CUY-90-14.90

PID 77332/85531

APPENDIX EX-44

CUY-090-1455 PID 06804
(Reference Document)

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

Innerbelt Bridge
Construction Contract Group 1 (CCG1)

Revision Date: 1983

L-0

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

CUY - 90 - 14.55

CUYAHOGA COUNTY
CITY OF CLEVELAND

FHWA REGION	STATE	FEDERAL PROJECT
5	OHIO	IR-90-1(124) 28

1 / 89

CUYAHOGA COUNTY
CUY-90-14.55

PROJECT DESIGNATION CUY-90-15.31 APPEARING THROUGHOUT THESE PLANS SHALL BE CONSIDERED TO READ CUY-90-14.55.

LIMITED ACCESS

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

CONVENTIONAL SIGNS

County Line
Township Line
Section Line
Corporation Line or
Fence Line (existing) (proposed)
Center Line 352 353
Trees, Stumps, (to be removed)
Utility Poles: Telephone, Power, Light

Limited Access (only) LA
Right of Way (only) RW
Limited Access & Right of Way LA & RW
Existing Right of Way
Property Line (in existing fence)
Railroad or
Guardrail (existing) (proposed)

INDEX OF SHEETS

Shts. No. 22-A & 24 revised 8-3-83 S.M.K.
Shts. No. 20, 32, 33, 34, 38 and 56 revised 10-17-83 EBL

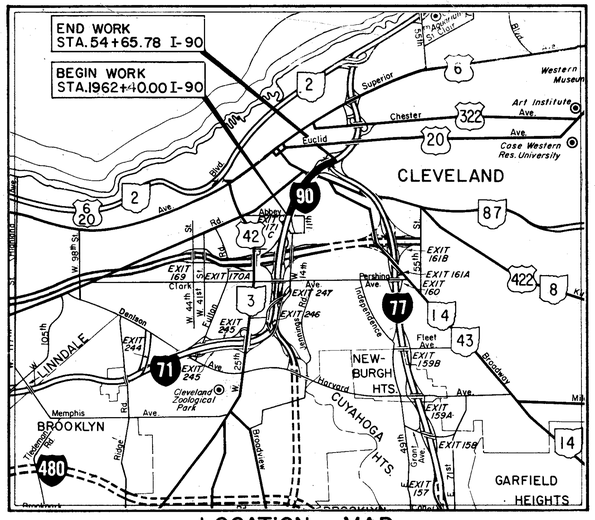
LINE DATA

WORK LIMITS:

STA. 1962+40.00 I-90 TO STA. 1999 + 01.08 I-90 = 3661.08 LIN. FT.
(STA. EQN.: STA. 1999+01.08 I-90 BK. = STA. 3+87.63 I-90 AH.)
STA. 3+87.63 I-90 TO STA. 54+65.78 I-90 = 5078.15 LIN. FT.

NET LENGTH OF WORK = 8739.23 LIN. FT. OR 1.655 MILES

NET LENGTH OF PROJECT = 0.00 LIN. FT. OR 0.00 MILES



LOCATION MAP

SCALE IN MILES
0 2 4 6 8

PORTION TO BE IMPROVED
FUTURE CONSTRUCTION
INTERSTATE
U.S. HIGHWAYS
STATE HIGHWAYS

SCALES

Plan 0 50 100

1981 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, EXCEPT AS NOTED ON SHEET 2, AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED DATE 1-20-82 — Thomas M. Krall — DISTRICT DEPUTY DIRECTOR OF TRANSPORTATION

APPROVED DATE 4-5-83 — Robert B. Pfeifer P.E.S. — ENGINEER, BUREAU OF BRIDGES AND STRUCTURAL DESIGN

APPROVED DATE 4-25-83 — Wayne H. Kaufula — CHIEF ENGINEER, PLANNING AND DESIGN

APPROVED DATE 4-25-83 — Warren J. Smith — DIRECTOR, DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATIONS			
NUMBER	DATE	NUMBER	DATE
836	3-12-75	927	10-19-81
839	11-25-70	953	8-21-80
845	3-2-81	956	6-26-78
847	4-3-76		
853	6-26-78		
		1001	1-3-77

PREPARED AND RECOMMENDED BY

HOWARD NEEDLES TAMMEN AND BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

Browning Crown
BROWNING CROWN

Project: CUY-90-15.31
Date of Letting ____ 19__, Contract No. 6804

D0300 Rev. 11-21-73

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS						
NUMBER	DATE	NUMBER	DATE			
✓BP-5	7-16-81	MC-3	6-1-73	TC-41.40 6-18-79		
F-1	5-1-76					
GR-1	2-5-82	TC-35.10	10-15-77			
GR-2B	2-5-82	TC-41.20	3-26-79			
GR-3A	2-5-82	TC-42.20	3-26-79			
GR-3B	2-5-82	TC-52.10	4-3-79			
GR-4	2-5-82	TC-72.20	2-26-82			
GR-4A	2-5-82	HL-3	7-27-73			
GR-5	2-5-82	HL-4	1-21-76			
GR-6	2-5-82	HL-5	9-6-73			
		HL-6	3-22-77			
MC-9A	5-1-81	RB-1-55	2-2-59			

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

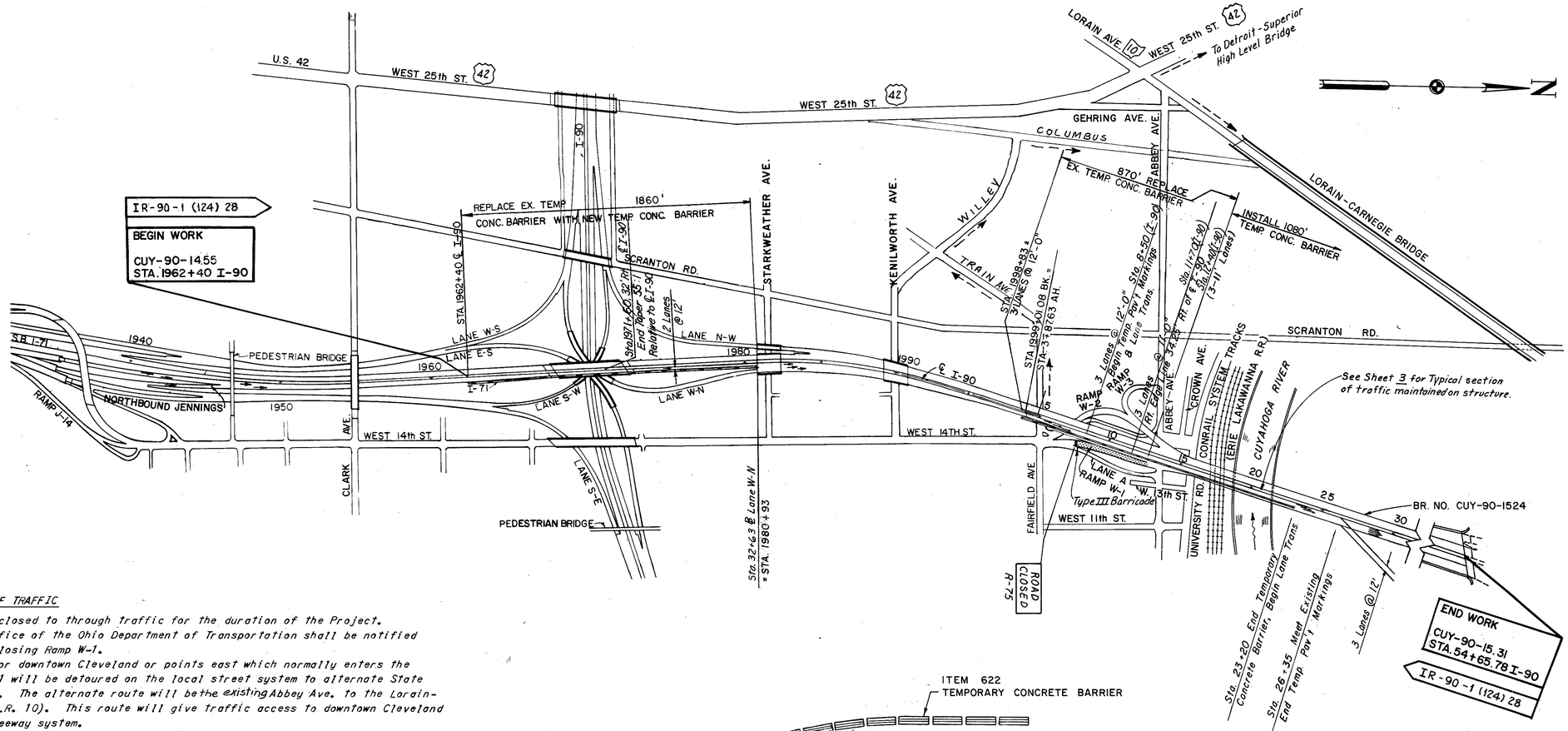
DIVISION ADMINISTRATOR DATE

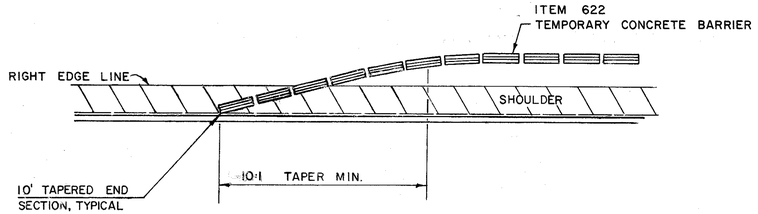
FHWA REGION	STATE	PROJECT	
5	OHIO		

2
89

CUYAHOGA COUNTY
CUY-90-15.31

SCHEMATIC PLAN — TRAFFIC MAINTENANCE





END TREATMENT FOR TEMPORARY CONCRETE BARRIER
NO SCALE

ITEM 614 MAINTENANCE OF TRAFFIC

1. Ramp W-1 shall be closed to through traffic for the duration of the Project. The District 12 office of the Ohio Department of Transportation shall be notified 2 weeks prior to closing Ramp W-1.
2. Traffic destined for downtown Cleveland or points east which normally enters the freeway on Ramp W-1 will be detoured on the local street system to alternate State and Federal routes. The alternate route will be the existing Abbey Ave. to the Lorain-Carnegie Bridge (S.R. 10). This route will give traffic access to downtown Cleveland or entry to the freeway system.
3. Eastbound I-90 traffic shall be maintained, use advisory signs shown elsewhere in plans, on three lanes of traffic through the construction area.
4. Temporary concrete barrier shall be precast in ten foot lengths with lifting rings. The concrete barrier sections shall be pinned together.
5. Existing pavement marking shall be completly removed prior to placing temporary markings. Item 614 Temporary Pav't. Markings, Class I, Tape shall be used in lieu of paint for temporary pavement marking.
6.
7. See Sheet 3 for typical section of traffic maintenance on structure.
8. Traffic lanes shall be tapered at a rate of 55:1, unless noted otherwise.
9. Flashing arrow signing and other devices deemed necessary to maintain traffic shall be used as directed by the Engineer.
10. All labor, materials, equipment and incidentals necessary to complete the work shall be included in the Lump Sum bid for Item 614 - Maintaining Traffic unless otherwise noted in these plans.

400 0 400 800 1200 1600
SCALE IN FEET

LEGEND
- DRUM BARRICADE
- DETOUR ROUTE
- TEMPORARY CONCRETE BARRIER
- NO ACCESS

MADE DSP DATE 3-3-77
TRACED JAG DATE 3-29-77
CHECKED FWH DATE 3-29-77
SCALE 1" = 400'

Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

SCHEMATIC PLAN—TRAFFIC MAINTENANCE

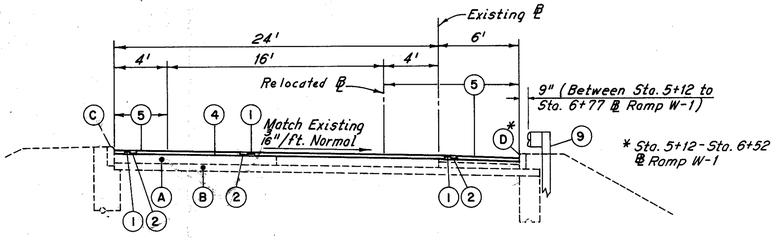
TYPICAL SECTIONS

TYPE 404

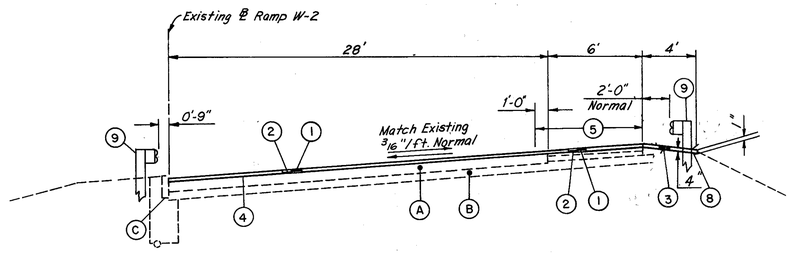
FHWA REGION	STATE	PROJECT	
5	OHIO		

3/89

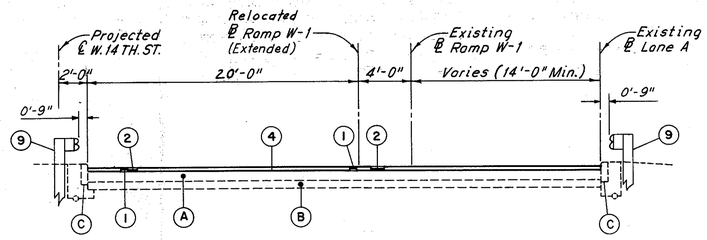
CUYAHOGA COUNTY
CUY-90-15.31



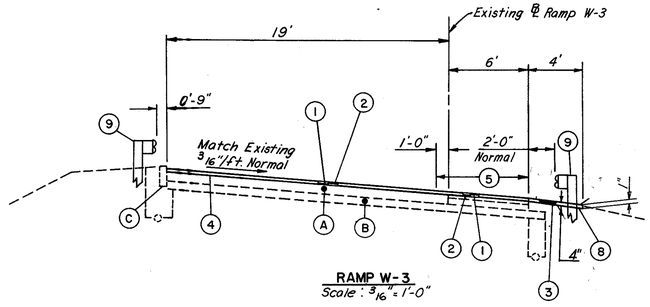
RAMP W-1
Scale: 3/16" = 1'-0"



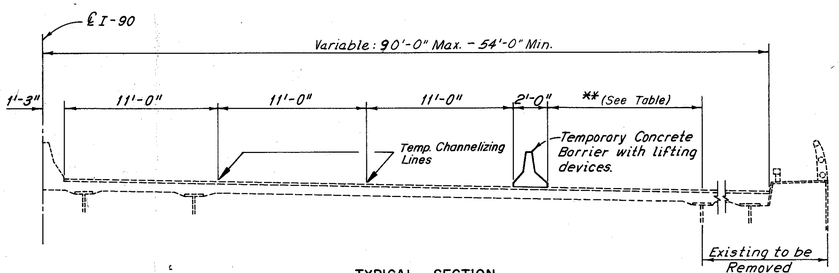
RAMP W-2
Scale: 3/16" = 1'-0"



RAMP W-1 AND LANE A
Scale: 3/16" = 1'-0"



RAMP W-3
Scale: 3/16" = 1'-0"



TYPICAL SECTION
Traffic Maintenance on Structure
Sta. 12+50 to Sta. 23+20 ℄ I-90
Scale: 3/16" = 1'-0"

WIDTH	LOCATION	
	STA.	TO STA.
17'-9"	12+50	12+71±
53'-3"± to 40'-9"±	12+71±	13+71±
40'-9" to 19'-0"	13+71±	15+37±
17'-0"	15+37±	16+10
12'-0"	16+10	21+41.02
3'-11½"	21+41.02	22+39.52
12'-0"	22+39.52	23+14.50

LEGEND

PROPOSED

(1) Item 404 1¼" Asphalt Concrete AC-20
(2) Item 402 1¼" Asphalt Concrete AC-20
(3) Item 301 Bituminous Aggregate Base, as per plan, AC-20, RT-11 or RT-12
(4) Item 407 Tack Coat:
and Cover Aggregate, 703.06
(5) Item 409 Seal Coat
Bituminous Material,
Applied at the rate of 0.30 Gal. per Sq. Yds. Cover Aggregate No. 8 at the rate of 0.008 Cu. Yds. per Sq. Yd.

(8) Item Special Weed Control
(9) Item 606 Guard Rail, Type 5

EXISTING

(A) 9" Reinforced Concrete Pavement
(B) 6" Subbase
(C) 6"x18" Sandstone Curb
(D) Conc[illegible]urb

NOTES

[illegible]

[illegible], this [illegible] to [illegible]

TYPICAL SECTIONS are intended to show the general roadway and pavement features only. For details see the plan sheets & detail sheets.

MADE DSR DATE 3-8-77
TRACED DLR DATE 3-10-77
CHECKED JAG DATE 3-21-77
SCALE AS SHOWN

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

GENERAL NOTES

FHWA REGION	STATE	PROJECT		4
5	OHIO			89

CUYAHOGA COUNTY
CUY-90-15.31

GENERAL

ITEM 624, MOBILIZATION, AS PER PLAN

The Contractor shall provide a suitable field office having a minimum of 800 sq. ft. of floor space which shall be in accordance with 619.01 and 619.02. Payment shall be included in the lump sum price bid for item 624, Mobilization, as per plan.

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.

UNDERGROUND UTILITIES

The locations of the underground utilities shown on the plans are as obtained from the owners of the utility as required by Section 153.64 ORC.

UTILITY OWNERSHIP

Cleveland Electric Illuminating Company
55 Public Square (underground and overhead)
Cleveland, Ohio 44113 216-623-1350

East Ohio Gas Company
1717 East Ninth Street
Cleveland, Ohio 44114 216-361-2753

Department of Public Utilities
Division of Water and Heat
1201 Lakeside Avenue
Cleveland, Ohio 44114 216-664-3346

The Ohio Bell Telephone Company
820 Superior Avenue, N. W.
Cleveland, Ohio 44113 216-822-6241

Municipal Electric Light and Power
1201 Lakeside Avenue
Cleveland, Ohio 44114 216-644-3922

COST PARTICIPATION

The Quantities which appear in the plans have been placed in one of the following participation areas:

COST PARTICIPATION I
FEDERAL PRIMARY & STATE PARTICIPATION

COST PARTICIPATION III
100% STATE PARTICIPATION

EXISTING TYPICAL SECTIONS

Existing typical sections have been taken from the records and are believed to represent the existing pavement, but the State of Ohio does not guarantee the accuracy of the same.

PUBLIC SAFETY

The period of time that a hazard is left unprotected by the removal of guardrail shall be held to an absolute minimum and in no case shall such a period be longer than one working day. If, after one day, the entire run of guardrail construction is not completed, the following shall apply:

A. In areas where existing guardrail has been removed or the guardrail is in a partial stage of completion the Contractor shall provide and maintain Type II barricades with Type C (steady burning) warning lights (see Sheet 8 for detail) within the limits of the unprotected area. The barricades shall be placed at 50' intervals and offset at least two feet from the edge of traveled roadway and in close proximity to the construction. The approach end of a partially completed run of guardrail shall be fastened at ground level to a steel drum.

B. If the existing guardrail is for the protection of an obstacle (i.e. sign support, bridge parapet, etc.) the Contractor shall erect Type 6 temporary beam rail in accordance with Item 606.04 for a length of 50 feet preceeding the obstacle in the direction of traffic. The requirements of part (A) shall apply to the remaining guardrail within the run.

C. The requirements stated in (A) and (B) shall apply for a period not to exceed one week. Where the rebuilding or construction of any run of guardrail cannot be accomplished within one week, the Contractor shall provide and maintain temporary beam rail, in accordance with Item 606.04, in the interim time it takes to complete the work. On the traffic approach end of the temporary beam rail, the end of the first section of rail shall be fastened to the steel drum so that the end of the rail is at the pavement or ground surface. In addition, a Type II barricade with Type B (High Intensity Flasher) Warning Light shall be placed in front of this initial section of temporary beam rail to provide forewarning to the approaching traffic.

The term "guardrail" as used herein shall be understood to cover all types of guardrail existing or proposed for the project including barrier design guardrail.

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

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. *Construction equipment shall not be parked nor materials stored within the existing right of way limits of this project overnight unless the location for parking or storage is approved by the Engineer.*
2. *Construction equipment and vehicles in use during the working day shall not be parked any closer than thirty feet (30 ft.) to the edge of roadway pavement, unless behind permanent guardrail or temporary concrete barrier, when the equipment and/or vehicles are not in operation.*
3. *Private vehicles shall not be parked within the existing right of way limits of this project at any time except at locations under the I-90 structure.*
4. *Materials removed for disposal, reuse, or storage may be stockpiled for pick-up and removal by the end of the same normal working day. Locations of the pick-up points shall be designated by the Engineer and shall be at least thirty feet (30 ft) away from the edge of the roadway pavement, unless behind permanent guardrail.*
5. *Materials brought on-site for use in the project construction should be restricted to that quantity expected to be used during a working day and shall be stockpiled at a location greater than thirty feet (30 ft) from the edge of the roadway pavement, unless behind permanent guardrail. Materials not used during the same working day shall be removed from within the existing project right of way in accordance with (1) above.*
6. *Items 1 through 5 shall apply between the extreme work limits of this project. 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.

MAINTAINING VEHICULAR TRAFFIC

General Provisions:

1. *Traffic shall be maintained at all times on I-90, Ramps W-2 and W-3 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.*
   Ramp W-1 shall be closed during the life of this contract. Traffic normally using this ramp shall be rerouted as described on Sheet 2.
2. *The Contractor shall notify the Engineer and the City of Cleveland Dept of Public Safety. not less than twenty-four (24) hours prior to a scheduled disruption of traffic.*
3. *No lane restrictions in excess of those allowed on sheet No. 7*

   shall occur between 7:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m. Monday thru Friday.
4. *During the initial installation of lane restriction devices employed for more than a one work day duration, law enforcement personnel shall be present to direct traffic through the work area.*
5. *During overhead construction the Contractor shall provide, if deemed necessary by the Engineer, safety nets and/or other safety devices under the structures to protect traffic in the area of construction.*
6. *During non-working periods, open excavations shall be covered with steel plates and delineated with warning flashers and/or other approved devices as deemed appropriate by the Engineer. Steel plates shall be anchored as directed by the Engineer.*
7. *Existing signs located within the road work areas which are necessary for interim or permanent traffic control shall be removed and reerected in locations as approved by the Engineer.*
8. *The Contractor shall furnish, erect and maintain all new warning and information signs necessary in maintaining traffic. The Contractor shall determine what signs are needed and advise the Engineer two (2) weeks in advance of his detailed plans.*
9. *Traffic control devices shall be set up prior to the start of construction, and shall be properly maintained during the time such special conditions exist. They shall remain in place only as long as they are needed and shall be immediately removed thereafter. Where operations are performed in stages, there shall be in place only those devices that apply to the condition preset during the stage in progress. All signs with messages which do not apply during a certain period shall be covered or set aside out of the view of traffic.*
10. *Placement of final Roadway Pavement Markings shall be accomplished only Monday thru Friday between the hours of 9:00 a.m. and 3:00 p.m. with a maximum of one lane each direction closed at any one time.*
    The Contractor shall provide two (2) trailing vehicles plus a police cruiser with flashing beacon following the pavement marking equipment when markings are placed in order to provide advance warning to the motorist of the temporary lane closure and construction. The two (2) trailing vehicles shall travel 500 feet apart with the remote vehicle traveling on the shoulder (left or right as applicable) where usable shoulder is available. The intermediate trailing vehicle shall travel in the closed lane 500 feet behind the pavement marking equipment. The police cruiser shall travel 500 to 1000 feet behind the remote trailing vehicle.
    Each trailing vehicle shall have yellow flashing beacons plus orange and black construction warning signs mounted on the back facing traffic with standard type messages advising motorists of the work ahead, advisory warning speed, and which lane is closed.
11. *The Contractor shall furnish all material, labor and equipment necessary to maintain traffic in accordance with the preceeding requirements.*
12. *All labor, materials, equipment and any incidentals required to complete the work as described above shall be included in the lump sum bid for Item 614-Maintaining Traffic.*

ORIGINAL CONSTRUCTION PLANS

For further information in regard to the Original Construction Project Plans, the Contractor shall refer to the "INNER BELT FREEWAY-PART 4, WEST APPROACH TO CENTRAL VIADUCT, CUY-42R-17.43". These plans may be reviewed at the Ohio Department of Transportation, District Twelve Office at 10100 Broadway Avenue, Garfield Heights, Ohio 44105.

GENERAL NOTES

QUANTITY CALCULATIONS
MADE BY M.E.E. DATE 3-2-78
CHECKED BY F.W.H. DATE 9-7-78

FHWA REGION	STATE	PROJECT	
5	OHIO		

5/89

CUYAHOGA COUNTY
CUY-90-15.31

GENERAL (CONT.)

TEMPORARY SIGNS AND SUPPORTS FOR VTAINING TRAFFI

The following requirements shall be adhered to regarding materials and placement of signs to be furnished, installed, maintained, and subsequently removed by the Contractor in accordance with the plans.

Signs shall be aluminum sheet or plywood type with reflective sheeting in accordance with Supplemental Specification 844. Sign Material shall conform with the following schedule:

Individual Sign Area	Material
less than 10 sq. ft.	0.060 Alum. Sheet
10-16 sq. ft.	0.080 Alum. Sheet
16-20 sq. ft.	0.100 Alum. Sheet
over 20 sq. ft.	¾ Inch Plywood

The Contractor shall have the option of furnishing extrusheet aluminum panels as a substitute for plywood.

All supports for ground mounted signs not erected on drums or overpass mounted may be steel channel type, driven to a minimum depth of 5 feet or other method approved by the Engineer, such as banding signs to existing poles. Signs shall have 1, 2, or 3 separate supports in accordance with the following schedule:

TOTAL SIGN ASSEMBLY AREA (Sq. Ft.)	SUPPORT TYPE		
SIGN LENGTH (Horiz.)	4 Ft. or Less	4-10 Ft.	11 Ft. or More
10 or Less	1-3 Lb. Post	2-3 Lb. Post	-
10-20	1-4 Lb. Post	2-3 Lb. Post	-

Supports for ground mounted signs greater than 20 sq. ft. in area shall be as directed by the Engineer.

Mounting height and lateral placement of temporary signs shall be in accordance with Figure C-1 of the Ohio Manual of Uniform Traffic Control Devices.

Standards and sign layouts for temporary signs are available from The Bureau of Design Services, 25 South Front Street, Columbus, Ohio 43215.

The Contractor shall be responsible for removal of all temporary signs and supports when no longer needed, and he shall restore each sign site to its original condition.

All signs and supports furnished, erected, maintained, and removed by the Contractor shall become the property of the contractor.

Basis of payment for the above described work shall be included in the Lump Sum Bid for Item 614, Maintaining Traffic.

COOPERATION-SEPERATE CONTRACTORS: The Contractor is hereby advised that a separate Contract (CUY-90-15.40) is to be awarded for the repair and resurfacing of CUY-90-15 40 and CUY-90-1547. The aforementioned contract is scheduled to be awarded before or during this contract. Contract provisions of CUY-90-15.40 require that all repairs for eastbound lanes be made prior to Nov 15, 1983. The contractor shall not implement his I-90 or W-1 lane closure until after that work (to lanes 1thru 4) has been completed. No costs shall be accrued to the State as a result of any delay caused by CUY-90-15.40 Contractor.

The Contractor shall cooperate with the separate contractor to arrange a suitable work schedule, subject to the approval of the Engineer, to permit the separate Contractor to work and operate necessary equipment within work limits to carry out the provision of his contract.

The Engineer shall notify the Contractor a minimum of thirty (30) days prior to any scheduled work by the seperate Contractor.

Each Contractor shall be held responsible for any damage, by him or his agents, to the work performance by the other Contractor.

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.

Payment for the above shall be included in the Lump Sum Bid for Item 614, Maintaining Traffic.

ITEM SPECIAL - HERBICIDES FOR WEED CONTROL

Prior to placing the Item 301 Bituminous Aggregate, an application of Princep 80 W or Amizine or an approved equal shall be applied to the shoulder bed. The rate and method of application shall be in strict conformance with the manufacturer's instructions.

Payment shall be made at the contract unit price bid per square yard, "Item Special - Herbicides for Weed Control," which price shall constitute full compensation for all labor, materials, tools, equipment and water required to complete this item of work.
The following estimated quantity has been added to the General Summary:

I-90
359 s.y. Cost Participation I

ITEM 847 - BROKEN LINE PAVEMENT MARKINGS

The requirements of supplemental specification 847.03 shall be modified for the application of both temporary and permanent broken lines. The lines shall be applied in a 40 ft. cycle consisting of a 10 ft. dash and a 30 ft. space between dashes.

LANE LINE WIDTH

Plan reference to 6 inch lane lines appearing throughout this plan shall be considered to read 4 inch lane line.

UTILITY NOTIFICATION

AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN AN AREA WHIGH MAY INVOLVE UNDERGROUND UTILITY FACILITIES, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER, THE REGISTERED UTILITY PROTECTION SERVICE AND THE OWNERS OF EACH UNDERGROUND UTILITY FACILITY SHOWN IN THE PLANS.

THE OWNER OF THE UNDERGROUND UTILITY FACILITY SHALL, WITHIN FORTY-EIGHT HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL HOLIDAYS, AFTER NOTICE IS RECEIVED, STAKE, MARK OR OTHERWISE DESIGNATE THE LOCATION OF THE UNDERGROUND UTILITY FACILITIES IN THE CONSTRUCTION AREA IN SUCH A MANNER AS TO INDICATE THEIR COURSE TOGETHER WITH THE APPROXIMATE DEPTH AT WHICH THEY WERE INSTALLED. THE MARKING OR LOCATING SHALL BE COORDINATED TO STAY APPROXIMATELY TWO DAYS AHEAD OF THE PLANNED CONSTRUCTION.

ROADWAY

LOCATIONS OF GUARD RAIL

The location of guard rail runs as shown in these plans are subject to adjustment, as determined by the Engineer, to assure that the planned installations will afford maximum protection for traffic. The location of proposed guard rail as shown on the plans may need to be shifted longitudinally so that the locations of the new guard rail posts do not coincide with the old rail post locations.

TYPE CLT FENCE, AS PER PLAN

This item of work shall include all labor, equipment and materials necessary to repair damaged fence or close gaps between sections of existing fence where noted in the plans. It is intended that when rebuilding fence that the Contractor reuse, in lieu of new fence, existing fence if in satisfactory condition, as determined by the Engineer.

Fence lines and locations shown on the plan are only approximate and may be adjusted by the Engineer for actual ground conditions. No intermediate anchor posts or corner post assemblies are shown on the plan sheets, but it is not intended that the requirement of 607.05 (b) be waived.

Payment for all of the above shall be included in the unit price bid per linear foot of Item 607 Fence, Type CLT, As Per Plan.

GUARDRAIL REMOVED, AS PER PLAN

All post holes shall be carefully filled and tamped to match existing ground.

In areas where guardrail is removed or new guardrail is to be installed outside the limits of Item 617, the following shall apply:

1. All areas disturbed by the removal of guardrail shall be graded and seeded to match surrounding conditions.
2. An area under new guardrail 3' wide, measured from one foot in front of the rail shall not be seeded.

Payment for all of the above shall be at the unit price bid for Item 202 Guardrail removed, measured by the linear foot, center-to center of terminal posts, or center of bridge connection splices.

CONCRETE SLOPE PROTECTION REPAIR

Large areas of the existing slope protection for the structure over Fairfield Ave. have become broken and/or undermined. The following estimated repair quantities have been included in the general summary to be used as directed by the engineer:

	Cost Participation I	
ITEM 202 - Concrete Slope Protection Removed	160	Sq. Yds.
ITEM 203 - Embankment	250	Cu. Yds.
ITEM 601 - Concrete Slope Protection	160	Sq. Yds.

REMOVAL OF EXISTING PAVEMENT MARKINGS

THIS ITEM OF WORK SHALL BE USED TO REMOVE EXISTING PAVEMENT MARKINGS WHICH STRIPE OUT THE EXISTING LANE DROP AREAS.

THE REMOVAL METHOD SHALL BE BY HYDROBLASTER (A COMBINATION WATER AND SAND BLASTER).

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE AS DIRECTED BY THE ENGINEER:

ITEM 621 - REMOVAL OF PAVEMENT MARKINGS, AS PER PLAN
12,000 LIN. FT. COST PARTICIPATION I

ITEM 60[illegible] FOR WEE[illegible]

MADE M.E.E. DATE 3-2-78
MRACED K.K.F. DATE 3-2-78
TCHECKED F.W.H. DATE 9-7-78
CH SCALE

Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

GENERAL NOTES

QUANTITY CALCULATIONS
MADE BY M.E.F. DATE 3-2-78
CHECKED BY F.W.H. DATE 9-7-78

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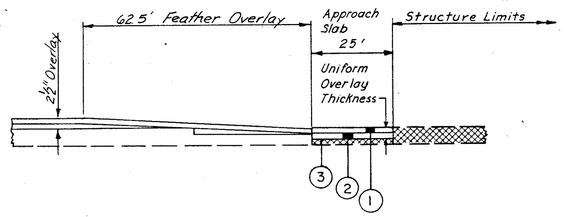
PAVEMENT

FEATHERING RESURFACING AT APPROACH SLABS

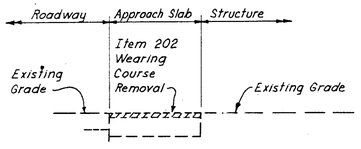
The proposed depth of asphalt resurfacing on the roadway shall be feathered as a butt joint type as per Standard Drawing BP-5. The end of the feathered overlay shall be at the limit as shown in the detail. The existing asphalt concrete wearing surface shall be removed prior to placing Item 404 and, if necessary, Item 402 on the approach slabs.



LEGEND

(1) Item 404 1¼" Asphalt Concrete AC-20
(2) Item 402 1¼" Asphalt Concrete AC-20 (Thickness less than 1¼")
(3) Item 407 Tack Coat: and Cover Aggregate.

TYPICAL FEATHERING DETAIL AT STRUCTURES
No Scale



WEARING COURSE REMOVAL
RAMPS W-1 & W-2,3
No Scale

407 TACK COAT

The tack coat and cover aggregate operation shall be as determined at a pre-construction conference as per 407.05. Plan quantities indicate average application rates of 0.10 gallons per square yard of tack coat and 7 pounds per square yard of cover aggregate.

PAVEMENT (CONT.)

TEMPORARY CONCRETE BARRIER

THE TEMPORARY CONCRETE BARRIER TO BE PROVIDED AS LOCATED ON SHEET 2 SHALL BE EITHER CAST-IN-PLACE OR PRECAST BARRIER. THE REQUIREMENTS OF ITEM 622 AND STANDARD CONSTRUCTION DRAWING MC-9A SHALL APPLY EXCEPT THAT BARRIER SECTIONS SHALL BE LIMITED TO 10'-0" IN LENGTH, AND PINNED TOGETHER. TAPERED END SECTIONS ARE REQUIRED.

EACH SECTION OF BARRIER SHALL BE PROVIDED WITH LIFTING RINGS TO ALLOW FOR EASE IN HANDLING WHEN THE TEMPORARY BARRIER IS REMOVED.

UPON COMPLETION OF THE WORK ON THIS PROJECT, THE CONTRACTOR SHALL DELIVER AND INSTALL THE TEMPORARY CONCRETE BARRIER AT LOCATIONS AS DETERMINED BY THE DISTRICT 12 TRAFFIC ENGINEER. (VARIOUS INTERSTATE LOCATIONS) → ± 2700 LIN.FT. I-71/I-90 INTERCHANGE; ± 510 LIN.FT. I-77/I-490 INTERCHANGE; ± 600 LIN.FT. ELSEWHERE IN CUYAHOGA COUNTY

PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIAL NECESSARY TO COMPLETE THIS ITEM INCLUDING THE FINAL RELOCATION SHALL BE AT THE UNIT PRICE BID PER LINEAR FOOT OF ITEM 622 TEMP. CONCRETE BARRIER, AS PER PLAN.

THE FOLLOWING ESTIMATED QUANTITY OF TEMPORARY CONCRETE BARRIER HAS BEEN ADDED TO THE GENERAL SUMMARY:

ITEM 622 TEMPORARY CONCRETE BARRIER, AS PER PLAN 3810 LIN. FT. COST PARTICIPATION I

ITEM 202 - TEMPORARY CONCRETE BARRIER REMOVED

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO REMOVE AND DISPOSE OF EXISTING TEMPORARY CONCRETE BARRIER. ① THE SUBJECT BARRIER WAS PLACED UNDER PREVIOUS CONTRACTS. THIS ITEM SHALL NOT BE USED FOR PAYMENT FOR REMOVING AND RELOCATING THE TEMPORARY CONCRETE BARRIER WHICH IS PLACED AS PART OF THIS CONTRACT.

① INCLUDES BARRIER LOCATIONS MENTIONED ABOVE WHICH WILL RECEIVE PERMANENT INSTALLATION.

ITEM 202 - TEMPORARY CONCRETE BARRIER REMOVED
6540 L.F. COST PARTICIPATION I

ITEM 404 ASPHALT CONCRETE

Where resurfacing terminates on the mainline and ramps, any pavement removed by chipping or other means for installing butt joints as per Standard Drawing BP-5 shall be included in the payment per cubic yard of the accepted quantities of Item 404 Asphalt Concrete, complete in place.

ITEM 301 BITUMINOUS AGGREGATE BASE AS PER PLAN

This item of work shall include site restoration, excavation and embankment operations necessary for the placement of this item in accordance with the requirements of Item 203.

The site restoration work will include grading of the shoulder area and adjacent slopes where traffic or weather may have built a ridge of earth and debris. The Contractor shall provide smooth shoulder slopes to assure positive shoulder drainage. All areas disturbed by site restoration work outside the limits of Item 301 shall be reseeded, unless under new guardrail.

Before completion of work on this project by the Contractor, any damage to the Bituminous Aggregate caused by the installation of guardrail or other item of work shall be repaired by the Contractor and approved by the Engineer, at no additional cost to the State.

All site restoration, excavation and embankment operations shall be included in the unit price bid for Item 301, Bituminous Aggregate Base, As per Plan.

The following estimated quantities have been provided in the General Summary.

ITEM 301 Bituminous Aggregate Base, As Per Plan
40 c.y. Cost Participation I

DRAINAGE

CATCH BASINS AND INLETS AT CURBED SHOULDERS & CURBED RAMP NOSES

While performing resurfacing work, the Contractor shall take care to keep open the grates of existing catch basins and curb openings of existing curb inlets at curbed shoulders and curbed ramp noses. The contractor shall taper the resurfacing course to match the existing elevations of the grates and curb openings as directed by the Engineer.

SIGNING

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

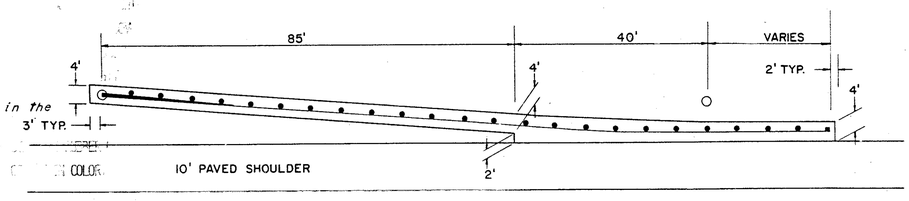
References to supplemental specifications 857, 858, 859, 957, 958, and 959 on the traffic control standard construction drawings in these plans shall be considered to read as respective references to items 630, 631, 632, 730, 731 and 732.

FASTENING OF BRIDGE TERMINAL ASSEMBLIES

BRIDGE TERMINAL ASSEMBLIES WHICH ARE TO BE FASTENED TO EXISTING CONCRETE PARAPETS BY STEEL BOX BLOCKOUTS SHALL BE ATTAGHED BY MEANS OF THROUGH BOLTS. EXPANSION ANCHOR BOLTS WILL NOT BE PERMITTED.

WHERE SELF-DRILLING ANCHORS ARE PERMITTED AND ARE USED, THE HOLES SHALL BE DRILLED WITH THE TUBULAR EXPANSION SHELL, RATHER THAN WITH A BIT, TO INSURE A PROPER FIT. THE ANCHORS SHALL BE INSTALLED FLUSH WITH THE SURFACE OF CONCRETE.

WHERE ANCHORAGE BY EXPANSION BOLTS TO A DETERIORATED CONCRETE SURFACE WOULD RESULT IN A QUESTIONABLE ATTACHMENT, THROUGH BOLTS SHALL BE USED INSTEAD, AT THE DISCRETION OF THE ENGINEER.



ITEM 301 FOR WEED CONTROL WITH 8.30' GUARDRAIL FLARE

DE M.E.F. DATE 3-2-78
ACED F.W.H. DATE 9-7-78
ECKED F.W.H. DATE 9-7-78
SCALE 1"=1'

Howard Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO
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GENERAL NOTES

GENERAL CONSTRUCTION SEQUENCE

The Contractor is reminded that, in the conduct of this project, his sequence of operations shall be planned and executed in such a way as to minimize the number of lane reductions and/or lane width reductions required to maintain traffic through the project.

It is the intent of this project to maintain a minimum of 3 eastbound lanes of traffic on the mainline pavement unless otherwise noted. Also, the Contractor is reminded that the flow of traffic shall not be "split" when being diverted around a work area unless the work is being done in the gore areas of an exit ramp.

Schedule of thru lanes to be maintained:

Approximate Station Limits	*Basic Roadway Typical Section (Existing Thru Lanes)*	*No. of Thru Lanes to be Maintained During Construction **
Sta. 1965+00 to Sta. 3+87.63 ℄ I-90	*3 Lanes each direction*	*2 Lanes I-90 Eastbound* *3 Lanes I-90 Westbound*
Sta. 3+87.63 to Sta. 25+00.00 ℄ I-90	*4 Lanes each direction*	*3 Lanes I-90 Eastbound* ⊕ *4 Lanes I-90 Westbound*
Sta. 26+03 to Sta. 32+63 @ Lane W-N	*2 Lanes eastbound*	*1 Lane Eastbound*

** Unless otherwise directed by the Engineer, the minimum width of each thru traffic lane being maintained shall be 11 feet.*

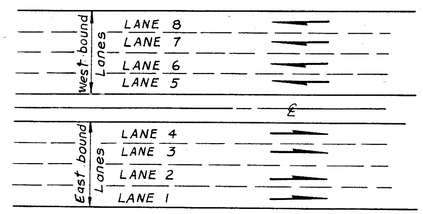
Suggested Construction Sequence

1. *Perform all major work in Lane 1 while maintaining traffic in accordance with these plans. Major work referred to herein shall include, but not necessarily be limited to removal of existing structure and reconstruction of structure. (For Lane Number Scheme see detail below)*
2. *Perform work items of guardrail, asphalt concrete overlay and pavement marking in accordance with these plans.*

If the Contractor so elects, he may submit an alternate construction sequence provided the intent of the contract (Subsection 104.01) is followed and no additional inconvenience to the traveling public results therefrom. No alternate plan shall be placed into effect until approval has been granted, in writing, by the Director.

The requirements set forth in Section 109.03 of the Specifications are not to be considered waived by the foregoing Suggested Construction Sequence.

⊕ *See Cooperation - Separate Contractors note on Sheet 5.*



LANE NUMBERING SCHEME
No Scale

MADE MEE DATE 5-19-78
TRACED K.L.N. DATE 5-30-78
CHECKED C.W.H. DATE 5-31-78
SCALE —

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GENERAL NOTES

TRAFFIC MAINTENANCE

TRAFFIC CONTROL MATERIALS

A. 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.

B. 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.

C. 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. DRUMS SHALL BE REQUIRED FOR NIGHTTIME CLOSURES. PAYMENT FOR DRUMS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC.

D. SMALL BARRICADES

TYPE II BARRICADES SHALL BE USED TO CLOSE LANES WHERE REQUIRED FOR RESURFACING. THESE SHALL BE AT LEAST 36" HIGH AND 12" WIDE. NEAR THE TOP OF THE BARRICADE THERE SHALL BE A PANEL WITH ALTERNATE ORANGE AND REFLECTORIZED WHITE 6" WIDE STRIPES. THIS PANEL SHALL BE AT LEAST 12" WIDE AND 24" HIGH. A SINGLE FACED FLASHER SHALL BE LOCATED AT THE TOP OF THE BARRICADE AT THE END NEAREST TO TRAFFIC. THE FLASH SHALL FACE ONCOMING TRAFFIC. THE BARRICADES SHALL BE OF SUFFICIENT STABILITY SO THAT WIND OR TRAFFIC AIR TURBULANCE WILL NOT UPSET THEM. BARRICADES SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

E. 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.

CONTINUOUS BURN LIGHTS SHALL BE 12 VOLT BATTERY-OPERATED MODELS WITH MINIMUM 7 INCH DIAMETER YELLOW LENSES. THEY SHALL BE PLACED ABOVE THE GROUND ON THE TOPS OF BARRELS OR BARRICADES AND SPACED AT 50 FT. INTERVALS. CONTINUOUS BURN LIGHTS AS DESCRIBED ABOVE SHALL BE REQUIRED WHENEVER ANY PORTION OF THE TRAVELED SURFACE IS CLOSED DURING TWILIGHT OR NIGHTTIME HOURS.

F. 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.

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GENERAL NOTES

G. ITEM 614 - TEMPORARY PLASTIC PAVEMENT MARKINGS (LANE SHIFTS)

TEMPORARY PLASTIC PAVEMENT MARKINGS SHALL BE REQUIRED AT ALL WORK AREAS AS DETAILED ON SHEET 2.
THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED FOR LANE SHIFTS.

	COST PARTICIPATION I
ITEM 614 - TEMPORARY EDGE LINE, CLASS I, TAPE	1270 L.F. OR 0.24 MILES
ITEM 614 - 4" TEMPORARY CHANNELIZING LINE, CLASS I, TAPE	3570 L.F.

H. ITEM 614 TEMPORARY PAVEMENT MARKINGS (RESURFACING OR LANE SHIFT REMOVAL)

TEMPORARY MARKINGS SHALL BE PLACED AT THE LOCATIONS AS SHOWN ON SHEET 13.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AFTER RESURFACING OR AFTER LANE SHIFT REMOVALS:

	COST PARTICIPATION I
ITEM 614 - TEMPORARY LANE LINES, CLASS I	1.47 MILES
ITEM 614 - TEMPORARY EDGE LINES, CLASS I	1.21 MILES
ITEM 614 - TEMPORARY GORE MARKING, CLASS I	700 LIN. FT.

REPLACEMENT SIGNS

FLAT SHEET SIGNS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENT OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER.

PAYMENT FOR THE NEW SIGNS SHALL BE MADE AT THE BID PRICE PER SQUARE FOOT FOR ITEM SPECIAL REPLACEMENT SIGNS AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF THE DAMAGED SIGNS, HARDWARE AND SUPPORTS; AND PROVIDING NECESSARY REPLACEMENT HARDWARE SUPPORTS, ETC. REPLACEMENT SIGNS SHALL BE NEW BUT OTHER MATERIALS MAY BE USED, SUBJECT TO APPROVAL BY THE ENGINEER.

AN ESTIMATED QUANTITY OF ITEM SPECIAL, REPLACEMENT SIGNS HAS BEEN CARRIED TO THE GENERAL SUMMARY:

		COST PARTICIPATION I
ITEM SPECIAL	REPLACEMENT SIGNS	200 SQ. FT.

TEMPORARY MARKINGS
(LAYDOWN ON SURFACE)
REQUIREMENT, UNLESS

TEMPORARY MARKINGS
PAVEMENT PRIOR TO
MARKINGS ARE NO LONGER
THE CONTRACTOR IN
PAVEMENT MARKINGS IN
CHANGE TO THE NEXT
CHANGE

REPLACEMENT DRUMS

DRUMS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENT OF THE PLANS, SPECIFICATION AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER AND PAID FOR UNDER ITEM SPECIAL REPLACEMENT DRUMS. PAYMENT FOR EACH NEW DRUM SHALL INCLUDE (1) THE COST OF REMOVING AND DISPOSING OF THE DAMAGED DRUM AND (2) PROVIDING, MAINTAINING AND REMOVING NEW DRUMS IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS FOR THE ORIGINAL DRUMS.

AN ESTIMATED QUANTITY OF ITEM SPECIAL, REPLACEMENT DRUMS HAS BEEN CARRIED TO THE GENERAL SUMMARY:

		COST PARTICIPATION I
ITEM SPECIAL	REPLACEMENT DRUMS	100 EACH

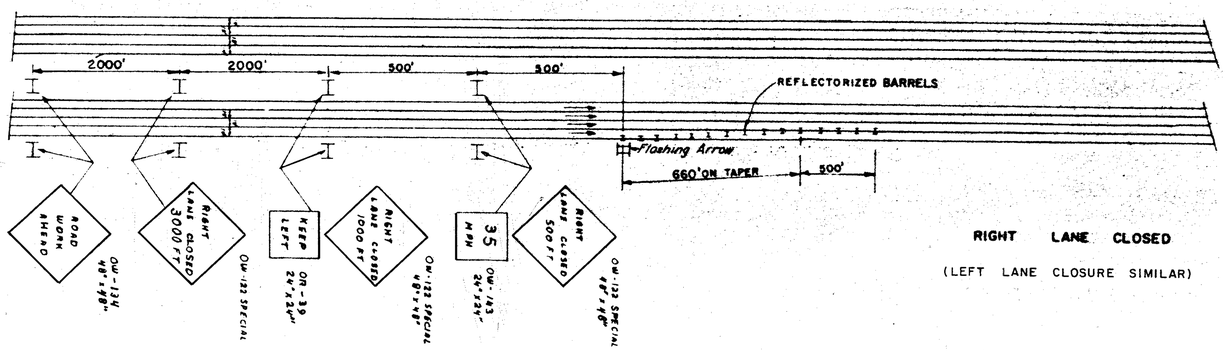
LAW ENFORCEMENT OFFICER WITH PATROL CAR

THE CONTRACTOR SHALL PROVIDE AND PAY ALL COST FOR THE SERVICES OF LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR THE EXCLUSIVE PURPOSE OF CONTROLLING TRAFFIC WHENEVER A CHANGE IN THE TRAFFIC PATTERN TAKES PLACE. THE NUMBER OF OFFICERS AND CARS REQUIRED FOR THIS PURPOSE SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE OFFICERS SHALL MOVE THEIR PATROL CARS AS NECESSARY TO INSURE THEIR CONSTANT PRESENCE AT THE POINT(S) OF SLOWDOWN, STOPPAGE OR BACK-UP. PAYMENT FOR THE ABOVE WILL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL, LAW ENFORCEMENT OFFICER WITH PATROL CAR.

THE FOLLOWING PAY ITEM AND QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

		COST PARTICIPATION I
ITEM SPECIAL	LAW ENFORCEMENT OFFICER WITH PATROL CAR	40 HOURS

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ARRANGEMENTS REGARDING SCHEDULING AND PAYMENT OF LAW ENFORCEMENT OFFICER WITH PATROL CAR.



RIGHT LANE CLOSED

(LEFT LANE CLOSURE SIMILAR)

GENERAL TRAFFIC CONTROL NOTES AND DETAILS

FOR ADDITIONAL NOTES, SEE SHEETS 2-7

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614 TEMPORARY PAVEMENT MARKINGS

GENERAL

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

THE MARKINGS SHALL BE MAINTAINED IN GOOD CONDITION DURING THE REQUIRED SERVICE PERIOD TO PROVIDE DAY AND NIGHT VISIBILITY. THE MARKINGS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER TO MAINTAIN REQUIRED VISIBILITY AT NO ADDITIONAL COST TO THE STATE.

MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE OF PAINT OR PAVEMENT MARKING TAPE.

A. PAINT

PAINT SHALL COMPLY WITH 708.14 AND SHALL BE APPLIED IN ACCORDANCE WITH 621 EXCEPT AS MODIFIED HEREIN.

B. PAVEMENT MARKING TAPE

FLEXIBLE RETROREFLECTIVE PREFORMED PRESSURE SENSITIVE TAPE SHALL HAVE STRAIGHT EDGES AND BE FREE OF CRACKS. THE TAPE SHALL CONSIST OF PIGMENT AND FILLERS WITH SUFFICIENT BINDER AND PLASTICIZER TO RETAIN GLASS BEADS HAVING A REFRACTIVE INDEX MEETING THE MINIMUM REFLECTIVE INTENSITY STANDARD STATED IN THE MANUFACTURERS INFORMATION. THE TAPE SHALL BE FLEXOLITE "WET REFLECTIVE", 3M "SCOTCHLANE", OR AN APPROVED EQUAL.

THE GLASS BEADS SHALL BE DISTRIBUTED UNIFORMLY THROUGHOUT THE TAPE WITH SUFFICIENT SURFACE BEADS TO PROVIDE OPTIMUM REFLECTORIZATION AT ALL TIMES.

PAVEMENT MARKING TAPE SHALL COMPLY WITH THE COLOR REQUIREMENTS OF 708.14.

THE TAPE SHALL HAVE A PRECOATED ADHESIVE LAYER FOR PAVEMENT APPLICATION WITHOUT THE USE OF HEAT, SOLVENTS OR ADDITIONAL ADHESIVES. THE ADHESIVE SHALL BE SUFFICIENT TO RETAIN COMPLETE MARKINGS ON THE PAVEMENT SURFACE THROUGHOUT THE USEFUL LIFE OF THE MARKINGS.

IN ADDITION TO THE FOREGOING, ALL TEMPERATURE APPLICATION REQUIREMENTS AND OTHER APPLICABLE MANUFACTURERS MATERIAL AND APPLICATION INSTRUCTIONS SHALL BE FOLLOWED.

LAYOUT

THE TEMPORARY MARKINGS SHALL BE ACCURATELY LAID OUT IN CONFORMANCE WITH 621.051 AND SHALL BE LOCATED IN A TRUE LINE ON THE CENTER LINE, LANE LINE, EDGE LINE, OR CHANNELIZING LINE WHERE PERMANENT MARKINGS WOULD LIE UNLESS OTHERWISE SPECIFIED IN THE PLANS.

PLACEMENT

TEMPORARY MARKINGS SHALL BE PLACED IN ACCORDANCE WITH (LAYOUTS ON SHEETS 2&3) AND THE FOLLOWING REQUIREMENTS, UNLESS OTHERWISE SPECIFIED IN THE PLANS.

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS ARE NO LONGER NEEDED, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 621.134 AND NECESSARY PAVEMENT MARKINGS INSTALLED BEFORE THE FLOW OF TRAFFIC IS CHANGED TO THE NEXT PHASE OR RETURNED TO ITS NORMAL CHANNEL.

WHERE PAVEMENT MARKINGS ARE CALLED FOR IN THE PLANS, THE CONTRACTOR SHALL FURNISH AND PLACE THE PERMANENT MARKINGS WITHING 30 CALENDAR DAYS FOLLOWING COMPLETION OF ALL SURFACE COURSES IN A SINGLE ROADWAY OR PRIOR TO THE END OF THE CONSTRUCTION SEASON, WHICHEVER COMES FIRST. PERMANENT MARKINGS SHALL NOT BE PLACED OVER ANY CLASS I, TAPE MARKINGS.

A. CLASS I MARKINGS

CLASS I MARKINGS SHALL BE AS DEFINED IN 621, EXCEPT AS FOLLOWS:
1) LANE LINES SHALL BE 4-INCHES IN WIDTH.
2) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
3) STOP LINES SHALL BE 12-INCHES IN WIDTH.
4) CROSS WALK LINES SHALL BE 8-INCHES IN WIDTH.

GORE MARKINGS SHALL CONSIST OF TWO CHANNELIZING LINES PLACED AT THE THEORETICAL OR TEMPORARY GORE OF RAMPS AND DIVERGING OR CONVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 16 GALLONS PER MILE FOR SOLID 4-INCH LINES, 24 GALLONS PER MILE FOR SOLID 6-INCH LINES, 48 GALLONS PER MILE FOR SOLID 12-INCH LINES, AND 4 GALLONS PER MILE FOR 4-INCH DASHED LINES.

B. CLASS II MARKINGS

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

CHANNELIZING LINES SHALL CONSIST OF WHITE 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 20-FOOT INTERVALS.

GORE MARKINGS SHALL BE TWO CONTINUOUS, WHITE 50-FOOT BY 4-INCH LINES PLACED AT THE THEORETICAL GORE OF AN EXIT RAMP OR DIVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 16 GALLONS PER MILE FOR GORE MARKINGS, 0.8 GALLONS PER MILE FOR CHANNELIZING LINE, AND 0.4 GALLONS PER MILE FOR LANE LINE AND CENTER LINE.

CONFLICTING MARKINGS

THE CONTRACTOR SHALL, PRIOR TO PLACING TEMPORARY MARKINGS, REMOVE ALL EXISTING CONFLICTING MARKINGS VISIBLE TO THE TRAVELING PUBLIC DURING DAYLIGHT OR NIGHTTIME HOURS IN ACCORDANCE WITH 621.134. THE COST FOR REMOVAL OF CONFLICTING MARKINGS SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS.

METHOD OF MEASUREMENT

TEMPORARY PAVEMENT MARKINGS WILL BE MEASURED COMPLETE IN PLACE, BY CLASS AND MATERIAL, IN THE UNITS DESIGNATED. DASHED LINE QUANTITIES WILL BE THE LENGTH OF THE COMPLETED STRIPE, INCLUDING GAPS, INTERSECTIONS, AND OTHER SECTIONS OF PAVEMENT NOT NORMALLY MARKED, IN ACCORDANCE WITH 621.15.

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

BASIS OF PAYMENT

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

ITEM	UNIT	DESCRIPTION
614	MILES	TEMPORARY LANE LINES, CLASS _____, (PAINT OR TAPE)
614	MILES	TEMPORARY CENTER LINES, CLASS _____, (PAINT OR TAPE)
614	MILES/LIN. FT.	TEMPORARY CHANNELIZING LINES, CLASS _____, (PAINT OR TAPE)
614	MILES	TEMPORARY EDGE LINES, CLASS I, (PAINT OR TAPE)
614	LIN. FT.	TEMPORARY GORE MARKING, CLASS II, (PAINT OR TAPE)
614	LIN. FT.	TEMPORARY STOP LINES, CLASS I, (PAINT OR TAPE)
614	LIN. FT.	TEMPORARY CROSSWALK LINES, CLASS I, (PAINT OR TAPE)
614	EACH	TEMPORARY LANE ARROWS, CLASS I, (PAINT OR TAPE)
614	EACH	TEMPORARY WORD "ONLY" ON PAVEMENT, 72-INCH, CLASS I, (PAINT OR TAPE)
614	LIN. FT.	TEMPORARY TRANSVERSE LINES, CLASS I, (PAINT OR TAPE)

COMPUTATIONS AND SUB SUMMARIES

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QUANTITY CALCULATIONS

MADE BY MEE DATE 8-30-78
CHECKED BY F.W.H. DATE 9-7-78
REVISED BY MEH DATE 2-23-83

ITEM 402 & 404 COST PARTICIPATION I

Station From	Station To	Side	Area (L x W)	Volume (Cu. Yds.)		
Ramp	W-1					
0+00	2+01.39		Planimeter 8554 sq. ft.	33.0		
2+01.39	2+81.39		80 x (26+24)0.5	7.7		
2+81.39	5+65±		283.61 (24) + 195(6)	30.8		
5+65±	5+80±		15 (24+26)0.5	1.4		
5+80±	6+77.31		97.31 (26)	9.8		
Ramp	W-2					
5+22	6+23±		Planimeter 4597 sq. ft.	17.7		
6+23±	6+91.02		68.02(30+28)0.5 + 225(6)	12.8		
6+91.02	8+90±		198.98 (28)	21.5		
8+90±	12+04±		Planimeter 13962 sq. ft.	53.9		
Ramp	W-3					
2+25±	2+94.59		69.59 (20.74+19)0.5 + 175(6)	9.4		
2+94.59	4+00±		105.41 (19+6)	10.2		
4+00±	5+96.84		Planimeter 5104 sq. ft. + 107(6)	22.2		
TOTAL				230.4		

SIGNING – COST PARTICIPATION I

Station	Code No.	Sign Size	630 Signs Flat Sheet	630 Ground Mounted Supports 3 lb. Post	630 Sign Support Assembly Pole Mounted
			Sq. Ft.	Lin. Ft.	Each
I-90					
10+09 Rt.	W-49R-48	48" x 48"	16		1
Ramp W-1					
2+30 Rt.	W-60C-36	36" x 36"	9	13	
Total			25	13	1

PAVEMENT QUANTITIES – COST PARTICIPATION I

Item	Description And Calculation	Quantity	Total	Unit
	[illegible] S.Y.			
407	Tack Coat			
	6635 S.Y. x 0.1 Gal./S.Y.	664	664	Gallons
407	Cover Aggregate			
	6635 S.Y. x 7 lbs/S.Y. ÷ 2000 lbs/Ton	23.2	23.2	Tons
409	Seal Coat			
	940 S.Y. x 0.30 Gal./S.Y.	282		
	[illegible]		282	Gallons
409	Cover Aggregate No. 8			
	940 S.Y. x .008	7.5	7.5	Cu. Yds.
202	Wearing course removed			
	(27'x27'+27'x27') ÷ 9 2 App. Slabs	144	144	Sq. Yds.

GUARD RAIL – COST PARTICIPATION I

Ref. No.	Station From	Station To	Side	202 G.R. Removed	606 G.R. Type 5	606 Anchor Assembly Type A	606 Anchor Assembly Type T	606 Bridge Terminal Assembly Type J	606 Bridge Terminal Assembly Type E
				Lin. Ft.	Lin. Ft.	Each	Each	Each	Each
R-1	1+19.5	3+07.0	Rt/W-3	162.5	162.5		1	1	
R-2	2+40.0	3+77.5	Lt/W-3	137.5	112.5	1	1		
R-3	6+41.5	7+79.0	Rt/W-2	137.5	112.5	1	1		
R-4	5+19.5	7+94.5	Lt/W-2	250.0	250.0		1	1	
R-5	0+80.0	5+80.0	Lt/W-1	350.0	475.0	1			1
R-6	3+50.0	6+75.0	Rt/W-1	312.5	300.0	1	1		
R-7	0+50.0	2+25.0	Lane A		150.0	1	1		
	TOTAL			1350	1487.5	5	6	2	1

FENCE SUMMARY – COST PARTICIPATION III

Ref. No.	Station From	Station To	Side	607 Type CLT as per plan
				Lin. Ft.
	Abbey	Ave.		
F-1	2+00	3+90	Rt.	190
	Total			190

PAVEMENT MARKING – ITEM 847 COST PARTICIPATION I

LOCATIONS AND STATIONS	SIDE, NORTH-BOUND OR SOUTH-BOUND	4" WHITE EDGE LINE (A)	4" YELLOW EDGE LINE (B)	4" LANE LINE (C)	4" LANE LINE (D)	8" WHITE CHANNEL-IZING LINE (E)	24" WHITE BROAD TRANS-VERSE LINE (F)	CURB PAINTED "WHITE" * (G)	24" STOP LINES (H)	CURB PAINTED "YELLOW" * (I)	6" CROSS-WALK (J)
		LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.
Lane WN											
12+83 – 32+63		1980			1980						
Ramp W-1											
0+23 – 2+10		225	181		105	160	60	30		20	100
2+10 – 7+40		530	530					165			
7+40 – 9+38		198				198					
9+38 – 11+78		240		240							
11+78 – 17+38		560									
Ramp W-2											
5+20 – 8+97		286	377		377	45	15				
8+97 – 9+55		58	58		58	120					
9+55 – 11+94		215	227		369	110	10	75	48	55	110
Ramp W-3											
1+20 – 2+15			95								
2+15 – 5+75		330	320			45	10	65	50	45	115
I-90	Northbound										
1998+83 – 8+50	Rt.	480			1440						
8+50 – 17+12	Rt.	862	862		2586						
17+12 – 26+35	Rt.		923		2769						
1962+40 – 1998+83	Rt.	3643			3643						
TOTAL		9607	3573	240	13327	678	95	335	98	120	325
		1.820 Mi.	.677 Mi.	.045 Mi.	2.524 Mi.	.128 Mi.					
		2.50 MILES		2.57 MILES							

* ITEM 621

MADE MEE DATE 5-17-78
TRACED DWT DATE 5-24-78
CHECKED F.W.H. DATE 9-7-78
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

GENERAL SUMMARY

QUANTITY CALCULATIONS
MADE BY M.E.E. DATE 6-5-78
CHECKED BY F.W.H. DATE 9-7-78

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15,31

* SEE SHEET 4

SHEET NUMBER							COST PARTICIPATION * I		COST PARTICIPATION * III		TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
5 I	6 I	9 I	9	9 III		8 I								
	6540						6540				6540	Lin. Ft.	202	ROADWAY Temporary Concrete Barrier Removed
160							160				160	SQ.YD.	202	Concrete Slope Protection Removed
		1350					1350				1350	Lin. Ft.	202	Guardrail Removed, as per plan
		144					144				144	Sq. Yd.	202	Wearing Course Removed
		1487.5					1487.5				1487.5	Lin. Ft.	606	Guardrail, Type 5
		5					5				5	Each	606	Anchor Assembly, Standard Type A
		6					6				6	Each	606	Anchor Assembly, Standard Type T
		1					1				1	Each	606	Bridge Terminal Assembly, Standard Type E
		2					2				2	Each	606	Bridge Terminal Assembly, Standard Type J
				190					190		190	Lin. Ft.	607	Fence, Type C.L.T, as per plan
250							250				250	Cu. Yd.	203	Embankment
														PAVEMENT
		230	230				230				230	Cu.Yd.	402	Asphalt Concrete AC-20
		230					230				230	Cu.Yd.	404	Asphalt Concrete AC-20
		23					23				23	Ton	407	Cover Aggregate
		664					664				664	Gal.	407	Tack Coat
		282					282				282	Gal.	409	Seal Coat Bituminous Material:
		8					8				8	Cu.Yd.	409	Seal Coat Cover Aggregate No. 8
	40						40				40	Cu.Yd.	301	Bituminous Aggregate Base; as per plan AC-20, RT-11 or RT-12
	3810						3810				3810	Lin.Ft.	622	Temporary Concrete Barrier, as per plan
														EROSION CONTROL
359							359				359	Sq.Yd.	Special	Herbicides for Weed Control
160							160				160	Sq. Yd.	601	Concrete Slope Protection
														For Roadway Lighting General Summary, see Sheet 15
														For Structure No. CUY-90-1524 Quantities, see Sheet 24 For Structure No. CUY-90-1540 Quantities, see Sheet 24 For Structure No. CUY-90-1547 Quantities, see Sheet 24 For Structure No. CUY-90-1599 Quantities, see Sheet 24
					1.47		1.47				1.47	Miles	614	TRAFFIC CONTROL Temporary Lane Lines, Class I
					1.21		1.21				1.21	Miles	614	Temporary Edge Lines, Class I
					700		700				700	Lin. Ft.	614	Temporary Gore Marking, Class I
					0.24		0.24				0.24	Lin. Ft.	614	Temporary Edge Line, Class I, Tape
					3570		3570				3570	Lin. Ft.	614	4" Temporary Channelizing Line, Class I, Tape
12,000							12,000				12,000	Lin. Ft.	621	Removal of Pavement Markings, as per plan
					200		200				200	Sq. Ft.	Special	Replacement Signs
					100		100				100	Each	Special	Replacement Drums

MADE M.E.E. DATE 6-5-78
PROOFED M.E.E. DATE 6-6-78
CHECKED F.W.H. DATE 9-7-78
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO
HNTB

GENERAL SUMMARY

QUANTITY CALCULATIONS
MADE BY MEE DATE 6-5-78
CHECKED BY FWH DATE 9-7-78
REVISED BY MEE DATE 2-23-83

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.31

* SEE SHEET 4

SHEET NUMBER	COST PARTICIPATION * I	COST PARTICIPATION * III	TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
						TRAFFIC CONTROL (CON'T.)
2.50	2.50		2.50	MILES	847	4-inch Edge Line, 847.09
2.57	2.57		2.57	MILES	847	4-inch Lane Line, 847.09
0.13	0.13		0.13	MILES	847	8-inch Channelizing Lines, 847.09
98	98		98	Lin. Ft.	847	24-inch Stop Lines, 847.09
95	95		95	Lin. Ft.	847	24-inch Broad Tranverse Lines, 847.09
455	455		455	Lin. Ft.	621	Curb Marking
325	325		325	Lin. Ft.	847	6-inch Crosswalk Lines, 847.09
25	25		25	Sq. Ft.	630	Signs, Flat Sheet
13	13		13	Lin. Ft.	630	Ground Mounted Supports, No.3 Steel Post, Driven
1	1		1	Each	630	Sign Support Assembly, Pole Mounted
40	40		40	Hours	Special	Law Enforcement Officer With Patrol Car
Lump Lump	Lump	Lump	Lump	Lump	614	Maintaining Traffic
Lump Lump	Lump	Lump	Lump	Lump	623	Construction Layout Stakes
	Lump	Lump	Lump	Lump	624	Mobilization, As Per Plan

MEE DATE 6-5-78
D MEE DATE 6-5-78
ED FWH DATE 9-7-78
\LE_

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FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.31

IR-90-1 (124) 28

END WORK
CUY-90-15.31
STA. 54+65.78 I-90

IR-90-1 (124) 28

BEGIN WORK
CUY-90-15.31
STA. 1962+40 I-90

MATCH LINE STA. 20+00 SEE THIS SHEET

O.L. 487 N

Existing Aerial

Existing Aerial

Established Dock Line

℄ Pier 2

Existing Pier R/W

I-90 & CONCRETE MEDIAN BARRIER (EXISTING)

Face of Curb

AERIAL

AERIAL

Existing Aerial

Existing Aerial

Overhead Sign Installation to be Removed as part of Project CUY-77/90-13.79/16.21

CUYAHOGA RIVER

Sta. 23+14.52
End Structure Work

Sta. 17+38.45 Rel. ℄ Ramp W-1
= Sta. 22+71.47, 52.0' Rt. ℄ I-90

3R

South Curb Line Abbey Ave.
End Overlay with Butt Joint as per Std. Dwg. BP-5

RAMP W-3

Note:
Remove & construct fence at existing location.

F-1

15' Offset

R-2

R-3

R-1

Wearing Course Removal

RAMP W-2

R-4

Sta. 5+47 ℄ Ramp W-2
Butt Joint as per Standard Drawing BP-5

LANE B

Sta. 8+90 Ramp W-2
End Overlay with Butt Joint as per Std. Dwg. BP-5

O.L. 70
O.L. 87

Existing Aerial

Existing Pier R/W

R.R. Tracks (9 Sets)

Existing Pier R/W

Established Dock Line

Existing Aerial

Sta. 1999+01.08 ℄ I-90 Brk.=
Sta. 3+87.63 ℄ I-90 Ahd.

Butt Joint as per Standard Drawing BP-5

℄ I-90

Existing Edge Line

Wearing Course Removal

R-5

Existing Sign

Relocated ℄ Ramp W-1

℄ RAMP W-1

CURVE NO.1

R-6

℄ Brg. Abut. W-1

CURVE NO.2

74.63'

2' Min. Clear

40:1 Taper

Existing Light (Typ.)

Bill Boards R/W

Existing Fol. I-90

Sub Lot 9
2 Sty. Br.
140'

TWD

R/W

2

AERIAL

℄ West End Pier

2R

AERIAL

Existing Aerial

℄ Pier 1

℄ Trocks

CUYAHOGA RIVER

MATCH LINE STA. 20+00 SEE THIS SHEET

Existing Signal

℄ W. 14TH ST.

Sta. 0+00 ℄ Ramp W-1 =
Sta. 5+26.00 ℄ Fairfield Ave.

Sta. 0+00 ℄ Lane A =
Sta. 5+40.00 ℄ Fairfield Ave.

℄ FAIRFIELD AVE.

Sta. 0+19 ℄ Ramp W-1
Begin Overlay with Butt Joint as per Standard Drawing BP-5

Sta. 2+00 Lane A
End Overlay with Butt Joint as per Standard Drawing BP-5

Sta. 5+03.29 4.00' Lt. ℄ Ramp W-1
= P.C. 5+03.29 Rel. ℄ Ramp W-1

Sta. 6+52 Rel. ℄ Ramp W-1
Butt Joint as per Standard Drawing BP-5

P.R.C. Sta. 6+68.81 Rel. ℄ Ramp W-1

Sta. 6+77 Relocated ℄ Ramp W-1
End Overlay

Sta. 12+71.47, 78.37 Rt. ℄ I-90=
P.O.C. Sta. 7+49.38 Rel. ℄ Ramp W-1

P.T. Sta. 8+33.30 Rel. Ramp W-1
=Sta. 13+66.60 ℄ I-90

Sta. 7+27.28 ℄ Reloc. Ramp W-1
Begin Work on Structure, See Sheets

℄ W. 13TH PL.

33' Existing R/W

GEORGE WORTHINGTON
RE-ALLT. VOL. 5 PAGE 41

30'

UNIVERSITY ROAD

℄ ABBEY AVE.

Erie Railroad (Conrail)

CURVE DATA

CURVE NO. 1	CURVE NO. 2
Δ= 3°18'37.9"	Δ= 2°52'42.4"
D= 2°00'00.0"	D= 1°45'00.0"
R= 2864.79'	R= 3274.04'
T= 82.79'	T= 82.26'
L= 165.53'	L= 164.48'
E= 1.196'	E= 1.033'

▨ – LIMITS OF OVERLAY

For Lighting Plans, See Sheets 14-19
For Structural Plans, See Sheets
For Guard Rail Quantities see sheet 9
For Asphalt Overlay Quantities see sheet 9
For Fence Quantities see sheet 9

50 0 50 100 150 200
SCALE IN FEET

MADE D.S.P. DATE 3-1-77
TRACED D.L.R. DATE 3-8-77
CHECKED J.A.G. DATE 3-21-77
SCALE 1"=50'

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CONSULTING ENGINEERS
CLEVELAND, OHIO

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ROADWAY IMPROVEMENTS
STA. 3+87.63 TO STA. 25+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.31

BEGIN WORK
IR-90-1 (124) 28
CUY-90-15.31
STA. 1962+40 I-90

END WORK
IR-90-1(124) 28
CUY-90-15.31
STA. 54+65.78 I-90

MATCH LINE STA. 20+00 SEE THIS SHEET

Existing Aerial
Existing Pier R/W
Established Dock Line
℄ Pier 2
I-90 & CONCRETE MEDIAN BARRIER (EXISTING)
Existing Edge Lines
Existing Lane Lanes to be Replaced
6" Lane Line
4" White Edge Line
Face of Curb
Existing Aeriol
CUYAHOGA RIVER
Overhead Installation to be Removed, include under portion of structures removed.
Ontario St E 9 St DOWNTOWN EXITS
End Pavement Marking Sta. 26+35

RAMP W-3
Abbey Ave.
W. 14th St.
1+58 ℄ Ramp W-3 No Work
4" Yellow Edge Line
4" White Edge Line
RAMP W-2
LANE B
Exit 171
W 14th St. Abbey Ave.
12+84 No Work
New Sign to be Attached to Existing Light Pole.
W-49R-49
Sta. 10+00 I-90
Existing Attenuator
Remove Existing Broad Stripes
Existing Edge Line (To Be Replaced)
Remove Existing Edge Line
6" Lane Line
Existing Lane Lines To Be replaced
4" White Edge Line
4" Lane Line
8" Channelizing Line
2" White Edge Line
Curb Painted Yellow
Curb Painted White
Existing Signal Controller
Existing Signal
24" Transverse Lines
4" Yellow Edge Line
Curb Painted White
Begin Pavement Marking
Sta. 3+82.63 abd. ℄ I-90
℄ I-90
℄ RAMP W-1
4" White Edge Line
℄ Brg. Abut. W-1
Solid Row (Existing)
LANE A
8" Channelizing Line
4" White Edge Line
Curb Painted White
Curb Painted Yellow
NO Work
Sta. 5+90 Fairfield Ave
Sta. 5+95 Fairfield Ave
EAST
06
90
No Work
℄ FAIRFIELD AVE.
Begin Pavement Marking Sta. 1+19 ℄ Ramp W-1
Sta. 1+77 Ramp W-1
End Pavement Marking
Sta. 2+00 Lane A No Work
EAST TO 90 77 No Work
Abbey Ave
Abbey Ave. EAST 90
W-60C-36
Bill Boards
Sub Lot 9
2 Sty. Br.
140'
38.3'
30'
UNIVERSITY ROAD
℄ W. 13TH PL.
33' Existing R/W
J.G. Jenning's Allt. Vol. 1 Page 15
℄ ABBEY AVE
Existing R/W
℄ West End Pier
Existing Aeriol
R.R. Tracks (9 Sets)
4 Lanes @ 12'-0"=48'-0"
14'
℄ Pier 1
℄ Tracks
Erie Railroad (Conrail)
CUYAHOGA RIVER

NOTE: ALL 6" LANE LINES SHOULD BE CONSIDERED TO READ AS 4".

For Pavement Marking Quantities see sheet 9
For Signing Quantities see sheet 9 .

TRAFFIC CONTROL PLAN
50 0 50 100 150 200
SCALE IN FEET

MADE D.M.P. DATE 12-28-77
TRACED K.D.L.R. DATE 6-1-77
CHECKED M.E.E. DATE 6-17-78
SCALE 1"=50'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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TRAFFIC CONTROL PLAN

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.31

LIGHTING NOTES

SPECIFICATIONS

These notes are supplemental to Items 625 and 713 of the State of Ohio Department of Transportation Construction and Material Specifications.

Reference shall be made to Standard Construction Drawings listed on the title sheet of these plans.

LIGHT POLE ANCHOR BOLTS FOR BRIDGES AND RETAINING WALLS

Anchor bolts for mounting light poles on bridges and retaining walls shall conform to the requirements of 713.01 and details shown on the plans and standard drawings, or the approved shop drawings, for the respective poles to be placed thereon. Payment shall be made at the unit price bid for each set of the size required and necessary to install one pole, and this payment shall constitute full compensation for furnishing and placing the bolts.

LIGHT POLE UPGRADING

General:

Even though light pole upgrading is directed, the Engineer shall verify the actual need for each bid item at each pole location, and payment shall only be made for installations as directed and as determined by the final measurement.

Requirements:

This work shall consist fo the following items:

1. Repairing, where directed, an existing concrete light pole foundation by furnishing and installing a steel bearing plate including four steel nuts with washers, as shown on the plans and in accordance with applicable sections of 519.06.
2. Furnishing and installing the following:
   (a) A type AT-X light pole transformer base conforming to 713.01, the plans, and the plan data tabulated for ordering the AT-X base. This item shall include four steel nuts with washers to connect the AT-X base to the existing anchor bolts and four steel bolts, of the size shown on the plans, with steel nuts and galvanized clips or washers with nuts to connect the existing pole to the AT-X base.
   (b) Light pole wiring extension Kits A, B, and C with all component items shown on the plans. In lieu of furnishing and placing cable extension Kits A and B, as detailed, the Contractor, may, at his option, furnish and install all new No. 10 AWG pole and bracket cable in each light pole to be upgraded. Payment for one Kit A and one Kit B will be allowed for each pole so rewired.
   (c) One each, 713.15 Type II and Type III cable connector kits, where same are not included in the existing pole wiring system.
   (d) One each ground rod where directed by the Engineer as a maintenance replacement or required to secure an acceptable ground test as hereinafter specified.
   (e) Missing components such as hand hole covers, chains, bolts, bolt covers, pole top caps, and like material shall be drawn from salvageable material from removal items and installed where required.
3. Electrical testing as follows:
   (a) A ground test as described in 625.22 except that the ground wire connecting each existing and or newly installed ground rod to a light pole shall be included in the ground test.
   (b) A performance test requiring the Contractor to energize and manually operate, for a minimum period of one hour, each circuit of the roadway lighting system affected by this work. The Contractor shall make a visual check to determine that only those lights required to be energized by the circuit are operating. The Contractor shall record each fault and the method of correction performed. After correction of a fault, a restart of the interrupted test shall be required.

Payment:

The unit price bid for each light pole foundation repaired and for each transformer base, wiring extension kit, connector kit, and ground rod furnished and installed shall include payment for all testing, equipment, labor, materials and component parts necessary to complete the work as specified.

CONNECTOR KITS

Type IX cable connections may not be substituted where Type II or III cable connections are specified in hand holes or transformer bases of light poles.

EXISTING LIGHT POLE ON STRUCTURE, TO BE REMOVED AND REERECTED, AS PER PLAN

This item consists of removing existing structure lighting units and reerecting same at locations shown in the plans, in full working condition as when removed.

The Contractor shall carefully remove and store on the project, at the location specified by the Engineer, poles, bracket arms, lamps, and luminaire assemblies. The Contractor is responsible for protecting stored material from damage. He shall replace at his own expense items damaged after disassembly.

Removed lighting units shall be reerected as detailed on Sheet 19 on handrail at locations specified in the plans.

Basis of payment for this work shall be the unit bid price per each Item 625, "Existing Lighting Unit, to be removed and reerected, As per plan," complete, as specified, including labor, materials, and incidentals.

HIGH VOLTAGE TEST

A high voltage direct current test, as described in Supplemental Specification 839, shall be performed on all distribution cable and duct cable systems to be installed on this project. The test shall not be performed until after all new construction, such as guard rail, fence, delineator posts, sign supports, etc., in the immediate vicinity of the location of the cable run being tested, has been completed.

NUMBE 2110 DATE 5-26-78
TRACE TLR DATE 6-15-78
HECK ET DATE 7-7-78
S

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

GENERAL SUMMARY

QUANTITY CALCULATIONS
MADE BY DMO DATE 5-26-78
CHECKED BY EFJ DATE 8-7-78

FHWA REGION	STATE	PROJECT	
5	OHIO		

15/89

CUYAHOGA COUNTY
CUY-90-15.31

STRUCTURE NUMBER CUY-90-	SHEET NUMBER	ESTIMATED QUANTITIES	COST PARTICIPATION I	II	III	IV	TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
1540 1547	14 16									
										ROADWAY LIGHTING
3 7			10				10	Each	625	Remove and reerect existing light pole on structure, as per plan
600 1650			2250				2250	Lin. Ft.	625	No. 4 AWG Distribution Cable, 5000 Volt
280 700			980				980	Lin. Ft.	625	Conduit 2" ϕ, 713.04
4 8			12				12	Each	625	Connector Kit, Type II, As per plan
4 8			12				12	Each	625	Connector Kit, Type III, As per plan
	20		20				20	Each	625	Extension Kit A
	20		20				20	Each	625	Extension Kit B
	20		20				20	Each	625	Extension Kit C
3			3				3	Each	625	Junction Box, 18" x 8" x 6"
3 7			10				10	Set	Special	Light Pole Anchor Bolts for Bridges and Retaining Wall
	20		20				20	Each	625	Transformer Base, Type AT-X, as per plan
	Lump		Lump				Lump	Lump	839	High Voltage Test

DMO DATE 6-78
DATE 8-78
DATE 7-78
SCALE

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Note:
Participation I is 90% Federal, 5% State and 5% Cleveland

LIGHTING QUANTITIES SUB-SUMMARIES

QUANTITY CALCULATIONS
MADE BY DMO DATE 5-26-78
CHECKED BY EFJ DATE 8-7-78

FHWA REGION	STATE	PROJECT		
5	OHIO			16 / 89

CUYAHOGA COUNTY
CUY-90-15.31

	LINE NUMBER	STATION	STATION	SIDE	625 No. 4 AWG, 5000 Volt Distribution Cable (Lin.Ft.)	625 Conduit 2"φ, 713.04 (Lin.Ft.)	625 Transformer Base Type AT-X As per plan (Each)	625 Junction Box 18"x8"x6" (Each)	625 Existing Light Pole on Structure to be removed and reerected, As per plan (Each)	625 Light Pole Anchor Bolts for Bridges and Retaining Walls (Set)	625 Extension Kit A (Each)	Extension Kit B (Each)	Extension Kit C (Each)	625 Connector Kit Type II (Each)	Connector Kit Type III (Each)
	1														
	2	sheet	18												
	3														
	4	11+00 Ramp W-2	5+35 Ramp W-3	Rt./Rt.			12				12	12	12		
	5	1+75 Ramp W-3		Rt.			1				1	1	1		
	6	2+20 Ramp W-1	6+34 Ramp W-1	Lt./Rt.			7				7	7	7		
CUY-90-1540	7	13+36	16+13	Rt.	600[s]	280[s]		3[s]	3[s]	3[s]				4[s]	4[s]
CUY-90-1547	8	16+13	23+80	Rt.	1650[s]	700[s]			7[s]	7[s]				8[s]	8[s]
	9														
	10	Total	Sheet 18		2250[s]	980[s]	20	3[s]	10[s]	10[s]	20	20	20	12[s]	12[s]
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	12														
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	51														
	52														
	53														
	5[illegible]														
	[illegible]	TOTAL	SHEET 17		2250[s]	980[s]	20	3[s]	10[s]	7[s]	20	20	20	12[s]	12[s]

MADE
TRACED KLB 5-26-78
CHECKED 6-13-78
SCA[illegible] DAT[illegible] -7-78

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

Note:
All Quantities are Participation I : 90% Federal, 5% State and 5% Cleveland

LIGHTING PLANS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.31

LEGEND
- Existing Light Pole to remain
- Existing Lighting unit structure mounted on hand rail [R]: to be relocated
- Existing Lighting unit, Relocated on structure hand rail, per bridge plans
- [U] Existing Lighting unit, to be upgraded with Break-Away Type AT-X Base.
- Existing underpass lighting No work (Cleveland owned)
- 2-#4 Conduit, 2"ϕ 713.04 with 713.02 Cable

CITY OF CLEVELAND

BEGIN WORK
IR-90-1 (124) 28
CUY-90-15.31
STA. 1962+40 ℄ I-90

END WORK
IR-90-1 (124) 28
CUY-90-15.31
STA. 54+65.78 I-90

4+55 W-3 H2-3
4+05 W-3 H2-4
3+30 W-3 H2-5
2+35 W-3 H2-6
7+07 W-2 H2-9
7+64 W-2 H2-10
8+21 W-2 H2-11
8+78 W-2 H2-12
5+35 W-3 H2-2
2+40 W-3 H2-7
6+50 W-2 H2-8
1+75 W-3 HA-4-7
RAMP W-3
RAMP W-2
LANE B
LANE A
Existing Transformer Vault Circuits H2 and HA5 480 VAC
℄ I-90
BRIDGE NO. CUY-90-1467
BRIDGE NO. CUY-90-1540
Existing Concrete Barrier Median
11+00 W-2 H2-13
2+89 W-1 H2-30
2+20 W-1 H2-29
3+58 W-1 H2-31
4+27 W-1 H2-32
4+96 W-1 H2-33
5+65 W-1 H2-34
6+34 W-1 H 2-35
Existing Edge Line
Existing Crossover Pullbox
24' Pavement Shld
6' Shld
54'
41'
12'
12'
12'
RELOCATED ℄ RAMP W-1
℄ RAMP W-1
℄ Brg. Abut. W-1
12+60 HA5-36
2-#4 AWG in 2" ϕ Conduit, 713.04
14+37 Parapet Junction Box
14+17 Parapet Junction Box
16+01 Parapet Junction Box
Looped Expansion Joint See Detail Sheet 20
13+36 I-90 (Typ) HA5-37 Connect to exist. wire. 1-Type II 1-Type III
14+14 HA5-38
14+93 HA5-39
Sub Lot 9 2 Sty. Br.
Existing Signal
℄ W. 14TH ST.
℄ FAIRFIELD AVE.
66'
℄ W. 13TH PL.
33' Existing R/W
30'
UNIVERSITY AVE.
℄ ABBEY AVE
Existing R/W
Sta. 16+13.02 ℄ West End Pier
℄ West End Pier
℄ Pier 1
℄ Tracks
R.R. Tracks (9 Sets)
Existing Pier R/W
Existing Aerial
Estoblished Dock Line
℄ Pier 2
BRIDGE NO. CUY-90-1547
℄ I-90 & CONCRETE MEDIAN BARRIER (EXISTING)
MATCH LINE STA. 20+00 SEE THIS SHEET
75'
54'
2-#4
℄ Face of Curb
2-#4 in 2"ϕ Conduit 713.04
CUYAHOGA RIVER
20+90 HA5-45
21+90 HA5-46
22+90 HA5-47
Sta. 17+38.45 Relocate ℄ W-1 = Sta. 22+71.47, 52' Rt. ℄ I-90
Sta. 23+14.5 End Structure Work Provide coupling to connect, new conduit to exist, conduit. Push new wires thru to Sta. 23+80.
23+80 HA5-48 Connect to exist. wires 1-Type II 1-Type III
16+90 HA5-41
17+90 HA5-42
18+90 HA5-43
19+90 HA5-44
2-#4 AWG 2" ϕ Conduit, 713.04, between existing junction boxes

MADE E.F.J. DATE 4-6-78
TRACE DMD DATE 4-14-78
CHECKED E.F.J. DATE 4-7-78
SCALE 1"=50'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

50 0 50 100 150 200
SCALE IN FEET

LIGHTING PLAN STA. 1991+00 ℄ I-90 TO STA. 25+00 ℄ I-90

LIGHT POLE UPGRADING

CUYAHOGA COUNTY
CUY-90-15.31

FED. HWY DIVISION	STATE	PROJECT	
2	OHIO		

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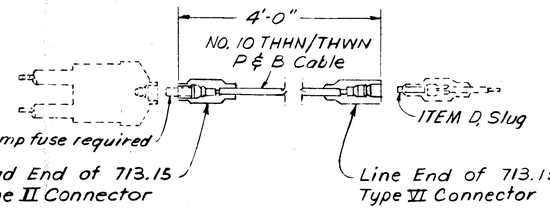
89

WHERE AT-X BASE IS BEING ADDED THE EXISTING WIRING SHALL BE MODIFIED WITH THE CABLE EXTENSION KITS AND ITEMS DETAILED BELOW:

EXTENSION KIT "A" FOR ENERGIZED CABLE

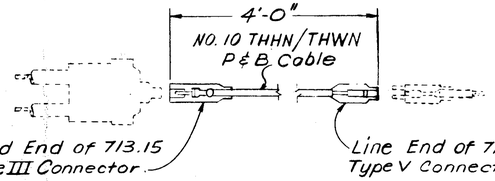
Fits between line end and load end of 713.15 Type II Kit



Two of these Kits will be required where system is 3-wire, 120/240 volts or 2-wire, 480 volts ungrounded.

EXTENSION KIT "B" FOR NEUTRAL CABLE

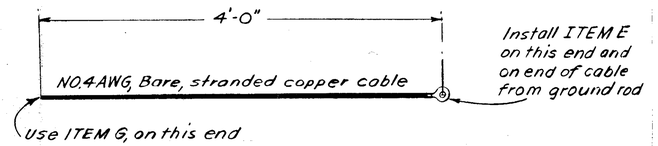
Fits between line end and load end of 713.15 Type III Kit



NOTE: A and B will provide enough slack to enable bringing connectors outside of base without unplugging to change fuses.

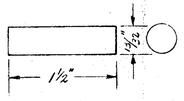
This Kit not required where electrical system is 3-wire, 120/240 volts or 2-wire, 480 volts ungrounded.

EXTENSION KIT "C" FOR GROUND CABLE



Includes ITEM G This Kit not required where electrical system is 3-wire, 120/240 volts or 2-wire 480 volts ungrounded.

ITEM D — Tin plated silicon bronze slug for use in Extension Kit A

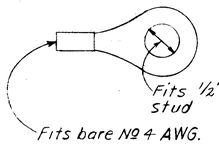


Included in Kit A for payment

ITEM E — Straight ring tongue terminal.

One required for each Kit C used.

One required to connect ground cable from ground rod to item F.

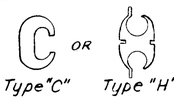


Included in AT-X base for payment

ITEM F — Stainless Steel Hex Head Cap Screw ½"–13

Included in AT-X base for payment

ITEM G — Compression Connector (select one)



To connect Extension Kit "C" to Extension Kit "B"

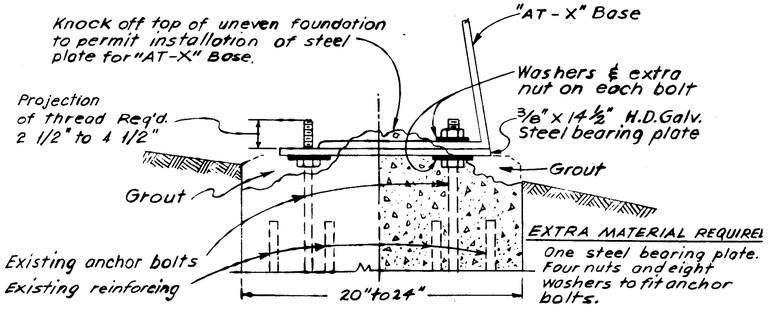
Included in Kit C for payment

PROCEDURE FOR INSTALLING BREAKAWAY "AT-X" TRANSFORMER BASES ON EXISTING PROJECTS

REPAIR OF DAMAGED FOUNDATION

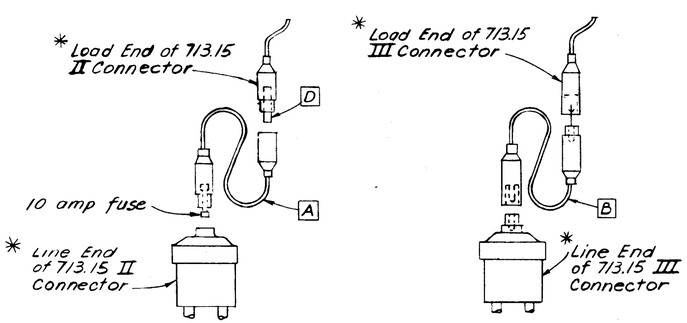
FOUNDATION

Where field inspection reveals that top of the existing light pole foundation has disintegrated proceed as follows:

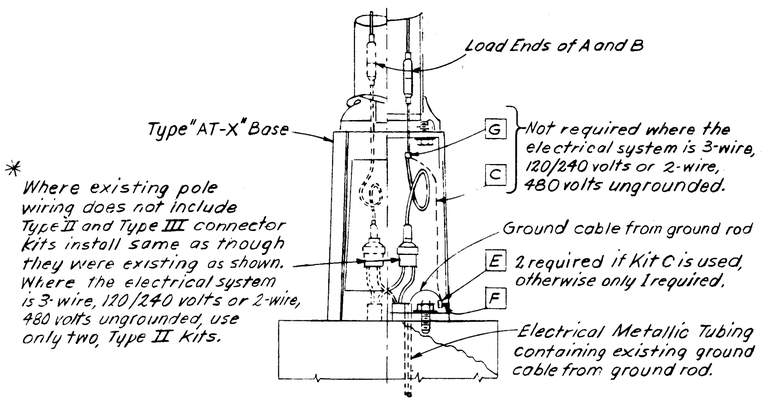


METHOD OF INSTALLING EXTENSION KITS

1. Prior to detaching pole from anchor bolts, pull load end connectors from line end connectors as shown:



2. After installing "AT-X" Base and light pole, plug in Extension Kits as shown:



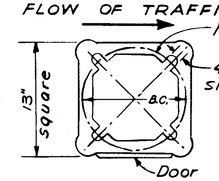
* Where existing pole wiring does not include Type II and Type III connector kits install same as though they were existing as shown. Where the electrical system is 3-wire, 120/240 volts or 2-wire, 480 volts ungrounded, use only two, Type II Kits.

FRANGIBLE ALUMINUM TRANSFORMER BASE TYPE "AT-X"

DATA NECESSARY FOR ORDERING FRANGIBLE BASES

REF. LETTER	EXISTING FOUNDATION ANCHOR BOLT CIRCLE	EXISTING ANCHOR BOLT DIAMETER	EXISTING SHAFT DIAMETER		EXISTING SHAFT LENGTH	EXISTING ARM LENGTH	MANUFACT'RS POLE DESIGN NUMBER
			TOP	BOTTOM			
U	12'2"	1¼"			27'±	10'-0"	–

FLOW OF TRAFFIC

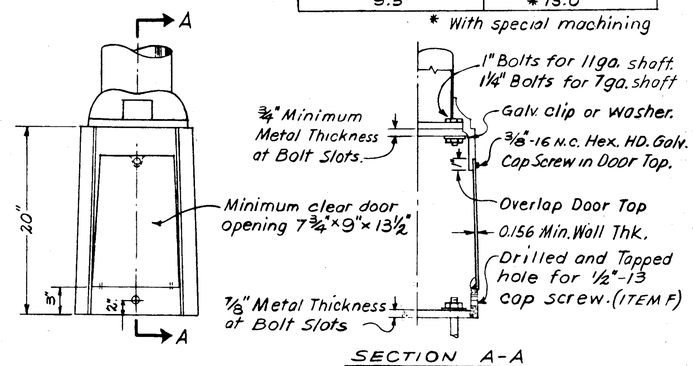


Top Plan for Transformer Base

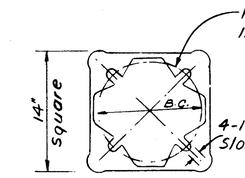
AT-X base is usable within the range of pole sizes tabulated below:

BOTTOM SHAFT DIAM.	BOLT CIRCLE
7.5"	10.5" (See note #2)
8.0"	11.0"
8.5"	11.5"
9.0"	12.5"
9.5"	* 13.0"

* With special machining



SECTION A-A



NOTE: This base shall be capable of resisting a bend moment of 34,000 ft. lbs. per 713.01

Bottom Plan of Transformer Base

NOTES: 1. Poles having bolt circles larger than 13" will require Type "AT-C" Transformer Base with adapter plates.

2. Poles having bolt circle smaller than 10.5" will require top and bottom adapter plates obtainable from the manufacturer of the AT-X Transformer Base. Payment for such adapter plates shall be included in payment for AT-X base

FHWA REGION	STATE	PROJECT	
5	OHIO		

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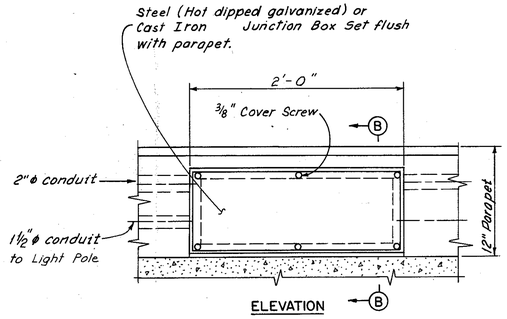
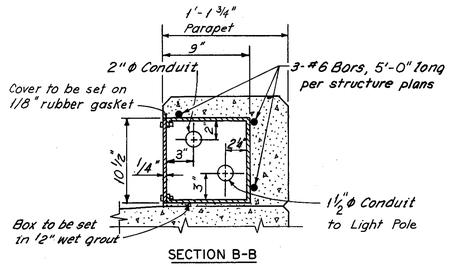
CUYAHOGA COUNTY
CUY-90-15.31

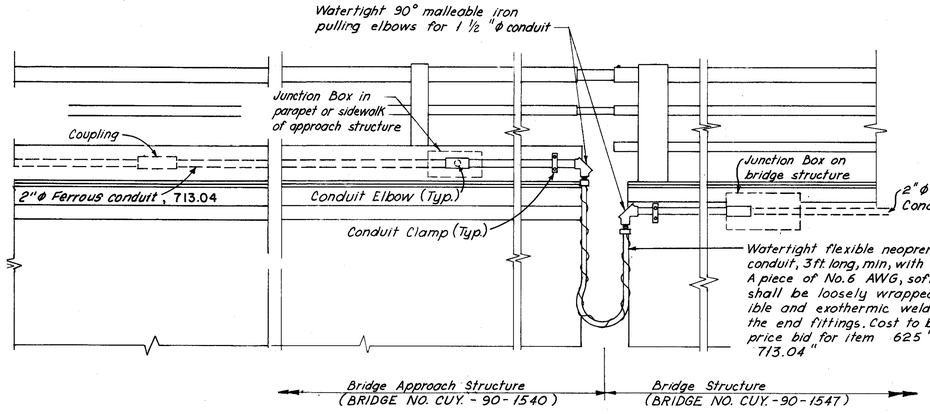
LIGHTING DETAILS



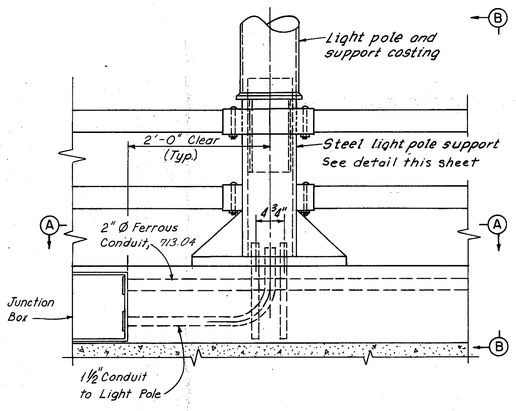


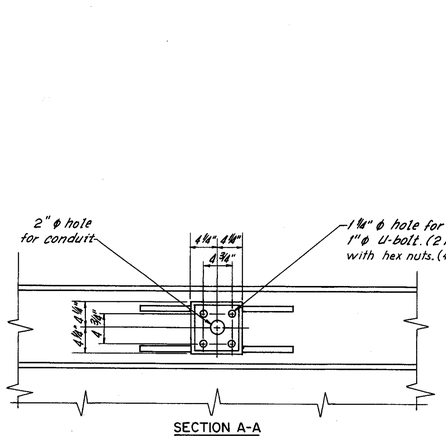
BRIDGE NO. CUY.-90-1540
PARAPET JUNCTION BOX

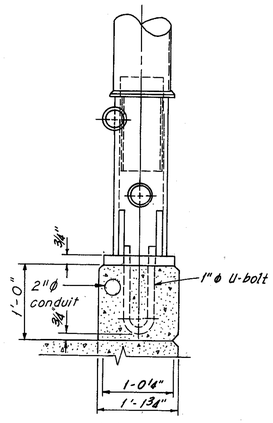
Note: For location of paropet junction box see sheet 17.
Details taken from CUY-42R-1750 sheet 66.



LOOPED EXPANSION JOINT
(CONDUIT CONNECTIONS
AT APPROACH TO STRUCTURE)
Scale: 12"=1'0"

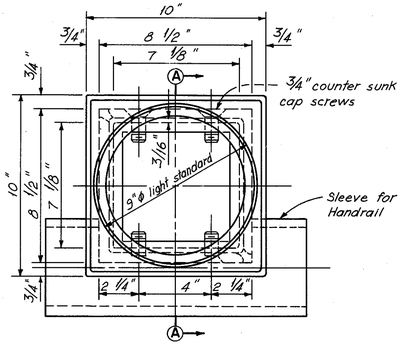


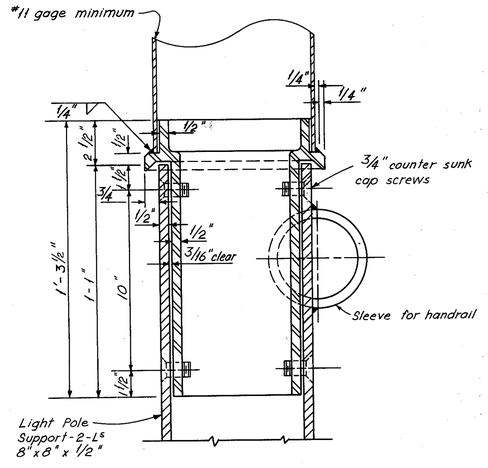




BRIDGE NO. CUY-90-1540
LIGHT POLE MOUNTING ON STRUCTURE
Scale: 1"=1'-0"

Note: The existing light poles and hand rail are to be removed and stored for reuse. The hand rail and light pole supports are to be replaced as part of the bridge construction. The light poles are to be replaced at locations shown on sheet 17 in the manner of the original placement of light poles as shown in CUY-42R-1750 plans.





LIGHT POLE SUPPORT DETAILS
Scale: 3"=1'-0"

MADE D.M.O. DATE 5-25-78
TRACED DWT DATE 6-12-78
CHECKED E.P.J. DATE 8-7-78
SCALE As Shown

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

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CUYAHOGA COUNTY
CUY-90-15.31

GENERAL NOTES - STRUCTURES OVER 20 - FT SPAN

1. PROPOSED WORK

A. Widening Bridges Nos. Cuy-90-1540 and CUY-90-1547

Approximately 350 Feet of Bridge No. CUY-90-1540 and 700 Feet of Bridge No. CUY-90-1547 shall be modified to accommodate a Class II entrance Terminal at the West 14th Street entrance (Ramp W-1) to I-90. Details of the modification are shown on Sheets W-1 Through W-59 of the plans.

B. Painting of Structural Steel

All existing structural steel in Bridges Nos. CUY-90-1524, CUY-90-1540, CUY-90-1547 and CUY-90-1599 shall be cleaned and painted. New structural steel proposed to support the widening of Bridges Nos. CUY-90-1540 and CUY-90-1547 shall also be painted. Limits and painting requirements are covered elsewhere in these General Notes and on Plan Sheets P-1 through P-6.

2. DESIGN SPECIFICATIONS

Standard Specifications for Highway Bridges adopted by the American Association of State Highway and Transportation Officials, dated 1977, including the 1978, 1979, 1980 1981 and 1982 Interim Specifications and the Ohio "Supplement" to these specifications. The design loading is HS-20-44 Case 1 and the Alternate Military Loading.

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

Concrete Class S - Unit Stress 1200 psi for superstructure
Concrete Class C - Unit Stress 1333 psi for substructure
Structural Steel - ASTM A36 - Unit Stress, 20,000 psi
ASTM A588 - Unit Stress 27,000 psi
ASTM A668 - Class N (Pins)
ASTM A27 - Grade 70-36 (Intermediate Expansion Joints)
All structural steel shall be ASTM A36 except as otherwise noted.

Reinforcing Steel - ASTM A615, A616, A617 - Unit Stress 20,000 psi

3. SUPPLEMENTAL SPECIFICATIONS

Reference shall be made to Supplemental Specifications 953 dated 8-21-80, 845 dated 3-2-81, 853 dated 6-26-78, 927 dated 10-19-81 and 956 dated 6-26-78.

4. REFERENCE DRAWINGS

Reference shall be made to Ohio Standard Drawing RB-1-55, revised 2-2-59.

5. PLANS OF EXISTING BRIDGES

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

6. *EXISTING STRUCTURE VERIFICATION: Details and dimensions shown on these plans pertaining to the existing structure have been obtained from plans of the existing structure. They are measured horizontally and at 60° F. 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.

7. CONSTRUCTION SEQUENCE

A suggested construction sequence is presented herewith for the proposed widening of Bridge No. CUY-90-1547. This sequence is furnished as a guide only. The Contractor shall submit in triplicate a detailed program of construction for widening both BRIDGES (CUY-90-1540 and CUY-90-1547) including proposed methods and sequence of operations to the Director for approval prior to start of work.

Suggested Construction Sequence - BRIDGE NO CUY-90-1547

Step 1 Remove existing railing, barrier curb and light supports and store for reuse.

Step 2 Remove existing wearing surface and deck slab as required including deck drains, deck expansion joints, deck contraction joints and the underdeck access system.

Step 3 Remove existing fascia girder-curb stringer assembly and store for reuse.

Step 4 Remove existing floorbeam cantilevers as required and stringer N between floorbeams 23 and 27.

Step 5 Drill or bore a hole in floorbeams 1 thru 22 under stringer N for the pin used to attach new floorbeam segments.

Step 6 Simultaneously with Steps 1 thru 5 connect angles and gusset plates to the existing truss at Floorbeams 5, 10, 14, 18 and 22.

Step 7 Erect struts and floorbeams at all strut location except at Floorbeam 14. Erect lateral bracing.

Step 8 Adjust the strut at Floorbeam 10 so that the floorbeam is in the final vertical position. Adjust other erected struts so that the girder end of the floorbeam is above its final elevation after all dead load has been placed by 1-3/8" at Floorbeam 5, 6-7/16" at Floorbeam 18 and 3/4" at Floorbeam 22. For final elevations and details see sheets W/35, W/38, W/41, W/42 and W/44 (note that the struts at Floorbeam 5 and 18 AND set considering girder and truss deflections and the strut at Floorbeam 22 IS set considering truss deflections).

Step 9 Erect the first girder segment in Unit 1 between the West End Pier and Field Splice 1.

Step 10 As girder erection progresses, erect floorbeams as required to provide lateral stability for the girder.

Step 11 Erect second girder segment in Unit 1 between Field Splice 1 and Field Splice 2.

Step 12 Erect remaining Unit 1 girder segment, release strut at Floorbeam 5 (see Sheet W/41) and erect remaining floorbeams in Unit 1. After this work is completed, the elevation at the top of the top flange at the cantilever end of the last girder segment shall be verified (Elev. 703.33 ~~703.85~~). △

Step 13 Erect the first girder segment in Unit 2 between the hanger and Field Splice 3.

Step 14 Erect the remaining girder segment in Unit 2.

Step 15 Release the strut at Floorbeam 18.

Step 16 Replace erection gussets at bottom of Strut of Floorbeams 5 and 18.

Step 17 Erect remaining floorbeams.

Step 18 Install expansion bearings, proposed stringers and reinstall Stringer N between Floorbeams 23 and 27.

Step 19 Reinstall fascia girder-curb stringer assembly and light supports.

Step 20 Install underdeck drainage, catwalks, deck drains, deck expansion joints, deck contraction joints, and modify navigational light access as required.

Step 21 Place the deck concrete in Unit 1 except for the temporary opening.

Step 22 Install the strut at Floorbeam 14.

Step 23 Place the deck concrete in Unit 2 except for the temporary opening.

Step 24 Place the remaining deck concrete.

Step 25 Final tighten all bolted girder connections as specified at Floorbeams 5, 10, 14, 18 and 22, see Note A, Sheet W/41.

Step 26 Re-install the barrier curb and railing.

Step 27 Re-connect the struts at Floorbeams 5 and 18.

Step 28 Place wearing surface.

8. REMOVAL

A. General

Structural steel designated by the plans for removal and disposal may be removed by methods of the Contractors selection and as approved by the Director.

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

B. Concrete Removal

Before removal of deck concrete, the removal line shall be saw cut to a maximum depth of 1/2 inch. Concrete shall be removed by means of approved pneumatic hammers employing pointed and blunt chisel tools. The maximum weight of hammer shall not exceed 35 pounds. Existing reinforcing steel shall be cut as indicated in the plans or as directed by the Engineer to serve as dowels or principal reinforcement in the rebuilt structure. Care shall be taken to preserve the bond of such dowels or principal reinforcement in the existing concrete. These bars shall be cleaned of all concrete fragments and foreign matter. Pneumatic hammers shall not be placed in direct contact with the bars; hand tools shall be employed for final cleaning. Damaged areas of reinforcement that are to remain shall be cut and stress transfer accomplished by either a lapped or mechanical splice. Other existing reinforcement within the removal limits shall be removed and disposed of.

C. Permanent Metal Underdeck Forms Removal

The concrete deck of Bridge No. CUY-90-1547 is supported on permanent metal forms. These forms shall be removed to the limits of deck concrete removal by methods of the Contractor's selection and as approved by the Engineer.

D. Special Requirements

The Contractor shall not permit the removed concrete or permanent metal forms to drop below the bridge deck. Means shall be provided for catching broken concrete. The Contractor shall submit details of the method he proposes to use to collect the concrete, to the Engineer, for approval. The material collected shall be removed promptly and not allowed to accumulate.

E. Disposal of Removed Material

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

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

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GENERAL NOTES
RAMP W-1 UPGRADING
BR. NO. CUY - 90-1524, 90-1540, 90-1547, 90-1599
STA. 3+87.63
STA. 54+65.78
CUYAHOGA COUNTY OHIO

DRAWN C.K.B.	TRACED C.P.	CHECKED C.A.B.	REVIEWED	REVISED
DATE 3-4-78	DATE 4-4-78	DATE 4-4-78	DATE	SHEET GN 1

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GENERAL NOTES - STRUCTURES OVER 20 - FT SPAN

9. BONDING NEW CONCRETE TO EXISTING CONCRETE

Polysulfide-Epoxy Resin Adhesive shall be used for bonding new concrete to existing concrete at all locations where new concrete is placed in contact with existing concrete. The adhesive shall be Thiobond No. 100 as manufactured by Steelcoat Manufacturing Company, St. Louis, Mo., Ceilcoat 348 Adhesive, as manufactured by the Ceilcoat Company, Berea, Ohio, Resiweld R-7689-G as manufactured by the H. B. Fuller Company or adhesive meeting the requirements of AASHTO M-235-73I. In the event of Application at less than 60°F or more than 194°F, it may be necessary to obtain a slightly modified material depending on the recommendations of the manufacturer.

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

No separate payment will be made for bonding new concrete to old using Polysulfide-Epoxy Resin Adhesive, but this work shall be included in the unit price bid for Item 511, Class C Concrete, Superstructure. This price shall include all labor, material and cleaning and preparing of the existing surface.

10. REINFORCING STEEL

All bars are designated on the plans by bar numbers. The bar size is designated by the first digit of three-digit numbers and by the first two digits of four-digit numbers.

The clear distance between reinforcing steel and face of concrete shall be 3" for all bars in footings, 2-1/2" at bar mats under shoes and 2" elsewhere unless otherwise shown on the plans.

All bar dimensions are given out to out.

All bars of series shall vary by a constant increment.

11. PAINTING STRUCTURAL STEEL *(See notes on sheet 22A)*

A. General

Plans have been developed to show the general painting requirements for each structure. The prospective bidders shall make an inspection of the bridges in the field to inform themselves of all surfaces requiring paint in accordance with the plans and these general notes and to satisfy themselves as to the conditions to be encountered in performing the work.

All new structural steel shall be painted in accordance with Item 514, Field Painting of New Structural Steel and all existing structural steel shall be painted in accordance with Item 514, Maintenance Painting of Existing Structures except for the permanent galvanized underdeck forms at Bridge No. CUY-90-1547. The exposed surface of these forms where rust or corrosion is evident shall be coated with aluminum paint meeting the requirements of 708.12 Type II. The work on the underdeck forms shall be performed as directed by the Engineer and shall be included with the lump sum bid for Item 514, Spot Prime Painting, for payment.

B. Maintaining Traffic

To prevent damage to vehicles traveling under structures which are being painted, the Contractor shall install and maintain suitable shields between his operations and vehicles using open traffic lanes. The shields shall be of a type and construction, approved by the Engineers, to prevent paint from dropping onto or being blown into pavement lanes open to traffic. They shall be suitably anchored and reinforced to prevent interfering with normal traffic operations in the open lanes. Payment for the shields shall be included in the lump sum price bid for Item 614, Maintaining Traffic. (See Roadway Plan.)

Reference is made to Roadway Plans for additional maintenance of traffic requirements.

C. Protection of Persons and Property

The Contractor shall collect, remove and dispose of all buckets, rags or other discarded materials and he shall leave the job site in a clean condition.

All portions of the structure which are not to be painted shall be protected by the Contractor against damage or disfigurement by splashes, spatters and smirches of paint.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

D. State Safety Requirements

State safety requirements as outlined in the Construction Safety Code for this type of work, will be enforced and the Contractor shall comply with the provisions of Bulletin I.C.-3 issued as a General Order by the Industrial Commission of Ohio.

E. Work in the Vicinity of Railroads

The Contractor shall cooperate at all times with the local 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 local officials of 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 Contractors operations over or adjacent to the tracks.

No scaffold, planks or other equipment shall be suspended or erected above or within 17 feet 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.

F. Cooperation of Contractor

The Contractor shall leave his ladders, platforms or scaffold in place for a sufficient length of time and in such a manner to permit the Engineer or Inspector to safely examine the work performed.

G. Pollution Control

The Contractor shall take all necessary precautions to comply with pollution control laws, rules or regulations of Federal, State or local agencies.

12. ITEM SPECIAL - CLEANOUT OF BRIDGE DRAINAGE SYSTEM

The location and details of the existing drainage system are shown in the plans. This item shall consist of removing all dirt and debris from the deck area near curb, deck area near median, sidewalk area, scuppers, cross drains, drainage troughs, hoppers, horizontal pipe collectors, and vertical pipe downspouts including the underground storm sewers to the adjacent manhole or catch basin. After the dirt and debris are removed, the entire system shall be flushed out with clean water making certain the water flows smoothly to the adjacent manhole or catch basin.

The Contractor shall provide necessary equipment prior to beginning of work for the purpose of examining the existing bridge drainage systems. The Contractor's superintendent shall accompany the engineer at this time in making this detailed examination. No separate payment will be made to the contractor to cover any cost of this examination.

This work shall be performed and the affected areas kept clean until the painting operation commences.

12. con't This item shall included all labor, equipment, and material necessary to complete the cleanout of the bridge drainage system.

Item Special - Remove All Dirt And Debris From Bridge Seats

This work shall consist of removing all dirt and debris from pier and abutment bridge seats. This item shall include all labor, equipment, and material necessary to complete this work.

Dirt and debris removed from the structure during the cleaning process shall become the property of the contractor and shall be removed by him from the site.

13. BOLTED CONNECTIONS

All bolted connections that are made at existing structural members, replacing 7/8" ø bolts or rivets, shall be 7/8" ø H.S. (ASTM A325) bolts unless otherwise noted. All bolted connections that are made between new members shall be 1" ø H.S. (ASTM A325) bolts unless otherwise noted. All bolts shall be installed and tightened in accordance with the Construction and Material Specifications except as noted on Sheets W/17, W/18, W/19, W/41 and W/45.

14. NAVIGATIONAL PROVISIONS - BRIDGE NO. CUY-90-1547

A formal Coast Guard permit will not be required for the work as shown in the plans. However, should the Contractor desire to utilize falsework or any type of scaffolding that will extend beyond the lower navigational limits of Bridge No. CUY-90-1547, prior approval from the United States Coast Guard shall be necessary. The Ninth Coast Guard District, 1240 East 9th Street, Cleveland, Ohio, shall be notified at least 14 days prior to the commencement of construction.

15. WELDING TO EXISTING STRUCTURES

Prior to welding to the existing structures, the Contractor shall remove two samples of steel, two ounces or larger, from the web of Girder R, Bridge No. CUY-90-1540 and a floorbeam in Unit 1 of Bridge No. CUY-90-1547 (four samples required). The location of all samples shall be approved by the Engineer. A complete chemical analysis of each sample in accordance with Part 32 of the current ASTM Standards shall be obtained. Certified copies of the chemical analysis report and the Contractor's proposed welding process shall be submitted to and approved by the Engineer prior to the start of welding operations. All welding shall be in accordance with 513.17.

All costs of the above work shall be included in the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

16. CONCRETE DECK

The final surface of the roadway shall conform as nearly as practicable to the elevations shown on the Plans.

The concrete slab shall be of uniform thickness between girders and stringers on Bridge No. CUY-90-1540 and between stringers on Bridge No. CUY-90-1547. The depth of concrete over the girders and stringers shall be as specified in the plans.

17. SEQUENCE OF PLACING DECK CONCRETE - BRIDGE NO. CUY-90-1547

In addition to the applicable requirements of 511.08, the deck concrete shall be placed from west to east in accordance with the "suggested construction sequence".

27. EPOXY BONDING OF TFE TO STEEL BEARING SURFACES

SELECTION OF THE EPOXY ADHESIVE AND SUPPLEMENTING THE SURFACE PREPARATION AND ADHESIVE APPLICATION PROCEDURES GIVEN BELOW SHALL BE BY THE BEARING MANUFACTURER WITH APPROVAL OF THE DIRECTOR. AS A CONDITION OF SUCH APPROVAL, THE BEARING MANUFACTURER SHALL SUBMIT PROOF OF THE ADEQUACY OF HIS PROPOSED BONDING SYSTEM.

THE BONDING SURFACE OF THE STEEL SHALL BE CLEANED OF RUST, SCALE, OIL AND GREASE BY BLAST CLEANING. THE ENTIRE SURFACE TO BE BONDED SHALL BE BLAST CLEANED TO THE ANCHOR PROFILE REQUIRED AND WIPED CLEAN WITH CLEANING SOLVENT. BLAST CLEANING SHALL BE PERFORMED WITHIN A MAXIMUM OF FOUR HOURS PRIOR TO BONDING.

THE WOVEN TFE SURFACE SHALL BE ETCHED IF REQUIRED.

NOT MORE THAN ONE-HALF (1/2) HOUR PRIOR TO USE, A SUFFICIENT QUANTITY OF EPOXY SHALL BE PREPARED FOR THE AMOUNT OF WORK TO BE PERFORMED. ACCURATELY MEASURED PROPORTIONS OF THE TWO COMPONENTS SHALL BE BLENDED IN ACCORDANCE WITH THE EPOXY MANUFACTURER'S INSTRUCTIONS. TO INSURE ACCURATE PROPORTIONS FOR ALL PRODUCTION RUNS AND A RELATIVELY BUBBLE-FREE MIXTURE OF UNIFORM CONSISTENCY, THE BEARING MANUFACTURER SHALL PROVIDE SPECIFIC INSTRUCTIONS AND, IF NECESSARY, SPECIFIC EQUIPMENT FOR THE PROPER BLENDING OF THE EPOXY COMPONENTS

A THIN UNIFORM COAT OF EPOXY SHALL BE SPREAD OVER THE ENTIRE SURFACE TO BE BONDED. IT MAY BE APPLIED TO EITHER THE STEEL OR THE TFE SURFACE OR TO BOTH.

THE TFE SURFACE SHALL THEN BE BONDED TO THE STEEL SURFACE UNDER FACTORY CONTROLLED CONDITIONS USING HEAT AND PRESSURE FOR THE TIME REQUIRED TO SET THE EPOXY ADHESIVE USED.

A COPY OF THE ADHESIVE MANUFACTURER'S INSTRUCTIONS, THE COMPLETE PROCEDURES USED TO ACHIEVE AN ADEQUATE BOND STRENGTH, AND A BONDED TFE/STEEL SAMPLE SHALL BE SUBMITTED TO THE DIRECTOR FOR APPROVAL PRIOR TO THE START OF PRODUCTION BONDING.

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18. SELF-LUBRICATING CAST IRON BUSHINGS

A. GENERAL

SELF-LUBRICATING CAST IRON BUSHINGS SHALL BE A PRODUCT APPROVED BY THE DIRECTOR AND PRODUCED BY A REPUTABLE MANUFACTURER HAVING A SUCCESSFUL PERFORMANCE RECORD OF AT LEAST TEN (10) YEARS IN SIMILAR APPLICATIONS. THE MANUFACTURER SHALL HAVE PROVEN CAPABILITIES OF PRODUCING THE BUSHINGS TO THE EXACTING REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS WITHIN ITS OWN FACILITIES IN ORDER TO ENSURE CLOSE SUPERVISION OVER MATERIALS, QUALITY AND WORKMANSHIP.

B. MATERIAL

THE CAST IRON EMPLOYED IN THE MANUFACTURE OF THESE BUSHINGS SHALL MEET THE REQUIREMENTS OF ASTM A48-74, ASTM A273-64, ASTM A319-71, ASTM A438-62 AND THE FOLLOWING TYPICAL PHYSICAL PROPERTIES:

TENSILE STRENGTH	50,000 PSI
MINIMUM COMPRESSION YIELD POINT	180,000 PSI
BRINNEL HARDNESS (APPROXIMATE)	220
MACHINABILITY RATING	48
MODULUS OF ELASTICITY	20,000;000 PSI
PROPORTION LIMIT (.01% PERMANENT SET)	20,000 PSI
MODULUS OF RIGIDITY	8,750,000 PSI
POISSON'S RATIO	.32
MODULUS OF RUPTURE	90,000 PSI
FATIGUE STRENGTH	22,000 PSI
SHEAR STRENGTH	50,000 PSI

C. LUBRICANT

THE LUBRICANT EMPLOYED IN THESE BUSHINGS SHALL CONSIST OF A COMBINATION OF SOLIDS HAVING NON-DETERIORATING CHARACTERISTICS AS WELL AS INHERENT LUBRICATING QUALITIES, AND SHALL BE CAPABLE OF WITHSTANDING THE EFFECTS OF ATMOSPHERIC EXPOSURE AND WATER. THE EMPLOYMENT IN THE LUBRICANT OF GRAPHITE, MOLYBDENUM DISULPHIDE OR OTHER INGREDIENTS THAT TEND TO PROMOTE ELECTROLYTIC OR CHEMICAL ACTION IS PROHIBITED. THE USE OF SHELLAC, TARS, RESINS, SOLVENTS OR OTHER NON-LUBRICATING BINDER MATERIALS IS NOT PERMITTED. THE LUBRICATING COMPOUND SHALL BE INTEGRALLY MOLDED AND COMPRESSED INTO THE RECESSES PROVIDED FOR CONTAINMENT OF THE LUBRICANT BY MEANS OF HYDRAULIC PRESSURE OF NOT LESS THAN THE DESIGN UNIT LOADING OF 20,000 PSI. THE INSERT THUS FORMED SHALL BE DENSE, NON-PLASTIC AND LUBRICATIVE.

D. RECESSES FOR LUBRICANT

DRILLED HOLES OR TREPANS SHALL BE PROVIDED OVER THE ENTIRE INSIDE AREA OF THE BUSHING IN A UNIFORM, GEOMETRIC AND OVERLAPPING PATTERN IN THE DIRECTION OF MOTION TO INSURE OPTIMUM LUBRICATING COVERAGE. THE RECESSES FOR THE LUBRICANT SHALL NOT EXTEND THROUGH THE WALL OF THE BUSHING AND SHALL BE OF SUFFICIENT DEPTH TO CONTAIN THE LUBRICANT PROPERLY. THE AREA OF THESE RECESSES SHALL NOT BE LESS THAN 30% OF THE DEVELOPED AREA OF THE INSIDE DIAMETER OF THE BUSHING. THE LUBRICATING RECESSES SHALL EXTEND TO WITHIN THREE-SIXTEENTHS INCH OF THE ENDS OF THE INSIDE BUSHING AREA TO INSURE ADEQUATE LUBRICANT DISTRIBUTION.

E. DIMENSIONS AND FINISHES

THE BUSHINGS SHALL BE FURNISHED COMPLETELY MACHINED TO THE SIZES SPECIFIED ON THE DRAWINGS AND SHALL NOT BE FURTHER MACHINED AFTER ASSEMBLY. THE SURFACE ROUGHNESS OF THE BUSHING AND THE SHAFT OR PIN SHALL NOT EXCEED 125 MICRO INCHES WHEN MEASURED IN ACCORDANCE WITH ASA STANDARD B46.1.

F. INSTALLATION

THE BUSHING SHALL BE PRESS FITTED WITH THE BUSHING HOUSINGS BY MECHANICAL MEANS. THE USE OF THERMAL OR CHILLING TECHNIQUES IS PROHIBITED. THE PRESS FIT SHALL BE ADEQUATE TO INSURE THAT SLIP WILL NOT OCCUR AT THE INTERFACE WHEN THE BUSHING IS SUBJECTED TO A DESIGN LOADING OF 20,000 PSI ASSUMING A COEFFICIENT OF FRICTION OF 0.14.

G. FRICTION COEFFICIENT

THE STATIC COEFFICIENT OF FRICTION BETWEEN THE BUSHING AND PIN SHALL NOT EXCEED 0.14 WHEN SUBJECTED TO THE DESIGN UNIT LOADING OF 20,000 PSI.

H. PAYMENT

PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL, SELF-LUBRICATING CAST IRON BUSHINGS (6"Ø PIN), AS PER PLAN OR ITEM SPECIAL, SELF-LUBRICATING CAST IRON BUSHINGS (9"Ø PIN), AS PER PLAN.

19. EXPANSION JOINT CASTINGS

NEW STEEL CASTINGS FOR ROADWAY EXPANSION JOINTS SHALL BE MACHINED ON BOTTOM SURFACES WHICH WILL CONTACT SUPPORTING STEEL AND TOP SURFACES SHALL BE SPOT FACED FOR NUTS. ALL SECTIONS FOR BOTH SIDES OF EACH JOINT SHALL BE SHOP ASSEMBLED WITH NOMINAL CLEARANCES OF 3/4" BETWEEN ENDS AND ROOTS OF MATING PROJECTIONS. WHILE THUS ASSEMBLED, THE JOINT SHALL BE CHECKED AND CORRECTED TO PROVIDE NOT LESS THAN 1/8" CLEARANCE BETWEEN SIDES OF PROJECTIONS AND NOT LESS THAN 5/8" CLEARANCE BETWEEN ENDS AND ROOTS OF PROJECTIONS.

ALL PARTS OF THE NEW AND REUSED JOINTS SHALL BE MATCH MARKED. ROADWAY EXPANSION JOINT CASTINGS SHALL BE ERECTED ACCORDING TO THE MATCH MARKING AND SHALL BE SET TO THE REQUIRED GRADE OF THE ROADWAY AND TO PROVIDE EQUAL SIDE CLEARANCE BETWEEN MATING PROJECTIONS. THE FINAL OPENING BETWEEN MATCHING CASTINGS SHALL BE SET TO MATCH THE OPENING BETWEEN EXISTING IN-PLACE CASTINGS. HOLES IN THE SUPPORTING STEEL SHALL BE DRILLED IN THE FIELD AFTER THE CASTINGS ARE ADJUSTED IN FINAL POSITION.

RESETTING OF THE EXISTING STEEL CASTINGS AS REQUIRED SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 513, STRUCTURAL STEEL (ASTM A27), FOR PAYMENT. PAYMENT FOR NEW STEEL CASTINGS WILL BE MADE UNDER ITEM 513- STRUCTURAL STEEL (ASTM A27).

20. SELF-LUBRICATING BRONZE BEARING PLATES

SELF-LUBRICATING BRONZE BEARING PLATES SHALL BE IN ACCORDANCE WITH THE STATE OF OHIO SUPPLEMENTAL SPECIFICATION 927 AND THE DETAILS SHOWN ON SHEET W-36 OF THE PLANS AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL, SELF-LUBRICATING BRONZE BEARING PLATES(AT CONTRACTION JOINTS), AS PER PLAN OR ITEM SPECIAL, SELF-LUBRICATING BRONZE BEARING PLATES (EXCEPT AT CONTRACTION JOINTS), AS PER PLAN.

21. STEEL BARRIER CURB, AS PER PLAN

THE EXISTING STEEL BARRIER CURB ON BRIDGE No. CUY-90-1540 SHALL BE REMOVED, STORED AND RESET ON THE WIDENED STRUCTURE. THE WORK GENERALLY INCLUDES CUTTING THE EXISTING ANCHOR BOLTS; REMOVAL AND STORAGE OF THE STEEL BARRIER CURB; ADJUSTING, ALIGNING AND RESETTING THE BARRIER CURB ALONG THE NEW FACE OF CURB AND ATTACHING THE BARRIER CURB TO THE NEW CURB.

STEEL BARRIER CURB WILL BE MEASURED IN PLACE ALONG THE NEW CURB BY LENGTH IN LINEAR FEET AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL, STEEL BARRIER CURB, AS PER PLAN. THIS PRICE SHALL BE PAYMENT IN FULL FOR FURNISHING ALL MATERIALS, EQUIPMENT AND LABOR TO COMPLETE THE WORK AS SPECIFIED.

22. FASCIA GIRDER - CURB STRINGER ASSEMBLY

THE EXISTING FASCIA GIRDER-CURB STRINGER ASSEMBLY ON BRIDGE No. CUY-90-1547 SHALL BE REMOVED, STORED AND RESET ON THE WIDENED STRUCTURE AS DETAILED IN THE PLANS. THIS ASSEMBLY INCLUDES THE FASCIA GIRDER, FASCIA GIRDER SUPPORT CHANNELS, CURB STRUT, CURB PLATES, CURB STRINGER, RAILING POSTS AND RAILING, BARRIER CURB POSTS AND BARRIER CURB AND LIGHT SUPPORTS.

THE WORK CAN BE ACCOMPLISHED BY UNBOLTING THE HAND RAILS FROM THE RAILING POSTS AND THE BARRIER CURB RAIL FROM THE BARRIER CURB POSTS. AFTERWHICH THESE ELEMENTS CAN BE REMOVED AND STORED FOR REUSE. THE REMAINING FASCIA GIRDER-CURB STRINGER ASSEMBLY CAN THEN BE UNBOLTED FROM THE SUPPORTING FLOORBEAMS AND REMOVED AS A UNIT FOR REUSE ON THE WIDENED STRUCTURE. THIS METHOD OF ACCOMPLISHING THE WORK IS FURNISHED AS A GUIDE ONLY. THE ACTUAL METHOD OF REMOVAL, STORAGE AND RESETTING SHALL BE BY METHODS OF THE CONTRACTOR'S SELECTION AND AS APPROVED BY THE ENGINEER. ANY COSTS RESULTING FROM DAMAGE TO THE FASCIA GIRDER-CURB STRINGER ASSEMBLY DURING REMOVAL, STORAGE OR RESETTING OPERATIONS IS THE RESPONSIBILITY OF THE CONTRACTOR AND NO ADDITIONAL PAYMENT WILL BE AWARDED BY THE STATE.

REMOVAL, STORAGE, ADJUSTING, ALIGNING AND RESETTING THE FASCIA GIRDER-CURB STRINGER ASSEMBLY WILL BE MEASURED IN PLACE ALONG THE REALIGNED FASCIA GIRDER AND SHALL BE PAID FOR AT THE CONTRACT PRICE BID FOR ITEM SPECIAL, FASCIA GIRDER-CURB STRINGER ASSEMBLY, AS PER PLANS. THIS PRICE SHALL BE PAYMENT IN FULL FOR ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THE WORK.

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TELEPHONE: (312) 530-6300

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OPERATIONS AND EQUIPMENT TO THE TRACKS.

NOTE: Work described in Notes 18, 19, 20, 21 and 22 shall be in accordance with Item 513 of the Construction and Material Specifications. Work described in Note 23, Item 517.

23. RAILING, AS PER PLANS

THE EXISTING ALUMINUM RAILING ON BRIDGE No. CUY-90-1540 SHALL BE REMOVED, STORED AND RESET ON THE WIDENED STRUCTURE AS DETAILED ON THE PLANS. THE WORK GENERALLY INCLUDES REMOVING THE NUTS FROM THE EXISTING ANCHOR BOLTS AT THE RAILING POSTS; REMOVAL AND STORAGE OF THE ALUMINUM RAILING AND POSTS, ADJUSTING, ALIGNING AND RESETTING THE RAILING AND POSTS ATOP THE NEW PARAPET AND ATTACHING THE RAILING POSTS TO THE NEW PARAPET.

RAILING WILL BE MEASURED IN PLACE ATOP THE NEW PARAPET BY LENGTH IN LINEAR FEET AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM SPECIAL, RAILINGS, AS PER PLAN. THIS PRICE SHALL BE PAYMENT IN FULL FOR FURNISHING ALL MATERIALS, EQUIPMENT AND LABOR TO COMPLETE THE WORK AS SPECIFIED.

24. SHOP DRAWINGS

AFTER ALL STEEL FABRICATION IS COMPLETED, THE FABRICATOR SHALL FURNISH A 35 MILLIMETER MICROFILM COPY OF EACH SHOP DRAWING MOUNTED ON A 3-1/4" x 7-3/8" APERTURE CARD. THE CARD SHALL BE IMPRINTED WITH THE BRIDGE AND PROJECT NUMBER, FABRICATOR'S NAME, DRAWING NUMBER AND DETAILS SHOWN ON THE DRAWING.

25. LATEX MODIFIED CONCRETE OVERLAY, 1¼" THICK

THE NEWLY CONSTRUCTED 9" CONCRETE DECK OF BR. NO. CUY-90-1540 SHALL BE OVERLAID WITH A 1-1/4" LATEX MODIFIED CONCRETE WEARING SURFACE. THE LATEX MODIFIED CONCRETE MATERIAL SHALL BE AS SPECIFIED IN ITEM 845 INCLUDING PLACING FINISHING, AND CURING. NOT MORE THAN 24 HOURS PRIOR TO PLACING THE OVERLAY, ALL SURFACES TO WHICH THE OVERLAY IS TO BOND, INCLUDING THE WORK FACE OF A PREVIOUSLY PLACED OVERLAY, AND THE FACES OF CURBS, BARRIERS, ETC. UP TO A HEIGHT OF AT LEAST 1 INCH ABOVE THE PROPOSED OVERLAY SURFACE, SHALL BE CLEANED BY ABRASIVE BLASTING OR AN APPROVED METHOD OF WATERBLASTING. THESE SURFACES SHALL BE MADE FREE OF SPALLS, LAITANCE, AND ALL TRACES OF FOREIGN MATERIAL. IF NECESSARY, DETERGENT CLEANING SHALL PRECEDE BLAST CLEANING TO INSURE THE REMOVAL OF CONTAMINANTS DETRIMENTAL TO ACHIEVING AN ADEQUATE BOND. THE DECK SURFACE WHICH WILL CONTACT THE OVERLAY SHALL BE CLEANED WITH AN AIR BLAST, WETTED AND KEPT WET BUT FREE OF STANDING WATER FOR AT LEAST ONE HOUR PRIOR TO PLACING THE OVERLAY. A THIN COATING OF THE OVERLAY MIXTURE SHALL BE THOROUGHLY SCRUBBED ONTO THIS DAMP SURFACE TO BOND THE OVERLAY. COARSER PARTICLES OF THE MIXTURE WHICH CANNOT BE SCRUBBED INTO INTIMATE CONTACT WITH THE SURFACE OF THE DECK SHALL BE REMOVED AND DISPOSED OF IN A MANNER APPROVED BY THE ENGINEER. THE BONDING GROUT SHALL BE APPLIED ONLY FOR A SHORT DISTANCE IN ADVANCE OF THE PLACEMENT OF THE OVERLAY AND IT SHALL NOT BE ALLOWED TO DRY PRIOR TO BEING COVERED WITH OVERLAY.

LATEX MODIFIED CONCRETE OVERLAY WILL BE MEASURED BY AREA, IN SQUARE YARDS, BASED ON PLAN DIMENSIONS AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM 845 LATEX MODIFIED CONCRETE OVERLAY, 1-1/4" THICK

THIS PRICE SHALL BE PAYMENT IN FULL FOR FURNISHING ALL MATERIALS, EQUIPMENT AND LABOR TO COMPLETE THE WORK AS SPECIFIED.

DOWEL HOLES, AS PER PLAN

DRILLING OF HOLES INTO CONCRETE AND THE FURNISHING AND PLACING GROUT INTO THE HOLES SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 853 AND SUPPLEMENTAL SPECIFICATION 956 (SEE SECTION N-N, SHEET 33/89)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

GENERAL NOTES

RAMP W-I UPGRADING

BR. NO. CUY- 90-1524, 90-1540, 90-1547, 90-1599 — STA.3+87.63, STA.54+65.78

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CUY-90-15.31

STRUCTURE NOTES

STRUCTURAL STEEL COATING

A. GENERAL PROVISIONS
THE CONTRACTOR'S ATTENTION IS CALLED TO ALL OF SECTION 100 OF THE CONSTRUCTION MATERIAL SPECIFICATIONS OF THE OHIO DEPARTMENT OF TRANSPORTATION AND SPECIFICALLY TO THE ITEMS LISTED BELOW AS PROVIDED FOR IN THIS SECTION.

B. COOPERATION OF CONTRACTOR
THE CONTRACTOR SHALL LEAVE HIS LADDERS, PLATFORMS OR SCAFFOLD IN PLACE FOR A SUFFICIENT LENGTH OF TIME AND IN SUCH A MANNER TO PERMIT THE ENGINEER OR INSPECTOR TO SAFELY EXAMINE THE WORK PERFORMED AND TAKE DRY FILM THICKNESS MEASUREMENTS.

C. PRIOR INSPECTION OF WORK
PROSPECTIVE BIDDERS ARE REQUIRED TO MAKE AN INSPECTION OF THE BRIDGE IN THE FIELD AND TO REVIEW THE PLANS AND SPECIFICATIONS BEFORE SUBMITTING BIDS. SEE SEC. 102.05 OF THE "CONSTRUCTION AND MATERIALS SPECIFICATIONS", DATED JANUARY 1, 1983. EXISTING STRUCTURE PLANS ARE AVAILABLE FOR INSPECTION AT THE DISTRICT 12 OFFICE IN GARFIELD HEIGHTS, OHIO.

D. PROTECTION OF PERSONS AND PROPERTY
THE CONTRACTOR SHALL COLLECT, REMOVE AND DISPOSE OF ALL BUCKETS, RAGS, OR OTHER DISCARDED MATERIALS AND HE SHALL LEAVE THE JOB SITE IN A CLEAN CONDITION.

THE CONTRACTOR SHALL PROTECT ALL PORTIONS OF THE STRUCTURE WHICH ARE NOT TO BE PAINTED AGAINST DAMAGE OR DISFIGUREMENT BY SPLASHES, SPATTERS, AND SMIRCHES OF PAINT.

WHEN OR WHERE ANY DIRECT OR INDIRECT DAMAGE OR INJURY IS DONE TO PUBLIC OR PRIVATE PROPERTY BY OR ON ACCOUNT OF ANY ACT, OMISSION, NEGLECT, OR MIDCONDUCT IN THE EXECUTION OF THE WORK, OR IN CONSEQUENCE OF THE NONEXECUTION THEREOF BY THE CONTRACTOR, HE SHALL RESTORE, AT HIS OWN EXPENSE, SUCH PROPERTY TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE, BY REPAIRING, REBUILDING OR OTHERWISE RESTORING AS MAY BE DIRECTED, OR HE SHALL MAKE GOOD SUCH DAMAGE OR INJURY IN AN ACCEPTABLE MANNER.

E. POLLUTION CONTROL
THE CONTRACTOR SHALL TAKE ALL THE 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.

F. WORK IN THE VICINITY OF RAILROADS
THE CONTRACTOR SHALL COOPERATE AT ALL TIMES WITH THE LOCAL 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 LOCAL OFFICIALS OF 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 AS NECESSARY BECAUSE OF ANY OF THE CONTRACTORS OPERATIONS OVER OR ADJACENT TO THE TRACKS.

NO SCAFFOLD, PLANKS OR OTHER EQUIPMENT SHALL BE SUSPENDED OR ERECTED ABOVE OR WITHIN 10 FEET 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.

G. AREAS TO BE COATED
ALL NEW AND EXISTING STRUCTURAL STEEL COMPONENTS, BOTH THE EXPOSED SURFACES AND ACCESSIBLE INTERIOR SURFACES, EXCEPT THOSE IN THE FOLLOWING LIST, SHALL BE PREPARED AND COATED IN ACCORDANCE WITH THESE PLANS AND NOTES:

1. GALVANIZED STEEL BARRIER CURB.
2. GALVANIZED STEEL BRIDGE RAILING
3. TOP SURFACES OF MILD STEEL CURBS AND SIDEWALKS.
4. ALUMINUM BRIDGE RAILINGS.

THE INTENT IS TO PAINT THE ABOVE SPECIFIED STEEL OF THE ENTIRE BRIDGE STRUCTURES FROM STA. 3+87.63 (SLM. 15.24) TO STA. 54+65.78 (SLM. 16.20) WHICH INCLUDES THE INNERBELT EXTENSION, THE WEST APPROACH VIADUCT, THE CENTRAL VIADUCT TRUSS AND THE EAST APPROACH VIADUCT. (I.E. BRIDGES NOS. 1524, 1540, 1547 AND 1599)

ALL NEW STRUCTURAL STEEL SHALL BE SHOP COATED IN ACCORDANCE WITH ITEM 514.04 EXCEPT THAT THE PRIME COAT SHALL BE THE SAME AS THAT SPECIFIED FOR ITEM SPECIAL - FIELD COATING OF EXISTING STEEL (ORGANIC ZINC PRIME COAT). SHOP COATING OF NEW STRUCTURAL STEEL IS INCLUDED UNDER ITEM 513 - STRUCTURAL STEEL FOR PAYMENT.

FURTHER, ALL NEW STRUCTURAL STEEL SHALL BE FIELD PAINTED ACCORDING TO ITEM 514.05 EXCEPT THAT THE FIELD COATS SHALL CONFORM TO AND BE PAID FOR UNDER ITEM SPECIAL - FIELD COATING OF EXISTING STEEL (VINYL INTERMEDIATE TIE COAT) AND ITEM SPECIAL - FIELD COATING OF EXISTING STEEL (VINYL FINISH COAT).
ANY RUSTED OR CORRODED EXPOSED SURFACES OF THE PERMANENT GALVANIZED UNDERDECK FORMS ON THE TRUSS SHALL BE PREPARED AND COATED WITH ORGANIC ZINC PRIME, ~~MEETING THE REQUIREMENTS OF 708.17.~~ vinyl intermediate tie coat and vinyl finish coat. SURFACE PREPARATION SHALL CONFORM TO AND BE PAID FOR UNDER ITEM SPECIAL - SURFACE PREPARATION OF EXISTING STEEL (100% Sa 2½). COST OF ALL MATERIALS, LABOR AND EQUIPMENT INVOLVING ~~COATING~~ APPLICATION ~~SHALL~~ of coatings shall BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL - FIELD COATING OF EXISTING STEEL FORMS. ~~(PRIME COAT ONLY)~~

H. COATING SYSTEM
THE COATING OF THE EXISTING STRUCTURAL STEEL SHALL CONSIST OF THE SURFACE PREPARATION AND THE APPLICATION OF THREE COATINGS AS FOLLOWS: AN ORGANIC ZINC PRIME COAT, A VINYL INTERMEDIATE TIE COAT, AND A VINYL FINISH COAT. THE MATERIAL SHALL BE ONE OF THOSE SYSTEMS NAMED HEREIN OR AN APPROVED ALTERNATE.

1. KOPPERS COMPANY INC.
   ORGANIC MATERIALS GROUP
   ELMHURST, ILLINOIS 60126
   TELEPHONE: (312) 530-6300

2. INTERNATIONAL PAINT COMPANY, INC.
   MORRIS & ELMWOOD AVENUES (P.O. BOX 386)
   UNION, NEW JERSEY 07083
   TELEPHONE: (201) 685-1300

ALL THREE COATS SHALL BE MANUFACTURED BY THE SAME COMPANY IN ORDER TO INSURE COMPATIBILITY OF THE COATS.

A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT FOR AT LEAST THE FIRST DAY THAT EACH COATING IS APPLIED.

COLOR OF THE FINISH COAT SHALL BE LIGHT GREY. THE FIELD DIFFERENTIATION OF COATS SHALL BE FACILITATED BY THE PRIME COAT COLOR OBVIOUSLY DIFFERING FROM THE NEAR-WHITE STEEL SUBSTRATE AND BY THE INTERMEDIATE TIE COAT COLOR OBVIOUSLY DIFFERING FROM BOTH THE PRIME COAT COLOR AND THE LIGHT GREY FINISH COAT. TINTING OF COATS SHALL NOT BE ACCEPTABLE DIFFERENTIATION. THE ENGINEER SHALL APPROVE THE COLOR OF THE PRIME, INTERMEDIATE, AND FINISH COATS PRIOR TO USE.

I. ITEM SPECIAL - SURFACE PREPARATION OF EXISTING STEEL (100% Sa 2½)

ALL HEAVY RUST AND SCALE SHALL BE REMOVED FROM SURFACES TO BE PAINTED, BY CHIPPING AND SCRAPING. PRIOR TO SANDBLASTING, SOLVENT CLEANING SHALL BE USED TO REMOVE OIL AND GREASE, AS DIRECTED BY THE ENGINEER.

ALL SURFACES TO BE PAINTED SHALL BE SANDBLAST CLEANED TO GRADE Sa 2½ (NEAR WHITE). LOOSE SAND AND OTHER CONTAMINANTS SHALL THEN BE AIR BLOWN FROM THESE SURFACES. NO MORE STEEL SHALL BE PREPARED THAN CAN BE COATED THAT SAME DAY. ALL PREPARED AREAS SHALL IN ALL CASES BE COATED WITH THE ORGANIC ZINC PRIME COAT ON THE SAME DAY THAT THE SURFACE IS PREPARED.

ALL PREPARED AREAS SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE APPLICATION OF THE COATING. DUE TO THE NATURE OF THE COATING, PARTICULAR ATTENTION WILL BE DIRECTED TOWARD THE SURFACE PREPARATION TO INSURE THAT A NEAR-WHITE SURFACE IS ATTAINED.

THE COST OF ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY TO ACCOMPLISH THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THIS ITEM.

Rev. 8-3-83 S.M.K.

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 12 LOCATION & DESIGN

GENERAL NOTES
RAMP W-1 UPGRADING
PAINTING SPECIFICATIONS

CUYAHOGA COUNTY OHIO

DESIGNED	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	SHEET 6N / 30

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.31

STRUCTURE NOTES

J. ITEM SPECIAL - FIELD COATING OF EXISTING STEEL (ORGANIC ZINC PRIME COAT)
SECTION 514.03 OF THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL APPLY TO THIS ITEM EXCEPT THAT THIS COATING MUST, IN ALL CASES, BE APPLIED ON THE SAME DAY THAT THE STEEL SURFACES ARE CLEANED AND PREPARED TO RECEIVE THE PRIME COAT.

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE COAT OF:

1) KOPPERS ORGANIC ZINC
OR 2) INTERNATIONAL'S MATCOTE BRUSHWELD 1-284 ORGANIC ZINC
OR 3) APPROVED ALTERNATE

THE TOTAL DRY FILM THICKNESS OF THE PRIME COAT SHALL NOT BE LESS THAN THREE (3.0) MILS. IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED MIL THICKNESS THAT COST SHALL BE BORNE BY THE CONTRACTOR. SURFACE PREPARATION SHALL BE AS PREVIOUSLY NOTED.

THE COST OF ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY TO ACCOMPLISH THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THIS ITEM.

K. ITEM SPECIAL - FIELD COATING OF EXISTING STEEL (VINYL INTERMEDIATE TIE COAT)
SECTION 514.03 OF THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL APPLY TO THIS ITEM.

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE COAT OF:

1) KOPPERS 25 PRIMER
OR 2) INTERNATIONAL'S INTERVINUX VXL000
OR 3) APPROVED ALTERNATE

THE TOTAL DRY FILM THICKNESS OF THE INTERMEDIATE TIE COAT SHALL NOT BE LESS THAN TWO (2.0) MILS. IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED MIL THICKNESS THAT COST SHALL BE BORNE BY THE CONTRACTOR.

THE APPLICATION OF THE INTERMEDIATE COAT SHALL NOT BEGIN UNTIL AT LEAST 24 HOURS HAVE ELAPSED AFTER PRIME COAT APPLICATION.

THE COST OF ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY TO ACCOMPLISH THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THIS ITEM.

L. ITEM SPECIAL - FIELD COATING OF EXISTING STEEL (VINYL FINISH COAT)
SECTION 514.03 OF THE OHIO DEPARTMENT OF TRANSPORATION CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL APPLY TO THIS ITEM.

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE COAT OF:

1) KOPPERS 401 VINYL
OR 2) INTERNATIONAL'S INTERVINUX VM SERIES HB FINISH
OR 3) APPROVED ALTERNATE

THE TOTAL DRY FILM THICKNESS OF THE FINISH COAT SHALL NOT BE LESS THAN 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.

THE APPLICATION OF THE FINISH COAT SHALL NOT BEGIN UNTIL AT LEAST 24 HOURS HAVE ELAPSED AFTER THE INTERMEDIATE COAT APPLICATION.

THE COST OF ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY TO ACCOMPLISH THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THIS ITEM.

M. THICKNESS OF COATS
THE TOTAL DRY FILM THICKNESS OF THE ORGANIC ZINC PRIME COAT SHALL NOT BE LESS THAN THREE (3.0) MILS WHEN AVERAGED FROM MEASUREMENTS TAKEN FROM AT NOT LESS THAN FIVE LOCATIONS. THE TOTAL DRY FILM THICKNESS OF THE VINYL INTERMEDIATE TIE COAT SHALL NOT BE LESS THAN TWO (2.0) MILS WHEN AVERAGED FROM MEASUREMENTS TAKEN FROM AT NOT LESS THAN FIVE LOCATIONS. THE TOTAL DRY FILM THICKNESS OF THE VINYL FINISH COAT SHALL NOT BE LESS THAN SIX (6.0) MILS WHEN AVERAGED FROM MEASUREMENTS TAKEN FROM AT NOT LESS THAN FIVE LOCATIONS.

DRY FILM THICKNESS READINGS SHALL BE MADE AFTER EACH COAT. A TOOKE GAUGE SHALL BE USED TO MAKE THE DRY FILM THICKNESS READINGS. TOOKE GAUGE READINGS SHALL BE MADE BY THE ENGINEER. MEASUREMENTS SHALL BE TAKEN AT ENOUGH VARIED LOCATIONS SO AS TO BE REPRESENTATIVE OF THE DRY FILM THICKNESS OF EACH COAT OVER THE ENTIRE BRIDGE.

N. DEDUCTION FOR DEFICIENCY
WHEN THE AVERAGE DRY FILM THICKNESS OF THE ORGANIC ZINC PRIME COAT IS LESS THAN THE SPECIFIED THREE (3.0) MILS, BUT AT LEAST TWO (2.0) MILS THE CONTRACT PRICE FOR THAT ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PER CENT DEFICIENCY OF COATING UP TO 33 1/3%. IF THE DEFICIENCY OF COATING IS MORE THAN 33 1/3% (IE. THE AVERAGE DRY FILM THICKNESS IS LESS THAN 2.0 MILS.) THE WORK FOR THAT ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTACTOR, INCLUDING ALL LABOR, EQUIPMENT, AND MATERIAL.

WHEN THE AVERAGE DRY FILM THICKNESS OF THE VINYL INTERMEDIATE TIE COAT IS LESS THAN THE SPECIFIED TWO (2.0) MILS BUT AT LEAST ONE (1.0) MIL THE CONTRACT PRICE FOR THAT ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 50%. IF THE DEFICIENCY OF COATING IS MORE THAN 50% (IE. THE AVERAGE DRY FILM THICKNESS IS LESS THAN 1.0 MIL.) THE WORK FOR THAT ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT, AND MATERIAL.

WHEN THE AVERAGE DRY FILM THICKNESS OF THE VINYL FINISH COAT IS LESS THAN THE SPECIFIED SIX (6.0) MILS BUT AT LEAST FIVE (5.0) MILS, THE CONTRACT PRICE FOR THAT ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF THE COATING UP TO 16 2/3 % (IE. THE AVERAGE DRY FILM THICKNESS IS LESS THAN 5.0 MILS) THE WORK FOR THAT ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT, AND MATERIAL.

O. DATE PAINTED AND PAINT CODE
THE COMPLETION DATE OF THE FINISH COAT OF PAINT (MONTH AND YEAR) SHALL BE STENCILED ON THE STRUCTURE IN A CONTRASTING COLOR. THIS DATE SHALL BE APPLIED AT FOUR LOCATIONS ON THE BRIDGE. LOCATIONS SHALL BE NEAR THE END OF EACH OUTSIDE BEAM, ON THE OUTSIDE WEB AT EACH CORNER OF THE BRIDGE AS DIRECTED BY THE ENGINEER. THE LETTERS "ZVV" SHALL ALSO BE STENCILED ON THE STRUCTURE WITH DATE. PAYMENT SHALL BE INCLUDED IN THE PRICE BID FOR - ITEM SPECIAL - COATING EXISTING STEEL (VINYL FINISH COAT).

P. METHOD OF APPLICATION
ALL COATS SHALL BE APPLIED BY AIRLESS SPRAY METHOD. THE MANUFACTURER CAN SUPPLY SPECIFIC INFORMATION CONCERNING RECOMMENDED AIRLESS SPRAY EQUIPMENT. GENERALLY, THE AIRLESS SPRAY GUN SHALL BE HELD 8" - 10" FROM THE SURFACE AND AT A RIGHT ANGLE TO THE SURFACE. EACH SUCCESSIVE PASS OF THE GUN SHALL OVERLAP THE PREVIOUS PASS BY 50%. MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS ARE AVAILABLE THROUGH THE MANUFACTURER.

Q. MAINTAINING TRAFFIC
TO PREVENT DAMAGE TO VEHICLES TRAVELING UNDER SPANS WHICH ARE BEING PAINTED, THE CONTRACTOR SHALL INSTALL AND MAINTAIN SUITABLE SHIELDS BETWEEN HIS OPERATIONS AND VEHICLES USING OPEN TRAFFIC LANES. THE SHIELDS SHALL BE OF TYPE AND CONSTRUCTION, APPROVED BY THE ENGINEER, THAT WILL PREVENT PAINT FROM DROPPING ONTO OR BEING BLOWN INTO PAVEMENT LANES OPEN TO TRAFFIC. THEY SHALL BE SUITABLY ANCHORED AND REINFORCED TO PREVENT INTERFERING WITH NORMAL TRAFFIC OPERATIONS IN THE OPEN LANES. PAYMENT FOR THE SHIELDS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC. (SEE ROADWAY PLAN.)

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 12 LOCATION & DESIGN

GENERAL NOTES
RAMP W-1 UPGRADING
PAINTING SPECIFICATIONS

CUYAHOGA COUNTY OHIO

DESIGNED	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	SHEET GN/3B

FHWA REGION	STATE	PROJECT	
5	OHIO		

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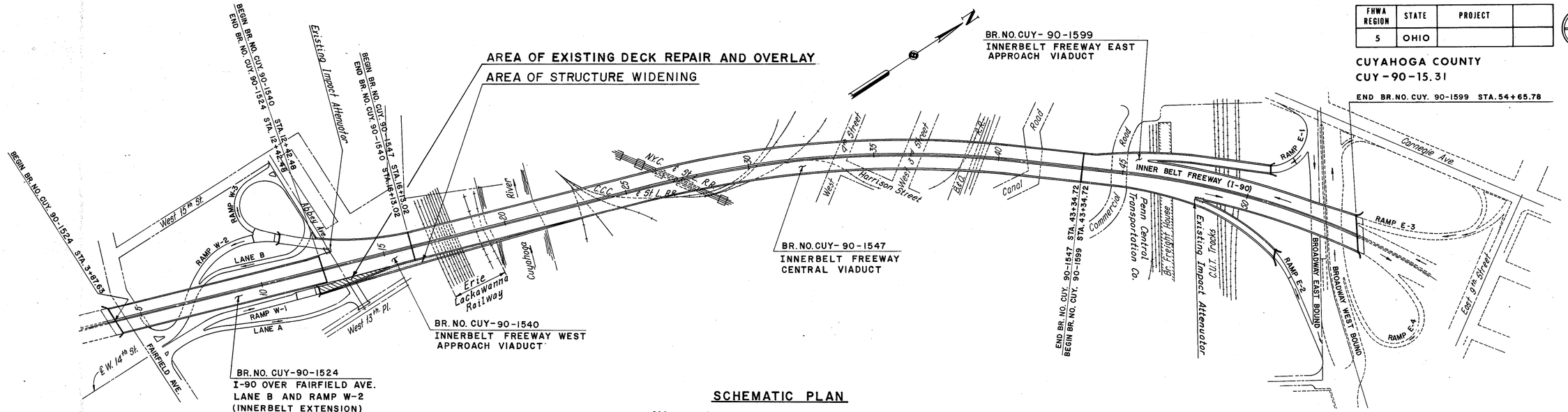
CUYAHOGA COUNTY
CUY-90-15.31

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



SCHEMATIC PLAN

200 0 200 400 600 800

SCALE IN FEET

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

TYPE: Units 1W and 1E - Continuous welded steel girder with reinforced concrete deck and substructure.
Units 2W, 3W and 2E - Continuous steel beam with reinforced concrete deck and substructure.
SPANS: Unit 1W 64'-0", 70'-6", 65'-6", 8'-0" Cantilever.
Unit 2W 63'-0", 90'-0", 79'-6", 64'-0", 6'-0" Cantilever.
Unit 3W 66'-0", 3 @ 72'-0", 61'-11¾"
Unit 1E 64'-0", 102'-0", 103'-0", 90'-0", 79'-6", 64'-0", 6'-0" Cantilever.
Unit 2E 66'-0", 3 @ 72'-0", 61'-11¾"
ROADWAY: 2 @ 53'-9" curb to curb with barrier safety curbs and concrete barrier median.
LOAD FREQUENCY: CF2000(57) adequate for A.A.S.H.T.O. alternate loading.
SKEW: Varies
WEARING SURFACE: 2" Dense Concrete.
APPROACH SLAB: AS-1-54 (25' Long)
ALIGNMENT: Tangent

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

TYPE: Continuous steel beams and girders with concrete deck and substructure.
SPAN: Varies (see General Plan)
ROADWAY: 2 @ 52'-6" with barrier safety curbs and concrete barrier median.
*LOADING: CF 2000
SKEW: Varies
WEARING SURFACE: 2½" Asphalt Concrete
APPROACH SLABS: AS-1-54 (25' Long)
ALIGNMENT: Tangent

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

TYPE: Steel deck trusses with reinforced concrete deck and substructure.
SPANS: Varies (see General Plans)
ROADWAYS: 2 @ 52'-9" curb to curb with barrier safety curbs and concrete barrier median.
*LOADING: CF 2000, adequate for A.A.S.H.T.O. alternate loading.
SKEW: Varies
WEARING SURFACE: 2½" Asphalt Concrete
ALIGNMENT: Tangent, 1°30' Curve Right, Tangent.

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

TYPE: Continuous steel beams and girders with concrete deck and substructure.
SPAN: Varies
ROADWAY: 2 @ 52'-6" with barrier safety curbs and concrete barrier median.
LOADING: CF 2000, adequate for A.A.S.H.T.O. alternate loading.
SKEW: Varies
WEARING SURFACE: 2½" Dense Concrete.
APPROACH SLAB: AS-1-54 (25' Long)
ALIGNMENT: 2° Curve Right

* *Structure widening is designed for HS20-44 and the Alternate Military Loading. Fatigue classification is in accordance with Case I.*

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

SCHEMATIC PLAN

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

STA. 3+87.63
STA. 54+65.78

CUYAHOGA COUNTY OHIO

DRAWN CKB	TRACED C.P.	CHECKED WEB	REVIEWED	REVISED
DATE 6-17-74	DATE 7-20-74	DATE 8-29-74	DATE	SHEET W 1

L-D

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.31

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	BR. NO. CUY-90-1524	BR. NO. CUY-90-1540	BR. NO. CUY-90-1547	BR. NO. CUY-90-1599		PARTICIPATION		
202	Lump Sum	Lump Sum	Portions of Structures Removed	—	Lump Sum	Lump Sum	—				
404	81	Cu. Yd.	Asphalt Concrete (AC-20)	—	—	81 *	—				
503	Lump Sum	Lump Sum	Cofferdams, Cribs and Sheeting	—	Lump Sum	—	—				
503	335	Cu. Yd.	Unclassified Excavation	—	335	—	—				
505	Lump Sum	Lump Sum	Test Pile	—	Lump Sum	—	—				
506	Lump Sum	Lump Sum	Pile Test Load	—	Lump Sum	—	—				
507	1,560	Lin. Ft.	Steel Piles, HP 12x53	—	1,560	—	—				
507	550	Lin. Ft.	14" Cast-In-Place Reinforced Concrete Piles	—	550	—	—				
507	130	Lin. Ft.	Prebored Holes	—	130	—	—				
509	166,892	Lb.	Reinforcing Steel	—	69,627	97,265	—				
511	103	Cu. Yd.	Class C Concrete, Footings	—	103	—	—				
511	295	Cu. Yd.	Class C Concrete, Piers, Above Footings	—	295	—	—				
511	381	Cu. Yd.	Class S Concrete, Superstructure	—	143	238	—				
513	688,200	Lb.	Structural Steel (ASTM A36) (AISC Category III)	—	138,700	549,500	—				
513	30,600	Lb.	Structural Steel (ASTM A588) (AISC Category III)	—	—	30,600	—				
513	1,900	Lb.	Structural Steel (ASTM 668, Class N) (AISC Category III)	—	—	1,900	—				
513	7,400	Lb.	Structural Steel (ASTM A27, Grade 70-36) (AISC Category III)	—	—	7,400	—				
516	135	Sq. Ft.	½" Preformed Expansion Joint Filler	—	135	—	—				
518	1	Each	Scupper, As Per Plan	—	1	—	—				
601	182	Sq. Yd.	Concrete Slope Protection (601.06)	—	182	—	—				
625			For Lighting Quantities, See Lighting Plans								
Special ~~514~~	Lump Sum	Lump Sum	Surface Preparation of Existing Steel (100% Sa 2½)	Lump Sum	Lump Sum	Lump Sum	Lump Sum				
Special ~~514~~	Lump Sum	Lump Sum	Field Coating of Existing Steel (Organic Zinc Prime Coat)	Lump Sum	Lump Sum	Lump Sum	Lump Sum				
Special ~~514~~	Lump Sum	Lump Sum	Field Coating of Existing Steel (Vinyl Intermediate Tie Coat)	Lump Sum	Lump Sum	Lump Sum	Lump Sum				
Special ~~514~~	Lump Sum	Lump Sum	Field Coating of Existing Steel (Vinyl Finish Coat)	Lump Sum	Lump Sum	Lump Sum	Lump Sum				
838	6	Hour	Dynamic Pile Tests	—	6	—	—				
Special ~~514~~	Lump Sum	Lump Sum	≠Field Coating of Existing Steel Forms ~~(Prime Coat Only)~~			Lump Sum					
845	2,108	Sq. Yd.	Latex Modified Concrete Overlay (1½" Thick)	—	945	1163 *	—				
845	72	Cu. Yd.	Latex Modified Concrete Overlay (Variable Thickness)	—	40	32 *	—				
845	2	Cu. Yd.	Full Depth Repair	—	2	—	—				
Special	352	Lin. Ft.	Steel Barrier Curb, As Per Plan	—	352	—	—				
Special	247	Lin. Ft.	Railings, As Per Plan	—	247	—	—				
Special	700	Lin. Ft.	Fascia Girder - Curb Stringer Assembly, As Per Plan	—	—	700	—				
Special	19	Each	Self-Lubricating Bronze Bearing Plates (At Contraction Joints), As Per Plan	—	—	19	—				
Special	44	Each	Self-Lubricating Bronze Bearing Plates (Except at Contraction Joints), As Per Plan	—	—	44	—				
Special	90	Each	Self-Lubricating Cast Iron Bushings (6"ϕ Pin), As Per Plan	—	—	90	—				
Special	4	Each	Self-Lubricating Cast Iron Bushings (9"ϕ Pin), As Per Plan	—	—	4	—				
Special	1,163	Sq. Yd.	Membrane Waterproofing, (See Proposal Note)	—	—	1,163 *	—				
Special	Lump Sum	Lump Sum	≠Cleanout of Bridge Drainage System	Lump Sum	Lump Sum	Lump Sum	Lump Sum				
Special	Lump Sum	Lump Sum	≠Removal of Dirt and Debris From Bridge Seats	Lump Sum	Lump Sum	Lump Sum	Lump Sum				

≠ No Federal Participation

Note:
Removal of Portions of Structures shall include the elements as indicated in the Plans or General Notes, and includes the following approximate quantity of reinforced concrete, asphalt concrete and structural steel:

TABLE 1

BR. NO.	SUPERSTRUCTURE CONCRETE	SUBSTRUCTURE CONCRETE	ASPHALT CONCRETE	STRUCTURAL STEEL
CUY-90-1540	83 Cu. Yd.	24 Cu. Yd.	568 Sq. Yd.	500 Lb.
CUY-90-1547	113 Cu. Yd.	———	566 Sq. Yd.	44,000 Lb.

Note:
The payment quantity for Item 513, Structural Steel, shall be the quantity of new structural steel incorporated into the completed structure. The payment quantity shall not include existing structural steel which is to be removed and reused in the completed structure.

Note:

* CONTINGENCY QUANTITY - Subject to coordination with CUY-90-15.40 project.

Note:

All structural steel shall be ASTM A36, excepted as noted below:

ASTM A588 - Hanger plates, web plates at hangers, pin connection plates, pin plates at pin connections, floor beam extension connection plates, and the strut and gusset plates at Floor Beam 10. All A588 steel is identified in the plans.

ASTM A668, class N- Pins, as identified in the plans.

ASTM A27, Grade 70-36 - Expansion joint castings, as indentified in the plans.

Rev. 8-3-83 S.M.K.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

ESTIMATED QUANTITIES

RAMP W-I UPGRADING

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

STA. 3+87.63
STA. 54+65.78

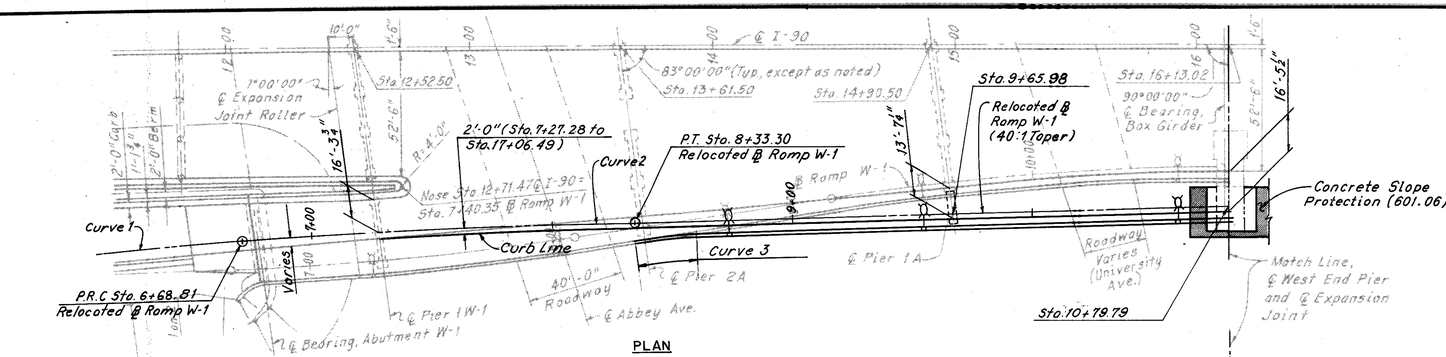
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B. DATE 3-10-78	C.E.P. DATE 3-15-78	R.A.S. DATE 5-11-78	DATE	SHEET W | 2

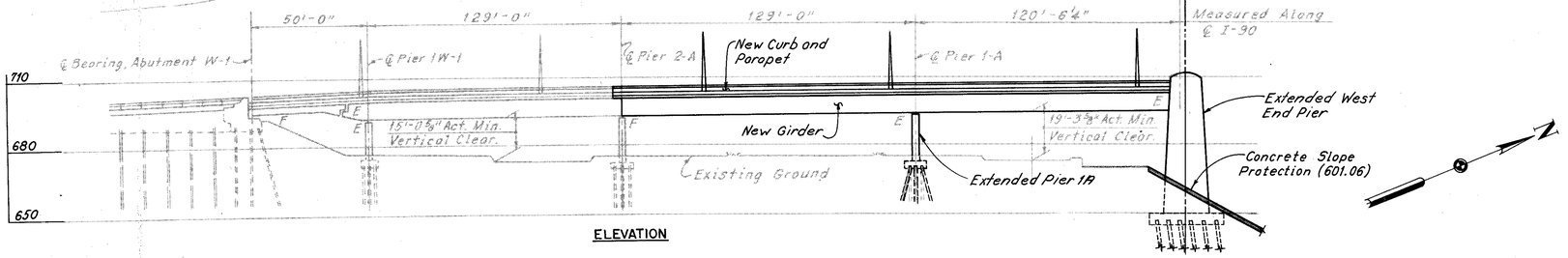
FHWA REGION	STATE	PROJECT	
5	OHIO		

25
89

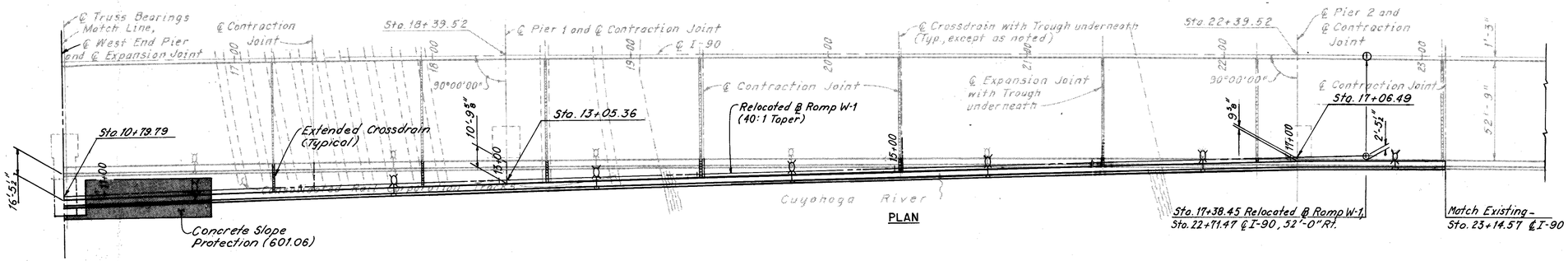
CUYAHOGA COUNTY
CUY-90-15.31



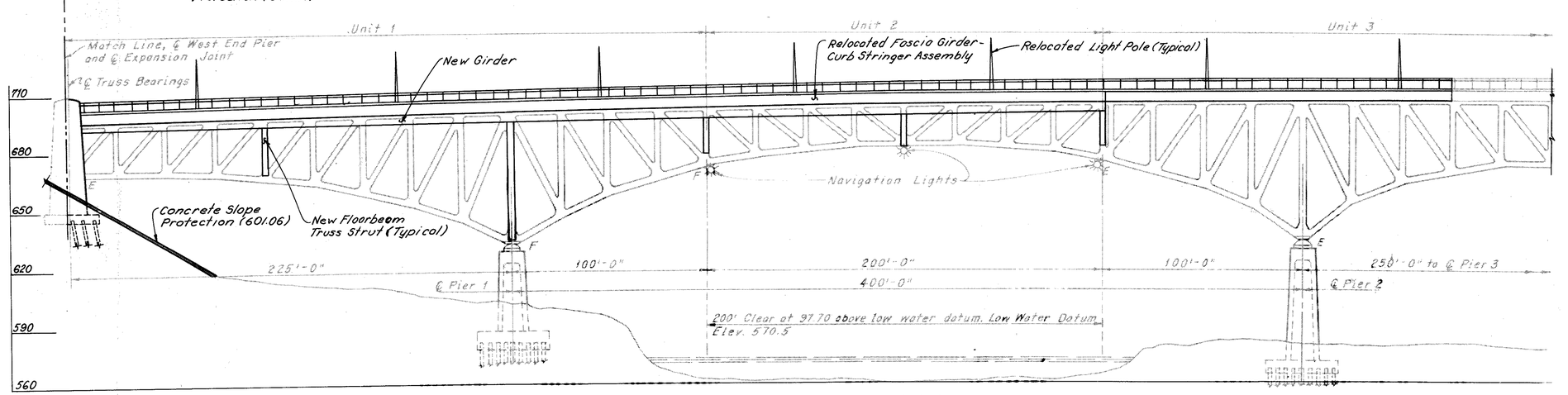
PLAN



ELEVATION



PLAN



ELEVATION
(Railroad Tracks Not Shown)

CURVE DATA
RELOCATED ℄ RAMP W-1

CURVE 1	CURVE 2
Δ = 3°18'38"	Δ = 2°52'42"
D = 2°00'00"	D = 1°45'00"
R = 2864.79'	R = 3274.05'
T = 82.79'	T = 82.26'
L = 165.53'	L = 164.48'
E = 1.20'	E = 1.03'

CURVE DATA
EAST FACE OF PARAPET

CURVE 3
Δ = 7°04" 05"
D = 28°07' 47"
R = 203.68'
T = 12.58'
L = 25.13'
E = 0.39'

FOUNDATION DATA:

The Pier 1A Extension is founded on 14"ϕ C.I.P. reinforced concrete piles with a design load of 50 tons and an estimated average pay length of 60 feet.

The West End Pier Extension is founded on HP 12 x 53 bearing piles with a design load of 65 tons and an estimated average pay length of 60 feet.

Note:
Subdued linework indicates existing conditions.

50 25 0 25 50
SCALE IN FEET

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS, CLEVELAND
HNTB

GENERAL PLAN AND ELEVATION

RAMP W-1 UPGRADING
BR. NO. CUY - 90-1524
90-1540
90-1547
90-1599

STA. 3+87.63
STA. 54+65.78

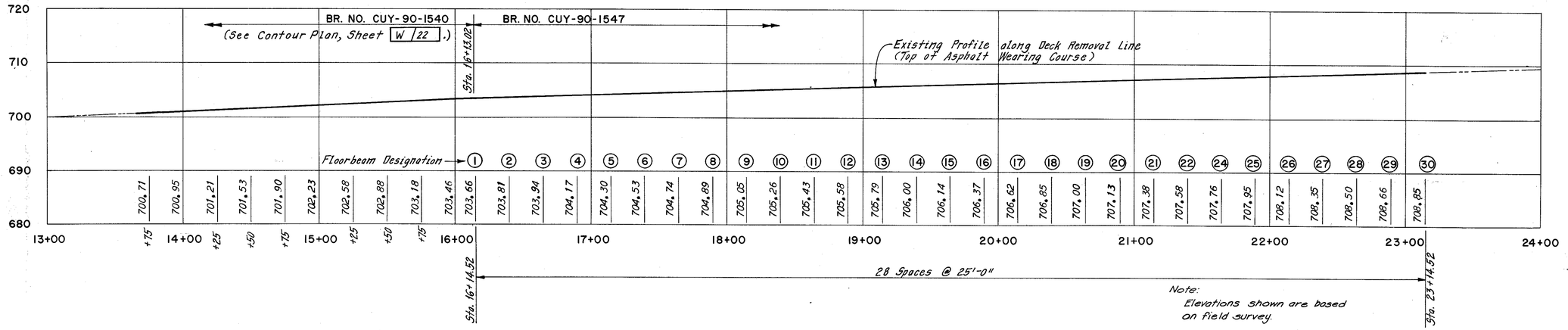
CUYAHOGA COUNTY OHIO

DRAWN CKB	TRACED J.L.V.	CHECKED R.A.S.	REVIEWED	REVISED
DATE 12-7-77	DATE 12-14-77	DATE 12-27-77	DATE	SHEET W 3

FHWA REGION	STATE	PROJECT	
5	OHIO		

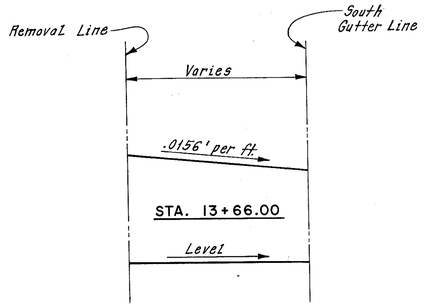
26
89

CUYAHOGA COUNTY
CUY-90-15.31



PROFILE

(Stationing given along ℄ I-90)



STA. 16+03.50 TO STA. 23+14.52

SUPERELEVATION TRANSITION DIAGRAMS

Notes:
For Framing Plan, Br. No. CUY-90-1547, see Sheet W/32.
For deck removal line location, see Sheets W/5 and W/25.

HOWARD NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

PROFILE AND SUPERELEVATION DATA

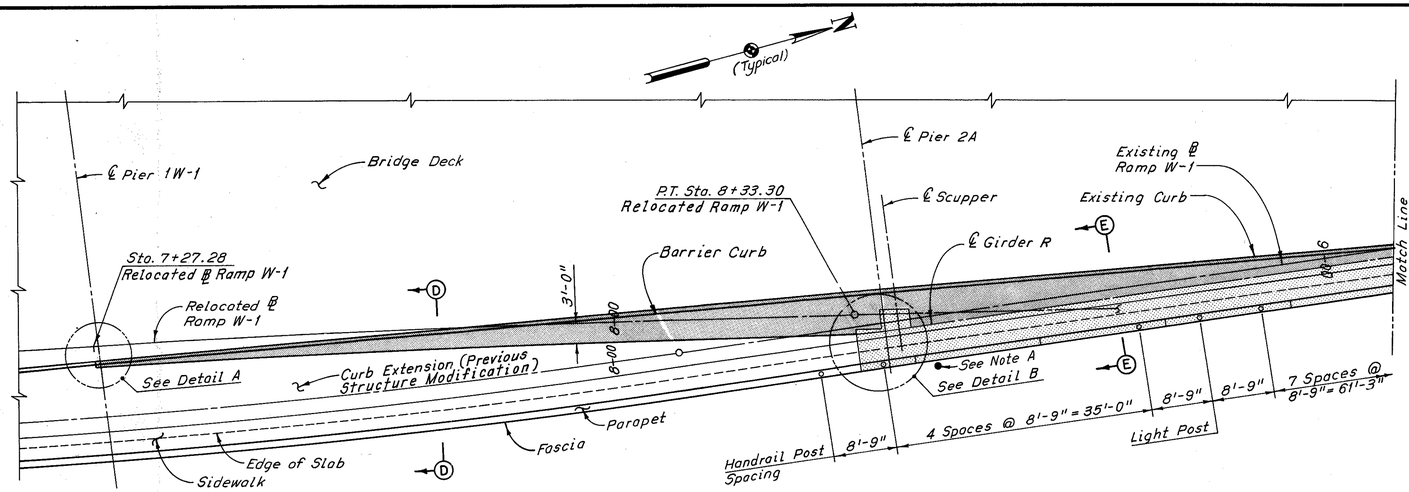
RAMP W-I UPGRADING
BR. NO. CUY - 90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
W.E.B. DATE 12-22-77	W.E.B. DATE 12-30-77	C.K.B. DATE 1-1-78	DATE	SHEET W/4

FHWA REGION	STATE	PROJECT	
5	OHIO		

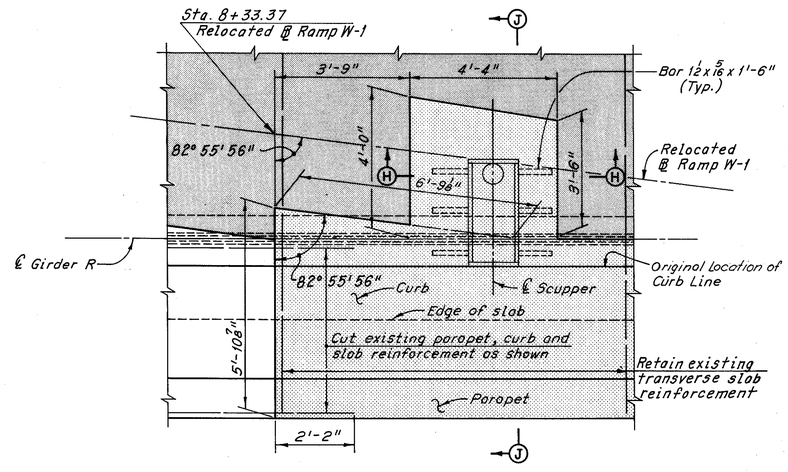
27
89

CUYAHOGA COUNTY
CUY-90-15.31

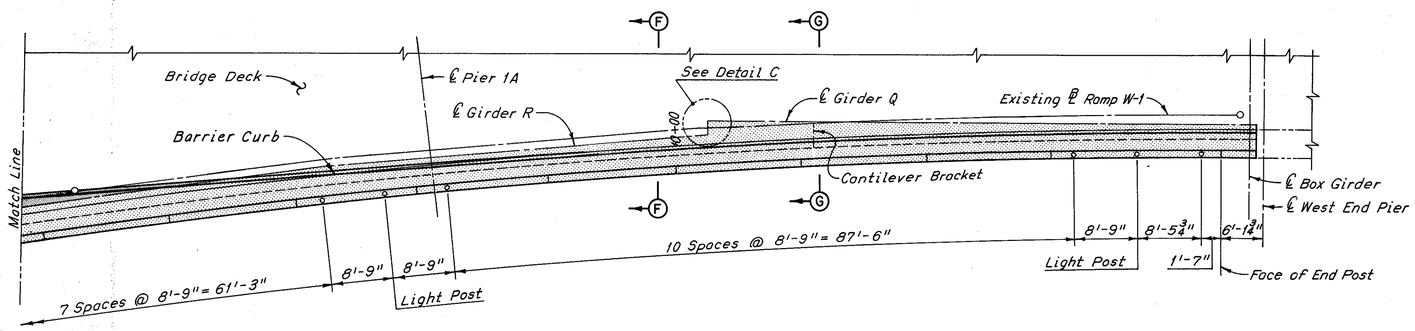


PART PLAN
10 5 0 5 10
SCALE IN FEET

Note A:
Remove existing speed limit sign and supports as required. Dispose of sign support and reinstall sign on widened structure. For details of relocated sign location, see Traffic Control Plans. Include disposal of sign support with Item 202, Portions of Structures Removed, for payment.



DETAIL B
(Railing and handrail posts not shown)
(Retain all existing deck reinforcement at scupper)

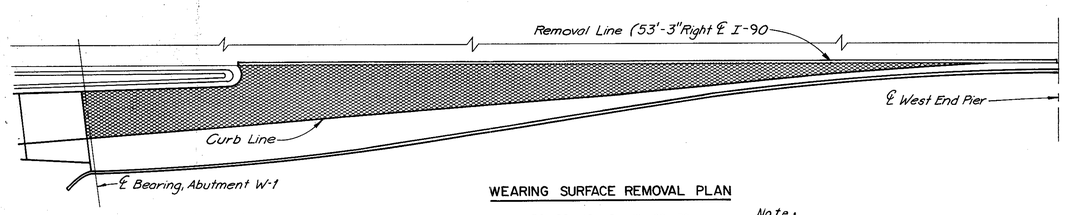


PART PLAN
10 5 0 5 10
SCALE IN FEET

LEGEND

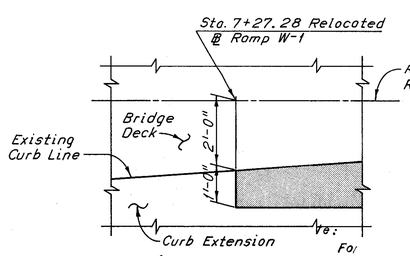
- indicates wearing surface removal
- indicates curb extension and barrier curb removal.
- indicates complete removal, except for dowel reinforcement and structural steel as noted.

Note:
For Sections D-D, E-E, F-F, G-G, H-H and J-J, see Sheet W/6

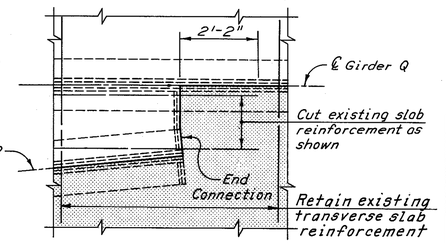


WEARING SURFACE REMOVAL PLAN
30 20 10 0 10 20 30
SCALE IN FEET

Note:
For additional data, see Sheet W/3



DETAIL A
(Barrier curb not shown)



DETAIL C

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

REMOVAL PLANS

RAMP W-1 UPGRADING
BR. NO. CUY-90-1524
90-1540
90-1547
90-1599

STA. 3+87.63
STA. 54+65.78

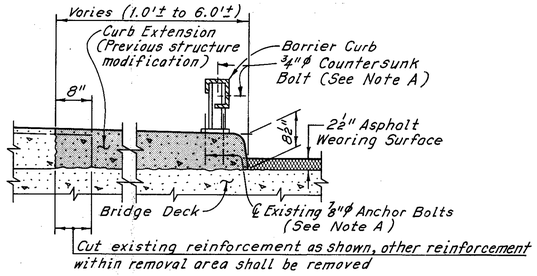
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B.	D.L.R.	R.A.S.		
DATE 10-10-77	DATE 10-17-77	DATE 10-19-77	DATE	SHEET W/5

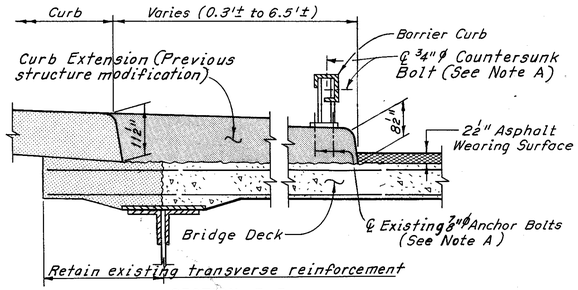
FHWA REGION	STATE	PROJECT	
5	OHIO		

28
89

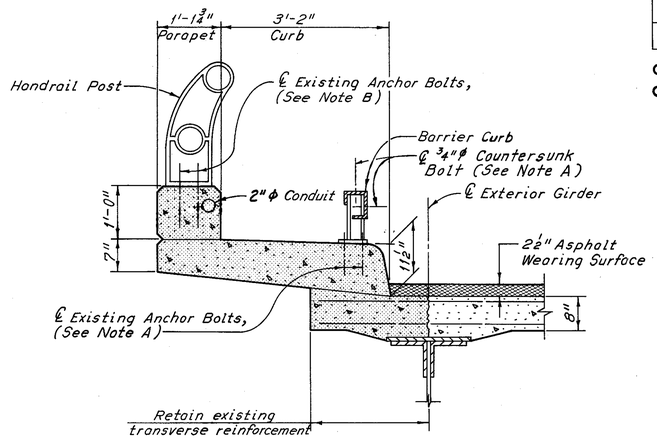
CUYAHOGA COUNTY
CUY-90-15.31



SECTION D-D

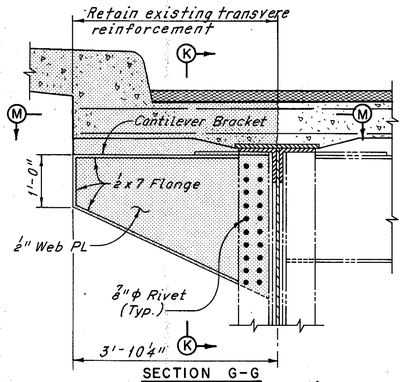


SECTION E-E

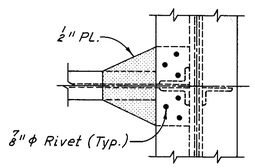


SECTION F-F

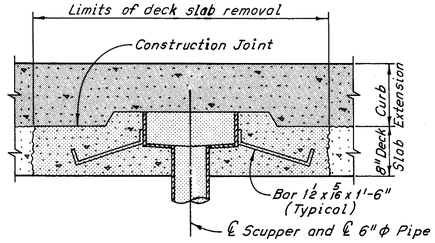
Note A:
Burn off existing anchor bolts and retain the existing barrier curb for resetting on the widened structure as shown in the Plans.
See Sheet W/22 for details.



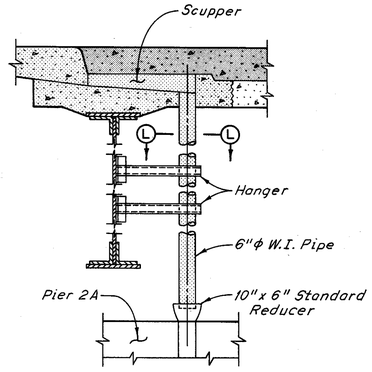
SECTION G-G
(Barrier Curb Not Shown)



SECTION M-M
(Deck Slab Not Shown)



SECTION H-H

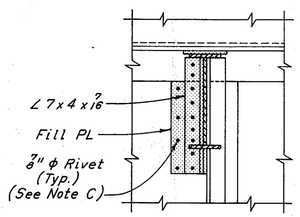


SECTION J-J

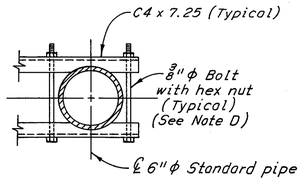
Note B:
Remove nuts from existing anchor bolts, remove and retain the existing handrail posts and railing for resetting on the widened structure as shown in the Plans.
See Sheet W/21 for details.

Note C:
Remove existing rivets and plug weld rivet holes. Include with Item 202, Portions of Structures Removed, for payment.

Note D:
Loosen ⅞"ϕ Bolts and remove existing 6"ϕ W.I. Pipe. Existing hangers shall be retained for installation of drainage pipe on widened structure. See Sheet W/23 for details. Include with Item 202, Portions of Structures Removed, for payment.



SECTION K-K



SECTION L-L

LEGEND

- indicates wearing surface removal.
- indicates curb extension removal.
- indicates complete removal, except for dowel reinforcement and structural steel as noted.

No r location of Sections D-D, E-E, F-F, G-G, H-H J-J, see Sheet W/5

HOWARD. NEEDLES. TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

REMOVAL PLANS

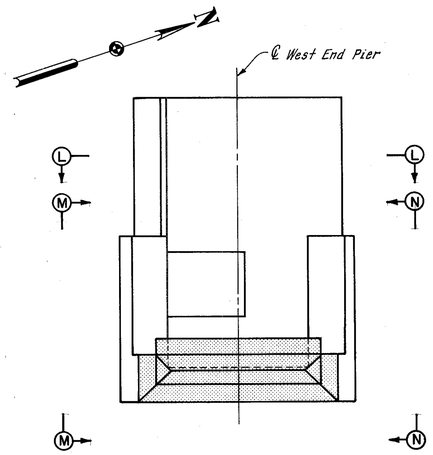
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA.3+87.63
90-1547 STA.54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B	D.L.P.	R.A.S.		
DATE 10-10-77	DATE 10-18-77	DATE 10-19-77	DATE	SHEET W/6

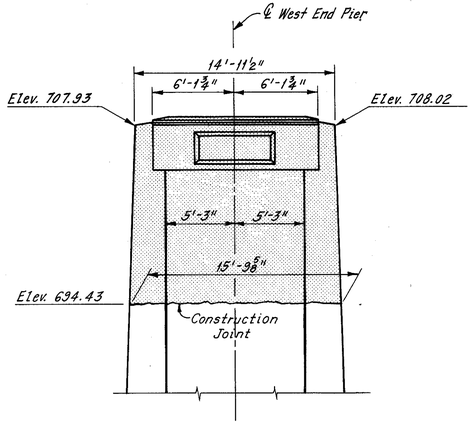
FHWA REGION	STATE	PROJECT	
5	OHIO		

29
89

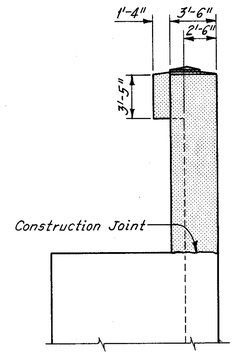
CUYAHOGA COUNTY
CUY-90-15.31



PLAN



VIEW L-L



VIEW M-M
(View N-N similar, opposite hand)

WEST END PIER

Notes:
▨ *Indicates portions of structures removed.*

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

REMOVAL PLANS

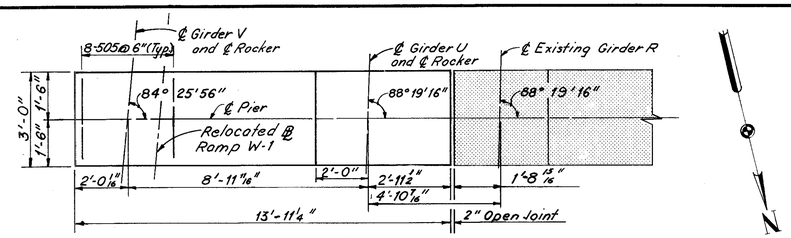
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B.	W.E.B.	S.A.		
DATE 12-5-77	DATE 12-9-77	DATE 12-21-77	DATE	SHEET W 7

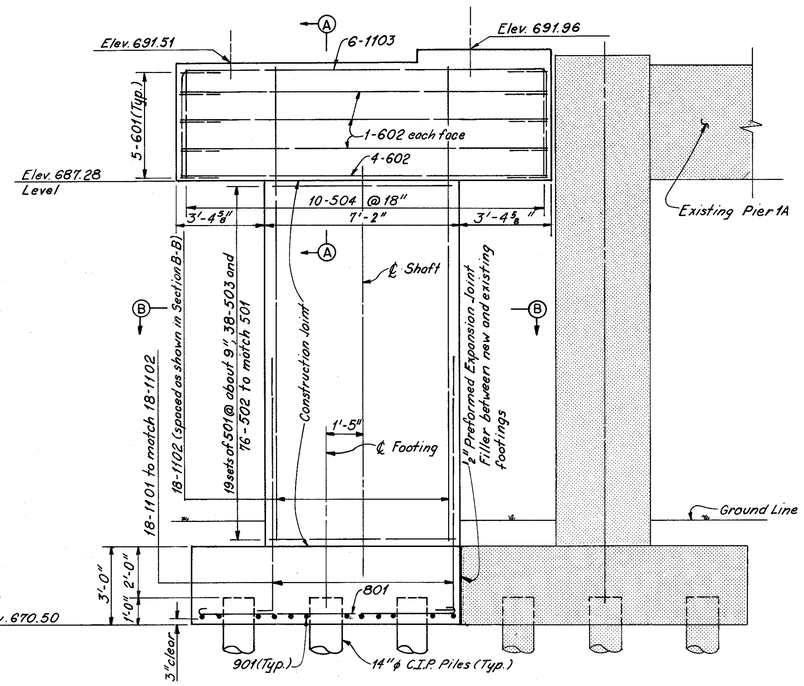
FHWA REGION	STATE	PROJECT	
5	OHIO		

30
89

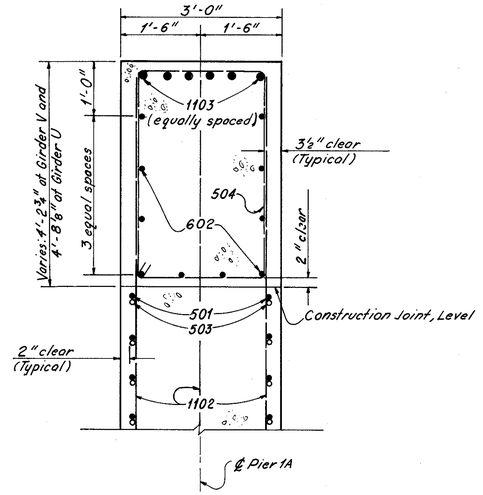
CUYAHOGA COUNTY
CUY-90-15.31



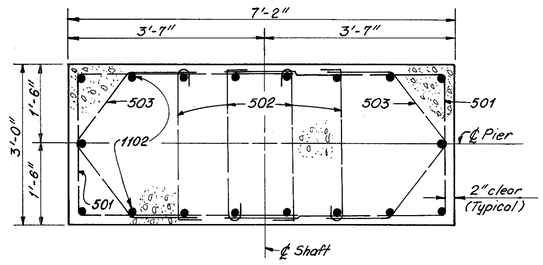
PLAN



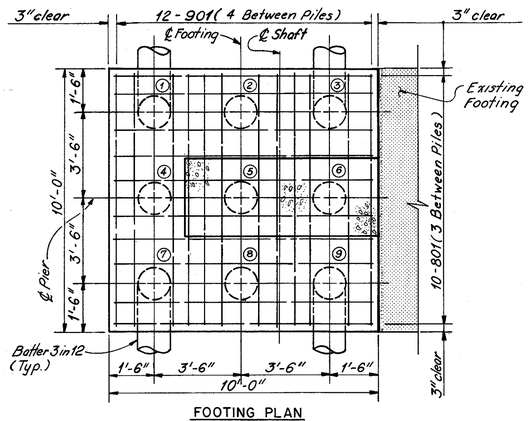
ELEVATION
(Looking South)



SECTION A-A



SECTION B-B



FOOTING PLAN

REQUIRED LAP LENGTHS

No. 5 Bars = 1'-4" Minimum
No. 6 Bars = 1'-5" Minimum
No. 11 Bars = 6'-9" Minimum

Note:
All reinforcing bar marks shall be prefixed PA.

Notes:
All piles are 14" ϕ C.I.P. reinforced concrete.
All battered piles shall be battered 3 in 12 in the direction shown.
Pile layout dimensions are measured along bottom of footing.
All hooks in the 504 bars shall be placed at the bottom of cap.
The Contractor shall exercise extreme care during excavation in order to avoid damage to the existing footing.
For reinforcement schedule, see Sheet W 59

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

PIER IA EXTENSION

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

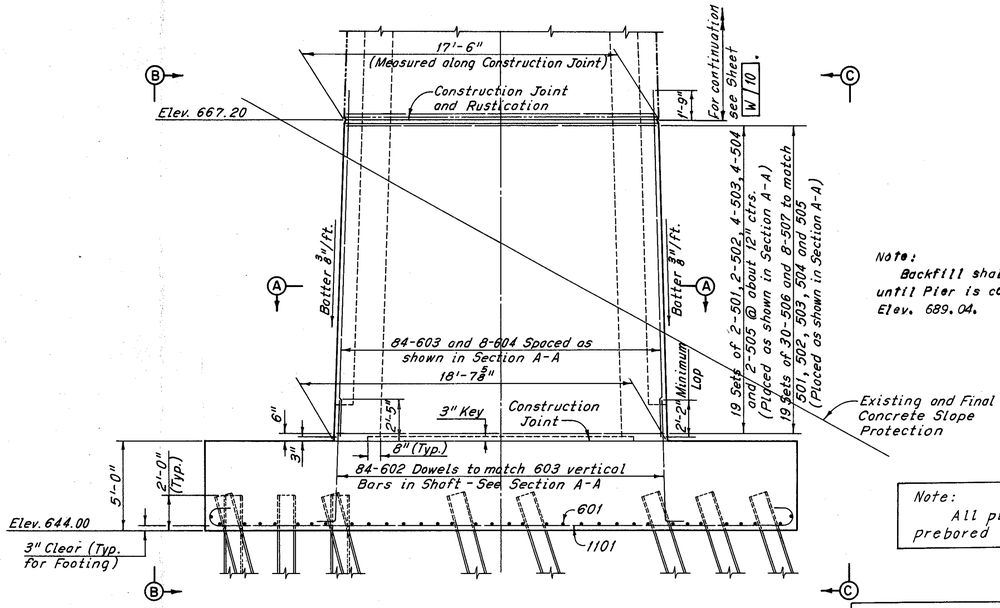
CUYAHOGA COUNTY OHIO

DRAWN JLV	TRACED JLV	CHECKED C.P.	REVIEWED	REVISED
DATE 10-25-77	DATE 10-25-77	DATE 11-29-77	DATE	SHEET W 8

FHWA REGION	STATE	PROJECT	
5	OHIO		

31
89

CUYAHOGA COUNTY
CUY-90-15.31

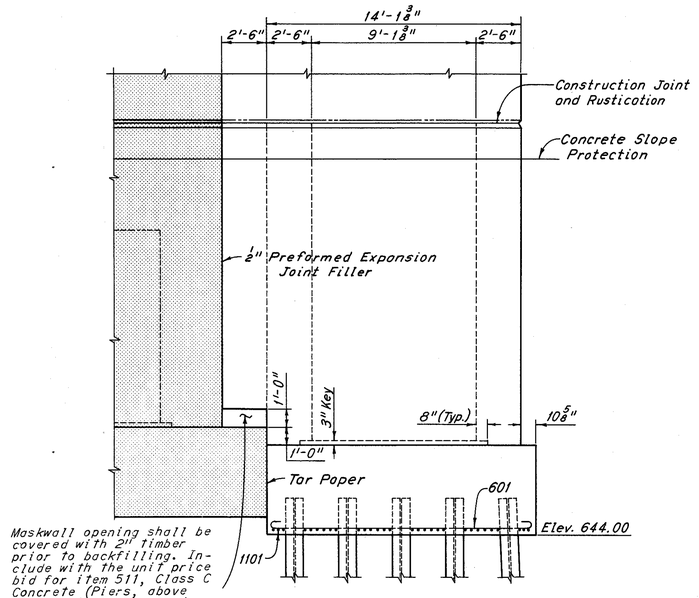


ELEVATION

Note:
Backfill shall not be placed until Pier is constructed to Elev. 689.04.

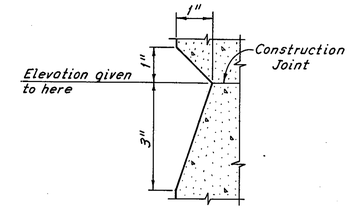
Note:
All piles shall be prebored to Elev. 639.00

Note:
Minimum lap required for No. 6 Bar is 1'-7", except as noted.

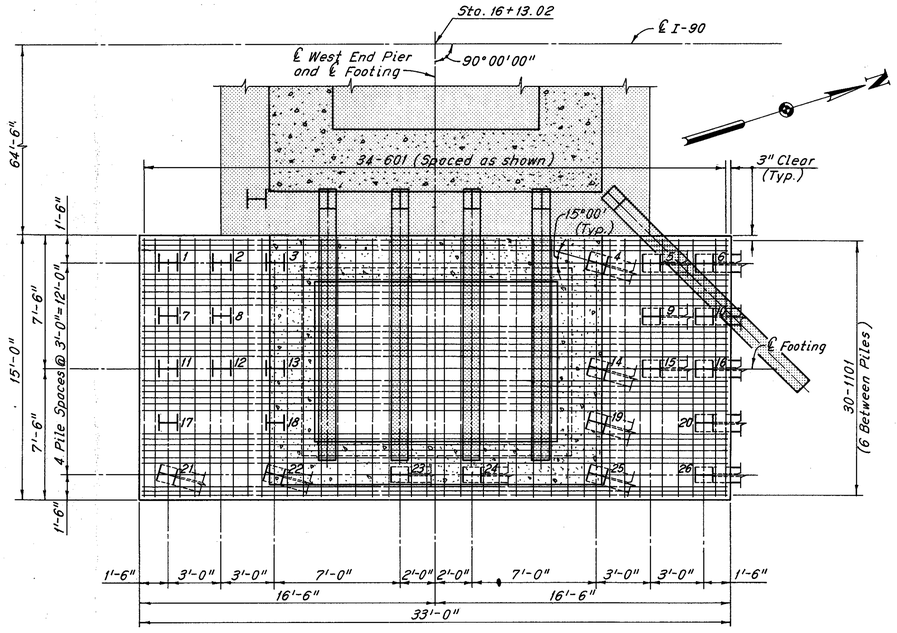


Maskwall opening shall be covered with 2" timber prior to backfilling. Include with the unit price bid for Item 511, Class C Concrete (Piers, above Footings), for payment.

ELEVATION B-B
(Elevation C-C similar, opposite hand)

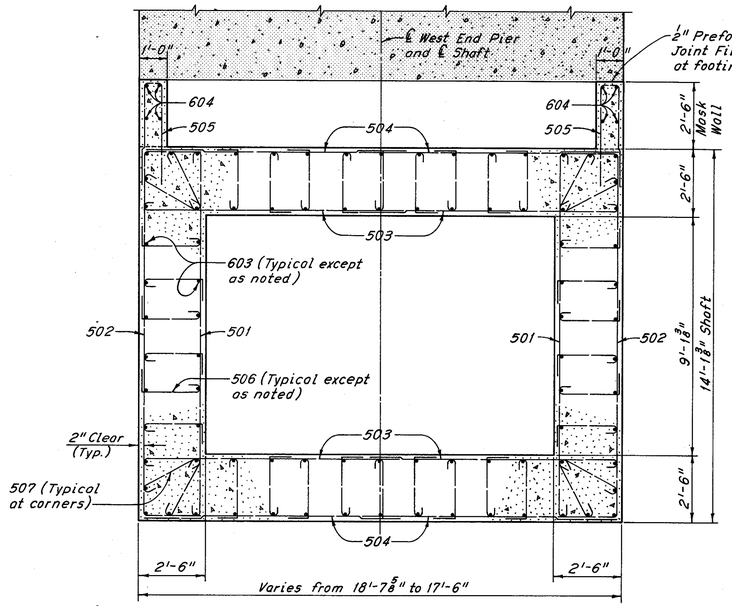


RUSTICATION DETAIL



FOOTING PLAN
(Existing piles which are under the extended footing only are shown)

Note:
All reinforcing bar marks shall be prefixed PB.



SECTION A-A
(Footing not shown)

Notes:
Indicates existing West End Pier.
All piles are HP 12x53 bearing piles.
All battered piles shall be inclined 4 in 12 in the direction shown except piles numbered 21, 22 and 23 which shall be battered 3 in 12 in the direction shown.
Pile layout dimensions are measured along the bottom of footing.
Tar paper shall be included in the unit price bid for Item 511, Class C Concrete, Footing, for payment.
For ladder details, see Sheet W 12.
For Reinforcement Schedule, see Sheet W 59.
The following abbreviation are used:
Typ. = Typical
ctrs. = Centers

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
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WEST END PIER EXTENSION

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN A.N.	TRACED D.L.P.	CHECKED	REVIEWED	REVISED
DATE 11-17-77	DATE 11-29-77	DATE 3-14-78	DATE	SHEET W 9

FHWA REGION	STATE	PROJECT	
5	OHIO		

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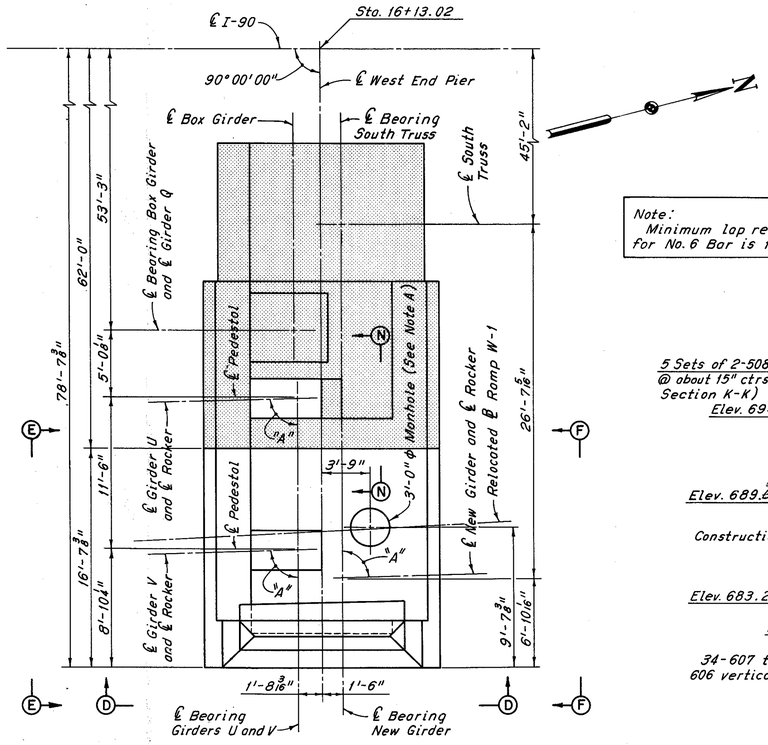
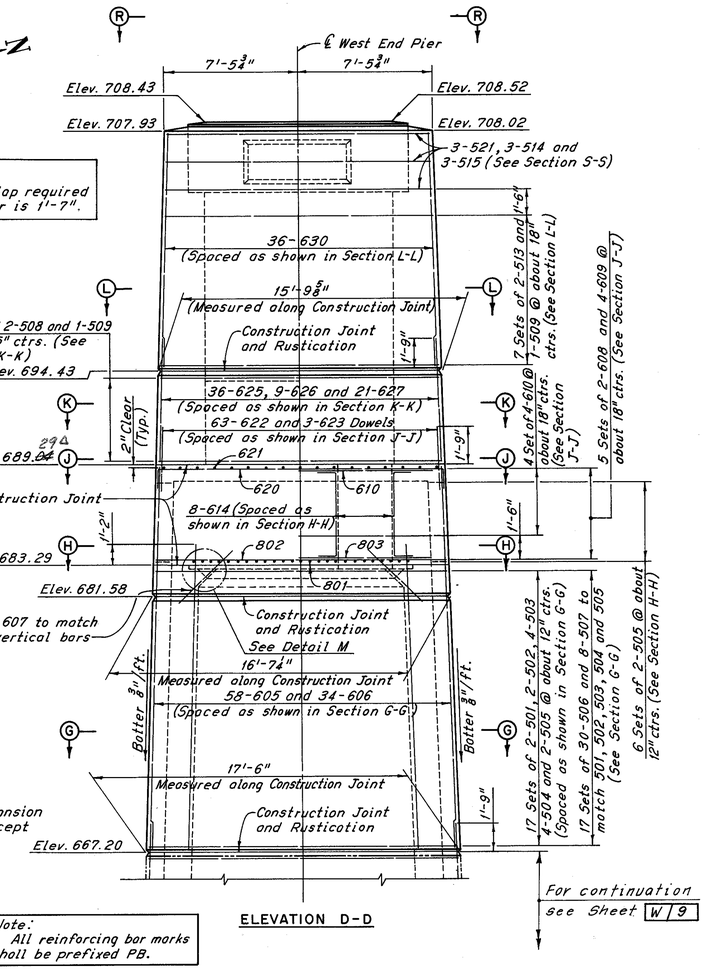
89

CUYAHOGA COUNTY
CUY-90-15.31



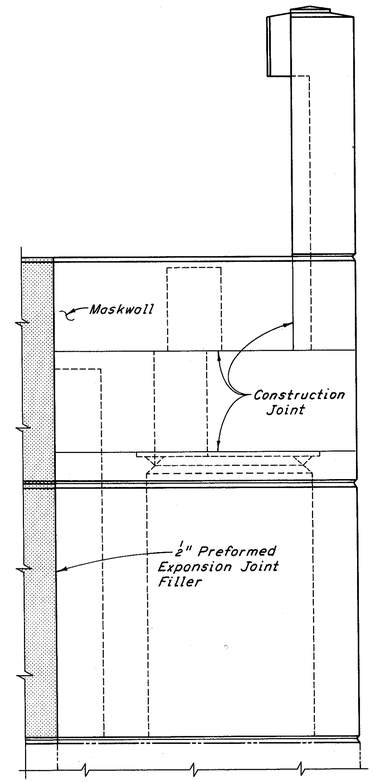
Note: Angle "A" = 88°34'04"

PLAN

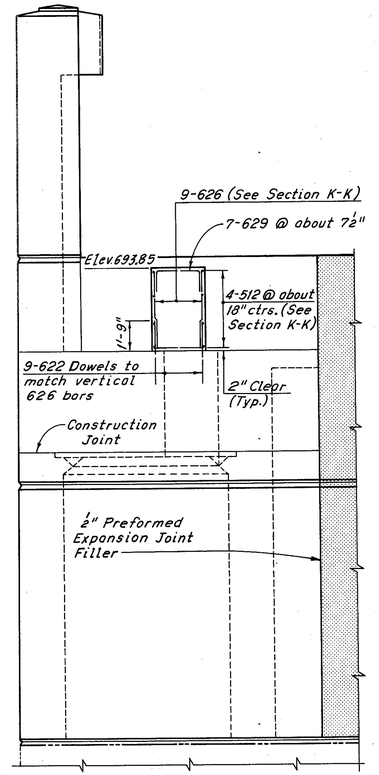


ELEVATION D-D

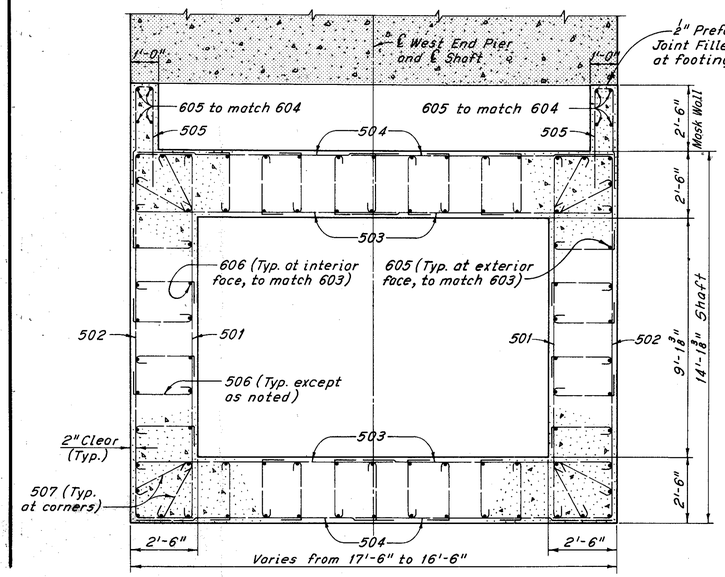
Note:
All reinforcing bar marks shall be prefixed PB.



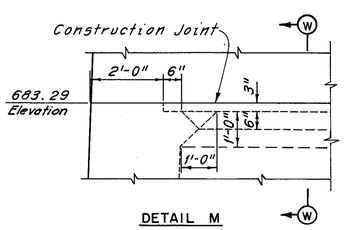
ELEVATION E-E



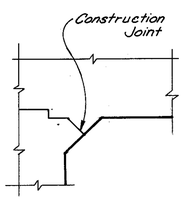
ELEVATION F-F



SECTION G-G



DETAIL M



SECTION W-W

Note A:
The Contractor shall provide a manhole casting and a solid cover. The casting and cover shall be Catalog Number R-1793-JL, Neenah, Catalog Number 1581, East Jordan; or approved equal. Include with Item 513, Structural Steel, (A36), for payment.

Notes:
Indicates existing West End Pier.
For Sections H-H, J-J, K-K, L-L and N-N, see Sheet W 11.
For View R-R, see Sheet W 12.
For Rustication Detail, see Sheet W 9.
For ladder details, see Sheet W 12.
For Reinforcement Schedule, see Sheet W 59.
The following abbreviations are used:
Typ. = Typical
ctrs. = Centers

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

WEST END PIER EXTENSION

RAMP W-1 UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
A.N.	DLR			
DATE 11-17-77	DATE 12-1-77	DATE 3-14-78	DATE	SHEET W 10

Δ Revised 10-17-83 EBL

FHWA REGION	STATE	PROJECT	
5	OHIO		

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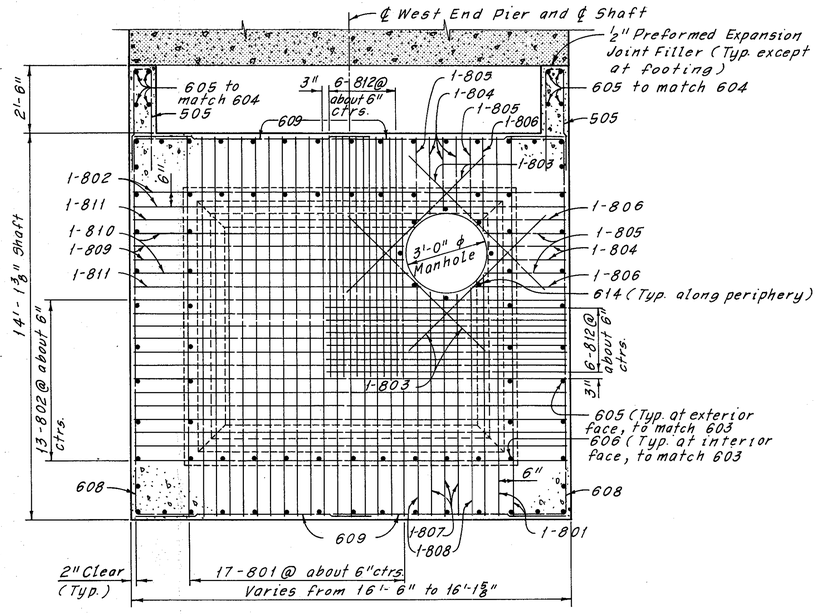
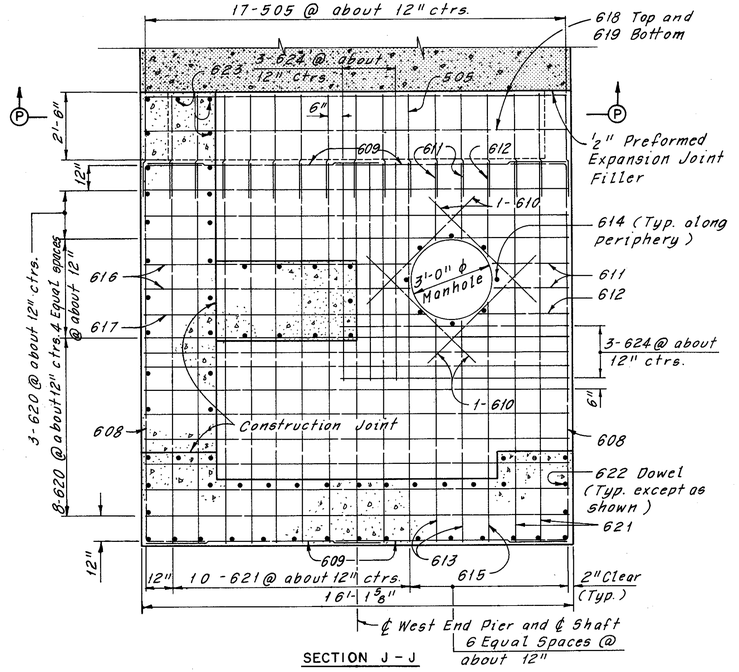
89

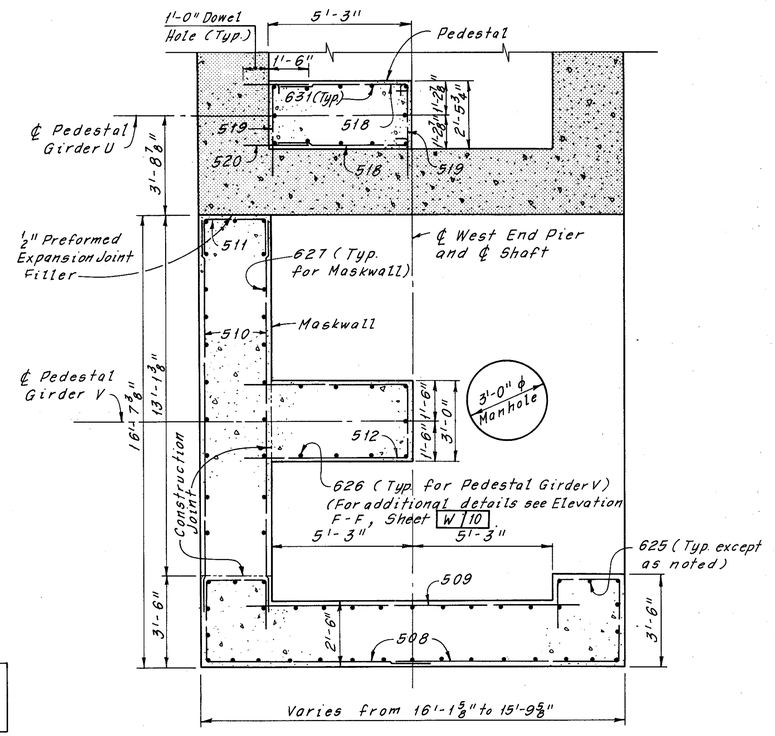
CUYAHOGA COUNTY
CUY-90-15.31



SECTION H-H



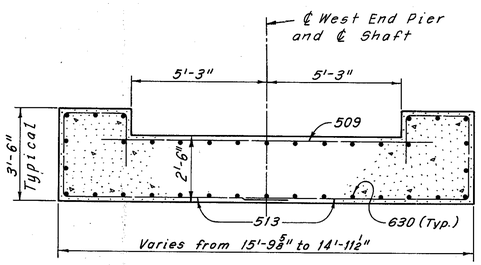
SECTION J-J



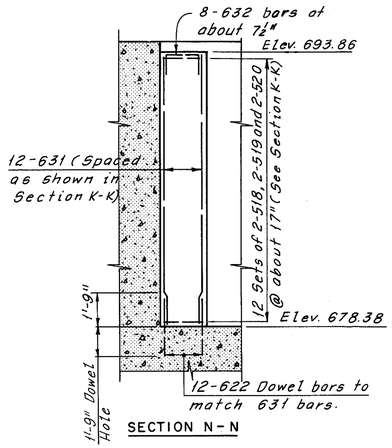
SECTION K-K
(Manhole Casting and Cover Not Shown)

Note:
All reinforcing bar marks shall be prefixed PB.

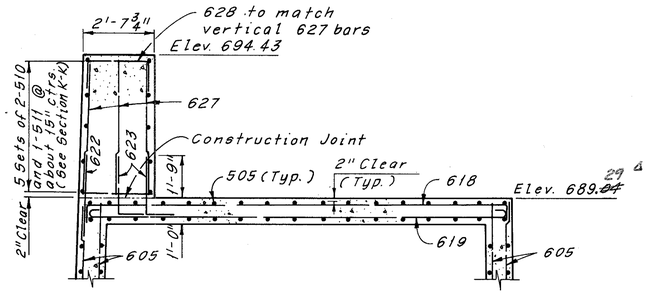
Note:
Mimimum lap required for No. 6 bar is 1'-7".



SECTION L-L



SECTION N-N



SECTION P-P

Notes:
Indicates existing West End Pier.
For location of Sections H-H, J-J, K-K, L-L and N-N, see Sheet W 10.
For ladder details, see Sheet W 12.
For Reinforcement Schedule, see Sheet W 59.
The following abbreviations are used:
Typ. = Typical
ctrs. = centers

HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

WEST END PIER EXTENSION

RAMP W-1 UPGRADING
BR. NO. CUY-90-1524
90-1540
90-1547
90-1599
STA. 3+87.63
STA. 54+65.78
CUYAHOGA COUNTY OHIO

DRAWN A.M.	TRACED CJT	CHECKED	REVIEWED	REVISED
DATE 11-17-77	DATE 12-6-77	DATE 3-13-78	DATE	SHEET W 11

Δ Revised 10-17-83 EBL

FHWA REGION	STATE	PROJECT	
5	OHIO		

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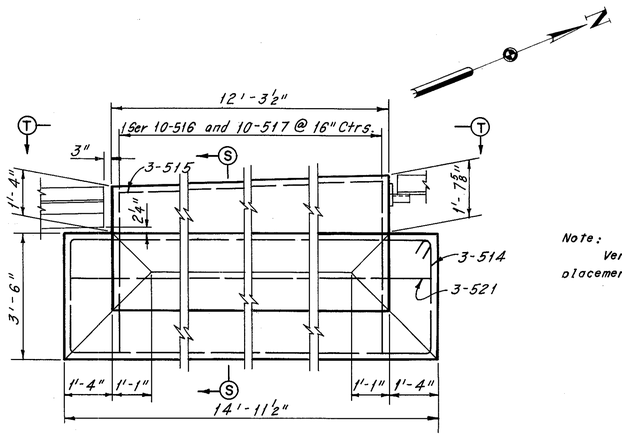
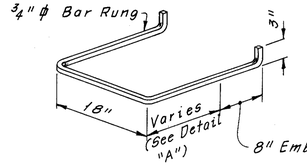
89

CUYAHOGA COUNTY
CUY-90-15.31



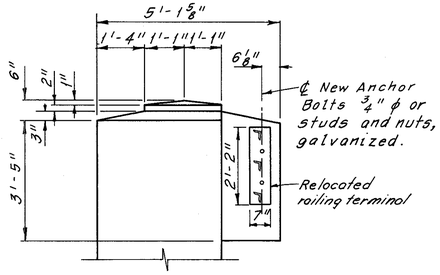
VIEW R-R

Note:
Vertical 630 bars not shown, for placement see Section L-L, Sheet W/11.



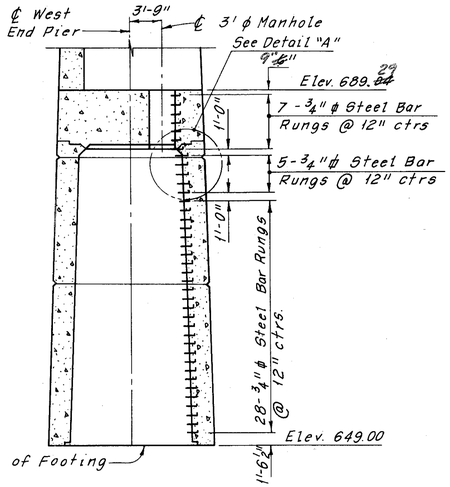
Note:
The steel bar rungs shall be galvanized in accordance with 711.02. Include with the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

STEEL BAR RUNG DETAIL

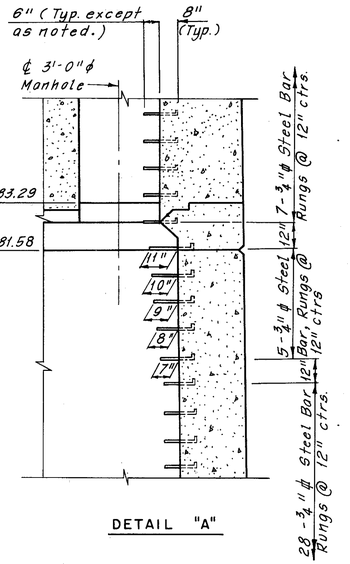


EAST END ELEVATION

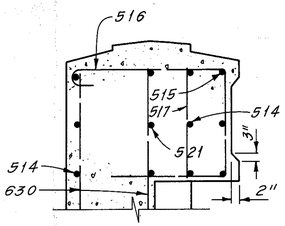
Note:
All reinforcing bar marks shall be prefixed PB.



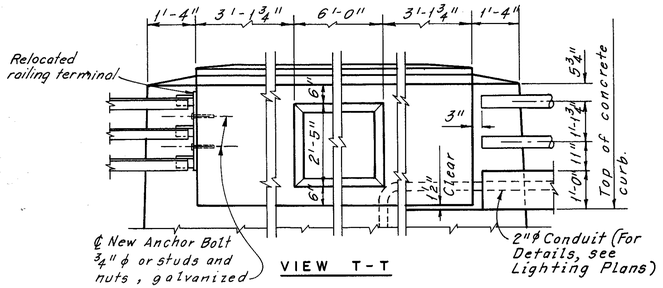
SECTION THRU MANHOLE
(Manhole Casting and Cover Not Shown)



DETAIL "A"



SECTION S-S



VIEW T-T

LADDER DETAILS

Notes:
For location of View R-R, see Sheet W/10.
The following abbreviations are used:
Typ. = Typical
ctrs. = centers

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

WEST END PIER EXTENSION
RAMP W-1 UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN CJT	TRACED CJT	CHECKED	REVIEWED	REVISED
DATE 12-8-77	DATE 12-13-77	DATE 3-15-78	DATE	SHEET W/12

Δ Revised 10-17-83 EBL

FHWA REGION	STATE	PROJECT	
5	OHIO		

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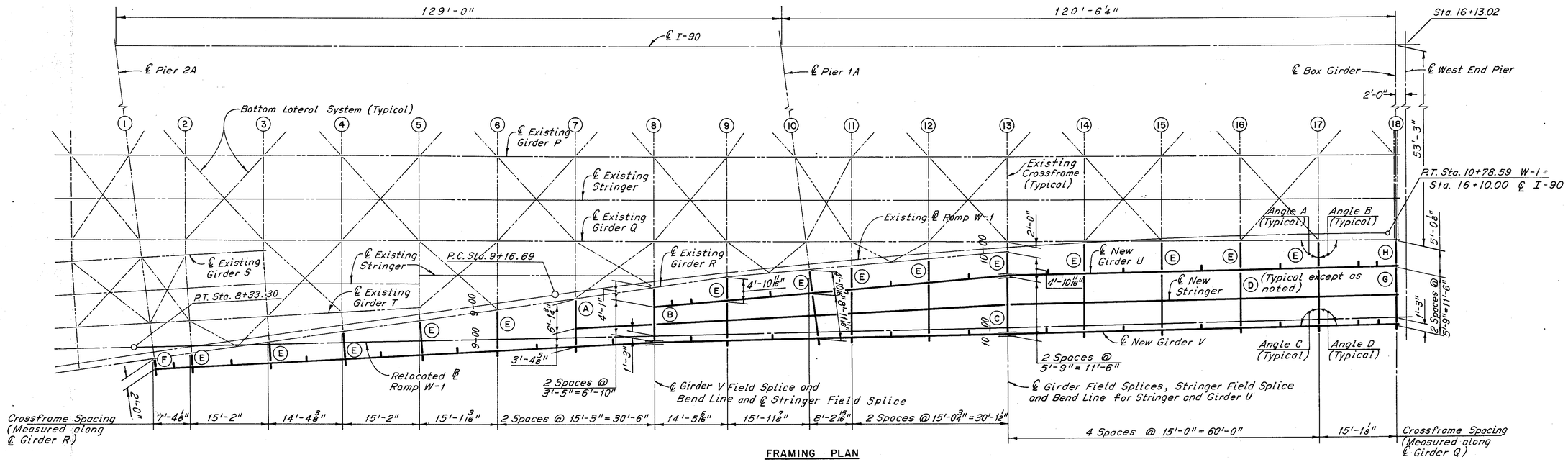
CUYAHOGA COUNTY
CUY-90-15.31



FRAMING PLAN

GIRDER ANGLES				
	Angle A	Angle B	Angle C	Angle D
Crossframe (1)	90°00'00"	90°00'00"	———	95°14'13"
Crossframe (2)	85°01'25"	94°58'35"	89°44'22"	90°15'38"
Crossframe (3)	↓	↓	↓	↓
Crossframe (4)	↓	↓	↓	↓
Crossframe (5)	85°01'25"	94°58'35"	89°44'22"	90°15'38"
Crossframe (6)	81°30'00"	98°30'00"	93°15'47"	86°44'13"
Crossframe (7)	↓	98°30'00"	93°15'47"	86°44'13"
Crossframe (8)	↓	98°30'00"	93°15'47"	88°34'04"
Crossframe (9)	81°30'00"	95°19'16"	91°25'56"	88°34'04"
Crossframe (10)	91°40'44"	88°19'16"	84°25'56"	95°34'04"
Crossframe (11)	84°40'44"	95°19'16"	91°25'56"	88°34'04"
Crossframe (12)	84°40'44"	95°19'16"	↑	↓
Crossframe (13)	84°40'44"	———	↑	↓
Crossframe (14)	90°00'00"	90°00'00"	↑	↓
Crossframe (15)	↑	↑	↑	↓
Crossframe (16)	↑	↑	↑	↓
Crossframe (17)	↓	90°00'00"	↑	88°34'04"
Crossframe (18)	90°00'00"	———	91°25'56"	———

FRAMING PLAN LEGEND:

— Indicates intermediate or bearing stiffener.

(A) Indicates type of crossframe.

(1) Indicates crossframe designation.

═ Indicates girder field splice.

Notes:
For girder and stringer details, see Sheet W/14
For crossframe details, see Sheets W/17 thru W/19
For details of roadway expansion joint at West End Pier, see Sheet W/49

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
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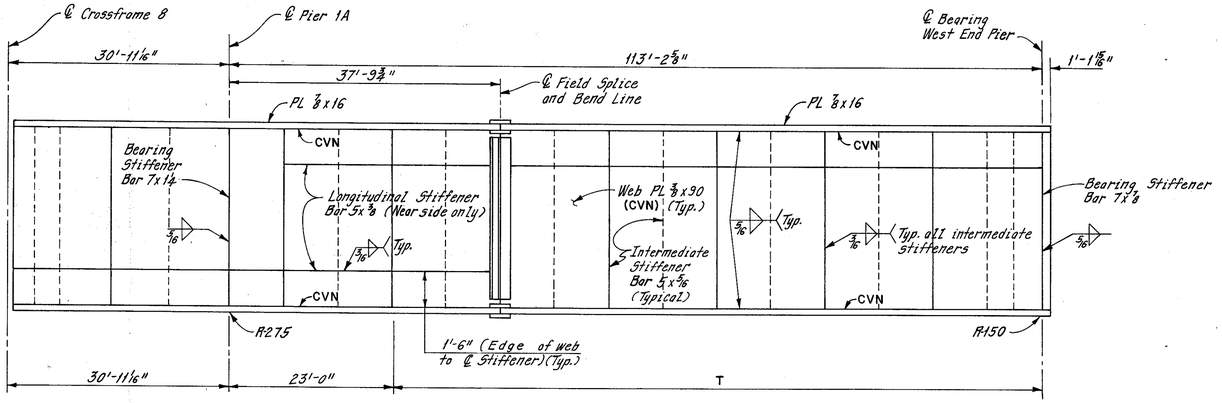
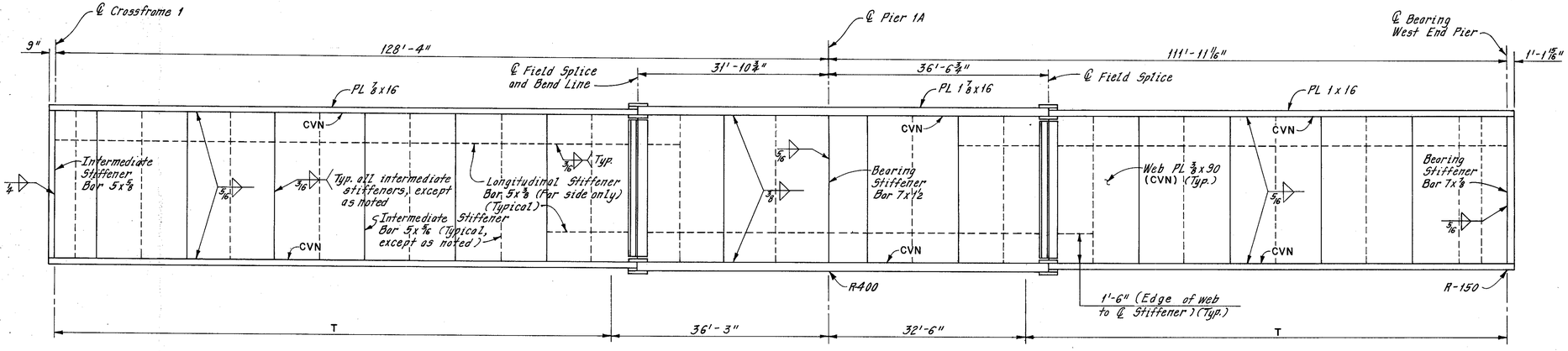
FRAMING PLAN

RAMP W-1 UPGRADING
BR. NO. CUY-90-1524
90-1540
90-1547
90-1599
STA. 3+87.63
STA. 54+65.78
CUYAHOGA COUNTY OHIO

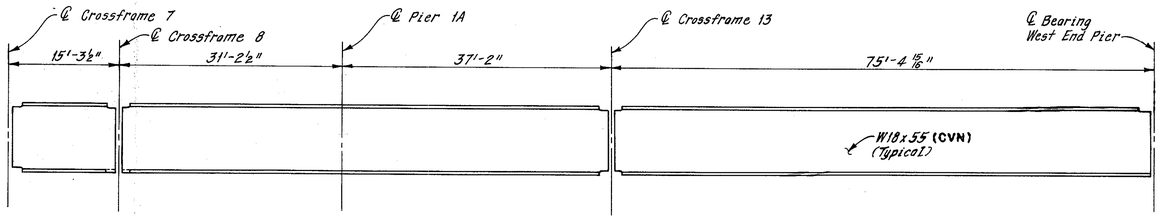
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B.	D.L.R.	R.A.S.		
DATE 9-20-77	DATE 9-23-77	DATE 10-18-77	DATE	SHEET W/13



GIRDER U ELEVATION



GIRDER V ELEVATION



STRINGER ELEVATION

NUMBER	NO. REQ'D	ROCKER DIMENSIONS (Inches)													WEIGHT (LBS.)
		A	B	C	D	F	G	H	K	L	M	R	T	Y	
R-400	1	3½	24	4	3½	1	12	22⅛	16	32	27	14½	3½	1 11/16	1,498

Note: For dimension locations and details, see Ohio Standard Drawing RB-1-55, revised 2-2-59.

LEGEND:

T — Indicates tension areas of the bottom flange. For the top flange, these areas are in compression.

Notes:

For Framing Plan, see Sheet W / 13
For field splice details, see Sheet W / 16
For crossframe details, see Sheets W / 17 thru W / 19
For Camber and Deflection Tables, see Sheet W / 15
For additional details of rockers, see Ohio Standard drawing RB-1-55, revised 2-2-59.

SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS (CVN)

Where a shape or plate is labeled "CVN", the material shall meet minimum notch toughness requirements in accordance with 711.01. The Fabricator shall submit to the Director a procedure designed for positive identification of material through all phases of fabrication. No material shall be fabricated until the Director has approved the procedure.

GIRDER NOTES:

The girders shall be fabricated to compensate for the effects of dead load deflections and vertical curvature. The top of the girder web shall parallel the profile of the roadway surface directly over the center line of the girder.

Top and bottom flange plates are to be the same and shall be spliced at points shown on the girder elevation. The web plates may be shop spliced as required by available plate lengths. The locations of shop web splices and the location and details of any additional shop flange splices shall be submitted to the Director for approval prior to ordering of materials.

Intermediate stiffeners shall be placed as shown on the framing plan equally spaced between crossframes, except the first two stiffeners at the ends of simply supported girders shall be one-half of this spacing. Intermediate stiffeners shall be placed in pairs at crossframes, and shall have a tight fit with the tension flange and may have either a tight fit with, or be welded to the compression flange with fillet welds on both sides, the same size as the web to flange weld at the same location. Intermediate stiffeners which are not placed in pairs shall have a tight fit with the tension flange and shall be welded to the compression flange with fillet welds on both sides, the same size as the web to flange weld at the same location.

Bearing stiffeners at piers shall be placed in pairs on all girders, and shall be placed normal to the girder flange. Bearing stiffeners shall have full bearing on the bottom flange. The contact surface shall be welded using a 45 degree double bevel. The bearing stiffeners shall have a tight fit at the top flange.

Intermediate stiffeners shall be normal to the girder flange, except at crossframe locations. At these locations the new stiffeners and crossframes shall have the same vertical alignment as existing stiffeners at Girders Q or R to which the crossframe is connected.

All intermediate and bearing stiffeners shall be clipped at corners as shown on Sheet

Longitudinal stiffeners shall be placed as shown on the girder elevations continuous thru transverse stiffeners and in segments between and 2" clear of web splice plates.

All girder field splices shall be made with 1" diameter high strength steel bolts. The bolts shall be placed with their heads on the outside face of the exterior girder, and on the bottom of all flange plates.

The Contractor shall submit to the Director for approval three prints showing his proposed erection procedure.

FHWA REGION	STATE	PROJECT	.
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.31

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND

HNTB

GIRDER AND STRINGER ELEVATIONS

RAMP W-I UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
W.E.B.	W.E.B.	R.A.S.	.	
DATE 10-12-77	DATE 10-14-77	DATE 10-20-77	DATE	SHEET W / 14

FHWA REGION	STATE	PROJECT	
5	OHIO		

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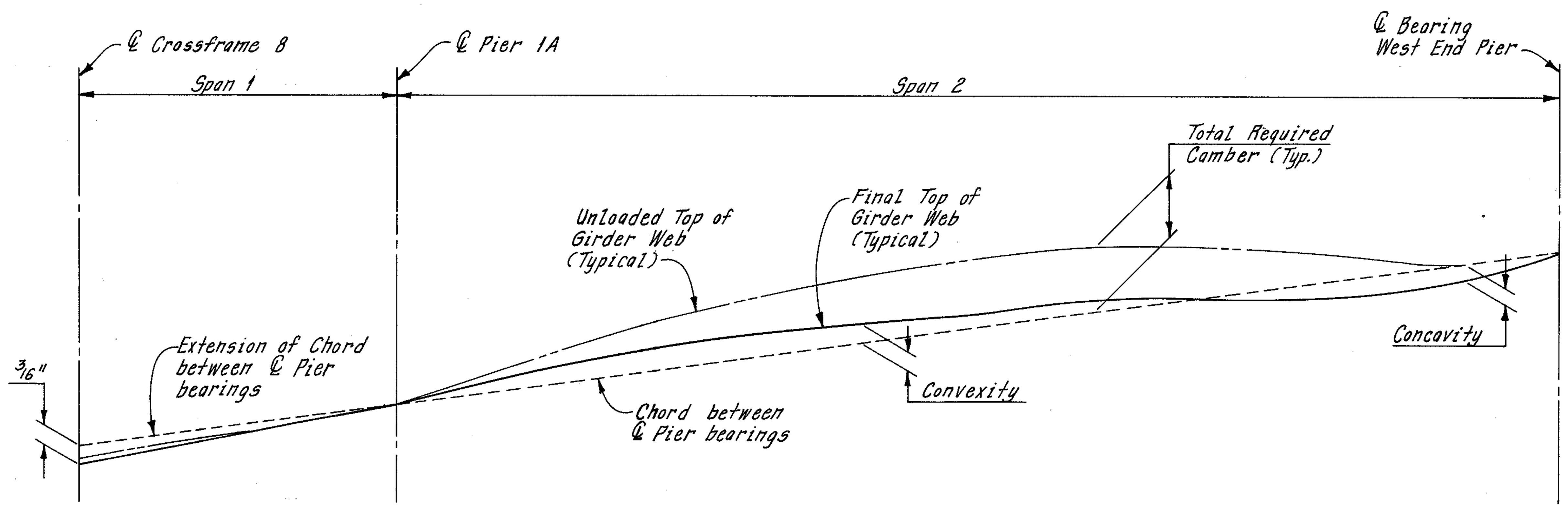
CUYAHOGA COUNTY
CUY-90-15.31



GIRDER U CAMBER DIAGRAM

DEAD LOAD DEFLECTIONS AND CAMBER - GIRDER U

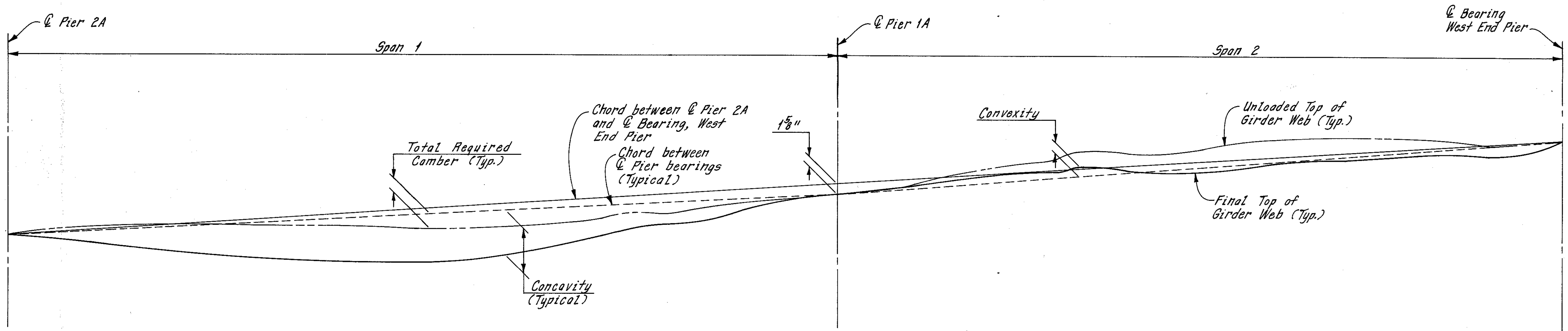
SPAN 1

Crossframe 8				.25				.50				.75			
Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.
0	1/8	-3/16	-1/16	0	1/16	-1/8	-1/16	0	0	-1/8	-1/8	0	0	0	0

SPAN 2

.1				.2				.3				Field Splice			
Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.
1/16	1/8	1/4	7/16	1/8	5/16	7/16	7/8	1/8	9/16	7/16	1 1/8	3/16	5/8	7/16	1 1/4

.4				.5				.6				.7				.8				.9			
Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.
1/4	11/16	5/16	1 1/4	1/4	13/16	1/4	1 5/16	1/4	13/16	1/4	1 5/16	3/16	3/4	-1/16	7/8	1/8	9/16	-3/16	1/2	1/16	5/16	-3/8	0



GIRDER V CAMBER DIAGRAM

Notes:

Negative values for convexity or concavity and total required camber indicate values below the chord line. Deflections, convexities and concavities are given to the nearest 1/16 inch.

The following abbreviations are used:

Stl. = Dead load deflection due to the weight of the steel.
Rem. D.L. = Remaining dead load deflection.
Con. = Convexity or concavity.
Tot. = Total required camber.

DEAD LOAD DEFLECTIONS AND CAMBER - GIRDER V

SPAN 1

.1				.2				.3				.4				.5			
Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.
1/8	5/16	-5/16	1/8	3/16	5/8	-3/4	1/16	3/16	13/16	-1 1/16	-1/16	1/4	7/8	-1 5/16	-3/16	1/4	13/16	-1 1/2	-7/16

.6				.7				Field Splice				.8				.9			
Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.
3/16	11/16	-1 3/8	-1/2	1/8	1/2	-1 1/16	-7/16	1/8	3/8	-3/4	-1/4	1/16	1/4	-11/16	-3/8	0	1/8	-1/4	-1/8

SPAN 2

.1				.2				.3				Field Splice				.4			
Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.
0	1/16	1/16	1/8	1/16	1/8	1/4	7/16	1/16	5/16	3/16	9/16	1/16	3/8	5/16	3/4	1/8	7/16	1/16	5/8

.5				.6				.7				.8				.9			
Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.	Stl.	Rem. D.L.	Con.	Tot.
1/8	9/16	-1/8	9/16	1/8	5/8	-1/16	11/16	1/8	9/16	-1/8	9/16	1/16	7/16	-1/8	3/8	1/16	1/4	-5/16	0

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND
HNTB

CAMBER DIAGRAMS

RAMP W-1 UPGRADING
BR. NO. CUY - 90-1524
90-1540 STA.3+87.63
90-1547 STA.54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN W.E.B. DATE 11-9-77	TRACED W.E.B. DATE 11-10-77	CHECKED R.A.S. DATE 11-11-77	REVIEWED DATE	REVISED SHEET W / 15

FHWA REGION	STATE	PROJECT	
5	OHIO		

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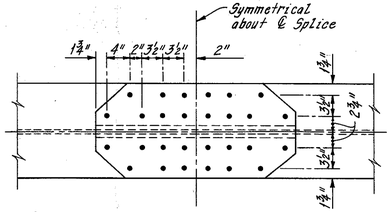
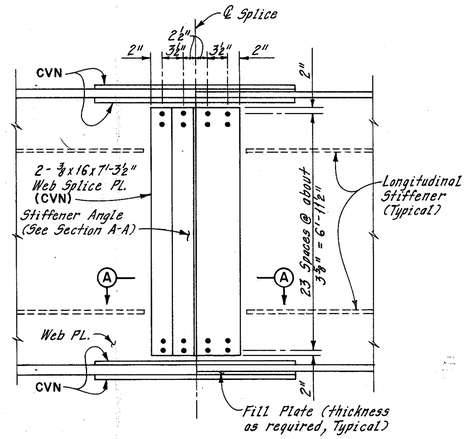
89

CUYAHOGA COUNTY
CUY-90-15.31

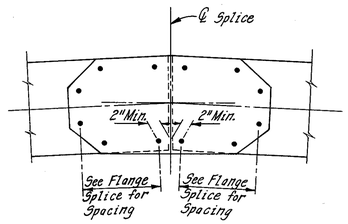


16" FLANGE SPLICE

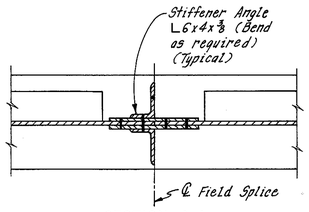
GIRDER FLANGE SPLICES			
Flange Thickness	FLANGE MEMBERS		No. of Flange Bolts
	Outside Plates 2 Required	Inside Bars 4 Required	
⅞"	½x16x2'-9½"	7x⅝x2'-9½"	56
1"	⅝x16x2'-9½"	7x¾x2'-9½"	



TYPICAL GIRDER WEB SPLICE



COVER PLATE DETAIL
AT GIRDER BEND POINT



SECTION A-A
(Girder V shown, Girder U similar)
(Crossframe members not shown)

Notes:
CVN - See Sheet
For Girder Notes, see Sheet

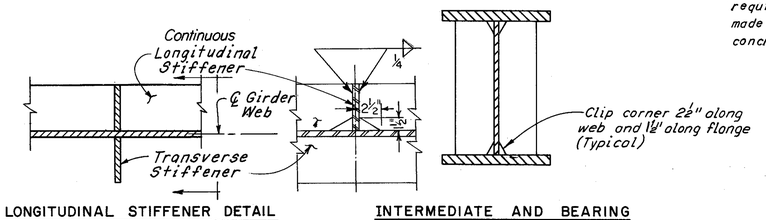
GIRDER FIELD SPLICE DETAILS

TOP OF PORTLAND CEMENT CONCRETE ELEVATIONS - GIRDER U															
SPAN 1					SPAN 2										
Cross-frame 8	.25	.50	.75	Pier 1A	.1	.2	.3	Field Splice	.4	.5	.6	.7	.8	.9	West End Pier
~~701.53~~	~~701.64~~	~~701.74~~	~~701.85~~	~~701.95~~	~~702.05~~	~~702.16~~	~~702.26~~	~~702.37~~	~~702.48~~	~~702.59~~	~~702.69~~	~~702.80~~	~~702.90~~	~~703.01~~	~~703.12~~	~~703.23~~	~~703.33~~
.61	.72	.82	.93	2.03	.20	.36	.51	.56	.65	.79	.94	3.06	.20	.33	.51	Δ	

TOP OF PORTLAND CEMENT CONCRETE ELEVATIONS - GIRDER V																							
SPAN 1												SPAN 2											
Pier 2A	.1	.2	.3	.4	.5	.6	.7	Field Splice	.8	.9	Pier 1A	.1	.2	.3	Field Splice	.4	.5	.6	.7	.8	.9	West End Pier
~~700.42~~	~~700.54~~	~~700.65~~	~~700.77~~	~~700.90~~	~~701.03~~	~~701.14~~	~~701.26~~	~~701.46~~	~~701.54~~	~~701.72~~	~~701.89~~	~~702.05~~	~~702.22~~	~~702.39~~	~~702.42~~	~~702.57~~	~~702.65~~	~~702.81~~	~~702.96~~	~~703.11~~	~~703.25~~	~~703.43~~
.50	.62	.73	.85	.98	.11	.27	.44	.54	.62	.80	.97	.13	.30	.45	.50	.59	.73	.89	3.04	.19	.33	.51	Δ

TOP OF PORTLAND CEMENT CONCRETE ELEVATIONS - GUTTERLINE																					
SPAN 1											SPAN 2										
Pier 2A	.1	.2	.3	.4	.5	.6	.7	.8	.9	Pier 1A	.1	.2	.3	.4	.5	.6	.7	.8	.9	West End Pier
~~700.55~~	~~700.69~~	~~700.82~~	~~700.95~~	~~701.08~~	~~701.21~~	~~701.34~~	~~701.48~~	~~701.63~~	~~701.79~~	~~701.97~~	~~702.16~~	~~702.34~~	~~702.53~~	~~702.71~~	~~702.90~~	~~703.08~~	~~703.27~~	~~703.45~~	~~703.63~~	~~703.81~~
.53	.67	.80	.93	1.06	.19	.32	.48	.63	.81	.97	.14	.31	.47	.65	.78	.94	.09	.23	.35	.51	Δ

Notes:
Elevations shown for Girder V in Span 1 are to extended top of portland cement concrete.
The elevations shown at the gutterline are those which are required before the concrete is placed. Proper allowance has been made for the dead load deflections caused by the weight of the concrete and wearing course.



LONGITUDINAL STIFFENER DETAIL AT CROSSFRAMES

INTERMEDIATE AND BEARING STIFFENER DETAIL

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

SUPERSTRUCTURE DETAILS AND PAVEMENT ELEVATIONS
RAMP W-1 UPGRADING
BR. NO. CUY - 90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

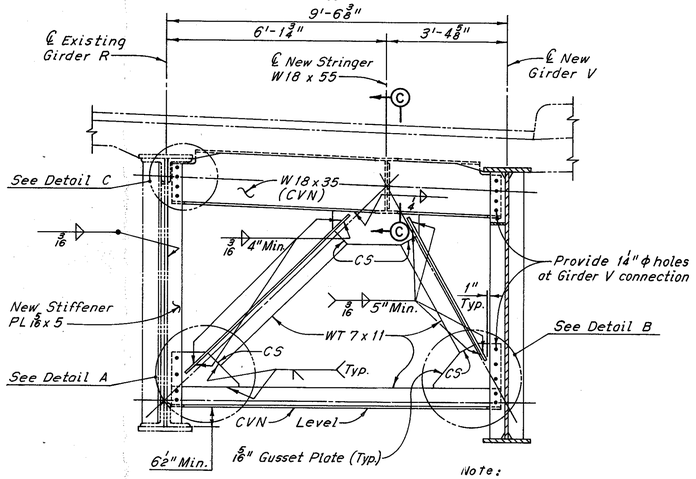
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
W.E.B. DATE 11-7-77	W.E.B. DATE 11-11-77	R.A.S. DATE 11-11-77	DATE	SHEET W 16

Δ Revised 10-17-83 EBL

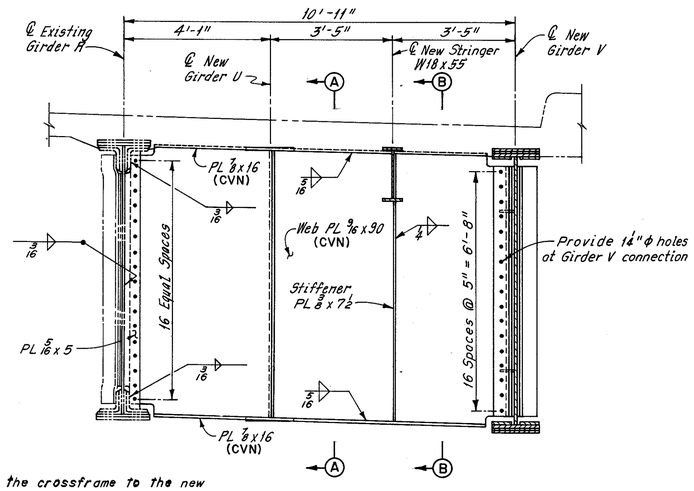
FHWA REGION	STATE	PROJECT	
5	OHIO		

39
89

CUYAHOGA COUNTY
CUY-90-15.31

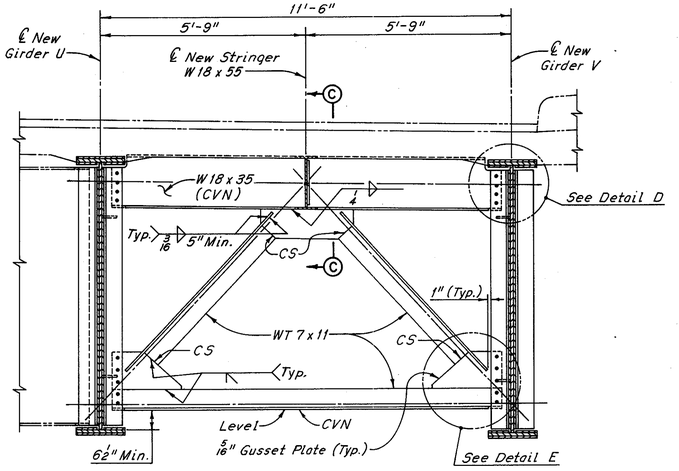


TYPE A CROSSFRAME

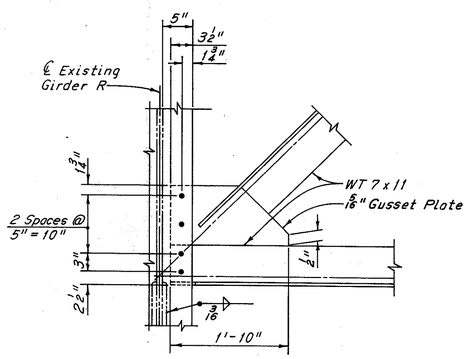


TYPE B CROSSFRAME

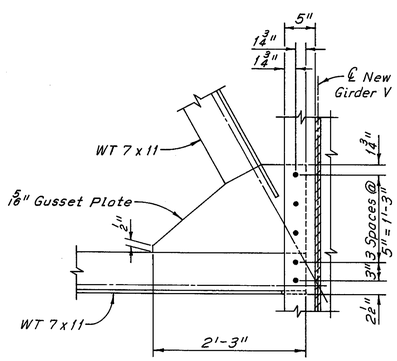
Note:
The High Strength bolts connecting the crossframe to the new Girder V at Crossframe Type A and B shall initially be snug tightened and final tightened after deck placement.



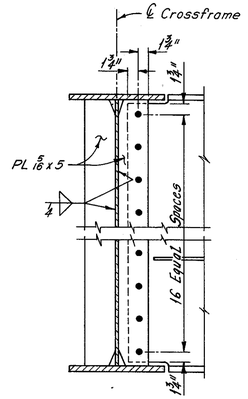
TYPE C CROSSFRAME



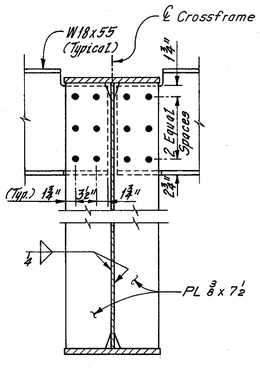
DETAIL A



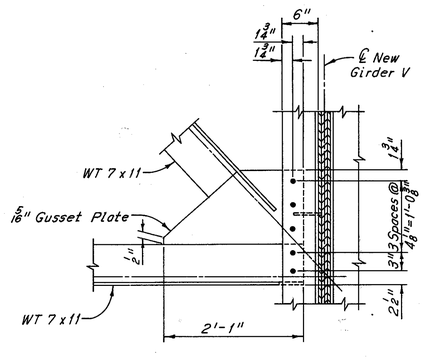
DETAIL B



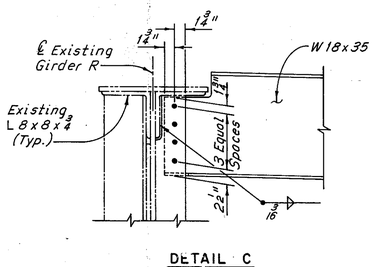
SECTION A-A



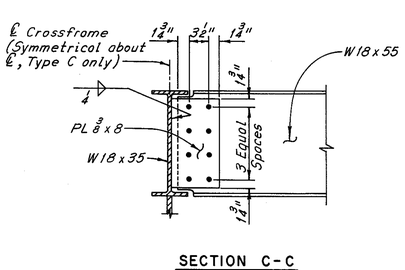
SECTION B-B



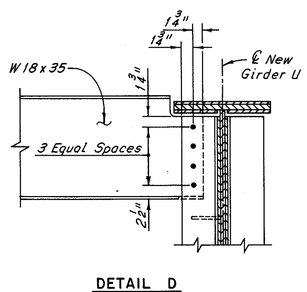
DETAIL E



DETAIL C



SECTION C-C



DETAIL D

CROSSFRAME NOTES:

Where a shape or plate is designated (CVN), the material shall meet specified minimum notch toughness requirements.

The designation (CS) indicates a butt weld subject to compressive stress only.

The removal of existing rivets, fill plates and drilling new holes in existing shapes or plates as required, shall be included with Item 202, Portions of Structures Removed for payment.

All bolts are 1 1/4" ϕ High Strength Bolts, A325 except as noted.

For location of crossframes, see Framing Plan, Sheet W 13 .

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

TYPES A, B AND C CROSSFRAME DETAILS

RAMP W-I UPGRADING

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

STA. 3+87.63
STA. 54+65.78

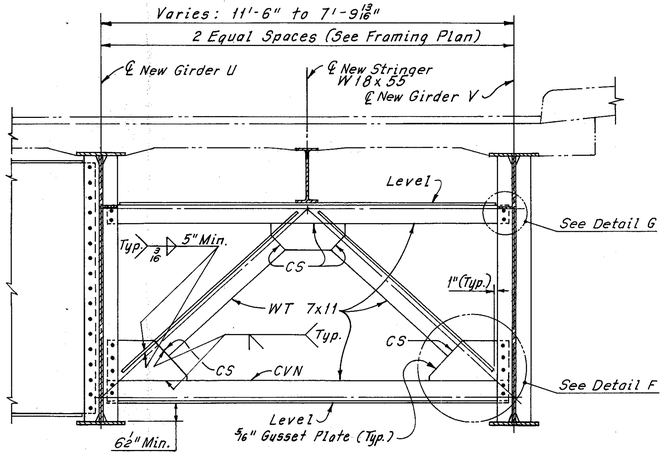
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.S.	D.L.R.	C.K.B.		
DATE 11-1-77	DATE 11-2-77	DATE 11-5-77	DATE	SHEET W 17

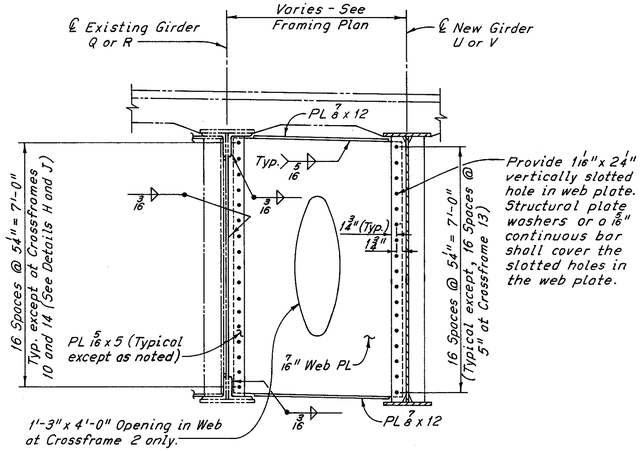
FHWA REGION	STATE	PROJECT	
5	OHIO		

40
89

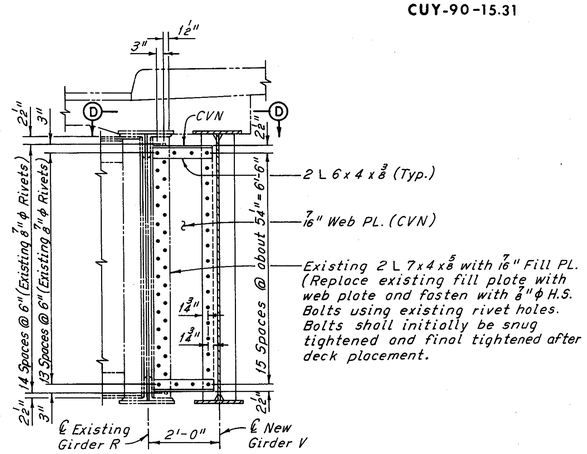
CUYAHOGA COUNTY
CUY-90-15.31



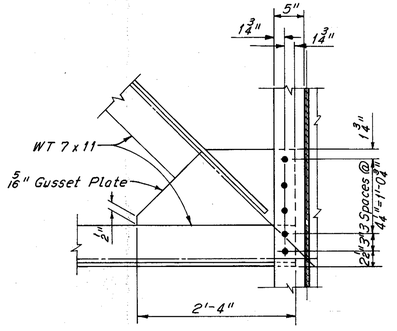
TYPE D CROSSFRAME



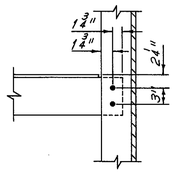
TYPE E CROSSFRAME
(Bolts at Girder U or V sholl initiolly be snug tightened and Finol tightened after deck placement)



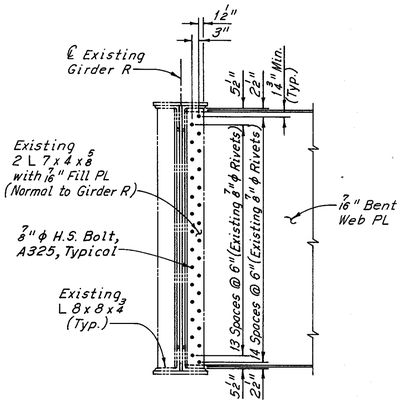
TYPE F CROSSFRAME



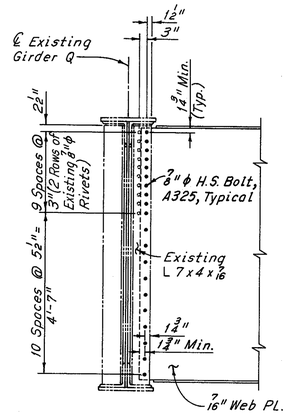
DETAIL F



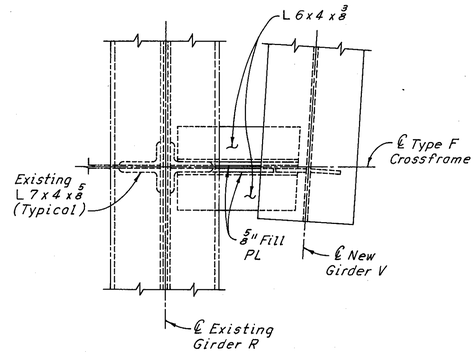
DETAIL G



DETAIL H
(Crossfrome 10 Connection)
Reploce existing fill plate with web plate and fosten with 7/8" ϕ H.S. Bolts using existing rivet holes



DETAIL J
(Crossfrome 14 Connection)



SECTION D-D
(Deck not shown)

Note:
For Crossfrome Notes, see Sheet W 17 .

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

TYPES D, E AND F CROSSFRAME DETAILS

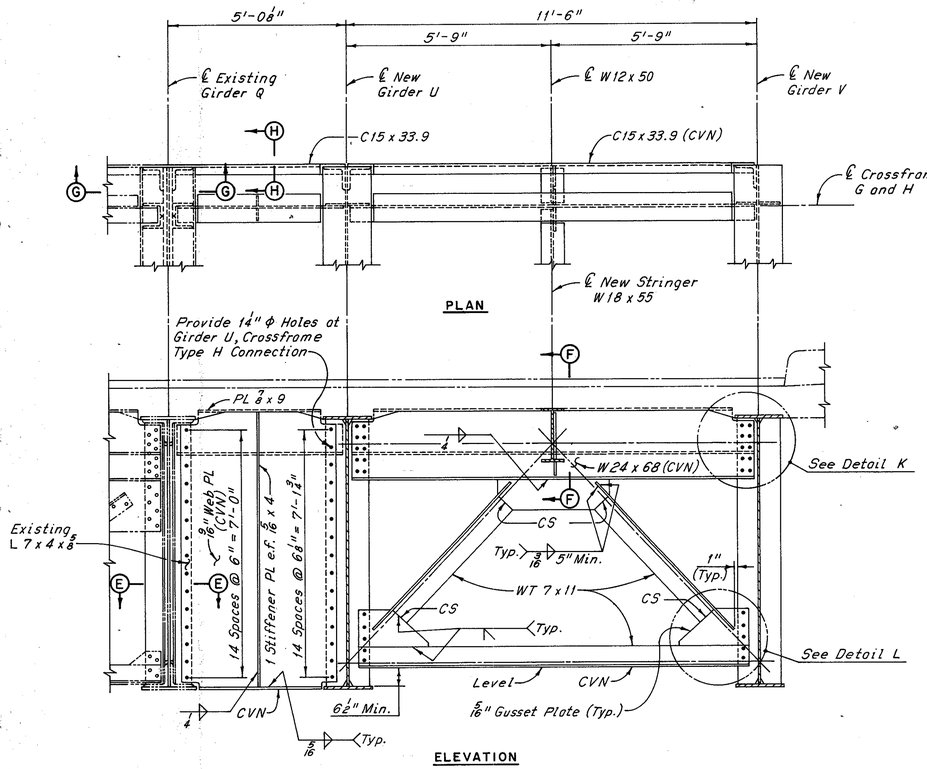
RAMP W-1 UPGRADING
BR. NO. CUY - 90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN R.A.S.	TRACED D.L.A.	CHECKED C.K.B.	REVIEWED	REVISED
DATE 11-1-77	DATE 11-2-77	DATE 11-5-77	DATE	SHEET W 18

FHWA REGION	STATE	PROJECT	
5	OHIO		

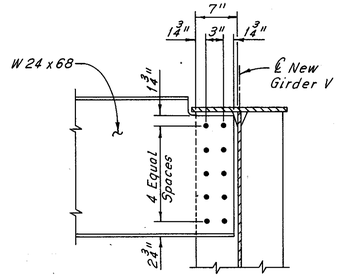
41
89

CUYAHOGA COUNTY
CUY-90-15.31

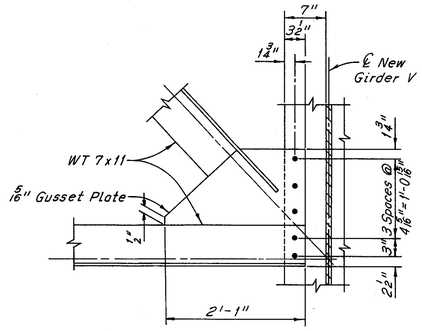


TYPE H CROSSFRAME

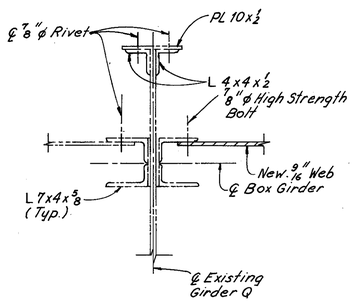
TYPE G CROSSFRAME



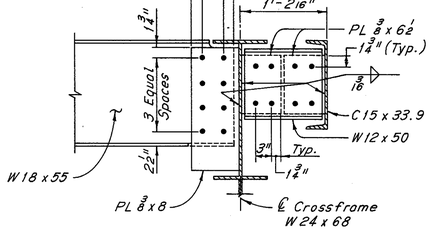
DETAIL K



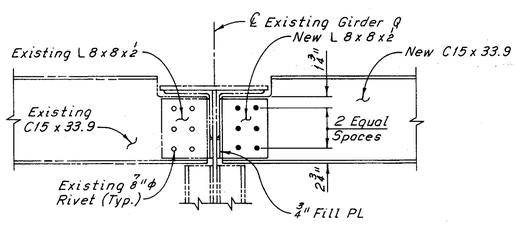
DETAIL L



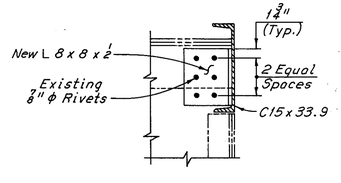
SECTION E-E



SECTION F-F



SECTION G-G
(Connection at Girders U and V similar)



SECTION H-H
(Connection at Girders U and V similar)

Note:
The High Strength bolts connecting Crossframe Type H to new Girder U shall initially be snug tightened and final tightened after deck placement.

For Crossframe Notes, see Sheet W/17

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

TYPES G AND H CROSSFRAME DETAILS

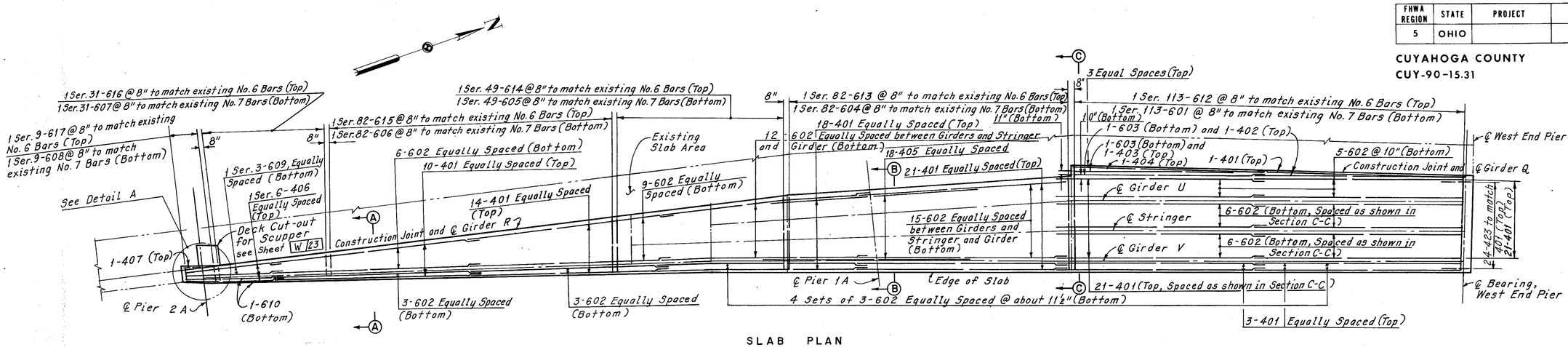
RAMP W-1 UPGRADING
BR. NO. CUY - 90-1524
90-1540
90-1547
90-1599
STA. 3+87.63
STA. 54+65.78
CUYAHOGA COUNTY OHIO

DRAWN P.A.S.	TRACED D.L.R.	CHECKED C.K.B.	REVIEWED	REVISED
DATE 11-1-77	DATE 11-2-77	DATE 11-5-77	DATE	SHEET W/19

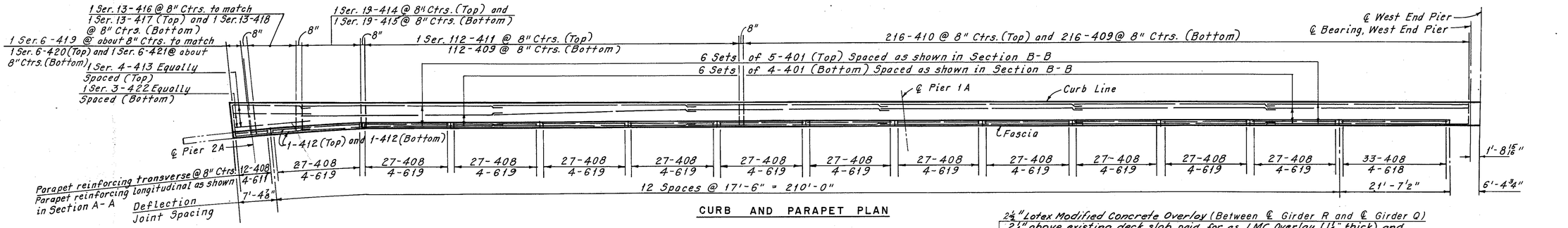
FHWA REGION	STATE	PROJECT	
5	OHIO		

42/89

CUYAHOGA COUNTY
CUY-90-15.31



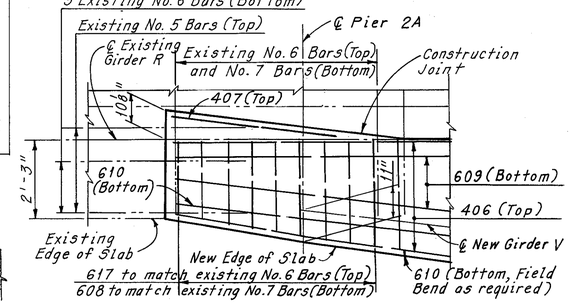
SLAB PLAN



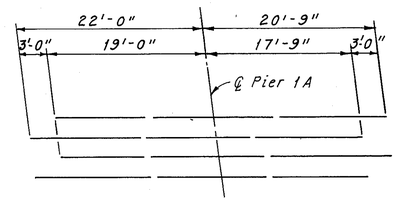
CURB AND PARAPET PLAN

Note:
All reinforcing bar marks shall be prefixed SA.

Note:
The newly constructed deck shall be water cured in accordance with 511.14 method (a).

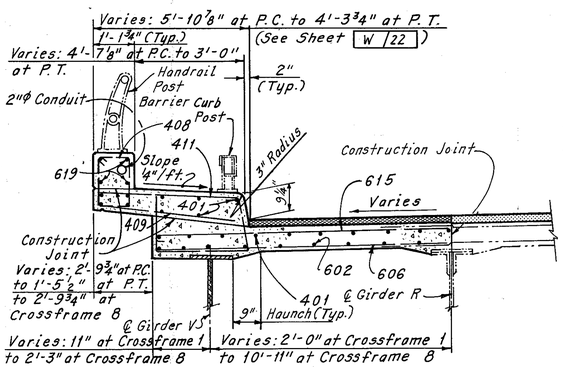


DETAIL A
(Deck Cut-out for Scupper Not Shown)

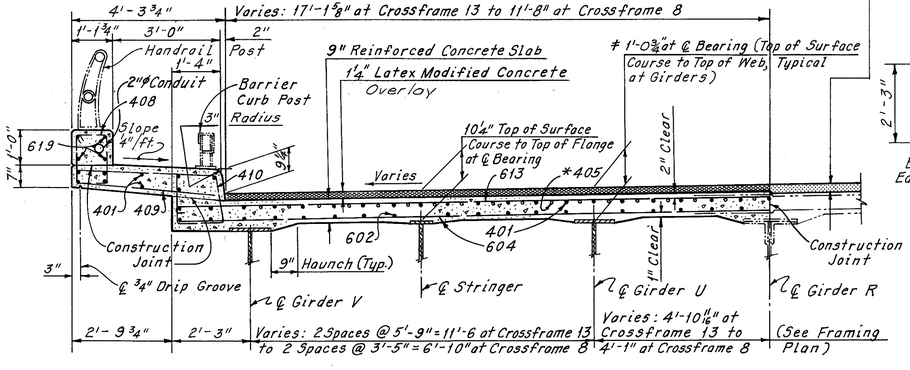


PLACEMENT OF 405 BARS OVER PIER 1A

Notes:
For Section C-C and Handrail Post Detail, see Sheet W 21.
For Framing Plan, see Sheet W 13.
For additional deck, curb, parapet and barrier curb details and contour plan, see Sheet W 22.
The following abbreviation is used:
Typ. = Typical
Phantom lines indicate existing or reused element.
For Reinforcement Schedule, see Sheet W 59.



SECTION A-A



SECTION B-B

Note:
All reinforcing bar marks shall be prefixed SA.

* Note:
For additional reinforcing bars over Pier 1A, see diagram for placement.

Note:
For Girder V this dimension is measured to the extended top of surface course when the girder is under the curb.

REQUIRED LAP LENGTH
No. 4 Bar = 1'-4" Min.
No. 6 Bar = 2'-0" Min.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

DECK PLAN, SECTIONS AND DETAILS

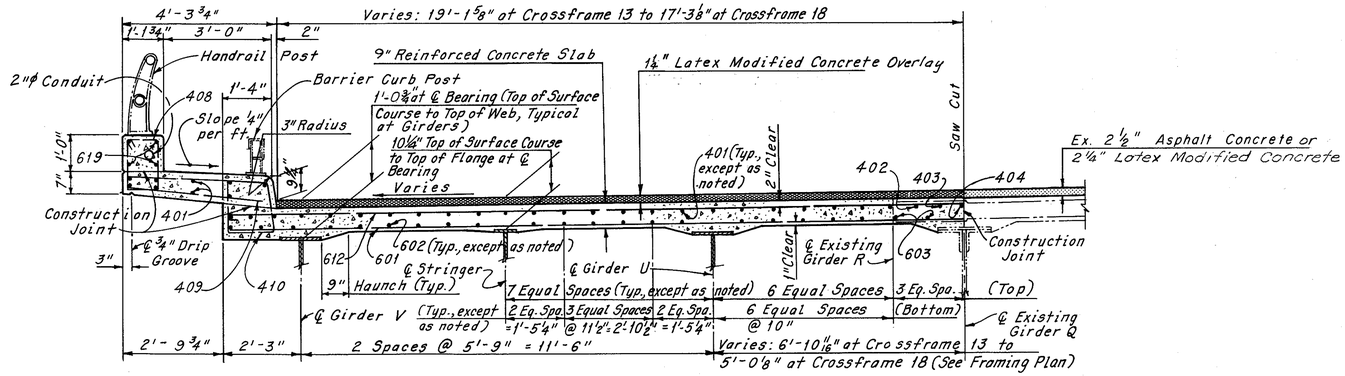
RAMP W-I UPGRADING
BR. NO. CUY- 90-1524
90-1540
90-1547
90-1599
STA. 3+87.63
STA. 54+65.78
CUYAHOGA COUNTY OHIO

DRAWN C.P.	TRACED C.P.	CHECKED W.E.B.	REVIEWED	REVISED
DATE 10-17-77	DATE 10-21-77	DATE 11-1-77	DATE	SHEET W 20

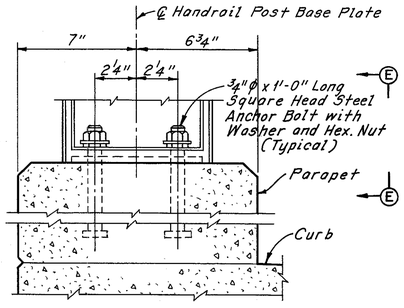
FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY-90-15.31

Note:
The newly constructed deck shall be water cured in accordance with 511.14 method (a).



SECTION C-C
(Phantom lines indicate existing or reused elements)

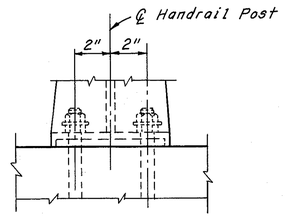


HANDRAIL POST DETAIL

Notes:
The handrail posts shall be reset along the new parapet as shown in the Plans. Handrail posts shall be set normal to grade and handrails shall parallel grade.

The steel anchor bolts, washers and nuts shall be galvanized according to 711.02.

The space below the post base plate shall be thoroughly caulked with aluminum-impregnated caulking compound (Alumilastic compound or approved equal).



VIEW E-E

Notes:
For location of Section C-C, see Sheet W/20.
For additional notes, see Sheet W/20

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

DECK DETAILS AND SECTION

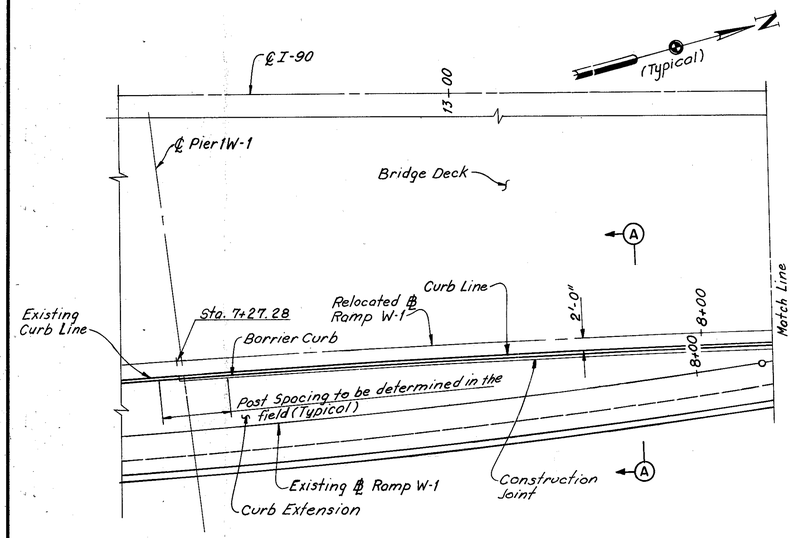
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540
90-1547
90-1599
STA. 3+87.63
STA. 54+65.78
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B. & C.P. DATE 10-21-77	C.P. DATE 10-24-77	W.E.B. DATE 11-16-77	DATE	SHEET W/21

FHWA REGION	STATE	PROJECT	
5	OHIO		

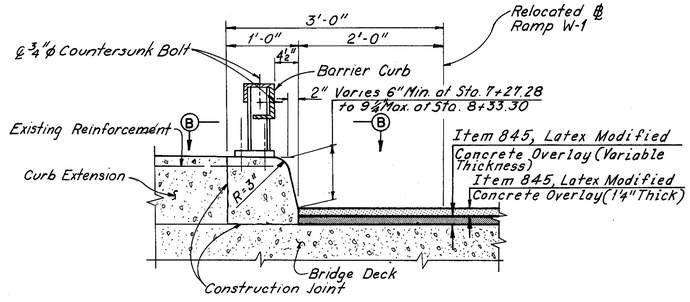
44
89

CUYAHOGA COUNTY
CUY-90-15.31

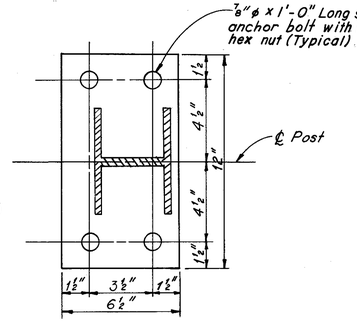


PART PLAN

10 5 0 5 10
SCALE IN FEET

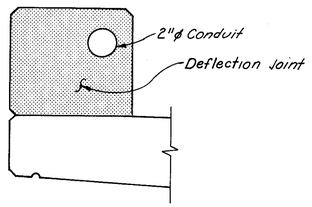


SECTION A-A



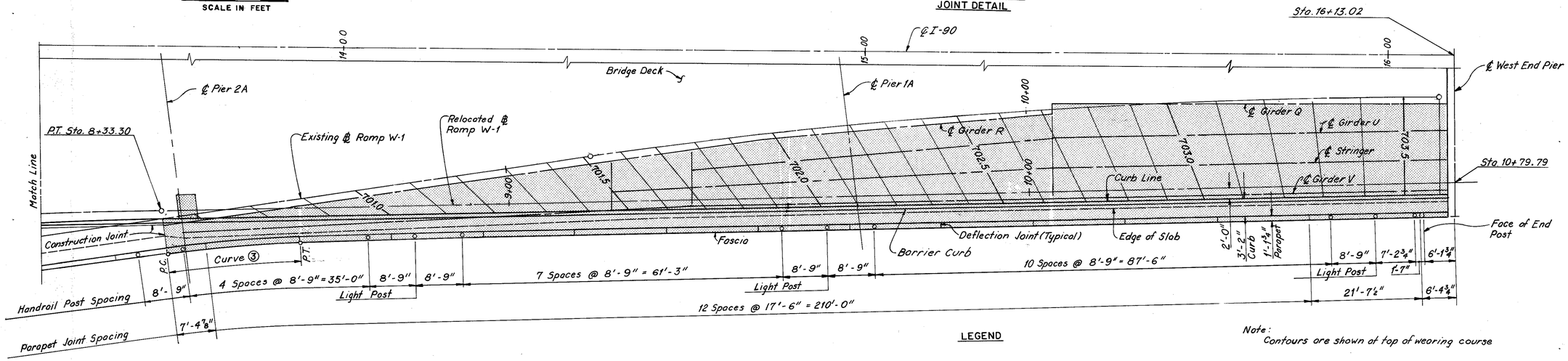
SECTION B-B

Note:
The barrier curb posts shall be reset along the new face of curb using existing post spacing. Posts shall be attached to the concrete with ¾"ϕ cast in place anchor bolts.



PARAPET DEFLECTION JOINT DETAIL

Note:
The deflection joints in the parapet shall be ¼" gray cellular polyvinyl chloride (PVC) sponge or ¼" gray sponge rubber. If rubber is used it shall meet the requirements of AASHTO M-153. The deflection joint shall be included with Item 511, Class C Concrete, Superstructure, for payment. The parapet shall be placed in alternate sections by the use of bulkheads, and after placement of expansion filler. Exposed edges of the filler shall be flush with the surface of concrete and shall be free of mortar.



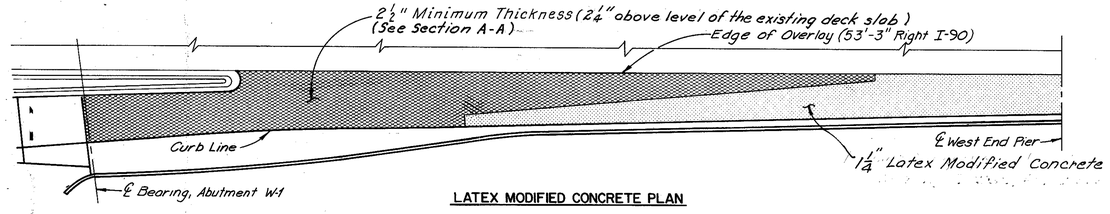
PART PLAN

10 5 0 5 10
SCALE IN FEET

LEGEND

indicates new Construction

Note:
Contours are shown at top of wearing course



LATEX MODIFIED CONCRETE PLAN

30 20 10 0 10 20 30
SCALE IN FEET

CURVE ③ DATA
(Parapet only)
Δ = 7° 04' 05"
D = 28° 07' 47"
R = 203.68'
T = 12.58'
L = 25.13'
E = 0.39'

Notes:
For removal plans, see Sheets W/5 and W/6
For framing plan, see Sheet W/13
For slab, curb and parapet reinforcement and railing details, see Sheets W/20 and W/21.

Note:
For additional data, see Sheet W/3

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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DECK, CURB, PARAPET AND BARRIER CURB DETAILS AND CONTOUR PLAN
RAMP W-1 UPGRADING

BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

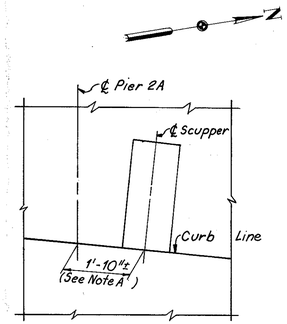
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B	J.L.V.	H.A.S.		
DATE 10-10-77	DATE 10-17-77	DATE 10-19-77	DATE	SHEET W/22

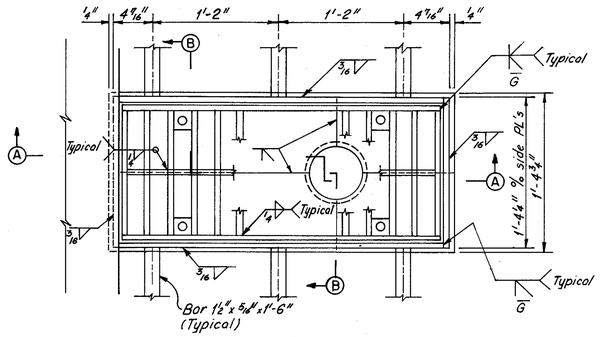
FHWA REGION	STATE	PROJECT	
5	OHIO		

45
89

CUYAHOGA COUNTY
CUY-90-15.31

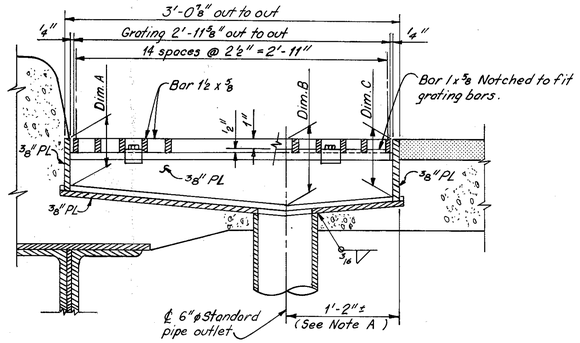


SCUPPER LOCATION



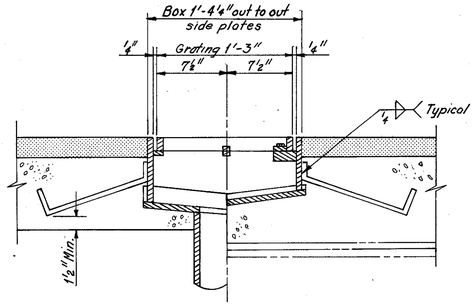
PLAN

Note A:
The contractor shall be responsible for the fit-up of the scupper. Prior to fabrication of the scupper or pipe outlet, adequate measurements shall be made in the field to determine dimensions required to assure that the pipe outlet shall fit into the existing hangers and standard reducer at Pier 2A (See Sheet W / 6). The cost of field measurement shall be included with the contract unit price bid for Item 518, Scupper , As Per Plan.



SECTION A-A
(Extend pipe outlet a minimum of 2" below top of reducer, see Sheet W / 6

TABLE OF DIMENSIONS		
	At Face of Side Plate	At ℄ Scupper
Dim. A	5½"	6"
Dim. B	7¾"	8¼"
Dim. C	6¾"	7¼"



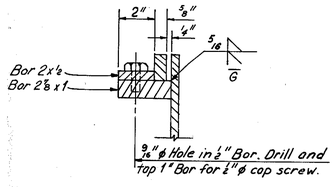
SECTION B-B

DRAINAGE NOTES:

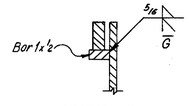
The scupper and grating shall be hot-dipped galvanized low or mild carbon steel available commercially. This material will be excluded from the requirements of 501.07 for test reports. The 6"ϕ pipe shall be hot-dipped galvanized steel pipe. All welding shall be done before galvanizing.

The Contractor shall cut existing reinforcing bars, as required for placement of the new scupper and replace the removed concrete to match the existing deck slab.

Payment for the in-place scupper including grating, pipe outlet, cutting existing reinforcing bars and placing new concrete will be made at the unit price bid for Item 518, Scupper : As Per Plan.



SECTION THRU
GRATING FASTENING



SECTION THRU
GRATING SUPPORT

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND

HNTB

DRAINAGE DETAILS

RAMP W-I UPGRADING
BR. NO. CUY – 90 – 1524
90 – 1540 STA. 3+87.63
90 – 1547 STA. 54+65.78
90 – 1599

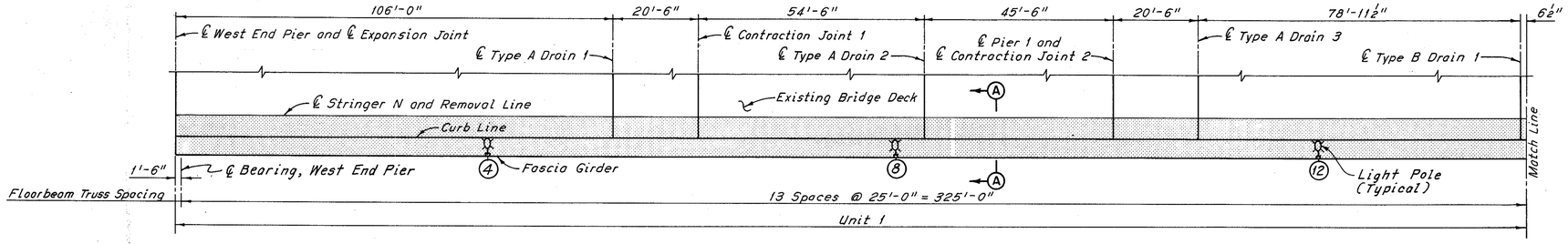
CUYAHOGA COUNTY · OHIO

DRAWN C.K.B.	TRACED J.L.V.	CHECKED H.A.S.	REVIEWED	REVISED
DATE 12-6-77	DATE 12-6-77	DATE 12-13-77	DATE	SHEET W 23

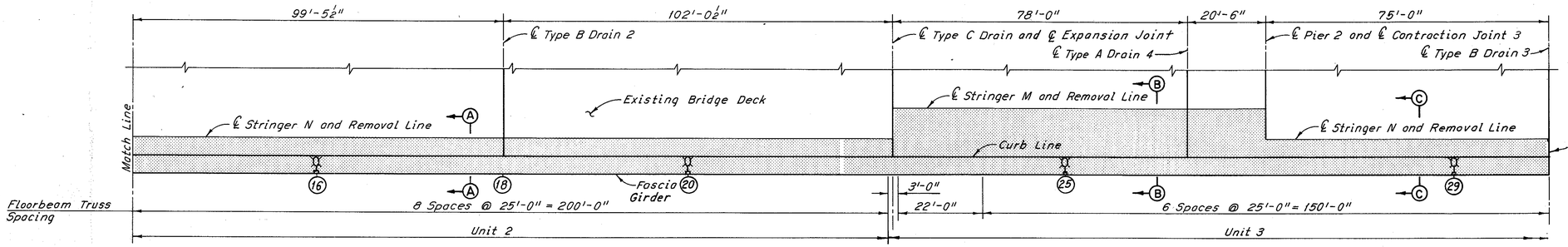
FHWA REGION	STATE	PROJECT	
5	OHIO		

46
89

CUYAHOGA COUNTY
CUY-90-15.31



PART PLAN



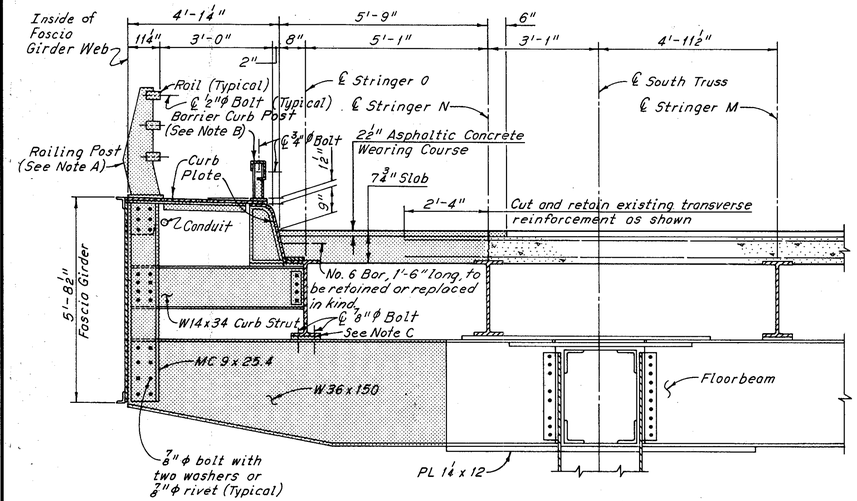
PART PLAN

Notes:
Indicates portions of structure removed.
For Framing Plan, see Sheet W/32.
For Sections B-B and C-C, see Sheet W/26.
For removal details at Type A and Type B drains, see Sheet W/26.
For removal details at Contraction Joints, see Sheet W/27.
For removal details at Expansion Joints, see Sheets W/29 and W/30.
○ Indicates floorbeam designation.

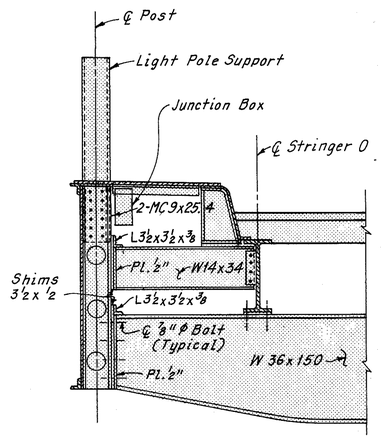
Note A:
Remove the rail attachment bolts from the railing posts and remove and retain the rails for resetting on the widened structure.

Note B:
Remove the barrier curb attachment bolts from the barrier curb posts and remove and retain the barrier curb for resetting on the widened structure.

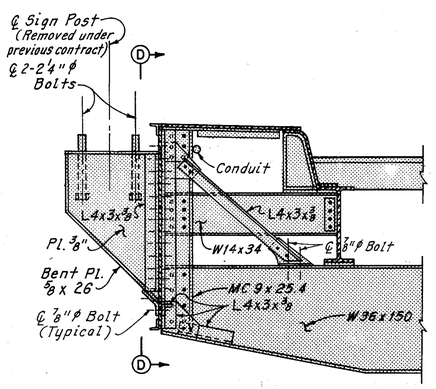
Note C:
Remove the existing fascia girder-curb stringer assembly(Including MC9 x 25.4, W14 x 34 Curb Strut and Curb Plates) as a unit for resetting on the widened structure. The assembly can be removed from the structure between Type B drains and/or expansion joints and/or cantraction joints.



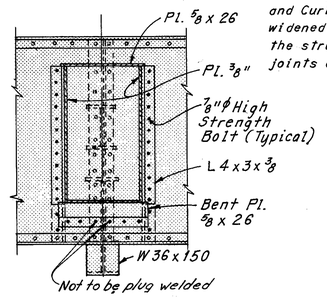
SECTION A-A - WEST END PIER TO TYPE C DRAIN
(Floorbeams 1 thru 22)
(Permanent metal forms on bottom side of deck not shown)



PART SECTION AT LIGHT POLE SUPPORT
(Railing and barrier curb not shown)



PART SECTION AT FLOORBEAM 18
(Railing post and barrier curb post not shown)



SECTION D-D
(Remove existing ⅞"ϕ bolts and plug weld holes in fascia girder, except as noted. Include with Item 202, Portions of Structures Removed, for payment.)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

REMOVAL PLANS

RAMP W-I UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599

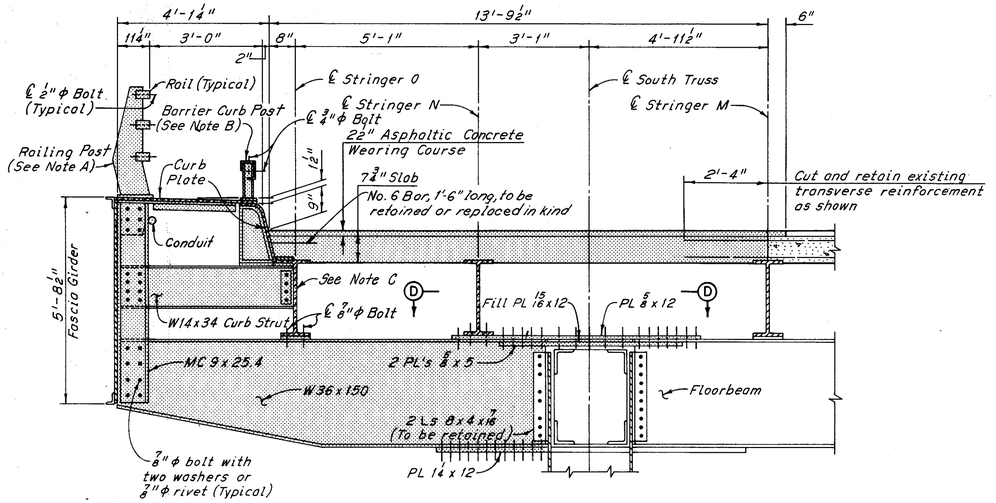
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B.	D.L.R.			
DATE 12-1-77	DATE 12-2-77	DATE 12-20-77	DATE	SHEET W/25

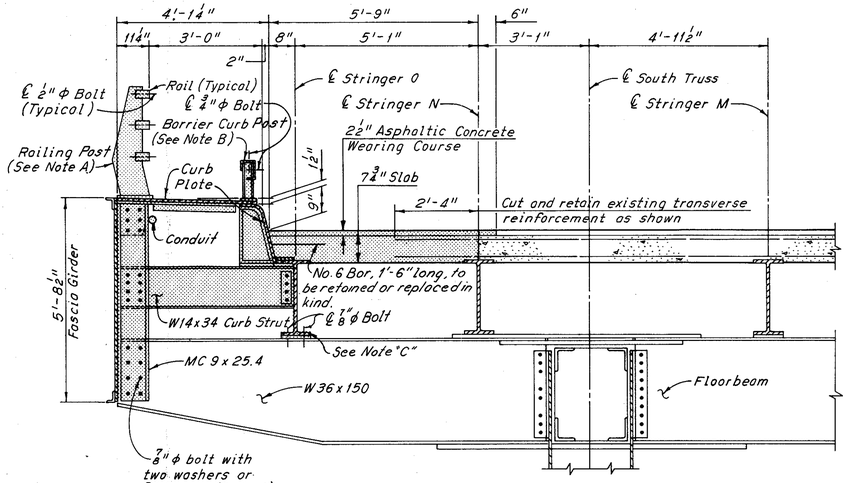
FHWA REGION	STATE	PROJECT	
5	OHIO		

47
89

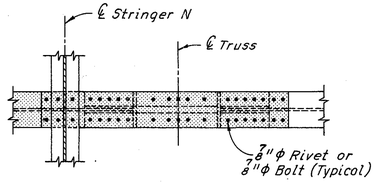
CUYAHOGA COUNTY
CUY-90-15.31



SECTION B-B - TYPE C DRAIN TO PIER 2
(Floorbeams 23 thru 26)
(Permanent metol forms on bottom side of deck not shown)

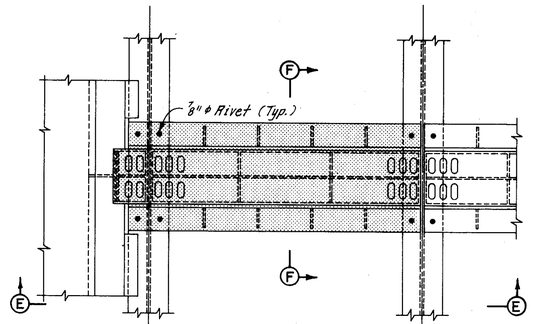


SECTION C-C - PIER 2 TO TYPE B DRAIN 3
(Floorbeams 27 thru 30)
(Permanent metol forms on bottom side of deck not shown)

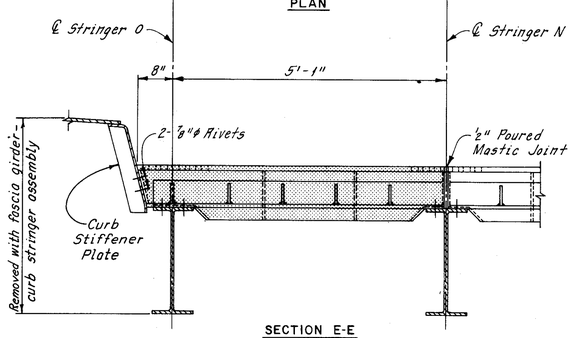


VIEW D-D

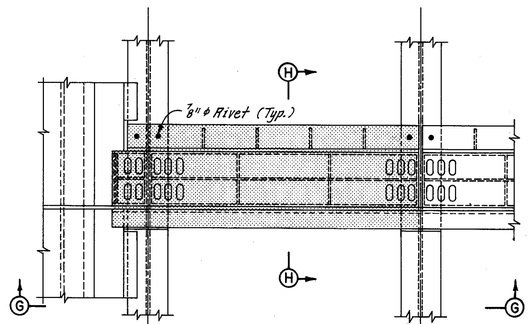
Note:
Stringer N, between Floorbeams 23 and 27 and Type A Drain 4, between Stringer M and Stringer N shall be removed, stored and reinstalled on the widened structure. Storage shall be included with Item 202, Portions of Structures Removed, for payment. and reinstallation shall be included in the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.



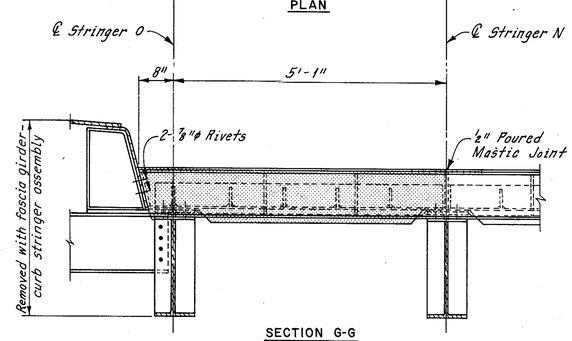
PLAN



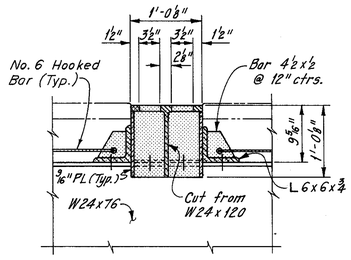
SECTION E-E
TYPE A DRAIN



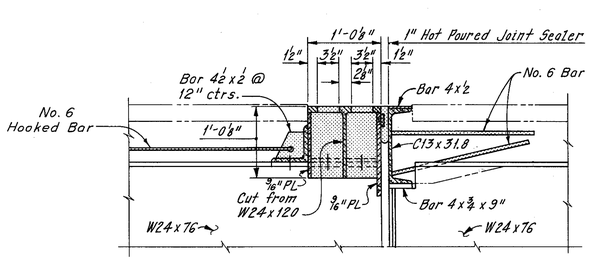
PLAN



SECTION G-G
TYPE B DRAIN



SECTION F-F



SECTION H-H

"Expansion Joint may have been modified as per the detail on sheet 70A."

Notes:
Indicates portions of structures removed.
For location of Sections B-B and C-C, see Sheet W 25 .
For locations of Type A and Type B Drains, see Sheet W 25 .
For additional notes, see Sheet W 25 .
The following abbreviations are used:
Typ. = Typical
Ctrs. = Centers

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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REMOVAL PLANS

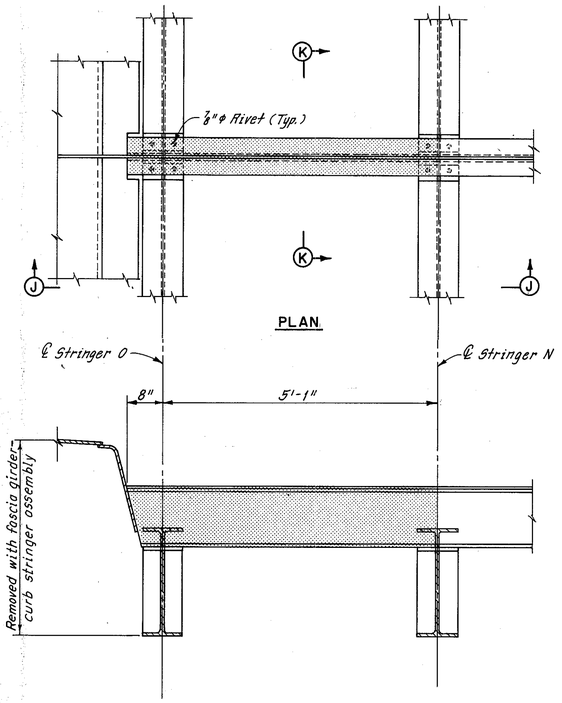
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA.3+87.63
90-1547 STA.54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.K.B.	D.L.H.			
DATE 12-5-77	DATE 12-7-77	DATE 12-20-77	DATE	SHEET W 26

FHWA REGION	STATE	PROJECT	
5	OHIO		

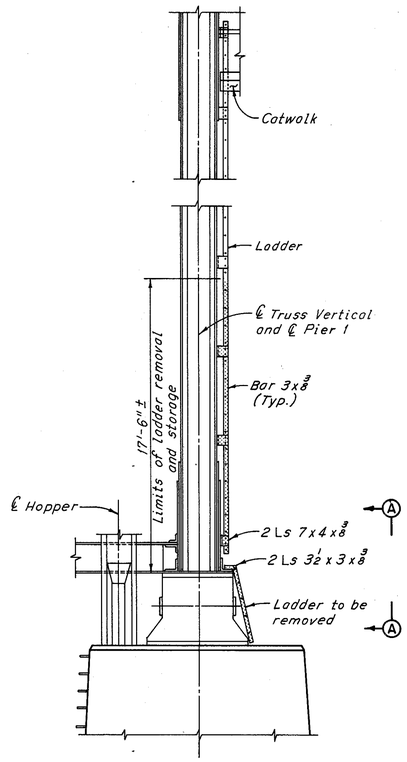
48
89

CUYAHOGA COUNTY
CUY-90-15.31

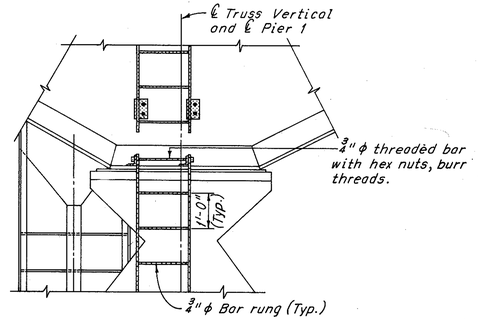


PLAN

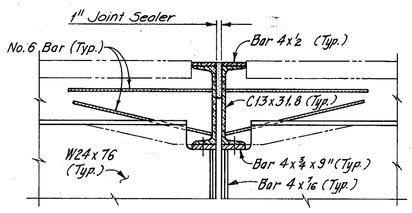
SECTION J-J



SOUTH TRUSS ELEVATION
(Looking East)



VIEW A-A



SECTION K-K

CONTRACTION JOINT

Note:
Contraction Joint 3 shall be temporarily supported at ℄ Stringer N until Stringer N is reset. Include with the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

"Expansion Joint may have been modified as per the detail on sheet 70A"

ACCESS TO PIER I

Notes:
Indicates portions of structures removed.
For location of Contraction Joints, see Sheet W/25.

Storage of the existing ladder shall be included with Item 202, Portions of Structures Removed, for payment.

The removed portion of the ladder shall be lengthened as required and approved by the Engineer and shall be reused as shown on Sheet W/54. Payment for lengthening and reinstalling the existing ladder excluding new supports shall be included with the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

For additional notes, see Sheet W/26.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
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REMOVAL PLANS

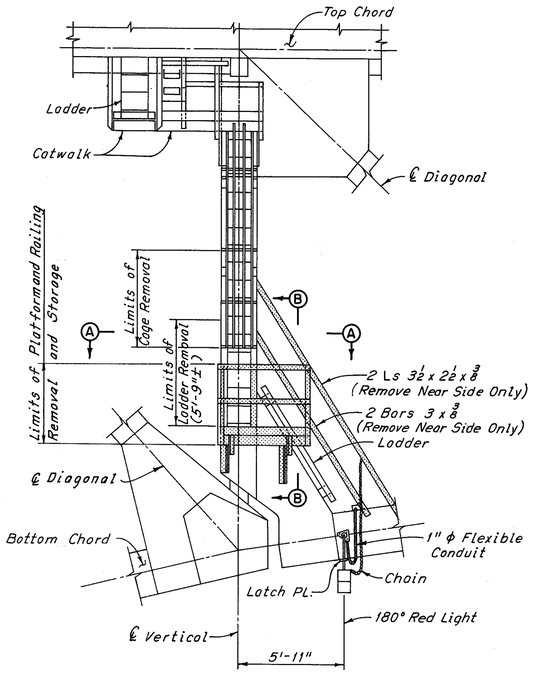
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN R.A.S	TRACED D.L.R	CHECKED B.P.+W.E.B.	REVIEWED	REVISED
DATE 2-1-78	DATE 3-3-78	DATE 3-23-78	DATE ·	SHEET W/27

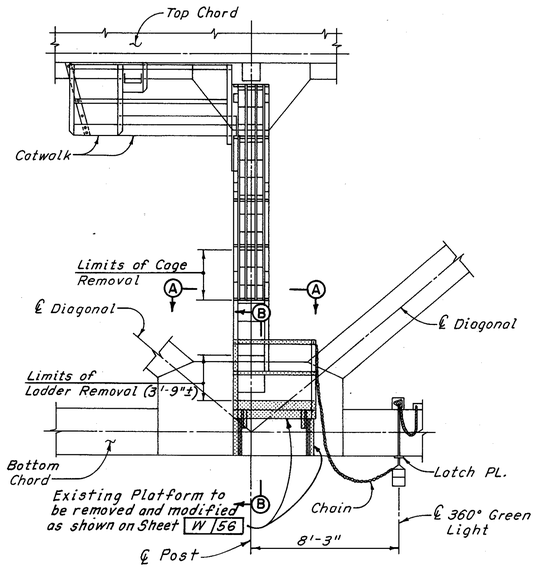
FHWA REGION	STATE	PROJECT	
5	OHIO		

49
89

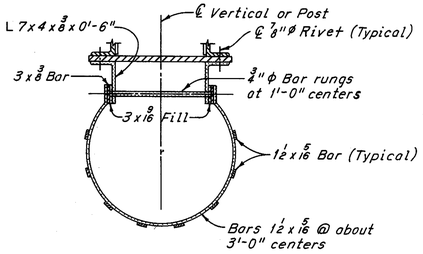
CUYAHOGA COUNTY
CUY-90-15.31



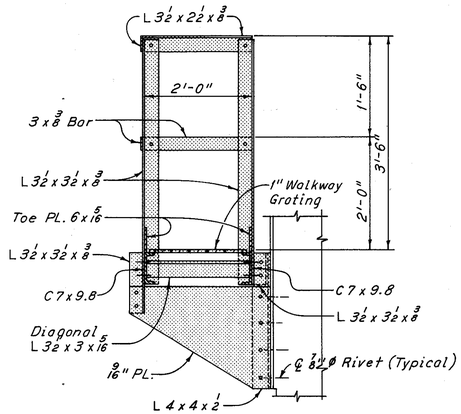
SOUTH TRUSS ELEVATION
(Looking North At Floorbeam 14)



SOUTH TRUSS ELEVATION
(Looking North At Floorbeam 18)



SECTION A-A
(Cage and Ladder Removal)



SECTION B-B
(Ladder not shown)

Notes:

Storage of existing elements as required, shall be included with Item 202, Portions of Structures Removed, for payment.

At the Floorbeam 14 location, the platform shall be reused as shown on Sheet W 55.

At the Floorbeam 18 location, the platform shall be reused as shown on Sheet W 56.

▨ Indicates portions of structures removed.

ACCESS TO NAVIGATION LIGHTS

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

REMOVAL PLANS

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

CUYAHOGA COUNTY OHIO

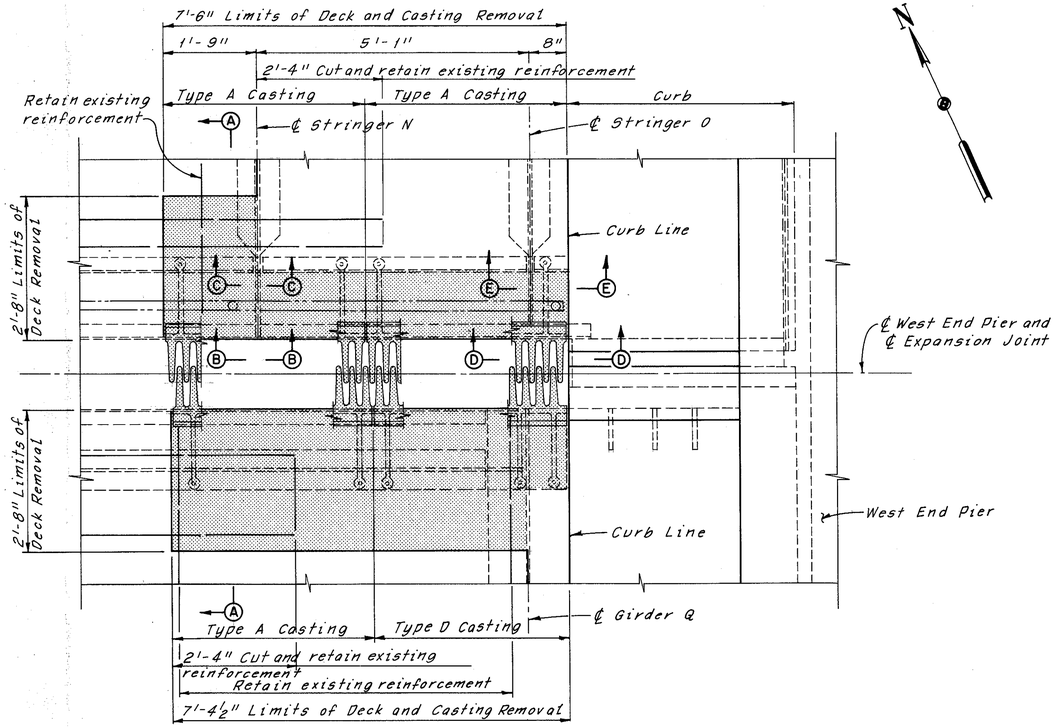
DRAWN RAS	TRACED DLR	CHECKED W.E.B.	REVIEWED	REVISED
DATE 2-1-78	DATE 3-3-78	DATE 3-28-78	DATE	SHEET W 28

L-0

FHWA REGION	STATE	PROJECT	
5	OHIO		

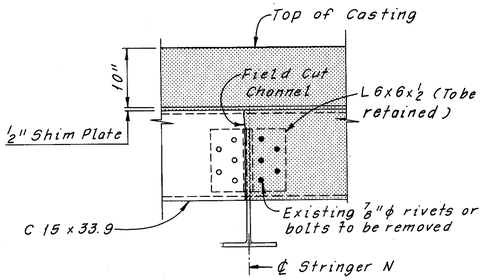
50/89

CUYAHOGA COUNTY
CUY-90-15.31

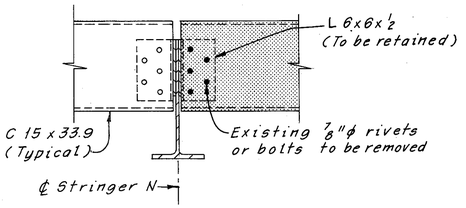


PART PLAN AT EXPANSION JOINT AT WEST END PIER

(Deck, except as shown, curb and West End Pier removal details not shown. Removal of these items is shown elsewhere.)

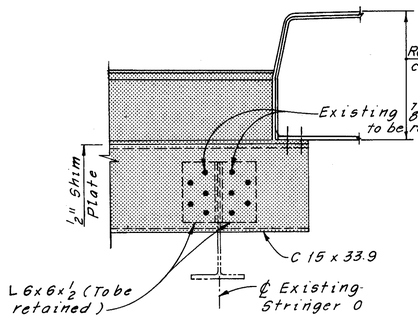


SECTION B-B

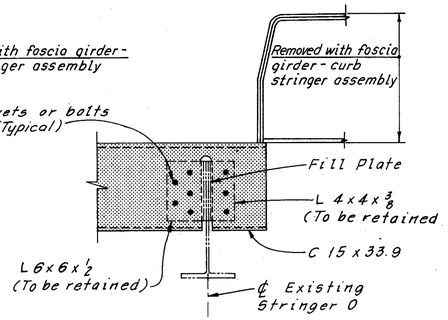


SECTION C-C

(Shim Plates and Castings not shown)

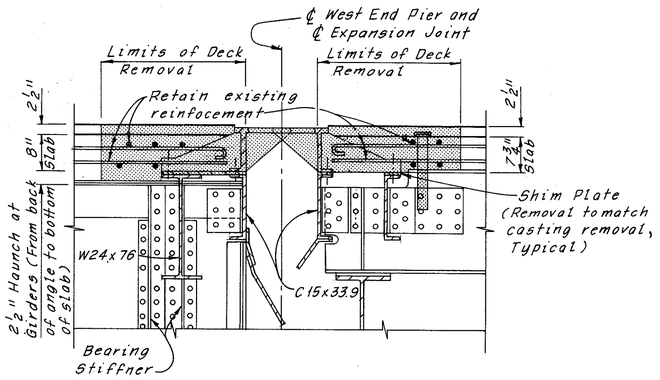


SECTION D - D



SECTION E - E

(Shim Plates and Castings not shown)



SECTION A-A

Notes:

Shaded indicates portions of structures to be removed.

Type A Castings that are removed shall be stored for installation in the widened structure. Include with the unit price bid for Item 513, Structural Steel (ASTM A27), for payment.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND

HNTB

REMOVAL PLANS

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

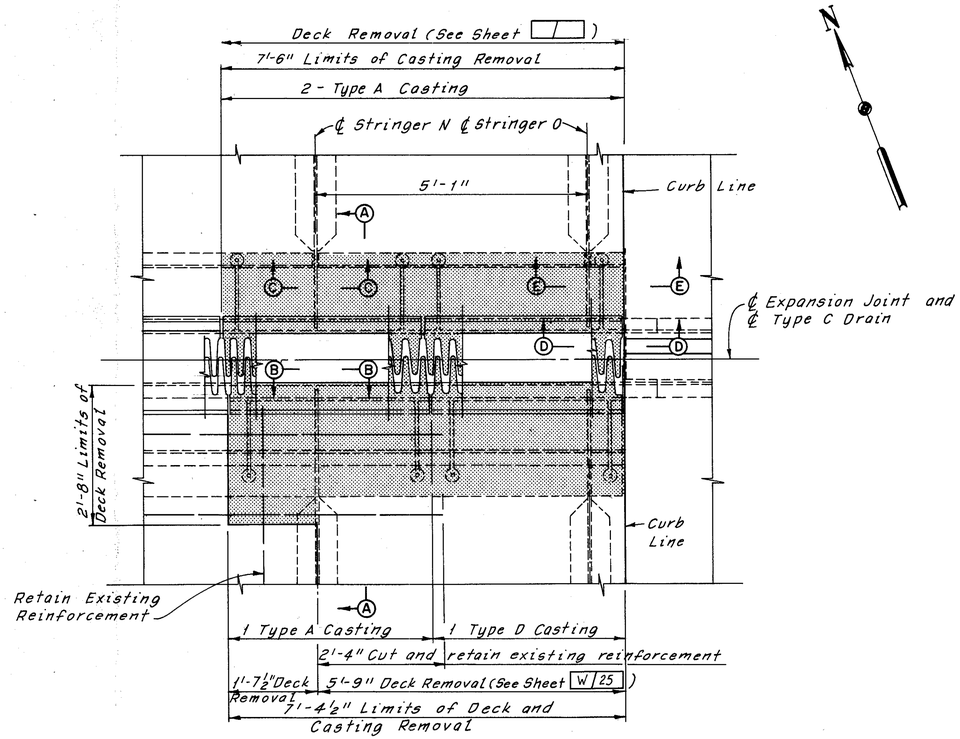
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
RAS	OTT			
DATE 11-17-77	DATE 12-22-77	DATE 12-30-77	DATE	SHEET W 29

FHWA REGION	STATE	PROJECT	
5	OHIO		

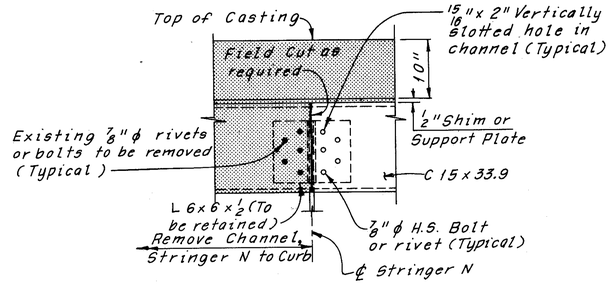
51
89

CUYAHOGA COUNTY
CUY-90-15.31

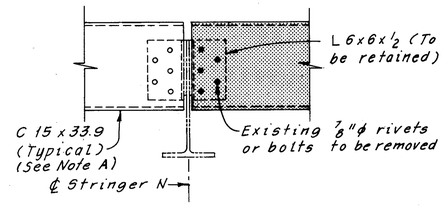


PART PLAN AT EXPANSION JOINT AT TYPE C DRAIN

(Deck, except as shown, and fascia girder - curb stringer assembly removal details not shown. Removal of these items is shown elsewhere.)

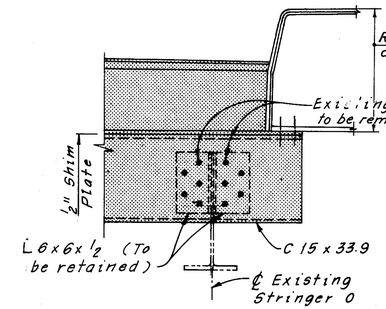


SECTION B-B

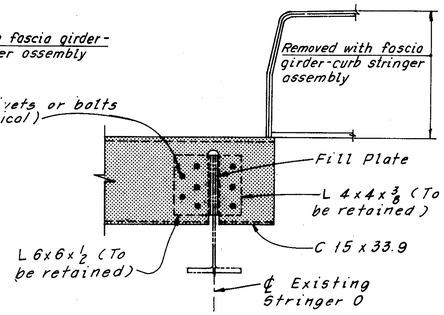


SECTION C-C

(Shim Plates and Castings not shown)



SECTION D - D



SECTION E - E

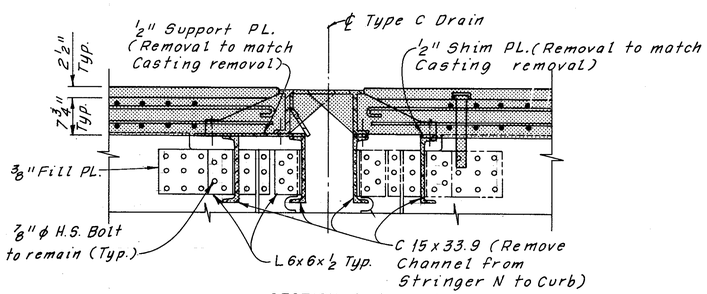
(Shim Plates and Castings not shown)

Notes:

Shaded indicates portions of structures to be removed.

Type A Castings that are removed shall be stored for installation in the widened structure, include with the unit price bid for Item 513, Structural Steel (ASTM A27), for payment.

For location of Expansion Joint and Type C Drain, see Sheet W 25



SECTION A-A

Note A:

The casting support channels shall be temporarily supported at ℄ Stringer N until Stringer N is reset. Included with the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

REMOVAL PLANS

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+85.78
90-1599

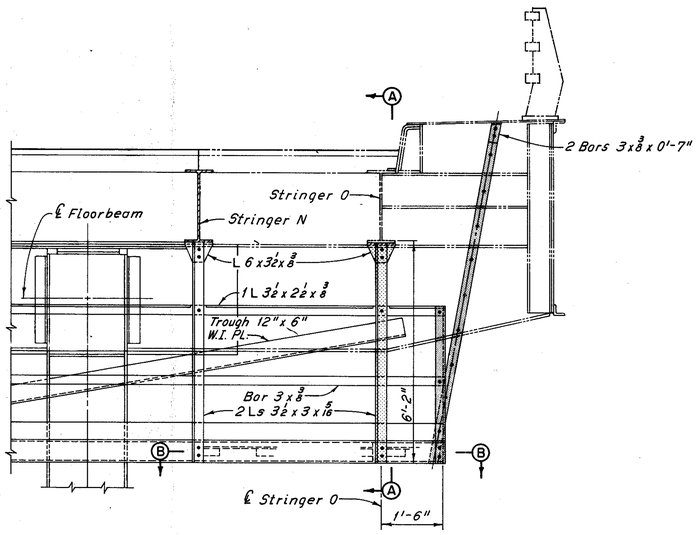
CUYAHOGA COUNTY OHIO

DRAWN KAS	TRACED CJT	CHECKED	REVIEWED	REVISED
DATE 11-17-77	DATE 12-22-77	DATE 12-30-77	DATE	SHEET W 30

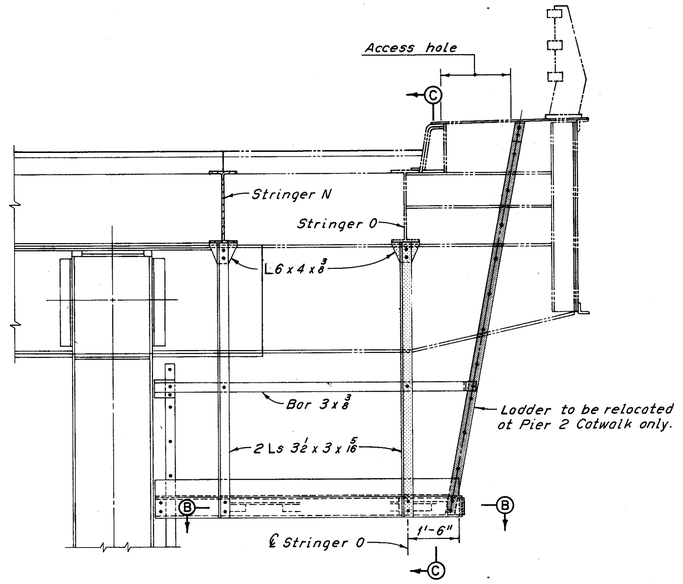
FHWA REGION	STATE	PROJECT	
5	OHIO		

52
89

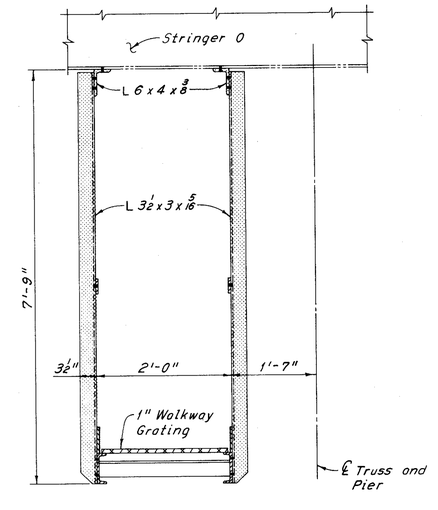
CUYAHOGA COUNTY
CUY-90-15.31



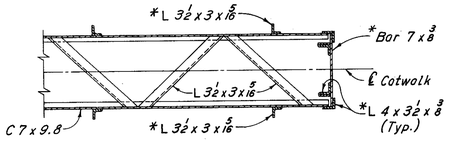
CATWALK REMOVAL AT CROSSDRAINS
(Flashing not shown)



CATWALK REMOVAL AT PIERS



SECTION C-C



SECTION B-B

* Indicates Removal

Notes:

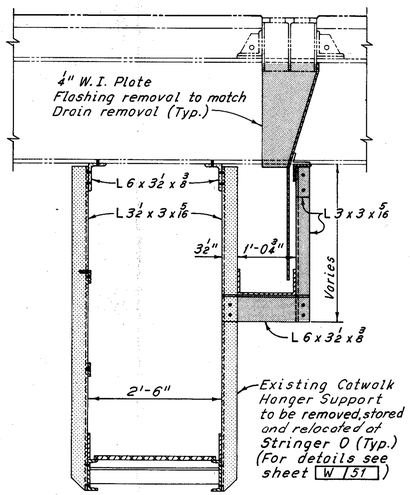
The Contractor shall take special care during removal so as not to damage the existing structural members that are to remain in place or to be reused on the widened structure.

Storage of structural elements that are to be reused on the widened structure shall be included with Item 202, Portions of Structures Removed, for payment.

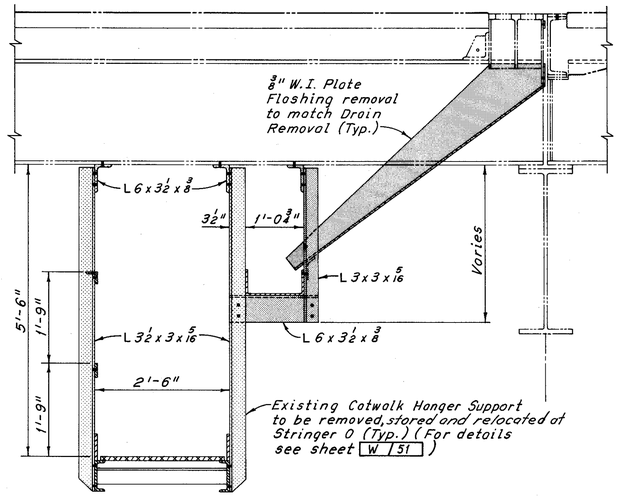
Resetting of structural elements on the widened structure shall be included in the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

Phantom lines indicate removal, details of which are shown elsewhere in these plans.

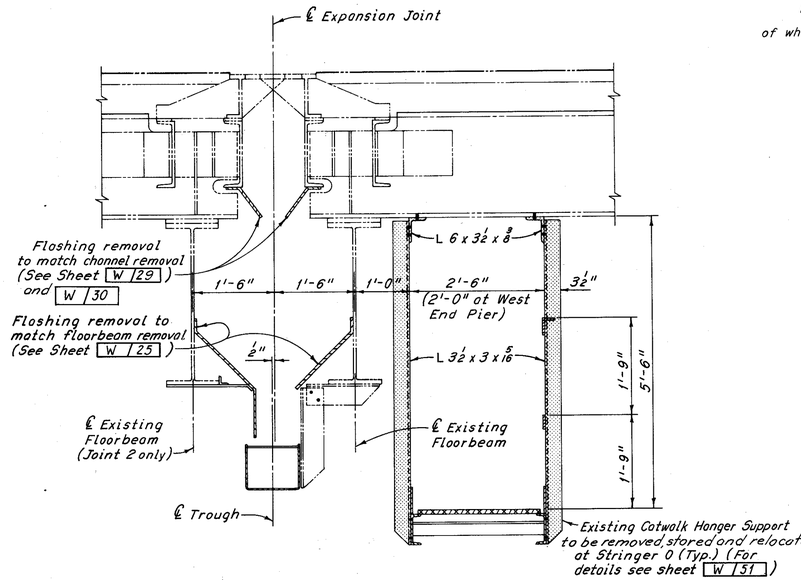
The following abbreviations are used:
W.I. = Wrought Iron
Typ. = Typical
Indicates Removal.
Indicates members to be removed and relocated.



TYPE A DRAIN



TYPE B DRAIN



TYPE C DRAIN
(Expansion Joint 2 Shown, West End Pier Similar)

SECTION A-A
(Floorbeam and Deck Removol are not shown)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

REMOVAL PLANS

RAMP W-1 UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.S.	D.L.R.	W.E.B.		
DATE 1-17-78	DATE 1-16-78	DATE 2-6-78	DATE	SHEET W 131

FHWA REGION	STATE	PROJECT	
5	OHIO		

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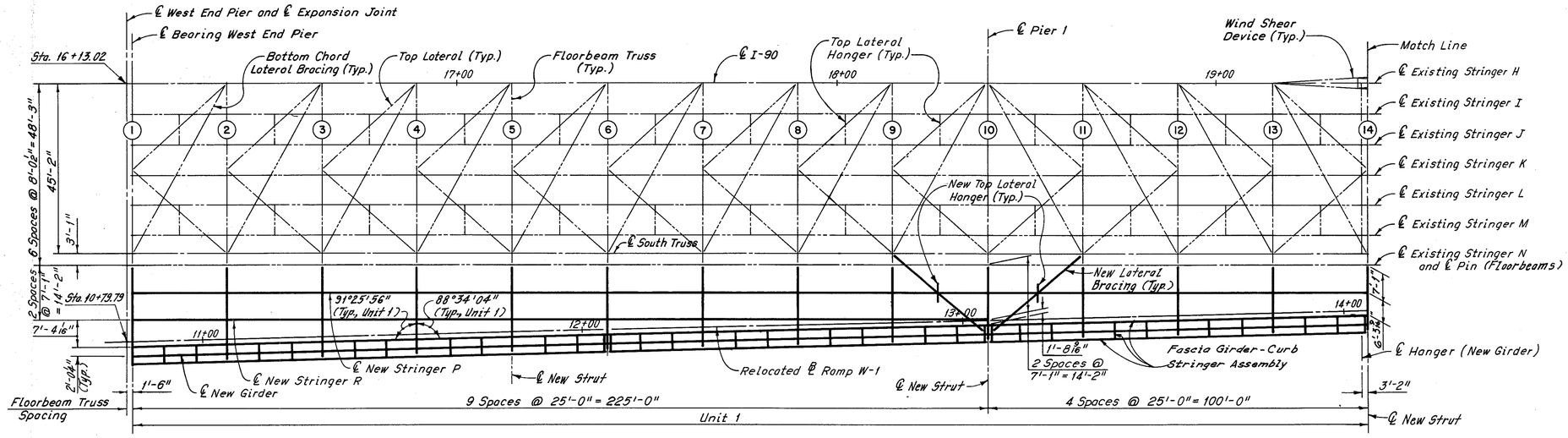
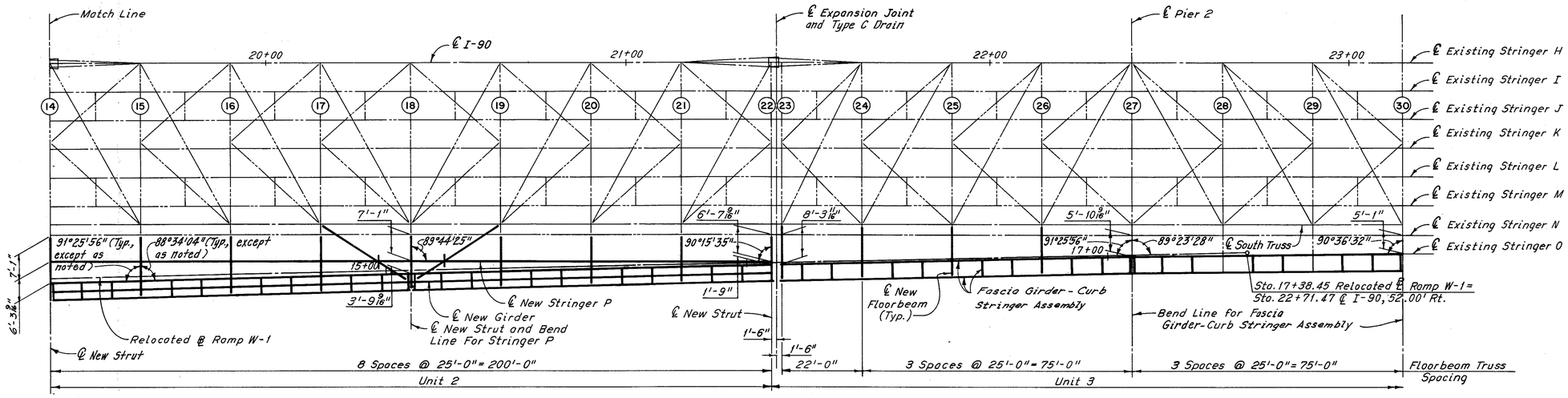
89

CUYAHOGA COUNTY
CUY-90-15.31



PART FRAMING PLAN



PART FRAMING PLAN

Notes:
(1) indicates floorbeam designation.
For girder and stringer details, see Sheet W/33.
For lateral bracing details, see Sheet W/45.
For floorbeam details, see Sheets W/38 thru W/40
For strut details, see Sheets W/41 thru W/44
The following abbreviations are used:
Typ. = Typical
Rt. = Right
Phantom lines indicate existing conditions.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

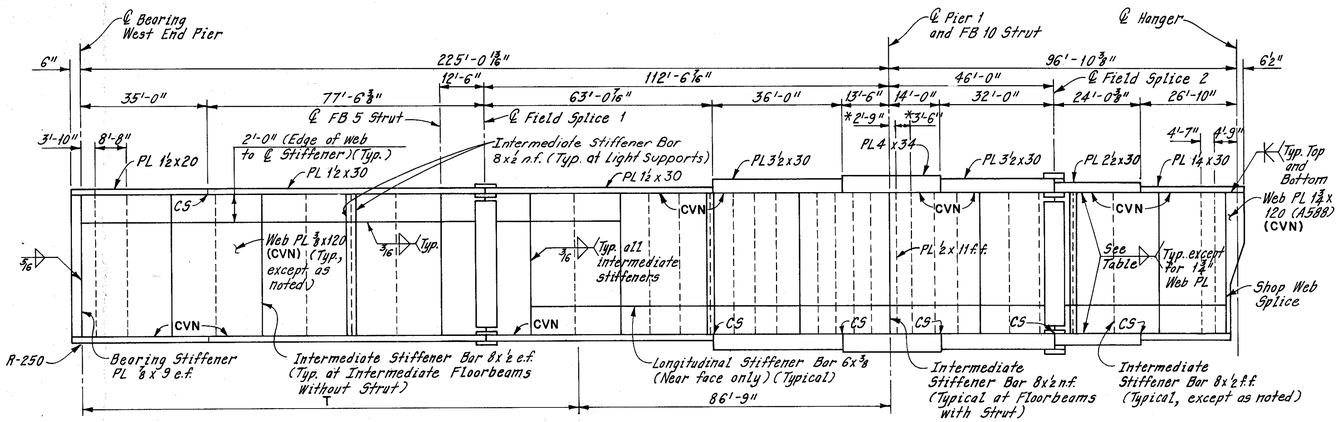
FRAMING PLAN

RAMP W-1 UPGRADING

BR. NO. CUY-90-1524
90-1540 STA.3+87.63
90-1547 STA.54+65.78
90-1599

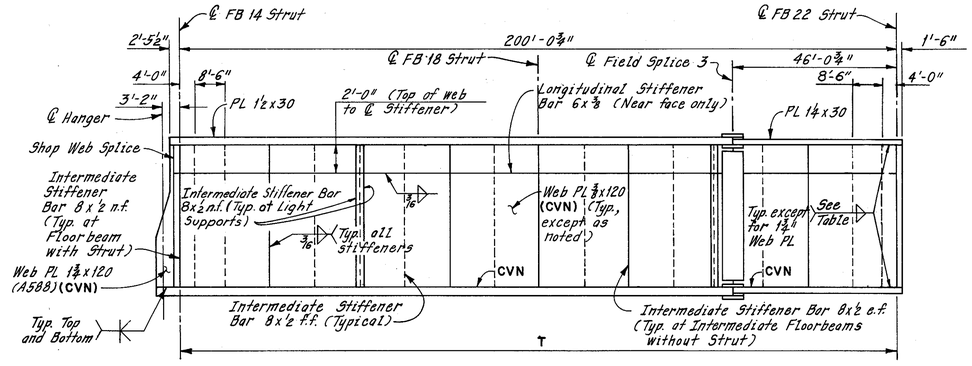
CUYAHOGA COUNTY OHIO

DRAWN C.K.B.	TRACED D.L.R.	CHECKED D.A.S.	REVIEWED	REVISED
DATE 11-4-77	DATE 11-8-77	DATE 3-2-78	DATE	SHEET W/32

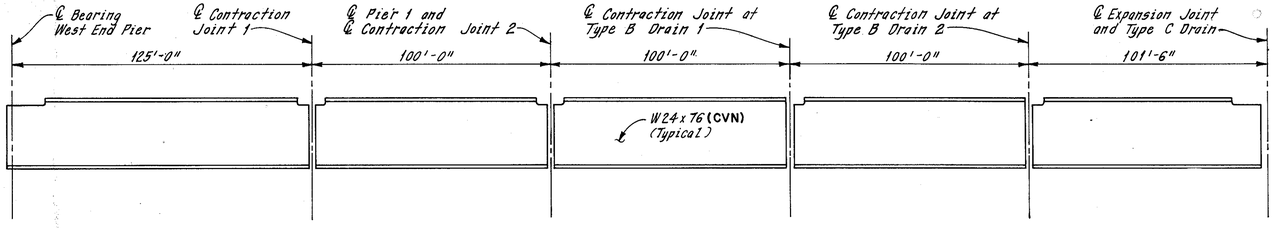


GIRDER ELEVATION – UNIT 1

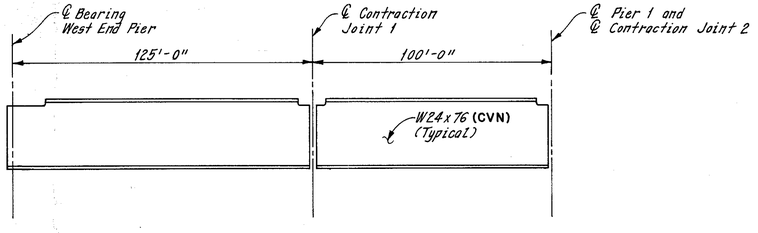
*These dimensions may be adjusted by the Fabricator to suit hydraulic ram dimensions, see Sheet W 44A.



GIRDER ELEVATION - UNIT 2



STRINGER P ELEVATION



STRINGER R ELEVATION

SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS (CVN)

Where a shape or plate is labeled "CVN", the material shall meet minimum notch toughness requirements in accordance with 711.01. The Fabricator shall submit to the Director a procedure designed for positive identification of material through all phases of fabrication. No material shall be fabricated until the Director has approved the procedure.

LEGEND:

T – Indicates tension areas of the bottom flange. For the top flange, these areas are in compression.

CS – Indicates flange butt weld subject to compressive stress only.

WELD SIZE WEB TO FLANGE	
Flange Plate Thickness	Fillet Weld Size
1/4" thru 1 1/4"	5/16"
2 1/4" thru 4"	3/8"

GIRDER NOTES:

The girders shall be fabricated to compensate for the effects of dead load deflections of the south truss and the girder, and vertical irregularities in the existing Profile Grade.

Top and bottom flange plates are to be the same and shall be spliced at points shown on the girder elevation. The web plates may be shop spliced as required by available plate lengths. The locations of additional shop web splices and the location and details of any additional shop flange splices shall be submitted to the Director for approval prior to ordering of materials.

Intermediate stiffeners shall be equally spaced between floorbeams, except as shown on the girder elevation. Intermediate stiffeners shall be placed in pairs at floorbeams without struts, and shall have a tight fit with the tension flange and may have either a tight fit with, or be welded to the compression flange with fillet welds on both sides, the same size as the web to flange weld at the same location. Intermediate stiffeners which are not placed in pairs shall have a tight fit with the tension flange and shall be welded to the compression flange with fillet welds on both sides, the same size as the web to flange weld at the same location.

Bearing stiffeners at the West End Pier shall be placed in pairs, and shall be milled to bear against the bottom flange. The bearing stiffeners shall have a tight fit at the top flange.

Intermediate stiffeners shall be normal to the girder flange except as noted. Bearing stiffeners at FB1 and intermediate stiffeners at FB14 and FB22 shall be parallel to struts.

All intermediate and bearing stiffeners shall be clipped at corners as shown on Sheet W 34.

Longitudinal stiffeners shall be placed as shown on the girder elevations continuous thru transverse stiffeners, in segments between and 2" clear of web splice plates and the shop web splice adjacent to the Hanger.

All structural steel shall be ASTM A36 except as noted.

All girder field splices shall be made with 1" diameter high strength steel bolts. The bolts shall be placed with their heads on the outside face of the girder, and on the bottom of all flange plates.

The Contractor shall submit to the Director for approval three prints showing his proposed erection procedure.

Notes:

For framing plan, see Sheet W 32.
For girder details, see Sheet W 34.
For stringer and stringer bearing details, see Sheet W 36.
For girder deflection and camber data, see Sheet W 35.
For south truss deflection and stringer camber data, see Sheet W 37.
For floorbeam connection details, see Sheet W 38.
For strut connection details, see Sheets W 41 thru W 44.
The following abbreviations are used:
Typ. = Typical n.f. = near face
FB = Floorbeam e.f. = each face
f.f. = far face
For details of rocker, see Ohio Standard Drawing RB-1.55, revised 2-2-59.

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUY-90-15.31

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

GIRDER AND STRINGER ELEVATIONS

RAMP W-I UPGRADING
BR. NO. CUY – 90 – 1524
90 – 1540 STA. 3+87.63
90 – 1547 STA. 54+65.78
90 – 1599

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
W.E.B.	W.E.B.	C.P.		
DATE 12-5-77	DATE 12-12-77	DATE 1-11-78	DATE	SHEET W 33

FHWA REGION	STATE	PROJECT	
5	OHIO		

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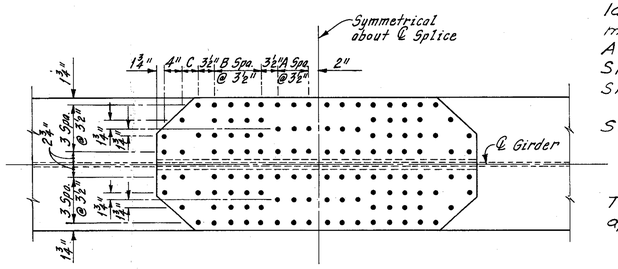
CUYAHOGA COUNTY
CUY-90-15.31

GIRDER FLANGE SPLICES

Flange Thickness	FLANGE MEMBERS		FLANGE BOLTS			Dimension C
	Outside Plates 2 Required	Inside Plates 4 Required	Number	Spaces A	Spaces B	
1¼"	⅝x30x3'-6"	¾x14x3'-6"	128	1	0	2¾"
1½"	⅞x30x4'-2½"	⅞x14x4'-2½"	160	1	1	3½"
2½"	1⅜x30x5'-11½"	1¼x14x5'-11½"	248	2	3	3½"



30" FLANGE SPLICE

Nondestructive Testing:

The hanger plates and pins shall be inspected by Ultrasonic Inspection to ensure the soundness of the material against laminations and other discontinuities. The material shall meet the requirements of Standard Specification ASTM A 578-80 and the following supplemental requirements.

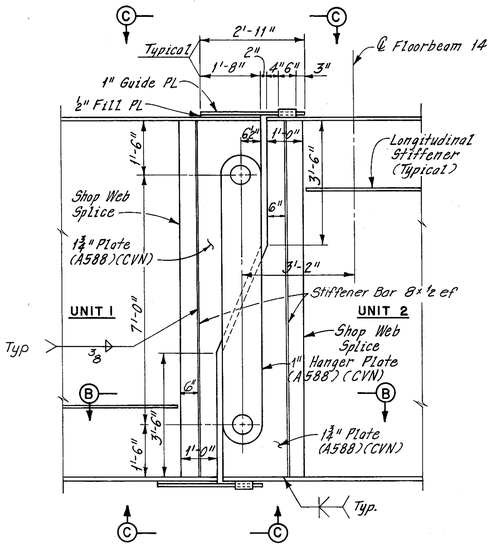
S1. Scanning

S1.1 Scanning shall be continuous over 100 percent of the plate surface and pins.

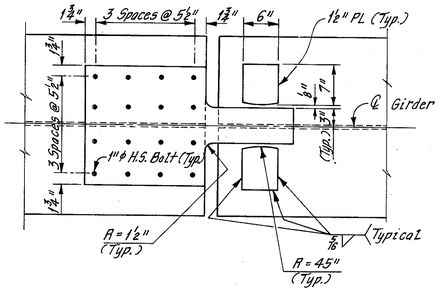
S2. Acceptance Standard

Any discontinuity which causes complete loss of back reflection is unacceptable.

The test results shall be submitted to the Director for approval before the hinges and pins are fabricated.

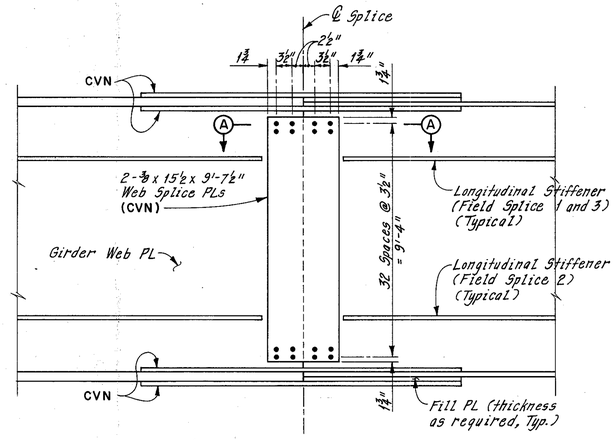


ELEVATION

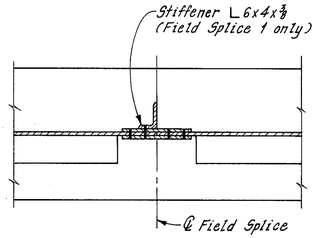


VIEW C-C

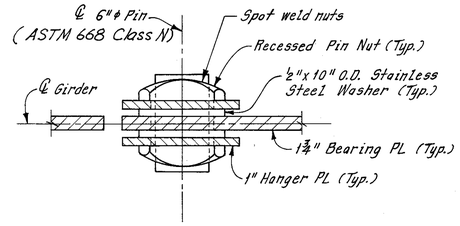
Note:
The perimeter of the pin hole, (pin plus bushing hole) shall be free of any notches. After the pin hole has been drilled or bored the area (zip-a-toned) shall be subjected to a magnetic particle inspection. Any discontinuities shall be evaluated by the Engineer. All non-destructive testing shall generally conform to 513.21 and be included with the unit price bid for Item 513, Structural Steel (588) for payment.



TYPICAL GIRDER WEB SPLICE

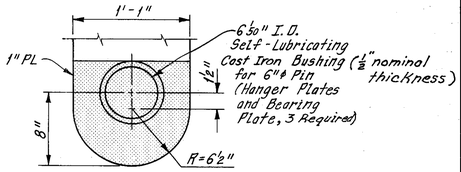


SECTION A-A



SECTION B-B

Note:
Stainless steel washers shall be Grade 2 (Type 410), ASTM A176, Include with Item 513, Structural Steel (ASTM A588), for payment.

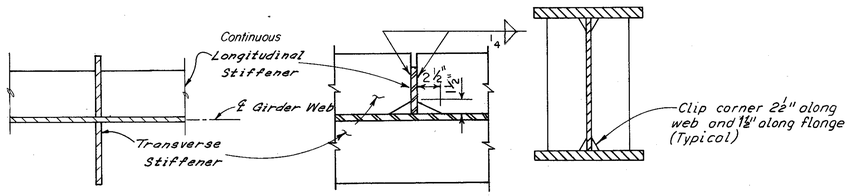


HANGER PLATE DETAIL

HANGER DETAILS

Notes:
CVN - See Sheet W/33.
For Girder Notes, see Sheet W/33.
The following abbreviation is used:
Typ. = Typical
ef = each face

GIRDER FIELD SPLICE DETAILS



LONGITUDINAL STIFFENER DETAIL AT FLOORBEAMS

INTERMEDIATE AND BEARING STIFFENER DETAIL

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

GIRDER DETAILS

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
W.L.B. K.K.B. DATE 1-3-78	W.E.B. DATE 1-4-78	R.A.S. DATE 1-9-78	DATE.	SHEET W/34

FHWA REGION	STATE	PROJECT	
5	OHIO		

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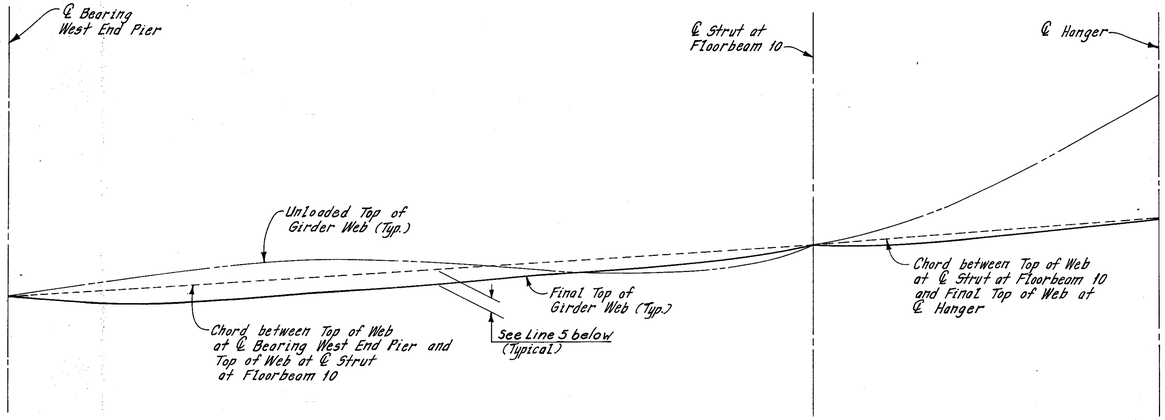
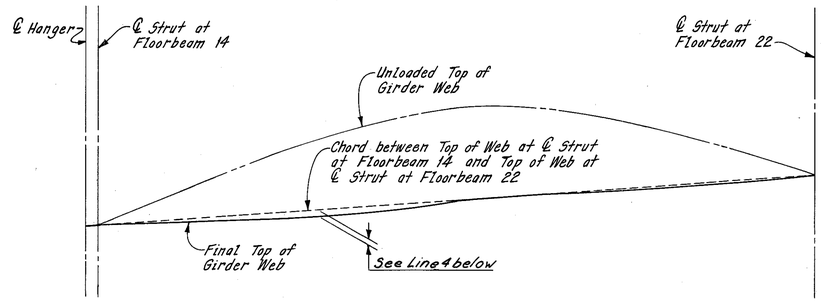
CUYAHOGA COUNTY
CUY-90-15.31



GIRDER CAMBER DIAGRAM - UNIT 1



GIRDER CAMBER DIAGRAM - UNIT 2

UNIT 1 GIRDER DEFLECTION AND CAMBER TABLE

	FLOORBEAMS																
	(1)	(2)	(3)	(4)	(5)	FS1	(6)	(7)	(8)	(9)	(10)	(11)	FS2	(12)	(13)	H
Line 1	0	11/16	1 3/8	1 1/4	1 1/8	1 1/2	1 1/2	1 1/4	11/16	5/8	0	-3/16	-5/16	-3/8	-5/8	-5/8
Line 2	0	-1/8	-1 3/8	-2 3/8	-3	-3 3/16	-3 5/16	-3 3/16	-2 11/16	-1 7/8	0	2	4	4 7/16	7 1/8	9 3/4
Line 3	0	1 1/8	2 1/4	2 5/8	3 1/16	3 1/16	2 7/8	2 1/16	1 1/16	1/8	0	-1/16	-1 1/4	-1 5/8	-1 7/8	-2 7/16
Line 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Line 5	0	-3/8	-5/8	-3/4	-15/16	-15/16	-3/4	-11/16	-11/16	-3/8	0	-3/8	-1/4	-1/4	-1/4	0
Line 6	0	1/16	3/4	1 1/16	1 1/8	1 1/8	1/4	-1/16	-1	-1 1/16	0	3/8	2 1/16	2 1/4	4 3/8	7

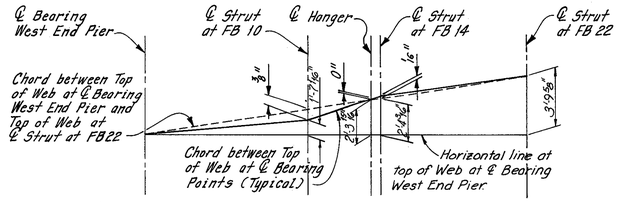
UNIT 1 GIRDER DEFLECTION AND CAMBER TABLE NOTES:
Line 1 = Deflection due to weight of steel. (Girder and floorbeams, Unit 1 only).
Line 2 = Deflection due to weight of steel. (Remaining steel in Unit 1 and all steel in Unit 2).
Line 3 = Deflection due to weight of added concrete.
Line 4 = Deflection due to weight of added wearing course.
Line 5 = Adjustment required for truss deflection and irregularities in existing structure profile.
Line 6 = Required shop camber.
Negative deflections indicate upward deflections.
Values given in the table are to the nearest 1/16 inch.

UNIT 2 GIRDER DEFLECTION AND CAMBER TABLE

	FLOORBEAMS										
	H	(14)	(15)	(16)	(17)	(18)	(19)	(20)	FS3	(21)	(22)
Line 1	0	0	1 3/4	2 1/4	3 5/8	3 3/8	3 3/8	2 3/8	2 3/8	1 1/16	0
Line 2	0	0	11/16	1 1/4	1 3/8	1 11/16	1 3/8	1 1/16	1 1/16	1 1/4	0
Line 3	0	0	0	0	0	0	0	0	0	0	0
Line 4	0	0	-1/4	-3/8	-3/8	0	0	-1/4	-1/4	-1/16	0
Line 5	0	0	1 1/16	3 3/8	4 1/8	5 1/4	4 7/8	3 5/8	3 5/8	2	0

UNIT 2 GIRDER DEFLECTION AND CAMBER TABLE NOTES:
Line 1 = Deflection due to weight of steel.
Line 2 = Deflection due to weight of added concrete.
Line 3 = Deflection due to weight of added wearing course.
Line 4 = Adjustment required for truss deflection and irregularities in existing structure profile.
Line 5 = Required shop camber.
Negative deflections indicate upward deflections.
Values given in the table are to the nearest 1/16 inch.

Note:
The support of Floorbeam 22 is not an unyielding support but is the cantilever end of Unit 3.



VERTICAL OFFSETS AT BEARING POINTS

TOP OF GIRDER WEB ELEVATIONS AT FINAL VERTICAL POSITION

West End Pier .89	Strut FB5 .53	Strut FB10 .49	Hanger .52	Strut FB14 .25	Strut FB18 .97	Strut FB22 .69
~~700.84~~ 700.95	~~701.48~~ 701.01	~~702.43~~ 702.92	~~703.77~~ 703.29	~~703.77~~ 703.02	~~703.91~~ 703.22	~~704.64~~ 703.95 Δ

Note: Elevations are given at final position of girder.

Notes:
For Framing Plan, see Sheet W/32.
For Girder Elevations, see Sheet W/33.
The following abbreviations are used:
FS = Field Splice
FB = Floorbeam
H = Hanger
Typ. = Typical

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

GIRDER DEFLECTION AND CAMBER DATA

RAMP W-1 UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599
CUYAHOGA COUNTY OHIO

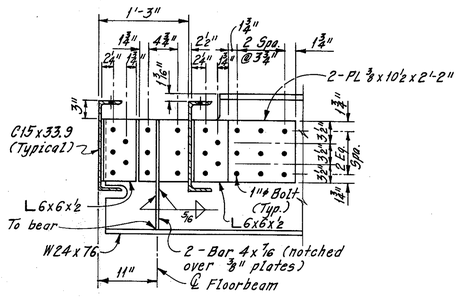
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
W.E.B.	W.E.B.	C.H.B.		
DATE 12-21-77	DATE 12-29-77	DATE 1-1-78	DATE	SHEET W/35

Δ Revised 10-19-83 EBL

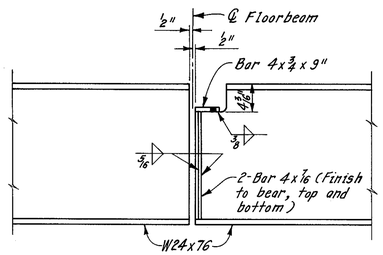
FHWA REGION	STATE	PROJECT	
5	OHIO		

57
89

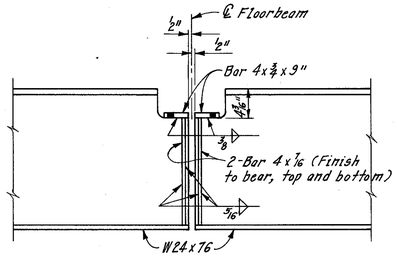
CUYAHOGA COUNTY
CUY-90-15.31



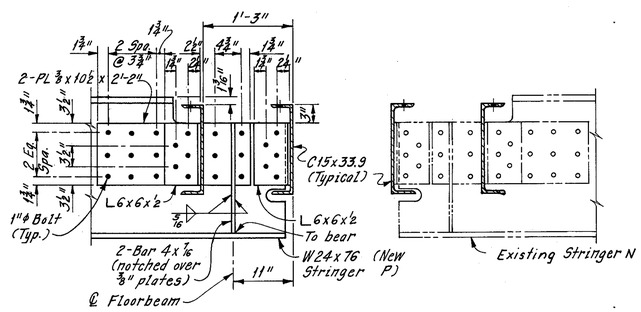
DETAIL AT EXPANSION JOINT AT WEST END PIER



DETAIL AT FLOORBEAM AT TYPE B DRAIN WITH CONTRACTION JOINT

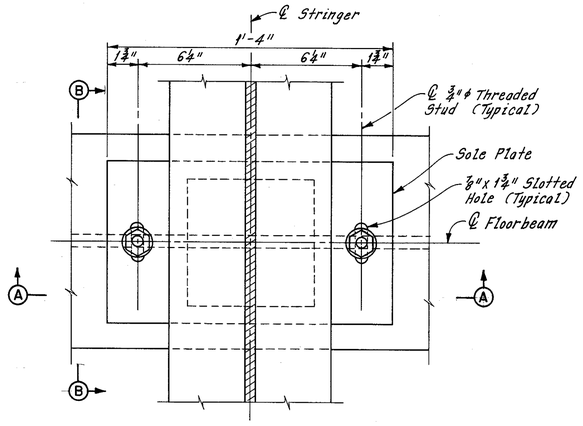


DETAIL AT CONTRACTION JOINT

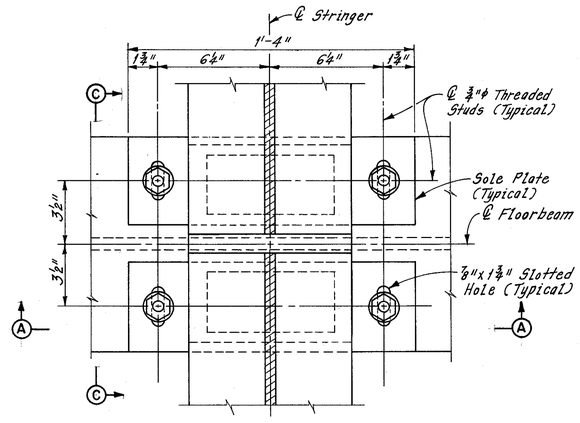


DETAIL AT EXPANSION JOINT

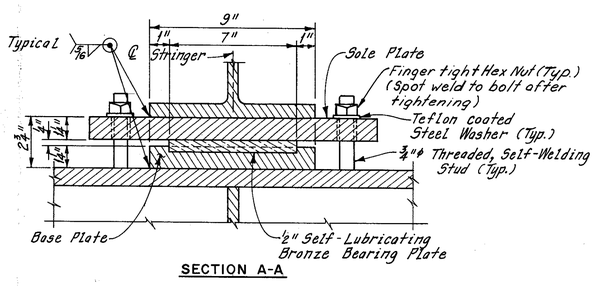
STRINGER DETAILS



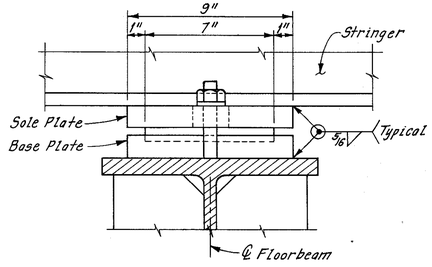
TYPICAL PLAN EXCEPT AT CONTRACTION JOINTS



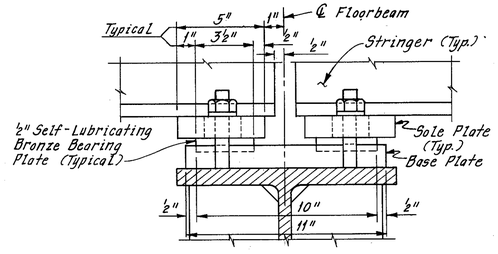
PLAN AT CONTRACTION JOINTS



SECTION A-A



SECTION B-B



SECTION C-C

STRINGER BEARING DETAILS

Notes:
The self-lubricating bronze bearing plates shall be in accordance with the State of Ohio Supplemental Specification 927.
The following abbreviation is used:
Typ. = Typical

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

STRINGER AND STRINGER BEARING DETAILS

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
W.E.B./C.K.B.	W.E.B.	C.P.		
DATE 1-6-78	DATE 1-9-78	DATE 1-13-78	DATE	SHEET W 136

FHWA REGION	STATE	PROJECT	
5	OHIO		

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89

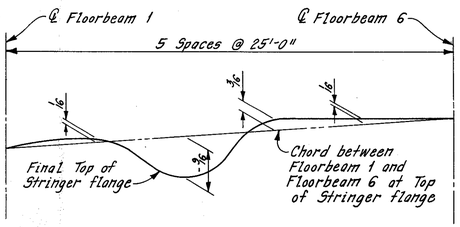
CUYAHOGA COUNTY
CUY-90-15.31

SOUTH TRUSS DEFLECTION TABLE

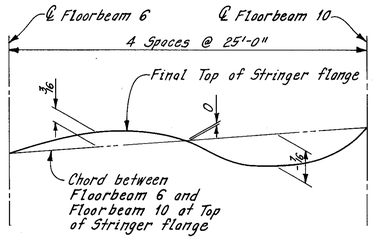
	FLOORBEAM																													
	Unit 1														Unit 2							Unit 3								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
Line 1	0	1/16	1/8	3/16	1/4	1/4	1/16	1/16	1/16	1/16	3/16	1/4	3/8	1/2	13/16	1	1 3/16	1 5/16	1 3/8	1 3/8	1 7/16	1 1/8	7/8	5/8	3/8	1/16	-3/16	-2/16	-7/16
Line 2	0	0	0	0	-1/16	-1/16	0	0	0	0	0	0	0	0	-1/16	-5/16	-1/4	-3/8	-7/16	-9/16	-5/8	-11/16	-9/16	-5/8	-3/8	0	1/8	1/4	5/16
Line 3	0	-4/16	-4/8	-4/8	-5/16	-4/16	-4/16	-5/16	-5/16	-4/16	-3/16	-4/8	-5/16	-6/16	-5/8	-3/4	-13/16	-15/16	-15/16	-15/16	-15/16	-7/8	-11/16	-7/16	-4/8	-4/16	3/16	3/16	3/8
Line 4	0	-4/16	-4/8	-3/16	-3/16	-4/8	-4/8	-4/16	-4/16	0	0	0	0	0	-4/8	-4/8	-4/8	-4/8	-5/16	-5/16	-5/16	-5/8	-3/16	-4/8	-4/16	0	1/16	1/16	1/8
Line 5	0	-4/16	-4/8	-4/8	-3/16	-4/8	-4/8	-4/16	-4/16	0	0	0	1/16	1/16	0	-4/16	-4/8	-4/8	-5/16	-7/16	-8/16	-3/4	-8/16	-5/16	-3/16	0	3/16	5/16	3/8

SOUTH TRUSS DEFLECTION TABLE NOTES:

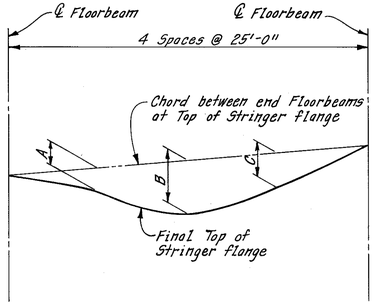
Line 1 = Deflection due to removal of portions of the existing structure as per Plan.
Line 2 = Deflection due to weight of added steel.
Line 3 = Deflection due to weight of added concrete.
Line 4 = Deflection due to weight of added wearing course.
Line 5 = Final deflection due to dead load of structure widening.
Negative deflections indicate downward deflections.
Values given in the table are to the nearest 1/16 inch.



STRINGER CAMBER DIAGRAM
(Floorbeam 1 thru Floorbeam 6)



STRINGER CAMBER DIAGRAM
(Floorbeam 6 thru Floorbeam 10)



STRINGER CAMBER DIAGRAM
(Floorbeam 10 thru Floorbeam 22)
(For dimensions not shown, see Stringer Camber Table)

STRINGER CAMBER TABLE				
Floorbeam	A	B	C	Floorbeam
10	-3/16	0	-1/16	14
14	-3/16	-3/16	-3/16	18
18	-3/16	-7/16	0	22

Notes:
For Framing Plan, see Sheet W/32.
For Stringer Elevations, see Sheet W/33.

STRINGER CAMBER NOTES:

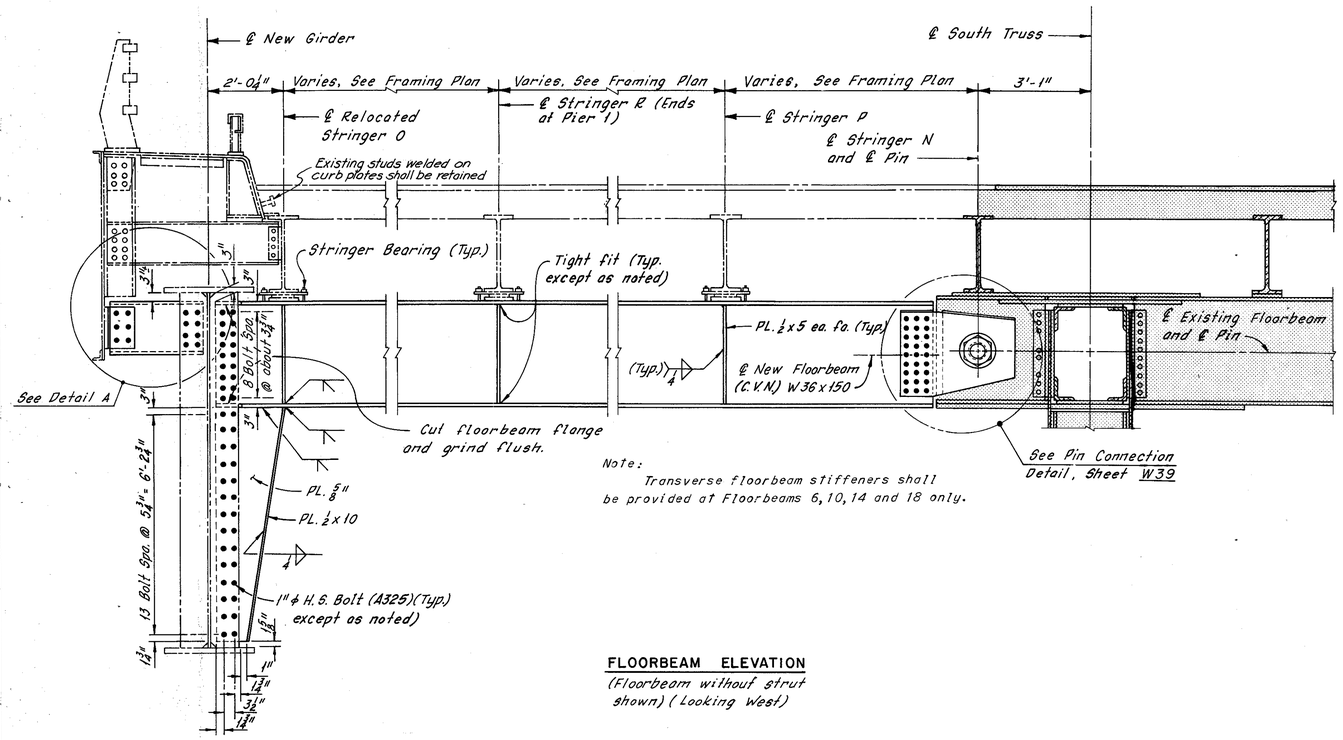
Stringers shall be cambered to adjust for the irregularities in the Profile Grade and the South Truss deflections.
Negative cambers indicate downward camber.
Values are to the nearest 1/16 inch.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND
HNTB

SOUTH TRUSS DEFLECTION AND STRINGER CAMBER DATA

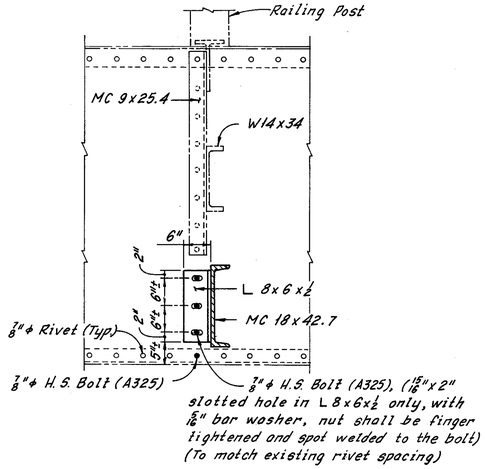
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA.3+87.63
90-1547 STA.54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
W.E.B. DATE 1-5-78	W.E.B. DATE 1-6-78	C.K.B. DATE 1-8-78	DATE	SHEET W/37

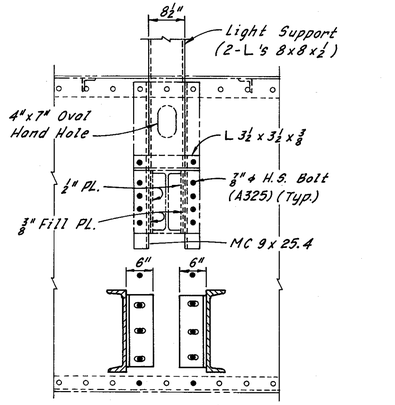


Note:
Transverse floorbeam stiffeners shall be provided at Floorbeams 6, 10, 14 and 18 only.

FLOORBEAM ELEVATION
(Floorbeam without strut shown) (Looking West)

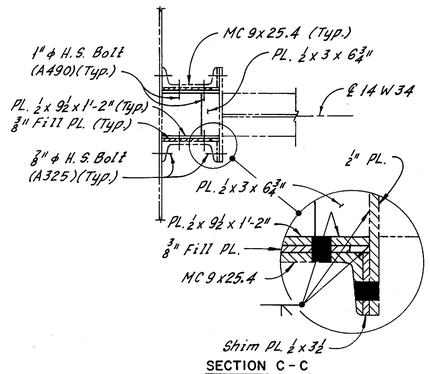


SECTION A-A



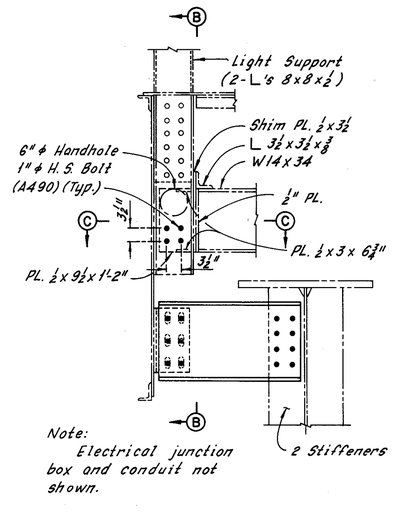
Note: Electrical junction box and conduit not shown.

SECTION B-B
(For additional notes and details, See Section A-A)



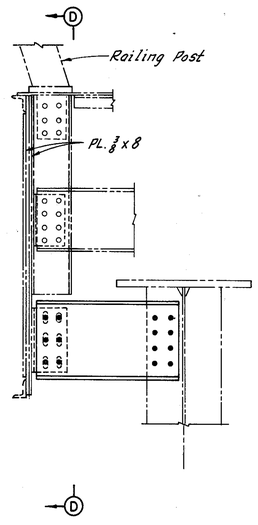
SECTION C-C

DETAIL A NOT AT LIGHT SUPPORT OR CONTRACTION JOINT

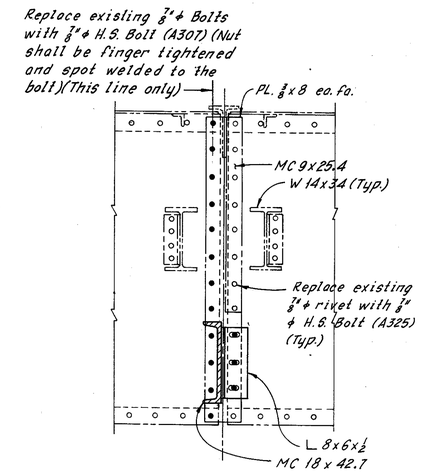


Note:
Electrical junction box and conduit not shown.

DETAIL A AT LIGHT SUPPORT
(For additional notes and details, See Detail A Not At Light Support or Contraction Joint)



DETAIL A AT CONTRACTION JOINT
(For additional notes and details, See Detail A Not At Light Support or Contraction Joint)



SECTION D-D
(For additional notes and details, See Section A-A)

Notes:
Zig-a-tone indicates existing structure.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For Framing Plan, see Sheet W 32.
For locations of Light Supports, see Sheet W 25.
For locations of Contraction Joints, see Sheet W 25.
For Stringer Bearing Details, see Sheet W 36.
For Strut Details, see Sheets W 41 thru W 44.
For Pin Connection Details, see Sheet W 39.
The following abbreviations are used:
Typ. = Typical
ea. fa. = each face

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY-90-15.31

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MODIFICATION DETAILS AT FLOORBEAMS 1 THRU 22

RAMP W-1 UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599

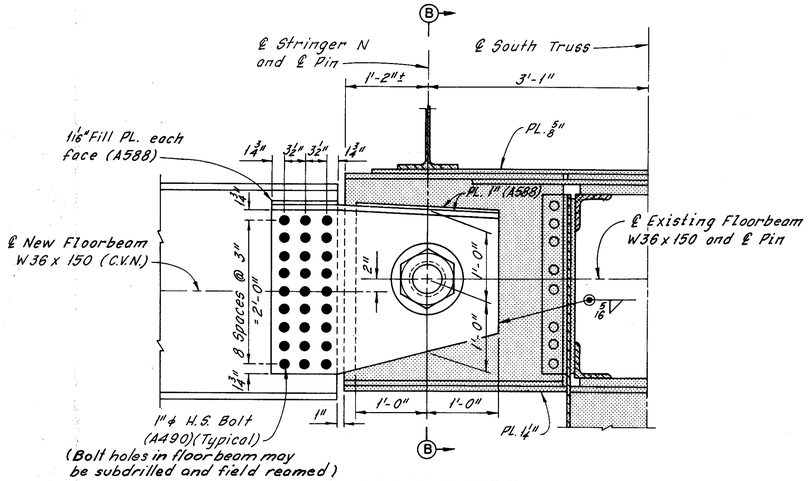
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 1-25-78	DATE 3-15-78	DATE 4-19-78	DATE	SHEET W 38

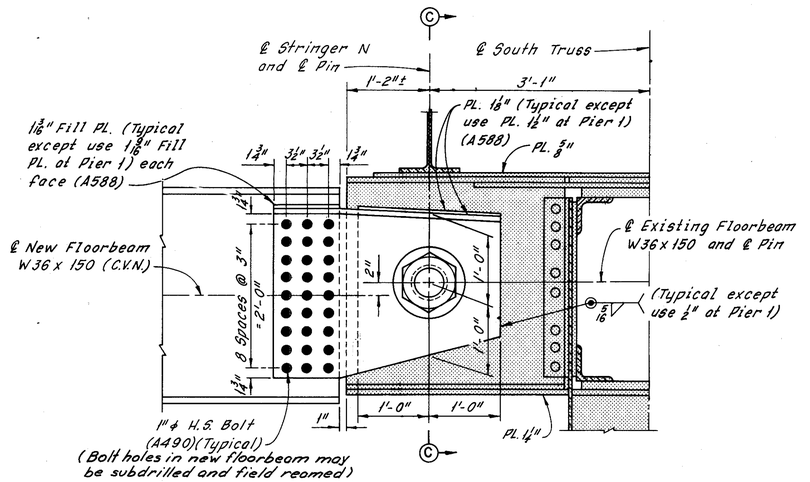
FHWA REGION	STATE	PROJECT	
5	OHIO		

60
89

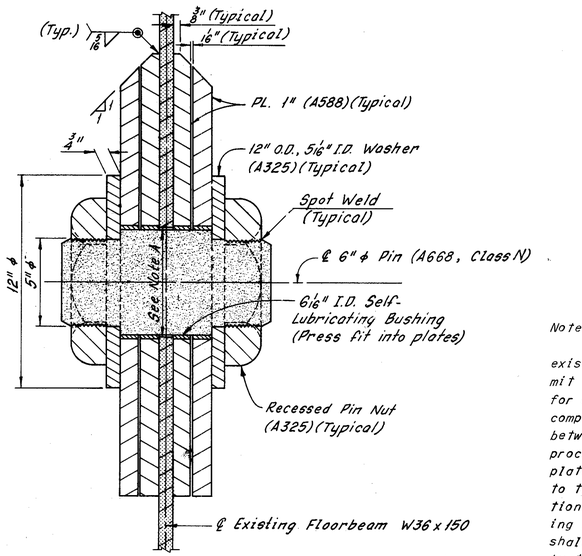
CUYAHOGA COUNTY
CUY-90-15.31



PIN CONNECTION DETAIL



PIN CONNECTION DETAIL

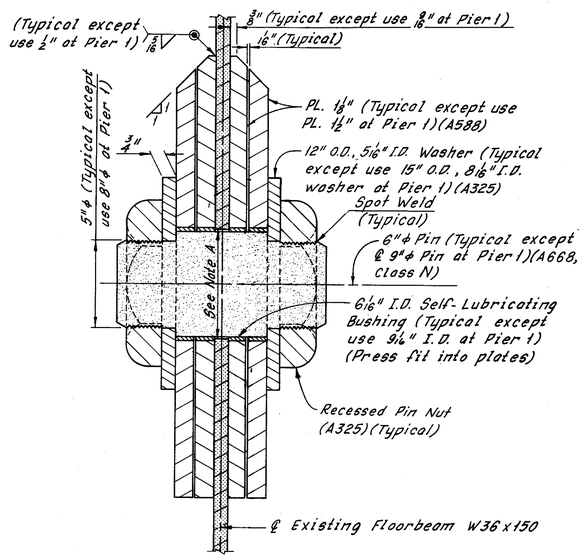


SECTION B-B

FLOORBEAMS WITHOUT STRUTS

Note A:
Drill or bore 6 1/4" ϕ hole for 6" ϕ pin (9 1/4" ϕ hole for 9" ϕ pin) in the existing floorbeam web. Include with Item 202, Portions of Structures Removed, for payment.

Note:
Prior to placement of the connection between the existing and new floorbeam, the Contractor shall submit to the Engineer for approval his proposed procedure for obtaining the fit-up specified including the plate compactness necessary to achieve the 1/16 inch clearance between the plates as shown in the plans. The proposed procedure should cover a method for eliminating possible plate distortion caused by field welding the pin plate to the web of the existing floorbeam. Possible distortion might be eliminated by temporary clamping or bolting the plates; however, whatever method is proposed shall be verified by full scale test prior to approval by the Engineer.



SECTION C-C

FLOORBEAMS WITH STRUTS

Notes:
Zip-a-tone indicates existing structure.
For location of Pin Connection, see Sheet W/38.
For additional notes and details, see Sheet W/38.
Pin connection plates shall be CVN.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND

HNTB

PIN CONNECTION DETAILS FLOORBEAMS 1 THRU 22

RAMP W-1 UPGRADING

BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

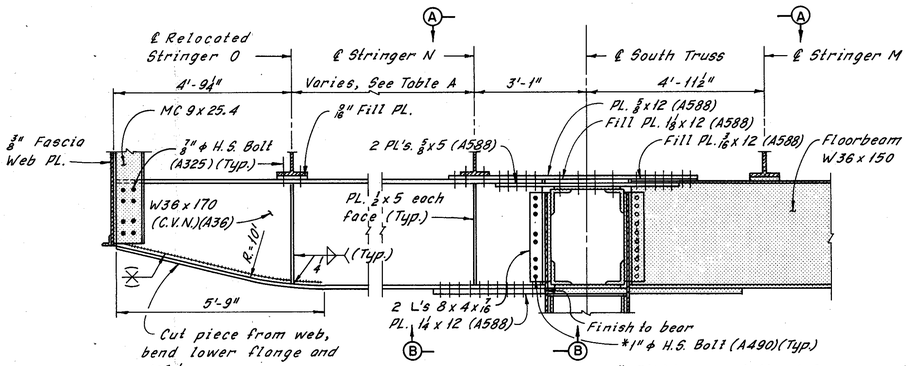
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 1-25-18	DATE 3-15-18	C.H.B. DATE 4/19/18	DATE	SHEET W/39

FHWA REGION	STATE	PROJECT	
5	OHIO		

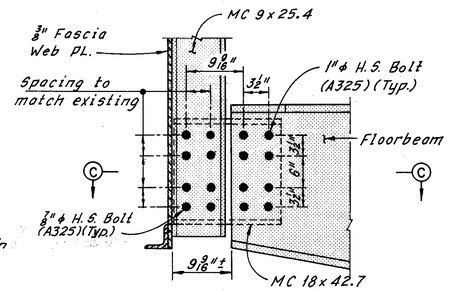
61/89

CUYAHOGA COUNTY
CUY-90-15.31

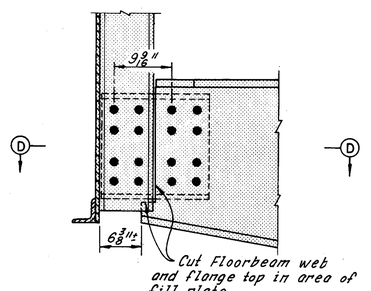


PART ELEVATION
(Floorbeams 23, 24 and 26)

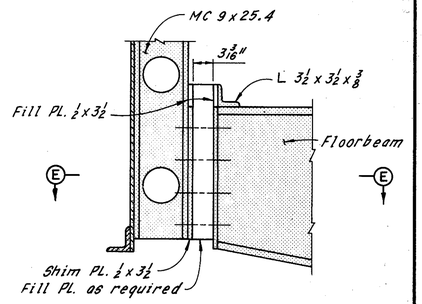
* Field ream existing holes as required to obtain the end bearing noted. Include with Item 202, Portions of Structures Removed, for payment.



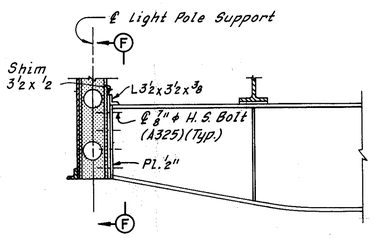
PART ELEVATION
(Floorbeam No. 27)



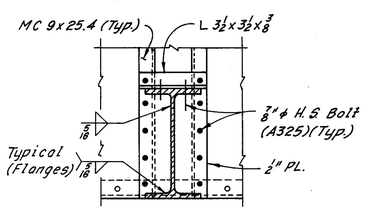
PART ELEVATION
(Floorbeam No. 28) (For details not shown see Floorbeam No. 27)



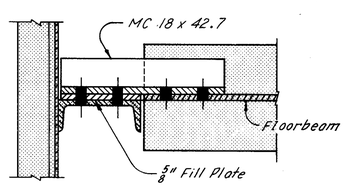
PART ELEVATION
(Floorbeam No. 29)



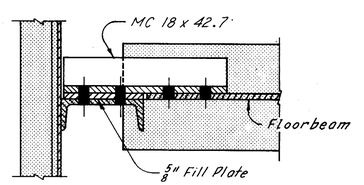
PART ELEVATION
(Floorbeam 25) (For details not shown, see Floorbeams 23, 24 & 26)



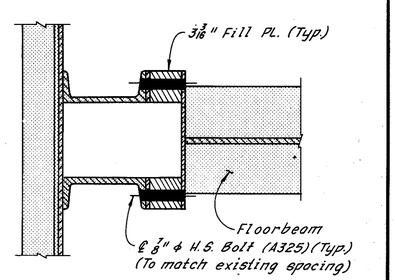
SECTION F-F



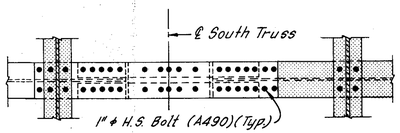
SECTION C-C



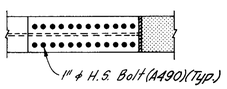
SECTION D-D



SECTION E-E



SECTION A-A
(Floorbeams 23 thru 26)



SECTION B-B
(Floorbeams 23 thru 26)

TABLE A	
F.B. 23	8'-3 11/16"
F.B. 24	7'-9 9/16"
F.B. 25	7'-1 13/16"
F.B. 26	6'-6 1/16"

Notes: (Floorbeams 27 thru 29, except as noted.)
Existing fill plate at stringer O shall be replaced in kind.

The existing bolt and or rivet holes in the floorbeam flange plate shall be plug welded and ground flush prior to relocating Stringer O. Include with Item 202, Portions of Structures Removed, for payment.

The existing bolt and or rivet holes in the floorbeam web shall be plug welded and ground flush prior to cutting the floorbeam web. Include with Item 202, Portions of Structures Removed, for payment. (Does not pertain to Floorbeam 29)

The connection between the floorbeam flange plate and relocated Stringer O shall be made using ⅞" ϕ high strength bolts (A325).

Note:
The connection at Floorbeam 30 shall be replaced in kind with ⅞" ϕ high strength bolts (A325).

Notes:
Zip-a-tone indicates existing structure.
For Removal Plans, see Sheet W/26.
For Framing Plan, see Sheet W/32.
The following abbreviations are used:
Typ. = Typical
H.S. = High Strength
F.B. = Floorbeam

FLOORBEAMS 23 THRU 26

FLOORBEAMS 27 THRU 30

HOWARD NEEDLES. TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

MODIFICATION DETAILS AT FLOORBEAMS 23 THRU 30

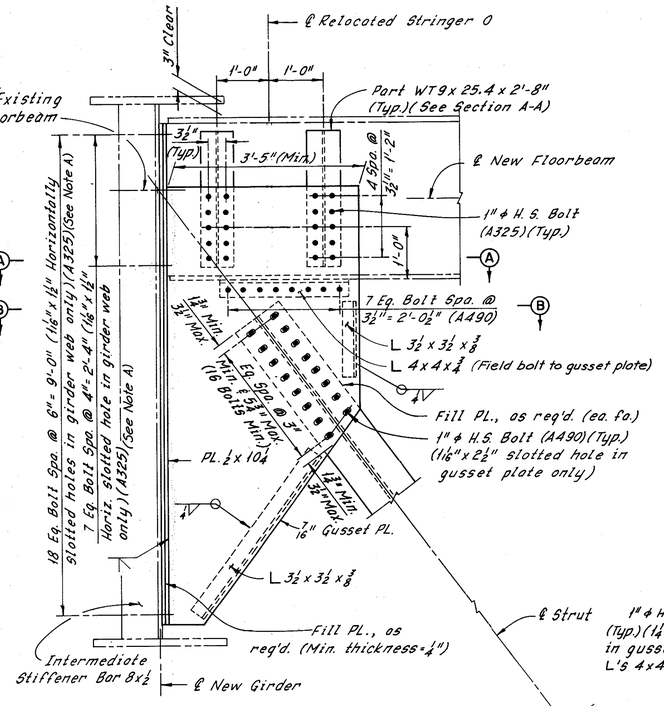
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA.3+87.63
90-1547 STA.54+65.78
90-1599
CUYAHOGA COUNTY OHIO

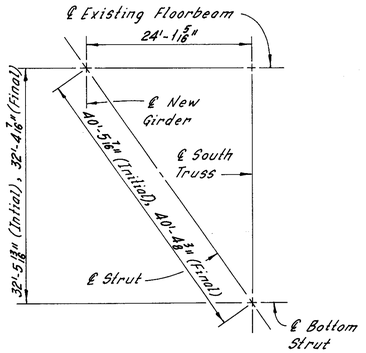
DRAWN R.D.	TRACED	CHECKED C.P.	REVIEWED	REVISED
DATE 12-26-77	DATE 12-27-77	DATE 1-9-78	DATE	SHEET W 40

FHWA REGION	STATE	PROJECT	
5	OHIO		

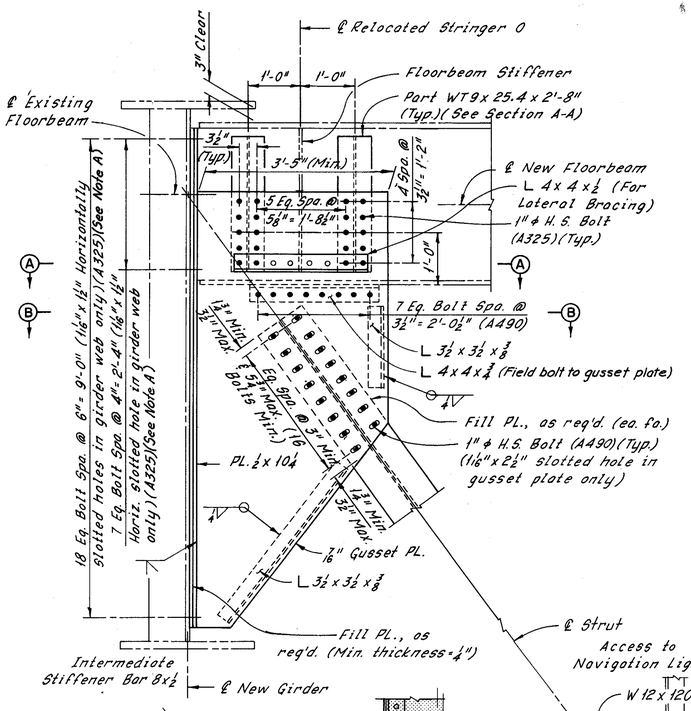
62
89

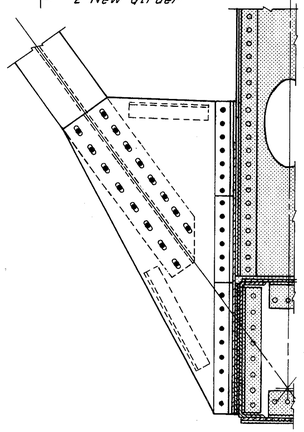
CUYAHOGA COUNTY
CUY-90-15.31





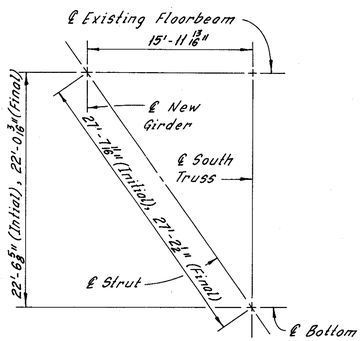
SCHEMATIC AT FLOORBEAM 5



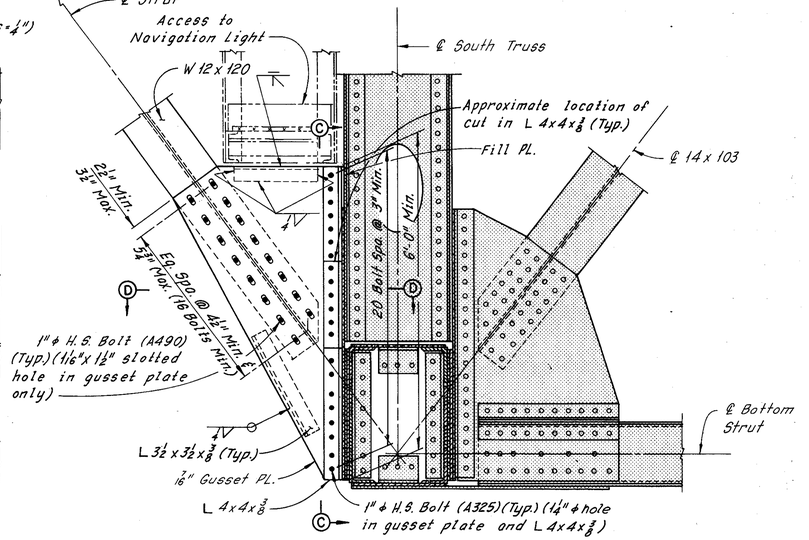


PART LOWER STRUT CONNECTION DETAIL

(Initial position) (For details not shown, see final position detail)



SCHEMATIC AT FLOORBEAM 18



Note A:
The girder web to strut and floorbeam gusset plate connections shall be snug tightened then backed off ½ turn at time of installation and final tightened after all deck concrete has been placed.

Note:
The release of the strut may be accomplished by either the removal of the strut or the removal of the bolts at the bottom of the strut connection and temporarily supporting the strut. The Contractor shall note that the strut has load at the time of release. (See General Note 7, Step 12.)

FLOORBEAM 5
(Looking west) (Shown in final position, initial position similar)

Notes:
Zip-a-tone indicates existing structure.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For Sections A-A, B-B, C-C and D-D, see Sheet W 43.
For details of Access to Navigational Light at Floorbeam 18, see Sheet W 56.
Structural plate washers or a ⅛ inch continuous bar shall cover all slotted holes.

All floorbeam-strut-girder joints shall be shop assembled in accordance with 513.20.

All bolts used in the slotted holes shall have the threads excluded from the sheer surface.

FLOORBEAM 18
(Looking West)
(Shown in final position)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

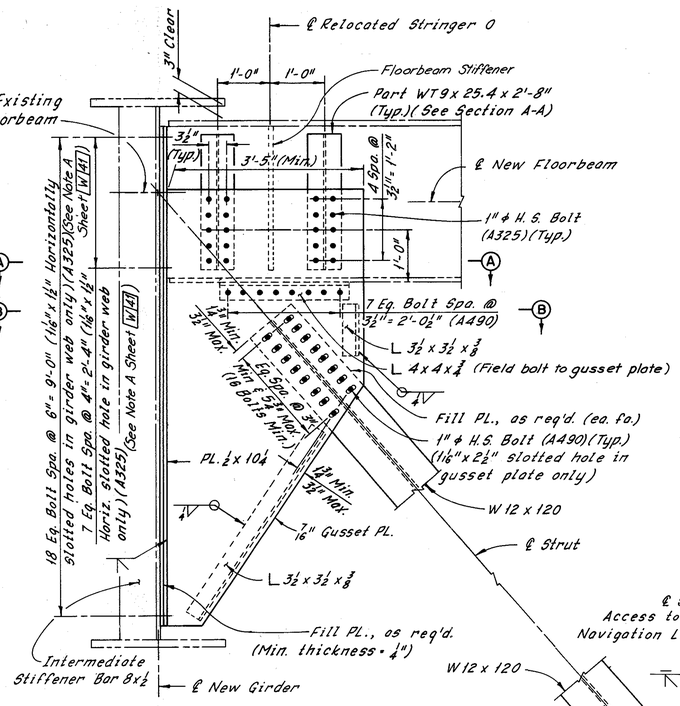
STRUT DETAILS
FLOORBEAM TRUSSES 5 AND 18
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

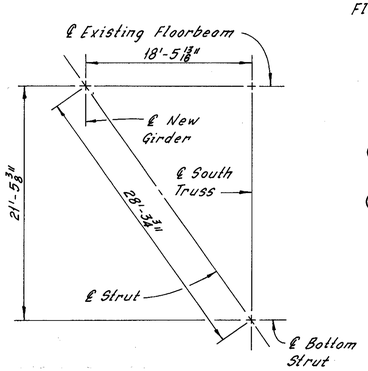
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 12-21-77	DATE 3-1-78	CHB DATE 4-1978	DATE	SHEET W 41

FHWA REGION	STATE	PROJECT	
5	OHIO		

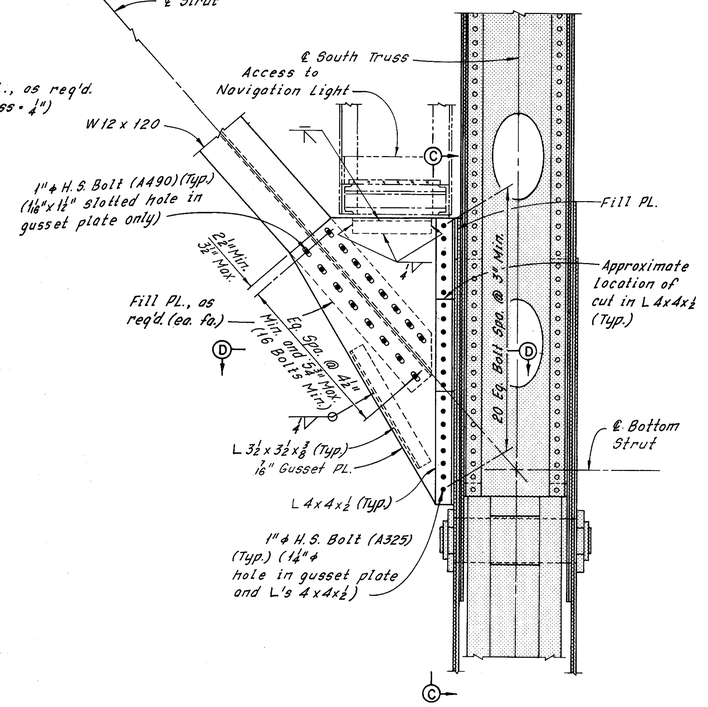
63
89

CUYAHOGA COUNTY
CUY-90-15.31

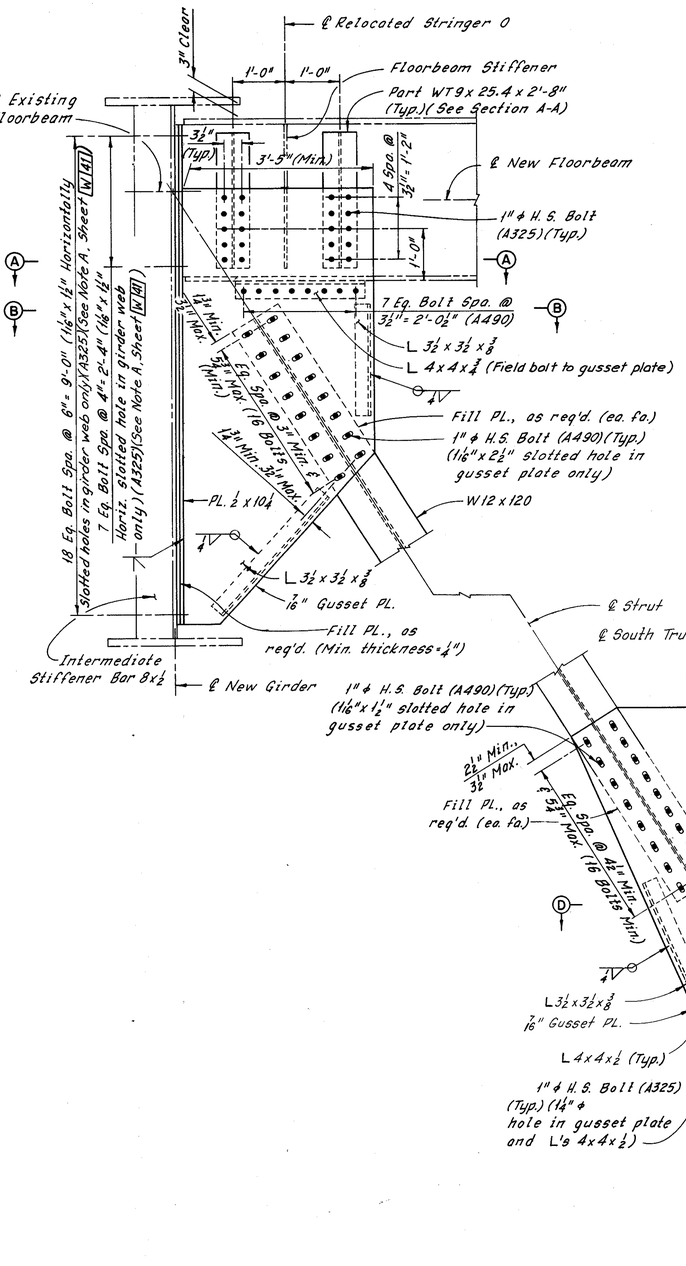


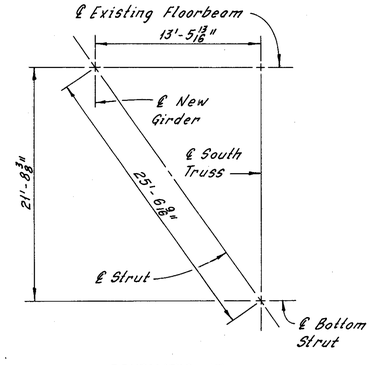


SCHEMATIC AT FLOORBEAM 14



FLOORBEAM 14
(Looking West)





SCHEMATIC AT FLOORBEAM 22

FLOORBEAM 22
(Looking West)

Notes:

Zip-a-tone indicates existing structure.

Phantom lines indicate new construction, details of which are shown elsewhere in these plans.

For Sections A-A, B-B, C-C and D-D, see Sheet W 43.

For details of Acess to Navigation Light at Floorbeam 14, see Sheet W 55.

For additional notes, see Sheet W 41.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

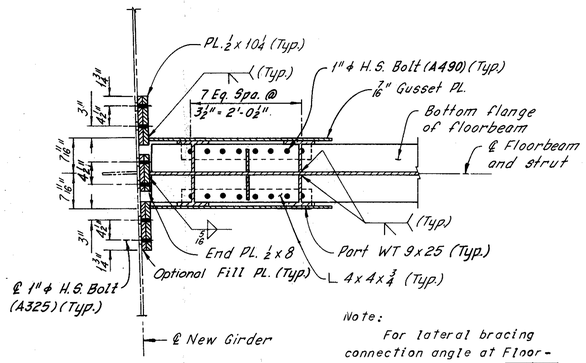
STRUT DETAILS
FLOORBEAM 14 AND 22
RAMP W-1 UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 12-21-77	DATE 3-1-78	C.H.B. DATE 4-19-78	DATE	SHEET W 42

FHWA REGION	STATE	PROJECT	
5	OHIO		

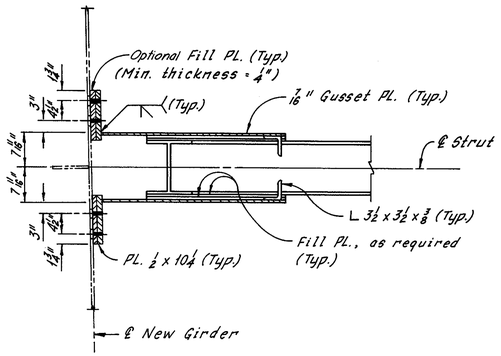
64
89

CUYAHOGA COUNTY
CUY-90-15.31

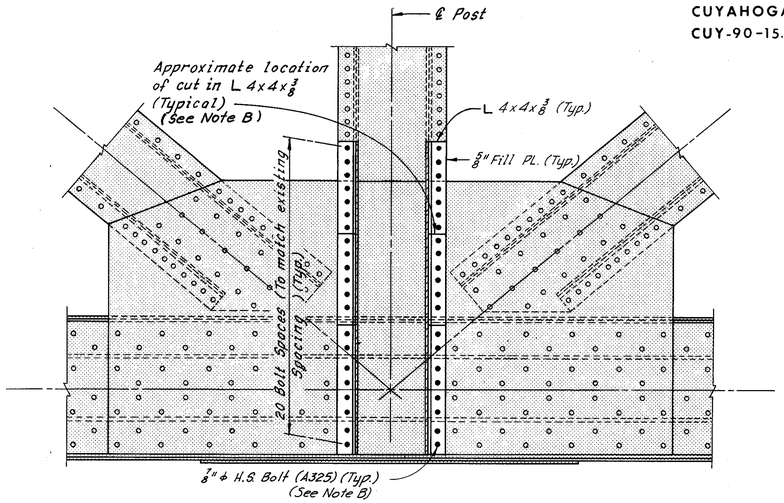


Note:
For lateral bracing connection angle at Floorbeam 18, see Sheets W 41 and W 45.

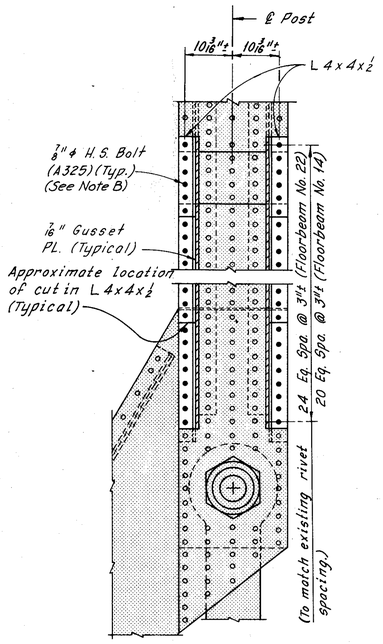
SECTION A-A
(Floorbeam No. 22 shown, Floorbeam Nos. 5, 14 and 18 similar)



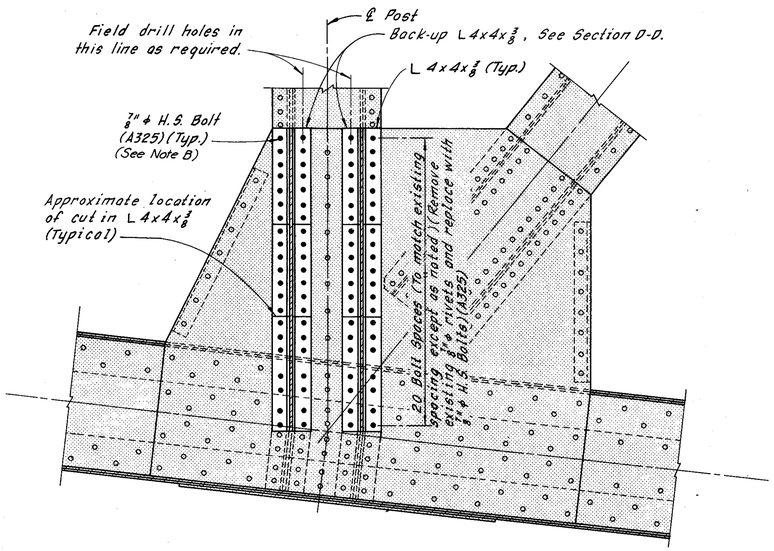
SECTION B-B
(Floorbeam No. 22, shown, Floorbeam Nos. 5, 14 and 18 similar)



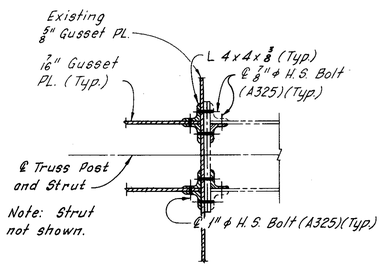
SECTION C-C
(Floorbeam No. 18, Only)



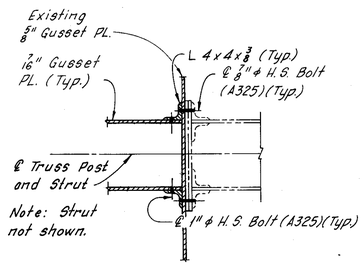
SECTION C-C
(Floorbeam No. 22, shown, Floorbeam No. 14 similar)



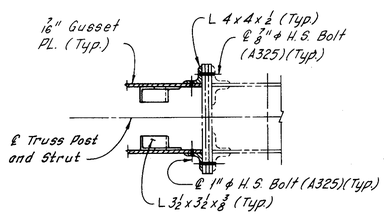
SECTION C-C
(Floorbeam No. 5, Only)



SECTION D-D
(Floorbeam No. 5, Only)



SECTION D-D
(Floorbeam No. 18, Only)



SECTION D-D
(Floorbeam No. 22, shown, Floorbeam No. 14 similar)

Note B::
Removal of rivets and placement of new angle segments shall be done one at a time.

Notes:
Zip-a-tone indicates existing structure.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For locations of Sections A-A, B-B, C-C and D-D, see Sheets W 41 and W 42.
Removal of existing rivets as noted and field drilling holes for new bolts as required for new construction shall be included with Item 202, Portions of Structures Removed, for payment.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

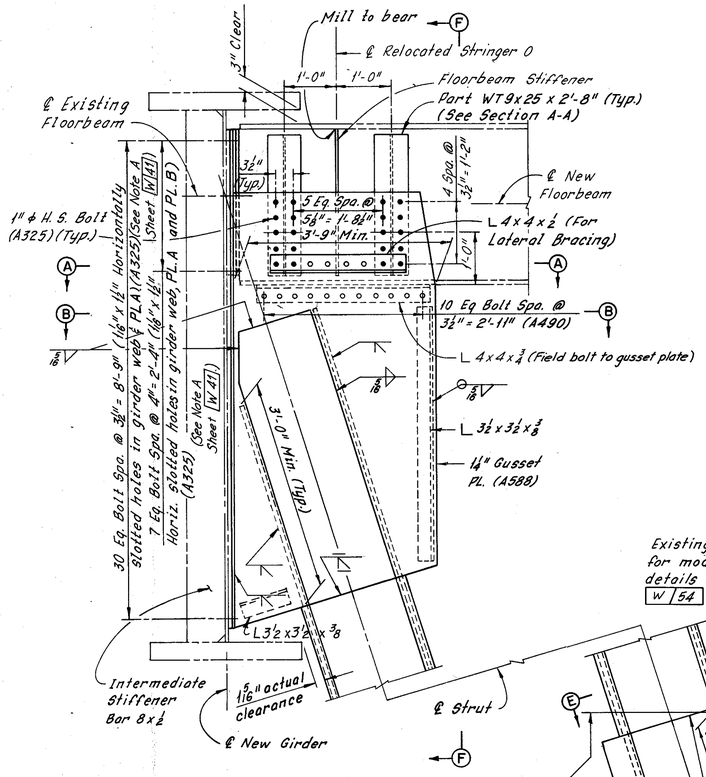
STRUT SECTIONS
FLOORBEAMS 5, 14, 18 AND 22
RAMP W-1 UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

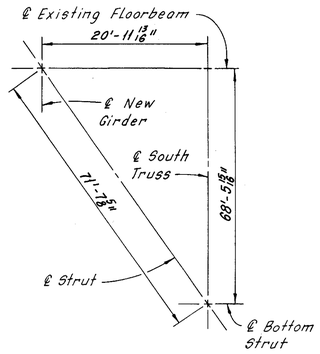
DRAWN E.A.	TRACED E.A.	CHECKED C.H.B.	REVIEWED	REVISED —
DATE 12-21-17	DATE 3-1-18	DATE 4-19-18	DATE	SHEET W 43

FHWA REGION	STATE	PROJECT	
5	OHIO		

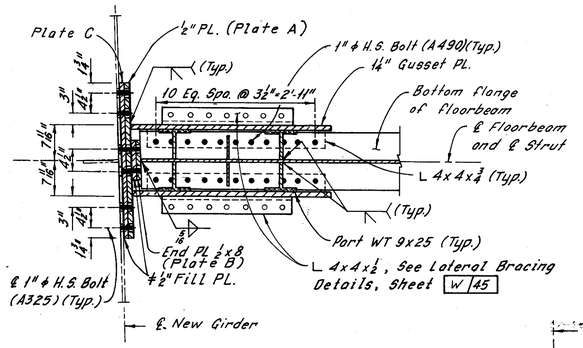
65/89

CUYAHOGA COUNTY
CUY-90-15.31

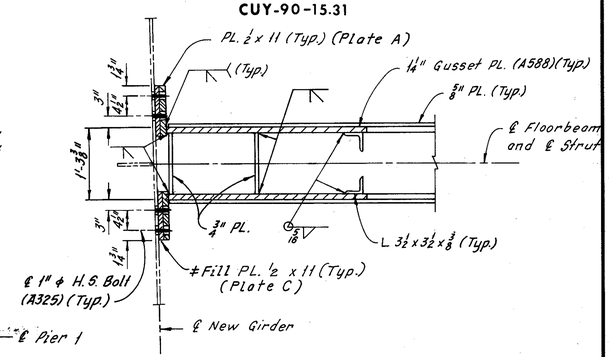




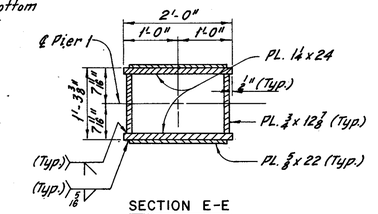
SCHEMATIC AT FLOORBEAM 10



\# ½" Nominal Fill Plate with 1 1/16" ϕ holes (thickness can be adjusted for fit-up, ⅜" minimum thickness)

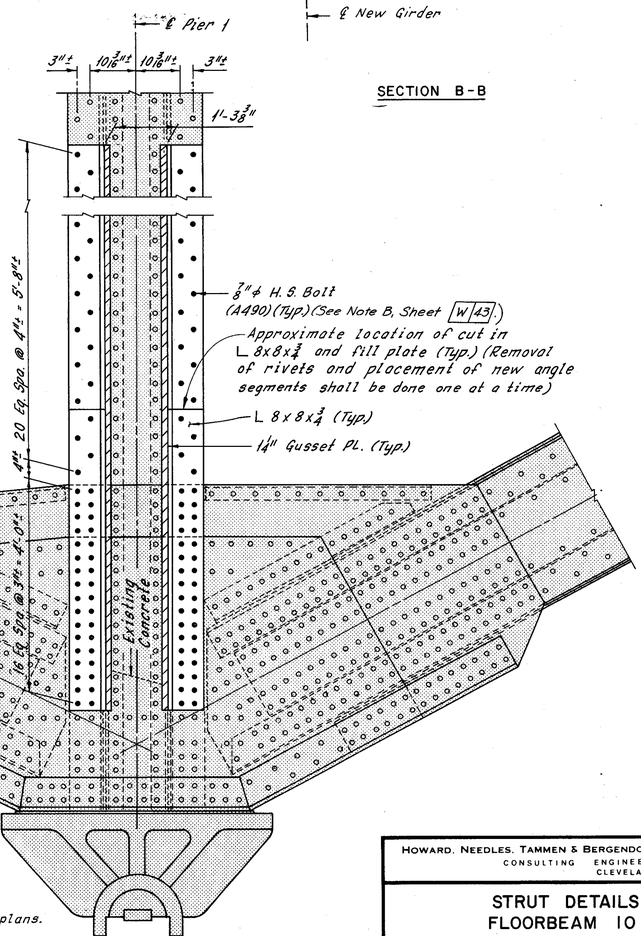


SECTION A-A
(Ram Assembly Not Shown)

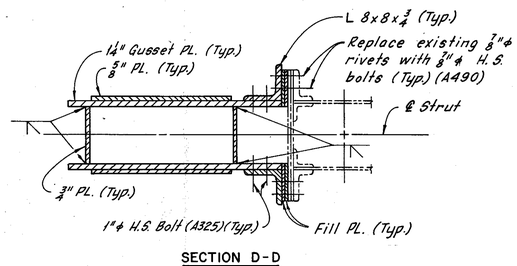


SECTION E-E
(No point is required on inside of strut)

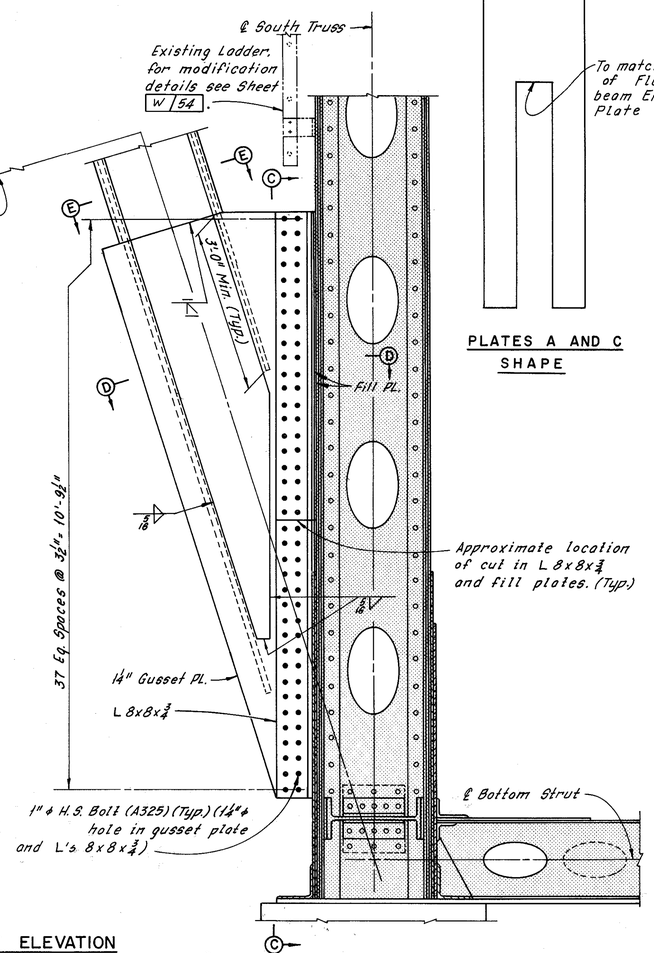
SECTION B-B



SECTION C-C



SECTION D-D



PLATES A AND C SHAPE

STRUT ELEVATION
(Ram Assembly at New Girder Not Shown)

Notes:
Zip-a-tone indicates existing structure.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For Section F-F, see Sheet W 44A.
The strut and gusset plates at either end of the strut shall be ASTM-A588 steel.
For additional notes, see Sheet W 41.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

STRUT DETAILS FLOORBEAM 10

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 12-21-77	DATE 3-1-78	CHB DATE 4/1978	DATE	SHEET W 44

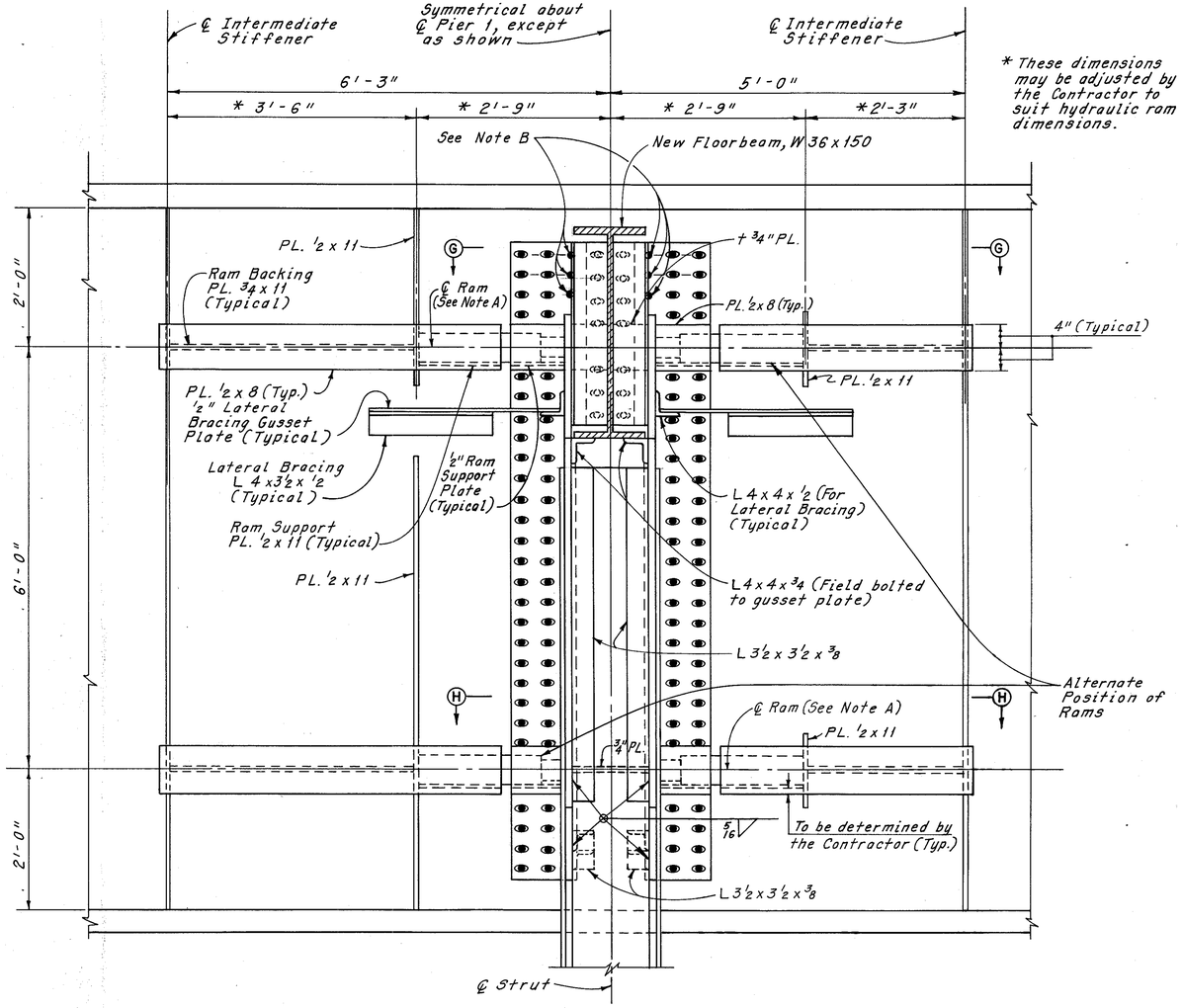
FHWA REGION	STATE	PROJECT	
5	OHIO		

66
89

CUYAHOGA COUNTY
CUY-90-15.31

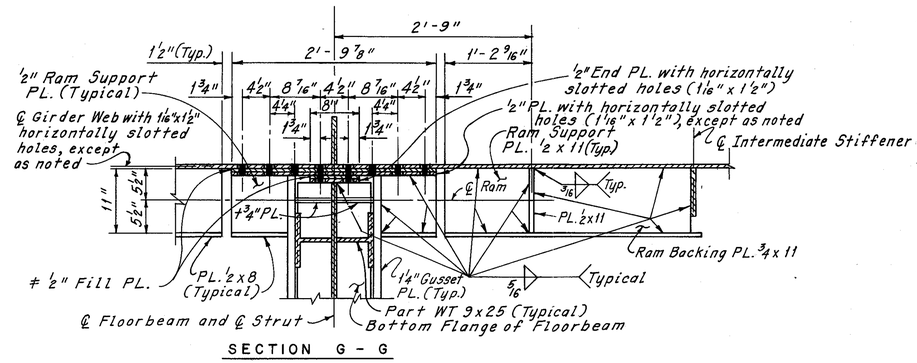
Note B:
Provide 1"ϕ high strength bolts in 1⅛"ϕ holes. These bolts shall be installed after all other bolts have been final tightened.

† Contractor shall provide PL. ¾x8 or other approved support during jacking operation. This support shall have full bearing on all contact plates and can be removed at the completion of jacking operations.



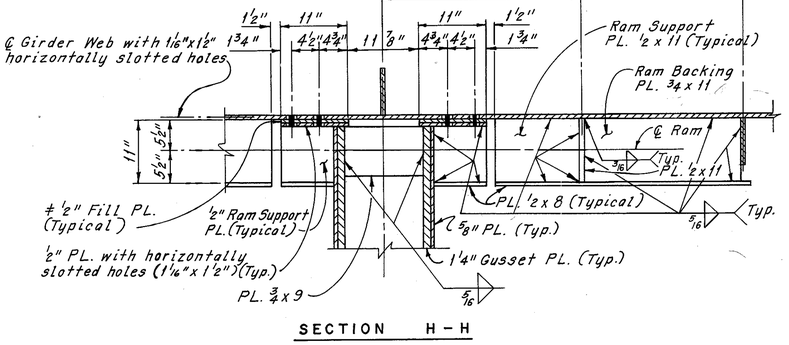
SECTION F - F

* These dimensions may be adjusted by the Contractor to suit hydraulic ram dimensions.



SECTION G - G

≠ ½" Nominal Fill Plate with 1⅛"ϕ holes (thickness can be adjusted for fit-up, ⅜" minimum thickness)



SECTION H - H

Note A:
Two 50 ton Rams shall be used to insure that the strut remains straight during placement of the structure dead load. The strut shall be monitored for straightness continuously as dead loads are applied. If the strut becomes bowed, operations shall cease and the strut shall be jacked to maintain straightness. This operation shall be repeated as often as necessary to maintain straightness of the strut.
All cost for the above described operation including material, equipment and labor shall be included with the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

Notes:
For location of Section F-F, see Sheet W/44.
Structural plate washers or a ⅛" continuous bar shall cover all slotted holes.
All bolts used in slotted holes shall have the threads excluded from the shear surfaces.
The following abbreviation is used:
Typ. = Typical
For Lateral Bracing at Floorbeam 10, see Sheet W/45.
The Contractor shall provide the necessary blocking to maintain the ram alignment shown. Blocking details shall be to the satisfaction of the Engineer.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

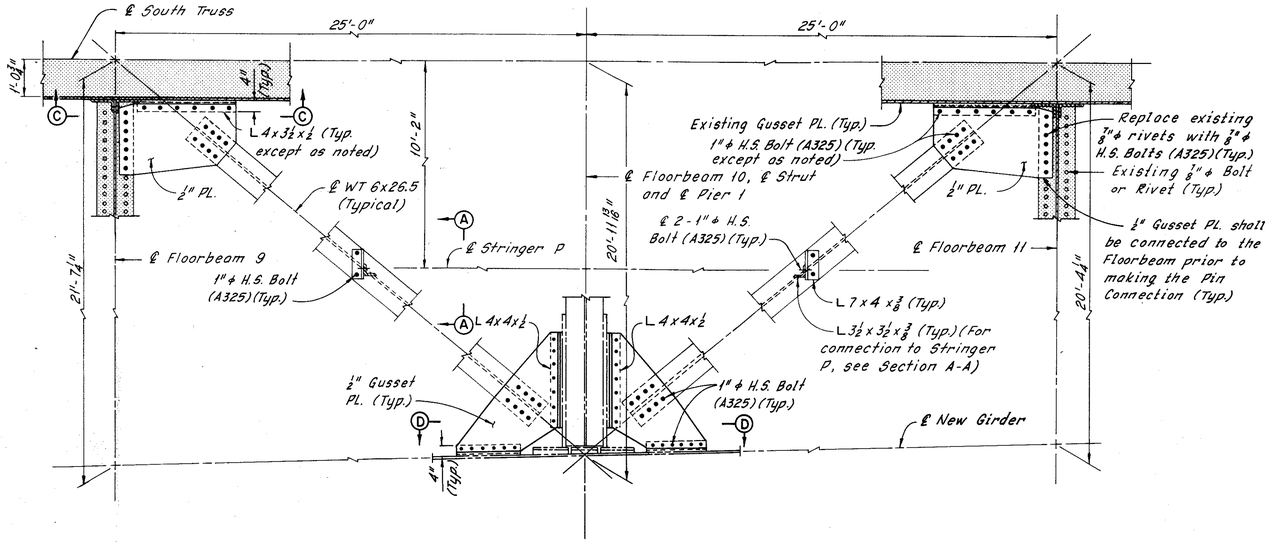
STRUT DETAILS
FLOORBEAM 10
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN C.P.	TRACED C.P.	CHECKED W.E.B.	REVIEWED	REVISED
DATE 10-16-78	DATE 10-23-78	DATE 10-25-78	DATE	SHEET W 44A

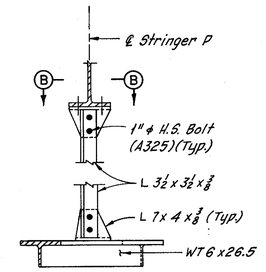
FHWA REGION	STATE	PROJECT	
5	OHIO		

67
89

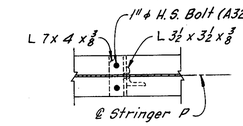
CUYAHOGA COUNTY
CUY-90-15.31



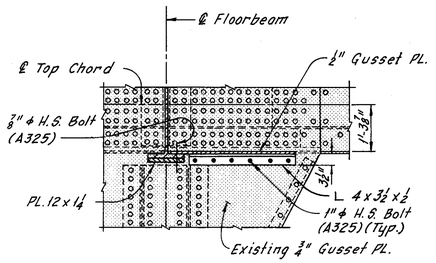
LATERAL BRACING AT FLOORBEAM 10



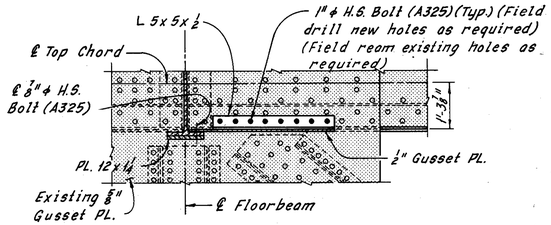
SECTION A-A



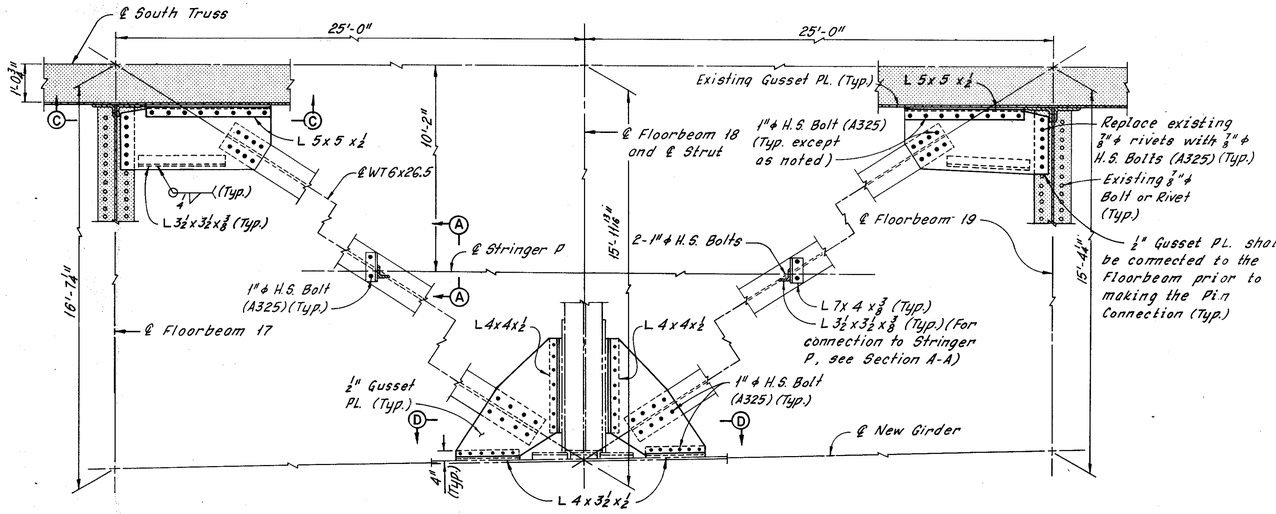
SECTION B-B



SECTION C-C
(Bracing for Floorbeam 10)



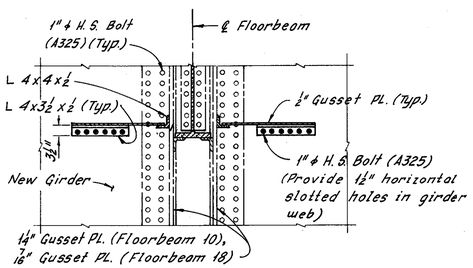
SECTION C-C
(Bracing for Floorbeam 18)



LATERAL BRACING AT FLOORBEAM 18

Note:
Structural plate washers or a ⅛ inch continous bar shall cover all slotted holes.

All bolts used in slotted holes shall have the threads excluded from the shear surface.



SECTION D-D
(Floorbeam 10 shown, Floorbeam 18 similar)

Notes:
Zip-a-tone indicates existing structure.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
For location of lateral bracing see Framing Plan, Sheet W 32.
All bolt holes in the WT 6x26.5 members shall be 1⅛" ϕ. Bolts connecting the lateral bracing members to the gusset plates shall be snug tightened at time of installation and final tightened after wearing surface is placed.
For additional details of lateral bracing connection at struts, see Sheets W 41 and W 44.
Removal of existing rivets and field drilling holes in existing members as required for new construction shall be included with Item 202, Portions of Structures Removed, for payment.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

LATERAL BRACING AT FLOORBEAMS 10 AND 18

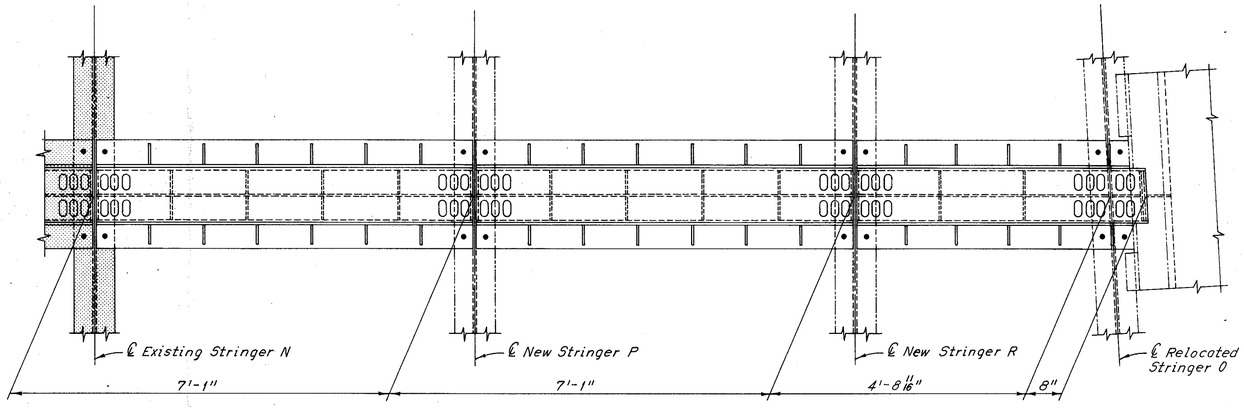
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA.3+87.63
90-1547 STA.54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 1-25-78	DATE 3-17-78	C.H.B. DATE 4-19-78	DATE	SHEET W 45

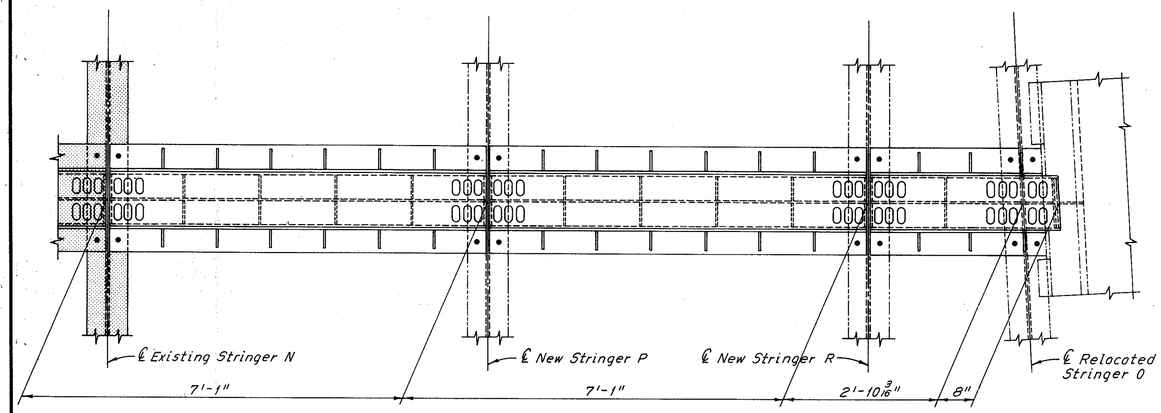
FHWA REGION	STATE	PROJECT	
5	OHIO		

68
89

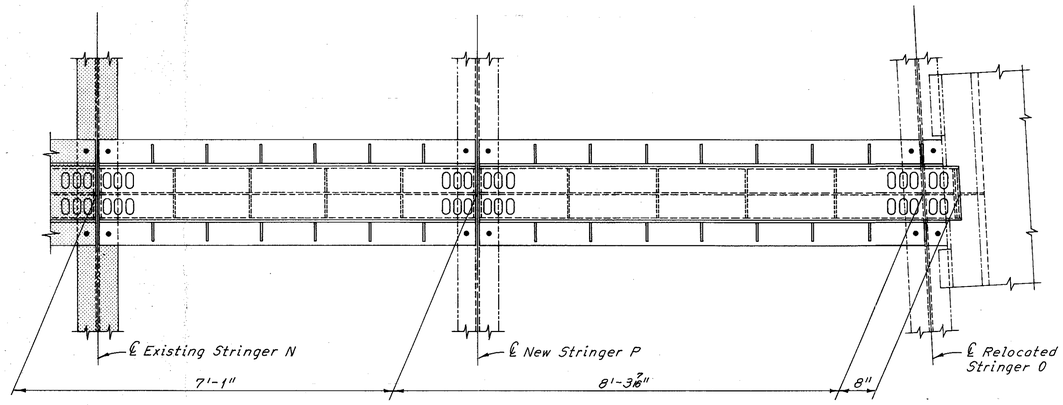
CUYAHOGA COUNTY
CUY-90-15.31



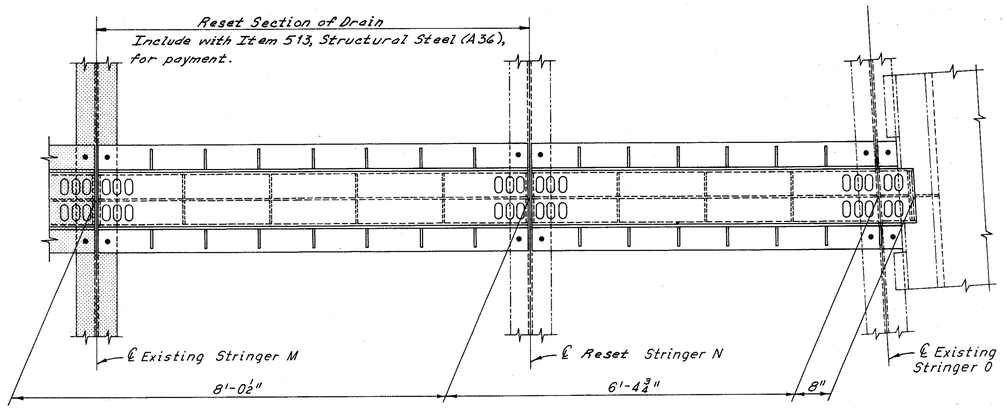
PLAN TYPE A DRAIN 1



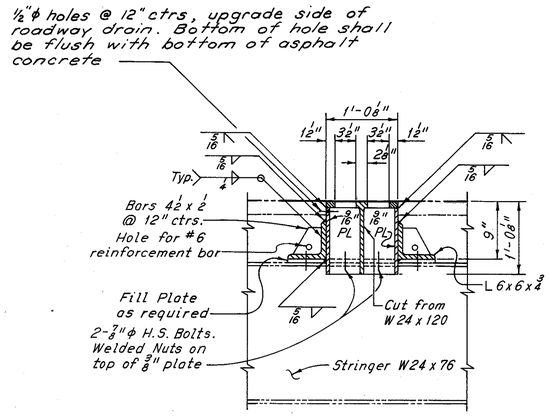
PLAN TYPE A DRAIN 2



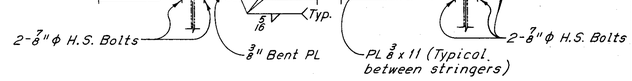
PLAN TYPE A DRAIN 3



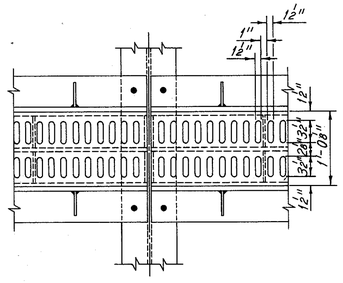
PLAN TYPE A DRAIN 4



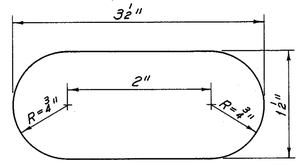
TYPICAL SECTION



TYPICAL PART ELEVATION



PLAN OF DRAIN



DETAIL OF DRAIN HOLE

Notes: For removal plans, see Sheet W 126
The hot applied joint sealer shall be included in the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.
For location of drains, see Slab Plans, Sheet W 157

Zipatone indicates existing structure.
Phantom lines indicate new construction, details of which are shown elsewhere in these Plans.
The following abbreviations are used:
Typ. = Typical
H. S. = High Strength
R = Radius

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND
HNTB

TYPE A DRAIN EXTENSION DETAILS

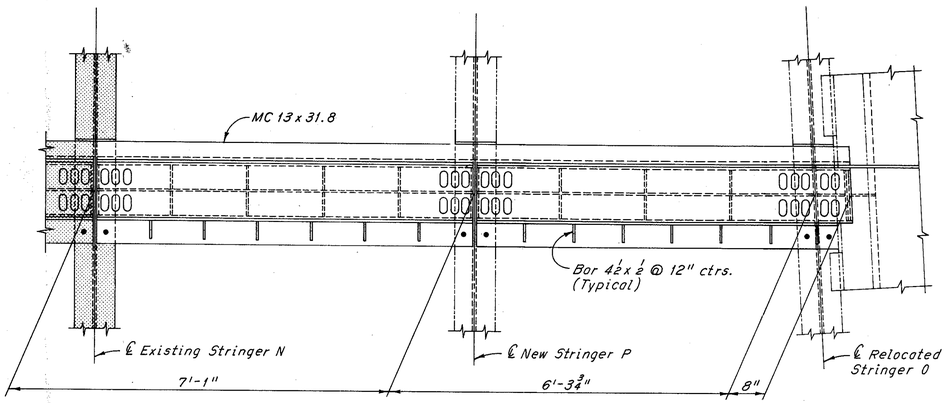
RAMP W-I UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599
CUYAHOGA COUNTY OHIO

DRAWN DLR	TRACED DLR	CHECKED C.P.	REVIEWED	REVISED
DATE 12-28-77	DATE 12-29-77	DATE 1-5-78	DATE	SHEET W 146

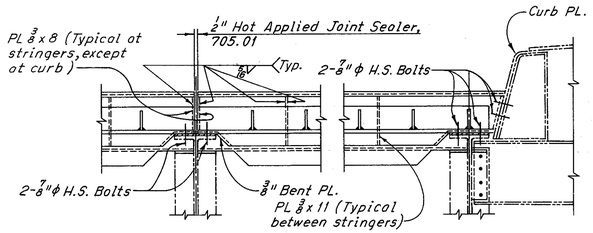
FHWA REGION	STATE	PROJECT	
5	OHIO		

69
89

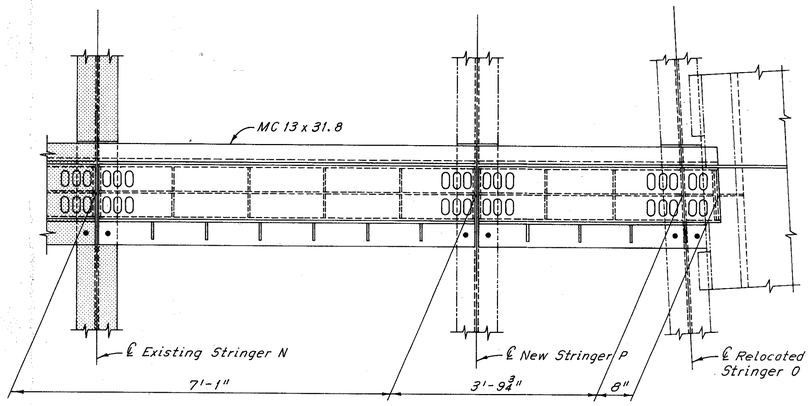
CUYAHOGA COUNTY
CUY-90-15.31



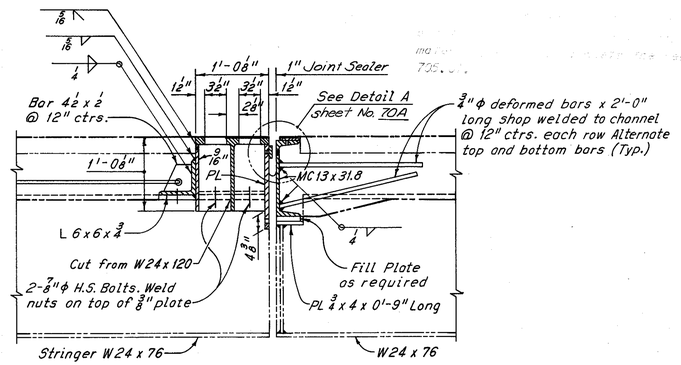
PLAN TYPE B DRAIN 1



TYPICAL PART ELEVATION



PLAN TYPE B DRAIN 2



TYPICAL SECTION
(Floorbeam not shown)

Notes:

The Poured joint seal and precompressed self-adhesive Joint seal shall be included in the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

For location of drains, see Stab Plans, Sheet W 157 .

For Plan of Drain and Detail of Drain Hole, see Sheet W 146 .

For additional notes, see Sheet W 146

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

TYPE B DRAIN EXTENSION DETAILS

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA.3+87.63
90-1547 STA.54+65.78
90-1599

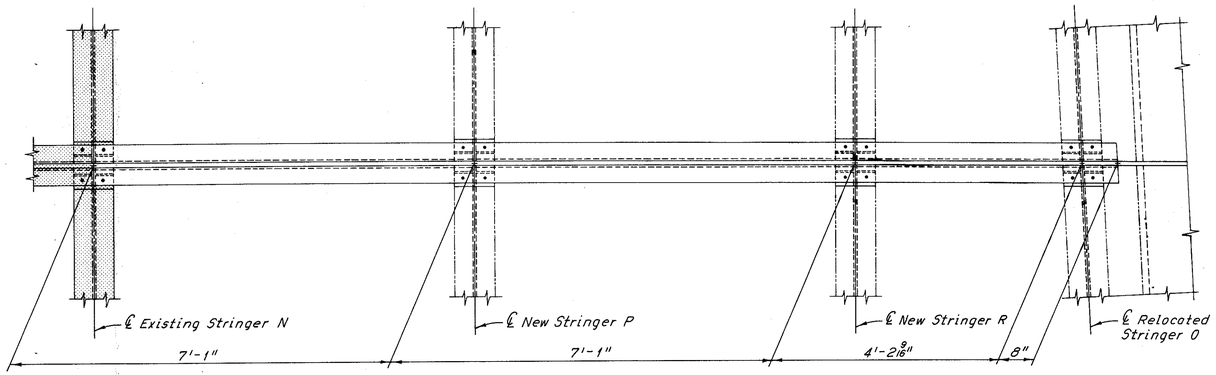
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
D.L.P.	D.L.P.	C.P.		
DATE 1-3-78	DATE 1-3-78	DATE 1-5-78	DATE	SHEET W 47

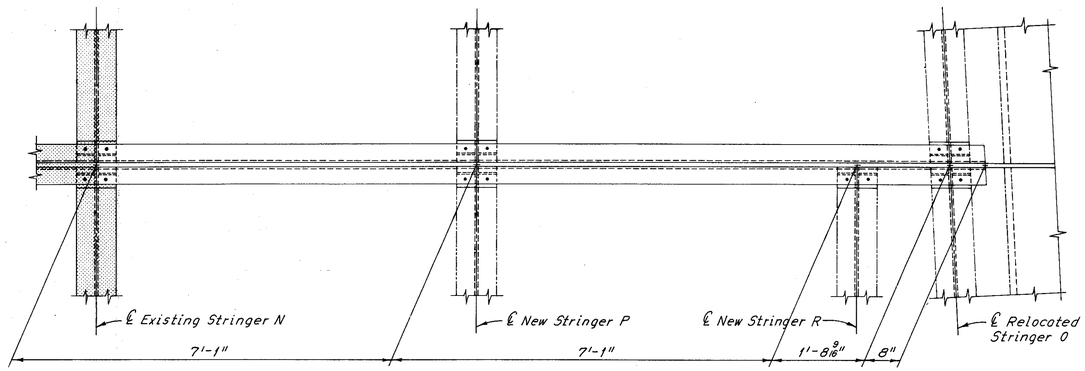
FHWA REGION	STATE	PROJECT	
5	OHIO		

70
89

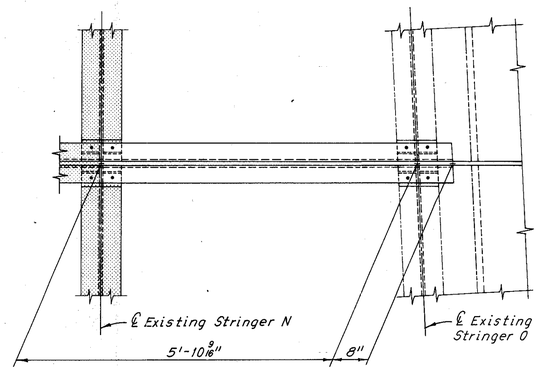
CUYAHOGA COUNTY
CUY-90-15.31



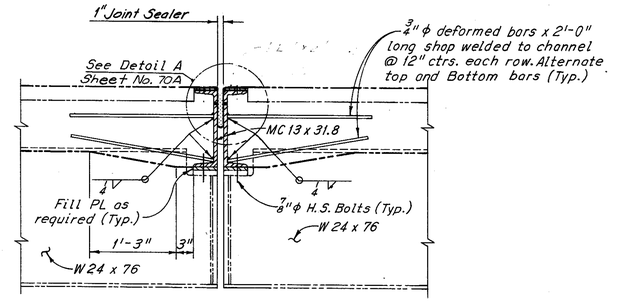
PLAN CONTRACTION JOINT 1



PLAN CONTRACTION JOINT 2



PLAN CONTRACTION JOINT 3



CONTRACTION JOINT DETAIL

Notes:

The Poured Joint seal and precompressed self-adhesive Joint seal shall be included in the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

For location of Contraction Joints, see Slab Plans, Sheet W 157 .

For removal plans, see Sheet W 127 .

For additional notes, see Sheet W 146 .

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

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CONTRACTION JOINT EXTENSION DETAILS

RAMP W-1 UPGRADING

BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599

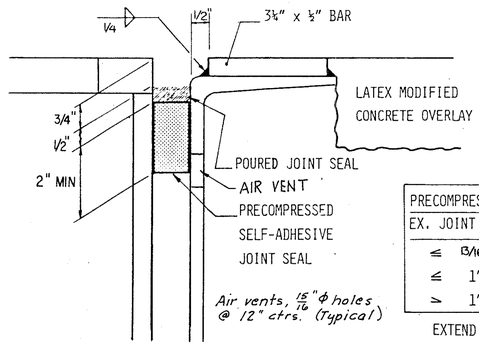
CUYAHOGA COUNTY OHIO

DESIGN	DRAWN DLA	TRACED DLA	CHECKED C.P.	REVIEWED	REVISED
	DATE 1-3-78	DATE 1-4-78	DATE 1-5-78	DATE	SHEET W 48

FHWA REGION	STATE	PROJECT	
5	OHIO		

70A
89

CUYAHOGA COUNTY
CUY-90-15.31

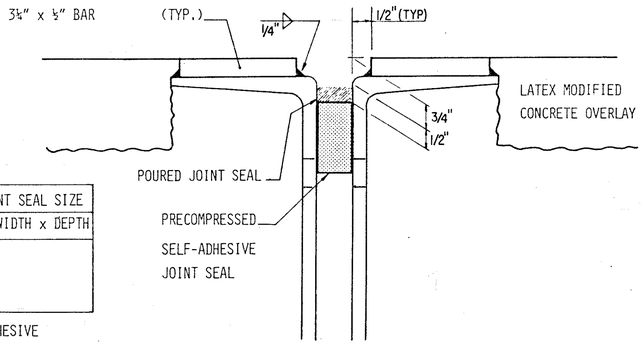


TYPE B DRAIN EXTENSION

DETAIL A-SEE SHEET Nº 69 FOR LOCATION

PRECOMPRESSED SELF-ADHESIVE JOINT SEAL SIZE	
EX. JOINT WIDTH	UNCOMPRESSED WIDTH x DEPTH
≤ 13/16"	3" x 2"
≤ 1"	4" x 2"
> 1"	5" x 2"

EXTEND PRECOMPRESSED SELF-ADHESIVE JOINT SEAL INTO CURB JOINT ANGLES (IF EXISTING), OTHERWISE STOP SEAL AT FACE OF CURB.



CONTRACTION JOINT EXTENSION

DETAIL A-SEE SHEET Nº 70 FOR LOCATION

PREPARATION FOR INSTALLATION OF JOINT SEALS

1. ALL AREAS WHICH ARE TO BE IN CONTACT WITH THE JOINT SEALS (EXCEPT THE PAINTED CURB ANGLES) SHALL BE SANDBLASTED CLEAN JUST PRIOR TO THE INSTALLATION OF THE JOINT SEALS. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 513- - STRUCTURAL STEEL

PRECOMPRESSED SELF-ADHESIVE JOINT SEAL

1. THE MATERIAL FOR THIS ITEM IS AN OPEN CELL BITUMEN IMPREGNATED FOAM SEAL OF THE SIZES SPECIFIED. IT SHALL BE "EMSEAL" AS MANUFACTURED BY EMSEAL CORPORATION, "COMPRIBAND V" AS MANUFACTURED BY SECOA CORPORATION OR AN APPROVED ALTERNATE. THE SEAL SHALL BE SUPPLIED WITH A SELF-ADHESIVE BACKING AND THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. SPLICES SHALL BE MITERED. BUTT JOINTS SHALL NOT BE PERMITTED.
3. BACKER ROD SHALL BE PLACED BELOW THE SEAL TO INSURE INSTALLATION AT THE PROPER DEPTH.
4. WHEN INSTALLED ADJACENT TO A COPPER WATERSTOP WHICH IS TO REMAIN, THE SEAL SHALL EXTEND 4 INCHES MINIMUM INTO THE INTACT COPPER WATERSTOP. ANY DISCONTINUITIES BETWEEN THE COPPER WATERSTOP AND THE DECK JOINT SHALL BE SMOOTHED USING A TROWELABLE EPOXY ADHESIVE FILLER AS APPROVED BY THE ENGINEER.
5. THE JOINT SEAL SIZES AS DETAILED ARE THE MINIMUM SIZES ACCEPTABLE. IF A LARGER DEPTH IS USED, THE END SHALL BE TRIMMED TO A DEPTH OF 2 INCHES FOR INSTALLATION BETWEEN THE CURB ANGLES. (IF EXISTING)
6. WHEN INSTALLED AT THE CURB LINE THE SEAL SHALL BE CUT TO PROVIDE FOR A GRADUAL BEND AT THE CURB LINE.

PAYMENT FOR ALL NECESSARY LABOR, MATERIALS AND EQUIPMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 513 - STRUCTURAL STEEL

POURED JOINT SEAL

1. THE MATERIAL FOR THIS ITEM 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 ALTERNATE.
2. IT SHALL BE USED AS A SECONDARY SEAL ON TOP OF THE PREFORMED EXPANSION JOINT SEAL AND TO SEAL THE TRANSITION BETWEEN THE EXISTING COPPER WATERSTOP AND THE PRECOMPRESSED EXPANSION JOINT SEAL.
3. THE INSTALLED AND CURED MATERIAL SHALL BE ½ INCH DEEP AND SHALL BE BONDED TO THE SIDES OF THE JOINT. ANY UNBONDED SECTION SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
4. DAMS AS REQUIRED TO CONTAIN THE POURED SEALER SHALL BE INCIDENTAL TO THIS ITEM OF WORK.

PAYMENT FOR ALL NECESSARY LABOR, MATERIALS AND EQUIPMENT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 513 - STRUCTURAL STEEL

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 12 LOCATION & DESIGN

TYPE B DRAIN EXTENSION SEAL
CONTRACTION JOINT EXTENSION SEAL

RAMP W-1 UPGRADING
CUY-90-1547

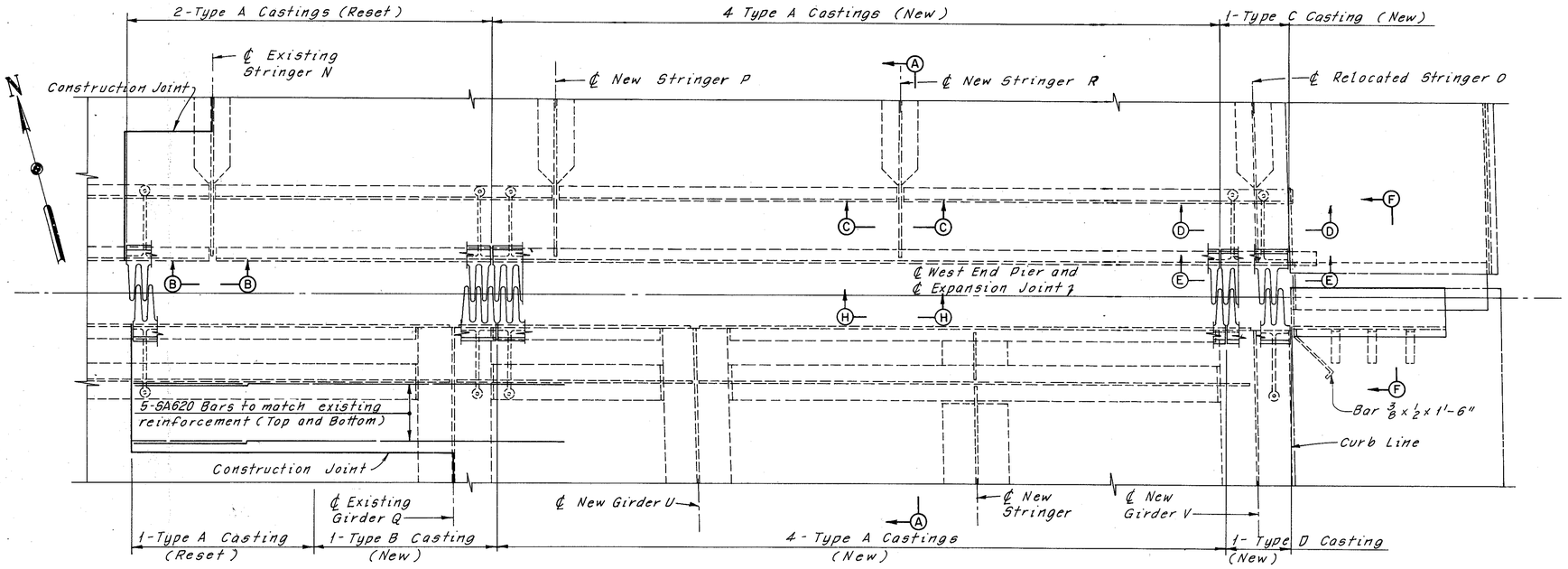
CUYAHOGA COUNTY OHIO

DESIGNED	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	SHEET W/48A

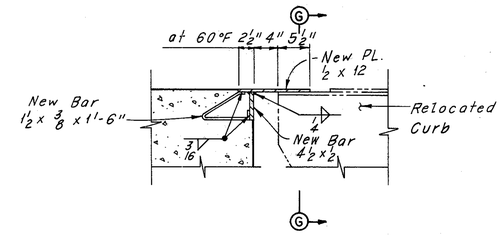
FHWA REGION	STATE	PROJECT	
5	OHIO		

71
89

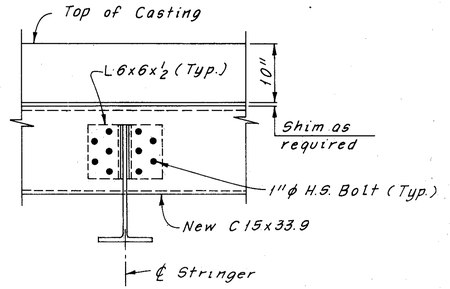
CUYAHOGA COUNTY
CUY-90-15.31



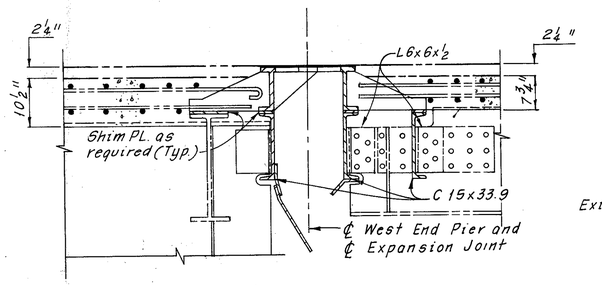
PART PLAN AT WEST END PIER
(Sub-drainage for Wearing Surface course and channel connection plates and angles not shown)



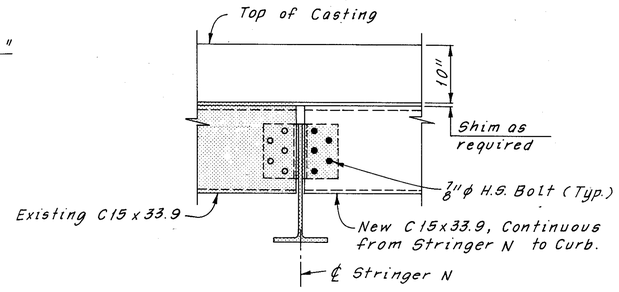
SECTION F - F



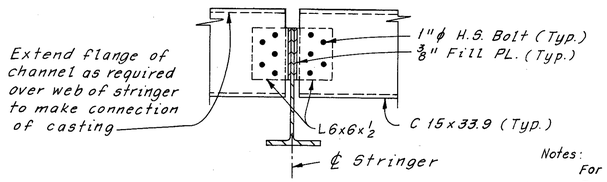
SECTION H-H
(Typical for Stringers Pond R)
(Tooth support plates not shown)



SECTION A-A



SECTION B-B
(Tooth support plates not shown)

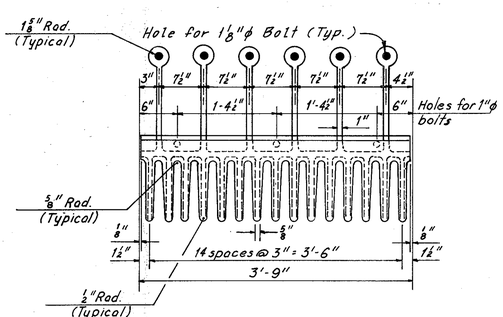


SECTION C-C
(Typical for Stringers Pond R)
(Shim plates and casting not shown)

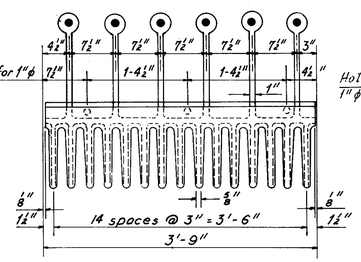
Notes:
For removal plans, see Sheet W/29.
For framing plan, see Sheet W/32.
For section of expansion joint casting, see Sheet W/50.

For details of drainage, see Sheet W/51 and W/52
For reinforcement Schedule, see Sheet W/59.
For Sections D-D and E-E, see Sheet W/50.

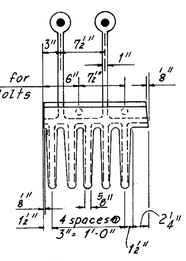
Zip-a-tone indicates existing structure.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.



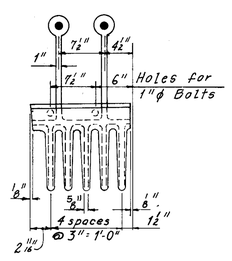
CASTING A
(8 Required)



CASTING B
(1 Required)

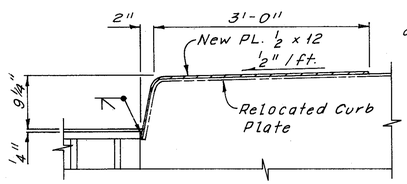


CASTING C
(1 Required)



CASTING D
(1 Required)

EXPANSION JOINT CASTINGS



SECTION G-G

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND

HNTB

EXPANSION JOINT EXTENSION AT WEST END PIER

RAMP W-I UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599

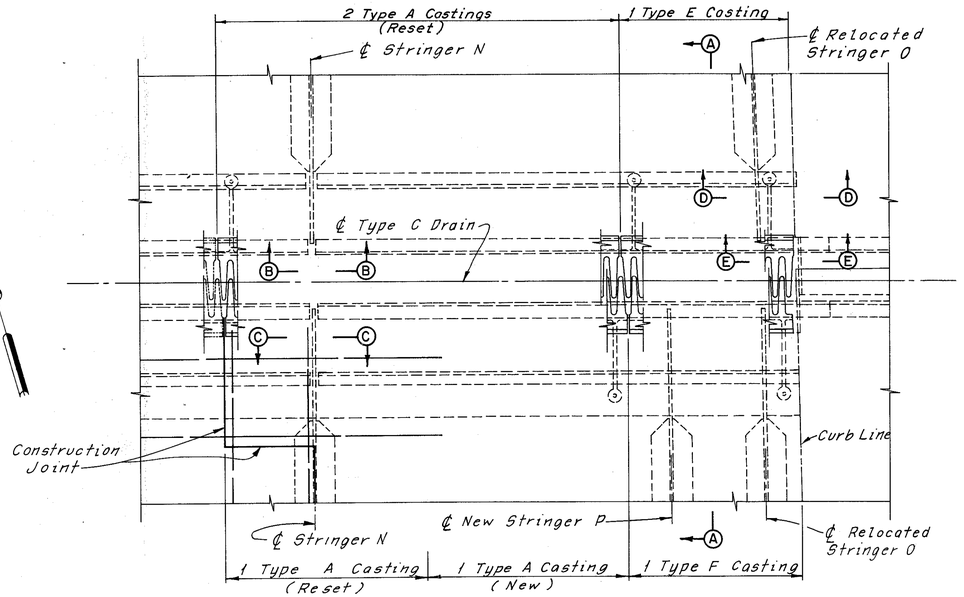
CUYAHOGA COUNTY OHIO

DRAWN RAS	TRACED CJT	CHECKED SRJ	REVIEWED	REVISED
DATE 12-23-77	DATE 12-27-77	DATE 3-23-78	DATE	SHEET W/49

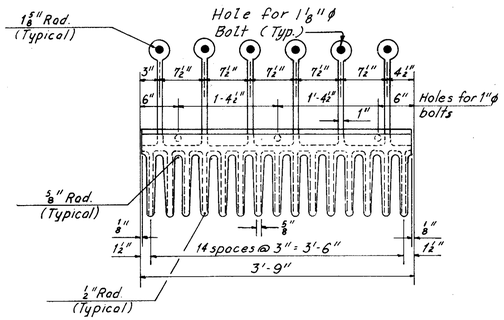
FHWA REGION	STATE	PROJECT	
5	OHIO		

72
89

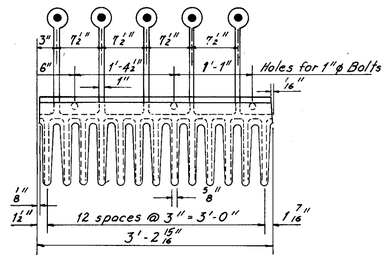
CUYAHOGA COUNTY
CUY-90-15.31



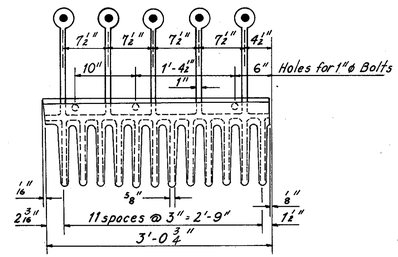
PART PLAN AT EXPANSION JOINT AT TYPE C DRAIN
(Sub-droinoge for wearing surface course and channel connection plates and angles not shown)



CASTING A
(1 Required)

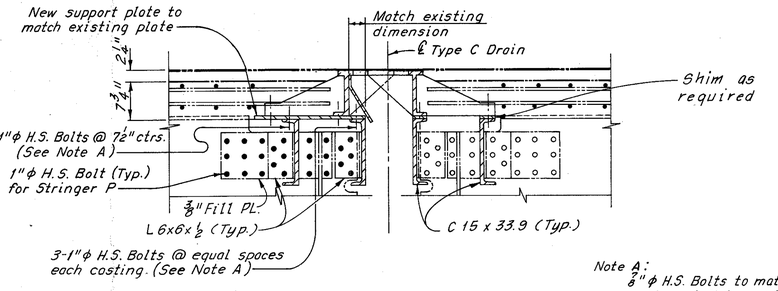


CASTING E
(1 Required)



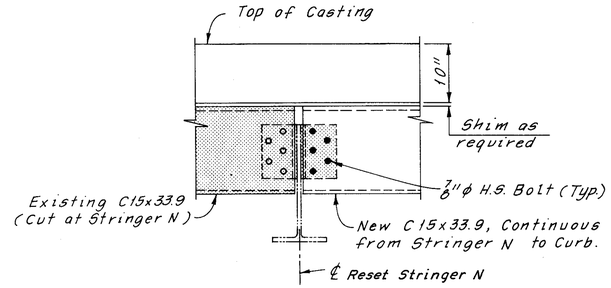
CASTING F
(1 Required)

EXPANSION JOINT CASTINGS
ASTM A27 Grade 70-36

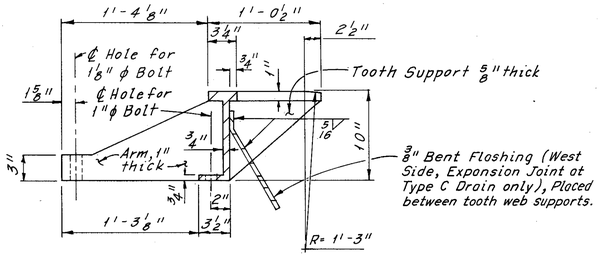


SECTION A-A

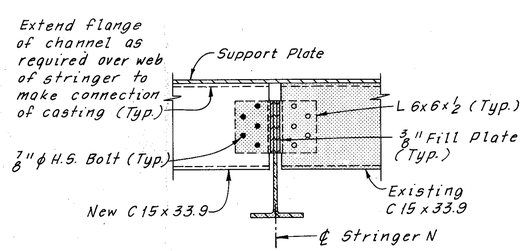
Note A:
⅞"ϕ H.S. Bolts to match existing shall be used where castings are reset.



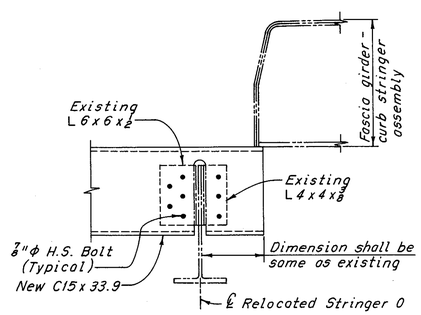
SECTION B-B
(Tooth Support plates not shown)



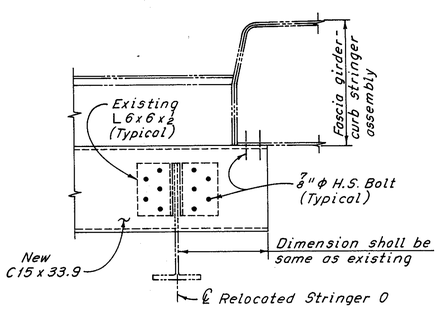
SECTION OF EXPANSION JOINT CASTING
(Dimensions shown are normal to ℄ Joint)



SECTION C-C
(Costing not shown)



SECTION D-D
(Shim plates and castings not shown)



SECTION E-E
(Tooth support plates not shown)

Notes:
For removal plans, see Sheet W/30.
For framing plan, see Sheet W/32.

For drainage details, see Sheets W/51, and W/52.
Zip-a-tone indicates existing structure.
Phantom lines indicate new construction, details of which are shown elsewhere in these plans.
Modification of sidewalk plates required for fit-up of the widened structure shall be included with the unit price bid for Item Special, Fascia Girder-Curb Stringer Assembly, As Per Plan, for payment.

Note:
New flashing plates shall be galvanized in accordance with 711.02. Include with unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

EXPANSION JOINT EXTENSION AT TYPE C DRAIN
RAMP W-I UPGRADING

BR. NO. CUY-90-1524
90-1540 . STA.3+87.63
90-1547 STA.54+65.78
90-1599

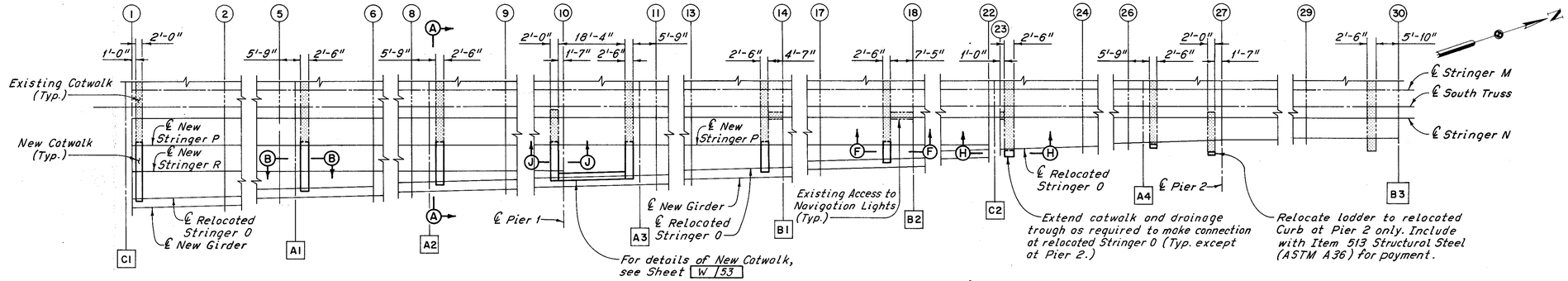
CUYAHOGA COUNTY OHIO

DRAWN RAS	TRACED SJT	CHECKED	REVIEWED	REVISED
DATE 12-23-77	DATE 1-3-78	DATE 3-23-78	DATE	SHEET W/50

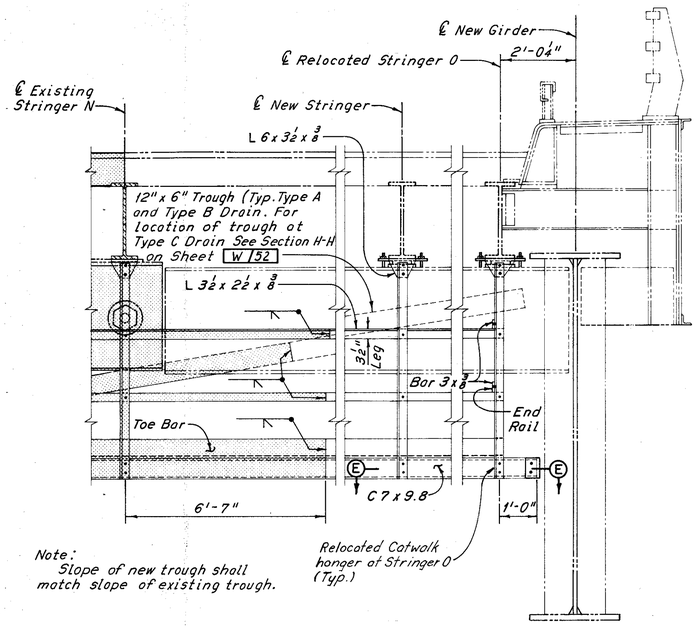
FHWA REGION	STATE	PROJECT	
5	OHIO		

73
89

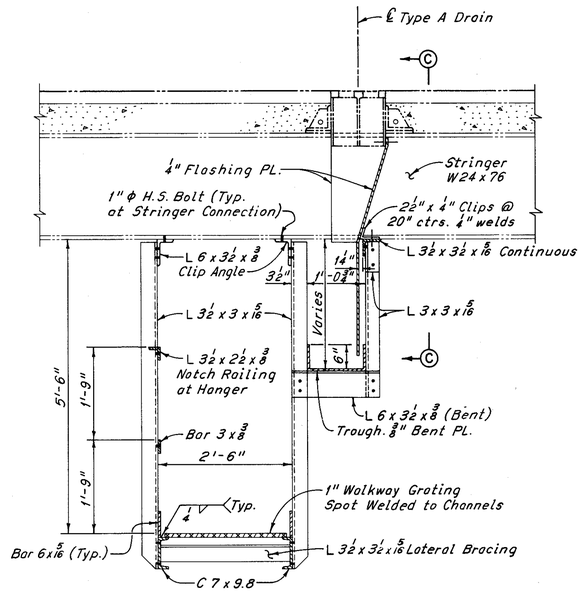
CUYAHOGA COUNTY
CUY-90-15.31



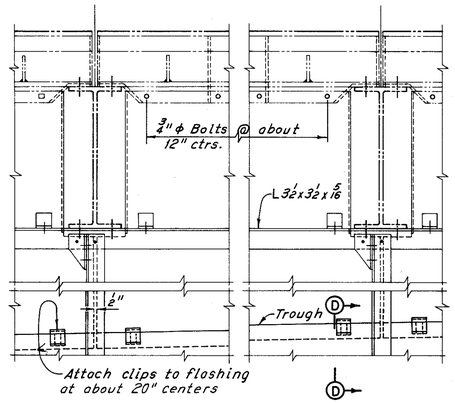
LOCATION PLAN
(Slab and Curb not shown)



SECTION A-A
(Typical Extension)
(For clarity the floorbeam connections are not shown)



SECTION B-B
(Type A Droins, Droin A-1 shown, Droins A-2, A-3 and A-4 are similar)



SECTION C-C

Notes:

Zip-a-tone indicates existing structure.

Phantom lines indicate new construction, details of which are shown elsewhere in these plans.

The new flashing plates and troughs shall be galvanized in accordance with 711.02. Include with the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

The Contractor shall provide a 1 inch walkway grating as required. The grating shall be Irving X-Bar Type AA, Catalog No. 14-P-20; or Bustin, Catalog No. 101, or approved equal. Include with the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

For details of cross-drain extensions, see Sheets W 46 thru W 50.

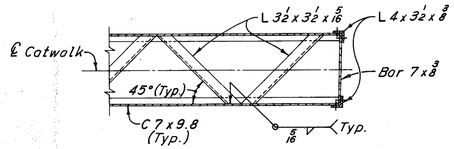
All new bolts shall be 3/4" ϕ High Strength Bolts, except as noted.

For Framing Plan, see Sheet W 32.

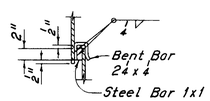
The following abbreviations are used:
Typ. = Typical
ctr. = center

○ *Indicates Floorbeam location.*
□ *Indicates Cross-drain type*

For Sections F-F, H-H and J-J see Sheet W 52.



PART SECTION E-E
(Hangers and rail posts not shown)



SECTION D-D

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

CATWALK AND TROUGH EXTENSION DETAILS

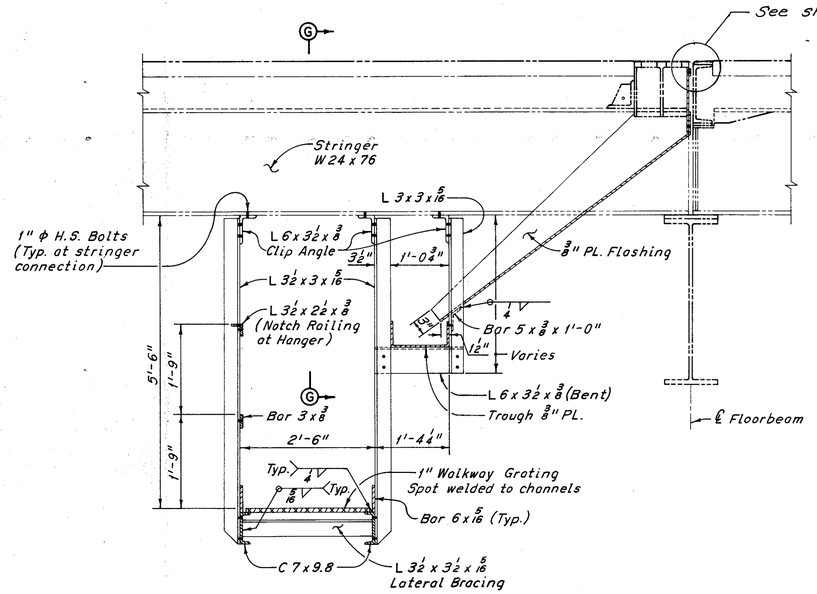
RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599
CUYAHOGA COUNTY OHIO

DRAWN R.A.S.	TRACED D.L.R.	CHECKED W.E.B.	REVIEWED	REVISED
DATE 1-20-78	DATE 1-20-78	DATE 2-6-78	DATE	SHEET W 51

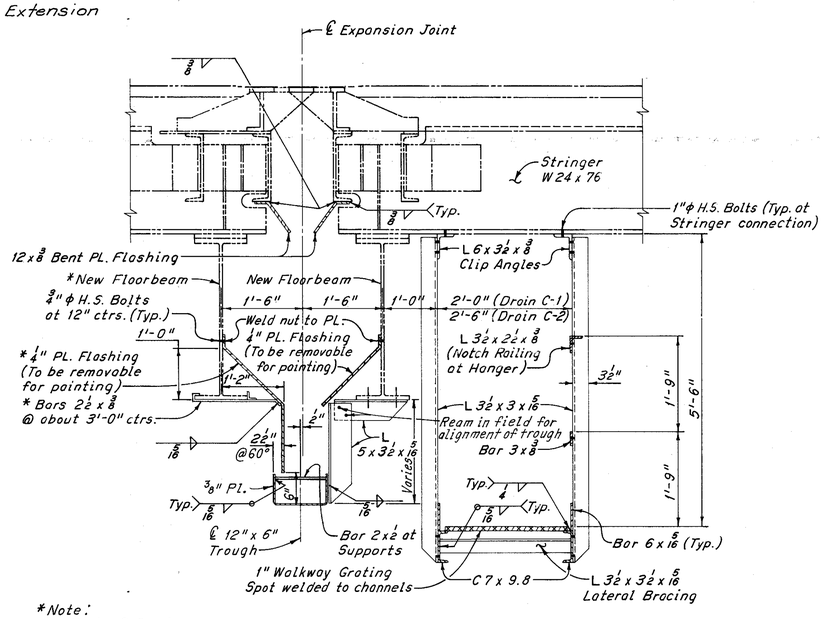
FHWA REGION	STATE	PROJECT	
5	OHIO		

74
89

CUYAHOGA COUNTY
CUY-90-15.31

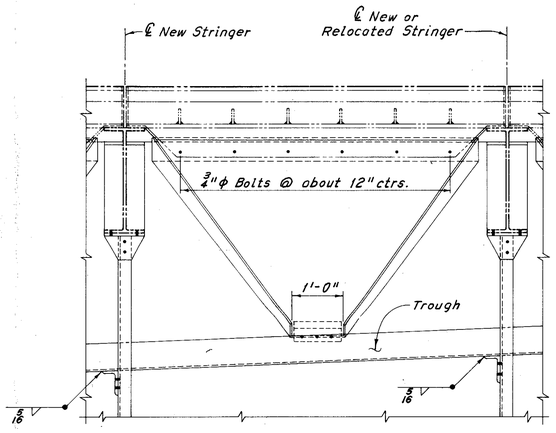


SECTION F-F
(Type B Drain, Droin B-2 shown Droin B-1 is similar)

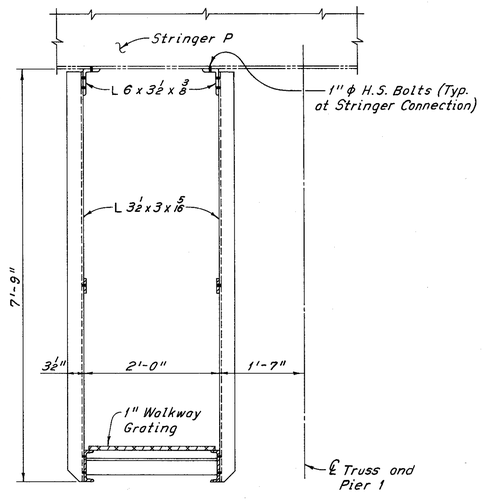


*Note:
Droin C-2 only.

SECTION H-H
(Type C Droin, Drain C-2 shown, Droin C-1 is similar)



SECTION G-G
(Typical between stringers)



SECTION J-J

Notes:

Type C drain trough supports shall be placed near stringer locations on the widened structure.

Reaming of holes shall be included with unit price bid for Item 513, Structural Steel, for payment.

For location of Sections F-F, H-H and J-J, see Sheet W / 51.

For additional Notes, see Sheet W / 51.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

CATWALK AND TROUGH EXTENSION DETAILS

RAMP W-I UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599
CUYAHOGA COUNTY OHIO

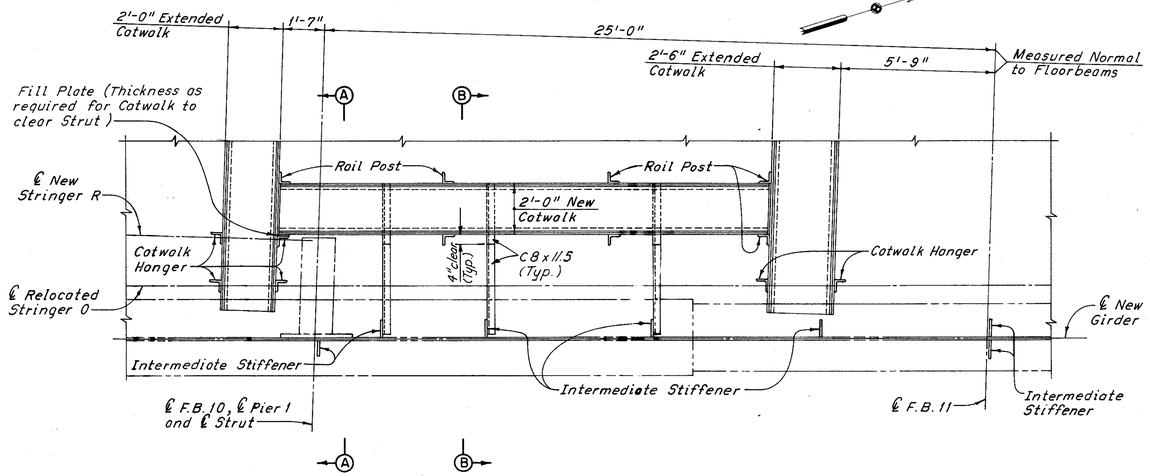
DRAWN R.A.S.	TRACED D.W.P.	CHECKED W.E.B.	REVISED	SHEET W 52
DATE 1-16-78	DATE 1-17-78	DATE 2-6-78	DATE	

L-0

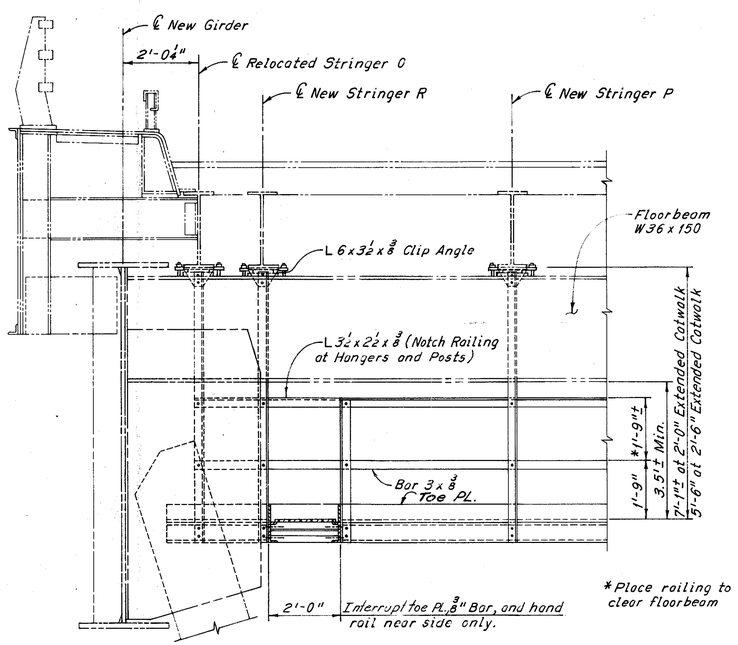
FHWA REGION	STATE	PROJECT	
5	OHIO		

75
89

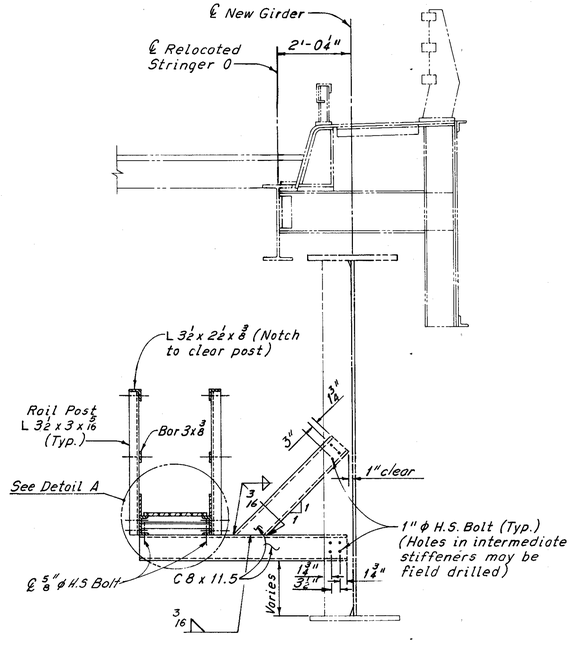
CUYAHOGA COUNTY
CUY-90-15.31



PART CATWALK PLAN

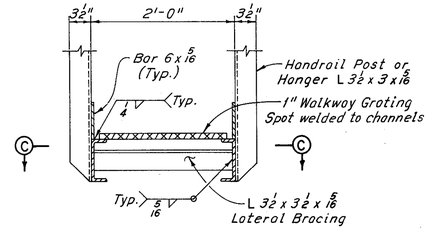


SECTION A-A
(Floorbeam connections not shown)

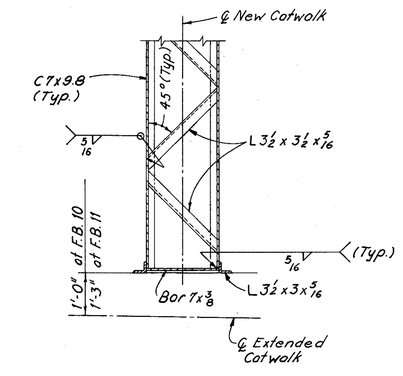


SECTION B-B

Note:
For details not shown, see Section A-A, Sheet W 51.



DETAIL A



PART SECTION C-C

Note:
For notes, see Sheet W 51

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

NEW CATWALK BETWEEN
PIER I AND FLOORBEAM II
RAMP W-I UPGRADING
BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599
CUYAHOGA COUNTY OHIO

DRAWN RA.S	TRACED DLR	CHECKED	REVIEWED	REVISED
DATE 1-20-78	DATE 2-27			SHT W 53

FHWA REGION	STATE	PROJECT	
5	OHIO		

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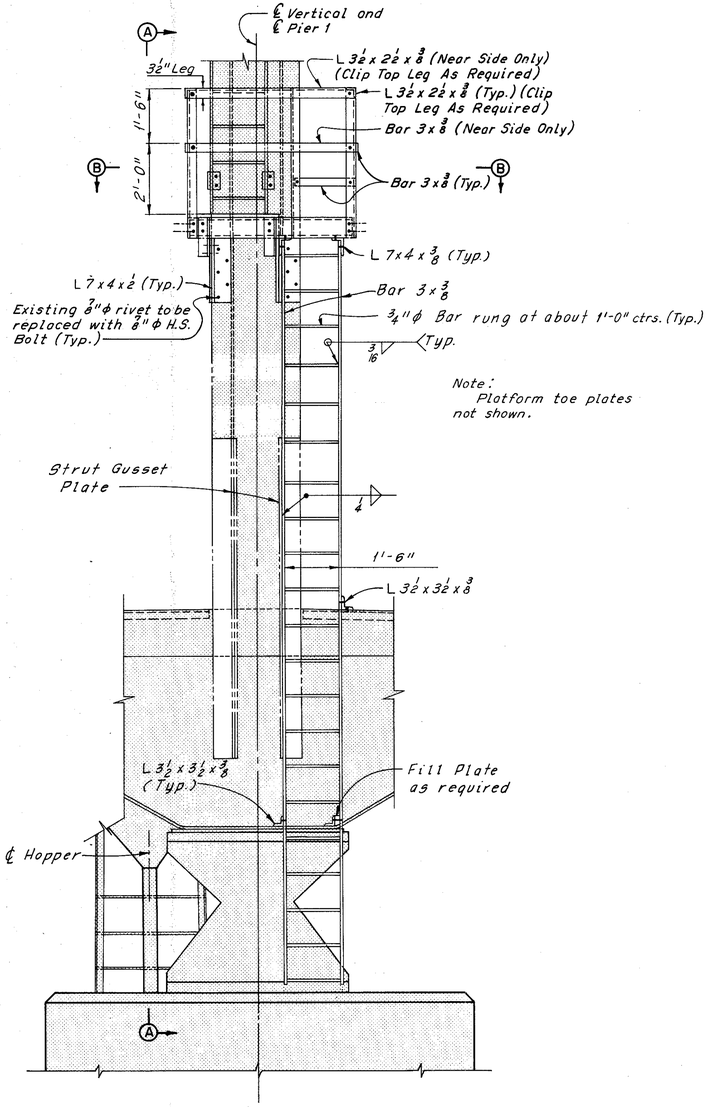
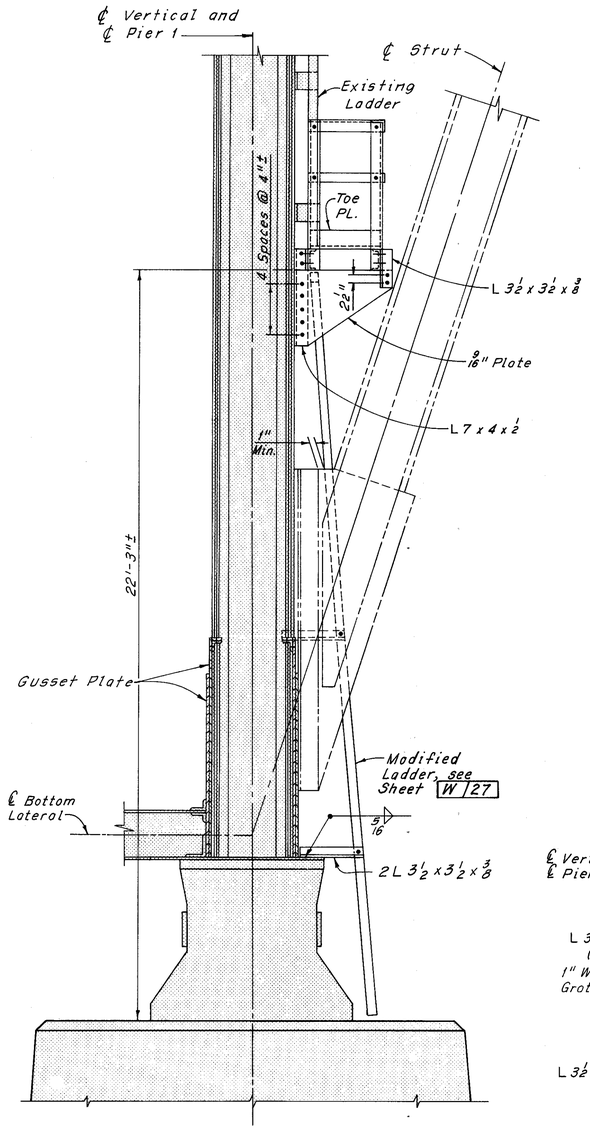
89

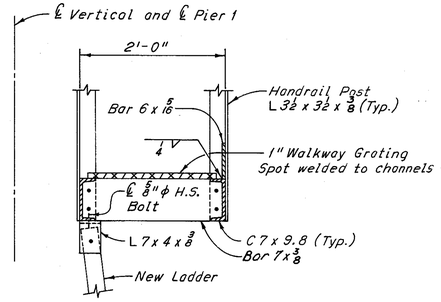
CUYAHOGA COUNTY
CUY-90-15.31



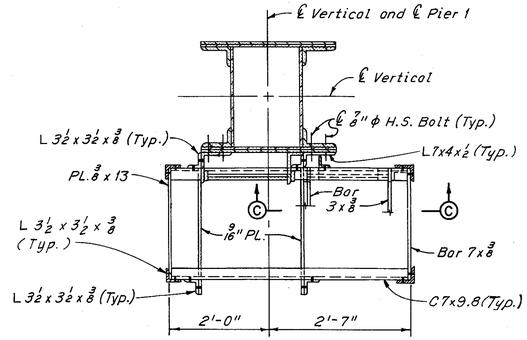
SOUTH TRUSS ELEVATION
(Looking North)



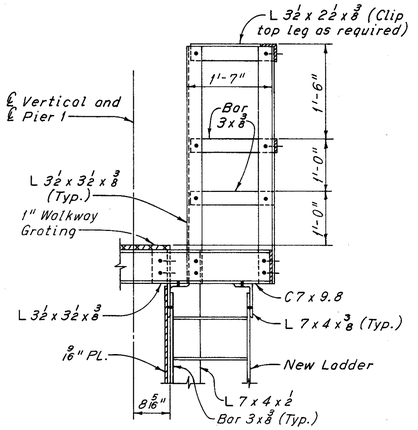
SECTION A-A



PLATFORM DETAIL
(Platform Support and Strut not shown)



SECTION B-B
(Strut and Walkway Grating not shown)



SECTION C-C

Notes:

Zip-a-tone indicates existing structure.

Phantom lines indicate new construction, details of which are shown elsewhere in these plans.

The removal of existing rivets and fill plates as required shall be included with Item 202, Portions of Structures Removed, for payment.

The Contractor shall provide a 1 inch walkway grating as required. The grating shall be Irving X-Bar Type AA, Catalog No. 14-P-20; or Bustin, Catalog No. 101; or approved equal. Included with unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

For Removal Plans, see Sheet W 27.

For Strut Details, see Sheet W 44.

All new bolts shall be ⅞" ϕ High Strength Bolts, except as noted at connections to existing members and thru flange of C7x9.8.

The following abbreviations are used:

Typ. = Typical
ctrs. = centers
Min. = Minimum
H.S. = High Strength

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND

HNTB

MODIFICATION OF ACCESS TO PIER I

RAMP W-I UPGRADING

BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
R.A.S. DATE 2-1-78	D.L.R. DATE 3-3-78	W. J. DATE 3-7-78	DATE	SHEET W 54

FHWA REGION	STATE	PROJECT	
5	OHIO		

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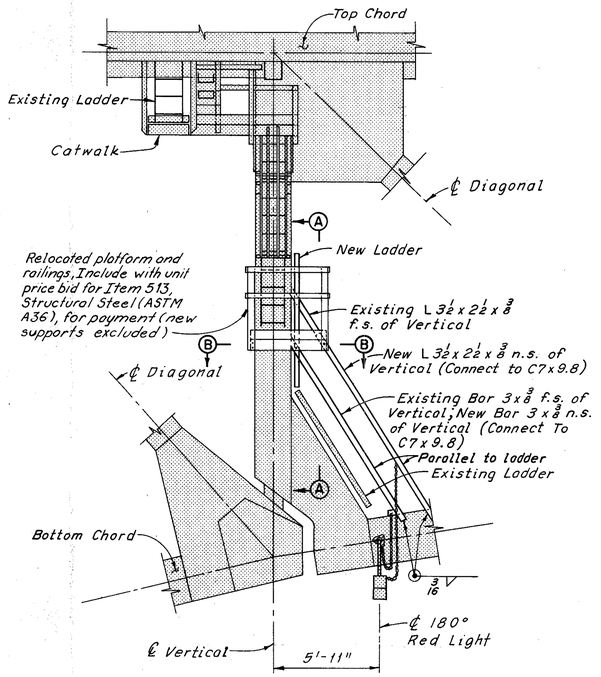
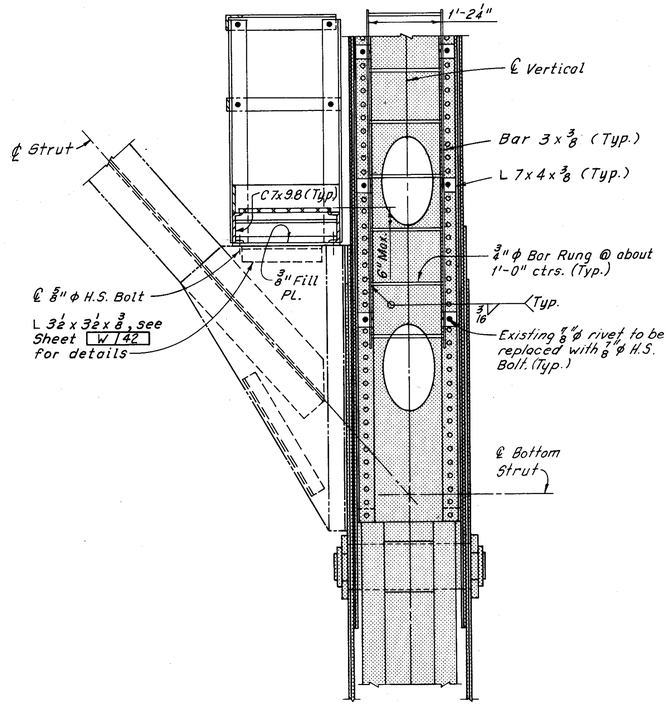
89

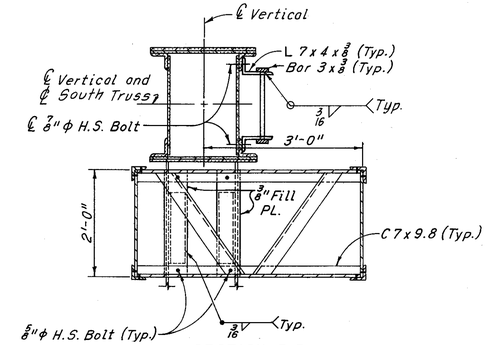
CUYAHOGA COUNTY
CUY-90-15.31



SOUTH TRUSS ELEVATION
(Looking North)
(Strut not shown)



SECTION A-A
(Railings for Ladder and Existing Ladders not shown)



SECTION B-B
(Strut, walkway grating and railing not shown)

Notes:
For Removal Plans, see Sheet W/28.
For Strut Details, see Sheets W/42 and W/43.
The following abbreviations are used:
Typ. = Typical — f.s. = far side
n.s. = near side — ctrs. = centers
H.S. = High Strength — Max. = Maximum
For additional notes, see Sheet W/54.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MODIFICATION OF ACCESS TO NAVIGATIONAL LIGHT AT FLOORBEAM 14

RAMP W-1 UPGRADING

BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

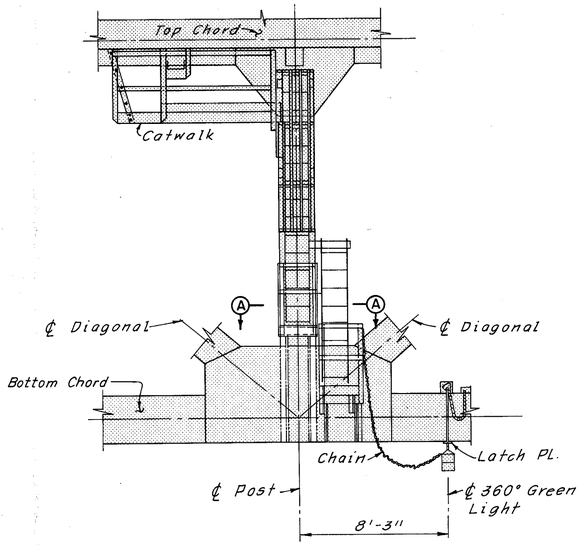
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
H.A.S.	A.J.T.	W.E.B.		
DATE 2-21-78	DATE 3-20-78	DATE 3-27-78	DATE	SHEET W/55

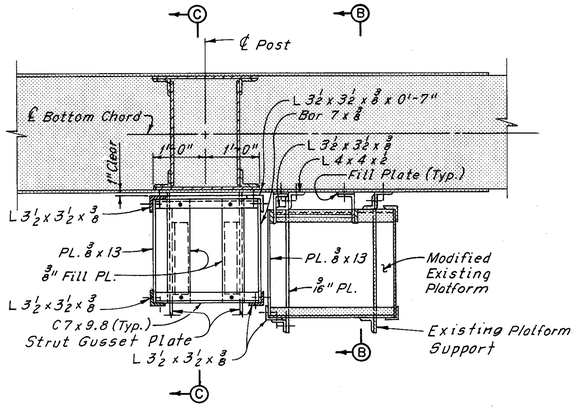
FHWA REGION	STATE	PROJECT	
5	OHIO		

78
89

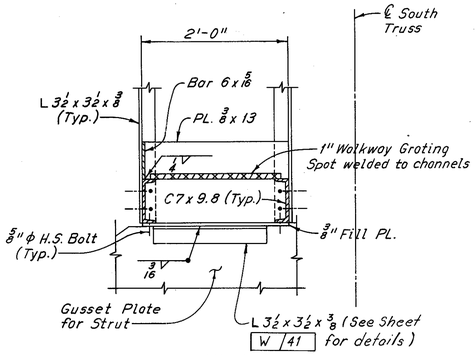
CUYAHOGA COUNTY
CUY-90-15.31



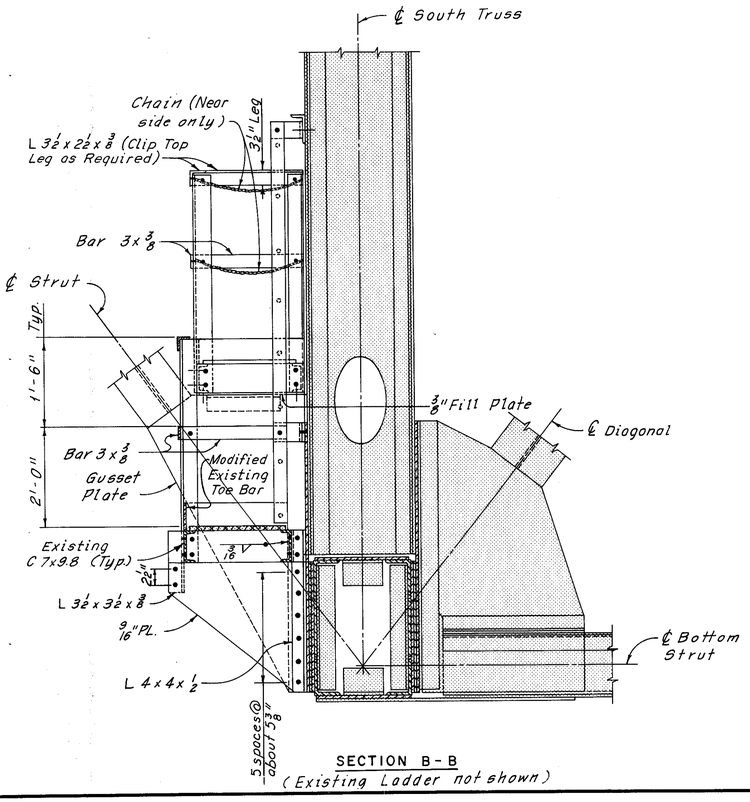
SOUTH TRUSS ELEVATION
(Looking North)



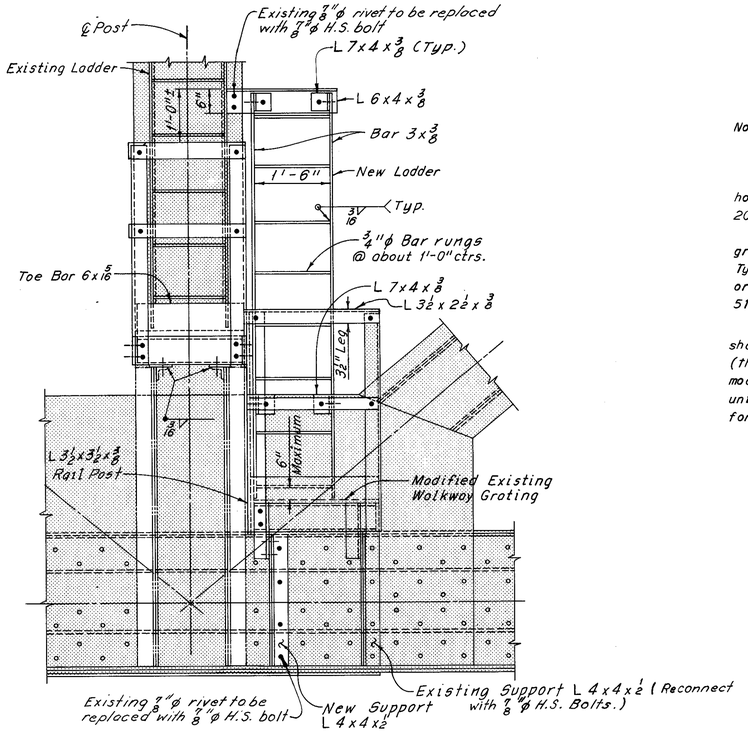
SECTION A-A
(Existing Ladder, Loteral Bracing, Horizontal Railings, Walkway Grating and Strut not shown)



SECTION C-C
(Existing Ladder Not Shown)



SECTION B-B
(Existing Ladder not shown)



PART ELEVATION
(Looking North)

Notes:

For Removal Plans, see Sheet W 28.

For Strut Details, see Sheet W 41 and W 43

The removal of existing rivets and drilling new holes in existing plates shall be included with Item 202, Portions of Structures Removed, for payment.

The Contractor shall provide a 1 inch walkway grating as required. The grating shall be Irving X- Bar Type AA, Catalog No. 14-P-20; or Bustin, Catalog No. 101; or approved equal. Included with unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

The existing platform removed in accordance with Sheet W 28 shall be modified and reset as shown in "Part Elevation" (this sheet). All material, labor and equipment necessary to modify and reset the platform shall be included with the unit price bid for Item 513, Structural Steel (ASTM A36), for payment.

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CONSULTING ENGINEERS CLEVELAND
HNTB

MODIFICATION OF ACCESS TO NAVIGATIONAL LIGHT AT FLOORBEAM 18
RAMP W-I UPGRADING

BR. NO. CUY - 90 - 1524
90 - 1540 STA 3+87.63
90 - 1547 STA 4+65.63
90 - 1599 STA 54+65.78
STA 54+65.78

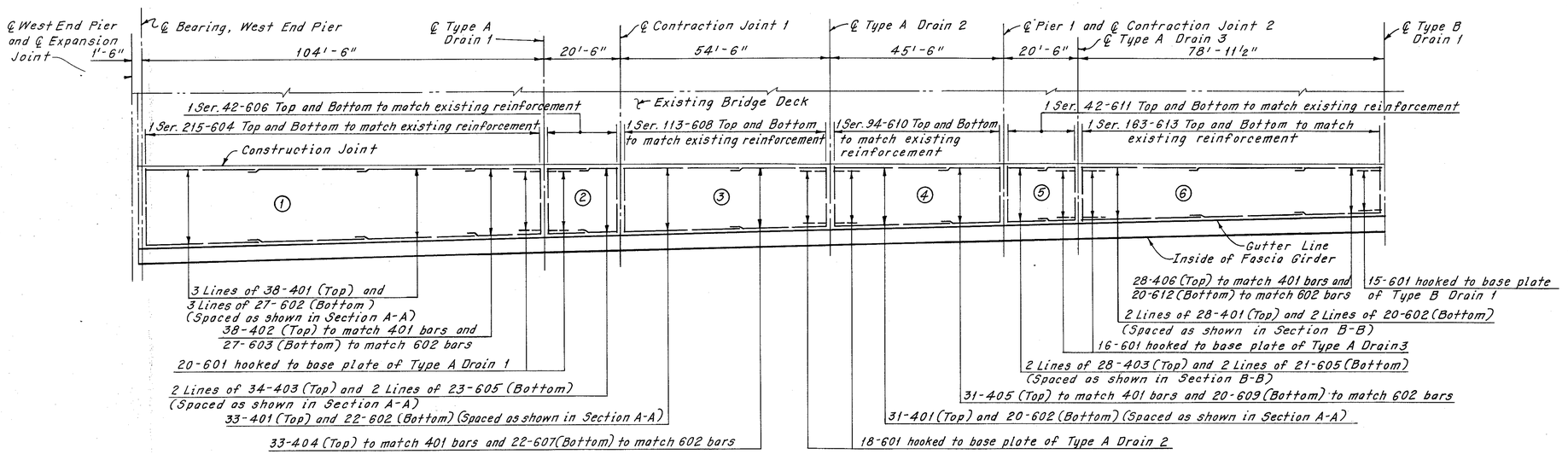
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	DESIGNED
R.A.S.	A.J.T.	W.E.B.		REVISED
DATE 2-21-78	DATE 3-20-78	DATE 3-29-78	DATE	SHEET W 56

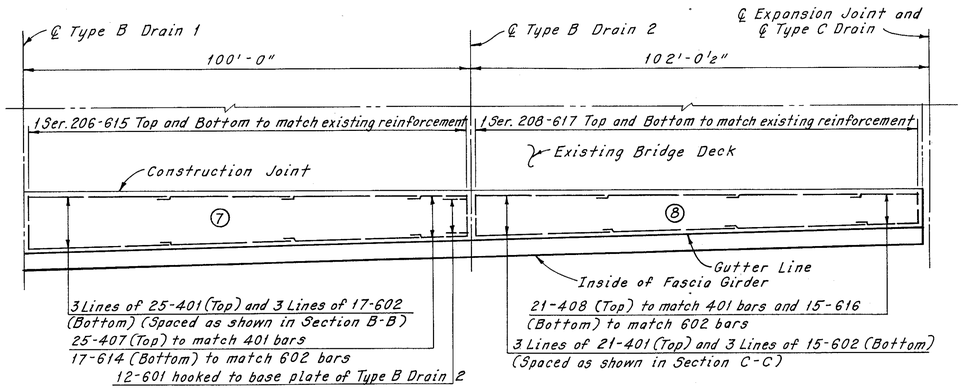
FHWA REGION	STATE	PROJECT	
5	OHIO		

79
89

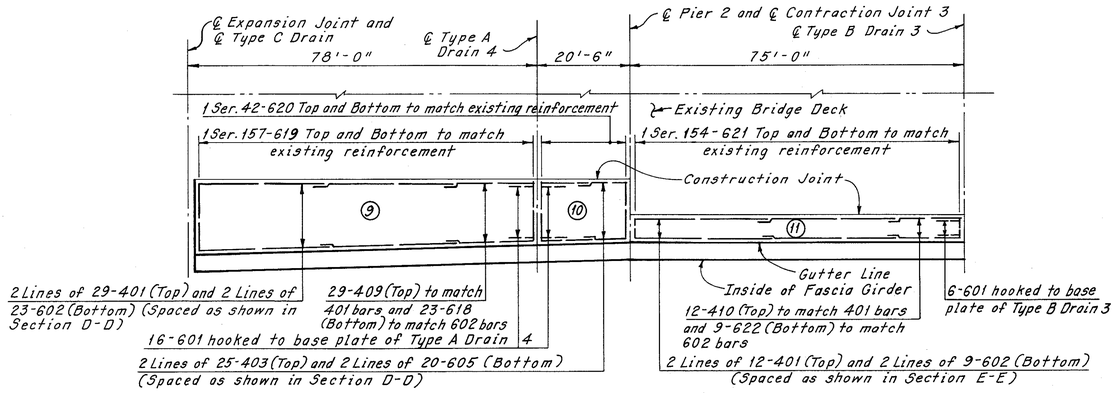
CUYAHOGA COUNTY
CUY-90-15.31



SLAB PLAN - UNIT 1



SLAB PLAN - UNIT 2



SLAB PLAN - UNIT 3

Note:
All reinforcing bar marks shall be prefixed SB.

REQUIRED LAP LENGTHS
No. 4 Bar = 1'-8" Min.
No. 6 Bar (Longitudinal) = 2'-7" Min.
No. 6 Bar (Transverse) = 2'-2" Min.

Notes:
(1) Indicates Slab Panel designation.
For Slab Sections, see Sheet W 58.
For details of Type A Drains, see Sheet W 46.
For details of Type B Drains, see Sheet W 47.
For details of Type C Drain, see Sheet W 50.
For details of Contraction Joints, see Sheet W 48.
For details of Expansion Joint at West End Pier, see Sheet W 49.
For Reinforcement Schedule, see Sheet W 59.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS CLEVELAND — HNTB

SLAB PLANS

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540
90-1547
90-1599

CUYAHOGA COUNTY

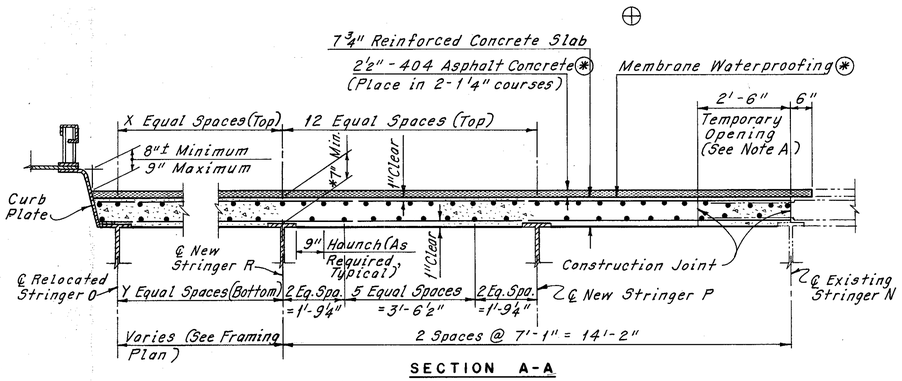
DRAWN CKB	TRACED C.P.	CHECKED SG.	REVIEWED
DATE 1-1-77	DATE 11-16-77	DATE 3-23-78	DATE

SHEET W 5

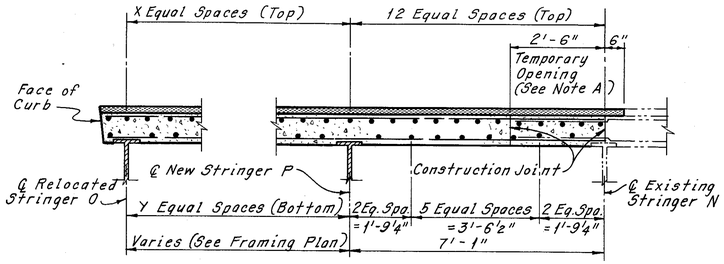
FHWA REGION	STATE	PROJECT	
5	OHIO		

80/89

CUYAHOGA COUNTY
CUY-90-15.31



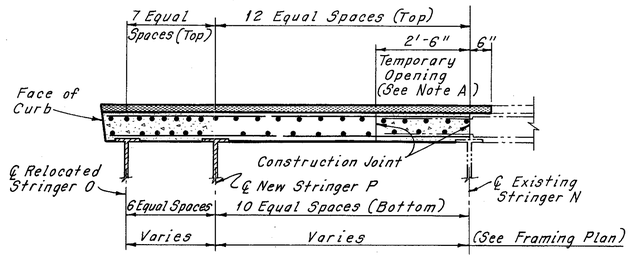
SECTION A-A
SLAB PANELS ① THRU ④



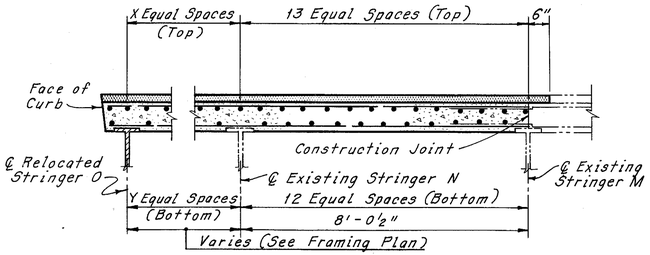
SECTION B-B
SLAB PANELS ⑤ THRU ⑦
(For details not shown, see Section A-A)

* After all steel is in place, and before any concrete is placed, the Contractor shall make a detailed survey along the top flange of each stringer. Based on this survey, the Contractor shall determine the depth of concrete required over each stringer to provide the gutterline elevations as shown on the table below. The calculated depths of concrete shall be submitted in triplicate to the Director for approval.

Cost of the above work shall be included with Item 623, Construction Layout Stakes, for payment. (See Roadway Plans for quantity.)



SECTION C-C
SLAB PANEL ⑧
(For details not shown, see Section A-A)



SECTION D-D
SLAB PANELS ⑨ AND ⑩
(For details not shown, see Section A-A)

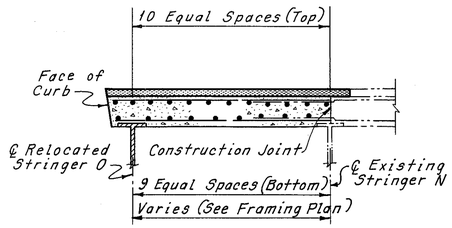
REINFORCEMENT DATA:

Transverse (Top and Bottom)	=	No. 6 Bars
Longitudinal (Top)	=	No. 4 Bars
Longitudinal (Bottom)	=	No. 6 Bars

For bar marks, see Sheet W 57.

Note A:
In Slab Panels 1 thru 8, concrete shall be placed in this area after all other deck concrete has cured.

Notes:
For Framing Plan, see Sheet W 32.
For Slab Details, see Sheet W 57.



SECTION E-E
SLAB PANEL ⑪
(For details not shown, see Section A-A)

DATA TABLE		
SLAB PANEL NO.	SPACES X	Y
1	12	11
2	8	7
3	7	6
4	5	4
5	14	13
6	14	12
7	11	9
9	14	12
10	11	9

Note:
All reinforcing bar marks shall be prefixed SB.

TOP OF PORTLAND CEMENT CONCRETE ELEVATIONS - GUTTERLINE

FLOORBEAMS																														
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳	㉑	㉒	㉓	㉔	㉕	㉖	㉗	㉘	㉙	㉚
703.45	703.72	703.91	704.19	704.37	704.53	704.70	704.81	704.89	705.05	705.15	705.32	705.45	705.60	706.03	706.24	706.50	706.75	706.85	707.00	707.15	707.25	707.29	707.53	707.71	707.92	708.11	708.35	708.52	708.72

Note:
The elevations shown at the gutterline are those which are required before the concrete is placed. Proper allowance has been made for the dead load deflections caused by the weight of the concrete and wearing course.

(*) The overlay shall consist of either asphalt concrete or latex modified concrete as determined by the Engineer.

⊕ 2¼" Latex Modified Concrete Overlay (2¼" above the new deck slab) - Paid for as Latex Modified Concrete Overlay (*) (1¼" Thick) and (Variable Thickness)

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

SLAB SECTIONS

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 7+65.78
90-1599

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVIS.
C.K.B.	C.P.	B.E.C.K.B.		
DATE 11-16-77	DATE 11-18-77	DATE 1-1-78	DATE	

SHEET W 58

MARK	NO.	LENGTH	TYPE	SER. INCR	WEIGHT (LBS.)
	BR. NO. CUY-90-1540				
	PIER IA EXTENSION				
PA501	38	10'-8"	105		423
PA502	76	4'-0"	103		317
PA503	38	6'-5"	163		254
PA504	10	13'-4"	109		139
PA505	16	4'-2"	105		70
PA601	10	4'-11"	105		174
PA602	10	13'-6"	Str.		203
PA801	10	11'-4"	100		303
PA901	12	12'-0"	100		490
PA1101	18	11'-5"	104		1,092
PA1102	18	17'-6"	Str.		1,674
PA1103	6	20'-7"	105		656
		TOTAL WEIGHT =			5,795
	WEST END PIER				
PB501	72	14'-11"	100		1,120
PB502	72	17'-11"	105		1,345
PB503	144	10'-5"	101		1,565
PB504	144	9'-9"	Str.		1,465
PB505	101	8'-0"	105		843
PB506	1,080	3'-6"	103		3,943
PB507	288	3'-7"	100		1,076
PB508	2 Ser. 5	15'-8" 15'-10"	127	1/2"	164
PB509	12	12'-6"	Str.		156
PB510	10	14'-6"	Str.		151
PB511	1 Ser. 5	4'-10" 5'-0"	105	1/2"	26
PB512	4	15'-0"	105		63
PB513	2 Ser. 7	15'-3" 15'-6"	127	1/2"	225
PB514	3	36'-2"	109		113
PB515	3	12'-0"	Str.		38
PB516	1 Ser. 10	11'-2" 11'-6"	165	1/16"	118
PB517	10	3'-3"	Str.		34
PB518	24	5'-6"	101		138
PB519	24	3'-11"	101		98
PB520	24	2'-6"	Str.		63
PB521	3	14'-6"	Str.		45
PB601	34	15'-10"	100		809
PB602	84	7'-10"	104		988
PB603	84	19'-9"	Str.		2,492
PB604	8	17'-9"	Str.		213
PB605	58	21'-6"	Str.		1,873
PB606	34	17'-0"	Str.		868
PB607	34	4'-3"	Str.		217
PB608	10	17'-9"	105		267
PB609	20	8'-9"	Str.		263
PB610	16	5'-9"	Str.		138
PB611	4	3'-6"	104		21
PB612	2	4'-2"	104		13
PB613	2	8'-7"	104		26
PB614	8	6'-8"	105		80
PB615	1	9'-8"	104		15
PB616	2	10'-10"	104		33
PB617	1	11'-6"	104		17
PB618	2	17'-5"	105		52
PB619	2	17'-1"	100		51
PB620	11	15'-9"	Str.		260
PB621	12	13'-9"	Str.		248
PB622	75	3'-6"	Str.		394
PB623	3	3'-3"	104		15
PB624	6	8'-10"	104		80
PB625	36	7'-0"	Str.		379
PB626	9	4'-6"	Str.		61
PB627	21	5'-0"	Str.		158
PB628	9	4'-4"	105		59
PB629	7	4'-8"	105		49
PB630	36	13'-3"	Str.		716
PB631	12	15'-3"	Str.		275
PB632	8	4'-2"	105		50

MARK	NO.	LENGTH	TYPE	SER. INCR	WEIGHT (LBS.)
PB801	19	13'-9"	Str.		698
PB802	15	16'-3"	Str.		651
PB803	4	7'-3"	Str.		77
PB804	5	21'-9"	Str.		37
PB805	4	31'-0"	Str.		32
PB806	3	31'-6"	Str.		28
PB807	3	7'-9"	Str.		62
PB808	2	8'-0"	Str.		43
PB809	2	10'-3"	Str.		55
PB810	2	10'-6"	Str.		56
PB811	2	11'-0"	Str.		59
PB812	12	8'-9"	Str.		280
PB1101	30	35'-8"	100		5,685
		TOTAL WEIGHT =			31,732
	SUPERSTRUCTURE				
SA401	166	40'-0"	Str.		4,436
SA402	2	22'-3"	Str.		30
SA403	1	25'-0"	Str.		17
SA404	1	36'-3"	Str.		24
SA405	18	39'-9"	Str.		478
SA406	1 Ser. 6	12'-0" 13'-0"	Str.	2 3/8"	50
SA407	1	5'-0"	Str.		3
SA408	369	4'-8"	109		1,150
SA409	328	3'-9"	Str.		822
SA410	216	7'-8"	164		1,106
SA411	1 Ser. 112	7'-8" 9'-1"	164	1/8"	627
SA412	4	11'-6"	Str.		31
SA413	1 Ser. 4	11'-6" 13'-0"	Str.	6"	33
SA414	1 Ser. 19	9'-1" 9'-6"	164	1/4"	118
SA415	1 Ser. 19	3'-9" 4'-3"	Str.	3/16"	51
SA416	1 Ser. 13	8'-3" 8'-11"	166	11/16"	75
SA417	1 Ser. 13	2'-7" 3'-1"	104	1/4"	25
SA418	1 Ser. 13	4'-3" 4'-9"	Str.	1/4"	39
SA419	1 Ser. 6	9'-2" 9'-8"	166	1 3/16"	38
SA420	1 Ser. 6	2'-7" 2'-10"	104	3/8"	11
SA421	1 Ser. 6	4'-9" 5'-3"	Str.	1 3/16"	20
SA422	1 Ser. 3	11'-6" 12'-6"	Str.	6"	24
SA423	24	3'-3"	101		52
SA601	1 Ser. 113	18'-6" 20'-6"	Str.	3/16"	3,310
SA602	94	40'-0"	Str.		5,648
SA603	3	35'-0"	Str.		158
SA604	1 Ser. 82	18'-6" 14'-9"	Str.	9/16"	2,048
SA605	1 Ser. 49	14'-3" 11'-0"	Str.	3/16"	948
SA606	1 Ser. 82	11'-0" 5'-3"	Str.	1/8"	1,001
SA607	1 Ser. 31	5'-3" 3'-0"	Str.	1/8"	192
SA608	1 Ser. 9	3'-0" 2'-0"	Str.	1 1/2"	34
SA609	1 Ser. 3	16'-3" 15'-9"	Str.	6"	73
SA610	2	15'-9"	Str.		47
SA611	4	7'-0"	Str.		42
SA612	1 Ser. 113	21'-2" 19'-2"	101	3/16"	3,423
SA613	1 Ser. 82	19'-2" 15'-5"	101	3/16"	2,130
SA614	1 Ser. 49	15'-5" 11'-8"	101	3/16"	997
SA615	1 Ser. 82	11'-8" 5'-11"	101	1/8"	1,083
SA616	1 Ser. 31	5'-11" 3'-8"	101	1/8"	223
SA617	1 Ser. 9	3'-8" 2'-8"	101	1 1/2"	43
SA618	4	21'-3"	Str.		128
SA619	48	17'-3"	Str.		1,244
SA620	5	9'-0"	Str.		68
		TOTAL WEIGHT =			32,100
	BR. NO. CUY-90-1547 SUPERSTRUCTURE				
SB401	454	30'-0"	Str.		9,098
SB402	38	19'-9"	Str.		501
SB403	174	10'-9"	Str.		1,249
SB404	33	25'-6"	Str.		562
SB405	31	16'-6"	Str.		342
SB406	28	21'-3"	Str.		397
SB407	25	14'-0"	Str.		234
SB408	21	15'-9"	Str.		221
SB409	29	20'-0"	Str.		387
SB410	12	17'-9"	Str.		142

MARK	NO.	LENGTH	TYPE	SER. INCR	WEIGHT (LBS.)
SB601	173	3'-2"	101		823
SB602	323	30'-0"	Str.		14,558
SB603	27	22'-6"	Str.		912
SB604	2 Ser. 215	19'-3" 21'-10"	Str.	1/8"	13,267
SB605	128	11'-3"	Str.		2,163
SB606	2 Ser. 42	18'-3" 19'-3"	Str.	1/8"	2,397
SB607	22	26'-6"	Str.		876
SB608	2 Ser. 113	17'-4" 18'-9"	Str.	1/8"	6,124
SB609	20	17'-6"	Str.		526
SB610	2 Ser. 94	16'-3" 17'-4"	Str.	1/8"	4,742
SB611	2 Ser. 42	15'-9" 16'-3"	Str.	1/8"	2,019
SB612	20	23'-0"	Str.		691
SB613	2 Ser. 163	13'-9" 15'-9"	Str.	1/8"	7,222
SB614	17	16'-9"	Str.		428
SB615	2 Ser. 206	11'-3" 13'-9"	Str.	1/8"	7,735
SB616	15	18'-6"	Str.		417
SB617	2 Ser. 208	8'-8" 11'-3"	Str.	1/8"	6,222
SB618	23	22'-0"	Str.		760
SB619	2 Ser. 157	14'-9" 16'-9"	Str.	1/8"	7,428
SB620	2 Ser. 42	14'-3" 14'-9"	Str.	1/8"	1,829
SB621	2 Ser. 154	5'-5" 6'-3"	Str.	1/16"	2,699
SB622	9	19'-6"	Str.		294
		TOTAL WEIGHT =			97,265

BENDING DIAGRAMS

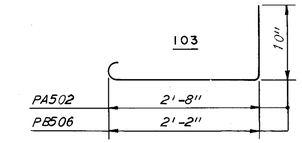
100

9'-6"	PA801, PA901
13'-9"	PB501
2'-5"	PB507
14'-6"	PB601
15'-9"	PB619
32'-6"	PB1101

101

2'-9"	SA423
18'-6" to 20'-6"	SA612
18'-6" to 14'-9"	SA613
14'-9" to 11'-0"	SA614
11'-0" to 5'-3"	SA615
5'-3" to 3'-0"	SA616
2'-0" to 3'-0"	SA617
9'-10"	PB503
4'-11"	PB518
3'-4"	PB519
2'-6"	SB601

103



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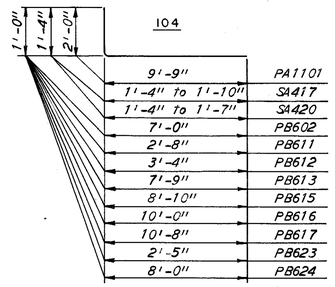

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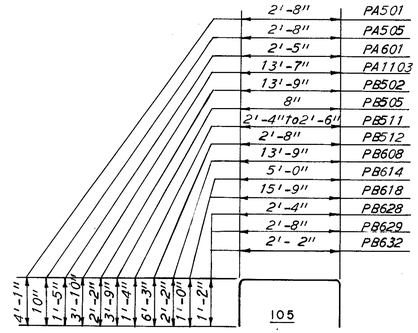

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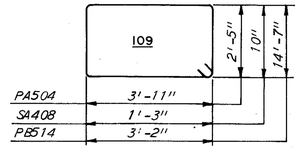
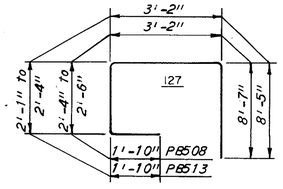
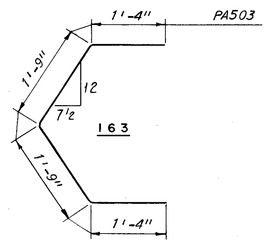
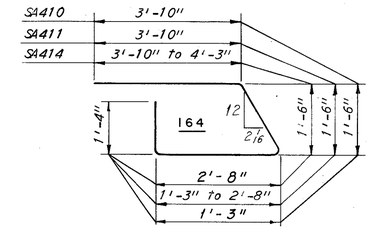
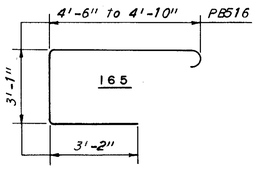
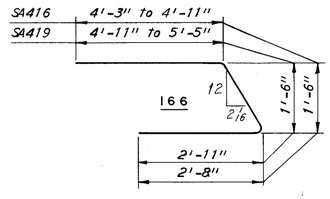












REINFORCING STEEL SAMPLES

Refer to CMS Sections 106.03, 700, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structures by the additional steel, spliced in accordance with 509.08.

FHWA REGION	STATE	PROJECT	
5	OHIO		

81
89

CUYAHOGA COUNTY
CUY-90-15.31

HOWARD NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND

HNTB

REINFORCEMENT SCHEDULES

RAMP W-I UPGRADING
BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

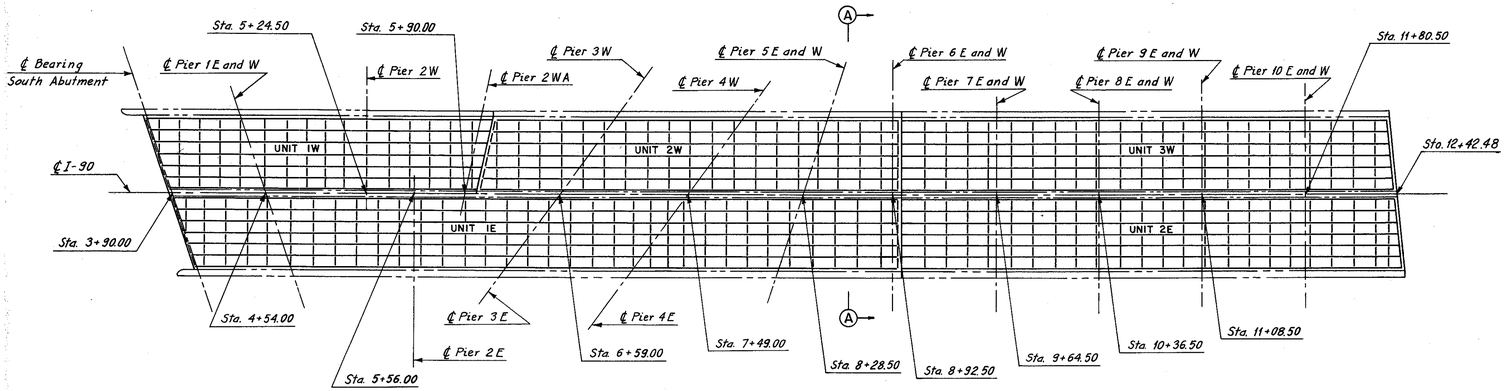
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
C.P.	C.P.	R.A.S.		
DATE 1-3-78	DATE 1-3-78	DATE 1-6-78	DATE	SHEET W 59

FHWA REGION	STATE	PROJECT	
5	OHIO		

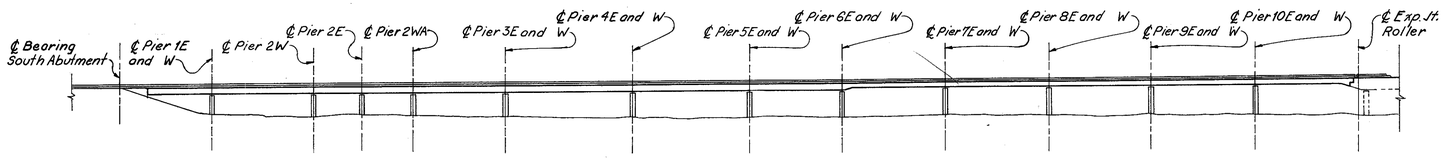
82
89

CUYAHOGA COUNTY
CUY-90-15.31



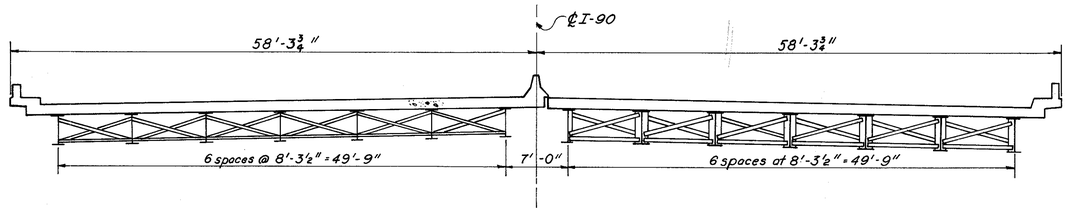
FRAMING PLAN
BR. NO. CUY-90-1524

0 50 100 150
SCALE IN FEET



ELEVATION

0 50 100 150
SCALE IN FEET



SECTION A-A

STRUCTURAL STEEL DATA

MAIN MEMBERS

Girder Units - Units 1E and 1W
Beam Units - Units 2E, 2W and 3W

Girder Units:
- Web depth = 42"
- Flange width = Unit 1E = 18"
  Unit 1W = 14"
- Stiffener plate width = Unit 1E = 8"
  Unit 1W = 6"
- Crossframe angles = L3½ x 3½

Beam Units:
- Beams = W36
- Crossframe angles = L3 x 3

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MAINTENANCE PAINTING OF EXISTING STRUCTURES

BR. NO. CUY - 90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

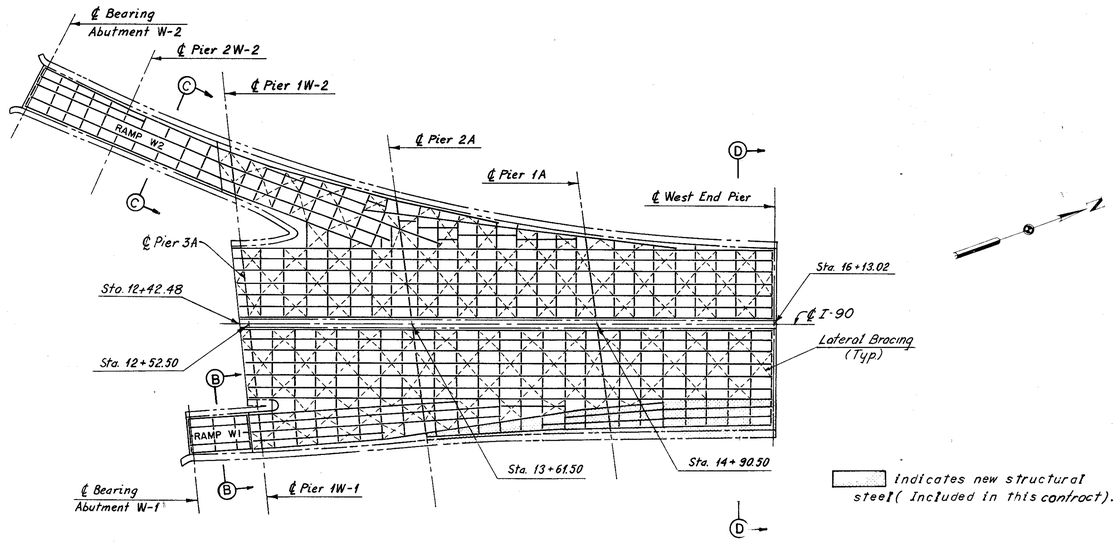
CUYAHOGA COUNTY OHIO

DRAWN A.N.	TRACED L.V.	CHECKED CHB	REVIEWED	REVISED
DATE 10-28-77	DATE 11-4-77	DATE 3-8-78	DATE	SHEET P-1

FHWA REGION	STATE	PROJECT	
5	OHIO		

83/89

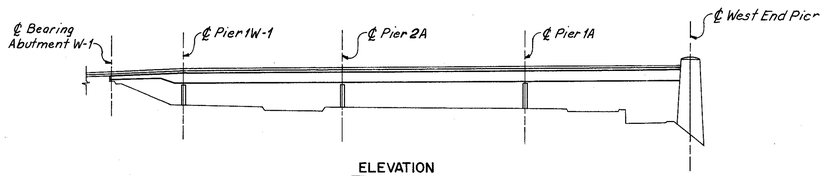
CUYAHOGA COUNTY
CUY-90-15.31



indicates new structural steel (Included in this contract).

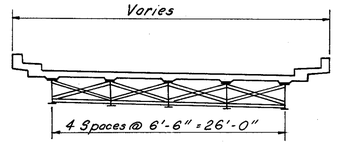
FRAMING PLAN
BR. NO. CUY-90-1540

0 50 100 150
SCALE IN FEET

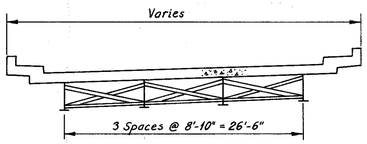


ELEVATION

0 50 100 150
SCALE IN FEET



SECTION B-B



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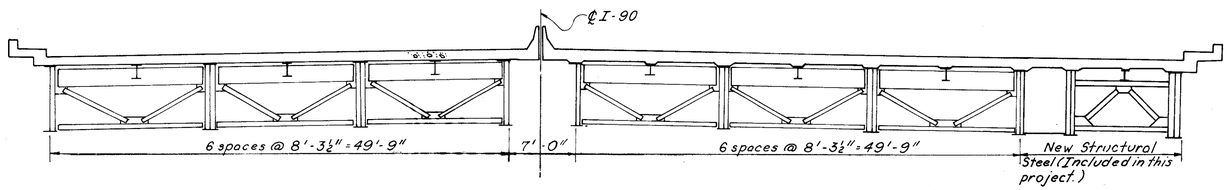


SECTION D-D

STRUCTURAL STEEL DATA

MAIN MEMBERS

Section B-B:
- Beam Unit
  - Beams = W33
  - Crossframe angles = L3 x 3

Section C-C:
- Beam Unit
  - Beams = W36
  - Crossframe angles = L3 x 3

Section D-D
- Girders with Floor System Unit
  - Girder Web depth = 90"
  - Girder Flange width = 18"
  - Girder Stiffener angles = L5 x 3½
  - Crossframe members
    - Top Chord = W24
    - Bottom Chord = WT6
    - Diagonals = L5 x 5
- Stringers = W18
- Lateral Bracing = WT6

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MAINTENANCE PAINTING OF EXISTING STRUCTURES

BR. NO. CUY - 90 - 1524
90 - 1540 STA. 3+87.63
90 - 1547 STA. 54+65.78
90 - 1599

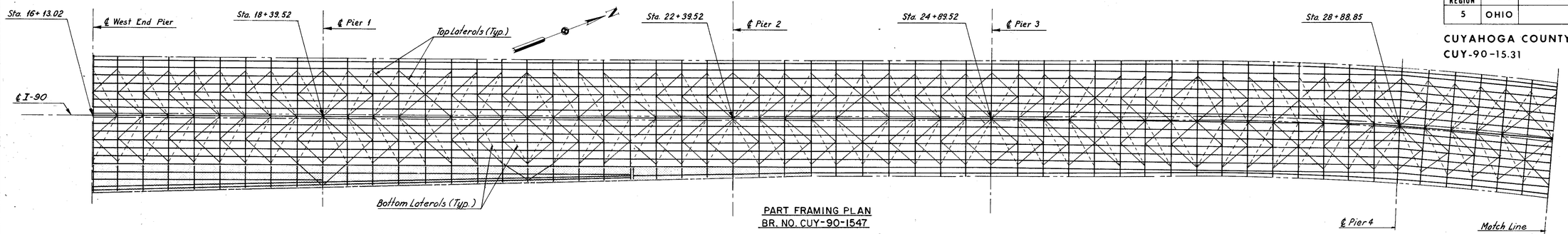
CUYAHOGA COUNTY OHIO

DRAWN A.N	TRACED J.L.V	CHECKED CHG	REVIEWED	REVISED
DATE 10-28-77	DATE 11-7-77	DATE 3-8-78	DATE	SHEET P-2

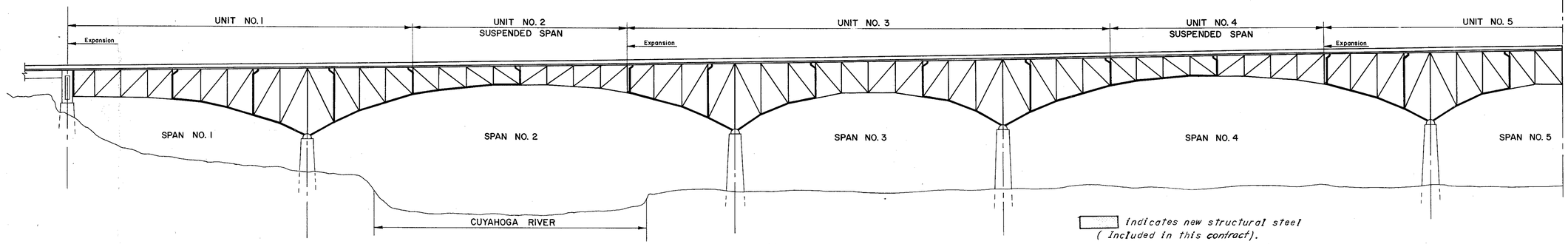
FHWA REGION	STATE	PROJECT	
5	OHIO		

84
89

CUYAHOGA COUNTY
CUY-90-15.31

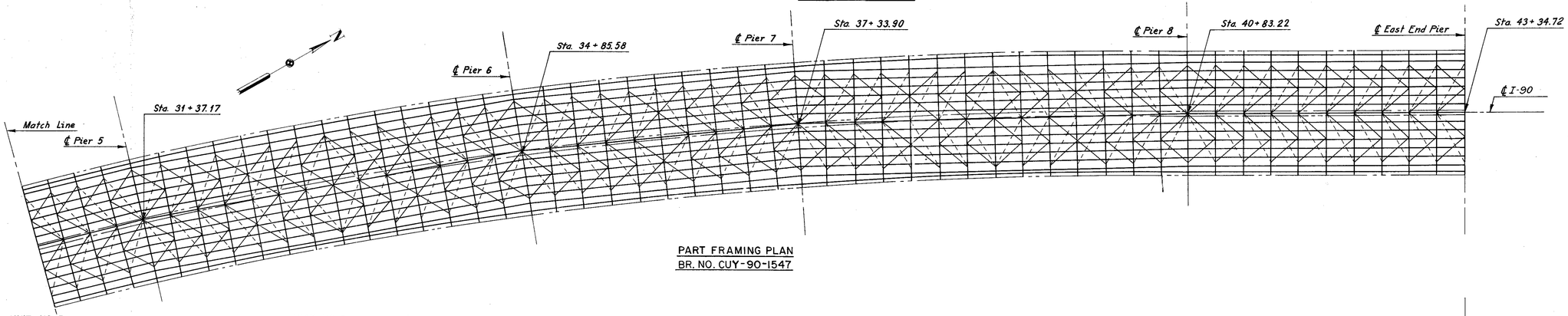


PART FRAMING PLAN
BR. NO. CUY-90-1547



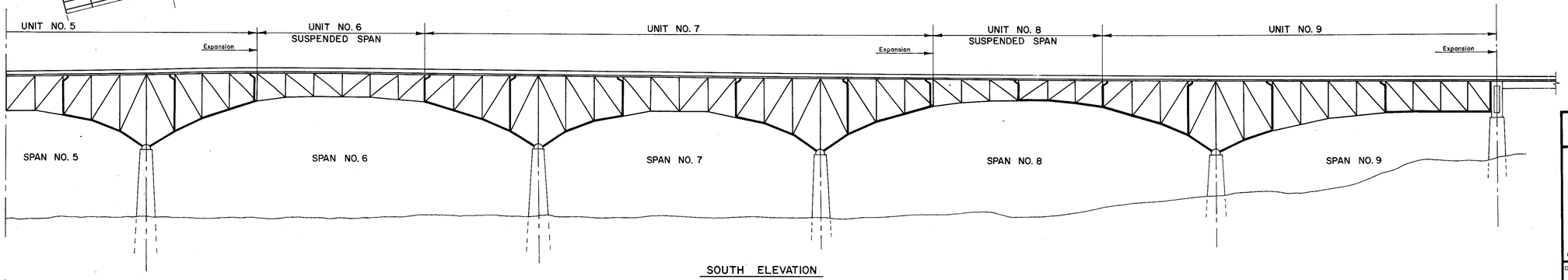
indicates new structural steel
(included in this contract).

SOUTH ELEVATION



PART FRAMING PLAN
BR. NO. CUY-90-1547

0 50 100 150
SCALE IN FEET



SOUTH ELEVATION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

MAINTENANCE PAINTING OF EXISTING STRUCTURES

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

STA. 3+87.63
STA. 54+65.78

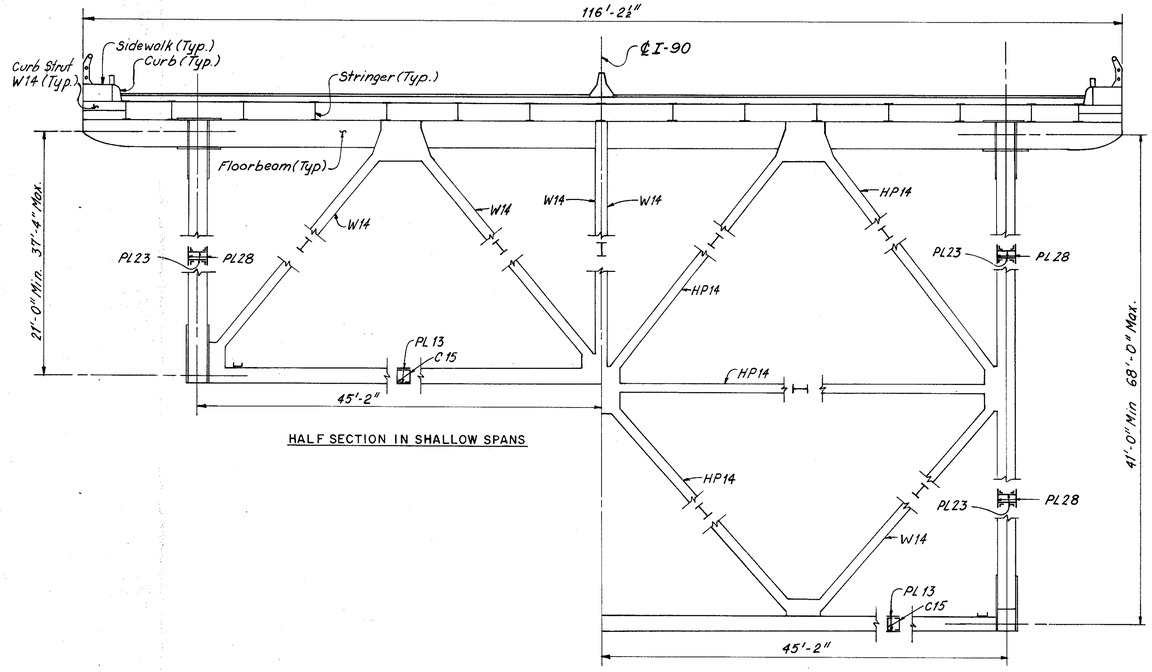
CUYAHOGA COUNTY OHIO

DRAWN A.N.	TRACED J.L.V.	CHECKED CHB	REVIEWED	REVISED
DATE 10-28-77	DATE 12-9-77	DATE 3-8-78	DATE	SHEET P.3

FHWA REGION	STATE	PROJECT	
5	OHIO		

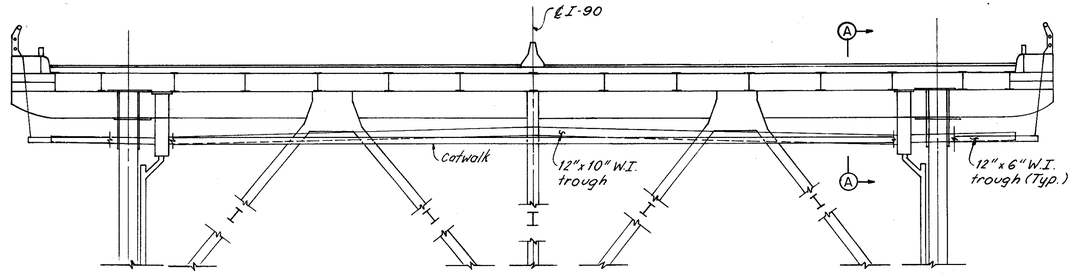
85
89

CUYAHOGA COUNTY
CUY-90-15.31

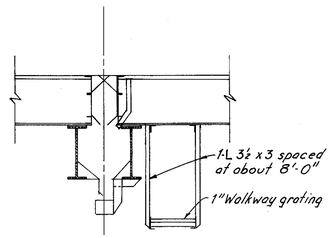


HALF SECTION IN SHALLOW SPANS

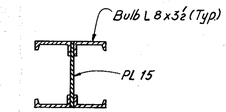
HALF SECTION NEAR PIERS



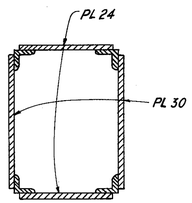
TYPICAL SECTION AT CROSS DRAINS
(Expansion Joint shown, other Types similar)



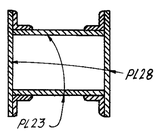
SECTION A-A



CROSS SECTION OF BOTTOM LATERAL



TOP CHORD & BOTTOM CHORD



DIAGONAL

CROSS SECTION OF TRUSS MEMBERS

STRUCTURAL STEEL DATA

MAIN MEMBERS

Fascia Girder Unit:
Girder Web depth = 68"
Girder Flanges = L4 x 3
Floorbeams = W36
Stringers = W24
Top Lateral Bracing = ½ HP12
Sidewalk = PL48-½" Raised Pattern
Curbs = PL23

Note:
For location of cross drains, see Sheet ____.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MAINTENANCE PAINTING OF EXISTING STRUCTURES

BR. NO. CUY-90-1524 STA. 3+87.63
90-1540
90-1547 STA. 54+65.78
90-1599

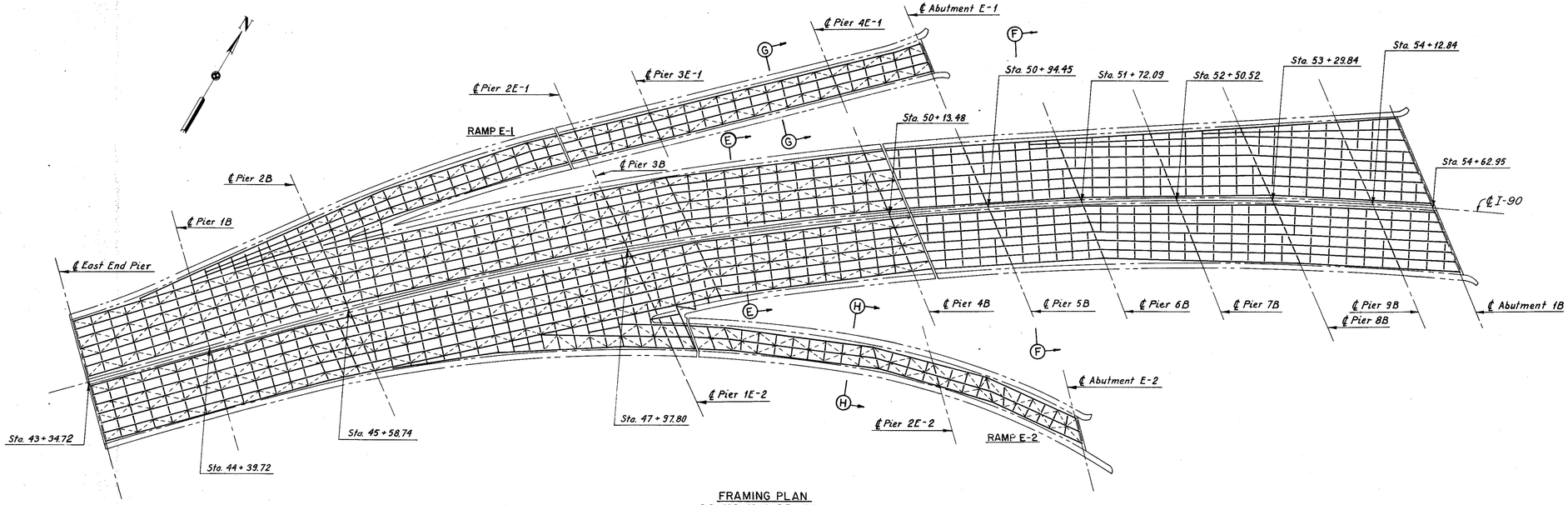
CUYAHOGA COUNTY OHIO

DRAWN A.N.	TRACED J.V.	CHECKED CHB	REVIEWED	REVISED
DATE 10-28-77	DATE 12-13-77	DATE 3-8-78	DATE	SHEET P.4

FHWA REGION	STATE	PROJECT	
5	OHIO		

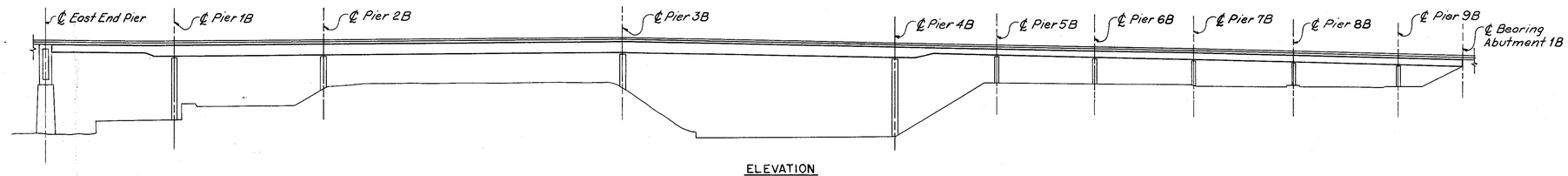
86
89

CUYAHOGA COUNTY
CUY-90-15.31



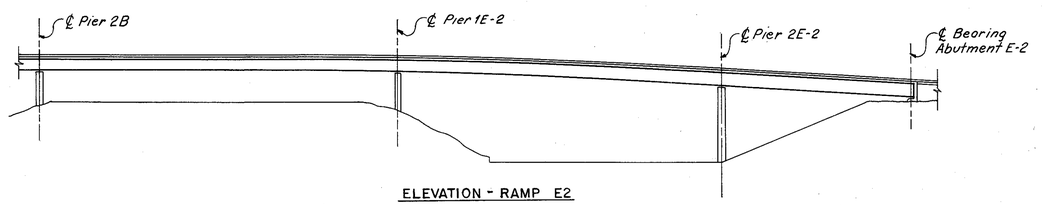
FRAMING PLAN
BR. NO. CUY-90-1599

0 50 100 150
SCALE IN FEET



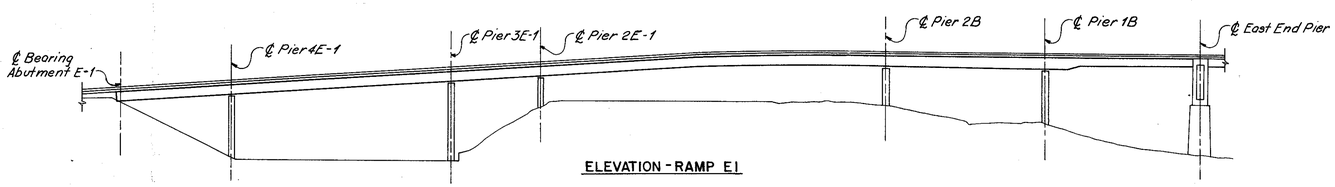
ELEVATION

0 50 100 150
SCALE IN FEET



ELEVATION - RAMP E2

0 50 100 150
SCALE IN FEET



ELEVATION - RAMP E1

0 50 100 150
SCALE IN FEET

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
CLEVELAND

HNTB

MAINTENANCE PAINTING OF
EXISTING STRUCTURES

BR. NO. CUY-90-1524
90-1540 STA. 3+87.63
90-1547 STA. 54+65.78
90-1599

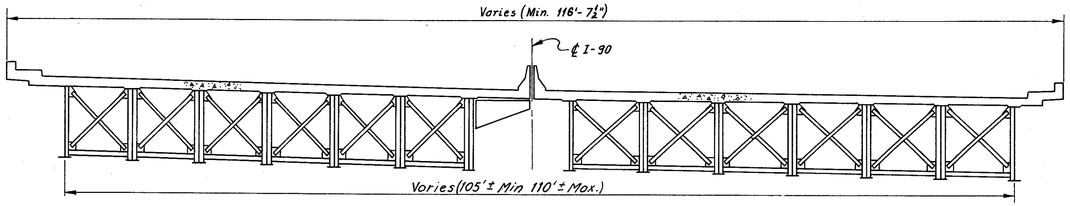
CUYAHOGA COUNTY OHIO

DRAWN A.N.	TRACED J.L.V.	CHECKED CHB	REVIEWED	REVISED
DATE 10-28-77	DATE 11-2-77	DATE 3-8-78	DATE	SHEET P-5

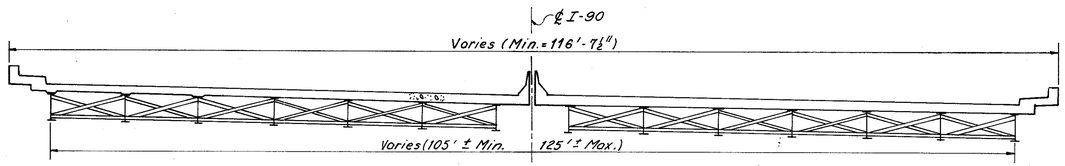
FHWA REGION	STATE	PROJECT	
5	OHIO		

87
89

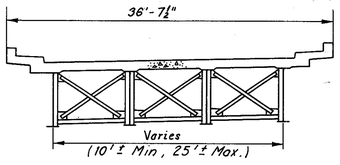
CUYAHOGA COUNTY
CUY-90-15.31



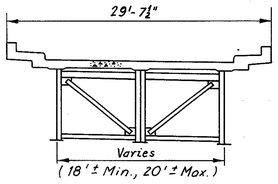
SECTION E-E



SECTION F-F



SECTION G - G



SECTION H-H

STRUCTURAL STEEL DATA

MAIN MEMBERS

Section E-E:
- *Girder Unit*
  - *Web depth = 96.5"*
  - *Flange width = 18"*
  - *Stiffener angles = L6 x 3½*
  - *Crossframe members*
    - *Bottom Chord = WT6*
    - *Diagonals = L5 x 3½*
- *Lateral Bracing = WT6*

Section F-F:
- *Beam Unit*
  - *Beams = W36*
  - *Crossframe angles = L3 x 3*

Section G-G:
- *Girder Unit*
  - *Web depth = 72.5"*
  - *Flange width = 14"*
  - *Stiffener angles = L5 x 3½*
  - *Crossframe members*
    - *Bottom Chord = WT6*
    - *Diagonals = L4 x 4*
- *Lateral Bracing = WT6*

Section H-H:
- *Girder Unit*
  - *Web depth = 96.5"*
  - *Flange width = 18"*
  - *Stiffener angles = L6 x 3½*
  - *Crossframe members*
    - *Top Chord = W10*
    - *Bottom Chord = WT8*
    - *Diagonals = L5 x 5*
- *Top Lateral Bracing = WT6*
- *Bottom Lateral Bracing = WT8*

HOWARD NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS CLEVELAND
HNTB

MAINTENANCE PAINTING OF EXISTING STRUCTURES

BR. NO. CUY-90-1524 STA.3+87.63
CUY-90-1540
CUY-90-1547 STA.54+65.78
CUY-90-1599

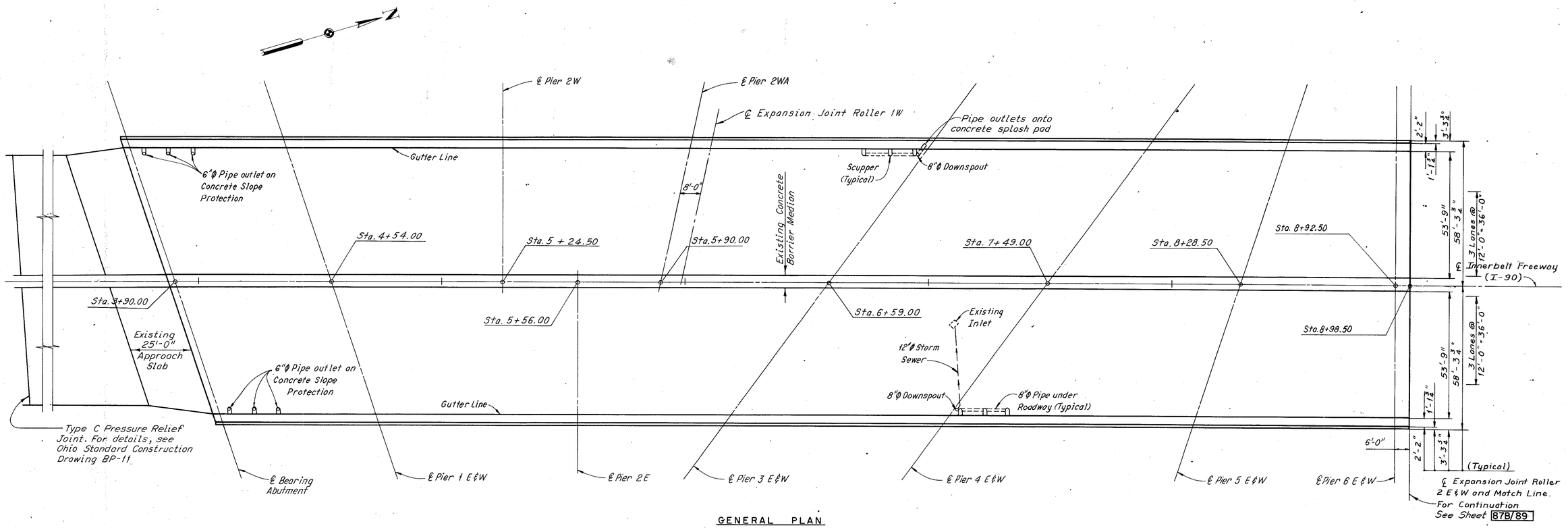
CUYAHOGA COUNTY OHIO

DRAWN A.N.	TRACED L.V.	CHECKED CHB	REVIEWED	REVISED
DATE 10-28-77	DATE 10-31-77	DATE 3-8-78	DATE	SHEET A-6

FHWA REGION	STATE	PROJECT	
	OHIO		

87A
89

CUYAHOGA COUNTY
CUY-90-15.31



GENERAL PLAN

GENERAL PLAN
INNERBELT EXTENSION

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

STA. 2+65±
STA. 56+00±

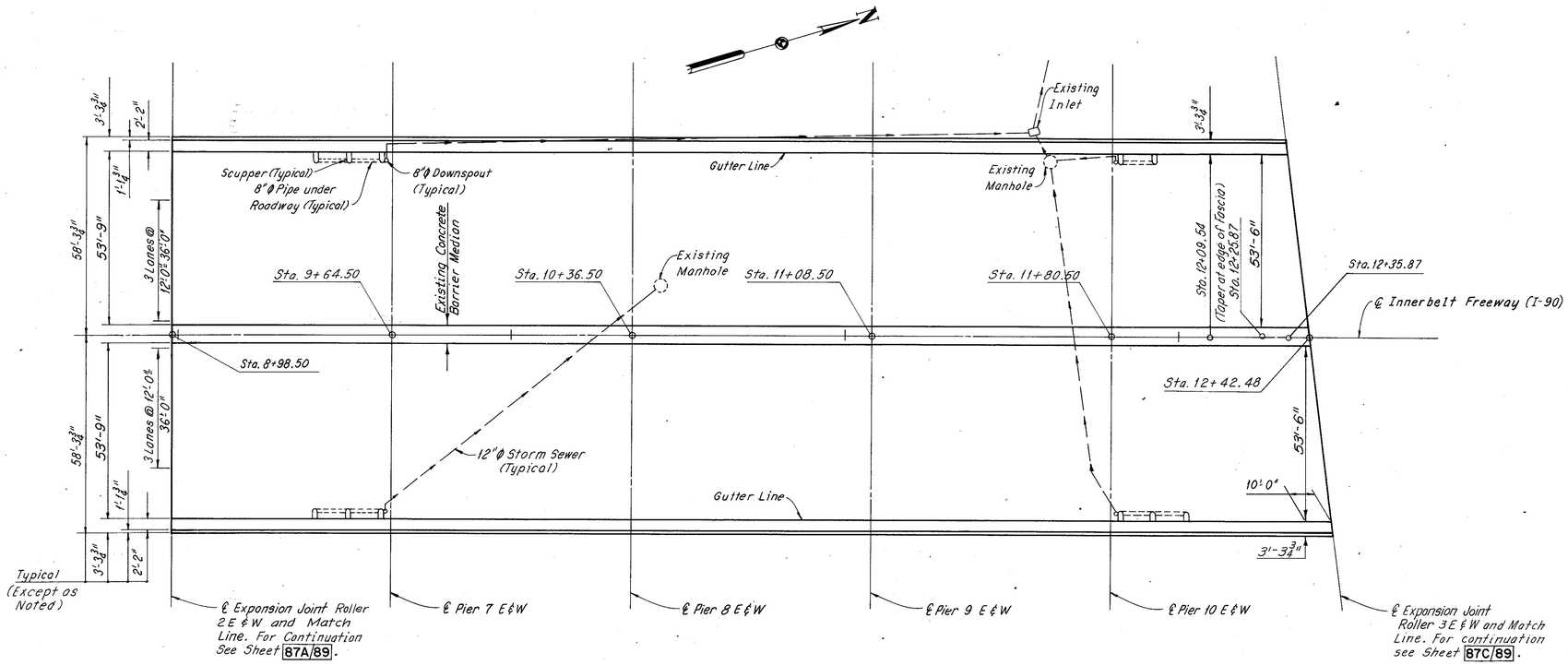
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	

FHWA REGION	STATE	PROJECT	
	OHIO		

87B / 89

CUYAHOGA COUNTY
CUY-90-15.31



GENERAL PLAN

GENERAL PLAN
INNERBELT EXTENSION

~~STR NO.~~ CUY.-90-1524
90-1540
90-1547
90-1599

STA. 2+65 ±
STA. 56+00 ±

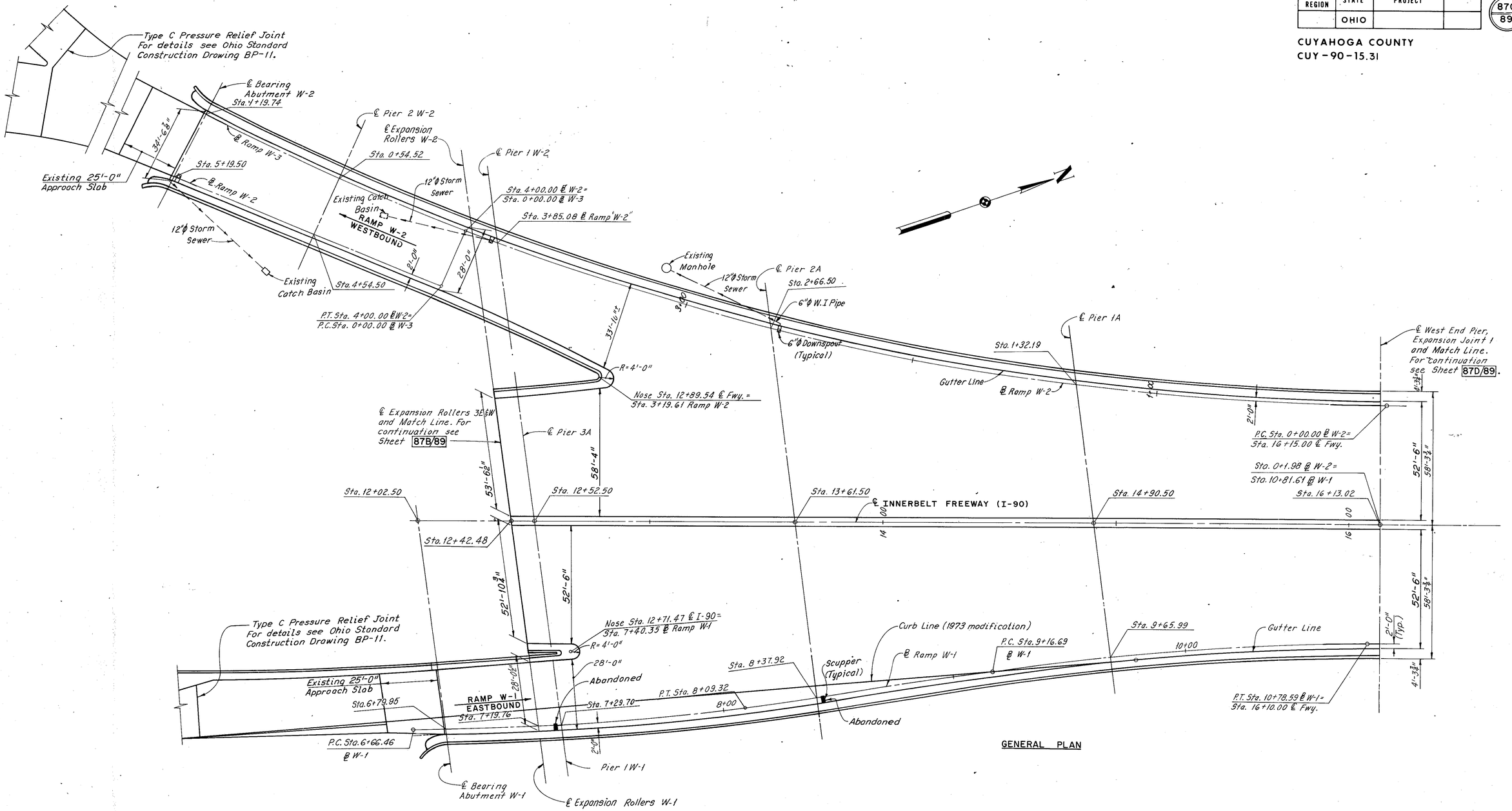
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	

FHWA REGION	STATE	PROJECT	
	OHIO		

87C / 89

CUYAHOGA COUNTY
CUY-90-15.31



GENERAL PLAN

GENERAL PLAN
WEST APPROACH

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

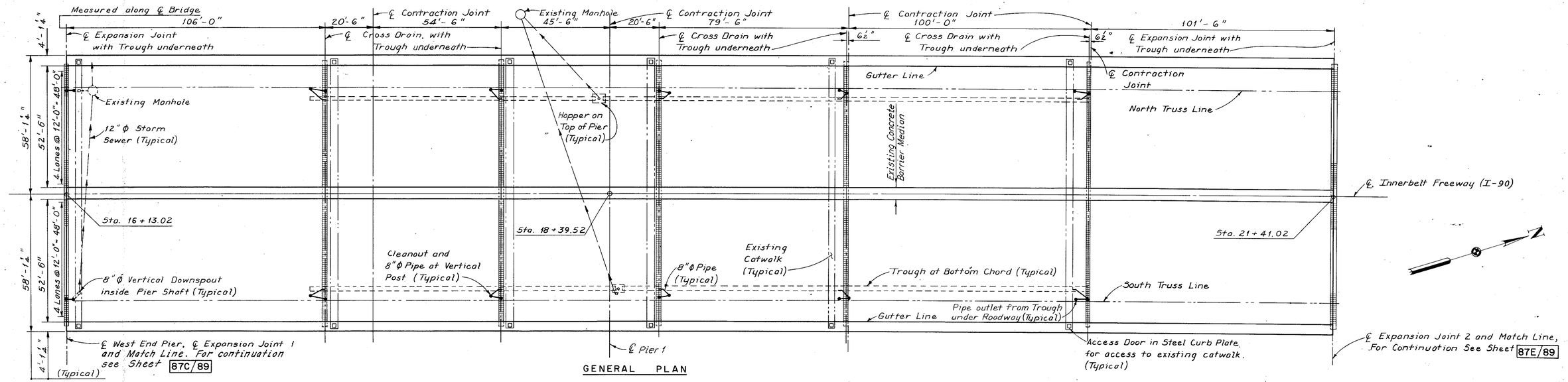
CUYAHOGA COUNTY OHIO

DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED

FHWA REGION	STATE	PROJECT	
5	OHIO		

87D / 89

CUYAHOGA COUNTY
CUY-90-15.31



GENERAL PLAN

GENERAL PLAN
CENTRAL VIADUCT

~~BR-~~ CUY.-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

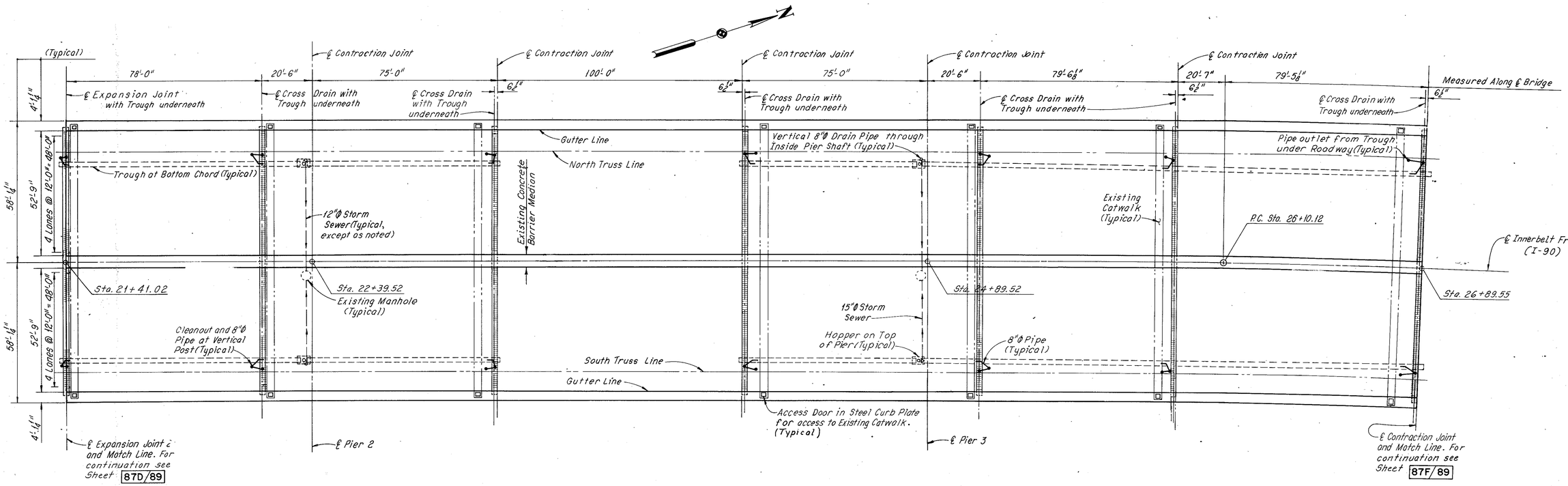
CUYAHOGA COUNTY OHIO

DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED

FHWA REGION	STATE	PROJECT	
5	OHIO		

87E / 89

CUYAHOGA COUNTY
CUY-90-15.31



GENERAL PLAN

GENERAL PLAN
CENTRAL VIADUCT

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

STA. 2+65±
STA. 56+00±

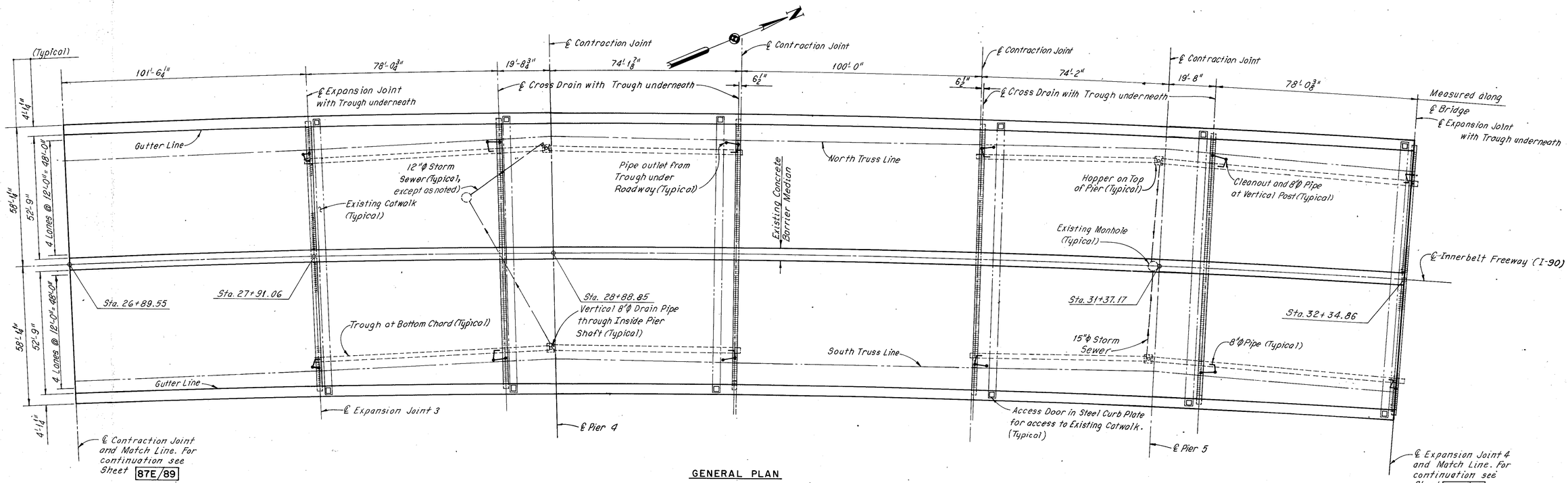
CUYAHOGA COUNTY OHIO

DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED

FHWA REGION	STATE	PROJECT	
5	OHIO		

87F / 89

CUYAHOGA COUNTY
CUY-90-15.31



GENERAL PLAN

GENERAL PLAN
CENTRAL VIADUCT

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

STA. 2+65±
STA. 56+00±

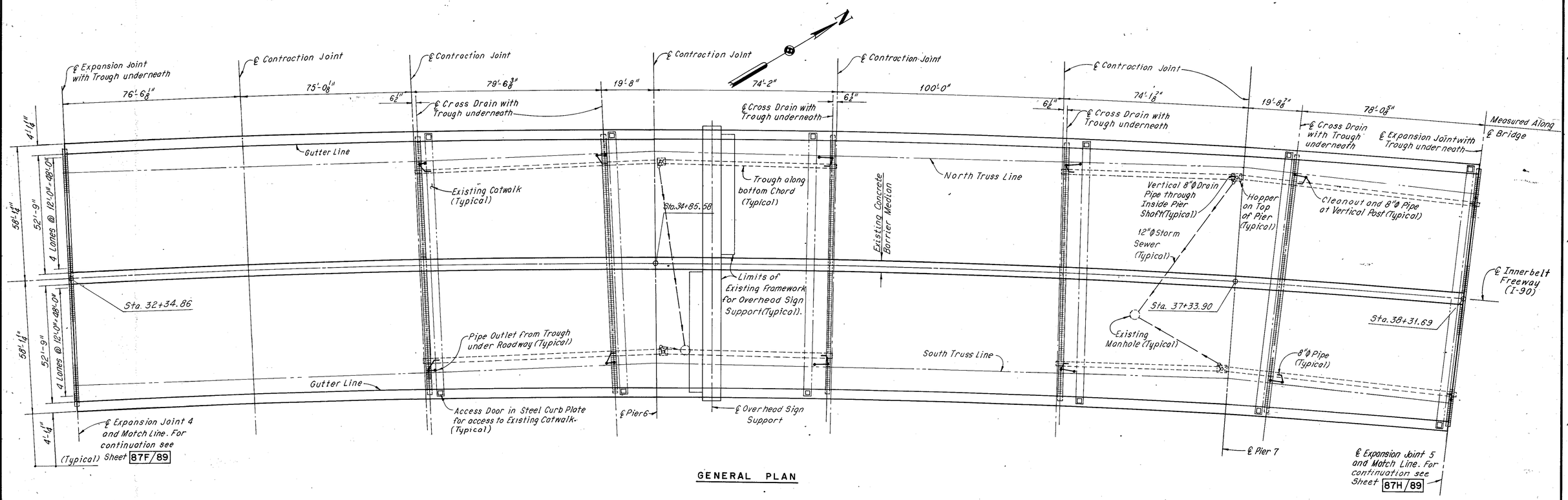
CUYAHOGA COUNTY OHIO

DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED
				-

FHWA REGION	STATE	PROJECT	
5	OHIO		

87G / 89

CUYAHOGA COUNTY,
CUY-90-15.31



GENERAL PLAN

GENERAL PLAN
CENTRAL VIADUCT

~~FAI-NO.~~ CUY.-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

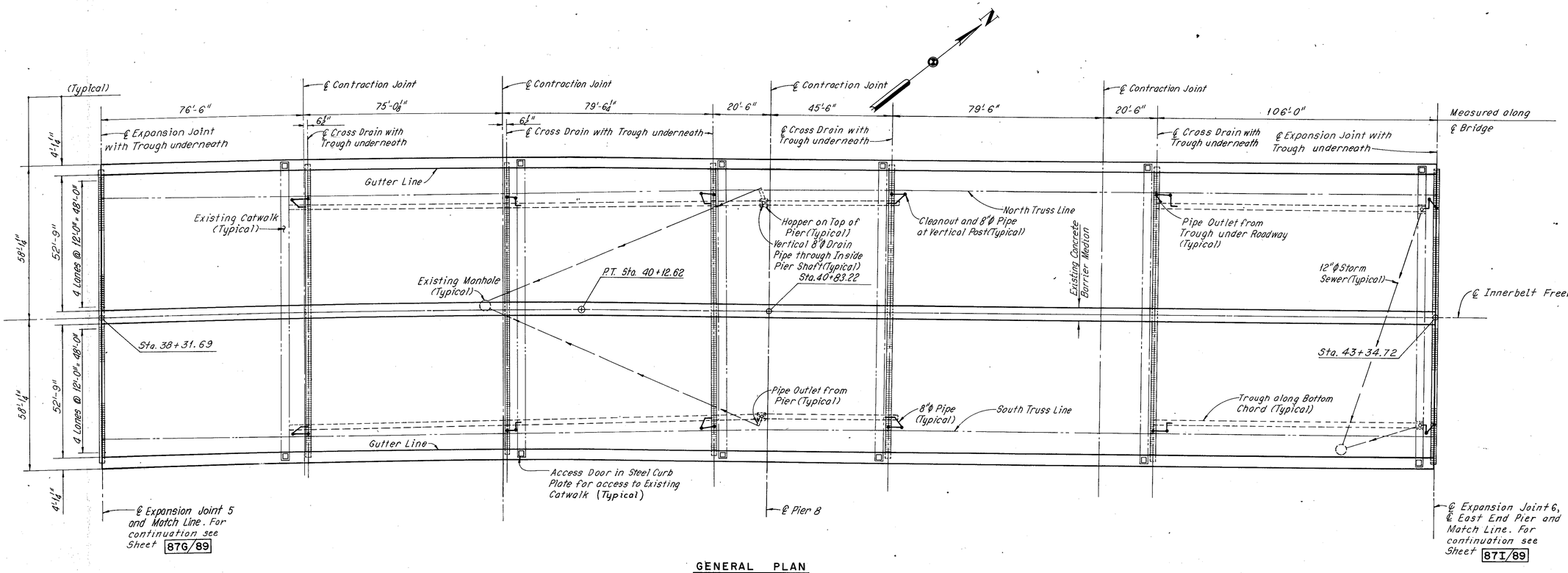
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	

FHWA REGION	STATE	PROJECT	
5	OHIO		

87H
89

CUYAHOGA COUNTY
CUY-90-15.31



GENERAL PLAN

GENERAL PLAN
CENTRAL VIADUCT

~~BR-NHS~~ CUY.-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

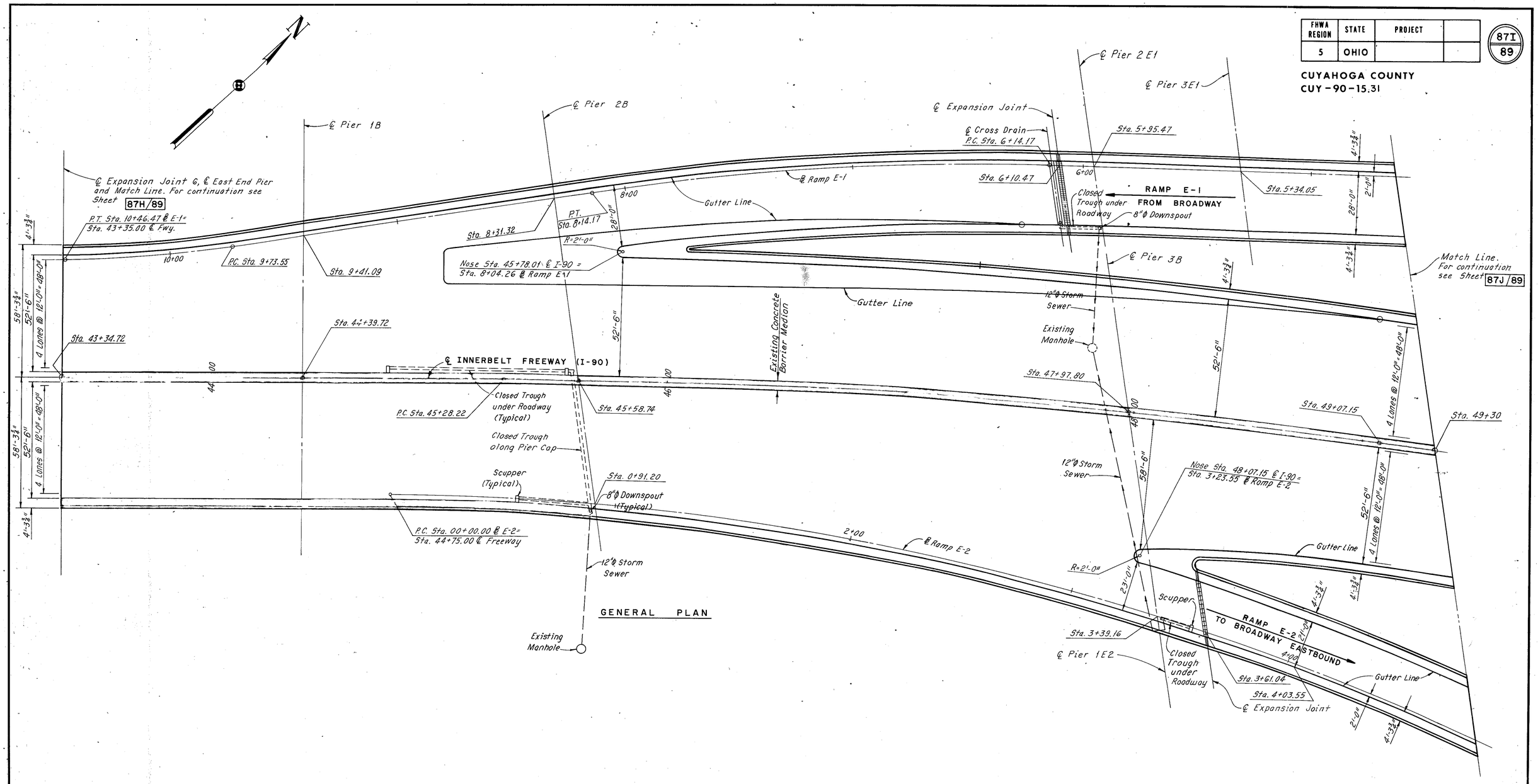
CUYAHOGA COUNTY OHIO

DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED

FHWA REGION	STATE	PROJECT	
5	OHIO		

87I / 89

CUYAHOGA COUNTY
CUY-90-15.31



GENERAL PLAN

GENERAL PLAN
EAST APPROACH

~~FIR. NO.~~ CUY.-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	

FHWA REGION	STATE	PROJECT	
5	OHIO		

87J / 89

CUYAHOGA COUNTY
CUY-90-15.31

P.T. Sta. 3+33.09
℄ Pier 4E1
Sta. 3+83.28
4+00
℄ Ramp E-1
Sta. 3+05.52
Gutter Line
RAMP E-1 FROM BROADWAY
28'-0"
26'-0"
Existing 25'-0" Approach Slab
29'-1½"
℄ Bearing Abutment E-1
4'-3¾"
2'-0"
N
℄ Pier 4B
℄ Expansion Joint 1B
℄ Pier 5B
℄ Pier 6B
℄ Pier 7B
Sta. 8+91.88
℄ Pier 8B
Sta. 8+16.76
℄ Pier 9B
℄ Bearing Abutment 1B
52'-6"
Sta. 9+69.20
10+00
Sta. 51+00.00 ℄ I-90 = P.T. Sta. 10+23.07 ℄ Ramp E-3
Gutter Line
8+00
Sta. 7+37.13
Sta. 6+89.61
℄ Ramp E-3
6"ø Pipe from Roadway Trough to Pier Trough
Closed Trough under Roadway
Scupper (Typical)
Sta. 49+30
50+00
Sta. 50+13.48
Closed Trough along Pier Cap
Sta. 50+94.45
℄ INNERBELT FREEWAY (I-90)
Existing Manhole
Type C Pressure Relief Joint
Match Line. For continuation see Sheet 87I/89
Existing Concrete Barrier Median
Sta. 51+72.09
6"ø Pipe to Trough
Sta. 52+50.52
89'-10"
Closed Trough along Pier Cap
Sta. 53+29.84
12"ø Storm Sewer
54'-00"
6"ø Pipe to Trough
Sta. 54+12.84
Existing 25'-0" Approach Slab
80'-7⅝"
Sta. 54+90.78
Sta. 54+62.95
Closed Trough along Pier Cap
60'-4⅝"
12"ø Storm Sewer
Gutter Line
8"ø Down Spout (Typical)
P.C. Sta. 0+00 Ramp E-4 = Sta. 54+60.00 ℄ Fwy.
6"ø Pipe to Trough
℄ Ramp E-4
Type C Pressure Relief Joint
℄ Pier 2E2
RAMP E-2 TO BROADWAY EASTBOUND
P.C.C. Sta. 5+15.69
Sta. 5+63.40
Gutter Line
6+00
Existing Manhole
21'-0"
21'-0"
℄ Bearing Abutment E-2
Existing 25'-0" Approach Slab
℄ Ramp E-2
30'-0.7"
Sta. 6+91.00
12"ø Storm Sewer
Existing Manhole

GENERAL PLAN
EAST APPROACH

~~BR-NG~~. CUY.-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

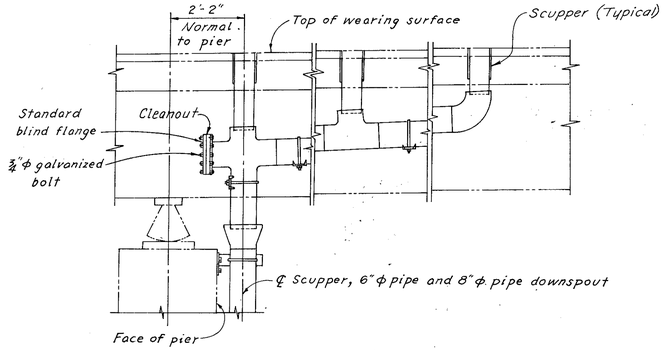
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	

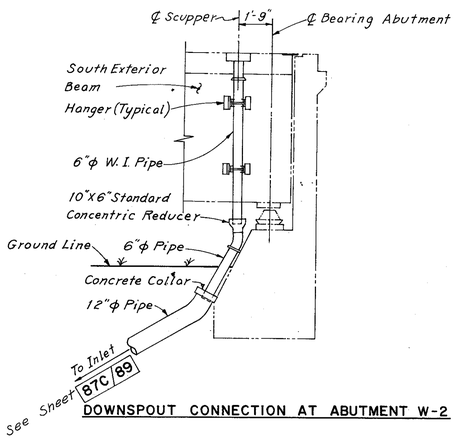
FHWA REGION	STATE	PROJECT	
5	OHIO		

87K / 89

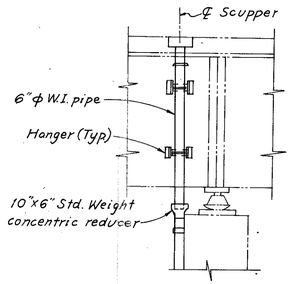
CUYAHOGA COUNTY
CUY-90-15.31



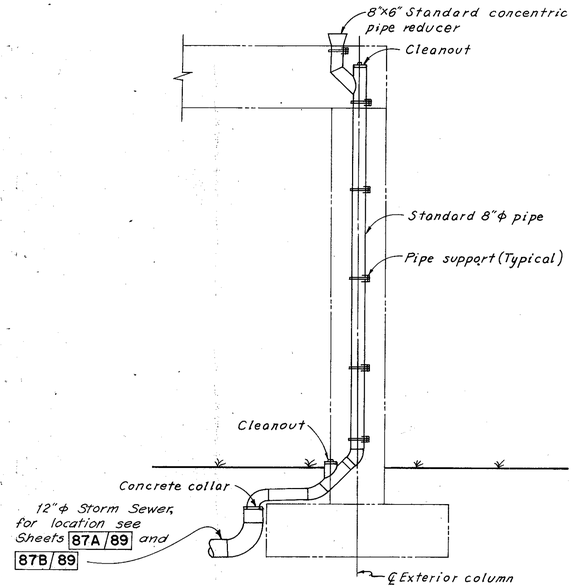
COLLECTOR SYSTEM AT PIERS



DOWNSPOUT CONNECTION AT ABUTMENT W-2

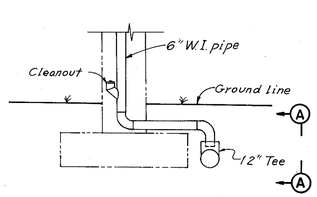


TYPICAL DOWNSPOUT CONNECTION AT PIERS

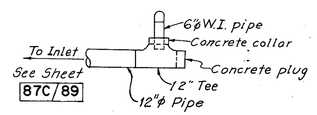


DOWNSPOUTS AT PIERS 4E, 7E, 7W, 10E AND 10W

DOWNSPOUT DETAIL AT PIER 3W



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



VIEW A-A

WEST APPROACH

INNERBELT EXTENSION

Notes:

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

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

Scupper boxes at West Approach are similar to those shown on East Approach Drainage Details, Sheet 87D/89.

For Scupper Locations see Sheets 87A/89, 87B/89 and 87C/89.

INNERBELT EXTENSION AND WEST APPROACH DRAINAGE DETAILS

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

STA. 2+65±
STA. 56+00±

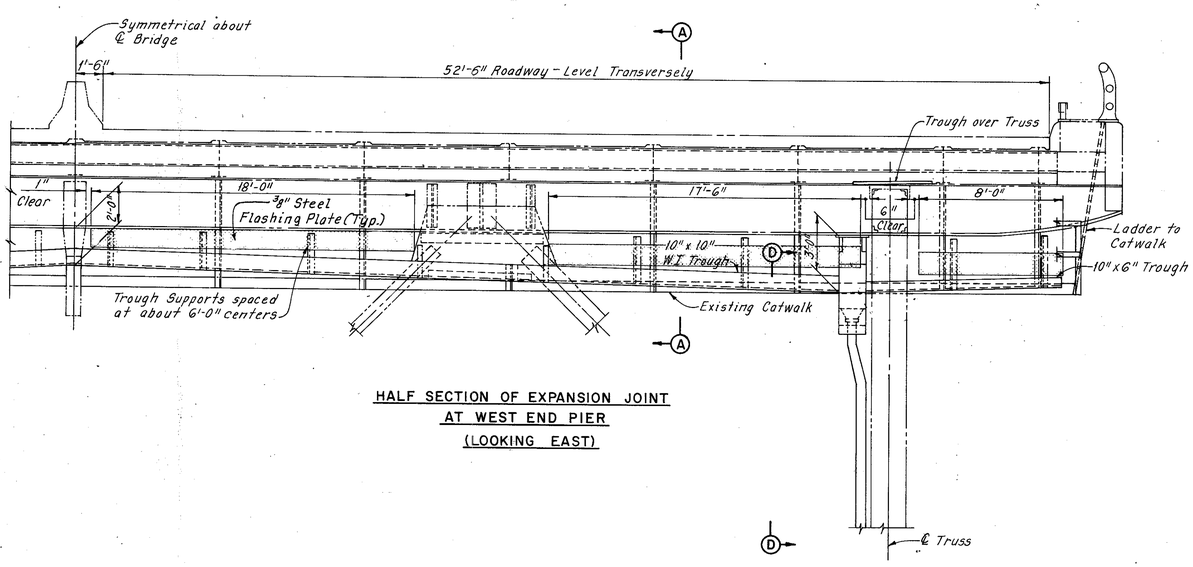
CUYAHOGA COUNTY OHIO

DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED

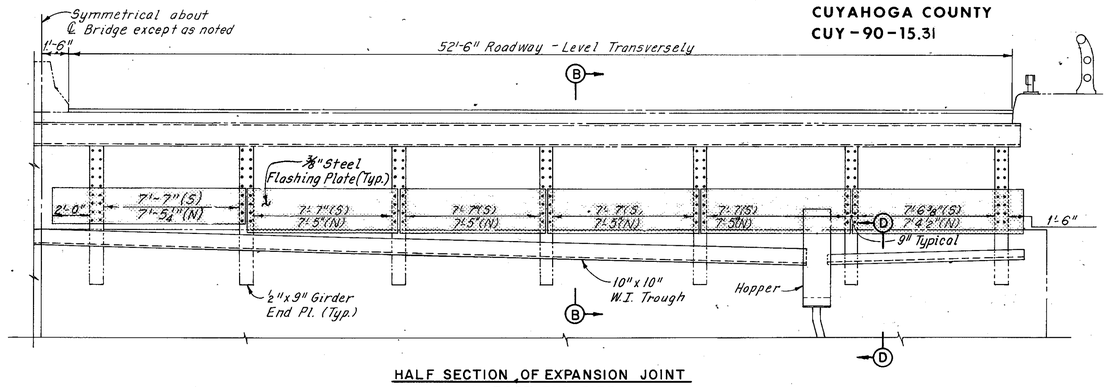
FHWA REGION	STATE	PROJECT	
5	OHIO		

87L/89

CUYAHOGA COUNTY
CUY-90-15.31

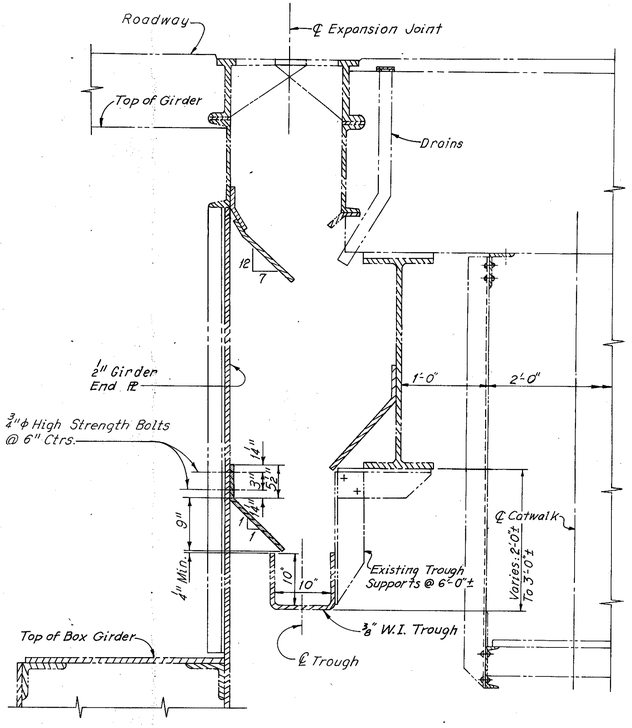


HALF SECTION OF EXPANSION JOINT
AT WEST END PIER
(LOOKING EAST)

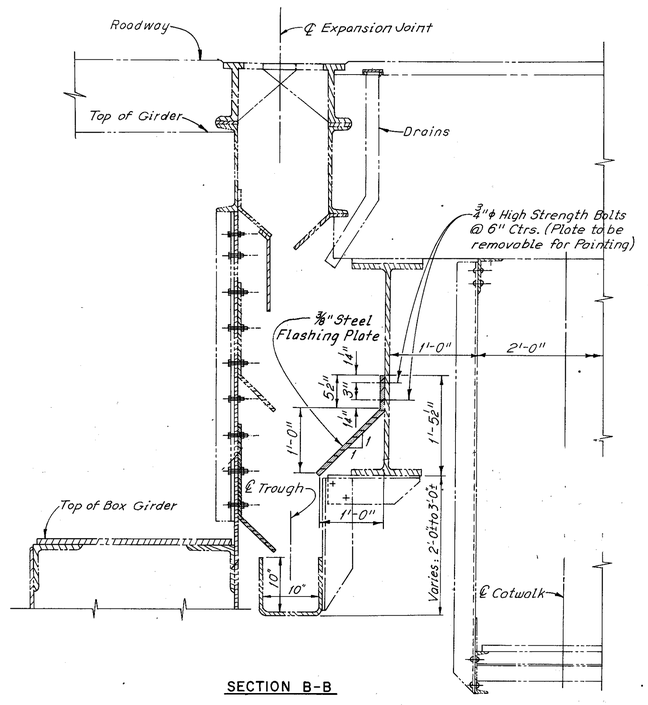


HALF SECTION OF EXPANSION JOINT
AT EAST END PIER
(LOOKING EAST)

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



SECTION A-A



SECTION B-B

For View D-D and Hopper Detail at top of piers see Sheet 87N/89.

CENTRAL VIADUCT
DRAINAGE DETAILS

~~DR-NS~~ CUY.-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

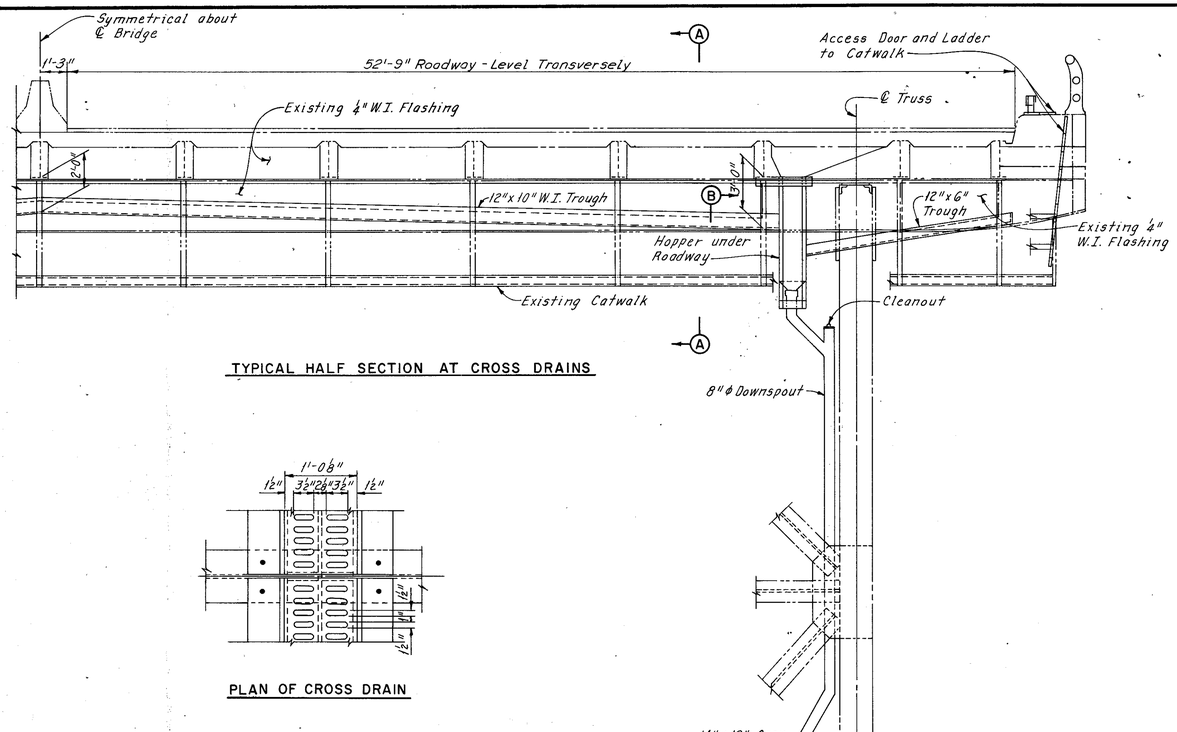
CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	

FHWA REGION	STATE	PROJECT	
5	OHIO		

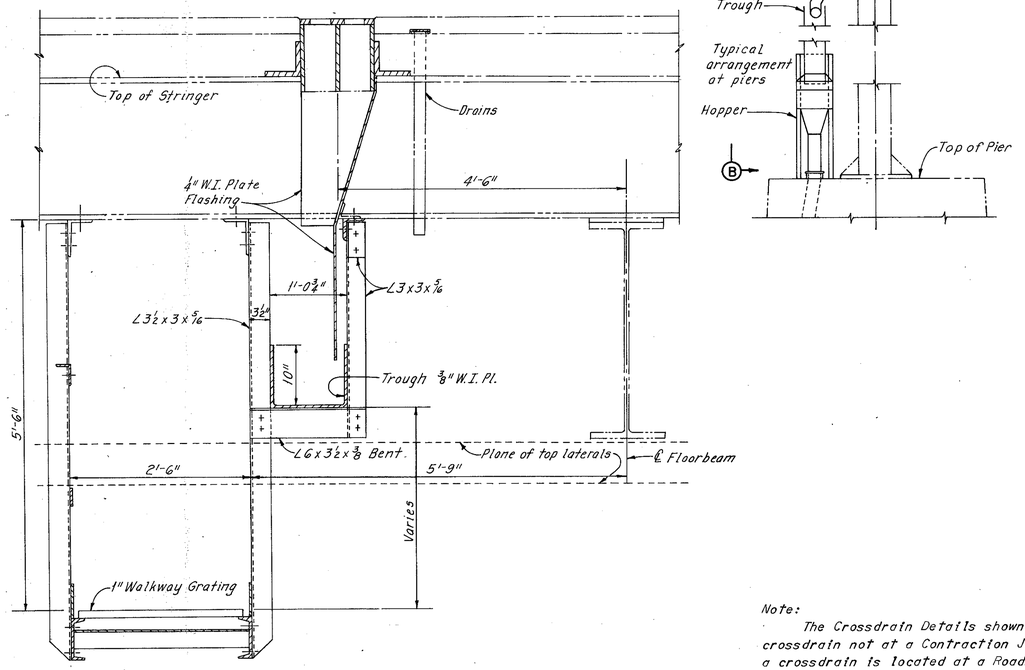
87M
89

CUYAHOGA COUNTY
CUY-90-15.31



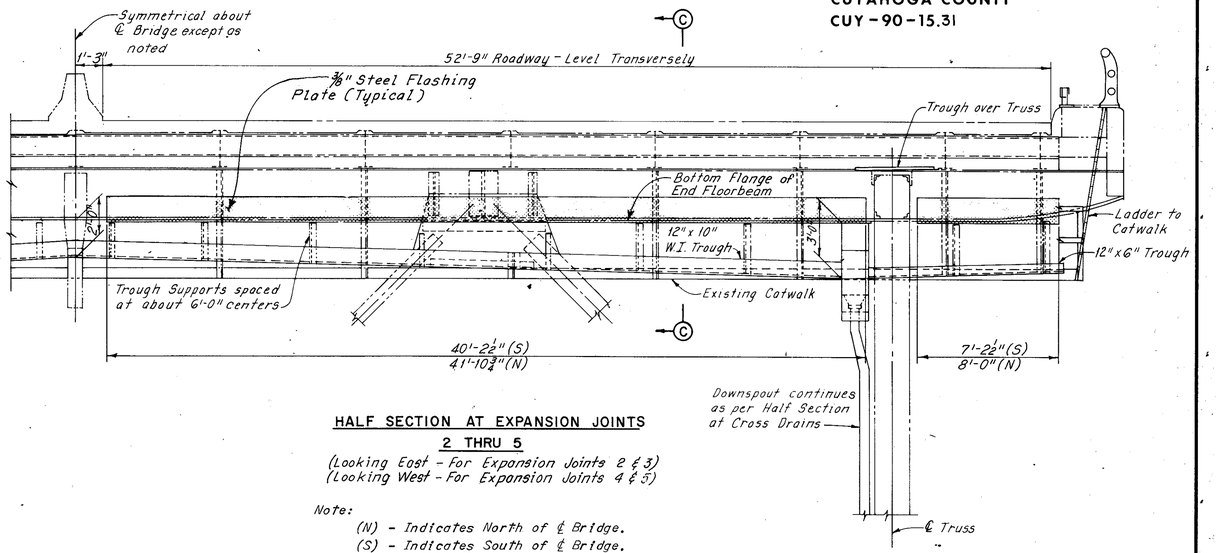
TYPICAL HALF SECTION AT CROSS DRAINS

PLAN OF CROSS DRAIN



SECTION A-A

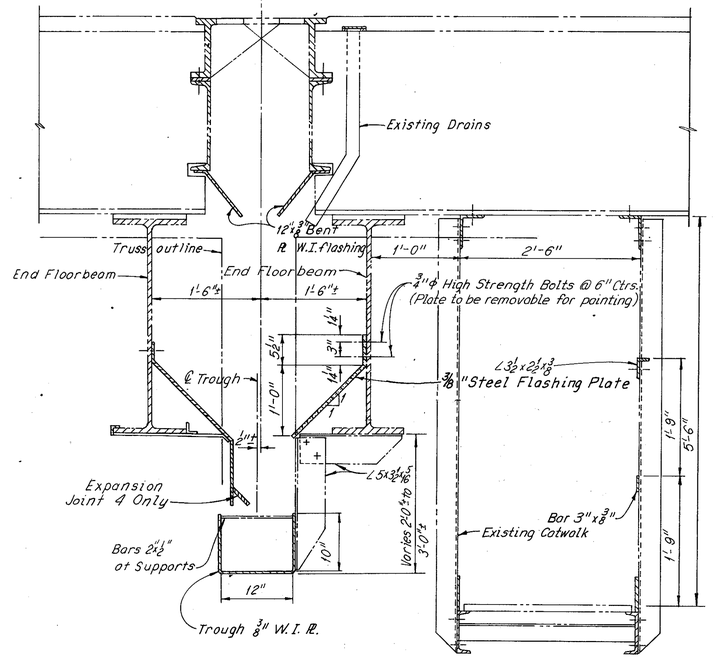
Note:
The Crossdrain Details shown are for a crossdrain not at a Contraction Joint. When a crossdrain is located at a Roadway Contraction Joint, the Details are similar.



HALF SECTION AT EXPANSION JOINTS
2 THRU 5

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

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



SECTION C-C

For View B-B and Hopper Detail at top of piers see Sheet 87N/89.

CENTRAL VIADUCT DRAINAGE DETAILS

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

STA. 2+65±
STA. 56+00±

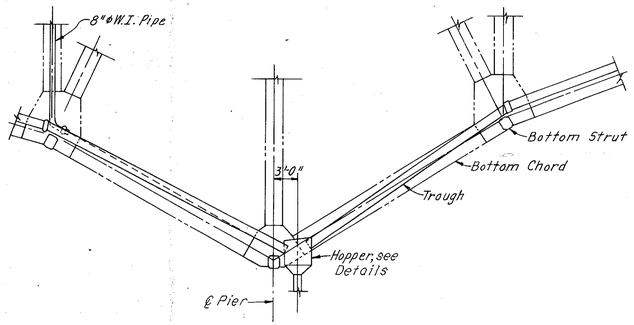
CUYAHOGA COUNTY OHIO

DRAWN	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED

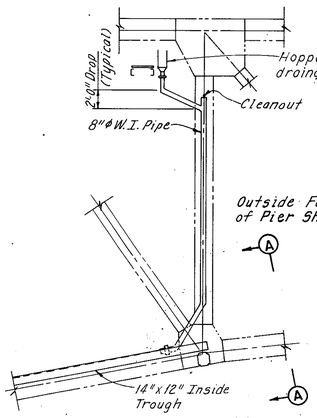
FHWA REGION	STATE	PROJECT	
5	OHIO		

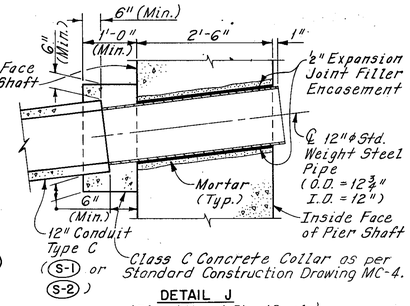
87N
89

CUYAHOGA COUNTY
CUY-90-15.31

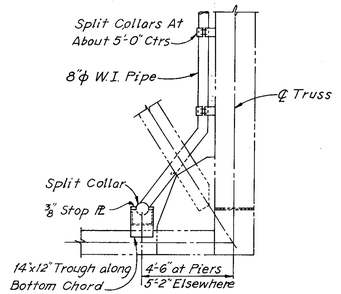


VIEW B-B
(For location of View B-B, see Sheet 87M 89.)

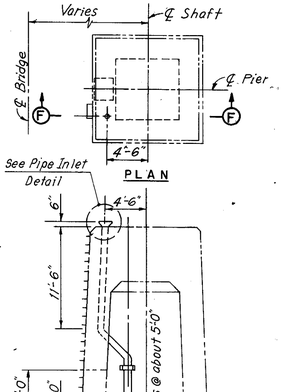




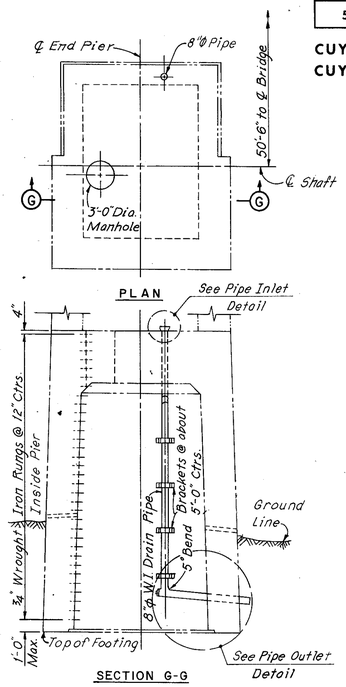
DETAIL J
(Pier 1N and Pier 1S only)



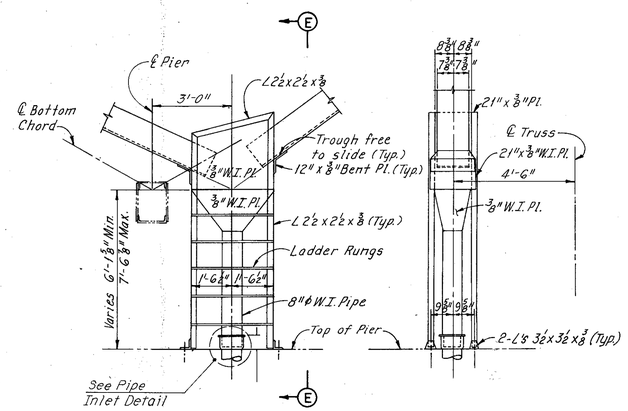
SECTION A-A



PIERS 1 THRU 8

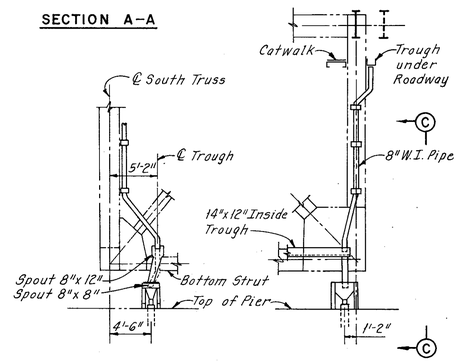


END PIERS



ELEVATION SECTION E-E

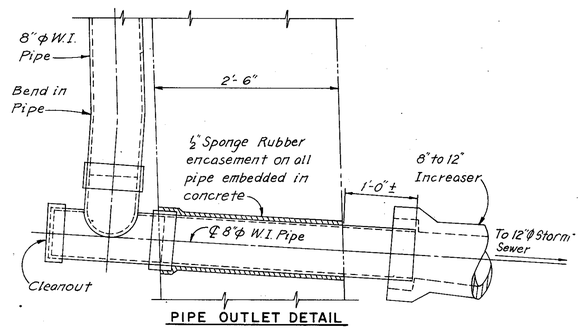
TYPICAL DETAIL OF HOPPER AT TOP OF PIERS



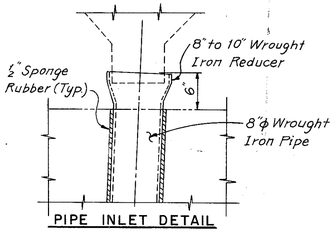
SECTION C-C VIEW D-D
(For location of View D-D, see Sheet 87L 89.)

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

SECTION AT END PIERS



PIPE OUTLET DETAIL



PIPE INLET DETAIL

DRAINAGE DETAILS INSIDE PIERS

DRAINAGE DETAILS ABOVE PIERS

CENTRAL VIADUCT
DRAINAGE DETAILS

~~BR-NS~~ CUY.-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

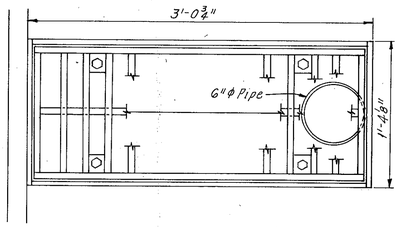
CUYAHOGA COUNTY OHIO

DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED

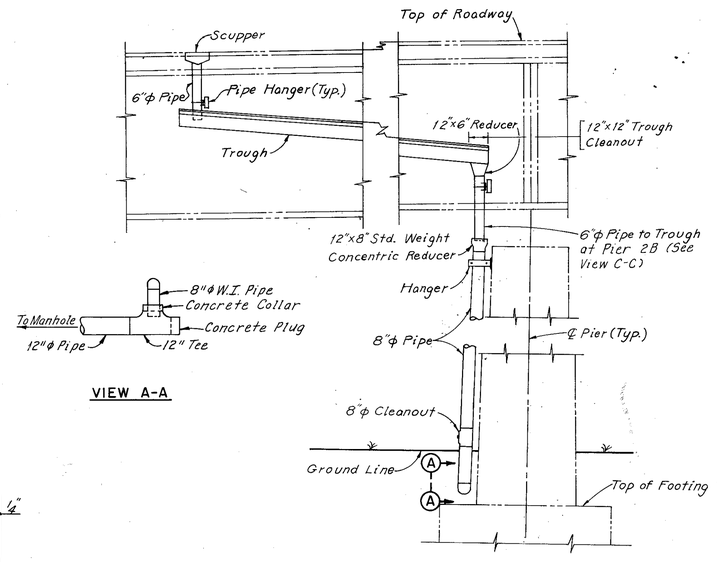
FHWA REGION	STATE	PROJECT	
5	OHIO		

87Ø / 89

CUYAHOGA COUNTY
CUY-90-15.31

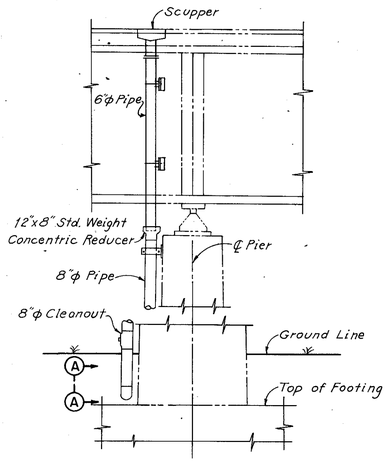


TYPICAL SCUPPER PLAN

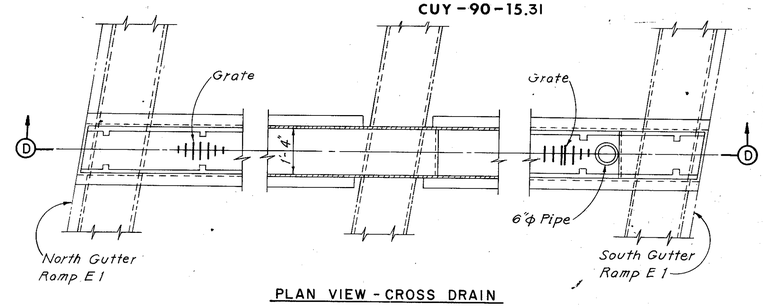


VIEW A-A

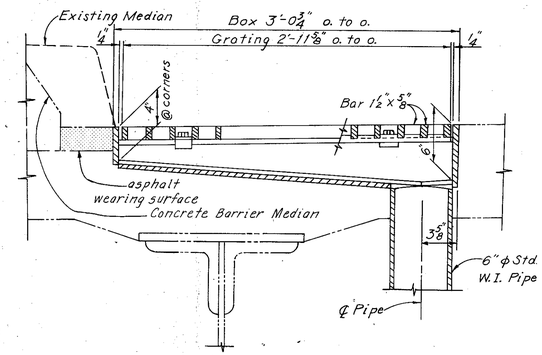
DRAINAGE AT PIER 1E2 - (LOOKING SOUTH)
DRAINAGE AT PIER 2B SOUTH CURB - (LOOKING NORTH)



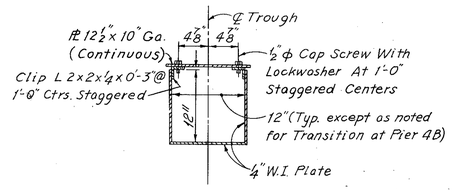
DRAINAGE AT PIER 2E2
(LOOKING SOUTH)



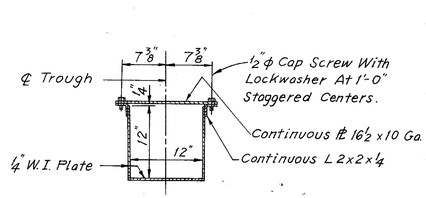
PLAN VIEW - CROSS DRAIN



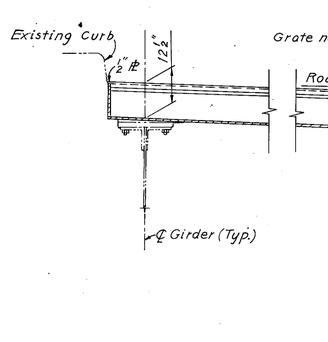
SECTION B-B



TYPICAL TROUGH SECTION
ALONG PIER CAPS

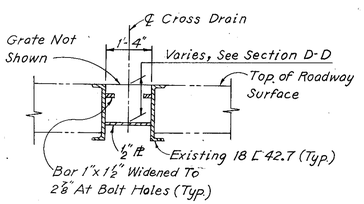


TYPICAL TROUGH SECTION
ALONG GIRDERS

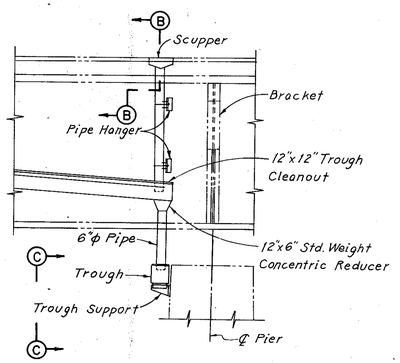


SECTION D-D

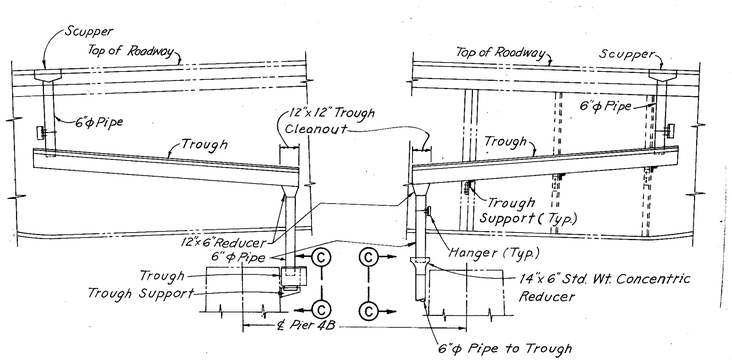
Note: Drainage from trough at Pier 2E1 is similar to Pier 1E2 drainage.



SECTION E-E

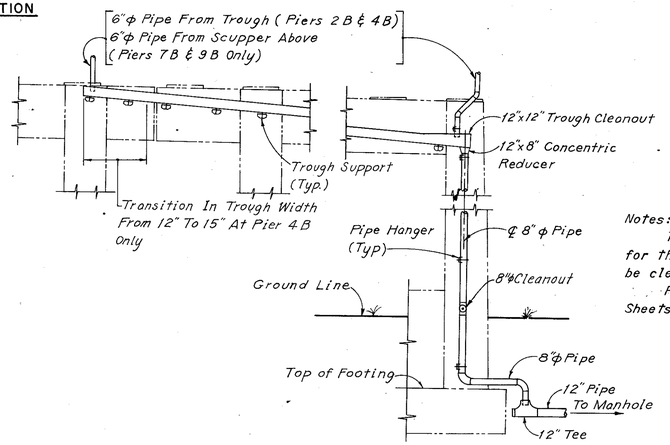


NORTH MEDIAN DRAINAGE AT PIER 2B
(LOOKING NORTH)



NORTH MEDIAN DRAINAGE AT PIER 4B
(LOOKING SOUTH)

SOUTH CURB DRAINAGE AT PIER 4B
(LOOKING NORTH)



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

Notes:
The details shown represent the original plan drawings for the drainage system. The existing drainage system shall be cleaned out as indicated in the General Notes.
For Scupper and Cross Drain locations see General Plan, Sheets 87I/89 and 87J/89.

EAST APPROACH
DRAINAGE DETAILS

~~BR-~~MID. CUY.-90-1524
90-1540
90-1547
90-1599

STA. 2+65±
STA. 56+00±

CUYAHOGA COUNTY OHIO

DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE	REVISED SHEET

7

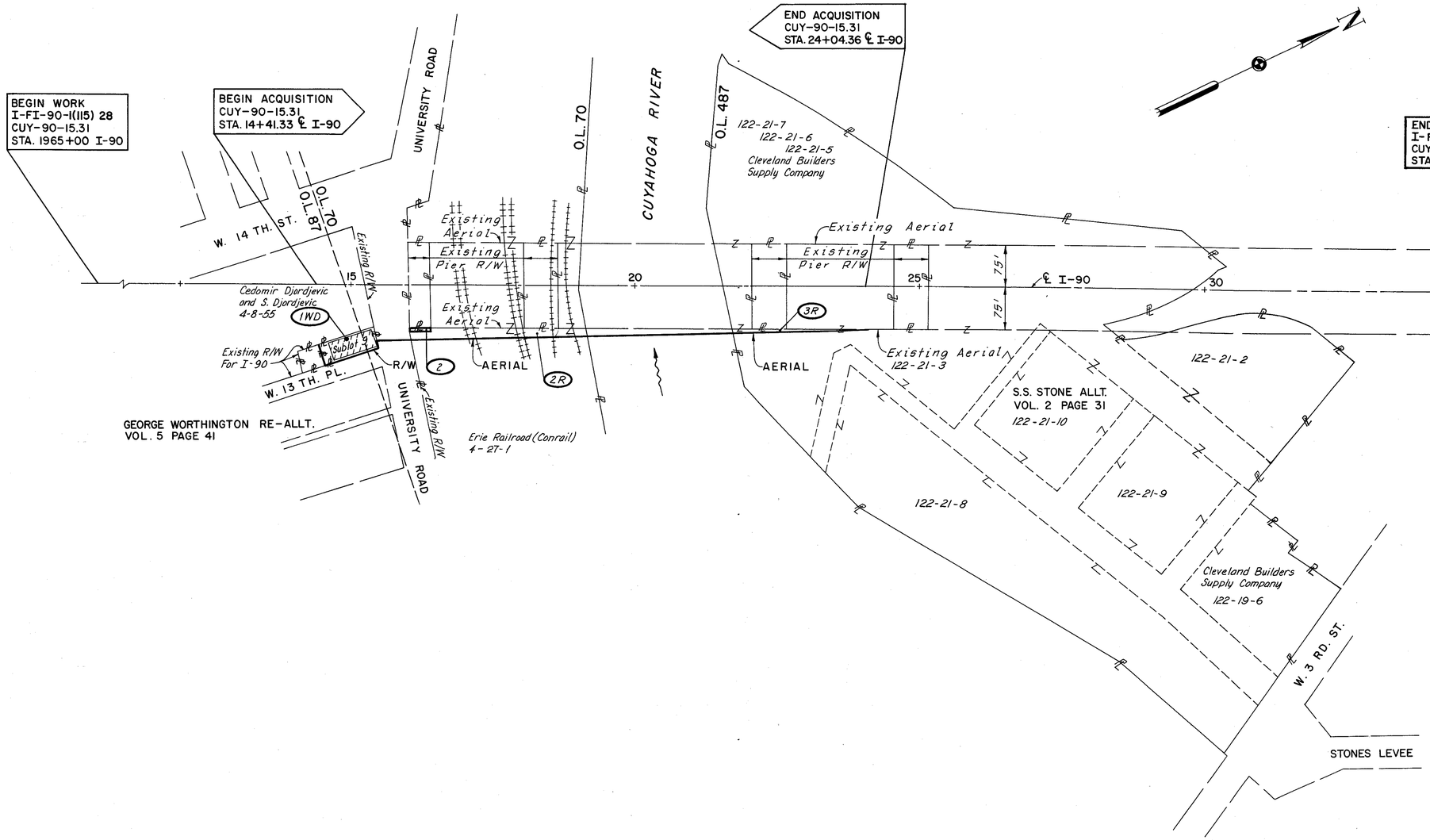
PROPERTY MAP

FHWA REGION	STATE	PROJECT	
5	OHIO		

88
89

CUYAHOGA COUNTY
CUY-90-15.31

1
2



CITY OF CLEVELAND
ORIGINAL BROOKLYN TOWNSHIP
RANGE 12 TOWN 7
ORIGINAL 100 ACRE LOT
RANGE 12 TOWN 7.

100 0 100 200 300 400
SCALE IN FEET

NAME	REVISION	DATE

MADE AJT DATE 3-8-77
TRACED ~~ DATE ~~
CHECKED JAG DATE 3-23-77
SCALE 1"= 100'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

PROPERTY MAP

FHWA REGION	STATE	PROJECT	
5	OHIO		

89/89

2/2

CUYAHOGA COUNTY
CUY-90-15.31

TOTAL NUMBER OF ___
3 OWNERSHIPS
1 TOTAL TAKES
1 OWNERSHIPS WITH STRUCTURES INVOLVED
0 OWNERSHIPS WITH "P" ITEMS

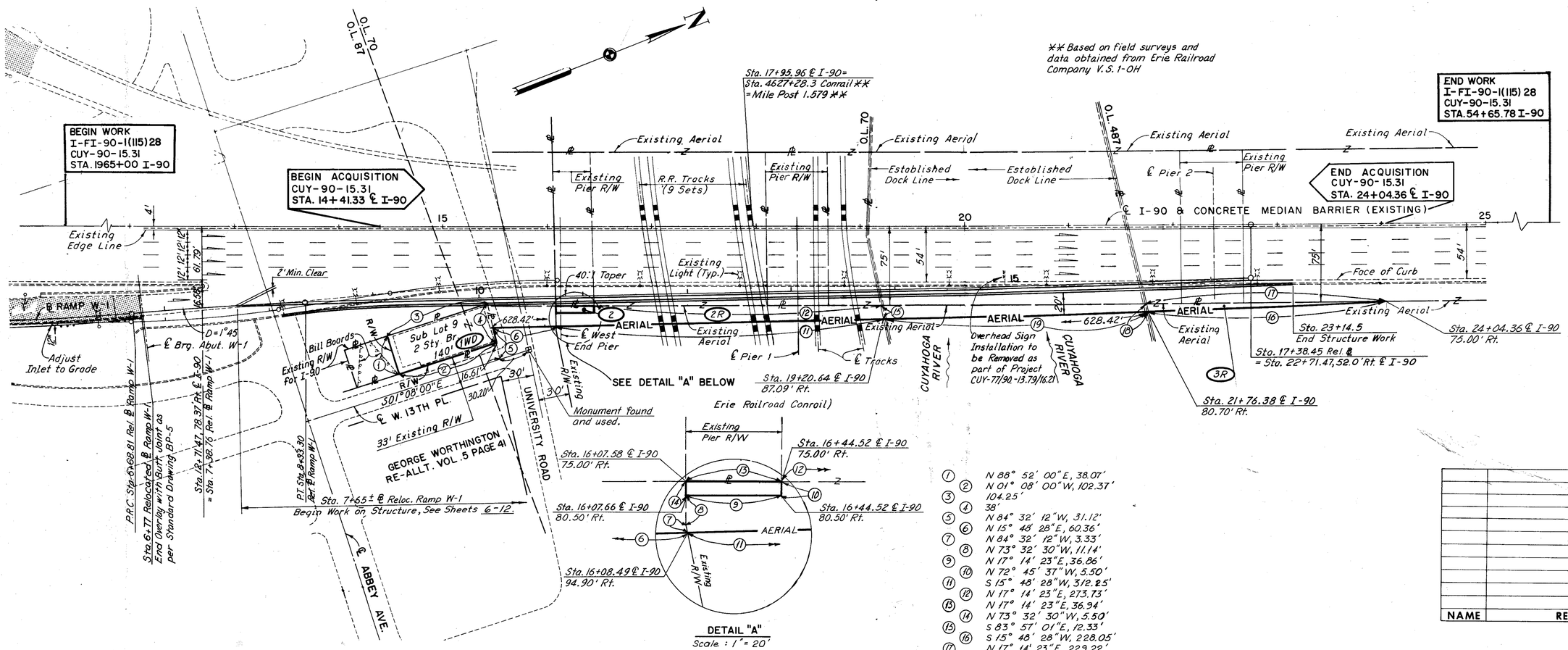
SUMMARY OF ADDITIONAL RIGHT OF WAY

PARCEL	OWNER	SHEET NO.	OWNER RECORD BOOK	OWNER RECORD PAGE	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS AND PERSONALTY	AS AQUIRED BOOK	AS AQUIRED PAGE
1 WD	Cedomir Djordjevic		12130	679	3926	–	3926	–	3926	Yes	–	–		Perm. Parcel No. 1-B-55		
	and S. Djordjevic													Total Take		
2	Erie Railroad Company		–	–			203	–	203	No	–	–		Highway Easement 4-27-1 *		
2R	(Conrail)						4789	–	4789	No				Aerial Easement		
3R	Clevelond Builders		14262	487	1570 Acres		653	–	653	No	–	–		Aerial Easement 122-21-2		
	Supply Company		14262	493										122-21-3, 122-21-5, 122-21-6		
			14262	499										122-21-7, 122-21-8, 122-21-9, *		
														122-21-10, & 122-19-6.		

Note: All areas are shown in square feet, except as shown.

* Perm. Parcel No.

CITY OF CLEVELAND
ORIGINAL BROOKLYN TOWNSHIP
RANGE 12 TOWN 7
ORIGINAL 100 ACRE LOT
RANGE 12 TOWN 7



①	②	N 88° 52' 00" E, 38.07'
③	④	N 01° 08' 00" W, 102.37'
		104.25'
⑤	⑥	38'
⑦	⑧	N 84° 32' 12" W, 31.12'
⑨	⑩	N 15° 48' 28" E, 60.36'
⑪	⑫	N 84° 32' 12" W, 3.33'
⑬	⑭	N 73° 32' 30" W, 11.14'
⑮	⑯	N 17° 14' 23" E, 36.86'
⑰	⑱	N 72° 45' 37" W, 5.50'
⑲		S 15° 48' 28" W, 312.25'
		N 17° 14' 23" E, 273.73'
		N 17° 14' 23" E, 36.94'
		N 73° 32' 30" W, 5.50'
		S 83° 57' 01" E, 12.33'
		S 15° 48' 28" W, 228.05'
		N 17° 14' 23" E, 223.22'
		N 85° 03' 14" W, 5.83'
		S 15° 48' 28" W, 255.81'

NAME	REVISION	DATE

MADE JAG DATE 5-8-78
TRACED DJR DATE 5-9-78
CHECKED MEF DATE 5-9-78
SCALE 1"=50'

Howard, Needles, Tammen & Bergendoff
CONSULTING ENGINEERS
CLEVELAND, OHIO

HNTB

50 0 50 100 150 200
SCALE IN FEET

SUMMARY OF ADDITIONAL R/W & R/W PLAN