

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
HAN-235-15.01

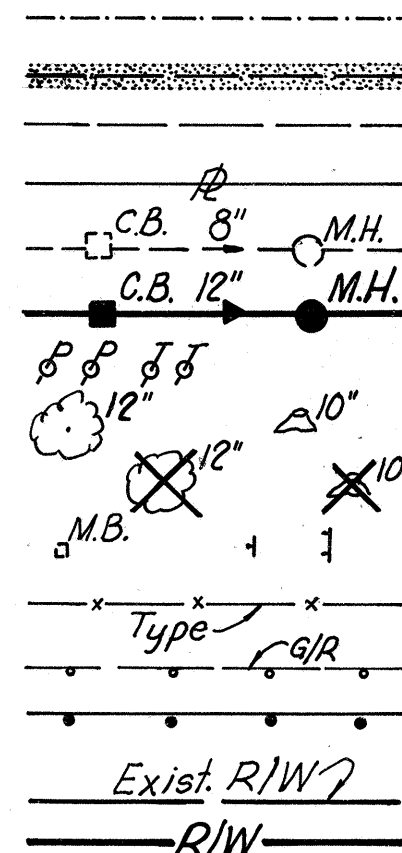
FHWA REGION	STATE	PROJECT
5	OHIO	BRS-321(2)

HANCOCK COUNTY
HAN 235-15.01

BRS-321(2)

CONVENTIONAL SIGNS

Corporation Line
Township Line
Section Line
Property Line
Existing Storm Sewer w/Catch Basin & Manhole
Proposed Storm Sewer w/Catch Basin & Manhole
Poles: Power, Telephone
Tree-Stump
Tree-Stump To Be Removed
Existing Mail Box & Signs
Existing Fence
Existing Guardrail
Proposed Guardrail
Existing Right-of-Way
Proposed Right-of-Way

MICROFILMED
MAY 20 1992

1985 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.

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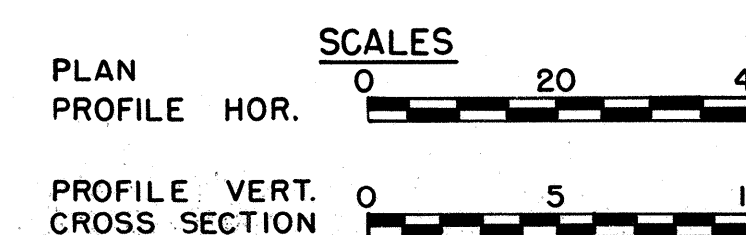
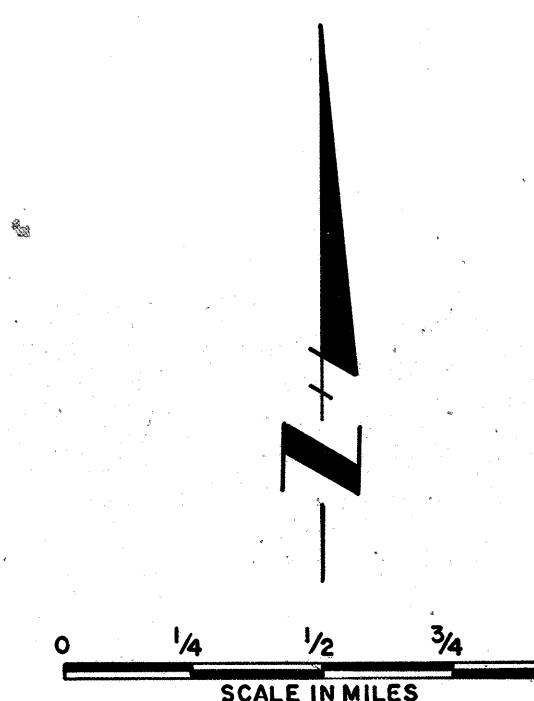
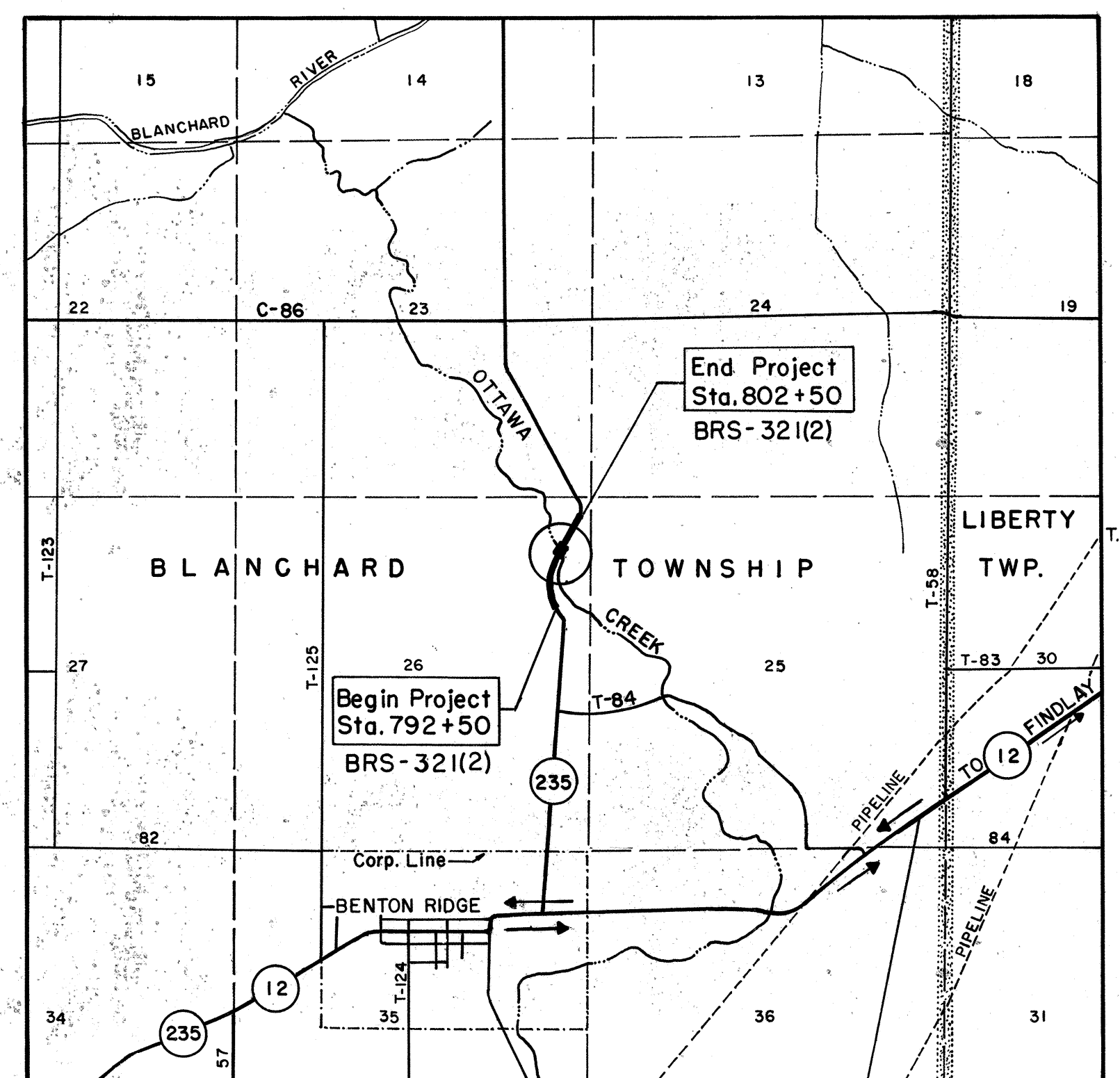
LINE DATA

Begin Project Sta. 792+50.00
End Project Sta. 802+50.00
Deduct for Sta. Equation Sta. 801+02.99 (Bk.) = Sta. 801+04.05 (Ah) = -1.06 L.F.
Length of Project = 998.94 L.F.
or 0.189 Mi.
Add for Work: Sta. 791+85 to Sta. 792+50 = 65.00 L.F.
Sta. 802+50 to Sta. 803+25 = 75.00 L.F.
Length of Work = 1138.94 L.F.
or 0.216 Mi.

PLAN PREPARED
BY
DANSARD • GROHNKE • LONG, Limited
Toledo, Ohio

PORTION TO BE IMPROVED
STATE ROADS
OTHER ROADS
DETOUR
FOR DETOUR MAP SEE SH'T. 2

LOCATION MAP



UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
Call 800-362-2764 (Toll free)
OHIO UTILITIES PROTECTION SERVICE

NON-MEMBERS
MUST BE CALLED DIRECTLY

STANDARD CONSTRUCTION DRAWINGS				SUPPLEMENTAL SPECIFICATIONS	
BP-5	1-1-85	MC-1	6-13-69	AS-1-81	11-27-81
BP-6	6-1-65			DBR-2-73	4-10-73
	GR-1	1-11-85	MC-4	7-26-76	PSBD-1-81
	GR-2B	2-5-82			
	GR-3	1-21-85	MC-11	8-1-78	
	GR-4	2-5-82			
	LA-1	6-1-70			

Approved James L. Schenck
Date 7-8-86 District Deputy Director of Transportation
Approved Walter J. Jennings / WJF
Date 8-15-86 Engineer, Bureau of Bridges and Structural Design
Approved Wayne H. Kunkle
Date 11-18-85 Chief Engineer, Planning and Design
Approved Warren T. Smith
Date 11-19-86 Director, Department of Transportation

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR

DATE

FILE No. PROJECT: HAN-235-15.01
DATE OF LETTING _____ 19 ____
CONTRACT No. _____

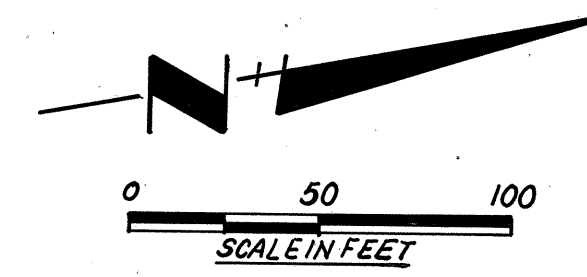
SCHEMATIC PLAN

FHWA REGION	STATE	PROJECT
5	OHIO	BRS-321(2)

2
28

HANCOCK COUNTY
HAN 235-15.01

CURVE DATA
Q. Survey & Constr.
 $\Delta = 32^{\circ}-13' \text{ LT}$
 $D_c = 13^{\circ}-00'$
 $R = 440.74'$
 $T = 127.28'$
 $L = 247.82'$
 $E = 18.01'$
P.C. Sta. 802+88.31
P.T. Sta. 804+15.59
P.T. Sta. 805+36.13



CURVE DATA
Q. Survey & Construction
P.I. Sta. 790+78.53
 $\Delta = 24^{\circ}-09'-00" \text{ RT}$
 $D_c = 11^{\circ}-00'$
 $R = 520.87'$
 $T = 111.43'$
 $L = 219.54'$
 $E = 11.78'$

Begin Work
Sta. 791+85

Begin Project
Sta. 792+50

BRS-321(2)

S.R. 235

CURVE DATA
Q. Survey & Construction
P.I. Sta. 794+89.29
 $\Delta = 34^{\circ}-31'-00" \text{ RT}$
 $D_c = 7^{\circ}-30'$
 $R = 763.94'$
 $T = 237.33'$
 $L = 460.22'$
 $E = 36.02'$

Structure No.
HAN-235-1513

BRS-321(2)

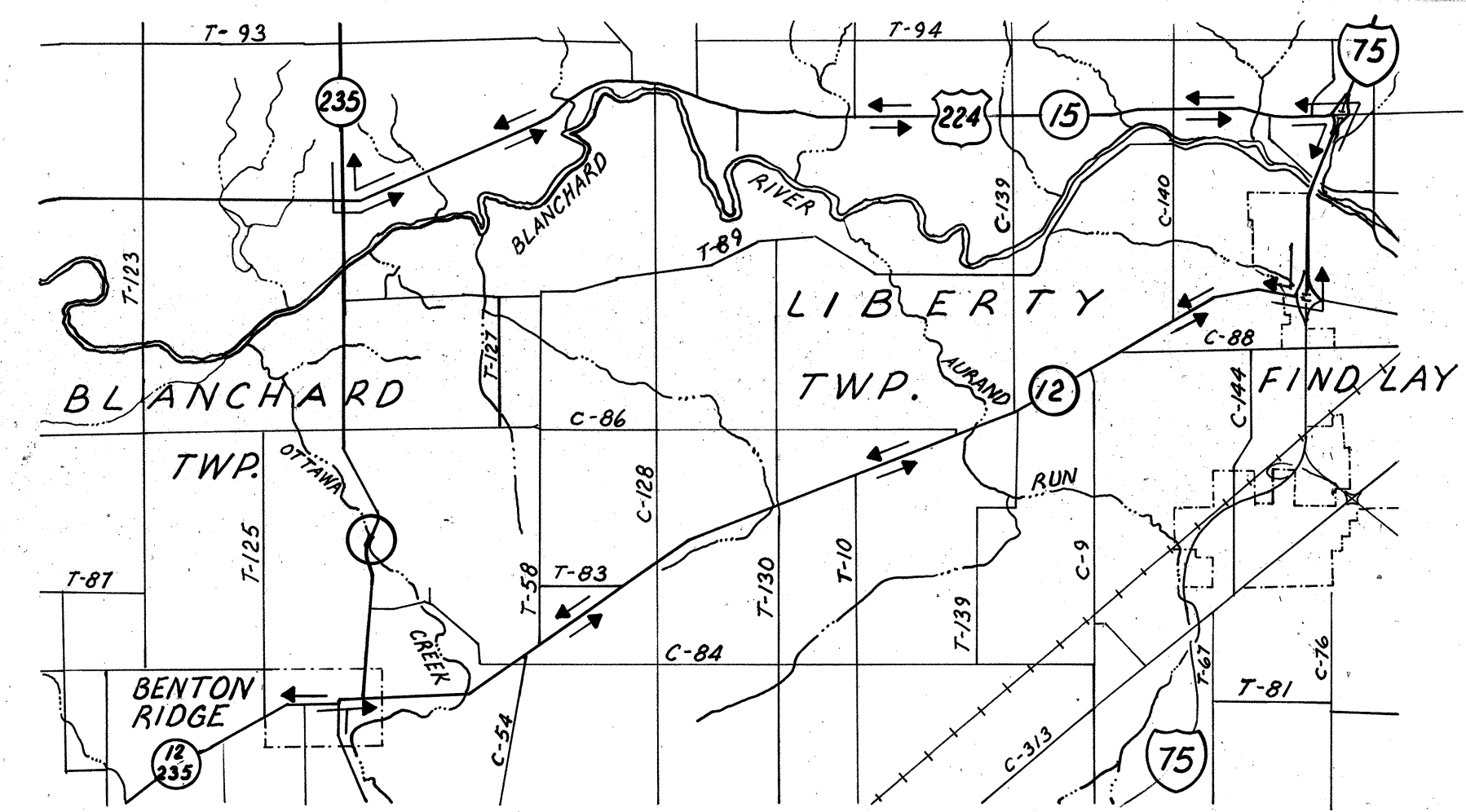
End Project
Sta. 802+50

End Work
Sta. 803+25

DESIGN DESIGNATION

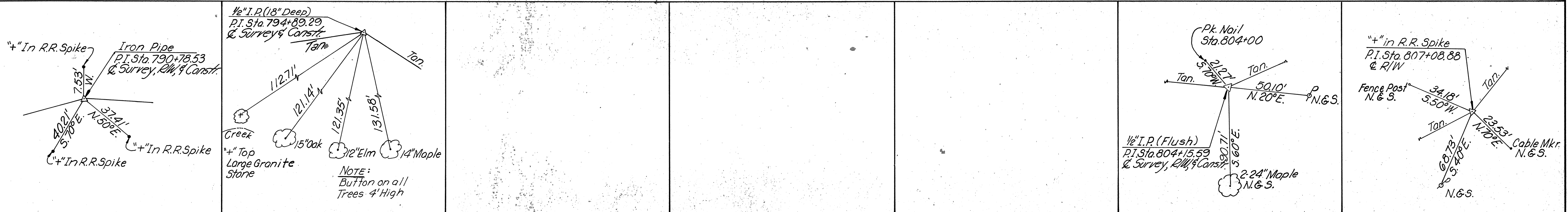
Current ADT. (1985)	=	374
Design Year ADT. (2005)	=	582
D.H.V.	=	74
D	=	55%
T	=	7%
V	=	55 mph

DESIGN EXCEPTION (FOR COMPLIANCE WITH 1984 AASHTO STANDARDS) FOR
LANE WIDTH, SHOULDER WIDTH, BRIDGE WIDTH, HORIZONTAL ALIGNMENT, AND
VERTICAL ALIGNMENT - STOPPING SIGHT DISTANCE APPROVED BY FHWA-5-13-86.



DETOUR MAP
SCALE IN MILES

Note ~ For Q. & R/W References, See Sheet 24.



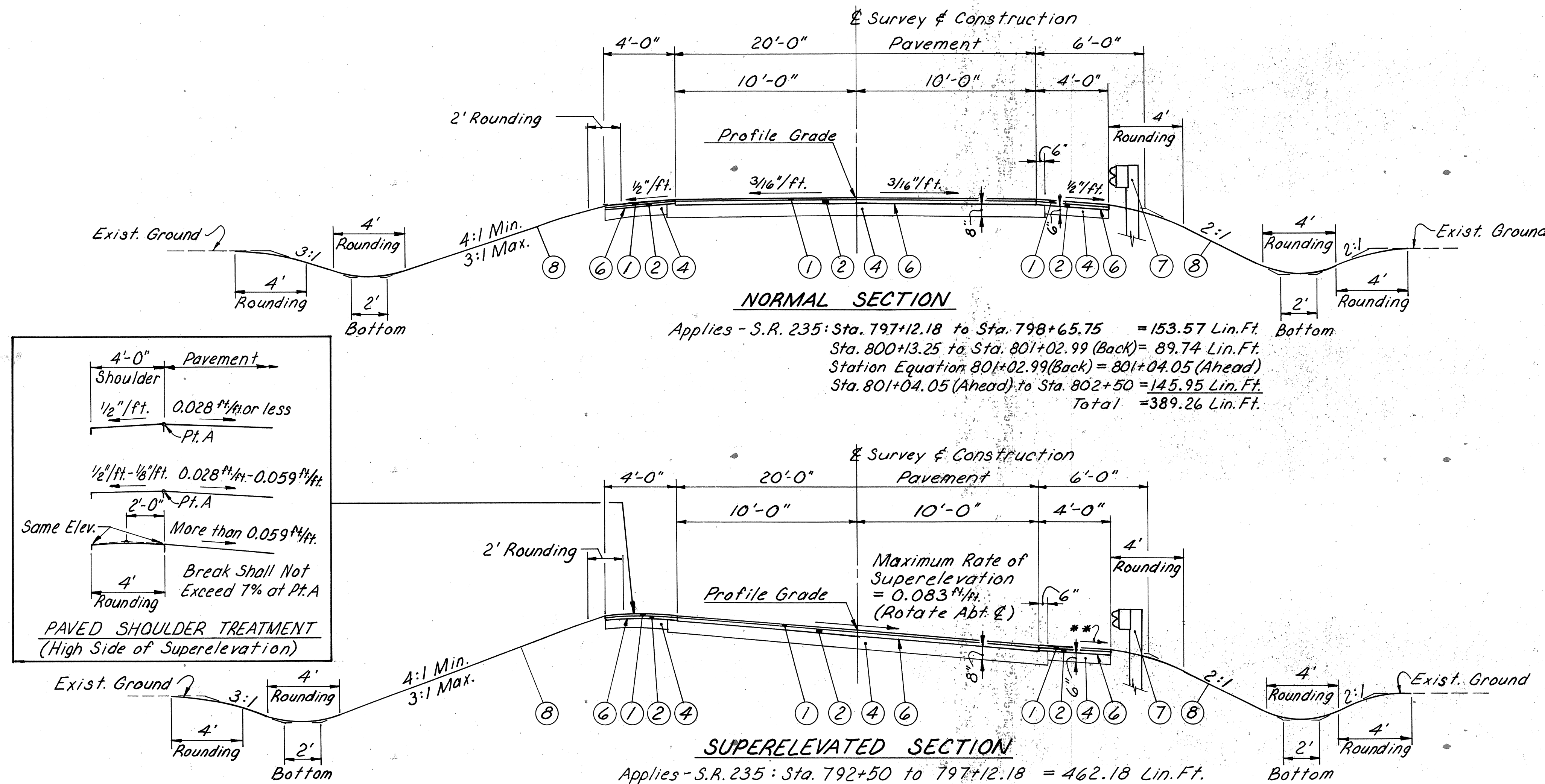
TYPICAL SECTIONS

TYPE 404 on 304

FHWA REGION	STATE	PROJECT
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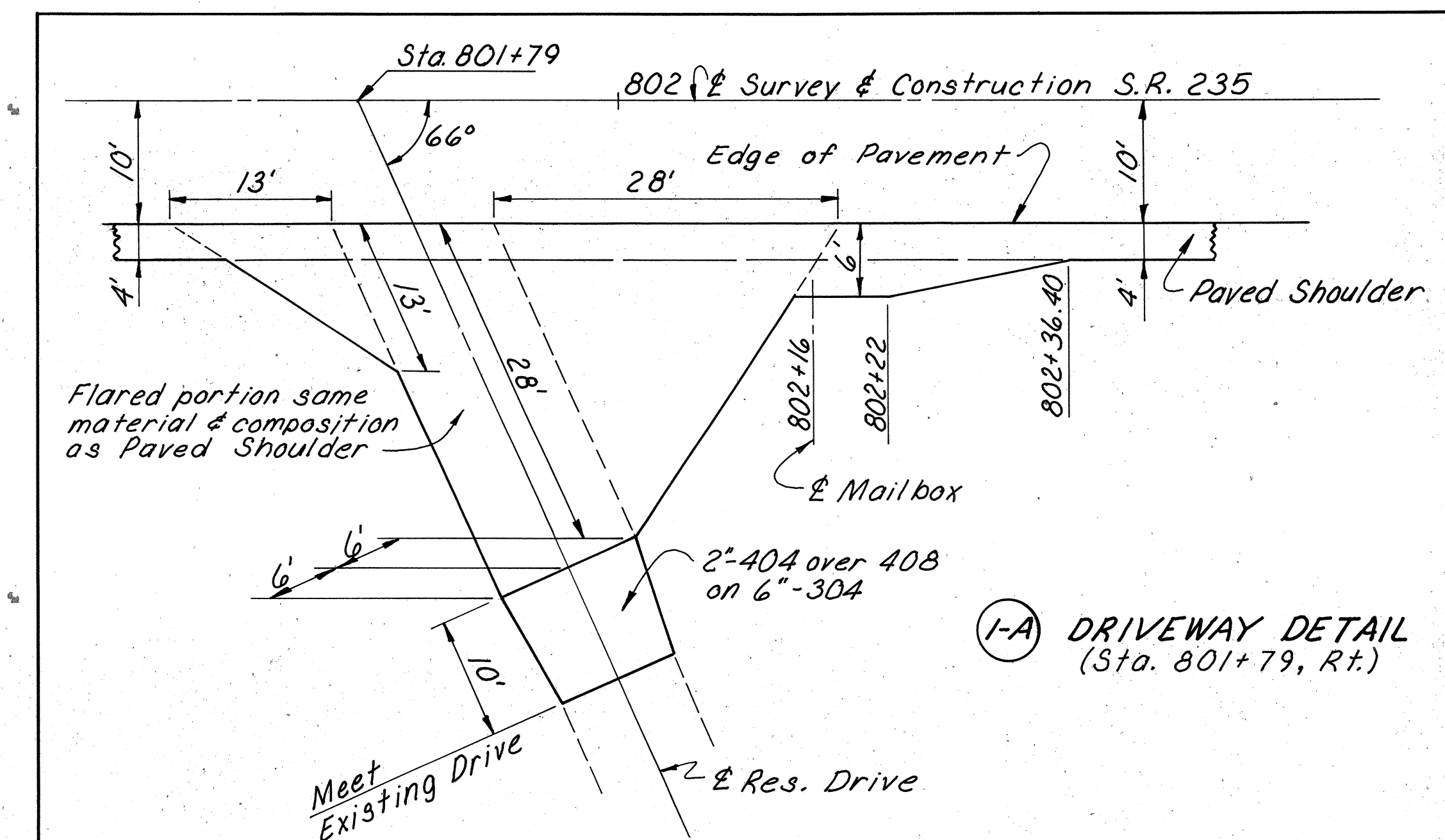
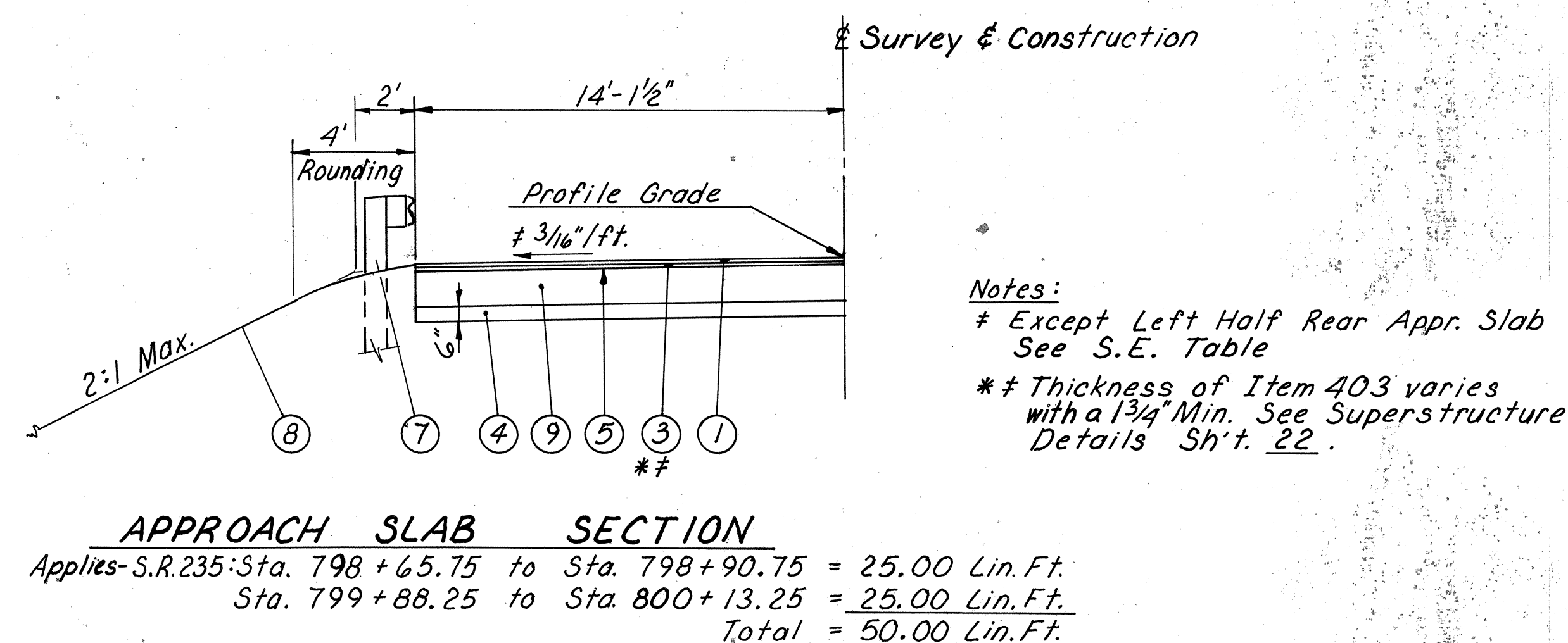
HANCOCK COUNTY
HAN 235-15.01

3
28



LEGEND

- ① Item 404 1 1/4" Asphalt Concrete ~ AC-20
- ② Item 402 1 3/4" Asphalt Concrete ~ AC-20
- ③ Item 403 1 3/4" Min. Asphalt Concrete ~ AC-20
- ④ Item 304 Aggregate Base (Thickness as Shown)
- ⑤ Item 407 Tack Coat @ 0.075 gal./sq. yd.
- ⑥ Item 408 Bituminous Prime Coat @ 0.40 gal./sq. yd.
- ⑦ Item 606 Guardrail, Type 5
- ⑧ Item 659 Seeding and Mulching (See General Notes)
- ⑨ Item 611 Reinforced Concrete Approach Slab (t=15")



GENERAL NOTES

QUANTITIES BY LLE 6/86
CHECKED BY RNE 6/86

FHWA REGION	STATE	PROJECT	
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HANCOCK COUNTY
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MAINTENANCE OF TRAFFIC

TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES, EXCEPT THAT FOR A PERIOD NOT TO EXCEED 120 CONSECUTIVE CALENDAR DAYS, THROUGH TRAFFIC MAY BE DETOURED AS SHOWN ON SHEET 2.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR THE MAINTENANCE OF TRAFFIC.

ITEM 410	TRAFFIC COMPACTED SURFACE TYPE A & B	50 CU.YD.
ITEM 616	CALCIUM CHLORIDE	1 TONS
ITEM 616	WATER	10 M.GALS.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 ORC.

UTILITY OWNERSHIP

BENTON RIDGE TELEPHONE CO.
P. O. BOX 180
BENTON RIDGE, OHIO 45816
419-859-2144

UNDERGROUND TELEPHONE

REMOVAL OF TREES OR STUMPS

ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT SHALL BE REMOVED UNDER THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING, EXCEPT THAT THOSE TREES FOR WHICH PROTECTION AND PRESERVATION WORK IS INDICATED ELSEWHERE IN THESE PLANS SHALL NOT BE REMOVED.

THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED.

SIZES	NO. TREES	TOTAL
30"	1	1
48"	3	3

THE ABOVE ESTIMATE IS APPROXIMATE AND THE STATE OF OHIO RESERVES THE RIGHT TO ORDER THE REMOVAL OF ADDITIONAL TREES OR STUMPS OUTSIDE OF THE LIMITS OF CONSTRUCTION BUT WITHIN THE RIGHT-OF-WAY AND/OR EASEMENT LINES. PAYMENT FOR THE REMOVAL OF THESE ADDITIONAL TREES OR STUMPS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK LISTED IN THE GENERAL SUMMARY FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

MONUMENTS

MONUMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN ON STANDARD CONSTRUCTION DRAWING MC-1, FOR LOCATIONS, SEE SHEET NO. 5.

407 TACK COAT

THE TACK COAT OPERATION SHALL BE DETERMINED AS SPEC. 407.05, PLAN QUANTITIES INDICATE AVERAGE APPLICATION RATES OF 0.075 GALLONS PER SQUARE YARD OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

LOCATION OF GUARDRAIL

THE LOCATIONS OF GUARDRAIL RUNS, AS SHOWN IN THESE PLANS, ARE SUBJECT TO ADJUSTMENT PRIOR TO FINAL ACCEPTANCE. THE ENGINEER SHALL BE SATISFIED THAT ALL INSTALLATIONS WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

SEEDING

QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN TEN (10) FEET OUTSIDE THE WORK LIMITS, AS SHOWN ON THE CROSS SECTIONS, OR TO THE RIGHT-OF-WAY LINE, IF SUCH LINE IS LESS THAN TEN (10) FEET FROM THE WORK LIMITS.

WATERING PERMANENT SEEDED AREAS

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND TO CARE FOR THE PERMANENT SEEDED AREAS, AS PER 659.09.

659	WATER	10 M. GALS.
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TEMPORARY SOILS EROSION AND SEDIMENT CONTROL

THE FOLLOWING ESTIMATED QUANTITY IS TO BE USED AS DIRECTED BY THE ENGINEER, FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES:

207	STRAW OR HAY BALES	30 EACH
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FARM DRAINS

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS UNDER THE DIRECTION OF THE ENGINEER. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE RIGHT-OF-WAY LIMITS BY ITEM 603 CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF THE ROADWAY DITCHES, SHALL BE OUTLETED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE, IF POSSIBLE, ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH.

THE LOCATION, TYPE, SIZE AND GRADE OF REQUIRED REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION, AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

ITEM 603	6" CONDUIT,	TYPE B	50 LIN. FT.
ITEM 603	8" CONDUIT,	TYPE B	50 LIN. FT.
ITEM 603	12" CONDUIT,	TYPE B	50 LIN. FT.
ITEM 603	6" CONDUIT,	TYPE E	50 LIN. FT.
ITEM 603	8" CONDUIT,	TYPE E	50 LIN. FT.
ITEM 603	12" CONDUIT,	TYPE E	50 LIN. FT.
ITEM 603	6" CONDUIT,	TYPE F	50 LIN. FT.
ITEM 603	8" CONDUIT,	TYPE F	50 LIN. FT.
ITEM 603	12" CONDUIT,	TYPE F	50 LIN. FT.

ITEM 601	ROCK CHANNEL PROTECTION TYPE C WITH FILTER	5 CU.YD.
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NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEM.

NONE OF THE ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL AUTHORIZED BY THE ENGINEER.

EROSION CONTROL PADS AND ANIMAL GUARDS

EROSION CONTROL PADS AND ANIMAL GUARDS SHALL BE PROVIDED AT THE OUTLET END OF ALL PIPE UNDERDRAINS AND FARM DRAINS, AS PER STANDARD CONSTRUCTION DRAWING MC-4, EXCEPT WHEN THEY ENTER INTO A DRAINAGE STRUCTURE.

PAYMENT FOR THE EROSION CONTROL PADS AND THE ANIMAL GUARDS SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 603, CONDUIT, TYPE F.

CONNECTION OF EXISTING PIPE

WHERE THE PLANS PROVIDE FOR PROPOSED CONDUIT TO BE CONNECTED TO, OR TO CROSS EITHER OVER OR UNDER AN EXISTING SEWER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPE BOTH AS TO LINE AND GRADE BEFORE HE STARTS TO LAY THE PROPOSED CONDUIT.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT 603 CONDUIT ITEMS.

CONDUIT END TREATMENT

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

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS

THE ROUNDED CORNERS SHOWN ON THE TYPICAL SECTIONS, APPLY TO ALL CROSS SECTIONS EVEN THOUGH OTHERWISE SHOWN ON THESE PLANS.

FIELD OFFICE

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 300 SQ. FT. OF FLOOR SPACE. PAYMENT SHALL BE AT THE LUMP SUM PRICE BID FOR ITEM 619, FIELD OFFICE.

ELEVATION DATUM

ALL ELEVATIONS ARE BASED ON U.S.G.S. DATUM

TEMPORARY STREAM CROSSING FORDS

WHERE STREAM CROSSING FORDS ARE REQUIRED FOR EQUIPMENT CROSSINGS, THE FOLLOWING SHALL APPLY TO THE CONTRACTOR'S OPERATIONS:

THE CROSSING SHALL CONSIST OF CLEAN NON-TOXIC GRANULAR OR ROCK MATERIAL, PROPERLY MAINTAINED TO PREVENT EROSION WITH PROVISIONS FOR CONVEYANCE OF ANTICIPATED HIGH FLOWS.

FURTHERMORE, IT SHALL FOLLOW PART 330.5 SPECIFIC CATEGORIES OF DISCHARGES-NATIONALLY PERMITTED, PARAGRAPH (d) (14) MINOR ROAD CROSSING FILLS - OF THE FEDERAL REGISTER - CORPS OF ENGINEERS INTERIM FINAL REGULATIONS PUBLISHED JULY 22, 1982.

Quantities by L.L.E. 4/86
Checked by R.N.E. 4/86

HANCOCK COUNTY
HAN 235-1501

S.R. 235-15.01			D _c = 7°-30'		
LEFT Max. rate of SE. = 0.083 ^{ft} /ft.		CENTER Rotate about @ Constr.		RIGHT Max. rate of SE. = 0.083 ^{ft} /ft.	
Edge of Pavt. Elevation	Add to Profile Grade	@ Constr. Station	Profile Grade	Deduct from Profile Grade	Edge of Pavt. Elevation
755.39	0.23	792+00	755.16	0.74	754.42
755.44	0.24	+25	755.20	Z	754.46
755.60	0.36	+50	755.24		754.50
755.61	0.37	P.C. +51.96	755.24		754.50
755.72	0.47	+75	755.25		754.51
755.84	0.59	793+00	755.25		754.51
755.97	0.71	+25	755.26	0.74	754.52
756.09	0.83	+50	755.26	0.83	754.43
756.10	Z	+75	755.27	Z	754.44
756.10		794+00	755.27		754.44
756.11		+25	755.28		754.45
756.11		+50	755.28		754.45
756.12		+75	755.29		754.46
756.12		795+00	755.29		754.46
756.16		+25	755.33		754.50
756.25		+50	755.42		754.59
756.40		+75	755.57		754.74
756.61		796+00	755.78		754.95
756.89	0.83	+25	756.06	0.83	755.23
757.10	0.71	+50	756.39	0.71	755.68
757.34	0.59	+75	756.75	0.59	756.16
757.58	0.47	797+00	757.11	0.47	756.64
757.70	0.42	P.T. +12.18	757.28	0.42	756.86
757.83	0.36	+25	757.47	0.36	757.11
758.07	0.24	+50	757.83	0.24	757.59
758.28	0.12	+75	758.16	0.16	758.00
758.43	0.00	798+00	758.43	0.16	758.27
758.59	-0.05	+25	758.64	0.16	758.48
758.68	-0.11	+50	758.79	0.16	758.63
758.73	-0.16	+75	758.89	0.16	758.73

DRAINAGE "D"									
Sheet No.	Reference No.	Station		Side	202		601		603
					Pipe Removed 24" & under		Rock Channel Protection, Type D 1'-6" thick w/o filter		15" Conduit Type D
		From	To		Lin. Ft.		Cu. Yd.		Lin. Ft.
9	1-D	798+78	799+02	Rt.			15		
	2-D	798+90	799+11	Lt.			15		
	3-D	799+67	799+87	Rt.			18		
	4-D	799+72	799+89	Lt.			22		
	5-D	799+85	800+00	Lt.	15				
9	6-D	800+83	801+00	Rt.	17				
10	1-D	801+00	802+08	Rt.	108				
10	2-D	801+57	802+21	Rt.					64
		TOTALS			140		70		64

GUARDRAIL "G"									
Sheet No.	Reference No.	Station		Side	202		606	606	606
					Guardrail Removed		Guardrail Type 5	Anchor Assembly Std. Type A	Bridge Terminal Assembly Std. Type B
		From	To		Lin.Ft.		Lin.Ft.	Each	Each
Z	1-G	797+84.97	798+86.37	Lt.	30		75.00	/	/
	2-G	797+84.97	798+86.37	Rt.	30		75.00	/	/
	3-G	799+92.62	801+00.27	Lt.	28		81.25	/	/
	4-G	799+92.62	801+00.27	Rt.	40		81.25	/	/
		TOTALS			128		312.50	4	4

EARTHWORK & SEEDING							
Sheet No.	Station		203		659		
			Excavation Not Including Embank. Construction	Embankment		Seeding & Mulching	Commercial Fertilizer
	From	To	Cu. Yd.	Cu. Yd.		Sq. Yd.	Ton
11	791+85	794+00	127	51		891	0.080
12	794+00	800+50	1291	1116		3710	0.334
13	800+50	803+25	229	156		1093	0.098
	TOTALS		1647	1323		5694	0.512

$$\text{Commercial Fertilizer} = \frac{\text{Seeding Area} \times 9 \times 20}{1000 \times 2000}$$

PAVEMENT MARKING TABLE					
Station	Side	621			
		4" Center Line; Solid, Double	4" Edge Line White		
From	To	Lin. Ft.	Lin. Ft.		
792+00	803+00	LT & RT	2200		
792+00	803+00	E	1100		
TOTALS (Lin. Ft.)		1100	2200		
TOTAL S (Miles)		0.21	0.42		

DRIVE APPROACH "A"										
Sheet No.	Reference No.	Station		Side	Length	Width	304	404	402	408
							Aggregate Base (6")	Asphalt Conc. AC-20 (Driveway)	Asphalt Conc. AC-20	Bituminous Prime Coat
		From	To		Ft.	Ft.	Cu. Yd.	Cu. Yd.	Cu. Yd.	Gals.
10	I-A	801+79	(Res. Dr.)	Rt.	40.5	12	14.6	3.30	3.67	35.1
		TOTALS			40.5	12	14.6	3.30	3.67	35.1

MONUMENTS				
Sheet No.	Reference No.	Description	604	
			Monument Assembly, Standard	Reference Monument, Std
			Each	Each
8	1-M	Sta 792+51.96, P.C. & Survey & Const.	1	
8	2-M	Sta 792+69.49, P.C. & P/W	1	
9	1-M	Sta 797+121.8, P.T. & Survey & Const.	1	
9	2-M	Sta 797+35.76, P.T. & P/W	1	
9	3-M	Sta 798+63.24, P.I. & P/W		1
9	4-M	Sta 800+54.24, P.I. & P/W	1	
10	1-M	Sta 802+88.31, P.C. & Survey, P/W & Const.	1	
		Totals	6	1

Note: All centerline monuments shall be constructed per Standard Construction Drawing MC-1.

Quantities by L.L.E. 4/86
Checked by R.N.E. 4/86

FHWA REGION	STATE	PROJECT
5	OHIO	BRS-32(12)

HANCOCK COUNTY
HAN 235-15.01

PAVEMENT TABLE													
Sheet No.	Station		203		304		402		403		404		611
			Subgrade Compaction	Subgrade Compaction (Shoulder)	Aggregate Base	Aggregate Base (Shoulder)	Asphalt Concrete AC-20	Asphalt Concrete AC-20 (Shoulder)	Asphalt Concrete AC-20	Asphalt Concrete AC-20	Tack Coat	Bituminous Prime Coat	
	From	To	Sq. Yd.	Sq. Yd.	Cu. Yd.	Cu. Yd.	Cu. Yd.	Cu. Yd.	Cu. Yd.	Cu. Yd.	Gal.	Gal.	Sq. Yd.
8	792+00	792+50	113.33	44.44	26.42	6.48	5.51	2.16			3.94	1.54	47.6
8#9	792+50	797+12.18	1027.07	410.82	239.65	59.92	49.93	19.98			35.66	14.26	431.4
9	797+12.18	798+65.75	341.27	136.50	79.63	19.90	16.59	6.64			11.85	4.74	143.3
9	798+65.75	798+90.75	75.59		12.60			4.77			2.72	5.9	78.47
9	799+88.25	800+13.25	75.59		12.60			4.77			2.72	5.9	78.47
9#10	800+13.25	802+50	523.76	209.50	122.21	30.56	25.46	10.18			18.19	7.28	220.0
10	802+50	803+00	110.28	44.44	26.67	6.48	5.36	2.16			3.83	1.54	48.0
	Sub-Totals		2266.89	845.70	519.78	129.34	102.85	41.12	9.54		78.91	29.36	890.3
	TOTALS		3112.59		643.12		143.97	9.54			108.27	11.8	1184.8

PAVEMENT CALCULATIONS

Sta. 792+00 to Sta. 792+50 (Transition), Length = 50 L.F.
Pavement ~

203 Subgrade Compaction $(50)(20.8+20.0)(\frac{1}{2})(\frac{1}{9}) = 113.33$ Sq. Yd.
304 $[(50)(21.8+21.0)(\frac{1}{2})(\frac{1}{27})] = 26.42$ Cu. Yd.
402 $[(50)(20.8+20.0)(\frac{1}{2})(\frac{1}{27})] = 5.51$ Cu. Yd.
404 $[(50)(20.8+20.0)(\frac{1}{2})(\frac{1}{27})] = 3.94$ Cu. Yd.
408 $(50)(21.8+21.0)(\frac{1}{2})(0.40)(\frac{1}{9}) = 47.6$ Gal.

Left Shoulder ~

203 Subgrade Compaction $(50)(4.0)(\frac{1}{9}) = 22.22$ Sq. Yd.
304 $[(50)(3.5)(\frac{1}{2})(\frac{1}{27})] = 3.24$ Cu. Yd.
402 $[(50)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 1.08$ Cu. Yd.
404 $[(50)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 0.77$ Cu. Yd.
408 $(50)(3.5)(0.40)(\frac{1}{9}) = 7.8$ Gal.

Right Shoulder ~

203 Subgrade Compaction $(50)(4.0)(\frac{1}{9}) = 22.22$ Sq. Yd.
304 $[(50)(3.5)(\frac{1}{2})(\frac{1}{27})] = 3.24$ Cu. Yd.
402 $[(50)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 1.08$ Cu. Yd.
404 $[(50)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 0.77$ Cu. Yd.
408 $(50)(3.5)(0.40)(\frac{1}{9}) = 7.8$ Gal.

Sta. 792+50 to Sta. 797+12.18, Length = 462.18 L.F.
Pavement ~

203 Subgrade Compaction $(462.18)(20)(\frac{1}{9}) = 1027.07$ Sq. Yd.
304 $[(462.18)(21)(8)(\frac{1}{2})(\frac{1}{27})] = 239.65$ Cu. Yd.
402 $[(462.18)(20)(1.75)(\frac{1}{2})(\frac{1}{27})] = 49.93$ Cu. Yd.
404 $[(462.18)(20)(1.25)(\frac{1}{2})(\frac{1}{27})] = 35.66$ Cu. Yd.
408 $(462.18)(21)(0.40)(\frac{1}{9}) = 431.4$ Gal.

Left Shoulder ~

203 Subgrade Compaction $(462.18)(4.0)(\frac{1}{9}) = 205.41$ Sq. Yd.
304 $[(462.18)(3.5)(\frac{1}{2})(\frac{1}{27})] = 29.96$ Cu. Yd.
402 $[(462.18)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 9.99$ Cu. Yd.
404 $[(462.18)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 7.13$ Cu. Yd.
408 $(462.18)(3.5)(0.40)(\frac{1}{9}) = 71.9$ Gal.

Right Shoulder ~

203 Subgrade Compaction $(462.18)(4.0)(\frac{1}{9}) = 205.41$ Sq. Yd.
304 $[(462.18)(3.5)(\frac{1}{2})(\frac{1}{27})] = 29.96$ Cu. Yd.
402 $[(462.18)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 9.99$ Cu. Yd.
404 $[(462.18)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 7.13$ Cu. Yd.
408 $(462.18)(3.5)(0.40)(\frac{1}{9}) = 71.9$ Gal.

Sta. 797+12.18 to Sta. 798+65.75, Length = 153.57 L.F.
Pavement ~

203 Subgrade Compaction $(153.57)(20)(\frac{1}{9}) = 341.27$ Sq. Yd.
304 $[(153.57)(21)(8)(\frac{1}{2})(\frac{1}{27})] = 79.63$ Cu. Yd.
402 $[(153.57)(20)(1.75)(\frac{1}{2})(\frac{1}{27})] = 16.56$ Cu. Yd.
404 $[(153.57)(20)(1.25)(\frac{1}{2})(\frac{1}{27})] = 11.85$ Cu. Yd.
408 $(153.57)(21)(0.40)(\frac{1}{9}) = 143.3$ Gal.

Left Shoulder ~

203 Subgrade Compaction $(153.57)(4.0)(\frac{1}{9}) = 68.25$ Sq. Yd.
304 $[(153.57)(3.5)(\frac{1}{2})(\frac{1}{27})] = 9.95$ Cu. Yd.
402 $[(153.57)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 3.32$ Cu. Yd.
404 $[(153.57)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 2.37$ Cu. Yd.
408 $[(153.57)(3.5)(0.40)(\frac{1}{9})] = 23.9$ Gal.

Right Shoulder ~

203 Subgrade Compaction $(153.57)(4.0)(\frac{1}{9}) = 68.25$ Sq. Yd.
304 $[(153.57)(3.5)(\frac{1}{2})(\frac{1}{27})] = 9.95$ Cu. Yd.
402 $[(153.57)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 3.32$ Cu. Yd.
404 $[(153.57)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 2.37$ Cu. Yd.
408 $[(153.57)(3.5)(0.40)(\frac{1}{9})] = 23.9$ Gal.

Sta. 798+65.75 to Sta. 798+90.75 (Appr. Slab), Length = 25 L.F.
Pavement ~

203 Subgrade Compaction $(25)(28.25)(\frac{1}{9}) = 75.59$ Sq. Yd.
304 $[(25)(28.25)(6)(\frac{1}{2})(\frac{1}{27})] = 12.60$ Cu. Yd.
403 $[(25)(28.25)(1.75+2.63)(\frac{1}{2})(\frac{1}{27})] = 4.77$ Cu. Yd.
404 $[(25)(28.25)(1.25)(\frac{1}{2})(\frac{1}{27})] = 2.72$ Cu. Yd.
407 $(25)(28.25)(0.075)(\frac{1}{9}) = 5.9$ Gal.
611 Reinf. Conc. Appr. Slab $(25)(28.25)(\frac{1}{9}) = 78.47$ Sq. Yd.
($t=15"$)

Sta. 798+90.75 to Sta. 799+88.25, Length = 97.50 L.F.
Bridge Limits ~ Str. No. HAN 235-1513

Sta. 799+88.25 to Sta. 800+13.25 (Appr. Slab), Length = 25 L.F.
Pavement ~

203 Subgrade Compaction $(25)(28.25)(\frac{1}{9}) = 75.59$ Sq. Yd.
304 $[(25)(28.25)(6)(\frac{1}{2})(\frac{1}{27})] = 12.60$ Cu. Yd.
403 $[(25)(28.25)(1.75+2.63)(\frac{1}{2})(\frac{1}{27})] = 4.77$ Cu. Yd.
404 $[(25)(28.25)(1.25)(\frac{1}{2})(\frac{1}{27})] = 2.72$ Cu. Yd.
407 $(25)(28.25)(0.075)(\frac{1}{9}) = 5.9$ Gal.
611 Reinf. Conc. Appr. Slab $(25)(28.25)(\frac{1}{9}) = 78.47$ Sq. Yd.
($t=15"$)

Sta. 800+13.25 to Sta. 802+50, Length = 235.69 L.F.
Pavement ~

203 Subgrade Compaction $(235.69)(20)(\frac{1}{9}) = 523.76$ Sq. Yd.
304 $[(235.69)(21)(8)(\frac{1}{2})(\frac{1}{27})] = 122.21$ Cu. Yd.
402 $[(235.69)(20)(1.75)(\frac{1}{2})(\frac{1}{27})] = 25.46$ Cu. Yd.
404 $[(235.69)(20)(1.25)(\frac{1}{2})(\frac{1}{27})] = 18.19$ Cu. Yd.
408 $(235.69)(21)(0.40)(\frac{1}{9}) = 220.0$ Gal.

Left Shoulder ~

203 Subgrade Compaction $(235.69)(4.0)(\frac{1}{9}) = 104.75$ Sq. Yd.
304 $[(235.69)(3.5)(\frac{1}{2})(\frac{1}{27})] = 15.28$ Cu. Yd.
402 $[(235.69)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 5.09$ Cu. Yd.
404 $[(235.69)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 3.64$ Cu. Yd.
408 $(235.69)(3.5)(0.40)(\frac{1}{9}) = 36.7$ Gal.

Right Shoulder ~

203 Subgrade Compaction $(235.69)(4.0)(\frac{1}{9}) = 104.75$ Sq. Yd.
304 $[(235.69)(3.5)(\frac{1}{2})(\frac{1}{27})] = 15.28$ Cu. Yd.
402 $[(235.69)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 5.09$ Cu. Yd.
404 $[(235.69)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 3.64$ Cu. Yd.
408 $(235.69)(3.5)(0.40)(\frac{1}{9}) = 36.7$ Gal.

Sta. 802+50 to Sta. 803+00 (Transition), Length = 50 L.F.
Pavement ~

203 Subgrade Compaction $(50)(20+19.7)(\frac{1}{9}) = 110.28$ Sq. Yd.
304 $[(50)(21+22.2)(8)(\frac{1}{2})(\frac{1}{27})] = 26.67$ Cu. Yd.
402 $[(50)(20+19.7)(1.75)(\frac{1}{2})(\frac{1}{27})] = 5.36$ Cu. Yd.
404 $[(50)(20+19.7)(1.25)(\frac{1}{2})(\frac{1}{27})] = 3.83$ Cu. Yd.
408 $(50)(21+22.2)(0.40)(\frac{1}{9}) = 48.0$ Gal.

Left Shoulder ~

203 Subgrade compaction $(50)(4.0)(\frac{1}{9}) = 22.22$ Sq. Yd.
304 $[(50)(3.5)(\frac{1}{2})(\frac{1}{27})] = 3.24$ Cu. Yd.
402 $[(50)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 1.08$ Cu. Yd.
404 $[(50)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 0.77$ Cu. Yd.
408 $(50)(3.5)(0.40)(\frac{1}{9}) = 7.8$ Gal.

Right Shoulder ~

203 Subgrade Compaction $(50)(4.0)(\frac{1}{9}) = 22.22$ Sq. Yd.
304 $[(50)(3.5)(\frac{1}{2})(\frac{1}{27})] = 3.24$ Cu. Yd.
402 $[(50)(4)(1.75)(\frac{1}{2})(\frac{1}{27})] = 1.08$ Cu. Yd.
404 $[(50)(4)(1.25)(\frac{1}{2})(\frac{1}{27})] = 0.77$ Cu. Yd.
408 $(50)(3.5+2.0)(\frac{1}{2})(0.40)(\frac{1}{9}) = 6.1$ Gal.

Quantities by L.L.E. 4/86
Checked by R.N.E. 4/86

FHWA REGION	STATE	PROJECT	
5	OHIO	BRS-321(2)	

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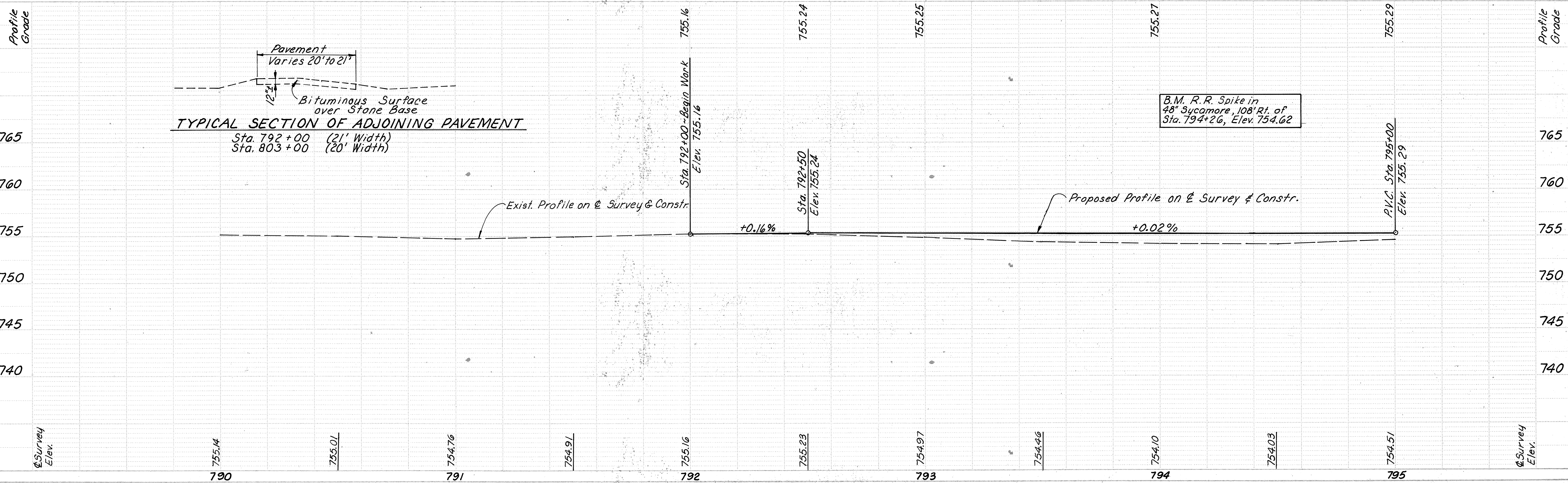
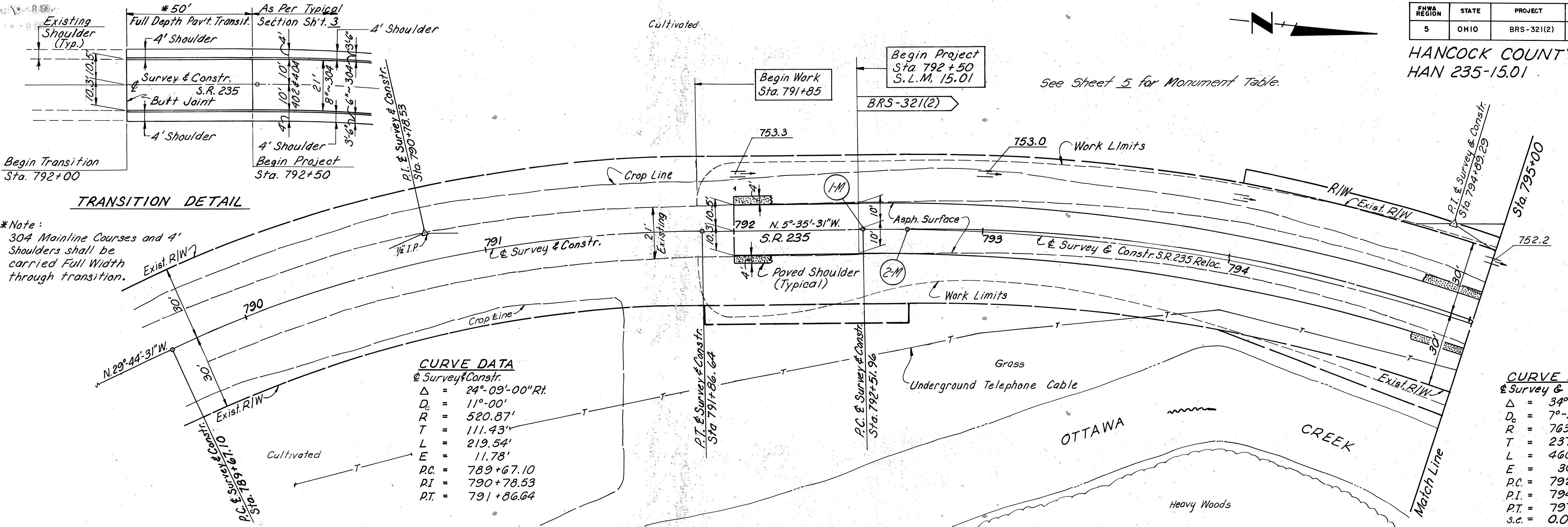
HANCOCK COUNTY
HAN 235-15.01

GENERAL SUMMARY				
ITEM	TOTAL QUANTITY	UNIT	DESCRIPTION	CARRIED FROM SHEET No.
ROADWAY				
201	Lump		Clearing and Grubbing	4
202	140	Lin.Ft.	Pipe Removed, 24" and under	5
202	128	Lin.Ft.	Guardrail Removed	5
203	1647	Cu.Yd.	Excavation Not Including Embankment Construction	5
203	1323	Cu.Yd.	Embankment	5
203	3113	Sq.Yd.	Subgrade Compaction	6
410	50	Cu.Yd.	Traffic Compacted Surface, Type A or B	4
604	6	Each	Monument Assembly, Standard	5
604	1	Each	Reference Monument, Standard	5
606	312.50	Lin.Ft.	Guardrail, Type 5	5
606	4	Each	Anchor Assembly, Standard Type A	5
606	4	Each	Bridge Terminal Assembly, Standard Type B	5
614	0.21	Miles	Temporary Center Lines, Class II	14
614	4	Each	Work Zone Marking Signs	14
616	1	Ton	Calcium Chloride	4
616	10	M.Gal.	Water	4
EROSION CONTROL				
207	30	Each	Straw or Hay Bales	4
601	5	Cu.Yd.	Rock Channel Protection Type C with Filter	4
601	70	Cu.Yd.	Rock Channel Protection Type D without Filter	5
659	5694	Sq.Yd.	Seeding and Mulching	5
659	0.51	Ton	Commercial Fertilizer	5
659	10	M.Gal.	Water	4
DRAINAGE				
603	50	Lin.Ft.	6" Conduit, Type B	4
603	50	Lin.Ft.	8" Conduit, Type B	4
603	50	Lin.Ft.	12" Conduit, Type B	4
603	64	Lin.Ft.	15" Conduit, Type D	5
603	50	Lin.Ft.	6" Conduit, Type E	4
603	50	Lin.Ft.	8" Conduit, Type E	4
603	50	Lin.Ft.	12" Conduit, Type E	4
603	50	Lin.Ft.	6" Conduit, Type F	4
603	50	Lin.Ft.	8" Conduit, Type F	4
603	50	Lin.Ft.	12" Conduit, Type F	4
PAVEMENT				
304	658	Cu.Yd.	Aggregate Base	5#6
402	148	Cu.Yd.	Asphalt Concrete, AC-20	5#6
403	10	Cu.Yd.	Asphalt Concrete, AC-20	6
404	108	Cu.Yd.	Asphalt Concrete, AC-20	6
404	3	Cu.Yd.	Asphalt Concrete, AC-20, (Driveway)	5
407	12	Gal.	Tack Coat	6
408	1220	Gal.	Bituminous Prime Coat	5#6
611	157	Sq.Yd.	Reinforced Concrete Approach Slab (T=15")	6
TRAFFIC CONTROL				
621	0.42	Mile	Edge Lines	5
621	0.21	Mile	Center Lines	5
STRUCTURES OVER 20' SPAN				
Bridge No. HAN 235-1513 Over Ottawa Creek				
(For Estimated Quantities See Sheet No. 17)				
614	Lump		Maintaining Traffic	4
619	Lump		Field Office	4
623	Lump		Construction Layout Stakes	-
624	Lump		Mobilization	-

GENERAL SUMMARY



See Sheet 5 for Monument Table.



MICROFILMED
NOV 18 1987

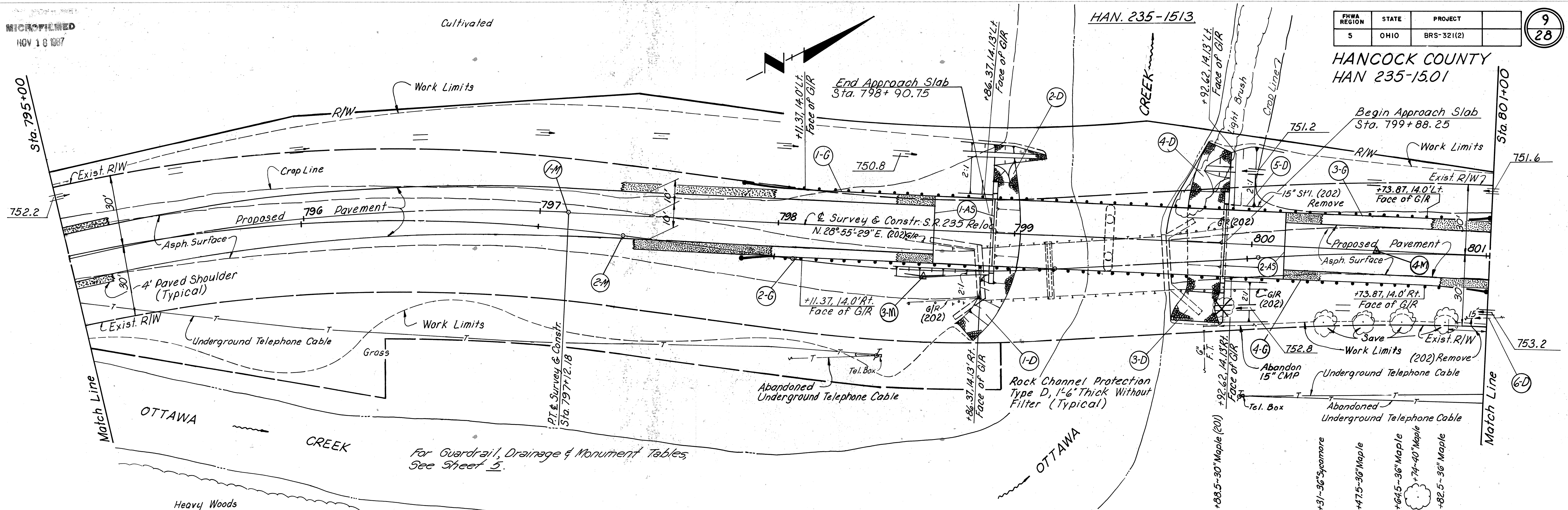
Cultivated

FHWA REGION	STATE	PROJECT	
5	OHIO	BRS-321(2)	

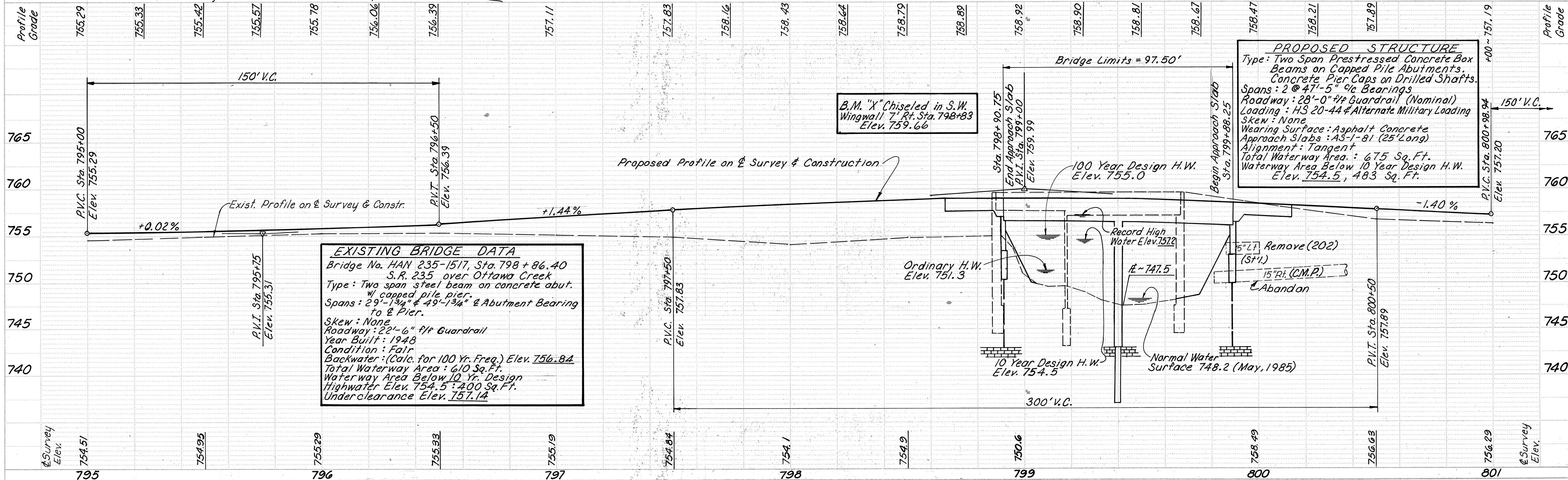
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HANCOCK COUNTY
HAN 235-1501

PLAN	DATE	BY	CHKD
SURVEYED	6/85	DEL	
NOTED	6/85	DEL	
NOTE BOOK	6/85	DEL	
RT. OF WAY CHECKED	6/85	DEL	



PROFILE	DATE	BY	CHKD
SURVEYED	6/85	DEL	
NOTED	6/85	DEL	
NOTE BOOK	6/85	DEL	
STRUCTURE NOTATIONS CHECKED	6/85	DEL	

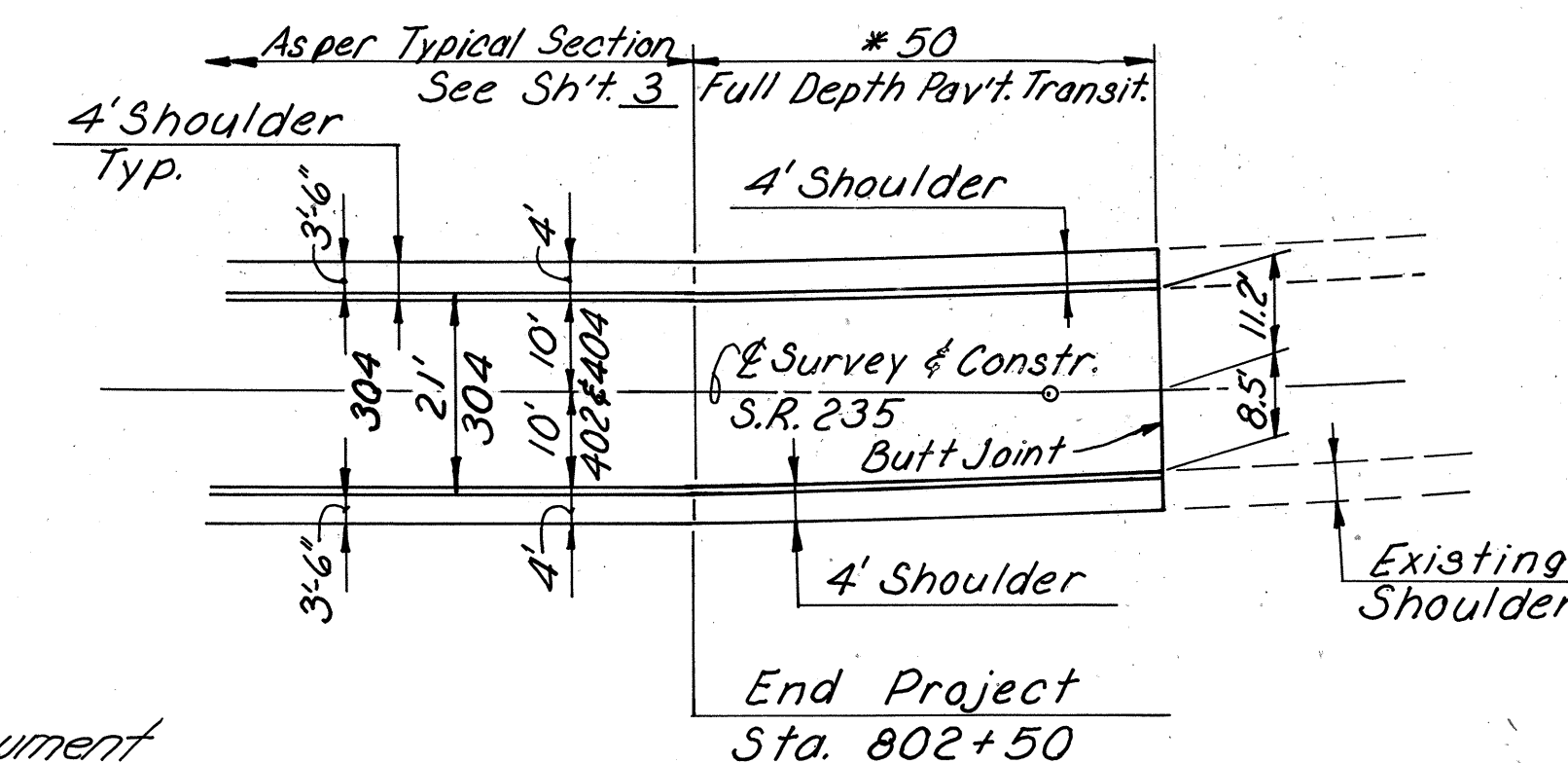


S.R. 235 Sta. 795+00 to Sta. 801+00

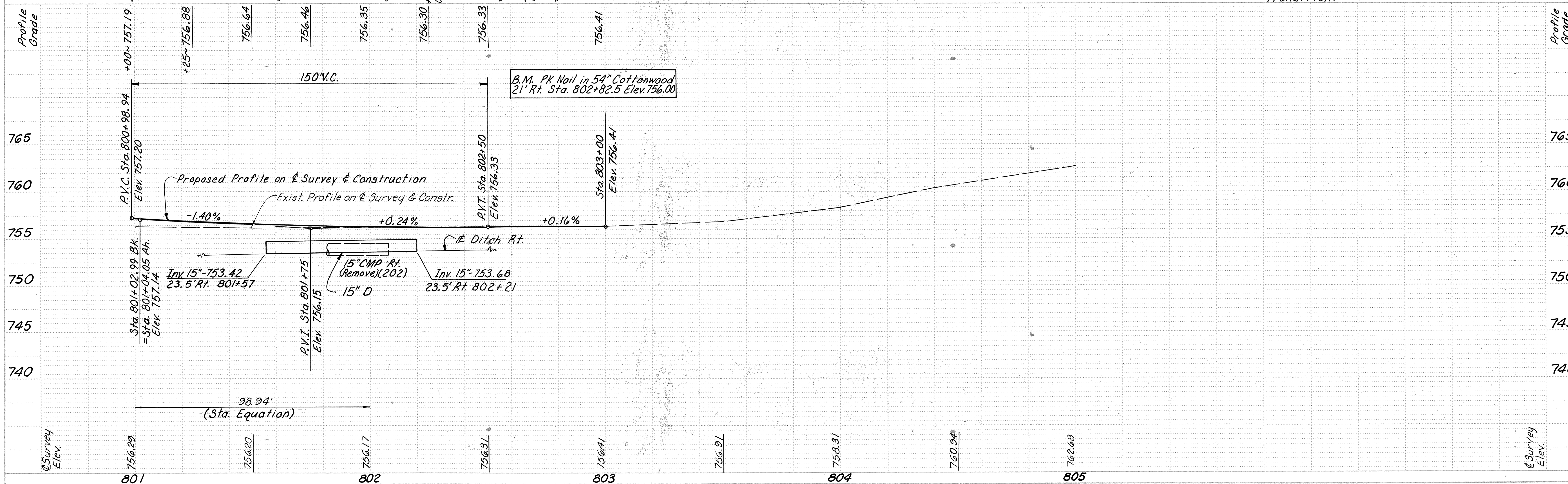


CURVE DATA
ℓ Survey# Constr.
 $\Delta = 32^{\circ}-13' \text{ Lt.}$
 $D_c = 13^{\circ}-00'$
 $R = 440.74'$
 $T = 127.28'$
 $L = 247.82'$
 $E = 18.01'$
 $P.C. = 802+88.31$
 $P.I. = 804+15.59$
 $P.T. = 805+36.13$

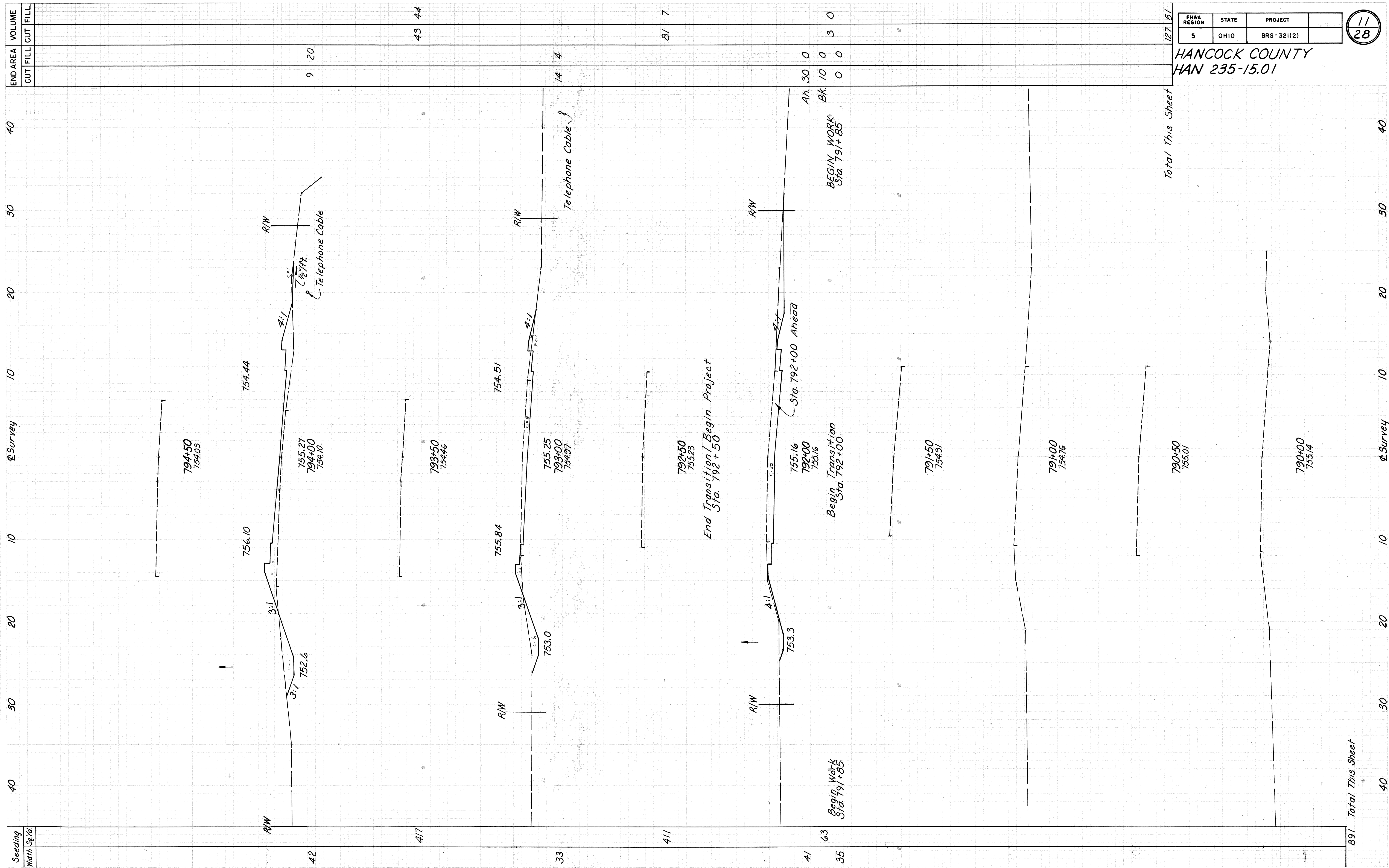
PLAN	SURVEYED	0007	BY	DGL	DATE	6/85
	PLOTTED	SAM				6/85
	NOTE BOOK	RJM				6/85
	NO.	RJM				6/85
		ALIGNMENT CHECKED				
		RT. OF WAY CHECKED				



DATE	BY	
6/85	DGL	
6/85	RAM	
6/85	RAM	
6/85	RAM	



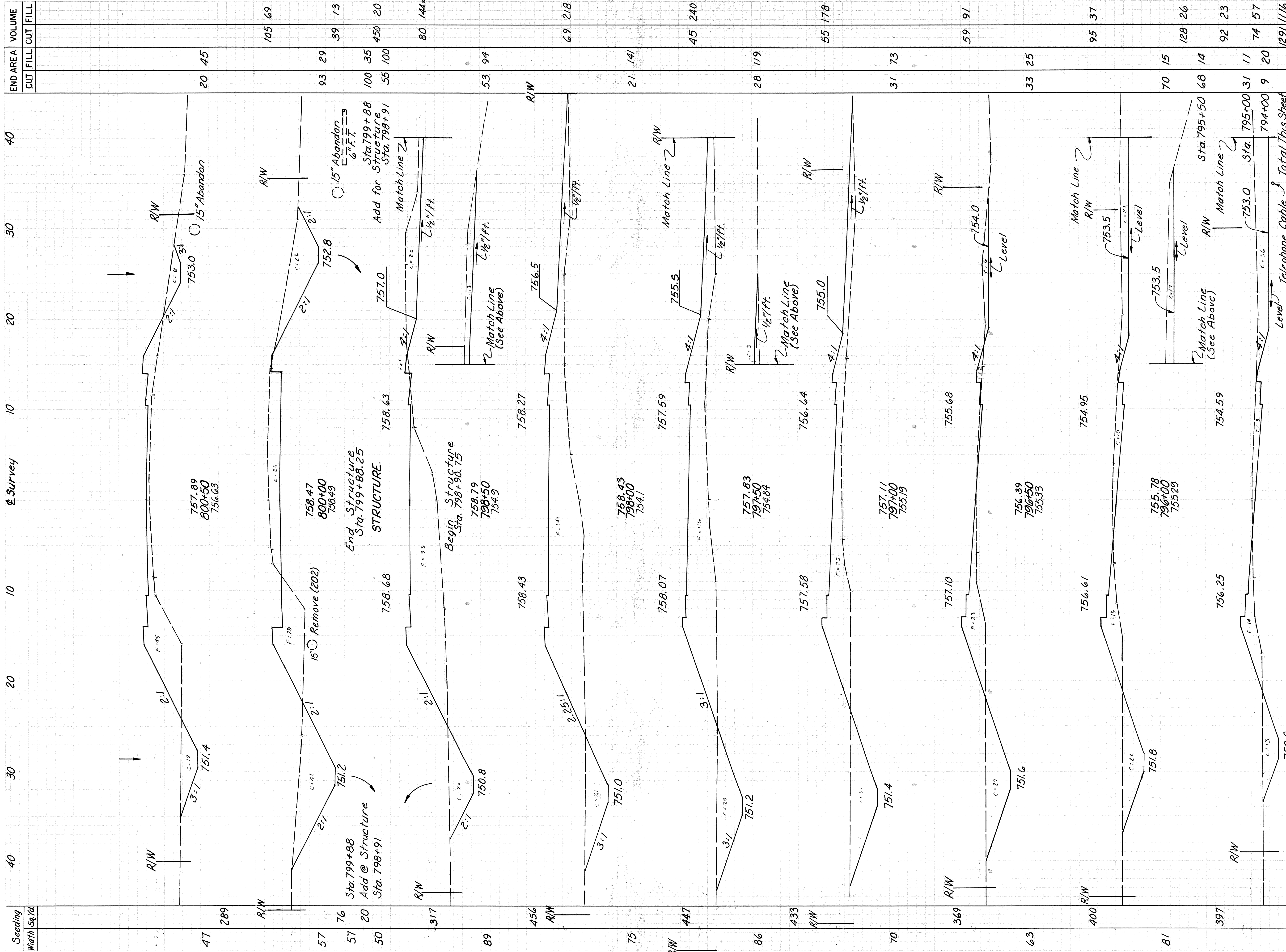
S.R. 235 Sta. 801+00 to Sta. 805+00



S.R. 235 Sta. 790+00 to Sta. 794+50

ORIGINAL SURVEY
SAM R/W 5/85
11/83
11/86

FINAL SURVEY
DATE OF SURVEY
DATE OF REVISION



FHWA REGION		STATE	PROJECT
5		OHIO	BRS-321(2)

END AREA	VOLUME
CUT	FILL
20	45
93	29
100	35
55	100
53	94
69	218
45	240
55	178
59	91
33	25
70	15
68	14
31	11
9	20
129	1116

HANCOCK COUNTY
HAN 235-15.01

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S.R.235 Sta. 795+00 to Sta. 800+50

ORIGINAL	SURVEYED _____	<i>SAM</i>	<i>RJM</i>	<i>5/85</i>	DATE
SURVEY	FLOTTED _____	<i>RNE</i>		<i>10/85</i>	
NOTE BOOK	TEMPLATE _____	<i>MBB</i>		<i>11/85</i>	
()	AREAS _____	<i>LEE</i>		<i>4/86</i>	

FHWA REGION	STATE	PROJECT	
5	OHIO	BRS-321(2)	



614 WORK ZONE PAVEMENT MARKINGS

GENERAL

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND WHEN NECESSARY, REMOVE WORK ZONE RETROREFLECTIVE PAVEMENT MARKINGS ON EXISTING, RECONSTRUCTED, RESURFACED OR TEMPORARY ROADS WITHIN THE WORK LIMITS, IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE MARKINGS SHALL BE EVALUATED BY THE ENGINEER IN ACCORDANCE WITH THE THREE PERFORMANCE PARAMETERS CONTAINED IN SUPPLEMENT 1047. THE MARKINGS SHALL BE REPAIRED OR REPLACED WHEN THE NUMERICAL RATING OF A PARAMETER IS (a) SIX OR LOWER FOR DURABILITY, (b) FOUR OR LOWER FOR VISUAL EFFECTIVENESS AND (c) FOUR OR LOWER FOR NIGHT VISIBILITY. THE CONTRACTOR SHALL REPAIR OR REPLACE UNSATISFACTORY MARKINGS IMMEDIATELY AND AT NO ADDITIONAL COST TO THE STATE.

THE CONTRACTOR SHALL, IN ADVANCE OF ANY SECTION OF ROADWAY LACKING OMUTCD FULL PATTERN STANDARD DIMENSION EDGE LINE OR CENTER LINE MARKINGS, ERECT A "NO EDGE LINES" (OW-167-36) SIGN OR "UNMARKED NO PASSING ZONES" (OW-168-36) SIGN OR BOTH AS MAY BE APPROPRIATE. THESE SIGNS SHALL BE IN PLACE PRIOR TO EXPOSING THE ROADWAY TO TRAFFIC. THESE SIGNS SHALL ALSO BE ERECTED ON EACH ENTRANCE RAMP, AT INTERSECTIONS OF THROUGH ROADS TO WARN ENTERING OR TURNING TRAFFIC OF THE CONDITION AND AT LEAST ONCE EVERY TWO MILES ALONG THE ROADWAY. THESE SIGNS SHALL BE REMOVED WHEN THEY NO LONGER APPLY.

TEMPORARY PAVEMENT MARKING MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE EITHER 621.02 PAINT OR 947.03 TYPE B OR C PREFORMED MATERIAL.

PAINT

PAINTED MARKINGS SHALL BE IN ACCORDANCE WITH 621 EXCEPT THAT (1) PARAGRAPH 621.14 SHALL NOT APPLY, (2) WHERE THE MARKINGS ARE NOT LIABLE TO BE TRACKED, EITHER CONVENTIONAL OR FAST DRY PAINT MAY BE USED FOR 621.02, AND (3) WHEN APPLIED TO NEW ASPHALT PAVEMENT SURFACES OR PLANED ASPHALT PAVEMENT SURFACES, THE SPECIFIED APPLICATION RATE SHALL BE AS FOLLOWS:

WIDTH OF		GALLONS PER MILE OF LINE			
LINE, IN.		6	8	12	24
SOLID LINE	24	36	48	72	144
DASHED LINE	6	9			
DOTTED LINE	8	12			

TYPE B AND TYPE C PREFORMED MATERIAL

PREFORMED MATERIAL SHALL COMPLY WITH 947.03 EXCEPT THAT NO PREFORMED MATERIAL CONTAINING METAL SHALL BE PLACED ON ANY SURFACE UNLESS IT WILL BE REMOVED LATER BY THE CONTRACTOR. TEMPORARY PAVEMENT MARKINGS OF 947.03 PREFORMED MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF 621 OR 847 SURFACE COURSE MARKINGS AT THAT LOCATION. PREFORMED MATERIAL SHALL BE APPLIED IN ACCORDANCE WITH 847 EXCEPT AS MODIFIED HEREIN.

PLACEMENT

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT, INCLUDING RAMPS, PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS CONFLICT WITH THE TRAFFIC PATTERN, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 621.134.

LINE PLACEMENT TOLERANCE FOR FINAL SURFACES SHALL BE IN ACCORDANCE WITH 621.052. ON SURFACES OTHER THAN THE FINAL, THE TOLERANCE PERMITTED SHALL BE TWICE THAT IN 621.052.

LAYOUT AND PREMARKING SHALL BE IN ACCORDANCE WITH 621.051.

TEMPORARY MARKING CLASSES

CLASS I MARKINGS

CLASS I MARKINGS SHALL BE APPLIED TO THE FULL DIMENSIONS AS DEFINED IN 621 WITH THE FOLLOWING ADDITIONS OR EXCEPTIONS:

- 1) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
- 2) STOP LINES SHALL BE 12-INCHES IN WIDTH.
- 3) CROSS WALK LINES SHALL BE 8-INCHES IN WIDTH.

CLASS II MARKINGS

CLASS II MARKINGS (ABBREVIATED) SHALL BE DEFINED AS FOLLOWS:

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 4-INCH WIDE BY A MINIMUM OF 48-INCH LONG DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

GORE MARKINGS SHALL BE TWO CONTINUOUS, WHITE 4-INCH LINES PLACED AT THE THEORETICAL GORE OF AN EXIT RAMP OR DIVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 2.4 GALLONS PER MILE FOR LANE LINE AND CENTER LINE AND 24 GALLONS PER MILE FOR GORE MARKINGS.

CONFLICTING EXISTING MARKINGS

THE CONTRACTOR SHALL, PRIOR TO PLACING TEMPORARY MARKINGS, REMOVE ALL CONFLICTING EXISTING MARKINGS VISIBLE TO THE TRAVELING PUBLIC DURING DAYLIGHT OR NIGHTTIME HOURS IN ACCORDANCE WITH 621.134. THE COST FOR REMOVAL OF CONFLICTING MARKINGS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC UNLESS SPECIFICALLY ITEMIZED.

THE CONTRACTOR SHALL ALSO REMOVE THE PRISMATIC RETRO-REFLECTOR WITHIN ANY RAISED PAVEMENT MARKER (RPM) WHICH IS IN CONFLICT WITH THE TEMPORARY PAVEMENT MARKINGS. WHEN THE TEMPORARY PAVEMENT MARKINGS ARE REMOVED AND THE RPM IS NO LONGER IN CONFLICT, THE CONTRACTOR SHALL THOROUGHLY CLEAN THE RECESSED REFLECTOR ATTACHMENT AREA OF THE CASTING AND INSTALL A NEW PRISMATIC RETRO-REFLECTOR OF THE SAME KIND AND COLOR. THE COST FOR THIS WORK SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS.

INTERIM MARKINGS

WITHIN 21 CALENDAR DAYS AFTER OPENING ANY LENGTH OF PAVEMENT TO TRAFFIC, THE 621 OR 847 PAVEMENT MARKINGS CALLED FOR IN THE PLANS SHALL BE APPLIED. EQUIVALENT 614 CLASS I, PAINT MARKINGS MAY BE USED IN LIEU OF FINAL MARKINGS. IN THIS EVENT, THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIAL NECESSARY TO PLACE AND MAINTAIN 614 CLASS I PAINT MARKINGS AS PART OF THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC

FOR EACH CALENDAR DAY BEYOND 21 DAYS THAT THIS WORK SHALL REMAIN UNCOMPLETED, THE SUM OF \$200 PER CALENDAR DAY WILL BE DEDUCTED FROM ANY MONEY DUE THE CONTRACTOR, NOT AS A PENALTY BUT AS LIQUIDATED DAMAGES.

METHOD OF MEASUREMENT

TEMPORARY PAVEMENT MARKINGS WILL BE MEASURED COMPLETE IN PLACE, BY CLASS AND MATERIAL, IN THE UNITS DESIGNATED. LINE QUANTITIES WILL BE THE LENGTH OF THE COMPLETED STRIPE, INCLUDING GAPS, INTERSECTIONS, AND OTHER SECTIONS OF PAVEMENT NOT NORMALLY MARKED.

TEMPORARY PAVEMENT MARKINGS WILL INCLUDE THE LAYOUT, APPLICATION AND REMOVAL OF THE MARKINGS, WHEN REQUIRED.

Quantities by LLE 4/86
Checked by RNE 4/86

FHWA REGION	STATE	PROJECT	
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HANCOCK COUNTY
HAN 235-15.01

BASIS OF PAYMENT

PAYMENT FOR ACCEPTED QUANTITIES COMPLETE IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR PLACEMENT, MAINTENANCE AND NECESSARY REMOVAL OF THE MARKINGS.

ITEM	UNIT	DESCRIPTION	QUANTITY
614	MILES	TEMPORARY LANE LINES, CLASS _____, _____ *	
614	MILES	TEMPORARY CENTER LINES; CLASS II	0.21
614	LIN. FT.	TEMPORARY CHANNELIZING LINES, CLASS I, _____ *	
614	MILES	TEMPORARY EDGE LINES, CLASS I, _____ *	
614	LIN. FT.	TEMPORARY GORE MARKINGS, CLASS II, _____ *	
614	LIN. FT.	TEMPORARY STOP LINES, CLASS I, _____ *	
614	LIN. FT.	TEMPORARY CROSSWALK LINES, CLASS I, _____ *	
614	EACH	TEMPORARY LANE ARROWS, CLASS I, _____ *	
614	EACH	TEMPORARY RAILROAD SYMBOL MARKINGS, CLASS I, _____ *	
614	EACH	TEMPORARY WORD "ONLY" ON PAVEMENT, 72-INCH, CLASS I, _____ *	
614	LIN. FT.	TEMPORARY TRANSVERSE LINES, CLASS I, _____ *	
614	LIN. FT.	TEMPORARY DOTTED LINES, CLASS I, _____ *	

*TYPE MATERIAL (621 PAINT, 947.03 TYPE B OR 947.03 TYPE C OR LEFT BLANK TO PERMIT ANY OF THE THREE)

fh4

621 EDGE LINES ON NEW ASPHALT PAVEMENTS

EDGE LINES SHALL BE IN ACCORDANCE WITH 621 EXCEPT THAT (1) ON EVERY ROADWAY AND RAMP, EDGE LINES SHALL BE IN PLACE PRIOR TO EXPOSING IT TO TRAFFIC, (2) WHERE THE EDGE LINES ARE NOT LIABLE TO BE TRACKED, EITHER CONVENTIONAL OR FAST DRY PAINT MAY BE USED FOR 621.02, AND (3) WHEN APPLIED TO NEW ASPHALT PAVEMENT THE SPECIFIED APPLICATION RATE SHALL BE 24 GALLONS PER MILE.

614 WORK ZONE MARKING SIGNS

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND SUBSEQUENTLY REMOVE WORK ZONE MARKING SIGNS (OW-167 AND OW-168) WITHIN THE WORK LIMITS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.

THE CONTRACTOR MAY USE SIGNS AND SUPPORTS IN USED BUT GOOD CONDITION PROVIDED THE SIGNS MEET CURRENT DEPARTMENT SPECIFICATIONS. SIGN FACES SHALL BE REFLECTORIZED WITH TYPE G SHEETING COMPLYING WITH THE REQUIREMENTS OF 730.19. WORK ZONE MARKING SIGNS SHALL BE PROVIDED WITH SUITABLE YIELDING SUPPORTS OF SUFFICIENT STRENGTH AND STABILITY.

WORK ZONE MARKING SIGNS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGN AND NECESSARY SUPPORTS. ALL OTHER WORK ZONE SIGNS SHALL BE INCLUDED IN 614 MAINTAINING TRAFFIC UNLESS SEPARATELY ITEMIZED.

PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE, IN PLACE WILL BE MADE AT THE CONTRACT UNIT PRICE. PAYMENT SHALL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, INCIDENTALS AND EQUIPMENT FOR PLACEMENT, MAINTENANCE AND REMOVAL OF THE SIGNS.

ITEM	UNIT	DESCRIPTION
614	EACH	WORK ZONE MARKING SIGNS

A QUANTITY OF 4 EACH WORK ZONE MARKING SIGNS (OW-167 AND 2 EACH "NO EDGE LINES" OW-167 AND 2 EACH "UNMARKED NO PASSING ZONES" OW-168) ARE CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

B.M. R.R. Spike in 48" Sycamore, 108' Rt. of Sta. 794+26, Elev. 754.62

MICROFILMED NOV 18 1987

B.M. "X" Chiseled in SW. Wing Wall 7' Rt. Sta. 798+83 Elev. 759.66

B.M. Pk. Nail in 54" Cottonwood 21' Rt. Sta. 802+82.5 Elev. 756.00

FHWA REGION	STATE	PROJECT
5	OHIO	BR-321(2)

15
28

HANCOCK COUNTY HAN 235-15.01

EXISTING BRIDGE DATA

Bridge No. HAN 235-1517, Sta. 798+86.40
S.R. 235 over Ottawa Creek
TYPE: Two span steel beam on concrete abutments and capped pile pier.
SPANS: 29'-13/4" & 49'-13/4" Abutment Bearing to E. Pier
SKEW: None
ROADWAY: 22'-6" Face/Face of Guardrail
YEAR BUILT: 1948

CONDITION: Fair

BACKWATER (Calculated for 100yr. Freq.): Elev. 756.84
TOTAL WATERWAY AREA: 610 Sq. Ft.
WATERWAY AREA BELOW 10 YEAR DESIGN HIGHWATER ELEV. 754.5: 400 Sq. Ft.
UNDERCLEARANCE ELEV. 751.14

FIRST BRIDGE UPSTREAM

Blanchard Twp. Rd. 84 over Ottawa Creek
(0.5 miles upstream)
Single span steel truss on stone abutments.
59' face/face of abutments. Skew: None
Total Waterway Area = 520 Sq. Ft.

FIRST BRIDGE DOWNSTREAM

Hancock County Rd. 86 over Ottawa Creek
(0.9 miles downstream.)
Three span steel beam on concrete abutments and concrete piers.
875' face/face of abutments. Skew: None
Total Waterway Area = 1050 Sq. Ft.

TRAFFIC DATA

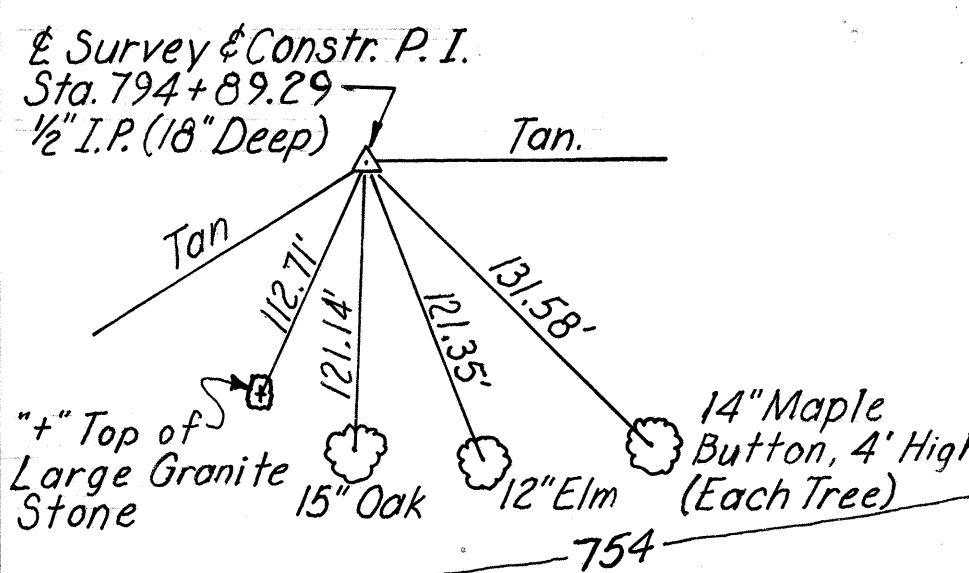
Current ADT (1985) = 374
Design ADT (2005) = 582
D.H.V. = 74

HYDRAULIC DATA

DRAINAGE AREA = 61.4 Sq. Mi.		PROPOSED BRIDGE				
FLOOD FREQUENCY (YEARS)	DISCHARGE C.F.S.	WATER SURFACE ELEV.	TOTAL WATERWAY OPENING 675 S.F.	VELOCITY F.P.S.	BACKWATER ELEV.	WATER AREA S.F.
10 Design	2620	754.5	5.4	755.07	483	
50	3320	754.9	6.4	755.92	519	
100	3620	755.0	6.9	756.07	528	

PROPOSED STRUCTURE

TYPE: Two Span Prestressed Concrete Box Beams on Capped Pile Abutments and Concrete Pier Caps on Drilled Shafts.
SPANS: 2 @ 47'-5" 1/2 Bearings
ROADWAY: 28'-0" ft Guardrail (Nominal)
LOADING: HS 20-44 & Alternate Military Loading
SKEW: None
WEARING SURFACE: Asphalt Concrete
APPROACH SLABS: AS-1-81 (25'-0" Long)
ALIGNMENT: Tangent



EARTHWORK limits shown are approximate. Actual slopes shall conform to plan cross sections.

Rock Channel Protection Type D, 1'-6" Thick Without Filter (Typical)

End Approach Slab Sta. 798+90.75

No Channel Work Below Elev. 748.7

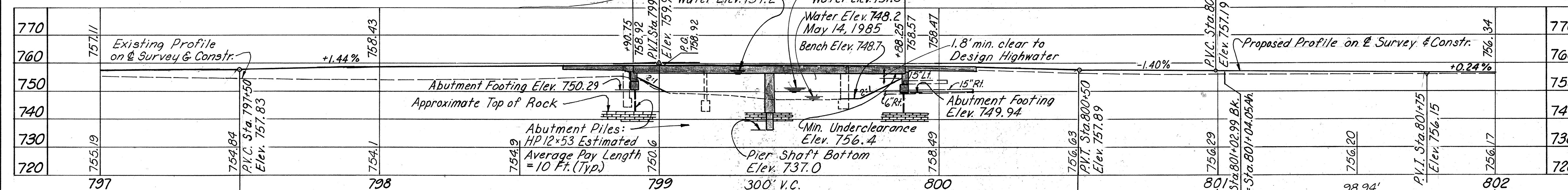
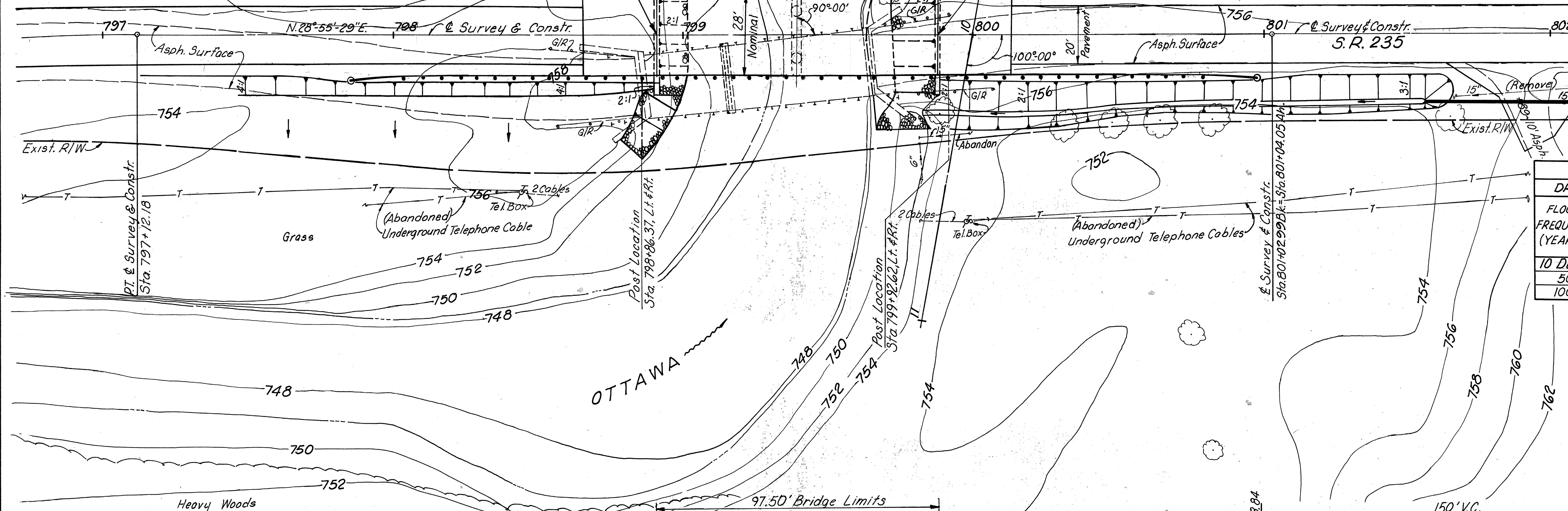
Begin Approach Slab Sta. 799+88.25

Type 5 Guardrail (Typ.)

Type A Anchor (Typ.)

Exist. R/W

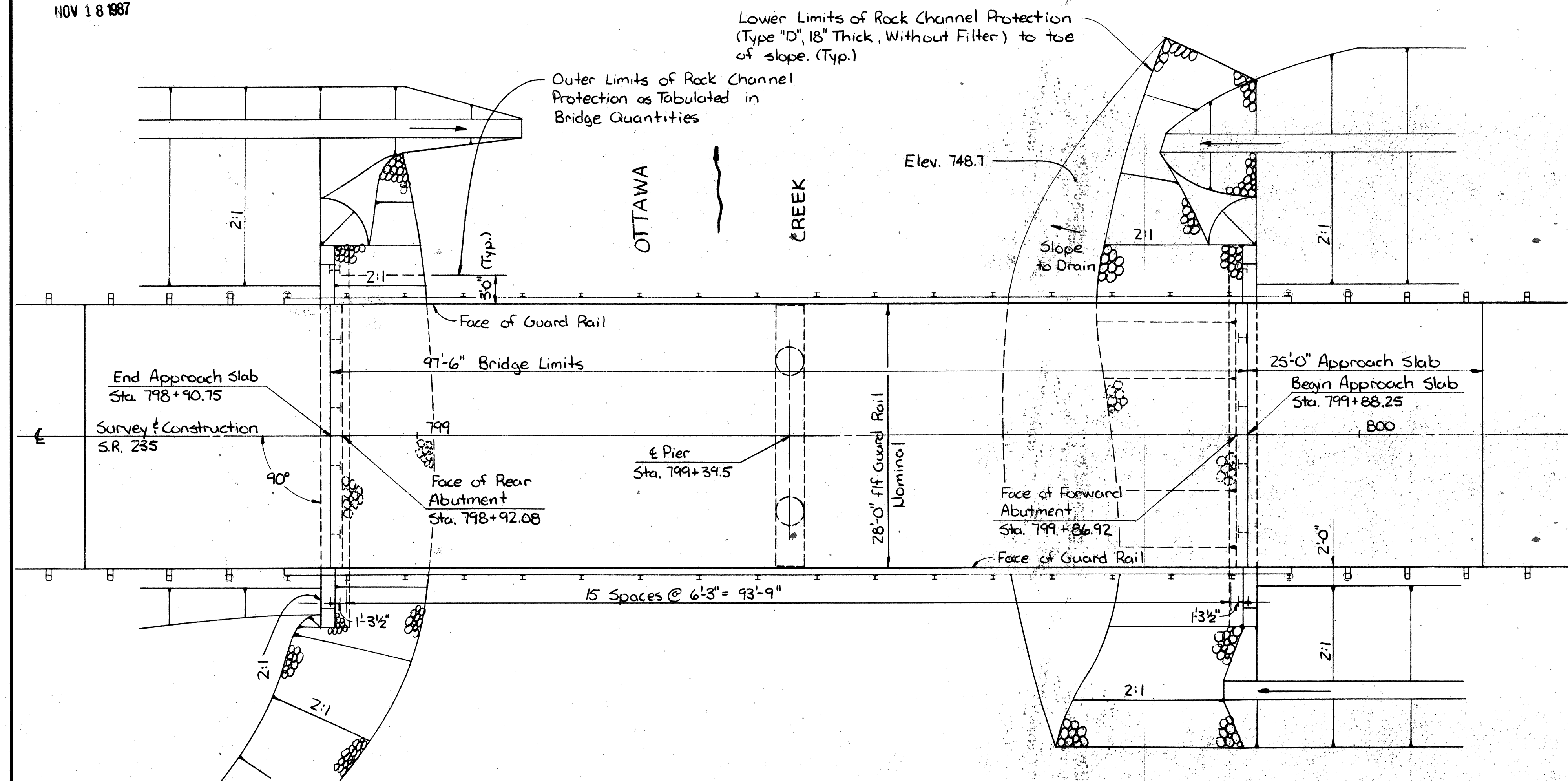
Exist. R/W



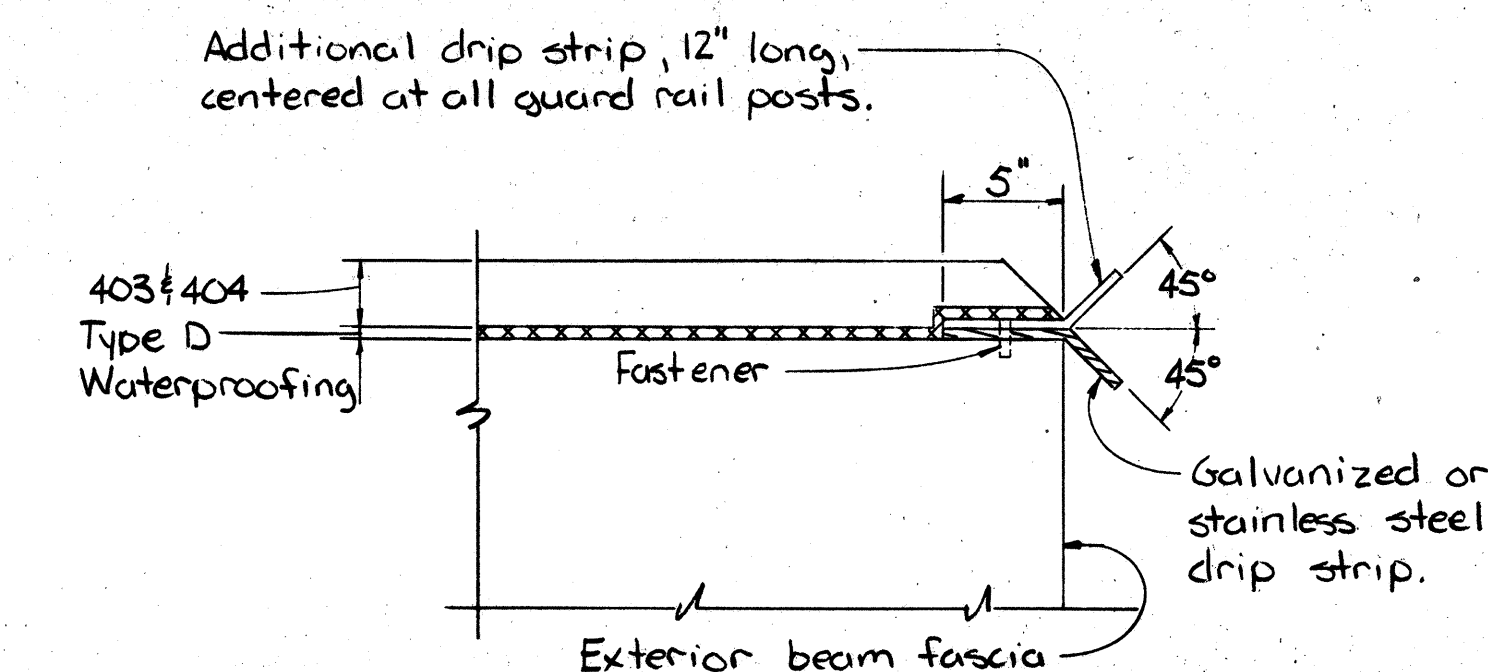
DANSARD • GROHNKE • LONG, LIMITED
CONSULTING ENGINEERS
TOLEDO, OHIO

SITE PLAN
HANCOCK COUNTY BRIDGE No. HAN 235-1513
STATE ROUTE 235 OVER
OTTAWA CREEK
HANCOCK COUNTY Sta. 798+90.75 to Sta. 799+88.25

PRESENT	TOPOGRAPHY	PROPOSED	WORK
SURVEYED	DRAWN	DESIGNED	DRAWN
D-G-L, Ltd.	MB/CLP	RJM	SAM
			TWD
			BD

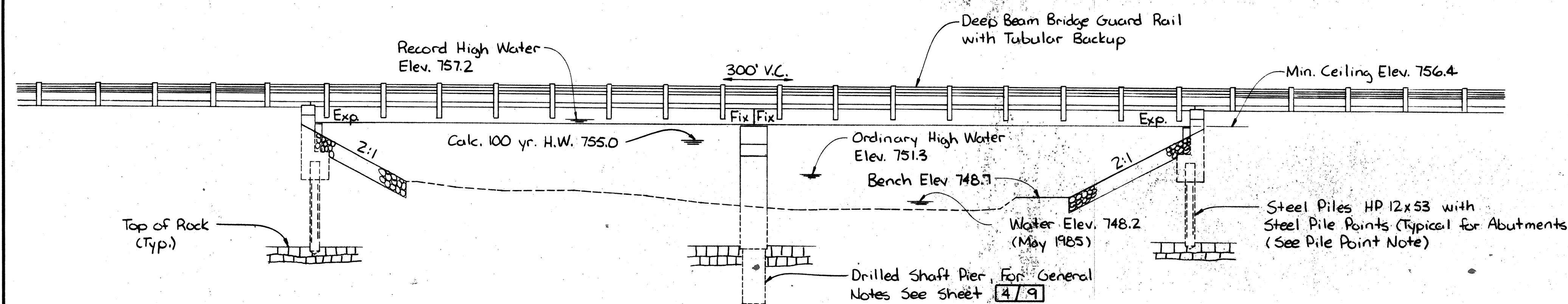


PLAN



DRIP STRIP: Prior to applying deck waterproofing, a bent drip strip shall be installed along the edges of the deck as shown. The strips shall be fastened at 1/6" $\pm$ maximum with 1/4" x 5/32" x 1/4" flat head drive pin and washer, (Length x Shank Dia. x Head Dia.) or #10 galvanized screws and expansion Anchors, subject to the approval of the Engineer. The strips shall be placed the full length of the deck, ending at the face of the Abutment wingwall. Where splices are required a 3"(Min.) lap shall be used with a fastener through the lap. Steel for galvanized strips shall be 8"x0.105" and shall meet the requirements of ASTM A568. Galvanizing shall be in accordance with 711.02. Stainless Steel shall be 20 Gauge ASTM A167, Type 304, Mill Finish. Payment shall be at the contract price bid for item Special, Sq. Ft., Steel Drip Strip, which shall include all materials, labor, tools and incidentals necessary to complete this item.

DRIP STRIP DETAIL



ELEVATION

GENERAL

NOTES

REFERENCE shall be made to Standard Drawings: AS-1-81, "Reinforced Concrete Approach Slabs", dated 11-27-81; PSBD-1-81, "Prestressed Concrete Box Beam Bridge Details", dated 9-18-81; DBR-2-73, "Deep Beam Bridge Guard Rail with Tubular Backup", dated 4-10-73 and to: Supplemental Specification 836 dated 11-12-85.

DESIGN SPECIFICATIONS: This structure conforms to "Standard Specifications for Highway Bridges" adopted by the American Association of State Highway and Transportation Officials, 1983; Including 1984 interim specifications and the Ohio "Supplement" to these specifications.

SPAN: Design span length is the distance shown between $\pm$ bearings.

DESIGN DATA

Design Loading: HS 20-44 and the Alternate Military Loading
Concrete Class C, Unit Stress = 1333 p.s.i. (substructure)
Reinforcing Steel, ASTM A615, A616 or A617 Grade 60
Unit Stress 24,000 p.s.i.
Concrete for Prestressed Concrete Beams - Unit Stress 2200 p.s.i. compression
444 p.s.i. tension
Prestressing Strands - ASTM A416, $f_s = 270,000$ p.s.i.
Initial Stress = 0.70 f_s
Deck Protection Method: Type D Waterproofing and Asphalt Concrete Overlay

REMOVAL OF EXISTING STRUCTURE: The existing structure shall be removed to accommodate construction of the new structure.

PILES shall be driven to refusal on bedrock. Refusal shall be considered as attained by penetrating soft bedrock with a minimum resistance of 20 blows per inch, or refusal shall be considered as attained after the pile has contacted hard bedrock and the pile has then received at least 20 blows. The design load is 38 tons per pile for the abutment piles.

PILE POINTS, AS PER PLAN

Steel pile points shall be used to protect the tips of the proposed steel "H" piling. The steel points shall be furnished by Associated Pile and Fitting Corporation, 262 Rutherford Boulevard, Clifton, New Jersey 07014; International Construction Equipment, Inc., 301 Warehouse Drive, Matthews, North Carolina 28015; Dougherty Foundation Products, Inc., P.O. Box 688, Franklin Lakes, New Jersey 07417; Versa Steel Inc., 3601 N.W. Yeon Ave., P.O. Box 10559, Portland, Oregon 97210 or by a manufacturer that can furnish a steel point that is acceptable to the Director. The pile points shall satisfy or exceed the requirements of ASTM A27 (Grade 45/30) or ASTM A148 (Grade 90/60).

DANSARD • GROHNKE • LONG, LIMITED CONSULTING ENGINEERS TOLEDO, OHIO						
GENERAL PLAN & ELEVATION AND GENERAL NOTES						
BRIDGE NO. HAN 235-1513 over OTTAWA CREEK HANCOCK COUNTY Sta. 798+90.75 to Sta. 799+88.25						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
SAM	SAM	Rep.	TWD	BD	1-24-86	

HANCOCK COUNTY
HAN-235-15.01

REINFORCING STEEL LIST BRIDGE No. HAN 235 -1513																	
Mark	No.	Length	Weight	Shp.	Rear	Fwd.	Bending Diagrams				Mark	No.	Length	Weight	Shp.		
ABUTMENTS															PIER		
A801	16	21'-10"	933	S	8	8					A502	2	27'-8"	238	S		
A802	40	4'-10"	516	B	20	20					A504	2	27'-8"	238	S		
											A507	5	30'-3"	651	B		
											A508						
											A509						
A601	6	27'-11"	252	S	3	3											
															P801	2	17'-6"
											P802	4	27'-11"	298	B		
A501	24	21'-2"	530	S	12	12											
A502	116	6'-7"	797	B	58	58									P501	2	27'-8"
A503	4	27'-11"	116	S	2	2					P502	2	6'-4"	13	B		
A504	40	11'-2"	466	B	20	20					P503	4	6'-11"	317	B		
A505	16	7'-8"	128	S	16	16					P504	8	6'-2"	52	B		
A506	8	4'-2"	35	S	4	4											
A507	20	14'-5"	301	B	10	10											
A508	8	12'-5"	104	B	4	4											
A509	40	4'-2"	174	B	20	20											
A510	8	6'-2"	51	S	4	4											
A511	4	27'-8"	115	S	2	2											
A401	24	8'-9"	140	B	12	12											
SUPERSTRUCTURE																	
S601	1	27'-8"	42	S													
S401	4	26'-11"	72	S													
S402	91	3'-6"	213	B													

SPIRAL REINFORCEMENT DATA				
Mark	SP401	SP402		
No.	2	2		
Core Dia.	26"	32"		
Height	6'-0"	10'-5 1/2"		
Pitch	4 1/2"	4 1/2"		
Weight	199	407		

Payment included with drilled shafts

REINFORCING STEEL SAMPLES.
Refer to CMS Section 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 structures by the additional steel spliced in accordance with 509.08.

ESTIMATED QUANTITIES BRIDGE No. HAN 235-1513										
Item	Total	Unit	Description	Abutments		Pier	Super-structure	General		
				Rear	Forw'd					
202	Lump		Structure removed					Lump		
403	17	Cu. Yd.	Asphalt concrete (AC-20)				17			
404	11	Cu. Yd.	Asphalt concrete (AC-20)				11			
503	Lump		Cofferdams, cribs and sheeting					Lump		
503	88	Cu. Yd.	Unclassified excavation	44	44					
505	Lump		Pile driving equipment mobilization					Lump		
507	120	Lin. Ft.	Steel piles, HP 12 x 53	60	60					
507	12	Each	Steel points, as per plan	6	6					
509	6706	Lb.	Reinforcing steel, grade 60	2329	2329	1721	327			
511	3	Cu. Yd.	Class S concrete, superstructure, high early strength				3			
511	52	Cu. Yd.	Class C concrete, abutments	26	26					
511	10	Cu. Yd.	Class C concrete, pier cap			10				
512	319	Sq. Yd.	Type D waterproofing				319			
515	14	Each	Prestressed concrete bridge members, B21-48 (See proposal note)				14			
516	56	Each	5" x 10" x 1" Laminated elastomeric bearings 50 Durometer	14	14	28				
516	125	Sq. Ft.	1" Preformed expansion joint filler	53	53	19				
516	58	Lin. Ft.	Joint sealer	29	29					
516	10	Sq. Ft.	1/8" preformed bearing pads, 711.21				10			
517	212.50	Lin. Ft.	Railing (deep beam rail with tubular backup and type 2 steel post and bolts)					212.50		
518	22	Cu. Yd.	Porous backfill	11	11					
601	47	Cu. Yd.	Rock channel protection, Type "D", 18" thick, without filter	19	28					
Special	21	Lin. Ft.	Drilled shafts above the bedrock socket			21				
Special	12	Lin. Ft.	Drilled shafts in bedrock			12				
Special	150	Sq. Ft.	Steel drip strip				150			
Special	54	Sq. Yd.	Sealing of concrete surfaces (See Proposal Note)				54			

ESTIMATED QUANTITIES BY: RJM Date: 1-7-86
CHECKED BY: SAM Date: 1-13-86

DANSARD • GROHNKE • LONG, LIMITED CONSULTING ENGINEERS TOLEDO, OHIO						
ESTIMATED QUANTITIES AND REINFORCING STEEL LIST BRIDGE No. HAN 235-1513 over OTTAWA CREEK HANCOCK COUNTY Sta 798+90.75 to Sta 799+88.25						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RJM	RJM	Rep.	SAM	BD	1-24-86	

NOV 18 1987

ITEM SPECIAL - DRILLED SHAFTS

DESCRIPTION

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING DRILLED SHAFTS OF THE TYPE AND SIZE CALLED FOR BY THE PLANS. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, AND APPURTENANCES REQUIRED TO COMPLETE THE WORK AS SPECIFIED. THE LENGTH(S) OF THE DRILLED SHAFTS SHOWN IN THESE PLANS HAS BEEN ESTIMATED FROM THE AVAILABLE SUBSURFACE INFORMATION. THE CONTRACTOR IS EXPECTED TO FURNISH THE PROPOSED DRILLED SHAFTS AS PER THESE PLAN REQUIREMENTS WITH THE UNDERSTANDING THAT THE ESTIMATED LENGTH SHOWN ON THE PLANS MAY BE DIFFERENT FROM THE ACTUAL LENGTH DETERMINED TO BE NECESSARY AT THE TIME OF CONSTRUCTING THE DRILLED SHAFTS.

THE LIMITS OF EACH DRILLED SHAFT SHALL BE DEFINED AT THE TOP BY THE PLAN ELEVATION AND AT THE BOTTOM BY THE ELEVATION OF THE BOTTOM OF THE BEDROCK SOCKET.

A CASING WILL BE NECESSARY FOR EACH PIER DRILLED SHAFT AND THE CASINGS SHALL BE LEFT IN PLACE.

CONTRACTOR QUALIFICATION

THE CONTRACTOR SHALL SUBMIT INFORMATION TO DOCUMENT THAT HIS PERSONNEL ARE EXPERIENCED IN THE CONSTRUCTION OF DRILLED SHAFTS OF THE TYPE AND SIZE DESCRIBED BY THE PLANS. THIS INFORMATION SHALL BE SUBMITTED AT THE PRECONSTRUCTION CONFERENCE.

DEVIATION FROM PLAN

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS INVOLVED WHEN MAKING CORRECTIONS TO HIS UNAUTHORIZED DEVIATIONS FROM THE PLANS. THE DIRECTOR SHALL DECIDE WHEN CORRECTIONS ARE NECESSARY.

IF A DRILLED SHAFT(S) IS CONSTRUCTED OUTSIDE OF THE PLAN TOLERANCES, THE CONTRACTOR MAY BE SUBJECT TO REDUCED PAYMENT AS DETERMINED BY THE DIRECTOR.

CASING

THE CASINGS SHALL BE MADE OF STEEL AND SHALL BE WATER TIGHT AND SHALL BE OF AMPLE STRENGTH TO WITHSTAND HANDLING STRESSES AND EXTERNAL SUBSURFACE PRESSURES. THE CASINGS SHALL BE SEATED INTO THE BEDROCK, THUS ATTEMPTING TO SEAL OFF INCOMING WATER, AND THE CASING LENGTH SHALL BE AS NECESSARY TO CONSTRUCT EACH DRILLED SHAFT.

THE DIAMETER OF THE FURNISHED CASING(S) SHALL BE LARGE ENOUGH TO ALLOW THE CONSTRUCTION OF A BEDROCK SOCKET WHICH HAS A DIAMETER THAT IS EQUAL TO OR GREATER THAN THE PLAN DIAMETER.

EXCAVATION

EXCAVATION FOR THE DRILLED SHAFTS SHALL BE PERFORMED BY ROTARY DRILLING METHODS USING PRACTICAL METHODS AND MACHINERY ACCEPTABLE TO THE ENGINEER. WHEN OBJECTS SUCH AS LARGE BOULDERS ARE ENCOUNTERED, THEY SHALL BE REMOVED. BLASTING METHODS MAY BE USED ONLY AFTER RECEIVING PERMISSION FROM THE ENGINEER AND WHEN USED SHALL BE SO CONDUCTED AS TO AVOID DISTURBANCE OF THE BEDROCK FORMATION BELOW AND OUTSIDE THE LIMITS OF THE PROPOSED DRILLED SHAFT EXCAVATIONS. THE CONTRACTOR SHALL CARRY LIABILITY INSURANCE AND SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS GOVERNING THE USE OF EXPLOSIVES. THE DRILLED SHAFTS SHALL PENETRATE INTO SOLID BEDROCK TO A DEPTH THAT PROVIDES A BEDROCK SOCKET LENGTH THAT IS NOT LESS THAN THE BEDROCK SOCKET LENGTH SHOWN IN THE PLANS. WHEN A CASING IS USED, THE BEDROCK SOCKET SHALL BE MEASURED FROM THE BOTTOM OF THE CASING TO THE BOTTOM OF THE DRILLED BEDROCK EXCAVATION. WHEN THE ENGINEER IS ASSURED THAT A PORTION OF THE METAL CASING IS EMBEDDED IN SOLID BEDROCK, THE EMBEDDED DISTANCE MAY BE INCLUDED AS PART OF THE BEDROCK SOCKET UPON THE DIRECTOR'S CONCURRENCE.

DEWATERING

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING ANY INCOMING WATER TO THE EXTENT THAT THE SHAFT EXCAVATION IS MAINTAINED DRY ENOUGH FOR PERFORMANCE OF THE REQUIRED INSPECTION OPERATION. THE PREFERRED METHOD OF CONSTRUCTION IS TO PLACE THE CONCRETE IN A CLEAN DRY EXCAVATION. THE CONTRACTOR IS EXPECTED TO MAKE A REASONABLE ATTEMPT TO SEAL WATER OUT OF THE DRILLED SHAFT EXCAVATION.

BOTTOM CLEANOUT

THE BOTTOM OF THE DRILLED SHAFT EXCAVATION SHALL BE AS CLEAN AS PRACTICABLE (NO MORE THAN ONE QUARTER INCH OF LOOSE MATERIAL ON THE BOTTOM) PRIOR TO CONCRETE PLACEMENT. DRILLING SPOILS THAT ADHERE TO THE VERTICAL SIDES OF THE BEDROCK SOCKET ARE TO BE REMOVED.

APPROVAL BEFORE CONCRETE PLACEMENT

THE CONTRACTOR SHALL SUBMIT TO THE PROJECT ENGINEER A WRITTEN REPORT OF STEPS AND PROCEDURES THAT HE PROPOSES TO FOLLOW WHEN PLACING AND MONITORING THE CONCRETE PLACEMENT. CONCRETE SHALL NOT BE PLACED IN ANY DRILLED SHAFT EXCAVATION WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE DRILLED SHAFT EXCAVATION SHALL BE INSPECTED IMMEDIATELY BEFORE THE CONCRETE IS PLACED. A LIGHT POWERFUL ENOUGH TO THOROUGHLY INSPECT THE SIDES, BOTTOM AND REINFORCING STEEL CAGE OF THE DRILLED SHAFT IS REQUIRED. NO CONCRETE SHALL BE PLACED DURING INCLEMENT WEATHER CONDITIONS WHICH PROHIBIT A THOROUGH INSPECTION.

CONCRETE PLACEMENT

THE CONCRETE FOR THE DRILLED SHAFTS SHALL BE PLACED AS PER 511 EXCEPT AS MODIFIED BY THE PLANS. THE CONCRETE PLACEMENT OPERATION SHOULD BE CONTINUOUS FROM START TO FINISH. THE CONCRETE FOR THE BEDROCK SOCKET SHALL BE PLACED AGAINST THE INSITU BEDROCK AND SHALL BE PLACED PROMPTLY AFTER THE FINAL INSPECTION OF THE SHAFT. IF PRACTICABLE, THE CONCRETE SHALL BE PLACED IN A CLEAN DRY EXCAVATION. CARE SHALL BE TAKEN TO ENSURE THAT CONCRETE IS NOT BEING PLACED IN MOVING WATER. THE CONCRETE CAN BE PLACED IN A DRY DRILLED SHAFT EXCAVATION BY THE FREE FALL METHOD PROVIDED THE CONCRETE FALLS TO ITS FINAL POSITION THROUGH AIR WITHOUT STRIKING THE SIDES OF THE HOLE, THE REINFORCING STEEL CAGE, OR ANY OTHER OBSTRUCTION. THE FREE FALL METHOD ALLOWS THE CONCRETE TO BE DROPPED FROM THE TOP THROUGH A CENTERING CHUTE TO THE CONCRETE'S FINAL POSITION.

IF THE ENGINEER DETERMINES THAT DEWATERING IS NOT PRACTICABLE, THE CONTRACTOR WILL BE GIVEN PERMISSION TO PLACE THE CONCRETE UNDER WATER. TO PLACE CONCRETE UNDER WATER, THE DRILLED SHAFT EXCAVATION SHALL BE FILLED WITH WATER TO SUCH A DEPTH THAT ALL WATER MOTION HAS CEASED. THE CONCRETE SHALL THEN BE PLACED BY MEANS OF A CONCRETE PUMP. THE CONCRETE PUMP PIPE SHALL HAVE A DIAMETER THAT IS NOT LESS THAN 4 INCHES. THE CONCRETE PUMP EQUIPMENT SHALL BE SO ARRANGED THAT NO VIBRATIONS RESULT WHICH MIGHT DAMAGE FRESHLY PLACED CONCRETE. PIPES CARRYING CONCRETE FROM THE PUMP TO THE SHAFT SHOULD BE LAID OUT WITH A MINIMUM NUMBER OF BENDS. THE PIPE USED TO CONVEY THE CONCRETE TO THE BOTTOM OF THE DRILLED SHAFT EXCAVATION SHALL BE ANCHORED TO THE STEEL CASING TO PREVENT THE PIPE FROM UNDULATING DURING THE INITIAL PLACEMENT OF THE CONCRETE.

THE PUMPING EQUIPMENT SHALL BE SUITABLE IN KIND AND ADEQUATE IN CAPACITY FOR THE WORK REQUIRED. THE USE OF ALUMINUM PIPE AS A CONVEYANCE FOR THE CONCRETE WILL NOT BE PERMITTED. AN ADEQUATE QUANTITY OF GROUT MORTAR OR CONCRETE WITH COARSE AGGREGATE OMITTED SHALL BE PUMPED THROUGH THE EQUIPMENT AHEAD OF THE SPECIFICATION CONCRETE TO PROVIDE LUBRICATION TO THE PUMPING SYSTEM. THE CONCRETE USED FOR LUBRICATION SHALL NOT BE PLACED IN THE SHAFT. THE LUBRICATION PROCESS WILL NOT BE REPEATED AS LONG AS THE PUMPING OPERATIONS ARE CONTINUOUS. THE OPERATION OF THE PUMP SHALL BE SUCH THAT A CONTINUOUS STREAM OF CONCRETE WITHOUT AIR POCKETS IS PRODUCED. IN ORDER TO PREVENT THE CONTAMINATION OF THE CONCRETE PLACED INITIALLY AT THE BOTTOM OF THE SHAFT, THE OUTLET END OF THE PUMPING PIPE SHALL BE SEALED WITH A DIAPHRAGM OR PLUG THAT IS FLUSHED OUT WHEN THE HYDROSTATIC PRESSURE FROM THE COLUMN OF CONCRETE EXCEEDS THAT OF THE WATER IN THE SHAFT. THE INITIAL RATE OF CONCRETE PLACEMENT MUST BE CAREFULLY CONTROLLED SO AS NOT TO LIFT OR DISPLACE THE CAGE OF REINFORCING STEEL. THE CONVEYING SYSTEM SHALL BE WATER TIGHT AND THE OUTLET END SHALL ALWAYS REMAIN WELL BELOW THE TOP OF THE FRESHLY PLACED CONCRETE. THE PREFERRED CONCRETE PLACEMENT PROCEDURE IS TO MAINTAIN THE OUTLET END OF THE PUMPING SYSTEM AT APPROXIMATELY 2 FEET BELOW THE TOP OF THE FRESH CONCRETE. WHEN THE CONCRETE REACHES THE TOP OF THE DRILLED SHAFT COLUMN ALL LAITANCE SHALL BE REMOVED.

ALTERNATE CONSTRUCTION METHODS

THE CONTRACTOR MAY PROPOSE ALTERNATE CONSTRUCTION METHODS WHICH WILL BE APPROVED OR REJECTED BY THE DIRECTOR.

TOLERANCES

THE CONTRACTOR SHALL LOCATE AND CONSTRUCT THE TOP CENTER OF THE PIER DRILLED SHAFTS WITHIN A ONE-INCH RADIUS OF THE POSITION INDICATED BY THE PLANS. THE PIER SHAFTS ARE TO BE INSTALLED VERTICALLY AND MUST BE WITHIN 1.0 PERCENT OF PLUMB FOR THE TOTAL LENGTH OF THE DRILLED SHAFT.

CONCRETE

CONCRETE FOR ALL DRILLED SHAFTS SHALL BE CLASS S CONCRETE AND SHALL BE IN ACCORDANCE WITH 511, EXCEPT AS MODIFIED AND SUPPLEMENTED HEREIN. THE REQUIRED SLUMP IS SIX (6) INCHES, PLUS OR MINUS ONE-HALF INCH. THE MAXIMUM WATER TO CEMENT RATIO SHALL BE 0.50. IF CONCRETE IS PLACED UNDER WATER, THE REQUIREMENT OF ADDING 10 PERCENT MORE CEMENT TO THE CONCRETE MIX SHALL BE WAIVED. THE TOP 5 FEET OF CONCRETE IN THE DRILLED SHAFTS ARE REQUIRED TO BE VIBRATED. ONLY A MINIMAL VIBRATORY EFFORT IS NECESSARY. SPECIAL CARE SHALL BE TAKEN NOT TO OVER-VIBRATE THE DRILLED SHAFT CONCRETE.

REINFORCING STEEL

REINFORCING STEEL SHALL MEET THE REQUIREMENTS OF 509. THE REINFORCING STEEL SHALL BE GRADE 60. THE SPIRAL REINFORCING STEEL MAY BE PLAIN BARS ASTM A82 OR A615. THE REINFORCING STEEL SHALL BE COMPLETELY ASSEMBLED PRIOR TO PLACEMENT AND THE LENGTH SHALL BE AS NECESSARY TO CONSTRUCT EACH DRILLED SHAFT. SEE PLAN SHEETS FOR DETAILS OF REINFORCING STEEL. VERTICAL BAR LENGTHS AS IN THE REINFORCING STEEL LIST HAVE BEEN ESTIMATED.

INSPECTION

THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SUITABLE MEANS FOR ACCESS AND SAFE DESCENT INTO ALL DRILLED SHAFT EXCAVATIONS THAT ARE PROTECTED BY A CASING AND HAVE A DIAMETER THAT IS LARGE ENOUGH TO ALLOW A PERSON TO SAFELY ENTER AND PERFORM THE REQUIRED INSPECTION. ACCESS CAN BE PROVIDED BY A POSITIVE FORWARD AND REVERSE HYDRAULIC WINCH OR A POWER-UP AND POWER-DOWN HOIST ON A CRANE. THE METHOD CHOSEN FOR ENTERING AND LEAVING THE SHAFT SHALL BE CONVENIENT, SAFE AND NOT UNCOMFORTABLE FOR THE USER. THE CONTRACTOR SHALL ALSO PROVIDE PROTECTIVE CLOTHING FOR USE BY THOSE MAKING AN INSPECTION OF THE SHAFT.

AN INSPECTION RECORD CHART HAS BEEN INCLUDED WITH THE PLANS ON SHEET 5 OF 9 AND SHALL BE COMPLETED BY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY EQUIPMENT NEEDED TO OBTAIN THE MEASUREMENTS FOR COMPLETING THE CHART AND THE CONTRACTOR SHALL ASSIST THE ENGINEER IN OBTAINING THESE MEASUREMENTS. MEASUREMENTS SHALL BE OBTAINED PRIOR TO PLACING CONCRETE. WHEN THE INSPECTION RECORD CHART IS COMPLETED, THE PROJECT ENGINEER SHALL SUBMIT A COPY TO THE BUREAU OF BRIDGES. ATTENTION: FOUNDATION ENGINEER.

THE ENGINEER SHOULD OBTAIN PHOTOGRAPHS OF THE CONTRACTOR'S CONSTRUCTION PROCEDURES.

SAFETY PROVISIONS

THE CONTRACTOR SHALL HAVE AT THE JOB SITE ALL EQUIPMENT AND MATERIALS NEEDED TO PROVIDE SAFE CONSTRUCTION AND INSPECTION OF THE DRILLED SHAFTS AS REQUIRED BY CITY, STATE AND FEDERAL SAFETY REQUIREMENTS.

SAFETY PROVISIONS SHALL INCLUDE, BUT NOT BE LIMITED TO, THE REQUIREMENTS SPECIFIED BY THE PLANS, SPECIAL PROVISIONS, AND PROPOSAL.

THE CONTRACTOR SHALL PROVIDE CONTINUOUS SURVEILLANCE OF ALL PERSONS IN THE PIER DRILLED SHAFT EXCAVATION. AT ALL TIMES WHEN A PERSON IS IN THE DRILLED SHAFT EXCAVATION, PROVISION SHALL BE MADE FOR PUMPING FRESH AIR TO SAID PERSON. ALL LIGHTING SHALL BE WITH ELECTRIC LIGHTS. MECHANICAL EQUIPMENT USED INSIDE THE SHAFT SHALL BE OPERATED BY AIR OR ELECTRICITY. THE USE OF GASOLINE ENGINES OR OTHER TYPES OF EQUIPMENT PRODUCING FUMES THAT MAY ENTER THE EXCAVATION WILL NOT BE PERMITTED. THE CONTRACTOR SHALL PROVIDE GAS DETECTION AND OXYGEN ANALYZERS, AND SHALL TEST THE DRILLED SHAFT EXCAVATION ATMOSPHERE QUALITATIVELY THROUGHOUT THE COLUMN'S ENTIRE LENGTH AND ASSURE THAT THE QUANTITIES OF GASES AND OXYGEN PRESENT ARE IN SAFE AMOUNT AND SAFE PROPORTIONS PRIOR TO PERMITTING ANY PERSON TO ENTER THE SHAFT.

METHOD OF MEASUREMENT

THE TOTAL LENGTH OF EACH DRILLED SHAFT TO BE PAID FOR SHALL BE THE COMPLETED AND ACCEPTED LENGTH, MEASURED ALONG THE AXIS OF THE DRILLED SHAFT FROM THE BOTTOM OF THE BEDROCK SOCKET TO THE PROPOSED TOP ELEVATION, AS PER PLAN. THE REINFORCING STEEL THAT PROJECTS FROM THE DRILLED SHAFT INTO THE PIER CAP AS SPECIFIED BY THE PLANS IS INCLUDED WITH THE DRILLED SHAFT FOR PAYMENT BUT SHALL NOT BE INCLUDED IN THE MEASURED LENGTH OF THE DRILLED SHAFT.

THE TOTAL LENGTH OF EACH DRILLED SHAFT SHALL BE DIVIDED INTO TWO SEGMENTS. THE LENGTH OF THE LOWER SEGMENT IS THE LENGTH OF THE BEDROCK SOCKET AND THE LENGTH OF THE UPPER SEGMENT IS THE LENGTH OF THE DRILLED SHAFT ABOVE THE BEDROCK SOCKET.

BASIS OF PAYMENT

PAYMENT FOR FURNISHING AND INSTALLING DRILLED SHAFTS WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAR FOOT OF ACCEPTED SHAFTS AS PER ITEM SPECIAL DRILLED-SHAFTS ABOVE THE BEDROCK SOCKET AND ITEM SPECIAL DRILLED-SHAFTS IN BEDROCK, WHICH SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE ITEM AS SPECIFIED.

DESIGN PARAMETERS

THE DESIGN LOAD TO BE SUPPORTED BY EACH DRILLED SHAFT IS 130 TONS AT THE PIER, WHICH IS ASSUMED TO BE RESISTED BY SHAFT ADHESION WITHIN A PORTION OF THE BEDROCK SOCKET AND ALSO BY SHAFT END BEARING PRESSURE. THE ALLOWABLE BEDROCK SOCKET ADHESION IS ONE TON PER SQUARE FOOT WHICH IS ASSUMED TO ACT ALONG THE BOTTOM 4 FEET OF THE BEDROCK SOCKET. THE ALLOWABLE END BEARING PRESSURE IS 40 TONS PER SQUARE FOOT.

FHWA REGION	STATE	PROJECT	
5	OHIO	BAS-321(2)	

18
28HANCOCK COUNTY
HAN-235-15.01

STATE OF OHIO		4 / 9
DEPARTMENT OF TRANSPORTATION BUREAU OF BRIDGES AND STRUCTURAL DESIGN		
DRILLED SHAFT NOTES		
BRIDGE NO. HAN-235-1513 OVER OTTAWA CREEK		
HANCOCK COUNTY STA. 778 + 90.75 TO STA. 799 + 88.25		
DESIGNED	DRAWN	TRACED
TWD	REF	Rep.
CHECKED	REVIEWED	DATE
CKT	WJJ	1-31-86
REVISED		

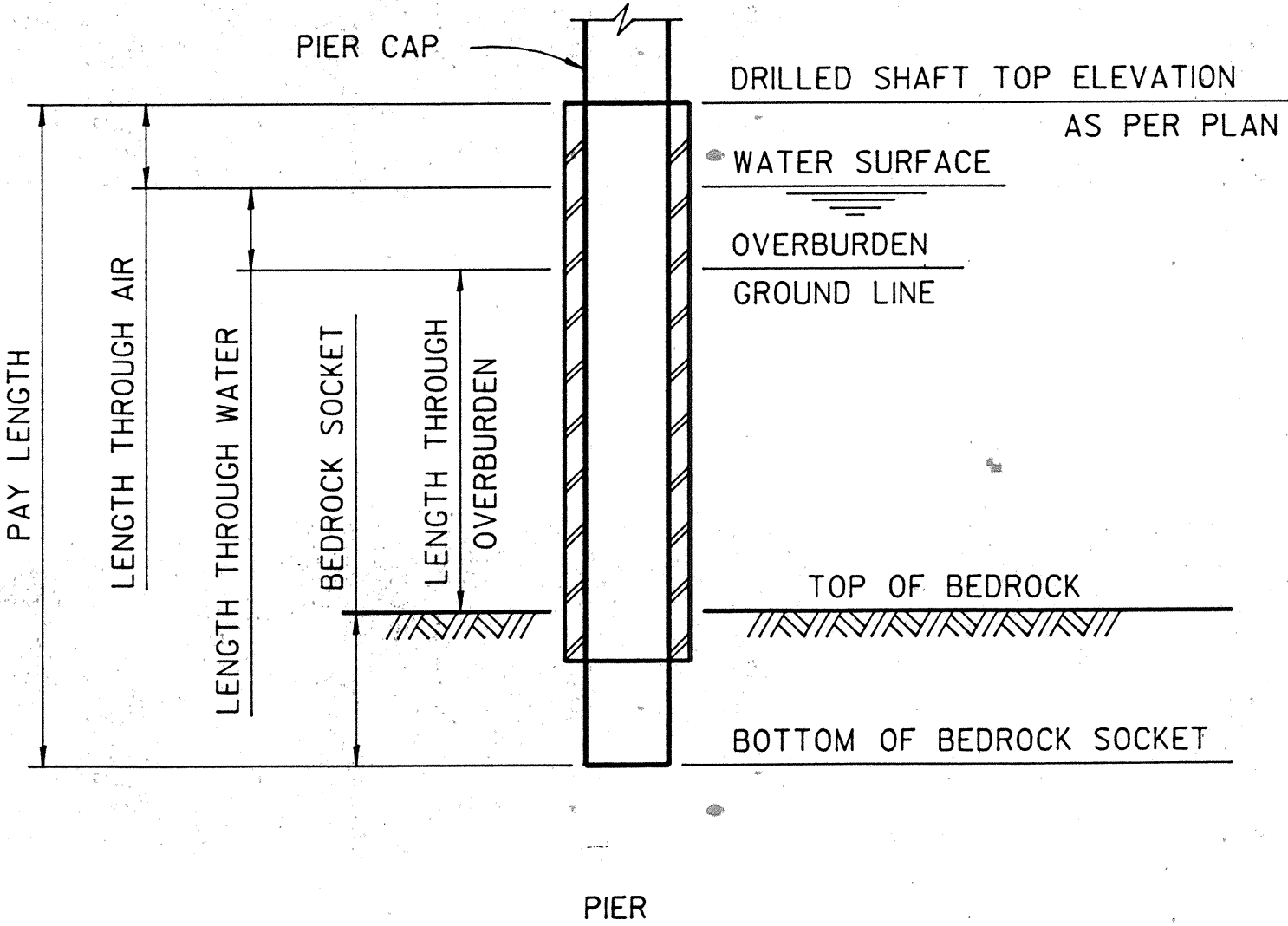
INSPECTION RECORD FOR DRILLED SHAFTS

A circular logo with a horizontal line. The number '19' is in the upper half and the number '28' is in the lower half.

PROJECT NO. <u>BRS-321(2)</u>	GENERAL CONTRACTOR _____	TYPE & MODEL OF DRILLING MACHINERY _____	TYPE OF CONCRETE PUMP _____	COST PER LINEAL FOOT _____
	DRILLING CONTRACTOR _____	MAX. CONTINUOUS TORQUE _____ FT.-LB.	HOSE DIAMETER _____ INCHES	ABOVE THE BEDROCK SOCKET _____
	PROJECT ENGINEER _____	CROWD (MAX. CONTINUOUS DOWNWARD FORCE) _____ LBS.	CAPACITY _____ CU. FT./MIN.	IN BEDROCK SOCKET _____
				TYPE OF ROCK <u>DOLOMITIC LIMESTONE</u>

[illegible]

WHEN INSPECTION RECORD IS COMPLETED
SUBMIT A COPY TO BUREAU OF BRIDGES
ATTN: FOUNDATION ENGINEER



THIS SHEET IS TO BE USED ONLY FOR
RECORDING "AS-BUILT" INFORMATION

STATE OF OHIO

DEPARTMENT OF TRANSPORTATION

BUREAU OF BRIDGES AND STRUCTURAL DESIGN

5 / 9

DRILLED SHAFTS INSPECTION RECORD

BRIDGE NO. HAN-235-1513

OVER

OTTAWA CREEK

HANCOCK COUNTY

STA. 778 + 90.75 TO
 STA. 799 + 88.25

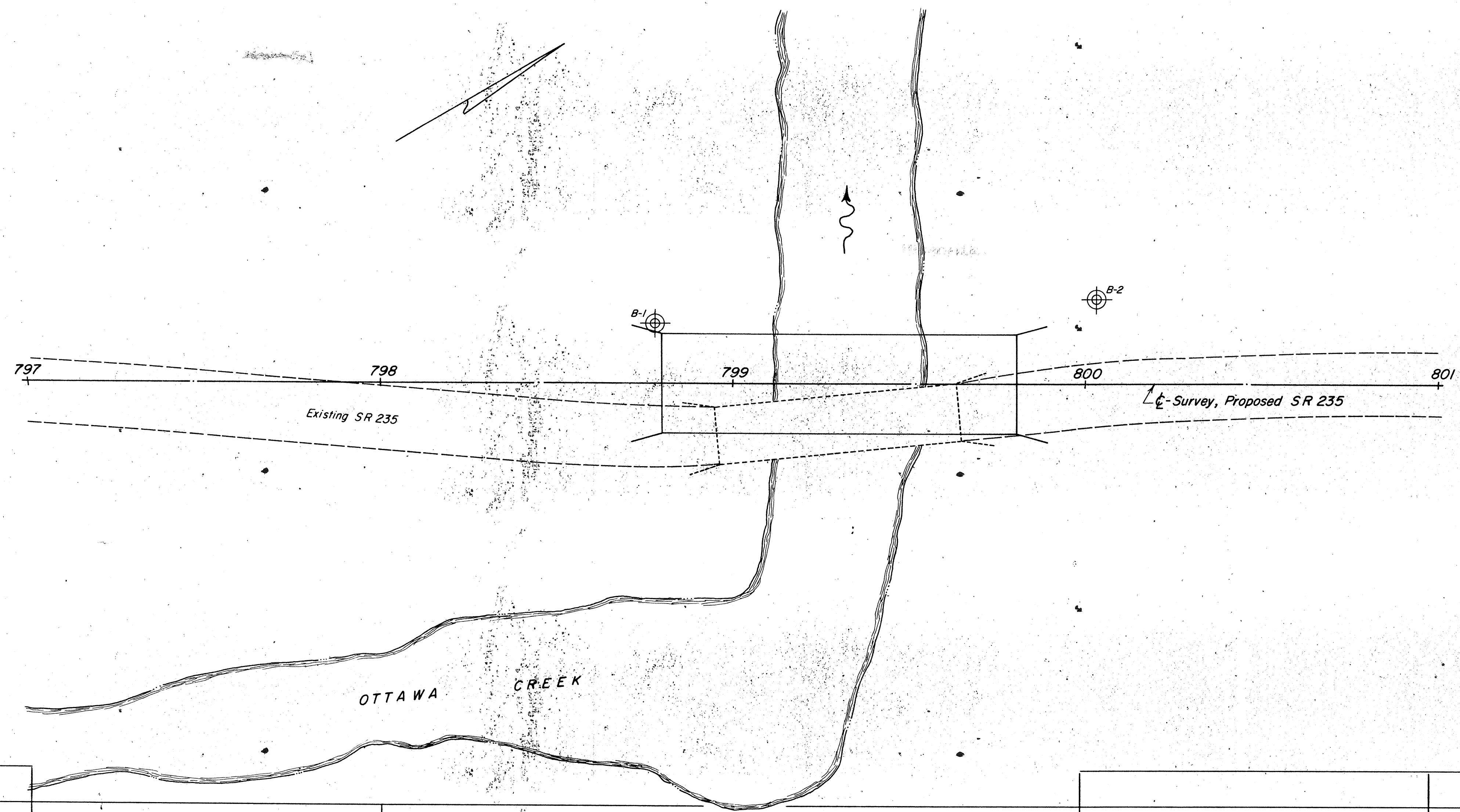
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
TWD	REF	Rep.	CKT	WJJ	1-31-86	

MICROFILMED

NOV 18 1987

HAN-235-15.01

2
2
2



NOTE: Profile was fabricated from a topography map and is very approximate.

770
760
750
740
730
720
710

770
760
750
740
730
720
710

B-1
3/5/6
1/2/5
40/50/50
32/40/50
TR

B-2
2/3/3
2/2/2
17/50(0.4)
52/50(0.3)
W
TR

797

798

799

800

801

SCALE: 1" = 20'

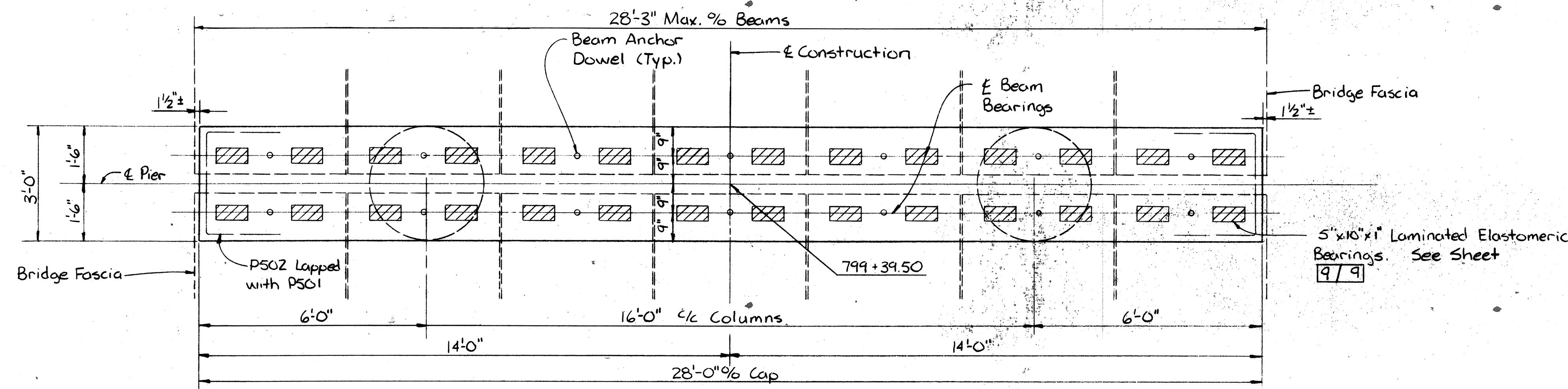
OHIO DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS-TESTING LABORATORY 1600 WEST BROAD STREET, COLUMBUS, OHIO 43223			
STRUCTURE FOUNDATION INVESTIGATION			
BRIDGE NO.	HAN-235-1513		
	OVER OTTAWA CREEK		
SEC.	HAN-235-15.01		
PLAN AND PROFILE			
DRAWN BY	CHECKED BY	REVIEWED BY	DATE
L. N. L.	L. N. L.	R. D. R.	5/22/84

MICROFILMED
NOV 18 1987

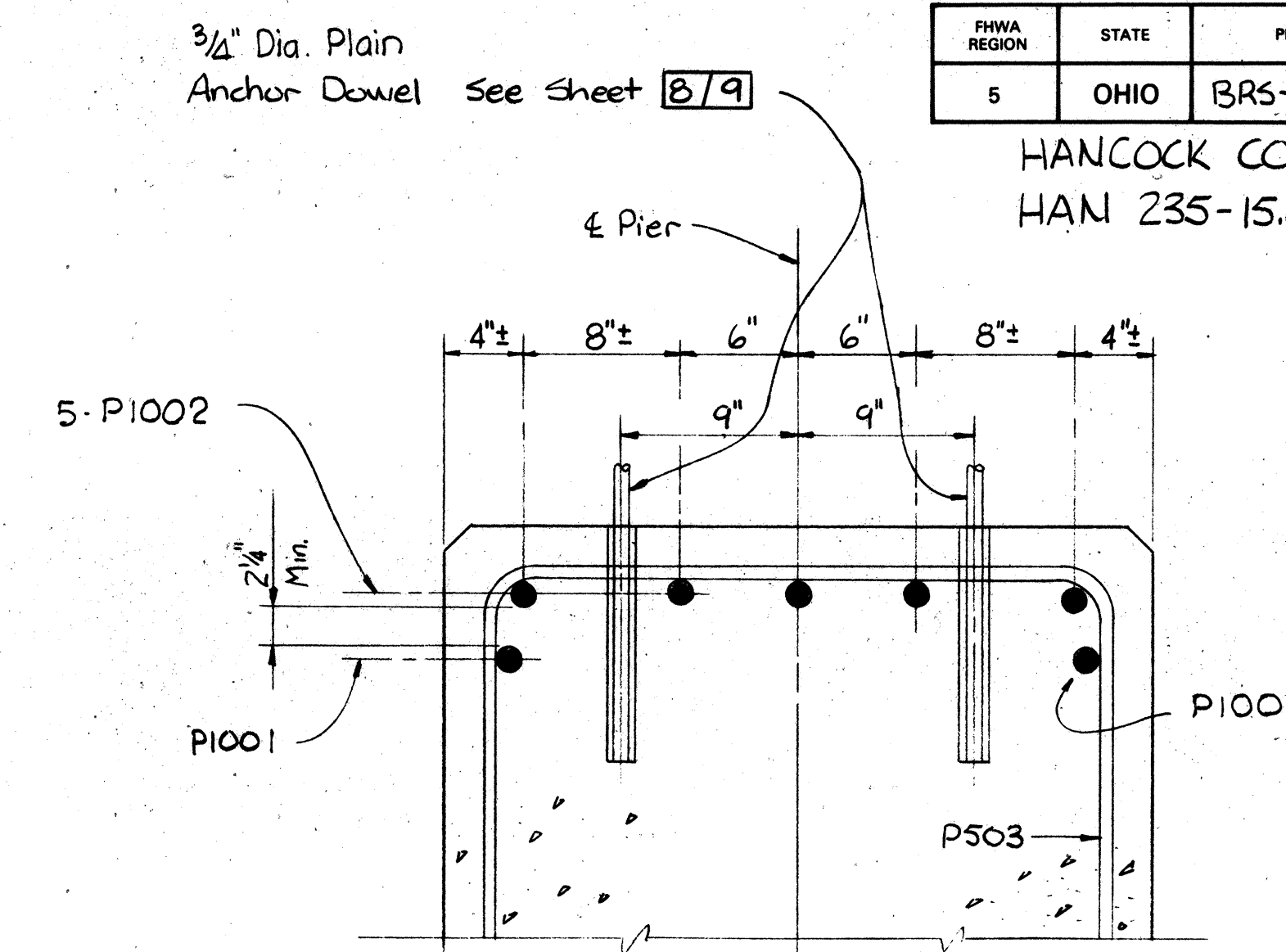
FHWA REGION	STATE	PROJECT	TYPE FUNDS
5	OHIO	BR5-321(2)	

21
28

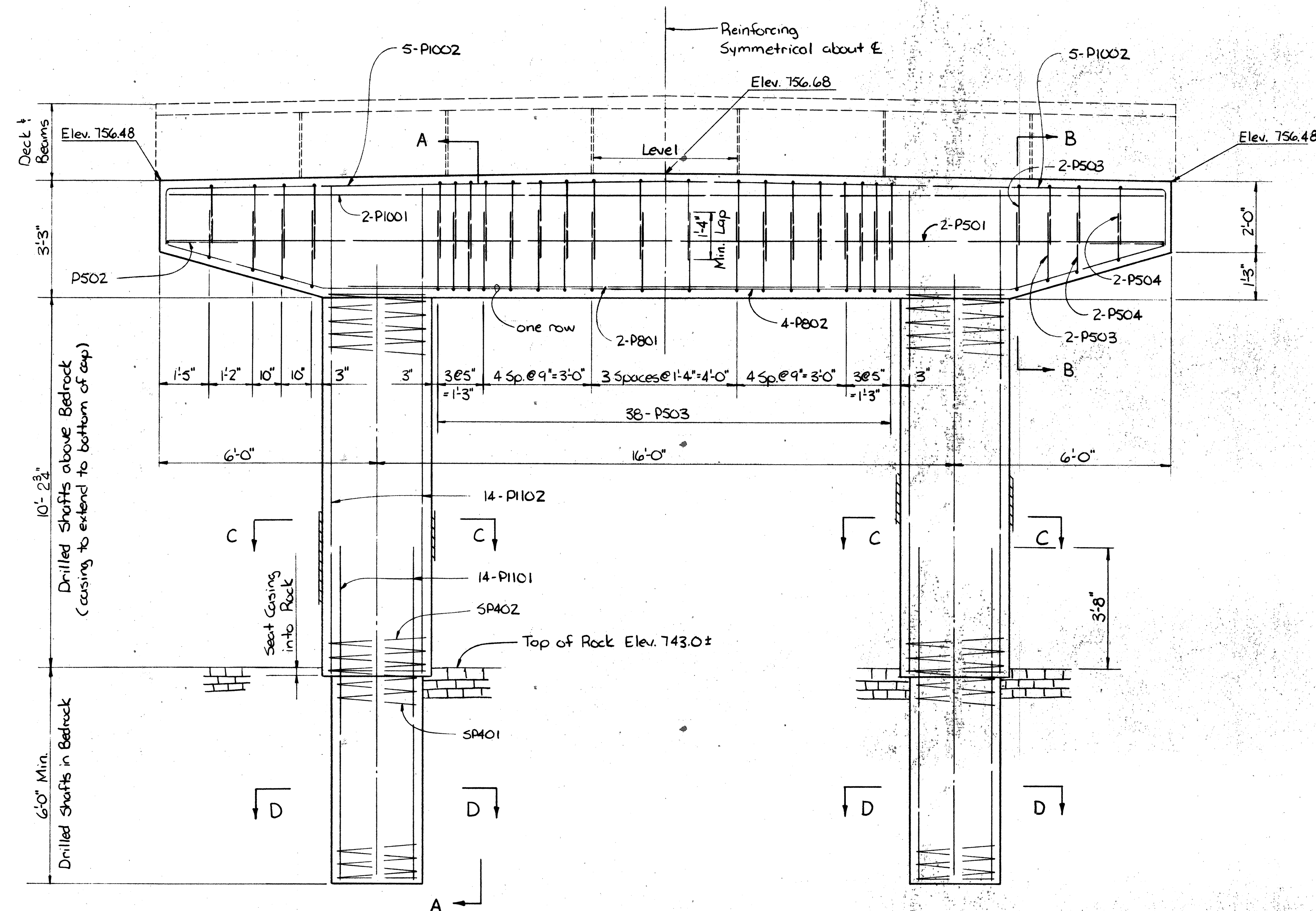
HANCOCK COUNTY
HAN 235-15.01



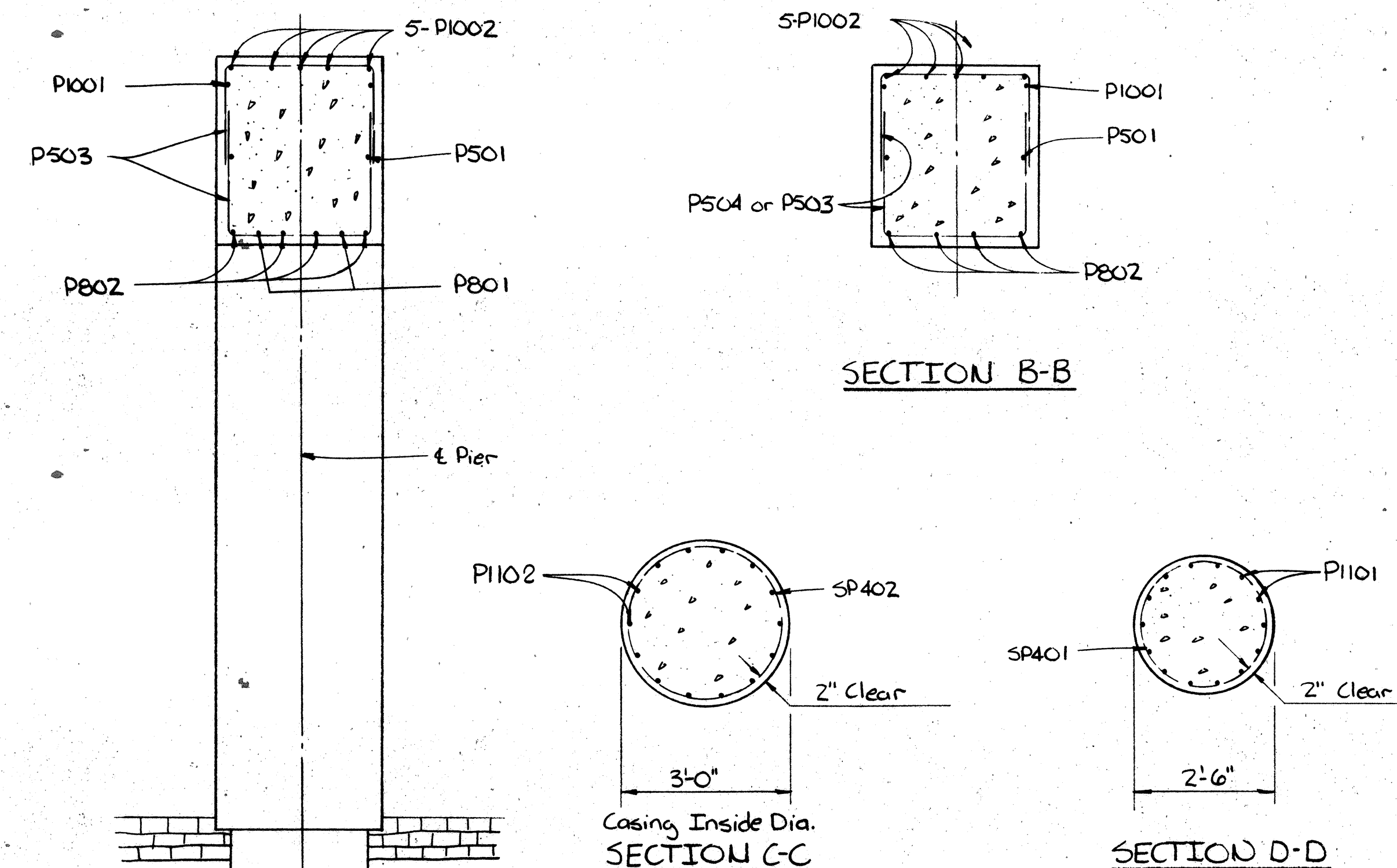
PIER PLAN



TOP LONGITUDINAL BAR LOCATION DETAIL



PIER ELEVATION



BRIDGE SEAT REINFORCING Reinforcing steel in the vicinity of the bridge seat shall be accurately placed to avoid interference with the drilling of anchor bar holes.

For Drilled Shaft Notes and Inspection Record see sheets 4/9 & 5/9

SECTION A-A

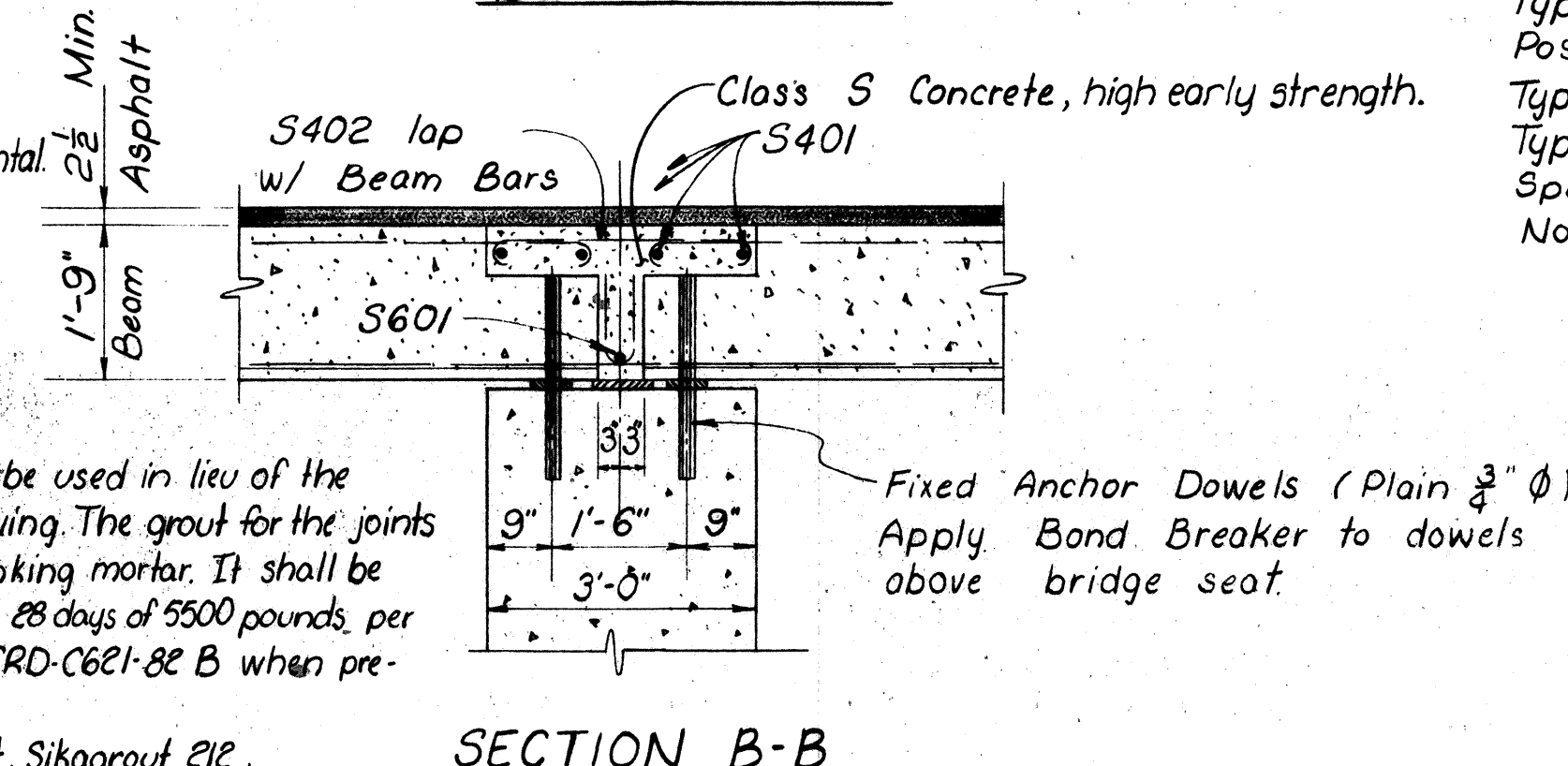
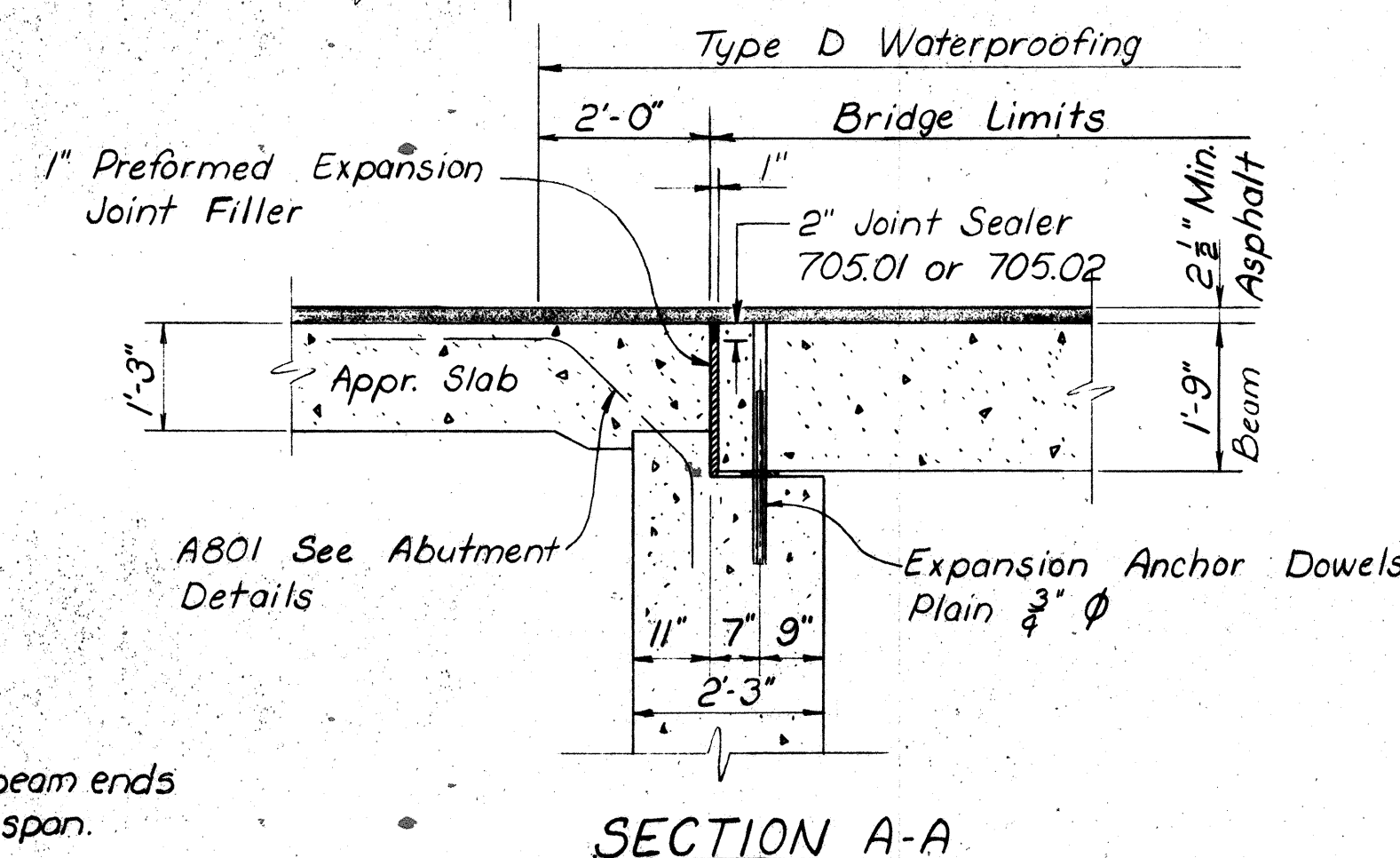
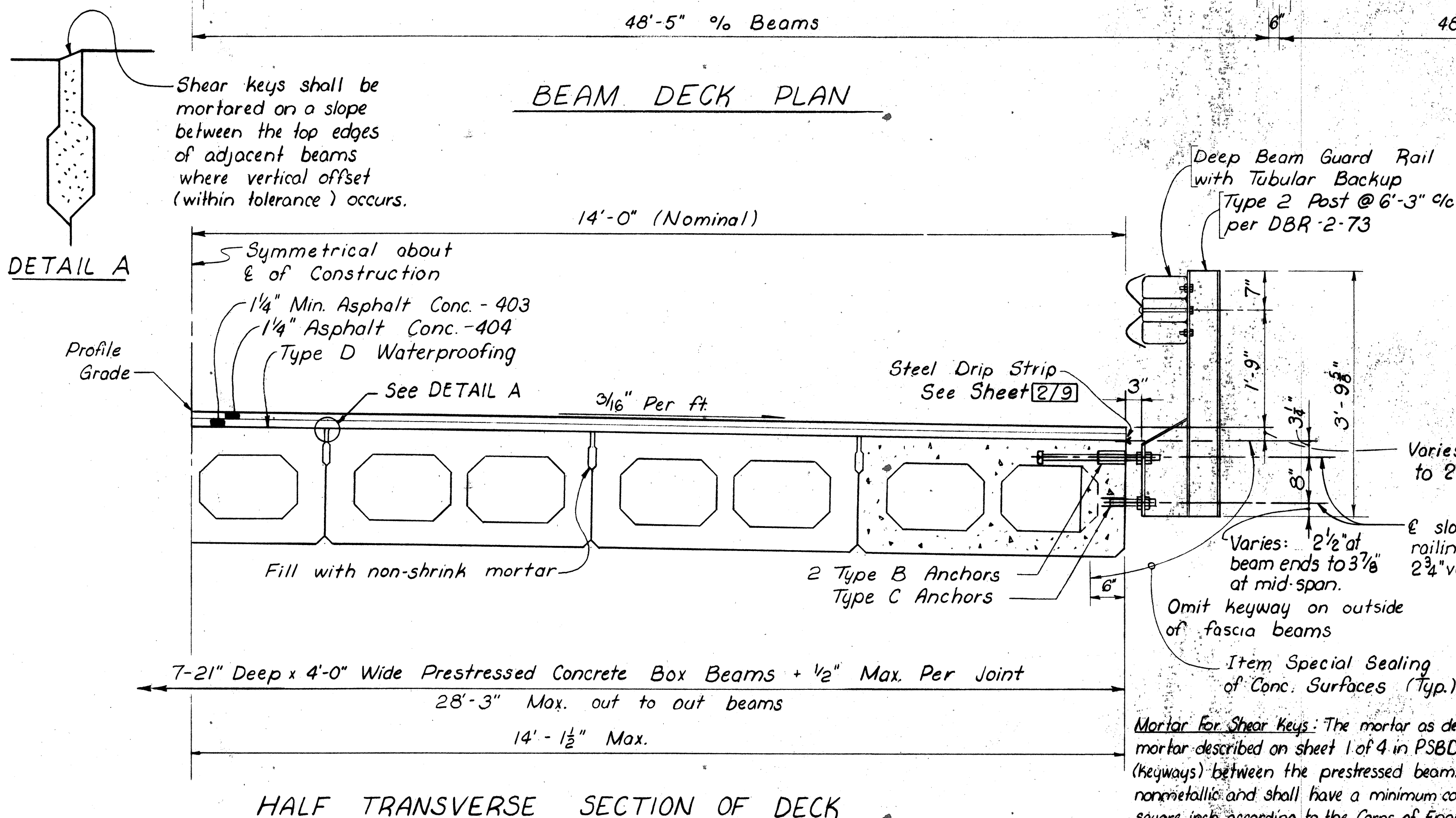
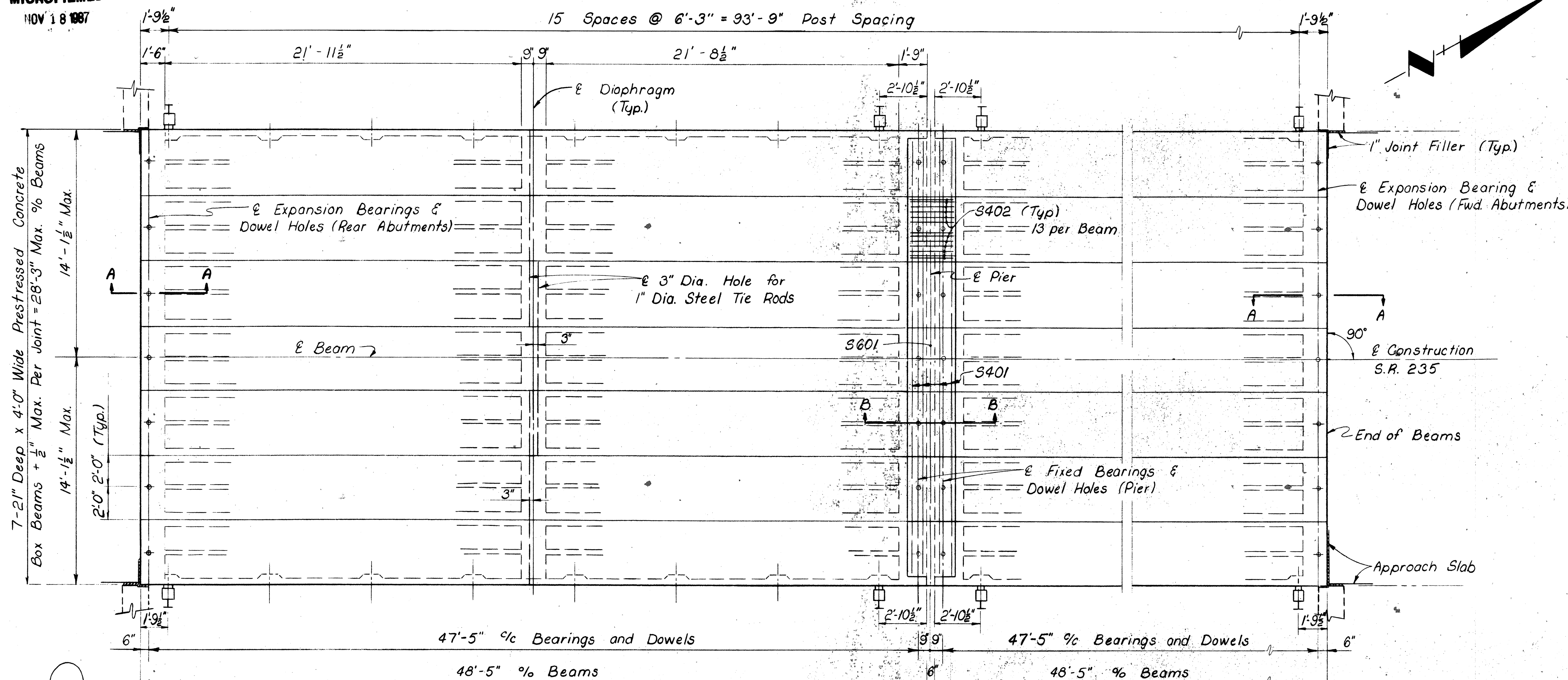
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
SAM	SAM	REP.	TWD	BD	1-24-86	

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CONSULTING ENGINEERS
TOLEDO, OHIO

PIER DETAILS
BRIDGE NO. HAN 235-1513 OVER
OTTAWA CREEK
HANCOCK COUNTY
Sta. 798+90.75 to
Sta. 799+88.25

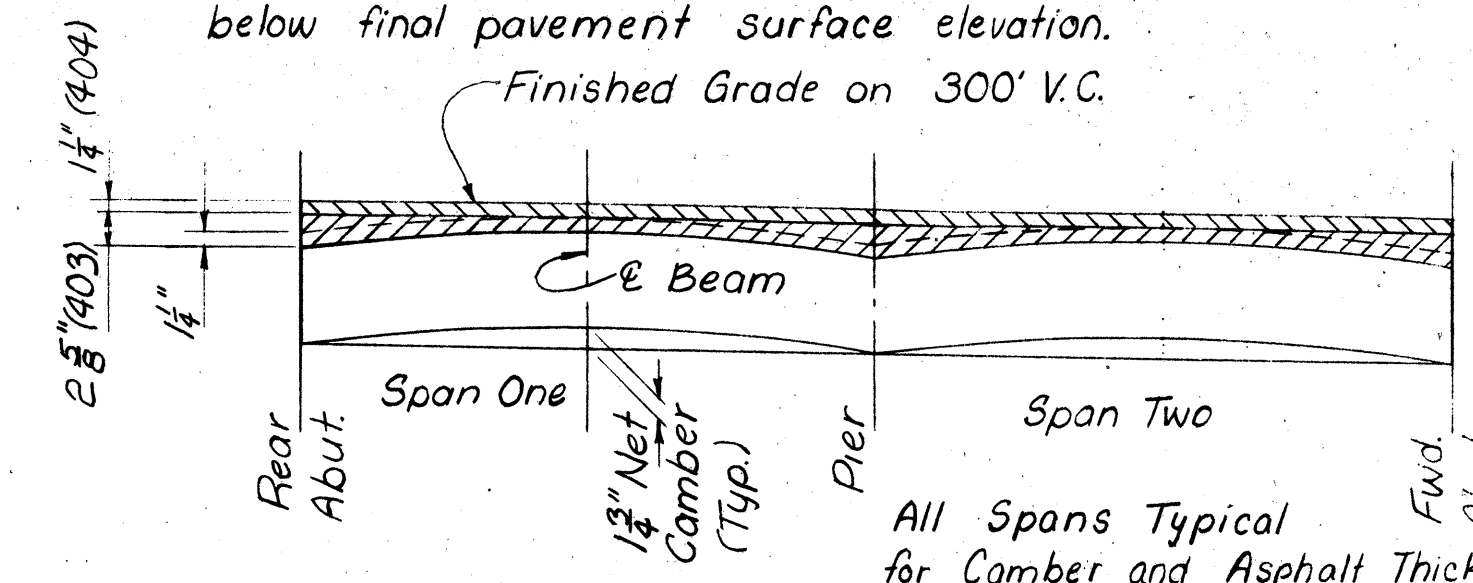
7/9

HANCOCK COUNTY
HAN 235-15.01



CAMBER:
Calculated camber at time of paving, including allowance for camber growth due to creep, is $\frac{1}{8}$ "
Calculated deflection due to weight of asphalt, concrete and railing is $\frac{1}{8}$ "
Camber of $\frac{1}{4}$ " at center of span one and $\frac{3}{8}$ " at center of span two are required for crest vertical curve.
Net final camber of beams is $\frac{1}{8}$ ". This is $\frac{1}{8}$ " in excess of the amount required to place the top of the beam parallel to profile grade. This excess should be compensated for by thickening the 403 leveling course from $\frac{1}{4}$ " at center of spans to $\frac{2}{8}$ " at ends of spans.

ASPHALT CONCRETE SURFACE COURSE
Shall consist of a variable thickness of 403 and a $\frac{1}{4}$ " thickness of 404. The 403 shall be placed in two operations. The first course shall be of $\frac{1}{4}$ " uniform thickness. The second course shall be feathered to place the surface parallel to and $\frac{1}{4}$ " below final pavement surface elevation.



REFERENCE TO STANDARD DRAWINGS

- See Standard Drawing PSBD-1-81 for the following details and notes:
- D Beam Details for B-21-48
 - E Beam Lifting Inserts
 - T Wall Thickening at Guard Rail Anchors
 - A End Details of Transverse Tie Rod Anchorage
 - I Beam Dimensional Tolerances
 - L Reinforcing Steel Details not shown hereon.
 - S Normal Crown Treatment at E Roadway for Joint at E Anchor Dowels for Fixed and Expansion Conditions
 - [Notches for Connection over Piers
 - N Transverse Tie Rods
 - O Galvanizing
 - T Anchor Dowels
 - E Mortaring of Shear Keys
 - S

See Standard Drawing DBR-2-73 for the following details:
Railing Elevation with Type 2 Post
Section D-D
Type 2 Post Detail
Post Anchorage Details - Prestressed Concrete Box Beams
Type B Anchor Detail
Type C Anchor Detail
Special Washer
Notes

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TOLEDO, OHIO

SUPERSTRUCTURE DETAILS

BRIDGE No. HAN 235-15/13 over
OTTAWA CREEK

HANCOCK COUNTY Sta. 798+90.75 to
Sta. 799+88.25

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISD
RJM	RJM	Rep.	SAM	BD	1-24-86	

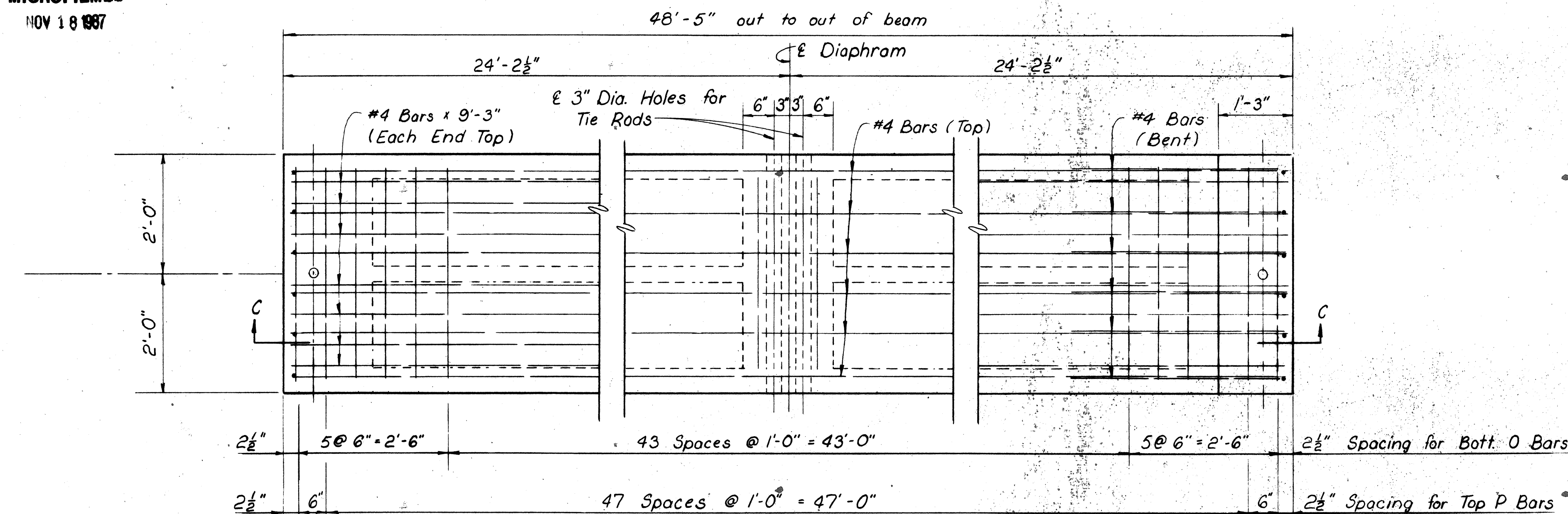
NOTES

PRESTRESSED BEAM

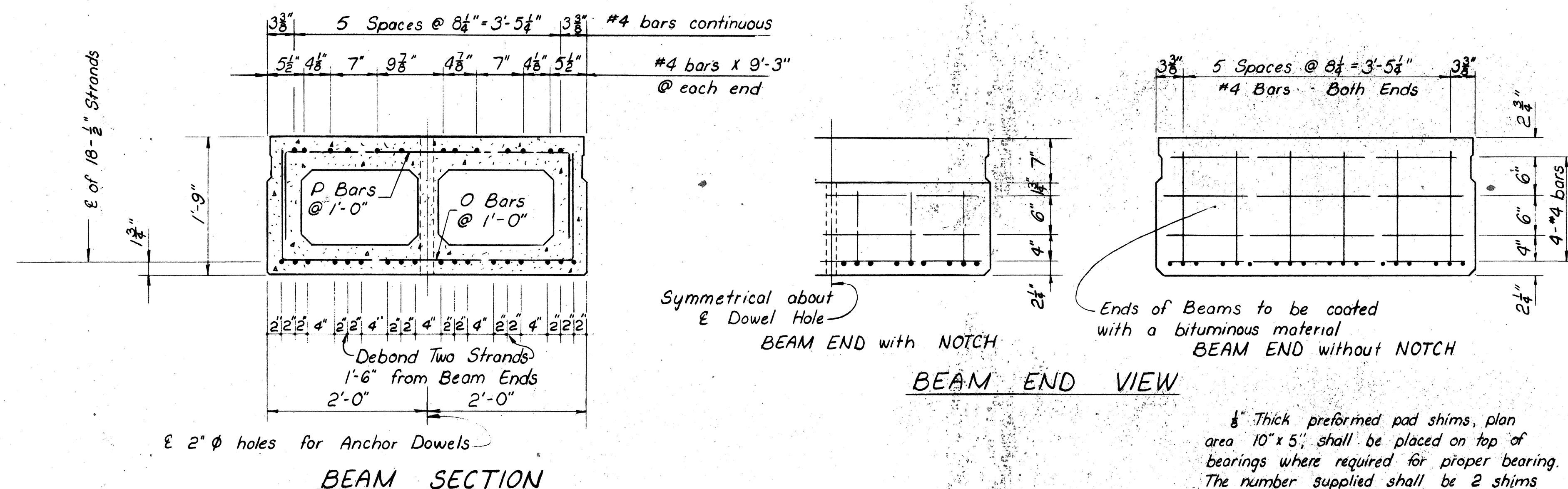
Minimum concrete compressive strength at 28 days = 5,500 p.s.i.
Minimum concrete compressive strength at time of initial prestress = 4000 p.s.i.
Prestressing strands are: ASTM A416, Grade 270; $\frac{1}{2}$ " diameter, seven wire, uncoated, stress relieved, $A_s = 153 \text{ in}^2$; initial tension = 28,900 lbs. per strand; ultimate strength = 41,300 lbs. per strand
Non prestressing steel shall meet the requirements of Item 509 and may be either Grade 60 or Grade 40. The Fabricators Shop Drawings shall show complete details of the reinforcing.

At the Contractor's option, beam widths may be varied provided the overall bridge width remains as per plan. If a change in width arrangement is elected, Bearings shall be redesigned by the Contractor's Professional Engineer. Any change as described above shall be at no extra cost to the State and must be submitted to the Director for approval.

ELASTOMERIC BEARING PADS shall conform to ASTM requirements referred to in Item 711.23. Elastomeric compound shall be of grade 50 hardness.



BEAM DETAIL PLAN



BEAM SECTION

Symmetrical about
Centerline

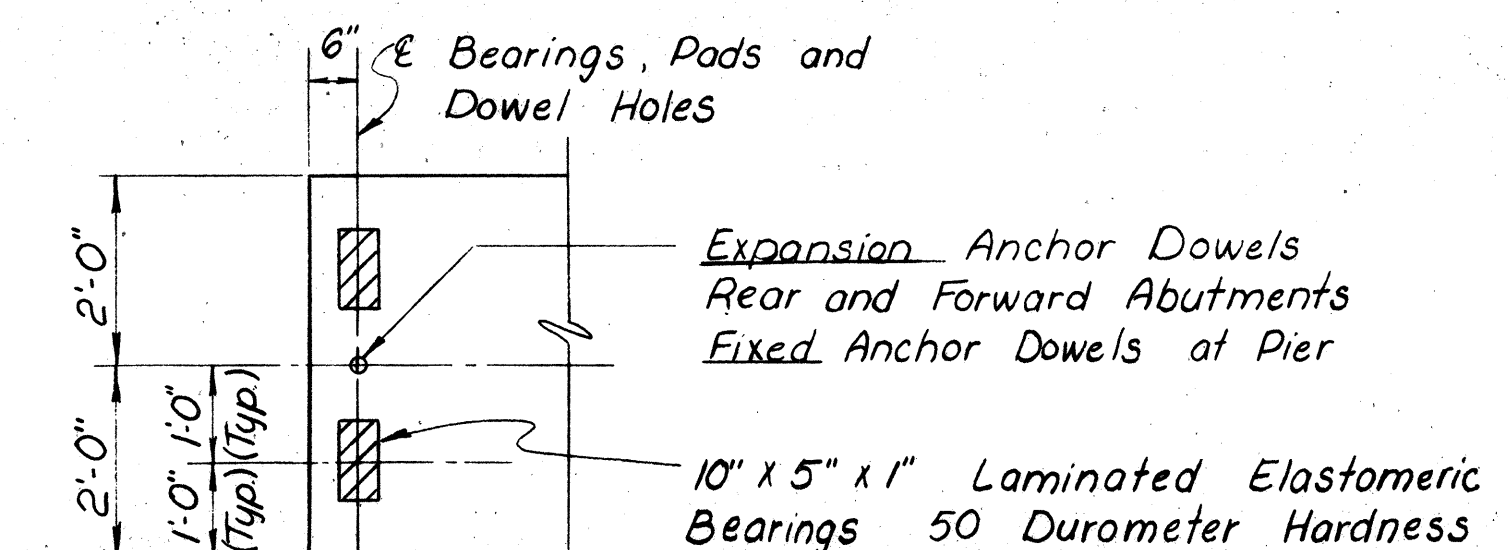
BEAM END with NOTCH

BEAM END VIEW

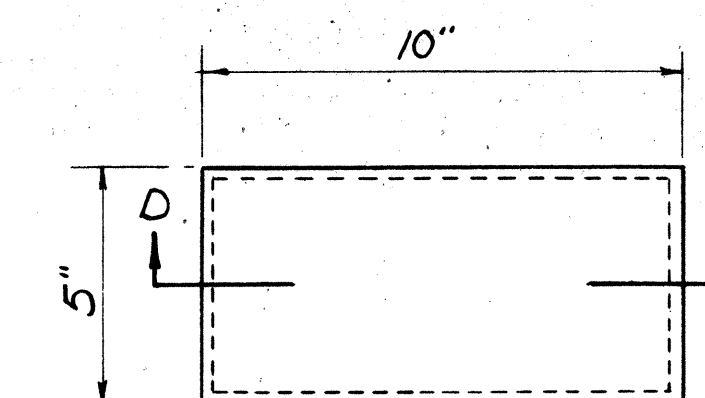
Ends of Beams to be coated
with a bituminous material

BEAM END without NOTCH

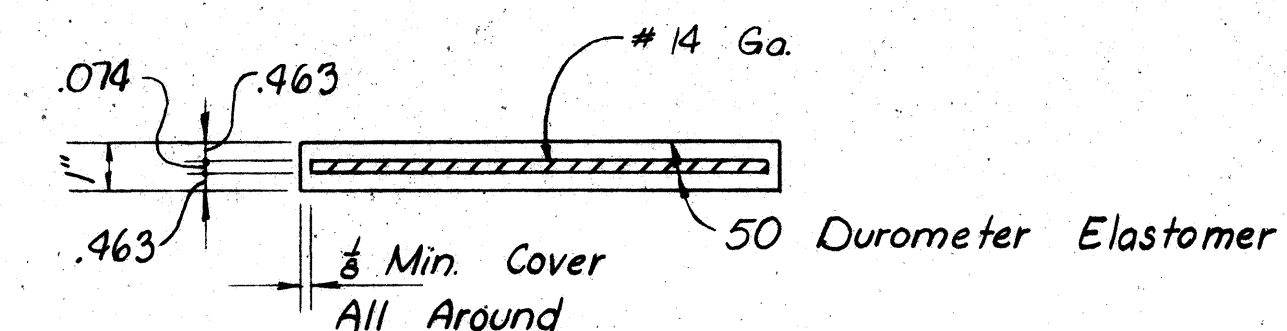
$\frac{1}{8}$ " Thick preformed pad shims, plan area 10" x 5", shall be placed on top of bearings where required for proper bearing. The number supplied shall be 2 shims per beam. Shims not used shall become the property of the State.



BEARING PAD LOCATION

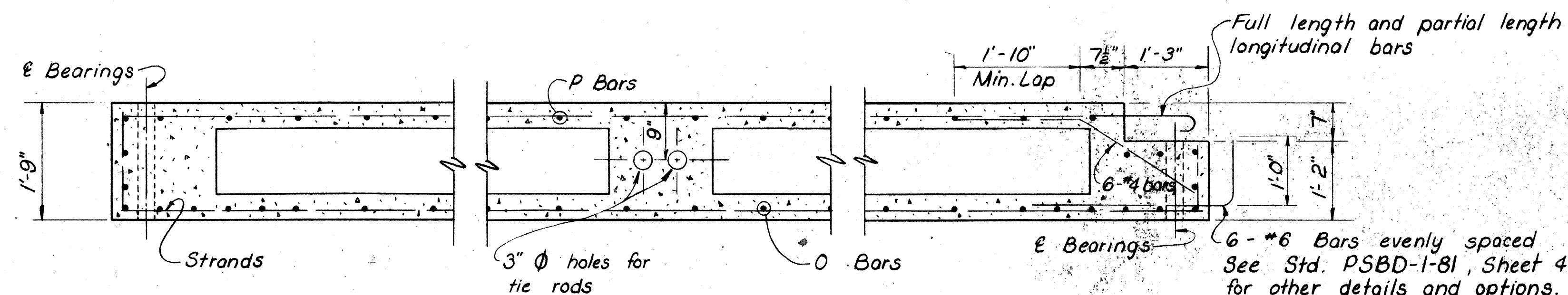


PLAN



SECTION D-D

LAMINATED ELASTOMERIC
BEARING DETAIL



SECTION C-C

DANSARD • GROHNKE • LONG, LIMITED							
CONSULTING ENGINEERS							
TOLEDO, OHIO							
SUPERSTRUCTURE DETAILS							
BRIDGE No. HAN 235-1513 over				Sta. 798+90.75 to			
OTTAWA CREEK				Sta. 799+88.25			
HANCOCK COUNTY							
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED	
RJM	RJM	Rep.	SAM	BD	1-24-86		

CENTERLINE SURVEY PLAT

OHIO DEPARTMENT OF TRANSPORTATION

STATE ROUTE 235-SEC.15.01

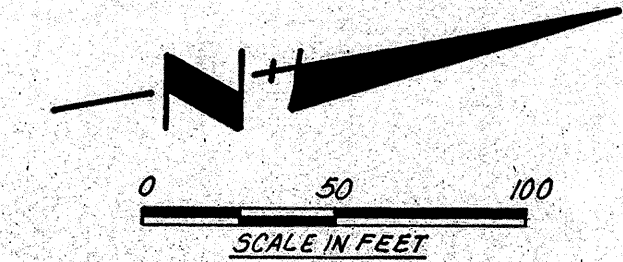
HANCOCK COUNTY

FHWA REGION	STATE	PROJECT
5	OHIO	BRS-321(2)

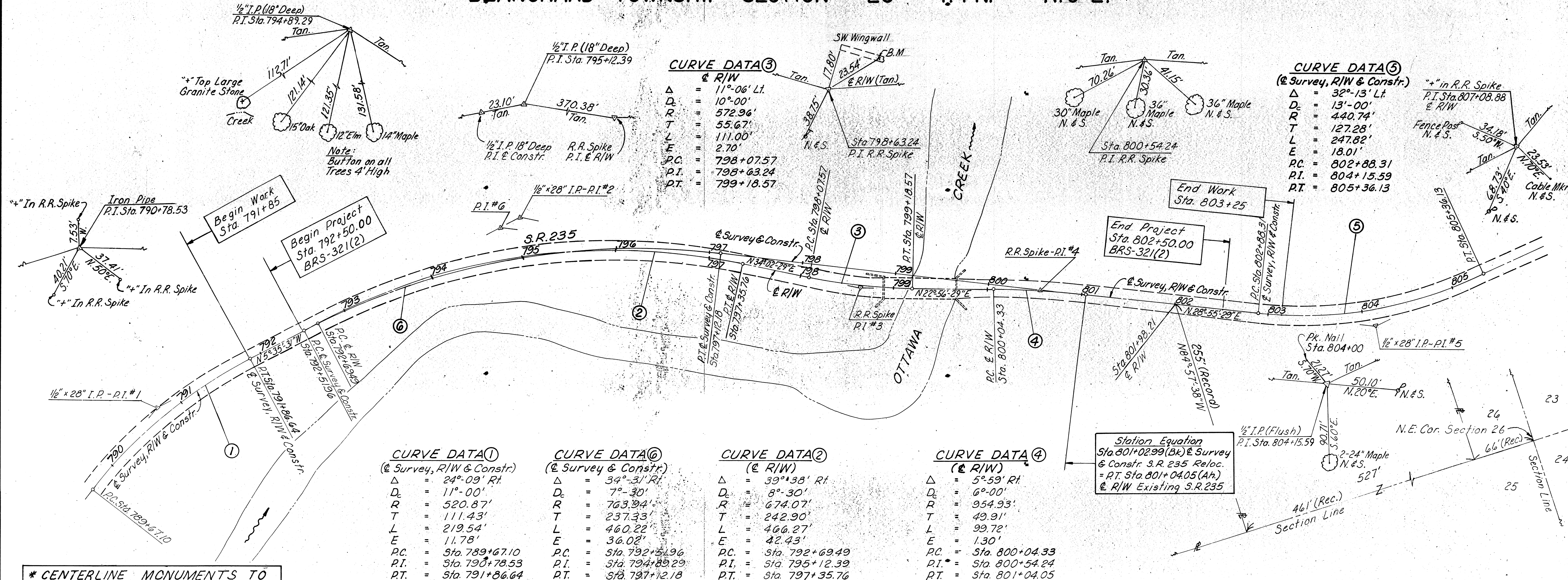
HANCOCK COUNTY
HAN 235-15.01
R/W PLAN

24
28

1
5



BLANCHARD TOWNSHIP SECTION 26 T.1 N. R.9 E.

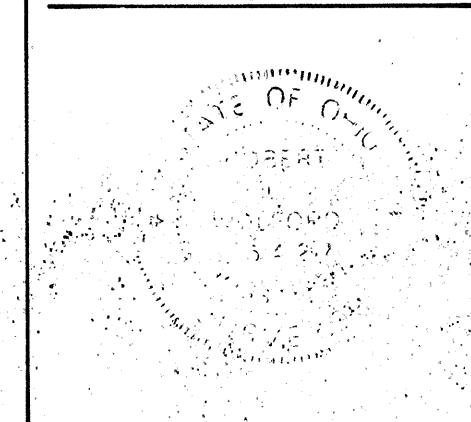


* CENTERLINE MONUMENTS TO BE SET AS PART OF THIS CONTRACT

Monument Assemblies Standard	
P.C.	Sta. 792+51.96, & Survey & Constr.
P.C.	Sta. 792+69.49, & R/W
P.T.	Sta. 797+12.18, & Survey & Constr.
P.T.	Sta. 797+35.76, & R/W
P.T.	Sta. 801+04.05, & R/W
P.C.	Sta. 802+88.31, & Survey, R/W & Constr.
Reference Monuments	
P.T.	Sta. 798+63.24, & R/W

* Note: All centerline monuments shall be constructed as per Std. Dwg. MC-1.

SURVEYOR SEAL



I HEREBY CERTIFY THIS PLAT TO BE A TRUE DELINEATION OF A SURVEY MADE BY THE OHIO DEPARTMENT OF TRANSPORTATION.

DATE 7-3-86 SIGNED Robert J. Wolford

APPROVED REGISTERED SURVEYOR NO. 5-6427

SIGNED DATE

RECEIVED AT

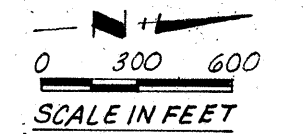
RECORDED

PLAT BOOK PAGE

SIGNED

HANCOCK COUNTY RECORDER

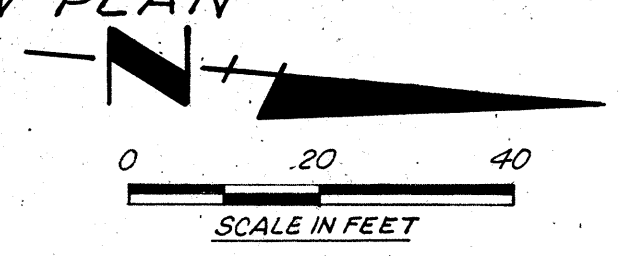
CENTERLINE SURVEY PLAT

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HANCOCK COUNTY BLANCHARD TOWNSHIP
NE 1/4 SECTION 26 T.1N. R.9E.

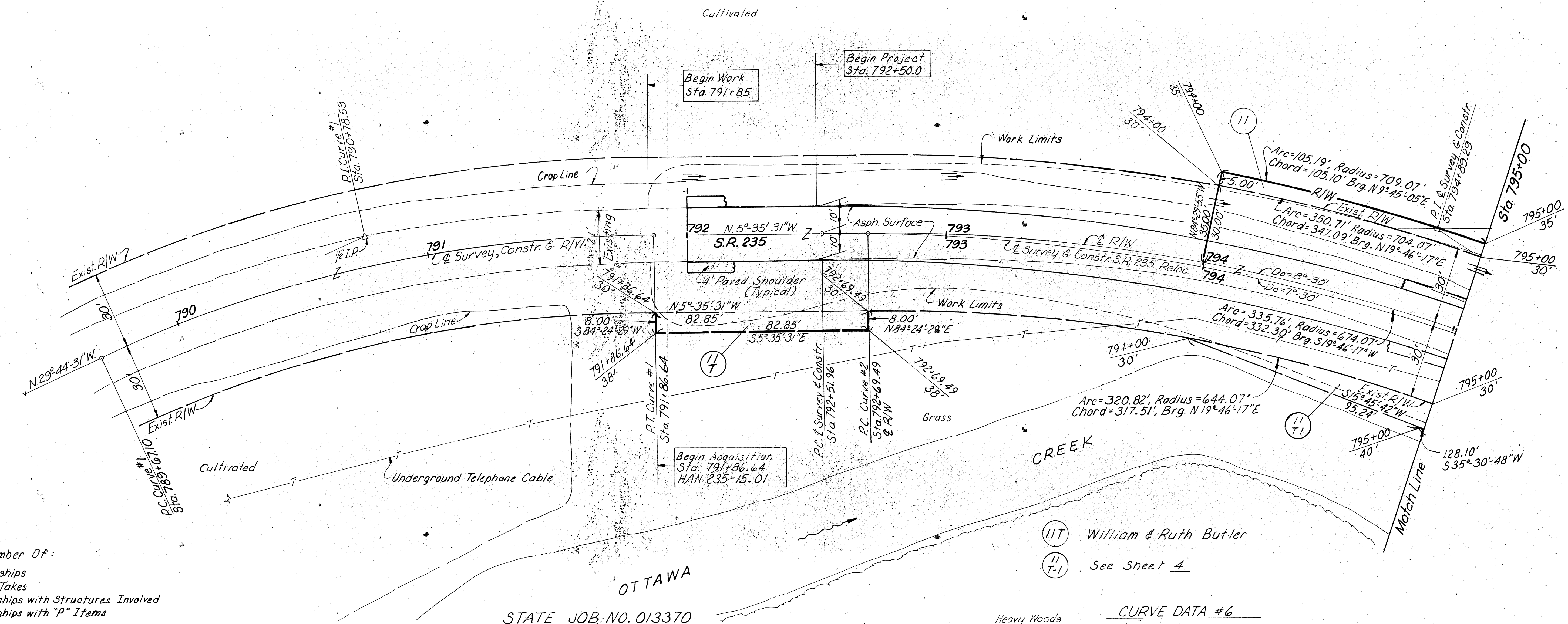
FHWA REGION	STATE	PROJECT
5	OHIO	BRS-321(2)

HANCOCK COUNTY
HAN 235-15.01
R/W PLAN



CURVE DATA #1
 Survey, Constr. & R/W
 $\Delta = 24^{\circ}-09'-00''$ Rt.
 $D_c = 11^{\circ}-00'$
 $R = 520.87'$
 $T = 111.43'$
 $L = 219.54'$
 $E = 11.78'$
 $PC = 789+67.10$
 $PT = 790+78.53$
 $PI = 791+86.64$

11 William & Ruth Butler
See Sheet 4



Total Number Of:
 2 Ownerships
 0 Total Takes
 0 Ownerships with Structures Involved
 0 Ownerships with "P" Items

STATE JOB NO. 013370

11T William & Ruth Butler
11T-1 See Sheet 4

CURVE DATA #6
 Survey & Construction
 $\Delta = 34^{\circ}-31'-00''$ Rt.
 $D_c = 7^{\circ}-30'$
 $R = 763.94'$
 $T = 237.33'$
 $L = 460.22'$
 $E = 36.02'$
 $PC = 792+51.96$
 $PT = 794+89.29$
 $PI = 797+12.18$

NOTE: All callouts are from the centerline of right of way.

STATE JOB NO. 013370

SUMMARY OF ADDITIONAL RIGHT-OF-WAY REQUIRED															
Parcel No.	Sheet No.	Owner	Recorded		Deed Area (Acres)	Total PRO (Acres)	Grass Take (Acres)	PRO in Take (Acres)	Net Take		Bidg.	Net Residue		Type Funds	Remarks
			Volume or Microfiche	Page No. or Loc. No.					Acres	Sq. Ft.		Left	Right		
10-T	5	Dillon & Marion Fisher	271	7	42.5	—	0.004	—	0.004	—	No		42.5	BRS	Grading, Ditch
11	3,4&5	William & Ruth Butler	235	199	88.62	1.8	0.939	0.606	0.333	—	No		114.287	BRS	
11-T	3	William & Ruth Butler	325	653	26		0.015	—	0.015	—	No			BRS	Grading
11-T1	3,4	William & Ruth Butler					0.219	—	0.219	—	No			BRS	Grading
11-T2	5	William & Ruth Butler					0.019	—	0.019	—	No			BRS	Drive Construction

0 20
SCALE IN FEET

[illegible]

S.R. 235 R/W Sta. 795+00 to Sta. 801+00

MICROFILMED
NOV 18 1987

HANCOCK COUNTY
HAN-235-15.01

Fed No. BRS-321(2)

GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED IN THE RELATIVELY FLAT GLACIATED PORTION OF THE LAKE PLAIN REGION, IN AN AREA WHERE RELATIVELY THIN GLACIAL AND ALLUVIAL DEPOSITS OVERLIE DOLOMITIC LIMESTONE BEDROCK OF THE MONROE FORMATION.

EXPLORATION

THE EXPLORATION CONSISTED OF ONE DRIVE-SAMPLE BORING AND ONE DRIVE SAMPLE-CORE BORING MADE BY MEANS OF A MECHANICALLY-POWERED HOLLOW STEM AUGER MOUNTED ON A MOBILE PLATFORM PERFORMED ON MAY 10 AND 14, 1984.

INVESTIGATIONAL FINDINGS AND OBSERVATIONS

THE BORINGS DISCLOSED THAT INTERVALS OF EXTREMELY LOOSE TO EXTREMELY DENSE UNSTRATIFIED BASIC SILTS, CLAYS AND SAND MODIFIED WITH GRAVEL AND VARYING AMOUNTS OF EACH OTHER THAT RAPIDLY INCREASE (ERRATIC AT TIMES) IN DENSITY WITH INCREASE IN DEPTH OVERLIE RELATIVELY FLAT-LYING BEDROCK SURFACE. BORING B-1 (IN THE GENERAL VICINITY OF THE REAR ABUTMENT) ENCOUNTERED BEDROCK SURFACE AT 11.5-FOOT DEPTH, ELEVATION 743.0 FEET AND WAS TERMINATED AT 14.5-FOOT DEPTH, ELEVATION 740.0 FEET, AFTER PENETRATING 3.0 FEET BELOW BEDROCK SURFACE. BORING B-2 (IN THE GENERAL VICINITY OF THE FORWARD ABUTMENT) ENCOUNTERED BEDROCK SURFACE AT 12.5-FOOT DEPTH, ELEVATION 743.0 FEET AND WAS TERMINATED AT THAT POINT, NO PENETRATION WAS MADE BELOW BEDROCK SURFACE.

FREE WATER WAS OBSERVED AND MEASURED IN BORING B-2 AT 7.5-FOOT DEPTH, ELEVATION 748.0 FEET. NO FREE WATER OBSERVATIONS WERE MADE IN BORING B-1, DURING OR AT THE CONCLUSION OF DRILLING OPERATIONS.

- 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

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

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.

SYMBOLS OF ROCK TYPES

- 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.

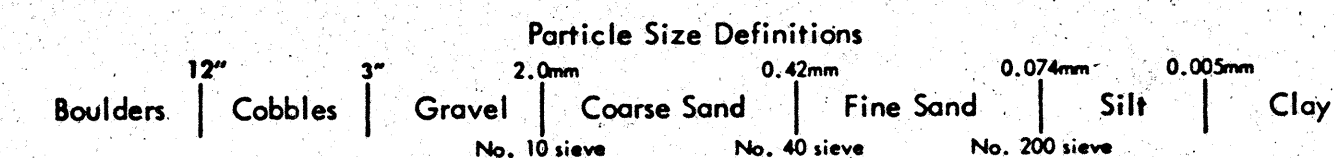
Drive Sample Borings - Drive-Press Sample Borings

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.



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.

LOG OF BORING															
Date Started 5/10/84		Sampler Type SS		Dia 1 3/8"		Water Elev. _____									
Date Completed 5/10/84		Casing Length _____		Dia _____		Surface Elev. 754.3'									
Boring No. B-1		Station & Offset 798+78		17' LT. (REAR ABUTMENT)											
Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics								SHTL Class.
754.5	0						% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	VSUR
754.0	2				SOD AND TOPSOIL										
752.0	4	3/5/6			BROWN-GRAY SANDY CLAY	1	3	1	19	41	36	34	12	25	A-6a
749.5	6														
747.0	8	1/2/3			BROWN SILTY SAND	2	0	9	57	19	15	NP	NP	32	A-3a
744.5	10	40/50/50			GRAY SANDY GRAVELLY SILT	3	38	12	10	26	14	NP	NP	8	A-4a
743.0	12	32/40/50			GRAY SILTY SANDY GRAVEL AND COBBLES	4	44	16	10	20	10	NP	NP	8	A-2-4
740.0	14		2.5	0.5	DOLOMITIC LIMESTONE, GRAY, HARD, DENSE, VERY VUGGY, EXTREMELY BROKEN AND JOINTED. CORE LOSS 17%.										
BOTTOM OF BORING															

LOG OF BORING															
Date Started		5/14/84		Sampler Type		SS		Dia		1 3/8"		Water Elev.		748.0'	
Date Completed		5/14/84		Casing Length		800+03		Dia		24"		Surface Elev.		755.5'	
Boring No.		B-2		Station & Offset		800+03 24" LT(FORWARD ABUTMENT)									
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.
755.5	0				SOD AND TOP SOIL										
755.0	2														
753.0	4	2/3/3			GRAY AND BROWN SANDY SILT	1	1	2	23	31	43	NP	NP	25	A-4a
750.5	6														
748.0	8	2/2/2			BROWN SANDY SILT	2	0	9	56	11	24	NP	NP	26	A-3a
	10	17/50 (0.4')			GRAY GRAVELLY SANDY SILT	3	23	10	15	23	29	20	6	11	A-4a
745.5	12	52/50 (0.3')			GRAY SILTY GRAVELLY SAND	4	29	20	17	19	15	NP	NP	7	A-2-4
743.0															
BOTTOM OF BORING - TOP OF ROCK															

BOTTOM OF BORING - TOP OF ROCK

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. HAN-235-1513
OVER OTTAWA CREEK
SEC. HAN-235-15.01

CHECKED BY L. N. L. REVIEWED BY R. D. R. DATE 5/22/84