



CUY-90-14.90

PID 77332/85531

APPENDIX EX-47

CUY-090-1524 PID 0.402

(Reference Document)

State of Ohio
Department of Transportation
Jolene M. Molitoris, Director

**Innerbelt Bridge
Construction Contract Group 1 (CCG1)**

L-0 Q-12

REPRODUCTION FEB 23 1977

STATE OF OHIO DEPARTMENT OF TRANSPORTATION CUY -90-15.24 CUYAHOGA COUNTY CITY OF CLEVELAND

I-90-1 (97) 28

FHWA REGION	STATE	PROJECT
5	OHIO	I-90-1(97)28

1
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CUYAHOGA COUNTY
CUY - 90-15.24

LIMITED ACCESS

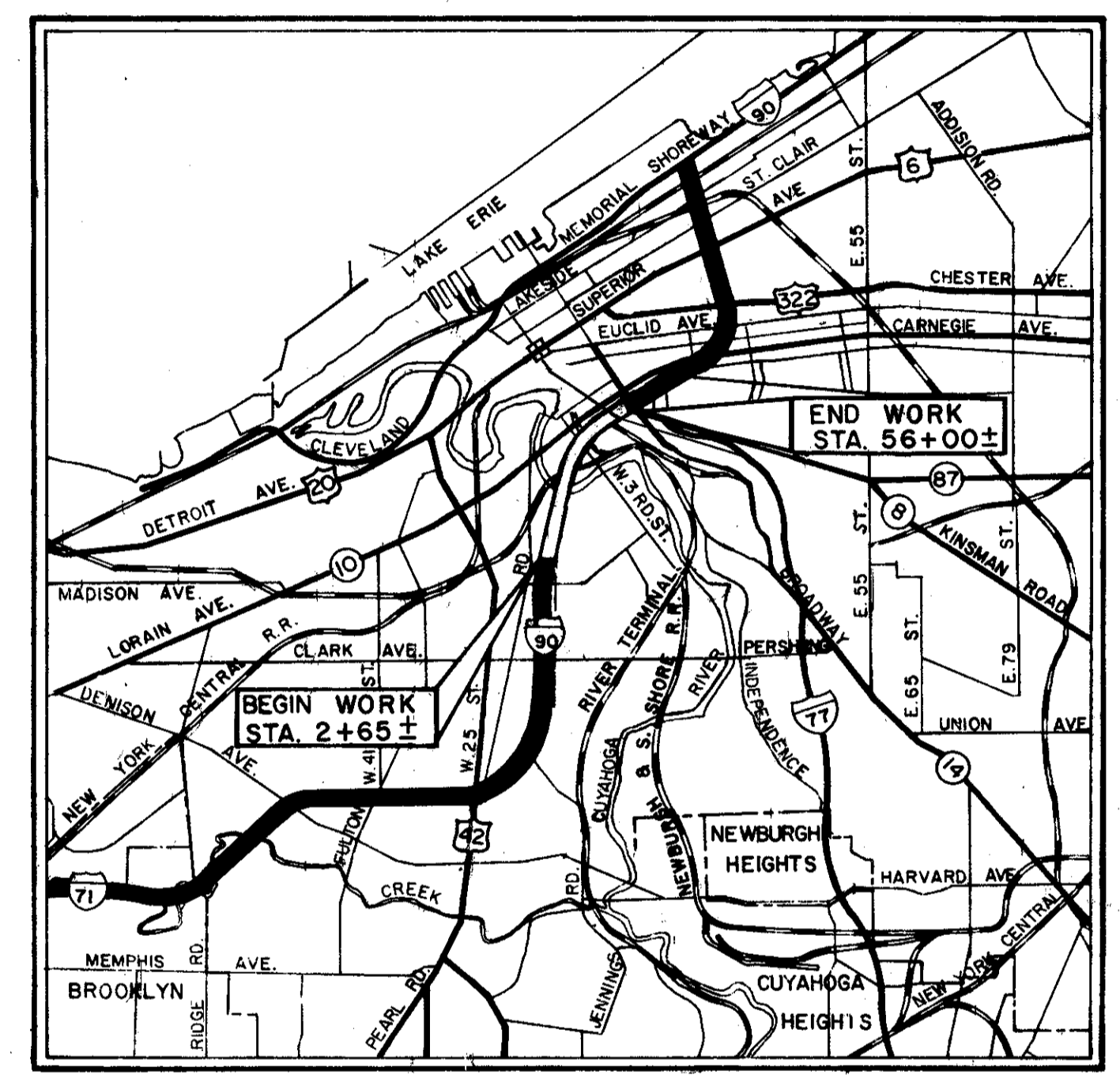
THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02, REVISED CODE OF OHIO.

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1977 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. THE RIGHT OF WAY FOR THIS IMPROVEMENT WILL BE PROVIDED BY THE STATE OF OHIO. I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING OF THE HIGHWAY TO TRAFFIC AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.



PORTION TO BE IMPROVED
STATE ROADS
OTHER ROADS

LINE DATA

PROJECT LENGTH = 0.00 LIN. FT. OR 0.000 MILE
 BEGIN WORK STA. 2+65±
 END WORK STA. 56+00±
 NET LENGTH OF WORK = 5335± FEET = 1.06± MILES

APPROVED DATE 4-12-76	<i>Thomas M. Hall</i> DISTRICT DEPUTY DIRECTOR OF TRANSPORTATION
APPROVED DATE 7-16-76	<i>Robert B. Pifer</i> ENGINEER, BUREAU OF BRIDGES
APPROVED DATE 9-14-76	<i>W.J. Cunningham</i> ENGINEER, BUREAU OF ROADWAY DESIGN
APPROVED DATE _____	ASSISTANT DEPUTY DIRECTOR FOR HIGHWAY DESIGN
APPROVED DATE _____	ASSISTANT DEPUTY DIRECTOR FOR REAL ESTATE
APPROVED DATE 9-14-76	<i>Howard E. Nolan</i> ASSISTANT DEPUTY DIRECTOR FOR PROGRAM DEVELOPMENT
APPROVED DATE 9-14-76	<i>R.E. Gathin</i> CHIEF ENGINEER, DESIGN
APPROVED DATE _____	CHIEF ENGINEER CONSTRUCTION
APPROVED DATE _____	CHIEF ENGINEER OPERATIONS
APPROVED DATE 9-14-76	<i>David L. Weir</i> ASSISTANT DIRECTOR, DEPARTMENT OF TRANSPORTATION
APPROVED DATE 9-14-76	<i>Richard D. Jackson</i> DIRECTOR, DEPARTMENT OF TRANSPORTATION

PREPARED AND RECOMMENDED BY
HOWARD NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

Browning Crow
BROWNING CROW

FILE NO.	CUY-90-15.24 CUYAHOGA COUNTY DATE OF LETTING CONTRACT NO.	004902
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SUPPLEMENTAL SPECIFICATIONS			
NUMBER	DATE	NUMBER	DATE
836	3-12-75		
837	12-7-72		
921	12-4-72		
1001	4-19-76		

STANDARD DRAWINGS			
NUMBER	DATE	NUMBER	DATE
SD-1-69(1 of 4)	6-12-69		
MC-4	7-26-76		
MH-1	6-12-75		
BP-11	1-3-75		
BP-5	6-1-75		
MH-3	6-12-75		
MH-5	6-12-75		
MC-3	6-1-73		

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED: _____
DIVISION ADMINISTRATION _____ DATE _____

GENERAL NOTES - STRUCTURES OVER 20-FT SPAN

FHWA REGION	STATE	PROJECT
5	OHIO	

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CUYAHOGA COUNTY
CUY-90-15:24

No separate payment will be made for bonding new concrete to old using Polysulfide-Epoxy Resin Adhesive, but this work shall be included in the pertinent repair item. This work shall include all labor, material and cleaning and preparing of the existing surface. If sandblasting the existing surface is necessary, this work shall also be included.

1. PROPOSED WORK

The proposed work is shown on the "Schematic Plan" of the bridge.

2. DESIGN SPECIFICATIONS

Standard Specifications for Highway Bridges adopted by the American Association of State Highway and Transportation Officials, dated 1973, and the Ohio "Supplement" to these specifications.

The classes of concrete and the grades of structural steel and reinforcing steel, together with the working stresses for each are as follows:

- Concrete Class C - Unit Stress 1200 psi for superstructure
- Unit Stress 1333 psi for substructure
- Structural Steel - ASTM A36 - Unit Stress 20,000 psi
- Reinforcing Steel - ASTM A615, A616, A617 - Unit Stress 20,000 psi

3. SUPPLEMENTAL SPECIFICATIONS

Reference shall be made to the Federal Specification WW-P-405A, dated 10-26-72, relating to bituminous coating.

4. PLANS OF EXISTING BRIDGES

Construction plans for the existing bridges are on file at the Ohio Department of Transportation, District 12 Office, 10100 Broadway Avenue, Garfield Heights, Ohio and are available for reference.

5. DIMENSIONS

Dimensions given are measured horizontally and at 60°F unless otherwise noted. Dimensions given for existing structures are from the original construction plans unless otherwise indicated as field measurements. Some variation from plan dimensions is expected. Any additional cost resulting from variation from plan dimensions shall be the responsibility of the Contractor and no additional payment will be awarded by the State.

6. MAINTENANCE OF TRAFFIC

One lane of traffic shall be maintained on Ramps W-1 and W-2 at all times. Traffic at Abutment 1B shall be maintained as shown in the Plans.

The Contractor shall maintain and protect traffic and the work during the construction period in accordance with Item 614 and as outlined in the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways, current edition with the latest revisions. In addition, the following requirements shall apply:

A. The Contractor shall submit in writing a schedule of operations to the Director of Transportation and receive approval before work is started on the project.

B. Closing of existing lanes prior to start of construction and changes in traffic flow during the construction period shall be accomplished between the hours of 10:00 A.M. and 2:00 P.M. The Contractor shall notify the Engineer prior to closing any existing traffic lanes or to making any changes in the traffic flow during construction.

C. A plan for lighting and traffic control for night operations shall be presented to, and be approved by the Engineer, prior to the beginning of night operations.

D. The Contractor shall use 55 gallon steel drums to divert the flow of traffic from its normal channel and to protect the work area during construction. The drums shall be painted orange and shall have two-4 inch bands of white reflectorized sheeting around the circumference of the drum. Drums shall be at least half-filled with granular material and spaced at 25 ft. intervals. Flashers shall be attached to each drum. Flashers shall be 12 volt battery operated models with a minimum 7" diameter amber lenses. The flashing cycle shall be such that the on time is 25% or more. These shall be single faced and erected with the face clearly visible to oncoming traffic. Operation shall be continuous. Flashers shall be in accordance with Sections 76-3, 4 and 5 of the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways, current edition with the latest revisions.

E. Advisory speed signs, OW-143, used in conjunction with appropriate construction warning signs shall read 35 MPH.

F. Whenever any part of the travelled surface is closed, the motorists shall be warned and diverted by the Contractor through the use of a flashing arrow, approximately 3 feet by 7 feet, in addition to those provisions set forth in the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways and in these plans. The arrow shall consist of ten sealed beam yellow lights at least 5 inches in diameter and 35 watts. These lights shall be mounted in the shape of an arrow on a panel and shall be elevated to a minimum height of seven feet above the pavement. The lights shall flash either sequentially or simultaneously and shall be placed in a location as directed by the Engineer, which will adequately warn the motoring public of the upcoming merger.

G. Payment for providing, erecting, maintaining, and removing all signs, barricades, drums, lights, etc., shall be included in the lump sum price bid for Item 614, Maintaining Traffic.

7. REMOVAL

A. General

Structural steel designated by the Plans for removal may be removed by methods of the Contractor's selection and as approved by the Engineer.

When so directed by the Engineer, the Contractor shall wet down concrete thoroughly during removal operations to prevent spread of dust. All necessary labor and material shall be provided by the Contractor and included with Item 202, Portions of Structures Removed, for payment.

B. Concrete Removal

Concrete shall be removed by means of approved pneumatic hammers employing pointed and blunt chisel edged tools.

Existing reinforcing steel shall not be cut flush at all locations but shall be cut as indicated in the plans or as directed by the Engineer to serve as dowels or principal reinforcement in the rebuilt structure. Care shall be taken to preserve the bond of such dowels or principal reinforcement in the existing concrete. These bars shall be cleaned of all concrete fragments and foreign matter. Pneumatic hammers shall not be placed in direct contact with the bars; hand tools shall be employed for final cleaning. Damaged areas of reinforcement that are to remain shall be cut and stress transfer accomplished by either a lapped or mechanical splice. Other existing reinforcement within the removal limits shall be removed and disposed of.

C. Disposal of Removed Material

All concrete, reinforcing steel, asphalt, etc., removed from the structure and not reused shall, unless otherwise specified, become the property of the Contractor and shall be removed by him from the site.

Under no circumstances shall the material be permitted to remain on the premises, right of way or streets pending disposal of same or for any other purposes, unless otherwise specified by the Engineer.

8. BONDING NEW CONCRETE TO EXISTING CONCRETE

Polysulfide-Epoxy Resin adhesive shall be used for bonding new concrete to existing concrete at all locations where new concrete or pneumatically placed mortar is placed in contact with existing concrete. The adhesive shall be Thiobond No. 100 as manufactured by Steelcoat Mfg. Company, St. Louis, Mo., Ceilcoat 348 Adhesive, as manufactured by the Ceilcoat Company, Berea, Ohio, Resiweld R-7680-G as manufactured by the H.B. Fuller Company or adhesive meeting the requirements of AASHTO M-235-73 I. In the event of application at less than 60°F or more than 104°F, it may be necessary to obtain a slightly modified material depending on the recommendations of the manufacturer.

Preparation of the surface of the existing concrete shall be in accordance with the manufacturer's recommendation. Just prior to application the prepared surface shall be washed with water to remove all dust. When the surface is damp or dry, the adhesive shall be applied by thorough brushing onto the surface to a thickness of not less than 15 mils with the coverage averaging at least one gallon per 100 Sq. ft. While the adhesive is tacky, the fresh concrete shall be placed against it. If the adhesive sets and is no longer tacky, a second coat shall be applied. The adhesive shall be thoroughly mixed and health precautions observed, all in accordance with the manufacturer's recommendation.

9. REINFORCING STEEL

All bars are designated on the plans by bar numbers. The bar size is indicated by the first digit.

All bar dimensions are given out to out.

The clear distance between reinforcing steel and face of concrete shall be 2" unless otherwise noted on the plans.

10. PAINTING STRUCTURAL STEEL

All new structural steel, except new flashing plates, shall be painted in accordance with Item 514, Field Painting of New Structural Steel.

The handrail between the columns of Piers 1B and 2B and parts of structural members beneath new flashing plates (as shown in the Plans) shall be painted in accordance with Supplemental Specification 837, Maintenance Painting of Existing Structures.

11. CONCRETE COATING

The concrete portions of the bridge shall be coated with a cement-epoxy coating in the areas indicated in the plans. The coating shall be a two component epoxy blended with portland cement and a coloring agent similar to CP102-1C, as manufactured by the Chester Chemical Company, 3214 Helms Ave., Los Angeles, California. The coating shall be non fungus nutrient, shall withstand freeze-thaw cycles and shall not retain moisture or act as a moisture barrier. The manufacturer of the coating must be able to cite structures which have been successfully coated with the material for a period of at least two years. The coating shall, after 360 hours of exposure to concentrated ultra-violet and infra-red light in accordance with ASTM Designation E-42, show no evidence of blistering, chalking, checking, cracking or flaking when evaluated in accordance with ASTM Publication D822. A concrete substrate shall be a light-gray as approved by the Director.

The surface to be coated shall be cleaned of efflorescence, dirt, oil, soot, loose material and any other material which would prevent a sound bond to the concrete. Cleaning shall be done by sandblasting. Any additional surface preparation requirements of the manufacturer of the coating must also be performed.

Prior to applying the coating, the substrate shall be examined by a qualified representative of the manufacturer of the coating. Before coating may begin, the representative shall certify to the Engineer in writing that the surface is properly prepared to receive the coating. In the event a primer is required, it shall be applied by the Contractor at no extra cost.

Mixing, application and curing shall be performed strictly according to the manufacturer's instructions. One coat will be required, coverage shall be in the range of 150-200 sq. ft. per gallon of unthinned material. Application shall be by spray or roller. Prior to final acceptance, all damaged areas of the coating shall be repaired.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

GENERAL NOTES

BR. NO. CUY.-90-1524
90-1540
90-1547
90-1599
CUYAHOGA COUNTY OHIO

STA. 2+65±
STA. 56+00±

DRAWN C.K.B.	TRACED C.P.	CHECKED A.B.	REVIEWED	REVISED
DATE 1-15-75	DATE 1-16-75	DATE 2-4-75	DATE	SHEET GN 1

GENERAL NOTES - STRUCTURES OVER 20-FT SPAN

FHWA REGION	STATE	PROJECT
5	OHIO	

3
20

CUYAHOGA COUNTY
CUY-90-15.24

11. CONCRETE COATING (Continued)

Precautions must be taken to prevent the coating from contacting parts of the structure not to be coated, persons and property using the bridge, and persons and property adjacent to the bridge. If damage occurs from drifting spray, spray application shall be discontinued.

The work of coating the bridge with cement-epoxy film will be measured by the area of surface coated using plan quantities and will be paid for at the contract unit price bid per square foot for Item Special, Concrete Coating. The cost of furnishing all labor, materials and equipment, sandblasting and any other cleaning and preparing required, primer if required, and of protecting persons and property from spray and drippings, shall be included in this price.

12. INSPECTION OF EXISTING SUBSTRUCTURE UNITS

The locations of the existing substructure units are shown in the Plans.

The Contractor shall provide all necessary material, equipment and labor prior to beginning of work, to permit inspection of the existing substructure units. The Contractor's Superintendent shall accompany the Engineer at this time in making a detailed examination of the repairs to be made. The material, equipment and labor shall be furnished for whatever length of time it may be necessary to conduct this examination.

Inspection of the existing substructure units will be paid for at the contract lump sum bid for Item Special, Inspection of Existing Substructure Units. This price shall be payment in full for all material, equipment and labor necessary to complete the work.

13. CONCRETE REPAIR (ITEM 519, ITEM 520 AND ITEM SPECIAL, REPAIR OF CRACKS)

Concrete in some areas of the structures has deteriorated by spalling, cracking, leaching and general breakdown resulting from faulty drainage and from honeycombed porous areas. A careful detailed visual inspection has been made of all the exposed concrete surfaces of the substructure for each structure. Based on this inspection, quantity estimates have been made for the areas of the structures which will require repair operations. Because complete inspection to determine the depths of the deteriorated and spalled concrete can only be made as work progresses and certain parts become accessible for inspection, special inspection of uncovered areas will be made from time to time as the work progresses. The Contractor shall cut out and remove all concrete as directed by the Engineer, and shall provide whatever is necessary in the way of platforms or staging to facilitate additional inspection as concrete is cut out. Based on such additional inspections the Engineer will determine the additional concrete to be removed over and above that indicated by the plans, if any, the number and lengths of corroded or misplaced reinforcing bars to be cut out, and the amount of new reinforcing steel to be placed.

For the repair work involved, the plans are indicative only of the type of repairs contemplated. The extent of the work which will be necessary to remove and restore all deteriorated concrete parts cannot be accurately determined by a visual inspection. The accompanying plans show only repairs considered necessary based on inspections which have been made. As the work of removing deteriorated concrete progresses, conditions may be disclosed wherein the concrete cannot be restored by methods shown on the plans. In such cases, additional plans will be prepared by the Engineer and the Contractor shall proceed with all work as directed.

Payment for this work shall be included in the unit prices bid for Item 519, Item 520, and Item Special, Repair of Cracks.

14. CLEANOUT OF BRIDGE DRAINAGE SYSTEMS

The location and details of the existing drainage systems are shown in the Plans. The cleanout shall consist of removing all dirt and debris from curb areas, scuppers, cross drains, drainage troughs, hoppers, horizontal pipe collectors and vertical pipe downspouts including the underground storm sewers to the adjacent manholes or catch basins. After the dirt and debris are removed, the entire system shall be flushed out with clean water making certain the water flows smoothly to the adjacent manhole or catch basin.

The Contractor shall provide necessary equipment prior to beginning of work for the purpose of examining the existing bridge drainage systems. The Contractor's Superintendent shall accompany the Engineer at this time in making this detailed examination. If, in the opinion of the Engineer, the bridge drainage systems do not require cleanout, the work covered by this item shall be non-performed. No separate payment will be made to the Contractor to cover any costs of this examination.

Cleanout of the bridge drainage system, if required, will be paid for at the contract lump sum price bid for Item Special, Cleanout of Bridge Drainage System. This price shall be payment in full for all material, equipment and labor necessary to complete this work.

15. EXAMINE UNDERGROUND SEWER SYSTEMS

The locations of the underground sewer systems are shown in the plans. The Contractor shall provide all material, equipment and labor necessary to examine the existing underground sewer systems from the manhole or catch basin adjacent to the substructure unit to the outflow point into the Cuyahoga River. The purpose of this examination is to determine the need to clean out the systems. The Contractor's Superintendent shall accompany the Engineer in making the examination. Based on the results, the Engineer will designate which parts of the systems require cleanout.

Examination of the underground sewer systems will be paid for at the contract lump sum bid for Item Special, Examine Underground Sewer Systems. This price shall be payment in full for all material, equipment and labor necessary to complete this work.

16. CLEANOUT OF UNDERGROUND SEWER SYSTEMS

The locations of the underground sewer systems are shown in the Plans. Cleanout shall consist of removing dirt and debris from the sewer systems which extend from the manhole or catch basin adjacent to the substructure unit to the outflow point into the Cuyahoga River. After the dirt and debris are removed, the systems shall be flushed to the satisfaction of the Engineer.

The number of linear feet of underground sewer systems shown in the plans (linear feet for each pipe diameter) are approximately the maximum number of linear feet of pipe that might require cleanout. Only parts of the systems designated by the Engineer after a detailed examination shall be cleaned out.

Cleanout of the underground sewer systems will be paid for at the contract unit price per linear foot for each size pipe bid for Item Special, Cleanout of Underground Sewer Systems. This price shall be payment in full for all material, equipment and labor necessary to complete the work. No separate payment shall be made to the Contractor to cover any cost for cleaning drainage structures within the underground sewer systems. The cost of cleaning these structures shall be included in the unit price bid per linear foot for Item Special, Cleanout of Underground Sewer Systems.

17. REMOVE ALL DIRT AND DEBRIS FROM BRIDGE SEATS

This work shall consist of removing all dirt and debris from pier and abutment bridge seats to the satisfaction of the Engineer.

Removal of dirt and debris will be paid for at the lump sum bid for Item Special, Remove All Dirt and Debris From Bridge Seats. This price shall be payment in full for all material, equipment and labor necessary to complete this work.

18. REPAIR OF CRACKS

Repair of cracks shall be in accordance with Sheet 25/25 of the Plans and shall be paid for at the contract unit price bid for Item Special, Repair of Cracks. This price shall be payment in full for all material, equipment and labor necessary to complete this work.

19. SHIM BEARINGS

Shimming of bearings shall be accomplished in accordance with Sheet 23/25 of the Plans and shall be paid for at the contract unit price bid for Item Special, Shim Bearings. This price shall be payment in full for all material, equipment and labor necessary to complete this work.

20. EROSION REPAIR

The minor erosion in the area identified on Sheet 14/25 shall be restored to the existing ground elevation by filling the gullies with suitable materials as described in Section 203.08 of the Specifications and shall be finished and compacted in a smooth plane.

The major erosion areas as identified by field survey May 1, 1975 and any other major erosion areas, that is gullies 1 foot or deeper, shall be filled with rock, granular material and suitable soil and shall be compacted in layers not to exceed 10" to form a heterogeneous embankment. The correction of the major erosion areas shall be completed prior to doing the minor erosion repair.

The Contractor shall be responsible for maintaining and protecting the existing Erie Lackawanna Railway tracks during repair operations.

An estimated quantity of 50 Cu. Yds. of suitable soil and 30 Cu. Yds. of granular material and rock, as per 203.08, shall be used as directed by the Engineer, to repair the eroded areas. All materials, equipment and incidentals required to complete the work shall be paid for at the contract lump sum bid for Item Special - Erosion Repair.

21. ITEM 603 - 24" CONDUIT, TYPE C, AS PER PLAN

This work shall consist of the removal of the existing 24" storm sewer between Piers 3 and 4 and replacing with 24" conduit, Type C as per plan, in kind, in accordance with the note on Sheet 14/25.

Removal of the existing storm sewer and replacement with the 24" conduit shall be paid for at the unit price bid for Item 603 - 24" Conduit, Type C, As Per Plan, per linear foot. This price shall be payment in full for all material, equipment and labor necessary to complete this work.

22. ITEM 604 - FURNISH COMPLETE BOLT DOWN CASTING FOR EXISTING MANHOLES, AS PER PLAN

If the existing castings of the existing manholes are found unsuitable, as determined by the Engineer, or missing during construction of the project, an estimated quantity of 4 Each, Furnish Complete Bolt Down Castings for Existing Manholes, As Per Plan, has been included in the General Summary to be used as directed by the Engineer.

Bolt down castings shall be East Jordan Iron Works Catalogue No. V040-T, or Neenah Foundry Catalogue No. R-1915 G or approved equal.

The cost of removing the unsuitable existing castings and all incidentals necessary to complete the work to the satisfaction of the Engineer shall be included in the price bid for the Item 604 - Furnish Complete Bolt Down Castings For Existing Manholes, As Per Plan.

23. FIELD OFFICE

The Contractor shall provide a suitable field office having a minimum of 300 sq. ft. of floor space and in addition to the requirements of Item 619, he shall provide and maintain sanitary provisions as per 107.06. All the above is included in the lump sum price bid for Item 619, Field Office.

24. PROTECTION OF PUBLIC AND PROPERTY

The Contractor shall provide and maintain safeguards, safety devices and protective equipment and take any other needed actions as may be necessary to protect the public and property in connection with this work.

25. ITEM 517 RAILING

For Notes Concerning Railing Reconstruction See Sheet 29.

26. SHOP DRAWINGS

After all steel fabrication is completed, the fabricator shall furnish a 35 millimeter microfilm copy of each shop drawing mounted on a 3 1/2" x 7 1/8" aperture card. The card shall be imprinted with the bridge and project number, fabricator's name, drawing number and details shown on the drawing.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

GENERAL NOTES

BR. NO. CUY-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

CUYAHOGA COUNTY OHIO

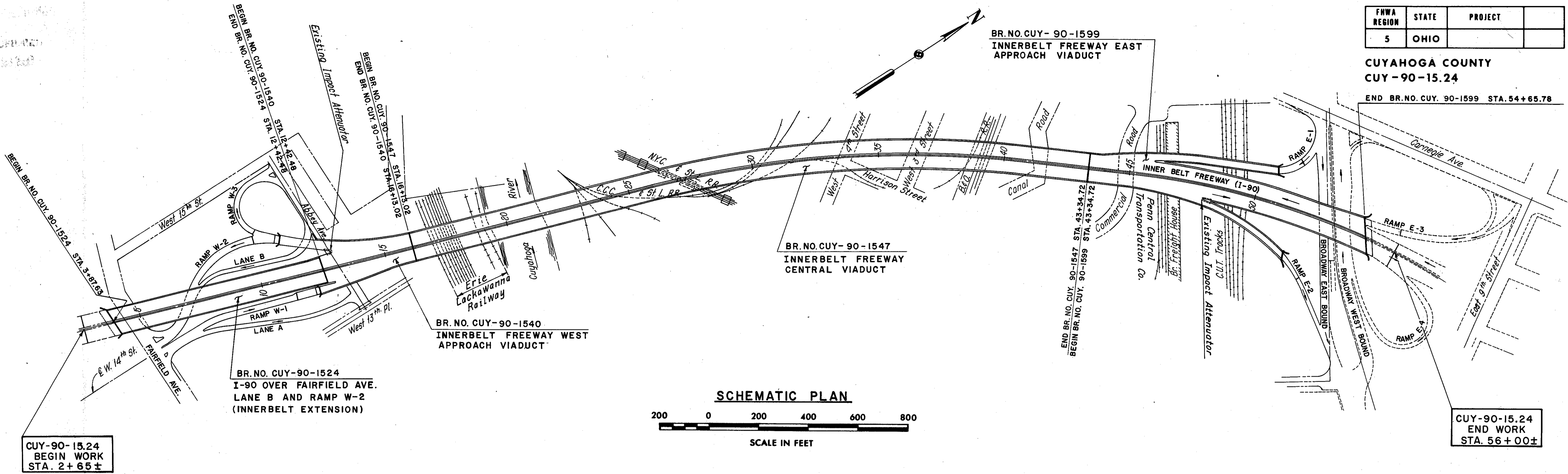
DRAWN C.K.B.	TRACED C.P.	CHECKED A.A.	REVIEWED	REVISED
DATE 1-16-75	DATE 1-16-75	DATE 2-4-75	DATE	DATE

SHEET GN 2

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.24
END BR. NO. CUY. 90-1599 STA. 54+65.78



SCHEMATIC PLAN

200 0 200 400 600 800
SCALE IN FEET

CUY-90-15.24
BEGIN WORK
STA. 2+65±

CUY-90-15.24
END WORK
STA. 56+00±

**EXISTING STRUCTURE BR.NO. CUY-90-1524
(CUY-42-1467)**

TYPE: Units 1W and 1E - Continuous welded steel girder with reinforced concrete deck and substructure.
Units 2W, 3W and 2E - Continuous steel beam with reinforced concrete deck and substructure.

SPANS: Unit 1W 64'-0", 70'-6", 65'-6", 81'-0" Cantilever.
Unit 2W 63'-0", 90'-0", 79'-6", 64'-0", 61'-0" Cantilever.
Unit 3W 66'-0", 3 @ 72'-0", 61'-11 1/2"
Unit 1E 64'-0", 102'-0", 103'-0", 90'-0", 79'-6", 64'-0", 61'-0" Cantilever.
Unit 2E 66'-0", 3 @ 72'-0", 61'-11 1/2"

ROADWAY: 2 @ 53'-0" curb to curb with barrier safety curbs and concrete barrier median.

LOAD FREQUENCY: CF2000(57) adequate for A.A.S.H.T.O. alternate loading.

SKEW: Varies

WEARING SURFACE: 2" Asphalt Concrete

APPROACH SLAB: AS-1-54 (25' Long)

ALIGNMENT: Tangent

**EXISTING STRUCTURE BR.NO. CUY-90-1540
(CUY-42R-1743)**

TYPE: Continuous steel beams and girders with concrete deck and substructure.

SPAN: Varies (see General Plan)

ROADWAY: 2 @ 52'-0" with barrier safety curbs and concrete barrier median.

LOADING: CF 2000

SKEW: Varies

WEARING SURFACE: 2 1/2" Asphalt Concrete

APPROACH SLABS: AS-1-54 (25' Long)

ALIGNMENT: Tangent

**EXISTING STRUCTURE BR.NO. CUY-90-1547
(CUY-42R-1750)**

TYPE: Steel deck trusses with reinforced concrete deck and substructure.

SPANS: Varies (see General Plans)

ROADWAYS: 2 @ 52'-0" curb to curb with barrier safety curbs and concrete barrier median.

LOADING: CF 2000, adequate for A.A.S.H.T.O. alternate loading.

SKEW: Varies

WEARING SURFACE: 2 1/2" Asphalt Concrete

ALIGNMENT: Tangent, 1°30' Curve Right, Tangent.

**EXISTING STRUCTURE BR.NO. CUY-90-1599
(CUY-42-1750)**

TYPE: Continuous steel beams and girders with concrete deck and substructure.

SPAN: Varies (see General Plans)

ROADWAYS: 2 @ 52'-0" with barrier safety curbs and concrete barrier median.

LOADING: CF 2000, adequate for A.A.S.H.T.O. alternate loading.

SKEW: Varies

WEARING SURFACE: 2 1/2" Asphalt Concrete

APPROACH SLAB: AS-1-54 (25' Long)

ALIGNMENT: 2° Curve Right

SEQUENCE OF WORK

Of the items listed in PROPOSED WORK, the following items shall be performed in the order listed before remaining items are performed.

1. #21
2. #2
3. #5
4. #6
5. #1

PROPOSED WORK

1. Cleanout entire bridge drainage system, see Sheets 3/25 thru 12/25 and 17/25 thru 21/25.
2. Cleanout underground sewer system to the Cuyahoga River see Sheets 13/25 thru 16/25.
3. Provide additional flashing plates at the Central Viaduct deck expansion joints, see Sheets 18/25 and 19/25.
4. Remove all dirt and debris from bridge seats.
5. Provide drain holes in the columns of the End Piers and Piers 2 thru 8 of the Central Viaduct, see Sheet 20/25.
6. Provide drain pipes in the columns of Piers 1N and 1S, see Sheets 14/25 and 20/25.
7. Paint the handrail between the columns at Piers 1B and 2B.
8. Provide 6" wood guard posts adjacent to Piers 2B, 3B and 1E2, see Sheets 16/25 and 24/25.
9. Coat the exposed concrete surfaces of the East Approach piers with a cement-epoxy coating, see Sheet 16/25.
10. Coat the underside of the bridge deck of the East Approach where spalling has occurred, see Sheets 11/25 and 12/25.
11. Replace Abutment W-1 backwall full depth within the approximate limits of each safety curb, see Sheet 22/25.

12. Replace Abutment W-2 backwall full depth within the approximate limits of each safety curb and trim expansion joint, see Sheet 22/25.
13. Replace approximately the top 1.3 ft. of the southbound roadway Abutment 1B backwall, see Sheet 23/25.
14. Shim abutment bearings at Abutment 1B, see Sheet 23/25.
15. Remove and replace the asphalt concrete on the approach slab at Abutment W-2, see Sheet 24/25.
16. Repair substructure deterioration, see Sheets 13/25 thru 16/25.
17. Fill as required in front of Abutment W-1 and Abutment E-1 and at Pier 2E1, see Sheets 13/25 and 16/25.
18. Repair eroded area in the vicinity of Piers 1N and 1S, see Sheet 14/25.
19. Install pressure relief joints on all approach roadways, see Sheets 3/25, 5/25 and 12/25.
20. Repair of cracks, see Sheet 25/25.
21. Replace 24" Storm Sewer between Pier 3 and Pier 4, see Sheet 14/25.
22. Furnish bolt down castings for existing manholes, see Sheet GN-2.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SCHEMATIC PLAN

BR. NO. CUY-90-1524
90-1540
90-1547
90-1599
CUYAHOGA COUNTY OHIO

STA. 2+65±
STA. 56+00±

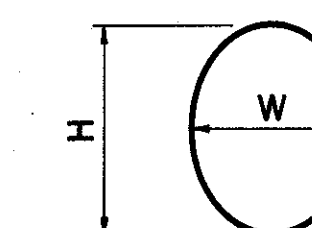
DRAWN: CB	TRACED: JS	CHECKED: WEG	REVIEWED:	REVISED:
DATE: 6-17-74	DATE: 6-18-74	DATE: 6-20-74	DATE:	DATE:

SHEET 1/25

ESTIMATED QUANTITIES (Cost Participation I)									
ITEM	TOTAL	UNIT	DESCRIPTION BRIDGE REPAIR	ABUTMENTS	PIERS	SUPER-STRUCTURE	APPROACH SLABS	GENERAL	From Sht. No.
** 202	Lump Sum	Lump Sum	Portions Of Structures Removed	Lump Sum					
202	103	Sq. Yd.	Wearing Course Removed	6			97		
203	376	Cu. Yd.	Embankment	223	153				16 & 19
402	3	Cu. Yd.	Asphalt Concrete, AC-20				3		27
404	3	Cu. Yd.	Asphalt Concrete, AC-20				3		27
407	11	Gallons	Tack Coat, 702.04, SS-1 or SS-1H, MS-2 or RS-1 or 702.02 RC-250				11		27
509	278	Pounds	Reinforcing Steel	278					28
511	10	Cu. Yd.	Class C Concrete, Abutments Above Footings	10					
513	16,280	Lbs.	Structural Steel (ASTM A36) Galvanized			16,280			
513	2,475	Lbs.	Structural Steel (ASTM A36)	2,475					
514	2,475	Lbs.	Field Painting of New Structural Steel	2,475					
519	142	Sq. Ft.	Patching Concrete Structures, as per plan	136	6				16 & 19
520	1,225	Sq. Ft.	Pneumatically Placed Mortar, as per plan	80	1,145				16-17-18-19
603	373	Lin. Ft.	24" Conduit, Type C, As Per Plan					373	17
603	37	Lin. Ft.	12" Conduit, Type C, 706.01, 706.02, or 706.08					37	17
604	2	Each	Standard No. 1 Manhole					2	17
604	4	Each	Furnish Complete Bolt Down Casting For Existing Manholes, As Per Plan					4	3
605	131	Lin. Ft.	Aggregate Drain					131	5
606	77	Each	Guard Posts, As Per Plan					77	27
407	0.3	Ton	Cover Aggregate					0.3	27
837	Lump Sum	Lump Sum	Surface Preparation			Lump Sum			
837	Lump Sum	Lump Sum	Spot Prime Painting			Lump Sum			
837	Lump Sum	Lump Sum	Complete Coat Prime Painting			Lump Sum			
837	Lump Sum	Lump Sum	Two Complete Coats Finish Painting			Lump Sum			
Special	59,491	Sq. Ft.	Concrete Coating		55,941	3,550			
Special	193	Lin. Ft.	Repair Of Cracks,	38	155				16-17-18-19
Special	Lump Sum	Lump Sum	Cleanout of Bridge Drainage System					Lump Sum	
Special	355	Lin. Ft.	Pressure Relief Joint, Type C					355	5
Special	Lump Sum	Lump Sum	Remove All Dirt And Debris From Bridge Seats	Lump Sum	Lump Sum				
Special	3	Each	Shim Bearings	3					26
Special	Lump Sum	Lump Sum	Erosion Repair					Lump Sum	3
			For Railing Quantities See Sheet 29						
Special	Lump Sum	Lump Sum	Inspection of Existing Substructure Units					Lump Sum	
Special	Lump Sum	Lump Sum	Examine Underground Sewer Systems, 12" & through 21" & Pipe					Lump Sum #	
Special	Lump Sum	Lump Sum	Examine Underground Sewer Systems, Larger than 21" & Pipe					Lump Sum #	
Special	3591	Lin. Ft.	Cleanout Of Underground Sewer Systems, 12" & Pipe					Δ 3488'	103' #
Special	1211	Lin. Ft.	Cleanout Of Underground Sewer Systems, 15" & Pipe					Δ 1211'	
Special	144	Lin. Ft.	Cleanout Of Underground Sewer Systems, 21" & Pipe					Δ 144'	
Special	1858	Lin. Ft.	Cleanout Of Underground Sewer Systems, 24" & Pipe					Δ 1064'	794' #
Special	90	Lin. Ft.	Cleanout Of Underground Sewer Systems, 27" & Pipe					Δ 90'	
Special	575	Lin. Ft.	Cleanout Of Underground Sewer Systems, 30" & Pipe					575' #	
Special	482	Lin. Ft.	Cleanout Of Underground Sewer Systems, 36" & Pipe					482' #	
Special	550	Lin. Ft.	Cleanout Of Underground Sewer Systems, 48" & Pipe					550' #	
			Cleanout Of Underground Sewer Systems, 54" & Pipe					530' #	
Special	850	Lin. Ft.	Cleanout Of Underground Sewer Systems, No. 3*					850' #	
Special	1127	Lin. Ft.	Cleanout Of Underground Sewer Systems, No. 4*					1127' #	
Special	745	Lin. Ft.	Cleanout Of Underground Sewer Systems, No. 5*					745' #	
Special	180	Lin. Ft.	Cleanout Of Underground Sewer Systems, No. 6*					180' #	
Special	220	Lin. Ft.	Cleanout Of Underground Sewer Systems, No. 7*					220' #	
Special	1480	Lin. Ft.	Cleanout Of Underground Sewer Systems, No. 8*					1480' #	
614	Lump Sum	Lump Sum	Maintaining Traffic					Lump Sum	
619	Lump Sum	Lump Sum	Field Office					Lump Sum	
623	Lump Sum	Lump Sum	Construction Layout Stakes					Lump Sum	

Sub-Summary

From Sht. No.	Approx. Sta. and Location	605 Aggr. Lin. Ft.	Pressure Relief Joint Lin. Ft.
6	2+85 South Str. 1524 N.B. & S.B.	34	108
8	4+14 Ramp W-2 & W-3 South Str. 1540	21	50
8	5+74 W-1 South Str. 1540	12	28
15	2+00 E-1 North Str. 1599	12	30
15	7+96 E-2 " " "	12	22
15	5+84 E-3 N. I. 90	12	23
15	56+22 E-4 N. I. 90	28	94
	Total to Gen. Summary	131	355



* CITY OF CLEVELAND		
SEWER SIZE		
NO.	H	W
3	2.75'	2.23'
4	3.23'	2.54'
5	3.74'	2.95'
6	4.23'	3.34'
7	4.69'	3.70'
8	5.12'	4.04'

QUANTITY CALCULATIONS:
Made by D.L.R. Date 10-15-74
Checked by W.E.B. Date 11-7-74

** Portions of Structures Removed includes approximately 10 Cu. Yds. of abutment concrete.

Δ Denotes Storm Sewers Maintained by the State of Ohio
Denotes Storm Sewers Maintained by the City of Cleveland

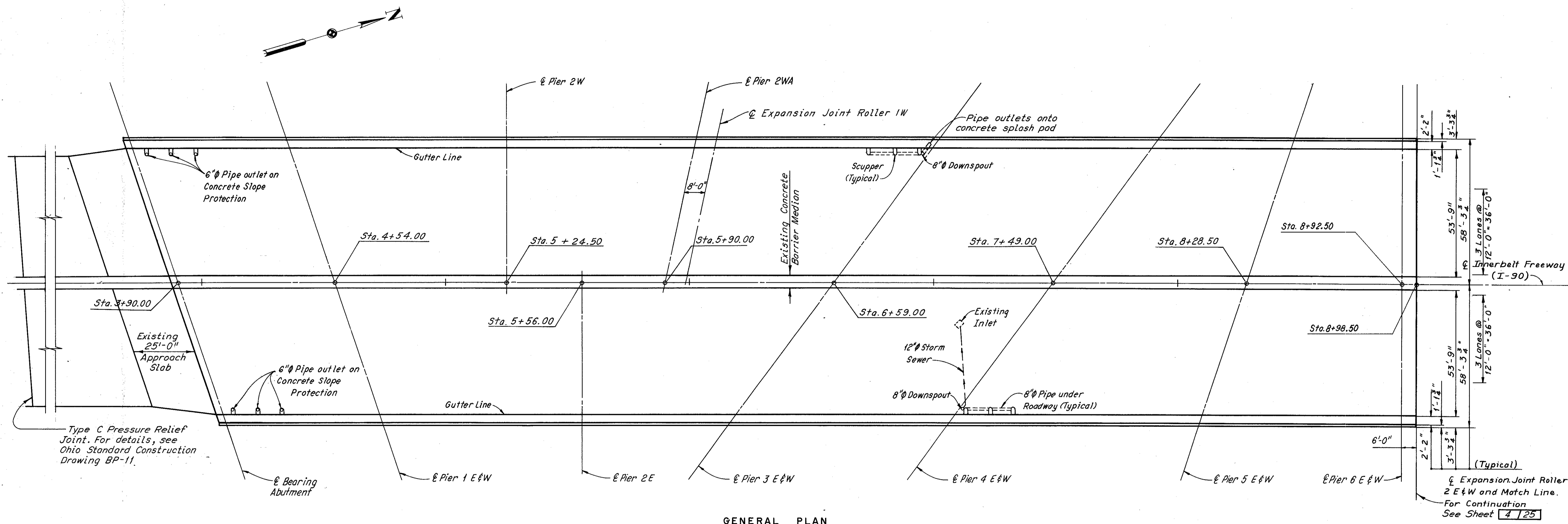
COST PARTICIPATION I. 100% STATE PARTICIPATION
COST PARTICIPATION II. FEDERAL, STATE, & CLEVELAND PARTICIPATION (Page 29)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
ESTIMATED QUANTITIES			
BR. NO: CUY-90-1524		STA. 2+65±	
90-1540		STA. 56+00±	
90-1547			
90-1599			
CUYAHOGA COUNTY		OHIO	
DRAWN D.L.R. DATE 10-15-74	TRACED D.L.R. DATE 10-16-74	CHECKED W.E.B. DATE 11-7-74	REVIEWED DATE
			SHEET 2 / 25

FHWA REGION	STATE	PROJECT
5	OHIO	

6
30

CUYAHOGA COUNTY
CUY-90-15.24



GENERAL PLAN

Note:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.

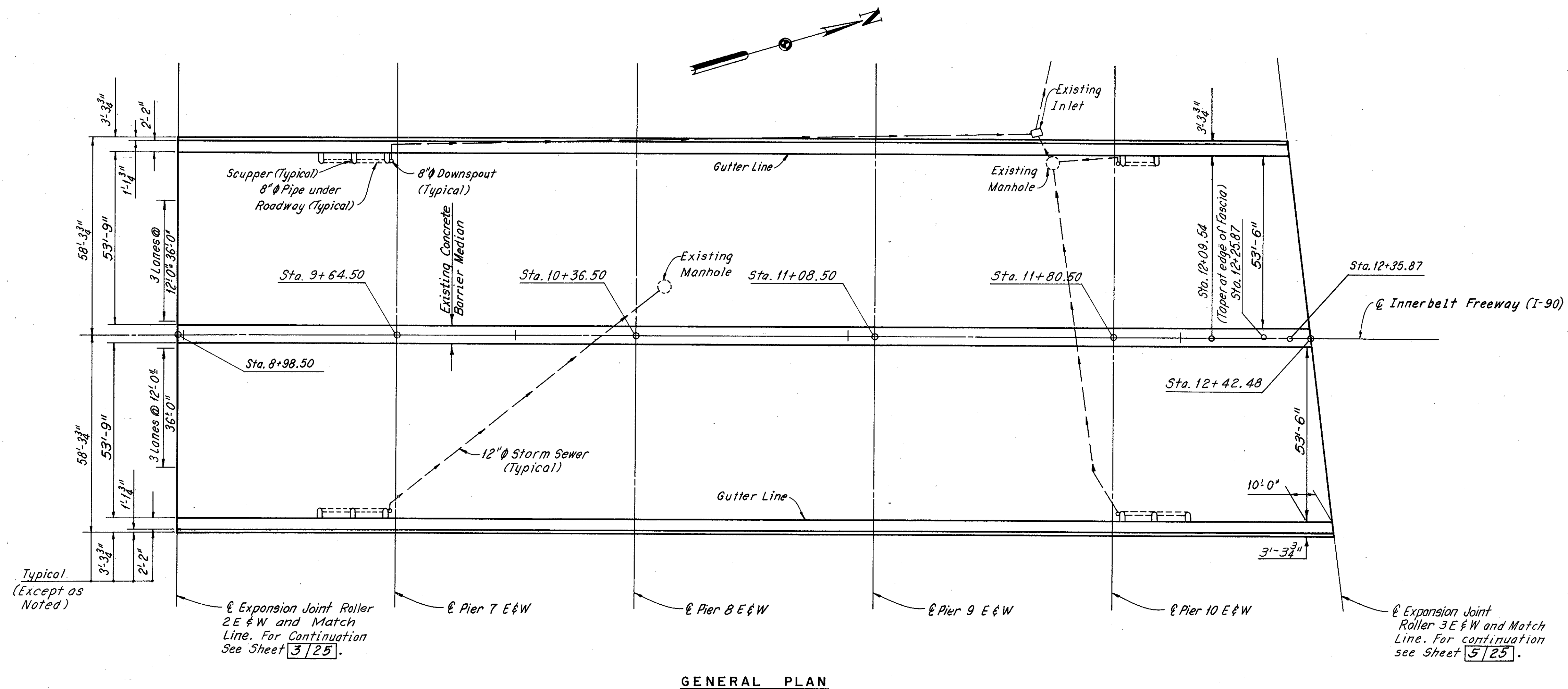
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
GENERAL PLAN INNERBELT EXTENSION			
BR. NO. CUY. -90-1524		STA. 2+65±	
90-1540		90-1547	
90-1547		90-1599	
CUYAHOGA COUNTY		OHIO	
DRAWN LKW	TRACED LKW	CHECKED WEB	REVIEWED
DATE 6-17-74	DATE 6-17-74	DATE 6-23-74	DATE
			REVISED
			SHEET 3 / 25

REVISED
FEB 03 1997

FHWA REGION	STATE	PROJECT	
5	OHIO		

7
30

CUYAHOGA COUNTY
CUY-90-15.24



GENERAL PLAN

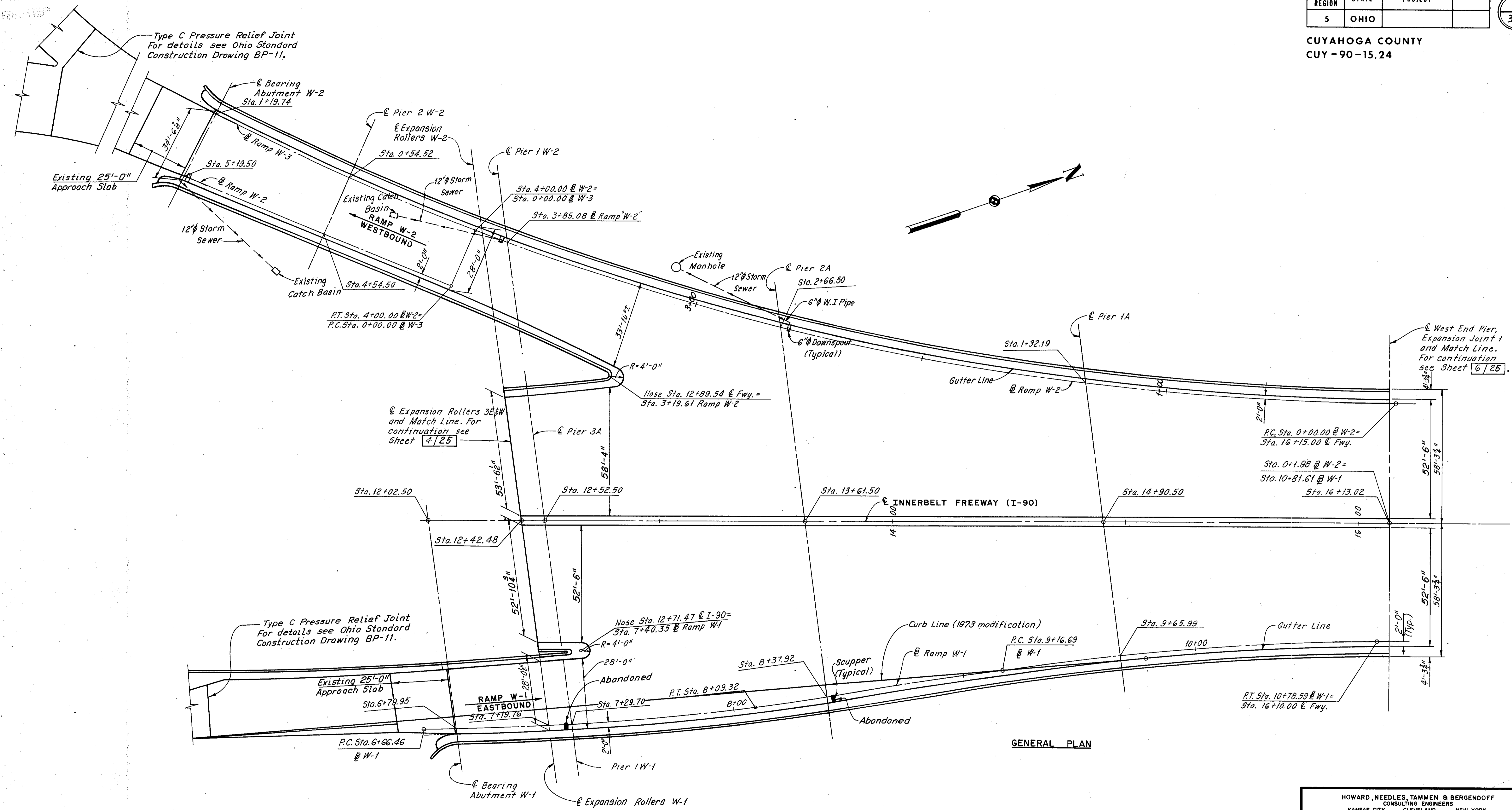
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HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
GENERAL PLAN INNERBELT EXTENSION			
BR. NO. CUY.-90-1524		STA. 2+65 ±	
90-1540		90-1547	
90-1599		STA. 56+00 ±	
CUYAHOGA COUNTY		OHIO	
DRAWN: KW	TRACED: KW	CHECKED: WCB	REVIEWED: _____
DATE: 6-18-24	DATE: 6-18-24	DATE: 8-29-24	DATE: _____
			REVISD: _____
			SHEET 4/25

FHWA REGION	STATE	PROJECT
5	OHIO	

8
30

CUYAHOGA COUNTY
CUY-90-15.24



GENERAL PLAN

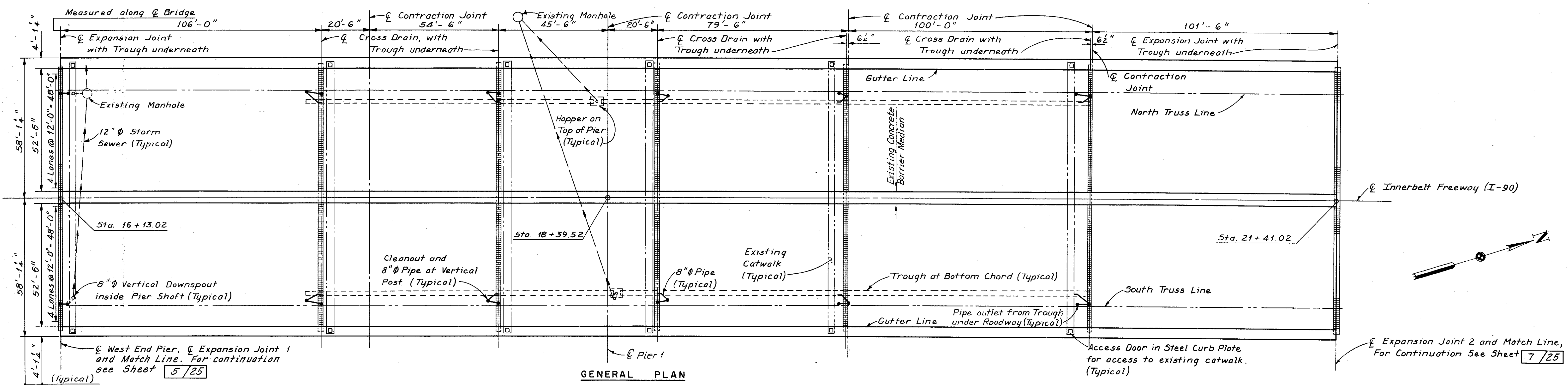
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HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK				
GENERAL PLAN WEST APPROACH				
BR. NO. CUY.-90-1524				
90-1540				
			STA. 2+65±	
			90-1547	
			90-1599	STA. 56+00±
CUYAHOGA COUNTY OHIO				
DRAWN/LW	TRACED/LW	CHECKED/WEB	REVIEWED	REVISED
DATE 6-19-74	DATE 6-19-74	DATE 8-29-74	DATE	DATE
				SHEET 5/25

FHWA REGION	STATE	PROJECT	
5	OHIO		

9
30

CUYAHOGA COUNTY
CUY-90-15.24



GENERAL PLAN

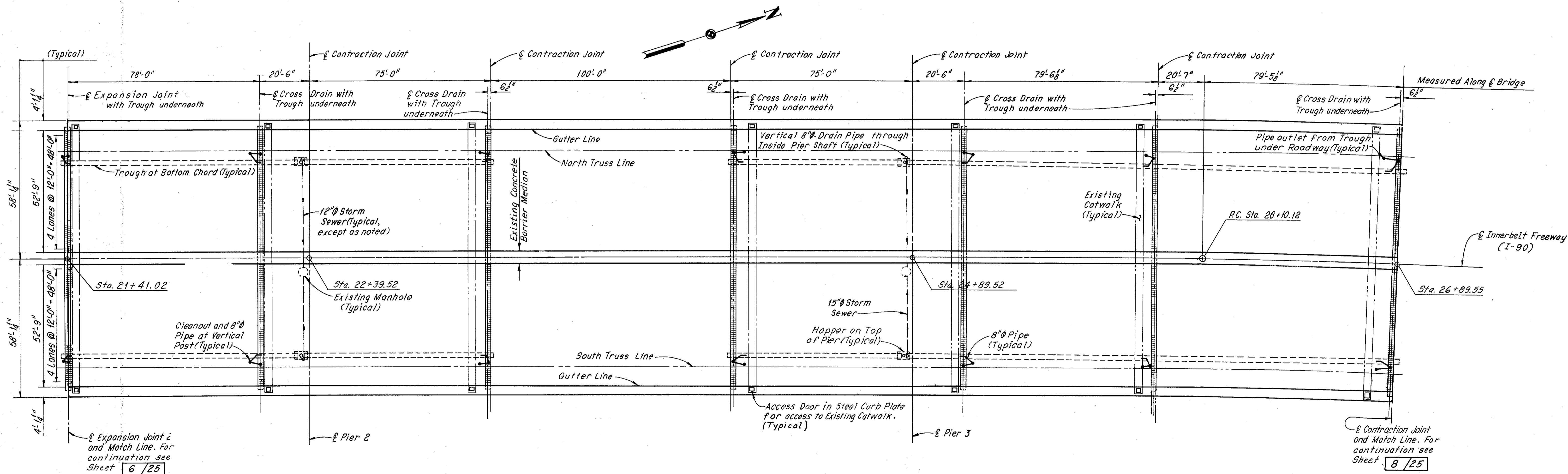
Note:
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HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK				
GENERAL PLAN CENTRAL VIADUCT				
BR. NO. CUY.-90-1524		STA. 2+65±		
90-1540		STA. 56+00±		
90-1547				
90-1599				
CUYAHOGA COUNTY OHIO				
DRAWN/LW	TRACED/LW	CHECKED/WEB	REVIEWED	REVISED
DATE 6-20-74	DATE 6-20-74	DATE 8-23-74	DATE	DATE
				SHEET 6/25

FHWA REGION	STATE	PROJECT	
5	OHIO		

10
30

CUYAHOGA COUNTY
CUY-90-15.24



GENERAL PLAN

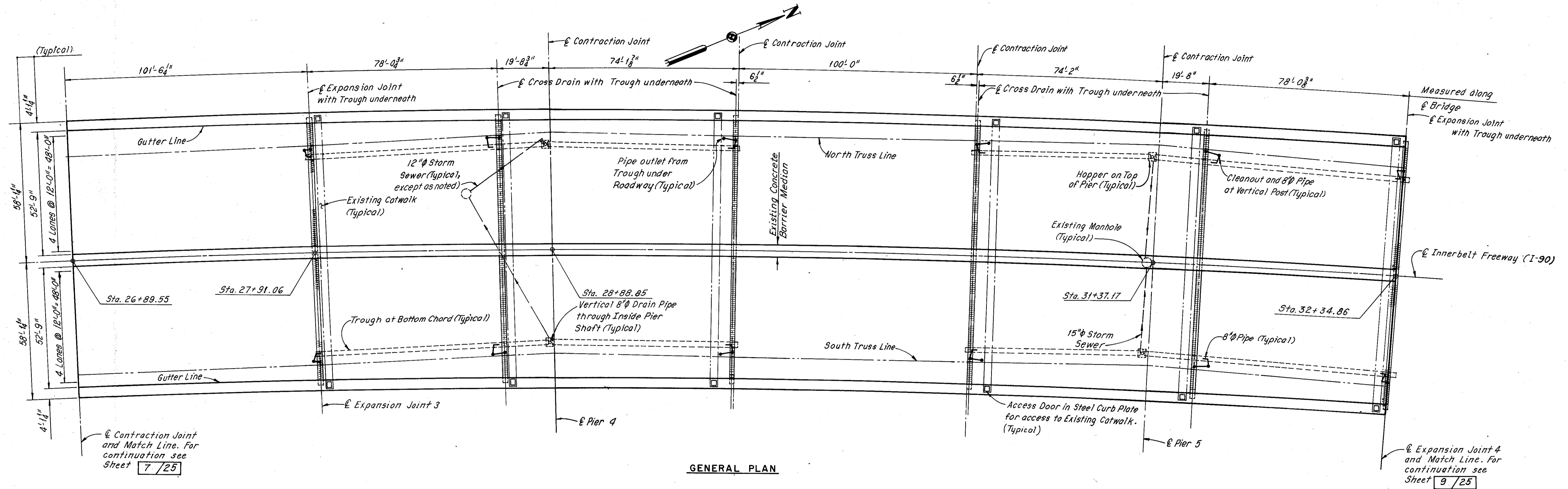
Notes:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
GENERAL PLAN CENTRAL VIADUCT			
BR. NO. CUY-90-1524		STA. 2+65±	
90-1540		90-1547	
90-1599		STA. 56+00±	
CUYAHOGA COUNTY		OHIO	
DRAWN LKW	TRACED LKW	CHECKED WEA	REVIEWED
DATE 6-21-74	DATE 6-21-74	DATE 6-25-74	DATE
			REVISION
			SHEET 7 / 25

FHWA REGION	STATE	PROJECT
5	OHIO	

11
30

CUYAHOGA COUNTY
CUY-90-15.24



GENERAL PLAN

Note:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.

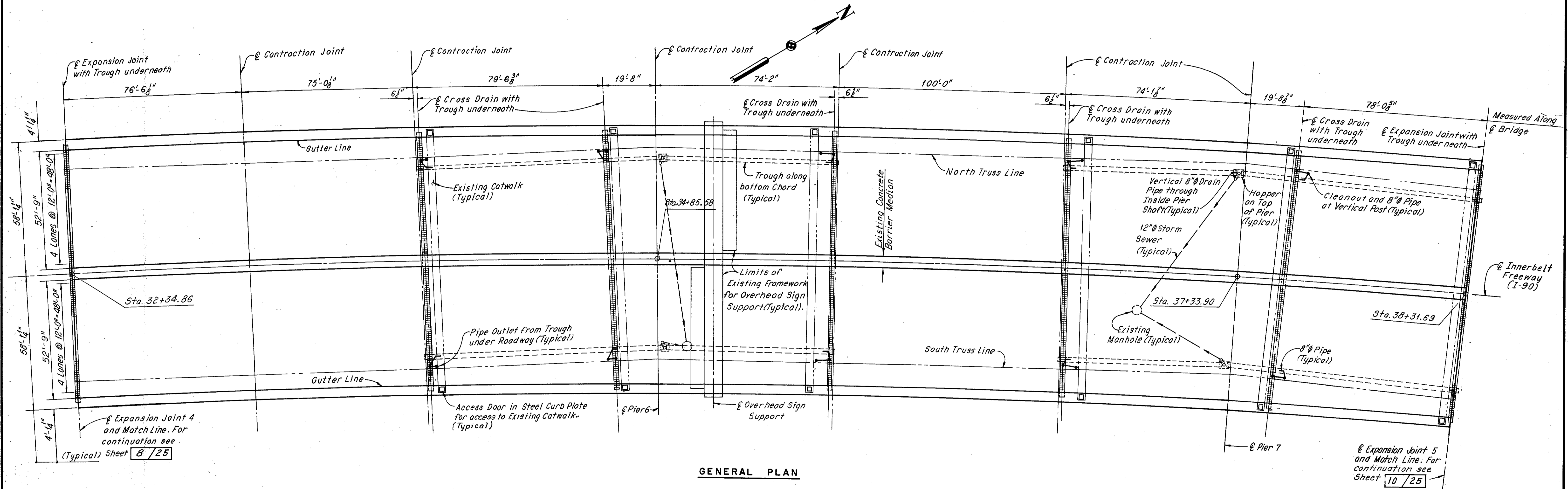
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK				
GENERAL PLAN CENTRAL VIADUCT				
BR. NO. CUY.-90-1524		90-1540		
		90-1547		
		90-1599		
CUYAHOGA COUNTY				OHIO
DRAWN LKW	TRACED LKW	CHECKED WE B	REVIEWED	REVISED
DATE 6-24-74	DATE 6-24-74	DATE 8-29-74	DATE	DATE
				SHEET 8 / 25

REVISED
FEB 24 1990

FHWA REGION	STATE	PROJECT
5	OHIO	

12
30

CUYAHOGA COUNTY,
CUY-90-15.24



GENERAL PLAN

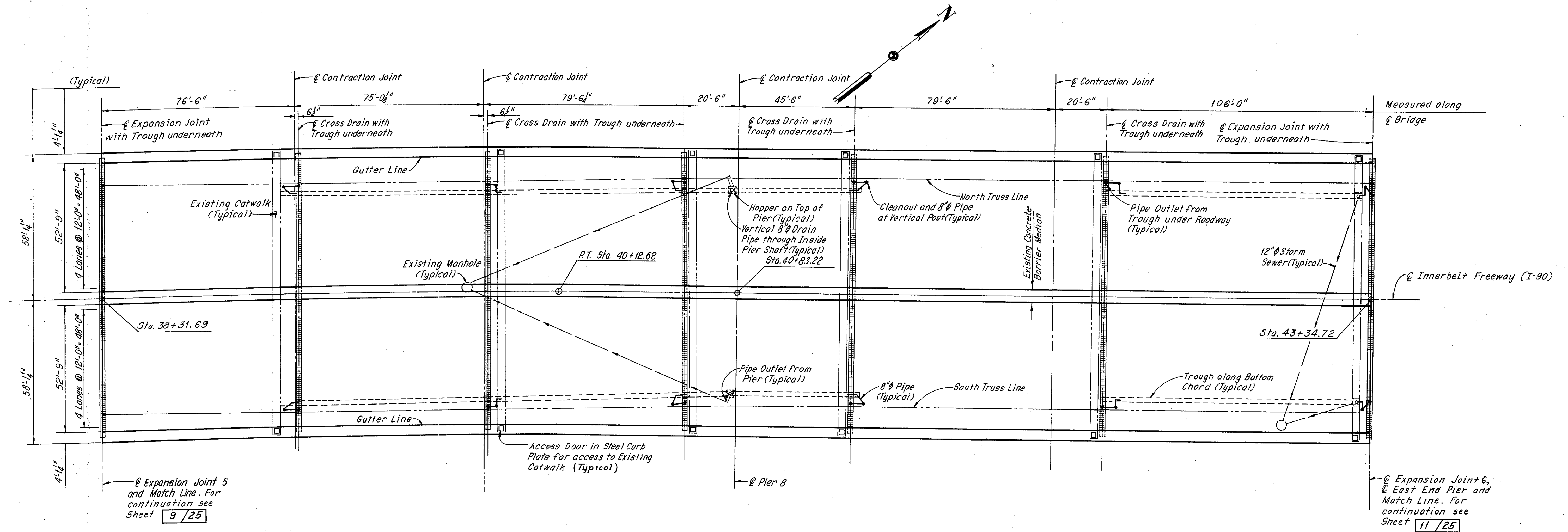
Note:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK				
GENERAL PLAN CENTRAL VIADUCT				
BR. NO. CUY.-90-1524 90-1540 90-1547 90-1599			STA. 2+65± STA. 56+00±	
CUYAHOGA COUNTY OHIO				
DRAWN LKW	TRACED LKW	CHECKED WCB	REVIEWED	REVISED
DATE 6-25-74	DATE 6-25-74	DATE 8-29-74	DATE	DATE
				SHEET 9 / 25

FHWA REGION	STATE	PROJECT
5	OHIO	

13
30

CUYAHOGA COUNTY
CUY-90-15.24



GENERAL PLAN

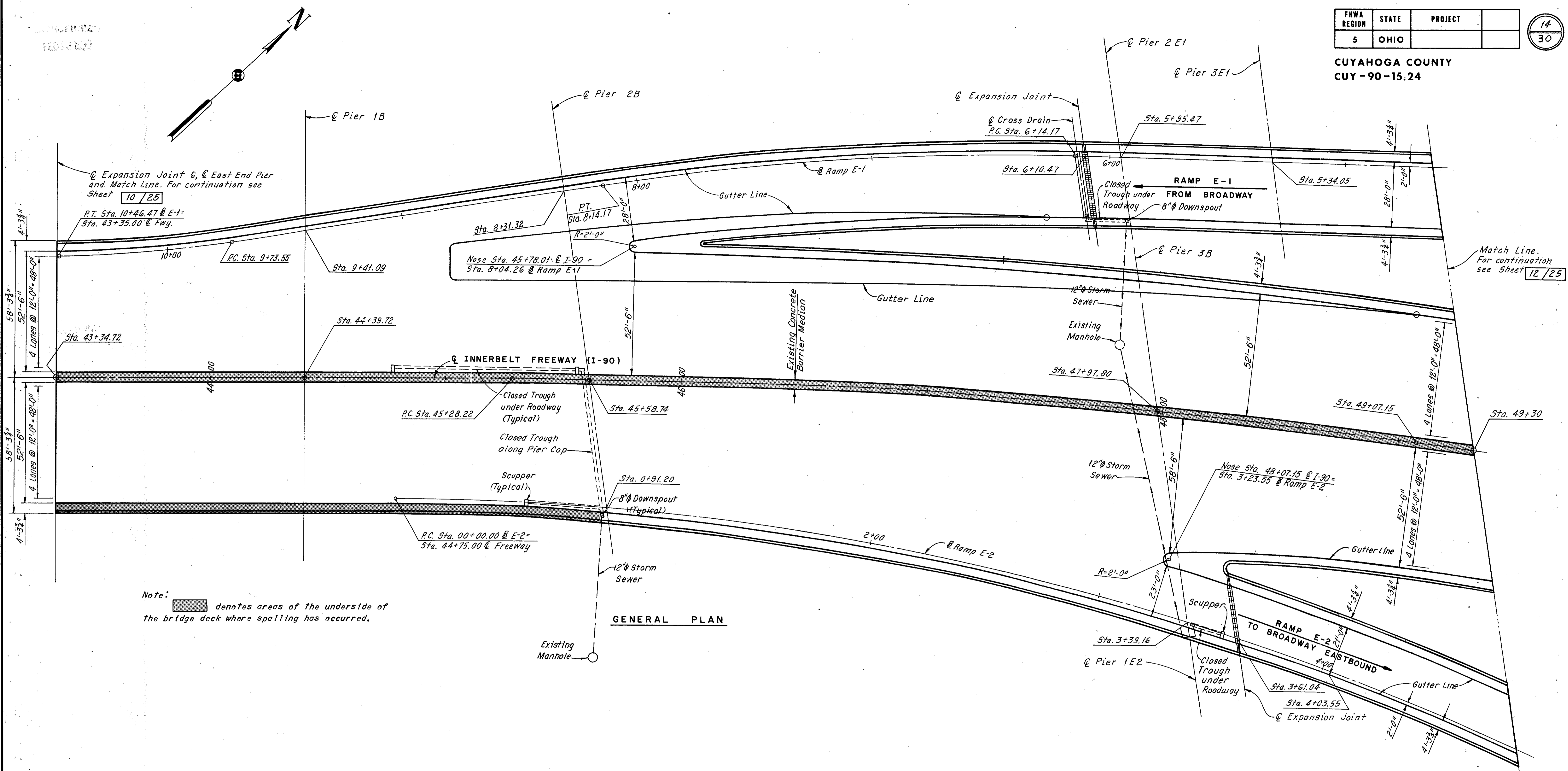
Note:
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HOWARD, NEEDLES, TAMMEN & BERGENOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK				
GENERAL PLAN CENTRAL VIADUCT				
BR. NO. CUY.-90-1524		STA. 2+65±		
90-1540		STA. 56+00±		
90-1547				
90-1599				
CUYAHOGA COUNTY		OHIO		
DRAWN LKW	TRACED LKW	CHECKED WFB	REVIEWED	REVISED
DATE 6-26-74	DATE 6-25-74	DATE 8-23-74	DATE	DATE
				SHEET 10/25

FHWA REGION	STATE	PROJECT
5	OHIO	

14
30

CUYAHOGA COUNTY
CUY-90-15.24



Note: denotes areas of the underside of the bridge deck where spalling has occurred.

GENERAL PLAN

PROCEDURE FOR COATING UNDERSIDE OF DECK

1. Remove all loose and disintegrated concrete in such a manner and to such an extent as to expose a sound concrete surface.
2. Apply a concrete coating as described in Item 12 of the General Notes.

Note:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.

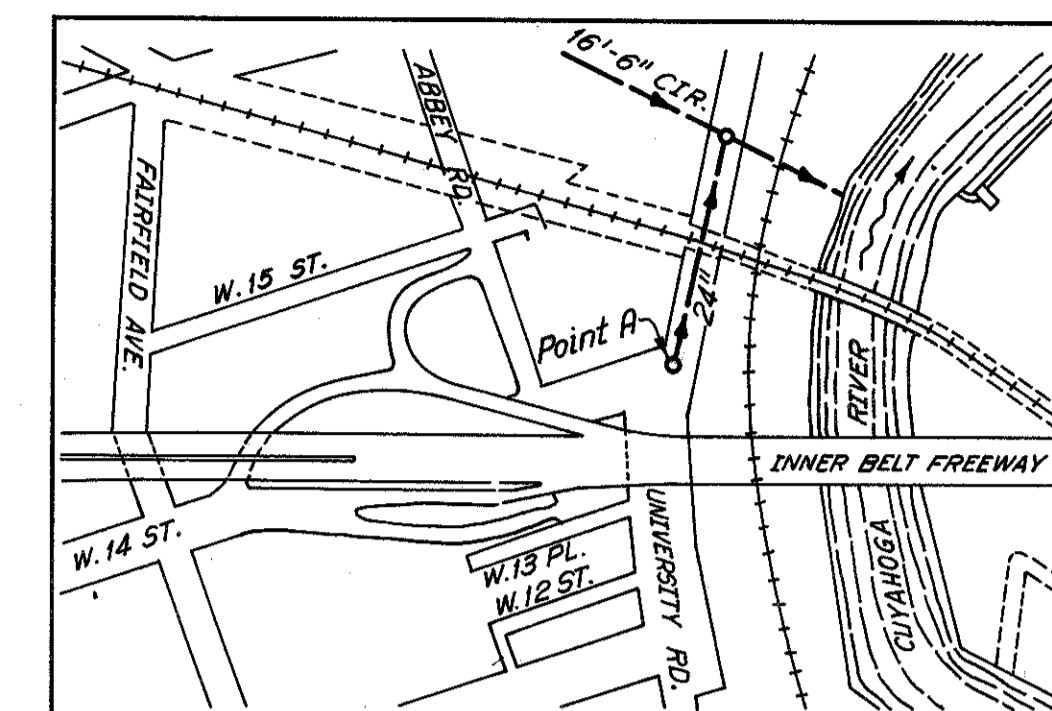
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
GENERAL PLAN EAST APPROACH			
BR. NO. CUY.-90-1524		STA. 2+65±	
90-1540		90-1547	
90-1547		90-1599	
CUYAHOGA COUNTY		OHIO	
DRAWN/LW	TRACED/LW	CHECKED/NEB	REVIEWED
DATE 6-27-74	DATE 6-27-74	DATE 6-27-74	DATE
			REVISED
			SHEET 11 / 25

ESTIMATED STORM SEWER CLEAN OUT QUANTITIES
AS SHOWN ON THIS DRAWING

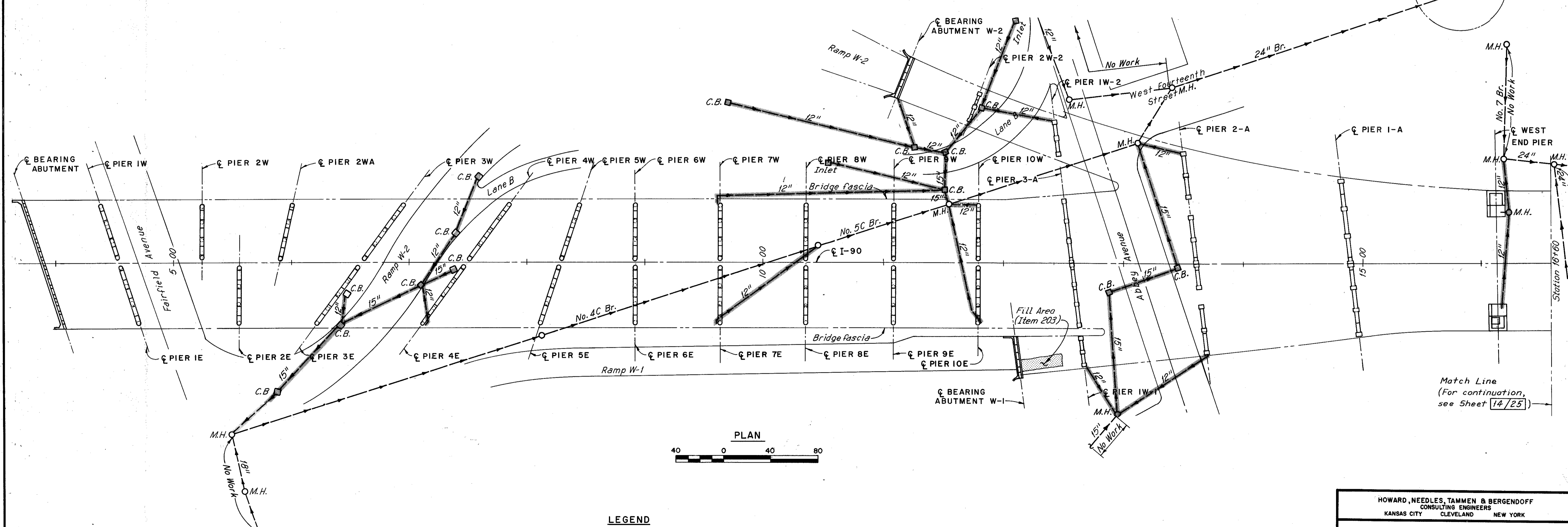
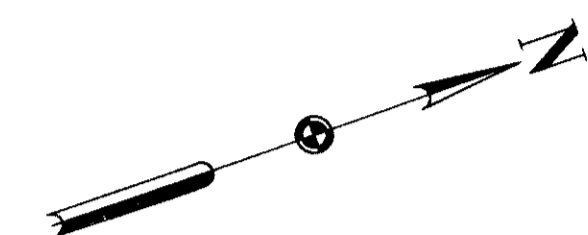
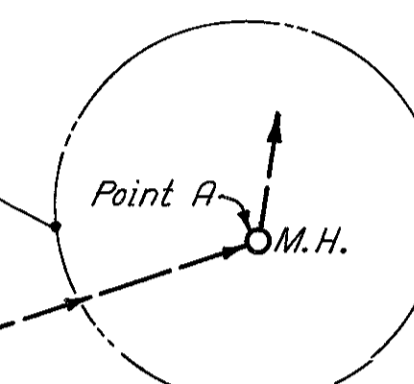
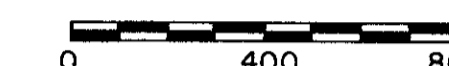
PIPE SIZE	MAINTAINED BY STATE OF OHIO	MAINTAINED BY CITY OF CLEVELAND
	Lin. Ft.	Lin. Ft.
12" φ	1445	
15" φ	571	
24" φ		794
No. 4		530
No. 5		345

ESTIMATED REPAIR QUANTITIES				
LOCATION	ITEM 519	ITEM 520	REPAIR OF CRACKS	ITEM 203
	Sq. Ft.	Sq. Ft.	Lin. Ft.	Cu. Yds.
Abut. W-1 and W.W.	6	12		*28
Abut. W-2 and W.W.	5			
Pier 1-A, Pier 2-A, Pier 1W-2, Pier 2W-2, and Pier 1W-1		5		
West End Pier (S)		6	36	
West End Pier (N)		10		
TOTAL	11	33	36	*28

* Abutment W-1 only



STORM SEWER FROM POINT A
TO CUYAHOGA RIVER



LEGEND

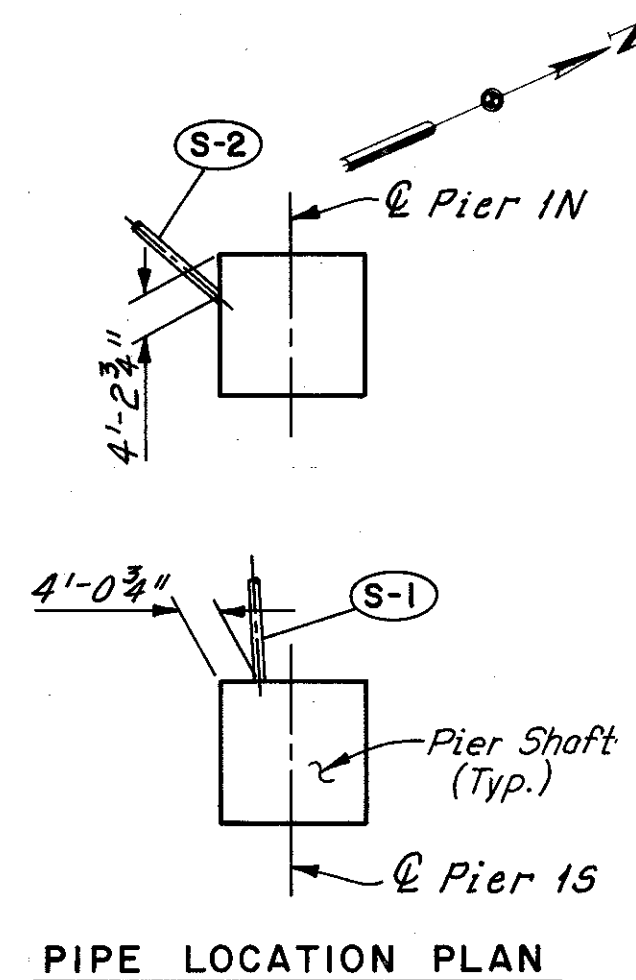
- denotes storm sewers maintained by the State of Ohio
- - - denotes storm sewers maintained by the City of Cleveland

Note:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.

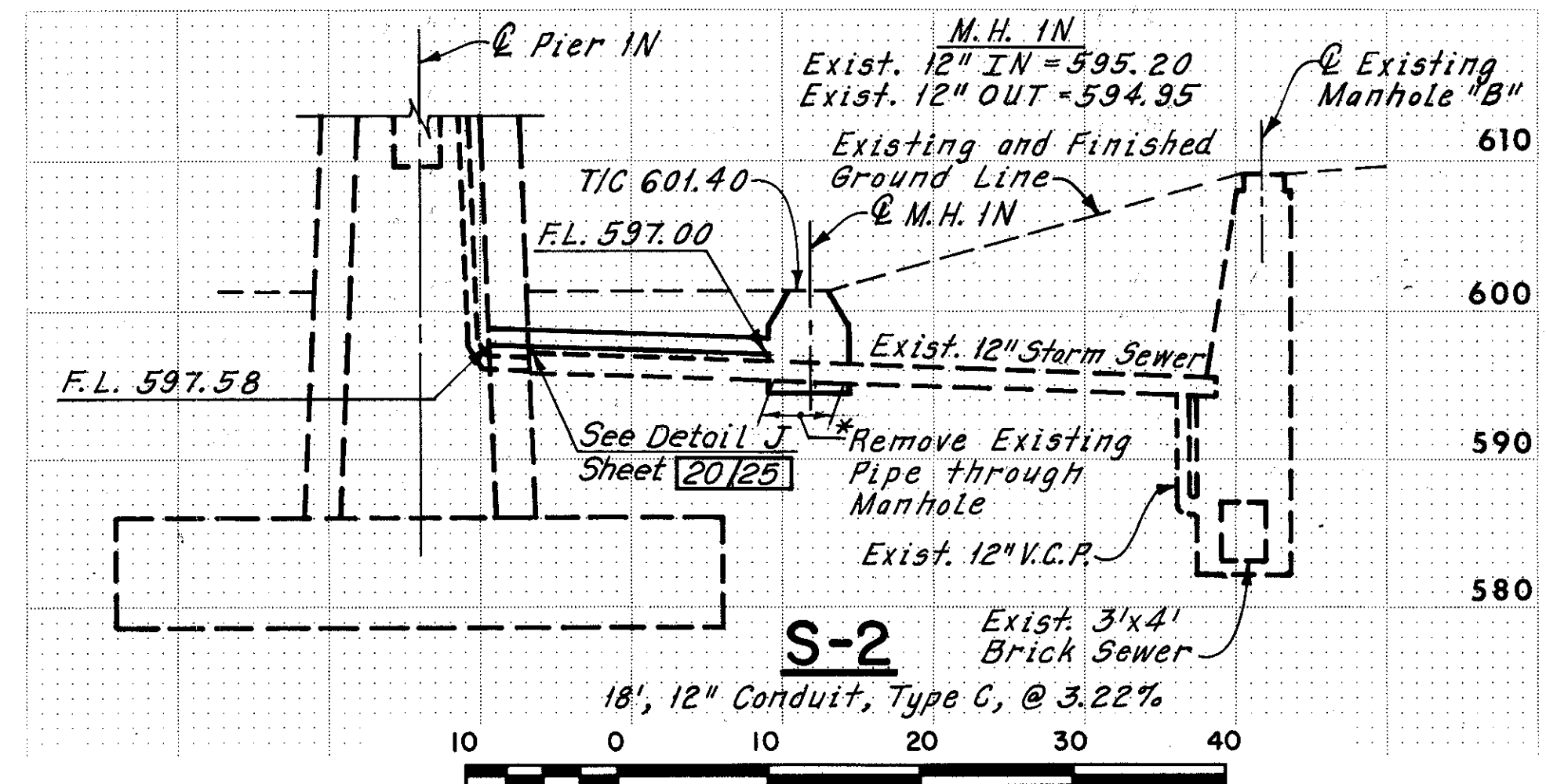
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
SUBSTRUCTURE IDENTIFICATION AND UNDERGROUND DRAINAGE SYSTEM			
BR. NO. CUY-90-1524		STA. 2+65 ±	
90-1540		90-1547	
90-1547		90-1599	
90-1599		STA. 56+00 ±	
CUYAHOGA COUNTY		OHIO	
DRAWN D.L.A.	TRACED D.L.R.	CHECKED W.E.B.	REVIEWED DATE
DATE 7-16-74	DATE 7-16-74	DATE 8-23-74	DATE
			SHEET 13/25

CUYAHOGA COUNTY
CUY-90-15.24

Note:
The location of the (S-1) and (S-2) conduits as shown on the "Pipe Location Plan" are based on original plan drawings and serve as a guide for the Contractor to meet the requirements as set forth on Sheet 20/25



PIPE LOCATION PLAN

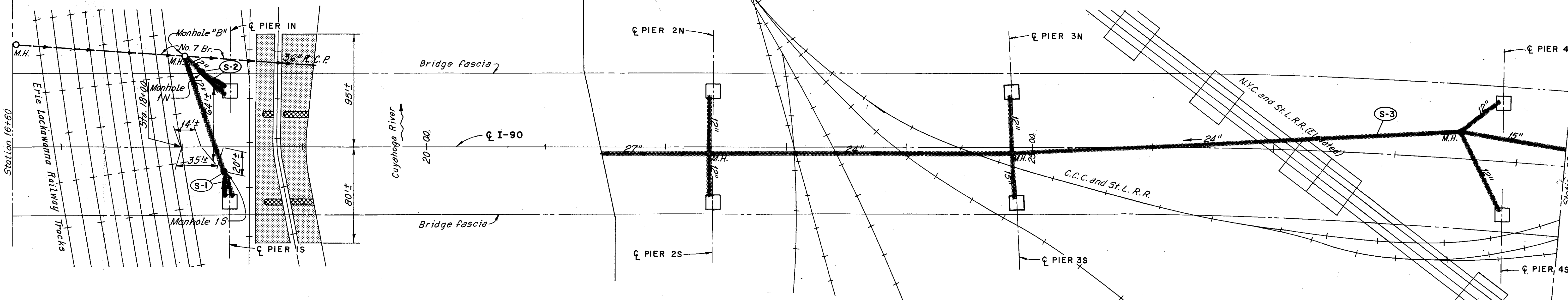


SCALE IN FEET

ESTIMATED REPAIR QUANTITIES			
LOCATION	ITEM 519	ITEM 520	REPAIR OF CRACKS
	Sq. Ft.	Sq. Ft.	Lin. Ft.
Pier 1S		36	
Pier 1N		32	
Pier 2S		24	
Pier 2N		75	
Pier 3S		13	
Pier 3N		100	
Pier 4S		120	72
Pier 4N		63	12
TOTAL		463	84

ESTIMATED STORM SEWER CLEAN OUT QUANTITIES AS SHOWN ON THIS DRAWING		
PIPE SIZE	MAINTAINED BY STATE OF OHIO	MAINTAINED BY CITY OF CLEVELAND
	Lin. Ft.	Lin. Ft.
12" φ	417	
15" φ	128	
24" φ	254	
27" φ	90	
36" φ		32
No. 7		220

Match Line
(For continuation, see Sheet 13/25)



PLAN
SCALE IN FEET

LEGEND

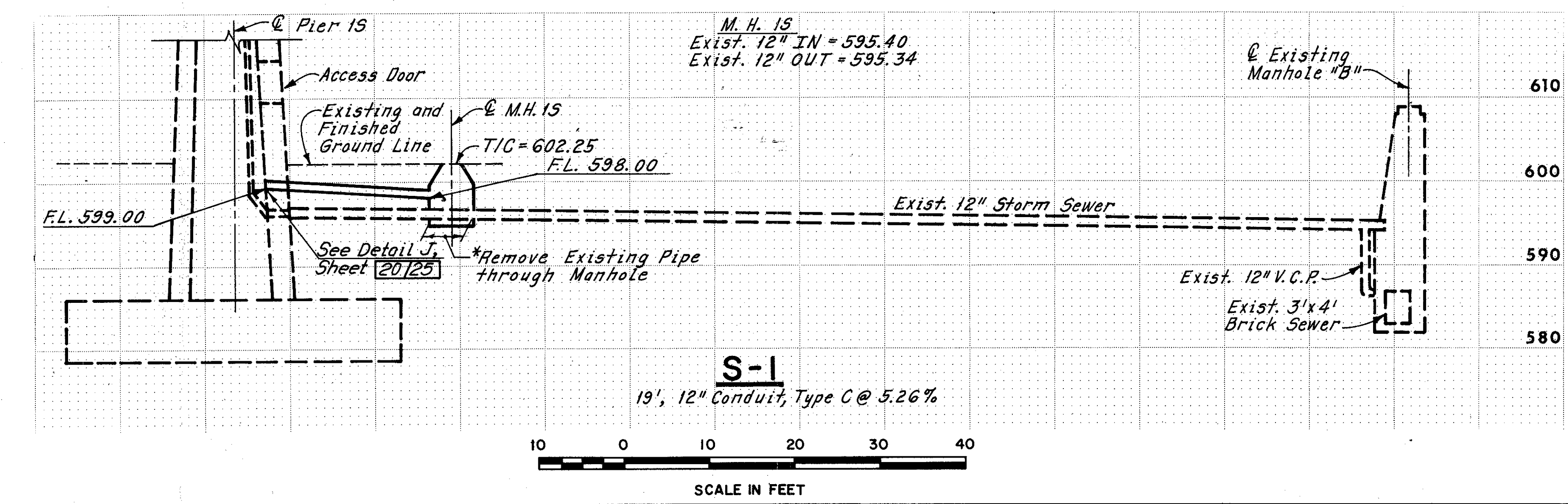
— denotes storm sewers maintained by the State of Ohio
- - - denotes storm sewers maintained by the City of Cleveland

Match Line
(For continuation, see Sheet 15/25)

Note:
Indicates Erosion Repair Limits.
Indicates Major Erosion areas as identified in field 5-1-75

Note:
The underground drainage system construction under this Contract consists of (S-1), (S-2) and (S-3) only.

Note:
Dimensions to locate proposed manholes are approximate only. It shall be the Contractor's responsibility to field locate the existing pipes.



SCALE IN FEET

*Flow in the existing 12" storm sewer shall be maintained at all times. Removal of part of the existing 12" storm sewer and maintaining flow in the sewer shall be included with Item 604, Standard No. 1 Manhole, for payment.

▲ 706.01, 706.02, or 706.08

Ref. No.	DRAINAGE QUANTITIES		
	603 12" Conduit Type C Lin. Ft.	603 24" Conduit Type C as per plan Lin. Ft.	604 Standard No. 1 M.H. Each
S-1	19		1
S-2	18		1
S-3		373	
Total	37	373	2

Note:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.

Note:
The 24" Conduit for (S-3) shall be so constructed to meet the line and grade of the existing 24" storm sewer. It is also intended that the existing pipe sections which enter and exit the existing manholes should remain, if determined to be in satisfactory condition by the Engineer, and re-used in the construction of the new sewer.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SUBSTRUCTURE IDENTIFICATION AND UNDERGROUND DRAINAGE SYSTEM

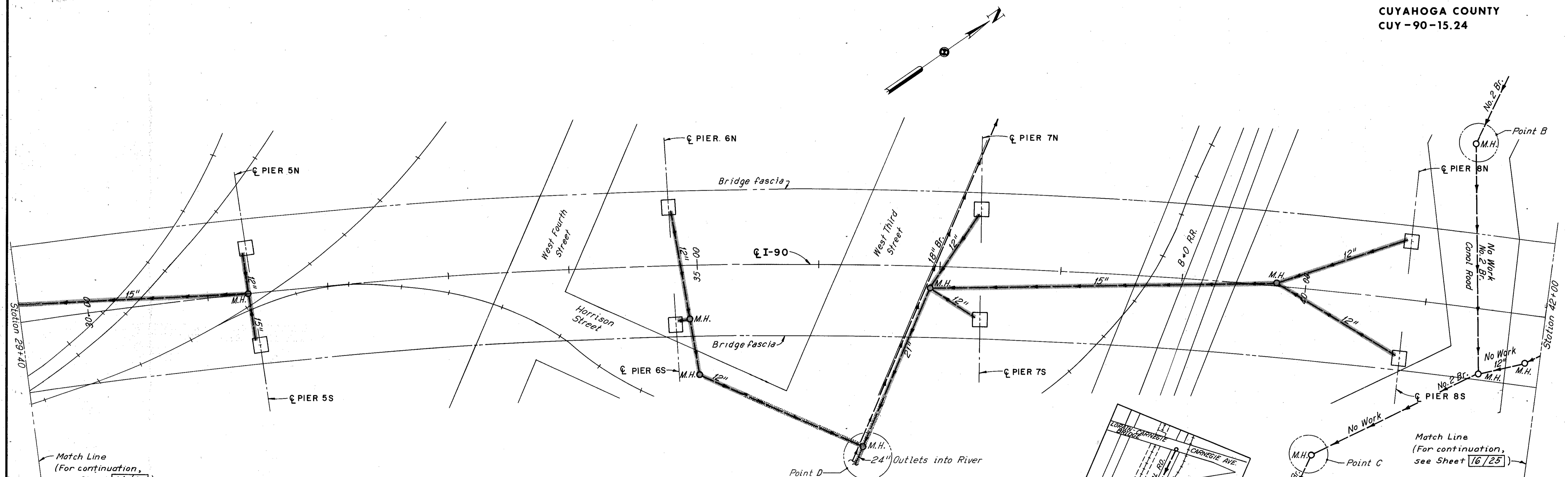
BR. NO. CUY-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

CUYAHOGA COUNTY OHIO

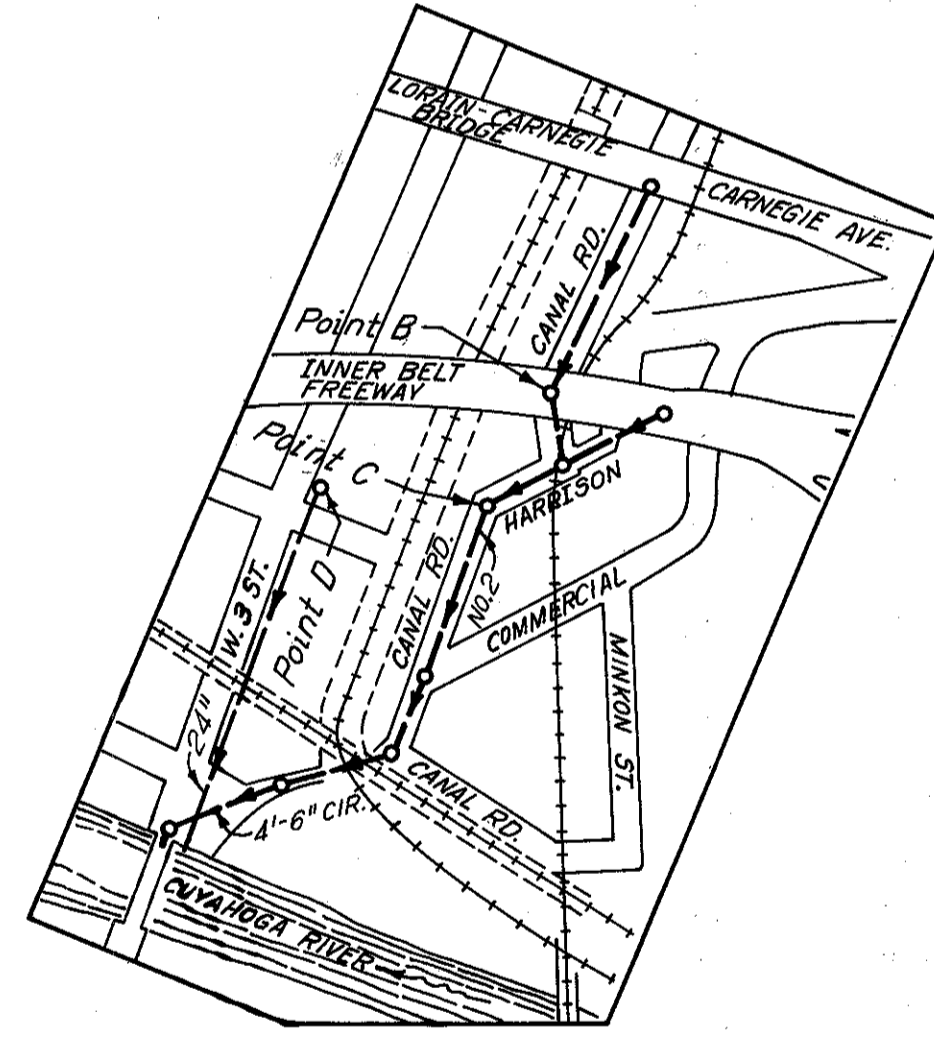
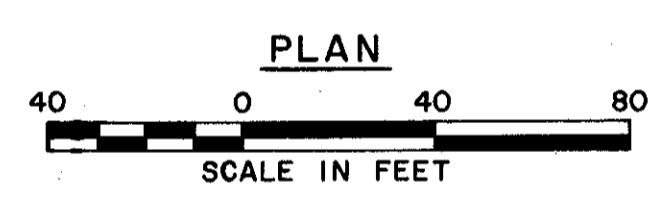
DRAWN/D.L.R.	TRACED/D.L.R.	CHECKED/W.E.B.	REVIEWED	REVISION
DATE 7-16-74	DATE 7-16-74	DATE 8-29-74	DATE	

SHEET 14/25

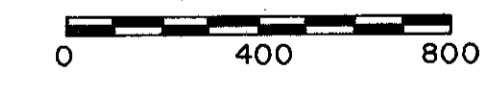


Match Line
(For continuation,
see Sheet 14/25)

LEGEND
 denotes storm sewers maintained by the State of Ohio
 denotes storm sewers maintained by the City of Cleveland



STORM SEWER FROM POINTS B, C AND D
TO CUYAHOGA RIVER



LOCATION	ESTIMATED REPAIR QUANTITIES		
	ITEM 519 Sq. Ft.	ITEM 520 Sq. Ft.	REPAIR OF CRACKS Lin. Ft.
Pier 5S		34	
Pier 5N		18	
Pier 6S		173	24
Pier 6N		22	
Pier 7S		50	
Pier 7N		5	
Pier 8S		4	
Pier 8N		3	
TOTAL		309	24

PIPE SIZE	ESTIMATED STORM SEWER CLEAN OUT QUANTITIES AS SHOWN ON THIS DRAWING	
	MAINTAINED BY STATE OF OHIO Lin. Ft.	MAINTAINED BY CITY OF CLEVELAND Lin. Ft.
12" φ	686	
15" φ	512	
21" φ	144	
24" φ	810	

Note:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.

HOWARD, NEEDLES, TAMMEN & BERGENOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SUBSTRUCTURE IDENTIFICATION AND UNDERGROUND DRAINAGE SYSTEM

BR. NO. CUY-90-1524
90-1540
90-1547
90-1599

STA. 2 + 65 ±
STA. 56 + 00 ±

CUYAHOGA COUNTY OHIO

DRAWN/D.L.R.	TRACED/D.L.R.	CHECKED/W.C.B.	REVIEWED	REVISED
DATE 7-16-74	DATE 7-16-74	DATE 8-29-74	DATE	DATE

SHEET 15/25

FHWA REGION	STATE	PROJECT
5	OHIO	

19
30

CUYAHOGA COUNTY
CUY-90-15.24

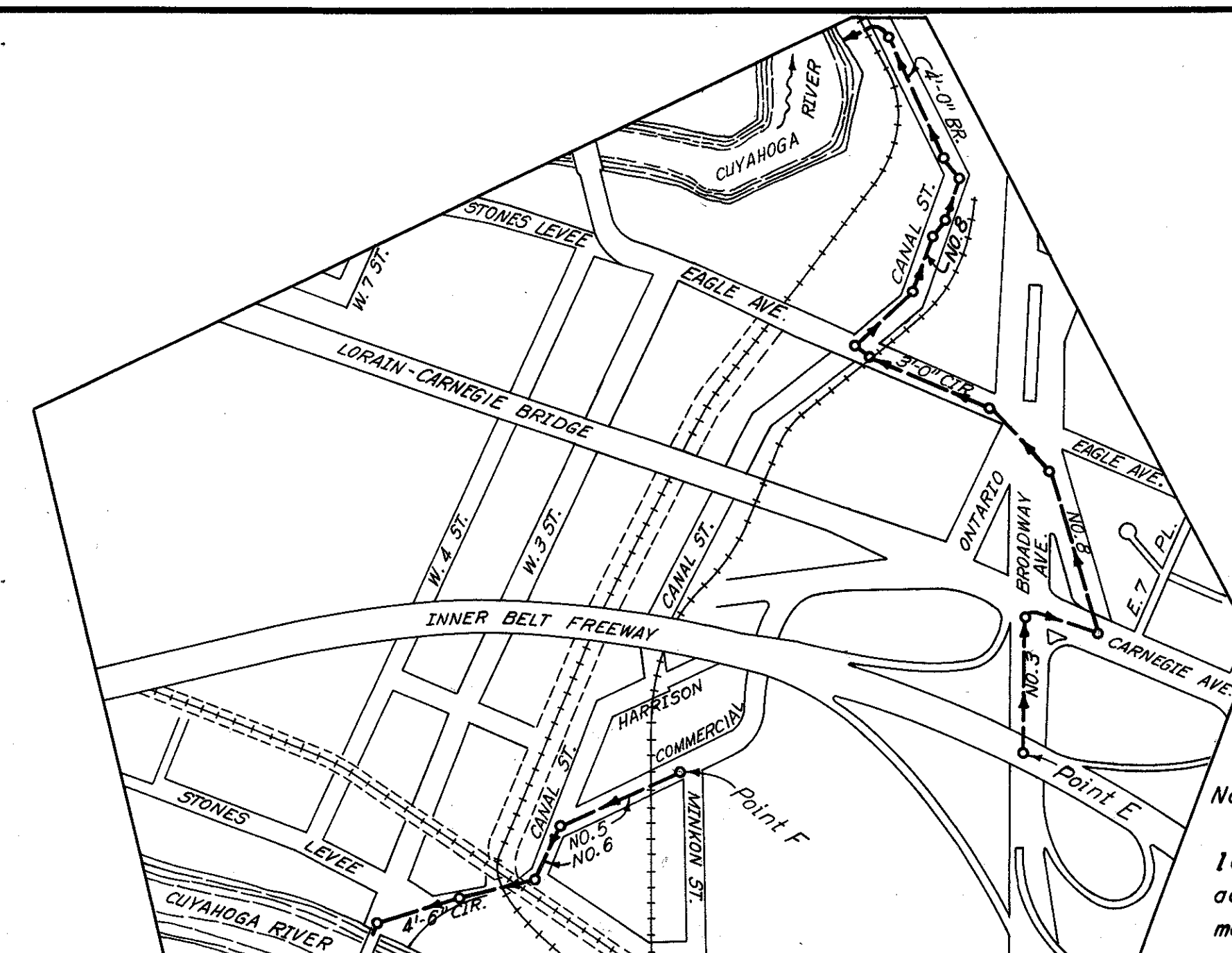
LOCATION	ESTIMATED REPAIR QUANTITIES			
	ITEM 519 Sq. Ft.	ITEM 520 Sq. Ft.	REPAIR OF CRACKS Lin. Ft.	ITEM 203 Cu. Yds.
East End Pier (S)		67		
East End Pier (N)		66		
Abut. E-2 and W.W.	5	8	30	
Abut. E-1 and W.W.			8	195
Abut. 1B and W.W.	120	60		
Pier 1B				
Pier 2B		12		
Pier 3B		12	3	
Pier 2E1				153
Pier 1E2		96	3	
Pier 4B	6			
Pier 4E1		3	5	
Pier 2E2				
Pier 3E1				
Pier 5B				
Pier 6B				
Pier 7B				
Pier 8B		90		
Pier 9B		6		
TOTAL	131	420	49	348

Note:
All exposed concrete portions of the following Piers shall be coated with a cement epoxy coating:

PIER	QUANTITY Sq. Ft.
1B	8,375
2B	6,415
3B	6,550
4B	11,061
5B	2,920
6B	2,753
7B	2,825
8B	2,778
9B	2,809
2E1	1,895
3E1	2,675
4E1	1,120
1E2	1,940
2E2	1,825
TOTAL	55,941

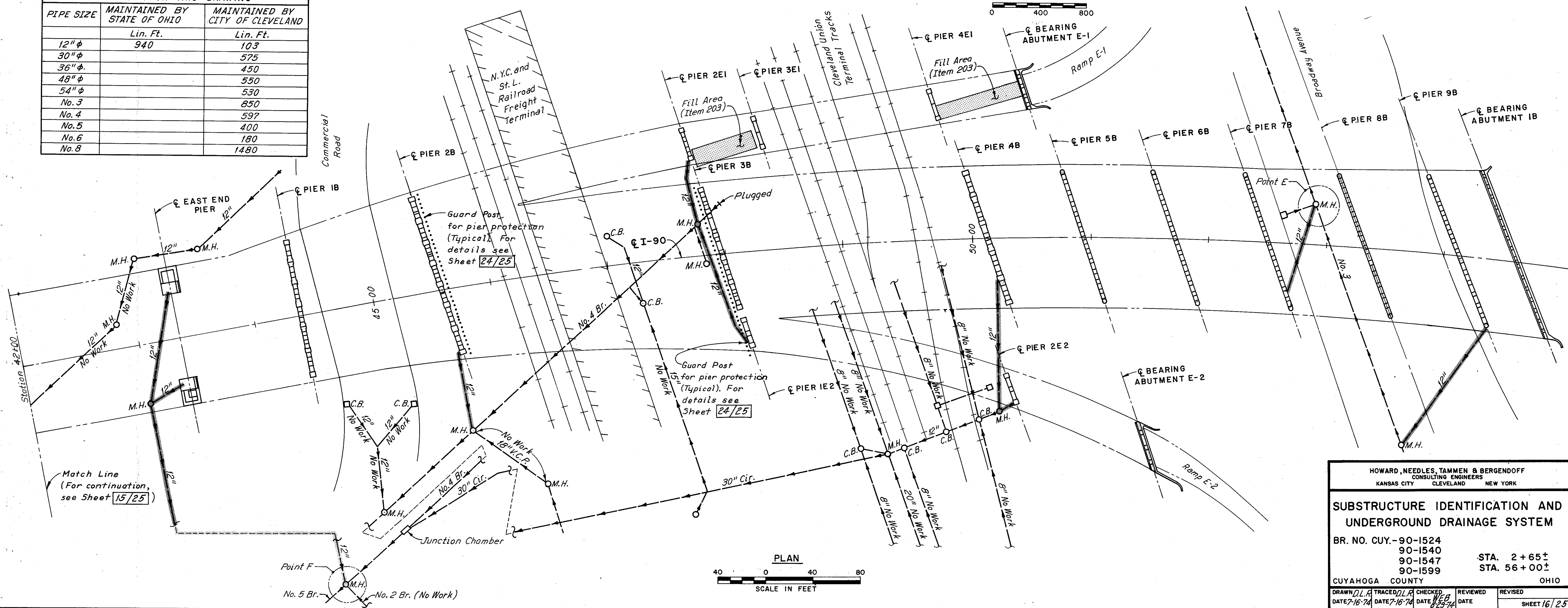
ESTIMATED STORM SEWER CLEAN OUT QUANTITIES AS SHOWN ON THIS DRAWING

PIPE SIZE	MAINTAINED BY	
	STATE OF OHIO	CITY OF CLEVELAND
	Lin. Ft.	Lin. Ft.
12" φ	940	103
30" φ		575
36" φ		450
48" φ		550
54" φ		530
No. 3		850
No. 4		597
No. 5		400
No. 6		180
No. 8		1480



LEGEND
 — denotes storm sewers maintained by the State of Ohio
 - - - denotes storm sewers maintained by the City of Cleveland

Note:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SUBSTRUCTURE IDENTIFICATION AND UNDERGROUND DRAINAGE SYSTEM

BR. NO. CUY-90-1524
90-1540 STA. 2+65±
90-1547 STA. 56+00±
90-1599

CUYAHOGA COUNTY OHIO

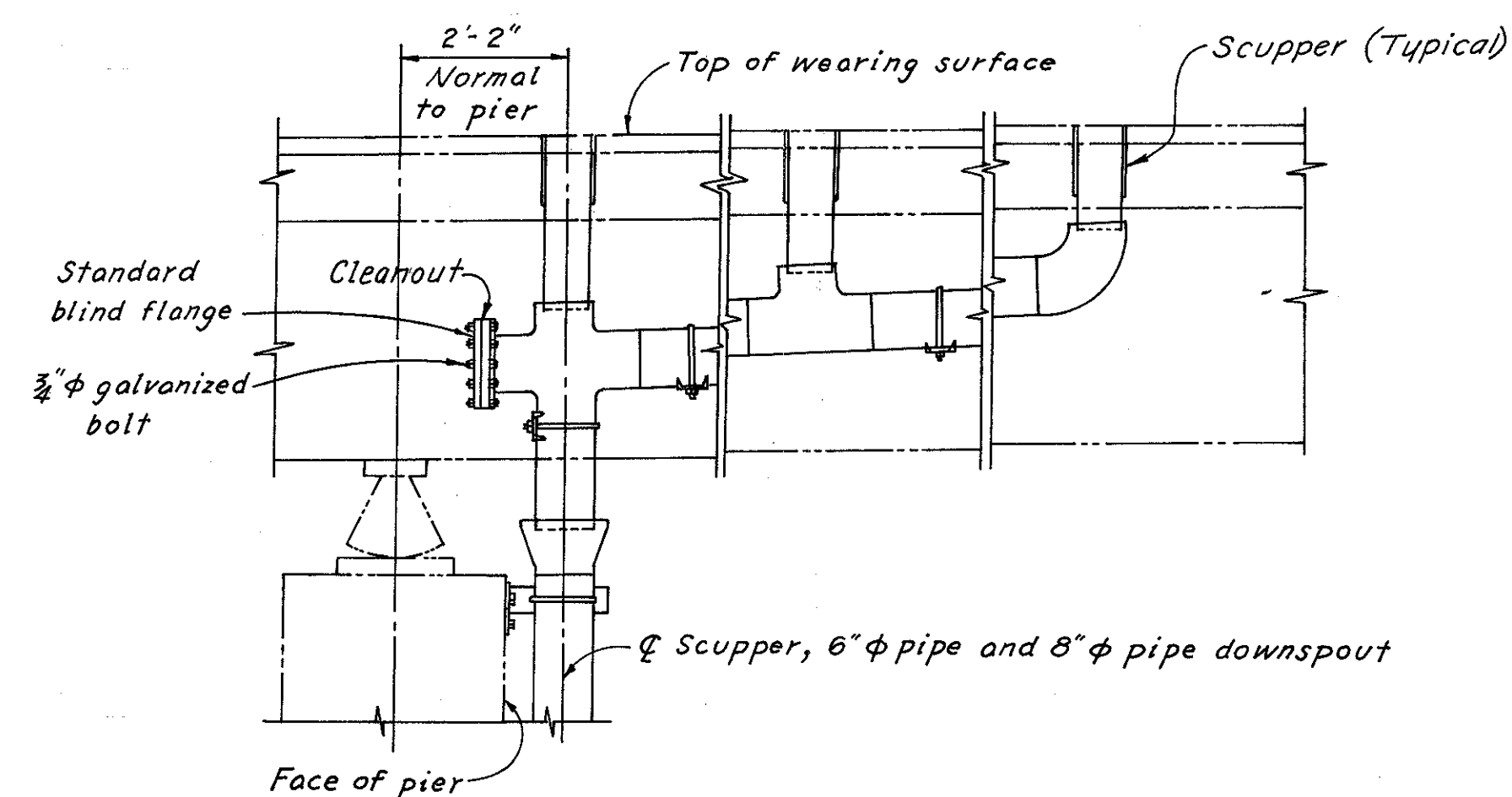
DRAWN D.L.R.	TRACED D.L.R.	CHECKED W.E.B.	REVIEWED	REVISED
DATE 7-16-74	DATE 7-16-74	DATE 8-23-74	DATE	DATE

SHEET 16 / 25

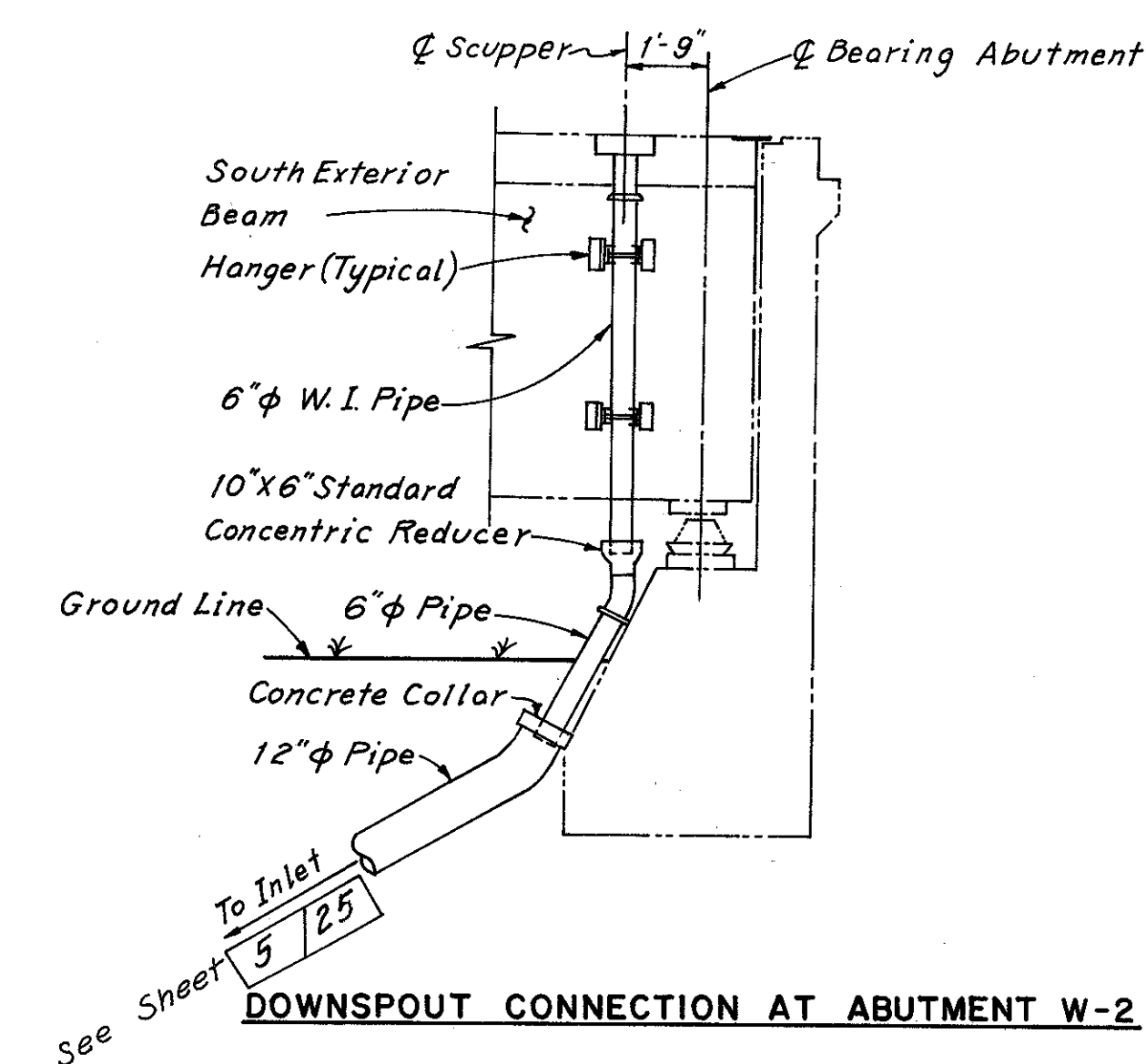
FHWA REGION	STATE	PROJECT	
5	OHIO		

20
30

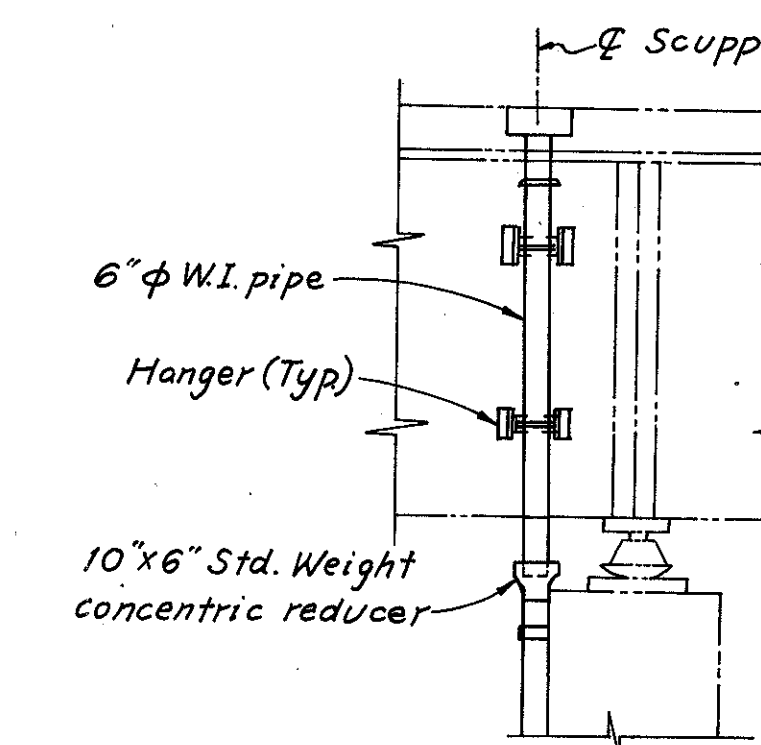
CUYAHOGA COUNTY
CUY-90-15.24



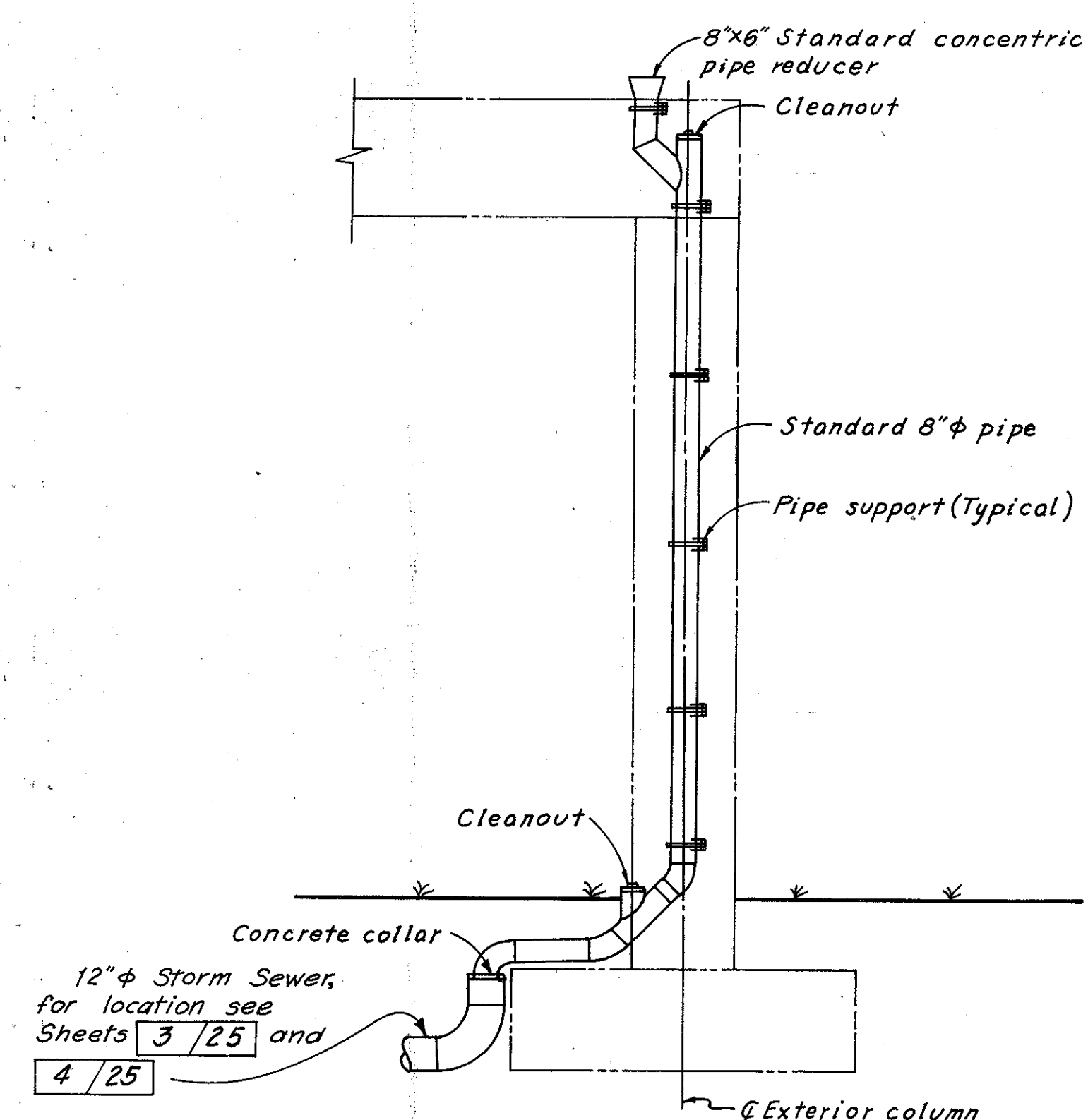
COLLECTOR SYSTEM AT PIERS



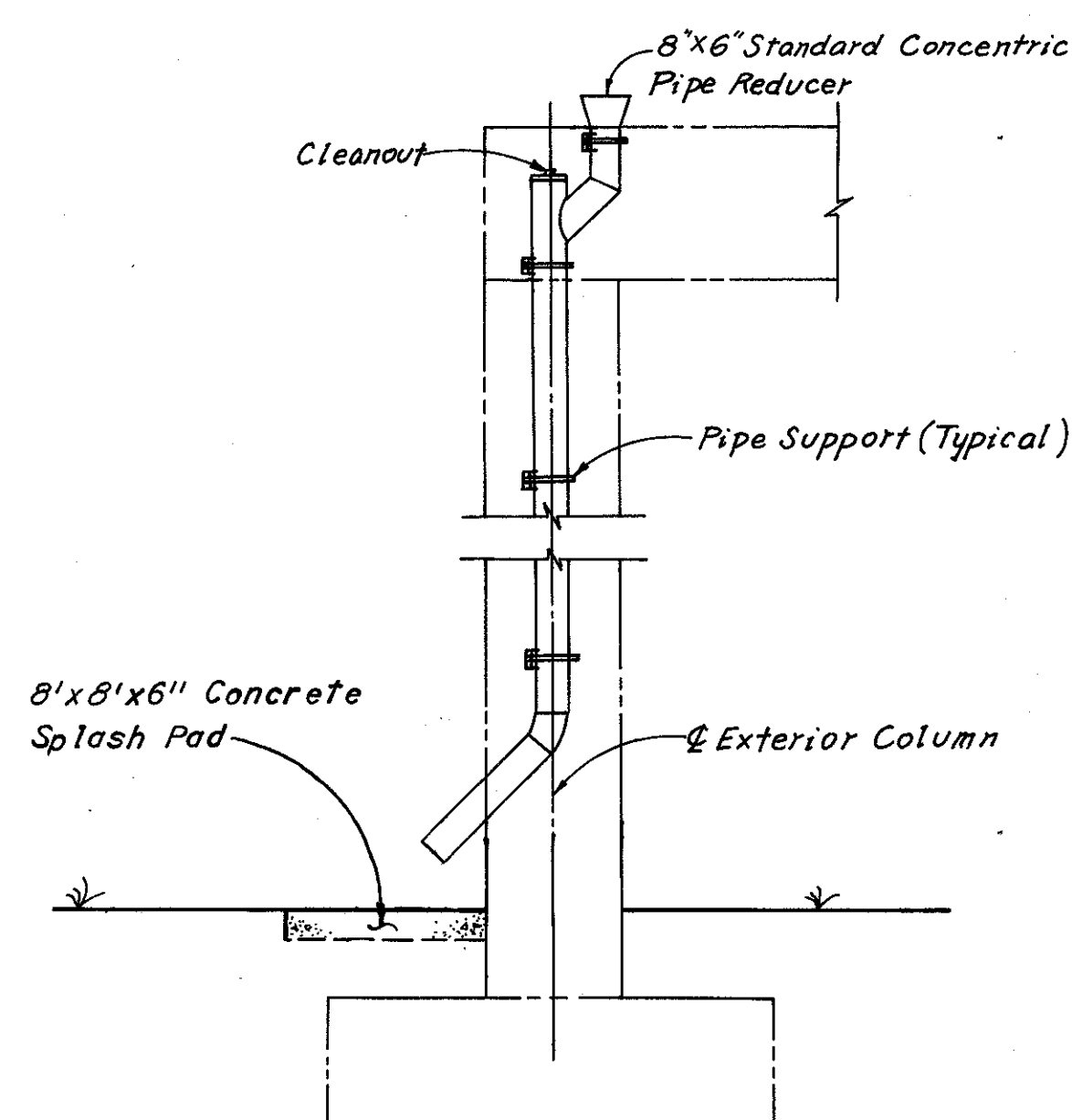
DOWNSPOUT CONNECTION AT ABUTMENT W-2



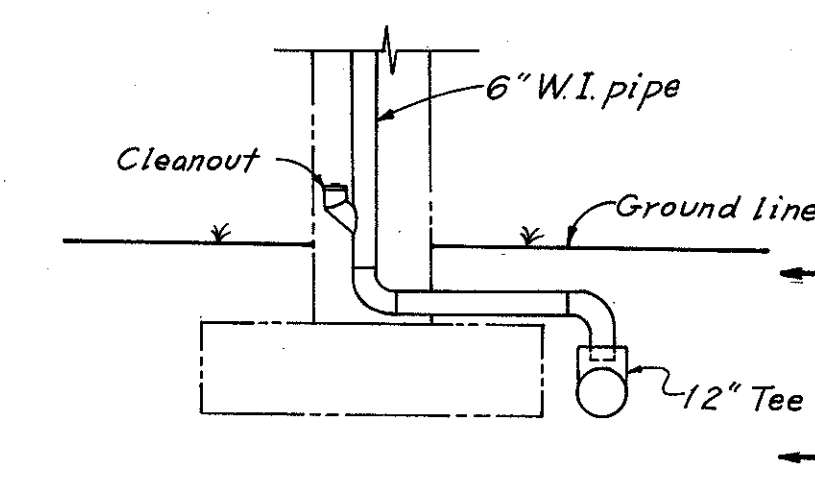
TYPICAL DOWNSPOUT CONNECTION AT PIERS



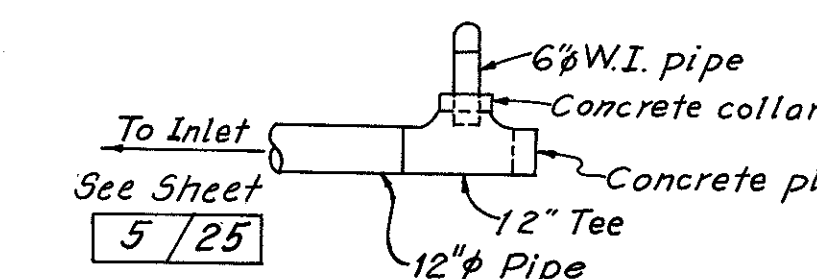
DOWNSPOUTS AT PIERS 4E, 7E, 7W, 10E AND 10W



DOWNSPOUT DETAIL AT PIER 3W



TYPICAL CONNECTION AT PIERS
6" φ W.I. PIPE TO 12" φ STORM SEWER



VIEW A-A

WEST APPROACH

INNERBELT EXTENSION

Notes:

The details shown represent the original plan drawings for the drainage system. The existing drainage system shall be cleaned out as indicated in the General Notes.

Scupper boxes at Innerbelt Extension are similar to those shown on Ohio Standard Drawing SD-1-69, sheet 3 of 4, except there are 12 grate spaces at 3"± with a total inside width of 3'-3"±.

Scupper boxes at West Approach are similar to those shown on East Approach Drainage Details, Sheet 21/25.

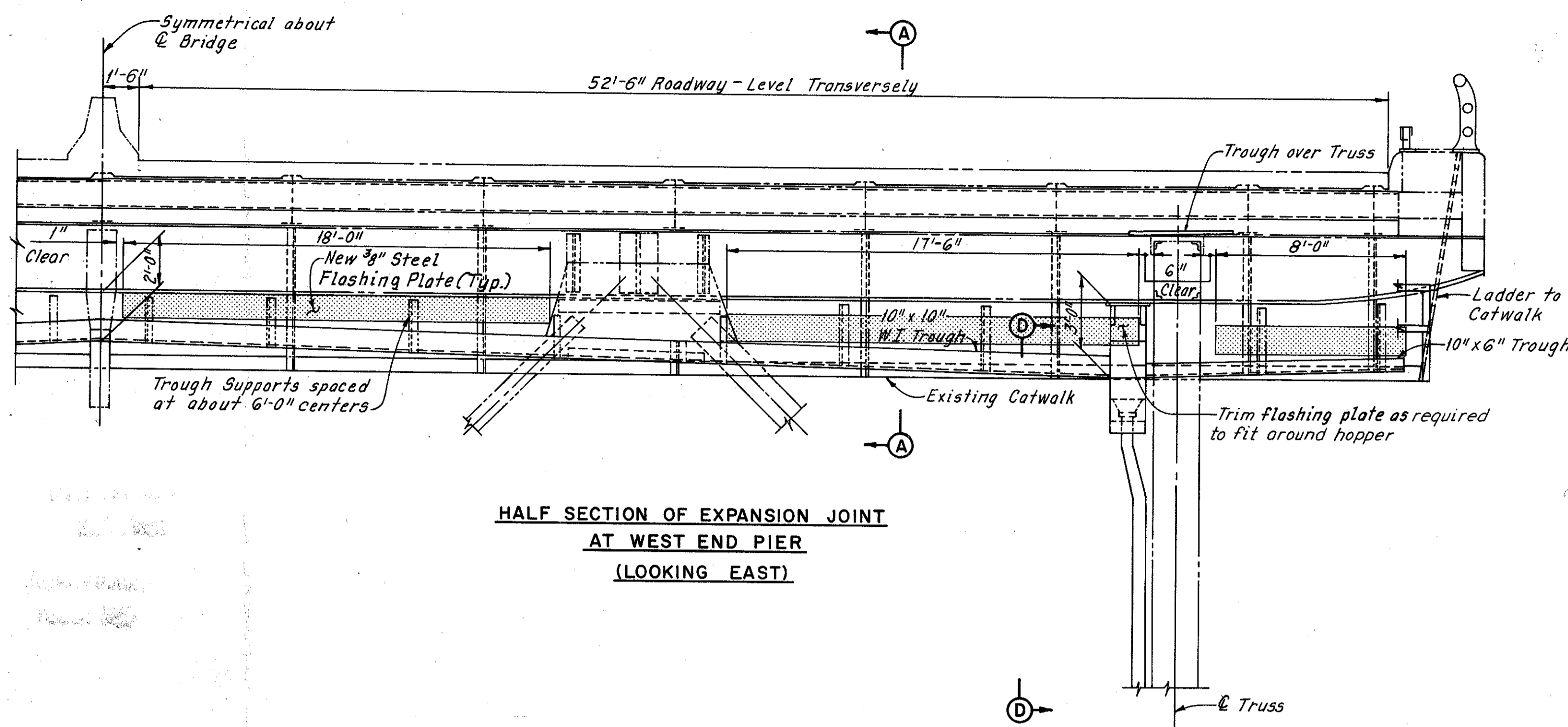
For Scupper Locations see Sheets 3/25, 4/25 and 5/25.

HOWARD, NEEDLES, TAMMEN & BERGENOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
INNERBELT EXTENSION AND WEST APPROACH DRAINAGE DETAILS			
BR. NO. CUY.	90-1524	STA. 2+65±	
	90-1540	STA. 56+00±	
	90-1547		
	90-1599		
CUYAHOGA COUNTY		OHIO	
DRAWN C.K.B.	TRACED L.W.	CHECKED W.C.B.	REVIEWED
DATE 7-1-74	DATE 7-1-74	DATE 8-23-74	DATE
			SHEET 17/25

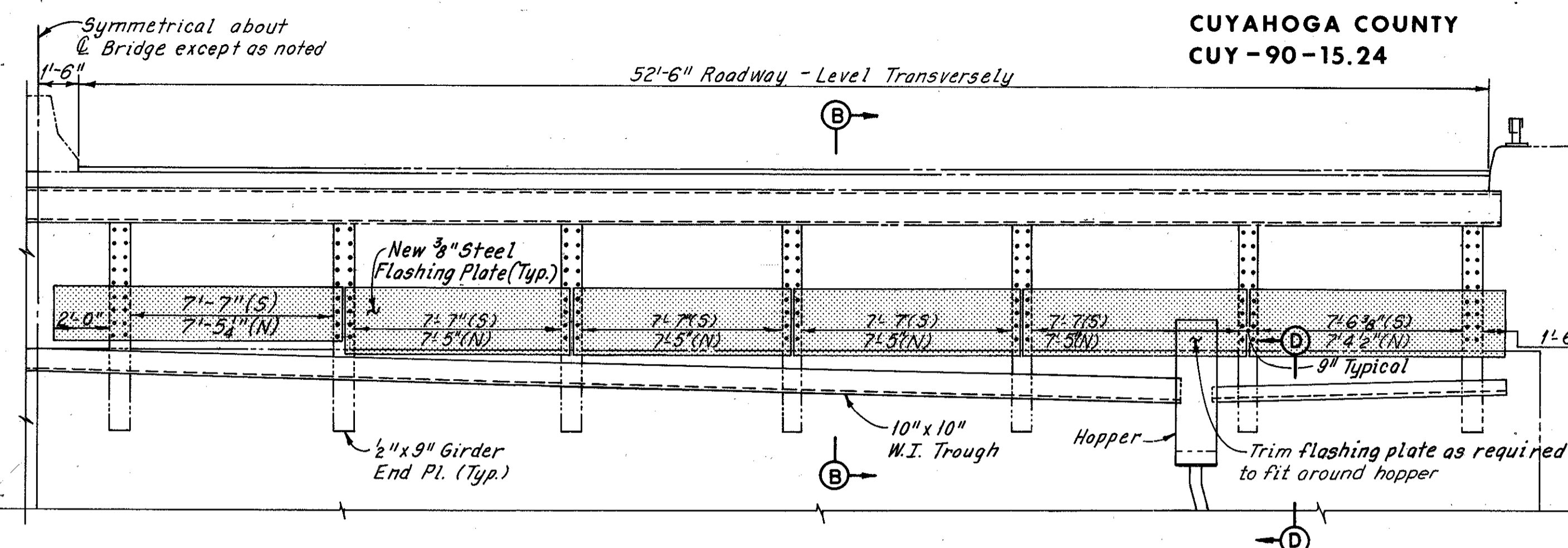
FHWA REGION	STATE	PROJECT
5	OHIO	

21
30

CUYAHOGA COUNTY
CUI-90-15.24

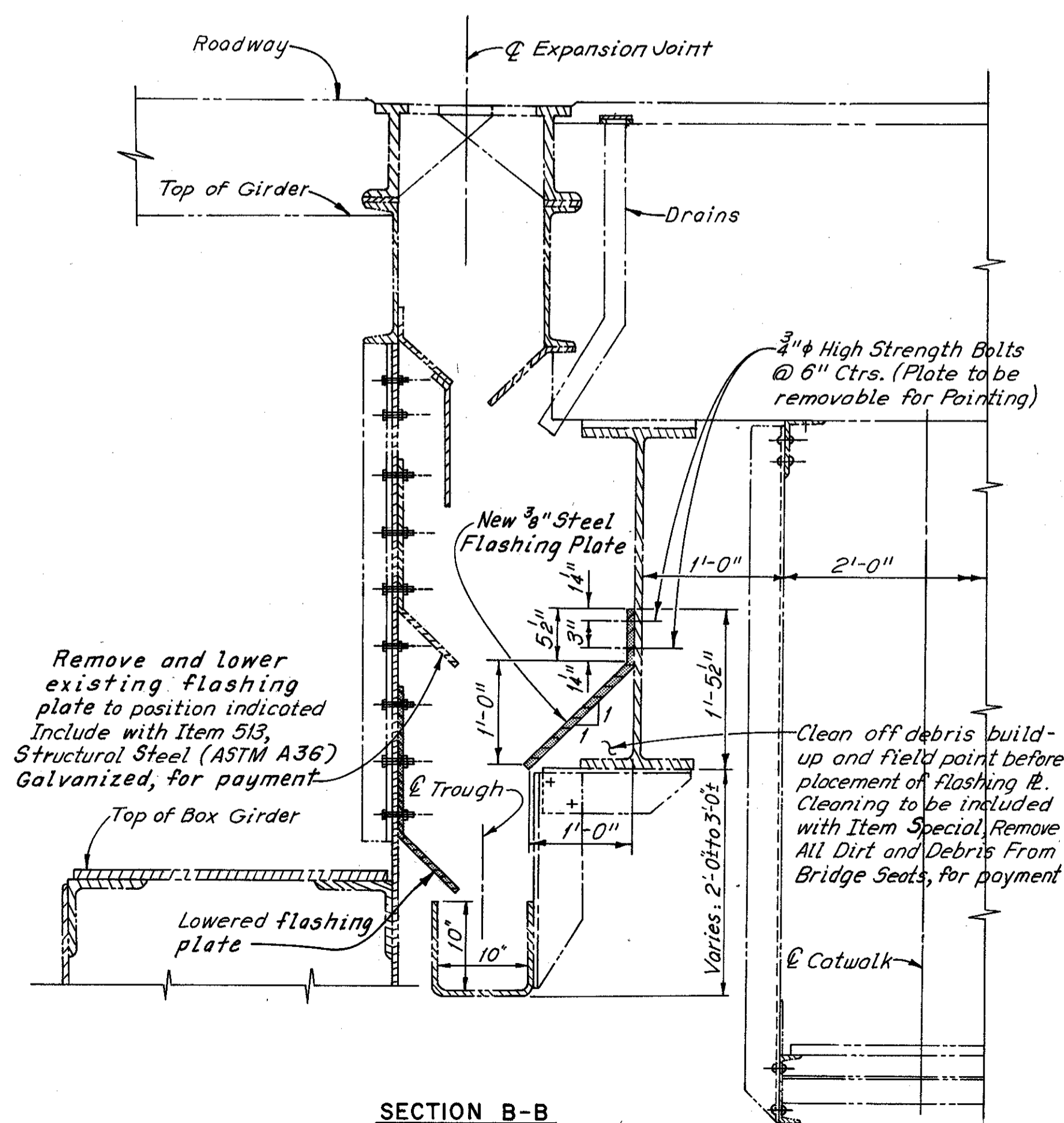
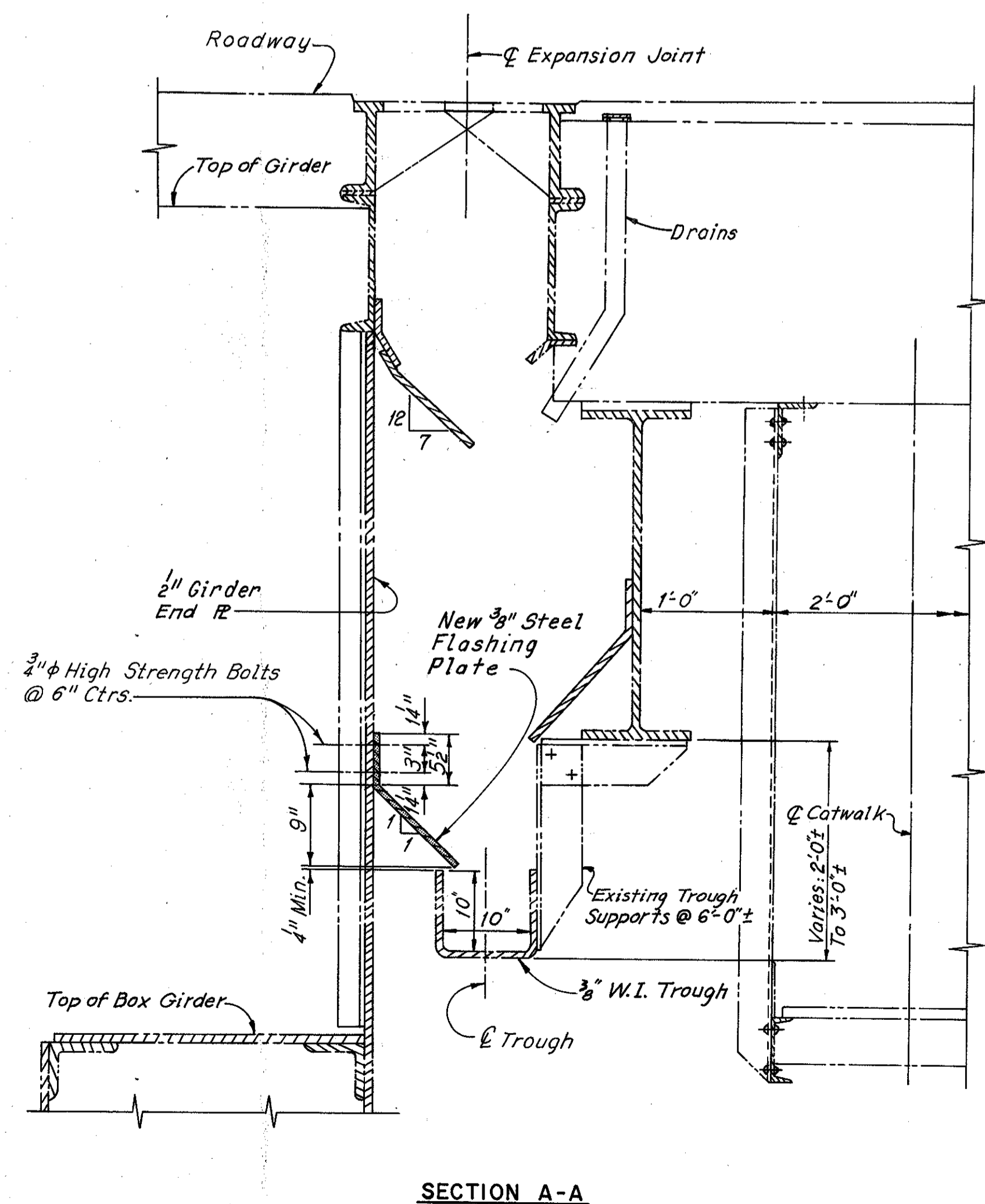


HALF SECTION OF EXPANSION JOINT
AT WEST END PIER
(LOOKING EAST)



HALF SECTION OF EXPANSION JOINT
AT EAST END PIER
(LOOKING EAST)

Note: (N) = Indicates North of \varnothing Bridge
(S) = Indicates South of \varnothing Bridge



Notes:

The new flashing plates shall be hot-dipped galvanized ASTM A36 steel. The 3/4" ϕ high strength bolts shall be galvanized as specified in ASTM A153.

The existing flashing plates that are removed and lowered shall be connected by the use of the existing bolts if approved by the Engineer or with new high strength bolts (A325, Type 3). These plates shall be cleaned and bituminous coated by coating F in accordance with the latest dated Federal Specification WW-P-405A. Only the faces exposed to the drainage need be coated. Include with Item 513, Structural Steel (ASTM A36) Galvanized, for payment.

The details shown represent the original plan drawings for the drainage system except for the modifications indicated. The existing drainage system shall be cleaned out as indicated in the General Notes.

For location of Expansion Joints see General Plan, Sheets 6/25 and 10/25.

For View D-D and Hopper Detail at top of piers see Sheet 20/25.

Indicates modifications.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CENTRAL VIADUCT
DRAINAGE DETAILS

BR. NO. CUY.-90-1524
90-1540
90-1547
90-1599

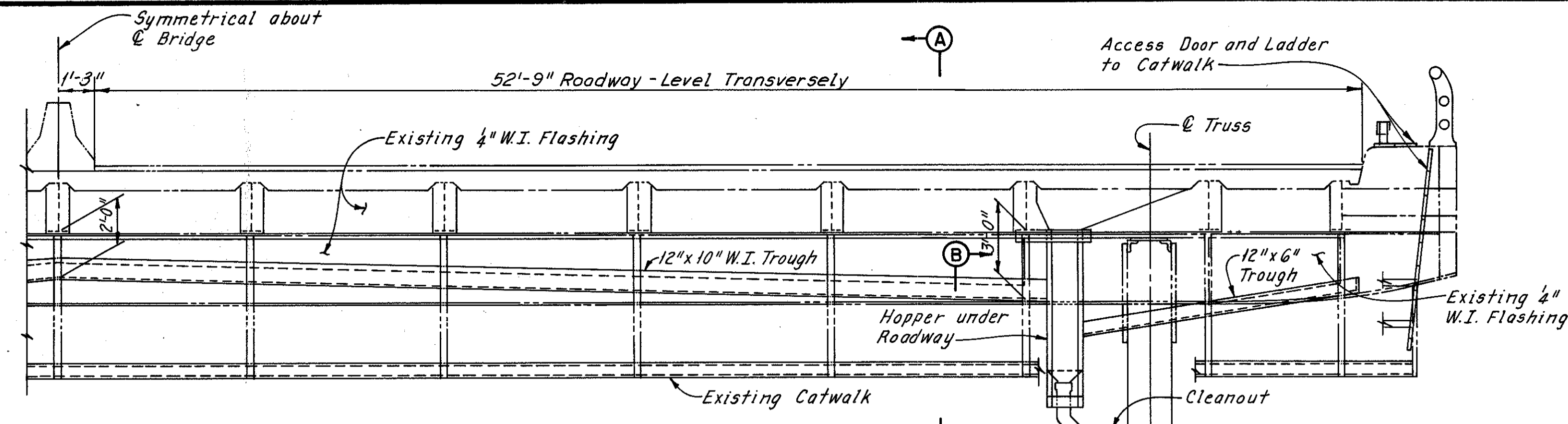
STA. 2+65 \pm
STA. 56+00 \pm

CUYAHOGA COUNTY OHIO

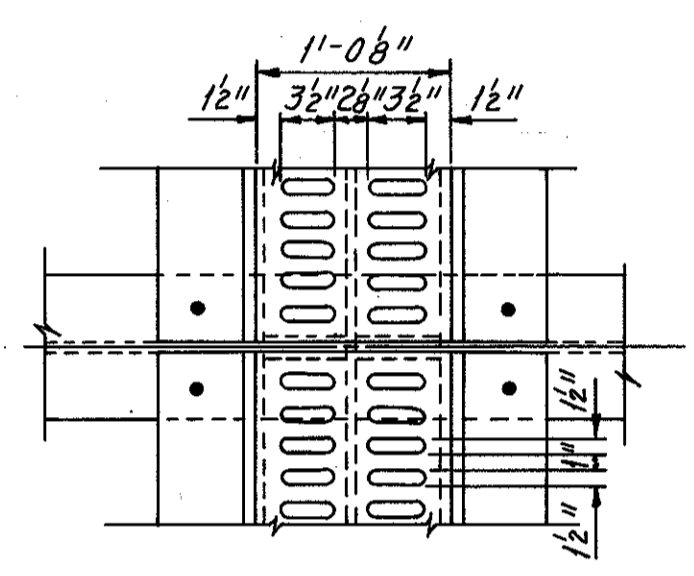
DRAWN C.K.B. TRACED D.L.A. CHECKED W.E.B. REVISIONS
DATE 7-1-74 DATE 7-23-74 DATE 8-29-74 DATE

SHEET 18/25

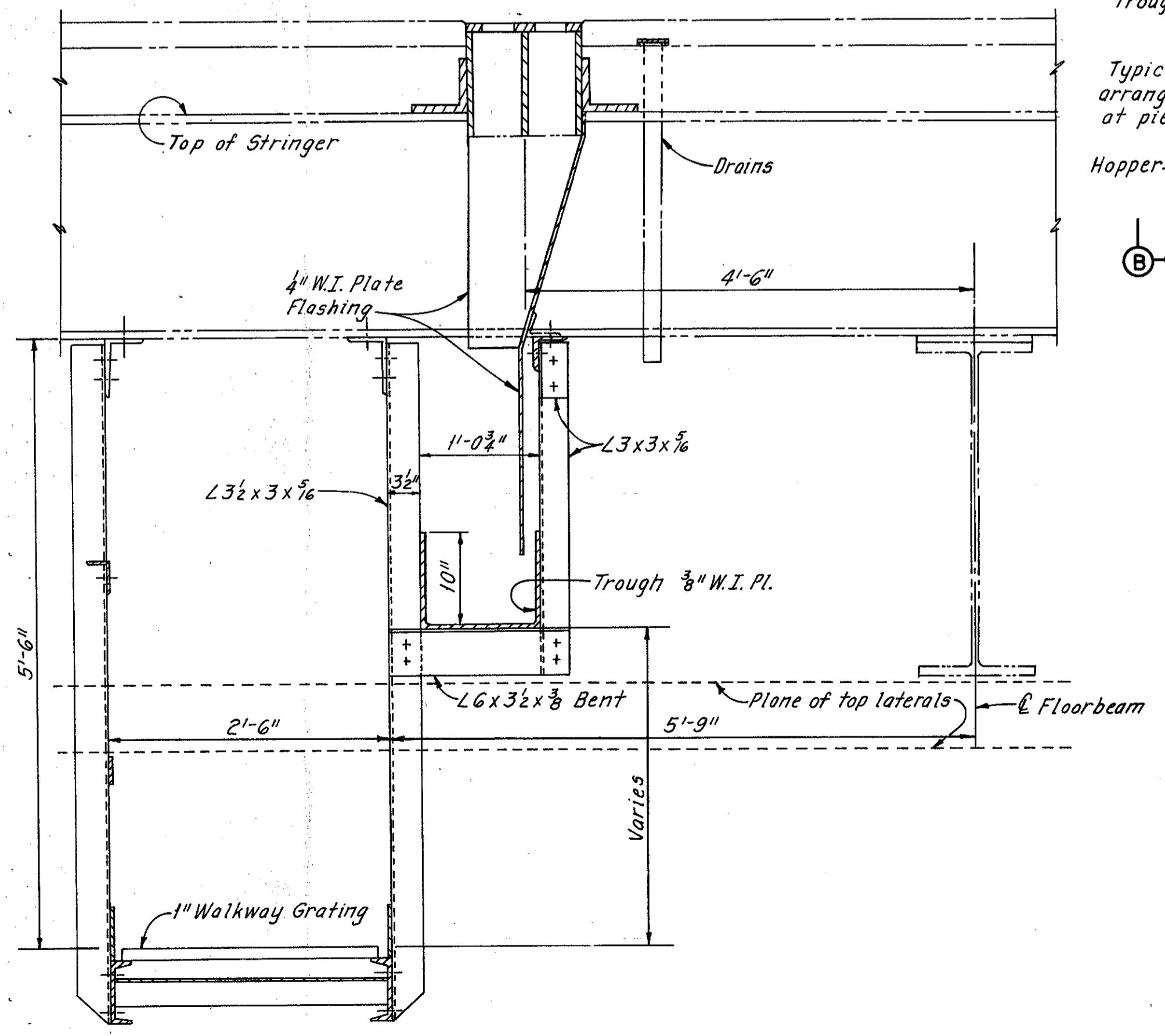
CUYAHOGA COUNTY
CUY-90-15.24



TYPICAL HALF SECTION AT CROSS DRAINS

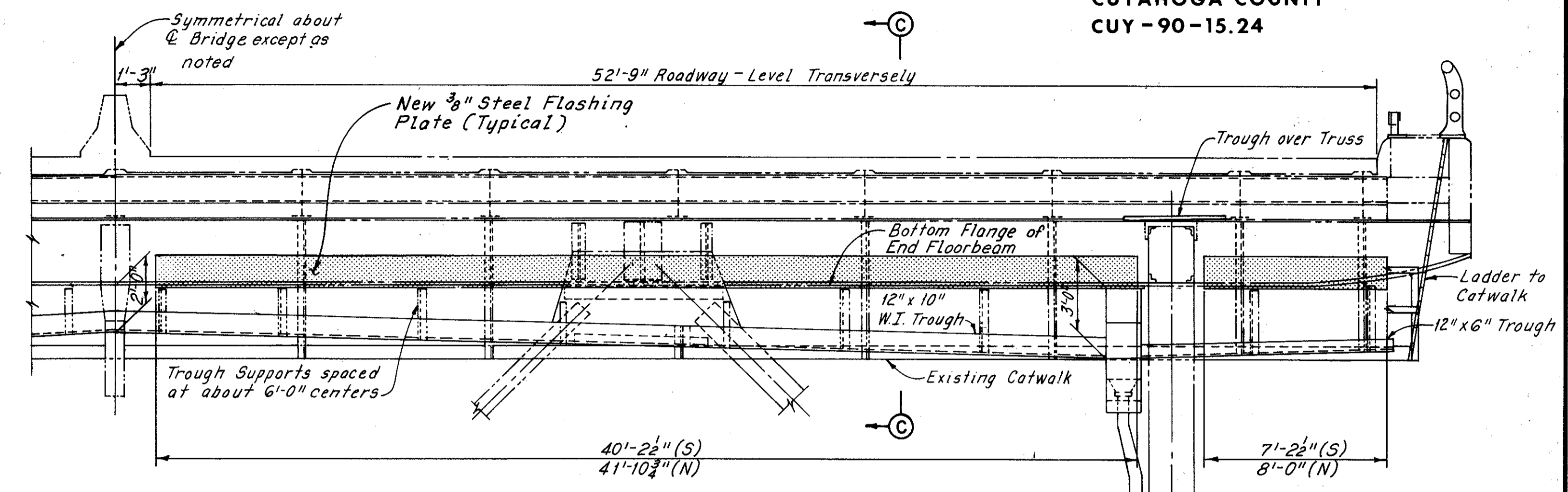


PLAN OF CROSS DRAIN



SECTION A-A

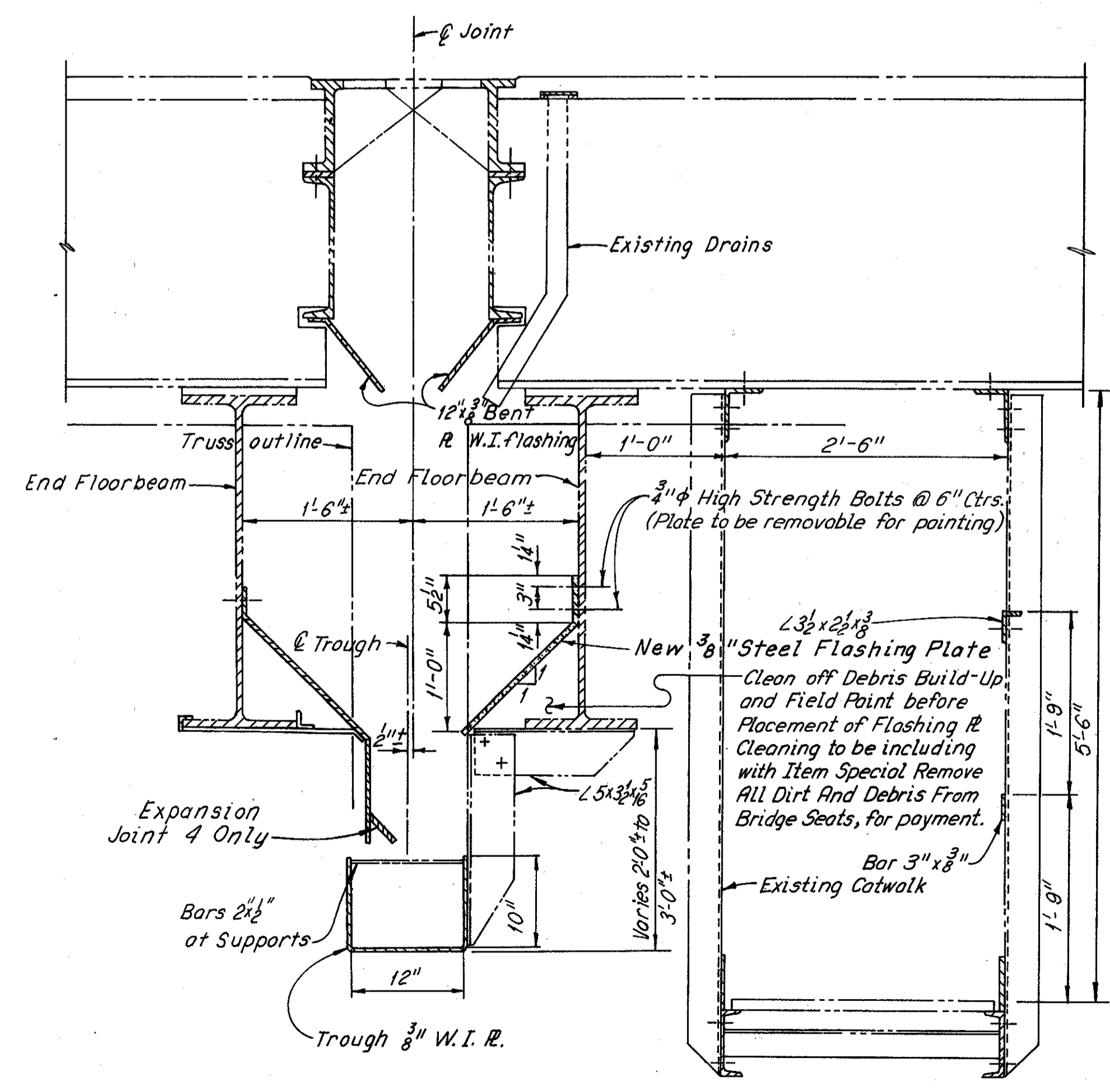
Note: The Crossdrain Details shown are for a crossdrain not at a Contraction Joint. When a crossdrain is located at a Roadway Contraction Joint, the Details are similar.



HALF SECTION AT EXPANSION JOINTS
2 THRU 5

(Looking East - For Expansion Joints 2 & 3)
(Looking West - For Expansion Joints 4 & 5)

Note:
(N) - Indicates North of Centerline of Bridge.
(S) - Indicates South of Centerline of Bridge.



SECTION C-C

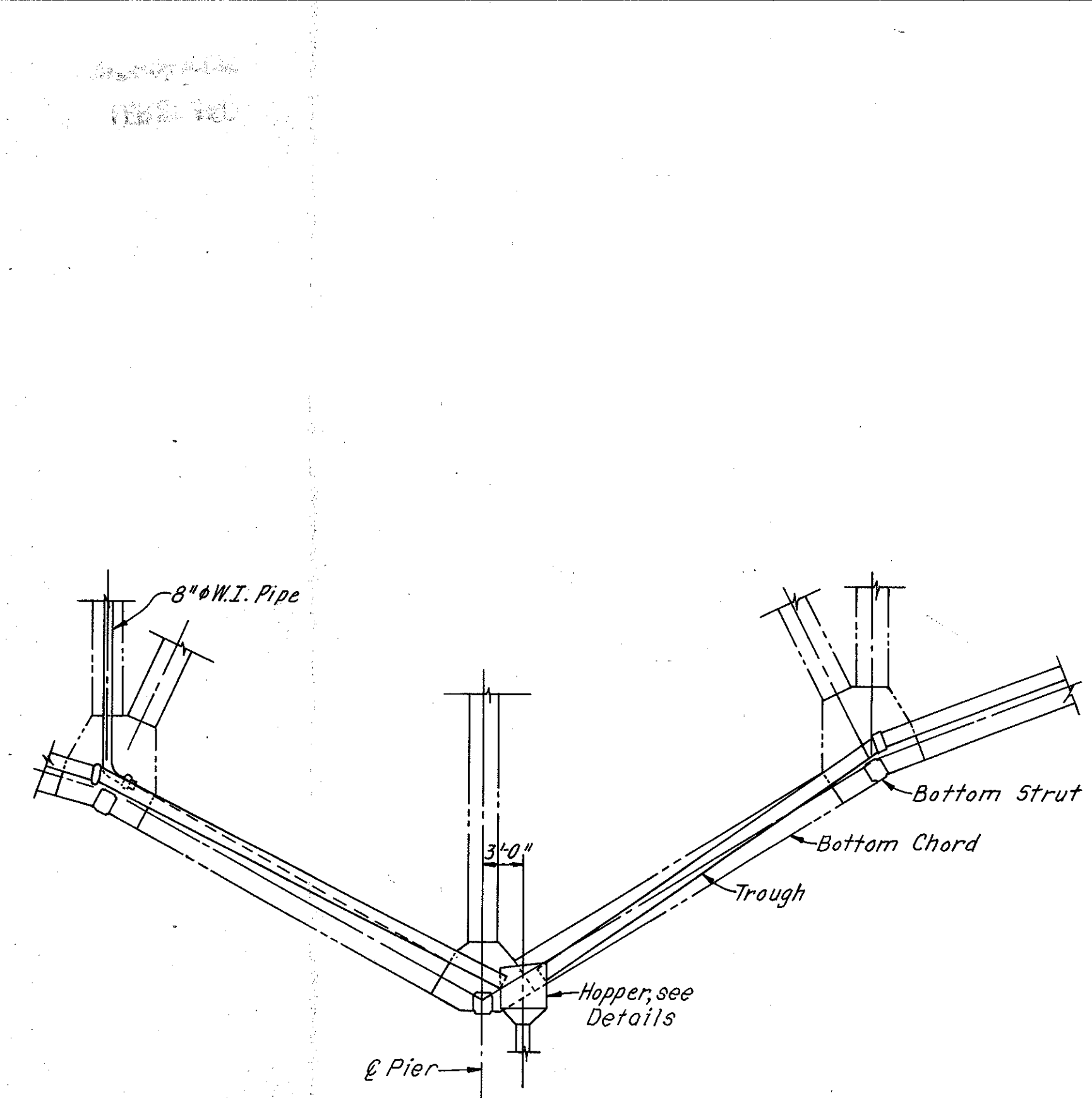
Notes:
The new flashing plates shall be hot-dipped galvanized ASTM A36 steel. The 3/4" diameter high strength bolts shall be galvanized as specified in ASTM A153.
The details shown represent the original plan drawings for the drainage system except for the modifications indicated. The existing drainage system shall be cleaned out as indicated in the General Notes.
For location of expansion joints and cross drains see General Plan, Sheets 6/25 thru 10/25.
For View B-B and Hopper Detail at top of piers see Sheet 20/25.
Indicates modifications.

HOWARD, NEEDLES, TAMMEN & BERGENOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
CENTRAL VIADUCT DRAINAGE DETAILS			
BR. NO. CUY-90-1524		STA. 2+65±	
90-1540		90-1547	
90-1547		90-1599	
CUYAHOGA COUNTY		OHIO	
DRAWN: C.K.B.	TRACED: D.L.P.	CHECKED: W.E.B.	REVIEWED: []
DATE: 7-1-74	DATE: 7-23-74	DATE: 8-29-74	DATE: []
			SHEET 19/25

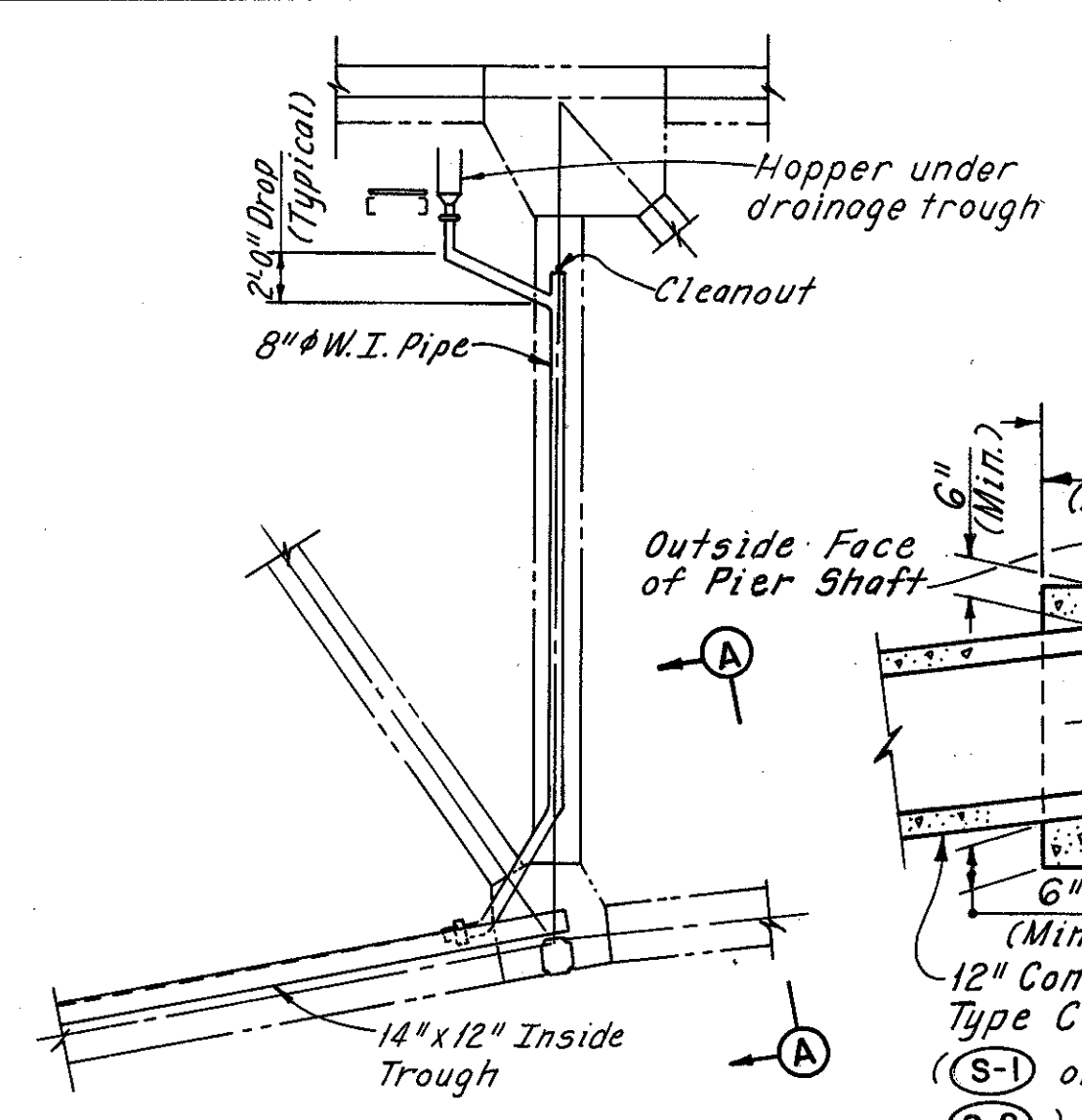
FHWA REGION	STATE	PROJECT
5	OHIO	

23
30

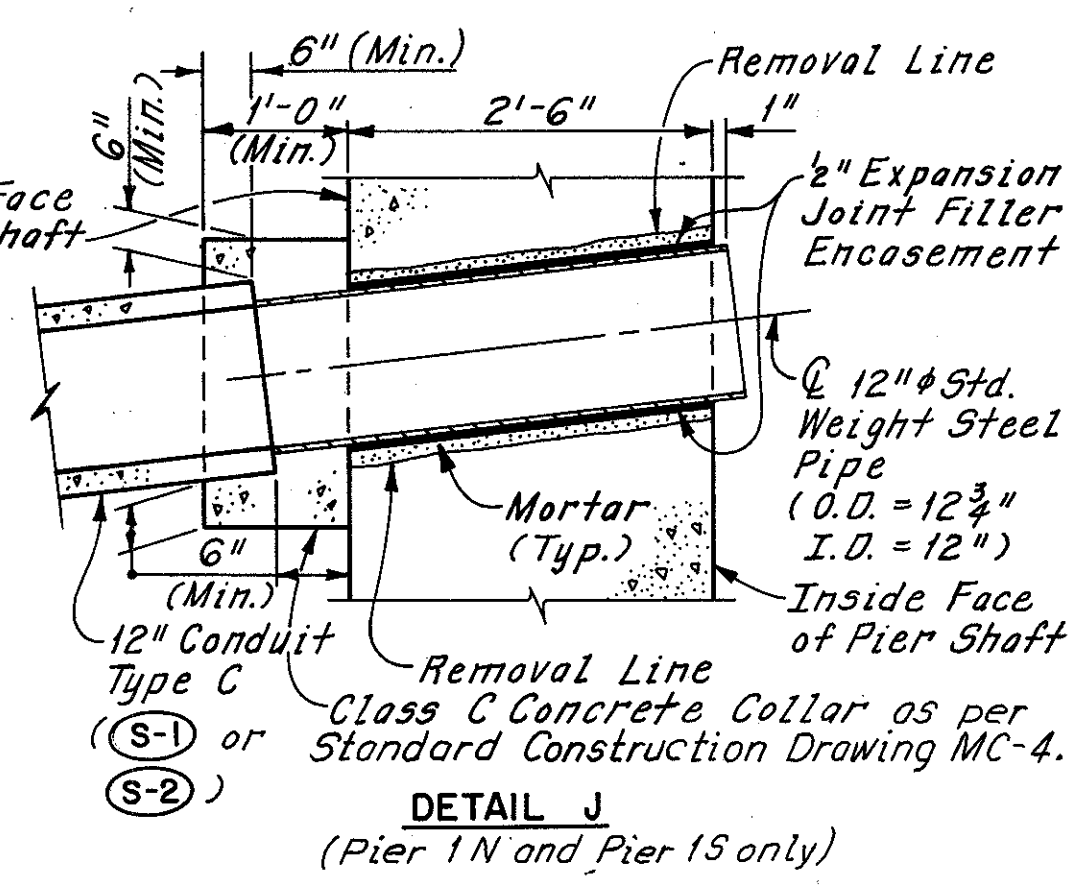
CUYAHOGA COUNTY
CUY-90-15.24



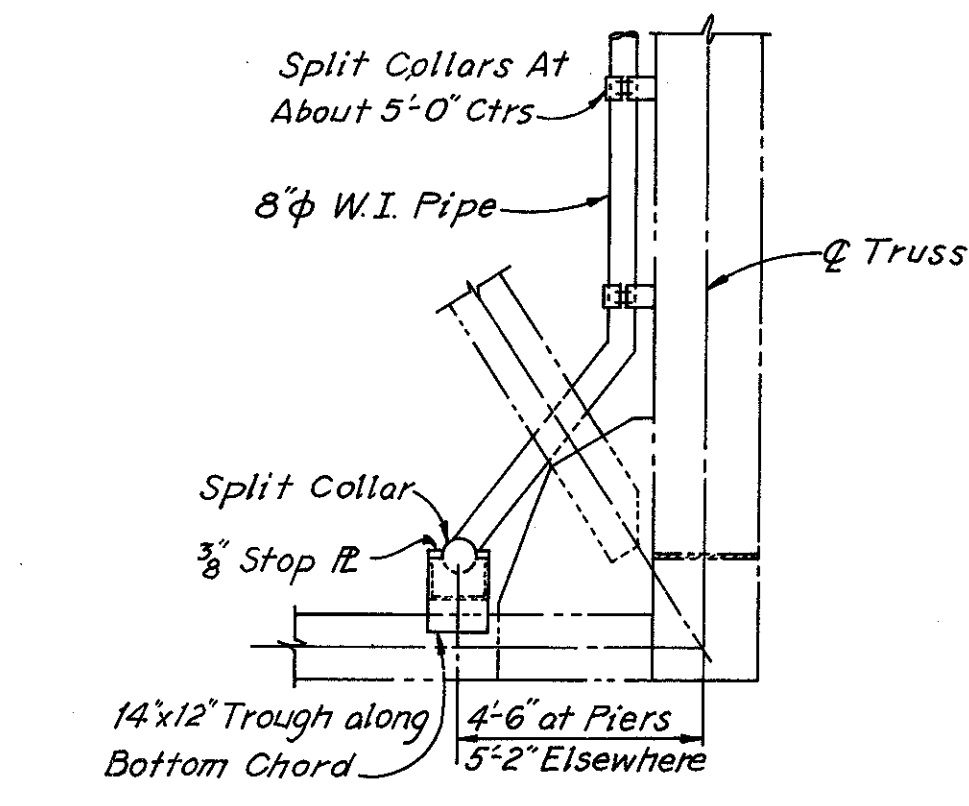
VIEW B-B
(For location of View B-B, see Sheet 19/25.)



Note:
For additional details of (S-1) and (S-2), see Sheet 14/25.

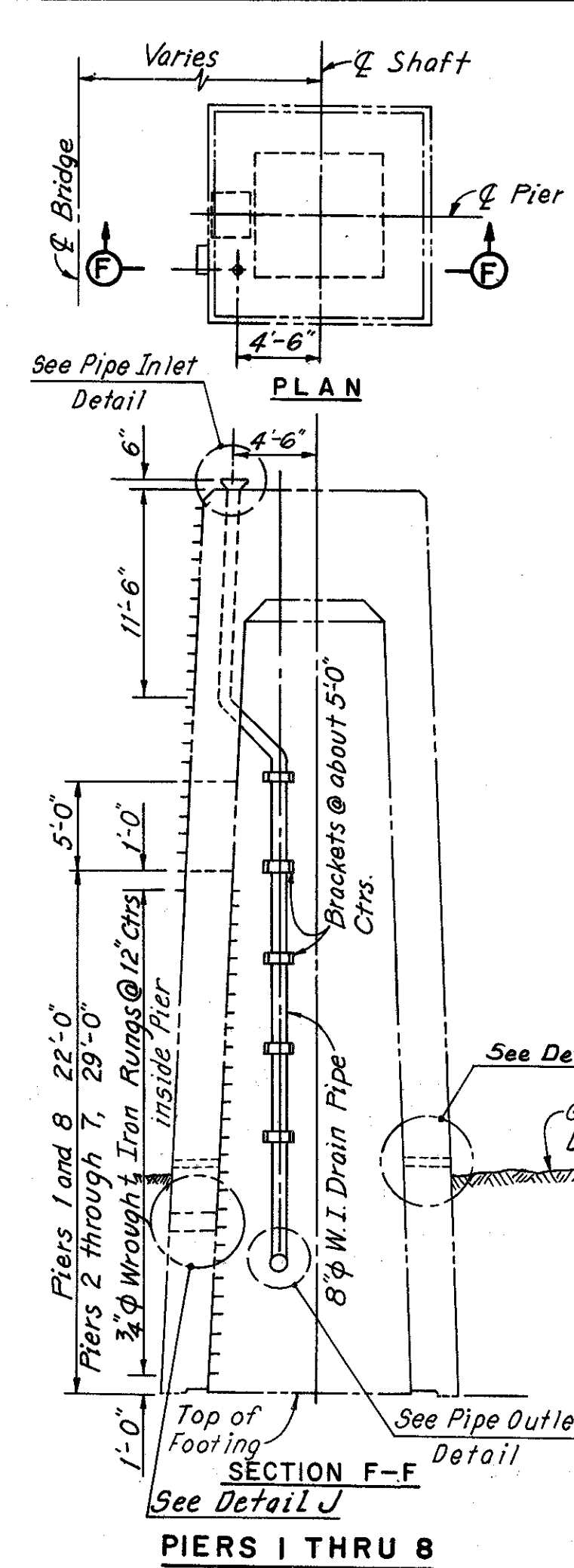


DETAIL J
(Pier 1 N and Pier 1 S only)

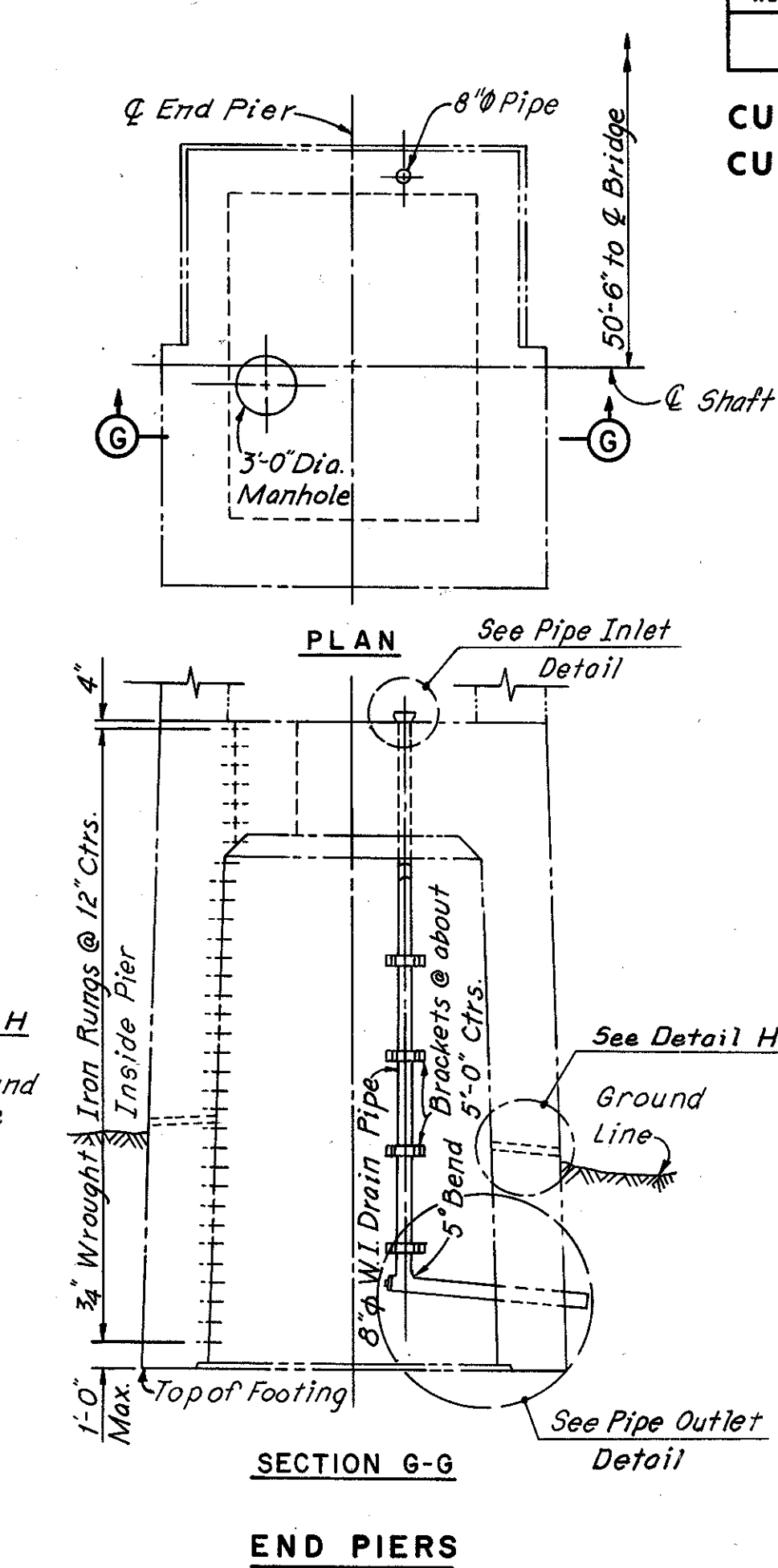


SECTION A-A

Note:
The Contractor shall locate reinforcement by instrument or by chipping concrete at outside face of shaft. The diameter of hole for insertion of pipe shall be kept to a minimum. Not more than two, and preferably only one vertical reinforcing bar in each face shall be cut after completion of the hole. Horizontal reinforcement preferably shall not be cut. Mortar shall be placed in firm contact with existing concrete. Shaft faces shall be finished smooth. (See Note A.)

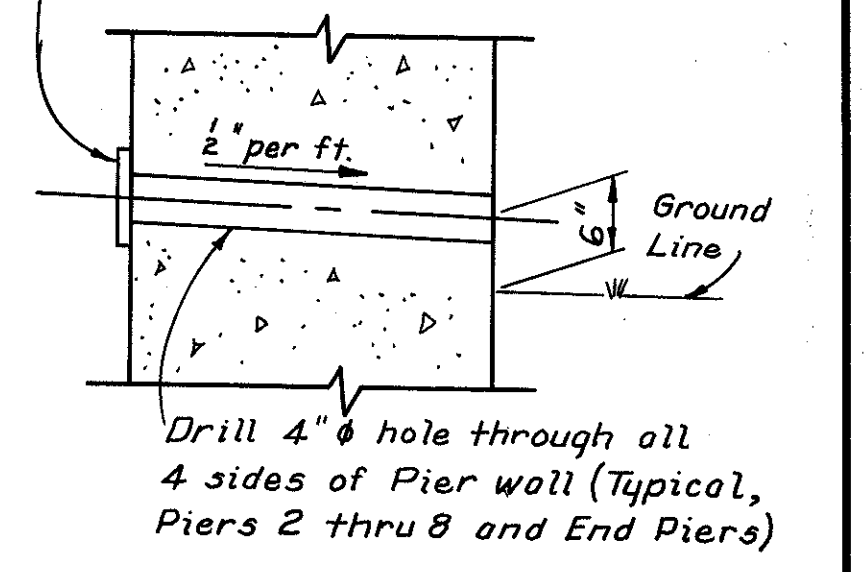


PIERS 1 THRU 8



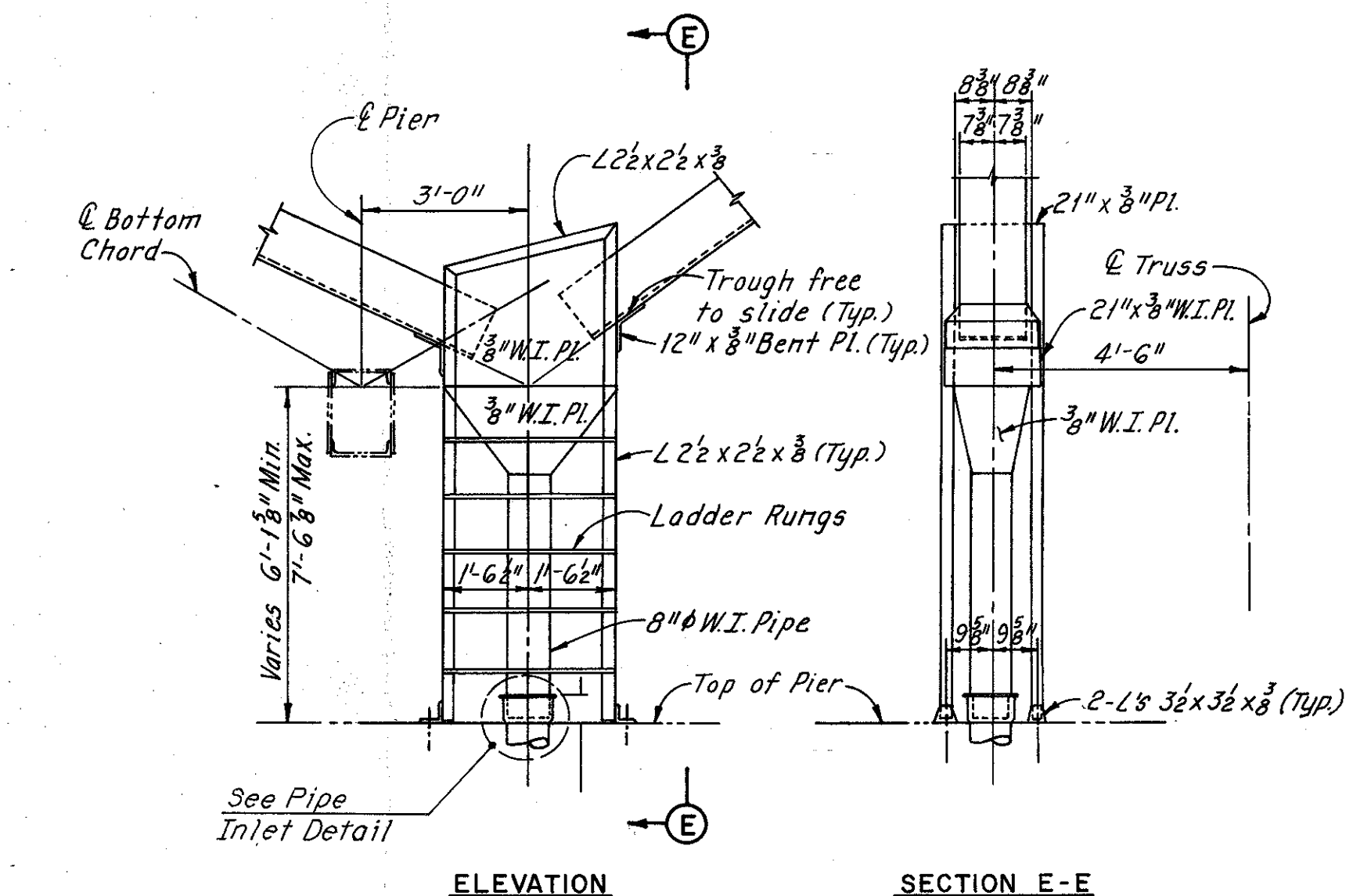
END PIERS

Provide galvanized screen (1/2 inch mesh) on inside face (Secure to concrete with 4 inch phi expansion bolts.)

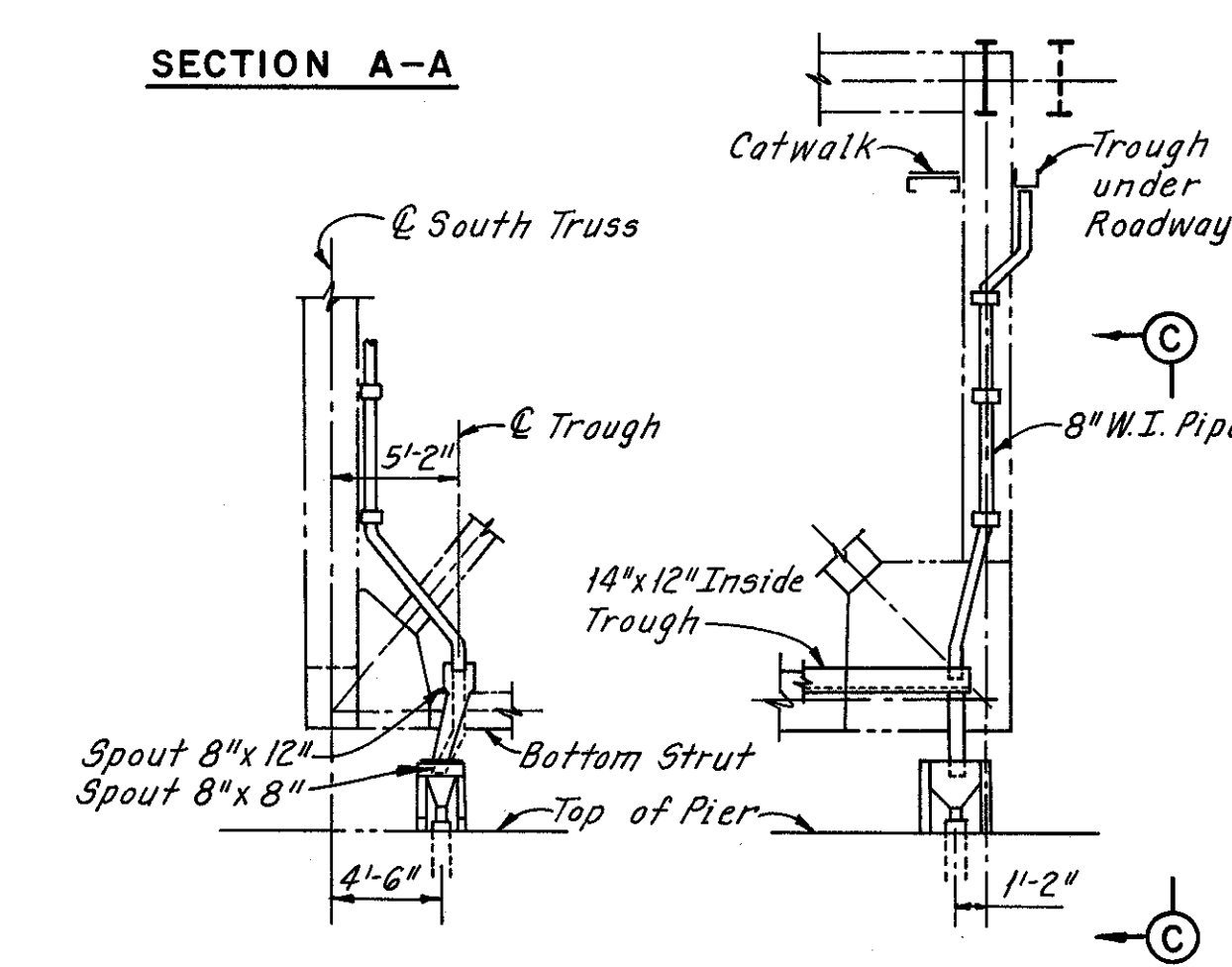


DETAIL H

Note:
Drilling, galvanized screen, and 1/2 inch phi bolts are included with "Item 202, Portions of Structures Removed", for payment.



ELEVATION
TYPICAL DETAIL OF HOPPER AT TOP OF PIERS

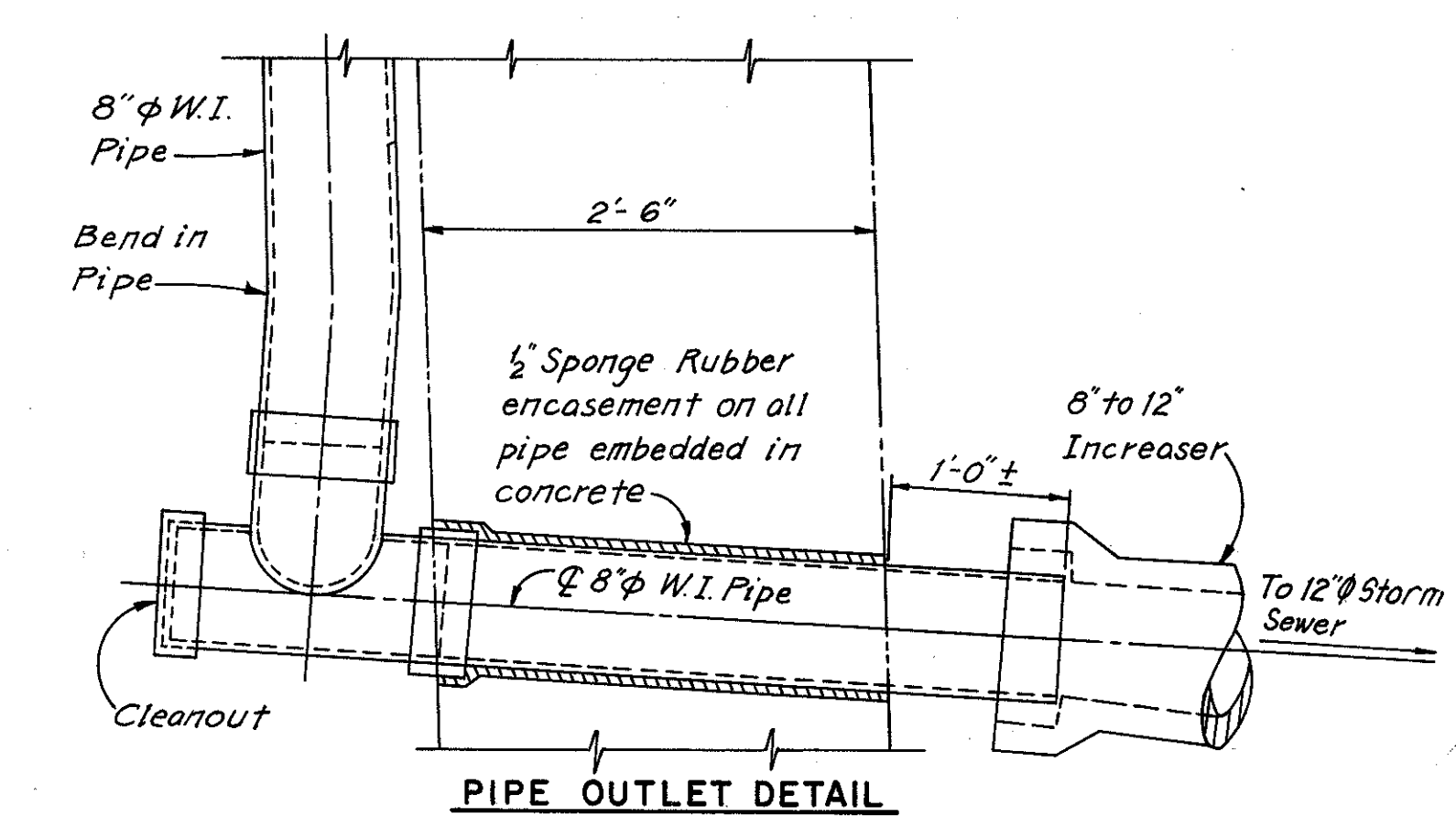


SECTION C-C

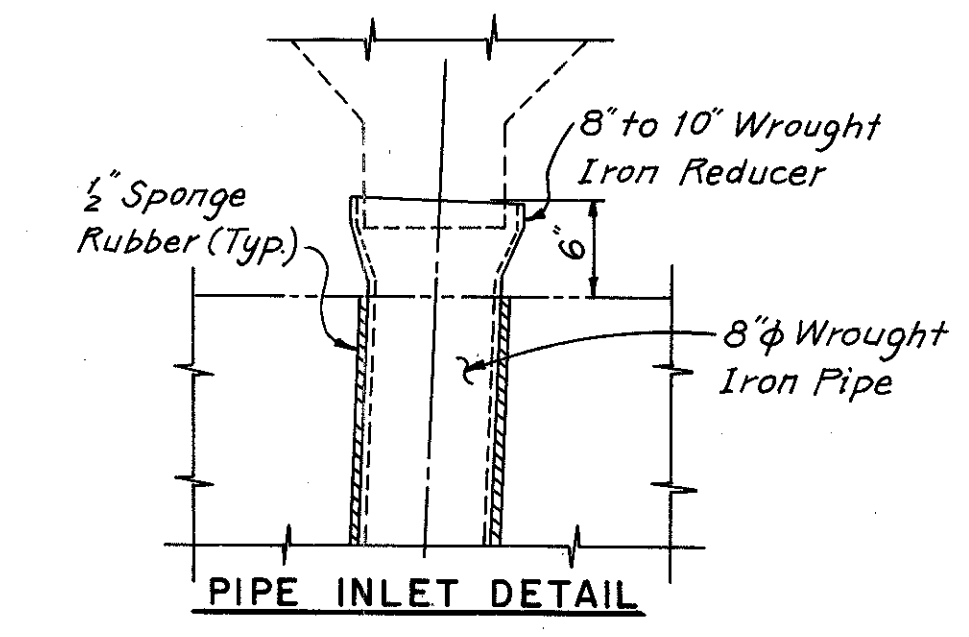
VIEW D-D
(For location of View D-D, see Sheet 18/25.)

East End Pier is shown. At West End Pier the trough is omitted and the downspout goes down into the hopper.

SECTION AT END PIERS



PIPE OUTLET DETAIL



PIPE INLET DETAIL

Notes:
The details shown represent the original plan drawings for the existing drainage system except for the modifications indicated in Details H and J. The existing drainage system shall be cleaned out as indicated in the General Notes.
For locations of drainage facilities, see Sheets 6/25 thru 10/25.

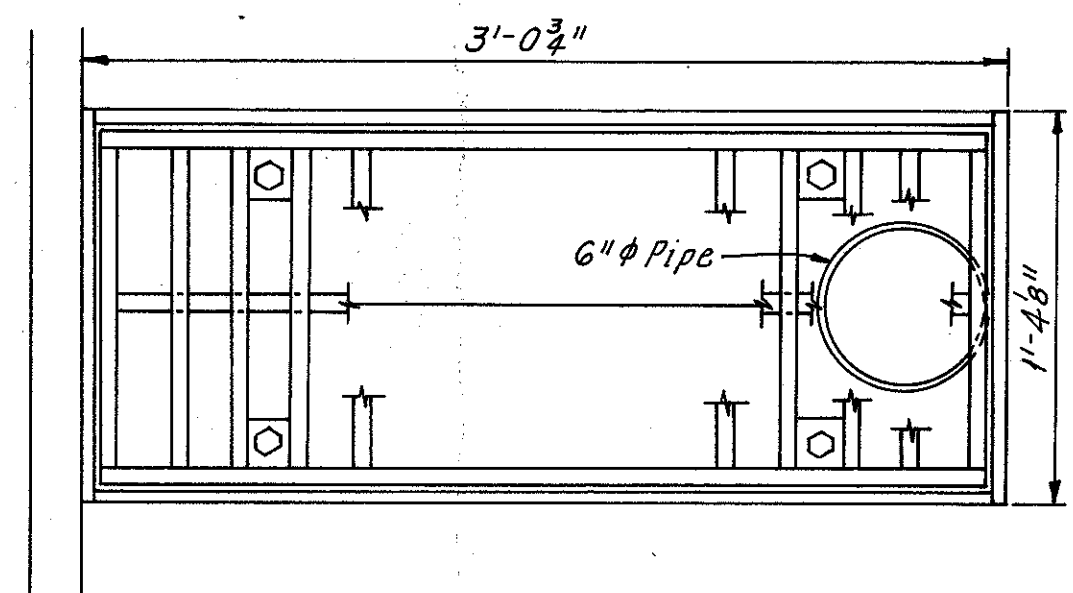
DRAINAGE DETAILS INSIDE PIERS

Note A:
Concrete and reinforcement removal, expansion joint filler and the mortar are included with "Item 202, Portions of Structures Removed", for payment. The steel pipes and concrete collars are included with "Item 603, 12 inch Conduit, Type C", for payment.

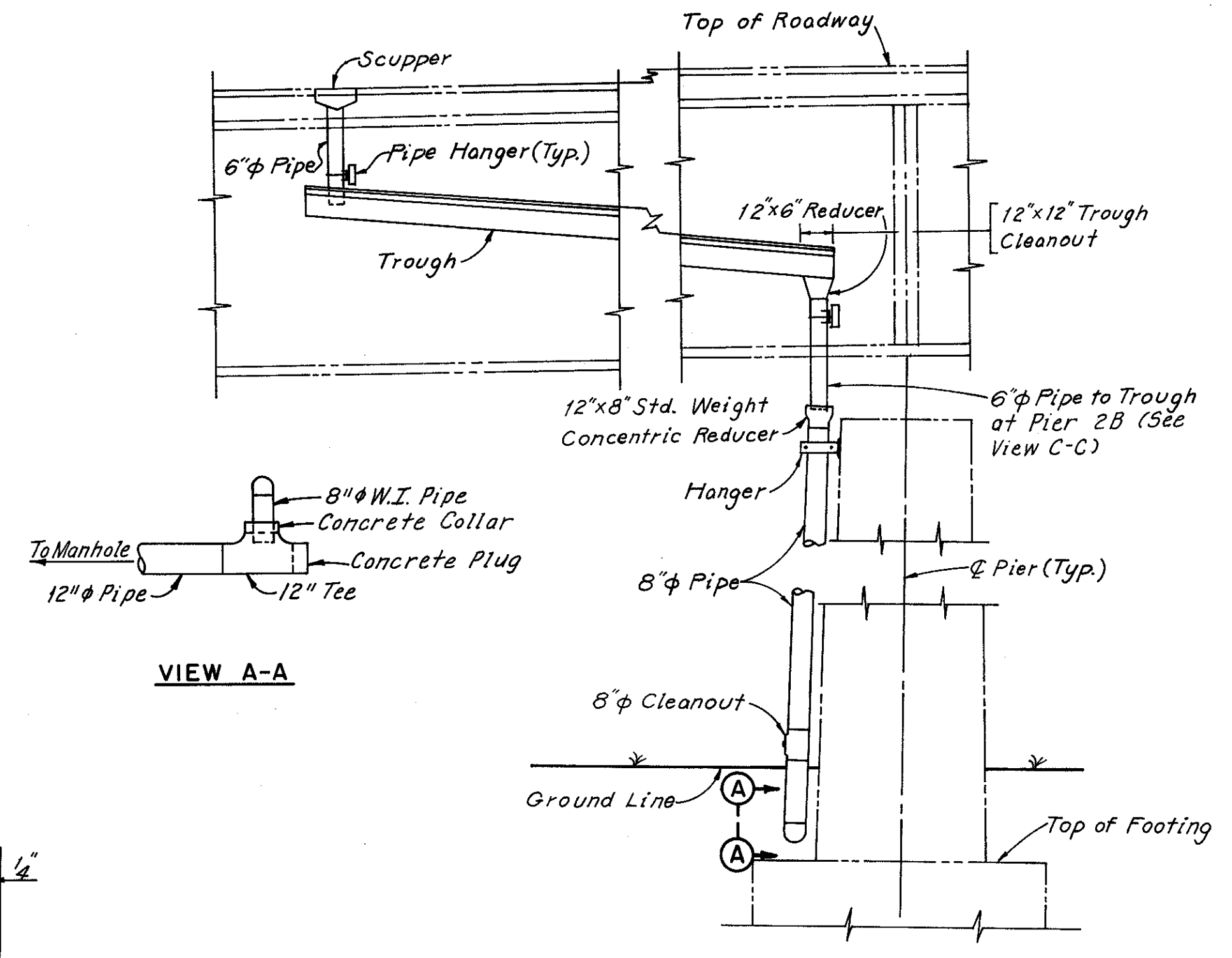
DRAINAGE DETAILS ABOVE PIERS

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
CENTRAL VIADUCT DRAINAGE DETAILS			
BR. NO. CUY-90-1524		STA. 2+65±	
90-1540		90-1547	
90-1599		90-1599	
CUYAHOGA COUNTY		OHIO	
DRAWN C.K.B.	TRACED L.K.W.	CHECKED W.E.B.	REVIEWED
DATE 7-1-74	DATE 7-2-74	DATE 8-29-74	DATE
			SHEET 20/25

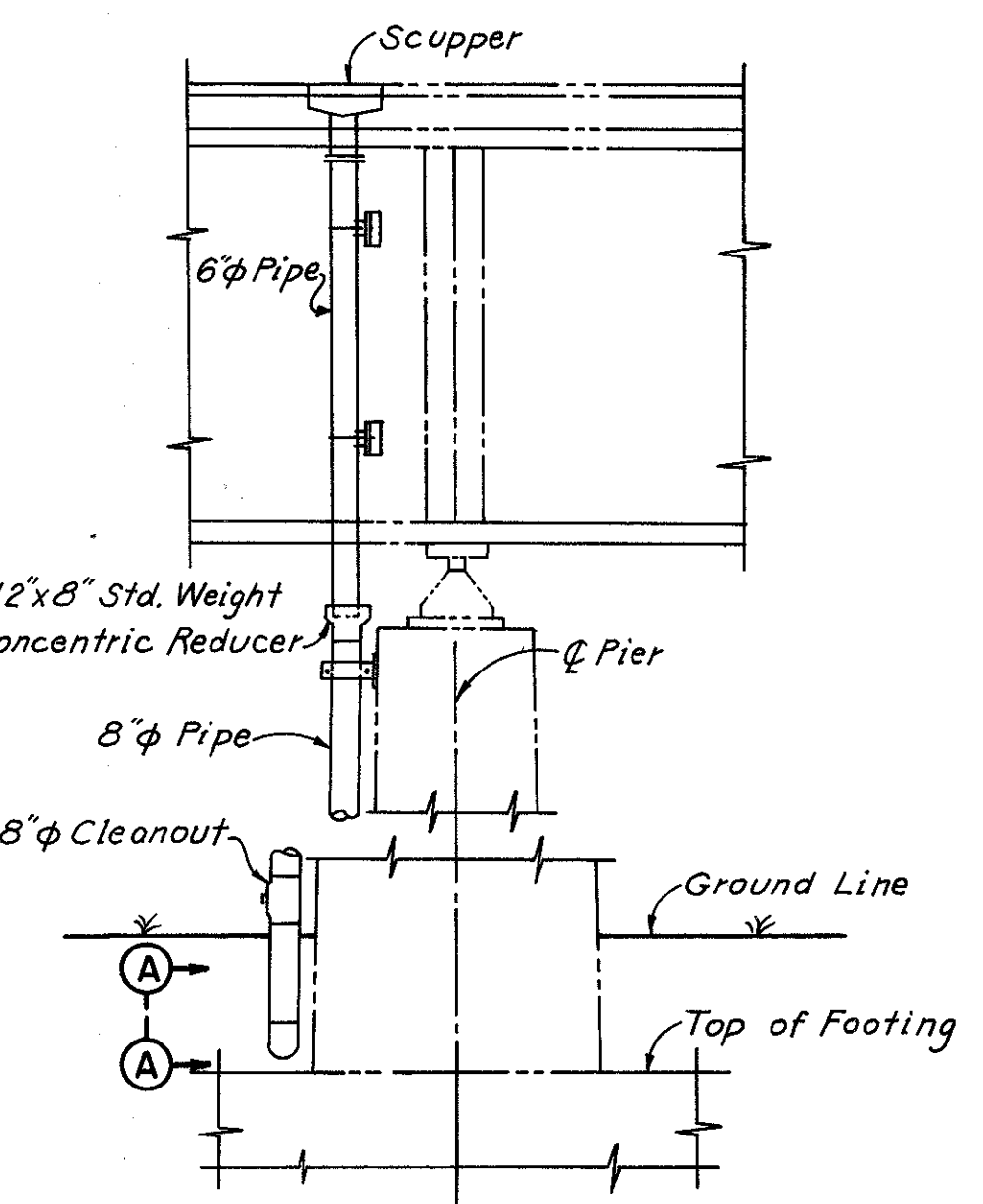
CUYAHOGA COUNTY
CUY-90-15.24



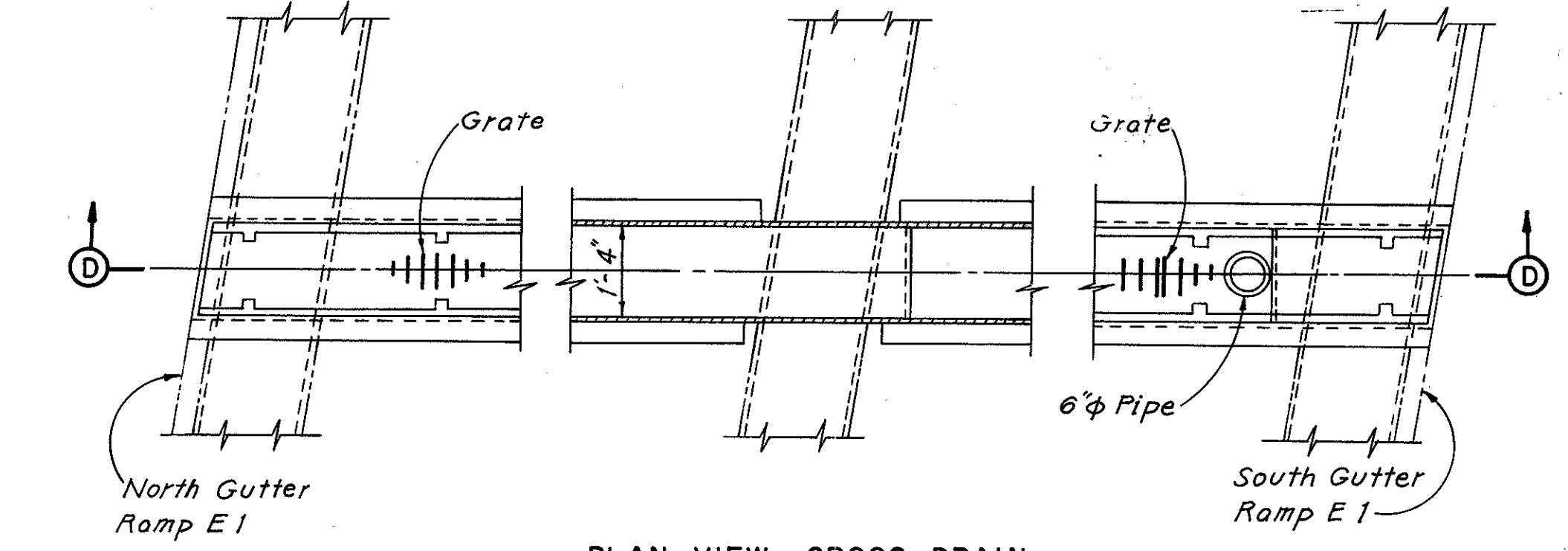
TYPICAL SCUPPER PLAN



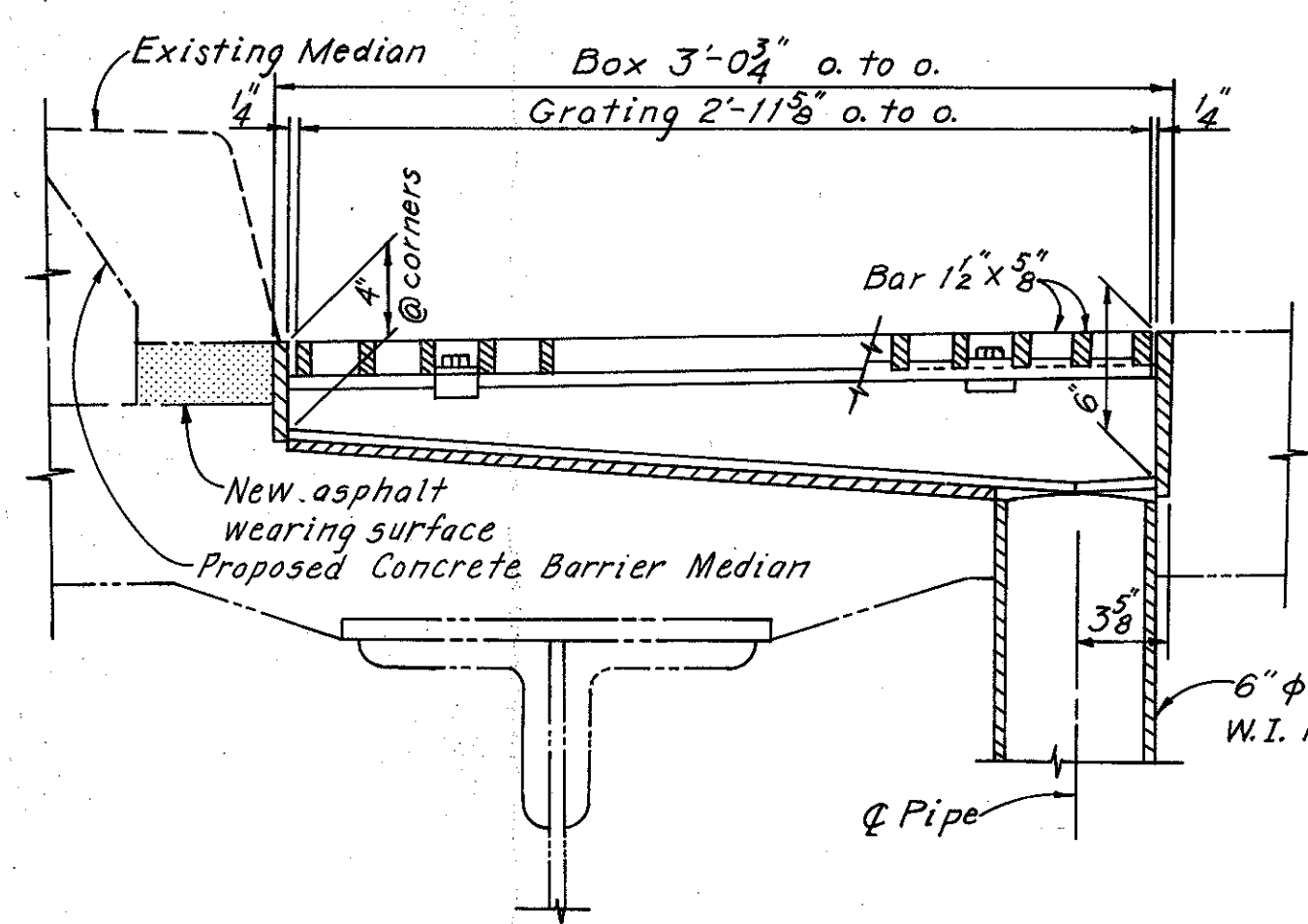
VIEW A-A



DRAINAGE AT PIER 2E2 (LOOKING SOUTH)

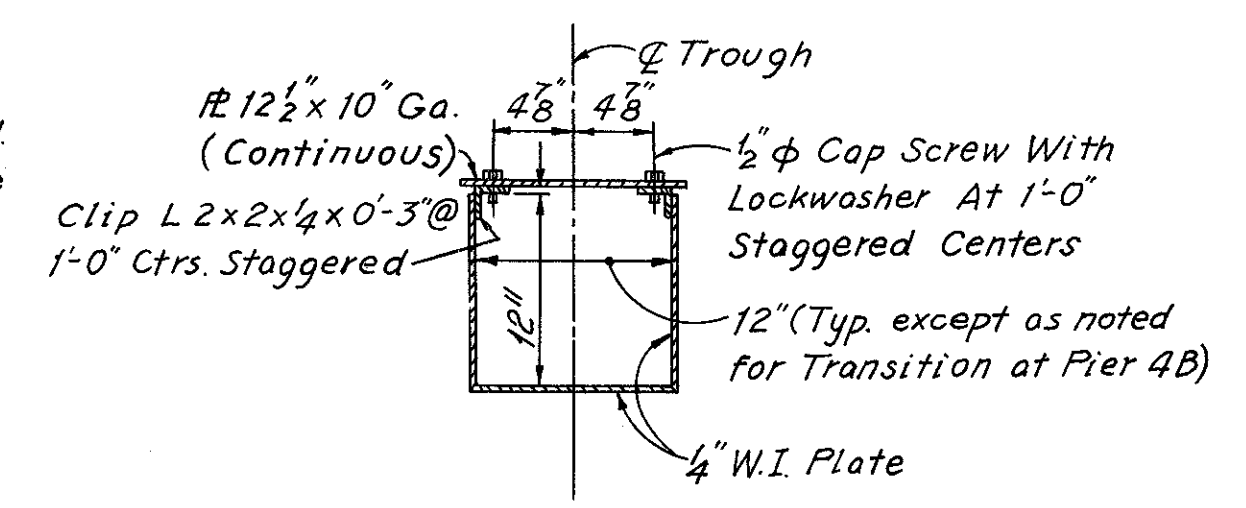


PLAN VIEW - CROSS DRAIN

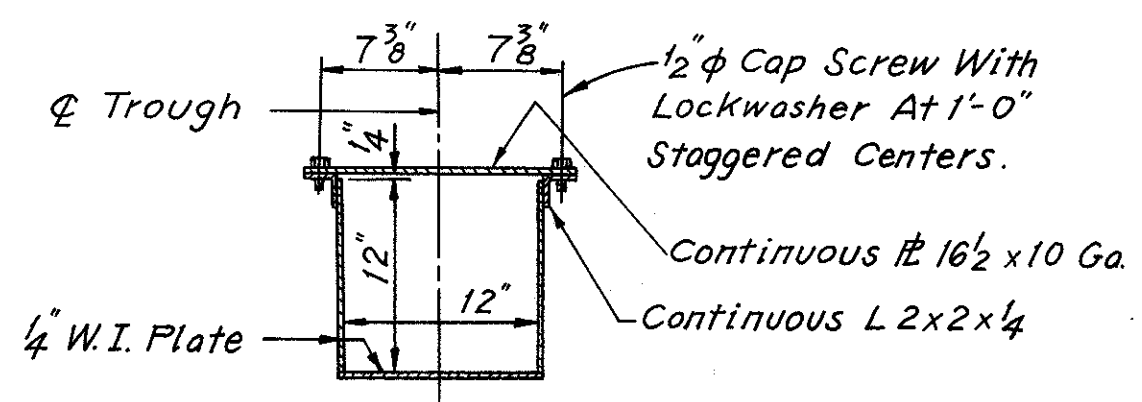


SECTION B-B

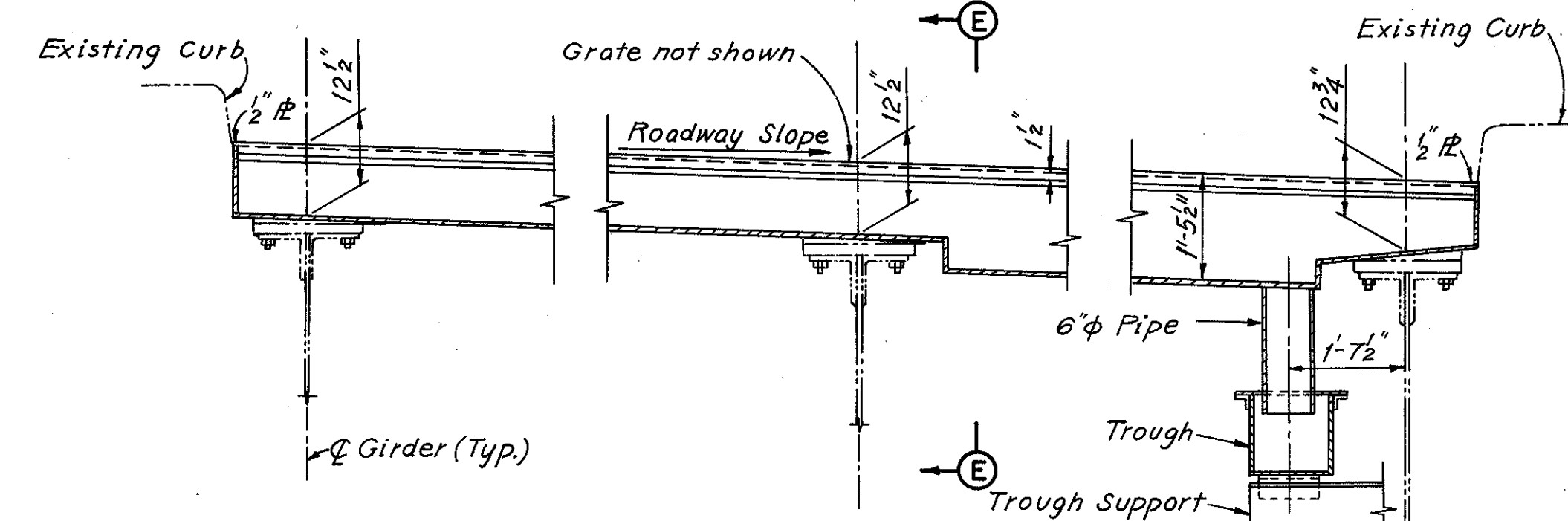
DRAINAGE AT PIER 1E2 - (LOOKING SOUTH)
DRAINAGE AT PIER 2B SOUTH CURB - (LOOKING NORTH)



TYPICAL TROUGH SECTION ALONG PIER CAPS

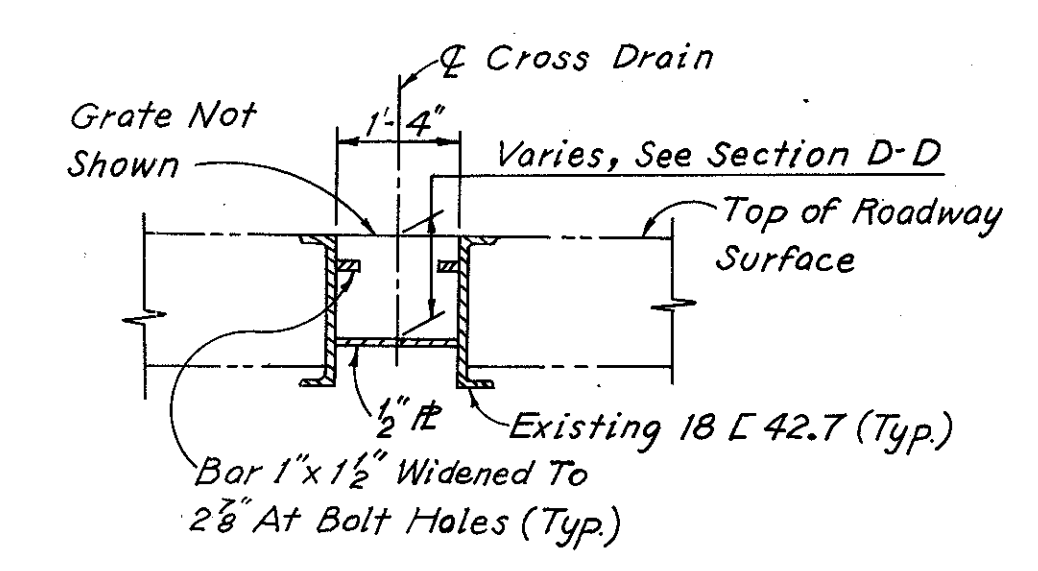


TYPICAL TROUGH SECTION ALONG GIRDERS



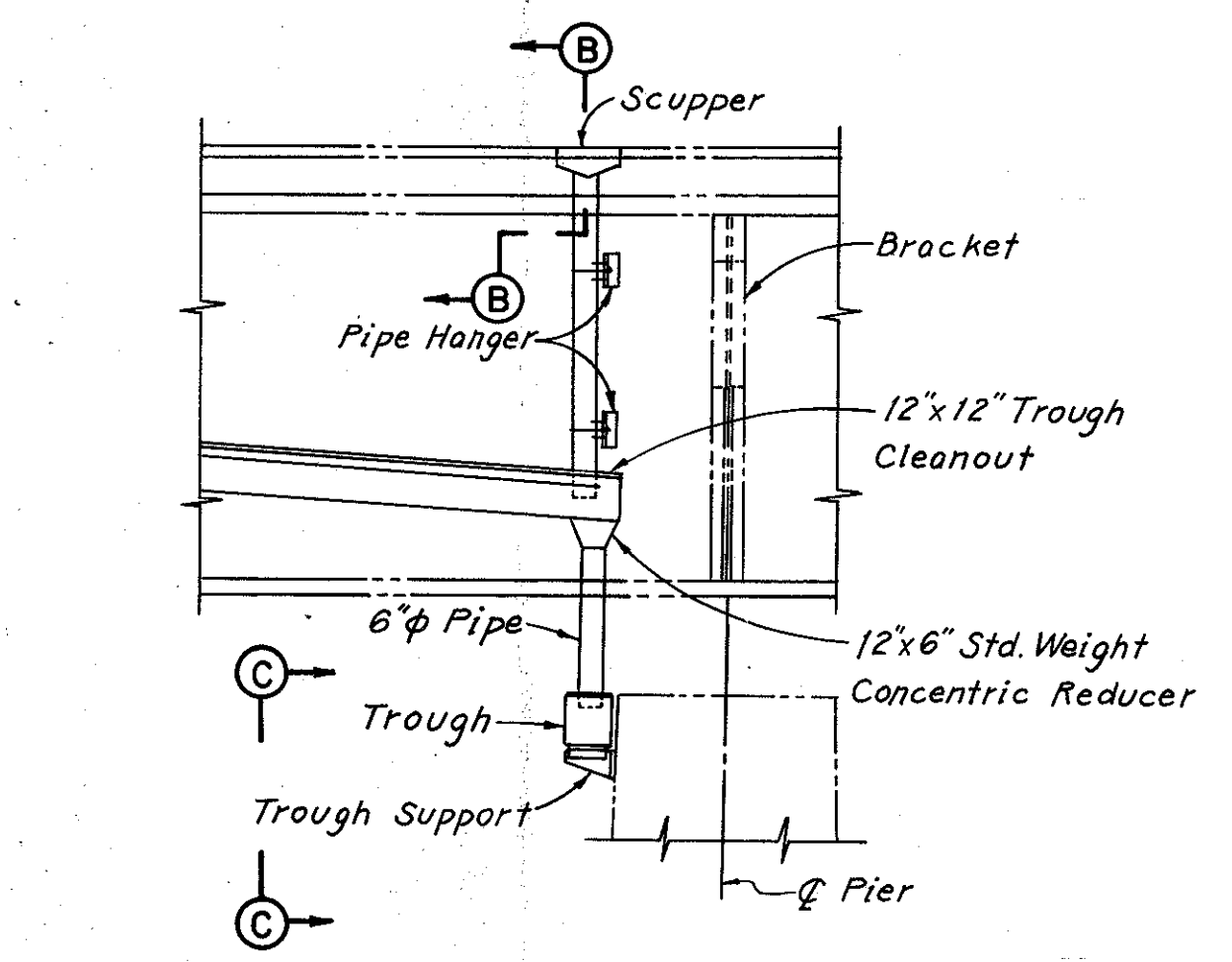
SECTION D-D

Note: Drainage from trough at Pier 2E1 is similar to Pier 1E2 drainage.

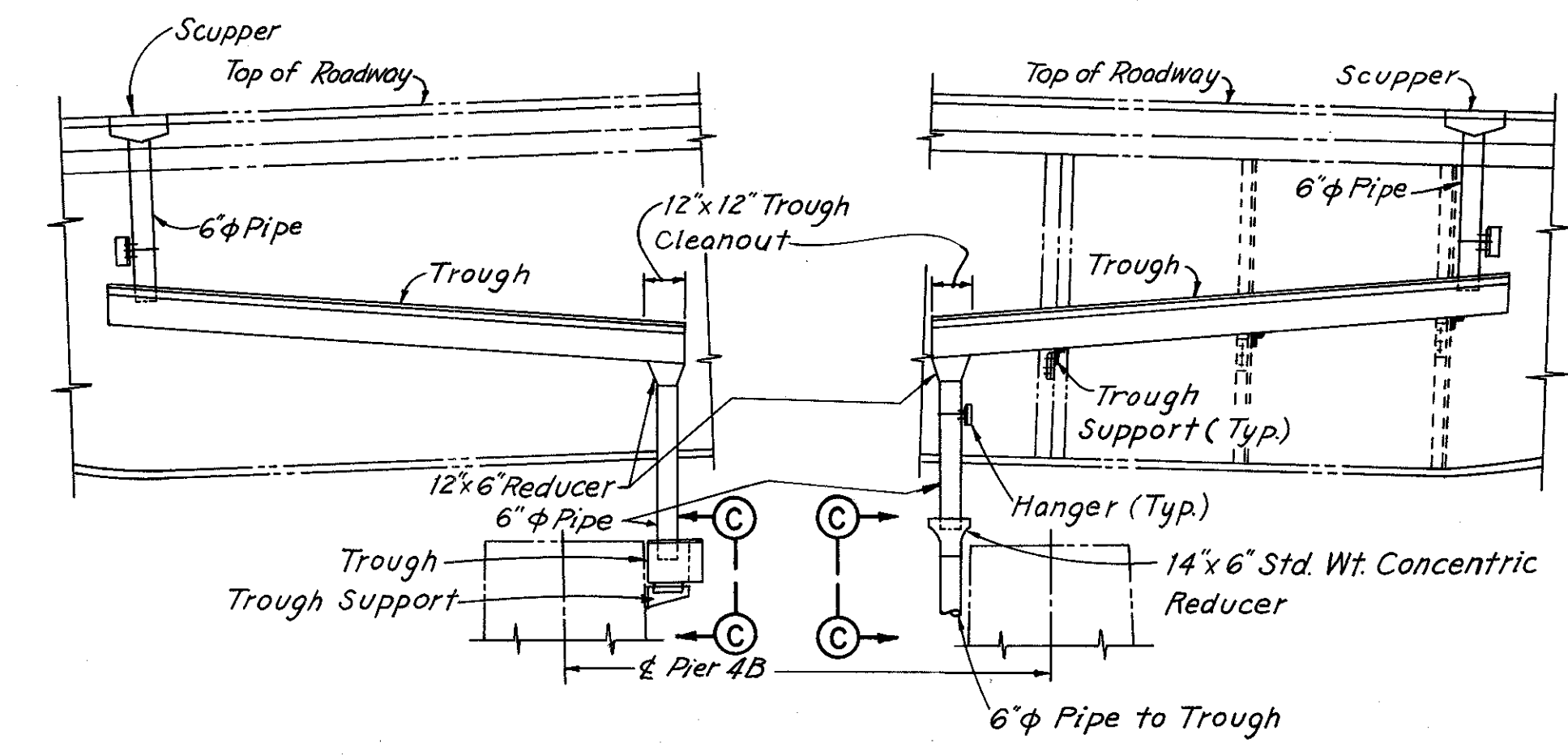


SECTION E-E

Notes:
The details shown represent the original plan drawings for the drainage system. The existing drainage system shall be cleaned out as indicated in the General Notes.
For Scupper and Cross Drain locations see General Plan, Sheets 11/25 and 12/25.

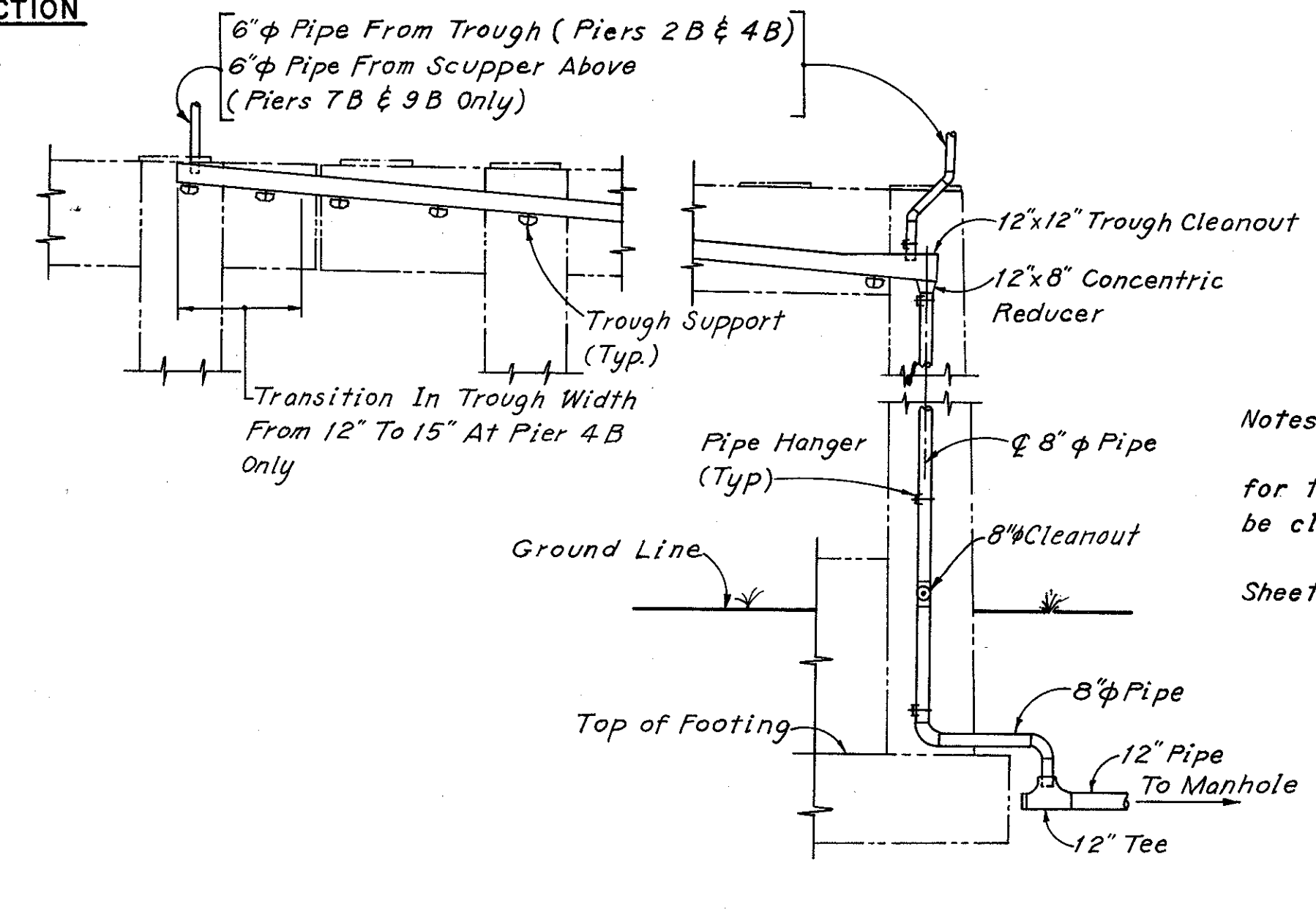


NORTH MEDIAN DRAINAGE AT PIER 2B (LOOKING NORTH)



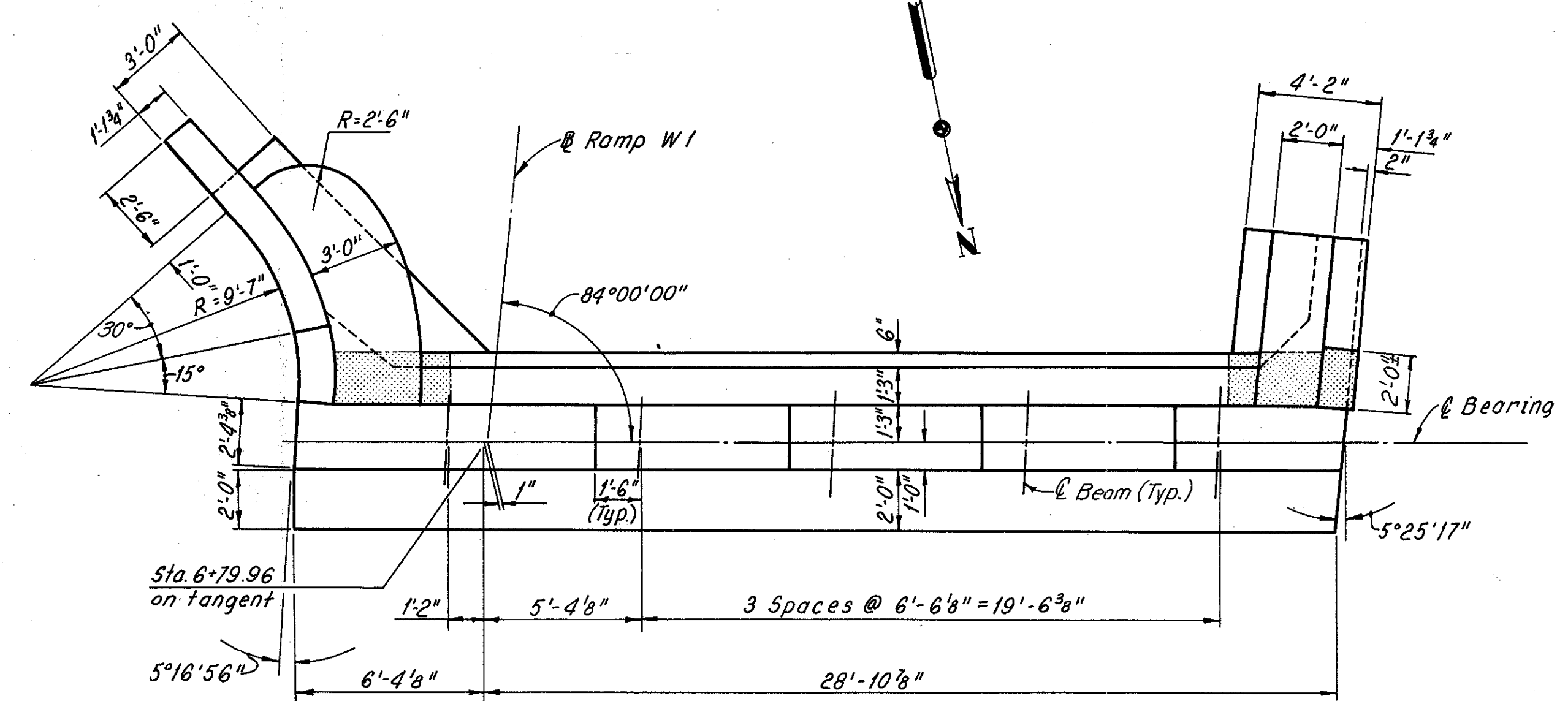
NORTH MEDIAN DRAINAGE AT PIER 4B (LOOKING SOUTH)

SOUTH CURB DRAINAGE AT PIER 4B (LOOKING NORTH)

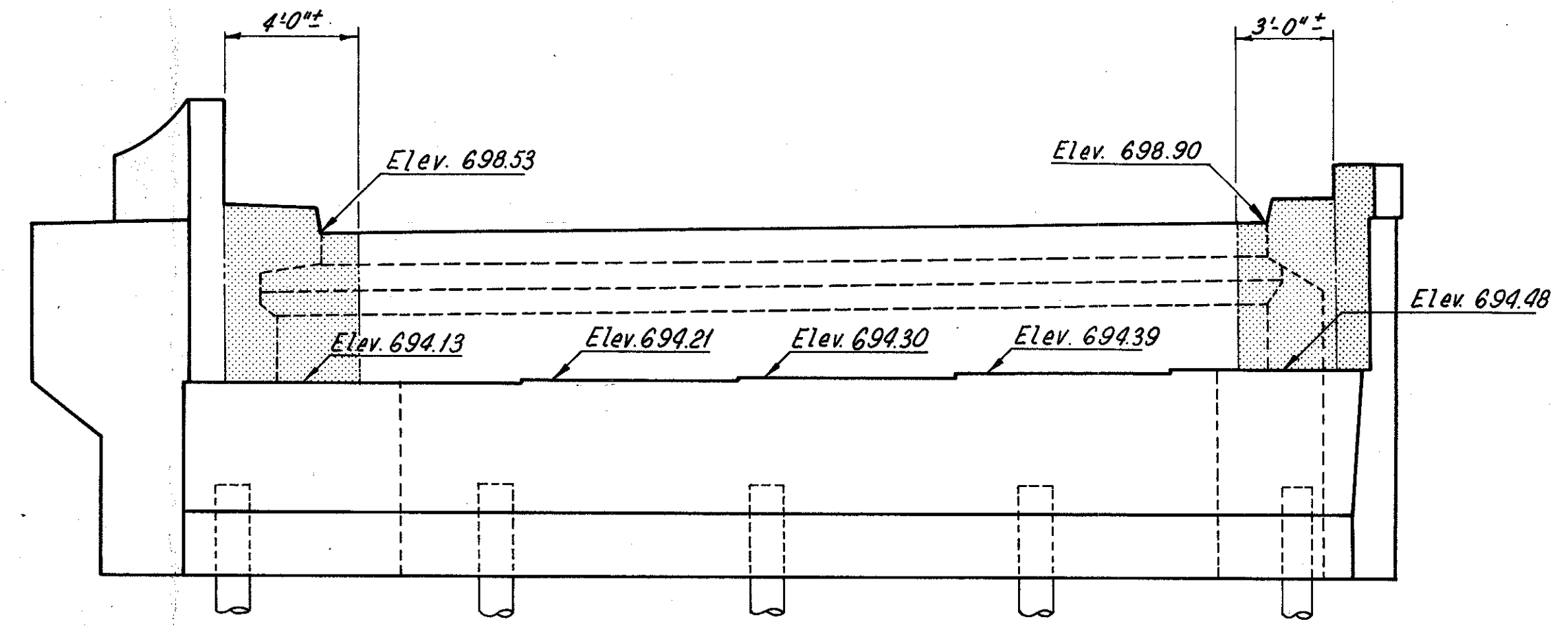


VIEW C-C AT PIERS 2B AND 4B (Similar at Piers 7B and 9B, except as noted)

HOWARD, NEEDLES, TAMMEN & BERGENOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK				
EAST APPROACH DRAINAGE DETAILS				
BR. NO. CUY-90-1524		90-1540		STA. 2+65±
90-1549		90-1549		STA. 56+00±
CUYAHOGA COUNTY OHIO				
DRAWN: K.B.	TRACED: J.W.	CHECKED: W.E.B.	REVIEWED: DATE	REVISED: DATE
DATE: 7-1-74	DATE: 7-2-74	DATE: 8-29-74		
				SHEET 21/25



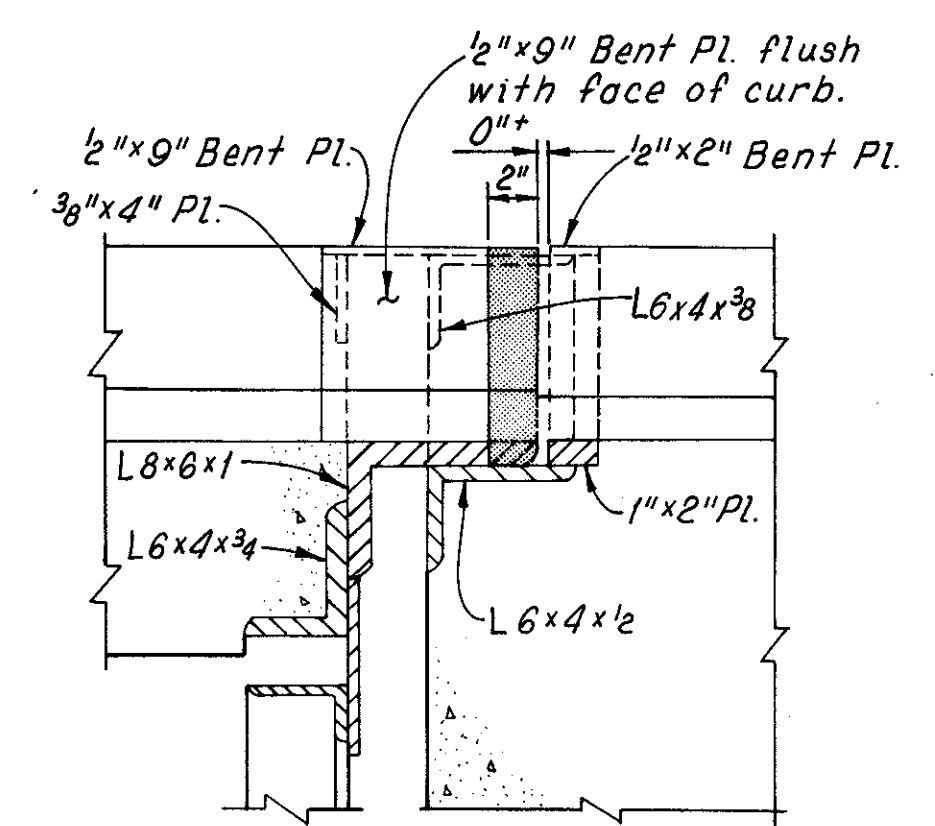
PLAN



ELEVATION

ABUTMENT W-1

Denotes approximate limits of concrete removal and replacement.



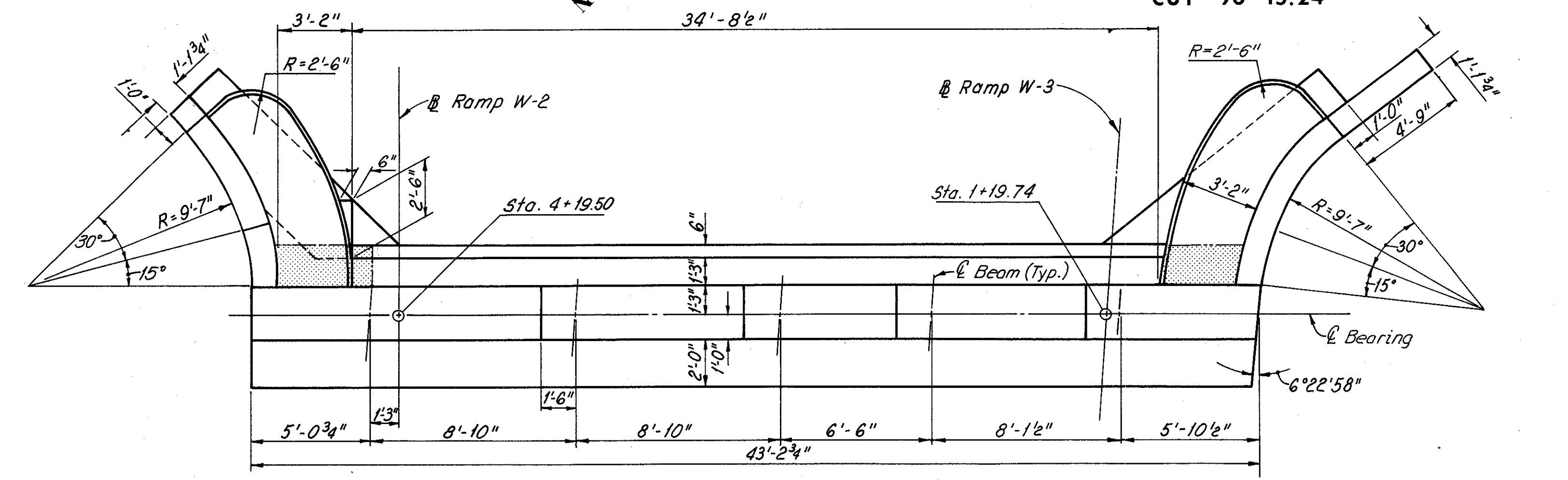
DETAIL FOR TRIMMING EXPANSION JOINT
ABUTMENT W-2

Denotes area of end dam removal.

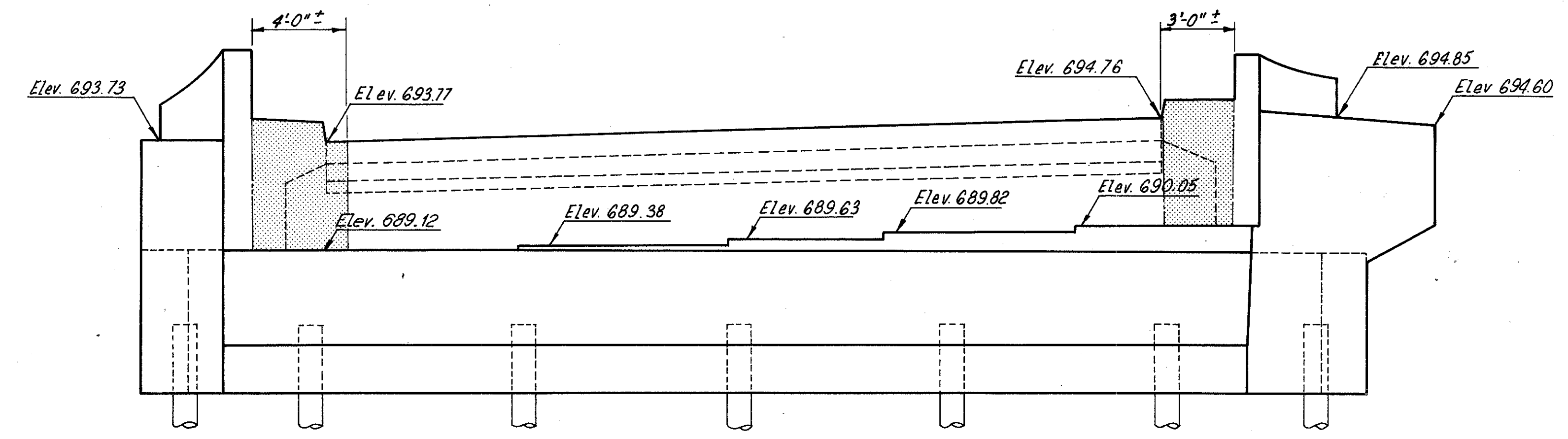
CONSTRUCTION PROCEDURE FOR TRIMMING EXPANSION JOINTS

- 1- Install pressure relief joints prior to this item of work.
- 2- Trim superstructure angle and curb plates as required to provide a 2" clear dimension from the backwall edge bar at 60°F. (See Detail). Special care shall be taken by the Contractor not to damage any portion of the end dam members which are to remain.
- 3- Where surface roughness results from trimming, the Contractor shall grind those areas as directed by the Engineer.

Note: Trimming Expansion Joint shall be included with Item 202, Portions of Structures Removed, for payment.



PLAN



ELEVATION

ABUTMENT W-2

Denotes approximate limits of concrete removal and replacement.

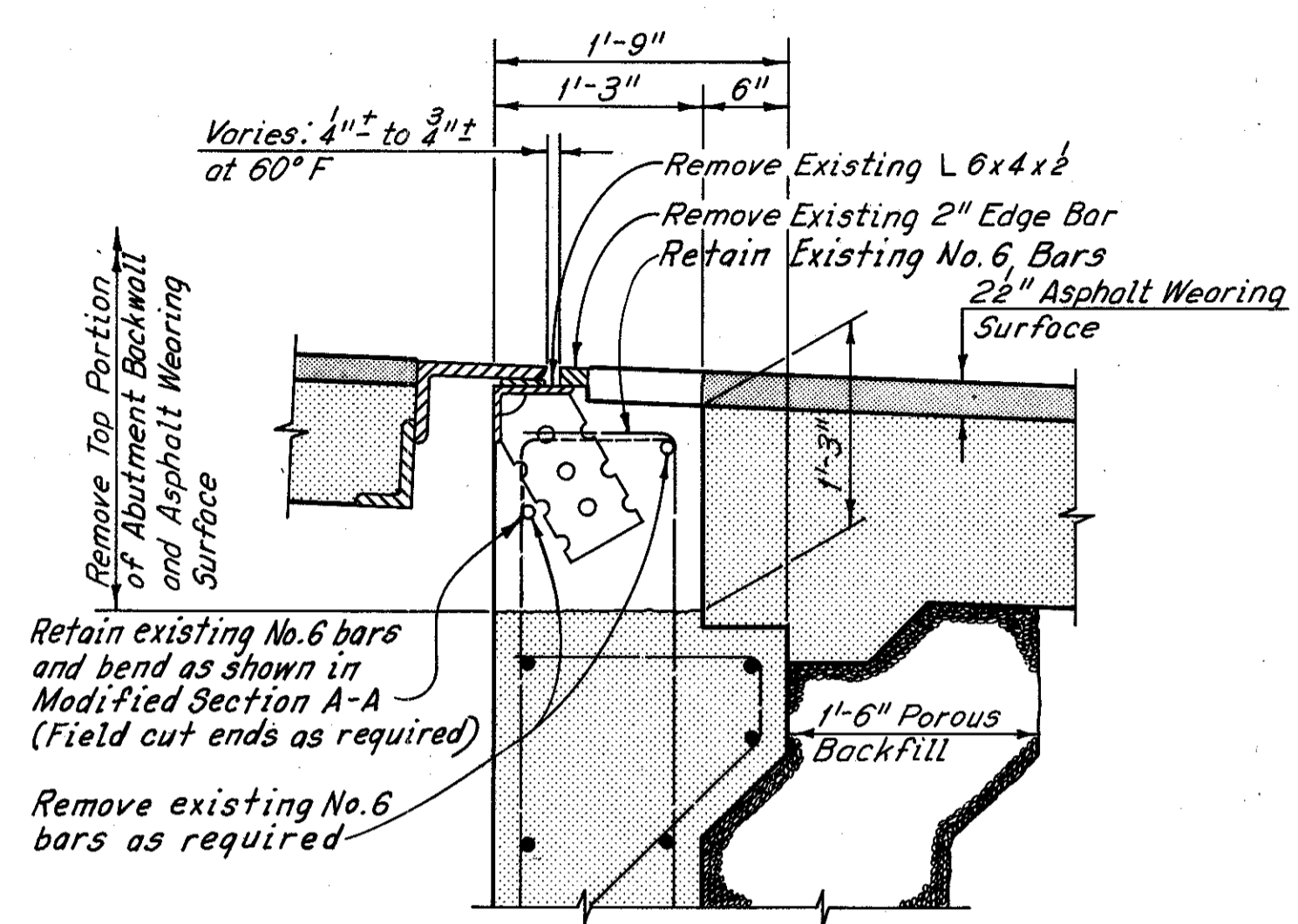
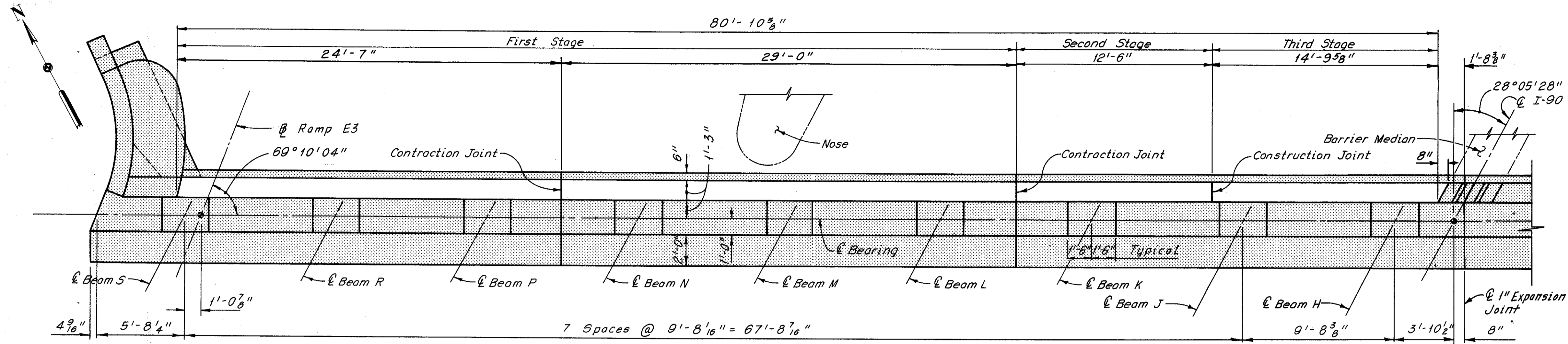
Notes:
Special care shall be taken by the Contractor not to damage any portion of the end dam members.
At the Contractor's option, existing reinforcement within the repaired sections can be removed and disposed of. Reinforcement, as removed, shall be replaced in-kind and a lap with the reinforcement that is to remain shall be provided for stress transfer. The existing and new bars shall be lapped a minimum of 30 bar diameters. No separate payment will be made to the Contractor to cover any costs of this work.
Concrete removal is included with Item 202, Portions of Structures Removed, for payment.
Concrete replacement is included with Item 511, Class C Concrete, Abutments Above Footings, for payment.

HOWARD, NEEDLES, TAMMEN & BERGENOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
REPAIR DETAILS			
ABUTMENTS W-1 AND W-2			
BR. NO. CUY.-90-1524			
90-1540			
90-1547		STA. 2+65±	
90-1599		STA. 56+00±	
CUYAHOGA COUNTY OHIO			
DRAWN SJS	TRACED SJS	CHECKED WEB	REVIEWED
DATE 7-15-74	DATE 7-16-74	DATE 8-29-74	DATE
			SHEET 22/25

FHWA REGION	STATE	PROJECT
5	OHIO	

26
30

CUYAHOGA COUNTY
CUY-90-15.24



EXISTING SECTION A-A

PROCEDURE FOR SHIMMING BEARINGS

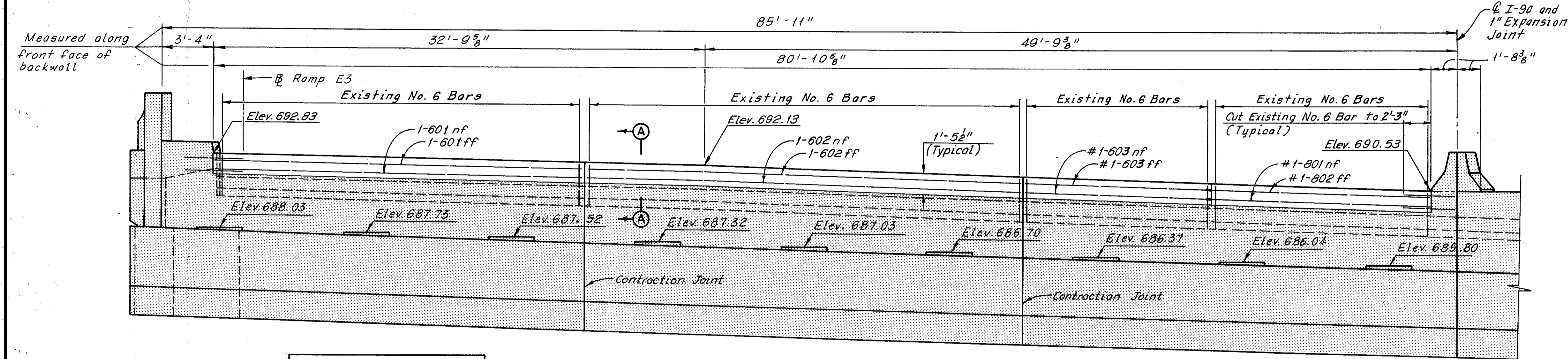
1. Raise the entire superstructure of the abutment (all beams simultaneously) until there is no contact between the sole plate and the bearing.
2. Provide shims under the base plate as required so that after the superstructure is released (all beams simultaneously) firm contact between the rocker and sole plate is established.

Note: The Contractor shall shim, to bring into contact, the bearings at Beams L, M and R.

PLAN

SUGGESTED TRAFFIC MAINTENANCE

1. First Stage - Ramp E3 shall be closed and two 11'-0" lanes of traffic shall be maintained on Southbound I-90 adjacent to the barrier median.
2. Second Stage - Ramp E3 shall be open and two 11'-0" lanes of traffic shall be maintained on Southbound I-90. (One lane adjacent to the barrier median and one lane adjacent to the Ramp E3 nose.)
3. Third Stage - Ramp E3 shall be open and two 11'-0" lanes of traffic shall be maintained on Southbound I-90 adjacent to the Ramp E3 nose.

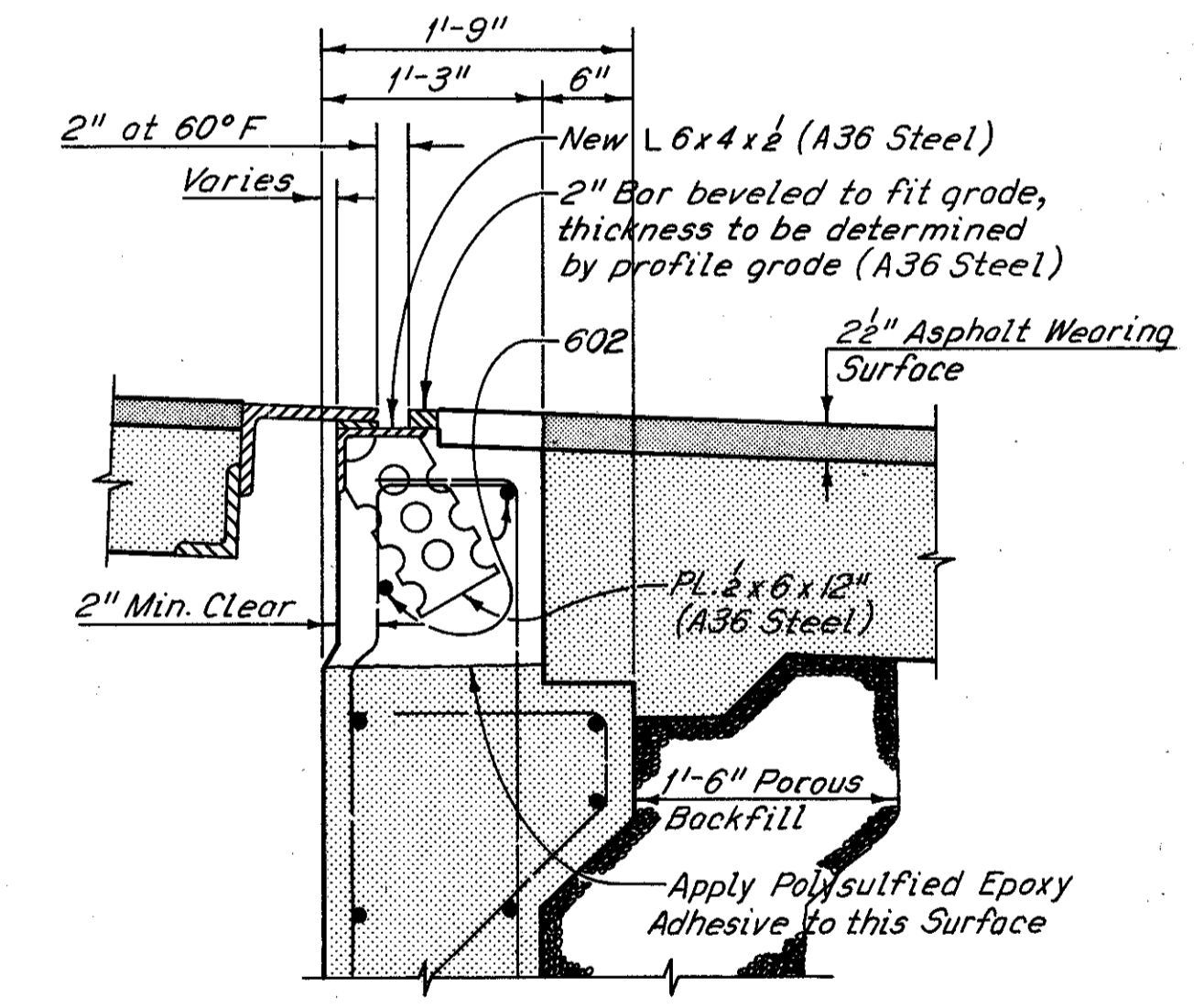


Note: All reinforcing bar marks shall be prefixed AE.

**ELEVATION
ABUTMENT I B**

Welded to threaded insert.
* Thread one end for connection to threaded insert.

Notes: Indicates existing portions of structure to remain in place.
For Reinforcement Schedule, see Sheet 25/25.



MODIFIED SECTION A-A

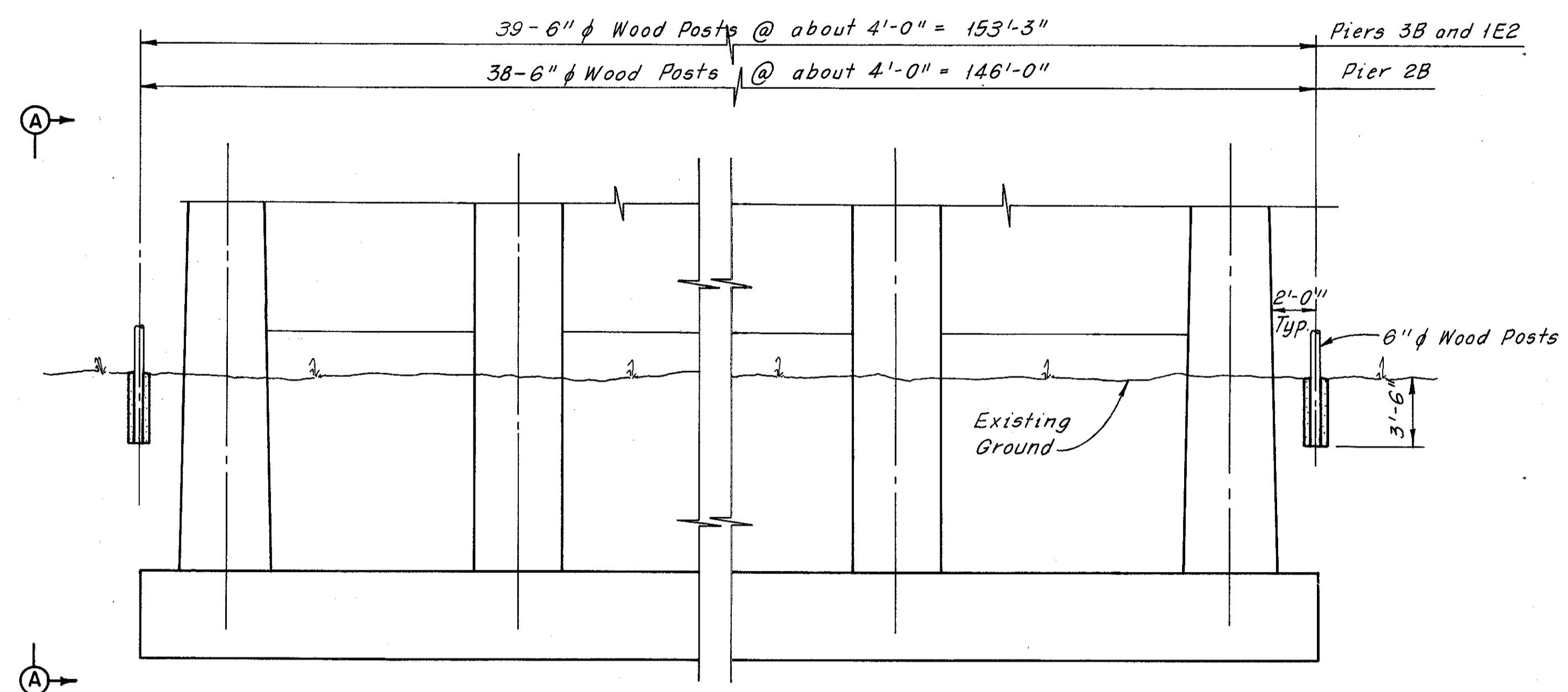
For additional details, see Ohio Standard Drawing 5D-1-69 (Sheet 1 of 4).

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
REPAIR DETAILS ABUTMENT I B			
BR. NO. CUY-90-1524		STA. 2+65±	
90-1540		90-1547	
90-1547		90-1599	
CUYAHOGA COUNTY		OHIO	
DRAWN BY DATE 7-17-74	TRACED BY DATE 7-18-74	CHECKED BY DATE 11-6-74	REVIEWED DATE
			REVISED DATE
SHEET 23/25			

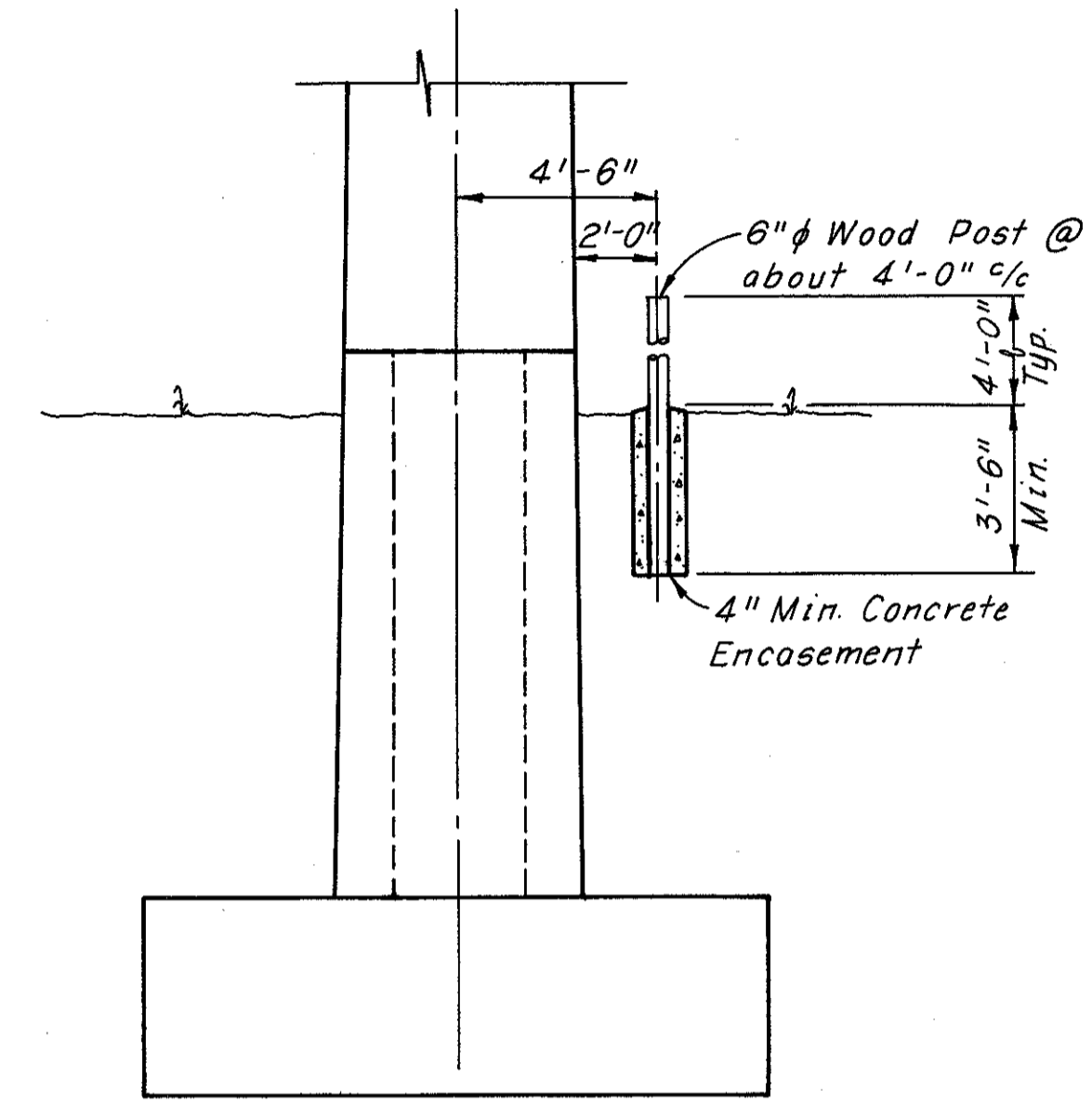
FHWA REGION	STATE	PROJECT	
5	OHIO		

27
30

CUYAHOGA COUNTY
CUY-90-15.24



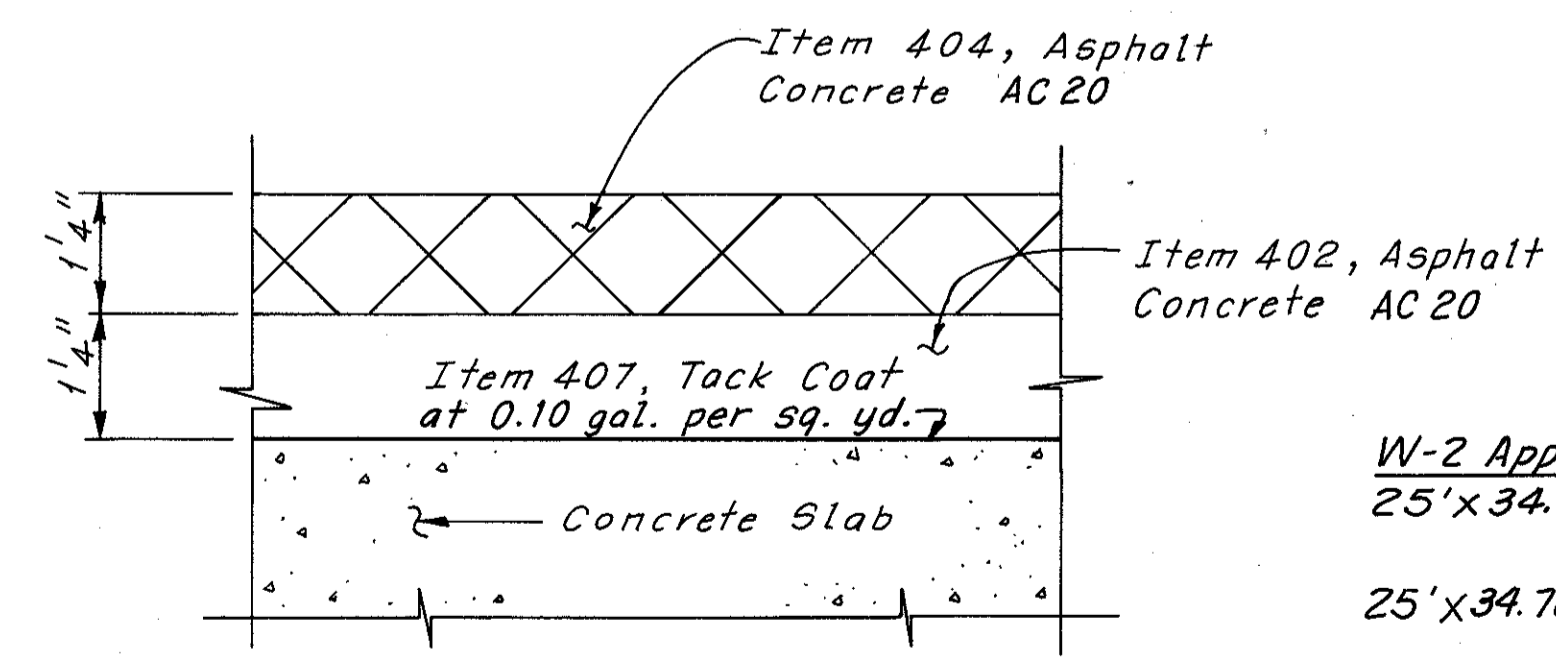
GUARD POST DETAILS FOR PIER PROTECTION
AT PIERS 2B, 1E2 AND 3B
(Looking West of Pier 2B.)
(Looking East at Piers 3B and 1E2.)



VIEW A-A

GUARD POST

Quan. to Gen. Summary = 77 Each (6" diameter wood) Guard Posts, as per plan



TYPICAL CROSS SECTION THRU NEW ASPHALT WEARING SURFACE COURSE

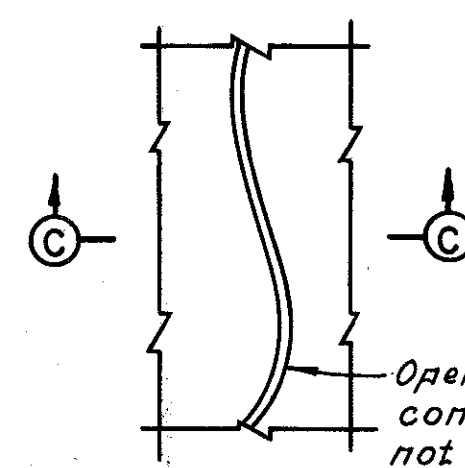
W-2 Approach Slab
25' x 34.706' x (1 1/4") = 90.2 Cu. Ft. = 3 Cu. Yds. 404 Asphalt Concrete
= 3 Cu. Yds. 402 Asphalt Concrete
25' x 34.706' x 1/10 gal. = yd² = 10 gal 407 tack coat
= 0.3 ton 407 aggregate
Quan. to Sht. 5 Gen. Summary

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
MISCELLANEOUS DETAILS			
BR. NO. CUY-90-1524		STA. 2+65±	
90-1540		STA. 56+00±	
90-1547			
90-1599			
CUYAHOGA COUNTY OHIO			
DRAWN BY AJT	TRACED BY AJT	CHECKED BY WEB	REVIEWED BY DATE
DATE 8-22-74	DATE 8-22-74	DATE 8-29-74	DATE
			SHEET 24/25

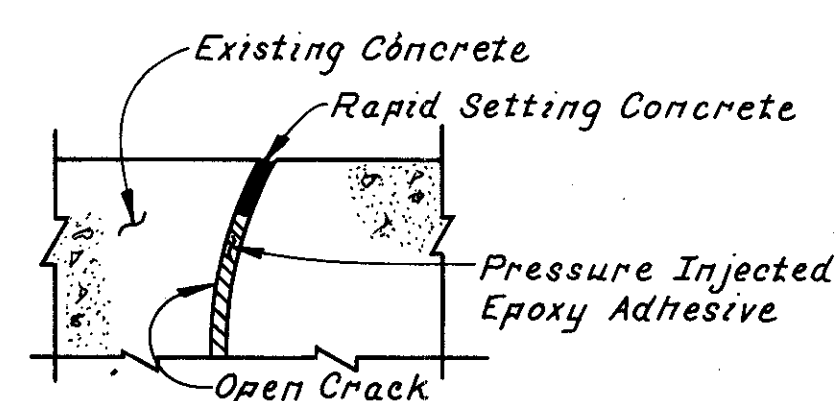
FHWA REGION	STATE	PROJECT	
5	OHIO		

28
30

CUYAHOGA COUNTY
CUY-90-15.24



OPEN CRACK

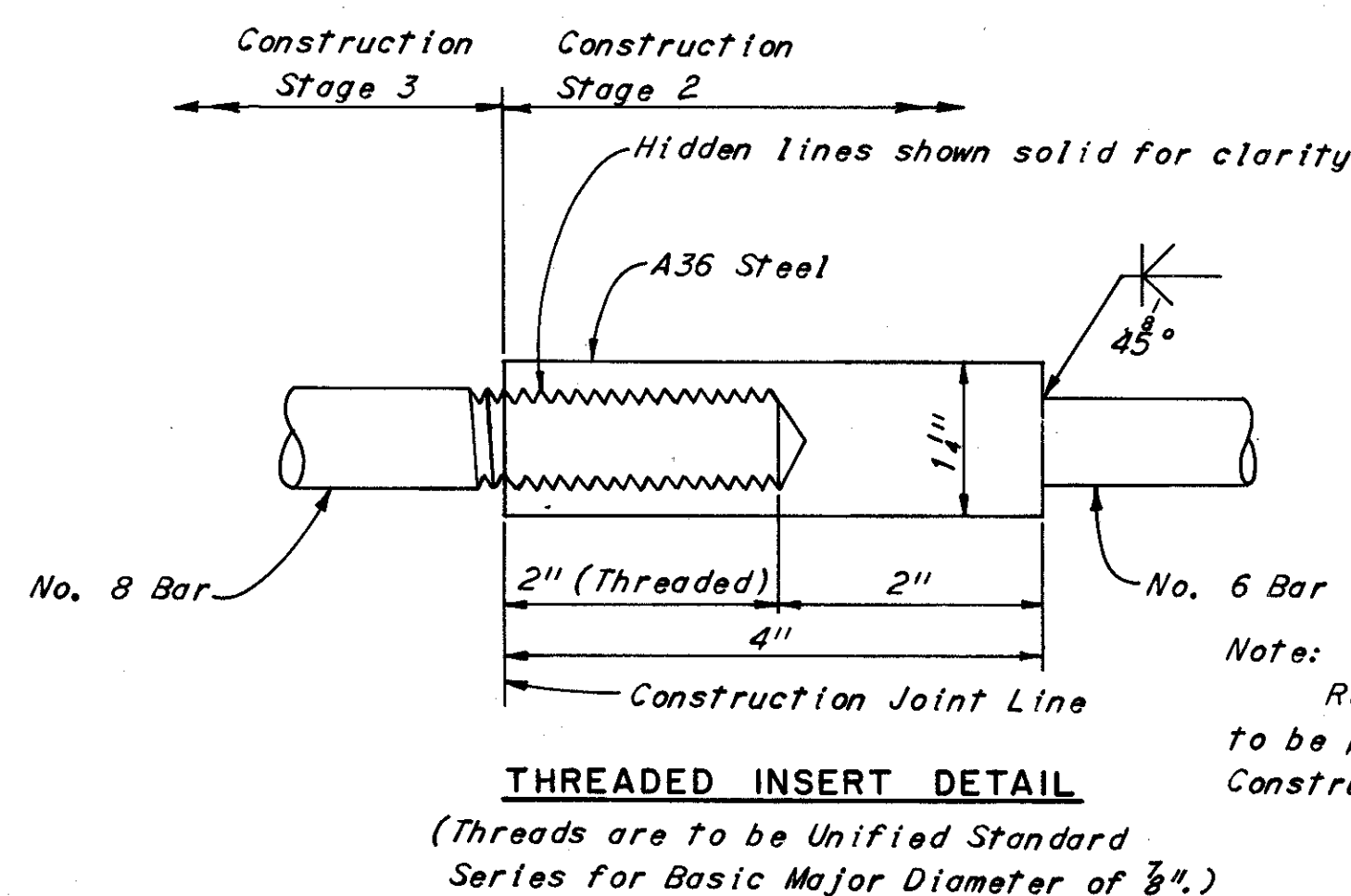


MODIFIED SECTION C-C

REPAIR OF CONCRETE CRACKS

Cracks in existing concrete shall be structurally repaired by the pressure injection of epoxy resin bonding compound. The method of repair shall consist of temporarily sealing the surface of the crack except for occasional openings, injecting the epoxy through the opening so as to completely fill the crack, and then removing the temporary seal. The method shall not deface the surface of the concrete.

The epoxy shall be 100% solids material and shall develop the strength of the concrete. In general, the repair procedure shall be similar to the method used by the Structural Concrete Bonding Division of the Adhesive Engineering Company, 1411 Industrial Road, San Carlos, California.



THREADED INSERT DETAIL
(Threads are to be Unified Standard Series for Basic Major Diameter of 3/8".)

Note: Welding shall conform to AWS D12.1-61 of the American Welding Society and 513.17 of the Construction and Material Specifications.

Note: Recess Plugs are to be provided during Construction Stage 2.

REINFORCEMENT SCHEDULE					
MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
BR. NO. CUY-90-1599					
ABUTMENT 1B					
AE601	2	24'-3"	Str.		73
AE602	2	28'-6"	Str.		86
AE603	2	12'-0"	Str.*		36
AE801	1	14'-9"	Str.†		39
AE802	1	15'-3"	Str.†		41
THREADED INSERTS					
	2				3
TOTAL WEIGHT =					278

* Weld to Threaded Inserts.
† Thread one end for connection to Threaded Insert.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

MISCELLANEOUS DETAILS

BR. NO. CUY-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

CUYAHOGA COUNTY OHIO

DRAWN C.P. TRACED C.P. CHECKED W.E.B. REVIEWED DATE 1-15-75 DATE 1-15-75 DATE 1-23-75 DATE SHEET 25/25

GENERAL NOTES

REFERENCE may be made to the construction drawings for this bridge for existing details as follows:

- Pier details at ends of truss spans
 - Project No. 448 (1956), sheet 44 of 67.
 - Project No. 567 (1957), sheet 42 of 117.
- Panel Length at piers at ends of truss spans
 - Project No. 319 (1955), sheets 18 and 26 of 122.
- Other railing panel lengths
 - Project No. 319 (1955), sheets 18 thru 26 of 122.
- Location of expansion panel points
 - Project No. 319 (1955), sheet 35 of 122.

DESIGN SPECIFICATIONS: This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway Officials, 1973, including the Ohio "Supplement" to these specifications.

DESIGN DATA:

- Design Loading AASHO paragraphs 1.19 and 1.2.11 (C).
- Steel for posts and light pole support and pier attachment - ASTM A36 unit stress 20,000 p.s.i.
- Steel for rails - ASTM A500, A501 or A36 as noted on the plans.
- High Strength Bolts - ASTM A325, galvanized.

FIELD VERIFICATION:

The Contractor shall verify by field dimensions and observation the distances between railing posts and/or light pole supports in order to determine railing support spacing and railing lengths and verify the number of posts and light pole supports involved. Also he shall verify the existing stud pattern dimensions for anchoring the base of the new posts and the slope of the sidewalk plate prior to fabrication of the new posts.

RAILING LENGTHS:

Sections of rail shall be continuous over three (3) supports (posts and/or light pole supports), that is, 25 feet long, more or less depending upon location of the supports and the opening size of the expansion sleeves.

EXISTING RAILING ANCHOR STUDS AND NUTS:

When removing existing railing the existing anchor nuts shall be salvaged for reuse and care shall be taken to preserve the studs and their threads. The studs were tack welded to the 324x90 post support and shall not be removed.

REMOVAL OF EXISTING RAILING PIPE ANCHORS AT LIGHT POLE SUPPORTS:

The pipe railing anchors welded to the light pole supports shall be burned off or otherwise removed. Care shall be exercised to avoid undercutting the light pole support plates. After removal the surfaces shall be ground smooth.

PAINTING:

Support angles 3x3x $\frac{3}{8}$ which are to be attached to the light pole supports by welding shall be galvanized prior to shipment to the bridge site. After being welded to the light post supports, all of the support and portions of the angles whose galvanizing is damaged by welding shall be cleaned to the satisfaction of the engineer, primed with one coat of shop paint and finish painted with two (2) coats of zinc rich paint.

Portions of the galvanizing on the new posts which are damaged by welding of the post to the sidewalk plate shall be painted in the same manner as the light pole supports. All painting shall be done by brushing.

GALVANIZING:

All posts and railing parts shall be galvanized in accordance with section 711.02 of the Construction and Material Specifications after all shop fabrication is completed.

FIELD WELDING shall be performed by a prequalified welder only.

ESTIMATED QUANTITIES FOR RAILING RECONSTRUCTION

The following estimated quantities have been included in the railing summary for railing reconstruction on the northbound side from station 16+17.66 to sta. 22+75.47. Work in the area shall not commence until directed by the engineer.

- Item 517 Railing removal (as per plan) 658 L.F.
- Item 517 Railing (Galvanized post in place) 74 L.F.
- Item 517 Railing, (Galvanized tubing including tapped bars, bolts mashers and sleeves) 1974 L.F.
- Item 517 Railing, (Light post support anchors and railing anchor brackets and bolts in place.) 6 Ea.

HIGH STRENGTH BOLTS:

All bolts connecting railing elements shall be $\frac{1}{2}$ " diameter and galvanized.

GROUT:

Grout shall be an expanding metallic filler similar to Embeco, or an approved equal. The voids in the existing aluminum tubing in the pier posts at the end of the truss spans shall be completely filled with grout and troweled flush with the post face. The voids under the steel railing post base plates shall be completely filled with grout after the railing erection is completed. Care shall be taken to avoid loss of grout thru the hole in the sidewalk plate through which the 324x90 post support protrudes.

PLANS OF EXISTING STRUCTURE are available for examination at the District Office in Cleveland, Ohio, or at the Central Office of the Ohio Department of Transportation in Columbus, Ohio.

SEQUENCE OF OPERATIONS

During the replacement of the railing the contractor shall, at the direction of the engineer, take all precautions necessary to protect the motorists and pedestrians using the bridge. The railing shall be replaced in a continuous operation in which the new railing is placed as the existing railing is removed. At no time during this operation shall the gap in the railing exceed two rail element lengths or approximately fifty (50) feet.

Before the contractor ceases his operations for the day all gaps shall be closed.

ESTIMATED QUANTITIES

Specified locations and usage of estimated quantities set up on this plan to be used "as directed by the engineer" shall be made a matter of record by incorporation into the final change order governing completion of this project. Estimated quantities of materials shall not be ordered for delivery to the project unless authorized by the engineer.

TYPE CODE X935

RAILING QUANTITIES (COST PARTICIPATION II)				
Item	Total	Unit	Description	
517	5420	Lin.Ft.	Railing, removal of existing as per plan	
517	606	Each	Railing, (Galvanized posts in place)	
517	16260	Lin.Ft.	Railing, (Galvanized tubing including tapped bars, bolts, washers and sleeves)	
517	58	Each	Railing (Light post support anchors and railing anchor brackets and bolts in place)	

STATE OF OHIO DEPARTMENT OF HIGHWAYS DIVISION OF DESIGN AND CONSTRUCTION BUREAU OF BRIDGES							1/2
GENERAL NOTES RAILING QUANTITIES							
BRIDGE NO CUY-90-1548 CENTRAL VIADUCT							
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED	
INNES	—	T.G.C.	GEA 2-21-75	BFG	3-20-75	11/2/75 4-14-76	

