

STATEMENT OF ESTIMATED QUANTITIES (WIDENING)				AVERAGE	H + S ASPHALT		FOREST LAKE CONT.		SCHIFSKY & SONS INC.		ASHBACH CONST. CO.		VALLEY PAVING INC.		ALEXANDER CONST. CO.		TOTAL ASPHALT CONST.		PALDA & SONS INC.		SHAFFER CONTRACTING CO.		
ITEM NO	ITEM	UNIT	ESTIMATED QUANTITIES	LOWEST BIDDERS	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	
2021.501	MOBILIZATION	LUMP SUM	1	4,833.33	5,000.00	5,000.00	5,000.00	5,000.00	4,500.00	4,500.00	7,000.00	7,000.00	3,000.00	3,000.00	3,000.00	3,000.00	7,000.00	7,000.00	9,100.00	9,100.00	15,000.00	15,000.00	
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.	722	2.37	1.50	1,083.00	3.00	2,166.00	2.62	1,891.64	1.40	1,010.80	3.00	2,166.00	2.75	2,129.90	3.00	2,166.00	2.20	1,588.40	1.75	1,263.50	
2104.501	REMOVE CULVERT PIPE	L.F.	144	3.04	3.50	504.00	3.00	432.00	2.62	377.28	3.40	489.60	2.70	388.80	2.16	311.04	3.00	432.00	3.00	432.00	4.00	576.00	
2104.509	REMOVE STEEL POST	EACH	4	25.00	35.00	140.00	20.00	80.00	20.00	80.00	10.00	40.00	20.00	80.00	11.00	44.00	25.00	100.00	15.00	60.00	10.00	40.00	
2105.501	COMMON EXCAVATION	C.Y.	4,236	3.06	3.00	12,708.00	3.00	12,708.00	3.20	13,552.00	2.65	11,225.40	3.27	13,851.72	3.15	13,343.40	3.50	14,826.00	3.00	12,708.00	3.25	13,767.00	
2105.523	COMMON BORROW (LV)	C.Y.	627	3.42	4.50	2,821.50	1.00	627.00	4.77	2,990.79	3.50	2,194.50	4.85	3,040.95	3.80	2,382.60	4.00	2,508.00	5.00	3,135.00	4.25	2,664.75	
2105.525	TOPSOIL BORROW	C.Y.	659	4.36	5.00	3,295.00	4.00	2,636.00	4.09	2,695.31	7.50	4,942.50	5.35	3,525.65	5.94	3,914.46	6.20	4,085.80	5.00	3,295.00	6.00	3,954.00	
2104.521	SALVAGE CULVERT PIPE	L.F.	114	4.60	3.50	399.00	4.00	456.00	6.30	718.20	4.00	456.00	6.48	738.72	6.50	741.00	3.00	342.00	4.00	456.00	4.00	456.00	
2211.525	AGGREGATE BASE, CLASS 6 OR 5 100% CRUSHED	TON	2,698	6.12	6.20	16,727.60	6.90	18,616.20	5.25	14,164.50	4.75	12,815.50	6.88	18,562.24	5.75	15,513.50	6.75	18,211.50	7.00	18,886.00	6.50	17,537.00	
0331.603	SAWCUT BITUMINOUS PAVEMENT SURFACE	L.F.	4,600	43	45	2,070.00	60	2,760.00	25	1,150.00	65	2,990.00	40	1,840.00	50	2,300.00	42	1,932.00	67	3,082.00	1.75	8,050.00	
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	166	186.67	190.00	31,540.00	185.00	30,710.00	185.00	30,710.00	200.00	33,200.00	185.00	30,710.00	190.00	31,540.00	200.00	33,200.00	200.00	33,200.00	185.00	30,710.00	
2341.508	WEARING COURSE MIXTURE	TON	1,820	12.18	12.00	21,840.00	12.27	22,331.40	12.27	22,331.40	14.00	25,480.00	12.94	23,550.80	14.15	25,753.00	12.70	23,114.00	12.95	23,569.00	12.27	22,331.40	
2341.510	BINDER COURSE MIXTURE	TON	931	12.11	12.00	11,172.00	12.17	11,330.27	12.17	11,330.27	13.90	12,940.70	13.41	12,484.71	13.65	12,708.15	11.95	11,125.45	12.30	11,451.34	12.17	11,330.27	
2331.512	LEVELING COURSE MIXTURE	TON (1)	20	26.33	21.00	420.00	29.00	580.00	29.00	580.00	50.00	1,000.00	30.00	600.00	85.00	1,700.00	35.00	700.00	35.00	700.00	29.00	580.00	
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL	829	1.37	1.10	911.90	1.50	1,243.50	1.50	1,243.50	1.20	994.80	1.25	1,036.25	1.25	1,036.25	1.50	1,243.50	1.50	1,243.50	1.50	1,243.50	
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL	1,694	90	01	16.94	1.35	2,286.90	1.35	2,286.90	50	847.00	1.20	2,032.80	90	1,524.60	40	677.60	50	847.00	1.35	2,286.90	
2501.511	18" C.M. PIPE CULVERT 16 GAUGE	L.F.	4	25.83	21.00	84.00	25.00	100.00	31.50	126.00	17.00	68.00	31.80	127.20	32.40	129.60	25.00	100.00	40.00	160.00	23.00	92.00	
2501.515	16" C.M. PIPE APRONS	EACH	18	57.58	65.00	1,170.00	50.00	900.00	57.75	1,039.50	90.00	1,620.00	58.00	1,044.00	60.00	1,080.00	60.00	1,080.00	100.00	1,800.00	60.00	1,080.00	
2501.511	15" C.M. PIPE CULVERT 16 GAUGE	L.F.	114	17.32	21.00	2,394.00	14.00	1,596.00	16.95	1,932.30	16.00	1,824.00	17.30	1,972.20	17.45	1,989.30	20.00	2,280.00	21.00	2,394.00	19.00	2,166.00	
2501.511	24" R.C. PIPE CULVERT, CLASS II	L.F.	108	28.22	30.00	3,240.00	26.00	2,808.00	28.66	3,095.28	28.00	3,024.00	28.50	3,078.00	29.50	3,186.00	25.00	2,700.00	25.00	2,700.00	30.00	3,240.00	
2506.522	ADJUST FRAME & RING CASTING	EACH	8	108.33	85.00	680.00	90.00	720.00	150.00	1,200.00	65.00	520.00	120.00	960.00	150.00	1,200.00	100.00	800.00	100.00	800.00	150.00	1,200.00	
2535.501	BITUMINOUS CURB	L.F.	900	1.43	1.80	1,620.00	1.25	1,125.00	1.25	1,125.00	2.00	1,800.00	3.00	2,700.00	2.00	1,800.00	2.00	1,800.00	2.00	1,800.00	1.25	1,152.00	
2554.501	TRAFFIC BARRIER, DESIGN 8307A	L.F.	375	12.13	12.00	4,500.00	11.90	4,462.50	12.49	4,683.75	15.00	5,625.00	12.25	4,593.75	11.90	4,462.50	12.75	4,781.25	11.90	4,462.50	11.90	4,462.50	
0554.607	TWISTED END TREATMENT (50L.F.)	EACH	3	415.00	425.00	1,275.00	400.00	1,200.00	420.00	1,260.00	500.00	1,500.00	420.00	1,260.00	648.00	1,944.00	450.00	1,350.00	400.00	1,200.00	400.00	1,200.00	
0554.602	GUARDRAIL ANCHORAGE PLATE FOR BRIDGES (8317C)	EACH	5	94.83	100.00	500.00	90.00	450.00	94.50	472.50	115.00	575.00	94.50	472.50	56.00	280.00	100.00	500.00	90.00	450.00	90.00	450.00	
2575.505	SODDING	S.Y.	7,900	1.11	1.15	9,085.00	1.05	8,295.00	1.12	8,848.00	1.45	11,455.00	1.20	9,480.00	1.17	9,243.00	1.25	9,875.00	1.14	9,006.00	1.15	9,085.00	
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	0.5	430.00	300.00	150.00	490.00	245.00	500.00	250.00	375.00	187.50	500.00	250.00	540.00	270.00	330.00	165.00	300.00	150.00	500.00	250.00	
412.604	TIMBER WALL	S.F.	420	6.08	6.75	2,835.00	6.00	2,520.00	5.50	2,310.00	9.70	4,074.00	7.25	3,045.00	7.55	3,171.00	7.00	2,940.00	11.00	4,620.00	6.50	2,730.00	
504.602	ADJUST VALVE BOX	EACH	3	63.33	65.00	195.00	80.00	240.00	45.00	135.00	50.00	150.00	100.00	300.00	75.00	225.00	50.00	150.00	75.00	225.00	90.00	270.00	
2501.515	24" R.C. PIPE APRON	EACH	2	282.67	240.00	480.00	230.00	460.00	378.00	756.00	400.00	800.00	388.00	776.00	390.00	780.00	400.00	800.00	400.00	800.00	320.00	640.00	
2501.573	INSTALL CULVERT PIPE	L.F.	114	8.38	14.00	1,596.00	5.00	570.00	6.14	699.96	4.75	541.50	6.15	701.10	6.32	720.48	5.00	570.00	7.00	798.00	6.00	684.00	
2511.503	GROUTED RIPRAP, CLASS A	C.Y.	4.6	49.25	40.00	184.00	50.00	230.00	57.75	265.65	60.00	276.00	58.00	266.80	60.00	276.00	100.00	400.00	60.00	276.00	60.00	276.00	
2511.504	FILTER BLANKET, TYPE I	C.Y.	2.3	28.83	11.00	25.30	20.00	46.00	31.50	72.45	25.00	57.50	31.00	71.30	32.40	74.52	30.00	69.00	30.00	69.00	25.00	57.50	
0105.631	SALVAGE BITUMINOUS PAVEMENT	S.Y.	1,951	1.20	1.00	1,951.00	1.10	2,146.10	1.50	2,926.50	1.10	2,146.10	2.00	3,902.00	3.00	5,853.00	1.35	2,633.85	1.10	2,146.10	1.25	2,438.75	
0231.601	PAVEMENT BREAKING	STA.	8	288.33	145.00	1,160.00	220.00	1,760.00	500.00	4,000.00	180.00	1,440.00	400.00	3,200.00	300.00	2,400.00	500.00	4,000.00	358.00	2,864.00	325.00	2,600.00	
0301.604	SAWCUT CONCRETE PAVEMENT	L.F.	50	2.45	1.35	67.50	3.00	150.00	3.00	150.00	6.25	312.50	2.50	125.00	3.00	150.00	3.00	150.00	5.00	250.00	3.50	175.00	
				143,840.74		143,986.87		145,952.88		155,623.10		155,933.49		157,176.30		158,867.95		160,723.80		166,012.07			

STATEMENT OF ESTIMATED QUANTITIES (WIDENING)				AVERAGE 3 LOWEST BIDDERS	C.S. McCrossan		Daily & Son Inc.		Bituminous Roadways		Barber Const. Co.									
ITEM NO	ITEM	UNIT	ESTIMATED QUANTITIES		UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT
2021.501	MOBILIZATION	LUMP SUM	1	4,833.33	9,500.00	9,500.00	800.00	800.00	5,000.00	5,000.00	2,500.00	2,500.00								
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.	722	2.37	5.00	3,610.00	10.00	7,220.00	2.60	1,877.20	3.00	2,166.00								
2104.501	REMOVE CULVERT PIPE	L.F.	144	3.04	2.65	381.60	2.75	396.00	2.75	396.00	4.00	576.00								
2104.509	REMOVE STEEL POST	EACH	4	25.00	50.00	200.00	60.00	240.00	25.00	100.00	10.00	40.00								
2105.501	COMMON EXCAVATION	C.Y.	4,236	3.06	4.95	20,968.20	4.00	16,944.00	5.00	21,180.00	4.00	16,944.00								
2105.523	COMMON BORROW (LV)	C.Y.	627	3.42	3.00	1,881.00	5.00	3,135.00	2.50	1,567.50	6.00	3,762.00								
2105.525	TOPSOIL BORROW	C.Y.	659	4.36	6.50	4,283.50	5.00	3,295.00	6.35	4,184.65	5.90	3,888.10								
2104.521	SALVAGE CULVERT PIPE	L.F.	114	4.60	6.30	718.20	6.60	752.40	7.00	798.00	4.00	456.00								
2211.525	AGGREGATE BASE, CLASS 6 OR 5 100% CRUSHED	TON	2,698	6.12	7.20	19,425.60	6.40	17,267.20	7.80	21,044.40	7.80	21,044.40								
0331.603	SAWCUT BITUMINOUS PAVEMENT SURFACE	L.F.	4,600	0.43	0.30	1,380.00	0.50	2,300.00	0.75	3,450.00	3.00	13,800.00								
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	166	186.67	185.00	30,770.00	2.05	34,030.00	2.00	33,200.00	180.00	29,880.00								
2341.508	WEARING COURSE MIXTURE	TON	1,820	12.18	13.90	25,298.00	19.00	34,580.00	14.25	25,935.00	16.50	30,030.00								
2341.510	BINDER COURSE MIXTURE	TON	931	12.11	13.90	12,940.90	18.50	17,223.50	18.40	17,130.40	16.00	14,896.00								
2331.512	LEVELING COURSE MIXTURE	TON (1)	20	26.33	50.00	1,000.00	20.00	400.00	150.00	3,000.00	40.00	800.00								
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL	829	1.37	1.50	1,243.50	1.40	1,160.60	2.00	1,658.00	1.30	1,077.70								
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL	1,694	0.90	0.01	16.94	1.40	2,371.60	1.65	2,795.10	1.30	2,202.20								
2501.511	18" C.M. PIPE CULVERT 16 GAUGE	L.F.	4	25.83	16.80	67.20	33.00	132.00	33.00	132.00	34.00	136.00								
2501.515	16" C.M. PIPE APRONS	EACH	18	57.58	58.00	1,044.00	60.00	1,080.00	61.00	1,098.00	235.00	4,230.00								
2501.511	15" C.M. PIPE CULVERT 16 GAUGE	L.F.	114	17.32	16.95	1,932.30	17.75	2,023.50	18.00	2,052.00	29.00	3,306.00								
2501.511	24" R.C. PIPE CULVERT, CLASS II	L.F.	108	28.22	28.65	3,094.20	30.00	3,240.00	30.00	3,240.00	40.00	4,320.00								
2506.522	ADJUST FRAME & RING CASTING	EACH	8	108.33	150.00	1,200.00	50.00	400.00	100.00	800.00	100.00	800.00								
2535.501	BITUMINOUS CURB	L.F.	900	1.43	3.00	2,700.00	2.50	2,250.00	2.50	2,250.00	1.65	1,485.00								
2554.501	TRAFFIC BARRIER, DESIGN 8307A	L.F.	375	12.13	12.75	4,687.50	13.00	4,875.00	13.10	4,912.50	11.25	4,218.75								
0554.607	TWISTED END TREATMENT (SOLF)	EACH	3	475.00	420.00	1,260.00	500.00	1,500.00	440.00	1,320.00	610.00	1,830.00								
0554.602	GUARDRAIL ANCHORAGE PLATE FOR BRIDGES (8317C)	EACH	5	94.83	95.00	475.00	120.00	600.00	100.00	500.00	60.00	300.00								
2575.505	SODDING	S.Y.	7,900	1.11	1.20	9,480.00	1.30	10,270.00	1.20	9,480.00	1.22	9,638.00								
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	0.5	430.00	315.00	157.50	500.00	250.00	550.00	275.00	500.00	250.00								
412.604	TIMBER WALL	S.F.	420	6.08	12.50	5,250.00	15.00	6,300.00	8.00	3,360.00	7.00	2,940.00								
504.602	ADJUST VALVE BOX	EACH	3	63.33	100.00	300.00	100.00	300.00	90.00	270.00	100.00	300.00								
2501.515	24" R.C. PIPE APRON	EACH	2	282.67	378.00	756.00	400.00	800.00	400.00	800.00	400.00	800.00								
2501.573	INSTALL CULVERT PIPE	L.F.	114	8.38	6.15	701.10	6.50	741.00	6.50	741.00	20.00	2,280.00								
2511.503	GROUTED RIPRAP, CLASS A	C.Y.	4.6	49.25	75.00	345.00	60.00	276.00	60.00	276.00	60.00	276.00								
2511.504	FILTER BLANKET, TYPE I	C.Y.	2.3	28.83	30.00	69.00	33.00	75.90	33.00	75.90	35.00	80.50								
0105.631	SALVAGE BITUMINOUS PAVEMENT	S.Y.	1,951	1.20	1.00	1,951.00	4.00	7,804.00	2.50	4,877.50	3.00	5,853.00								
0231.601	PAVEMENT BREAKING	STA	8	288.33	185.00	1,480.00	400.00	3,200.00	1,300.00	10,400.00	1,250.00	10,000.00								
0301.604	SAWCUT CONCRTE PAVEMENT	L.F.	50	2.45	3.00	150.00	4.00	200.00	2.00	100.00	4.00	200.00								
TOTAL						\$ 170,657.24		\$ 188,432.70		\$ 190,276.15		\$ 197,305.65								

S.A.P. 62-658-04

STATEMENT OF ESTIMATED QUANTITIES (WIDENING)

ITEM NO	ITEM	UNIT	ESTIMATED QUANTITY	UNIT PRICE	Bikeway WIDENING		CENTER OVERLAY		DETACHED BIKEWAY		FINAL COST									
					QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT
2021 501	MOBILIZATION	LUMP SUM	1	5,000 00	1	5,000 00					1	5,000 00								
2104 505	REMOVE CONCRETE PAVEMENT	S.Y.	722	1 50	527	790 50					527	790 50								
2104 501	REMOVE CULVERT PIPE	L.F.	144	3 50	186	651 00					186	651 00								
2104 509	REMOVE STEEL POST	EACH	4	35 00	4	140 00					4	140 00								
2105 501	COMMON EXCAVATION	C.Y.	4,236	3 00	4335	13,005 00			223	669 00	4558	13,674 00								
2105 523	COMMON BORROW (LV)	C.Y.	627	4 50	84	378 00					84	378 00								
2105 525	TOPSOIL BORROW	C.Y.	659	5 00	896	4,480 00					896	4,480 00								
2104 521	SALVAGE CULVERT PIPE	L.F.	114	3 50	90	315 00					90	315 00								
2211 525	AGGREGATE BASE, CLASS 6 OR 5 100% CRUSHED	TON	2,698	6 20	2608 2	16,170 84			2094	1298 28	2817 6	17,469 12								
0331 603	SAWCUT BITUMINOUS PAVEMENT SURFACE	L.F.	4,600	45	4200	1,890 00					4200	1,890 00								
2341 504	BITUMINOUS MATERIAL FOR MIXTURE	TON	166	190 00	70 26	13,349 40	62 57	11,888 30	693	1316 70	139 76	26,554 40								
2341 508	WEARING COURSE MIXTURE	TON	1,820	12 00	721 9	8,662 80	930 4	11,164 80	72	864 00	1724 3	20,691 60								
2341 510	BINDER COURSE MIXTURE	TON	931	12 00	707 9	8,494 80	152 7	1,832 40	72	864 00	932 6	11,191 20								
2331 512	LEVELING COURSE MIXTURE	TON (1)	20	21 00	—	—	—	—	—	—	—	—								
2357 502	BITUMINOUS MATERIAL FOR TACK COAT	GA.	829	1 10	250	275 00	450	495 00	20	22 00	720	792 00								
2358 501	BITUMINOUS MATERIAL FOR PRIME COAT	GA.	1,694	01	—	—	—	—	—	—	—	—								
2501 511	18" C.M. PIPE CULVERT 16 GAUGE	L.F.	4	21 00	6	126 00					6	126 00								
2501 515	16" C.M. PIPE APRONS	EACH	18	65 00	18	1,170 00					18	1,170 00								
2501 511	15" C.M. PIPE CULVERT 16 GAUGE	L.F.	114	21 00	114	2,394 00					114	2,394 00								
2501 511	24" R.C. PIPE CULVERT, CLASS II	L.F.	108	30 00	108	3,240 00					108	3,240 00								
2506 522	ADJUST FRAME & RING CASTING	EACH	8	85 00	8	680 00					8	680 00								
2535 501	BITUMINOUS CURB	L.F.	900	1 80	739	1,330 20					739	1,330 20								
2554 501	TRAFFIC BARRIER, DESIGN 8307A	L.F.	275	12 00	340	4,080 00					340	4,080 00								
0554 607	TWISTED END TREATMENT (50LF)	EACH	3	425 00	3	1,275 00					3	1,275 00								
0554 602	GUARDRAIL ANCHORAGE PLATE FOR BRIDGES (8317C)	EACH	5	100 00	4	400 00					4	400 00								
2575 505	SODDING	S.Y.	7,900	1 15	8158	9,381 70					8158	9,381 70								
2575 531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	25	300 00	51	153 00					51	153 00								
412 604	TIMBER WALL	S.F.	420	6 75	482 5	3,256 87	440	2970 00	528	3564 00	1450 5	9,790 87								
504 602	ADJUST VALVE BOX	EACH	3	65 00	2	130 00					2	130 00								
2501 515	24" R.C. PIPE APRON	EACH	2	240 00	2	480 00					2	480 00								
2501 573	INSTALL CULVERT PIPE	L.F.	114	14 00	116	1,624 00					116	1,624 00								
2511 503	GROUTED RIPRAP, CLASS A	C.Y.	46	40 00	46	1,840 00					46	1,840 00								
2511 504	FILTER BLANKET, TYPE I	C.Y.	23	11 00	23	253 00					23	253 00								
Supplemental Agreement No. 1																				
0105 631	SALVAGE BITUMINOUS PAVEMENT	S.Y.	1,951	1 00	—	—	2134	2095 00			2134	2,134 00								
0231 601	PAVEMENT BREAKING	STA	8	145 00	—	—	4	580 00			4	580 00								
0301 604	SAWCUT CONCRETE PAVEMENT	L.F.	50	1 35	—	—	20	27 00			20	27 00								
						\$103,532.41		\$33,186.50		\$8,597.98		\$145,316.89								

Nov. 1, 1982
R.J.B.
R.H.P.

26-105

EDGERTON ST. BIKEWAY, CO. RD. "D" TO VADNAIS BLVD.

STATEMENT OF ESTIMATED QUANTITIES				BIKEWAY WIDENING		CENTER OVERLAY		8' DETACHED BIKEWAY		
ITEM NO	ITEM	UNIT	UNIT PRICE	ESTIMATED QUANTITIES	AMOUNT	ESTIMATED QUANTITIES	AMOUNT	ESTIMATED QUANTITIES	AMOUNT	TOTAL ESTIMATED QUANTITIES
2021.501	MOBILIZATION	LUMP SUM		1						1
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.		722						722
2104.501	REMOVE CULVERT PIPE	L.F.		144						144
2104.509	REMOVE STEEL POST	EACH		4						4
2105.501	COMMON EXCAVATION	C.Y.		4,013				223		4,236
2105.523	COMMON BORROW (LV)	C.Y.		627						627
2105.525	TOPSOIL BORROW	C.Y.		659						659
2104.521	SALVAGE CULVERT PIPE	L.F.		114						114
2211.525	AGGREGATE BASE, CLASS 6 OR 5 100% CRUSHED	TON		2,479				219		2,698
0331.603	SAWCUT BITUMINOUS PAVEMENT SURFACE	L.F.		4,600						4,600
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON		80		77		9		166
2341.508	WEARING COURSE MIXTURE	TON		674 *		1,074		72		1,820
2341.510	BINDER COURSE MIXTURE	TON		674 *		185		72		931
2331.512	LEVELING COURSE MIXTURE	TON (I)				20				20
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL.		282		514		33		829
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL.		1,694						1,694
2501.511	18" C.M. PIPE CULVERT 16 GAUGE	L.F.		4						4
2501.515	15" C.M. PIPE APRONS	EACH		18						18
2501.511	15" C.M. PIPE CULVERT 16 GAUGE	L.F.		114						114
2501.511	24" R.C. PIPE SEWER, CLASS II	L.F.		108						108
2506.522	ADJUST FRAME & RING CASTING	EACH		8						8
2535.501	BITUMINOUS CURB	L.F.		900						900
2554.501	TRAFFIC BARRIER, DESIGN 8307A	L.F.		375						375
0554.607	TWISTED END TREATMENT (50 L.F.)	EACH		3						3
0554.602	GUARDRAIL ANCHORAGE PLATE FOR BRIDGES (8317C)	EACH		5						5
2575.505	SODDING	S.Y.		7,900						7,900
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON		0.5						0.5
412.604	TIMBER WALL	S.F.		300				120		420
504.602	ADJUST VALVE BOX	EACH		3						3
2501.515	24" R.C. PIPE APRON	EACH		2						2
2501.573	INSTALL CULVERT PIPE	L.F.		114						114
2511.503	GROUTED RIPRAP, CLASS A	C.Y.		4.6						4.6
2511.504	FILTER BLANKET, TYPE I	C.Y.		2.3						2.3
0105.631	SALVAGE BITUMINOUS PAVEMENT	S.Y.				1,951				1,951
0231.601	PAVEMENT BREAKING	STA.				8				8
0301.604	SAWCUT CONCRETE PAVEMENT	L.F.				50				50

(1) INCLUDES BIT. MATERIAL FOR MIXTURE IN PAYMENT * INCLUDES 22 TON FOR DRIVEWAY RESTORATION

26-105

STATEMENT OF ESTIMATED QUANTITIES				BIKEWAY WIDENING	CENTER OVERLAY	8' DETACHED BIKEWAY	TOTAL ESTIMATED QUANTITIES			
ITEM NO	ITEM	UNIT	UNIT PRICE	ESTIMATED QUANTITIES	AMOUNT	ESTIMATED QUANTITIES	AMOUNT	ESTIMATED QUANTITIES	AMOUNT	TOTAL ESTIMATED QUANTITIES
2021.501	MOBILIZATION	LUMP SUM	5,000 00	1	5,000 00					1
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.	3 00	722	2,166 00					722
2104.501	REMOVE CULVERT PIPE	L.F.	3 00	144	432 00					144
2104.509	REMOVE STEEL POST	EACH	20 00	4	80 00					4
2105.501	COMMON EXCAVATION	C.Y.	3 00	4,013	12,039 00			223	669 00	4,236
2105.523	COMMON BORROW (LV)	C.Y.	1 00	627	627 00					627
2105.525	TOPSOIL BORROW	C.Y.	4 00	659	2,636 00					659
2104.521	SALVAGE CULVERT PIPE	L.F.	4 00	114	456 00					114
2211.525	AGGREGATE BASE, CLASS 6 OR 5 100% CRUSHED	TON	6 90	2,479	17,105 10			219	1,511 10	2,698
0331.603	SAWCUT BITUMINOUS PAVEMENT SURFACE	L.F.	0 60	4,600	2,760 00					4,600
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	185 00	80	14,800 00	77	14,245 00	9	1,665 00	166
2341.508	WEARING COURSE MIXTURE	TON	12 27	674 *	8,269 98	1,074	13,177 98	72	883 44	1,820
2341.510	BINDER COURSE MIXTURE	TON	12 17	674 *	8,202 58	185	2,251 45	72	876 24	931
2331.512	LEVELING COURSE MIXTURE	TON (I)	29 00			20	580 00			20
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL.	1 50	282	423 00	514	771 00	33	49 50	829
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL.	1 35	1,694	2,286 90					1,694
2501.511	18" C.M. PIPE CULVERT 16 GAUGE	L.F.	25 00	4	100 00					4
2501.515	15" C.M. PIPE APRONS	EACH	50 00	18	900 00					18
2501.511	15" C.M. PIPE CULVERT 16 GAUGE	L.F.	14 00	114	1,596 00					114
2501.511	24" R.C. PIPE SEWER, CLASS II	L.F.	26 00	108	2,808 00					108
2506.522	ADJUST FRAME & RING CASTING	EACH	90 00	8	720 00					8
2535.501	BITUMINOUS CURB	L.F.	1 25	900	1,125 00					900
2554.501	TRAFFIC BARRIER, DESIGN 8307A	L.F.	11 90	375	4,462 50					375
0554.607	TWISTED END TREATMENT (50 L.F.)	EACH	400 00	3	1,200 00					3
0554.602	GUARDRAIL ANCHORAGE PLATE FOR BRIDGES (8317C)	EACH	90 00	5	450 00					5
2575.505	SODDING	S.Y.	1 05	7,900	8,295 00					7,900
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	490 00	0.5	245 00					0.5
412.604	TIMBER WALL	S.F.	6 00	300	1,800 00			120	720 00	420
504.602	ADJUST VALVE BOX	EACH	80 00	3	240 00					3
2501.515	24" R.C. PIPE APRON	EACH	230 00	2	460 00					2
2501.573	INSTALL CULVERT PIPE	L.F.	5 00	114	570 00					114
2511.503	GROUTED RIPRAP, CLASS A	C.Y.	50 00	4.6	230 00					4.6
2511.504	FILTER BLANKET, TYPE I	C.Y.	20 00	2.3	46 00					2.3
0105.631	SALVAGE BITUMINOUS PAVEMENT	S.Y.	1 10			1,951	2,146 10			1,951
0231.601	PAVEMENT BREAKING	STA.	220 00			8	1,760 00			8
0301.604	SAWCUT CONCRETE PAVEMENT	L.F.	3 00			50	150 00			50
TOTALS					102,531 06		35,081 53		6,374 28	

(1) INCLUDES BIT. MATERIAL FOR MIXTURE IN PAYMENT

* INCLUDES 22 TON FOR DRIVEWAY RESTORATION

Bike Grants 41,342 = 42,386.34

MSAS Funds @ 58.66% = 60,144.72 + 35,081.53 = 95,226.25

26-105

STATEMENT OF ESTIMATED QUANTITIES				BIKEWAY WIDENING	CENTER OVERLAY	8' DETACHED BIKEWAY	TOTAL ESTIMATED QUANTITIES			
ITEM NO	ITEM	UNIT	UNIT PRICE	ESTIMATED QUANTITIES	AMOUNT	ESTIMATED QUANTITIES	AMOUNT	ESTIMATED QUANTITIES	AMOUNT	TOTAL ESTIMATED QUANTITIES
2021.501	MOBILIZATION	LUMP SUM	5,000 00	1	5,000 00					1
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.	1 50	722	1,083 00					722
2104.501	REMOVE CULVERT PIPE	L.F.	3 50	144	504 00					144
2104.509	REMOVE STEEL POST	EACH	35 00	4	140 00					4
2105.501	COMMON EXCAVATION	C.Y.	3 00	4,013	12,039 00			223	669 00	4,236
2105.523	COMMON BORROW (LV)	C.Y.	4 50	627	2,821 50					627
2105.525	TOPSOIL BORROW	C.Y.	5 00	659	3,295 00					659
2104.521	SALVAGE CULVERT PIPE	L.F.	3 50	114	399 00					114
2211.525	AGGREGATE BASE, CLASS 6 OR 5 100% CRUSHED	TON	6 20	2,479	15,369 80			219	1,357 80	2,698
0331.603	SAWCUT BITUMINOUS PAVEMENT SURFACE	L.F.	0 45	4,600	2,070 00					4,600
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	190 00	80	15,200 00	77	14,630 00	9	1,710 00	166
2341.508	WEARING COURSE MIXTURE	TON	12 00	674 *	8,088 00	1,074	12,888 00	72	864 00	1,820
2341.510	BINDER COURSE MIXTURE	TON	12 00	674 *	8,088 00	185	2,220 00	72	864 00	931
2331.512	LEVELING COURSE MIXTURE	TON (I)	21 00			20	420 00			20
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL.	1 10	282	310 20	514	565 40	33	36 30	829
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL.	0 01	1,694	16 94					1,694
2501.511	18" C.M. PIPE CULVERT 16 GAUGE	L.F.	21 00	4	84 00					4
2501.515	15" C.M. PIPE APRONS	EACH	65 00	18	1,170 00					18
2501.511	15" C.M. PIPE CULVERT 16 GAUGE	L.F.	21 00	114	2,394 00					114
2501.511	24" R.C. PIPE SEWER, CLASS II	L.F.	30 00	108	3,240 00					108
2506.522	ADJUST FRAME & RING CASTING	EACH	85 00	8	680 00					8
2535.501	BITUMINOUS CURB	L.F.	1 80	900	1,620 00					900
2554.501	TRAFFIC BARRIER, DESIGN 8307A	L.F.	12 00	375	4,500 00					375
0554.607	TWISTED END TREATMENT (50L.F.)	EACH	425 00	3	1,275 00					3
0554.602	GUARDRAIL ANCHORAGE PLATE FOR BRIDGES (8317C)	EACH	100 00	5	500 00					5
2575.505	SODDING	S.Y.	1 15	7,900	9,085 00					7,900
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	300 00	0.5	150 00					0.5
412.604	TIMBER WALL	S.F.	6 75	300	2,025 00			120	810 00	420
504.602	ADJUST VALVE BOX	EACH	65 00	3	195 00					3
2501.515	24" R.C. PIPE APRON	EACH	240 00	2	480 00					2
2501.573	INSTALL CULVERT PIPE	L.F.	14 00	114	1,596 00					114
2511.503	GROUTED RIPRAP, CLASS A	C.Y.	40 00	4.6	184 00					4.6
2511.504	FILTER BLANKET, TYPE I	C.Y.	11 00	2.3	25 30					2.3
0105.631	SALVAGE BITUMINOUS PAVEMENT	S.Y.	1 00		-	1,951	1,951 00			1,951
0231.601	PAVEMENT BREAKING	STA.	145 00		-	8	1,160 00			8
0301.604	SAWCUT CONCRETE PAVEMENT	L.F.	1 35		-	50	67 50			50
TOTALS					103,627 74		33,901 90		6311 10	

(1) INCLUDES BIT. MATERIAL FOR MIXTURE IN PAYMENT

* INCLUDES 22 TON FOR DRIVEWAY RESTORATION

Bike Grant @ 41.34% = \$42,839.71

MSAS @ 58.66% = 60,788.03 + 33,901.90 = 94,689.93

26-105

STATEMENT OF ESTIMATED QUANTITIES				BIKEWAY WIDENING		CENTER OVERLAY		8' DETACHED BIKEWAY		TOTAL ESTIMATED QUANTITIES
ITEM NO	ITEM	UNIT	UNIT PRICE	ESTIMATED QUANTITIES	AMOUNT	ESTIMATED QUANTITIES	AMOUNT	ESTIMATED QUANTITIES	AMOUNT	
2021.501	MOBILIZATION	LUMP SUM	4,500 00	1	4,500 00					1
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.	2 62	722	1,891 64					722
2104.501	REMOVE CULVERT PIPE	L.F.	2 62	144	377 28					144
2104.509	REMOVE STEEL POST	EACH	20 00	4	80 00					4
2105.501	COMMON EXCAVATION	C.Y.	3 20	4,013	12,841 60			223	713 60	4,236
2105.523	COMMON BORROW (LV)	C.Y.	4 77	627	2,990 79					627
2105.525	TOPSOIL BORROW	C.Y.	4 09	659	2,695 31					659
2104.521	SALVAGE CULVERT PIPE	L.F.	6 30	114	718 20					114
2211.525	AGGREGATE BASE, CLASS 6 OR 5 100% CRUSHED	TON	5 25	2,479	13,014 75			219	1,149 75	2,698
0331.603	SAWCUT BITUMINOUS PAVEMENT SURFACE	L.F.	0 25	4,600	1,150 00					4,600
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	185 00	80	14,800 00	77	14,245 00	9	1,665 00	166
2341.508	WEARING COURSE MIXTURE	TON	12 27	674 *	8,269 98	1,074	13,177 98	72	883 44	1,820
2341.510	BINDER COURSE MIXTURE	TON	12 17	674 *	8,202 58	185	2,251 45	72	876 24	931
2331.512	LEVELING COURSE MIXTURE	TON (I)	29 00			20	580 00			20
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL.	1 50	282	423 00	514	771 00	33	49 50	829
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL.	1 35	1,694	2,286 90					1,694
2501.511	18" C.M. PIPE CULVERT 16 GAUGE	L.F.	31 50	4	126 00					4
2501.515	15" C.M. PIPE APRONS	EACH	57 75	18	1,039 50					18
2501.511	15" C.M. PIPE CULVERT 16 GAUGE	L.F.	16 95	114	1,932 30					114
2501.511	24" R.C. PIPE SEWER, CLASS II	L.F.	28 66	108	3,095 28					108
2506.522	ADJUST FRAME & RING CASTING	EACH	150 00	8	1,200 00					8
2535.501	BITUMINOUS CURB	L.F.	1 25	900	1,125 00					900
2554.501	TRAFFIC BARRIER, DESIGN 8307A	L.F.	12 49	375	4,683 75					375
0554.607	TWISTED END TREATMENT (50 L.F.)	EACH	420 00	3	1,260 00					3
0554.602	GUARDRAIL ANCHORAGE PLATE FOR BRIDGES (8317C)	EACH	94 50	5	472 50					5
2575.505	SODDING	S.Y.	1 12	7,900	8,848 00					7,900
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	500 00	0.5	250 00					0.5
412.604	TIMBER WALL	S.F.	5 50	300	1,650 00			120	660 00	420
504.602	ADJUST VALVE BOX	EACH	45 00	3	135 00					3
2501.515	24" R.C. PIPE APRON	EACH	378 00	2	756 00					2
2501.573	INSTALL CULVERT PIPE	L.F.	6 14	114	699 96					114
2511.503	GROUTED RIPRAP, CLASS A	C.Y.	57 75	4.6	265 65					4.6
2511.504	FILTER BLANKET, TYPE I	C.Y.	31 50	2.3	72 45					2.3
0105.631	SALVAGE BITUMINOUS PAVEMENT	S.Y.	1 50			1,951	2,926 50			1,951
0231.601	PAVEMENT BREAKING	STA.	500 00			8	4,000 00			8
0301.604	SAWCUT CONCRETE PAVEMENT	L.F.	3 00			50	150 00			50
					101,853 42		38,101 93		5,997 53	

\$ 145,952.88

(1) INCLUDES BIT. MATERIAL FOR MIXTURE IN PAYMENT

* INCLUDES 22 TON FOR DRIVEWAY RESTORATION

Bike Grant @ 41.348 = 42,106.20

M.S.A.S. @ 58.668 = 59,747.22 + 38,101.93 = 97,849.15

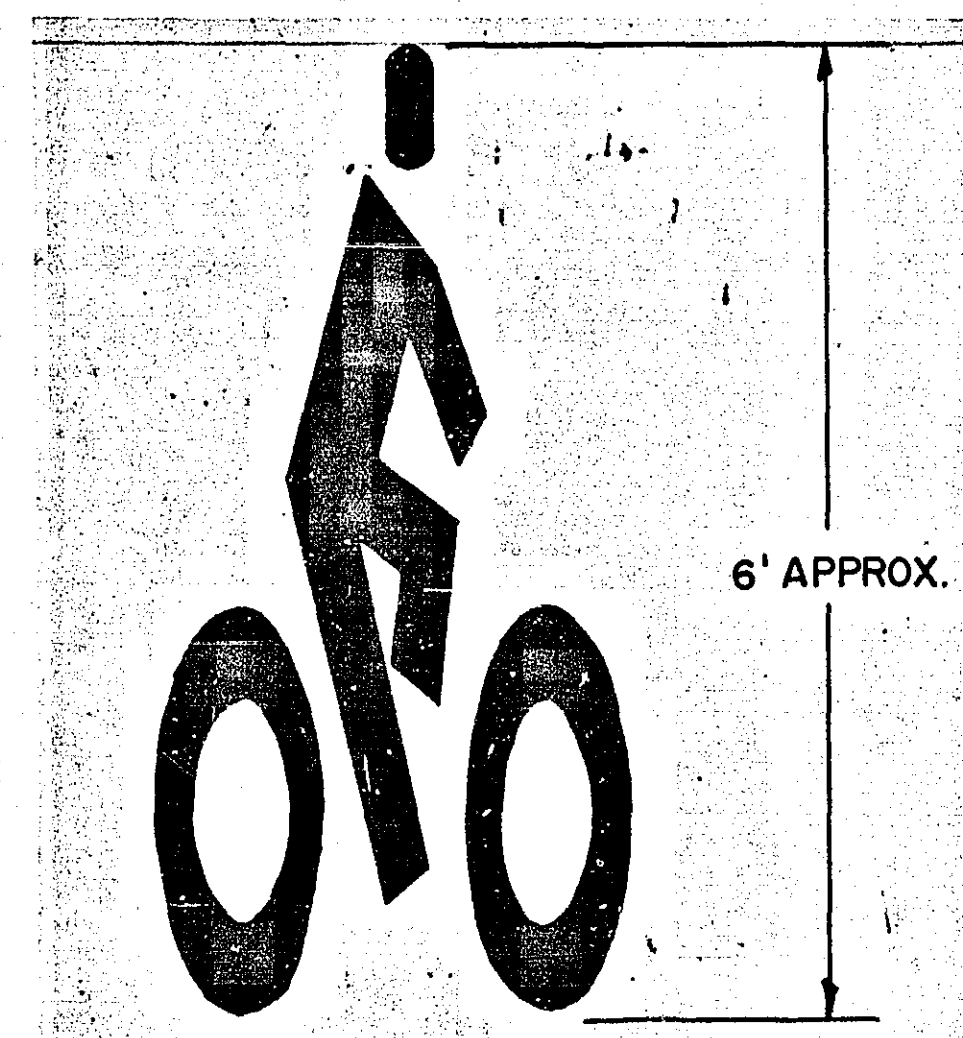
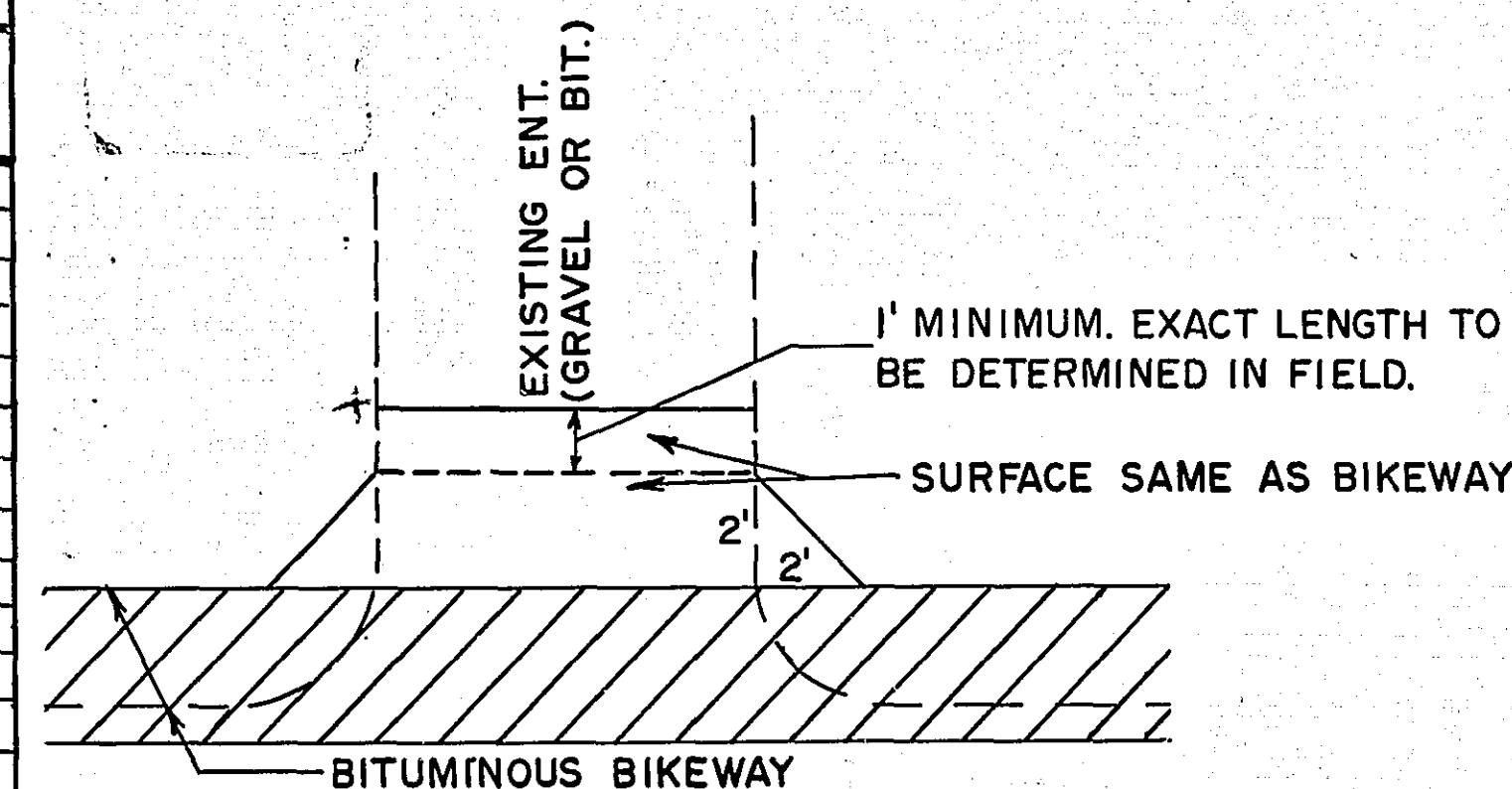
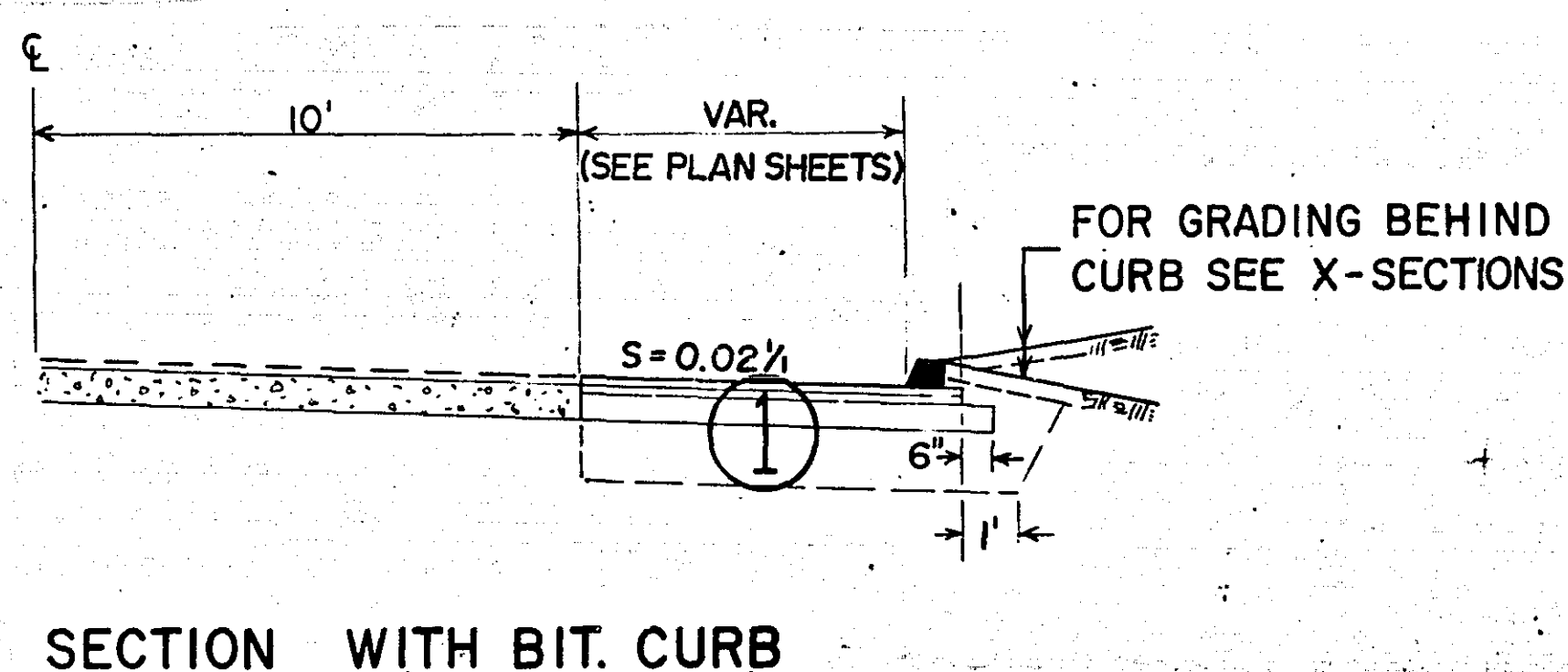
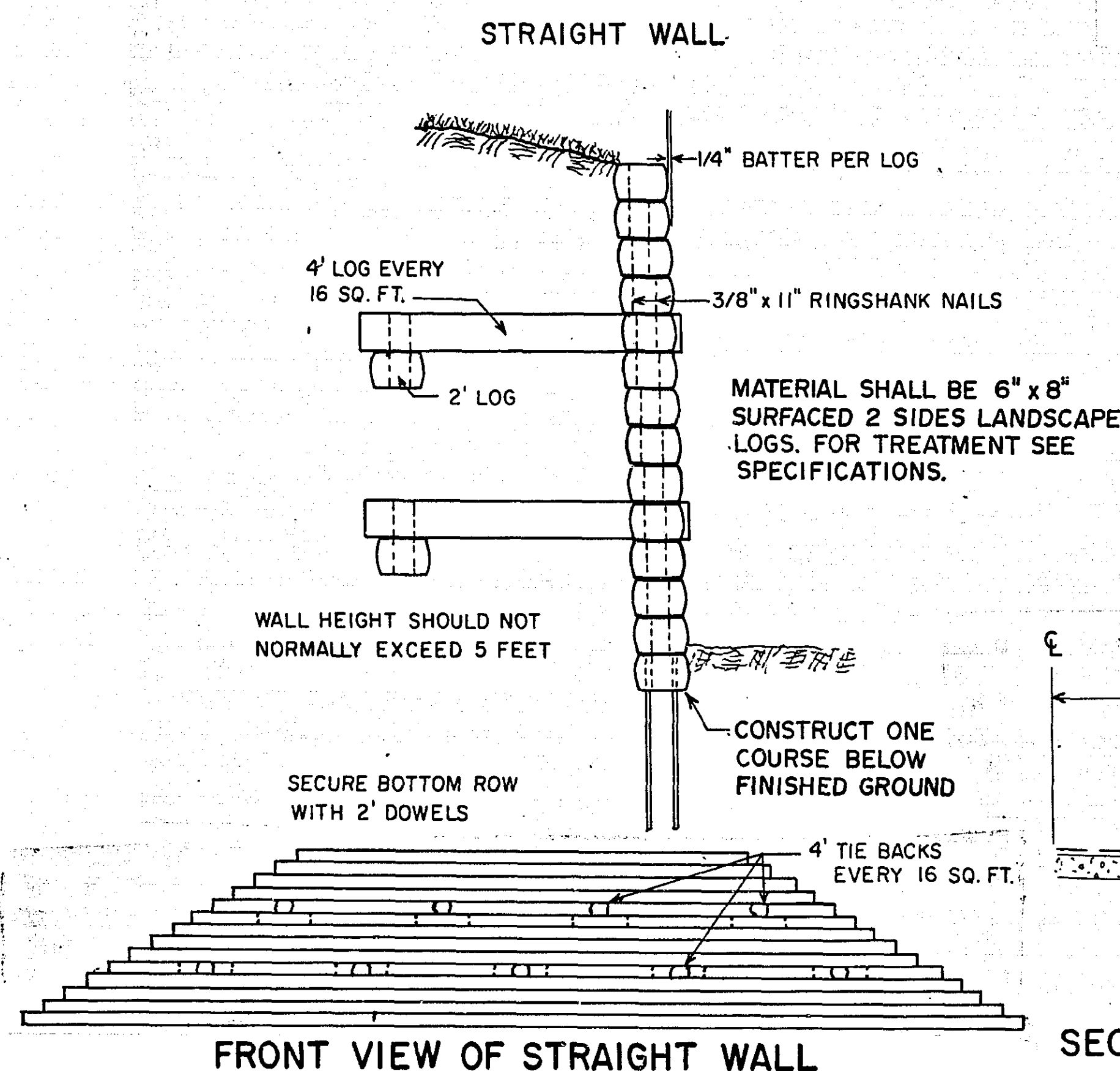
26-105

Sheet No. 1 of 13 Sheets

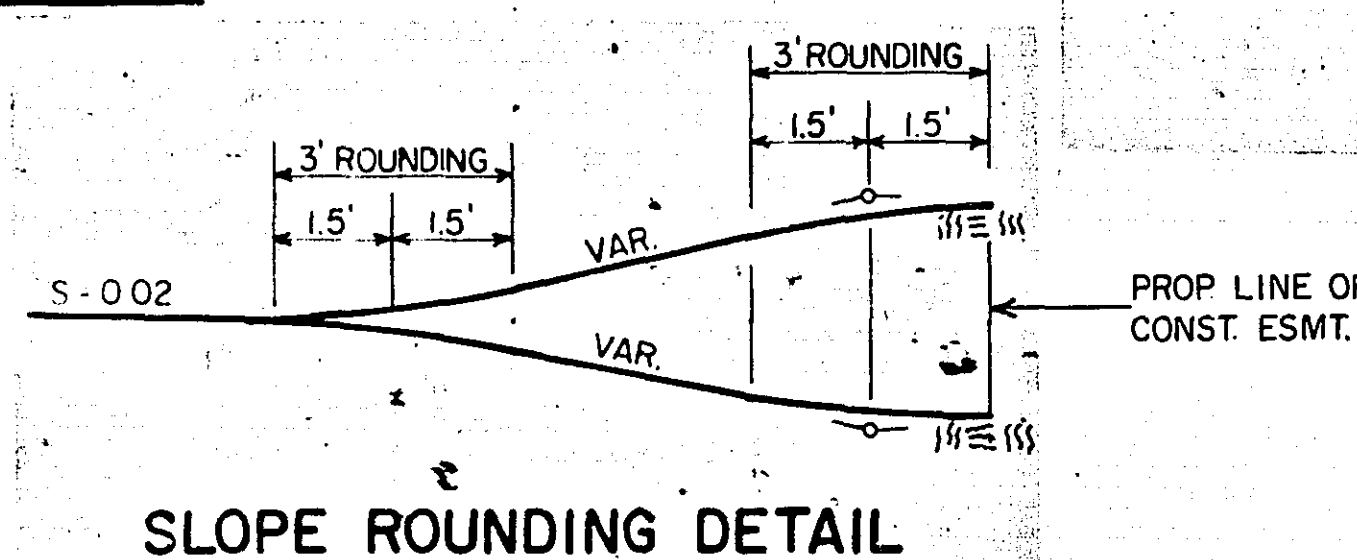
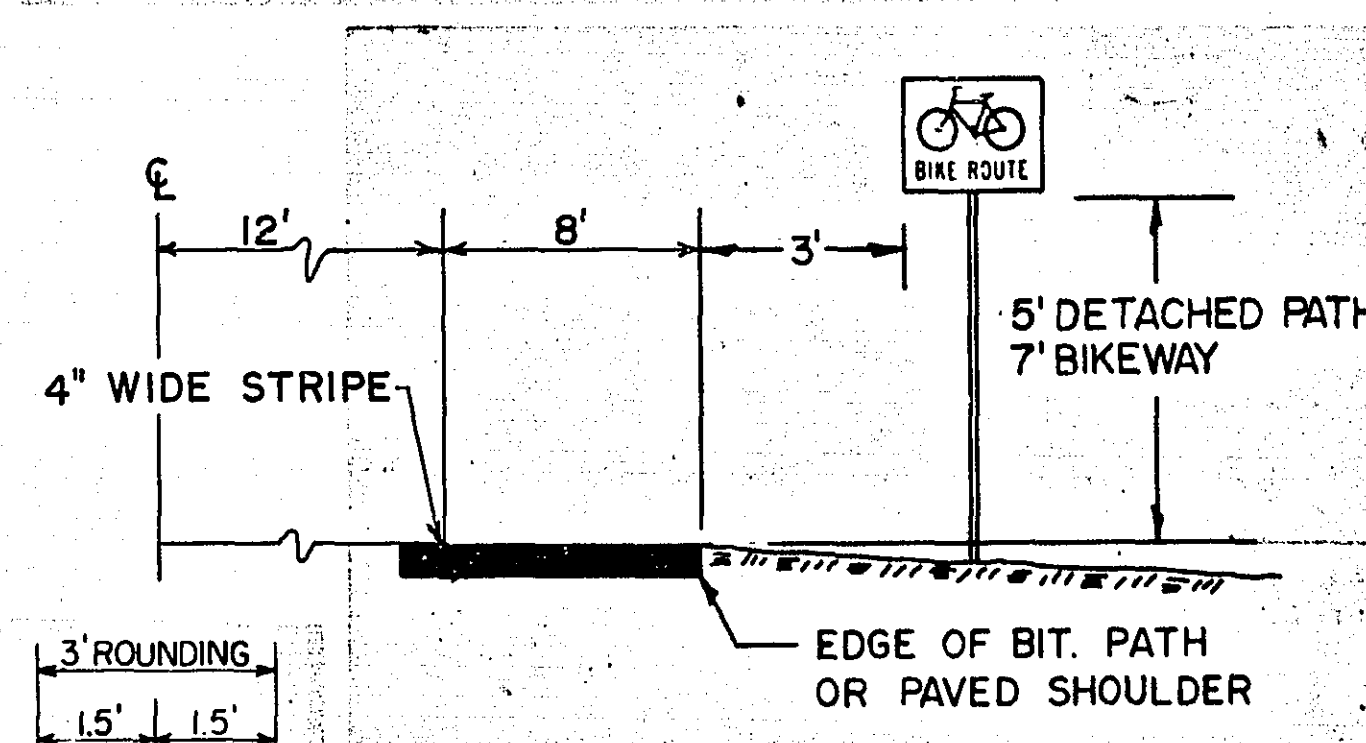
STATEMENT OF ESTIMATED QUANTITIES			BIKEWAY WIDENING	CENTER OVERLAY	8' DETACHED BIKEWAY	TOTAL
ITEM NO.	ITEM	UNIT	ESTIMATED QUANTITIES	ESTIMATED QUANTITIES	ESTIMATED QUANTITIES	ESTIMATED QUANTITIES
2021.501	MOBILIZATION	LUMP SUM	1			1
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.	722			722
2104.501	REMOVE CULVERT PIPE	L.F.	144			144
2104.509	REMOVE STEEL POST	EACH	4			4
2105.501	COMMON EXCAVATION	C.Y.	4,013		223	4,236
2105.523	COMMON BORROW (LV)	C.Y.	627			627
2105.525	TOPSOIL BORROW	C.Y.	659			659
2104.521	SALVAGE CULVERT PIPE	L.F.	114			114
2211.525	AGGREGATE BASE, CLASS 6 OR 5 100% CRUSHED	TON	2,479		219	2,698
0331.603	SAWCUT BITUMINOUS PAVEMENT SURFACE	L.F.	4,600			4,600
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	80	77	9	166
2341.508	WEARING COURSE MIXTURE	TON	674 *	1,074	72	1,820
2341.510	BINDER COURSE MIXTURE	TON	674 *	185	72	931
2331.512	LEVELING COURSE MIXTURE	TON (1)		20		20
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL.	282	514	33	829
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL.	1,694			1,694
2501.511	18" C.M. PIPE CULVERT 16 GAUGE	L.F.	4			4
2501.515	15" C.M. PIPE APRONS	EACH	18			18
2501.511	15" C.M. PIPE CULVERT 16 GAUGE	L.F.	114			114
2501.511	24" R.C. PIPE CULVERT, CLASS II	L.F.	108			108
2506.522	ADJUST FRAME & RING CASTING	EACH	8			8
2535.501	BITUMINOUS CURB	L.F.	900			900
2554.501	TRAFFIC BARRIER, DESIGN 8307A	L.F.	375			375
0554.607	TWISTED END TREATMENT (50L.F.)	EACH	3			3
0554.602	GUARDRAIL ANCHORAGE PLATE FOR BRIDGES (8317C)	EACH	5			5
2575.505	SODDING	S.Y.	7,900			7,900
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	0.5			0.5
412.604	TIMBER WALL	S.F.	300		120	420
504.602	ADJUST VALVE BOX	EACH	3			3
2501.515	24" R.C. PIPE APRON	EACH	2			2
2501.573	INSTALL CULVERT PIPE	L.F.	114			114
2511.503	GROUTED RIPRAP, CLASS A	C.Y.	4.6			4.6
2511.504	FILTER BLANKET, TYPE I	C.Y.	2.3			2.3
0105.631	SALVAGE BITUMINOUS PAVEMENT	S.Y.		1,951		1,951
0231.601	PAVEMENT BREAKING	STA.		8		8
0301.604	SAWCUT CONCRETE PAVEMENT	L.F.		50		50

NOTE: THE CONTRACTOR IS ADVISED THAT HE MAY USE AGGREGATE BASE, CLASS 6 OR, AS AN ALTERNATE, HE MAY USE 100% CRUSHED MATERIAL WHICH MEETS THE REQUIREMENTS OF CLASS 5 IN TABLE 3138-1 OF THE MN./D.O.T. STANDARD SPECIFICATIONS.

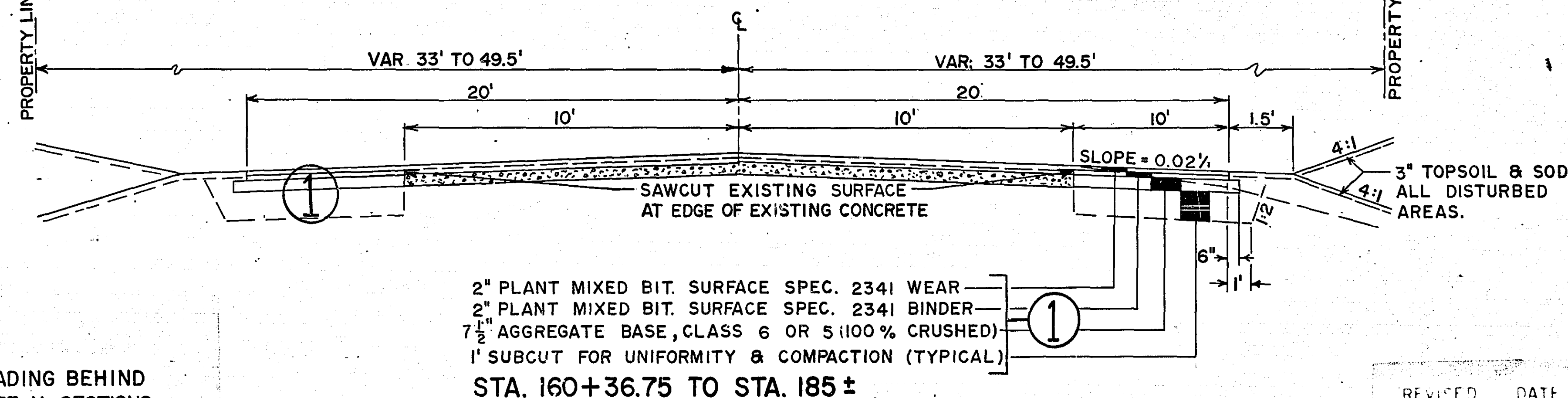
* INCLUDES 22 TONS FOR DRIVEWAY RESTORATION
(1) INCLUDES BIT. MATERIAL FOR MIXTURE IN PAYMENT



TYPICAL SIGN & PAVEMENT MESSAGE PLACEMENT
SIGNING AND PAINTING BY OTHERS



TYPICAL SECTION



2" PLANT MIXED BIT. SURFACE SPEC. 2341 WEAR
2" PLANT MIXED BIT. SURFACE SPEC. 2341 BINDER
7 1/2" AGGREGATE BASE, CLASS 6 OR 5 (100% CRUSHED)
1" SUBCUT FOR UNIFORMITY & COMPACTION (TYPICAL)
STA. 160+36.75 TO STA. 185 ±

STA. 185 ± TO STA. 193+25 ±
SEE TYPICAL, SHEET NO. 6

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Harry Feldman
Date 6-11-81 Reg. No. 13501

S.A.P. NO. 62-658-04

STANDARD DETAIL PLATES

ITEM NO.	ITEM
0003 A	SPECIFICATION REFERENCE TO STANDARD PLATES
3000 I	REINFORCED CONCRETE PIPE
3006 C	GASKET JOINT FOR REINFORCED CONCRETE PIPE
3040 F	C.M.P. CULVERT
3133 A	RIPRAP AT R.C.P. OUTLETS
3100 F	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3123 H	METAL APRON FOR C.M.P.

4010 E	CONCRETE SHORT CONE AND ADJUSTING RING
--------	--

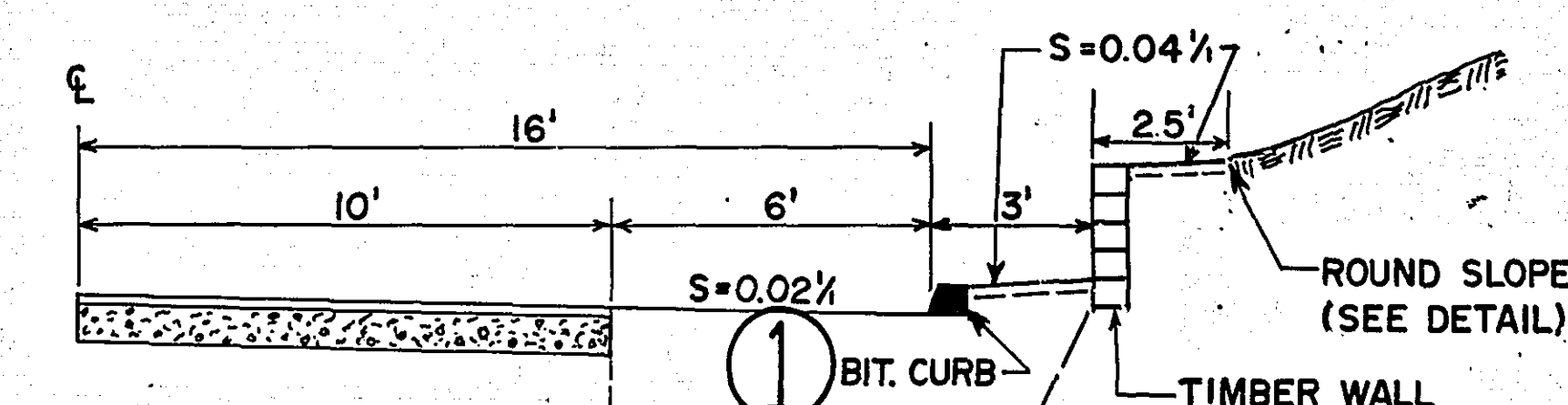
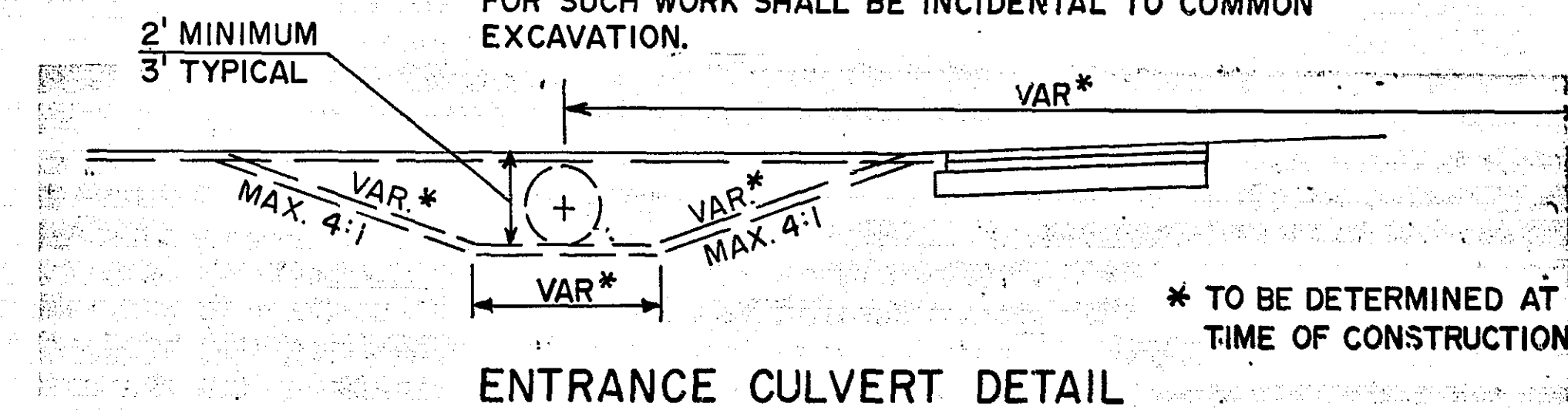
7065 C	BITUMINOUS CURB
--------	-----------------

8000 H	STANDARD BARRICADES
--------	---------------------

8307 L	STRUCTURAL PLATE BEAM GUARDRAIL
8317 C	GUARDRAIL ANCHORAGE ASSEMBLY FOR BRIDGES
8319 D	TWISTED END TREATMENT

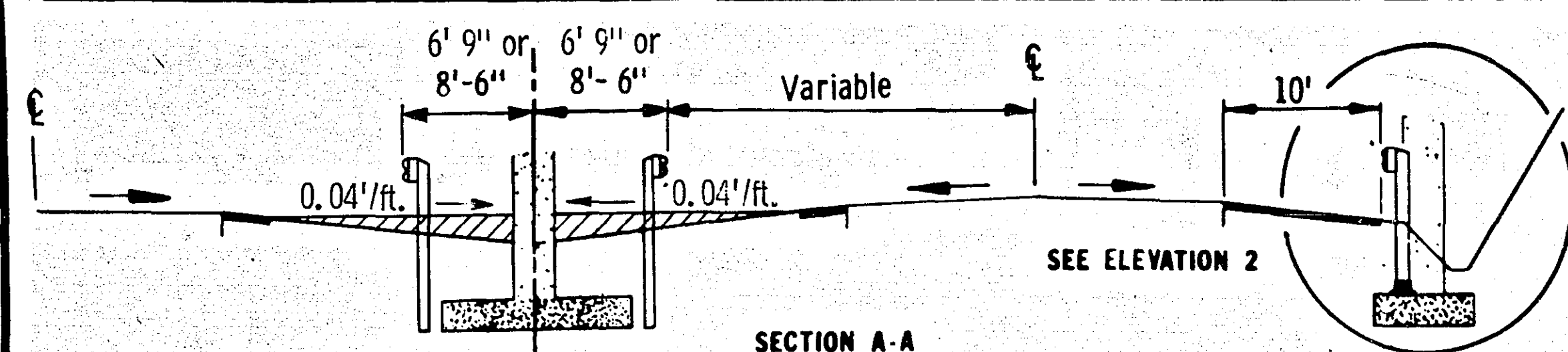
9102 C	SODDING AT PIPE CULVERT ENDS
--------	------------------------------

NOTE: PARTIAL REMOVAL OF TIMBER, MASONRY, OR FLAGSTONE CULVERT HEADWALLS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BY THE ENGINEER. PAYMENT FOR SUCH WORK SHALL BE INCIDENTAL TO COMMON EXCAVATION.

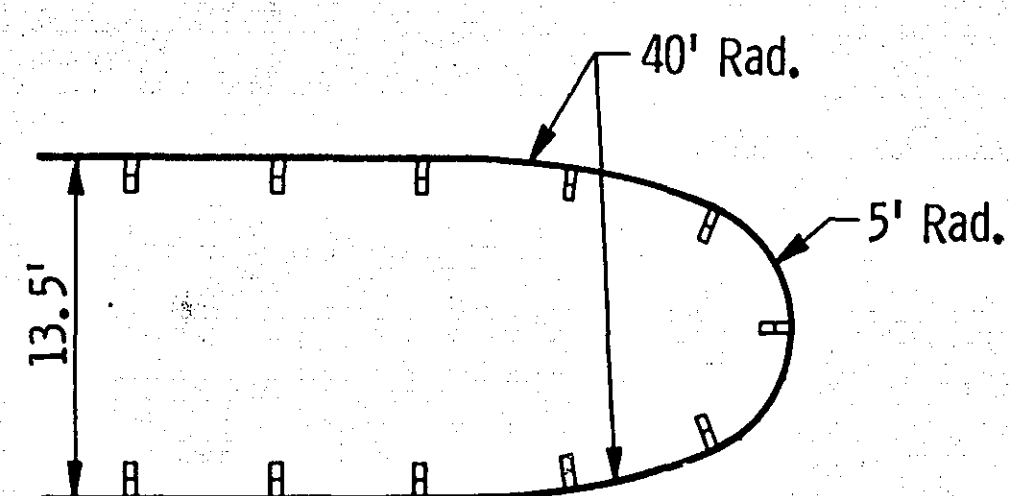
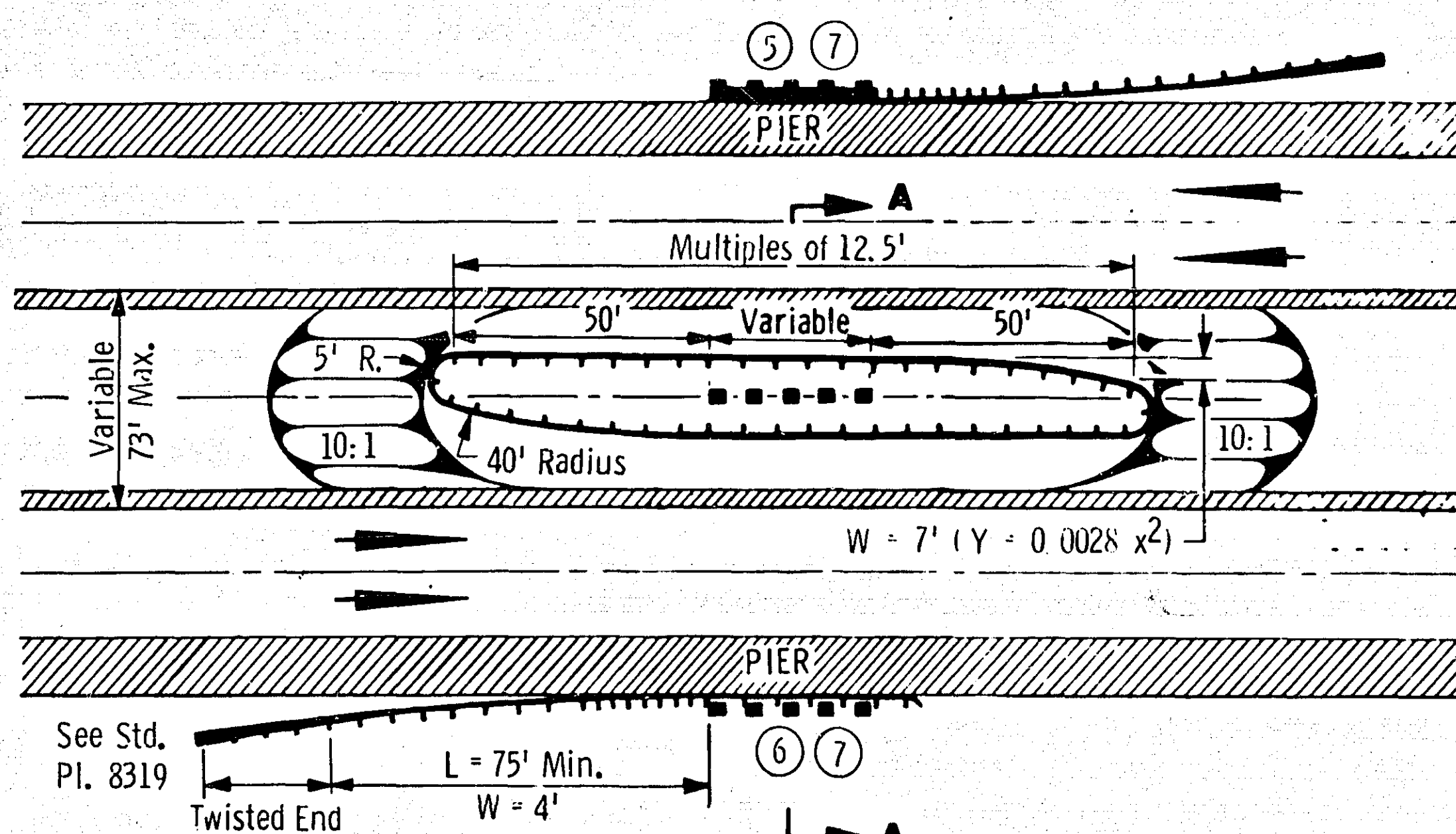


SECTION WITH TIMBER WALL
STA. 187+75 TO STA. 189+25 RT. 19'
STA. 188+45 TO STA. 188+75 LT. 34'

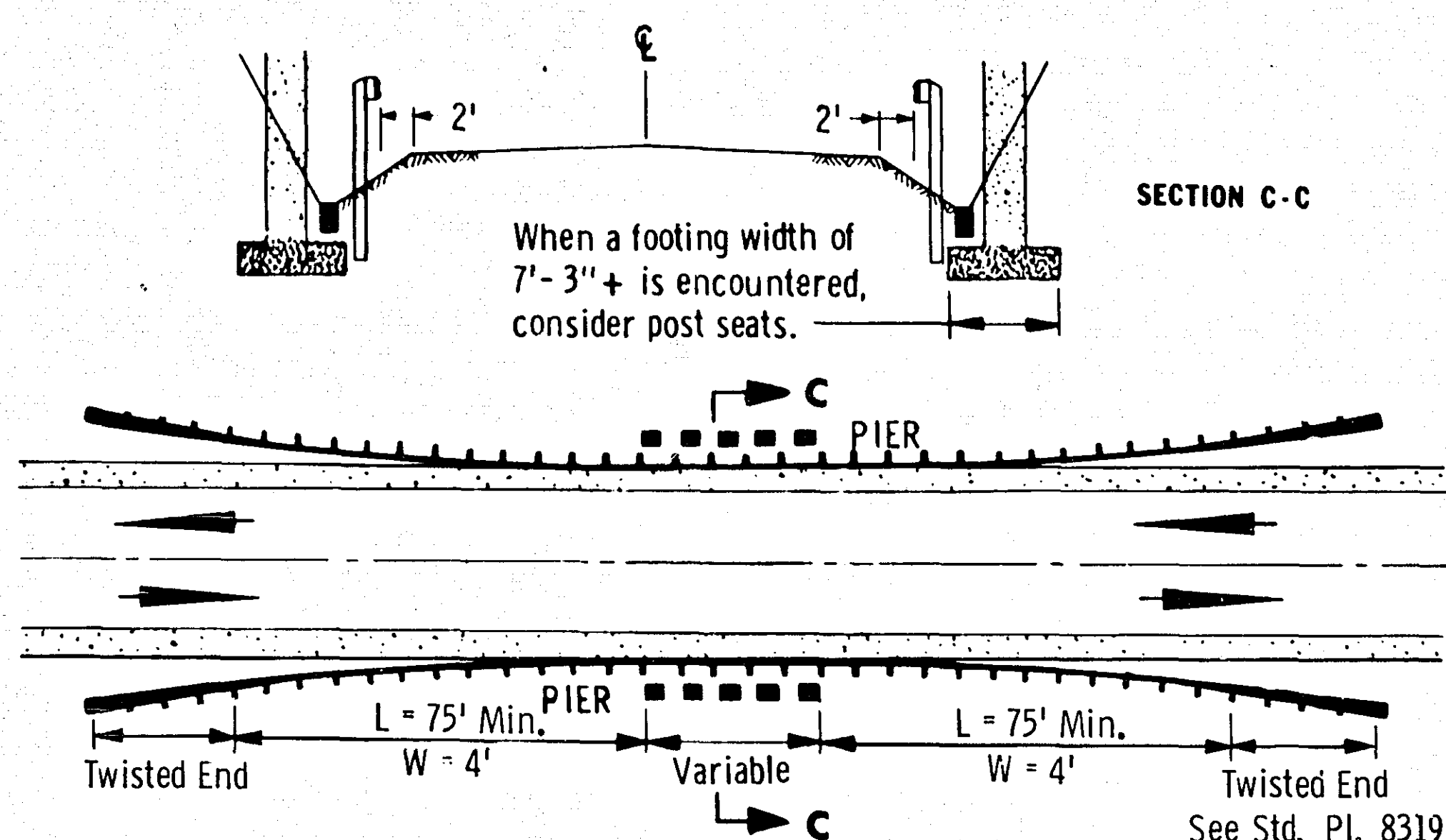
REVISED	DATE	DESIGNED BY	CHECKED BY
TYPICAL SECTION # 1	9-14-81	DAIAN PY	



The median ditch shall be filled to provide an elevation of guardrail approximately (within 6" ±) the same as if installed on the shoulder. Extend fill to guardrail nose and taper to median ditch on 10:1 slope.



ALTERNATE GUARDRAIL INSTALLATION ⑦

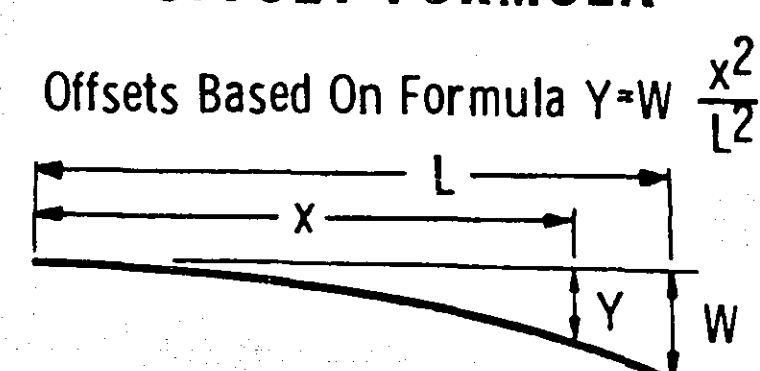


TWO-WAY UNDERPASS

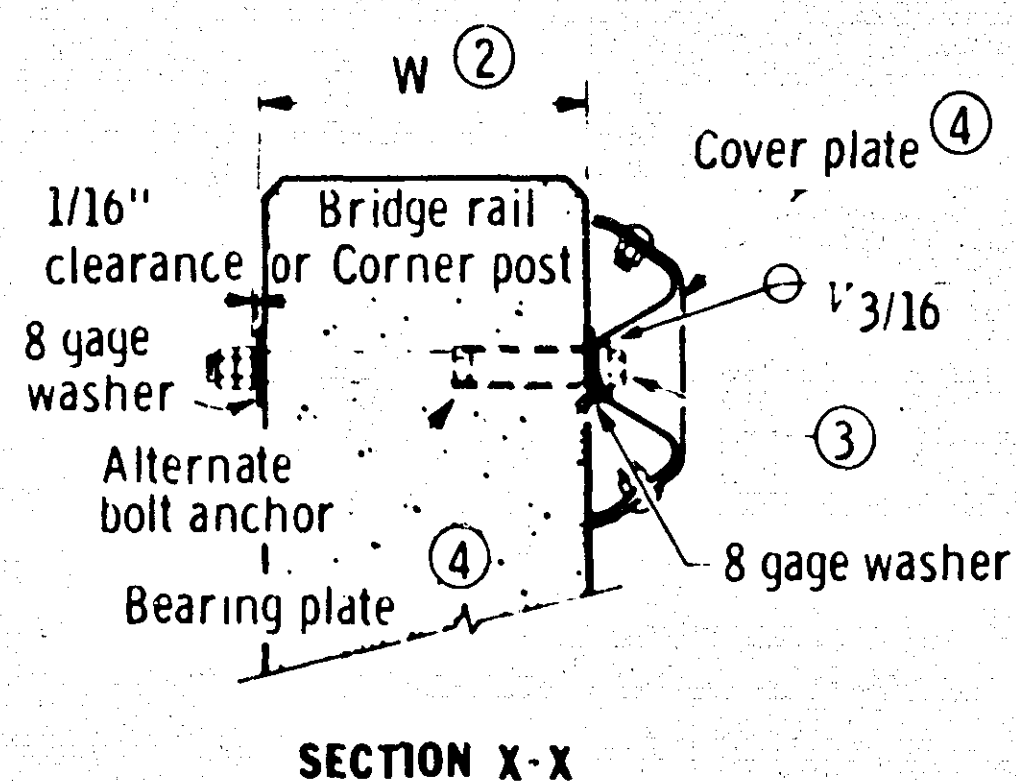
GENERAL NOTES:

- All guardrail posts shall be 6' 3" c. to c. except where noted.
- When the approaching flare can be buried in the backslope eliminate the twisted end and add 25' of rail.
- The required L length and W offset shall be determined in the field by the Engineer.
- See Road Design Manual Fig. C 5-291.566 for offset charts.
- The latest approved Standard Plates shall apply 8307, 8316, 8317, 8319.

OFFSET FORMULA

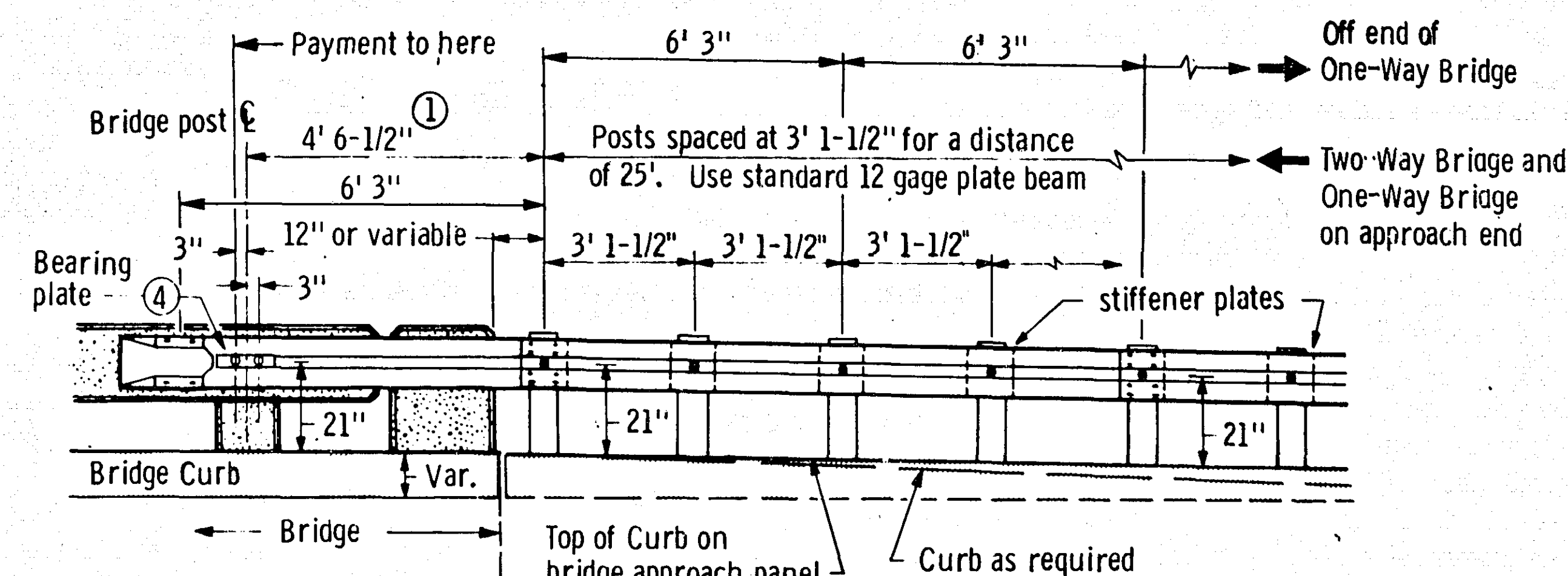
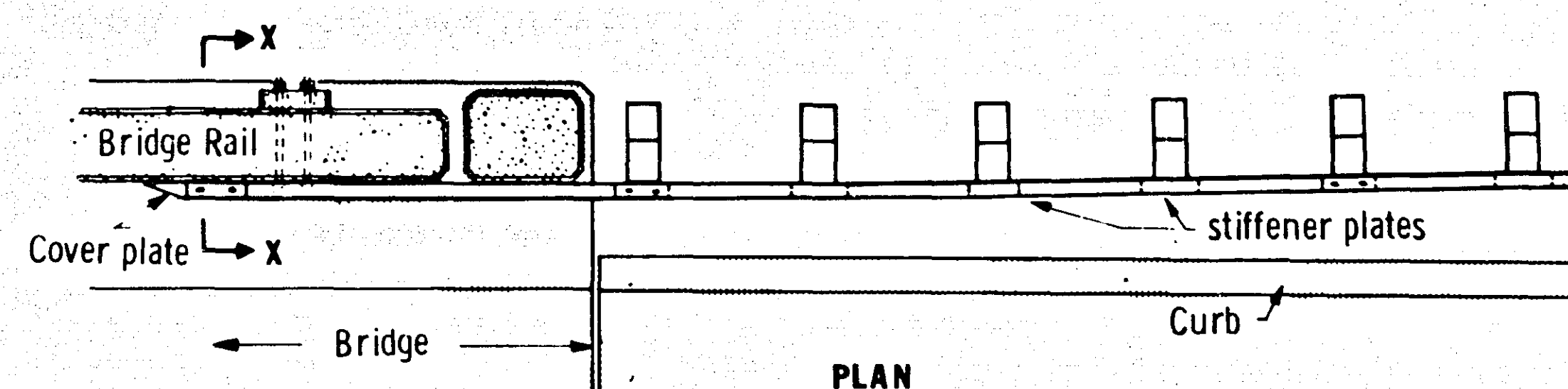


Y = Intermediate Offsets
W = Width of Final Offset
X = Intermediate Distances
L = Total Length of Flare



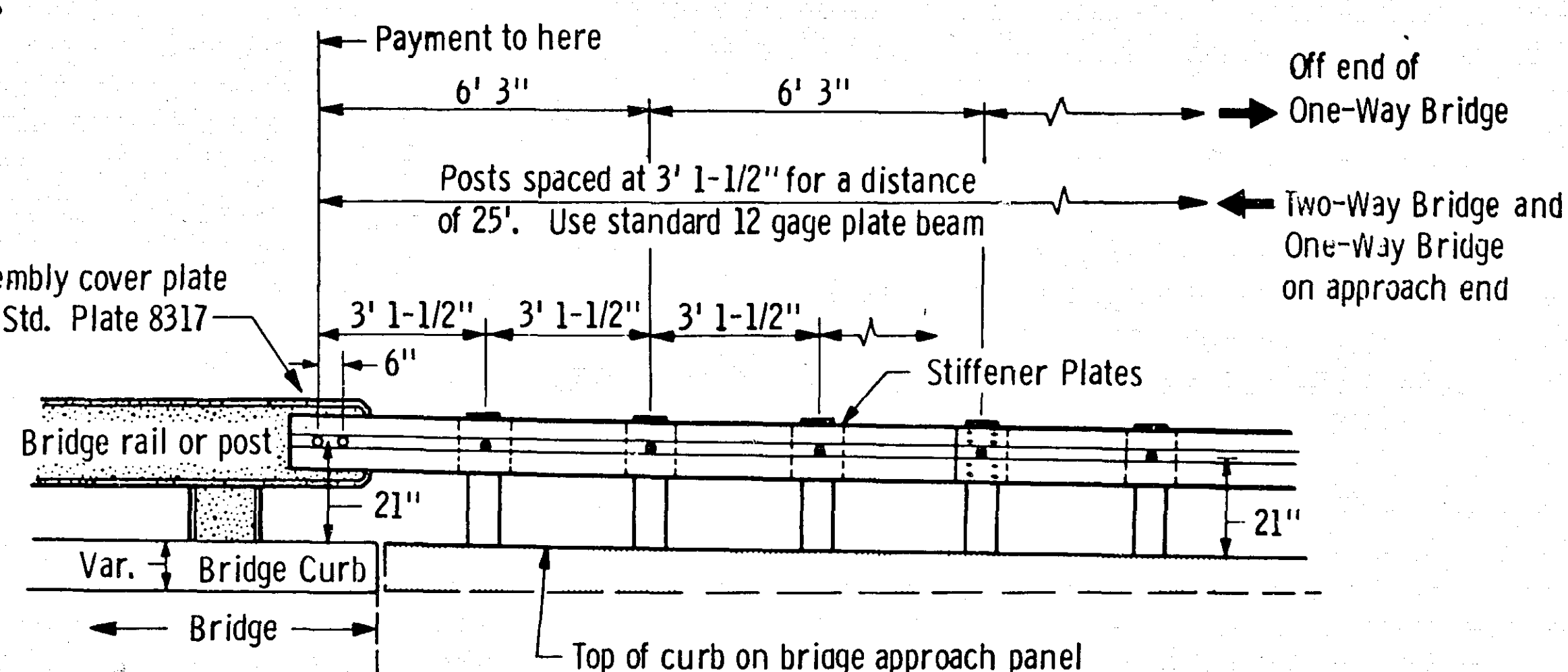
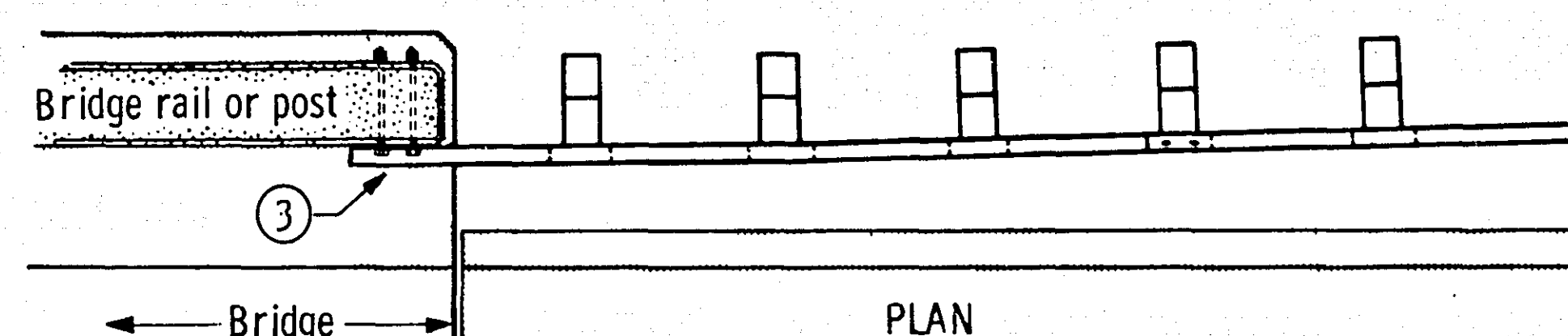
- ① Use the standard 6' 3" section with 4' 6-1/2" dimension wherever feasible. Lengths are tabulated in plans for various types of corner posts and/or railings.
- ② Width variable dependent on bridge design
- ③ Drill holes for two 1-1/4" bolts, lock two nuts. Where W exceeds 15", 1-1/4" bolt anchorages, Spec. 3387, may be used. Embed 6 inches minimum in concrete. Allow 1/16" clearance after tightening bolt anchorages.
- ④ See Standard Plate 8317 "Guardrail Connection Assembly for Bridges" for cover plate and bearing plate details
- ⑤ Concrete barrier wall between pier columns. See sheet _____ for wall details. Connect guardrail to barrier wall anchorage plate Std. Plate 8318
- ⑥ Use 3' 1-1/2" post spacing between and at the upstream end of piers when less than 2' from face of rail to face of pier.
- ⑦ Notes ⑤, ⑥ and Alternate Guardrail as determined by designer and specified on sheet _____.

POST ANCHORAGE ON FOOTINGS



ELEVATION

TYPICAL TREATMENT B



ELEVATION

TYPICAL TREATMENT A

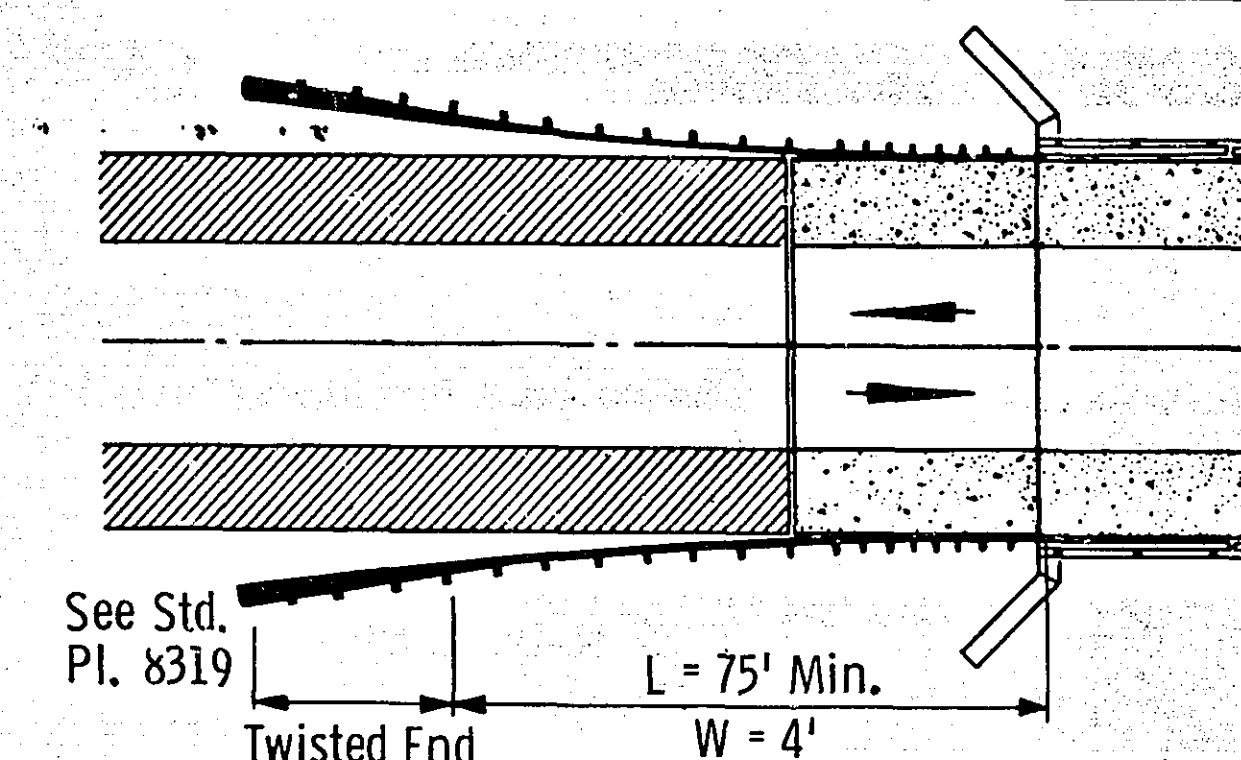
GUARDRAIL CONNECTION TO BRIDGE

APPROVED April 23, 1976
Leonard E. Elter
Engineering Standards Engineer
MATERIALS, RESEARCH AND
STANDARDS DIVISION

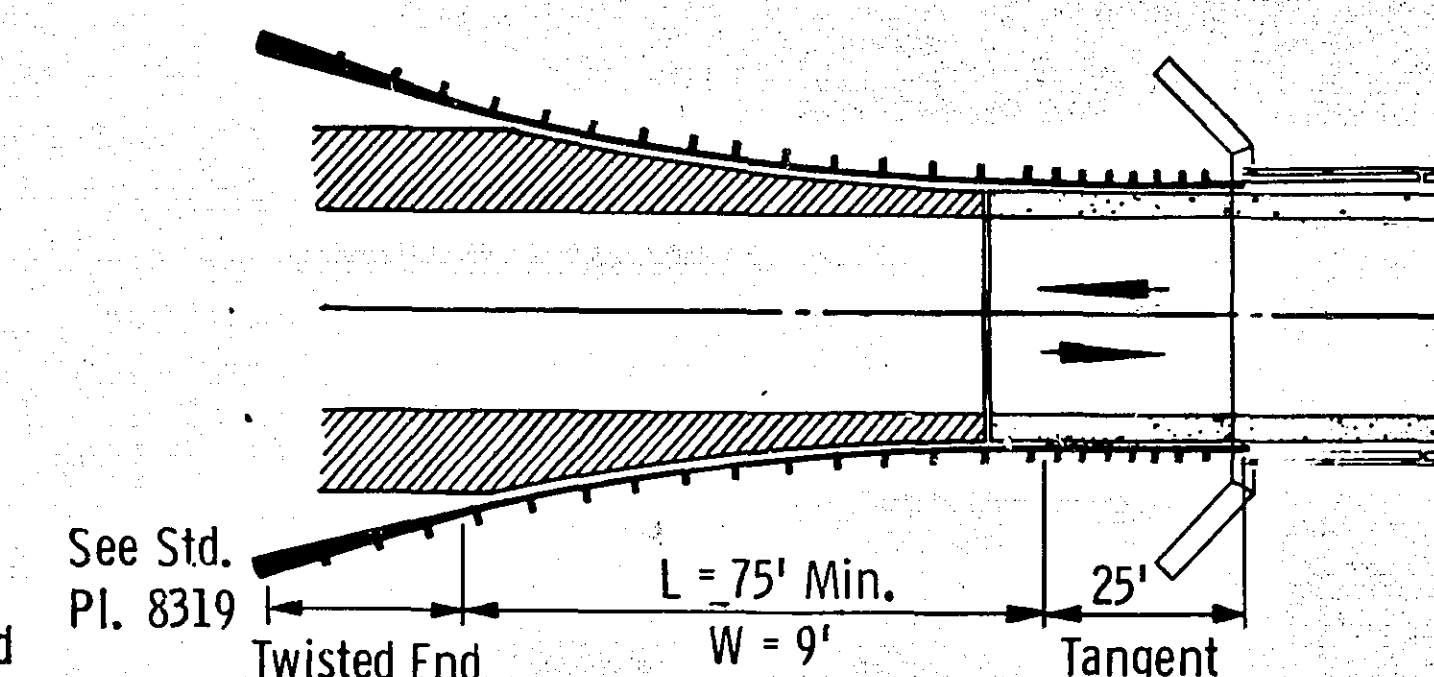
GUARDRAIL IMPROVEMENTS FOR BRIDGES AND PIERS

S.A.P. NO. 62-658-04

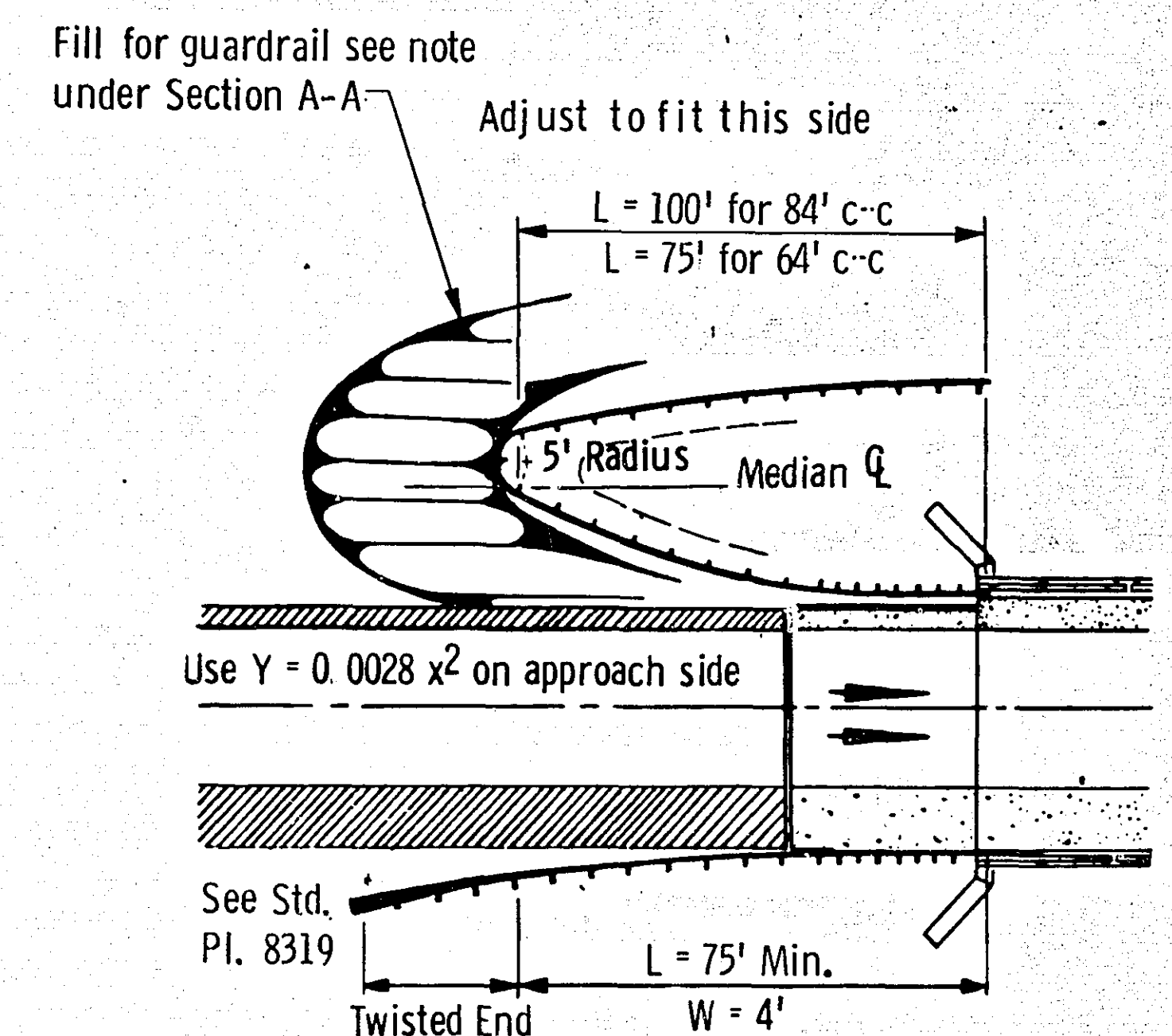
Fed. Proj. No.



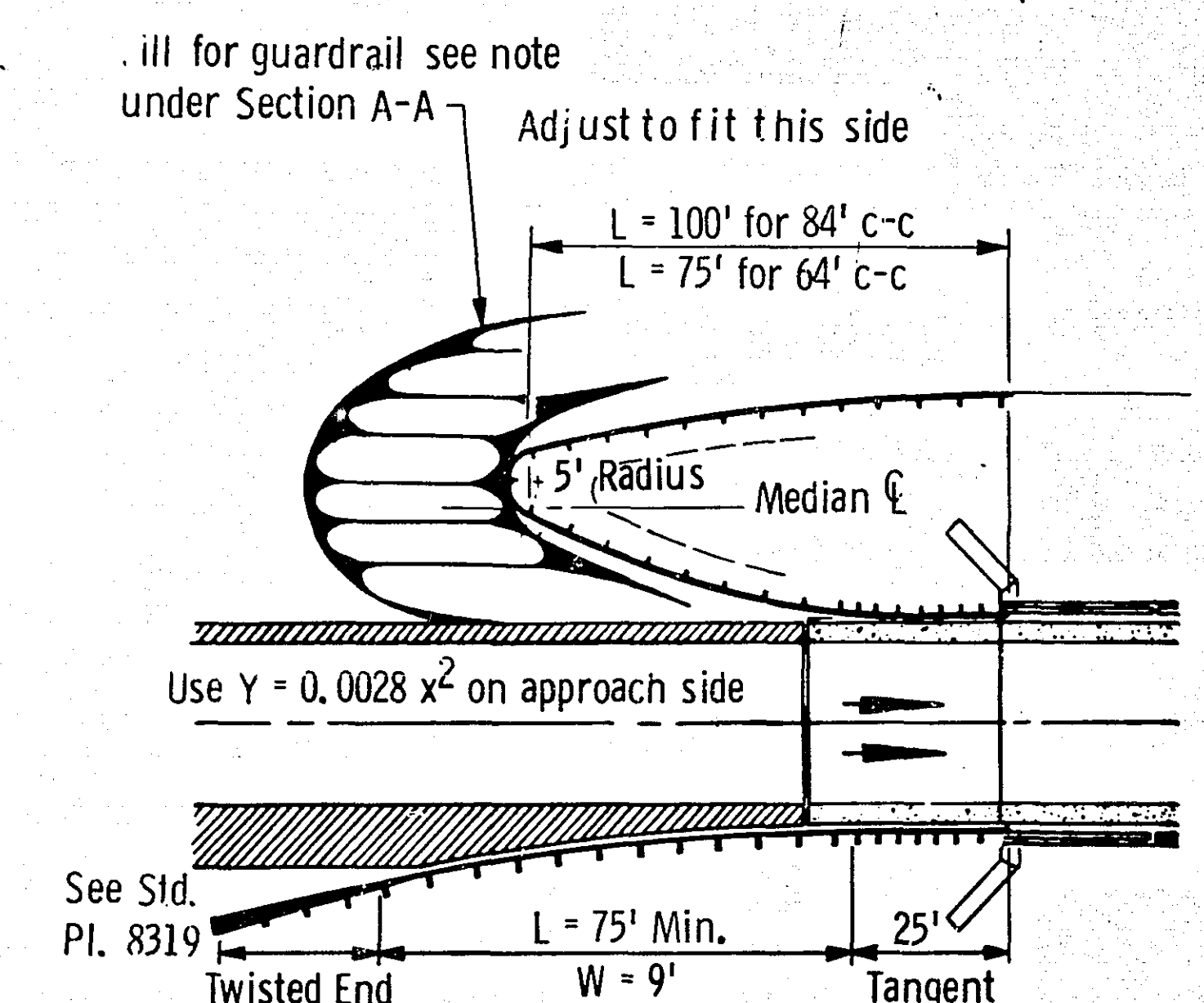
TWO-WAY BRIDGE WITH SHOULDERS



TWO-WAY BRIDGE WITHOUT SHOULDERS

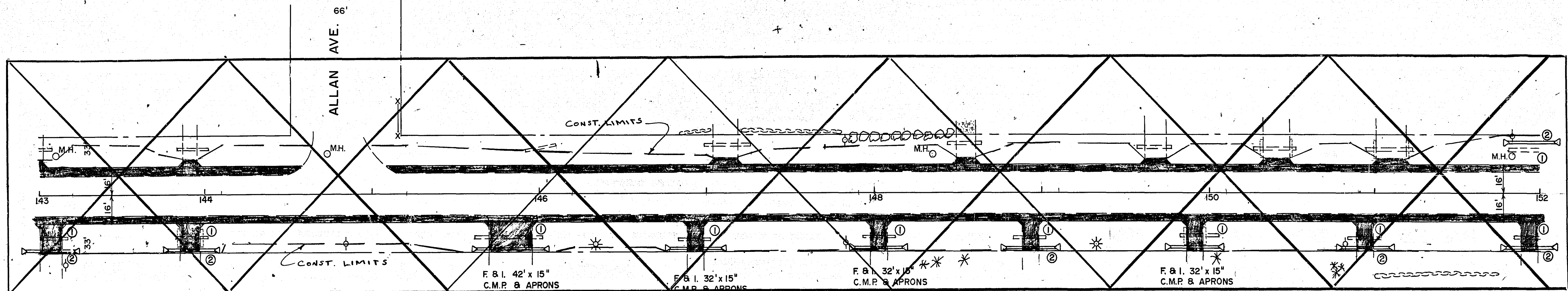


ONE-WAY BRIDGE WITH SHOULDER



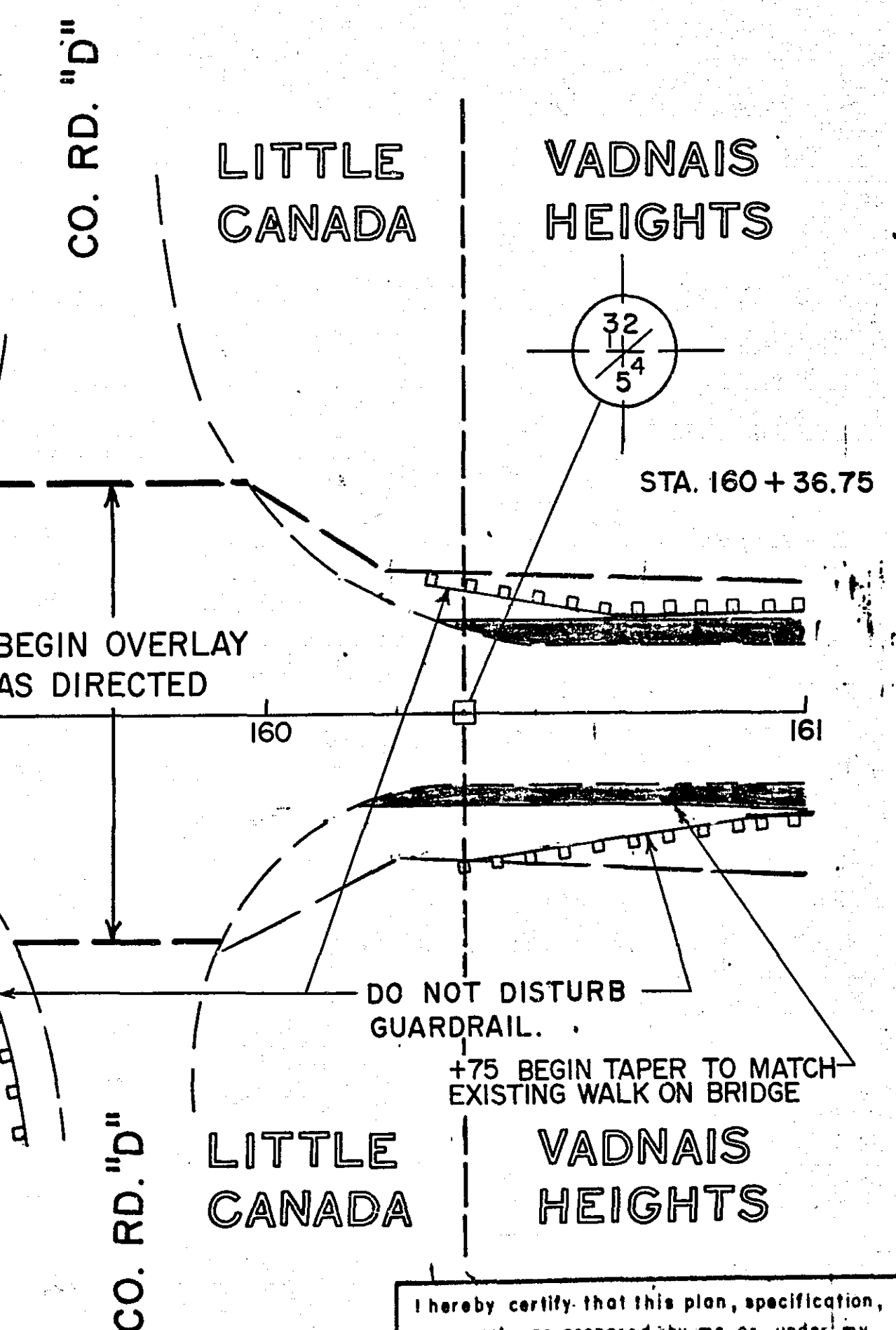
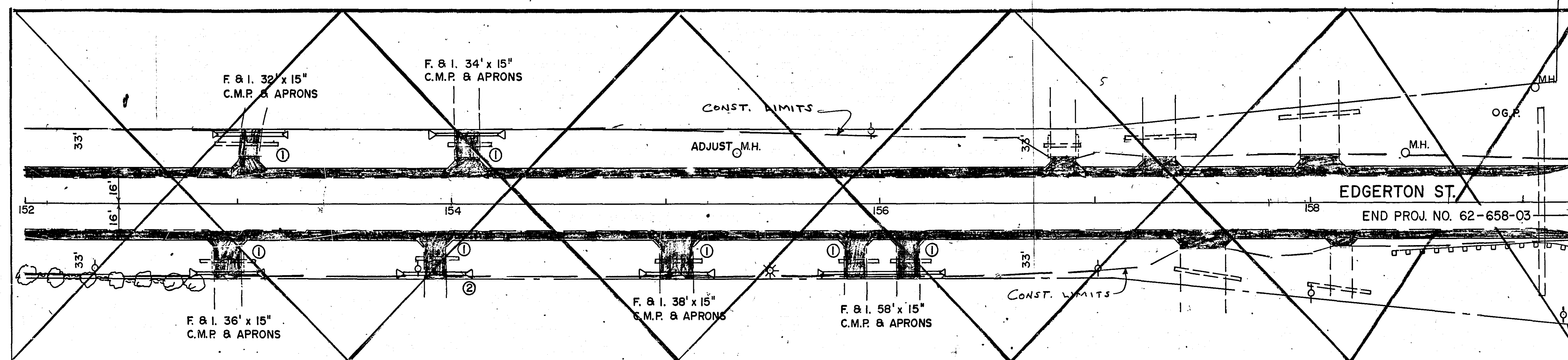
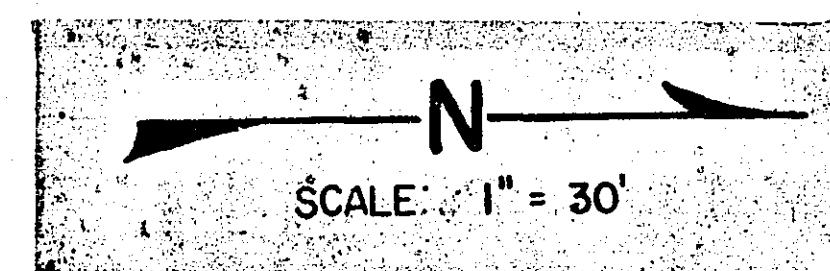
ONE-WAY BRIDGE WITHOUT SHOULDERS

Sheet No. 3 of 13 Sheets



NOTE: CONTRACTOR SHALL SALVAGE
MAIL BOXES - INCIDENTAL.

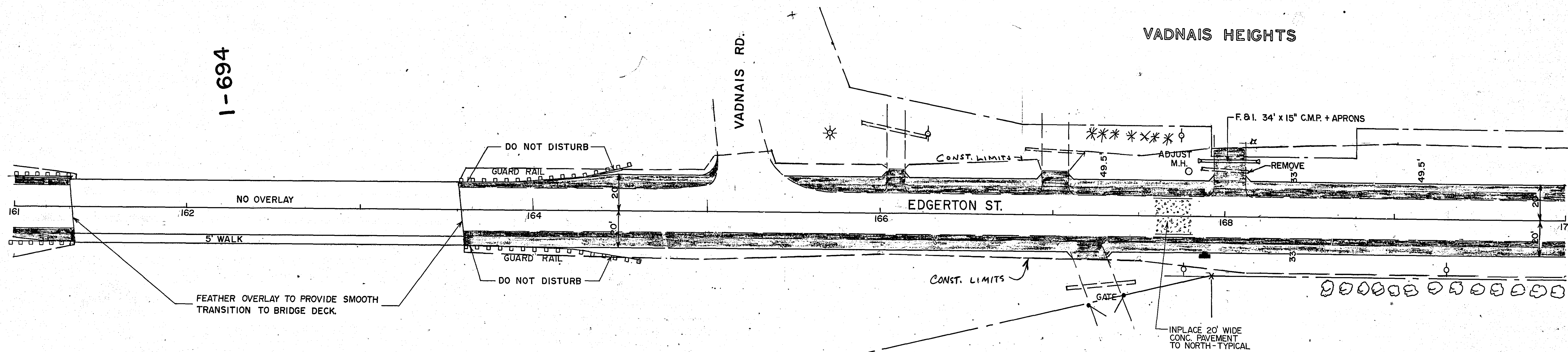
- ① REMOVE EXISTING C.M.P.
- ② F. & I. 30' x 15" C.M.P. & APRONS



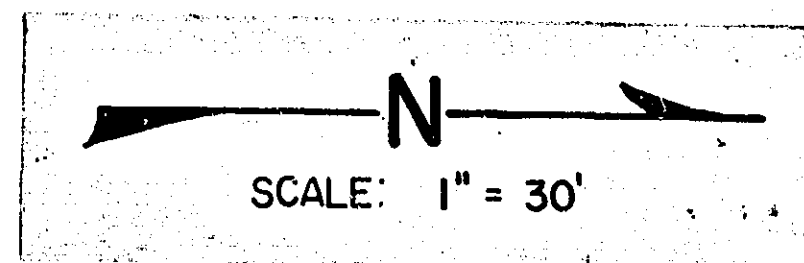
REVISED	DATE	DESIGNED BY	
		DRAWN BY	
		CHECKED BY	

I hereby certify that this plan, specification,
or report was prepared by me or under my
direct supervision and that I am a duly
Registered Professional Engineer under the laws
of the State of Minnesota.
Larry Feldman
Date 6-11-81 Reg. No. 13501

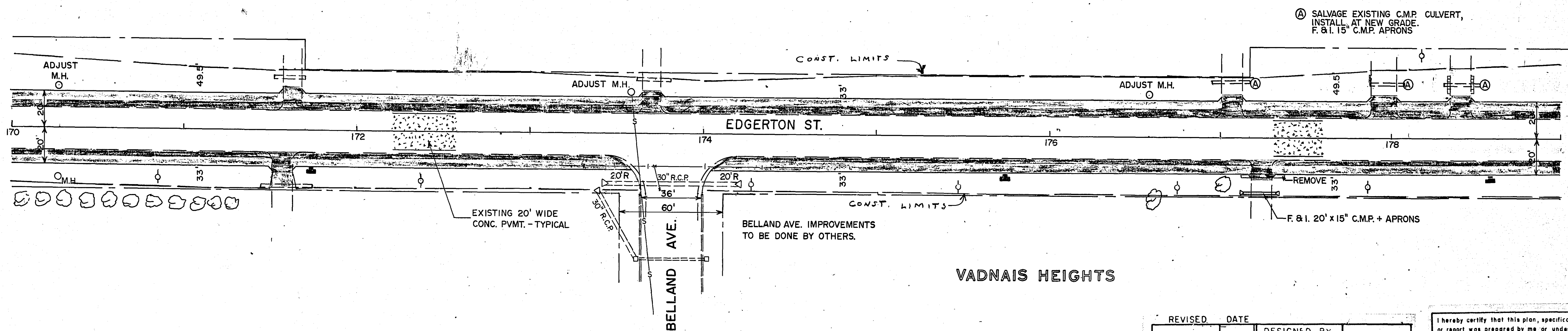
1-694



NOTE: CONTRACTOR SHALL SALVAGE MAIL BOXES - INCIDENTAL



VADNAIS HEIGHTS



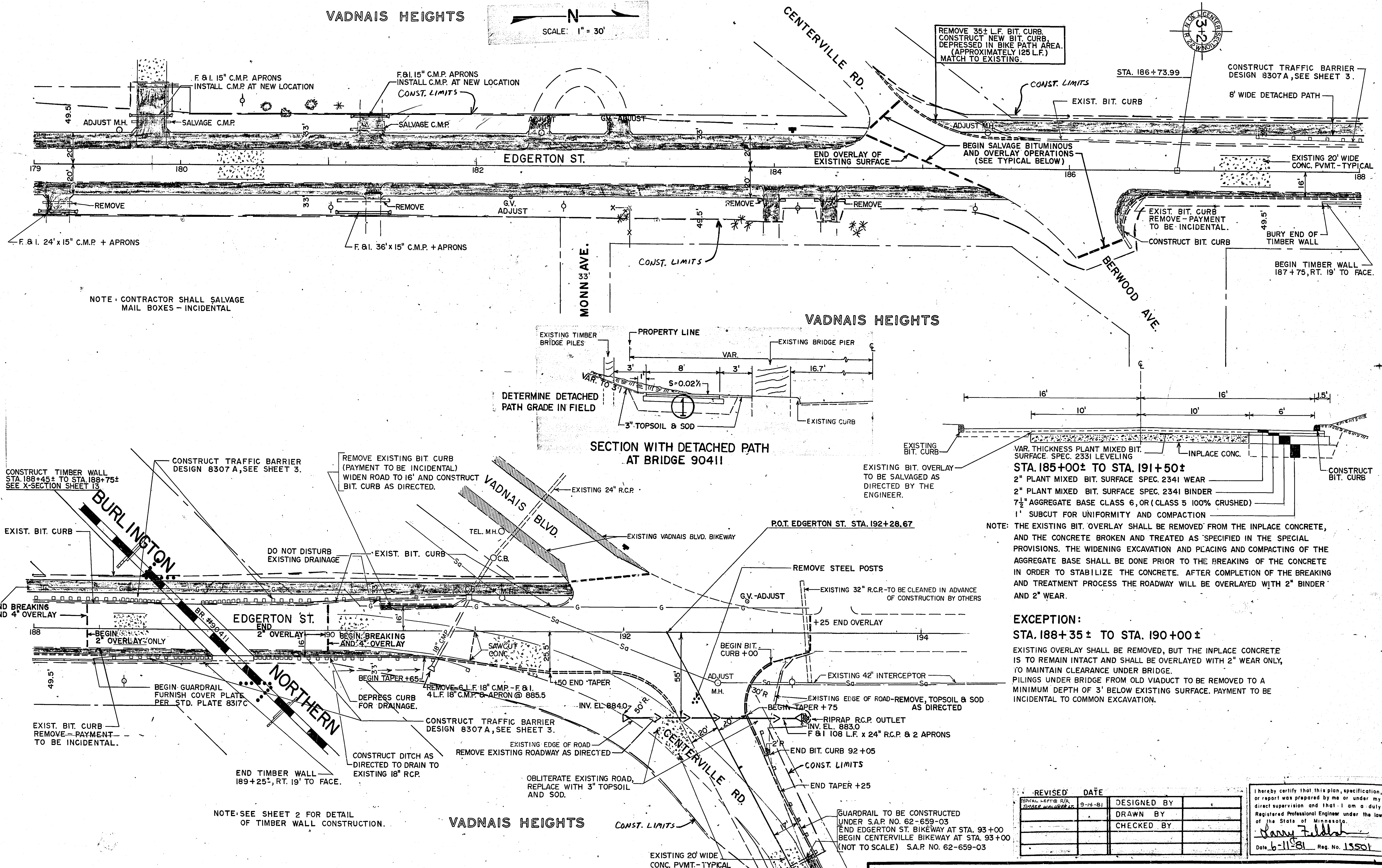
(A) SALVAGE EXISTING C.M.P. CULVERT, INSTALL AT NEW GRADE. F. & I. 15" C.M.P. APRONS

VADNAIS HEIGHTS

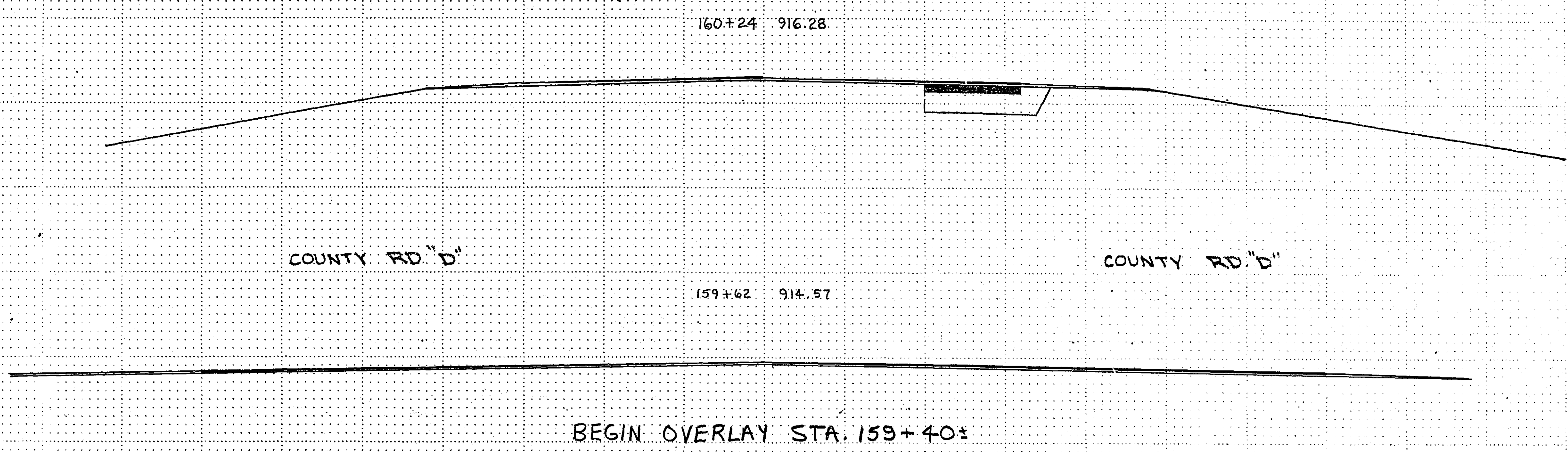
REVISED	DATE	DESIGNED BY	
		DRAWN BY	
		CHECKED BY	

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Larry F. Johnson
Date 6-11-81 Reg. No. 13501

SCALE: 1" = 30'



S.A.P. NO. 62-658-04



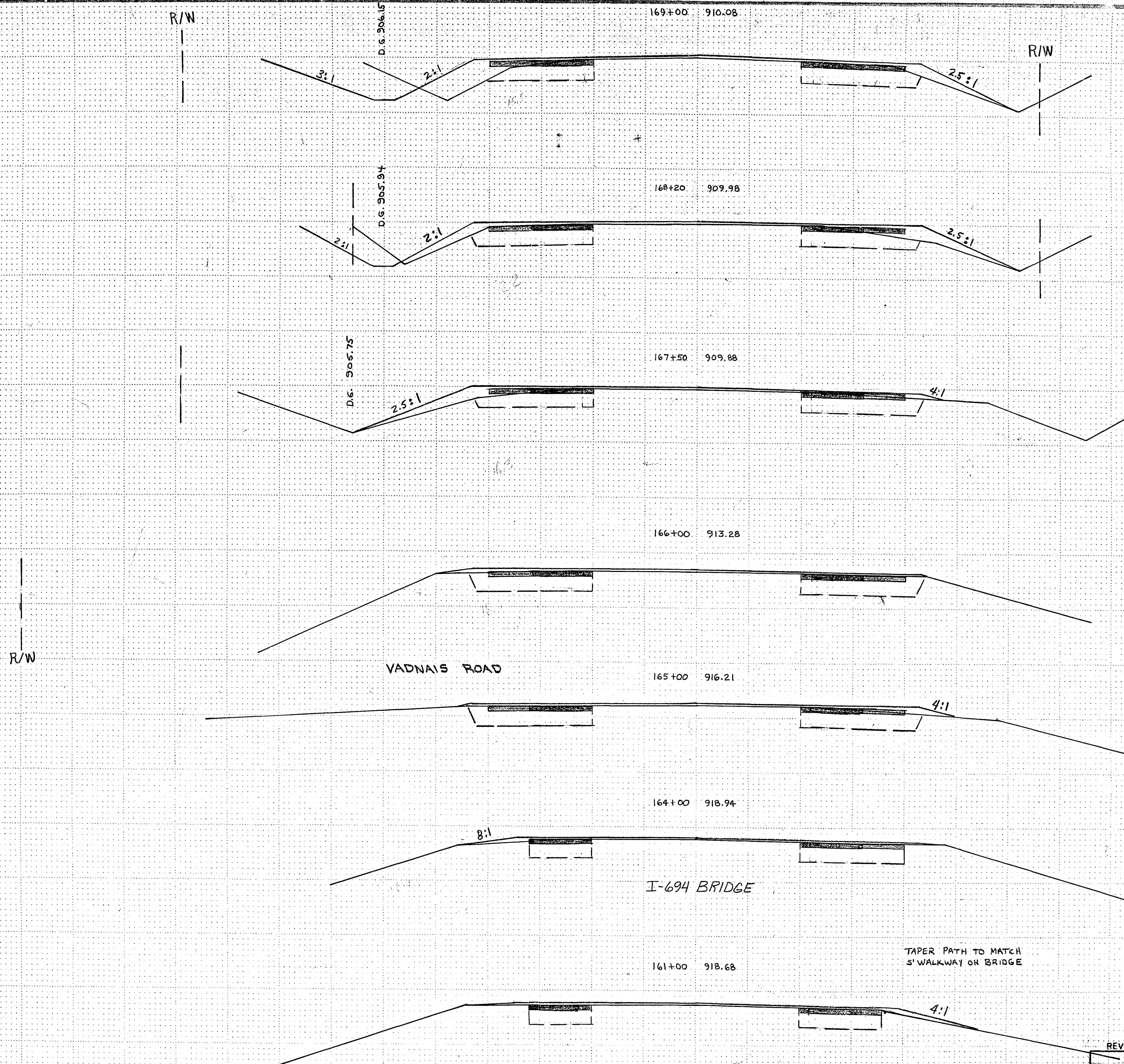
REVISED	DATE	DESIGNED BY	
		DRAWN BY	
		CHECKED BY	

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Larry Feldman

Date 6-11-81 Reg. No. 13501

Fed. Proj. No.



REVISED	DATE	SIGNED BY	DRAWN BY
		CHECKED BY	

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

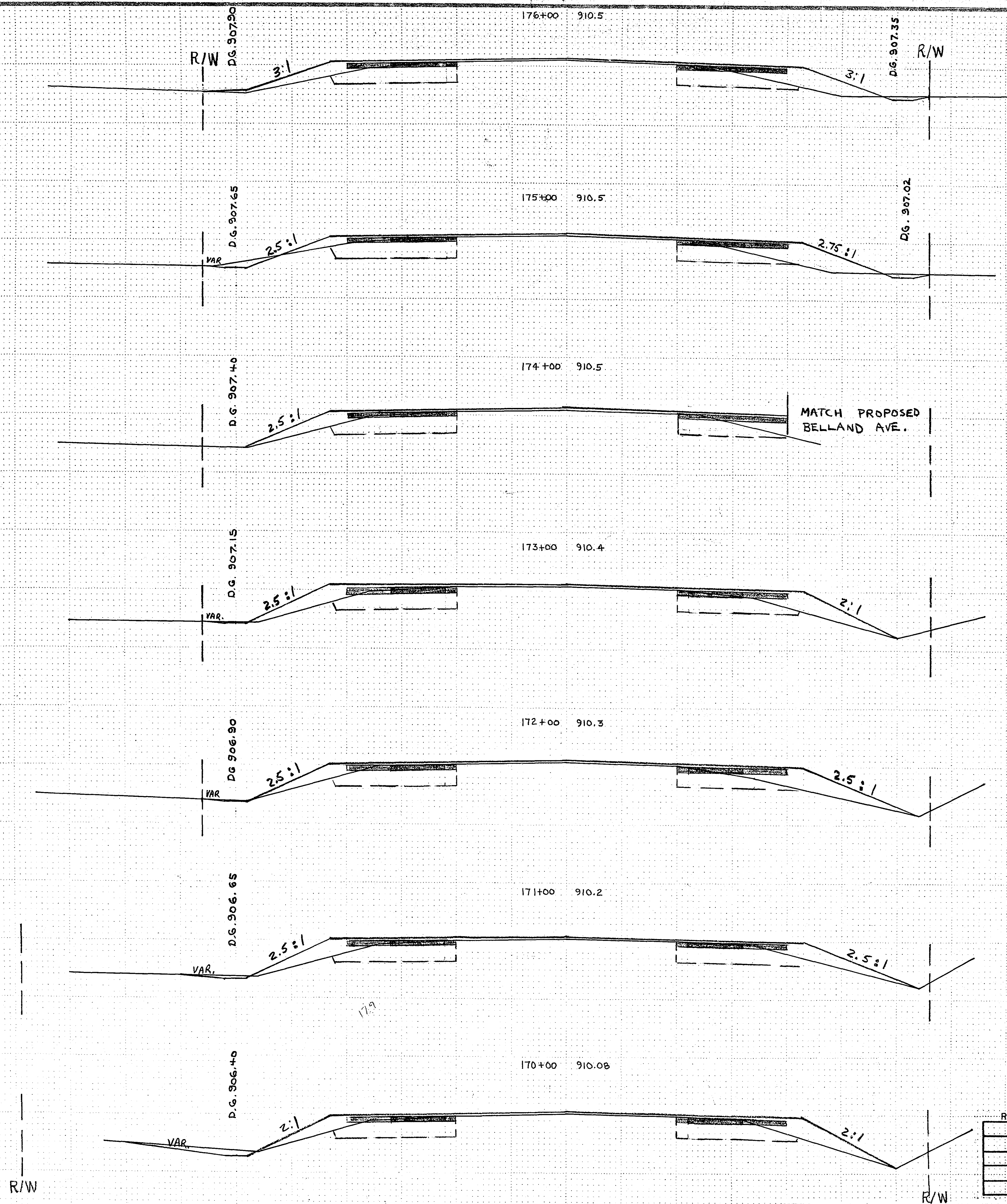
Larry Field

Date 6-11-81 Reg No. 13501

S.A.P. NO. 62-658-04

Sheet No. 8 of 13 Sheets

Fed. Proj. No.



REVISED	DATE	DESIGNED BY	CHECKED BY

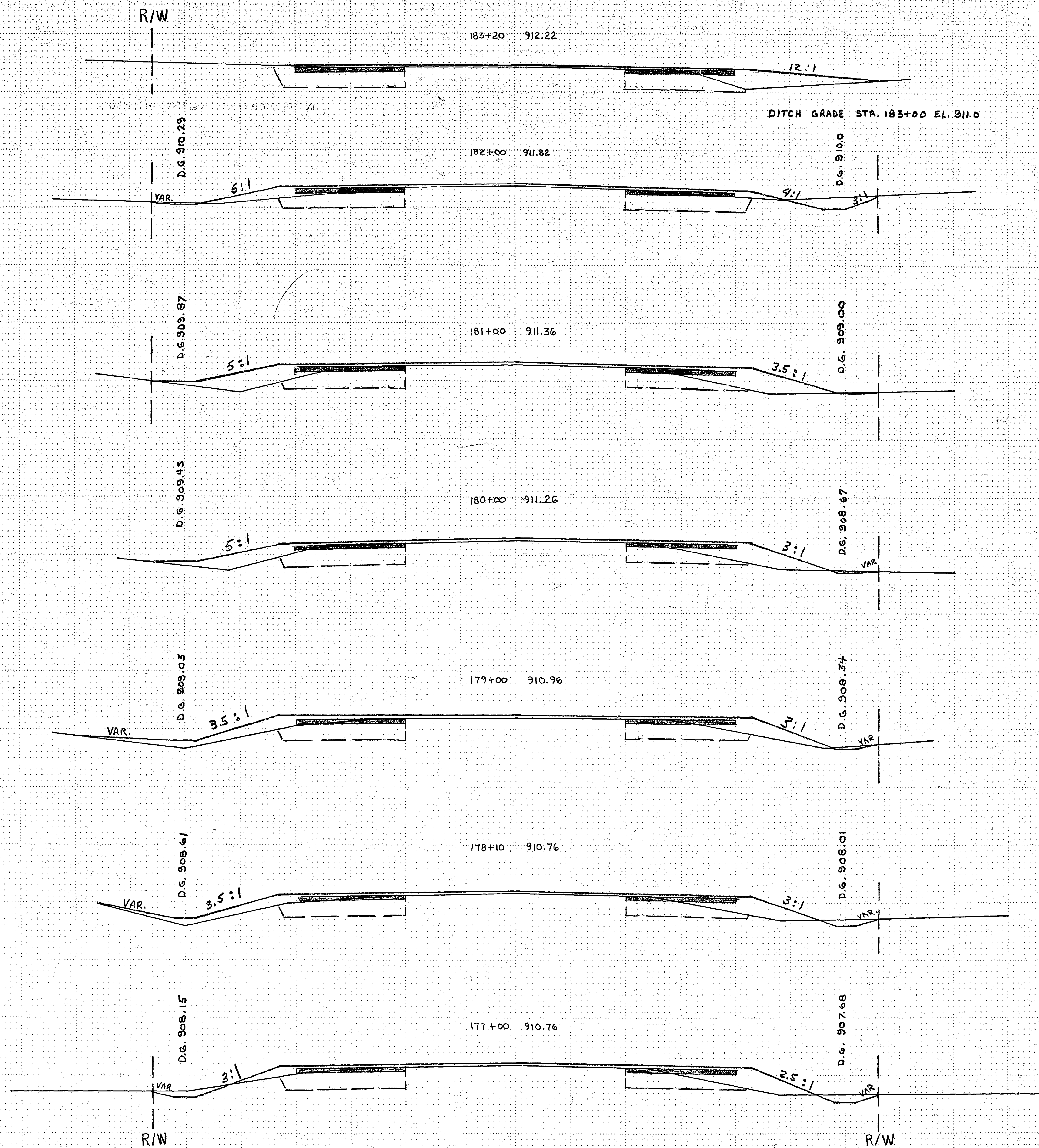
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Larry Feldman
Date 6-11-81 Rep. No. 13501

S.A.P. NO. 62-658-04

Sheet No. 9 of 13 Sheets

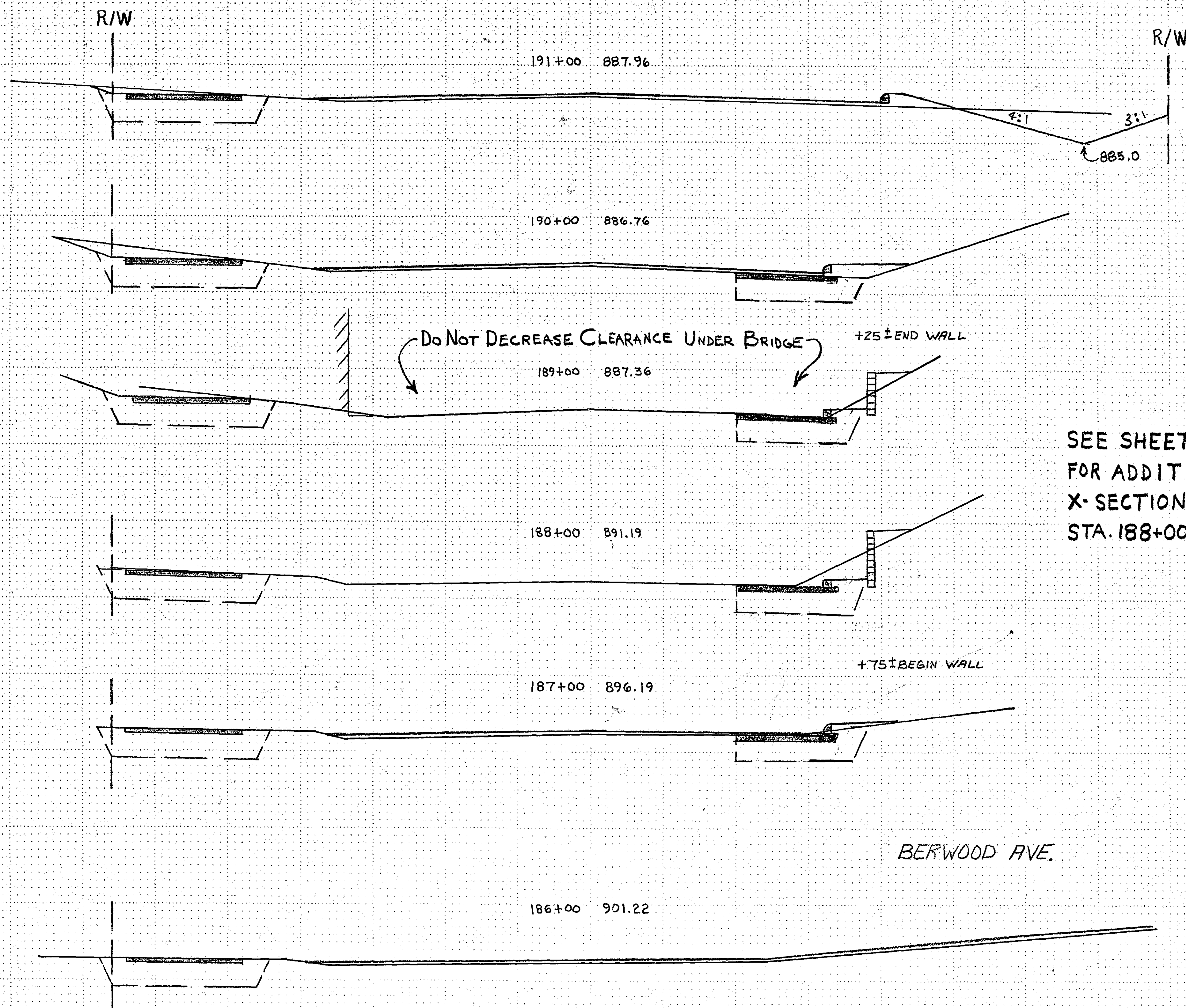
Fed. Proj. No.



REVISED	DATE	SIGNED BY
		DRAWN BY
		CHECKED BY

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Larry F. Jellison
 Date 6-11-81 Reg. No. 13501

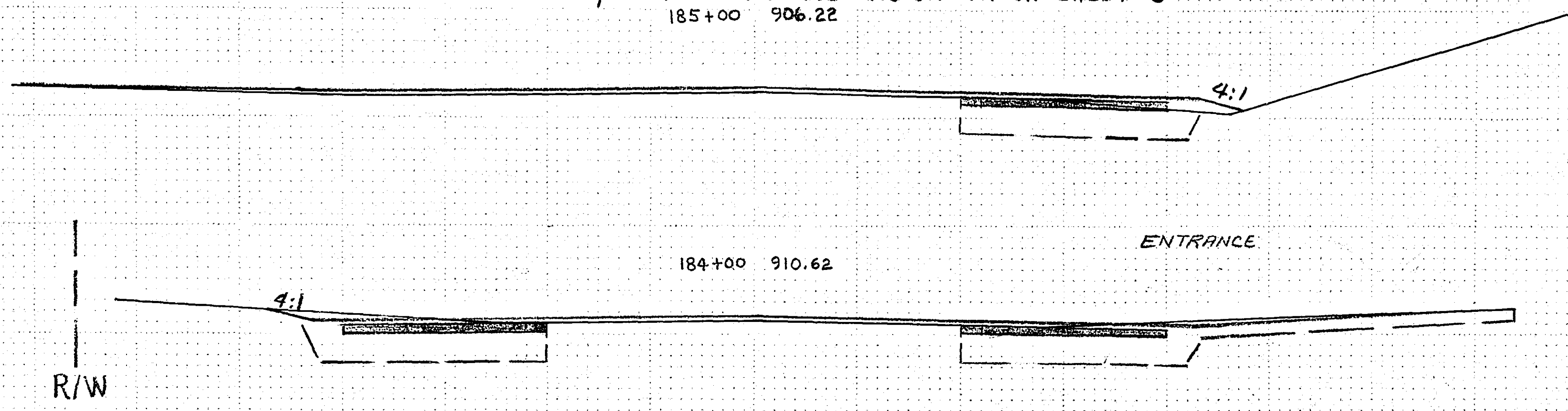


SEE SHEET No. 13
FOR ADDITIONAL
X-SECTIONS BETWEEN
STA. 188+00 & 190+00

BERWOOD AVE.

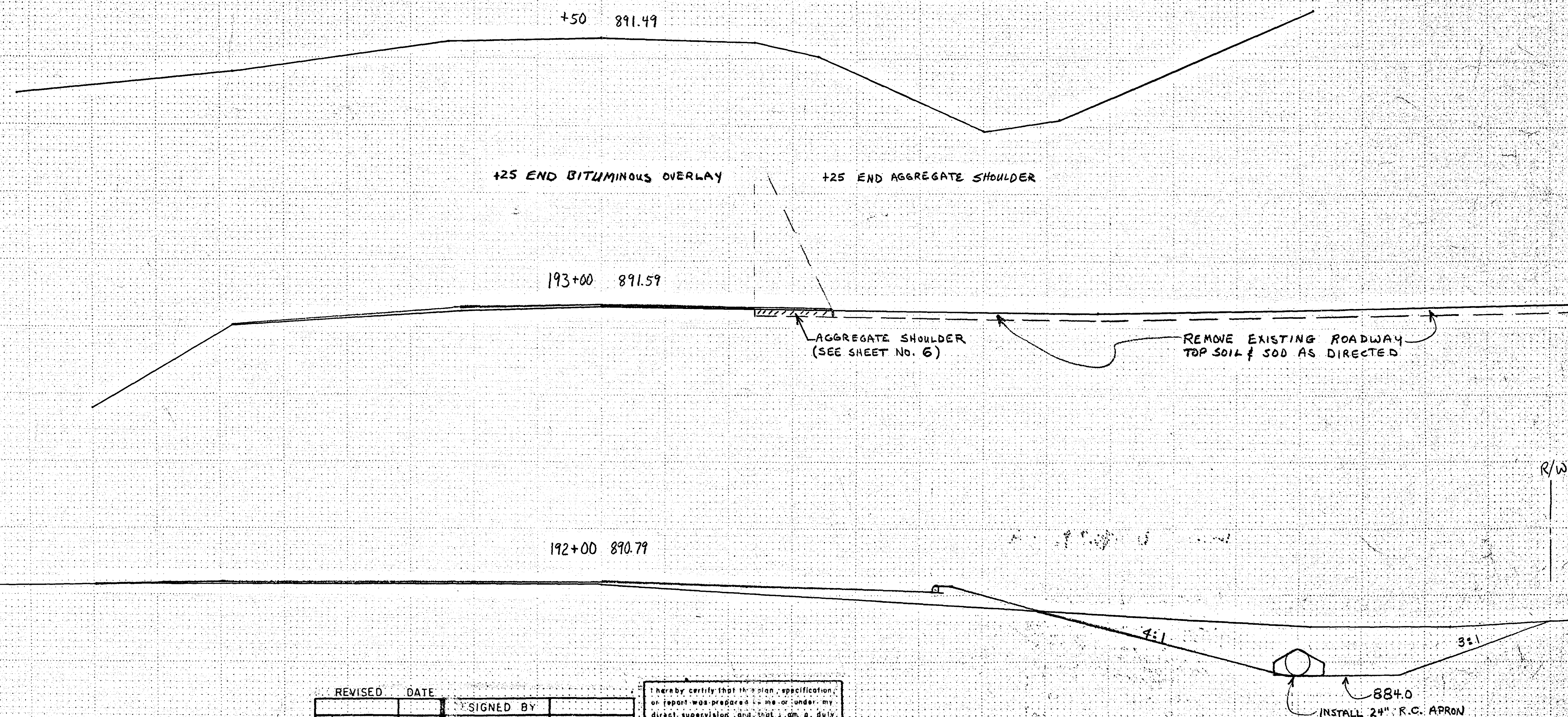
CENTERVILLE RD.

STA. 185+00± END 2" OVERLAY OF EXISTING BIT. SURFACE.
BEGIN MILLING & BREAKING PROCESS AS SHOWN ON SHEET 6
185+00 906.22



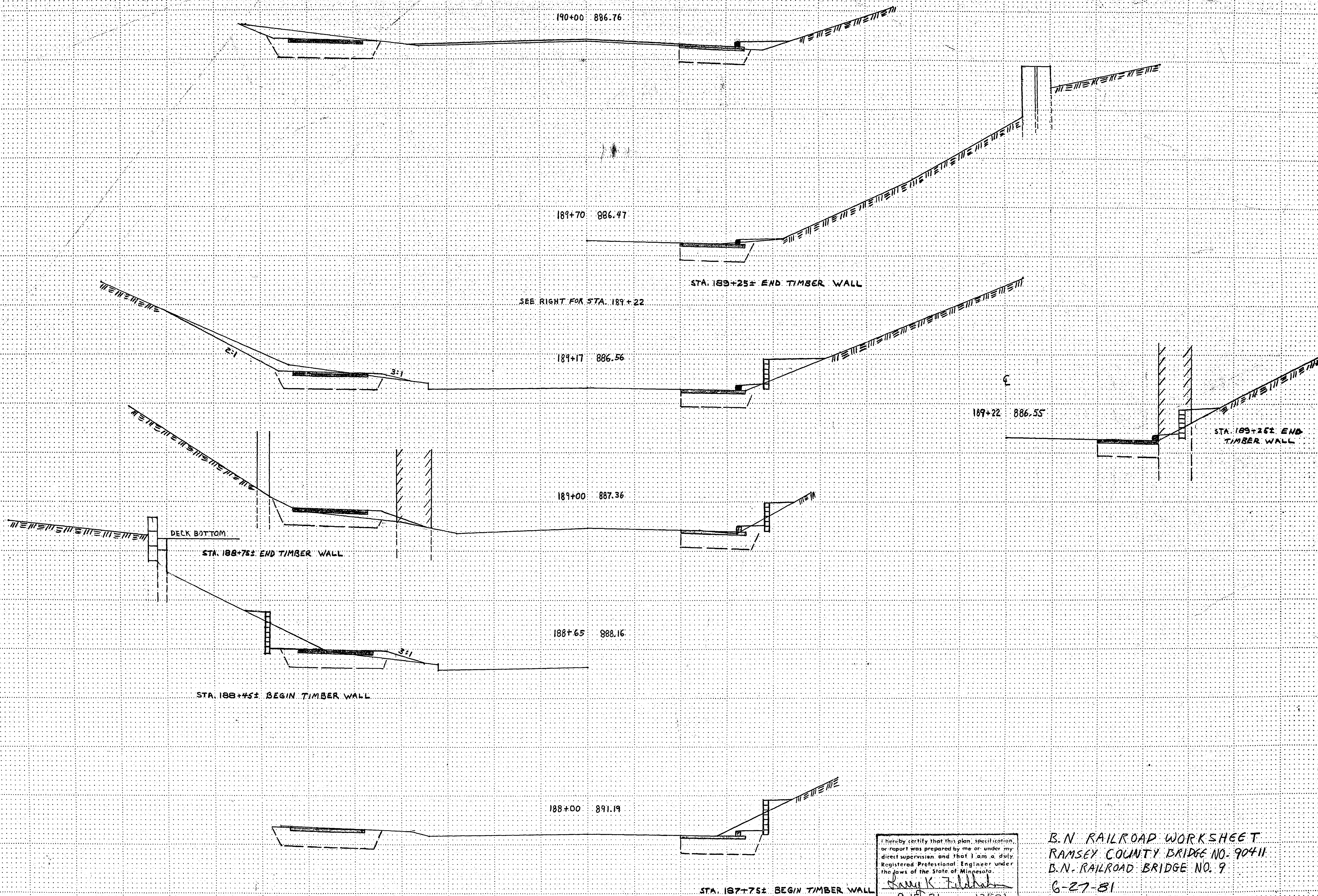
REVISED	DATE	BY
		BY
		BY

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Larry Feldman
Date 6-11-81 Reg. No. 13501



REVISED	DATE	SIGNED BY	HECKED BY

I hereby certify that the plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Michigan.
Darryl J. Feltch
 Date 6-11-81 Rev. No. 13501



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Harry K. Fildes
 Date 9-15-31 Reg. No. 13501

B.N. RAILROAD WORKSHEET
 RAMSEY COUNTY BRIDGE NO. 90411
 B.N. RAILROAD BRIDGE NO. 9
 6-27-31