STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DRAPER-TEMPLE STREETS
CITY OF WASHINGTON
FAYETTE COUNTY

ISSUE I PROJECT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	STATE	

FAYETTE COUNTY
DRAPER-TEMPLE STREETS

CONVENTIONAL SYMBOLS

CENTER LINE		TELEPHONE POLES	
PROPERTY LINE	℄	TREES	
RIGHT OF WAY	R/W	STUMPS	
CORPORATION LINE		FIRE HYDRANT	
WATER LINE	W	VALVE BOX	
GAS LINE	G	FENCE	
STORM SEWER	ST	CONSTRUCTION LIMITS	
SANITARY SEWER	SAN	GUARD RAIL (PROPOSED)	
COMBINATION SEWER	COMB	GUARD RAIL (EXISTING)	
POWER POLES		RAILROAD CROSSBUCK	

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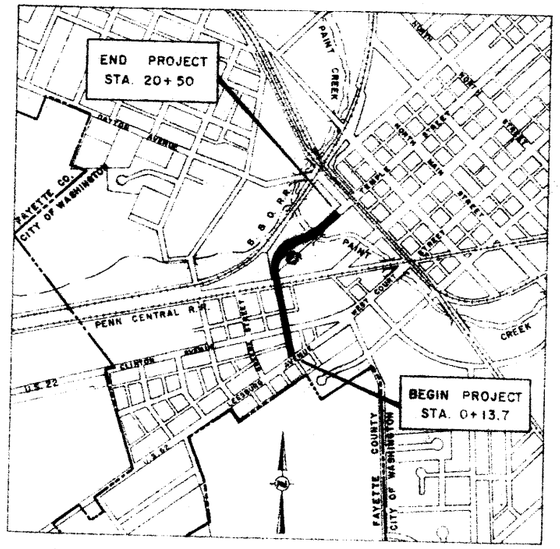
LINE DATA

BEGIN PROJECT	STA. 0+13.7	
END PROJECT	STA. 20+50	
NET LENGTH OF PROJECT	2,036.3 LIN. FT. OR 0.385 MILE	
ADD FOR WORK		
STA. 0+08.5 TO STA. 0+13.7	5.2 LIN. FT.	
NET LENGTH OF WORK	2,041.5 LIN. FT. OR 0.386 MILE	



LOCATION MAP

0 800 1600 2400 3200 4000 4800
SCALE IN FEET

DESIGN DESIGNATION

CURRENT ADT.	2260
DESIGN YEAR ADT.	3950 (20 Year)
D.H.V.	500
D.	60 %
T.	20 %
V.	25 M.P.H.

1969 SPECIFICATIONS

The Standard Specifications of the State of Ohio, Department of Highways, including changes and supplemental specifications listed in the Proposal, shall govern this improvement.

The Right-of-Way for this improvement will be provided by the State of Ohio.

I hereby approve these plans and declare that the making of this improvement will require the closing to traffic of the highway as noted on sheet 4.

APPROVED Clarence A. Christman Jr.
DATE 8/24/70 CITY MANAGER, CITY OF WASHINGTON

APPROVED Charles P. Wagner
DATE 8-24-1970 COUNTY ENGINEER, FAYETTE COUNTY

APPROVED Robert McFarlane
DATE 8-24-1970 COMMISSIONER, FAYETTE COUNTY

APPROVED Lawrence A. Denfeld
DATE 8/24/70 COMMISSIONER, FAYETTE COUNTY

APPROVED Robert J. Moore
DATE 8-24-70 COMMISSIONER, FAYETTE COUNTY

APPROVED Richard D. Jackson
DATE 9-14-70 DIVISION DEPUTY DIRECTOR

APPROVED C. H. Alberates
DATE 10-7-70 ENGINEER OF BRIDGES

APPROVED R. E. Ballin
DATE 10-7-70 ENGINEER OF LOCATION AND DESIGN

APPROVED Barry J. Thomas
DATE 10-7-70 DEPUTY DIRECTOR OF DESIGN AND CONSTRUCTION

APPROVED
DATE DEPUTY DIRECTOR OF RIGHT-OF-WAY

APPROVED Thomas M. Mater
DATE 10-21-70 DEPUTY DIRECTOR OF PLANNING AND PROGRAMMING

APPROVED P. W. Wilson
DATE 10-22-70 FIRST ASSISTANT DIRECTOR

APPROVED P. E. Masheter
DATE 10-22-70 DIRECTOR OF HIGHWAYS

PLANS PREPARED BY
THE JENNINGS - LAWRENCE CO.
555 BUTTLES AVENUE
COLUMBUS, OHIO

FOR THE CITY OF WASHINGTON
RECOMMENDED FOR APPROVAL

Robert L. Sucke 24369
REGISTERED ENGINEER STATE OF OHIO

STANDARD DRAWINGS

BP-5	6-1-65	MH-1A	10-1-68	SUPPLEMENTAL SPECIFICATIONS	
BP-6	6-1-65	HW-D	6-1-65	801	1-1-69
BP-7	1-1-66	GR-1	1-1-67	836	6-17-69
MC-3	6-20-69	GR-2A	1-1-67		
MC-4	6-13-69	L-1	6-1-65	938	8-12-69
CB-2-2-A & B	6-1-65	AS-1-67	6-12-69	1001	1-1-69
MH-1	10-1-68	BP-3	12-1-68	808	11-14-69
HW-4	1-1-70	P-1-54	11-8-65		

SCALES IN FEET

PLAN	(1" = 20')
PROFILE HORIZONTAL	(1" = 20')
PROFILE VERTICAL	(1" = 2')
ROADWAY CROSS SECTIONS	(1" = 5')
INTERSECTION DETAILS	(1" = 10')

20' 0 20'
20' 0 20'
2' 0 2'
5' 0 5'
10' 0 10'

FILE NO. FAYETTE COUNTY DRAPER-TEMPLE STREETS
DATE OF LETTING
CONTRACT NO.

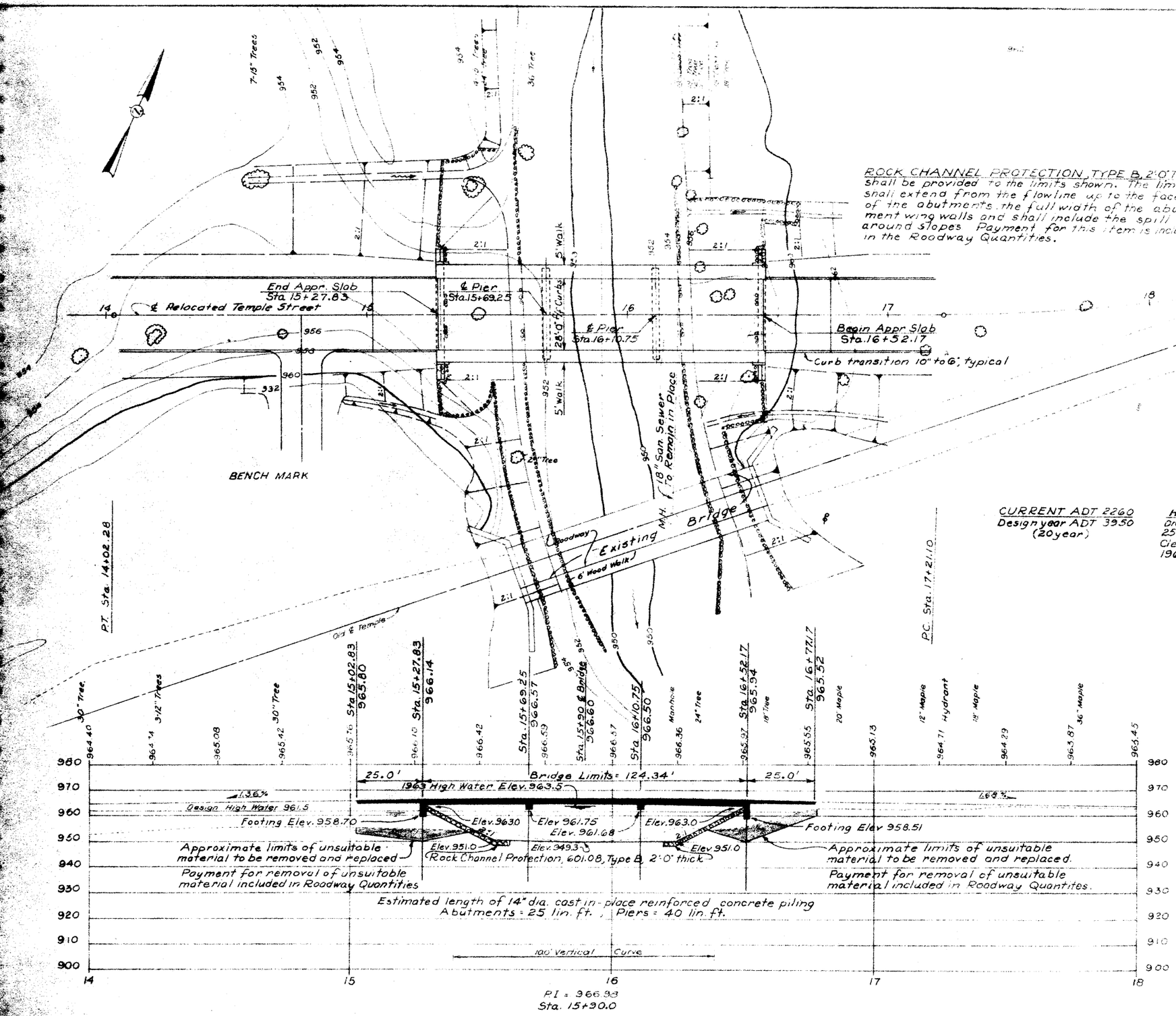
701022

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	STATE	

FAYETTE COUNTY
DRAPER — TEMPLE STREETS

ROCK CHANNEL PROTECTION, TYPE B, 2'-0" THICK shall be provided to the limits shown. The limits shall extend from the flowline up to the face of the abutments, the full width of the abutment wing walls and shall include the spill around slopes. Payment for this item is included in the Roadway Quantities.

FOUNDATION SOUNDINGS: The foundation design and quantities are based on a study of soil-samplings made on the site. Copies of this information are available at the office of the City Engineer, Washington Court House, Ohio and at the Bureau of Bridges, Ohio Department of Highways, Columbus, Ohio. The State of Ohio does not guarantee the accuracy of the foundation information.



CURRENT ADT 2260
Design year ADT 3950
(20 year)

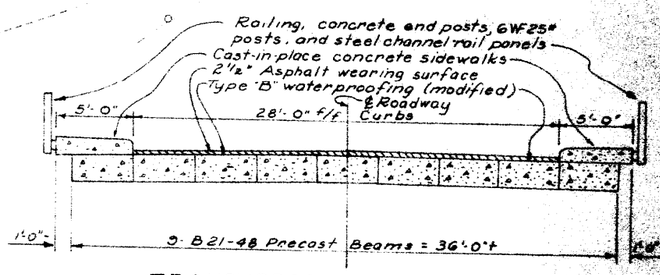
HYDRAULIC DATA
Drainage Area 70 sq. mi.
25 yr. High Water Elev. 961.5
Clears 25 yr. High Water 2.6 feet
1963: Discharge = 5,200 C.F.S.
High Water = Elev. 963.5 ±
Velocity = 3.7 F.P.S.

NOTE

Existing superstructure to be removed by the City prior to award of this contract.

Existing abutments to be removed as per Item 202 and payment is included in Roadway Items covering channel relocation. Damage to the existing 18" sewer shall be prevented. The Contractor shall proceed with caution with any work in areas adjacent to the 18" sewer. If centerline of pier piling is actually closer than 5 feet to the 18" sewer, all piling within this distance shall be preboned to below the flow line of the sewer. Any damage to the existing 18" sewer resulting from the Contractors operations or negligence, as determined by the Engineer, shall be immediately repaired by the Contractor, at no additional cost.

Earthwork limits shown are schematic. Actual slopes shall conform to Plan cross-sections.



TRANSVERSE DECK SECTION

EXISTING STRUCTURE

TYPE: WROUGHT IRON TRUSS WITH CANTILEVERED 6' WOOD PLANK SIDEWALK ONE SIDE ONLY

SPAN: 100'
ROADWAY: 16'
SKEW: NONE
WEARING SURFACE: WOOD STRIP
CONDITION: DAMAGED SUPERSTRUCTURE TO BE REMOVED BY CITY

PROPOSED STRUCTURE

TYPE: PRECAST PRESTRESSED CONCRETE NON-COMPOSITE B-21-48 BOX BEAMS, SUPPORTED ON CAPPED PILE PIERS & ABUTMENTS

SPAN: 40'-0", 40'-0", 40'-0" ℄ BRG
ROADWAY: 28' ⅞ + 5' SIDEWALKS
LOADING: HS-20-44
SKEW: NONE
WEARING SURFACE: 2" ASPHALT
APPROACH SLAB: AS-1-69, 25'-0" LONG
ALIGNMENT: TANGENT

THE JENNINGS-LAWRENCE CO.
CIVIL & MUNICIPAL ENGINEERS
COLUMBUS, OHIO

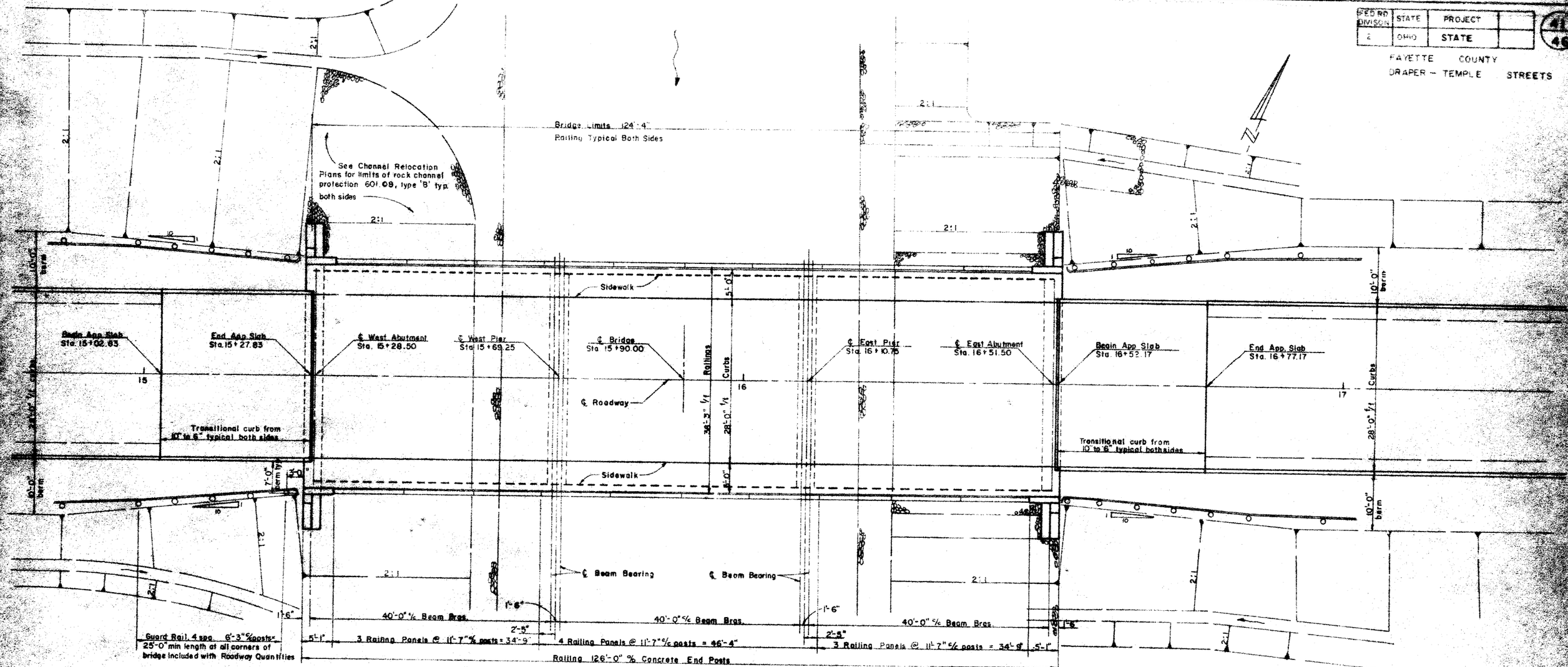
SITE PLAN
TEMPLE STREET BRIDGE
OVER PAINT CREEK
JULY 1970
DESIGN LOADING HS20-44
WASHINGTON COURT HOUSE OHIO

701022

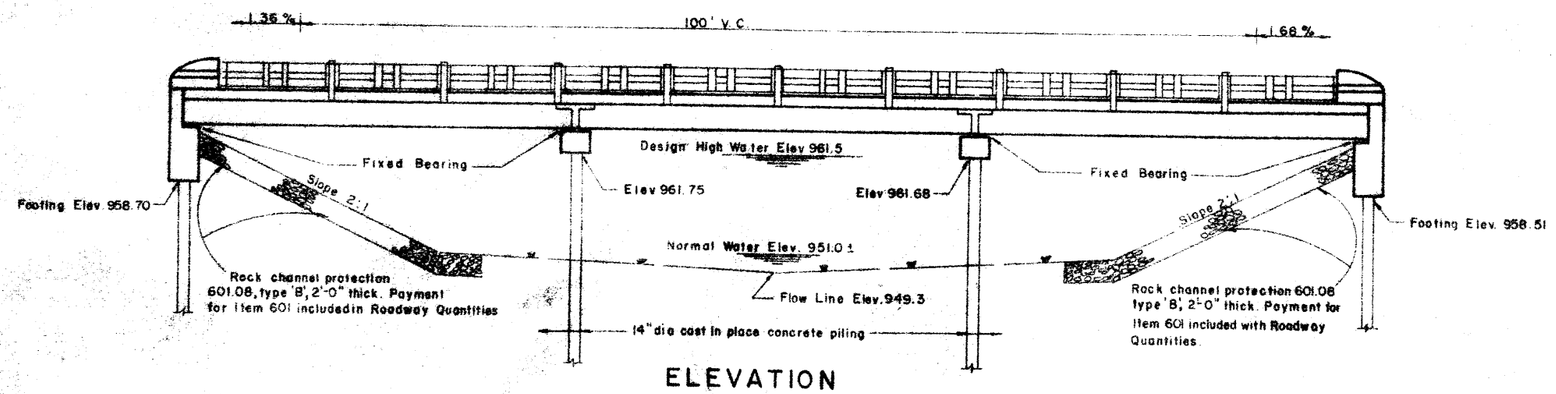
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
R.P.	R.R.	R.R.	R.R.		

FED RD DIVISION	STATE	PROJECT	
2	OHIO	STATE	

FAYETTE COUNTY
DRAPER – TEMPLE STREETS



GENERAL PLAN



ELEVATION

The Jennings Lawrence Co.
Civil & Municipal Engineers
Columbus Ohio

GENERAL PLAN & ELEVATION

TEMPLE STREET BRIDGE
OVER PAINT CREEK
JULY 1970
DESIGN LOADING HS20-44
WASHINGTON COURT HOUSE OHIO

Designed	Drawn	Traced	Checked	Reviewed
R.R.	R.R.	R.W.C.	R.P.	

FED RD DIV. SION	STATE	PROJECT	
2	OHIO	STATE	

FAYETTE COUNTY
DRAPER - TEMPLE STREETS

GENERAL NOTES

REFERENCE: Reference shall be made to standard drawing AS-1-67 Revised 6-12-69, Supplemental Specification 836 dated 6-17-69 and 808 dated 11-14-69

Design Specifications: This structure conforms to standard specifications for highway bridges adopted by the American Association of State Highway Officials, 1969, including the State of Ohio Supplement to these specifications.

DESIGN DATA:

Design Loading	S20-60 (meets requirements of HS20-44)
Concrete Class C	Unit stress 1200 psi for superstructure Unit stress 1333 psi for substructures
Structural Steel	ASTM A-36 - Unit stress 20,000 psi
Reinforcing Steel	ASTM A-615, A616 or 617 Unit stress 20,000 psi

SPECIFICATIONS: All items or section numbers appearing in these plans refer to State of Ohio, Dept. of Highways Construction and Material Specifications dated January 1, 1969

REMOVAL OF EXISTING SUPERSTRUCTURE: Will be by others

REMOVAL OF EXISTING SUBSTRUCTURE: Is included in roadway quantities for payment. (202) Suitable waste masonary may be used as channel protection, as directed by the engineer.

EMBANKMENT CONSTRUCTION: The embankment shall be constructed to the level of the subgrade for a minimum distance of 200 feet back of the abutments. Excavation shall then be made for the abutments.

PILES: Shall be driven to minimum bearing capacity of 30 tons per pile for the abutments and 35 tons per pile for the piers.

PIER PILE ENCASEMENT: If the tapered portion of any pier pile extends above the stream bed, an encasement, as shown on standard drawing P-1-54 latest revision, will be required for all pier piles. If no encasement is required, pile casing shall have a thickness of metal of not less than no 7 guage and the painting of the piles shall extend to low water elevation. The painting of the piles shall be in accordance with 514 and the unit price bid per lineal foot for item 507, Bearing Piles, shall include the painting of piles.

EXISTING 18' DIA. SANITARY SEWER: Within the bridge limits is to remain in place. The exact location of the sewer line is to be determined by the contractor prior to driving adjacent pier piling. If the centerline of any pile is less than (5) five feet from the sewer line, the pile shall be pre-bored to an elevation below the flow line of the sewer line. Payment for all labor, materials and equipment required to preform this work shall be included in the unit price bid for item 507.

PRESTRESSED CONCRETE BRIDGE MEMBERS ITEM 515: This item shall consist of furnishing and erecting the prestressed beams, dowels, transverse tie rods, grouting of dowels mortoring of shear keys, and railpost inserts.

Transverse tie rods shall be provided through the diaphragms in the positions indicated. Each tie rod shall be equivalent to a 1" diameter mild steel rod, as per 711, tightened to 18,000 pounds. Tension may be applied by a torque of approximately 300 foot pounds with the threads lubricated.

After transverse tie rods have been placed and tightened, shear keys between the beams shall be filled with low slump non-shrink portland cement mortar. Mortar shall be tamped into the keyways in a manner that insures complete and solid filling.

The contractor shall furnish a complete set of fabrication and erection plans for the precast prestressed beams. These plans shall include all details required in the manufacture, transportation, erection and completion of assembly of the bridge members as a portion of the superstructure

These plans shall be submitted to the engineer for his approval prior to the fabrication of any precast bridge members as per 515.02.

CAMBER: Of (1) one inch has been calculated for the precast prestressed concrete beams under full dead load.

TYPE "B" WATERPROOFING MODIFICATION ITEM 512: The following are to be added to the requirements of item 512.

All bituminous material shall be asphalt.

Placing of waterproofing shall begin at the face of the curbs and shall progress toward the center

The waterproofing shall extend up the face of the curbs a minimum of (½) one half inch above the top of the asphalt wearing surface and shall terminate in a neat line.

All joints and irregularities in the deck shall be filled with bituminous material sec. 702.06 after the deck is primed.

After the deck is primed and before the first mopping, an extra ply of fabric shall be laid over the joint or irregularity being wide enough to extend at least 9" on each side of it. The membrane shall then be mopped on top of this extra ply allowing the under side to remain loose which allows for movement in the joint.

INTERMEDIATE COURSE ITEM 403: Adequate planks or runways shall be used so that the paving machine will have no direct bearing on the surface of the waterproofing membrane.

UTILITY LINES: All expense involved in relocating (installing) the affected utility lines shall be borne by the owner(s). The contractor and owner (s) are requested to cooperate by arranging their work in such a manner that inconvenience to either would be held to a minimum.

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	SUPERSTRUCTURE	ABUTMENTS	PIERS	GENERAL	UNIT	TOTAL
403	20	Cu. Yds.	Asphalt concrete intermediate course (70-85)	20					
404	11	Cu. Yds.	Asphalt concrete surface course (70-85)	11					
503	105	Cu. Yds.	Unclassified excavation		105				
505	Lump	Sum	First test pile		450	720			
507	1,170	Lin. Ft.	14" dia. cast-in-place reinforced concrete piles						
509	15,843	Lbs.	Reinforcing steel	5131	6,818	3,894			
510	24	Lin. Ft.	Dowel holes		8	16			
511	61	Cu. Yds.	Concrete Class 'C' superstructure, sidewalks and deck joints at piers.	61					
511	21	Cu. Yds.	Concrete Class 'C' pier caps			21			
511	66	Cu. Yds.	Concrete Class 'C' abutments.		66				
512	400	Sq. Yds.	Type 'B' waterproofing (modified)	400					
515	27	Each	Prestressed concrete bridge members B-21-48, non-composite	27					
516	68.04	Sq. Ft.	1" thick elastomeric bearing pads, 5" wide, 1'-6" long, 50, 60 or 70 hardness		22.68	45.36			
516	177	Sq. Ft.	½" preformed expansion joint filler		33	144			
516	132	Sq. Ft.	2" preformed expansion joint filler		132				
517	252	Lin. Ft.	Railing including concrete end posts, steel posts and panels, and connections	252					
518	18	Cu. Yds.	Porous backfill		18				
808	61	Units	Chemical admixtures for concrete Type A, B, or D	61					

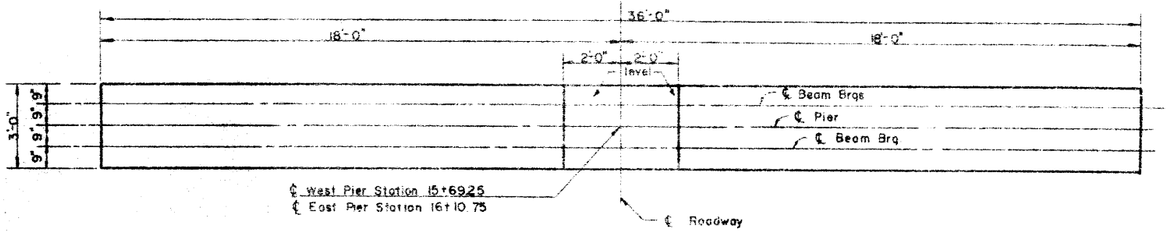
The Jennings Lowrance Co
Civil & Municipal Engineers
Columbus Ohio

GENERAL NOTES & ESTIMATED QUANTITIES
TEMPLE STREET BRIDGE
OVER PAINT CREEK
JULY 1970
DESIGN LOADING HS 20-44
WASHINGTON COURT HOUSE OHIO

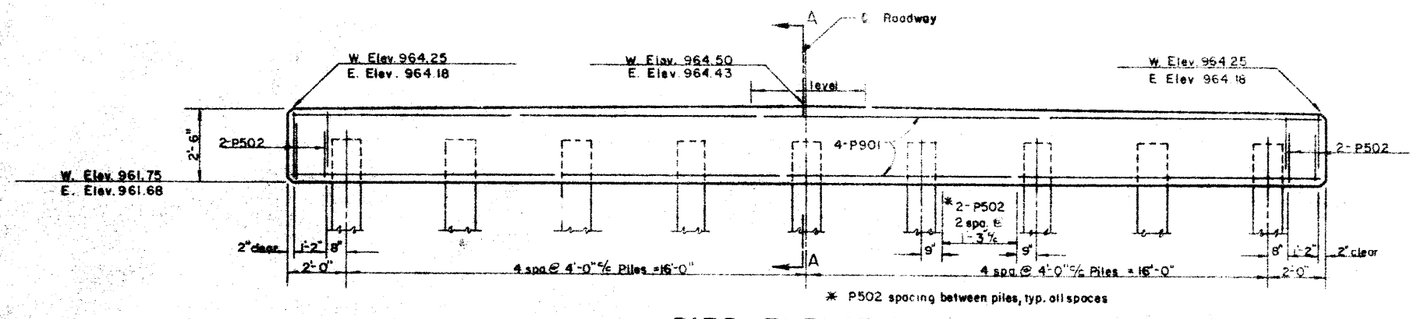
Designed	Drawn	Traced	Checked	Reviewed	Revised
R R	R.W.C	R.W.C	R P		

FED RD DIVISION	STATE	PROJECT	
2	OHIO	STATE	

FAYETTE COUNTY
DRAPER–TEMPLE STREETS

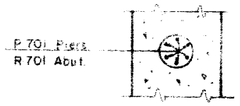


PIER PLAN

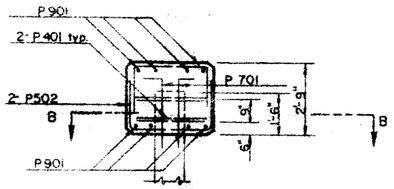


* P502 spacing between piles, typ. all spaces

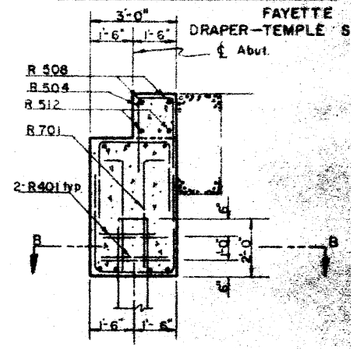
PIER ELEVATION



SECTION B-B

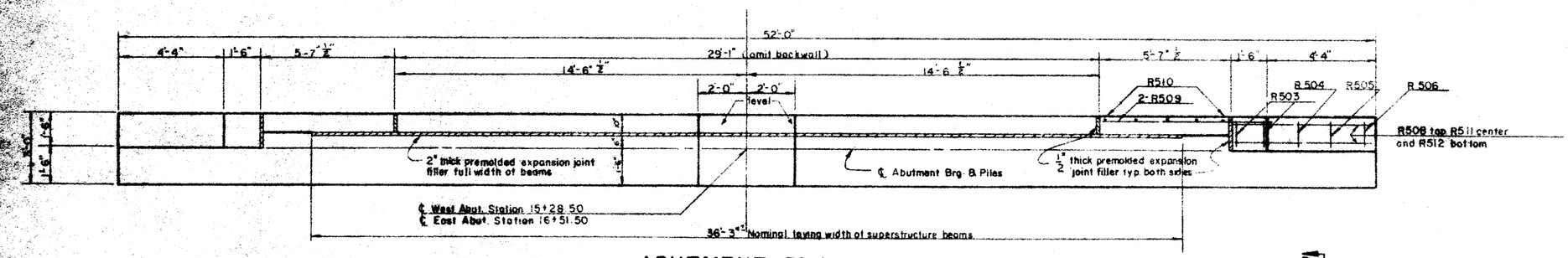


SECTION A-A

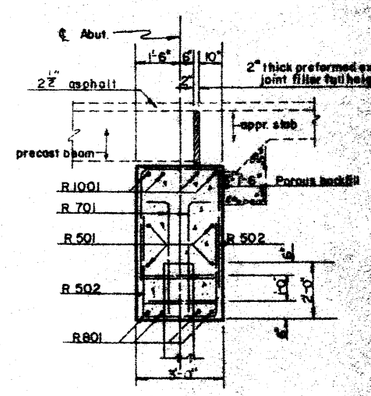


Reinforcing steel not shown same as shown in Section C-C

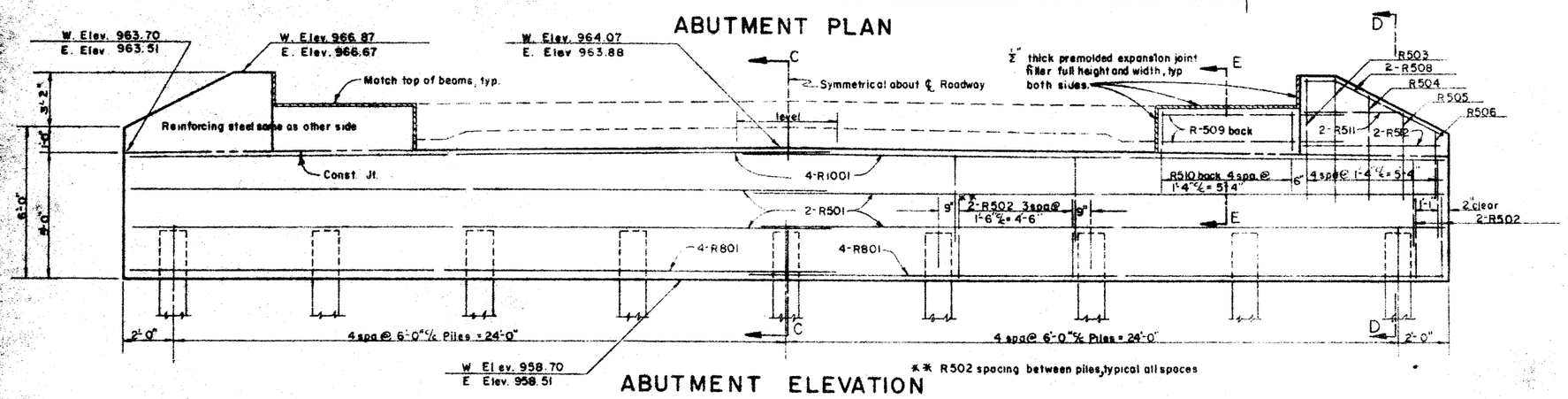
SECTION D-D



ABUTMENT PLAN

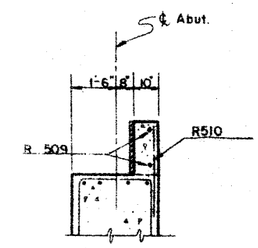


SECTION C-C



** R502 spacing between piles, typical all spaces

ABUTMENT ELEVATION



Reinforcing steel not shown same as shown in section C-C

SECTION E-E

NOTES

WING WALLS & BACKWALLS shall be poured only after the superstructure beams are in place, the rods tightened, and joints grouted.

POROUS BACKFILL 1'-6" thick, shall extend from 1'-0" below beam seat at the centerline, 2'-0" below the beam seat at end of wing walls, upward to the approach slab and to the surface of the earth shoulders, and outward to the surface of the embankment slopes. Excavation therefore in excess of that required for construction of the footing shall be considered as paid for in the bid price per cubic yard for Item 518, Porous Backfill.

EXCAVATION quantity includes the removal of the embankment material between the bottom of the abutment and the level of the subgrade

ALL PREFORMED EXPANSION JOINT FILLER shall be placed after the precast beams are in place. The wing walls, back walls and approach slabs shall be poured against the joint filler. The 2" joints shall then be sealed with 705.02, Joint Sealer, prior to waterproofing and pouring of sidewalk slab.

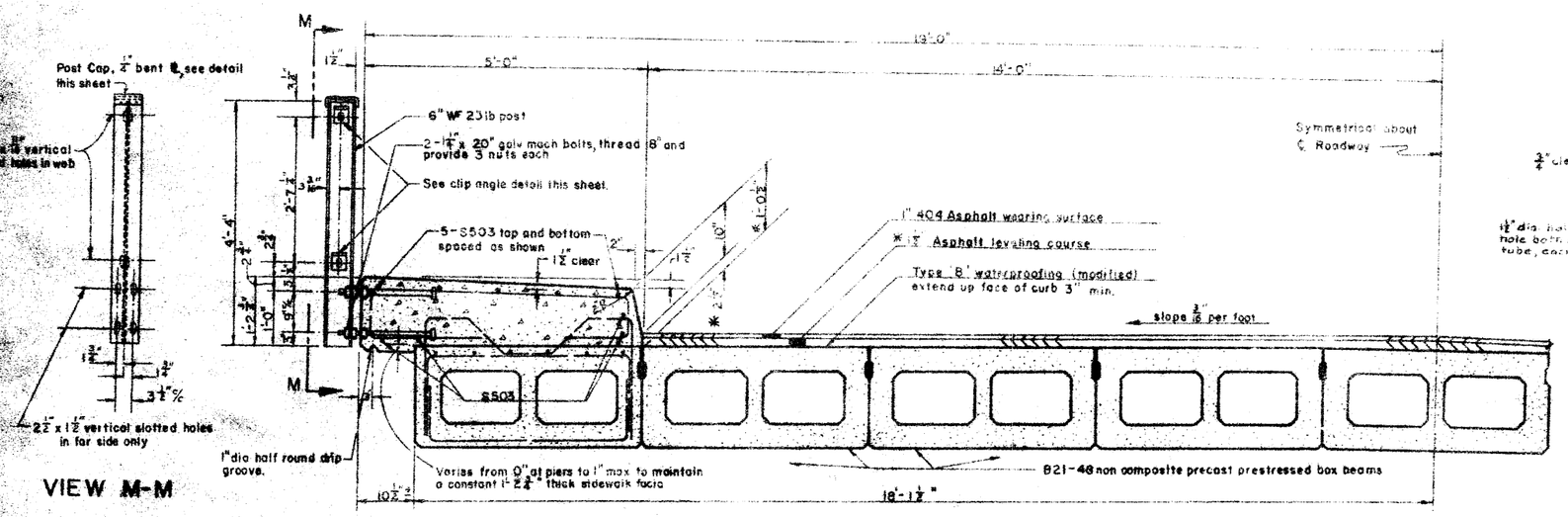
The Jennings Lawrence Co.
Civil & Municipal Engineers
Columbus Ohio

PIER & ABUTMENT DETAILS
TEMPLE STREET BRIDGE
OVER PAINT CREEK
JULY 1970
DESIGN LOADING HS 20-44
WASHINGTON COURT HOUSE OHIO

Designed	Drawn	Traced	Checked	Reviewed	Approved
R.R.	R.R.	RWC	R.P.		

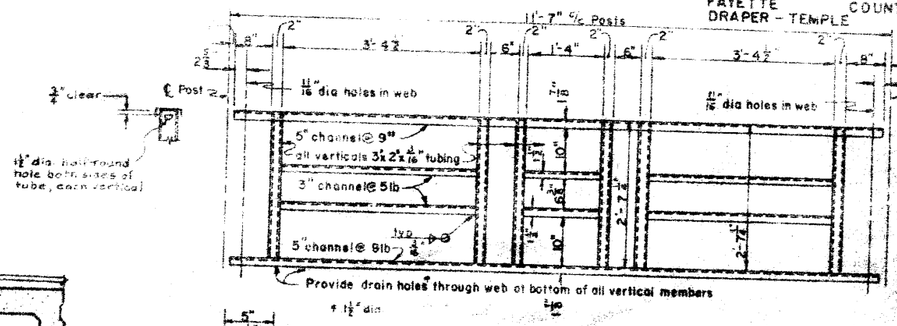
FED RD DIVISION	STATE	PROJEC	
2	OHIO	STATE	

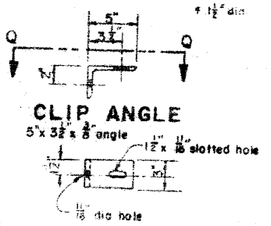
FAYETTE COUNTY
DRAPER - TEMPLE STREETS

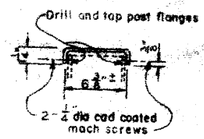


HALF TRANSVERSE SECTION

* This dimension is a minimum and may be increased over the piers to offset the camber of the precast beams





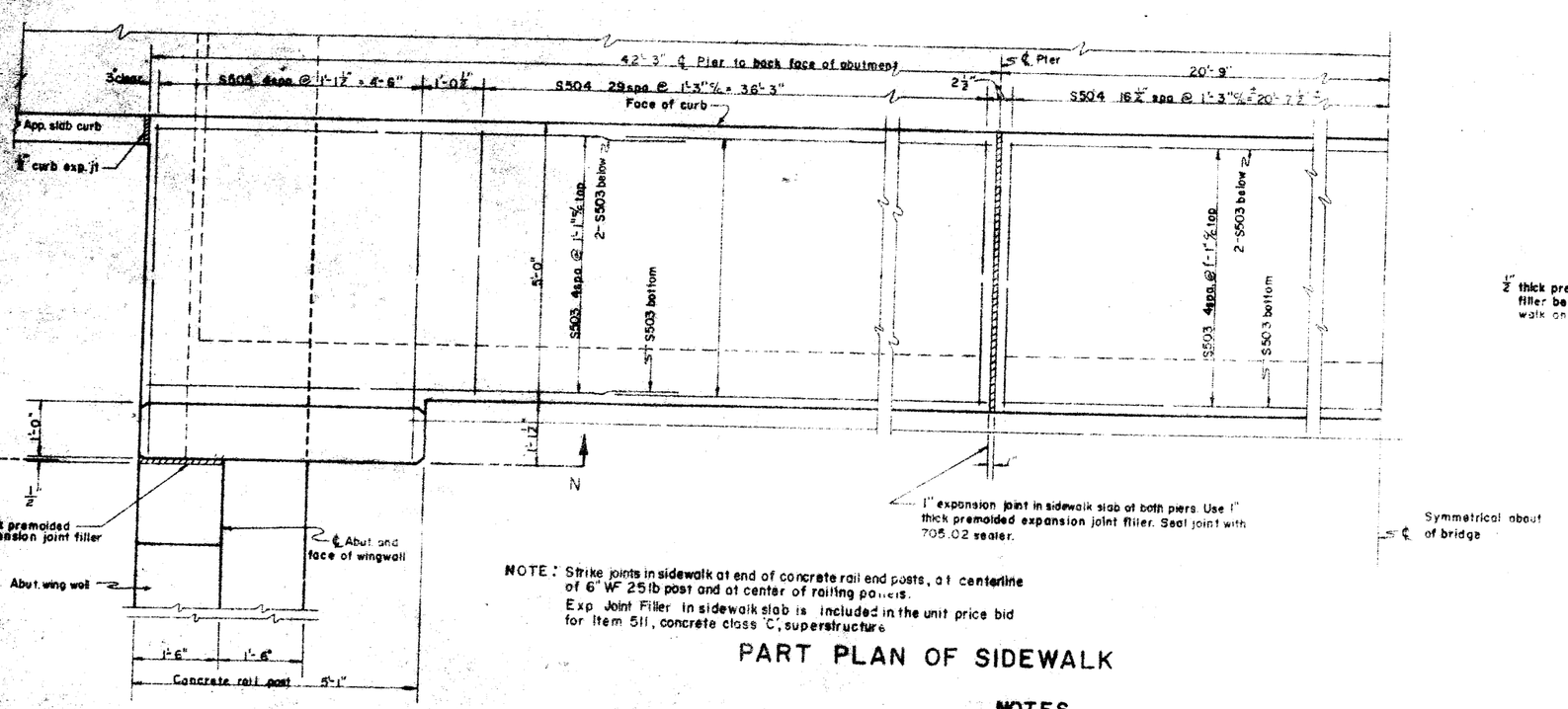


Structural tubing 3"x2"x5/16" shall be A-36 steel

Welding shall be in accordance with 513.23

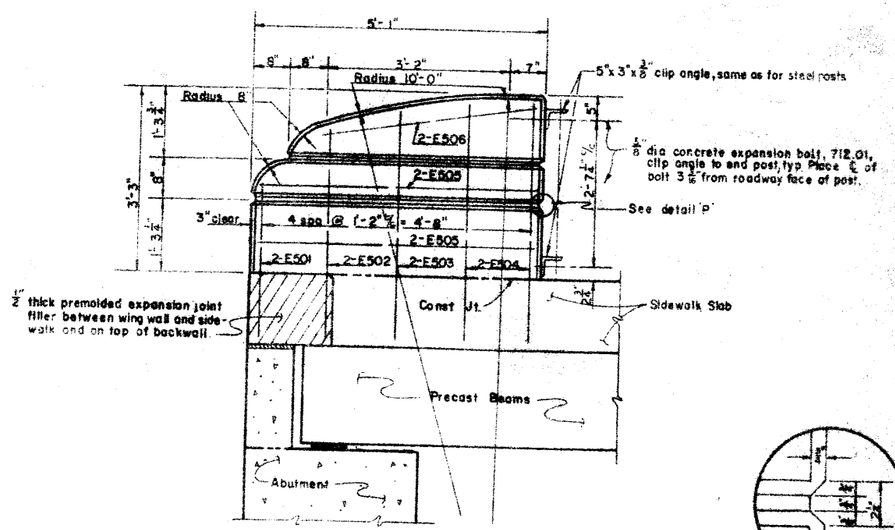
Provide galv. 5/8" dia x 1 1/2" bolts with 1 flat and lock washer for rail panel to clip angle connection. Provide galv. 5/8" dia. x 2" bolts with 1 flat cad lock washer for clip angle to post connection.

RAILING DETAILS



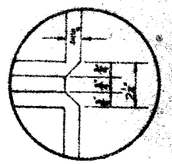
NOTE: Strike joints in sidewalk at end of concrete rail end posts, at centerline of 6" WF 25lb post and at center of railing panels.
Exp Joint Filler in sidewalk slab is included in the unit price bid for Item 511, concrete class 'C', superstructure

PART PLAN OF SIDEWALK



Concrete rail end posts shall not be poured until steel railing posts have been installed and adjusted to line and grade.
Reinforcing steel included in Item 517. for payment.

SECTION N-N



Rustication Detail

DETAIL P

NOTES

Total thickness of items 403 and 404 shall be 2 1/2" minimum at the center of each span and at the abutments, and may vary in thickness at the piers due to the camber of the precast prestressed concrete beams.

Railing Item 517 shall include concrete end posts, 6" WF 25lb steel posts, railing panels and all necessary connections. Galvanizing of the railing panels and posts shall be done after fabrication in accordance with Item 711.02

*Cast-in-place concrete sidewalk shall not be poured until all precast beams are in place, tie rods tightened, shear keys grouted, pier joints completed and anchor dowels grouted. Expansion joints in sidewalk slabs shall be full depth and width

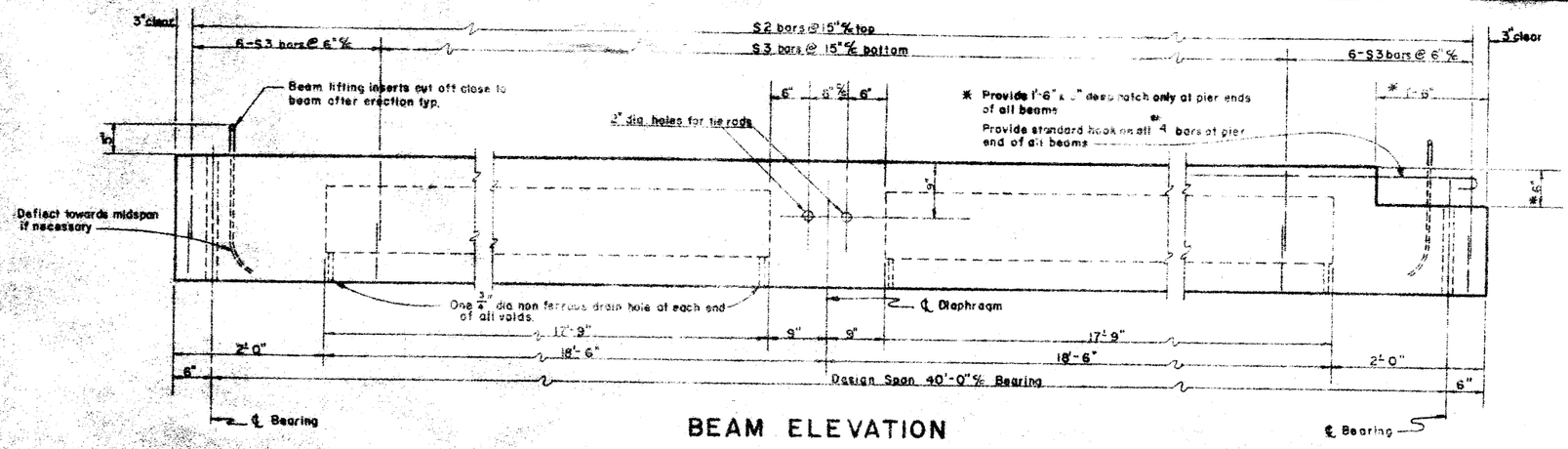
The Jennings Lawrence Co.
Civil & Municipal Engineers
Columbus, Ohio

SUPERSTRUCTURE DETAILS
TEMPLE STREET BRIDGE
OVER PAINT CREEK
JULY 1970
DESIGN LOADING HS20-44
WASHINGTON COURT HOUSE OHIO

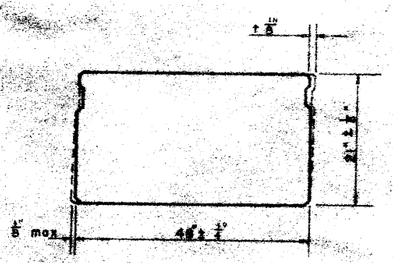
Designed	Drawn	Traced	Checked	Reviewed	Sheet
RR	RR	RWC	RP		

FED RD DIVISION	STATE	PROJECT	
2	OHIO	STATE	

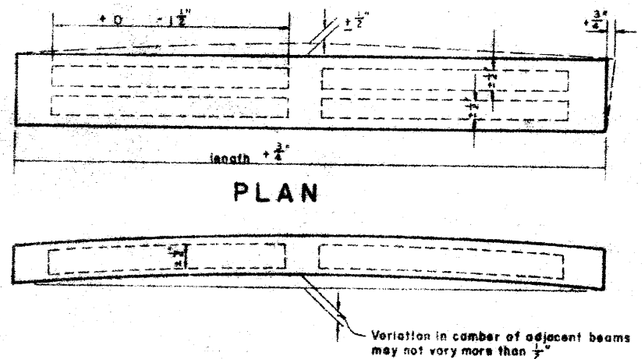
FAYETTE COUNTY
DRAPER – TEMPLE STREETS



BEAM ELEVATION



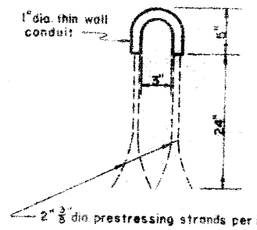
END VIEW



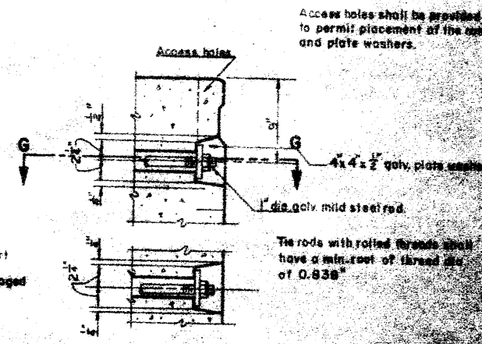
PLAN

ELEVATION

BEAM DIMENSIONAL TOLERANCE



BEAM LIFTING INSERT



SECTION G-G

TRANSVERSE TIE ROD RECESS

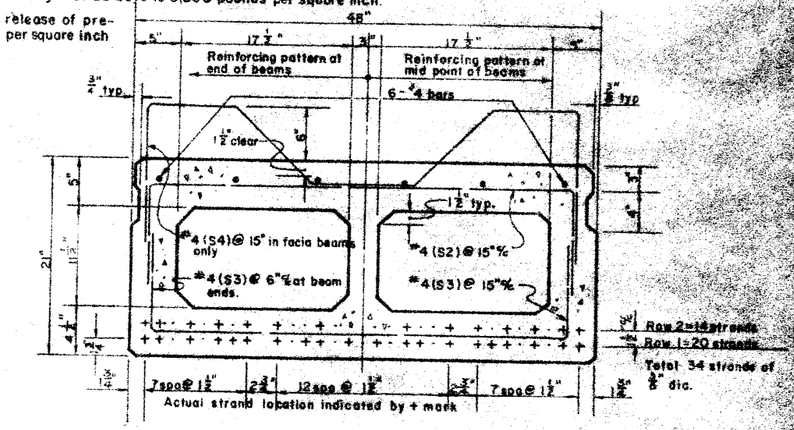
NOTES: Prestressing strands are 3/8" dia uncoated 7 wire stress relieved strand with an initial tension of 14,000 pounds per strand.

Each beam is stressed with 34 strands.

Mild reinforcing steel shall have 1 1/2" clear concrete cover

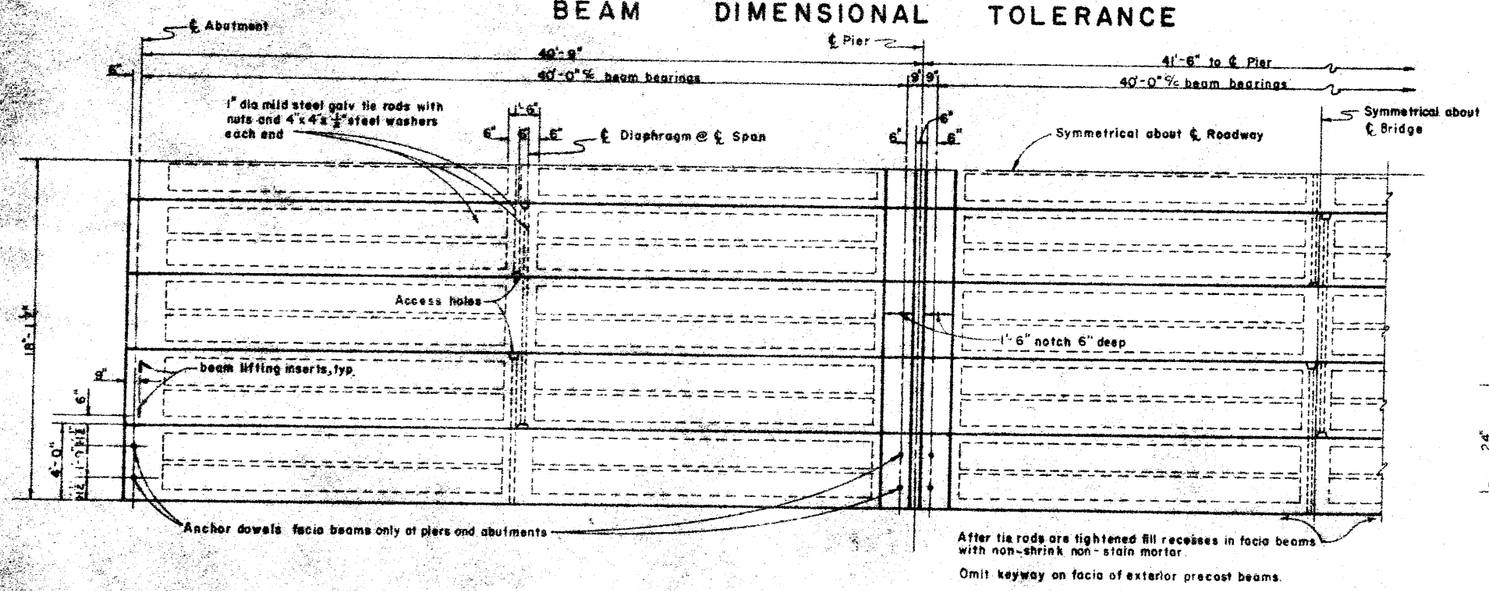
Minimum concrete strength at 28 days is 5,500 pounds per square inch.

Minimum concrete strength at release of prestress shall be 4500 pounds per square inch to minimize camber.

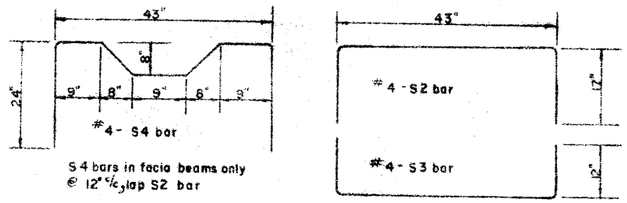


SECTION OF B-21-48

PRECAST PRESTRESSED CONCRETE BEAM



PARTIAL DECK PLAN



MILD REINFORCEMENT

The Jennings Lawrence Co.
Civil & Municipal Engineers
Columbus, Ohio

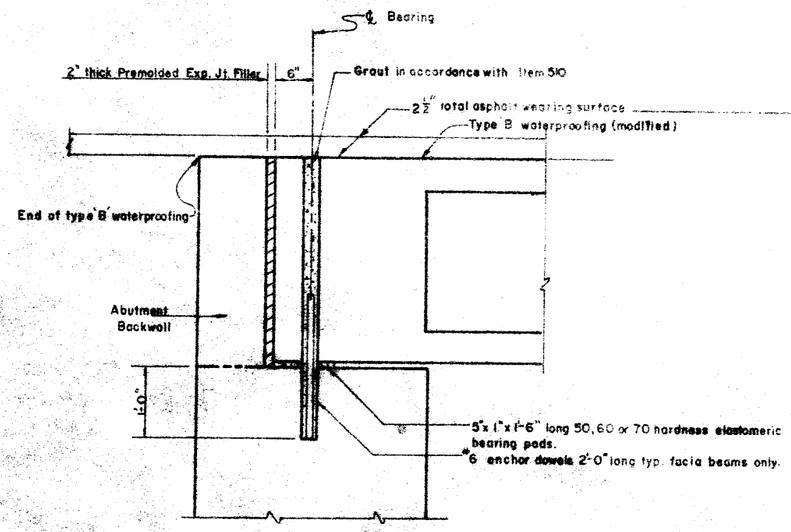
PRESTRESSED BEAMS
TEMPLE STREET BRIDGE
OVER PAINT CREEK
JULY 1970
DESIGN LOADING HS20-44
WASHINGTON COURT HOUSE, OH.

Designed	Drawn	Traced	Checked	Engineering Approval
R.R.	R.R.	RWC	R.P.	

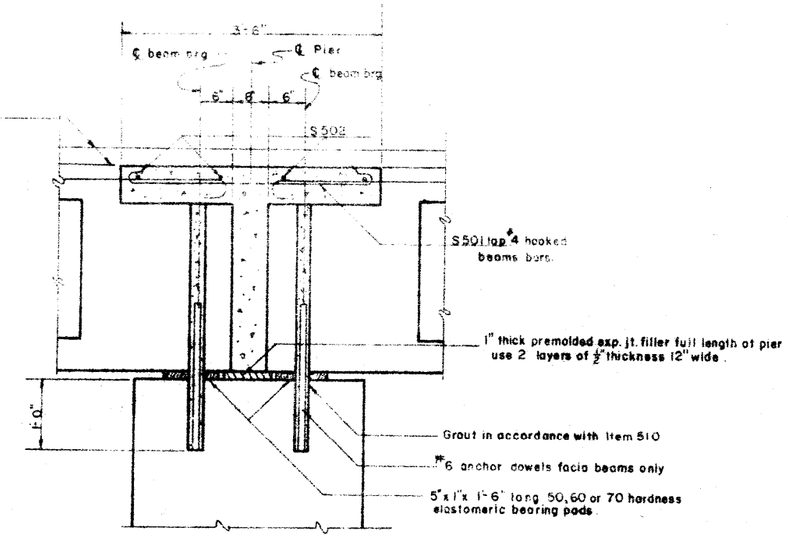
FED RD DIVISION	STATE	PROJECT	
2	OHIO	STATE	

FAYETTE COUNTY
DRAPER — TEMPLE STREETS

46
46

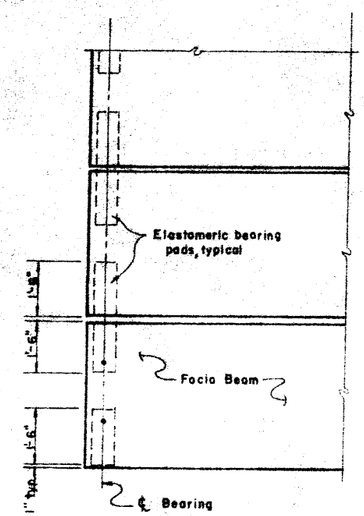


ABUTMENT BEARING



PIER BEARING

NOTE: Drill anchor dowel holes in piers and abutments only after tie rods are tightened.

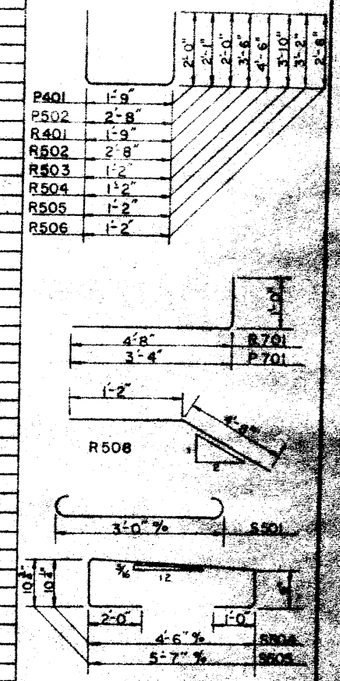


BEARING PAD LOCATION

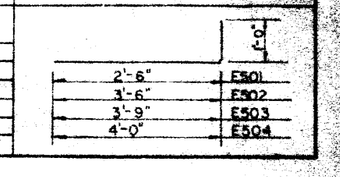
REINFORCING STEEL LIST

MARK	NO	LENGTH	WEIGHT	SHAPE
SUPERSTRUCTURE				
S501	108	4'-2"	469	BT.
S502	8	35'-9"	298	ST.
S503	108	22'-0"	2478	ST.
S504	188	8'-7"	1683	BT.
S505	20	9'-9"	203	BT.
TWO PIERS				
P401	72	5'-6"	265	BT.
P502	112	6'-7"	769	BT.
P701	108	4'-2"	920	BT.
P901	16	35'-8"	1,940	ST.
TWO ABUTMENTS				
R401	72	5'-6"	265	BT.
R501	16	26'-8"	445	ST.
R502	144	9'-5"	1414	BT.
R503	8	9'-11"	83	BT.
R504	4	8'-7"	36	BT.
R505	4	7'-3"	30	BT.
R506	4	5'-11"	25	BT.
R508	8	5'-10"	49	BT.
R510	20	3'-6"	73	ST.
R511	8	4'-3"	36	ST.
R512	8	5'-5"	45	ST.
R701	108	5'-6"	1214	BT.
R801	16	27'-1"	1,157	ST.
R1001	16	27'-5"	1888	ST.
R509	8	7'-0"	58	ST.
REPLACEMENT BARS				
RE401	1	6'-3"		ST.
RE501	1	6'-7"		ST.
RE701	1	7'-2"		ST.
RE801	1	7'-6"		ST.
RE901	1	7'-10"		ST.
RE1001	1	8'-2"		ST.
FOUR CONCRETE RAIL POSTS Included in Item 517 for payment				
E501	8	3-4		BT.
E502	8	4-4		BT.
E503	8	4-7		BT.
E504	16	4-10		BT.
E505	16	4-9		ST.
E506	8	3-9		ST.

SHAPE



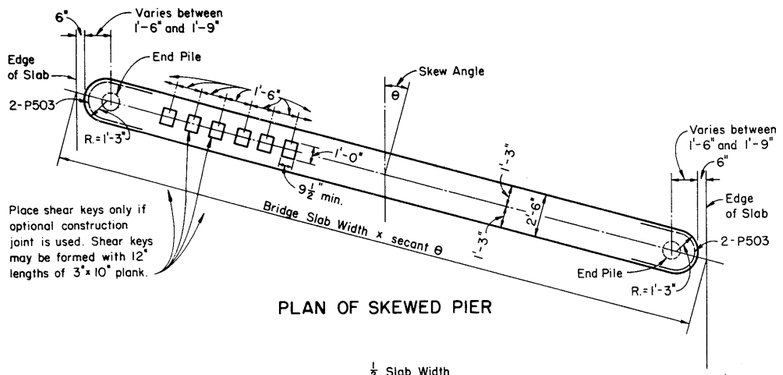
BAR SIZE is indicated in the bars mark. The first digit where three digits are used and the first two digits were four digits are used indicate the bar size. For example A700 is a #7 size bar and A1400 is a #14 size bar.



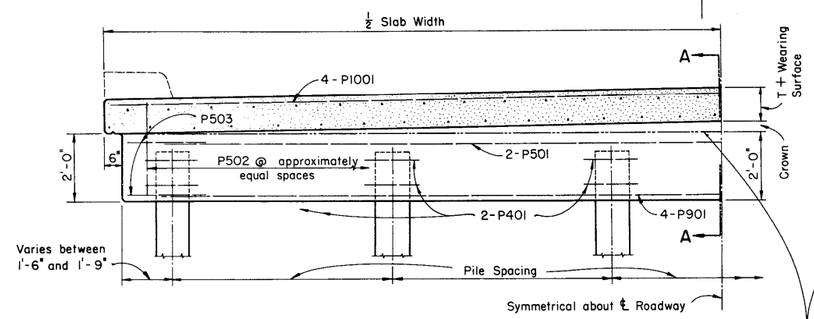
The Jennings Lawrence Co
Civil & Municipal Engineers
Columbus Ohio

SUPERSTRUCTURE DETAILS
TEMPLE STREET BRIDGE
OVER PAINT CREEK
JULY 1970
DESIGN LOADING HS 20-44
WASHINGTON COURT HOUSE, OHIO

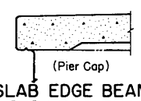
Designed	Drawn	Traced	Checked	Reviewed	Approved
E.R.	E.R.	R.W.C.	R.P.		



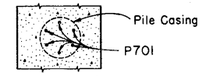
PLAN OF SKEWED PIER



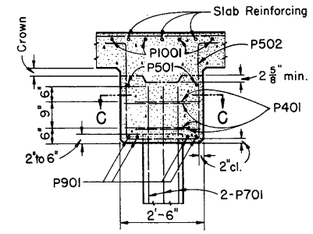
HALF ELEVATION



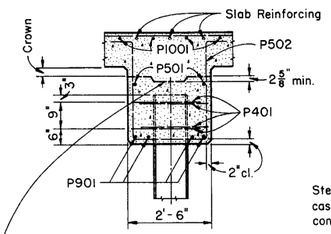
SLAB EDGE BEAM FOR "T" LESS THAN 14"



SECTION C-C

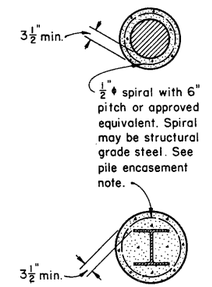


SECTION A-A
SHOWING CAST-IN-PLACE CONCRETE PILES

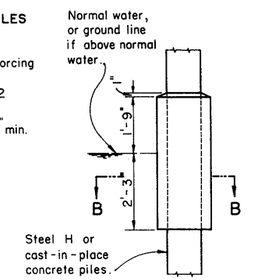


SECTION A-A
SHOWING STEEL H PILES

Construction joint to be provided in case of machine finishing of concrete deck; otherwise joint is optional.



SECTION B-B



DETAIL OF PILE ENCASEMENT

GENERAL: This drawing provides design and general construction details and is intended to be used with Standard Drawings CS-1-65 and CS-2-65. The project plans for each structure will show spans; roadway width; skew; elevations; type, size and capacity of piles; estimated quantities; reinforcing steel list; and other necessary notes and details.

The pier design shown on this drawing should not be used if:

a. Sloped embankment would cause appreciable horizontal force against the pile bent. In such case, a pier of different type, in which battered piles may be incorporated, should be used.
b. Rock or other firm material would prevent driving piles at least ten feet below stream bed.
c. The length of piles, from ground to bottom of cap, would exceed fifteen feet.

DESIGN SPECIFICATIONS: This standard drawing conforms to the "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated October 1, 1951, together with revisions dated July 15, 1952 and April 1, 1954.

PILE SIZE: Cast-in-place reinforced concrete piles shall be 14" diameter if the piles are exposed above the concrete encasement, and 12" diameter if the encasement extends to the bottom of the pier cap. Steel H piles shall be 12BP53.

PILE SPACING: In case of skew, the number of piles shall be the same as shown but the tabulated spacing dimension shall be multiplied by the secant of θ (the angle of skew).

PILE CAPACITY shall be as specified on the project plans. The required capacity according to the formula in Sec. 507.05 of the "Construction and Material Specifications", generally will be the same as the design load listed in the table, except for steel H piles that are to be driven to firm contact with rock or other hard material, in which case the required formula capacity generally will be greater than the design load and will be dependent upon the relative magnitude of the design load and size of hammer, and upon the kind and relative depth of the penetrated soil.

PILE CASINGS: The casings of cast-in-place concrete piles shall be of the type that is left in place and is designed to resist both direct compression and bending. The portion above the circular concrete encasement shall be of uniform diameter (not tapered) and shall have a thickness of metal not less than No. 7 gauge.

PILE ENCASEMENT, as shown hereon, shall be provided for each pier pile. If the distance from the bottom of the pier cap to normal water elevation, or ground line if above normal water, is less than approximately 6 feet, the encasement shall be extended to the bottom of the concrete cap for all the piles in that pier, if so specified on the project plans. It shall consist of Class "C" or "E" concrete and may be placed in water as per Sec. 511.12, care being taken to remove all dirt between the piles and the forms. Metal forms, if used, may be left in place if the exposed portion is painted or galvanized. Corrugated metal may be used. Metal forms with irregular deformations, such as oil drums, will not be permitted. If metal forms meeting the requirements of Sec. 707.01 are left in place, no spiral reinforcement in the concrete will be required.

PILE PAINTING: The exposed portion of the piles, above the encasement, shall be painted in accordance with Item 514, applying two coats as per Secs. 708.06, 708.09 or 708.08 and two coats as per Sec. 708.12. Metal forms, left in place on the encasement, unless galvanized, shall be similarly painted.

PAYMENT FOR PILES, per lin. ft., includes payment for the encasement (concrete, reinforcement, forms, painting, galvanizing and excavating) and the pile painting. The elevation of cut-off, as per Sec. 507.13, shall be considered as 4" above the bottom of the concrete cap for cast-in-place concrete piles and 1'-6" for steel H piles.

FALSEWORK SUPPORT: The pier cap shall not be used to support falsework for the deck slab.

REINFORCING STEEL: The P1001, P901, and P501 bars, at the option of the Contractor, may be furnished in one length as shown, or in pairs lapped 30 diameters at or near the centerline of the roadway. Determination of the pay quantity will be according to the number and length of bars as shown hereon, unless otherwise called for on the project plans.

HORIZONTAL CONSTRUCTION JOINT between the top of pier cap and bottom of slab will be permitted if keys, as shown, are provided at the top of the cap. If such a joint is not provided, the concrete in the slab and cap shall be placed in a continuous operation.

CONCRETE shall be Class "C".

PIER CAP CONCRETE QUANTITY will be added to the quantity of superstructure concrete when listed on the project plans.

BAR SIZE is indicated in the bar mark. The first digit where three digits are used and the first two digits where four are used, indicate the bar size number. For example P901 is a No. 9 size bar and P1001 is a No. 10 size.

NUMBER, SPACING AND DESIGN LOAD (IN TONS) OF PILES FOR ONE NON-SKEWED PIER

LOAD FREQUENCY	SLAB WIDTH	SPANS (IN FEET) 16-20-16			18-22.5-18			20-25-20			22-27.5-22			24-30-24			26-32.5-26			28-35-28			30-37.5-30			32-40-32			34-42.5-34			36-45-36			38-47.5-38			40-50-40			42-52.5-42			44-55-44		
		No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load	No.	Spcg.	Load
CF = 30	24'	5	5'-0"	18	5	5'-0"	20	5	5'-0"	22	5	5'-0"	24	5	5'-0"	26	5	5'-0"	28	5	5'-0"	30	5	5'-0"	33	5	5'-0"	35	5	5'-0"	38	6	4'-0"	33	6	4'-0"	36	6	4'-0"	39	6	4'-0"	43	6	4'-0"	46
	28'	5	6'-0"	21	5	6'-0"	24	5	6'-0"	26	5	6'-0"	29	5	6'-0"	31	5	6'-0"	34	5	6'-0"	36	6	4'-9"	32	6	4'-9"	34	6	4'-9"	36	7	4'-0"	33	7	4'-0"	36	7	4'-0"	39	7	4'-0"	43	7	4'-0"	46
	32'	6	5'-7"	19	6	5'-7"	22	6	5'-7"	25	6	5'-7"	27	6	5'-7"	29	6	5'-7"	31	6	5'-7"	34	6	5'-7"	37	7	4'-8"	33	7	4'-8"	36	7	4'-8"	39	8	4'-0"	36	8	4'-0"	39	8	4'-0"	43	8	4'-0"	46
	34'	6	6'-0"	21	6	6'-0"	24	6	6'-0"	26	6	6'-0"	29	6	6'-0"	31	6	6'-0"	34	6	6'-0"	36	7	5'-0"	33	7	5'-0"	35	7	5'-0"	38	7	5'-0"	41	8	4'-3"	38	8	4'-3"	42	8	4'-3"	45	8	4'-3"	49
	36'	6	6'-4"	22	6	6'-4"	25	6	6'-4"	28	6	6'-4"	30	6	6'-4"	33	6	6'-4"	36	6	6'-4"	38	7	5'-4"	35	7	5'-4"	38	8	4'-6"	35	8	4'-6"	38	8	4'-6"	41	9	4'-0"	39	9	4'-0"	43	9	4'-0"	46
	40'	7	6'-0"	21	7	6'-0"	24	7	6'-0"	26	7	6'-0"	29	7	6'-0"	31	7	6'-0"	34	7	6'-0"	36	8	5'-1"	34	8	5'-1"	37	8	5'-1"	39	8	5'-1"	43	9	4'-6"	41	9	4'-6"	44	10	4'-0"	43	10	4'-0"	46
	44'	8	5'-8"	20	8	5'-8"	22	8	5'-8"	25	8	5'-8"	27	8	5'-8"	30	8	5'-8"	32	8	5'-8"	34	8	5'-8"	37	8	5'-8"	40	9	5'-0"	38	9	5'-0"	41	10	4'-5"	40	10	4'-5"	43	11	4'-0"	43	11	4'-0"	46
CF = 130	24'	5	5'-0"	18	5	5'-0"	20	5	5'-0"	23	5	5'-0"	25	5	5'-0"	27	5	5'-0"	29	5	5'-0"	32	5	5'-0"	34	5	5'-0"	37	6	4'-0"	32	6	4'-0"	34	6	4'-0"	38	6	4'-0"	41	6	4'-0"	44	6	4'-0"	48
	28'	5	6'-0"	22	5	6'-0"	25	5	6'-0"	27	5	6'-0"	30	5	6'-0"	33	5	6'-0"	35	5	6'-0"	38	6	4'-9"	33	6	4'-9"	35	6	4'-9"	38	7	4'-0"	34	7	4'-0"	38	7	4'-0"	41	7	4'-0"	44	7	4'-0"	48
	32'	6	5'-7"	21	6	5'-7"	23	6	5'-7"	25	6	5'-7"	28	6	5'-7"	30	6	5'-7"	33	6	5'-7"	35	6	5'-7"	38	7	4'-8"	34	7	4'-8"	37	8	4'-0"	34	8	4'-0"	38	8	4'-0"	41	8	4'-0"	44	8	4'-0"	48
	34'	6	6'-0"	22	6	6'-0"	25	6	6'-0"	27	6	6'-0"	30	6	6'-0"	33	6	6'-0"	35	6	6'-0"	38	7	5'-0"	34	7	5'-0"	37	7	5'-0"	40	8	4'-3"	37	8	4'-3"	40	8	4'-3"	43	8	4'-3"	47	8	4'-3"	51
	36'	6	6'-4"	23	6	6'-4"	26	6	6'-4"	29	6	6'-4"	31	6	6'-4"	34	6	6'-4"	37	7	5'-4"	34	7	5'-4"	37	7	5'-4"	39	8	4'-6"	36	8	4'-6"	38	9	4'-0"	38	9	4'-0"	41	9	4'-0"	44	9	4'-0"	48
	40'	7	6'-0"	22	7	6'-0"	25	7	6'-0"	27	7	6'-0"	30	7	6'-0"	33	7	6'-0"	35	7	6'-0"	38	8	5'-1"	36	8	5'-1"	38	8	5'-1"	41	9	4'-6"	39	9	4'-6"	42	10	4'-0"	41	10	4'-0"	44	10	4'-0"	48
	44'	8	5'-8"	21	8	5'-8"	23	8	5'-8"	26	8	5'-8"	28	8	5'-8"	30	8	5'-8"	33	8	5'-8"	36	8	5'-8"	39	9	5'-0"	37	9	5'-0"	40	9	5'-0"	43	10	4'-5"	41	10	4'-5"	45	11	4'-0"	44	11	4'-0"	48
CF = 400	24'	5	5'-0"	19	5	5'-0"	21	5	5'-0"	24	5	5'-0"	26	5	5'-0"	28	5	5'-0"	31	5	5'-0"	33	5	5'-0"	36	5	5'-0"	39	6	4'-0"	34	6	4'-0"	36	6	4'-0"	39	6	4'-0"	43	6	4'-0"	46	6	4'-0"	50
	28'	5	6'-0"	23	5	6'-0"	26	5	6'-0"	28	5	6'-0"	31	5	6'-0"	34	5	6'-0"	37	6	4'-9"	32	6	4'-9"	34	6	4'-9"	37	7	4'-0"	34	7	4'-0"	36	7	4'-0"	39	7	4'-0"	43	7	4'-0"	46	7	4'-0"	50
	32'	6	5'-7"	21	6	5'-7"	24	6	5'-7"	27	6	5'-7"	29	6	5'-7"	31	6	5'-7"	34	6	5'-7"	37	7	4'-8"	33	7	4'-8"	36	7	4'-8"	39	8	4'-0"	36	8	4'-0"	39	8	4'-0"	43	8	4'-0"	46	8	4'-0"	50
	34'	6	6'-0"	23	6	6'-0"	26	6	6'-0"	28	6	6'-0"	31	6	6'-0"	34	6	6'-0"	37	7	5'-0"	33	7	5'-0"	36	7	5'-0"	39	7	5'-0"	42	8	4'-3"	38	8	4'-3"	41	8	4'-3"	45	8	4'-3"	49	8	4'-3"	53
	36'	6	6'-4"	24	6	6'-4"	27	6	6'-4"	30	6	6'-4"	32	6	6'-4"	35	6	6'-4"	39	7	5'-4"	35	7	5'-4"	38	7	5'-4"	42	8	4'-6"	39	8	4'-6"	41	9	4'-0"	39	9	4'-0"	43	9	4'-0"	46	9	4'-0"	50
	40'	7	6'-0"	23	7	6'-0"	26	7	6'-0"	28	7	6'-0"	31	7	6'-0"	34	7	6'-0"	37	8	5'-1"	34	8	5'-1"	37	8	5'-1"	40	8	5'-1"	43	9	4'-6"	41	9	4'-6"	44	10	4'-0"	43	10	4'-0"	46	10	4'-0"	50
	44'	8	5'-8"	22	8	5'-8"	24	8	5'-8"	27	8	5'-8"	29	8	5'-8"	32	8	5'-8"	35	8	5'-8"	37	8	5'-8"	40	9	5'-0"	39	9	5'-0"	42	10	4'-5"	40	10	4'-5"	43	11	4'-0"	43	11	4'-0"	46	11	4'-0"	50
CF = 2000	24'	5	5'-0"	19	5	5'-0"	21	5	5'-0"	24	5	5'-0"	26	5	5'-0"	29	5	5'-0"	31	5	5'-0"	33	5	5'-0"	36	5	5'-0"	39	6	4'-0"	34	6	4'-0"	36	6	4'-0"	39	6	4'-0"	43	6	4'-0"	46	6	4'-0"	50
	28'	5	6'-0"	23	5	6'-0"	26	5	6'-0"	28	5	6'-0"	31	5	6'-0"	34	5	6'-0"	37	6	4'-9"	32	6	4'-9"	34	6	4'-9"	37	7	4'-0"	34	7	4'-0"	36	7	4'-0"	39	7	4'-0"	43	7	4'-0"	46	7	4'-0"	50
	32'	6	5'-7"	22	6	5'-7"	24	6	5'-7"	27	6	5'-7"	29	6	5'-7"	32	6	5'-7"	34	6	5'-7"	37	7	4'-8"	33	7	4'-8"	36	7	4'-8"	39	8	4'-0"	36	8	4'-0"	39	8	4'-0"	43	8	4'-0"	46	8	4'-0"	50
	34'	6	6'-0"	23	6	6'-0"	26	6	6'-0"	28	6	6'-0"	31	6	6'-0"	34	6	6'-0"	37	7	5'-0"	33	7	5'-0"	36	7	5'-0"	39	7	5'-0"	42	8	4'-3"	38	8	4'-3"	41	8	4'-3"	45	8	4'-3"	49	8	4'-3"	53
	36'	6	6'-4"	24	6	6'-4"	27	6	6'-4"	30	6	6'-4"	33	6	6'-4"	36	6	6'-4"	39	7	5'-4"	35	7	5'-4"	38	7	5'-4"	42	8	4'-6"	39	8	4'-6"	41	9	4'-0"	39	9	4'-0"	43	9	4'-0"	46	9	4'-0"	50
	40'	7	6'-0"	23	7	6'-0"	26	7	6'-0"	28	7	6'-0"	31	7	6'-0"	34	7	6'-0"	37	8	5'-1"	34	8	5'-1"	37	8	5'-1"	40	8	5'-1"	43	9	4'-6"	41	9	4'-6"	44	10	4'-0"	43	10	4'-0"	46	10	4'-0"	50
	44'	8	5'-8"	22	8	5'-8"	24	8	5'-8"	27	8	5'-8"	30	8	5'-8"	32	8	5'-8"	35	8	5'-8"	37	8	5'-8"	40	9	5'-0"	39	9	5'-0"	42	10	4'-5"	40	10	4'-5"	43	11	4'-0"	43	11	4'-0"	46	11	4'-0"	50

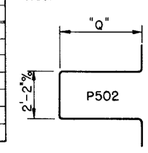
DATA FOR ONE NON-SKEWED PIER

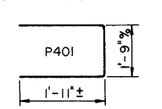
Slab Width	REINFORCING STEEL: P1001 Straight 4 req'd. Length *	P901 Straight 4 req'd. Length *	P701 Straight 4'-0" Number	P501 Straight 2 req'd. Length *	P502 Bt. 8'-0" or 9'-0" Number	P503 Bent 6'-4" Number	P401 Bent 5'-5" Number	CONCRETE QUANTITY Add to Deck Concrete Cu. Yds.
24'	23'-6"	20'-6"	6 x Number of Piles	20'-6"	18	4 Required	4 x Number of Piles	4.2
28'	27'-6"	24'-6"		24'-6"	20			4.9
32'	31'-6"	28'-6"		28'-6"	24			5.6
34'	33'-6"	30'-6"		30'-6"	26			6.0
36'	35'-6"	32'-6"		32'-6"	28			6.4
40'	39'-6"	36'-6"		36'-6"	30			7.1
44'	43'-6"	40'-6"		40'-6"	34			7.9

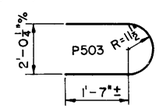
* For skewed piers multiply tabulated length by secant of skew angle.

"Q" dimension = 2'-10"% for bridges with deck slab over 16" thick and for bridges having 14" thick edge beam on deck slab

"Q" dimension = 2'-4"% for bridges with deck slab 16" thick or less and without 14" edge beam on deck slab.







REVISIONS
12 - 1 - 54
2 - 2 - 59
11 - 8 - 65

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

STANDARD

CAPPED PILE PIERS FOR CONTINUOUS CONCRETE SLAB BRIDGES

LOAD FREQUENCY:
CF = 30, CF = 130, CF = 400, CF = 2000

APPROVED: Richard Ohlt
DATE: 7-1-54 ENGINEER OF BRIDGES

PREPARED	TRACED	CHECKED	REVIEWED	DRAWING NUMBER
LJE CFB JCM WHR	CEJ	DHS	CSD BFG CHA AJF DHO	P-1-54