

STATE OF MINNESOTA  
DEPARTMENT OF HIGHWAYS

CONSTRUCTION PLAN FOR GRADING, BASE, BITUMINOUS & STORM SEWER

# County State Aid Highway No. 78

Between CSA # 11 And TH # 242

A PT. APPROX. 575' NO. & 660' WEST A PT. APPROX. 360' SO. OF THE N.E.

From OF THE SE. SEC. 10, T. 31N, R. 24W. To COR. SEC. 10, T. 31N, R. 24W.

Give proper reference to Sections, Township and Range

GROSS LENGTH 4,836.57 FEET 0.92 MILES  
BRIDGES LENGTH 44 FEET 0.01 MILES  
EXCEPTIONS LENGTH \_\_\_\_\_ FEET \_\_\_\_\_ MILES  
NET LENGTH 4,836.90 FEET 0.92 MILES

### INDEX OF SHEETS

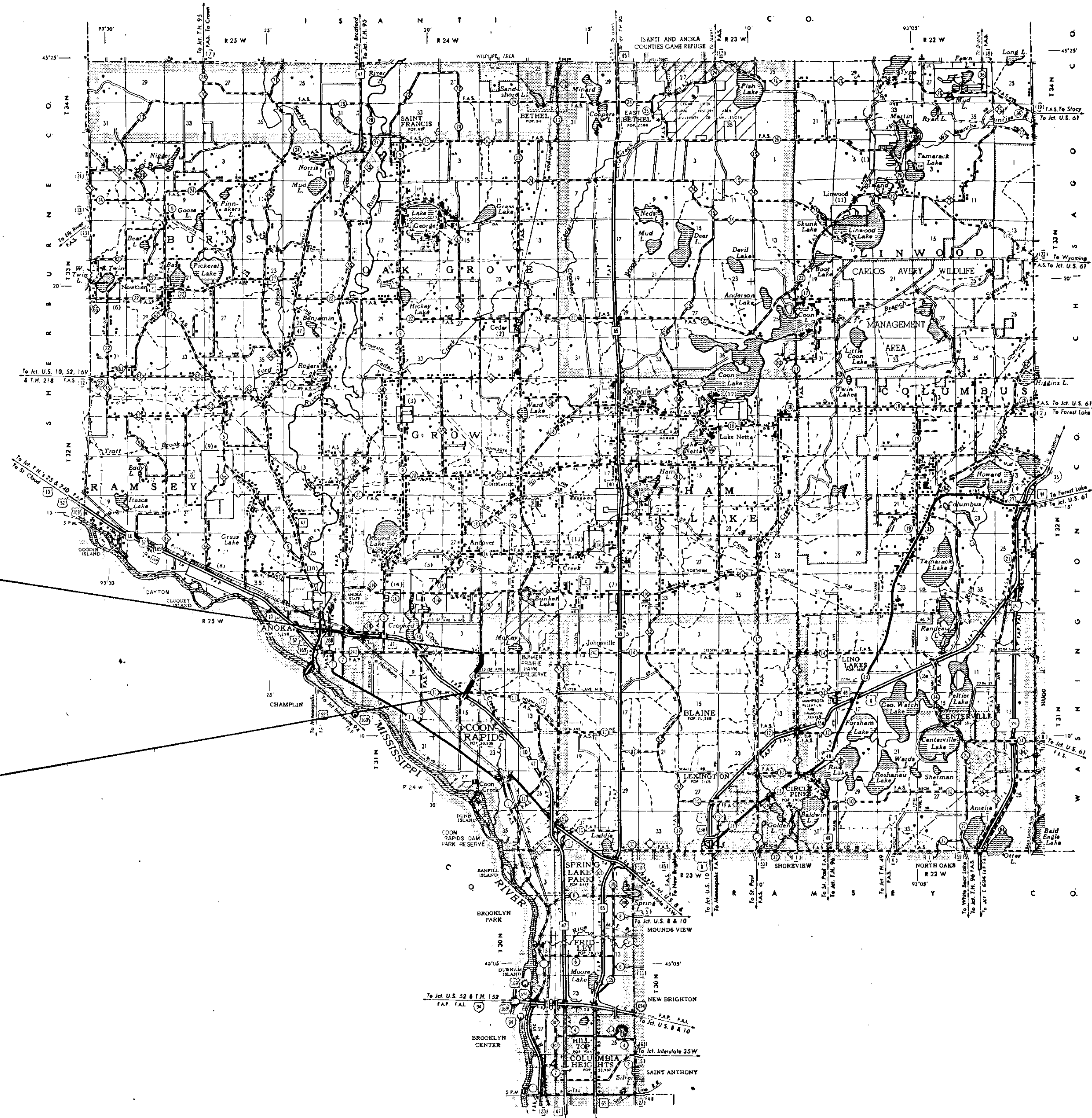
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### SCALE

INDEX MAP 2 MI.  
 PLAN & PROFILE 50' HORIZ.  
5' VERT.  
 CROSS SECTION 10'

### CONVENTIONAL SIGNS

- STATE LINE
- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- RIGHT-OF-WAY LINE
- PRESENT RIGHT-OF-WAY LINE
- CONTINGENT ACCESS LINE
- PROPERTY LINE (Except Land Lines)
- VACATED PLATTED PROPERTY
- CORPORATE OR CITY LIMITS
- TRUNK HIGHWAY CENTER LINE
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT-OF-WAY LINE
- RIVER OR CREEK
- KEY HOLE
- DRAINAGE DITCH
- ELECTRIC POWER LINE
- TELEPHONE OR TELEGRAPH LINE
- JOINT TELEPHONE AND POWER
- CONDUIT
- TELEPHONE CABLE - AERIAL
- TELEPHONE CABLE - UNDERGROUND
- POWER CABLE - UNDERGROUND
- GAS MAIN
- CULVERT
- DRAIN INLET
- SEWER MANHOLE
- BARBED WIRE FENCE
- WOVEN WIRE FENCE
- CHAIN LINK FENCE
- RAILROAD SNOW FENCE
- STONE WALL OR FENCE
- HEDGE
- WATER PIPE
- SEWER PIPE
- DRAIN TILE
- SPRINGS
- MARSH
- TIMBER
- ORCHARD
- BRUSH
- NURSERY
- CATCH BASIN
- MANHOLE
- FIRE HYDRANT
- STREET LIGHT
- RAILROAD CROSSING SIGN
- RAILROAD CROSSING BELL
- ELECTRIC WARNING SIGN
- CROSSING GATE
- CATTLE GUARD
- OVERPASS (Highway Over)
- UNDERPASS (Highway Under)
- BRIDGE
- BUILDING (One Story Frame)
- F. FRAME C-CONCRETE
- S. STONE T-TILE
- B. BRICK ST-STUCCO
- IRON PIPE OR ROOF
- MONUMENT (STONE, CONCRETE OR METAL)
- WOODEN PILE
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY
- MEASURER CORNER



END PROJECT C.P. 82-09-78  
STA. 68+56

BEGIN PROJECT C.P. 82-09-78  
STA. 20+16

SURVEY P.O.T. 59+06.77  
OR P.T. 59+03.67

### DESIGN DESIGNATION

ADT (CURRENT YEAR) 8,927  
 ADT (FUTURE YEAR) 17,854  
 T (HEAVY COMMERCIAL) 300-600  
9 Ton Design SOIL FACTOR A-3.50%  
 Design Speed 50 MPH  
 Design Speed not achieved at:  
 STA \_\_\_\_\_ TO STA \_\_\_\_\_ MPH  
 STA \_\_\_\_\_ TO STA \_\_\_\_\_ MPH

### SPECIFICATIONS

THE "STANDARD" SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, DATED JAN. 1, 1978, SHALL GOVERN.

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

I HEREBY CERTIFY THAT THIS PLAN 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.

*Paul K. Rund*  
COUNTY ENGINEER DATE 3/4/83

ANOKA COUNTY REG. NO. 6549

RECOMMENDED FOR APPROVAL \_\_\_\_\_ 19  
DISTRICT STATE AID ENGINEER

RECOMMENDED FOR APPROVAL \_\_\_\_\_ 19

APPROVED \_\_\_\_\_ 19  
STATE AID ENGINEER

Minn. Proj. No. \_\_\_\_\_ County Proj. No. 82-09-78

State Proj. No. \_\_\_\_\_ S.A.P.

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL ESTIMATED QUANTITIES	TOTAL FINAL QUANTITIES
2021.501	MOBILIZATION	LUMP SUM	1	
2031.503	FIELD LABORATORY, TYPE D	EACH	1	
2101.501	CLEARING	ACRE	0.65	
2101.502	CLEARING	TREE	52	
2101.506	GRUBBING	ACRE	0.65	
2101.507	GRUBBING	TREE	47	
2104.501	REMOVE 24" STEEL PIPE CASING	LIN. FEET	50	
2104.501	REMOVE CURB AND GUTTER	LIN. FEET	116	
2104.501	REMOVE BITUMINOUS CURB	LIN. FEET	96	
2104.503	REMOVE SIDEWALK	SQ. FT.	215	
2104.505	REMOVE BITUMINOUS PAVEMENT	SQ. YARD	16260 (P)	
2104.521	SALVAGE PRECAST CONCRETE BARRIER	LIN. FT.	90	
2104.521	SALVAGE 21" R.C.P. SEWER	LIN. FT.	457	
2104.521	SALVAGE 24" D.I.P. BALL JOINT WATER MAIN	LIN. FT.	260	
2104.523	SALVAGE CASTINGS	EACH	3	
2105.501	COMMON EXCAVATION	CU. YD.	23161 (P)	
2105.505	MUCK EXCAVATION (EV)	CU. YD.	319	
2105.521	GRANULAR BORROW (EV)	CU. YD.	5695	
2105.525	TOPSOIL BORROW (LV)	CU. YD.	715	
2130.501	WATER	M-GAL.	150	
2211.503	AGGREGATE BASE PLACED, CLASS 5	CU. YD.	4032 (P)	
2331.504	BITUMINOUS MATERIAL FOR MIXTURE (CONVENTIONAL OR RECYCLED)	TON	296	
2331.510	BINDER COURSE MIXTURE (CONVENTIONAL OR RECYCLED)	TON	3275	
2331.514	BASE COURSE MIXTURE (CONVENTIONAL OR RECYCLED)	TON	3275	
2331.531	TEMPORARY LANE MARKING	ROAD STATION	145	
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	151	
2341.508	WEARING COURSE MIXTURE	TON	2510	
0341.503	BITUMINOUS MIXTURE FOR DRIVEWAYS	SQ. YD.	205	
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	2900	
2442.501	REMOVE OLD BRIDGE	LUMP SUM	1	
2501.511	12" C.M. PIPE CULVERT	LIN. FT.	12	
2501.515	12" C.M. PIPE APRONS	EACH	2	
2501.515	12" R.C. PIPE APRONS	EACH	1	
2501.515	15" R.C. PIPE APRONS	EACH	3	
2501.515	18" R.C. PIPE APRONS	EACH	1	
2503.541	12" R.C. PIPE SEWER, DESIGN 3006D CL.2	LIN. FT.	438	
2503.541	15" R.C. PIPE SEWER, DESIGN 3006D CL.2	LIN. FT.	1003	
2503.541	15" R.C. PIPE SEWER, DESIGN 3006D CL.4	LIN. FT.	69	
2503.541	18" R.C. PIPE SEWER, DESIGN 3006D CL.2	LIN. FT.	21	
2503.511	21" R.C. PIPE SEWER CL. 2	LIN. FT.	16	
2503.571	INSTALL 21" R.C. PIPE SEWER	LIN. FT.	441	
2506.507	CONSTRUCT CATCH BASINS, DESIGN A OR F	LIN. FT.	21.4	
2506.507	CONSTRUCT CATCH BASINS, DESIGN C, G, OR H	LIN. FT.	70.5	
2506.511	RECONSTRUCT MANHOLES	LIN. FT.	175	
2506.516	CASTING ASSEMBLIES	EACH	23	
2506.521	INSTALL CASTINGS	EACH	2	
2506.522	ADJUST FRAME AND RING CASTINGS	EACH	11	
0411.603	STONE RETAINING WALL	SQ. FT.	195	
0504.602	ADJUST WATER GATE HOUSING	EACH	4	
2521.501	4" CONCRETE WALK	SQ. FT.	1022	
2521.501	3" CONCRETE WALK (FOR MEDIAN)	SQ. FT.	1020	
2531.501	CONCRETE CURB AND GUTTER, DESIGN B-612	LIN. FT.	490	
2531.501	CONCRETE CURB AND GUTTER, DESIGN B-618	LIN. FT.	10192	
2531.503	CONCRETE MEDIAN	SQ. YD.	11	
2531.507	6" CONCRETE DRIVEWAY PAVEMENT	SQ. YD.	53	

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL ESTIMATED QUANTITIES	TOTAL FINAL QUANTITIES
2575.501	ROADSIDE SEEDING	ACRE	3.3 (P)	
2575.502	SEED MIXTURE NO. 5	POUND	251	
2575.505	SODDING	SQ. YD.	7983	
2575.511	MULCH MATERIAL TYPE 1	TON	6.7	
2575.519	DISC ANCHORING	ACRE	3.3 (P)	
2575.531	COMMERCIAL FERTILIZER ANALYSIS 10-10-10	TON	1.20	
SANITARY SEWER CONSTRUCTION				
1.	8" PVC SEWER PIPE	LIN. FT.	130	
2.	4" E.H.C.I. SEWER PIPE	LIN. FT.	85	
3.	BREAK INTO EXISTING MANHOLE	EACH	2	
WATER MAIN CONSTRUCTION				
1.	24" x 24" x 12" TAPPING TEE WITH 12" RESILIENT WEDGE VALVE	EACH	1	
2.	24" x 24" x 8" TAPPING TEE WITH 8" RESILIENT WEDGE VALVE	EACH	3	
3.	24" DUCTILE IRON PIPE	LIN. FT.	80	
4.	12" DUCTILE IRON PIPE	LIN. FT.	65	
5.	8" DUCTILE IRON PIPE	LIN. FT.	155	
6.	6" DUCTILE IRON PIPE	LIN. FT.	13	
7.	STANDARD HYDRANT	EACH	2	
8.	6" RESILIENT WEDGE VALVE	EACH	2	
9.	8" x 8" x 6" TEE	EACH	1	
10.	24" BENDS WITH BLOCKING	EACH	2	
11.	12" PLUG	EACH	1	
12.	8" PLUG	EACH	3	
13.	24" PLUG	EACH	1	
14.	1" SERVICE CONNECTION	EACH	1	
15.	1" COPPER SERVICE PIPE	LIN. FT.	20	
WATER MAIN RELOCATION				
1.	INSTALL SALVAGED 24" WATER MAIN PIPE	LIN. FT.	260	
2.	2" EXTRUDED POLYSTYRENE INSULATION	SQ. FT.	2100	
3.	4" URETHANE PIPE WRAP WITH 6 MILL POLY VAPOR BARRIER	LIN. FT.	150	
4.	GRANULAR BACKFILL WITHIN INSULATION BOX	TON	63	
5.	24" x 24" x 6" TEE	EACH	1	
6.	24" SLEEVE	EACH	2	
7.	HYDRANT EXTENSION	EACH	1	
8.	PEA GRAVEL	TON	30	
9.	WATER MAIN TESTING	LUMP SUM	1	

BASIS OF PLANNED QUANTITIES

- 2331 PLANT MIXED BASE COURSE  
BITUMINOUS MIXTURE 110 LBS./ SQ. YD. PER 1" THICKNESS  
BITUMINOUS MATERIAL FOR MIXTURE 4.5% BY WEIGHT
- 2331 PLANT MIXED BINDER COURSE  
BITUMINOUS MIXTURE 110 LBS./ SQ. YD. PER 1" THICKNESS  
BITUMINOUS MATERIAL FOR MIXTURE 4.5% BY WEIGHT
- 2341 PLANT MIXED WEARING COURSE  
BITUMINOUS MIXTURE 110 LBS./ SQ. YD. PER 1" THICKNESS  
BITUMINOUS MATERIAL FOR MIXTURE 6.0% BY WEIGHT
- 2575 MULCH MATERIAL, TYPE -1  
2 TONS / ACRE
- 2575 SEED MIXTURE #6  
75 LBS. / ACRE
- 2575 COMMERCIAL FERTILIZER, ANALYSIS 10-10-10  
500 LBS. / ACRE
- 2575 ROADSIDE SHADING BASED ON HORIZONTAL MEASUREMENT PLUS 10%

- ①
- ②
- ③
- ④
- ⑤

- ① FOR FRONT YARD AREAS TO BE SODDED.
- ② FOR DUST CONTROL.
- ③ INCLUDES 144 CU. YD. FOR STREET APPROACHES.
- ④ INCLUDES 72 TON FOR STREET APPROACHES.
- ⑤ INCLUDES 54 TON FOR STREET APPROACHES.
- ⑥ INCLUDES SODDED AREAS.

SPECIAL DETAILS

THE CONTRACTOR SHALL REMOVE SUFFICIENT TOPSOIL MATERIAL WITHIN THE EXCAVATION AREAS AND AREAS ON WHICH EMBANKMENT WILL BE PLACED, STOCKPILE IF NECESSARY, AND USE IT FOR TOPSOIL COVERING ON THE NEW SLOPES AND DITCH BOTTOMS. THIS WILL REQUIRE APPROXIMATELY 2111 CU. YDS. TO PROVIDE A MINIMUM COVER OF 3". THIS WORK SHALL BE CONSIDERED AS INCIDENTAL TO COMMON EXCAVATION. APPROXIMATELY 319 CU. YDS. OF MUCK EXCAVATION MATERIAL IS TO BE USED AS TOPSOIL COVERING TO PROVIDE A MINIMUM COVER OF 3" ON THE NEW SLOPES ADJACENT TO THE EXCAVATION AREA. THIS WORK SHALL BE CONSIDERED AS INCIDENTAL TO MUCK EXCAVATION AND NO ADDITIONAL COMPENSATION WILL BE MADE THEREFORE.

REMOVAL OF BITUMINOUS PAVEMENT IN PLACE IS BASED ON AN AVERAGE WIDTH OF 29.6 FEET AND QUANTITIES COMPUTED ON THE BASIS OF SQUARE YARDS IN PLACE. STREET APPROACHES AND PRIVATE ENTRANCES ARE INCLUDED IN THE BITUMINOUS PAVEMENT REMOVAL QUANTITIES.

STANDARD PLATES

PLATE NO.	DESCRIPTION
0003A	SPECIFICATION REFERENCE TO STANDARD PLATES
3000I	REINFORCED CONCRETE PIPE
3004D	GASKET JOINT FOR R.C. PIPE
3040F	CORRUGATED METAL PIPE CULVERT
3100E	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3123H	METAL APRONS FOR C.M. PIPE
4000H	MANHOLE OR CATCH BASIN
4002D	MANHOLE OR CATCH BASIN
4005K	MANHOLE OR CATCH BASIN
4006K	MANHOLE OR CATCH BASIN
4011D	PRECAST CONCRETE BASE
4101B	RING CASTING FOR MANHOLE OR CATCH BASIN
4110D	COVER CASTING FOR MANHOLE
4126E	CATCH BASIN FRAME CASTING
4149C	GRATE CASTING FOR CATCH BASIN
4161E	CURB BOX CASTING FOR CATCH BASIN
4180G	MANHOLE OR CATCH BASIN STEP
7035J	CONCRETE WALK AND CURB RETURNS AT ENTRANCES
7036C	PEDESTRIAN CURB RAMP
7100E	CONCRETE CURB AND GUTTERS
7110E	CURB AND GUTTER CONSTRUCTION AT CATCH BASIN
7111E	INSTALLATION OF CATCH BASIN CASTINGS
8000H	STANDARD BARRICADES
9102C	SODDING AT PIPE CULVERT ENDS

CLEARING AND GRUBBING					
STATION (TO STATION)	LOC.	CLEARING		GRUBBING	
		TREE	ACRE	TREE	
L <sup>OR</sup> 25+90	63 LT.	1		1	
L <sup>OR</sup> 26+00	52 LT.	1		1	
L <sup>OR</sup> 26+06	56 LT.	1		1	
L <sup>OR</sup> 27+52	44 RT.	1		1	
L <sup>OR</sup> 27+57	44 RT.	1		1	
L <sup>OR</sup> 27+95	36 RT.	2		1	
L <sup>OR</sup> 27+95	43 RT.	1		1	
L <sup>OR</sup> 27+97	45 RT.	1		1	
L <sup>OR</sup> 28+00	43 LT.	2		2	
L <sup>OR</sup> 28+06	39 RT.	1		1	
L <sup>OR</sup> 28+06	37 RT.	2		1	
L <sup>OR</sup> 28+08	35 RT.	1		1	
L <sup>OR</sup> 28+15	39 RT.	1		1	
L <sup>OR</sup> 28+16	37 RT.	1		1	
L <sup>OR</sup> 28+18	42 RT.	1		1	
L <sup>OR</sup> 28+59	69 LT.	2		1	
L <sup>OR</sup> 28+62	60 LT.	1		1	
L <sup>OR</sup> 28+92	69 LT.	1		1	
L <sup>OR</sup> 28+94	66 LT.	1		1	
L <sup>OR</sup> 29+01	48 LT.	1		1	
L <sup>OR</sup> 29+03	66 LT.	1		1	
L <sup>OR</sup> 29+05	47 LT.	1		1	
L <sup>OR</sup> 29+08	47 LT.	1		1	
L <sup>OR</sup> 30+64	48 LT.	1		1	
L <sup>OR</sup> 30+65	45 LT.	1		1	
L <sup>OR</sup> 30+70	47 LT.	1		1	
L <sup>OR</sup> 30+75	49 LT.	1		1	
L <sup>OR</sup> 30+82	49 LT.	1		1	
L <sup>OR</sup> 34+60	37 LT.	1		1	
L <sup>OR</sup> 34+60	44	1		1	
L <sup>OR</sup> 40+89	45 RT.	1		1	
L <sup>OR</sup> 44+87	34 RT.	1		1	
L <sup>OR</sup> 44+86-46+50	36-45 RT.		0.10	0.10	
L <sup>OR</sup> 58+65	50 LT.	1		1	
L <sup>OR</sup> 58+65	33 RT.	1		1	
L <sup>OR</sup> 59+04	44 LT.	1		1	
L <sup>OR</sup> 59+07	44 LT.	1		1	
L <sup>OR</sup> 59+20	44 LT.	1		1	
L <sup>OR</sup> 59+30	44 LT.	1		1	
L <sup>OR</sup> 59+69	44 LT.	2		1	
L <sup>OR</sup> 62+45-68+35	32-59 RT.		0.50	0.50	
L <sup>OR</sup> 65+12	58 LT.	4		4	
L <sup>OR</sup> 65+20	48 LT.	2		1	
L <sup>OR</sup> 65+30	46 LT.	1		1	
L <sup>OR</sup> 65+31	52 LT.	1		1	
L <sup>OR</sup> 67+42-67+77	44-56 LT.		0.05	0.05	
TOTALS		52	0.65	47	0.65

MISCELLANEOUS REMOVALS

STA. TO STA.	LOC.	DESCRIPTION	UNIT LIN. FT.	UNIT SQ. FT.
L <sup>OR</sup> 20+18-20+28	RT.	CONC. C. & G.	10'	
L <sup>OR</sup> 34+80-34+93	RT.	CONCRETE WALK		55
L <sup>OR</sup> 34+94	RT.	CONC. C. & G.	16'	
L <sup>OR</sup> 35+24	RT.	CONC. C. & G.	16'	
L <sup>OR</sup> 35+24-35+36	RT.	CONCRETE WALK		60
L <sup>OR</sup> 43+55	RT.	CONC. C. & G.	34'	
L <sup>OR</sup> 44+09	RT.	CONC. C. & G.	40'	
L <sup>OR</sup> 66+26	RT.	CONCRETE WALK		100
L <sup>OR</sup> 67+60-68+56	RT.	BITUMINOUS CURB	96'	
TOTAL			212	215

DRIVEWAY CONSTRUCTION

STATION	ADDRESS	REMARKS	REMOVE BITUMINOUS	6" CONC. DRY. PAV.			BIT. PAVEMENT DRIVEWAY	
			SQ. YD.	WIDTH	SQ. YD.	WIDTH	REPLMT	NEW
L <sup>OR</sup> 23+45 RT.	11831	REMOVE BITUMINOUS TO 51' & REPLACE	53	16'	9	16'	36	
L <sup>OR</sup> 45+30 LT.	12110	PAVE TO PROPERTY LINE	-	14'	8	14'		26
L <sup>OR</sup> 47+00 LT.	12128	REMOVE BIT. TO 51' & REPLACE	86	18'	10	18'	40	
L <sup>OR</sup> 56+69 RT.	12251	REMOVE BIT. TO 50' & REPLACE	33	14'	8	14'	30	
L <sup>OR</sup> 59+50 LT.		PAVE TO PROPERTY LINE	-	14'	8	14'		45
L <sup>OR</sup> 60+13 RT.	12325	PAVE TO PROPERTY LINE	-	18'	10	18'		28
TOTALS			172		53		106	99

SODDING

STATION	LOC.	S.Y.
L <sup>OR</sup> 21+16-28+17	27-31.5LT.	350
L <sup>OR</sup> 21+16-22+00	27-31.5RT.	50
L <sup>OR</sup> 22+00-23+37	27-45RT.	274
L <sup>OR</sup> 23+53-24+65	27-47RT.	249
L <sup>OR</sup> 24+65-28+17	27-31.5RT.	176
L <sup>OR</sup> 28+17-29+61	27-45RT.	238
L <sup>OR</sup> 28+17-29+61	27-45LT.	238
L <sup>OR</sup> 29+61-43+55	27-31.5LT.	697
L <sup>OR</sup> 29+61-34+94	27-31.5RT.	266
L <sup>OR</sup> 35+24-43+55	27-31.5RT.	416
L <sup>OR</sup> 44+09-44+50	27-31.5LT.	21
L <sup>OR</sup> 44+50-45+23	27-38LT.	89
L <sup>OR</sup> 44+09-51+00	27-52RT.	1919
L <sup>OR</sup> 45+37-46+93	27-38LT.	191
L <sup>OR</sup> 47+07-47+50	27-38LT.	55
L <sup>OR</sup> 47+50-68+56	27-31.5LT.	1053
L <sup>OR</sup> 51+00-56+00	27-31.5RT.	230
L <sup>OR</sup> 56+00-56+62	27-40RT.	89
L <sup>OR</sup> 56+76-60+05	27-42RT.	548
L <sup>OR</sup> 60+21-61+30	27-38RT.	133
L <sup>OR</sup> 61+30-68+56	27-31.5RT.	363
BRIDGE (BEBO) APPROACHES		155
CULVERT ENDS		17
STORM SEWER INLET & OUTLET		46
TOTAL		7983

ADJUST FRAME & RING CASTINGS

STATION	LOC.	TYPE	REMARKS
L <sup>OR</sup> 23+15	31 RT.	M.H.	BELL TEL. CO.
L <sup>OR</sup> 31+20	31 RT.	M.H.	BELL TEL. CO.
L <sup>OR</sup> 31+94	42 RT.	M.H.	STORM SEWER
L <sup>OR</sup> 32+08	7 LT.	M.H.	SAN. SEWER
L <sup>OR</sup> 32+60	30 LT.	M.H.	SAN. SEWER
L <sup>OR</sup> 34+94	41 RT.	C.B.	STORM SEWER
L <sup>OR</sup> 35+24	42 RT.	C.B.	STORM SEWER
L <sup>OR</sup> 36+05	30 LT.	M.H.	SAN. SEWER
L <sup>OR</sup> 36+08	42 RT.	C.B.	STORM SEWER
L <sup>OR</sup> 39+41	29 RT.	M.H.	STORM SEWER
L <sup>OR</sup> 40+05	24 LT.	M.H.	SAN. SEWER
L <sup>OR</sup> 40+45	29 RT.	M.H.	BELL TEL. CO.
L <sup>OR</sup> 43+74	20 LT.	M.H.	SAN. SEWER
L <sup>OR</sup> 43+98	36 RT.	M.H.	STORM SEWER
L <sup>OR</sup> 49+26	28 RT.	M.H.	BELL TEL. CO.
L <sup>OR</sup> 57+86	35 RT.	M.H.	BELL TEL. CO.
L <sup>OR</sup> 67+06	28 RT.	M.H.	BELL TEL. CO.
L <sup>OR</sup> 67+20	28 RT.	M.H.	BELL TEL. CO.

NOTE: SEE STORM SEWER FOR SCHEDULE FOR M.H. & C.B. INCLUDED WITH STORM SEWER WORK. BELL TEL. CO. WILL BE ADJUSTED BY OTHERS.

CASTING ASSEMBLIES

ASSEMBLY	ITEM	CASTING NUMBER	QUANTITY
A	FRAME COVER	700-7 712	2
B	FRAME GRATE CURB BOX	801 810 821 B	21

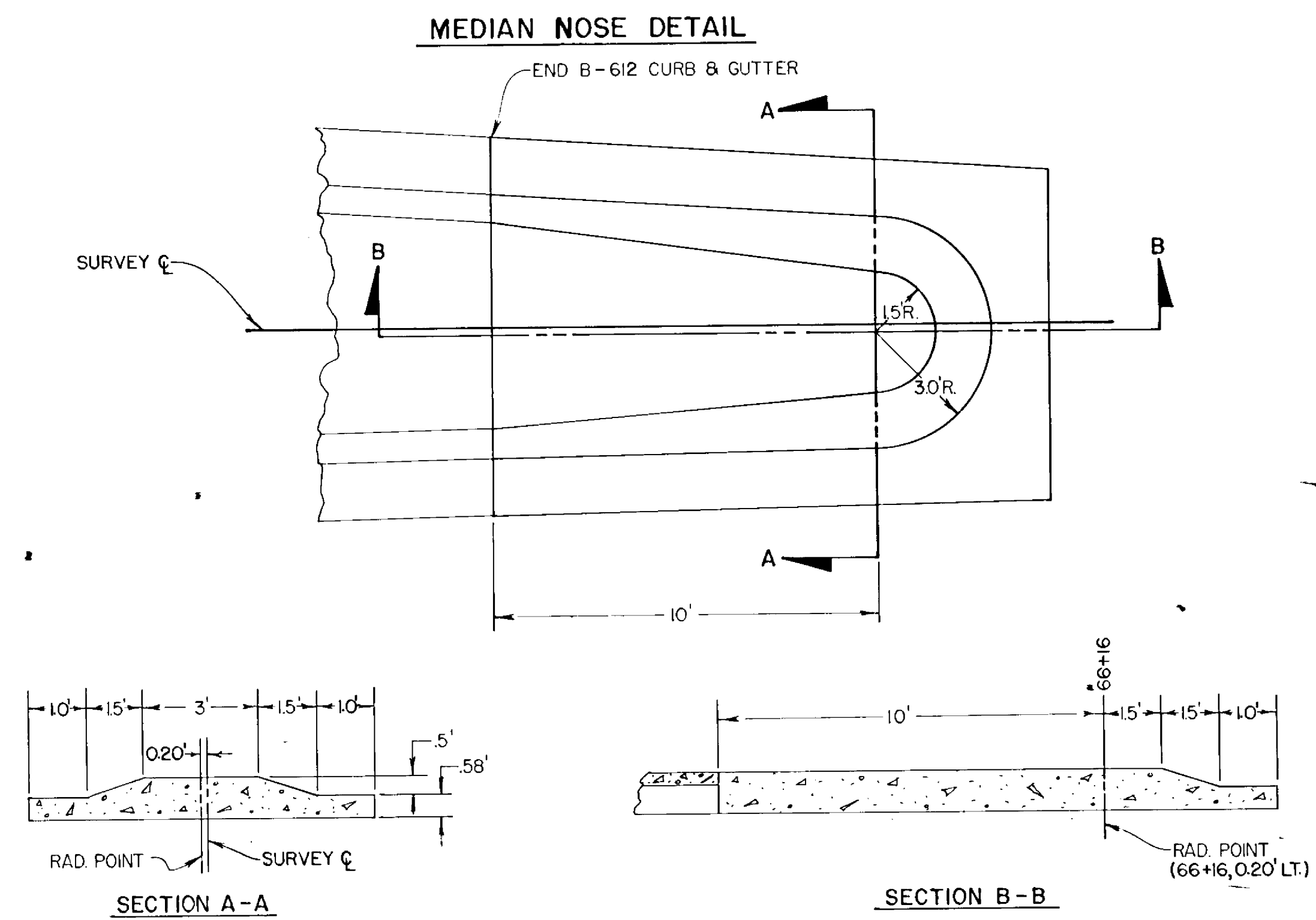
RECONSTRUCT MANHOLES

STATION	TYPE	LOC.	LIN. FT.
L <sup>OR</sup> 36+05	SAN. SEWER	30' LT.	5.8'
L <sup>OR</sup> 40+05	SAN. SEWER	24' LT.	5.8'
L <sup>OR</sup> 43+74	SAN. SEWER	20' LT.	5.9'
TOTAL			17.50'

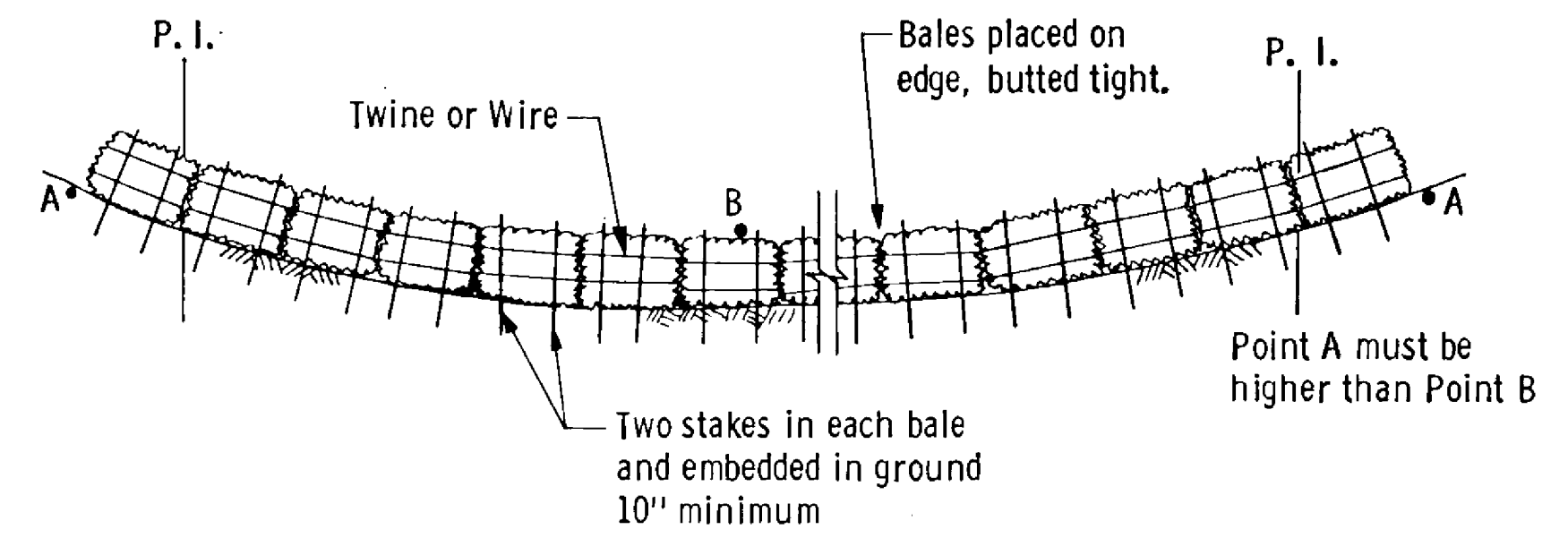
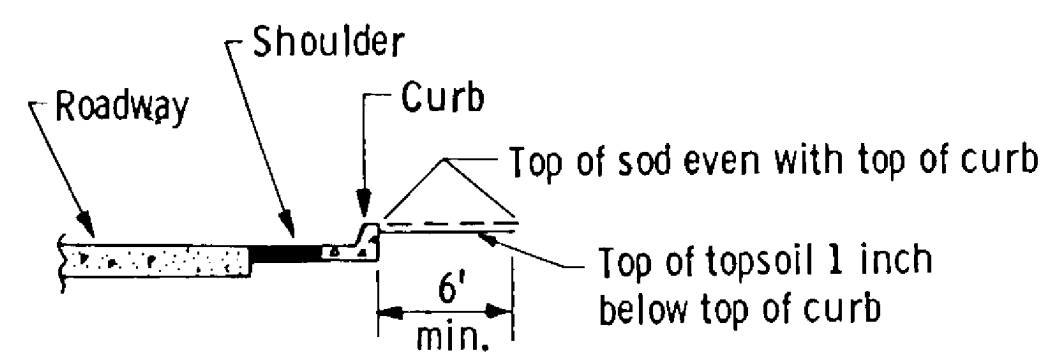
GATE VALVES

STATION	LOCATION
L <sup>OR</sup> 34+97	13' RT.
L <sup>OR</sup> 34+91	5' RT.
L <sup>OR</sup> 43+85	35' RT.
L <sup>OR</sup> 44+25	20' RT.
TOTAL	4

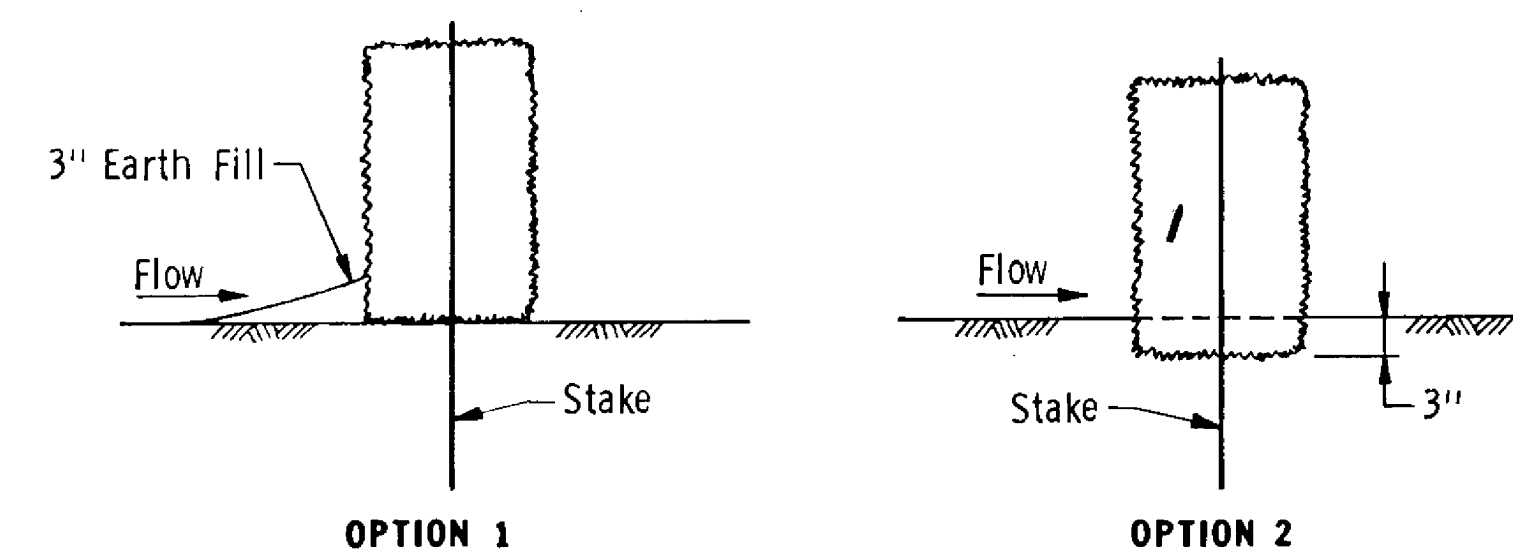




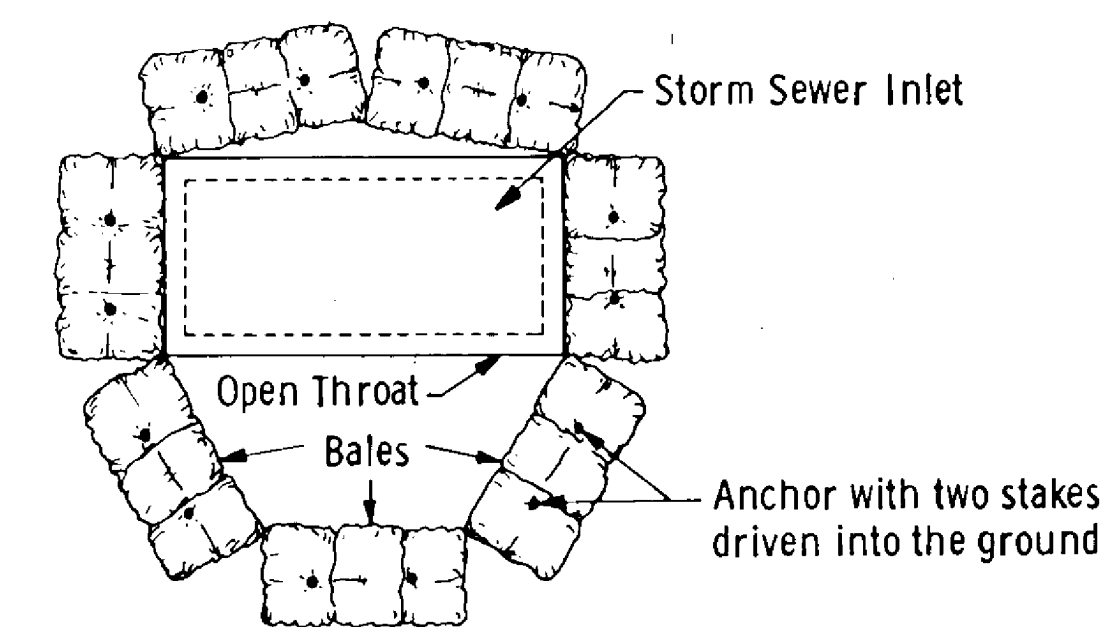
**SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED**



**BALE HAY OR STRAW DITCH CHECK**



**DITCH CHECK SECTIONS**

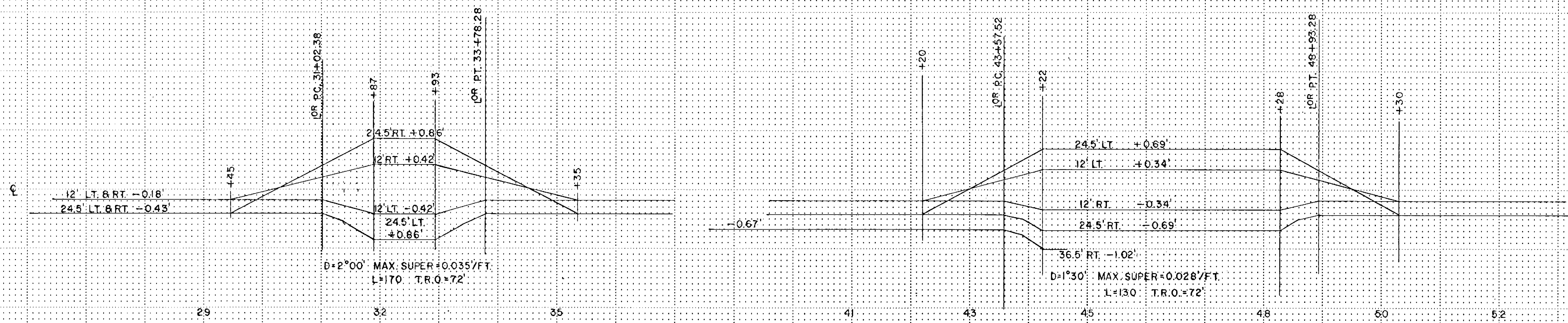


**BALE DIVERSION TO PROTECT STORM SEWER INLETS**



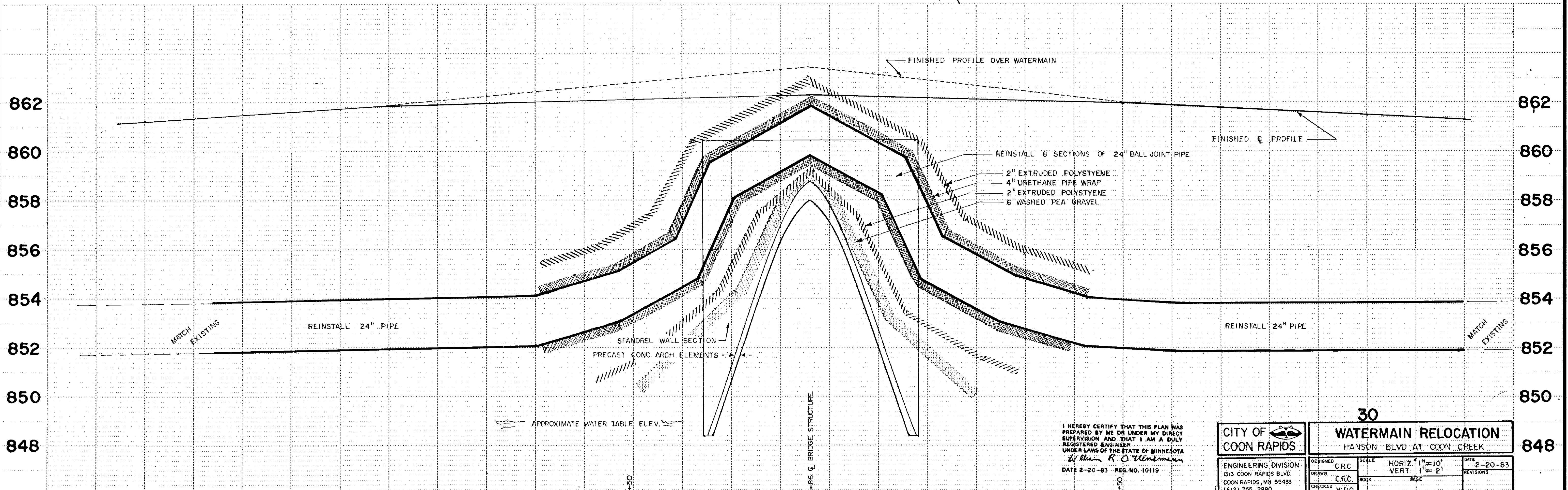
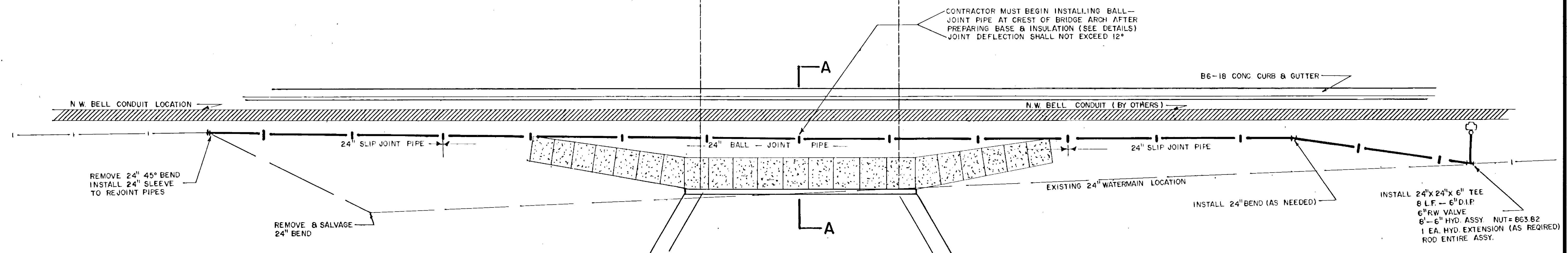
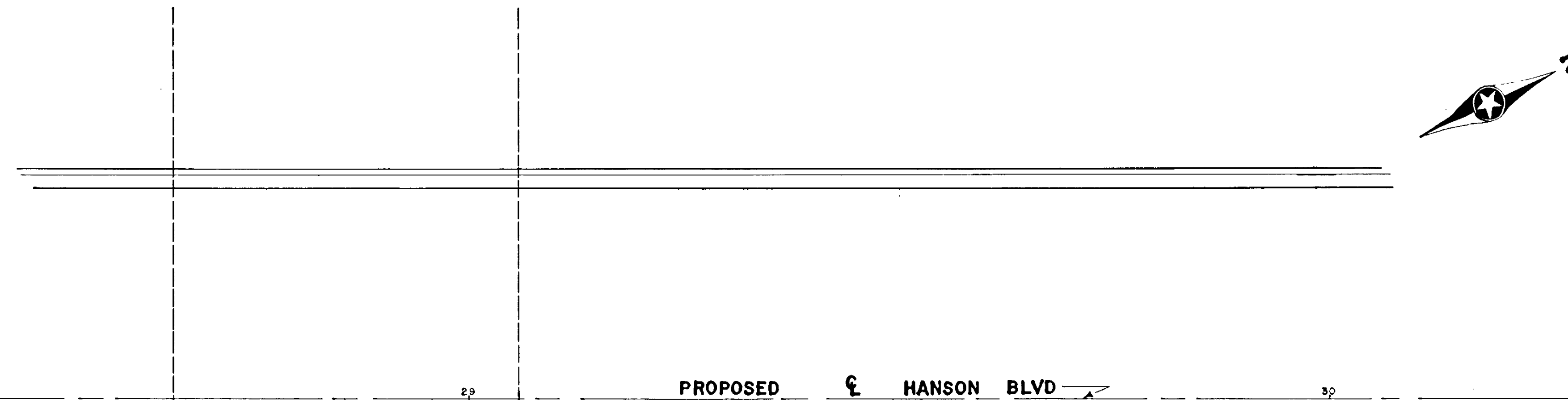
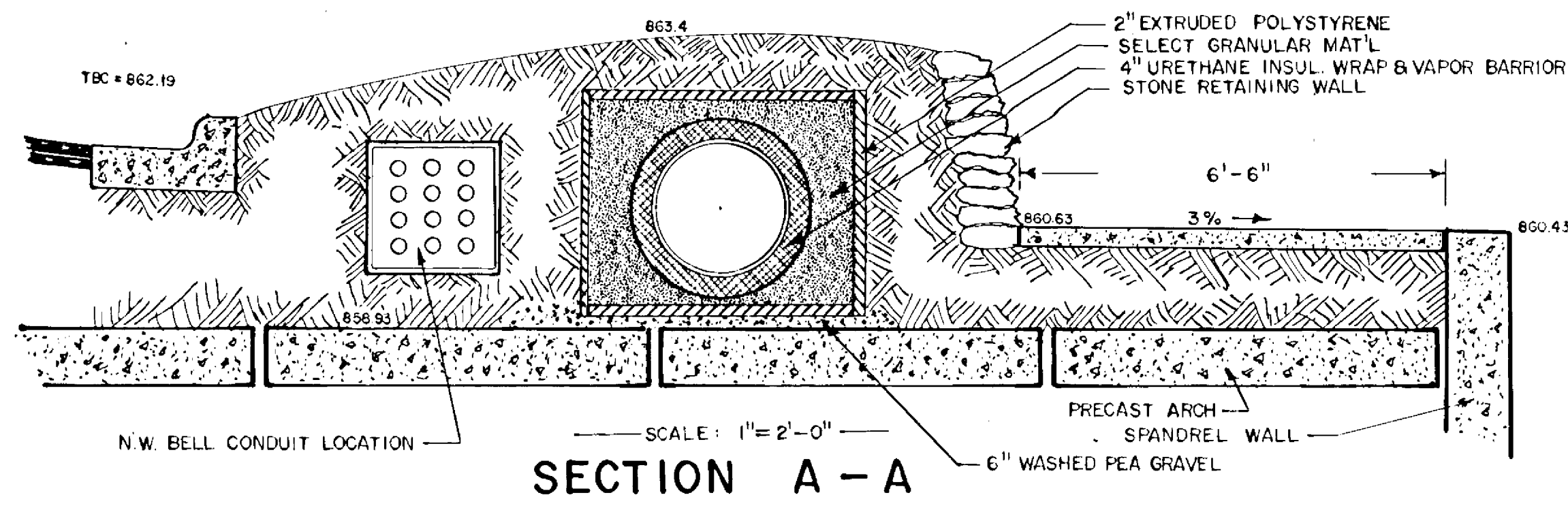
FURNISHING & INSTALLING STORM SEWER

STRUCT NO	STATION	LOCATION	CONSTRUCTION		TOP OF CASTING OR INLET ELEV.	SUMP	OUTLET ELEV.	CASTING ASSY. TYPE	REMOVE		ADJUST	RECON-STRUCT	12" RCP	15" RCP	15" RCP	18" RCP	21" RCP	SALVAGE	INSTALL	CLASS	APRONS		DRAINS TO		INLET ELEV.	SODDING SQ. YD.	REMARKS	
			DESIGN	PAY HEIGHT					CB	PIPE			12" RCP	15" RCP	15" RCP	18" RCP	21" RCP	21" RCP	R.C.P.		C.M.P.	STR. NO.	GRADE %					
			M.H.	C.B.					EA.	LF.			CL-2	CL-2	CL-4	CL-2	CL-2	21" RCP	21" RCP									
1	20+32	24.9' RT.	H	2.9	857.01		853.95	B																				
2	20+32	24.9' LT.	H	3.1	857.01		853.70	B																				
3	25+00	24.9' RT.	C OR G	3.9	858.51		854.40	B														15"		CB #2	0.50			
4	25+00	24.9' LT.	C OR G	4.4	858.51		853.90	B				50'												SWAMP	0.50	853.71	9	
5	31+43	24.9' RT.	C OR G	3.9	860.42		856.28	B				26'										12"		CB #4	1.00			
6	31+94	42' RT.	--	--	860.96		852.36	B				55'												SWAMP	1.00	853.92	9	
7	31+90	24.9' LT.	C OR G	3.2	858.83		855.56	B																INPL MH #6	0.67	855.91		
9	34+94	55' RT.	C OR G	4.7	861.30		856.43	B				72'												CONCRETE			M. H. INPLACE	
10	34+94	42' RT.	--	INPL	--		854.79	A				13'												INPL MH #6	0.50	855.20		
11	35+24	42' RT.	--	INPL	--		854.85	A																MH #10	1.00		INSTALL CAST. FROM # 10	
12	35+24	55' RT.	C OR G	4.7	861.42		856.48	B																MH #7	0.81		SALVAGE CB CAST. F&I MH CAST	
13	35+54	24.9' RT.	A OR F	5.3	861.75		856.30	F				13'												MH #10		856.35	SALVAGE CB CAST. F&I MH CAST	
14	35+54	24.9' LT.	C OR G	4.8	861.75		856.80	B				35'												MH #11	1.00	--	INSTALL CAST FROM # 11	
15	39+41	29.0' RT.	--	INPL	865.05		858.60	B				50'												MH #11	1.00	855.95		
16	39+41	24.9' LT.	C OR G	5.0	865.11		859.89	B																CB #13	1.00	--		
17	43+98	36' RT.	--	INPL	--		865.53	B				54'												MH #11	0.84	--	SALVAGE MH CASTING F&I CB CAST	
18	44+62	24.9' RT.	A OR F	5.5	872.80		867.15	B								16'	457'	441'						CB #15	1.00	859.35		
19	47+50	24.9' RT.	A OR F	5.3	877.81		872.33	B					66'											CB #15	1.516	858.63	SALVAGE EXIST. 21" RCP, INSTALL TO NEW GRADE	
20	50+30	24.9' RT.	A OR F	5.3	883.44		877.93	B					288'											MH #17	1.80	866.0		
21	50+30	24.9' LT.	C OR C	4.6	883.44		878.68	B					280'											CB #18	1.80	867.15		
22	62+00	24.9' LT.	C OR G	3.9	881.25		877.12	B				50'												CB #19	2.00	872.33		
23	63+50	24.9' LT.	C OR G	3.8	880.23		876.22	B					150'											CB #20	1.00	878.18		
24	64+70	12.9' LT. LSE	C OR G	3.9	879.38		875.26	B					120'											CB #23	0.60			
25	64+80	12.9' LT. LSE	C OR G	3.6	879.47		875.70	B								21'							18"	CB #24	0.60	875.50		
26	64+00	12.9' RT. LNE	C OR G	3.6	879.83		876.00	B				10'												POND	1.50		11	
27	64+70	12.9' RT. LNE	C OR G	3.3	879.33		875.84	B					25'											15"	CB #24	2.00		
28	64+80	12.9' RT. LNE	C.G. OR H	3.2	879.42		876.04	B					76'											15"	POND	4.00		9
																									CB #24	1.00	875.26	8
																									CB #27	2.00		
TOTALS				91.90								438	1,003	69	21	16	457	441										46



REVISIONS





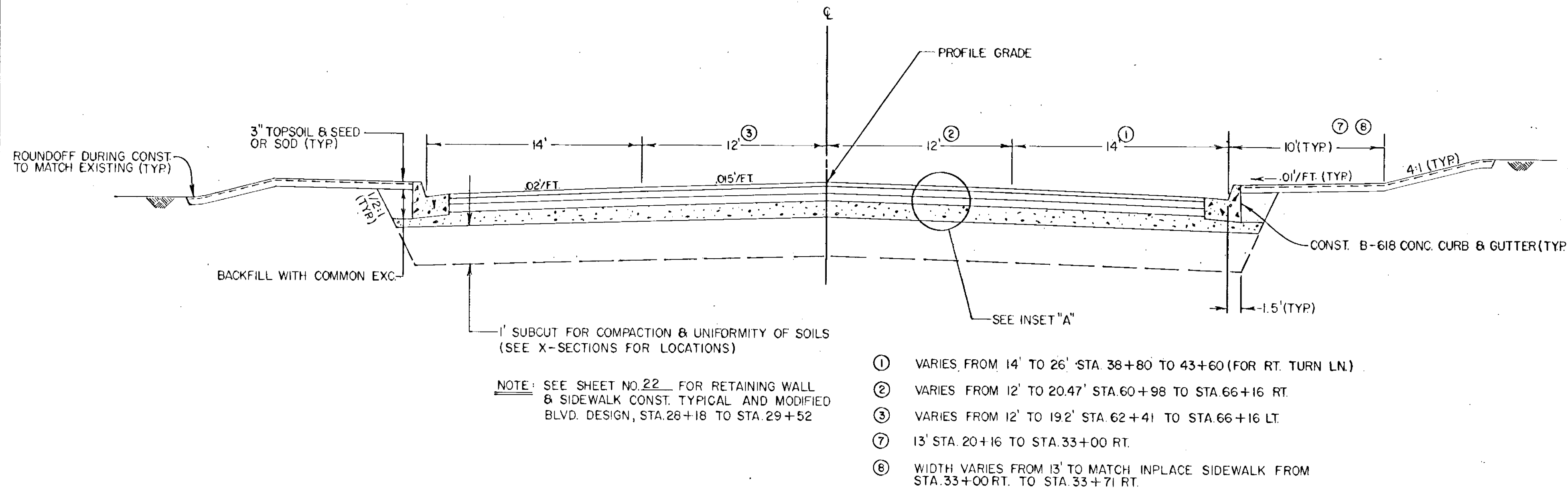
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ENGINEER UNDER LAWS OF THE STATE OF MINNESOTA  
*William R. O'Connell*  
 DATE 2-20-83 REG. NO. 10119

CITY OF COON RAPIDS		30	
ENGINEERING DIVISION 1313 COON RAPIDS BLVD. COON RAPIDS, MN 55433 (612) 755-2880		WATERMAIN RELOCATION HANSON BLVD AT COON CREEK	
DESIGNED C.R.C.	SCALE HORIZ. 1"=10' VERT. 1"=2'	DATE 2-20-83	REVISIONS
DRAWN C.R.C.	CHECKED W.R.O.		



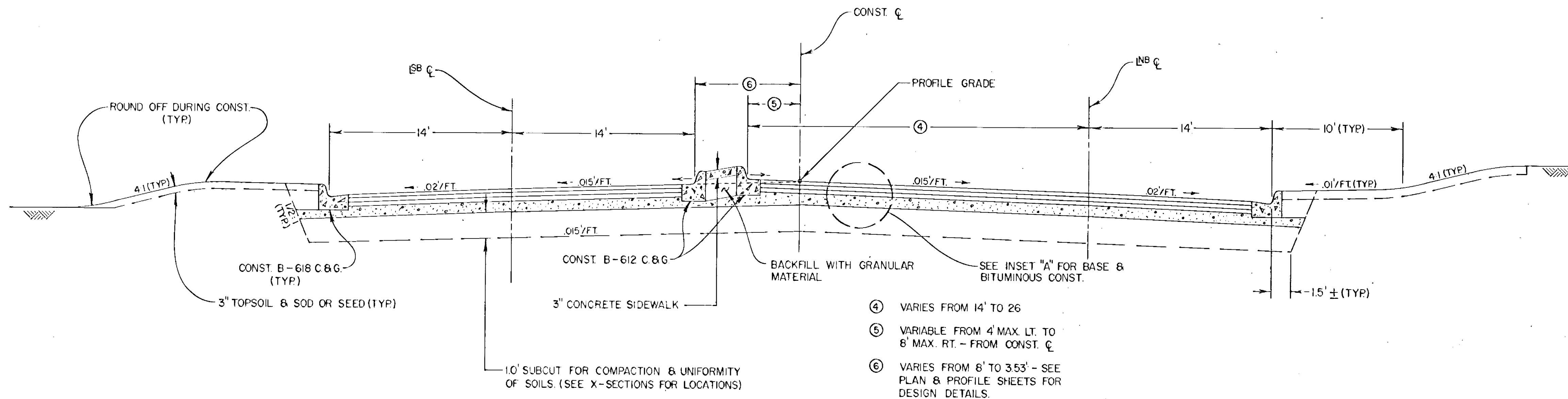
TYPICAL SECTIONS

GRADING & BITUMINOUS  
STA. TO STA.  
20+16 - 66+16



- ① VARIES FROM 14' TO 26' STA. 38+80 TO 43+60 (FOR RT. TURN LN.)
- ② VARIES FROM 12' TO 20.47' STA. 60+98 TO STA. 66+16 RT.
- ③ VARIES FROM 12' TO 19.2' STA. 62+41 TO STA. 66+16 LT.
- ⑦ 13' STA. 20+16 TO STA. 33+00 RT.
- ⑥ WIDTH VARIES FROM 13' TO MATCH INPLACE SIDEWALK FROM STA. 33+00 RT. TO STA. 33+71 RT.

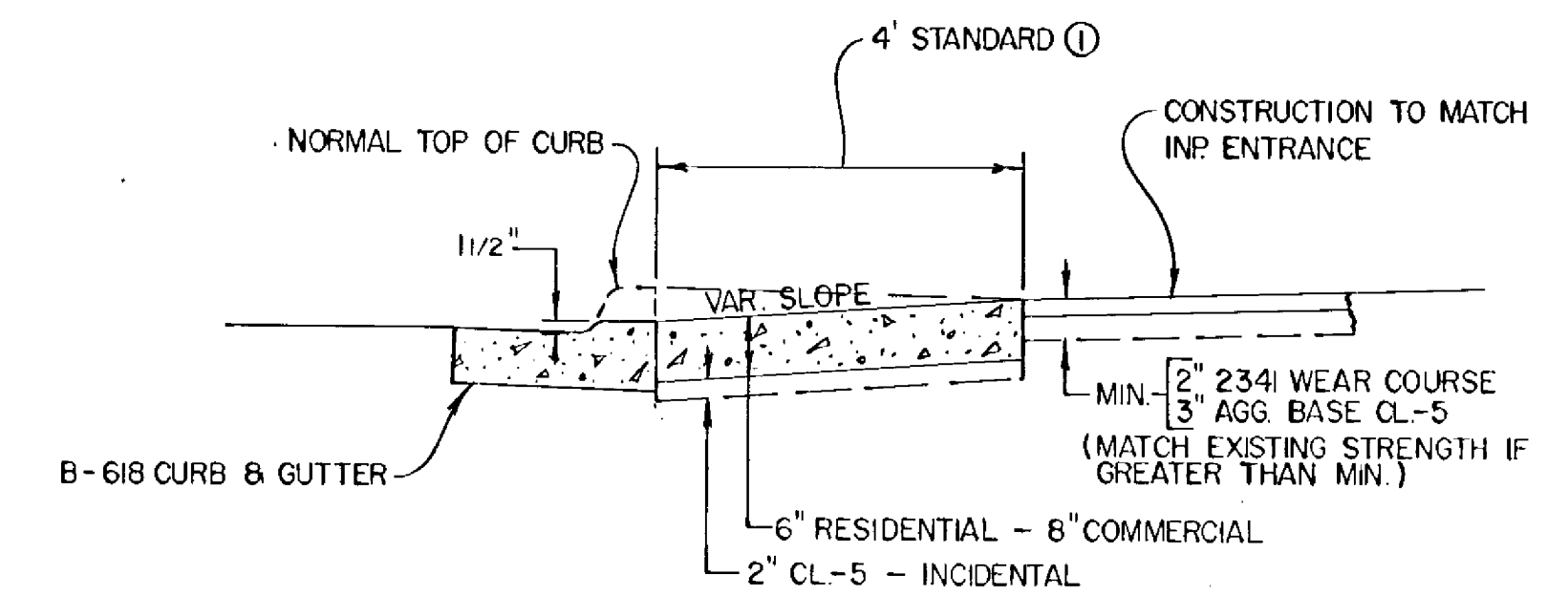
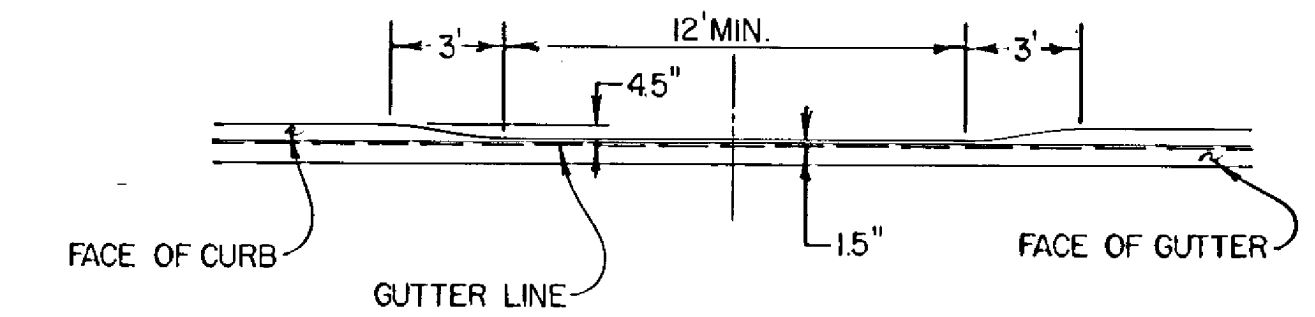
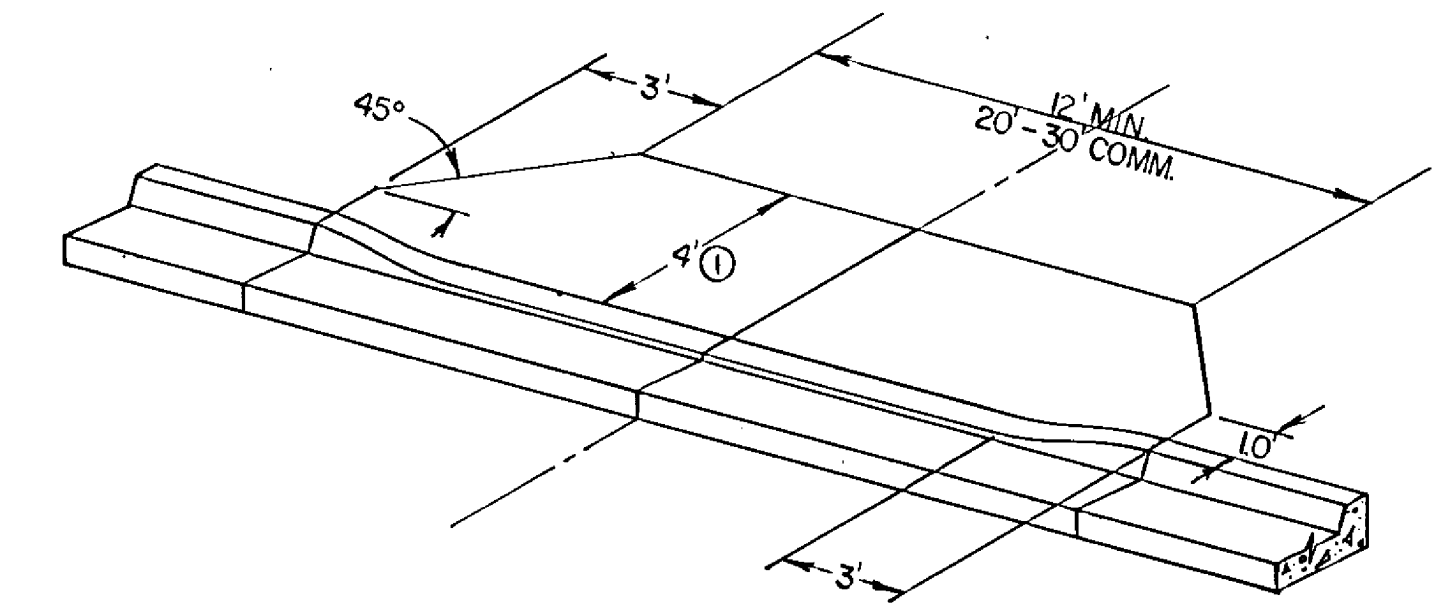
GRADING & BITUMINOUS  
STA. TO STA.  
66+16 - 68+56



- ④ VARIES FROM 14' TO 26'
- ⑤ VARIABLE FROM 4' MAX. LT. TO 8' MAX. RT. - FROM CONST. C
- ⑥ VARIES FROM 8' TO 3.53' - SEE PLAN & PROFILE SHEETS FOR DESIGN DETAILS.

NOTE: SEE X-SECTIONS FOR MUCK EXCAVATION AREAS & LIMITS.

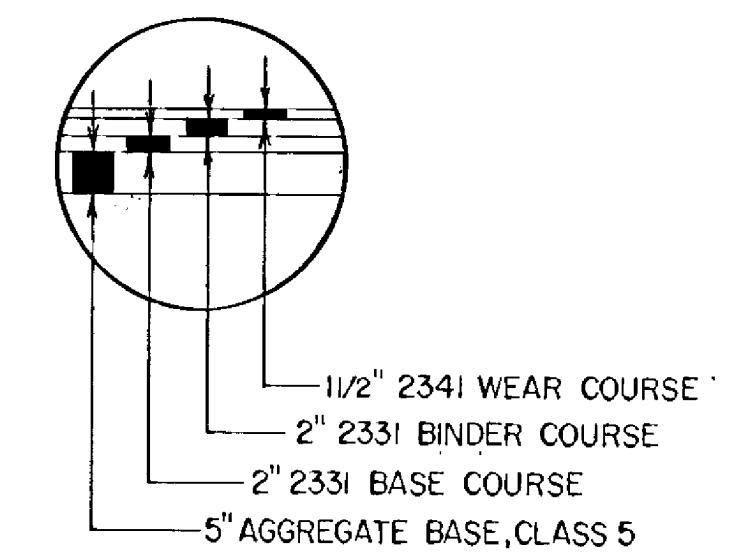
CONCRETE APRON DETAIL

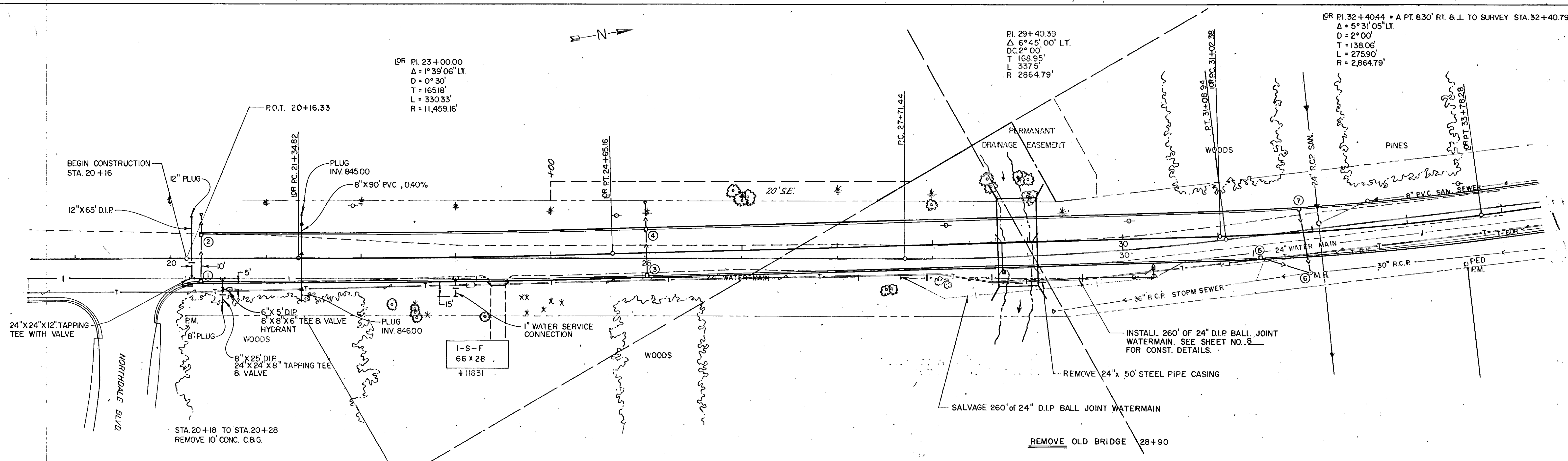


① IN SIDEWALK AREAS EXTEND CONC. APRON TO MATCH SIDEWALK.

NOTE: ALSO SEE STD. PLATE NO. 7035 J

INSET "A"

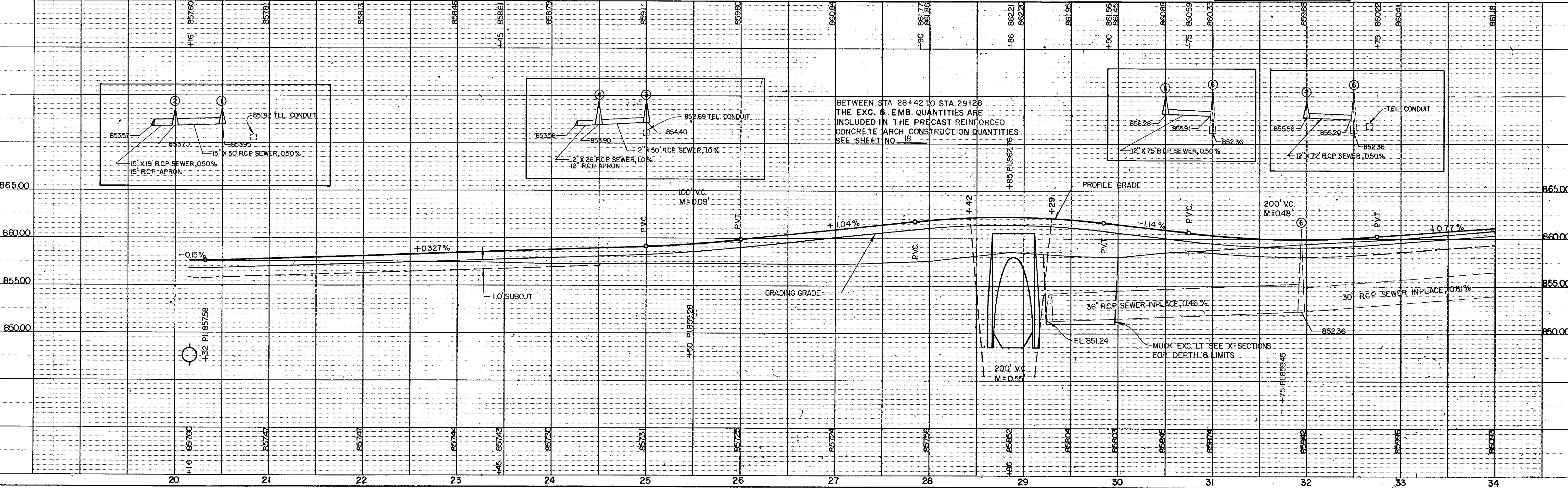




B.M. 1, ELEV. 860.49  
 R.R. SPIKE IN DBL. 8" OAK  
 70' SE OF NORTHDALE BLVD.  
 & HANSON BLVD. INTERSECTION.

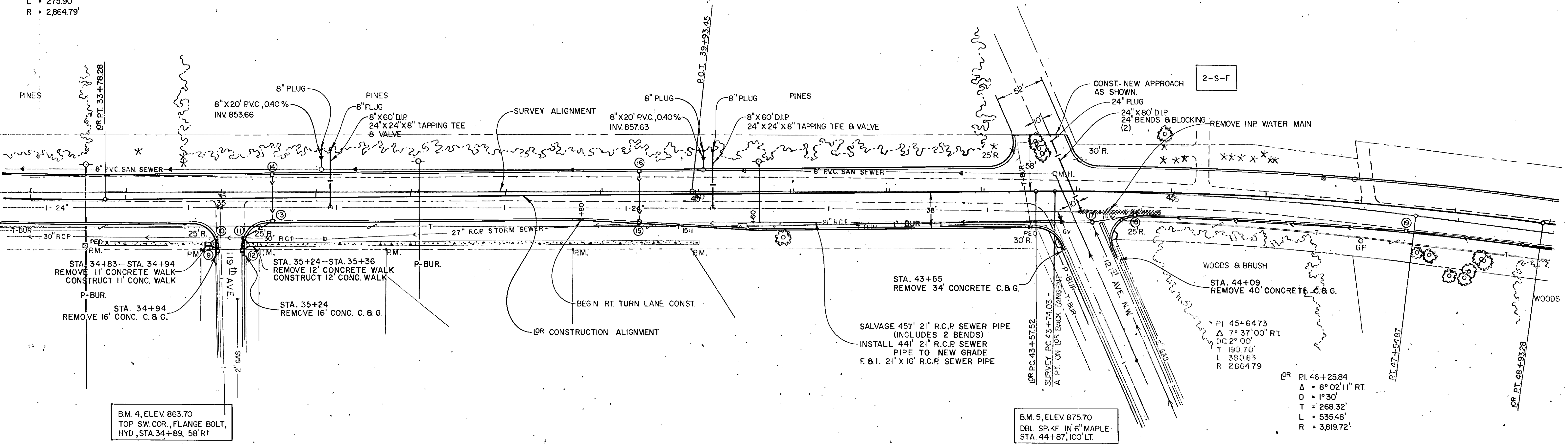
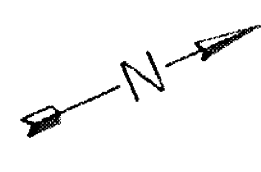
B.M. 2, ELEV. 857.57  
 DBL. SPIKE IN 60" COTTONWOOD  
 STA. 26+30, 80' RT.

B.M. 3, ELEV. 857.68  
 DBL. SPIKE IN 72" COTTONWOOD  
 STA. 29+90, 150' RT.





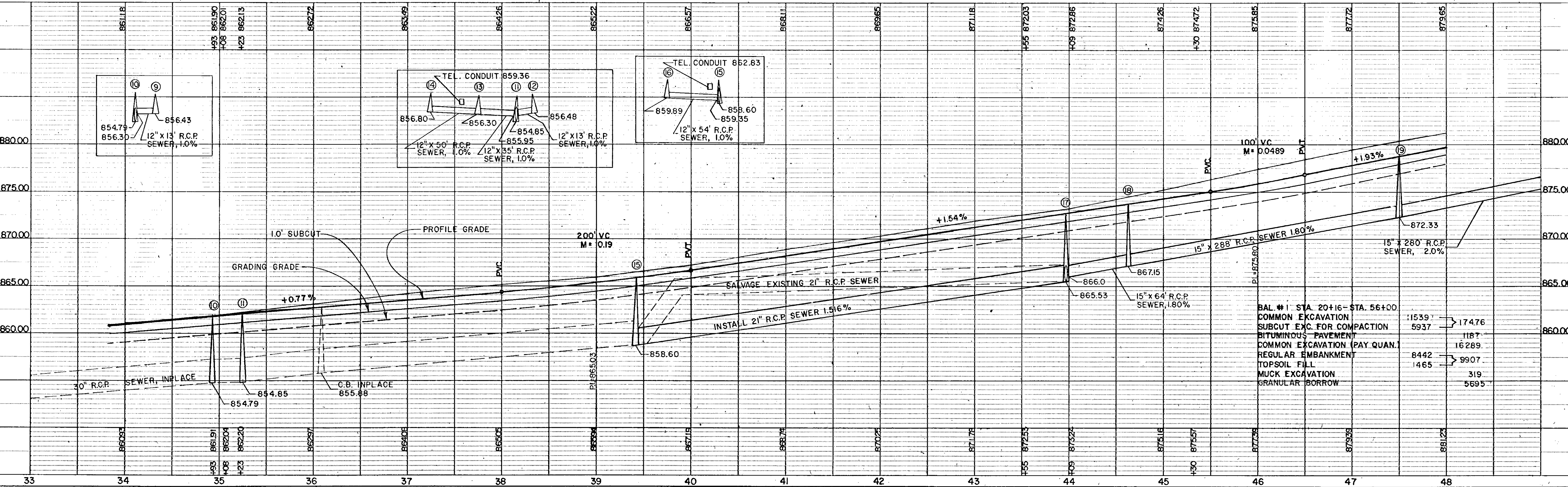
OR PI 32+40.44  
 $\Delta = 5^{\circ}31'05''$  LT  
 D = 2° 00'  
 T = 138.06'  
 L = 275.90'  
 R = 2,864.79'



B.M. 4, ELEV. 863.70  
 TOP SW. COR., FLANGE BOLT,  
 HYD. STA. 34+89, 58' RT

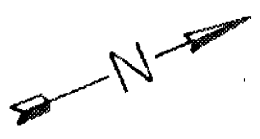
B.M. 5, ELEV. 875.70  
 DBL SPIKE IN 6\"/>

OR PI 46+25.84  
 $\Delta = 8^{\circ}02'11''$  RT  
 D = 1° 30'  
 T = 268.32'  
 L = 53548'  
 R = 3,819.72'



Item	Quantity	Unit
BAL. #1 STA. 20+16- STA. 56+00		
COMMON EXCAVATION	11539	174.76
SUBCUT EXC. FOR COMPACTION	5937	1187
BITUMINOUS PAVEMENT		16289
COMMON EXCAVATION (PAY QUAN.)	8442	9907
REGULAR EMBANKMENT	1465	319
TOPSOIL FILL		5695
MUCK EXCAVATION		
GRANULAR BORROW		

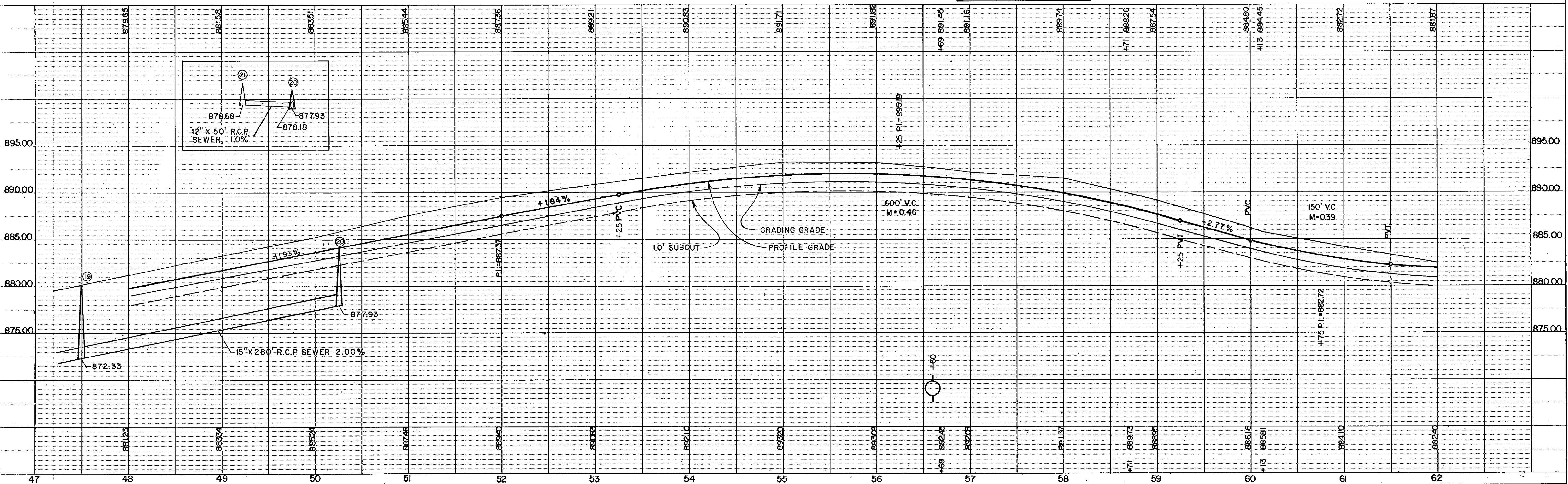
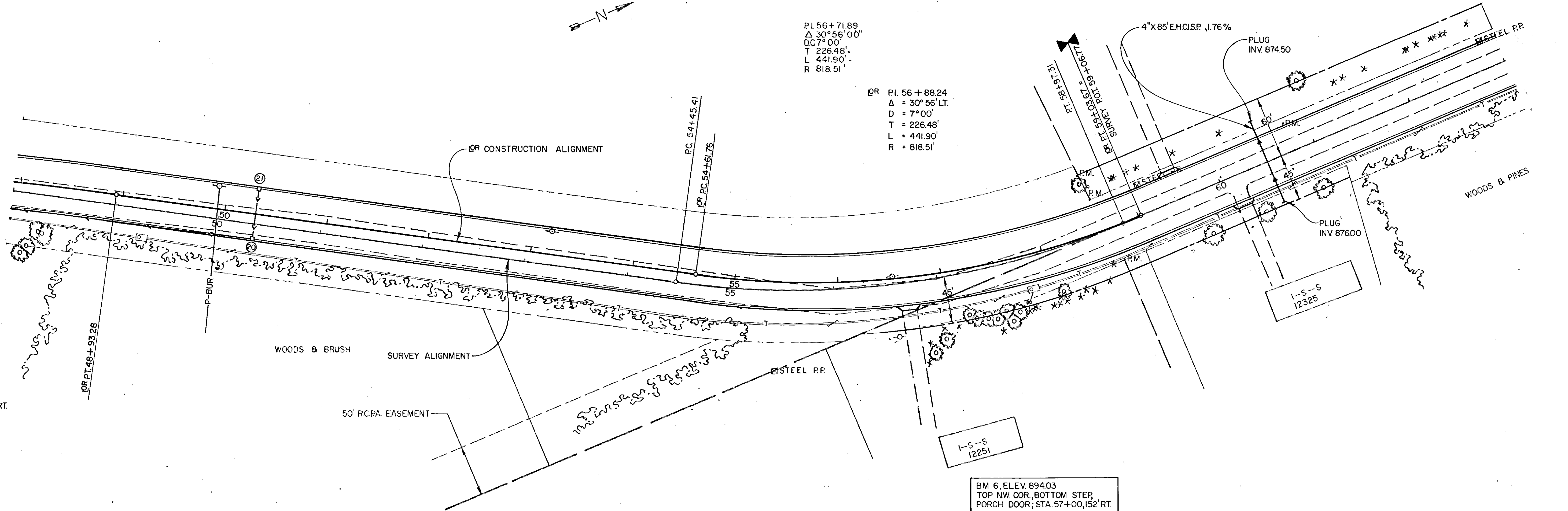




PI 56+71.89  
 $\Delta = 30^\circ 56' 00''$   
 $D = 7^\circ 00'$   
 $T = 226.48'$   
 $L = 441.90'$   
 $R = 818.51'$

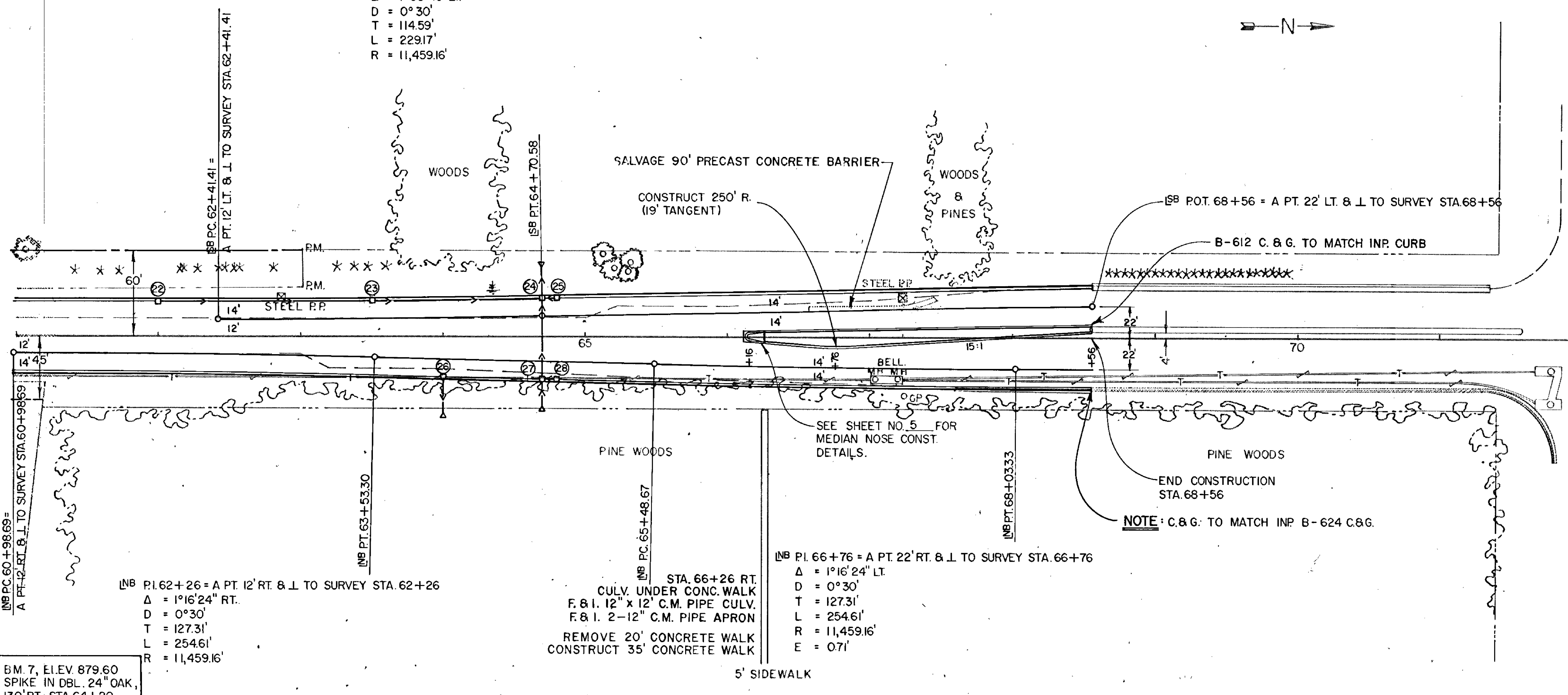
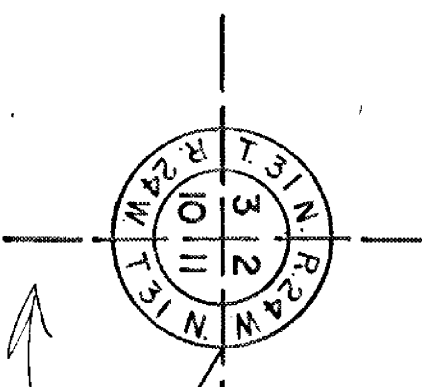
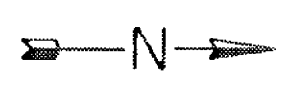
OR PI 56+88.24  
 $\Delta = 30^\circ 56' 00''$   
 $D = 7^\circ 00'$   
 $T = 226.48'$   
 $L = 441.90'$   
 $R = 818.51'$

OR PI 46+25.84  
 $\Delta = 6^\circ 02' 11''$  RT.  
 $D = 1^\circ 30'$   
 $T = 268.32'$   
 $L = 535.48'$   
 $R = 3,819.72'$





ISB PI. 63+56 = A PT. 12' LT. & L TO SURVEY STA. 63+56  
 $\Delta = 1^{\circ}08'45''$  LT.  
 $D = 0^{\circ}30'$   
 $T = 114.59'$   
 $L = 22917'$   
 $R = 11,459.16'$



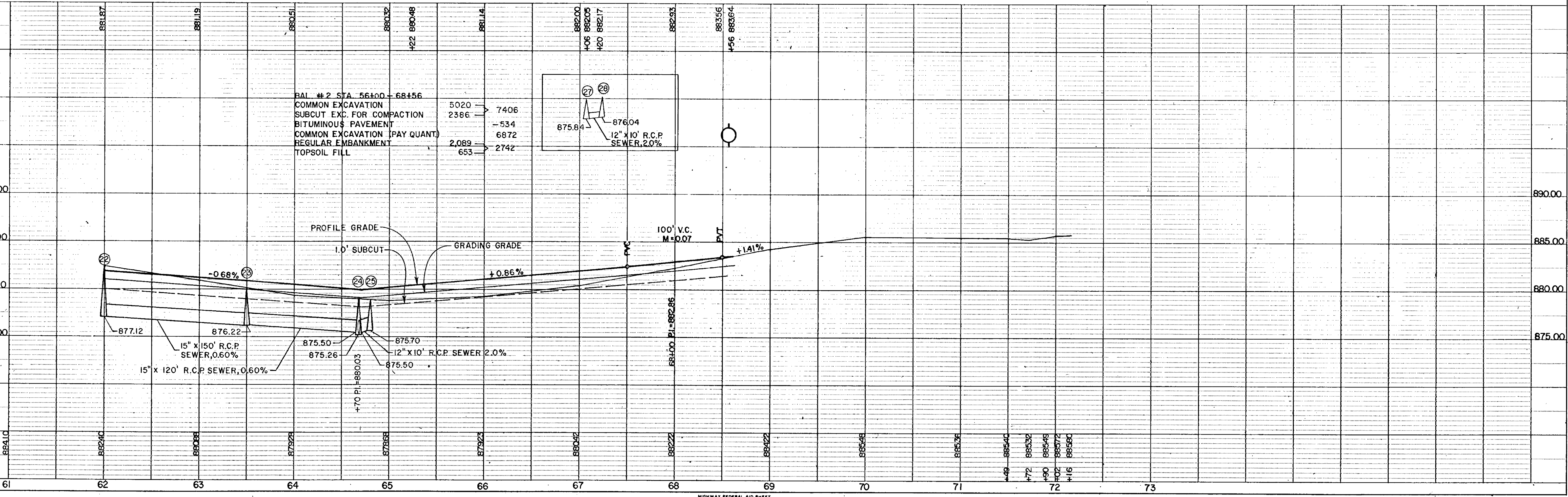
INB PI. 62+26 = A PT. 12' RT. & L TO SURVEY STA. 62+26  
 $\Delta = 1^{\circ}16'24''$  RT.  
 $D = 0^{\circ}30'$   
 $T = 127.31'$   
 $L = 25461'$   
 $R = 11,459.16'$

STA. 66+26 RT.  
 CULV. UNDER CONC. WALK  
 F. & I. 12" x 12" C.M. PIPE CULV.  
 F. & I. 2-12" C.M. PIPE APRON  
 REMOVE 20' CONCRETE WALK  
 CONSTRUCT 35' CONCRETE WALK

INB PI. 66+76 = A PT. 22' RT. & L TO SURVEY STA. 66+76  
 $\Delta = 1^{\circ}16'24''$  LT.  
 $D = 0^{\circ}30'$   
 $T = 127.31'$   
 $L = 25461'$   
 $R = 11,459.16'$   
 $E = 07'$

B.M. 8A, ELEV. 888.22  
 TOP GAS VENT PIPE, NE.  
 COR. OF INTERSECTION OF  
 HANSON BLVD. & TH. 242,  
 STA. 72+60 RT.

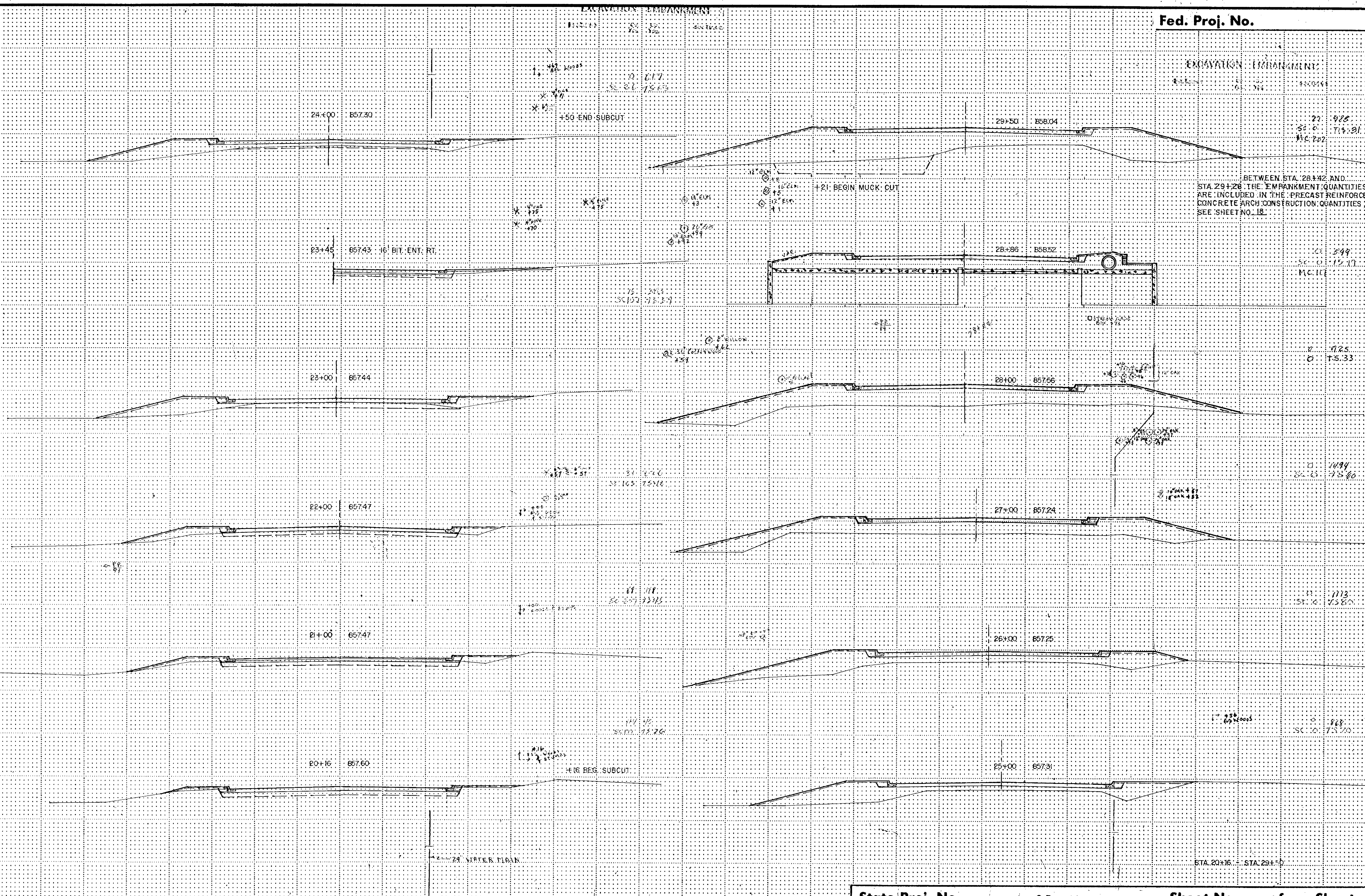
B.M. 7, ELEV. 879.60  
 SPIKE IN DBL. 24" OAK,  
 130' RT, STA. 64+20





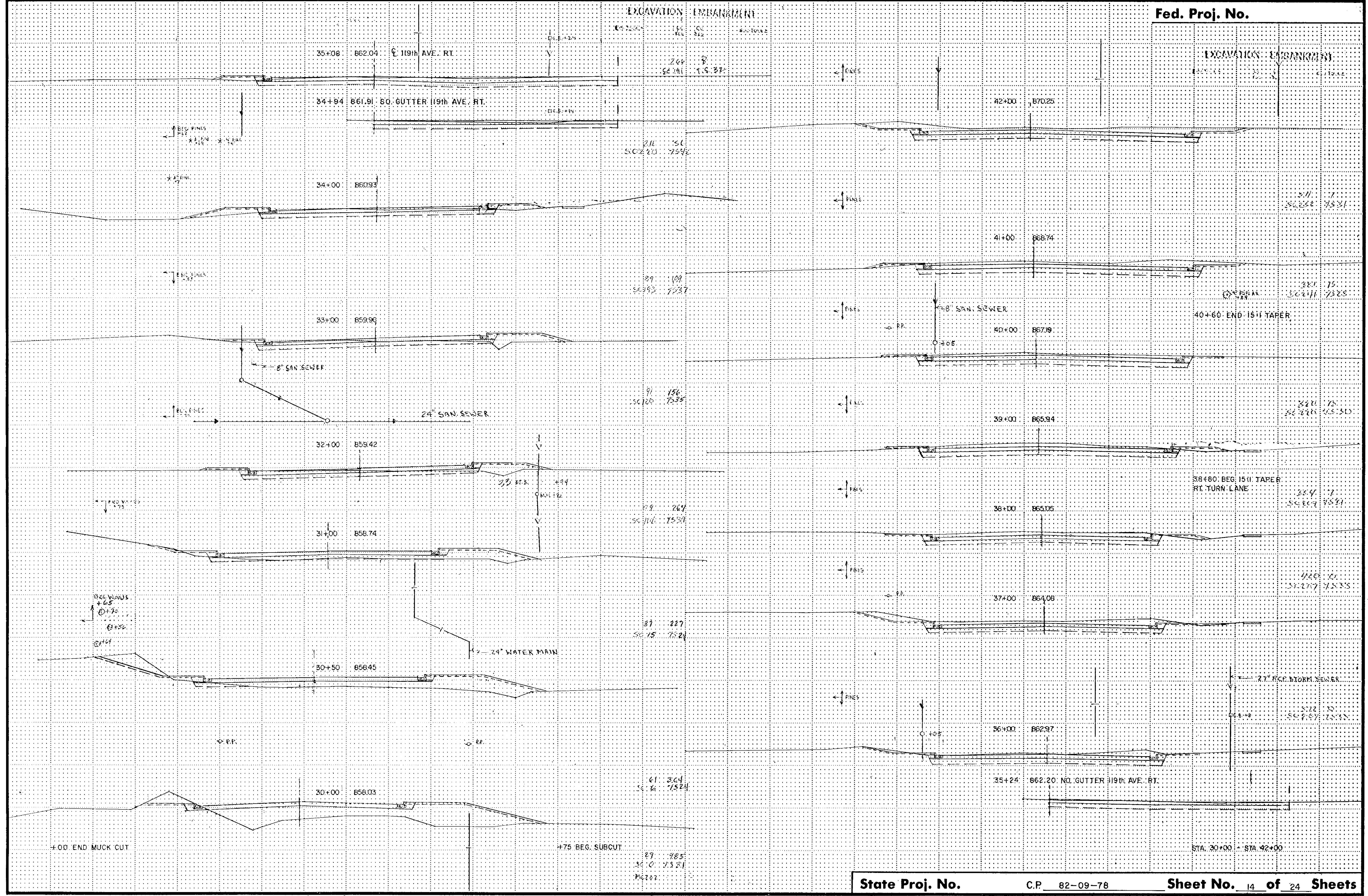
EXCAVATION EMBANKMENT

EXCAVATION EMBANKMENT



VERTICAL NOT CROSS SECTION 10 FT. 9/76





EXCAVATION EMBANKMENT

40+60 END 15:1 TAPER

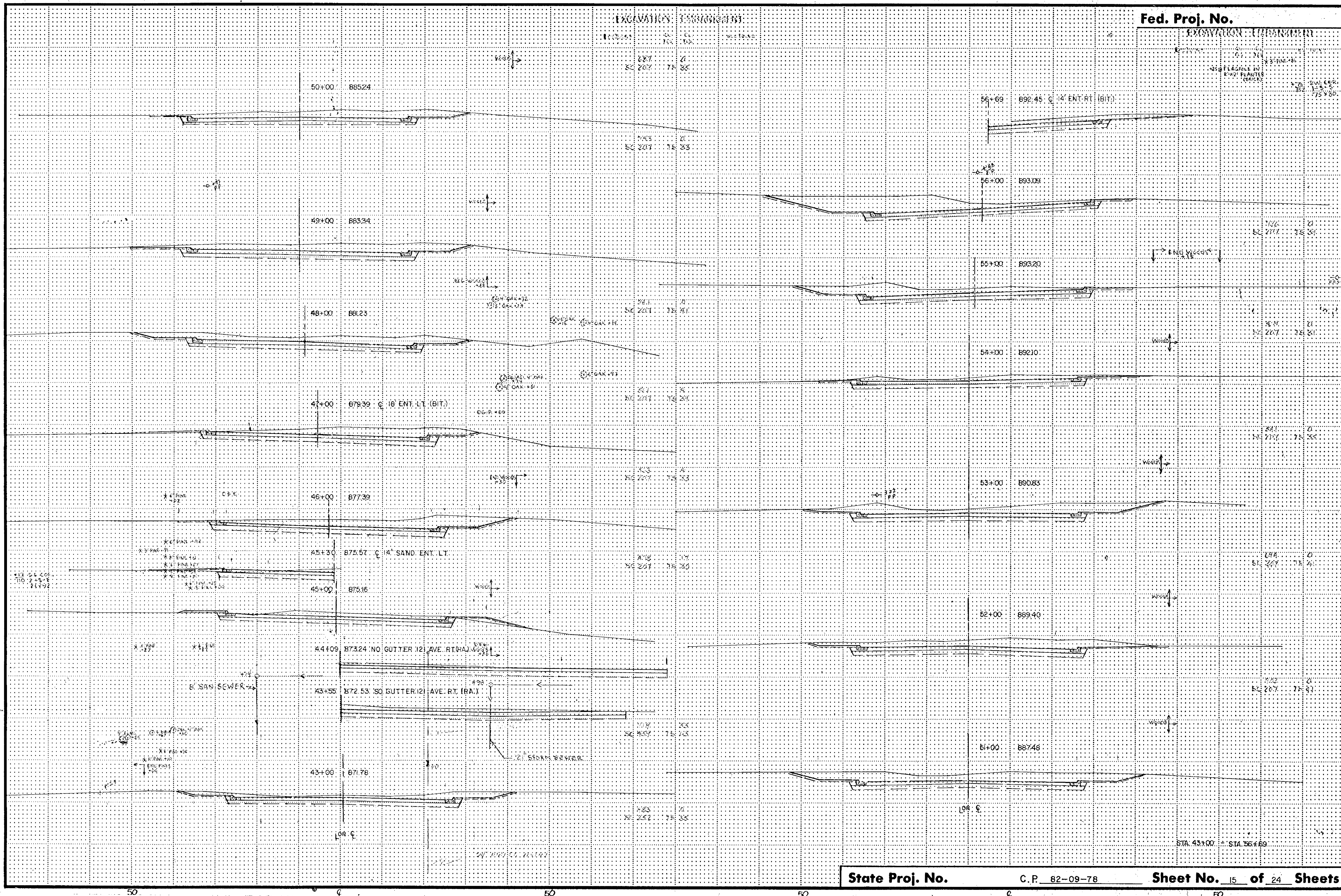
38+60 BEG 15:1 TAPER RT. TURN LANE

27\"/>

STA. 30+00 - STA. 42+00

TELEPHONE POST CROSS SECTION 1011 1/2





Station	Elevation	Notes
56+69	892.45	C 14 ENT. RT. (BIT.)
56+00	893.09	
55+00	893.20	
54+00	892.10	
53+00	890.83	
52+00	889.40	
51+00	887.46	
49+00	885.34	
48+00	886.23	
47+00	879.39	C 16 ENT. LT. (BIT.)
46+00	877.39	
45+30	875.57	C 14 SAND ENT. LT.
45+00	875.16	
44+09	873.24	NO GUTTER 12\"/>

STA. 43+00 - STA. 56+69

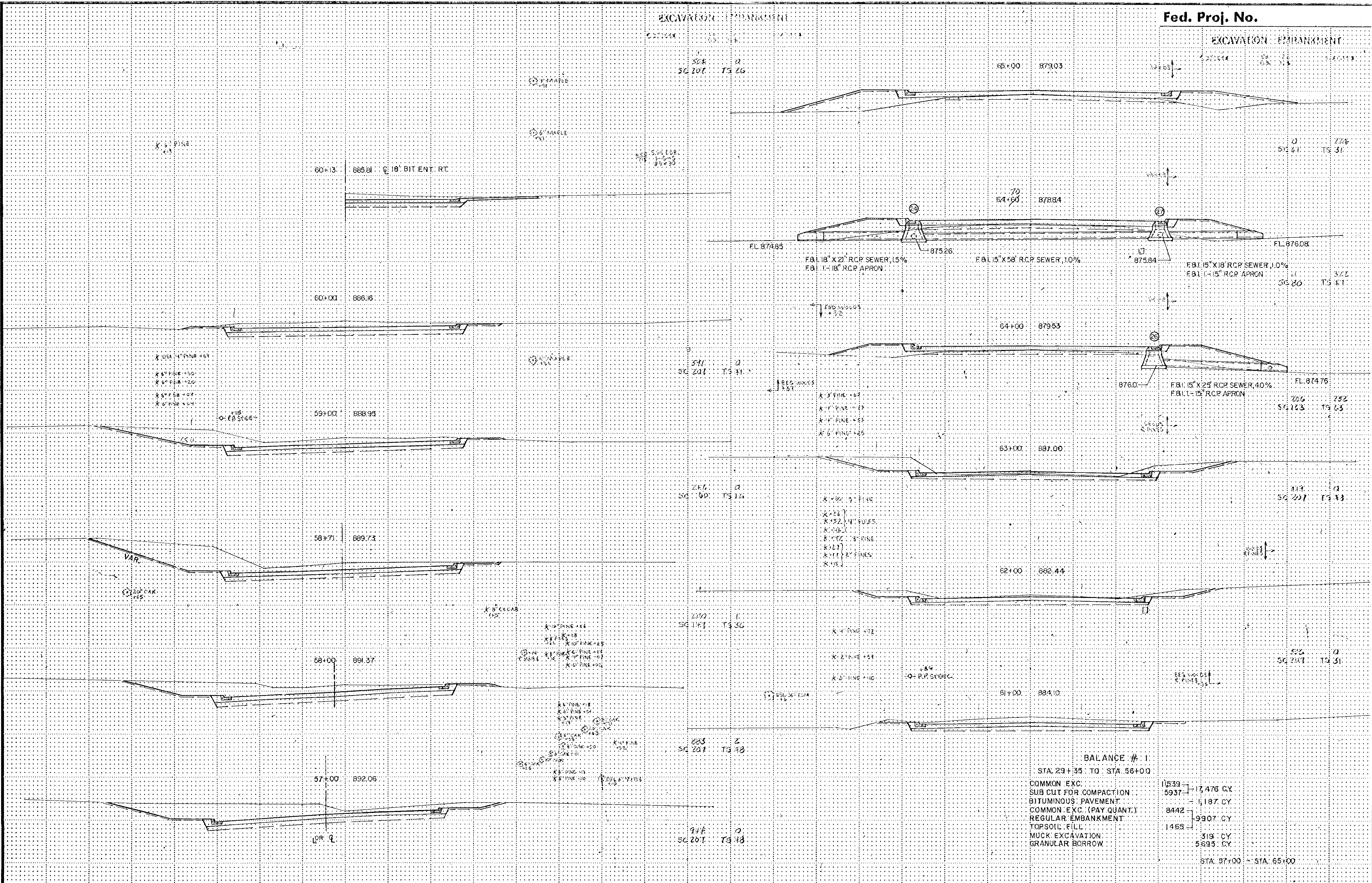
TYPICAL POST CROSS SECTION, 10/17/78



EXCAVATION EMBANKMENT

Fed. Proj. No.

EXCAVATION EMBANKMENT



BALANCE # 1  
STA. 29+35 TO STA. 56+00

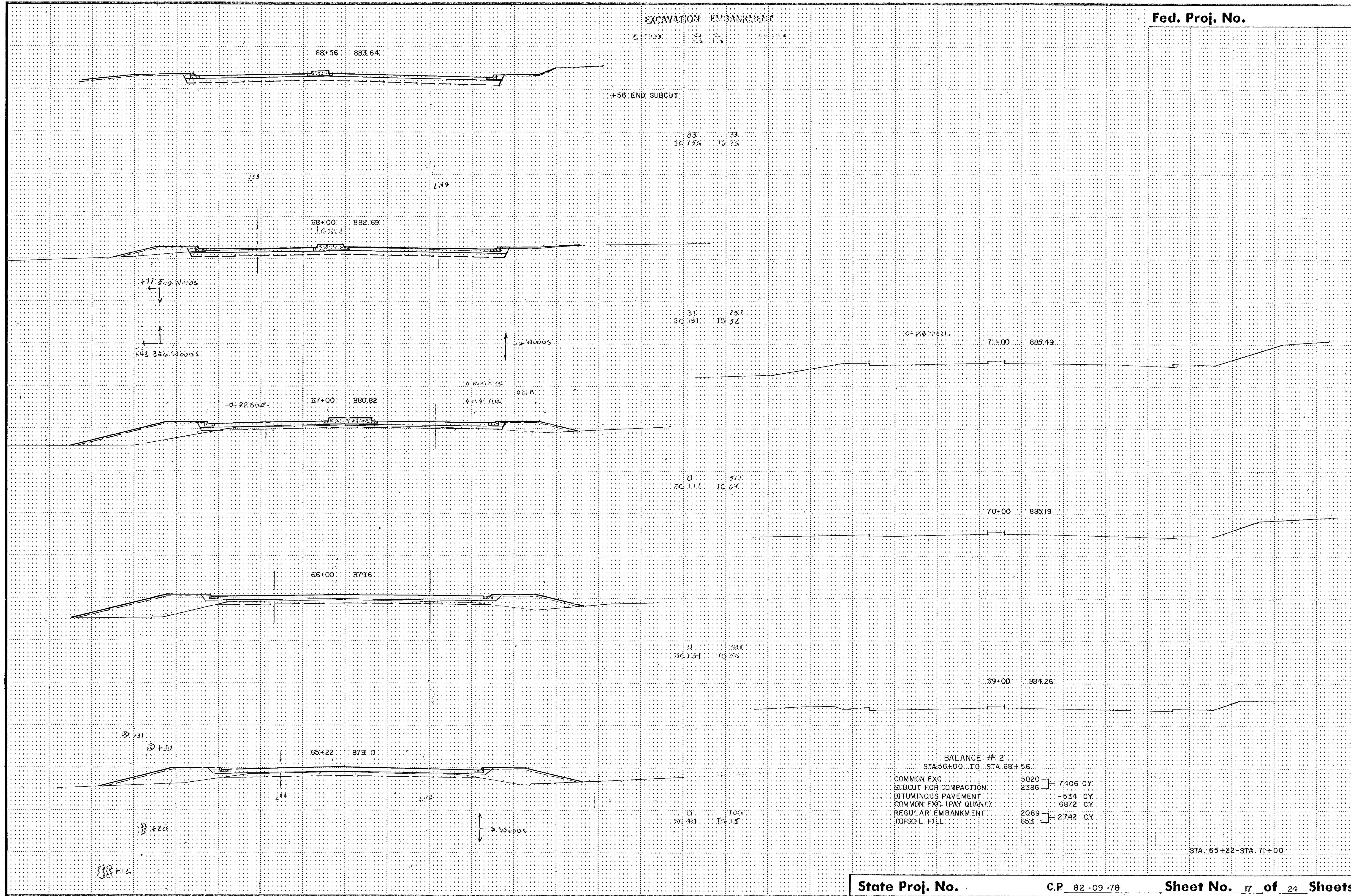
COMMON EXC.	11839	17,476 CY
SUB CUT FOR COMPACTION	5937	-1,187 CY
BITUMINOUS PAVEMENT	8442	-9907 CY
COMMON EXC. (PAY QUANT.)		
REGULAR EMBANKMENT	1469	319 CY
TOPSOIL FILL		5693 CY
MUCK EXCAVATION		
GRANULAR BORROW		
		STA. 57+00 - STA. 65+00

TELEPHONE CROSS SECTION 1041 57A



EXCAVATION EMBANKMENT

Fed. Proj. No.



+56 END SUBCUT

+17.5' WOODS  
 +42.3' WOODS

WOODS

P.O. PROPOSED

P.O. PROPOSED

BALANCE # 2  
 STA 56+00 TO STA 68+56

COMMON EXC	5020	7406 CY
SUBCUT FOR COMPACTION	2386	534 CY
BITUMINOUS PAVEMENT		6872 CY
COMMON EXC (PAY QUANT)		2089
REGULAR EMBANKMENT	653	2742 CY
TOPSOIL FILL		

STA. 65+22 - STA. 71+00

State Proj. No.

C.P. 82-09-78

Sheet No. 17 of 24 Sheets

ILLUSTRATIVE CROSS SECTION UNIT NUMBER