

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

PLAN NO. BR-8-77

BROWN COUNTY BRO-221-5.47 STATE	OHIO	1 4
	FHWA REGION 5	
	FEDERAL PROJECT	

MICROFILMED
DEC 27 1985

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DEC 9 1985

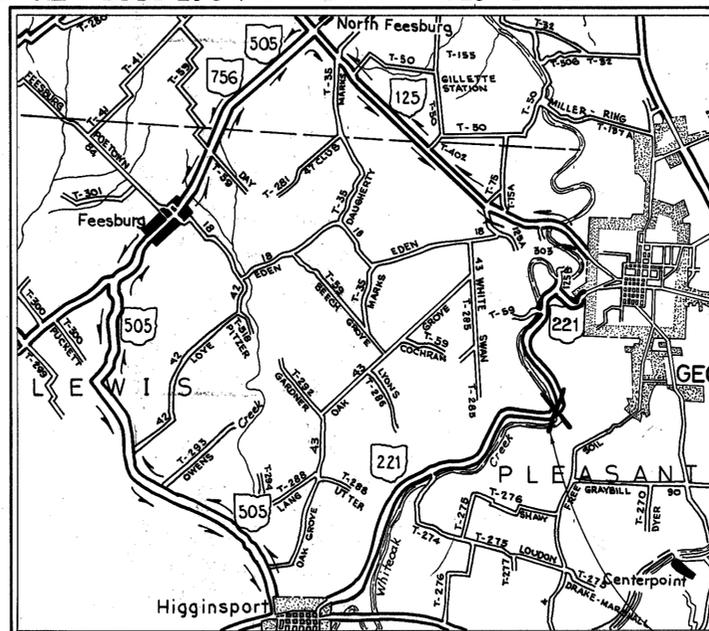
BRO-221-5.47
LEWIS AND PLEASANT TOWNSHIP
BROWN COUNTY

STRUCTURE IMPROVEMENT-BRIDGE MAJOR REPAIR

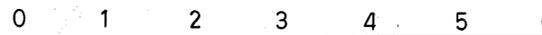
1977 SPECIFICATIONS

CONVENTIONAL SIGNS

County Line	-----	Limited Access (only)	-----	LA
Township Line	-----	Right of Way (only)	-----	RW
Section Line	-----	Limited Access & Right of Way	-----	LA & RW
Corporation Line	----- or -----	Existing Right of Way	-----	
Fence Line (existing)	-x-x-	Property Line	— —	(in existing fence) -x-x-
Center Line	-----	Railroad	-----	
Trees	⊗	Guardrail (existing)	—o—o—o—	(proposed) —•—•—•—
Stumps	⊗			
Utility Poles: Telephone	⊕			
Power	⊕			
Light	⊕			



LOCATION & DETOUR MAP



Portion to be improved	-----
State Roads	-----
Other Roads	-----

SCALES

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

The standard specifications of the State of Ohio Department of Transportation 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 and that detours will be provided as indicated on the plans.

INDEX OF SHEETS

TITLE SHEET	SHEET NO.	1
SITE PLAN		2
PIER DETAILS		3
GENERAL NOTES, CAISSON NOTES, ESTIMATED QUANTITIES		4

Approved Vaughn C. Wilson
Date 12/30/76 District Deputy Director of Transportation

Approved Robert B. Pfeiffer
Date 1-6-77 Engineer of Bridges JR

Approved R. L. Zook
Date 1-21-77 Engineer of Maintenance

Approved Shennis R. Howard
Date 1-22-77 Chief Engineer, Operations

Approved Howard E. Nolan
Date 1-24-77 Assistant Deputy Director, Program Development

Approved _____
Date _____ Chief Engineer, Construction

Approved R. E. Guthrie
Date 1-24-77 Chief Engineer, Design

Approved David H. Wain
Date 1-25-77 Assistant Director, Department of Transportation

Approved Richard J. Jackson
Date 1-25-77 Director, Department of Transportation

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

SUPPLEMENTAL SPECIFICATIONS

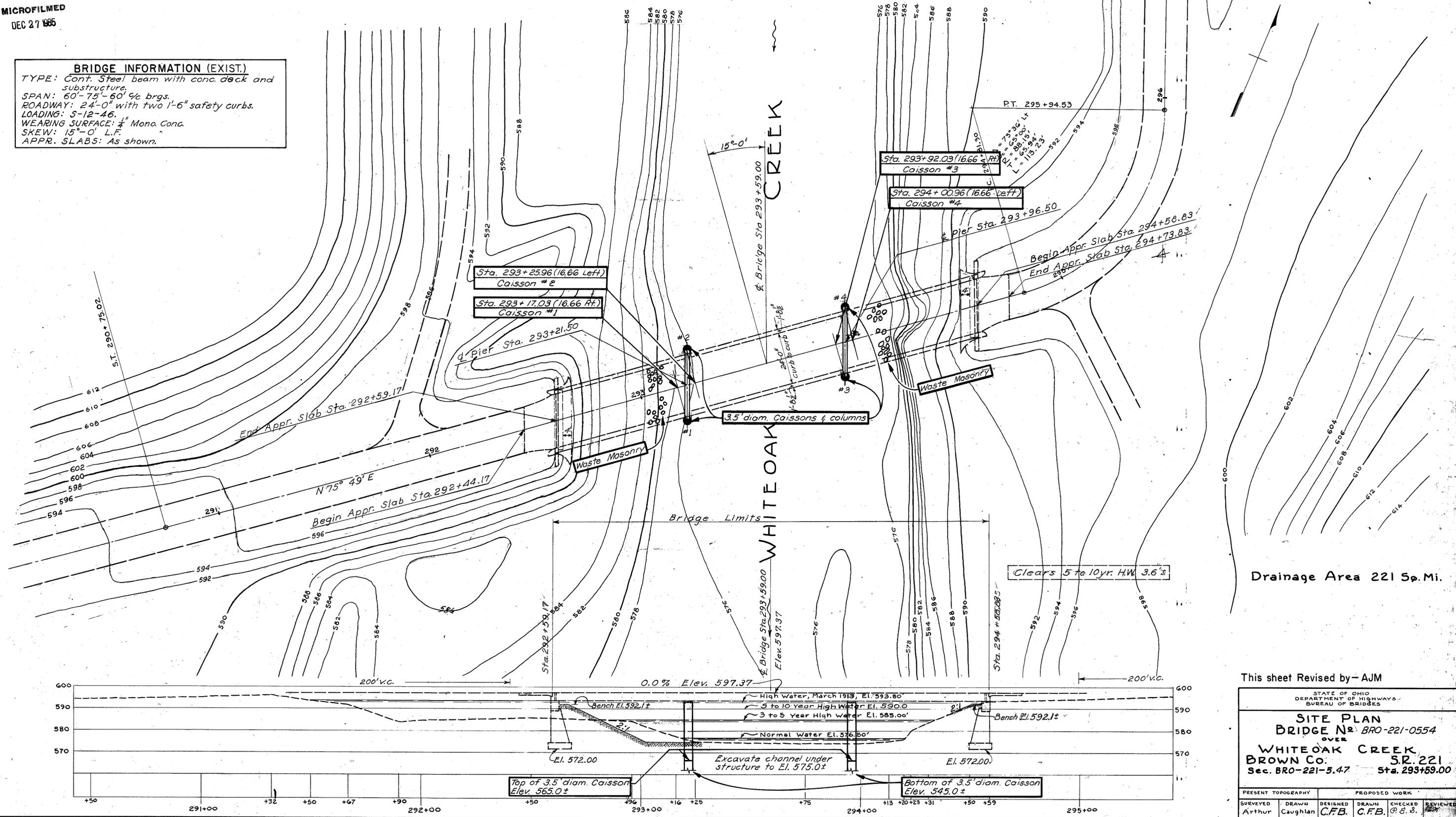
Note: This site plan has been prepared using the site plan from the plans for the existing bridge. It is furnished only for the purpose of showing basic data of the existing bridge and location of the replacement piers to be constructed under this contract. Channel cross-section, contour lines and high water data are taken from the original site plan and may not be representative of present conditions. Details of new construction are enclosed in heavy blocks.

FHWA Region	STATE	PROJECT	FISCAL YEAR
5	OHIO		

BROWN COUNTY
 BRO-221-5.47
 2.23 Mi.± S. of Georgetown

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BRIDGE INFORMATION (EXIST.)
 TYPE: Cont. Steel beam with conc. deck and substructure.
 SPAN: 60'-75'-60' ¼ brgs.
 ROADWAY: 24'-0" with two 1'-6" safety curbs.
 LOADING: S-12-46.
 WEARING SURFACE: ¼" Mono. Conc.
 SKEW: 15°-0' L.F.
 APPR. SLABS: As shown.



Drainage Area 221 Sq. Mi.

This sheet Revised by - AJM

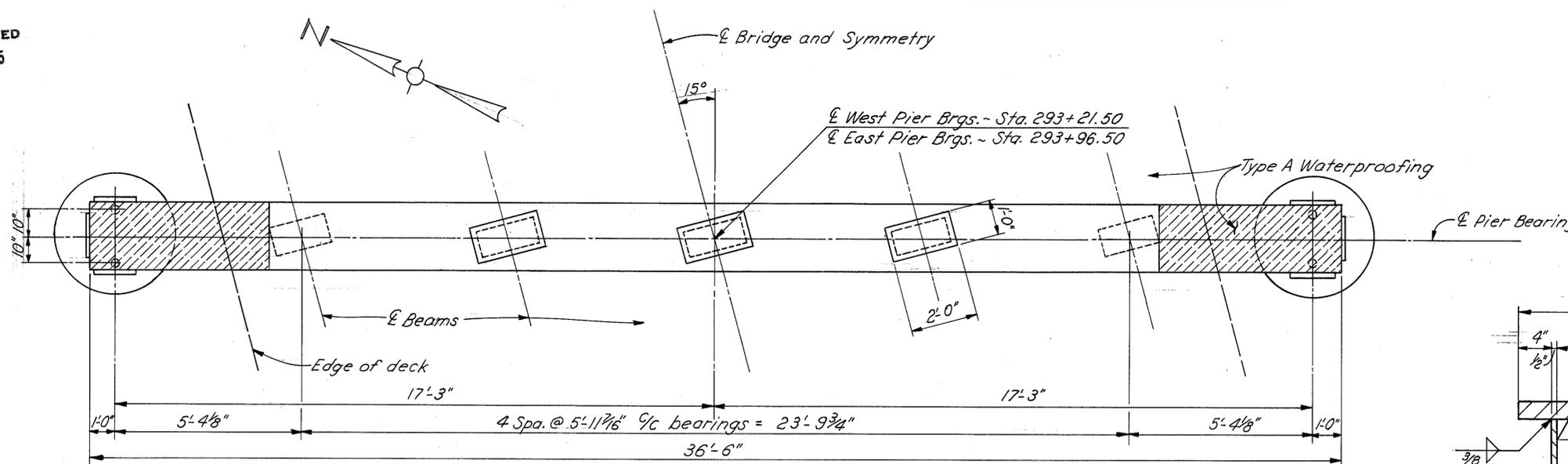
STATE OF OHIO DEPARTMENT OF HIGHWAYS BUREAU OF BRIDGES					
SITE PLAN					
BRIDGE No. BRO-221-0554					
OVER					
WHITE OAK CREEK					
BROWN Co.			S.R. 221		
Sec. BRO-221-5.47			Sta. 293+59.00		
PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVIEWED
Arthur	Caughlan	C.F.B.	C.F.B.	G.S.B.	

MICROFILMED
DEC 27 1985

FHWA REGION	STATE	PROJECT
5	OHIO	

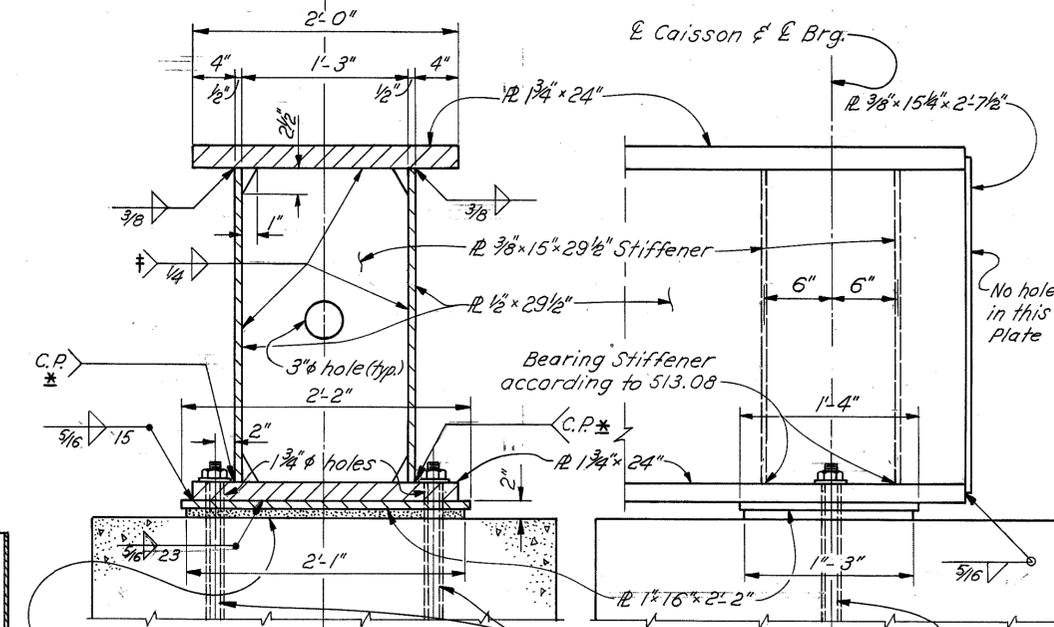
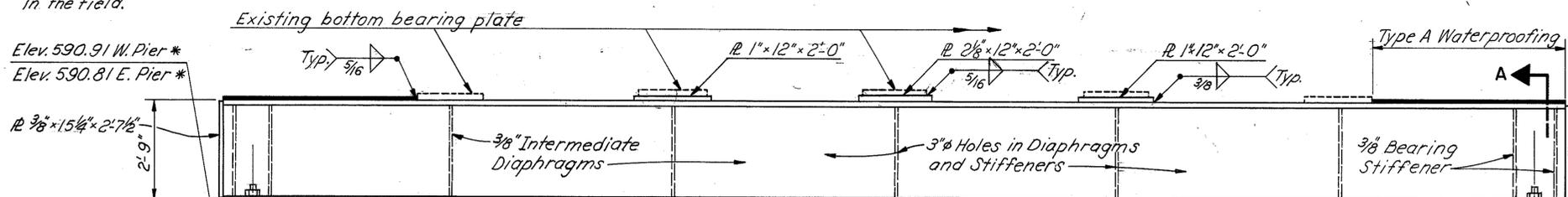
3
4

BRO-221-5.47



*To be verified
in the field.

Elev. 590.91 W. Pier *
Elev. 590.81 E. Pier *

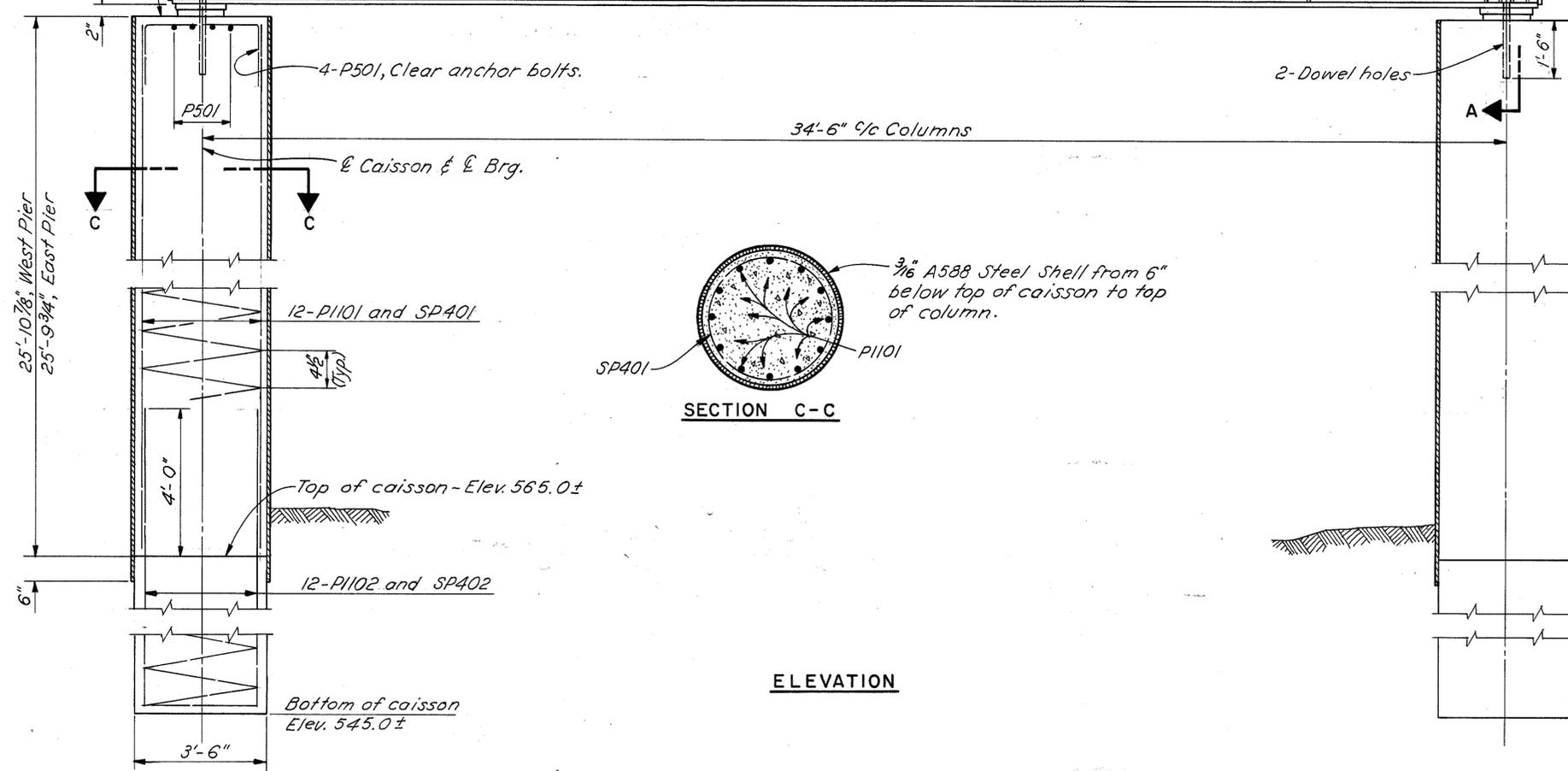


Vulcanized bond obtained during the molding process between the elastomer and steel.

* C.P. - Complete Penetration.
† Typical weld for intermediate diaph. and bearing stiffeners.

BEARING DETAILS
Laminated Elastomeric Bearings
Elastomer plan area 15" x 25" (1" thick) and 50 Durometer Neoprene.
Upper Steel Plate 1" x 16" x 2'-2" (A588). Provide 1 3/4" holes in bearing and bottom flange.
WELDING shall be controlled so that the plate temperature at the elastomer bonded surface does not exceed 300°F as determined by use of pyrometric sticks or other temperature monitoring devices.

- Notes:**
- The diaphragm shall be clipped at the corners. The dimensions of the clip shall be 2 1/2" along the web and 1" along the flange.
 - The intermediate diaphragm shall be welded to the top flange and webs and shall have a tight fit with the bottom flange.
 - The steel box section shall be cambered 3/8" at the middle point to compensate for dead load deflection.



STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS BUREAU OF BRIDGES					
PIER DETAILS					
BRIDGE NO. BRO-221-0554 OVER WHITE OAK CREEK					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
MRG	MRG	gfm	JMD	WJJ	12-8-76

ESTIMATED QUANTITIES

Item	Total	Unit	Description	Piers	Gen'l	As-Built
202	* 25	Cu.Yd.	Portions of existing structure removed		* 25	
509	17296	Lb.	Reinforcing Steel	17296		
510	12	Lin.Ft.	Dowel holes	12		
511	37	Cu.Yd.	Class C concrete, pier columns	37		
512	5	Sq. Yd.	Type A Waterproofing	5		
513	30,100	Lb.	Structural Steel, A588, Pier Cap	30,100		
513	8,900	Lb.	Structural Steel, A588, Steel shell	8,900		
516	4	Each	Laminated elastomeric bearing (1" x 15" x 25" neoprene pad with bonded 1" x 16" x 26" steel plate)	4		
Special	Lump	Sum	Temporary shoring and jacking		Lump	
Special	80	Lin.Ft.	Drilled Caissons as per plan	80		

* The quantity shown is for the removal of the rear and forward piers. Each pier is composed of a cap 1.5 x 250' x 27.0' & 3 columns 1.5 x 2.5' x 20.75'. Footings shall not be removed. Removed material shall be used for channel protection.

GENERAL NOTES

DESIGN SPECIFICATIONS: THIS STRUCTURE MODIFICATION CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, 1973, INCLUDING THE 1974, 1975 AND 1976 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

DESIGN DATA:
DESIGN LOADING - HS20-44
CONCRETE CLASS C - UNIT STRESS 1333 P.S.I. SUBSTRUCTURE
STRUCTURAL STEEL - ASTM A588 UNIT STRESS 27,000 P.S.I.
REINFORCING STEEL - ASTM A615, A616 OR A617
UNIT STRESS 20,000 P.S.I.
SPIRAL REINFORCEMENT MAY BE PLAIN BARS
ASTM A82 OR A615

CAISSON: THE DESIGN LOAD IS 125 TONS PER CAISSON.

VERIFICATION: DIMENSIONS OF EXISTING STRUCTURE SHOWN ON THESE PLANS SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR. SEE 513.02. EXISTING BRIDGE PLANS CAN BE EXAMINED IN THE CENTRAL OFFICE IN COLUMBUS OR DISTRICT OFFICE IN CHILLICOTHE, OHIO.

PROPOSED WORK:

- CAISSONS SHALL BE CONSTRUCTED TO THE ELEV. SHOWN ON PLANS.
- JACK THE SUPERSTRUCTURE FROM FALSEWORK SO IT WILL NOT INTERFERE WITH THE CONSTRUCTION OF THE NEW PIER CAP.
- REMOVE THE EXISTING PIERS. THE MATERIAL REMOVED SHALL BE USED AS DUMPED ROCK CHANNEL PROTECTION AT FACE OF ABUTMENT SPILL-THRU SLOPES. BEARINGS WILL BE REUSED WITHOUT THE 1/8" SHEET LEAD.

- ERECT THE STEEL BOX SECTIONS IN THEIR POSITION, SECURE THE CAP IN PLACE BY THE ANCHOR BOLTS PROVIDED WITH BEARINGS,
- AFTER BEAMS ARE PROPERLY SET ON THE BEARINGS FALSEWORK SHALL BE REMOVED.

ITEM SPECIAL, TEMPORARY SHORING AND JACKING

JACKING AT PIERS MAY BE DONE FROM FALSEWORK ADJACENT TO THE PIERS WITH SUPPORTS IN DIRECT CONTACT WITH EXISTING CONCRETE FOOTINGS. THE JACKING SHALL BE DONE IN SUCH A WAY AS TO MAINTAIN AXIAL LOADING AT THE FOOTINGS. ALL FIVE BEAMS AT A PIER SHALL BE JACKED SIMULTANEOUSLY. IF SUPERSTRUCTURE IS JACKED AT PIERS WHILE REMAINING IN PLACE AT ABUTMENTS, THE MAXIMUM PERMISSIBLE LIFT AT PIERS SHALL BE 3" FOR JACKING AT BOTH PIERS SIMULTANEOUSLY OR 2" FOR JACKING AT ONE PIER AT A TIME, TO PREVENT OVERSTRESSING THE BEAMS. NO HEAVY CONSTRUCTION EQUIPMENT WILL BE ALLOWED ON THE SUPERSTRUCTURE WHILE THERE IS ANY LIFT AT ANY PIER.

DEAD LOAD REACTION PER BEAM AT PIER = 50 K
AND TOTAL D.L. REACTION AT PIER = 250 K

DETAILS OF THE JACKING PROCEDURE (3 SETS) SHALL BE SUBMITTED TO THE DIRECTOR 15 DAYS PRIOR TO JACKING OPERATIONS, AND WORK SHALL NOT COMMENCE BEFORE THE DIRECTOR'S APPROVAL IS GIVEN.

BLAST CLEANING OF A588 STEEL, ACCORDING TO 513.221, SHALL NOT BE REQUIRED.

REINFORCING STEEL LIST

Mark	No.	Length	Weight	Shp.	Bending Diagrams
P1101	48	25'-8"	6546	St.	
P1102	48	24'-0"	6121	St.	
SP401	4	25'-8"	2289	B	
SP402	4	24'-0"	2146	B	
P501	32	5'-10"	194	B	

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 in accordance with 509.08.

CAISSON NOTES

SPECIFICATIONS FOR DRILLED CAISSONS

CAISSONS. THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING CAISSONS OF THE KIND AND SIZE CALLED FOR ON THE PLANS AND IN THE FOLLOWING SPECIFICATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH ALL LABOR, MATERIALS, TESTS AND APPURTENANCES REQUIRED TO COMPLETE THE WORK AS SPECIFIED. IN NO WAY WILL THE CONTRACTOR'S RESPONSIBILITY BE AFFECTED IF THE ESTIMATED PAY LENGTH OF THE CAISSONS SHOWN ON THE PLANS IS DIFFERENT FROM THAT FOUND AT THE SITE.

THE CONTRACTOR SHALL LOCATE THE CENTER OF EACH CAISSON WITHIN A ONE-INCH RADIUS OF THE POSITION SHOWN ON THE PLAN. CAISSONS NOT LOCATED PROPERLY SHALL BE REINSTALLED AT THE CONTRACTOR'S EXPENSE.

THE TOP ELEVATION OF EACH CAISSON SHALL BE AS ESTABLISHED BY THE CONTRACT DRAWINGS. UPON THE COMPLETION OF A CAISSON, THE ENGINEER SHALL RECORD ITS LOCATION, SIZE, DEPTH OF PENETRATION, METHOD OF INSTALLATION, AND BEHAVIOR DURING INSTALLATION. FOR EACH CAISSON, A RECORD OF THE LOCATION, SIZE, DEPTH OF PENETRATION, METHOD OF INSTALLATION AND BEHAVIOR OF EACH CAISSON DURING INSTALLATION SHALL BE KEPT. THIS DATA SHALL BE RECORDED BY THE ENGINEER UPON COMPLETION OF THE INSTALLATION OF A CAISSON. DURING THE INSTALLATION OF A CAISSON, NO JETTING TO AID IN THE PENETRATION OF THE CAISSON SHALL BE PERMITTED WITHOUT THE APPROVAL OF THE DIRECTOR.

THE CAISSONS SHALL BE INSTALLED PLUMB AND SHALL NOT DEVIATE MORE THAN ONE-SIXTEENTH OF AN INCH PER FOOT FROM THE SPECIFIED AXIS. IF THE CAISSON AXIS VARIES MORE THAN THIS, THE ALIGNMENT OF THE CAISSON SHALL BE CORRECTED OR IF NECESSARY, ADDITIONAL CAISSONS SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE STATE. WHERE OBSTACLES SUCH AS LARGE BOULDERS ARE ENCOUNTERED, THEY SHALL BE REMOVED. BLASTING OF SUCH OBSTACLES MAY BE PERMITTED, PROVIDED THE CONTRACTOR CARRIES INSURANCE FOR LIABILITY. IF WATER IS ENCOUNTERED DURING THE INSTALLATION OF ANY CAISSON, OR IF THE NATURE OF THE EXCAVATION IS SUCH THAT THERE IS DANGER OF FOREIGN SUBSTANCES, EARTH, OR OTHER DEBRIS CONTAMINATING OR FALLING INTO THE CONCRETE MIX DURING THE PLACING OPERATIONS, THEN THE CONTRACTOR SHALL USE STEEL SHELLS FOR THE PLACING OF THE CAISSON CONCRETE. THESE STEEL SHELLS MAY BE LEFT IN PLACE, OR WITHDRAWN, AS THE CONCRETE IS PLACED PROVIDED THE CONCRETE COMPLETELY FILLS THE EXCAVATED SPACE TO THE TOP OF THE CAISSONS. THE CONCRETE FOR THE CAISSONS IS INTENDED TO BE PLACED AGAINST THE EXISTING SUBSOILS WITHOUT THE USE OF PERMANENT FORMS, PROVIDED THE FOLLOWING CONDITIONS ARE MET: THE EARTH EXCAVATION IS CLEAN, THERE IS NO EXCESSIVE LOSS OF CONCRETE, AND THE DIAMETER OF THE EXCAVATION IS MAINTAINED AT ALL TIMES. IF AN ARTESIAN WATER CONDITION IS ENCOUNTERED DURING THE INSTALLATION OF ANY CAISSON, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SPECIAL PROCEDURES NECESSARY TO ACCOMPLISH THE INSTALLATION, TO THE SATISFACTION OF THE DIRECTOR.

IF TWO CAISSONS ARE SPACED RELATIVELY CLOSE TOGETHER, ONE OF THE HOLES SHALL BE DRILLED, POURED, AND THE CONCRETE PERMITTED TO SET, PRIOR TO DRILLING THE OTHER HOLE.

EACH CAISSON SHALL PENETRATE INTO FIRM BEDROCK TO THE ELEVATION SHOWN ON THE PLANS. THIS DEPTH SHALL BE CONFIRMED BY THE ENGINEER AFTER INSPECTION OF EACH HOLE.

EXAMINATION OF CAISSONS. BEFORE THE PLACING OF THE CAISSON CONCRETE, THE CAISSON EXCAVATION SHALL BE CLEAN AND FREE FROM ALL FOREIGN MATTER. IN ALL CASES, THE EXCAVATION SHALL BE INSPECTED AND APPROVED BY THE ENGINEER. UPON HIS APPROVAL, THE REINFORCEMENT MAY THEN BE INSTALLED AND THE CONCRETE PLACED, THERE SHALL BE NO WATER IN THE HOLE WHEN THE CONCRETE IS PLACED, EXCEPT UNDER CERTAIN CONDITIONS WHEN ARTESIAN WATER IS ENCOUNTERED.

MATERIALS. CONCRETE FOR ALL CAISSONS SHALL BE CLASS "C" CONCRETE AND SHALL BE CONTROLLED AND PLACED ACCORDING TO THE REQUIREMENTS OF ITEM 511 FOR STRUCTURES OVER 20 FEET. REINFORCING STEEL SHALL MEET THE REQUIREMENTS OF ITEM 509 AND THE VERTICAL BARS SHALL BE DEFORMED. METAL SHELLS SHALL BE WATER-TIGHT AND SHALL BE OF SUFFICIENT STRENGTH TO WITHSTAND THE EARTH PRESSURES DURING THE INSTALLATION PROCEDURES.

METHOD OF MEASUREMENT. THE LENGTH OF EACH CAISSON TO BE PAID FOR SHALL BE THE COMPLETED AND ACCEPTED LENGTH, MEASURED ALONG THE AXIS OF THE CAISSON FROM THE BOTTOM OF THE DRILLED HOLE TO THE ELEVATION OF THE TOP OF THE CAISSON.

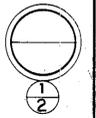
BASIS OF PAYMENT. THE QUANTITY OF DRILLED CAISSONS, MEASURED AS DESCRIBED ABOVE, SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT BID UNDER "SPECIAL ITEMS - DRILLED CAISSONS," COMPLETE IN PLACE. THIS UNIT PRICE AND PAYMENT THEREOF SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING ALL MATERIALS, EXCEPT REINFORCING STEEL, FOR ALL LABOR, THE USE OF TOOLS AND EQUIPMENT, AND ALL INCIDENTALS NECESSARY TO COMPLETE THIS ITEM.

REINFORCING STEEL. THE REINFORCING STEEL SHALL NOT BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT OF CAISSONS, BUT SHALL BE PAID FOR UNDER ITEM 509.

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BUREAU OF BRIDGES

GENERAL NOTES
CAISSON NOTES
ESTIMATED QUANTITIES
BRIDGE NO. BRO-221-0554
OVER WHITE OAK CREEK

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
Mrg	---	TGC	JM	WJJ	12-8-76	



GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED IN THE HIGHLY DISSECTED, GLACIATED PORTION OF THE LEXINGTON PENEPLAIN REGION, ON THE FLOODPLAIN OF AND OVER WHITE OAK CREEK, IN AN AREA WHERE EXTREMELY THIN VALLEY AND STREAM DEPOSITS OVERLIE BEDROCK OF ORDOVICIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF TWO CORE BORINGS MADE BY MEANS OF A MECHANICALLY POWERED HOLLOW STEM AUGER, MOUNTED ON A MOBILE PLATFORM PERFORMED ON DECEMBER 7, 1976.

INVESTIGATIONAL FINDINGS

THE BORINGS WERE MADE WITHIN THE LIMITS OF WHITE OAK CREEK AND DISCLOSED THAT THE CREEK IS FLOWING ON RELATIVELY FLAT BEDROCK SURFACE, ENCOUNTERED AT STREAM BED SURFACE, ELEVATION 575 FEET IN THE VICINITY OF THE REAR AND FORWARD PIERS. THE BORINGS WERE TERMINATED AT 15 TO 20-FOOT DEPTHS, ELEVATION 560 TO 555 FEET, AFTER PENETRATING 15 TO 20 FEET BELOW BEDROCK SURFACE.

- Auger Boring Location - Plan View.
- Press and / or Drive Sample and / or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- Top of Rock

- Coal
- Weathered Mudstone or Claystone
- Mudstone or Claystone
- Weathered Shale
- Shale
- Weathered Siltstone
- Siltstone

SYMBOLS OF ROCK TYPES

- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone
- Boulders or Cobbles

LEGEND

- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- Figures Beside the Boring Log in Profile Indicate the Number of Blows for Standard Penetration Test.
X = Number of Blows for First 6 inches.
Y = Number of Blows for Second 6 inches.
Z = Number of Blows for Third 6 inches.
- Drive Rod Penetration Resistance Sounding Log - Profile
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z Indicates Final Measurement of Penetration, in Inches.
- W Indicates Free Water Elevation.
- Indicates Static Water Elevation.

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

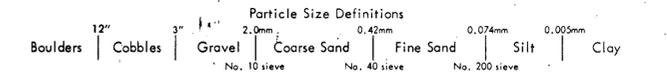
Drive Sample Borings - Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and / or 5-foot depth intervals, driven by means of a 140-pound drop-hammer with a free fall of 30 inches. The number of blows required to drive the sampler 18 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in three 6-inch increments, depth of press samples, field sample number, sample description - based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.



HOLLOW STEM LOG OF BORING

Date Started 12/7/76 Sampler Type AUGER Dia. _____ Water Elev. _____
 Date Completed 12/7/76 Casing Length _____ Dia. _____
 Boring No. B-2 Station & Offset 293+26, 15' LT (REAR PIER) Surface Elev. 575.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.	
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	PI		W.C.
575.0	0				TOP OF ROCK										
	2				CLAYSHALE, GRAY, CALCAREOUS, MEDIUM-FIRM, IN LAYERS 0.5 TO 1.5 FEET THICK, ALTERNATING WITH HARD, DENSE LIMESTONE LAYERS 0.1 FEET TO 0.5 FEET THICK, WET AND WEATHERED IN UPPER 10 FEET. RATIO 67% SHALE : 33% LIMESTONE CORE LOSS 6%										
	4	4.2	0.8												
	6														
	8	5.0	0.0												
	10				CLAYSHALE, GRAY, CALCAREOUS, MEDIUM-FIRM, IN LAYERS 0.5 TO 1.5 FEET THICK, ALTERNATING WITH HARD, DENSE LIMESTONE LAYERS 0.1 FEET TO 0.5 FEET THICK, WET AND WEATHERED IN UPPER ONE HALF OF INTERVAL. CORE LOSS 3% RATIO=72% SHALE : 28% LIMESTONE										
	12														
	14	5.0	0.0												
	16														
560.0	20				BOTTOM OF BORING										

HOLLOW STEM LOG OF BORING

Date Started 12/7/76 Sampler Type AUGER Dia. _____ Water Elev. _____
 Date Completed 12/7/76 Casing Length _____ Dia. _____
 Boring No. B-4 Station & Offset 294+01, 16' LT (FORWARD PIER) Surface Elev. 574.5'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	PI	
574.5	0				TOP OF ROCK									
	2				CLAYSHALE, GRAY, CALCAREOUS, MEDIUM-FIRM, IN LAYERS 0.5 TO 1.5 FEET THICK, ALTERNATING WITH HARD, DENSE LIMESTONE LAYERS 0.1 FEET TO 0.5 FEET THICK, WET AND WEATHERED IN UPPER ONE HALF OF INTERVAL. CORE LOSS 3% RATIO=72% SHALE : 28% LIMESTONE									
	4	4.4	0.6											
	6													
	8	5.0	0.0											
	10				CLAYSHALE, GRAY, CALCAREOUS, MEDIUM-FIRM, IN LAYERS 0.5 TO 1.5 FEET THICK, ALTERNATING WITH HARD, DENSE LIMESTONE LAYERS 0.1 FEET TO 0.5 FEET THICK, WET AND WEATHERED IN UPPER ONE HALF OF INTERVAL. CORE LOSS 3% RATIO=72% SHALE : 28% LIMESTONE									
	12													
	14	5.0	0.0											
	16													
554.5	20				BOTTOM OF BORING									

NOTE - ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE STRUCTURE FOUNDATION INVESTIGATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE BUREAU OF TESTS AT 1600 WEST BROAD STREET, THE PAVEMENT AND SOILS SECTION OF THE BUREAU OF ROADWAY DESIGN OR IN THE BRIDGE BUREAU AT 25 SOUTH FRONT STREET.

NOTE: Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

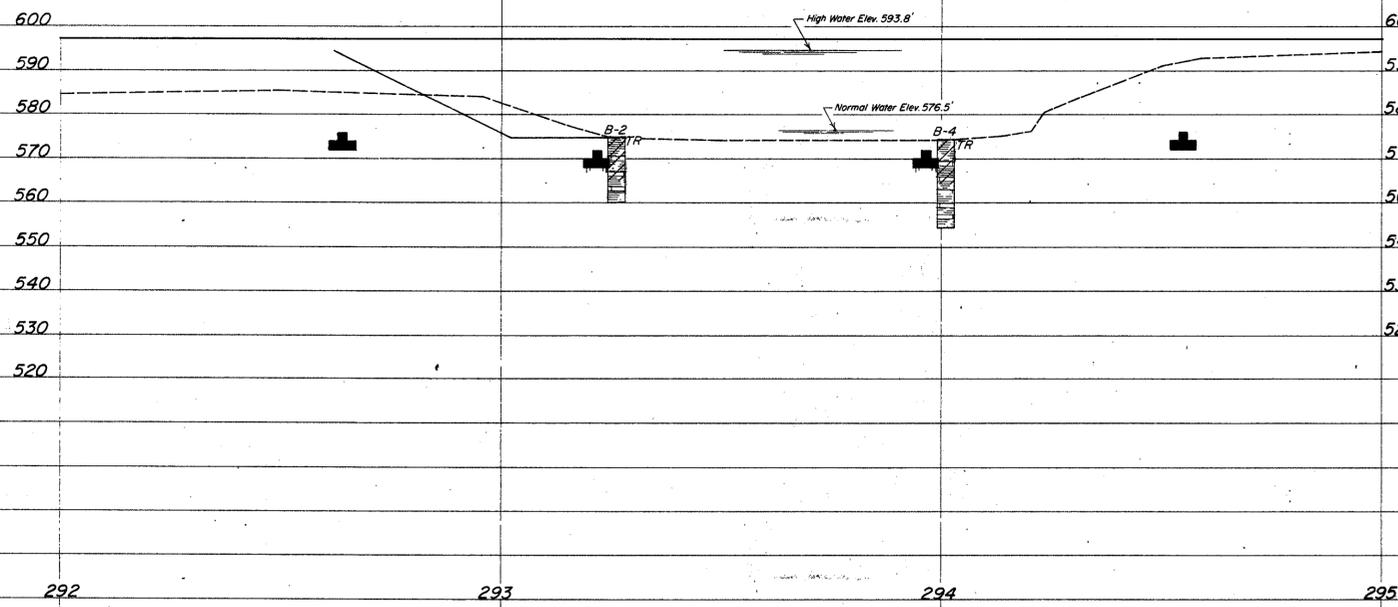
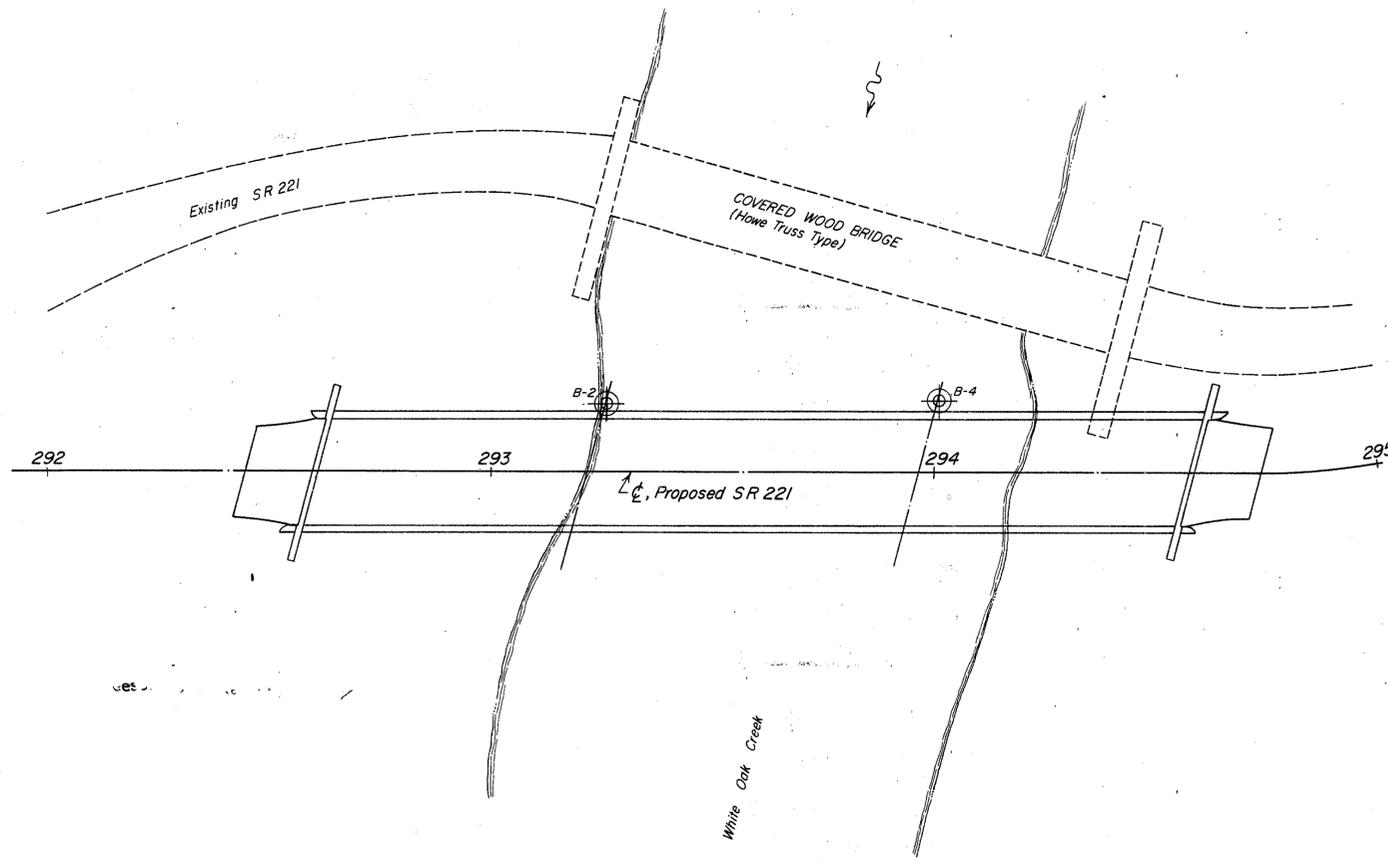
OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - TESTING LABORATORY
1600 WEST BROAD STREET, COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. BRO-221-0554
OVER WHITE OAK CREEK
SEC. BRO-221-5.47

CHECKED BY L. N. L. REVIEWED BY R. D. R. DATE 12/15/76

MICROFILMED
DEC 27 1985

BRO-221-5.47



OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS-TESTING LABORATORY 1600 WEST BROAD STREET, COLUMBUS, OHIO 43223			
STRUCTURE FOUNDATION INVESTIGATION			
BRIDGE NO.	BRO-221-0554		
	OVER WHITE OAK CREEK		
SEC.	BRO-221-5.47		
PLAN AND PROFILE			
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
L. N. L.	L. N. L.	R. D. R.	12/15/76

SCALE: 1" = 20'

BRO-551-2-11 B-D