RAB 8-15-77 REV. LKF 8-8-77 RAB 6-14-77

STATEMENT OF ESTIMATED QUANITITIES 62-668-16

ITEM NO	ITEM	UNIT	ESTIMATED QUANITITIES	UNIT PRICE	ENGINEER'S ESTIMATE AMOUNT
2021.501	MOBILIZATION	LUMP SUM	1	$ 13,294 21	$ 13,294 21
2101.502	CLEARING	TREE	29	50 00	1,450 00
2101.507	GRUBBING	TREE	27	40 00	1,080 00
(1) 2104.501	REMOVE SEWER PIPE	L.F.	290	4 00	1,160 00
2104.501	REMOVE CURB & GUTTER	L.F.	295	1 00	295 00
2104.503	REMOVE SIDEWALK	S.F.	800	0 40	320 00
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.	156	3 25	507 00
2104.509	REMOVE FLAGSTONE WALL (APPROXIMATELY 400 S.F)	EACH	1	500 00	500 00
2104.509	REMOVE CONCRETE BLOCK WALL (APPROXIMATELY 150 S.F)	EACH	1	200 00	200 00
2104.509	REMOVE CATCH BASINS	EACH	22	130 00	2,860 00
(1) 2104.521	SALVAGE SEWER PIPE	L.F.	290	5 00	1,450 00
2104.521	SALVAGE FENCE (WOOD)	L.F.	55	4 00	220 00
2104.521	SALVAGE FENCE (WOVEN WIRE)	L.F.	57	4 00	228 00
2104.521	SALVAGE FENCE (CHAIN LINK)	L.F.	253	3 00	759 00
2104.523	SALVAGE HYDRANT	EACH	10	218 00	2,180 00
2104.523	SALVAGE HANDHOLE	EACH	1	100 00	100 00
2105.501	COMMON EXCAVATION	C.Y.	19,433	1 70	33,036 10
2105.505	MUCK EXCAVATION	C.Y.	1,284	1 25	1,605 00
2105.522	SELECT GRANULAR BORROW (L.V.)	C.Y.	1,271	3 00	3,813 00
2130.501	WATER	(M) GAL.	100	12 25	1,225 00
2211.501	AGGREGATE BASE, CLASS 4	TON	1,726	3 10	5,350 60
2211.501	AGGREGATE BASE, CLASS 6	TON	5,011	3 50	17,538 50
2331.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	306	68 00	20,808 00
2331.504	BASE COURSE MIXTURE	TON	6,796	6 50	44,174 00
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	226	68 00	15,368 00
2341.508	WEARING COURSE MIXTURE	TON	50	9 00	450 00
2341.510	BINDER COURSE MIXTURE	TON	1,901	7 00	13,307 00
2341.518	BITUMINOUS MIXTURE FOR LEVELING	TON	2,552	7 00	17,864 00
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL.	3,010	0 50	1,505 00
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL.	9,136	0 45	4,111 20
2361.504	ASPHALT CEMENT	TON	121	70 00	8,470 00
2361.508	WEARING COURSE MIXTURE	TON	1,419	12 75	18,092 25
2411.505	CONCRETE STRUCTURE, RETAINING WALL (APPROX. 1,420 S.F.)	EACH	1	25,000 00	25,000 00
2411.505	CONCRETE STRUCTURE, STEPS	EACH	1	1,700 00	1,700 00
2501.511	12" C.S. PIPE CULVERT, 16 GAUGE	L.F.	34	11 50	391 00
2501.515	12" C.S. PIPE APRONS	EACH	2	50 00	100 00
2503.511	15" R.C. PIPE SEWER, CLASS IV	L.F.	2161	14 00	30,254 00
2503.511	18" R.C. PIPE SEWER, CLASS II	L.F.	50	17 00	850 00
2503.511	24" R.C. PIPE SEWER, CLASS II	L.F.	377	21 00	7,917 00
2506.508	CONSTRUCT MANHOLE, DESIGN A OR F	EACH	3	800 00	2,400 00
2506.509	CONSTRUCT SURFACE DRAIN, DESIGN A OR F	EACH	1	800 00	800 00
2506.509	CONSTRUCT CATCH BASINS, DESIGN A OR F	EACH	15	800 00	12,000 00
2506.509	CONSTRUCT CATCH BASINS, DESIGN L-P4	EACH	22	850 00	18,700 00
2506.511	RECONSTRUCT MANHOLES	L.F.	10	80 00	800 00
2506.516	CASTINGS (GRATE ONLY)	EACH	10	150 00	1,500 00
2506.522	ADJUST FRAME AND RING CASTING	EACH	55	90 00	4,950 00
2521.501	4" CONCRETE WALK	S.F.	1,750	1 20	2,100 00
2531.501	CONCRETE CURB & GUTTER, DESIGN B624	L.F.	9,075	4 10	37,207 50
2531.501	CONCRETE CURB & GUTTER, DESIGN B612	L.F.	1,150	3 50	4,025 00
2531.507	6" CONCRETE DRIVEWAY PAVEMENT	S.Y.	514	14 00	7,196 00
2557.501	WIRE FENCE, DESIGN 42-9322	L.F.	162	3 00	486 00
2557.516	PEDESTRIAN GATES	EACH	1	50 00	50 00
2571.503	FURNISH & PLANT SHADE TREES 1 1/2" MAPLE	TREE	2	65 00	130 00
2571 541	TRANSPLANT TREES	TREE	14	50 00	700 00
2575.505	SODDING	S.Y.	9,308	0 80	7,446 40
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	0.7	300 00	210 00
2575.551	TOPSOIL BORROW	C.Y.	776	5 50	4,268 00
411.609	12" CONCRETE BLOCK RETAINING WALL	S.F.	150	4 75	712 50
411.609	FLAGSTONE RETAINING WALL	S.F.	1,414	5 25	7,423 50
504.679	ADJUST VALVE BOX	EACH	20	70 00	1,400 00
504.666	INSTALL HYDRANT	EACH	10	400 00	4,000 00
557.604	INSTALL WOOD FENCE	L.F.	49	2 00	98 00
557.604	INSTALL WOVE WIRE FENCE	L.F.	57	2 75	156 75
557.604	INSTALL CHAIN LINK FENCE	L.F.	235	2 00	470 00
545.602	RELOCATE ORNAMENTAL ELECTRICAL LIGHT	UNIT	1	50 00	50 00
		SUB	TOTAL		$ 418,638 30
	NON-PARTICIPATING				
2521.504	4" CONCRETE WALK	S.F.	19,770	1 10	21,747 00
2521.504	6" CONCRETE WALK (THRU DRIVEWAYS)	S.F.	1,800	1 80	3,240 00
	8" D.I.P. WATERMAIN	L.F.	370	9 00	3,330 00
	8" FITTINGS & SMALLER	LBS.	280	1 20	336 00
	CONNECTIONS TO EXISTING WATERMAIN	EACH	2	150 00	300 00
	8" V.C. PIPE SEWER 10-12 FT. DEEP	L.F.	100	10 00	1,000 00
	CONSTRUCT MANHOLE, DESIGN F	EACH	1	700 00	700 00
	AGGREGATE BEDDING (L.V.)	C.Y.	50	4 50	225 00
		SUB	TOTAL		$ 30,878 00
		GRAND	TOTAL		$ 449,516.30

McKNIGHT ROAD Between BEAM AVE. AND 11th Ave 62-668-16

RAB 8-15-77 REV. LKF 8-8-77 6-14-77 BID TABULATIONS TAKEN SEPTEMBER 14, 1977

STATEMENT OF ESTIMATED QUANITITIES 62-668-16

ITEM NO	ITEM	UNIT	ESTIMATED QUANTITIES	UNIT PRICE	ENGINEER'S ESTIMATE AMOUNT	AVERAGE 3 LOW BIDDERS	SHAFER Const. UNIT PRICE	SHAFER Const. AMOUNT	C.S. McCROSSAN UNIT PRICE	C.S. McCROSSAN AMOUNT	ASHBACH Const. UNIT PRICE	ASHBACH Const. AMOUNT	ARCON Const. UNIT PRICE	ARCON Const. AMOUNT	ALEXANDER UNIT PRICE	ALEXANDER AMOUNT						
2021.501	MOBILIZATION	LUMP SUM	1	$ 13,294 21	$ 13,294 21	16,666 60	20000 00	20,000 00	15,000 00	15,000 00	15,000 00	15,000 00	17,650 00	17,650 00	9,000 00	9,000 00						
2101.502	CLEARING	TREE	29	50 00	1,450 00	58 33	75 00	2,175 00	45 00	1,305 00	55 00	1,595 00	45 00	1,305 00	48 50	1,406 50						
2101.507	GRUBBING	TREE	27	40 00	1,080 00	58 33	75 00	2,025 00	45 00	1,215 00	55 00	1,485 00	50 00	1,350 00	48 50	1,309 50						
2104.501	REMOVE SEWER PIPE	L.F.	290	4 00	1,160 00	4 58	4 00	1,160 00	4 00	1,160 00	5 75	1,667 50	6 00	1,740 00	3 15	913 50						
2104.501	REMOVE CURB & GUTTER	L.F.	295	1 00	295 00	1 42	95	280 25	1 00	295 00	2 30	678 50	2 25	663 75	1 35	398 25						
2104.503	REMOVE SIDEWALK	S.F.	800	0 40	320 00	57	40	320 00	40	320 00	92	736 00	35	280 00	55	440 00						
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.	156	3 25	507 00	3 33	3 00	468 00	4 00	624 00	3 00	468 00	4 25	663 00	4 20	655 20						
2104.509	REMOVE FLAGSTONE WALL (APPROXIMATELY 400 S.F.)	EACH	1	500 00	500 00	516 67	200 00	200 00	500 00	500 00	850 00	850 00	225 00	225 00	350 00	350 00						
2104.509	REMOVE CONCRETE BLOCK WALL (APPROXIMATELY 150 S.F.)	EACH	1	200 00	200 00	150 00	100 00	100 00	250 00	250 00	100 00	100 00	90 00	90 00	150 00	150 00						
2104.509	REMOVE CATCH BASINS	EACH	22	130 00	2,860 00	114 67	75 00	1,650 00	200 00	4,400 00	69 00	1,518 00	75 00	1,650 00	73 50	1,617 00						
2104.521	SALVAGE SEWER PIPE	L.F.	290	5 00	1,450 00	5 08	4 00	1,160 00	6 00	1,740 00	5 25	1,522 50	1 00	290 00	7 35	2,131 50						
2104.521	SALVAGE FENCE (WOOD)	L.F.	55	4 00	220 00	1 57	1 50	82 50	1 50	82 50	1 70	93 50	1 50	82 50	1 58	86 90						
2104.521	SALVAGE FENCE (WOVEN WIRE)	L.F.	57	4 00	228 00	1 57	1 50	85 50	1 50	85 50	1 70	96 90	1 50	85 50	1 58	90 06						
2104.521	SALVAGE FENCE (CHAIN LINK)	L.F.	253	3 00	759 00	1 57	1 50	379 50	1 50	379 50	1 70	430 10	1 50	379 50	1 58	399 74						
2104.523	SALVAGE HYDRANT	EACH	10	218 00	2,180 00	315 00	300 00	3,000 00	300 00	3,000 00	345 00	3,450 00	100 00	1,000 00	157 50	1,575 00						
2104.523	SALVAGE HANDHOLE	EACH	1	100 00	100 00	116 67	150 00	150 00	100 00	100 00	100 00	100 00	75 00	75 00	50 00	50 00						
2105.501	COMMON EXCAVATION	C.Y.	19,433	1 70	33,036 10	1 86	2 25	43,724 25	1 95	37,894 35	1 38	26,817 54	2 37	46,056 21	2 25	43,724 25						
2105.505	MUCK EXCAVATION	C.Y.	1,284	1 25	1,605 00	2 18	2 25	2,889 00	2 00	2,568 00	2 30	2,953 20	1 95	2,503 80	2 65	3,402 60						
2105.522	SELECT GRANULAR BORROW (L.V.)	C.Y.	1,271	3 00	3,813 00	2 68	3 25	4,130 75	2 30	2,923 30	2 50	3,177 50	2 80	3,558 80	2 50	3,177 50						
2130.501	WATER	(M) GAL	100	12 25	1,225 00	13 33	7 00	700 00	18 00	1,800 00	15 00	1,500 00	6 25	625 00	7 00	700 00						
2211.501	AGGREGATE BASE, CLASS 4	TON	1,725	3 10	5,350 60	3 63	3 45	5,954 70	3 80	6,555 80	3 65	6,299 90	3 25	5,609 50	3 46	5,971 96						
2211.501	AGGREGATE BASE, CLASS 6	TON	5,011	3 50	17,538 50	3 85	3 95	19,793 45	4 05	20,294 55	3 55	17,789 05	3 60	18,039 60	3 52	17,638 72						
2331.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	306	68 00	20,808 00	74 33	73 00	22,338 00	75 00	22,950 00	75 00	22,950 00	73 00	22,338 00	78 00	23,868 00						
2331.504	BASE COURSE MIXTURE	TON	6,736	6 50	44,174 00	6 77	6 50	44,174 00	7 05	47,911 80	6 75	45,873 00	6 50	44,174 00	6 89	46,824 44						
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	226	68 00	15,368 00	74 33	73 00	16,498 00	75 00	16,950 00	75 00	16,950 00	73 00	16,498 00	78 00	17,628 00						
2341.508	WEARING COURSE MIXTURE	TON	50	9 00	450 00	23 30	19 50	975 00	40 00	2,000 00	10 40	520 00	19 50	975 00	56 65	2,832 50						
2341.510	BINDER COURSE MIXTURE	TON	1,901	7 00	13,307 00	7 08	7 00	13,307 00	7 35	13,972 35	6 90	13,116 90	7 00	13,307 00	7 01	13,326 01						
2341.518	BITUMINOUS MIXTURE FOR LEVELING	TON	2,552	7 00	17,864 00	7 08	7 00	17,864 00	7 35	18,757 20	6 85	17,481 20	7 00	17,864 00	6 89	17,583 28						
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL	3,010	0 50	1,505 00	58	50	1,505 00	75	2,257 50	48	1,444 80	50	1,505 00	60	1,806 00						
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL	9,136	0 45	4,111 20	32	10	913 60	40	3,654 40	47	4,293 92	10	913 60	50	4,568 00						
2361.504	ASPHALT CEMENT	TON	121	70 00	8,470 00	74 33	73 00	8,833 00	75 00	9,075 00	75 00	9,075 00	73 00	8,833 00	78 00	9,438 00						
2361.508	WEARING COURSE MIXTURE	TON	1,419	12 75	18,092 25	13 32	12 90	18,308 10	14 50	20,575 50	12 25	17,382 75	12 90	18,305 10	14 48	20,547 12						
2411.505	CONCRETE STRUCTURE, RETAINING WALL (APPROX. 1420 S.F.)	EACH	25,000 00	25,000 00	25,733 33	20,000 00	20,000 00	25,000 00	25,000 00	32,200 00	32,200 00	32,042 00	32,042 00	43,000 00	43,000 00							
2411.505	CONCRETE STRUCTURE, STEPS	EACH	1	1,700 00	4,700 00	2,521 67	2,000 00	2,000 00	2,000 00	2,000 00	3,565 00	3,565 00	1,545 00	1,545 00	1,650 00	1,650 00						
2501.511	12" C.S. PIPE CULVERT, 16 GAUGE	L.F.	34	11 50	391 00	13 65	14 00	476 00	12 00	408 00	14 95	508 30	13 00	442 00	12 60	428 40						
2501.515	12" C.S. PIPE APRONS	EACH	2	50 00	100 00	56 67	60 00	120 00	50 00	100 00	60 00	120 00	50 00	100 00	63 00	126 00						
2503.511	15" R.C. PIPE SEWER, CLASS IV	L.F.	2161	14 00	30,254 00	15 92	15 00	32,415 00	14 00	30,254 00	17 25	37,277 25	19 10	41,275 10	19 11	41,296 71						
2503.511	18" R.C. PIPE SEWER, CLASS II	L.F.	50	17 00	850 00	19 00	17 00	850 00	16 00	800 00	24 00	1,200 00	27 80	1,390 00	19 95	997 50						
2503.511	24" R.C. PIPE SEWER, CLASS II	L.F.	377	21 00	7,917 00	20 67	20 00	7,540 00	20 00	7,540 00	22 00	8,294 00	23 00	8,671 00	23 85	8,991 45						
2506.508	CONSTRUCT MANHOLE, DESIGN A OR F	EACH	3	800 00	2,400 00	763 33	900 00	2,700 00	700 00	2,100 00	690 00	2,070 00	500 00	1,500 00	860 00	2,580 00						
2506.509	CONSTRUCT SURFACE DRAIN, DESIGN A OR F	EACH	1	800 00	800 00	630 00	500 00	500 00	700 00	700 00	690 00	690 00	650 00	650 00	705 00	705 00						
2506.509	CONSTRUCT CATCH BASINS, DESIGN A OR F	EACH	15	800 00	12,000 00	683 33	600 00	9,000 00	700 00	10,500 00	750 00	11,250 00	540 00	8,100 00	625 00	9,375 00						
2506.509	CONSTRUCT CATCH BASINS, DESIGN L-P4	EACH	22	850 00	18,700 00	908 33	850 00	18,700 00	900 00	19,800 00	975 00	21,450 00	940 00	20,680 00	1,235 00	27,170 00						
2506.511	RECONSTRUCT MANHOLES	L.F.	10	80 00	800 00	105 00	95 00	950 00	100 00	1,000 00	120 00	1,200 00	100 00	1,000 00	178 50	1,785 00						
2506.516	CASTINGS (GRATE ONLY)	EACH	10	150 00	1,500 00	103 33	125 00	1,250 00	100 00	1,000 00	85 00	850 00	120 00	1,200 00	75 00	750 00						
2506.522	ADJUST FRAME AND RING CASTING	EACH	55	90 00	4,950 00	105 00	95 00	5,225 00	125 00	6,875 00	95 00	5,225 00	70 00	3,850 00	105 00	5,775 00						
2521.501	4" CONCRETE WALK	S.F.	1,750	1 20	2,100 00	1 01	96	1,680 00	96	1,680 00	1 10	1,925 00	1 25	2,187 50	1 09	1,907 50						
2531.501	CONCRETE CURB & GUTTER, DESIGN B624	L.F.	9,075	4 10	37,207 50	4 12	3 90	35,392 50	3 95	35,846 25	4 50	40,837 50	4 25	38,568 75	4 15	37,661 25						
2531.501	CONCRETE CURB & GUTTER, DESIGN B6.2	L.F.	1,150	3 50	4,025 00	4 00	3 80	4,370 00	3 80	4,370 00	4 40	5,060 00	3 30	3,795 00	3 60	4,140 00						
2531.507	6" CONCRETE DRIVEWAY PAVEMENT	S.Y.	514	14 00	7,196 00	12 83	13 00	6,682 00	13 50	6,939 00	12 00	6,168 00	13 35	6,861 90	15 15	7,787 10						
2557.501	WIRE FENCE, DESIGN 42-9322	L.F.	162	3 00	486 00	4 20	4 00	648 00	4 00	648 00	4 60	745 20	4 00	648 00	4 25	688 50						
2557.516	PEDESTRIAN GATES	EACH	1	50 00	50 00	121 67	115 00	115 00	115 00	115 00	135 00	135 00	115 00	115 00	120 75	120 75						
2571.503	FURNISH & PLANT SHADE TREES 1 1/2" MAPLE	TREE	2	65 00	130 00	131 67	125 00	250 00	125 00	250 00	145 00	290 00	130 00	260 00	95 00	190 00						
2571.541	TRANSPLANT TREES	TREE	14	50 00	700 00	53 33	50 00	700 00	50 00	700 00	60 00	840 00	65 00	910 00	55 00	770 00						
2575.505	SODDING	S.Y.	9,308	0 80	7,446 40	1 13	1 05	9,773 40	1 10	10,238 80	1 25	11,635 00	95	8,842 60	1 00	9,308 00						
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	07	300 00	210 00	315 00	300 00	210 00	300 00	210 00	345 00	241 50	300 00	210 00	315 00	220 50						
2575.551	TOPSOIL BORROW	C.Y.	776	5 50	4,268 00	6 48	6 00	4,656 00	6 25	4,850 00	7 20	5,587 20	7 95	6,169 20	8 30	6,440 80						
411.609	12" CONCRETE BLOCK RETAINING WALL	S.F.	150	4 75	712 50	8 50	8 50	1,275 00	9 00	1,350 00	8 00	1,200 00	4 25	637 50	21 00	3,150 00						
411.609	FLAGSTONE RETAINING WALL	S.F.	1,363	5 25	7,423 50	4 65	4 50	6,363 00	6 00	8,484 00	3 45	4,878 30	7 00	9,898 00	7 50	10,605 00						
504.679	ADJUST VALVE BOX	EACH	20	70 00	1,400 00	60 00	65 00	1,300 00	50 00	1,000 00	65 00	1,300 00	50 00	1,000 00	55 00	1,100 00						
504.666	INSTALL HYDRANT	EACH	10	400 00	4,000 00	416 67	350 00	3,500 00	500 00	5,000 00	400 00	4,000 00	250 00	2,500 00	420 00	4,200 00						
557.604	INSTALL WOOD FENCE	L.F.	49	2 00	98 00	2 10	2 00	98 00	2 00	98 00	2 30	112 70	2 00	98 00	2 10	102 90						
557.604	INSTALL WOVE WIRE FENCE	L.F.	57	2 75	156 75	2 10	2 00	114 00	2 00	114 00	2 30	131 10	2 00	114 00	2 10	119 70						
557.604	INSTALL CHAIN LINK FENCE	L.F.	235	2 00	470 00	2 62	2 50	587 50	2 50	587 50	2 85	669 75	2 50	587 50	2 10	493 50						
545.602	RELOCATE ORNAMENTAL ELECTRICAL LIGHT	UNIT	1	50 00	50 00	191 67	100 00	100 00	200 00	200 00	275 00	275 00	150 00	150 00	75 00	75 00						
		SUB TOTAL			$ 418,638 30			$ 434,681 00		$ 451,356 80		$ 449,346 56		$ 454,632 91		$ 487,320 09						
	NON-PARTICIPATING																					
2521.504	4" CONCRETE WALK	S.F.	19,770	1 10	21,747 00	1 01	96	18,979 20	96	18,979 20	1 10	21,747 00	1 25	24,712 50	1 09	21,549 30						
2521.504	6" CONCRETE WALK (THRU DRIVEWAYS)	S.F.	1,800	1 80	3,240 00	1 22	1 15	2,070 00	1 15	2,070 00	1 35	2,430 00	1 93	2,574 00	1 97	2,646 00						
	8" D.I.P. WATERMAIN	L.F.	370	9 00	3,330 00	16 32	20 00	7,400 00	14 00	5,180 00	14 95	5,531 50	13 40	4,958 00	17 85	6,604 50						
	8" FITTINGS & SMALLER	LBS.	280	1 20	336 00	1 48	1 50	420 00	1 50	420 00	1 45	406 00	90	252 00	3 15	882 00						
	CONNECTIONS TO EXISTING WATERMAIN	EACH	2	150 00	300 00	266 67	300 00	600 00	200 00	400 00	300 00	600 00	300 00	600 00	787 50	1,575 00						
	8" V.C. PIPE SEWER 10-12 FT. DEEP	L.F.	100	10 00	1,000 00	16 17	20 00	2,000 00	16 00	1,600 00	12 50	1,250 00	23 20	2,320 00	20 10	2,010 00						
	CONSTRUCT MANHOLE, DESIGN F	EACH	1	700 00	700 00	883 33	900 00	900 00	900 00	900 00	850 00	850 00	775 00	775 00	1,570 00	1,570 00						
	AGGREGATE BEDDING (L.V.)	C.Y.	50	4 50	225 00	9 00	9 00	450 00	10 00	500 00	8 00	400 00	10 00	500 00	16 80	840 00						
		SUB TOTAL			$ 30,878 00			$ 32,819 20		$ 30,049 20		$ 33,214 50		$ 36,691 50		$ 37,676 80						
		GRAND TOTAL			$ 449,516.30	TOTAL		$ 467,500.20		$ 481,406.00		$ 482,561.06		$ 491,324.41		$ 524,996.89						

TOPOGRAPHY	PLOTTED BY	DATE	CHECKED BY	DATE
UTILITIES	PLOTTED BY	DATE	CHECKED BY	DATE
PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE

RIGHT OF WAY
McKNIGHT ROAD
IITH AVE. TO BEAM AVE.

STARTED: MAY 1977
COMPLETED:

PARCEL NO. 1
HILLCREST DEVELOPMENT, a LIMITED PARTNERSHIP

C A S T L E W O O D

WOODS & BRUSH

TO BE CONSTRUCTED BY M.H.D. UNDER PROJECT NO. S.P. 6211-53

BEGIN PROJECT STA. 37+76

DITCH · CREEK · WOODS · BIT. SPILLWAY · APRON · GUARDRAIL · PHONE BOOTH · SIGN · C.L.F.E.

MCKNIGHT RD.

EXISTING B618 · 102" R.C.P. SPAN · 30' R · E-BUR C.P. · M.H.2 · W.M.H.3 · Sa · IITH AVE · E-BUR B624 · 60'

OVERLAY INTERSECTION AS DIRECTED BY THE ENGINEER

SALVAGE HANDHOLE · C.B.100 · B618 · 36' · 43' · 4' · 27' · 26' · +45 · +35 · 39+00 BEGIN TAPER · 20' · 30' R · RELOCATE HYDRANT · CONST LIMITS · 42+00 BEGIN TAPER · 40' · 27' · 55' · 29' · 10' · 5' · 15' · 12" R.C.P. · M.H.5 · B624 C.&G. · B612 C.&G. · 5" POPULAR (REMOVE) · REMOVE EXISTING SEWER · 4' WOOD BOARD FENCE SALVAGE & RELOCATE · 12TH AVE · B618 · 60' · HO. · GAR. · GRAVEL ENT.

(1) DEPRESS CURB M.H.D. STD. PLATE NO. 7036A
(2) REMOVE EXISTING CURB & GUTTER
(3) MATCH CURB & GUTTER TO EXISTING CURB & GUTTER
(4) MATCH CURB & GUTTER TO EXISTING CATCH BASIN
(5) ADJUST C.M.P. TO PICK UP LOW SPOT (PAYMENT TO BE INCIDENTAL TO COMMON EXCAVATION.)

* SEE SHEET NO. 2 FOR LOCATION OF DEPRESSION STD. PL. 7016C

F O U R T H A D D I T I O N T O N O R T H S T. P A U L

PARCEL NO. 30
HILLCREST DEVELOPMENT, a LIMITED PARTNERSHIP

PARCEL NO. 31
ALBERT I. BERKUS

PARCEL NO. 32
ALETHEA M. HABBERSTAD
AMBROSE A. CZECK
BERNICE M. CZECK

PARCEL NO. 33
ERNEST CHRISTIANSEN

B.M. ELEV. 939.99
TOP OF HYD. NE. COR. IITH AVE. & McKNIGHT RD.

WARP GRADE TO MATCH D.O.T. GRADE · +76 · +54 · C.B.4 · C.B.100 · +0.50 · 39.08 · P.I. 39+50 EL. 939.2 · 33.08 · -0.50 · C.B.6 · C.B.101 · EL.=936.20 · -0.98 · +25 · V.C.=50' M=0.0625 · +75 · +50 · 15" X 102' R.C.P. · INV. 931.81 · INV. 932.80 · 24" X 100' R.C.P. @ 0.11% · 24" X 256' R.C.P. @ 0.11% · INV. 930.92 · INV. 930.81

945 · 940 · 935 · 930 · 00 · 35 · 36 · 37 · 38 · 39 · 40 · 41 · 42 · 43

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Sheet No. 1 of 6 Sheets

TOPOGRAPHY
UTILITIES
PROFILE

PARCEL NO. 1
HILLCREST DEVELOPMENT,
a LIMITED PARTNERSHIP

PARCEL NO. 2
NORTH ST. PAUL BAPTIST CHURCH
FIRST FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 3
WINZEL C. LOEFFLER

CASTLEWOOD NELSON'S RE-ARRANGEMENT

FOURTH ADDITION TO NORTH ST. PAUL

McKNIGHT ROAD

13TH AVE.

14TH AVE.

15TH AVE.

CONST. LIMITS

F&I. 12"X 34' C.S. CULVERT AND APRONS

WOOD POST

DIRT ENT.

20'R

C.B.104

18" ARCH

B624 C.&G.

MH 13

C.B.106

TEL.

+30 END TAPER

BACKSTOP

42" R.C.P.

MH 15

MH 20

48" R.C.P.

MH 24

MH 27

C.B.108

C.B.29

WOOD SPLIT RAIL FENCE

GUY POLE

SIGN

HO. 2253

C.B.26

MH 25

15" R.C.P.

C.B.105

45+00 END TAPER

+95 END TAPER

12" R.C.P.

MH 16

T-BUR

C.B.107

CB 19

C.B.18

MH 21

MH 31

C.B.109

C.B.30

C.B.28

CONSTRUCT WALL

SALVAGE & RELOCATE WOVEN WIRE FENCE ON TOP OF WALL.

RELOCATE HYDRANT

BIT.

REMOVE 5' SIDEWALK

HO. 2266

HO. 2265

GA

B618

B624

① DEPRESS CURB M.H.D. STD. PLATE NO. 7036A
② REMOVE EXISTING CURB & GUTTER
④ MATCH CURB & GUTTER TO EXISTING CATCH BASINS

PARCEL NO. 33
ERNEST CHRISTIANSEN

PARCEL NO. 34
LIBERTY STATE BANK, a MINNESOTA CORPORATION

PARCEL NO. 35
GEORGE J. REILING
MARY JANE REILING

PARCEL NO. 36
LARRY A. PETERSON
CANDACE S. PETERSON

PARCEL NO. 37
DENNIS C. CHUHEL
ELIZABETH J. CHUHEL

B.M. ELEV. 938.17
TOP OF HYD. NE. COR.
13TH AVE. & McKNIGHT

B.M. ELEV. 966.29
TOP OF HYD. NE. COR.
15TH AVE. & McKNIGHT

C.B. 102
C.B. 104
C.B. 111
15"X67" R.C.P.
15"X30" R.C.P.
INV. 930.48
INV. 931.5
24"X22" R.C.P. @ 0.11%
M.H. 103
C.B. 12
15"X36" R.C.P.
C.B. 105
VC = 200'
M = 1.2870
P.I. 44+75
EL. 935.02
INV. 930.48
INV. 930.5
INV. 932.20
INV. 932.56
8" V.C.P @ 0.5%
8" V.C.P @ 1.0%
925.00
36.0
39.19
+4.17
-0.98
+75
M.H. 15
C.B. 106
948.58
C.B. 107
P.I. 48+00
EXISTING R.C.P.
15"X12' R.C.P.
INV 943.04
INV 943.16
INV 944.8 ±
INV 935.57
+4.80
58.18
+00
P.I. 50+50
EL. 960.58
VC = 100'
M = 0.28125
61.86
+2.55
C.B. 108
C.B. 109
63.77
+75
EXISTING R.C.P.
INV. 957.4 ±
INV. 956.8 ±
VC = 100'
M = 0.41625
P.I. 52+25
EL. 965.04
-0.78
965
960
955
950
945
940
935
930
44
45
46
47
48
49
50
51
52

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TOPOGRAPHY
UTILITIES
PROF. F

PARCEL NO. 3
WINZEL C. LOEFFLER

PARCEL NO. 4
GEORGE RICHARD FENNER
BETTY ANN FENNER

PARCEL NO. 5
DONALD MINKE
SHIRLEY E. MINKE

PARCEL NO. 6
HERBERT A. LOEFFLER
PAULINE L. LOEFFLER

PARCEL NO. 7
ANN M. CHRISTENSEN
GENE CHRISTENSEN
GENE NELSON

PARCEL NO. 8
EDWARD J. WINTERS
CHARLOTTE J. WINTERS
CITY AND COUNTY EMPLOYEES CREDIT UNION, a CORPORATION

PARCEL NO. 9
RICHARD P. NELSON
CORRINE M. NELSON
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

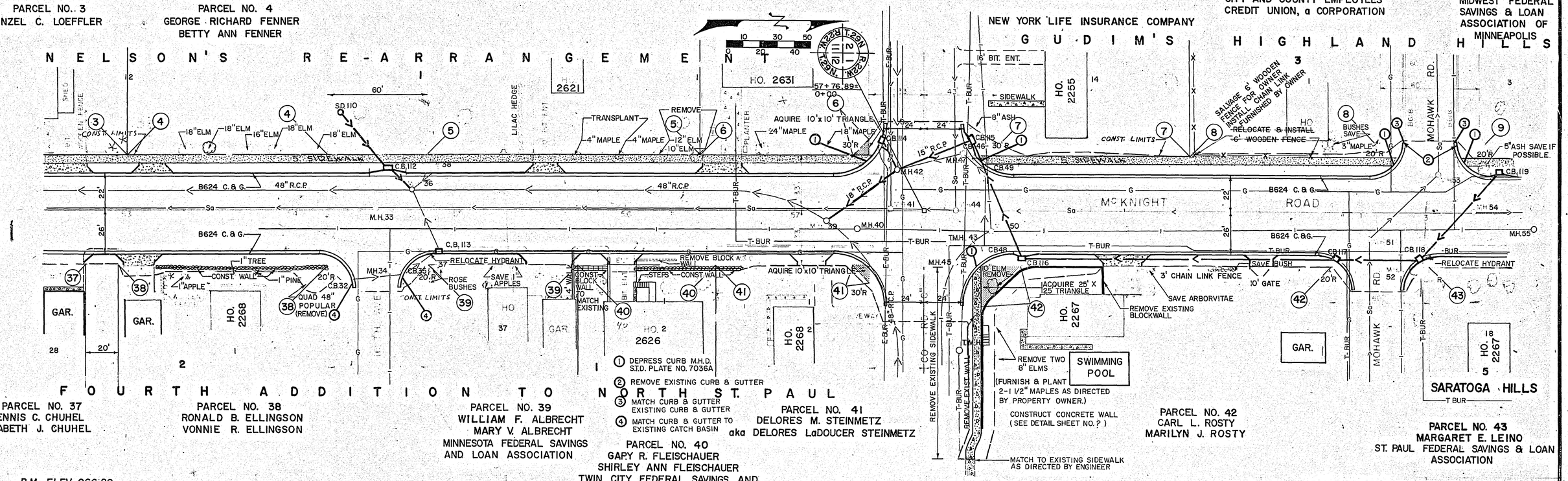
NEW YORK LIFE INSURANCE COMPANY

N E L S O N ' S R E - A R R A N G E M E N T

G U D I M ' S H I G H L A N D H I L L S

F O U R T H A D D I T I O N T O N O R T H S T . P A U L

S A R A T O G A H I L L S



B.M. ELEV. 966.29
TOP OF HYD. NE. COR.
15TH AVE. & McKNIGHT

B.M. ELEV. 970.60
TOP OF HYD. NE. COR. MOHAWK

PARCEL NO. 37
DENNIS C. CHUHEL
ELIZABETH J. CHUHEL

PARCEL NO. 38
RONALD B. ELLINGSON
VONNIE R. ELLINGSON

PARCEL NO. 39
WILLIAM F. ALBRECHT
MARY V. ALBRECHT
MINNESOTA FEDERAL SAVINGS AND LOAN ASSOCIATION

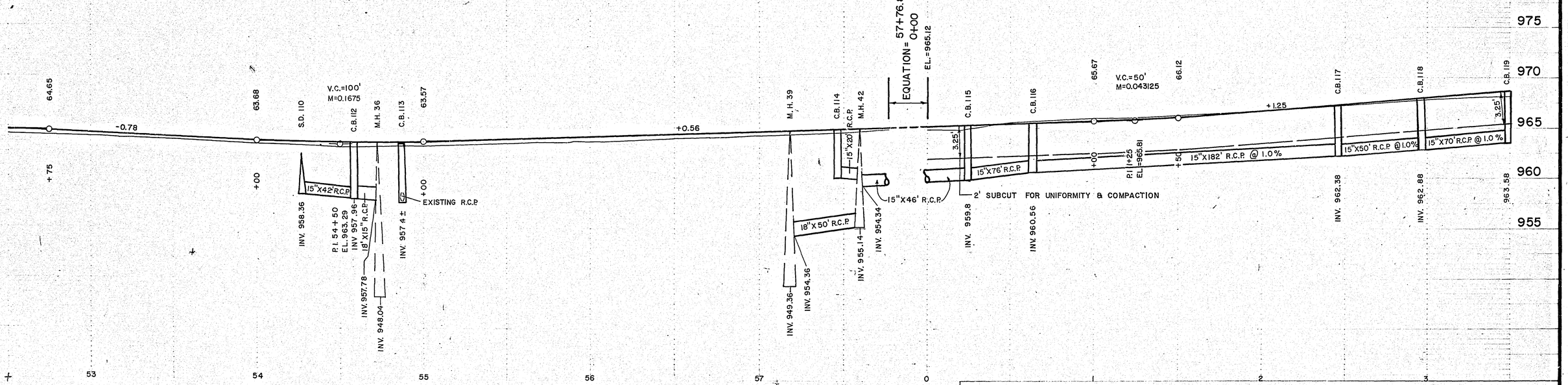
PARCEL NO. 40
GARY R. FLEISCHAUER
SHIRLEY ANN FLEISCHAUER
TWIN CITY FEDERAL SAVINGS AND LOAN ASSOCIATION

PARCEL NO. 41
DELORES M. STEINMETZ
aka DELORES LaDOUCER STEINMETZ

PARCEL NO. 42
CARL L. ROSTY
MARILYN J. ROSTY

PARCEL NO. 43
MARGARET E. LEINO
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

1. DEPRESS CURB M.H.D. S.T.D. PLATE NO. 7036A
2. REMOVE EXISTING CURB & GUTTER
3. MATCH CURB & GUTTER EXISTING CURB & GUTTER
4. MATCH CURB & GUTTER TO EXISTING CATCH BASIN



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TOPOGRAPHY				
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PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE

PARCEL NO. 9
RICHARD P. NELSON
CORRINE M. NELSON
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

PARCEL NO. 10
RONALD J. NOYES
ROBERTA K. NOYES
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 11
ROBERT W. NORD
GRACE MARIE NORD
PRUDENTIAL INSURANCE COMPANY OF AMERICA

PARCEL NO. 12
JAMES G. ENGELBRECHT
MARY C. ENGELBRECHT
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 13
JOEL A. DANIELSON
MARY K. DANIELSON
HOME FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 14
LOWELL C. TORGERSON
HELEN J. TORGERSON
FEDERAL NATIONAL MORTGAGE ASSOCIATION

PARCEL NO. 15
WILLIAM T. PFEIFER
HELEN F. PFEIFER

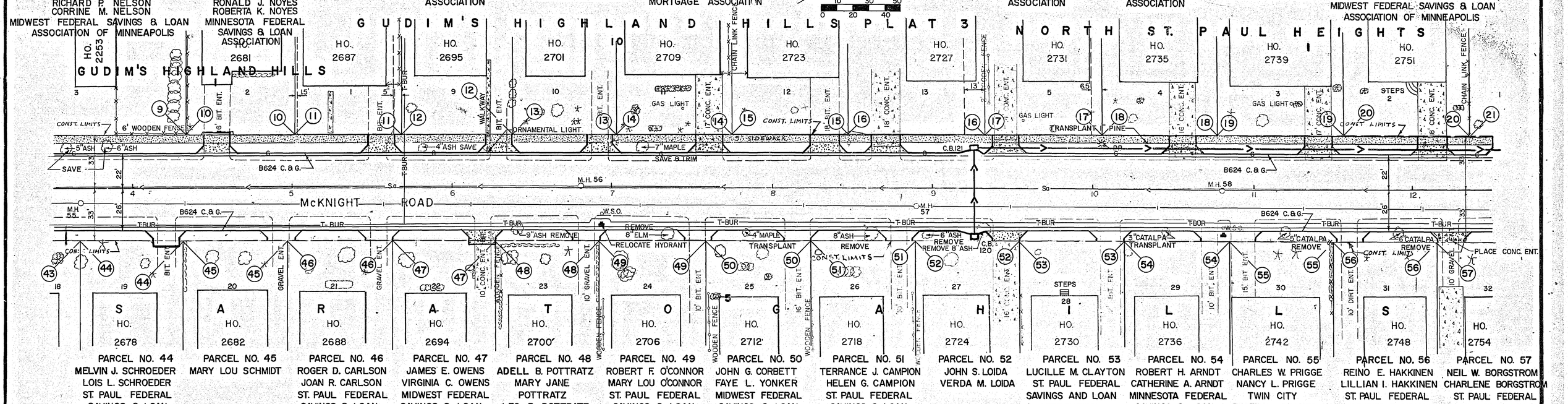
PARCEL. NO. 16
TERRANCE T. HENDRIKSEN
FEDERAL NATIONAL MORTGAGE ASSOCIATION

PARCEL NO. 17
IVER H. GREEN
LILA GREEN
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 18
RICHARD F. KATH
MYRA KATH
TWIN CITY FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 19
HAROLD M. BROWN
KATHLEEN L. BROWN
DROVERS STATE BANK IN SOUTH ST. PAUL

PARCEL NO. 20
THOMAS M. KELLER
NANCY J. KELLER
THE PRUDENTIAL INSURANCE COMPANY OF AMERICA
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS



PARCEL NO. 44
MELVIN J. SCHROEDER
LOIS L. SCHROEDER
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 45
MARY LOU SCHMIDT

PARCEL NO. 46
ROGER D. CARLSON
JOAN R. CARLSON
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 47
JAMES E. OWENS
VIRGINIA C. OWENS
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

PARCEL NO. 48
ADELL B. POTTRATZ
MARY JANE POTTRATZ
LEO B. POTTRATZ
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 49
ROBERT F. O'CONNOR
MARY LOU O'CONNOR
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 50
JOHN G. CORBETT
FAYE L. YONKER
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

PARCEL NO. 51
TERRANCE J. CAMPION
HELEN G. CAMPION
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 52
JOHN S. LOIDA
VERDA M. LOIDA

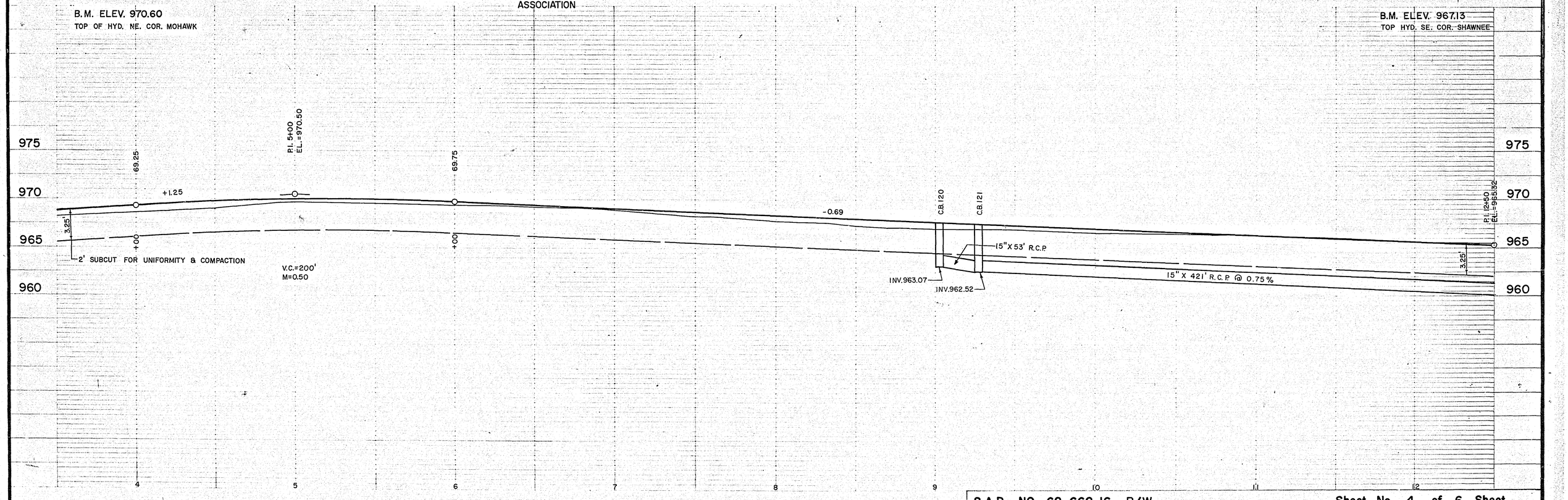
PARCEL NO. 53
LUCILLE M. CLAYTON
ST. PAUL FEDERAL SAVINGS AND LOAN ASSOCIATION

PARCEL NO. 54
ROBERT H. ARNDT
CATHERINE A. ARNDT
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 55
CHARLES W. PRIGGE
NANCY L. PRIGGE
TWIN CITY FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 56
REINO E. HAKKINEN
LILLIAN I. HAKKINEN
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 57
NEIL W. BORGSTROM
CHARLENE BORGSTROM
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION



S.A.P. NO. 62-668-16 R/W

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PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE

PARCEL NO. 21
BERNICE A. REEVES
FIRST MERCHANTS STATE BANK
OF SAINT PAUL

PARCEL NO. 22
DUANE E. HELMS
DELORES L. HELMS
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION
FIRST NATIONAL BANK OF SAINT PAUL

PARCEL NO. 23
ROBERT F. NEPPER
MARY C. NEPPER
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 24
PERKEGWIN INVESTMENT COMPANY

PARCEL NO. 25
CARR PROPERTIES, INC.
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 26
P. OWEN DEAN
JEAN DEAN
THE DIME SAVINGS BANK OF NEW YORK

NORTH ST. PAUL HEIGHTS HO. 1 2757

GUDIM HIGHLAND HILLS PLAT 2

GUDIM HIGHLAND HILLS PLAT 2 HO. 2251

C A R R A D D I T I O N
N O R T H S T. P A U L

ROBERT TILSEN'S MAPLEWOOD HEIGHTS HO. 2253

M A P L E W O O D

NOTE: 3 ENTRANCES TO BE CONTRACTED AT TIME OF CONSTRUCTION. LOCATION TO BE DETERMINED BY OWNER.

SHAWNEE DR.

McKNIGHT ROAD

RADATZ AVE.

NAVAJO RD.

SHOSHONE

SAVE OR TRANSPLANT 5" PINE

SAVE RELOCATE HYDRANT

RELOCATE HYDRANT

1" MAPLE TRANSPLANT

4" MAPLE

1" PINE TRANSPLANT

1" ELM REMOVE

4' CHAIN LINK FENCE

ROW OF 1" PINE & POPLAR

12" ELM (REMOVE)

4" ELM (REMOVE)

POPLARS

RUBBLE WALL CONSTRUCT TEMPORARY FENCE DURING CONSTRUCTION OF RUBBLE WALL

6" ASH REMOVE

CONST. SIDEWALK

CONST. LIMITS

SARATOGA HILLS PLAT 2 HO. 2267

SARATOGA HILLS PLAT 2 HO. 2266

SARATOGA HILLS PLAT 2 HO. 2836

SARATOGA HILLS
N O R T H S T. P A U L

SARATOGA HILLS PLAT 2

① DEPRESS CURB M.H.D. STD. PLATE NO. 7036 A
③ MATCH CURB & GUTTER TO EXISTING CURB & GUTTER.
④ MATCH CURB & GUTTER TO EXISTING CATCH BASIN.

PARCEL NO. 57
NEIL W. BORGSTROM
CHARLENE BORGSTROM
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 58
JOSEPH J. SPECIALE
NEWELL N. NELSON

PARCEL NO. 59
FRED PHILLIP LUND
ANITA MARGARET LUND
THE BOWERY SAVINGS BANK

PARCEL NO. 60
NEIL M. LINDAMOOD
ELAINE E. LINDAMOOD
THE BOWERY SAVINGS BANK

PARCEL NO. 61
HOWARD L. NELSON
GLORIA J. NELSON
TWIN CITY FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 62
RICHARD HENRY GIESER
DARLENE Z. GIESER
DOLLAR SAVINGS BANK OF THE CITY OF NEW YORK

PARCEL NO. 63
DAVID M. RUSHENBERG
ANNE RUSHENBERG
FIRST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

B.M. ELEV. 967.13
TOP HYD. SE. COR. SHAWNEE

B.M. ELEV. 993.33
TOP OF HYD. NW. COR. MAPLEVIEW

P.I. 12+50 EL.=965.30
64.07
-0.30
3.25
+25
15"X 120' R.C.P @ 1.0%
2' SUBCUT FOR UNIFORMITY COMPACTION
P.I. 14+75 EL.=964.62
V=300'
M=1.61250
70.62
2.25
+25
1' SUBCUT FOR UNIFORMITY & COMPACTION
+4.0
+50
83.62
P.I. 20+50 EL.=987.62
86.92
+1.3
2.25
+50
V.C.=200'
M=0.6750

990 985 980 975 970 965 960

13 14 15 16 17 18 19 20 21

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TOPOGRAPHY	PLOTTED BY	DATE	CHECKED BY	DATE
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PARCEL NO. 27
JOHN DeJAGER
MARGARET T. DeJAGER
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 28
RUSSELL A. BOUDIN
MAE F. BOUDIN
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 29
DAVID PINGWAH YOUNG
AUDREY HOPE TREADGILL YOUNG
FIRST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

ROBERT TILSEN'S MAPLEWOOD HEIGHTS

MAPLEWOOD

MAPLEVIEW LANE

BEAM AVE.

HO. 2254

HO. 2255

STA. 26+27.8

END OF PROJECT
STATION 25+76

TO BE CONSTRUCTED BY RAMSEY COUNTY UNDER PROJECT NO. S.A.P. 62-668-14.

CONST. LIMITS

SIDEWALK

BURIED TELE CABLE

B624 C. & G.

T-BUR

B618 CURB

C.B.135 C.B.136 C.B.137 C.B.138 C.B.139

M.H.136 M.H.88 M.H.90 W.M.H. 89

SAN. M.H.

WATER M.H.

W.S.O.

FP

TWN

WN

TRI

WASHING WELL

PLANTER BOX & LITE

4' CHAIN LINK FENCE

WOOD FENCE

BIT. ENT.

GRAVEL ENT.

DIRT ENT.

BIT. CURB

11" ASH REMOVE

8" ASH REMOVE

2" PINES TRANSPLANT

4" ELM REMOVE

6" ASH REMOVE

2" PINE

3" PINE TRANSPLANT

5" ASH REMOVE

3" PINE SAVE

RELOCATE HYDRANT

GAR.

HO. 2844

HO. 2850

HO. 2858

HO. 2866

2874 HO.

9

S A R A T O G A H I L L S P L A T 2

NORTH ST. PAUL

PARCEL NO. 64
GEORGE F. HOLEMAN
NELLIE L. HOLEMAN
THE BOWERY SAVINGS

PARCEL NO. 65
EUGENE F. HAUGEN
DOROTHY J. HAUGEN
TWIN CITY FEDERAL SAVINGS & LOAN ASSOCIATION

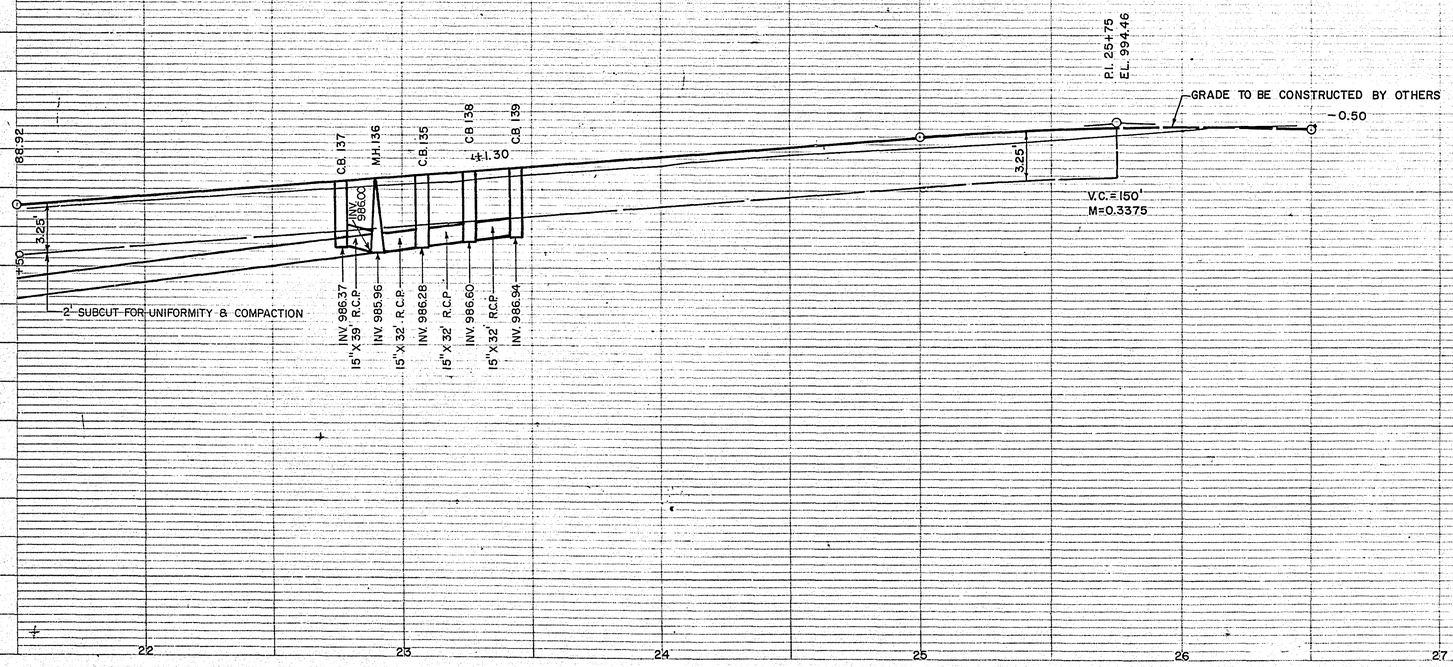
PARCEL NO. 66
STANLEY U. MOORE
MARGARET C. MOORE
THE BOWERY SAVINGS BANK

PARCEL NO. 67
ERNEST C. CONLON
IRENE G. CONLON
DOLLAR SAVINGS BANK OF THE CITY OF NEW YORK

PARCEL NO. 68
MEREDITH C. OESTREICH
SELMA A. OESTREICH
THE BOWERY SAVINGS BANK

B.M. ELEV. 993.33
TOP OF HYD. NW. COR. MAPLEVIEW

B.M. ELEV. 997.28
TOP OF HYD SE. COR. BEAM AVE.



S.A.P. NO. 62-668-16 R/W

Sheet No. 6 of 6 Sheets

PLANS SYMBOLS

STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT-OF-WAY LINE
PRESENT RIGHT-OF-WAY LINE
CONTROL OF ACCESS LINE
PROPERTY LINE (Except Land Lines)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RETAINING WALL
RAILROAD
RAILROAD RIGHT-OF-WAY LINE
RIVER OR CREEK
DRY RUN
DRAINAGE DITCH
DRAIN TILE
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
RAILROAD SNOW FENCE
STONE WALL OR FENCE
HEDGE
RAILROAD CROSSING SIGN
RAILROAD CROSSING BELL
ELECTRIC WARNING SIGN
CROSSING GATE
MEANDER CORNER

SPRINGS
MARSH
TIMBER
ORCHARD
BRUSH
NURSERY
CATCH BASIN — C.B.
FIRE HYDRANT
CATTLE GUARD
OVERPASS (Highway Over)
UNDERPASS (Highway Under)
BRIDGE
BUILDING (One Story Frame)
F-FRAME C-CONCRETE
S-STONE T-TILE
B-BRICK ST-STUCCO
IRON PIPE OR ROD
MONUMENT (STONE, CONCRETE, OR METAL)
WOODEN HUB
GRAVEL PIT
SAND PIT
BORROW PIT
ROCK QUARRY

UTILITIES SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
JOINT TELEPHONE AND POWER ON POWER POLES
OR TELEPHONE POLES
ANCHOR
STEEL TOWER
STREET LIGHT
PEDESTAL (TELEPHONE CABLE TERMINAL)
GAS MAIN
WATER MAIN

CONDUIT
TELEPHONE CABLE IN CONDUIT
ELECTRIC CABLE IN CONDUIT
TELEPHONE MANHOLE
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE
BURIED ELECTRIC CABLE
AERIAL TELEPHONE CABLE
SEWER, (SANITARY OR STORM)
SEWER MANHOLE

NOTE SECTION NUMBERS READ FROM THE SOUTH

PIT DATA

PIT NO. _____ Located in .....
Dead Haul .....

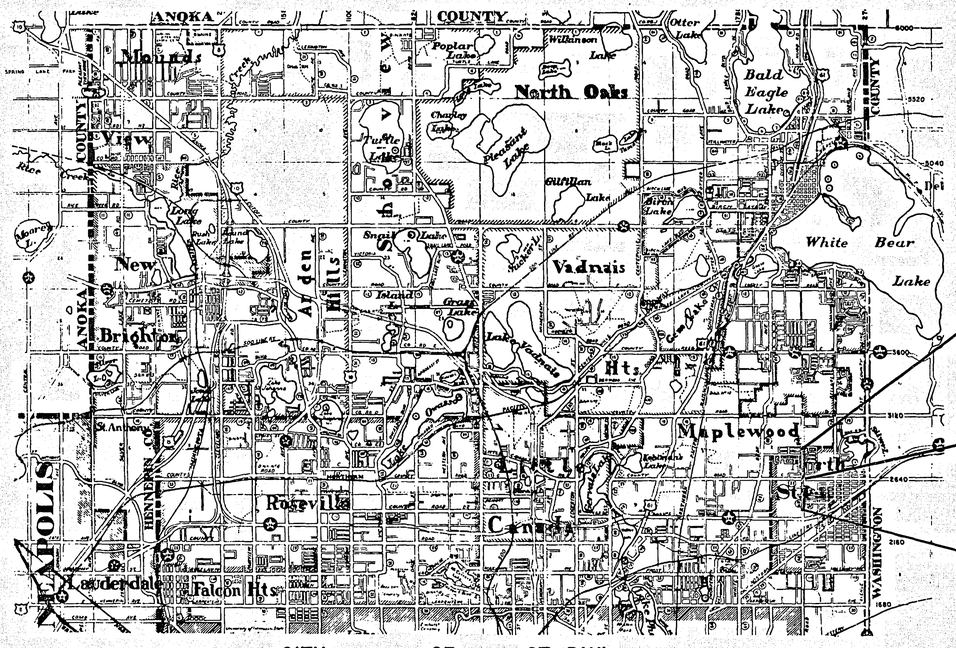
PIT NO. _____ Located in .....
Dead Haul .....

THE "MINNESOTA HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" DATED JANUARY 1, 1972 AS AMENDED BY "SUPPLEMENTAL SPECIFICATIONS" DATED APRIL 1, 1976 SHALL GOVERN.

McKNIGHT RD.

GROSS LENGTH	4576.89	FEET = 0.8668	MILES
BRIDGES - LENGTH	0	FEET =	MILES
EXCEPTIONS-LENGTH	0	FEET =	MILES
NET LENGTH	4576.89	FEET = 0.8668	MILES

PLAN, 10 30 50 / 0 20 40
PROFILE, HORZ., 10 30 50 / 0 20 40
PROFILE, VERT., 0 5 10
CROSS SECTIONS, 0 5 10
LAYOUT, 5,280

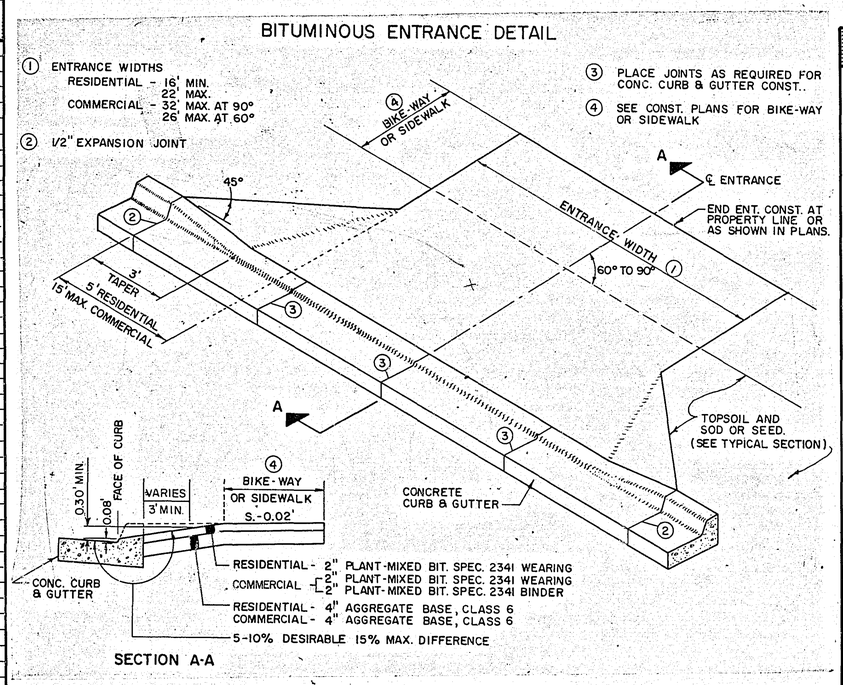

ANOKA COUNTY
RAMSEY COUNTY
Mounds View
North Oaks
Vadnais Heights
New Brighton
Arden Hills
Roseville
Maplewood
North St. Paul
Lauderdale
Falcon Hts.
Gem Lake
White Bear Lake
Bald Eagle Lake
Poplar Lake
Turtle Lake
Snail Lake
Gramsie Lake
Gilfillan Lake
Otter Lake
Wilkinson Lake
Keller Lake
Lake Owasso
Rice Creek
Locke Lake
Long Lake
Island Lake
Marsh Lake
Lake Johanna
Lake Valentine
Lake Josephine
Lake Wabasso
Lake Gervais
Lake Phalen
Round Lake
Deer Lake
Pleasant Lake
Chaska Lake
Wilkinson Lake
Otter Lake
Bald Eagle Lake
Poplar Lake
Turtle Lake
Snail Lake
Gramsie Lake
Gilfillan

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	ESTIMATED QUANTITIES	FINAL ESTIMATED QUANTITIES
2021.501	MOBILIZATION	LUMP SUM	1	
2101.502	CLEARING	TREE	29	
2101.507	GRUBBING	TREE	27	
(1) 2104.501	REMOVE SEWER PIPE	L.F.	290	
2104.501	REMOVE CURB & GUTTER	L.F.	295	
2104.503	REMOVE SIDEWALK	S.F.	800	
2104.505	REMOVE CONCRETE PAVEMENT	S.Y.	156	
2104.509	REMOVE FLAGSTONE WALL (APPROXIMATELY 400 S.F.)	EACH	1	
2104.509	REMOVE CONCRETE BLOCK WALL (APPROXIMATELY 150 S.F.)	EACH	1	
2104.509	REMOVE CATCH BASINS	EACH	22	
(1) 2104.521	SALVAGE SEWER PIPE	L.F.	290	
2104.521	SALVAGE FENCE (WOOD)	L.F.	55	
2104.521	SALVAGE FENCE (WOVEN WIRE)	L.F.	57	
2104.521	SALVAGE FENCE (CHAIN LINK)	L.F.	253	
2104.523	SALVAGE HYDRANT	EACH	10	
2104.523	SALVAGE HANDHOLE	EACH	1	
2105.501	COMMON EXCAVATION	C.Y.	19,433	
2105.505	MUCK EXCAVATION	C.Y.	1,284	
2105.522	SELECT GRANULAR BORROW (L.V.)	C.Y.	1,271	
2130.501	WATER	(M) GAL.	100	
2211.501	AGGREGATE BASE, CLASS 4	TON	1,726	
2211.501	AGGREGATE BASE, CLASS 6	TON	5,011	
2331.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	306	
2331.504	BASE COURSE MIXTURE	TON	6,796	
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	226	
2341.508	WEARING COURSE MIXTURE	TON	50	
2341.510	BINDER COURSE MIXTURE	TON	1,901	
2341.518	BITUMINOUS MIXTURE FOR LEVELING	TON	2,552	
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL.	3,010	
2358.501	BITUMINOUS MATERIAL FOR PRIME COAT	GAL.	9,136	
2361.504	ASPHALT CEMENT	TON	121	
2361.508	WEARING COURSE MIXTURE	TON	1,419	
2411.505	CONCRETE STRUCTURE, RETAINING WALL (APPROX. 1420 S.F.)	EACH	1	
2411.505	CONCRETE STRUCTURE, STEPS	EACH	1	
2501.511	12" C.S. PIPE CULVERT, 16 GAUGE	L.F.	34	
2501.515	12" C.S. PIPE APRONS	EACH	2	
2503.511	15" R.C. PIPE SEWER, CLASS IV	L.F.	2161	
2503.511	18" R.C. PIPE SEWER, CLASS II	L.F.	50	
2503.511	24" R.C. PIPE SEWER, CLASS II	L.F.	377	
2506.508	CONSTRUCT MANHOLE, DESIGN A OR F	EACH	3	
2506.509	CONSTRUCT SURFACE DRAIN, DESIGN A OR F	EACH	1	
2506.509	CONSTRUCT CATCH BASINS, DESIGN A OR F	EACH	15	
2506.509	CONSTRUCT CATCH BASINS, DESIGN L-P4	EACH	22	
2506.511	RECONSTRUCT MANHOLES	L.F.	10	
2506.516	CASTINGS (GRATE ONLY)	EACH	10	
2506.521	INSTALL CASTINGS	EACH	2	
2506.522	ADJUST FRAME AND RING CASTING	EACH	55	
2521.501	4" CONCRETE WALK	S.F.	1,750	
2531.501	CONCRETE CURB & GUTTER, DESIGN B624	L.F.	9,075	
2531.501	CONCRETE CURB & GUTTER, DESIGN B612	L.F.	1,150	
2531.507	6" CONCRETE DRIVEWAY PAVEMENT	S.Y.	514	
2557.501	WIRE FENCE, DESIGN 42-9322	L.F.	162	
2557.516	PEDESTRIAN GATES	EACH	1	
2571.503	FURNISH & PLANT SHADE TREE 1 1/2" MAPLE	TREE	2	
2571.541	TRANSPLANT TREES	TREE	14	
2575.505	SODDING	S.Y.	9,308	
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 12-12-12	TON	0.7	
2575.551	TOPSOIL BORROW	C.Y.	776	
411.609	12" CONCRETE BLOCK RETAINING WALL	S.F.	150	
411.609	FLAGSTONE RETAINING WALL	S.F.	1,414	
504.679	ADJUST VALVE BOX	EACH	20	
504.666	INSTALL HYDRANT	EACH	10	
557.604	INSTALL WOOD FENCE	L.F.	49	
557.604	INSTALL WOVE WIRE FENCE	L.F.	57	
557.604	INSTALL CHAIN LINK FENCE	L.F.	235	
545.602	RELOCATE ORNAMENTAL ELECTRICAL LIGHT	UNIT	1	
	NON-PARTICIPATING			
2521.504	4" CONCRETE WALK	S.F.	19,770	
2521.504	6" CONCRETE WALK (THRU DRIVEWAYS)	S.F.	1,800	
	8" D.I.P. WATERMAIN	L.F.	370	
	8" FITTINGS & SMALLER	LBS.	280	
	CONNECTIONS TO EXISTING WATERMAIN	EACH	2	
	8" V.C. PIPE SEWER 10-12 FT. DEEP	L.F.	100	
	CONSTRUCT MANHOLE, DESIGN F	EACH	1	
	AGGREGATE BEDDING (L.V.)	C.Y.	50	

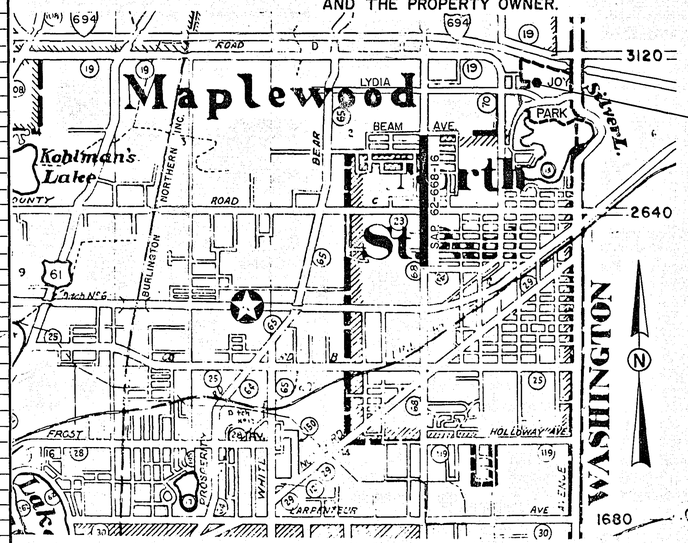
(1) SEWER PIPE TO BE REMOVED, SALVAGED OR ABANDONED SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

BITUMINOUS ENTRANCE DETAIL



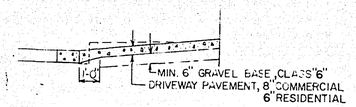
SECTION A-A

NOTE: DRIVEWAY TO BE DETERMINED IN THE FIELD BY THE ENGINEER AND THE PROPERTY OWNER.



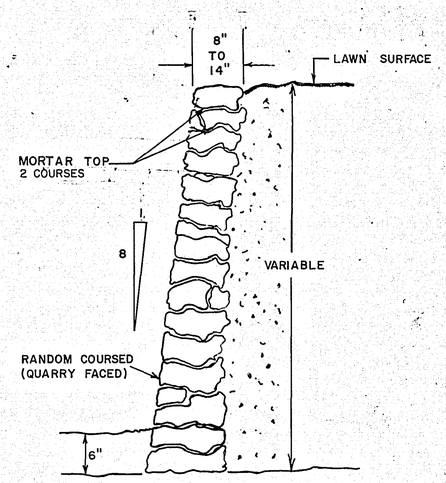
STOCKPILE SITE FOR 4,151 C.Y. EXCESS COMMON EXCAVATION AND 1,284 C.Y. MUCK EXCAVATION

CONCRETE DRIVEWAY



SECTION ON ℄ DRIVEWAY

DRY RUBBLE MASONRY RETAINING WALLS



STANDARD DETAIL PLATES

0002A	SPECIFICATION REFERENCE TO STANDARD PLATES
3000G	REINFORCED CONCRETE PIPE
3006B	GASKET JOINT FOR R.C. PIPE
3040D	CORRUGATED METAL PIPE
3123G	METAL APRON FOR C.M. PIPE
3124A	METAL APRON CONNECTION
4000G	MANHOLE OR CATCH BASIN
4005J	MANHOLE OR CATCH BASIN
4010E	CONCRETE SHORT CONE & ADJUSTING RING
4011C	PRECAST CONCRETE BASE
4021C	PRECAST CURB OPENING CATCH BASIN
4101B	RING CASTING FOR MANHOLE OR CATCH BASIN
4110D	COVER CASTING FOR MANHOLE
4129B	CATCH BASIN FRAME CASTING
4142D	BEEHIVE GRATE CASTING FOR CATCH BASIN
4151B	GRATE CASTING FOR CATCH BASIN
4160C	CURB BOX CASTING FOR CATCH BASIN
4180F	MANHOLE STEP CASTING
7035I	CONCRETE WALK & CURB RETURN AT ENTRANCES
7036A	PEDESTRIAN CURB RAMP
7100D	CONCRETE CURB & GUTTERS
7110E	CURB & GUTTER CONSTRUCTION AT CATCH BASINS
7111E	INSTALLATION OF CATCH BASIN CASTINGS
8000F	STANDARD BARRICADES
8400D	PIPE RAILING
9322F	CHAIN LINK FENCE

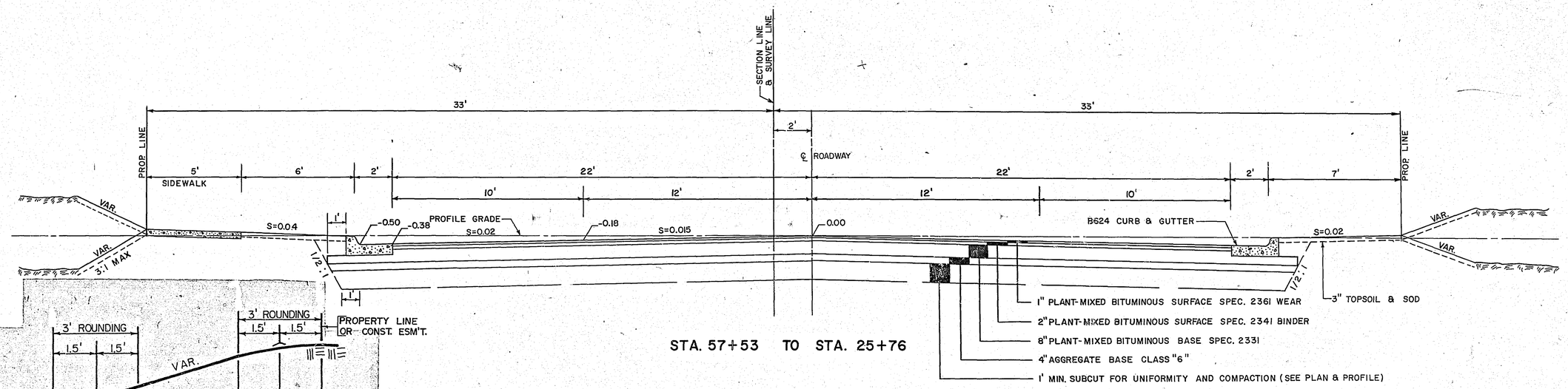
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Date 6-17-77 Reg. No. 5782

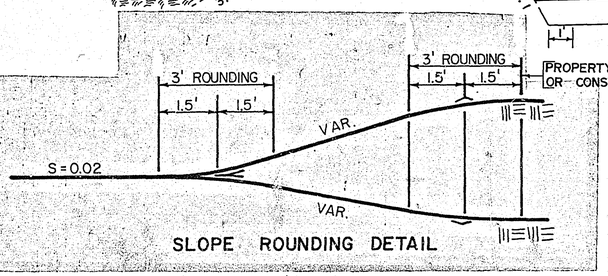
REVISED	DATE	
LKF	8-10-77	DESIGNED BY
		DRAWN BY
		CHECKED BY

S.A.P. NO. 62-668-16

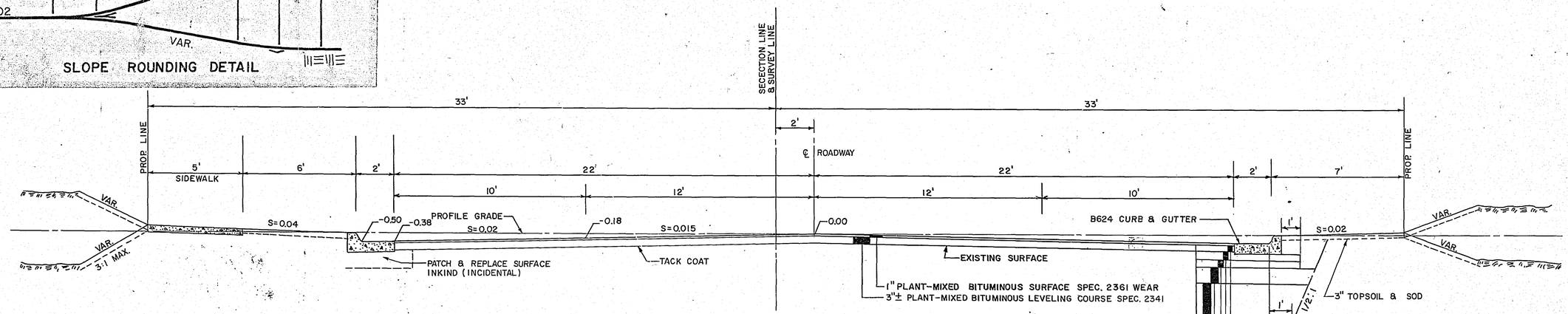
TYPICAL SECTION



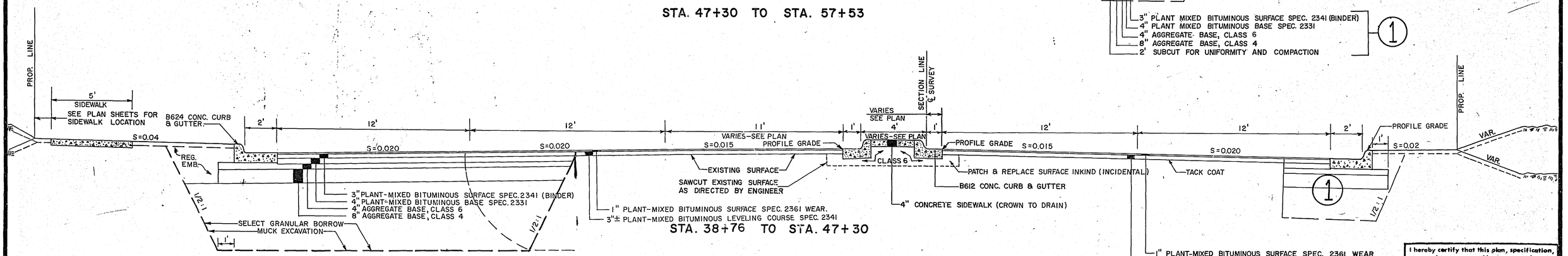
STA. 57+53 TO STA. 25+76



SLOPE ROUNDING DETAIL



STA. 47+30 TO STA. 57+53



STA. 38+76 TO STA. 47+30

SEE X-SECTIONS FOR LOCATION RT. OR LT. & STATIONING FOR MUCK EXCAVATION

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.

Wayne R. Swanson

Date 6-17-77 Reg. No. 6782

S.A.P NO. 62-668-16

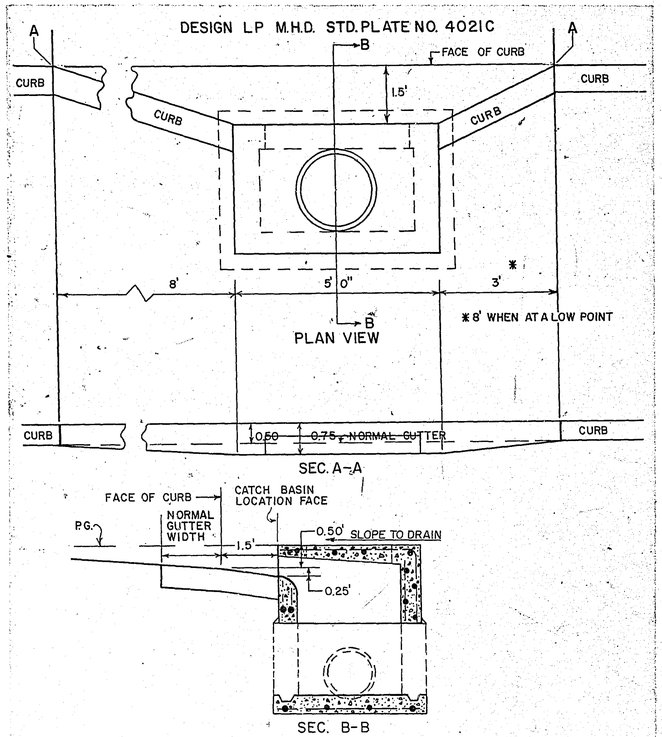
DRAINAGE CHART

STATION	LOCATION	NO.	TYPE	DESIGN	CONST. HEIGHT LIN. FT.	CASTING ASSEMBLY	ELEVATION PROFILE	ELEVATION ORIGNAL GRATE OR RING	ELEVATION NEW GRATE OR RING	C.B. or M.H. INVERT	ADJUST CASTING ASSEMBLY	RECONSTRUCT CATCH BASIN OR MAN HOLE L.IN. FT.	INSTALL CASTING ASSEMBLY	FURNISH AND INSTALL PIPE SEWER: REINFORCED CONCRETE PIPE 12"	15"	18"	21"	24"			CORRUGATED STEEL PIPE 12"	15"	18"			APRON	CLASS	DRAINS TO: STRUCTURE NO.	INVERT EL.	REMARKS
37+80	RT.49'	1	C.B.				938.16	937.70			1																		MATCH RADIUS TO EXIST. C.B.
37+99	LT. 3'	2	M.H.	SAN.			938.38	937.87	938.30		+0.4																		
38+09	RT.35'	3	M.H.	WATER			938.48	937.75			OK																		
38+24	RT.48'	4	C.B.				938.57	937.71		931.81	1																		MATCH RADIUS TO EXIST. C.B.
41+10	RT.46'	5	M.H.				938.40	937.89		931.74	OK																		
41+16	RT.46'	6	C.B.				938.37	937.20		930.92			1*					100'									101	930.81	MATCH RADIUS TO EXIST. C.B.
41+28	LT.6'	7	M.H.	SAN.			938.31	937.75	938.19		+0.4																		
41+32	LT.6'	8	M.H.	SAN.			938.29	937.69	938.17		+0.48																		
41+39	RT.46'	9	M.H.	WATER			938.26	937.50			OK		1*																
41+46	RT.46'	10	C.B.				938.22	937.10			1																		MATCH RADIUS TO EXIST. C.B.
44+46	RT.46'	11	C.B.				935.96	934.40																					REMOVE
44+76	RT.46'	12	C.B.				936.32	934.20																					
46+48	LT.17'	13	M.H.				942.23		941.91																				
47+76	RT.45'	14	C.B.				947.57	947.00					1*																MATCH RADIUS TO EXIST. C.B.
47+78	LT.14'	15	M.H.				947.66	947.17	947.40	935.57	+0.23																		
47+99	RT.2'	16	M.H.	SAN.			948.53	948.15	948.53		+0.38																		
48+02	RT.57'	17	M.H.	WATER			948.67	947.56			OK																		
48+05	RT.45'	18	C.B.				948.81	947.00					1*																MATCH RADIUS TO EXIST. C.B.
48+22	RT.22'	19	C.B.					949.00																					REMOVE
49+52	LT.15'	20	M.H.				955.87	955.19	955.59		+0.40																		
50+92	RT.14'	21	M.H.	WATER			961.64	961.20	961.46		+0.26																		
51+06	LT.39	22	C.B.				962.00	962.20					1*																MATCH RADIUS TO EXIST. C.B.
51+08	RT.42'	23	C.B.				962.05	962.20					1*																MATCH RADIUS TO EXIST. C.B.
51+22	℄	24	M.H.	SAN.			962.41	962.24			+0.17																		
51+30	LT.34'	25	M.H.	WATER			962.61	961.92			OK																		
51+36	LT.39'	26	C.B.				962.76	962.00					1*																MATCH RADIUS TO EXIST. C.B.
51+37	LT.11'	27	M.H.				962.79	962.42	962.59		+0.17																		
51+37	RT.42'	28	C.B.				962.79	962.00					1*																MATCH RADIUS TO EXIST. C.B.
51+54	LT.22'	29	C.B.					962.50																					REMOVE
51+55	RT.23'	30	C.B.					962.70																					REMOVE
51+66	RT.13'	31	M.H.	WATER			963.53	963.20	963.36		+0.16																		
54+36	RT.41'	32	C.B.				963.48	962.20					1*																MATCH RADIUS TO EXIST. C.B.
54+50	LT.1'	33	M.H.				963.45	963.00	963.40		+0.40																		
54+59	RT.35'	34	M.H.				963.44	962.39			1																		
54+65	RT.36'	35	C.B.				963.44	962.30	962.80				1*																
54+72	LT.12'	36	M.H.				963.45	962.84	963.23	948.04	+0.39																		
54+84	RT.22'	37	C.B.					962.61																					REMOVE
54+85	LT.22'	38	C.B.				963.50	962.70	963.16		+0.14																		ADJUST CASTING TO NEW CURB
57+19	RT.6'	39	M.H.				964.79	964.36	964.73	949.36	+0.37																		
57+37	RT.11'	40	M.H.				964.89	964.50	964.75		+0.25																		
57+56	LT.1'	41	M.H.				964.99	964.70	964.94		+0.24																		
57+61	LT.24'	42	M.H.				965.02	964.24		955.14	1					50'											39	954.36	REPLACE 12"R.C.P. WITH 15" R.C.P.
0+16	RT.19'	43	M.H.	TELL.			965.20	964.86	964.92		+0.06																		
0+19	RT.0.5'	44	M.H.	SAN.			965.22	964.81	965.20		+0.39																		
0+19	RT.31	45	M.H.	WATER			965.22	964.79			1																		
0+22	LT.33'	46	C.B.					963.81																					REMOVE
0+27	LT.31'	47	M.H.	WATER			965.26	965.26			1																		
0+36	RT.22'	48	C.B.					964.51																					REMOVE
0+37	LT.20	49	C.B.					964.45																					REMOVE
0+40	RT.12'	50	M.H.	WATER			965.33	965.22	965.18		-0.04																		
2+66	RT.16'	51	M.H.	SAN.			967.51	967.30	967.29		-0.01																		
2+85	RT.36'	52	M.H.	WATER			967.81	967.41	967.30		-0.11±																		
3+08	LT.23'	53	M.H.	SAN.			968.10	967.98			1																		
3+29	LT. 1'	54	M.H.	SAN.			968.36	968.27	968.31		-0.04																		
3+67	RT.9'	55	M.H.	WATER			968.84	968.33	968.73		+0.40																		
6+81	LT. 1'	56	M.H.	SAN.			969.25	969.03	969.20		+0.17																		
8+90	RT.11'	57	M.H.	WATER			967.81	966.86	967.67		+0.81																		
10+80	RT. 1'	58	M.H.	SAN.			966.50	968.66	966.48		-0.18																		

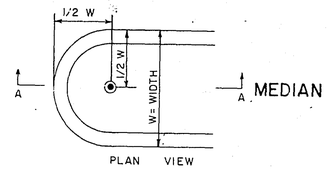
CASTINGS — A= RING CASTING M.H.D. NO. 790-2, COVER CASTING NO. 712 (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).
B = GRATE FRAME CASTING M.H.D. NO. 802A, GRATE NO. 811, CURB BOX NO. 823A (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).
C = RING CASTING M.H.D. NO. 700-7, COVER CASTING NO. 712 (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).
D = RING CASTING M.H.D. NO. 700-7, COVER CASTING NO. 730-6 (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).

MANHOLES & CATCH BASINS — L.P-4 M.H.D. STD. PLATE NO. 4021C; A. OR F, M.H.D. STD. PLATE NO. 4000G OR 4005I

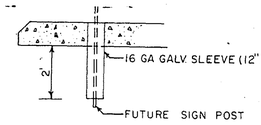
CURB OPENING CATCH BASIN INSTALLATION DETAIL



* INSTALL NEW GRATE CASTINGS WITH DIAGONAL BARS FOR BICYCLE SAFTY. TYPE SHALL BE DETERMINED PRIOR TO CONSTRUCTION BY THE ENGINEER. PAYMENT SHALL BE COMPENSATION IN FULL FOR FURNISHING AND INSTALLING GRATE UNDER ITEM NO. 2506.516 CASTING (GRATE ONLY)



PLACEMENT OF MEDIAN HOLES



NOTES:

1.) PAYMENT FOR SLEEVE TO BE INCIDENTAL AND INCLUDED IN ITEM NO. 2531.503 CONCRETE MEDIAN.

2.) WHERE CONCRETE MEDIAN IS PLACED ON EXISTING CONCRETE PAVEMENT, THE EXISTING PAVEMENT SHALL BE BROKEN OUT TO ACCOMMODATE SLEEVE, PAYMENT SHALL BE INCIDENTAL TO ITEM NO. 2531.503.

3.) • DENOTES PLACEMENT OF MEDIAN HOLES ON CONSTRUCTION PLAN.

4.) HOLES SHALL BE FILLED WITH SILICA SAND.

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.

Date 6-17-74 Reg. No. 5782

S.A.P. NO. 62-668-16

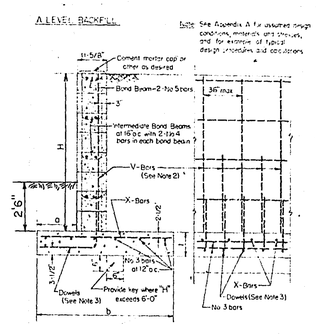
DRAINAGE CHART

STATION	LOCATION	NO.	TYPE	DESIGN	CONST. HEIGHT LIN. FT.	CASTING ASSEMBLY	ELEVATION PROFILE	ELEVATION ORIGINAL GRATE OR RING	ELEVATION NEW GRATE OR RING	ELEVATION C.B. or M.H. INVERT	ADJUST CASTING ASSEMBLY	RECONSTRUCT CATCH BASIN OR MAN HOLE LIN. FT.	INSTALL CASTING ASSEMBLY	FURNISH AND INSTALL PIPE SEWER: REINFORCED CONCRETE PIPE 12"	15"	18"	21"	24"			CORRUGATED STEEL PIPE 12"	15"	18"			APRON	CLASS	DRAINS TO: STRUCTURE NO.	INVERT EL.	REMARKS
14+41	RT. 18'	59	C.B.					964.68																					REMOVE
14+47	LT. 18'	60	C.B.					964.87																					REMOVE
14+56.	RT. 8'	61	M.H.	WATER			965.95	965.28	965.86		+0.58																		
14+61	LT. 8'	62	M.H.				966.02	965.44	965.87	951.74	+0.43																		
14+64	LT. 35'	63	M.H.				966.07	964.61		951.01	1																		
14+80	LT. 35'	64	M.H.	WATER			966.37	964.67			1																		
14+84	RT. 29'	65	M.H.	WATER			966.44				1																		
14+71	LT. 1'	66	M.H.	SAN.			966.20	965.56	966.15		+0.59																		
14+88	LT. 8'	67	M.H.				966.71	965.64	966.56	959.14	+0.92																		
14+88	LT. 35'	68	C.B.					964.55																					REMOVE
15+08	RT. 6'	69	M.H.	WATER			966.96	965.86	966.90		+1.04																		
15+15	LT. 17'	70	C.B.					965.58																					REMOVE
17+06	RT. 8'	70A	M.H.	WATER			973.90	974.08	973.81		-0.27																		REMOVE
17+23	RT. 17'	71	C.B.					974.00																					
17+55	LT. 10'	72	M.H.				975.86	975.78	975.68	970.18	-0.10																		
17+65	LT. 1'	73	M.H.	SAN.			976.26	976.22	976.21		-0.01																		
17+74	RT. 39'	74	M.H.	WATER			976.62	976.47			1																		
17+81	RT. 44'	75	C.B.				976.90	976.03		971.73	1																		MATCH RADIUS TO EXIST. C.B.
18+16	RT. 17'	76	C.B.					977.60																					REMOVE
18+18	LT. 17'	77	C.B.					977.66																					REMOVE
19+72	LT. 72'	78	M.H.	SAN.			984.51				1																		
19+83	RT. 7'	79	M.H.	WATER			984.91	984.81	984.83		+0.02																		
20+00	RT. 11'	80	M.H.	WATER			985.49	985.39	985.35		-0.04																		
20+21	RT. 18'	81	C.B.					985.86																					REMOVE
20+50	LT. 10'	82	M.H.					986.53																					REMOVE
20+60	RT. 1'	83	M.H.	SAN.			987.24	986.96	987.22		+0.26																		
20+71	RT. 38'	84	M.H.	WATER			987.51	987.34			1																		
20+77	RT. 38'	65	C.B.					987.00																					REMOVE
21+09	LT. 18'	86	C.B.					987.24																					REMOVE
21+10	RT. 18'	87	C.B					987.48																					REMOVE
23+00	LT. 79'	88	M.H.	SAN.			990.91				1																		
23+10	RT. 7'	89	M.H.	WATER			991.43	990.48	991.35		+0.87																		
23+49	RT. 1'	90	M.H.	SAN.			991.55		991.53		1																		
				NEW CONSTRUCTION																									
38+63	LT. 44.5'	100	C.B.	L.P-4	6.4	A	938.72		938.72	932.80				102'													4	931.81	
41+57	LT. 41.5'	101	C.B.	L.P-4	7.8	A	938.13		938.13	930.81								241'									102	930.55	
43+98	LT. 34.75'	102	C.B.	L.P-4	6.0	A	936.00		936.00	930.55								36'									103	930.5±	
44+35±	LT. 52±	103	M.H.	A OR F	5.6	C			936.0±	930.5±																			BUILD OVER EXIST. SEWER AS DIRECTED BY ENGINEER
43+98	RT. 28.5'	104	C.B.	L.P-4	5.0	A	936.00		936.00	931.50				67'													102	930.48	
45+07	RT. 27.5'	105	C.B.	L.P-4	6.5	A	937.41		937.41	931.39				36'													104B	931.21	
47+78	LT. 23.5'	106	C.B.	L.P-4	5.0	A	947.66		947.66	943.16				12'													15	943.04	
48+20±	RT. 25'	107	C.B.	A OR F	4.0	B	949.54		948.84	944.80																	18		USE EXISTING PIPE
51+53 ±	LT. 21'	108	C.B.	A OR F	5.0	B	963.21		962.51	957.40																	27		USE EXISTING PIPE
51+55 ±	RT. 25'	109	C.B.	A OR F	5.7	B	963.26		962.56	956.80																	27		USE EXISTING PIPE
54+28±	LT. 59±	110	S.D.	A OR F	4.0	D			962.3±	958.36				42'													112	957.96	
54+58	LT. 23.5'	112	C.B.	L.P-4	6.0	A	963.46		963.46	957.96				18'													36	957.78	
54+84 ±	RT. 25'	113	C.B.	A OR F	5.0	B	963.49		962.79	957.41																	36		USE EXISTING PIPE
57+50±	LT. 42'	114	C.B.	A OR F	4.4	B			964.6±	960.10				20'													42	959.90	
0+26 ±	LT. 42'	115	C.B.	L.P-4	5.0	A			964.3±	959.80				46'													42	959.34	
0+64	RT. 27.5'	116	C.B.	L.P-4	5.4	A	965.48		965.48	960.56				76'													115	959.80	
2+46±	RT. 29±	117	C.B.	A OR F	4.1	B	967.32		966.6±	962.38				182'													116	960.56	BUILD IN CONJUCTION WITH B624 RADIUS
2+96 ±	RT. 29±	118	C.B.	A OR F	4.1	B	967.95		967.1 ±	962.88				50'													117	962.38	BUILD IN CONJUCTION WITH B624 RADIUS
3+47	LT. 23.5'	119	C.B.	L.P-4	5.5	A	968.59		968.59	963.58				70'													118	962.88	
9+25	RT. 27.5'	120	C.B.	L.P-4	5.0	A	967.57		967.57	963.07				53'													121	962.52	
9+25	LT. 23.5'	121	C.B.	L.P-4	5.5	A	967.57		967.57	962.52				421'													123	959.36	
13+46	RT. 27.5'	122	C.B.	L.P-4	5.7	A	965.04		965.04	959.89				53'													123	959.36	

CASTINGS — A = RING CASTING M.H.D. NO. 790-2, COVER CASTING NO. 712 (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).
B = GRATE FRAME CASTING MHD. NO. 802 A, GRATE NO. 811, CURB BOX NO. 823 A (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).
C = RING CASTING M.H.D. NO. 700-7, COVER CASTING NO. 712 (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).
D = RING CASTING M.H.D. NO. 700-7, COVER CASTING NO. 730-6 (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).

MANHOLES & CATCH BASINS — L.P-4 M.H.D. STD. PLATE NO. 4021C; A OR F, M.H.D. STD. PLATE NO. 4000G OR 4005I

CONCRETE BLOCK RETAINING WALL



USE

H	a	b	t	V-Bars (See Note 2)	X-Bars
Type A SOIL — Very permeable, coarse-grained material such as clean sand and gravel					
3'-4"	4"	1'-0"	9"	No 3 at 32"	No 3 at 27"
4'-0"	5"	1'-6"	9"	No 3 at 32"	No 3 at 27"
4'-8"	6"	1'-8"	9"	No 3 at 32"	No 3 at 27"
5'-4"	8"	2'-0"	10"	No 4 at 32"	No 3 at 27"
6'-0"	9"	2'-6"	10"	No 3 at 16"	No 3 at 32"
6'-8"	10"	2'-9"	12"	No 5 at 32"	No 3 at 22"
7'-4"	13"	3'-0"	12"	No 4 at 16"	No 4 at 24"
8'-0"	15"	3'-6"	12"	No 6 at 24"	No 4 at 22"
8'-8"	16"	3'-8"	12"	No 7 at 24"	No 5 at 26"
9'-4"	18"	3'-10"	12"	No 5 at 16"	No 5 at 20"
11'-0"	20"	5'-2"	12"	No 8 at 16"	No 6 at 24"
Type B SOIL — Granular material with a conspicuous clay content such as fine silty sand					
3'-4"	8"	2'-0"	9"	No 3 at 32"	No 3 at 27"
4'-0"	10"	2'-9"	9"	No 3 at 32"	No 3 at 27"
4'-8"	12"	3'-3"	10"	No 4 at 32"	No 3 at 27"
5'-4"	14"	3'-8"	10"	No 4 at 24"	No 3 at 25"
6'-0"	15"	4'-2"	12"	No 4 at 16"	No 4 at 30"
6'-8"	16"	4'-6"	12"	No 6 at 24"	No 4 at 22"
7'-4"	18"	4'-10"	12"	No 7 at 24"	No 5 at 26"
8'-0"	20"	5'-4"	12"	No 7 at 24"	No 5 at 21"
8'-8"	22"	5'-10"	14"	No 7 at 16"	No 6 at 26"
9'-4"	24"	6'-4"	14"	No 8 at 16"	No 6 at 21"

GENERAL NOTES
1. Reinforcement of a size and spacing other than given in the table may be used, providing such other reinforcement furnishes an area of steel at least equal to that indicated in the table.
2. Alternate V-Bars may be stopped at the mid-height of the wall (H/2), if the spacing of the bars continued to the top does not exceed 36".
3. Dowels shall be of steel equal in size and spacing to V-Bars, shall project a minimum of 30 bar diameters into the filled block cores, and shall extend to the toe of the footing.
4. See Fig. 4 and 5 for suggested water-proofing, drainage and other general construction details.

NOTE: CONSTRUCT AND INSTALL CATCH BASINS DESIGN A OR F AS SHOWN IN M.H.D. STANDARD PLATE NO'S 7110E & 7111E.

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.
Date 6-17-77 Reg. No. 5332

S.A.P. NO. 62-668-16

DRAINAGE CHART

STATION	LOCATION	NO.	TYPE	DESIGN	CONST. HEIGHT LIN. FT	CASTING ASSEMBLY	ELEVATION: PROFILE	ELEVATION: ORIGINAL GRATE OR RING	ELEVATION: NEW GRATE OR RING	ELEVATION: CB. or M.H. INVERT	ADJUST CASTING ASSEMBLY	RECONSTRUCT CATCH BASIN OR MAN HOLE LIN. FT.	INSTALL CASTING ASSEMBLY	FURNISH AND INSTALL PIPE SEWER: REINFORCED CONCRETE PIPE 12"	15"	18"	21"	24"			CORRUGATED STEEL PIPE 12"	15"	18"			APRON	CLASS	DRAINS TO: STRUCTURE NO.	INVERT EL.	REMARKS
13+46	LT.23.5'	123	C.B.	L.P-4	6.2	A	965.04		965.04	959.36					120'												63	958.16	
15+20	RT.27.5'	124	C.B.	L.P-4	5.0	A	967.11		967.11	962.61					50'												67	962.11	
15+20	LT.23.5'	125	C.B.	L.P-4	5.0	A	967.11		967.11	962.61					35'												67	962.26	
17+55	LT.23.5'	126	C.B.	L.P-4	5.6	A	975.47		975.47	970.40					14'												72	970.2±	
17+51	RT.45'	127	C.B.	A OR F	4.3	B			976.4±	972.00					32'												128	971.70	
17+81	RT.45'	128	C.B.	A OR F	4.6	B			976.4±	971.7 ±																			USE EXISTING PIPE
18+10	RT.27.5'	129	C.B.	L.P-4	5.0	A	978.02		978.02	973.53					30'												128	973.23	
20+16	LT.10'	130	M.H.	A OR F	6.0	C	985.97		985.79	979.9±																	72		BUILD OVER EXISTING
20+16	LT.23.5'	131	C.B.	L.P-4	5.2	A	985.97		985.97	981.27					14'												130	981.13	
20+48	RT.45'	132	C.B.	A OR F	4.0	B			987.2 ±	983.11					65'												130	982.46	
20+78	RT.45'	133	C.B.	A OR F	3.9	B			987.4±	983.43					32'												132	983.11	
21+08	RT.27.5	134	C.B.	L.P-4	5.0	A	988.25		988.25	983.75					32'												133	983.43	
22+86	LT.41	135	C.B.	A OR F	4.4	B			990.8±	986.28					32'												136	985.96	
22+90	LT.10'	136	M.H.	A OR F	4.7	C	990.74		990.56	985.96					274'												130	979.90	
23+00	RT.27.5'	137	C.B.	L.P-4	5.0	A	990.87		990.87	986.37					39'												136	986.00	
23+14	LT.41'	138	C.B.	A OR F	4.1	B			990.8±	986.60					32'												135	986.28	
23+44	LT.23.5'	139	C.B.	L.P-4	5.0	A	991.44		991.44	986.94					34'												138	986.60	
44+46	RT.45'	104A	C.B.	A OR F	4.6	B			935.1±	931.05					46'												104	930.48	
44+76	RT.45'	104B	C.B.	A OR F	4.7	B			935.4±	931.21					32'												104 A	931.05	
													TOTALS		2161	50'		377'											

CASTINGS —
A = RING CASTING M.H.D. NO. 790-2, COVER CASTING NO. 712 (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).
B = GRATE FRAME CASTING M.H.D. NO. 802A, GRATE NO. 811, CURB BOX NO. 823 A (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).
C = RING CASTING M.H.D. NO. 700-7, COVER CASTING NO. 712 (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).
D = RING CASTING M.H.D. NO. 700-7, COVER CASTING NO. 730-6 (INCLUDE WITH STRUCTURE, NOT SEPARATE PAY ITEM).

MANHOLES & CATCH BASINS — L.P-4 M.H.D. STD. PLATE NO. 4021C; A. OR F, M.H.D. STD. PLATE NO. 4000G OR 4005I

CLEAR & GRUB CHART

STATION	LOCATION LT.	LOCATION RT.	DESCRIPTION	CLEAR	GRUB
39+57	42'		5" POPULAR	1	1
55+27	34'		STUMP		1
56+21	32'		12" ELM	1	1
56+43	32'		10" ELM	1	1
0+40		46'	10" ELM	1	1
6+41		24'	9" ASH	1	1
7+35		28'	8" ELM	1	1
8+62		28'	8" ASH	1	1
9+31		26'	8" ASH	1	1
54+48		40'	QUAD 48" POPULAR	4	1
10+34	28'		1" PINE	1	1
19+81		27'	4" ELM	1	1
21+92		27'	11" ELM	1	1
22+72		27'	8" ASH	1	1
23+61		25'	4" ELM	1	1
39+00 ± & 41+00 ±	BETWEEN STATIONS IN WOODED AREA		VARIOUS TREES	11	11
			TOTAL	29	27

NOTE: ALL TREES MUST BE APPROVED BY THE ENGINEER BEFORE REMOVAL.

TRANSPLANT CHART

STATION	LOCATION LT.	LOCATION RT.	DESCRIPTION	TRANSPLANT TO LT.	TRANSPLANT TO RT.
55+71	32'		4" MAPLE		
55+96	32'		4" MAPLE		
0+30 TO 2+40		RT.	FURNISH & PLANT 2-1 1/2" MAPLES	SEE SHEET 14	
7+84		27'	4" MAPLE		
10+34	28"		1" PINE		
10+45		26'	3" CATALPA		
15+53		27'	1" MAPLE		
15+97		26'	4" MAPLE		
17+23		38'	1" PINE		
17+95		36'	1" PINE		
23+17		31'	2" PINE		
23+19		27'	2" PINE		
23+22		31'	2" PINE		
25+61		27'	2" PINE		
25+72		27'	3" PINE		
TOTAL	3	11			

NOTE: ALL TREES MUST BE APPROVED BY ENGINEER BEFORE TRANSPLANTING.

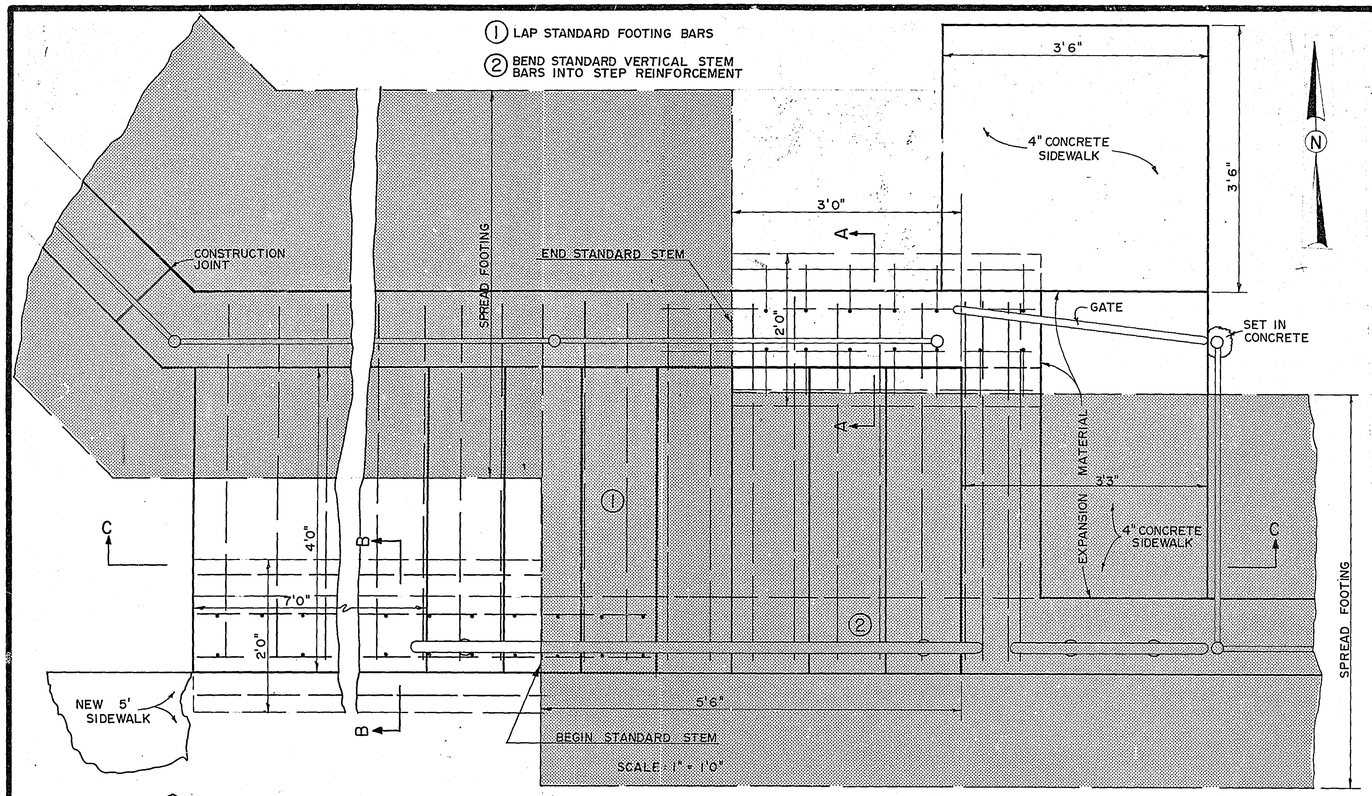
REVISED	DATE	
L K F	8-10-77	DESIGNED BY
		DRAWN BY
		CHECKED BY

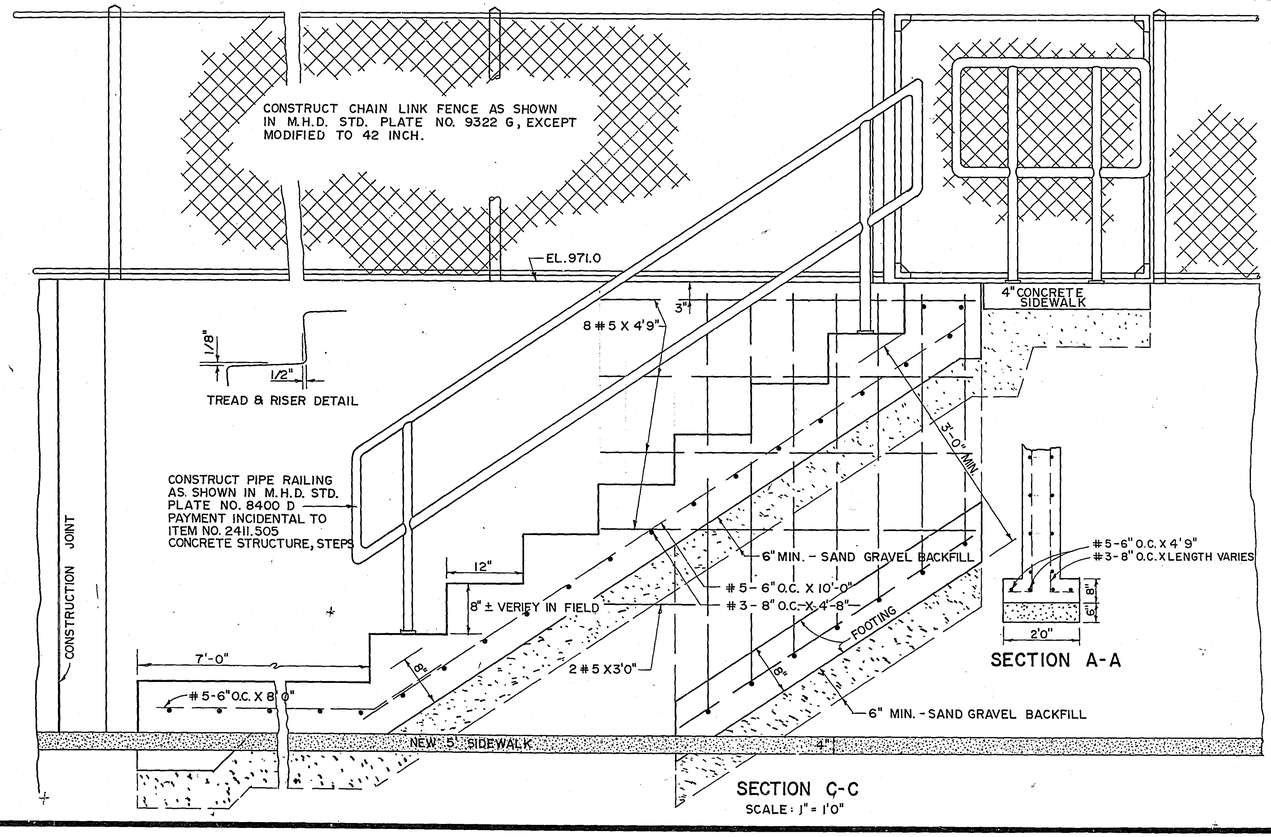
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Wayne K. Leonard
Date 6-17-77 Reg. No. 5-782

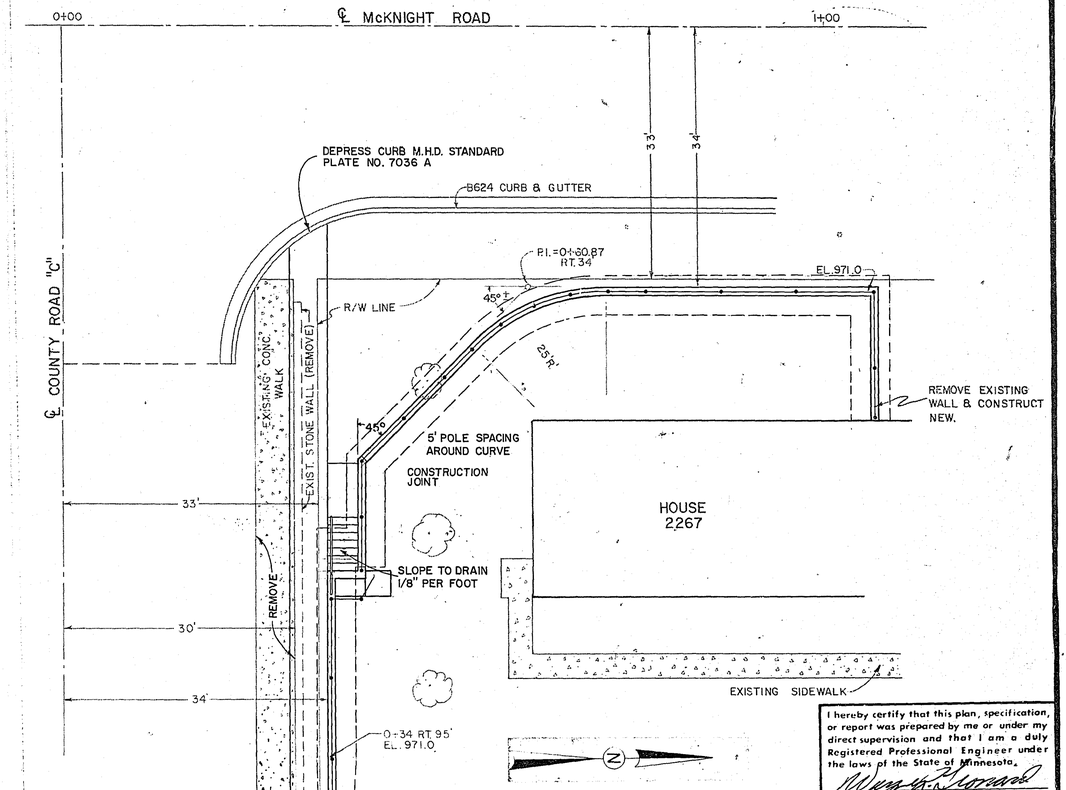
S.A.P NO. 62-668-16

REVISED	DATE		
		DESIGNED BY	
		DRAWN BY	
		CHECKED BY	

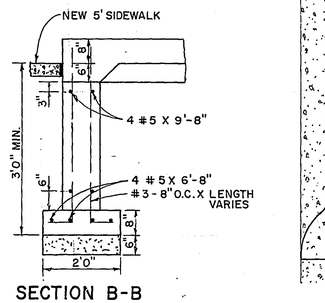
① LAP STANDARD FOOTING BARS
② BEND STANDARD VERTICAL STEM BARS INTO STEP REINFORCEMENT



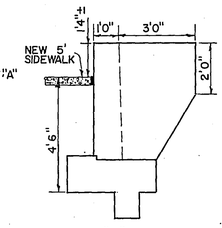




PLAN
CONCRETE WALL
SCALE 1" = 10'



SECTION B-B



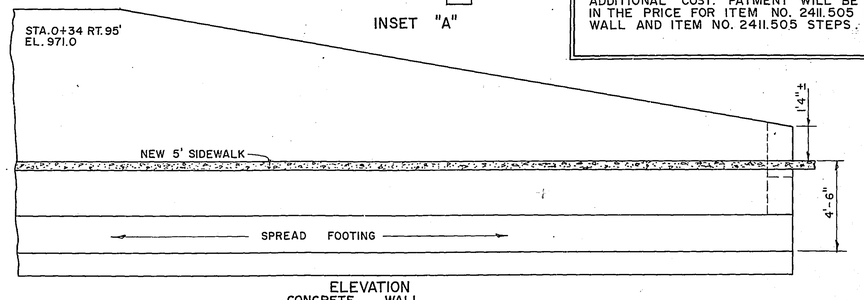
INSET "A"

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.
Date 6-17-77 Reg. No. 5782

SUMMARY OF QUANTITIES FOR CONCRETE RETAINING WALL

CONCRETE MIX NO. 3Y43 (STEM)	61 CU. YD.
CONCRETE MIX NO. 1A43 (FOOTING)	49 CU. YD.
CONCRETE MIX. NO. 3Y46 (STEPS)	2 CU. YD.
REINFORCEMENT BARS	8,089 LBS.

THE SUMMARY OF QUANTITIES FOR THE RETAINING WALL IS FOR THE CONTRACTORS CONVENIENCE ONLY. ANY ADDITIONAL ITEMS REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COST. PAYMENT WILL BE INCLUDED IN THE PRICE FOR ITEM NO. 2411.505 RETAINING WALL AND ITEM NO. 2411.505 STEPS.



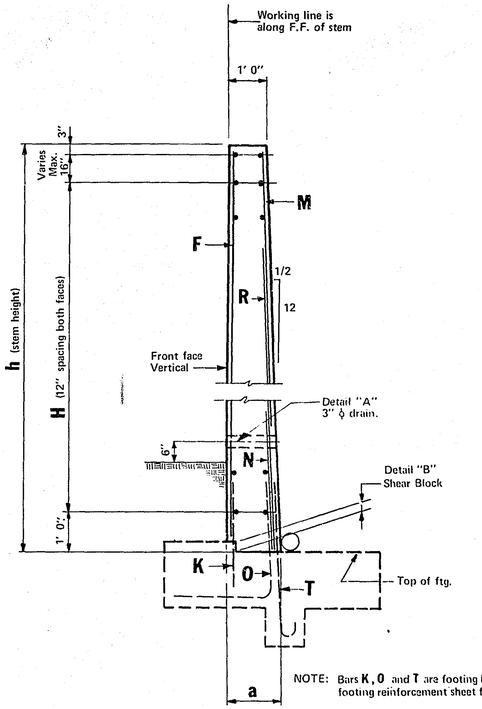
ELEVATION
CONCRETE WALL
STA. 0+34 RT. 95' TO STA. 0+34 RT. 124'

Fed. Proj. No.

The Minnesota Highway Department's current "Standard Specifications for Highway Construction" shall apply.

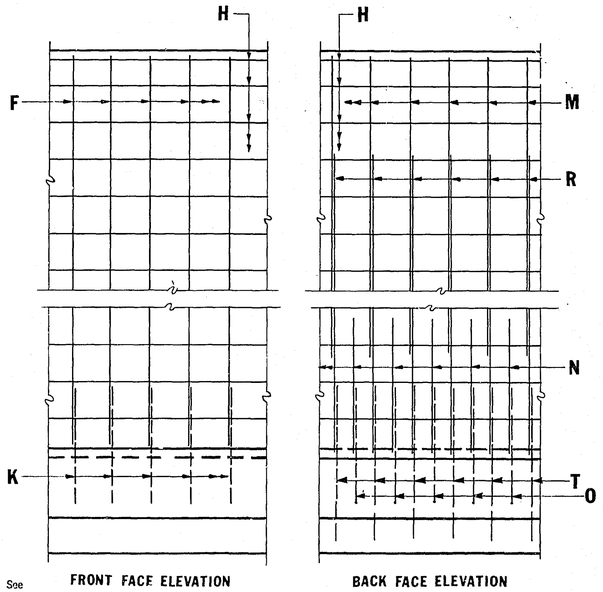
A.A.S.H.O. DESIGN SPECIFICATIONS

fc = 1600 p.s.i. n = 8 Concrete
fs = 24,000 p.s.i. Reinforcement



NOTE: Bars **K**, **O** and **T** are footing bars. See footing reinforcement sheet for details.

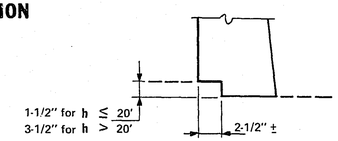
TYPICAL SECTION THRU STEM



FRONT FACE ELEVATION

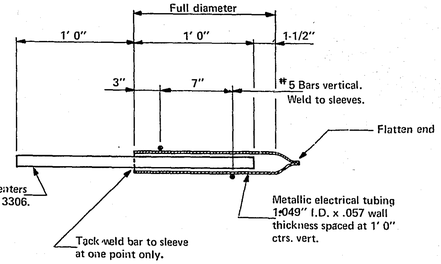
BACK FACE ELEVATION

STEM ELEVATION



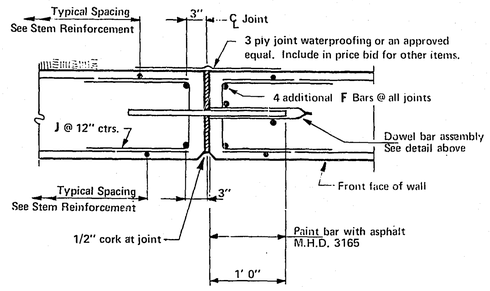
*Vertical bars **F** and **M** in stems of varying heights shall vary in length in accordance with the dimensions of the structure.

DETAIL B



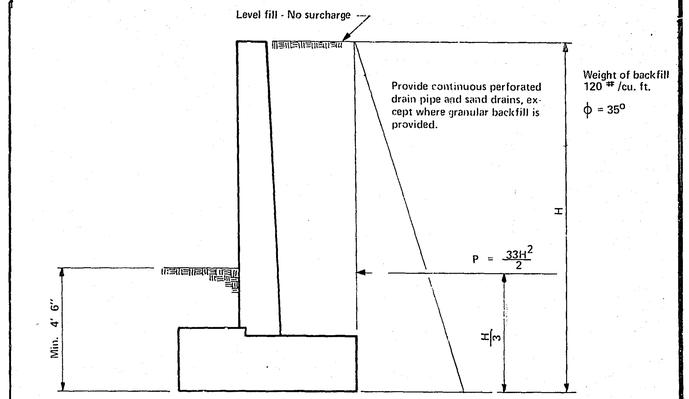
DOWEL BAR ASSEMBLY

Material and placing to be included in price bid for other items



Cork shall comply with M.H.D. 3702. Secure cork with 2-1/2" long 11 ga. copper nails about 18" ctrs. Cork and nails included in price bid for other items.

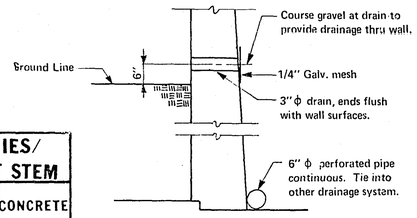
TYPICAL SECTION THRU STEM JOINT



SPREAD FTGS: If soil studies indicate that the inplace soils below the footing cannot support the base pressures shown t his design shall not be used.

PILES FTGS: Lateral resistance is equal to horizontal component of battered piles plus bending resistance of:
6[k] per pile for timber
9[k] per pile for cast-in-place concrete
12[k] per pile for steel
If soil studies indicate that material in place below footing cannot offer the lateral resistance required, this design shall not be used.

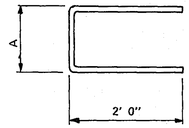
DESIGN CRITERIA



DETAIL A

3" ϕ Drains @ about 10' ctrs. horz. Rigid asbestos cement, bituminized fiber or plastic conduit as per M.H.D. 3803.

Drains, mesh, and gravel to be included in price bid for other items. Perforated pipe is required only when listed for payment in the drainage pay items.



BAR J

STEM NOTES

1. Maximum spacing of stem joints(panels) is 32 feet.Use dowel assemblies at all joints.No reinf. thru joint
2. Concrete in stems to be Concrete Mix No. 3Y43.
3. Reinforcement bars shall be deformed billet steel bars conforming to ASTM A615 Grade 60.
4. Bar lap at authorized splices: 36 diameters for #4 to #7 bars and 40 diameters for #8 to #11 bars.
5. All reinforcement bars to have a 2" minimum cover. When 1" or less rustication is used, move front face reinf. bars in to maintain 2" cover. For rustication over 1" in depth, increase stem width to depth of rustication to maintain minimum reinforcement cover.
6. Edges of concrete on all exposed joints and top of stem wall shall be formed with 1/2" vee unless otherwise noted.
7. Construction to be in accordance with MHD 2411 except as noted.
8. When stem heights vary by less than four feet in any panel, the rebars shall be sized and spaced for the maximum height in the panel.
9. When stem heights at the ends of any panel differ by more than four feet but less than eight feet, the panel shall be subdivided into two approximately equal parts (or on some other logical basis) for rebar design. The bars for each portion of the panel shall be sized and spaced for the maximum stem height in that portion.
10. When stem heights vary by more than eight feet, the panel shall be divided into 3 parts for rebar design. The maximum stem height in each portion shall be used for determining rebar sizing and spacing in that portion.
11. When stem heights are five feet or less, the rebars shall be sized and spaced as required for h = 5 feet.
12. Vertical bars F and M in stems of varying heights and transverse bars O, P and Q in footings of varying widths shall vary in length in accordance with the dimensions of the structure.

STEM GEOMETRICS		STEM REINFORCEMENT BARS																						QUANTITIES/ LIN. FT. OF STEM	
h	a	J (TIES)				* F (VERTICAL)			H (HORIZONTAL)			* M (VERTICAL)			N (VERTICAL)			R (VERTICAL)						REINF.	CONCRETE
HT.	WIDTH	SIZE	NO.	LENGTH	A	SIZE	LENGTH	SPAC.	SIZE	NO.	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.				POUNDS	CU. YDS.
5'	1' 2-1/2"	# 6	10	4' 8"	7" to 9"	# 4	4' 8"	12"	# 5	8	18"	# 4	4' 10"	14-1/2"										16.71	.203
6	1 3	6	12	4 8	7 to 9-1/2	4	5 8	12	5	10	18	4	5 10	14-1/2										20.54	.249
7	1 3-1/2	6	14	4 8	7 to 10	4	6 8	12	5	10	18	4	6 10	14-1/2										22.29	.296
8	1 4	6	16	4 8	7 to 10-1/2	4	7 8	12	5	12	18	4	7 10	14-1/2										26.12	.345
9	1 4-1/2	6	18	4 9	7 to 11	4	8 8	12	5	14	18	4	8 10	14-1/2										30.02	.395
10	1 5	6	20	4 9	7 to 11-1/2	4	9 8	12	5	14	18	4	9 10	14-1/2										31.77	.446
11	1 5-1/2	6	22	4 9	7 to 1 0	4	10 8	12	5	16	18	4	10 10	14-1/2										35.60	.500
12	1 6	6	24	4 9	7 to 1 0-1/2	4	11 8	12	5	18	18	5	11 10	14-1/2										43.11	.555
13	1 6-1/2	6	26	4 10	7 to 1 1	4	12 8	12	5	18	18	5	12 0	14-1/2				# 5	5' 0"	14-1/2"				48.88	.611
14	1 7	6	28	4 10	7 to 1 1-1/2	4	13 8	12	5	20	18	5	12 0	14-1/2				6	5 0	14-1/2				54.07	.669
15	1 7-1/2	6	30	4 10	7 to 1 2	4	14 8	12	5	22	18	5	12 0	14-1/2				7	5 0	14-1/2				59.61	.728
16	1 8	6	32	4 10	7 to 1 2	4	15 8	12	5	22	18	5	12 0	14-1/2				7	6 0	14-1/2				62.50	.789
17	1 8-1/2	6	34	4 10	7 to 1 2-1/2	4	16 8	12	5	24	18	5	12 0	14-1/2				8	7 0	14-1/2				71.11	.851
18	1 9	6	36	4 11	7 to 1 3	4	17 8	12	5	26	18	5	12 0	13				8	8 0	14-1/2				79.99	.916
19	1 9-1/2	6	38	4 11	7 to 1 3-1/2	4	18 8	12	5	26	18	5	12 0	13	# 6	7' 0"	13"	6	9 0	14-1/2				83.66	.981
20	1 10	6	40	4 11	7 to 1 4	4	19 8	12	5	28	18	5	12 0	13	7	8 0	13	6	10 0	13				93.74	1.049
21	1 10-1/2	6	42	4 11	7 to 1 4-1/2	4	20 6	12	5	30	18	5	12 0	13	7	7 0	13	7	11 0	13				101.92	1.116
22	1 11	6	44	5 0	7 to 1 5	4	21 6	12	5	30	18	5	12 0	13	7	8 0	13	7	12 0	13				107.08	1.186
23	1 11-1/2	6	46	5 0	7 to 1 5-1/2	4	22 6	12	5	32	18	5	12 0	13	8	9 0	13	7	13 0	13				119.36	1.257
24	2 0	6	48	5 0	7 to 1 6	4	23 6	12	5	34	18	5	12 0	13	8	10 0	13	7	14 0	13				127.02	1.331
25	2 0-1/2	6	50	5 0	7 to 1 6-1/2	4	24 6	12	5	34	18	5	12 0	13	8	9 0	13	8	15 0	13				136.33	1.406
26	2 1	6	52	5 0	7 to 1 6-1/2	4	25 6	12	5	36	18	5	12 0	14-1/2	9	10 0	14-1/2	9	16 0	14-1/2				152.45	1.482
27	2 1-1/2	6	54	5 1	7 to 1 7	4	26 6	12	5	38	18	5	12 0	14-1/2	10	10 0	14-1/2	9	17 0	14-1/2				165.57	1.560
28	2 2	6	56	5 1	7 to 1 7-1/2	4	27 6	12	5	38	18	5	12 0	13	10	11 0	13	9	18 0	13				185.43	1.639
29	2 2-1/2	6	58	5 1	7 to 1 8	4	28 6	12	5	40	18	5	12 0	12	10	11 0	12	9	19 0	12				201.45	1.720
30'	2' 3"	# 6	60	5' 1"	7" to 1' 8-1/2"	# 4	29' 6"	12"	# 5	42	18"	# 5	12' 0"	11 "	# 10	11' 0"	11"	# 9	20' 0"	11"				219.79	1.803

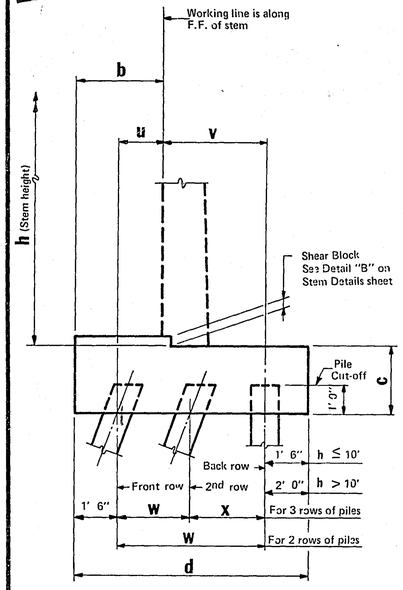
RETAINING WALL - LEVEL FILL

(STEM DETAILS)

March 11, 1974 | S.A.P. NO. 62-668-16 | Sheet No. 8 of 34 Sheets

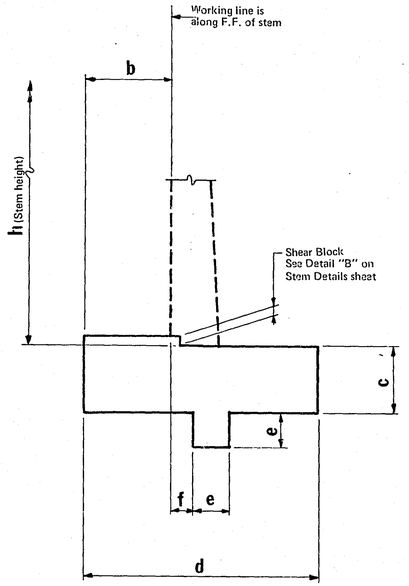
Wayne Leonard 6-17-77 -5192

Fed. Proj. No.



TYPICAL SECTION THRU PILE FTG.

h	PILE FOOTING GEOMETRICS					
	b	c	d	u	v	
HT.	OFFSET	DEPTH	WIDTH	OFFSET	OFFSET	
5'	1' 3-1/2"	1' 11"	4 0"	-0' 2-1/2"	1' 2-1/2"	
6	1 5-1/2	2 0	4 5	- 0-1/2	1 5-1/2	
7	1 7-1/2	2 0	4 10	1-1/2	1 8-1/2	
8	1 9-1/2	2 1	5 3	3-1/2	1 11-1/2	
9	1 11-1/2	2 1	5 8	5-1/2	2 2-1/2	
10	2 1-1/2	2 2	6 1	7-1/2	2 5-1/2	
11	2 3-1/2	2 2	6 6	9-1/2	2 2-1/2	
12	2 5-1/2	2 3	6 11	11-1/2	2 5-1/2	
13	2 7-1/2	2 3	7 4	1 1-1/2	2 8-1/2	
14	2 9-1/2	2 4	7 9	1 3-1/2	2 11-1/2	
15	2 11-1/2	2 4	8 2	1 5-1/2	3 2-1/2	
16	3 1-1/2	2 5	8 7	1 7-1/2	3 5-1/2	
17	3 3-1/2	2 5	9 0	1 9-1/2	3 8-1/2	
18	3 5-1/2	2 6	9 5	1 11-1/2	3 11-1/2	
19	3 7-1/2	2 6	9 10	2 1-1/2	4 2-1/2	
20	3 9-1/2	2 7	10 3	2 3-1/2	4 5-1/2	
21	3 11-1/2	2 7	10 8	2 5-1/2	4 8-1/2	
22	4 1-1/2	2 8	11 1	2 7-1/2	4 11-1/2	
23	4 3-1/2	2 8	11 6	2 9-1/2	5 2-1/2	
24	4 5-1/2	2 9	11 11	2 11-1/2	5 5-1/2	
25	4 7-1/2	2 9	12 4	3 1-1/2	5 8-1/2	
26	4 9-1/2	2 10	12 9	3 3-1/2	5 11-1/2	
27	4 11-1/2	2 10	13 2	3 5-1/2	6 2-1/2	
28	5 1-1/2	2 11	13 7	3 7-1/2	6 5-1/2	
29	5 3-1/2	2 11	14 0	3 9-1/2	6 8-1/2	
30'	5' 5-1/2"	3' 0"	14' 5"	3' 11-1/2"	6' 11-1/2"	



TYPICAL SECTION THRU SPREAD FTG.

h	SPREAD FOOTING GEOMETRICS					BASE PRESSURE (KIPS/SQ. FT.)		QTY./LIN. FT. OF FOOTING
	b	c	d	e	f			CONCRETE
HT.	OFFSET	DEPTH	WIDTH	BLOCK	OFFSET	AT TOE	AT HEEL	CU. YDS.
5'	9-1/2"	1' 2"	3' 0"	1' 0"	0' 9-1/2"			
6	11-1/2	1 3	3 6-1/2	1 0	10	1.36	0.27	.172
7	1 1-1/2	1 3	4 1	1 0	10-1/2	1.50	.28	.207
8	1 3-1/2	1 4	4 7-1/2	1 0	11	1.65	.29	.233
9	1 5-1/2	1 4	5 2	1 0	11-1/2	1.82	.30	.263
10	1 7-1/2	1 5	5 8-1/2	1 0	1 0	2.00	.32	.306
11	1 9-1/2	1 5	6 3	1 0	1 0-1/2	2.15	.34	.346
12	1 11-1/2	1 6	6 9-1/2	1 0	1 1	2.30	.37	.375
13	2 1-1/2	1 6	7 4	1 0	1 1-1/2	2.46	.39	.425
14	2 3-1/2	1 7	7 10-1/2	1 2	1 2	2.61	.41	.456
15	2 5-1/2	1 7	8 5	1 2	1 2-1/2	2.77	.43	.524
16	2 7-1/2	1 8	8 11-1/2	1 2	1 3	2.94	.48	.557
17	2 9-1/2	1 8	9 6	1 2	1 3-1/2	3.09	.51	.617
18	2 11-1/2	1 9	10 0-1/2	1 2	1 4	3.23	.54	.652
19	3 1-1/2	1 9	10 7	1 2	1 4-1/2	3.39	.57	.717
20	3 3-1/2	1 10	11 1-1/2	1 2	1 5	3.54	.60	.753
21	3 5-1/2	1 10	11 8	1 2	1 5-1/2	3.68	.63	.823
22	3 7-1/2	1 11	12 2-1/2	1 4	1 6	3.82	.68	.883
23	3 9-1/2	1 11	12 9	1 4	1 6-1/2	4.00	.71	.976
24	3 11-1/2	2 0	13 3-1/2	1 4	1 7	4.12	.74	1.016
25	4 1-1/2	2 0	13 10	1 4	1 7-1/2	4.25	.78	1.097
26	4 3-1/2	2 1	14 4-1/2	1 4	1 8	4.35	.80	1.139
27	4 5-1/2	2 1	14 11	1 4	1 8-1/2	4.50	.87	1.225
28	4 7-1/2	2 2	15 5-1/2	1 4	1 9	4.64	.92	1.269
29	4 9-1/2	2 2	16 0	1 4	1 9-1/2	4.77	.96	1.361
30	4' 11-1/2"	2' 3"	16' 6-1/2"	1' 4"	1' 10"	4.88	1.00	1.406
						5.00	1.03	1.502

FOOTING NOTES

1. Construction joints in footing are permissible. Construction joints shall be located a min. of 2' away from stem joints. A keyway is required.
2. Pile spacing shown is at bottom of footing.
3. Pile spacing shown is based on a design loading of:
   24 tons - timber piling
   40 tons - cast-in-place concrete piling
   55 tons - steel piling
   See MHD 2452.3E1.
   All piles to be battered 4" in 12" in direction shown except back row.
4. Concrete in footings to be Concrete Mix No. 1A43.
5. Eliminate shear key on spread footing where footing is 6" or more into rock.
6. Where sound very hard rock is encountered, the footing shall be keyed into rock as directed by the Engineer.
7. Reinforcement bars shall be deformed Billet Steel bars conforming to ASTM A615 Grade 60.
8. Bar lap at authorized splices: 36 diameters for #4 to #7 bars and 40 diameters for #8 to #11 bars.
9. All reinforcement bars to have a 3" minimum cover unless noted otherwise. When rustication is used, move front face vertical dowel K in to maintain 2" cover. For rustication over 1" in depth, increase stem width to depth of rustication to maintain minimum reinforcement cover.
10. Maximum longitudinal slope on bottom of footing shall be 10 to 1. Steps shall be used for steeper slopes.
11. Pile per foot quantities listed are approximate figures.
12. Footing reinforcement to continue through joints.

h	PILE SPACING					QTY./LIN. FT. OF FOOTING	
	TRANSVERSE		LONGITUDINAL ROW			PILES	CONCRETE
HT.	W	X	FRONT ROW	2nd ROW	BACK ROW	NO.	CU. YDS.
5'	1' 0"		12' 0"		12' 0"	.167	.291
6	1 5		11 1		12 0	.173	.336
7	1 10		10 2		12 0	.181	.367
8	2 3		9 3		12 0	.192	.415
9	2 8		8 4		12 0	.203	.448
10	3 1		7 5		12 0	.218	.500
11	3 0		6 10		12 0	.230	.534
12	3 5		6 3		12 0	.243	.590
13	3 10		5 8		12 0	.260	.625
14	4 3		5 1		12 0	.280	.685
15	4 8		4 6		12 0	.306	.722
16	5 1		4 2		12 0	.323	.785
17	5 6		3 10		12 0	.344	.823
18	5 11		3 6		12 0	.369	.880
19	6 4		3 2		12 0	.399	.930
20	3 0	3' 9"	3 7	7' 8"	12 0	.493	1.061
21	3 0	4 2	3 6	6 9	12 0	.517	1.096
22	3 0	4 7	3 5	5 10	12 0	.546	1.143
23	3 0	5 0	3 4	5 0	12 0	.583	1.186
24	3 0	5 5	3 3	4 1	12 0	.636	1.266
25	3 0	5 10	3 3	3 3	12 0	.699	1.310
26	3 0	6 3	3 1	3 1	11 0	.740	1.394
27	3 0	6 8	2 11	3 0	10 0	.776	1.439
28	3 0	7 1	2 9	2 10	9 0	.828	1.527
29	3 0	7 6	2 7	2 9	8 0	.876	1.574
30'	3' 0"	7' 11"	2' 6"	2' 8"	7' 0"	.918	1.665

TIMBER PILE SPACING
(See MHD 3471 for diameter of piles)

h	PILE SPACING					QTY./LIN. FT. OF FOOTING	
	TRANSVERSE		LONGITUDINAL ROW			PILES	CONCRETE
HT.	W	X	FRONT ROW	2nd ROW	BACK ROW	NO.	CU. YDS.
5'	1' 0"		12' 0"		12' 0"	0.167	.291
6	1 5		12 0		12 0	.167	.336
7	1 10		12 0		12 0	.167	.367
8	2 3		12 0		12 0	.167	.415
9	2 8		12 0		12 0	.167	.448
10	3 1		12 0		12 0	.167	.500
11	3 0		11 6		12 0	.170	.534
12	3 5		10 6		12 0	.179	.590
13	3 10		9 6		12 0	.189	.625
14	4 3		8 6		12 0	.201	.685
15	4 8		7 7		12 0	.215	.722
16	5 1		7 0		12 0	.226	.785
17	5 6		6 5		12 0	.239	.823
18	5 11		5 10		12 0	.255	.880
19	6 4		5 4		12 0	.271	.930
20	6 9		4 10		12 0	.290	1.001
21	7 2		4 7		12 0	.301	1.067
22	7 7		4 3		12 0	.319	1.143
23	8 0		3 11		11 4	.344	1.186
24	8 5		3 7		10 6	.374	1.266
25	3 0	5' 10"	4 2	12' 0"	12 0	.407	1.310
26	3 0	6 3	4 2	10 6	12 0	.419	1.394
27	3 0	6 8	4 3	8 11	12 0	.431	1.439
28	3 0	7 1	4 3	7 5	12 0	.454	1.527
29	3 0	7 6	4 4	5 10	12 0	.486	1.574
30'	3' 0"	7' 11"	4' 4"	4' 4"	12' 0"	.545	1.665

CAST-IN-PLACE CONCRETE PILE SPACING
(12" nominal diameter piles as per MHD 3371.
For fabrication and driving see Special Provisions)

h	PILE SPACING					QTY./LIN. FT. OF FOOTING	
	TRANSVERSE		LONGITUDINAL ROW			PILES	CONCRETE
HT.	W	X	FRONT ROW	2nd ROW	BACK ROW	NO.	CU. YDS.
5'	1' 0"		12' 0"		12' 0"	.167	.291
6	1 5		12 0		12 0	.167	.336
7	1 10		12 0		12 0	.167	.367
8	2 3		12 0		12 0	.167	.415
9	2 8		12 0		12 0	.167	.448
10	3 1		12 0		12 0	.167	.500
11	3 0		12 0		12 0	.167	.534
12	3 5		12 0		12 0	.167	.590
13	3 10		12 0		12 0	.167	.625
14	4 3		11 9		12 0	.168	.685
15	4 8		10 6		12 0	.178	.722
16	5 1		9 9		12 0	.186	.785
17	5 6		9 0		12 0	.194	.823
18	5 11		8 3		12 0	.205	.880
19	6 4		7 6		12 0	.217	.930
20	6 9		6 9		12 0	.232	1.001
21	7 2		5 3		12 0	.243	1.067
22	7 7		5 10		12 0	.255	1.143
23	8 0		5 5		12 0	.268	1.186
24	8 5		5 0		12 0	.283	1.266
25	3 0	5' 10"	5 8	12' 0"	12 0	.343	1.310
26	3 0	6 3	5 4	11 8	12 0	.357	1.394
27	3 0	6 8	5 1	11 3	12 0	.369	1.439
28	3 0	7 1	4 10	10 10	12 0	.383	1.527
29	3 0	7 6	4 7	10 5	12 0	.397	1.574
30'	3' 0"	7' 11"	4' 4"	10' 0"	12' 0"	.414	1.665

STEEL PILE SPACING
(10 BP42 piles as per M.H.D. 3372)

RETAINING WALL - LEVEL FILL
(FOOTING DETAILS)

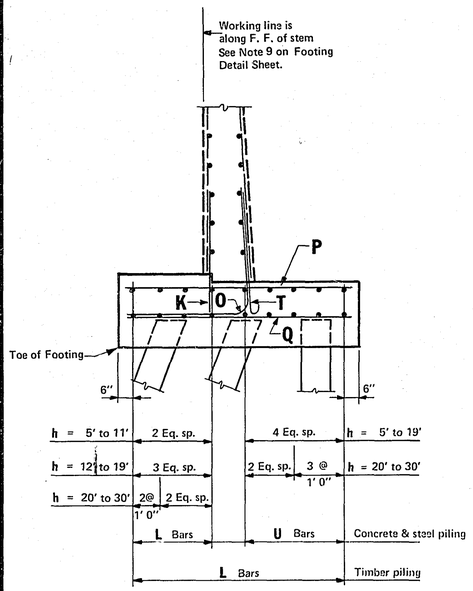
March 11, 1974

S. A. P. NO. 62-668-16

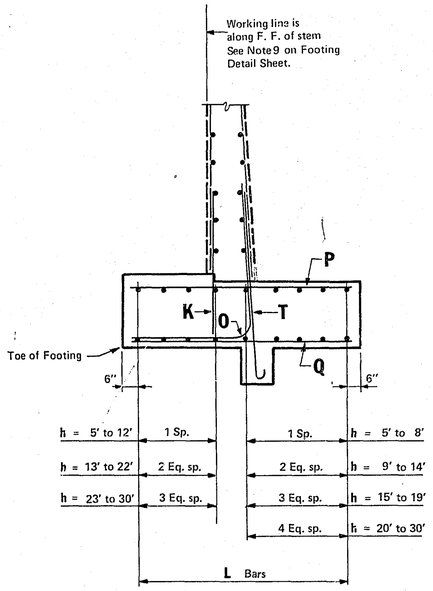
Sheet No. 9 of 34 Sheets

Wayne Leonard 6-17-77 5782

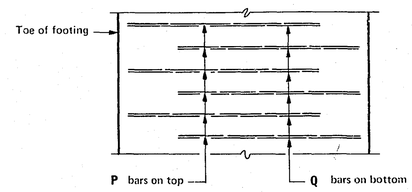
Fed. Proj. No.



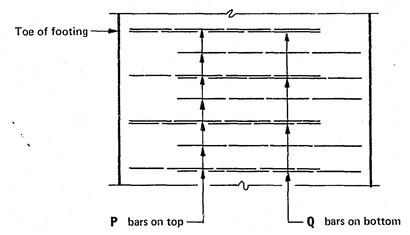
TYPICAL SECTION THRU PILE FOOTING



TYPICAL SECTION THRU SPREAD FOOTING



CASE 1



CASE 2

PART FOOTING PLAN
(SHOWING STAGGERED P AND Q BARS ONLY)

TYPE OF FOOTING	CASE 1	CASE 2
TIMBER PILING	h : 5' to 22'	h : 23' to 30'
CONCRETE PILING	h : 5' to 24'	h : 25' to 30'
STEEL PILING	h : 5' to 24'	h : 25' to 30'
SPREAD	h : 5' to 18'	h : 19' to 30'

SPREAD FOOTING REINFORCEMENT BARS

h	K (FRONT DOWELS)			L (LONGIT.)		O (TOE)				P (TRANSVERSE)			Q (TRANSVERSE)			T (BACK DOWELS)			WEIGHT /LIN. FT. OF WALL
HT.	SIZE	LENGTH	SPAC.	SIZE	NO.	SIZE	LENGTH	SPAC.	B	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	POUNDS
5'	#4	3' 0"	12"	#5	8					#4	2' 6"	14 1/2"	#4	2' 6"	14-1/2"	#4	3' 5"	14-1/2"	15.35
6	4	3 0	12	5	8					4	2 11	14 1/2	4	2 11	14-1/2	4	3 6	14-1/2	15.86
7	4	3 0	12	5	8					4	3 4	14 1/2	4	3 4	14 1/2	4	3 6	14-1/2	16.32
8	4	3 0	12	5	8					4	3 9	14-1/2	4	3 9	14-1/2	4	3 7	14-1/2	16.83
9	4	3 0	12	5	10					4	4 2	14-1/2	4	4 2	14-1/2	4	3 7	14-1/2	19.45
10	4	3 0	12	5	10					4	4 7	14-1/2	4	4 7	14-1/2	5	4 1	14-1/2	21.46
11	4	3 0	12	5	10					5	5 0	14-1/2	4	5 0	14-1/2	5	4 1	14-1/2	23.47
12	4	3 0	12	5	10	#4	5' 7"	14-1/2"	3' 1"	5	5 5	14-1/2	4	5 5	14-1/2	4	3 9	14-1/2	25.69
13	4	3 0	12	5	12	5	6 3	14-1/2	3 3	6	5 10	14-1/2	4	5 10	14-1/2	4	3 9	14-1/2	32.89
14	4	3 0	12	5	12	5	6 6	14-1/2	3 6	6	6 3	14-1/2	4	6 3	14-1/2	5	4 5	14-1/2	35.69
15	4	3 0	12	5	14	6	7 1	14 1/2	3 8	7	6 8	14-1/2	4	6 8	14-1/2	5	4 5	14-1/2	44.71
16	5	4 0	12	5	14	6	7 4	14 1/2	3 11	7	7 1	14 1/2	4	7 1	14-1/2	6	4 10	14-1/2	50.41
17	5	4 0	12	5	14	7	8 0	14 1/2	4 1	8	7 6	14-1/2	4	7 6	14 1/2	6	4 10	14-1/2	59.64
18	5	4 0	12	5	14	7	8 3	13	4 4	8	7 11	13	4	7 11	13	6	4 11	13	66.16
19	5	4 0	12	5	14	7	8 6	13	4 6	6	8 4	6 1/2	4	8 4	13	7	5 4	13	73.73
20	5	4 0	12	5	16	8	9 5	13	4 11	7	8 9	6 1/2	4	8 9	13	7	5 5	13	93.40
21	5	4 0	12	5	16	8	9 8	13	5 2	7	9 2	6 1/2	5	9 2	13	8	7 0	13	106.06
22	5	4 0	12	5	16	9	10 5	13	5 4	7	9 7	6-1/2	5	9 7	13	8	7 3	13	117.51
23	5	4 0	12	5	18	9	10 8	13	5 7	8	10 0	6 1/2	5	10 0	13	9	8 1	13	141.49
24	5	4 0	12	5	18	10	11 4	13	5 9	8	10 5	6-1/2	5	10 5	13	9	8 2	13	155.75
25	5	4 0	12	5	18	10	11 7	13	6 0	8	10 10	6 1/2	5	10 10	13	10	8 9	13	168.72
26	5	4 0	12	5	18	11	12 4	14 1/2	6 2	9	11 3	7	5	11 3	14-1/2	11	9 6	14-1/2	195.01
27	5	4 0	12	5	18	11	12 7	14 1/2	6 5	10	11 8	7	5	11 8	14 1/2	11	9 6	14-1/2	216.96
28	5	4 0	12	5	18	11	12 10	13	6 7	10	12 1	6 1/2	5	12 1	13	11	9 7	13	241.29
29	5	4 0	12	5	18	11	13 1	12	6 7	10	12 6	6	5	12 6	12	11	9 7	12	264.77
30'	#5	4' 0"	12"	#5	18	#11	13' 4"	11"	6' 10"	#9	12' 11"	5 1/2"	#5	12' 11"	11"	#11	9' 8"	11"	267.55

USE WITH SPREAD FOOTING ONLY

PILE FOOTING REINFORCEMENT BARS

h	K (FRONT DOWELS)			O (TOE)				T (BACK DOWELS)			L (LONGIT.)		P (TRANSVERSE)			Q (TRANSVERSE)			WEIGHT /LIN. FT. OF WALL
HT.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	B	SIZE	LENGTH	SPAC.	SIZE	NO.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	POUNDS
5'	#4	3' 0"	12"					#4	2' 11"	14-1/2"	#5	16	#4	3' 0"	14-1/2"	#4	3' 0"	14-1/2"	24.32
6	4	3 0	12					4	3 0	14 1/2	5	16	4	3 4	14-1/2	4	3 4	14-1/2	24.74
7	4	3 0	12					4	3 0	14-1/2	5	16	4	3 8	14-1/2	4	3 8	14-1/2	25.10
8	4	3 0	12					4	3 1	14-1/2	5	16	4	4 0	14-1/2	4	4 0	14-1/2	25.52
9	4	3 0	12	#4	5' 4"	14 1/2"	2' 11"	4	3 1	14 1/2	5	16	4	4 4	14-1/2	4	4 4	14-1/2	28.84
10	4	3 0	12	4	5 8	14 1/2	3 2	5	3 8	14-1/2	5	16	4	4 8	14-1/2	4	4 8	14-1/2	30.85
11	4	3 0	12	4	5 10	14 1/2	3 4	5	3 8	14 1/2	5	16	4	5 0	14-1/2	4	5 0	14 1/2	31.31
12	4	3 0	12	4	6 2	14 1/2	3 7	4	3 3	14-1/2	5	18	4	5 4	14-1/2	4	5 4	14-1/2	32.66
13	4	3 0	12	5	6 9	14-1/2	3 9	4	3 3	14-1/2	5	18	4	5 8	14-1/2	4	5 8	14 1/2	35.45
14	4	3 0	12	5	7 1	14 1/2	4 0	5	3 10	14-1/2	5	18	4	6 0	14-1/2	4	6 0	14-1/2	37.61
15	4	3 0	12	6	7 7	14 1/2	4 2	5	3 10	14 1/2	5	18	4	6 4	14 1/2	4	6 4	14 1/2	41.30
16	5	4 0	12	6	7 11	14-1/2	4 5	6	4 4	14-1/2	5	18	4	6 8	14-1/2	4	6 8	14 1/2	46.32
17	5	4 0	12	7	8 6	14 1/2	4 7	6	4 4	14-1/2	5	18	5	7 0	14-1/2	4	7 0	14 1/2	53.40
18	5	4 0	12	7	8 10	13	4 10	6	4 5	13	5	18	5	7 3	13	4	7 3	13	57.97
19	5	4 0	12	7	9 0	13	5 0	7	5 0	13	5	18	5	7 6	13	5	7 6	13	64.58
20	5	4 0	12	8	10 0	13	5 3	7	5 1	13	5	22	7	7 9	13	4	7 9	13	81.72
21	5	4 0	12	8	10 2	13	5 5	8	5 10	13	5	22	7	8 0	13	4	8 0	13	87.54
22	5	4 0	12	9	11 0	13	5 8	8	5 11	13	5	22	7	8 3	13	4	8 3	13	97.84
23	5	4 0	12	9	11 2	13	5 10	9	6 9	13	5	22	6	8 6	6 1/2	4	8 6	13	113.12
24	5	4 0	12	10	11 11	13	6 1	#9	6 10	13	5	22	6	8 9	6-1/2	4	8 9	13	126.52
25	5	4 0	12	10	12 1	13	6 3	10	7 5	13	5	22	6	9 0	6 1/2	4	9 0	13	136.04
26	5	4 0	12	11	12 11	14-1/2	6 6	11	8 2	14-1/2	5	22	7	9 3	7	4	9 3	14-1/2	158.31
27	5	4 0	12	11	13 1	14-1/2	6 8	11	8 2	14-1/2	5	22	7	9 6	7	4	9 6	14-1/2	160.05
28	5	4 0	12	11	13 5	13	6 11	11	8 3	13	5	22	7	9 9	6-1/2	4	9 9	13	177.14
29	5	4 0	12	11	13 7	12	7 1	11	8 3	12	5	22	7	10 0	6	4	10 0	12	191.64
30'	#5	4' 0"	12"	#11	13' 11"	11"	7' 4"	#11	8' 4"	11"	#5	22	#7	10' 3"	6-1/2"	#4	10' 3"	11"	210.22

USE WITH ALL PILING

L (LONGIT.)		P (TRANSVERSE)			Q (TRANSVERSE)			U (LONGIT.)		WEIGHT /LIN. FT. OF WALL
SIZE	NO.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	NO.	POUNDS
#5	6	#4	3' 0"	14-1/2"	#4	3' 0"	14-1/2"	#6	10	28.47
5	6	4	3 4	14-1/2	4	3 4	14-1/2	6	10	28.89
5	6	4	3 8	14-1/2	4	3 8	14-1/2	6	10	29.25
5	6	4	4 0	14-1/2	4	4 0	14-1/2	6	10	29.90
5	6	4	4 4	14-1/2	4	4 4	14-1/2	6	10	32.99
5	6	4	4 8	14-1/2	4	4 8	14-1/2	6	10	35.00
5	6	4	5 0	14-1/2	4	5 0	14-1/2	6	10	35.46
5	8	4	5 4	14-1/2	4	5 4	14-1/2	6	10	36.82
5	8	4	5 8	14-1/2	4	5 8	14-1/2	6	10	39.61
5	8	4	6 0	14-1/2	5	6 0	14-1/2	6	10	43.64
5	8	4	6 4	14-1/2	4	6 4	14-1/2	6	10	45.46
5	8	4	6 8	14-1/2	5	6 8	14-1/2	6	10	52.55
5	8	5	7 0	14-1/2	4	7 0	14-1/2	6	10	53.56
5	8	5	7 3	13	5	7 3	13	6	10	64.64
5	8	5	7 6	13	5	7 6	13	6	10	68.74
5	10	6	7 9	13	5	7 9	13	6	12	85.50
5	10	6	8 0	13	6	8 0	13	6	12	94.68
5	10	6	8 3	13	6	8 3	13	6	12	105.04
5	10	7	8 6	13	7	8 6	13	6	12	121.36
5	10	7	8 9	13	7	8 9	13	6	12	134.86
5	10	6	9 0	6 1/2	5	9 0	13	6	12	144.13
5	10	6	9 3	7	5	9 3	14-1/2	6	12	157.56
5	10	6	9 6	7	6	9 6	14-1/2	6	12	162.76
5	10	6	9 9	13	6	9 9	13	6	12	175.74
5	10	6	10 0	6	5	10 0	12	6	12	189.53
#5	10	#6	10' 3"	6-1/2"	#5	10' 3"	11"	#6	12	207.22

USE WITH TIMBER PILING ONLY

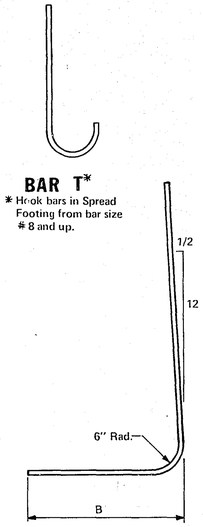
L (LONGIT.)		P (TRANSVERSE)			Q (TRANSVERSE)			U (LONGIT.)		WEIGHT /LIN. FT. OF WALL
SIZE	NO.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	NO.	POUNDS
#6	6	#4	3' 0"	14-1/2"	#4	3' 0"	14-1/2"	#7	10	38.03
6	6	4	3 4	14-1/2	4	3 4	14-1/2	7	10	38.44
6	6	4	3 8	14-1/2	4	3 8	14-1/2	7	10	38.81
6	6	4	4 0	14-1/2	4	4 0	14-1/2	7	10	39.22
6	6	4	4 4	14-1/2	4	4 4	14-1/2	7	10	42.54
6	6	4	4 8	14-1/2	4	4 8	14-1/2	7	10	44.65
6	6	4	5 0	14-1/2	5	5 0	14-1/2	7	10	46.57
6	8	4	5 4	14-1/2	6	5 4	14-1/2	7	10	51.03
6	8	4	5 8	14-1/2	6	5 8	14-1/2	7	10	54.05
6	8	4	6 0	14-1/2	6	6 0	14-1/2	7	10	56.45
6	8	4	6 4	14-1/2	7	6 4	14-1/2	7	10	63.20
6	8	4	6 8	14-1/2	7	6 8	14-1/2	7	10	68.61
6	8	5	7 0	14-1/2	6	7 0	14-1/2	7	10	72.93
6	8	5	7 3	13	7	7 3	13	7	10	81.87
6	8	5	7 6	13	7	7 6	13	7	10	86.21
6	10	6	7 9	13	6	7 9	13	7	12	101.63
6	10	6	8 0	13	6	8 0	13	7	12	105.52
6	10	6	8 3	13	6	8 3	13	7	12	117.88
6	10	7	8 6	13	6	8 6	13	7	12	129.95
6	10	7	8 9	13	6	8 9	13	7	12	143.32
6	10	6	9 0	6 1/2	4	9 0	13	7	12	153.86
6	10	6	9 3	7	4	9 3	14 1/2	7	12	167.53
6	10	6	9 6	7	6	9 6	14-1/2	7	12	175.61
6	10	6	9 9	13	7	9 9	13	7	12	197.60
6	10	6	10 0	6	7	10 0	12	7	12	212.38
#6	10	#6	10' 3"	6-1/2"	#6	10' 3"	11"	#7	12	225.25

USE WITH CONCRETE PILING ONLY

L (LONGIT.)		P (TRANSVERSE)			Q (TRANSVERSE)			U (LONGIT.)		WEIGHT /LIN. FT. OF WALL
SIZE	NO.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	NO.	POUNDS
#6	6	#4	3' 0"	14-1/2"	#4	3' 0"	14-1/2"	#7	10	38.03
6	6	4	3 4	14-1/2	4	3 4	14-1/2	7	10	38.44
6	6	4	3 8	14-1/2	4	3 8	14-1/2	7	10	38.81
6	6	4	4 0	14-1/2	4	4 0	14-1/2	7	10	39.22
6	6	4	4 4	14-1/2	4	4 4	14-1/2	7	10	42.54
6	6	4	4 8	14-1/2	4	4 8	14-1/2	7	10	44.65
6	6	4	5 0	14-1/2	5	5 0	14-1/2	7	10	46.57
6	8	4	5 4	14-1/2	6	5 4	14-1/2	7	10	51.03
6	8	4	5 8	14-1/2	6	5 8	14-1/2	7	10	54.05
6	8	4	6 0	14-1/2	6	6 0	14-1/2	7	10	56.45
6	8	4	6 4	14-1/2	7	6 4	14-1/2	7	10	63.20
6	8	4	6 8	14-1/2	7	6 8	14-1/2	7	10	68.61
6	8	5	7 0	14-1/2	6	7 0	14-1/2	7	10	72.93
6	8	5	7 3	13	7	7 3	13	7	10	81.87
6	8	5	7 6	13	7	7 6	13	7	10	86.21
6	10	6	7 9	13	6	7 9	13	7	12	101.63
6	10	6	8 0	13	6	8 0	13	7	12	105.52
6	10	6	8 3	13	6	8 3	13	7	12	117.88
6	10	7	8 6	13	6	8 6	13	7	12	129.95
6	10	7	8 9	13	6	8 9	13	7	12	143.32
6	10	6	9 0	6 1/2	4	9 0	13	7	12	153.86
6	10	6	9 3	7	4	9 3	14 1/2	7	12	167.53
6	10	6	9 6	7	6	9 6	14-1/2	7	12	175.61
6	10	6	9 9	13	7	9 9	13	7	12	197.60
6	10	6	10 0	6	7	10 0	12	7	12	212.38
#6	10	#6	10' 3"	6-1/2"	#6	10' 3"	11"	#7	12	225.25

USE WITH STEEL PILING ONLY

NOTE:
Reinforcement quantities for pile footings includes bars K, O & T



BAR T*

* Hook bars in Spread Footing from bar size # 8 and up.

BAR O

RETAINING WALL - LEVEL FILL
(FOOTING REINFORCEMENT)

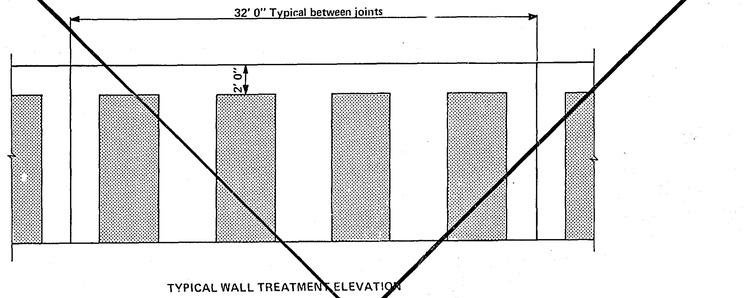
March 11, 1974

S.A.P. NO. 62-668-16

Sheet No. 10 of 34 Sheets

Wayne K. Conard 6-17-77 5782

Fed. Proj. No.



TYPICAL WALL TREATMENT ELEVATION

TYPICAL WALL TREATMENT DETAILS

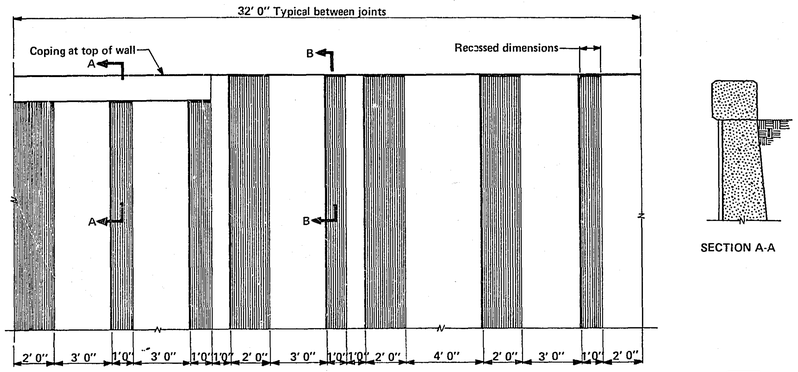
WALL PANELS

Walls shall be architecturally treated by forming vertical panels of 4' 0" in width and alternate recessed panels of 4' 0" in width.

WALL JOINTS

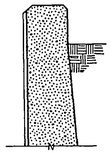
The pattern of panels will be adjusted so that all expansion, contraction and construction joints will be at rustications. All construction joints will be repaired and pointed to present a satisfactory appearance.

VERTICAL PANEL DESIGN

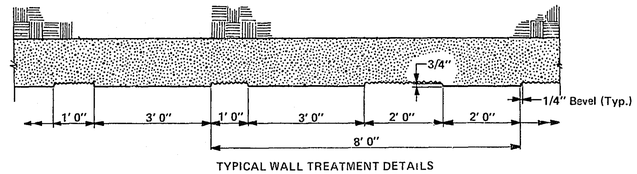


TYPICAL WALL TREATMENT ELEVATION

SECTION A-A



SECTION B-B



TYPICAL WALL TREATMENT DETAILS

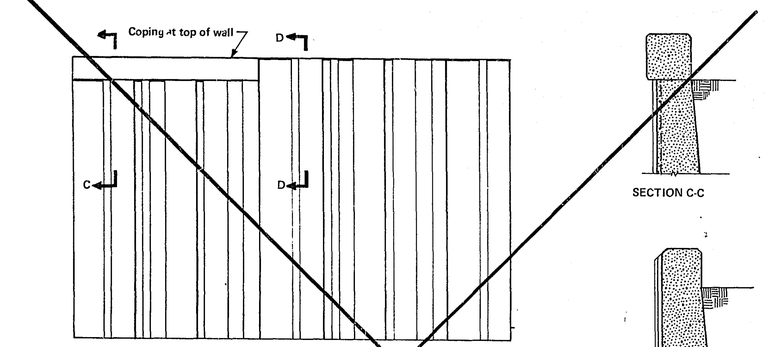
WALL TREATMENT

Walls shall be architecturally treated by forming vertical panels of variable width and alternate recessed textured finish. Repeat the pattern every 32' 0" to allow repetitive use of forms. Coping may be used or omitted depending upon other architectural elements involved.

WALL JOINTS

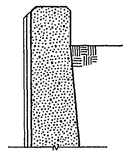
The pattern of the panels should be adjusted so that all expansion, contraction, and construction joints will occur at panel joints. All construction joints should be repaired and pointed to present a satisfactory appearance. Also arrange panels so that form joints will occur at panel joints.

VERTICAL RANDOM STRIATED PANEL DESIGN



TYPICAL WALL TREATMENT ELEVATION

SECTION C-C



SECTION D-D

TYPICAL WALL TREATMENT DETAILS

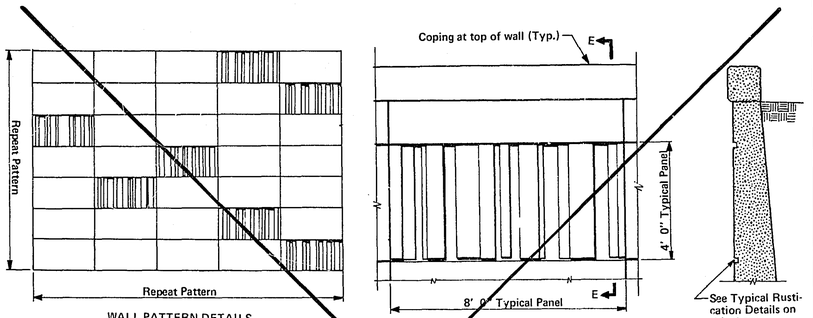
WALL TREATMENT

Walls shall be architecturally treated by forming panels of variable width and thickness. The pattern shall be repeated every 32' 0" to allow the repetitive use of forms. Coping may be used or omitted depending upon other architectural elements involved. All panels shall be placed vertically.

WALL JOINTS

The pattern of the panels should be adjusted so that all expansion, contraction, and construction joints will occur at panel joints (preferable between flush and 1-1/2" recessed panels). All construction joints shall be repaired and pointed to present a satisfactory appearance.

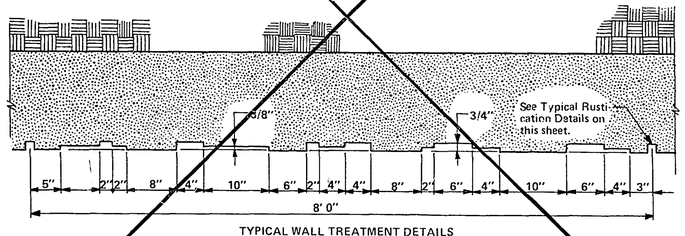
VERTICAL RANDOM WIDTH DOUBLE INSET PANEL DESIGN



WALL PATTERN DETAILS

TYPICAL WALL TREATMENT ELEVATION

SECTION E-E



TYPICAL WALL TREATMENT DETAILS

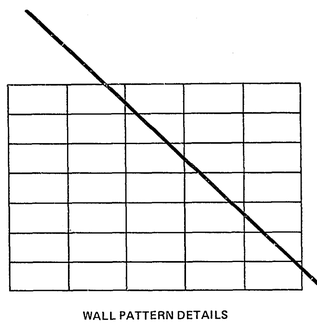
WALL PANELS

Panels shall be formed by rustications and will normally be 4' 0" in height by 8' 0" in width but may be modified in width to fit detail dimensions. The face of walls will receive a smooth rubbed finish. All rustications are either horizontal or vertical.

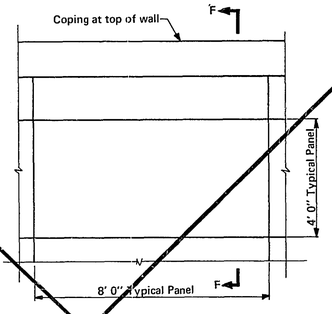
WALL JOINTS

The pattern of panels will be adjusted so that all expansion contraction, and construction joints will be at rustications. All construction joints will be repaired and pointed to present a satisfactory appearance.

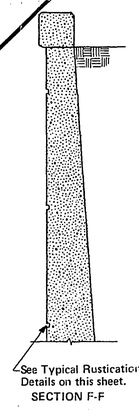
HORIZONTAL RECTANGULAR RUSTICATION RANDOM PANEL DESIGN



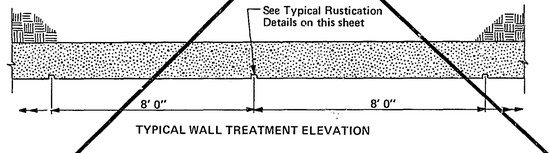
WALL PATTERN DETAILS



TYPICAL WALL TREATMENT ELEVATION



SECTION F-F



TYPICAL WALL TREATMENT ELEVATION

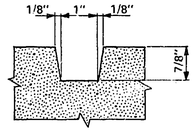
WALL PANELS

Panels shall be formed by rustications and will normally be 4' 0" in height by 8' 0" in width but may be modified in width to fit detail dimensions. The face of walls will receive a smooth rubbed finish. All rustications are either horizontal or vertical. See Rustication Detail.

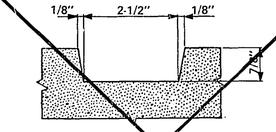
WALL JOINTS

The pattern of panels will be adjusted so that all expansion, contraction and construction joints will be at rustications. All construction joints will be repaired and pointed to present a satisfactory appearance.

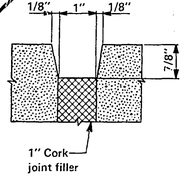
HORIZONTAL RECTANGULAR RUSTICATION DESIGN.



TYPICAL IN WALL



AT FENCE POST LOCATIONS



AT EXPANSION JOINT

TYPICAL RUSTICATION DETAILS

March 11, 1974

S.A.P. NO. 62-668-16

Sheet No. 11 of 34 Sheets

Richard Leonard 6-17-77 5782

	PLOTTED BY	DATE	CHECKED BY	DATE
TOPOGRAPHY				
UTILITIES	PLOTTED BY	DATE	CHECKED BY	DATE
PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE

PARCEL NO. 1
HILLCREST DEVELOPMENT, a LIMITED PARTNERSHIP

C A S T L E W O O D

FOURTH ADDITION TO NORTH ST. PAUL

TO BE CONSTRUCTED BY M.H.D. UNDER PROJECT NO. S.P. 6211-53

BEGIN PROJECT STA. 37+76

DITCH

B618

30" R.C.P.

102" R.C.P. SPAN

MCKNIGHT RD.

BIT. SPILLWAY

DITCH

CREEK

WOODS

APRON

GUARDRAIL

PHONE BOOTH

SIGN

OVERLAY INTERSECTION AS DIRECTED BY THE ENGINEER

SAWCUT EXISTING B618

11TH AVE.

M.H. 2

W.M.H. 3

30' R

60'

E-BUT. B624

C.L. F.E.

FILL AS DIRECTED BY ENG.

GRADE TO DRAIN TO DITCH

SALVAGE HANDHOLE

C.B. 100

C.B. 101

WOODS & BRUSH

CONST. LIMITS

B624 C. & G.

5" POPULAR (REMOVE)

B612 C. & G.

MH 7 MH 8

42+00 ANGLE IN TAPER

REMOVE EXISTING SEWER

8" D.I.P.

REMOVE DITCH

RELOCATE HYDRANT

39+00 BEGIN TAPER

REMOVE 12" R.C.P.

MH 9

C.B. 10

RELOCATE HYDRANT

4' WOOD BOARD FENCE SALVAGE & RELOCATE

12TH AVE.

HO. 28 GAR.

GRAVEL ENT.

20' R

20'

F-F

(1) DEPRESS CURB M.H.D. STD. PLATE NO. 7036A * SEE SHEET NO. 2 FOR LOCATION OF DEPRESSION STD. PL. 7016C
(2) REMOVE EXISTING CURB & GUTTER
(3) MATCH CURB & GUTTER TO EXISTING CURB & GUTTER
(4) MATCH CURB & GUTTER TO EXISTING CATCH BASIN
(5) ADJUST C.M.P. TO PICK UP LOW SPOT (PAYMENT TO BE INCIDENTAL TO COMMON EXCAVATION.)
(7) LOCATE & CONSTRUCT WATERMAIN AS DIRECTED BY THE CITY OF NORTH ST. PAUL.

PARCEL NO. 30
HILLCREST DEVELOPMENT, a LIMITED PARTNERSHIP

PARCEL NO. 31
ALBERT I. BERKUS

PARCEL NO. 32
ALETHEA M. HABBERSTAD

PARCEL NO. 33
ERNEST CHRISTIANSEN

B.M. ELEV. 939.99
TOP OF HYD. NE. COR. 11TH AVE. & McKNIGHT RD.

• DENOTES MEDIAN HOLE (SEE SHEET NO. 4 FOR DETAIL).

WARP GRADE TO MATCH D.O.T. GRADE

+76 +54 +00

C.B. 4 C.B. 100 C.B. 6 C.B. 101

+0.50 -0.50 -0.98

39.08 P.I. 39+50 EL. 939.2 39.08

+25 V.C.=50' M=0.0625 +75

EL.=938.20 +50

15" X 102' R.C.P.

INV. ~~931.81~~ 932.14

INV. ~~932.80~~ 933.05

24" X 100' R.C.P. @ 0.11%

24" X 241' R.C.P. @ 0.11%

INV. ~~930.92~~ 930.87

INV. ~~930.81~~ 930.82

945 940 935 930

35 36 37 38 39 40 41 42 43

AS-BUILT PLAN
CONFORMING TO CONST. RECORDS
DONE BY: JA
DATE: 12-12-78

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.
Date 6-19-79 Reg. No. 5-7812

S.A.P. NO. 62-668-16

Sheet No. 12 of 34 Sheets

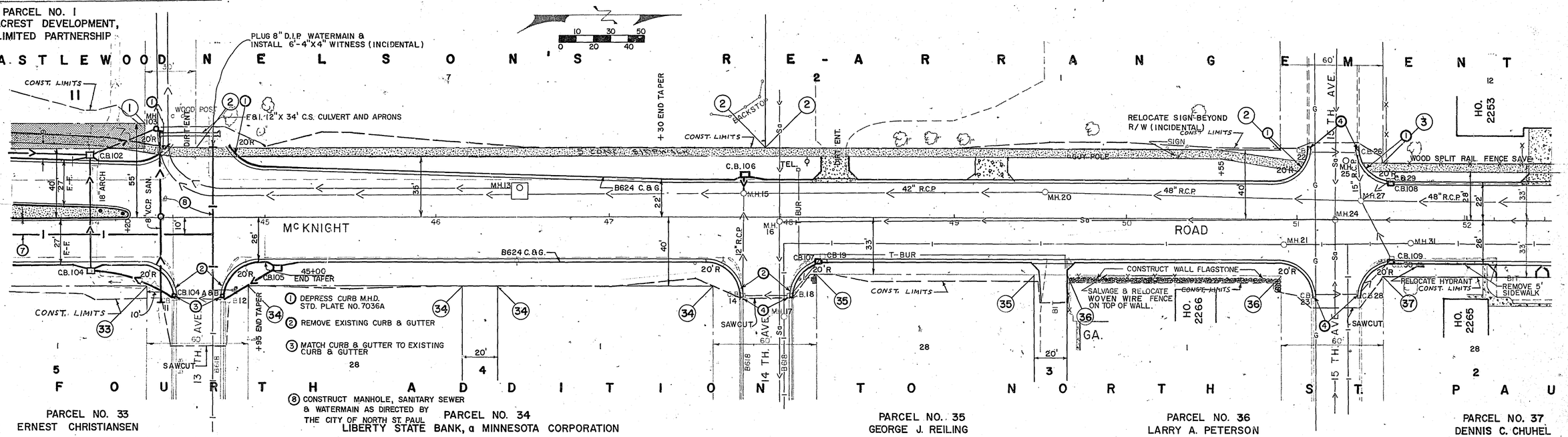
TOPOGRAPHY	PLOTTED BY	DATE	CHECKED BY	DATE
UTILITIES	PLOTTED BY	DATE	CHECKED BY	DATE
PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE

PARCEL NO. 2
NORTH ST. PAUL BAPTIST CHURCH
FIRST FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 3
WINZEL C. LOEFFLER

PARCEL NO. 1
HILLCREST DEVELOPMENT,
a LIMITED PARTNERSHIP

C A S T L E W O O D N E L S O N ' S R E - A R R A N G E M E N T



F O U R T H A D D I T I O N T O N O R T H S T . P A U L

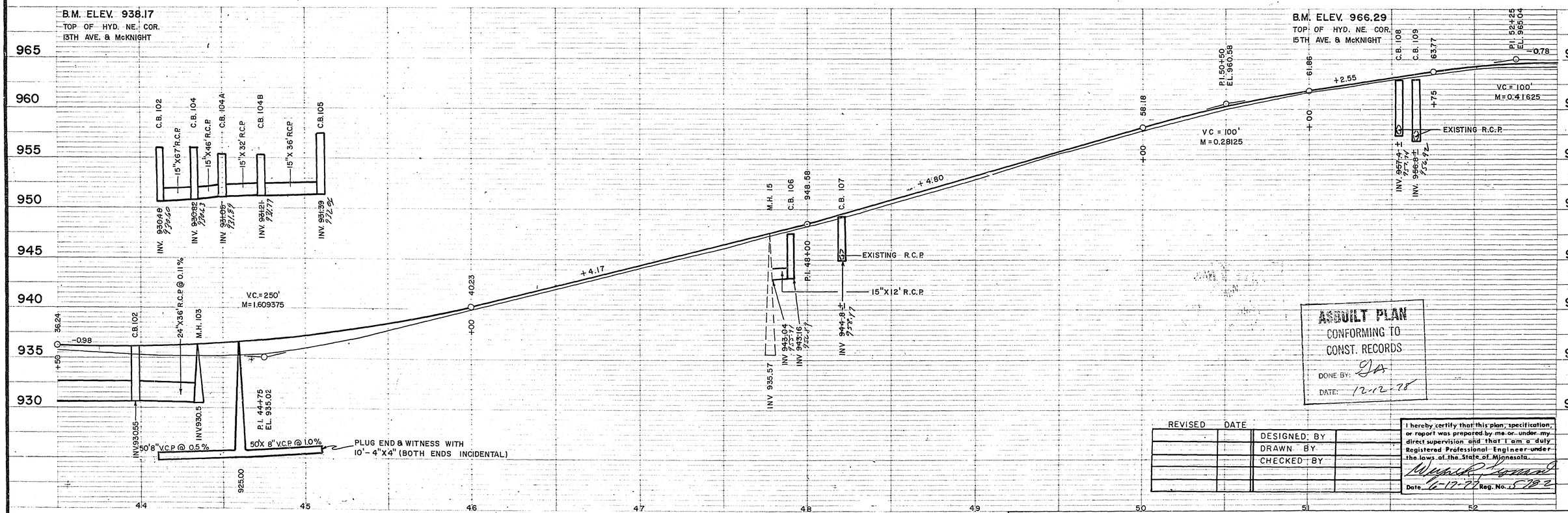
PARCEL NO. 33
ERNEST CHRISTIANSEN

PARCEL NO. 34
LIBERTY STATE BANK, a MINNESOTA CORPORATION

PARCEL NO. 35
GEORGE J. REILING
MARY JANE REILING

PARCEL NO. 36
LARRY A. PETERSON
CANDACE S. PETERSON

PARCEL NO. 37
DENNIS C. CHUHEL
ELIZABETH J. CHUHEL



ASBUILT PLAN
CONFORMING TO CONST. RECORDS
DONE BY: DA
DATE: 12-12-78

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.
Date 6-12-77 Reg. No. 5782

S.A.P. NO. 62-668-16

Sheet No. 13 of 34 Sheets

TOPOGRAPHY
UTILITIES
PROFILE

PARCEL NO. 3
WINZEL C. LOEFFLER

PARCEL NO. 4
GEORGE RICHARD FENNER
BETTY ANN FENNER

PARCEL NO. 5
DONALD MINKE
SHIRLEY E. MINKE

PARCEL NO. 6
HERBERT A. LOEFFLER
PAULINE L. LOEFFLER

PARCEL NO. 7
ANN M. CHRISTENSEN
GENE CHRISTENSEN
GENE NELSON

PARCEL NO. 8
EDWARD J. WINTERS
CHARLOTTE J. WINTERS
CITY AND COUNTY EMPLOYEES
CREDIT UNION, a CORPORATION

PARCEL NO. 9
RICHARD P. NELSON
CORRINE M. NELSON
MIDWEST FEDERAL
SAVINGS & LOAN
ASSOCIATION OF
MINNEAPOLIS

NEW YORK LIFE INSURANCE COMPANY

NELSON'S RE-ARRANGEMENT

GUDIM'S HIGHLAND HILLS

FOURTH ADDITION TO NORTH ST. PAUL

SARATOGA HILLS

PARCEL NO. 37
DENNIS C. CHUHEL
ELIZABETH J. CHUHEL

PARCEL NO. 38
RONALD B. ELLINGSON
VONNIE R. ELLINGSON

PARCEL NO. 39
EDWIN J. KOTKE
LORRAINE R. KOTKE
MINNESOTA FEDERAL SAVINGS
AND LOAN ASSOCIATION

PARCEL NO. 40
GARY R. FLEISCHAUER
SHIRLEY ANN FLEISCHAUER
TWIN CITY FEDERAL SAVINGS AND
LOAN ASSOCIATION

PARCEL NO. 41
DELORES M. STEINMETZ
aka DELORES LaDOUCER STEINMETZ

PARCEL NO. 42
CARL L. ROSTY
MARILYN J. ROSTY

PARCEL NO. 43
MARGARET E. LEINO
ST. PAUL FEDERAL SAVINGS & LOAN
ASSOCIATION

B.M. ELEV. 966.29
TOP OF HYD. NE. COR.
15TH AVE. & McKNIGHT

B.M. ELEV. 970.60
TOP OF HYD. NE. COR. MOHAWK

① DEPRESS CURB M.H.D. S.T.D. PLATE NO. 7036A
② REMOVE EXISTING CURB & GUTTER
③ MATCH CURB & GUTTER EXISTING CURB & GUTTER
④ MATCH CURB & GUTTER TO EXISTING CATCH BASIN

ASBUILT PLAN
CONFORMING TO
CONST. RECORDS
DONE BY: BA
DATE: 12-12-77

REVISED	DATE	
		DESIGNED BY
		DRAWN BY
		CHECKED BY

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Date 6-17-77 Reg. No. 5782

S.A.P. NO. 62-668-16

Sheet No. 14 of 34 Sheets

TOPOGRAPHY	PLOTTED BY	DATE	CHECKED BY	DATE	
UTILITIES	PLOTTED BY	DATE	CHECKED BY	DATE	
PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE	

PARCEL NO. 3
WINZEL C. LOEFFLER

PARCEL NO. 4
GEORGE RICHARD FENNER
BETTY ANN FENNER

PARCEL NO. 5
DONALD MINKE
SHIRLEY E. MINKE

PARCEL NO. 6
HERBERT A. LOEFFLER
PAULINE L. LOEFFLER

PARCEL NO. 7
ANN M. CHRISTENSEN
GENE CHRISTENSEN
GENE NELSON

PARCEL NO. 8
EDWARD J. WINTERS
CHARLOTTE J. WINTERS
CITY AND COUNTY EMPLOYEES CREDIT UNION, a CORPORATION

PARCEL NO. 9
RICHARD P. NELSON
CORRINE M. NELSON
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

NEW YORK LIFE INSURANCE COMPANY

N E L S O N ' S R E - A R R A N G E M E N T G U D I M ' S H I G H L A N D H I L L S

F O U R T H A D D I T I O N T O N O R T H S T . P A U L S A R A T O G A H I L L S

PARCEL NO. 37
DENNIS C. CHUHEL
ELIZABETH J. CHUHEL

PARCEL NO. 38
RONALD B. ELLINGSON
VONNIE R. ELLINGSON

PARCEL NO. 39
EDWIN J. KOTKE
LORRAINE R. KOTKE
MINNESOTA FEDERAL SAVINGS AND LOAN ASSOCIATION

PARCEL NO. 40
GARY R. FLEISCHAUER
SHIRLEY ANN FLEISCHAUER
TWIN CITY FEDERAL SAVINGS AND LOAN ASSOCIATION

PARCEL NO. 41
DELORES M. STEINMETZ
aka DELORES LaDOUCER STEINMETZ

PARCEL NO. 42
CARL L. ROSTY
MARILYN J. ROSTY

PARCEL NO. 43
MARGARET E. LEINO
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

① DEPRESS CURB M.H.D. STD. PLATE NO. 7036A
② REMOVE EXISTING CURB & GUTTER
③ MATCH CURB & GUTTER EXISTING CURB & GUTTER
④ MATCH CURB & GUTTER TO EXISTING CATCH BASIN

B.M. ELEV. 966.29
TOP OF HYD. NE. COR. 15TH AVE. & McKNIGHT

B.M. ELEV. 970.60
TOP OF HYD. NE. COR. MOHAWK

ASBUILT PLAN
CONFORMING TO CONST. RECORDS
DONE BY: GJB
DATE: 12-12-78

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.
Date 12-17-77 Reg. No. 5782

S.A.P. NO. 62-668-16

	PLOTTED BY	DATE	CHECKED BY	DATE
TOPOGRAPHY				
UTILITIES				
PROFILE				

PARCEL NO. 9
RICHARD P. NELSON
CORRINE M. NELSON
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

PARCEL NO. 10
RONALD J. NOYES
ROBERTA K. NOYES
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 11
ROBERT W. NORD
GRACE MARIE NORD
PRUDENTIAL INSURANCE COMPANY OF AMERICA

PARCEL NO. 12
JAMES G. ENGELBRECHT
MARY C. ENGELBRECHT
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 13
JOEL A. DANIELSON
MARY K. DANIELSON
HOME FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 14
LOWELL C. TORGERSON
HELEN J. TORGERSON
FEDERAL NATIONAL MORTGAGE ASSOCIATION

PARCEL NO. 15
WILLIAM T. PFEIFER
HELEN F. PFEIFER

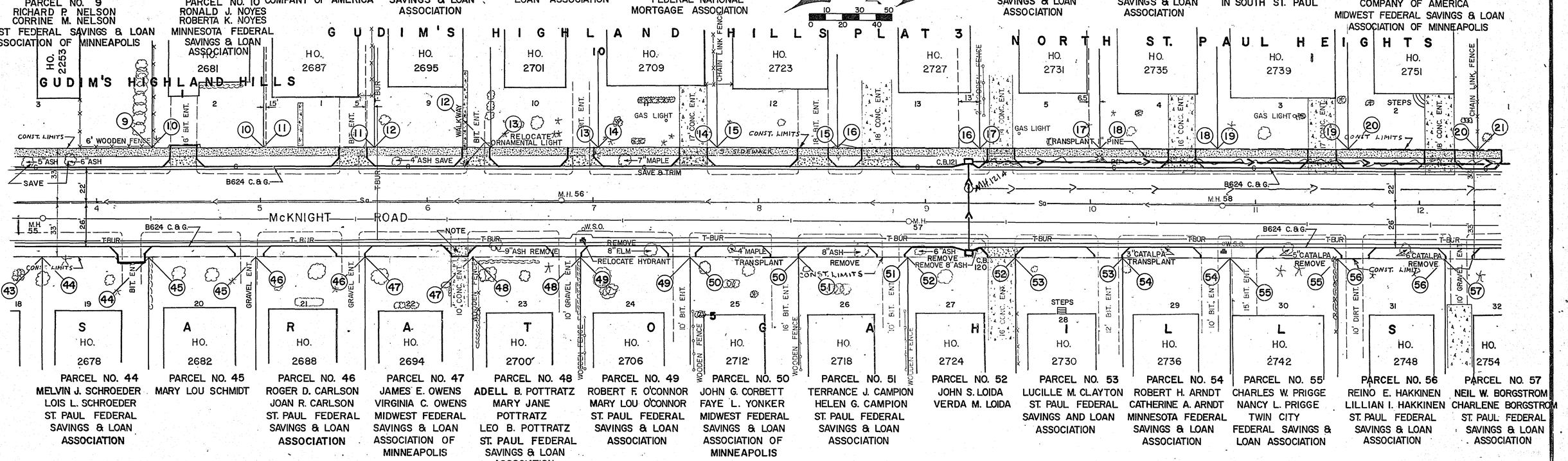
PARCEL NO. 16
TERRANCE T. HENDRIKSEN
FEDERAL NATIONAL MORTGAGE ASSOCIATION

PARCEL NO. 17
IVER H. GREEN
LILA GREEN
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 18
RICHARD F. KATH
MYRA KATH
TWIN CITY FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 19
HAROLD M. BROWN
KATHLEEN L. BROWN
DROVERS STATE BANK IN SOUTH ST. PAUL

PARCEL NO. 20
THOMAS M. KELLER
NANCY J. KELLER
THE PRUDENTIAL INSURANCE COMPANY OF AMERICA
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS



PARCEL NO. 44
MELVIN J. SCHROEDER
LOIS L. SCHROEDER
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 45
MARY LOU SCHMIDT

PARCEL NO. 46
ROGER D. CARLSON
JOAN R. CARLSON
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 47
JAMES E. OWENS
VIRGINIA C. OWENS
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

PARCEL NO. 48
ADELL B. POTTRATZ
MARY JANE POTTRATZ
LEO B. POTTRATZ
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 49
ROBERT F. O'CONNOR
MARY LOU O'CONNOR
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 50
JOHN G. CORBETT
FAYE L. YONKER
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

PARCEL NO. 51
TERRANCE J. CAMPION
HELEN G. CAMPION
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 52
JOHN S. LOIDA
VERDA M. LOIDA

PARCEL NO. 53
LUCILLE M. CLAYTON
ST. PAUL FEDERAL SAVINGS AND LOAN ASSOCIATION

PARCEL NO. 54
ROBERT H. ARNDT
CATHERINE A. ARNDT
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 55
CHARLES W. PRIGGE
NANCY L. PRIGGE
TWIN CITY FEDERAL SAVINGS & LOAN ASSOCIATION

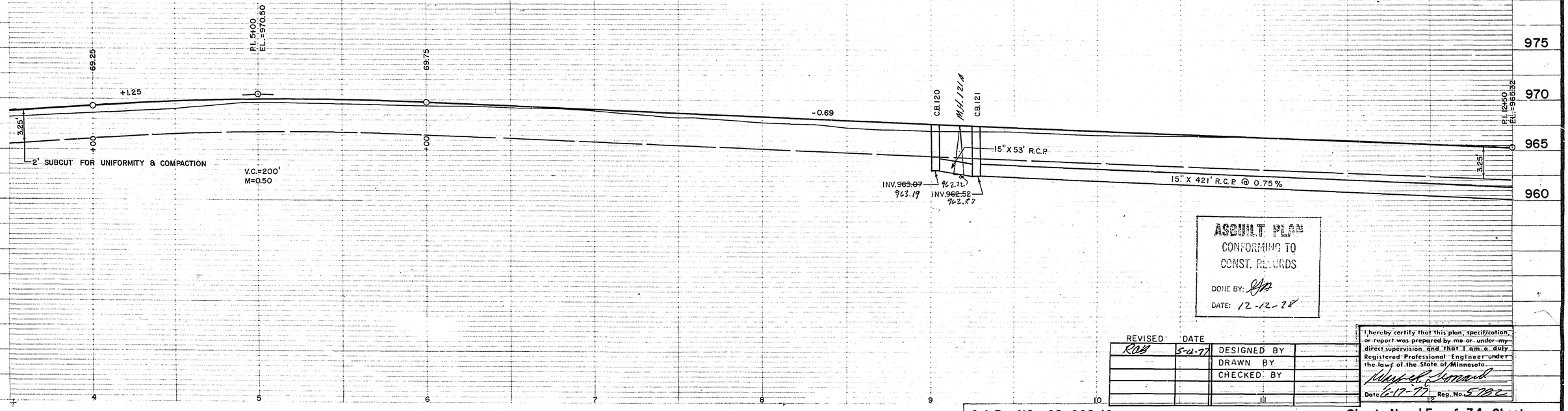
PARCEL NO. 56
REINO E. HAKKINEN
LILLIAN I. HAKKINEN
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 57
NEIL W. BORGSTROM
CHARLENE BORGSTROM
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

B.M. ELEV. 970.60
TOP OF HYD. NE. COR. MOHAWK

B.M. ELEV. 967.13
TOP HYD. SE. COR. SHAWNEE

NOTE: PARCEL NO.47-NO CONSTRUCTION EASEMENT, BUILD WITHIN R/W. MATCH EXISTING 10' CONC. DRIVE WITH CONC. APRON.



AS BUILT PLAN
CONFORMING TO
CONST. RECORDS
DONE BY: GP
DATE: 12-12-78

REVISED	DATE	
ROW	5-12-77	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.
Date 6-17-77 Reg. No. 5782

S.A.P. NO. 62-668-16

Sheet No. 15 of 34 Sheet

	PLOTTED BY	DATE	CHECKED BY	DATE
TOPOGRAPHY				
UTILITIES	PLOTTED BY	DATE	CHECKED BY	DATE
PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE

PARCEL NO. 21
BERNICE A. REEVES
FIRST MERCHANTS STATE BANK
OF SAINT PAUL

PARCEL NO. 22
DUANE E. HELMS
DELORES L. HELMS
MIDWEST FEDERAL SAVINGS & LOAN ASSOCIATION
FIRST NATIONAL BANK OF SAINT PAUL

PARCEL NO. 23
ROBERT F. NEPPER
MARY C. NEPPER
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 24
PERKEGWIN INVESTMENT COMPANY

PARCEL NO. 25
CARR PROPERTIES, INC.
MINNESOTA FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 26
P. OWEN DEAN
JEAN DEAN
THE DIME SAVINGS BANK OF NEW YORK

NORTH ST. PAUL HEIGHTS HO. 1 2757

GUDIM HIGHLAND HILLS PLAT 2

GUDIM HIGHLAND HILLS PLAT 2 HO. 2251

C A R R A D D I T I O N
N O R T H S T. P A U L

ROBERT TILSEN'S MAPLEWOOD HEIGHTS HO. 2253

M A P L E W O O D

NOTE: 3 ENTRANCES TO BE CONTRACTED AT TIME OF CONSTRUCTION. LOCATION TO BE DETERMINED BY OWNER.

SAWNEE DR. — SHAWNEE LI — McKNIGHT ROAD — NAVAJO RD. — SHOSHONE AVE. — RADATZ AVE.

S A R A T O G A H I L L S

SARATOGA HILLS PLAT 2
N O R T H S T. P A U L

SARATOGA HILLS PLAT 2 HO. 2836

S A R A T O G A H I L L S P L A T 2

PARCEL NO. 57
NEIL W. BORGSTROM
CHARLENE BORGSTROM
ST. PAUL FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 58
JOSEPH J. SPECIALE
NEWELL N. NELSON

PARCEL NO. 59
FRED PHILLIP LUND
ANITA MARGARET LUND
THE BOWERY SAVINGS BANK

PARCEL NO. 60
NEIL M. LINDAMOOD
ELAINE E. LINDAMOOD
THE BOWERY SAVINGS BANK

PARCEL NO. 61
HOWARD L. NELSON
GLORIA J. NELSON
TWIN CITY FEDERAL SAVINGS & LOAN ASSOCIATION

PARCEL NO. 62
RICHARD HENRY GIESER
DARLENE Z. GIESER
DOLLAR SAVINGS BANK OF THE CITY OF NEW YORK

PARCEL NO. 63
DAVID M. RUSHENBERG
ANNE RUSHENBERG
FIRST FEDERAL SAVINGS & LOAN ASSOCIATION OF MINNEAPOLIS

① DEPRESS CURB M.H.D. STD. PLATE NO. 7036 A
③ MATCH CURB & GUTTER TO EXISTING CURB & GUTTER.
④ MATCH CURB & GUTTER TO EXISTING CATCH BASIN.

S&R SALVAGE AND RELOCATE 4' CHAIN LINK FENCE 2' BEHIND WALL

B.M. ELEV. 967.13
TOP HYD. SE. COR. SHAWNEE

B.M. ELEV. 993.33
TOP OF HYD. NW. COR. MAPLEVIEW

V=300'
M=1.61250

VC=200
M=0.6750

AS-BUILT PLAN
CONFORMING TO
HOIST RECORDS
DONE BY: JM
DATE: 12-18-78

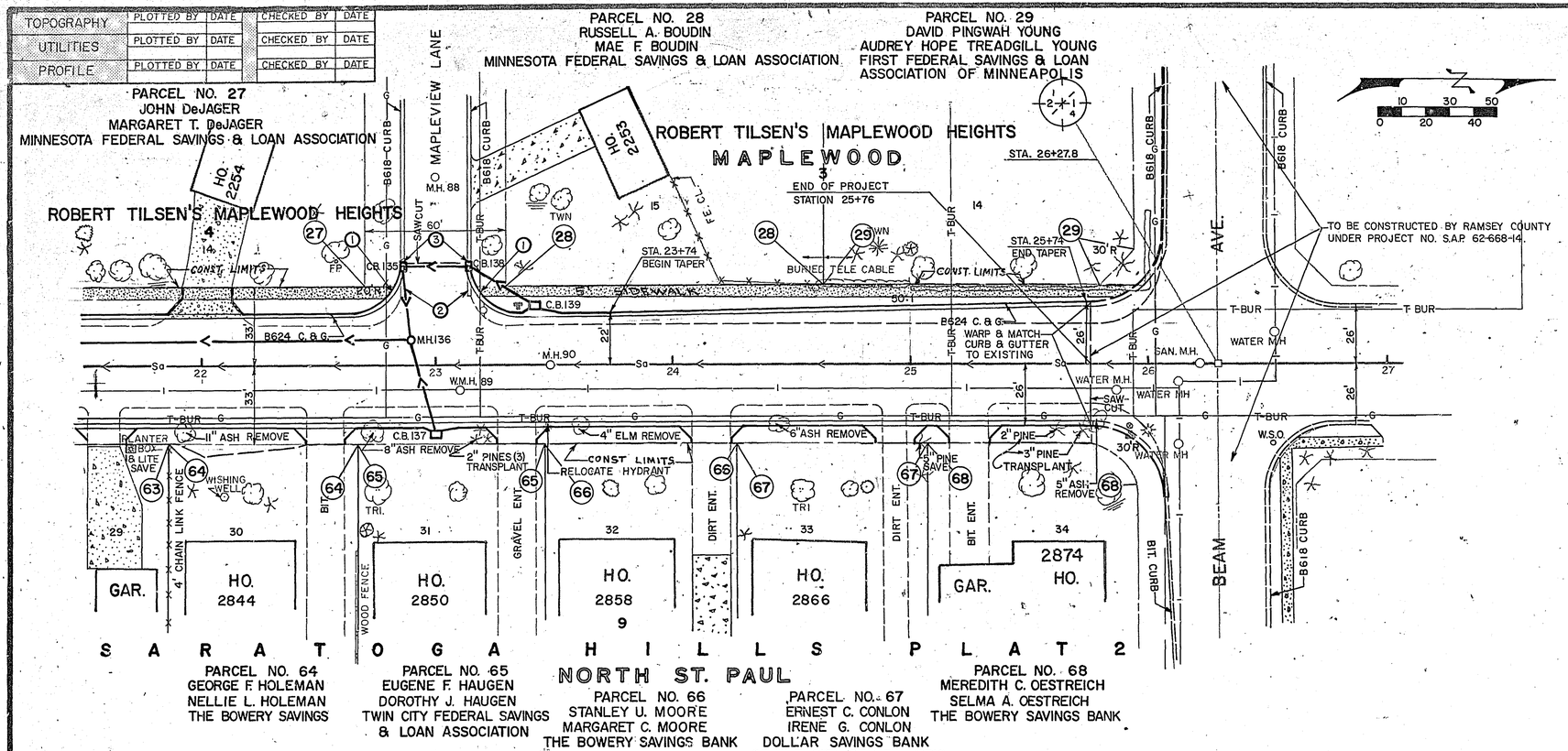
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RAB	5-12-71	DESIGNED BY
LRF	8-10-71	DRAWN BY
		CHECKED BY

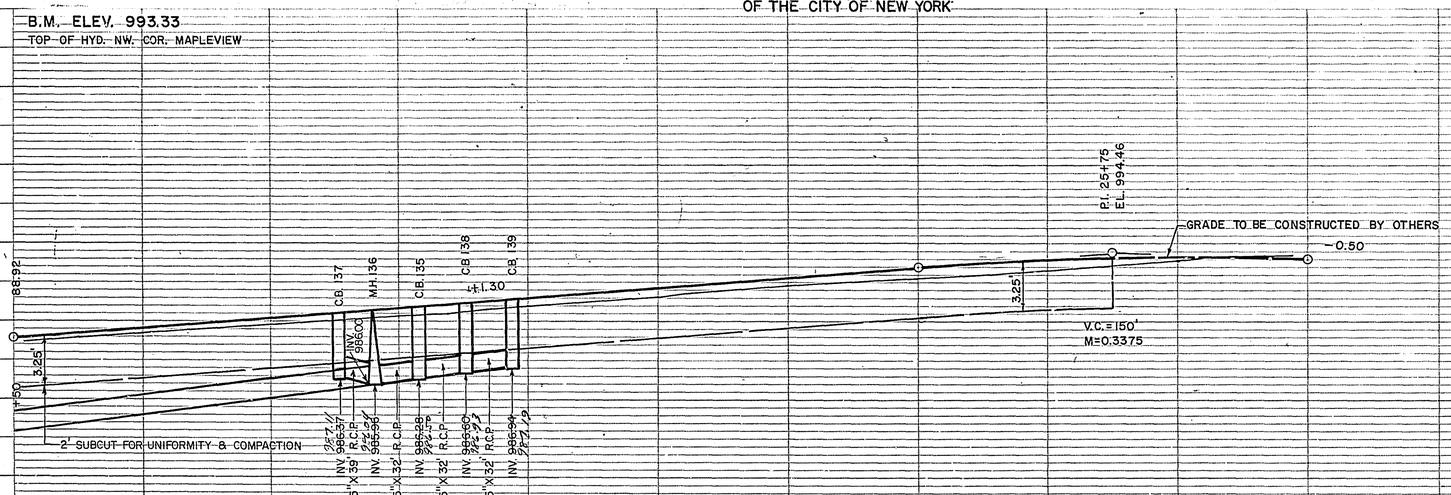
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Dated 12-17-71 Reg. No. 5782

S.A.P. NO. 62-668-16

Sheet No. 16 of 34 Sheets

	PLOTTED BY	DATE	CHECKED BY	DATE
TOPOGRAPHY				
UTILITIES	PLOTTED BY	DATE	CHECKED BY	DATE
PROFILE	PLOTTED BY	DATE	CHECKED BY	DATE





ASBUILT PLAN
CONFORMING TO
CONST. RECORDS
DONE BY: DA
DATE: 12-12-78

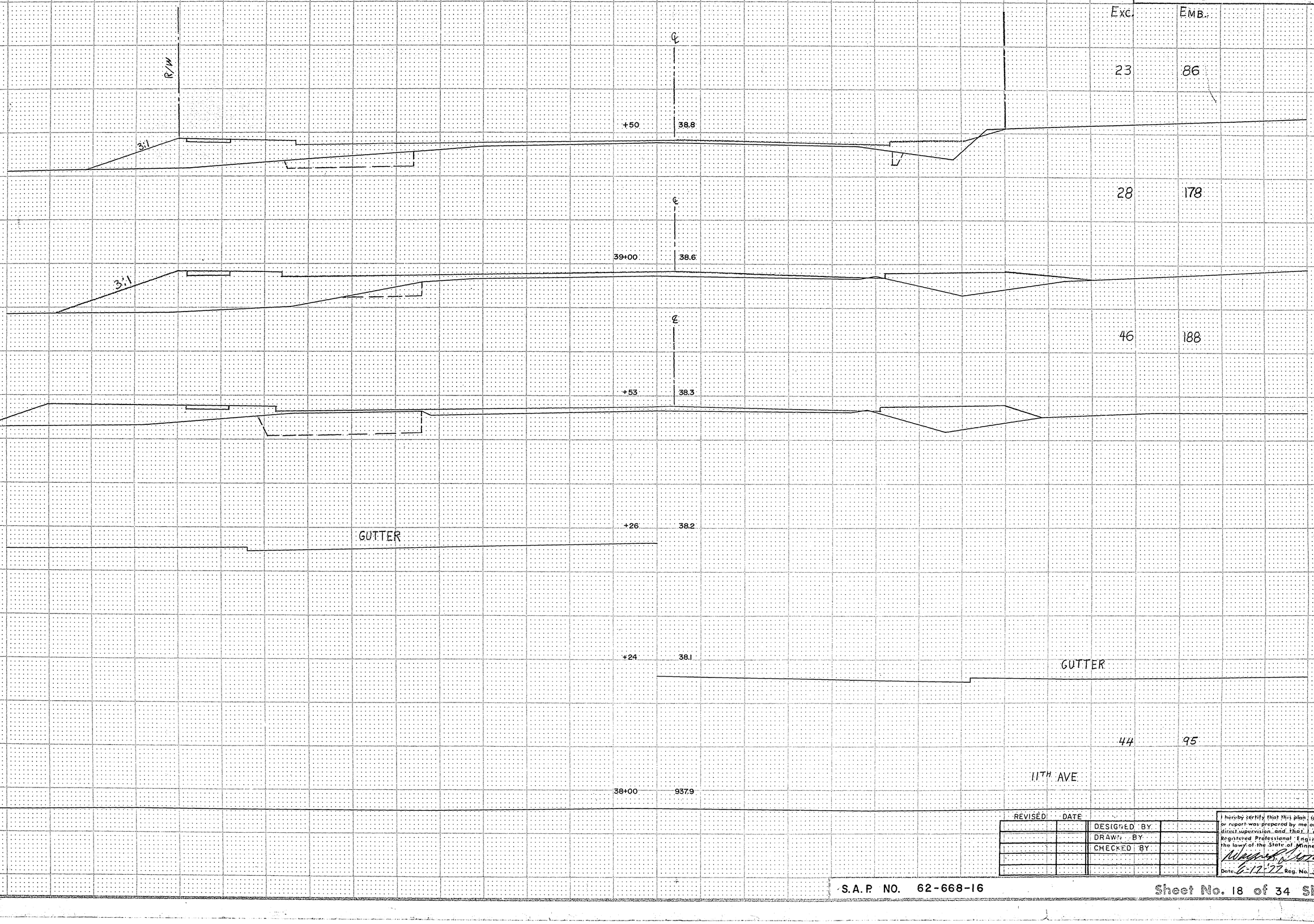
REVISED	DATE	
		DESIGNED BY
		DRAWN BY
		CHECKED BY

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.
Date 6-12-77 Reg. No. 5082

S.A.P. NO. 62-668-16

Sheet No. 17 of 34 Sheets

Fed. Proj. No.



	Exc.	Emb.
	23	86
	28	178
	46	188
	44	95

FUNCTIONAL CROSS SECTION - OPEN DITCH
H. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

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.

Wayne S. Howard

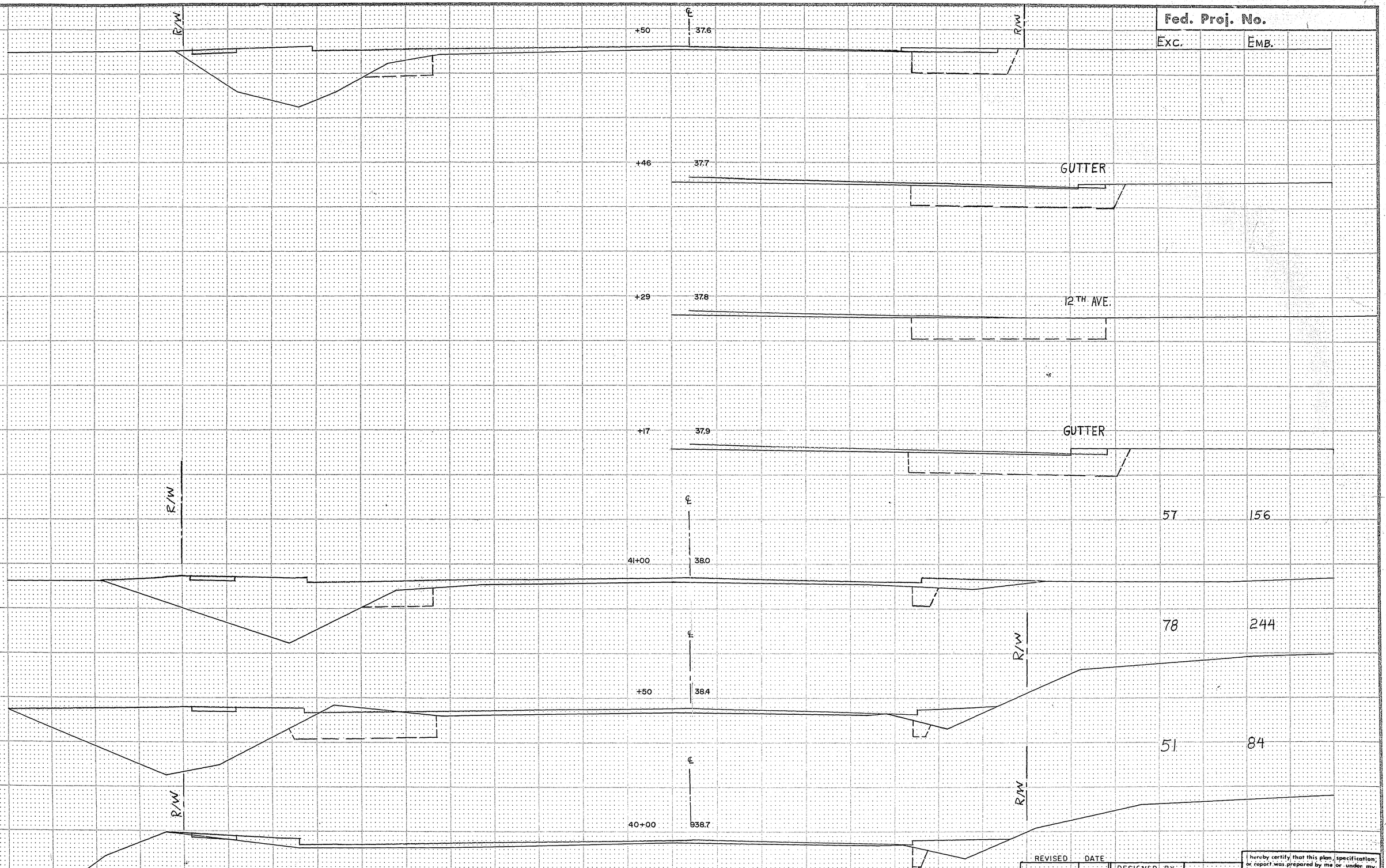
Date 6-12-72 Reg. No. 5782

S.A.P. NO. 62-668-16

Sheet No. 18 of 34 Sheets

Fed. Proj. No.

	Exc.	Emb.
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	78	244
	51	84



REVISED	DATE		
		DESIGNED BY	
		DRAWN BY	
		CHECKED BY	

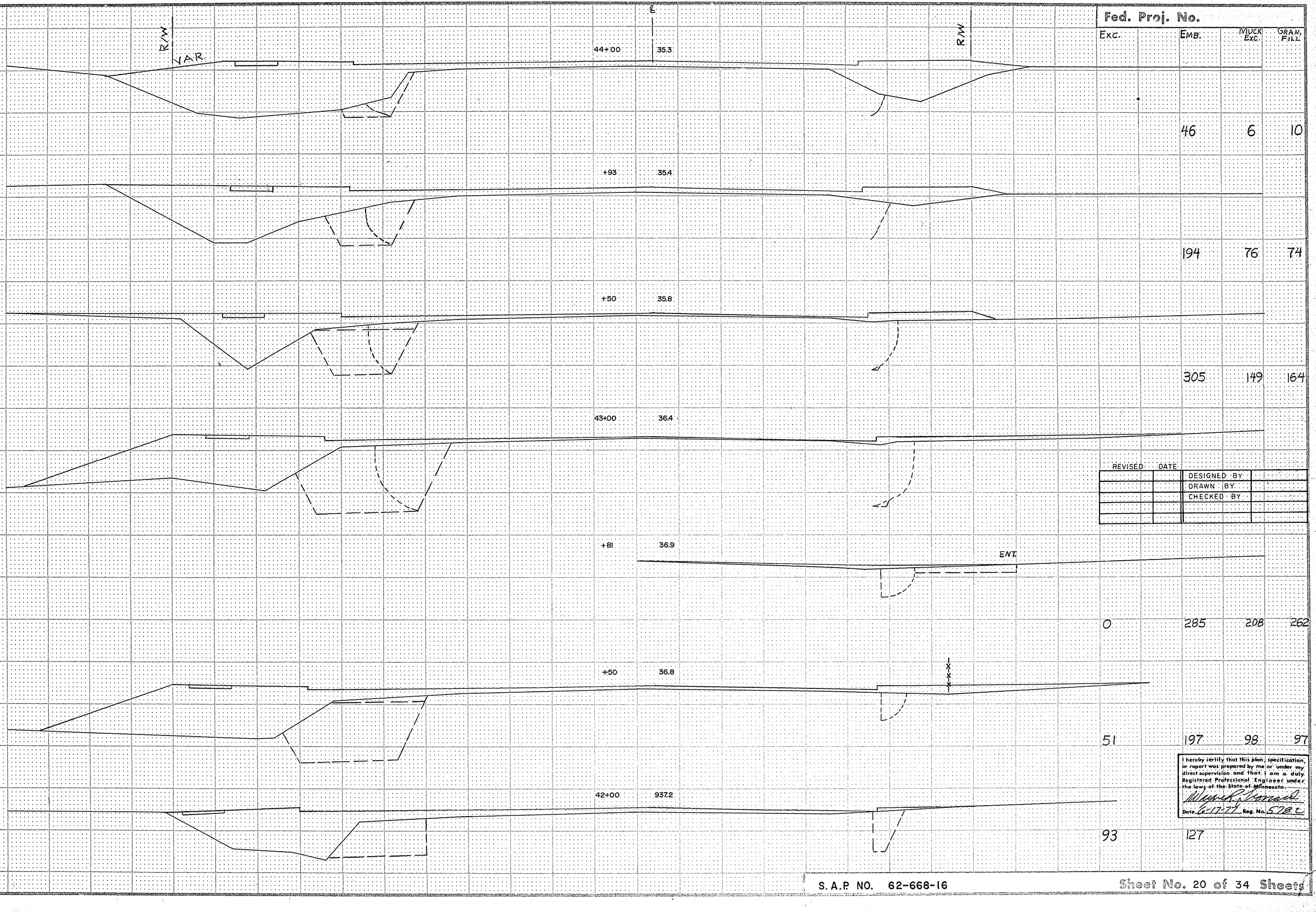
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Date 6-17-72 Reg. No. 5782

S.A.P NO. 62-668-16

Sheet No. 19 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DOTTED
H. A. ROGERS CO., MINNEAPOLIS - ST. PAUL



Fed. Proj. No.

Exc.	Emb.	Muck Exc.	Gran. Fill
	46	6	10
	194	76	74
	305	149	164
0	285	208	262
51	197	98	97
93	127		

REVISED	DATE		
		DESIGNED BY	
		DRAWN BY	
		CHECKED BY	

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Wayne P. Howard

Date 6-17-77 Reg. No. 5782

S.A.P. NO. 62-668-16

Sheet No. 20 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DOTTED
M. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

Fed. Proj. No.

			Exc.	Emb.	Muck Exc.	Gran. Fill
45+00	36.0					24
+75	35.4	GUTTER				
			26	419		182
+60	35.3					
			11	271		108
+46	35.2	GUTTER				
			10	77		34
+39	35.2					
44+12	935.2	DITCH				
			193	55		61

REVISED	DATE	
		DESIGNED BY
		DRAWN BY
		CHECKED BY

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Wayne R. Simonard

Date 6-12-77 Reg. No. 5782

S.A.P. NO. 62-668-16

Sheet No. 21 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DOTTED

H. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

Fed. Proj. No.

		Exc.	Emb.	Muck Ex.	Gran. Fill
R/W	+50 46.1				
		26	30		
	47+00 44.1				
		40	38		
	+50 42.0				
		21	40		
	46+00 39.9				
		10	54		
R/W	+50 37.8				
R/W	45+33 937.1				
		10	34	49	37

REVISED	DATE		
		DESIGNED BY	
		DRAWN BY	
		CHECKED BY	

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Wayne H. Monard

Date 6-17-72 Reg. No. 5782

S.A.P. NO. 62-668-16

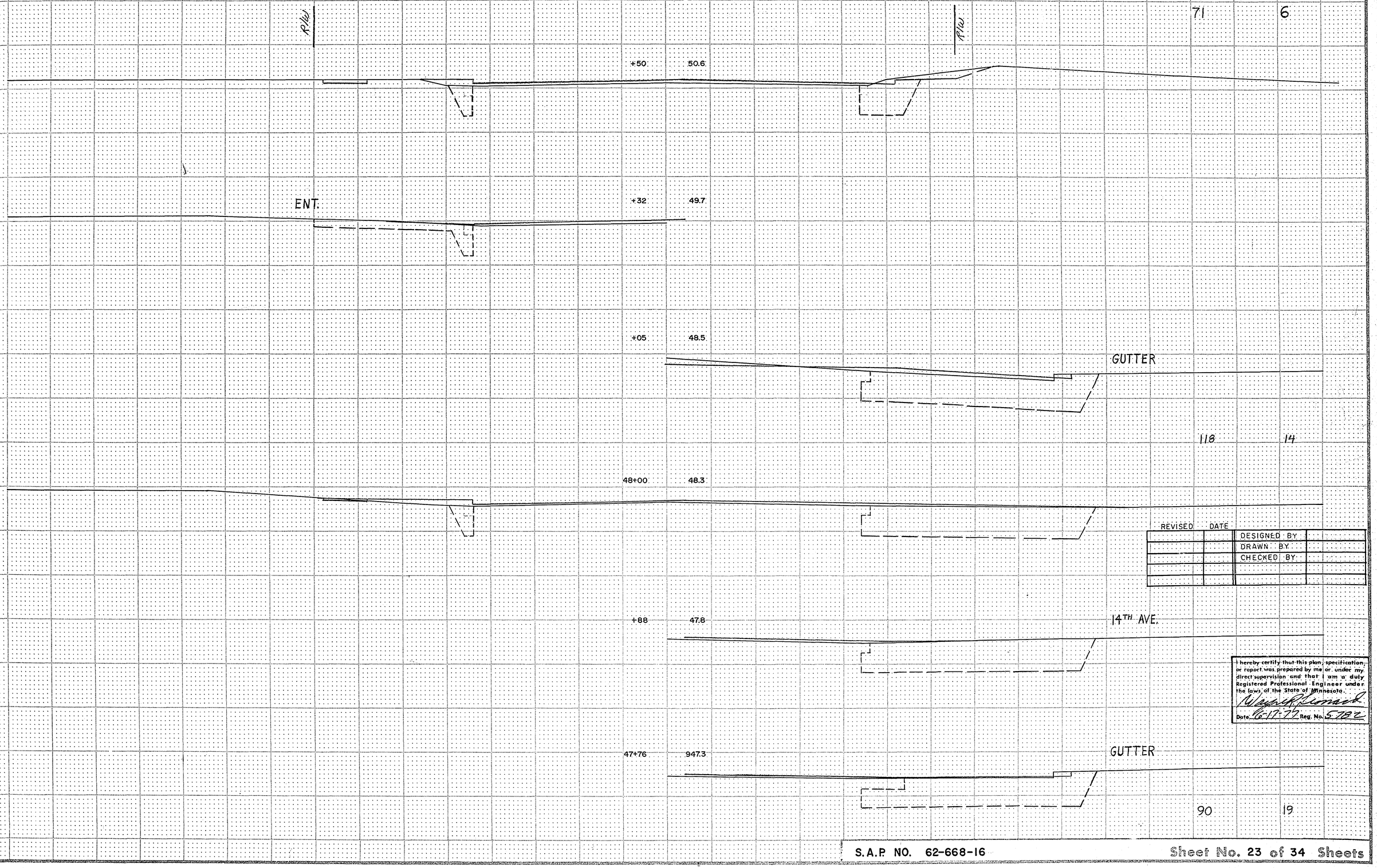
Sheet No. 22 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DOTTED

R. A. ROGERS CO., MINNEAPOLIS - ST. PAUL

Fed. Proj. No.

	Exc.	Emb.
	71	6
	118	14
	90	19



REVISED	DATE		
		DESIGNED BY	
		DRAWN BY	
		CHECKED BY	

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Wayne Kennedy

Date 6-17-77 Reg. No. 5782

S.A.P NO. 62-668-16

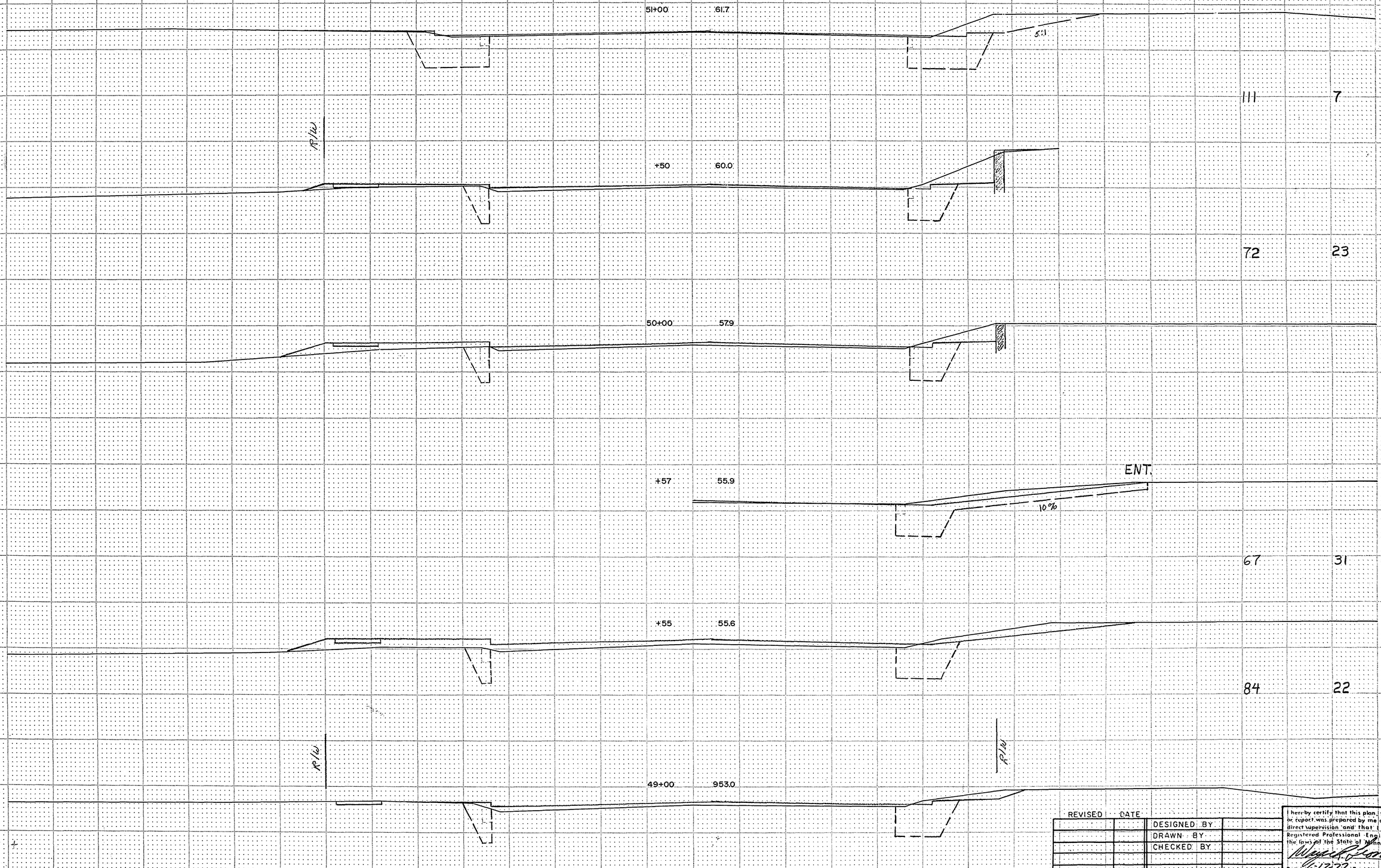
Sheet No. 23 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DOTTED

M. A. ROSEN CO. - MINNEAPOLIS - ST. PAUL

Fed. Proj. No.

	Exc.	Emb.
51+00 61.7	111	7
+50 60.0	72	23
50+00 57.9		
+57 55.9	67	31
+55 55.6	84	22
49+00 953.0		



REVISED	DATE	
		DESIGNED BY
		DRAWN BY
		CHECKED BY

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Wayne Peterson

Date 6-17-77 Reg. No. 5737

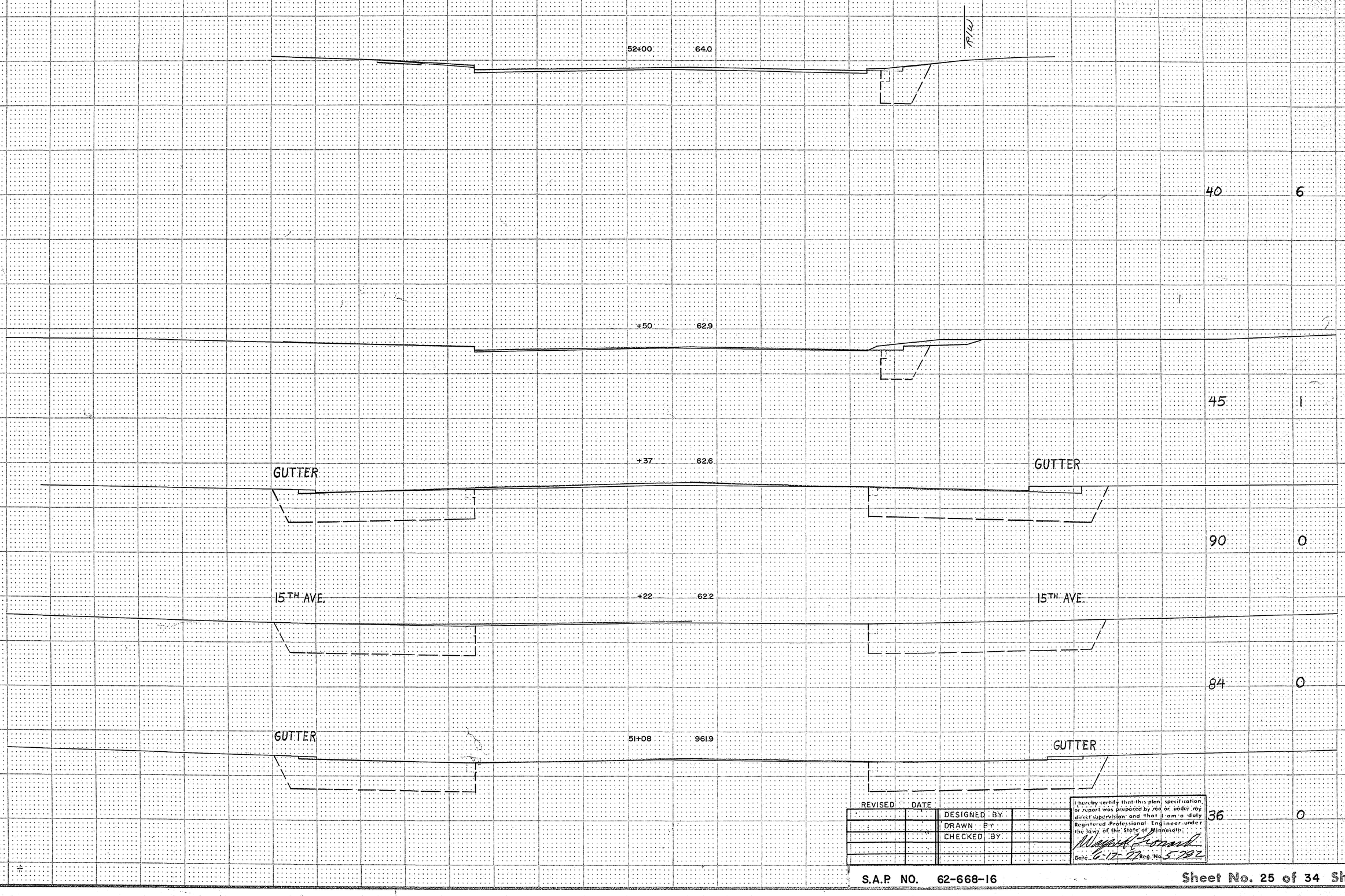
S.A.P. NO. 62-668-16

Sheet No. 24 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DOTTED
H. A. ROSTAD CO. - MINNEAPOLIS - ST. PAUL

Fed. Proj. No.

	Exc.	Emb.
52+00 64.0	40	6
+50 62.9	45	1
+37 62.6	90	0
+22 62.2	84	0
51+08 961.9	36	0



FUNCTIONAL CROSS SECTION - OPEN DOTTED
H. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

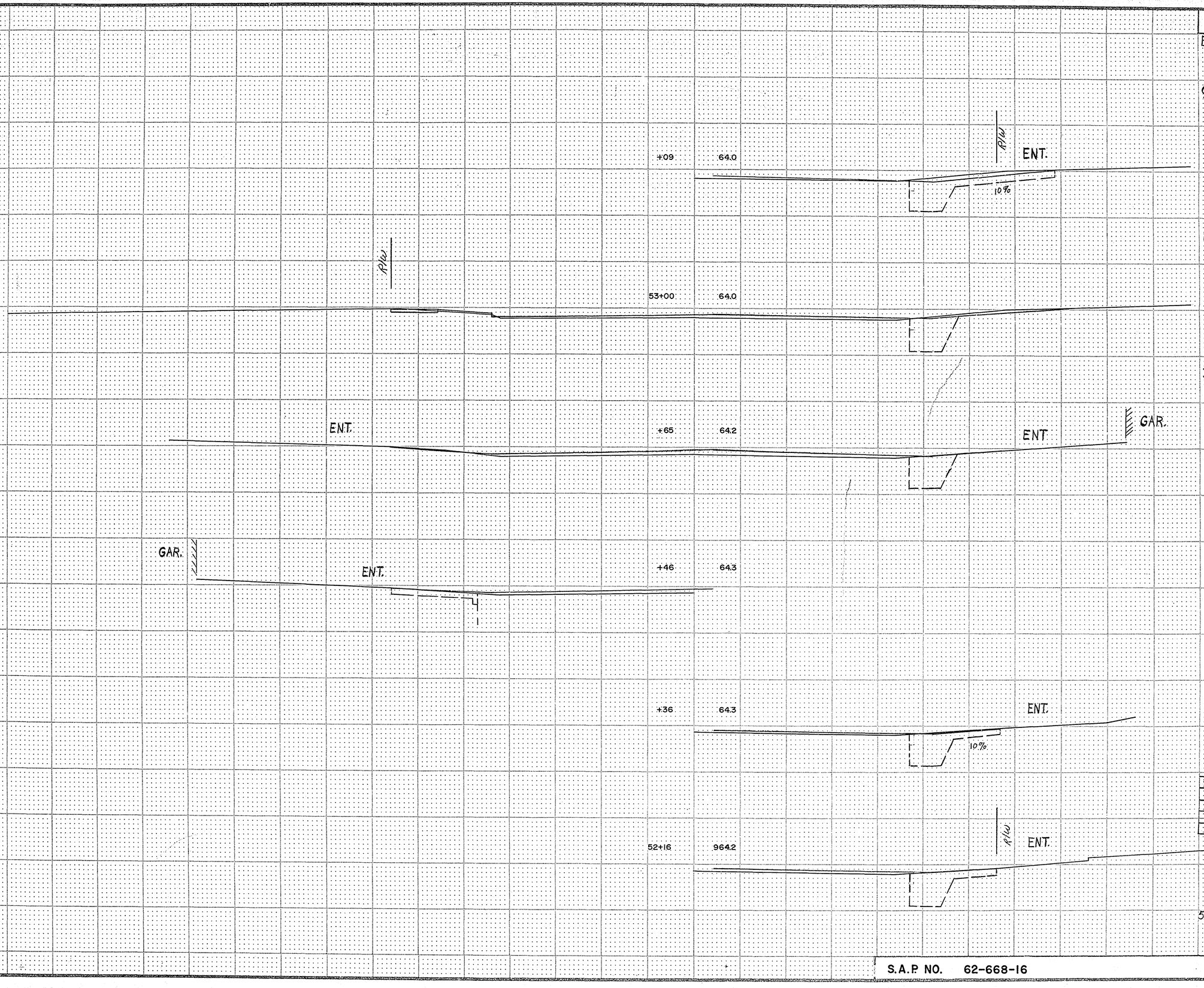
REVISED	DATE	
		DESIGNED BY
		DRAWN BY
		CHECKED BY

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.
Wayne Leonard
Date 6-17-77 Reg. No. 5-7992

S.A.P. NO. 62-668-16

Sheet No. 25 of 34 Sheets

Fed. Proj. No.	
Exc.	Emb.
9	0
8	1
31	2



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.

Wayne K. Howard

Date 6-17-77 Reg. No. 5702

58 4

S.A.P. NO. 62-668-16

Sheet No. 26 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DITCH
H. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

Fed. Proj. No.

		Exc.	Emb.
16TH AVE.	+50 63.0		
GUTTER	+36 63.1		
5:1	+18 63.2	117	3
	54+00 63.3	67	5
	+50 63.7	37	2
ENT.	+23 63.9	8	0
R/W ENT.	53+17 963.9		

R/W GAR. ENT. 10%

FUNCTIONAL CROSS SECTION - OPEN DOTTED
H. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

REVISED	DATE		
		DESIGNED	BY
		DRAWN	BY
		CHECKED	BY

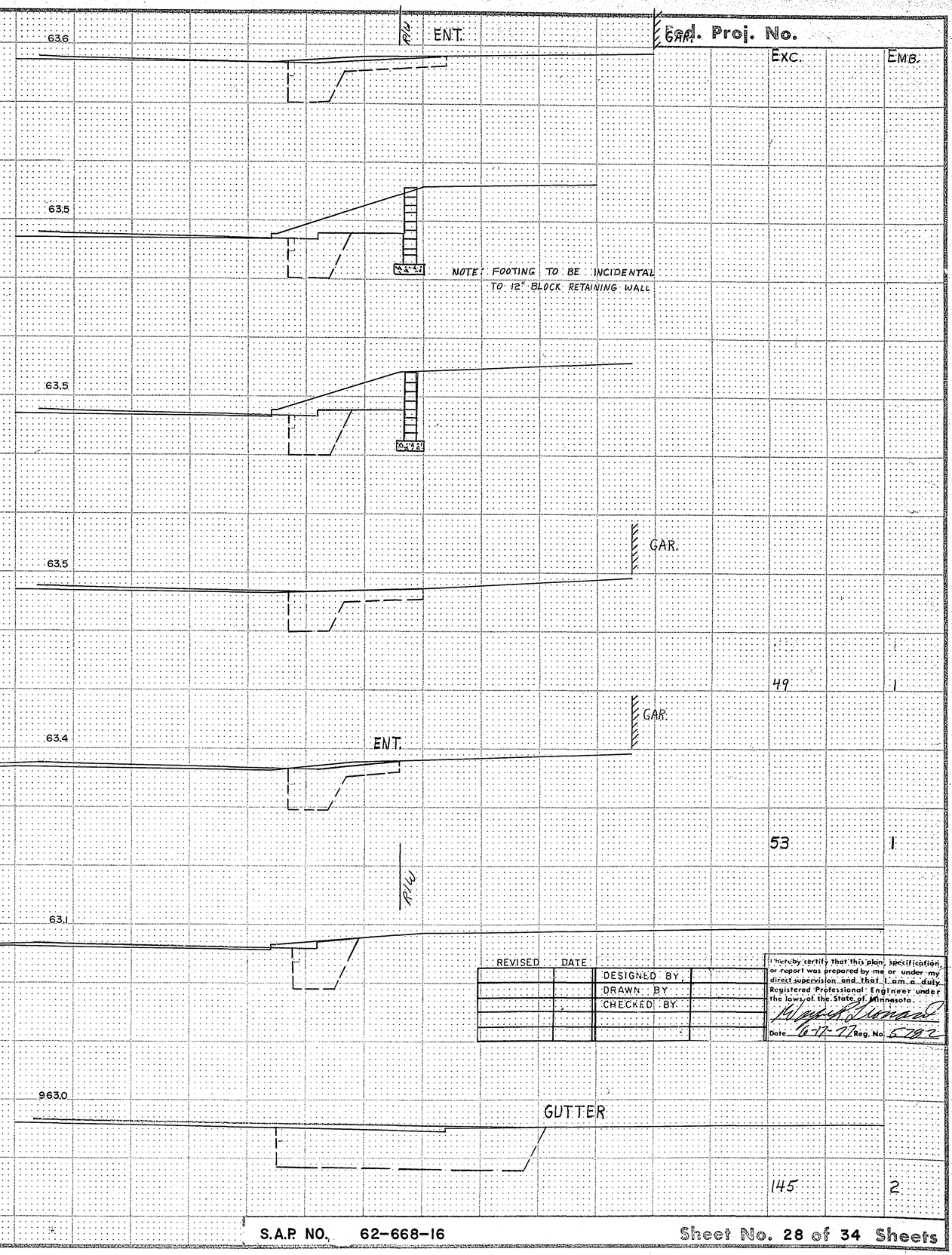
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Date 6-17-77 Reg. No. 5-7976

S.A.P. NO. 62-668-16

Sheet No. 27 of 34 Sheets

Fed. Proj. No.



49 1

53 1

145 2

REVISED	DATE	
		DESIGNED BY
		DRAWN BY
		CHECKED BY

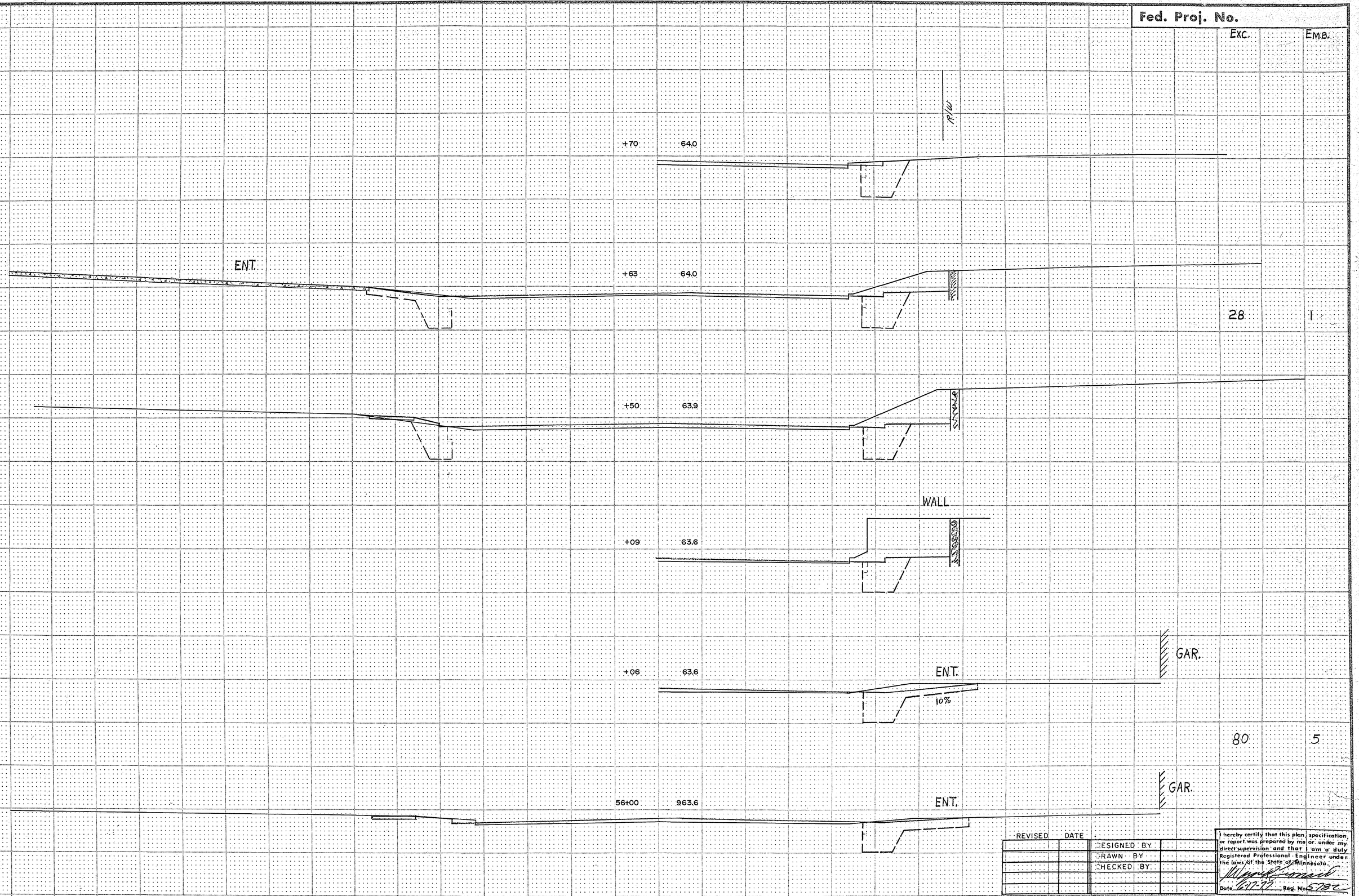
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Date 6-17-77 Reg. No. 5782

S.A.P. NO. 62-668-16

FUNCTIONAL CROSS SECTION - OPEN DOTTED
H. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

Fed. Proj. No.



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		DRAWN BY
		CHECKED BY

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Date 6-17-77 Reg. No. 5782

S.A.P. NO. 62-668-16

Sheet No. 29 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DOTTED
R. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

STATION—ELEVATION	EXCAVATION SUB TOTALS CU. YDS.	EMBANKMENT CU. YDS. SUB TOTALS
1+00 965.9 — 218	223	74
+75 65.7 — 220	227	93
+60 65.6 — 245	141	56
+40 65.3 — 350	234	79
+30 65.0 — 252	105	49
+18 64.8 — 426	124	82
0+00 64.8 — 347	234	147
0+25 964.7 — 470	493	192
0+30 964.5 — 495	274	198

STATION—ELEVATION	EXCAVATION SUB TOTALS CU. YDS.	EMBANKMENT CU. YDS. SUB TOTALS
3+16 968.0 — 216	248	151
3+00 67.9 — 240	138	84
+86 67.6 — 315	143	83
+74 67.4 — 245	121	71
+61 67.3 — 248	116	68
2+50 67.1 — 161	85	77
2+00 66.7 — 179	317	198
1+50 66.2 — 192	339	185
1+20 966.0 — ENT.	1400 to 1450: 234	111

STATION—ELEVATION	EXCAVATION SUB TOTALS CU. YDS.	EMBANKMENT CU. YDS. SUB TOTALS
6+00 969.4 — 170	106	63
+50 69.4 — ENT. 172	312	185
5+00 68.7 — 168	311	185
+90 69.6 — ENT.	4150 to 5100 62	37
+50 69.0 — 140	221	155
+21 68.8 — ENT.	4400 to 4450: 106	112
+11 68.7 — ENT.	264	229
4+00 68.6 — 136	306	190
3+50 968.2 — 174	1400 to 1450: 234	111

FUNCTIONAL CROSS SECTION OPEN DOTTED
K. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

REVISED	DATE	
		DESIGNED BY
		DRAWN BY
		CHECKED BY

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Date 6-10-77 Reg. No. 5782

S.A.P NO. 62-668-16

Sheet No. 30 of 34 Sheets

STATION—ELEVATION

EXCAVATION | EMBANKMENT
SUB TOTALS : CU. YDS. CU. YDS. : SUB TOTALS

8+15 96.7 ENT.

86 61

8+00 67.8 150

7+50 to 8+00

+59 68.3 ENT.

283 206

+50 68.3 ENT. 180

7+00 68.9 172

6+50 to 7+00:

+93 69.0 ENT.

303 204

+82 69.1 ENT.

+50 69.2 170

64 39

+30 69.9 ENT. 168

6+17 96.9 ENT. 170

FUNCTIONAL CROSS SECTION - OPEN DOTTED
R. A. BIGGS CO. - MINNEAPOLIS - ST. PAUL

STATION—ELEVATION

EXCAVATION | EMBANKMENT
SUB TOTALS : CU. YDS. CU. YDS. : SUB TOTALS

+54 96.5 178

10+00 to 10+54:

+10 66.6 ENT.

348 214

10+00 66.6 170

+59 66.9 ENT.

311 221

+95 66.9 ENT. 150

9+00 to 9+45:

17 12

+42 66.9 ENT.

232 165

9+00 67.0 140

8+50 to 9+00:

+77 67.1 ENT.

118 90

+70 67.1 ENT.

37 26

+50 67.3 135

8+00 to 8+50:

8+31 96.76 ENT.

92 59

STATION—ELEVATION

EXCAVATION | EMBANKMENT
SUB TOTALS : CU. YDS. CU. YDS. : SUB TOTALS

13+00 96.49 190

292 156

+58 65.5 182

12+00 to 12+58:

+22 65.6 ENT. 129

311 221

+10 65.6 ENT.

392 215

12+00 65.48 175

11+00 to 11+56:

+56 66.0 ENT. 130

285 63

+39 66.1 ENT.

351 214

11+00 66.32

10+54 to 11+00:

+93 66.9 ENT.

296 188

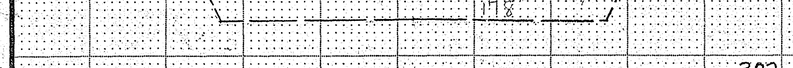
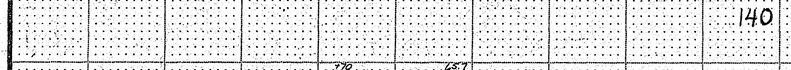
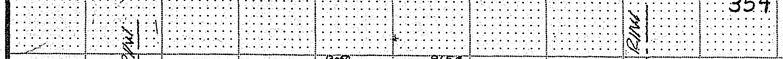
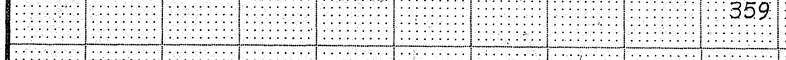
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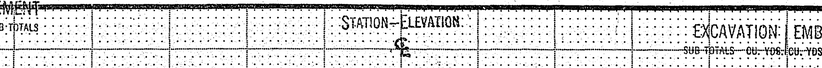
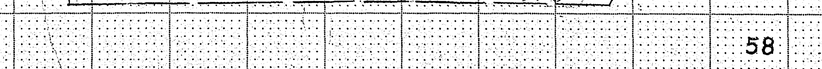
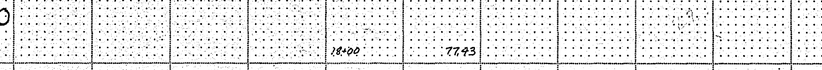
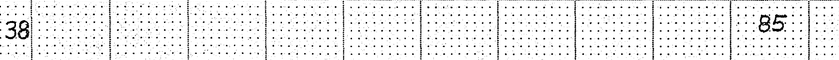
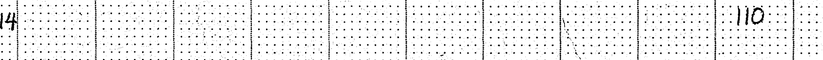
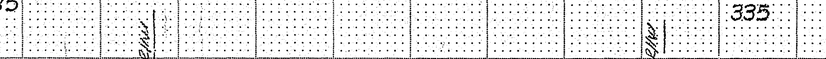
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DRAWN BY
CHECKED BY

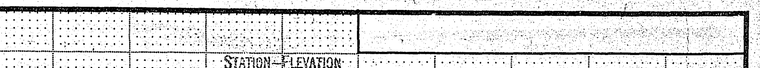
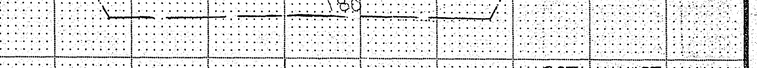
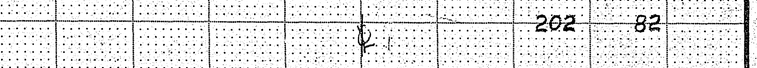
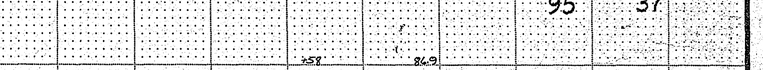
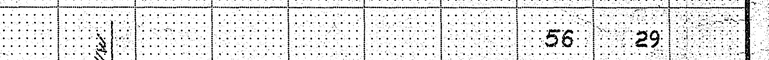
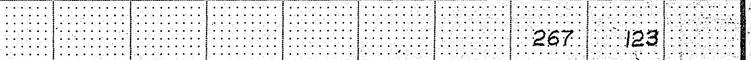
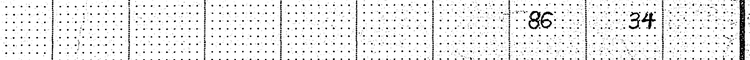
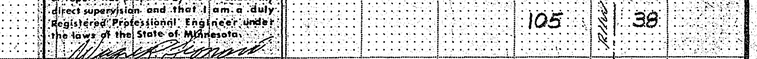
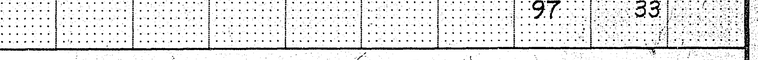
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.
Wayne Grimark
Date 6-17-77 Reg. No. 5782

S.A.P. NO. 62-668-16

Sheet No. 31 of 34 Sheets

STATION—ELEVATION	EXCAVATION: SUB TOTALS CU. YDS.	EMBANKMENT: CU. YDS. SUB TOTALS
	257	91
	283	145
	302	215
	114	84
	140	100
	107	83
	51	38
	356	214
	354	185
	359	185

STATION—ELEVATION	EXCAVATION: SUB TOTALS CU. YDS.	EMBANKMENT: CU. YDS. SUB TOTALS
	58	18
	274	95
	224	91
	227	91
	133	48
	85	31
	110	41
	335	109
	322	91

STATION—ELEVATION	EXCAVATION: SUB TOTALS CU. YDS.	EMBANKMENT: CU. YDS. SUB TOTALS
	321	206
	290	176
	287	167
	202	82
	95	37
	56	29
	267	123
	86	34
	105	38
	97	33

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Date 6-17-77 Reg. No. 5782

REVISED	DATE	
Rub	5-4-77	DESIGNED BY:
		DRAWN BY:
		CHECKED BY:

S.A.P. NO. 62-668-16

Sheet No. 32 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DOTTED
M. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

STATION – ELEVATION ℄		EXCAVATION SUB TOTALS CU. YDS.	EMBANKMENT CU. YDS. SUB TOTALS
		239	168
+50	92.3		
146			
		208	145
+13	91.8		
ENT.			
150			
		74	51
24+00	91.6		
144			
		285	197
+50	91.0		
152			
		91	61
+34	90.8		
ENT.			
160			
		89	78
+19	90.5		
158			
		133	114
23+00	90.4		
218			
		125	84
+84	90.2		
222			
RPM	RPM	208	144
22+53	989.8		
ENT.			
162			

STATION – ELEVATION ℄		EXCAVATION SUB TOTALS CU. YDS.	EMBANKMENT CU. YDS. SUB TOTALS
+50	93.3		
166			
		149	97
+24	93.0		
ENT.			
170			
		144	94
25+00	92.8		
162			
RPM	RPM	48	33
24+92	992.7		
ENT.			
172			

COMMON EXCA.	REG. EMB.	MUCK EXCA.	GRAN. FILL
19,433 CU. YDS.	12,743	1,284 CU. YDS.	978 CU. YDS.
– 16,566 CU. YDS.	x 130%		x 130%
2,867 EXCESS	16,566 CU. YDS.		1,271 CU. YDS.

2867 EXCESS COMMON EXCAVATION
1,284 MUCK EXCAVATION
4,151 C.Y. EXCESS TO BE STOCKPILED IN JOY PARK
SEE SHEET NO. 2 FOR LOCATION

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.
Date 6-7-77 Reg. No. 6782

S.A.P. NO. 62-668-16

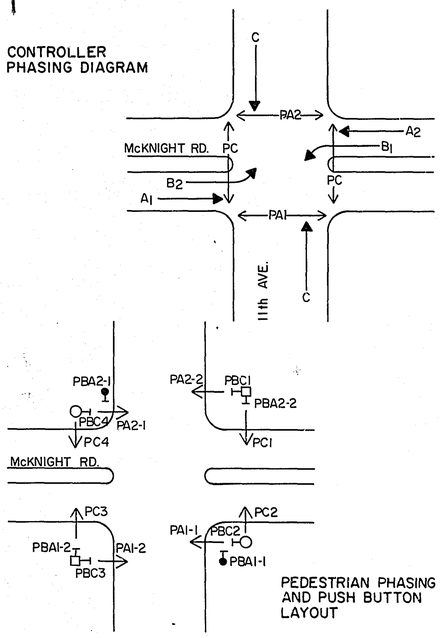
Sheet No. 33 of 34 Sheets

FUNCTIONAL CROSS SECTION - OPEN DOTTED
H. A. ROGERS CO. - MINNEAPOLIS - ST. PAUL

LEGEND OF SYMBOLS

SIGNAL BASE No. (5)
SIGNAL FACE No. (A2)
CONTROLLER AND CABINET
CONTROLLER AND CABINET-INPLACE
HANDHOLE
HANDHOLE-INPLACE
RIGID STEEL CONDUIT (R.S.C.)
RIGID STEEL CONDUIT (R.S.C.)-INPLACE
SIGNAL FACE
SIGNAL FACE WITH BACKGROUND SHIELD
SIGNAL FACE-INPLACE
PEDESTRIAN INDICATIONS
PEDESTRIAN INDICATIONS-INPLACE
PEDESTRIAN PUSH BUTTON ON PEDESTAL OR POLE
PEDESTRIAN PUSH BUTTON STATION
TRAFFIC SIGNAL PEDESTAL
TRAFFIC SIGNAL PEDESTAL-INPLACE
TRAFFIC SIGNAL POLE AND MAST ARM
TRAFFIC SIGNAL POLE AND MAST ARM-INPLACE
MAST ARM AND LUMINAIRE
MAST ARM AND LUMINAIRE-INPLACE
WOOD POLE
WOOD POLE-INPLACE
SOURCE OF POWER
EMERGENCY VEHICLE PRE-EMPTION DETECTOR LOCATION

CONTROLLER PHASING DIAGRAM



PEDESTRIAN PHASING AND PUSH BUTTON LAYOUT

VEHICLE DETECTION

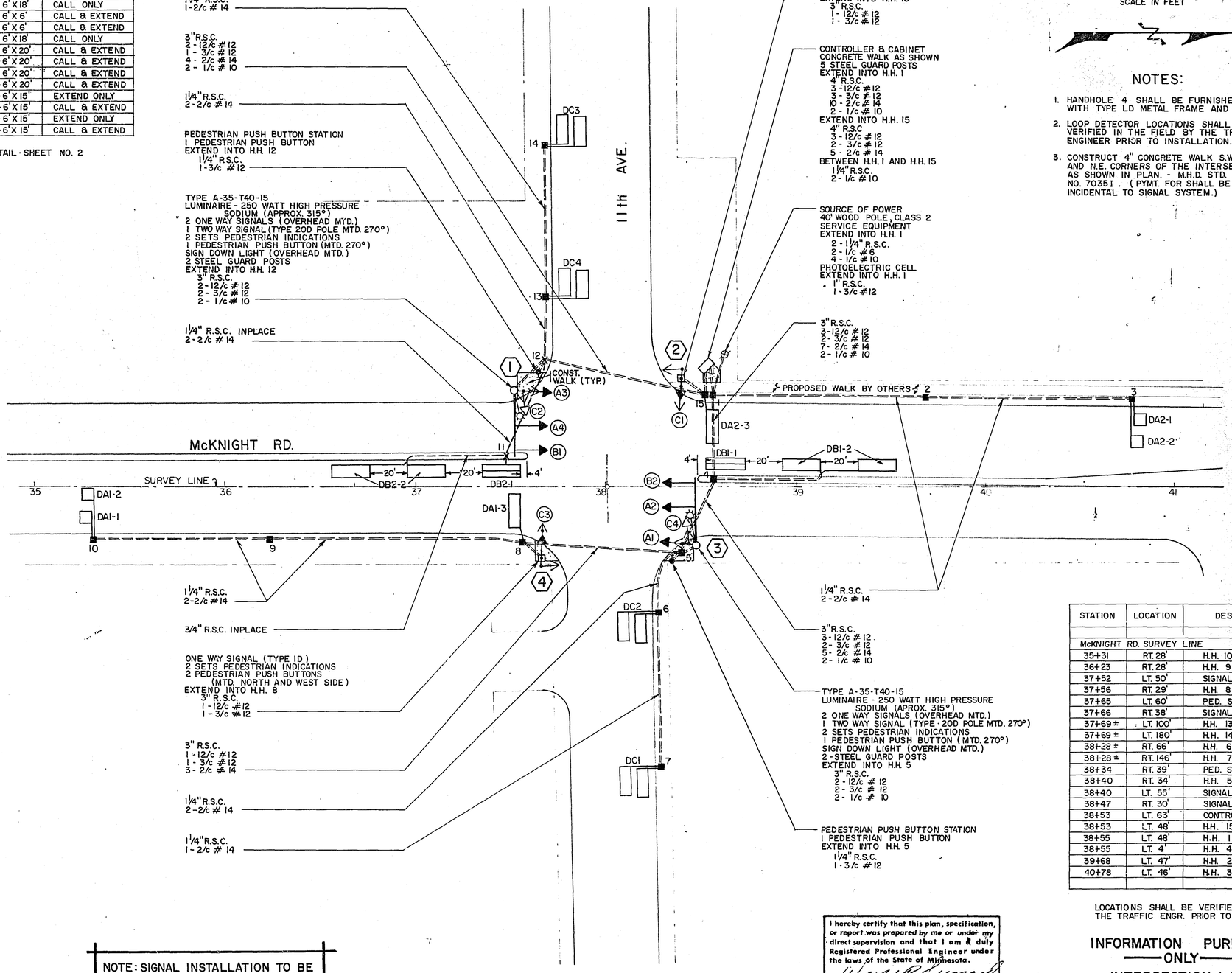
NUMBER	SIZE	REMARKS
DA1-1	6'X6'	CALL & EXTEND
DA1-2	6'X6'	CALL & EXTEND
DA1-3	6'X18'	CALL ONLY
DA2-1	6'X6'	CALL & EXTEND
DA2-2	6'X6'	CALL & EXTEND
DA2-3	6'X18'	CALL ONLY
* DB2-1	6'X20'	CALL & EXTEND
DB2-2	2-6'X20'	CALL & EXTEND
* DB1-1	6'X20'	CALL & EXTEND
DB1-2	2-6'X20'	CALL & EXTEND
DC1	2-6'X15'	EXTEND ONLY
DC2	2-6'X15'	CALL & EXTEND
DC3	2-6'X15'	EXTEND ONLY
DC4	2-6'X15'	CALL & EXTEND

* SEE DETAIL-SHEET NO. 2

SIGNAL INDICATION CHART

FACE	PHASE	FLASH	INDICATION SIZE R	Y	G	←	↑	→
A1	A1	R	12"	12"	12"	–	–	–
* A2	A1	R	12"	12"	12"	–	–	–
A3	A2	R	12"	12"	12"	–	–	–
* A4	A2	R	12"	12"	12"	–	–	–
* B1	B1	R	12"	12"	–	12"	–	–
* B2	B2	R	12"	12"	–	12"	–	–
C1	C	R	12"	12"	12"	–	–	–
C2	C	R	12"	12"	12"	–	–	–
C3	C	R	12"	12"	12"	–	–	–
C4	C	R	12"	12"	12"	–	–	–

* SPECIAL SIGNAL FACES (SEE SPECIAL PROVISIONS)



0 15 30 45 60 75
SCALE IN FEET

NOTES:

1. HANDHOLE 4 SHALL BE FURNISHED WITH TYPE LD METAL FRAME AND COVER.
2. LOOP DETECTOR LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE TRAFFIC ENGINEER PRIOR TO INSTALLATION.
3. CONSTRUCT 4" CONCRETE WALK S.W., S.E., AND N.E. CORNERS OF THE INTERSECTION AS SHOWN IN PLAN. - M.H.D. STD. PLATE NO. 7035I. (PYMT. FOR SHALL BE INCIDENTAL TO SIGNAL SYSTEM.)

STATION	LOCATION	DESCRIPTION
McKNIGHT RD. SURVEY LINE		
35+31	RT. 28'	H.H. 10
36+23	RT. 28'	H.H. 9
37+52	LT. 50'	SIGNAL 1
37+56	RT. 29'	H.H. 8
37+65	LT. 60'	PED. STA.
37+66	RT. 38'	SIGNAL 4
37+69 ±	LT. 100'	H.H. 13
37+69 ±	LT. 180'	H.H. 14
38+28 ±	RT. 66'	H.H. 6
38+28 ±	RT. 146'	H.H. 7
38+34	RT. 39'	PED. STA.
38+40	RT. 34'	H.H. 5
38+40	LT. 55'	SIGNAL 2
38+47	RT. 30'	SIGNAL 3
38+53	LT. 63'	CONTROLLER
38+53	LT. 48'	H.H. 15
38+55	LT. 48'	H.H. 1
38+55	LT. 4'	H.H. 4
39+68	LT. 47'	H.H. 2
40+78	LT. 46'	H.H. 3

LOCATIONS SHALL BE VERIFIED BY THE TRAFFIC ENGR. PRIOR TO INSTALLATION

NOTE: SIGNAL INSTALLATION TO BE LET UNDER SEPARATE CONTRACT CONCURRENT WITH THIS CONTRACT.

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.
Wayne R. Leonard
Date 6-17-77 Reg. No. 5782

INFORMATION PURPOSES ONLY

INTERSECTION LAYOUT
McKNIGHT RD. & 11th AVE.
NOT IN CONTRACT

ACCOUNT NO. 50169

S.A.P. NO. 62-668-15

SHEET NO. 34 OF 34 SHEETS