

OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

FHWA REGION	STATE	FEDERAL PROJECT	
5	OHIO		

1
13

367-87

224-87

PLAN NO. BR-65-86

BRIDGE DECK REPLACEMENT

The Standard 19 87 Specifications of the State of Ohio, Department of Transportation, including changes and Supplemental Specifications listed in the plans and proposal shall govern these improvements.

I hereby approve these plans and declare that the making of these improvements will require the closing of the highways to traffic on Parts No. 1 and that detours will be provided by State forces. The closing to traffic of the highways will not be required on Parts No. _____ and provisions for the maintenance and safety of traffic will be as indicated in the proposal.

Approved
Date 11-20-86

George E. Downum
District Deputy Director of Transportation

Approved
Date 2-6-87

Walter J. Gustafson
Engineer of Bridges

Approved
Date _____

Approved
Date 2-9-87

James R. Longenecker
Deputy Director, Operations

Approved
Date _____

Approved
Date _____

Approved
Date _____

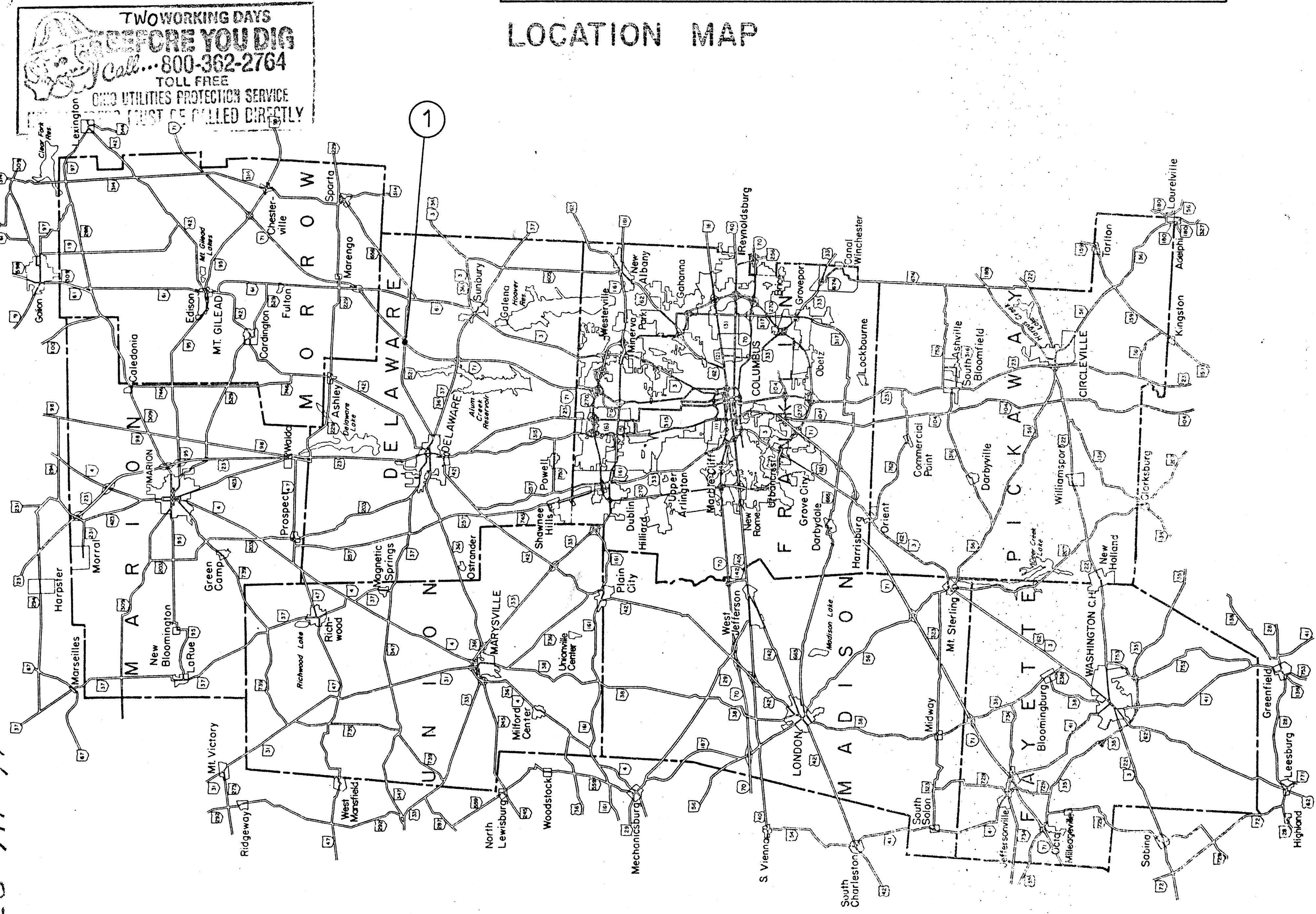
Approved
Date _____

Approved
Date 2-6-87

Walter J. Smith
Director, Department of Transportation

PART	COUNTY	ROUTE	STRUCTURE NO.	PROJECT TERMINI		NET LENGTH MILES	TOWNSHIP	CITY	VILLAGE
				BEGIN	END				
1	Delaware	521	DEL-521-0967						
INDEX									
				Title Sheet					1
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				Lane Closure for Repair of Overhead Bridge					13

LOCATION MAP



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CALL FIRST OR CALLED DIRECTLY

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

STANDARD DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	
BR-1	5-29-79	824	10-8-82
BP-5	1-11-85		
GR-1	1-11-85		
GR-3	1-21-85		

— PORTION TO BE IMPROVED

224

4-14-87

N

ESTIMATED QUANTITIES

Type Code: X231

2
13

PLAN NO.
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ITEM	DESCRIPTION	UNIT	TOTAL
		Lump	Lump
202	Portions of Superstructure Removed		
		Cu. Yds.	5
202	Portions of Abutments Removed		
		Sq. Yds.	1597
202	Wearing Course Removed		
		Cu. Yds.	16
404	Asphalt Concrete, AC-20		
		Gals.	32
407	Tack Coat		
		Cu. Yds.	447
511	Class 'S' Concrete for Superstructure, as per plan		
		Cu. Yds.	5
511	Class 'C' Concrete for Abutments		
		Lin. Ft.	87
516	Structural Expansion Joints, including Elastomeric Strip Seals, as per plan		
		Each	12
518	Scuppers (For Girder Bridges)		
		Lump	Lump
Special	Metalizing of Existing Steel		
		Sq. Yds.	806
Special	Sealing of Concrete Surfaces (See proposal note)		
		Lbs.	103509
824	Epoxy Coated Reinforcing Steel, grade 60		
		Each	4
606	Bridge Terminal Assemblies, Type A		
		Lump	Lump
614	Maintaining Traffic		
		Lump	Lump
619	Field Office		
		Lump	Lump
624	Mobilization		
		Cu. Yds.	40
404	Bituminous Concrete for Maintaining Traffic		
		Sq. Ft.	100
519	Patching Concrete Structures		

GENERAL NOTES

PROPOSED WORK: Remove existing asphalt wearing surface from bridge deck and approaches. Remove existing bridge terminal assemblies, concrete curbs and parapets, concrete deck, and portions of the abutments. Place a concrete deck on existing steel girders, replace abutment backwalls, place new concrete railing, resurface approaches, install strip seals, and metalize steel superstructure.

DESIGN SPECIFICATIONS: This structure conforms to "Standard Specifications for Highway Bridge" adopted by the Association of State Highway and Transportation Officials, 1983, including the Ohio "Supplement" to these specifications.

Design Loading - HS 20-44 Case II and the Alternate Military Load.

Concrete Class S - compressive strength 4,500 p.s.i.

Concrete Class C - compressive strength 4,000 p.s.i.

Reinforcing Steel - ASTM A615, A616, A617 - Grade 60 min. yield strength 60,000 p.s.i.

Structural Steel A-7 - yield strength 33,000 p.s.i. (existing); A-36 - yield strength 36,000 p.s.i. (new)

Deck Protection Method: Epoxy coated reinforcing steel

Utility Ownership: Delaware Rural Electric Company
26 N. Union St.
Delaware, Ohio 43015
Telephone No. (614) 363-2641

General Telephone Company
1300 Columbus Sandusky Rd.
Marion, Ohio 43302
Telephone No. (614) 383-0411

STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS DISTRICT 6 BRIDGE DEPARTMENT					
ESTIMATED QUANTITIES & GENERAL NOTES					
DEL-521-0967					
DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE
3 a 3	3 a 3	3 a 3		EM	11-21-86
					REVISED

GENERAL NOTES

ITEM 202 - Portions of Superstructure Removed

This item shall include the cost of all labor and equipment required to remove existing portions of the curbs, parapets, bridge deck, steel end dams, and curbs and parapets down to the construction joints on the approaches as shown on plan sheet no. 8. Existing vertical reinforcing steel is to be left in tact for re-use, in accordance with plan sheet no. 8. Also included with this item shall be the removal of existing bridge terminal assemblies as well as removal and re-aligning guardrail in accordance with plan sheet no. 6.

ITEM 202 - Portions of Abutments Removed

This item shall include the cost of removing and disposing of portions of the abutment backwalls in accordance with plan sheet no. 8.

ITEM 511 - Class 'S' Concrete for Superstructure

This item shall include the cost of all labor, equipment and materials required to replace the bridge railing, bridge deck, and portion of modified wingwall shown on plan sheet no. 8. This shall be done in accordance with the plans. For additional details see Standard Drawing BR-1.

ITEM 511 - Class 'C' Concrete for Abutments

This item shall include the cost of all labor, equipment and materials required to replace portions of the abutment backwalls in accordance with plan sheet no. 8. Reinforcing steel damaged during removal work shall be replaced at the direction of the Engineer and cost included with this item for payment.

ITEM 516 - Structural Expansion Joints including Elastomeric Strip Seals

MATERIALS: A588 or A36 with paint as specified for the main structural steel, except that System B shall be used when the main structural steel is to remain unpainted. No shop coat is required. Field paint shall consist of one prime coat for System A or two prime coats for System B, and one finish coat.

The preformed strip seal gland shall be extruded polychloroprene material meeting the requirements of ASTM D2628. Due to the configurations of the Strip Seal, the recovery tests are not applicable. Physical Properties shall meet the requirements specified in Table "A".

Each lot strip seal glands shall be tested by the manufacturer or an accredited laboratory to insure compliance with these provisions. Two certified copies of the qualification test data indicating that the tested materials comply with these provisions shall be submitted to the testing laboratory.

Each strip seal gland design, shape, width, depth and thickness shall be approved by the Director. Material acceptance will be based upon laboratory evaluation of certified test data and the TE-30 field inspection report.

Lubricant-- adhesive used to install the preformed strip seals shall be a polyurethane and hydrocarbon solvent mixture as specified by the seal manufacturer (unless otherwise approved by the Director). It shall have suitable consistency at the temperature at which the seals are installed and shall be compatible with the seals and the steel retainers.

SPLICE OR JOINT IN SEAL GLAND: Seal glands for bridge deck joints shall be furnished in one continuous piece unless a shop fabricated splice, field splice or field butt joint is indicated on the plans or approved by the engineer.

Completed splices shall have no offsets on exterior surfaces, and after installation, there shall be no evidence of bond failure at the splices.

For other than straight seals without intermediate splices, seal glands shall be shop fabricated in accordance with approved shop drawings. Shop drawing dimensions for existing joints or for joints which are being modified shall be based on field measurements provided by the contractor.

PREPARATIONS FOR INSTALLATION: To avoid the subsequent contamination of the prepared surfaces, all surfaces of elastomeric strip seal gland shall be cleaned with methyl ethyl ketone (MEK), toluene (T) or other approved solvent using clean disposable cloths.

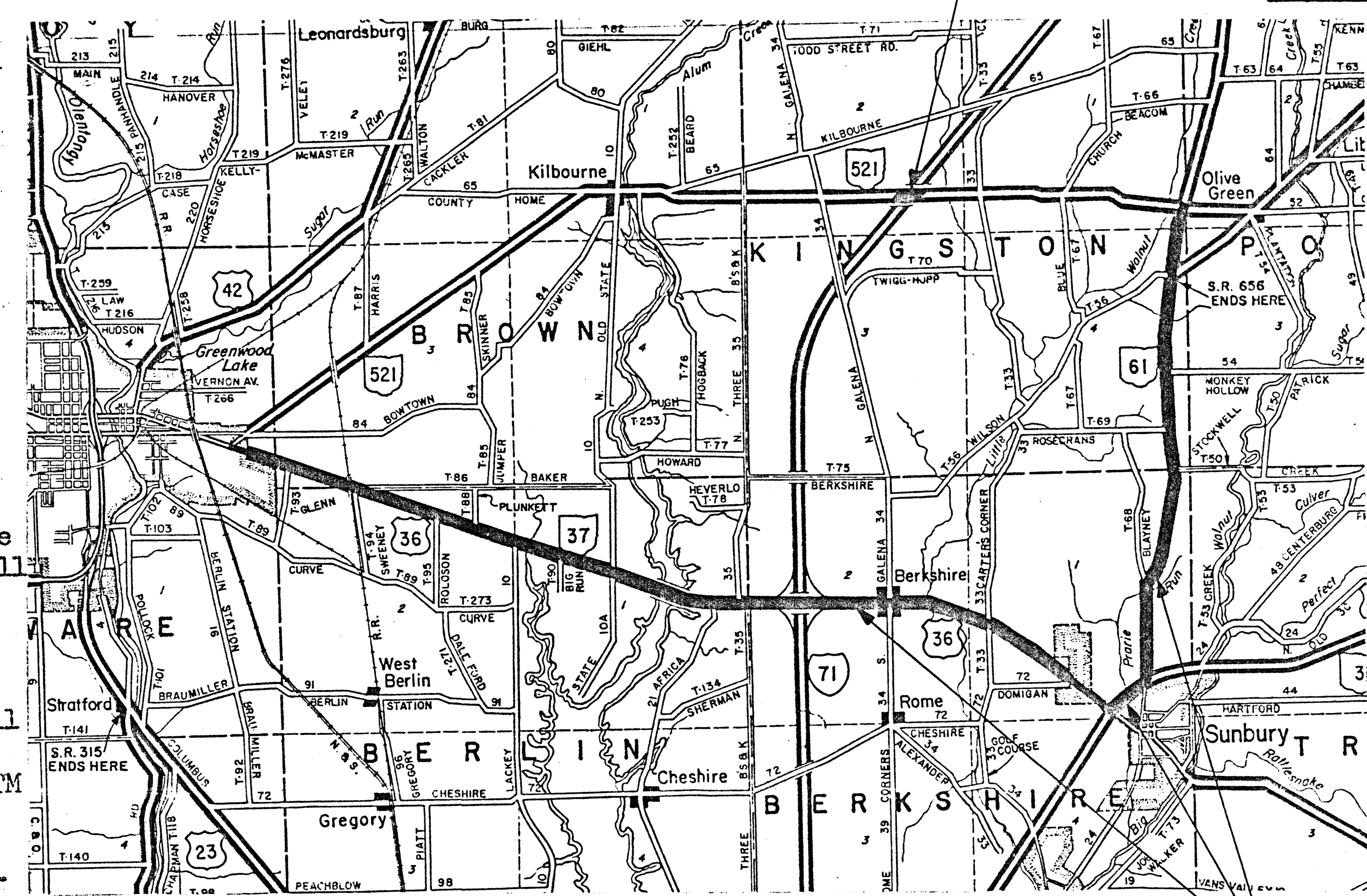
The bonding surfaces of the steel extrusions (the interior of the anchor grooves) shall be prepared to Grade Sa 3, ASTM D2200. Preparation shall be accomplished not more than 24 hrs. prior to adhesive bonding.

INSTALLATION: Immediately prior to application of lubricant-adhesive, bonding surfaces shall be clean, dry and warmer than 45°F, and they shall be maintained at or above this temperature until the adhesive has cured. Lubricant-adhesive shall be applied liberally to both

steel and elastomeric bonding surfaces using a stiff brush if necessary to achieve a complete and relatively uniform coating. Then the bulbed edges of the elastomeric seal shall be inserted into the anchor grooves. After installation, excess lubricant - adhesive shall be removed from the exposed seal surfaces. Seal glands shall be installed with equipment designed or specifically adapted for the installation of elastomeric joint seal glands. This equipment shall not elongate the seal gland or cause structural damage to the completed installation.

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DETOUR PLAN

CONSTRUCTION PROCEDURE:

1. Abutment backwall concrete shall not be placed until after superstructure concrete in the span adjacent to the abutment has been placed.
2. Place backwall concrete during stable or rising ambient temperatures and conclude placement at or immediately before the day's peak ambient temperature.
3. Not more than four hours prior to the day's peak ambient temperature, set abutment expansion joint width to Dimension "A".
4. Loosen temporary joint armor bolts after initial set of concrete, preferably not later than two hours after conclusion of concrete placement.

TABLE A
(Physical Properties of Seal Element)

Property	Requirement	ASTM Method
Tensile Strength, Min. P.S.I.	2000	D412
Elongation at Break, Min. Percent	250	D412
Hardness, Type A Durometer	50 Min. 65 Max.	D2240 (Modified)
Oven Aging, 70 Hr. at 212°F Tensile Strength, Loss, Max. Elongation, Loss, Max. Hardness, Type A Durometer (Points Change)	20 Percent 20 Percent 0 to +10	D573
Ozone Resistance 20 Percent Strain, 300 PPHM, in air at 104°F (Wiped with Toluene to remove surface Contamination)	No Cracks	D1149

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISTRICT 6 BRIDGE DEPARTMENT

**GENERAL NOTES
& DETOUR PLAN**

DEL-521-0967

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
J. A.	J. A.	J. A.	J. A.	EM	11-21-86	

ITEM Srecial - Metalizing of Existing Steel

This procedure governs the methods, requirements and procedures for applying thermal sprayed metal. The thermal spraying process consists of melting the metal and then spraying it onto a prepared surface by means of compressed gas.

This item shall consist of furnishing all materials and incidentals and metalizing as specified. All structural steel and other areas shall be metalized. The prime contractor shall obtain the service of one of the following contractors to perform surface preparation, metalizing, and a clear phenolic top coat on said structure.

- | | | |
|---|---|--|
| Akron SandBlast & Metallizing Co.
Mr. Al Kay, President
1031 Lambert St.
Barberton, OH 44203 | O. B. Cannon & Sons
Mr. Sam Wineman
5600 Woodland Ave.
Philadaphia, PA 19143 | Marserve Inc.
Mr. Jim Nicely
P.O. Box 2236
Canton, OH 44711 |
| Cincinnati Thermal Spray Inc.
Mr. Jack Kittle
5901 Creek Road
Cincinnati, OH 45242 | Federal Industrial Services
Mr. Kent Strachn
12980 Inkster Rd.
Redford, MI 48239 | Newsome & Work Metalizing Co.
Mr. Roger Newsome
P.O. Box 2791
Akron, OH 44301 |
| Metalweld Inc.
Mr. Jack Childs
5 Brower Ave.
P.O. Box S
Oaks, PA 19456 | National Thermal Spray
Mr. Tom Gardega
117 Brook Avenue
Deer Park, NY 11729 | |

MATERIAL AND SPECIFICATIONS: Metalizing: Zinc 6 to 8 mils.
Zinc: Shall meet the requirements of the Department of Defense specification Mil-W-6712B, table II Zinc

NOTE: Maximum of 10 Mils

MANUFACTURER: Sufficient identifiable characteristics other than trade or brand name or designated number or symbol be provided to permit laboratory test verification of metal identity. Each container or coil wrapping shall be examined to verify the presence of a proper label identifying component type, supplier, size, batch number, and wire lot number.

MATERIALS HANDLING AND USE: Each container or coil shall be examined for damage. Broken or bent coils shall be marked and segregated for return, and removal from the material area. Materials shall be promptly stacked or arranged in the controlled storage unit.

APPLICATION: Before any metalizing is done, the Contractor shall prepare a test section. There will be one test section for each metal applied. The Contractor shall submit to the Project Engineer a steel plate approximately 12" x 12" to which the metal has been deposited to the specified thickness, as checked with a magnetic or Eddy Current gage, for acceptance by the Engineer as to grain size and texture of the sprayed metal. Such plate will be used to determine the acceptance of the finished job. In the event the Contractor's coating is inferior to the sample, he shall be required to correct the coating by an acceptable repair method and do a job comparable to the specimen submitted. If the surface is degraded or contaminated subsequent to surface preparation and prior to metalizing, the surface shall be restored before metalizing. All surface cleaning shall be approved by the Engineer prior to metalizing. In order to prevent the degradation or contamination of cleaned surfaces, the metalizing shall be applied the same day the surface has been cleaned. The seal coat shall be applied the same day as the metalizing.

The Contractor shall be required to provide facilities to protect the finished metalized surface from damage during the blasting and thermal spraying work operations on adjacent areas. All damaged coated areas shall be properly repaired by the contractor. Surfaces not intended to be metalized shall be suitably protected from the effects of cleaning and metalizing operations. If metalizing is done prior to deck placement, flanges to be embedded in concrete are not to be metalized.

TEMPERATURE: Metalizing shall not be applied when the temperature of the steel or metal is below 40°F (4°C) or when the air temperature is below 40°F (4°C). Metalizing shall not be applied to steel which is at a temperature that will cause blistering or porosity or otherwise will be detrimental to the life of the metalizing.

MOISTURE: Metalizing shall not be applied in rain, wind, snow, fog or mist, or when the steel surface temperature is less than 5°F (3°C) above the dew point. Metalizing shall not be applied to wet, damp or frosted surfaces. Metalizing shall not be applied when the relative humidity is above 85%.

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DAMAGE: Damaged areas of metalizing which are detrimental to the service life shall be removed. The surface shall again be prepared and remetalized as before.

CONTINUITY: To the maximum extent practical, metalizing shall be applied as a continuous film of uniform thickness free of pores. All thin spots or areas missed in the application shall be re-metalized.

THICKNESS AND DEDUCTION: Contractor shall call for inspection and acceptance daily of completed sections of coatings. The coatings shall be checked for thicknesses by means of an approved thickness guage. Contractor shall provide sufficient thickness guages to make thorough inspection of the completed surfaces. Contractor shall be required to add metal within the same work day to any areas failing to register minimum thickness. Any thicknesses which exceed ten (10) Mils. shall be removed by grinding.

The metalizing unit shall be a gun as manufactured by an established domestic company, (such as Metco or Tafa), of the gas or ARC type are acceptable and recommended. The equipment shall be used in accordance with manufacturer's recommendations. No surface shall be sprayed which shows any sign of rust, scale, or moisture. At least one single layer of the coating must be applied within a maximum of four hours of the blasting. Spraying shall be done in a block pattern not to exceed two feet square. To produce the required thickness and uniformity, two passes are required, overlapping and at right angles to each other. The gun shall be held at such a distance from the work surface that the metal is still plastic on impact. (Usually 5" to 9") The coating shall be firmly adherent and free from uncoated spots, lumps or blisters, and shall have a fine sprayed texture. Each spray operator shall demonstrate to the Engineer his ability to metalize as specified. Any operator who does not demonstrate this ability shall not spray.

INSPECTION: All work and materials supplied under this specification shall be subject to timely inspection by the Engineer. The Contractor shall correct such work or replace such material that is found defective under the specification. Samples of metal used under this specification shall be supplied upon request along with the supplier's name and identification for the materials. The Contractor shall furnish and erect scaffolding meeting the approval of the Engineer to permit inspection of the steel prior to and after painting. The Engineer shall perform the following test for adhesion. The Engineer shall cut through the coating with a knife or chisel. If the coating or any part of it can be lifted from the base 1/4" or more ahead of cutting blade, without actually cutting the metal, the surface preparation shall be deemed improper and the coating shall be considered unsatisfactory.

SAFETY REQUIREMENTS AND PRECAUTIONS: The Contractor is required to meet the applicable safety requirements of the Ohio Industrial Commission. The materials specified on this project can be hazardous to the health of the applicator if not applied as per manufacturers instructions. The Contractor shall follow the recommendations contained on the material safety data sheet, product data sheet and the label on the containers. These precautions shall include the use of respirators and eye and skin protection as specified. The material safety data sheet shall be provided at the preconstruction meeting for all material safety data sheet has been submitted.

PRIOR INSPECTION OF WORK: Prosective bidders are required to make an inspection of the bridge in the field and to review the plans and specifications before submitting bids. See section 102.05 of the "Construction and Material Specifications", dated January 1, 1985.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS DISTRICT 6 BRIDGE DEPARTMENT						
GENERAL NOTES						
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Ja	Ja	Ja		EM	11-21-86	

PROTECTION OF PERSONS AND PROPERTY: The Contractor shall collect, remove and dispose of all 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 metalized against damage.

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 misconduct in the execution of the work, 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.

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

WORK LIMITATIONS: All work shall be done between March 15 and October 15.

SURFACE PREPARATION (METALIZING): All surfaces to be metalized shall be washed with water having a nozzle pressure at least 1,000 PSI and a delivery rate of not less than 4 gallon per minute. The Contractor shall provide equipment specifications to verify the above. The equipment shall also be equipped with gages to verify the pressure. The water shall contain a detergent at the rate specified by the manufacturer, to remove oil, grease, salt, and dirt to the Engineer's satisfaction. Before the surfaces dry, two rinses with no dry between, shall be used to remove all remaining detergent, the nozzle shall be held a maximum of twelve (12) inches from the surface being washed or rinsed. The metalizing shall be applied within one (1) month of washing the structure.

All dirt, sand, and debris shall be completely removed from the structure steel and all other sections of the bridge as directed by the Engineer. All dirt, sand, and debris from the above areas shall then be removed from the bridge work area.

To avoid a traffic hazard the Contractor shall remove all sand from the roadway and shoulder areas each day. The sand shall be disposed of outside the highway right-of-way. When disposing of the sand, the Contractor shall take all necessary precautions to comply with pollution control laws, rules or regulations or federal, state or local agencies.

All steel to be metalized shall be blast cleaned to grade SA 2½ according to ASTM D2200 or SSPC-SP10 (SSPC VIS 1). The average surface profile shall be three (3) Mils. The average surface profile shall be considered the average of three (3) separate readings in 2000 sq. ft. Blasting shall not proceed when the steel temperature is within five (5) degrees of the dew point to prevent rust back. All fins, tears, slivers, and burred or sharp edges that are present on any steel member after blasting shall be removed by grinding and the area reblast-ed.

The following tests shall be done to insure that the air and abrasives are not contaminated. Open the air valve for thirty (30) seconds and test the air cleanliness with a white blotter. Any oil or contaminants on the blotter requires corrective action. This test shall be done at the start of the shift and at four (4) hour intervals. When using black abrasives, place a quantity of abrasive in a container of clean fresh water with a PH of seven (7). Test the solution with standard litmus paper. Stop sandblasting if an oil film or a PH other than seven (7) is recorded. Conduct the test on each batch or load delivered.

Before any sandblasting is done the Contractor will prepare a test section. The test section will be a representative area to be sandblasted. The Project Engineer and the Contractor will photograph the test section area after they agree that the area has been sandblasted according to plan requirements. Only after a test section area has been approved and documented by photographs may the Contractor proceed with his sandblasting operation. The photographs shall be used in addition to plan specifications to determine acceptance of sandblasting procedures.

TOP COAT: A clear Phenolic Sealer shall be applied over the metalizing as per the manufacturers requirements and included with the metalizing for payment.

ITEM 519 - Patching Concrete Structures

Work under this item shall consist of patching disintegrated portions of the exposed abutments. Locations and limits shall be at the direction of the Engineer.

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ITEM 619 - Field Office

The Contractor shall provide a suitable field office having a minimum of 150 sq. ft. of floor space and in addition to the requirements of Item 619. He shall provide and maintain sanitary provisions as per 107.06. All of the above shall be included in the lump sum price bid for Item 619, Field Office.

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 shall be considered tentative and approximate. The Contractor is to refer to C.M.S. 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.

ITEM 614 - Maintaining Traffic

A detour shall be provided by State Forces for a period not to exceed 120 calendar days. All work required to complete this project shall be completed while the detour is in effect. The Contractor shall notify the District 6 Traffic Engineer at least 48 hours prior to closing the road to traffic. Also included with this item for payment shall be the lane closure on I-71 in accordance with plan sheet no. 13. No lane closures shall be permitted during the Ohio State Fair or from 12PM on the day preceding a holiday weekend until 9AM the day after a holiday weekend. Also no overnight lane closure shall be permitted unless authorized by the Engineer.

The lane closures on I-71 shall be used only when removing concrete, sandblasting, and metalizing. When working over shoulder - shoulder should be barricaded. A minimum of one lane in each direction shall be maintained at all times. Never work within five feet of traveled lane.

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GENERAL NOTES					
DEL-521-0967					
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Ja ₃	Ja ₃	Ja ₃		EM 11-21-86	



Remove an asphalt wedge tapered from 2 1/2" deep at abutments to 1" at end of taper and replace with Item 404 to provide a smooth transition from abutment to end of taper. Remove material from berm areas at the direction of the Engineer as necessary to match the top of the new pavement surface. Cost of grading berms shall be included in the unit cost of Item 202 - Wearing Course Removed. Removal of approach pavement shall be by Roto-Mill or an approved equivalent. (Typ.)

Underground Telephone Cable (Typ.)

50'+ guardrail to be removed and re-aligned. Include with Item 202 - Portions of Superstructure Removed. (Typ.)

Scuppers -
I-71 S.B.
I-71 No.B.
NW = 7' 2 Spa. @ 14' (Typ.)

Taper 404 onto the berms

SW = 20'-5"

Joint sealer and preformed expansion joint filler to be placed between modified wingwall and existing approach slab. See plan sheet no. 8 for details. (Typ.)

Existing Roadway 28'-0"
Proposed Roadway 31'-8"

Bridge Terminal Assemblies, Type A (Typ.)

SE = 15'-1"

50'-0" Removal and Resurface (Typ.)

NE = Northeast
NW = Northwest
SE = Southeast
SW = Southwest

PLAN VIEW
Skew = 42°-52'-15" L.F.

BENCH MARK
P.K. Nail set in north side of Power Pole, #8860, 63' Rt. Sta. 505+38 Assumed Elev. 100.00'

Bridge Limits = 384.48'

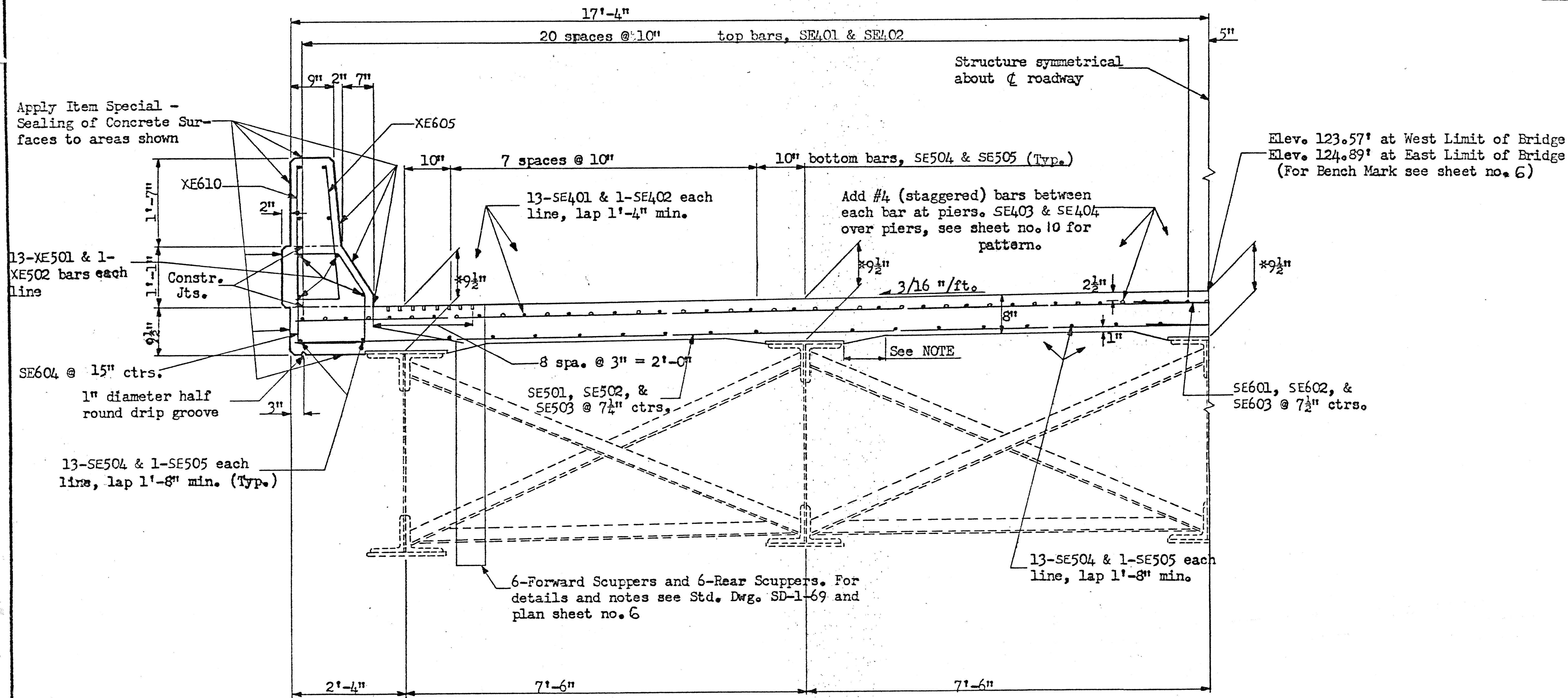
Bridge Railing, See plan sheet no. 11 for details

ELEVATION

PRESENT STRUCTURE	
Type:	Continuous steel girder with concrete deck and substructure
Roadway:	28'-0" f/f 2'-0" safety curbs
Spans:	77'-11", 111'-3", 111'-3", 77'-11" c/c brgs.
Loading:	CF-130(51)
Skew:	42°-52'-15" L.F.
Wearing Surface:	2 1/2" Asphalt Concrete w/ waterproofing
Condition:	Concrete deck, poor

PROPOSED STRUCTURE	
Type:	Continuous steel girder with concrete deck and substructure
Roadway:	31'-8" f/f bridge railing
Spans:	77'-11", 111'-3", 111'-3", 77'-11" c/c brgs.
Loading:	HS 20-44 Case II and the Alternate Military Load
Skew:	42°-52'-15" L.F.
Wearing Surface:	1" monolithic concrete

STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS DISTRICT 6 BRIDGE DEPARTMENT					
GENERAL PLAN AND ELEVATION					
DEL-521-0967					
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					REVISED



NOTE: A typical haunch width of 9" shall be used for computing quantity of concrete. However, the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" width.

* This is the design dimension. The quantity of deck concrete to be paid for shall be based upon this dimension, even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finish grade. This dimension will increase in the beam spans due to slab weight deflections. The Contractor shall allow for an increase in this dimension when setting screed elevations as follow:

	1/4 pt.	1/2 pt.	3/4 pt.
Span 1	7/16"	1/2"	1/8"
Span 2	3/4"	1 1/4"	5/8"
Span 3	5/8"	1 1/4"	3/4"
Span 4	1/8"	1/2"	7/16"

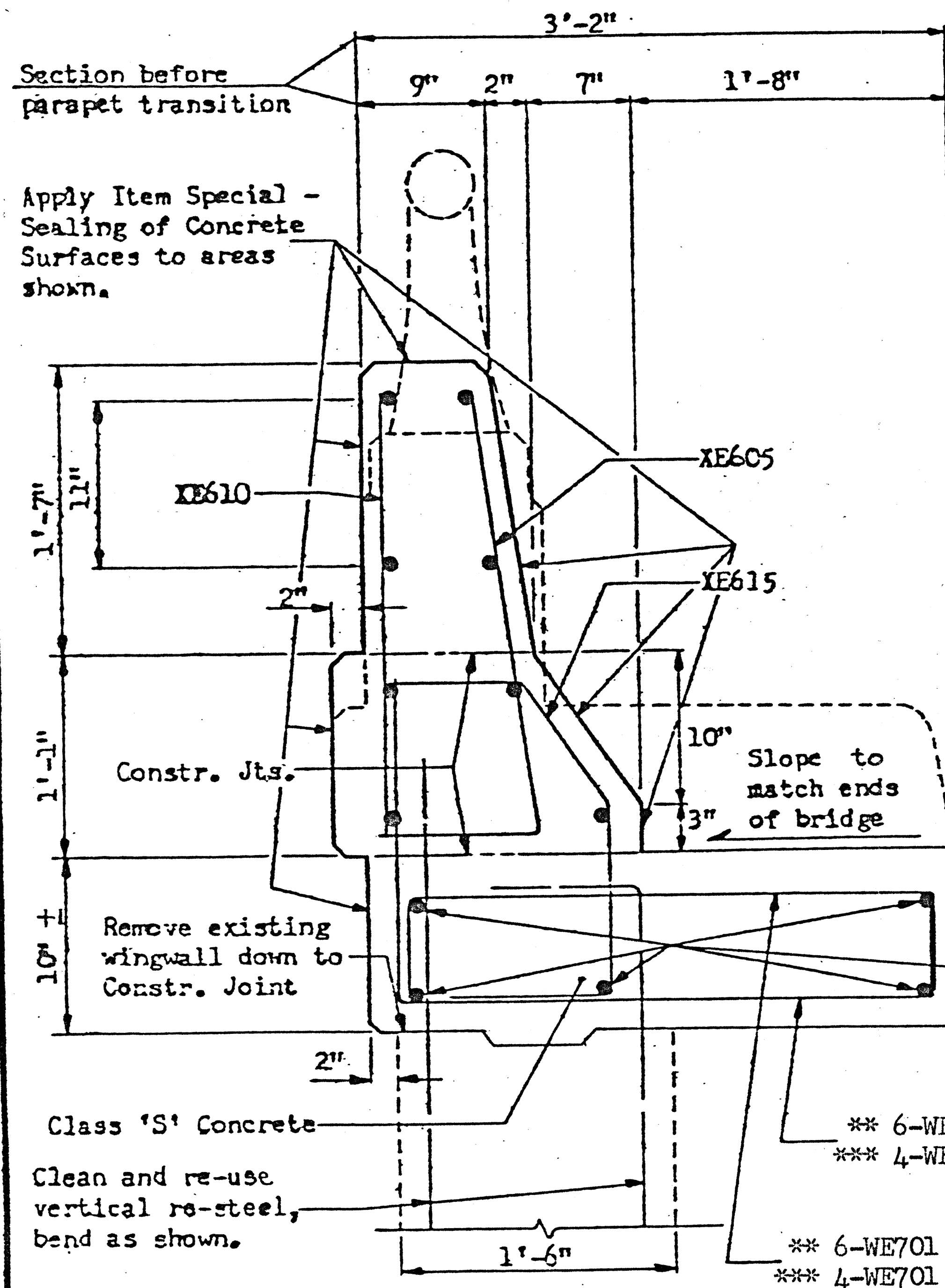
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DISTRICT 6 BRIDGE DEPARTMENT

TRANSVERSE SECTION

DEL-521-0967

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
Ja	Ja	Ja			EM 11-21-86	

STRIP SEAL	TEMPERATURE ADJUSTMENT						
	30°F.	40°F.	50°F.	60°F.	70°F.	80°F.	90°F.
'A'	2 7/16"	2 5/16"	2 1/8"	2"	1 7/8"	1 11/16"	1 9/16"

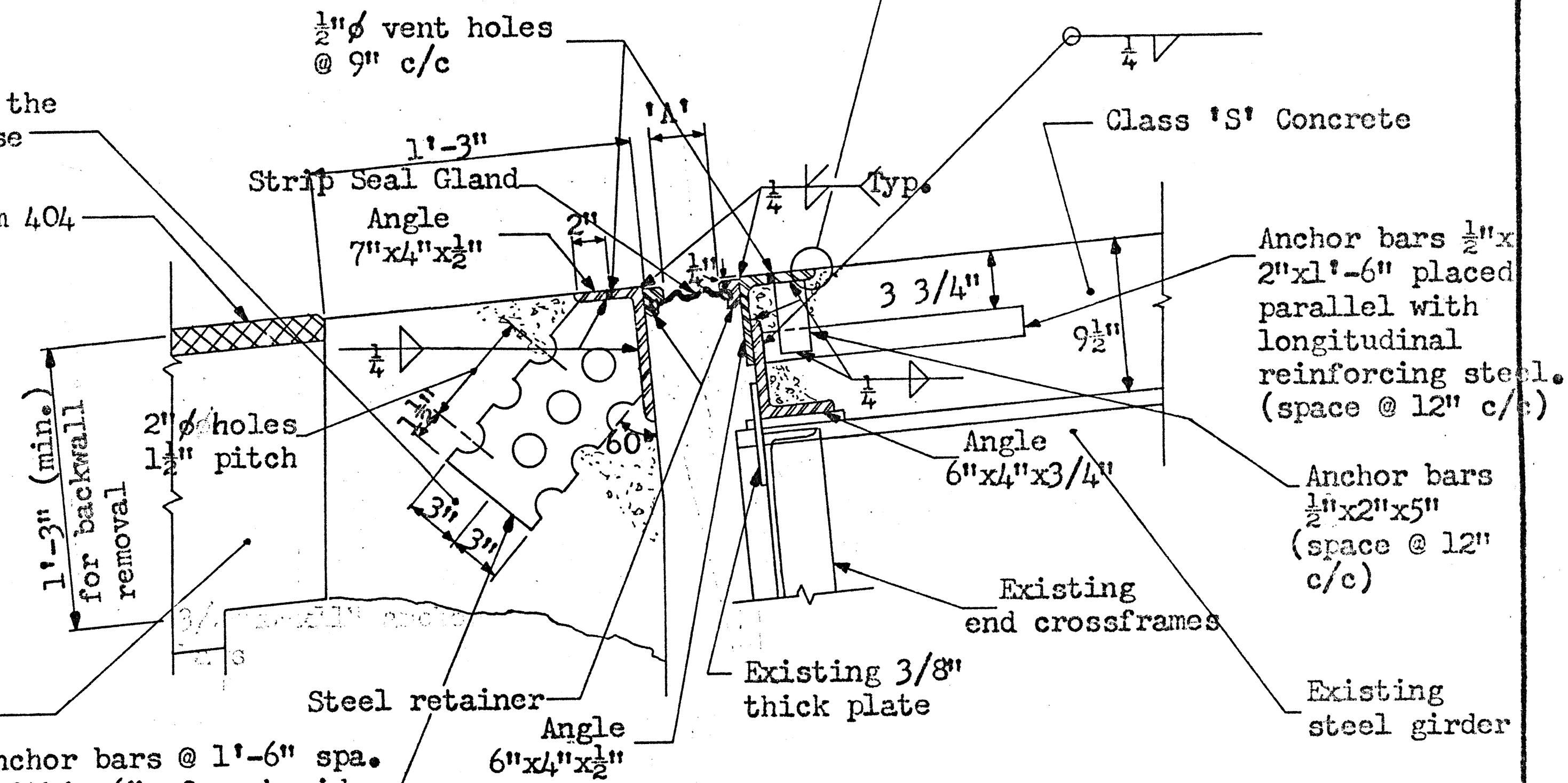


Remove backwall down to sound concrete at the direction of the Engineer. Clean and re-use existing reinforcing steel. Replace with Class 'C' Concrete.

Joint sealer 705.11 or 705.12, include with Class 'S' Concrete for payment.

Approach Slab

3/8"x6"x11" anchor bars @ 1'-6" spa. with one bar within 6" of each side of joints in angle.



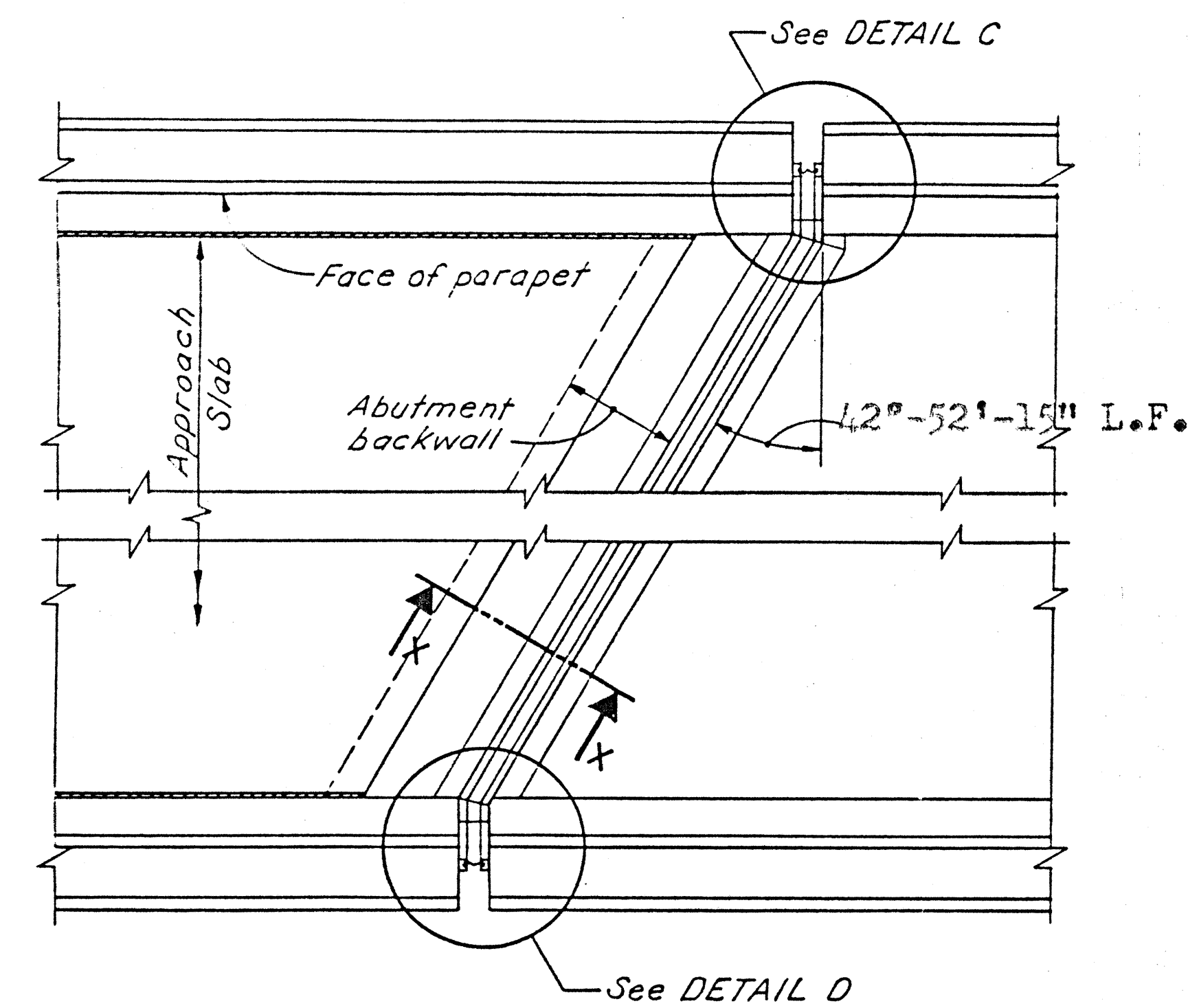
Finish concrete surface either flush with or slightly above joint armor.

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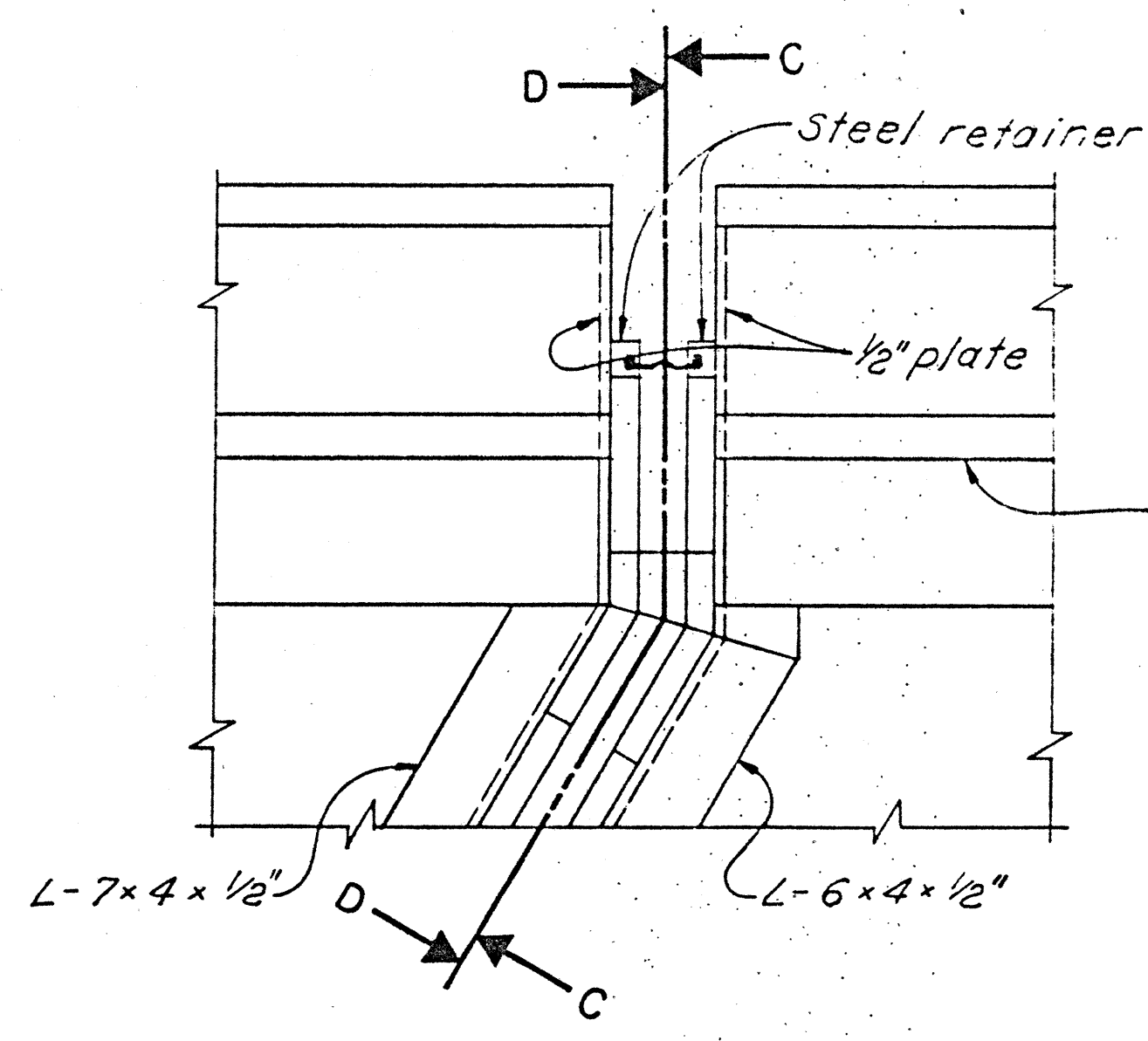
MODIFIED WINGWALL & EXPANSION JOINT DETAILS

DEL-521-0967

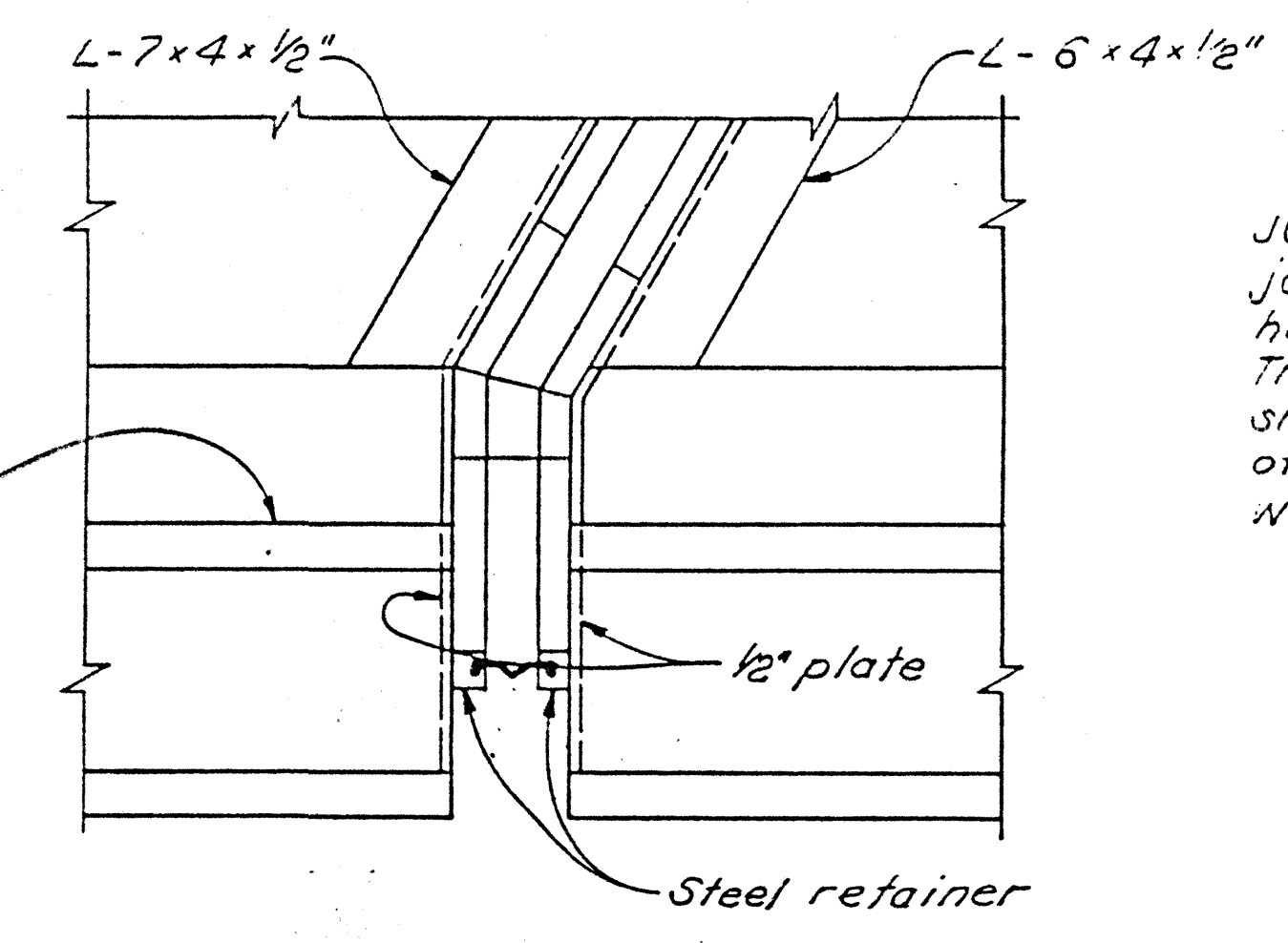
DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
				EM	11-21-86	



PLAN AT ABUTMENT

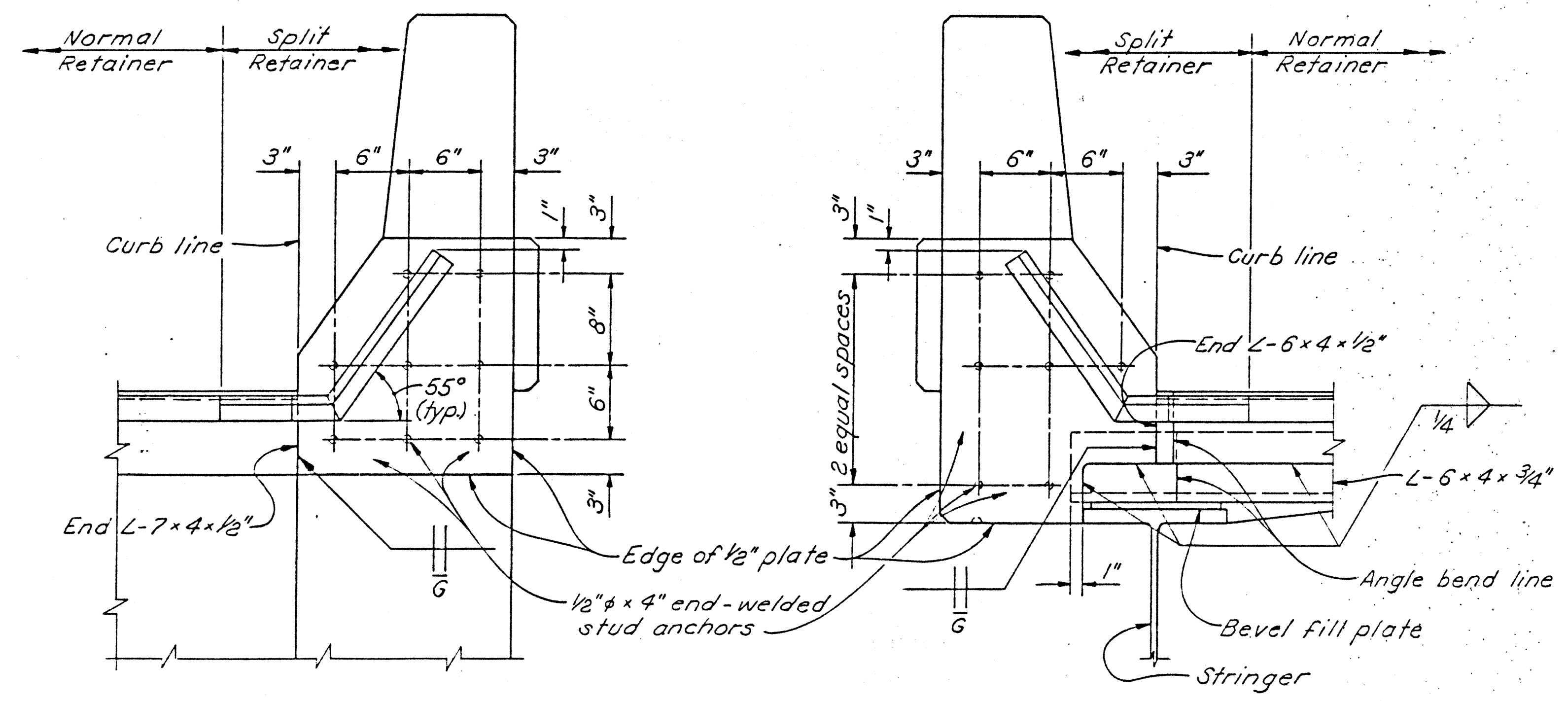


DETAIL C



DETAIL D

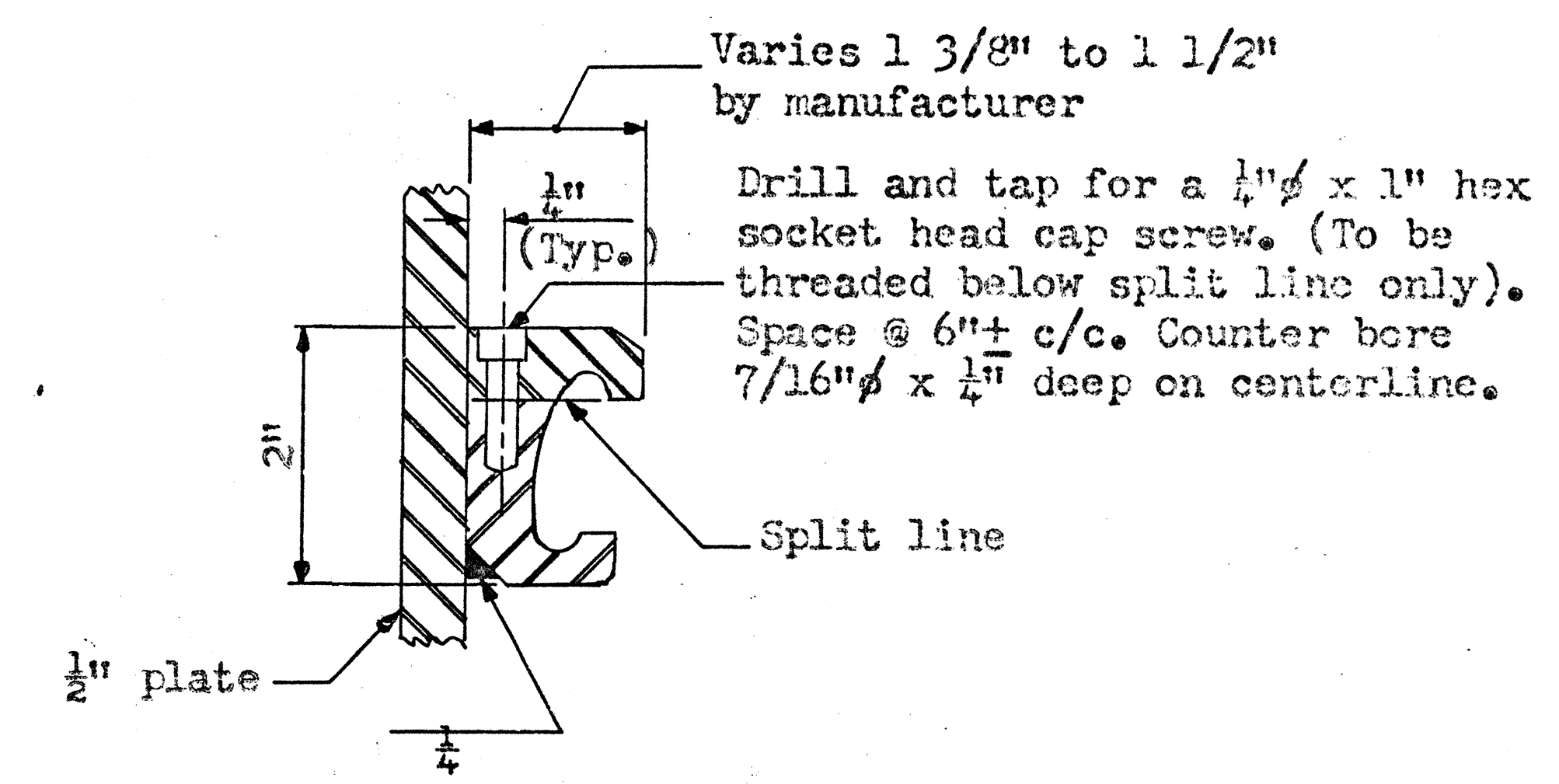
JOINTS IN END DAM ARMOR: Transverse joints in superstructure angles shall have complete penetration butt welds. Transverse joints in abutment angle shall be closely burra with a minimum of 6'-0" between joints. Welds in contact with seal glands shall be ground flush.



SECTION C-C

SECTION D-D

See SIDEWALK AND PARAPET JOINT ARMOR ANCHORS note on sheet 1/4.



SPLIT RETAINER DETAIL
Normal Retainer Similar

The split retainer shown above is a normal extrusion which has been modified as indicated. When joint upturns are greater than 60° (from horizontal), split retainers are required. When joint upturns are 60° or less, split retainers are optional. Steel retainers shall be welded at all miters (below the line where split).

STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS DISTRICT 6 BRIDGE DEPARTMENT						
STRIP SEAL EXPANSION JOINTS AT ABUTMENTS						
DEL-521-0967						
DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
		J a J		EM	11-21-86	

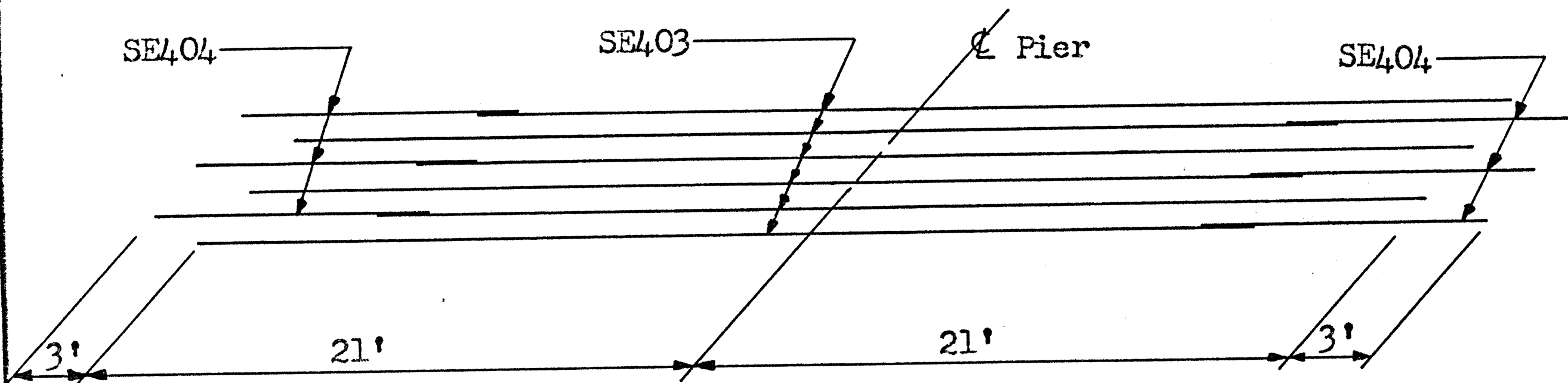
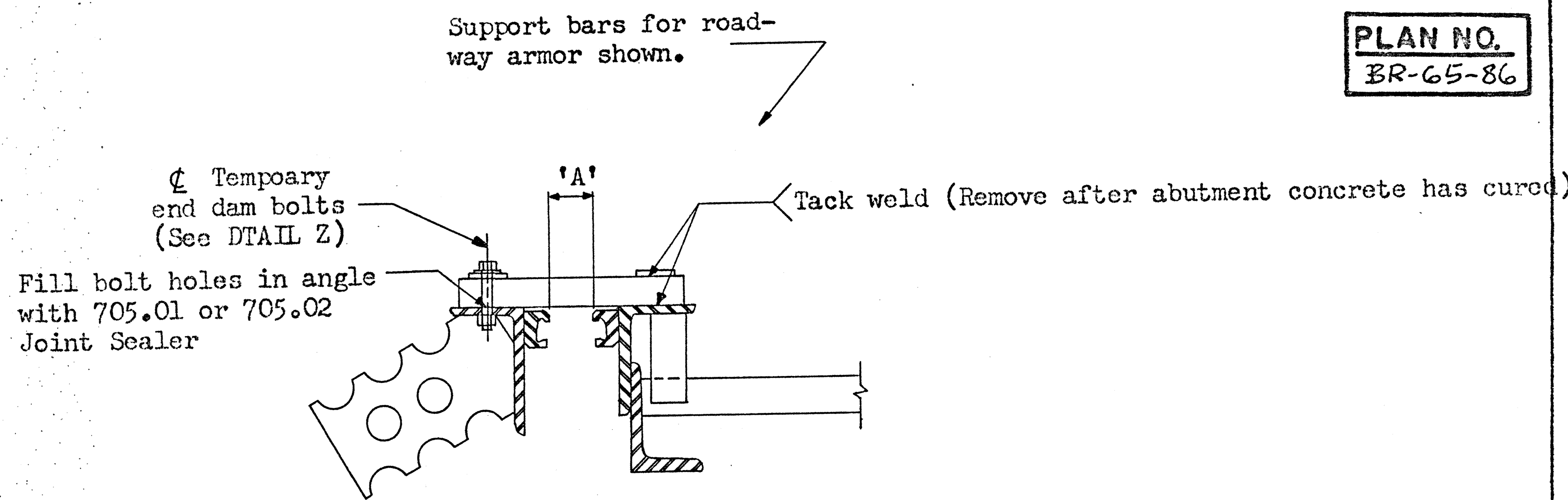
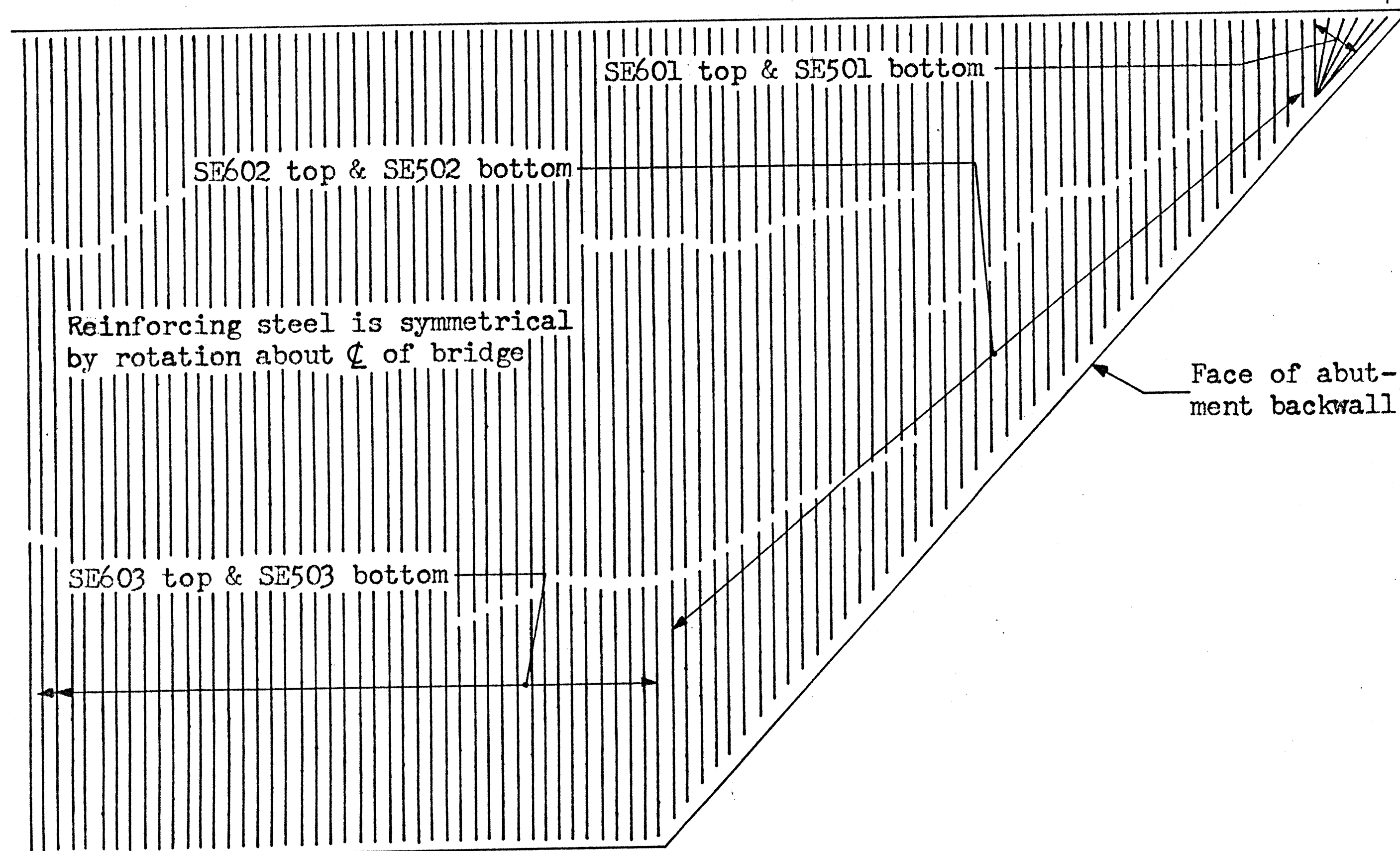
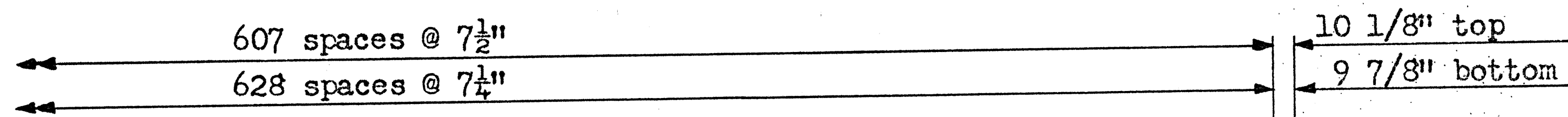


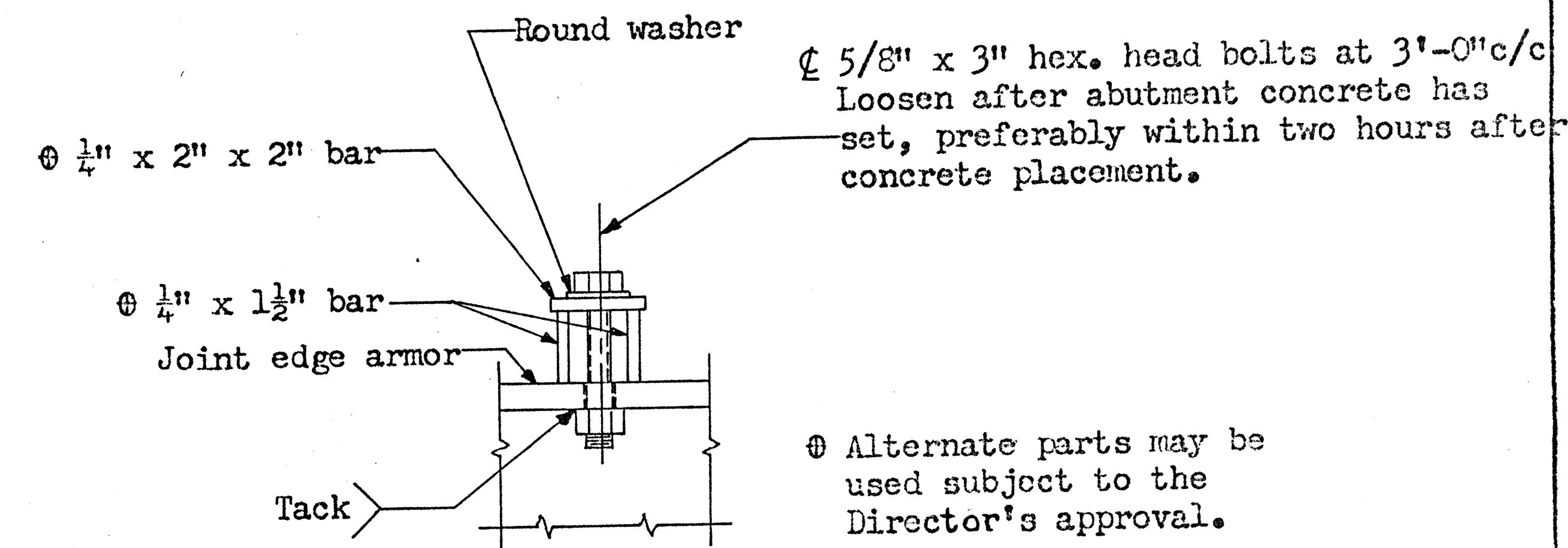
DIAGRAM SHOWING STAGGER OF SE403
& SE404 BARS OVER PIERS



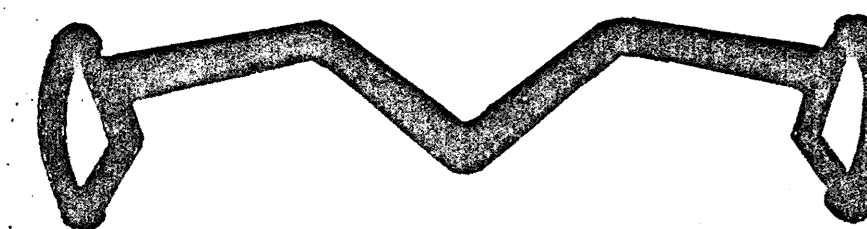
JOINT ARMOR ADJUSTMENT DETAIL



SLAB TRANSVERSE REINFORCEMENT



DETAIL Z
Temporary Support Bars



STRIP SEAL GLAND TABLE			
SEAL MOVEMENT RATING	MANUFACTURER & DESIGNATION *		
	D. S. BROWN	STRUCTURAL ACCESSORIES	WATSON BOWMAN & ACME
3"	SS300	30 SS	S-300
4"	SS400	40 SS	S-400
5"	SS500	50 SS	S-500

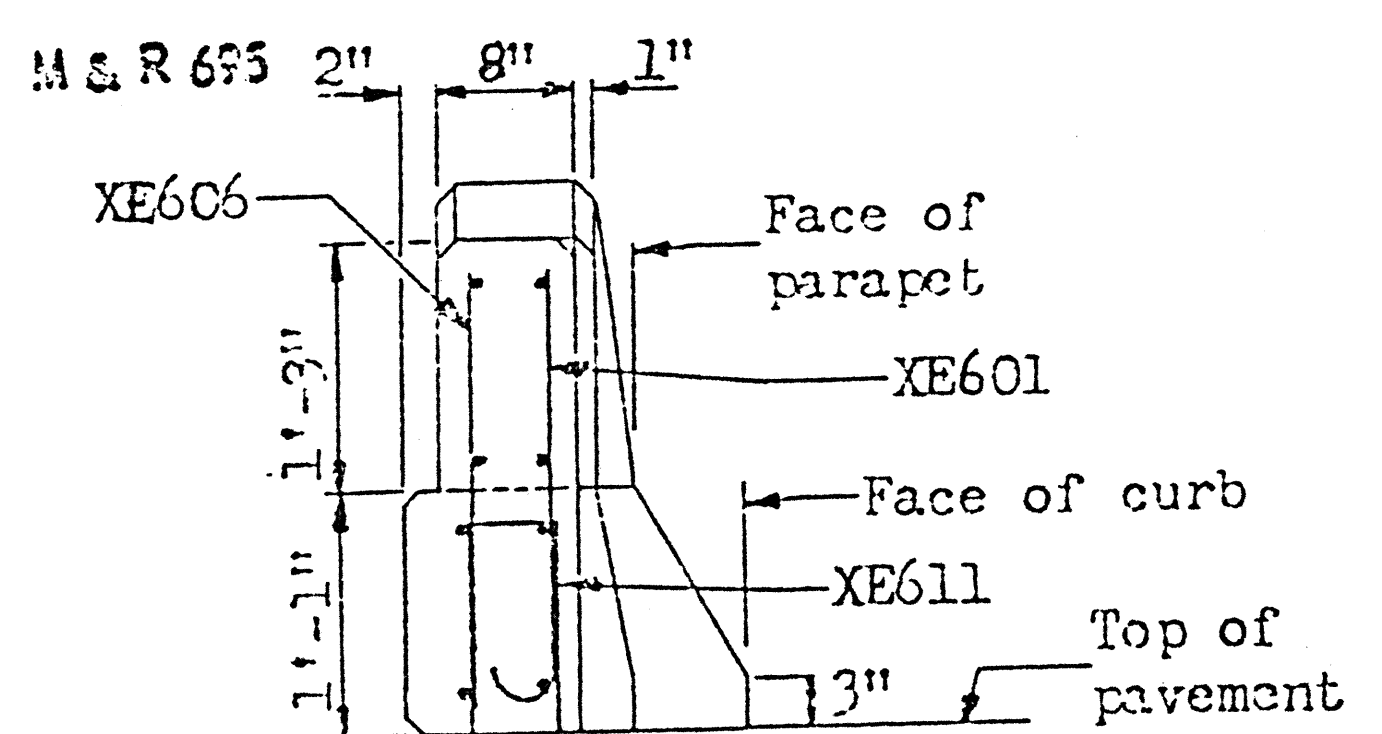
* OR AN APPROVED ALTERNATE

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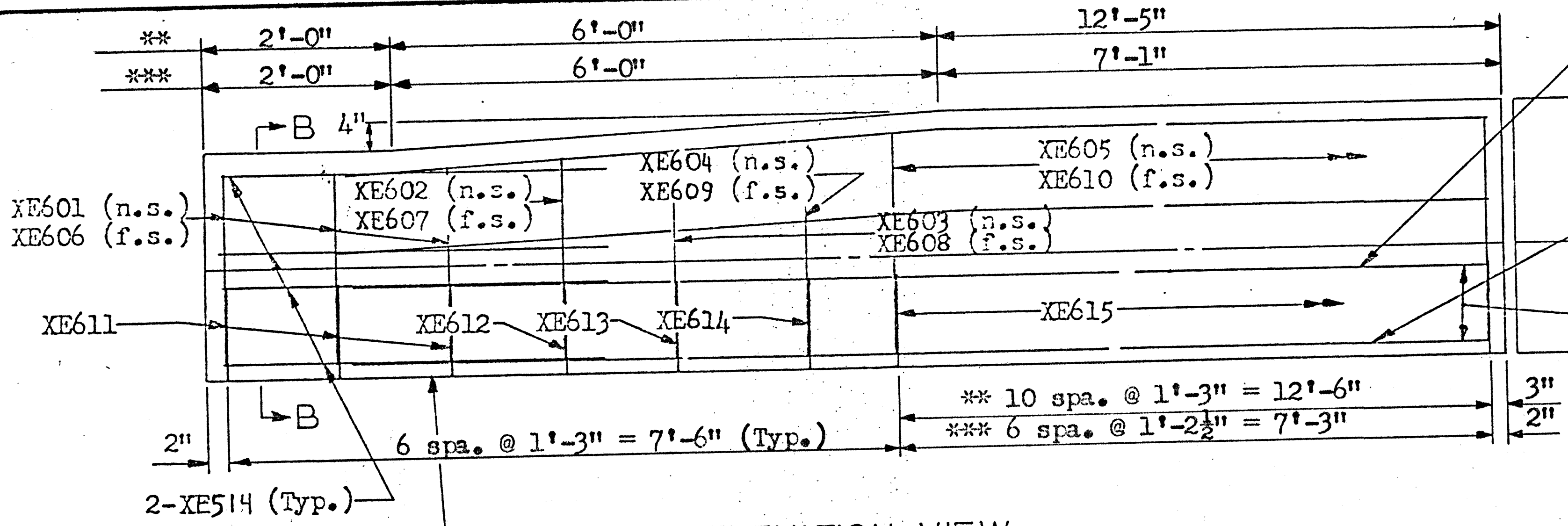
**DECK PLAN AND
TEMPORARY SUPPORTS**

DEL-521-0967

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
3 a 3	3 a 3	3 a 3		EM	11-21-86	



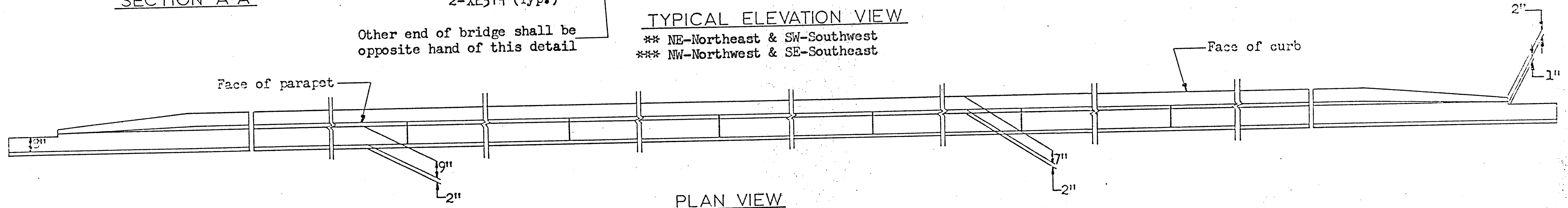
SECTION A-A



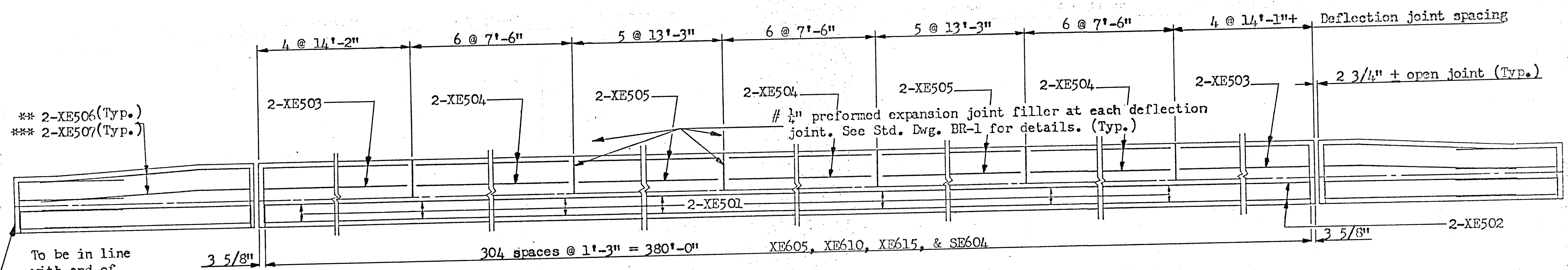
TYPICAL ELEVATION VIEW

Other end of bridge shall be opposite hand of this detail

** NE-Northeast & SW-Southwest
*** NW-Northwest & SE-Southeast



PLAN VIEW



ELEVATION VIEW

Min. 2" clearance between reinforcing steel and surface of concrete.
Lap #5 bars 1'-8" min.
The parapets may be cast at one time and the necessary deflection joints cut into the parapet after form removal by sawcutting. The subsequent joints shall then be sealed with a silicone or poly urethane caulking meeting Federal Specification TT-5-230-A.
n.s. - near side
f.s. - far side

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BRIDGE RAILING
DETAILS

DEL-521-0967

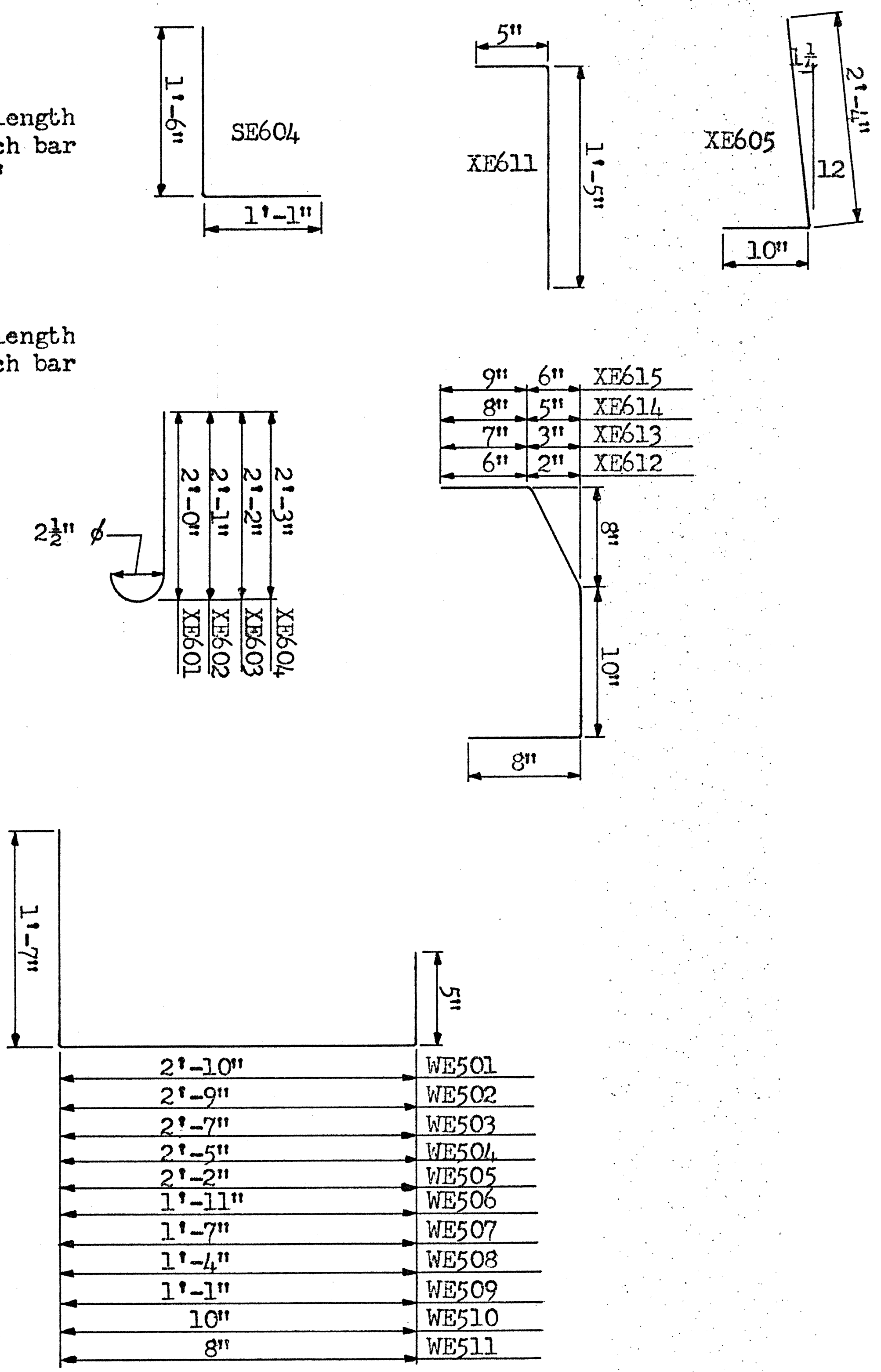
DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
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PLAN NO.
BR-65-86

MARK	NO.	LENGTH	WEIGHT	SHP.
Bridge Deck				
SE601	12	3'-5"	62	Str.
	2 series	3'-11"		
SE602	of	to	2575	Str.
	45 bars	34'-2"		
SE603	557	34'-4"	28724	Str.
SE604	610	2'-5"	2214	Str.
SE501	12	3'-3"	41	Str.
	2 series	3'-8"		
SE502	of	to	1863	Str.
	47 bars	34'-4"		
SE503	576	34'-4"	20627	Str.
SE504	468	30'-0"	14644	Str.
SE505	36	11'-5"	429	Str.
SE401	546	30'-0"	10942	Str.
SE402	42	7'-1"	199	Str.
SE403	123	36'-4"	2985	Str.
SE404	246	10'-0"	1643	Str.
Bridge Railing				
XE601	12	2'-6"	45	Bent
XE602	4	2'-7"	16	Bent
XE603	4	2'-8"	16	Bent
XE604	4	2'-9"	17	Bent
XE605	646	3'-0"	2911	Bent
XE606	12	2'-0"	36	Str.
XE607	4	2'-1"	13	Str.
XE608	4	2'-2"	13	Str.
XE609	4	2'-3"	14	Str.
XE610	646	2'-4"	2264	Str.
XE611	12	1'-8"	30	Bent
XE612	4	2'-7"	16	Bent
XE613	4	2'-8"	16	Bent
XE614	4	2'-10"	17	Bent
XE615	646	3'-1"	2992	Bent
XE501	104	30'-0"	3254	Str.
XE502	8	11'-8"	97	Str.
XE503	64	13'-9"	918	Str.
XE504	144	7'-2"	1076	Str.
XE505	80	12'-11"	1078	Str.
XE506	8	18'-9"	157	Bent
XE507	8	13'-5"	112	Bent

vary length of each bar by 8 1/4"

vary length of each bar by 8"

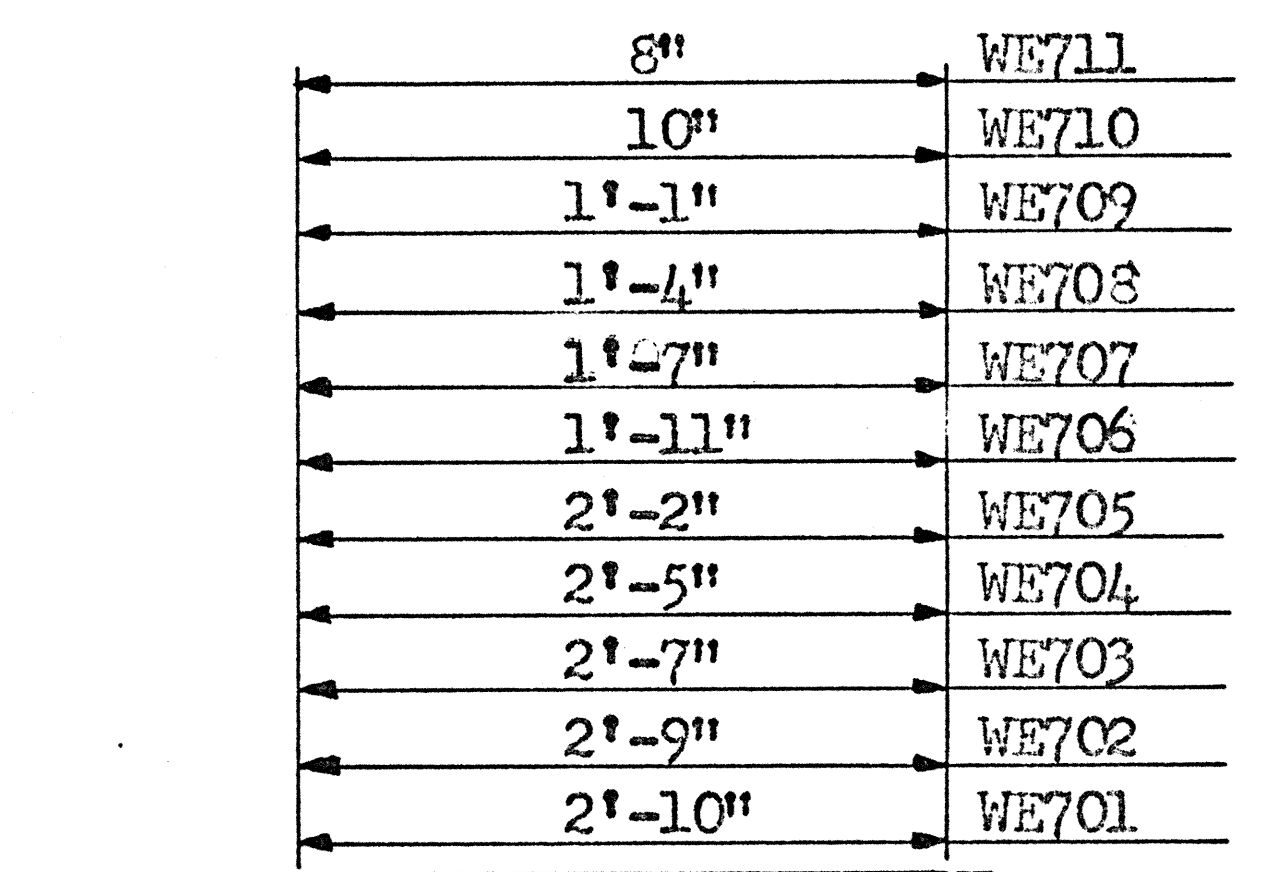
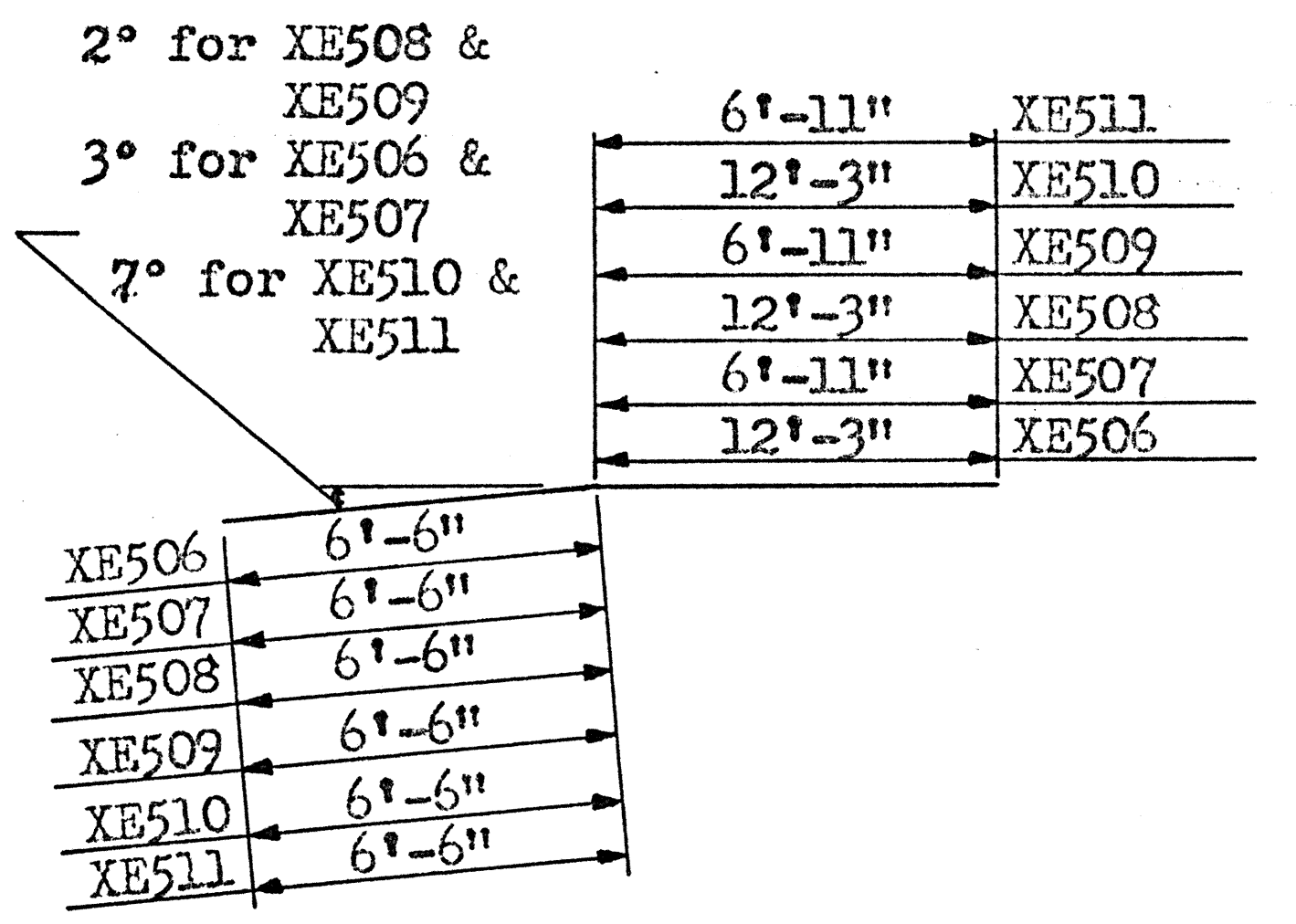


NOTE: Refer to CMS Sections 106.03, 700, 709.01 through 709.05 and 709.08. Sufficient additional reinforcing steel shall be provided for sampling. Random samples shall be replaced in the structure by the additional steel, spliced in accordance with 509.08.

MARK	NO.	LENGTH	WEIGHT	SHP.
XE508	2	18'-9"	39	Bent
XE509	2	13'-5"	28	Bent
XE510	2	18'-9"	39	Bent
XE511	2	13'-5"	28	Bent
XE512	4	18'-9"	78	Str.
XE513	4	13'-5"	56	Str.
XE514	32	3'-0"	100	Str.
Wingwalls				
WE701	20	3'-4"	136	Bent
WE702	4	3'-3"	27	Bent
WE703	4	3'-1"	25	Bent
WE704	4	2'-11"	24	Bent
WE705	4	2'-8"	22	Bent
WE706	4	2'-5"	20	Bent
WE707	4	2'-1"	17	Bent
WE708	4	1'-10"	15	Bent
WE709	4	1'-7"	13	Bent
WE710	4	1'-4"	11	Bent
WE711	4	1'-2"	10	Bent
# WE601	10	20'-1"	302	Str.
# WE602	10	14'-9"	222	Str.
WE501	20	4'-7"	96	Bent
WE502	4	4'-6"	19	Bent
WE503	4	4'-4"	18	Bent
WE504	4	4'-2"	17	Bent
WE505	4	3'-11"	16	Bent
WE506	4	3'-8"	15	Bent
WE507	4	3'-4"	14	Bent
WE508	44	3'-1"	13	Bent
WE509	4	2'-10"	12	Bent
WE510	4	2'-7"	11	Bent
WE511	4	2'-5"	10	Bent

"E" as a prefix means Epoxy Coated

Bend in field where necessary

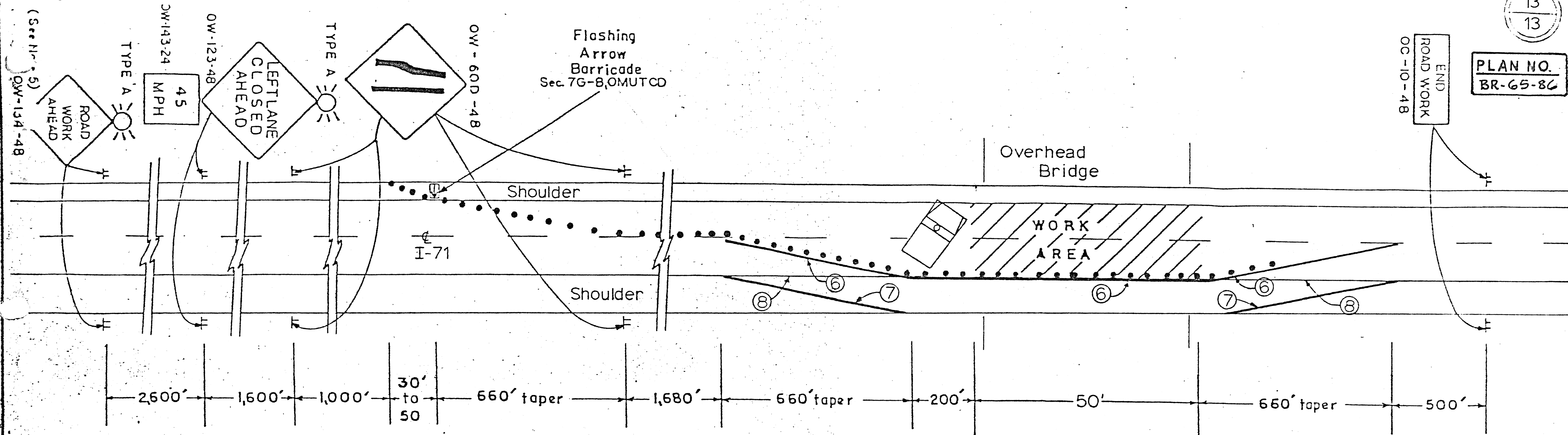


STATE OF OHIO
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DISTRICT 6 BRIDGE DEPARTMENT

REINFORCING
STEEL LIST

DEL-521-0967

DESIGN	DRAWN	TRACED	CHECKED	REVIEW	DATE	REVISED
S a 3	S a 3	S a 3	S a 3	EM	11-21-86	



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. Cones, drums or barricades shall be spaced at 50 to 60 foot centers in an area from 200 feet ahead of the work area to 1,000 feet into the work area and at a maximum of 100 to 120 feet for the balance of the work area. Cones may be substituted for the barricades or drums for the lane closures during daylight hours only.
2. One (1) lane of traffic shall be maintained at all times.
3. The work vehicle shown on the beginning of the work area shall be in place and unoccupied whenever men are working within the work area. This vehicle shall be moved from the pavement whenever workmen are not in the work area. Other protective devices may be used in lieu of the work vehicle shown when approved by the Engineer.
4. 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.
5. The Type A flashing barricade warning lights shown on the "Road Construction Ahead" sign, OW-128-48, are required whenever a night lane closure is necessary.
6. Install 4" Temporary Channelizing Lines, White, Class I and remove when work is completed.
7. Install 4" Temporary Edge Lines, White, Class I and remove when the work is completed.
8. Remove existing conflicting markings and replace when the work is completed.
9. The Contractor shall make any necessary shoulder repairs as directed by the Engineer to maintain traffic on shoulders.
10. The cost of all Items on this sheet to be included in the cost of Item 614 - Maintaining Traffic.
11. A minimum of one 10' lane shall be maintained at all times unless otherwise directed by the Engineer.
12. Closing only the left lane of a four (4) lane highway shall be as detailed in "Closing one lane of a four lane highway".

LANE CLOSURE FOR REPAIR
 OF OVERHEAD BRIDGE

DEL-521-0967
 over I-71