

CONVENTIONAL SIGNS

STATE LINE	-----
COUNTY LINE	-----
TOWNSHIP OR RANGE LINE	-----
SECTION LINE	-----
QUARTER SECTION LINE	-----
SIXTEENTH LINE	-----
RIGHT OF WAY LINE	-----
PRESERVE RIGHT OF WAY LINE	-----
LOW RIDGE OF ACCESS LINE	-----
PROPERTY LINE (EXISTING)	-----
ACCURATE PLATTED PROPERTY	-----
UNPLATTED OR CITY LIMITS	-----
TRUCK HIGHWAY CENTER LINE	-----
RETAINING WALL	-----
RAILROAD	-----
RAILROAD RIGHT OF WAY LINE	-----
RIVER OR CREEK	-----
DRAIN	-----
SEWERAGE SYSTEM	-----
ELECTRIC POWER LINE	-----
TELEPHONE OR TELEGRAPH LINE	-----
JOINT TELEPHONE AND POWER	-----
CONDUIT	-----
TELEPHONE CABLE AERIAL	-----
TELEPHONE CABLE UNDERGROUND	-----
POWER CABLE UNDERGROUND	-----
SALE SIGN	-----
SIGNAL	-----
STOP SIGN	-----
CURB SIGN	-----
BARBED WIRE FENCE	-----
CHAIN LINK FENCE	-----
RAILROAD SIGN FENCE	-----
STONE WALL OR FENCE	-----
WEDGE	-----
WATER PIPE	-----
SEWER PIPE	-----
DRAIN PIPE	-----
SPRING	-----
WASH	-----
CHIMNEY	-----
DECK	-----
BRUSH	-----
NURSERIES	-----
CATER BUSH	-----
MANHOLE	-----
TREE (STANDARD)	-----
STREET LIGHT	-----
RAILROAD CROSSING SIGN	-----
RAILROAD CROSSING BEEL	-----
ELECTRIC WARNING SIGN	-----
CROSSING GATE	-----
CATTLE GUARD	-----
UNDERPASS (Hatched)	-----
BRIDGE	-----
BUILDING (CONCRETE)	-----
1 FRAME	-----
2 FRAME	-----
3 FRAME	-----
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78 FRAME	-----
79 FRAME	-----
80 FRAME	-----

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS

CONSTRUCTION PLAN FOR GRADING PAVING & STORM SEWER
County State Aid Highway No. 7

Between T.H. 10 And JOHNSON ST. IN ANOKA

From 163.22' SO. OF CENTER SEC. 6, T-31N, R-24W To 1588.49 SO. OF NO. 1/4 COR. SEC. 6, T-31N, R-24W

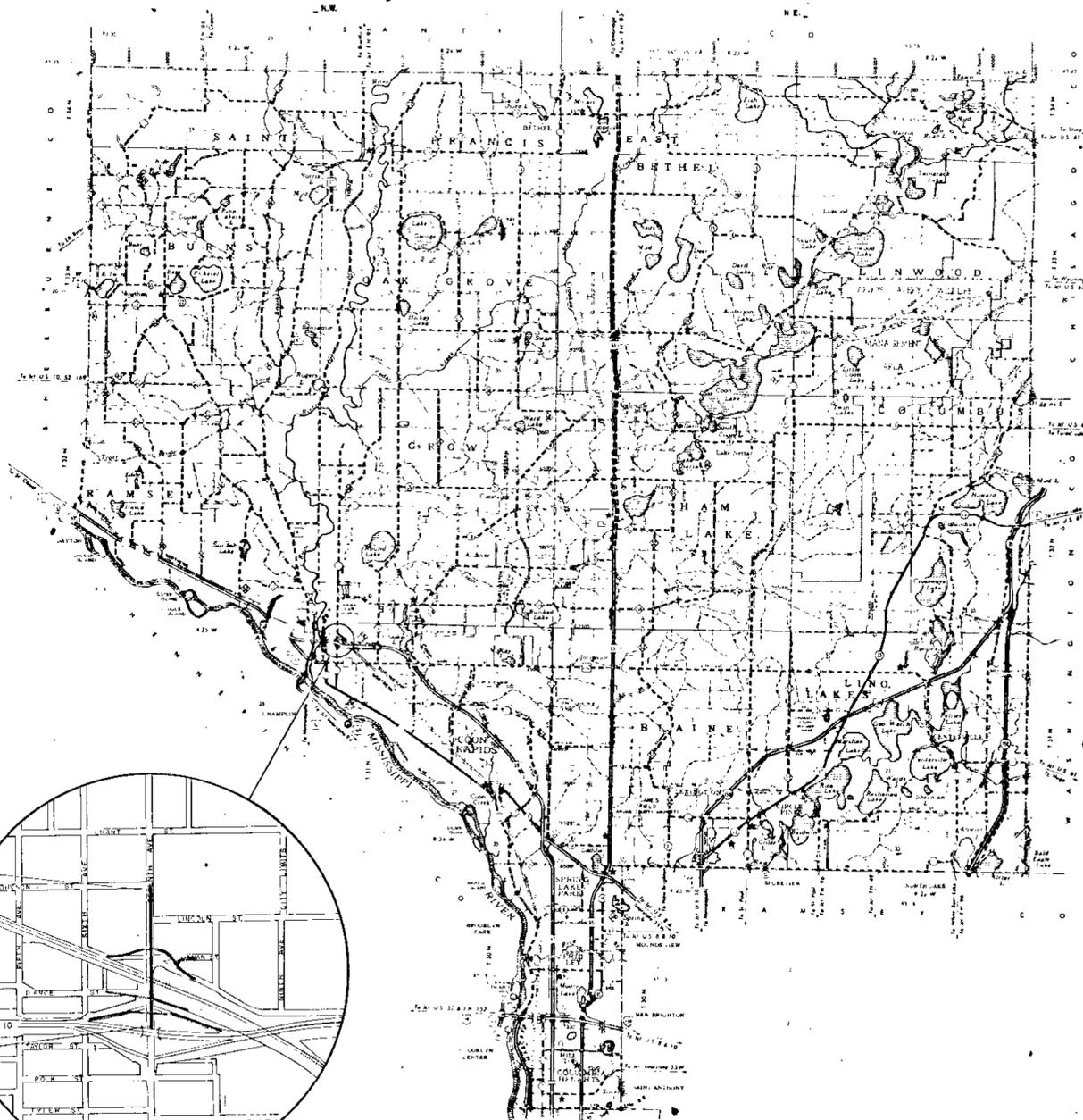
GROSS LENGTH	1300.00	FEET	0.246	MILES
BRIDGES LENGTH	0.00	FEET	0.000	MILES
EXCEPTIONS LENGTH	0.00	FEET	0.000	MILES
NET LENGTH	1300.00	FEET	0.246	MILES

INDEX OF SHEETS

SH. NO.	DESCRIPTION
1	TITLE SHEET & LAYOUT MAP
2	ESTIMATE OF QUANTITIES
3-6	TYPICAL SECTION
7	SUPERELEVATION CHART
8	WATERMAIN & SANITARY SEWER DETAILS
9	LIGHTING DETAILS
10-14	TABULATIONS
15	EXISTING TOPOGRAPHY
16	ALIGNMENT
17	CROSS-SECTION LAYOUT
18-20	7th AVE. DETAILS (20 SCALES)
21-24	PLAN AND PROFILE
23	STORM SEWER PROFILES
26-32	RETAINING WALL DETAILS
33-34	EROSION CONTROL
35-36	ROADSIDE DEVELOPMENT
37	LETTER ROUTES AND SIGNING
38-40	RAILROAD SHOO-FLY ALIGNMENT
41-56	CROSS-SECTIONS
57-80	BRIDGE PLANS (1-24)

SCALES

INDEX MAP	2 MI.
PLAN	50'
PROFILES	50' HORIZ. 5' VERT.
CROSS SECTIONS	10'



END S. P. 02-607-03
STA. 32+00.00

BEGINS. P. 02-607-09
STA. 19+00.00

DESIGN DESIGNATION

ADT (CURRENT YEAR) 1974-8000 SOIL FACTOR :A-3

ADT (FUTURE YEAR) 1995-17,500

HCADT (HEAVY COMMERCIAL) 600-1100

9 Ton Design

Design Speed 45 MPH

Design Speed not achieved at:

STA. _____ TO STA. _____ MPH

STA. _____ TO STA. _____ MPH

SPECIFICATIONS
THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, DATED JAN. 1, 1972 AND AMENDED BY "SUPPLEMENTAL SPECIFICATION" DATED APRIL 1, 1976 SHALL GOVERN.

ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH, IN THE CONSTRUCTION OF THIS PROJECT.

BRW 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.

Lawrence J. Anderson
REG. NO. 9075 DATE 3-18-76

Paul K. Lund
DATE 3-18-76

ANOKA COUNTY REG. NO. 6549

RECOMMENDED FOR APPROVAL *C.E. Wackelbrunn* 5-12-76
DISTRICT STATE AID ENGINEER

RECOMMENDED FOR APPROVAL *Delbert O. Opedahl* 6-2-76
DISTRICT STATE AID ENGINEER

APPROVED *G.B. 76* *William M. Gay*
DATE 7-1-76

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____ DATE _____
DIVISION ADMINISTRATOR

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	ESTIMATED QUANTITIES	FINAL QUANTITIES
2021.501	MOBILIZATION	LUMP SUM	1	
2031.501	FIELD OFFICE TYPE D	EACH	1	
2031.503	FIELD LAB. TYPE A	EACH	1	
2101.502	CLEARING	TREE	147	
2101.507	GRUBBING	TREE	139	
2104.501	REMOVE CURB AND GUTTER	LIN. FT.	5597	
2104.501	REMOVE CURB	LIN. FT.	1466	
2104.501	REMOVE PIPE SEWERS	LIN. FT.	1424	
2104.501	REMOVE WATER MAIN	LIN. FT.	2,036	
2104.503	REMOVE SIDEWALK	SQ. FT.	16,751	
2104.507	REMOVE MASONRY AND CONCRETE STRUCTURES	CU. YD.	692	
2104.509	REMOVE MANHOLES AND CATCH BASINS	EACH	21	
2104.509	REMOVE LIGHT STANDARD BASE	EACH	5	
2104.509	REMOVE SIGNS	EACH	1	
2104.521	SALVAGE CHAIN LINK FENCE	LIN. FT.	1160	
2104.523	SALVAGE LIGHT STANDARD	EACH	5	
2104.523	SALVAGE CASTINGS	EACH	29	
2104.523	SALVAGE CONCRETE APRON	EACH	2	
2105.501	COMMON EXCAVATION	CU. YD.	115,764	
2105.507	SUBGRADE EXCAVATION	CU. YD.	13,394	
2105.525	TOPSOIL BORROW (LV)	CU. YD.	3,993	
2130.501	WATER	1000(M)GAL.	10	
2211.503	AGGREGATE BASE PLACED, CLASS 5 (P)	CU. YD.	3320	
2221.503	AGGREGATE SHOULDERING PLACED, CLASS 5 (P)	CU. YD.	618	
2331.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	163	
2331.510	BINDER COURSE MIXTURE	TON	945	
2331.514	BASE COURSE MIXTURE	TON	3787	
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	56	
2341.508	WEARING COURSE MIXTURE	TON	1006	
2361.504	ASPHALT CEMENT	TON	35	
2361.508	WEARING COURSE MIXTURE	TON	410	
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL.	1620	
2411.501	CONCRETE MIX NO. 1A43	CU. YD.	159	
2411.501	CONCRETE MIX NO. 3Y43	CU. YD.	173	
2411.511	STRUCTURE EXCAVATION CLASS E	CU. YD.	325	
2411.541	REINFORCEMENT BARS	POUND	32,840	
2451.511	COARSE FILTER AGGREGATE (CV)	CU. YD.	183.2	
2452.510	STEEL H PILING DRIVEN	LIN. FT.	3000	
2452.511	STEEL H PILING DELIVERED	LIN. FT.	3000	
2452.520	STEEL H TEST PILES, 70 FT. LG.	EACH	3	
2501.523	INSTALL CONCRETE APRONS	EACH	2	
2502.521	6" C.S. PIPE DRAIN	LIN. FT.	20	
2502.541	6" PERF. C.S. PIPE DRAIN	LIN. FT.	750	
2502.541	10" PERF. C.S. PIPE DRAIN	LIN. FT.	155	
2502.551	C.S. INSPECTION TEES	LIN. FT.	20	
2503.541	12" R.C. PIPE SEWER, DES. 3006 CL IV	LIN. FT.	1027	
2503.541	15" R.C. PIPE SEWER, DES. 3006 CL III	LIN. FT.	404	
2503.541	15" R.C. PIPE SEWER, DES. 3006 CL IV	LIN. FT.	205	
2503.541	18" R.C. PIPE SEWER, DES. 3006 CL III	LIN. FT.	170	
2503.541	24" R.C. PIPE SEWER, DES. 3006 CL IV	LIN. FT.	144	
2503.541	30" R.C. PIPE SEWER, DES. 3006	LIN. FT.	166	
2503.541	30" R.C. PIPE SEWER, DES. 3006 CL IV	LIN. FT.	132	
2503.541	36" R.C. PIPE SEWER, DES. 3006	LIN. FT.	110	
2503.511	8" V.C. PIPE SEWER, EXTRA STRENGTH	LIN. FT.	311	
0503.605	4" CAST IRON PIPE SEWER	LIN. FT.	276	
2503.511	12" C.S. PIPE SEWER	LIN. FT.	243	
0504.601	6" WATERMAIN, DUCTILE IRON	LIN. FT.	2816	
0504.612	1" COPPER WATER SERVICE CONNECTION	LIN. FT.	577	
0504.614	6" HYDRANT	HYDRANT	5	
0504.620	CAST IRON FITTINGS	POUND	1905	
0504.622	6" WATER GATE VALVES	VALVE	12	
0504.630	1" CORPORATION	CONN.	17	
0504.634	1" WATER VALVE AND BOX	ASSEMBLY	17	
0504.666	INSTALL HYDRANT	EACH	1	
0504.679	ADJUST VALVE BOX	BOX	4	
0504.677	ADJUST WATER STOP BOX	EACH	3	

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	ESTIMATED QUANTITIES	FINAL QUANTITIES
2506.506	CONSTRUCT MANHOLES DESIGN A OR F	LIN. FT.	48.6	
2506.506	CONSTRUCT MANHOLES DESIGN C OR G	LIN. FT.	8.8	
2506.506	CONSTRUCT MANHOLES DESIGN SPECIAL I	LIN. FT.	25.0	
2506.507	CONSTRUCT CATCH BASINS DESIGN A OR F	LIN. FT.	31.9	
2506.507	CONSTRUCT CATCH BASINS DESIGN C OR G	LIN. FT.	105.2	
2506.507	CONSTRUCT CATCH BASINS DESIGN H	LIN. FT.	25.1	
2506.507	CONSTRUCT CATCH BASINS DESIGN 48-4019	LIN. FT.	8.6	
2506.511	RECONSTRUCT MANHOLES	LIN. FT.	6.8	
2506.512	RECONSTRUCT CATCH BASINS	LIN. FT.	5.0	
2506.516	CASTING ASSEMBLIES	EACH	49	
2506.521	INSTALL CASTINGS	EACH	16	
2506.522	ADJUST FRAME AND GRATE CASTINGS	EACH	4	
2511.501	RANDOM RIPRAP, CL. A	CU. YD.	3.4	
2511.504	FILTER BLANKET, TYPE I	CU. YD.	1.8	
2521.501	4" CONCRETE WALK	SQ. FT.	21,542	
2531.501	CONCRETE CURB AND GUTTER DESIGN B618	LIN. FT.	4024	
2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN. FT.	4268	
2531.501	CONCRETE CURB AND GUTTER DESIGN D	LIN. FT.	2691	
2531.507	6" CONC. DRIVEWAY PAVEMENT	SQ. YD.	81	
2531.507	8" CONC. DRIVEWAY PAVEMENT	SQ. YD.	45	
2535.501	BITUMINOUS CURB	LIN. FT.	810	
2554.501	TRAFFIC BARRIER DESIGN A8307	LIN. FT.	300	
2554.501	TRAFFIC BARRIER DESIGN B8307	LIN. FT.	100	
2557.604	INSTALL CHAIN LINK FENCE	LIN. FT.	910	
2564.531	FURNISH AND INSTALL SIGN PANELS, TYPE C	SQ. FT.	94	
0563.623	TRAFFIC CONTROL	LUMP SUM	1	
2571.501	BLACK HILLS SPRUCE, 7'-8' HI, BB	TREE	36	
2571.502	NORWAY MAPLE, 3 1/2"-4" CAL., BB	TREE	7	
2571.502	GREEN ASH, 3 1/2"-4" CAL., BB	TREE	11	
2571.502	LITTLELEAF LINDEN, 3 1/2"-4" CAL., BB	TREE	7	
2571.503	AMUR MAPLE, 1 1/2"-2" CAL., BB	TREE	6	
2571.503	RUSSIAN OLIVE, 1 1/2"-2" CAL., BB	TREE	14	
2571.503	CANADA RED CHERRY, 1 1/2"-2" CAL., BB	TREE	8	
2571.505	RED TWIG DOGWOOD, 4'-5' HI, BB	SHRUB	68	
2571.505	ZABELS HONEYSUCKLE, 4'-5' HI, BB	SHRUB	68	
2571.505	GOLDEN NINEBARK, 4'-5' HI, BB	SHRUB	34	
2571.505	GOLDEN MOCK ORANGE, 4'-5' HI, BB	SHRUB	34	
2571.507	CROWN VETCH, 2 YR. POTTED	PLANT	2960	
2575.505	SODDING	SQ. YD.	35,700	
2575.531	COMMERCIAL FERTILIZER, ANALYSIS (10-20-20)	TON	1.3	
0411.608	STONE RETAINING WALL	SQ. FT.	153	
2545.501	ELECTRIC LIGHTING SYSTEM	LUMP SUM	1	
2545.521	3" RIGID STEEL CONDUIT SIGNAL	LIN. FT.	336	
2545.553	PULL BOXES, SIGNAL	EACH	6	
0331.613	SAWING BITUMINOUS PAVEMENT SURFACE	LIN. FT.	340	
0412.614	METAL EDGING	LIN. FT.	1245	
2118.502	AGGREGATE SURFACING, CL. 2	CU. YD.	200	
2569.521	4" WIDE SOLID LINE	ROAD STA.	5.6	
0569.601	4" WIDE SKIP LINE	ROAD STA.	2.6	
0569.614	PAVEMENT MESSAGE	EACH	4	
2402.583	ORNAMENTAL METAL RAILING	LIN. FT.	155	

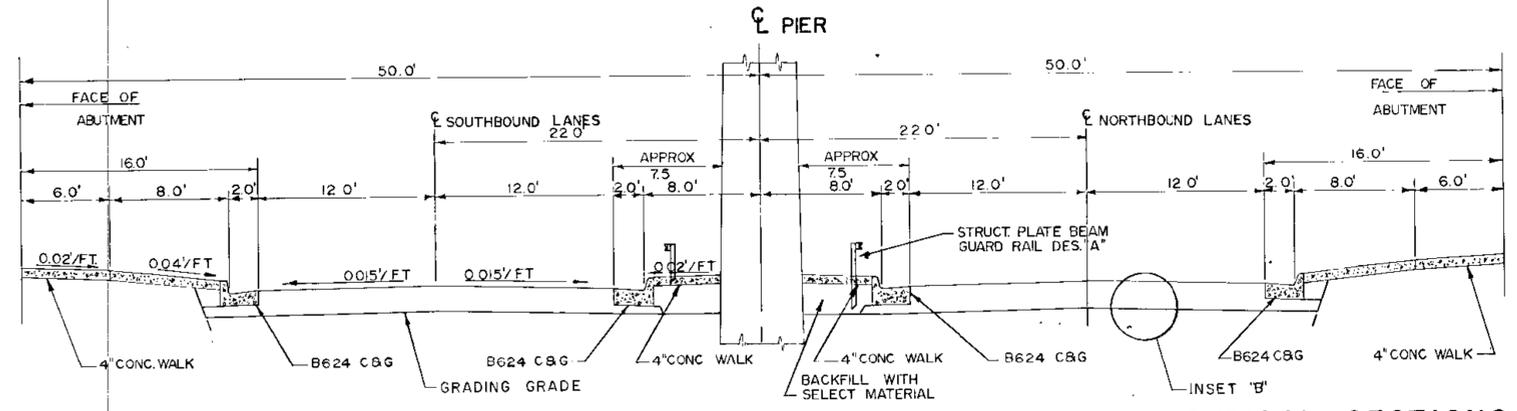
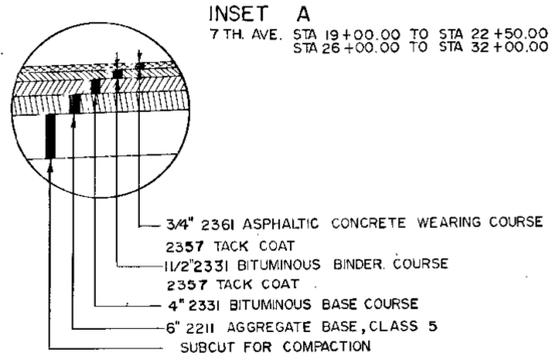
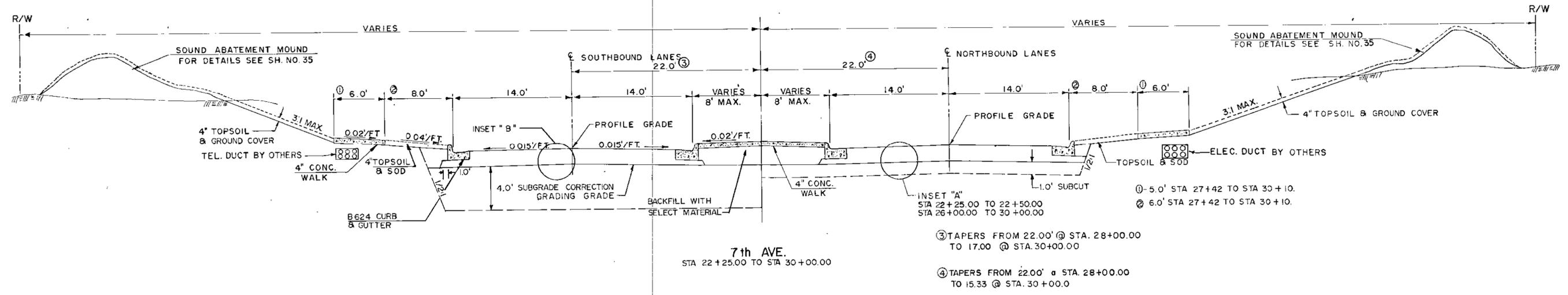
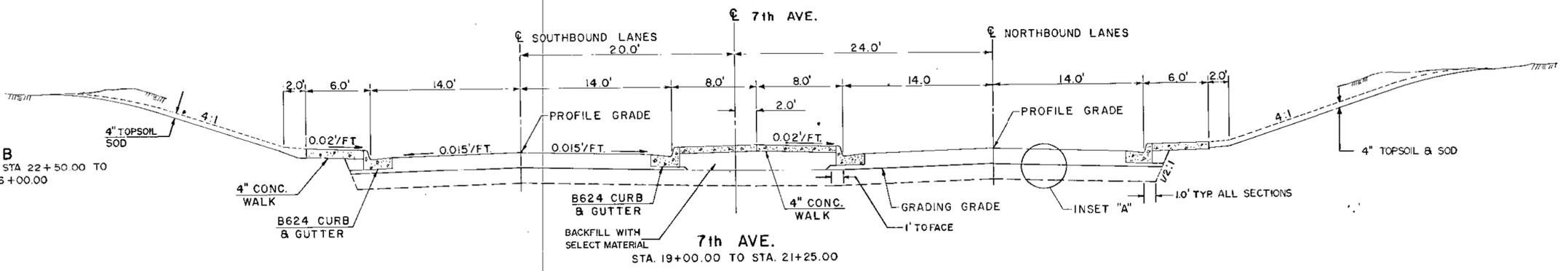
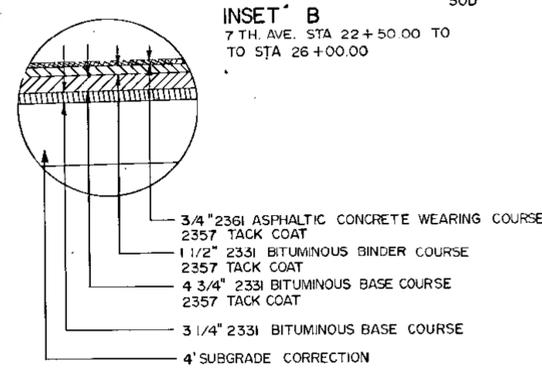
CONSTRUCTION NOTES

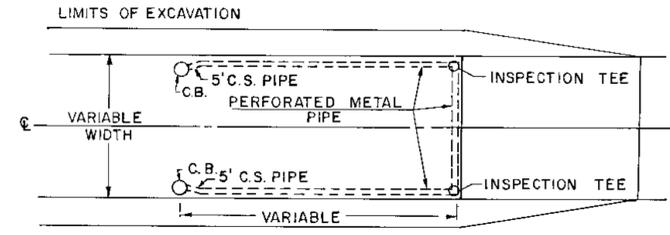
- ① INCLUDES 755 LIN. FT. OF 6" V.C.P. BELOW LIMITS OF NORMAL EXCAVATION
- ② INCLUDES 7725 CU. YD. OF UNSUITABLE MATERIAL
- ③ INCLUDES 1-7'30" ELBOW
- ④ INCLUDES 2 TONS FOR DRIVEWAYS
- ⑤ INCLUDES 42 TONS FOR DRIVEWAYS
- ⑥ 2 YR. PLANTS @ 6' O.C. (30 PLANTS PER 1000 S.F.)
- ⑦ FERTILIZE SODDED AREAS AT THE RATE 350 POUNDS PER ACRE OR ITS EQUIVALENT.
- ⑧ FOR DRIVEWAY RESTORATION
- ⑨ INCLUDES 5093 CU. YD. FOR RAILROAD SHOULDER.
- ⑩ ONLY
- ⑪ SOD ALL DISTURBED AREAS NOT TO BE LANDSCAPED
- ⑫ 8" HEIGHT

BASIS FOR PLANNED QUANTITIES

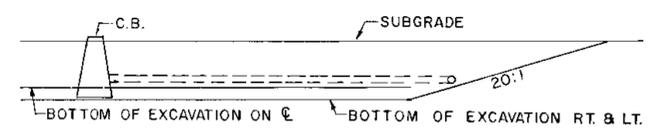
- BITUMINOUS BASE COURSE (2331)
BITUMINOUS MIXTURE 115 POUNDS/SQ. YD./IN. OF DEPTH
BITUMINOUS MATERIAL 4% OF MIXTURE BY WEIGHT
- BITUMINOUS BINDER COURSE (2331)
BITUMINOUS MIXTURE 115 POUNDS/SQ. YD./IN. OF DEPTH
BITUMINOUS MIXTURE 4 1/2% OF MIXTURE BY WEIGHT
- BITUMINOUS WEARING COURSE (2341)
BITUMINOUS MIXTURE 120 POUNDS/SQ. YD./IN. OF DEPTH
BITUMINOUS MATERIAL 4 1/2% OF MIXTURE BY WEIGHT
- BITUMINOUS TACK COAT (2357)
BITUMINOUS MATERIAL 0.05 GAL./SQ. YD./COURSE
- BITUMINOUS WEARING COURSE (2361)
BITUMINOUS MIXTURE 100 POUNDS/SQ. YD./IN. OF DEPTH
ASPHALT CEMENT 8 1/2% OF MIXTURE BY WEIGHT

ESTIMATED QUANTITIES

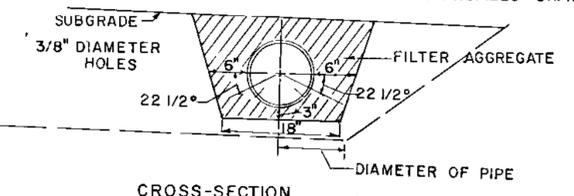




PLAN

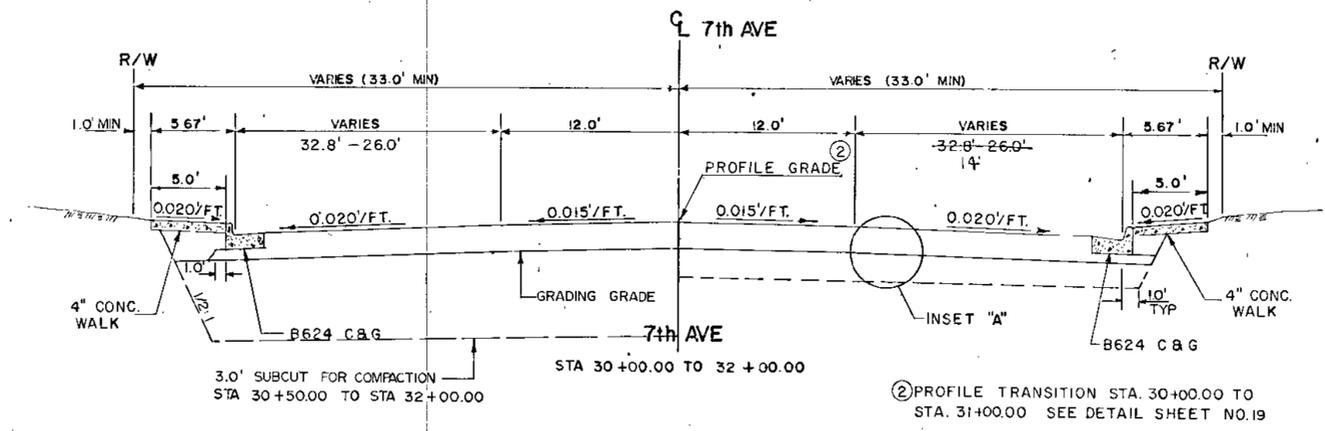


PROFILE (SEE STORM SEWER PROFILES SH. NO. 25)

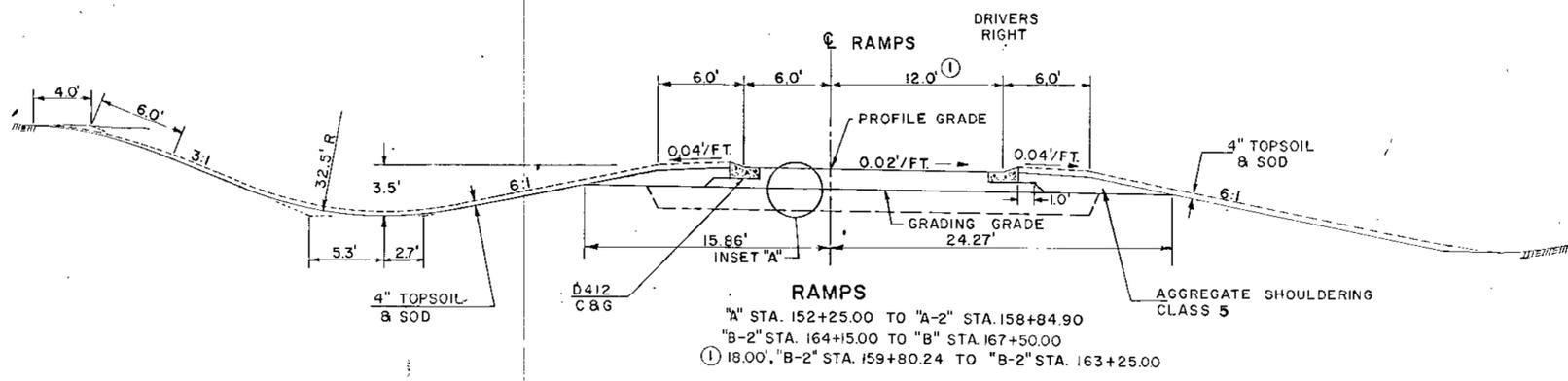


CROSS-SECTION

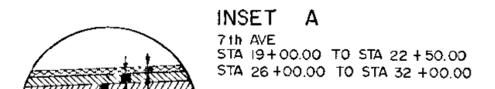
INSTALLATION OF PERFORATED DRAINAGE PIPE



② PROFILE TRANSITION STA. 30+00.00 TO STA. 31+00.00 SEE DETAIL SHEET NO. 19

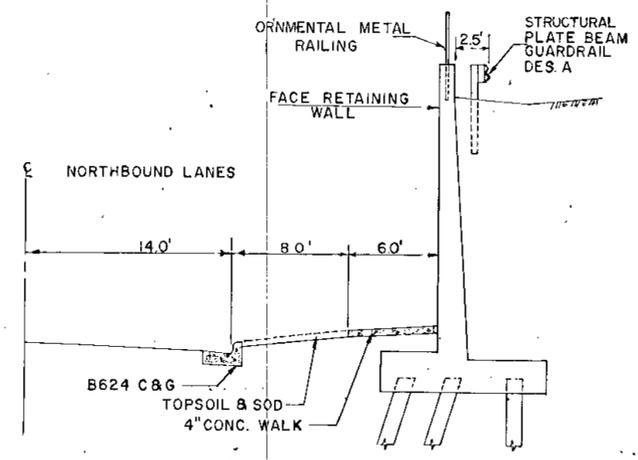


RAMPS
 "A" STA. 152+25.00 TO "A-2" STA. 158+84.90
 "B-2" STA. 164+15.00 TO "B" STA. 167+50.00
 ① 18.00', "B-2" STA. 159+80.24 TO "B-2" STA. 163+25.00

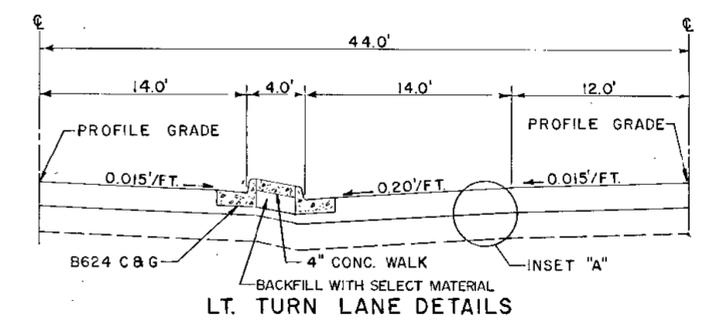


INSET A
 7th AVE
 STA 19+00.00 TO STA 22+50.00
 STA 26+00.00 TO STA 32+00.00

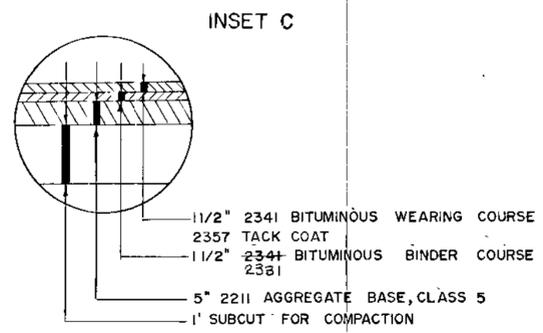
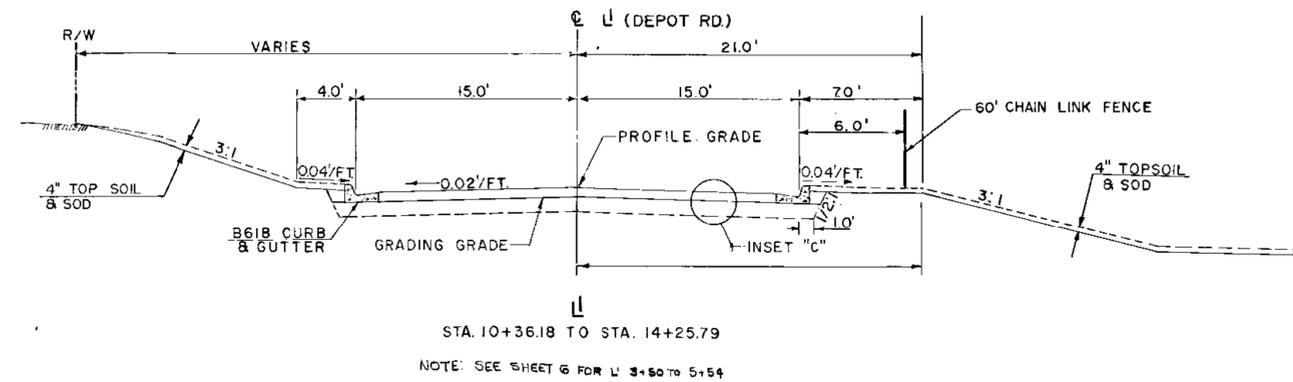
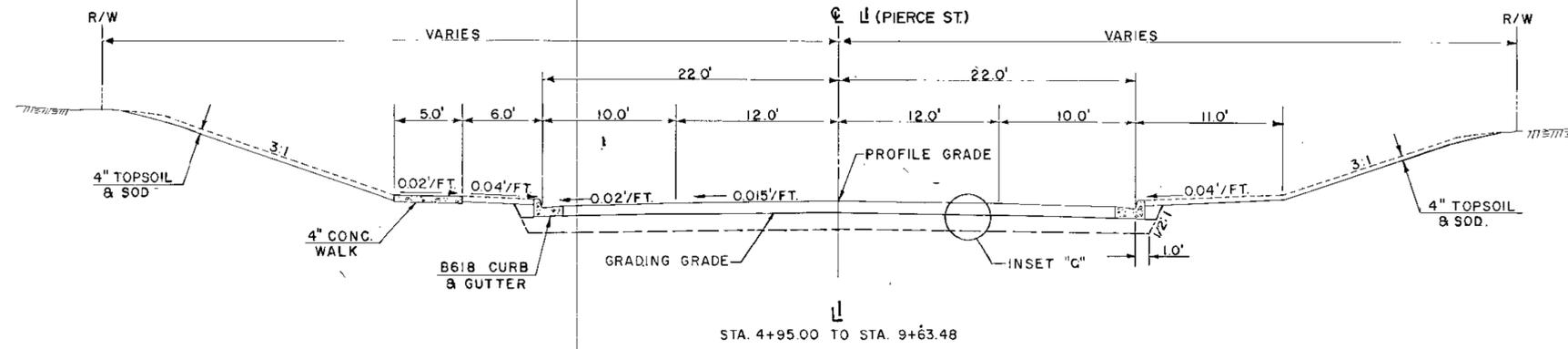
- 3/4" 2361 ASPHALTIC CONCRETE WEARING COURSE
- 2357 BITUMINOUS TACK COAT
- 1 1/2" 2331 BITUMINOUS BINDER COURSE
- 2357 BITUMINOUS TACK COAT
- 4" 2331 BITUMINOUS BASE COURSE
- 6" 2211 AGGREGATE BASE, CLASS 5
- SUBCUT FOR COMPACTION



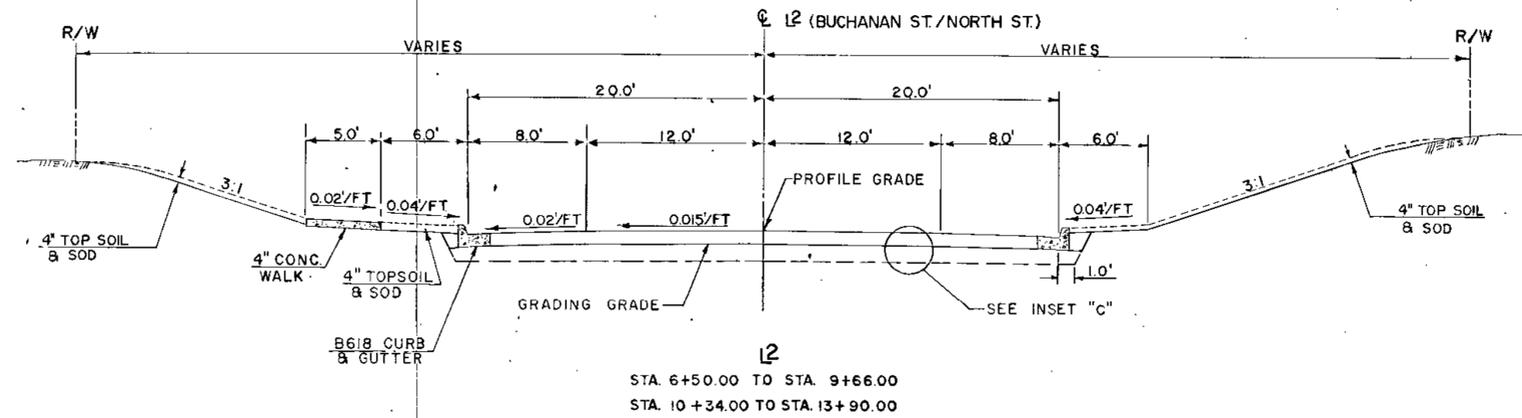
7th AVE.
 RETAINING WALL
 STA. 24+67.50 TO STA. 26+48.50
 SEE SHEET NO. 26-32 FOR DETAILS



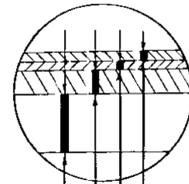
TYPICAL SECTIONS
 7TH AVE.
 LT. TURN LANE
 RAMPS



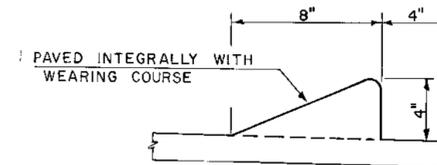
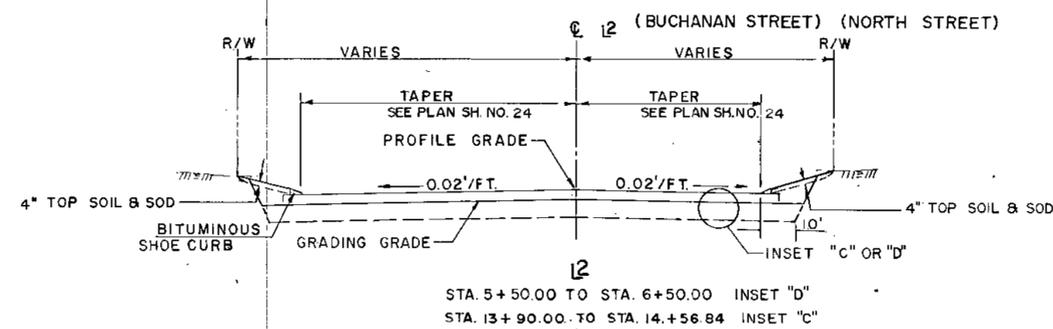
TYPICAL SECTIONS



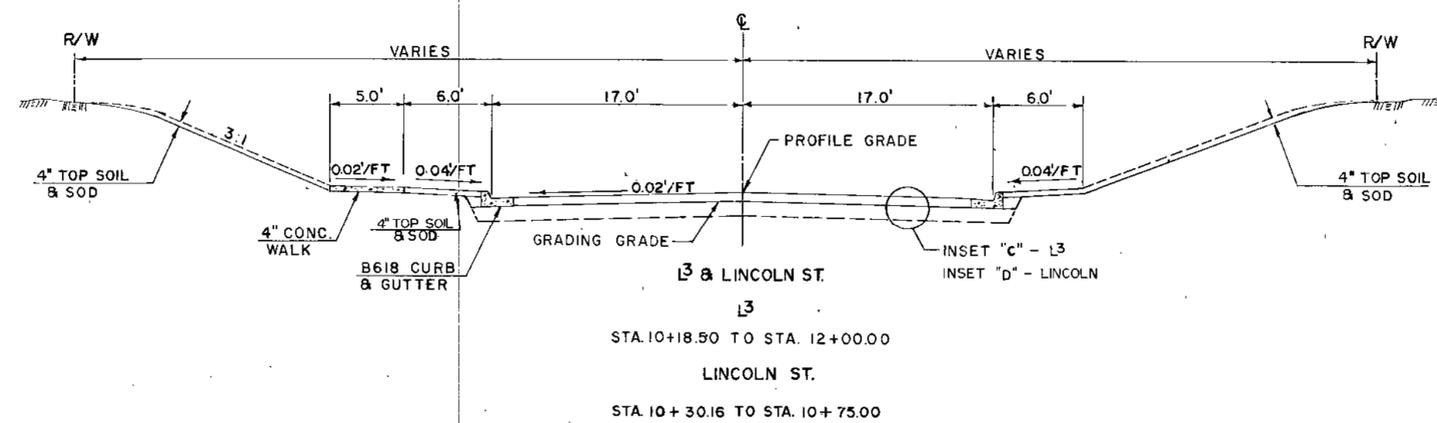
INSET C



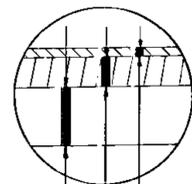
- 1 1/2" 2341 BITUMINOUS WEARING COURSE
- 2357 TACK COAT
- 1 1/2" 2331 BITUMINOUS BINDER COURSE
- 5" 2211 AGGREGATE BASE, CLASS 5
- 1' SUBCUT FOR COMPACTION



SUGGESTED SHOE CURB DETAIL
NOTE: CONTRACTOR MAY MODIFY DESIGN IF APPROVED BY ENGINEER



INSET D

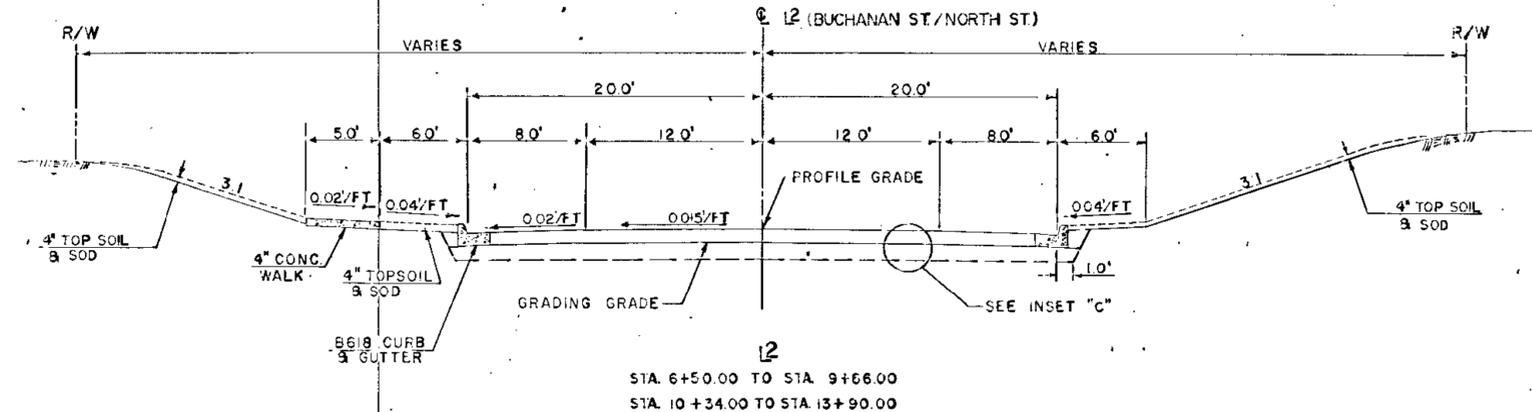


- 2" 2341 BITUMINOUS WEARING COURSE
- 6" 2211 AGGREGATE BASE, CLASS 5
- 1' SUBCUT FOR COMPACTION

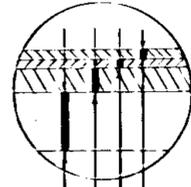
TYPICAL SECTIONS

12 USE SHEET 6A
13 REVISED 9-19-77

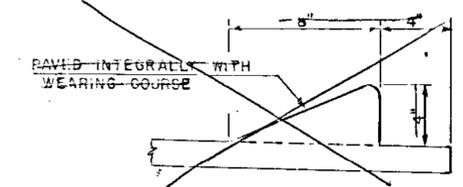
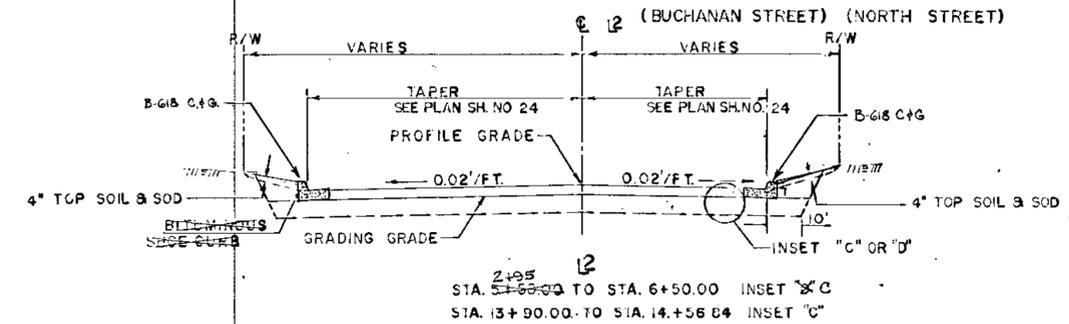
LINCOLN ST.



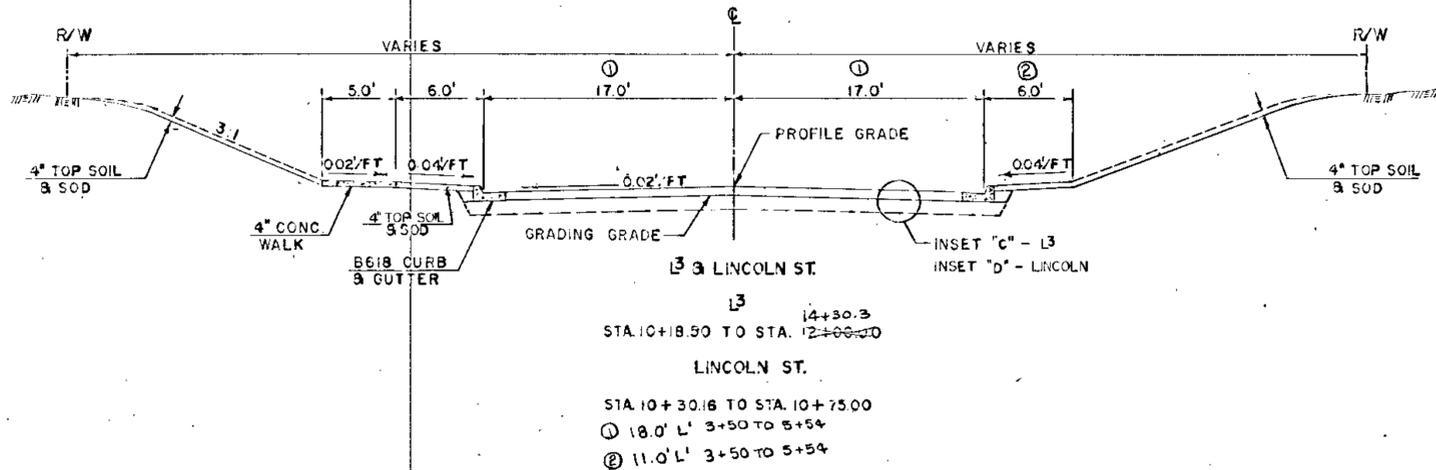
INSET C



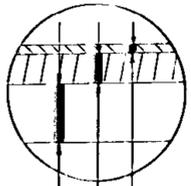
1 1/2" 2341 BITUMINOUS WEARING COURSE
 2357 TACK COAT
 1 1/2" 2331 BITUMINOUS BINDER COURSE
 5" 2211 AGGREGATE BASE, CLASS 5
 1" SUBCUT FOR COMPACTION



SUGGESTED SHOE CURB DETAIL
 NOTED: CONTRACTOR MAY MODIFY DESIGN IF APPROVED BY ENGINEER



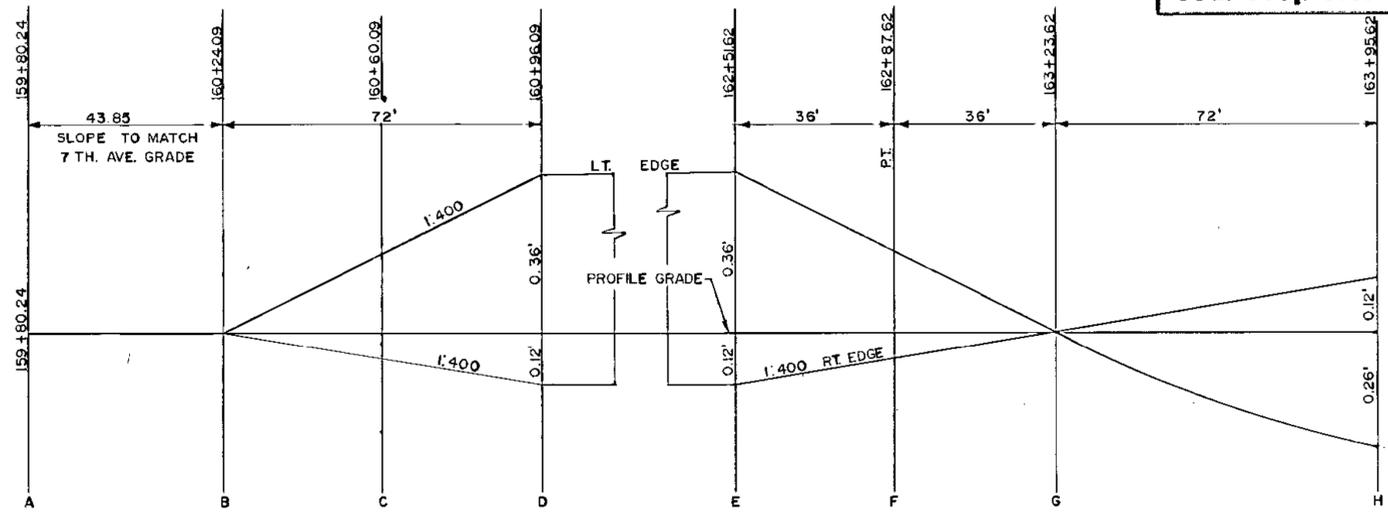
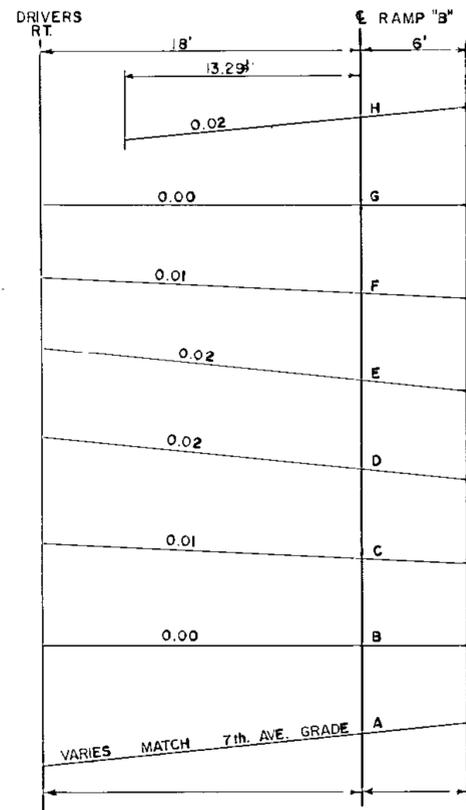
INSET D



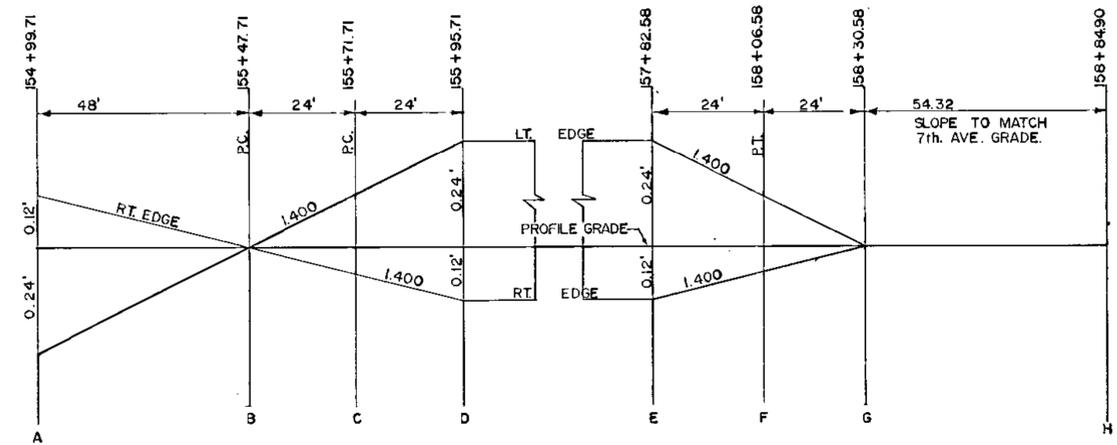
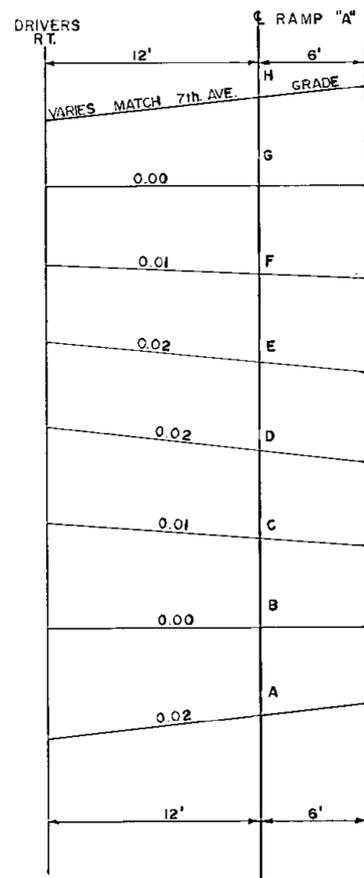
2" 2341 BITUMINOUS WEARING COURSE
 6" 2211 AGGREGATE BASE, CLASS 5
 1" SUBCUT FOR COMPACTION

TYPICAL SECTIONS

L2
 L3
 LINCOLN ST.
 REV 9-19-77
 C.O. # 3



RAMP "B" SUPER CHART



RAMP "A" SUPER CHART

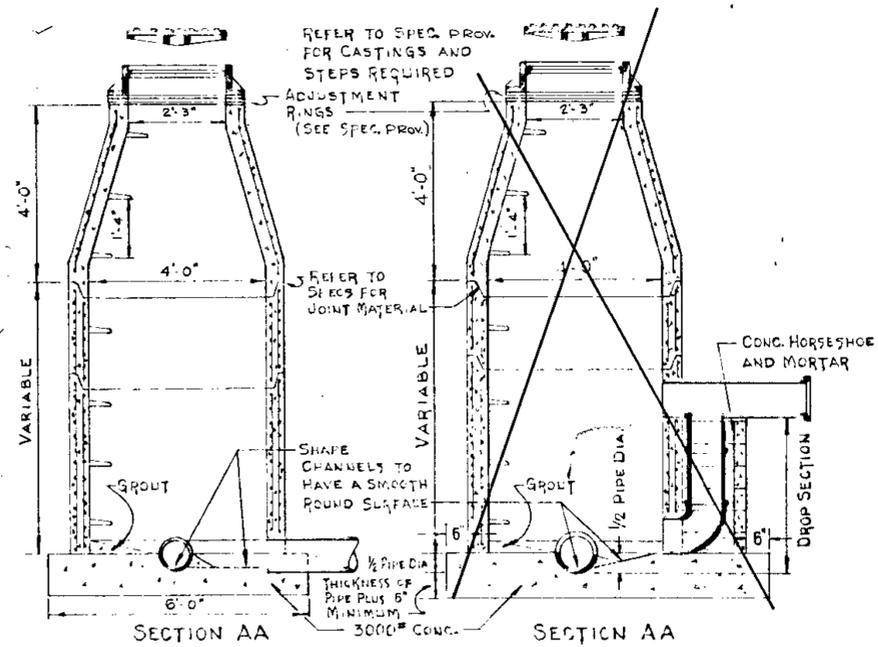
PLAN

EXISTING	CHECKED
PROPOSED	CHECKED
ALIGNMENT	CHECKED
DESIGN APPROVAL	CHECKED

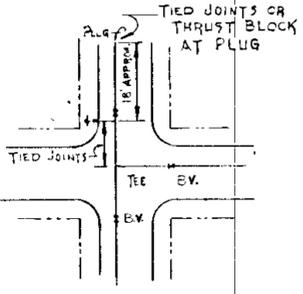
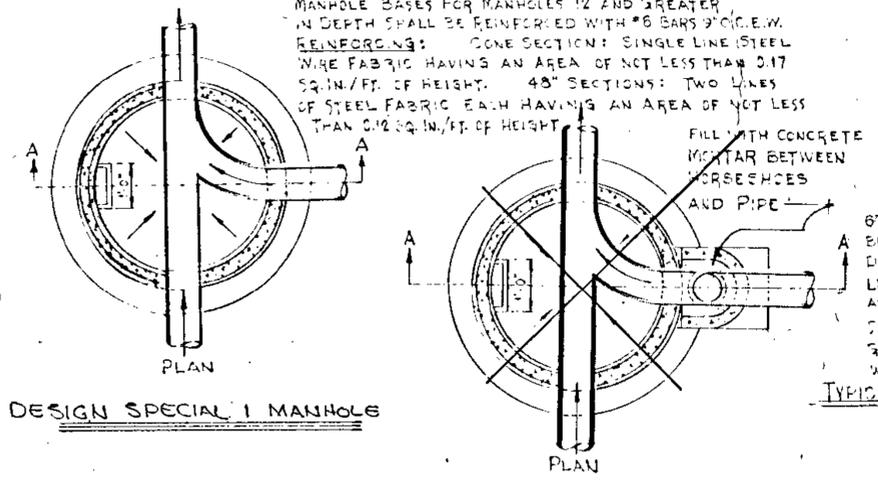
PROFILE

EXISTING	CHECKED
PROPOSED	CHECKED
GRADES	CHECKED
SEWER	CHECKED

SUPERELEVATION CHART
 AXIS ROTATION AT C



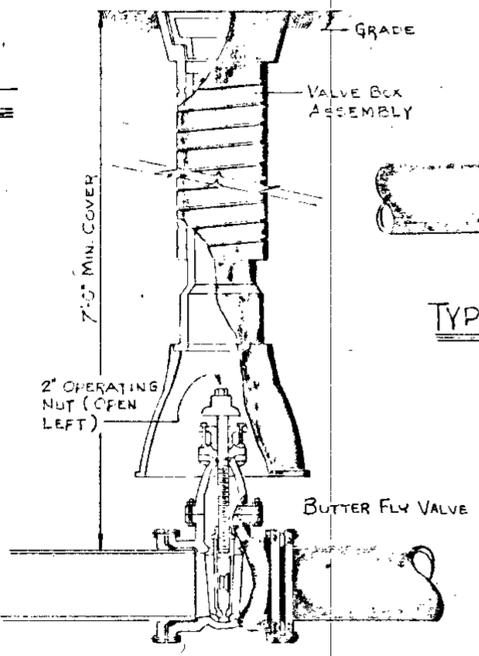
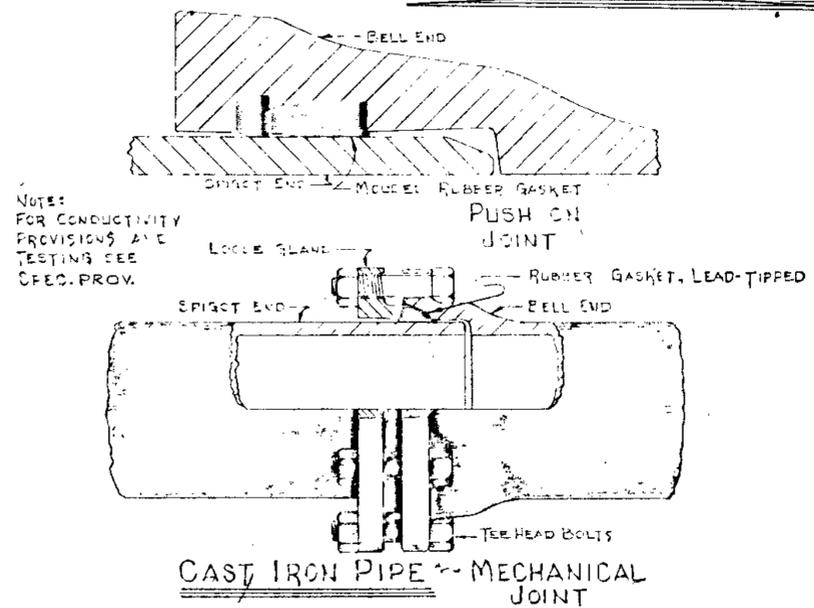
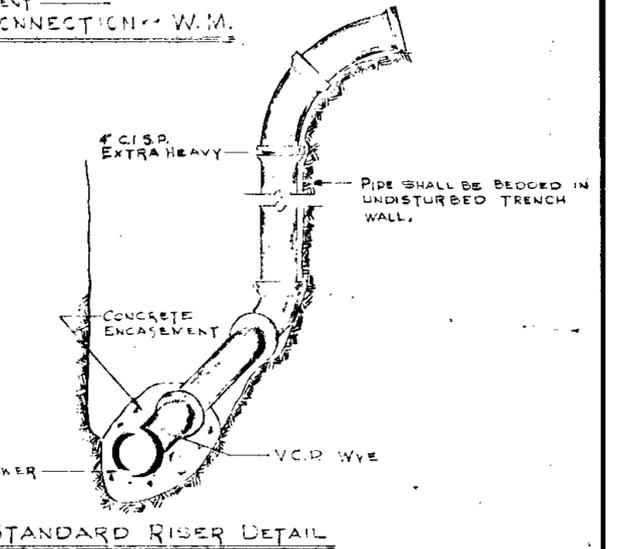
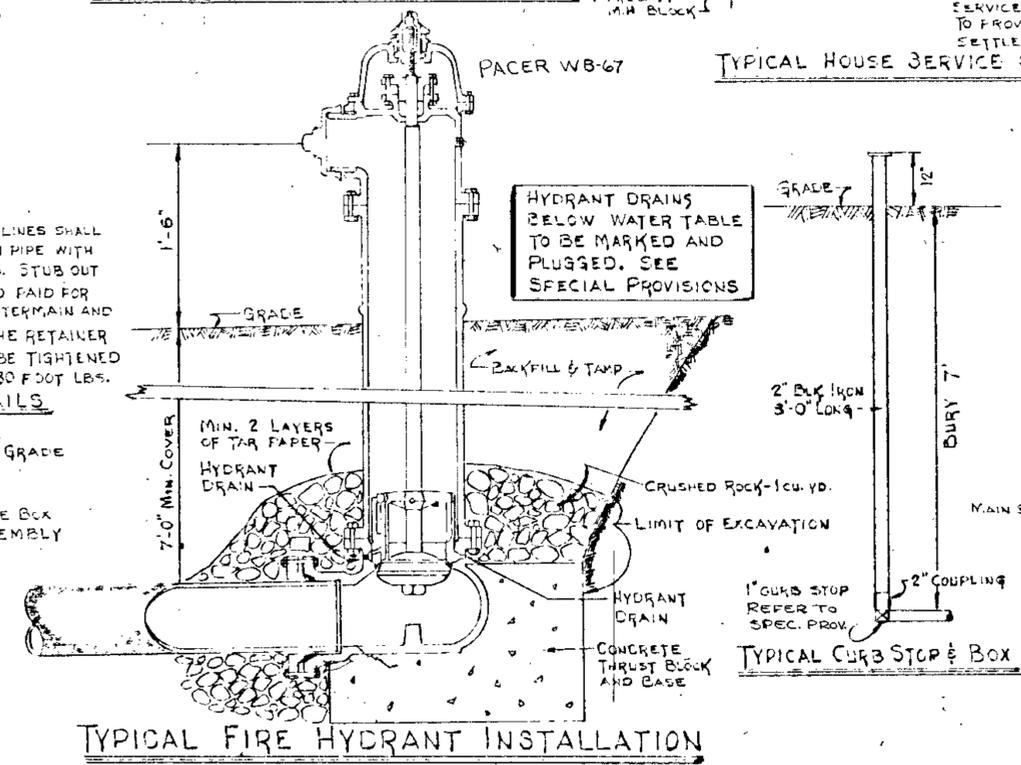
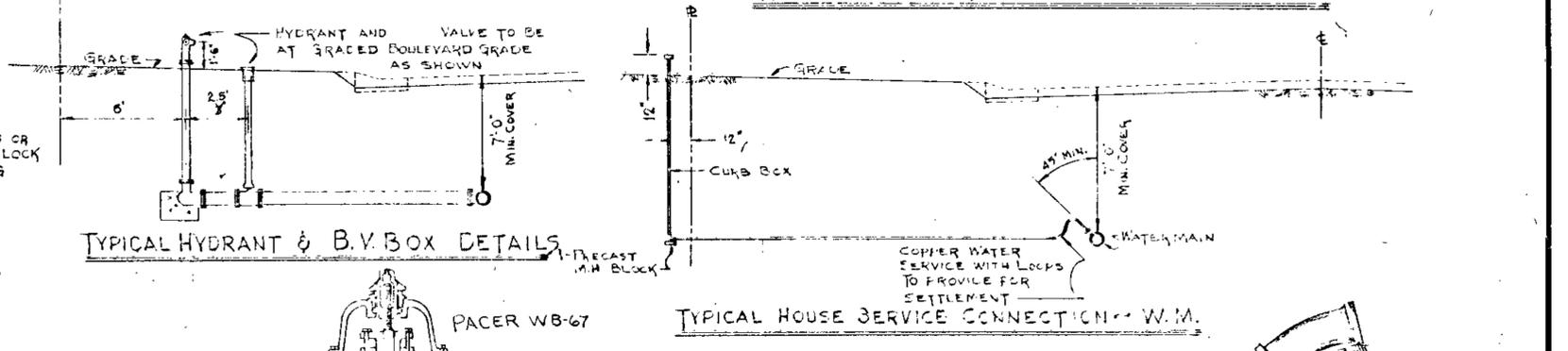
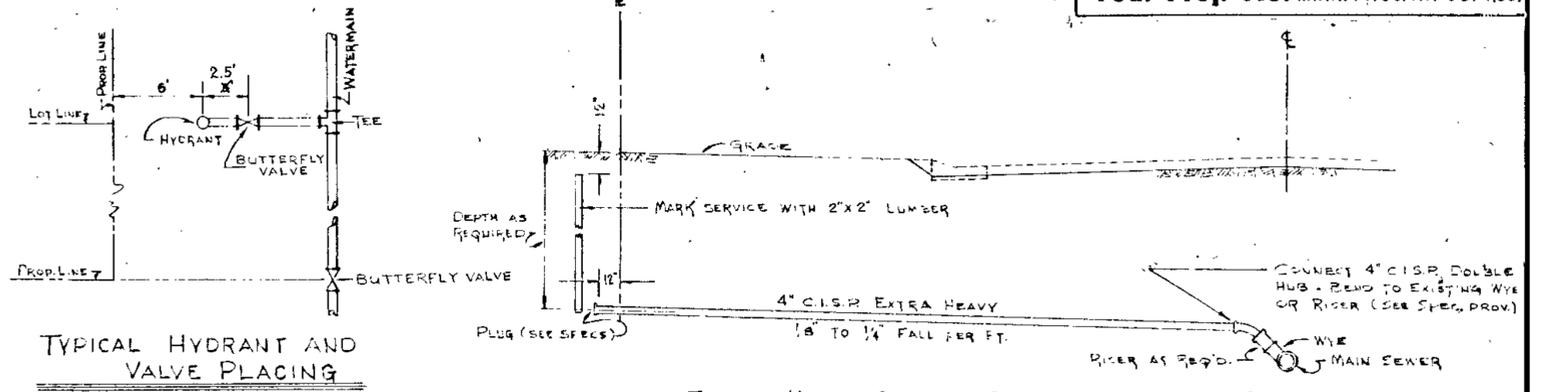
MANHOLE BASES FOR MANHOLES 12" AND GREATER IN DEPTH SHALL BE REINFORCED WITH #6 BARS 3" O.C.E.W. REINFORCING: CONE SECTION: SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.17 SQ. IN./FT. OF HEIGHT. 48" SECTIONS: TWO LINES OF STEEL FABRIC EACH HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN./FT. OF HEIGHT.



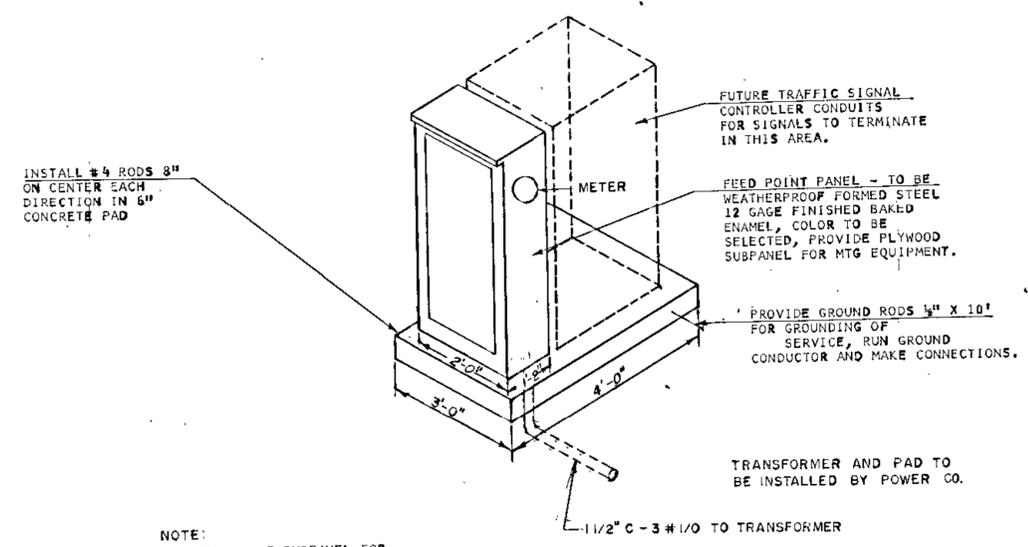
PIPE DIAMETER	6"	8"	10"
SET SCREWS PER GLAND	6	8	16

6", 8" AND 10" STUB-OUT DEAD END LINES SHALL BE MECHANICAL JOINT CAST IRON PIPE WITH DUCTILE IRON RETAINER GLANDS. STUB OUT LINES SHALL BE MEASURED AND PAID FOR AS THE PRICE BID FOR C.I.P. WATERMAIN AND SHALL INCLUDE THE COST OF THE RETAINER GLANDS. SET SCREWS SHALL BE TIGHTENED WITH A TORQUE WRENCH TO 80 FOOT LBS.

TYPICAL "DEAD END" PIPE DETAILS

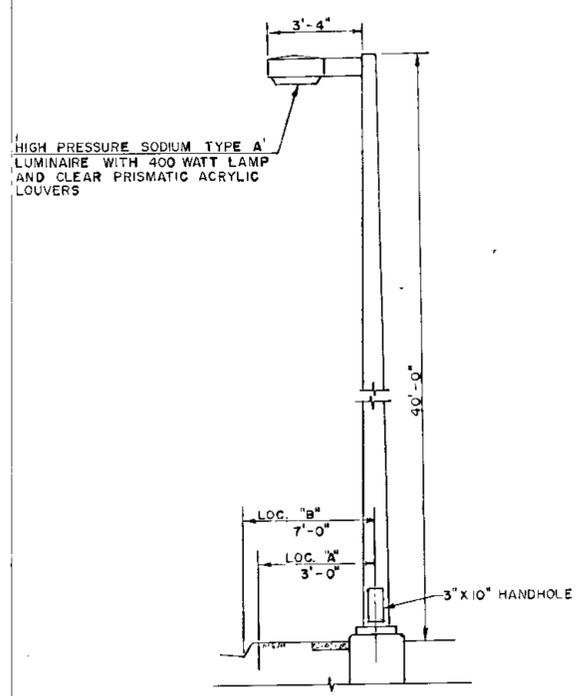


WATERMAIN AND SANITARY SEWER DETAILS CITY OF ANOKA STANDARDS

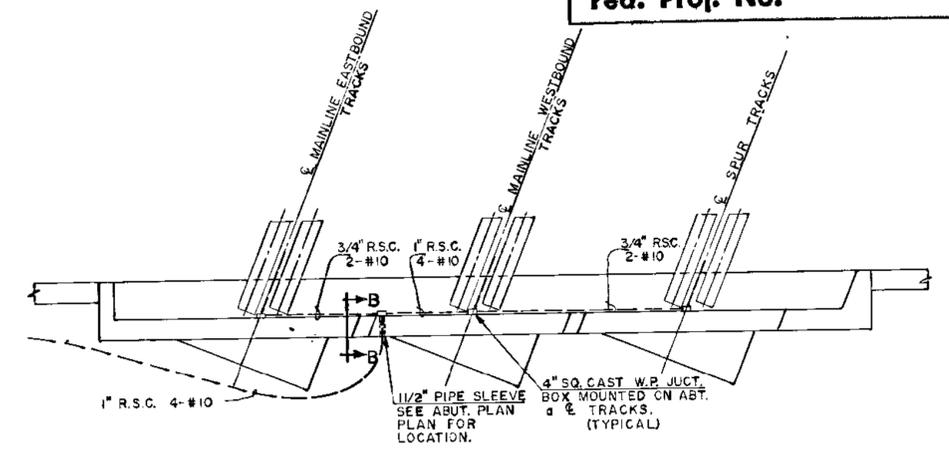


NOTE:
SEE DETAIL OF SUBPANEL FOR
EQUIPMENT REQUIRED.
PROVIDE 1/2" X 10" COPPER GROUND ROD.

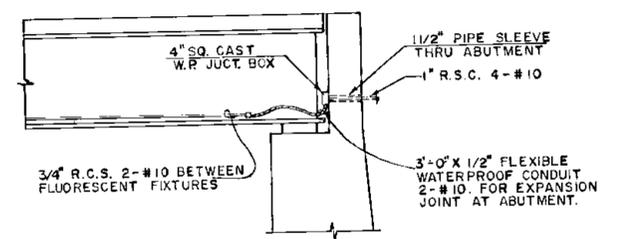
FEED POINT PEDESTAL DETAIL



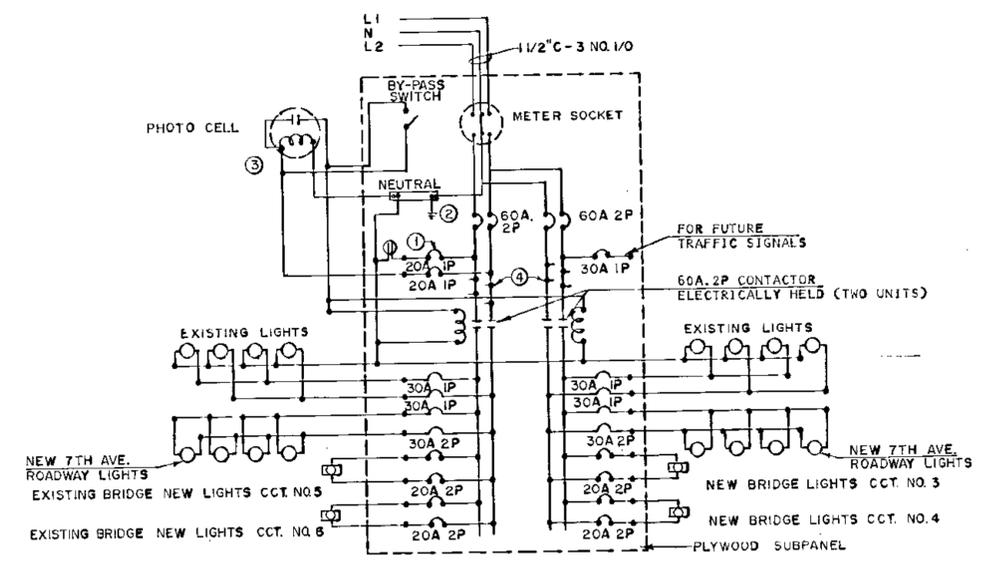
FIXTURE DETAILS



CONDUIT DETAILS AT ABUTMENT

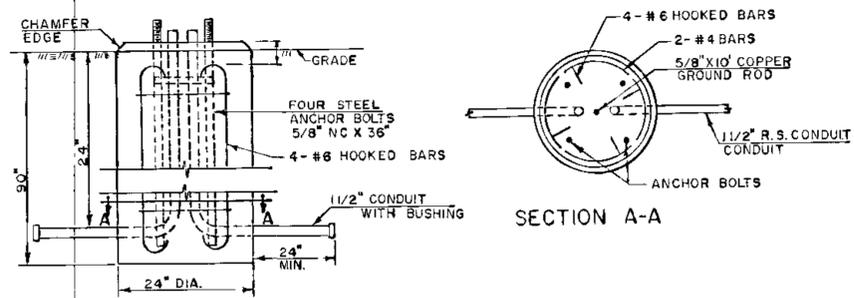


SECTION B-B

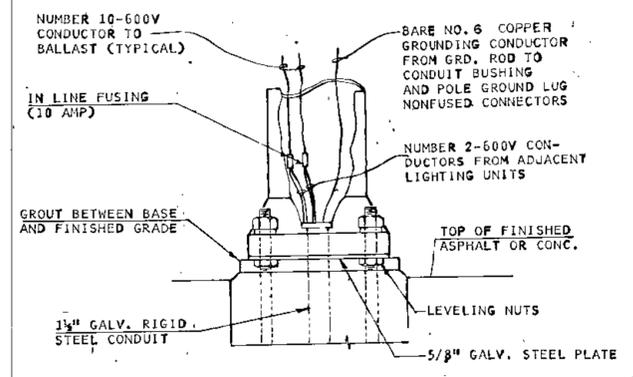


- 1 CIRCUIT BREAKER SHALL BE GROUND FAULT TYPE, RECEPTABLE TO BE MTD. INSIDE CABINET.
- 2 1/2" X 10" COPPERWELD GROUND ROD WITH #4 CU GROUND WIRE, INSTALL IN CONCRETE PAD,
- 3 PHOTO CELL MOUNTED ON NEAREST LUMINAIRE.
- 4 PROVIDE 2-2P SPACES AHEAD OF EACH CONTACTOR FOR FUT. CIRCUIT BREAKERS.

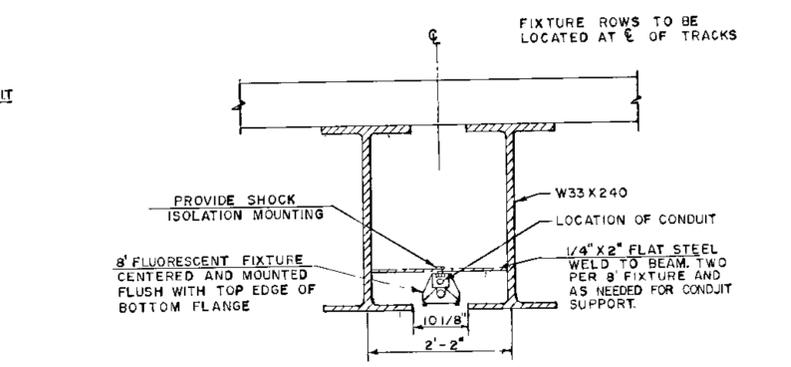
WIRING DIAGRAM FOR FEED POINT CONTROLLER



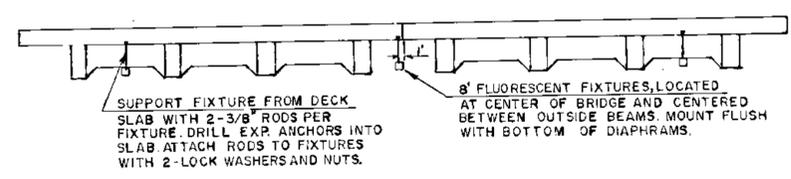
LIGHT STANDARD BASE DETAILS



WIRING DETAILS FOR LIGHTING STANDARDS



FLUORESCENT FIXTURE MOUNTING DETAILS AT NEW BRIDGE



FLUORESCENT FIXTURE MOUNTING DETAILS AT EXISTING BRIDGE

LIGHTING DETAILS

CURB AND GUTTER, SIDEWALK, DRIVEWAY PAVT.								
STATION TO STATION	LOCATION	B624	B618	TYPE D	4" WALK	6" DRWY	8" DRWY	BIT.
		C&G	C&G	C&G	SQ. FT.	PAVT.	PAVT.	CURB
		LIN FT.	LIN FT.	LIN FT.		SQ. YD.	SQ. YD.	LIN. FT.
7TH AVE.								
19+00.0 TO 20+91.5	LT.	207			1021			
19+00.0 TO 20+83.0	RT.	198			975			
19+00.0 TO 20+45	MED.	297			927			
21+32.5 TO 21+98.0	RT.	154			393			
21+43.0 TO 22+24.0	LT.	160			486			
21+25.0 TO 21+95.0	MED.	153			187			
22+56.5 TO 26+59.0	RT.	491			2811			
22+76.0 TO 26+45.0	MED.	757			3281			
23+04.0 TO 26+73.0	LT.	437			2610			
27+34.0 TO 32+00	LT.	493			2290			
27+41.5 TO 30+20.5	RT.	345			1395			
27+50.0 TO 30+00.0	MED.	514			949			
30+69.0 TO 31+10.0	RT.	62			205			
30+31.0	LT.					16.5		
31+51.0	LT.					8.5		
RAMP "A"								
158+28.0 TO 158+26.4				598	--			
152+28.0 TO 158+69.7				642	--			
RAMP "B"								
159+99.1 TO 167+26.0	RT.			727	--			
160+25.8 TO 167+500	LT.			724	--			
L ¹								
3+49.6 TO 9+05.5	LT.		568		2198			
3+49.6 TO 9+30.1	RT.		592		--			
10+64.4 TO 14+25.0	LT.		361		--			
10+87.6 TO 14+25.0	RT.		337		--			
5+34.0	LT.					22.5		
L ²								
3+00 TO 6+50	RT.							326
3+24 TO 6+50	LT.							350
6+50.0 TO 9+43.1	LT.		293					
6+50.0 TO 9+19.9	RT.		270					
10+67.1 TO 12+26.4	LT.		159		1011			
11+05.6 TO 13+90.0	RT.		316					
12+92.9 TO 13+90.0	LT.		128					
13+35.0	RT.					22.5		
13+90 TO 14+56.8	LT. & RT.							134
L ³								
10+32.5 TO 14+33.0	LT.		412		803			
10+46.4 TO 14+33.0	RT.		398					
11+19.0	LT.					16.5		
11+68.0	LT.					16.5		
LINCOLN ST.								
10+47.1 TO 11+30.0	LT.		83					
10+48.7 TO 11+56.0	RT.		107					
11+13.0	LT.					10		
LINCOLN ST. (CONT.)								
11+39.5	RT.					13		

GUARD RAIL						
STATION TO STATION	LOCATION	STRUCTURAL PLATE				
		LIN. FT.	END SECT.	ANCHORAGE ASSEMBLIES		
23+50 TO 25+00	7.25' RT	150	5' R.			
23+50 TO 25+00.0	7.25' LT	150	8316			
24+85 TO 25+85	53.5' RT	100	STD			

SIGNS					
MHD SIGN NUMBER	DESCRIPTION	SIZE	SQ.FT	NUMBER REQUIRED	TOTAL SQ.FT
R1-1	STOP	30" X 30"	6.25	6	37.50
R3-X2	LEFT TURN LANE	30" X 30"	6.25	4	25.00
R4-7	KEEP RIGHT	24" X 30"	5.0	3	15.00
R4-7P	KEEP RIGHT	24" X 18"	3.0	3	9.00
R5-9	WRONG WAY	30" X 18"	3.75	2	7.50

THE FOLLOWING STANDARD PLATES, AS APPROVED BY THE FHWA, SHALL APPLY

STANDARD PLATES	
PLATE NO.	DESCRIPTION
0002A	SPECIFICATION REFERENCE TO STD. PLATES
3000F	REINFORCED CONCRETE PIPE
3004B	REINFORCED CONCRETE PIPE
3100F	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3133A	RIPRAP AT RCP OUTLETS
3145A	CONCRETE PIPE JOINT TIES
3006A	GASKET JOINT FOR RC PIPE
4000G	MANHOLE OR CATCH BASIN
4002D	MANHOLE OR CATCH BASIN
4005I	MANHOLE OR CATCH BASIN
4006H	MANHOLE OR CATCH BASIN
4011C	PRECAST CONCRETE BASE
4019B	MANHOLE OR CATCH BASIN
4101B	RING CASTING FOR MANHOLE OR CATCH BASIN
4110D	COVER CASTING FOR MANHOLE
4126D	CATCH BASIN FRAME CASTING (NO. 801)
4131B	CATCH BASIN FRAME AND GRATE CASTING
4142D	BEEHIVE GRATE CASTING FOR CATCH BASINS
4149C	GRATE CASTING FOR CATCH BASIN
4161E	CURB BOX FOR CATCH BASINS
4180F	MANHOLE STEP CASTING
7035I	CONCRETE WALK AND CURB RETURNS AT ENTRANCES
7036A	PEDESTRIAN CURB RAMP
7065C	BITUMINOUS CURB
7100D	CONCRETE CURB AND GUTTER
7102F	CONCRETE CURB AND GUTTER
7107F	ENTRANCE NOSE
7108C	EXIT NOSE
7110E	CURB AND GUTTER CONSTRUCTION AT CATCH BASIN
7111E	INSTALLATION OF CATCH BASIN CASTINGS
8000F	STANDARD BARRICADES
8117E	PRECAST CONCRETE HANDHOLE (OR PULL BOX)
8123A	POLE AND MAST ARM (LUMINAIRES AND TRAFFIC LIGHTS)
8307K	STRUCTURAL PLATE BEAM GUARDRAIL
8316B	MISC. GUARDRAIL HARDWARE
9102C	SODDING AT PIPE CULVERT ENDS
9322F	CHAIN LINK FENCE

TABULATIONS
STANDARD PLATES
CURB AND GUTTER, SIDEWALK
DRIVEWAY PAVEMENT
GUARDRAIL
SIGNS

STORM SEWER

STRUCT. NO.	STATION	LOCATION ①	CONSTRUCTION		TOP OF CASTING OR INLET ELEV.	SUMP	OUTLET ELEV.	CASTING ASSY. TYPE	REMOVE	ADJUST	RECON-STRUCT	FURNISH AND INSTALL SEWER PIPE					CLASS	APRONS		DRAINS TO			SODDING SQ. YD.	CLASS A RANDOM RIPRAP CU. YD.	TYPE I FILTER BLANKET CU. YD.	REMARKS							
			DESIGN M.H.	PAY HEIGHT C.B. LIN. FT.								12" RCP	15" RCP	18" RCP	24" RCP	30" RCP		36" RCP	R.C.P.	C.M.	STR. NO.	GRADE %					INL. EL.						
																												STR. NO.	GRADE %	INL. EL.			
1	7th AVE 19+03	34' LT		EXIST.	866.09	0.1		S-2		X																		SALVAGE CASTING					
2	7th AVE 19+04	6' LT		EXIST.	866.09	0.1		S-2		X																		SALVAGE CASTING					
3	7th AVE 19+03	10' RT.		EXIST.	866.09	0.1		S-2		X																		SALVAGE CASTING					
4	7th AVE 19+03	38' RT.		EXIST.	866.09	0.1		S-2		X																		SALVAGE CASTING					
5	7th AVE 19+23	34' LT		EXIST.																								SALVAGE CASTING					
6	7th AVE 19+23	38' RT.		EXIST.																								SALVAGE CASTING					
7	7th AVE 20+00	28' LT	EXIST	67.5'	865.73		852.40	A			2.0'		EXISTING 48" RCP												15		851.68	SALVAGE CASTING REMOVE 20 L.F. OF 12" R.C.P. SALVAGE CASTING REMOVE 20 L.F. OF 12" R.C.P. SALVAGE CASTING REMOVE 20 L.F. OF 12" R.C.P. CUT IN 30" R.C.P.					
8	7th AVE 20+81	32.9 LT		C OR G	4.4	864.19	0.1	859.69	S-2																								
9	7th AVE 20+72	36.9 RT. 36.9		C OR G	4.4	864.35	0.1	859.85	S-2																								
10	7th AVE 21+08	9.0 LT	A OR F		11.3	863.83		852.73	A		X																		REMOVE EXIST. M.H. SALVAGE CASTING REMOVE 10 L.F. 24" R.C.P.				
11	RAMP "A" 155+25	16.9 LT 12.0'		H	2.9	868.96	0.1	865.96	S-1					20																			
12	RAMP "A-2" 156+86	60.0 LT		EXIST.							X																						
13	RAMP "A-2" 156+92	20.0 LT		EXIST.							X																						
14	RAMP "A-2" 157+00	23.0 RT		EXIST.							X																						
15	RAMP "A-2" 156+95	112.0 RT	EXIST			874.95		851.65																									
16	RAMP "A-2" 157+90	42.0 LT		H	3.7	860.14		857.14	S-1					47																			
17	RAMP "A-2" 157+90	4.9 RT 6.0'		A OR F	6.5	863.44	0.1	856.56	S-1					30																			
18	RAMP "A-2" 157+90	36.0 RT		C OR G	4.5	859.84		856.01	S-1																								
20A	RAMP B 160+30	62.0 LT		C OR G		859.90		856.65	S-1																								
19	RAMP "B-2" 160+16	11.0 LT		EXIST.	69.5	864.36		854.69	A			5.0																					
20	RAMP "B-2" 160+22	38.0 LT		EXIST.	72.3						X																						
21	11+16	38.0 RT		EXIST.							X																						
22	RAMP "B-2" 160+40	36.0 RT		H	3.7	861.34		858.34	S-1					53																			
23	RAMP "B-2" 160+75	4.9 RT 6.0'		C OR G	4.4	865.31	0.1	860.81	C					61																			
24	RAMP "B-2" 161+76	12.0 LT		EXIST.							X																						
25	RAMP "B-2" 161+82	12.0 LT		EXIST.							X																						
26	RAMP "B" 163+55	13.6 LT 16.0		H	2.9	881.36	0.1	878.36	C					20																			
66	RAMP "B-2" 160+26	55.0 LT		H	3.2	859.5		857.35	S-1																								
27	7th AVE 21+93	9.1 LT 8.5'		A OR F	8.2	861.33	0.1	852.99	S-2																								
28	7th AVE 21+93	1.9 LT 2.2'		C OR G	4.4	860.99	0.2	856.49	S-2					7																			
29	11 9+03	20.9 LT		C OR G	4.4	859.89	0.2	855.39	B					48																			
30	11 9+28	20.9 RT		C OR G	4.6	859.58	0.2	854.81	B					66																			
31	7th AVE 22+31	34.0 LT		EXIST.							X																						
32	7th AVE 22+40	9.0 LT	A OR F		7.3	860.25		853.13	A																								
33	7th AVE 22+48	27.0 RT		EXIST.							X																						
34	11 10+67	13.9 LT		C OR G	4.6	860.16	0.1	855.48	B					76																			
35	11 10+90	13.9 RT		C OR G	4.4	860.46	0.1	855.96	B					38																			
36	7th AVE 23+85	9.1 LT		48' 40' 9"	4.4	858.02	0.1	853.57	B																								
37	7th AVE 23+85	9.1 RT		C OR G	3.4	858.02	0.1	854.39	B																								
38	7th AVE 23+98	34.9 LT		C OR G	3.1	857.89	0.1	854.71	B					26																			
39	7th AVE 23+98	9.1 LT		48' 40' 9"	4.2	857.89	0.1	853.63	B																								
40	7th AVE 23+98	9.1 RT		C OR G	3.2	857.89	0.1	854.58	B																								
41	7th AVE 23+98	34.9 RT		C OR G	3.1	857.89	0.1	854.71	B					26																			
42	7th AVE 23+98	34.9 LT		H	2.9	858.01	0.1	855.01	B					39																			
43	7th AVE 23+98	34.9 RT		H	2.9	858.01	0.1	855.01	B					39																			
44	7th AVE 24+35	65.0 RT		C OR G	3.7	877.0		874.0	S-1					155 C.S.																			
45	7th AVE 24+35	9.1 LT	A OR F		5.2	859.58		854.49	A B																								
46	12 9+17	18.9 RT		C OR G	4.4	865.00	0.2	860.50	B					45																			
47	12 9+41	18.9 LT		C OR G	4.8	864.75	0.2	859.80	B																								
48	7th AVE 27+20	9.0 LT	A OR F		7.5	865.70		858.31	A																								
49	12 10+70	18.9 LT		A OR F	5.6	864.86	0.2	859.11	B																								
50	12 10+80	24.5 RT		C OR G	4.4	864.30	0.2	859.80	B					44																			
51	13 10+35	15.9 LT		C OR G	4.445	871.43	0.1	867.88	B																								
52	13 10+49	15.9 RT		C OR G	4.442	871.57	0.1	867.07	B					34																			
53	7th AVE 25+90	56.0 RT		A OR F	5.9	877.50		872.35	S-1					88 C.S.																			
54	7th AVE 27+56	36.9 LT																															

STORM SEWER

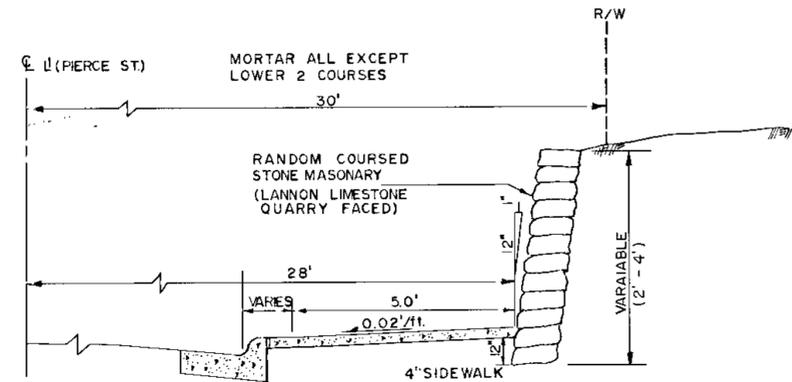
STRUCT. NO.	STATION	LOCATION	CONSTRUCTION		TOP OF CASTING OR INLET ELEV.	SUMP	OUTLET ELEV.	CASTING ASSY. TYPE	REMOVE	ADJUST	RECON-STRUCT	FURNISH AND INSTALL SEWER PIPE				CLASS	APRONS R.C.P. C.M.	DRAINS TO			SODDING SQ. YD.	CLASS A RANDOM RIPRAP CU. YD.	TYPE I FILTER BLANKET CU. YD.	REMARKS
			DESIGN	PAY HEIGHT								12" R.C.P.	36" R.C.P.	INL. EL.	STR. NO.			GRADE %						
												LINE FT.	LINE FT.											
66	7th AVE. 20+43	20.5' LT.	A OR F	12.9	865.26		852.53	A F & I				14	44.3	III		7	0.30	852.40						
67	7th AVE. 20+43	7.1' LT.	A OR F	5.7	864.87	0.1	857.08	B				7		IV		66	1.00%	858.94						
68	7th AVE. 20+43	0.9' LT.	C OR G	5.1	864.53	0.2	859.28	B						IV		67	1.00%	859.18						
69	7th AVE. 23+10	56.0' RT.	C OR G	4.6	861.60		857.13	A F & I				72		IV		34	1.00%	856.41						
70	7th AVE. 23+50	56.0' LT.	C OR G	4.2	861.10		857.05	A F & I				72		IV		29	1.00%	856.33						

SANITARY SEWER

STRUCT. NO.	STATION	LOCATION	CONSTRUCTION		TOP OF CASTING OR INLET ELEV.	OUTLET ELEV.	CASTING ASSY. TYPE	REMOVE	ADJUST	RECON-STRUCT	PIPE		DRAINS TO			REMARKS
			DESIGN	PAY HEIGHT							8" V.C. EXTRA STR.	STR. NO.	GRADE %	INL. EL.		
															M.H.	
100	PIERCE ST 3+40.5	2.5' LT.			872.63	862.23							SOUTH	EXIST.		USE AS IS
101	1 5+55	2.5' LT.			871.61	865.33	A			1.2			100	EXIST.	(E) 862.24	SALVAGE CASTING
102	1 6+10	2.5' LT.	SPEC. I	5.1	871.05	866.04	A						101	EXIST.	865.35	
103	1 9+35	4.70' LT.			879.40	870.10		X					101			SALVAGE CASTING
104	2 3+12	2.0' RT.			875.68	864.37							SOUTH	EXIST.	(E) 864.72	USE AS IS
105	2 6+00	11.0' RT.			873.72	866.06	A			3.2			104	EXIST.	866.04	SALVAGE CASTING
106	2 6+75	6	SPEC. I	7.1	873.36	866.42	A						105	EXIST.	866.04	
107	7th 26+51	1.0' RT.			879.30	868.10		X					107		870.30	SALVAGE CASTING
108	3 10+89	3.0' LT.						X					107		868.22	
109	3 11+35	3.0' RT.	SPEC. I	5.4	875.44	870.16	A				3.11		107	0.40%	868.22	
110	3 14+47	9.0' RT.	SPEC. I	7.4	876.26	868.94	A						NORTH	EXIST.		CONST. ON EXIST. LINE
111	7th AVE 29+52	6			878.00	869.20		X					107			SALVAGE CASTING
112	7th AVE 30+40	1.0' LT.			877.16	871.15	A			0.40			113	EXIST.	869.77	SALVAGE CASTING
113	7th AVE 32+15	1.0' LT.			877.30	869.73							114	EXIST.		USE AS IS
114	7th AVE 33+98	2.0' LT.			877.04	871.00							WEST	EXIST.		USE AS IS
115	LINCOLN AVE 2+02	3.0' RT.			881.0	871.68							112	EXIST.	871.15	USE AS IS
116	3 14+47	3.0' RT.			876.2				X				NORTH	EXIST.		PLUG EXIST. OUTLET TO WEST
108A	10+50	18.0' LT.						X								SALVAGE CASTING

CASTING ASSEMBLIES		
NO.	TYPE	DESCRIPTION
17 ①	A	RING CASTING 700-7 COVER CASTING 712
26	B	FRAME CASTING NO. 801 GRADE CASTING NO. 810 CURB BOX CASTING NO. 821 B
4	C	FRAME CASTING NO. 804 GRATE CASTING NO. 813
6 ②	S-1	BEEHIVE GRATE CASTING NO. 730-1
8	S-2	USE SALVAGED FRAME & GRATE CASTING NEW CURB BOX CASTING NO. 821-B

- ① 12 TO BE SALVAGED ASSEMBLIES, INSTALL ONLY.
5 ASSEMBLIES TO BE FURNISHED & INSTALLED.
- ② 4 TO BE SALVAGED ASSEMBLIES, INSTALL ONLY.
2 ASSEMBLIES TO BE FURNISHED & INSTALLED.



MASONRY STONE WALL
 STA TO STA
 5+52 TO 6+10

WATERMAIN RECONSTRUCTION

LOCATION	1" COPPER SERVICE	1" CORPORATION	1" CURB STOP & BOX	ADJUST VALVE BOX	ADJUST CURB STOP BOX
	LINE FT.	CONN.	ASSEMBLY	BOX	EACH
7th AVE. 23+22, RT	150				
30+29, 20' LT					
30+30, 15' LT					
30+32, 7' LT					
30+44, 26' LT					
30+66, LT					
31+00, RT					
31+68, LT					
1 4+87, LT	22				
5+71, LT	22				
12 5+85, LT	20				
6+50, LT	18				
13 11+34, LT	22				
11+35, RT	33				
11+62, RT	40				
11+93, LT	20				
12+57, RT	40				
12+64, LT	20				
13+40, RT	40				
13+60, LT	20				
14+32, LT	20				
8th ST., EAST	30				
8th ST., EAST	30				
8th ST., EAST	30				

NOTE: LOCATION AND LENGTH OF SERVICES SUBJECT TO FIELD VERIFICATION.

**STORM & SANITARY SEWER TABS
 CASTING ASSEMBLIES
 STONE MASONRY WALL DETAILS**

CLEARING AND GRUBING					
STATION TO STATION	LOCATION	CLEARING		GRUBING	
		TREE	ACRE	TREE	ACRE
7TH AVE.					
22+43	64' RT.	2		1	
22+47	46' RT.	1		1	
25+00	63' RT.	1		1	
25+05	80' RT.	1		1	
24+15	93' RT.	1		1	
24+76	76' RT.	1		1	
25+07	51' LT.	1		1	
27+04	47' RT.	1		1	
27+04	57' RT.	1		1	
27+04	56' LT.	1		1	
27+05	72' RT.	1		1	
27+09	37" LT.	1		1	
27+39	100' RT.	1		1	
26+86	27' LT.	1		1	
27+41	37' LT.	1		1	
27+68	37' RT.	1		1	
27+62	50' LT.	1		1	
27+86	37' RT.	1		1	
27+95	38' LT.	1		1	
27+97	37' RT.	1		1	
27+98	145' LT.	1		1	
28+12	37' LT.	1		1	
28+14	37' RT.	1		1	
28+18	48' LT.	1		1	
28+27	37' RT.	1		1	
28+36	37' RT.	1		1	
28+48	37' RT.	1		1	
28+33	145' RT.	1		1	
28+48	45' RT.	1		1	
28+61	37' LT.	1		1	
28+61	95' RT.	1		1	
28+65	95' RT.	1		1	
28+68	92' RT.	1		1	
28+71	37' RT.	1		1	
28+77	38' RT.	1		1	
28+82	37' RT.	1		1	
28+89	36' RT.	1		1	
28+92	38' LT.	1		1	
28+74	104' LT.	1		1	
28+98	95' RT.	1		1	
28+92	37' RT.	1		1	
28+59	93' LT.	1		1	
29+09	37' RT.	1		1	
29+21	87' LT.	1		1	
29+27	57' RT.	1		1	
29+32	105' LT.	1		1	
29+40	38' LT.	1		1	
29+67	38' LT.	1		1	
29+59	93' LT.	1		1	

CLEARING AND GRUBING					
STATION TO STATION	LOCATION	CLEARING		GRUBING	
		TREE	ACRE	TREE	ACRE
7TH AVE. (CON'T.)					
29+70	106' LT.	1		1	
29+98	39' LT.	1		1	
31+11	37' RT.	1		1	
31+45	36' RT.	1		1	
PIERCE ST.					
5+12	20' LT.	1		1	
5+58	20' LT.	1		1	
5+88	20' LT.	1		1	
6+18	20' LT.	1		1	
6+42	20' RT.	1		1	
6+49	20' LT.	1		1	
6+64	20' RT.	1		1	
6+65	20' LT.	1		1	
6+92	20' LT.	1		1	
6+97	40' RT.	2		1	
6+98	20' RT.	1		1	
7+03	30' RT.	1		1	
7+07	55' RT.	1		1	
7+08	58' RT.	1		1	
7+14	20' LT.	1		1	
7+23	53' LT.	1		1	
7+34	20' RT.	1		1	
7+43	19' LT.	1		1	
7+48	29' RT.	1		1	
7+54	20' RT.	1		1	
7+69	19' LT.	1		1	
7+71	39' RT.	1		1	
7+76	19' RT.	3		1	
7+88	22' LT.	1		1	
7+96	19' RT.	1		1	
8+13	49' RT.	1		1	
8+18	20' RT.	1		1	
8+04	22' LT.	1		1	
8+17	57' LT.	1		1	
8+27	42' LT.	1		1	
8+38	65' RT.	1		1	
8+40	63' RT.	1		1	
8+40	40' RT.	1		1	
8+46	19' RT.	1		1	
BUCHANAN ST. (WEST)					
6+38	25' LT.	1		1	
6+47	26' LT.	1		1	
6+22	33' LT.	1		1	
6+69	22' LT.	1		1	
6+73	36' LT.	2		1	

CLEARING AND GRUBING					
STATION TO STATION	LOCATION	CLEARING		GRUBING	
		TREE	ACRE	TREE	ACRE
BUCHANAN ST. (WEST) CON'T.					
6+79	20' LT.	2		1	
6+94	20' LT.	1		1	
7+10	26' LT.	1		1	
7+24	20' LT.	1		1	
7+33	29' LT.	1		1	
7+43	19' LT.	1		1	
7+45	30' LT.	1		1	
7+64	21' LT.	2		1	
7+75	19' LT.	2		1	
8+01	23' LT.	1		1	
8+27	22' LT.	1		1	
8+34	22' LT.	1		1	
8+34	41' LT.	1		1	
8+66	62' RT.	1		1	
8+71	63' LT.	1		1	
8+72	45' LT.	1		1	
9+04	22' LT.	1		1	
9+34	29' RT.	1		1	
BUCHANAN ST. (EAST)					
1+24	29' LT.	1		1	
1+43	29' LT.	1		1	
2+34	37' LT.	1		1	
2+34	46' LT.	1		1	
2+34	30' LT.	1		1	
2+30	33' RT.	16		16	
2+57	30' LT.	1		1	
2+88	30' LT.	1		1	
3+02	31' LT.	1		1	
3+19	31' LT.	1		1	
3+69	28' LT.	1		1	
1+90	96' LT.	1		1	
2+30	57' LT.	1		1	
2+30	70' LT.	1		1	

CURB AND CURB AND GUTTER REMOVAL			
STATION TO STATION	LOCATION	C&G	
		LIN. FT.	LIN. FT.
7TH AVE.			
19+00 TO 21+40	LT.	245	
19+00 TO 20+96	MED.	196	
19+00 TO 20+96	MED.	197	
19+00 TO 21+17	RT.	218	
22+12 TO 22+90	LT.	85	
22+40 TO 23+20	RT.	94	
23+24 TO 23+66	LT.	60	
30+22 TO 32+00	LT.	178	
30+01 TO 30+00	RT.	7	
30+78 TO 31+10	RT.	32	
PIERCE ST.			
0+69 TO 7+75	LT & RT.		1466
RAMP "A"			
152+28 TO 159+70	LT & RT.	1325	
RAMP "B"			
159+90 TO 167+50	LT & RT.	1575	
BUCHANAN ST. (EAST)			
0+45 TO 6+45	LT.	624	
1+38 TO 6+45	RT.	531	
LINCOLN ST.			
0+26 TO 1+30	LT & RT.	230	

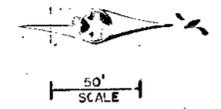
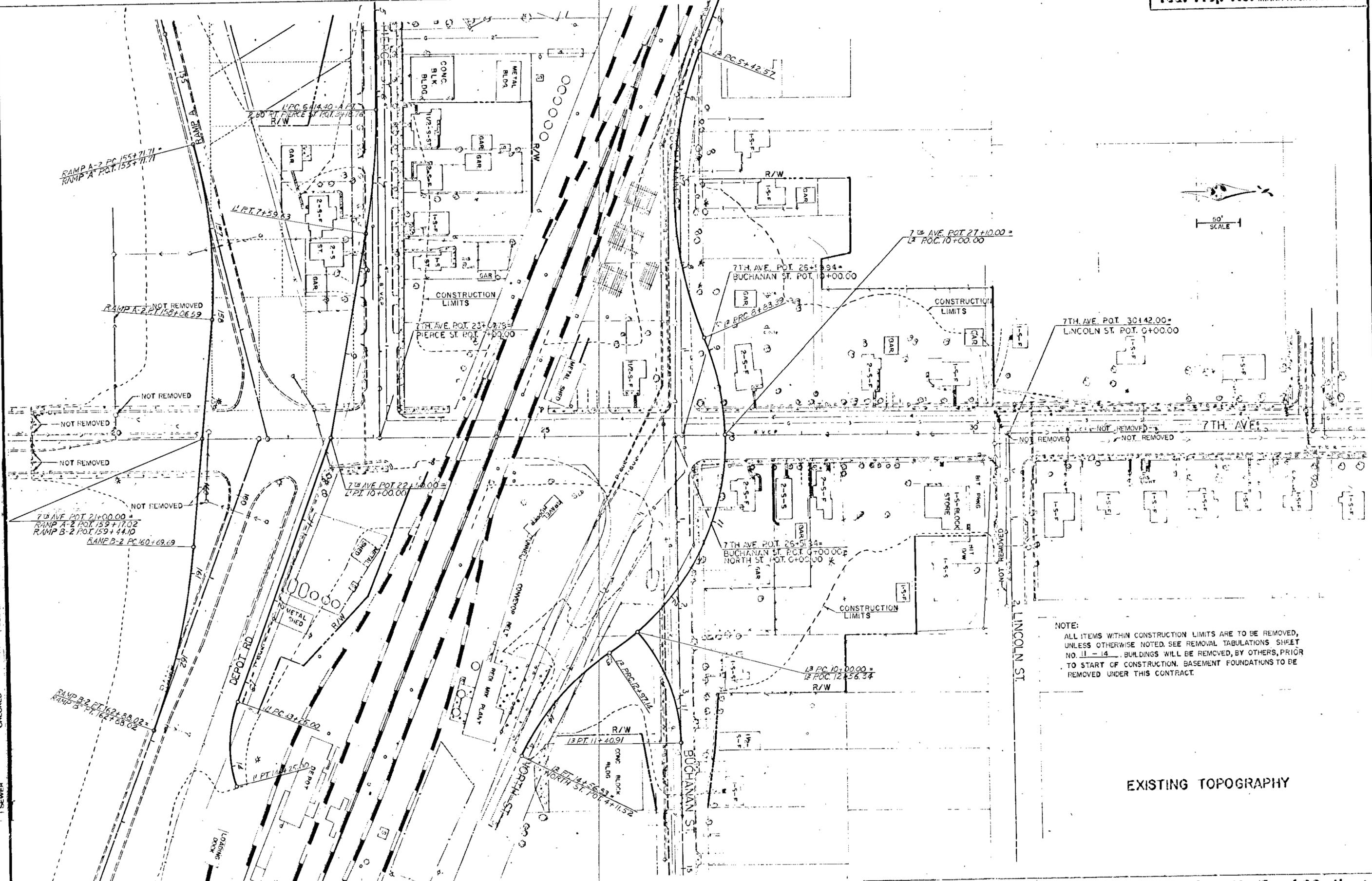
SIDEWALK REMOVAL		
STATION TO STATION	LOCATION	SQ. FT. SQ. YD.
7TH AVE.		
19+00 TO 21+22	RT.	1183
19+00 TO 20+96	MED.	1438
19+00 TO 21+36	LT.	1258
22+25 TO 22+38	LT.	309
22+46 TO 23+18	RT.	432
23+31 TO 23+90	LT.	354
25+05 TO 26+44	LT.	695
26+81 TO 30+17	RT.	1680
26+81 TO 32+00	LT.	2595
30+67 TO 31+10	RT.	215
26+06	LT. HO.	39
27+37	RT. HO.	120
27+46	LT. HO.	57
27+65	RT. HO.	150
27+80	RT. HO.	45
28+10	RT. HO.	80
28+31	RT. HO.	30
28+85	LT. HO.	192
29+54	RT. HO.	57
29+79	LT. HO.	207
PIERCE ST.		
2+00 TO 6+68	LT.	2808
3+18	LT. HO.	48
3+40	LT. HO.	64
3+68	LT. HO.	260
4+03	LT. HO.	162
4+45	RT. HO.	330
4+55	LT. HO.	72
4+86	LT. HO.	352
4+87	RT. HO.	100
BUCHANAN ST. (EAST)		
0+33 TO 1+48	LT.	575
0+85	LT. HO.	150
1+64	LT. DR. APRON	64
2+41	LT. DR. APRON	64
2+78	LT. HO.	198
3+33	LT. DR. APRON	56
3+80	RT. DR. APRON	80
3+83	LT. DR. APRON	64
LINCOLN ST.		
1+13	LT. DR. APRON	88
1+13	RT. DR. APRON	80

CLEARING & GRUBBING
SIDEWALK REMOVAL

REMOVAL OF MISCELLANEOUS STRUCTURES						
STATION TO STATION	LOCATION	DESCRIPTION	UNIT			
			LIN. FT.	SQ. YD.	CU. YD.	EACH
7TH AVE.						
20+01	RT.	LIGHT STANDARD BASE				1
21+20	LT.	LIGHT STANDARD BASE				1
21+91	RT.	LIGHT STANDARD BASE				1
25+26	LT.	CONC. WALL				
25+42	LT.	CONC. WALL				
25+29	LT.	BUILDING BASEMENT				
26+00	LT.	HOUSE BASEMENT				37
27+40	LT.	HOUSE BASEMENT				50
27+35	RT.	HOUSE BASEMENT				38
27+80	RT.	HOUSE BASEMENT				38
28+25	LT.	HOUSE BASEMENT				45
28+80	LT.	HOUSE BASEMENT				37
29+63	RT.	SIGN				1
29+75	LT.	HOUSE BASEMENT				44
PIERCE ST.						
3+15 TO 8+25	LT.	CONC. BLOCK RETAINING WALL				75
3+40	LT.	HOUSE BASEMENT				47
3+85	LT.	HOUSE BASEMENT				38
4+40	LT.	HOUSE BASEMENT				41
4+45	RT.	HOUSE BASEMENT				52
4+80	LT.	HOUSE BASEMENT				36
4+90	RT.	HOUSE BASEMENT				41
BUCHANAN ST. (WEST)						
		HOUSE BASEMENT				36
BUCHANAN ST. (EAST)						
		HOUSE BASEMENT				37
RAMP B						
165+75	LT.	LIGHT STANDARD BASE				1
167+50	LT.	LIGHT STANDARD BASE				1

PUBLIC UTILITIES						
SHEET NO.	LOCATION	INPLACE ITEM	CONSTRUCT. LIMITS		REMARKS	OWNER
			WITHIN	OUTSIDE		
	7TH AVE.					
	22+43, 56' RT.	LIGHT POLE	X		RELOCATED BY OTHERS	CITY OF ANOKA
	26+73, 40' RT.	POWER AND LIGHT POLE	X		" " "	" "
	27+16 TO 27+62, 35' RT.	2 POWER POLES	X		" " "	" "
	29+26, 35' LT.	POWER POLE	X		" " "	" "
	30+20, 35' LT.	POWER AND LIGHT POLE	X		" " "	CITY OF ANOKA
	26+62 TO 32+00, 13' LT.	3" GAS LINE	X		" " "	NORTH CENTRAL PUBLIC SERVICE CO.
	26+60 TO 32+00, 32' LT.	BURIED TELEPHONE	X		" " "	NORTHWESTERN BELL TELEPHONE CO.
	23+30, 30' LT.	LIGHT POLE	X		" " "	CITY OF ANOKA
	PIERCE ST.					
	2+15 TO 6+00, 18' RT.	4 POWER POLES	X		RELOCATE BY OTHERS	CITY OF ANOKA
	2+15 TO 6+00, 18' RT.	TELEPHONE ON POWER POLES	X		" " "	NORTHWESTERN BELL TELEPHONE CO.
	2+00 TO 5+40, 6' RT.	2" GAS LINE	X		" " "	NORTH CENTRAL PUBLIC SERVICE CO.
	6+00 TO + , 18' RT.	BURIED TELEPHONE	X		" " "	NORTHWESTERN
	L ¹ (DEPOT ROAD)					
	10+ TO 13+20	BURIED TELEPHONE	X		RELOCATED BY OTHERS	NORTHWESTERN BELL TELEPHONE CO.
	12+20, 6' LT.	POWER POLE	X		" " "	
	BUCHANAN ST. (WEST)					
	1+32 TO 4+58, 23' LT. TO 13' RT.	4 POWER POLES	X		RELOCATED BY OTHERS	CITY OF ANOKA
	0+00 TO 4+43, 37' LT. TO 16' RT.	BURIED TELEPHONE	X		" " "	NORTHWESTERN BELL TELEPHONE CO.
	0+00 TO 1+32, 52' LT. TO 23' LT.	BURIED POWER	X		" " "	CITY OF ANOKA
	BUCHANAN ST. (EAST)					
	1+27 TO 3+35, 18' LT. TO 20' RT.	3 POWER POLES	X		RELOCATED BY OTHERS	CITY OF ANOKA
	0+33 TO 4+15, 9' RT.	2" GAS LINE	X		" " "	NORTH CENTRAL PUBLIC SERVICE CO.
	1+93 TO 4+15, 20' RT.	BURIED TELEPHONE	X		" " "	NORTHWESTERN BELL TELEPHONE CO.
	NORTH ST.					
	0+13 TO 1+35, 24' RT. TO 39' RT.	BURIED TELEPHONE	X		RELOCATED BY OTHERS	NORTHWESTERN BELL TELEPHONE CO.
	0+20 TO 1+35, 38' RT. TO 39' RT.	BURIED POWER	X		" " "	CITY OF ANOKA
	1+35 TO 3+95, 39' RT.	6 POWER POLES		X	" " "	CITY OF ANOKA
	1+35 TO 3+95, 39' RT.	TELEPHONE ON POWER POLES		X	" " "	NORTHWESTERN BELL TELEPHONE CO.
	0+60 TO 4+10, 22' LT. TO 9' LT.	3" GAS LINE	X		" " "	NORTH CENTRAL PUBLIC SERVICE CO.
	LINCOLN ST.					
	10+60 TO 11+30, 23' LT.	2 BURIED TELEPHONE	X		RELOCATED BY OTHERS	NORTHWESTERN BELL TELEPHONE CO.

MISC. REMOVALS
PUBLIC UTILITIES



PLAN

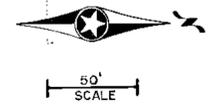
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ALIGNMENT	CHECKED
DESIGN APPROVAL	CHECKED

PROFILE

EXISTING	CHECKED
PROPOSED	CHECKED
GRADES	CHECKED
SEWER	CHECKED

NOTE:
 ALL ITEMS WITHIN CONSTRUCTION LIMITS ARE TO BE REMOVED, UNLESS OTHERWISE NOTED. SEE REMOVAL TABULATIONS SHEET NO. 11-14. BUILDINGS WILL BE REMOVED, BY OTHERS, PRIOR TO START OF CONSTRUCTION. BASEMENT FOUNDATIONS TO BE REMOVED UNDER THIS CONTRACT.

EXISTING TOPOGRAPHY

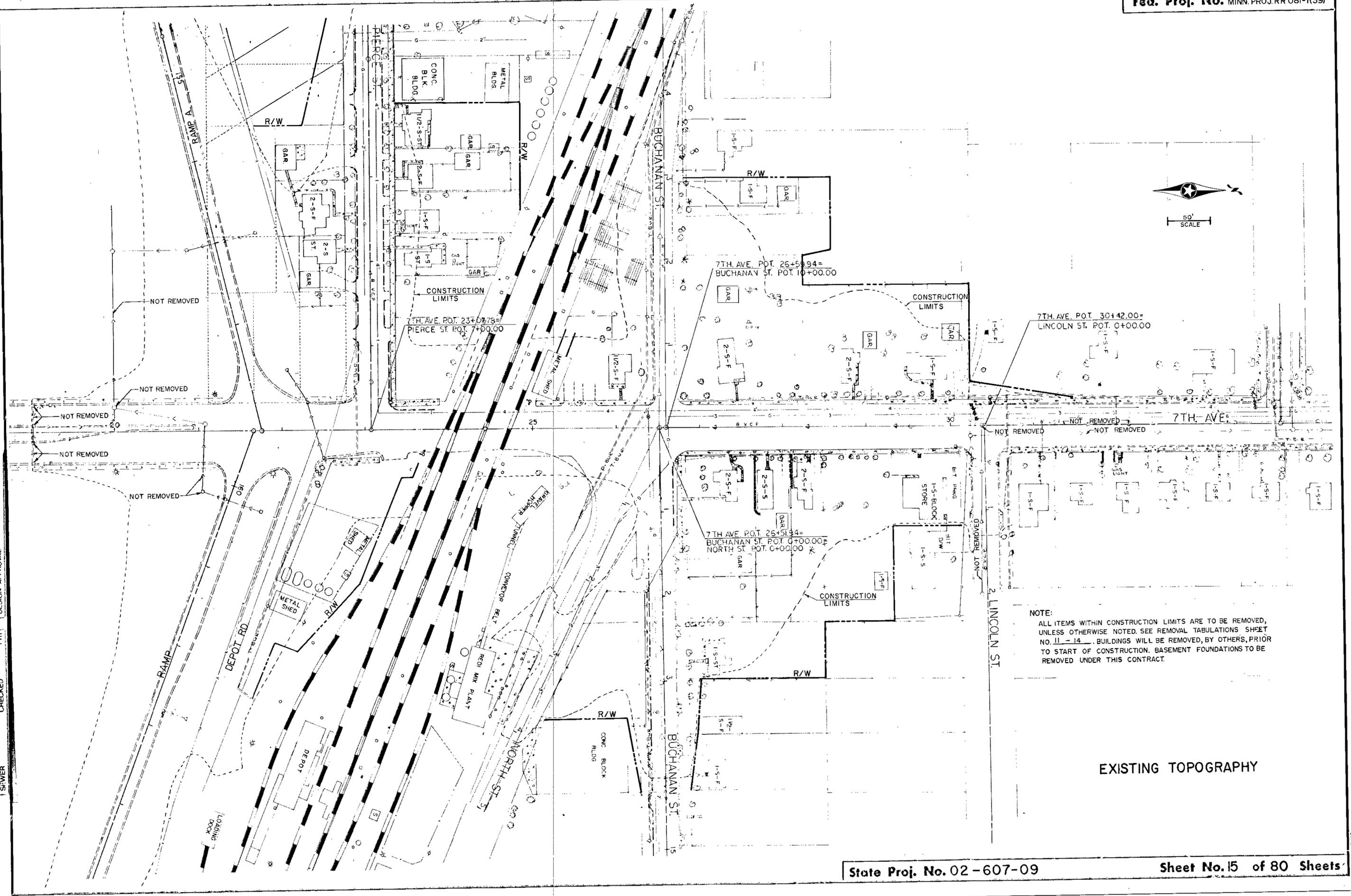


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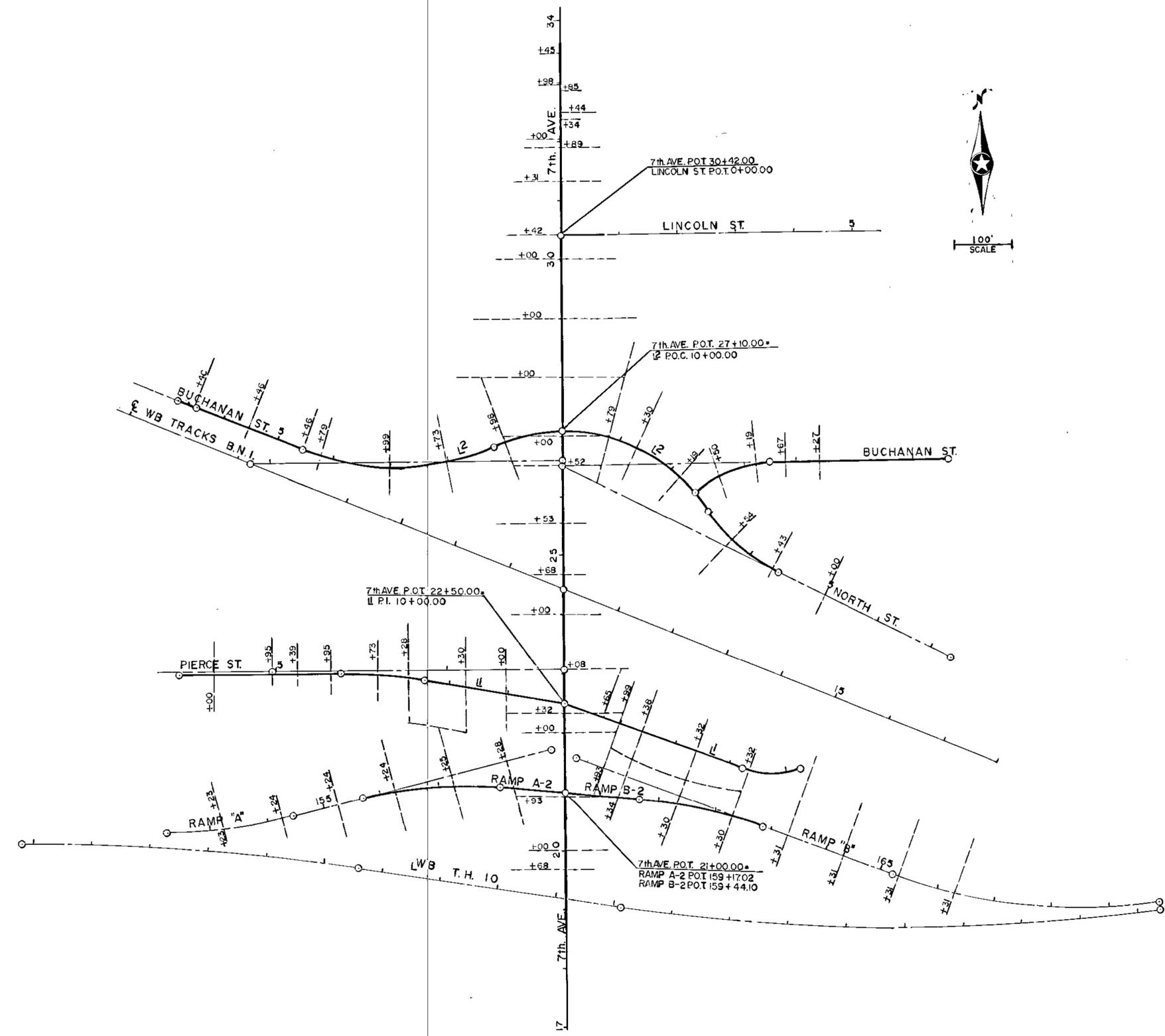
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GRADES	CHECKED
SEWER	CHECKED



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EXISTING TOPOGRAPHY



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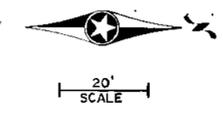
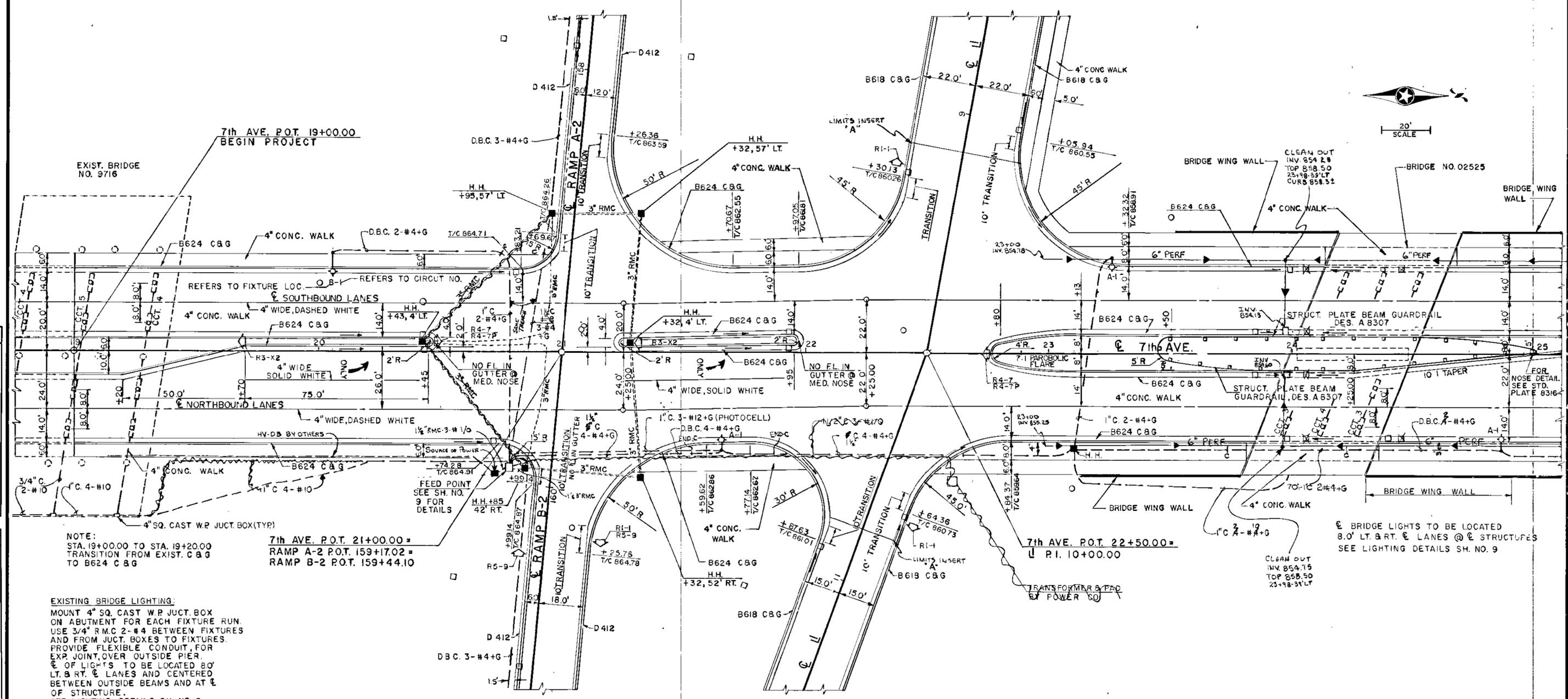
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ALIGNMENT	CHECKED
DESIGN APPROVAL	

PROFILE

EXISTING	CHECKED
PROPOSED	CHECKED
GRADES	CHECKED
SEWER	CHECKED

CROSS-SECTION LAY OUT

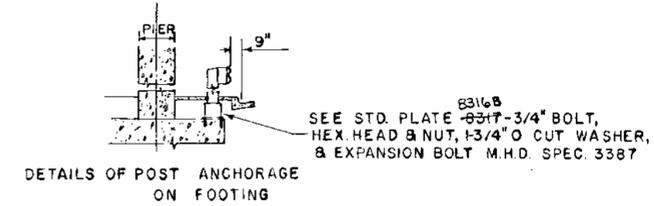
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	ALIGNMENT	CHECKED	DESIGN APPROVAL	CHECKED
PROFILE	EXISTING	CHECKED	PROPOSED	CHECKED
	GRADES	CHECKED	SEWER	CHECKED



NOTE:
 STA. 19+00.00 TO STA. 19+20.00
 TRANSITION FROM EXIST. C&G
 TO B624 C&G

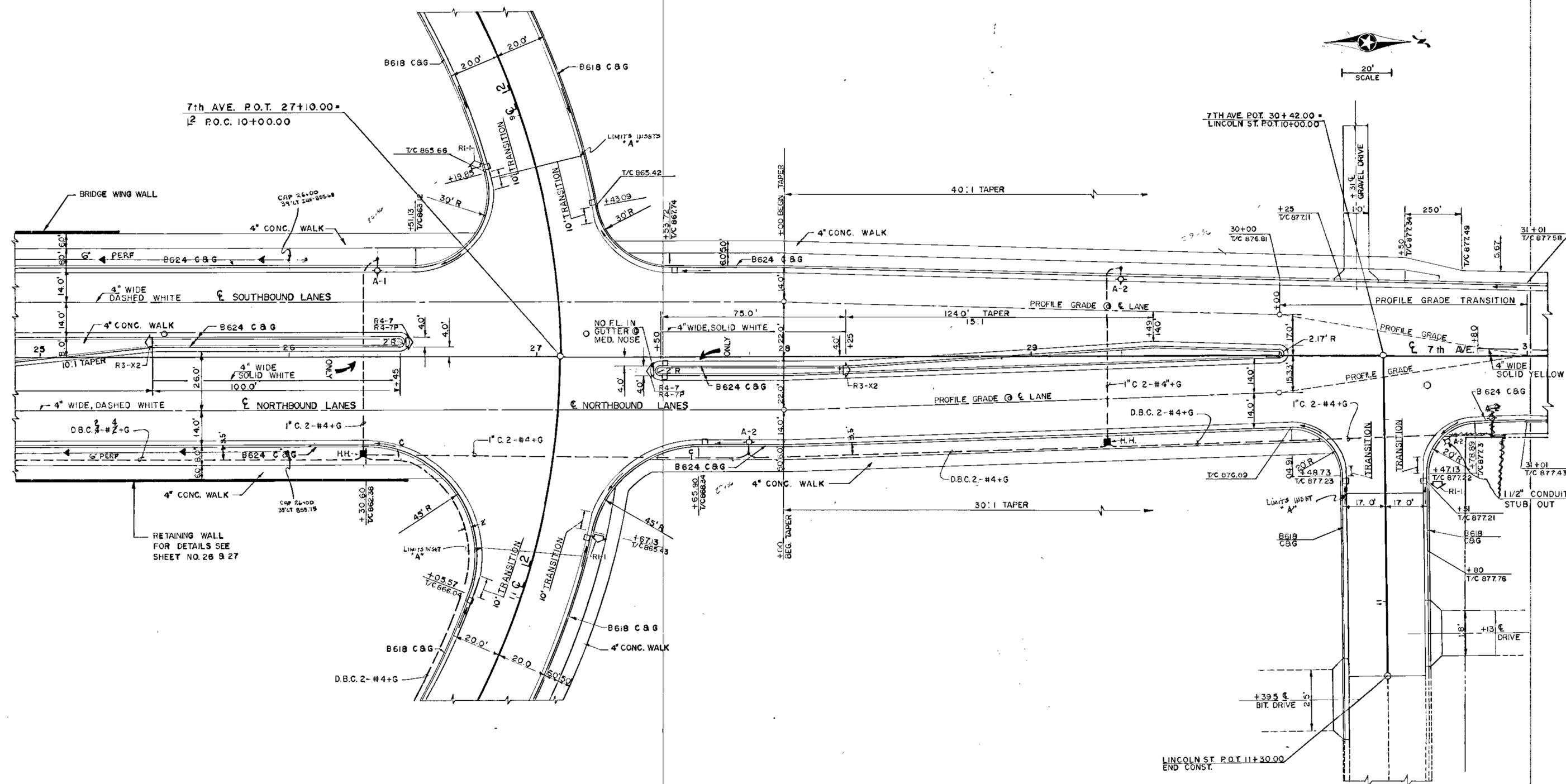
7th AVE. P.O.T. 21+00.00 =
 RAMP A-2 P.O.T. 159+17.02 =
 RAMP B-2 P.O.T. 159+44.10

EXISTING BRIDGE LIGHTING.
 MOUNT 4" SQ. CAST W.P. JUCT. BOX
 ON ABUTMENT FOR EACH FIXTURE RUN.
 USE 3/4" R.M.C. 2-#4 BETWEEN FIXTURES
 AND FROM JUCT. BOXES TO FIXTURES.
 PROVIDE FLEXIBLE CONDUIT FOR
 EXP. JOINT, OVER OUTSIDE PIER.
 ☉ OF LIGHTS TO BE LOCATED 8'
 LT. & RT. ☉ LANES AND CENTERED
 BETWEEN OUTSIDE BEAMS AND AT ☉
 OF STRUCTURE.
 SEE LIGHTING DETAILS SH. NO. 9



SEE STD. PLATE 8316B
 3/4" BOLT,
 HEX. HEAD & NUT, 1-3/4" O. CUT WASHER,
 & EXPANSION BOLT M.H.D. SPEC. 3387

7th AVE. DETAILS
 STA. 19+00.00 TO STA. 25+00.00



PLAN

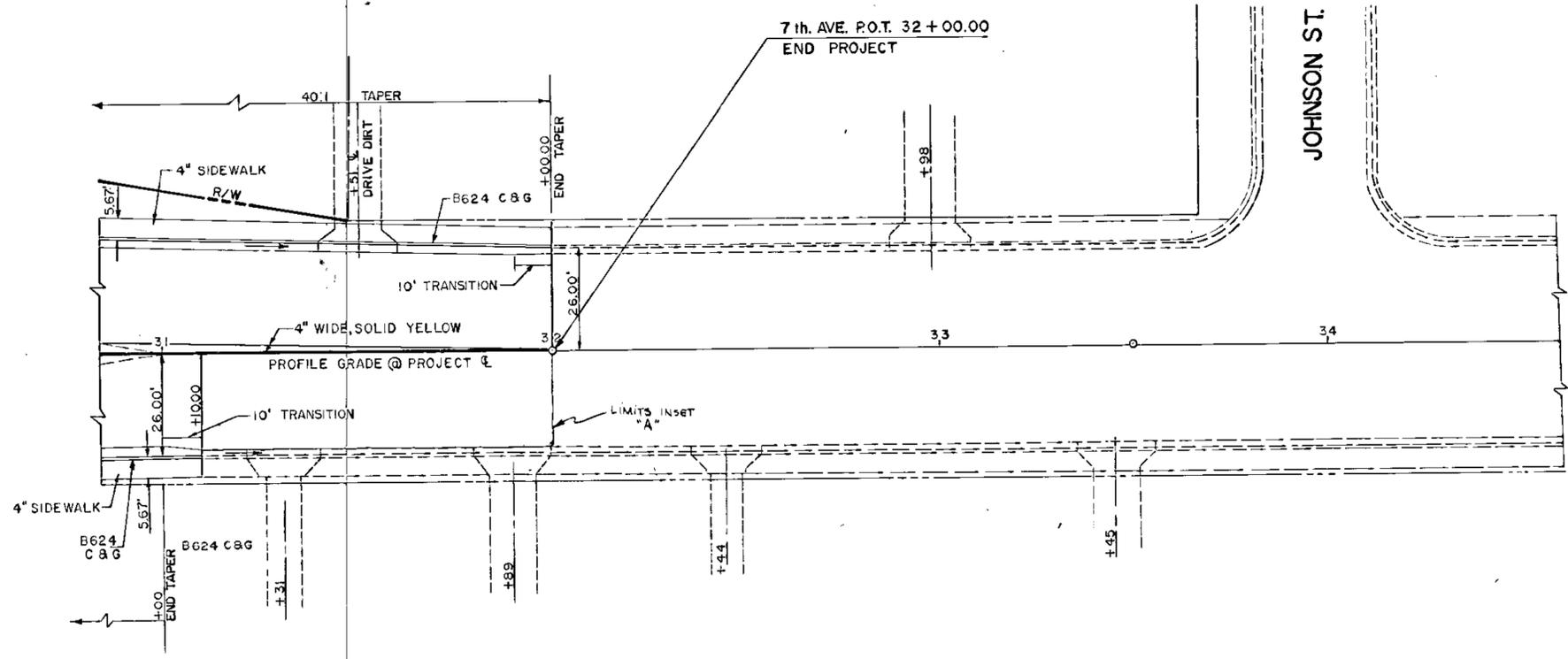
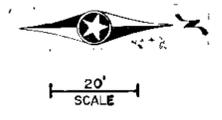
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PROPOSED	CHECKED
ALIGNMENT	CHECKED
DESIGN APPROVAL	CHECKED

PROFILE

EXISTING	CHECKED
PROPOSED	CHECKED
GRADES	CHECKED
SEWER	CHECKED

7th AVE. DETAILS

STA. 25+00.00 to STA. 31+00.00



PLAN

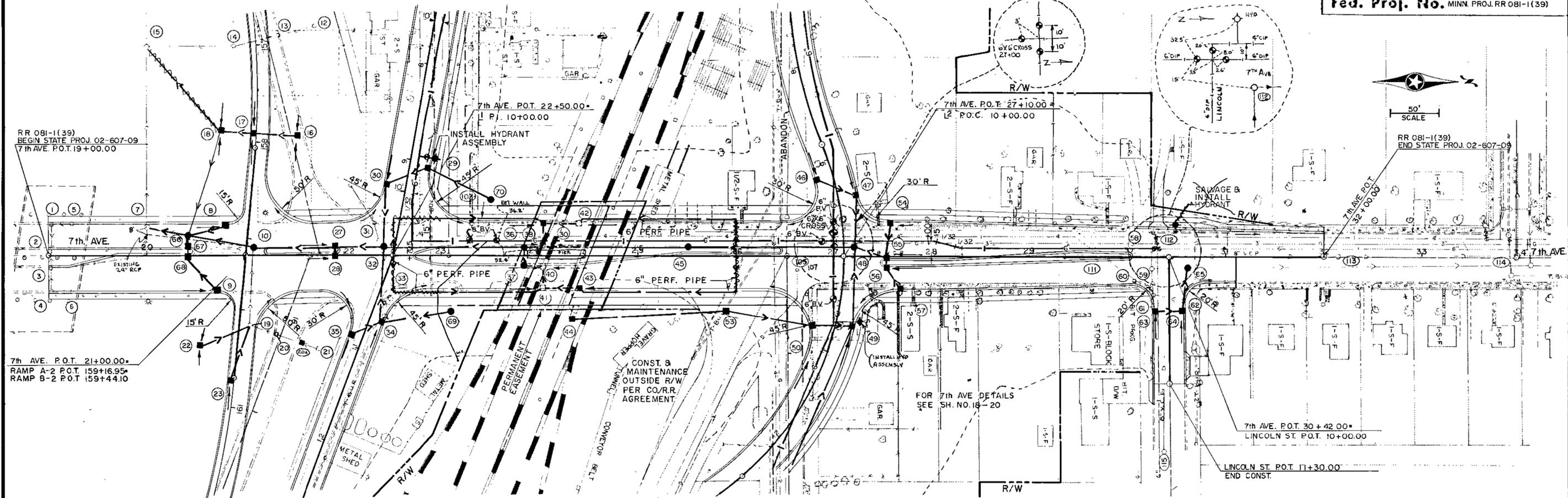
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ALIGNMENT	CHECKED
DESIGN APPROVAL	

PROFILE

EXISTING	CHECKED
PROPOSED	CHECKED
GRADES	CHECKED
SEWER	CHECKED

7th AVE. DETAILS
 STA. 31+00.00 to STA. 32+00.00

Rebuilt 1-5-79

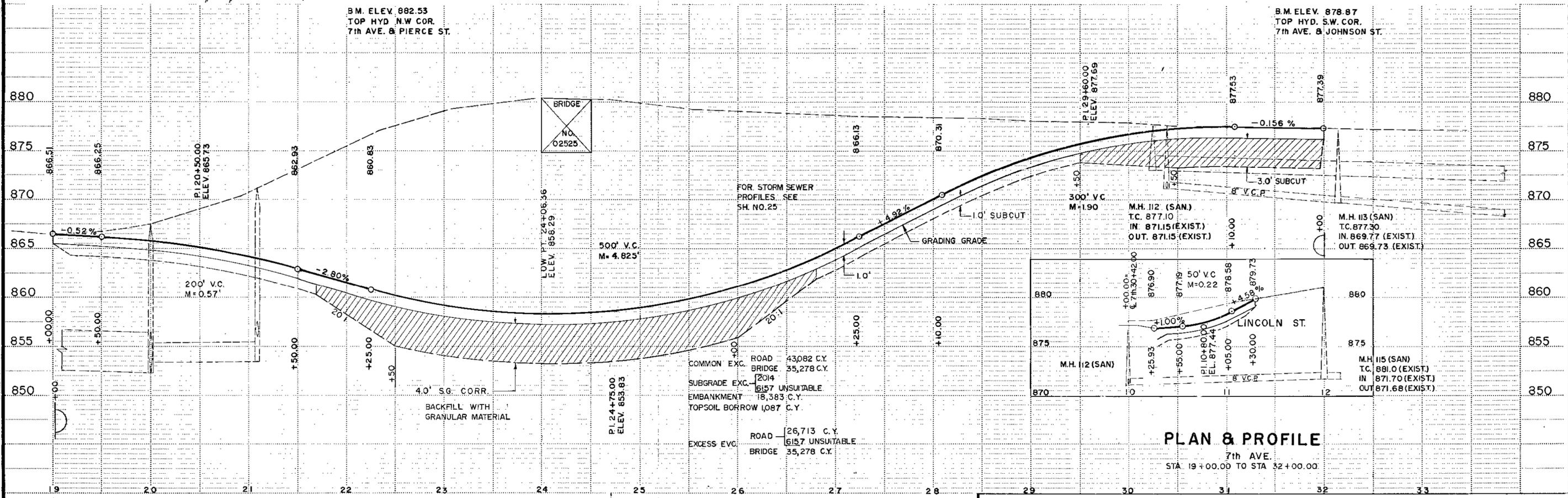


PLAN

EXISTING	CHECKED
PROPOSED	CHECKED
ALIGNMENT	CHECKED
DESIGN APPROVAL	CHECKED

PROFILE

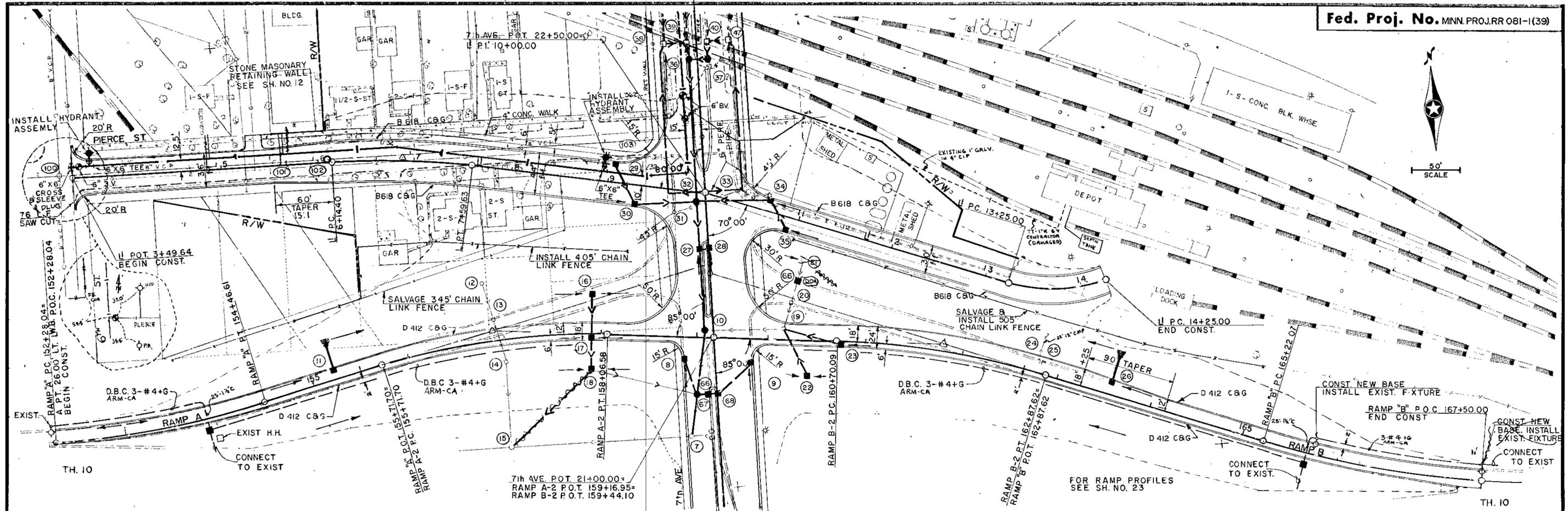
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PROPOSED	CHECKED
GRADES	CHECKED
SEWER	CHECKED



COMMON EXC.	ROAD	43,082 C.Y.
	BRIDGE	35,278 C.Y.
SUBGRADE EXC.		2,014
EMBANKMENT		18,383 C.Y.
TOPSOIL BORROW		1,087 C.Y.
EXCESS EVC.	ROAD	26,713 C.Y.
	BRIDGE	35,278 C.Y.

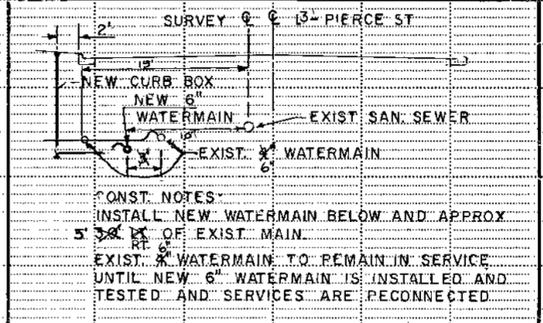
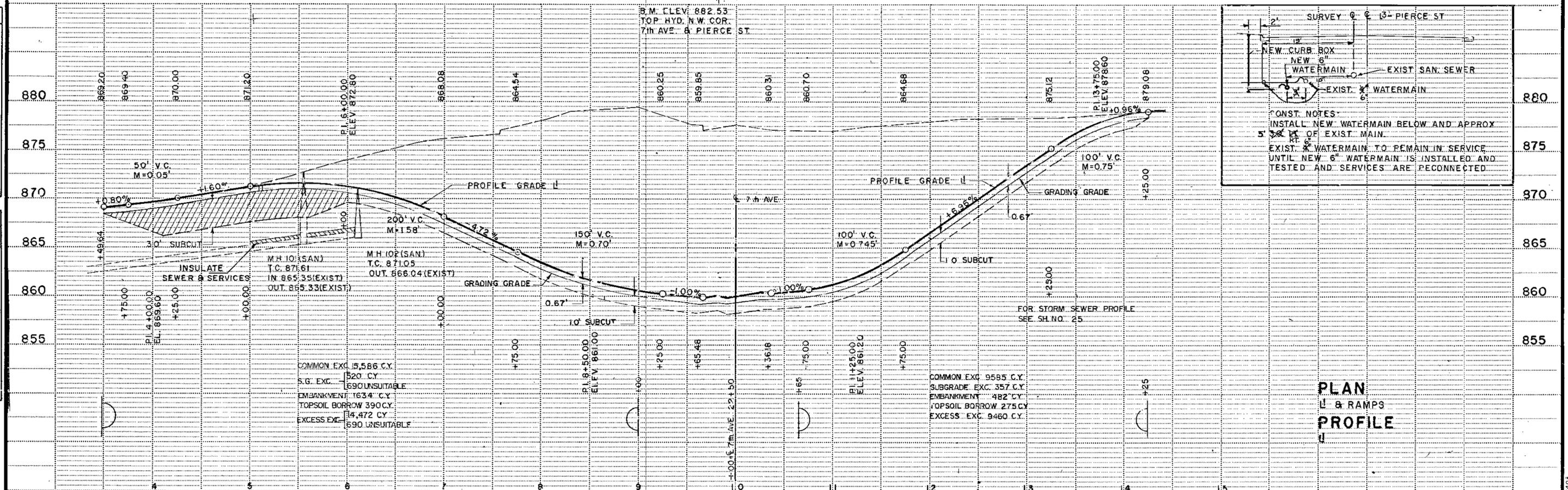
PLAN & PROFILE

7th AVE
STA. 19+00.00 TO STA. 32+00.00



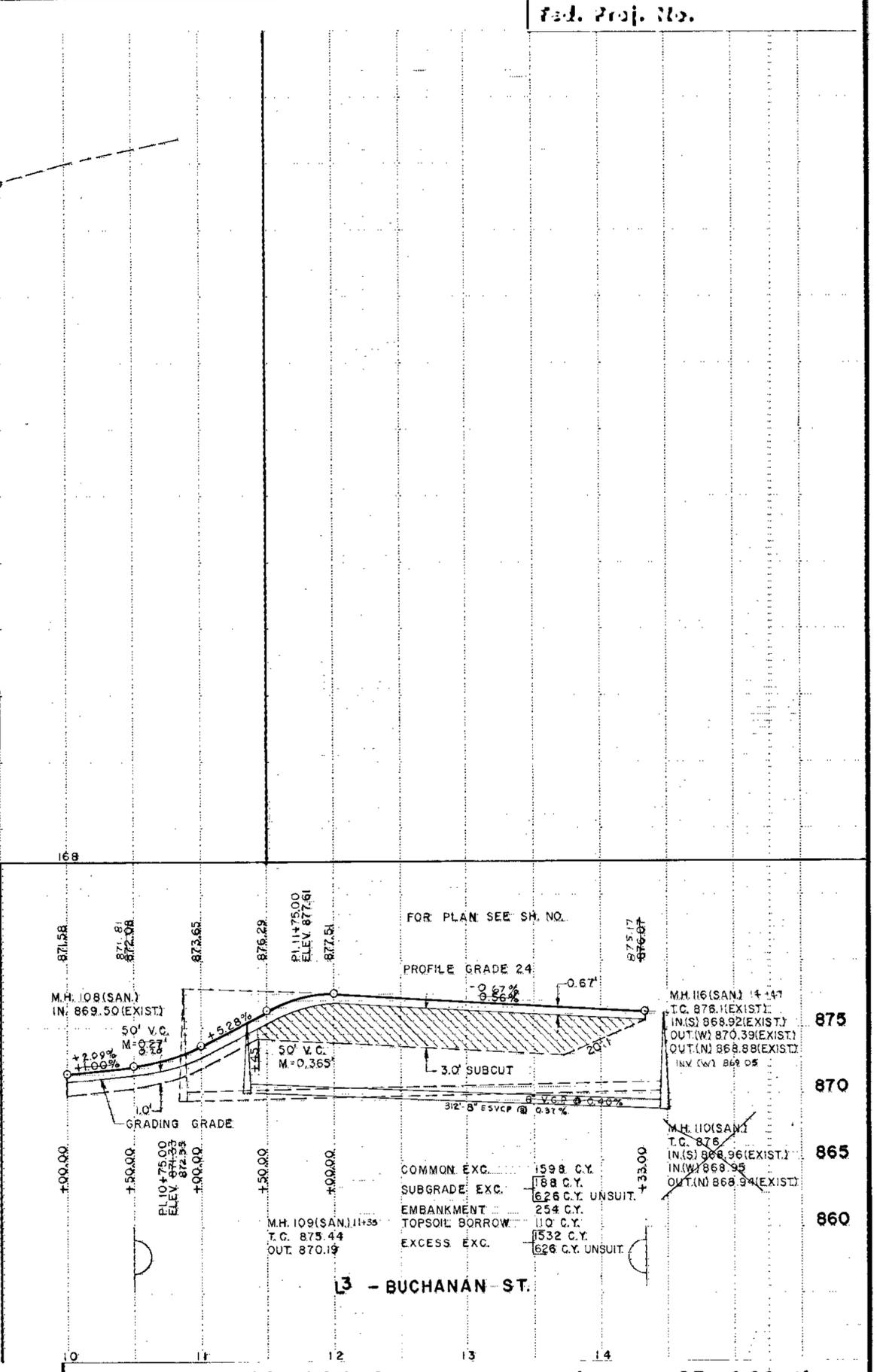
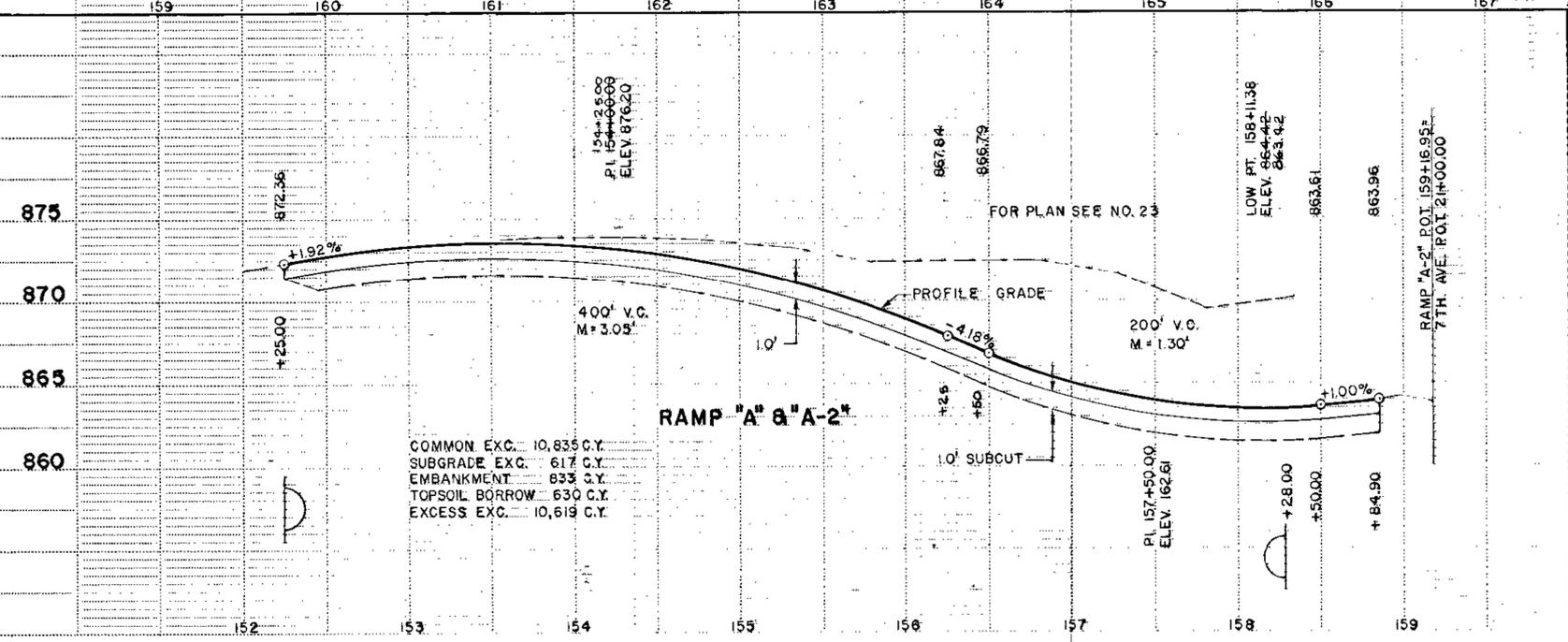
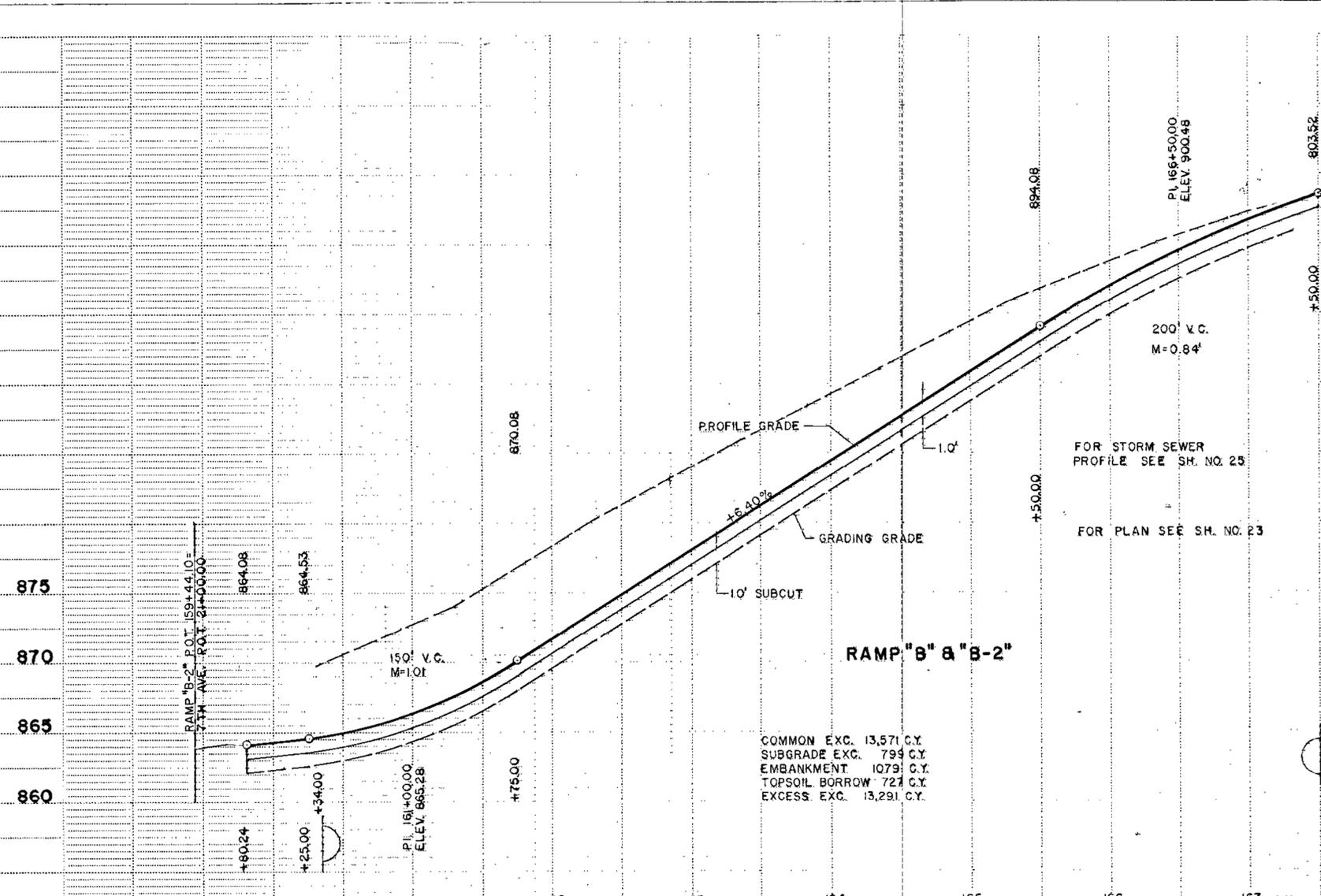
PLAN	
EXISTING ALIGNMENT	CHECKED
PROPOSED ALIGNMENT	CHECKED
DESIGN APPROVAL	CHECKED

PROFILE	
EXISTING GRADES	CHECKED
PROPOSED GRADES	CHECKED
SEWER	CHECKED

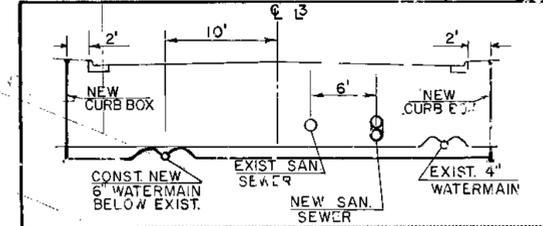
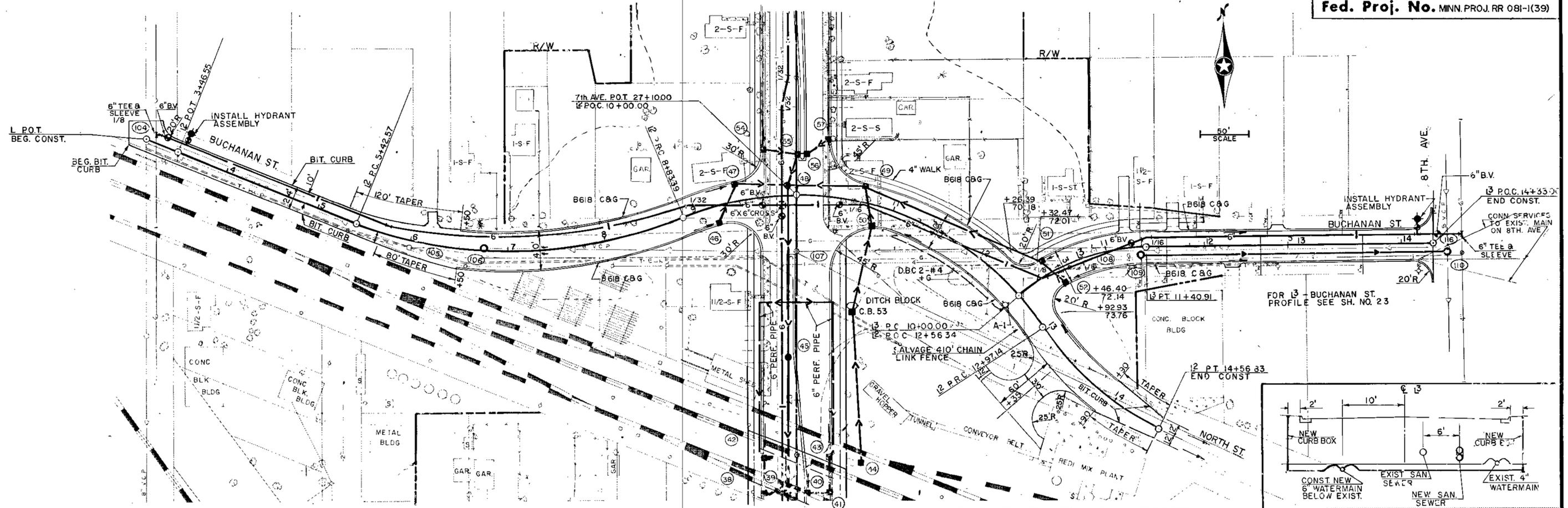


CONST. NOTES:
 1. INSTALL NEW WATERMAIN BELOW AND APPROX. 5' BELOW EXIST. MAIN.
 2. EXIST. 6" WATERMAIN TO REMAIN IN SERVICE UNTIL NEW 6" WATERMAIN IS INSTALLED AND TESTED AND SERVICES ARE RECONNECTED.

PLAN
 & RAMP
 PROFILE

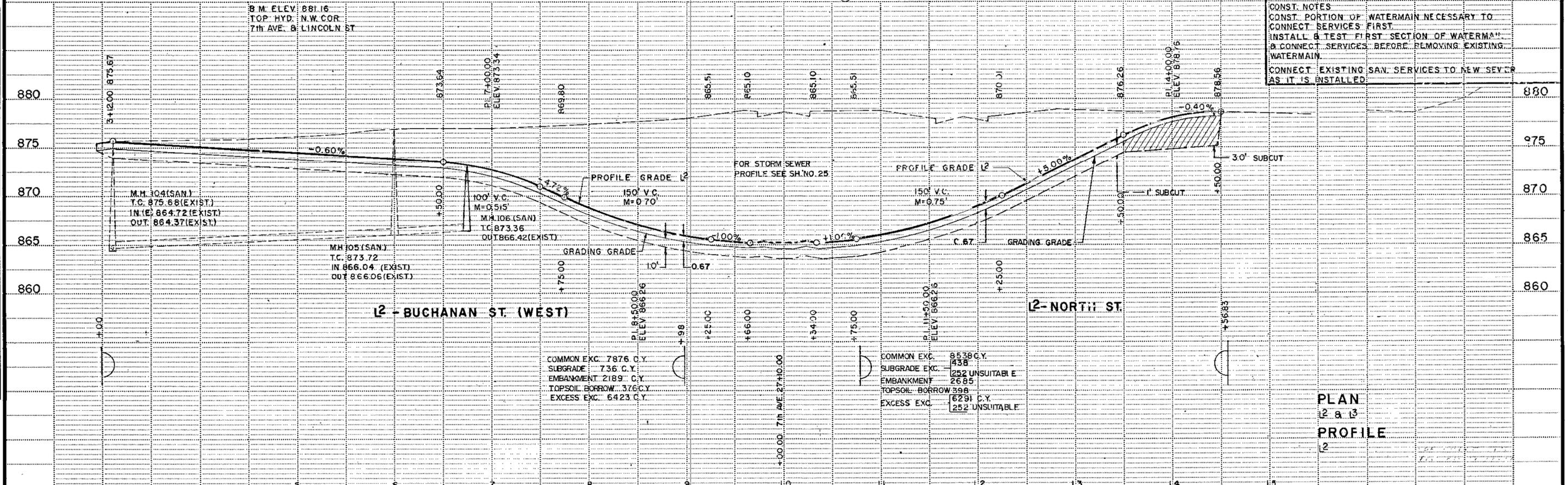


FULL PROFILE NOTED
 R.A. BROWN CO. CHICAGO, ILL.



PLAN
 EXISTING CHECKED
 PROPOSED CHECKED
 ALIGNMENT CHECKED
 DESIGN APPROVAL CHECKED

PROFILE
 EXISTING CHECKED
 PROPOSED CHECKED
 GRADES CHECKED
 SEWER CHECKED



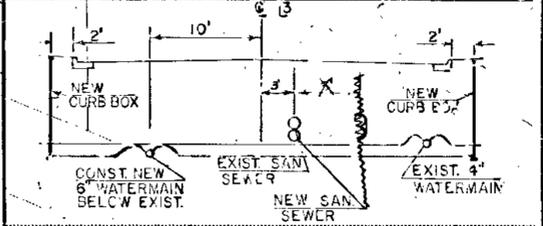
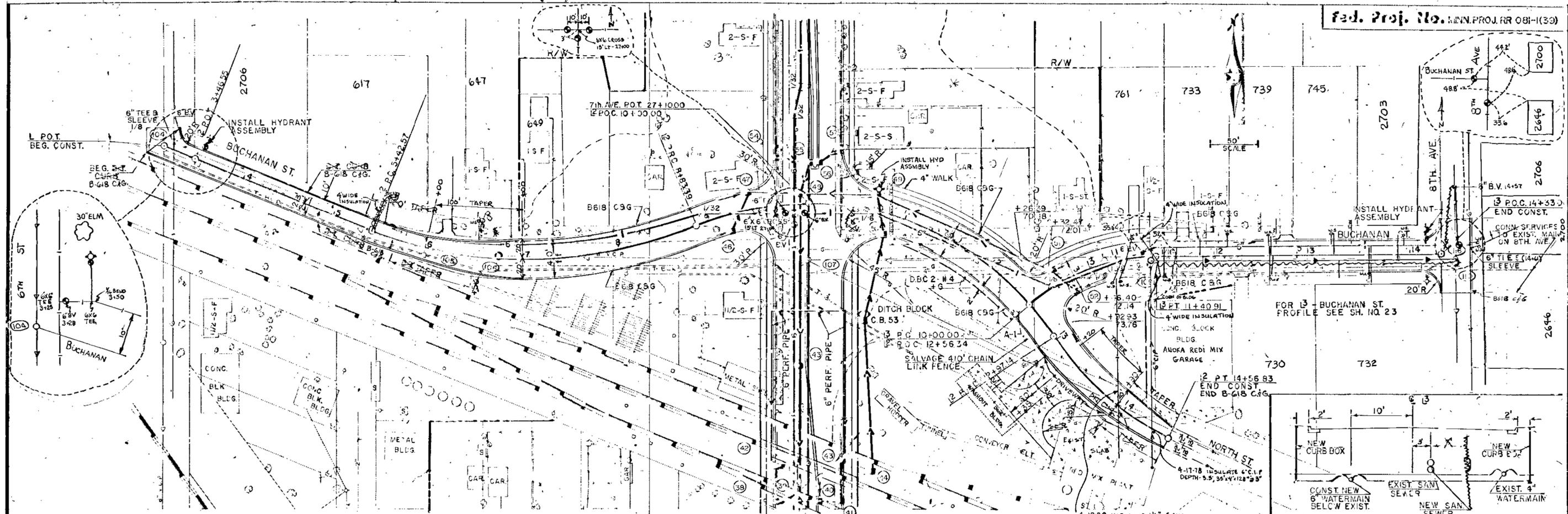
CONST. NOTES
 CONST. PORTION OF WATERMAIN NECESSARY TO
 CONNECT SERVICES FIRST.
 INSTALL & TEST FIRST SECTION OF WATERMAIN.
 & CONNECT SERVICES BEFORE REMOVING EXISTING
 WATERMAIN.
 CONNECT EXISTING SAN. SERVICES TO NEW SEWER
 AS IT IS INSTALLED.

COMMON EXC. 7876 C.Y.
 SUBGRADE 736 C.Y.
 EMBANKMENT 2189 C.Y.
 TOPSOIL BORROW 376 C.Y.
 EXCESS EXC. 6423 C.Y.

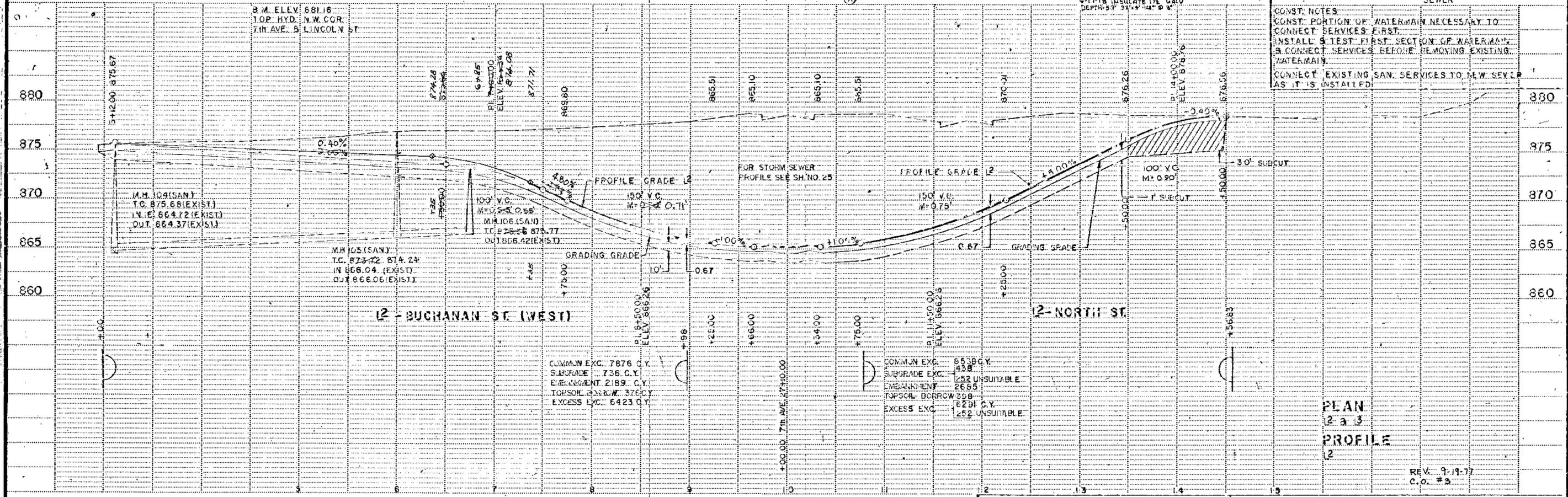
COMMON EXC. 8538 C.Y.
 SUBGRADE 438
 EMBANKMENT 252 UNSUITABLE
 TOPSOIL BORROW 2685
 EXCESS EXC. 6291 C.Y.
 252 UNSUITABLE

PLAN
 2 & 13
 PROFILE
 2

SINGLE PLAN-DOTTED
 A. HERRING CO. - MINNEAPOLIS, MINN.



PLAN	EXISTING	CHECKED
	PROPOSED	CHECKED
	ALIGNMENT	CHECKED
	DESIGN APPROVAL	CHECKED
PROFILE	EXISTING	CHECKED
	PROPOSED	CHECKED
	GRADES	CHECKED
	SEWER	CHECKED

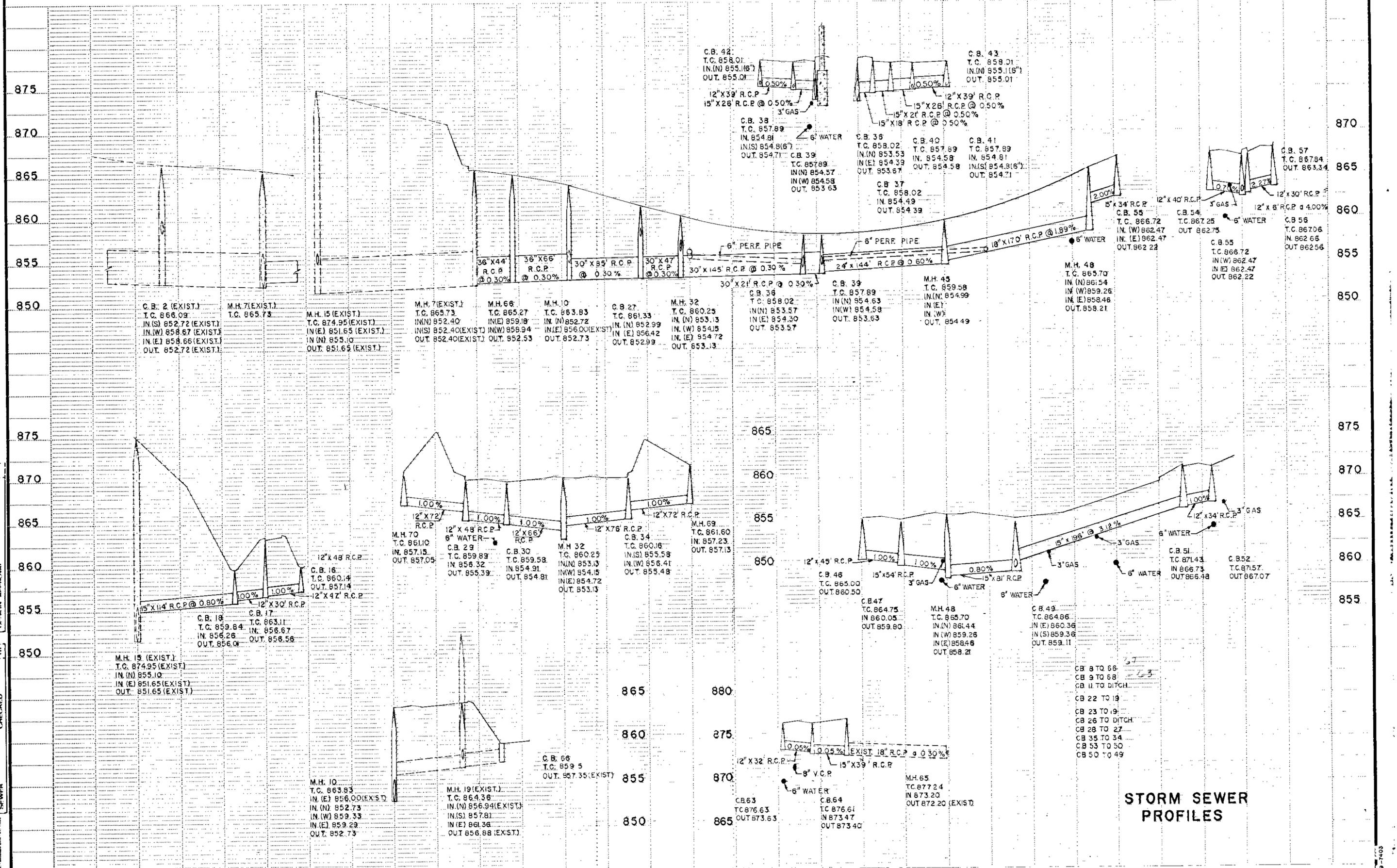


CONST. NOTES:
 CONST. PORTION OF WATERMAIN NECESSARY TO
 CONNECT SERVICES FIRST.
 INSTALL & TEST FIRST SECTION OF WATERMAIN
 & CONNECT SERVICES BEFORE REMOVING EXISTING
 WATERMAIN.
 CONNECT EXISTING SAN SERVICES TO NEW SEWER
 AS IT IS INSTALLED.

COMMON EXC. 7876 C.Y.
 SUBGRADE 736 C.Y.
 EMBANKMENT 2189 C.Y.
 TOPSOIL 3700 C.Y.
 EXCESS EXC. 6423 C.Y.

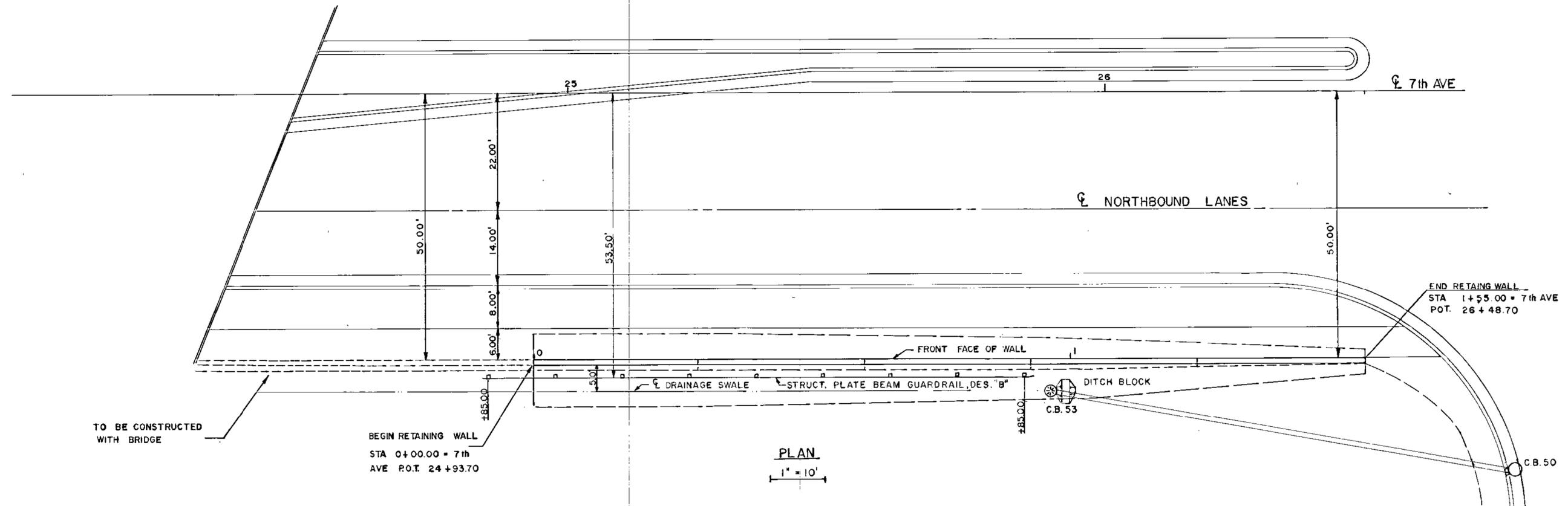
COMMON EXC. 5538 C.Y.
 SUBGRADE 438 C.Y.
 EMBANKMENT 2655 C.Y.
 TOPSOIL BORROW 399 C.Y.
 EXCESS EXC. 1629 C.Y.
 1629 UNSUITABLE

PLAN
 2-a-3
 PROFILE
 12
 REV. 9-19-77
 C.O. # 2



EXISTING	CHECKED
PROPOSED	CHECKED
ALIGNMENT	CHECKED
GRADES	CHECKED
SEWER	CHECKED

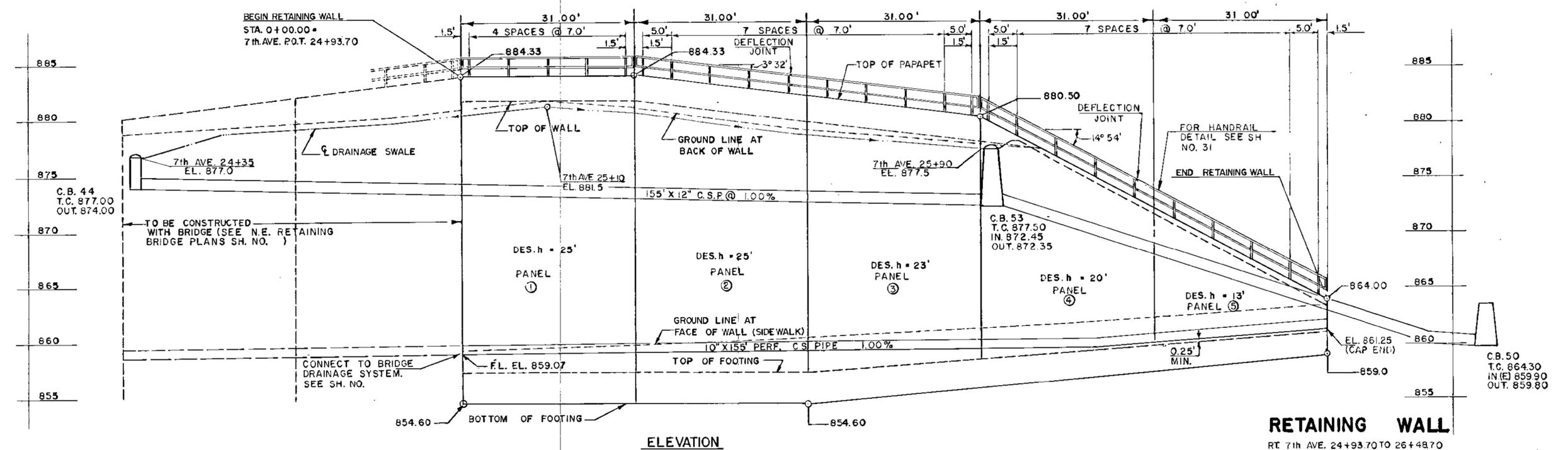
STORM SEWER PROFILES



PLAN
1" = 10'

PLAN	
EXISTING	CHECKED
PROPOSED	CHECKED
ALIGNMENT	CHECKED
DESIGN APPROVAL	CHECKED

PROFILE	
EXISTING	CHECKED
PROPOSED	CHECKED
GRADES	CHECKED
SEWER	CHECKED

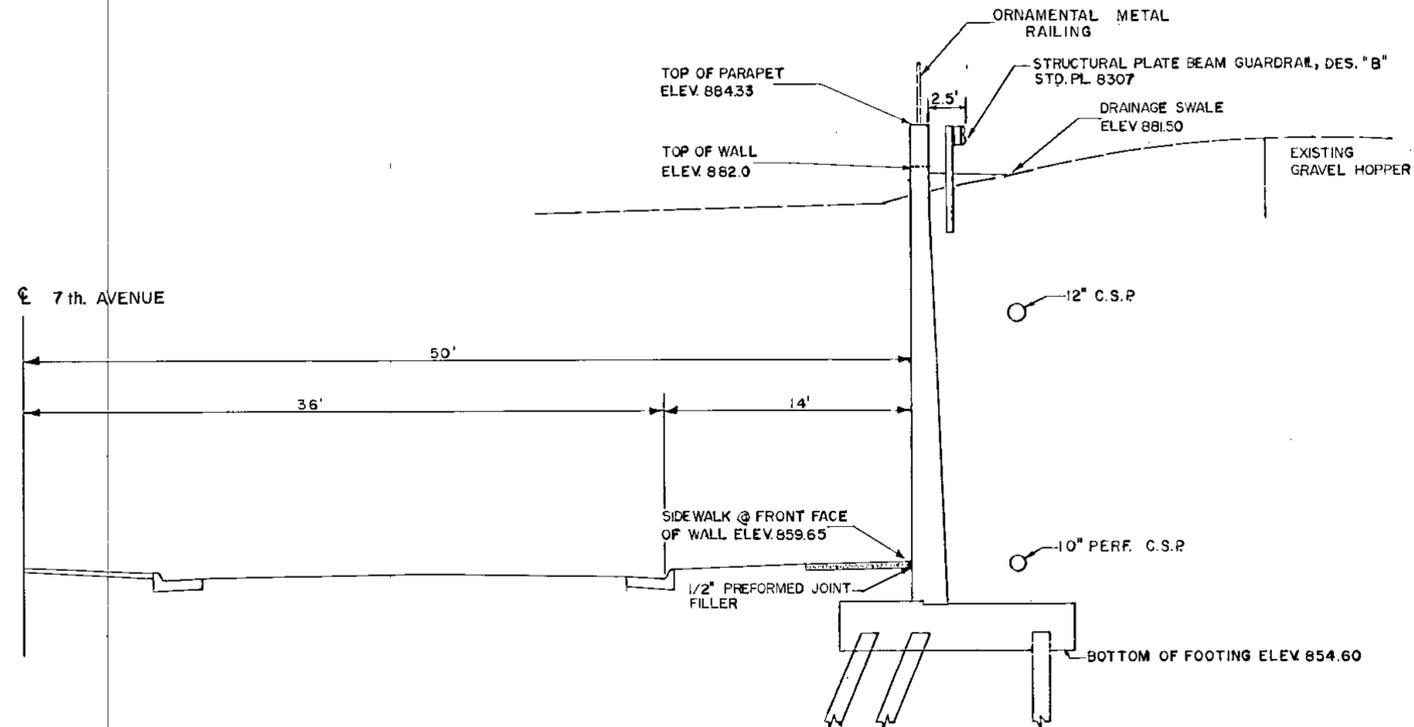


ELEVATION

SCALE VERT. 5'
HORIZ. 10'

RETAINING WALL
RT 7th AVE. 24+93.70 TO 26+48.70

QUANTITIES			
	CONCRETE CU. YD.	STEEL POUNDS	CLASS "Y" EXC. CU. YD.
FOOTING	1A43 - 159 C.Y.	13,360	325
STEM	3Y43 - 173 C.Y.	19,480	



5'
SCALE

TYPICAL SECTION
RETAINING WALL - 2' LIVE LOAD SURCHARGE
STA. 0 + 15.00 - 7th. AVE. STA 25 + 08.7

PLAN

EXISTING _____ CHECKED _____
PROPOSED _____ CHECKED _____
ALIGNMENT _____ CHECKED _____
DESIGN APPROVAL _____

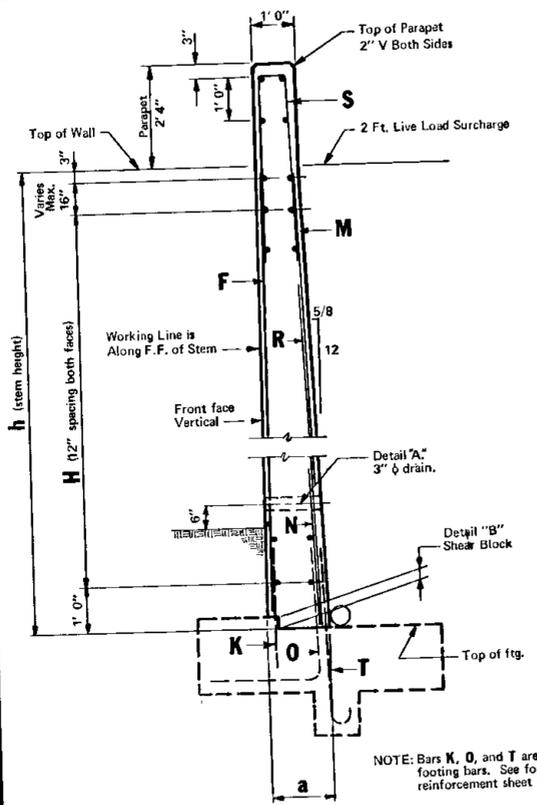
PROFILE

EXISTING _____ CHECKED _____
PROPOSED _____ CHECKED _____
GRADES _____ CHECKED _____
SEWER _____ CHECKED _____

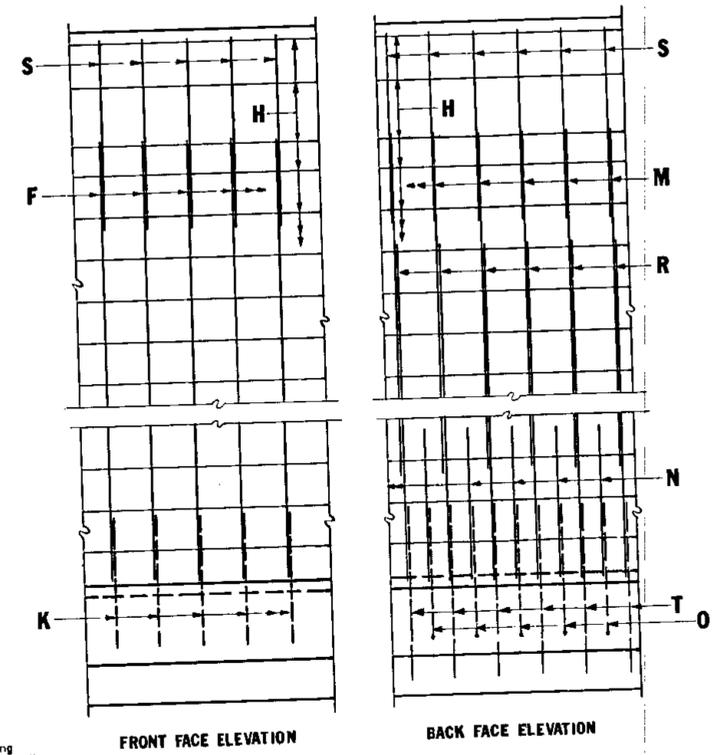
PILING					TEST PILE
STATION	TYPE	LENGTH	NUMBER	LIN. FT.	
SEE NOTE	STEEL H	70	3	210	
	STEEL H	60	50	3000	

NOTE: LOCATE TEST PILES NEAR THE CENTER OF PANELS ①, ③ & ⑤

RETAINING WALL
RT. 7th. AVE. STA. 24 + 93.7 TO 26 + 48.7

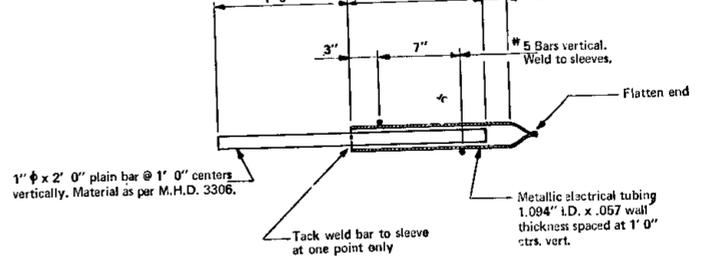


TYPICAL SECTION THRU STEM



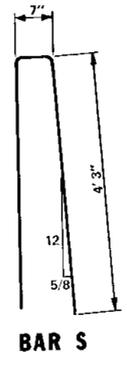
FRONT FACE ELEVATION BACK FACE ELEVATION

PART STEM ELEVATION

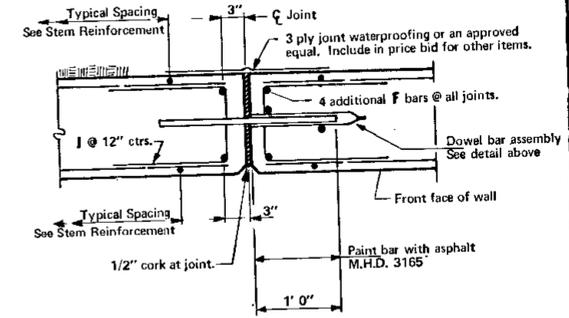


DOWEL BAR ASSEMBLY

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

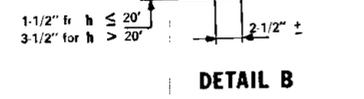


BAR S



TYPICAL SECTION THRU STEM JOINT

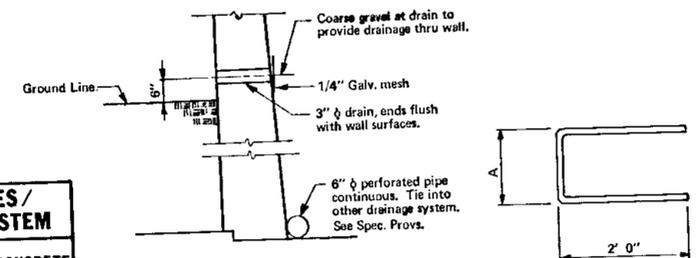
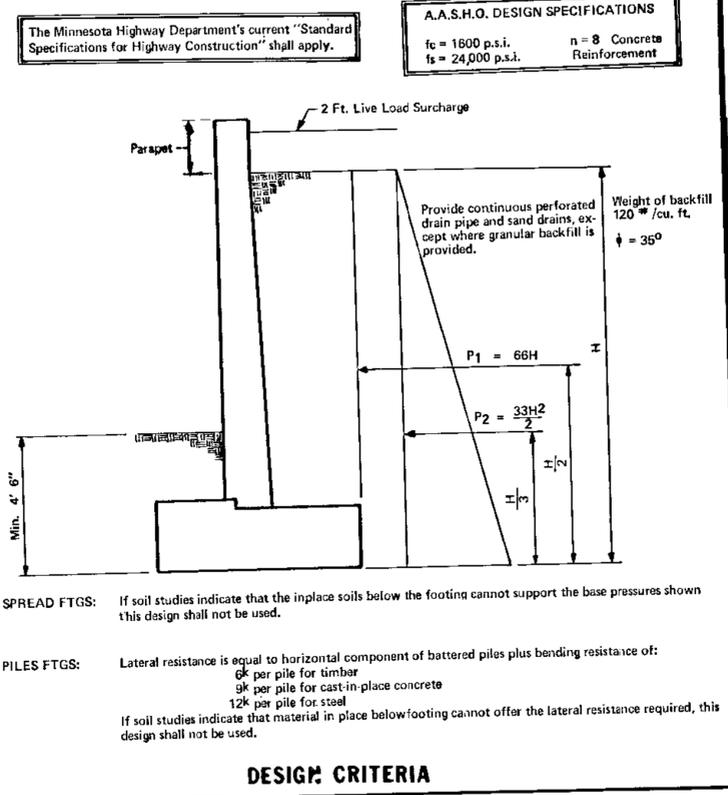
Cork shall comply with M.H.D. 3702. Secure cork with 2-1/2" long 11 ga. copper nails about 18" ctrs. Cork and nails included in price.



DETAIL B

*Vertical bars F and M in stems of varying heights 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)			S (PARAPET)			REINF.	CONCRETE				
HT.	WIDTH	SIZE	NO.	LENGTH	A	SIZE	LENGTH	SPAC.	SIZE	NO.	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	POUNDS	CU. YDS.	
5'	1' 3-1/8"	# 6	10	4' 8"	7" to 9 1/2"	# 4	4' 8"	12"	# 5	12	18"	# 5	4' 10"	14-1/2"							# 5	9' 1"	12"				31.88	.294	
6'	1' 3-3/4"	6	12	4' 8"	7 to 10	4	5' 8"	12	5	14	18	5	5' 10"	14-1/2"							5	9' 1"	12				36.00	.342	
7'	1' 4-3/8"	6	14	4' 9"	7 to 10 1/2	4	6' 8"	12	5	14	18	5	6' 10"	14-1/2"							5	9' 1"	12				38.11	.391	
8'	1' 5"	6	16	4' 9"	7 to 11	4	7' 8"	12	5	16	18	5	7' 10"	14-1/2"							5	9' 1"	12				42.26	.443	
9'	1' 5-5/8"	6	18	4' 9"	7 to 1 0	4	8' 8"	12	5	18	18	5	8' 10"	14-1/2"							5	9' 1"	12				46.40	.496	
10'	1' 6-1/4"	6	20	4' 10"	7 to 1 0-1/2	4	9' 8"	12	5	18	18	5	9' 10"	14-1/2"							5	9' 1"	12				48.54	.551	
11'	1' 6-7/8"	6	22	4' 10"	7 to 1 1	4	10' 8"	12	5	20	18	5	10' 10"	14-1/2"							# 6	5' 0"	14-1/2"				52.69	.609	
12'	1' 7-1/2"	6	24	4' 10"	7 to 1 1-1/2	4	11' 8"	12	5	22	18	5	11' 0"	14-1/2"							7	5' 0"	14-1/2"				62.34	.668	
13'	1' 8-1/8"	6	26	4' 11"	7 to 1 2	4	12' 8"	12	5	22	18	5	11' 0"	14-1/2"							7	5' 0"	14-1/2"				65.90	.729	
14'	1' 8-3/4"	6	28	4' 11"	7 to 1 2-1/2	4	13' 8"	12	5	24	18	5	11' 0"	14-1/2"							8	6' 0"	14-1/2"				69.19	.792	
15'	1' 9-3/8"	6	30	4' 11"	7 to 1 3	4	14' 8"	12	5	26	18	5	11' 0"	14-1/2"							8	7' 0"	14-1/2"				77.29	.857	
16'	1' 10"	6	32	4' 11"	7 to 1 4	4	15' 8"	12	5	26	18	5	11' 0"	13'							9	9' 0"	13				80.71	.924	
17'	1' 10-5/8"	6	34	5' 0"	7 to 1 4-1/2	4	16' 8"	12	5	28	18	5	11' 0"	13'							8	8' 0"	13				89.49	.992	
18'	1' 11-1/4"	6	36	5' 0"	7 to 1 5	4	17' 8"	12	5	30	18	5	11' 0"	13							9	9' 0"	13				101.32	1.063	
19'	1' 11-7/8"	6	38	5' 0"	7 to 1 5-1/2	4	18' 8"	12	5	30	18	5	11' 0"	13							9	10' 0"	13				105.68	1.136	
20'	2' 0-1/2"	6	40	5' 1"	7 to 1 6	4	19' 8"	12	5	32	18	5	11' 0"	14-1/2"							7	11' 0"	14-1/2"				112.95	1.211	
21'	2' 1-1/8"	6	42	5' 1"	7 to 1 7	4	20' 8"	12	5	34	18	5	11' 0"	14-1/2"							8	12' 0"	14-1/2"				124.04	1.286	
22'	2' 1-3/4"	6	44	5' 1"	7 to 1 7-1/2	4	21' 6"	12	5	34	18	5	11' 0"	14-1/2"							8	12' 0"	14-1/2"				135.13	1.364	
23'	2' 2-3/8"	6	46	5' 1"	7 to 1 8	4	22' 6"	12	5	36	18	5	11' 0"	13							9	9' 0"	14-1/2"				143.47	1.445	
24'	2' 3"	6	48	5' 2"	7 to 1 8-1/2	4	23' 6"	12	5	38	18	5	11' 0"	13							9	10' 0"	13				157.35	1.527	
25'	2' 3-5/8"	6	50	5' 2"	7 to 1 9	4	24' 6"	12	5	38	18	5	11' 0"	12							8	15' 0"	13				171.23	1.611	
26'	2' 4-1/4"	6	52	5' 2"	7 to 1 9-1/2	4	25' 6"	12	5	40	18	5	11' 0"	12							9	17' 0"	12				186.23	1.697	
27'	2' 4-7/8"	6	54	5' 3"	7 to 1 10	4	26' 6"	12	5	42	18	5	11' 0"	12							9	18' 0"	12				206.50	1.785	
28'	2' 5-1/2"	6	56	5' 3"	7 to 1 11	4	27' 6"	12	5	42	18	5	11' 0"	11							10	11' 0"	12				215.45	1.875	
29'	2' 6-1/8"	6	58	5' 3"	7 to 1 11-1/2	4	28' 6"	12	5	44	18	5	11' 0"	11							10	20' 0"	11				244.41	1.967	
30'	2' 6-3/4"	# 6	60	5' 4"	7" to 2' 0"	# 4	29' 6"	12"	# 5	46	18"	# 5	11' 0"	11"	# 10	11' 0"	11"	# 10	11' 0"	11"	# 10	21' 0"	11"	# 5	9' 1"	12"		257.37	2.061



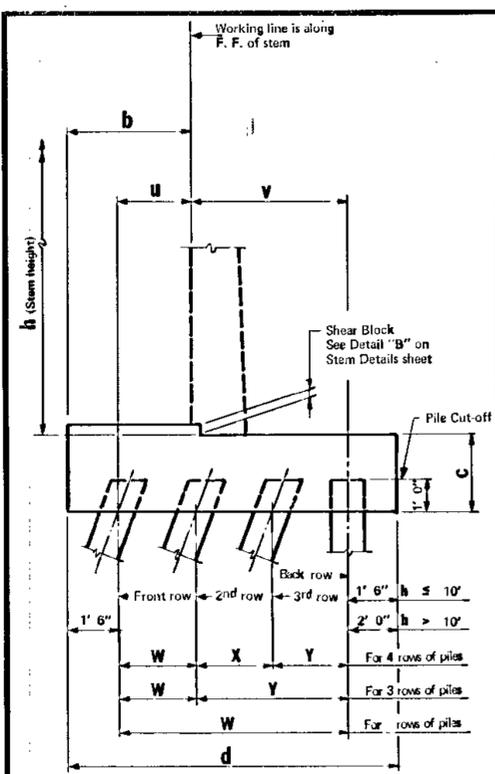
DETAIL A

BAR J

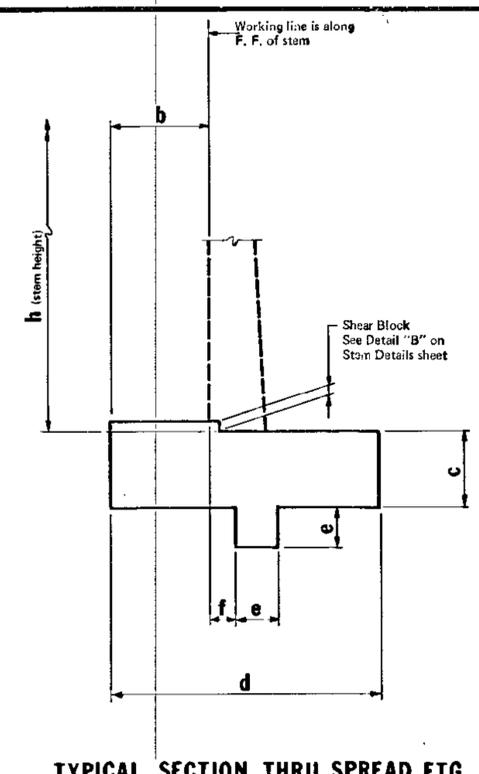
3" dia. Drains @ about 10' ctrs. horz. Rigid asbestos cement, bituminized fiber or plastic conduit as per MHD 3803. Drains, mesh, and gravel to be included in price bid for other items. Perforated pipe is required only when listed for payment in the drainage pay items.

- STEM NOTES:**
- Maximum spacing of stem joints (panels) is 32 feet. Use dowel assemblies at all joints. No reinf. thru joint.
 - Concrete in stems to be Concrete Mix No. 3Y43.
 - Reinforcement bars shall be deformed billet steel bars conforming to ASTM A615 Grade 60.
 - Bar lap at authorized splices: 36 diameters for #4 to #7 bars and 40 diameters for #8 to #11 bars.
 - 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.
 - Edges of concrete on all exposed joints and top of stem wall shall be formed with 1/2" vee unless otherwise noted.
 - Construction to be in accordance with MHD 2411 except as noted.
 - When stem heights vary by less than four feet in any panel, the rebar shall be sized and spaced for the maximum height in the panel.
 - 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.
 - 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.
 - When stem heights are five feet or less, the rebar shall be sized and spaced as required for h = 5 feet.
 - 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.

RETAINING WALL - 2' LIVE LOAD SURCHARGE
(STEM DETAILS INCLUDING PARAPET)



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



SPREAD FOOTING GEOMETRICS						BASE PRESSURE		QTY./LIN. FT. OF FOOTING
h HT.	b	c	d	e	f	AT TOE	AT HEEL	CONCRETE CU. YDS.
	OFFSET	DEPTH	WIDTH	BLOCK	OFFSET			
5'	1' 1-7/8"	1' 3"	3' 8"	1' 0"	0' 10-1/8"	1.92	0.02	.213
6	1' 3-3/4"	1' 4"	4' 2-1/2"	1' 0"	10-3/4"	2.06	.03	.252
7	1' 5-5/8"	1' 4"	4' 9"	1' 0"	11-3/8"	2.23	.04	.280
8	1' 7-1/2"	1' 5"	5' 3-1/2"	1' 0"	1' 0"	2.40	.05	.324
9	1' 9-3/8"	1' 5"	5' 10"	1' 0"	1' 0-5/8"	2.55	.07	.353
10	1' 11-1/4"	1' 6"	6' 4-1/2"	1' 0"	1' 1-1/4"	2.70	.09	.399
11	2' 1-1/8"	1' 6"	6' 11"	1' 0"	1' 1-7/8"	2.86	.11	.432
12	2' 3"	1' 7"	7' 5-1/2"	1' 0"	1' 2-1/2"	3.02	.13	.488
13	2' 4-7/8"	1' 7"	8' 0"	1' 0"	1' 3-1/8"	3.17	.16	.519
14	2' 6-3/4"	1' 8"	8' 6-1/2"	1' 2"	1' 3-3/4"	3.31	.19	.591
15	2' 8-5/8"	1' 8"	9' 1"	1' 2"	1' 4-3/8"	3.45	.22	.625
16	2' 10-1/2"	1' 9"	9' 7-1/2"	1' 2"	1' 5-5/8"	3.61	.24	.689
17	3' 0-3/8"	1' 9"	10' 2"	1' 2"	1' 5-5/8"	3.78	.28	.725
18	3' 2-1/4"	1' 10"	10' 8-1/2"	1' 2"	1' 6-1/4"	3.92	.31	.794
19	3' 4-1/8"	1' 10"	11' 3"	1' 2"	1' 6-7/8"	4.07	.35	.831
20	3' 6"	1' 11"	11' 9-1/2"	1' 2"	1' 7-1/2"	4.20	.39	.905
21	3' 7-7/8"	1' 11"	12' 5"	1' 2"	1' 8-1/8"	4.37	.42	.968
22	3' 9-3/4"	2' 0"	12' 10-1/2"	1' 4"	1' 8-3/4"	4.50	.47	1.064
23	3' 11-5/8"	2' 0"	13' 5"	1' 4"	1' 9-3/8"	4.65	.50	1.105
24	4' 1-1/2"	2' 1"	13' 11-1/2"	1' 4"	1' 10"	4.8	.54	1.190
25	4' 3-3/8"	2' 1"	14' 6"	1' 4"	1' 10-5/8"	4.92	.60	1.234
26	4' 5-1/4"	2' 2"	15' 0-1/2"	1' 4"	1' 11-1/4"	5.07	.63	1.324
27	4' 7-1/8"	2' 2"	15' 7"	1' 4"	1' 11-7/8"	5.21	.68	1.369
28	4' 9"	2' 3"	16' 1-1/2"	1' 4"	2' 0-1/2"	5.35	.72	1.464
29	4' 10-7/8"	2' 3"	16' 8"	1' 4"	2' 1-1/8"	5.49	.77	1.511
30'	5' 0-3/4"	2' 4"	17' 2-1/2"	1' 4"	2' 1-3/4"	5.65	.81	1.610

TYPICAL SECTION THRU SPREAD FTG.

TYPICAL SECTION THRU PILE FTG.

FOOTING NOTES

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

h HT.	PILE SPACING							QTY./LIN. FT. OF FOOTING	
	TRANSVERSE			LONGITUDINAL				PILES NO.	CONCRETE CU. YDS.
	W	X	Y	FRONT ROW	2nd ROW	3rd ROW	BACK ROW		
5'	1' 6"			12' 0"			12' 0"	.187	.341
6	1' 11-1/2"			10' 10"			12' 0"	.176	.391
7	2' 5"			9' 8"			12' 0"	.187	.427
8	2' 10-1/2"			8' 6"			12' 0"	.201	.482
9	3' 4"			7' 4"			12' 0"	.220	.519
10	3' 9-1/2"			6' 2"			12' 0"	.245	.578
11	3' 9"			5' 8"			12' 0"	.260	.617
12	4' 2-1/2"			5' 2"			12' 0"	.277	.679
13	4' 8"			4' 8"			12' 0"	.298	.720
14	5' 1-1/2"			4' 2"			11' 10"	.325	.787
15	5' 7"			3' 8"			10' 0"	.373	.829
16	6' 0-1/2"			3' 5"			9' 3"	.401	.907
17	6' 6"			3' 2"			8' 8"	.434	.943
18	6' 11-1/2"			2' 11"			7' 9"	.472	1.018
19	7' 5"			2' 8"			7' 0"	.518	1.063
20	3' 0"		4' 10-1/2"	3' 4"	5' 6"		9' 0"	.594	1.138
21	3' 0"		5' 4"	3' 2"	5' 1"		8' 4"	.633	1.215
22	3' 0"		5' 9-1/2"	3' 0"	4' 8"		7' 8"	.678	1.299
23	3' 0"		6' 3"	2' 10"	4' 4"		7' 0"	.726	1.348
24	3' 0"		6' 8-1/2"	2' 8"	4' 0"		6' 4"	.783	1.437
25	3' 0"	3' 0"	4' 2"	3' 0"	3' 3"	10' 0"	10' 0"	.841	1.487
26	3' 0"	3' 0"	4' 7-1/2"	2' 10"	3' 1"	9' 0"	9' 4"	.896	1.580
27	3' 0"	3' 0"	5' 1"	2' 9"	3' 11"	8' 0"	8' 8"	.947	1.631
28	3' 0"	3' 0"	5' 6-1/2"	2' 8"	2' 9"	7' 0"	8' 0"	1.007	1.729
29	3' 0"	3' 0"	6' 0"	2' 7"	2' 7"	6' 0"	7' 4"	1.077	1.782
30'	3' 0"	3' 0"	6' 5-1/2"	2' 6"	2' 6"	5' 0"	6' 8"	1.150	1.882

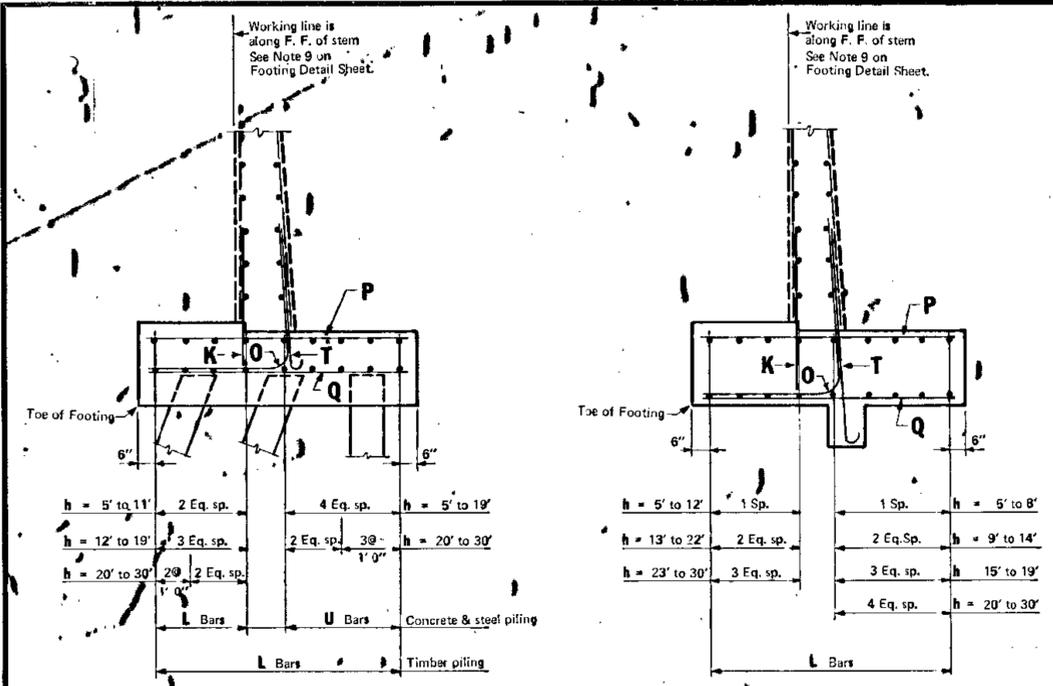
TIMBER PILE SPACING
(See MHD 3471 for diameter of piles)

h HT.	PILE SPACING					QTY./LIN. FT. OF FOOTING	
	TRANSVERSE		LONGITUDINAL			PILES NO.	CONCRETE CU. YDS.
	W	Y	FRONT ROW	2nd ROW	BACK ROW		
5'	1' 6"		12' 0"		12' 0"	.167	.341
6	1' 11-1/2"		12' 0"		12' 0"	.167	.391
7	2' 5"		12' 0"		12' 0"	.167	.427
8	2' 10-1/2"		12' 0"		12' 0"	.167	.482
9	3' 4"		12' 0"		12' 0"	.167	.519
10	3' 9-1/2"		10' 5"		12' 0"	.179	.578
11	3' 9"		9' 7"		12' 0"	.188	.617
12	4' 2-1/2"		8' 9"		12' 0"	.198	.679
13	4' 8"		7' 11"		12' 0"	.210	.720
14	5' 1-1/2"		7' 1"		12' 0"	.224	.787
15	5' 7"		6' 3"		12' 0"	.243	.829
16	6' 0-1/2"		5' 9"		12' 0"	.257	.907
17	6' 6"		5' 4"		12' 0"	.271	.943
18	6' 11-1/2"		4' 11"		12' 0"	.287	1.018
19	7' 5"		4' 6"		11' 8"	.308	1.063
20	3' 0"	4' 10-1/2"	4' 9"	12' 0"	12' 0"	.377	1.138
21	3' 0"	5' 4"	4' 7"	11' 0"	11' 4"	.397	1.215
22	3' 0"	5' 9-1/2"	4' 5"	10' 0"	10' 9"	.420	1.299
23	3' 0"	6' 3"	4' 3"	9' 0"	10' 2"	.445	1.348
24	3' 0"	6' 8-1/2"	4' 1"	8' 0"	9' 7"	.474	1.437
25	3' 0"	7' 2"	4' 0"	7' 0"	9' 0"	.504	1.487
26	3' 0"	7' 7-1/2"	3' 11"	6' 3"	8' 7"	.532	1.580
27	3' 0"	8' 1"	3' 10"	5' 7"	8' 2"	.563	1.631
28	3' 0"	8' 6-1/2"	3' 9"	4' 11"	7' 9"	.599	1.729
29	3' 0"	9' 0"	3' 8"	4' 3"	7' 4"	.644	1.782
30'	3' 0"	9' 5-1/2"	3' 7"	3' 7"	7' 0"	.701	1.883

STEEL PILE SPACING
(10 BP 42 piles as per MHD 3372)

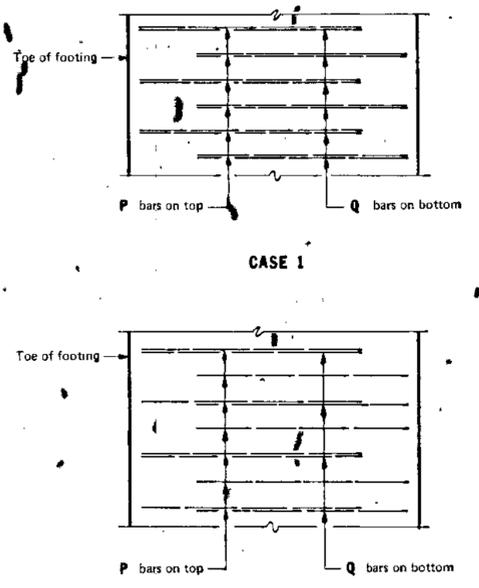
NOTE:
USE HP10X42 STEEL H PILES DESIGN LOADING 55 TONS PER PILE, SEE MHD 2452.3E1.
USE PILE SPACING AS ORIGINALLY NOTED FOR CAST-IN-PLACE CONCRETE PILE. (SOILS REPORT INDICATES A GROUP PILE EFFICIENCY REDUCTION IS REQUIRED)

h HT.	PILE SPACING					QTY./LIN. FT. OF FOOTING	
	TRANSVERSE		LONGITUDINAL			PILES NO.	CONCRETE CU. YDS.
	W	Y	FRONT ROW	2nd ROW	BACK ROW		
5'	1' 6"		12' 0"		12' 0"	.167	.341
6	1' 11-1/2"		12' 0"		12' 0"	.167	.391
7	2' 5"		12' 0"		12' 0"	.167	.427
8	2' 10-1/2"		12' 0"		12' 0"	.167	.482
9	3' 4"		12' 0"		12' 0"	.167	.519
10	3' 9-1/2"		12' 0"		12' 0"	.167	.578
11	3' 9"		12' 0"		12' 0"	.167	.617
12	4' 2-1/2"		12' 0"		12' 0"	.167	.679
13	4' 8"		10' 11"		12' 0"	.175	.720
14	5' 1-1/2"		9' 5"		12' 0"	.188	.787
15	5' 7"		8' 7"		12' 0"	.200	.829
16	6' 0-1/2"		7' 11"		12' 0"	.210	.907
17	6' 6"		7' 4"		12' 0"	.220	.943
18	6' 11-1/2"		6' 9"		12' 0"	.231	1.018
19	7' 5"		6' 2"		12' 0"	.246	1.063
20	3' 0"	4' 10-1/2"	5' 7"		12' 0"	.262	1.138
21	3' 0"	5' 4"	5' 3"		12' 0"	.274	1.215
22	3' 0"	5' 9-1/2"	4' 11"		12' 0"	.287	1.299
23	3' 0"	6' 3"	4' 7"		11' 8"	.304	1.348
24	3' 0"	6' 8-1/2"	5' 0"	12' 0"	12' 0"	.367	1.437
25	3' 0"	7' 2"	5' 0"	12' 0"	12' 0"	.367	1.487
26	3' 0"	7' 7-1/2"	5' 0"	10' 7"	11' 7"	.381	1.580
27	3' 0"	8' 1"	5' 0"	9' 2"	11' 2"	.399	1.631
28	3' 0"	8' 6-1/2"	5' 0"	7' 9"	10' 9"	.422	1.729



TYPICAL SECTION THRU PILE FOOTING

TYPICAL SECTION THRU SPREAD FOOTING



CASE 1

CASE 2

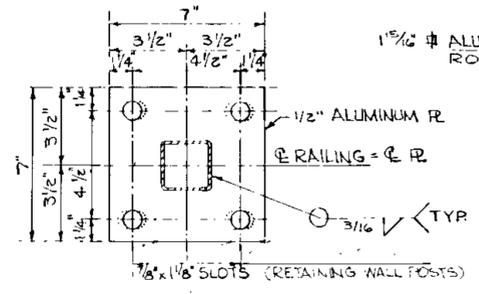
PART FOOTING PLAN (SHOWING STAGGERED P AND Q BARS ONLY)

TYPE OF FOOTING	CASE 1	CASE 2
TIMBER PILING	h: 5' to 20'	h: 21' to 30'
CONCRETE PILING	h: 5' to 20'	h: 21' to 30'
STEEL PILING	h: 5' to 24'	h: 25' to 30'
SPREAD	h: 5' to 18'	h: 17' to 30'

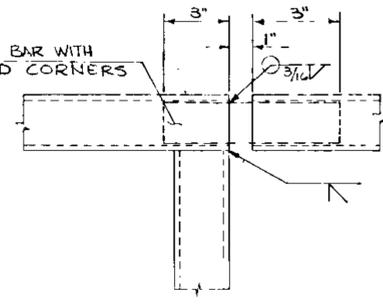
h HT.	K (FRONT DOWELS)			L (LONGIT.)			O (TOE)			P (TRANSVERSE)			Q (TRANSVERSE)			T (BACK DOWELS)			WEIGHT /LIN. FT. OF WALL POUNDS			
	SIZE	LENGTH	SPAC.	SIZE	NO.	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.				
5'	4	3	0"	12"	5	8				4	3	0"	14-1/2"	4	3	0"	14-1/2"	5	3	11"	14-1/2"	17.40
6'	4	3	0	12	5	8				4	3	5	4-1/2	4	3	5	4-1/2	5	4	0	14-1/2	17.93
7'	4	3	0	12	5	8				4	3	10	14-1/2	4	3	10	14-1/2	5	4	0	14-1/2	18.39
8'	4	3	0	12	5	8				4	4	3	14-1/2	4	4	3	14-1/2	5	4	1	14-1/2	18.77
9'	4	3	0	12	5	10				4	4	8	14-1/2	4	4	8	14-1/2	5	4	1	14-1/2	21.55
10'	4	3	0	12	5	10		4	5	1	14-1/2"	2	7	5	5	1	14-1/2"	4	5	1	14-1/2"	26.75
11'	4	3	0	12	5	10		5	8	3	14-1/2"	2	9	5	5	6	14-1/2"	4	5	6	14-1/2"	29.64
12'	4	3	0	12	5	10		5	8	8	14-1/2"	3	0	8	5	11	14-1/2"	4	5	11	14-1/2"	32.77
13'	4	3	0	12	5	12		8	7	1	14-1/2"	3	2	7	8	4	14-1/2"	4	6	4	14-1/2"	41.73
14'	4	3	0	12	5	12		8	7	4	14-1/2"	3	3	7	8	9	14-1/2"	4	6	9	14-1/2"	45.31
15'	4	3	0	12	5	14		7	8	0	14-1/2"	3	7	8	7	2	14-1/2"	4	7	2	14-1/2"	56.56
16'	5	4	0	12	5	14		7	8	3	14-1/2"	3	10	8	7	2	14-1/2"	4	7	7	14-1/2"	63.31
17'	5	4	0	12	5	14		7	8	6	13	4	0	8	8	0	6-1/2"	4	8	0	13	72.60
18'	5	4	0	12	5	14		8	9	5	13	4	3	8	8	5	6-1/2"	4	8	5	13	81.34
19'	5	4	0	12	5	14		8	9	8	13	4	5	7	8	10	6-1/2"	4	8	10	13	99.24
20'	5	4	0	12	5	16		9	10	5	14-1/2"	4	8	7	9	3	7	4	9	3	14-1/2"	104.05
21'	5	4	0	12	5	16		9	10	8	14-1/2"	4	10	8	9	8	7	5	9	8	14-1/2"	126.44
22'	5	4	0	12	5	16		10	11	4	14-1/2"	5	1	8	10	1	7	5	10	1	14-1/2"	139.76
23'	5	4	0	12	5	18		10	11	7	14-1/2"	5	3	8	10	8	7	5	10	6	14-1/2"	153.26
24'	5	4	0	12	5	18		10	11	10	13	5	6	8	10	11	6-1/2"	5	10	11	13	170.14
25'	5	4	0	12	5	18		10	12	0	12	5	8	8	11	4	8	5	11	4	12	185.71
26'	5	4	0	12	5	18		11	12	10	12	5	11	9	11	9	8	5	11	9	12	222.43
27'	5	4	0	12	5	18		11	13	1	12	6	1	9	12	2	8	5	12	2	12	239.58
28'	5	4	0	12	5	18		11	13	4	12	8	4	9	12	7	8	5	12	7	12	244.62
29'	5	4	0	12	5	18		11	13	7	11	6	8	9	13	0	5-1/2"	5	13	0	11	269.71
30'	5	4	0	12	5	18		11	13	10	11	8	9	9	13	5	5-1/2"	5	13	5	11	275.21

USE WITH SPREAD FOOTING ONLY

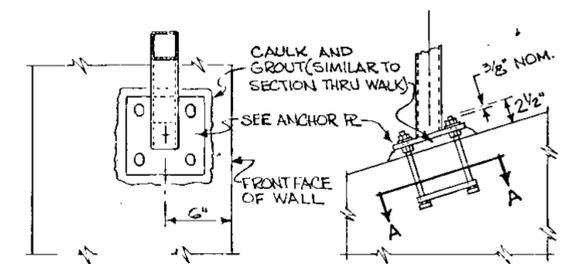
h HT.	K (FRONT DOWELS)			O (TOE)			T (BACK DOWELS)			PILE FOOTING REINFORCEMENT BARS			WEIGHT /LIN. FT. OF WALL POUNDS	L (LONGIT.)			P (TRANSVERSE)			Q (TRANSVERSE)			U (LONGIT.)			WEIGHT /LIN. FT. OF WALL POUNDS	L (LONGIT.)			P (TRANSVERSE)			Q (TRANSVERSE)			U (LONGIT.)			WEIGHT /LIN. FT. OF WALL POUNDS	
	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	NO.	SPAC.		SIZE	LENGTH	SPAC.	SIZE	LENGTH	SPAC.	SIZE	NO.	SPAC.	SIZE	NO.	SPAC.		SIZE	NO.	SPAC.	SIZE	LENGTH	SPAC.	SIZE	NO.	SPAC.	SIZE	NO.	SPAC.		
5'	4	3	0"	12"			5	3	6"	14-1/2"	5	16	4	3	6"	14-1/2"	4	3	6"	14-1/2"	4	3	6"	14-1/2"	8	10	30.43	8	8	4	3	6"	14-1/2"	4	3	6"	14-1/2"	7	10	29.99
6'	4	3	0	12			5	3	7	14-1/2	5	16	4	3	10	14-1/2	4	3	10	14-1/2	5	3	10	14-1/2	6	10	32.06	6	6	3	10	14-1/2	4	3	10	14-1/2	7	10	40.43	
7'	4	3	0	12			5	3	7	14-1/2	5	16	4	4	2	14-1/2	4	4	2	14-1/2	5	4	2	14-1/2	6	10	32.54	8	8	4	4	2	14-1/2	4	4	2	14-1/2	7	10	40.80
8'	4	3	0	12			5	3	8	14-1/2	5	16	4	4	6	14-1/2	4	4	6	14-1/2	5	4	6	14-1/2	6	10	34.79	6	6	4	4	6	14-1/2	4	4	6	14-1/2	7	10	41.24
9'	4	3	0	12	4	5	8"	14-1/2"	2	8	5	16	4	4	10	14-1/2	4	4	10	14-1/2	5	4	10	14-1/2	6	10	36.68	6	6	4	4	10	14-1/2	5	4	10	14-1/2	7	10	46.24
10'	4	3	0	12	4	5	11	14-1/2"	2	11	5	16	4	5	2	14-1/2	4	5	2	14-1/2	5	5	2	14-1/2	6	10	37.37	6	6	4	5	2	14-1/2	5	5	2	14-1/2	7	10	46.92
11'	4	3	0	12	5	6	7	14-1/2"	3	1	5	16	4	5	6	14-1/2	4	5	6	14-1/2	5	5	6	14-1/2	6	10	40.25	6	6	4	5	6	14-1/2	5	5	6	14-1/2	7	10	49.80
12'	4	3	0	12	5	6	10	14-1/2"	3	4	5	18	4	5	10	14-1/2	4	5	10	14-1/2	5	5	10	14-1/2	6	10	43.19	6	8	4	5	10	14-1/2	6	5	10	14-1/2	7	10	55.93
13'	4	3	0	12	6	7	5	14-1/2"	3	6	5	18	5	6	2	14-1/2	4	6	2	14-1/2	5	6	2	14-1/2	6	10	48.89	6	8	5	6	2	14-1/2	6	8	2	14-1/2	7	10	61.1
14'	4	3	0	12	6	7	8	14-1/2"	3	9	6	18	5	6	8	14-1/2	4	6	8	14-1/2	5	6	8	14-1/2	6	10	51.86	6	8	5	6	8	14-1/2	7	6	8	14-1/2	7	10	67.77
15'	4	3	0	12	7	8	4	4-1/2"	3	11	6	18	5	6	10	14-1/2	4	6	10	14-1/2	4	6	10	14-1/2	6	10	54.88	6	8	5	6	10	14-1/2	6	6	10	14-1/2	7	10	70.13
16'	5	4	0	12	7	8	7	14-1/2"	4	2	7	18	6	7	2	14-1/2	4	7	2	14-1/2	5	7	2	14-1/2	6	10	65.96	6	8	6	7	2	14-1/2	6	7	2	14-1/2	7	10	79.21
17'	5	4	0	12	7	8	10	13	4	4	7	18	6	7	6	13	4	7	6	13	5	7	6	13	8	10	71.61	6	8	6	7	6	13	6	7	6	13	7	10	85.32
18'	5	4	0	12	8	9	9	13	4	7	7	18	6	7	10	13	4	7	10	13	5	7	10	13	8	10	77.20	6	8	6	7	10	13	5	7	10	13	7	10	90.44
19'	5	4	0	12	8	10	0	13	4	9	8	18	6	8	2	13	5	8	2	13	5	8	2	13	8	10	86.10	6	8	6	8	2	13	5	8	2	13	7	10	96.63
20'	5	4	0	12	9	10	9	14-1/2	5	0	8	22	8	8	6	14-1/2	4	8	6	14-1/2	4	8	6	14-1/2	6	12	95.46	6	10	7	8	6	14-1/2	5	8	6	14-1/2	7	12	110.94
21'	5	4	0	12	9	11	0	14-1/2	5	2	9	22	8	8	10	7	4	8	10	14-1/2	4	8	10	14-1/2	6	12	110.63	6	10	7	8	10	14-1/2	6	8	10	14-1/2	7	12	121.77
22'	5	4	0	12	10	11	8	14-1/2	5	5	9	22	8	9	2	7	4	9	2	14-1/2	6	12	122.50	6	10	8	9	2	7	4	9	2	14-1/2	6	12	133.58				
23'	5	4	0	12	10	11	11	14-1/2	5	7	10	22	8	9	6	7	4	9	6	14-1/2	6	12	131.62	6	10	8	9	6	7	4	9	6	14-1/2	6	12	146.89				
24'	5	4	0	12	10	12	2	13	5	10	10	22	6	9	10	6-1/2	4	9	10	13	6	12	144.51	6	10	8	9	10	13	7	9	12	13	7	12	161.13				
25'	5	4	0	12	10	12	5	12	6	0	10	22	6	10	2	6	4	10	2	12	6	12	156.09	6	10	6	10	2	6	4	10	2	12	6	12	168.93				
26'	5	4	0	12	11	13	2	12	6	3	10	22	7	10	6	8	4	10	6	12	6	12	180.60	6	10	7	10	6	6	4	10	6	12	6	12	185.58				
27'	5	4	0	12	11	13	5	12	6	5	11	22	8	10	10	6	4	10	10	12	6	12	199.69	6	10	7	10	10	6	4	10	10	12	7	12	212.54				
28'	5	4																																						



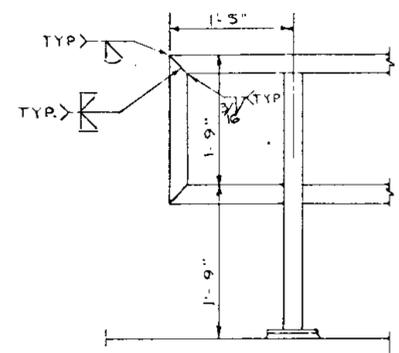
ANCHOR PLATE
SCALE: 3" = 1"



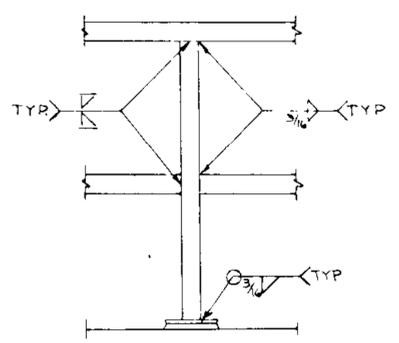
DETAIL A
SCALE: 3" = 1"



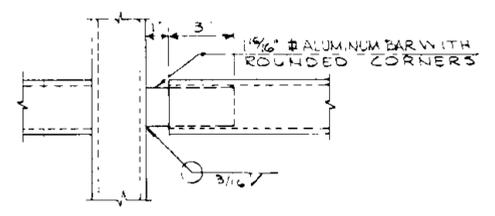
PLAN ELEVATION
HANDRAIL ON RETAINING WALL



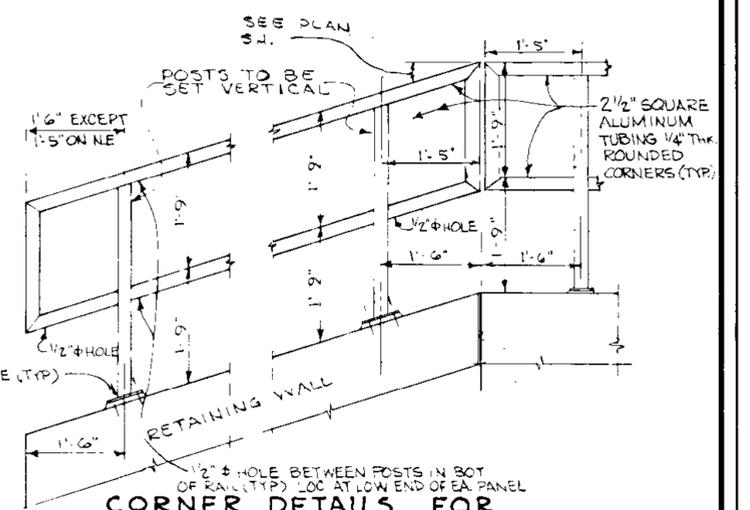
CORNER DETAIL
SCALE: 1" = 1'-0"



DETAIL C
SCALE: 3" = 1'-0"



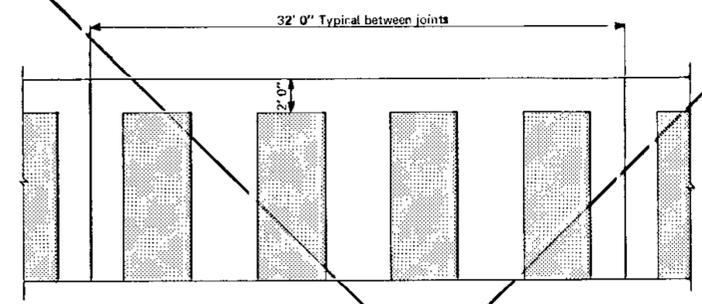
DETAIL B
SCALE: 3" = 1'-0"



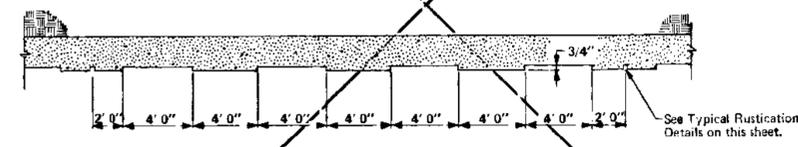
CORNER DETAILS FOR
HANDRAIL ON RETAINING WALL

NOTES

ALL SURFACES OF ALUMINUM IN CONTACT WITH CONCRETE SHALL BE GIVEN A HEAVY COATING OF AN APPROVED ALUMINUM-IMPREGNATED CAULKING COMPOUND TO PROVIDE COMPLETE INSULATION BETWEEN ALUMINUM AND CONCRETE. SYNTHETIC RUBBER GASKETS MAY BE USED AS AN ALTERNATE.
ALUMINUM SHALL CONFORM TO MHD 3336, ALLOY 6061-T6
STAINLESS STEEL SHALL CONFORM TO MHD 3312.
PRICE BID FOR ORNAMENTAL METAL RAILING SHALL INCLUDE ALL MATERIALS AS SHOWN ON THIS SHEET.



TYPICAL WALL TREATMENT ELEVATION

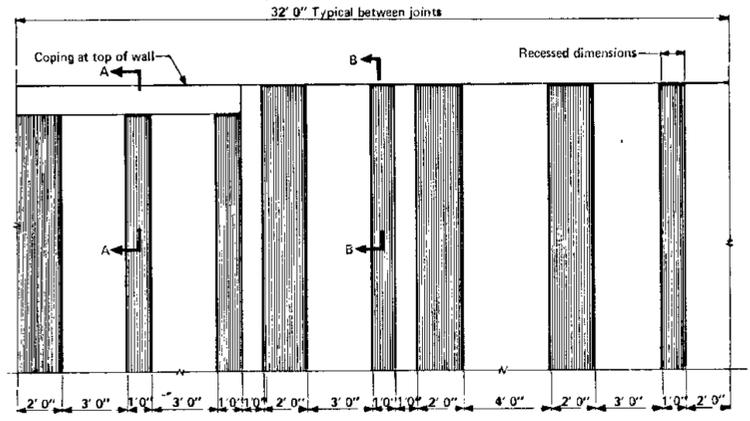


TYPICAL WALL TREATMENT DETAILS

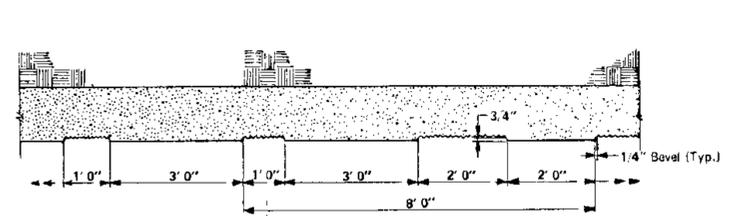
WALL PANELS
Walls shall be architecturally treated by forming vertical panels of 4' 0" in width and alternate recessed panels of 4' 0" in width.

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.

(NOT USED)
VERTICAL PANEL DESIGN



TYPICAL WALL TREATMENT ELEVATION

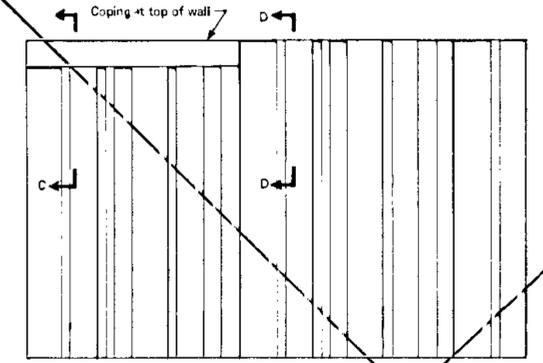


TYPICAL WALL TREATMENT DETAILS

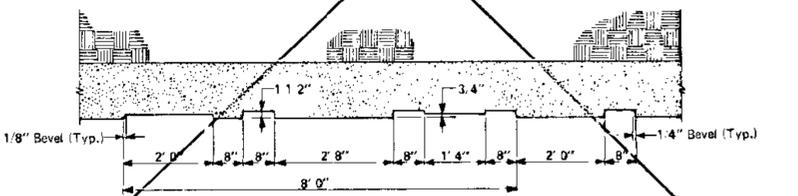
WALL TREATMENT
Walls shall be architecturally treated by forming vertical panels of variable width and alternate recessed textured finish. Repeat the pattern every 32' 0" to allow repetitive use of forms. Coping may be used or omitted depending upon other architectural elements involved.

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.

(USE THIS)
VERTICAL RANDOM STRIATED PANEL DESIGN



TYPICAL WALL TREATMENT ELEVATION

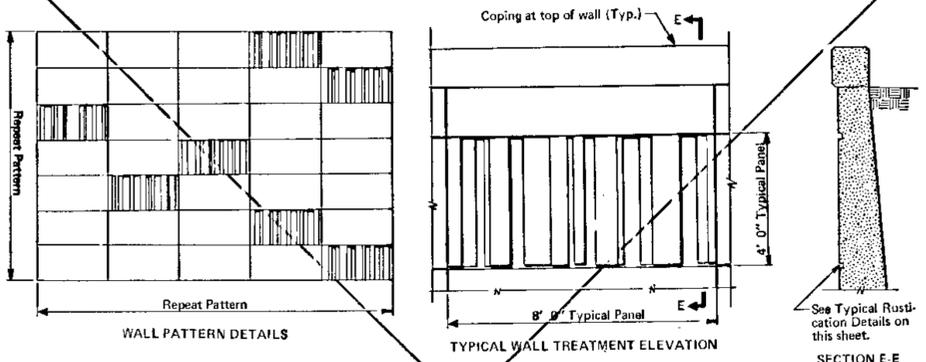


TYPICAL WALL TREATMENT DETAILS

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.

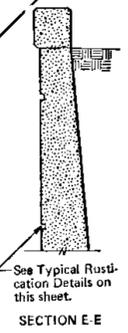
WALL JOINTS
The pattern of the panels should be adjusted so that all expansion, contraction, and construction joints will occur at panel joints (preferable between flush and 1-1/2" recessed panels). All construction joints shall be repaired and pointed to present a satisfactory appearance.

(NOT USED)
VERTICAL RANDOM WIDTH DOUBLE INSET PANEL DESIGN

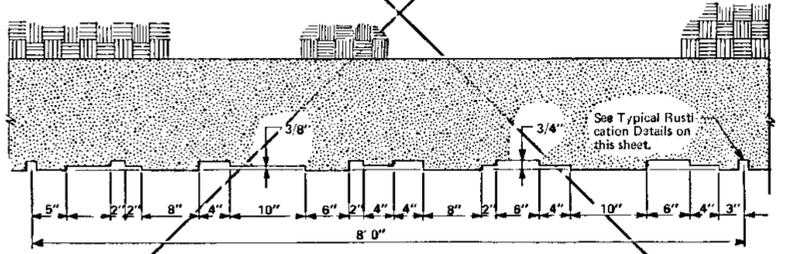


WALL PATTERN DETAILS

TYPICAL WALL TREATMENT ELEVATION



SECTION E-E

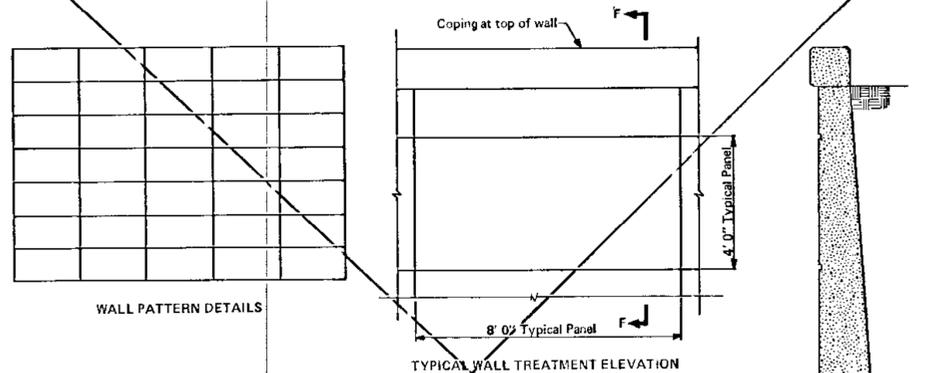


TYPICAL WALL TREATMENT DETAILS

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.

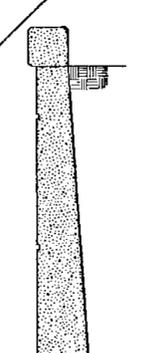
WALL JOINTS
The pattern of panels will be adjusted so that all expansion, contraction, and construction joints will be at rustications. All construction joints will be repaired and pointed to present a satisfactory appearance.

(NOT USED)
HORIZONTAL RECTANGULAR RUSTICATION RANDOM PANEL DESIGN

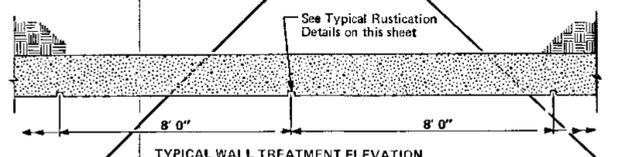


WALL PATTERN DETAILS

TYPICAL WALL TREATMENT ELEVATION



SECTION F-F

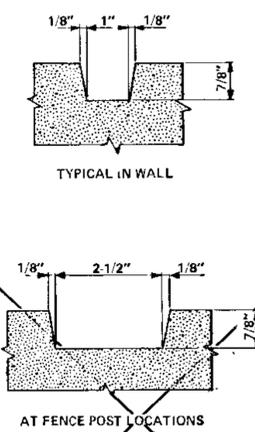


TYPICAL WALL TREATMENT ELEVATION

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.

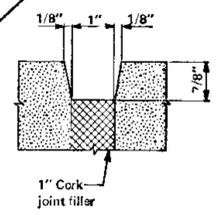
WALL JOINTS
The pattern of panels will be adjusted so that all expansion, contraction and construction joints will be at rustications. All construction joints will be repaired and pointed to present a satisfactory appearance.

(NOT USED)
HORIZONTAL RECTANGULAR RUSTICATION DESIGN.



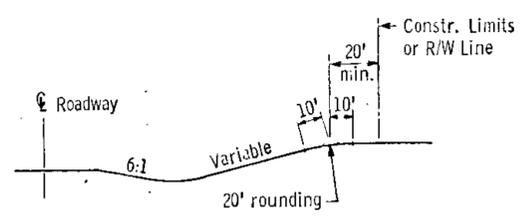
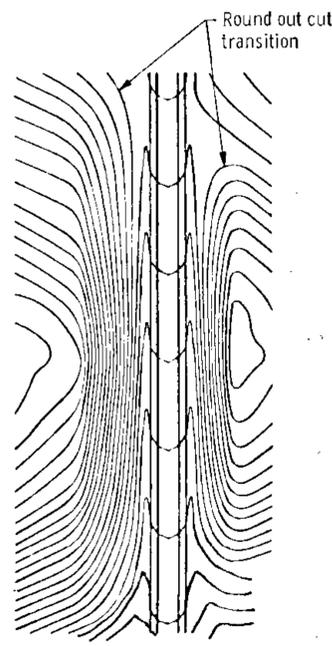
TYPICAL IN WALL

AT FENCE POST LOCATIONS



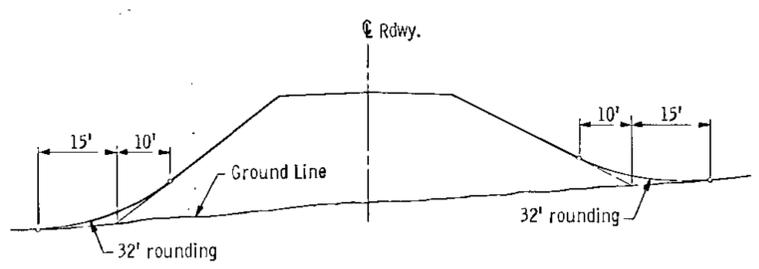
AT EXPANSION JOINT

(NOT USED)
TYPICAL RUSTICATION DETAILS

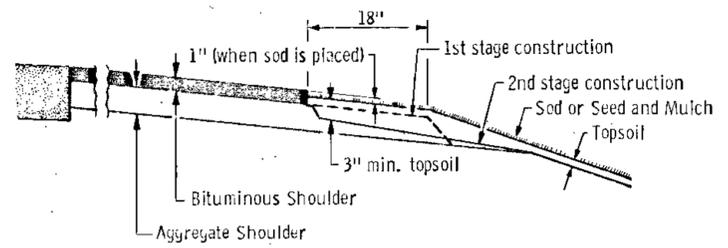


ROUNDING BACK SLOPES

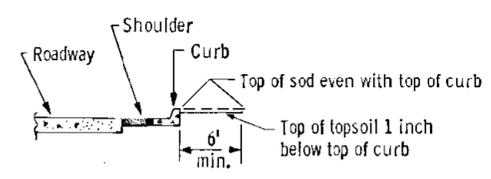
CONTOURING ROAD CUTS



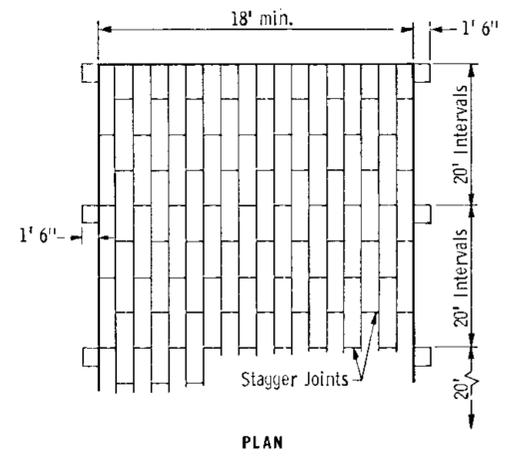
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



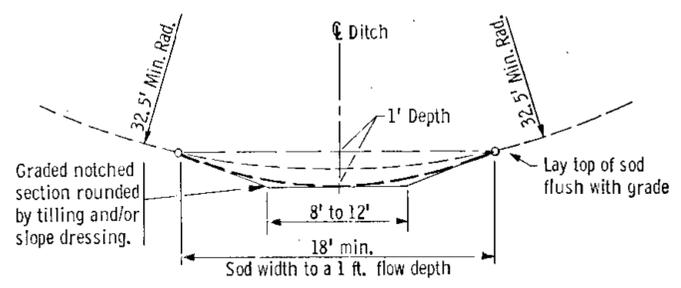
SHAPING AND TOPSOILING INSLOPES



SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED

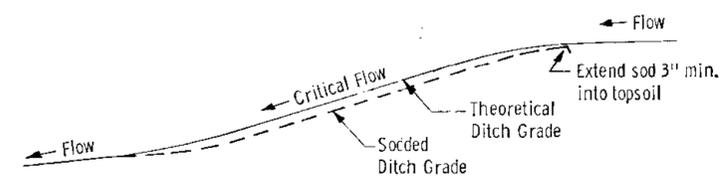


PLAN



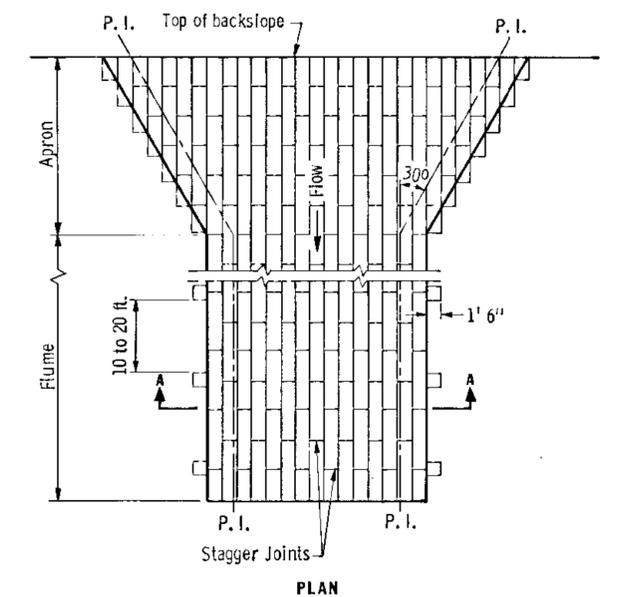
SODDED DITCH CROSS SECTION

Ditches having a minimum radius of 32.5 feet and requiring sod shall be constructed according to the above details. Where ditch radius is less than 32.5 feet, notching is not required. Sod a minimum of 18 feet in width.

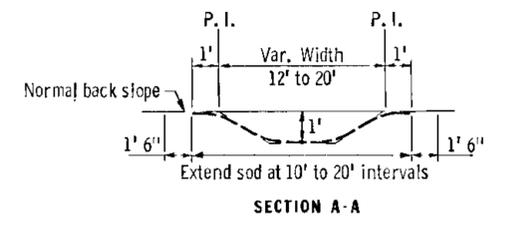


DITCH PROFILE

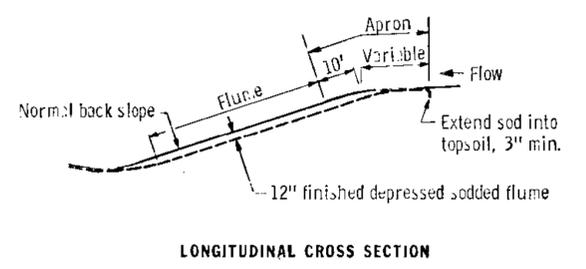
SODDED DITCH DETAILS



PLAN



SECTION A-A



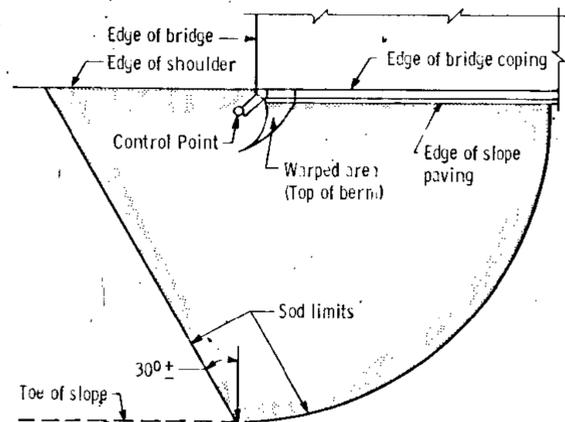
LONGITUDINAL CROSS SECTION

SODDED FLUME DETAILS

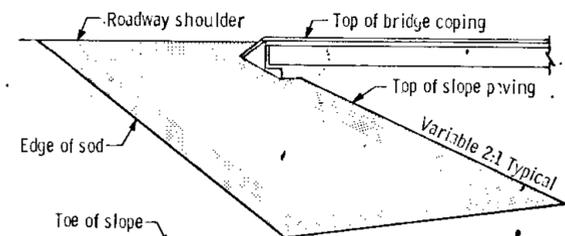
EROSION CONTROL

Approved: *Leonard E. Ely*
 Engineer in Charge
 Minnesota State Highway Department
 St. Paul, Minnesota

5-1403

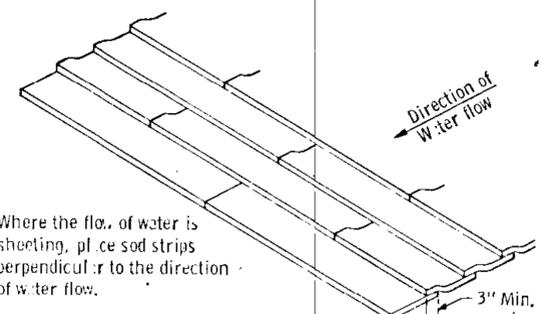


PLAN

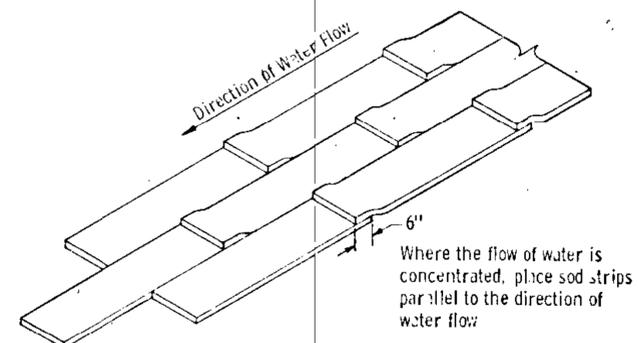


ELEVATION

SODDING LIMITS AT BRIDGE APPROACH FILLS

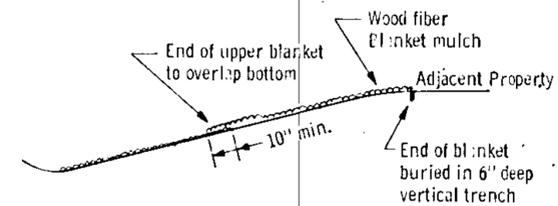


SHINGLING SOD

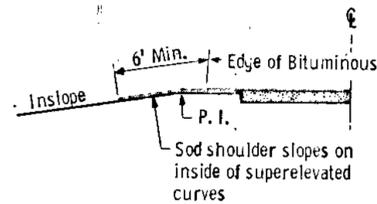


OVERLAPPING SOD

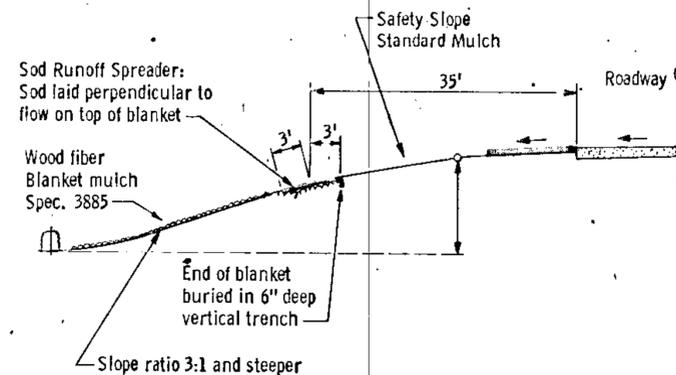
SPECIAL SOD PLACEMENT TECHNIQUES



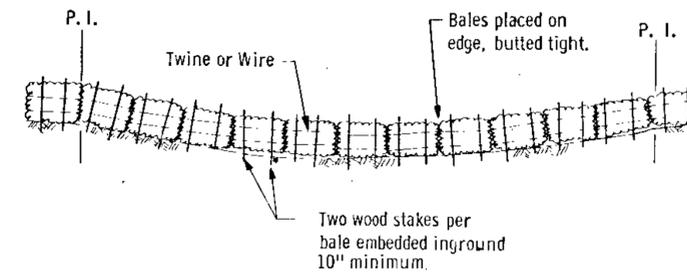
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



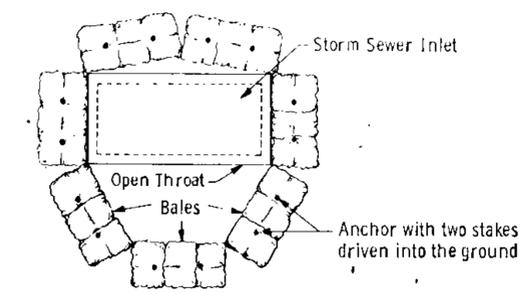
SODDING INSLOPES OF SUPERELEVATED CURVES



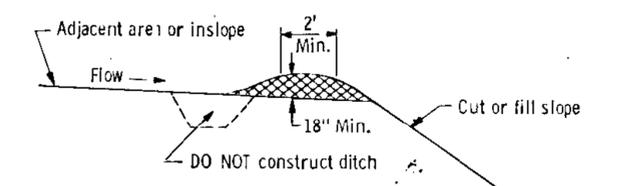
WOOD FIBER BLANKET INSTALLATION ON A SAFETY FILL SLOPE



BALE HAY OR STRAW DITCH CHECK

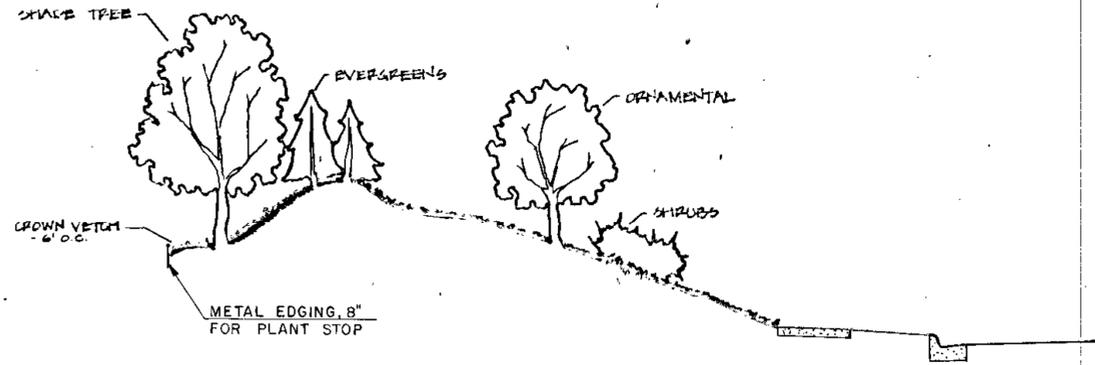


BALE DIVERSION TO PROTECT STORM SEWER INLETS



TEMPORARY EARTH DRAINAGE DIVERSION

APPROVED Dec. 17, 1974
Leon E. Eitzen
 Engineering Standards Engineer
 MATERIALS RESEARCH AND
 STANDARDS DIVISION



TYPICAL MOUNDING DETAIL

PLAN

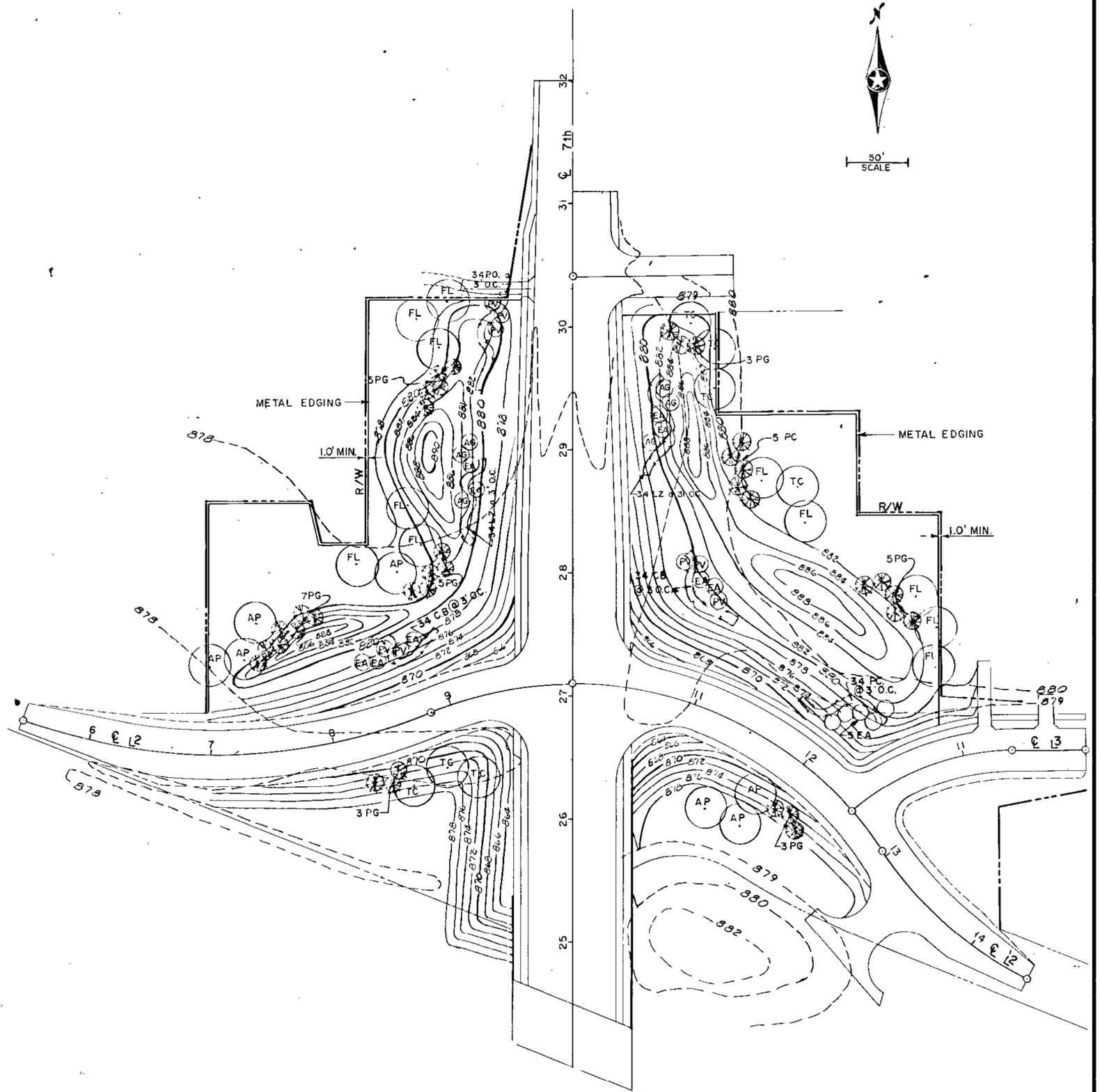
EXISTING	CHECKED
PROPOSED	CHECKED
ALIGNMENT	CHECKED
DESIGN APPROVAL	CHECKED

TABULATION OF PLANT MATERIALS

ITEM	SIZE	QUANTITY
AP - NORWAY MAPLE	3 1/2" - 4" BB	7
FL - GREEN ASH	3 1/2" - 4" BB	11
TC - LITTLE LEAF LINDEN	3 1/2" - 4" BB	7
AG - AMUR MAPLE	1 1/2" - 2" BB	6
EA - RUSSIAN OLIVE	1 1/2" - 2" BB	14
PV - CANADA RED CHERRY	1 1/2" - 2" BB	8
CB - RED TWIG DOGWOOD	4" - 5" BB	68
LZ - ZABELS HONEYSUCKLE	4" - 5" BB	68
PO - GOLDEN LEAF NINEBARK	4" - 5" BB	34
PC - GOLDEN MOCKORANGE	4" - 5" BB	34
PG - BLACK HILLS SPRUCE	7" - 8" BB	36

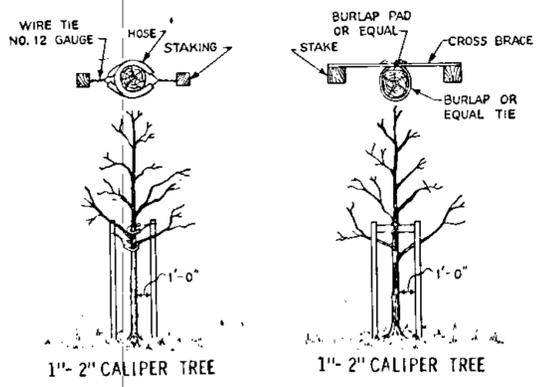
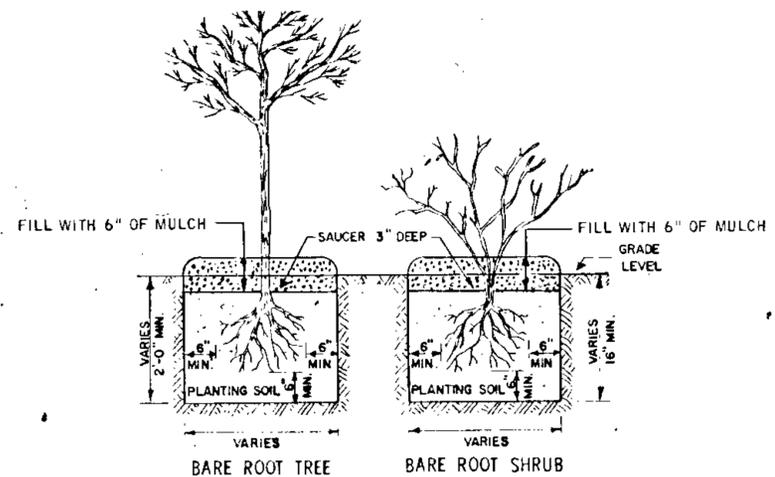
PROFILE

EXISTING	CHECKED
PROPOSED	CHECKED
GRADES	CHECKED
SEWER	CHECKED

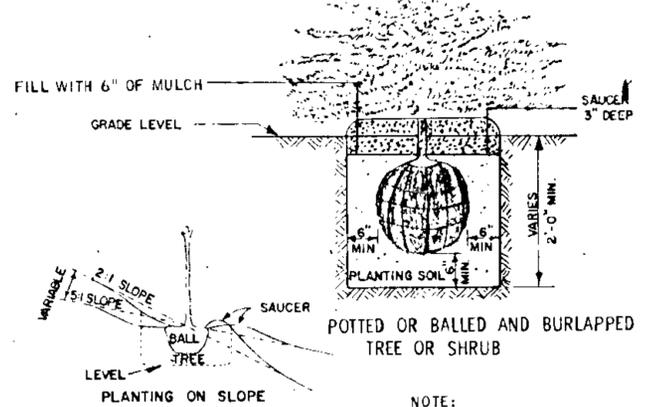


DETAILS FOR SOUND ABATEMENT MOUNDING

ROADSIDE DEVELOPMENT

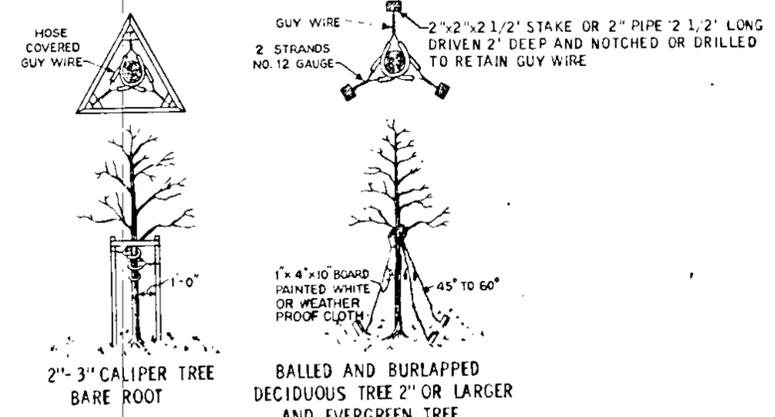
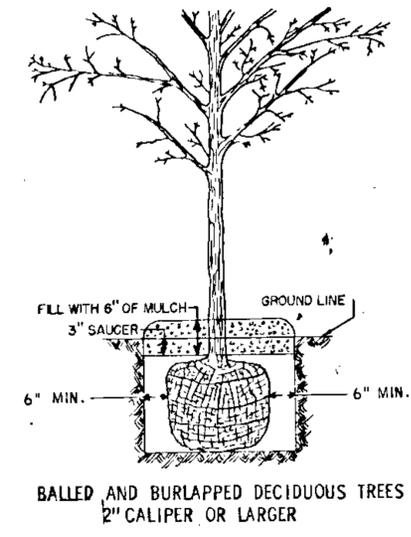


ALL STAKES ARE NOMINAL 2"x2" OR 2 1/2" DIAMETER, 8' LONG WITH 2" IN THE GROUND. CROSS BRACES ARE NOMINAL 1"x3" MATERIAL.

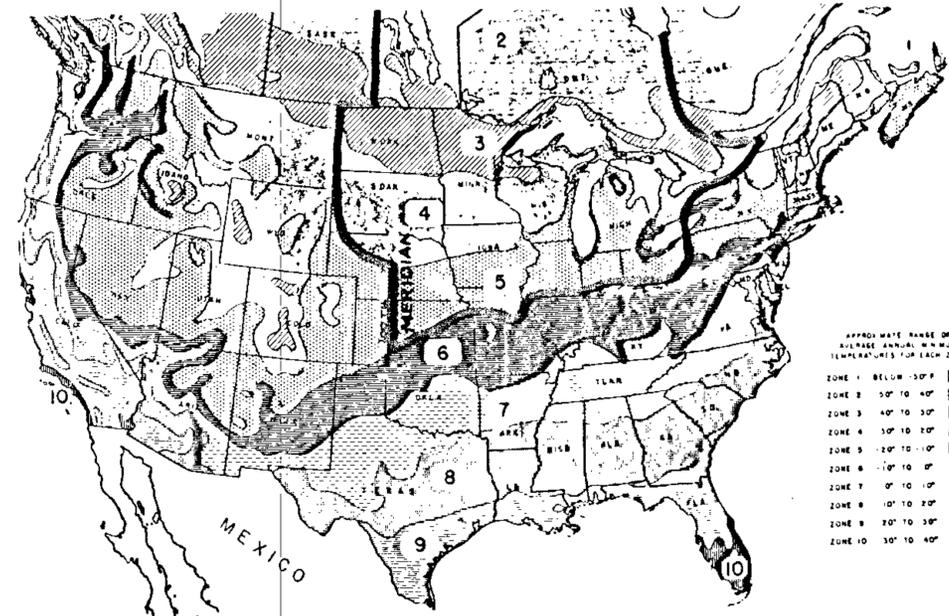


NOTE:
SET PLANTS AT THE SAME OR SLIGHTLY LOWER DEPTH AS THEY GREW IN THE NURSERY OR FIELD. ALL PLANTS SHALL BE PLACED IN A PLUMB POSITION.

PLANTING METHODS



STAKING AND GUYING METHODS



APPROXIMATE RANGE OF AVERAGE ANNUAL WINTER TEMPERATURES FOR EACH ZONE

ZONE 1	BELOW -50°F
ZONE 2	50° TO 40°
ZONE 3	40° TO 30°
ZONE 4	30° TO 20°
ZONE 5	20° TO 10°
ZONE 6	10° TO 0°
ZONE 7	0° TO 10°
ZONE 8	10° TO 20°
ZONE 9	20° TO 30°
ZONE 10	30° TO 40°

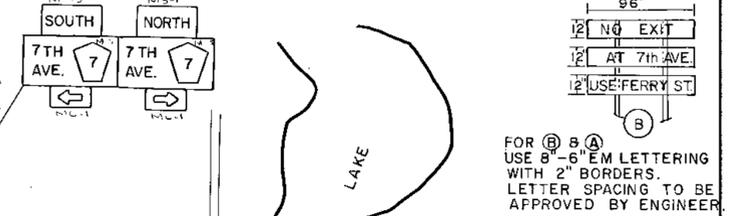
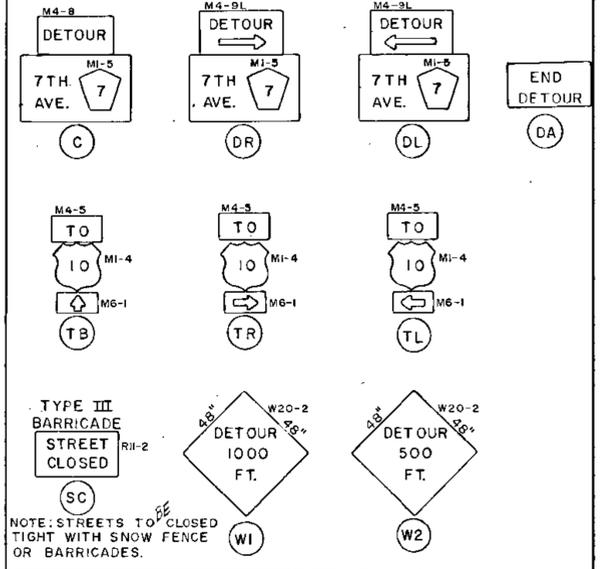
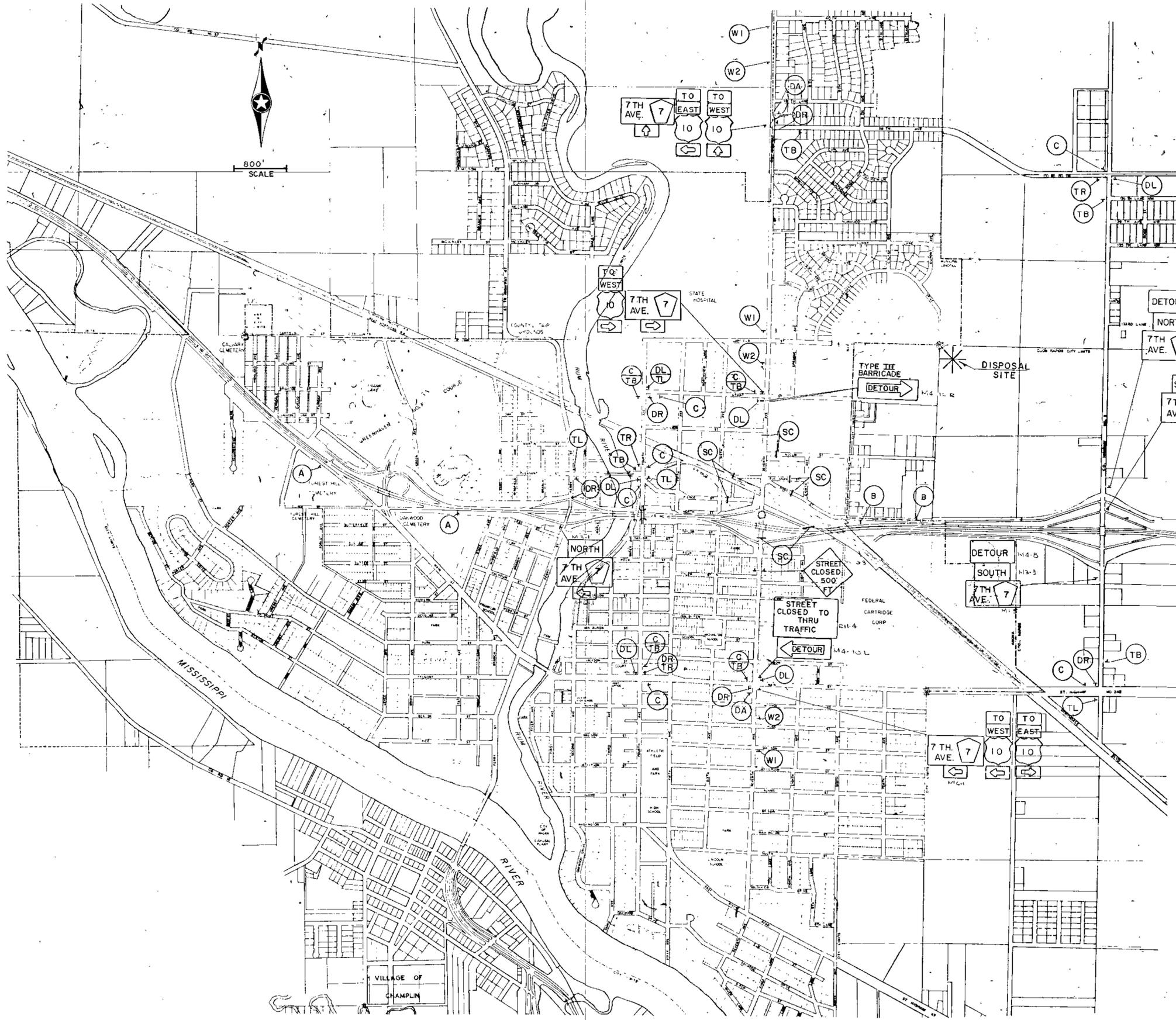
The Zones of Plant Hardiness—This is an adapted version of the color map on the reverse side. It may be useful for small-scale reproduction in books, magazines, and nursery catalogs. This map is not copyrighted, and permission for reproducing it is not required.

GENERAL NOTES

FERTILIZER: Shall be 10-6-4 analysis at the rate of 5 LB per cu yd of planting soil. Shall be considered incidental.

MULCH MATERIAL: All plant installations shall be mulched to a minimum depth of 6 inches and 24 inches in diameter with wood chips, unless noted otherwise on this plan.

ROADSIDE DEVELOPMENT PLANTING DETAILS



NOTE:
 PLACE ADVANCE WARNING SIGNS AND COVER EXISTING SIGNS ON HIGHWAY 10. SP 0215-9700 9717 INVOLVING BRIDGE DECK REPAIR IS SCHEDULED FOR CONSTRUCTION CONCURRENT WITH THIS PROJECT. CONTACT M.H.D. DIST. 5 FOR COORDINATION OF TRAFFIC CONTROL.

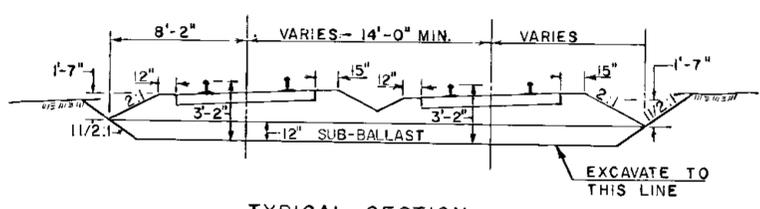
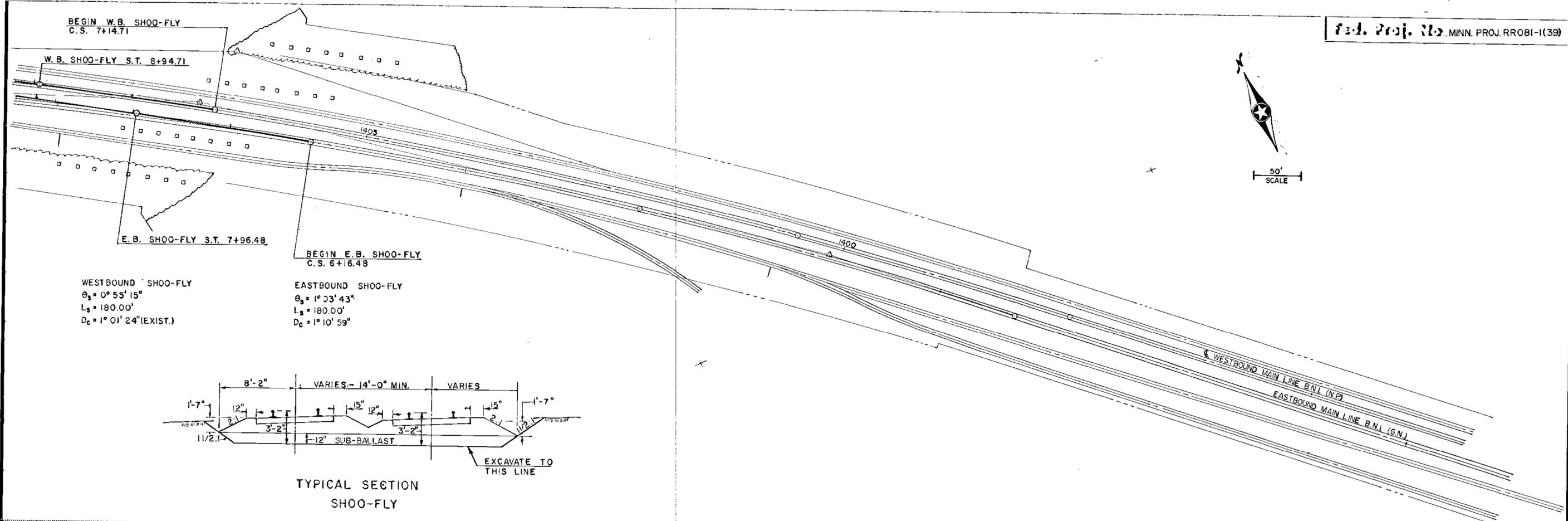
PLAN

EXISTING	CHECKED
PROPOSED	CHECKED
ALIGNMENT	CHECKED
DESIGN APPROVAL	CHECKED

PROFILE

EXISTING	CHECKED
PROPOSED	CHECKED
GRADES	CHECKED
SEWER	CHECKED

DETOUR ROUTES AND SIGNING LAYOUT



PLAN	PROFILE	CHECKED	
		EXISTING	PROPOSED
880 0.00% 881.64 881.34	880 0.00% 881.48	CHECKED CHECKED CHECKED CHECKED	CHECKED CHECKED CHECKED CHECKED

PLAN
 EXISTING CHECKED
 PROPOSED CHECKED
 ALIGNMENT CHECKED
 DESIGN APPROVAL CHECKED

PROFILE
 EXISTING CHECKED
 PROPOSED CHECKED
 GRADES CHECKED
 SEWER CHECKED

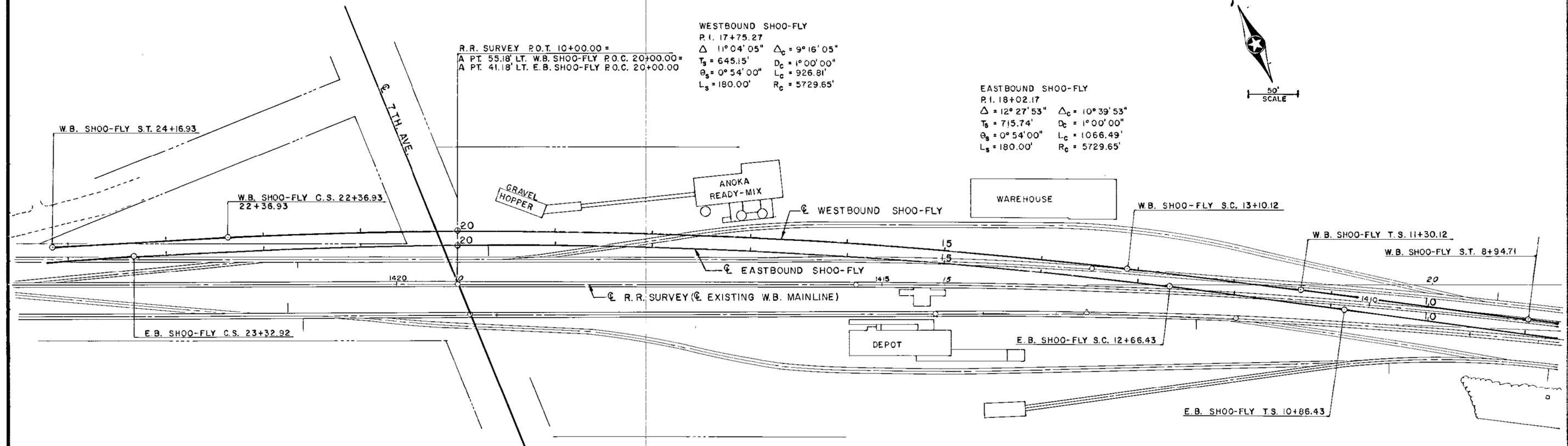
SINGLE PLAIN DOTTED
 K.A. BROWN CO. ARCHITECTS, ST. PAUL



WESTBOUND SHOO-FLY
 P.I. 17+75.27
 $\Delta = 11^{\circ}04'05''$ $\Delta_c = 9^{\circ}16'05''$
 $T_s = 645.15'$ $D_c = 1^{\circ}00'00''$
 $\theta_s = 0^{\circ}54'00''$ $L_c = 926.81'$
 $L_s = 180.00'$ $R_c = 5729.65'$

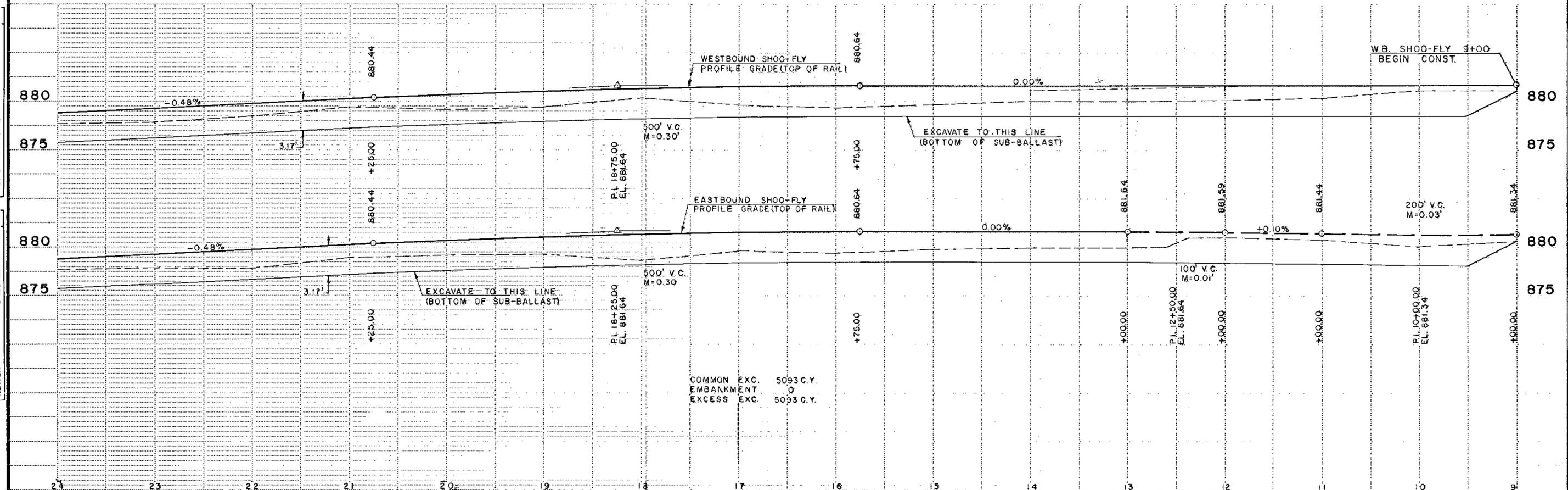
EASTBOUND SHOO-FLY
 P.I. 18+02.17
 $\Delta = 12^{\circ}27'53''$ $\Delta_c = 10^{\circ}39'53''$
 $T_s = 715.74'$ $D_c = 1^{\circ}00'00''$
 $\theta_s = 0^{\circ}54'00''$ $L_c = 1066.49'$
 $L_s = 180.00'$ $R_c = 5729.65'$

R.R. SURVEY P.O.T. 10+00.00 =
 A PT. 55.18' LT. W.B. SHOO-FLY P.O.C. 20+00.00 =
 A PT. 41.18' LT. E.B. SHOO-FLY P.O.C. 20+00.00

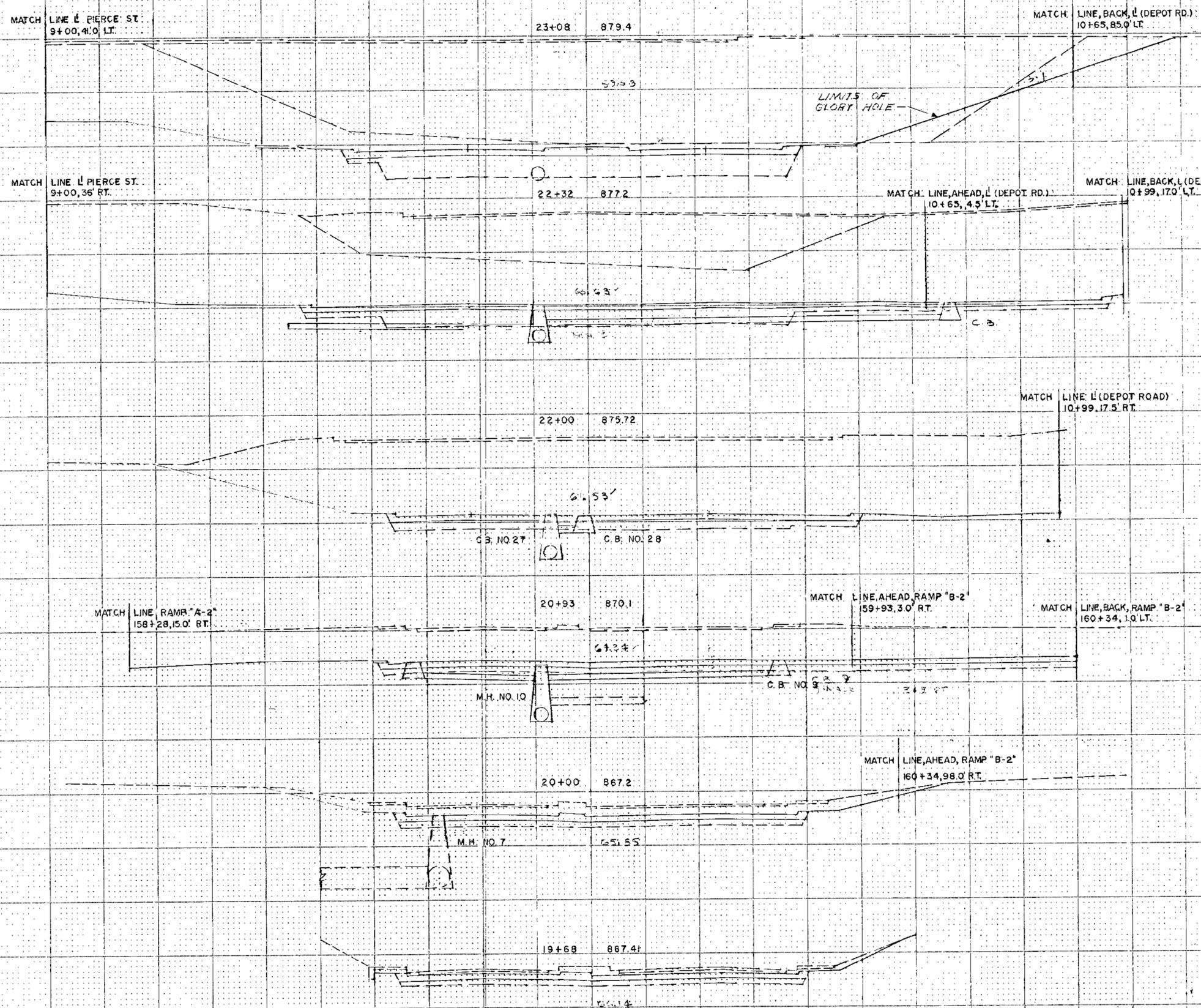


PLAN
 EXISTING CHECKED
 PROPOSED CHECKED
 ALIGNMENT CHECKED
 DESIGN APPROVAL CHECKED

PROFILE
 EXISTING CHECKED
 PROPOSED CHECKED
 GRADES CHECKED
 SEWER CHECKED



COMMON EXC. 5093 C.Y.
 EMBANKMENT 0
 EXCESS EXC. 5093 C.Y.



	EXC. CU.	EMB. YD.
COMM.	4270	0
GLORY HOLE	4888	0
S.G.	61	61
T.S.	650	UNSUITABLE
		69

	EXC. CU.	EMB. YD.
COMM.	2499	0
GLORY HOLE	966	0
S.G.	50	50
T.S.	160	UNSUITABLE
		19

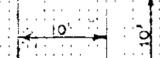
	EXC. CU.	EMB. YD.
COMM.	6353	0
S.G.	194	194
T.S.	222	UNSUITABLE
		32

	EXC. CU.	EMB. YD.
COMM.	2614	0
S.G.	346	346
T.S.		28

	EXC. CU.	EMB. YD.
COMM.	250	0
S.G.	88	88
T.S.		10

	EXC. CU.	EMB. YD.
COMM.	282	0
S.G.	93	93
T.S.		0

7th AVE
19+68 TO 23+08

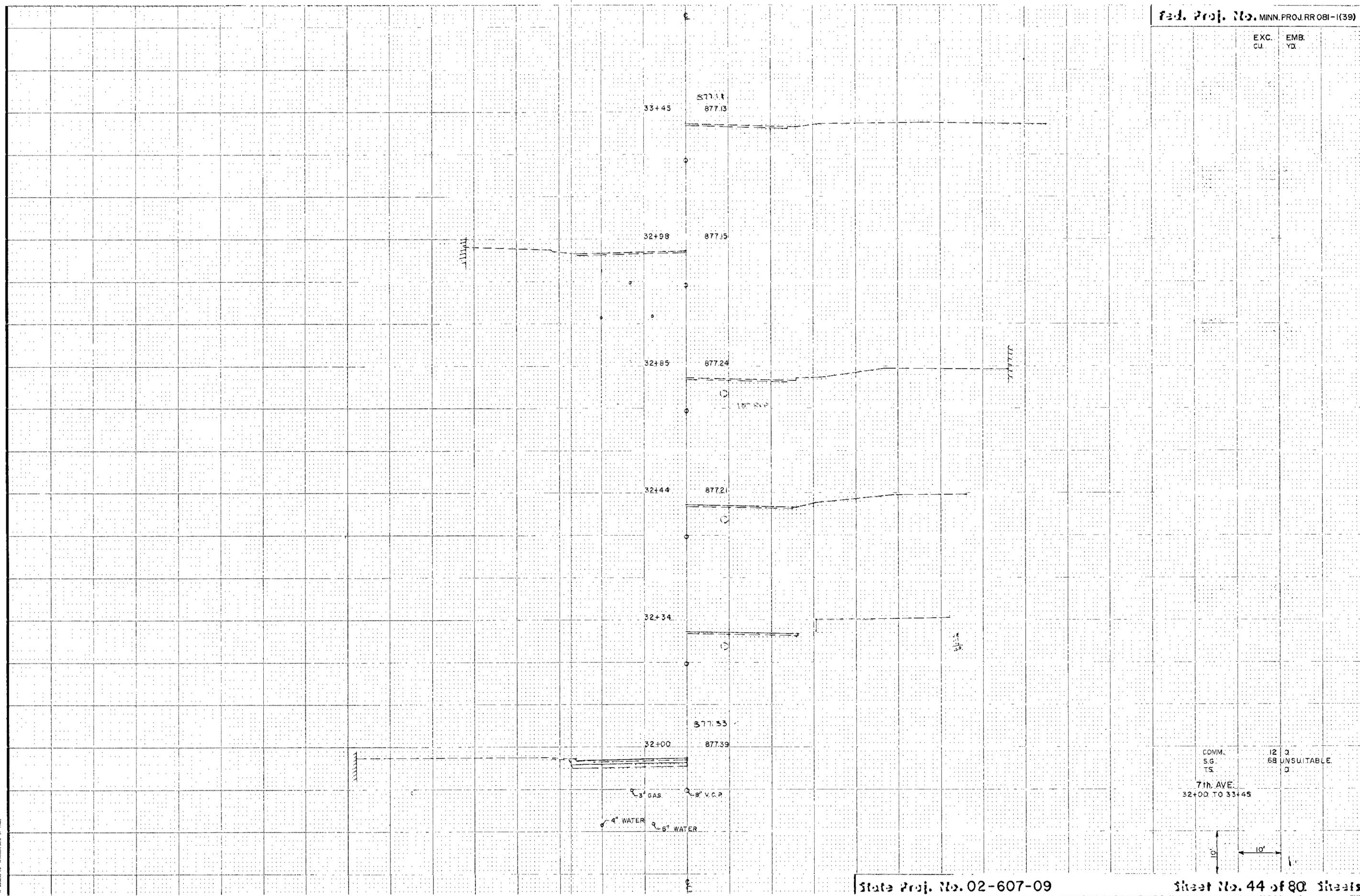


FUNCTIONAL CROSS SECTION OPEN NOTED
N.A. MODEL CO. MINNEAPOLIS, ST. PAUL

9-7403

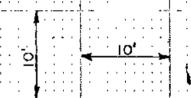
EXC.
CU.

EMB.
YD.



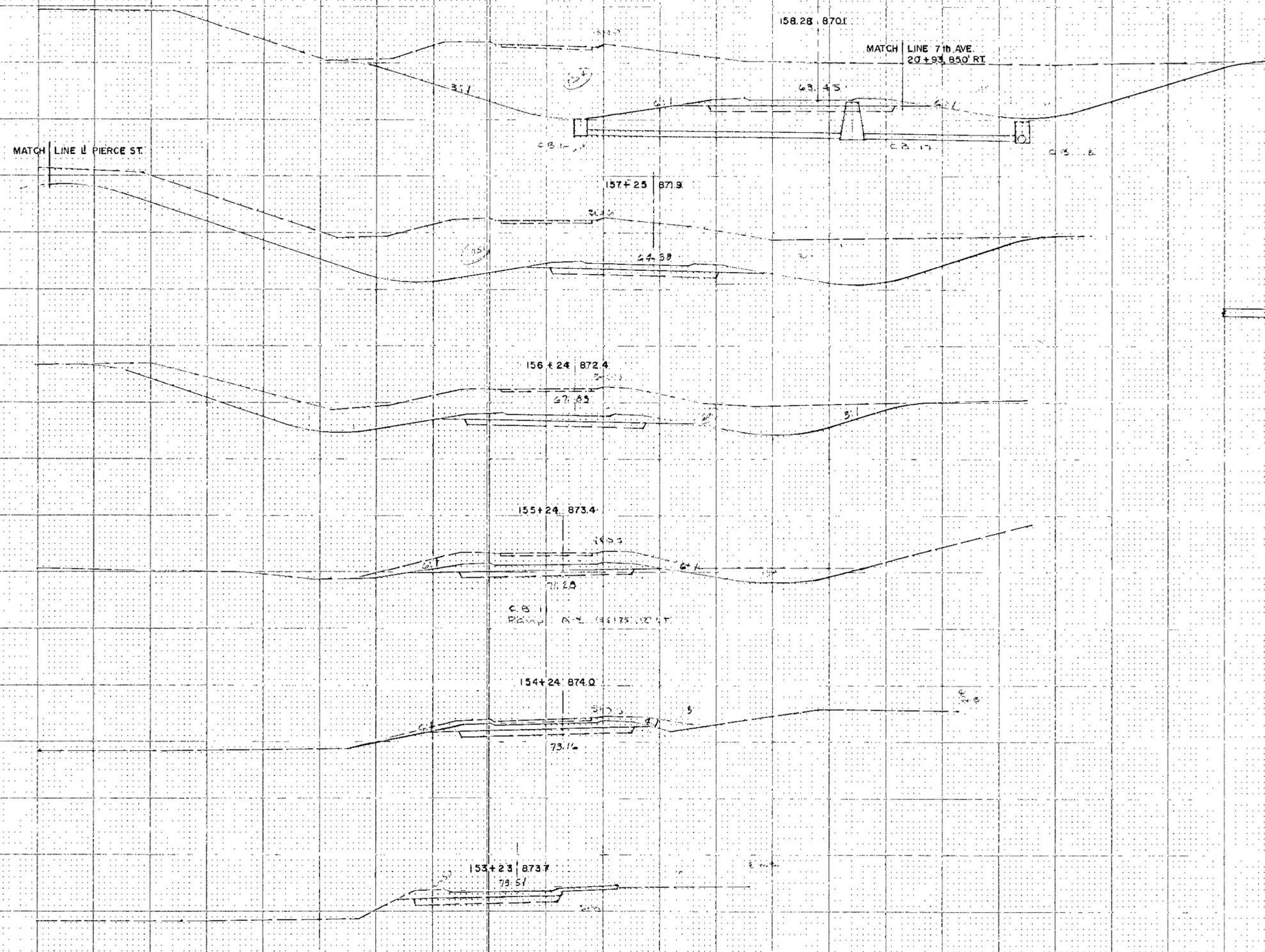
COMM.	12	0
SG	68	UNSUITABLE
TS	0	0

7th AVE.
32+00 TO 33+45



HORIZONTAL CROSS SECTION - OPEN DITCH
 N. A. BROWN, CIVIL ENGINEER, ST. PAUL

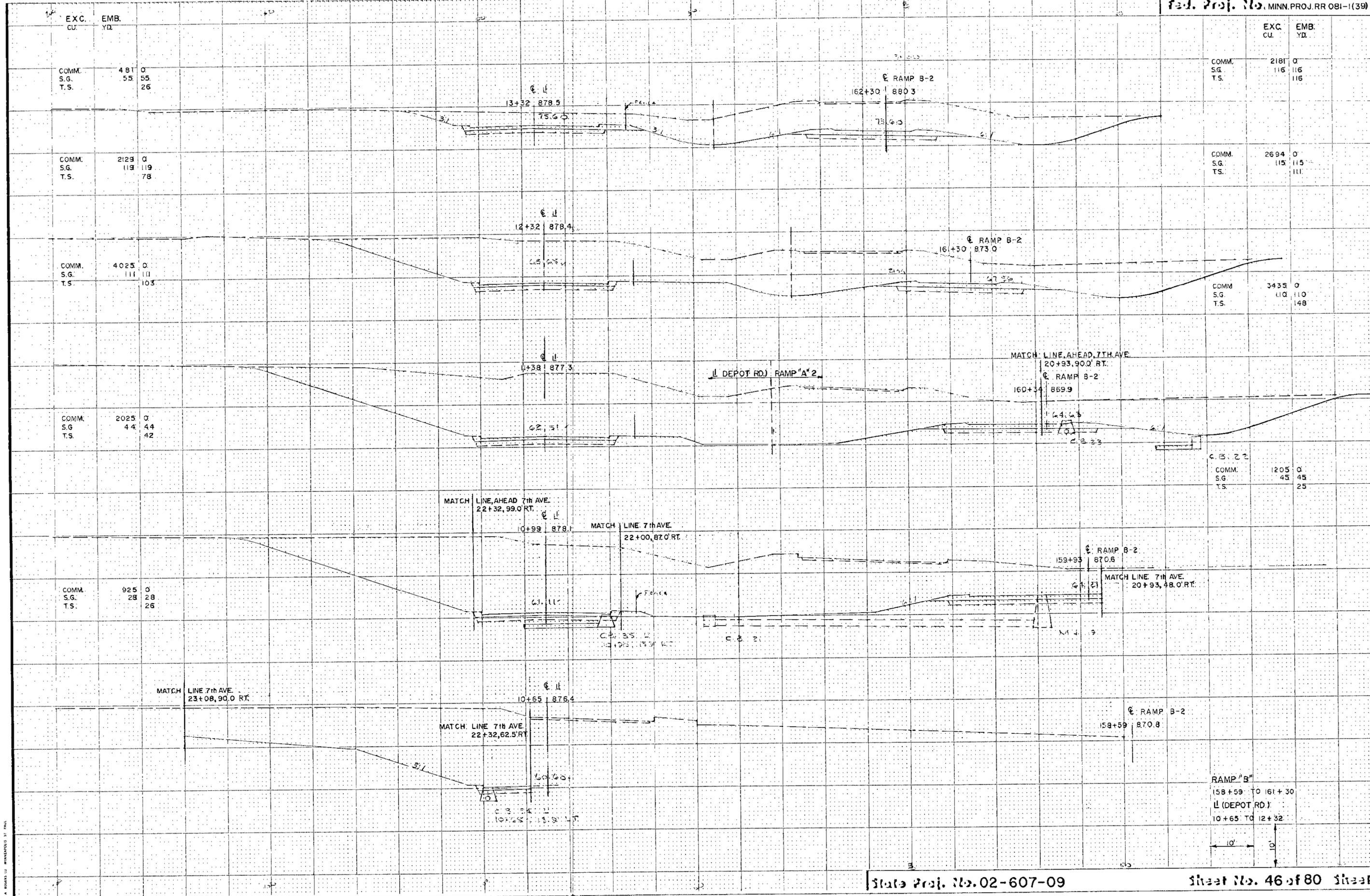
8-2-03



	EXC. CU	EMB. YD
COMM. S.G. T.S.	4785 118	0 118 198
COMM. S.G. T.S.	3460 116	0 116 186
COMM. S.G. T.S.	1602 113	0 115 128
COMM. S.G. T.S.	572 115	0 115 65
COMM. S.G. T.S.	277 107	0 107 37
COMM. S.G. T.S.	139 46	0 46 16
RAMP "A" 153+23 TO 157+28		

FUNCTIONAL CROSS SECTION OPEN DOTTED
A. 1/2" = 10' HORIZONTAL
B. 1/4" = 1' VERTICAL

9-7403



FUNCTIONAL CROSS SECTION OPEN DOTTED
A. A. BROWN & COMPANY, ST. PAUL, MINN.

9-7405

EXC.
CU.

EMB.
YD.

COMM. 269 0
S.G. 68 68
T.S. 24 24

166+31 899.8

98.71

COMM. 75.1 0
S.G. 115 115
T.S. 20 20

165+31 895.9

92.82

COMM. 134.8
S.G. 115 115
T.S. 111

164+31 890.9

32.42

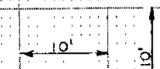
COMM. 168.8 0
S.G. 115 115
T.S. 122

163+31 885.7

30.22

C.B. 212 P.M.S. B-2
1897-55 1053-10

RAMP "B"
103+31 TO 166+31



FUNCTIONAL CROSS SECTION - UPPER DOTTED

9-7403

EXC. CU.	EMB. YD.
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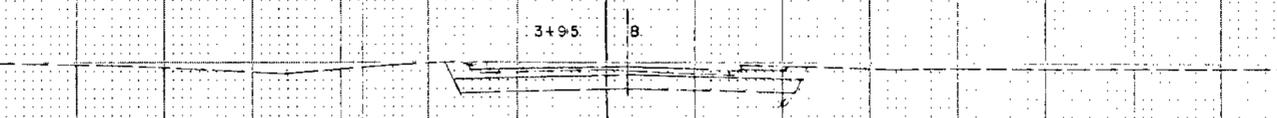
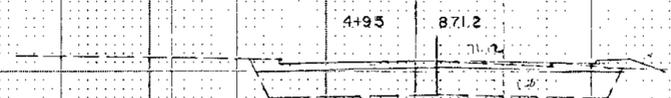
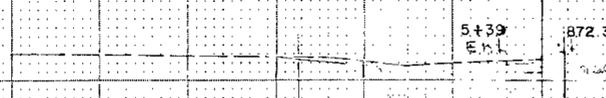
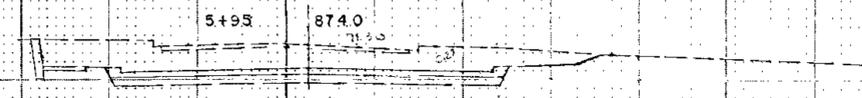
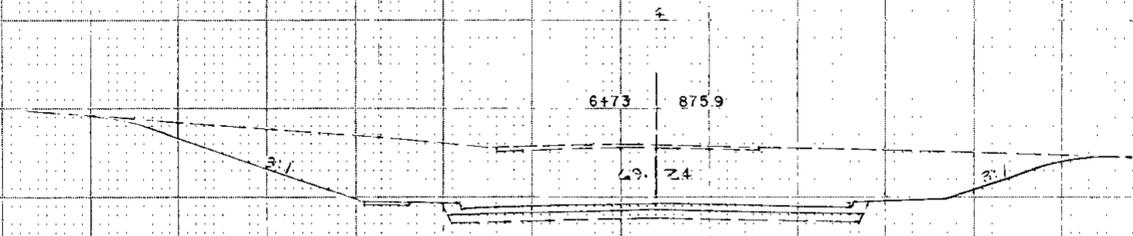
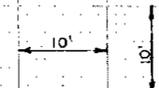
COMM. S.G. T.S.	1117 133	0 133 48
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COMM. S.G. T.S.	463 296	4 UNSUITABLE 28
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COMM. S.G. T.S.	169 337	4 UNSUITABLE 8
-----------------------	------------	----------------------

COMM. S.G. T.S.	50 57	0 UNSUITABLE
-----------------------	----------	-----------------

↓ (PIERCE ST.)
3+95 TO 6+73



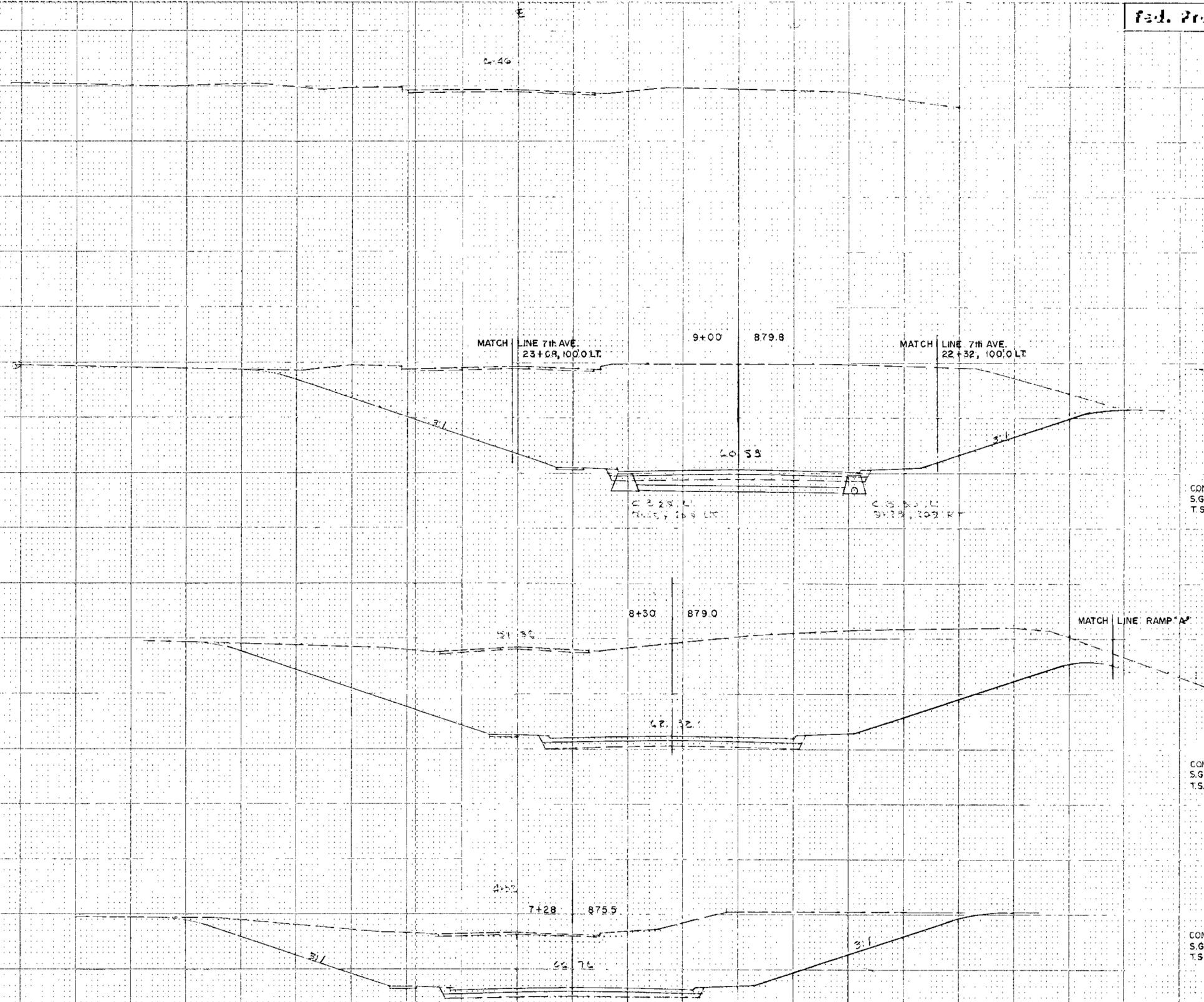
2 2
1 1
1 1
1 1
1 1

FUNCTIONAL CROSS SECTION OPEN DITCH
4" X 10" BOX OR EQUIVALENT 3" DIA.

9-7403

EXC.
CU.

EMB.
YD.

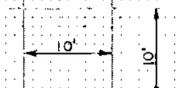


COMM. S.G. T.S. 5585 0 119 104

COMM. S.G. T.S. 6349 0 174 143

COMM. S.G. T.S. 1853 0 94 57

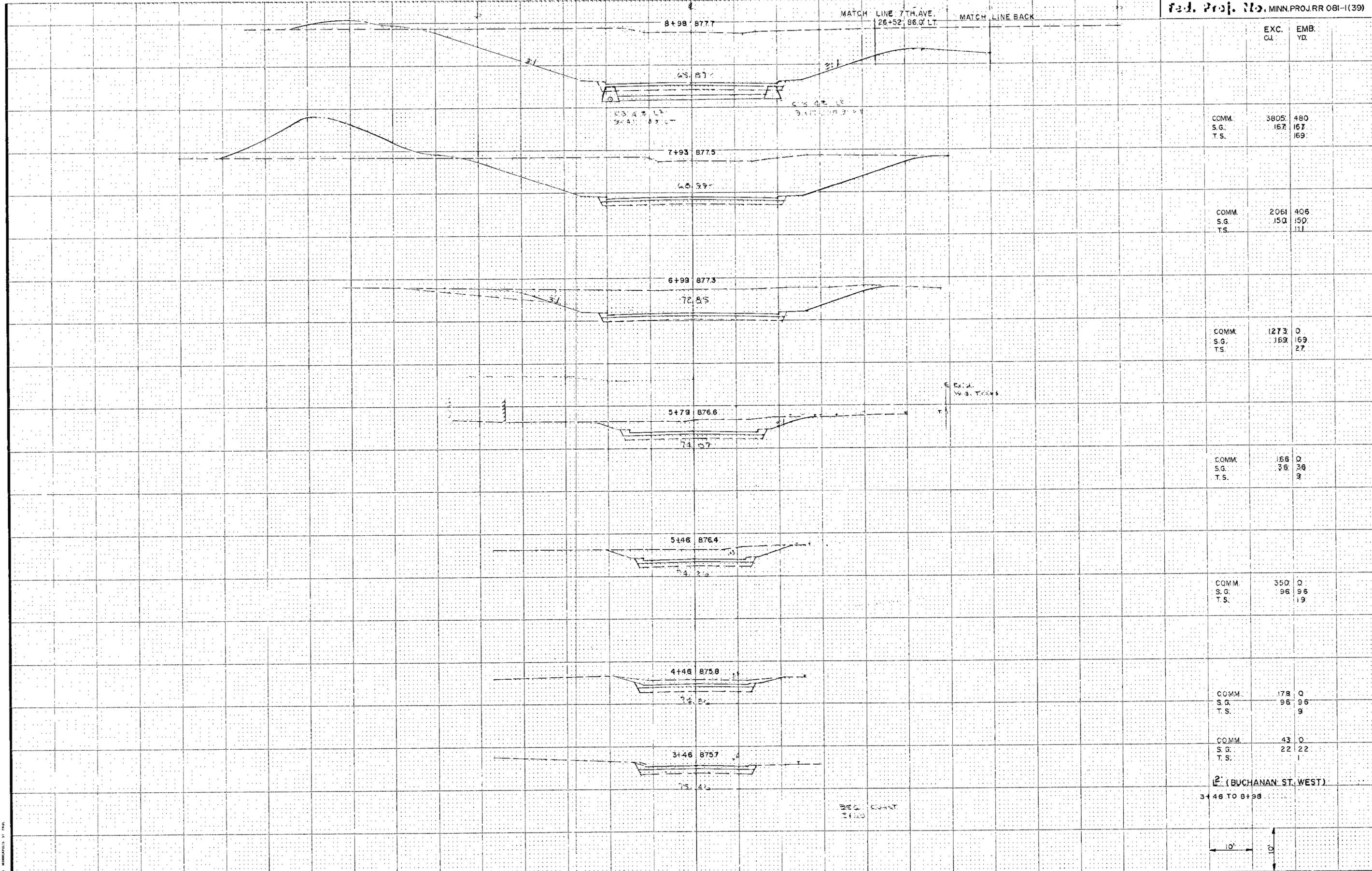
1' (PERCE ST)
7+28 TO 9+100



FUNCTIONAL CROSS SECTION OPEN DOTTED
H. A. BOGGS CO. MINNEAPOLIS, MINN.

9-7403

MATCH LINE 7TH AVE. 26+52' 86.0' LT. MATCH LINE BACK



	EXC. CU.	EMB. YD.
COMM. S.G. T.S.	3805 167	480 167 169
COMM. S.G. T.S.	2061 150	406 150 111
COMM. S.G. T.S.	1273 169	0 169 27
COMM. S.G. T.S.	166 36	0 36 9
COMM. S.G. T.S.	350 96	0 96 19
COMM. S.G. T.S.	178 96	0 96 9
COMM. S.G. T.S.	43 22	0 22 1

2' (BUCHANAN ST. WEST)
3+46 TO 8+98

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

END CONST
STA 14.33

EXC.
CU.

EMB.
YD.

COMM.
S.G.
T.S.

191
423
15

0
UNSUITABLE
15

COMM.
S.G.
T.S.

77
203
17

0
UNSUITABLE
17

COMM.
S.G.
T.S.

306
96
27

0
98
27

COMM.
S.G.
T.S.

1024
92
51

0
92
51

12+27 877.4

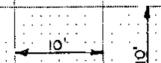
11+67 877.8

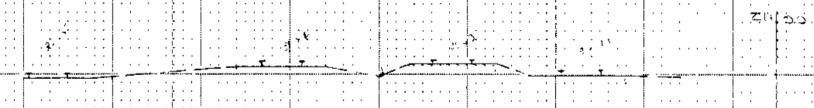
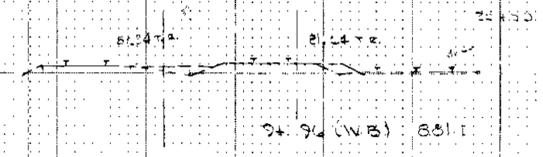
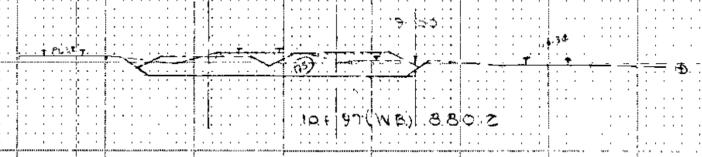
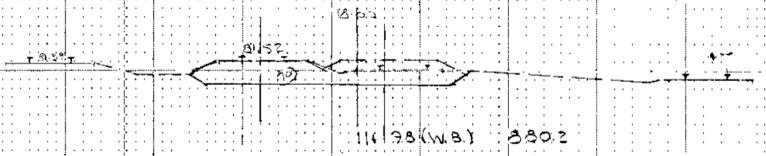
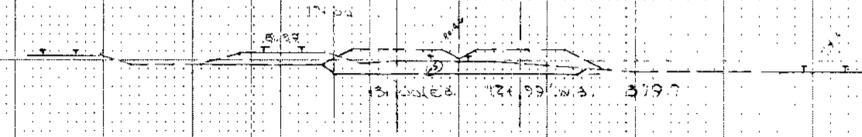
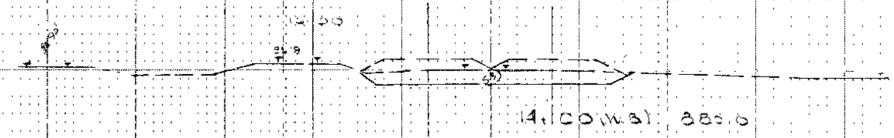
11+19 877.7

10+50 879.2

13 (BUCHANAN ST. EAST)

10+50 TO 12+27





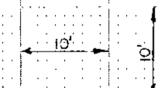
COMM. 219 0

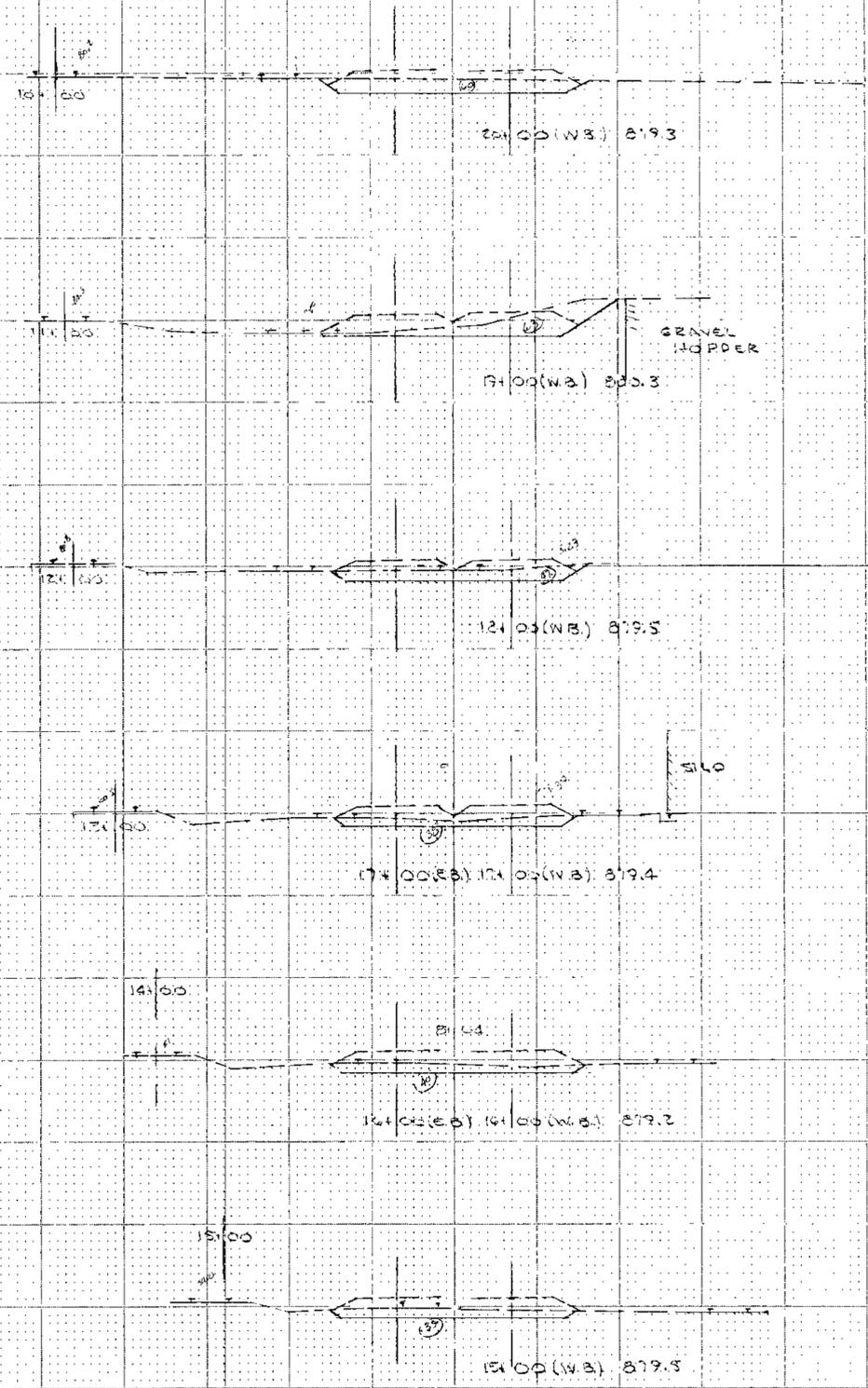
COMM. 252 0

COMM. 217 0

COMM. 140 0

RAILROAD SHOO-FLY
9+96 TO 14+00





COMM. 228 0

COMM. 204 0

COMM. 157 0

COMM. 144 0

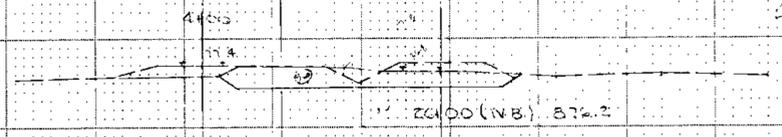
COMM. 146 0

COMM. 170 0

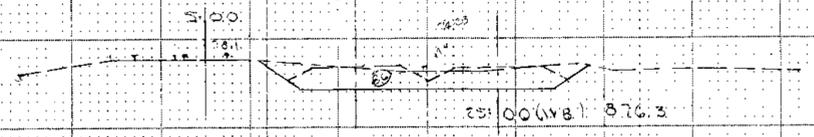
RAILROAD SHOOF-FLY
15+00 TO 20+00



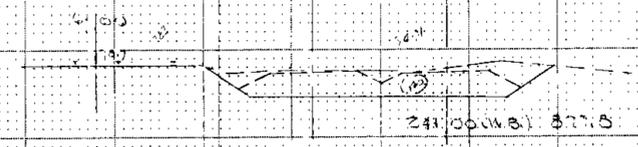
FUNCTIONAL CROSS SECTION OPEN BOTTLID
A. A. ROOSE TO MINNEAPOLIS BY PAUL



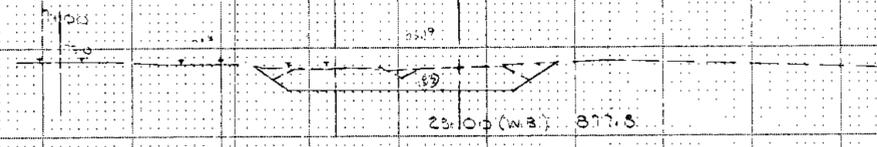
COMM. 312 0



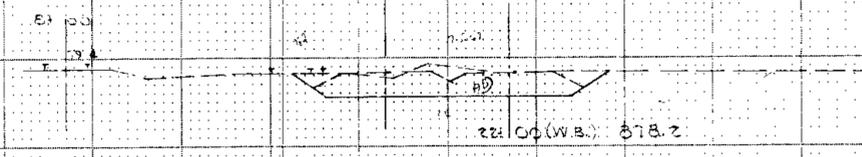
COMM. 337 0



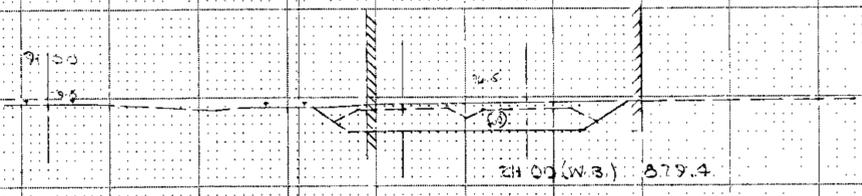
COMM. 381 0



COMM. 378 0



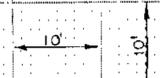
COMM. 335 0



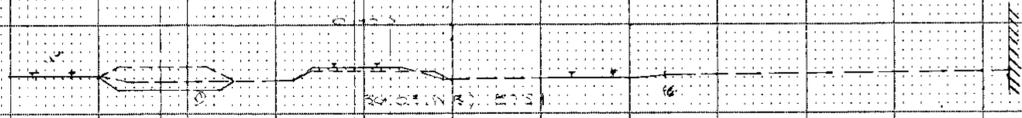
COMM. 367 0

COMM. 296 0

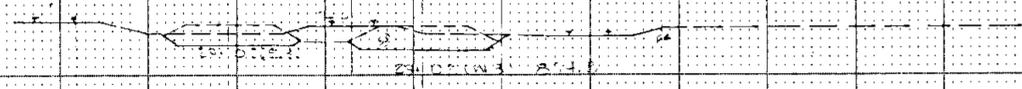
RAILROAD SHOULDER
21+00 TO 26+00



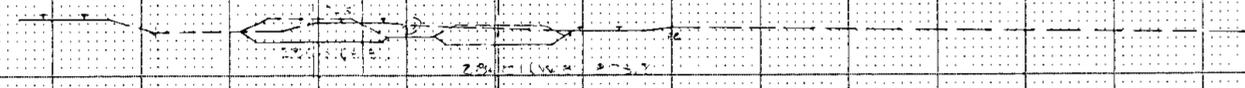
FUNCTIONAL CROSS SECTION - OPEN DOTTED
BY A. BODDIE CO. - MEMPHIS, TN



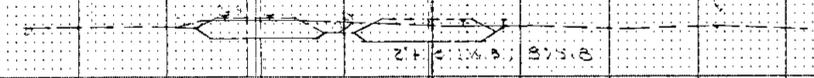
COMM. 189 0



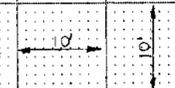
COMM. 296 0



COMM. 274 0



RAILROAD SHOULDER
27+01 TO 30+03



FUNCTIONAL CROSS SECTION - OPEN DOTTED
N. A. MOORE CO. - MINNEAPOLIS, ST. PAUL