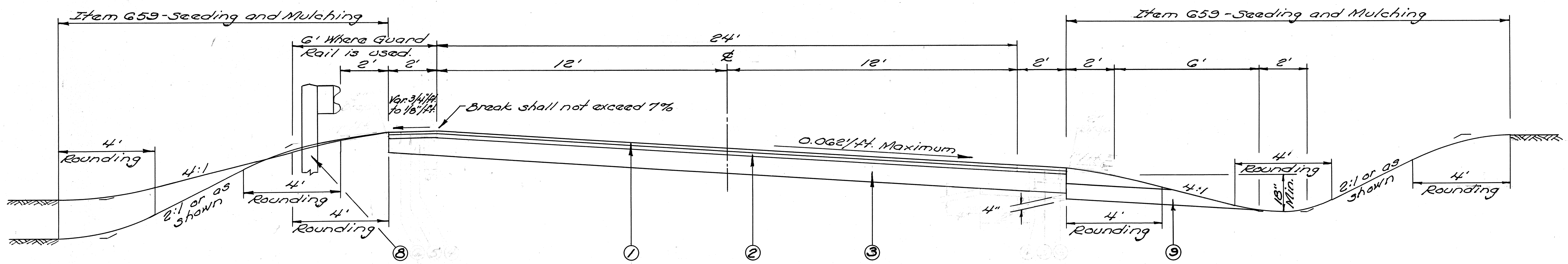


DESIGN EXCEPTIONS  
ITEM Horizontal PLAN 23° REQUIRED 6°

BEL-148-14.03



**NORMAL SECTION**  
 \* STA. 13+50 TO STA. 14+50 = 100 LIN. FT.  
 \* STA. 19+00 TO STA. 20+00 = 100 LIN. FT.



**SUPERELEVATED SECTION**  
 STA. 14+50 TO STA. 19+00 = 450 LIN. FT.  
 STA. 20+00 TO STA. 23+00 = 300 LIN. FT.  
 \* STA. 23+00 TO STA. 24+00 = 100 LIN. FT.

\* For Variable Pavement width see Transition Details Sheet 4

**- LEGEND -**

- ① Item 404 - 1 1/4" Asphalt Concrete, AC-20
- ② Item 402 - 1 3/4" Asphalt Concrete, AC-20
- ③ Item 301 - 9" Bituminous Aggregate Base, AC-20
- ④ Item 301 - 3" Bituminous Aggregate Base, AC-20
- ⑤ Item 403 - 3/4" Bituminous Aggregate Base, AC-20
- ⑥ Item 403 - 3/4" Bituminous Aggregate Base, AC-20
- ⑦ Item 403 - 3/4" Bituminous Aggregate Base, AC-20
- ⑧ Item 606 - Guardrail, Type 5
- ⑨ Item 605 - Aggregate Drains (See General Notes)

# GENERAL NOTES

| QUANTITIES   |              |
|--------------|--------------|
| Calc. I.J.C. | Chkd. J.A.W. |
| Date 6-4-86  | Date 6-6-86  |

| FHWA REGION | STATE | PROJECT |
|-------------|-------|---------|
| 5           | OHIO  |         |

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B.E.L-148-14.03

## FIELD OFFICE:

The Contractor shall provide a suitable field office having a minimum of 300 Sq. Ft. of floor space. Payment shall be of the lump sum price bid for Item 619, Field Office.

## DATUM:

All elevations are based on U.S.G.S. Datum.

## SEEDING:

Quantities for seeding are calculated for the soil areas between the work limits, as shown on the cross sections.

## ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS:

The rounded corners shown on the Typical Sections, apply to all cross sections even though otherwise shown on these plans.

## LOCATION OF GUARDRAIL:

The locations of guardrail runs, as shown in these plans, are subject to adjustment prior to final acceptance. The Engineer shall be satisfied that all installations will afford maximum protection for Traffic.

## CONTINGENCY QUANTITIES:

The contractor shall not order materials or perform work for plan items set up to be used as directed by the Engineer unless authorized by the Engineer. The actual work locations and quantities used at the Engineer's discretion shall be made a matter of record by incorporation into the final change order governing completion of this project.

## WATERING PERMANENT SEEDING AREAS:

The following estimated quantity is to be used as directed by the Engineer to promote growth and to care for the permanent seeded areas, as per 659.09.

Item 659-Water = 20 M-Gals.

## TEMPORARY STREAM CROSSING FORDS:

Where stream crossing fords are required for equipment crossings the following shall apply to the Contractor's operations:

The crossing shall consist of clean non-toxic granular or rock material, properly maintained to prevent erosion with provisions for conveyance of anticipated high flows. Furthermore, it shall follow Part 330.5 Specific Categories of Discharges - Nationally Permitted, paragraph (a) (14) Minor Road Crossing Fills - of the Federal Register - Corps of Engineers Final Regulations published July 22, 1982.

## ITEM 605 - AGGREGATE DRAINS:

Aggregate Drains shall be placed at fifty (50) foot intervals on each side of normal crowned sections and at twenty-five (25) foot intervals on the low side only of super-elevated sections.

An aggregate drain shall be placed at the low point of each sag vertical curve.

A quantity of 300 Lin. Ft. of Item 605 Aggregate Drains has been carried to the General Summary.

## CONDUIT END TREATMENT:

Immediately after placement of any conduits, the Contractor shall construct the end treatments required by the plans at both the outlet and inlet ends. This shall include headwalls, concrete riprap, rock channel protection, Sodding etc.

## UNDERGROUND UTILITIES:

The locations of the underground utilities shown on the plans are as obtained from the owners of the utility as required by Section 153.04 O.R.C.

## UTILITIES NOTIFICATION:

In addition to the requirements of Specification 105.06, the Contractor shall notify, at least two working days before breaking ground, all public service corporations having wires, poles, conduit or other structures, which may be affected by the operation. He shall conduct his operations in such a manner to avoid damages to any and all utilities. Any and all work required for public or private utilities will be done by and at the expense of their respective owners unless otherwise noted on these plans.

Following is a list of the owners of utilities known to be within the area of this project:

Ohio Bell Telephone Co.  
840 Orchard Street  
Zanesville, Ohio 43701  
Phone 614/454-3401

Belmont Electric Co-op, Inc.  
37801 Barnesville-Bathesda Rd.  
P.O. Box 270  
Barnesville, Ohio 43713-0270  
Phone 614/425-4018

Belmont Sanitary Sewer District  
P.O. Box 457  
St. Clairsville, Ohio 43950  
Phone 614/695-3144

## REMOVAL OF TREES OR STUMPS:

All trees and stumps specifically marked for removal within the construction limits of this project shall be removed under the lump sum price bid for Item 201, Clearing and Grubbing, except that those trees for which protection and preservation work is indicated elsewhere in these plans shall not be removed.

The following is an approximate estimate of the number of trees and stumps to be removed:

| Sizes | No. of Trees |
|-------|--------------|
| 18"   | 11           |
| 30"   | 3            |
| 48"   | 0            |
| 60"   | 1            |

The above estimate is approximate and the State of Ohio reserves the right to order the removal of additional trees or stumps outside of the limits of easement lines. Payment for the removal of these additional trees or stumps shall be included in the lump sum price bid for Item 201, Clearing and Grubbing.

## TEMPORARY SOIL EROSION AND SEDIMENT CONTROL:

The following estimated quantities are to be used as directed by the Engineer for temporary erosion and sediment control measures:

Item 207 - Straw or Hay Bales = 50 Each

## EROSION CONTROL:

Items 601 and 670 are provided in the plans for erosion control. Rock of a stable nature will not be removed in order to place either of these items, and turf of a stable nature will not be removed in order to place 670. The Engineer shall check and non-perform quantities or adjust locations and quantities for these items where indicated by field conditions during construction.

## MAINTAINING TRAFFIC:

The Contractor shall maintain traffic at all times in accordance with the requirements of Specification 614 except as noted below. Both the existing and proposed roadways and structures will be used to maintain traffic.

Whenever possible two way traffic shall be maintained within the project limits. During those periods that the Engineer agrees maintenance of two way traffic is not possible, alternating one-way traffic will be permitted. The Contractor's work shall be scheduled to keep the duration of alternating one-way traffic operation to a minimum. During the periods of alternating one-way traffic, the Contractor shall be responsible for the maintenance of traffic as indicated on Sheet No. 6.

All the above work shall be included with the lump sum payment for Item 614 Maintaining Traffic.

When necessary traffic shall be maintained, as described above, by the construction of temporary roadways surfaced with 410 Aggregate stabilized with 616 Calcium Chloride. Their location and design shall be approved by the Engineer. The limits and duration of the use of temporary roadways shall be held to an absolute minimum, and in all cases shall be subject to the approval of the Engineer.

The following estimated quantities have been included in the General Summary to be used as directed by the Engineer for the Maintenance of Traffic and Dust Control.

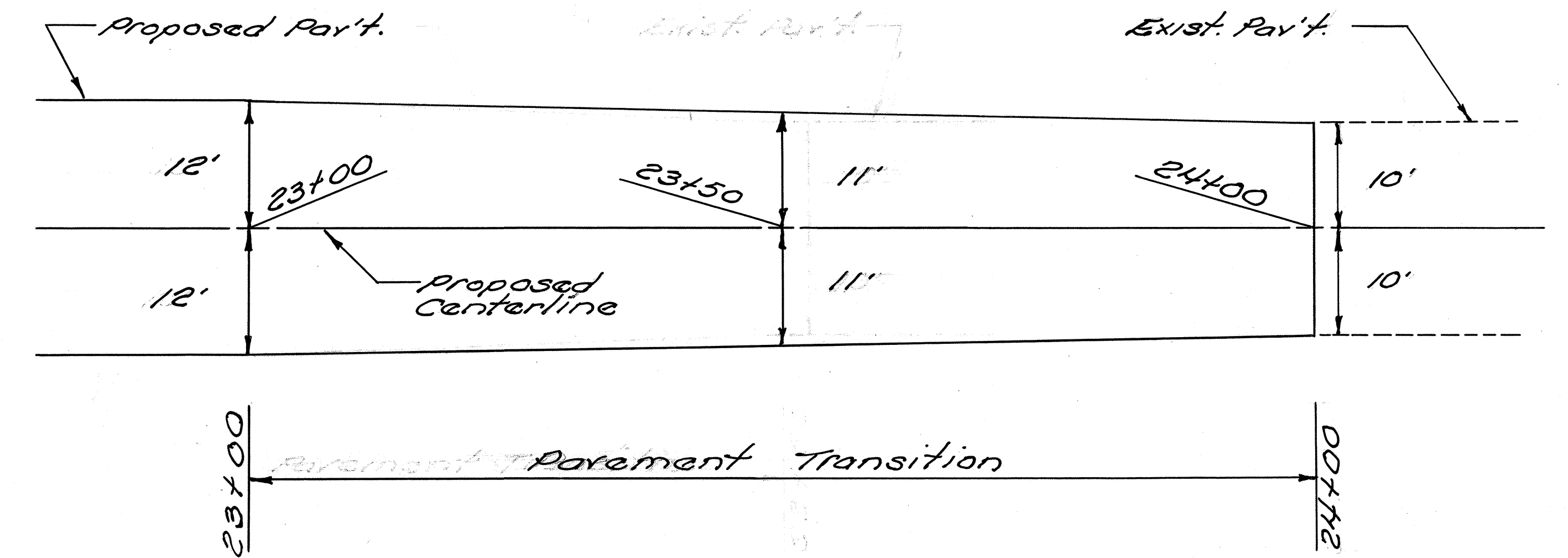
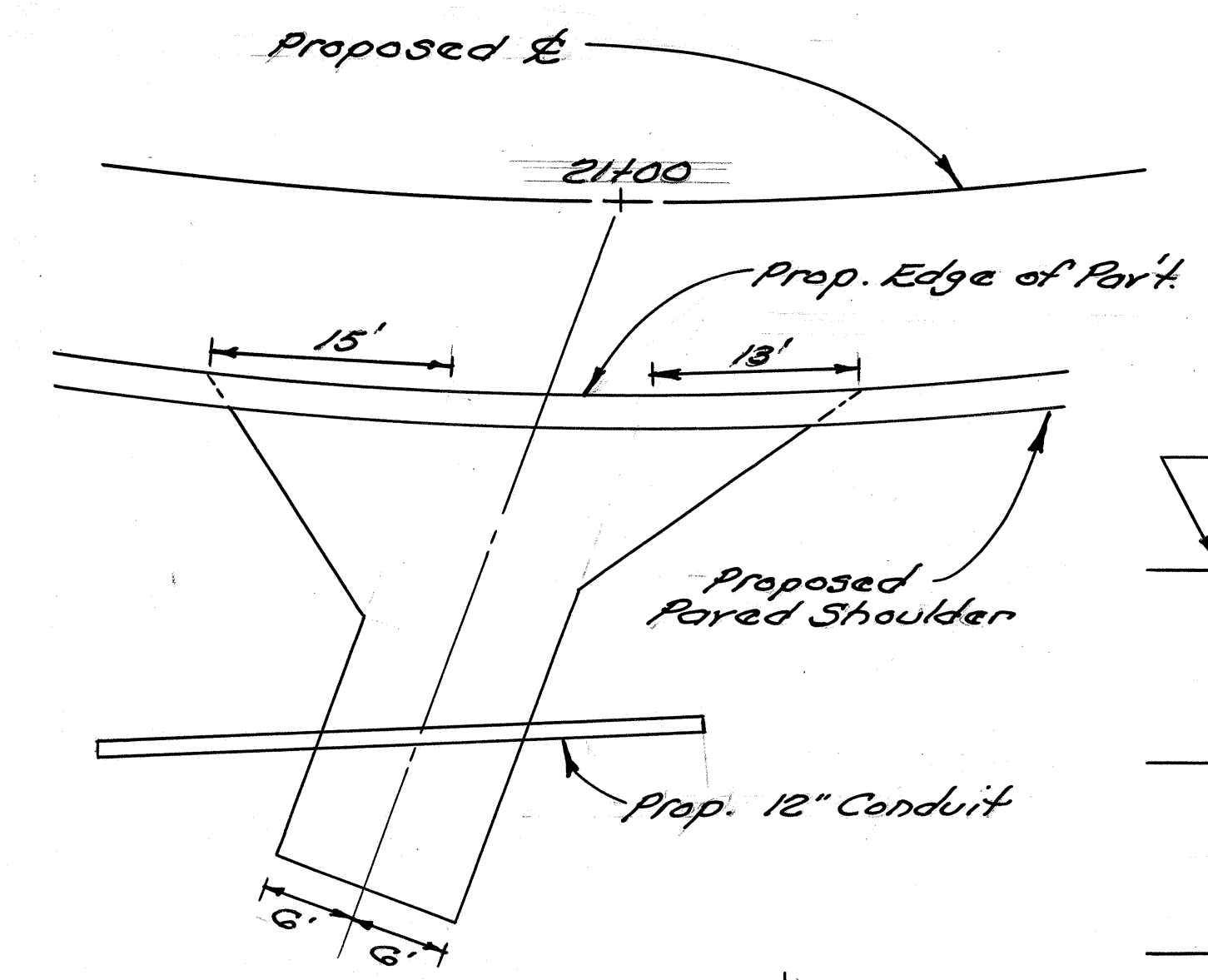
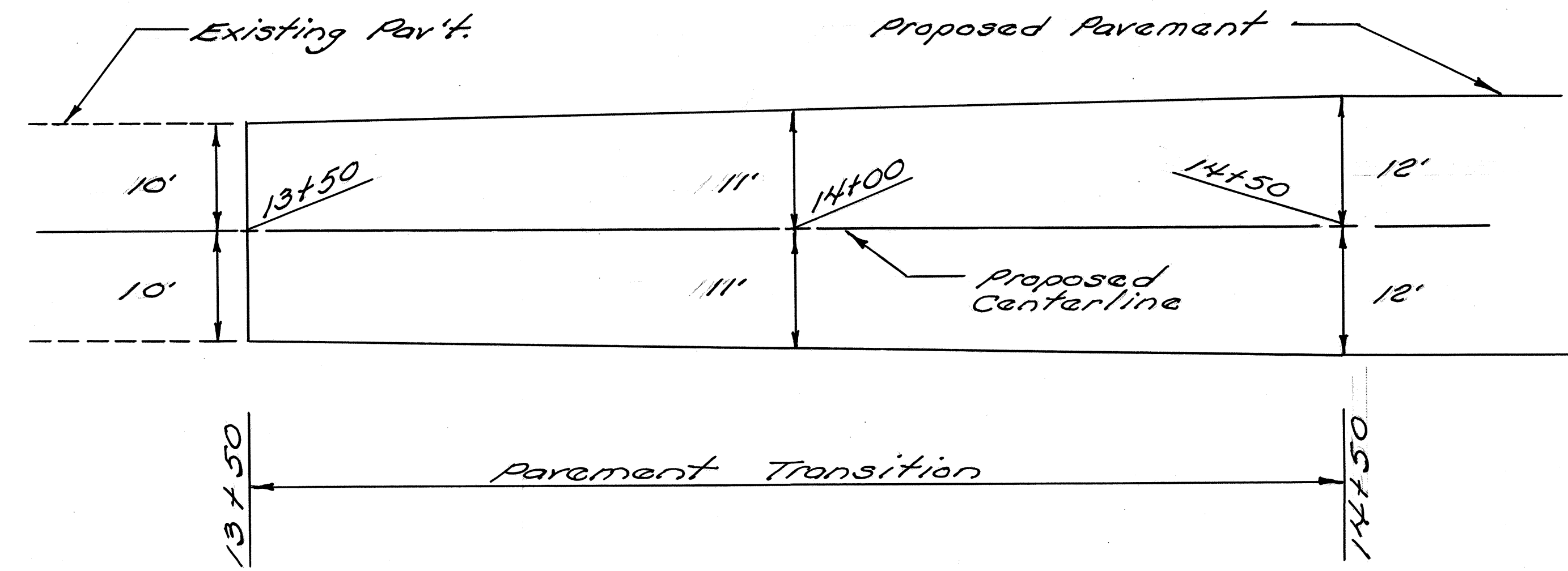
Item 410 Traffic Compacted Surface, Type A or B 200 Cu.Yds.  
Item 616 Calcium Chloride 5 Tons  
Item 616 Water 50 M-Gals.

## UNDERGROUND UTILITIES

TWO WORKING DAYS  
BEFORE YOU DIG  
Call 800-362-2764 (Toll Free)  
Ohio Utilities Protection Service  
Non Members  
Must Be Called Directly

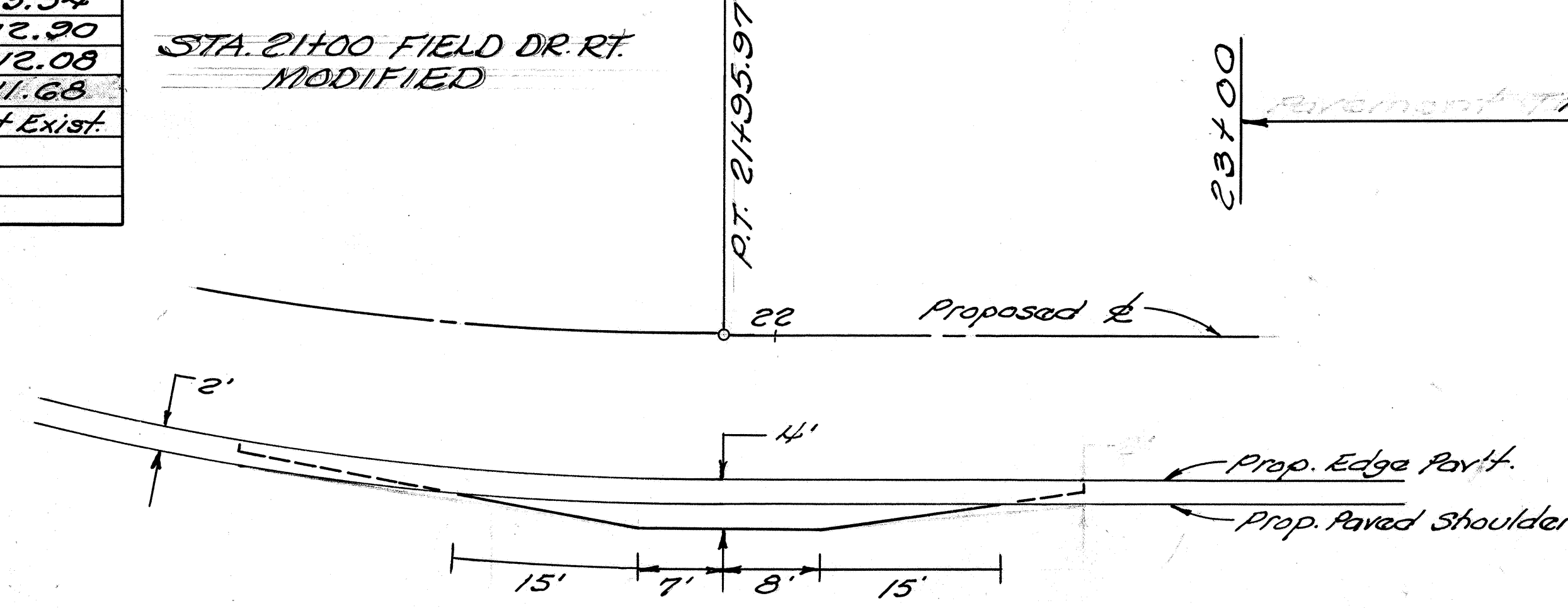
**SUPERELEVATION TABLES**

| P.C. 14+80.29 |       |                     | D=23°00'      |       | P.T. 17+47.68 |              |  |
|---------------|-------|---------------------|---------------|-------|---------------|--------------|--|
| LEFT          |       | Maximum Super=1.50' |               | RIGHT |               |              |  |
| Left Edge     | Width | Station             | Profile Grade | Width |               | Right Edge   |  |
| Meet. Exist.  | 10'   | 13+50               | Meet. Exist.  | 10'   |               | Meet. Exist. |  |
| 816.92        | -18   | 13+75               | 817.10        | 10.5' | -20           | 816.90       |  |
| 816.46        | -15   | 14+00               | 816.61        | 11'   | -19           | 816.42       |  |
| 816.12        | -08   | +25                 | 816.20        | 11.5' | -19           | 816.01       |  |
| 815.87        | -02   | +50                 | 815.89        | 12'   | -19           | 815.70       |  |
| 815.76        | +11   | +75                 | 815.65        |       | -19           | 815.48       |  |
| 815.75        | +14   | P.C.+80.29          | 815.61        |       | -20           | 815.41       |  |
| 815.77        | +22   | +100                | 815.51        |       | -20           | 815.25       |  |
| 815.85        | +40   | +25                 | 815.45        |       | -40           | 815.05       |  |
| 816.02        | +54   | +50                 | 815.48        |       | -54           | 814.94       |  |
| 816.29        | +69   | +75                 | 815.60        |       | -69           | 814.91       |  |
| 816.56        | +75   | 16+00               | 815.81        |       | -75           | 815.06       |  |
| 817.06        | +75   | +50                 | 816.31        |       | -75           | 815.56       |  |
| 817.41        | +75   | +85                 | 816.66        |       | -75           | 815.91       |  |
| 817.46        | +67   | 17+00               | 816.79        |       | -67           | 816.12       |  |
| 817.45        | +53   | +25                 | 816.92        |       | -53           | 816.39       |  |
| 817.33        | +40   | P.T.+47.68          | 816.93        |       | -40           | 816.53       |  |
| 817.32        | +39   | +50                 | 816.93        |       | -39           | 816.54       |  |
| 817.07        | +24   | +75                 | 816.83        |       | -24           | 816.59       |  |
| 816.96        | +19   | +85                 | 816.77        |       | -19           | 816.58       |  |
| 816.75        | +10   | 18+00               | 816.65        |       | -19           | 816.46       |  |
| 816.17        | -08   | +50                 | 816.25        |       | -19           | 816.06       |  |
| 815.67        | -19   | 19+00               | 815.86        | 12'   | -19           | 815.67       |  |



| P.C. 20+58.72 |       |                     | D=23°00'      |        | P.T. 21+95.97 |              |        |
|---------------|-------|---------------------|---------------|--------|---------------|--------------|--------|
| LEFT          |       | Maximum Super=0.38' |               | RIGHT  |               |              |        |
| Left Edge     | Width | Station             | Profile Grade | Width  |               | Right Edge   |        |
| 815.27        | -19   | 19+50               | 815.46        | 12'    | -19           | 815.27       |        |
| 814.88        | -19   | 20+00               | 815.07        |        | -17           | 814.90       |        |
| 814.48        | -19   | +50                 | 814.67        |        | -05           | 814.62       |        |
| 814.41        | -19   | P.C.+58.72          | 814.60        |        | -01           | 814.59       |        |
| 814.09        | -19   | 21+00               | 814.28        |        | +19           | 814.47       |        |
| 813.69        | -19   | +50                 | 813.88        |        | +19           | 814.07       |        |
| 813.46        | -06   | P.T.+95.97          | 813.52        |        | +06           | 813.58       |        |
| 813.44        | -05   | 22+00               | 813.49        |        | +05           | 813.54       |        |
| 813.28        | +19   | +50                 | 813.09        |        | -19           | 812.90       |        |
| 812.95        | +25   | 12'                 | 23+00         | 812.70 | 12'           | -62          | 812.08 |
| 812.67        | +37   | 11'                 | +50           | 812.30 | 11'           | -62          | 811.68 |
| Meet. Exist.  | 10'   | 24+00               | Meet. Exist.  | 10'    |               | Meet. Exist. |        |

STA. 21+00 FIELD DR. RT. MODIFIED



Note: Mailbox Approach Pavement to be same as Paved Shoulder Design. For Details not shown see Std. Drawing BP-6 Dated 6-1-65

MAILBOX APPROACH (MODIFIED)

| QUANTITIES                   |                              |
|------------------------------|------------------------------|
| Calc. L.J.C.<br>Date 6-11-86 | Chkd. J.A.W.<br>Date 6-23-86 |

|             |       |         |
|-------------|-------|---------|
| FHWA REGION | STATE | PROJECT |
| 5           | OHIO  |         |

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BEL-148-14.03

## 614 WORK ZONE PAVEMENT MARKINGS

### GENERAL

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

THE MARKINGS SHALL BE EVALUATED BY THE ENGINEER IN ACCORDANCE WITH THE THREE PERFORMANCE PARAMETERS CONTAINED IN SUPPLEMENT 1047. THE MARKINGS SHALL BE REPAIRED OR REPLACED WHEN THE NUMERICAL RATING OF A PARAMETER IS (a) SIX OR LOWER FOR DURABILITY, (b) FOUR OR LOWER FOR VISUAL EFFECTIVENESS AND (c) FOUR OR LOWER FOR NIGHT VISIBILITY. THE CONTRACTOR SHALL REPAIR OR REPLACE UNSATISFACTORY MARKINGS IMMEDIATELY AND AT NO ADDITIONAL COST TO THE STATE.

THE CONTRACTOR SHALL, IN ADVANCE OF ANY SECTION OF ROADWAY LACKING MUTCD FULL PATTERN STANDARD DIMENSION EDGE LINE OR CENTER LINE MARKINGS, ERECT A "NO EDGE LINES" (OW-167-36) SIGN OR "UNMARKED NO PASSING ZONES" (OW-168-36) SIGN OR BOTH AS MAY BE APPROPRIATE. THESE SIGNS SHALL BE IN PLACE PRIOR TO EXPOSING THE ROADWAY TO TRAFFIC. THESE SIGNS SHALL ALSO BE ERECTED ON EACH ENTRANCE RAMP, AT INTERSECTIONS OF THROUGH ROADS TO WARN ENTERING OR TURNING TRAFFIC OF THE CONDITION AND AT LEAST ONCE EVERY TWO MILES ALONG THE ROADWAY. THESE SIGNS SHALL BE REMOVED WHEN THEY NO LONGER APPLY.

### TEMPORARY PAVEMENT MARKING MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE EITHER 621.02 PAINT OR 947.03 TYPE B OR C PREFORMED MATERIAL.

#### PAINT

PAINTED MARKINGS SHALL BE IN ACCORDANCE WITH 621 EXCEPT THAT (1) PARAGRAPH 621.14 SHALL NOT APPLY, (2) WHERE THE MARKINGS ARE NOT LIABLE TO BE TRACKED, EITHER CONVENTIONAL OR FAST DRY PAINT MAY BE USED FOR 621.02, AND (3) WHEN APPLIED TO NEW ASPHALT PAVEMENT SURFACES OR PLANED ASPHALT PAVEMENT SURFACES, THE SPECIFIED APPLICATION RATE SHALL BE AS FOLLOWS:

| WIDTH OF LINE, IN. | GALLONS PER MILE OF LINE |    |    |     |
|--------------------|--------------------------|----|----|-----|
| 4                  | 6                        | 8  | 12 | 24  |
| SOLID LINE         | 24                       | 36 | 48 | 144 |
| DASHED LINE        | 6                        | 9  |    |     |
| DOTTED LINE        | 8                        | 12 |    |     |

#### TYPE B AND TYPE C PREFORMED MATERIAL

PREFORMED MATERIAL SHALL COMPLY WITH 947.03 EXCEPT THAT NO PREFORMED MATERIAL CONTAINING METAL SHALL BE PLACED ON ANY SURFACE UNLESS IT WILL BE REMOVED LATER BY THE CONTRACTOR. TEMPORARY PAVEMENT MARKINGS OF 947.03 PREFORMED MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF 621 OR 847 SURFACE COURSE MARKINGS AT THAT LOCATION. PREFORMED MATERIAL SHALL BE APPLIED IN ACCORDANCE WITH 847 EXCEPT AS MODIFIED HEREIN.

#### PLACEMENT

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT, INCLUDING RAMPS, PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS CONFLICT WITH THE TRAFFIC PATTERN, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 621.134.

LINE PLACEMENT TOLERANCE FOR FINAL SURFACES SHALL BE IN ACCORDANCE WITH 621.052. ON SURFACES OTHER THAN THE FINAL, THE TOLERANCE PERMITTED SHALL BE TWICE THAT IN 621.052.

LAYOUT AND PREMARKING SHALL BE IN ACCORDANCE WITH 621.051.

### TEMPORARY MARKING CLASSES

#### CLASS I MARKINGS

CLASS I MARKINGS SHALL BE APPLIED TO THE FULL DIMENSIONS AS DEFINED IN 621 WITH THE FOLLOWING ADDITIONS OR EXCEPTIONS:

- 1) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
- 2) STOP LINES SHALL BE 12-INCHES IN WIDTH.
- 3) CROSS WALK LINES SHALL BE 8-INCHES IN WIDTH.

#### CLASS II MARKINGS

CLASS II MARKINGS (ABBREVIATED) SHALL BE DEFINED AS FOLLOWS:

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

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

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 2.4 GALLONS PER MILE FOR LANE LINE AND CENTER LINE AND 24 GALLONS PER MILE FOR GORE MARKINGS.

#### CONFLICTING EXISTING MARKINGS

THE CONTRACTOR SHALL, PRIOR TO PLACING TEMPORARY MARKINGS, REMOVE ALL CONFLICTING EXISTING MARKINGS VISIBLE TO THE TRAVELING PUBLIC DURING DAYLIGHT OR NIGHTTIME HOURS IN ACCORDANCE WITH 621.134. THE COST FOR REMOVAL OF CONFLICTING MARKINGS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC UNLESS SPECIFICALLY ITEMIZED.

THE CONTRACTOR SHALL ALSO REMOVE THE PRISMATIC RETRO-REFLECTOR WITHIN ANY RAISED PAVEMENT MARKER (RPM) WHICH IS IN CONFLICT WITH THE TEMPORARY PAVEMENT MARKINGS. WHEN THE TEMPORARY PAVEMENT MARKINGS ARE REMOVED AND THE RPM IS NO LONGER IN CONFLICT, THE CONTRACTOR SHALL THOROUGHLY CLEAN THE RECESSED REFLECTOR ATTACHMENT AREA OF THE CASTING AND INSTALL A NEW PRISMATIC RETRO-REFLECTOR OF THE SAME KIND AND COLOR. THE COST FOR THIS WORK SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS.

#### INTERIM MARKINGS

WITHIN 21 CALENDAR DAYS AFTER OPENING ANY LENGTH OF PAVEMENT TO TRAFFIC, THE 621 OR 847 PAVEMENT MARKINGS CALLED FOR IN THE PLANS SHALL BE APPLIED. EQUIVALENT 614 CLASS I PAINT MARKINGS MAY BE USED IN LIEU OF FINAL MARKINGS. IN THIS EVENT, THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIAL NECESSARY TO PLACE AND MAINTAIN 614 CLASS I PAINT MARKINGS AS PART OF THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC

FOR EACH CALENDAR DAY BEYOND 21 DAYS THAT THIS WORK SHALL REMAIN UNCOMPLETED, THE SUM OF \$200 PER CALENDAR DAY WILL BE DEDUCTED FROM ANY MONEY DUE THE CONTRACTOR, NOT AS A PENALTY BUT AS LIQUIDATED DAMAGES.

#### METHOD OF MEASUREMENT

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

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

### BASIS OF PAYMENT

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

| ITEM | UNIT       | DESCRIPTION  |
|------|------------|--|
| 614  | MILES      | TEMPORARY LANE LINES, CLASS _____, *                   |
| 614  | 0.20 MILES | TEMPORARY CENTER LINES, CLASS II, *                    |
| 614  | LIN. FT.   | TEMPORARY CHANNELIZING LINES, CLASS I, *               |
| 614  | MILES      | TEMPORARY EDGE LINES, CLASS I, *                       |
| 614  | LIN. FT.   | TEMPORARY GORE MARKINGS, CLASS II, *                   |
| 614  | LIN. FT.   | TEMPORARY STOP LINES, CLASS I, *                       |
| 614  | LIN. FT.   | TEMPORARY CROSSWALK LINES, CLASS I, *                  |
| 614  | EACH       | TEMPORARY LANE ARROWS, CLASS I, *                      |
| 614  | EACH       | TEMPORARY RAILROAD SYMBOL MARKINGS, CLASS I, *         |
| 614  | EACH       | TEMPORARY WORD "ONLY" ON PAVEMENT, 72-INCH, CLASS I, * |
| 614  | LIN. FT.   | TEMPORARY TRANSVERSE LINES, CLASS I, *                 |
| 614  | LIN. FT.   | TEMPORARY DOTTED LINES, CLASS I, *                     |

\*TYPE MATERIAL (621 PAINT, 947.03 TYPE B OR 947.03 TYPE C OR LEFT BLANK TO PERMIT ANY OF THE THREE)

fh4

## 621 EDGE LINES ON NEW ASPHALT PAVEMENTS

EDGE LINES SHALL BE IN ACCORDANCE WITH 621 EXCEPT THAT (1) ON EVERY ROADWAY AND RAMP, EDGE LINES SHALL BE IN PLACE PRIOR TO EXPOSING IT TO TRAFFIC, (2) WHERE THE EDGE LINES ARE NOT LIABLE TO BE TRACKED, EITHER CONVENTIONAL OR FAST DRY PAINT MAY BE USED FOR 621.02; AND (3) WHEN APPLIED TO NEW ASPHALT PAVEMENT THE SPECIFIED APPLICATION RATE SHALL BE 24 GALLONS PER MILE.

## 614 WORK ZONE MARKING SIGNS

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND SUBSEQUENTLY REMOVE WORK ZONE MARKING SIGNS (OW-167 AND OW-168) WITHIN THE WORK LIMITS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE CONTRACTOR MAY USE SIGNS AND SUPPORTS IN USED BUT GOOD CONDITION PROVIDED THE SIGNS MEET CURRENT DEPARTMENT SPECIFICATIONS. SIGN FACES SHALL BE REFLECTORIZED WITH TYPE G SHEETING COMPLYING WITH THE REQUIREMENTS OF 730.19. WORK ZONE MARKING SIGNS SHALL BE PROVIDED WITH SUITABLE YIELDING SUPPORTS OF SUFFICIENT STRENGTH AND STABILITY.

WORK ZONE MARKING SIGNS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGN AND NECESSARY SUPPORTS. ALL OTHER WORK ZONE SIGNS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC UNLESS SEPARATELY ITEMIZED.

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

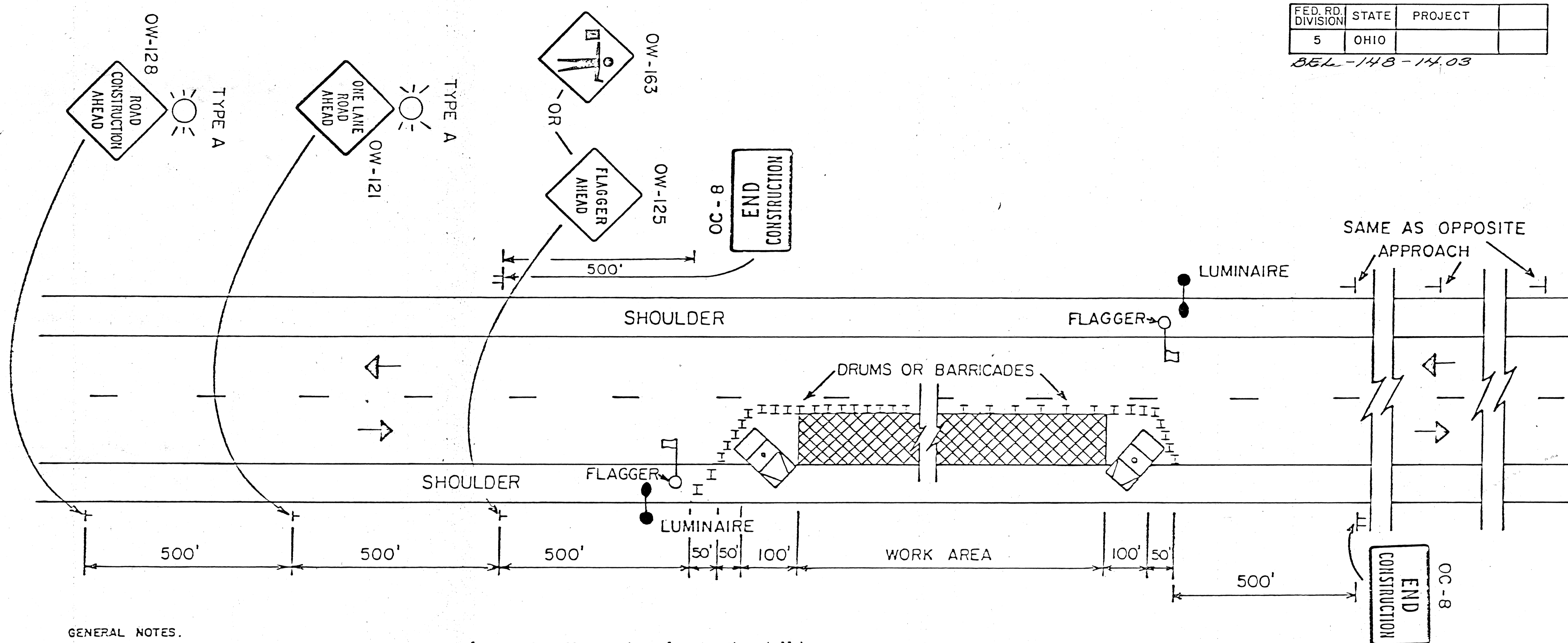
| ITEM | UNIT | DESCRIPTION             |
|------|------|-------------------------|
| 614  | EACH | WORK ZONE MARKING SIGNS |

A QUANTITY OF 4 EACH WORK ZONE MARKING SIGNS (2 EACH "NO EDGE LINES" OW-167 AND 2 EACH "UNMARKED NO PASSING ZONES" OW-168) ARE CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

|                   |       |         |  |
|-------------------|-------|---------|--|
| FED. RD. DIVISION | STATE | PROJECT |  |
| 5                 | OHIO  |         |  |

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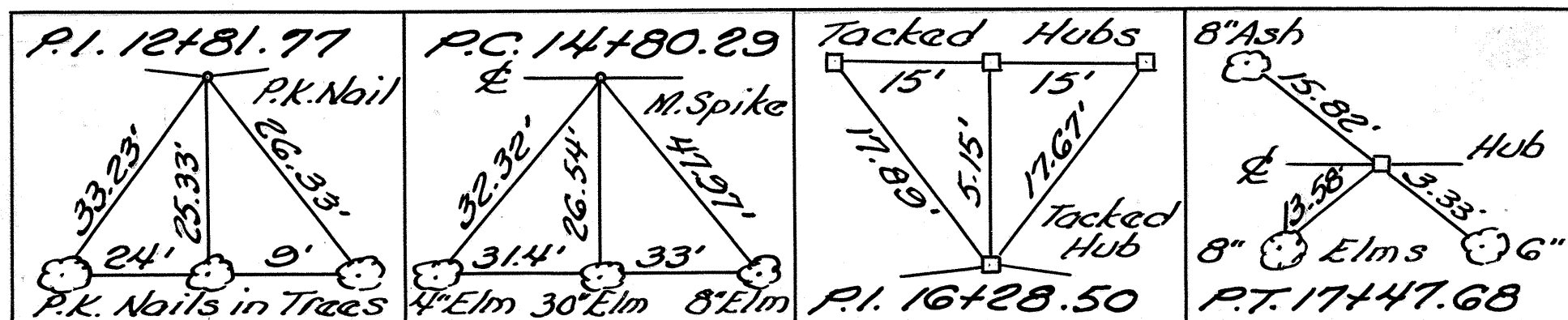


GENERAL NOTES.

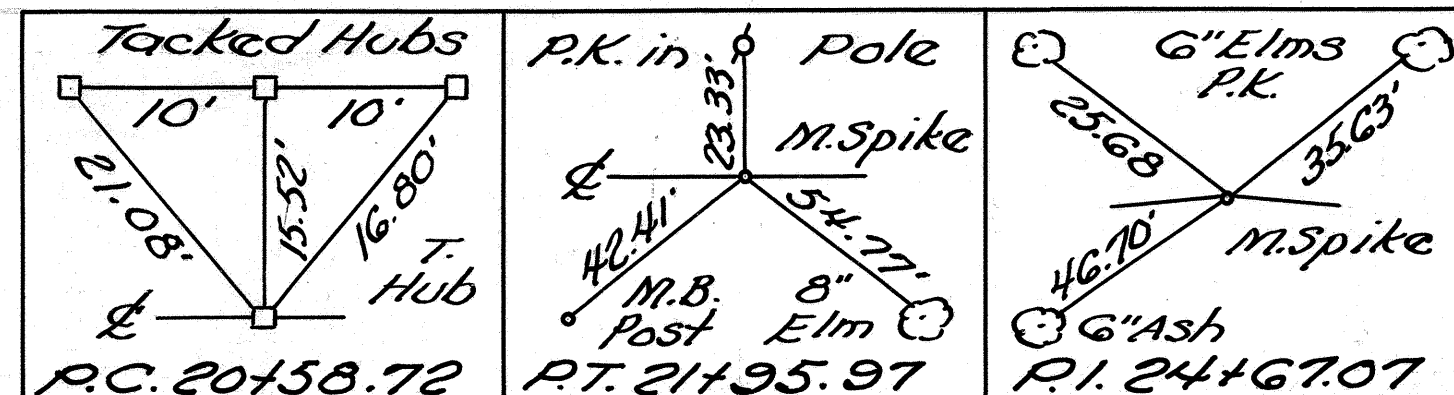
- The location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment. The distances shown are minimums.
- Flaggers shall be used to control traffic continuously for as long as a one lane operation is in effect. The flaggers shall communicate with each other at all times as described in the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) in Section 7H: Control of Traffic Through Work Areas.
- drums or barricades shall be spaced at approximately 50' to 60' center to center for the first 1000 feet of the work area and at a maximum of 100' to 120' center to center for the balance of the work area. drums or barricades on the advance and return tapers shall be spaced at 10' center to center. Cones may be substituted for barricades or drums during daylight for short term lane closures.
- Several small work sites close together shall be combined into one work area to make a closure not more than 2000 feet long including tapers. Closures of more than 2000 feet may be approved by the Engineer. The minimum length between closures shall be 2000 feet. Only one side of the road shall be closed in any one work area.
- The work vehicles shown at the beginning and end of the work area shall be in place and unoccupied whenever workers are in the work area. These work vehicles shall be removed from the pavement whenever workers are not in the work area. Other protective devices may be used in lieu of the work vehicles shown when approved by the Engineer. The vehicles shall be equipped with a 360° rotating or flashing amber beacon clearly visible a minimum of a 1/4 mile.
- The Type A flashing barricade warning lights shown on the "Road Construction Ahead" and the "One Lane Road Ahead" signs are required whenever a night lane closure is necessary.
- Type C steady burning barricade warning lights shall be erected on drums or barricades for night lane closures. The maximum spacing shall be identical to the channelizing device spacing requirements described in Note 3.
- Adequate area illumination to clearly identify the flagger station at night for long term operations shall be provided by using 150 watt minimum high pressure sodium luminaires or 250 watt minimum mercury luminaires. Luminaires shall be located adjacent to one flagger station for each direction of traffic as shown above. The mounting height for temporary luminaires shall be a minimum of 27 feet above the pavement and the overhead conductor clearance shall be 20 feet above the pavement.

|   |               |
|---|---------------|
| OHIO DEPARTMENT OF TRANSPORTATION                 |               |
| FLAGGERS CLOSING<br>1 LANE OF A 2 LANE<br>HIGHWAY | DATE<br>12/82 |





Note: For Baseline "A" Details See Sheet 11

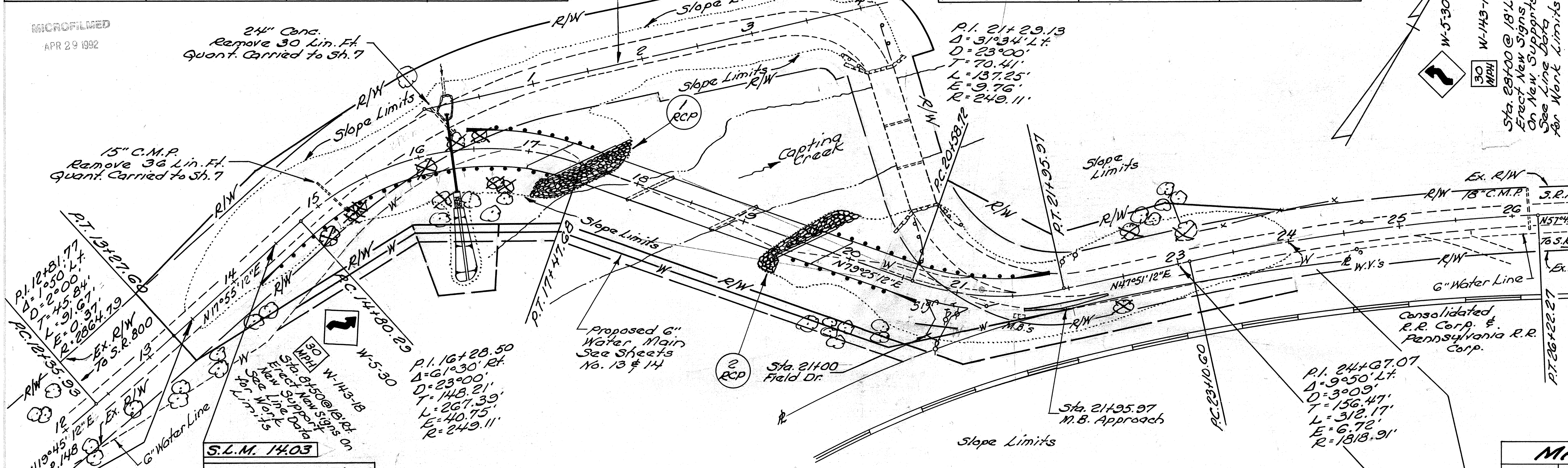


| QUANTITIES   |              |
|--------------|--------------|
| Calc. L.J.C. | Chkd. J.A.W. |
| Date 8-5-86  | Date 6-23-86 |

| FHWA REGION | STATE | PROJECT | 8  |
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MICROFILMED  
APR 29 1992



**EXISTING STRUCTURE**  
Type: Steel Beam  
Spans: 48.25'-39.75'-38.17'  
Roadway: 22'6"  
Alignment: Tangent  
Skew: 0°  
To Be Removed

**PROPOSED STRUCTURE**  
Type: Continuous Steel Beam  
Spans: 64'-80'-64' g/c Bearing  
Roadway: 32' f/c Guardrail  
Loading: HS 20-44 Case II & Alt. Military Loading  
Wearing Surface: Monolithic Concrete  
Skew: 45°00'00" Left Forward  
Alignment: Tangent  
Approach Slabs - AS-181 (25' Long)

**TRAFFIC CONTROL**

| Station       | Side | Item 630          |                                    |
|---------------|------|-------------------|------------------------------------|
|               |      | Signs, Flat Sheet | Ground Mounted Supports, 16.4 Post |
| 8+50          | RT   | 8.5               | 15.0                               |
| 28+00         | LT   | 8.5               | 15.0                               |
| <b>Totals</b> |      | <b>17.0</b>       | <b>30.0</b>                        |

**MAILBOX APPROACH**

| Station       | Side | See Sheet | Item 301 3" Bitum. Aggr. Base AC-20, RT-11 cu.yd. | Item 408 13/4" Asphalt Concrete AC-20 cu.yd. | Item 404 1 1/4" Asphalt Concrete AC-20 cu.yd. |
|---------------|------|-----------|---|--|---|
| 21+95.97      | RT   | 44/10     | /   | /  | /   |
| <b>Totals</b> |      |           | <b>1</b>  | <b>1</b>                                     | <b>1</b>                                      |

**EROSION CONTROL**

| Reference     | Station | Side  | Calculations                           | Item 601 - Rock Channel, Traff. Type C (1'-2') w/o Filter cu.yds. |
|---------------|---------|-------|--|---|
| 1 RCP         | 17+50±  | LT/RT | Planim. = 1192 S.F.<br>1192 × 2 ÷ 27 = | 88  |
| 2 RCP         | 19+50±  | LT/RT | Planim. = 1800 S.F.<br>1800 × 2 ÷ 27 = | 134   |
| <b>Totals</b> |         |       |  | <b>222</b>  |

**FIELD DRIVE**

| Station      | Side | See Sheet | Item 304 6" Aggr. Base Type D cu.yd. | Item 603 1/2" Conc. Type D Lin. Ft. |
|--------------|------|-----------|--------------------------------------|-------------------------------------|
| 21+00        | RT   | 44/10     | 10                                   | 38                                  |
| <b>Total</b> |      |           | <b>10</b>                            | <b>38</b>                           |

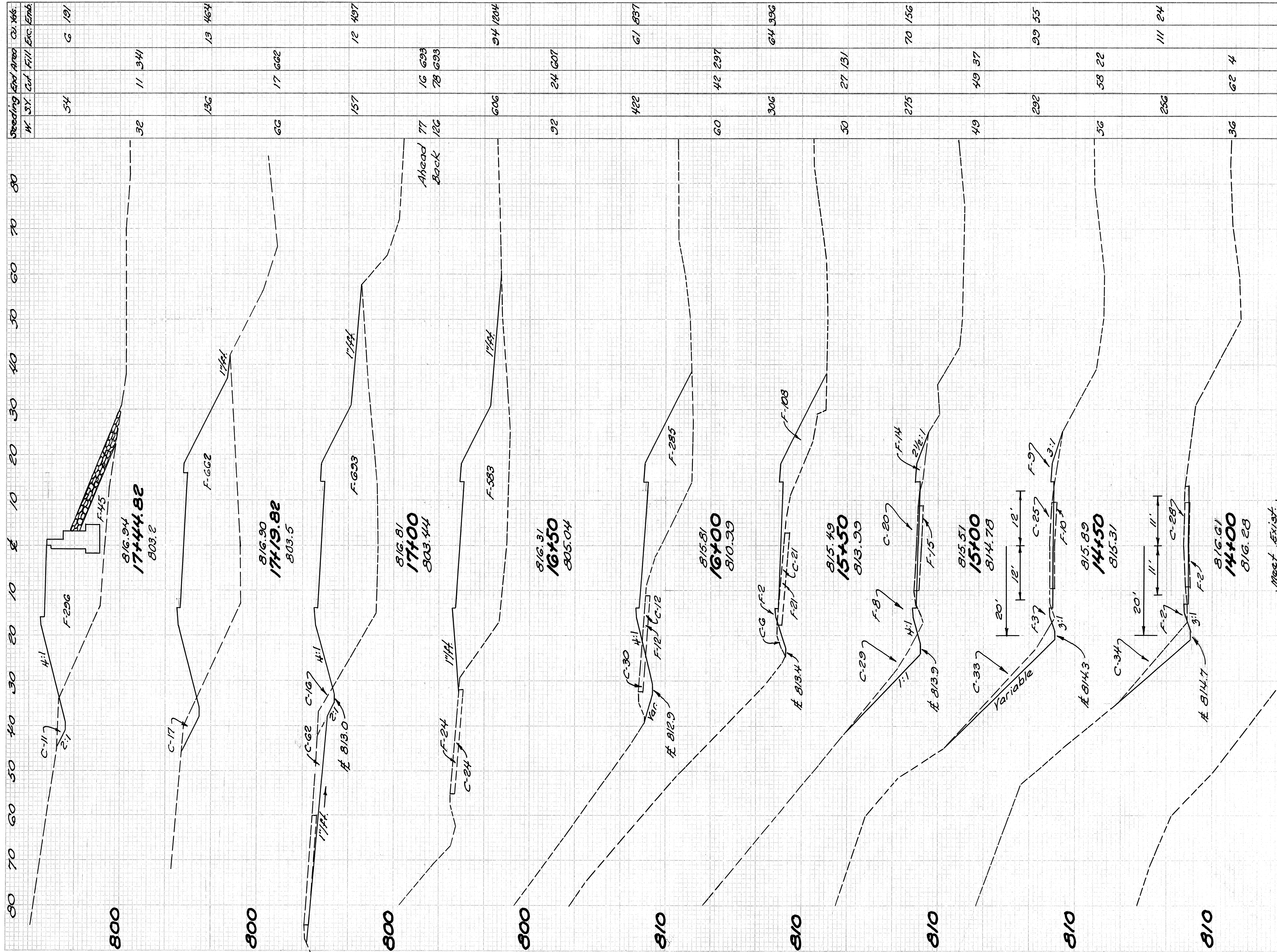
**PERMANENT PAVEMENT MARKINGS**

| Station       | Side     | Item 621                           |                                    |
|---------------|----------|------------------------------------|------------------------------------|
|               |          | Edge Line, Double (White) Lin. Ft. | Center Line, Double Solid Lin. Ft. |
| From 13+50    | To 24+00 | LT                                 | 1050                               |
| From 13+50    | To 24+00 | RT                                 | 1050                               |
| <b>Totals</b> |          | <b>2100</b>                        | <b>1050</b>                        |

**GUARDRAIL**

| Station       | Side        | Item 606                  |                             | Item 202      |
|---------------|-------------|---------------------------|-----------------------------|---------------|
|               |             | Guardrail Type 5 Lin. Ft. | Anchor Assembly Type A Each |               |
| From 16+40    | To 17+58.63 | LT                        | 100.00                      | /             |
| From 14+11    | To 17+26.63 | RT                        | 275.00                      | /             |
| From 19+77.38 | To 21+85.82 | LT                        | 175.00                      | /             |
| From 19+45.38 | To 20+69.68 | RT                        | 100.00                      | /             |
| From 19+48    | To 19+80    | LT                        |                             | 37.00         |
| From 20+58    | To 20+85    | LT                        |                             | 26.00         |
| From 20+39    | To 20+63    | LT                        |                             | 43.00         |
| From 19+3E    | To 19+6E    | LT                        |                             | 33.00         |
| <b>Totals</b> |             | <b>650.00</b>             | <b>4</b>                    | <b>145.00</b> |

STA. 12+00 TO STA. 26+00



| Seeding | End Area | Co. Yds.  |
|---------|----------|-----------|
| W. S.Y. | Co. Fill | Exc. Emb. |
| 122     | 230      | 79 4      |
| 8       | 230      | 0         |

FHWA REGION 5 OHIO PROJECT BEL-148-14.03

Quantities  
 Calc. L.J.C. 05/14/06 J.A.M.  
 Date 6-18-06 Date 6-24-06

80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80

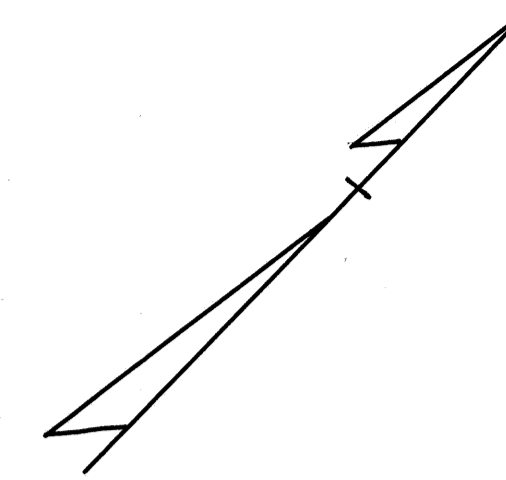
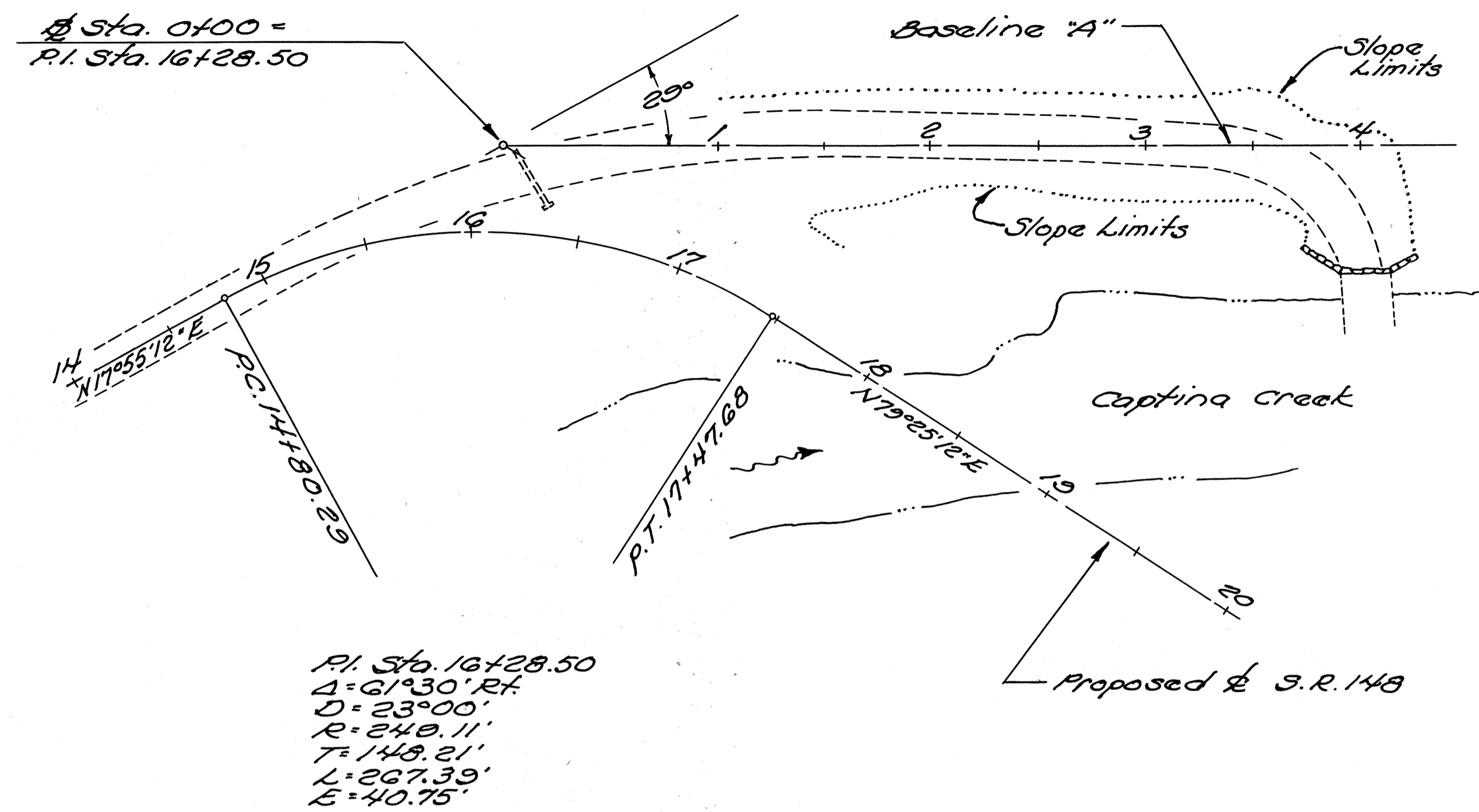
STA 13+00 TO STA 17+44.82



| QUANTITIES    |                 |  |  |
|---------------|-----------------|--|--|
| By: L.J.C.    | Checked: J.A.W. |  |  |
| Date: 6-24-86 | Date: 6-25-86   |  |  |

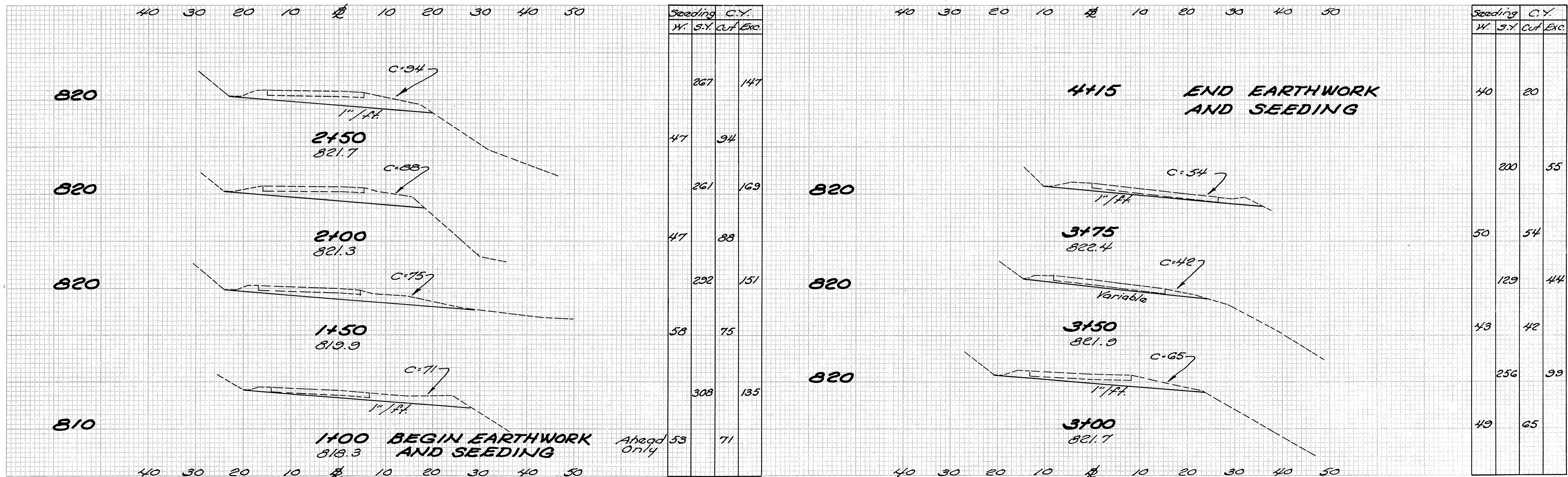
| FED. RD. DIVISION | STATE | PROJECT |  |
|-------------------|-------|---------|--|
| 2                 | OHIO  |         |  |

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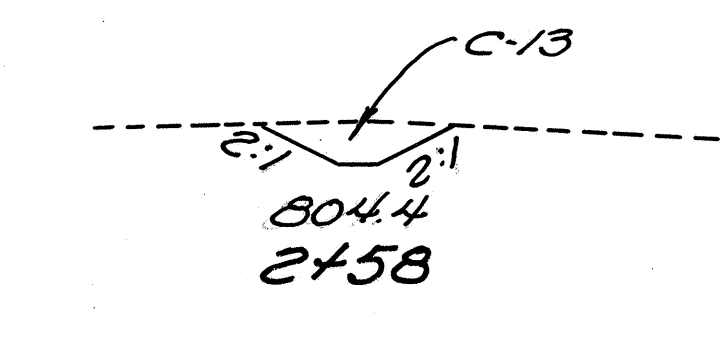
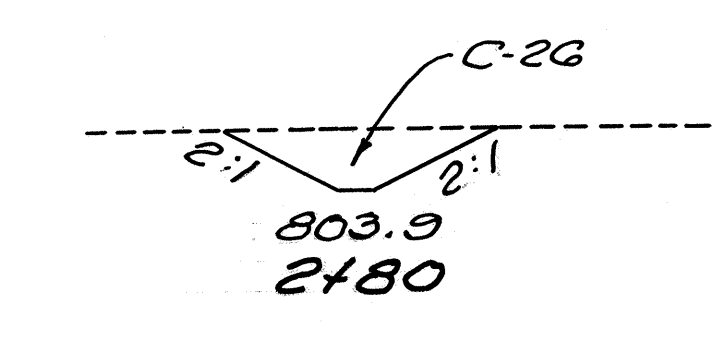
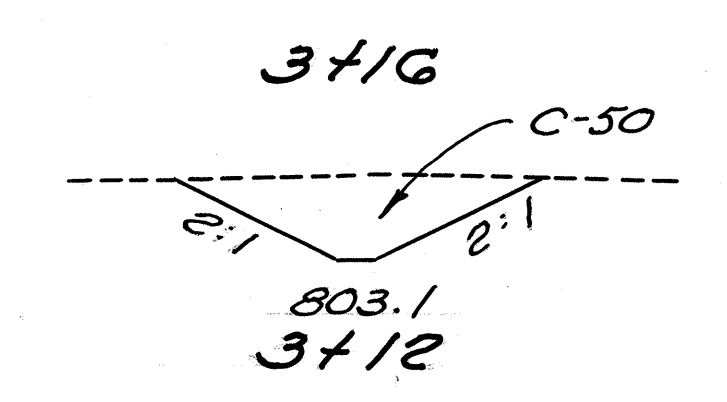
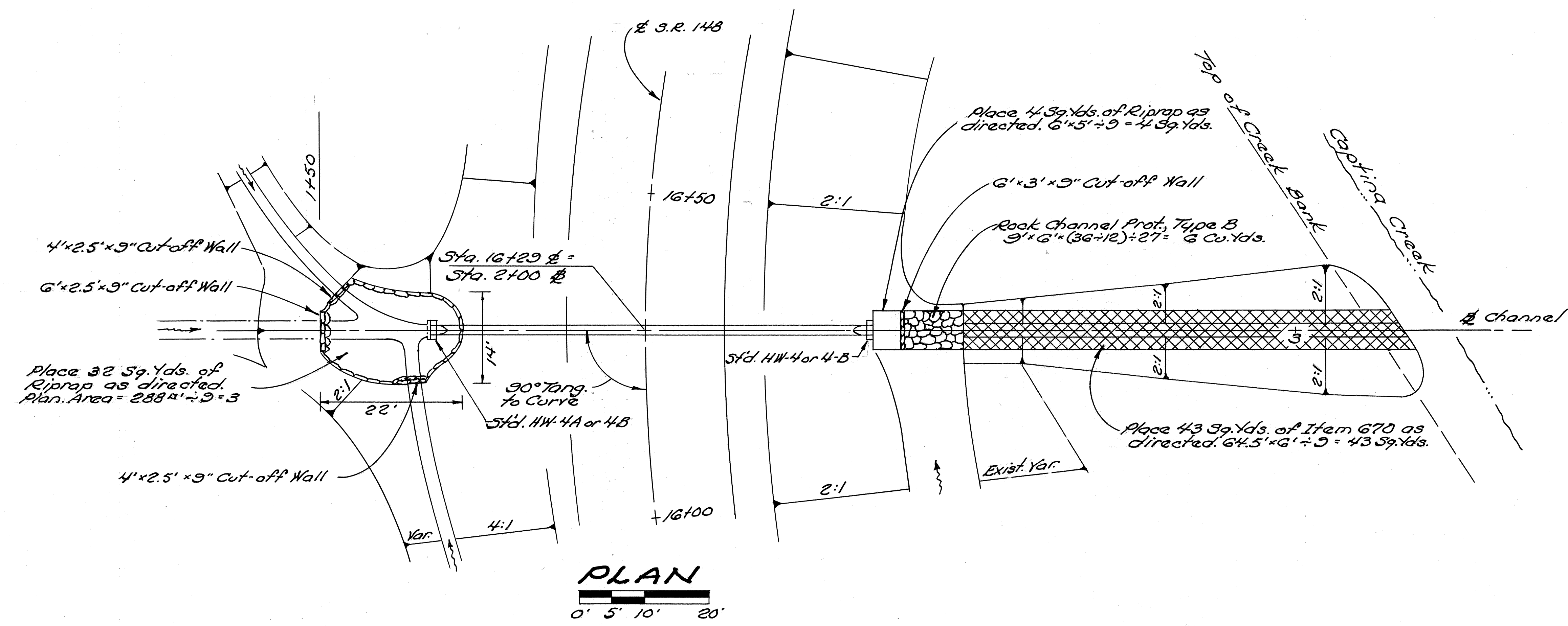


Quantities carried to General Summary Sheet 7.

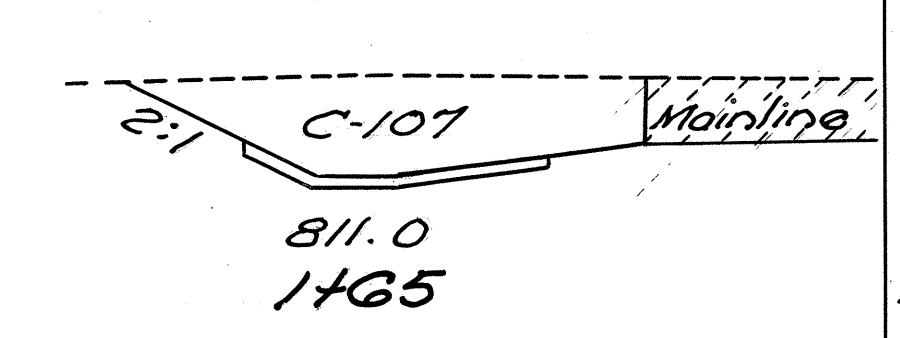
Item 203-Excavation 800 cu. yds.  
Item 659-Seeding and Mulching 1713 Sq. yds.



BASELINE "A" DETAILS



2+37 Resume  
 1+83 Suspend



1+40.5

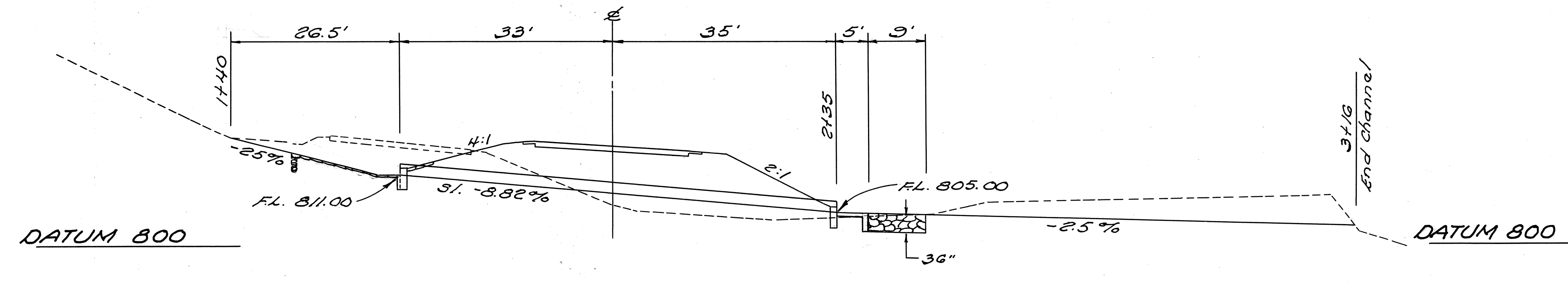
| St. No.       | S.Y. | Seeding |      |
|---------------|------|---------|------|
|               |      | E.A.    | C.Y. |
| 8             | 0    |         |      |
|               | 6    |         | 4    |
| 19            | 50   |         |      |
|               | 59   |         | 45   |
| 14            | 26   |         |      |
|               | 29   |         | 16   |
| 10            | 13   |         |      |
|               | 21   |         | 5    |
| 8             | 0    |         |      |
| 12            | 0    |         |      |
|               | 28   |         | 36   |
| 16            | 107  |         |      |
|               | 53   |         | 49   |
| 23            | 0    |         |      |
| <b>Totals</b> |      | 196     | 155  |

**QUANTITIES**

- Item 603 - 18" Conduit, Type A, 706.01, 706.02, 706.03 or 24" 707.03 (0.138) 68 Lin. Ft.
- Item 601 - Rock Channel Protection, Type B with Filter 6 Cu. Yd.
- Item 601 - Riprap, using 6" Reinforced Concrete Slab 36 Sq. Yd.
- Item 602 - Concrete Masonry 1.09 Cu. Yd.
- Item 670 - Ditch Erosion Protection 43 Sq. Yd.
- Item 203 - Excavation 155 Cu. Yd.
- Item 659 - Seeding and Mulching 196 Sq. Yd.

Quantities carried to General Summary Sh. 7

Drainage Area = 7.2 Acres  
 Q<sub>25</sub> = 14.3 c.f.s.  
 Q<sub>100</sub> = 17.3 c.f.s.  
 HW<sub>100</sub> = 815.00



**PROFILE**

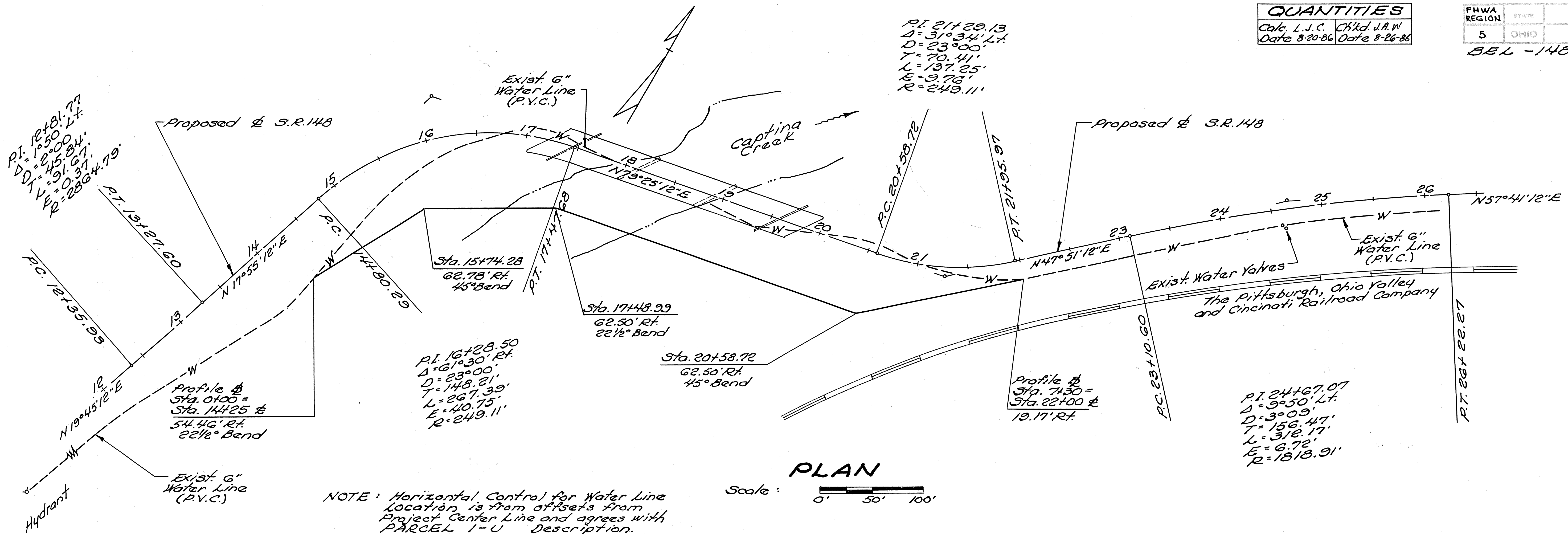
**STA. 16+29**  
**18" x 70' STD. PIPE CONDUIT**

| QUANTITIES   |              |
|--------------|--------------|
| Calc. L.J.C. | Chkd. J.A.W. |
| Date 8-20-86 | Date 8-26-86 |

| FHWA REGION | STATE | PROJECT |
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| 5           | OHIO  |         |

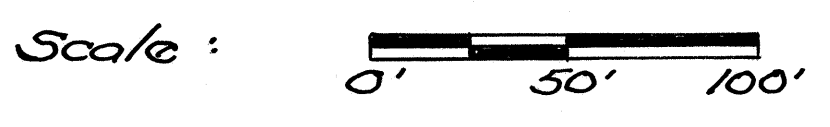
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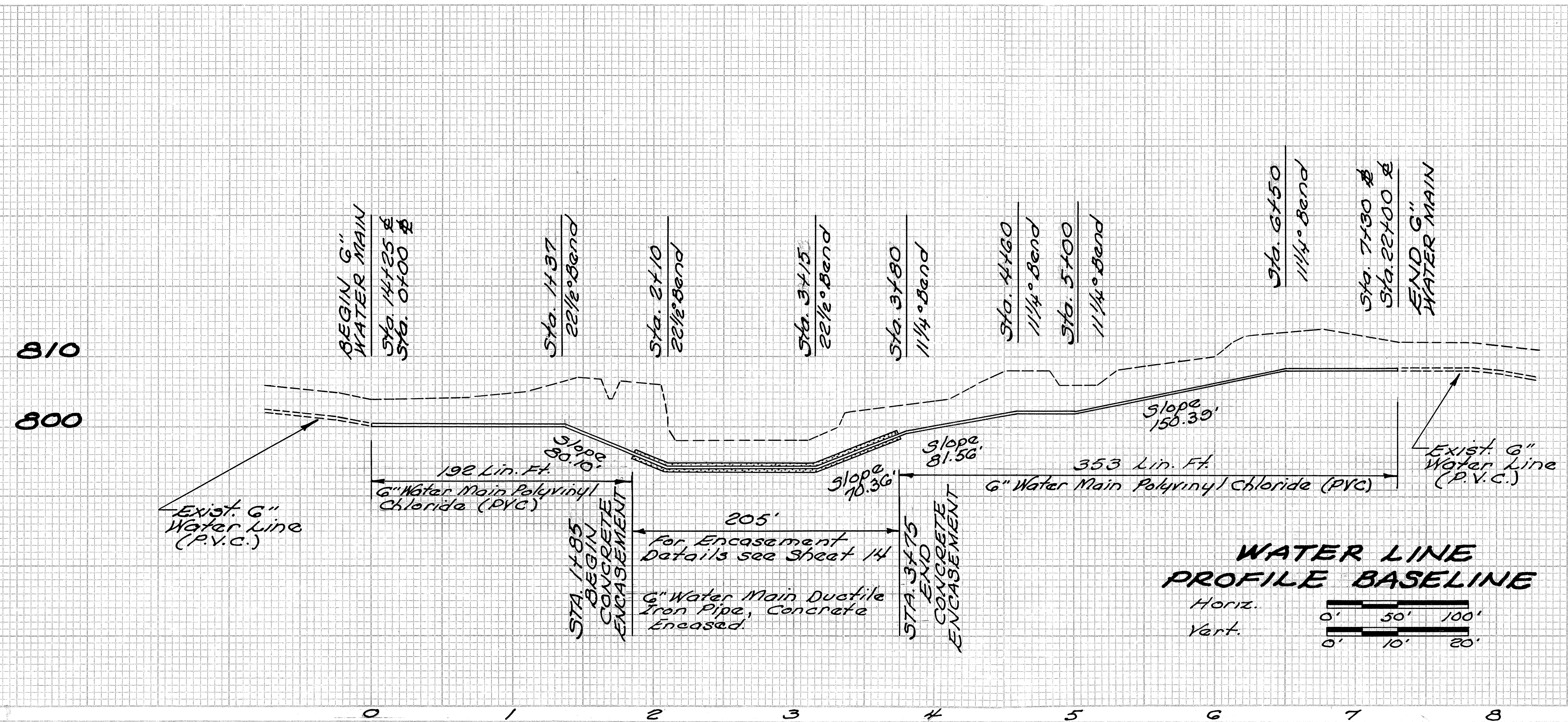
NOTE: Horizontal Control for Water Line Location is from offsets from Project Center Line and agrees with PARCEL 1-U Description.

**PLAN**

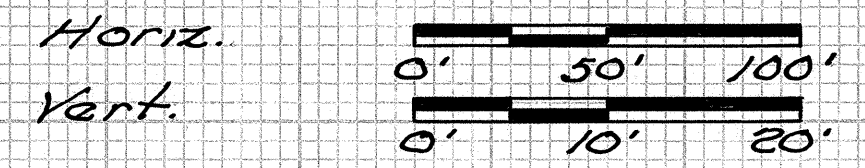


| QUANTITIES   |          |
|--|----------|
| <b>WATER LINE - ITEM 814</b>   |          |
| 6" Water Main Polyvinyl Chloride (PVC)<br>A.W.W.A. C-900 Class 600                           | 545 L.F. |
| 6" Water Main Ductile Iron Pipe<br>A.N.S.I. Class 52 Mechanical Joints,<br>Concrete Encased. | 205 L.F. |

Quantities carried to General Summary - Sheet 7.



**WATER LINE PROFILE BASELINE**



# WATER LINE NOTES AND DETAILS

## CONNECTIONS TO EXISTING PIPES:

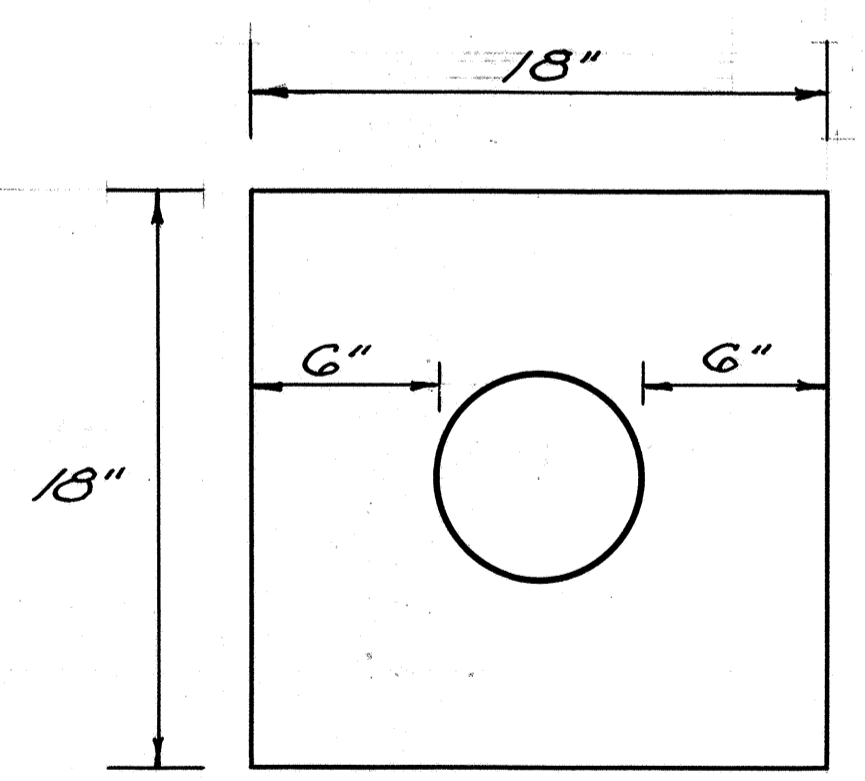
At places where the plans provide for proposed pipe to be connected to the existing pipe, it shall be the responsibility of the Contractor to locate the existing pipe both as to the line and grade before he starts to lay the proposed pipe. The cost of this operation shall be included in the unit price bid for the pertinent pipe item.

## WATER LINES:

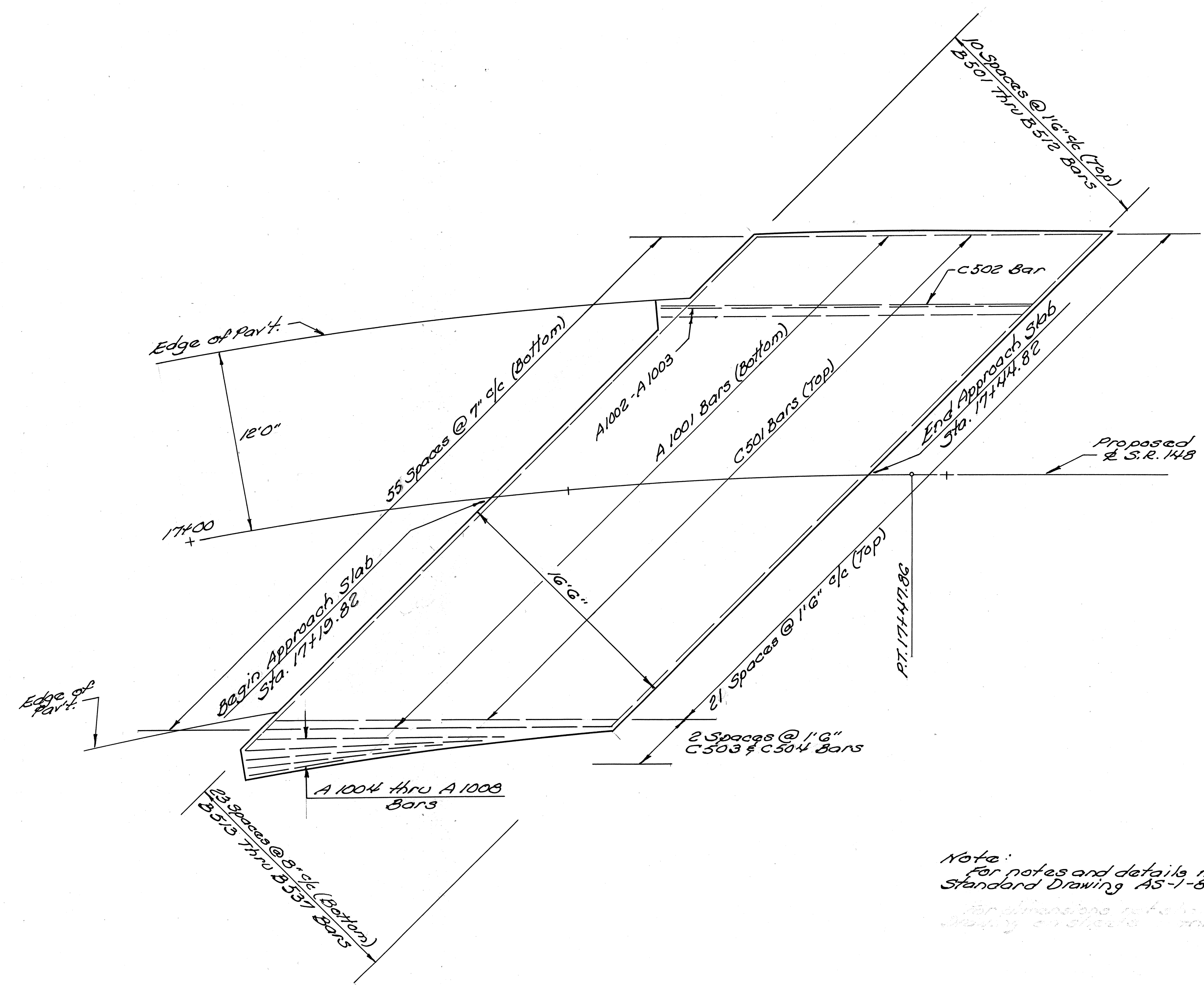
pipe fittings, connectors, collars, reaction backing and all appurtenances necessary for the laying of the pipe shall be furnished and installed where needed even though not specifically called for on the plans and included for payment in the unit price bid for the pertinent pipe under Item 814. Also payment for the removal of any existing water line shall be included in the unit price bid for the respective "814 Water Main" items.

The Water Line located within the limits of this project is a 6" main. This line must remain in service at all times. The Contractor shall take appropriate action to assure that service, except for the minimum cut in time, shall be maintained and be prepared with the assistance of the Belmont County Sanitary Sewer District to establish emergency service if necessary. Prior to beginning any work on the project the Contractor shall meet with the Director of the Belmont County Sanitary Sewer District and develop an emergency plan which shall be made available to the Ohio Department of Transportation Project Engineer.

The contractor shall notify the Belmont County Sanitary Sewer District 2 Working Days before the scheduled connection to the existing 6" Water line is to be made. The maximum time permitted to make the connections and restore service is 8 hrs. At the time of notification the Contractor and the Belmont County Sanitary Sewer District shall agree on the time of Day the Water system shall be out of service.



CONCRETE ENCASEMENT DETAIL

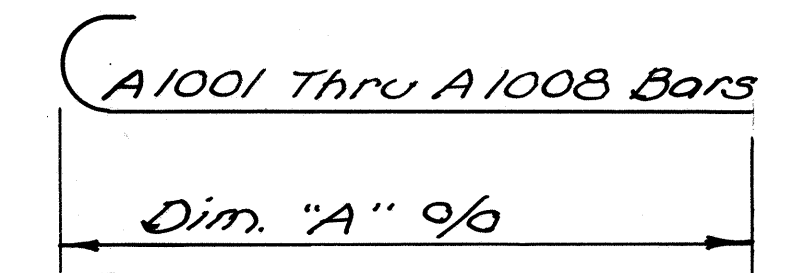


**REINFORCING STEEL LIST**

| Mark  | No. | Length | Dim. "A" |
|-------|-----|--------|----------|
| A1001 | 56  | 24'5"  | 23'0"    |
| A1002 | 1   | 25'7"  | 24'2"    |
| A1003 | 1   | 25'2"  | 23'9"    |
| A1004 | 1   | 17'11" | 16'6"    |
| A1005 | 1   | 16'11" | 15'6"    |
| A1006 | 1   | 14'5"  | 13'0"    |
| A1007 | 1   | 12'2"  | 10'9"    |
| A1008 | 1   | 8'2"   | 6'9"     |
| B501  | 1   | 49'1"  |          |
| B502  | 1   | 50'7"  |          |
| B503  | 1   | 51'2"  |          |
| B504  | 1   | 50'6"  |          |
| B505  | 1   | 50'0"  |          |
| B506  | 1   | 49'6"  |          |
| B507  | 1   | 49'0"  |          |
| B508  | 1   | 48'7"  |          |
| B509  | 1   | 48'1"  |          |
| B510  | 1   | 47'10" |          |
| B511  | 1   | 47'5"  |          |
| B512  | 1   | 47'1"  |          |
| B513  | 1   | 46'11" |          |
| B514  | 1   | 46'0"  |          |
| B515  | 1   | 45'11" |          |
| B516  | 1   | 45'7"  |          |
| B517  | 1   | 45'3"  |          |
| B518  | 1   | 44'10" |          |
| B519  | 1   | 44'6"  |          |
| B520  | 1   | 44'2"  |          |
| B521  | 1   | 43'11" |          |
| B522  | 1   | 43'7"  |          |
| B523  | 1   | 43'3"  |          |
| B524  | 1   | 42'10" |          |
| B525  | 1   | 42'6"  |          |
| B526  | 1   | 42'2"  |          |
| B527  | 1   | 41'11" |          |
| B528  | 1   | 41'7"  |          |
| B529  | 1   | 41'3"  |          |
| B530  | 1   | 40'10" |          |
| B531  | 1   | 40'6"  |          |
| B532  | 1   | 40'2"  |          |
| B533  | 1   | 39'11" |          |
| B534  | 1   | 39'7"  |          |
| B535  | 1   | 39'3"  |          |
| B536  | 1   | 38'10" |          |
| B537  | 1   | 38'6"  |          |
| C501  | 22  | 23'0"  |          |
| C502  | 1   | 24'7"  |          |
| C503  | 1   | 14'6"  |          |
| C504  | 1   | 3'0"   |          |

Note:  
For notes and details not shown, See Standard Drawing AS-1-81.  
For dimensions not shown, see bridge drawing sheets.

APPROACH SLAB MODIFIED AS PER PLAN



**APPROACH SLAB DETAILS**



**GENERAL NOTES**

DESIGN SPECIFICATIONS

This structure conforms to "Standard Specifications For Highway Bridges" adopted by the American Association of State Highway and Transportation Officials, dated 1983, including 84#85 Interim Specifications and the Ohio "Supplement" to these Specifications.

DESIGN DATA

Design loading - HS20-44 Case II and the alternate military loading.

Concrete class S - unit stress 1500 psi. for Superstructure.

Concrete class C - unit stress 1333 psi. for Substructure.

Structural steel ASTM A588 - unit stress 27,000 psi.

Deck protection method - Epoxy Coated Reinforced Steel, both mats. Monolithic wearing surface is assumed for design purposes to be 1" thick.

Reinforcing Steel - ASTM A615, A616, A617, Gr. 60, Unit stress 24,000 psi.

SUPPLEMENTAL SPECIFICATION

Reference shall be made to supplemental specifications:

No. 824 - Epoxy Coated Reinforcing Steel, dated 10/8/82.

No. 836 - Concrete Curing and Protective Membrane, dated 11/12/85.

No. 849 and 949 - Elastomeric compression seals for structural steel joints, dated 12/24/85.

REFERENCE DRAWINGS

Reference shall be made to standard drawings:

AS-1-81, dated 11/27/81

DBR-2-73, dated 04/10/73

FB-1-82, dated 05/10/82

RB-1-55, revised 02/02/59

SD-1-69, dated 06/12/69

EXJ-2-81, revised 04/2/84

REMOVAL OF EXISTING STRUCTURE

When no longer needed to maintain traffic the existing structure shall be removed.

The contractor shall take special care and appropriate measures to ensure that removed debris shall not fall into water; The contractor shall remove, at his own expense, any debris which has resulted from his operations.

DIMENSIONS

Dimensions given are measured horizontally and at 60°F, unless otherwise noted.

REINFORCING STEEL SPLICES

All reinforcing steel splices shall be in accordance with Item 509.08. Unless shown otherwise, all splices shall be made by overlapping the ends of the bars not less than shown in the following table:

| BAR SIZE | LAP LENGTH |
|----------|------------|
| #4       | 1'-4"      |
| #5       | 1'-8"      |
| #6       | 2'-0"      |
| #7       | 2'-6"      |
| #8       | 3'-3"      |
| #9       | 4'-2"      |
| #10      | 5'-3"      |

FOUNDATIONS

A. Pier Footings: The pier footing shall extend a minimum of three inches into bedrock or to the elevation shown, whichever is lower.

B. Foundation Bearing Pressure: Pier footings, as designed, produce a maximum bearing pressure of 3.0 tons per square foot.

C. Pile Driving Constraints - Rear Abutment: Prior to driving piles at the proposed rear abutment, the spill-thru slope embankment at the abutment shall be constructed to the level of the subgrade for a minimum distance of 100 feet back of the abutment. After the embankment has been completed within the above required limits, excavation for the rear abutment footing can be made and the piles can be driven.

D. Pile Points: Steel pile points shall be used to protect the tips of the proposed piling. The steel points shall be furnished by Associated Pile and Fitting Corporation, 262 Rutherford Boulevard, Clifton, New Jersey 07014; International Construction Equipment, Inc., 301 Warehouse Drive, Matthews, North Carolina 28015; Dougherty Foundation Products, Inc., P.O. Box 688, Franklin Lakes, New Jersey 07417; Versa Steel Inc., 3601 N.W. Yeon Ave., P.O. Box 10559, Portland, Oregon 97210, or by a manufacturer that can furnish a steel point that is acceptable to the Director.

E. Piles: Piles shall be driven to refusal on bedrock. Refusal shall be considered as attained by penetrating soft bedrock with a minimum resistance of 20 blows per inch, or refusal shall be considered as attained after the pile has contacted hard bedrock and the pile has then received at least 20 blows.

The design load is 32 tons per pile for abutments.

STRUCTURAL STEEL

All structural steel of this structure shall be unpainted ASTM A588, except as noted for bearings and expansion joint armor.

UTILITY OWNERSHIP

For Utility Ownership see General Notes of Roadway Plans.

UTILITY LINES

All expense involved in relocating (installing) the affected utility lines shall be borne by the Owners. The Contractor and Owners are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

QUANTITY CALCULATIONS  
BY DATE:  
CALC. S.J.R. 5/86  
CHK'D. M.B. 5/86

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

17  
27

BELMONT COUNTY  
BEL-148-14.03

**ESTIMATED QUANTITIES**

| ITEM    | TOTAL    | UNIT     | DESCRIPTION  | ABUTMENT | PIERS  | SUPER-STRUCTURE | GENERAL  |
|---------|----------|----------|--|----------|--------|-----------------|----------|
| 202     | LUMP SUM | LUMP SUM | STRUCTURES REMOVED   |          |        |                 | LUMP SUM |
| 503     | LUMP SUM | LUMP SUM | COFFERDAMS, CRIBS AND SHEETING   |          |        |                 | LUMP SUM |
| 503     | 232      | CU. YD.  | UNCLASSIFIED EXCAVATION INCLUDING ROCK   | 62       | 170    |                 |          |
| 505     | LUMP SUM | LUMP SUM | PILE DRIVING EQUIPMENT MOBILIZATION  |          |        |                 | LUMP SUM |
| 507     | 420      | LIN. FT. | STEEL PILES, HP 10 X 42, AS PER PLAN   | 420      |        |                 |          |
| 507     | 28       | EACH     | STEEL POINTS   | 28       |        |                 |          |
| 509     | 36,539   | LB.      | REINFORCING STEEL, GRADE 60  | 14,158   | 22,381 |                 |          |
| 511     | 110      | CU. YD.  | CLASS C CONCRETE, ABUTMENTS ABOVE FOOTINGS                                       | 110      |        |                 |          |
| 511     | 101      | CU. YD.  | CLASS C CONCRETE, PIERS ABOVE FOOTINGS   |          | 101    |                 |          |
| 511     | 142      | CU. YD.  | CLASS C CONCRETE, FOOTINGS   | 80       | 62     |                 |          |
| 511     | 230      | CU. YD.  | CLASS S CONCRETE, SUPERSTRUCTURE (SEE PROPOSAL NOTE)                             |          |        | 230             |          |
| 512     | 16       | SQ. YD.  | TYPE A WATERPROOFING   | 16       |        |                 |          |
| 513     | 160,500  | LB.      | STRUCTURAL STEEL (AISC CATEGORY I), A588 (SEE PROPOSAL NOTE)                     |          |        | 160,500         |          |
| 513     | 2190     | EACH     | WELDED STUD SHEAR CONNECTORS   |          |        | 2190            |          |
| 514     | LUMP SUM | LUMP SUM | PARTIAL PAINTING OF A588 STEEL, SYSTEM A, AS PER PLAN                            |          |        |                 | LUMP SUM |
| 516     | 94.4     | LIN. FT. | STRUCTURAL EXPANSION JOINTS, INCLUDING ELASTOMERIC COMPRESSION SEALS             |          |        | 94.4            |          |
| 516     | 25       | LIN. FT. | PVC WATERSTOP, AS PER PLAN   | 25       |        |                 |          |
| 517     | 437.50   | LIN. FT. | RAILING (DEEP BEAM RAIL WITH STEEL TABULAR BACKUP, TYPE I STEEL POSTS AND BOLTS) |          |        | 437.50          |          |
| 518     | 74       | CU. YD.  | POROUS BACKFILL  | 74       |        |                 |          |
| 518     | 110      | LIN. FT. | 6" PERFORATED, HELICAL CORRUGATED STEEL PIPE, 707.01                             | 110      |        |                 |          |
| 518     | 29       | LIN. FT. | 6" NON-PERFORATED HELICAL CORRUGATED STEEL PIPE INCLUDING SPECIALS, 707.01       | 29       |        |                 |          |
| 824     | 46,637   | LB.      | EPOXY COATED REINFORCING STEEL, GRADE 60   |          |        | 46,637          |          |
| SPECIAL | 164      | SQ. YD.  | SEALING OF CONCRETE SURFACES (SEE PROPOSAL NOTE)                                 |          |        | 164             |          |
| SPECIAL | 2669     | SQ. FT.  | PROTECTION OF CONCRETE SURFACES (SEE PROPOSAL NOTE)                              | 729      | 1940   |                 |          |

ADLAKA AND ASSOCIATES  
ENGINEERS & SURVEYORS  
YOUNGSTOWN, OH.

2 / 10

GENERAL NOTES &  
ESTIMATED QUANTITIES  
BRIDGE NO. BEL-148-14.03  
OVER  
CAPTINA CREEK

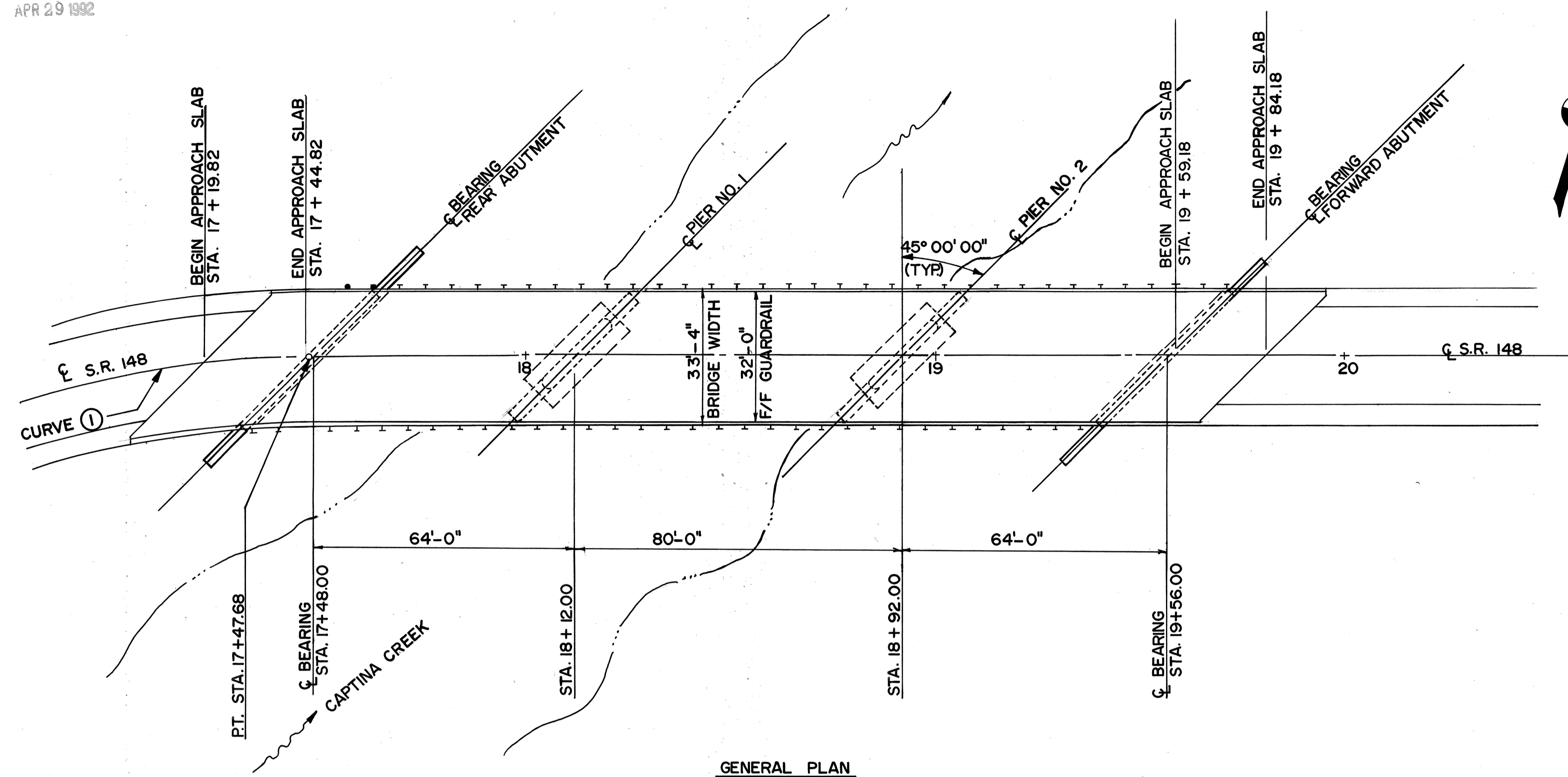
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|----------|--------|--------|---------|----------|------|---------|
| M.B.     | D.R.S. | D.R.S. | S.J.R.  | S.A.     | 7/86 |         |

MICROFILMED  
APR 29 1992

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

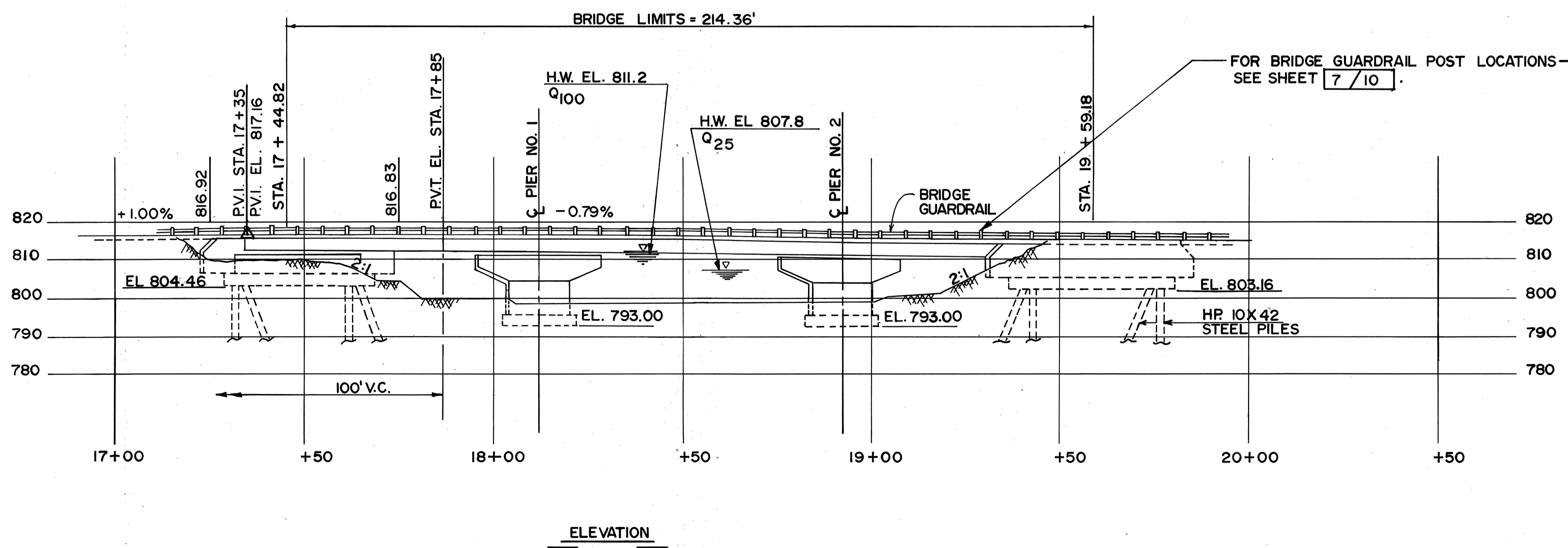
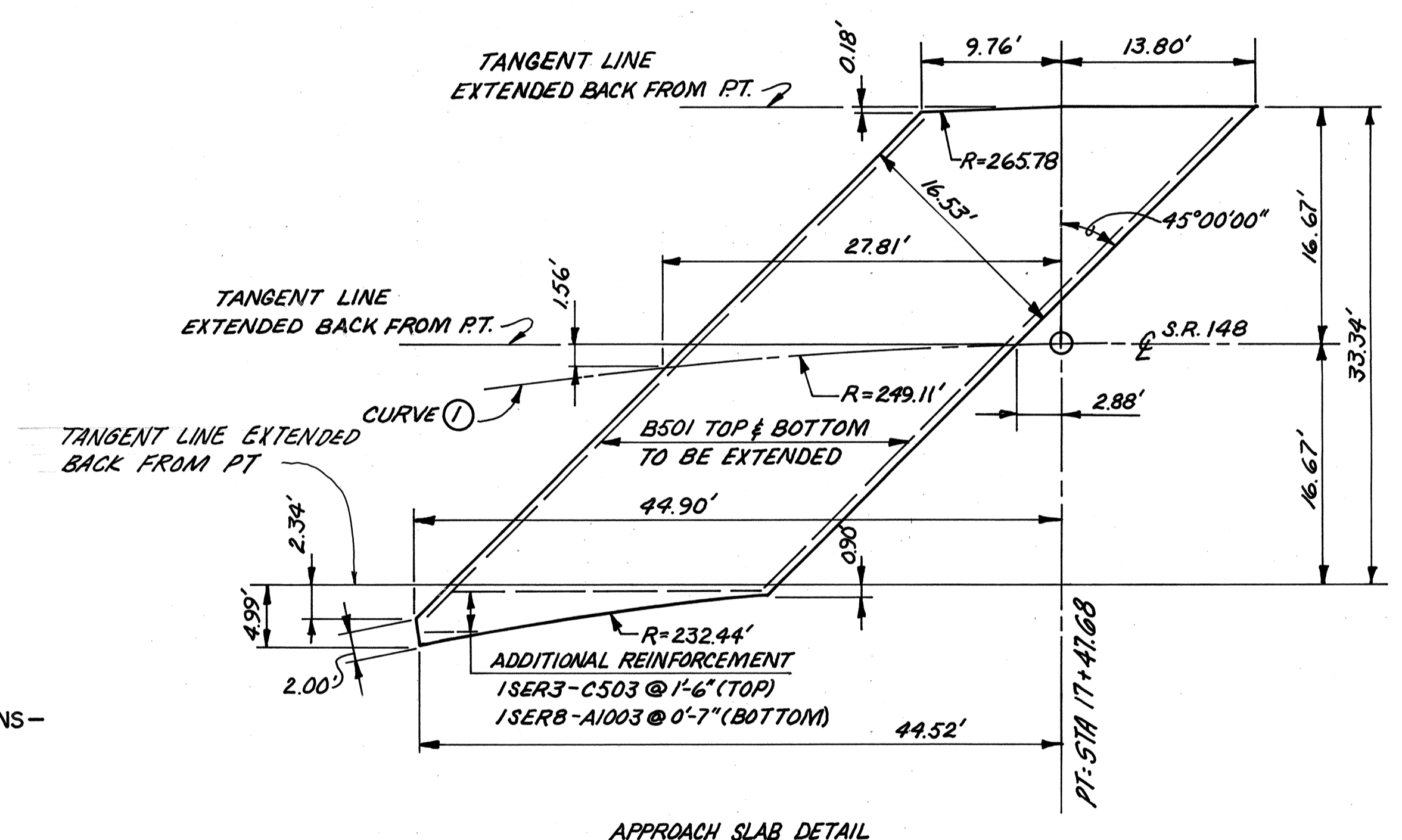
18  
27

BELMONT COUNTY  
BEL-148-14.03



**CURVE ①**  
 P.I. STA. 16+28.50  
 $\Delta = 61^\circ-30'$  RT.  
 $D_c = 23^\circ-00'$   
 $R = 249.11'$   
 $T = 148.21'$   
 $L = 267.39'$   
 $E = 40.75'$

**VERTICAL CURVE DATA**  
 P.V.I. STA. = 17+35.00  
 P.V.I. ELEV. = 817.16  
 V.C. = 100'  
 GRADES = 1.00% & -0.79%  
 M = -0.22

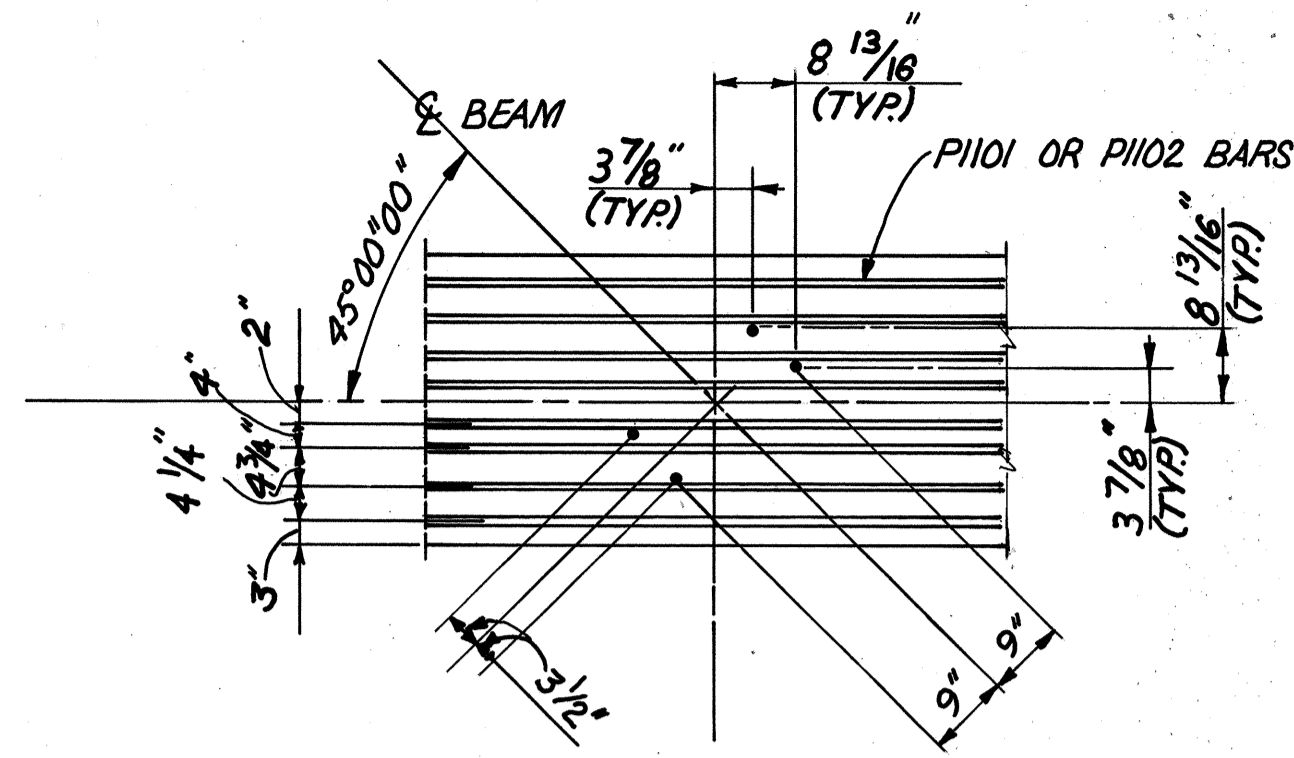


NOTE: SEE STANDARD DWG. AS-1-81, SHEET 1 of 3 FOR OTHER DETAILS.

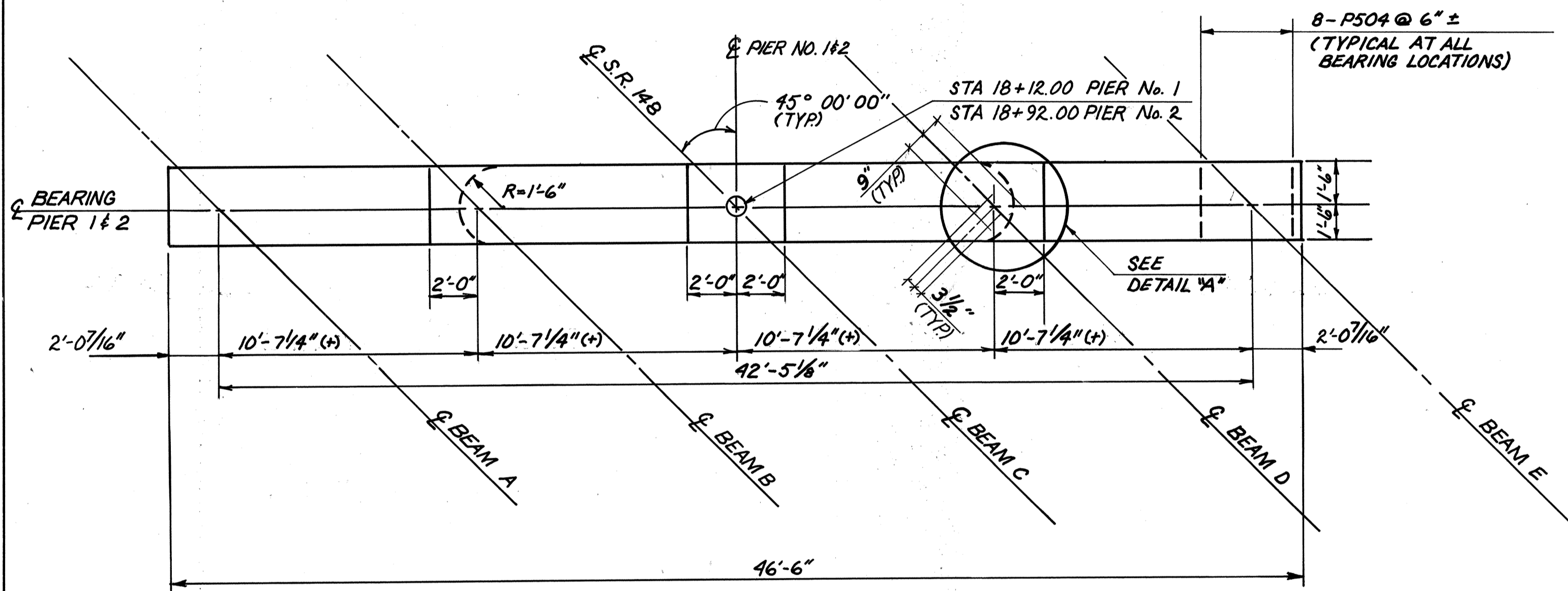
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|---|---------------|------------------|-------------------|------------------|--------------|---------|
| ADLAKA AND ASSOCIATES<br>ENGINEERS & SURVEYORS<br>YOUNGSTOWN, OH. |               |                  |                   |                  |              | 3 / 10  |
| <b>GENERAL PLAN &amp; ELEVATION</b>                               |               |                  |                   |                  |              |         |
| BRIDGE NO. BEL-148-14.03<br>OVER<br>CAPTINA CREEK                 |               |                  |                   |                  |              |         |
| DESIGNED<br>M.B.  | DRAWN<br>M.B. | TRACED<br>D.R.S. | CHECKED<br>S.U.R. | REVIEWED<br>S.A. | DATE<br>7/86 | REVISED |



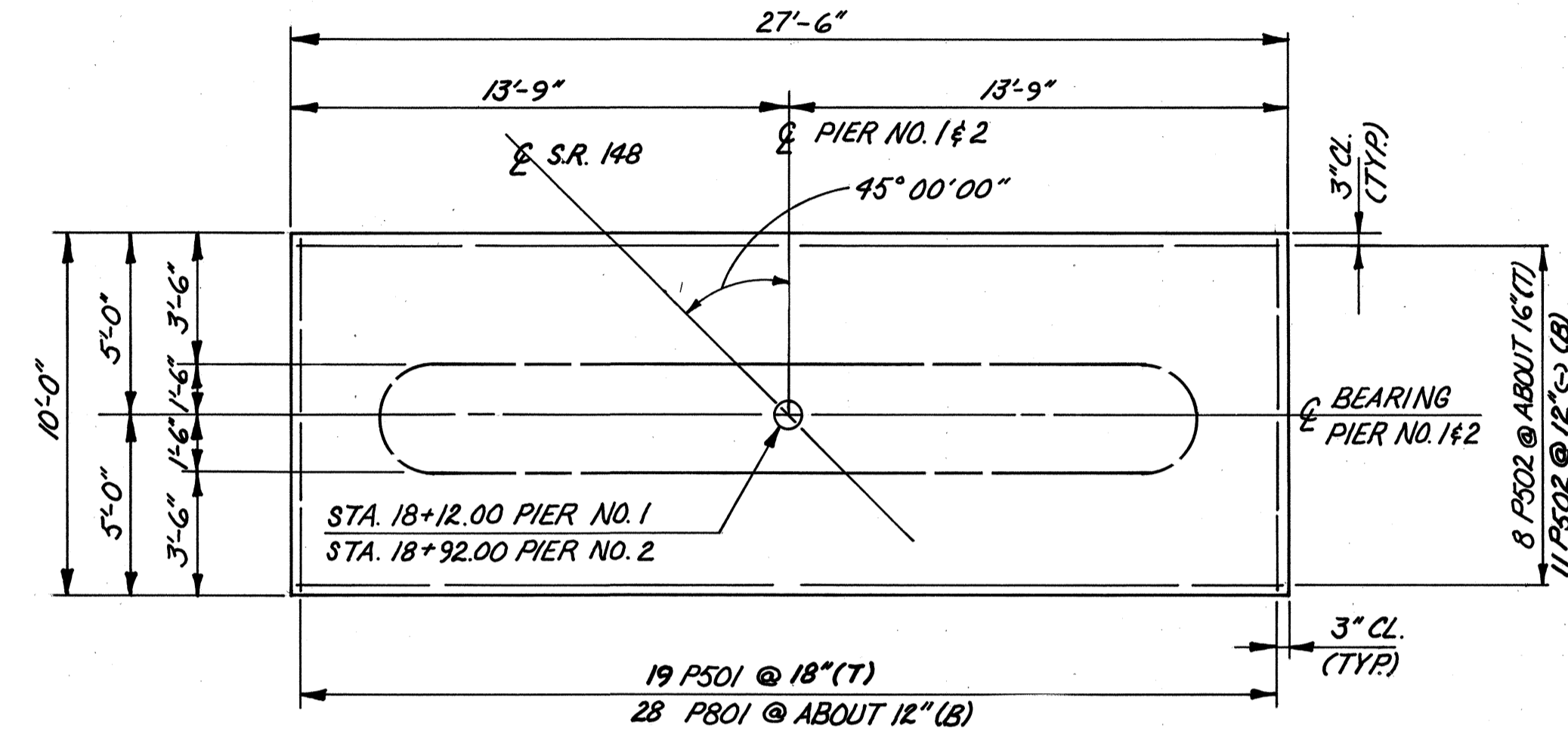




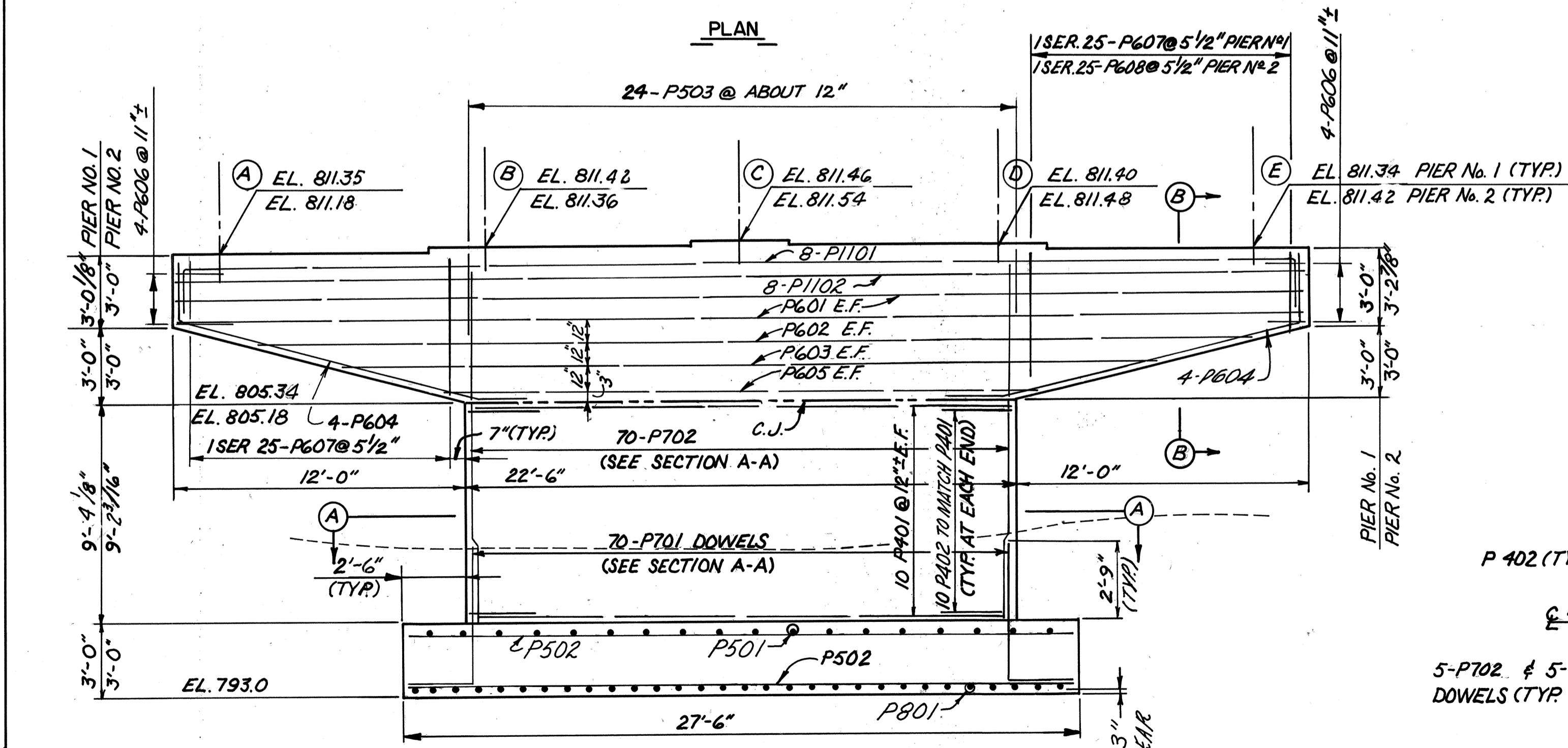
DETAIL "A"  
(PIER 2 ONLY)



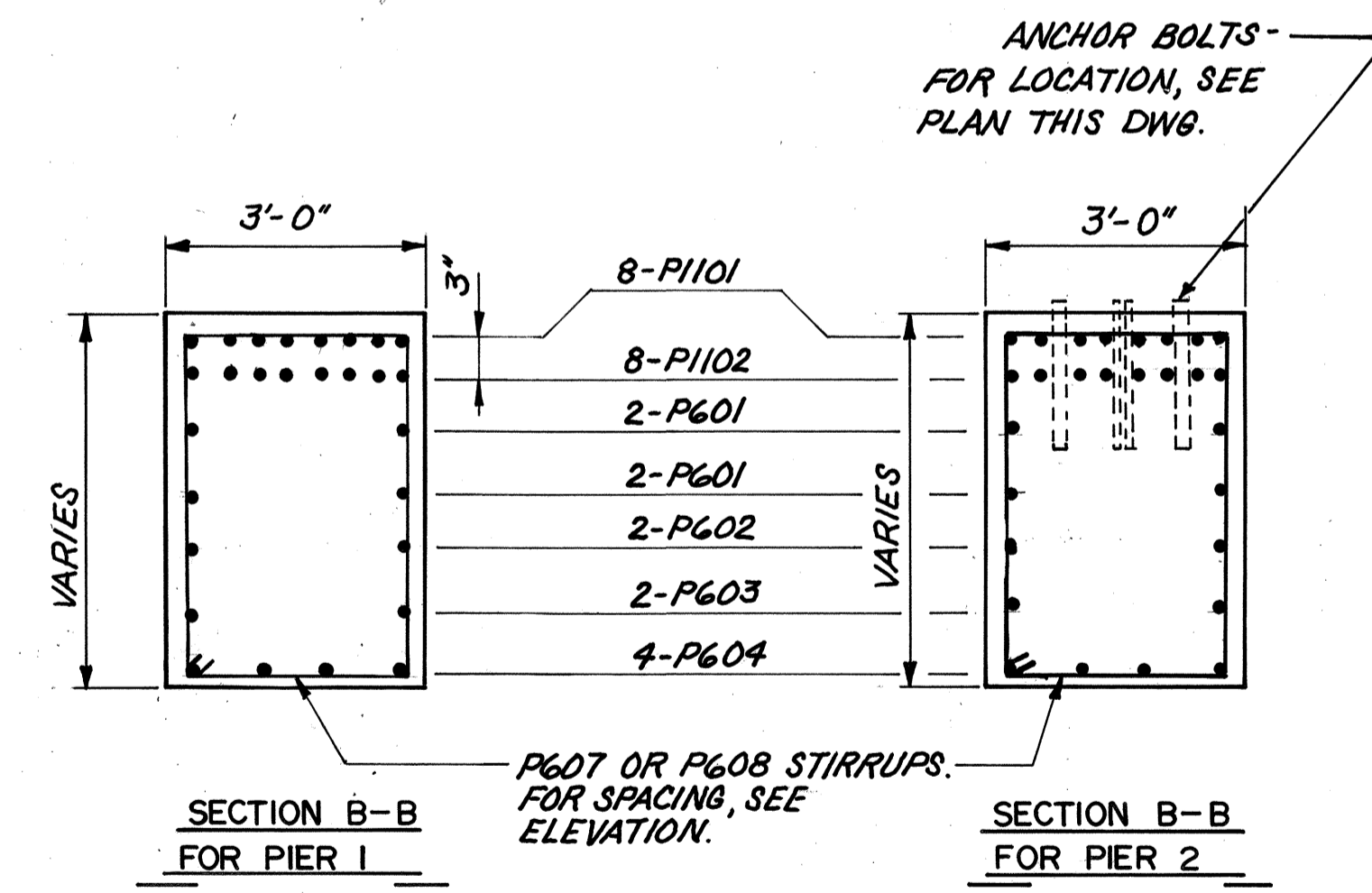
PLAN



FOOTING PLAN

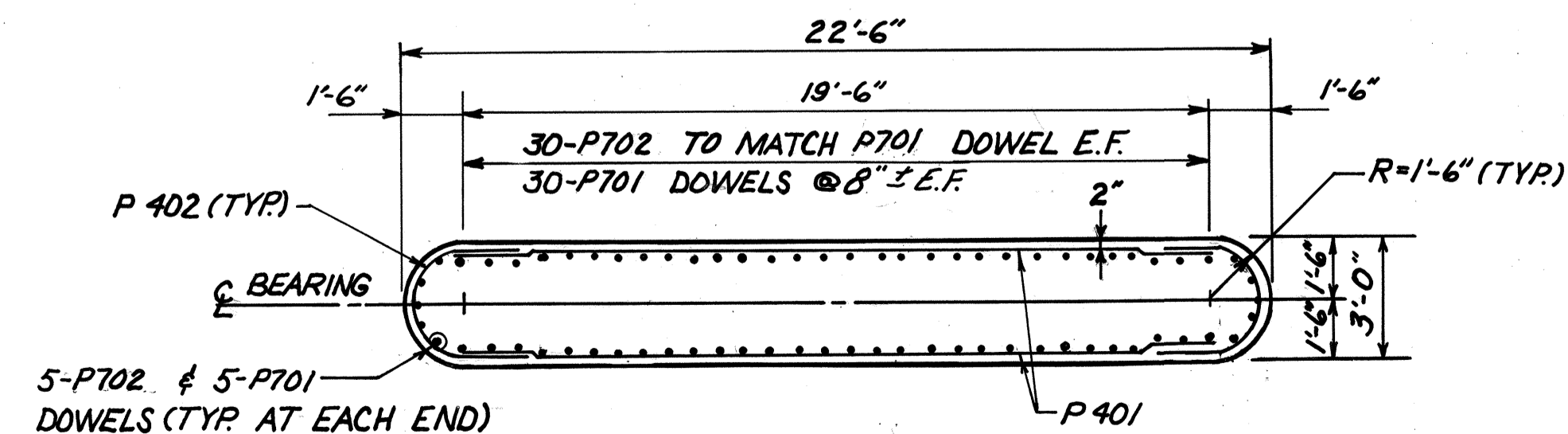


ELEVATION



SECTION B-B FOR PIER 1

SECTION B-B FOR PIER 2

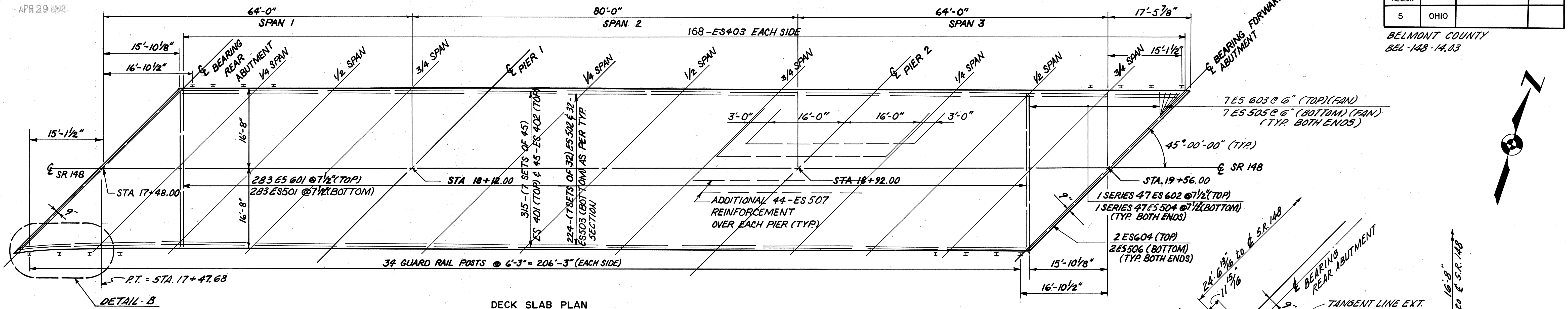


SECTION A-A

NOTES

1. Elevations written above arrow line are for Pier No. 1, those written below are for Pier No. 2.
2. CAP stirrups shall be placed with the hooks on the bottom.
3. Bridge seat reinforcing: reinforcing steel in the vicinity of the bridge seat shall be accurately placed to avoid interference with the drilling of the bearing anchor holes or the pre-setting of bearing anchors.
4. Bearing anchors: at the option of the contractor, bearing anchors (or formed holes), located and supported by templates, may be cast in place.
5. For abbreviations, see sheet 5/10.
6. For reinforcement schedule see sheet 10/10.

|   |         |        |         |          |      |         |
|---|---------|--------|---------|----------|------|---------|
| ADLAKA AND ASSOCIATES<br>ENGINEERS & SURVEYORS<br>YOUNGSTOWN, OH.               |         |        |         |          |      | 6/10    |
| PIER 1 & PIER 2<br>DETAILS<br>BRIDGE NO. BEL-148-14.03<br>OVER<br>CAPTINA CREEK |         |        |         |          |      |         |
| DESIGNED  | DRAWN   | TRACED | CHECKED | REVIEWED | DATE | REVISED |
| M.B.  | Mod. C. | D.R.S. | S.D.R.  | S.A.     | 7/86 |         |



**TOP OF FINAL PAVEMENT ELEVATION (TOP OF PORTLAND CEMENT CONCRETE)**

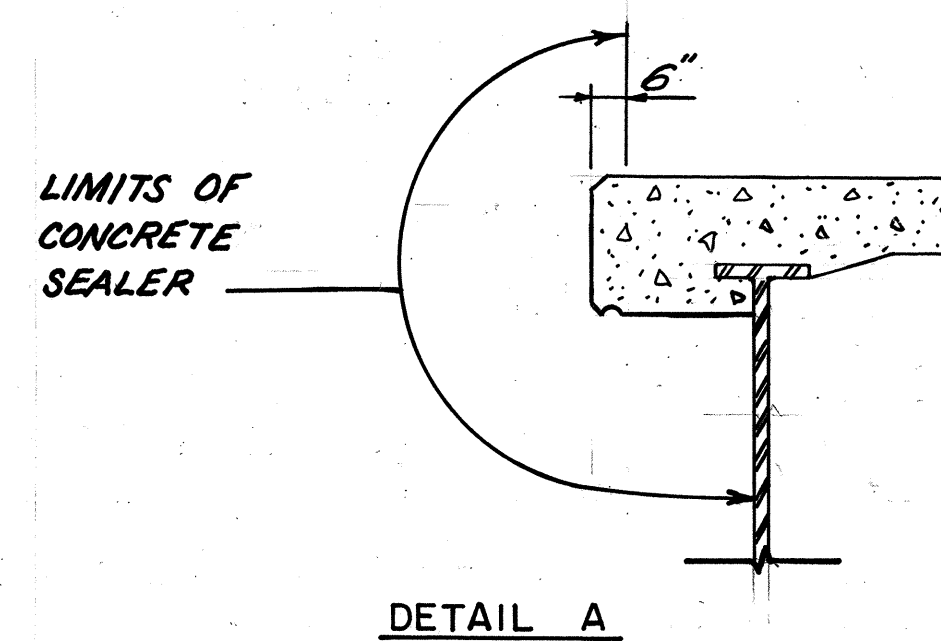
| ELEV. AT BEAM | C. BRG. R. ABUT. | SPAN 1   |          |          | SPAN 2   |          |          | SPAN 3   |          |          | C. BRG. F. ABUT. |        |        |
|---------------|------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------------------|--------|--------|
|               |                  | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN |                  |        |        |
| A             | 817.29           | 817.08   | 816.85   | 816.64   | 816.44   | 816.19   | 815.98   | 815.76   | 815.57   | 815.44   | 815.32           | 815.19 | 815.06 |
| B             | 817.14           | 817.02   | 816.86   | 816.68   | 816.52   | 816.31   | 816.12   | 815.93   | 815.75   | 815.62   | 815.49           | 815.37 | 815.24 |
| C             | 816.94           | 816.89   | 816.80   | 816.68   | 816.56   | 816.40   | 816.24   | 816.08   | 815.93   | 815.80   | 815.67           | 815.55 | 815.42 |
| D             | 816.66           | 816.70   | 816.69   | 816.62   | 816.50   | 816.34   | 816.18   | 816.02   | 815.87   | 815.74   | 815.61           | 815.49 | 815.36 |
| E             | 816.33           | 816.44   | 816.51   | 816.53   | 816.44   | 816.28   | 816.12   | 815.96   | 815.81   | 815.68   | 815.55           | 815.43 | 815.30 |

NOTE: TOP OF FINAL PAVEMENT ELEVATIONS ARE ALONG CENTERLINE OF BEAMS.

**DECK SCREED ELEVATION (TOP OF PORTLAND CEMENT CONCRETE)**

| ELEV. | C. BRG. R. ABUT. | SPAN 1   |          |          | SPAN 2   |          |          | SPAN 3   |          |          | C. BRG. F. ABUT. |        |        |
|-------|------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------------------|--------|--------|
|       |                  | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN | 1/4 SPAN | 1/2 SPAN | 3/4 SPAN |                  |        |        |
| F     | 817.31           | 817.13   | 816.89   | 816.64   | 816.42   | 816.21   | 816.01   | 815.75   | 815.53   | 815.42   | 815.32           | 815.19 | 815.02 |
| C'    | 816.94           | 816.93   | 816.85   | 816.70   | 816.56   | 816.44   | 816.32   | 816.12   | 815.93   | 815.81   | 815.72           | 815.59 | 815.42 |
| G     | 816.25           | 816.41   | 816.51   | 816.52   | 816.42   | 816.31   | 816.18   | 815.99   | 815.79   | 815.68   | 815.58           | 815.45 | 815.29 |

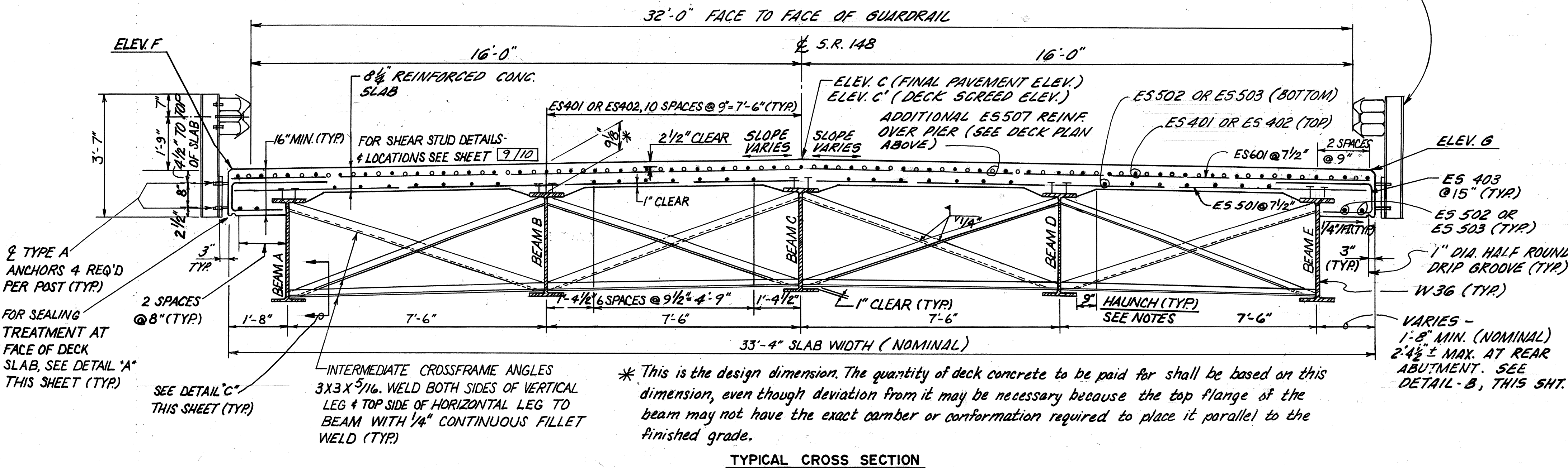
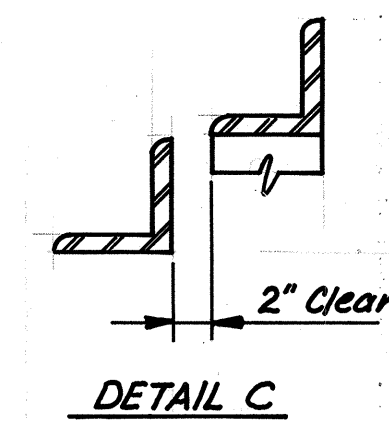
NOTE: DECK SCREED ELEVATIONS SHOWN ARE AT THE TOP OF CONCRETE DECK THAT IS REQUIRED BEFORE THE CONCRETE IS PLACED. PROPER ALLOWANCE HAS BEEN MADE FOR THE DEAD LOAD DEFLECTIONS FOR DECK SLAB



DEEP BEAM BRIDGE GUARDRAIL WITH TUBULAR BACK UP & TYPE 1 POST. FOR DETAILS, SEE STD. DRAWING DBR-2-73

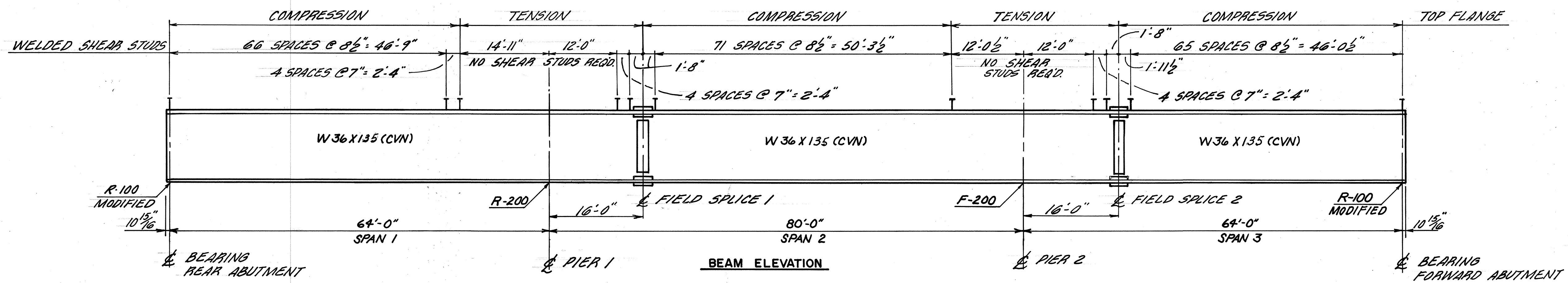
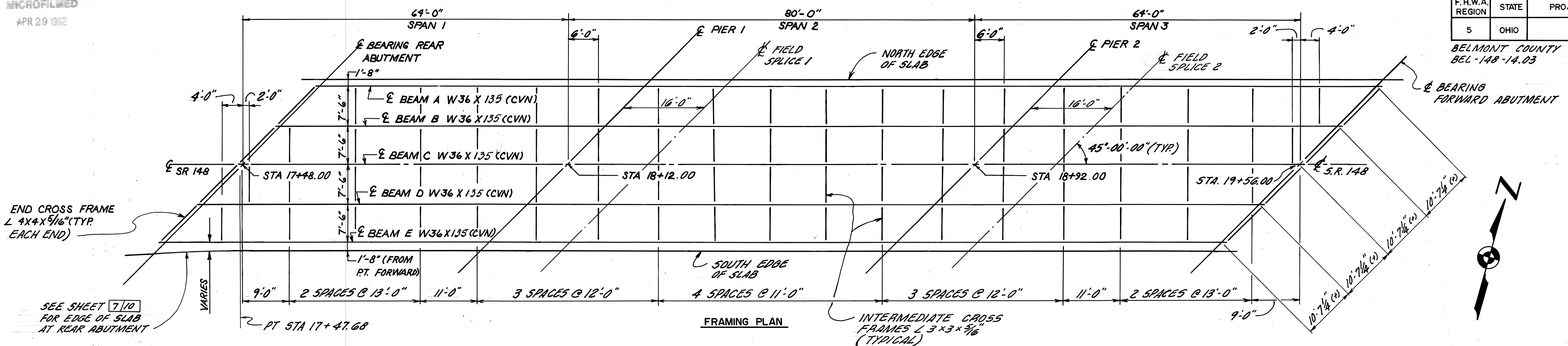
**NOTES**

- A typical haunch width of 9" shall be used for computing quantity of concrete. However the haunch width may vary between 6" and 12", provided that the slope shall not be more than 1:4 for a haunch less than 9" in width.
- All reinforcing in deck slab shall be epoxy coated. These bars are prefixed E.
- Drip grooves shall terminate 2'-0" from the faces of abutments.
- Top and bottom transverse reinforcement bar series at skew end of deck slab shall be field cut as required to clear expansion end dam details. No separate payment will be made for field cutting. This work shall be included in the unit price bid for Item 824.
- For roadway end dam details see standard drawing EXJ-2-81, sheet 1 and 2 of 2. Payment per linear foot for Item 516 - Structural Expansion Joints Including Elastomeric Compression Seals, includes all labor, materials and equipment necessary to complete the joint in-place, including the joint armor, 1/2" steel plates, all anchoring devices and the top gusset plates attached to the NIC 12 X 45.
- For Roadway End Dam, paint shall be S14, System A. Rather than System B as shown on EXJ-2-81, color shall match that used for Item 514.



\* This is the design dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

|   |          |        |
|---|----------|--------|
| ADLAKA AND ASSOCIATES<br>ENGINEERS AND SURVEYORS<br>YOUNGSTOWN, OH. |          | 7 / 10 |
| <b>DECK SLAB PLAN &amp; TYPICAL CROSS SECTION</b>                   |          |        |
| BRIDGE NO. BEL-148-14.03<br>OVER<br>CAPTINA CREEK                   |          |        |
| DESIGNED  | DRAWN    | TRACED |
| M.B.  | M.S.C.   | D.R.S. |
| CHECKED   | REVIEWED | DATE   |
| SUR.  | S.A.     | 7/86   |

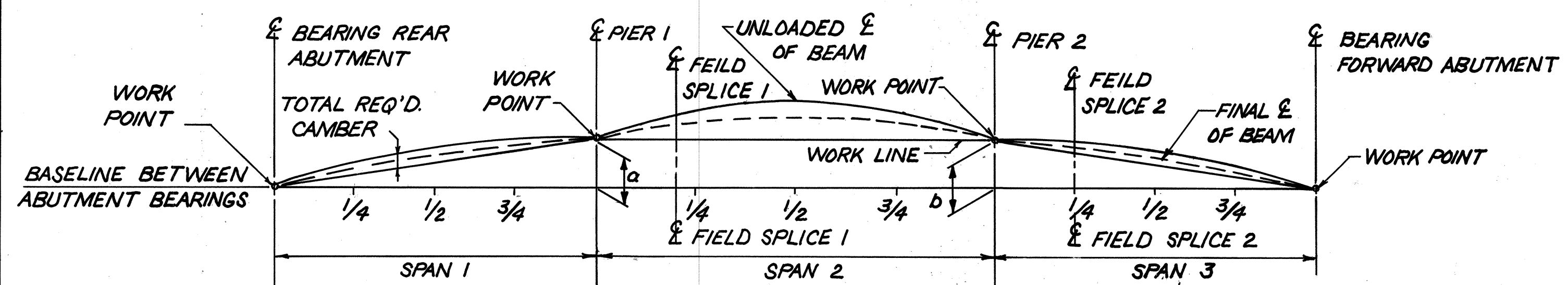


- NOTES:**
- FOR FIXED BEARING F-200, SEE STD. DWG. FB-1-82.
  - FOR ROCKER BEARING R-200, SEE STD. DWG. RB-1-55.
  - FOR ROCKER BEARING R-100 MODIFIED, SEE SHT. 9/10.
  - FOR DETAILS OF END CROSSFRAMES, SEE STD. DWG. SD-1-69 SHT. 1 of 4.
  - FOR STRUCTURAL STEEL EXPANSION JOINT AT ABUTMENTS, SEE STD. DWG. EXV-2-81.
  - FOR ADDITIONAL NOTES, SEE SHT. 9/10.

**DEAD LOAD DEFLECTION AND CAMBER**

| AT BEAMS | SPAN 1     |           |       |        |            |           |        |         |            |           |        |         | SPAN 2         |           |       |      |            |           |      |      |            |           |       |       | SPAN 3     |           |       |      |                |           |      |      |            |           |      |      |          |     |   |      |
|----------|------------|-----------|-------|--------|------------|-----------|--------|---------|------------|-----------|--------|---------|----------------|-----------|-------|------|------------|-----------|------|------|------------|-----------|-------|-------|------------|-----------|-------|------|----------------|-----------|------|------|------------|-----------|------|------|----------|-----|---|------|
|          | 1/4 SPAN   |           |       |        | 1/2 SPAN   |           |        |         | 3/4 SPAN   |           |        |         | FIELD SPLICE 1 |           |       |      | 1/4 SPAN   |           |      |      | 1/2 SPAN   |           |       |       | 3/4 SPAN   |           |       |      | FIELD SPLICE 2 |           |      |      | 1/2 SPAN   |           |      |      | 3/4 SPAN |     |   |      |
|          | STEEL D.L. | REM. D.L. | CON.  | TOT.   | STEEL D.L. | REM. D.L. | CON.   | TOT.    | STEEL D.L. | REM. D.L. | CON.   | TOT.    | STEEL D.L.     | REM. D.L. | CON.  | TOT. | STEEL D.L. | REM. D.L. | CON. | TOT. | STEEL D.L. | REM. D.L. | CON.  | TOT.  | STEEL D.L. | REM. D.L. | CON.  | TOT. | STEEL D.L.     | REM. D.L. | CON. | TOT. | STEEL D.L. | REM. D.L. | CON. | TOT. |          |     |   |      |
| A        | 1/16       | 1/2       | 1/8   | 11/16  | 1/16       | 9/16      | -1/8   | 1/2     | 1/16       | 3/16      | -1/8   | 1/8     | 1/16           | 5/16      | -5/16 | 1/16 | 1/16       | 7/16      | -3/8 | 1/8  | 1/8        | 13/16     | -3/8  | 9/16  | 1/16       | 7/16      | -5/16 | 3/16 | 1/16           | 3/16      | 0    | 1/4  | 1/16       | 9/16      | 0    | 5/8  | 1/16     | 1/2 | 0 | 9/16 |
| B        | 1/16       | 1/2       | 3/8   | 15/16  | 1/16       | 9/16      | 3/8    | 1       | 1/16       | 3/16      | 1/16   | 5/16    | 1/16           | 5/16      | -1/8  | 1/4  | 1/16       | 7/16      | -1/8 | 3/8  | 1/8        | 13/16     | -3/16 | 3/4   | 1/16       | 7/16      | -1/16 | 7/16 | 1/16           | 3/16      | 0    | 1/4  | 1/16       | 9/16      | 0    | 5/8  | 1/16     | 1/2 | 0 | 9/16 |
| C        | 1/16       | 1/2       | 5/8   | 1-3/16 | 1/16       | 9/16      | 11/16  | 1-5/16  | 1/16       | 3/16      | 3/8    | 5/8     | 1/16           | 5/16      | 0     | 3/8  | 1/16       | 7/16      | 0    | 1/2  | 1/8        | 13/16     | 0     | 15/16 | 1/16       | 7/16      | 0     | 1/2  | 1/16           | 3/16      | 0    | 1/4  | 1/16       | 9/16      | 0    | 5/8  | 1/16     | 1/2 | 0 | 9/16 |
| D        | 1/16       | 1/2       | 15/16 | 1-1/2  | 1/16       | 9/16      | 1-5/16 | 1-15/16 | 1/16       | 3/16      | 1-1/16 | 1-5/16  | 1/16           | 5/16      | 0     | 3/8  | 1/16       | 7/16      | 0    | 1/2  | 1/8        | 13/16     | 0     | 15/16 | 1/16       | 7/16      | 0     | 1/2  | 1/16           | 3/16      | 0    | 1/4  | 1/16       | 9/16      | 0    | 5/8  | 1/16     | 1/2 | 0 | 9/16 |
| E        | 1/16       | 1/2       | 1     | 1-9/16 | 1/16       | 9/16      | 1-1/2  | 2 1/8   | 1/16       | 3/16      | 1-7/16 | 1-11/16 | 1/16           | 5/16      | 0     | 3/8  | 1/16       | 7/16      | 0    | 1/2  | 1/8        | 13/16     | 0     | 15/16 | 1/16       | 7/16      | 0     | 1/2  | 1/16           | 3/16      | 0    | 1/4  | 1/16       | 9/16      | 0    | 5/8  | 1/16     | 1/2 | 0 | 9/16 |

- NOTES FOR DEFLECTION & CAMBER:**
- WORK POINTS ARE TOP OF BEAM FLANGE AT CENTERLINE OF BEARINGS.
  - THE WORK LINE IS A STRAIGHT LINE BETWEEN THE INDICATED WORK POINTS.
  - THE BASE LINE IS A STRAIGHT LINE BETWEEN INDICATED WORK POINTS AT ABUTMENTS.
  - THE TABULATED DEFLECTION AND CAMBER DATA IS MEASURED FROM THE WORK LINE.
  - DEFLECTION AND CAMBER ARE GIVEN TO THE NEAREST 1/16 INCH. THE FOLLOWING ABBREVIATIONS ARE USED:  
STEEL D.L. = DEAD LOAD DEFLECTION DUE TO STEEL BEAMS AND FRAMING.  
REM. D.L. = DEFLECTION DUE TO REMAINING DEAD LOAD.  
CON. = CONVEXITY REQ'D FOR VERTICAL CURVE & VARIABLE SUPERELEVATION (MINUS INDICATES BELOW THE WORK LINE.)  
TOT. = TOTAL REQUIRED CAMBER IN INCHES.



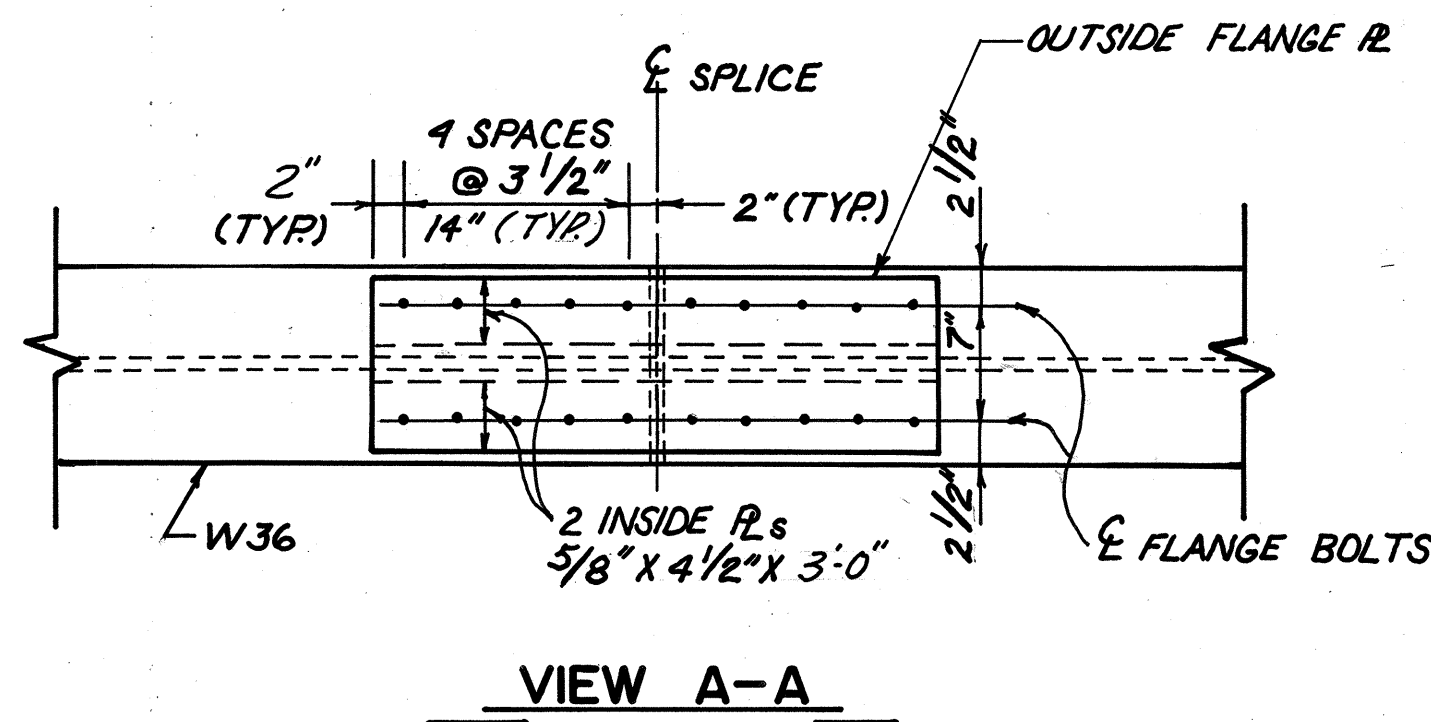
| BEAMS | A         | B      | C     | D       | E       |
|-------|-----------|--------|-------|---------|---------|
| a     | -1 15/16" | -7/16" | 1/16" | 2 7/8"  | 5 1/8"  |
| b     | -2 1/8"   | -7/8"  | 1/2"  | 1 5/16" | 2 5/16" |

8 / 10

ADLAKA AND ASSOCIATES  
ENGINEERS & SURVEYORS  
YOUNGSTOWN, OH.

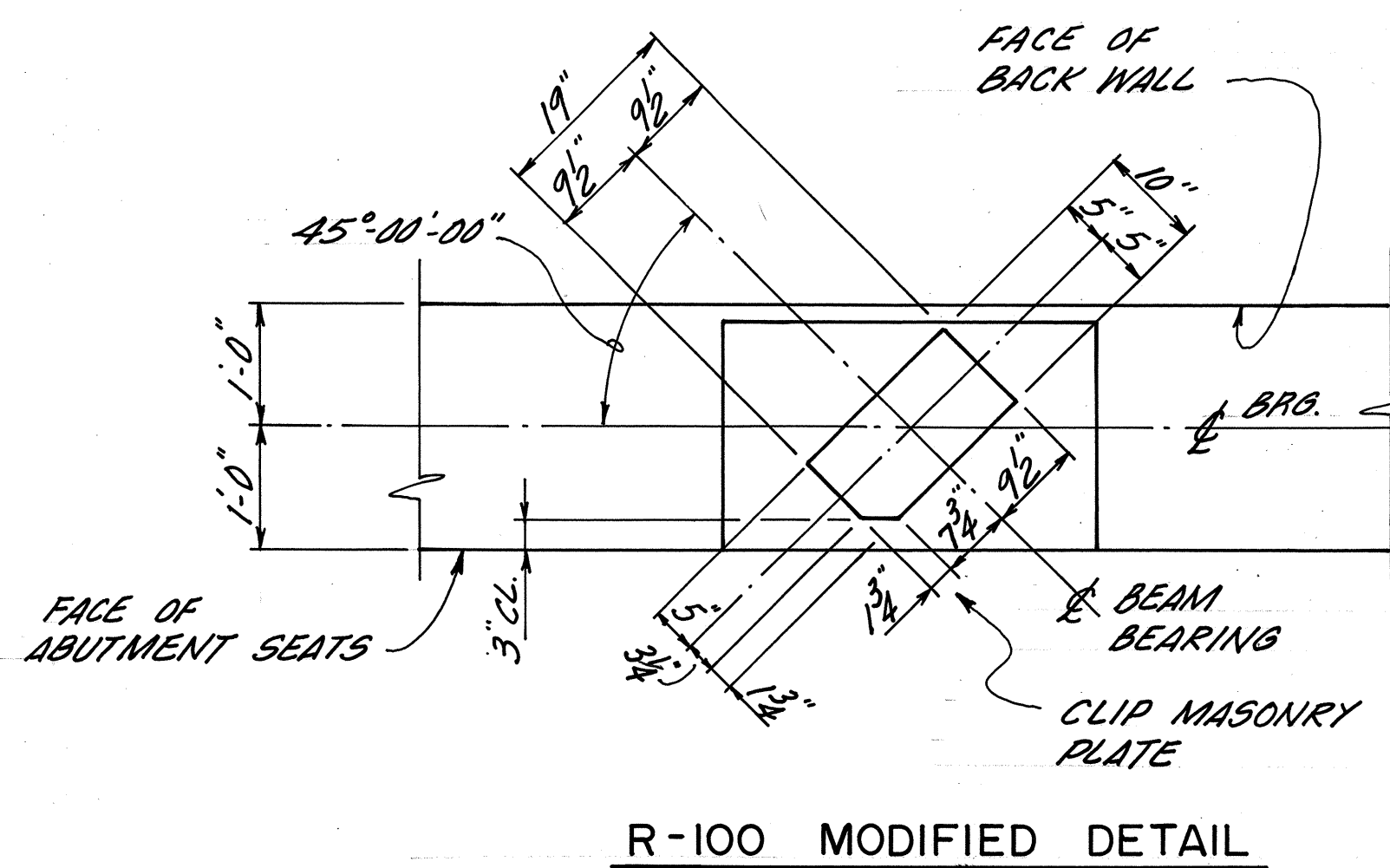
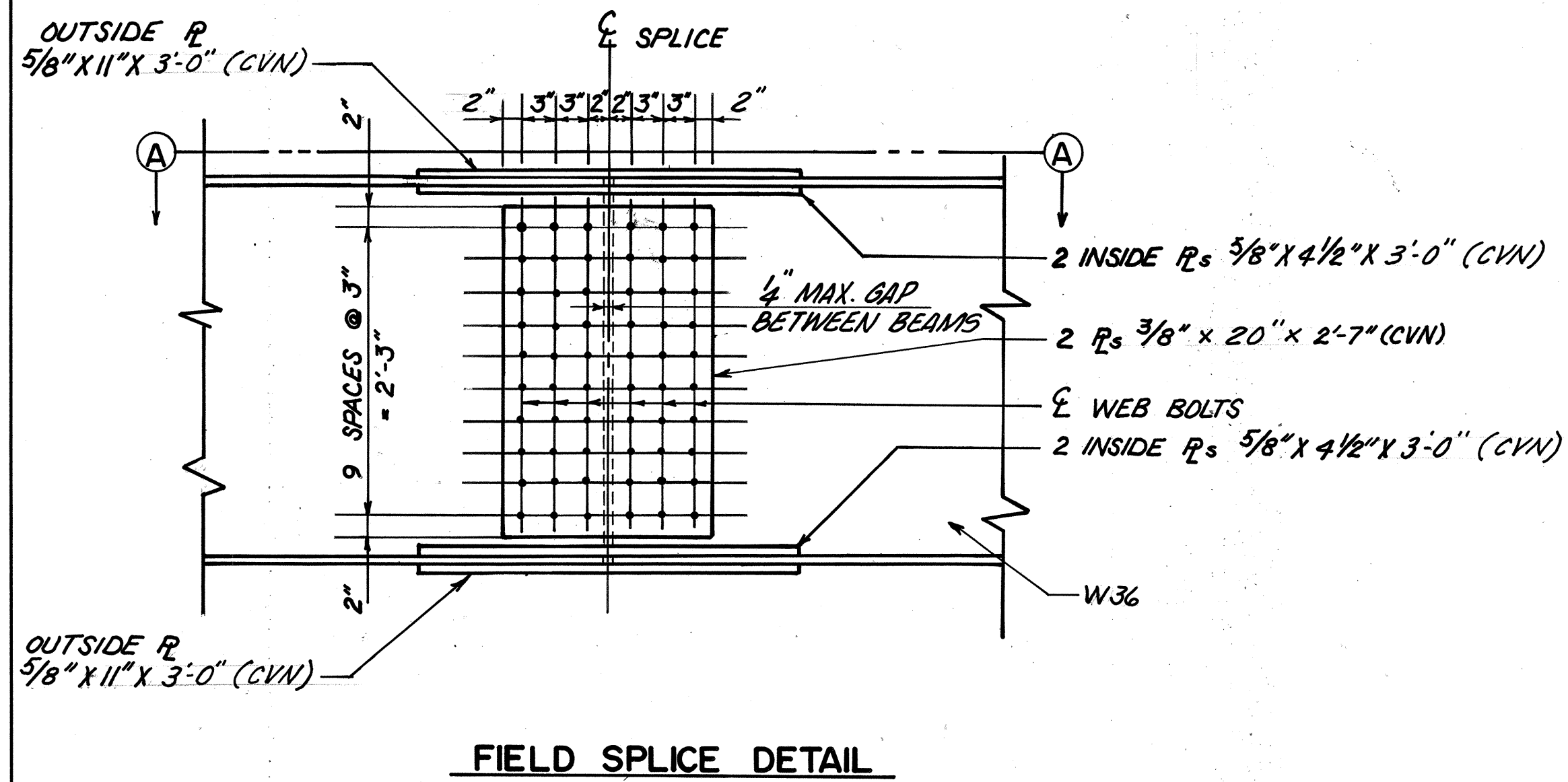
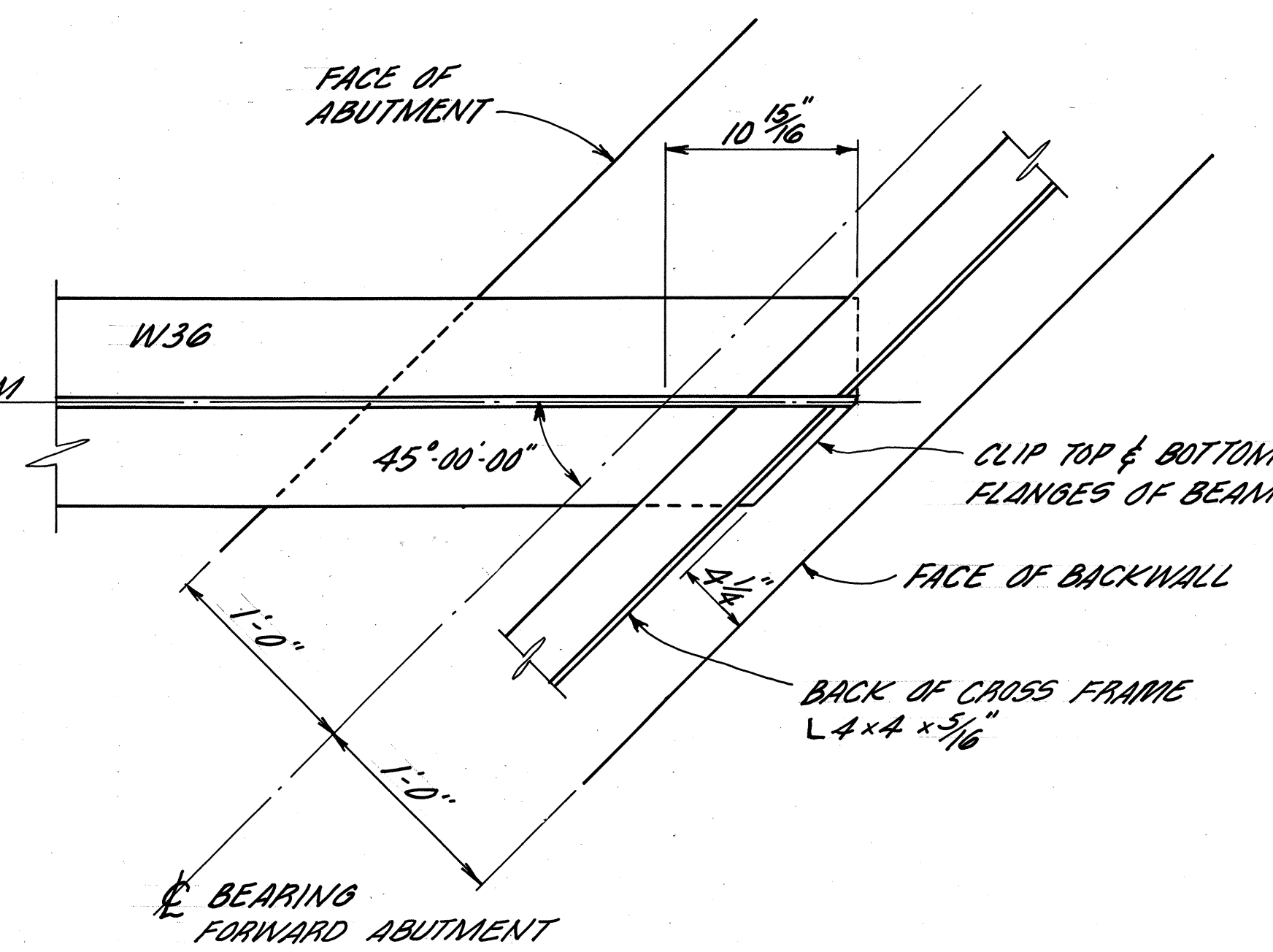
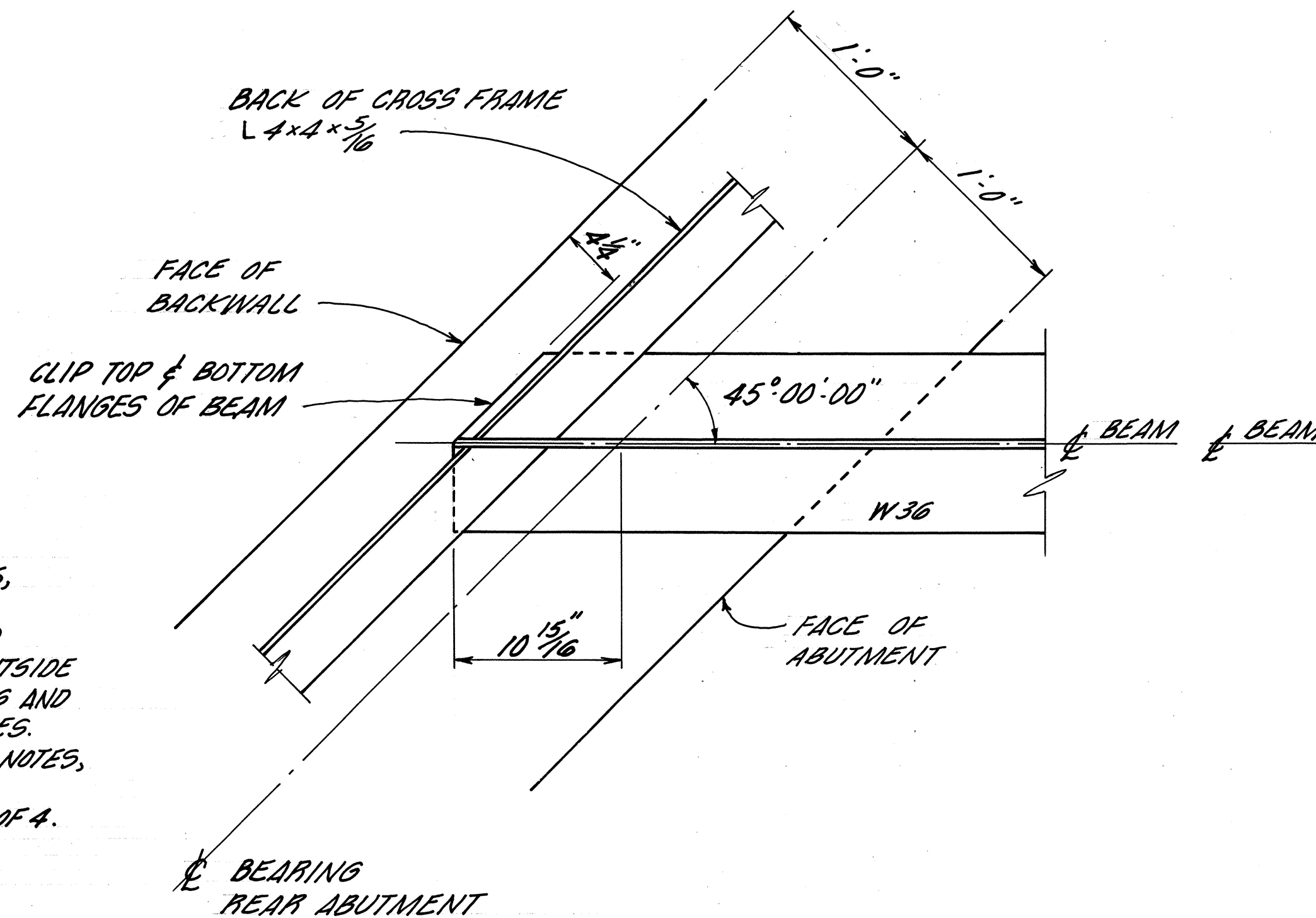
**SUPERSTRUCTURE**  
FRAMING PLAN B  
BEAM DETAIL  
BRIDGE NO. BEL-148-14 03  
OVER  
CAPTINA CREEK

|          |       |        |         |          |      |         |
|----------|-------|--------|---------|----------|------|---------|
| DESIGNED | DRAWN | TRACED | CHECKED | REVIEWED | DATE | REVISED |
| M.B.     | M.B.  | D.R.S. | S.D.R.  | S.A.     | 7/86 |         |



**NOTES:**

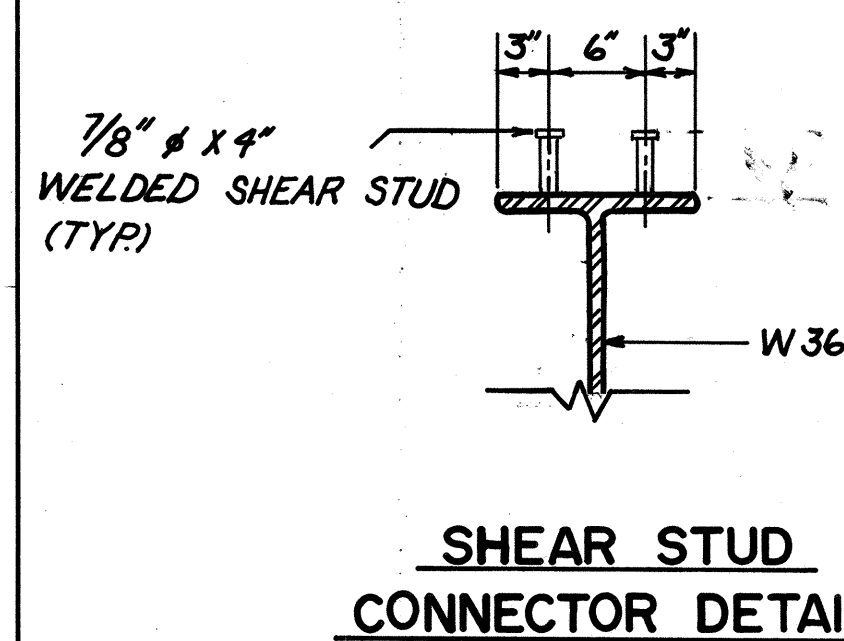
- A. ALL HIGH STRENGTH BOLTS SHALL BE 1" DIAMETER A325, UNLESS OTHERWISE NOTED.
- B. THE BOLTS SHALL BE PLACED WITH THEIR HEADS ON THE OUTSIDE FACE OF THE EXTERIOR BEAMS AND ON THE BOTTOM OF THE FLANGES. FOR ADDITIONAL DETAILS AND NOTES, SEE OHIO STANDARD BRIDGE DRAWING SD-1-69, SHEET 4 OF 4.



**STRUCTURAL STEEL NOTES**

1. WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.02 OF C.M.S.
2. PARTIAL PAINTING OF A588 STEEL: A TEN FOOT LENGTH OF THE ENDS OF BEAMS ADJACENT TO ABUTMENTS AND ALL CROSS-FRAMES AND OTHER A588 STEEL WITHIN THESE LIMITS SHALL BE PAINTED. PAINT SHALL BE S14, SYSTEM A. THE PRIME COAT SHALL BE 708.17. THE TOP COAT SHALL BE 708.18 EXCEPT THAT THE COLOR SHALL CLOSELY APPROACH FEDERAL STANDARD NO. 595a - 20045 OR 20059. PARTIAL PAINTING OF A588 STEEL SHALL BE PAID FOR UNDER ITEM S14, PARTIAL PAINTING OF A588 STEEL, SYSTEM A, AS PER PLAN.
3. FOR A588 STEEL LEFT UNPAINTED, SEE CMS 513.221 FOR CLEANING REQUIREMENTS.
4. INSTALLATION OF SEAL: DURING INSTALLATION OF THE SUPPORT/ARMOR FOR THE SUPERSTRUCTURE SIDE OF THE EXPANSION JOINT SEAL, THE SEATING OF BEAMS ON BEARINGS SHALL BE CAREFULLY OBSERVED TO ASSURE THAT POSITIVE BEARING IS MAINTAINED. PROPER VERTICAL FIT OF THE SUPPORT/ARMOR ON THE BEAMS SHALL BE ACHIEVED BY POSITIONING OF THE BEVEL FILL PLATES RATHER THAN BY CLAMPING FORCE.
5. ARMOR COMPRESSION JOINT AND STEEL MEMBERS SHALL BE FURNISHED IN LENGTHS AS LONG AS PRACTICABLE. AT ALL FIELD BUTT JOINTS THEY SHALL BE RIGIDLY FASTENED TOGETHER AS REQUIRED PRIOR TO PLACING CONCRETE.

6. BEARINGS: IN LIEU OF A588 STEEL, A36 STEEL, GALVANIZED, MAY BE FURNISHED FOR BEARINGS, EXCEPT FOR UPPER PLATE ELEMENT OF BEARINGS. THIS A36 STEEL SHALL BE INCLUDED WITH THE A588 STEEL QUANTITY FOR PAYMENT.
7. WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.



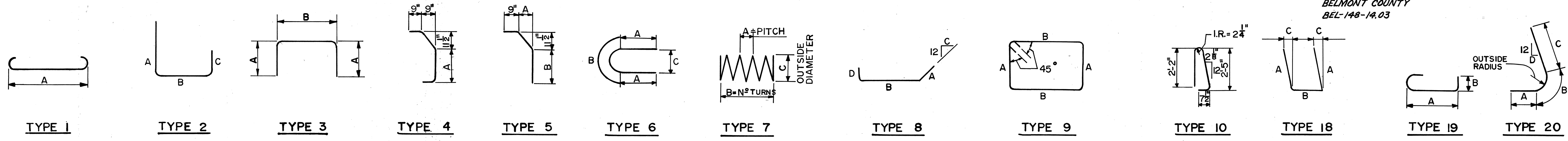
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|---|--------|--------|---------|----------|
| ADLAKA AND ASSOCIATES ENGINEERS & SURVEYORS YOUNGSTOWN, OH. |        |        |         | 9 / 10   |
| <b>SUPERSTRUCTURE SPLICES &amp; MISC. STEEL DETAILS</b>     |        |        |         |          |
| BRIDGE NO. BEL-148-1403 OVER CAPTINA CREEK                  |        |        |         |          |
| DESIGNED  | DRAWN  | TRACED | CHECKED | REVIEWED |
| M.B.  | M.J.G. | D.R.S. | S.D.R.  | S.A.     |
|   |        |        |         | DATE     |
|   |        |        |         | 7/85     |
|   |        |        |         | REVISED  |

MICROFILMED  
APR 29 1982

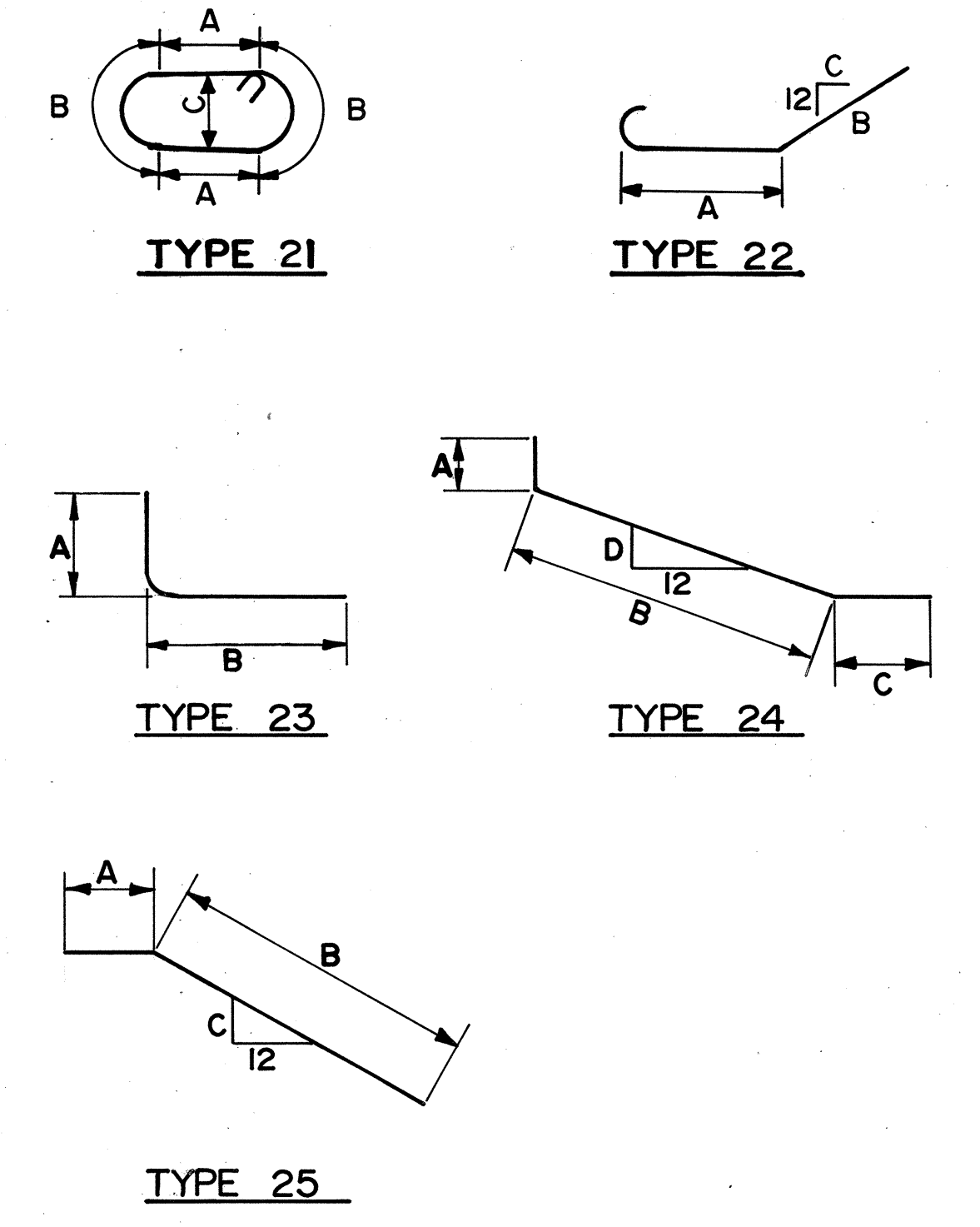
|                   |       |         |
|-------------------|-------|---------|
| FED. RD. DIVISION | STATE | PROJECT |
| 5                 | OHIO  |         |

25  
27

BELMONT COUNTY  
BEL-148-14.03



| MARK                          | NO.    | LENGTH  | TYPE | A     | B      | C     | D | INC.      | WEIGHT | WEIGHT                        | MARK | NO. | LENGTH | TYPE | A | B | C | D | INC. | WEIGHT                      | WEIGHT | MARK | NO. | LENGTH | TYPE | A | B | C | D | INC. | WEIGHT | WEIGHT |  |
|-------------------------------|--------|---------|------|-------|--------|-------|---|-----------|--------|-------------------------------|------|-----|--------|------|---|---|---|---|------|-----------------------------|--------|------|-----|--------|------|---|---|---|---|------|--------|--------|--|
| SUPERSTRUCTURE - EPOXY COATED |        |         |      |       |        |       |   |           |        | PIER No 1 & PIER No 2 (CONT.) |      |     |        |      |   |   |   |   |      | FORWARD ABUTMENT            |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES401                         | 315    | 30'-0"  | STR. |       |        |       |   |           | 6313   |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES402                         | 45     | 9'-0"   | STR. |       |        |       |   |           | 271    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES403                         | 336    | 4'-8"   | 2    | 2'-6" | 0'-11" | 1'-5" |   |           | 1048   |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES501                         | 283    | 33'-0"  | STR. |       |        |       |   |           | 9741   |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES502                         | 224    | 30'-0"  | STR. |       |        |       |   |           | 7009   |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES503                         | 32     | 11'-4"  | STR. |       |        |       |   |           | 378    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES504                         | 25ER47 | 32'-3"  | STR. |       |        |       |   | 0'-7 1/2" | 1753   |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES505                         | 14     | 3'-0"   | STR. |       |        |       |   |           | 44     |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES506                         | 4      | 25'-0"  | STR. |       |        |       |   |           | 104    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES507                         | 88     | 35'-0"  | STR. |       |        |       |   |           | 3212   |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES601                         | 283    | 33'-0"  | STR. |       |        |       |   |           | 14,027 |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES602                         | 25ER47 | 32'-3"  | STR. |       |        |       |   | 0'-7 1/2" | 2524   |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES603                         | 14     | 3'-0"   | STR. |       |        |       |   |           | 63     |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| ES604                         | 4      | 25'-0"  | STR. |       |        |       |   |           | 150    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| SUBTOTAL - SUPERSTRUCTURE     |        |         |      |       |        |       |   |           |        | SUBTOTAL - PIER No 1 & 2      |      |     |        |      |   |   |   |   |      | SUBTOTAL - FORWARD ABUTMENT |        |      |     |        |      |   |   |   |   |      |        |        |  |
|                               |        |         |      |       |        |       |   |           |        | REAR ABUTMENT                 |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P401                          | 40     | 19'-6"  | STR. |       |        |       |   |           | 521    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P402                          | 40     | 7'-8"   | 6    | 1'-9" | 4'-2"  | 2'-8" |   |           | 205    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| F501                          | 38     | 9'-6"   | STR. |       |        |       |   |           | 377    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| F502                          | 38     | 27'-0"  | STR. |       |        |       |   |           | 1,070  |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| F503                          | 48     | 8'-9"   | 3    | 3'-2" | 2'-8"  |       |   |           | 438    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| F504                          | 80     | 3'-11"  | 3    | 0'-9" | 2'-8"  |       |   |           | 327    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P601                          | 8      | 46'-2"  | STR. |       |        |       |   |           | 555    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P602                          | 4      | 39'-2"  | STR. |       |        |       |   |           | 235    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P603                          | 4      | 31'-2"  | STR. |       |        |       |   |           | 187    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P604                          | 16     | 16'-5"  | 24   | 2'-2" | 12'-4" | 2'-0" | 3 |           | 395    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P605                          | 4      | 23'-2"  | STR. |       |        |       |   |           | 139    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P606                          | 16     | 6'-2"   | 3    | 2'-0" | 2'-6"  |       |   |           | 148    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P607                          | 3SER25 | 11'-4"  | 9    | 2'-8" | 2'-8"  | 5'-6" |   | 0'-2 1/2" | 1,593  |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P608                          | 1SER25 | 10'-10" | 9    | 2'-8" | 2'-11" | 5'-9" |   | 0'-3 1/2" | 532    |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| F701                          | 140    | 6'-7"   | 23   | 1'-3" | 5'-6"  |       |   |           | 1,883  |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| F702                          | 140    | 14'-10" | STR. |       |        |       |   |           | 4,244  |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| P801                          | 56     | 9'-6"   | STR. |       |        |       |   |           | 1,420  |                               |      |     |        |      |   |   |   |   |      |                             |        |      |     |        |      |   |   |   |   |      |        |        |  |
| SUBTOTAL - REAR ABUTMENT      |        |         |      |       |        |       |   |           |        | SUBTOTAL - FORWARD ABUTMENT   |      |     |        |      |   |   |   |   |      | SUBTOTAL - REAR ABUTMENT    |        |      |     |        |      |   |   |   |   |      |        |        |  |



Reinforcing Steel Samples:  
Refer to CMS Sections 106.03, 700.00, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel spliced in accordance with 509.08.

|   |        |        |         |          |      |         |
|---|--------|--------|---------|----------|------|---------|
| ADLAKA AND ASSOCIATES ENGINEERS & SURVEYORS YOUNGSTOWN, OH. |        |        |         |          |      | 10 / 10 |
| REINFORCING STEEL LIST                                      |        |        |         |          |      |         |
| BRIDGE NO. BEL-148-14.03 OVER CAPTINA CREEK                 |        |        |         |          |      |         |
| DESIGNED  | DRAWN  | TRACED | CHECKED | REVIEWED | DATE | REVISED |
| M.B.  | D.A.S. | D.R.S. | S.U.R.  | S.A.     | 7/86 |         |

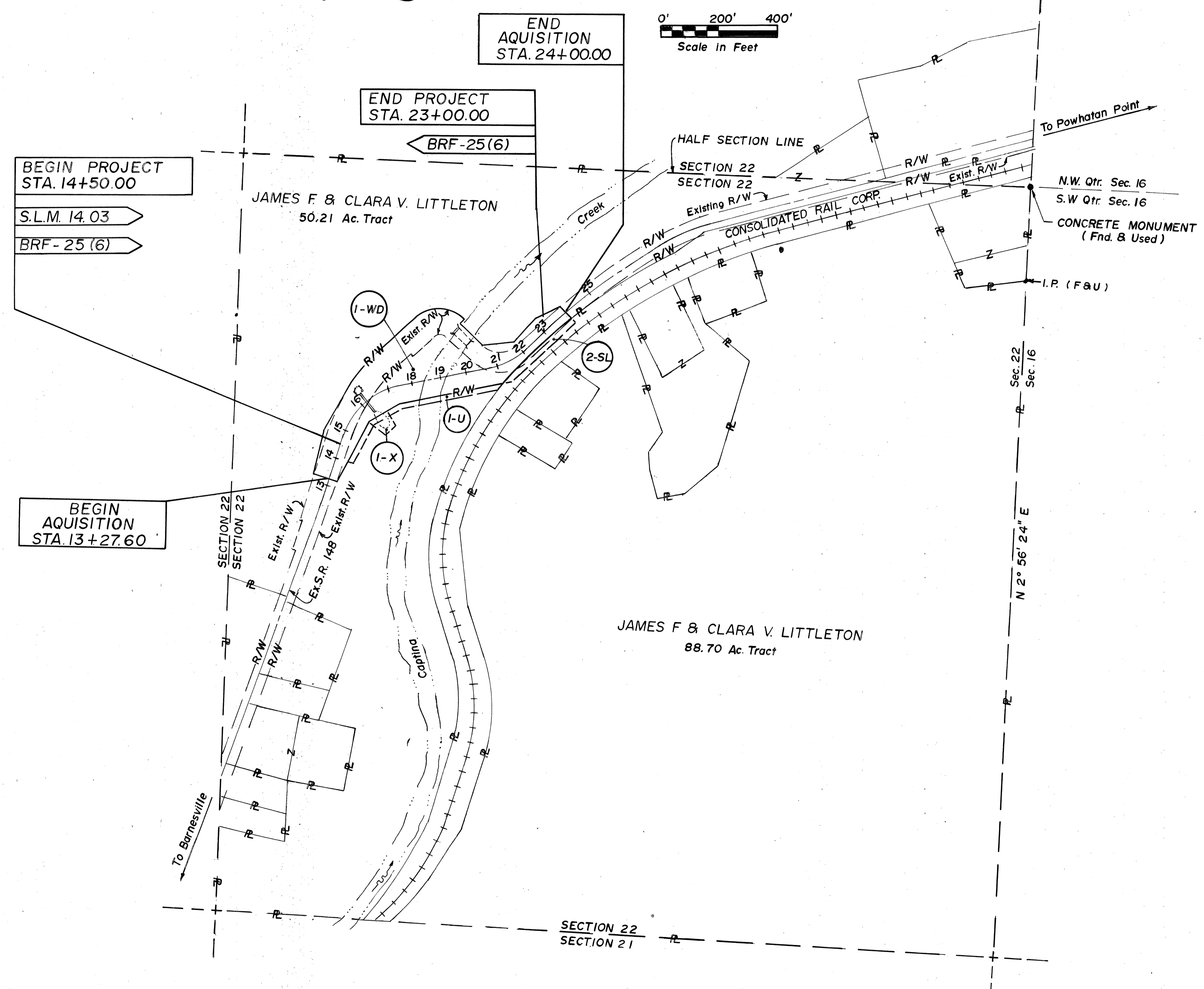
# PROPERTY MAP BELMONT COUNTY WASHINGTON TWP. SEC. 22 T-5-N R-4-W

|             |       |         |
|-------------|-------|---------|
| FHWA REGION | STATE | PROJECT |
| 5           | OHIO  |         |

26  
27

BEL-148-14.03  
RIGHT OF WAY PLAN

1  
2



### INDEX OF OWNERS

- ① JAMES F. & CLARA V. LITTLETON
- ② CONSOLIDATED RAIL CORPORATION,  
A PENNSYLVANIA CORPORATION  
f.k.a. THE PITTSBURGH, OHIO VALLEY  
& CINCINNATI RAILROAD COMPANY

|                    |    |         |
|--------------------|----|---------|
|                    |    |         |
| REVISION COMPLETED | BY | DATE    |
|                    |    | 9-15-86 |

UTILITY OWNERS

- (T) Ohio Bell Telephone Co.  
840 Orchard Street  
Zanesville, Ohio 43701  
Phone 614/454-3401
- (E) Belmont Electric Co-op, Inc.  
37801 Barnesville - Bethesda Rd.  
P.O. Box 270  
Barnesville, Ohio 43713-0270  
Phone 614/425-4018
- (W) Belmont County Sanitary Sewer District  
P.O. Box 457  
St. Clairsville, Ohio 43950  
Phone 614/695-3144

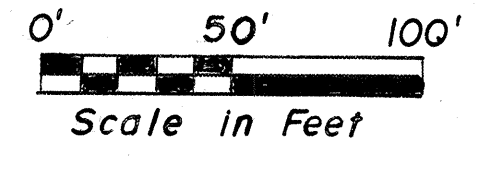
# BELMONT COUNTY

## WASHINGTON TWP. SEC. 22 T. 5 N R. 4 W

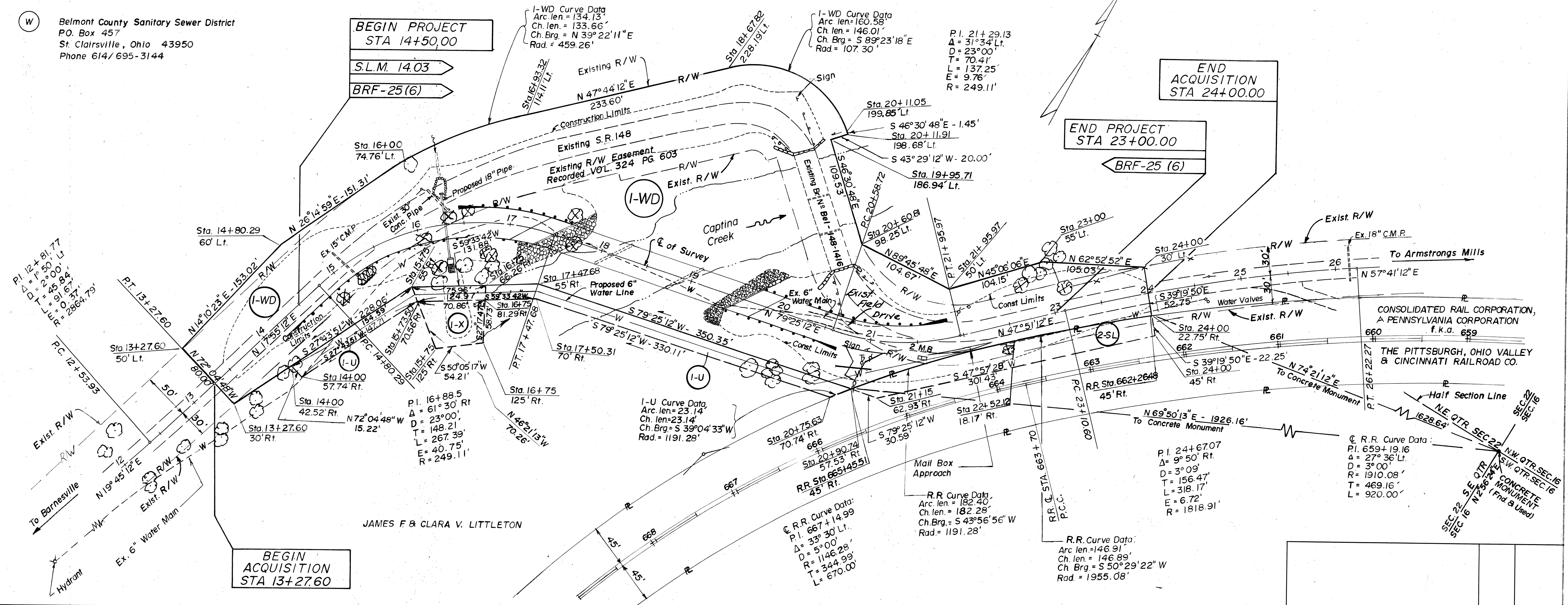
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|--|--|------------------|---------------|-------------------------------|----------|
| CALCULATED BY<br><i>R.C.Y.</i><br>8-5-86 | CHECKED BY<br><i>D.E.L.</i><br>9-12-86 | FHWA REGION<br>5 | STATE<br>OHIO | STATE PROJECT NO.<br>11G90(O) | 27<br>27 |
|--|--|------------------|---------------|-------------------------------|----------|

BEL-148-14.03

R/W PLAN



JAMES F. & CLARA V. LITTLETON



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

### SUMMARY OF ADDITIONAL RIGHT OF WAY

NOTE: All areas in Acres unless otherwise noted.

NOTE:  
 Record Area after outsales  
 minus Total P.R.O. minus  
 Net Take equals Net  
 Residue.

|  |          |          |
|--|----------|----------|
| Revised Topo and added Drive Rt of Sta. 21+00 on Parcel I-WD | Dist. 11 | 10-23-86 |
| REVISION<br>COMPLETED  | BY       | DATE     |
|  |          | 9-15-86  |

| PARCEL | OWNER   | SHEET NO. | OWNERS RECORD |      | RECORD AREA | TOTAL P.R.O. | GROSS TAKE | P.R.O. IN TAKE | NET TAKE | STRUC-TURE | NET RESIDUE |       | TYPE FUND | REMARKS AND PERSONALTY   | AS ACQUIRED |      |
|--------|---|-----------|---------------|------|-------------|--------------|------------|----------------|----------|------------|-------------|-------|-----------|--|-------------|------|
|        |   |           | BOOK          | PAGE |             |              |            |                |          |            | LEFT        | RIGHT |           |  | BOOK        | PAGE |
| I-WD   | JAMES F. & CLARA V. LITTLETON   | 2         | 512           | 648  | 50.21       | 4.79         | 3.793      | 2.040          | 1.753    | —          | 26.267      | 17.40 | STATE     |  |             |      |
| I-U    | "   | 2         |               |      |             |              | 0.213      | —              | 0.213    |            |             |       | STATE     | To Be Acquired In the name of the Belmont County Sanitary Sewer District |             |      |
| I-X    | "   | 2         |               |      |             |              | 0.095      | —              | 0.095    |            |             |       | STATE     | 1101 Sq. Ft. Overlaps with Parcel 'I-U'                                  |             |      |
| 2-SL   | CONSOLIDATED RAIL CORPORATION,<br>A PENNSYLVANIA CORPORATION f.k.a. THE PITTSBURGH<br>OHIO VALLEY & CINCINNATI RAILROAD COMPANY | 2         | 379           | 346  | 8.861       | 0.39         | 0.187      | 0.052          | 0.135    | —          |             | 8.348 | STATE     |  |             |      |

GENERAL INFORMATION

INTRODUCTION

THIS REPORT CONSISTS OF THE SOILS INVESTIGATION OF 0.19 MILE OF PROPOSED SR 148, LOCATED APPROXIMATELY 0.20 MILE NORTHEAST OF THE TOWN OF ALLEDONIA, AT CAPTINA CREEK.

PROPOSED GRADE INDICATES MAXIMUM PROPOSED 2-FOOT CUTS AND 15-FOOT FILL EMBANKMENTS.

GEOLOGY OF THE PROJECT

THE PROJECT IS LOCATED ON THE FLOODPLAIN OF CAPTINA CREEK, IN AN AREA WHERE THIN ALLUVIAL AND OUTWASH MATERIALS OVERLIE SHALE, SANDSTONE, LIMESTONE AND ASSOCIATED COALS OF PERMIAN AND PENNSYLVANIAN AGES.

EXPLORATION

EXPLORATORY BORINGS WERE MADE BY TRUCK-MOUNTED MECHANICAL SOIL AUGER ON DECEMBER 4, 1984. INCLUDED IN THIS REPORT ARE LOGS OF BORINGS MADE FOR THE STRUCTURE FOUNDATION INVESTIGATION ON THE PROJECT.

INVESTIGATIONAL FINDINGS

MATERIALS ENCOUNTERED ON THE PROJECT WERE COMPRISED OF SANDY GRAVELS (A-1-B AND A-2-4), SANDY SILTS (A-4A), SILT CLAYS (A-6A) AND CLAY (A-7-6), GENERALLY HAVING LOW MOISTURE CONTENTS AND MOISTURE CONTENTS IN THE LOWER PORTIONS OF THE PLASTIC RANGE.

WET MATERIAL WAS ENCOUNTERED AT STATION 17+50.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS— 7 SAMPLES TESTED

| DESCRIPTION               | H.R.B. CLASS | OHIO CLASS | % AGG. | % C. SAND | % F. SAND | % SILT | % CLAY | LIQUID LIMIT | PLASTICITY INDEX | WATER CONTENT | SAMPLES TESTED |
|---------------------------|--------------|------------|--------|-----------|-----------|--------|--------|--------------|------------------|---------------|----------------|
| GRAVEL WITH SAND          | A-1-B(0)     | A-1-B      | 49     | 17        | 13        | 11     | 10     | NP           | NP               | 17            | 1              |
| GRAVEL WITH SAND AND SILT | A-2-4(0)     | A-2-4      | 53     | 15        | 12        | 12     | 8      | 28           | 7                | 9             | 2              |
| SANDY SILT                | A-4(4)       | A-4A       | 0      | 2         | 41        | 34     | 23     | 25           | 9                | 23            | 1              |
| SILT AND CLAY             | A-6(9)       | A-6A       | 3      | 2         | 26        | 33     | 36     | 33           | 15               | 14            | 2              |
| CLAY                      | A-7-6(13)    | A-7-6      | 5      | 5         | 8         | 25     | 57     | 42           | 21               | 17            | 1              |

|  |   |                       |     |
|--|---|-----------------------|-----|
|  | CLAY SHALE  | VISUAL CLASSIFICATION | --- |
|  | LIMESTONE   | VISUAL CLASSIFICATION | --- |
|  | VARIOUS OTHER MATERIALS   | VISUAL CLASSIFICATION | --- |
|  | SOD OR TOPSOIL=X= APPROXIMATE DEPTH   |                       |     |
|  | AUGER BORING-PLAN VIEW  |                       |     |
|  | DRIVE SAMPLE CORE BORING-PLAN VIEW  |                       |     |
|  | AUGER BORING PLOTTED TO VERTICAL SCALE ONLY   |                       |     |
|  | DRIVE SAMPLE CORE BORING PLOTTED TO VERTICAL SCALE ONLY   |                       |     |
|  | WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT.   |                       |     |
|  | FREE WATER  |                       |     |
|  | NUMBER OF BLOWS FOR "STANDARD PENETRATION" TEST.<br>X=NUMBER OF BLOWS FOR FIRST 6 INCHES<br>Y=NUMBER OF BLOWS FOR SECOND 6 INCHES<br>Z=NUMBER OF BLOWS FOR THIRD 6 INCHES |                       |     |

NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT e.g. /5

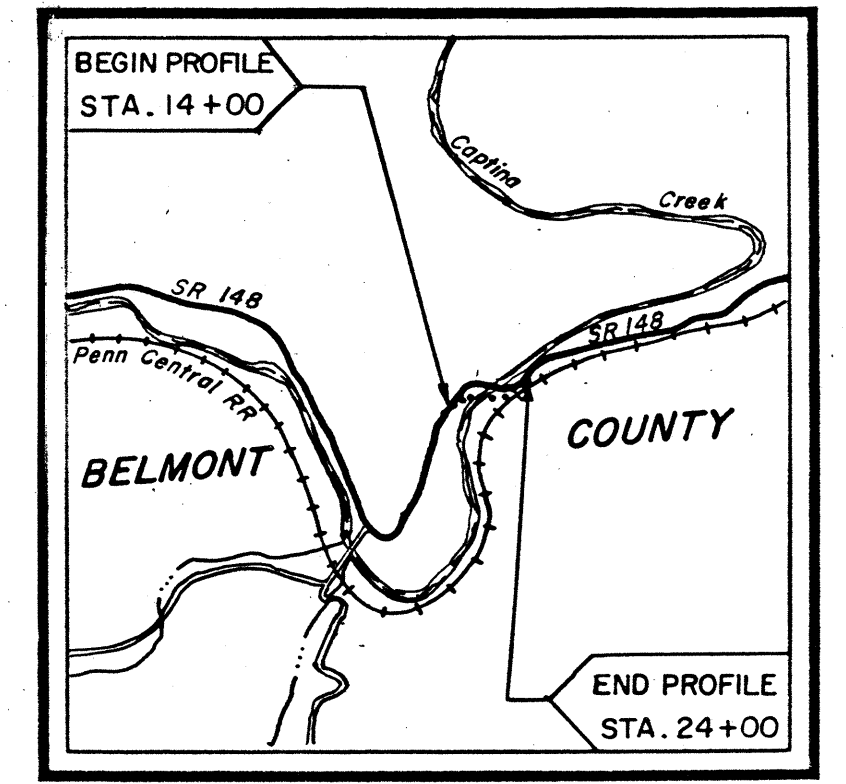
SOIL PROFILE BELMONT COUNTY

BEL - 148 - 14.03

OHIO DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS-TESTING LABORATORY  
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.

ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE SOIL PROFILE FOUNDATION INVESTIGATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATION, SOIL TESTS, AND BEDROCK BORINGS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE BUREAU OF TESTS AT 1600 WEST BROAD STREET, THE PAVEMENT AND SOILS SECTION OF THE BUREAU OF LOCATION AND DESIGN OR IN THE BRIDGE BUREAU AT 25 SOUTH FRONT STREET.



LOCATION MAP

Recon. R.D.R. 11/16/84

Drilling. C.E.G. 12/4/84

Drafting-R.A.W. 1/22/85

SUMMARY OF SOIL TEST DATA

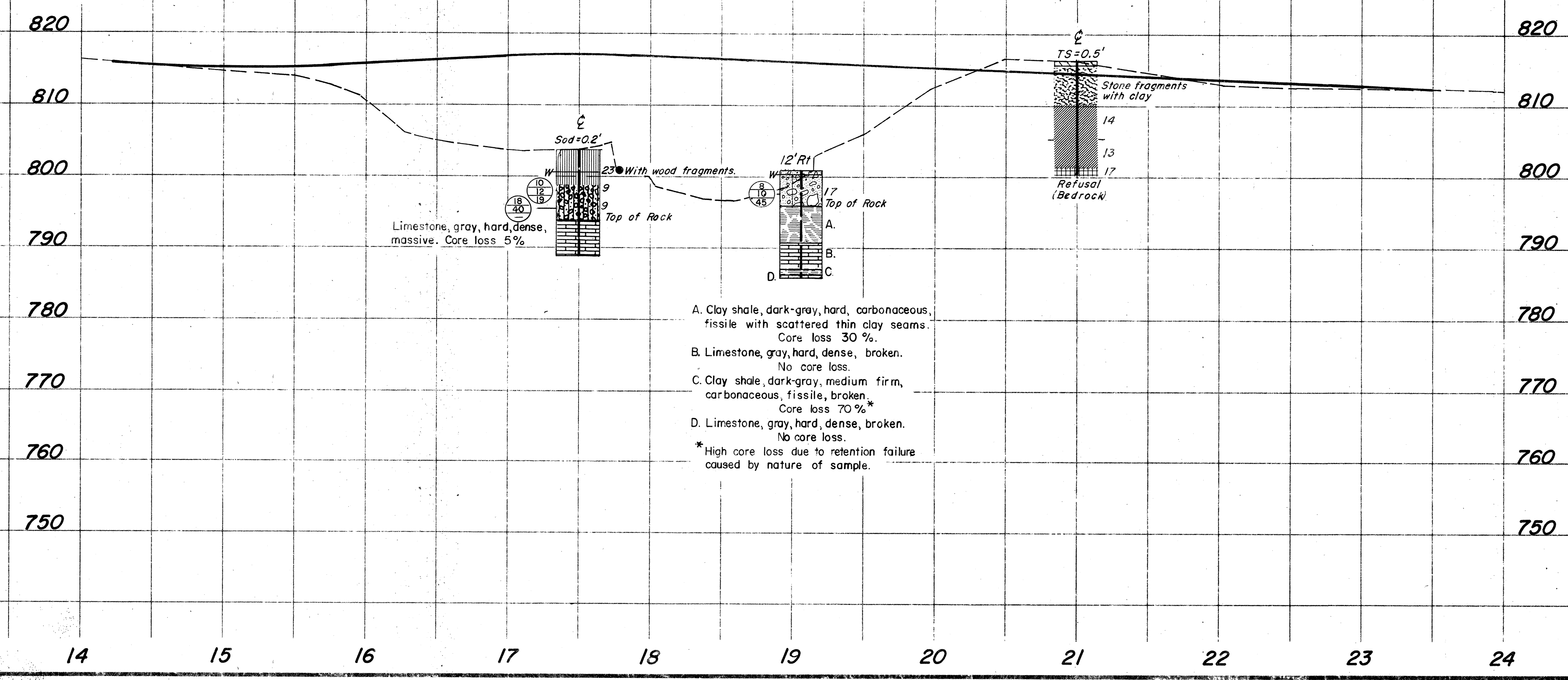
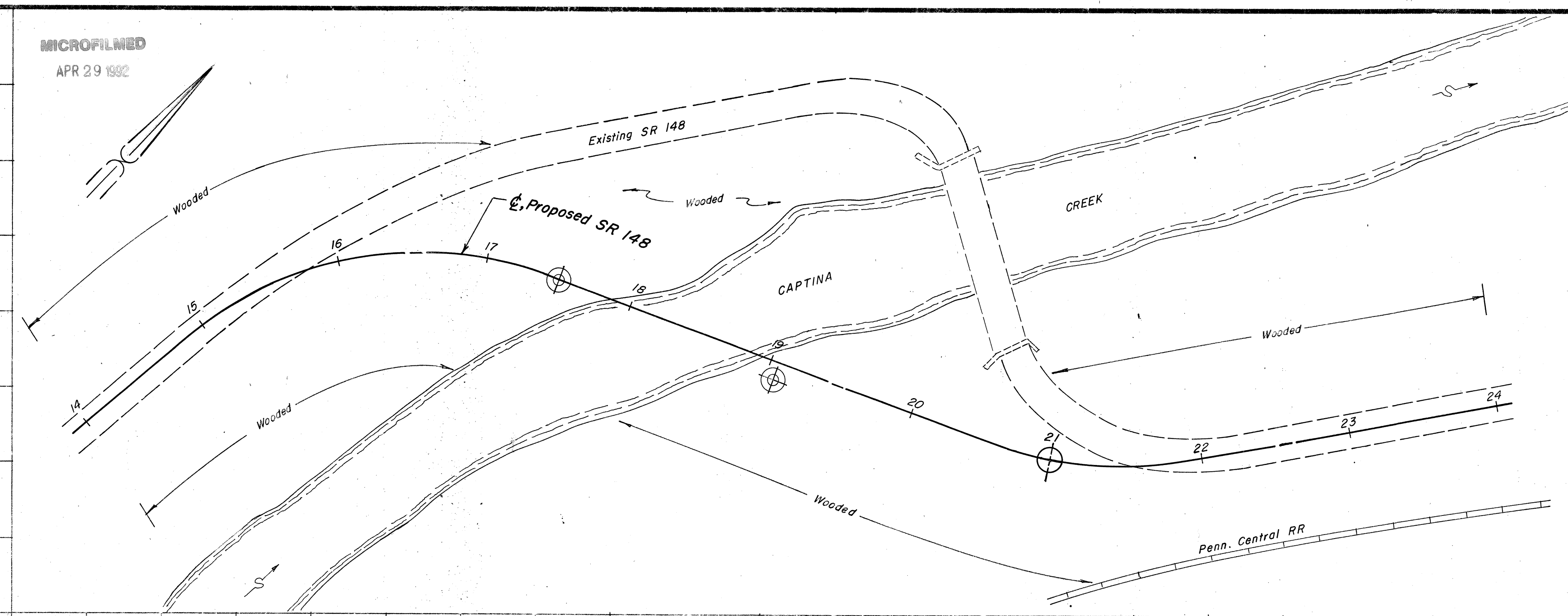
NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES THAT THE MATERIAL IS NON PLASTIC

\* DENOTES SAMPLE TAKEN AT OR NEAR GRADE

| STATION & OFFSET | DEPTH FROM TO | % AGG.             | % C.S. | % F.S. | % SILT | % CLAY | L.L. | P.I. | W.C. | SHTL CLASS |
|------------------|---------------|--------------------|--------|--------|--------|--------|------|------|------|------------|
| 17+50.000 C      | 02.5-04.0     | 0                  | 2      | 41     | 34     | 23     | 25   | 9    | 23   | A-4A       |
|                  | 05.0-06.5     | 47                 | 16     | 16     | 13     | 8      | 25   | 7    | 9    | A-2-4      |
|                  | 07.5-08.5     | 58                 | 15     | 8      | 10     | 9      | 30   | 7    | 9    | A-2-4      |
| 19+07.012 R      | 02.5-04.0     | 49                 | 17     | 13     | 11     | 10     | NP   | NP   | 17   | A-1-B      |
| 21+00.000 C      | 00.5-06.0     | 24                 | 5      | 9      | 28     | 34     | 35   | 15   | 19   |            |
|                  |               | ST FRAGS WITH CLAY |        |        |        |        |      |      |      |            |
|                  | 06.0-11.0     | 0                  | 2      | 24     | 37     | 37     | 33   | 15   | 14   | A-6A       |
|                  | 11.0-15.0     | 6                  | 2      | 27     | 29     | 36     | 33   | 15   | 13   | A-6A       |
|                  | 15.0-16.0     | 5                  | 5      | 8      | 25     | 57     | 42   | 21   | 17   | A-7-6      |

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**SOIL PROFILE**  
**BELMONT COUNTY**  
**BEL-148-14.03**  
 OHIO DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS TESTING LABORATORY  
 1600 WEST BROAD STREET COLUMBUS, OHIO 43223



**GEOLOGY OF THE SITE**

THE STRUCTURE SITE IS LOCATED IN THE HIGHLY DISSECTED UNGLACIATED PORTION OF THE FLUSHING ESCARPMENT, ON THE NARROW FLOODPLAIN OF AND OVER CAPTINA CREEK, IN AN AREA WHERE RELATIVELY SHALLOW VALLEY AND ALLUVIAL DEPOSITS OVERLIE SHALE AND LIMESTONE BEDROCK OF PENNSYLVANIAN AGE.








**EXPLORATION**

THE EXPLORATION CONSISTED OF TWO DRIVE SAMPLE-CORE BORINGS MADE BY MEANS OF A MECHANICALLY-POWERED HOLLOW STEM AUGER MOUNTED ON A MOBILE PLATFORM, PERFORMED DECEMBER 11, 1984.


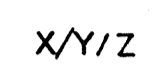







**INVESTIGATIONAL FINDINGS AND OBSERVATIONS**

THE BORINGS DISCLOSED THAT INTERVALS OF DENSE TO EXTREMELY DENSE UNSTRATIFIED BASIC SILTS AND GRAVEL MODIFIED WITH CLAYS, SAND, WOOD FRAGMENTS AND VARYING AMOUNTS OF EACH OTHER THAT RAPIDLY INCREASE IN DENSITY WITH INCREASE IN DEPTH OVERLIE GENTLY SLOPING BEDROCK SURFACE. BORING B-1 (IN THE GENERAL VICINITY OF THE REAR ABUTMENT) ENCOUNTERED BEDROCK SURFACE AT 10.0-FOOT DEPTH, ELEVATION 793.8 FEET AND WAS TERMINATED AT 15.0-FOOT DEPTH, ELEVATION 788.8 FEET, AFTER PENETRATING 5.0 FEET BELOW BEDROCK SURFACE. BORING B-2 (IN THE GENERAL VICINITY OF THE FORWARD ABUTMENT) ENCOUNTERED BEDROCK SURFACE AT 8.0-FOOT DEPTH, ELEVATION 796.0 FEET AND WAS TERMINATED AT 15.0-FOOT DEPTH, ELEVATION 786.0 FEET, AFTER PENETRATING 10.0 FEET BELOW BEDROCK SURFACE.















FREE WATER WAS OBSERVED AND MEASURED IN BORING B-1 AT 3.0-FOOT DEPTH, ELEVATION 800.8 FEET AND IN BORING B-2 AT 0.5-FOOT DEPTH, ELEVATION 800.5 FEET.

-  Auger Boring Location - Plan View.
-  Press and/or Drive Sample and/or Core Boring Location - Plan View.
-  Drive Rod Penetration Resistance Sounding Location - Plan View.
-  Capped Pile
-  Footing
-  Footing on Pile
-  Top of Rock

**LEGEND**

-  Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
-  Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.  
X = Number of Blows for First 6 inches.  
Y = Number of Blows for Second 6 inches.  
Z = Number of Blows for Third 6 inches.
-  Drive Rod Penetration Resistance Sounding Log - Profile
-  Casing
-  Resistance "R" <math>< 10,000</math> lbs.
-  Resistance "R" > 10,000 lbs.
-  Z Indicates Final Measurement of Penetration, in Inches.
-  W Indicates Free Water Elevation.
-  Indicates Static Water Elevation.

**SYMBOLS OF ROCK TYPES**

-  Coal
-  Weathered Mudstone or Claystone
-  Mudstone or Claystone
-  Weathered Shale
-  Shale
-  Weathered Siltstone
-  Siltstone
-  Weathered Sandstone
-  Sandstone
-  Leached Dolomite
-  Dolomite
-  Leached Limestone
-  Limestone
-  Boulders or Cobbles

**Drive Rod Penetration Sounding Tests**

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

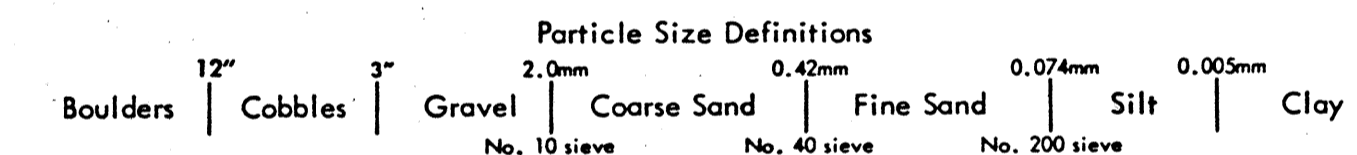
**Drive Sample Borings - Drive-Press Sample Borings**

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and/or 5-foot depth intervals, driven by means of a 140-pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 18 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in three 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.



**LOG OF BORING**

Date Started 12-11-84    Sampler Type SS    Dia 1 3/8"    Water Elev. 800.8'  
 Date Completed 12-11-84    Casing Length    Dia    Surface Elev. 803.8'  
 Boring No. B-1    Station & Offset 17+50    CL (REAR ABUTMENT)

| Elev. | Depth | Std. Pen. (N) | Rec. Ft. | Loss Ft. | Description   | Physical Characteristics |        |        |        |        |        |    |    |      |  | SMTL Class. |  |  |       |
|-------|-------|---------------|----------|----------|---|--------------------------|--------|--------|--------|--------|--------|----|----|------|--|-------------|--|--|-------|
|       |       |               |          |          |   | Sample No.               | % Agg. | % C.S. | % F.S. | % Silt | % Clay | LL | PI | W.C. |  |             |  |  |       |
| 803.8 | 0     |               |          |          | SOD   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
| 801.3 | 2     |               |          |          |   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
| 798.8 | 4     | AUGERED       |          |          | BROWN SANDY SILT WITH WOOD FRAGMENTS                  | 1                        | 0      | 2      | 41     | 34     | 23     | 25 | 9  | 23   |  |             |  |  | A-4a  |
| 796.3 | 6     | 10/12/19      |          |          | BROWN AND GRAY SILTY SANDY GRAVEL                     | 2                        | 47     | 16     | 16     | 13     | 8      | 25 | 7  | 9    |  |             |  |  | A-2-4 |
| 793.8 | 8     | 18/40         |          |          | GRAY SILTY SANDY GRAVEL                               | 3                        | 58     | 15     | 8      | 10     | 9      | 30 | 7  | 9    |  |             |  |  | A-2-4 |
|       | 10    |               |          |          | TOP OF ROCK   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
|       | 12    |               | 4.5      | 0.5      | LIMESTONE, GRAY, HARD, DENSE, MASSIVE. CORE LOSS: 5%. |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
|       | 14    |               |          |          |   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
| 788.8 |       |               |          |          |   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |

BOTTOM OF BORING

**LOG OF BORING**

Date Started 12/11/84    Sampler Type SS    Dia 1 3/8"    Water Elev. 800.5'  
 Date Completed 12/11/84    Casing Length    Dia    Surface Elev. 801.0'  
 Boring No. B-2    Station & Offset 19+07    12' RT. (FORWARD ABUTMENT)

| Elev. | Depth | Std. Pen. (N) | Rec. Ft. | Loss Ft. | Description   | Physical Characteristics |        |        |        |        |        |    |    |      |  | SMTL Class. |  |  |       |
|-------|-------|---------------|----------|----------|---|--------------------------|--------|--------|--------|--------|--------|----|----|------|--|-------------|--|--|-------|
|       |       |               |          |          |   | Sample No.               | % Agg. | % C.S. | % F.S. | % Silt | % Clay | LL | PI | W.C. |  |             |  |  |       |
| 801.0 | 0     |               |          |          |   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
| 798.5 | 2     |               |          |          |   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
| 796.0 | 4     | 8/10/45       |          |          | BROWN AND GRAY SILTY SANDY GRAVEL   | 4                        | 49     | 17     | 13     | 11     | 10     | NP | NP | 17   |  |             |  |  | A-1-b |
|       | 6     |               |          |          |   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
|       | 8     |               | 3.5      | 1.5      | CLAY SHALE, DARK-GRAY, HARD, CARBONACEOUS, FISSILE WITH SCATTERED THIN CLAY SEAMS, CORE LOSS 30%. |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
| 790.8 | 10    |               |          |          |   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
|       | 12    |               | 4.4      | 0.6      | LIMESTONE, GRAY, HARD, DENSE, BROKEN. NO CORE LOSS.   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
| 787.1 | 14    |               |          |          |   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
| 786.3 |       |               |          |          | CLAY SHALE, DARK-GRAY, MEDIUM FIRM, CARBONACEOUS, FISSILE, BROKEN. CORE LOSS 70%.                 |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |
| 786.0 |       |               |          |          |   |                          |        |        |        |        |        |    |    |      |  |             |  |  |       |

BOTTOM OF BORING

NOTE - HIGH CORE LOSS DUE TO RETENTION FAILURE CAUSED BY NATURE OF SAMPLE.  
 \*\* LIMESTONE, GRAY, HARD, DENSE, BROKEN. NO CORE LOSS.

NOTE - ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE STRUCTURE FOUNDATION INVESTIGATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE BUREAU OF TESTS AT 1600 WEST BROAD STREET, THE PAVEMENT AND SOILS SECTION OF THE BUREAU OF LOCATION AND DESIGN OR IN THE BRIDGE BUREAU AT 25 SOUTH FRONT STREET.

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

OHIO DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS - TESTING LABORATORY  
 1600 WEST BROAD STREET, COLUMBUS, OHIO 43223

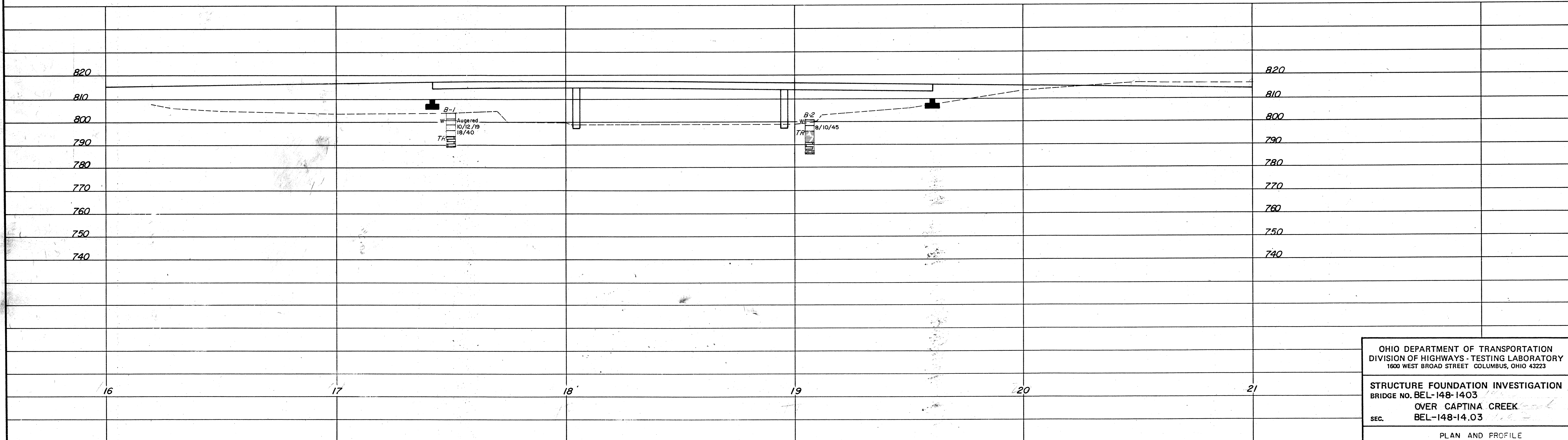
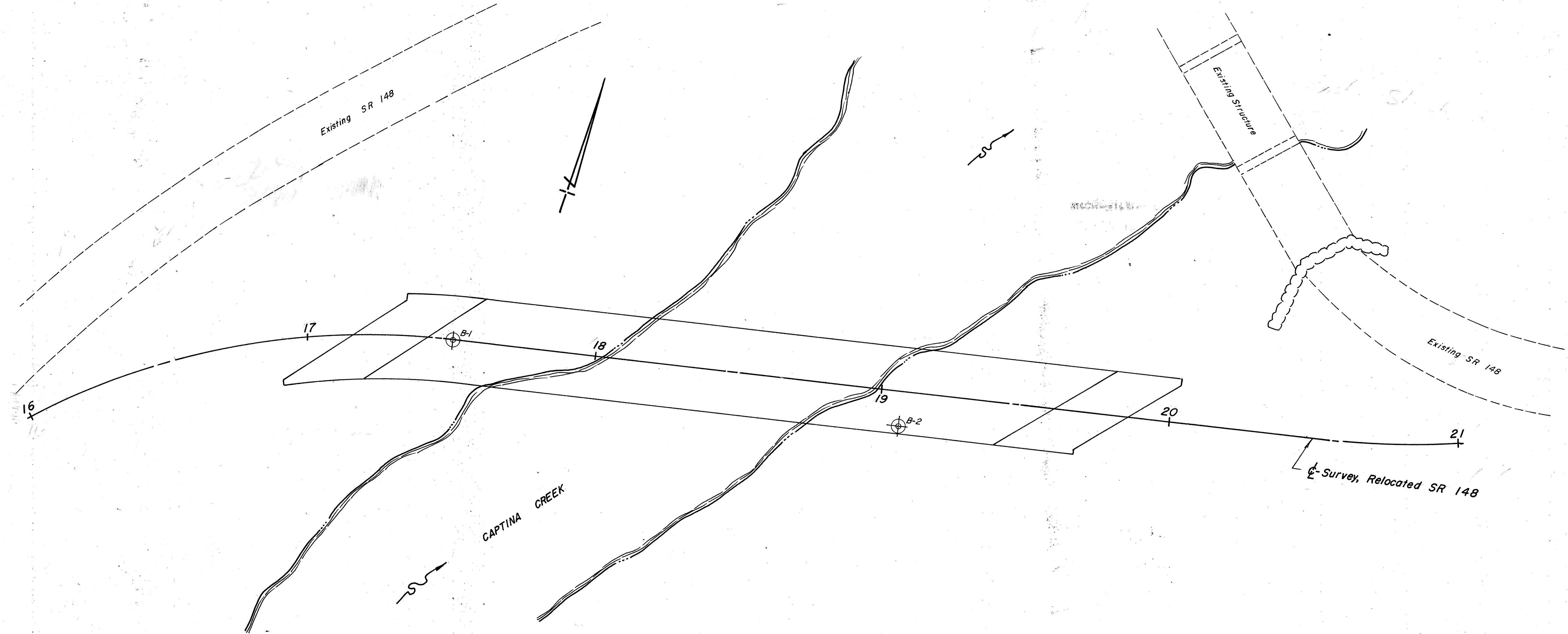
STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. BEL-148-14.03  
 OVER CAPTINA CREEK  
 SEC. BEL-148-14.03

CHECKED BY L. N. L.    REVIEWED BY R. D. R.    DATE 12/26/84

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BEL-148-14.03

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OHIO DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS - TESTING LABORATORY  
1600 WEST BROAD STREET COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. BEL-148-14.03  
OVER CAPTINA CREEK  
SEC. BEL-148-14.03

PLAN AND PROFILE

|                   |                        |                         |                  |
|-------------------|------------------------|-------------------------|------------------|
| DRAWN BY<br>A. F. | CHECKED BY<br>L. N. L. | REVIEWED BY<br>R. D. R. | DATE<br>12/26/84 |
|-------------------|------------------------|-------------------------|------------------|

SCALE: 1" = 20'