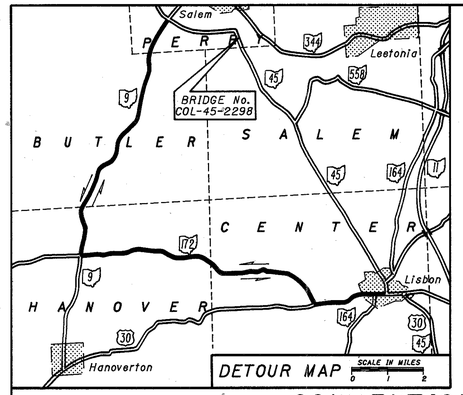


MICROFILMED
DEC 1 1992

MICROFILMED
DEC 6 1993
on
ROLL FILM

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
COL-45-(22.98)
BRIDGE NO. COL-45-2298
PERRY TOWNSHIP
COLUMBIANA COUNTY

COL-45-(22.98)	OHIO FHWA REGION 5 FEDERAL PROJECT

1/9

BR-10-89

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 require the closing to traffic of the highway and that detours will be provided as indicated on the plans.

APPROVED William R. McKenna
DATE 4/3/89 DISTRICT DEPUTY DIRECTOR OF TRANSPORTATION

APPROVED R. D. Hankhouse FFE
DATE 4-7-89 ENGINEER, BUREAU OF BRIDGES AND STRUCTURAL DESIGN

APPROVED James R. Hengemeister
DATE 5-1-89 DEPUTY DIRECTOR, OPERATIONS

APPROVED Bernard B. Hurst
DATE 5-1-89 DIRECTOR, DEPARTMENT OF TRANSPORTATION

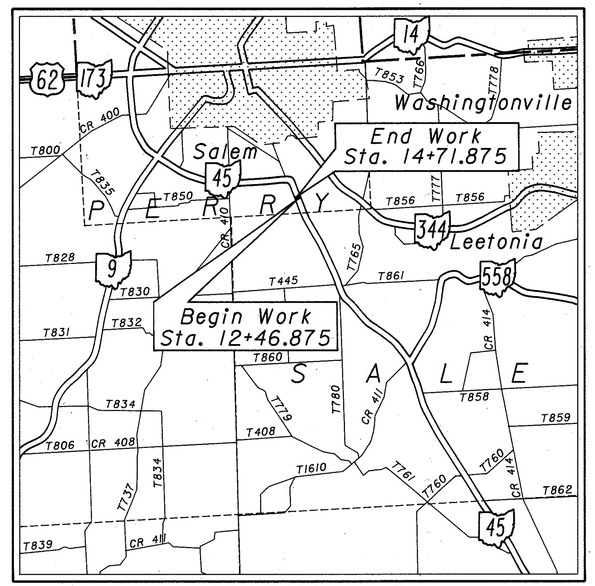
CONVENTIONAL SIGNS

COUNTY LINE
TOWNSHIP LINE
SECTION LINE
CORPORATION LINE OR
FENCE (EXISTING) (PROPOSED)
CENTERLINE
TREES STUMPS (TO BE REMOVED)
UTILITY POLES: TELEPHONE POWER LIGHT

LIMITED ACCESS (ONLY) L/A
RIGHT OF WAY (ONLY) R/W
LIMITED ACCESS & RIGHT OF WAY L/A & R/W
EXISTING RIGHT OF WAY R/W
PROPERTY LINE (IN EXISTING FENCE)
RAILROAD OR
GUARDRAIL (EXISTING) (PROPOSED)

INDEX OF SHEETS

TITLE SHEET 1
GENERAL NOTES AND SUMMARY 2
SITE PLAN 3
ROADWAY CROSS SECTIONS 4
CHANNEL CROSS SECTIONS 5
GENERAL PLAN AND ELEVATION 6
HEADWALL DETAILS 7
FOUNDATION INVESTIGATION 8-9



LOCATION MAP

SCALE IN MILES
0 1 2 3 4

LINE DATA

BEGIN PROJECT - STATION 13+25.00
END PROJECT - STATION 13+75.00
NET LENGTH OF PROJECT - 50.00 LIN.FT. OR 0.010 MILE

BEGIN WORK - STATION 12+46.875
END WORK - STATION 14+71.875
TOTAL NET LENGTH OF WORK - 225.00 LIN.FT. OR 0.043 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

PLAN 0 20 40
PROFILE: HORIZONTAL 0 20 40 VERTICAL 0 10 20
CROSS SECTION: HORIZONTAL 0 10 20 VERTICAL 0 10 20

SUPPLEMENTAL SPECIFICATIONS	
802 5-4-88	

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS					
BP-5	10-1-87				
GR-1	1-11-85				
GR-2B	2-5-82				
GR-4	2-5-82				
GR-4A	2-5-82				
HW-4B	4-1-80				
MC-4	7-26-76				
MC-11	8-1-78				

PLAN PREPARED BY:
OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 11

SEAL

PROJECT: COL-45-(22.98)
DATE OF LETTING _____ 19__ CONTRACT NO. _____

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

QUANTITIES	
Calc. WRG	Chkd. JNM
Date: 02-03-89	Date: 03-08-89

FHWA REGION	STATE	PROJECT	
5	OHIO		

COL-45-(22.98)

BR-10-89

GENERAL NOTES

WORK REQUIRED

REMOVE EXISTING STRUCTURE AS PER 202.03.
INSTALL NEW CONDUITS.
CONSTRUCT HEADWALLS.
CONSTRUCT NEW PAVEMENT.
PLACE ROCK CHANNEL PROTECTION.
COMPLETE EMBANKMENT WORK.
INSTALL GUARDRAIL.
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.

DATUM

ALL ELEVATIONS ARE BASED ON USC&GS DATUM.

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.

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.

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 GUARDRAIL, TYPE 5 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, GUARDRAIL, TYPE 5.

MAINTAINING TRAFFIC

WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC THE EXISTING STRUCTURE SHALL BE REMOVED AS PER ITEM 202. THE ROAD CAN BE CLOSED TO TRAFFIC FOR A PERIOD NOT TO EXCEED 30 CALENDAR DAYS. BEFORE CLOSING THE ROAD THE CONTRACTOR SHALL HAVE ON SITE THE MATERIALS REQUIRED TO IMMEDIATELY PROCEED WITH THE WORK. THE DISTRICT TRAFFIC ENGINEER SHALL BE NOTIFIED AT LEAST 14 CALENDAR DAYS IN ADVANCE OF THE CLOSURE.

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.

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.

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.

SEEDING

QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN THE WORK LIMITS AS SHOWN ON THE CROSS SECTIONS.

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.

EROSION CONTROL

ITEM 601 IS PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE THIS ITEM. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES FOR THIS ITEM WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

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

NOTIFICATION OF TRAFFIC ENGINEER

THE PROJECT ENGINEER SHALL NOTIFY THE DISTRICT TRAFFIC ENGINEER TWO (2) WEEKS PRIOR TO THE OPENING OF THE ROAD TO TRAFFIC SO THAT HE CAN SCHEDULE THE PLACEMENT OF PERMANENT PAVEMENT MARKINGS BY O.D.O.T. FORCES.

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 OWNERS

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

COLUMBIA GAS TRANSMISSION
P.O. BOX 1273
CHARLESTON, WEST VIRGINIA 25325
PHONE (304) 357-2537

COLUMBIA GAS OF OHIO
216 HIGHLAND AVE.
CAMBRIDGE, OHIO 43725
PHONE (614) 432-8225

OHIO BELL TELEPHONE CO.
P.O. BOX 1587
YOUNGSTOWN, OHIO 44501
PHONE (216) 744-6571

OHIO EDISON CO.
730 SOUTH AVE.
YOUNGSTOWN, OHIO 44502
PHONE (216)747-2071

CITY OF SALEM
WATER AND SEWER DEPT.
231 SOUTH BROADWAY
SALEM, OHIO 44460
PHONE (216) 337-8723

GENERAL SUMMARY

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION
202	2021100	LUMP	LUMP	STRUCTURES REMOVED
202	2023490	12.0	LIN.FT.	PIPE REMOVED
202	2023800	368	LIN.FT.	GUARDRAIL REMOVED
201		LUMP	LUMP	CLEARING AND GRUBBING
203	2031200	158	CU.YD.	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION
203	2032000	280	CU.YD.	EMBANKMENT
207	2077000	50	EACH	STRAW OR HAY BALES
301	3011002	20	CU.YD.	BITUMINOUS AGGREGATE BASE, AC-20
304	3042000	10	CU.YD.	AGGREGATE BASE
402	4022000	7	CU.YD.	ASPHALT CONCRETE, AC-20
404	4042000	5	CU.YD.	ASPHALT CONCRETE, AC-20
601	6013410	144	CU.YD.	ROCK CHANNEL PROTECTION, TYPE B, WITHOUT FILTER
602	6022000	130.2	CU.YD.	CONCRETE MASONRY
603	6035400	54.0	LIN.FT.	87"x136" CONDUIT, TYPE A (706.04)
603	6031340	12.0	LIN.FT.	30" CONDUIT, TYPE B (706.01 or 706.02)
606	6061300	312.50	LIN.FT.	GUARDRAIL, TYPE 5
606	6062500	3	EACH	ANCHOR ASSEMBLY, TYPE A
606	6062650	1	EACH	ANCHOR ASSEMBLY, TYPE T
659	6591000	695	SQ.YD.	SEEDING AND MULCHING
659	6592000	0.06	TON	COMMERCIAL FERTILIZER
659	6593000	0.31	TON	AGRICULTURAL LIMING
802	8020010	6	EACH	BARRIER REFLECTORS, TYPE A
614	6141100	LUMP	LUMP	MAINTAINING TRAFFIC
619	6191000	LUMP	LUMP	FIELD OFFICE
623	6231000	LUMP	LUMP	CONSTRUCTION LAYOUT STAKES
624	6241000	LUMP	LUMP	MOBILIZATION

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

GENERAL NOTES & SUMMARY

BRIDGE NO. COL-45-2298
OVER STONE MILL RUN

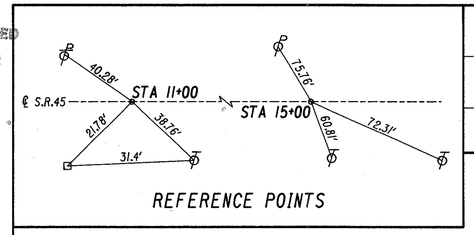
DESIGNED	DRAWN	CADD	CHECKED	REVIEWED	DATE	REVISED
WRG	WRG	WRG	JNM			

MICROFILMED
DEC 1 1992

FHWA REGION	STATE	PROJECT	
5	OHIO		

COL-45-(22.98)

BR-10-87

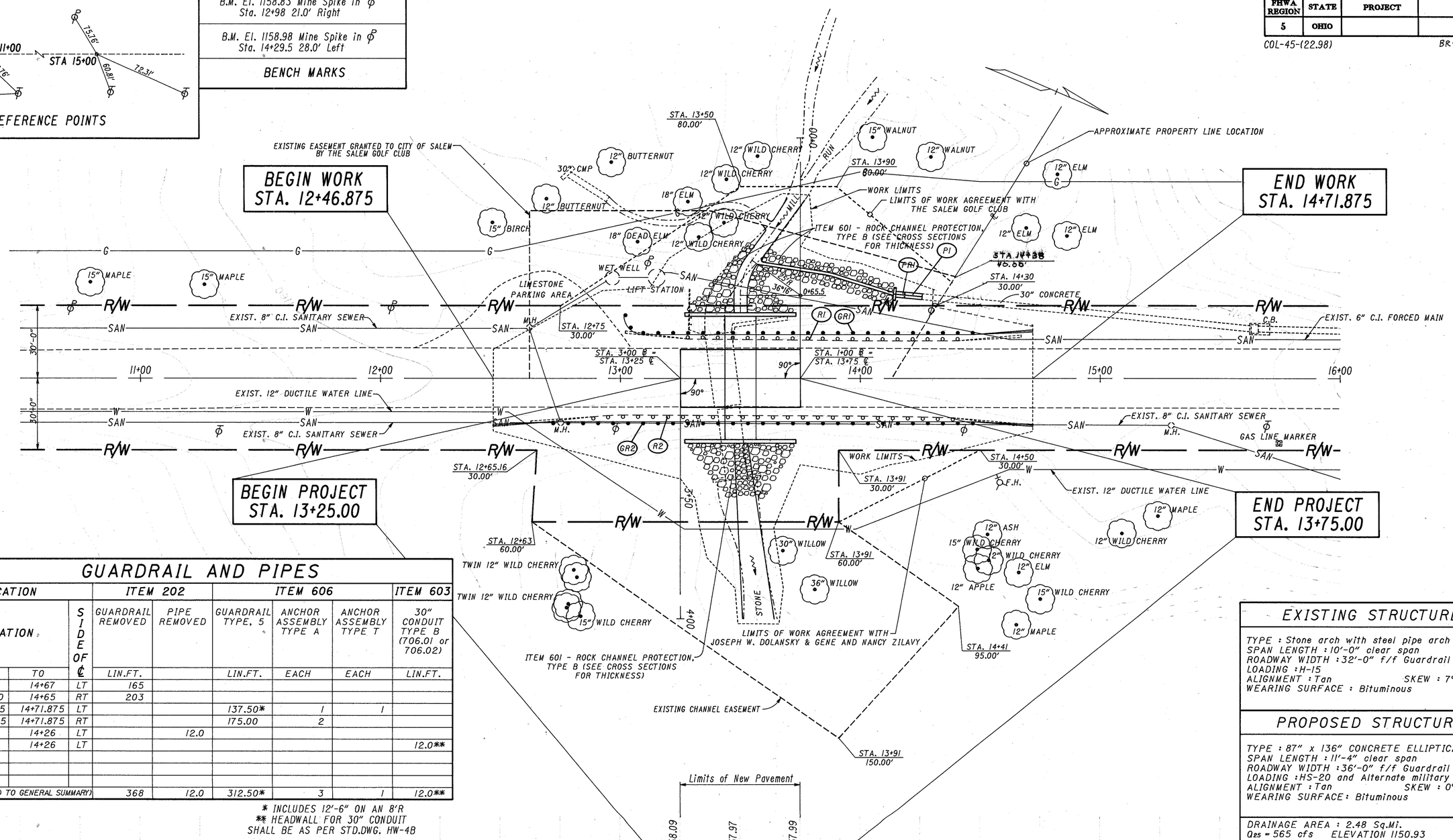


REFERENCE POINTS

B.M. El. 1158.83 Mine Spike in ϕ
Sta. 12+98 21.0' Right

B.M. El. 1158.98 Mine Spike in ϕ
Sta. 14+29.5 28.0' Left

BENCH MARKS



GUARDRAIL AND PIPES

REF	LOCATION STATION FROM	LOCATION STATION TO	SIDE OF ℄	ITEM 202 GUARDRAIL REMOVED	ITEM 202 PIPE REMOVED	ITEM 606 GUARDRAIL TYPE, 5	ITEM 606 ANCHOR ASSEMBLY TYPE A	ITEM 606 ANCHOR ASSEMBLY TYPE T	ITEM 603 30" CONDUIT TYPE B (706.01 or 706.02)
				LIN.FT.		LIN.FT.	EACH	EACH	LIN.FT.
R1	13+02	14+67	LT	165					
R2	12+62.50	14+65	RT	203					
GR1	13+01.375	14+71.875	LT			137.50*	1	1	
GR2	12+46.875	14+71.875	RT			175.00	2		
PR1	14+14	14+26	LT		12.0				
P1	14+14	14+26	LT						12.0**
TOTALS (CARRIED TO GENERAL SUMMARY)				368	12.0	312.50*	3	1	12.0**

* INCLUDES 12'-6" ON AN 8'R
** HEADWALL FOR 30" CONDUIT SHALL BE AS PER STD.DWG. HW-4B

EXISTING STRUCTURE

TYPE : Stone arch with steel pipe arch extension
SPAN LENGTH : 10'-0" clear span
ROADWAY WIDTH : 32'-0" f/f Guardrail
LOADING : H-15
ALIGNMENT : Tan SKEW : 7°40'R.F.
WEARING SURFACE : Bituminous

PROPOSED STRUCTURE

TYPE : 87" x 136" CONCRETE ELLIPTICAL PIPE
SPAN LENGTH : 11'-4" clear span
ROADWAY WIDTH : 36'-0" f/f Guardrail
LOADING : HS-20 and Alternate military loading
ALIGNMENT : Tan SKEW : 0°
WEARING SURFACE : Bituminous

DRAINAGE AREA : 2.48 Sq.Mi.
Q_{25} = 565 cfs ELEVATION 1150.93
Q_{100} = 789 cfs ELEVATION 1153.00

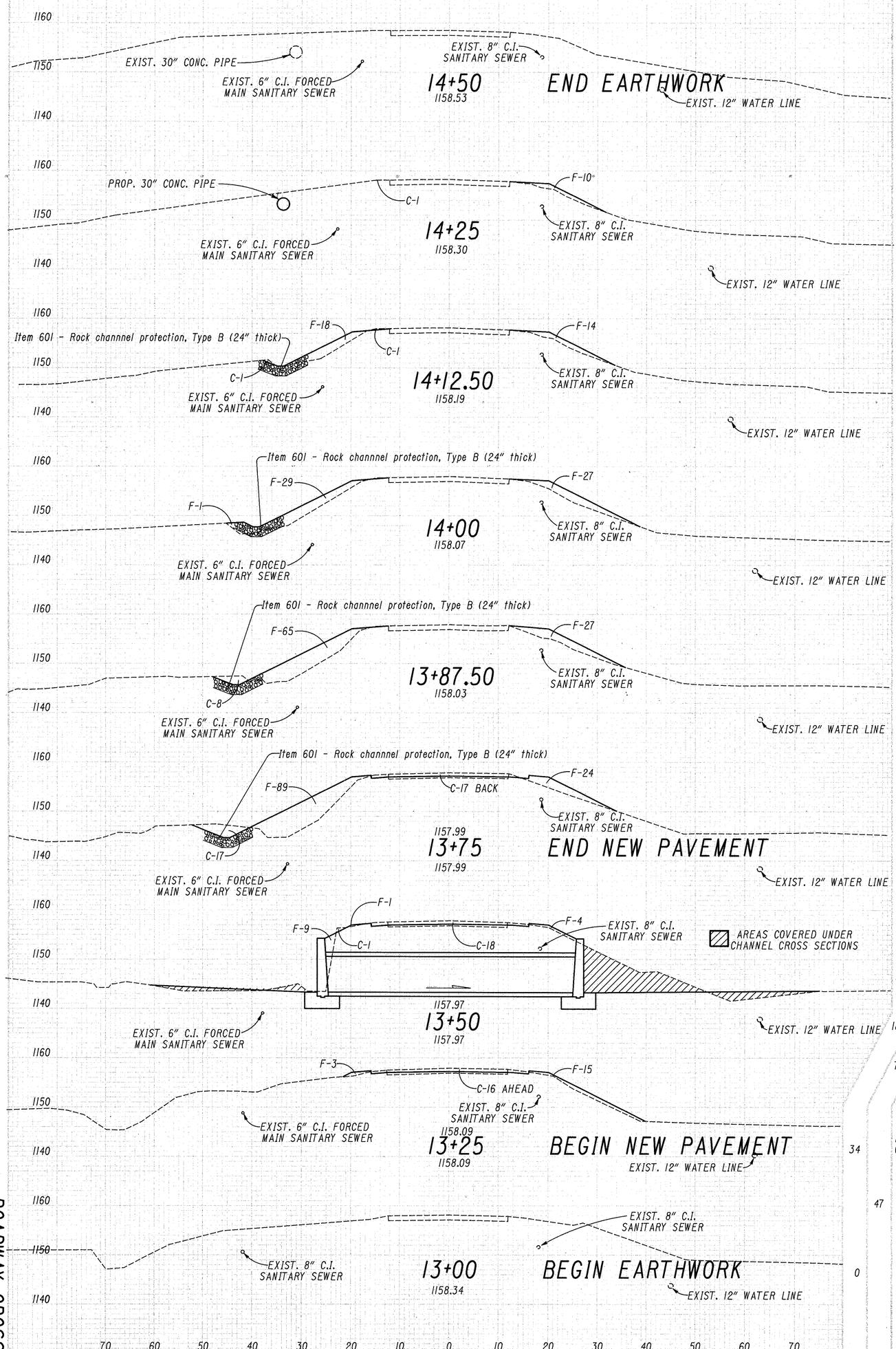
STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BUREAU OF MAINTENANCE

SITE PLAN

BRIDGE No. COL-45-2298
OVER STONE MILL RUN

COLUMBIANA COUNTY

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	CADD	DESIGNED	CADD	CHECKED	REVIEWED
DISTRICT 11	WRG	WRG	WRG	JNM	

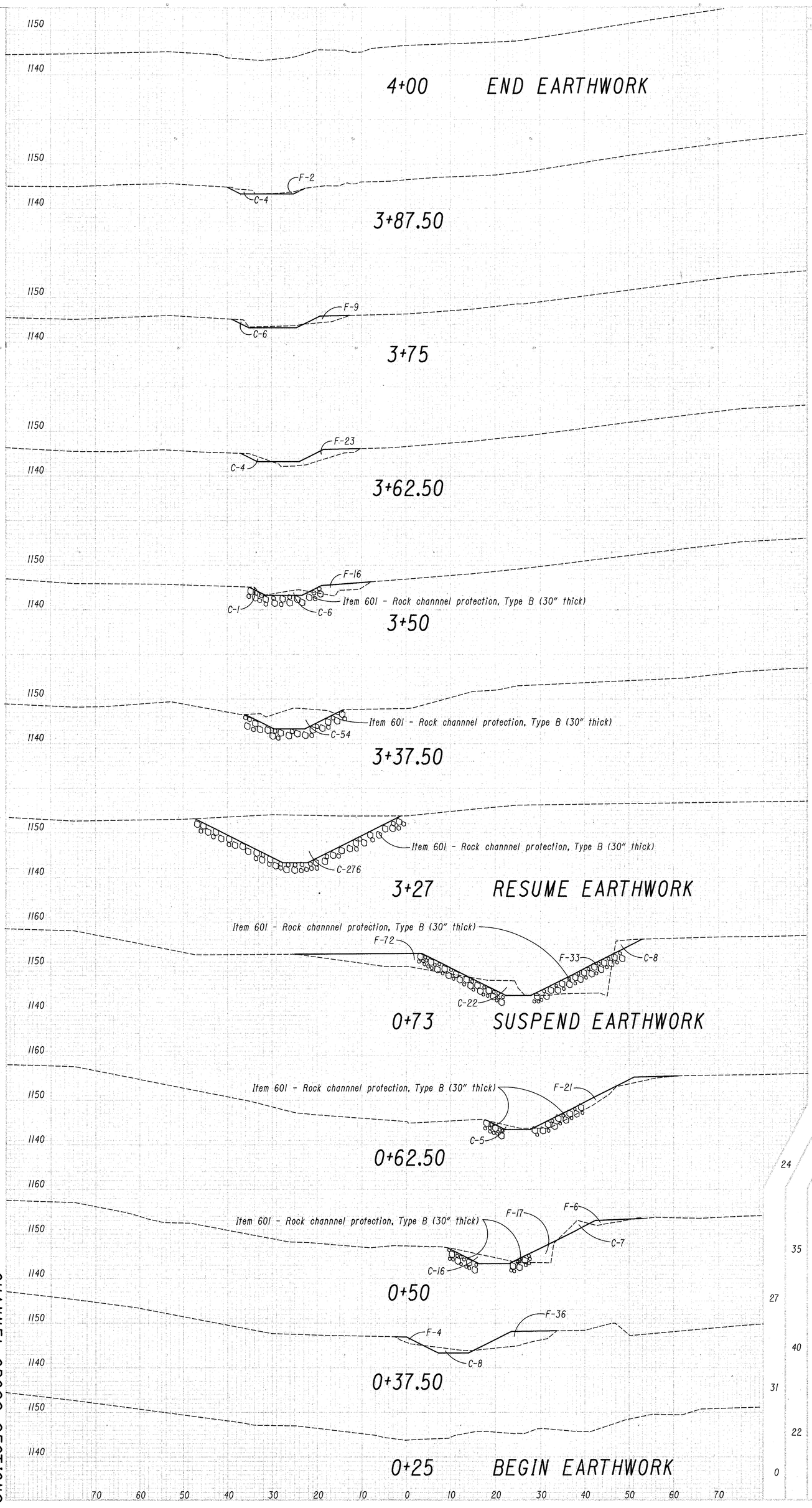


SECDIRC	END AREA VOLUME				
STATION	CUT	FILL	CUT	FILL	
14+50	0		0	0	
14+25	9	13	1	10	1 5
14+12.50	27	25	2	32	1 8
14+00	48	52	0	57	1 21
13+87.50	50	68	8	92	2 34
13+75	50	69	17AH 34BK	113	6 47
13+50	18	94	19	14	24 59
13+25	34	72	16AH 0 BK	18	16 15
13+00	0	47	0	0	8

ROADWAY CROSS SECTIONS

WRG 1-19-89
JNM 3-8-89

OHIO
FROM 3
ROUTE
4
9
82-1-89



SENDING END AREA VOLUME					
	0	0	0		
		4		1	1
	6	4	2		
		16		2	3
	17	6	9		
		24		2	7
	18	4	23		
		26		14	9
	20	7	20		
		26		76	4
	17	54	0		
		37		64	0
	46	276	0		
	34	28	105		
		34		6	25
	24	5	21		
	35		6	10	
	27	23	23		
	40		7	15	
	31	8	40		
	22		2	9	
	0	0	0		

CHANNEL CROSS SECTIONS

WRC 1-19-89
LNM 5-8-89
BR 1-8-89

OHIO
TIME 5
SHEET 5 / 9

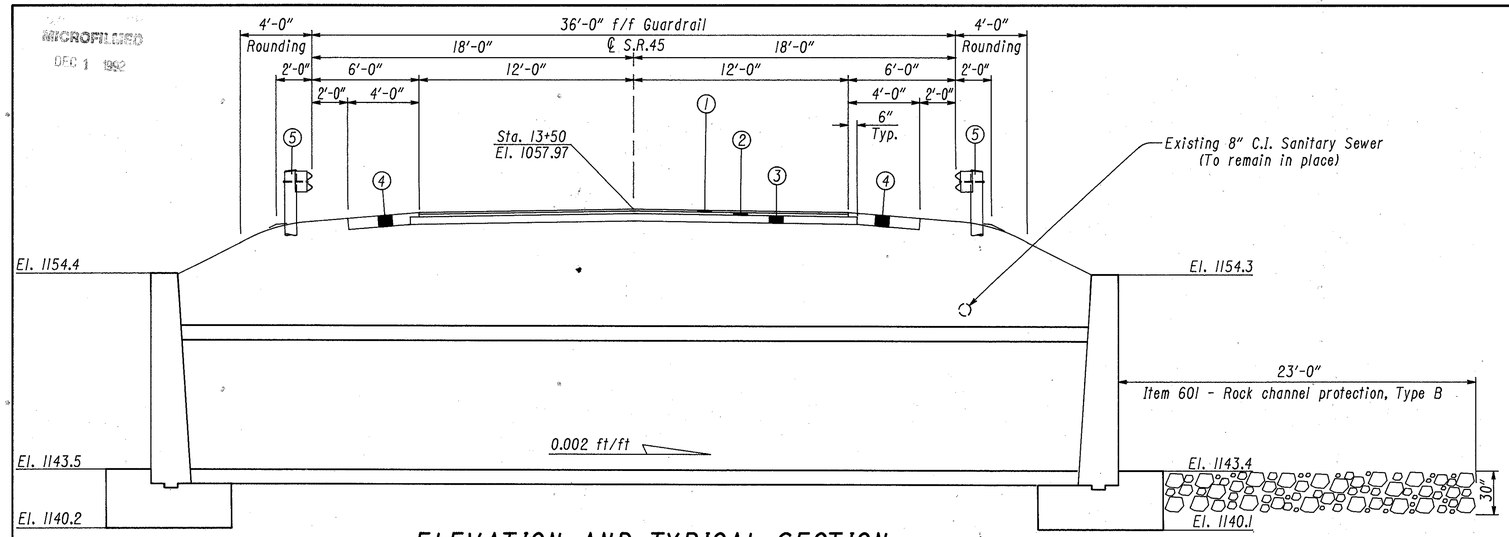
MICROFILMED
DEC 1 1992

FHWA REGION	STATE	PROJECT	
5	OHIO		

6/9

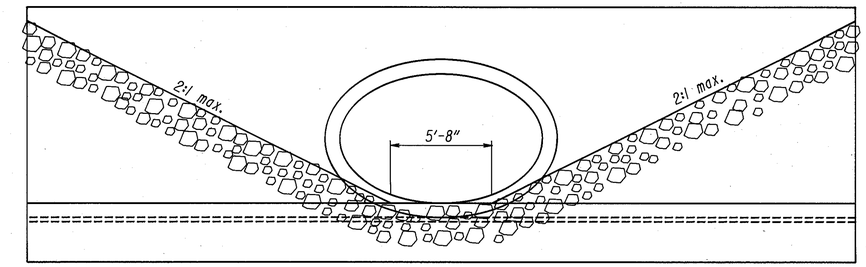
COL-45-(22.98)

BR-10-89

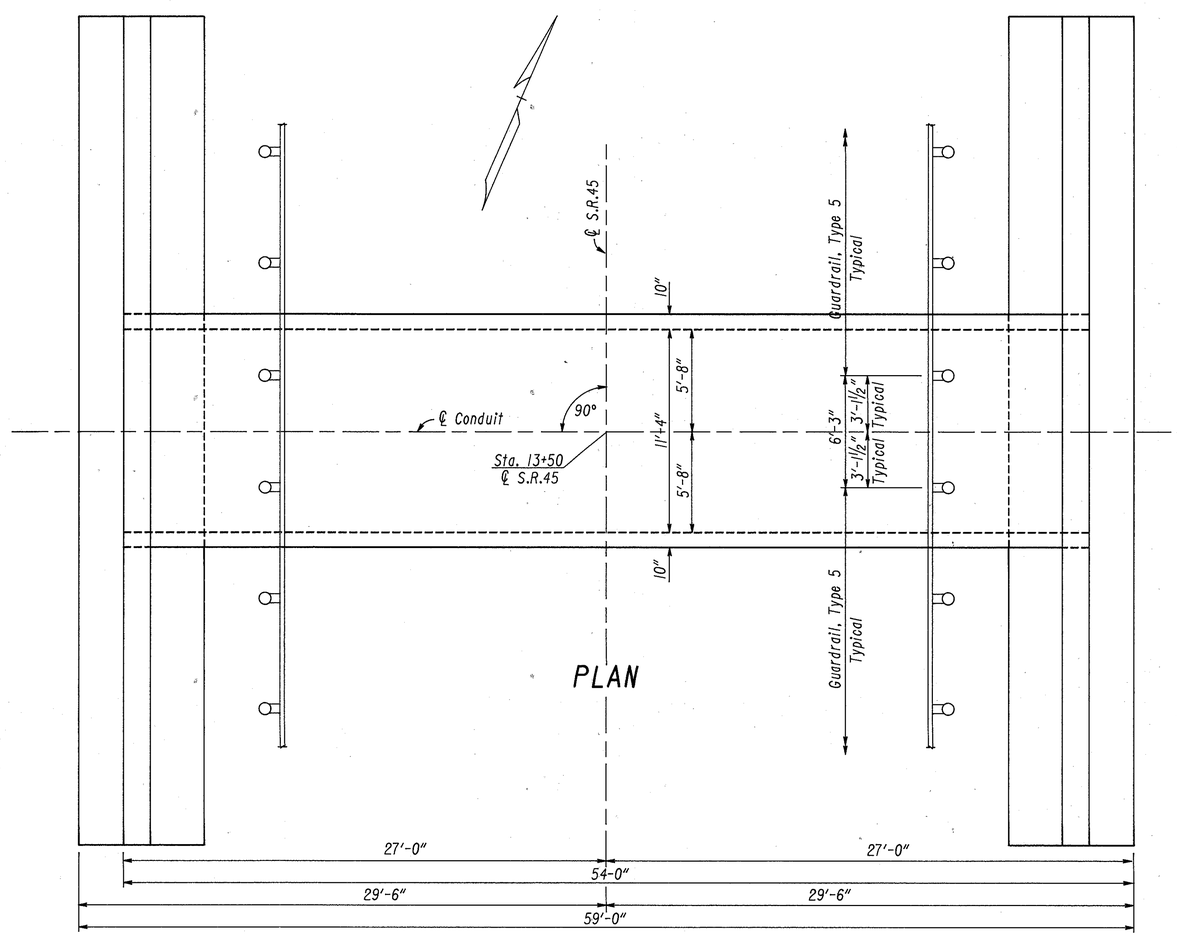


ELEVATION AND TYPICAL SECTION

NOTE: For details and diminsions not shown see sheet 7 of 9.



END VIEW
(SHOWING OUTLET)



PLAN

LEGEND

1. Item 404 - 1 1/4 " Asphalt concrete, AC-20
2. Item 402 - 1 3/4 " Asphalt concrete, AC-20
3. Item 301 - 5" Bituminous aggregate base, AC-20
4. Item 304 - 8" Aggregate base
5. Item 606 - Guardrail, Type 5

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

GENERAL PLAN AND ELEVATION

BRIDGE No. COL-45-2298
OVER STONE MILL RUN

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WRG	WRG	WRG	JNM			

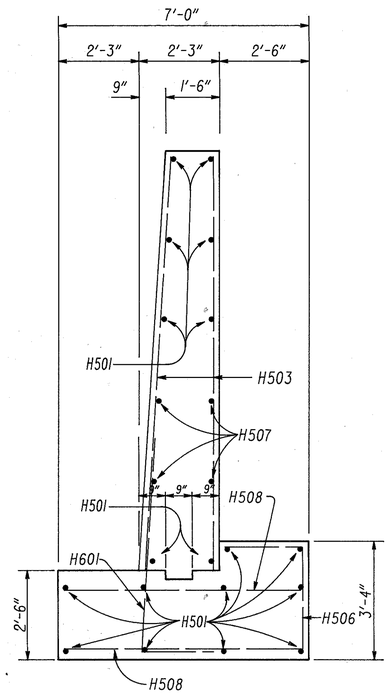
MICROFILMED
DEC 1 1992

QUANTITIES	
Calc. WRG	Chkd. JNM
Date: 01-31-89	Date: 03-15-89

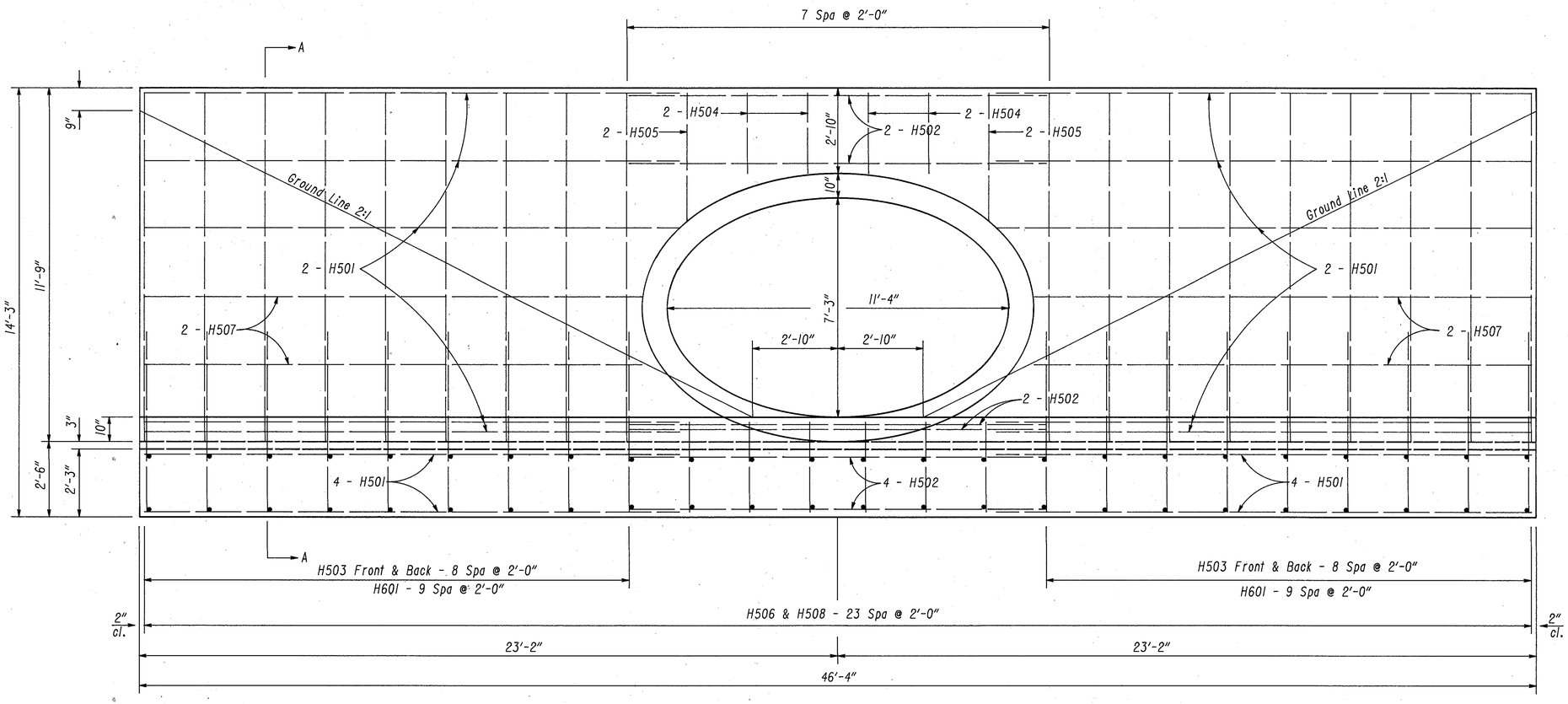
FHWA REGION	STATE	PROJECT	
5	OHIO		

COL-45-(22.98)

BR-10-89



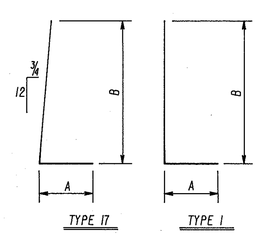
SECTION A-A



TYPICAL END VIEW

REINFORCING STEEL LIST

MARK	NUMBER LEFT	NUMBER RIGHT	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	DIMENSIONS B	DIMENSIONS C	DIMENSIONS D
H501	36	36	72	17'-9"	1333	ST.				
H502	12	12	48	13'-10"	693	ST.				
H503	36	36	72	11'-7"	870	ST.				
H504	8	8	16	2'-8"	45	ST.				
H505	4	4	8	4'-3"	35	ST.				
H506	24	24	48	5'-0"	250	1	2'-2"	2'-10"		
H507	8	8	16	16'-6"	275	ST.				
H508	48	48	96	6'-8"	668	ST.				
H601	18	18	36	8'-0"	432	17	2'-0"	6'-0"		



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

COST OF ALL REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 602 - CONCRETE MASONRY.

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.

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

HEADWALL REINFORCING DETAILS

BRIDGE No. COL-45-2298
OVER STONE MILL RUN

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WRG	WRG	WRG	JNM			

TE - 118
600 - 6 - 73

MICROFILMED
DEC 1 1992

GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED IN THE MATURELY-DISSECTED UNGLACIATED PORTION OF THE ALLEGHENY PLATEAU REGION ON THE FLUSHING ESCARPMENT, IN THE NARROW VALLEY OF AND OVER STONE MILL RUN, IN AN AREA WHERE RELATIVELY SHALLOW TO THIN VALLEY, ALLUVIAL AND ROADWAY MATERIAL OVERLIE SANDSTONE BEDROCK, OF PENNSYLVANIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF TWO DRIVE SAMPLE-CORE BORINGS MADE BY MEANS OF A MECHANICALLY-POWERED HOLLOW STEM ROTARY AUGER MOUNTED ON A MOBILE PLATFORM, PERFORMED ON AUGUST 8 and 9, 1988

INVESTIGATIONAL FINDINGS AND OBSERVATIONS

THE TEST BORINGS DISCLOSED THAT INTERVALS OF EXTREMELY LOOSE TO EXTREMELY DENSE UNSTRATIFIED BASIC SILTS AND SAND MODIFIED WITH GRAVELS AND CINDERS, VARYING PERCENTAGES OF EACH OTHER THAT FLUCTUATE ERRATICALLY IN DENSITY OVERLIE FLAT-LYING BEDROCK SURFACE. TEST BORING NO. B-1 ENCOUNTERED BEDROCK SURFACE AT 17.0 FOOT DEPTH, ELEVATION 1140.7 FEET AND CONTINUED TO PENETRATE TO A DEPTH OF 25.0 FEET, ELEVATION 1133.7 FEET WHERE THE TEST BORING WAS TERMINATED AFTER HAVING PENETRATED 7.0 FEET BELOW BEDROCK SURFACE. TEST BORING NO. B-2 ENCOUNTERED BEDROCK SURFACE AT 18.0 FOOT DEPTH, ELEVATION 1140.5 FEET AND CONTINUED TO PENETRATE TO A DEPTH OF 23.0 FEET, ELEVATION 1135.0 FEET WHERE THE TEST BORING WAS TERMINATED AFTER HAVING PENETRATED 6.0 FEET BELOW BEDROCK SURFACE.

NO FREE WATER OBSERVATIONS WERE MADE IN EITHER OF THE TEST BORINGS PERFORMED DURING DRILLING OPERATIONS.

BOULDERY ZONE WERE ENCOUNTERED IN BORING B-1 AND ORGANIC MATERIAL IN BORING B-2 AT ELEVATION 1143.0 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
- TR — Top of Rock
- H — Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y/Z — 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.

SYMBOLS OF ROCK TYPES

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

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.

Particle Size Definitions

Boulders (12") | Cobbles (3") | Gravel (2.0mm, No. 10 sieve) | Coarse Sand (0.42mm, No. 40 sieve) | Fine Sand (0.074mm, No. 200 sieve) | Silt (0.005mm) | Clay

LOG OF BORING

Date Started 8/8/88 — Sampler Type SS — Dia. 1 3/8" — Water Elev. --
Date Completed 8/9/88 — Casing: Length — Dia —
Boring No. B-1 — Station & Offset 13+13, 8' RT. (MIDSECTION) — Surface Elev 1158.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
1158.2	0														
1157.5		AUGERED			ASPHALT										VISUAL
	2	AUGERED			SUBBASE	-	-	-	-	-	-	-	-	-	VISUAL
1155.5															
	4	AUGERED			BROWN SANDY SILT (DRILLER'S DESCRIPTION)	-	-	-	-	-	-	-	-	-	VISUAL
1153.2															
	6	1/1/2			BROWN SANDY SILT	1	7	11	29	36	17	NP	NP	17	A-4a
1151.2															
	8														
		AUGERED			BOULDERY ZONE	-	-	-	-	-	-	-	-	-	VISUAL
1148.2	10														
		7/10/20			BROWN SILTY SAND	2	2	35	39	16	8	NP	NP	11	A-3a
1145.7	12														
		50(0.5')			NO RECOVERY - BOULDER, DRILLER'S DESCRIPTION	-	-	-	-	-	-	-	-	-	VISUAL
	14														
1143.2					TOP OF ROCK										
	16	18/19/35	(0.1)		GRAY SANDY SILT	3	3	14	34	29	20	NP	NP	10	A-4a
1140.7		50(0.2)			BROWN WEATHERED SANDSTONE	4	-	-	-	-	-	-	-	-	VISUAL
	18														
1138.2	20	50(0.2)			BROWN WEATHERED SANDSTONE	5	-	-	-	-	-	-	-	-	VISUAL
1138.0															
	22														
			4.8	0.0	SANDSTONE, GRAY, FIRM, MEDIUM-GRAINED, MICACEOUS WITH SCATTERED THIN CLAY SEAMS, GENERALLY BADLY BROKEN AND JOINTED NO CORE LOSS.										
1133.2	24														
	26														

BOTTOM OF BORING

LOG OF BORING

Date Started 8/9/88 — Sampler Type SS — Dia. 1 3/8" — Water Elev. --
Date Completed 8/9/88 — Casing: Length — Dia —
Boring No. B-2 — Station & Offset 13+75, 8' RT. (MIDSECTION) — Surface Elev 1158.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
1158.0	0														
1157.3		AUGERED			ASPHALT										VISUAL
1155.3	2	AUGERED			SUBBASE	-	-	-	-	-	-	-	-	-	VISUAL
	4	AUGERED			BROWN SANDY SILT (DRILLER'S DESCRIPTION)	-	-	-	-	-	-	-	-	-	VISUAL
1153.0															
	6	1/2/3			BROWNISH-GRAY SANDY SILT	6	4	13	25	36	22	NP	NP	16	A-4a
1150.5	8														
		2/3/8			BROWN SANDY SILT WITH CINDERS	7	4	13	25	40	18	NP	NP	15	VISUAL
1148.0	10														
		10/15/16			BROWN SILTY SAND	8	-	-	-	-	-	-	-	9	VISUAL
1145.5	12														
		5/10/60			BROWN SILTY SAND	9	-	-	-	-	-	-	-	15	VISUAL
1143.0	14														
					TOP OF ROCK										
	16	15/8/16			GRAY SILTY GRAVELLY SAND, TRACE OF ORGANIC	10	19	17	36	19	9	NP	NP	22	A-3a
1140.5															
	18	24/50(0.1')			BROWNISH-GRAY CLAY SHALE	11	-	-	-	-	-	-	-	13	VISUAL
1139.9															
	20														
			3.6	1.3	SANDSTONE, GRAY, FIRM, MEDIUM-GRAINED, MICACEOUS WITH SCATTERED THIN CLAY SEAMS GENERALLY BADLY BROKEN AND JOINTED. CORE LOSS 26%.*										
	22														
1135.0															
	24														

*NOTE: HIGH CORE LOSS DUE TO RETENTION FAILURE

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.

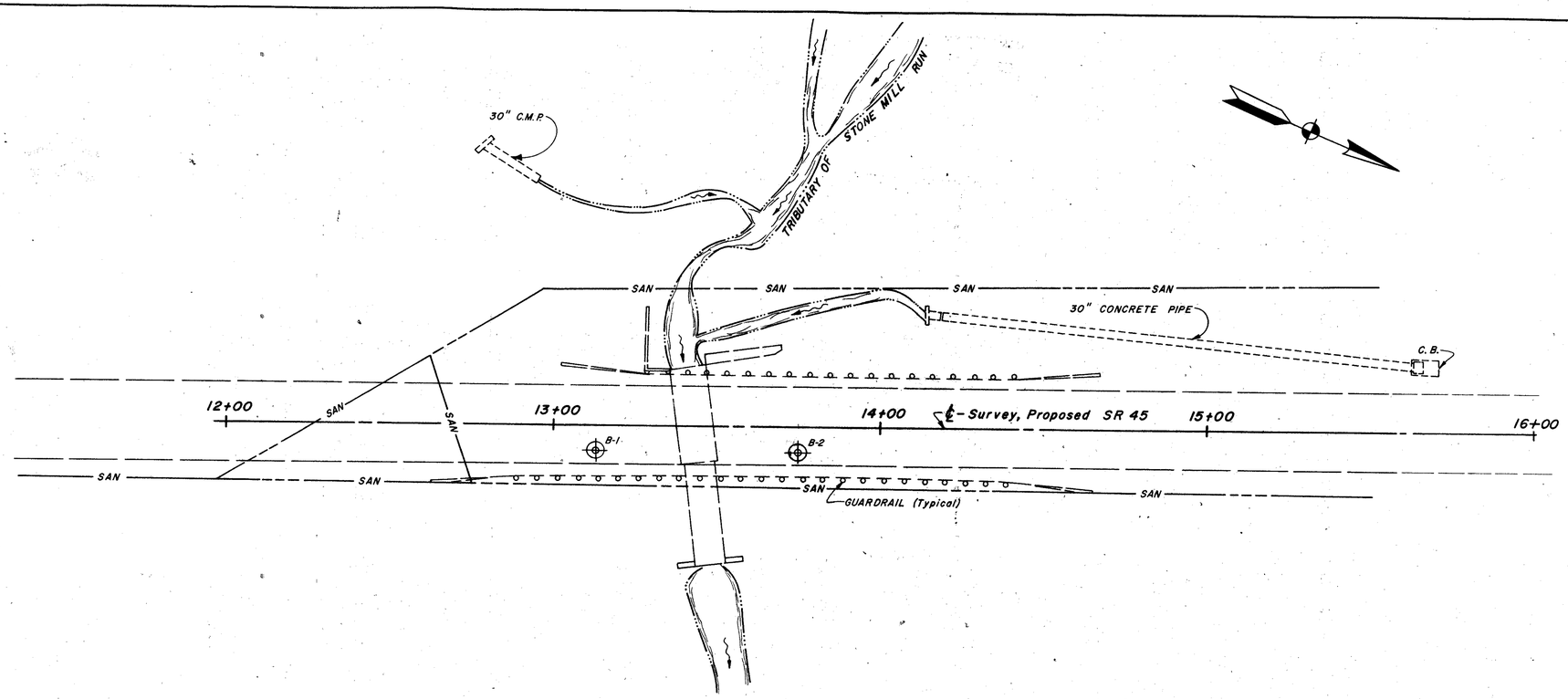
NOTE: Information shown by this subsurface investigation is obtained only for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

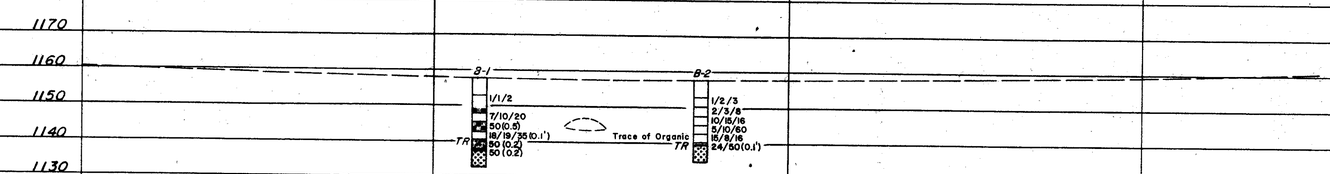
OHIO DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS — TESTING LABORATORY
1600 WEST BROAD STREET, COLUMBUS, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. COL-45-2298
OVER TRIBUTARY OF STONE MILL RUN
SEC. COL-45-22.98

CHECKED BY	REVIEWED BY	DATE
A. F.	R. D. R.	9/12/88

MICROFILMED
DEC 1 1992





SCALE: 1" = 20'

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

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. COL-45-2298
OVER TRIBUTARY OF STONE MILL RUN
SEC. COL-45-22.98

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
W.L.C.H.	A.F.	R. D. R.	9/12/88

COL-45-22.98
BR-10-89