CUY-90-14.90

PID 77332/85531

APPENDIX EX-50

CUY-090-1524 PID 03572

(Reference Document)

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

Innerbelt Bridge
Construction Contract Group 1 (CCG1)

Revision Date: 1986

L-0

FHWA REGION	STATE	PROJECT	
5	OHIO	IR-90-1(140)28	

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IR-90-1(140)28

CUYAHOGA COUNTY
CUY-90-15.24

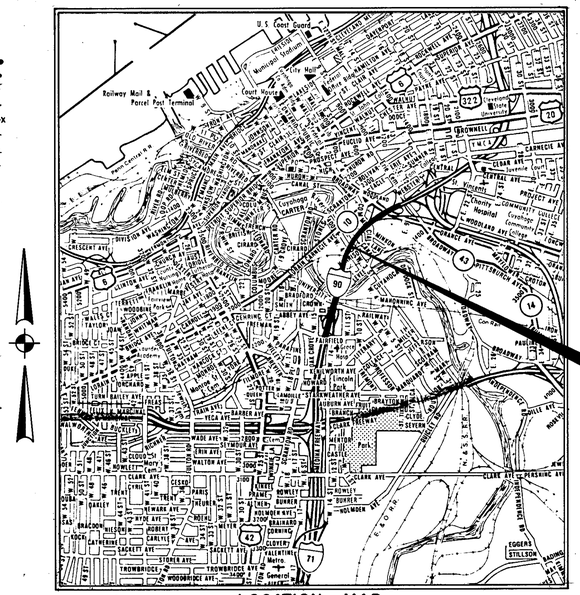
STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
BRIDGE DRAINAGE REHABILITATION
BRIDGE NO. CUY-90-15.24
CITY OF CLEVELAND
CUYAHOGA COUNTY

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

CONVENTIONAL SIGNS

COUNTY LINE
TOWNSHIP LINE
SECTION LINE
CORPORATION LINE
FENCE LINE (EXISTING) —x—x— (PROPOSED) —x—x—
CENTER LINE
TREES STUMPS (TO BE REMOVED)
UTILITY POLES TELEPHONE POWER LIGHT
LIMITED ACCESS —LA— LA
RIGHT OF WAY —RW— RW
TEMPORARY RIGHT OF WAY —T—
EXISTING RIGHT OF WAY
PROPERTY LINE —℄— (IN EXISTING FENCE)—℄—x
RAILROAD
GUARD RAIL (EXISTING) (PROPOSED)
WORK LIMITS

INDEX OF SHEETS



LOCATION MAP
SCALE IN MILES

PORTION TO BE IMPROVED
STATE HIGHWAYS
OTHER STREETS

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: Martin A Gallb
DATE: 4-10-86 DISTRICT DEPUTY DIRECTOR OF TRANSPORTATION

APPROVED: Walter J Jennings / CPA
DATE: 6-26-86 ENGINEER, BUREAU OF BRIDGES AND STRUCTURAL DESIGN

APPROVED: Wayne H. Kauble
DATE: 10-20-86 CHIEF ENGINEER, PLANNING AND DESIGN

APPROVED: Warren J Smith
DATE: 10-20-86 DIRECTOR, DEPARTMENT OF TRANSPORTATION

LINE DATA

	PROJECT	WORK
BEGIN		3+85
END		54+65
NET LENGTH	0.00	5,080.00 L.F.
	or	or
	0.00	0.962 Mi.

UNDERGROUND UTILITIES

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

SUPPLEMENTAL SPECIFICATIONS

845	2-25-86
849	12-24-85
949	12-24-85
953	8-21-80

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

CB-2-38.2-4	5-1-79	TC-35.10	8-29-84
MH-1	12-18-84		

REVISED BY O.D.O.T.
4-10-86

3572

PROJECT CUY-90-15.24
DATE OF LETTING ____ 19 ____ CONTRACT NO. ____

PREPARED AND RECOMMENDED BY
RICHLAND ENGINEERING LIMITED
Consulting Engineers
MANSFIELD, CLEVELAND, OHIO

STATE OF OHIO
DEAN A PALMER
E-37475
REGISTERED PROFESSIONAL ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR ____ DATE

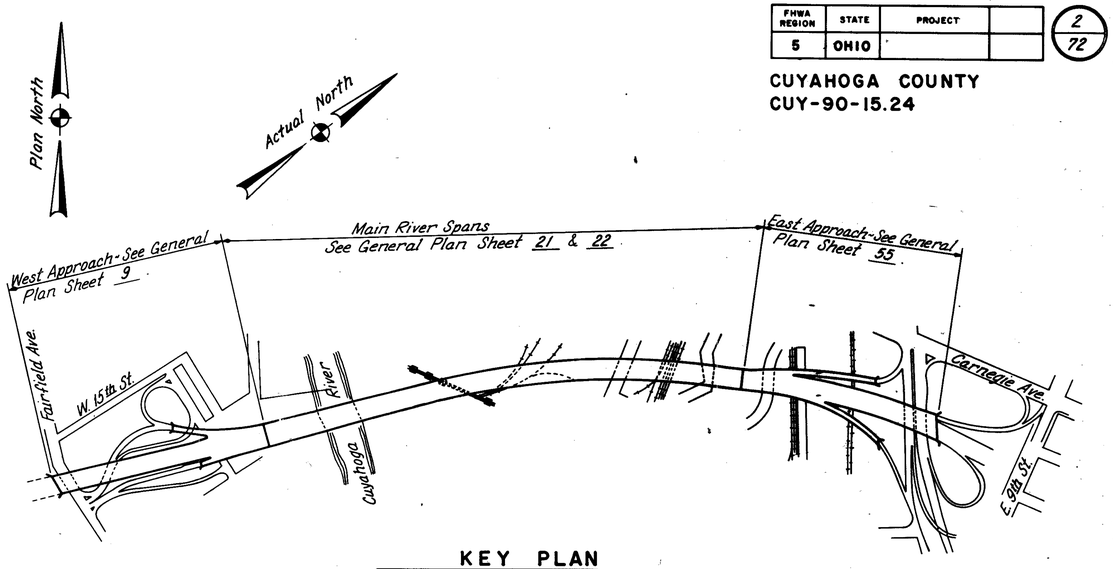
Rev 1-22-87

FHWA REGION	STATE	PROJECT		2 / 72
5	OHIO			

CUYAHOGA COUNTY
CUY-90-15.24

GENERAL SUMMARY

ITEM	TOTAL	UNIT	DESCRIPTION	WEST APPROACH	MAIN RIV. SPN.	EAST APPROACH	GENERAL
202	Lump		Portions of structure removed	Lump	Lump	Lump	
513	1600	Sq.Ft.	Replace existing 1"steel grating with new 1"steel grating, as per plan				1600
514	Lump		Field painting of existing steel, surface preparation, System "A"	Lump	Lump	Lump	
514	Lump		Field painting of existing steel, complete coat prime, System "A", as per plan	Lump	Lump	Lump	
Special	Lump		Field painting of new and exist. steel, complete vinyl intermediate tie coat	Lump	Lump	Lump	
514	Lump		Field painting of new and exist. steel, complete coat finish, System "A", as per plan	Lump	Lump	Lump	
516	43	Sq.Ft.	½" Preformed expansion joint filler	43	0	0	
516	328	Lin.Ft.	Joint sealer, 705.01, as per plan	328	0	0	
518	323	Lin.Ft.	Expansion joint flashing including supports, West Approach	323	0	0	
518	128	Lin.Ft.	Expansion joint flashing including supports, East Approach	0	0	128	
518	22	Lin.Ft.	6"ϕ Pipe downspout including specials and supports	12	0	0	10
518	2038	Lin.Ft.	8"ϕ Pipe downspout including specials and supports	109	1533	356	40
518	1,319	Lin.Ft.	Drainage collection system, Type A	0	1,319	0	
518	1,403	Lin.Ft.	Drainage collection system, Type B	0	1,403	0	
518	661	Lin.Ft.	Drainage collection system, Type C	0	661	0	
518	25	Lin.Ft.	Drainage collection system, Type D	0	0	25	
518	11	Lin.Ft.	Drainage collection system, Type E	0	0	11	
518	1,384	Lin.Ft.	Relocate reused longitudinal trough including new supports	0	1,348	0	
518	261	Lin.Ft.	New 12"x14" longitudinal trough including specials and supports	0	218	43	
518	46	Lin.Ft.	New 10"x12" longitudinal trough including specials and supports	0	0	46	
518	16	Each	Pier hopper, Type 1 or 2	0	16	0	
518	4	Each	Pier hopper, Type 3	0	4	0	
518	2	Each	Pier hopper, Type 4	0	0	2	
518	1	Each	Pier hopper, Type 5	0	0	1	
518	1	Each	New scupper including supports, as per plan	0	0	1	
519	155	SQ. FT.	PATCHING CONCRETE STRUCTURES, AS PER PLAN	40	60	55	
520	1,490	SQ. FT.	PNEUMATICALLY PLACED MORTAR, AS PER PLAN	380	560	550	
601	715	Sq.Yd.	Grouted riprap, Type 1, as per plan	468	103	144	
601	97	Cu.Yd.	Dumped rock fill, Type C	57	4	36	
604	27	Each	Catch basin, Std. No. 2-3, as per plan, Type 1, 2, 3, 4, 5 or 6	6	16	5	
SPECIAL	149,884	SQ. FT.	* SOUNDING CONCRETE BRIDGE COMPONENTS	38,167	55,776	55,941	
SPECIAL	10,505	SQ. YD.	SEALING OF CONCRETE SURFACES (EPOXY) See Proposal Note	4,241	6,197	67	
Special	1,503	Lin.Ft.	Longitudinal joint sealing, poured polyurethane with foam backup	371	0	1,132	
Special	855	Lin.Ft.	Longitudinal joint sealing, compression seal	855	0	0	
Special	1,799	Sq.Yd.	Bottom deck repair	856	0	943	
Special	Lump		* Clean out of bridge drainage system	Lump	Lump	Lump	
614	Lump		Maintaining traffic				Lump
619	Lump		Field office				Lump
624	Lump		Mobilization				Lump



KEY PLAN

* No Federal Participation.

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

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KEY PLAN & GENERAL SUMMARY

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	JPT	DHT	1/27/86	ODOT 4-10-86

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.24

GENERAL NOTES

EXISTING STRUCTURE PLANS including design plans, repair plans, and shop drawings may be examined by prospective bidders at the Ohio Department of Transportation, District 12 Office, 10100 Broadway Avenue, Garfield Heights, Ohio.

EXISTING STRUCTURE VERIFICATION: Details and dimensions shown on these plans pertaining to the existing structure have been obtained from plans of the existing structure and/or from field observations and measurements. Consequently, they are indicative of the existing structure and the proposed work but they shall be considered tentative and approximate. The contractor is referred to CMS Sections 102.05, 105.02 and 513.02.

Contract bid prices shall be based upon a recognition of the uncertainties described above and upon a prebid examination of the existing structure by the contractor. However, all project work shall be based upon actual details and dimensions which have been verified by the Contractor in the field.

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.

UTILITIES: Any relocation, protection, or necessary precautions to any utilities that may be affected by the repair work shall be paid by the Contractor. The contractor shall coordinate all this work with the proper utility company. Payment for this work shall be included in the unit price bid for the various related items of work.

SPECIAL RAILROAD REQUIREMENTS

A. GENERAL: The Contractor shall cooperate at all times with the officials of the railroad company. He shall use all reasonable care and diligence in the work in order to avoid accidents, damage or interference with the trains or the property of the railroad. The Contractor shall notify the railroad prior to starting work that may affect railroad property and facilities and shall pay the railroad company the cost of flagmen furnished by the railroad company and made necessary because of any of the Contractor's operations over or adjacent to the tracks.

No scaffold, planks or other equipment shall be suspended or erected above or within 10 feet horizontally of a rail over which trains are operating without prior written approval of the Chief Engineer, or his authorized representative, of the railroad company.

Failure to notify the railroad company as noted above shall be cause for stopping work until all provisions for protecting railroad property have been provided.

B. CONSTRUCTION CLEARANCE: A construction clearance of 8.0 feet, measured horizontally from the center of tracks, and 18.0 feet vertically from a point level with the top of the higher rail and 4.0 feet from the center of the tracks, shall be maintained at all times.

C. DEMOLITION PLAN: The Contractor shall submit demolition plans and procedures for the work area over the tracks for approval by the railroad prior to starting any demolition work within railroad right of way.

REVIEW OF DRAINAGE FACILITIES: Before any work is started on the project, and again before final acceptance by the State, representatives of the State and the Contractor, along with local representatives, shall make an inspection of the existing sewers within the work limits which are to remain in service and which may be affected by the work. The condition of the existing conduits and their appurtenances shall be determined from field observations. Records of the inspections shall be kept in writing by the State.

All new catch basins constructed as a part of the project shall be free of all foreign matter and in a clean condition before the project will be accepted by the State.

All existing sewers inspected initially by the above-mentioned parties shall be maintained and left in a condition reasonably comparable to that determined by the original inspection. Any change in the condition resulting from the Contractor's operations shall be corrected by the Contractor to the satisfaction of the Engineer.

Payment for all operations described above shall be included in the unit price bid for the pertinent 604 items of the contract.

ELEVATION DATUM: All elevations shown on these plans are in feet above the U.S.G.S. Datum plane.

FIELD OFFICE: The Contractor shall provide a suitable field office having a minimum of 400 square feet of floor space. Payment shall be at the lump sum price bid for Item 619, Field Office.

SEEDING: The Engineer shall determine areas to be seeded following the completion of the various items of work to be constructed. All costs for fertilizer, seed and mulch as per item 659 shall be considered incidental to the various pay items and no separate payment will be made unless specific areas are noted in the plans.

PORTIONS OF STRUCTURE REMOVED shall include the elements indicated in the plans and general notes and are not separately listed for payment. Items to be removed include all existing materials being replaced by new construction, and miscellaneous items that are not shown incorporated in the final construction and are directed to be removed by the engineer. The following major items are included:

Item	Approximate Quantity for Information Only	
Latex modified concrete wearing surface	650	S.F.
Concrete deck	0.4	C.Y.
Structural steel	24	Tons
Drainage pipe downspouts	2,200	L.F.
Drain troughs	4,000	L.F.
Flashing	2,100	L.F.
Hoppers	66	Each

Drainage pipe downspouts are to be removed to 1'-0" below finished grade, and the pipe end plugged.

Concrete shall be removed by means of approved pneumatic hammers employing pointed and blunt chisel tools. The weight of hammer shall be approved by the Engineer. The weight of the hammer shall not be more than 35 pounds for removal within 18-in. of portions to be preserved. Outside the 18-in. limit, a hammer heavier than 35 pounds, but not to exceed 85 pounds, may be used at the approval of the Engineer. Pneumatic hammers shall not be placed in direct contact with reinforcing steel that is to be retained in the rebuilt structure. Exposed reinforcing steel shall be cleaned by sandblasting to Grade SA-1 to remove all loose particles of concrete or rust. Existing reinforcing steel shall be cut and/or maintained as indicated in the plans, or as directed by the engineer, to serve as dowels or principal reinforcement in the re-built structure. These bars shall be cleaned to remove concrete fragments and foreign matter. Care shall be taken to preserve the bond of such dowels or principal reinforcement to the existing concrete. Where bond between existing concrete and reinforcing steel that is to be retained has been destroyed, the unbonded concrete adjacent to the bar shall be removed to a depth which will permit new concrete to bond to the entire periphery of the bar so debonded. A minimum of 1 1/2 in. clearance around the perimeter of the steel shall be provided. Damaged areas of reinforcement that are to remain shall be cut and stress transfer shall be accomplished by either a lapped or mechanical splice as approved by the Engineer. Other existing reinforcement within the removal limits shall be removed and disposed of. All necessary labor, equipment and material required to cut and clean existing reinforcing steel shall be provided by the Contractor and included with Item 202-Portions of structure removed, for payment. Lapped or mechanical splices required for stress transfer where existing reinforcement is damaged by the contractor shall be provided by the contractor at his expense.

GENERAL NOTES CONTINUED: See sheet 3A.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GENERAL NOTES

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DAP	JPS	JPS	DAP	DHT	1/27/86	C.O.S.T. 4-10-86

FHWA REGION	STATE	PROJECT	
5	OHIO		

3A/72

CUYAHOGA COUNTY
CUY-90-1524

UTILITIES

THE CONTRACTOR'S ATTENTION SHALL BE DIRECTED TO SECTION 105.06 OF THE CMS.

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

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

CITY OF CLEVELAND WATER DEPARTMENT
1201 LAKESIDE AVENUE
CLEVELAND, OHIO 44114
(216) 664-3346

CLEVELAND ELECTRIC ILLUMINATING CO.
55 PUBLIC SQUARE
CLEVELAND, OHIO 44101
(216) 623-1350

CLEVELAND PUBLIC POWER
1201 LAKESIDE AVENUE
CLEVELAND, OHIO 44114
664-4600

EAST OHIO GAS CO.
1201 EAST 55th STREET
CLEVELAND, OHIO 44113
(216) 351-2753

GREATER CLEVELAND REGIONAL TRANSIT SYSTEM
615 SUPERIOR AVENUE NW
CLEVELAND, OHIO 44113
556-5100

OHIO BELL TELEPHONE CO.
820 WEST SUPERIOR AVENUE
CLEVELAND, OHIO 44113
(216) 822-6241

ITEM SPECIAL - SOUNDING CONCRETE BRIDGE COMPONENTS

THIS WORK SHALL CONSIST OF SUPPLYING THE MATERIALS, LABOR AND EQUIPMENT NECESSARY FOR SOUNDING CONCRETE BRIDGE COMPONENTS IN ORDER THAT THE ENGINEER MAY OUTLINE THE SPALLED AND DELAMINATED AREAS TO BE REMOVED. THE CONTRACTOR SHALL SOUND THE CONCRETE COMPONENTS LISTED BELOW WITH HAMMERS AND THE ENGINEER SHALL OUTLINE ALL UNSOUND AREAS FOR CONCRETE RESTORATION. THE FOOTAGE UNDER THIS ITEM SHALL BE THE NUMBER OF SQUARE FEET OF CONCRETE SURFACE THAT ARE SATISFACTORILY SOUNDED AND ACCEPTED. THE ACCEPTED QUANTITIES OF SOUNDING WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FOOT, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY FOR SOUNDING CONCRETE BRIDGE COMPONENTS. PAYMENT WILL BE MADE AS SPECIFIED BELOW FOR SOUNDING THE FOLLOWING CONCRETE COMPONENTS.

1. ALL WEST APPROACH PIERS INCLUDING CAPS AND COLUMNS
2. ALL MAIN RIVER SPAN PIERS INCLUDING THE WEST AND EAST END PIERS
3. ALL EAST APPROACH PIERS INCLUDING CAPS AND COLUMNS

ITEM	UNIT	DESCRIPTION
SPECIAL	SQUARE FOOT	SOUNDING CONCRETE BRIDGE COMPONENTS

ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN
ITEM 520 - PNEUMATICALLY PLACED MORTAR, AS PER PLAN

THESE ITEMS SHALL BE USED AND DIRECTED BY THE ENGINEER TO REPAIR DAMAGED CONCRETE AREAS OUTLINED BY THE SOUNDING CONCRETE BRIDGE COMPONENTS WORK ITEM. GENERALLY, ITEM 520 SHALL BE USED WHERE THE SURFACE TO BE REPAIRED CANNOT READILY BE FORMED AND POURED OR THE REPAIR DEPTH IS LESS THAN 3 INCHES. ITEM 519 SHALL BE USED WHERE THE REPAIR DEPTH IS 3 INCHES OR GREATER AND THE SURFACE CAN BE READILY FORMED AND POURED. ALL SURFACES TO BE PATCHED AND THE EXPOSED REINFORCING STEEL WITHIN SHALL BE THOROUGHLY CLEANED BY SANDBLASTING PRIOR TO THE CLEANING SPECIFIED BY 519.04 AND 520.05. CLEANING SHALL PRECEDE APPLICATION OF THE PATCHING MATERIAL OR ERECTION OF THE FORMS BY NOT MORE THAN 24 HOURS.

ITEM SPECIAL - SEALING OF CONCRETE SURFACES (EPOXY)

AN EPOXY SEALER SHALL BE APPLIED TO THE EXPOSED CONCRETE SURFACES OF THE BRIDGES AS LISTED BELOW. SEE THE PROPOSAL FOR SEALER MATERIAL AND SURFACE PREPARATION REQUIREMENTS, AND APPLICATION RATES AND PROCEDURES.

1. ALL WEST APPROACH PIERS INCLUDING CAPS AND COLUMNS
2. ALL MAIN RIVER SPAN PIERS INCLUDING THE WEST AND EAST END PIERS
3. ALL PATCHED AREAS ON THE EAST APPROACH PIERS

GENERAL NOTES CONTINUED: SEE SHEET 4.

SEQUENCE OF CONSTRUCTION: The following requirements shall be met to minimize damage to the existing structure and embankments by misdirected or uncollected roadway drainage. Removal of existing drainage system downspouts, drain troughs, flashing, hoppers and supports shall be limited to no more than can be completely replaced by new drainage collection systems, downspouts, drain troughs, flashing, hoppers and supports within one month. Once removal work at a particular location begins, all other work at that location shall be diligently pursued until that new drainage system, including underground and all flashing work, is complete. Removal work at a particular location shall not begin until such time as the new materials to be installed at that location are on the job site, or proof of the materials availability for delivery has been furnished the Engineer.

Removals necessary for obtaining field measurements shall be replaced or otherwise temporarily flashed or collected to the satisfaction of the Engineer.

Partially completed work at a particular location shall not be left during a suspension of all work at any time, particularly during the winter months. The Contractor shall complete work, or provide temporary materials and installations acceptable to the Engineer, to collect and conduct roadway drainage from the bridge deck to the underground prior to a suspension of work.

The cost of performing the described work in sequence, and including temporary materials and installations, shall be included as incidental to the pertinent work items.

Revised 1-22-87

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 12 BRIDGE DEPARTMENT

3A/72

GENERAL NOTES

BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

CUYAHOGA COUNTY OHIO

DESIGNED	TRACED	CHECKED	REVIEWED	REVISED
EJA DATE 4-9-86	K.L.D DATE 4-9-86	DWL DATE 4-10-86	GWM DATE 4-11-86	ODOT 4-10-86

SHEET

GENERAL NOTES

SHOP DRAWINGS shall be furnished per 501.05 for all 518 items.

STRUCTURAL STEEL AND STEEL FOR DRAINAGE ITEMS including supports, hangers, catwalks, straps and brackets shall be ASTM A36 unless otherwise noted. Stainless steel shall be ASTM A167 or ASTM A240, Type 304.

SHOP PAINTING NEW STEEL: All new steel that is not stainless or galvanized, and is to be finished per Item Special-Field coating of new and existing steel, shall be shop painted per 514.03 and 514.04, System A, except that materials shall be the same organic zinc primer utilized for Item Special - Field coating of new and existing steel (organic zinc prime coat). Shop painting shall be included in the price bid for the applicable item.

NEW GALVANIZED STEEL shall be galvanized after fabrication per 711.02. The Contractor shall be very careful in handling the galvanized steel to minimize scratches and abrasions of the finish. Wire rope slings and metal hooks shall be padded with wood, or reinforced fabric webbing shall be used for material handling. Scratches and abrasions of the galvanized finish shall be touched up in the field by "cold applied galvanizing" as directed by the Engineer.

Specific items to be galvanized shall include downspouts, all hoppers except pier hoppers for piers 1 through 8 of the main river spans, all collectors, heads and all steel attachments shop welded to these items.

WELDING TO EXISTING STEEL: It shall be the Contractors responsibility to sample metal from existing flashing, downspouts, and/or troughs in order to determine its metallurgical properties where welding to existing material is required. The Contractor is advised that materials may vary throughout the structure depending on the date of construction and fabricator. Welding to the existing structural steel shall not be permitted without the approval of the engineer, except where detailed in the plans. The contractor shall submit to the engineer a list of electrodes and flux electrode combinations for each process that he proposed to use in welding to existing steel. All welding shall be performed in accordance with the current American Welding Society Structural Welding Code.

CONNECTION BOLTS shall be 3/4 inch diameter, ASTM A325 high strength bolts, unless otherwise noted. Connection bolts for galvanized steel members shall be galvanized, unless noted to be stainless steel. For connection of new material to existing material: 5/8" diameter cadmium plated threaded welded studs may be used in lieu of through bolting with 1/2" diameter stainless steel bolts; and 3/4" diameter cadmium plated threaded, welded studs may be used in lieu of 3/4" diameter bolts.

ADHESIVE ANCHORS shall be as manufactured by Celtite, Inc. or by the Hilti Corporation, Molly Division of Emhart Corporation, or approved equal. Anchorage to concrete shall be with 3/4" diameter anchors with a minimum embedment of 6 1/2" unless otherwise noted. Payment for adhesive anchors and installation shall be included with the pertinent pay item for the work being installed.

REPLACE EXISTING RIVET WITH BOLT: At the locations indicated on the plans, and at locations designated by the Engineer, the existing rivets shall be removed and replaced with new high-strength bolts. The sequence and the method of work shall be determined by the contractor and as approved by the Engineer. Burning through the hole will not be an acceptable method of rivet removal. The details of the Contractor's proposed method shall be submitted in triplicate, to the Engineer for approval.

The Contractor shall exercise extreme care during rivet removal operation so as not to damage the underlying connected materials. Any damage to the connected material due to the Contractor's rivet removal operation shall be rectified to the satisfaction of the Engineer at the cost of the Contractor. The holes shall be reamed to provide a hole no larger than 1/8" greater than the rivet hole. After the rivet removal, the hole and the adjacent metal area shall be cleaned to the satisfaction of the Engineer. New bolts shall be 1/16" less diameter than the reamed hole.

Payment for this work shall be included in the unit price bid for the various pay items for the work being installed.

NYLON REINFORCED NEOPRENE SHEET (NRNS): The material shall be 3/32 inch thick general purpose, heavy duty elastomeric sheet of nylon fabric encased in a neoprene polymer. The material shall be "Fairprene" number NN-0003 as manufactured by the Dupont Company, Fabrics and Finishes Department, Specialty Products Division, Wilmington, Delaware, "Wingprene Style N" as manufactured by the Goodyear Tire & Rubber Company, or approved equal.

The one ply material shall conform to ASTM D751 and the following:

Thickness	-0.093 inch ± 0.01 inch
Minimum breaking strength grab	-700 x 700 lb.
Minimum adhesion	-1" strip, 2" min. - 9 lbs.
Minimum mullins bursting strength	-1,400 psi
Heat aging after 70 hours, 180° bend with cracking	-212°F
Low temperature brittleness	-ASTM D2136
Pass flex test after 5 hours at	-minus 40°

Adhesives for splices and bonding shall be Fairprene Neoprene Adhesive NZ-5140 as manufactured by the Dupont Company, Chemlok 220/205 as manufactured by Hughson Chemicals, Lord Corporation, Erie, Pennsylvania, or approved equal. The adhesive shall be used in accordance with the manufacturer's recommendations. All surfaces where adhesive is to be placed shall be thoroughly cleaned of all rust, dirt, water, and other foreign materials before adhesive is applied. Steel surfaces shall be sandblasted. All splices shall be lapped as detailed on the plans. Pressure shall be applied to joined pieces until adhesive sets.

Fabrication, handling, splicing and installation of the NRNS shall be in strict accordance with manufacturer's recommendations.

The NRNS material, adhesive, fabrication and installation shall be included for payment as flashing or troughs, with the applicable 518 drainage item.

REPLACE EXISTING 1" STEEL GRATING WITH NEW 1" STEEL GRATING: Any existing steel grating with damage or deterioration, or otherwise deemed unusable by the engineer shall be removed and a new section of steel grating of the same size and dimension shall be installed in its place. Sections of steel grating shall be replaced entirely from original field splice to original field splice.

The new 1" steel grating shall be painted, welded steel grating as manufgactured by Borden Metal Products Company, Elizabeth, N.J.; Reliance Steel Products Company, McKeesport, PA.; or equal.

The rectangular welded grating shall be made with 1" x 3/16" bearing bars at 1 3/16" centers and twisted square cross bars at 4" centers. Material shall be ASTM A-569 steel.

Grating panels shall be fastened to support steel at a maximum spacing of 2'-0" centers. There shall be a minimum of 4 fasteners per grating panel. Fasteners shall be bolted steel universal clips or saddle clips secured by bolts or welded threaded steel studs.

All edge plates, banding, shop fabrications and fasteners necessary for a complete installation shall be included. Fabrication and installation shall be per 513.

An estimated quantity of 1,600 square feet has been included to be used at the direction of the engineer.

The cost of all labor, materials and equipment necessary for replacing existing steel grating with new steel grating including removal according to 202, shall be included in the unit price bid, per square foot of new grating installed in place of existing grating, for Item 513 - Replace existing 1" steel grating with new 1" steel grating.

GENERAL NOTES CONTINUED: See sheet 5.

GENERAL NOTES

STRUCTURAL STEEL CLEANING AND COATING:

A. AREAS TO BE COATED: Steel components in the following list shall be prepared and coated in accordance with these plans and notes:

1. All new steel that is not stainless or galvanized, including but not limited to:
   a. Expansion joint flashing supports.
   b. Drainage collection system supports and hangers.
   c. Catwalks and railings.
   d. Longitudinal and transverse troughs and supports.
2. Existing steel damaged by contractors operations such as welding, removals, scratches or abrasions.
3. *Existing rusting structural steel located within five (5) feet, each side of a vertical plane extending from the ground to the centerline of the deck expansion joints; and deck drains being flashed or collected.*
4. Existing steel that is removed from the structure and reused at new locations in the project.

All new steel to be painted shall be shop coated in accordance with Item 514.04. Shop coating of new steel is included with the particular drainage item for payment.

The painting contractor is cautioned to become familiar with other work included in these plans and coordinate his work. In general new steel shall be installed prior to beginning painting operations.

B. LIMITATIONS OF OPERATIONS: No nightime structural steel cleaning and coating operations shall be permitted. No sandblasting operations or steel coating operations shall be performed during the period beginning November 1st and ending March 31st.

The application of all three coats to an area shall in all cases be completed during the same construction season. Areas which do not receive all three coats during the same construction season shall be considered unsatisfactory and shall be resandblasted and recoated at the Contractor's expense.

C. APPLICATION: All coats shall be applied by airless spray equipment except in areas deemed by the Engineer to be inaccessible to spraying.

D. SAFETY PRECAUTIONS: The coating materials specified on this project can be hazardous to the health of the applicator if not applied as per manufacturer's instructions. The Contractor shall follow the recommendations contained on the material safety data sheet, product data sheet and the label on the paint containers. These precautions shall include the use of respirators and eye and skin protection as specified.

E. POLLUTION CONTROL: The Contractor shall take all necessary precautions to comply with pollution control laws, rules or regulations of federal, state, or local agencies.

In addition, the Engineer shall have the Contractor cease operations if the wind or other conditions are such that the surrounding environment is being detrimentally affected due to the work.

The Contractor shall direct particular attention to Section 277.11 of the City of Cleveland's air pollution code. Consultation with the City of Cleveland Division of Air Pollution Control (Telephone 216-664-3560) is required prior to implementation of work so that blast cleaning and painting procedures can be discussed and approved. Any additional cost resulting from restrictions or additions to the blast cleaning and painting operations shall be borne by the Contractor. Any penalties resulting from violation of any pollution control ordinances shall also be borne by the Contractor.

F. MATERIALS: All three coats used shall be manufactured by the same company to insure compatability of coats.

G. ITEM 514 - FIELD PAINTING OF EXISTING STEEL, COMPLETE COAT PRIME, SYSTEM A, AS PER PLAN: A Tooke Gauge shall be used to make dry film thickness measurements. When the average dry film thickness of this coat over the entire bridge is less than the specified five (5.0) mils but is at least four (4.0) mils, the contract price for this item shall be reduced in direct proportion to the percent deficiency of coating up to 20%. If the deficiency of coating is more than 20% (i.e. the average dry film thickness is less than 4.0 mils) the work for this item shall be considered unsatisfactory and shall be recoated at the full expense of the contractor, including all labor, equipment, and material.

H. ITEM SPECIAL - FIELD PAINTING OF NEW AND EXISTING STEEL, COMPLETE VINYL INTERMEDIATE TIE COAT: This item shall consist of the application of one coat of vinyl to all steel elements which received the prime coat. The total dry film thickness of this coat shall not be less than two (2.0) mils.

The color of this coat shall be white.

All work shall conform to Item 514 as modified herein.

A Tooke Gauge shall be used to make dry film thickness measurements. When the average dry film thickness of this coat over the entire bridge is less than the specified two (2.0) mils but is at least one and one-half (1.5) mils, the contract price for this item shall be reduced in direct proportion to the percent deficiency of coating up to 25%. If the deficiency of coating is more than 25% (i.e. the average dry film thickness is less than 1.5 mils) the work for this item shall be considered unsatisfactory and shall be recoated at the full expense of the contractor, including all labor, equipment, and material.

At least 24 hours but no more than five (5) days shall elapse after the application of the inorganic zinc prime coat and before the intermediate coat is applied.

The vinyl intermediate tie coat shall be as recommended by the manufacturer. It shall be suitable for use over the cured inorganic zinc silicate prime coat when applied in accordance with the manufacturer's printed instructions. It shall also be suitable for use under the vinyl finish coat.

The pigments shall be finely ground and not be livered, skinned, or settled to the degree that they cannot easily be redispersed.

The cost of all labor, materials, and equipment necessary to accomplish this item of work shall be included in the lump sum bid price for this item.

I. ITEM 514 - FIELD PAINTING OF NEW AND EXISTING STEEL, COMPLETE COAT FINISH, SYSTEM A, AS PER PLAN: The finish coat shall possess a color approaching federal color standard no. 595-16440. At least 24 hours but no more than five days shall elapse after the application of the vinyl intermediate coat and before the application of the vinyl finish coat. Surfaces shall in all cases be clean before the finish coat is applied.

The minimum dry film thickness of this coat shall be six (6.0) mils. If more than one pass is necessary to obtain the required mil thickness that cost shall be borne by the contractor. A Took Gauge shall be used to make dry film thickness measurements. When the average dry film thickness of this coat over the entire bridge is less than the specified six (6.0) mils but is at least five (5.0) mils, the contract price for this item shall be reduced in direct proportion to the percent deficiency of coating up to 16-2/3%. If the deficiency of coating is more than 16-2/3% (i.e. the average dry film thickness is less than 5.0 mils) the work for this item shall be considered unsatisfactory and shall be recoated at the full expense of the contractor, including all labor, equipment, and material.

GENERAL NOTES CONTINUED: See sheet 6.

GENERAL NOTES

EXPANSION JOINT FLASHING shall include all stainless steel and nylon reinforced neoprene sheet flashings, and all supports, connections and fasteners necessary for a complete installation which conducts the drainage leaking through the joints to the area below the structural steel.

Payment shall be at the unit price bid per lineal foot of joint flashed, including both sides of a joint, for Item 518 - Expansion joint flashing including supports.

PIPE DOWNSPOUT shall be standard weight, schedule 40 steel pipe. Elbows shall be schedule 40 welded fittings with full penetration butt welds. Elbows and downspout inlets shall be shop fabricated with the downspouts. Field splices in the downspouts shall be Victaulic coupling Style 99, Dresser coupling Style 38, or equal.

8" Pipe downspout shall have a wall thickness of 0.322 inches. 6" Pipe downspout shall have a wall thickness of 0.280 inches.

Elbows and bends shall be smooth radius or fabricated double mitered per each 45° bend. The centerline radius shall be 18" inches.

Steel materials for downspouts, including elbows and reducers, mounting brackets, couplings and all hardware shall be galvanized per 711.02 after fabrication.

Downspouts shall be supported by brackets at a maximum spacing to 5'-0" c/c unless otherwise noted.

Downspout inlets shall be included in the measured length of pipe downspout.

Downspout outlet elbows shall be directed along the lines of the grouted riprap toward catch basins as shown on the ground drainage plans.

DRAINAGE COLLECTION SYSTEM, TYPE A, B, C, D, or E shall include all flashing, collectors, heads, downspouts, troughs, hoppers, supports and connections necessary to conduct the drainage from the deck drain or joint to the outlet to the longitudinal trough or 8" pipe downspout inlet.

Connection of members shall be made with a minimum of 2 bolts 3/4" diameter, unless otherwise noted.

The Contractor may reuse portions of downspouts and transverse troughs removed from the existing structure, in the completed work. Materials to be reused shall be in good condition with no holes or deterioration. Repairs to reused members are subject to approval by the Engineer.

Catwalk, ladder and railing relocations, modifications, extensions and additions shall be included for payment as incidental to the particular drainage collection system.

New 1" steel grating shall be as specified for Item 513 - Replace existing 1" steel grating with new 1" steel grating, except that payment shall be included as incidental to the particular drainage collection system.

Payment shall be at the unit price bid, per lineal foot of deck drain or joint being collected, for Item 518 - Drainage collection system, Type A, B, C, D, or E.

LONGITUDINAL JOINT SEALING, POURED POLYURETHANE WITH FOAM BACKUP shall consist of sealing the open top median joints with bitumen impregnated foam and poured polyurethane joint sealer in accordance with these specifications, in reasonably close conformity with the plans, and manufacturer's specifications and recommendations, or as directed by the Engineer.

The 6" x 4" bitumen impregnated foam material shall be a precompressed self-adhesive joint sealant such as Emseal PSCA, Permaband 8100 or an approved equal. Emseal U.S.A., Inc. is located at 344 Mill Road in Stamford, CT 06903 and has a telephone number of (203) 322-3828. Permaband is available from Permaquik (Canada) Ltd. which is located at 3043 Universal Drive in Mississauga, Ontario L4X2E2; Telephone (416) 625-9444.

The poured polyurethane material is a two-part, cold applied chemically curing, self leveling, elastomeric, polyurethane joint sealant. It shall be "FX-551" as manufactured by Fox Industries Incorporated; "Urexpan NR-200" as manufactured by Pecora Corporation; or an approved equal.

All materials shall be stored and incorporated in the work as recommended by the manufacturer. A manufacturer's representative for each product shall be present at the job site until such time as he and the Engineer are sure that the Contractor is qualified in all aspects of barrier median joint sealing.

The barrier median faces to which the seal must adhere shall be sandblasted clean and be free of foreign material such as dirt, dust, grease, form oil, release agents and any other material detrimental to adhesion of the sealant.

Joint seal shall be installed only when the barrier median is dry and its temperature is above 50°F. The concrete surfaces shall be primed as recommended by manufacturer. The foam seal shall be removed from the packaging and its narrow edge inserted into the joint opening. The depth face with the self-adhesive backing shall be pressed against one side of the barrier median so that foam is held in place while it recovers.

At temperatures above 70°F, the material will recover in a few hours. At temperatures below 70° the recovery shall be accelerated by heating the material with an open flame, gas burner, infra-red lamp or hot-air blower.

A continuous length of joint seal shall be achieved by joining individual strips only by means of scafed joints cut at 45° or less relative to the sides of the joint. The scarfed ends must be pushed well past one another. The seal shall not be pulled or stretched so the gaps between successive lengths are prevented.

Polyurethane joint seal shall be poured over the full length of the bitument impregnated foam seal previously installed in the open longitudinal joint and shall be applied only when the barrier median is dry and its temperature is above 50°F. The poured joint sealer shall act as a second seal on top of the bitumen impregnated foam joint seal. The installed and cured material shall be the depth of the chamfer and shall be bonded to the concrete sides of the joint. Any unbonded section shall be removed and replaced at the contractor's expense. Dams as required to contain the poured sealer shall be incidental to this item of work.

The method of measurement for this item shall be the linear feet of open longitudinal joint seal on the bridge barrier median that are complete, in place and accepted.

The accepted quantities of sealed longitudinal barrier median joint shall be paid for at the contract unit price per linear foot, which price and payment shall be full compensation for preparing the surfaces, furnishing and placing all materials, supplying the manufacturer's representatives and all other material, labor and equipment necessary to complete the joint seal according to specifications. Payment will be made under Item Special - Longitudinal joint sealing, poured polyurethane with foam backup.

GENERAL NOTES CONTINUED: See sheet 7.

GENERAL NOTES

LONGITUDINAL JOINT SEALING, COMPRESSION SEAL

A. DESCRIPTION: The work shall consist of sealing the median joint at the base of the concrete barrier with an elastomeric compression seal and placing a new edge angle and latex modified concrete to patch the wearing surface removed to permit installation of the seal. All of the work shall be in accordance with these specifications, in reasonably close conformity with the plans, and manufacturer's specifications and recommendations, or as directed by the Engineer.

B. QUALIFICATION: Each lot of seals and adhesives furnished under these provisions shall be identified, shall be products which have been tested by the manufacturer or a commercial laboratory and shall comply with these provisions. Adhesives are required.

C. CERTIFICATION: Two certified copies of the qualification test results for the continuous seals, indicating the tested materials comply with these provisions, shall be submitted to the testing laboratory for approval. Sampling, if requested, will be submitted to the testing laboratory from each lot. Seal samples shall be one piece two feet long.

D. ACCEPTANCE: Material acceptance will be based upon evaluation of certified test results submitted, upon laboratory test of sampled material, or upon evaluation of both certificates and tested samples.

E. REQUIREMENTS, GENERAL: Continuous seals of the size, shape and tolerances shown on the plans shall be Watson Bowman & Acme Corp., D.S. Brown Co., Structural Accessories Inc. (Onflex), or of an approved alternate type composed of an extruded or molded vulcanized elastomeric virgin polychloroprene material conforming to ASTM D-2628 modified to omit the recovery test. The seals shall be resilient and shall not soften excessively or become brittle between the temperature of -30°F and 160°F.

Adhesives shall be stored at temperatures between 50°F and 80°F and shall be used within 270 days after the date of manufacture. Adhesives shall be Sikastix 360 manufactured by the Sika Chemical Company of Lyndhurst, New Jersey.; Fel-poxy FP-101 manufactured by the Felt Products Manufacturing Company of Skokie, Illinois; or an approved equal.

F. REQUIREMENTS, COMPRESSION SEALS: Compression seals shall conform to the pertinent provisions of AASHTO M 220 except that specimens for the low temperature recovery test shall be lightly dusted with talc on the outside surfaces only.

Each design, shape, width, depth, web and shell thickness shall be approved by the director prior to use. Drawings of the seals showing dimensions, dimensional tolerances and weight per foot shall be submitted with the request for design approval.

G. PREPARATIONS FOR INSTALLATION: To avoid the subsequent contamination of prepared surfaces, all surfaces of elastomeric seals shall be cleaned by methyl ethyl keton (MEK), toluene (T) or other approved solvent using clean disposable cloths.

All existing joint fillers and sealers shall be removed. The bonding surfaces of the steel and concrete for compression seals shall be blast cleaned. Irregularities in the concrete or steel surfaces shall be leveled by grinding. Preparation shall be accomplished not more than 24 hours prior to adhesive bonding.

H. INSTALLATION, COMPRESSION SEALS: Substrate surfaces shall be clean, dry and warmer than 45° during seal installation and adhesive curing. Supplemental heating will be permitted to attain and maintain the substrate temperature at the required temperature during installation and curing. Adhesive shall be applied liberally to both the steel, concrete and elastomeric bonding surfaces using a serrated spatula if necessary to achieve a complete and relatively uniform coating. Then the elastomeric seal shall be compressed sufficiently so that it can be inserted and allowed to expand within the joint.

Adhesive shall then be removed from the exposed joint and seal surfaces after which a small bead of adhesive, approximately 1/4 inch in diameter, shall be applied to fillet the corners formed by the outside edges of the seal and the sides of the joint.

Seals shall be installed with equipment designed or specifically adapted for the installation of elastomeric joint seals. This equipment shall not elongate the seal or cause structural damage to the completed installation.

I. POURED POLYURETHANE JOINT SEALER: shall be placed after the compression seal and before the wearing surface. Materials and installation shall be as specified for Item Special - Longitudinal joint sealing, poured polyurethane with foam backup.

J. WEARING SURFACE REPLACEMENT: A new edge angle and wearing surface shall be installed where the existing is removed. The steel shall be per 513. The wearing surface shall be per Supplemental Specification 845, except for method of payment.

K. PAYMENT: The cost of all labor, materials and equipment necessary for the complete installation of the compression seal, including surface preparations, adhesives, poured polyurethane joint sealer, and wearing surface replacement, shall be included in the unit price bid, per lineal foot of compression seal, for Item Special - Longitudinal joint sealing, compression seal.

BOTTOM DECK REPAIR

A. DESCRIPTION: The work shall consist of removing unsound concrete from the bottom of the bridge deck in the areas adjacent to the longitudinal median joint on the approach spans, and applying an epoxy coating to the concrete.

B. MATERIALS shall be a two part, solvent free, epoxy resin coating. The color shall closely match that of the concrete. The material shall be Sikagard 62 as manufactured by the Sika Corporation Lyndhust, N.J.; Epoxy 452 L.V. as manufactured by the Euclid Chemical Company, Cleveland, Ohio; or an approved alternate.

A manufacturer's representative shall be present at the job site during the application of the epoxy coating until such time as he and the Engineer are satisfied the Contractor is qualified in all aspects of applying the epoxy coating.

A. continued. Where the removal is extensive the Engineer may require an area to be patched. Such patching will be paid for as Item 519, Patching Concrete Structures, as per plan.

C. PREPARATION: All loose and disintegrated concrete shall be removed from the areas to be repaired in such a manner and to such an extent as to expose a solid concrete surface. The Engineer will sound the area to insure that only solid concrete remains. The contractor shall leave his ladders, platforms, or scaffolds in place for a sufficient length of time and in such manner to permit the Engineer to sound the concrete.

Concrete may be removed by chipping or hand dressing. Chipping hammers shall not be heavier than the nominal 35 pound class. Care shall be used in working around reinforcing steel so as not to damage or debond the steel, or to shatter the concrete around it.

Cleaning shall precede application of the coating by not more than 24 hours. The surface to be coated and exposed reinforcing steel shall be thoroughly cleaned by sandblasting to grade SA-1, followed by an air blast. It may be necessary to use hand tools to remove scale from the reinforcing steel. Surfaces shall be made free of spall, laitance and all traces of foreign materials.

The preparation work shall not begin until the median joint is sealed per Item Special-Longitudinal joint sealing, neoprene sheet or compression seal. The paint coating on the adjacent structural steel shall be protected from the sandblasting operations.

D. APPLICATION: The epoxy shall be applied to the concrete surfaces by brushing, under conditions and in the manner specified by the manufacturer. Two coats shall be applied at the rate of 200 square feet per gallon for each coat. The first coat shall be tinted to appear different in color than the second coat. The color of the second coat shall closely match that of the concrete.

E. PAYMENT: The cost of all labor, materials and equipment necessary for the coating of the concrete including removals and surface preparation, shall be included in the unit price bid per square yard of concrete surface coated, for Item Special - Bottom deck repair.

GENERAL NOTES CONTINUED: See sheet 8.

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CUYAHOGA COUNTY
CUY-90-15.24

GENERAL NOTES

CLEANOUT OF BRIDGE DRAINAGE SYSTEM: This item consists of removing all dirt and debris from the roadway deck near the curb and median, sidewalk areas, scuppers, cross drains, drainage troughs, collection boxes, hoppers, horizontal conductors, downspouts, underground storm sewers and manholes to the main city storm sewers or pipe outlet. After the dirt and debris are removed, the entire system shall be flushed out with clean water making certain the water flows smoothly to its outlet.

The Main River Span piers No. 1 through 8, both sides of the bridge have various levels of water accumulated inside of the hollow concrete structures. The contractor shall pump or otherwise drain all of the water out of the piers at the completion of the project. The cost of removing the water shall be incidental to this Item.

Locations of existing underground sewers shown on the plans have been determined from construction drawings and field observations. Some inaccuracies are expected. Existing manhole covers that are buried shall be excavated for access for inspection and cleaning. The manholes shall be left exposed except where the Engineer determines a hazard may exist, in which case the Contractor shall fill and grade the area. Any additional cost resulting from variation from plan information, for excavating manhole covers, or for filling and grading is the responsibility of the Contractor and no additional payment will be awarded.

The Contractor shall provide necessary equipment for the purpose of examining the existing bridge drainage systems. The Contractor's superintendent shall accompany the Engineer in making a detailed examination prior to beginning work and again at the completion of the work. No separate payment will be made to the Contractor to cover any costs of this examination.

All dirt and debris shall be removed from the bridge site and properly disposed of.

The cleanout of the bridge drainage system shall not begin until all other work under this contract is completed, including painting.

The cost of all labor, materials and equipment necessary to complete the cleanout of the bridge drainage system shall be included in the lump sum price bid for Item Special-Cleanout of bridge drainage system.

MAINTAINING TRAFFIC

A. GENERAL PROVISIONS:

1. Traffic shall be maintained at all times on I-90, without interruption during construction of the work. The Contractor shall set up and operate his equipment in such a manner as to minimize encroachment upon the traveled width of pavement.

2. The lane closures shown on sheet no. 72 shall be in effect between the hours of 9:30 a.m. to 3:00 p.m., Monday thru Friday only and the contractor shall so schedule his operations to strictly observe these limitations. Lane closures on Saturday, Sunday, and during night time hours may be permitted subject to the approval and direction of the Engineer.

3. When constructing the proposed scupper on the east approach, a 4'x4' plate shall be bolted over the opening each day prior to reopening the roadway to traffic. The plate and hold down bolts shall be as shown on sheet no. 61.

4. The Contractor shall furnish all material, labor and equipment necessary to maintain traffic in accordance with the preceeding requirements.

B. EQUIPMENT AND MATERIAL STORAGE: In order to provide for the safety of the traveling public, the Contractor's attention is directed to the following:

1. Only construction vehicles and equipment will be allowed on the bridge. No private vehicles will be allowed at any time.

2. Prior to removing the lane closure signs and barrels each work day, the contractor shall remove all equipment and material from the bridge to an area at least 30 feet from the traveled edge of pavement or behind permanent guardrail or barriers.

3. The above stipulations shall apply for all work areas on the bridge. The above procedures shall be in addition to Item 614.03, Traffic Control, paragraph five. Exceptions to the above procedures shall not be made except as approved in writing by the Director.

The cost of complying with these safety procedures shall be included in the lump sum bid for Item 614, Maintaining Traffic.

C. TRAFFIC CONTROL MATERIALS

1. Signs: Sign dimensions and specifications, including letter sizes, shall be as provided in the "Manual", or in sign design drawings provided by the Department of Transportation. The signs shall be subject to approval of the Engineer prior to the start of the project.

2. Sign Supports: Sign supports shall be sufficient size and height as to support the signs at the height indicated in the "Manual" on plate C-1. Supports shall also be adequate in mass and stability to prevent the signs being blown over by wind or vehicular-generated air turbulence.

3. Drums: Drums shall be approximately 36" in height and a minimum of 18" in diameter. The markings on drums shall be horizontal, circumferential, orange and white reflectorized stripes four to eight inches wide, using a material that has a smooth, sealed outer surface which will display the same approximate size, shape and color day and night. There shall be at least two orange and two white stripes on each drum. If there are nonreflectorized spaces between the horizontal orange and white stripes, they shall be no more than two inches wide. Drums shall be filled one-third full of water to insure stability or ballasted as approved by the Engineer. Payment for drums shall be included in the lump sum price bid for Item - 614 Maintaining Traffic.

4. Flashing Arrow Barricade: Whenever any part of the traveled surface is closed, the motorist shall be warned and diverted by the Contractor through the use of a Flashing Arrow Barricade. The Contractor shall refer to TC-35.10, and the provision set forth in the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways, current edition, for all information regarding furnishing, maintaining, use of, and placement for Flashing Arrow Barricades.

5. Lighting Devices: Flashers shall be 12 volt battery-operated models with 7 inch diameter yellow lenses illuminated by rapid intermittent flashes of short duration and shall be placed on all signs at all times.

6. Cones: Standard rubber or plastic cones shall be used. Cones shall be at least 36" high and shall be predominantly orange in color. All cones shall have weighted bases.

D. PAYMENT: Unless otherwise noted for separate payment, all materials, labor, equipment and tools necessary to accomplish the required traffic maintenance shall be included in the lump sum bid for Item 614 - Maintaining Traffic.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GENERAL NOTES

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

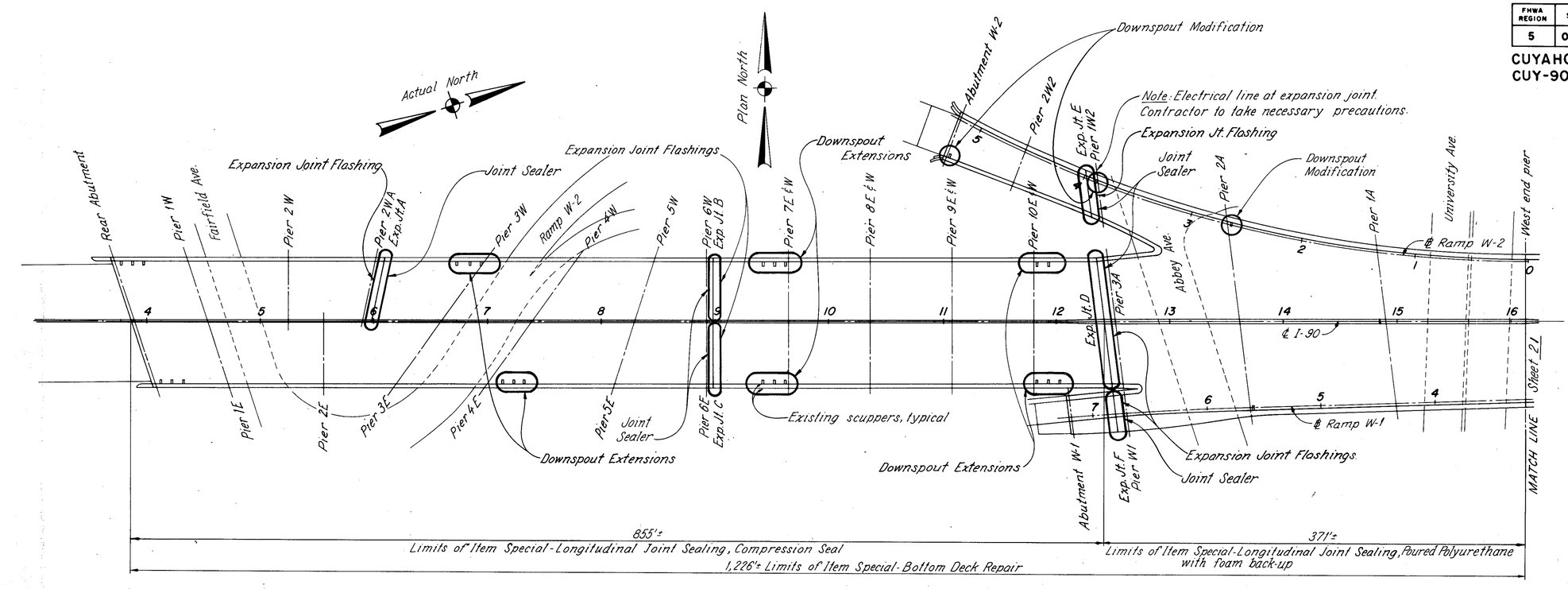
CUYAHOGA COUNTY — I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DAP	JPS	JPS	DAP	DHT	1/27/86	

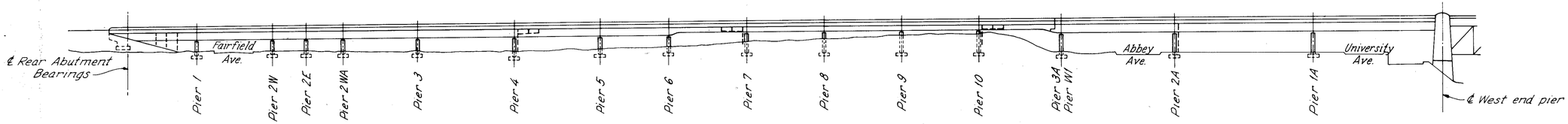
FHWA REGION	STATE	PROJECT	
5	OHIO		

9
72

CUYAHOGA COUNTY
CUY-90-15.24



PLAN



ELEVATION

NOTES

REMOVAL DETAILS: See sheet 10.

DOWNSPOUT EXTENSION DETAILS: See sheet 11.

EXPANSION JOINT FLASHING DETAILS: See sheet 12 thru. 16.

BOTTOM DECK REPAIR DETAILS: See sheet 17.

LONGITUDINAL JOINT SEALING DETAILS: See sheet 17.

GROUND DRAINAGE DETAILS: See sheet 18 thru. 20.

DOWNSPOUT MODIFICATIONS: See sheet 20.

JOINT SEALER DETAIL: See sheet 13.

UTILITIES: See sheet 18.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GENERAL PLAN
WEST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY — I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HEW	JLS	JLS	DAP	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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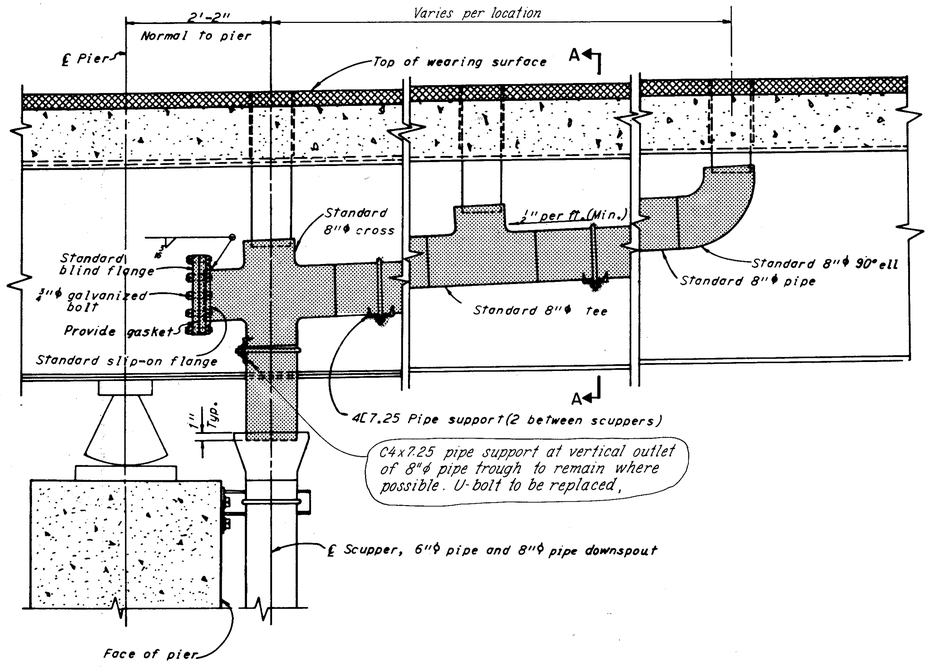
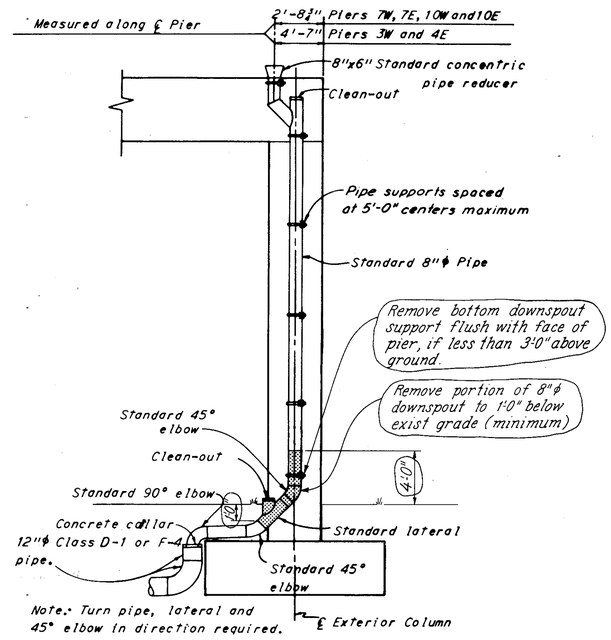
CUYAHOGA COUNTY
CUY-90-15.24



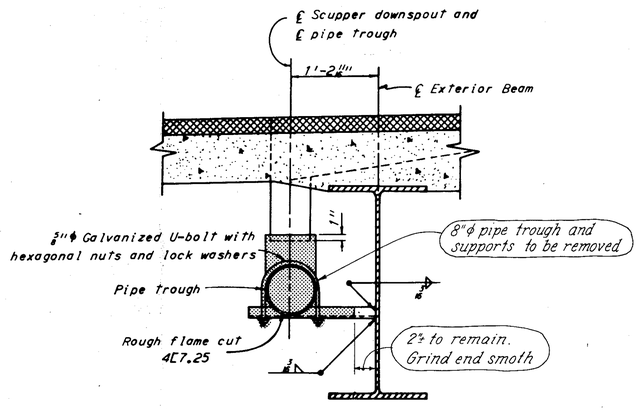
COLLECTOR SYSTEM AT PIERS



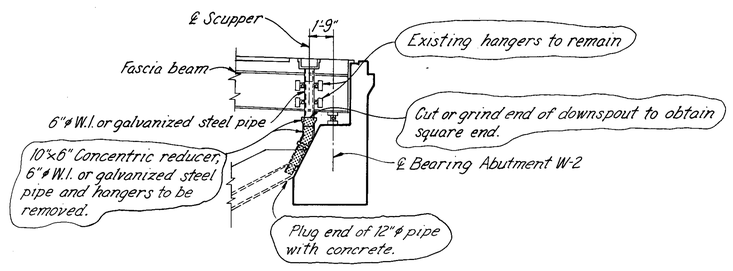
DOWNSPOUT AT PIERS

LEGEND

Indicates existing drainage materials to be removed. Contractor to dispose of removal materials unless otherwise shown on plans or directed by the Engineer.



SECTION A-A



COLLECTOR SYSTEM AT ABUTMENT W-2

NOTES

MATERIALS shown are existing. Work to be done under this project shown in (captions). Dimensions and notes otherwise shown are from original design plans for information only.

STEEL PIPES: The 6"ϕ and 8"ϕ standard weight pipes, including specials are wrought iron pipe or hot-dipped galvanized. The pipe joints for downspouts and collector systems are made by welding or by a clamp type coupling with a ring gasket.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

REMOVAL DETAILS WEST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	JPS	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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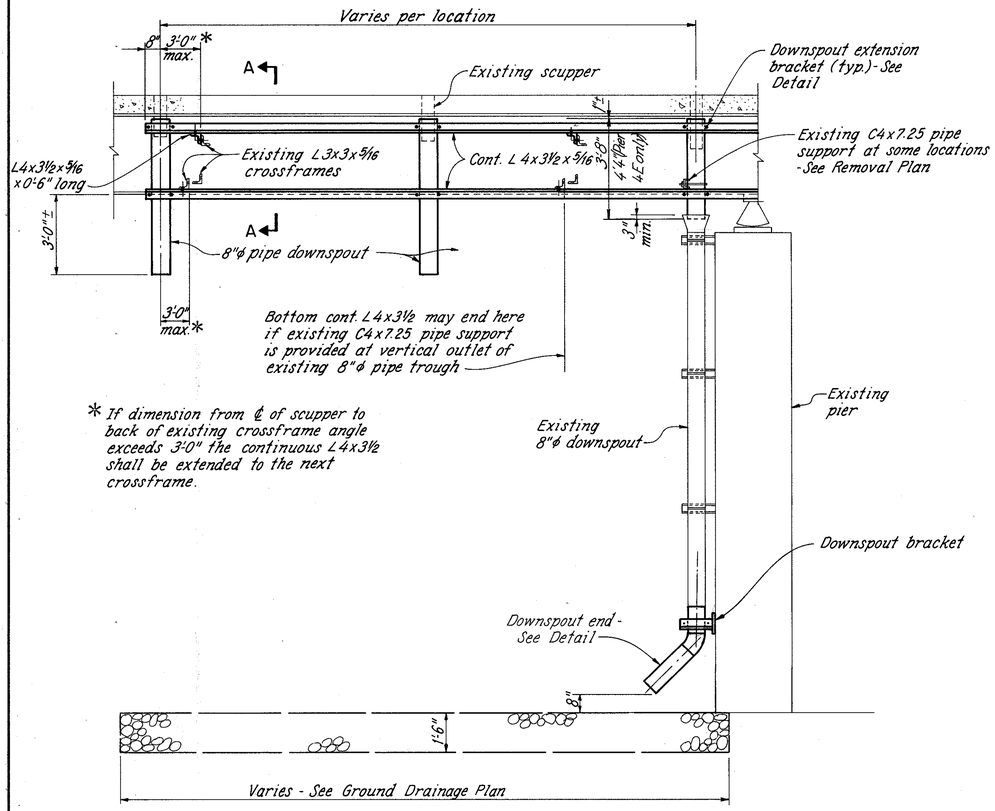
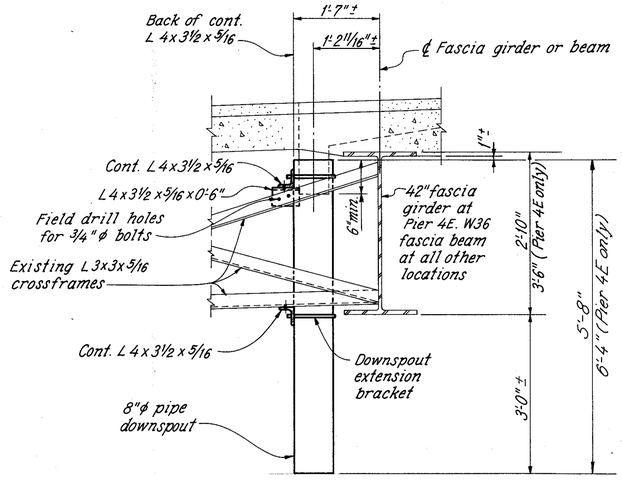
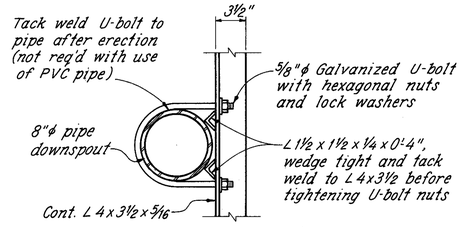
CUYAHOGA COUNTY
CUY-90-15.24



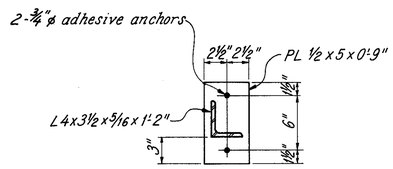
DOWNSPOUT EXTENSION TYPICAL ELEVATION



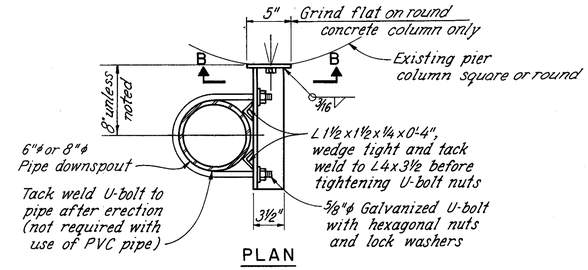
SECTION A-A



DOWNSPOUT EXTENSION BRACKET



SECTION B-B



PLAN

DOWNSPOUT BRACKET AT PIER

NOTES

REMOVAL PLAN: See sheet 10.

GROUND DRAINAGE PLAN: See sheet 18.

DOWNSPOUT END DETAIL: See sheet 20.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DOWNSPOUT EXTENSION DETAILS WEST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

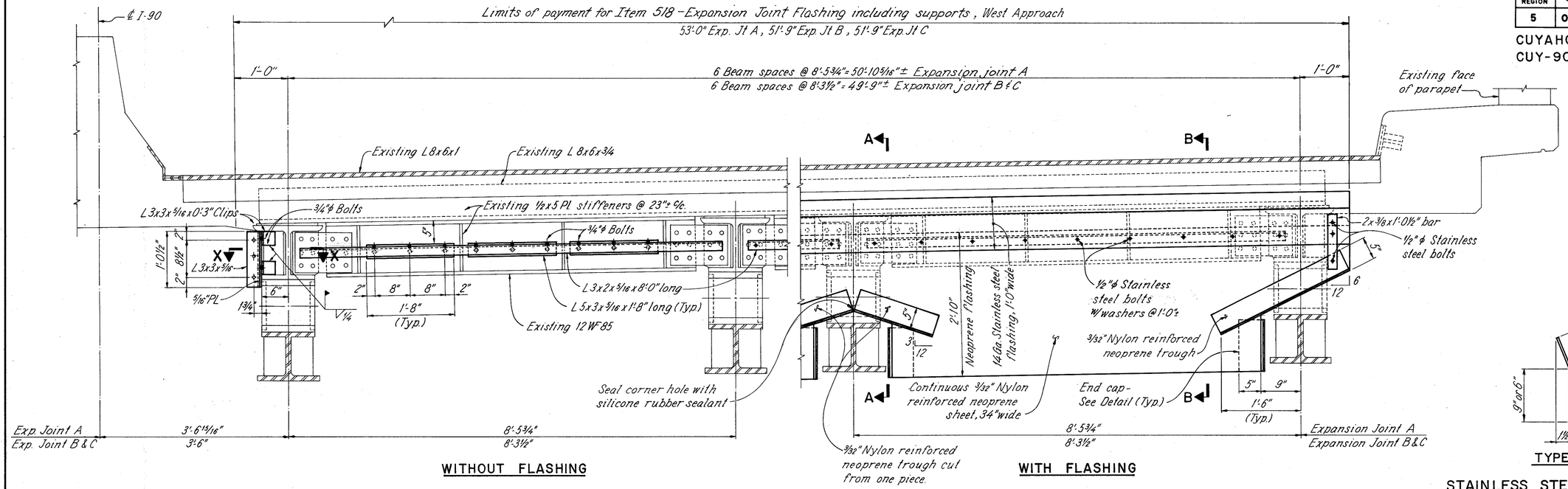
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	JPS	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

12/72

CUYAHOGA COUNTY
CUY-90-15.24

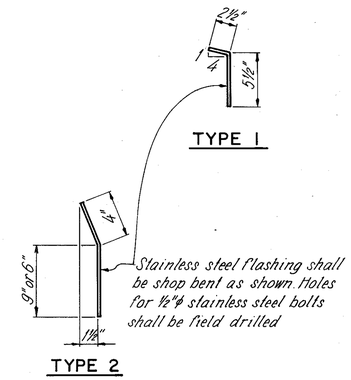


WITHOUT FLASHING

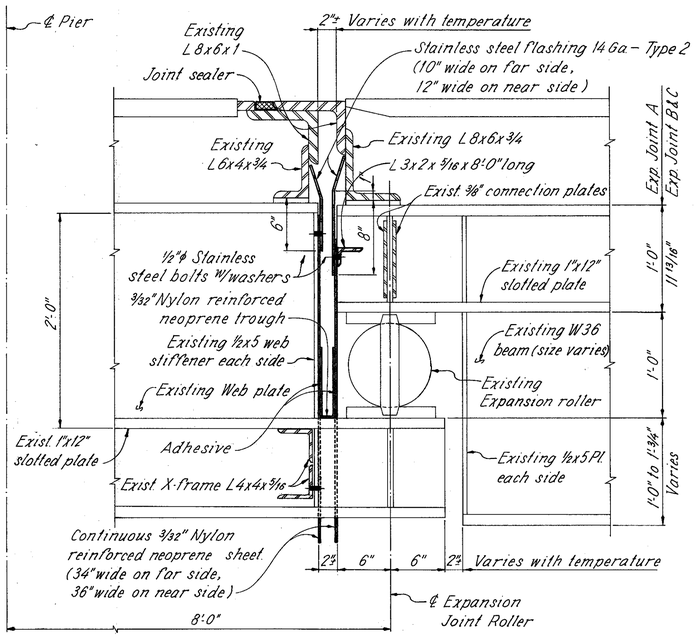
WITH FLASHING

TYPICAL SECTION THRU. JOINT

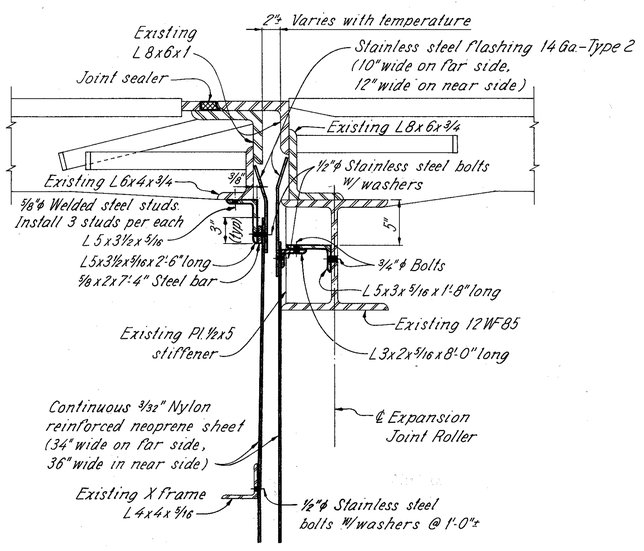
LOOKING TOWARD EXPANSION ROLLER



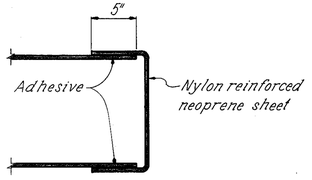
STAINLESS STEEL FLASHING DETAILS



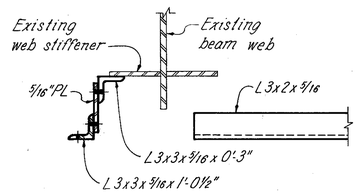
SECTION A-A



SECTION B-B



END CAP DETAIL



SECTION X-X

NOTES:

EXPANSION JOINT FLASHING INCLUDING SUPPORTS, WEST APPROACH: See General Note sheet 6 for pay item description.

JOINT SEALER DETAIL: See sheet 13.

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

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FLASHING DETAILS EXPANSION JOINTS A, B & C WEST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	KH	KH	JPT	DHT	1/21/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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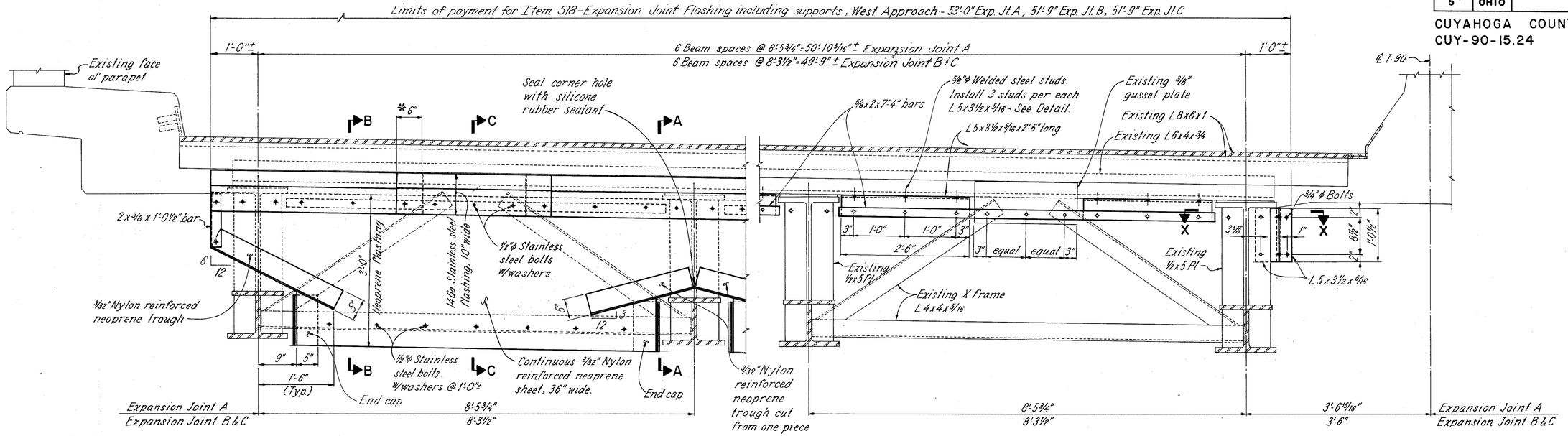
72

CUYAHOGA COUNTY
CUY-90-15.24

* Overlap in stainless steel flashing each side of existing gusset plate

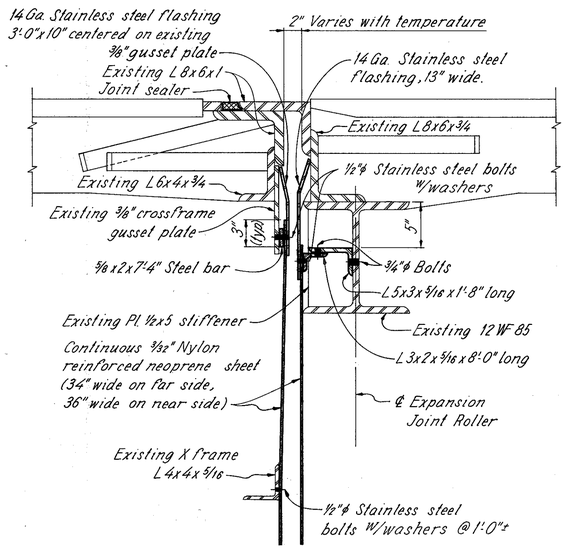


WITH FLASHING

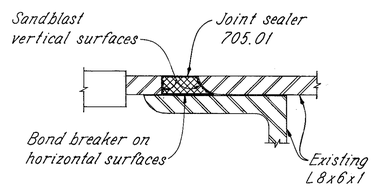
WITHOUT FLASHING

TYPICAL SECTION THRU. JOINT

LOOKING AWAY FROM EXPANSION ROLLER

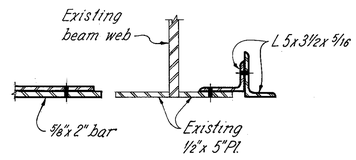


SECTION C-C



JOINT SEALER DETAIL

JOINT SEALER: *Sliding plate type expansion joints shall be filled with a hot applied bridge deck waterproofing material which also meets the requirements of 705.01. Sandblast vertical surfaces and wipe clean. Seal joint before rust forms. If rust forms, sandblast again. Use bond breaker on the horizontal surfaces.*



SECTION X-X

NOTES:

SECTION A-A & B-B: *See sheet 14.*

ADDITIONAL NOTES: *See sheet 12.*

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

FLASHING DETAILS EXPANSION JOINTS A, B & C WEST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

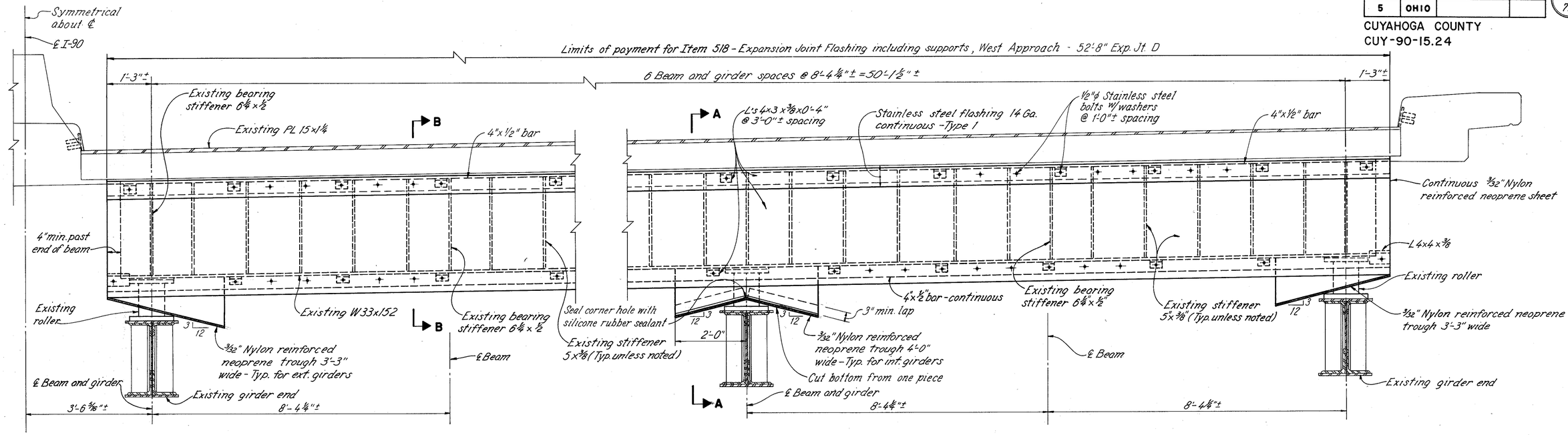
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	KH	KH	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

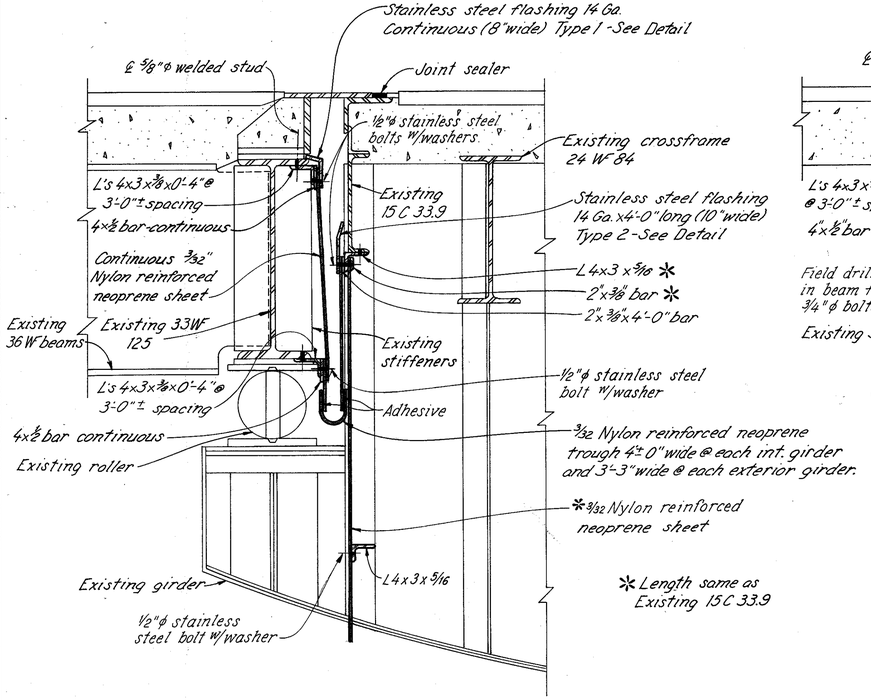
14
72

CUYAHOGA COUNTY
CUY-90-15.24

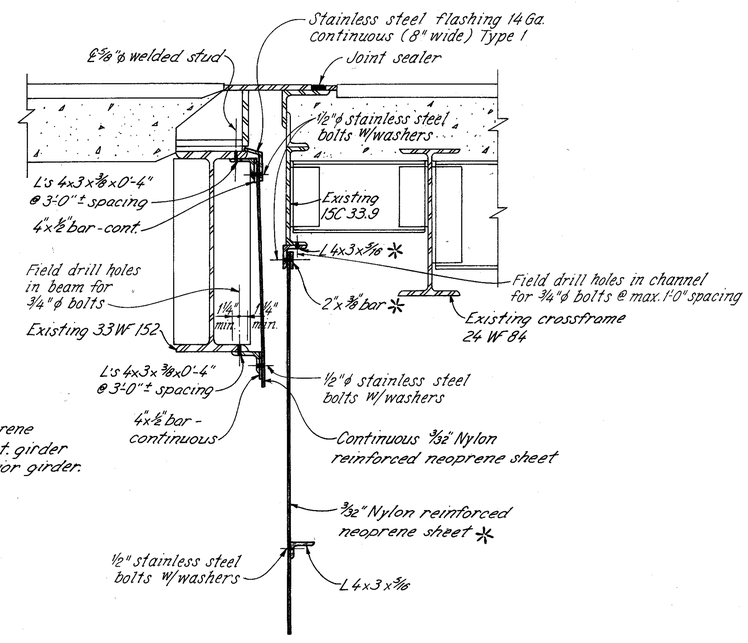


TYPICAL HALF SECTION THRU JOINT

LOOKING TOWARD ROLLER



SECTION A-A



SECTION B-B

NOTES

STAINLESS STEEL FLASHING DETAIL: See sheet 12.

ADDITIONAL NOTES: See sheet 12.

JOINT SEALER DETAIL: See sheet 13.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

FLASHING DETAILS EXPANSION JOINT D WEST APPROACH BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

CUYAHOGA COUNTY — I-90

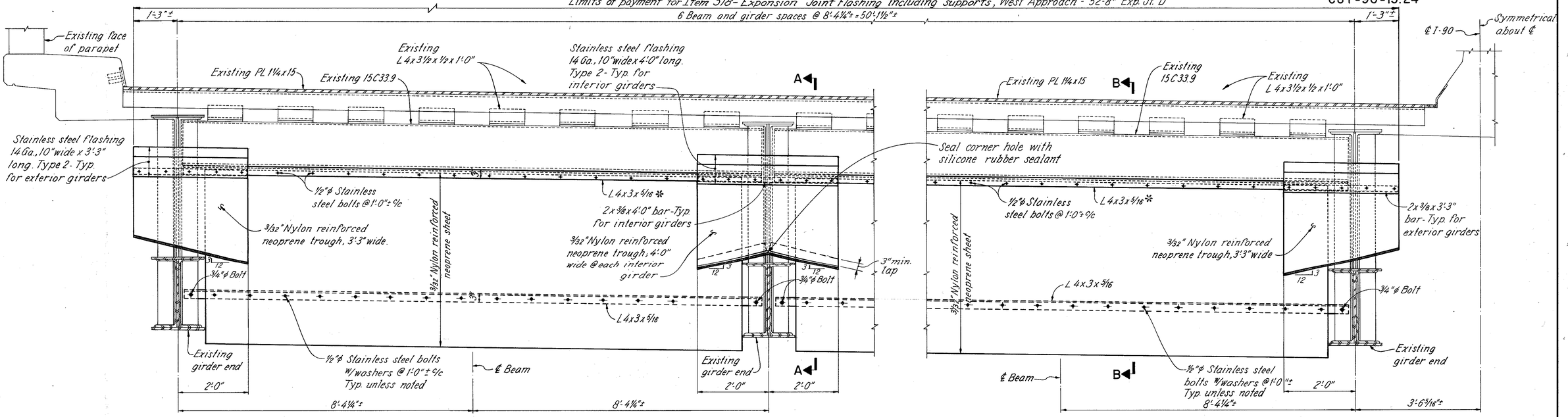
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	EFW	JPT	OHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

15
72

CUYAHOGA COUNTY
CUY-90-15.24

* Length same as existing 15C33.9



TYPICAL HALF SECTION THRU JOINT

LOOKING AWAY FROM EXPANSION ROLLER

NOTES:

SECTION A-A & B-B: See sheet 14.

ADDITIONAL NOTES: See sheet 12.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

FLASHING DETAILS EXPANSION JOINT D WEST APPROACH

BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

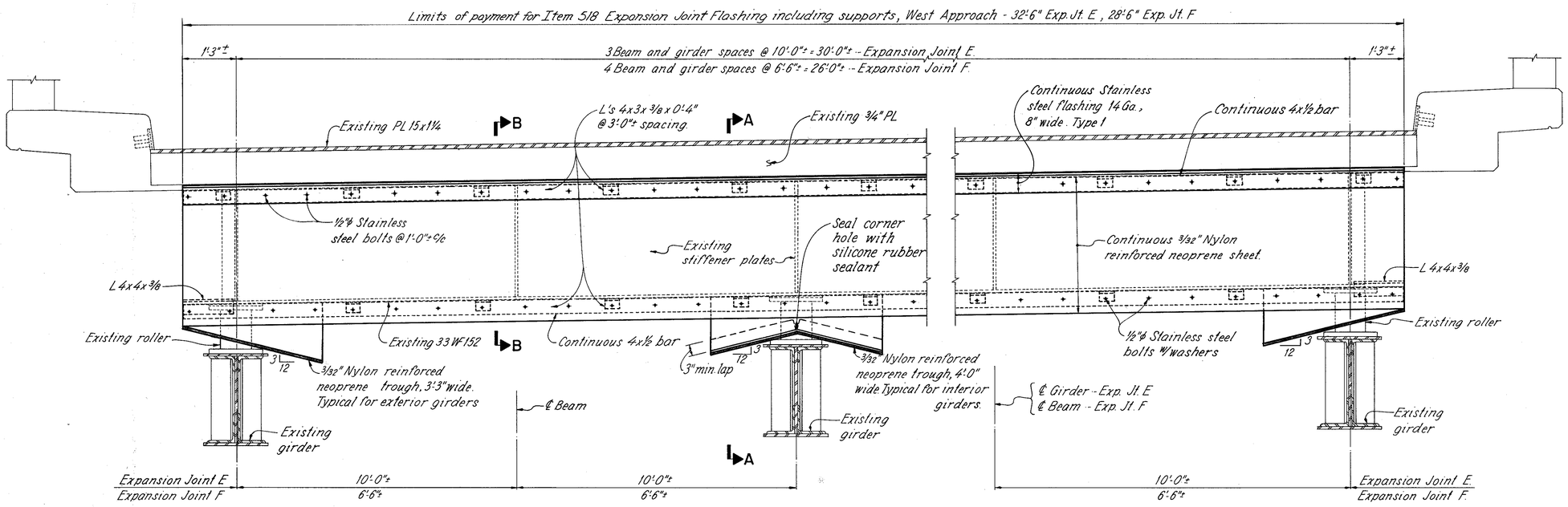
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/21/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

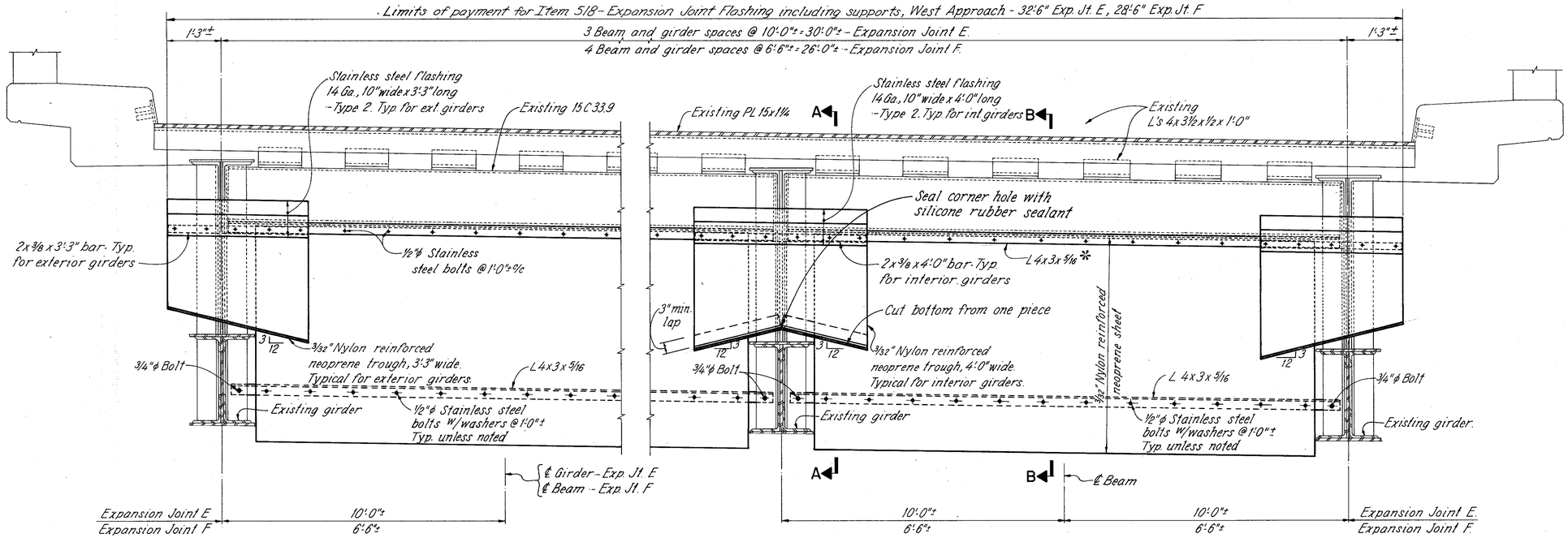
16
72

CUYAHOGA COUNTY
CUY-90-15.24



TYPICAL SECTION THRU. JOINT

LOOKING TOWARD EXPANSION ROLLER



TYPICAL SECTION THRU. JOINT

LOOKING AWAY FROM EXPANSION ROLLER

* Length same as existing 15 C 33.9

NOTES:

SECTION A-A & B-B: See sheet 14.

STAINLESS STEEL FLASHING DETAIL: See sheet 12.

ADDITIONAL NOTES: See sheet 12.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

FLASHING DETAILS EXPANSION JOINTS E & F WEST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

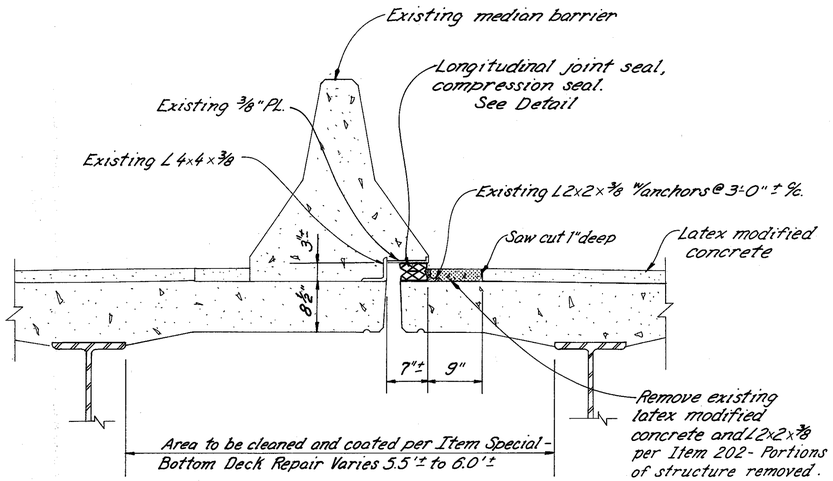
CUYAHOGA COUNTY 1-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

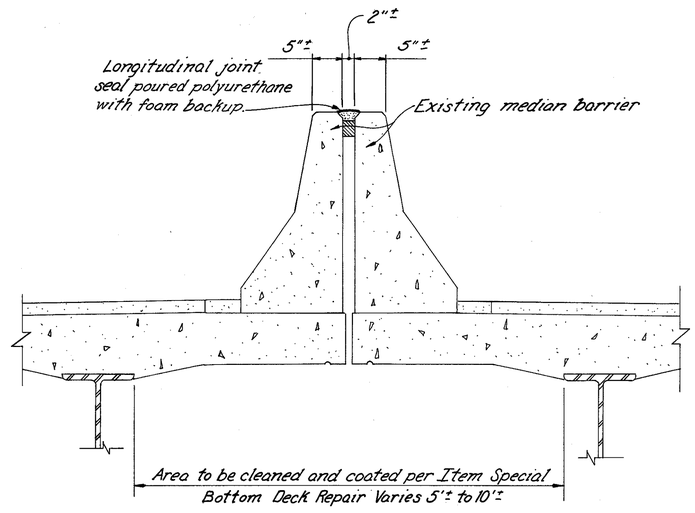
17/72

CUYAHOGA COUNTY
CUY-90-15.24



SECTION THRU MEDIAN BARRIER

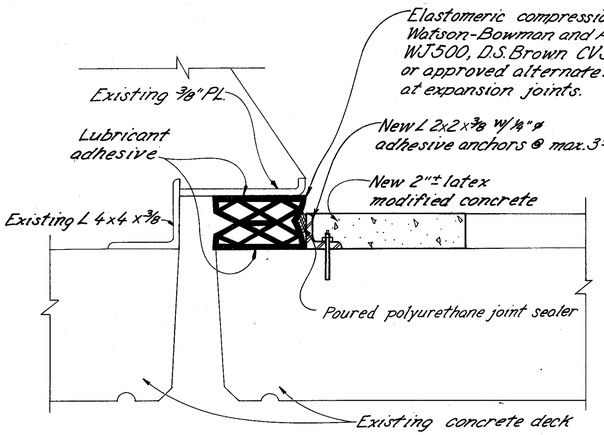
WEST APPROACH – *Rear abutment joint to expansion joint "D"*



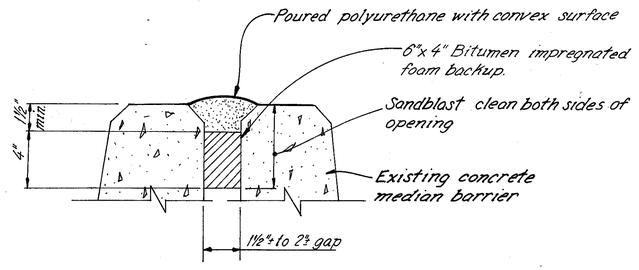
SECTION THRU MEDIAN BARRIER

WEST APPROACH – *Expansion joint "D" to joint (C1)*

EAST APPROACH – *Expansion joint (C6) to forward abutment joint.*



LONGITUDINAL JOINT SEALING, COMPRESSION SEAL



LONGITUDINAL JOINT SEALING, POURED POLYURETHANE WITH FOAM BACKUP

NOTES:

LONGITUDINAL JOINT SEALING: *See General Notes sheet 6 and 7 for pay item description.*

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

BOTTOM DECK REPAIR & LONGITUDINAL JOINT SEALING DETAILS - WEST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

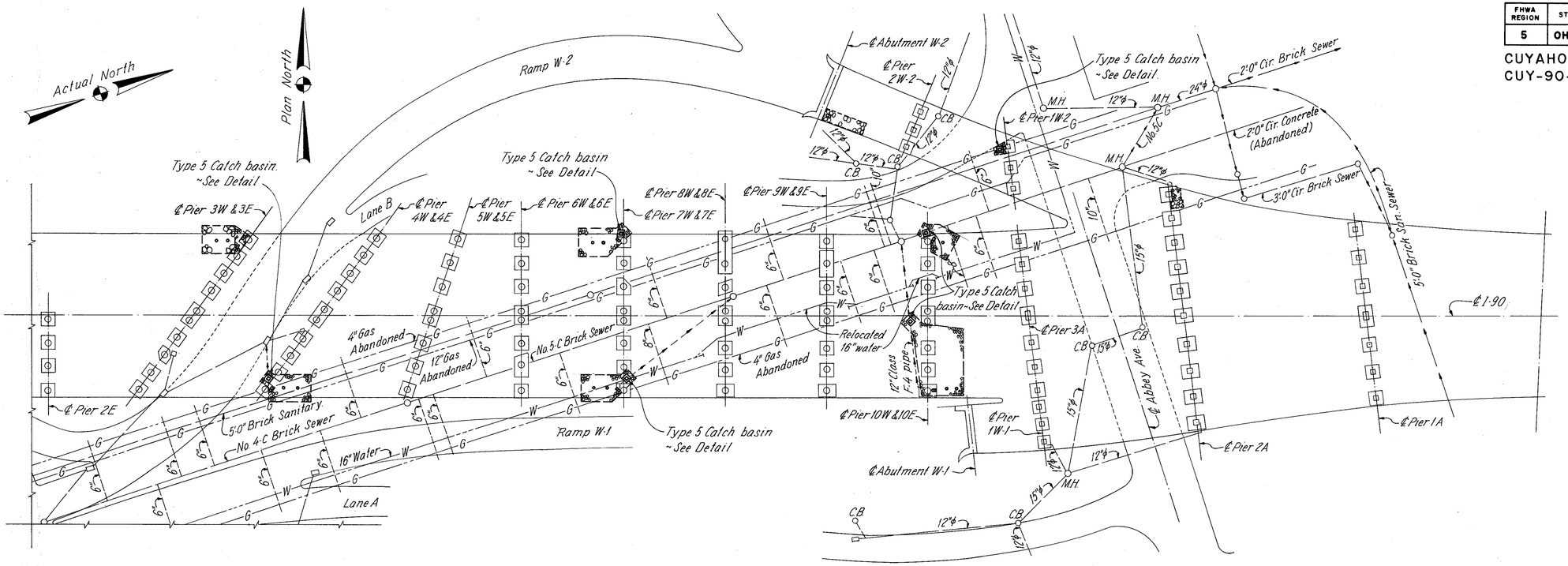
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DAP	JRS	EFW	DAP	DHT	1/27/86	

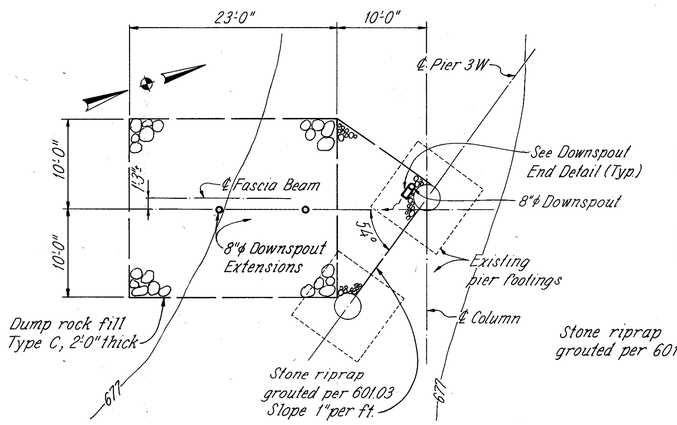
FHWA REGION	STATE	PROJECT	
5	OHIO		

18
72

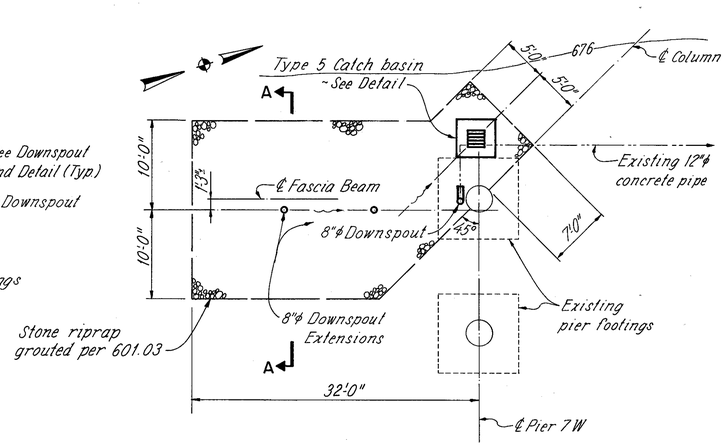
CUYAHOGA COUNTY
CUY-90-15.24



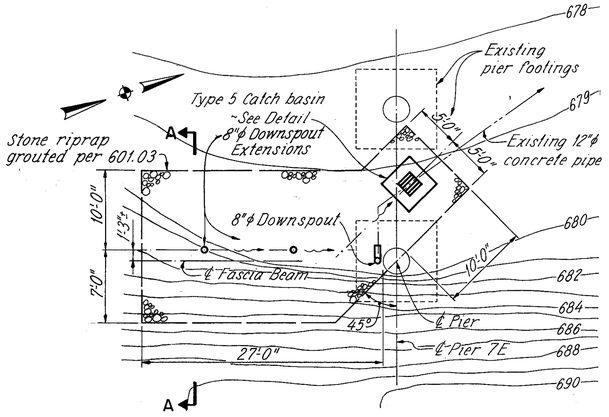
GROUND DRAINAGE PLAN



PLAN - PIER 3W



PLAN - PIER 7W



PLAN - PIER 7E

NOTES

PLAN - PIER 10W, PIER 4E & PIER 10E: See sheet 19.

PLAN - ABUTMENT W2, PIER 1W2 & PIER 2A: See sheet 20.

CATCH BASIN DETAIL: See sheet 19.

SECTION A-A: See sheet 19.

DOWNSPOUT END DETAIL: See sheet 20.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GROUND DRAINAGE PLAN
WEST APPROACH
BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

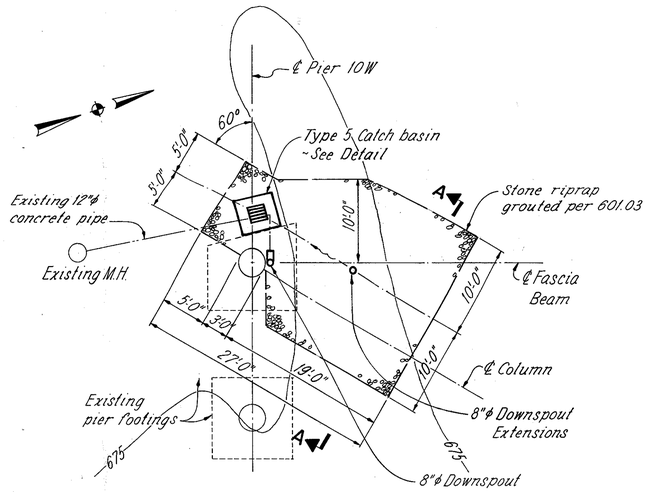
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	KH	KH	JPT	DHT	1/27/86	

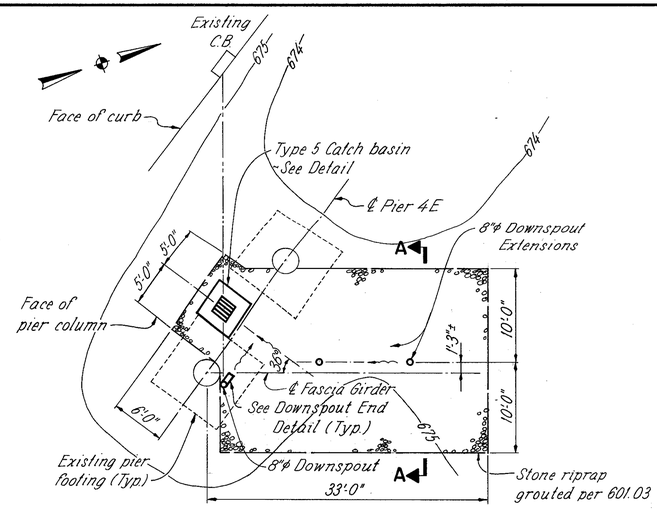
FHWA REGION	STATE	PROJECT	
5	OHIO		

19
72

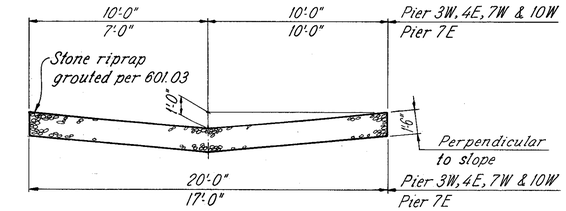
CUYAHOGA COUNTY
CUY-90-15.24



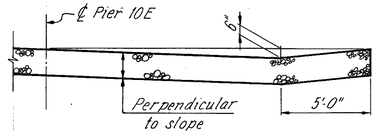
PLAN - PIER 10W



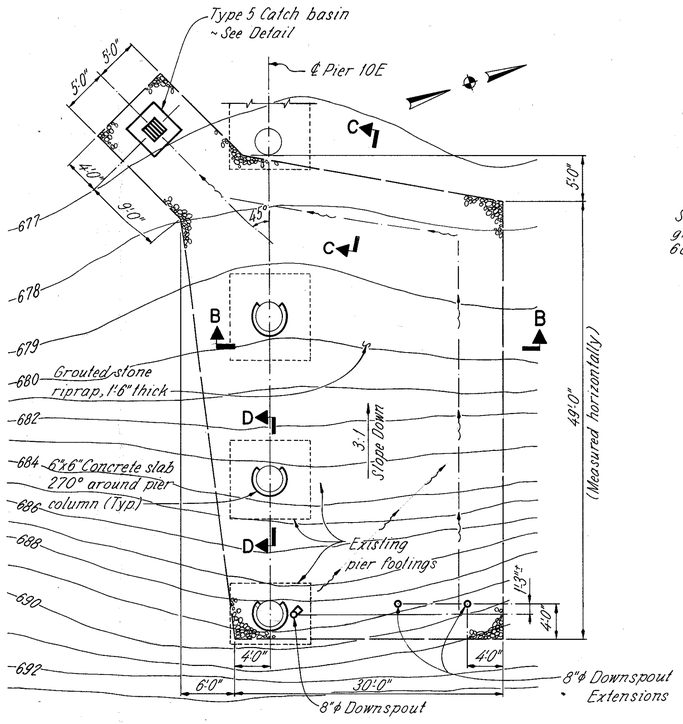
PLAN - PIER 4E



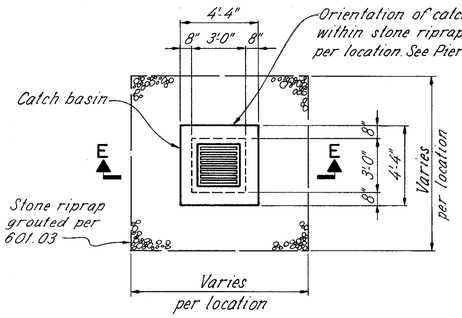
SECTION A-A



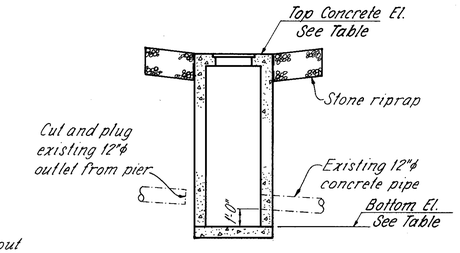
SECTION B-B



PLAN - PIER 10E

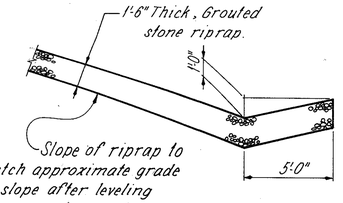


PLAN

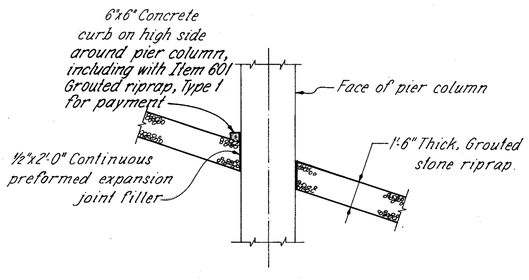


SECTION E-E

TYPE 5 CATCH BASIN



SECTION C-C



SECTION D-D

PIER DRAINAGE SUMMARY TABLE

PIER	TOP PIER ELEV.	PROPOSED CATCH BASIN DATA		
		EXIST. PIPE INV. §	BOTTOM EL.	TOP CONC. EL.
4E	689.80	668.5	667.5	674.0
7W	692.51	670.5	669.5	675.5
7E	692.51	673.0	672.0	678.5
10W	694.15	668.0	667.0	674.5
10E	694.15	671.0	670.0	676.0
1W-2	688.37	671.5	670.5	674.5

§ Elevations estimated from data on original 1956 design plans.

NOTE:

DOWNSPOUT END DETAIL: See sheet 20.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GROUND DRAINAGE DETAILS WEST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

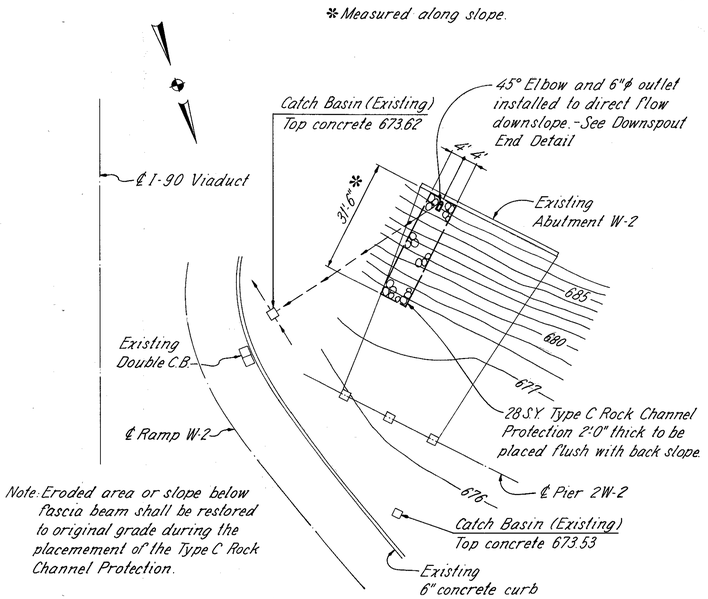
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPT	KM	JPT	DHT	1/27/86	

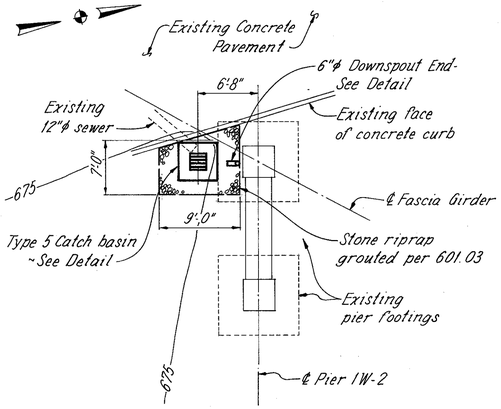
FHWA REGION	STATE	PROJECT	
5	OHIO		

20/72

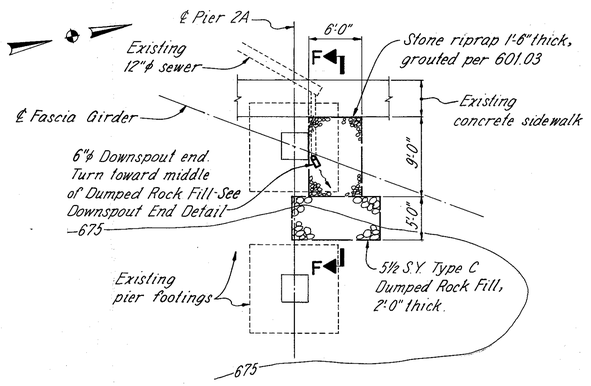
CUYAHOGA COUNTY
CUY-90-15.24



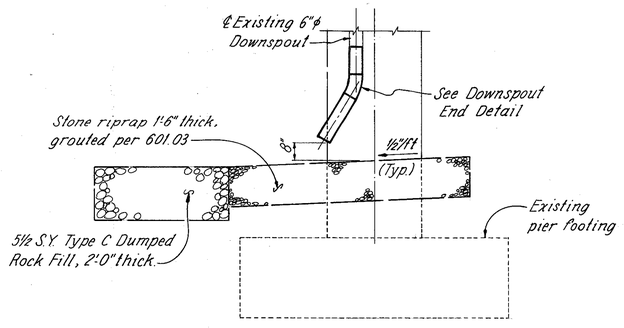
PLAN - ABUTMENT W-2



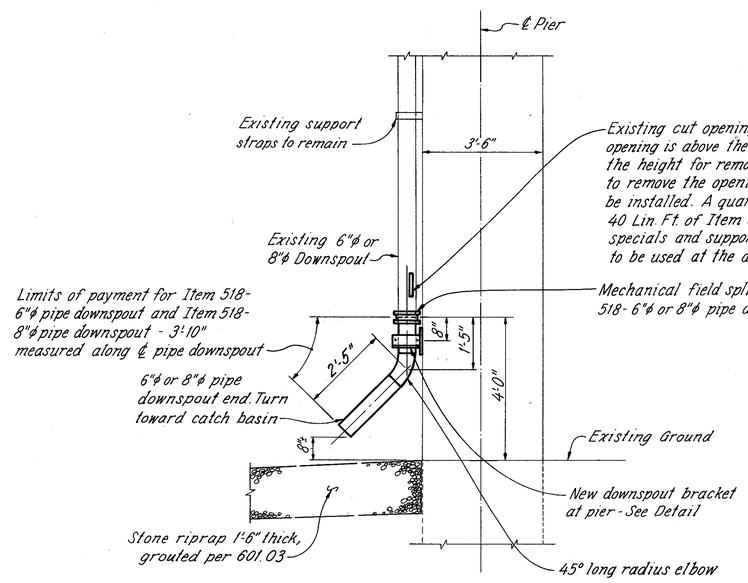
PLAN - PIER 1W-2



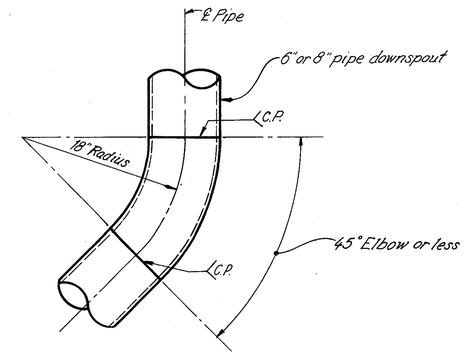
PLAN - PIER 2A



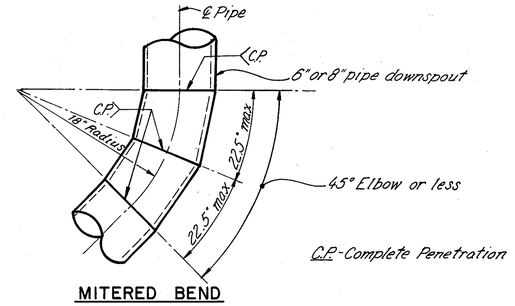
SECTION F-F



DOWNSPOUT END DETAIL



SMOOTH RADIUS BEND



MITERED BEND

DOWNSPOUT BEND DETAILS

NOTES

DOWNSPOUT BRACKET AT PIER DETAIL: See sheet 11.

20/72

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GROUND DRAINAGE DETAILS WEST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

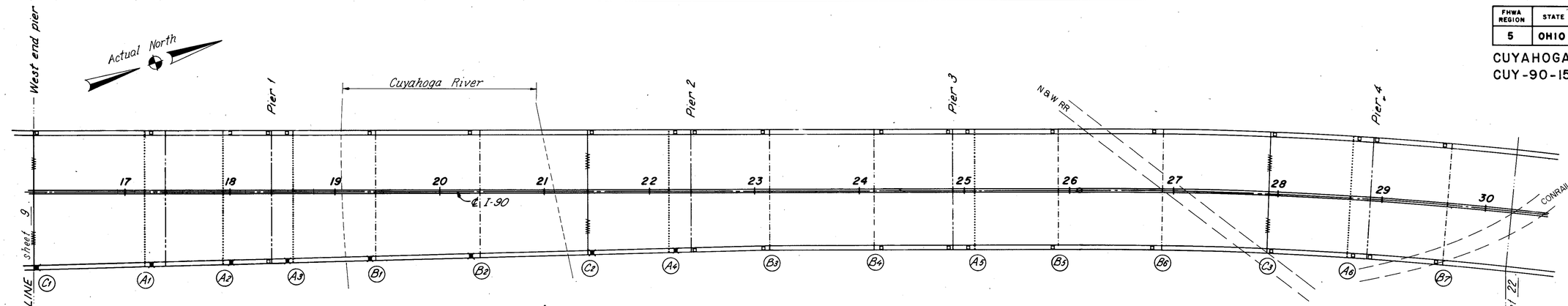
CUYAHOGA COUNTY 1-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPT	KH	JPT	DHT	1/27/86	

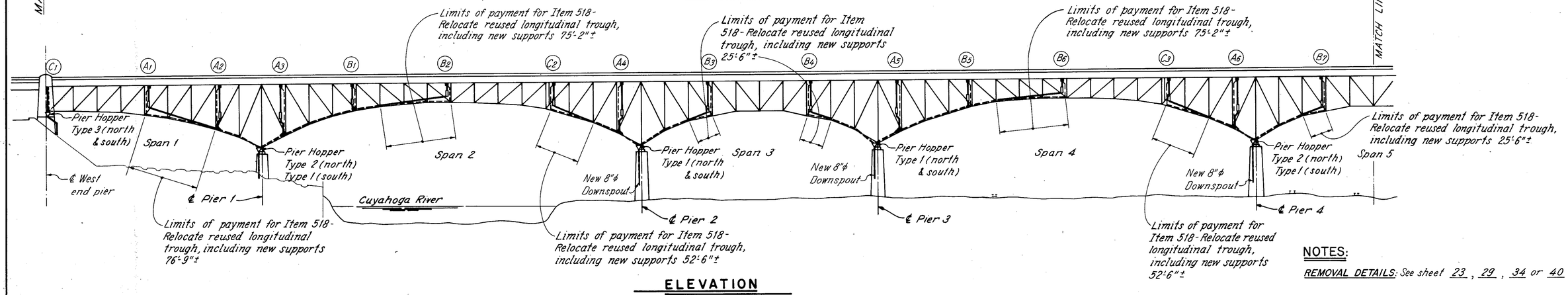
FHWA REGION	STATE	PROJECT	
5	OHIO		

21/72

CUYAHOGA COUNTY
CUY-90-15.24



PLAN



ELEVATION

LEGEND

- CONTRACTION JOINT
- Ⓐ TRANSVERSE DRAIN CASTING
- Ⓑ TRANSVERSE DRAIN CASTING AT CONTRACTION JOINT
- Ⓒ FINGER TYPE EXPANSION JOINT & TRANVERSE DRAIN
- EXISTING DRAINAGE (TO BE REMOVED)
- EXISTING DRAINAGE (TO REMAIN)
- PROPOSED DRAINAGE
- ACCESS HATCH THROUGH SIDEWALK
- ACCESS HATCH OUT OF SERVICE
- HOPPER LOCATION
- PIER HOPPER LOCATION
- TRANSVERSE TROUGH LOCATION

NOTES:

REMOVAL DETAILS: See sheet 23, 29, 34 or 40.

TYPICAL SECTIONS: See sheet 24, 25, 30, 35 or 41.

HOPPER DETAILS: See sheet 28, 33, 39 or 45.

CATWALK DETAILS: See sheet 46, 47 and 48.

DOWNSPOUT DETAILS: See sheet 49.

LONGITUDINAL TROUGH DETAILS: See sheet 50.

PIER HOPPER DETAILS: See sheet 51.

GROUND DRAINAGE DETAILS: See sheet 52 thru 54.

UTILITIES: See sheet 52 & 53.

CROSS DRAIN	Ⓒ1	Ⓐ1	Ⓐ2	Ⓐ3	Ⓑ1	Ⓑ2	Ⓒ2	Ⓐ4	Ⓑ3	Ⓑ4	Ⓐ5	Ⓑ5	Ⓑ6	Ⓒ3	Ⓐ6	Ⓑ7
SPAN - PANEL POINT	1-0	1-4	1-7	2-1	2-4	2-8	2-12	2-15	3-3	3-7	4-1	4-4	4-8	4-12	4-15	5-3
1956 PANEL NUMBER *	100	104	107	110	113/20	24	300/28	303	307	311	315	318/40	44	500/48	503	507
℄ OF DRAIN TO ℄ PANEL PT.	≠ 1'-6"W	4'-6"E	4'-6"E	4'-6"W	6½"W	6½"W	≠ 1'-6"E	4'-6"E	6½"W	6½"E	4'-6"W	6½"W	6½"W	≠ 1'-6"E	4'-6"E	6½"W
℄ OF TROUGH TO ℄ PANEL PT.	≠ 1'-2"W	4'-11"E	4'-11"E	4'-11"W	3'-9"W	6'-7"W	≠ 1'-7"E	4'-11"E	5'-0"W	5'-0"E	4'-11"W	3'-9"W	6'-7"W	≠ 1'-7"E	4'-11"E	5'-0"W

* Designations used in original 1956 design plans
≠ Offset for 60°F

NOTATION: W - West
E - East

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GENERAL PLAN - 1
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

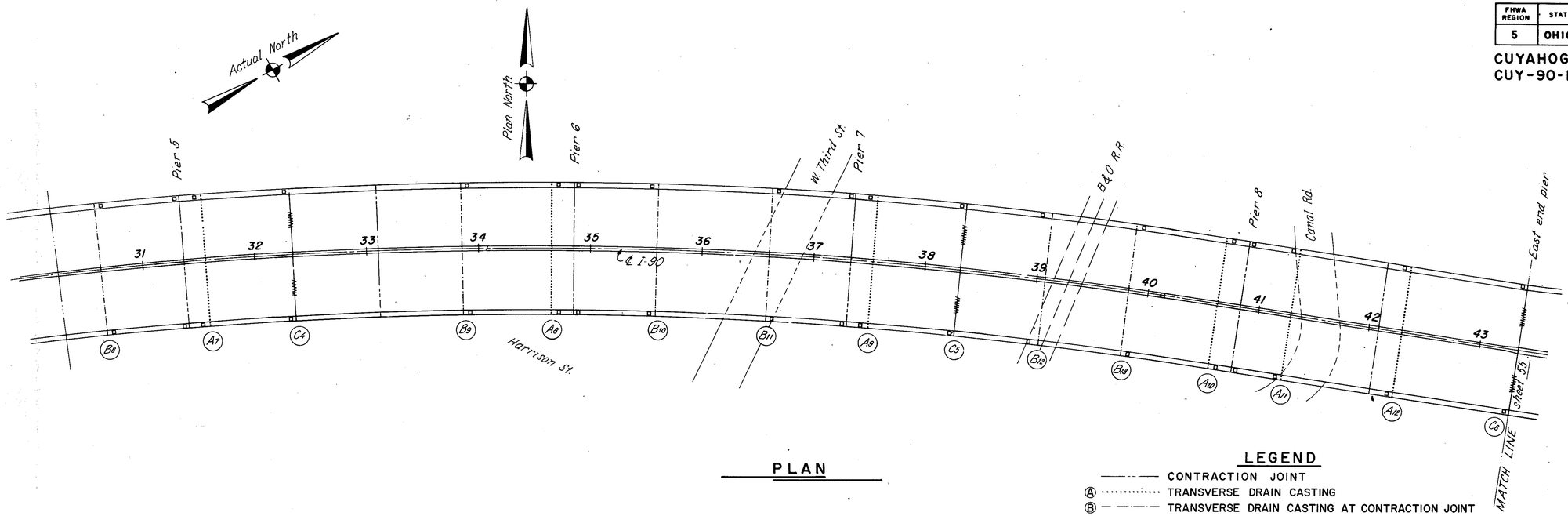
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HEW	JLS	JLS	DAP	DHT	11/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

22/72

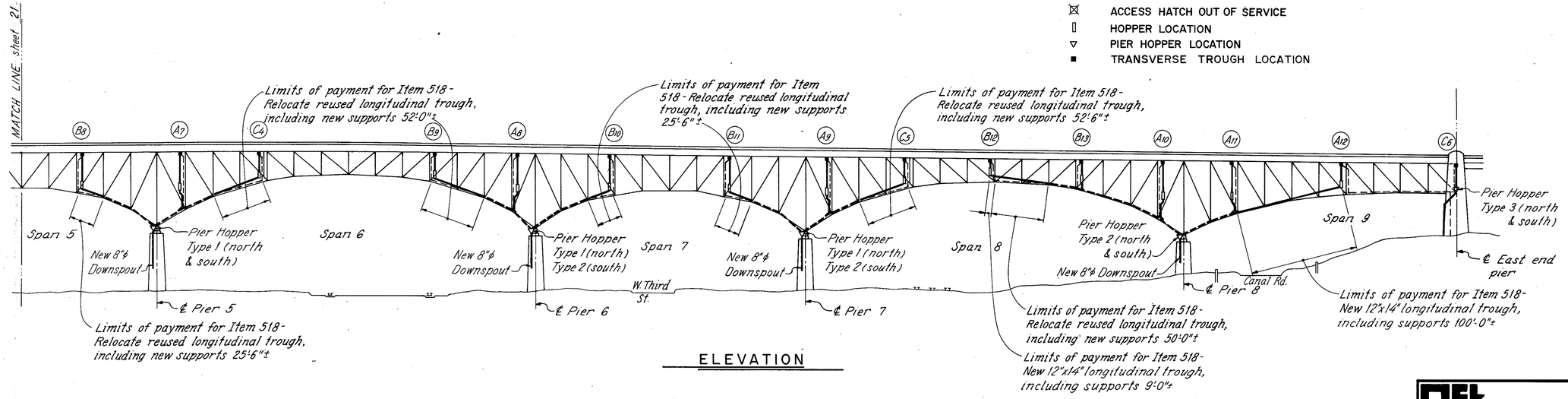
CUYAHOGA COUNTY
CUY-90-15.24



PLAN

LEGEND

- CONTRACTION JOINT
- Ⓐ TRANSVERSE DRAIN CASTING
- Ⓑ TRANSVERSE DRAIN CASTING AT CONTRACTION JOINT
- Ⓒ FINGER TYPE EXPANSION JOINT & TRANSVERSE DRAIN
- EXISTING DRAINAGE (TO BE REMOVED)
- EXISTING DRAINAGE (TO REMAIN)
- PROPOSED DRAINAGE
- ACCESS HATCH THROUGH SIDEWALK
- ACCESS HATCH OUT OF SERVICE
- HOPPER LOCATION
- PIER HOPPER LOCATION
- TRANSVERSE TROUGH LOCATION



ELEVATION

CROSS DRAIN	Ⓑ8	Ⓐ7	Ⓒ4	Ⓑ9	Ⓐ8	Ⓑ10	Ⓑ11	Ⓐ9	Ⓒ5	Ⓑ12	Ⓑ13	Ⓐ10	Ⓐ11	Ⓐ12	Ⓒ6
SPAN - PANEL POINT	5-7	6-1	6-4	6-10	6-13	7-3	7-7	8-1	8-4	8-7	8-10	8-13	9-2	9-6	9-9
1956 PANEL NUMBER *	511	515	518/60	700/66	703	707	711	715	718/80	83	900/86	903	906	910	914
℄ OF DRAIN TO ℄ PANEL PT.	6½"E	4'-6"W	≠1'-6"W	6½"E	4'-6"E	6½"W	6½"E	4'-6"W	≠1'-6"W	6½"W	6½"E	4'-6"E	4'-6"W	4'-6"W	≠1'-6"E
℄ OF TROUGH TO ℄ PANEL PT.	5'-0"E	4'-11"W	≠1'-7"W	3'-9"E	4'-11"E	5'-0"W	5'-0"E	4'-11"W	≠1'-7"W	6'-7"W	3'-9"E	4'-11"E	4'-11"W	4'-11"W	≠1'-2"E

* Designations used in original 1956 design plans.
≠ Offset for 60°F.

NOTATION: W. West
E. East

22/72

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GENERAL PLAN - 2
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

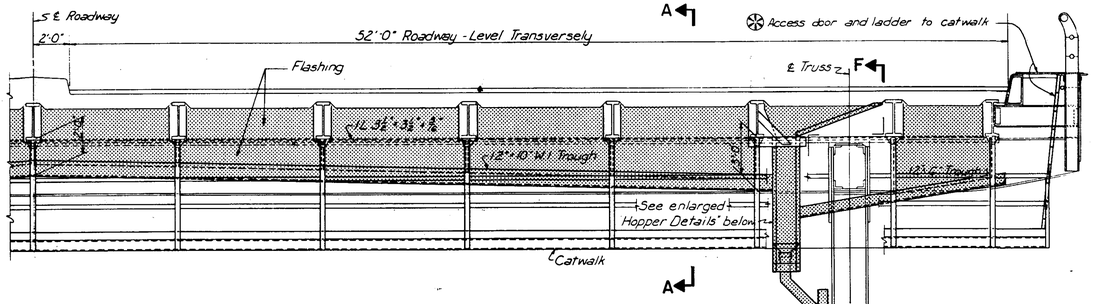
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HEW	JLS	JLS	DAP	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

23/72

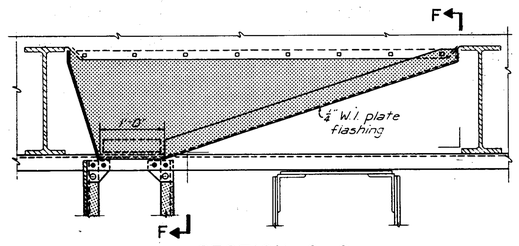
CUYAHOGA COUNTY
CUY-90-15.24



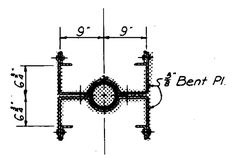
TYPICAL HALF SECTION AT CROSS DRAINS

Existing W.I. troughs, downspouts, hoppers and structural hangers shall be removed as shown. Sections of troughs and hanger angles may be reused with the Engineers' approval.

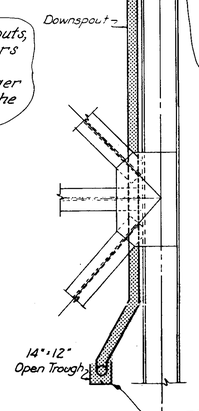
Ladder to catwalk on south side was removed at locations A1 through A3 during previous widening project. Access door not in service at these locations.



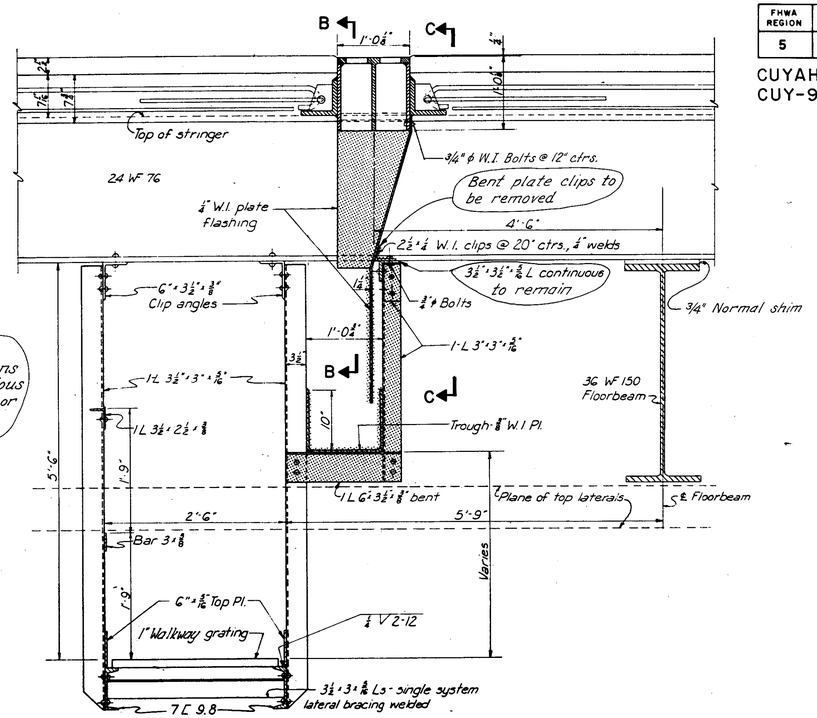
SECTION G-G



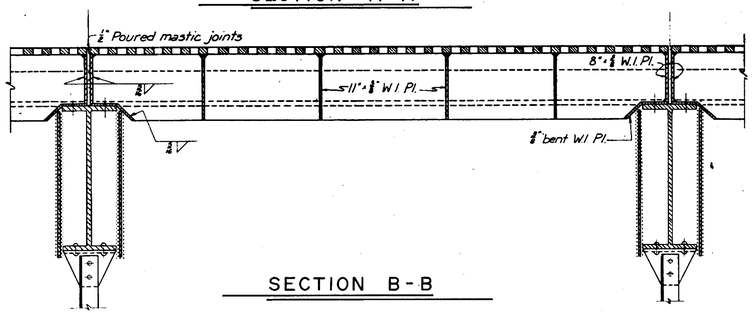
SECTION E-E



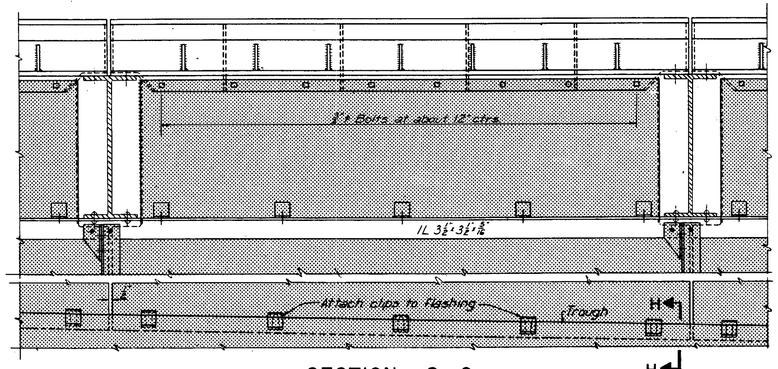
Existing longitudinal trough to be removed at locations A1 and A12 only.



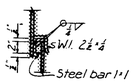
SECTION A-A



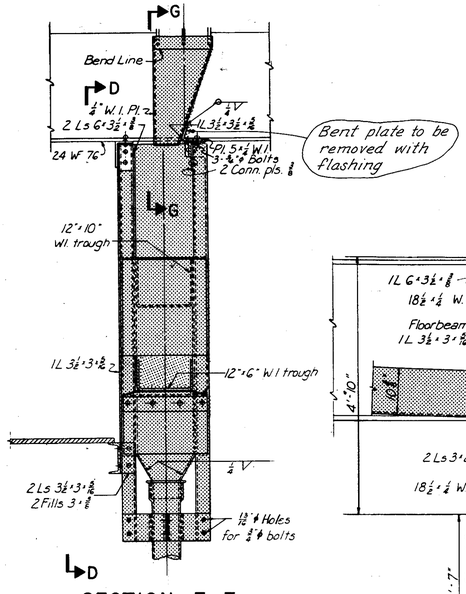
SECTION B-B



SECTION C-C



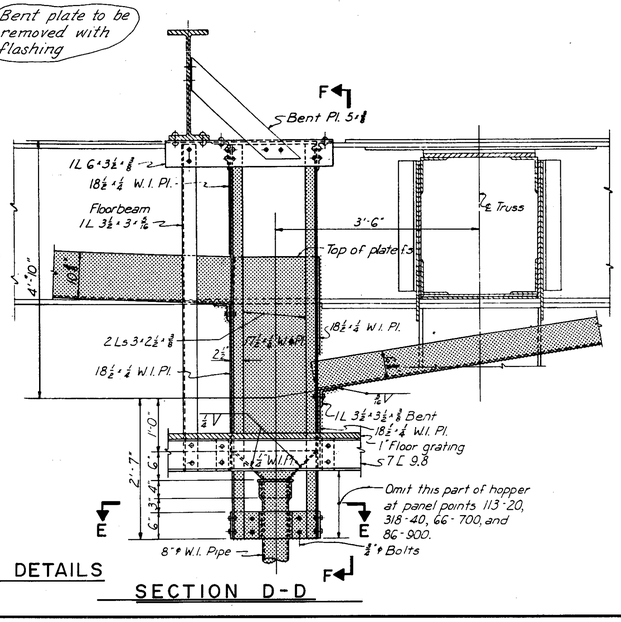
SECTION H-H



Bent plate to be removed with flashing

SECTION F-F

HOPPER DETAILS



SECTION D-D

LEGEND

Indicates existing drainage materials to be removed. Contractor to dispose of removal materials unless otherwise shown on plans or directed by the Engineer.

NOTES

COLLECTOR TYPES and locations shown on sheet 27.

MATERIALS shown are existing. Work to be done under this project shown in ©aptions. Dimensions and notes otherwise shown are from original design plans for information only. Existing troughs, plates and flashing marked W.I. have been fabricated of Corten weatherizing steel in lieu of wrought iron.

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

REMOVAL DETAILS TYPE A DRAIN MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY — I-90

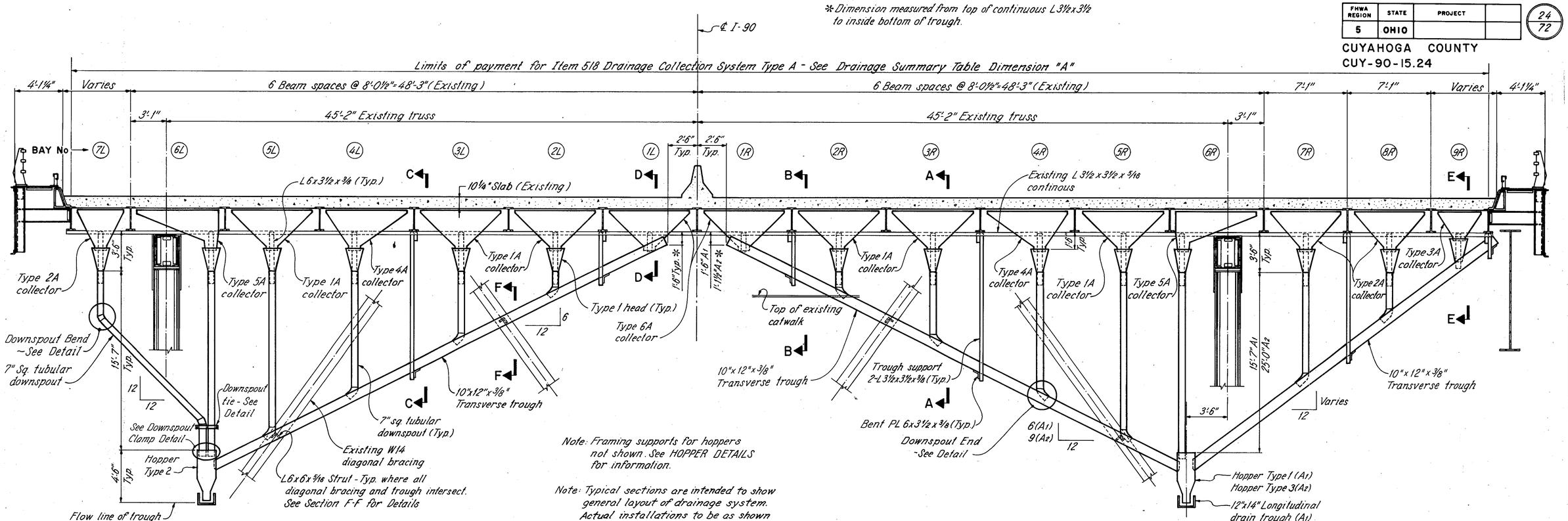
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	DER	DER	JPT	DHT	1/27/86	

23/72

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-90-15.24

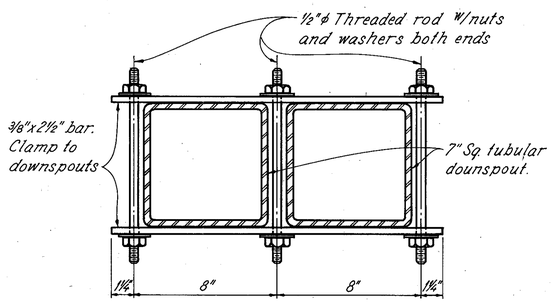
*Dimension measured from top of continuous L 3½x3½ to inside bottom of trough.



Note: Framing supports for hoppers not shown. See HOPPER DETAILS for information.

Note: Typical sections are intended to show general layout of drainage system. Actual installations to be as shown or opposite hand, as required per location.

TYPICAL HALF SECTION - A1 (NORTH) & A12 (NORTH & SOUTH)



DOWNSPOUT TIE

TYPICAL HALF SECTION - A1 (SOUTH) & A2 (SOUTH)

DRAINAGE SUMMARY TABLE		
JOINT	DIM. "A"	DIM. "B"
A1	120'-6"	-
A2	118'-9"	19'-0"
A3	117'-0"	26'-0"
A4	108'-0"	26'-0"
A5	106'-10"	26'-0"
A6	106'-10"	26'-0"
A7	106'-10"	25'-0"
A8	106'-10"	25'-0"
A9	106'-10"	25'-0"
A10	106'-10"	25'-0"
A11	106'-9"	19'-0"
A12	106'-9"	-

NOTES:

SECTION A-A, B-B, C-C, D-D, E-E & F-F: See sheet 26.

COLLECTOR & HEAD DETAILS: See sheet 27.

HOPPER DETAILS: See sheet 28.

DOWNSPOUT END DETAIL: See sheet 49.

DOWNSPOUT CLAMP DETAIL: See sheet 49.

DOWNSPOUT BEND DETAIL: See sheet 49.

DRAINAGE COLLECTION SYSTEM: See General Note Sheet 6 for pay item description.

24/72

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

TYPICAL SECTION & DETAILS TYPE A DRAIN MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY — I-90

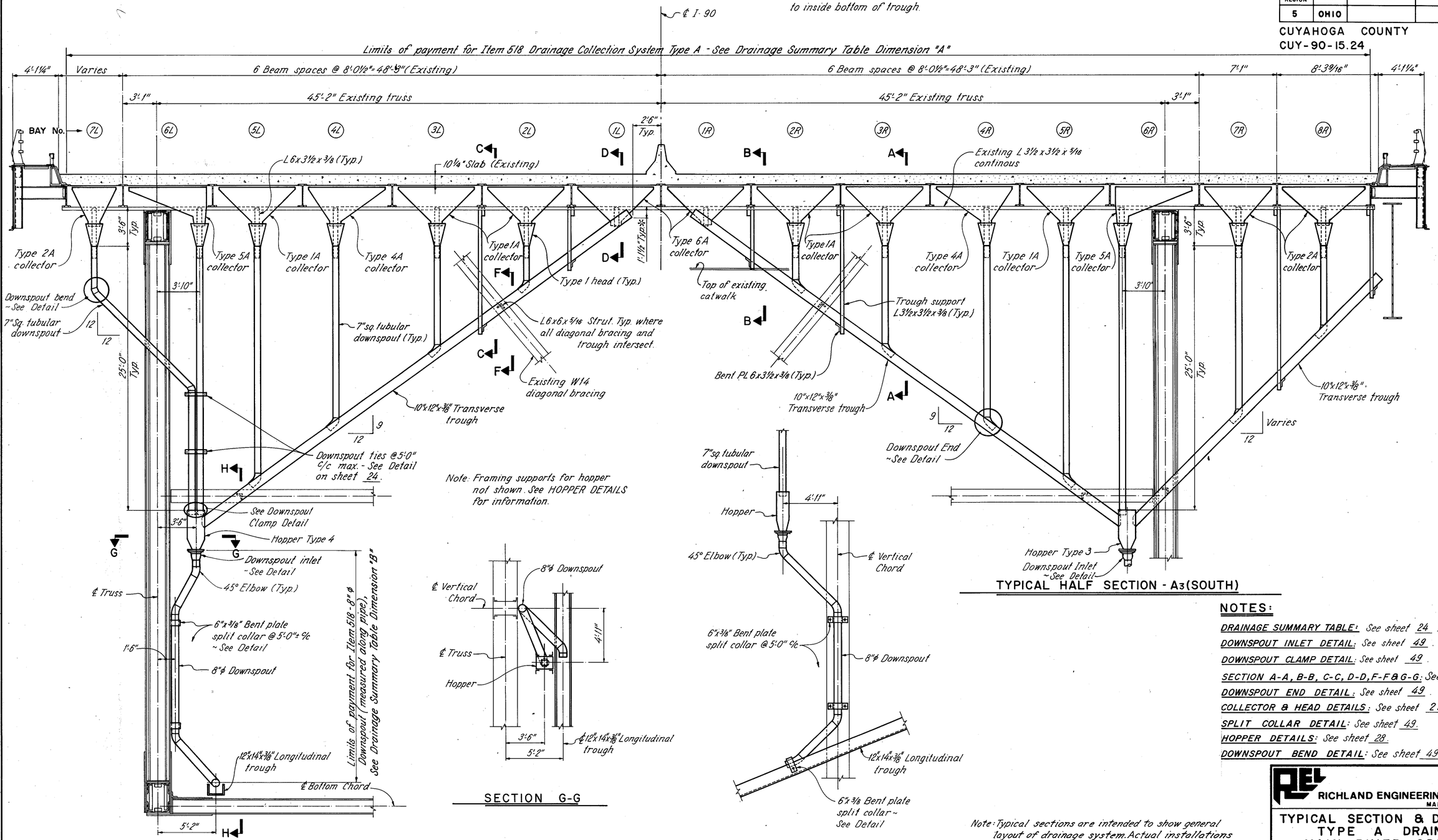
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DHT	KH	KH	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

25/72

CUYAHOGA COUNTY
CUY-90-15.24

* Dimesion measured from top of continuous L 3½x3½ to inside bottom of trough.



TYPICAL HALF SECTION - A2 (NORTH), A3 (NORTH) & A4 THRU. A11 (NORTH & SOUTH)

Note: Framing supports for hopper not shown. See HOPPER DETAILS for information.

SECTION G-G

VIEW H-H

TYPICAL HALF SECTION - A3 (SOUTH)

Note: Typical sections are intended to show general layout of drainage system. Actual installations to be as shown or opposite hand, as required per location.

NOTES:

DRAINAGE SUMMARY TABLE: See sheet 24.
DOWNSPOUT INLET DETAIL: See sheet 49.
DOWNSPOUT CLAMP DETAIL: See sheet 49.
SECTION A-A, B-B, C-C, D-D, F-F & G-G: See sheet 26.
DOWNSPOUT END DETAIL: See sheet 49.
COLLECTOR & HEAD DETAILS: See sheet 27.
SPLIT COLLAR DETAIL: See sheet 49.
HOPPER DETAILS: See sheet 28.
DOWNSPOUT BEND DETAIL: See sheet 49.

25/72

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

TYPICAL SECTION & DETAILS TYPE A DRAIN MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

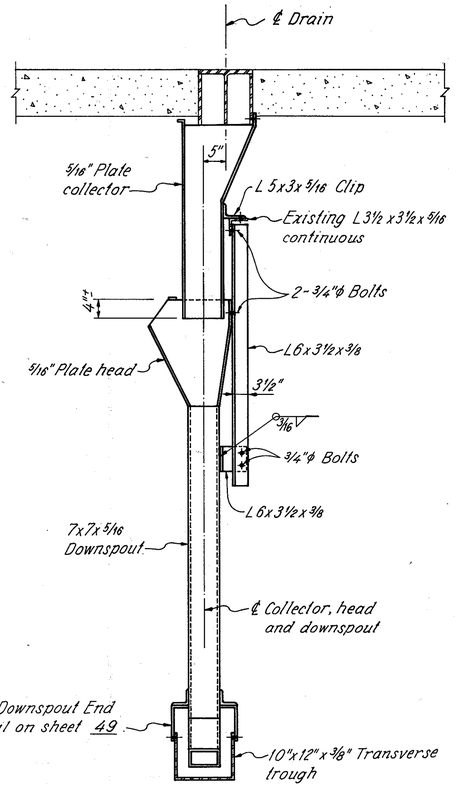
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DHT	KH	KH	JPT	DHT	1/27/86	

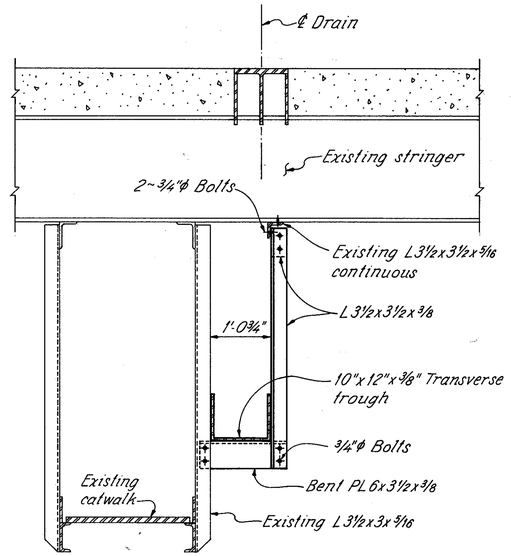
FHWA REGION	STATE	PROJECT	
5	OHIO		

26/72

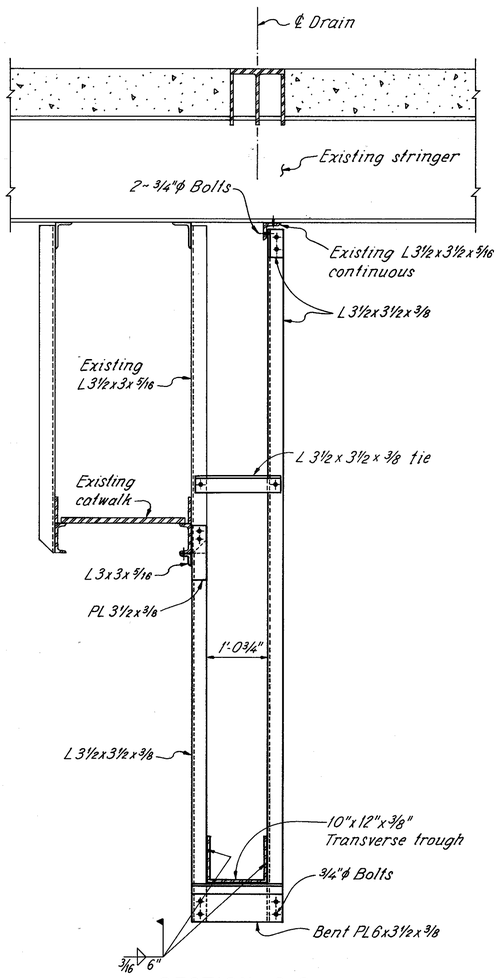
CUYAHOGA COUNTY
CUY-90-15.24



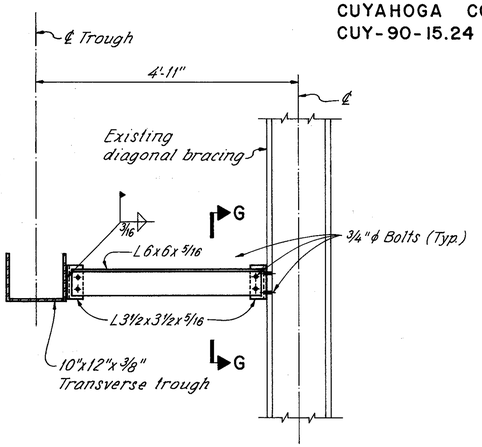
SECTION A-A



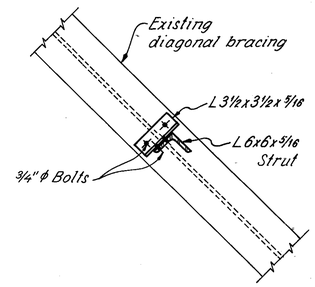
SECTION B-B



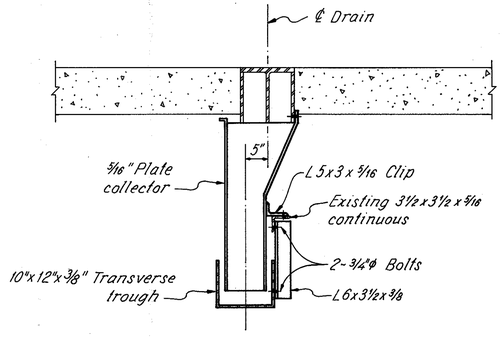
SECTION C-C



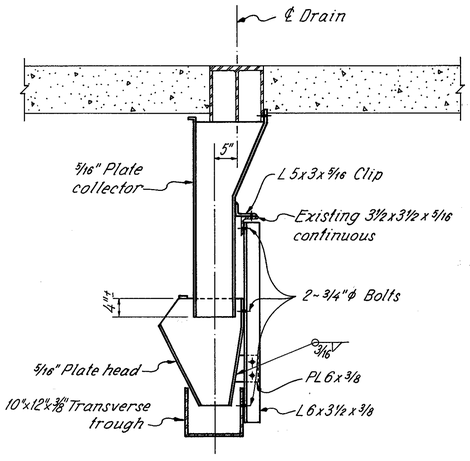
SECTION F-F



SECTION G-G



SECTION D-D



SECTION E-E

26/72

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS TYPE A DRAIN MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

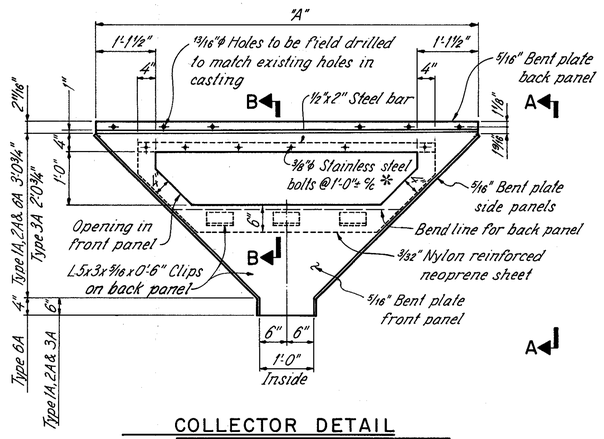
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

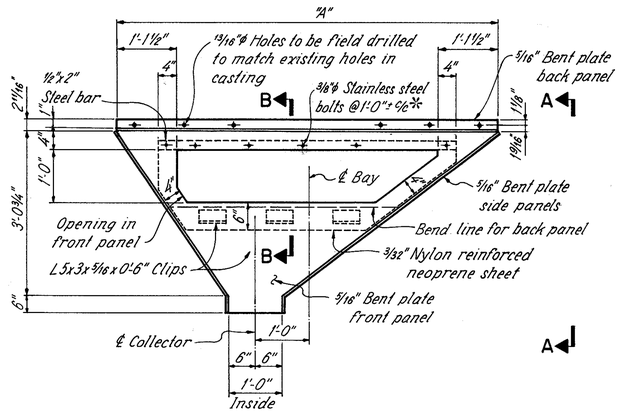
27/72

CUYAHOGA COUNTY
CUY-90-15.24



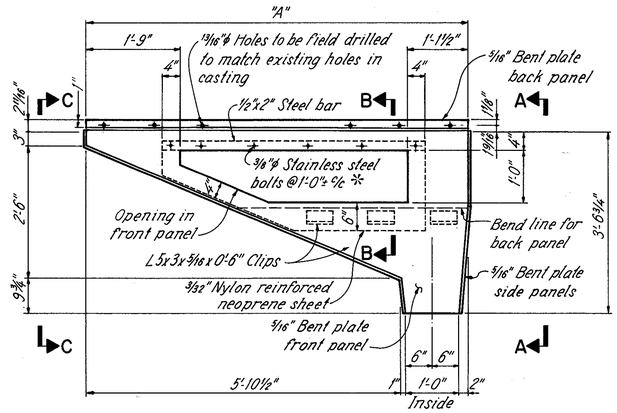
COLLECTOR DETAIL

TYPE 1A
TYPE 2A
TYPE 3A
TYPE 6A



COLLECTOR DETAIL

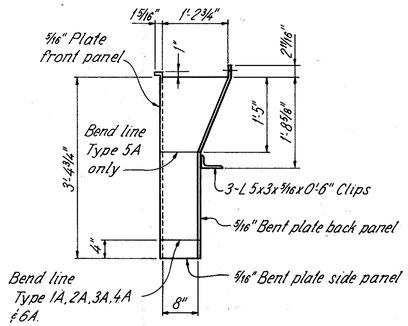
TYPE 4A



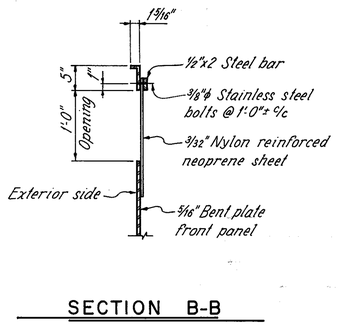
COLLECTOR DETAIL

TYPE 5A

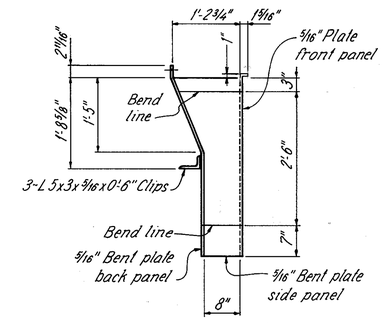
✻ Tack weld nuts to ½"x2" steel bar



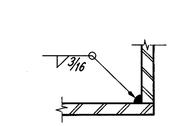
VIEW A-A



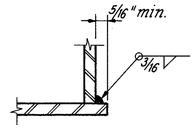
SECTION B-B



VIEW C-C



TYPICAL WELD INSIDE CORNER



ALTERNATE WELD OUTSIDE CORNER

Note: Boxes are to be fully welded and water tight. All welds are to be the inside corner type. Where there is no space to make an inside corner weld, an outside corner weld may be used with the approval of the Engineer.

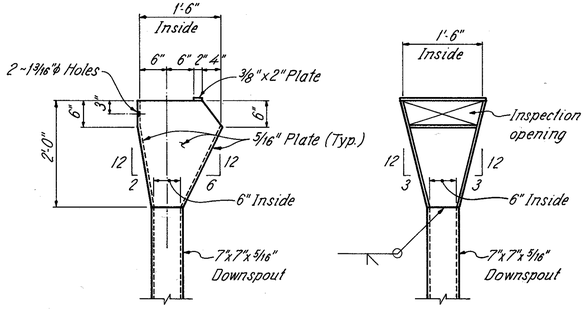
COLLECTOR, HEAD AND HOPPER WELD DETAIL

Bays numbered from centerline to fascia.
L indicates "left" (south side), R indicates "right" (north side)

COLLECTOR TABLE

JOINT	TYPE	BAY	DIM. "A" ✻✻	NO. REQ'D
A1 thru A12	1A	2L, 3L, 5L, 2R, 3R & 5R	7'-1½"	72
A1 thru A12	4A	4L (as shown) & 4R (opp. hand)	7'-1½"	12 (A.S.) 12 (O.H.)
A1 thru A12	5A	6L (as shown) & 6R (opp. hand)	7'-1½"	12 (A.S.) 12 (O.H.)
A1, A2, A3, A6 thru A9	2A	7R	6'-2"	9
A1 & A2	2A	8R	6'-2"	
A3	2A	8R	7'-5"	1
A1	3A	9R	3'-10"	1
A2	3A	9R	2'-0"	1
A1, A2, A3, A4, A11 & A12	2A	7L	4'-2"	8
A11 & A12	2A	7R	4'-2"	
A5 & A10	2A	7L	4'-8"	2
A6, A7, A8 & A9	2A	7L	2'-6"	4
A4	2A	7R	5'-6"	1
A5 & A10	2A	7R	3'-10"	2
A1 thru A12	6A	1L, 1R	7'-1½"	24

✻✻ *Contractor shall verify dimension "A" before fabrication*



ELEVATION SIDE VIEW

HEAD TYPE 1

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

27/72

DRAINAGE DETAILS TYPE A DRAIN MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

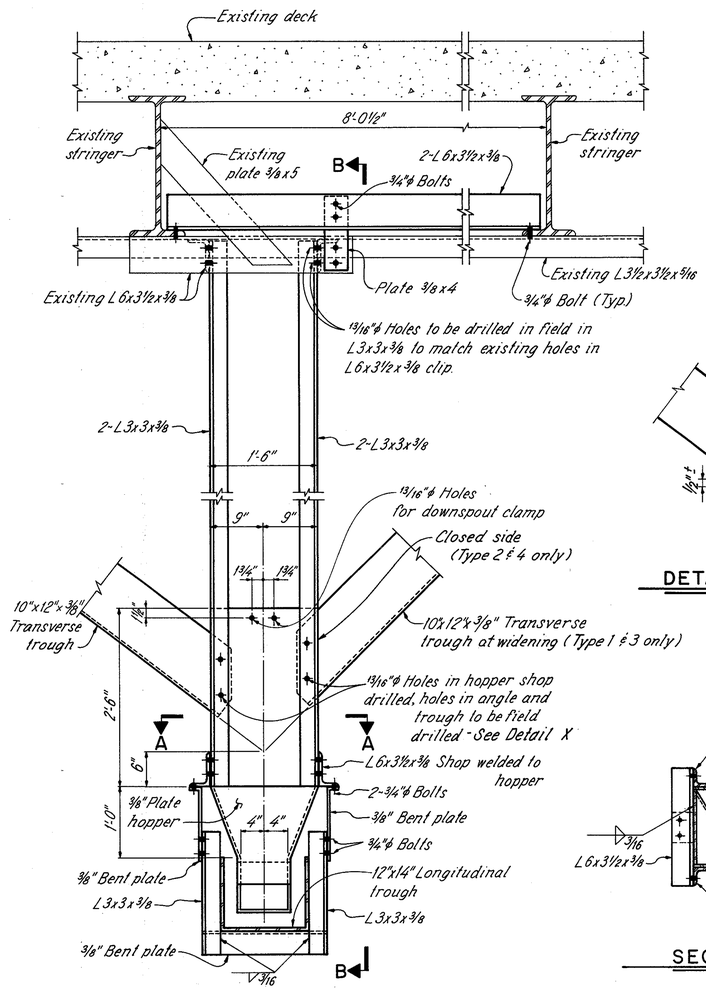
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/27/86	

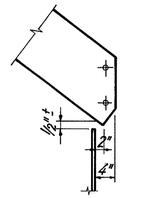
FHWA REGION	STATE	PROJECT	
5	OHIO		

28/72

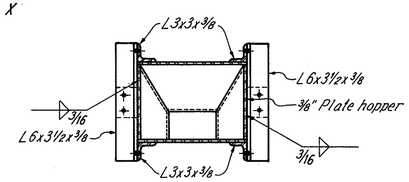
CUYAHOGA COUNTY
CUY-90-15.24



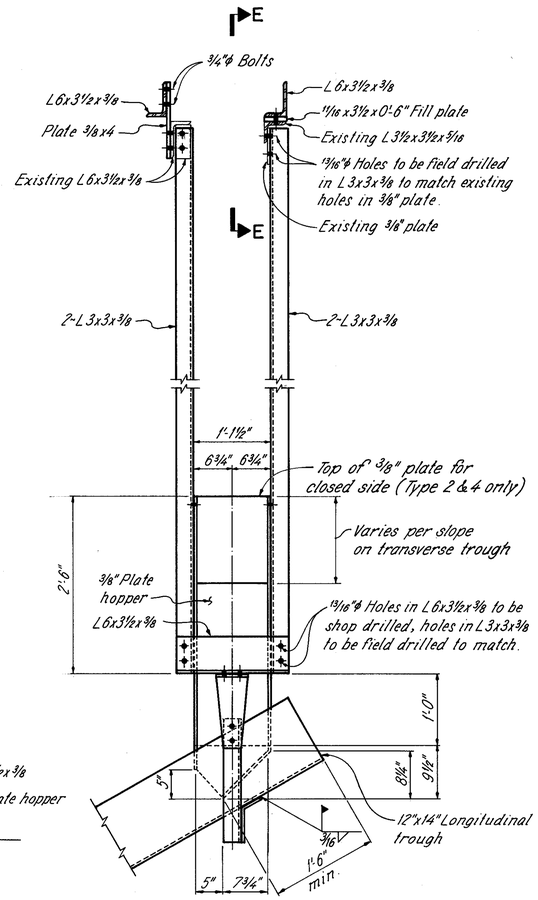
ELEVATION
TYPE 1 - 1 REQUIRED
TYPE 2 - 3 REQUIRED



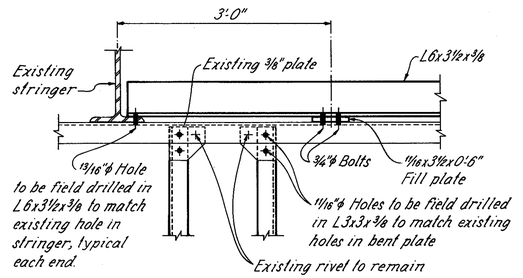
DETAIL X



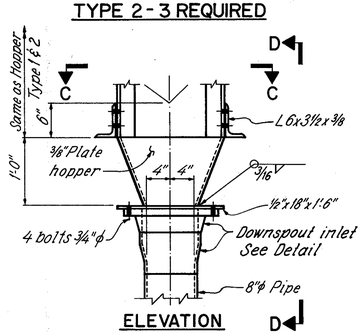
SECTION A-A



VIEW B-B

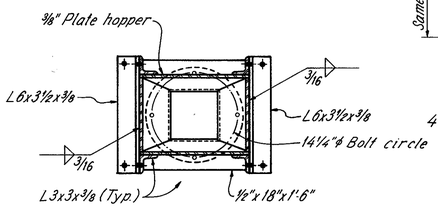


SECTION E-E

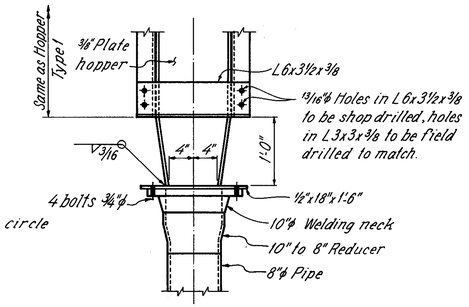


ELEVATION
TYPE 3 - 2 REQUIRED
TYPE 4 - 18 REQUIRED

HOPPER DETAILS



SECTION C-C



VIEW D-D

NOTES

DOWNSPOUT INLET DETAIL: See sheet 49.

HOPPER WELD DETAIL: See sheet 27.

28/72

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS
TYPE A DRAIN
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

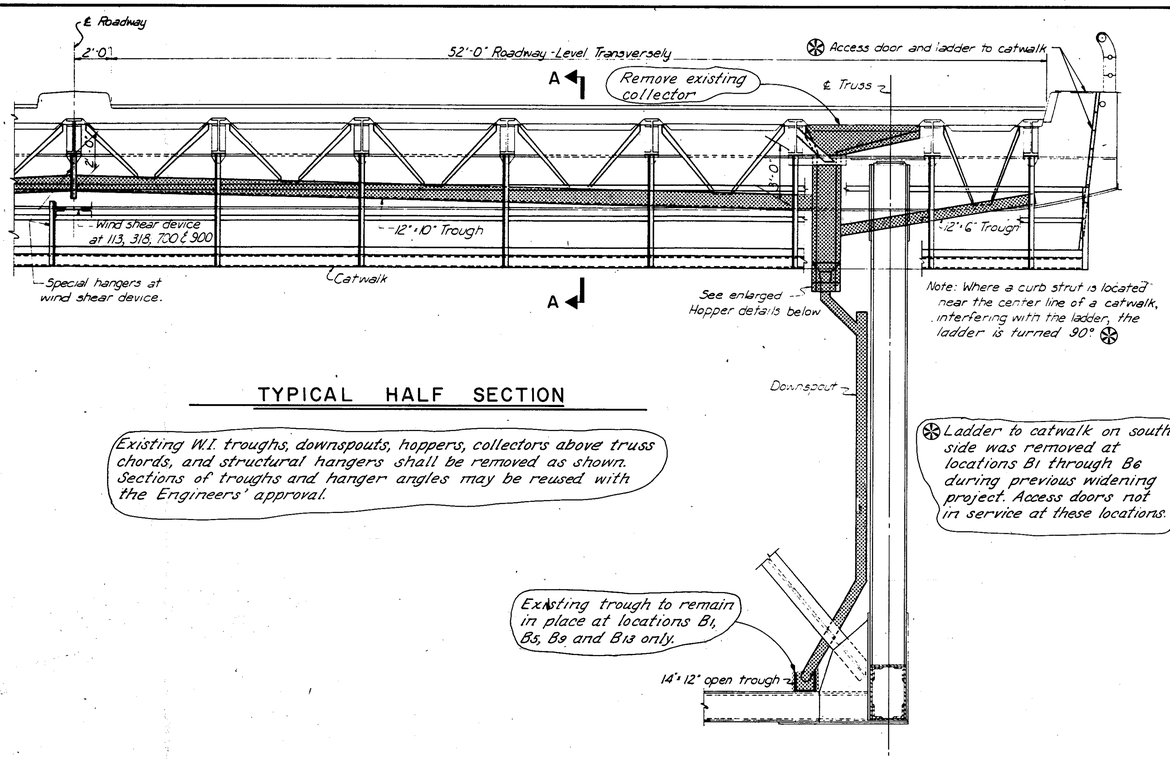
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

29/72

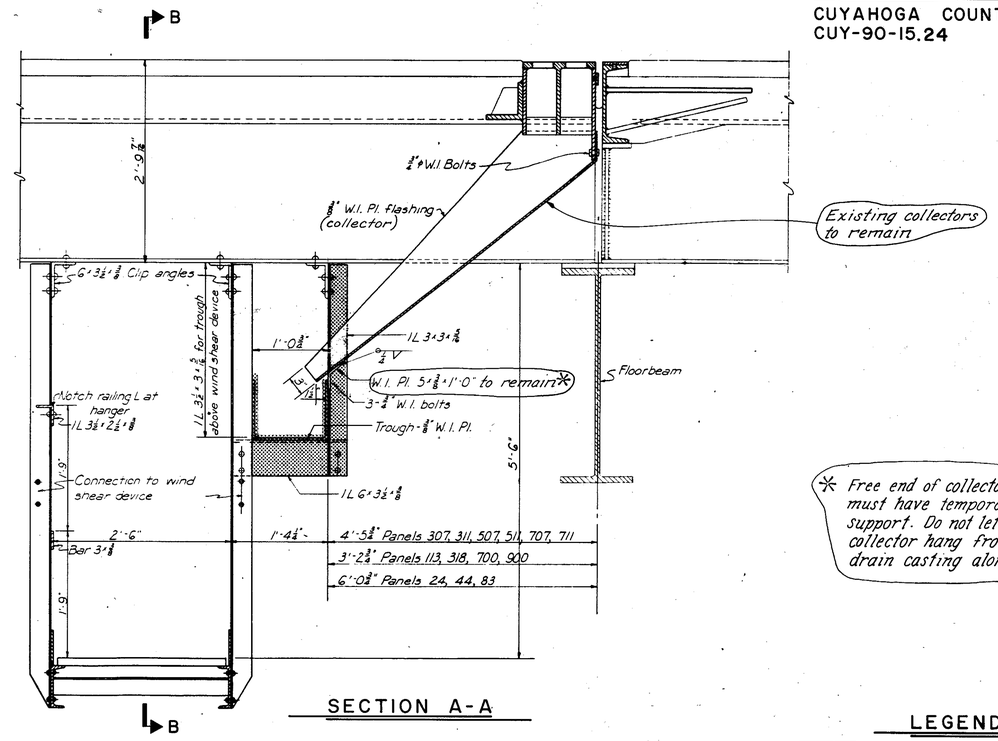
CUYAHOGA COUNTY
CUY-90-15.24



TYPICAL HALF SECTION

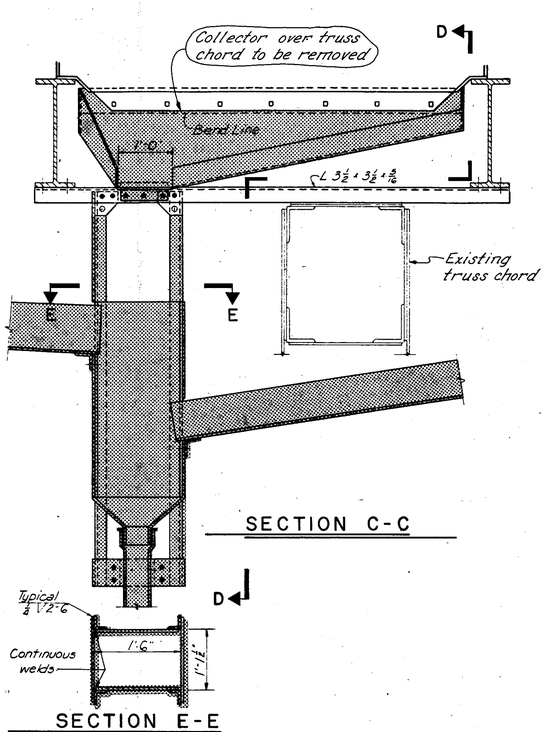
Existing W.I. troughs, downspouts, hoppers, collectors above truss chords, and structural hangers shall be removed as shown. Sections of troughs and hanger angles may be reused with the Engineers' approval.

Ladder to catwalk on south side was removed at locations B1 through B6 during previous widening project. Access doors not in service at these locations.



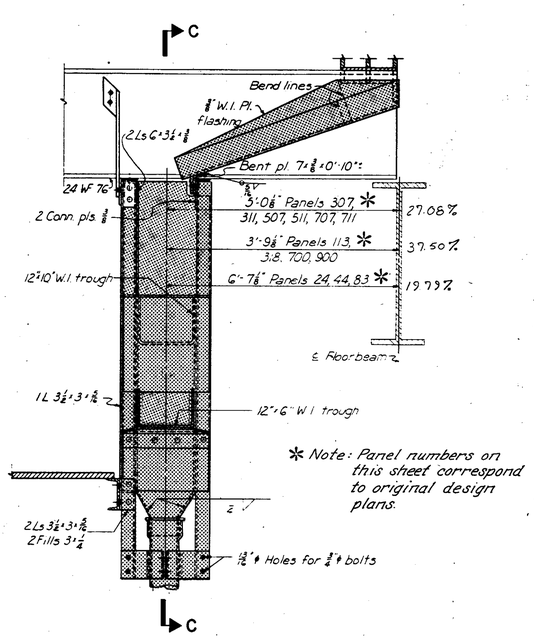
SECTION A-A

* Free end of collector must have temporary support. Do not let collector hang from drain casting alone



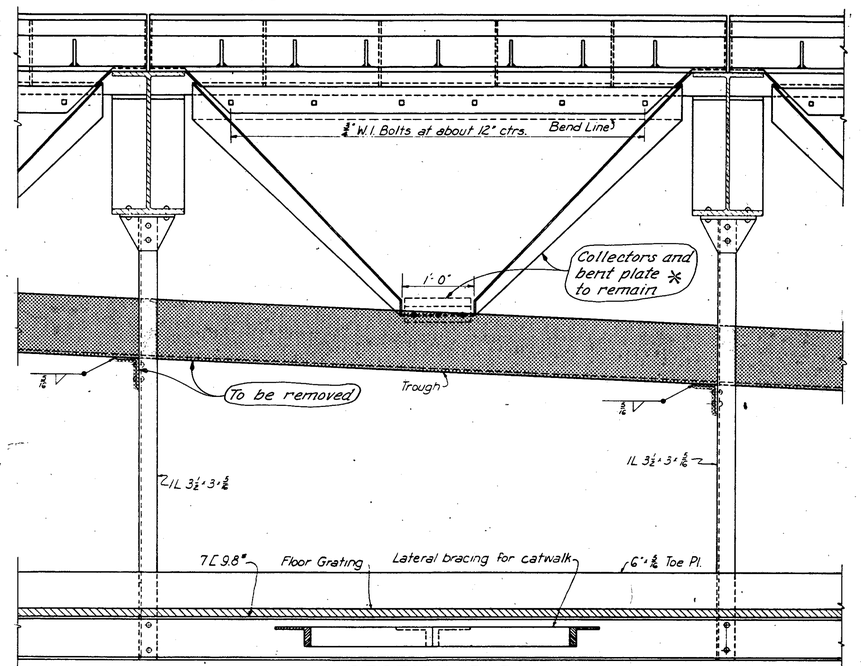
SECTION C-C

SECTION E-E



SECTION D-D

* Note: Panel numbers on this sheet correspond to original design plans.



SECTION B-B

LEGEND

Indicates existing drainage materials to be removed. Contractor to dispose of removal materials unless otherwise shown on plans or directed by the Engineer.

NOTES

COLLECTOR TYPES and locations shown on sheet 27

MATERIALS shown are existing. Work to be done under this project shown in (captions). Dimensions and notes otherwise shown are from original design plans for information only. Existing troughs, plates and flashing marked W.I. have been fabricated of Corten weatherizing steel in lieu of wrought iron.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

REMOVAL DETAILS TYPE B DRAIN MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	JPT	DHT	1/27/86	

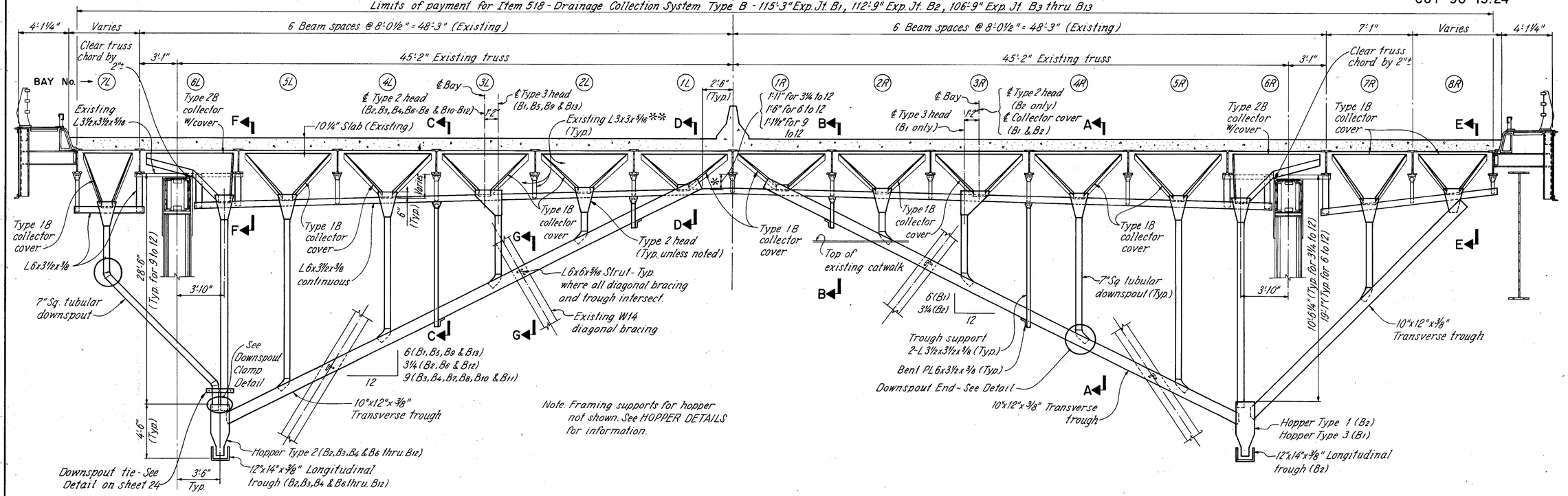
FHWA REGION	STATE	PROJECT	
5	OHIO		

30/72

CUYAHOGA COUNTY
CUY-90-15.24

** Existing L3x3x5/16 to be cut off at elevation determined in the field with placement of continuous L6x3½x5/16

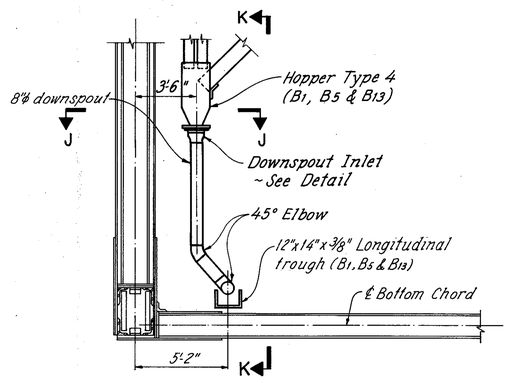
* Dimension measured from bottom of existing stringer to inside bottom of transverse trough.

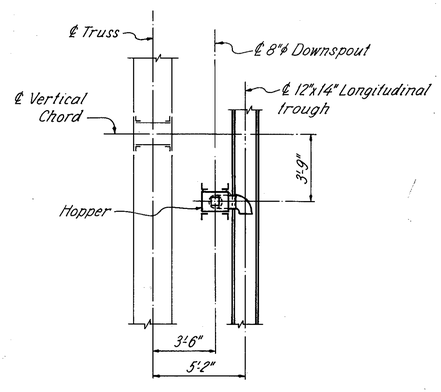


Note: Framing supports for hopper not shown. See HOPPER DETAILS for information.

TYPICAL HALF SECTION - B1 (SOUTH) & B2 (SOUTH)

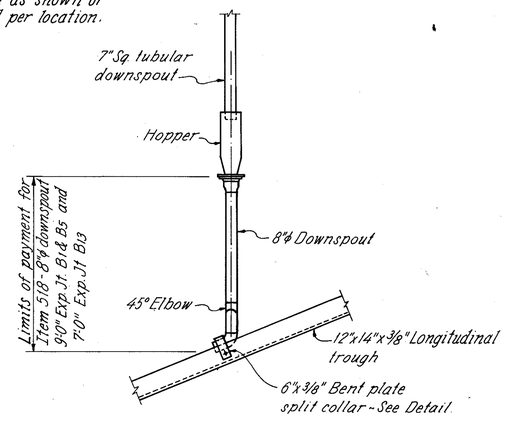
Note: Typical sections are intended to show general layout of drainage system. Actual installations to be as shown or opposite hand, as required per location.





SECTION J-J

TYPICAL HALF SECTION - B1 (NORTH), B2 (NORTH) & B3 THRU. B13 (NORTH & SOUTH)



VIEW K-K

NOTES

DRAINAGE COLLECTION SYSTEM: See General Notes sheet 6 for pay item description.

SECTION A-A THRU G-G: See sheet 31.

COLLECTOR & HEAD DETAILS: See sheet 32.

DOWNSPOUT BEND DETAIL: See sheet 49.

HOPPER DETAILS: See sheet 33.

SPLIT COLLAR DETAILS: See sheet 49.

DOWNSPOUT END DETAIL: See sheet 49.

DOWNSPOUT CLAMP DETAIL: See sheet 49.

DOWNSPOUT INLET DETAIL: See sheet 49.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

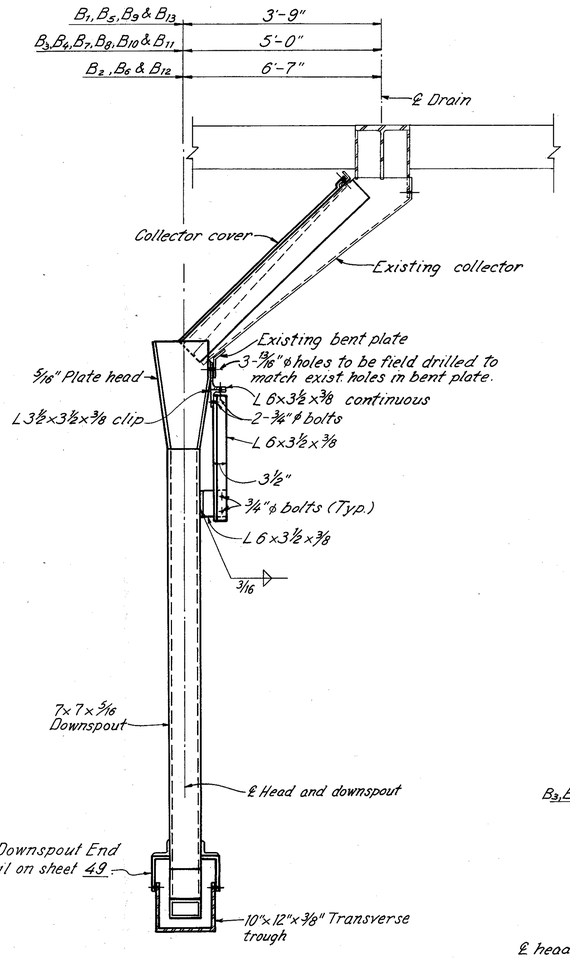
TYPICAL SECTION & DETAILS TYPE B DRAIN MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER
CUYAHOGA COUNTY I-90

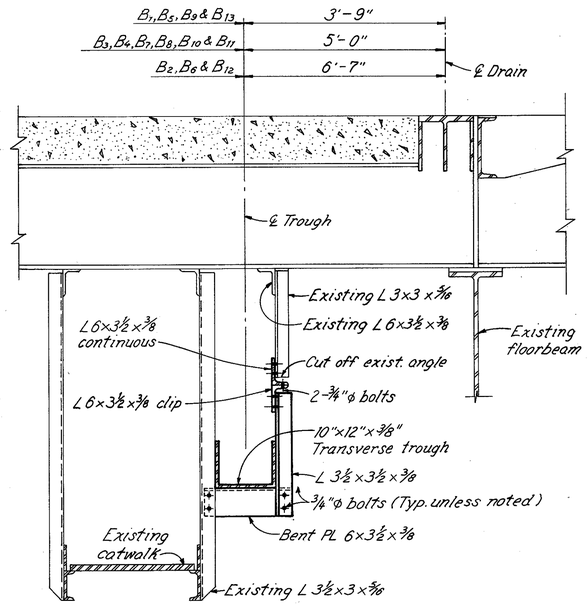
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DHT	JPS.	JPS	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

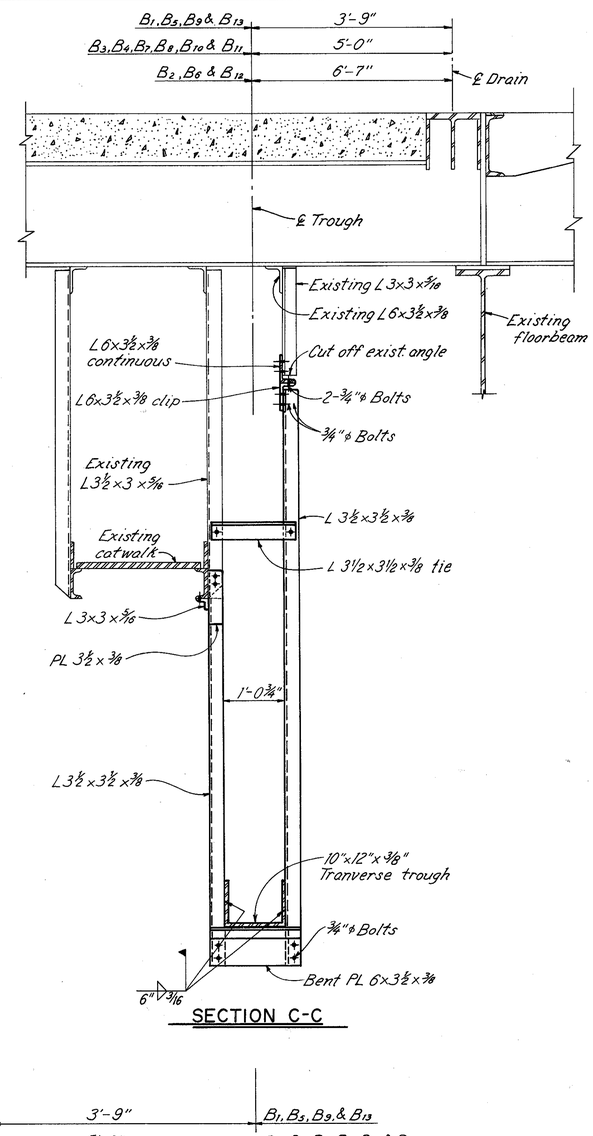
CUYAHOGA COUNTY
CUY-90-15.24



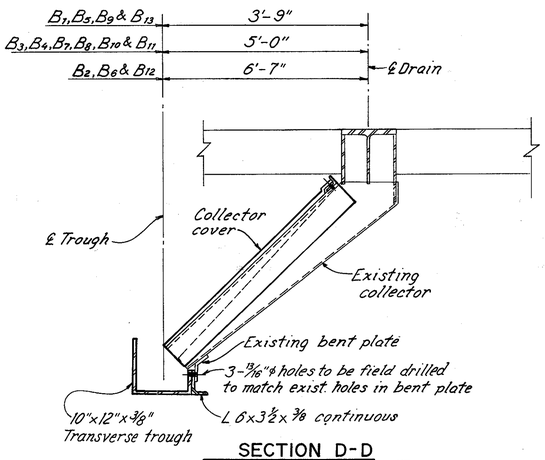
SECTION A-A



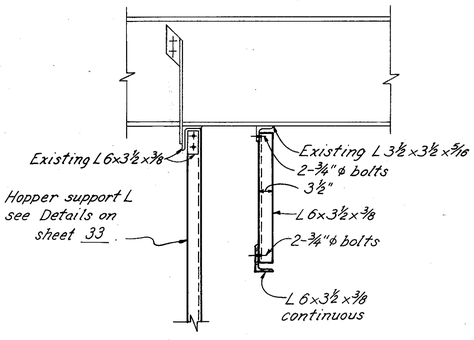
SECTION B-B



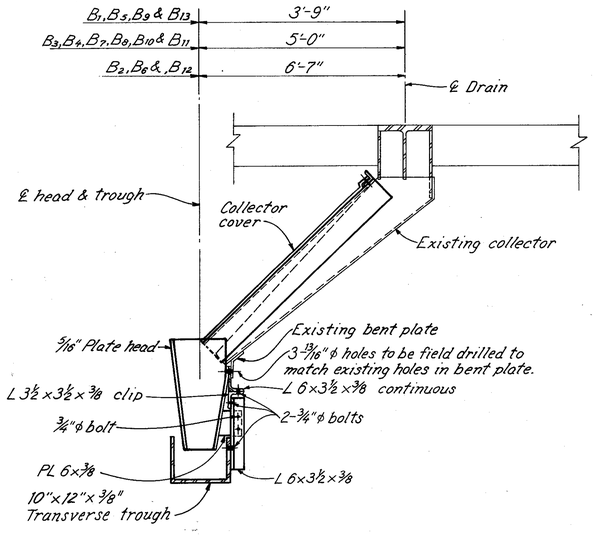
SECTION C-C



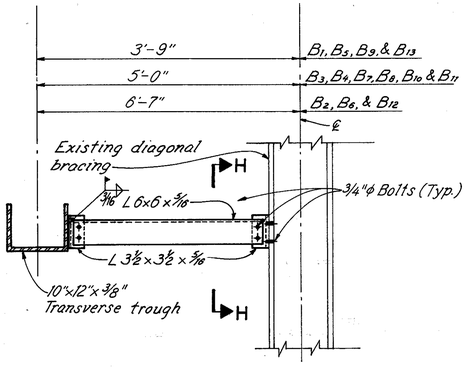
SECTION D-D



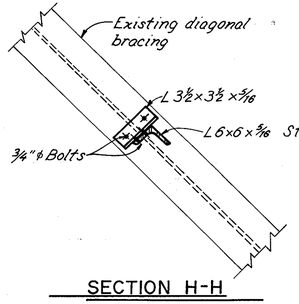
SECTION F-F



SECTION E-E



SECTION G-G



SECTION H-H

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS TYPE B DRAIN MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

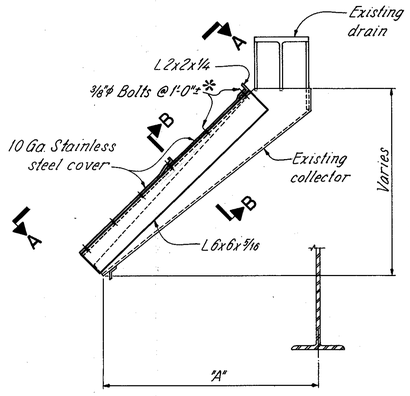
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	EFW	JPT	DHT	1/27/86	

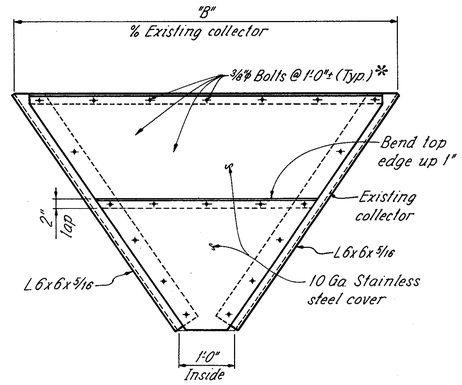
FHWA REGION	STATE	PROJECT	
5	OHIO		

32/72

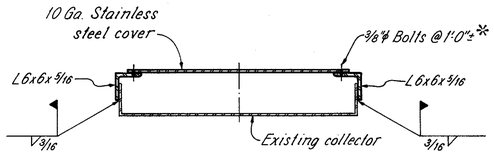
CUYAHOGA COUNTY
CUY-90-15.24



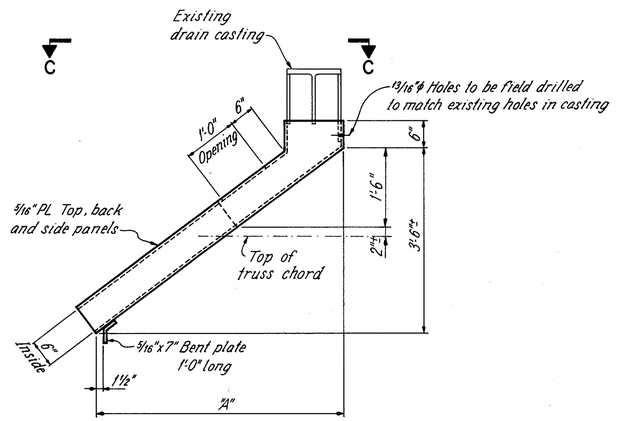
SIDE VIEW



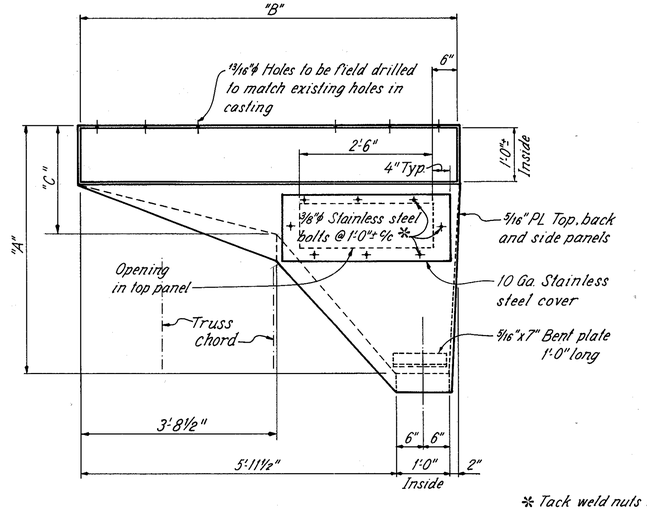
VIEW A-A



SECTION B-B



SIDE VIEW



VIEW C-C

* Tack weld nuts to collector

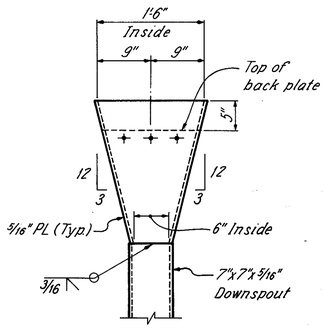
COLLECTOR DETAIL - TYPE 1B

COLLECTOR TABLE						
JOINT	TYPE	BAY	DIM. "A"	DIM. "B"	DIM. "C"	NO. REQ'D
B1, B5, B9 & B13	1B	1L-5L & 1R-5R	3'-4½"	7'-1½"		40
B1, B5, B9 & B13	2B	6L(A.S) & 6R(O.H)	3'-4½"	7'-1½"	1'-5⅜"±	4(A.S) & 4(O.H)
B1	1B	7L	3'-4½"	4'-2"		1
B1	1B	7R	3'-4½"	6'-2"		1
B1	1B	8R	3'-4½"	5'-6"		1
B5	1B	7L	3'-4½"	6'-0"		1
B5	1B	7R	3'-4½"	2'-5"		1
B9	1B	7L	3'-4½"	4'-8"		1
B9	1B	7R	3'-4½"	3'-0"		1
B13	1B	7L	3'-4½"	6'-2"		1
B13	1B	7R	3'-4½"	2'-3"		1
B2, B6 & B12	1B	1L-5L & 1R-5R	4'-7½"	7'-1½"		30
B2, B6 & B12	2B	6L(A.S) & 6R(O.H)	4'-7½"	7'-1½"	1'-11¾"±	3(A.S) & 3(O.H)
B2	1B	7L	4'-7½"	4'-2"		1
B2	1B	7R	4'-7½"	6'-2"		1
B2	1B	8R	4'-7½"	3'-1"		1
B6	1B	7L	4'-7½"	7'-1"		1
B6	1B	7R	4'-7½"	1'-4"		1
B12	1B	7L	4'-7½"	6'-5"		1
B12	1B	7R	4'-7½"	2'-0"		1
B3, B4, B7, B8, B10 & B11	1B	1L-5L & 1R-5R	6'-2½"	7'-1½"		60
B3, B4, B7, B8, B10 & B11	2B	6L(A.S) & 6R(O.H)	6'-2½"	7'-1½"	2'-8"±	6(A.S) & 6(O.H)
B3 & B4	1B	7L & 7R	6'-2½"	4'-2"		4
B7, B8, B10 & B11	1B	7L	6'-2½"	3'-1"		4
B7, B8, B10 & B11	1B	7R	6'-2½"	5'-4"		4

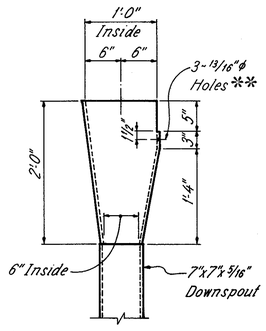
A.S - As shown
O.H - Opposite hand

COLLECTOR DETAIL - TYPE 2B

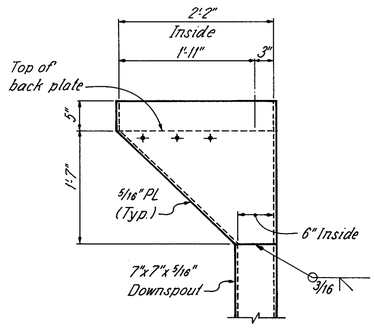
Both left and right configurations are required



ELEVATION



TYPICAL SIDE VIEW



ELEVATION

HEAD TYPE 2

HEAD TYPE 3

** 13/16"ϕ Holes to be field drilled to match existing holes in bent plate on collector.

NOTES

COLLECTOR AND HEAD WELD DETAILS:
See sheet 27.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS
TYPE B DRAIN
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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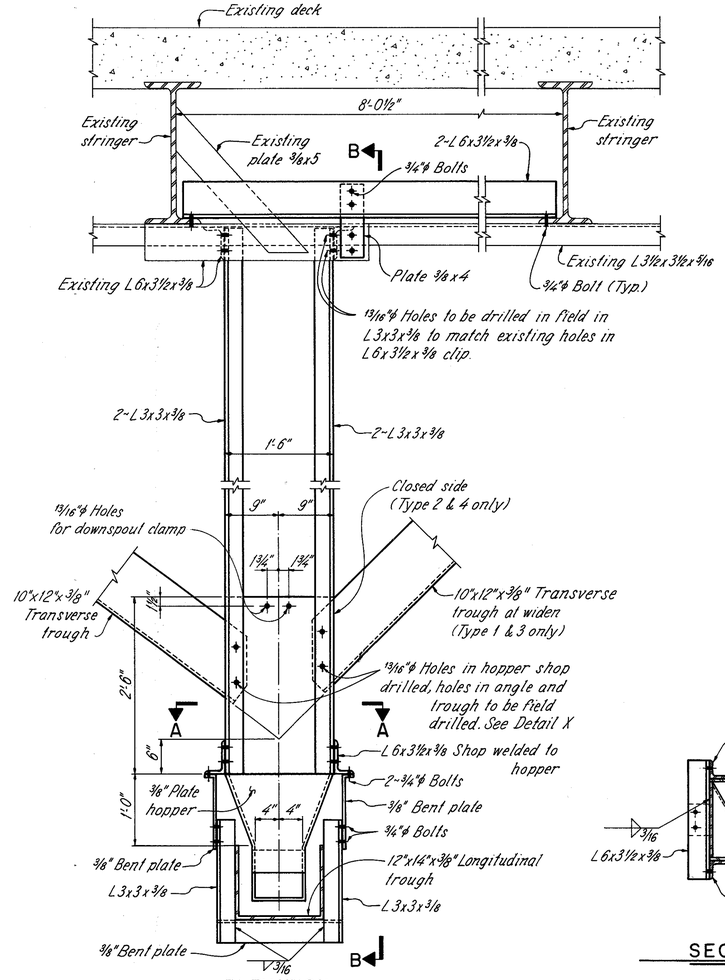
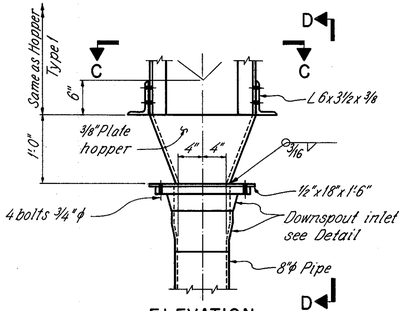
CUYAHOGA COUNTY
CUY-90-15.24

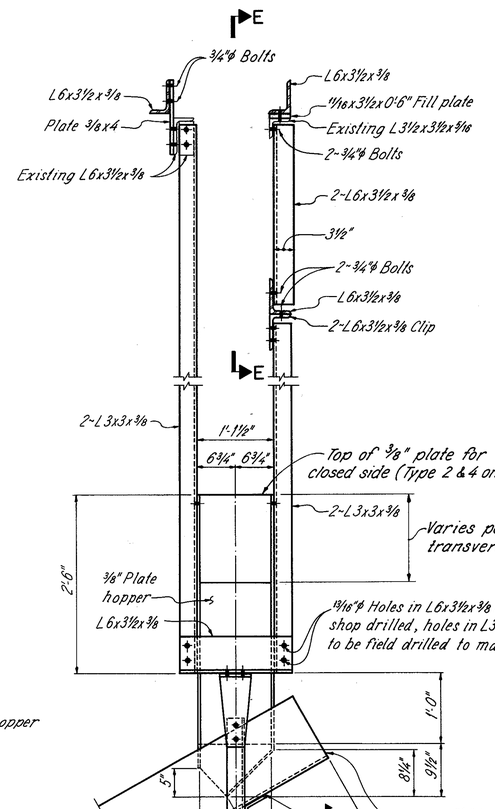


ELEVATION
TYPE 1 - 1 REQUIRED
TYPE 2 - 19 REQUIRED

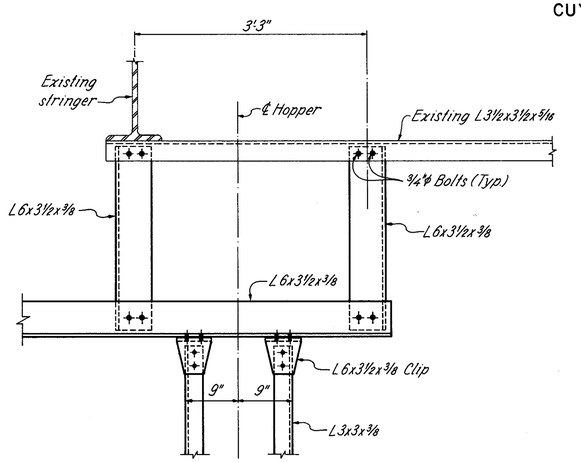


ELEVATION
TYPE 3 - 1 REQUIRED
TYPE 4 - 5 REQUIRED

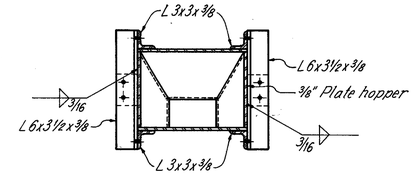
HOPPER DETAIL



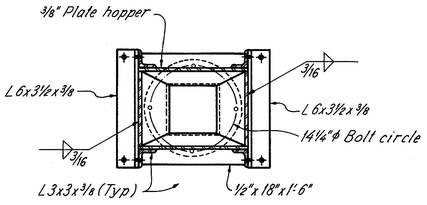
VIEW B-B



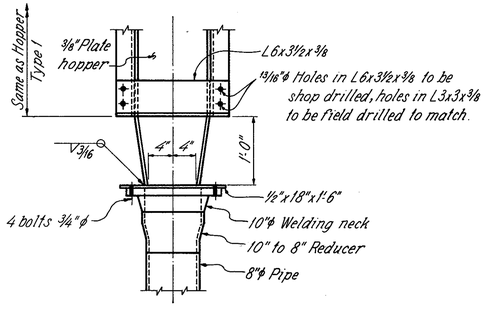
SECTION E-E



SECTION A-A



SECTION C-C



VIEW D-D

NOTES

DETAIL X: See sheet 28.

DOWNSPOUT INLET DETAIL: See sheet 49.

HOPPER WELD DETAIL: See sheet 27.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS
TYPE B DRAIN
MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/27/86	

NS0341

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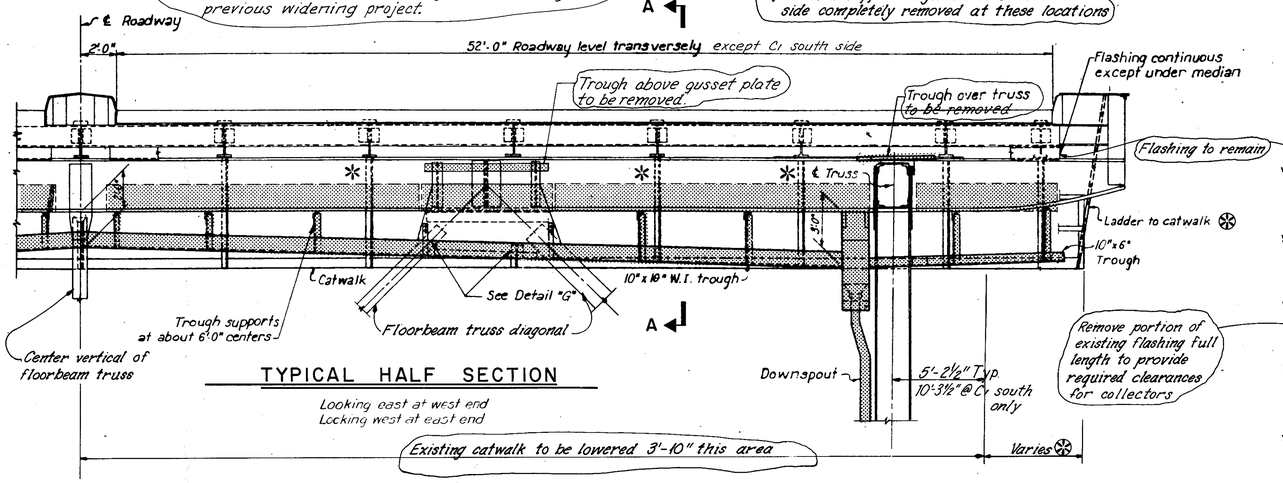
CUY - 90 - 15.24

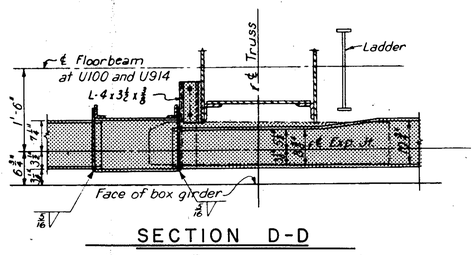
✻ Ladder from catwalk to sidewalk was eliminated at south end of catwalk at joint C1 during previous widening project.

✻ Catwalk support angle on floorbeam side completely removed at these locations

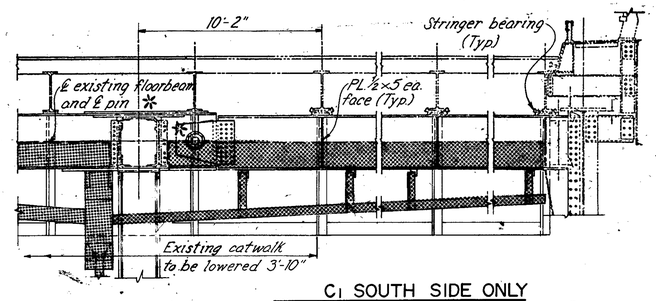


TYPICAL HALF SECTION

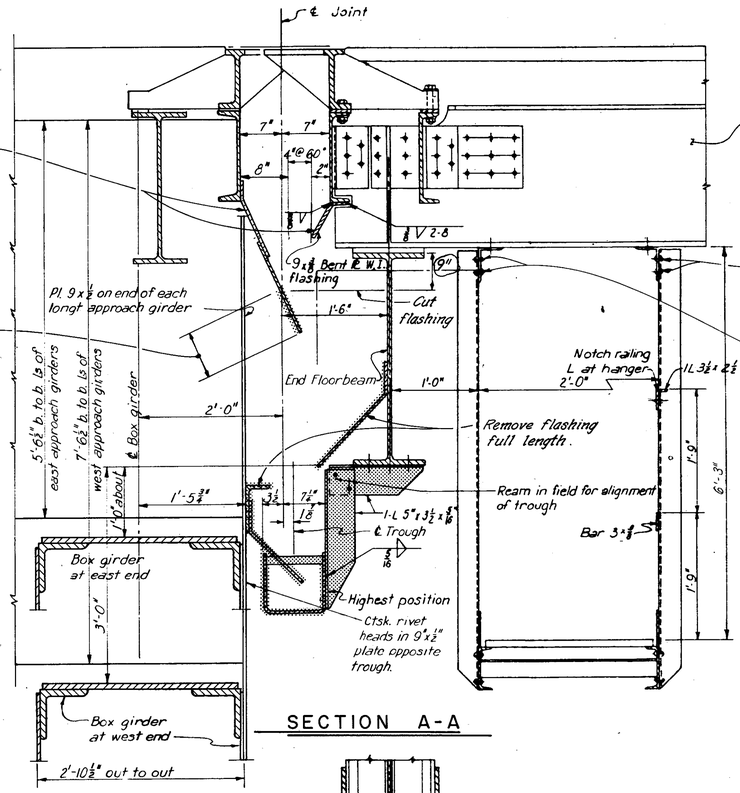
Looking east at west end
Looking west at east end



SECTION D-D



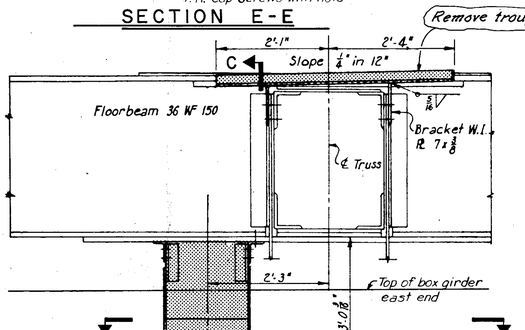
C1 SOUTH SIDE ONLY



SECTION A-A

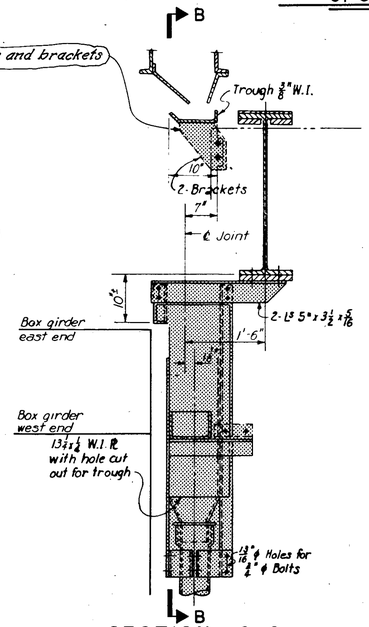
Existing ⅞"ø rivets to be removed in areas where catwalk is to be lowered 3'-10". Top clip angle to remain.

Existing rivets to be removed in areas where catwalk is to be lowered, except as noted. Entire length of hanger and top clip angle on this side shall be removed at locations marked with ✻. See typical half section.



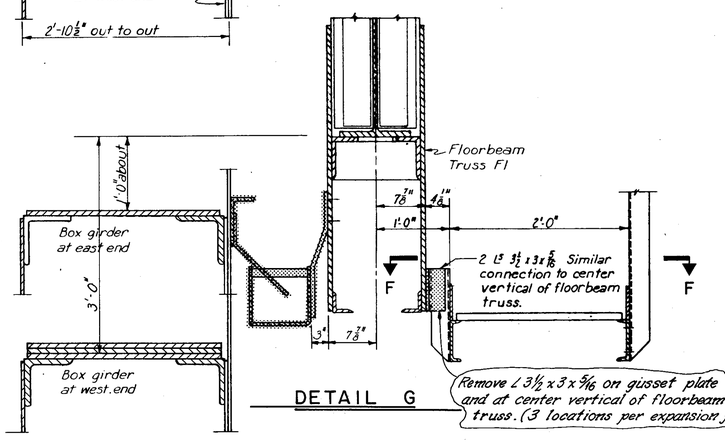
SECTION E-E

SECTION B-B

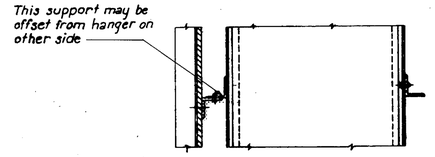


SECTION C-C

Existing W.I. troughs, floorbeam flashing, downspouts, and structural hangers for troughs and downspouts shall be removed. Portions of hanger angles may be reused with the Engineers approval.



DETAIL G



SECTION F-F

LEGEND

Indicates existing drainage materials to be removed. Contractor to dispose of removal materials unless otherwise shown on plans or directed by Engineer.

NOTES:

CATWALK RELOCATION DETAILS : See sheet 46 thru 48.

COLLECTOR TYPES And locations shown on sheet 38.

MATERIALS shown are existing. Work to be done under this project shown in Captions. Dimensions and notes otherwise shown are from original design plans for information only. Existing troughs, plates and flashing marked W.I. have been fabricated of Corten weatherizing steel in lieu of wrought iron.

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

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REMOVAL DETAILS
TYPE C DRAIN AT C1 & C6
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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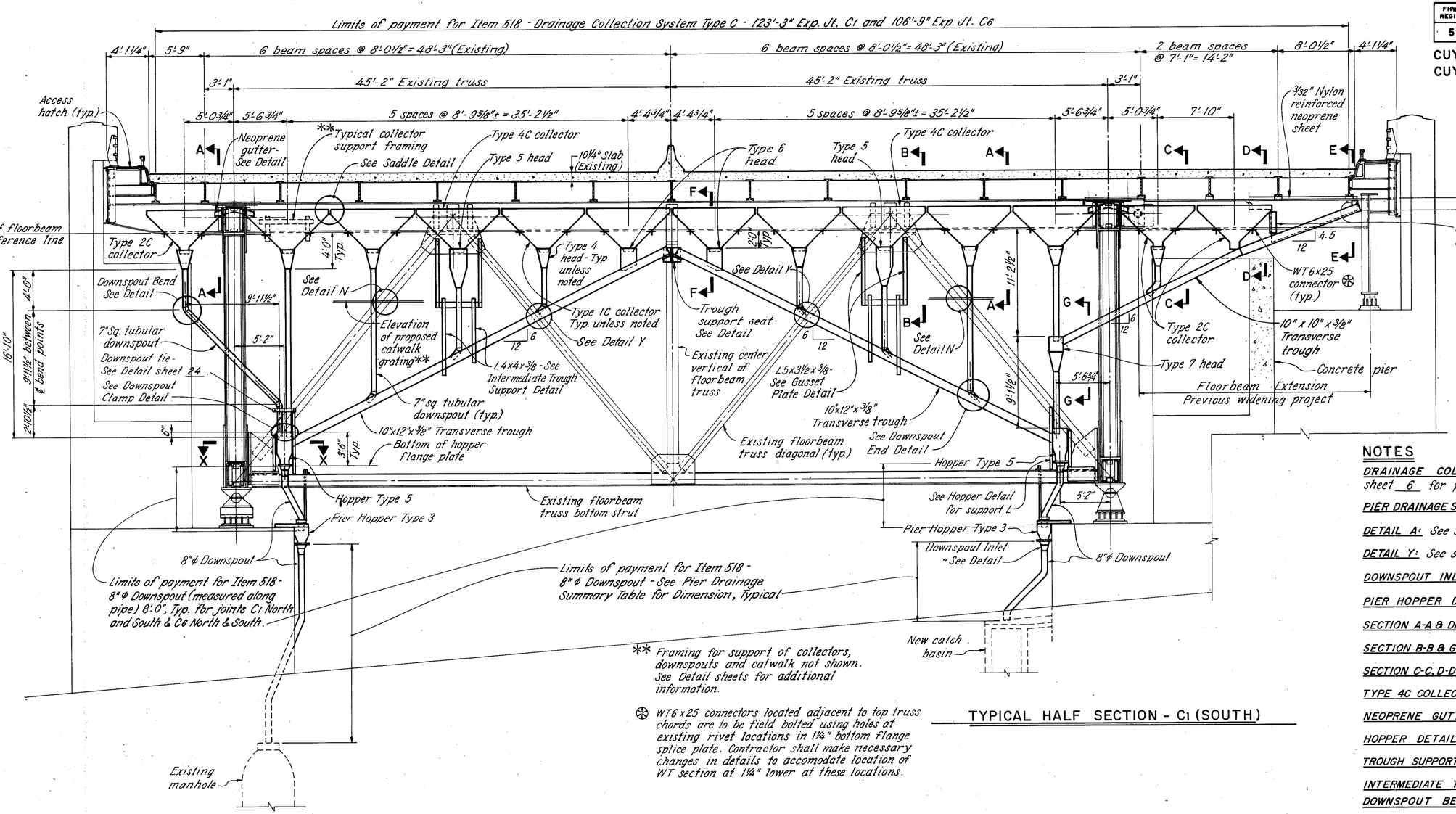
CUYAHOGA COUNTY
CUY-90-15.24



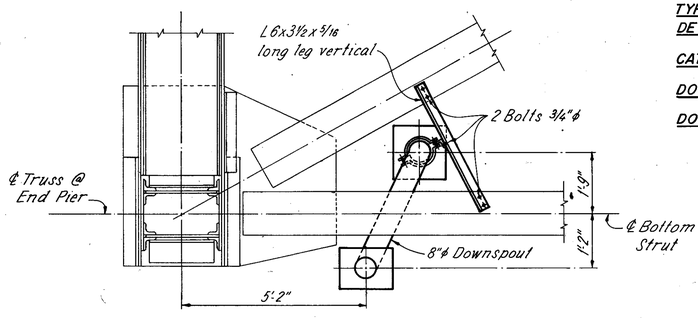
** Framing for support of collectors, downspouts and catwalk not shown. See Detail sheets for additional information.

⊛ WT 6 x 25 connectors located adjacent to top truss chords are to be field bolted using holes at existing rivet locations in 1¼" bottom flange splice plate. Contractor shall make necessary changes in details to accomodate location of WT section at 1¼" lower at these locations.

TYPICAL HALF SECTION - C1 (SOUTH)

TYPICAL HALF SECTION - C1 (NORTH) & C6 (NORTH & SOUTH)

Note: Typical sections are intended to show general layout of drainage system. Actual installations to be as shown or opposite hand, as required per location.



SECTION X-X

NOTES

DRAINAGE COLLECTION SYSTEM: See General Notes sheet 6 for pay item description.

PIER DRAINAGE SUMMARY TABLE: See sheet 54.

DETAIL A: See sheet 54.

DETAIL Y: See sheet 39.

DOWNSPOUT INLET DETAIL: See sheet 49.

PIER HOPPER DETAILS: See sheet 51.

SECTION A-A & DETAIL N: See sheet 36.

SECTION B-B & GUSSET PLATE DETAIL: See sheet 37.

SECTION C-C, D-D, E-E, F-F & G-G: See sheet 38.

TYPE 4C COLLECTOR DETAIL: See sheet 38.

NEOPRENE GUTTER DETAIL: See sheet 38.

HOPPER DETAILS: See sheet 39.

TROUGH SUPPORT SEAT DETAIL: See sheet 41.

INTERMEDIATE TROUGH SUPPORT DETAIL: See SHEET 37

DOWNSPOUT BEND DETAIL: SEE SHEET 49

TYPE 1C & TYPE 2C COLLECTOR, HEAD AND SADDLE DETAILS: See sheet 44.

CATWALK DETAILS: See sheet 46 thru 48.

DOWNSPOUT END DETAIL: See sheet 49.

DOWNSPOUT CLAMP DETAIL: See sheet 49.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

TYPICAL SECTION & DETAILS
TYPE C DRAIN AT C1 & C6
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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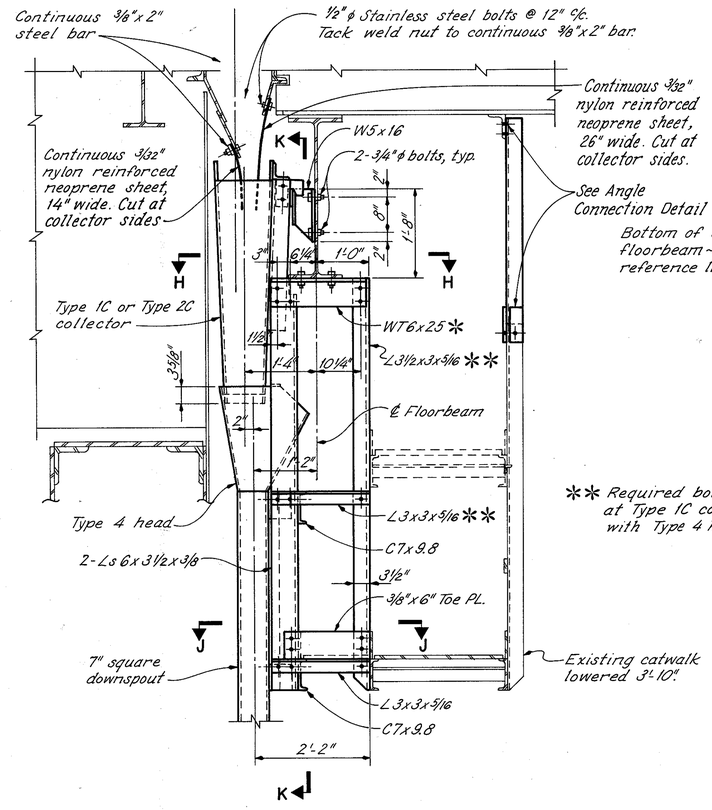
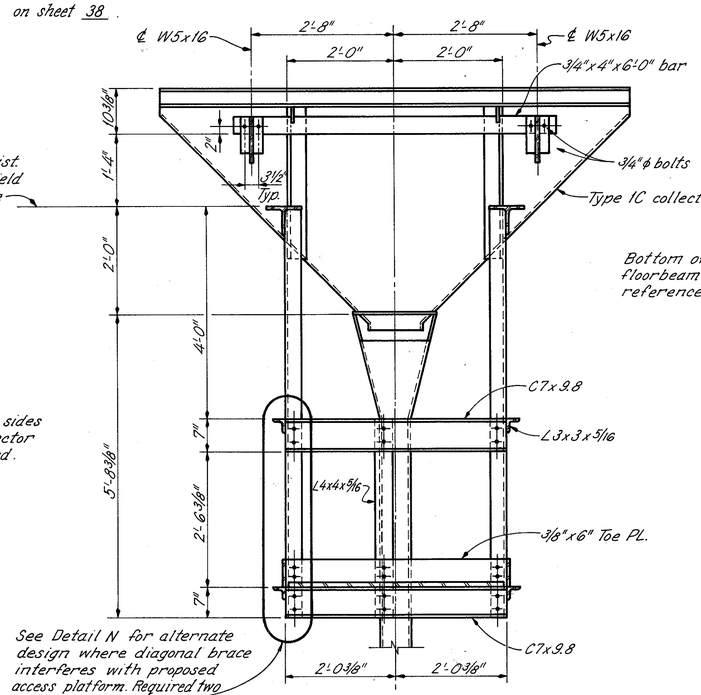
CUYAHOGA COUNTY
CUY-90-15.24



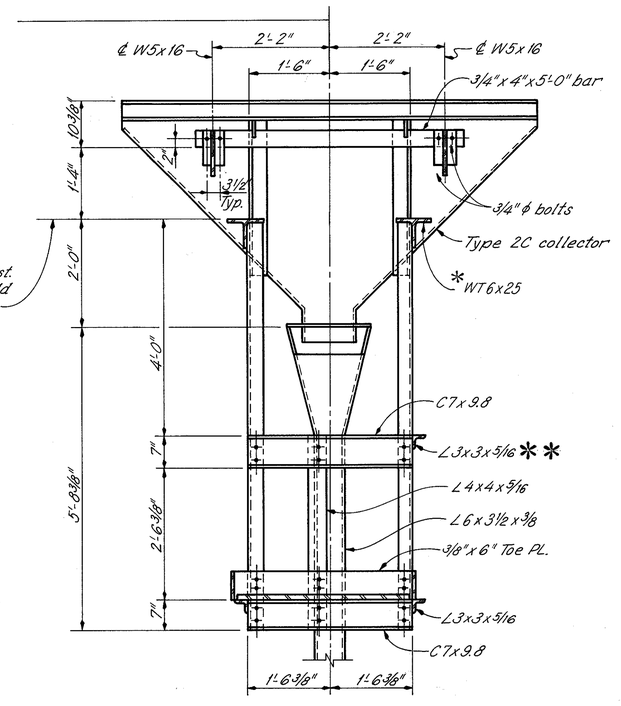
SECTION A-A

* At each type 2C collector the WT6x25 closest to the truss chord shall be fabricated so as to be flush with the floorbeam flange on the catwalk side. All WT6x25 connections on the exterior side of the south truss at C1 shall be fabricated flush as shown in Section C-C on sheet 38 .

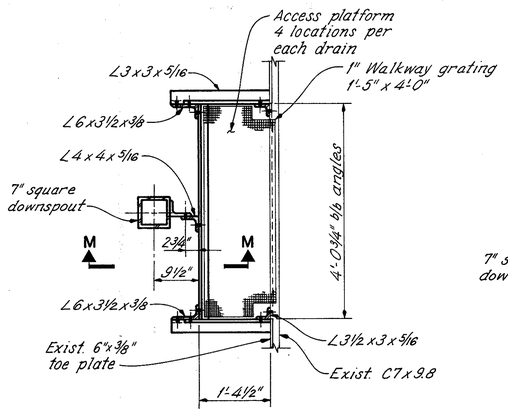
** Required both sides at Type 1C collector with Type 4 head.



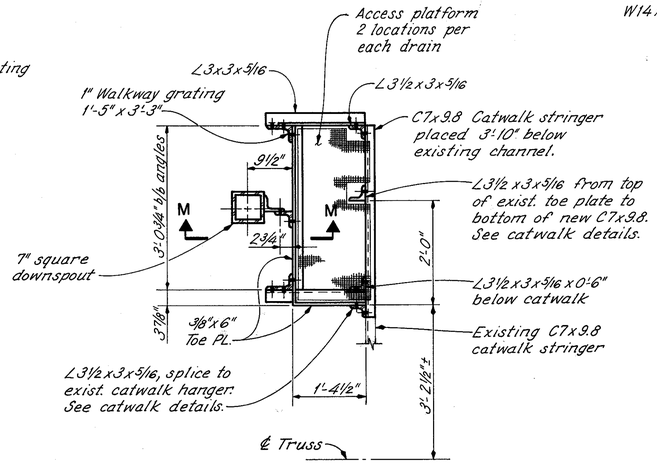
SECTION K-K
FOR TYPE 1C COLLECTOR



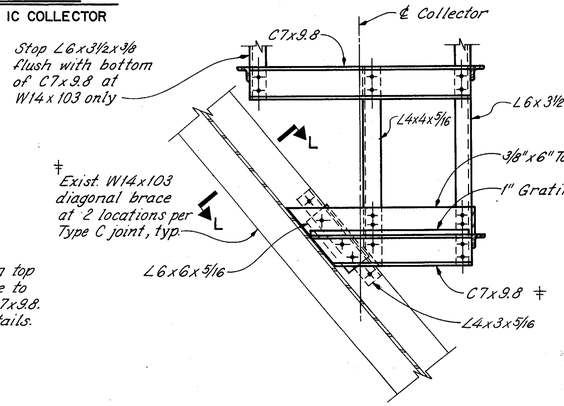
SECTION K-K
FOR TYPE 2C COLLECTOR



SECTION J-J
FOR TYPE 1C COLLECTOR

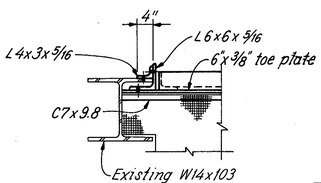


SECTION J-J
FOR TYPE 2C COLLECTOR



DETAIL N

‡ Toe plate, grating and bottom C7x9.8 shall be field cut to fit along web of existing W14x103. Holes shall be field drilled for bolts as shown. Similar interference occurs at the W14x43 diagonal at two locations per drain. Bottom C7x9.8, grating and 3½" leg of the L6x3½ shall be field cut to fit along the web of the W14x43. The 6" leg of the L6x3½ shall be coped to clear the flange of the W14x43. Toe plate and L3x3x5/16 shall not be used on side obstructed by W14x103 or W14x43.



SECTION L-L

NOTES:

SECTION A-A: For location see sheet 35 .

SECTION H-H AND SECTION M-M: see sheet 42 .

ANGLE CONNECTION DETAIL: See sheet 48 .

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

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DRAINAGE DETAILS TYPE C DRAIN AT C1 & C6 MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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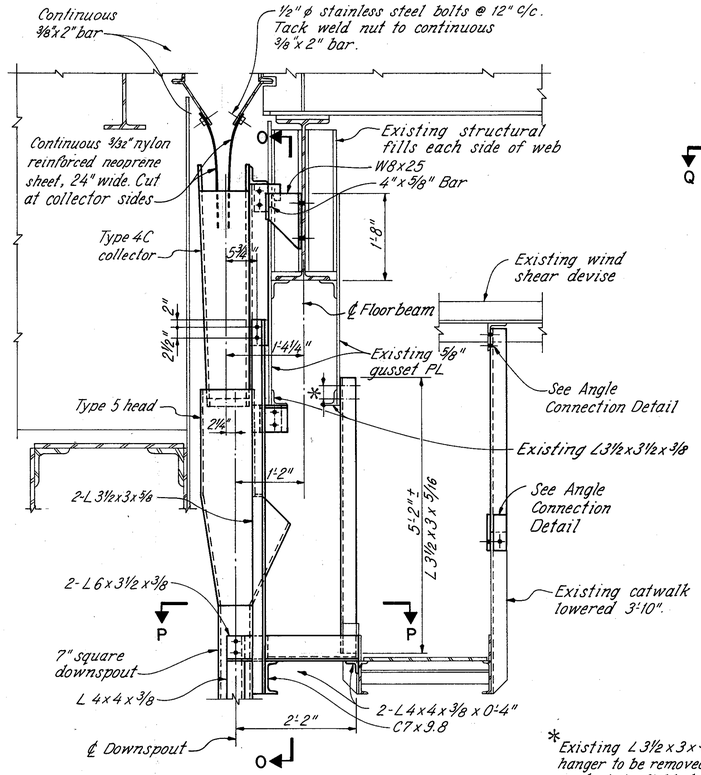
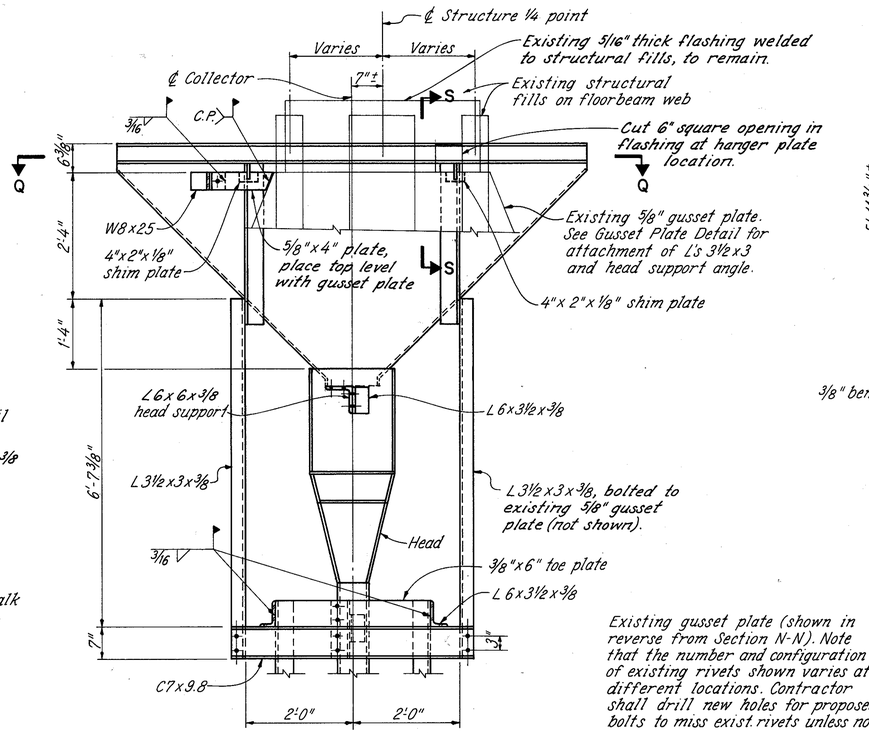
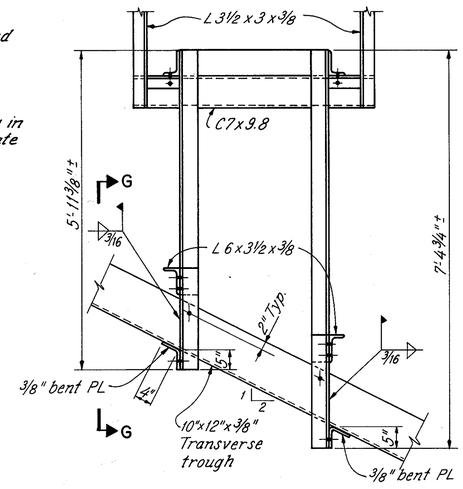
CUYAHOGA COUNTY
CUY-90-15.24



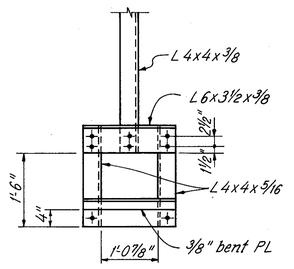
SECTION B-B



SECTION O-O



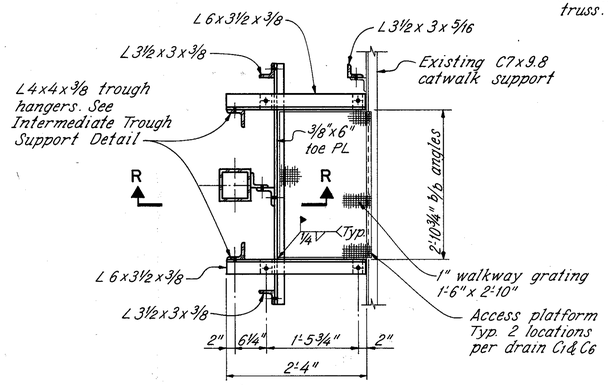
ELEVATION



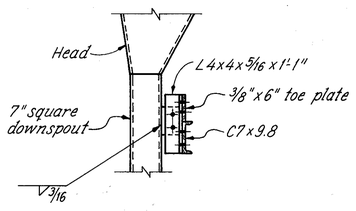
SECTION G-G

INTERMEDIATE TROUGH SUPPORT DETAIL

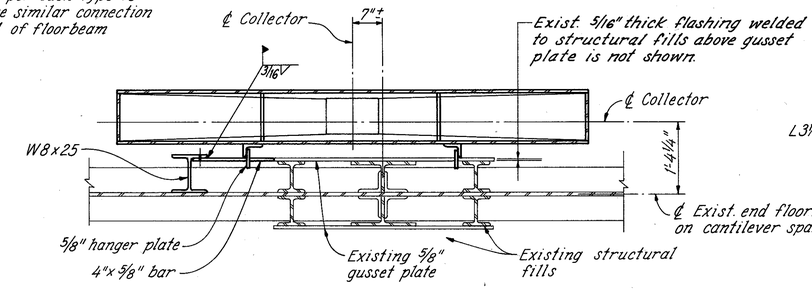
*Existing L 3½x3x5/16 catwalk hanger to be removed. New 5'-2"± long angle to be field drilled and bolted using 2 existing rivet holes in gusset plate. One location per each Type 4C collector head. Use similar connection at center vertical of floorbeam truss.



SECTION P-P

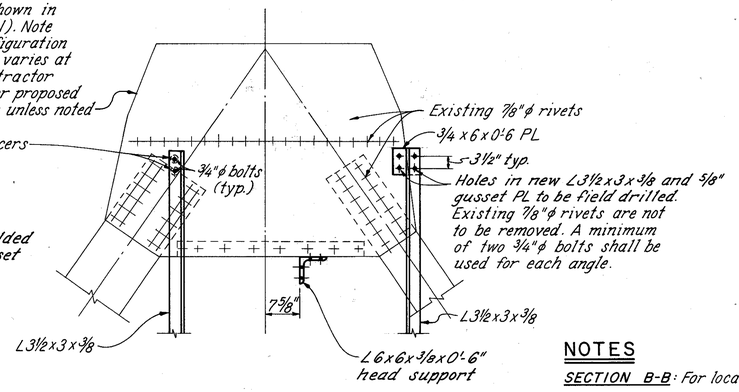


SECTION R-R

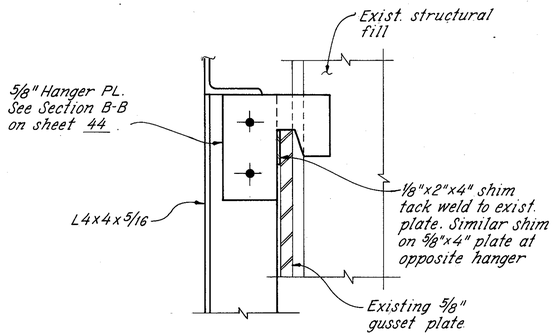


SECTION Q-Q

Existing gusset plate (shown in reverse from Section N-N). Note that the number and configuration of existing rivets shown varies at different locations. Contractor shall drill new holes for proposed bolts to miss exist. rivets unless noted



GUSSET PLATE DETAIL



SECTION S-S

NOTES

SECTION B-B: For location see sheet 35.

C.P.: Complete Penetration

ANGLE CONNECTION DETAIL: See sheet 48.

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

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DRAINAGE DETAILS
TYPE C DRAIN AT C1 & C6
MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	JPS	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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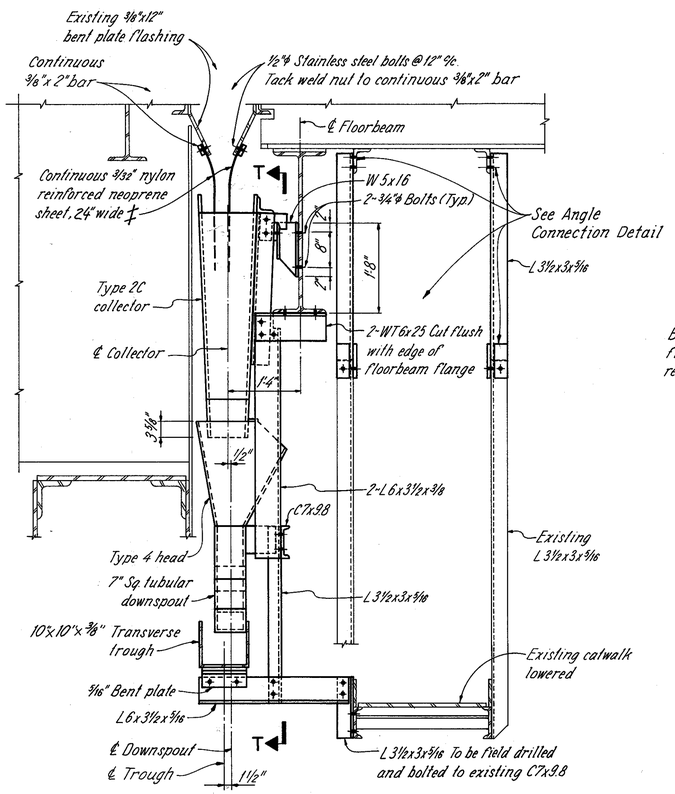
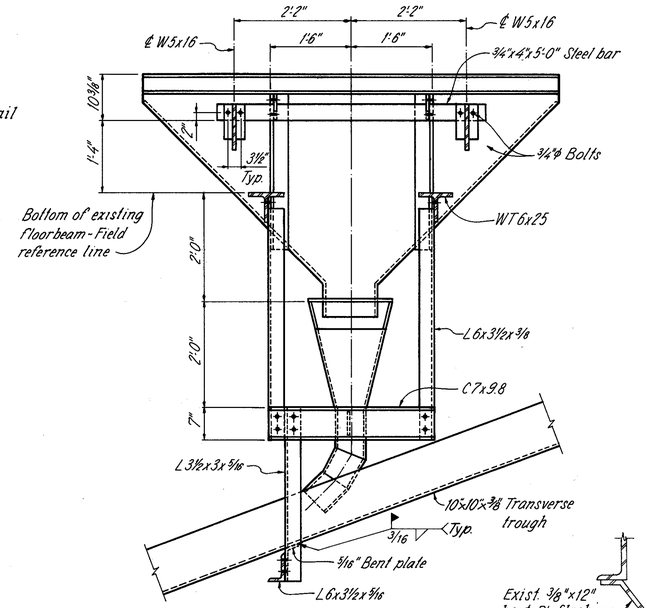
CUYAHOGA COUNTY
CUY-90-15.24



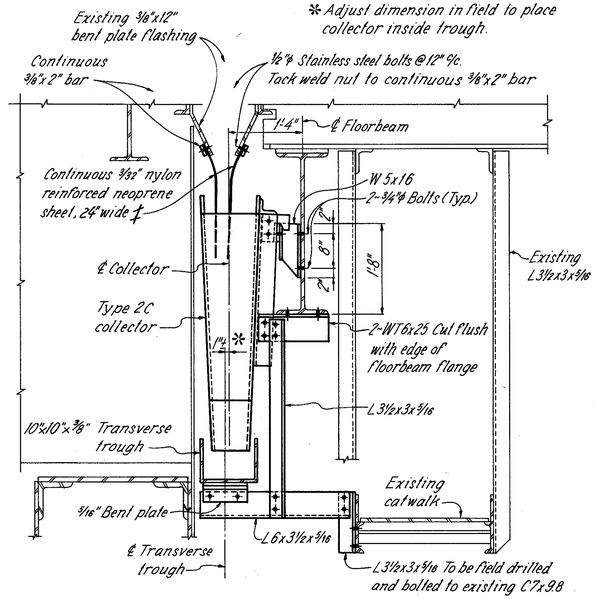
SECTION C-C

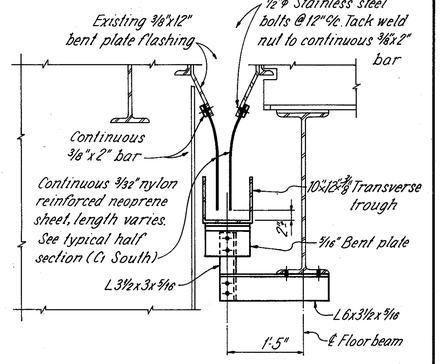
‡ Cut bottom notch in nylon reinforced neoprene sheet at collector sides.



SECTION T-T

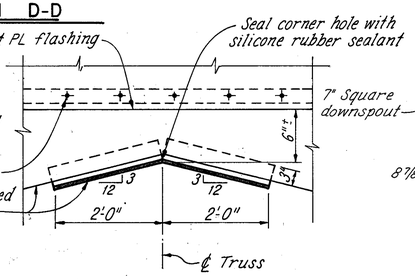
✻ Adjust dimension in field to place collector inside trough.



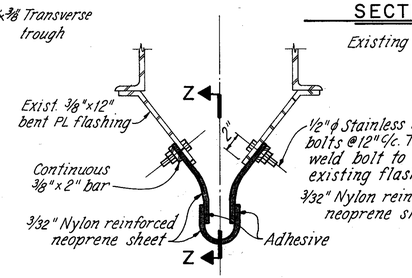


SECTION E-E

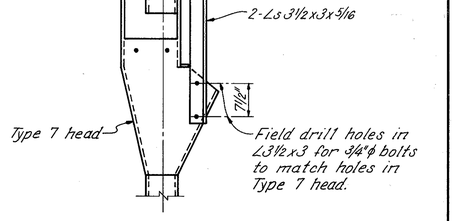
SECTION D-D



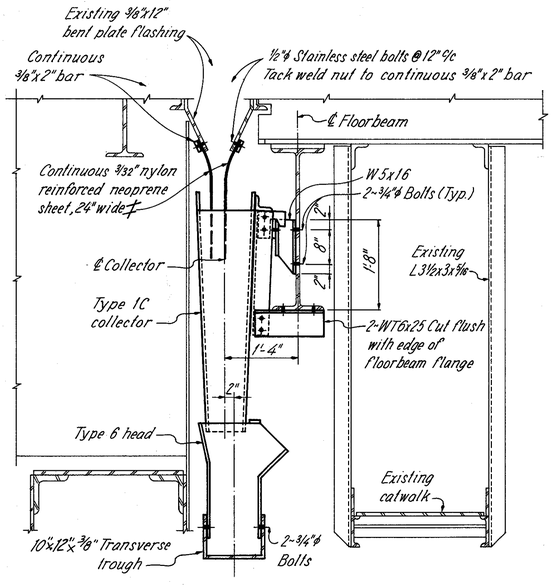
SECTION Z-Z



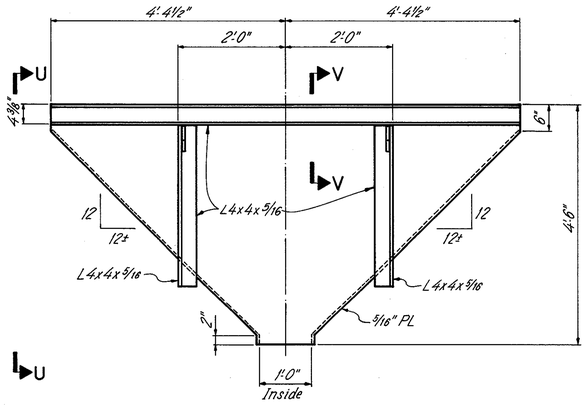
NEOPRENE GUTTER



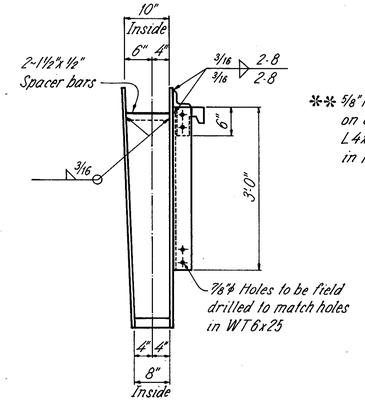
SECTION G-G



SECTION F-F

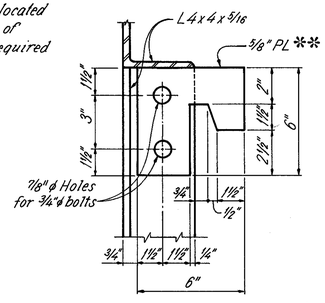


COLLECTOR DETAIL
TYPE 4C - 2 REQUIRED



VIEW U-U

✻✻ 5/8" PL may be located on either side of L4x4x5/16 as required in field.



SECTION V-V

NOTES

COLLECTOR WELD DETAIL: See sheet 27.

ANGLE CONNECTION DETAIL: See sheet 48.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS
TYPE C DRAIN AT C1 & C6
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/27/86	

IN50341

FHWA REGION	STATE	PROJECT	
5	OHIO		

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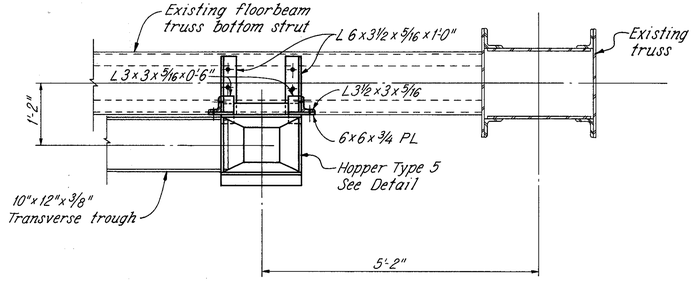
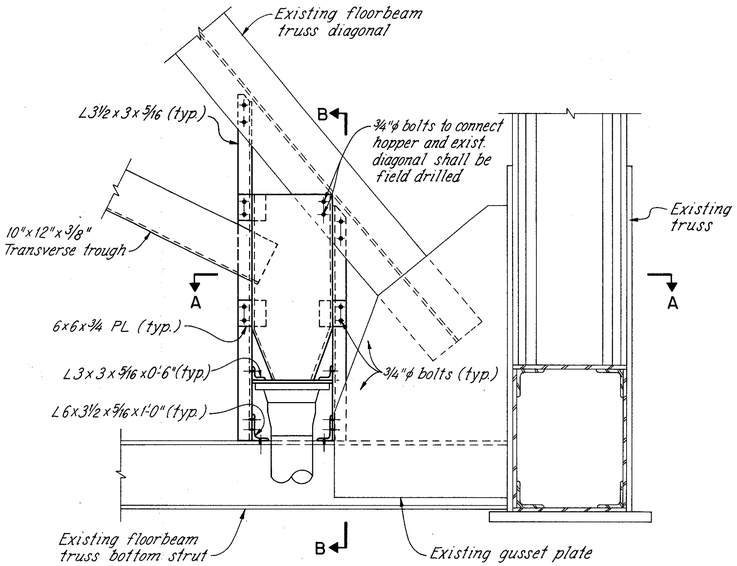
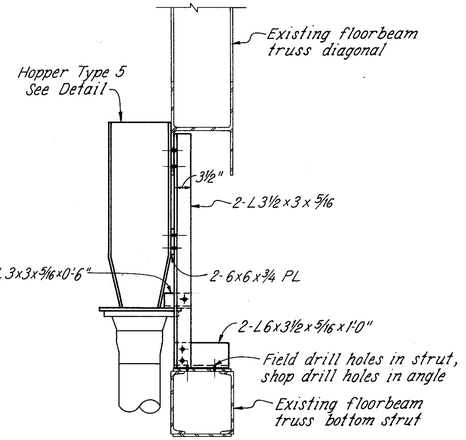
CUYAHOGA COUNTY
CUY-90-15.24



SECTION A-A

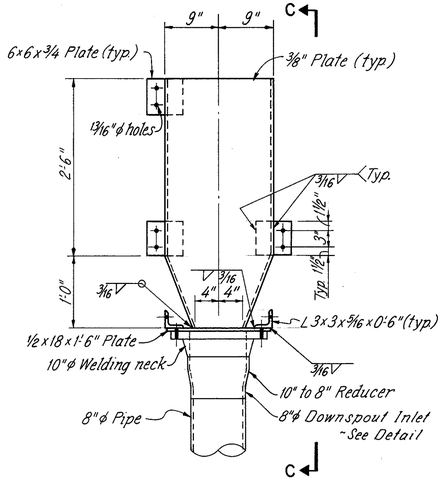


ELEVATION

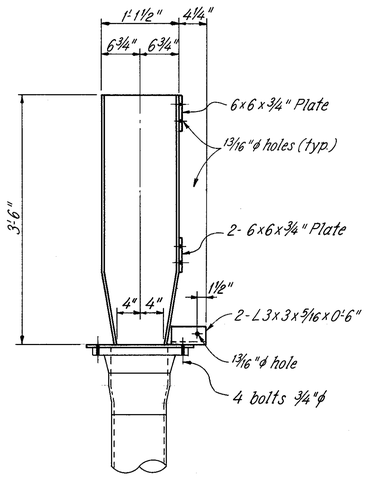


SECTION B-B

HOPPER SUPPORT DETAIL

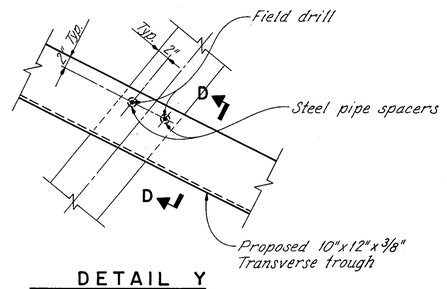


ELEVATION

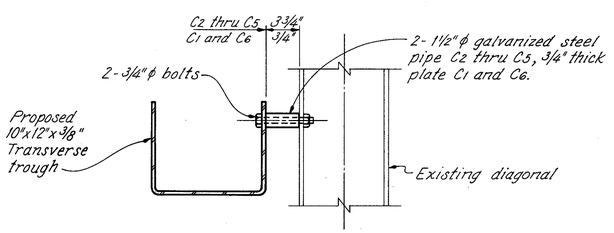


VIEW C-C

HOPPER DETAIL TYPE 5



DETAIL Y



SECTION D-D

NOTE:

8"ϕ DOWNSPOUT INLET DETAIL: See sheet 49

HOPPER WELD DETAIL: See sheet 27.

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

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DRAINAGE DETAILS
TYPE C DRAIN AT C1 & C6
MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

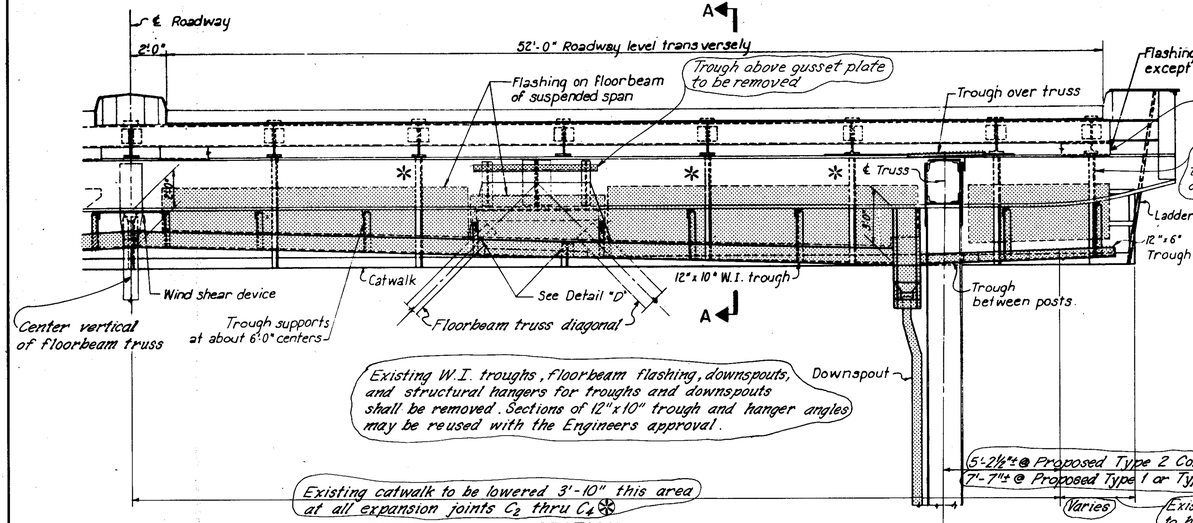
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	JPS	JPT	DHT	1/27/86	

hd0341

FHWA REGION	STATE	PROJECT	
5	OHIO		

40/72

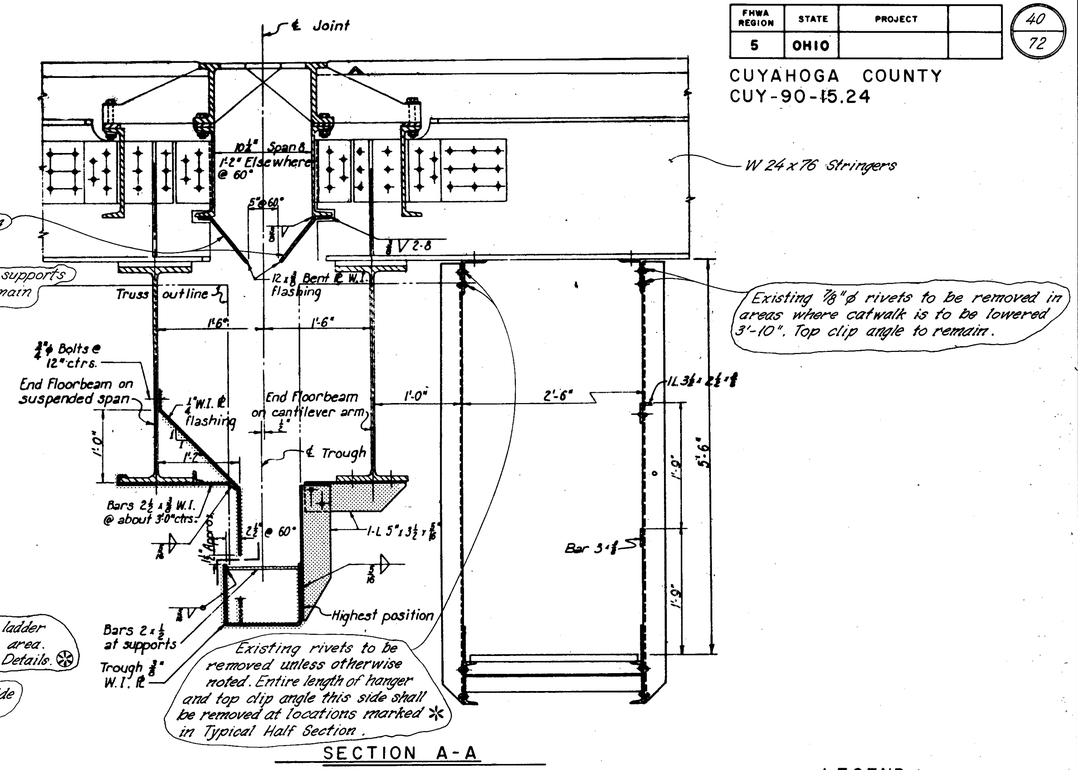
CUYAHOGA COUNTY
CUY-90-15.24



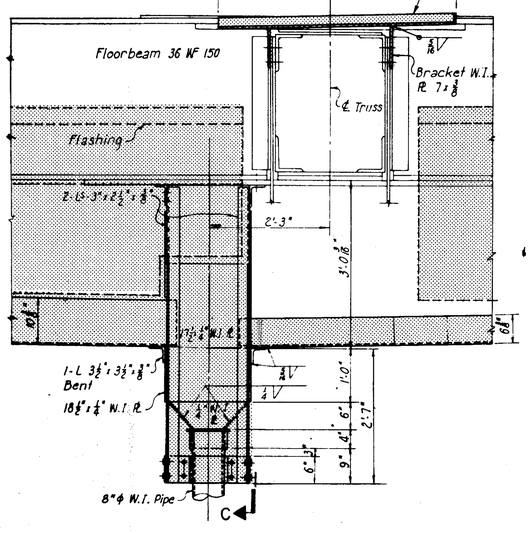
TYPICAL HALF SECTION

✻ Catwalk support angle on floorbeam side to be completely removed at these locations.

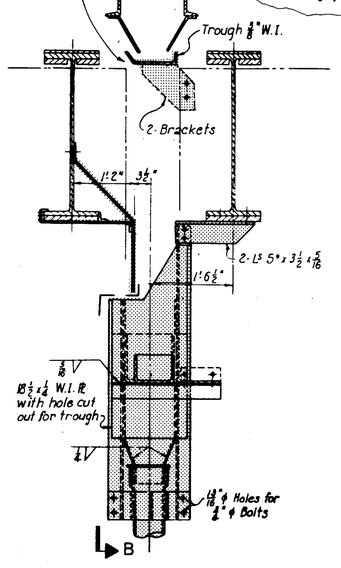
✻ Full length of catwalk to be lowered at joint C2 south side only. Ladder to sidewalk was eliminated during previous widening project along south side at joint C2.



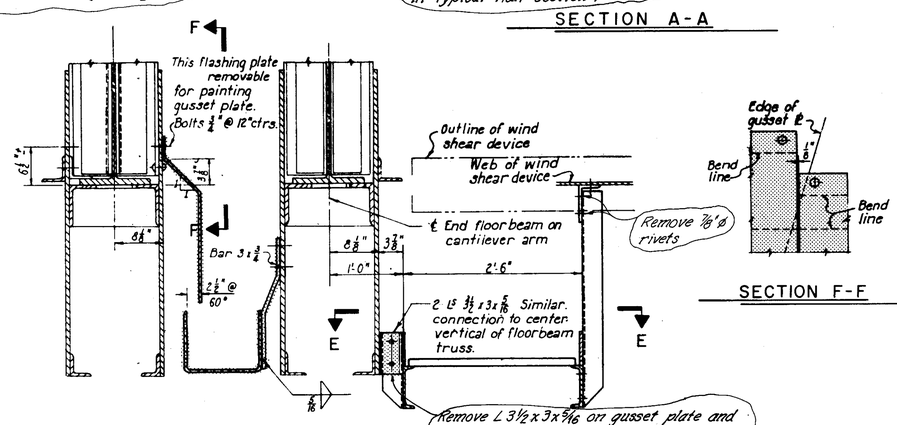
SECTION A-A



SECTION B-B

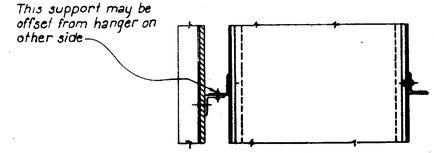


SECTION C-C



DETAIL "D"

SECTION F-F



SECTION E-E

LEGEND

Indicates existing drainage materials to be removed. Contractor to dispose of removal materials unless otherwise shown on plans or directed by Engineer.

NOTES:

CATWALK RELOCATION DETAILS: See Sheet 46 thru 48.

COLLECTOR TYPES And Locations shown on sheet 44.

MATERIALS shown are existing. Work to be done under this project shown in (captions). Dimensions and notes otherwise shown are from original design plans for information only. Existing troughs, plates and flashing marked W.I. have been fabricated of Corten weatherizing steel in lieu of wrought iron.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

REMOVAL DETAILS TYPE C DRAIN AT C2 THRU C5 MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	DER	DER	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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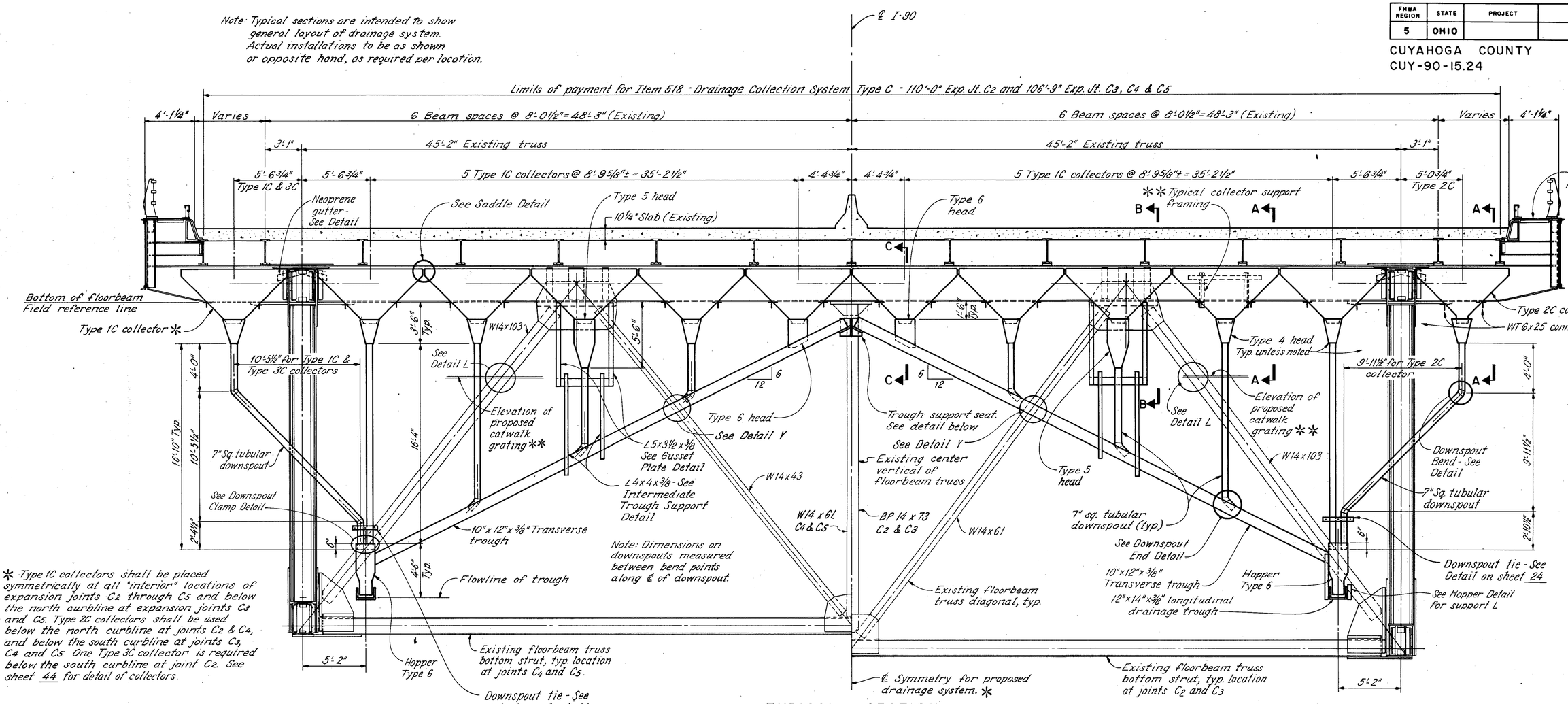
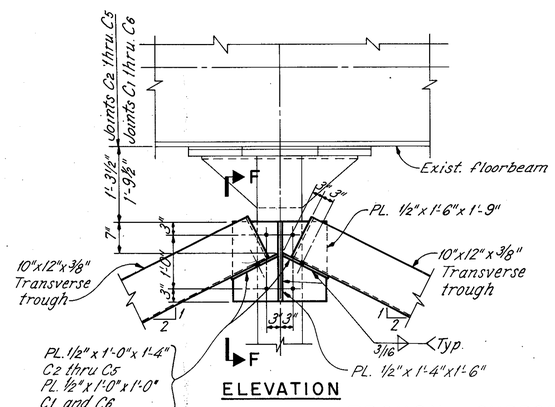
CUYAHOGA COUNTY
CUY-90-15.24

Note: Typical sections are intended to show general layout of drainage system. Actual installations to be as shown or opposite hand, as required per location.

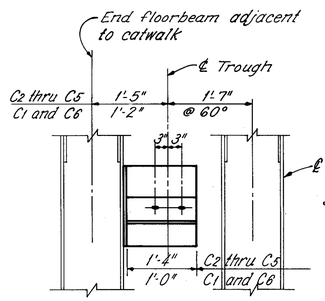


TYPICAL SECTION

* Type 1C collectors shall be placed symmetrically at all "interior" locations of expansion joints C2 through C5 and below the north curbline at expansion joints C3 and C5. Type 2C collectors shall be used below the north curbline at joints C2 & C4, and below the south curbline at joints C3, C4 and C5. One Type 3C collector is required below the south curbline at joint C2. See sheet 44 for detail of collectors.

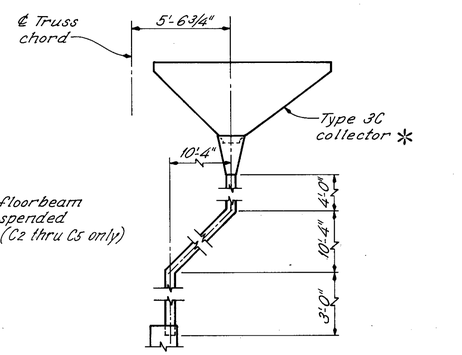


ELEVATION



VIEW F-F

TROUGH SUPPORT SEAT



PARTIAL SECTION AT C2

SOUTH CURBLINE

NOTES

DOWNSPOUT BEND DETAIL: See sheet 49.

DOWNSPOUT CLAMP DETAIL: See sheet 49.

SECTION A-A: See sheet 42.

SECTION B-B: See sheet 43.

SECTION C-C: See sheet 44.

DOWNSPOUT END DETAIL: See sheet 49.

HOPPER DETAIL: See sheet 45.

COLLECTORS, HEAD AND SADDLE DETAIL: See sheet 44.

DETAIL Y: See sheet 39.

DETAIL L: See sheet 42.

INTERMEDIATE TROUGH SUPPORT DETAIL AND GUSSET PLATE DETAIL: See sheet 43.

NEOPRENE GUTTER DETAIL: See sheet 38.

CATWALK DETAILS: See sheet 46 thru 48

** Framing for support of collectors, downspouts and catwalk not shown. See detail sheets for additional information.

⊛ WT6x25 connectors located adjacent to top truss chords are to be field bolted using holes at existing rivet locations in 1¼" bottom flange splice plate. Contractor shall make necessary changes in details to accomodate location of WT section at 1¼" lower at these locations.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

TYPICAL SECTION & DETAILS TYPE C DRAIN AT C2 THRU C5 MAIN RIVER SPANS

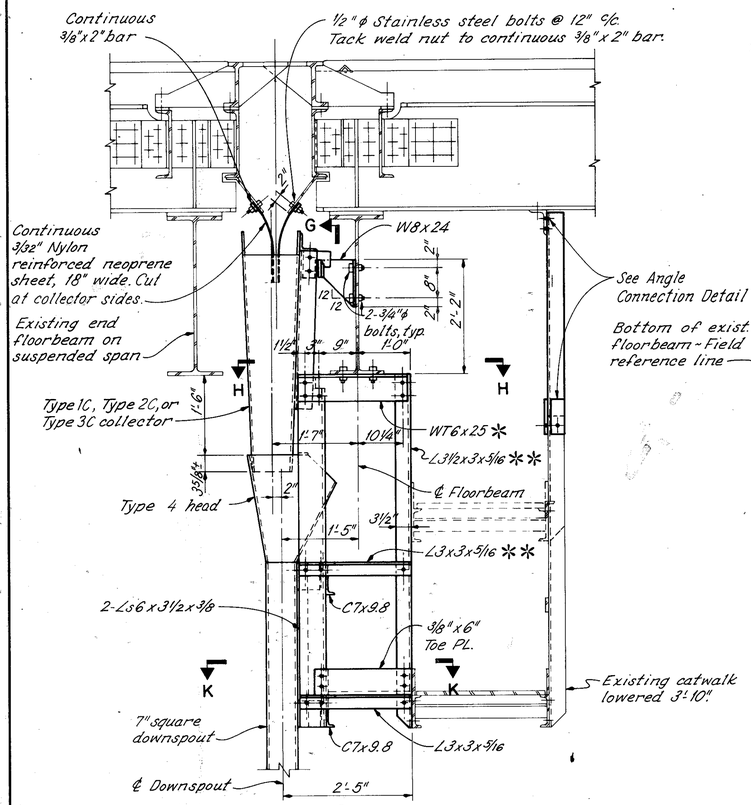
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	JPT	DHT	11/27/86	

FHWA REGION	STATE	PROJECT		42
5	OHIO			72

CUYAHOGA COUNTY
CUY-90-15.24

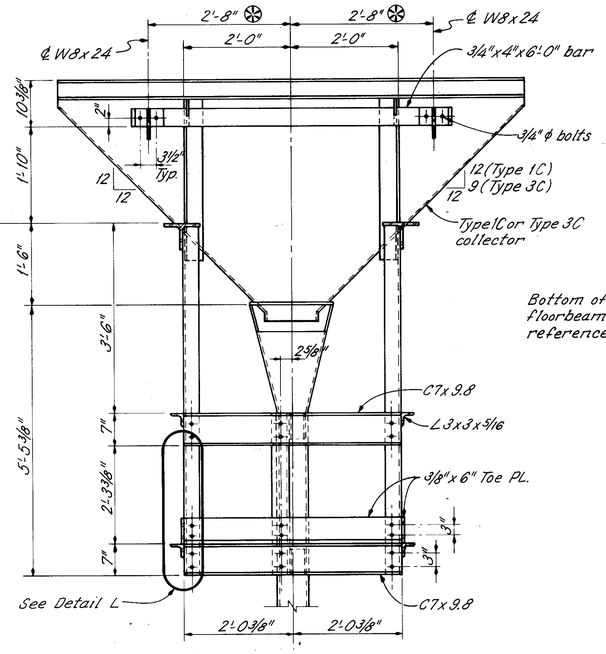


SECTION A-A

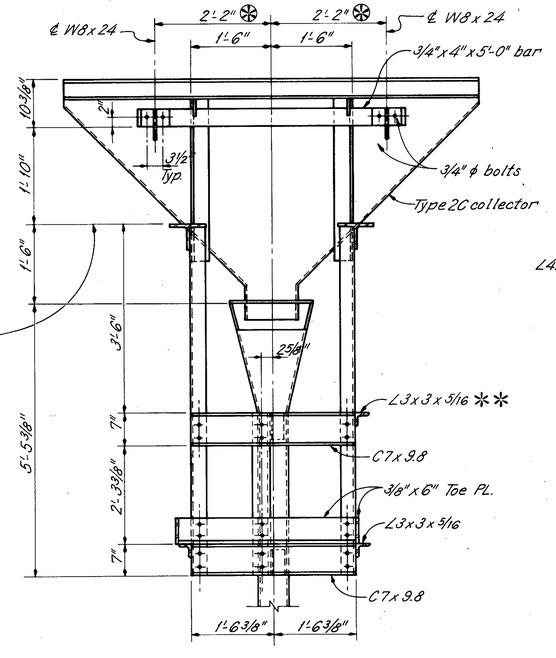
✻ At each type 2C collector the WT6x25 closest to the truss chord shall be fabricated so as to be flush with the floorbeam flange on the catwalk side.

✻✻ Required both sides at Type 1C or Type 3C collector, required one side at Type 2C collector. See catwalk details.

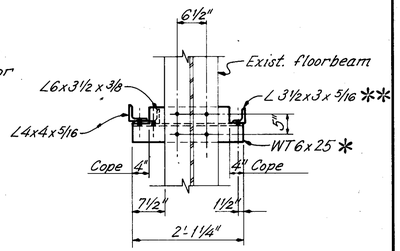
⊛ Dimension may be changed in field if necessary to avoid conflict with existing construction.



SECTION G-G
FOR TYPE 1C & TYPE 3C COLLECTORS



SECTION G-G
FOR TYPE 2C COLLECTOR
(2 locations as shown, 3 locations opposite hand)

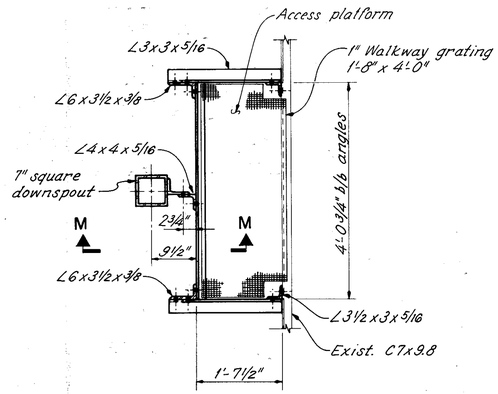


SECTION H-H

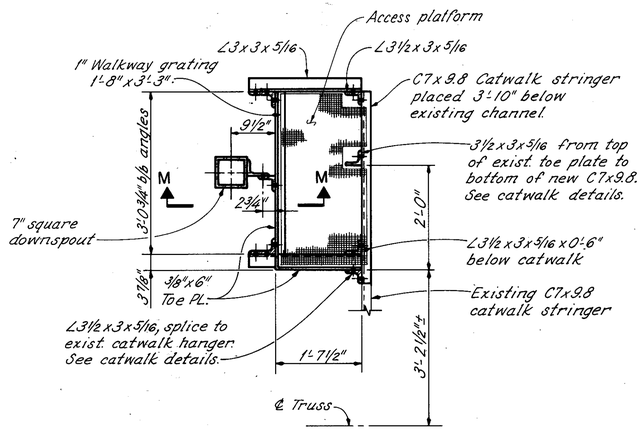
NOTES

SECTION A-A: For location see sheet 41.

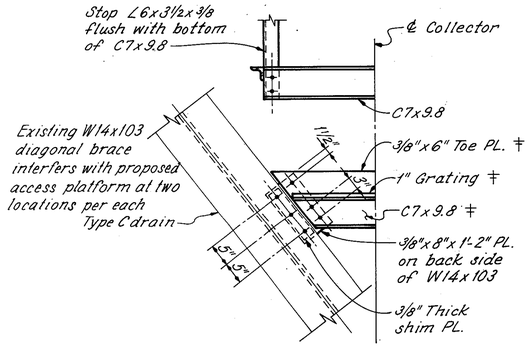
ANGLE CONNECTION DETAIL: See sheet 48.



SECTION K-K
FOR TYPE 1C & TYPE 3C COLLECTORS

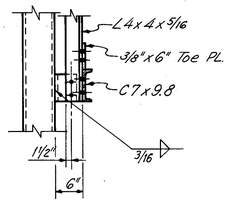


SECTION K-K
FOR TYPE 2C COLLECTOR
(2 locations as shown, 3 locations opposite hand)



DETAIL L

‡ Toe plate, grating, and bottom C7x9.8 shall be field cut to fit along flange of W14x103. Holes shall be field drilled for bolts as shown. Toe plate and L3x3x5/16 shall not be used on side obstructed by existing W14x103.



SECTION M-M

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS
TYPE C DRAIN AT C2 THRU C5
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

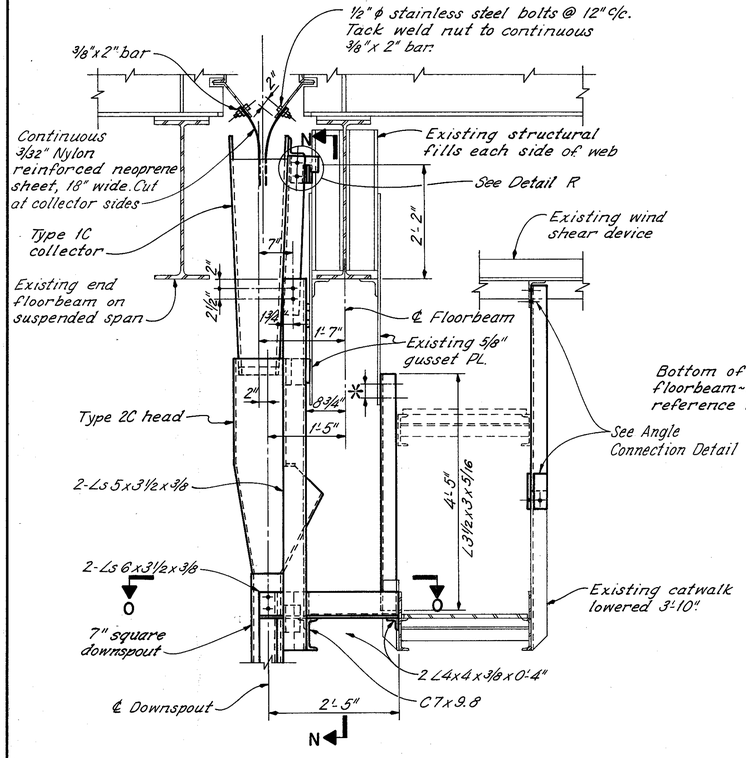
CUYAHOGA COUNTY — I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	JPT	DHT	11/27/86	

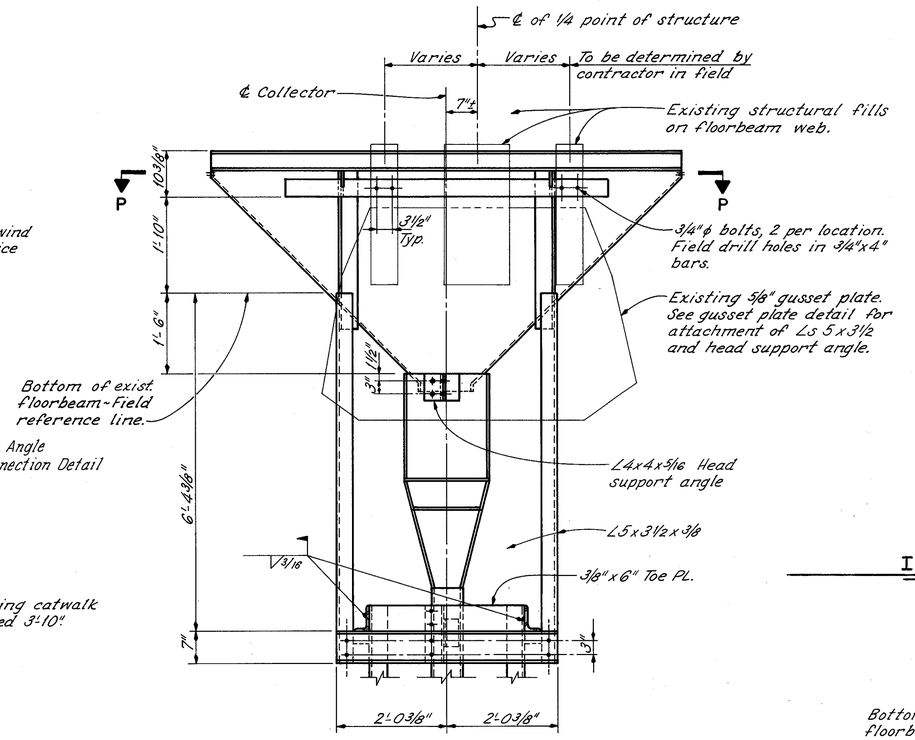
FHWA REGION	STATE	PROJECT	
5	OHIO		

43
72

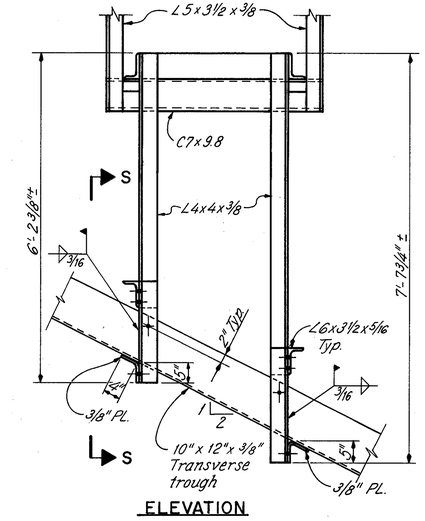
CUYAHOGA COUNTY
CUY-90-15.24



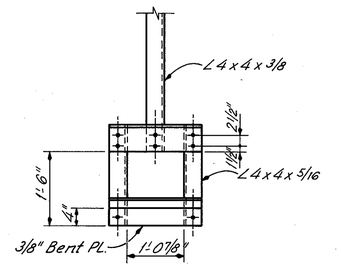
SECTION B-B



SECTION N-N

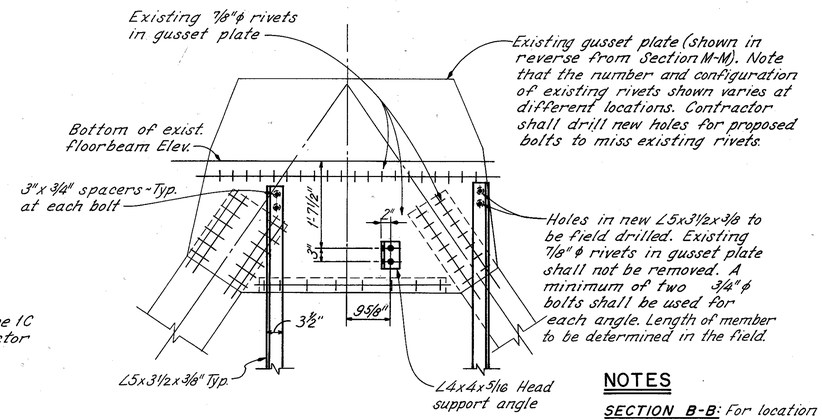


ELEVATION



SECTION S-S

INTERMEDIATE TROUGH SUPPORT DETAIL

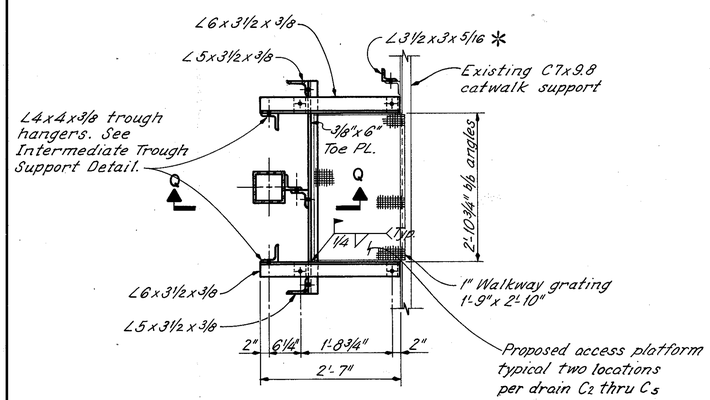


GUSSET PLATE DETAIL

NOTES

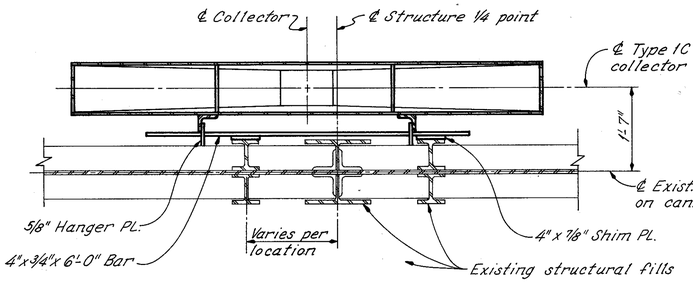
SECTION B-B: For location see sheet 41

ANGLE CONNECTION DETAIL: See sheet 48.

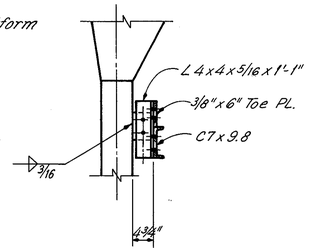


SECTION O-O

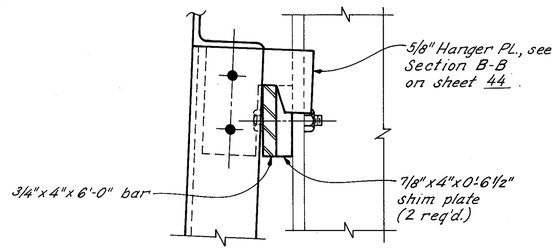
* Existing L3½x3x5/16 catwalk hanger to be removed. New 4'-5" long angle to be field drilled and bolted using 2 existing rivet holes in gusset plate. One location per each Type 2C collector head. Use similiar connection at center vertical of floorbeam truss.



SECTION P-P



SECTION Q-Q



DETAIL R

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS TYPE C DRAIN AT C2 THRU C5 MAIN RIVER SPANS

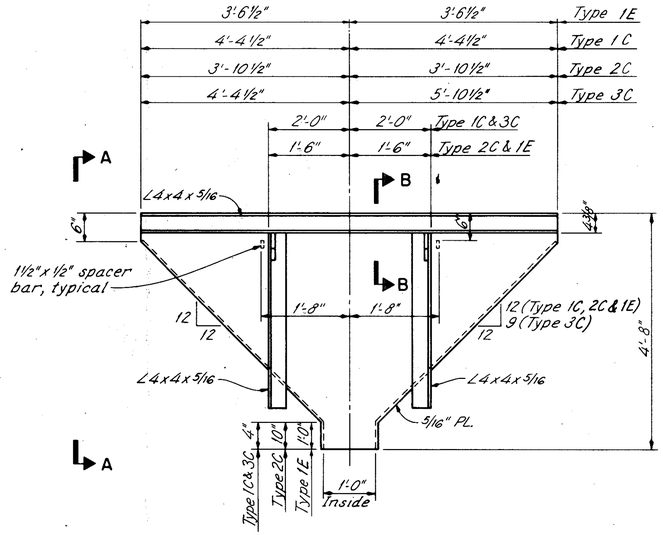
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	JPT	DHT	1/27/86	

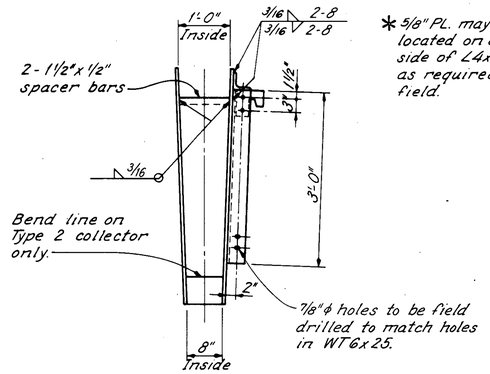
FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-90-15.24



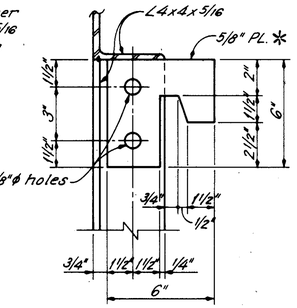
COLLECTOR DETAIL

Type 1C - 42 required
Type 2C - 5 required
Type 3C - 1 required
Type 1E - 1 required

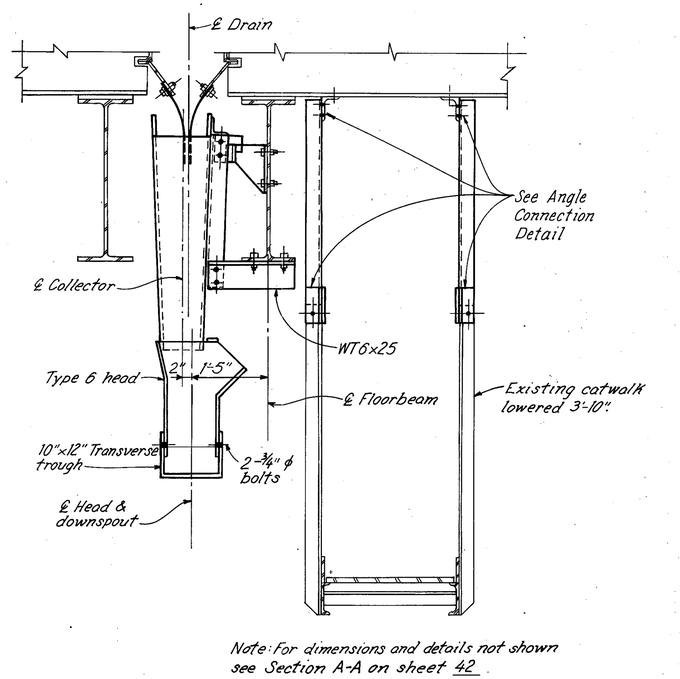


VIEW A-A

* 5/8" PL. may be located on either side of ∠4x4x5/16 as required in field.

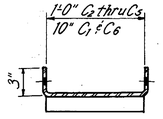


SECTION B-B

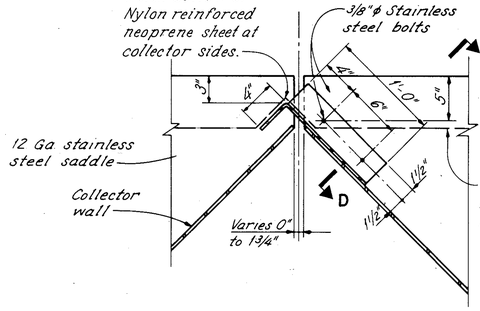


Note: For dimensions and details not shown see Section A-A on sheet 42.

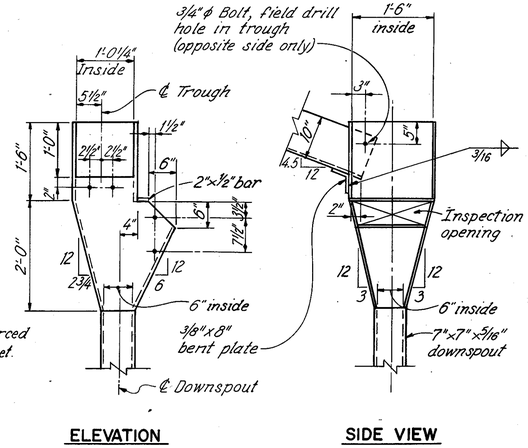
SECTION C-C



SECTION D-D



ELEVATION

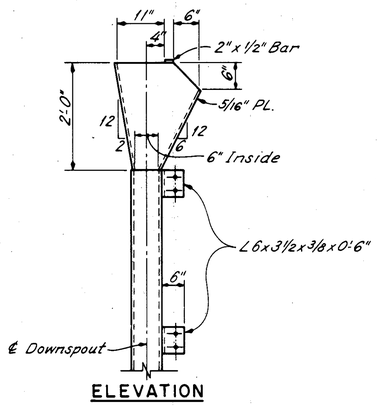


ELEVATION

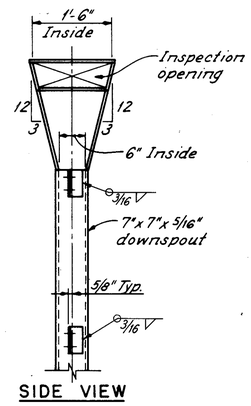
SIDE VIEW

HEAD TYPE 7

SADDLE DETAIL

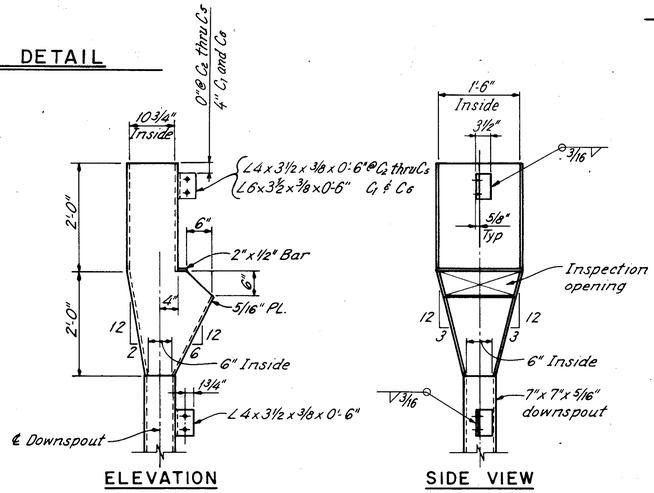


ELEVATION



SIDE VIEW

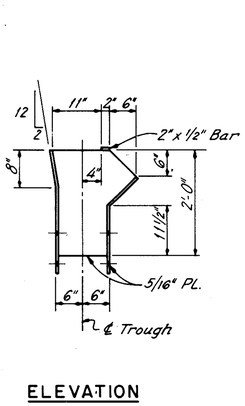
HEAD TYPE 4



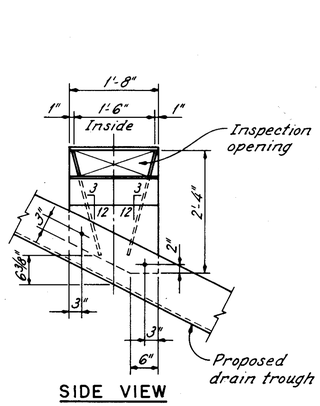
ELEVATION

SIDE VIEW

HEAD TYPE 5



ELEVATION



SIDE VIEW

HEAD TYPE 6

NOTES:

SECTION C-C: For location see sheet 41.

COLLECT AND HEAD WELD DETAIL: See sheet 27.

ANGLE CONNECTION DETAIL: See sheet 48.

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS
TYPE C DRAIN AT C2 THRU C5 MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

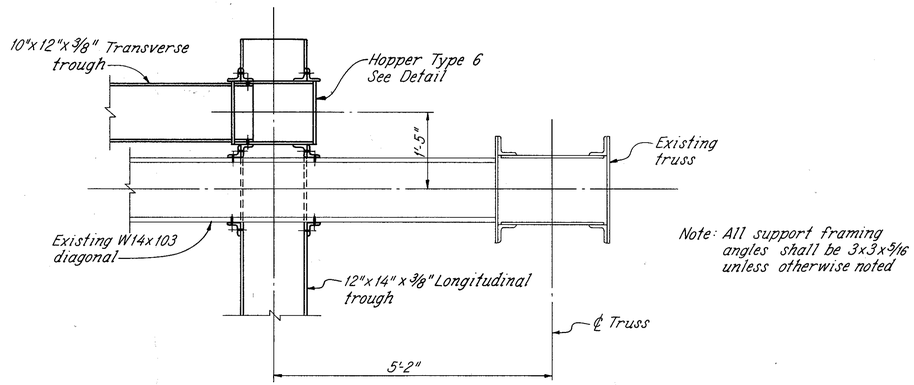
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

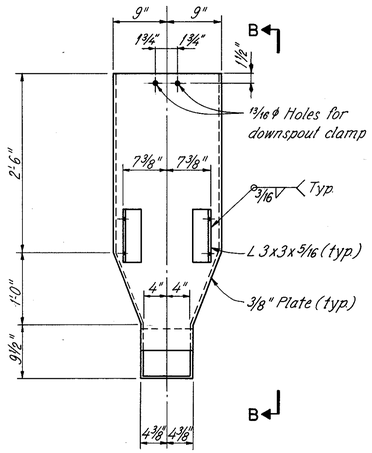
45/72

CUYAHOGA COUNTY
CUY-90-15.24

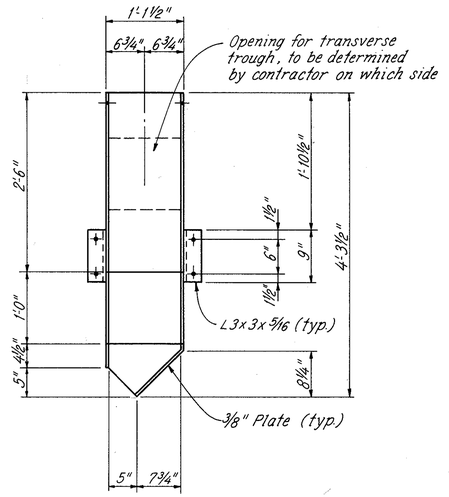


PLAN

Note: All support framing angles shall be 3x3x5/16 unless otherwise noted



ELEVATION



VIEW B-B

HOPPER DETAIL TYPE 6

ELEVATION

SECTION A-A

HOPPER SUPPORT DETAIL

NOTES

HOPPER WELD DETAIL: See sheet 27.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DRAINAGE DETAILS
TYPE C DRAIN AT C2THRUC5
MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER
CUYAHOGA COUNTY

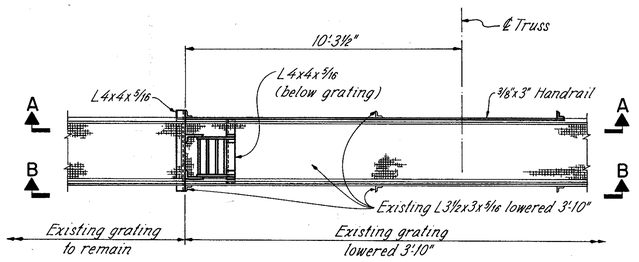
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JRS	JPS	JPT	DHT	11/27/86	

N00141

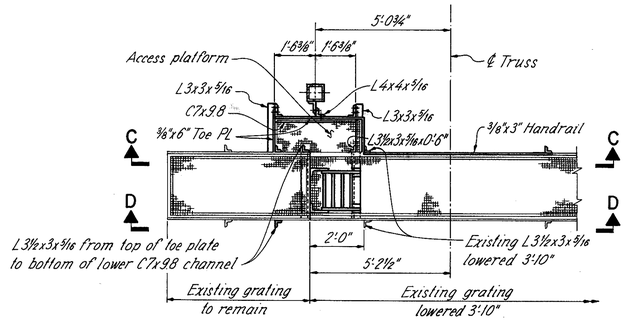
FHWA REGION	STATE	PROJECT	
5	OHIO		

46/72

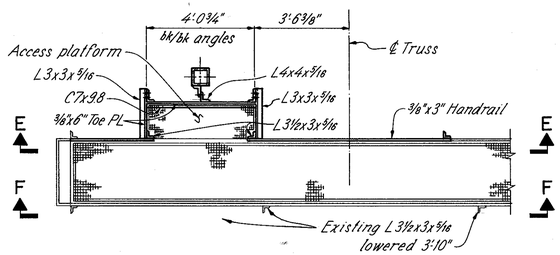
CUYAHOGA COUNTY
CUY-90-15.24



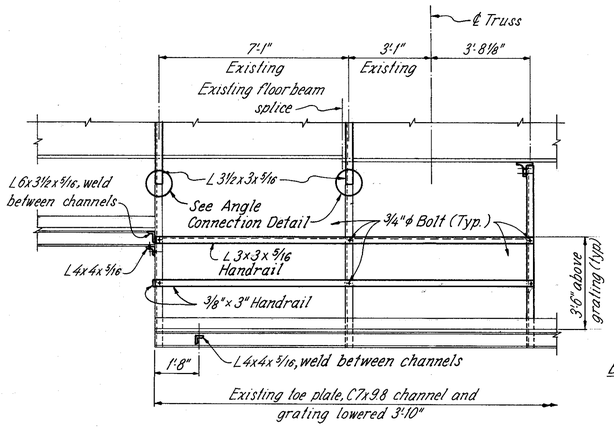
PLAN



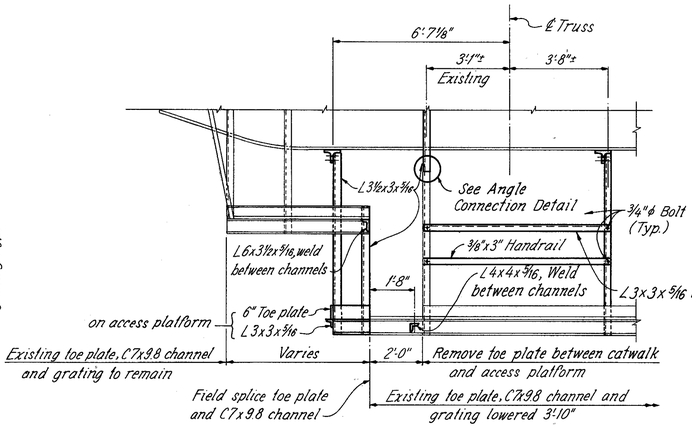
PLAN



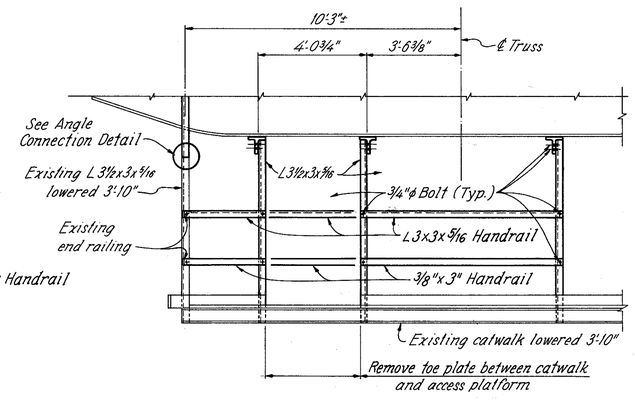
PLAN



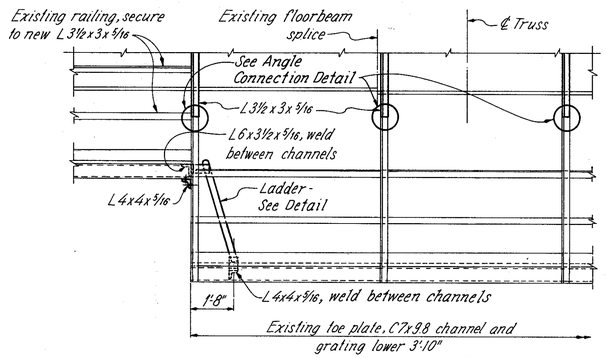
VIEW A-A



VIEW C-C

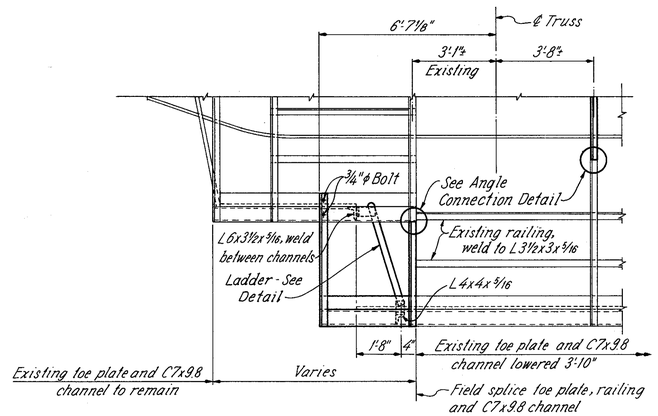


VIEW E-E



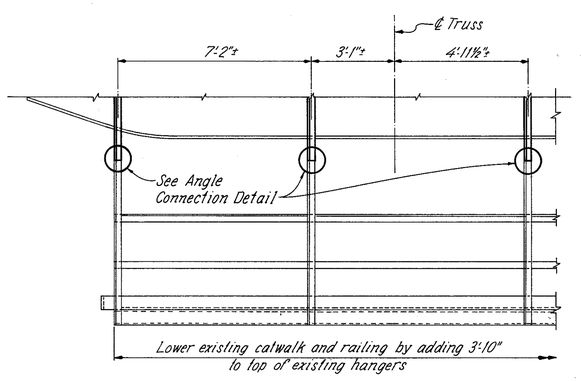
VIEW B-B

CATWALK DETAIL - C1 SOUTH



VIEW D-D

CATWALK DETAIL - C1 NORTH (O.H.), C2 NORTH (O.H.), C3 SOUTH (A.S.), C5 SOUTH (O.H.), C4 & C6 NORTH (A.S.) & SOUTH (O.H.)



VIEW F-F

CATWALK DETAIL - C2 SOUTH

NOTES

LADDER DETAIL: See sheet 47.

ANGLE CONNECTION DETAIL: See sheet 48.

CATWALK, RAILING AND LADDER relocations, modifications, extensions and additions shall be included for payment as incidental to the particular drainage collection system.

NOTATION: A.S. - As shown
O.H. - Opposite hand

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

CATWALK DETAILS
TYPE C DRAIN AT C1 THRU C6
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

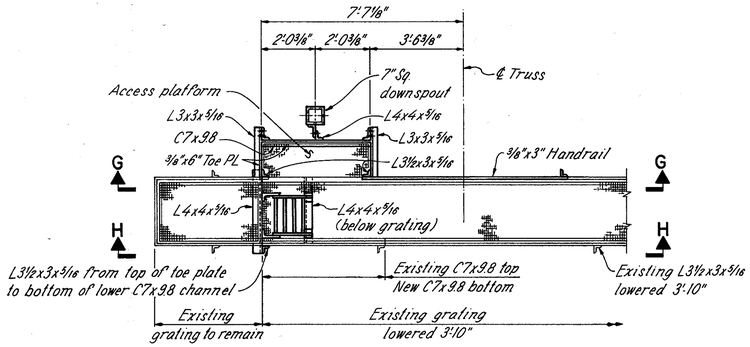
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	KH	KH	JPT	DHT	1/27/86	

N50341

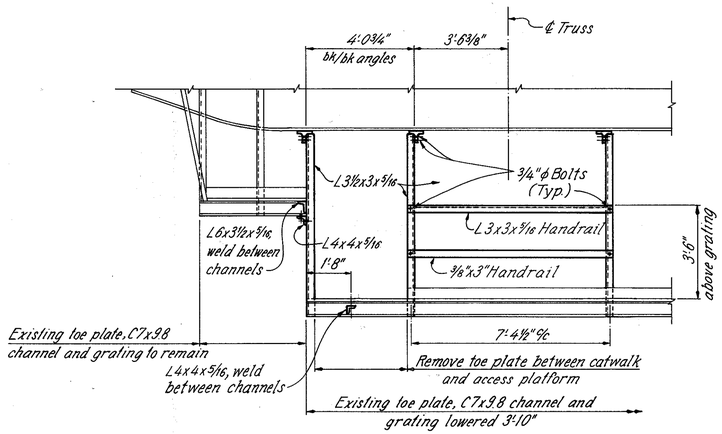
FHWA REGION	STATE	PROJECT	
5	OHIO		

47/72

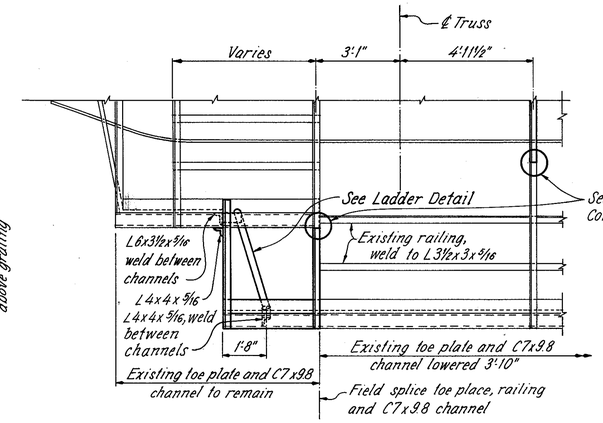
CUYAHOGA COUNTY
CUY-90-15.24



PLAN

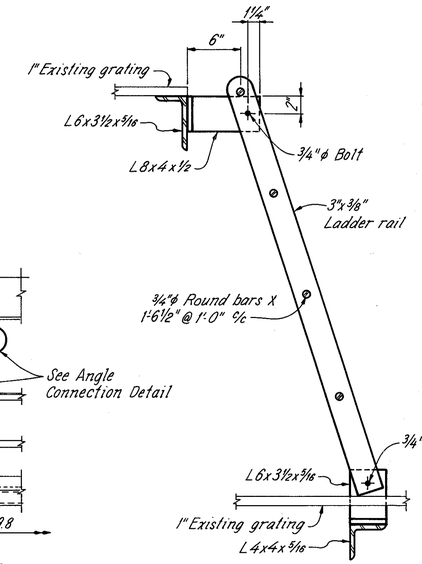


VIEW G-G

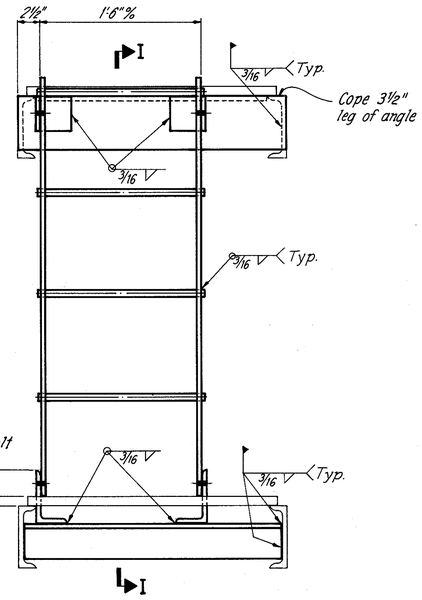


VIEW H-H

CATWALK DETAIL - C3 NORTH (O.H.) & C5 NORTH (A.S.)



SECTION I-I



ELEVATION

LADDER DETAIL

NOTES

ANGLE CONNECTION DETAIL: See sheet 48.

ADDITIONAL NOTES: See sheet 46.

NOTATION: A.S. - As shown.
O.H. - Opposite hand.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

CATWALK DETAILS
TYPE C DRAIN AT C1 THRU C6
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

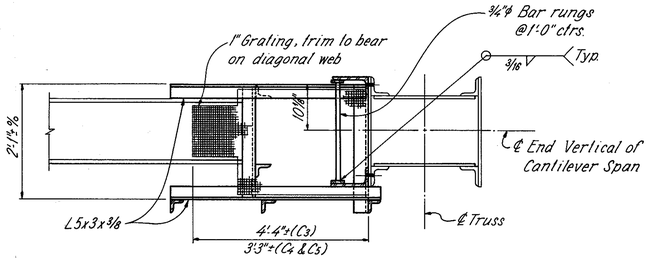
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

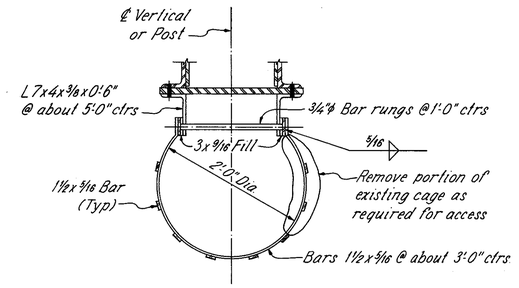
48
72

CUYAHOGA COUNTY
CUY-90-15.24

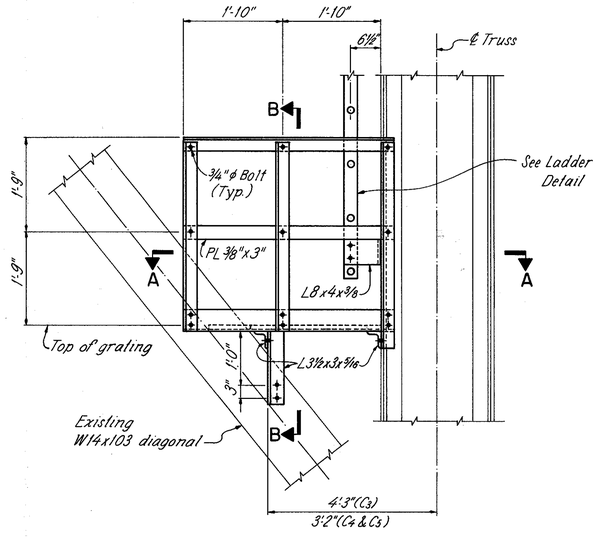


SECTION A-A

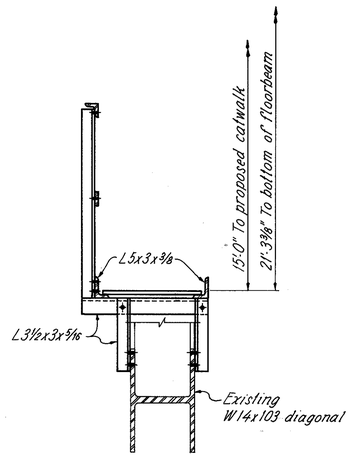
Note: All framing Ls shall be L 3x3x5/16 unless otherwise shown.



SECTION C-C

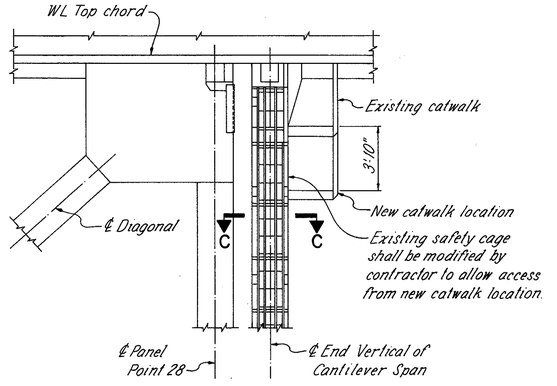


ELEVATION

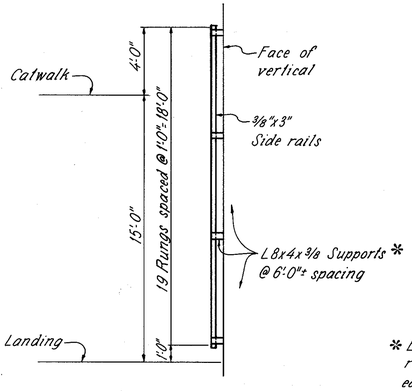


SECTION B-B

HOPPER ACCESS PLATFORM
AT C3, C4 & C5

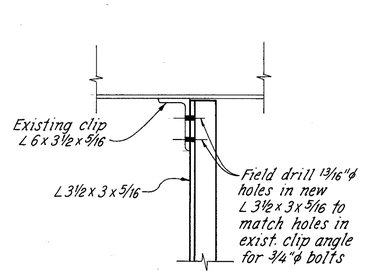


EXISTING LADDER TO NAVIGATION LIGHTS
AT C2

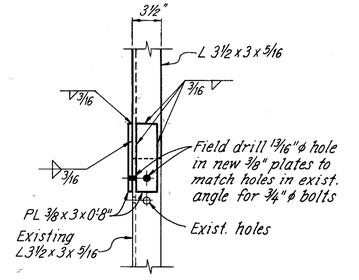


* Existing rivets in vertical shall be replaced with 7/8"ϕ H.S. bolts, 2 per each support location.

LADDER DETAIL
AT C3, C4 & C5



TOP CONNECTION



LOWER CONNECTION

ANGLE CONNECTION DETAIL

NOTES: See sheet 46.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

CATWALK DETAILS TYPE C DRAIN AT C2 THRU C5 MAIN RIVER SPANS

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

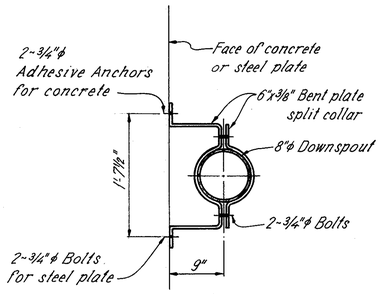
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	KH	JPT	DHT	1/27/86	

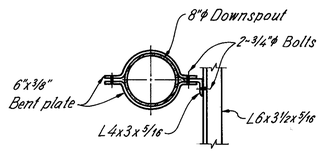
FHWA REGION	STATE	PROJECT	
5	OHIO		

49
72

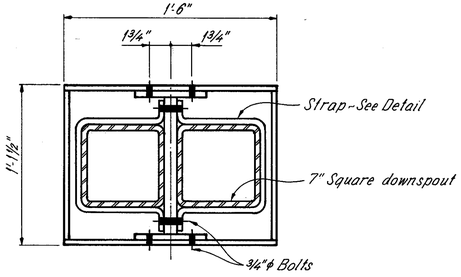
CUYAHOGA COUNTY
CUY-90-15.24



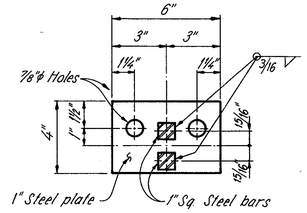
CONCRETE OR STEEL PLATE



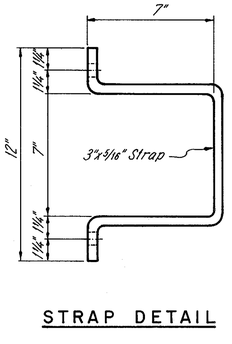
ANGLE



PLAN
TYPE A, B & C2 THRU C5 DRAINS

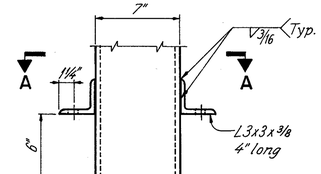


ELEVATION

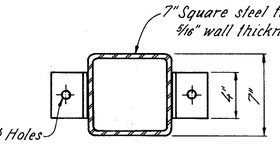


STRAP DETAIL

DOWNSPOUT CLAMP DETAIL

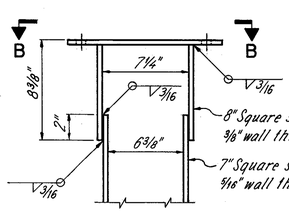


ELEVATION

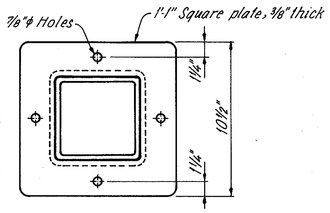


SECTION A-A

MALE DOWNSPOUT END



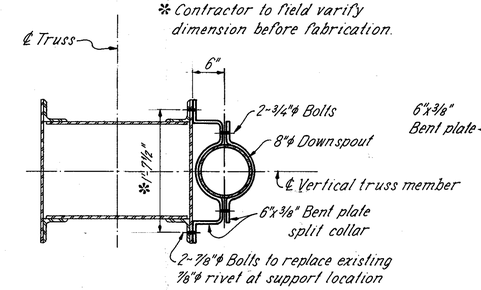
ELEVATION



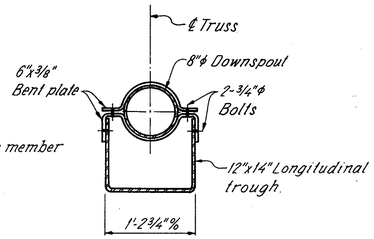
SECTION B-B

FEMALE DOWNSPOUT END

DOWNSPOUT SPLICE DETAIL

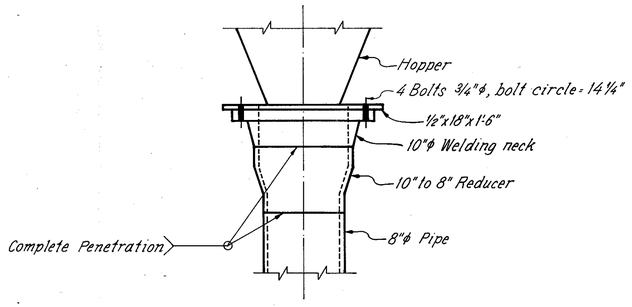


STEEL COLUMN



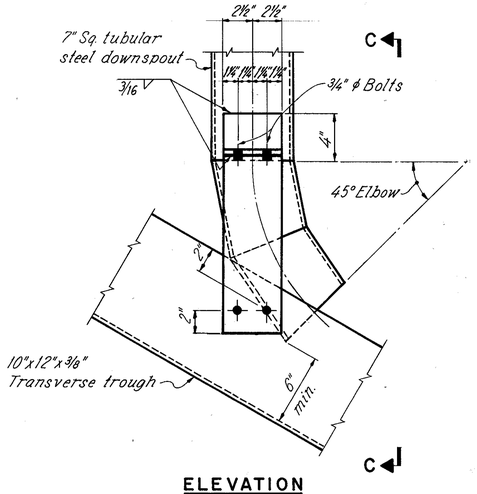
TROUGH

SPLIT COLLAR DETAILS

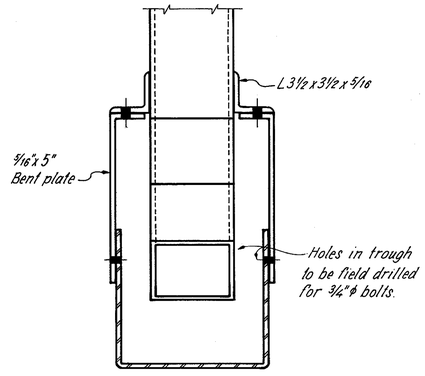


DOWNSPOUT INLET DETAIL

8"ø DOWNSPOUT DETAILS

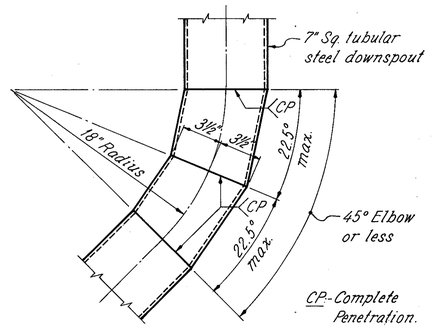


ELEVATION



SECTION C-C

DOWNSPOUT END DETAIL



DOWNSPOUT BEND DETAIL

7"ø DOWNSPOUT DETAILS

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

DOWNSPOUT DETAILS
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

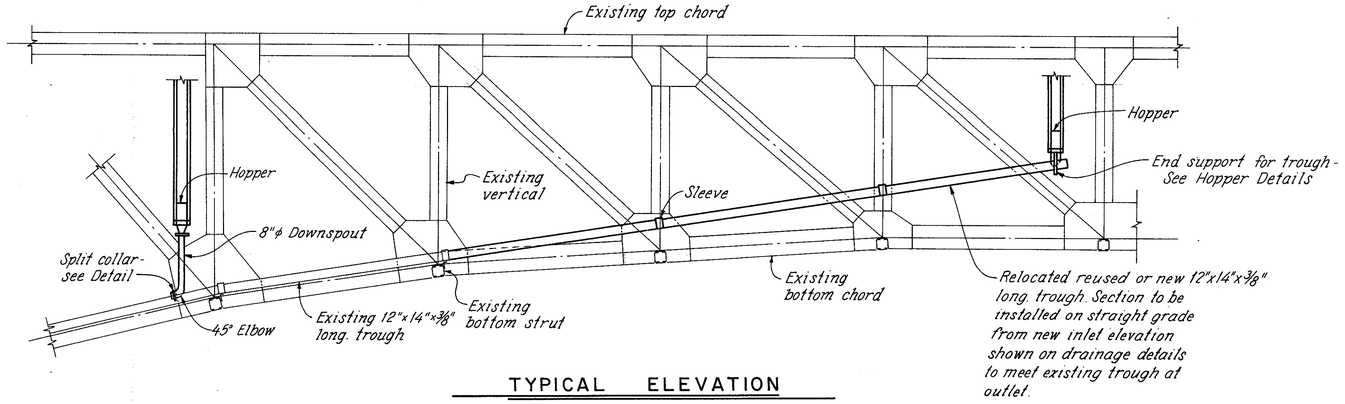
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	JPT	DHT	1/27/86	

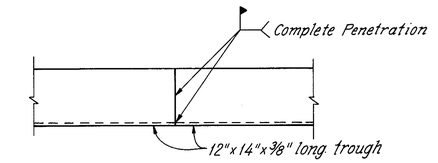
FHWA REGION	STATE	PROJECT	
5	OHIO		

50
72

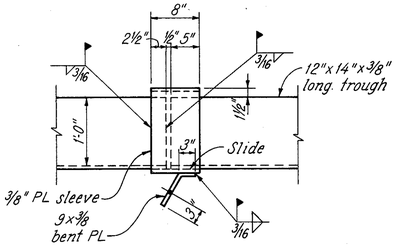
CUYAHOGA COUNTY
CUY-90-15.24



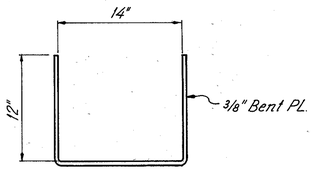
TYPICAL ELEVATION



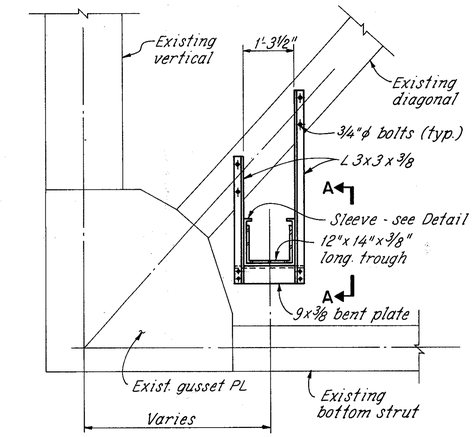
TROUGH SPLICE DETAIL



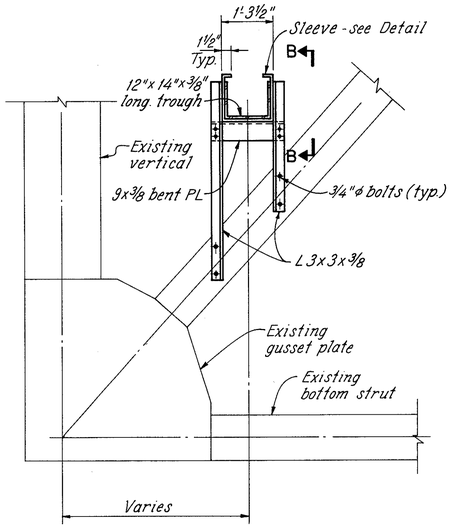
SLEEVE DETAIL



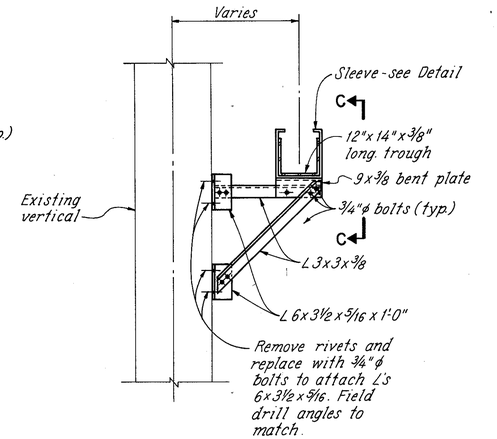
NEW LONGITUDINAL TROUGH DETAIL



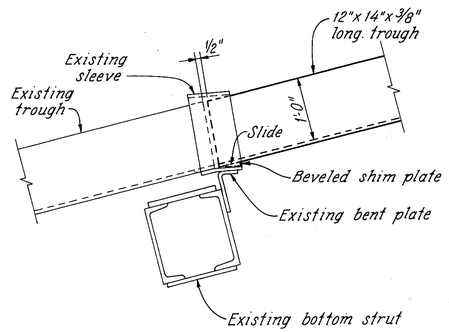
TROUGH SUPPORT BELOW DIAGONAL



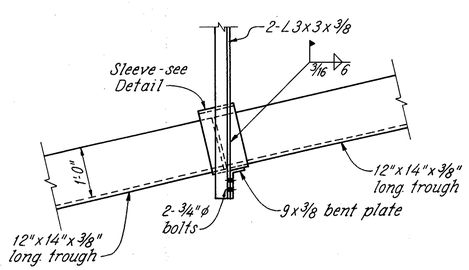
TROUGH SUPPORT ABOVE DIAGONAL



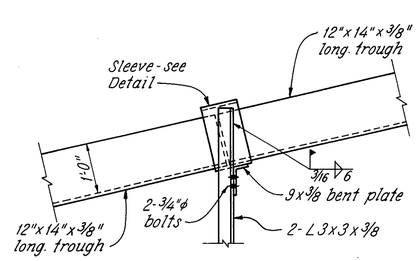
TROUGH SUPPORT AT VERTICAL



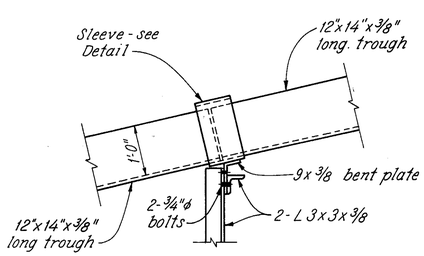
TROUGH SUPPORT AT BOTTOM STRUT



SECTION A-A



SECTION B-B



SECTION C-C

NOTES

HOPPER DETAILS: See sheet 28, 33 or 39 or 45.

SPLIT COLLAR DETAILS: See sheet 49.

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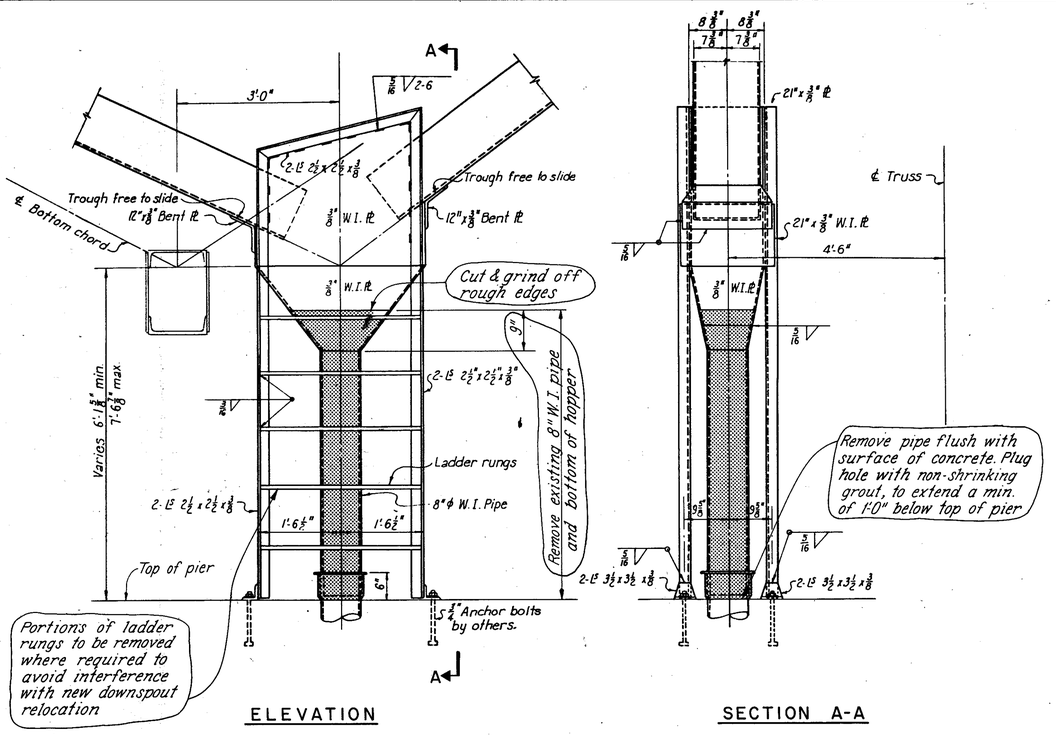
RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

LONGITUDINAL TROUGH DETAILS
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER
CUYAHOGA COUNTY I-90

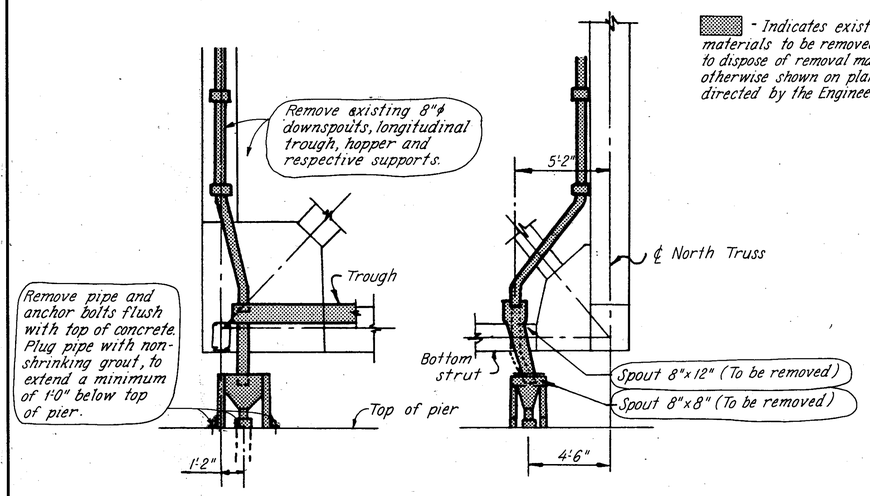
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	JPS	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT		51
5	OHIO			72

CUYAHOGA COUNTY
CUY-90-15.24

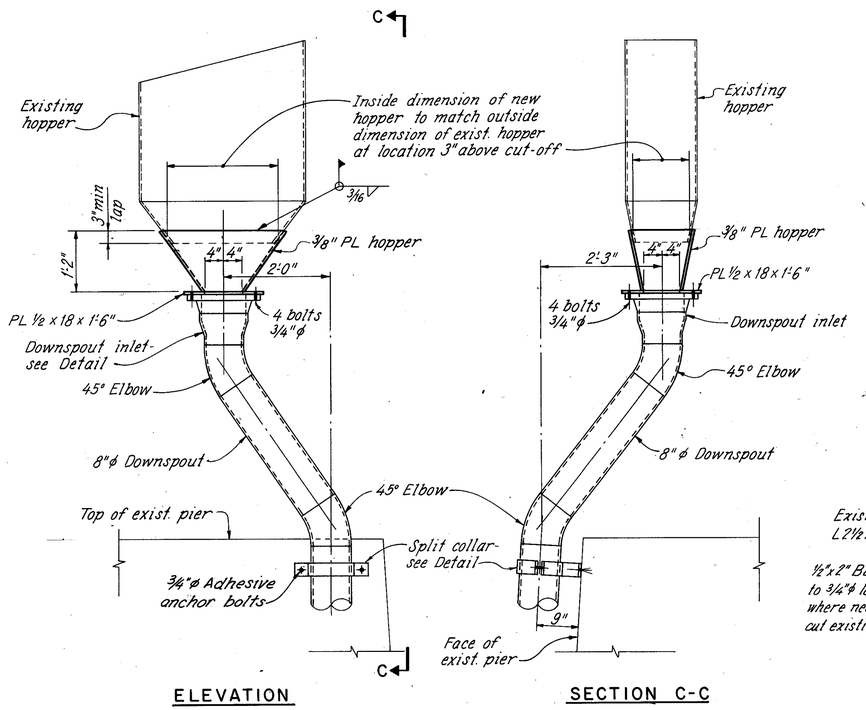


REMOVAL DETAILS
PIERS 1 THRU 8

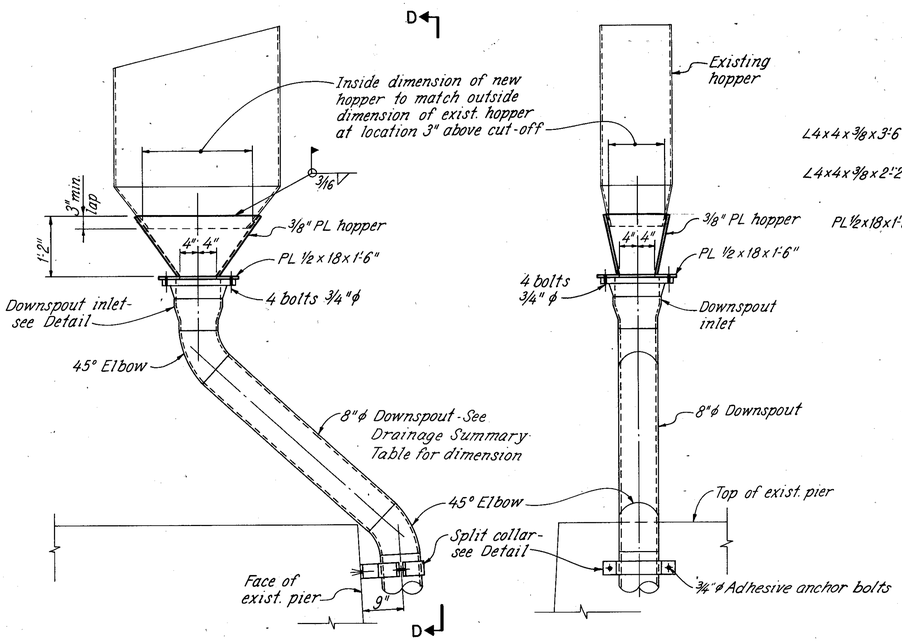


▨ - Indicates existing drainage materials to be removed. Contractor to dispose of removal materials unless otherwise shown on plans or as directed by the Engineer.

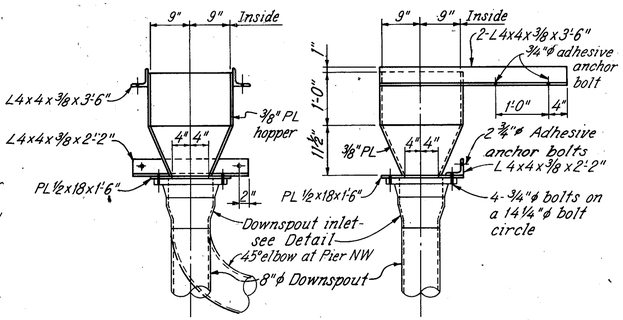
REMOVAL DETAILS
END PIERS



PIER HOPPER DETAIL - TYPE 1
AT PIER 1S, 2N&S, 3N&S, 4S, 5N&S, 6N AND 7N



PIER HOPPER DETAIL - TYPE 2
AT PIER 1N, 4N, 6S, 7S AND 8N&S



PIER HOPPER DETAIL - TYPE 3
AT END PIERS

NOTES

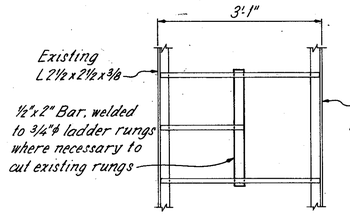
DOWNSPOUT INLET DETAIL: See sheet 49.

HOPPER WELD DETAIL: See sheet 27.

SPLIT COLLAR DETAIL: See sheet 49.

MATERIALS shown on REMOVAL DETAILS are existing. Work to be done under this project are shown in (captions). Dimensions and notes otherwise shown are from the original design plans for information only. Existing troughs, plates and flashing marked W.I. have been fabricated of Corten weatherizing steel in lieu of wrought iron.

DRAINAGE DIMENSION TABLE: See sheet 54.



LADDER RUNGS DETAIL

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

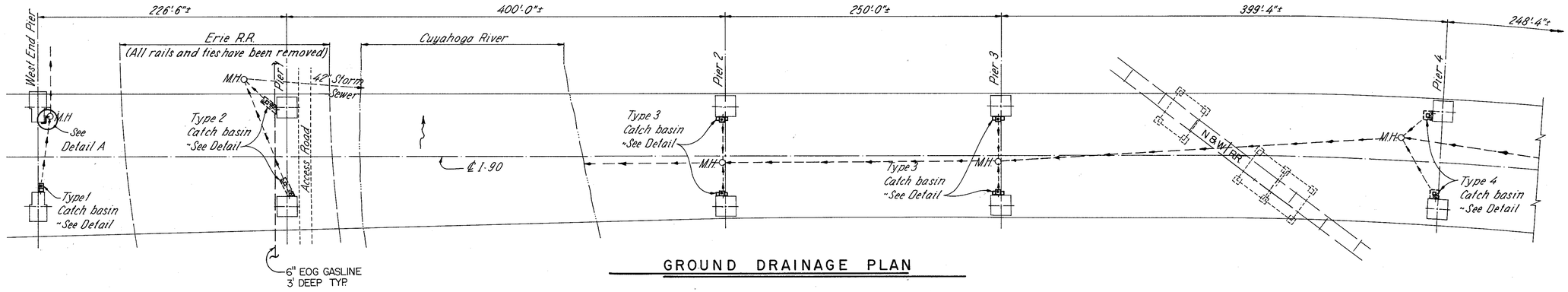
PIER HOPPER DETAILS
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	JPS	JPT	DHT	1/27/86	

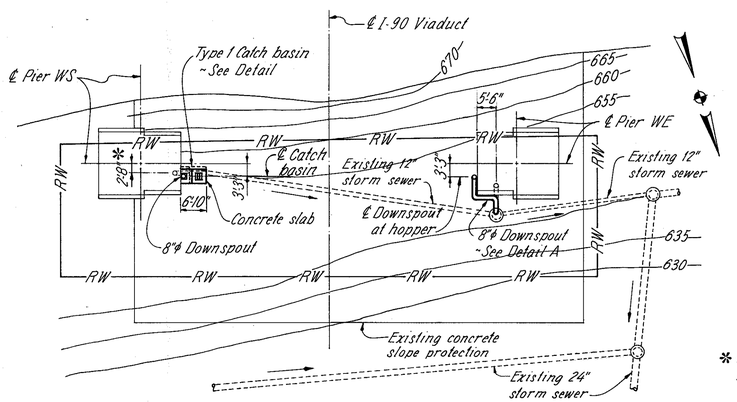
FHWA REGION	STATE	PROJECT	
5	OHIO		

52
72

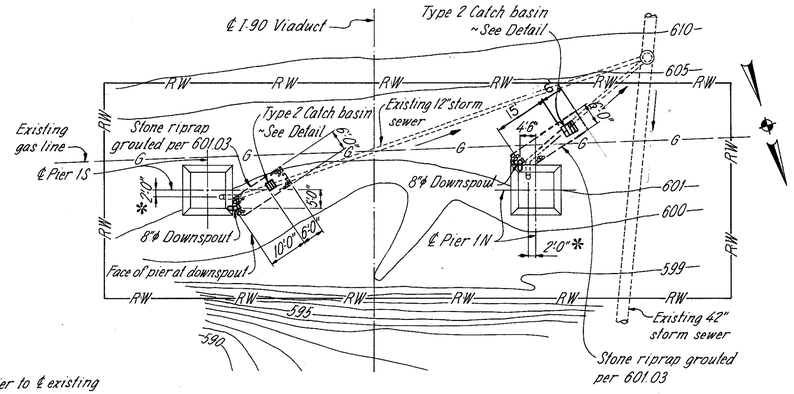
CUYAHOGA COUNTY
CUY-90-15.24



GROUND DRAINAGE PLAN

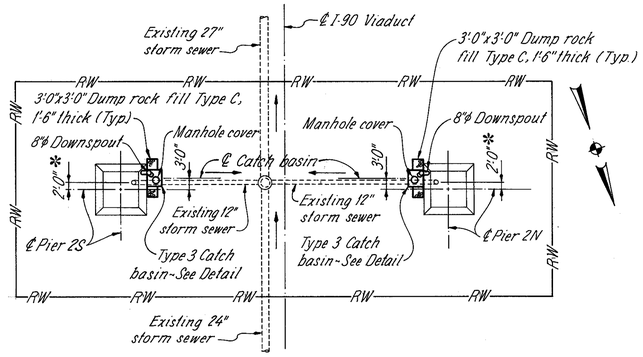


PLAN - WEST END PIER

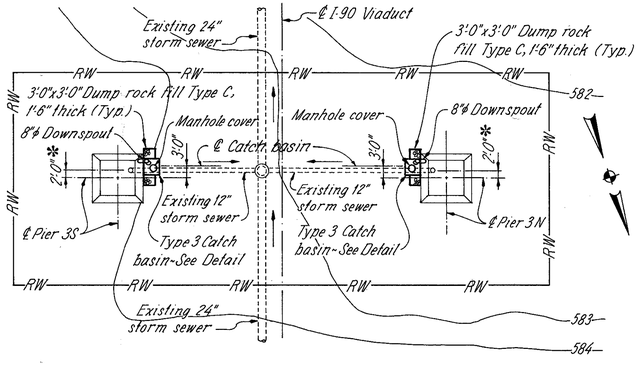


* ℄ Pier to ℄ existing 12" outlet

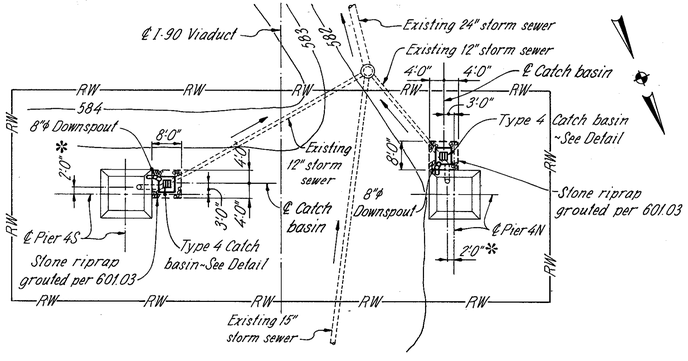
PLAN - PIER 1



PLAN - PIER 2



PLAN - PIER 3



PLAN - PIER 4

NOTES:

CATCH BASIN DETAILS: See sheet 54.

DETAIL A: See sheet 54.

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

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GROUND DRAINAGE PLAN 1
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JCR	KH	JPT	DHT	1/27/86	O.D.O.T. 4-10-86

FHWA REGION	STATE	PROJECT.	
5	OHIO		

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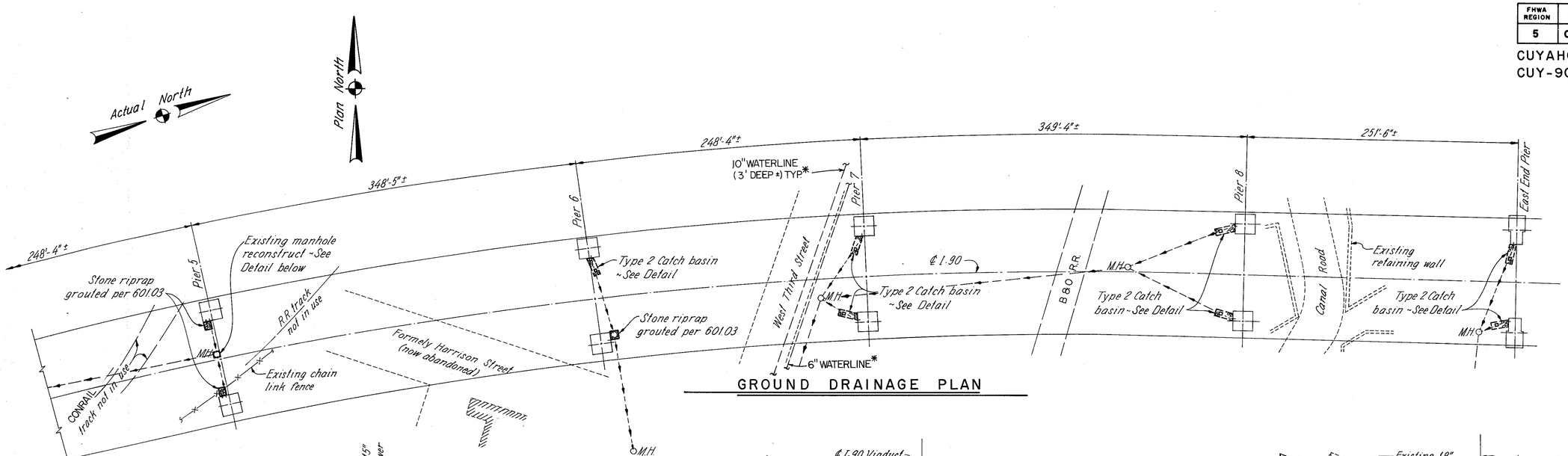
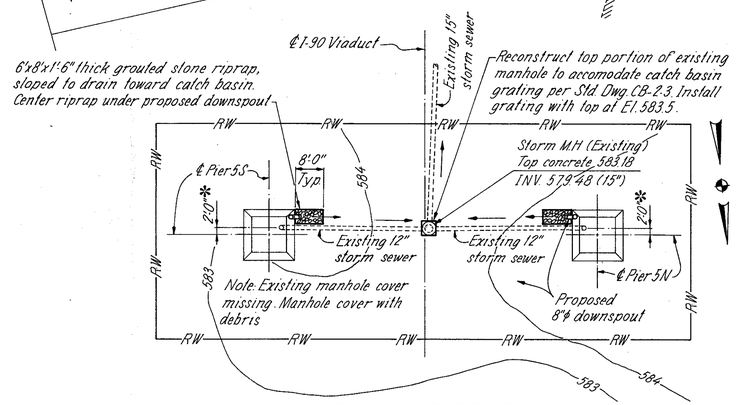
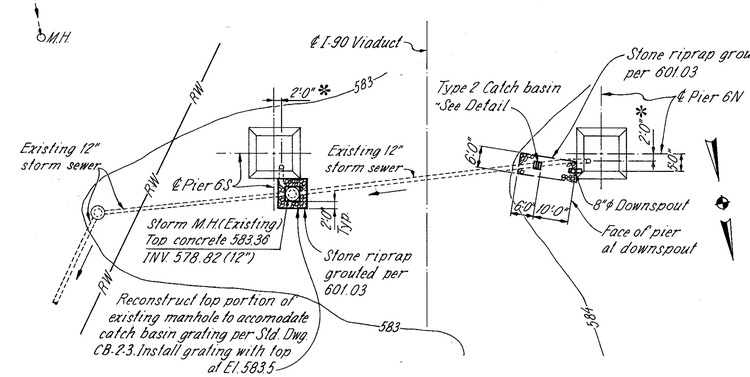
CUYAHOGA COUNTY
CUY-90-15.24



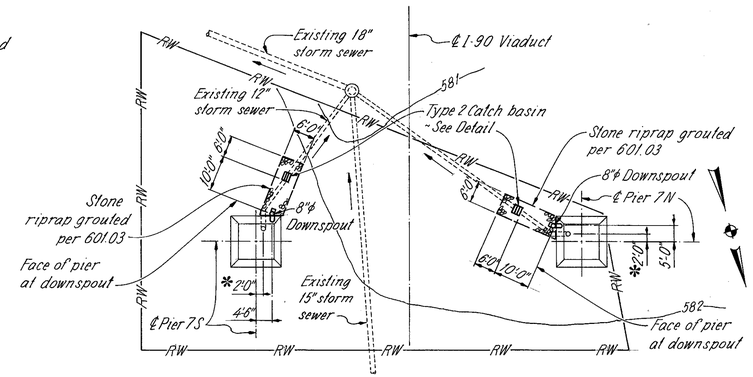
GROUND DRAINAGE PLAN



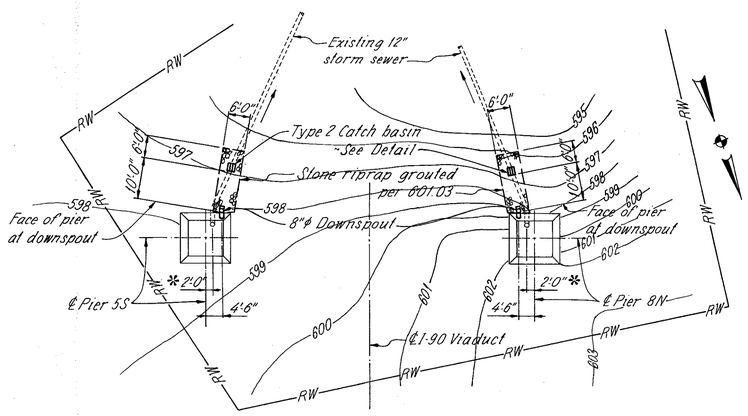
PLAN - PIER 5



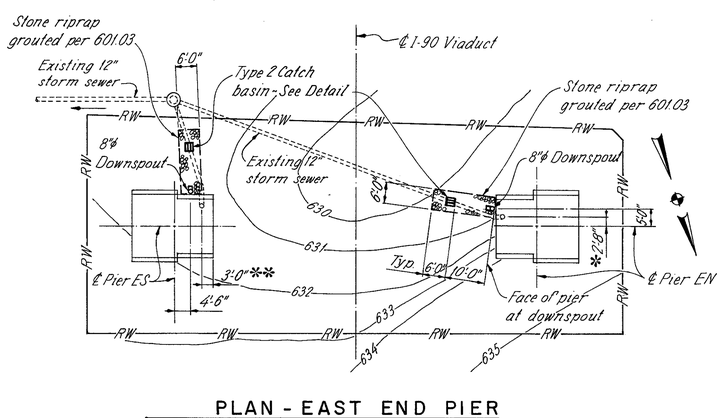
PLAN - PIER 6



PLAN - PIER 7



PLAN - PIER 8



PLAN - EAST END PIER

NOTES:

CATCH BASIN DETAILS: See sheet 54.

DOWNSPOUT OULET: Turn oulet elbow toward catch basin.

* ℄ Pier to ℄ existing 12"ϕ oulet.

** Face of northwest corner of pier to ℄ existing 12"ϕ oulet.

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

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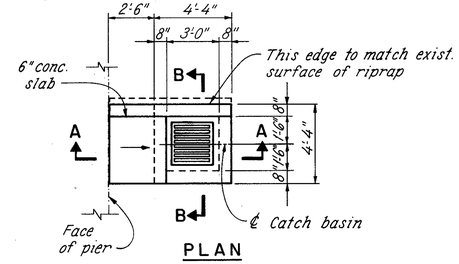
GROUND DRAINAGE PLAN 2
MAIN RIVER SPANS
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

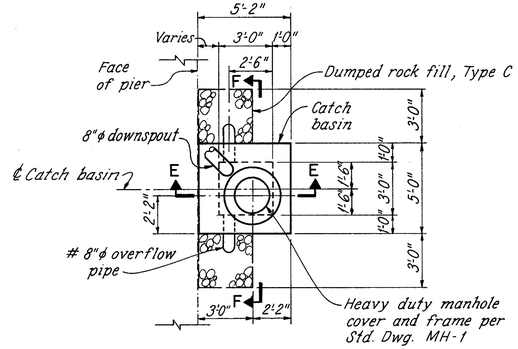
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JCR	KH	JPT	DHT	1/27/86	

FHWA REGION	STATE	PROJECT		54 / 72
5	OHIO			

CUYAHOGA COUNTY
CUY-90-15.24

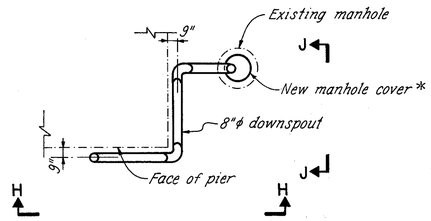


PLAN

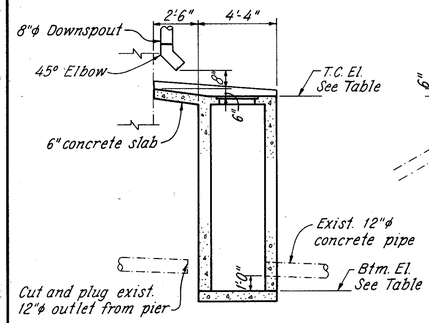


PLAN

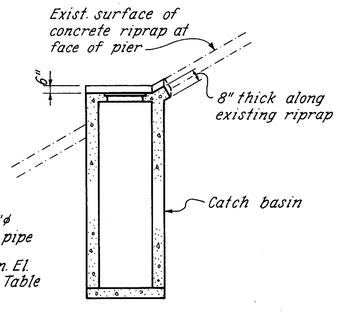
Each overflow pipe shall be shop fabricated of one 8"ϕ 45° long radius elbow and two 1'-0" sections of straight pipe, shop welded before galvanizing.



PLAN

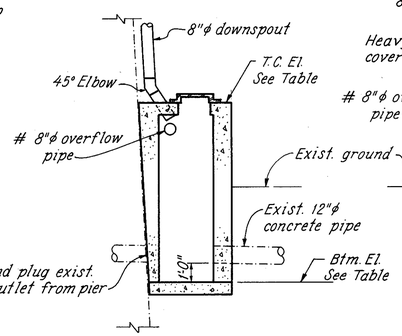


SECTION A-A

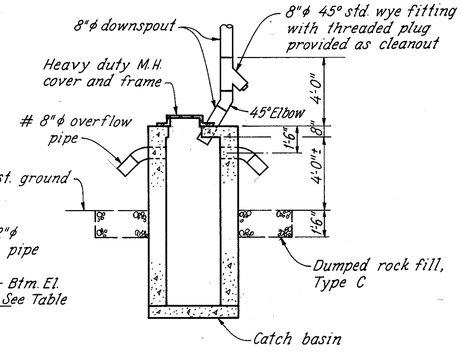


SECTION B-B

TYPE 1 CATCH BASIN

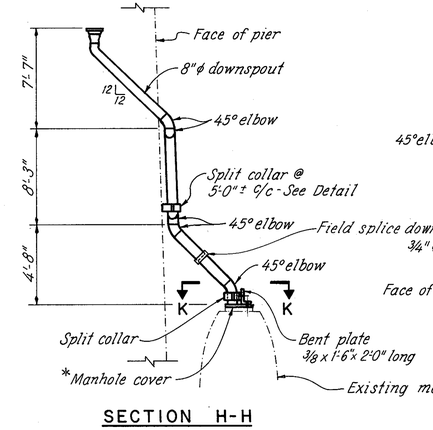


SECTION E-E

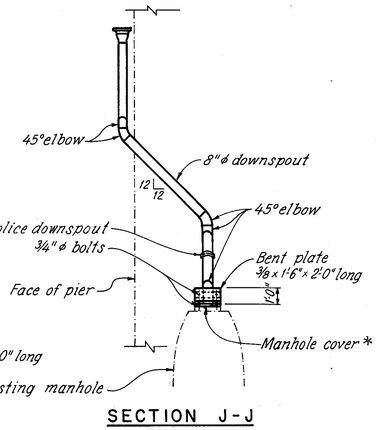


SECTION F-F

TYPE 3 CATCH BASIN

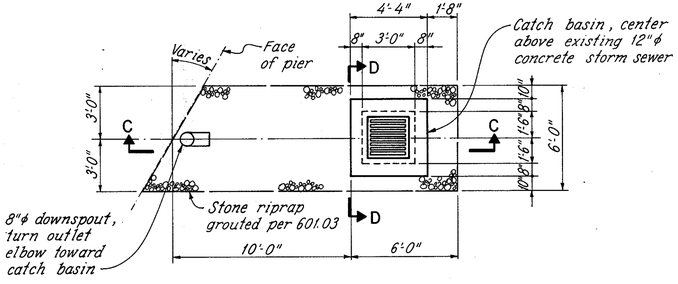


SECTION H-H

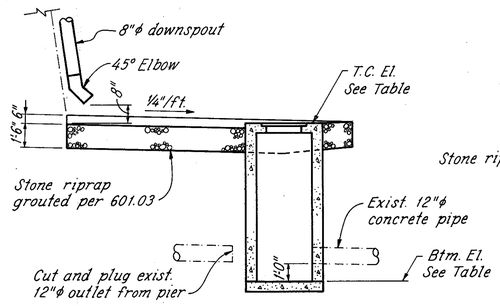


SECTION J-J

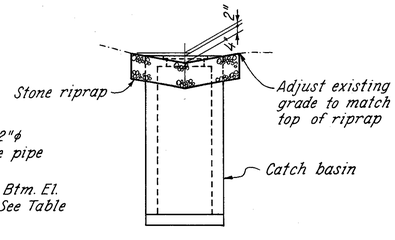
DETAIL A



PLAN

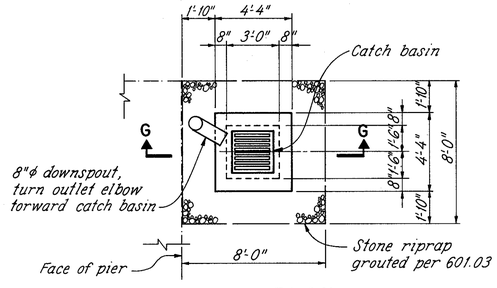


SECTION C-C

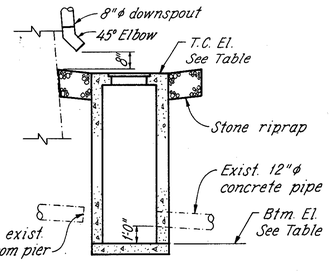


SECTION D-D

TYPE 2 CATCH BASIN



PLAN



SECTION G-G

TYPE 4 CATCH BASIN

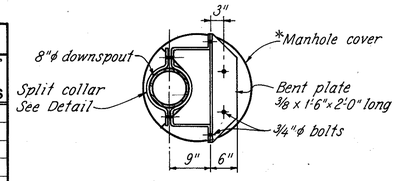
DRAINAGE SUMMARY TABLE					
PIER COLUMN	TOP PIER ELEV.	PROPOSED CATCH BASIN DATA			8"ϕ ff D.S. LENGTHS
		EXIST. PIPE INV.ᶠ	BTM. EL.	T.C. ELEV.	
WS	667.20	650.0	649.0	657.0	16'-0"
WN	667.20	636.5	(Existing)	* 645.0	26'-0"
1S	626.32	595.7	594.7	599.0	34'-0"
1N	626.32	595.3	594.3	599.0	34'-0"
2S	628.76	576.3	575.3	586.0	51'-0"
2N	628.76	576.3	575.3	586.0	51'-0"
3S	631.23	577.7	576.7	587.5	52'-0"
3N	631.23	577.7	576.7	587.5	52'-0"
4S	633.31	579.0	578.0	582.5	57'-0"
4N	633.64	579.0	578.0	582.5	57'-0"
5S	636.62	(Existing M.H.	(Existing)	** 583.5	59'-0"
5N	636.62	Invert @ 579.5)	(Existing)	** 583.5	59'-0"
6S	634.66	(Exist. M.H. Inv. 578.8)	(Existing)	** 583.5	57'-0"
6N	634.66	579.8	578.8	583.5	57'-0"
7S	632.70	579.2	578.2	582.5	58'-0"
7N	632.70	578.8	577.8	581.0	58'-0"
8S	627.92	590.0	589.0		52'-0"
8N	627.92	590.0	589.0		52'-0"
ES	667.42	625.6	624.6	631.5	42'-0"
EN	667.42	626.9	625.9	630.5	43'-0"

* Existing manhole to be reused. New manhole cover to be installed at existing top elevation. New cover shall be modified by contractor to provide for passage of new 8"ϕ downspout from pier hopper into manhole.

** Existing manhole to be reconstructed as catch basin using existing base and lower wall sections.

ᶠ Elevations estimated from data on original 1956 design plans.

ᶠᶠ Pay lengths include an allowance length of 6'± of downspout atop of the piers. Actual conditions need to be verified prior to ordering pipe and fittings.



SECTION K-K

NOTES

SPLIT COLLAR DETAILS: See sheet 49 .

CATCH BASINS: Except as noted, construction materials and dimensions shall conform to Standard Drawing CB-2-3, except no side inlet.

T.C.: Top of concrete

D.S.: Downspout

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GROUND DRAINAGE DETAILS MAIN RIVER SPANS

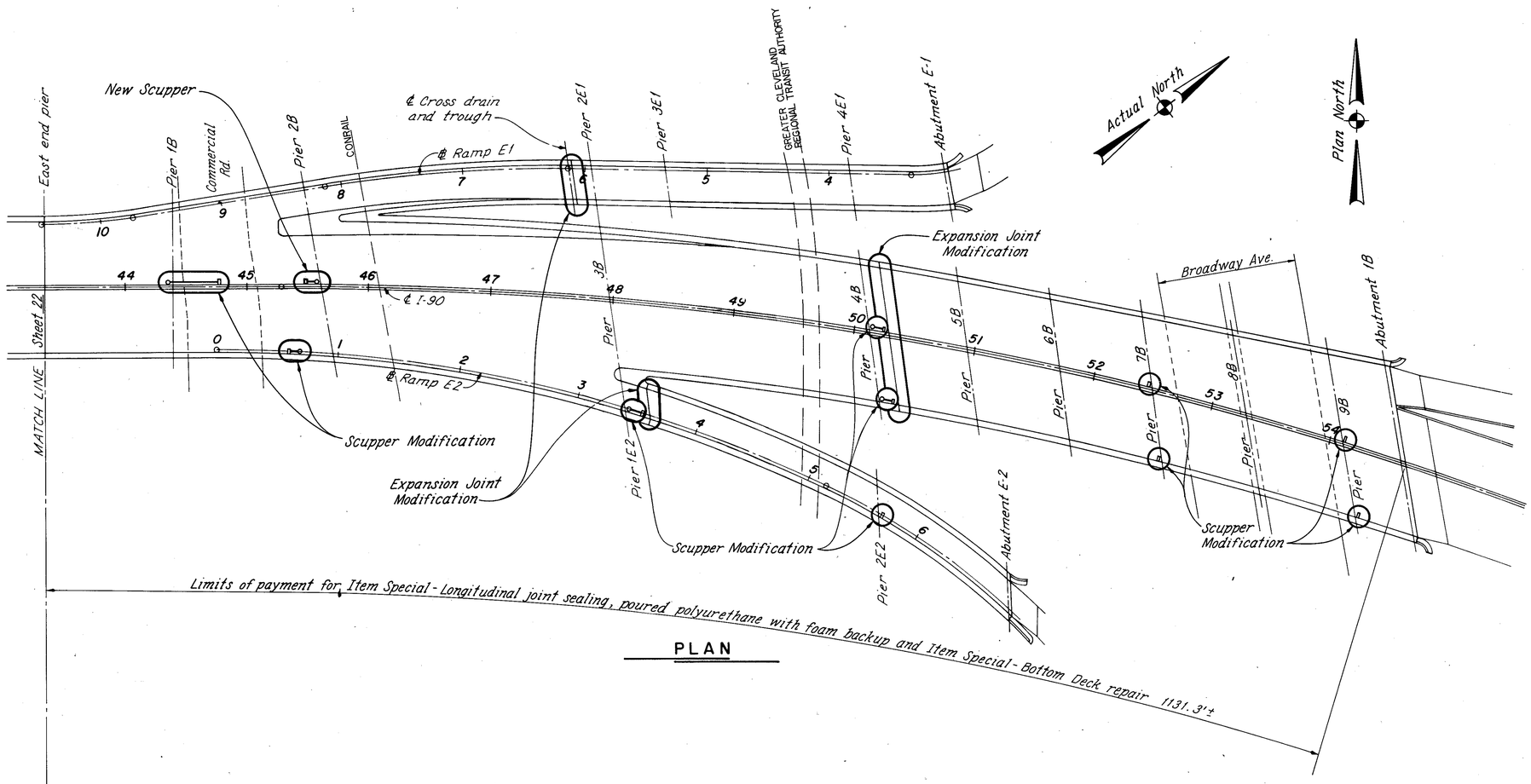
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	JPS	JPT	DHT	1/27/86	

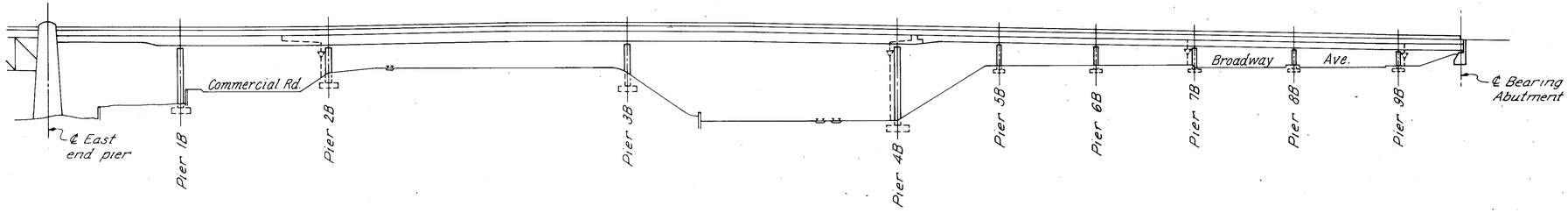
FHWA REGION	STATE	PROJECT	
5	OHIO		

55/72

CUYAHOGA COUNTY
CUY-90-15.24



PLAN



ELEVATION

NOTES

REMOVAL DETAILS: See sheet 56 and 57.

SCUPPER MODIFICATIONS: See sheet 58, 59, 60 and 64.

EXPANSION JOINT MODIFICATIONS: See sheet 62 thru 69.

NEW SCUPPER DETAILS: See sheet 61.

BOTTOM DECK REPAIR DETAILS: See sheet 17.

LONGITUDINAL JOINT SEALING DETAIL: See sheet 17.

GROUND DRAINAGE DETAILS: See sheet 70 and 71.

UTILITIES: See Sheet 70.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GENERAL PLAN EAST APPROACH

BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

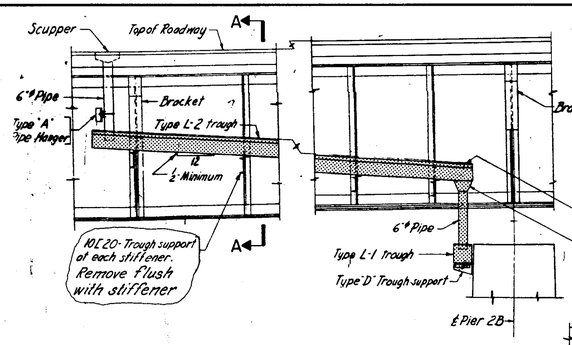
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
HEW	JLS	JLS	DAP	DHT	1/27/86	

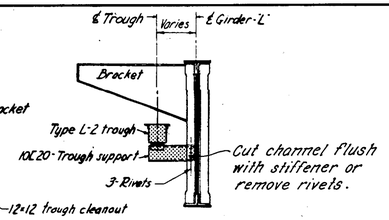
FHWA REGION	STATE	PROJECT	
5	OHIO		

56/72

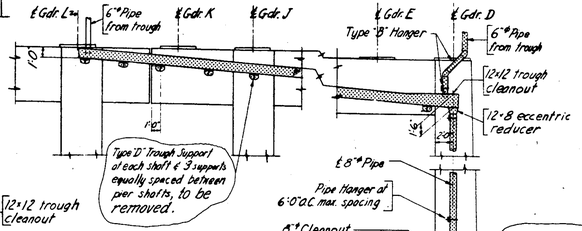
CUYAHOGA COUNTY
CUY-90-15.24



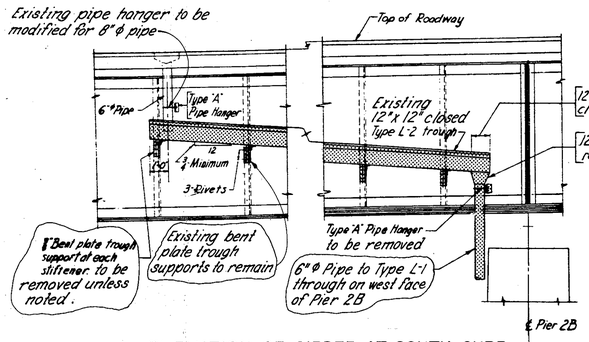
ELEVATION OF GIRDER AT MEDIAN



SECTION A-A

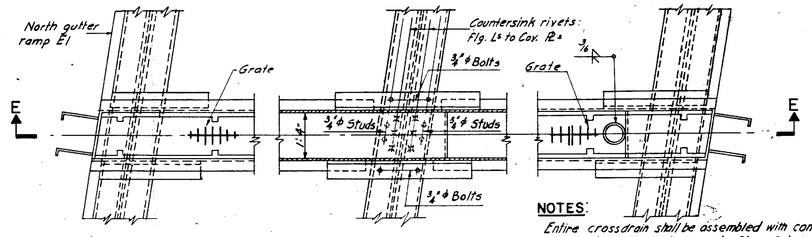


ELEVATION LOOKING AT PIER



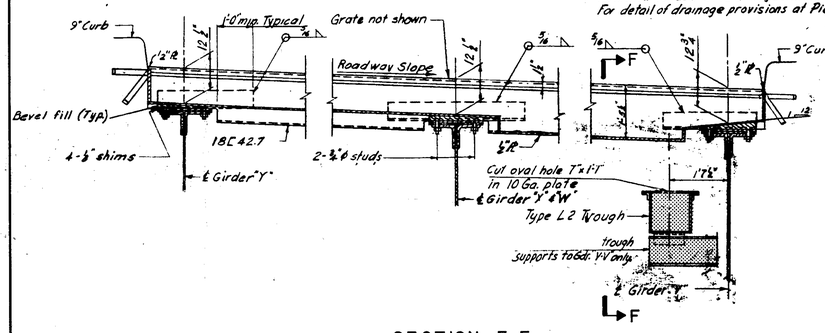
ELEVATION OF GIRDER AT SOUTH CURB

REMOVAL AT PIER 2B



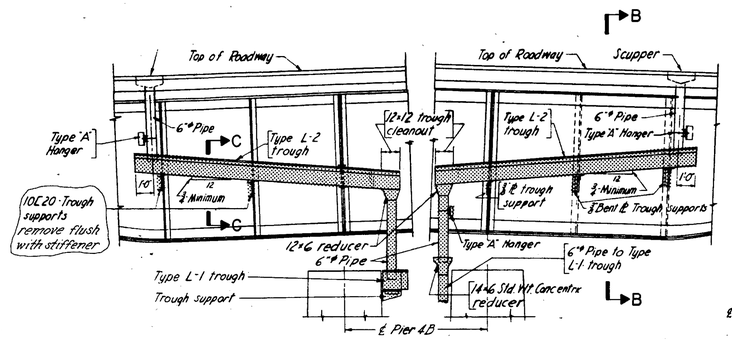
PLAN

NOTES:
Entire crossdrain shall be assembled with continuous ¼" shop weld and shall be galvanized after fabrication.
Where 4-½" shims are specified, two additional ½ shims shall be furnished for use in field adjustment.
For detail of drainage provisions at Pier 2E1 see Sh. 10B.

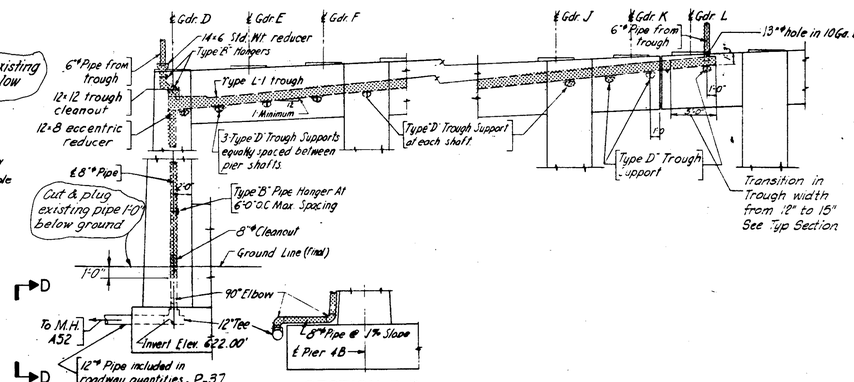


SECTION E-E

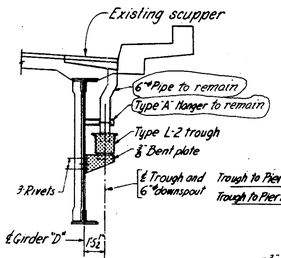
REMOVAL AT PIER 2E1



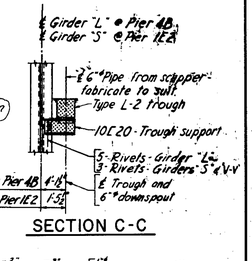
ELEVATION OF GIRDER AT MEDIAN



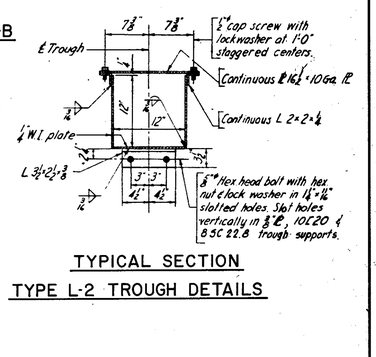
SECTION D-D



SECTION B-B



SECTION C-C



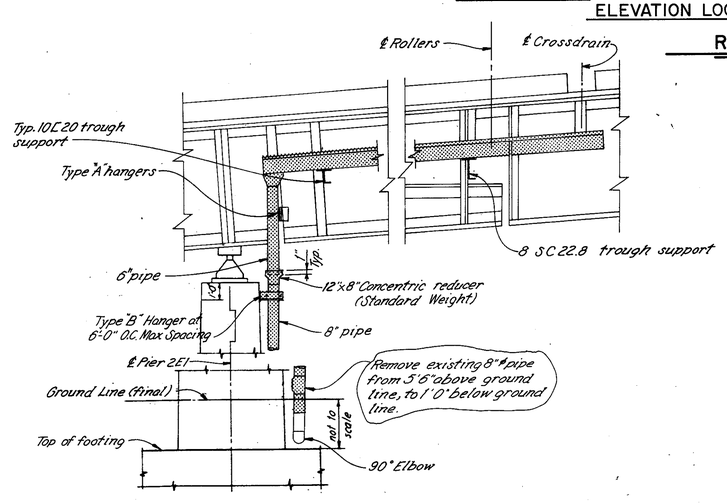
TYPICAL SECTION

TYPE L-2 TROUGH DETAILS

LEGEND

▨ - Indicates existing drainage materials to be removed. Contractor to dispose of removal materials unless otherwise shown on the plans or as directed by the Engineer.

REMOVAL AT PIER 4B



SECTION F-F

NOTES:

MATERIALS shown are existing. Work to be done under this project shown in captions. Dimensions and notes otherwise shown are from original design plans for information only.

EXISTING DRAINAGE MATERIALS (original design plan spec.)
Where W.I. plates are called for, Mayari R or Cor-Ten steel may be used.
All 6"ϕ and 8"ϕ pipes shall be "Standard Weight" pipe in accordance with the State of Ohio Department of Highways Construction and Material Specifications. They shall be wrought iron or hot dipped galvanized steel, with extra strong (except as noted) weld type seamless steel fittings or galvanized Victaulic couplings or approved equal.
Welded joints of all pipes and fittings to be single bevel butt welds - full penetration with ¼" root opening and 45° included angle.
Steel pipe, all steel fittings, all pipehangers, trough supports, nuts, bolts and washers shall be hot dipped galvanized after fabrication.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

REMOVAL DETAILS EAST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

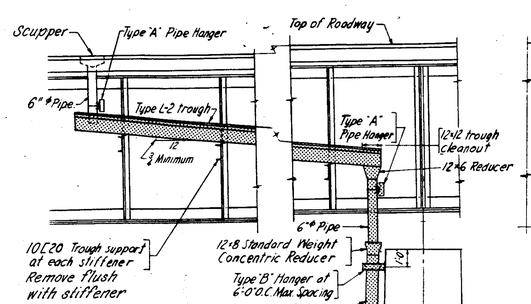
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	TH	JPT	DHT	11/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

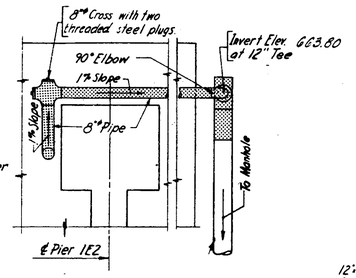
57/72

CUYAHOGA COUNTY
CUY-90-15.24

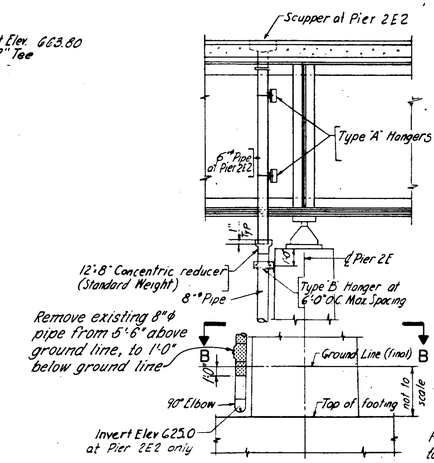


ELEVATION OF GIRDER AT SOUTH CURB

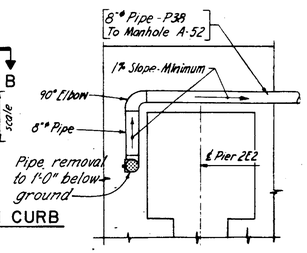
REMOVAL AT PIER 1E2



SECTION A-A

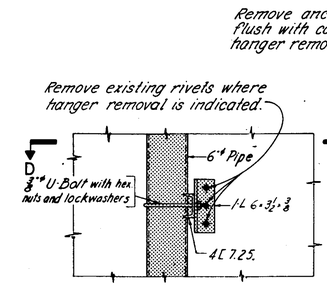


ELEVATION OF GIRDER AT SOUTH CURB

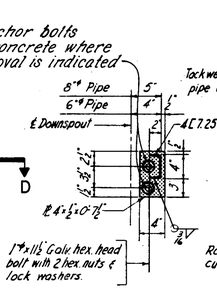


SECTION B-B

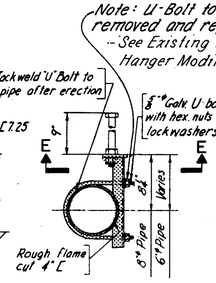
REMOVAL AT PIER 2E2



ELEVATION



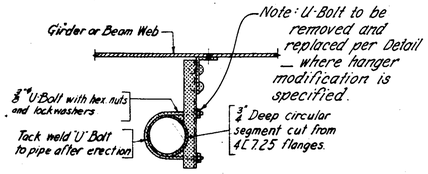
SECTION E-E



PLAN

TYPE "B" HANGER

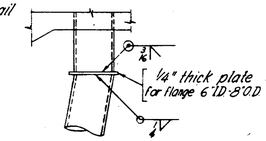
To be removed where specified



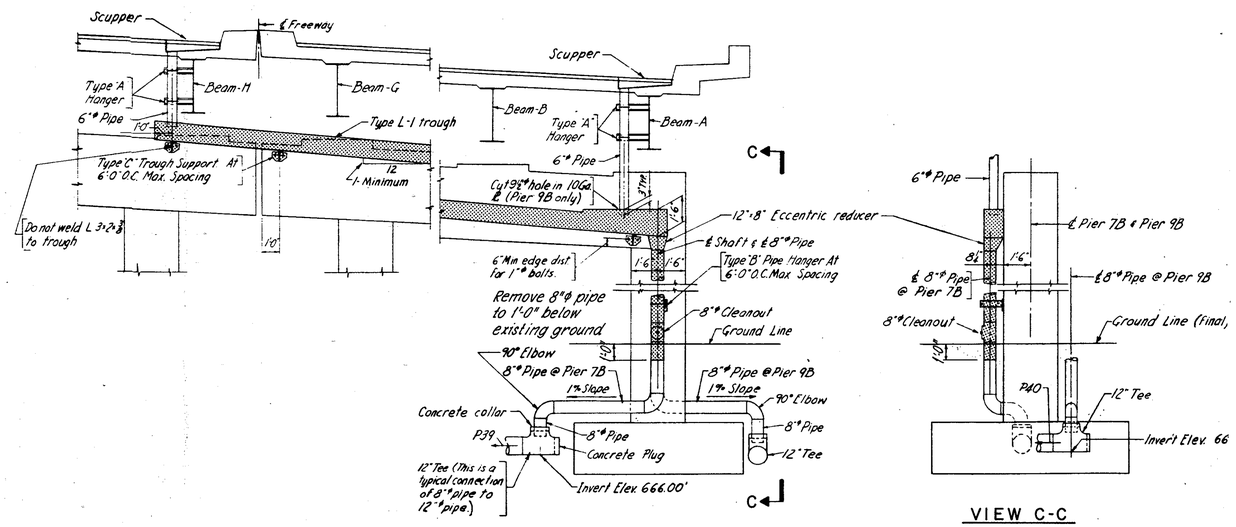
SECTION D-D

TYPE "A" HANGER

To be removed where specified



SCUPPER CONNECTION TO DOWNSPOUT

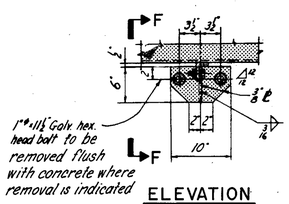


ELEVATION LOOKING AT PIER 7B

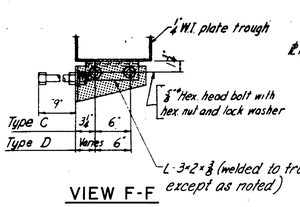
ELEVATION LOOKING AT PIER 9B *(Opposite hand)*

VIEW C-C

REMOVAL AT PIER 7B AND 9B

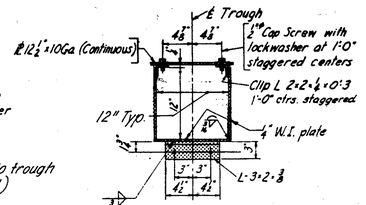


ELEVATION



VIEW F-F

TYPE C & D TROUGH SUPPORTS



TYPICAL SECTION

TYPE L-1 TROUGH DETAILS

LEGEND

▨ - *Indicates existing drainage materials to be removed. Contractor to dispose of removal materials unless otherwise shown on the plans or as directed by the Engineer.*

NOTES:

DETAIL NOTES: See sheet 56.

EXISTING PIPE HANGER MODIFICATION: See sheet 58.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

REMOVAL DETAILS EAST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

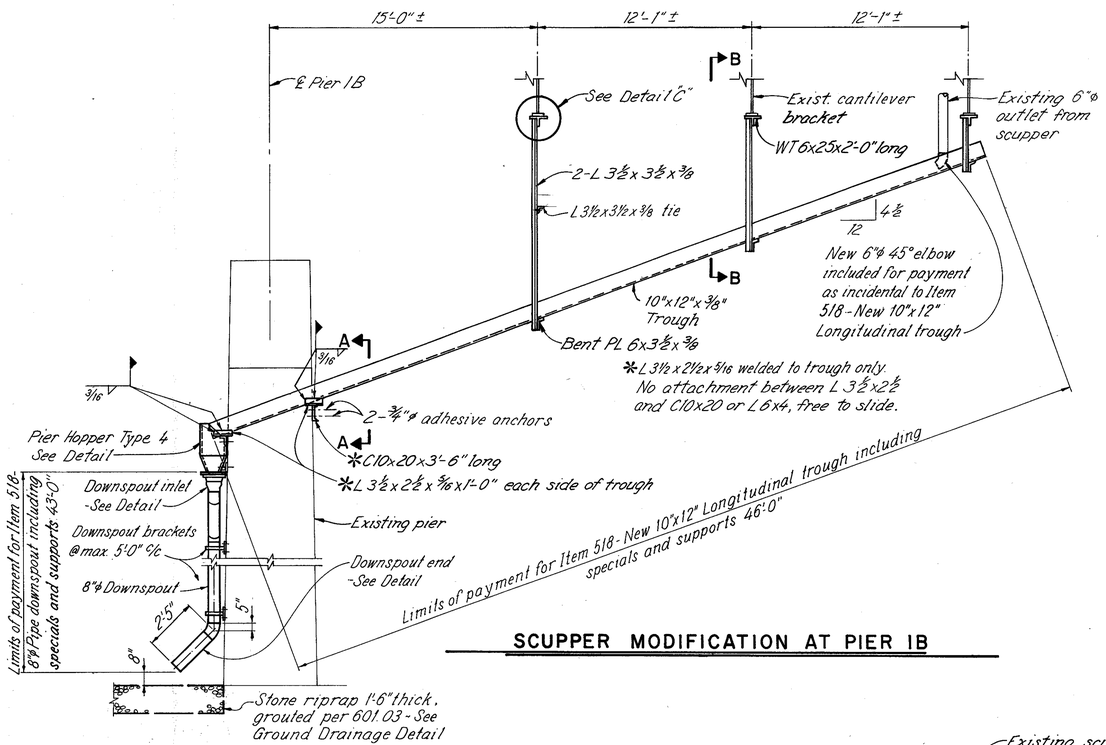
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	WH	JPT	DHT	1/27/86	

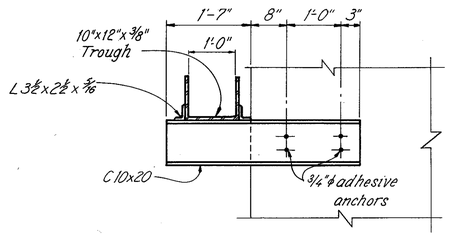
FHWA REGION	STATE	PROJECT	
5	OHIO		

58/72

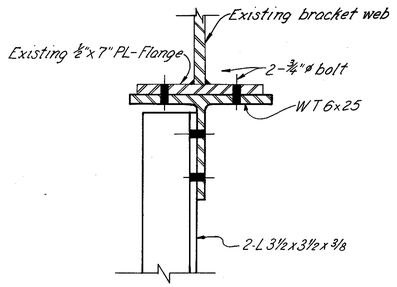
CUYAHOGA COUNTY
CUY-90-15.24



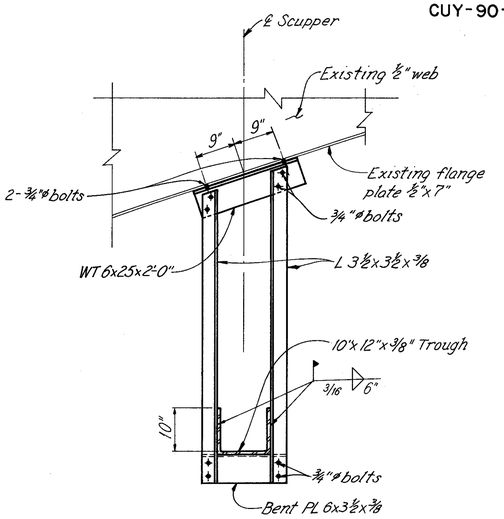
SCUPPER MODIFICATION AT PIER 1B



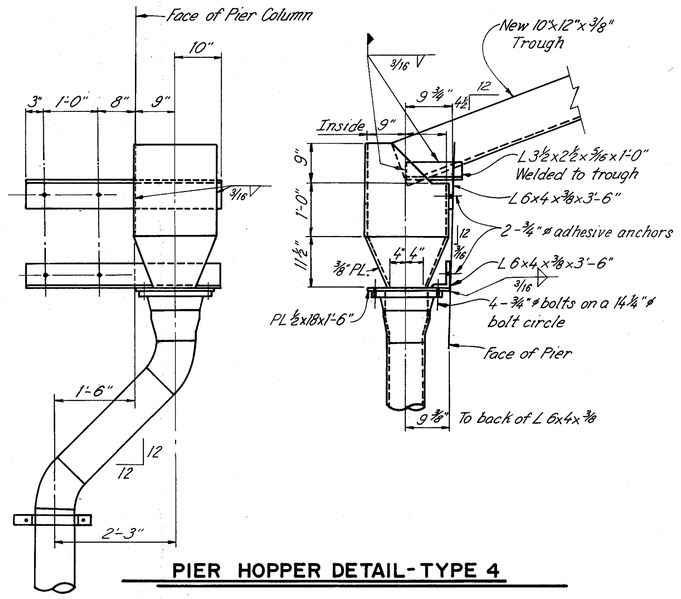
SECTION A-A



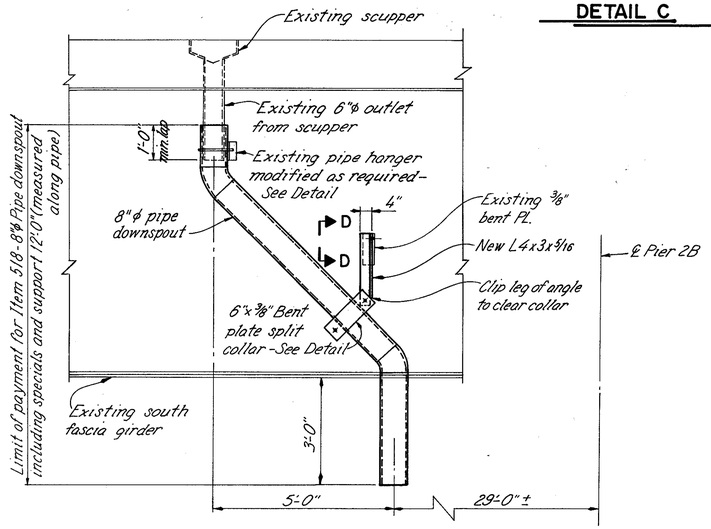
DETAIL C



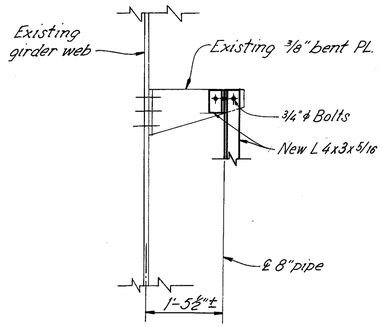
SECTION B-B



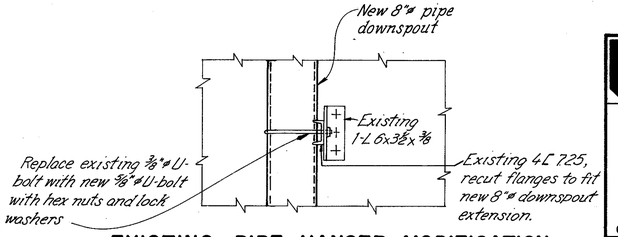
PIER HOPPER DETAIL-TYPE 4



SCUPPER MODIFICATION AT PIER 2B



SECTION D D



EXISTING PIPE HANGER MODIFICATION

NOTES

DOWNSPOUT INLET DETAIL: See sheet 49.

SPLIT COLLAR DETAIL: See sheet 49.

GROUND DRAINAGE DETAIL: See sheet 70.

DOWNSPOUT END DETAIL: See sheet 20.

DOWNSPOUT BRACKET DETAIL: See sheet 11.

HOPPER WELD DETAIL: See sheet 27.

DOWNSPOUT BEND DETAIL: See sheet 20.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

SCUPPER MODIFICATION
EAST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

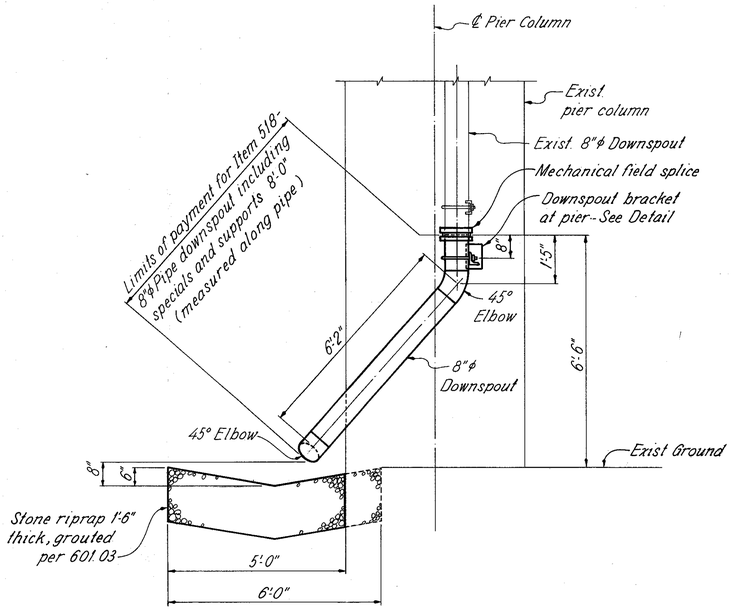
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	EFW	DAP	DHT	1/27/86	

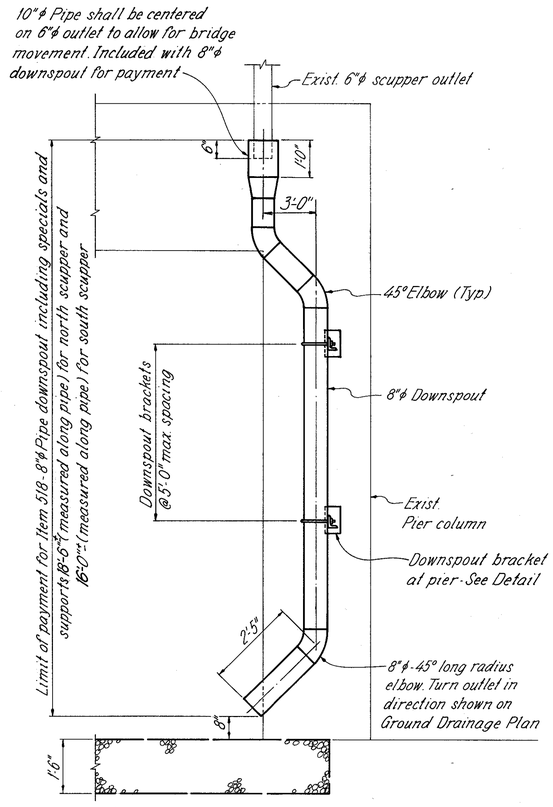
FHWA REGION	STATE	PROJECT	
5	OHIO		

59/72

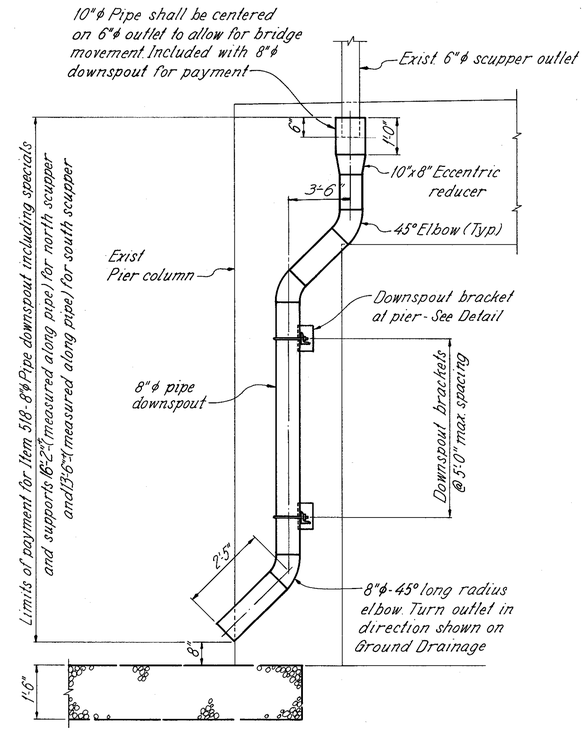
CUYAHOGA COUNTY
CUY-90-15.24



SCUPPER MODIFICATION AT PIER 2E2



SCUPPER MODIFICATION AT PIER 7B
(NORTH & SOUTH)



SCUPPER MODIFICATION AT PIER 9B
(NORTH & SOUTH)

NOTES:

DOWNSPOUT BRACKET AT PIER DETAIL: See sheet 11 .

GROUND DRAINAGE PLAN: See sheet 71 .

DOWNSPOUT BEND DETAILS: See sheet 20 .

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

SCUPPER MODIFICATION
EAST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

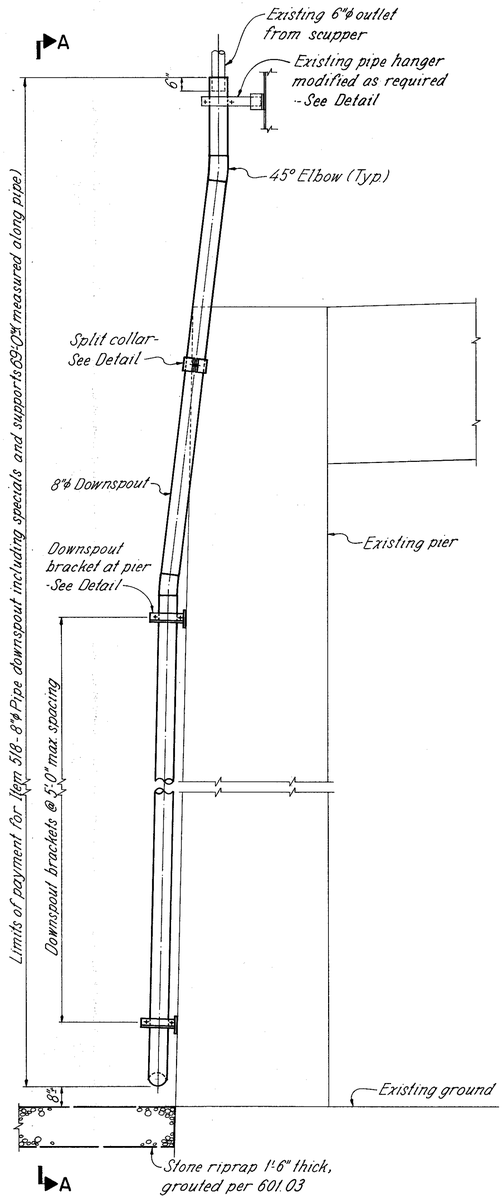
CUYAHOGA COUNTY I-90

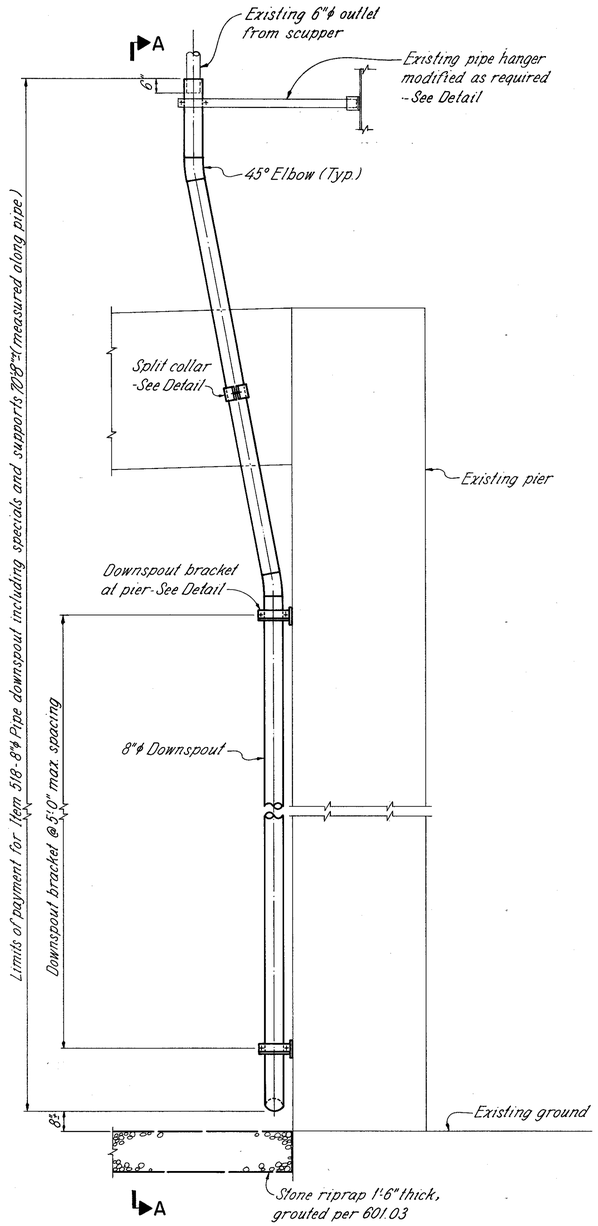
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	DAP	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

60/72

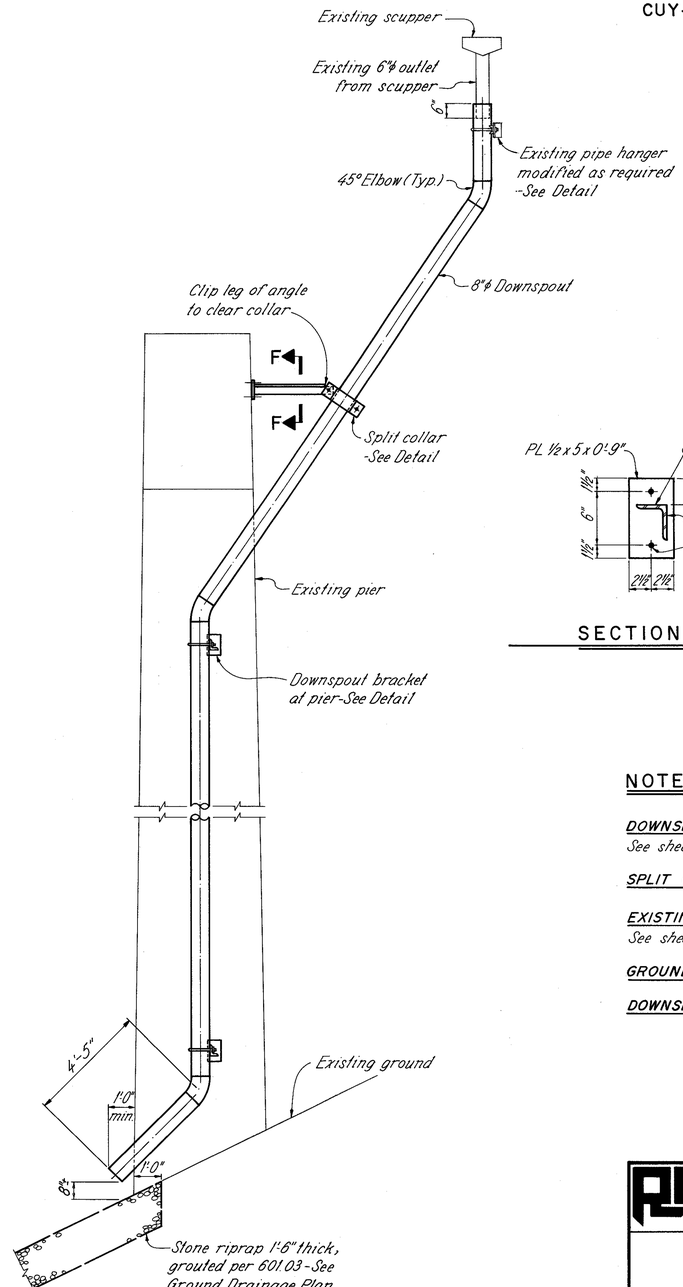
CUYAHOGA COUNTY
CUY-90-15.24



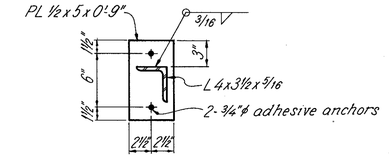


SCUPPER MODIFICATION AT PIER 4B

ELEVATION LOOKING WEST



SECTION A-A



SECTION F-F

NOTES:

DOWNSPOUT BRACKET AT PIER DETAIL: See sheet 11.

SPLIT COLLAR DETAIL: See sheet 49.

EXISTING PIPE HANGER MODIFICATION: See sheet 58.

GROUND DRAINAGE PLAN: See sheet 71.

DOWNSPOUT BEND DETAILS: See sheet 20.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

SCUPPER MODIFICATION
EAST APPROACH
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

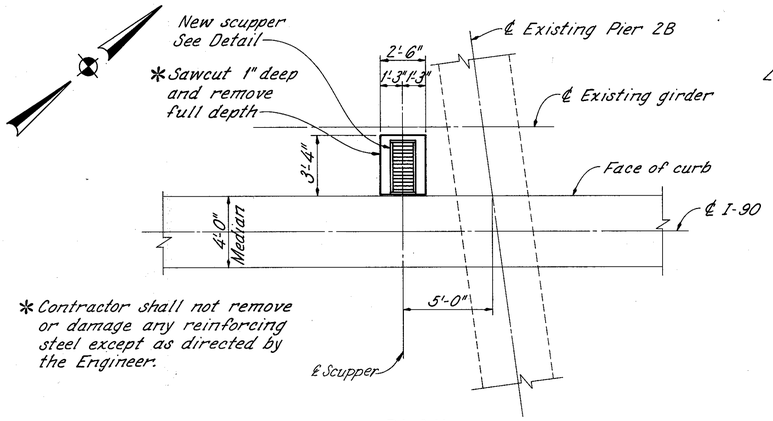
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	DAP	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

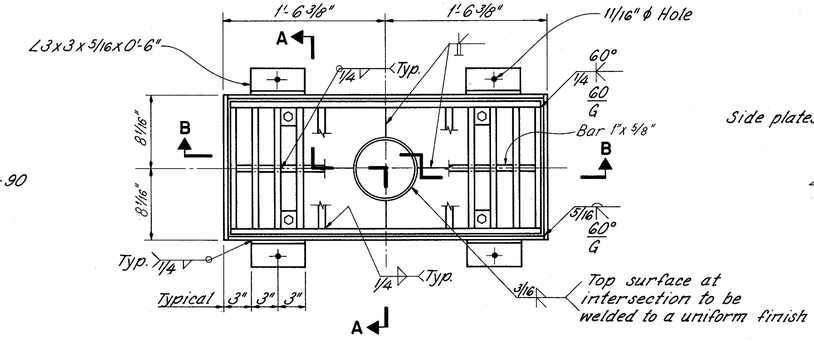
61/72

CUYAHOGA COUNTY
CUY-90-15.24



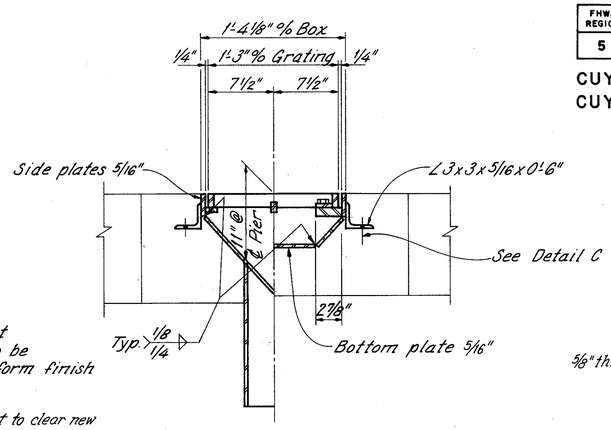
*Contractor shall not remove or damage any reinforcing steel except as directed by the Engineer.

PLAN

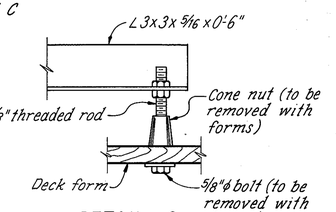


PLAN

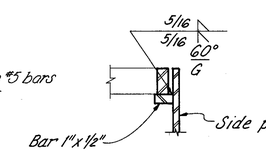
*To be cut to clear new scupper by 2".



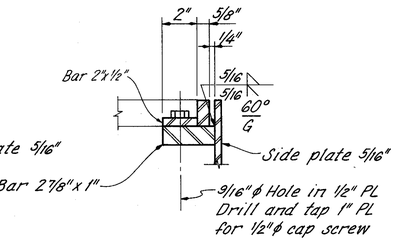
SECTION A-A



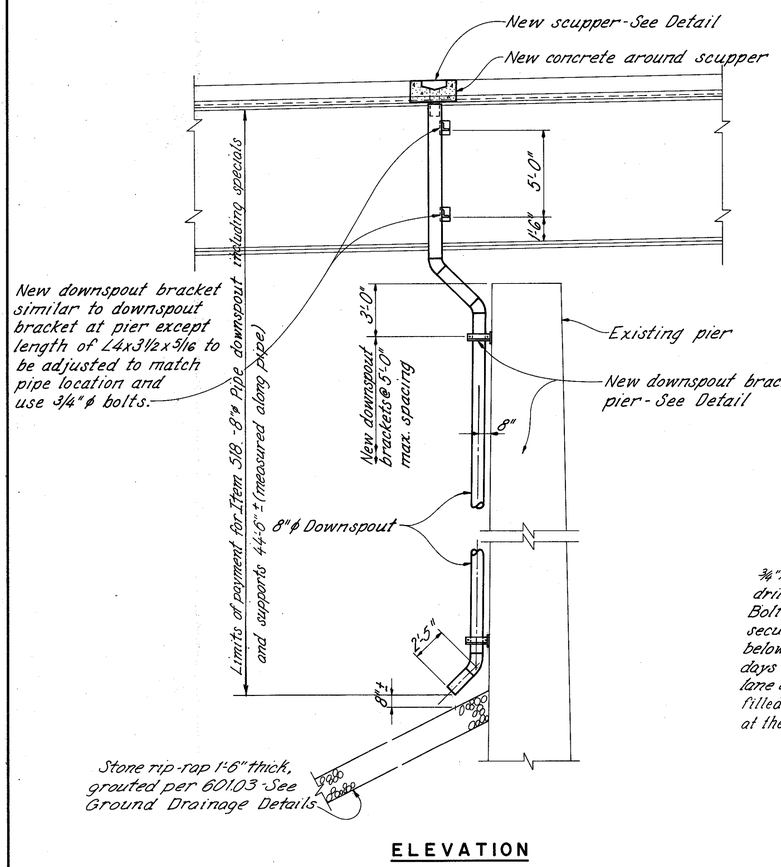
DETAIL C



GRATING SUPPORT

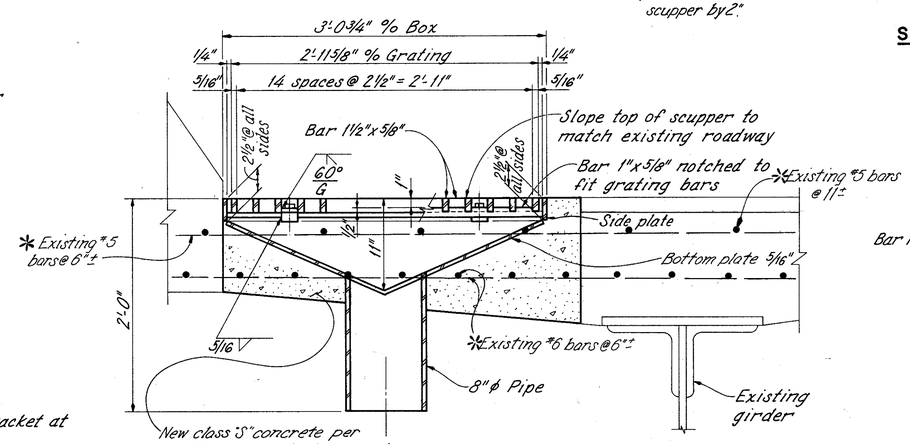


GRATING FASTENING



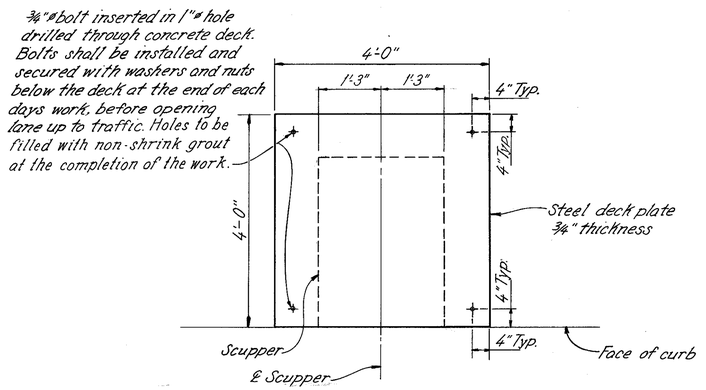
ELEVATION

NEW SCUPPER AT PIER 2B



SECTION B-B

NEW SCUPPER DETAILS



STEEL DECK PLATE DETAIL

NOTES

DOWNSPOUT BRACKET AT PIER: See sheet 11.

GROUND DRAINAGE DETAILS: See sheet 70.

REPLACEMENT OF EXISTING REINFORCING STEEL: Any existing reinforcing bars which are to be incorporated into the new work and which are made unusable by the contractors concrete removal operations shall be replaced with new steel at his cost.

CONCRETE shall be Class S per 511, included for payment as incidental to Item 518-New scupper including supports.

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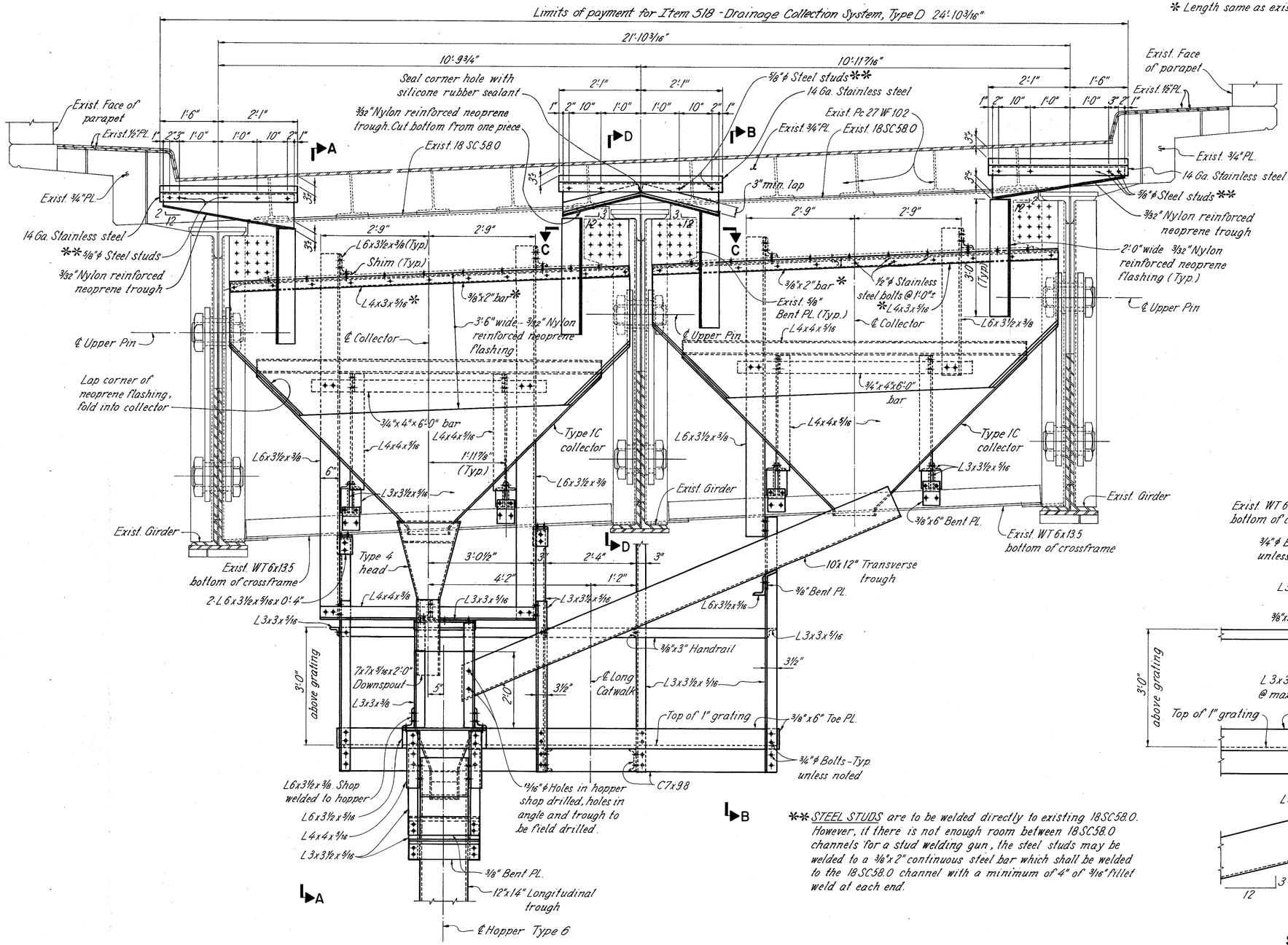
RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

NEW SCUPPER DETAILS EAST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	JLS	DAP	DHT	1/27/86	



TYPICAL SECTION THRU. JOINT

LOOKING TOWARD LINK JOINT

SECTION A-A

NOTES

DRAINAGE COLLECTION SYSTEM: See General Note sheet 6 for pay item description.
SECTION B-B, C-C & D-D: See sheet 63
TYPE IC COLLECTOR: See sheet 44
TYPE 4 HEAD: See sheet 44
TYPE 6 HOPPER: See sheet 45

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

EXPANSION JOINT MODIFICATIONS AT JOINT 1E2 EAST APPROACH

BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

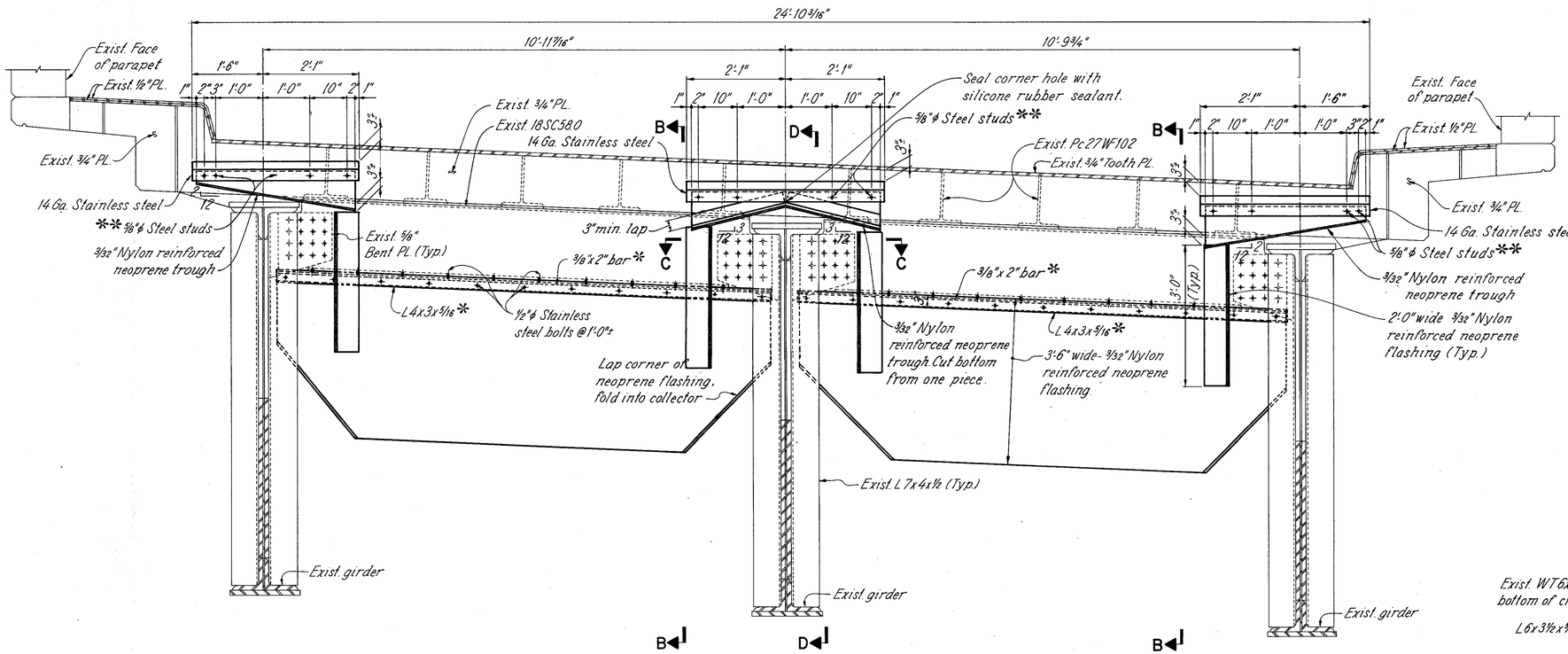
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	KH	KH	DAP	DHT	11/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

63/72

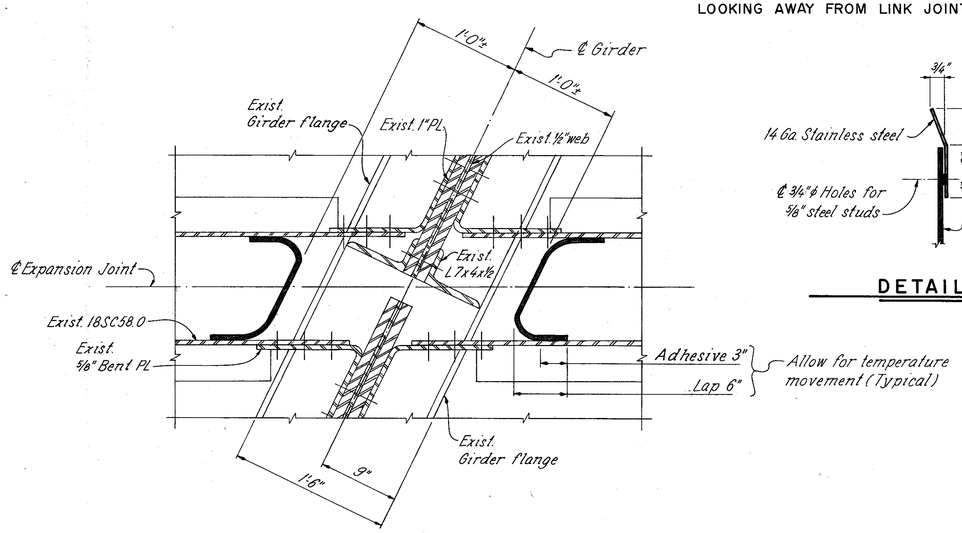
CUYAHOGA COUNTY
CUY-90-15.24

* Length same as existing 18SC58.0

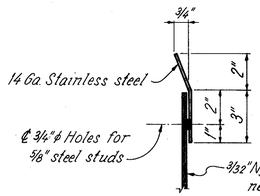


TYPICAL SECTION THRU. JOINT

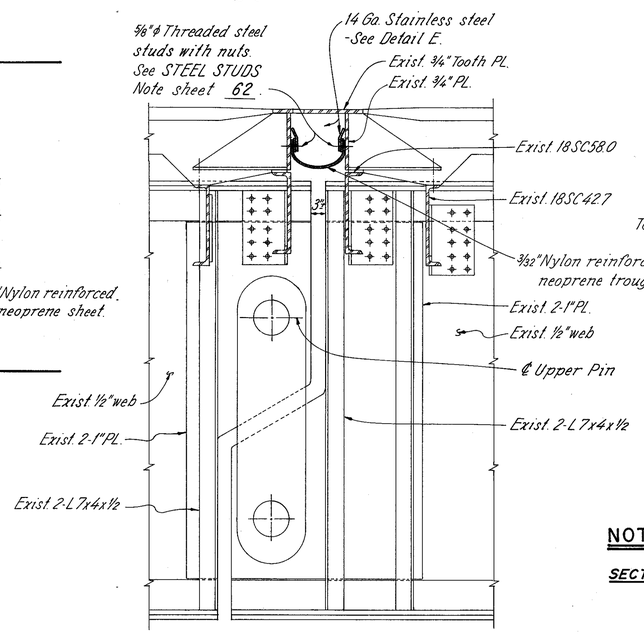
LOOKING AWAY FROM LINK JOINT



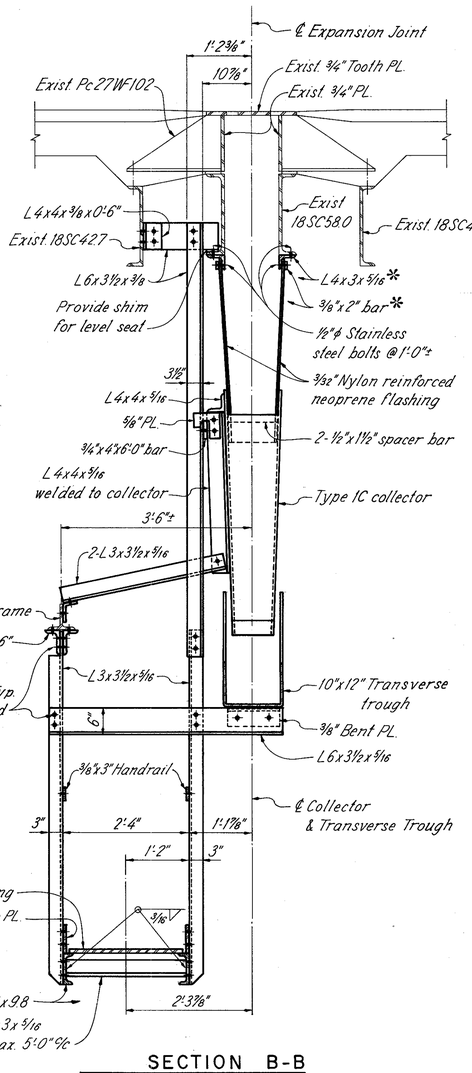
SECTION C-C



DETAIL E



SECTION D-D



SECTION B-B

NOTES:

SECTION A-A: See sheet 61

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

EXPANSION JOINT MODIFICATIONS AT JOINT 1E2 EAST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

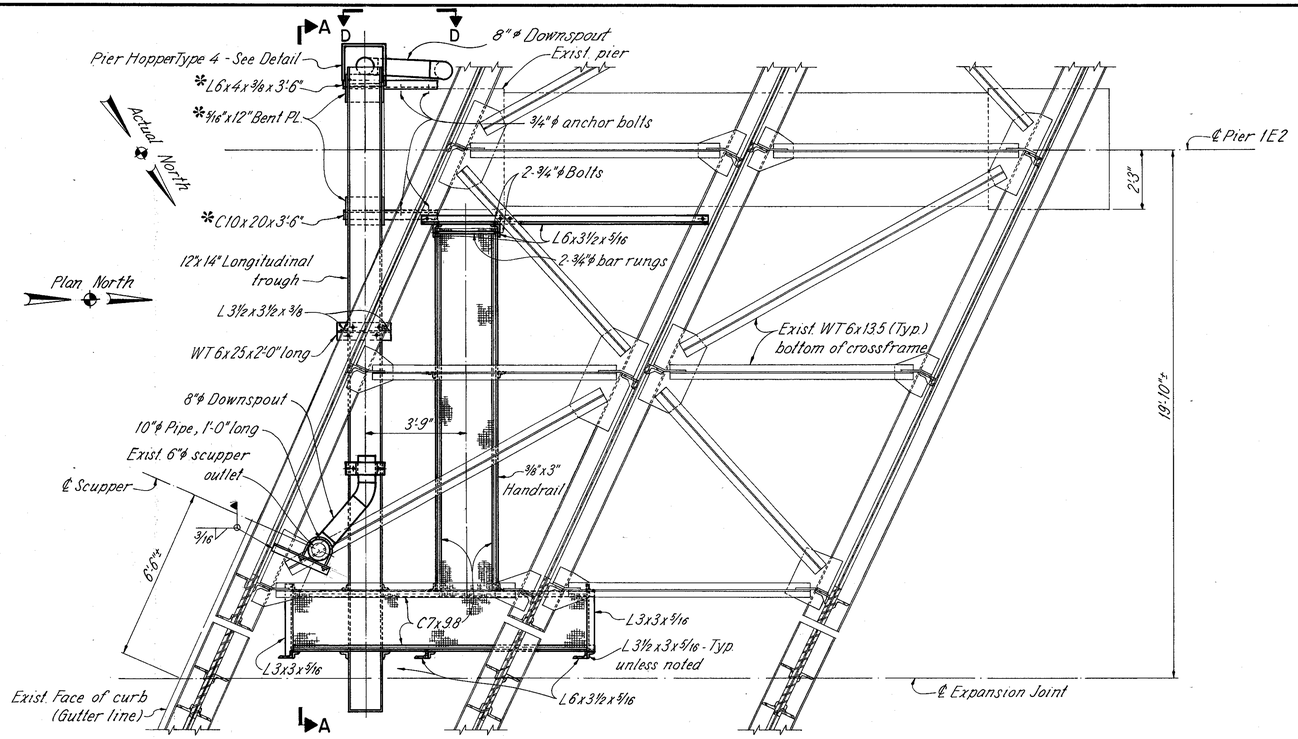
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	KH	KH	DAP	DHT	1/27/86	

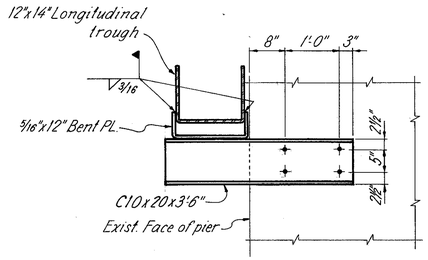
FHWA REGION	STATE	PROJECT	
5	OHIO		

64/72

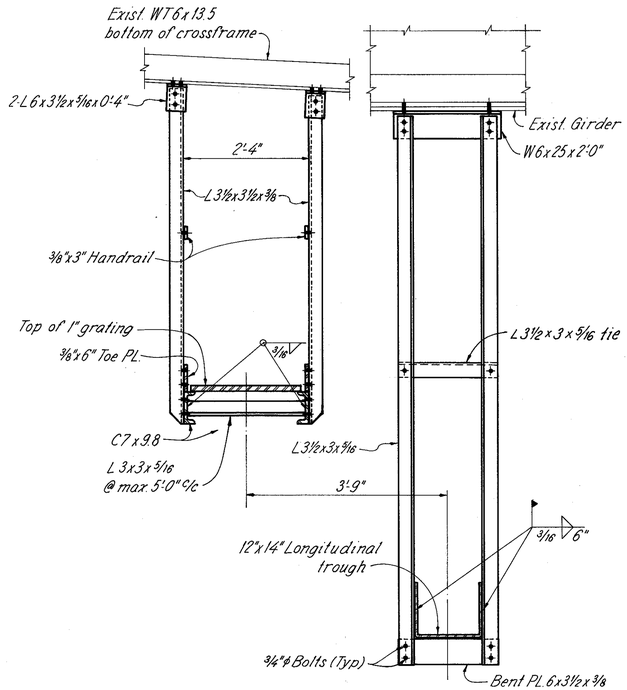
CUYAHOGA COUNTY
CUY-90-15.24



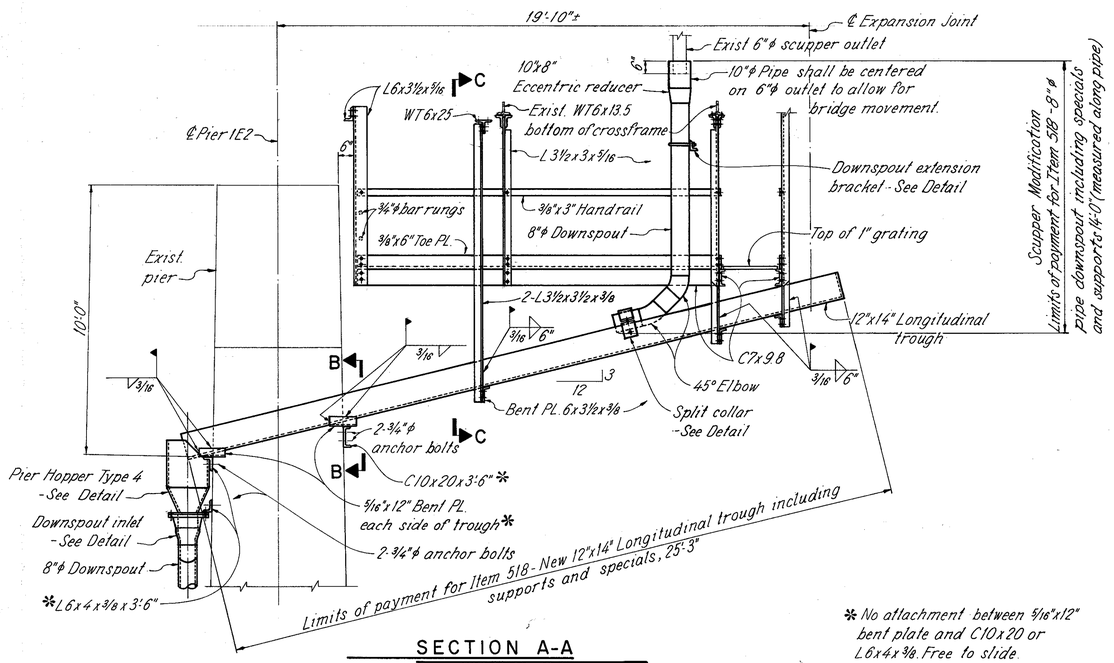
EXPANSION JOINT MODIFICATION AT PIER 1E2 - PLAN



SECTION B-B



SECTION C-C



SECTION A-A

* No attachment between ⅝"x12" bent plate and C10x20 or L6x4x⅜. Free to slide.

NOTES:

PIER HOPPER TYPE 4 DETAIL: See sheet 58

DOWNSPOUT INLET DETAIL: See sheet 49

SECTION D-D: See sheet 65

SPLIT COLLAR DETAIL: See sheet 49

DOWNSPOUT EXTENSION BRACKET DETAIL: See sheet 11

64/72

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

EXPANSION JOINT MODIFICATIONS AT JOINT 1E2 EAST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

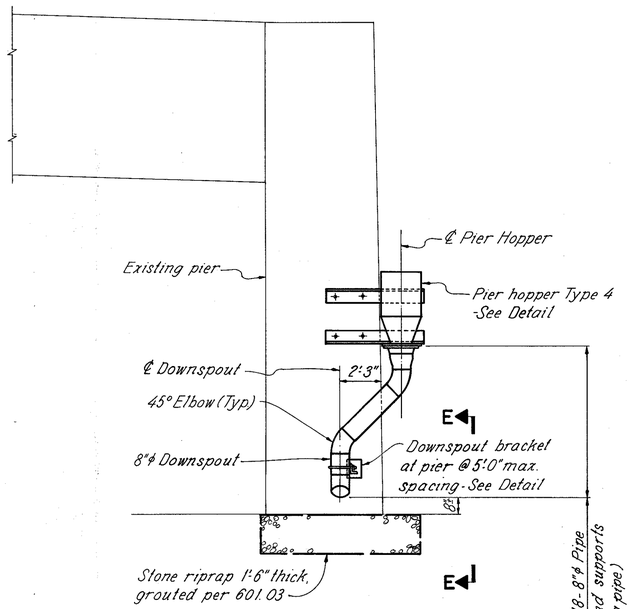
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	KH	KH	DAP	DHT	1/27/86	

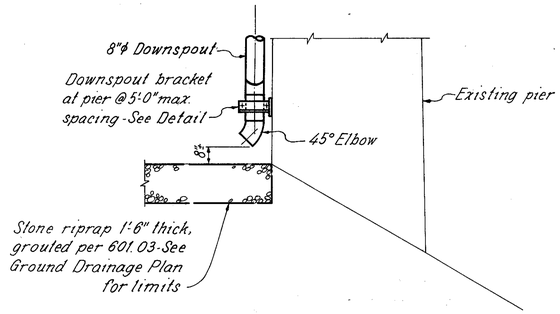
FHWA REGION	STATE	PROJECT	
5	OHIO		

65/72

CUYAHOGA COUNTY
CUY-90-15.24



SECTION D-D



SECTION E-E

Limits of payment for Item 518 - 8"ϕ Pipe
downspout including specials and supports
7'-0" (measured along pipe)

NOTES:

PIER HOPPER TYPE 4 DETAIL: See sheet 58 .

DOWNSPOUT BRACKET AT PIER DETAIL:
See sheet 11 .

GROUND DRAINAGE DETAIL: See sheet 71 .

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

EXPANSION JOINT MODIFICATIONS
AT JOINT 1E2
EAST APPROACH
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

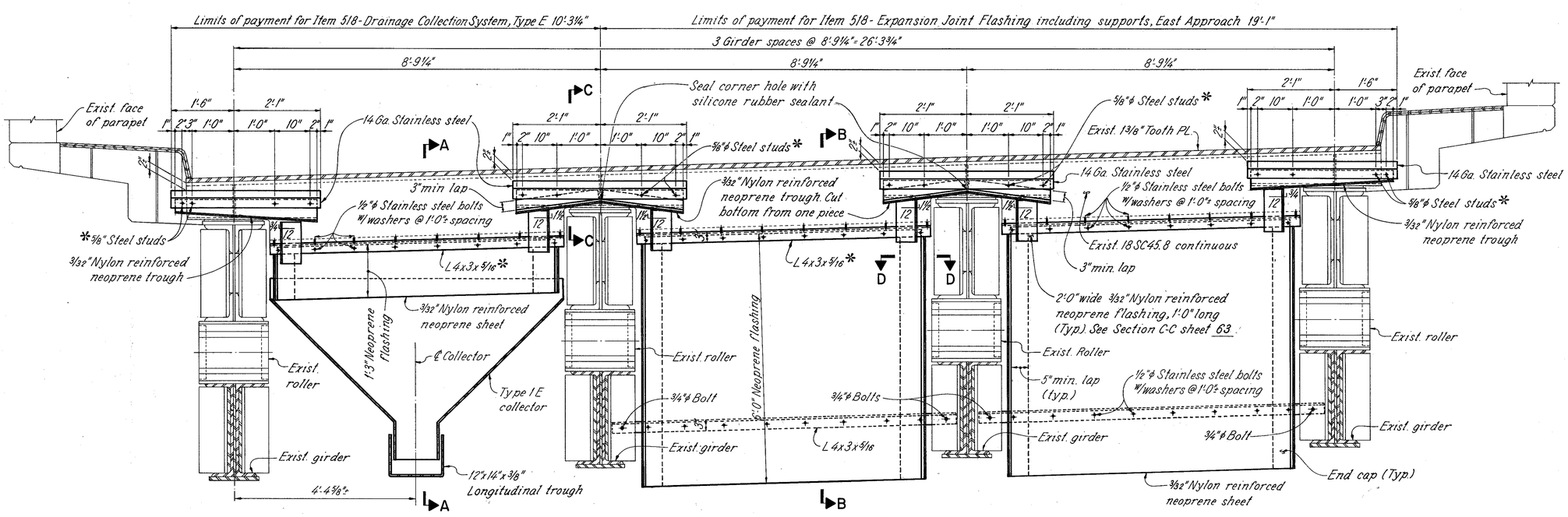
CUYAHOGA COUNTY 1-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	DAP	DHT	11/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

65/72

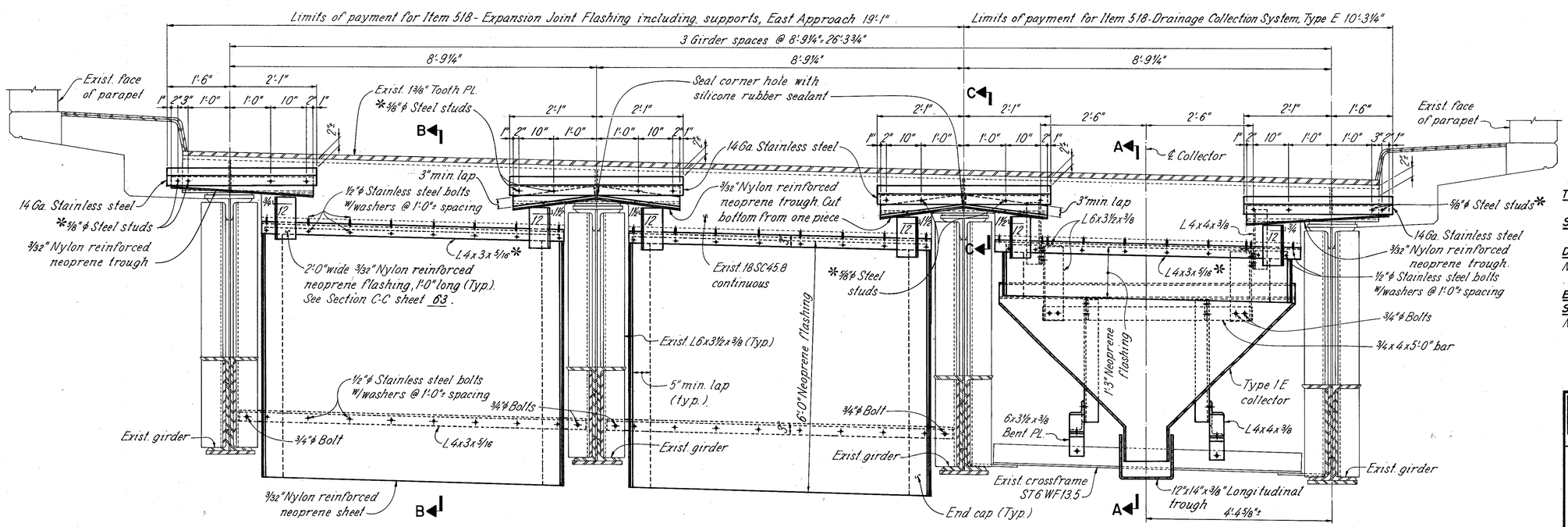
CUYAHOGA COUNTY
CUY-90-15.24



TYPICAL SECTION THRU. JOINT

LOOKING TOWARD EXPANSION ROLLER

* See STEEL STUDS Note sheet 62 .



TYPICAL SECTION THRU. JOINT

LOOKING AWAY FROM EXPANSION ROLLER

* Length same as bottom flange of existing 18 SC45.8

NOTES:

TYPE 1E COLLECTOR: See sheet 44 .

SECTION A-A, B-B, C-C, D-D: See sheet 67 .

DRAINAGE COLLECTION SYSTEM: See General Note sheet 6 for pay item description.

EXPANSION JOINT FLASHING INCLUDING SUPPORTS, EAST APPROACH: See General Note sheet 6 for pay item description.

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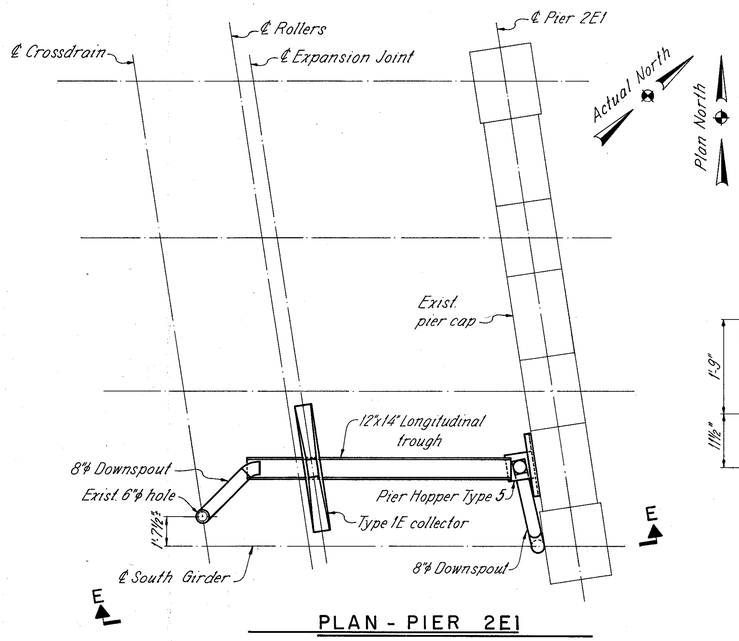
RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

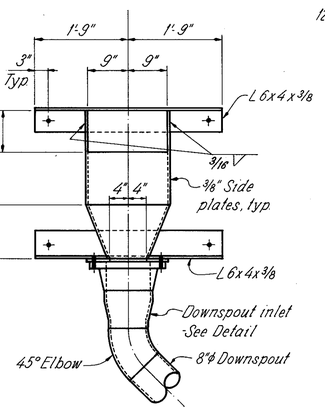
EXPANSION JOINT MODIFICATIONS AT JOINT 2E1 EAST APPROACH BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

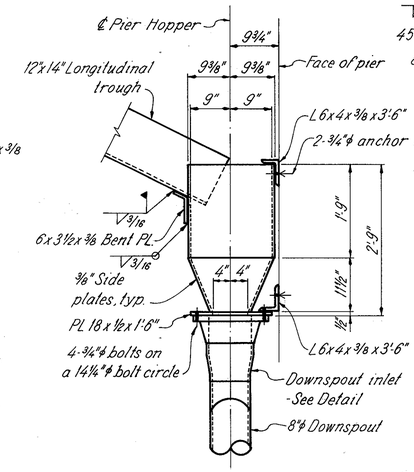
CUYAHOGA COUNTY 1-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DAP	JPS	KH	DAP	DHT	1/27/86	

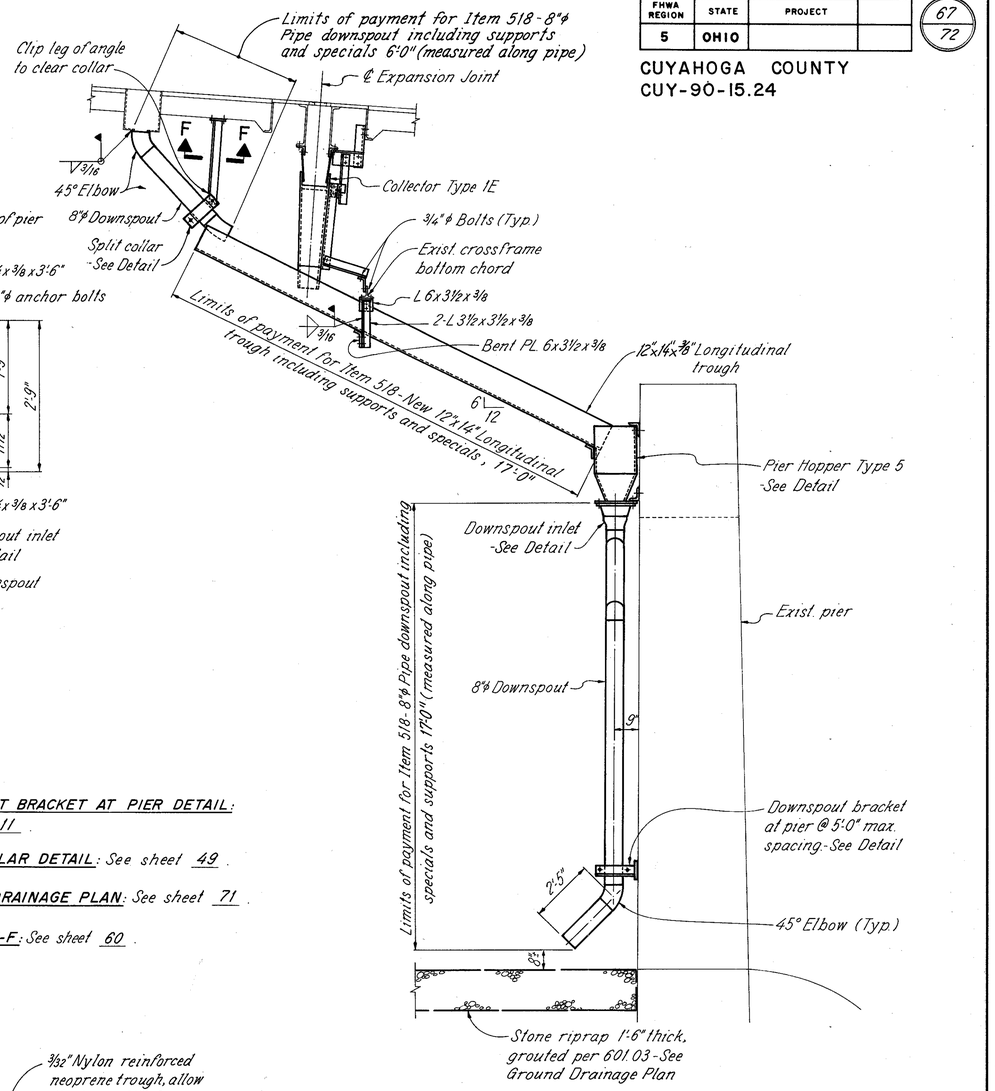


PLAN - PIER 2E1

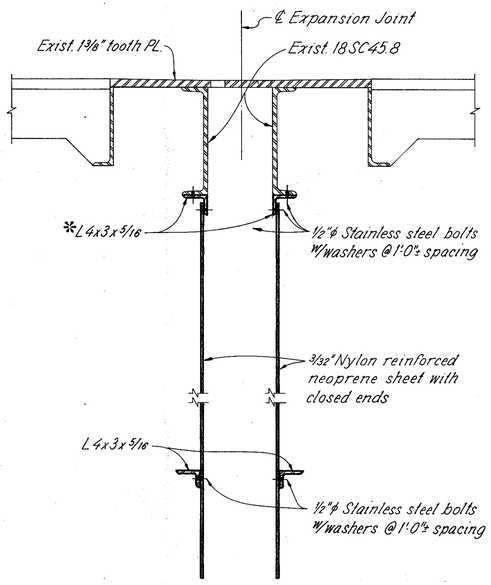




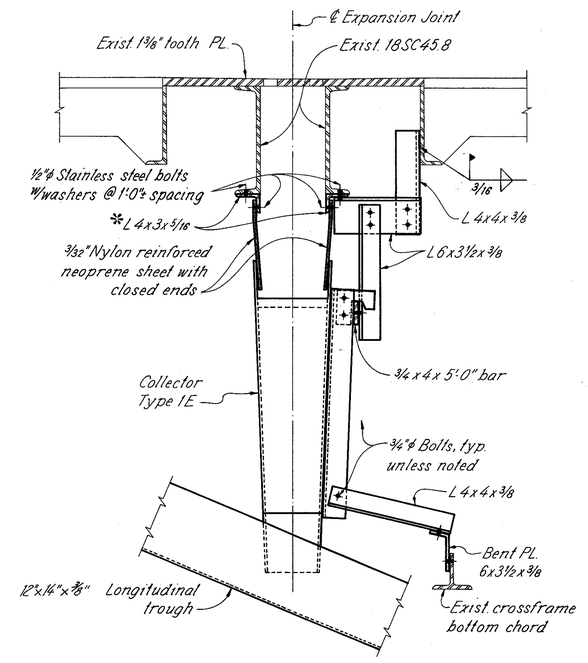
PIER HOPPER DETAIL - TYPE 5



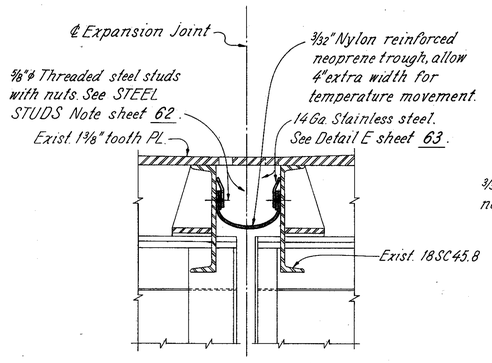
SECTION E-E



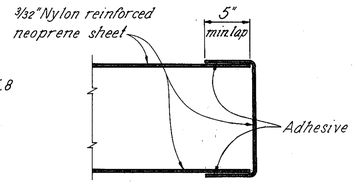
SECTION B-B



SECTION A-A



SECTION C-C



SECTION D-D

NOTES:

DOWNSPOUT BRACKET AT PIER DETAIL: See sheet 11.

SPLIT COLLAR DETAIL: See sheet 49.

GROUND DRAINAGE PLAN: See sheet 71.

SECTION F-F: See sheet 60.

*Length same as bottom flange of existing 18SC45.8

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

EXPANSION JOINT MODIFICATIONS AT JOINT 2E1 EAST APPROACH

BRIDGE NO. CUY-90-1524 OVER CUYAHOGA RIVER

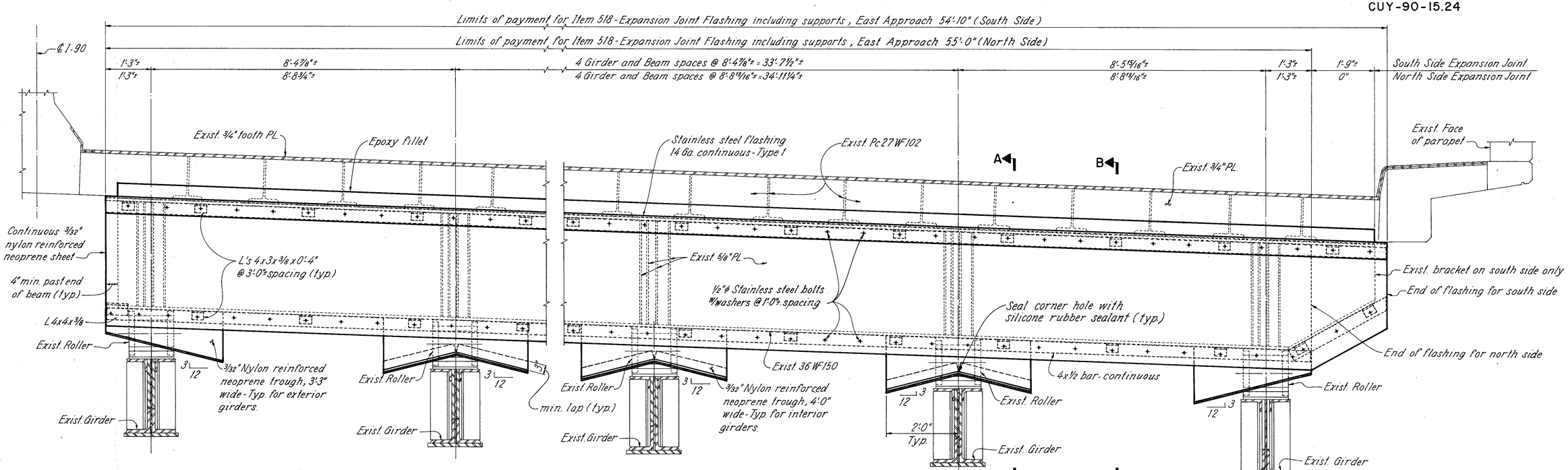
CUYAHOGA COUNTY 1-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DAP	JPS	KH	DAP	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

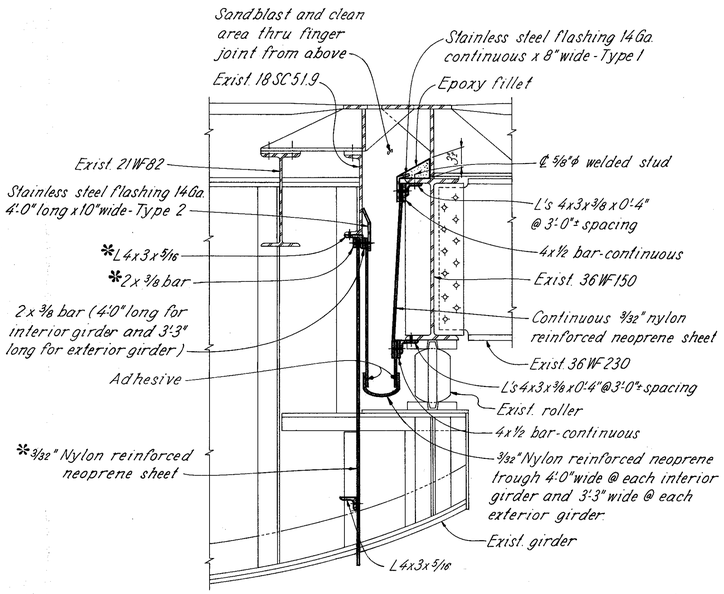
68/72

CUYAHOGA COUNTY
CUY-90-15.24

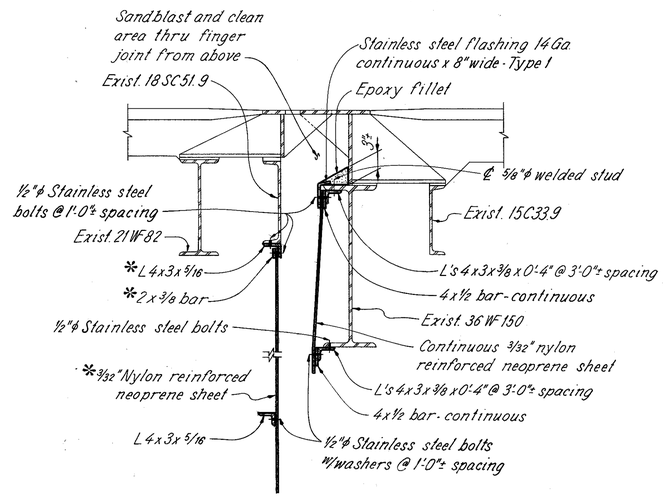


TYPICAL SECTION THRU. JOINT

LOOKING TOWARD EXPANSION ROLLER



SECTION A-A



SECTION B-B

NOTES:

STAINLESS STEEL FLASHING DETAILS: See sheet 12.

EPOXY FILLET shall be Epoxy 452 Gel as manufactured by the Euclid Chemical Company, Cleveland, OH, Sikadir 31, Hi-Mod Gel as manufactured by the Sika Corporation, Lyndhurst, NJ, or an approved alternate. Approximately 3 parts epoxy silica aggregate may be added per 1 part epoxy. Surfaces shall be clean and dry prior to placing the epoxy fillet per manufacturer's recommendations. The epoxy shall be a trowelable consistency at the time of placement. The epoxy shall be placed by pumping or by hand and shall be struck off by hand to a straight slope before the epoxy begins to harden. Payment shall be included as incidental to the applicable drainage item.

ADDITIONAL NOTES: See sheet 66.

*Length same as bottom flange of existing 18 SC 51.9

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

EXPANSION JOINT MODIFICATIONS AT JOINT 4B EAST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY 1-90

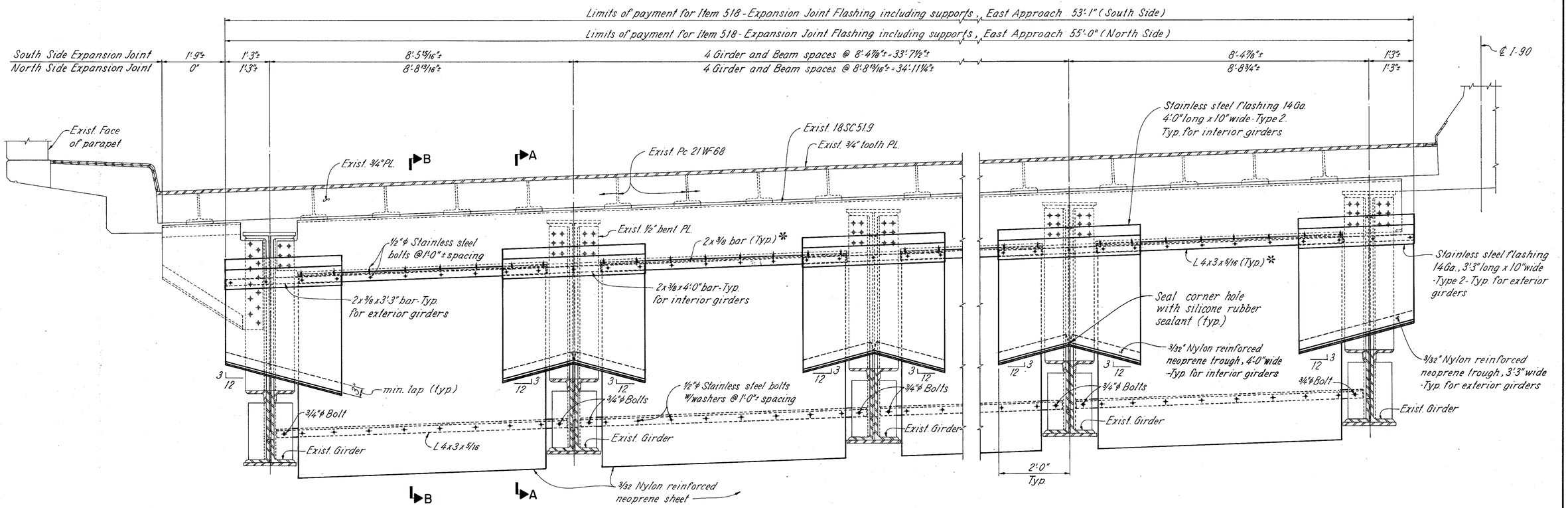
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	DAP	DHT	1/27/86	

* Length same as bottom flange of existing 18SC51.9

FHWA REGION	STATE	PROJECT	
5	OHIO		

69/72

CUYAHOGA COUNTY
CUY-90-15.24



TYPICAL SECTION THRU. JOINT

LOOKING AWAY FROM EXPANSION ROLLER

NOTES:

SECTION A-A & B-B: See sheet 68.

STAINLESS STEEL FLASHING DETAILS: See sheet 12.

ADDITIONAL NOTES: See sheet 66.

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

EXPANSION JOINT MODIFICATIONS AT JOINT 4B EAST APPROACH
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

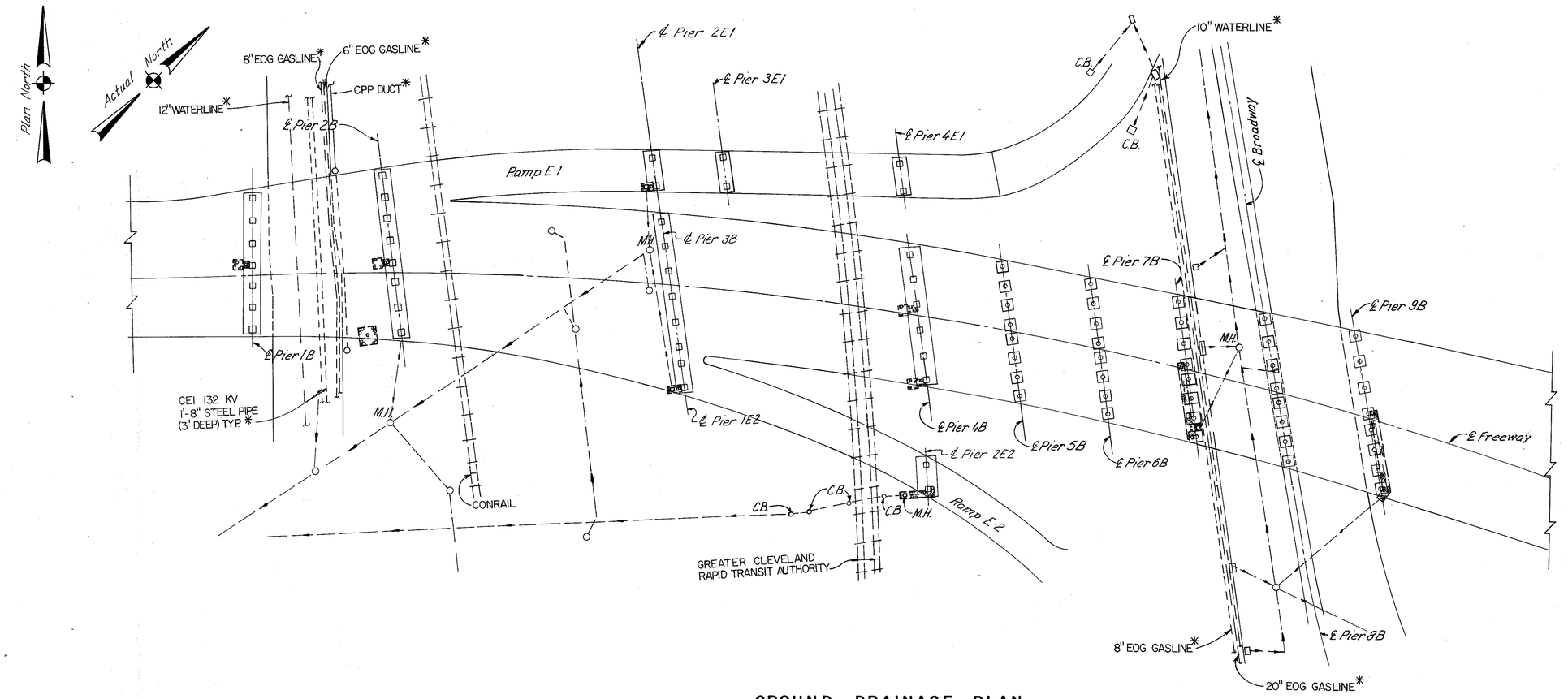
CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JPS	KH	DAP	DHT	1/27/86	

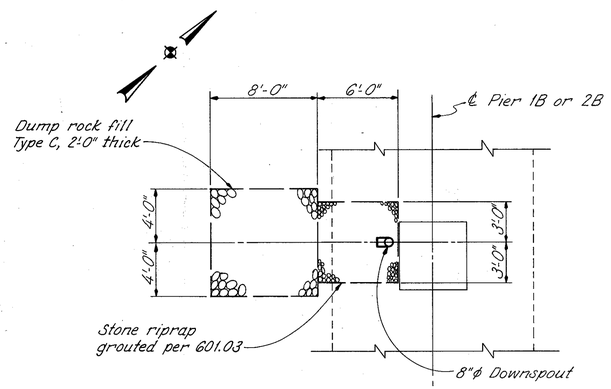
FHWA REGION	STATE	PROJECT	
5	OHIO		

70/72

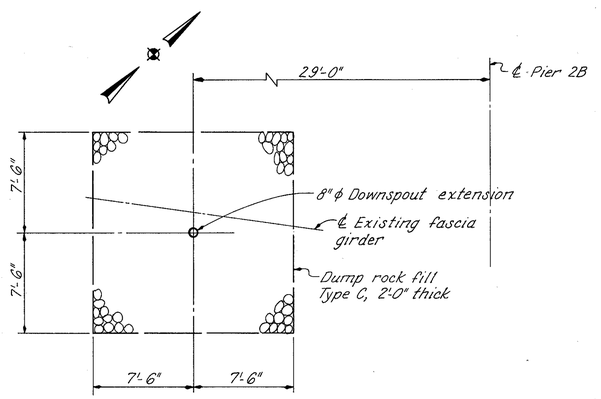
CUYAHOGA COUNTY
CUY-90-15.24



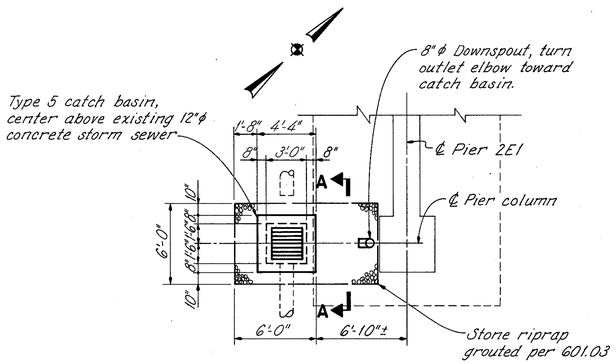
GROUND DRAINAGE PLAN



PLAN - PIER 1B
PLAN - PIER 2B



PLAN - PIER 2B



PLAN - PIER 2E1

NOTES

SECTION A-A: See sheet 71

TYPE 5 CATCH BASIN: See detail, sheet 19

PLAN - PIER 1E2, PIER 2E2, PIER 4B, PIER 7B, PIER 9B: See sheet 71

RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

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GROUND DRAINAGE PLAN
EAST APPROACH
BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	DAP	DHT	1/27/86	

FHWA REGION	STATE	PROJECT	
5	OHIO		

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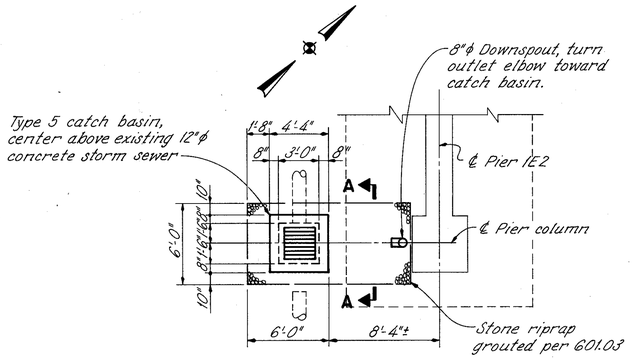
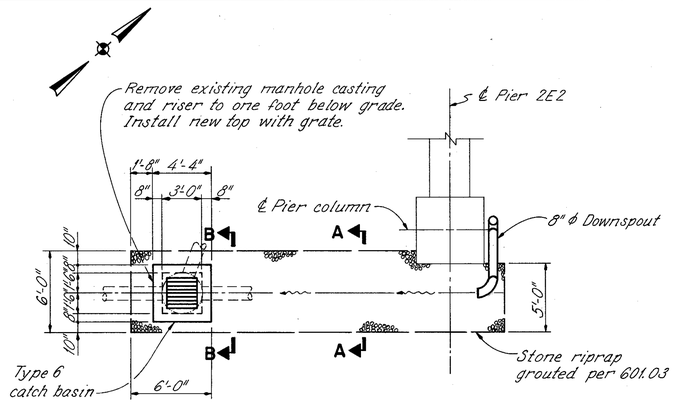
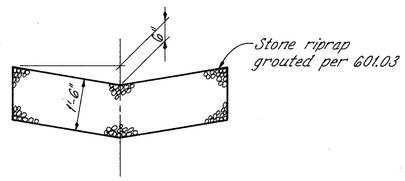
CUYAHOGA COUNTY
CUY-90-15.24



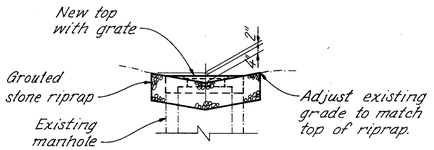
PLAN - PIER 1E2



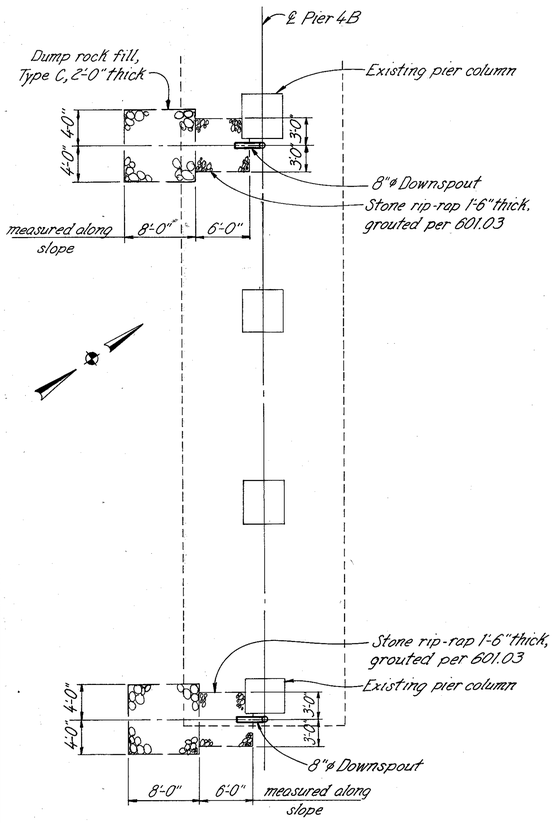
PLAN - PIER 2E2



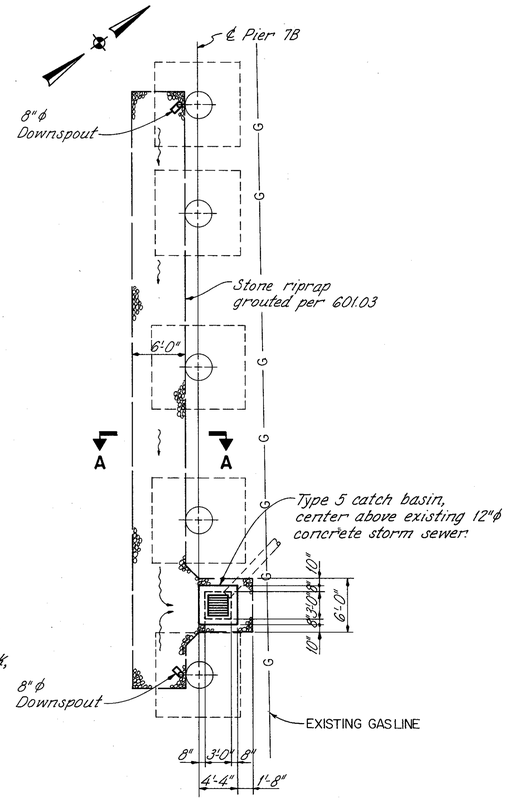
SECTION A-A



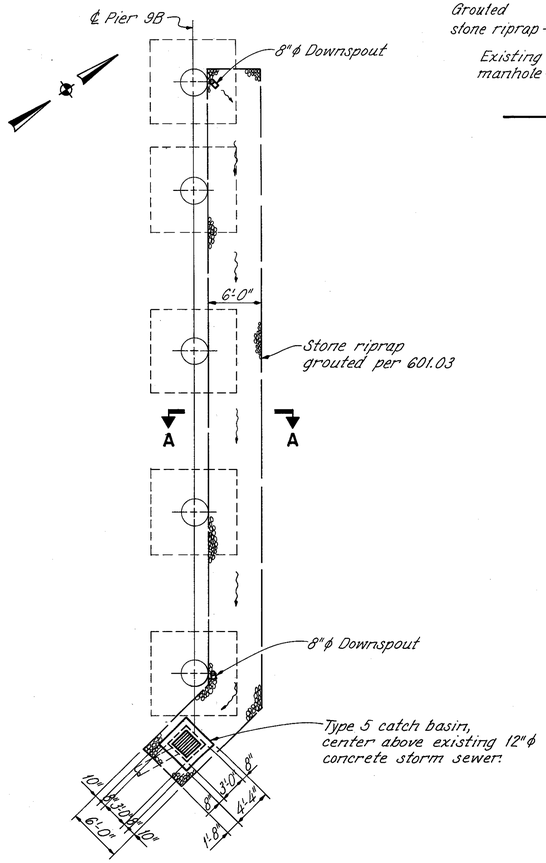
SECTION B-B



PLAN - PIER 4B



PLAN - PIER 7B



PLAN - PIER 9B

NOTES

TYPE 5 CATCH BASIN: See detail, sheet 19

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RICHLAND ENGINEERING LIMITED
MANSFIELD, OHIO

GROUND DRAINAGE PLAN EAST APPROACH

BRIDGE NO. CUY-90-1524
OVER CUYAHOGA RIVER

CUYAHOGA COUNTY I-90

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JPT	JLS	JLS	DAP	DHT	1/27/86	

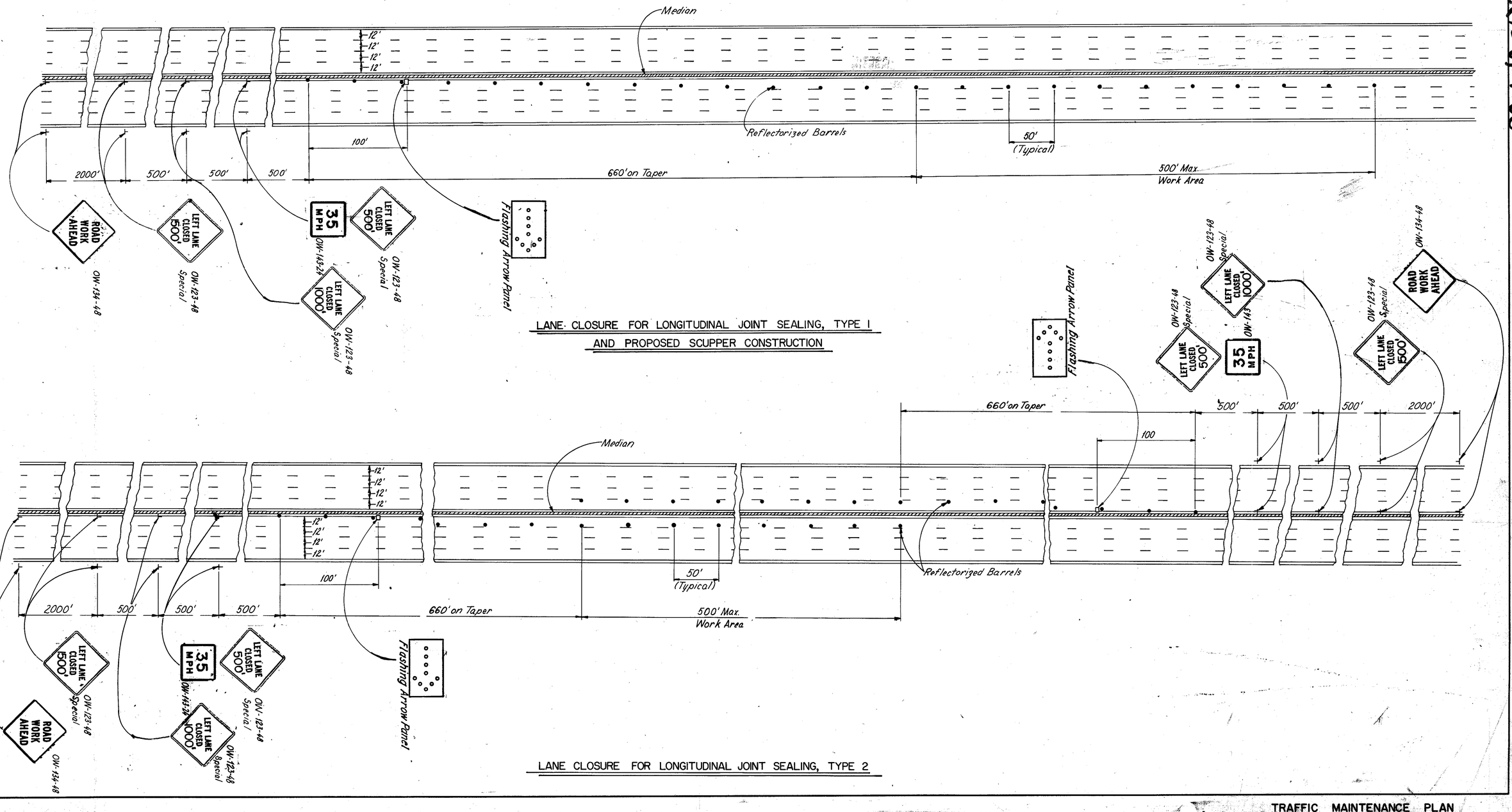
TRAFFIC MAINTENANCE PLAN

QUANTITIES	
CALCULATED	
CHECKED	

FHWA REGION	STATE	PROJECT	
5	OHIO		

72
72

CUYAHOGA COUNTY
CUY-90-15.24



LANE CLOSURE FOR LONGITUDINAL JOINT SEALING, TYPE 1
AND PROPOSED SCUPPER CONSTRUCTION

LANE CLOSURE FOR LONGITUDINAL JOINT SEALING, TYPE 2