STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

SUM-271-08 02
BOSTON TOWNSHIP
SUMMIT COUNTY
BRIDGE REPAIR

OHIO	1 / 15
FHWA REGION 5	
IR-271-6(63) 237	FEDERAL PROJECT

PLAN NO. BR-43-85

MICROFILM

SUM-271-08 02 L & R

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)

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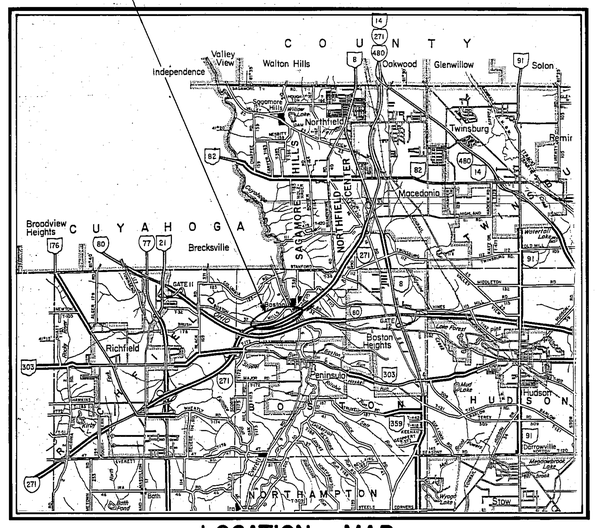
MAINTAINING TRAFFIC	15

SHEET 9A HAS BEEN ADDED



LOCATION MAP

SCALE IN MILES
0 1 2 3 4 5 6 7 8

Portion to be improved
State & Federal Routes
Other Roads

1985 SPECIFICATIONS

The standard specifications of the State of Ohio, Department of Transportation, including changes and supplemental specifications listed in the proposal shall govern this improvement.

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

MICROFILM
AUG 20 1986

Approved Francis V. Fischer
Date 3-7-85 District Deputy Director of Transportation

Approved Walter J. Jeffries
Date 4-2-85 Engineer, Bureau of Bridges and Structural Design

Approved James R. Longenecker
Date 4-4-85 Chief Engineer, Operations

Approved Warren F. Smith
Date 4-4-85 Director, Department of Transportation

Rev. 5-22-85 RLE

LINE DATA

PROJECT LENGTH = SUM OF BRIDGE LIMITS = 1,457.50'
= 0.276 MILES

WORK LENGTH = SUM OF WORK LIMITS o/o = 1,457.50'
= 0.276 MILES

UNDERGROUND UTILITIES
48 HOURS **BEFORE YOU DIG** Call···800-362-2764 (Toll free) OHIO UTILITIES PROTECTION SERVICE NON-MEMBERS MUST BE CALLED DIRECTLY

SCALES

Plan
Profile: Horizontal, Vertical
Cross Section: Horizontal, Vertical

SUPPLEMENTAL SPECIFICATIONS	

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS				
TC-35.10 10/5/77				

Plan Prepared By:

OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 04

SEAL

Project:
Date of Letting 19__, Contract No.

LD0300 Rev. 1-1-81

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

GENERAL SUMMARY

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

PLAN NO. BR-43-85

SUM-271-0802

ITEM	LEFT	RIGHT	TOTAL	UNIT	ITEM	DESCRIPTION
SPECIAL	3000	2910	5910	L.F.	SPECIAL	CATWALK, AS PER PLAN
SPECIAL	70	70	140	EACH	SPECIAL	STRUCTURAL STEEL RETROFIT (INTERMEDIATE STIFFENER AND PLATE END REMOVALS, GRINDING & NDT)
SPECIAL	20	20	40	EACH	SPECIAL	STRUCTURAL STEEL RETROFIT (BEARING STIFFENER END REMOVALS, GRINDING & NDT)
SPECIAL	180	180	360	EACH	SPECIAL	DRILLING STRUCTURAL STEEL (1" DIAMETER HOLE, GRINDING AND DYE PENETRANT)
SPECIAL	62	61	123	EACH	SPECIAL	LATERAL BRACING MODIFICATION, AS PER PLAN
514			LUMP	LUMP	514	FIELD PAINTING OF EXISTING STEEL-SYSTEM A, AS PER PLAN
614			LUMP	LUMP	614	MAINTAINING TRAFFIC
619			LUMP	LUMP	619	FIELD OFFICE
624			LUMP	LUMP	624	MOBILIZATION
SPECIAL	4	4	8	EACH	SPECIAL	HINGE STIFFENER MODIFICATION, AS PER PLAN
SPECIAL	74	72	146	EACH	SPECIAL	PEENING LATERAL GUSSET TO FLANGE WELDS

MICROFIL.
AUG 20 1986

GENERAL NOTES

EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND/OR FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK, BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION'S CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) SECTIONS 102.05 AND 105.02.

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. PLANS OF THE EXISTING STRUCTURE INCLUDING STANDARD DRAWINGS ARE AVAILABLE FOR EXAMINATION AT THE ODOT DISTRICT 04 OFFICE IN RAVENNA, OHIO.

RIGHT-OF-WAY

ALL WORK WILL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY.

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.

COOPERATION WITH RAILROADS

THE CONTRACTOR SHALL COOPERATE AT ALL TIMES WITH LOCAL OFFICIALS OF THE RAILROAD COMPANY. HE SHALL USE ALL REASONABLE CARE AND DILIGENCE IN THE WORK IN ORDER TO AVOID ACCIDENTS, DAMAGE OR INTERFERE WITH THE TRAINS OR OTHER 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 CONTRACTOR'S OPERATIONS OVER OR ADJACENT TO THE TRACKS.

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

CUYAHOGA VALLEY NATIONAL RECREATION AREA

THE CUYAHOGA VALLEY NATIONAL RECREATION AREA OWNS THE LAND ADJACENT TO THIS PROJECT, BUT NOT THE LAND UNDERNEATH THE BRIDGE. IF THEY NEED TO BE CONTACTED FOR STORAGE OF MATERIALS OR EMERGENCIES, THEY CAN BE REACHED AT:

SUPERINTENDENT, CUYAHOGA VALLEY NATIONAL RECREATION AREA
15610 VAUGHN ROAD
BRECKSVILLE, OHIO 44141
(216) 526-5256

ITEM SPECIAL - CATWALK, AS PER PLAN

ALL GRATING DESIGNS AND MATERIALS SHALL BE IN ACCORD WITH THE STANDARD SPECIFICATIONS FOR METAL BAR GRATINGS AND TREADS AS PUBLISHED IN THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM) METAL BAR GRATING MANUAL, 1979 REVISED EDITION.

THE PLAN INTENT IS TO INSTALL THE CATWALK THE ENTIRE LENGTH OF SUM-271-0802 L & R ADJACENT TO BOTH GIRDERS AS PER PLAN, EXCEPT THAT NO CATWALK SHALL BE INSTALLED AT THE FIRST 'MAIN' AND FIRST 'OFFSET' SECTION OVER ALL ABUTMENTS.

'MAIN' CATWALK SECTIONS ARE THE LONGER RUNS BETWEEN THE EXISTING LATERAL BRACING (ST 7 WF 17 OR ST 7 WF 19). THE 'OFFSET' CATWALK SECTIONS ARE SHORTER IN LENGTH AND ARE LOCATED UNDERNEATH THE FLOORBEAMS (@ ST 6 WF 26.5 STRUTS).

ALL CATWALK SECTIONS SHALL BE COMPLETELY FABRICATED AND GALVANIZED AT THE SHOP. ALL GALVANIZING SHALL BE IN ACCORDANCE WITH CMS 711.02. ALL CATWALK SECTIONS SHALL BE SECURELY FASTENED TO EXISTING STEEL WITH GALVANIZED BOLTS, WASHERS AND NUTS. NO NEW STEEL SHALL BE WELDED TO THE EXISTING STEEL.

ALL SKEW CUT GRATING PANELS AND ALL PANELS WHICH HAVE THE 4" x 4" CUTOUTS (FOR BOLTING OPERATIONS), SHALL BE TRIM BANDED WITH 1 1/4" x 3/16" BARS. THE END OF THE GRATING PANEL WHICH HAS BEEN CUTOUT SHALL BE BANDED ONLY.

ITEM SPECIAL - CATWALK, AS PER PLAN (CONTINUED)

MATERIAL

GRATING: ALL BEARING BARS, CROSS BARS AND BANDS SHALL BE OF WELDING QUALITY STEEL CONFORMING TO ASTM:A 569 ALL GRATING SHALL BE SERRATED ELECTRO-FORGED STEEL (19-W-4). MAIN BEARING BARS SHALL BE 1 1/4" x 3/16" @ 1 3/16" c/c. ALL CROSS BARS SHALL BE 1/8" DIAMETER (MIN.) @ 4" c/c. THE 'SPAN' OF THE PANELS SHALL BE 2'-6"; THE 'WIDTH' SHALL BE 3'-0", EXCEPT WHEN SHORTER PANELS ARE NEEDED TO COMPLETE THE 'MAIN' OR 'OFFSET' CATWALK SECTIONS.

THE GRATING PANELS SHALL BE PLACED ON THE SUPPORTS SUCH THAT THERE IS 3/8" CLEARANCE AS SHOWN ON THE PLANS. 1/2" CLEARANCE SHALL BE MAINTAINED BETWEEN THE STRUCTURAL TEES AND THE END GRATING PANELS, EXCEPT WHERE NOTED.

SUPPORTING STEEL: ALL STEEL USED FOR SUPPORTING THE GRATING PANELS SHALL BE ASTM:A 36 (AISC CERTIFICATION REQUIRED). ON 'MAIN' CATWALK SECTIONS, THE SUPPORT SHALL BE 2 - C 8 x 13.75, ON 'OFFSET' CATWALK SECTIONS, THE SUPPORT CLOSEST TO THE GIRDER SHALL BE ∠ 2 1/2" x 2 1/2" x 3/8", THE OTHER SUPPORT SHALL BE C 8 x 13.75. ON HINGE CATWALK SECTIONS, THE SUPPORT SHALL BE 2 - C 8 x 13.75.

ALL SUPPORTING STEEL SHALL BE BOLTED TO THE EXISTING STRUCTURAL TEES AS SHOWN WITH 3/4" DIAMETER BOLTS, WASHERS AND NUTS. ALL MATERIAL USED FOR BOLTING SHALL BE GALVANIZED IN ACCORDANCE WITH CMS 711.02.

HAND RAILING AND POSTS: ALL RAILING AND ALL POSTS SHALL BE ∠'s 2 1/2" x 2 1/2" x 1/4". THE HAND RAILING SHALL BE 7/8" DIAMETER STEEL BARS. ALL STEEL SHALL BE ASTM:A 36(AISC CERTIFICATION REQUIRED). THE RAILING AND POSTS SHALL BE WELDED TO THE SUPPORTS AS SHOWN ON THE PLANS. THE HINGE CATWALK SECTIONS REQUIRE RAILING AND POSTS ON BOTH SIDES OF THE SUPPORTS, SEE SHEET NO. 10. ALL OTHER SECTIONS REQUIRE HAND RAILING AND POSTS ON THE SIDE FARTHEST FROM THE GIRDER.

CHAINS: ALL HARDWARE SHOWN ON SHEET NO. 9A SHALL BE GALVANIZED IN ACCORDANCE WITH CMS 711.02. THE CONTRACTOR INSTALL THE CHAINS ON ALL FOUR (4) CORNERS OF THE PROPOSED CATWALK ON BOTH BRIDGES. 3/8" DIAMETER HOLES SHALL BE DRILLED IN THE ∠ 2 1/2" x 2 1/2" x 1/4" POSTS AND IN THE 6" x 1/2" PLATES AS SHOWN ON SHEET NO. 9A.

WELDING

ALL WELDING SHALL BE DONE IN THE SHOP IN ACCORDANCE WITH SS - 1027 AND AWS STRUCTURAL WELDING CODE. THE FILLET WELDS CONNECTING THE RAILING AND POSTS, POSTS AND CHANNELS, SHALL BE WELDED ALL-AROUND WHERE POSSIBLE. THE GRATING PANELS SHALL BE WELDED TO THE SUPPORTS AS SHOWN ON SHEET NO. 10. PANELS WHICH ARE CUT OUT OR SKEW CUT, SHALL ALSO BE SECURELY WELDED TO THE SUPPORTS.

INSTALLATION LIMITATIONS

IF THE FABRICATED MAIN CATWALK SECTIONS ARE TOO SHORT, THEY MAY BE MOVED FURTHER AWAY FROM THE GIRDER; BUT IN NO INSTANCE MAY THE CLEARANCE BETWEEN THE BACK OF THE CHANNEL AND THE EDGE OF THE FLANGE PLATE OF THE GIRDER, BE GREATER THAN 1'-0". IF THE CATWALK SECTIONS ARE TOO LONG, THEY MAY BE CUT IN THE FIELD TO FIT PROPERLY. NO CATWALK SECTION MAY BE CUT MORE THAN THREE (3) INCHES IN THE FIELD.

ANY GALVANIZED MATERIAL WHICH HAS BEEN CUT OR DAMAGED IN ANY WAY SUCH THAT UNPROTECTED NEW STEEL IS EXPOSED, THAT STEEL SHALL BE IMMEDIATELY WIRE BRUSHED AND COATED WITH ZINC RICH PAINT CONFORMING TO 708.17 OF THE CMS.

METHOD OF PAYMENT

THIS ITEM SHALL INCLUDE ALL GRATING, CHANNELS, ANGLES, STEEL RODS, BOLTS, WASHERS, PLATES, NUTS, CHAINS, EYE BOLTS, SWIVELS, SNAPS, WELDING RODS AND OTHER INCIDENTALS REQUIRED TO FABRICATE THE CATWALK AS PER PLAN. THIS ITEM SHALL ALSO INCLUDE ALL WELDING, GALVANIZING, DRILLING, FASTENING, FIELD CUTTING AND ERECTING. THIS ITEM SHALL ALSO INCLUDE ALL EQUIPMENT AND ALL LABOR NECESSARY TO INSTALL THE CATWALK AS PER PLAN. PAYMENT FOR ALL OF THE ABOVE SHALL BE MADE AT THE CONTRACT BID PRICE PER L. F. FOR ITEM SPECIAL - CATWALK AS PER PLAN. THE DISTANCE WILL BE MEASURED AT THE CENTERLINE OF THE GRATING, INCLUDING MAIN, OFFSET, AND HINGE SECTIONS.

SHOP DRAWINGS

THE CONTRACTOR SHALL PROVIDE TO THE STATE OF OHIO, SHOP DRAWINGS AND INSTALLATION DRAWINGS AS REQUIRED UNDER ITEM 513 STRUCTURAL STEEL.

ITEM SPECIAL - STRUCTURAL STEEL RETROFIT (INTERMEDIATE STIFFENER AND PLATE END REMOVALS, GRINDING & NDT)

THE CONTRACTOR IS DIRECTED TO SHEET NO. 12 FOR SEQUENCE OF OPERATIONS AND DETAILED DRAWINGS. FOR CONVENIENCE, THE INTERMEDIATE LOCATIONS SHALL BE RESTATED HERE: SUM-271-0802 L = FB # 2 THRU 5, 7, 8, 11, 12, 14, 15, 18, 19, 21, 22, 25, 26, 28, 29, 36, 37, 40, 41, 43, 44, 48, 49, 51, 52, 56, 57, 59 THRU 63. SEE THE FRAMING PLAN ON SHEET NO. 6 FOR ADDITIONAL INFORMATION. SUM-271-0802 R = FB # 2 THRU 5, 7, 8, 11, 12, 14, 15, 18, 19, 21, 22, 25, 26, 28, 29, 36, 37, 40, 41, 43, 44, 47, 48, 50, 51, 55, 56, 58 THRU 62. SEE THE FRAMING PLAN ON SHEET NO. 7 FOR ADDITIONAL INFORMATION.

NOTE: NO RETROFITTING SHALL BE PERFORMED ON THE TWO FLOORBEAMS ADJACENT TO THE HINGES (FB # 33 & 34 ON BOTH BRIDGES)

ALL AREAS TO BE RETROFITTED, THE CONTRACTOR SHALL MAINTAIN ACCESS FOR INSPECTION PERSONNEL THROUGHOUT THE DURATION OF THE PROJECT. THIS SHALL INCLUDE ACCESS TO BOTH INTERIOR AND EXTERIOR FACES OF THE GIRDERS. THIS ACCESS SHALL MEET ALL APPLICABLE SAFETY REQUIREMENTS.

METHOD OF PAYMENT WILL BE AS DESCRIBED ON SHEET NO. 12.

ITEM SPECIAL - STRUCTURAL STEEL RETROFIT (BEARING STIFFENER END REMOVALS, GRIND & NDT)

THE CONTRACTOR IS DIRECTED TO SHEET NO. 13 FOR SEQUENCE OF OPERATIONS AND DETAILED DRAWINGS. FOR CONVENIENCE, THE BEARING LOCATIONS TO BE RETROFITTED SHALL BE RESTATED HERE: SUM-271-0802 L = FB # 1, 6, 13, 20, 27, 35, 42, 50, 58 AND 64. SEE FRAMING PLAN ON SHEET NO. 6 FOR ADDITIONAL INFORMATION. ALSO, SUM-271-0802 R = FB # 1, 6, 13, 20, 27, 35, 42, 49, 57 AND 63. SEE THE FRAMING PLAN ON SHEET NO. 7 FOR ADDITIONAL INFORMATION.

ALL AREAS TO BE RETROFITTED, THE CONTRACTOR SHALL MAINTAIN ACCESS FOR INSPECTION PERSONNEL THROUGHOUT THE DURATION OF THE PROJECT. THIS SHALL INCLUDE ACCESS TO BOTH INTERIOR AND EXTERIOR FACES OF THE GIRDERS. THIS ACCESS SHALL MEET ALL APPLICABLE SAFETY REQUIREMENTS.

METHOD OF PAYMENT WILL BE AS DESCRIBED ON SHEET NO. 13.

MICROFILM
AUG 20 1986

ITEM SPECIAL - DRILLING STRUCTURAL STEEL (1" DIAMETER HOLE, GRINDING AND DYE PENETRANT)

SEE SHEET NO. 12 FOR NOTES AND DETAILED DRAWINGS. THE ESTIMATED QUANTITIES OF 180 HOLES FOR EACH BRIDGE WERE BASED ON 2 HOLES PER RETROFIT LOCATION. A PORTION OF THIS QUANTITY IS SUBJECT TO NON-PERFORMANCE WITHOUT PENALTY TO THE STATE OF OHIO.

METHOD OF PAYMENT WILL BE AS DESCRIBED ON SHEET NO. 12.

ITEM SPECIAL - LATERAL BRACING MODIFICATION, AS PER PLAN

THE PLAN INTENT OF THIS ITEM IS TO DAMPEN THE EXCESSIVE VIBRATION OF THE LATERAL BRACING (ST 7 WF 17 OR ST 7 WF 19). THIS DAMPENING SHALL OCCUR AT EVERY LATERAL BRACING SPLICE.

SEE SHEET NO. 14 FOR DETAILED DRAWINGS REGARDING THIS ITEM. THE FRAMING PLANS ON SHEET NO. 6 & 7 SHOW THE LOCATIONS OF THE LATERAL BRACING MODIFICATIONS.

MATERIAL

THE 5/8" DIAMETER RODS SHALL BE ASTM: A 36 (AISC CERTIFICATION REQUIRED). THESE RODS SHALL BE 5'-0" LONG AND THREADED 1'-0" ON BOTH ENDS. ALL RODS, NUTS AND LOCK WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH CMS 711.02.

INSTALLATION

THE CONTRACTOR SHALL DRILL 3/4" DIAMETER HOLES IN THE C 15 x 33.9 AND IN THE LATERAL BRACING (ST 7 WF 17 OR ST 7 WF 19) AS SHOWN IN THE PLANS. THE CONTRACTOR SHALL USE A PLUMB LINE TO MAINTAIN THE VERTICALITY (± 2") OF THE ROD PRIOR TO THE DRILLING OPERATION. THE BOLTS SHALL BE TIGHTENED SO THAT THERE IS NO PLAY OR SLOP IN THE GALVANIZED ROD.

METHOD OF PAYMENT

THIS ITEM SHALL INCLUDE ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THIS ITEM. PAYMENT WILL BE MADE AT THE CONTRACT BID PRICE UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	EACH	LATERAL BRACING MODIFICATION, AS PER PLAN

GENERAL NOTES

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

4/15

SUM-271-0802

PLAN NO. BR-43-85

ITEM 514 - FIELD PAINTING OF EXISTING STRUCTURAL STEEL - SYSTEM A

BLAST CLEAN AND PAINT ALL AREAS WHERE ANY STRUCTURAL STEEL HAS BEEN RETROFITTED. THIS SHALL INCLUDE THE STIFFENERS AND PLATES WHICH HAVE BEEN TRIMMED, ALL AREAS WHICH HAVE BEEN GROUND AND NON-DESTRUCTIVELY TESTED. ANY HOLES WHICH HAVE BEEN DRILLED IN THE WEB PLATE TO STOP THE CRACKS, SHALL ALSO BE BLASTED AND PAINTED. ALL PAINTING OPERATIONS SHALL BE IN ACCORDANCE WITH ITEM 514 OF THE CMS.

THE 3/4" DIAMETER HOLES DRILLED IN THE LATERAL BRACING (ST 7 WF 17 OR ST 7 WF 19) AND C 15 x 33.9 DURING THE LATERAL BRACING MODIFICATION SHALL ALSO BE BLASTED AND PAINTED PRIOR TO THE INSTALLATION OF THE GALVANIZED ROD. ALL 7/8" DIAMETER HOLES DRILLED IN THE STRUCTURAL TEES DURING THE CATWALK ERECTION PROCESS, SHALL BE BLASTED AND PAINTED PRIOR TO BOLTING OF THE CATWALK SECTIONS.

IN ADDITION TO THE ABOVE NAMED LOCATIONS, THE CONTRACTOR SHALL BLAST AND PAINT 20 FEET EACH WAY OF BOTH EXPANSION JOINTS AND HINGES, PLUS ANY AREA WHERE SURFACE RUST IS SHOWN AS DIRECTED BY THE PROJECT ENGINEER.

MATERIALS SHALL BE AS FOLLOWS: PRIME PAINT FOR SPOT COATS AND COMPLETE COATS 708.17; FINISH PAINT 708.18. THE COLOR OF PAINT SHALL MATCH THE EXISTING PAINT OF THE STRUCTURES.

THE CONTRACTOR SHALL PAINT ANY GALVANIZED MATERIAL, WHICH HAS BEEN CUT OR DAMAGED WHERE UNPROTECTED NEW STEEL IS EXPOSED, WITH ZINC RICH PAINT CONFORMING TO 708.17 OF THE CMS. THE COLOR OF THIS PAINT SHALL MATCH THE GALVANIZED MATERIAL.

THE COST OF ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO ACCOMPLISH THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 514 - FIELD PAINTING OF EXISTING STEEL - SYSTEM A.

ITEM 614 - MAINTAINING TRAFFIC

THE CONTRACTOR SHALL FURNISH, INSTALL AND REMOVE ALL WARNING AND REGULATORY SIGNS, LIGHTS, BARRICADES, PAVEMENT MARKING, AND ANY OTHER DEVICE NECESSARY TO MAINTAIN TRAFFIC AS INDICATED IN THE OHIO MANUAL OF TRAFFIC CONTROL FOR CONSTRUCTION AND MAINTAINENCE OPERATIONS, CURRENT EDITION, LATEST REVISIONS. PAYMENT SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614, MAINTAINING TRAFFIC.

THE FLASHING ARROW WILL BE USED AT ALL TIMES AS PER STANDARD DRAWING TC-35.10 DATED 10/5/77, PAGE C-20. PAYMENT FOR THE FLASHING ARROW SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614, MAINTAINING TRAFFIC.

THE CONTRACTOR IS REFERRED TO SHEET NO. 15 FOR LANE CLOSING DETAILS. THE CONTRACTOR SHALL COOPERATE WITH THE CONTRACTOR(S) OF OTHER PROJECTS IN ACCORDANCE WITH 105.07 OF THE CMS.

ITEM 619 - FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 400 SQ. FT. OF FLOOR SPACE. PAYMENT SHALL BE MADE AT THE LUMP SUM BID PRICE FOR ITEM 619, FIELD OFFICE.

ITEM 624 - MOBILIZATION

THE CONTRACTOR SHALL, ON ANY BID WHICH EXCEEDS $50,000.00, INCLUDE AN AMOUNT TO COVER ANY APPLICABLE EXPENDITURES REFERRED TO UNDER ITEM 624 OF THE 1985 CMS. PAYMENT SHALL BE THE LUMP SUM BID PRICE FOR ITEM 624, MOBILIZATION.

STAGING AND STORING AREAS

FOR SAFETY PURPOSES, NO MATERIAL OR EQUIPMENT SHALL BE STORED OR PARKED IN THE MEDIAN OR WITHIN FIFTY (50) FEET OF THE OUTSIDE EDGE OF THE PAVEMENT UNLESS BEHIND GUARDRAIL.

NO PRIVATE VEHICLES BELONGING TO THE CONTRACTOR'S EMPLOYEES AND TO O.D.O.T. PERSONNEL PERMANENTLY ASSIGNED TO THE PROJECT SHALL BE PARKED WITHIN THE LIMITS OF THE HIGHWAY PROJECT. ALL PARKING WILL BE DONE AT THE APPROVED CONTRACTOR'S STAGING AREAS.

ITEM SPECIAL - HINGE STIFFENER MODIFICATION, AS PER PLAN

THE CONTRACTOR SHALL PERFORM THIS ITEM ONLY AT THE FOLLOWING LOCATIONS: SUM - 271 - 0802 L = FB # 33, 34 (SEE SHEET NO. 6); SUM - 271 - 0802 R = FB # 33, 34 (SEE SHEET NO. 7).

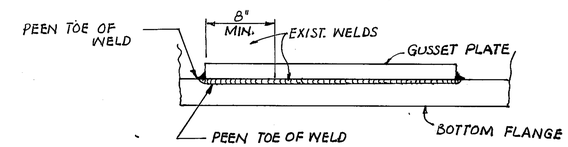
THE FOLLOWING WORK SHALL BE PERFORMED: TORCH AND GRIND TO A SMOOTH RADIUS, THE EXISTING SLOTS IN THE 1/2" PLATE OR THE EXISTING SLOTS IN THE FLOORBEAM WHICH SURROUND THE 28" x 1 1/4" PLATES. SEE THE TRANSVERSE SECTION ON SHEET NO. 8 FOR DETAILS.

THIS ITEM SHALL INCLUDE ALL MATERIAL, EQUIPMENT AND LABOR NECESSARY TO COMPLETE THIS ITEM. PAYMENT WILL BE MADE AT THE CONTRACT BID PRICE UNDER:

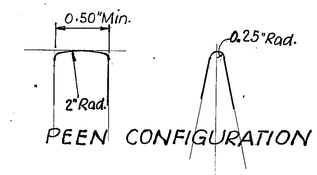
ITEM	UNIT	DESCRIPTION
SPECIAL	EACH	HINGE STIFFENER MODIFICATION, AS PER PLAN

ITEM SPECIAL - PEENING LATERAL GUSSET TO FLANGE WELDS

THE WELDS WHICH CONNECT THE LATERAL GUSSETS TO THE LOWER FLANGES SHALL BE PEENED AT THE ROOT OF THE WELD AT THE FLANGE FOR A MINIMUM LONGITUDINAL DISTANCE OF 8", AROUND THE CORNER, AND ALL OF ANY TRANSVERSE WELD (BOTH ENDS OF EACH PLATE) ON ALL PLATES BETWEEN SPLICES, ABUTMENTS OR HINGES (ANY AREA SUBJECT TO TENSILE STRESSES). PEENING SHALL BE DONE WITH PNEUMATIC TOOLS SO THAT A SMOOTH LINE IS PRODUCED AT THE TOE OF THE WELD THE DEFORMATION BEING APPROXIMATELY 0.03" DEEP. PAYMENT WILL BE MADE AT THE BID PRICE PER GUSSET AND SHALL INCLUDE CLEANING THE WELD PRIOR TO PEENING WITH A PENCIL SAND BLASTER AND ALL LABOR, EQUIPMENT AND MATERIAL TO ACCOMPLISH THE PROPOSED WORK



ELEVATION OF FLANGE



PEEN CONFIGURATION

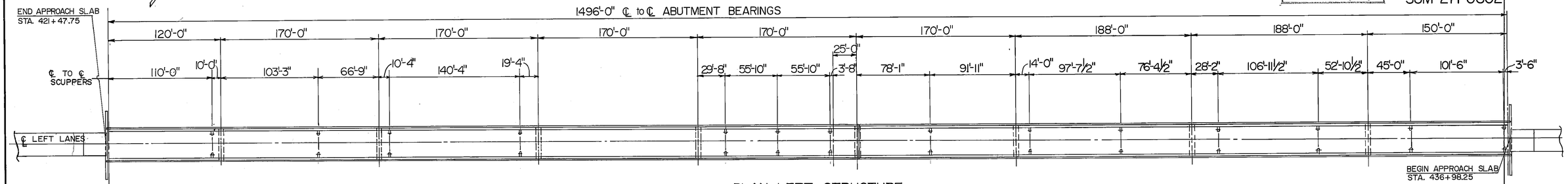
MICROFILM
AUG 20 1986

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

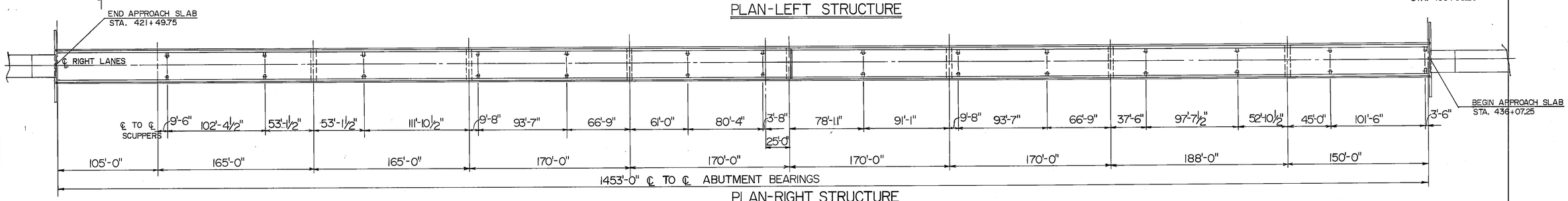
5/15

PLAN NO. BR-43-85

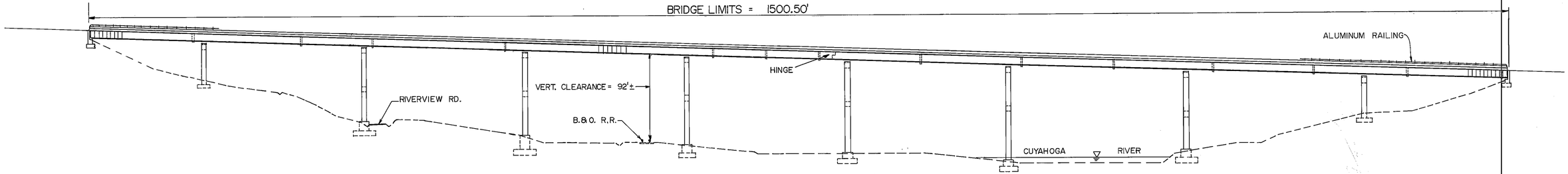
SUM-271-0802



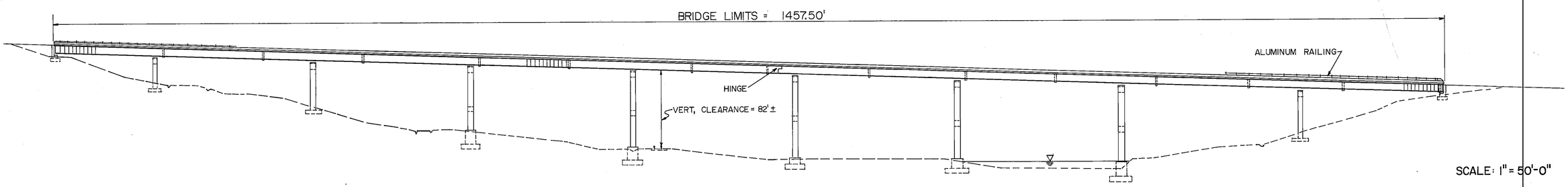
PLAN-LEFT STRUCTURE



PLAN-RIGHT STRUCTURE



ELEVATION OF LEFT STRUCTURE



ELEVATION OF RIGHT STRUCTURE

SCALE: 1" = 50'-0"

MICROFILM
AUG 20 1996

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

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PLAN AND ELEVATION

BRIDGE SUM-271-0802 L & R

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

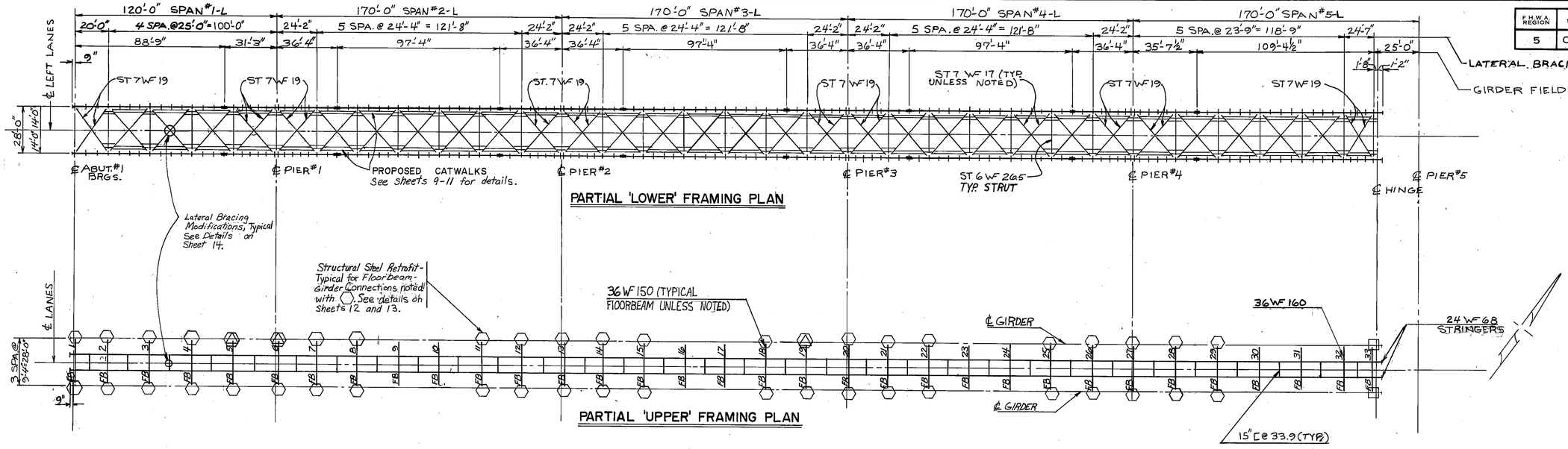
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
	NCM					

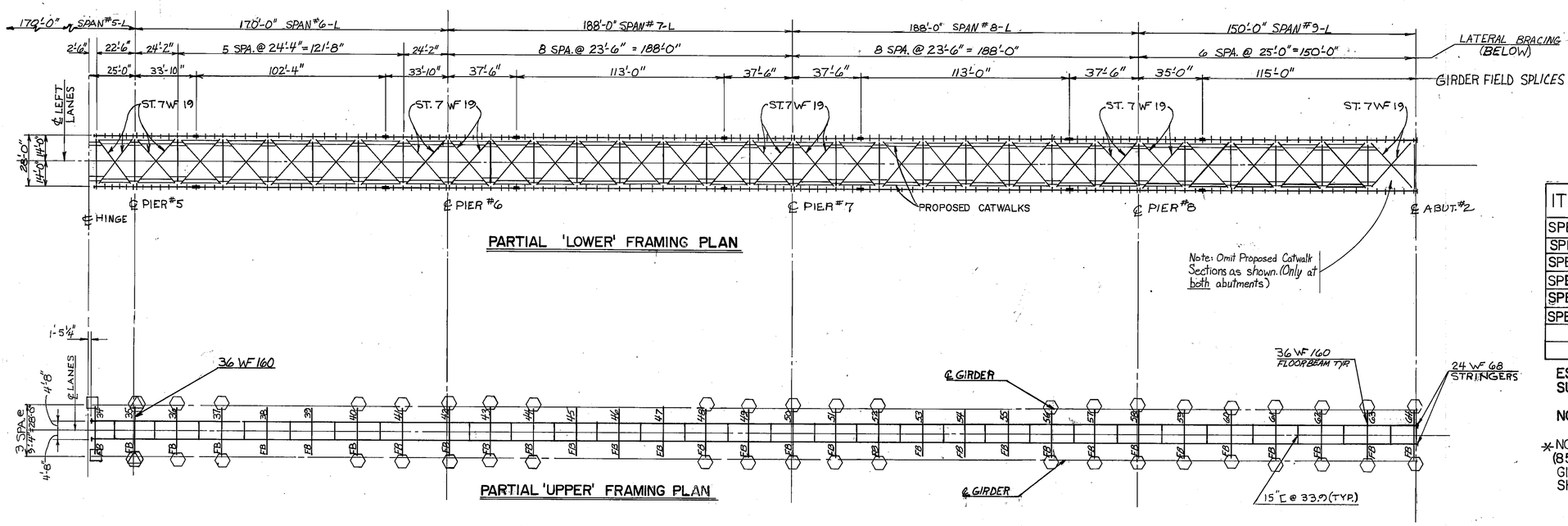
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

6/15

SUM-271-0802

PLAN NO. BR-43-85





KEY

- □ HINGE STIFFENER MODIFICATION LOCATIONS
- ⬡ STRUCTURAL STEEL RETROFIT LOCATIONS
- ○ LATERAL BRACING MODIFICATION LOCATIONS
- △ KNOWN LOCATIONS OF EXISTING CRACKS

ESTIMATED QUANTITIES

ITEM	QUANTITY	UNIT	DESCRIPTION
SPECIAL	3000	L.F.	CATWALK, AS PER PLAN
SPECIAL	70	EACH	S.S.R. @ 'INTERMEDIATE' FB
SPECIAL	20	EACH	S.S.R. @ 'BEARING' FB
SPECIAL	180 *	EACH	DRILLING STRUCTURAL STEEL
SPECIAL	62	EACH	LATERAL BRACING MODIFICATION
SPECIAL	4	EACH	HINGE STIFFENER MODIFICATION

ESTIMATED QUANTITIES ARE CARRIED TO GENERAL SUMMARY ON SHEET 2.

NOTE: S.S.R. = STRUCTURAL STEEL RETROFIT

* NOTE: INCLUDES CONTINGENCY QUANTITY OF 170 HOLES (85 LOCATIONS) TO BE USED AS DIRECTED BY THE ENGINEER TO REPAIR ALL CRACKS NOT SHOWN ON THIS SHEET.

NO SCALE

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

2/11

FRAMING PLAN

BRIDGE SUM-271-0802 L

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

MICROFILM
AUG 20 1986

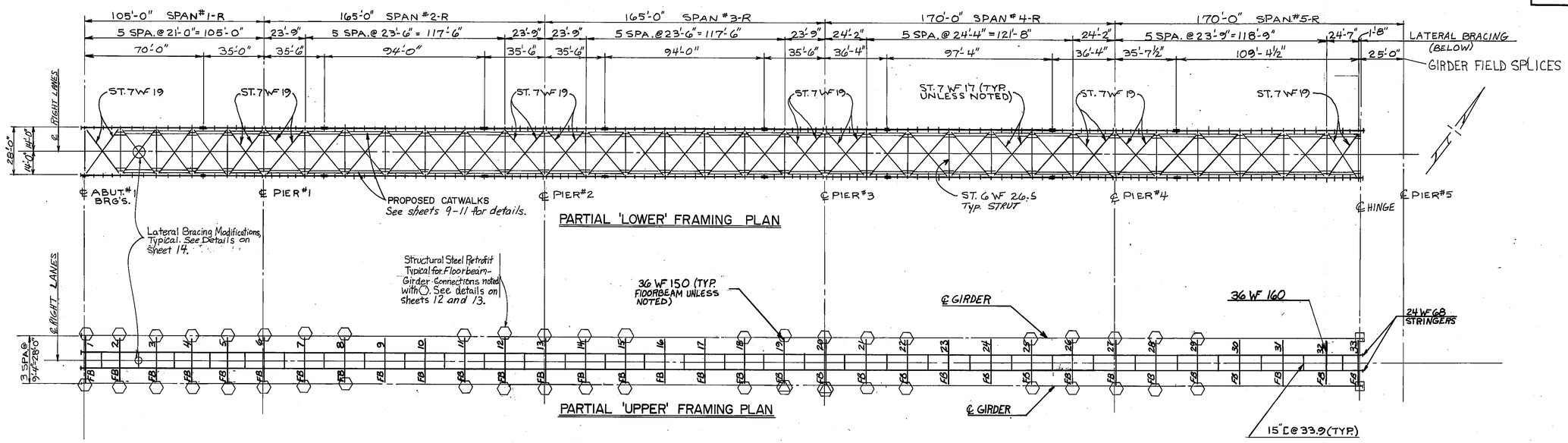
3370

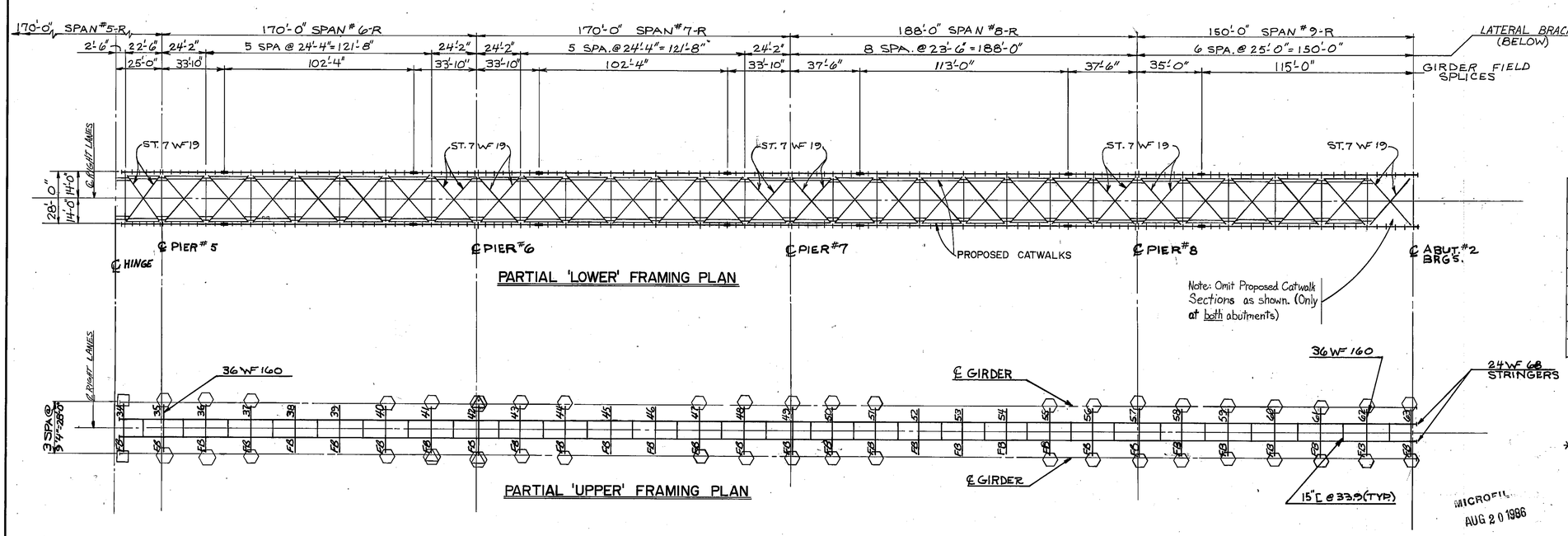
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

7/15

SUM-271-0802

PLAN NO. BR-43-85





KEY

- ☐ HINGE STIFFENER MODIFICATION LOCATIONS
- ⬡ STRUCTURAL STEEL RETROFIT LOCATIONS
- ○ LATERAL BRACING MODIFICATION LOCATIONS
- △ KNOWN LOCATIONS OF EXISTING CRACKS

ESTIMATED QUANTITIES

ITEM	QUANTITY	UNIT	DESCRIPTION
SPECIAL	2910	L.F.	CATWALK, AS PER PLAN
SPECIAL	70	EACH	S. S. R. @ 'INTERMEDIATE' FB
SPECIAL	20	EACH	S. S. R. @ 'BEARING' FB
SPECIAL	180 *	EACH	DRILLING STRUCTURAL STEEL
SPECIAL	61	EACH	LATERAL BRACING MODIFICATION
SPECIAL	4	EACH	HINGE STIFFENER MODIFICATION

ESTIMATED QUANTITIES ARE CARRIED TO GENERAL SUMMARY ON SHEET 2.

NOTE: S. S. R. = STRUCTURAL STEEL RETROFIT

* NOTE: INCLUDES CONTINGENCY QUANTITY OF 170 HOLES (85 LOCATIONS) TO BE USED AS DIRECTED BY THE ENGINEER TO REPAIR ALL CRACKS NOT SHOWN ON THIS SHEET.

MICROFILM AUG 20 1986

NO SCALE

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

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FRAMING PLAN

BRIDGE SUM-271-0802 R

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

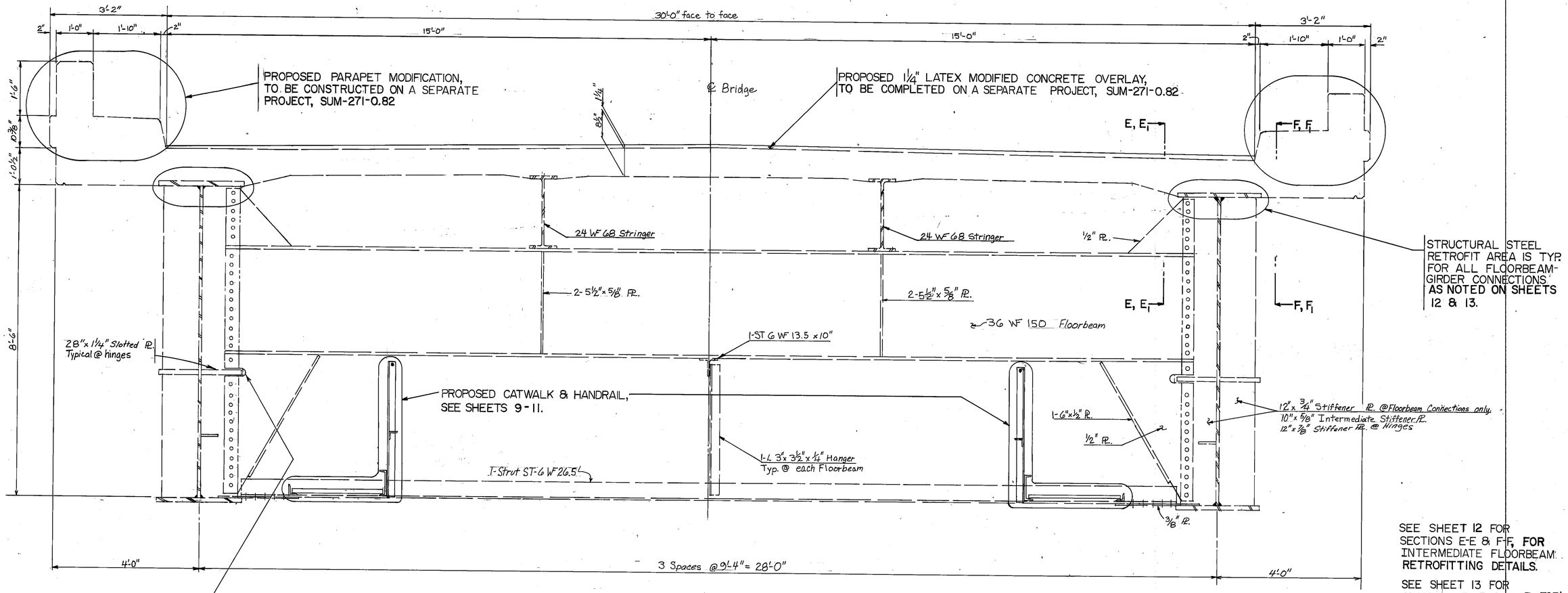
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

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

8/15

SUM-271-0802

PLAN NO. BR-43-85



STRUCTURAL STEEL RETROFIT AREA IS TYP. FOR ALL FLOORBEAM-GIRDER CONNECTIONS AS NOTED ON SHEETS 12 & 13.

TORCH AND GRIND TO SMOOTH RADIUS, TYPICAL AT HINGES ONLY (8 LOCATIONS TOTAL). TO BE PAID UNDER ITEM SPECIAL-HINGE STIFFENER MODIFICATION, AS PER PLAN.

TYPICAL TRANSVERSE SECTION AT FLOORBEAM LOCATIONS

SEE SHEET 12 FOR SECTIONS E-E & F-F, FOR INTERMEDIATE FLOORBEAM RETROFITTING DETAILS.

SEE SHEET 13 FOR SECTIONS E_1-E_1 & F_1-F_1 FOR BEARING FLOORBEAM RETROFITTING DETAILS.

MICROFILM
AUG 20 1986

SCALE: 3/4" = 1'-0"

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

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TRANSVERSE SECTION

BRIDGE SUM-271-0802 L & R

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

3377D

F.H.W.A. REGION	STATE	PROJECT	
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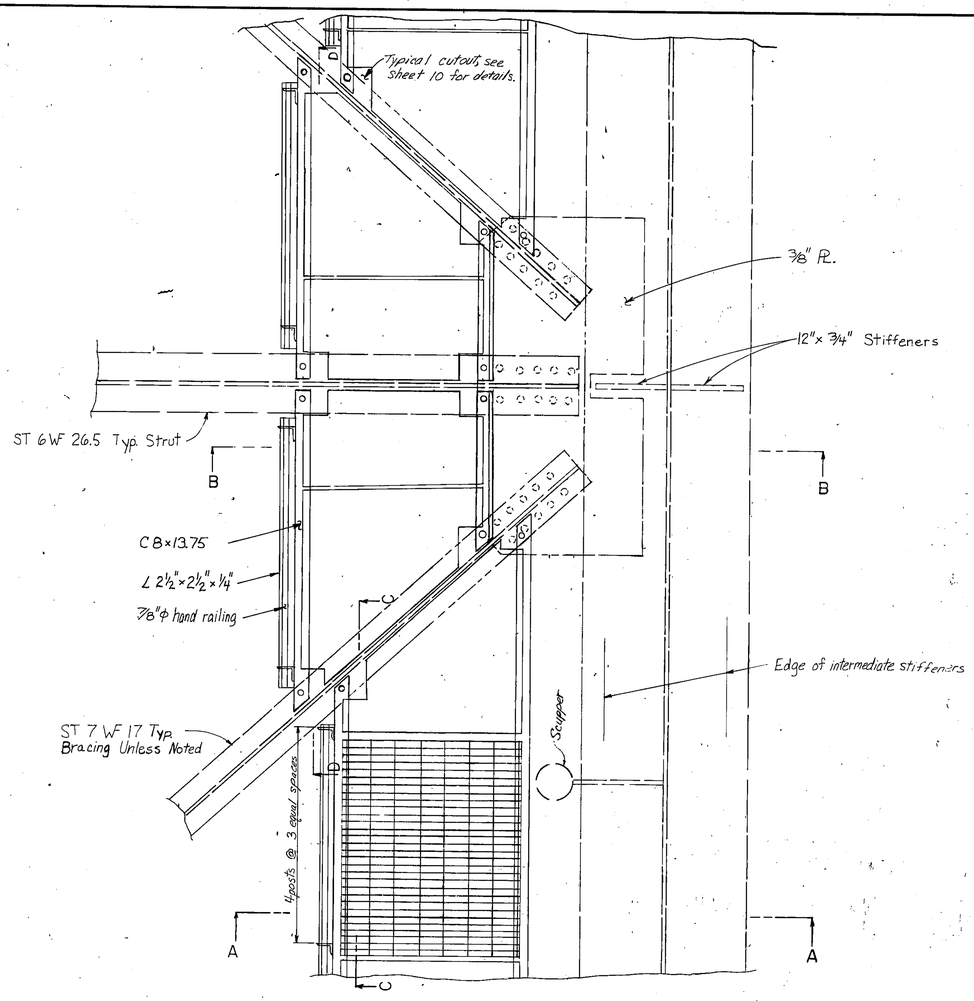
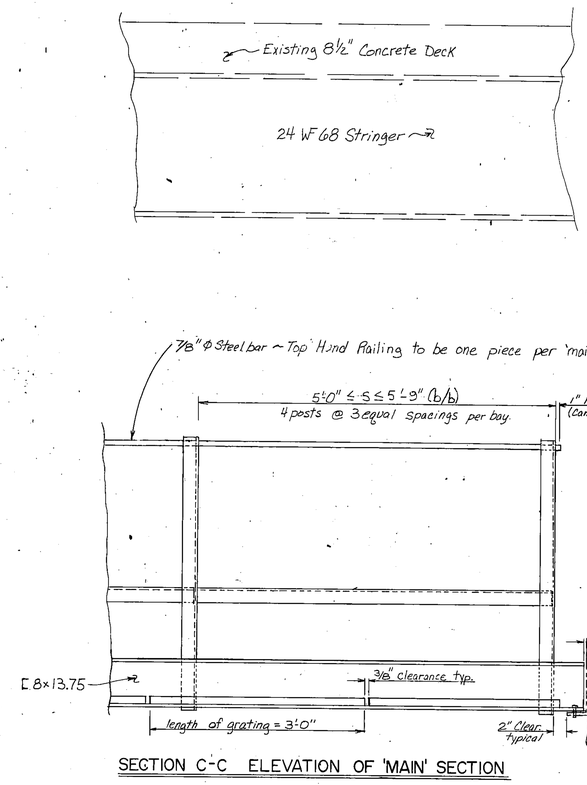
9/15

SUM-271-0802

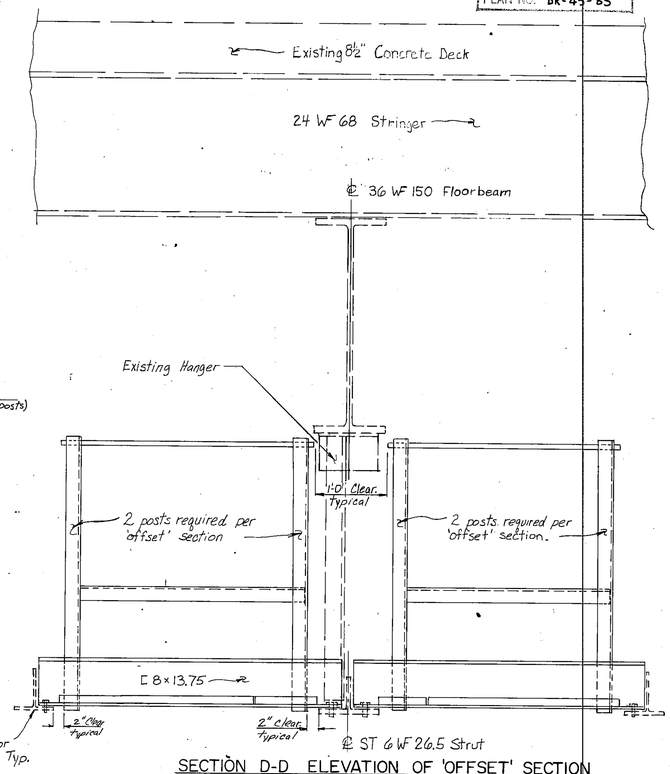
PLAN NO. BR-43-85



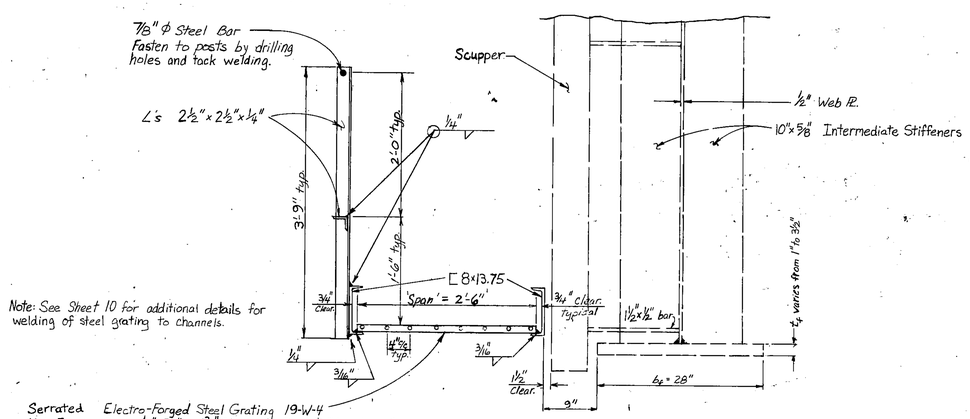
TYPICAL PLAN VIEW-PROPOSED CATWALK



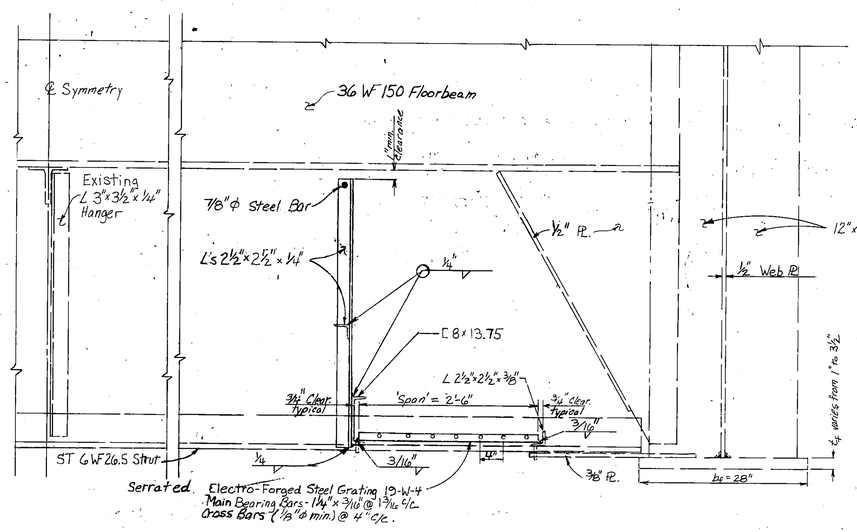
SECTION C-C ELEVATION OF 'MAIN' SECTION



SECTION D-D ELEVATION OF 'OFFSET' SECTION



SECTION A-A



SECTION B-B TRANSVERSE SECTION OF 'OFFSET'

MICROFILM
AUG 20 1986

SCALE: 1"=1'-0"

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

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CATWALK DETAILS

BRIDGE SUM-271-0802 L&R

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

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

9A / 15

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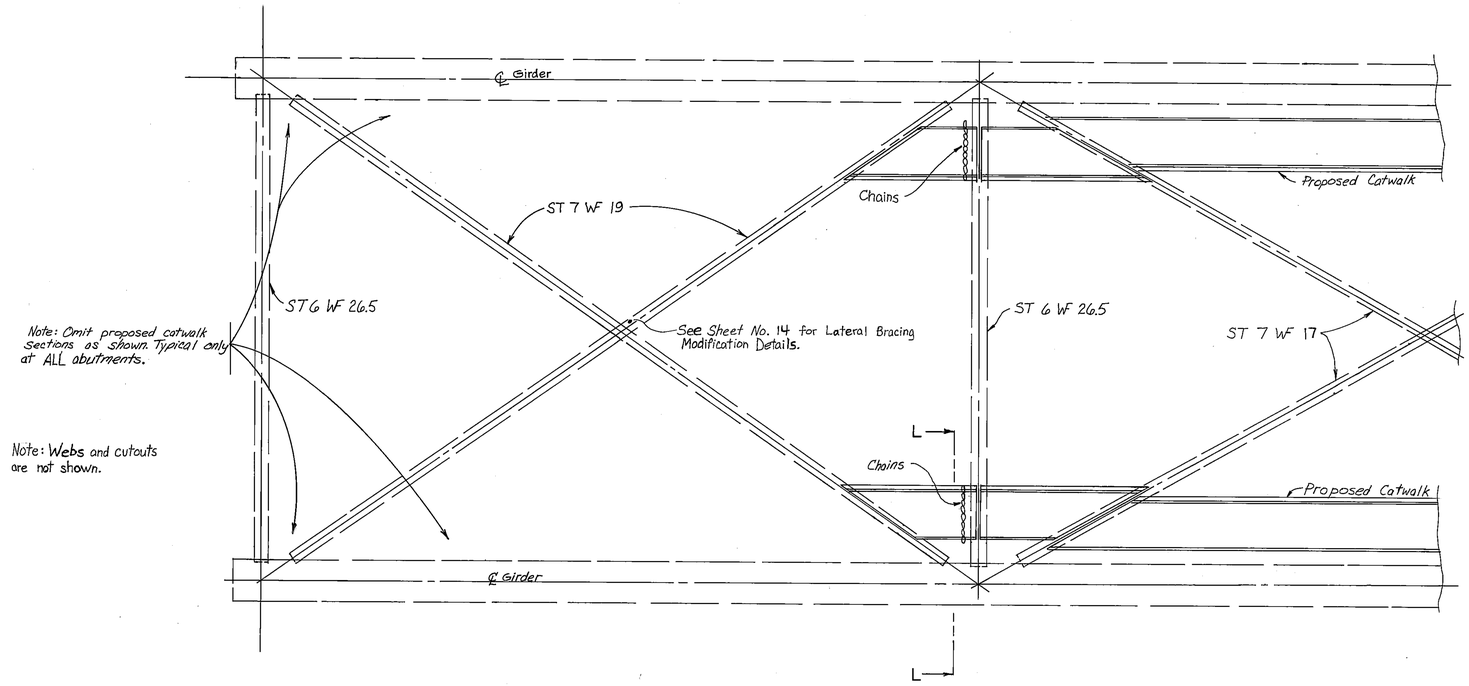
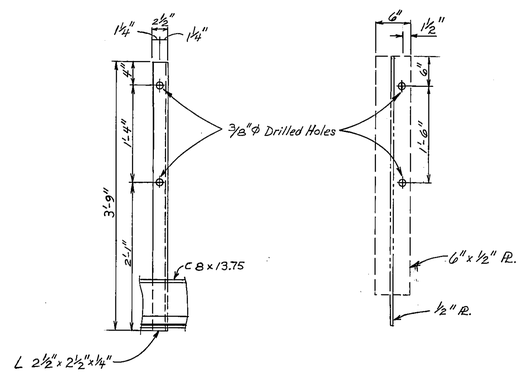
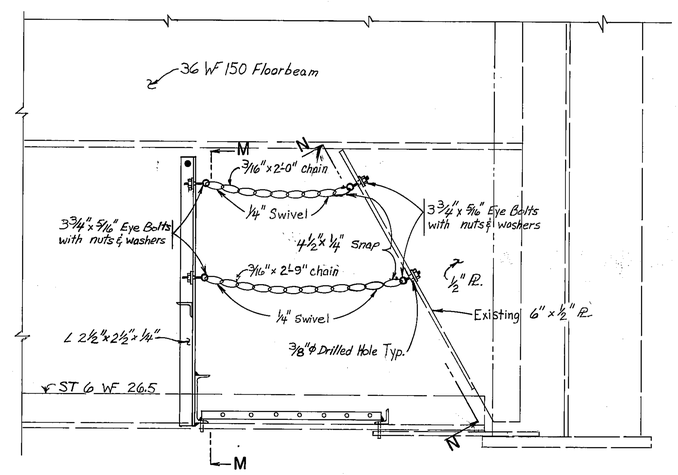
PLAN NO. BR-43-85



PROPOSED PLAN AT ABUTMENT



M-M N-N



SECTION L-L TYPICAL CHAIN DETAILS

Chains required on ALL four (4) corners of proposed catwalk, typical BOTH bridges. This work shall be included in ITEM SPECIAL - CATWALK, AS PER PLAN. See sheet 9 for details not shown.

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DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

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CATWALK DETAILS

BRIDGE SUM-271-0802 L & R

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

33770

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

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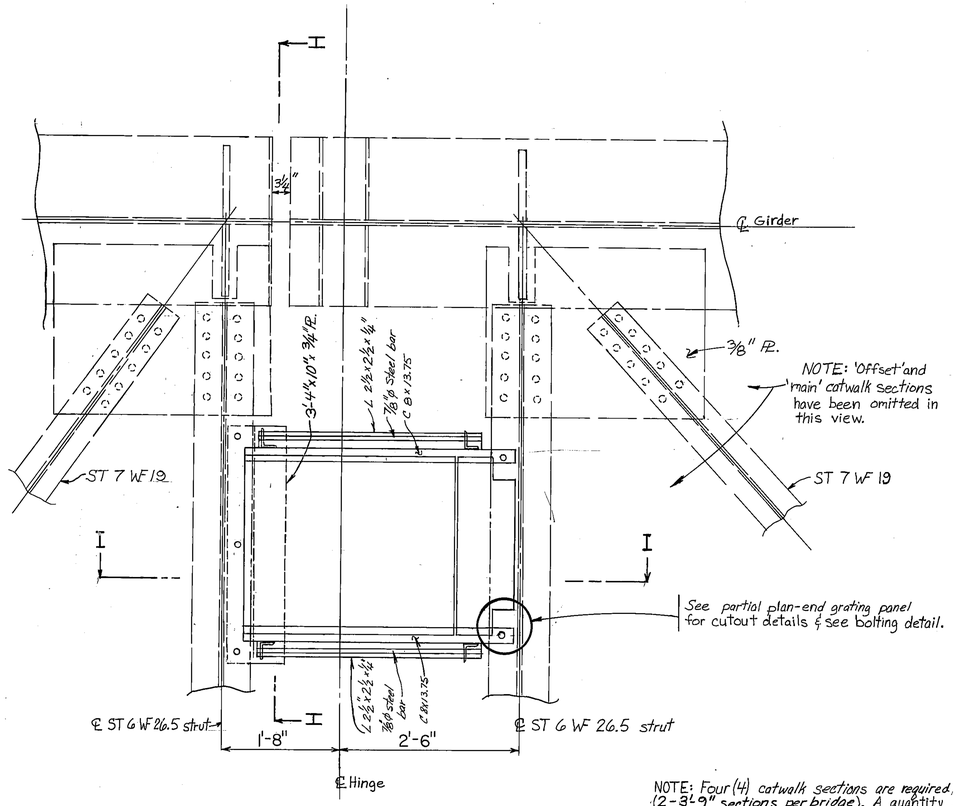
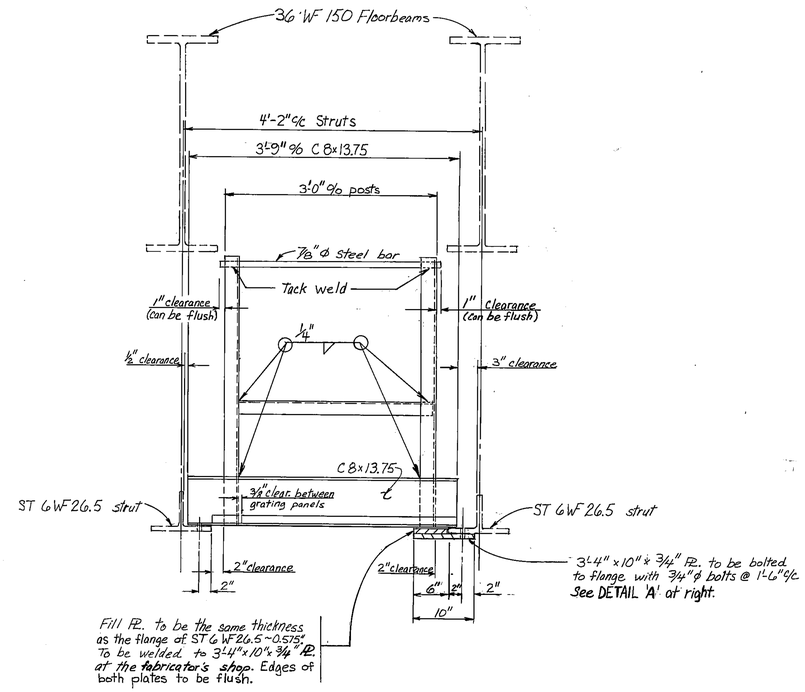
PLAN NO. BR-43-85

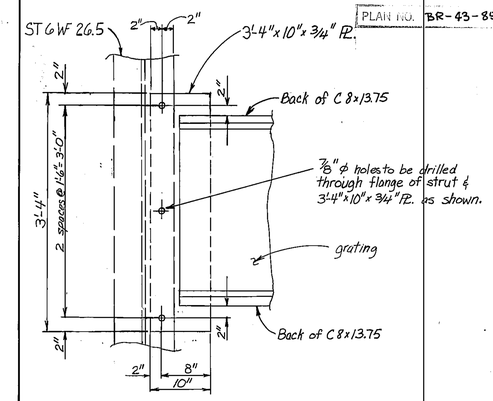


PARTIAL PLAN-PROPOSED CATWALK AT HINGE

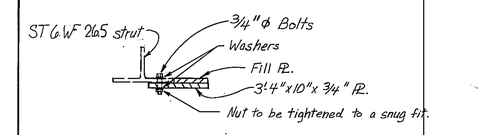
NOTE: Four (4) catwalk sections are required. (2-3'-9" sections per bridge). A quantity of 8 L.F of catwalk has been carried to the left framing plan on sheet 6 and to the right framing plan on sheet 7.



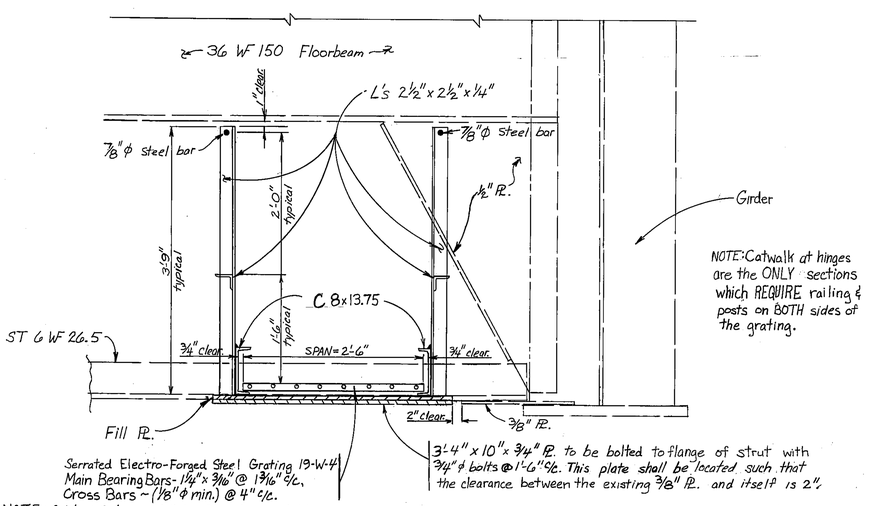
SECTION I-I ELEVATION OF CATWALK AT HINGE



DETAIL 'A'



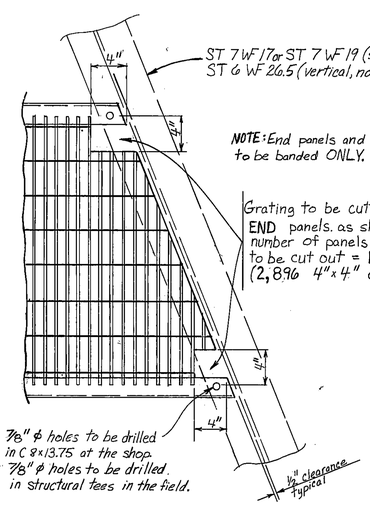
TYPICAL STRUT-PLATE CONNECTION AT HINGE



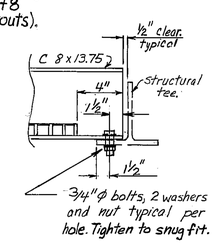
NOTE: Catwalk at hinges are the ONLY sections which REQUIRE railing & posts on BOTH sides of the grating.

NOTE: Grating to be welded to channels as shown at far right.

SECTION H-H

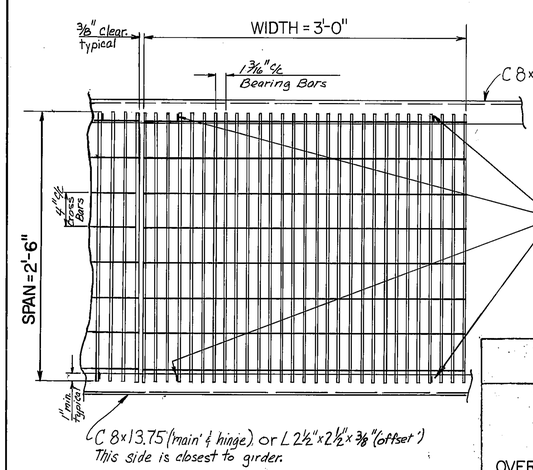


PARTIAL PLAN-END GRATING PANEL



BOLTING DETAIL

Railing & posts are not shown.



NOTE: For grating panels less than 3'-0" in width, the panels must be welded to the supports at ALL corners.

TYPICAL GRATING PANEL

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DISTRICT 04 BRIDGE DEPARTMENT

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CATWALK DETAILS

BRIDGE SUM-271-0802 L&R

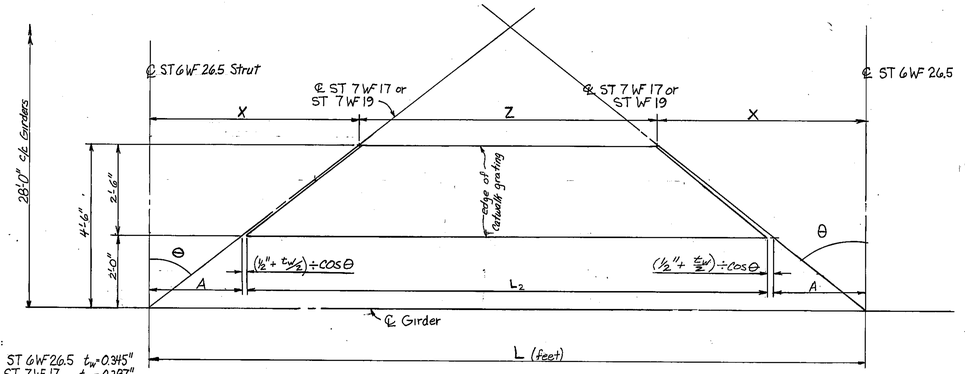
OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

33770

SUM-271-0802

PLAN NO. BR-43-85



Given:

ST 6WF26.5 $t_w = 0.345''$
ST 7WF17 $t_w = 0.287''$
ST 7WF19 $t_w = 0.313''$

Majority of lateral bracing is ST 7WF17

L_1 Calculations:

$\theta = \tan^{-1}\left(\frac{L}{28'}\right)$

$L = 2X + Z$

$\tan\theta = \frac{L}{28'}$

$\tan\theta = \frac{X}{4.50'}$

solving for X ∴ $X = 4.50' \cdot \tan\theta$

substituting ∴ $X = \frac{4.50' L}{28'}$

$X = 0.161 \cdot L$

substituting ∴ $L = 2(0.161 \cdot L) + L_1 + 0.107'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right]$

$L = 0.321 \cdot L + L_1 + 0.107'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right]$

solving for L_1 ∴ $L_1 = 0.679 \cdot L - 0.107'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right]$

$Z = L_1 + \left[2\left(\underbrace{\tfrac{1}{2}''}_{clear}\right) + \underbrace{0.287''}_{t_w}\right]/\cos\theta$

$Z = L_1 + 1.287''/\cos\theta$

$Z = L_1 + 0.107'/\cos\theta$

$Z = L_1 + 0.107'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right]$

L_2 Calculations:

$L = L_2 + 2A + \left[2\left(\underbrace{\tfrac{1}{2}''}_{clear}\right) + \underbrace{0.287''}_{t_w}\right]/\cos\theta$

$L = L_2 + 2A + 1.287''/\cos\theta = L_2 + 2A + 0.107'/\cos\theta$

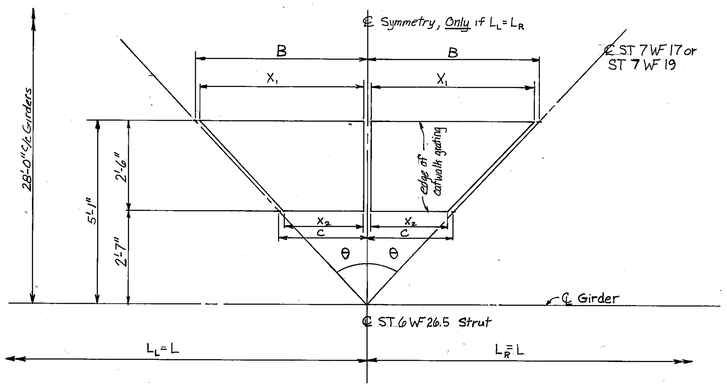
$\tan\theta = \frac{A}{2.00'}$ ∴ $A = 2.00' \cdot \tan\theta$

substituting ∴ $A = 2.00\left(\frac{L}{28'}\right) = 0.071 \cdot L$

substituting ∴ $L = L_2 + 2(0.071 \cdot L) + 0.107'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right]$

$L = L_2 + 0.143 \cdot L + 0.107'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right]$

solving for L_2 ∴ $L_2 = 0.857 \cdot L - 0.107'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right]$



X_1 Calculations:

$B = X_1 + \left(\underbrace{\frac{0.345''}{2}}_{t_w\text{-strut}} + \underbrace{\frac{1}{2}''}_{clear} + \underbrace{\left[\frac{1}{2}'' + \frac{0.287''}{2}\right]}_{t_w\text{-bracing}}\right)/\cos\theta$

$B = X_1 + 0.673'' + 0.644''/\cos\theta$

$B = X_1 + 0.056' + 0.054'/\cos\theta$

$\tan\theta = \frac{L}{28'}$ $\theta = \tan^{-1}\left(\frac{L}{28'}\right)$

$\tan\theta = \frac{B}{5.083'}$

solving for B ∴ $B = 5.083' \cdot \tan\theta$

substituting ∴ $X_1 + 0.056' + 0.054'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right] = \frac{5.083' \cdot L}{28'}$

solving for X_1 ∴ $X_1 = 0.1815 \cdot L - 0.056' - 0.054'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right]$

X_2 Calculations:

$C = X_2 + \frac{0.345''}{2} + \frac{1}{2}'' + \left[\frac{1}{2}'' + \frac{0.287''}{2}\right]/\cos\theta$

$C = X_2 + 0.673'' + 0.644''/\cos\theta$

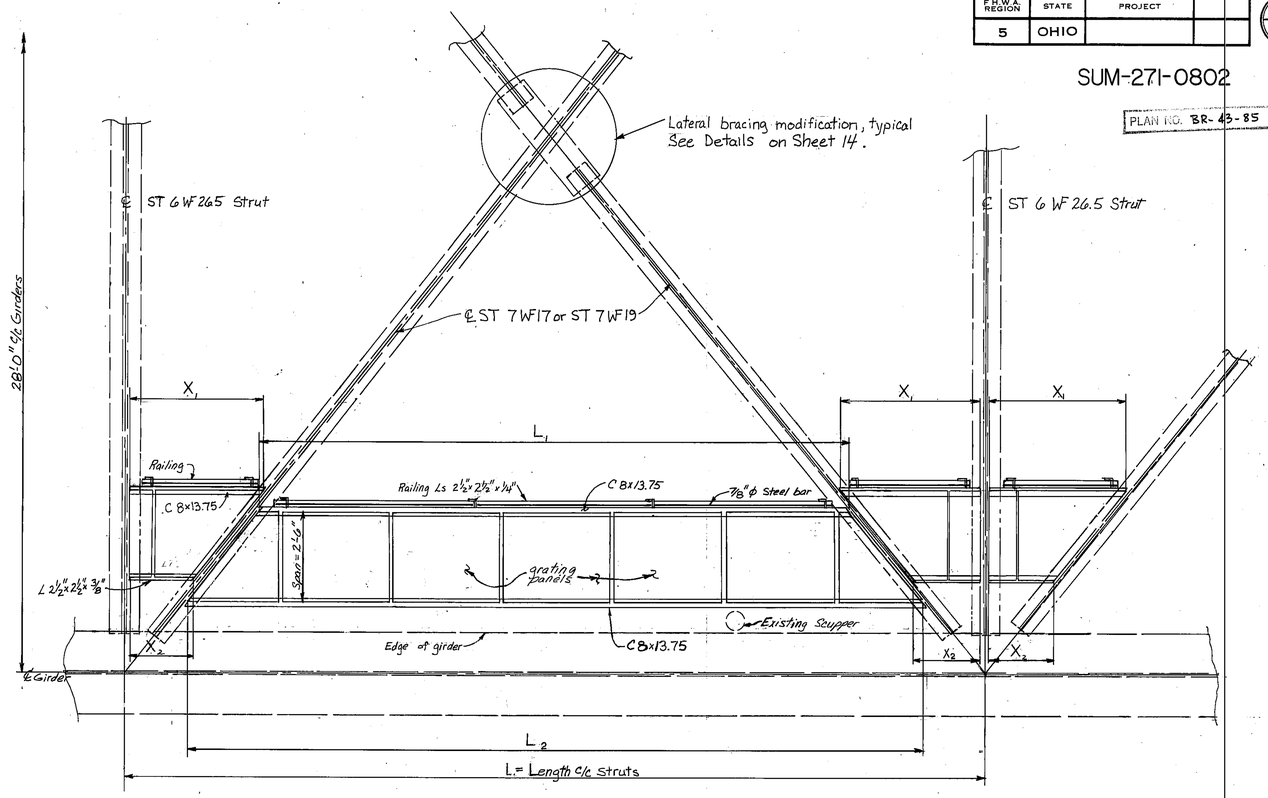
$C = X_2 + 0.056' + 0.054'/\cos\theta$

$\tan\theta = \frac{C}{2.583'}$

solving for C ∴ $C = 2.583' \cdot \tan\theta$

substituting ∴ $X_2 + 0.056' + 0.054'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right] = 2.583 \cdot \frac{L}{28'}$

solving for X_2 ∴ $X_2 = 0.0923 \cdot L - 0.056' - 0.054'/\cos\left[\tan^{-1}\left(\frac{L}{28'}\right)\right]$



SUM-271-0802 L							SUM-271-0802 R						
L = LENGTH	MAIN CATWALK SECTIONS			OFFSET CATWALK SECTION			L = LENGTH	MAIN CATWALK SECTIONS			OFFSET CATWALK SECTION		
c/c STRUTS **	NUMBER REQUIRED	L_1	L_2	NUMBER REQUIRED	X_1	X_2	c/c STRUTS **	NUMBER REQUIRED	L_1	L_2	NUMBER REQUIRED	X_1	X_2
20'-0"*				2	3'-6⅛"	1'-8⅝"	21'-0"*				2	3'-8¼"	1'-9¾"
22'-6"	2	15'-1⅝"	19'-1¾"	4	3'-11½"	1'-11⅜"	21'-0"	8	14'-1½"	17'-10⅜"	16	3'-8¼"	1'-9¾"
23'-6"	32	15'-9¾"	20'-0"	64	4'-1⅝"	2'-0½"	22'-6"	2	15'-1⅝"	19'-1¾"	4	3'-11½"	1'-11⅜"
23'-9"	10	15'-11⅞"	20'-2½"	20	4'-2¼"	2'-0¾"	23'-6"	36	15'-9¾"	20'-0"	72	4'-1⅝"	2'-0½"
24'-2"	16	16'-3¼"	20'-6⅞"	32	4'-3⅛"	2'-1¼"	23'-9"	18	15'-11⅞"	20'-2½"	36	4'-2¼"	2'-0¾"
24'-4"	40	16'-4⅝"	20'-8½"	80	4'-3½"	2'-1⅜"	24'-2"	12	16'-3¼"	20'-6⅞"	24	4'-3⅛"	2'-1¼"
24'-7"	2	16'-6⅝"	20'-11⅛"	4	4'-4"	2'-1¾"	24'-4"	30	16'-4⅝"	20'-8½"	60	4'-3½"	2'-1⅜"
25'-0"	18	16'-10"	21'-3⅜"	36	4'-4⅞"	2'-2⅛"	24'-7"	2	16'-6⅝"	20'-11⅛"	4	4'-4"	2'-1¾"
25'-0"*				2	4'-4⅞"	2'-2⅛"	25'-0"	10	16'-10"	21'-3⅜"	20	4'-4⅞"	2'-2⅛"
							25'-0"*				2	4'-4⅞"	2'-2⅛"

* MAIN CATWALK SECTIONS ARE NOT REQUIRED AT ABUTMENTS.

** THESE DIMENSIONS WERE OBTAINED FROM ORIGINAL CONSTRUCTION PLANS, THE CONTRACTOR(S) SHALL VERIFY THESE DIMENSIONS BY FIELD MEASUREMENTS PRIOR TO FABRICATION.

NOTE: ALL CALCULATED DIMENSIONS (L_1, L_2, X_1, X_2) HAVE BEEN ROUNDED TO THE NEAREST ⅛", AND SHALL BE USED TO DETERMINE THE LENGTHS OF THE SUPPORTING CHANNELS AND ANGLES, AND RAILING (ANGLES) FOR THE CORRESPONDING SECTIONS AS PER PLAN.

MICROFILM
AUG 20 1986

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

8/11

CATWALK CALCULATIONS

BRIDGE SUM-271-0802 L & R

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

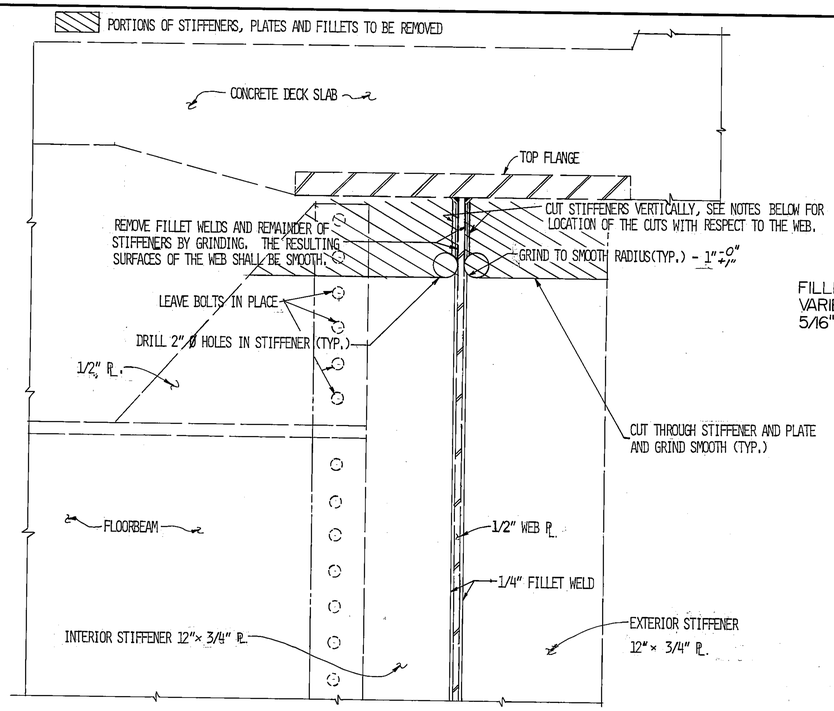
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

33770

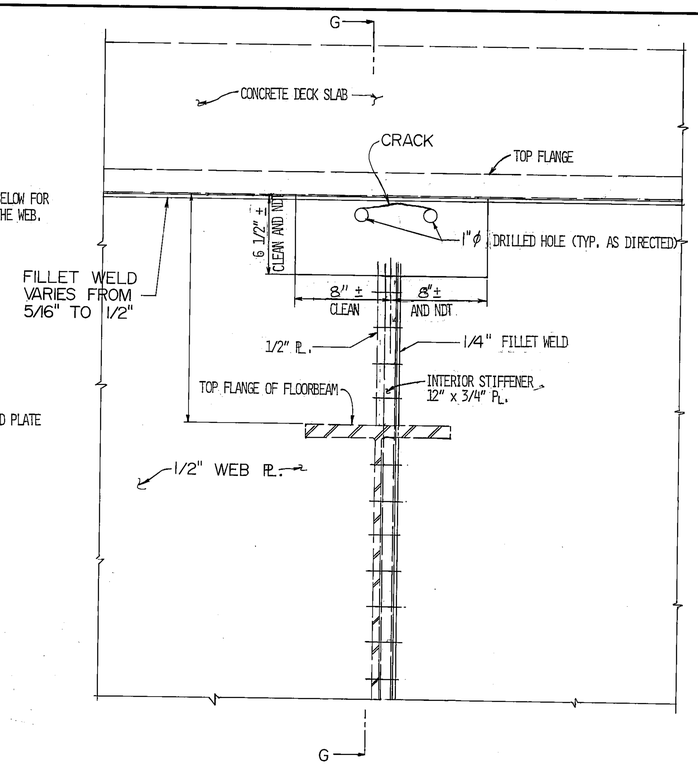
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

PLAN NO. BR-43-85

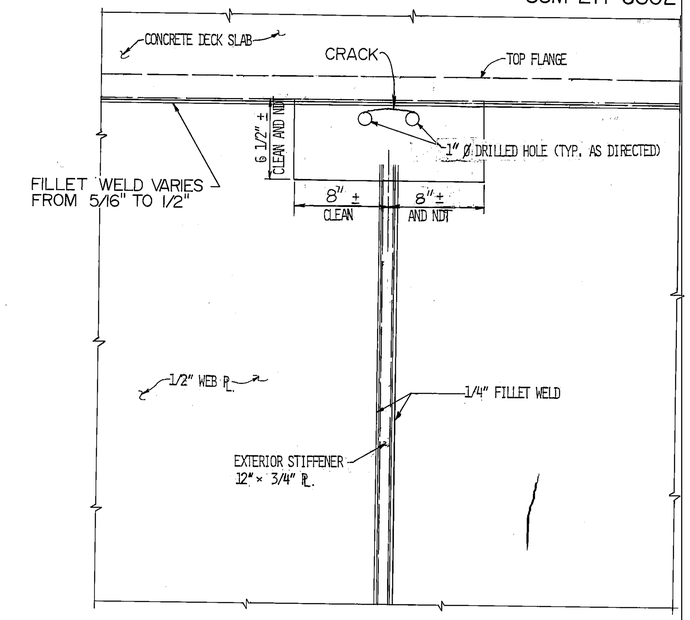
SUM-271-0802



SECTION G-G GIRDER-INTERMEDIATE FLOORBEAM CONNECTION



SECTION E-E INTERIOR ELEVATION



SECTION F-F EXTERIOR ELEVATION

ITEM SPECIAL - STRUCTURAL STEEL RETROFIT (INTERMEDIATE STIFFENER AND PLATE END REMOVALS, GRINDING & NDT)

THIS WORK SHALL CONSIST OF THE FOLLOWING SEQUENCE OF OPERATIONS:

1. DRILL 2 INCH DIAMETER HOLES THROUGH BOTH STIFFENERS AT THE LOCATIONS SHOWN.

2. MAKE THE HORIZONTAL CUT THRU THE STIFFENERS AND PLATES AS SHOWN. THIS CUT SHALL BE BETWEEN THE SECOND AND THIRD BOLT HOLES (FROM THE TOP), AND THIS CUT SHALL BE COMPLETELY BELOW THE SECOND BOLT HOLE (FROM THE TOP).

3. MAKE VERTICAL CUT THRU THE STIFFENERS SHOWN, BEING CAREFUL TO CUT FAR ENOUGH AWAY FROM THE GIRDER WEB TO AVOID ANY UNDERCUT OR GOUGING OF THE WEB FROM THE CUTTING OPERATION.

   ALL CUTTING MAY BE DONE BY EITHER THE OXYGEN CUTTING OR THE AIR CARBON ARC PROCESS. CUTTING MAY BE DONE MANUALLY, PROVIDED A GUIDE IS USED AND A STRAIGHT CUT IS ATTAINED.

   IF OXYGEN CUTTING IS USED, THE CUT SHALL BE MADE IN SUCH A LOCATION THAT THE STIFFENER ONLY IS SEVERED, AND NOT AT A LOCATION WHERE THE CUT WOULD EXTEND INTO THE VERTICAL FILLET WELDS. IF AIR CARBON ARC IS USED, THE CUT SHALL BE MADE NO CLOSER TO THE WEB THAN 1/8". WITH WHATEVER PROCESS IS USED, THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER PRIOR TO THE START OF WORK, THAT HE CAN ACCOMPLISH THE WORK WITHOUT DAMAGE TO THE GIRDER WEB.

4. THE SURFACES OF THE VERTICAL CUTS SHALL BE GROUND IMMEDIATELY AFTER DISCARDING THE PORTION OF THE STIFFENER REMOVED. THIS GRINDING IS TO REMOVE ANY LARGE SURFACE IRREGULARITIES.

5. GRIND ANY REMAINING VERTICAL FILLET WELDS AND STIFFENERS SO THAT THE RESULTING SURFACE OF THE WEB IS SMOOTH. CARE SHALL BE TAKEN THAT THE FULL THICKNESS OF THE WEB IS MAINTAINED AND NO UNDERCUT, GOUGING OR OVERGRINDING OF THE WEB TAKES PLACE. IF THE 2" DIAMETER HOLES OF STEP 1 DID NOT TOUCH THE EDGE OF THE WEB, THE HOLES SHALL BE GROUND SO THAT A SMOOTH RADIUS FROM THE FACE OF WEB TO HORIZONTAL TOP OF THE STIFFENER RESULTS. DO NOT GOUGE THE FLANGE.

6. GRIND THE TOPS OF THE STIFFENERS AND PLATES SMOOTH.

7. CLEAN THE RETROFIT AREAS OUTLINED IN THE ELEVATION VIEWS BY PENCIL SAND BLASTING THE PAINT FROM BOTH SIDES OF THE WEB AND FLANGE-WEB FILLET WELDS. SPECIAL CLEANING BY GRINDING SHALL BE USED ONLY AS DIRECTED BY THE ENGINEER FOR FURTHER INVESTIGATION OF CRACK PRESENCE.

8. THE CONTRACTOR AND THE ENGINEER SHALL CAREFULLY VISUALLY INSPECT THE WEB AND FILLET WELDS. FURTHER CAREFUL GRINDING MAY BE DIRECTED BY THE ENGINEER TO IMPROVE THE PERFORMANCE OF THE NON-DESTRUCTIVE TESTS. GRINDING MUST BE CAUTIOUS ESPECIALLY IN THE CRACK LOCATION. THEN THE CONTRACTOR SHALL NON-DESTRUCTIVELY TEST (NDT) BOTH AREAS WITH MAGNETIC PARTICLE EXAMINATION AND DYE PENETRANT SO THAT THE ENGINEER MAY FURTHER INSPECT FOR CRACKS.

NOTE: THE ABOVE NOTES AND SECTIONS E-E, F-F AND G-G APPLY ONLY TO THE RETROFITTING OF THE 'INTERMEDIATE' FLOORBEAMS. THESE LOCATIONS ARE:

SUM-271-0802 L = FB # 2 THRU 5, 7, 8, 11, 12, 14, 15, 18, 19, 21, 22, 25, 26, 28, 29, 36, 37, 40, 41, 43, 44, 48, 49, 51, 52, 56, 57, 59 THRU 63.

SUM-271-0802 R = FB # 2 THRU 5, 7, 8, 11, 12, 14, 15, 18, 19, 21, 22, 25, 26, 28, 29, 36, 37, 40, 41, 43, 44, 47, 48, 50, 51, 55, 56, 58 THRU 62.

THE ACCEPTED NUMBER OF RETROFITS AS DETAILED ABOVE WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LOCATION, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO CUT AND GRIND BOTH STIFFENERS AND PLATES AND TO PERFORM NDT ON THE WEB. PAYMENT WILL BE MADE UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	EACH	STRUCTURAL STEEL RETROFIT (INTERMEDIATE STIFFENER AND PLATE END REMOVALS, GRINDING & NDT)

ITEM SPECIAL - DRILLING STRUCTURAL STEEL (1" DIAMETER HOLE, GRINDING AND DYE PENETRANT)

THIS WORK SHALL CONSIST OF DRILLING 1" DIAMETER HOLES AT THE ENDS OF CRACKS, GRINDING AND DYE PENETRANT TESTING AS DIRECTED BY THE ENGINEER.

1" DIAMETER HOLES SHALL BE DRILLED AT THE APPARENT ENDS OF THE CRACKS REVEALED BY THE NDT AND VISUAL INSPECTION PERFORMED UNDER THE STRUCTURAL STEEL RETROFIT. THE EXPOSED SURFACE OF EACH DRILLED HOLE SHALL BE GROUND SMOOTH AND CAREFULLY INSPECTED FOR CRACKS USING DYE PENETRANT. DRILLING, GRINDING AND DYE PENETRANT TESTING SHALL CONTINUE UNTIL ALL CRACK ENDS ARE DRILLED WHEN NO CRACKS ARE DETECTED AT A LOCATION, NO HOLES SHALL BE DRILLED.

THE ELEVATION VIEWS ABOVE SHOW TYPICAL CRACKS WHICH MAY BE ENCOUNTERED. ALL CRACKS, REGARDLESS OF TYPE, SHALL BE DRILLED SINCE ANY OF THE CRACKS COULD PROPOGATE INTO THE FLANGE-WEB FILLET WELD, REMOVING THE ENDS IS IMPERATIVE. CATCHING THE END OF THE CRACK IS COMPLICATED BY THE TANGENCY OF THE CRACK TO THE HOLE. WHEN THE CRACK IS VERY CLOSE TO THE FLANGE-WEB FILLET WELD, DRILL THE HOLE TO JUST TOUCH THE TOE OF THE FILLET WELD. SEE DETAIL AT RIGHT.

THE LOCATION OF ALL HOLES SHALL BE DETERMINED BY THE ENGINEER AND DRILLED UNDER HIS DIRECTION.

THE ACCEPTED NUMBER OF 1 INCH DIAMETER HOLES DRILLED IN THE STRUCTURAL STEEL AS DETAILED ABOVE, WILL BE PAID AT THE CONTRACT PRICE PER EACH HOLE. THIS PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY FOR DRILLING THE HOLES, GRINDING AND DYE PENETRANT TESTING.

PAYMENT WILL BE MADE UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	EACH	DRILLING STRUCTURAL STEEL (1" DIAMETER HOLE, GRINDING AND DYE PENETRANT)

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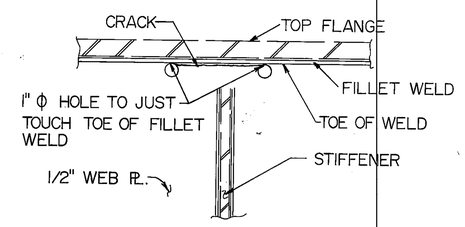


STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

9/11

STRUCTURAL STEEL RETROFIT DETAILS

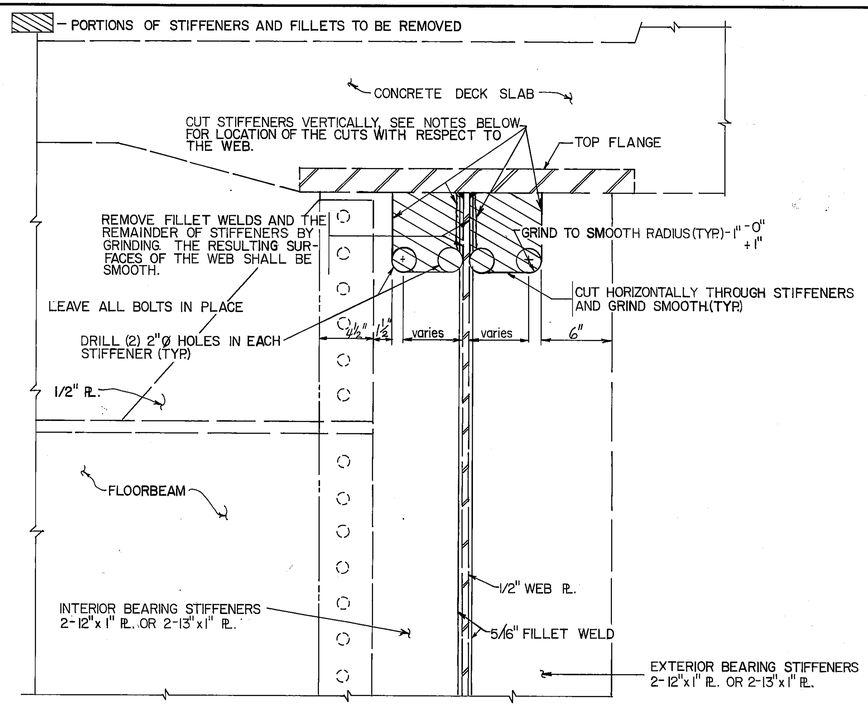
BRIDGE SUM-271-0802 L & R

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

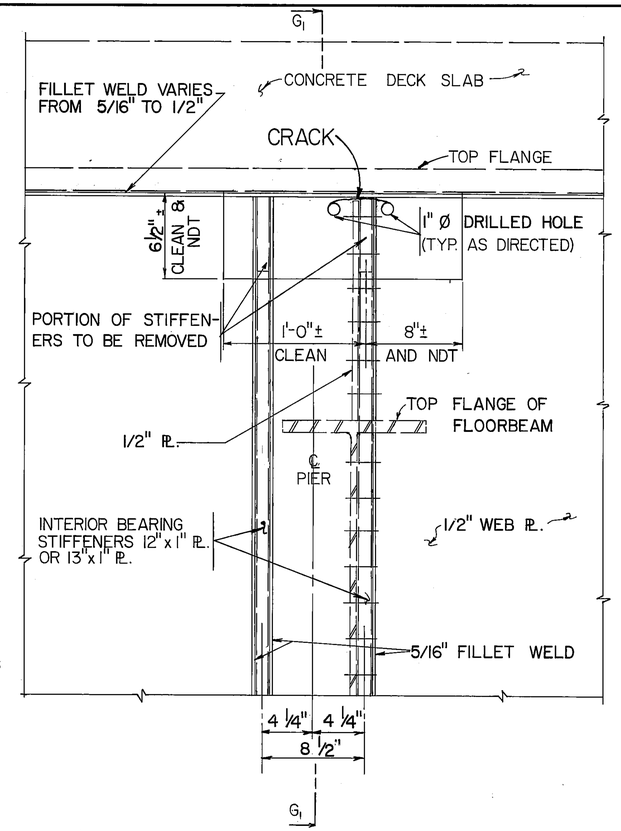
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

PLAN NO. BR-43-85

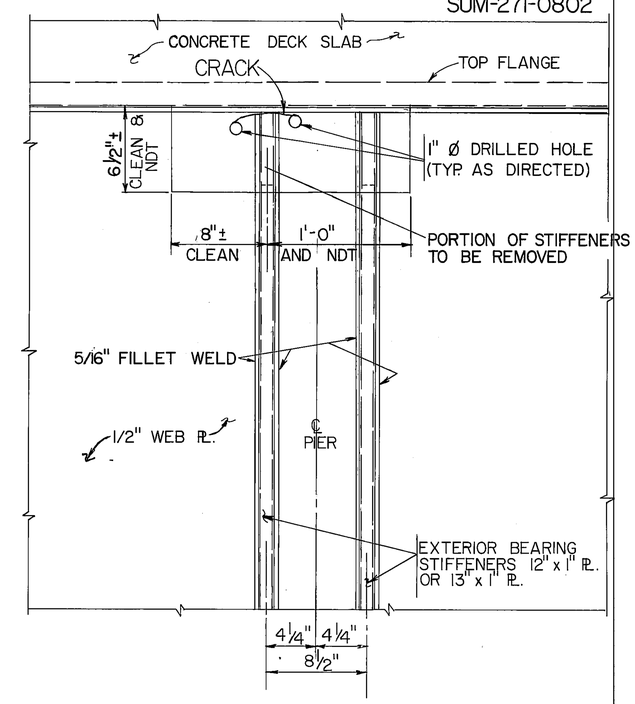
SUM-271-0802



SECTION G_1-G_1 GIRDER-BEARING FLOORBEAM CONNECTION



SECTION E_1-E_1 INTERIOR ELEVATION



SECTION F_1-F_1 EXTERIOR ELEVATION

ITEM SPECIAL - STRUCTURAL STEEL RETROFIT (BEARING STIFFENER END REMOVALS, GRINDING & NDT)

NOTE: THE ABOVE VIEWS AND THE FOLLOWING NOTES APPLY TO THE RETROFITTING OF THE 'BEARING' FLOORBEAMS WHICH ARE LOCATED AT THE ABUTMENTS AND ALL PIERS.

THESE LOCATIONS ARE:

SUM-271-0802 L = FB # 1, 6, 13, 20, 27, 35, 42, 50, 58 AND 64.

SUM-271-0802 R = FB # 1, 6, 13, 20, 27, 35, 42, 49, 57 AND 63.

THIS WORK SHALL CONSIST OF THE FOLLOWING SEQUENCE OF OPERATIONS:

1. DRILL TWO (2) - 2 INCH DIAMETER HOLES THROUGH ALL STIFFENERS AT THE LOCATIONS SHOWN.

2. MAKE THE HORIZONTAL CUTS THROUGH THE STIFFENER AS SHOWN. THIS CUT SHALL BE APPROXIMATELY SIX AND ONE HALF (6½) INCHES BELOW THE BOTTOM OF THE TOP FLANGE.

3. MAKE VERTICAL CUTS THRU THE STIFFENERS AS SHOWN, BEING CAREFUL TO CUT FAR ENOUGH AWAY FROM THE GIRDER WEB TO AVOID ANY UNDERCUT OR GOUGING OF THE WEB FROM THE CUTTING OPERATION. THE PLAN INTENT IS TO LEAVE THE OUTSIDE SIX (6) INCHES OF EACH STIFFENER IN PLACE, TO PROVIDE FOR BEARING AT THE ABUTMENTS AND PIERS.

   ALL CUTTING MAY BE DONE BY EITHER THE OXYGEN CUTTING OR AIR CARBON ARC PROCESS. CUTTING MAY BE DONE MANUALLY, PROVIDED A GUIDE IS USED AND A STRIAGHT CUT IS ATTAINED.

   IF OXYGEN CUTTING IS USED, THE CUT SHALL BE MADE IN SUCH A LOCATION THAT THE STIFFENER IS SEVERED ONLY, AND NOT AT A LOCATION WHERE THE CUT WOULD EXTEND INTO THE VERTICAL FILLET WELDS. IF AIR CARBON ARC IS USED, THE CUT SHALL BE MADE NO CLOSER THAN 1/8 ". WITH WHATEVER PROCESS IS USED, THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER PRIOR TO THE START OF WORK, THE HE CAN ACCOMPLISH THE WORK WITHOUT DAMAGE TO THE GIRDER WEB.

4. THE SURFACES OF ALL VERTICAL CUTS SHALL BE GROUND IMMEDIATELY AFTER DISGARDING THE PORTIONS OF THE STIFFENER REMOVED. THIS GRINDING IS TO REMOVE ANY LARGE SURFACE IRREGULARITIES.

5. GRIND ANY REMAINING VERTICAL FILLET WELDS AND STIFFENERS SO THAT THE RESULTING SURFACE OF THE WEB IS SMOOTH. CARE SHALL BE TAKEN THAT THE FULL THICKNESS OF THE WEB IS MAINTAINED AND NO UNDERCUTTING, GOUGING OR OVERGRINDING OF THE WEB TAKES PLACE. IF THE 2" DIAMETER HOLES OF STEP # 1 DO NOT TOUCH THE EDGE OF THE WEB, THE HOLES SHALL BE GROUND SMOOTH SO THAT A SMOOTH RADIUS FROM THE FACE OF THE WEB TO THE HORIZONTAL TOP OF THE STIFFENER RESULTS. THE ENGINEER SHALL APPROVE THE FINAL APPEARANCE OF THE STIFFENER. DO NOT GOUGE THE FLANGE, 1/2" PLATE OR THE FLOORBEAMS.

6. GRIND THE TOPS OF THE PORTIONS OF THE STIFFENERS CUT IN STEP # 1 SMOOTH.

7. CLEAN THE RETROFIT AREAS OUTLINED IN THE ELEVATION VIEWS BY PENCIL SANDBLASTING THE PAINT FROM BOTH SIDES OF THE WEB AND FLANGE-WEB FILLET WELDS. SPECIAL CLEANING BY GRINDING SHALL BE USED ONLY AS DIRECTED BY THE ENGINEER FOR FURTHER INVESTIGATION OF CRACK PRESENCE.

8. THE CONTRACTOR AND THE ENGINEER SHALL CAREFULLY VISUALLY INSPECT THE WEB AND THE FILLET WELDS. FURTHER CAREFUL GRINDING MAY BE DIRECTED BY THE ENGINEER TO IMPROVE THE PERFORMANCE OF THE NON-DESTRUCTIVE TESTS. GRINDING MUST BE CAUTIOUS ESPECIALLY IN THE CRACK LOCATION. THEN THE CONTRACTOR SHALL NON-DESTRUCTIVELY TEST (NDT) BOTH AREAS WITH MAGNETIC PARTICLE EXAMINATION AND DYE PENETRANT SO THAT THE ENGINEER MAY FURTHER INSPECT FOR CRACKS.

THE ACCEPTED NUMBER OF RETROFITS AS DETAILED ABOVE WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LOCATION, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO CUT AND GRIND ALL STIFFENERS AND TO PERFORM NDT ON THE WEB. PAYMENT WILL BE MADE UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	EACH	STRUCTURAL STEEL RETROFIT (BEARING STIFFENER END REMOVALS, GRINDING & NDT)

NOTE: ALL CRACKS SHALL BE DRILLED AT THE APPARENT ENDS AS SHOWN ABOVE AND AS DESCRIBED ON SHEET NO. 12 UNDER: ITEM SPECIAL - DRILLING STRUCTURAL STEEL.

RECEIVED
AUG 29 1986

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

10/10

STRUCTURAL STEEL RETROFIT DETAILS

BRIDGE SUM-271-0802 L & R

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B.&O. R.R.

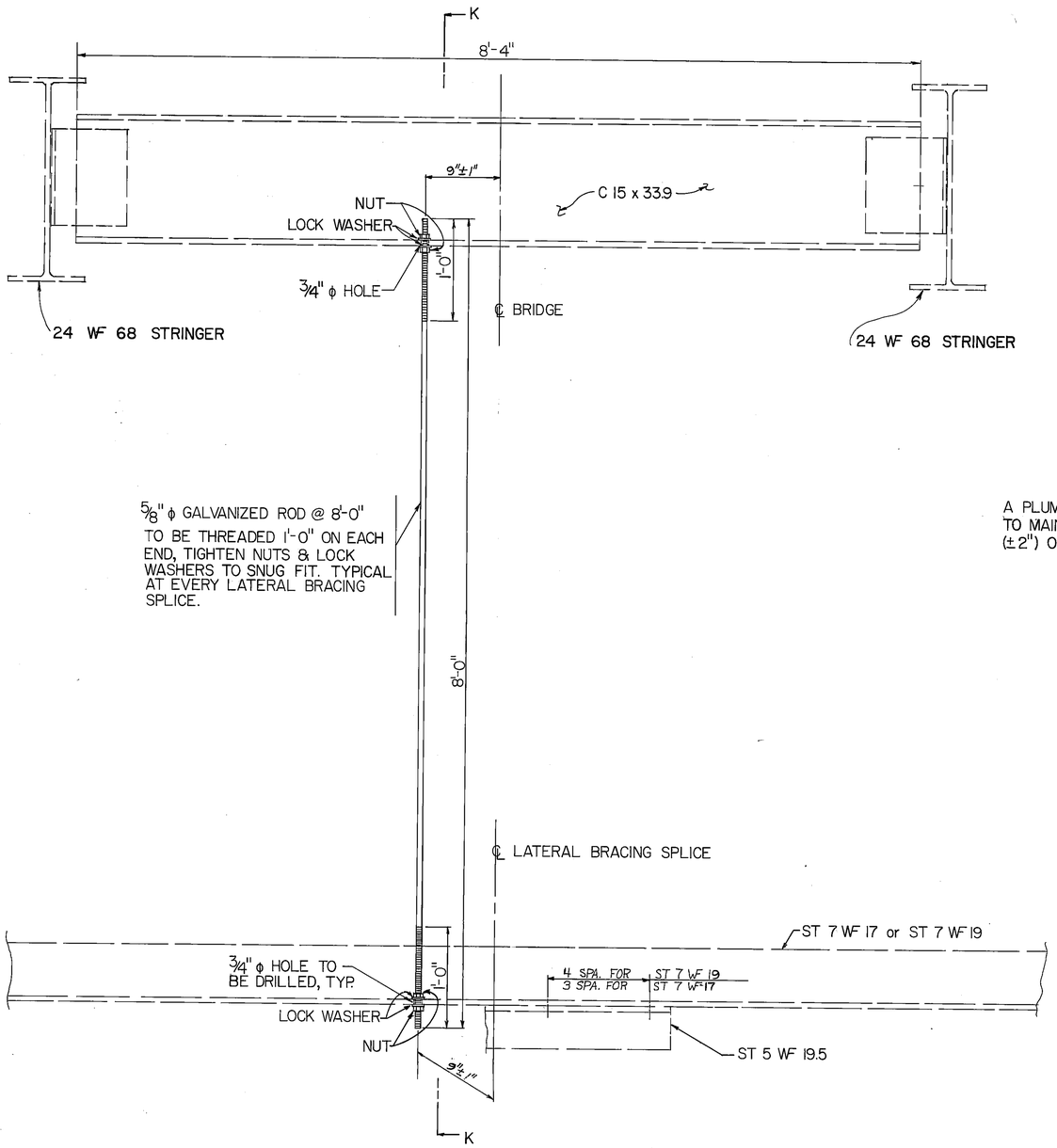
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

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

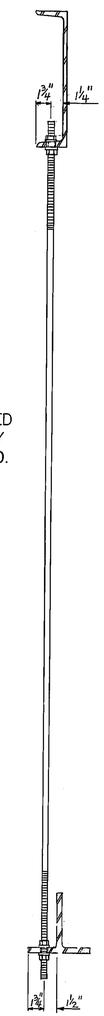
14/15

SUM-271-0802

PLAN NO. BR-43-85

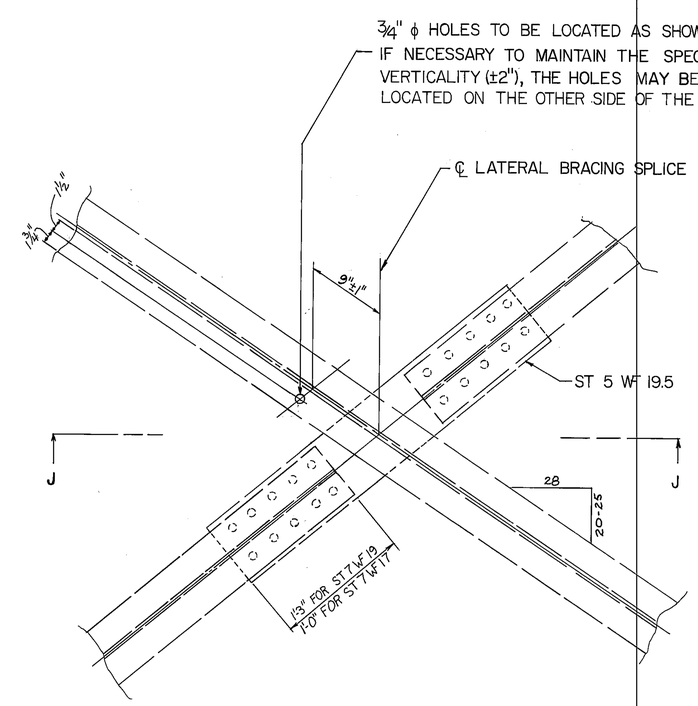


SECTION J-J ELEVATION OF LATERAL BRACING MODIFICATION



A PLUMB LINE SHALL BE USED TO MAINTAIN THE VERTICALITY (±2") OF THE GALVANIZED ROD.

SECTION K-K



DETAIL B - PARTIAL PLAN OF BRACING SPLICE

MICROFIL
AUG 20 1986

NO SCALE

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 04 BRIDGE DEPARTMENT

11/11

LATERAL BRACING MODIFICATION DETAIL

BRIDGE SUM-271-0802 L & R

OVER RIVERVIEW RD., CUYAHOGA RIVER, & B. & O. R. R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
NCM	NCM					

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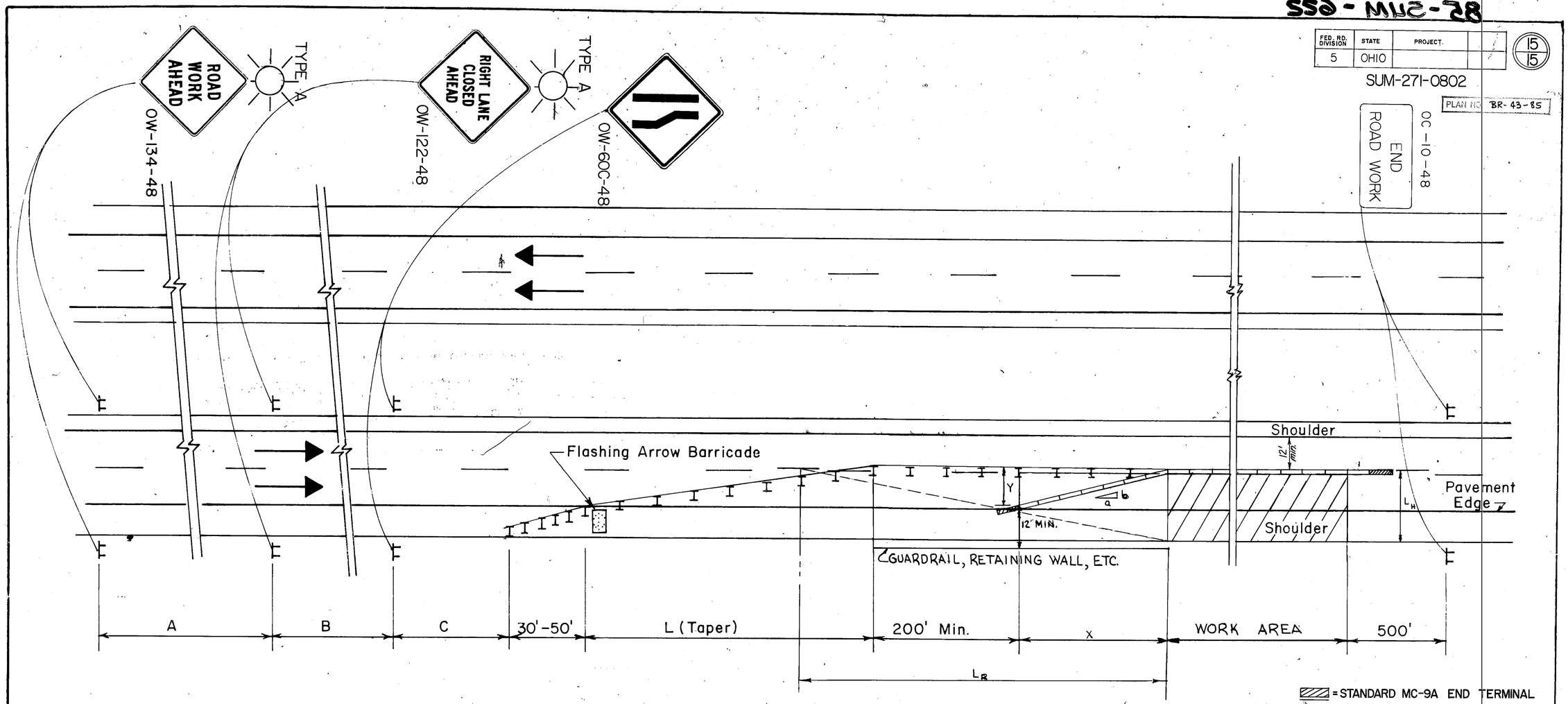
FED. RD. DIVISION	STATE	PROJECT.
5	OHIO	

15/15

SUM-271-0802

PLAN NO. BR-43-85



= STANDARD MC-9A END TERMINAL

= TEMPORARY CONCRETE MEDIAN BARRIER

I I = DRUMS OR TYPE II BARRICADES

GENERAL NOTES

1. THIRTEEN (13) DRUMS OR BARRICADES SHALL BE USED TO FORM THE LANE TRANSITION TAPER IN ADVANCE OF THE WORK AREA. FIVE (5) CHANNELIZING DEVICES SHALL BE USED TO FORM THE TAPER ON THE SHOULDER. DRUMS OR BARRICADES SHALL BE SPACED AT 50 FOOT CENTERS FOR THE FIRST 1000 FEET OF THE WORK AREA AND AT A MAXIMUM OF 100 FEET FOR THE BALANCE OF THE WORK AREA.

2. WHEN WORK IS BEING PERFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY "OW-123-48" SIGNS SHALL BE SUBSTITUTED FOR "OW-122-48" SIGNS AND THE OW-60D SIGNS SHALL BE SUBSTITUTED FOR THE OW-60C SIGNS

3. THE "WORK AREA" IS DEFINED TO INCLUDE AREAS WHERE HEAVY EQUIPMENT OR MATERIALS ARE STORED.

4. THE FLASHING ARROW BARRICADE SHALL BE IN ACCORDANCE WITH THE DETAILS SHOWN ON STANDARD DRAWING TC 35.10.

5. SIGNS SHALL BE MOUNTED ON PORTABLE SIGN SUPPORTS WITH APPROPRIATE WEIGHTING AND SHALL BE IN ACCORDANCE WITH OMUTCD, CURRENT EDITION, LATEST REVISION.

6. A MINIMUM WIDTH OF 12' IS REQUIRED FOR ACCESS TO WORK AREA.

7. TYPE A FLASHING BARRICADE WARNING LIGHTS SHOWN ON THE "ROAD WORK AHEAD" AND THE "RIGHT (LEFT) LANE CLOSED AHEAD" SIGNS ARE REQUIRED WHENEVER A NIGHT LANE CLOSURE IS NECESSARY.

8. TYPE C STEADY BURNING BARRICADE WARNING LIGHTS SHALL BE ERECTED ON DRUMS OR BARRICADES FOR NIGHT LANE CLOSURES. THE MAXIMUM SPACING SHALL BE IDENTICAL TO THE CHANNELIZING DEVICE SPACING REQUIREMENTS DESCRIBED IN NOTE 1.

$L_1 = 0$, $L_2 = 0$

$$X = \frac{L_H + \frac{L_1}{a} - L_2}{\frac{1}{a} + \frac{L_H}{L_R}}$$

$$Y = L_H - \frac{X \times L_H}{L_R} \qquad Y \geq 8'$$

SPEED	a:b	L_R (Ft.)
55	15:1	360

DISTANCE	A	B	C	L
FREEWAY AND EXPRESSWAY	2600	1600	1000	720

OHIO DEPARTMENT OF TRANSPORTATION

CLOSING ONE LANE OF A FOUR LANE DIVIDED HIGHWAY WITH TEMPORARY CONC. BARRIER

DATE 4/77

DR. | CK