

MICROFILMED  
NOV 29 1993

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
**TUS-250-(26.31)**  
BRIDGE NO. TUS-250-2631  
UNION TOWNSHIP  
TUSCARAWAS COUNTY

TUS-250-(26.31)

OHIO

FHWA REGION 5

FEDERAL PROJECT

1/8

BR-44-88

CULVERT REPLACEMENT

1989 SPECIFICATIONS

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

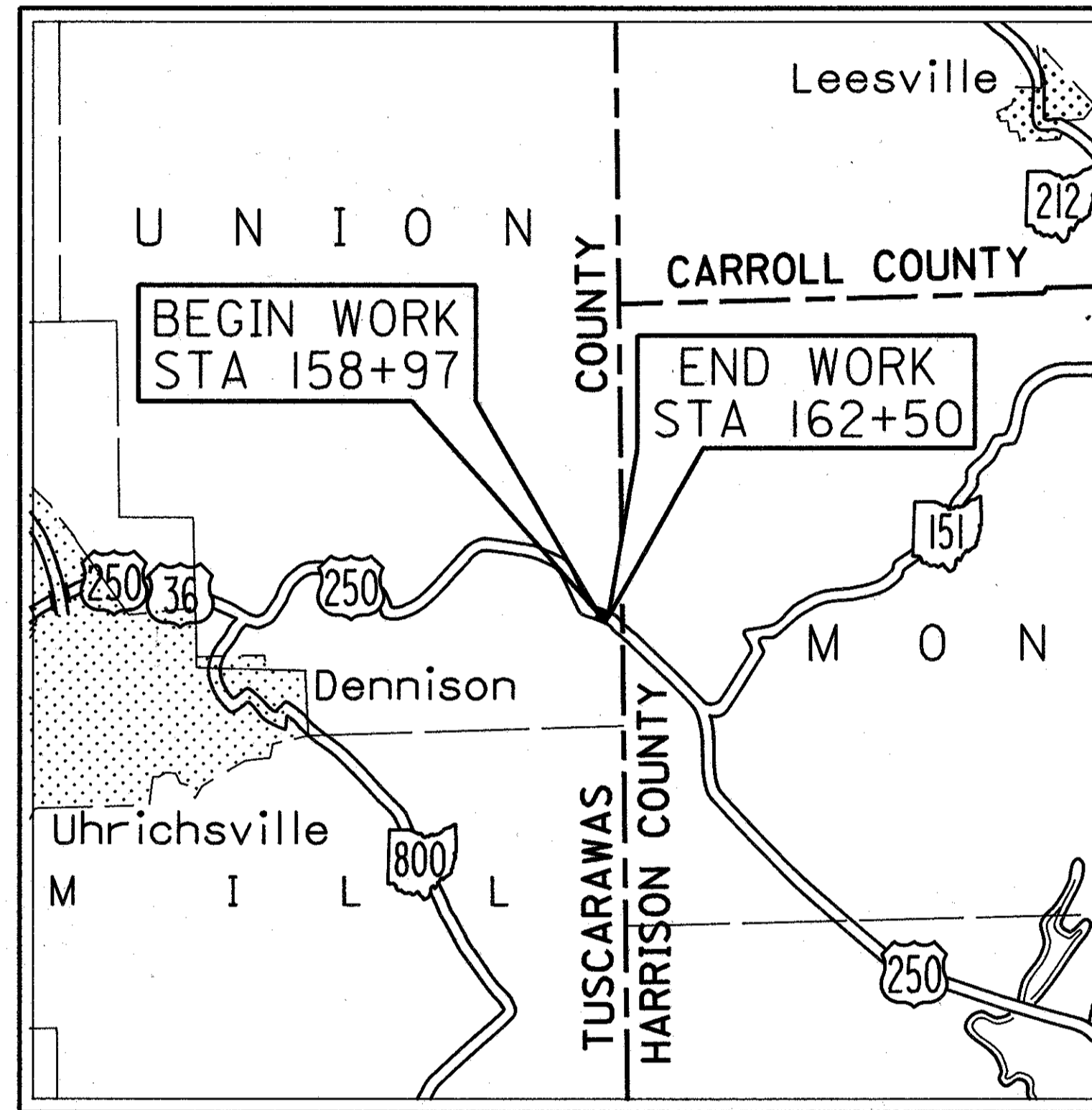
I hereby approve these plans and declare that the making of this improvement will not require the closing to traffic of the highway and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

CONVENTIONAL SIGNS

COUNTY LINE	-----	LIMITED ACCESS (ONLY)	L/A
TOWNSHIP LINE	-----	RIGHT OF WAY (ONLY)	RW
SECTION LINE	-----	LIMITED ACCESS & RIGHT OF WAY	LA & RW
CORPORATION LINE	-----	EXISTING RIGHT OF WAY	-----
FENCE (EXISTING)	X X (PROPOSED) X X	PROPERTY LINE	R (IN EXISTING FENCE) X-R-X
CENTERLINE	200 201	RAILROAD	OR
TREES STUMPS (TO BE REMOVED)	⊗ ⊗	GUARDRAIL (EXISTING)	o o (PROPOSED)
UTILITY POLES: TELEPHONE POWER LIGHT	⊕ ⊕ ⊕		

INDEX OF SHEETS

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LOCATION MAP

SCALE IN MILES



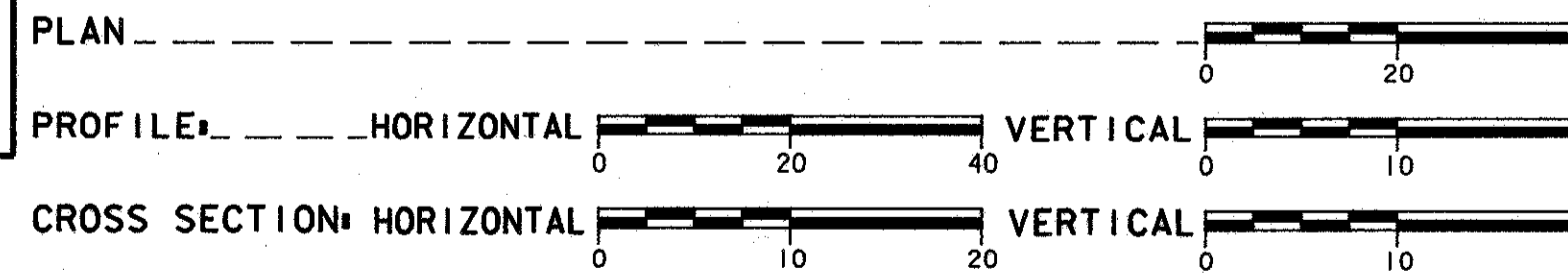
LINE DATA

BEGIN WORK = STATION 158+97.00  
END WORK = STATION 162+50.00  
TOTAL NET LENGTH OF WORK = 353.00 LIN. FT. OR 0.067 MILE

**UNDERGROUND UTILITIES**  
2 WORKING DAYS  
**BEFORE YOU DIG**  
CALL 800-362-2764 (TOLL FREE)  
OHIO UTILITIES PROTECTION SERVICE  
NON-MEMBERS  
MUST BE CALLED DIRECTLY

PORTION TO BE IMPROVED  
STATE & FEDERAL ROUTES  
OTHER ROADS

SCALES



SUPPLEMENTAL SPECIFICATIONS	
802	5-4-88

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS	
GR-2B	2-5-82
GR-4	2-5-82
GR-4A	1-30-84
MC-4	7-26-76
MC-11	8-1-78
HW-4A	4-1-80

PLAN PREPARED BY:  
OHIO DEPARTMENT OF TRANSPORTATION  
DISTRICT II

SEAL

PROJECT: TUS-250-(26.31)

DATE OF LETTING 19\_\_ , CONTRACT NO. \_\_\_\_\_

APPROVED William P. McGinnis  
DATE 12-8-88 DISTRICT DEPUTY DIRECTOR OF TRANSPORTATION

APPROVED B. D. Hanklman  
DATE 12-19-88 ENGINEER, BUREAU OF BRIDGES AND STRUCTURAL DESIGN

APPROVED James R. Longenecker  
DATE 1-30-89 DEPUTY DIRECTOR, OPERATIONS

APPROVED Bernard B. Hurst  
DATE 1-30-89 DIRECTOR, DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED \_\_\_\_\_  
DIVISION ADMINISTRATOR

DATE \_\_\_\_\_

# GENERAL NOTES

QUANTITIES			
Calc.	WRG	Chkd.	RDA
Date:	10-25-88	Date:	12-06-88

FHWA REGION	STATE	PROJECT	
5	OHIO		

2  
8

TUS-250-(26.31)  
BR-44-88

## WORK REQUIRED

EXCAVATE BENEATH EXISTING STRUCTURE AND PLACE BEDDING FOR CONDUIT.  
INSTALL CONDUIT WITHIN EXISTING STRUCTURE.  
BUILD HEADWALLS.  
FILL VOID BETWEEN EXISTING STRUCTURE AND PROPOSED CONDUIT.  
REMOVE PORTIONS OF EXISTING STRUCTURE.  
COMPLETE EMBANKMENT WORK.  
INSTALL GUARDRAIL AND SEED AND MULCH.  
CLEAN-UP.

## DESIGN DATA

DESIGN LOADING - HS20-44 AND THE ALTERNATE MILITARY LOADING  
CONCRETE - CLASS C - UNIT STRESS 1333 PSI FOR FOOTERS AND HEADWALLS.

## EXISTING STRUCTURE VERIFICATION

DETAILS AND DIMENSIONS ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND/OR FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.02. CONTRACT BID PRICES SHALL BE BASED 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.

## BRIDGE IDENTIFICATION SIGNS

THE EXISTING BRIDGE IDENTIFICATION SIGN(S) SHALL BE REMOVED FOR REUSE BY THE CONTRACTOR. IF THE EXISTING SIGN(S) ARE DETERMINED TO BE UNSUITABLE FOR REUSE BY THE ENGINEER, NEW SIGN(S) WILL BE PROVIDED BY THE STATE OF OHIO. AFTER THE NEW TYPE 5 GUARDRAIL HAS BEEN ERECTED, THE CONTRACTOR SHALL DRILL THE NECESSARY HOLES NEAR THE TOP OF THE RAIL AND INSTALL THE SIGN(S) AT THE APPROPRIATE CORNER(S), AS DIRECTED BY THE ENGINEER. PAYMENT FOR ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 606, TYPE 5 GUARDRAIL, AS PER PLAN.

## CONDUIT END TREATMENT

IMMEDIATELY AFTER PLACEMENT OF ANY CONDUIT, THE CONTRACTOR SHALL CONSTRUCT THE END TREATMENTS AS REQUIRED BY THE PLANS AT BOTH THE OUTLET AND INLET ENDS. THIS SHALL INCLUDE HEADWALLS, CONCRETE RIPRAP, ROCK CHANNEL PROTECTION, SODDING, ETC.

## TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER, FOR TEMPORARY EROSION AND SEDIMENT CONTROL:

207 STRAW OR HAY BALES -----50 EACH

## SEEDING

QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN THE WORK LIMITS AS SHOWN ON THE CROSS SECTIONS. AN ADDITIONAL 200 SQ.YD. HAS BEEN INCLUDED TO SEED THE CHANNEL AREAS.

## ROUNDING OF CORNERS

THE ROUNDING OF CORNERS, AS SHOWN ON THE TYPICAL SECTION, SHALL APPLY TO ALL CROSS SECTIONS EVEN THOUGH OTHERWISE SHOWN ON THE PLANS.

## ITEM 202 - PORTIONS OF STRUCTURE REMOVED

ANY PORTIONS OF THE EXISTING STRUCTURE THAT INTERFERS WITH THE PLACEMENT OF THE CULVERT AND HEADWALLS SHALL BE REMOVED AS PER 202.03. THE EXISTING DECK IS TO REMAIN IN PLACE. AFTER BACKFILLING AROUND THE PIPE THE RAILING AND CURBS SHALL BE REMOVED BELOW THE LEVEL OF THE SHOULDER MATERIAL.

## FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 150 SQ.FT. OF FLOOR SPACE. PAYMENT SHALL BE AT THE LUMP SUM PRICE BID FOR ITEM 619, FIELD OFFICE.

## LOCATION OF GUARDRAIL

THE LOCATION OF GUARDRAIL RUNS AS SHOWN ON THESE PLANS ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER TO ASSURE THAT THE INSTALLATION WILL AFFORD MAXIMUM PROTECTION TO TRAFFIC.

## RIGHT-OF-WAY

ALL WORK SHALL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY AND AREAS INDICATED ON THE SITE PLAN TO BE COVERED BY A MAINTENANCE WORK AGREEMENT SIGNED BY THE RESPECTIVE OWNERS. AREAS COVERED BY THE WORK AGREEMENT(S) SHALL BE GRADED TO MEET THE LINE OF THE CHANNEL CROSS SECTIONS, OR SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER UNDER ITEM 203 - EMBANKMENT FOR PAYMENT, AFTER OTHER WORK HAS BEEN COMPLETED.

## ITEM SPECIAL - REBUILDING FARM FENCE

THIS ITEM SHALL INCLUDE THE INSTALLATION OF A FENCE EQUAL OR BETTER THAN EXISTING, PLACED TEMPORARILY ALONG THE WORK LIMITS AND SUBSEQUENTLY ALONG THE RIGHT OF WAY LINE, AS DIRECTED BY THE ENGINEER. POST SHALL BE NEW, BUT MAY BE THE SAME TYPE AS EXISTING. OTHER MATERIALS SHALL BE AS PER 607.02. ALL LABOR AND MATERIALS REQUIRED TO COMPLETE THE ABOVE WORK SHALL INCLUDED IN THE UNIT PRICE BID PER LIN.FT.

## GUARDRAIL OVER CONDUITS

WHEN SUFFICIENT POST DEPTH IS NOT AVAILABLE DUE TO A CULVERT, THE GUARDRAIL POSTS DIRECTLY OVER THE CULVERT SHALL NOT BE DRIVEN, BUT SET IN HOLES. IF THE DISTANCE BETWEEN THE GROUND LINE AND THE TOP OF THE CULVERT IS LESS THAN 3 FT., THE POST SHALL BE ENCASED IN A MINIMUM OF 4" THICKNESS OF CLASS C CONCRETE FOR THE FULL DEPTH OF THE POST. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 606, GUARDRAIL TYPE 5.

## ITEM 603 - 108" CONDUIT, TYPE A (707.03 or 707.23), AS PER PLAN

THIS ITEM SHALL CONSIST OF CONSTRUCTING THE CONDUIT WITHIN THE EXISTING STRUCTURE IN ACCORDANCE WITH 603, THIS NOTE AND IN REASONABLY CLOSE CONFORMITY WITH THE LINE AND GRADE SHOWN ON THE PLANS. THE CONDUIT MAY BE ASSEMBLED INSIDE THE EXISTING STRUCTURE OR ASSEMBLED THEN MANEUVERED THROUGH THE EXISTING STRUCTURE IN SUCH A MANNER AS NOT TO DAMAGE THE ROOF OF THE EXISTING STRUCTURE, THE PAVEMENT OR THE CONDUIT. PAYMENT FOR ALL LABOR, TOOLS, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 603.

## ITEM 503 - LOW STRENGTH MORTAR BACKFILL MATERIAL, CLASS LSM-50

THIS WORK SHALL CONSIST OF FILLING THE VOID AROUND THE CONDUIT WITHIN THE EXISTING STRUCTURE. MATERIAL TO BE USED SHALL BE AS PER PROPOSAL NOTE. THE MATERIAL SHALL COMPLETELY FILL THE VOID BETWEEN THE EXISTING STRUCTURE AND THE PROPOSED CONDUIT FOR THE ENTIRE LIMITS OF THE EXISTING CONCRETE SLAB. THE CONTRACTOR SHALL BRACE THE CONDUIT BOTH INSIDE AND OVERHEAD AGAINST THE EXISTING CONCRETE SLAB IN ORDER THAT NO DISTORTION WILL OCCUR FROM "FLOAT" WHEN THE CONDUIT IS BEING FILLED. THE MATERIAL SHALL BE CONTAINED WITHIN THE REQUIRED FILL BY THE USE OF BULKHEADS OF BRICK AND/OR CONCRETE MASONRY FORMING A 12" MINIMUM THICK SEAL WITH THE EXISTING STRUCTURE. THE REMAINDER OF THE BACKFILL SHALL BE AS PER 603.08. TO INSURE THAT THE VOID IS COMPLETELY FILLED, 2" DIAMETER HOLES PER 80 SQ.FT. OF DECK AREA AT APPROXIMATELY 8 FT. CENTERS SHALL BE CORED THROUGH THE DECK SLAB AND PUMPED FULL OF MORTAR. PAYMENT FOR THE ABOVE INCLUDING FURNISHING AND PLACING ALL MATERIALS AND ALL LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 503, LOW STRENGTH MORTAR BACKFILL MATERIAL, CLASS LSM-50, AS PER PLAN.

## ITEM 203 - EXCAVATION INCLUDING EMBANKMENT CONSTRUCTION

A QUANTITY FOR THIS ITEM HAS BEEN INCLUDED TO COVER ALL EARTHWORK REQUIRED TO CONSTRUCT THE SLOPES AT THE INLET AND OUTLET OF THE CONDUIT AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER. ALL WORK SHALL BE PERFORMED AS PER THE REQUIREMENTS OF 203.

## CONTINGENCY QUANTITIES

SPECIFIC LOCATIONS AND USAGE OF THE ESTIMATED QUANTITIES SET UP ON THIS PLAN TO BE USED "AS DIRECTED BY THE ENGINEER" SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT. ESTIMATED QUANTITIES OF MATERIALS SHALL NOT BE ORDERED FOR DELIVERY TO THE PROJECT UNLESS AUTHORIZED BY THE ENGINEER.

## UNDERGROUND UTILITIES

THE LOCATIONS OF UNDERGROUND UTILITIES ON THE PLAN ARE AS OBTAINED FROM OWNERS OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C.

## UTILITY NOTIFICATION

FOLLOWING ARE OWNERS KNOWN TO BE WITHIN THE AREA OF THE PROJECT:

OHIO BELL TELEPHONE  
840 ORCHARD ST.  
ZANESVILLE, OHIO 43701  
PHONE (614)454-3401

OHIO POWER COMPANY  
301 CLEVELAND AVE. S.W.  
CANTON, OHIO 44701  
PHONE (216)438-7040

RESOURCE EXPLORATION INC.  
2876 S.ARLINGTON RD.  
AKRON, OHIO 44312

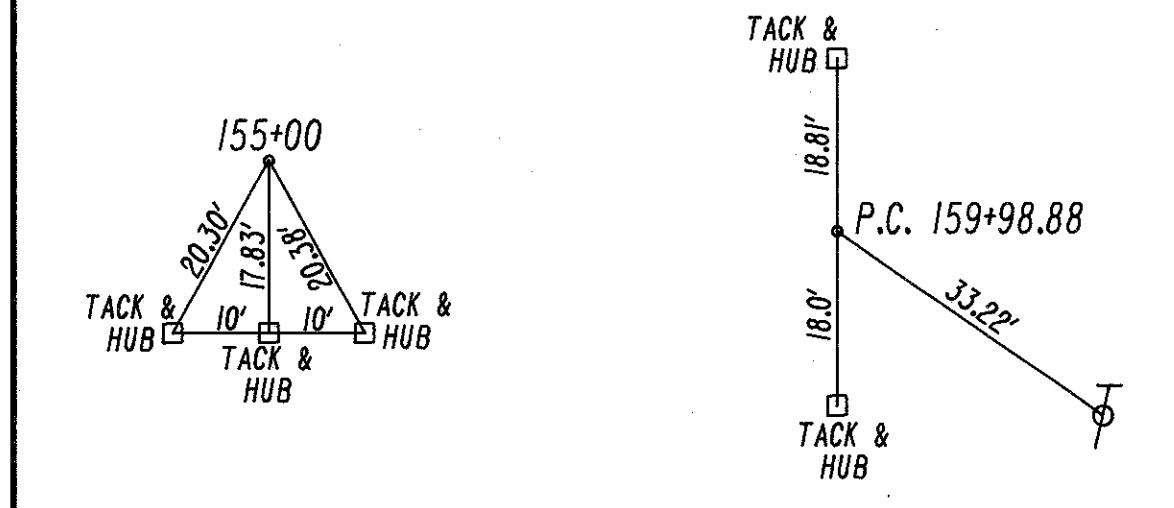
GENERAL SUMMARY				
ITEM	TOTAL	UNIT	ITEM EXT.	DESCRIPTION
202	LUMP	LUMP	2021121	PORTIONS OF STRUCTURE REMOVED, AS PER PLAN
202	337.5	LIN.FT.	2023800	GUARDRAIL REMOVED
203	60	CU.YD.	2032000	EMBANKMENT
203	36	CU.YD.	2031320	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION
203	100	CU.YD.	2031100	EXCAVATION INCLUDING EMBANKMENT CONSTRUCTION
207	50	EACH	2077000	STRAW OR HAY BALES
503	65	CU.YD.	5034120	LOW STRENGTH MORTAR BACKFILL MATERIAL, CLASS LSM-50
601	80	CU.YD.	6013410	ROCK CHANNEL PROTECTION, TYPE B WITHOUT FILTER
602	93.8	CU.YD.	6022000	CONCRETE MASONRY
603	49.0	LIN.FT.	6033200	108" CONDUIT, TYPE A (707.03 OR 707.23)
606	318.75	LIN.FT.	6061301	GUARDRAIL, TYPE 5, AS PER PLAN
606	2	EACH	6062500	ANCHOR ASSEMBLY, TYPE A
606	2	EACH	6062650	ANCHOR ASSEMBLY, TYPE T
659	402	SQ.YD.	6591000	SEEDING AND MULCHING
659	0.4	TON	6592000	COMMERCIAL FERTILIZER
659	0.2	TON	6593000	AGRICULTURAL LIMING
802	8	EACH	8020010	BARRIER REFLECTORS, TYPE A
SPECIAL	100	LIN.FT.	6079800	REBUILDING FARM FENCE, AS PER PLAN
614	LUMP	LUMP	6141100	MAINTAINING TRAFFIC
619	LUMP	LUMP	6191000	FIELD OFFICE
623	LUMP	LUMP	6231000	CONSTRUCTION LAYOUT STAKES
624	LUMP	LUMP	6241000	MOBILIZATION

STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS BUREAU OF MAINTENANCE					
<b>GENERAL NOTES AND SUMMARY</b>					
BRIDGE NO. TUS-250-2631 OVER LONE PINE CREEK					
DESIGNED	DRAWN	CADD	CHECKED	REVIEWED	DATE REVISD
WRG	WRG	WRG	WSR		

FHWA REGION	STATE	PROJECT
5	OHIO	

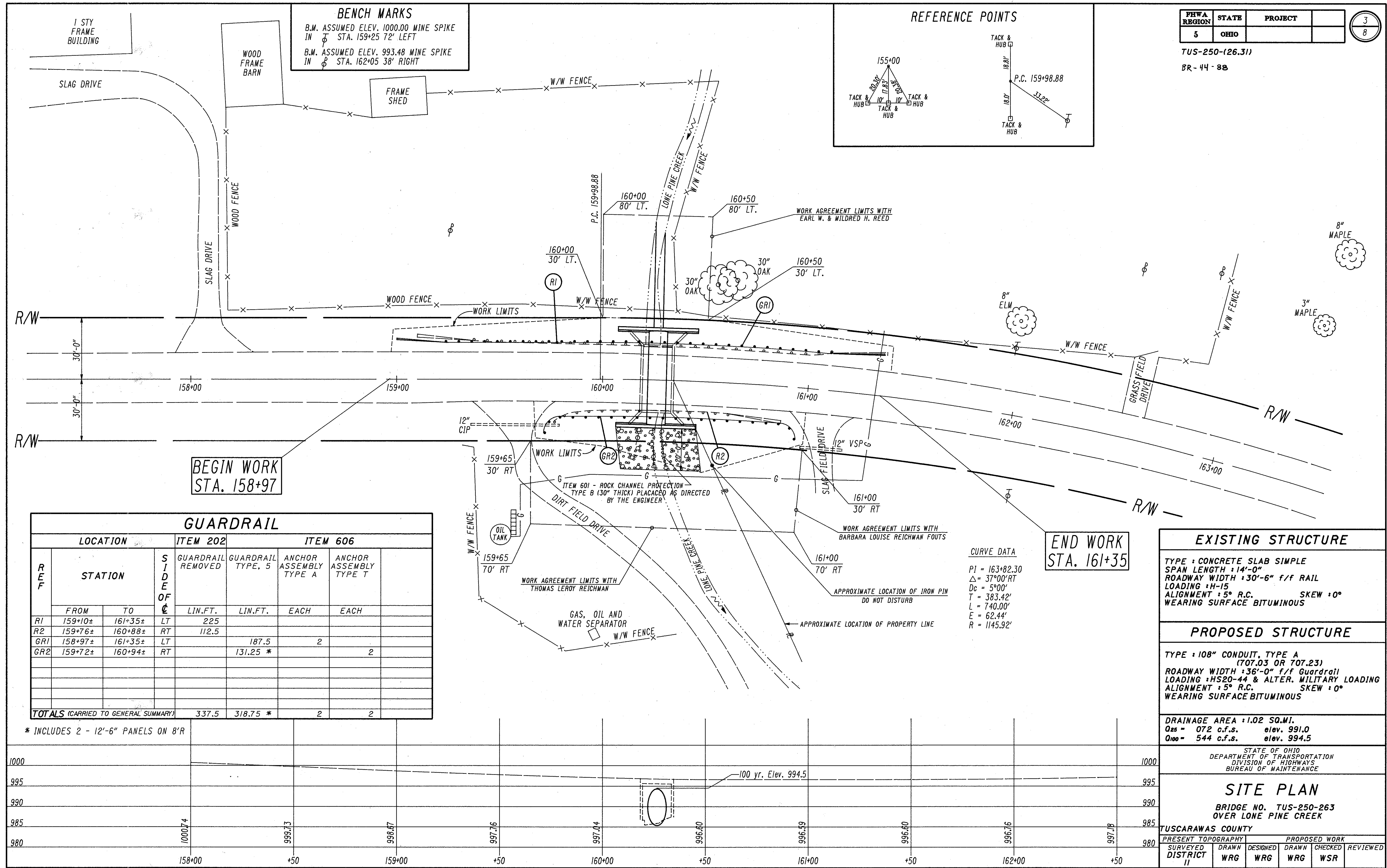
TUS-250-(26.31)  
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REFERENCE POINTS



BENCH MARKS

B.M. ASSUMED ELEV. 1000.00 MINE SPIKE IN  $\phi$  STA. 159+25 72' LEFT  
B.M. ASSUMED ELEV. 993.48 MINE SPIKE IN  $\phi$  STA. 162+05 38' RIGHT



BEGIN WORK  
STA. 158+97

END WORK  
STA. 161+35

CURVE DATA

PI = 163+82.30  
 $\Delta$  = 37°00' RT  
Dc = 5°00'  
T = 383.42'  
L = 740.00'  
E = 62.44'  
R = 1145.92'

GUARDRAIL

REF	LOCATION		SIDE OF C	ITEM 202		ITEM 606	
	FROM	TO		GUARDRAIL REMOVED	GUARDRAIL TYPE, 5	ANCHOR ASSEMBLY TYPE A	ANCHOR ASSEMBLY TYPE T
	STATION	STATION		LIN.FT.	LIN.FT.	EACH	EACH
RI	159+10±	161+35±	LT	225			
R2	159+76±	160+88±	RT	112.5			
GR1	158+97±	161+35±	LT		187.5	2	
GR2	159+72±	160+94±	RT		131.25 *		2
TOTALS (CARRIED TO GENERAL SUMMARY)				337.5	318.75 *	2	2

\* INCLUDES 2 - 12'-6" PANELS ON 8'R

EXISTING STRUCTURE

TYPE : CONCRETE SLAB SIMPLE  
SPAN LENGTH : 14'-0"  
ROADWAY WIDTH : 30'-6" f/f RAIL  
LOADING : H-15  
ALIGNMENT : 5° R.C. SKEW : 0°  
WEARING SURFACE BITUMINOUS

PROPOSED STRUCTURE

TYPE : 108" CONDUIT, TYPE A (707.03 OR 707.23)  
ROADWAY WIDTH : 36'-0" f/f Guardrail  
LOADING : HS20-44 & ALTER. MILITARY LOADING  
ALIGNMENT : 5° R.C. SKEW : 0°  
WEARING SURFACE BITUMINOUS

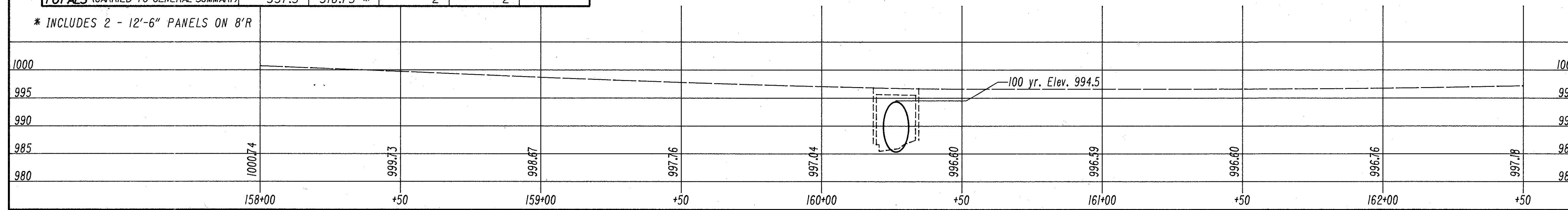
DRAINAGE AREA : 1.02 SQ.MI.  
Q25 = 072 c.f.s. elev. 991.0  
Q100 = 544 c.f.s. elev. 994.5

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

SITE PLAN

BRIDGE NO. TUS-250-263  
OVER LONE PINE CREEK

TUSCARAWAS COUNTY					
PRESENT TOPOGRAPHY			PROPOSED WORK		
SURVEYED DISTRICT II	DRAWN WRG	DESIGNED WRG	DRAWN WRG	CHECKED WSR	REVIEWED



SEEDING END AREA VOLUME  
 1000 990  
 1000 990  
 1000 990  
 1000 990  
 1000 990  
 1000 990  
 1000 990

END AREA  
 1000 990  
 1000 990  
 1000 990  
 1000 990  
 1000 990  
 1000 990  
 1000 990

FILL  
 0 0  
 0 0  
 0 0  
 0 0  
 0 0  
 0 0  
 0 0

CUT  
 0 0  
 0 0  
 0 0  
 0 0  
 0 0  
 0 0  
 0 0

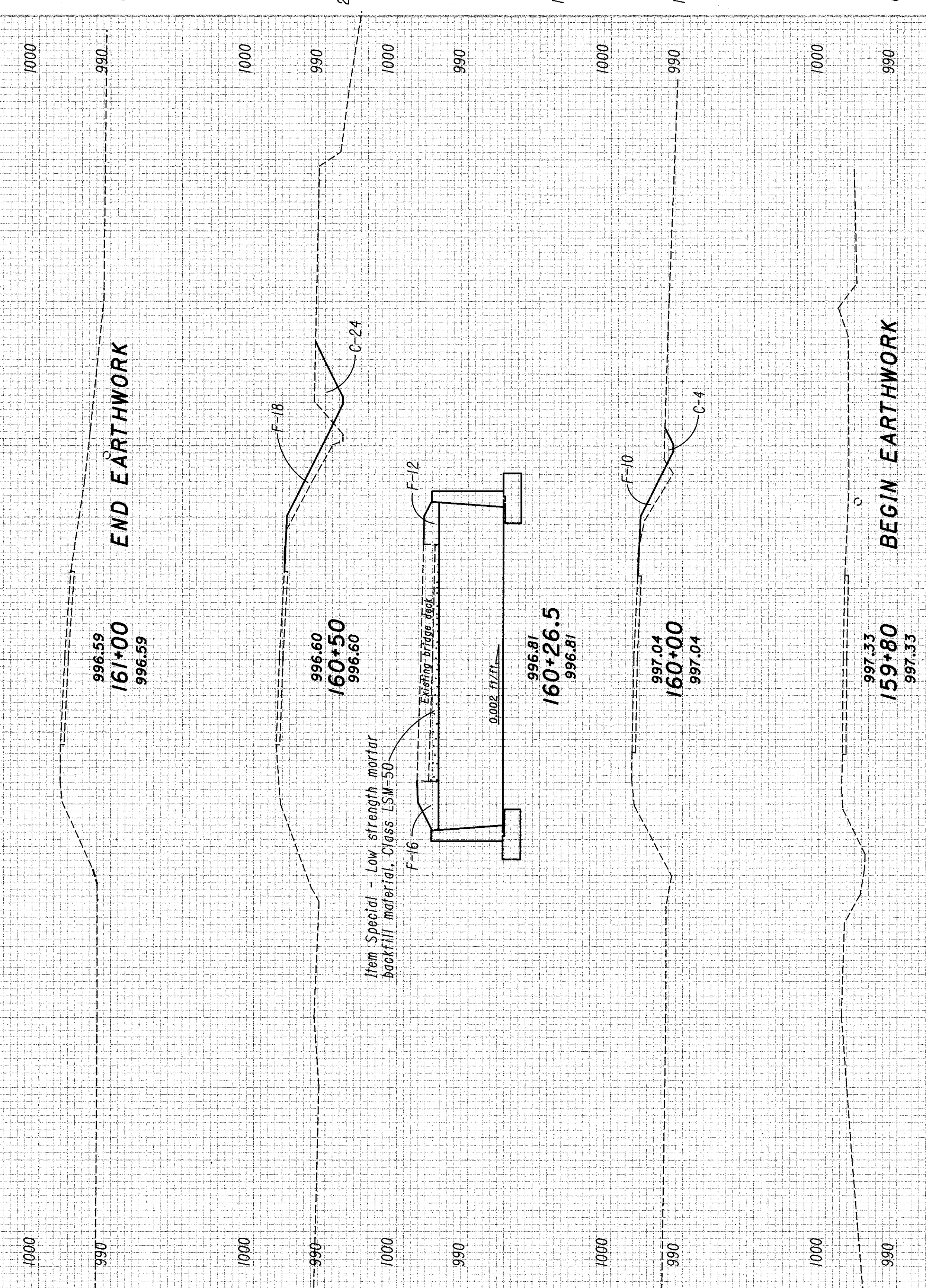
VOLUME  
 0 0  
 0 0  
 0 0  
 0 0  
 0 0  
 0 0  
 0 0

22 17  
 24 18  
 29 18  
 57 20  
 15 28  
 46 19  
 16 10  
 18 4  
 2 4

CALC BY WRG  
 DATE 12-06-88  
 CHECK BY RDA  
 DATE 12-06-88  
 BR-44-88

OHIO  
 FHWA REGION 5

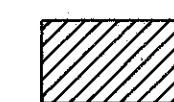
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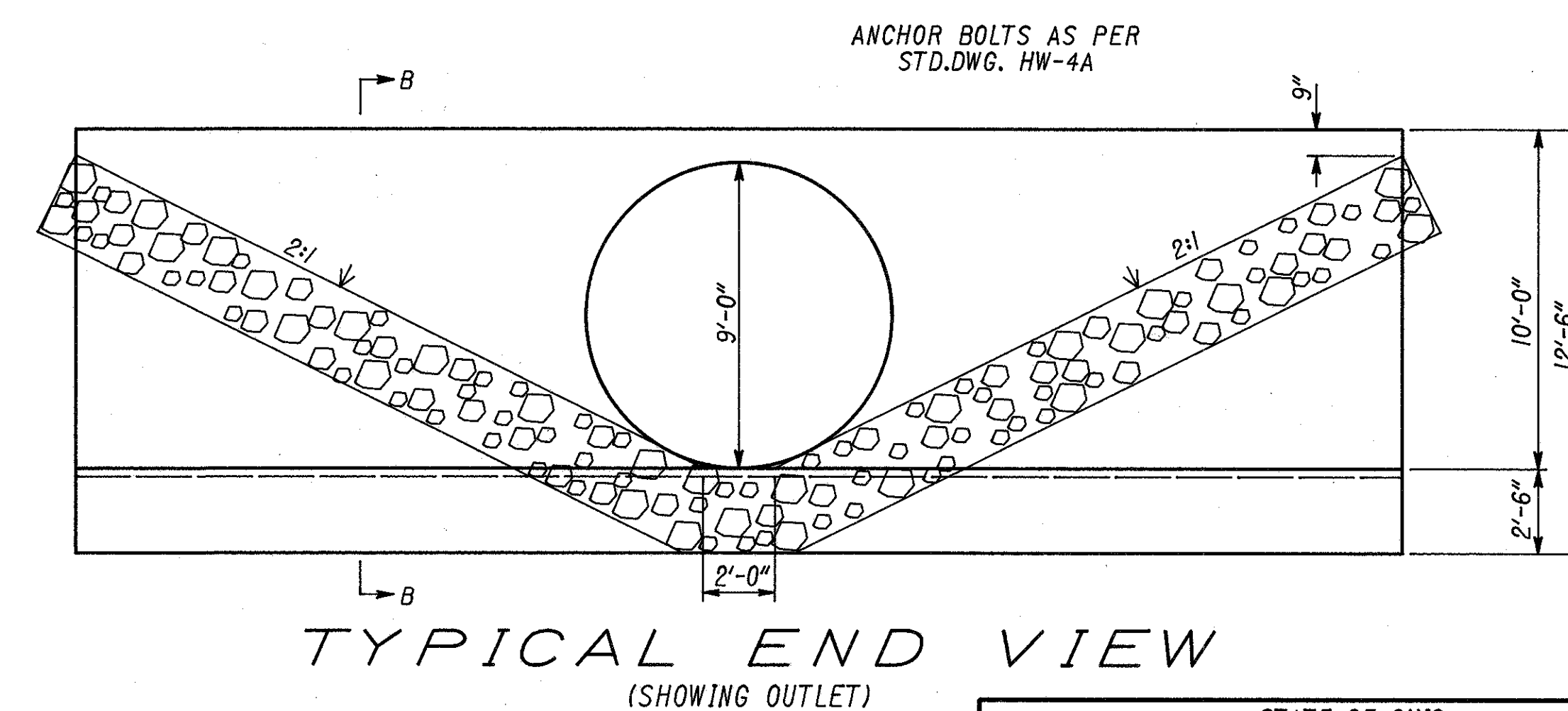
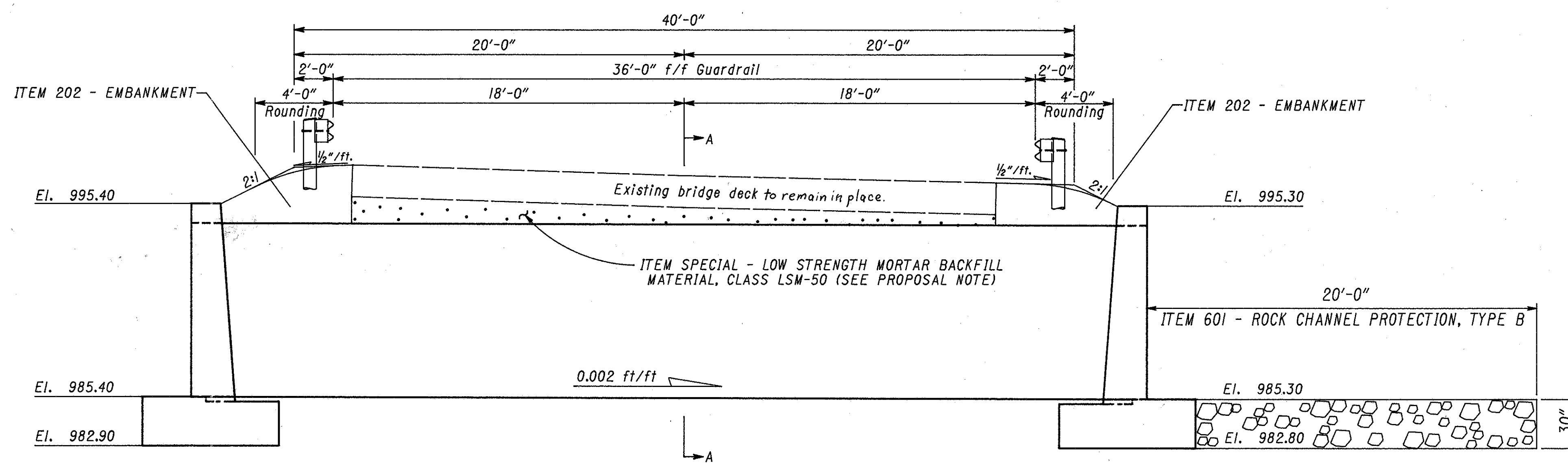
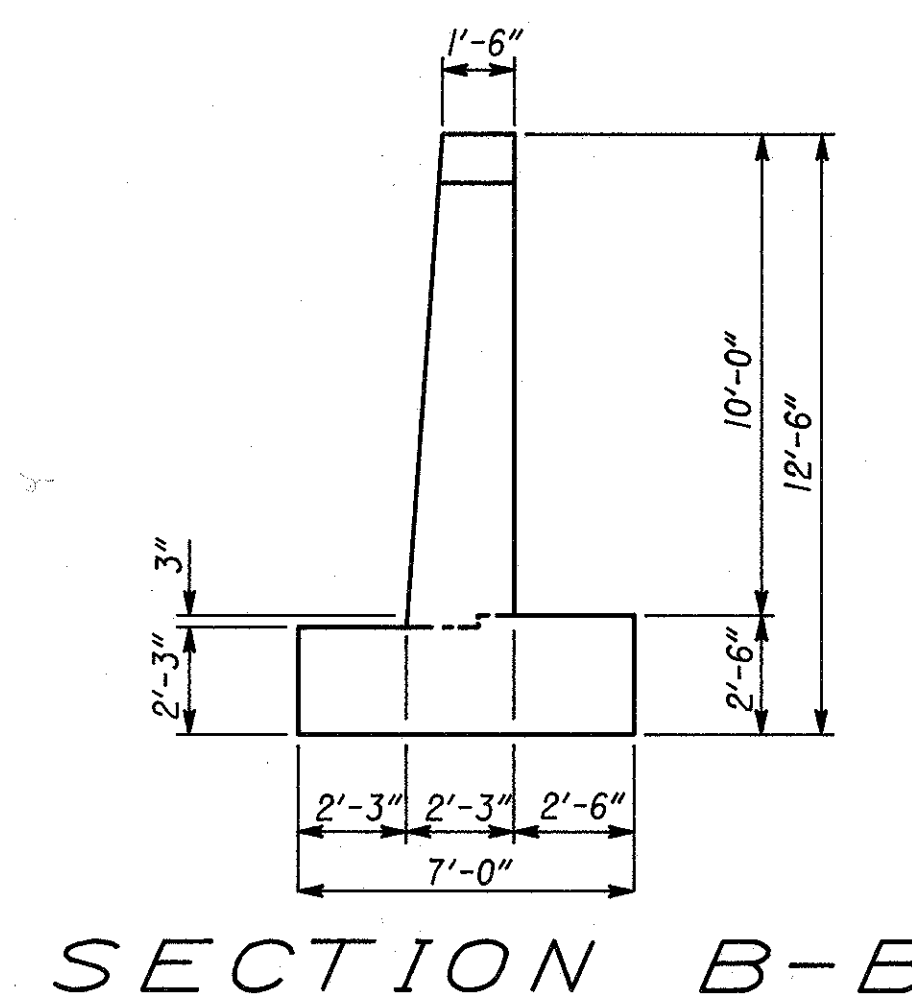
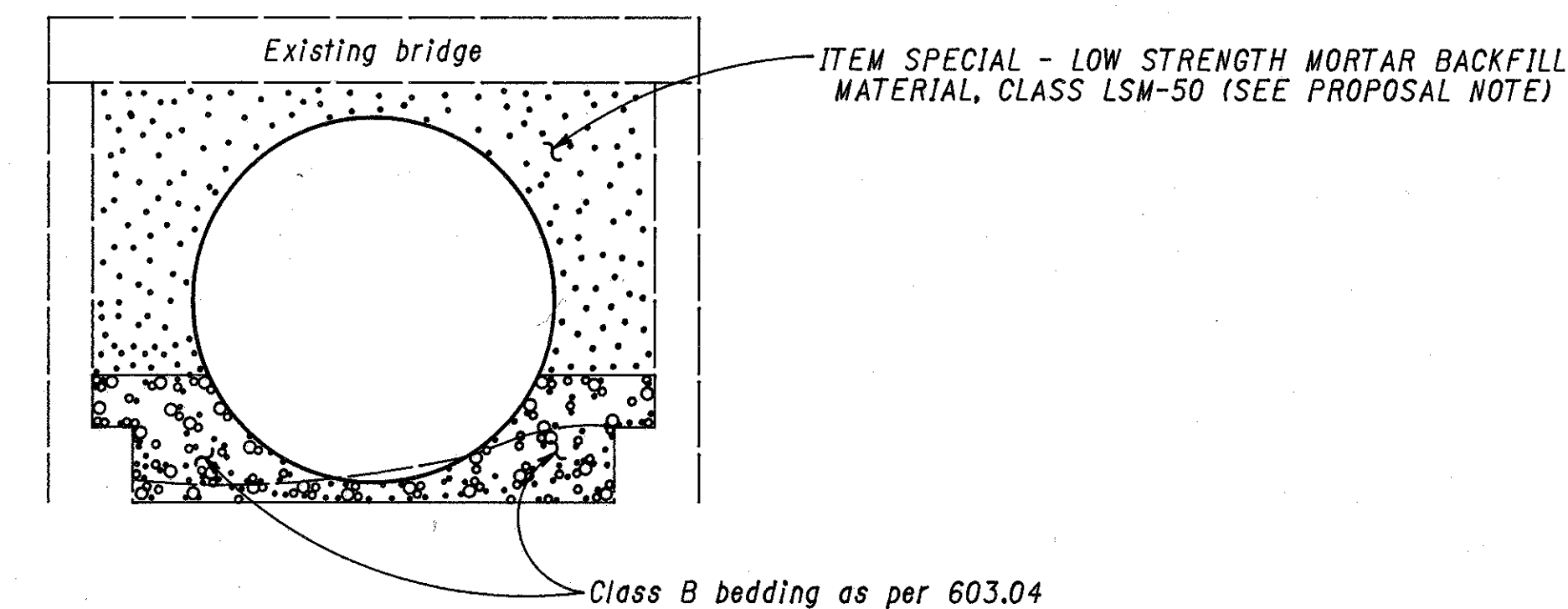
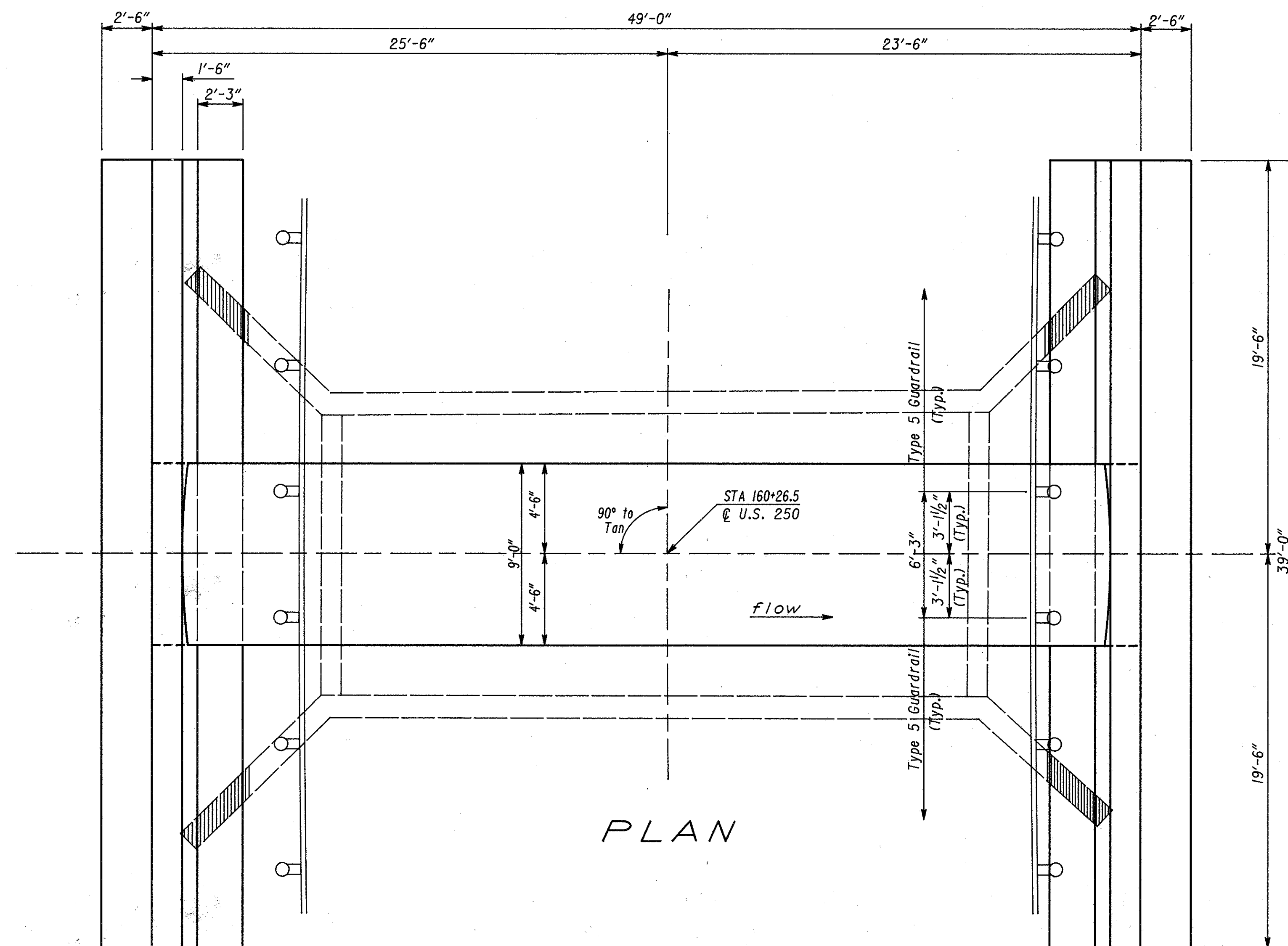


FHWA REGION	STATE	PROJECT
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 Portions of structure to be removed as directed by the Engineer



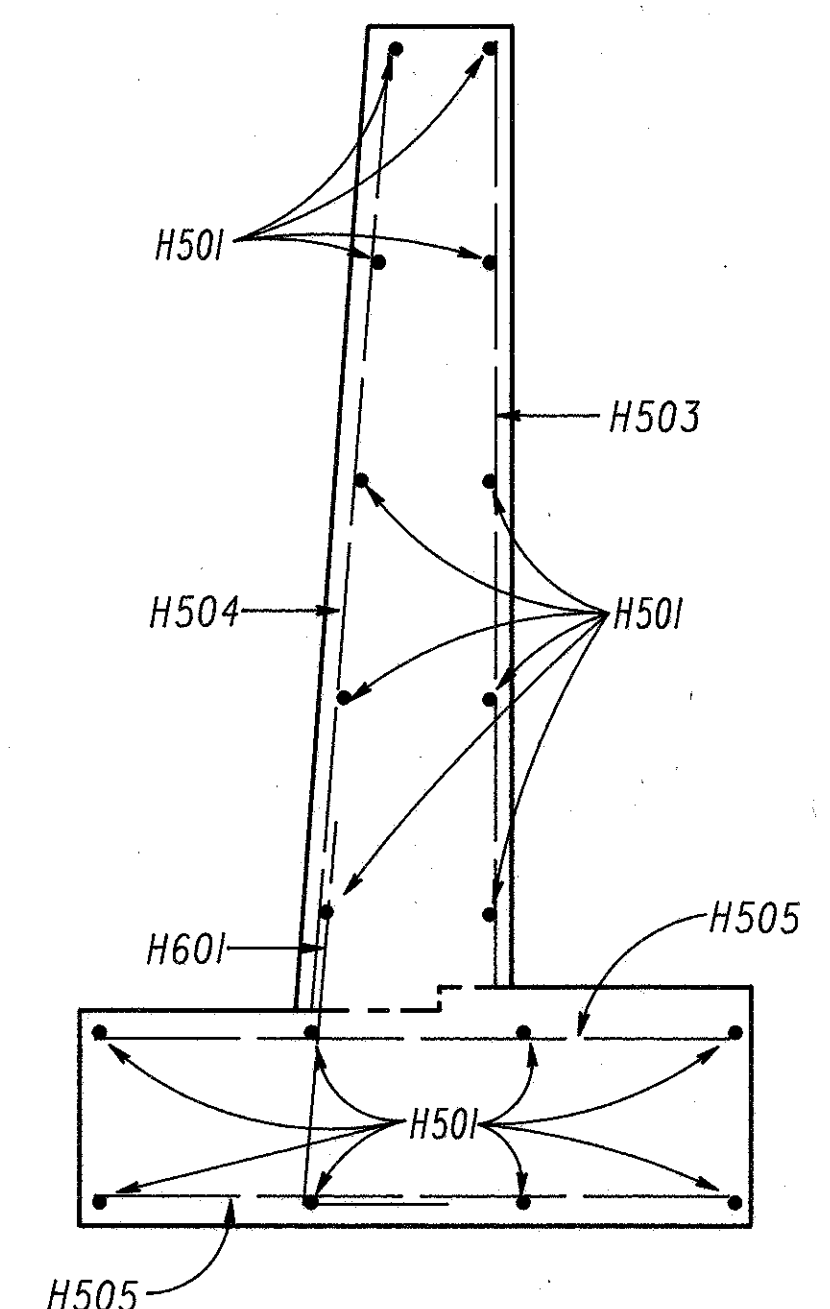
STATE OF OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS BUREAU OF MAINTENANCE					
<b>GENERAL PLAN AND ELEVATION</b>					
BRIDGE NO. TUS-250-2631 OVER LONE PINE CREEK					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE REVISED
WRG	WRG	WRG	JLO		

QUANTITIES			
Calc.	WRG	Chkd.	RDA
Date:	10-26-88	Date:	12-06-88

FHWA REGION	STATE	PROJECT
5	OHIO	

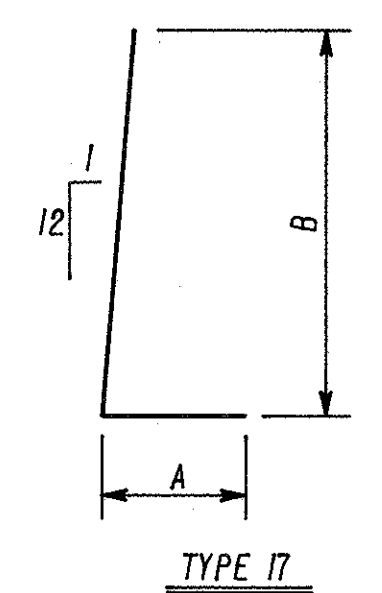
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TUS-250-(26.31)  
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SECTION A-A

MARK	NUMBER			LENGTH	WEIGHT	TYPE	DIMENSIONS					
	LEFT	RIGHT	TOTAL				A	B	C	D		
H501	36	36	72	14'-7"	1095	ST.						
H502	10	10	20	12'-10"	268	ST.						
H503	16	16	32	9'-10"	328	ST.						
H504	16	16	32	10'-1 1/2"	338	ST.						
H505	38	38	76	6'-8"	528	ST.						
H601	16	16	32	5'-6"	264	17	1'-6"	4'-0"				

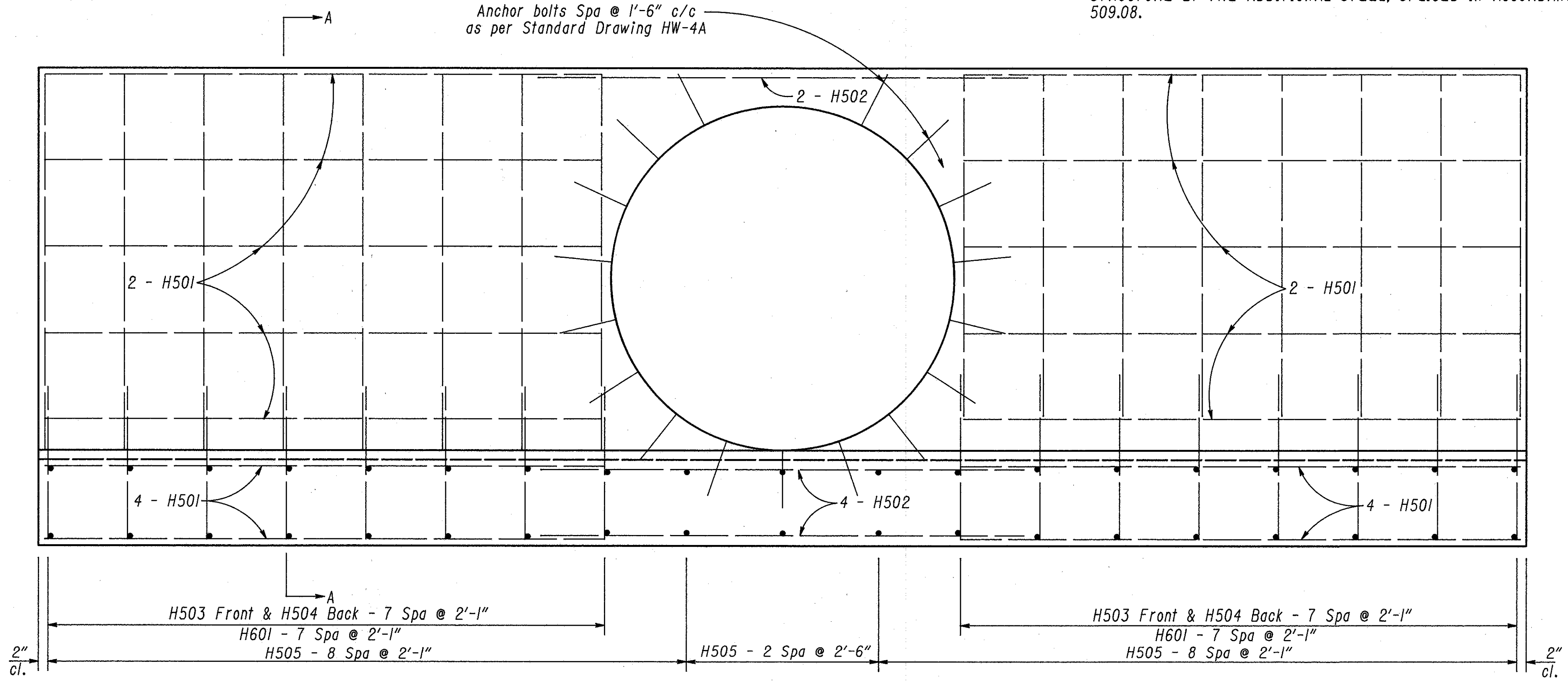


NOTE: Reinforcing steel shall be in accordance with Item 509.

REINFORCING STEEL SAMPLES

REFER TO CMS SECTIONS 106.03, 700, 709.01 THROUGH 709.05 AND 709.08. SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE STRUCTURE BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE WITH 509.08.

Anchor bolts Spa @ 1'-6" c/c as per Standard Drawing HW-4A



TYPICAL END VIEW

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

## HEADWALL REINFORCING DETAILS

BRIDGE NO. TUS-250-2631  
OVER LONE PINE CREEK

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WRG	WRG	WRG	JLD			

**GEOLOGY OF THE SITE**

THE STRUCTURE SITE IS LOCATED IN THE HIGHLY DISSECTED GLACIATED PORTION OF THE ALLEGHENY PLATEAU REGION, ON THE BROAD FLOODPLAIN OF AND OVER LONE PINE CREEK, IN AN AREA WHERE MODERATELY DEEP GLACIAL-DERIVED MATERIAL AND ALLUVIAL DEPOSITS OVERLIE BEDROCK, OF PENNSYLVANIAN AGE.

**EXPLORATION**

THE EXPLORATION CONSISTED OF ONE DRIVE SAMPLE BORINGS MADE BY MEANS OF A MECHANICALLY-POWERED HOLLOW STEM ROTARY AUGER MOUNTED ON A MOBILE PLATFORM, PERFORMED ON JUNE 9 AND 13, 1988, AND NOVEMBER 21, 1988.

**INVESTIGATIONAL FINDINGS AND OBSERVATIONS**

THE TEST BORINGS ENCOUNTERED INTERVALS OF EXTREMELY LOOSE TO EXTREMELY DENSE UNSTRATIFIED BASIC SILTS AND SANDS MODIFIED WITH VARYING PERCENTAGES OF EACH OTHER THAT GRADUALLY INCREASE IN DENSITY WITH INCREASE IN DEPTH. TEST BORING NO. B-1 (MADE IN THE GENERAL VICINITY OF THE REAR ABUTMENT) PENETRATED TO A DEPTH OF 61.5 FEET, ELEVATION 935.5 FEET AND WAS TERMINATED AT THAT POINT AFTER PENETRATING IN EXCESS OF 10.0 FEET OF MATERIAL REQUIRING IN EXCESS OF 21 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST. BORING NO. 2 WAS DISCONTINUED AT 22.0 FOOT DEPTH, ELEVATION 974.1 FEET.

BEDROCK SURFACE WAS NOT ENCOUNTERED IN THE TEST BORING PERFORMED.

FREE WATER WAS OBSERVED AND MEASURED IN TEST BORING NO. B-1 AT ELEVATION 979.0 FEET.

**LEGEND**

- 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

- 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.
- Indicates Final Measurement of Penetration, in Inches.
- Indicates Free Water Elevation.
- Indicates Static Water Elevation.

**SYMBOLS OF ROCK TYPES**

- Coal
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone
- Boulders or Cobbles
- Weathered Mudstone or Claystone
- Mudstone or Claystone
- Weathered Shale
- Shale
- Weathered Siltstone
- Siltstone

**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.

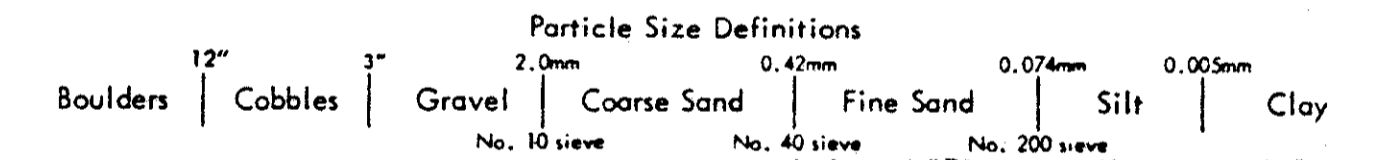
**Drive Sample Borings - Drive-Press Sample Borings**

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.



**LOG OF BORING**

Date Started 6/9/88    Sampler Type SS    Dia 1 3/8"    Water Elev. 979.0'  
 Date Completed 6/13/88    Casing Length    Dia    Surface Elev. 997.0'  
 Boring No. B-1    Station & Offset 160+10, 8' LT. (REAR ABUTMENT)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.			
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.		
997.0	0				ASPHALT AND CONCRETE												VISUAL
996.2	0.8				SUBBASE												VISUAL
995.2	1.8																
992.0	5.0	6/8/10			GRAY SANDY SILT	1	0	4	25	50	21	NP	NP	15			A-4b
989.5	7.5	1/2/3			GRAY SANDY SILT	2	0	2	22	44	32	NP	NP	25			A-4a
987.0	10.0	2/4/8			GRAY SILT	3	4	2	3	43	48	NP	NP	23			A-4a
984.5	12.5	4/5/7			GRAY SILT	4	0	0	1	55	44	NP	NP	24			A-4b
982.0	15.0	4/5/6			GRAY SILT	5	0	0	1	52	47	NP	NP	25			A-4b
979.5	17.5	2/4/6			GRAY SILT	6	0	0	1	64	35	NP	NP	24			A-4b
977.0	20.0	2/3/7			GRAY CLAYEY SILT	7	0	0	8	50	42	NP	NP	8	24		A-4b
974.5	22.5	3/6/9			GRAY SILT AND CLAY	8	0	0	0	47	53	NP	NP	12	25		A-6a
972.0	25.0	2/6/8			GRAY SILT	9	0	0	0	48	52	NP	NP	25			A-4a
967.0	30.0	2/4/7			GRAY SILT	10	0	0	0	42	58	NP	NP	29			A-4a
962.0	35.0	3/6/9			GRAY SILT	11	0	1	1	56	42	NP	NP	26			A-4b
957.0	40.0	2/4/8			GRAY SILT	12	0	0	6	53	41	NP	NP	25			A-4b
952.0	45.0	7/9/12			GRAY SILT	13	0	0	3	60	37	NP	NP	20			A-4b
947.0	50.0	7/14/21			GRAY SANDY SILT	14	0	5	27	34	34	NP	NP	26			A-4a
942.0	55.0	9/16/16			GRAY SANDY SILT	15	3	6	40	28	23	NP	NP	20			A-4a
937.0	60.0	5/9/12			GRAY SANDY SILT	16	1	5	34	40	20	NP	NP	26			A-4a

BOTTOM OF BORING

**LOG OF BORING**

Date Started 11/21/88    Sampler Type SS    Dia 1 3/8"    Water Elev. 982.6'  
 Date Completed 11/21/88    Casing Length    Dia    Surface Elev. 996.1'  
 Boring No. B-2    Station & Offset 160+46, 10' RT.

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.			
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.		
996.1	0				ASPHALT AND CONCRETE												VISUAL
995.1	1.0				AUGERED BROWN SANDY CLAY GRAVEL (DRILLER'S DESCRIPTION)												VISUAL
991.1	5.0				AUGERED GRAY SANDY SILT CLAY WET (DRILLER'S DESCRIPTION)												VISUAL
986.1	10.0				PRESS BROWN AND GRAY SILTY CLAY	1	0	1	3	42	54	41	17	25			A-7-6
981.1	15.0				PRESS BROWN AND GRAY SILT AND CLAY	2	A&B	0	1	8	47	44	36	15	28		A-6A
976.1	20.0				PRESS GRAY SILT AND CLAY	3	0	0	1	45	54	37	15	32			A-6A
974.1	22.0				PRESS GRAY CLAYEY SILT	3A	0	0	1	60	39	30	9	26			A-4b

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 LOCATION AND DESIGN OR IN THE BRIDGE BUREAU AT 25 SOUTH FRONT STREET.

Revised 12/28/88

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.

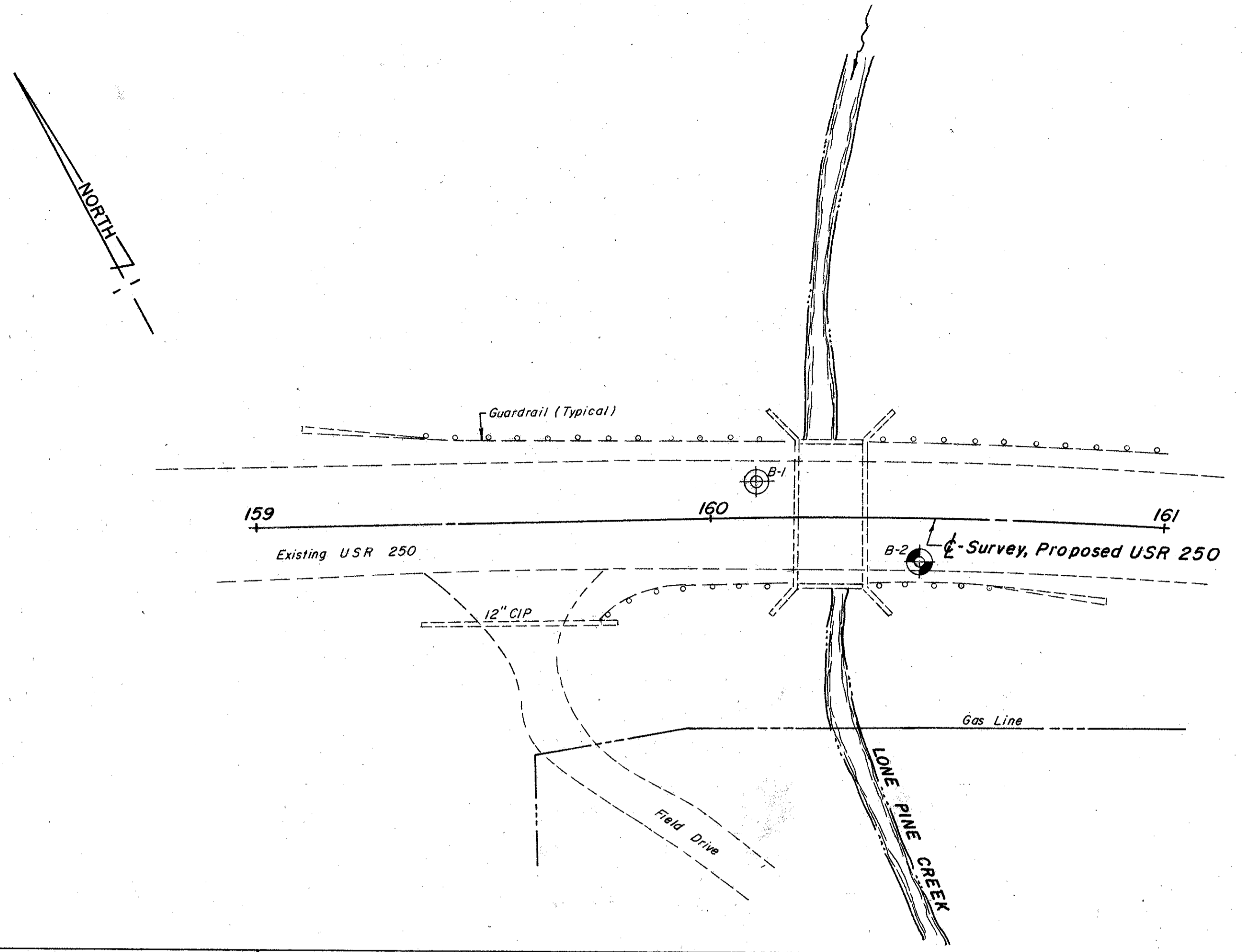
OHIO DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS - TESTING LABORATORY  
1600 WEST BROAD STREET, COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. TUS-250-2631

OVER LONE PINE CREEK  
SEC. TUS-250-26.31

CHECKED BY A. F.    REVIEWED BY R. D. R.    DATE 8/10/88

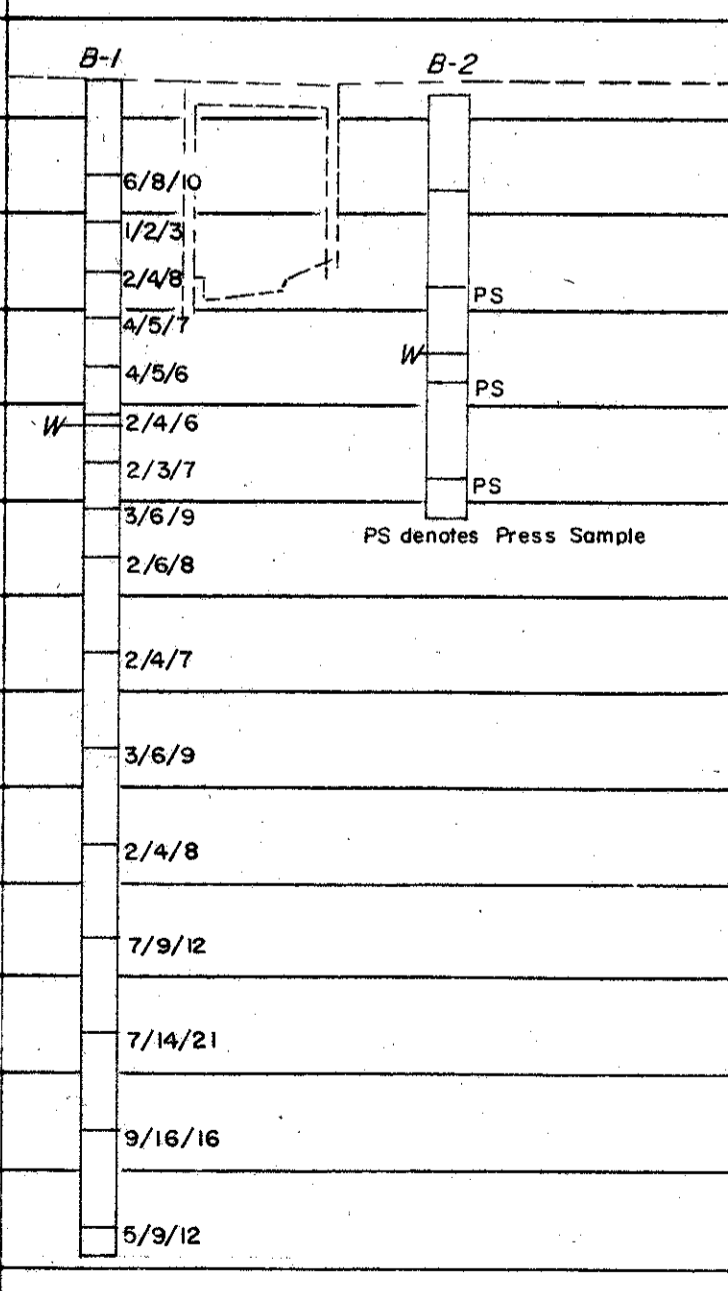
58 TUS-250-26.31



SUPPLEMENTAL BORING DATED 12/28/88

SCALE, PLAN-VIEW 1" = 20'

			1000								1000	
			990								990	
			980								980	
			970								970	
			960								960	
			950								950	
			940								940	
			930								930	
			159								160	



*Revised 12/28/88*

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

STRUCTURE FOUNDATION INVESTIGATION  
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PLAN AND PROFILE

DRAWN BY A. F.	CHECKED BY A. F.	REVIEWED BY R. D. R.	DATE 8/10/88
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SCALE, VERTICAL 1" = 10'