

STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
CONSTRUCTION PLAN FOR Grading, Base & Surfacing

TRUNK HIGHWAY NO. 8-63 & 35W

BETWEEN County Road C AND Minnesota Transfer Railway
A POINT 239.82' SOUTH AND 1486.59' WEST OF THE N.E. CORNER OF SEC. 7, T29N, R23W TO A POINT 1421.2' NORTH AND 1030.3' WEST OF THE S.E. CORNER OF SEC. 32, T30N, R23W

SPECIFICATIONS
THE "SPECIFICATIONS FOR HIGHWAY CONSTRUCTION"
DATED JANUARY 1, 1964 SHALL GOVERN.

CONVENTIONAL SIGNS

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

MINNESOTA PROJECT U-059-1 (31)

GROSS LENGTH 8755.36 FEET 1.66 MILES
BRIDGES-LENGTH 0 FEET 0 MILES
EXCEPTIONS-LENGTH 0 FEET 0 MILES
NET LENGTH 8755.36 FEET 1.66 MILES

STATE PROJECT NO. 2712-11

GROSS LENGTH 2202.00 FEET 0.42 MILES
BRIDGES-LENGTH 0 FEET 0 MILES
EXCEPTIONS-LENGTH 0 FEET 0 MILES
NET LENGTH 2202.00 FEET 0.42 MILES
NOTE: LENGTH BASED ON LE W.B. RDWY.

STATE PROJECT NO. 6202-32

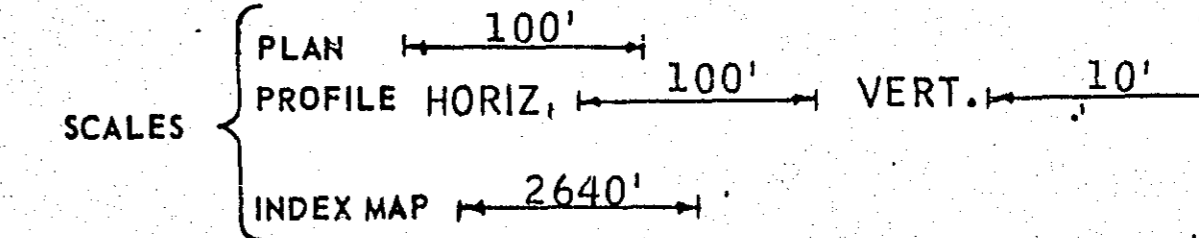
GROSS LENGTH 6553.36 FEET 1.24 MILES
BRIDGES-LENGTH 0 FEET 0 MILES
EXCEPTIONS-LENGTH 0 FEET 0 MILES
NET LENGTH 6553.36 FEET 1.24 MILES
NOTE: LENGTH BASED ON LE W.B. RDWY.

MINNESOTA PROJECT I-IG-35W-3 (42)116

GROSS LENGTH 438.09 FEET 0.08 MILES
BRIDGES-LENGTH 0 FEET 0 MILES
EXCEPTIONS-LENGTH 0 FEET 0 MILES
NET LENGTH 438.09 FEET 0.08 MILES

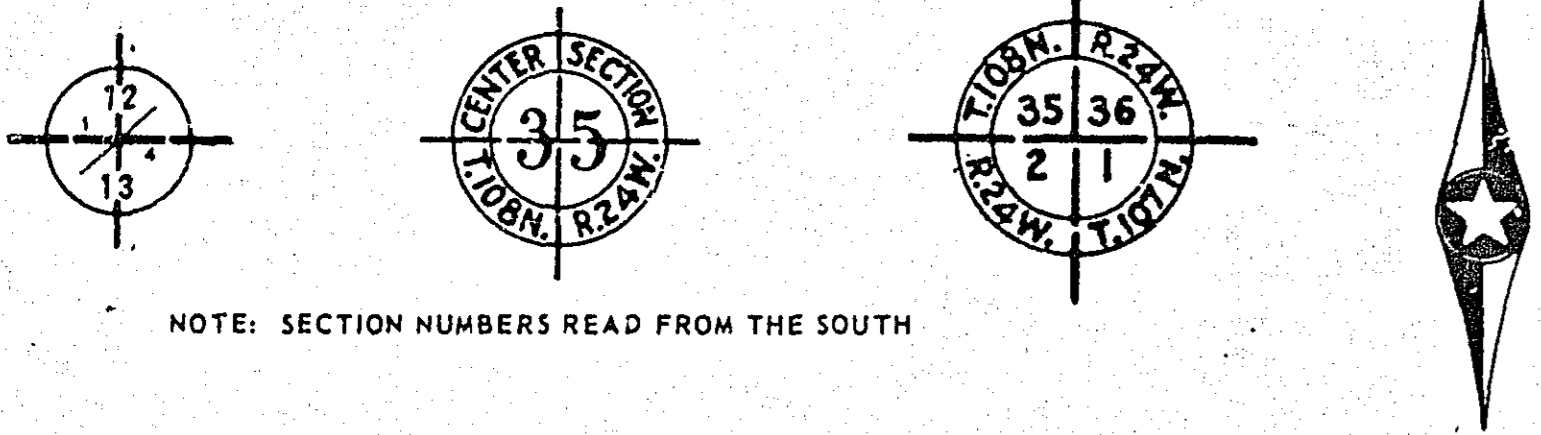
STATE PROJECT NO. 6284-49

GROSS LENGTH 438.09 FEET 0.08 MILES
BRIDGES-LENGTH 0 FEET 0 MILES
EXCEPTIONS-LENGTH 0 FEET 0 MILES
NET LENGTH 438.09 FEET 0.08 MILES
NOTE: LENGTH BASED ON LE W.B. RDWY.



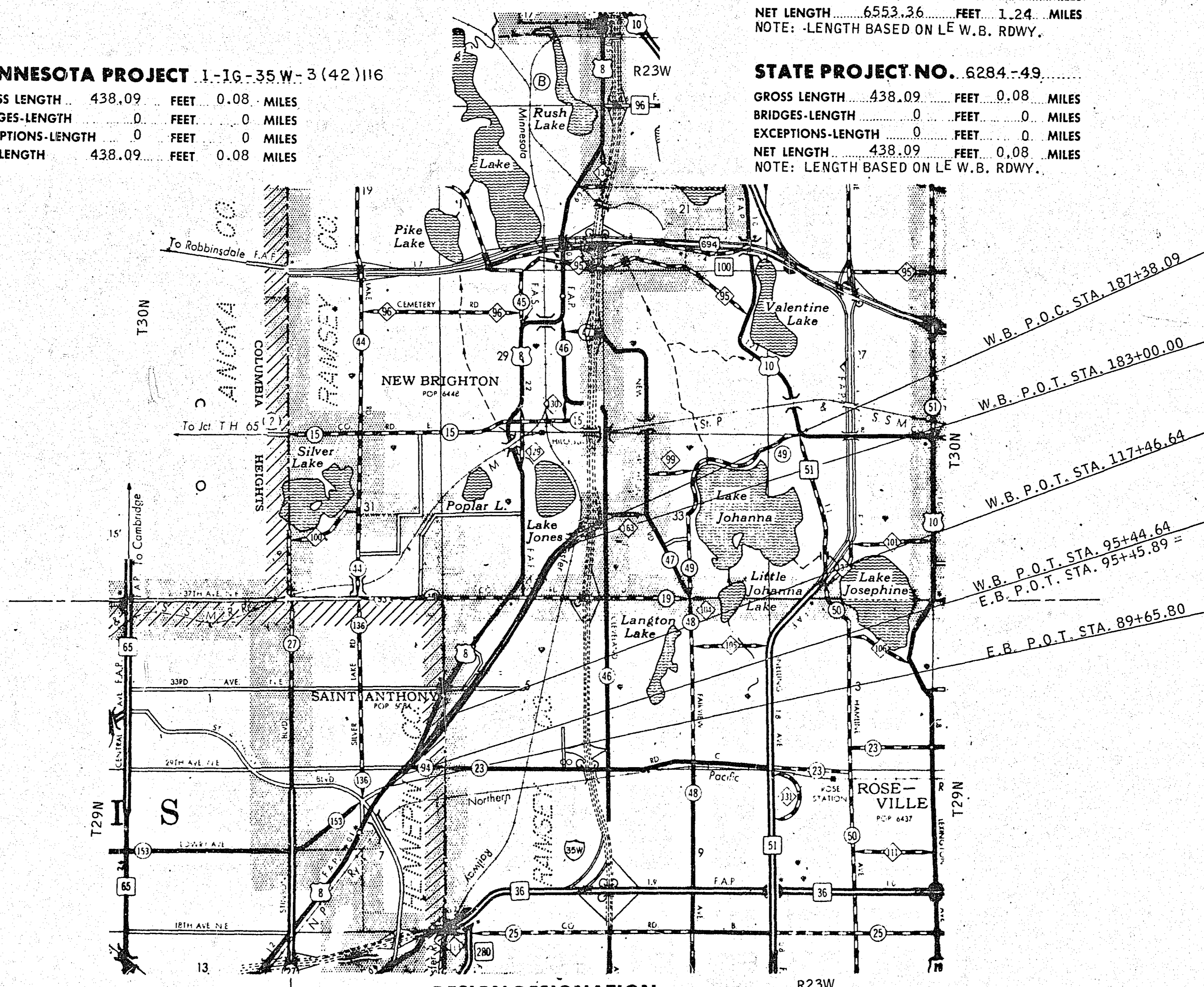
INDEX

SHEET NO.	DESCRIPTION
1	TITLE
2	GENERAL LAYOUT AND TIES
3	ESTIMATE AND STANDARD DETAIL PLATES
4	ESTIMATE AND MISCELLANEOUS TABULATIONS
5	MAINLINE TYPICAL SECTIONS
6	MISCELLANEOUS TYPICAL SECTIONS
7	CONSTRUCTION DETAILS
8	TABULATION OF MISCELLANEOUS ITEMS AND DRAINAGE
9-10	TABULATION OF PUBLIC UTILITIES
11	UTILITY PROFILES AND LAYOUT
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13	DETAIL OF BRIDGE APPROACH PANELS
14	PAVING LAYOUT
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PIT DATA

GRAVEL PIT NO. A	Located in S.W. 1/4, S.E. 1/4, SEC. 17, T30N, R23W	Dead Haul	POSSIBLE SOURCE FOR GRANULAR MATERIAL
GRAVEL PIT NO. 2395	Located in SEC. 10, T30N, R23W	Dead Haul	POSSIBLE SOURCE FOR CLASS 4 AND CLASS 4A
PIT NO.	Located in	Dead Haul	
PIT NO.	Located in	Dead Haul	



End S.P. 6284-49 (T.H. 35W-394)
End Minn. Proj. I-IG-35W-3 (42)116
Beg. Minn. Proj. I-IG-35W-3 (42)116
Beg. S.P. 6284-49 (T.H. 35W-394)
End S.P. 6202-32 (T.H. 8-63)
End Minn. Proj. U-059-1 (31)
Beg. S.P. 6202-32 (T.H. 8-63)
End S.P. 2712-11 (T.H. 8-63)
Beg. Minn. Proj. U-059-1 (31)
Beg. S.P. 2712-11 (T.H. 8-63)
End Temporary Connection
Beg. Temporary Connection

Right of Way Approval *E. J. Burns* 3-16-65
ENGINEER OF LANDS AND RIGHT OF WAY
Recommended for Approval _____ 19____
Recommended for Approval *R. J. Paul & Vel* 3/8-1965
ROAD PLANS ENGINEER
Recommended for Approval _____ 19____
DISTRICT ENGINEER
Recommended for Approval *F. J. Thompson* 3-8-1965
ASSISTANT ROAD DESIGN ENGINEER
Recommended for Approval *F. J. Thompson* 3/8-1965
ROAD DESIGN ENGINEER
Approved 3/8 1965 *D. T. Burns*
DEPUTY CHIEF ENGINEER

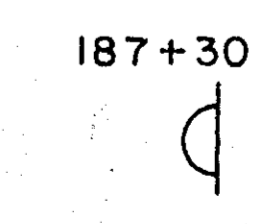
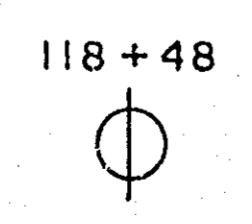
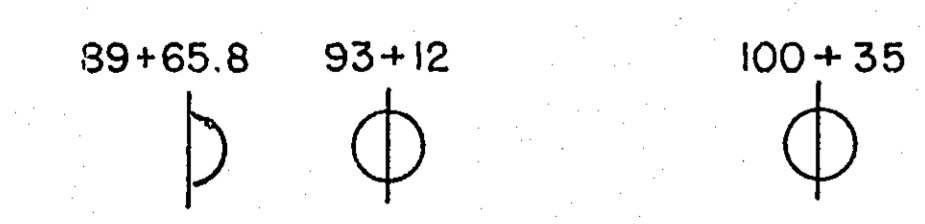
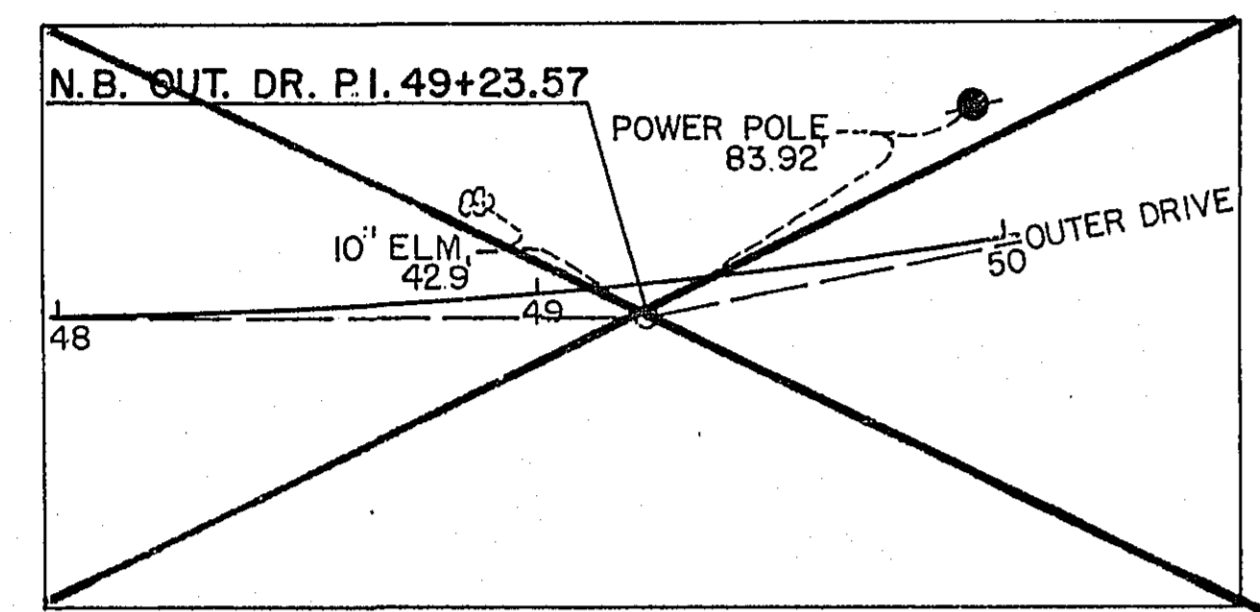
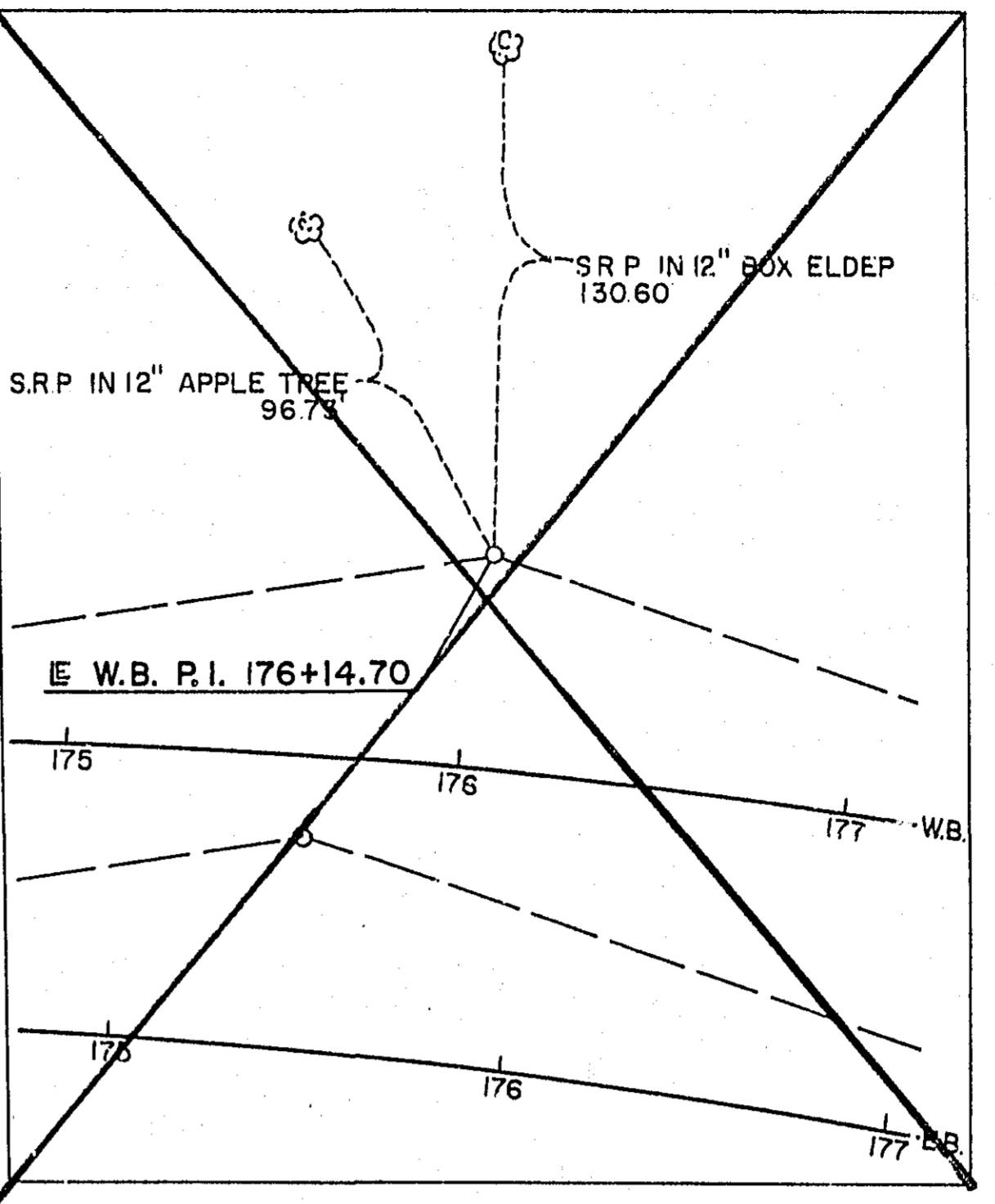
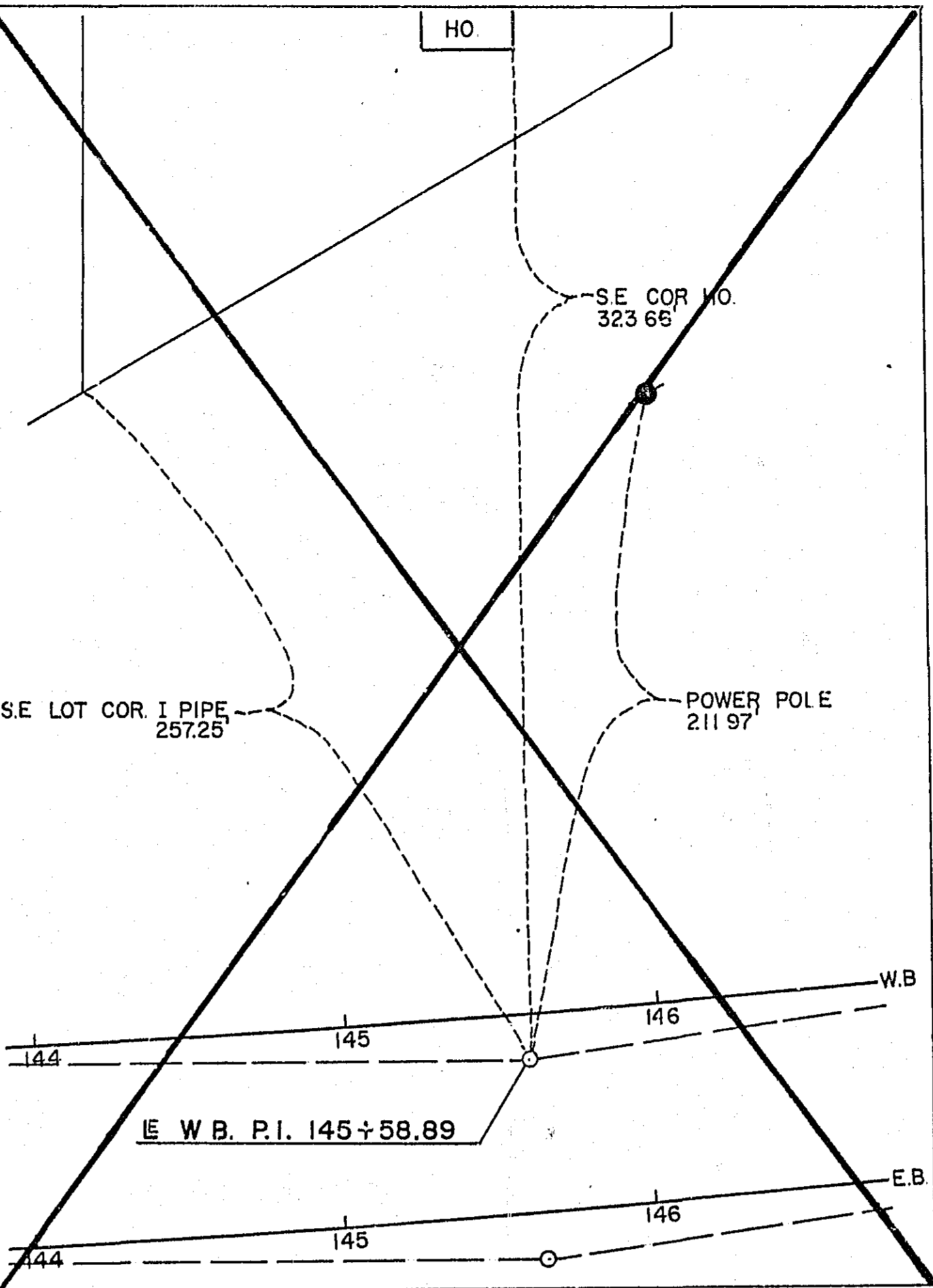
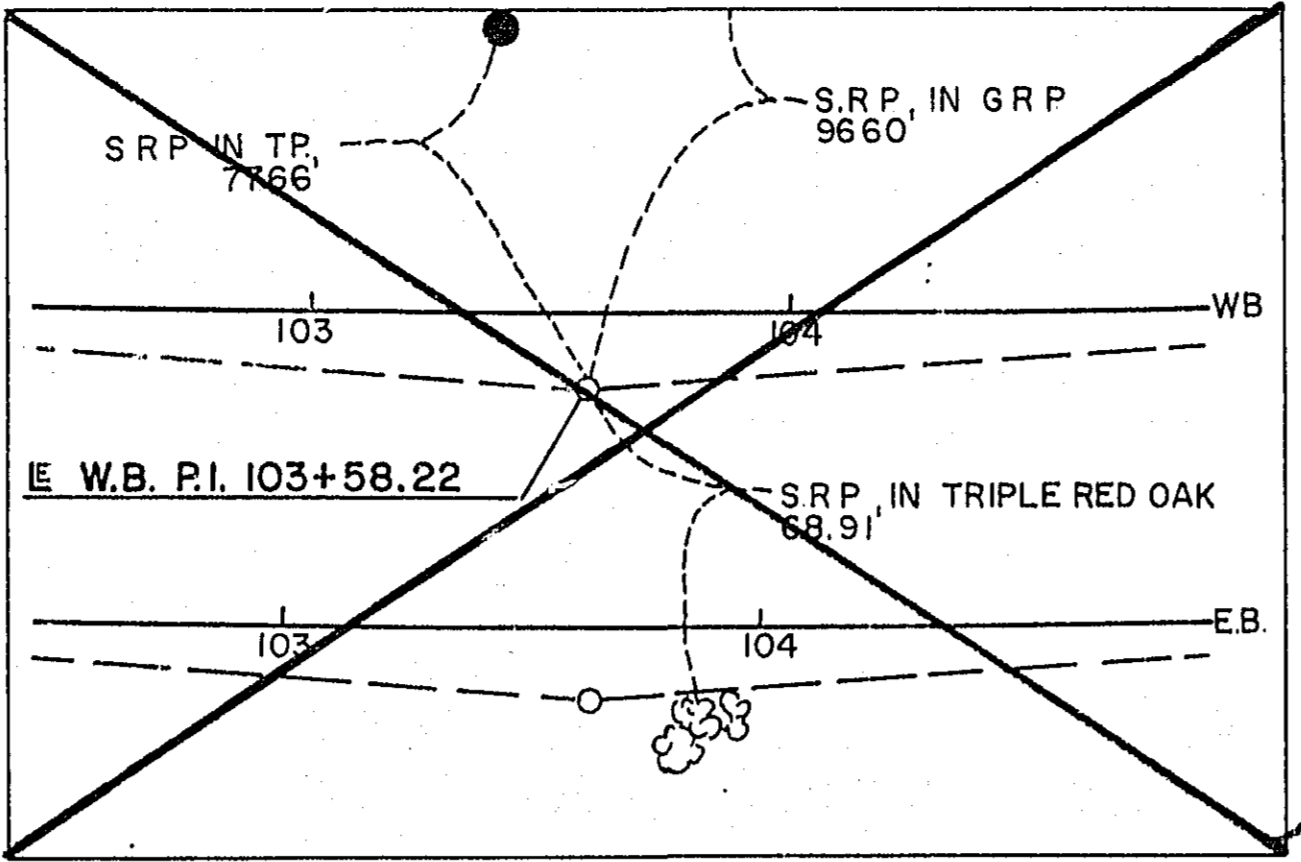
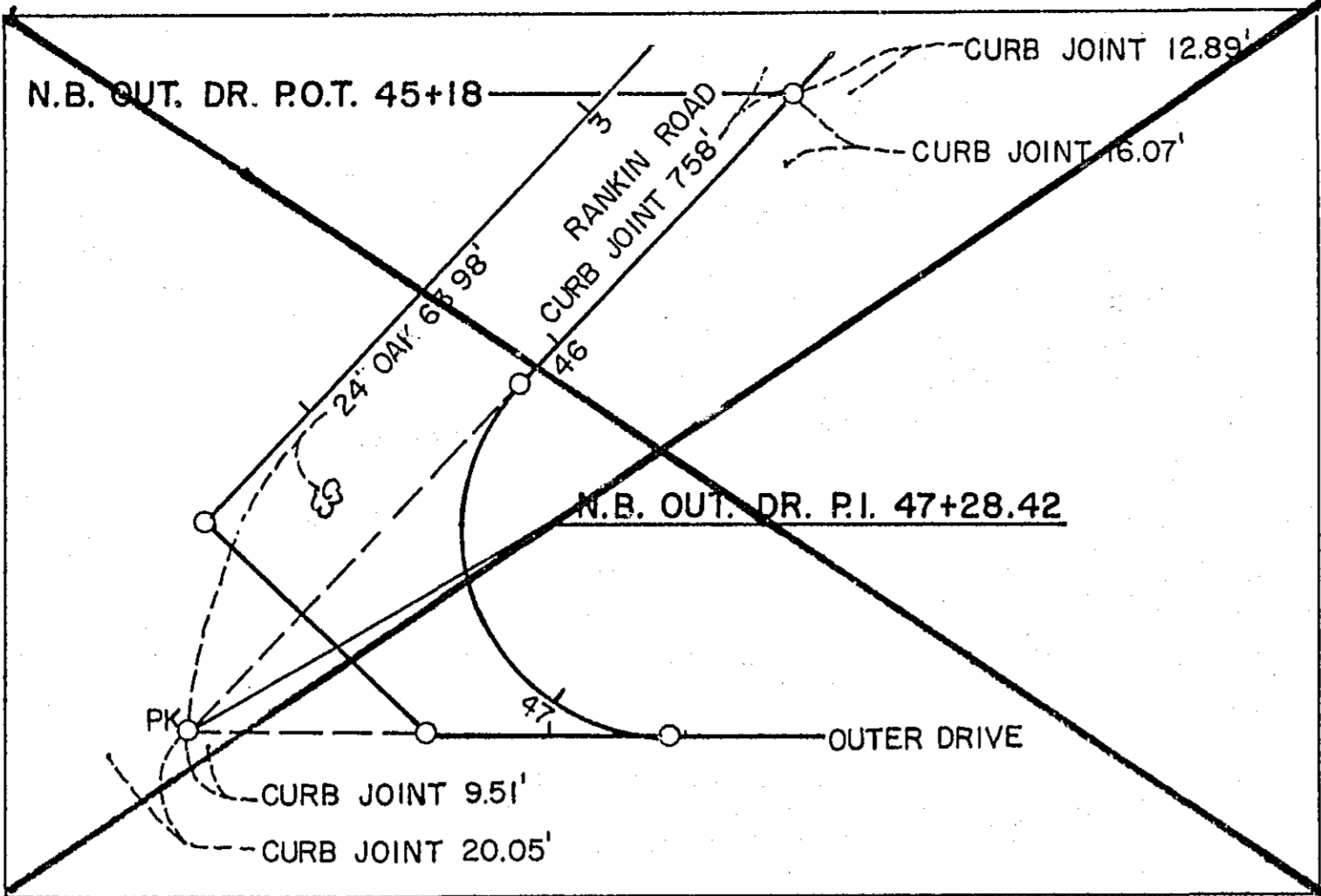
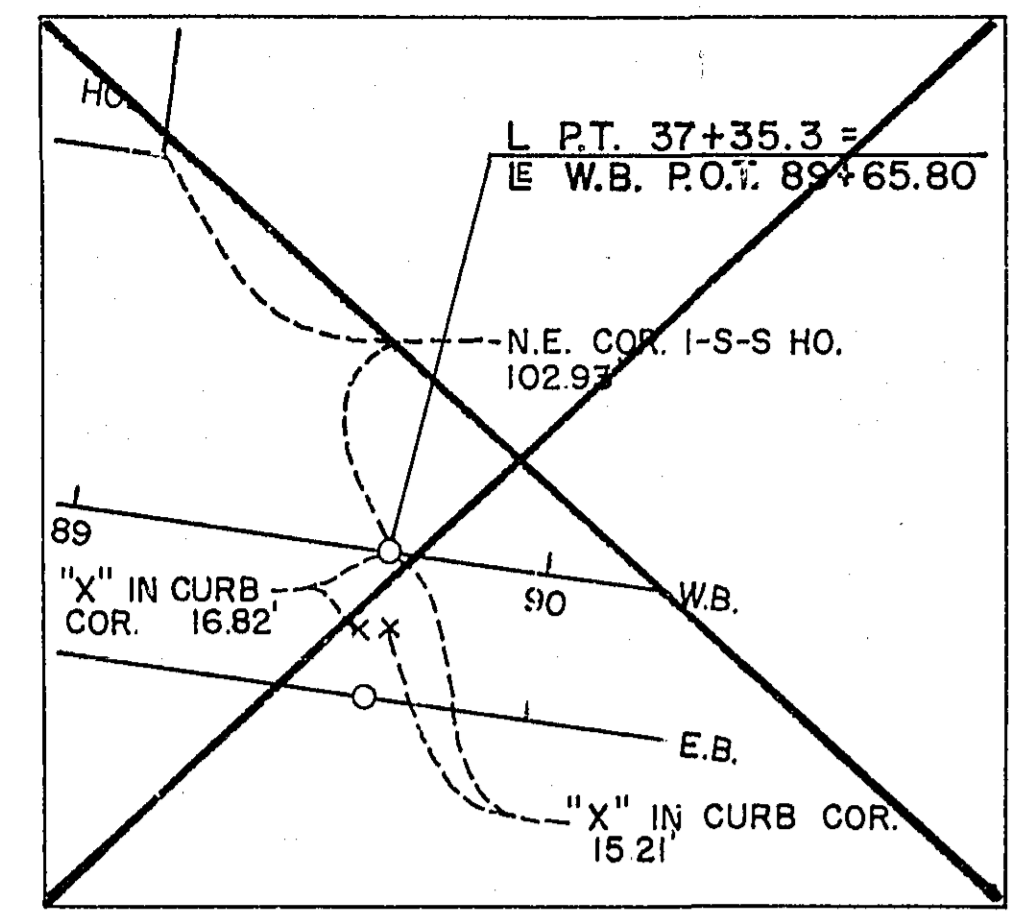
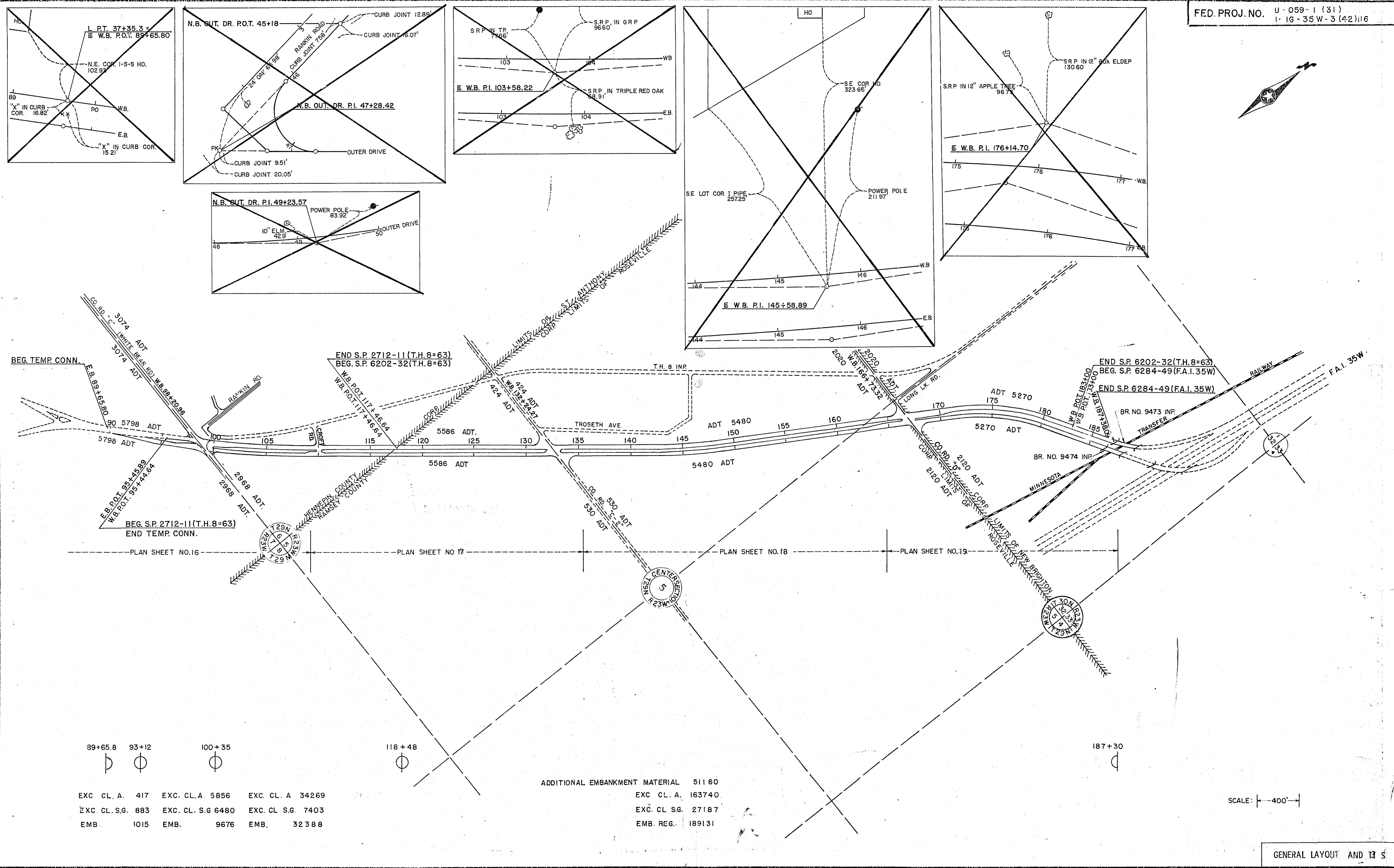
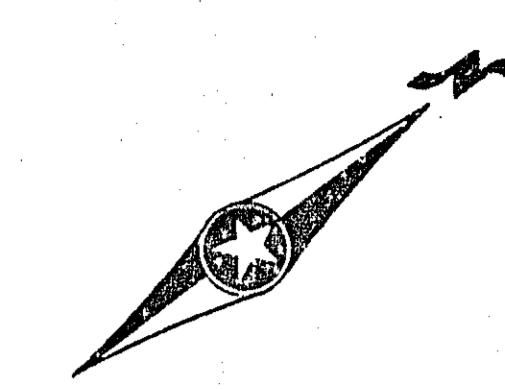
REVISIONS

DATE	SHEET NO.	REVISED BY
3-18-65	1, 5 & 6	A.R.

ADT (CURRENT YEAR) 1963 = 11,300
ADT (FUTURE YEAR) 1980 = 4,400 (1)
DHV (DESIGN HOUR VOLUME) = _____
D (DIRECTIONAL DISTRIBUTION) = 60-40 %
T (HEAVY COMMERCIAL) = 12 %
Design Speed 50 MPH
Based on STOPPING Sight Distance
Height of eye 3.75' Height of object 0.5'
Design Speed not achieved at:
STA. _____ TO STA. _____ MPH _____
STA. _____ TO STA. _____ MPH _____

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.
F. J. Hanftiel
DATE 1-25-65, REG. NO. 2708
DESIGN SQUAD G.H. HOW, C.E. II

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED: _____
DIVISION ENGINEER DATE



EXC. CL. A.	417	EXC. CL. A.	5856	EXC. CL. A.	34269
EXC. CL. S.G.	883	EXC. CL. S.G.	6480	EXC. CL. S.G.	7403
EMB.	1015	EMB.	9676	EMB.	32388

ADDITIONAL EMBANKMENT MATERIAL	51160
EXC. CL. A.	163740
EXC. CL. S.G.	27187
EMB. REG.	189131

SCALE: 1" = 400'

GENERAL LAYOUT AND T.S.

P.W. Howe

SEE ALSO SHEET NO. 4

The following Standard Plates, approved by the Bureau of Public Roads, shall apply on this project.

FED. PROJ. NO. U-0591 (31)
1-16-35 W-3 (42) 116

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	S.P. 2712-11 QUANTITIES		S.P. 6202-32 QUANTITIES		TOTAL ESTIMATED QUANTITIES	TOTAL FINAL QUANTITIES	S.P. 6284-49 QUANTITIES		TOTAL ESTIMATED QUANTITIES	TOTAL FINAL QUANTITIES
			EST.	FINAL	EST.	FINAL			EST.	FINAL		
			2101.501	Clearing	Acre					3.7		
2101.502	Clearing	Tree	7	10	10	102	17	112			17	112
2101.506	Grubbing	Acre			3.7	4.45	3.7	4.45	0.3	.10	4	4.55
2101.507	Grubbing	Tree	7	9	10	85	17	94			17	94
2104.504	Remove Curb	Lin. Ft.	88	276			88	276			88	276
2104.501	Remove Portable Culverts	Lin. Ft.	58	54	94	101	152	155			152	155
2104.502	Remove Pavement	Sq. Yd.	4840	5031			4840	5031			4840	5031
2104.503	Remove Curb and Gutter	Lin. Ft.	695	804			695	804			695	804
2105.501	Class A Excavation	Cu. Yd.	27639	27639	176643	179450	204282	207089			204282	207089
2106.501	Special Swamp Excavation (21)	Cu. Yd.	50425	53475	1578	3818	52003	57293			52003	57293
2105.504	Class SG Excavation	Cu. Yd.	14001	16323	27952	28741	41953	45064			41953	45064
2110.505	Embankment Material	Cu. Yd.				762		762	51160	51160	51160	51922
2110.517	Granular Material (17)	Cu. Yd.	68875	77048	22336	26998	91211	104046			91211	104046
ITEMS WITHOUT ALTERNATES												
2501.503	Structure Excavation (Class U) (1)	Cu. Yd.	70	656	460	2614	530	3270			530	3270
2501.521	F. & I. 12" Reinforced Concrete Pipe Culverts - Class II	Lin. Ft.	8	8	4	0	12	8			12	8
2501.521	F. & I. 18" Reinforced Concrete Pipe Culverts - Class II	Lin. Ft.			150	94	150	94			150	94
2501.521	F. & I. 18" Reinforced Concrete Pipe Culverts - Class III	Lin. Ft.			206	200	206	200			206	200
2501.521	F. & I. 24" Reinforced Concrete Pipe Culverts - Class II	Lin. Ft.	130	132	336	208	466	340			466	340
2501.522	F. & I. 22" Span Reinforced Concrete Pipe-Arch Culverts Cl. III	Lin. Ft.	48	38			48	38			48	38
2501.522	F. & I. 59" Span Reinforced Concrete Pipe-Arch Culverts Cl. III	Lin. Ft.			130	142	130	142			130	142
2503.512	F. & I. 12" Reinforced Concrete Pipe Sewer - Class II	Lin. Ft.	116	111			116	111			116	111
2503.512	F. & I. 12" Reinforced Concrete Pipe Sewer - Class III	Lin. Ft.	44	40			44	40			44	40
2501.531	Install Corrugated Metal Culverts	Lin. Ft.	34	0			34	0			34	0
2515.541	F. & I. Concrete Aprons for 12" Sectional Concrete Pipe	Apron	3	3	1	0	4	3			4	3
2515.541	F. & I. Concrete Aprons for 18" Sectional Concrete Pipe	Apron			14	12	14	12			14	12
2515.541	F. & I. Concrete Aprons for 24" Sectional Concrete Pipe	Apron	2	2	4	4	6	6			6	6
2515.542	F. & I. Concrete Aprons for 22" Span SCP-A	Apron	2	2			2	2			2	2
2515.542	F. & I. Concrete Aprons for 59" Span SCP-A	Apron			2	2	2	2			2	2
2511.501	Random Riprap Class A	Cu. Yd.			6	4	6	4			6	4
2511.506	Filter Blanket, Type I	Cu. Yd.			4	2	4	2			4	2
ALTERNATE NO. I (1)												
2501.511	F. & I. 18" Corrugated Metal Pipe Culverts	Lin. Ft.			126	70	126	70			126	70
2515.531	F. & I. Metal Aprons for 18" Corrugated Metal Pipe	Apron			6	4	6	4			6	4
ALTERNATE NO. I (2)												
2501.521	F. & I. 18" Reinforced Concrete Pipe Culverts - Class II	Lin. Ft.			108		108				108	
2515.541	F. & I. Concrete Aprons for 18" Sectional Concrete Pipe	Apron			6		6				6	
ALTERNATE NO. I (3)												
2501.507	F. & I. 18" Corrugated Aluminum Pipe Culverts	Lin. Ft.			126		126				126	
2515.545	F. & I. Aluminum Aprons for 18" Corrugated Aluminum Pipe	Apron			6		6				6	
2301.541	Integral Curb, Design B-6	Lin. Ft.	668	0			668	0			668	0
2531.501	concrete curb and gutter, Design S 512	Lin. Ft.	225	245			225	245			225	245
2506.507	Construct Catch Basins, Design C or G	Lin. Ft.	10	10			10	10			10	10
2506.516	F. & I. Casting Assemblies	Assembly	3	3			3	3			3	3
2545.521	3" Rigid Metallic Conduit	Lin. Ft.	540	528	830	956	1370	1484			1370	1484
2545.523	3" Nonmetallic Conduit	Lin. Ft.	134	132			134	132			134	132
2545.553	Precast Concrete Pull Boxes	Box	14	14	12	12	26	26			26	26
2565.663	Remove Traffic Signal System (16)	System	1	1			1	1			1	1
2531.503	Concrete Median	Sq. Yd.	128	80.6			128	80.6			128	80.6
2531.501	Concrete Curb and Gutter, Design B624	Lin. Ft.	695	1226		253	695	1479			695	1479
2531.501	Concrete Curb and Gutter, Design B1024	Lin. Ft.	155	172			155	172			155	172
2531.502	concrete curb, Design S-5	Lin. Ft.	144	334			144	334			144	334
2301.541	Integral Curb, Design B10 (4)	Lin. Ft.							146	144	146	144
2567.501	Permanent Barricades	Lin. Ft.	50	50			50	50			50	50
555.615	Triple Cable Guard Rail (Treated Wood Post)	Lin. Ft.			718	718	718	718	695	695	1413	1413
2555.521	Anchorage Assemblies (15)	Assembly			4	4	4	4	3	3	7	7
2556.501	Structural Plate Beam Guard Rail (Type B) (3)	Lin. Ft.							308	313	308	313
2565.531	Expansion Assemblies	Assembly			3	6	3	6	9	6	12	12

GRADING

STANDARD PLATES

PLATE NO.	DESCRIPTION
1017	Concrete Pavements With Steel Fabric Reinforcement
1035 D	Bridge Approach Panel (Skew) 24' Foot Pavement
1062 D	Tapered Panels at Bridge Approach
1075 G	Panels Adjacent to Bridges, Railway Crossings & Terminal Headers
1100 E	Expansion Joints (Plain)
1101 G	Expansion Joints (Dowelled)
1103 C - 1108 C	Dowel Bar Assembly
1120 G	Contraction Joints
1140 G	Longitudinal Joints
1141 A	Pavement Keyway For Keyed Joint Construction
1150 F	Construction of Header Joint
3000 C	Reinforced Concrete Pipe
3014 B	Reinforced Concrete Pipe-Arch
3100 D	Concrete Apron for Reinforced concrete Pipe
3102 C	Concrete Apron For Reinforced Concrete Pipe
3110 B	Concrete Apron For Reinforced Concrete Pipe-Arch
3112 B	Concrete Apron For Reinforced Concrete Pipe - Arch
3123 C	Metal Apron For C. M. Pipes
4000 E	Manhole or catch Basin (DESIGN A)
4002 C	Manhole or catch Basin (DESIGN C)
4006 D	Manhole or catch Basin (DESIGN G)
4011 A	Pre Cast Concrete Base for Manhole or Catch Basin Design F or G
4129	catch Basin Frame Casting (CASTING NO. 802)
4151A	Grate Casting for Catch Basin (CASTING NO. 811)
4160	Curb Box Casting for Catch Basin (CASTING NO. 823)
4180 D	Manhole Step Casting
7001 B	Integral curb (Design B)
4181	Manhole Step casting, 12" Tread
7020 C	Concrete Curb (Design B)
7100 C	Concrete Curb and Gutter (Design B)
7022 B	Concrete Curb (Design S)
7102 B	Concrete curb and Gutter (Design S)
7111 C	Installation of Catch Basin Castings
7035 D	Curb Returns at Entrances
7105 B	Concrete Median
8000A & 8009	Standard Barricades
8001	Standard Secondary Barricade
8002 A	Permanent Barricade
8003 - 8008 A	Warning Signs
8313	3-cable Guard Rail Assembly
8314	3-cable Guard Rail Details
8315	Connection for Guard Rail to Concrete Rail
8307 D	Structural plate beam Guard Rail
8308 B	Plate beam Guard Rail Bracket
8309 A	Connection Between Plate Beam and Cable Guard Rail
9000	Approaches and Entrances
9102 A	Sodding at Pipe Culvert Ends
8117	Precast Concrete Handhole

NOTES: (A) See Guard Rail Details on sheet No. 14 A
 (1) When roadway is in excavation, this quantity computed from top of grading grade
 (3) Includes 2 end sections - Post spacing at 6'3" c-c. See sheet No. 14 A
 (4) Transition from B6 to B10 curb, also includes two 4' transition to B6 Curb
 (15) Includes 4 intermediate assemblies
 (16) Detail of traffic signal system, see sheet No. 12
 (17) Includes 71,083 Cu.Yds. in swamp backfill and 20,128 in subgrade treatment backfill.
 (21) Excess excavated swamp material is to be disposed of by the contractor as per special provisions.
 THE TOTAL ESTIMATED TOPSOIL REQUIRED ON THIS PROJECT IS 9466 CU. YDS. OF WHICH 4,165 CU. YDS. SWAMP EXCAVATION IS USED.

CLEARING AND GRUBBING			
STATION (TO STATION)	LOC.	CLEARING TREE ACRES	GRUBBING TREE ACRES
E. B. 103+80	20' Rt.	1	1
W. B. 115+40 - 116+20'	Rt. & Lt.	6	6
E. B. 116+60 - 121+20	Rt. & Lt.		1.3
W. B. 121+40	50' Lt.	1	1
W. B. 134+10	65' Lt.	1	1
W. B. 134+70	90' Lt.	1	1
W. B. 137+00	70' Rt.	2	2
W. B. 161+00 - 164+00	Rt. & Lt.	0.2	0.2
W. B. 164+50 - 165+40	Lt.	5	5
W. B. 166+50 - 175+00	Rt. & Lt.	1.2	1.2
W. B. 180+50 - 183+00	Rt. & Lt.	0.9	0.9
W. B. 183+00 - 184+10	Rt. & Lt.	0.3	0.3

REMOVE CONCRETE PAVEMENT			
Station	Loc.	Description	Sq. Yd.
W. B. 95+44.64 - 102+92	℄-88' Lt.	Bituminous surf'd Concrete Pavement	3640
E. B. 89+65.8 - 95+45.9	℄-50' Lt.	Bituminous surf'd Concrete Pavement	1200

*Includes co. Rd. C and pavement widening.

PERMANENT BARRICADE		
STATION	LOCATION	LIN. FT.
I+25	S.B. Rankin Road	50

REMOVE TRAFFIC SIGNAL SYSTEM		
STATION	LOCATION	SYSTEM
W. B. 98+21	CO. RD. C INTERSECTION	1

ESTIMATE SHEET & STANDARD DETAIL PLATES

B. J. Haver

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	S.P. 2712-11 QUANTITIES		S.P. 6202-32 QUANTITIES		TOTAL	TOTAL	S.P. 6284-49 QUANTITIES		TOTAL	TOTAL
			EST.	FINAL	EST.	FINAL	ESTIMATED QUANTITIES	FINAL QUANTITIES	EST.	FINAL	ESTIMATED QUANTITIES	FINAL QUANTITIES
2574.501	Roadside Seeding	Acre	8	6.5	23	30.3	31	36.8	2	7	33	37.5
2574.511	Seed (Class 15)	Pound	640	555	1840	2586	2480	3141	160	59	2640	3200
2574.521	Commercial Fertilizer (18)	Ton	2	2.13	6	7.43	8	9.56	1	.52	9	10.08
2575.501	Surface Mulching, Type 1	Ton	1	13.6	3	51	4	64.6	2	12	6	65.8
2576.501	Sodding	Sq. Yd.	2367	8235	6287	30481	8654	38716	264	6694	8918	45410
2201.526	Gravel Sub-base in Place (Class 4)	(5) Ton	9074	7466	14011	16236	23085	23702	645	744	23730	24446
2201.526	Gravel Sub-base in Place (Class 4A)	(6) Ton	2189	1231	1920	1812	4109	3043			4109	3043
2202.526	Gravel Base in Place (Class 5)	Ton	3987	4469	13667	16190	17654	20659	635	782	18289	21441
2121.527	Aggregate Shouldering in Place (Class 5)	(7) Ton	3169	2196	6533	6949	9702	9145	182	164	9884	9309
2202.526	Gravel Base in Place (Class 5B)	(8) Ton	2431	1727	2342	2973	4773	4700			4773	4700
2208.503	Bituminous Material For Mixture	Gallon	1176	1477	2771	3837	3947	5314			3947	5314
2208.506	Aggregate	Ton	131	183	308	483	439	666			439	666
2359.505	Bituminous Material For Seal Coat	Gallon	380	1027			1407				1407	
2359.507	Seal Coat Aggregate	Sq. Yd.	13		34		47				47	
2331.508	Wearing Course Mixture	Ton			120	147	120	147			120	147
2331.501	Bituminous Material For Prime Coat	Gallon			610	0	610	0			610	0
2331.504	Bituminous Material For Mixture (9)	Ton	33	15	15	8	48	23			48	23
2331.514	Base Course Mixture (10)	Ton	888	442			888	442			888	442
2331.516	Shoulder Mixture	Ton			154	0	154	0			154	0
2341.501	Bituminous Material For Prime Coat	Gallon	4074	1965	6215	4607	10289	6572	375	243	10664	6815
2341.502	Bituminous Material For Tack Coat	Gallon	130	129	260	409	390	538			390	538
2341.504	Bituminous Material For Mixture	Ton	95	83	150	195	245	278	7	7	252	285
2341.510	Binder Course Mixture	Ton	211	260	459	549	670	809			670	809
2341.508	Wearing Course Mixture	Ton	211	389	374	627	585	1016			585	1016
2341.516	Shoulder Mixture	Ton	1273	896	2091	2452	3364	3348	126	126	3490	3474
2341.517	Shoulder Mixture + Filler	Ton	97				97				97	
2351.502	Bituminous Material For Tack Coat (11) (19)	Gallon	381	119			381	119			381	119
2351.504	Asphalt Cement (12)	Ton	36	16			36	16			36	16
2351.509	Asphaltic Concrete Wearing Course + Filler (13)	Ton	315	149			315	149			315	149
2351.510	Asphaltic Concrete Binder Course (14)	Ton	402	164			402	164			402	164
2301.512	8" Reinforced Concrete Pavement (Standard Strength)	Sq. Yd.	13195	12721	34845	35153	48040	47874	2220	2180	50260	50054
2301.531	Reinforcement Bars	Pound	5560	7336	14709	17701	20269	25037	4349	4352	24618	29389
2301.533	Steel Fabric (Style 612-24)	Sq. Yd.	15497	15592	37133	37437	52630	53029	2220	1929	54850	54958
2301.536	Dowel Bar Assemblies	Lin. Ft.	3555	3484	8560	8914	12115	12398	497	480	12612	12878
2301.522	8" Reinforced Concrete Pavement (High Early Strength) (22)	Sq. Yd.	2302	2658	2288	1857	4590	4515			4590	4515
2301.549	Concrete Treating Oil	Gallon	930	1067	2228	2560	3158	3627	133	151	3291	3778
2506.511	The Following items are Public Utilities: Reconstruct Manholes	Lin. Ft.	1.5	3.8	5.5	1.7	7.0	5.5			7	5.5
2506.521	Install Castings	Assembly	1	2	1	1	2	3			2	3
2506.522	Adjust Frame and Ring Castings	Assembly	2	5	1	1	3	6			3	6
505.602	Relocate Gas Main (20)	Lump Sum		L.S.		L.S.	L.S.					L.S.
2051.501	Maintenance and Restoration of Haul Roads	Lump Sum		L.S.		L.S.	L.S.					L.S.

- (5) Includes 1,785 tons for by-passes
- (6) Includes 1,208 tons for by-passes
- (7) Includes 1,094 tons for by-passes
- (8) Includes 772 tons for by-passes
- (9) Includes 18 tons for by-passes
- (10) Includes 503 tons for by-passes
- (11) Includes 216 gallons for by-passes
- (12) Includes 20 tons for by-passes
- (13) Includes 173 tons for by-passes
- (14) Includes 221 tons for by-passes
- (18) Analysis 12-12-12 at rate of 500 pounds per acre. (or equivalent)
- (19) Includes prime and tack for 2331 Base course on S.P. 2712-11
- (20) See Twin City Arsenal 12" gas main material estimate, sheet No. 11
- (22) To be used as directed by the Engineer. Spec. No. 1404 shall not apply to this item

STATION (TO STATION)		LOC.	DESCRIPTION	UNIT			ABAND.
				LIN. FT.	SQ. YD.	CU. YD.	STRUCTURE
Co. Rd. C 8+00 - 9+10	Rt.		Remove Curb and Gutter	110			
Rankin Rd. 0+30 - 1+30	Lt.		Remove Curb and Gutter	50			
Rankin Rd. 1+05 - 3+35	22' Rt.		Remove Curb and Gutter	230			
Rankin Rd. 1+05 - 1+90	8' Rt.		Remove Curb and Gutter	85			
Rankin Rd. 1+00 - 3+20	36' Rt.		Remove Curb and Gutter	220			
E.B. T.Conn. 89+65.8-90+46	Median		Remove curb	88			

STATION TO STATION		LOCATION	SOD.	MULCH
			SQ. YD.	SQ. YD.
Outer Dr. 45+18 - 50+64	Lt. (Berm)		788	
E. B. 91+00 - 94+00	Rt.			467
E. B. 92+85 - 93+00	Lt. (Nose)		5	
W. B. 93+00 - 97+80	Median			824
E. B. 94+00 - 95+00	Rt. (Ditch Bottom)		156	
E. B. 95+00 - 97+20	Rt.			342
W. B. 95+45 - 96+95	Lt.			156
W. B. 96+45 - 96+85	Lt. (Radius)		118	
W. B. 96+95 - 97+70	Lt. (Island)		229	
W. B. 97+80 - 97+98	Median (Nose)		30	
E. B. 98+60 - 99+00	Rt. (Radius)		83	
W. B. 98+20 - 98+60	Lt. (Radius)		83	
E. B. 99+25 - 99+43	Median (Nose)		30	
E. B. 99+30 - 100+00	Rt. (Island)		229	
W. B. 108+85 - 109+95	Lt. (O. D. x-over)		314	
W. B. 108+92 - 109+17	Median (Nose)		42	
E. B. 109+70 - 110+00	Median (Nose)		67	
E. B. 120+60 - 121+50	Rt. (Backslope)		500	
W. B. 131+65 - 131+95	Median (Nose)		60	
W. B. 130+80 - 132+60	Lt. (Radius)		206	
E. B. 132+30 - 134+30	Rt. (Radius)		219	
E. B. 133+05 - 133+35	Median (Nose)		60	
W. B. 134+00 - 136+90	Lt.			451
W. B. 134+00 - 136+90	Median			451
E. B. 135+00 - 137+02	Rt.			314
E. B. 159+50 - 160+50	Rt. (Toe of Slope)		156	
E. B. 160+31 - 163+23	Rt.			454
E. B. 161+00 - 161+50	Rt. (Toe of Slope)		78	
W. B. 162+00 - 163+88	Lt.			292
W. B. 162+00 - 163+88	Median			292
W. B. 165+50 - 167+10	Lt. (Radius)		221	
W. B. 166+00 - 166+30	Median (Nose)		42	
E. B. 166+70 - 168+30	Rt. (Radius)		221	
E. B. 167+54 - 167+84	Median (Nose)		42	

STATION TO STATION		LOCATION	SOD.	MULCH
			SQ. YD.	SQ. YD.
W. B. 170+12 - 175+66	Lt.			862
W. B. 170+12 - 175+66	Median			862
E. B. 170+46 - 175+50	Rt.			784
E. B. 170+90 - 180+00	Rt. (Inslope)			607
W. B. 171+50 - 180+60	Rt. (Inslope)			607
W. B. 178+00 - 179+50	Lt. (Toe of Slope)			233
W. B. 179+14 - 180+24	Rt.			171
W. B. 179+30 - 180+50	Lt.			182
W. B. 179+30 - 180+50	Median			182
E. B. 181+00 - 181+75	Rt. (Toe of Slope)			117
E. B. 181+25 - 183+00	Rt. (Fill Slope)			700
W. B. 181+25 - 183+00	Lt. (Fill Slope)			758
E. B. 183+00 - 186+72	Rt. (Fill Slope)			2067
W. B. 183+00 - 187+38	Lt. (Fill Slope)			2774
W. B. 185+00 - 187+38	Lt. (2:1 Fill Slope)			159
E. B. 185+00 - 186+57	Rt. (2:1 Fill Slope)			105
Co. Rd. D 0+75 - 4+00	Rt. (Ditch bottom)			433
Co. Rd. D 0+75 - 3+10	Lt. (Ditch bottom)			313
Co. Rd. D 2+50 - 3+05	Rt. & Lt. backslope			275
Co. Rd. D 8+00 - 0+40 (1)	Lt. (Backslope)			164
Co. Rd. D 7+00 - 2+00 (1)	Lt. (Ditch bottom)			629
Co. Rd. D 8+50 - 9+50	Rt. (Ditch bottom)			133
Long Lk. Rd. 0+30 - 3+25	Lt. (Backslope)			492
E.B. Temp. Conn. 90+10-91+90	Median			98

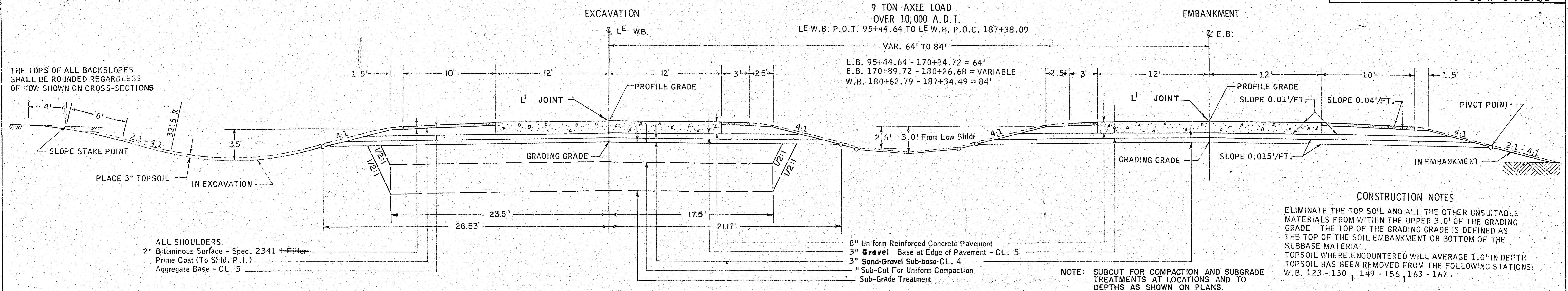
(1) Includes equation 9+71.46 = 0+00

STA. TO STA.		LOCATION	3-CABLE			STRUCTURAL PLATE			
			ANCHORAGE ASSEMBLIES	EXPAN-SION ASSMB	BENDING				
			INTER-MEDIATE	END	CONVEX		CONCAVE		
					REG. SECT.	END SECT.	REG. SECT.	END SECT.	
W. B. (B) 180+16 - 187+54	Lt.	738	2	1	6				
E. B. (C) 178+30 - 185+41	Rt.	675	2	2	6				
E. B. 185+41 - 186+42	Rt.					101	1		
184+65 - 186+72	Lt.					207	1		

- (A) SEE GUARD RAIL DETAILS ON SHEET NO. 14A
- (B) INCLUDES 284 LIN FT IN SP 6202-32
- (C) INCLUDES 434 LIN FT IN SP 6202-32, ALSO INCLUDES EQUATION EB, 180 + 26.68 = 180 + 62.79.

Station to Station		Location	B624	B1024	B10 (2)	S-5	S-512	B6 INTEGRANT
			C.&G.	C.&G.	Curb	Curb	C.&G.	Curb
E. B. 89+65.8 - 91+90	Lt.						225	
E. B. 90+46 - 91+90	Lt.					144		
W. B. 96+95 - 97+70	14' Lt.							75
W. B. 96+95 - 97+20	16'-70' Lt.							60
E. B. 99+30 - 100+00	14' Rt.							70
E. B. 99+80 - 100+00	16'-70' Rt.							55
Co. Rd. C 8+00 - 9+73	18' Lt.							173
Co. Rd. C 9+73 - 10+00	18'-32' Lt.							30'
Co. Rd. C 8+00 - 8+50	18'-40' Rt.							60'
Co. Rd. C 8+75 - 9+50	18' Rt.							75
Co. Rd. C 11+30 - 12+10	12' Lt.							70
Outer Drive N. B. 45+18 - 46+50	Rt.			155'				
Outer Drive S. B. 45+97 - 47+29	Rt.	160'						
Outer Drive N. B. 45+30 - 50+64	Lt.	535						

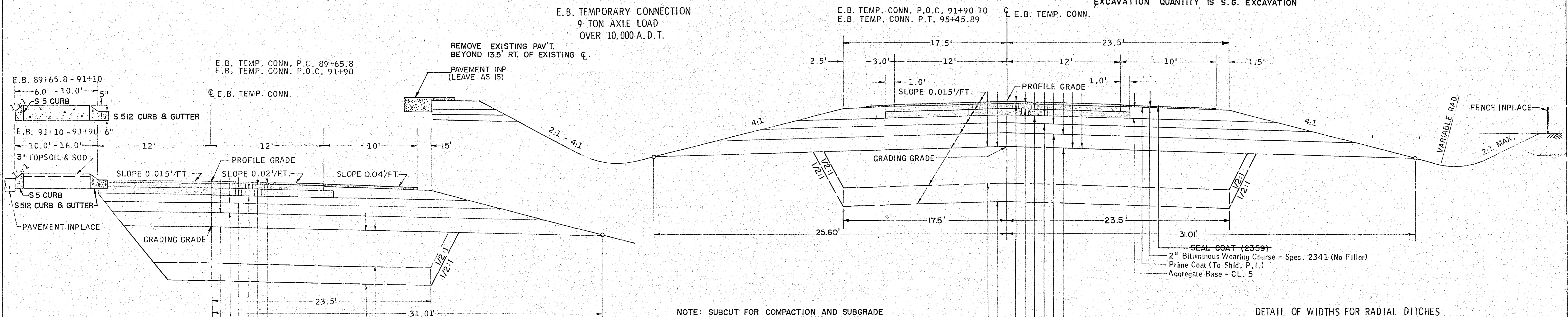
TYPICAL SECTIONS
TRUNK HIGHWAY NO. 8
9 TON AXLE LOAD
OVER 10,000 A.D.T.



CONSTRUCTION NOTES

ELIMINATE THE TOP SOIL AND ALL THE OTHER UNSUITABLE MATERIALS FROM WITHIN THE UPPER 3.0' OF THE GRADING GRADE. THE TOP OF THE GRADING GRADE IS DEFINED AS THE TOP OF THE SOIL EMBANKMENT OR BOTTOM OF THE SUBBASE MATERIAL.
TOPSOIL WHERE ENCOUNTERED WILL AVERAGE 1.0' IN DEPTH TOPSOIL HAS BEEN REMOVED FROM THE FOLLOWING STATIONS: W.B. 123-130, 149-156, 163-167.

E.B. TEMPORARY CONNECTION
9 TON AXLE LOAD
OVER 10,000 A.D.T.

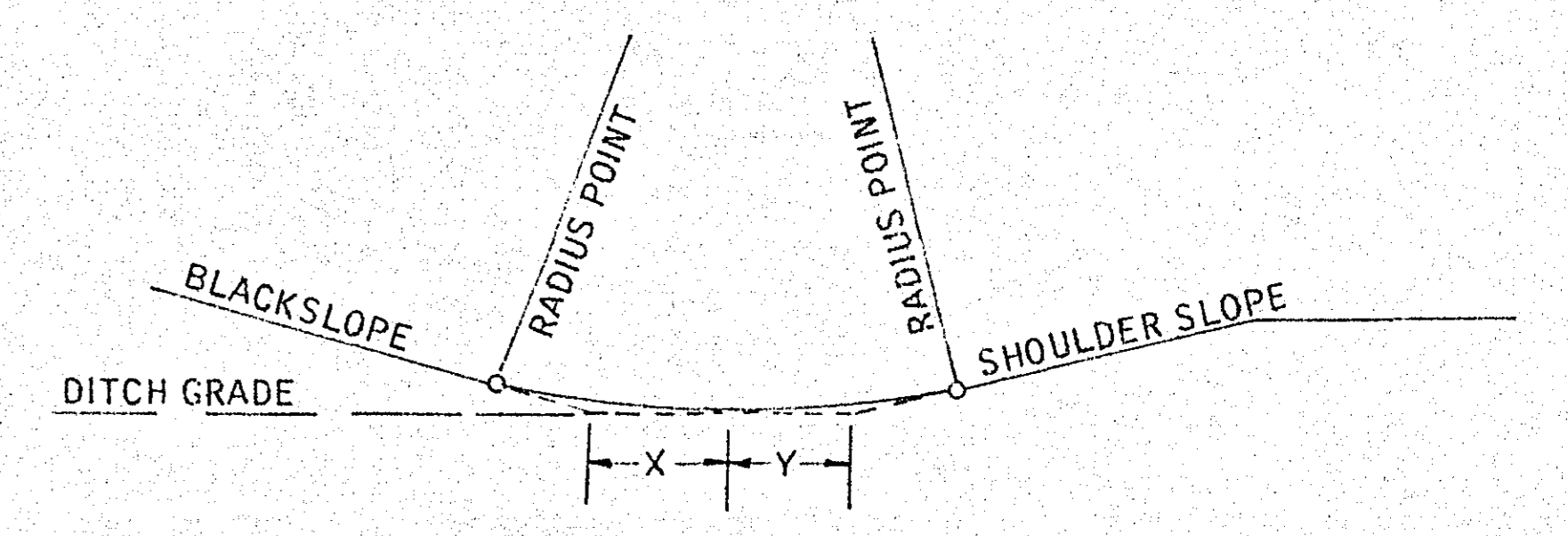
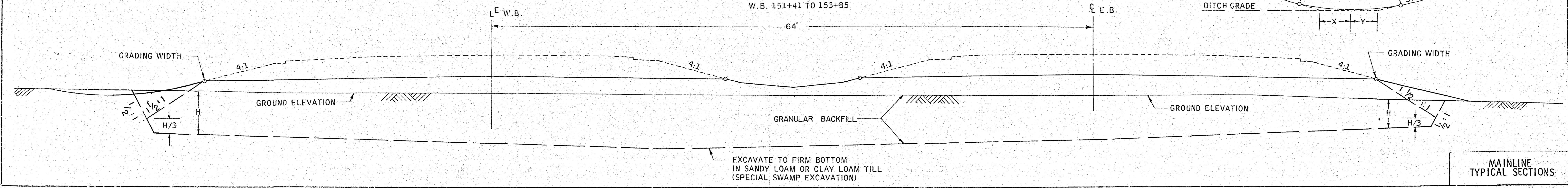


DETAIL OF WIDTHS FOR RADIAL DITCHES

VALUE OF X & Y FOR VARIOUS SLOPES & RADII	
SLOPE RATIO	4:1 3:1 3:1 2 1/2:1 2:1 1 1/2:1 1:1
RADIUS=10	1.231 1.401 1.623 1.926 2.361 3.028 4.142
	16.3 12.0 12.28 12.65 13.14 13.85 14.94 16.75
	32.5 14.00 14.55 15.27 16.26 17.67 19.84 23.68

TYPICAL SWAMP SECTION

W.B. 99+00 TO 111+50
E.B. 99+50 TO 105+50
E.B. 107+50 TO 112+00
W.B. 151+41 TO 153+85



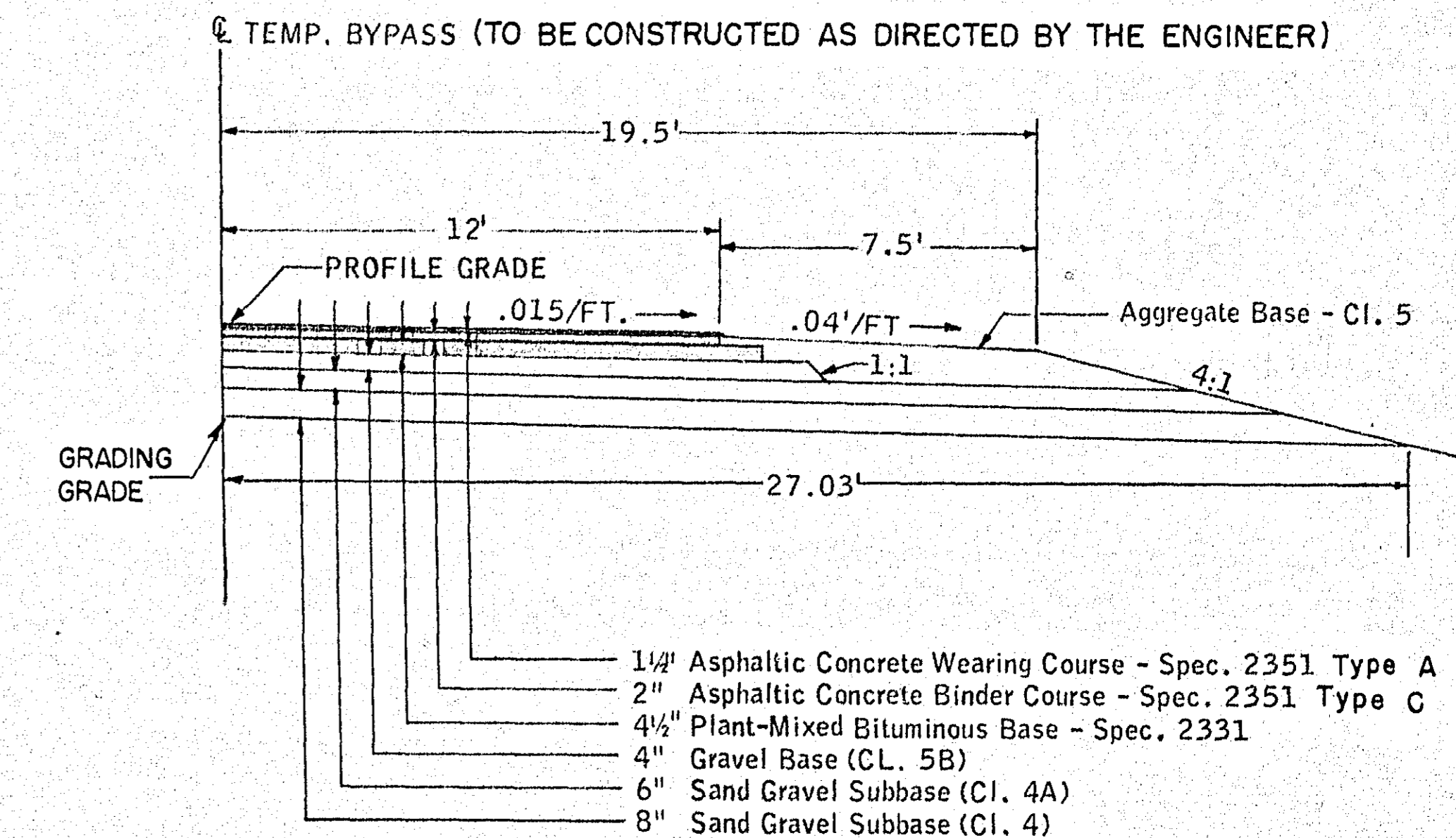
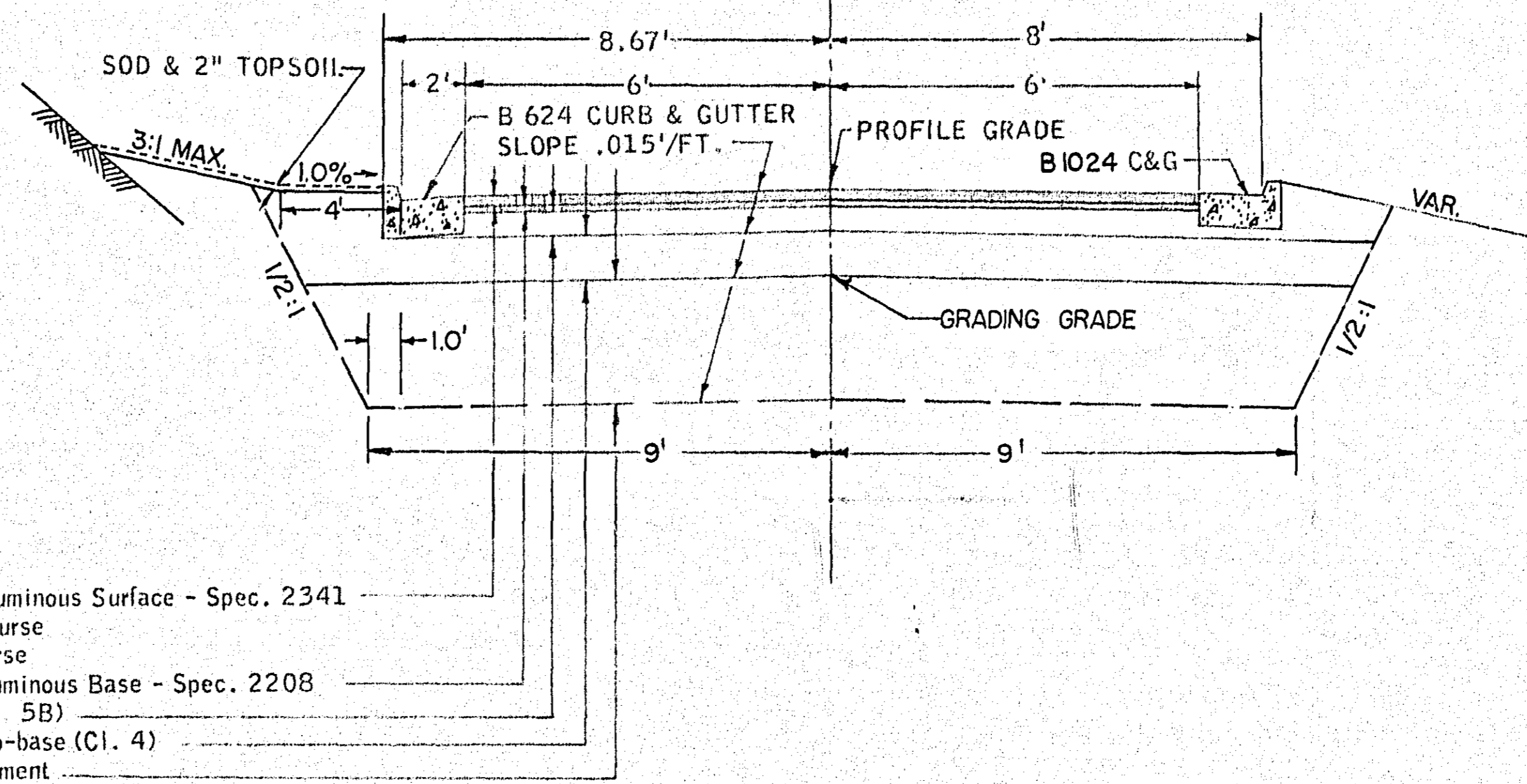
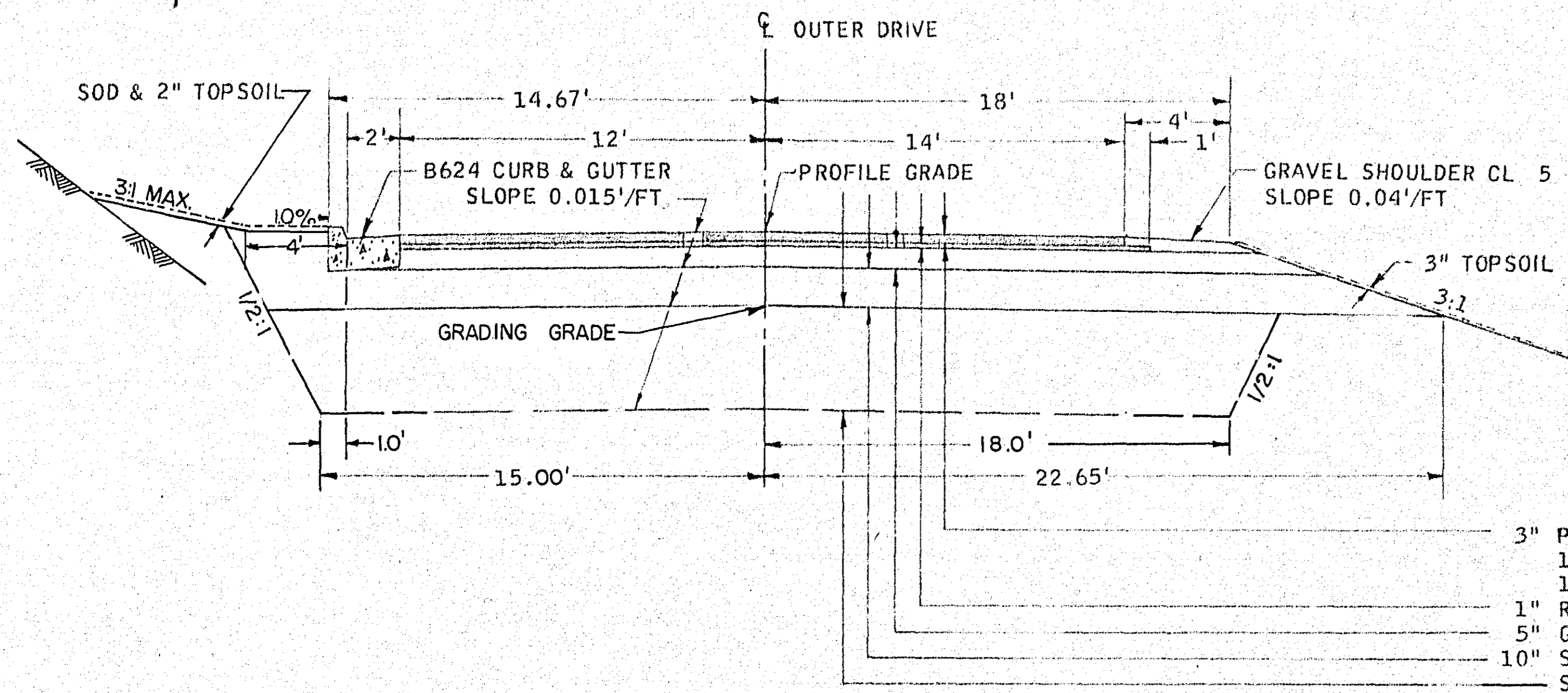
MAINLINE TYPICAL SECTIONS

OUTER DRIVE 47+29.36 TO 50+64.36

OUTER DRIVE
9 TON AXLE LOAD
Less Than 150 Heavy Commercial A. D. T.
(1,000 to 2,000 A. D. T.)

CL N.B. OUTER DRIVE 45+18 TO 46+13.23

TEMP. BY-PASSES NO. 1 & NO. 2
9 TON AXLE LOAD
OVER 10,000 A. D. T.



COUNTY ROAD "C"
9 TON AXLE LOAD
Over 1,100 Heavy Commercial A. D. T.
(Over 10,000 A. D. T.)

NOTE: SUBCUT FOR COMPACTION AND SUBGRADE TREATMENTS AT LOCATIONS AND TO DEPTHS AS SHOWN ON PLANS. EXCAVATION QUANTITY IS S.G. EXCAVATION.

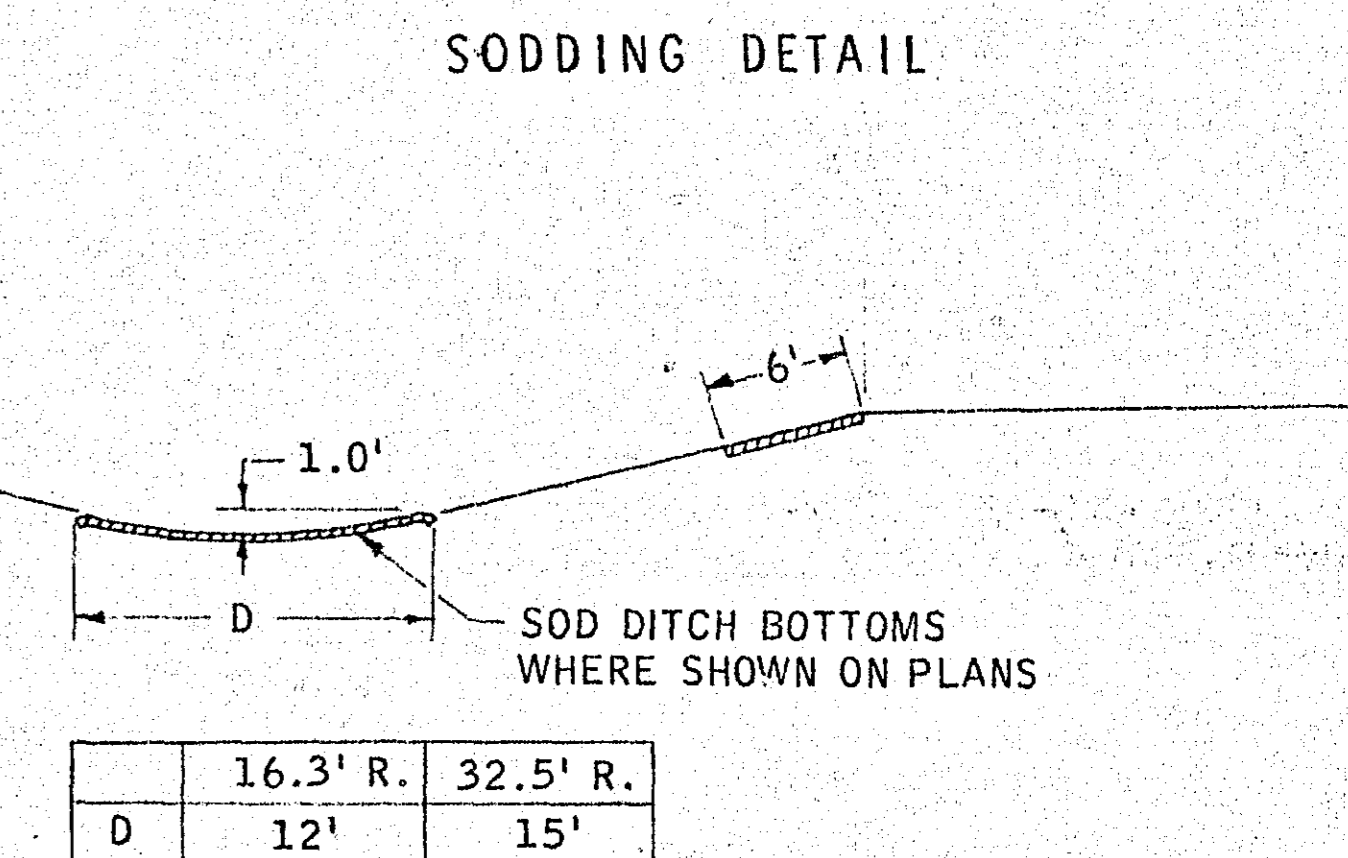
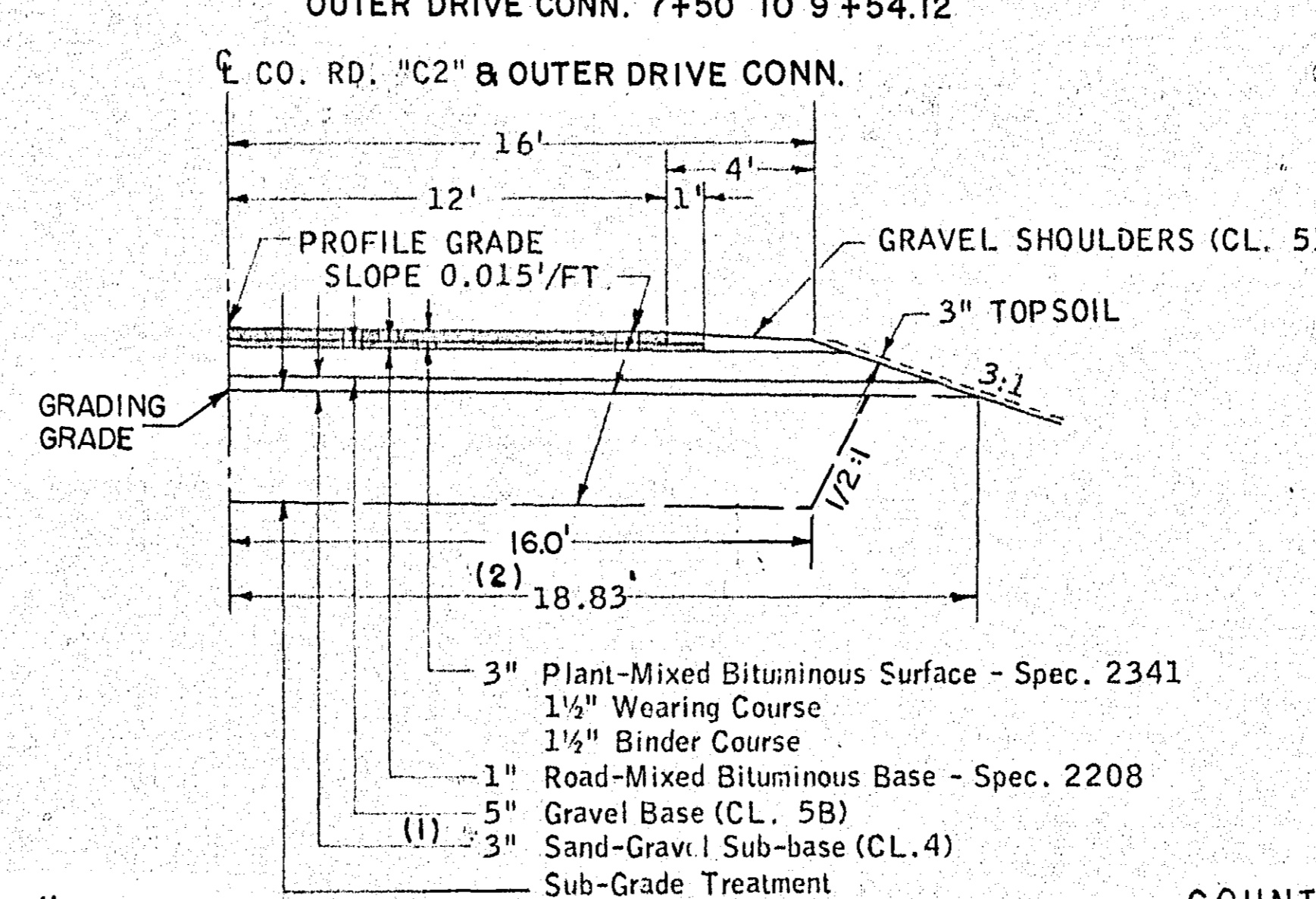
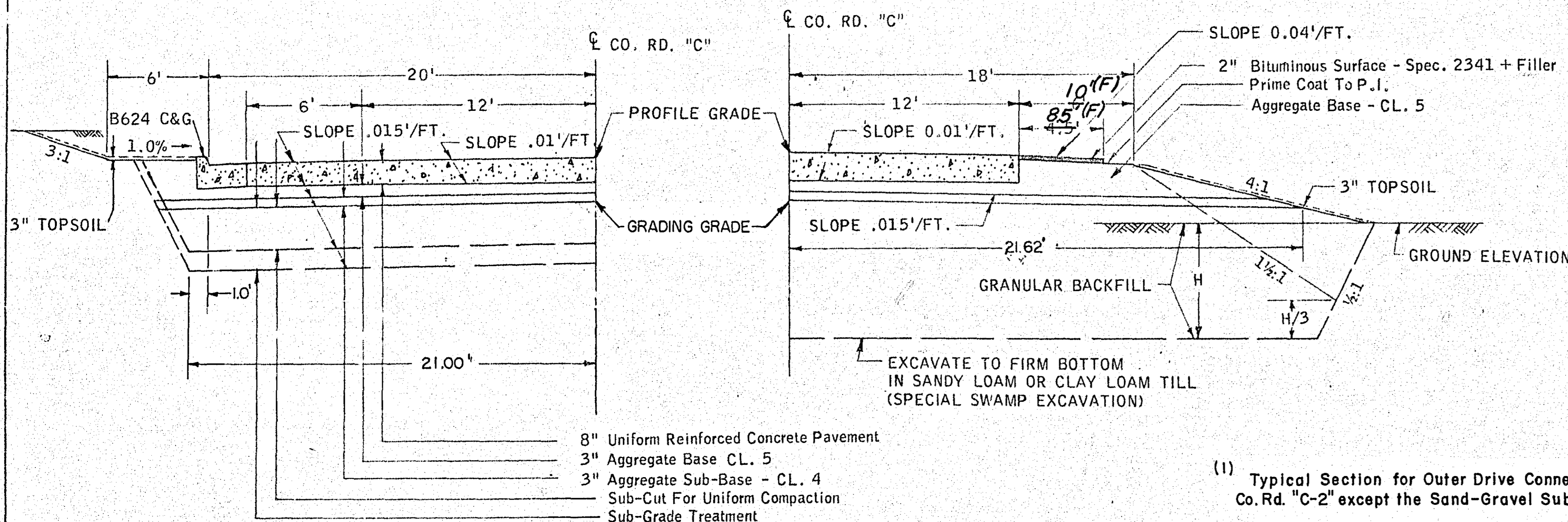
COUNTY ROAD "C-2" & OUTER DRIVE CONNECTION
9 TON AXLE LOAD
Less Than 150 Heavy Commercial A. D. T.
(1,000 to 2,000 A. D. T.)

SODDING AND MULCHING NOTES
SOD 6' WIDE ON INSIDE SHOULDER SLOPE OF SUPERELEVATED CURVES.
SOD 6' WIDE ON SHOULDER SLOPE WHERE FILL IS OVER 10' IN HEIGHT EXCEPT OUTSIDE SHOULDER SLOPE OF SUPERELEVATED CURVES.
SOD DITCH BOTTOMS WHERE GRADES ARE 2.0% OR GREATER.
SOD AT PIPE CULVERT ENDS.
MULCH BELOW THE SOD ON ALL FILL SLOPES OVER 10' IN HEIGHT.
MULCH DITCH BOTTOMS ON GRADES OF 1.0% TO 2.0%.
SEED ALL CONSTRUCTION AREAS EXCEPT ROADBEDS AND SODDED AREAS.

CO. RD. "C" 8+00 TO 9+80

CO. RD. "C" 11+15 TO 12+00

CO. RD. "C-2" 8+50 TO 12+25
OUTER DRIVE CONN. 7+50 TO 9+54.12



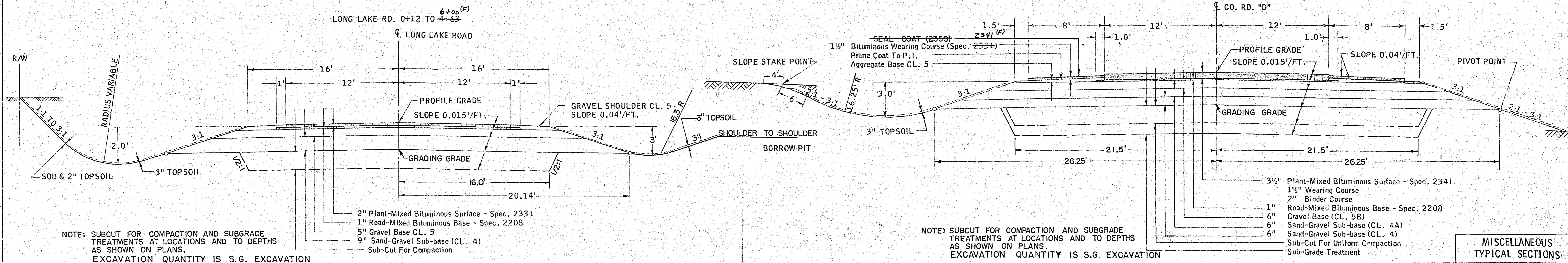
NOTE: SUBCUT FOR COMPACTION AND SUBGRADE TREATMENTS AT LOCATIONS AND TO DEPTHS AS SHOWN ON PLANS. EXCAVATION QUANTITY IS S.G. EXCAVATION

LONG LAKE ROAD (8th AVE. S.E.)
9 TON AXLE LOAD
Less Than 150 Heavy Commercial A. D. T.
(Less Than 1,000 A. D. T.)

(1) Typical Section for Outer Drive Connection will be the same as Co. Rd. "C-2" except the Sand-Gravel Sub-base (CL.4) will be 10'
(2) 22.65' for Outer Drive Connection.

NOTE: SUBCUT FOR COMPACTION AND SUBGRADE TREATMENTS AT LOCATIONS AND TO DEPTHS AS SHOWN ON PLANS. EXCAVATION QUANTITY IS S.G. EXCAVATION

COUNTY ROAD "D"
9 TON AXLE LOAD
300 - 600 Heavy Commercial A. D. T.
(2,000 to 5,000 A. D. T.)
CO. RD. "D" 0+16 TO 5+09
CO. RD. "D" 6+07 TO 2+00 (EQUA. 9+71.46 = 0+00)



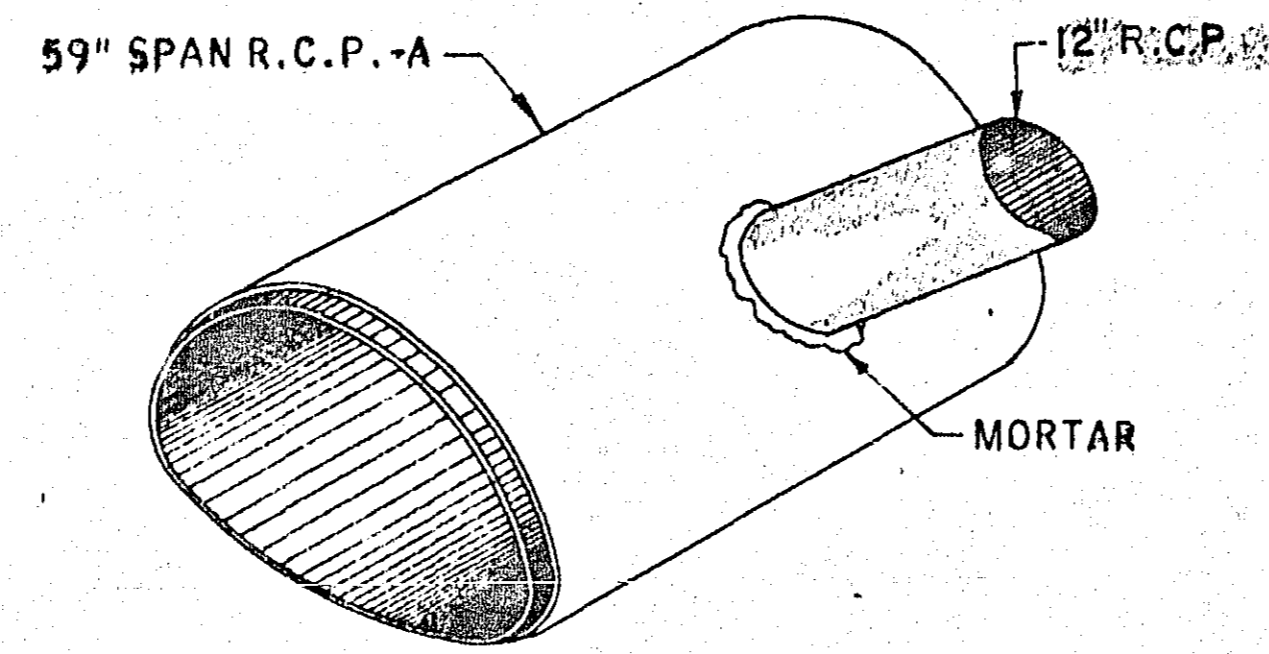
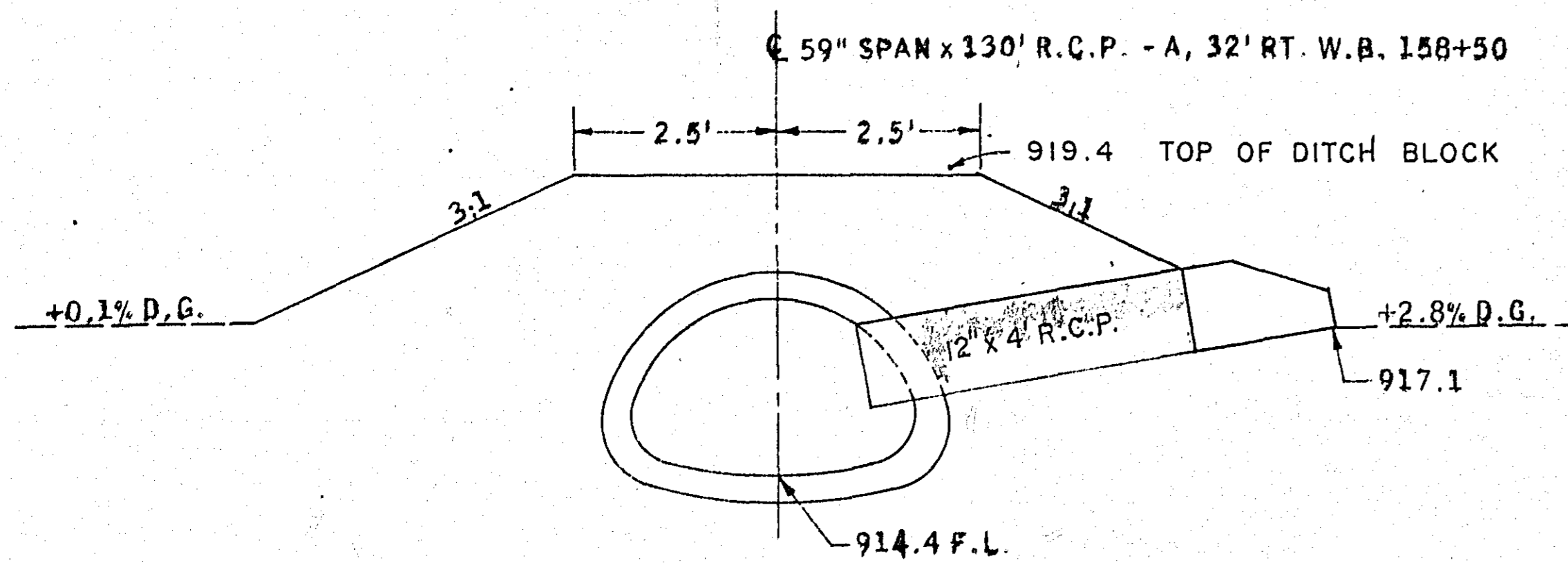
NOTE: SUBCUT FOR COMPACTION AND SUBGRADE TREATMENTS AT LOCATIONS AND TO DEPTHS AS SHOWN ON PLANS. EXCAVATION QUANTITY IS S.G. EXCAVATION

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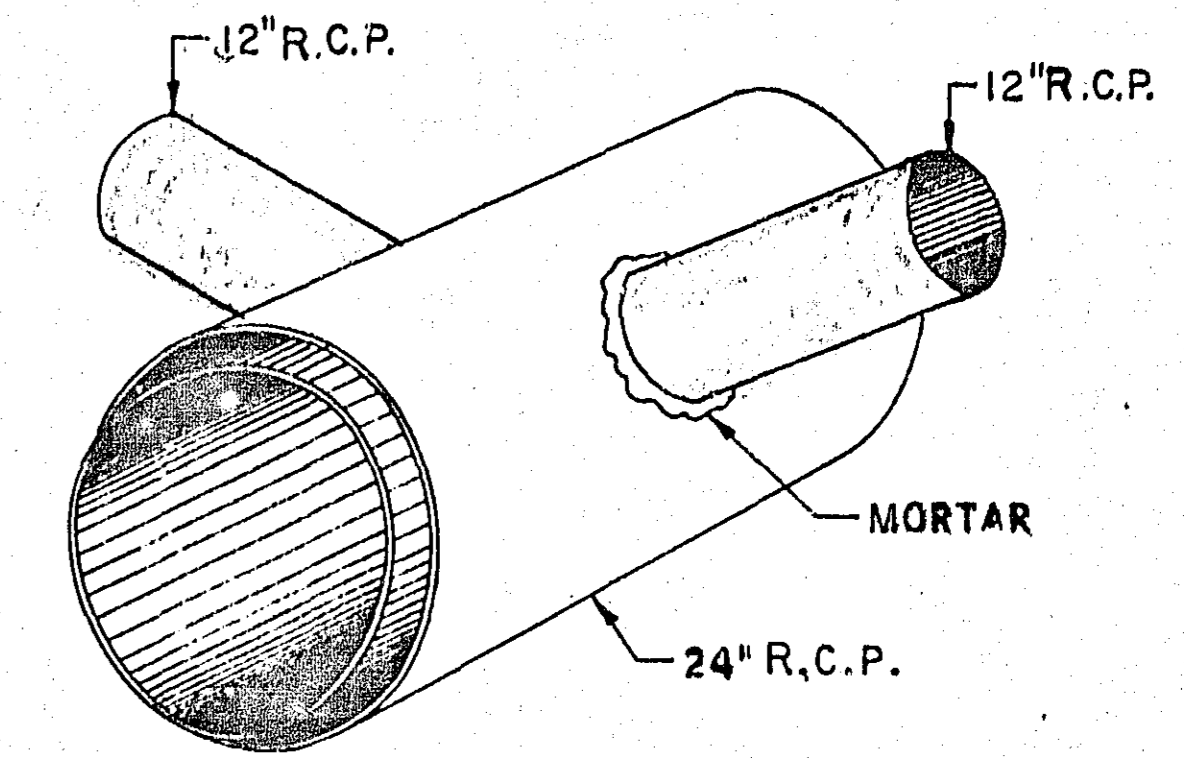
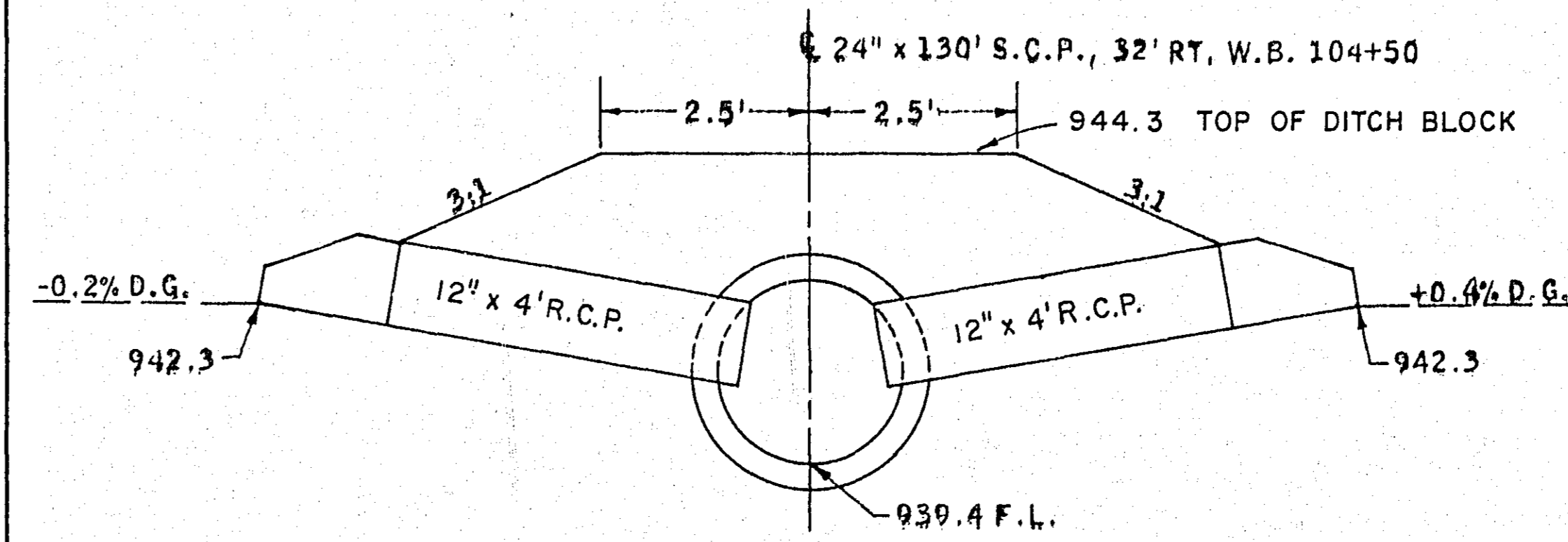
MISCELLANEOUS TYPICAL SECTIONS

DETAIL OF DITCH BLOCK AND CULVERTS
W.B. STA. 158+50



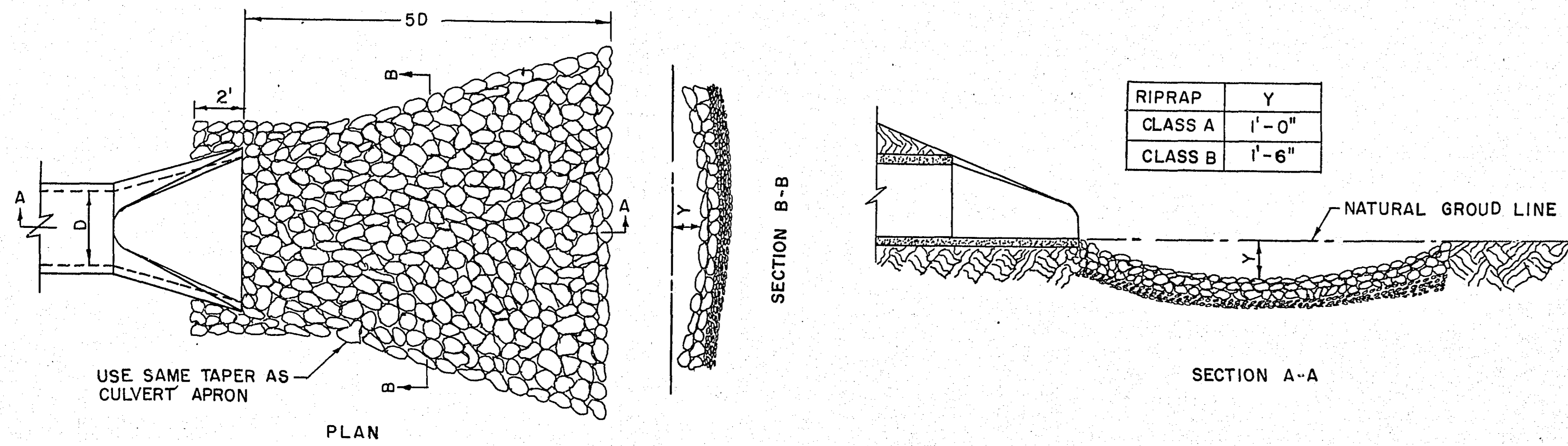
NOTE: PUNCH HOLE IN 59" SPAN R.C.P. -A, AND MORTAR 12" R.C.P. INTO POSITION

DETAIL OF DITCH BLOCK AND CULVERTS
W.B. STA. 104+50

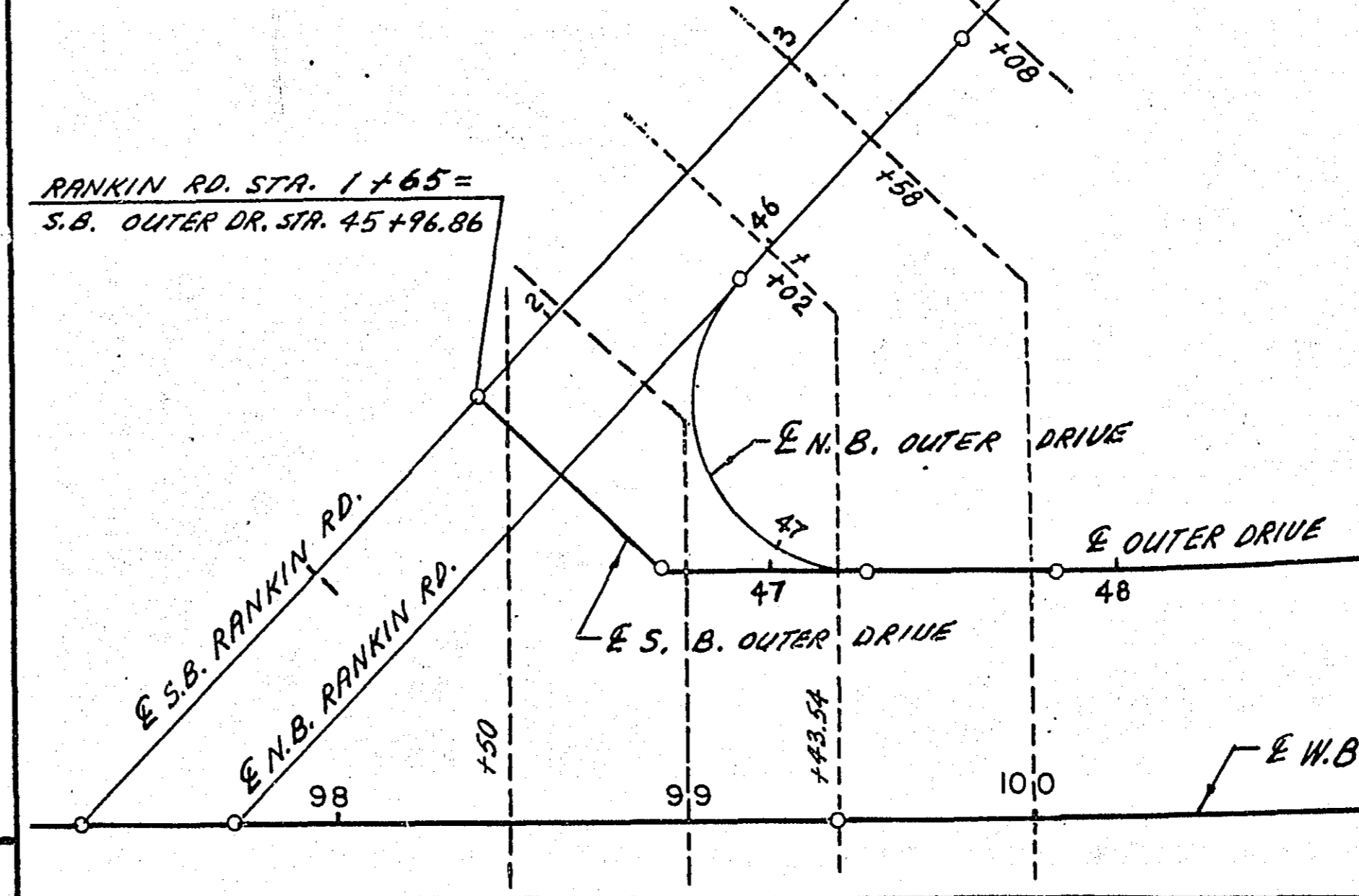


NOTE: PUNCH HOLE IN 24" R.C.P. AND MORTAR 12" R.C.P. INTO POSITION.

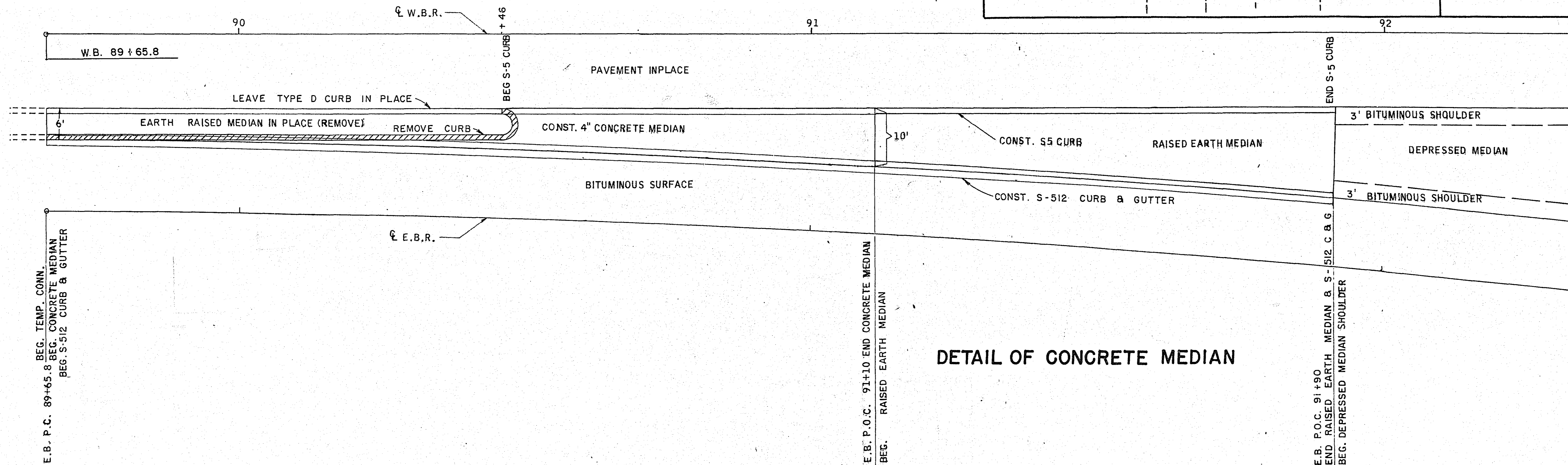
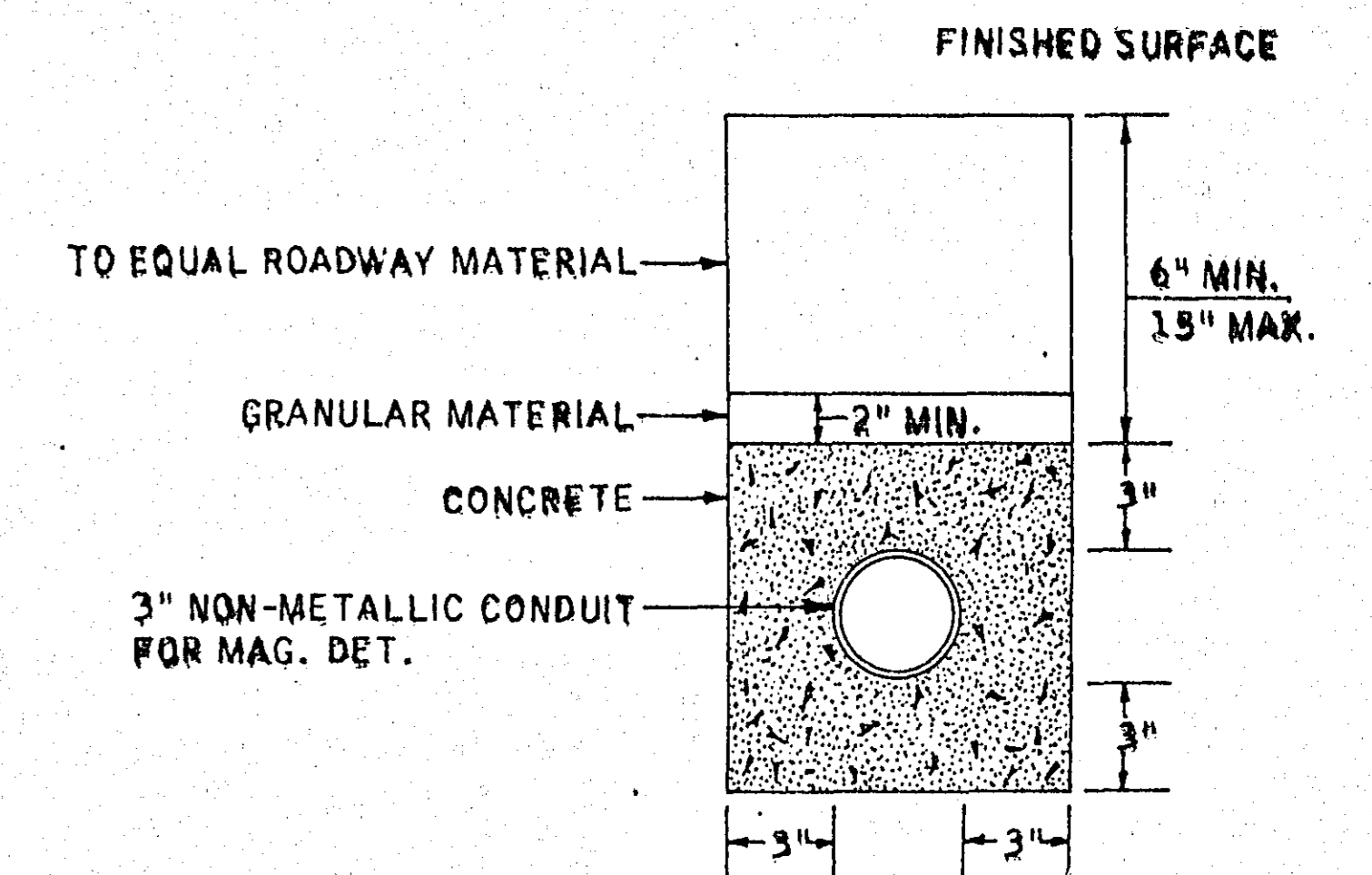
TYPICAL RIPRAP AT CULVERT OUTLET



CROSS-SECTIONS LAYOUT



DETAIL OF NON-METALLIC CONDUIT ENCASEMENT



DETAIL OF CONCRETE MEDIAN

CONSTRUCTION DETAILS

SEWER SYSTEMS IN PLACE											
Item No.	Location	Item In Place	Remarks	Ownership	Inp. T.C. Elev.	Prop. T.C. Elev.	Flow Line Elev.	Adjust	Remove	Recon-struct Lin. Ft.	Install Casting Assembly
M.H. 2	W.B. 92+24 37' Lt.	Manhole (Sanitary)	O.K. as is	St. Anthony	28.41		18.22				
C.B. 19	W.B. 89+58 13' Rt.	Catch Basin (Storm)	O.K. as is	M.H.D.	26.91		23.68				
M.H. 3	W.B. 95+35 275' Lt.	Manhole (Sanitary)	O.K. as is	St. Anthony	43.72		23.85				
M.H. 4	W.B. 97+70 48' Lt.	Manhole (Sanitary)	O.K. as is	St. Anthony	43.60		26.00	1 ✓			
M.H. 5	W.B. 99+69 65' Lt.	Manhole (Sanitary)	O.K. as is	St. Anthony	44.21		26.35			1.55 1.57 (F)	1 ✓
M.H. 8	W.B. 103+44 123' Lt.	Manhole (Sanitary)	O.K. as is	St. Anthony	44.65		27.35				
M.H. 13	W.B. 97+75 60' Lt.	Manhole (Storm)	O.K. as is	M.H.D.	43.55		37.15	1 ✓			
C.B. 21	W.B. 98+13 104' Lt.	Catch Basin	O.K. as is	M.H.D.	43.71		40.85				
C.B. 22	W.B. 98+24 90' Lt.	Catch Basin	O.K. as is	M.H.D.	43.61		39.64	1 (F)			
M.H. 6	W.B. 99+87 2' Lt.	Manhole (Sanitary)	Eliminate-By Others	St. Anthony	38.00		26.72				
M.H. 7	W.B. 100+31 155' Rt.	Manhole (Sanitary)	O.K. as is	St. Anthony	41.18		27.38			2.2 (F)	1 (F)
M.H. 9	W.B. 103+10 58' Lt.	Manhole (Sanitary)	O.K. as is	St. Anthony	44.69		33.19				
M.H. 10	W.B. 105+08 80' Lt.	Manhole (Sanitary)	O.K. as is	St. Anthony	46.16		36.42				
M.H. 11	W.B. 99+95 275' Lt.	Manhole (Sanitary)	O.K. as is	St. Anthony	47.25		37.25				
M.H. 12	W.B. 100+00 280' Lt.	Manhole (Storm)	O.K. as is	M.H.D.	47.65		41.00				
C.B. 20	W.B. 97+26 118' Lt.	Catch Basin	O.K. as is	M.H.D.	42.54		37.74	1 (F)			
M.H. 34	W.B. 131+22 135' Lt.	Manhole (Sanitary)	O.K. as is	Roseville	39.00	39.00	25.50				
M.H. 38	W.B. 133+05 100' Rt.	Manhole (Sanitary)	O.K. as is	Roseville	39.00	38.85	27.22	1 ✓			
M.H. 39	W.B. 134+70 320' Rt.	Manhole (Sanitary)	O.K. as is	Roseville	40.5		26.87				
M.H. 17	W.B. 144+80 220' Lt.	Manhole (Sanitary)	O.K. as is	Roseville	23.10		08.77				
M.H. 16	W.B. 146+05 45' Lt.	Manhole (Sanitary)	O.K. as is	Roseville	19.20		06.89				
M.H. 15	W.B. 148+00 265' Rt.	Manhole (Sanitary)	O.K. as is	Roseville	16.8		06.3				
M.H. 40	Long Lake Rd. 1+80 6 1/4' Manhole	Reconstruct	O.K. as is	N. Brighton	44.9	39.4	32.0			5.5 1.7 (F)	1 ✓
M.H. 41	Long Lake Rd. 5+30 15' Rt.	Pipe	O.K. as is	N. Brighton	941.5		927.0				

STORM SEWERS													
Structure No.	Station	Location	Construction		Top of Casting or Inlet Elev.	Outlet Elev.	F. & I. Casting Assembly (I) Type	F. & I. Pipe Sewers		Drains To			Sodding Sq. Yd.
			Design	Pay Height				R.C.P. Sewer Cl. II Lin. Ft.	R.C.P. Sewer Cl. III LF. Apr.	No.	Grade %	Inl. El.	
C.B. 31	N.B. Outer Dr. 46+10	7' Lt. Outer Dr.	C or G	4.15	TC 48.09	43.80	A	50		C.B. 32	2.0	42.80	
C.B. 32	N.B. Outer Dr. 46+45	20' Rt. Outer Dr.	C or G	3.43	TC 46.17	42.00	A	66		C.B. 33	0.6	42.20	
C.B. 33	N.B. Outer Dr. 47+01	13' Lt. Outer Dr.	C or G	2.89	TC 45.03	42.00	A		44	Ditch	0.4	41.80	6
C.B. 31	N.B. Outer Dr. 46+10	7' Lt. Outer Dr.	C or G	4.0	TC 47.87	43.80	A	47		C.B. 32	2.3	42.73	
C.B. 32	N.B. Outer Dr. 46+45	20' Rt. Outer Dr.	C	2.71	TC 45.49	42.71	A	64		C.B. 33	1.0	42.13	
C.B. 33	N.B. Outer Dr. 47+01	11.5' Lt. Outer Dr.	C	2.94	TC 45.02	42.01	A	40	40	Ditch	0.5	41.81	

(1) Casting Assembly A includes one catch basin frame casting No. 802, one grate casting No. 811, and one curb box casting No. 823.

GAS AND PETROLEUM TRANSMISSION LINES					
Station	Location	Item In Place	Ownership	Remarks and Disposition	
W.B. 97+00 - 97+83	140' Lt. to 59' Lt.	6" Gas Line	Mpls. Gas Co.	O.K. as is	
W.B. 97+83 - 98+14	59' Lt. to 30' Lt.	6" Gas Line	Mpls. Gas Co.	Relocate To be done by others	
W.B. 98+14 - 99+00	31' Lt. to 44' Lt.	6" Gas Line	Mpls. Gas Co.	Relocate To be done by others	
W.B. 99+00 - 101+90	44' Lt. to 90' Lt.	6" Gas Line	Mpls. Gas Co.	Relocate To be done by others	
W.B. 101+90 - 103+00	90' Lt. to 107' Lt.	6" Gas Line	Mpls. Gas Co.	Relocate To be done by others	
W.B. 97+83 - 99+22	59' Lt. to 140' Lt.	3" Gas Line	Mpls. Gas Co.	Relocate To be done by others	
Co Rd. D 0+00 - 2+00 (1)	22' Rt. of C	4" Gas Line	Mpls. Gas Co.	O.K. as is	
W.B. 152+82	C	Oil Pipe Line	Standard Oil Co.	Lower and encase To be done by others	
W.B. 89+66 - 103+00	16' Rt. to 73' Lt.	12" Gas Line	Twin City Arsenal	Relocate	
W.B. 170+14 - 173+90	80' Lt. to 160' Rt.	12" Gas Line	Twin City Arsenal	Relocate	

(1) Includes Equation 9+71.46=0+00

CONCRETE PULL BOXES FOR LIGHTING SYSTEM		
Station	Location and Distance	Quantity
E.B. Temp. Conn.		
96+15 ✓	28.5' Lt. & 23.5' Rt.	2 ✓
97+25 ✓	28.5' Lt. (F)	1 ✓
W.B. 96+80 82 (F)	44' 100' Lt. (F)	1 ✓
W.B. 97+32 ✓	30' 60' Lt. (F)	1 ✓
E.B. 97+75 ✓	40' Lt. & 23.5' Rt.	2 ✓
W.B. 98+13 ✓	51' 90' Lt. (F)	1 ✓
W.B. 99+55 ✓	23' Lt.	1 ✓
E.B. 99+55 ✓	25' 60' Lt. & 55' Rt. 28' Rt. (F)	2 ✓
W.B. 100+00 ✓	28.5' Rt.	1 ✓
W.B. 101+10 ✓	23.5' Lt. & 28.5' Rt.	2 ✓
W.B. 131+05 06 (F)	30' 35' Lt. (F)	1 ✓
W.B. 131+70 ✓	35' Rt.	1 ✓
E.B. 132+10 ✓	23.5' Rt.	1 ✓
W.B. 132+94 ✓	23.5' Lt.	1 ✓
W.B. 133+40 41 (F)	40' Rt.	1 ✓
E.B. 134+00 ✓	31' 35' Rt. (F)	1 ✓
W.B. 165+70 ✓	32' 35' Lt. (F)	1 ✓
W.B. 166+06 05 (F)	29' 30' Rt. (F)	1 ✓
E.B. 166+50 48 (F)	23.5' 30' Rt. (F)	1 ✓
W.B. 167+40 ✓	23.5' Lt.	1 ✓
W.B. 167+80 ✓	40' Rt.	1 ✓
E.B. 168+15 ✓	31' 35' Rt. (F)	1 ✓

CONDUITS FOR LIGHTING SYSTEM				
Station	Loc.	Metallic Size	Non-Metallic Size	Length
E.B. Temp. Conn.				
96+15	C		3"	54'
97+25	Lt.		3"	15'
W.B. 97+55	C	3"		70'
E.B. 97+75	C	3"		60'
W.B. 96+80 - 97+32	Lt.	3"		55'
W.B. 97+32 - 98+13	Lt.	3"		85'
W.B. 98+13 - 99+55	Lt.	3"		150'
W.B. 99+55	C	3"		62'
E.B. 99+55	C	3"		58'
W.B. 100+00	Rt.		3"	15'
W.B. 101+10	C		3"	50'
W.B. 131+35	C	3"		95'
E.B. 131+90	C	3"		75'
W.B. 131+00 - 132+90	Lt.	3"		190'
W.B. 133+15	C	3"		80'
E.B. 133+65	C	3"		80'
W.B. 165+95	C	3"		75'
E.B. 166+30	C	3"		80'
W.B. 167+55	C	3"		80'
E.B. 167+92	C	3"		75'
W.B. 165+70 - 167+40	Lt.	3"		170' (F)

TABULATION OF PUBLIC UTILITIES

Law Haven

PUBLIC UTILITIES

POWER POLES IN PLACE

LINE	SHEET NO.	LOCATION	ITEM INPLACE	LINE	REMARKS	(I) OWNERSHIP
1		W. B. 97+31	43' Lt.	1	Remove	
2				2		
3		W. B. 99+75	73' Lt.	3	Relocate	
4		W. B. 102+19	115' Lt.	4	O. K. as is	
5		W. B. 104+51	146' Lt.	5	O. K. as is	
6		W. B. 105+95	166' Lt.	6	O. K. as is	
7		W. B. 106+66	173' Lt.	7	O. K. as is	
8		W. B. 108+46	219' Lt.	8	O. K. as is	
9		W. B. 110+05	262' Lt.	9	O. K. as is	
10		W. B. 131+58	47' Lt.	10	Relocate	
11		W. B. 131+98	110' Lt.	11	Jointly used with NW Bell Tel. Co.	
12		W. B. 133+50	192' Rt.	12	O. K. as is	
13		W. B. 133+83	110' Lt.	13	Jointly used with NW Bell Tel. Co.	
14		W. B. 134+41	308' Rt.	14	O. K. as is	
15		W. B. 135+42	427' Rt.	15	O. K. as is	
16		W. B. 135+65	108' Lt.	16	O. K. as is	
17		W. B. 137+18	108' Lt.	17	O. K. as is	
18		W. B. 138+73	104' Lt.	18	O. K. as is	
19		W. B. 140+38	100' Lt.	19	O. K. as is	
20		W. B. 141+52	170' Lt.	20	O. K. as is	
21		W. B. 141+66	98' Lt.	21	O. K. as is	
22		W. B. 142+98	98' Lt.	22	O. K. as is	
23		W. B. 143+34	273' Lt.	23	O. K. as is	
24		W. B. 143+35	148' Lt.	24	O. K. as is	
25		W. B. 144+18	135' Lt.	25	O. K. as is	
26		W. B. 152+31	36' Rt.	26	High Tension Tower	
27		W. B. 185+16	246' Rt.	27	Relocate by others	
28				28	O. K. as is	
29				29		
30		Co. Rd. D 2+12	28' Lt.	30	Jointly used with NW Bell Tel. Co.	
31		Co. Rd. D 3+56	28' Lt.	31	Relocate	
32		Co. Rd. D 4+21	30' Lt.	32	Jointly used with NW Bell Tel. Co.	
33		Co. Rd. D 6+26	30' Lt.	33	Relocate	
34		Co. Rd. D 8+22	29' Lt.	34	Jointly used with NW Bell Tel. Co.	
35				35		
1		W. B. 108+40	168' Rt.	1	O. K. as is	
2		W. B. 106+45	168' Rt.	2	O. K. as is	
3		W. B. 106+45	224' Rt.	3	O. K. as is	
4		W. B. 110+47	170' Rt.	4	O. K. as is	
5		W. B. 110+60	60' Lt.	5	O. K. as is	
6		W. B. 111+97	165' Rt.	6	O. K. as is	
7		W. B. 112+45	166' Rt.	7	O. K. as is	
8		W. B. 113+25	266' Rt.	8	O. K. as is	
9		W. B. 113+56	304' Rt.	9	O. K. as is	
10		W. B. 132+50	70' Rt.	10	Relocate	
11				11		
12				12		
13				13		
14				14		
15				15		

(1) NOTE: The power poles are the property of Northern States Power Co. All removals and relocations are to be performed by the company.

PUBLIC UTILITIES

TELEPHONE POLES IN PLACE

LINE	SHEET NO.	LOCATION	ITEM INPLACE	LINE	REMARKS	(I) OWNERSHIP
1		W. B. 90+51	92' Rt.	1	O. K. as is	
2		W. B. 91+64	92' Rt.	2	O. K. as is	
3		W. B. 92+76	90' Rt.	3	Relocate	
4		W. B. 94+10	88' Rt.	4	Relocate	
5		W. B. 95+31	88' Rt.	5	Relocate	
6		W. B. 96+49	87' Rt.	6	Relocate	
7		W. B. 97+72	87' Rt.	7	Relocate	
8		W. B. 98+75	139' Rt.	8		
9				9	Relocate	
10		W. B. 99+63	182' Rt.	10	O. K. as is	
11		W. B. 99+97	125' Rt.	11	Relocate	
12				12		
13		W. B. 102+07	42' Lt.	13	Relocate	
14		W. B. 103+35	59' Lt.	14	Relocate	
15		W. B. 104+49	72' Lt.	15	O. K. as is	
16				16		
17				17		
18				18		
19				19		
20				20		
21				21		
22				22		
23				23	UNDERGROUND TELEPHONE	CABLES
24		W. B. 96+24 - 97+61	140' Lt. - 32' Lt.	24	Abandon	
25		W. B. 97+61 - 102+96	32' Lt. - 109' Lt.	25	Abandon	
26		W. B. 97+61 - 98+08	32' Lt. - 30' Rt.	26	Abandon	
27		W. B. 98+08 - 99+75	30' Rt. - 177' Rt.	27	Abandon	
28		W. B. 99+75 (TEL. MH.)	183' Rt.	28	O.K. as is	
29				29		
30				30		
31				31		
32				32		
33				33		
34				34		
35				35		

(1) NOTE: The telephone poles and underground cables are the property of Northwestern Bell Telephone Co., all removals and relocations to be performed by the company.

PUBLIC UTILITIES

WATER SYSTEMS

LINE	SHEET NO.	LOCATION	ITEM INPLACE	LINE	REMARKS	OWNERSHIP
1				1		
2				2		
3		W. B. 89+65.8 - 92+30	18' Lt. - 18' Lt.	3	6" Water Main	O. K. as is
4		W. B. 96+80 - 97+54	115' Lt. - 46' Lt.	4	8" Water Main	O.K. as is
5		W. B. 97+54 - 98+50	46' Lt. - 150' Lt.	5	8" Water Main	O.K. as is
6		W. B. 97+80 - 98+50	70' Lt. - 40' Lt.	6	8" Water Main	O.K. as is
7		W. B. 99+27	15' Rt.	7	Water Valve	Relocate - to be done by others
8		W. B. 97+90	90' Lt.	8	Hydrant	Relocate - to be done by others
9		W. B. 98+50 - 99+22	40' Lt. - 50' Lt.	9	8" Water Main	O. K. as is
10		W. B. 99+22 - 99+22	50' Lt. - 75' Rt.	10	8" Water Main	O.K. as is
11		W. B. 99+22 - 100+50	75' Rt. - 195' Rt.	11	8" Water Main	O.K. as is
12		W. B. 99+22 - 103+00	5' Rt. - 68' Lt.	12	6" Water Main	O.K. as is
13				13		
14		W. B. 166+20	146' Lt.	14	Hydrant	Lower - to be done by others
15				15		New Brighton
16				16		
17		Co. Rd. D 0+71 - 2+00 (1)	12' Lt.	17	6" Water Main	O.K. as is
18				18		New Brighton
19				19		
20				20		
21		W. B. 97+80 - 98+00	60' Lt. - 80' Lt.	21	Water Main	O.K. as is
22				22		St. Anthony Village
23				23		
24				24		

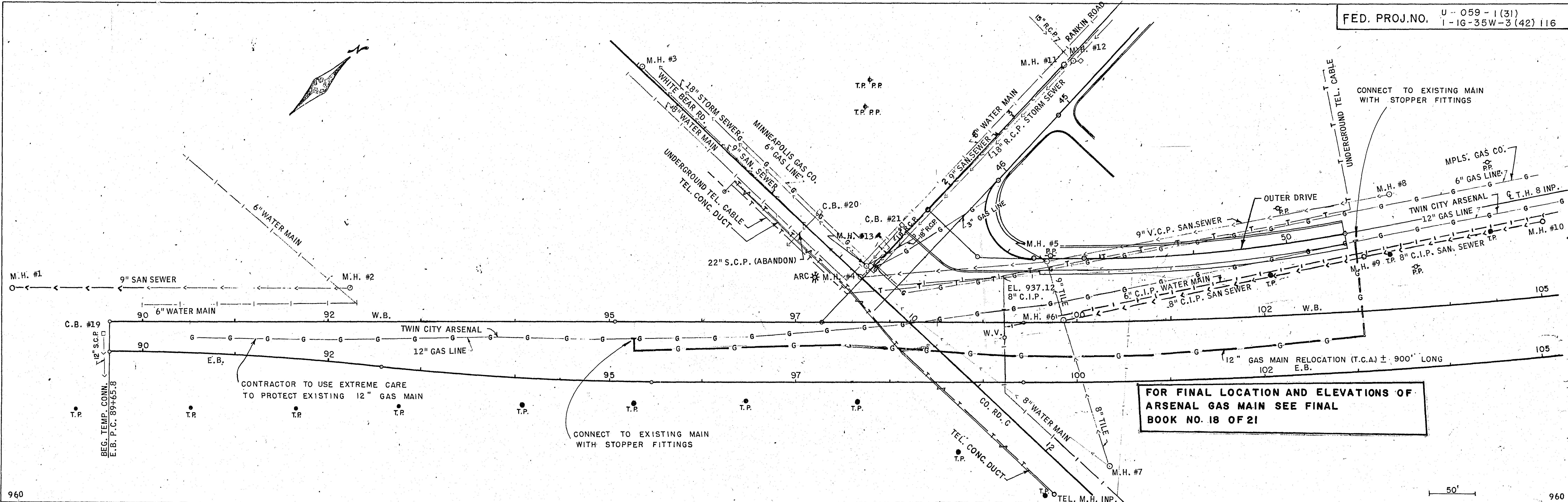
(1) Station includes Equation 9+71.46 = 0+00

TABULATION OF PUBLIC UTILITIES

Bob Brown

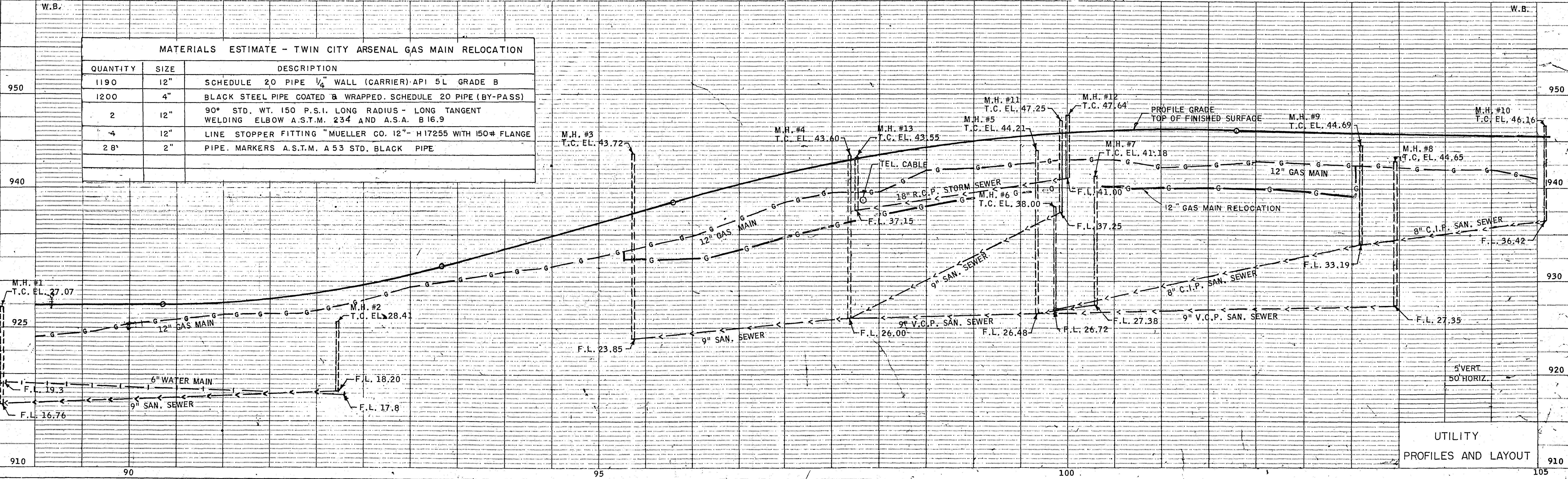
DATE	BY

DATE	BY



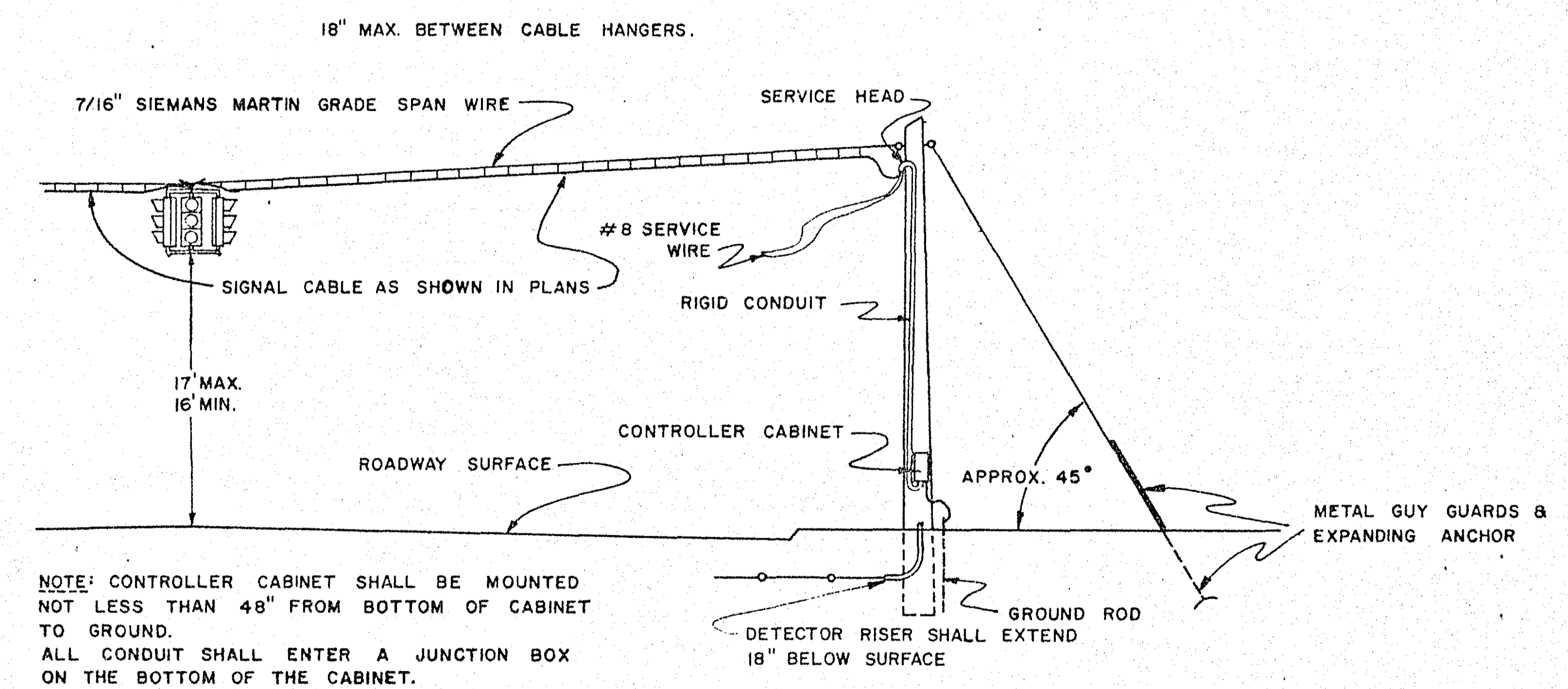
FOR FINAL LOCATION AND ELEVATIONS OF ARSENAL GAS MAIN SEE FINAL BOOK NO. 18 OF 21

MATERIALS ESTIMATE - TWIN CITY ARSENAL GAS MAIN RELOCATION			
QUANTITY	SIZE	DESCRIPTION	
1190	12"	SCHEDULE 20 PIPE 1/4" WALL (CARRIER) API 5L GRADE B	
1200	4"	BLACK STEEL PIPE COATED & WRAPPED, SCHEDULE 20 PIPE (BY-PASS)	
2	12"	90° STD. WT. 150 P.S.I. LONG RADIUS - LONG TANGENT WELDING ELBOW A.S.T.M. 234 AND A.S.A. B16.9	
4	12"	LINE STOPPER FITTING "MUELLER CO. 12" - H17255 WITH 150# FLANGE	
28'	2"	PIPE MARKERS A.S.T.M. A 53 STD. BLACK PIPE	



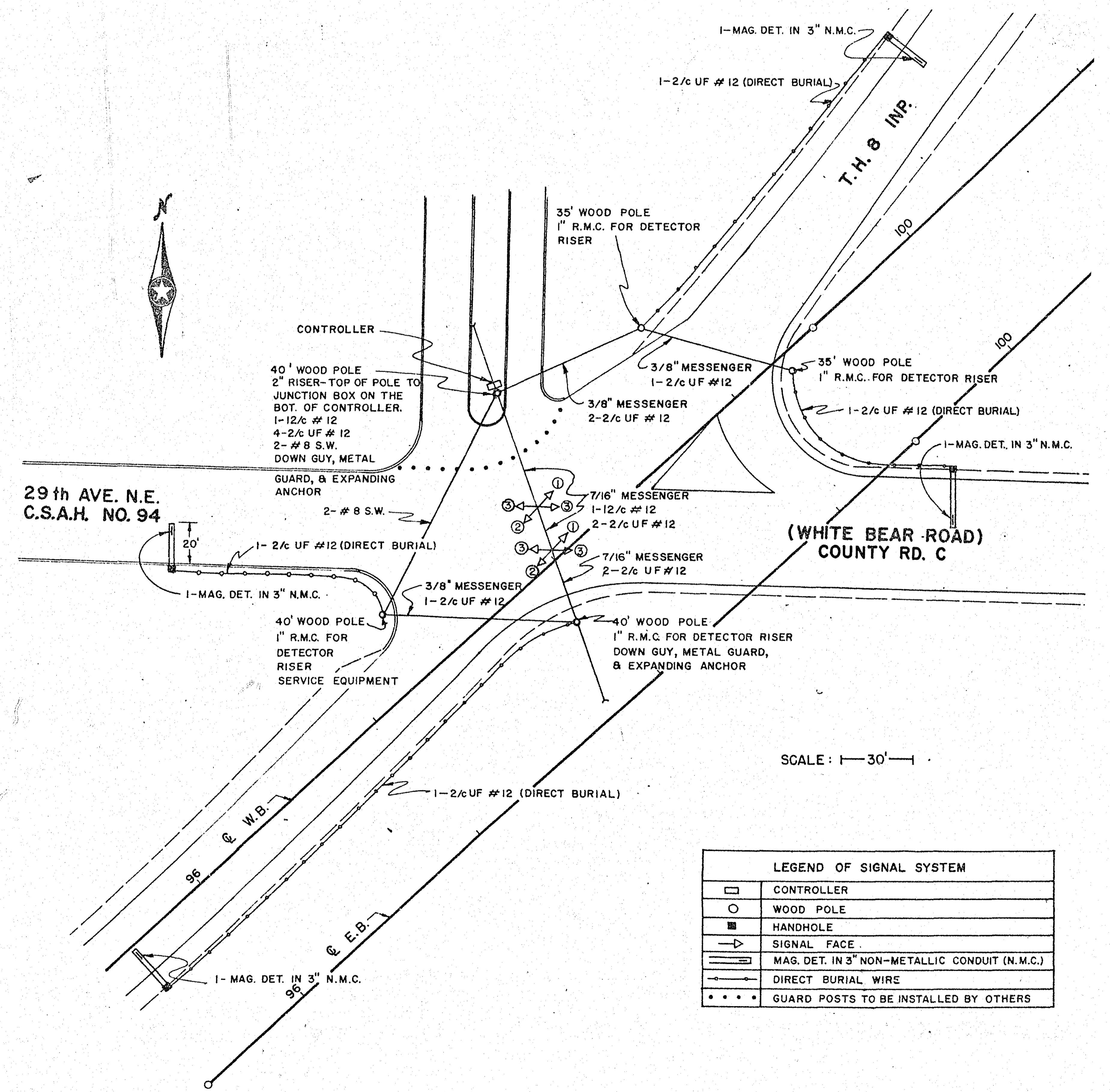
UTILITY PROFILES AND LAYOUT

Paul J. ...



NOTE: CONTROLLER CABINET SHALL BE MOUNTED NOT LESS THAN 48" FROM BOTTOM OF CABINET TO GROUND.
ALL CONDUIT SHALL ENTER A JUNCTION BOX ON THE BOTTOM OF THE CABINET.

WOOD POLE AND SPAN WIRE MOUNTED TRAFFIC SIGNAL



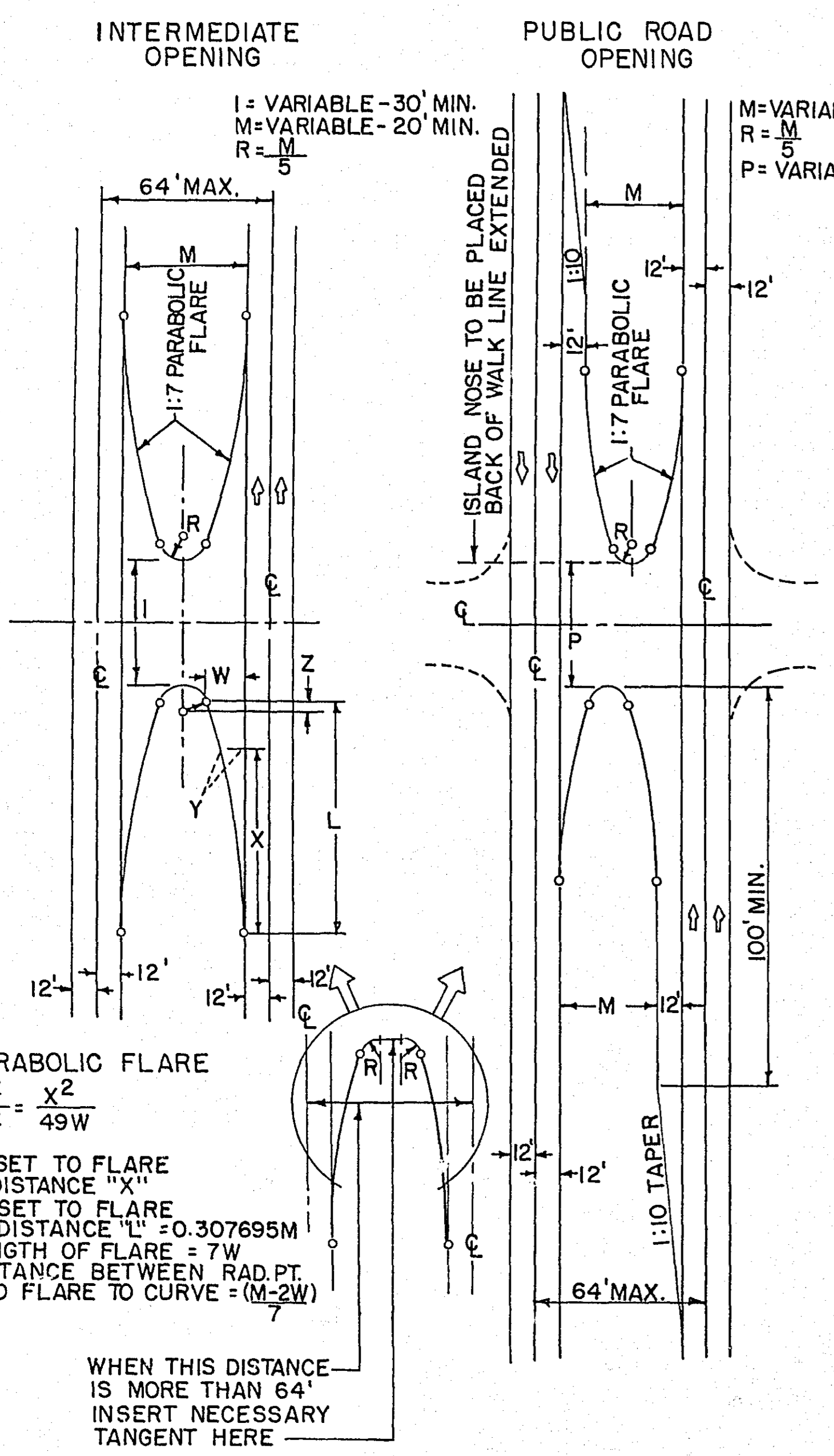
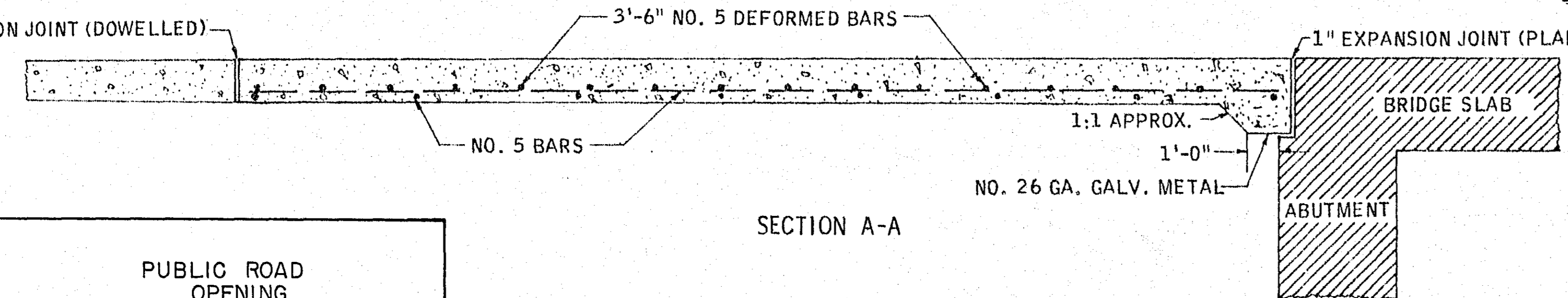
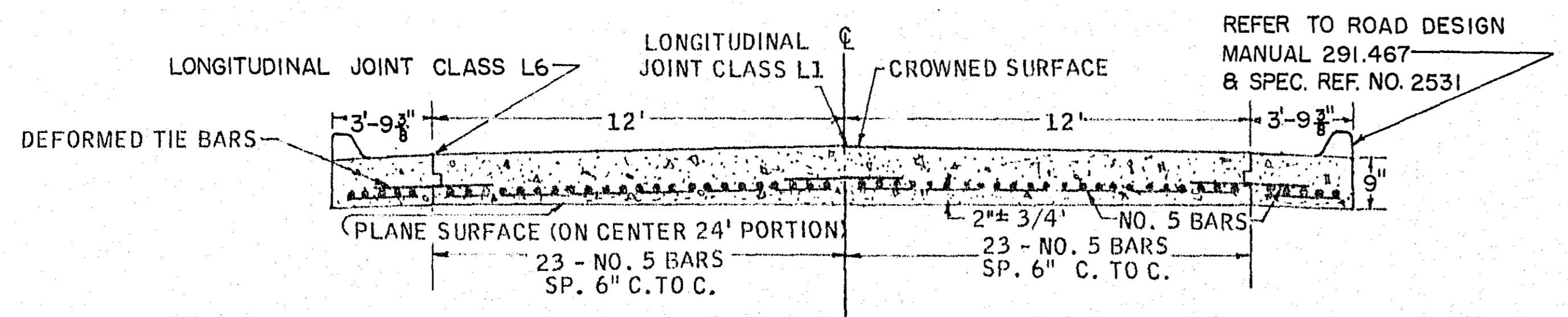
SCALE: 1" = 30'

LEGEND OF SIGNAL SYSTEM	
□	CONTROLLER
○	WOOD POLE
■	HANDHOLE
→	SIGNAL FACE
—	MAG. DET. IN 3" NON-METALLIC CONDUIT (N.M.C.)
—	DIRECT BURIAL WIRE
•••••	GUARD POSTS TO BE INSTALLED BY OTHERS

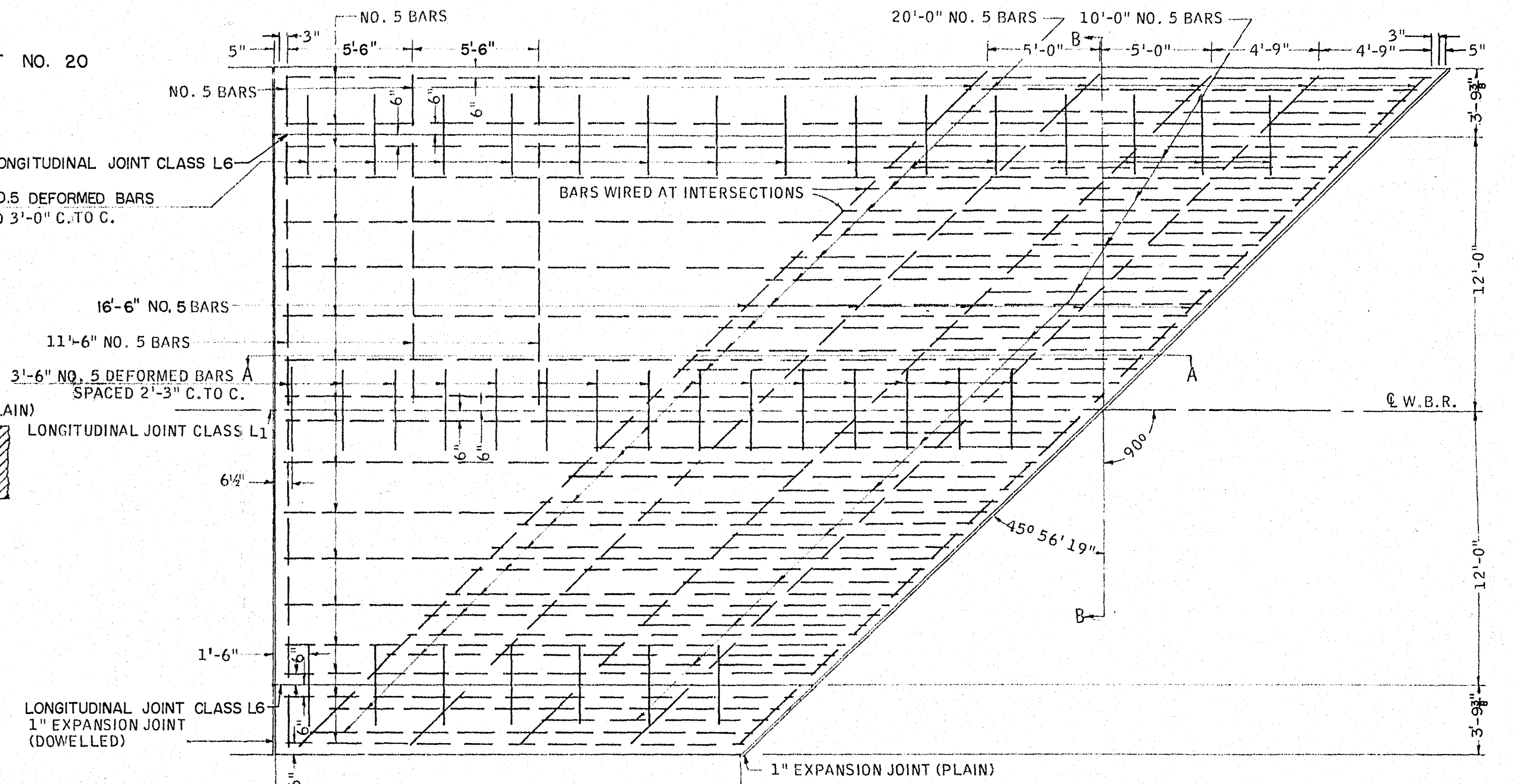
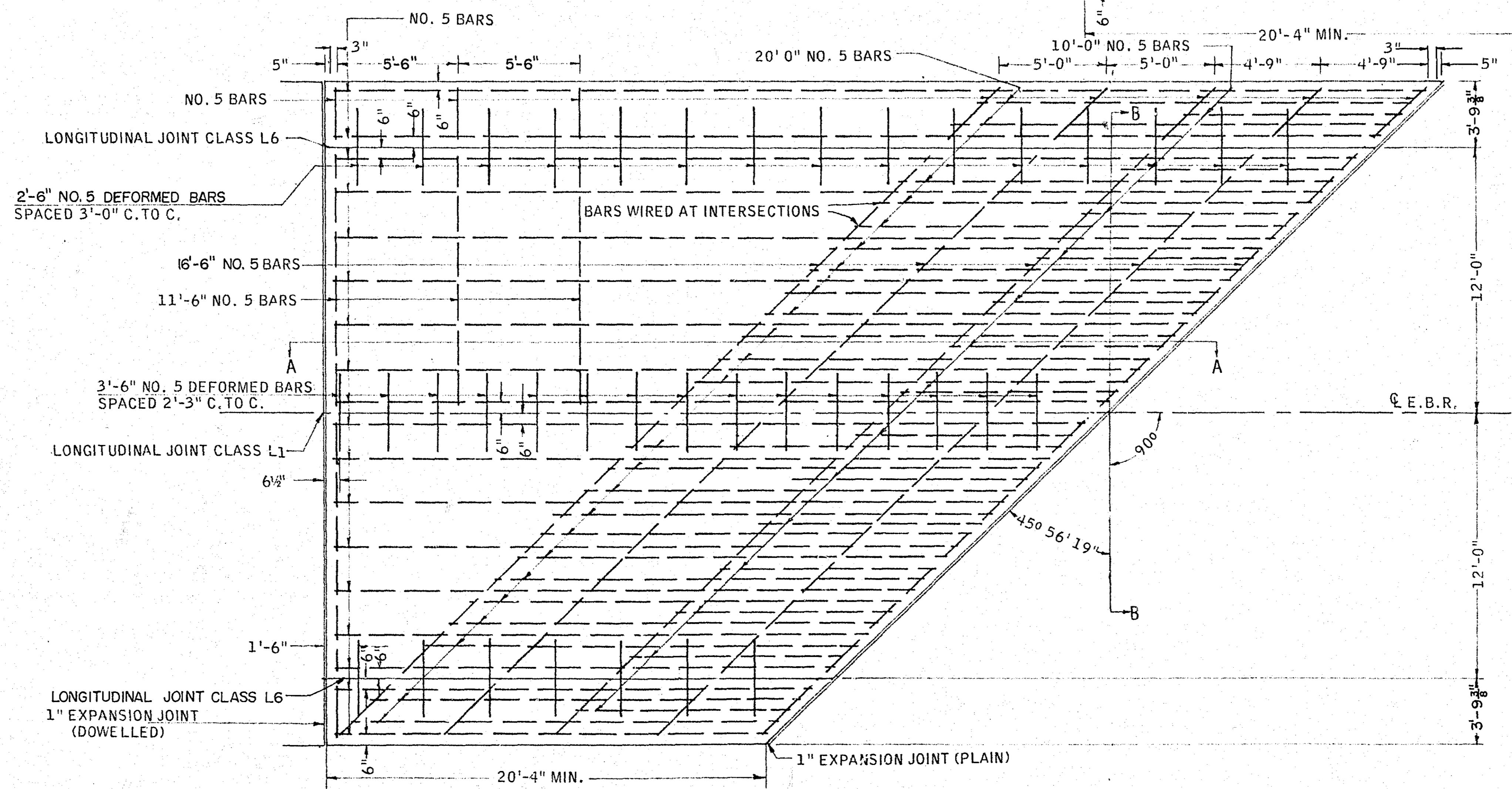
APPROX. DETAILS OF TRAFFIC SIGNAL SYSTEM IN PLACE

Rev. Brown

NOTE: SEE SUPERELEVATION DIAGRAM ON SHEET NO. 20



AS PER STANDARD PLATE NO. 1035 D



PREFORMED CONTRACTION JOINT SEAL

NOT TO SCALE

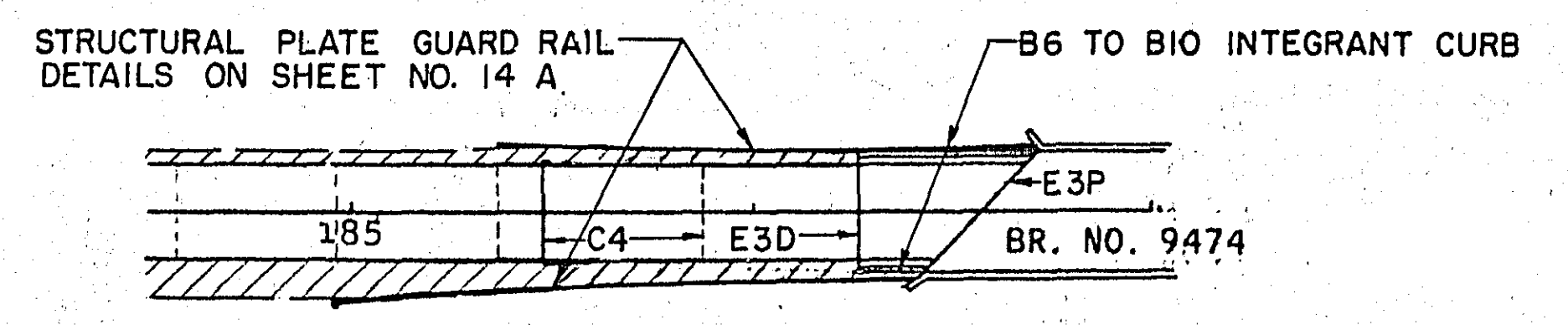
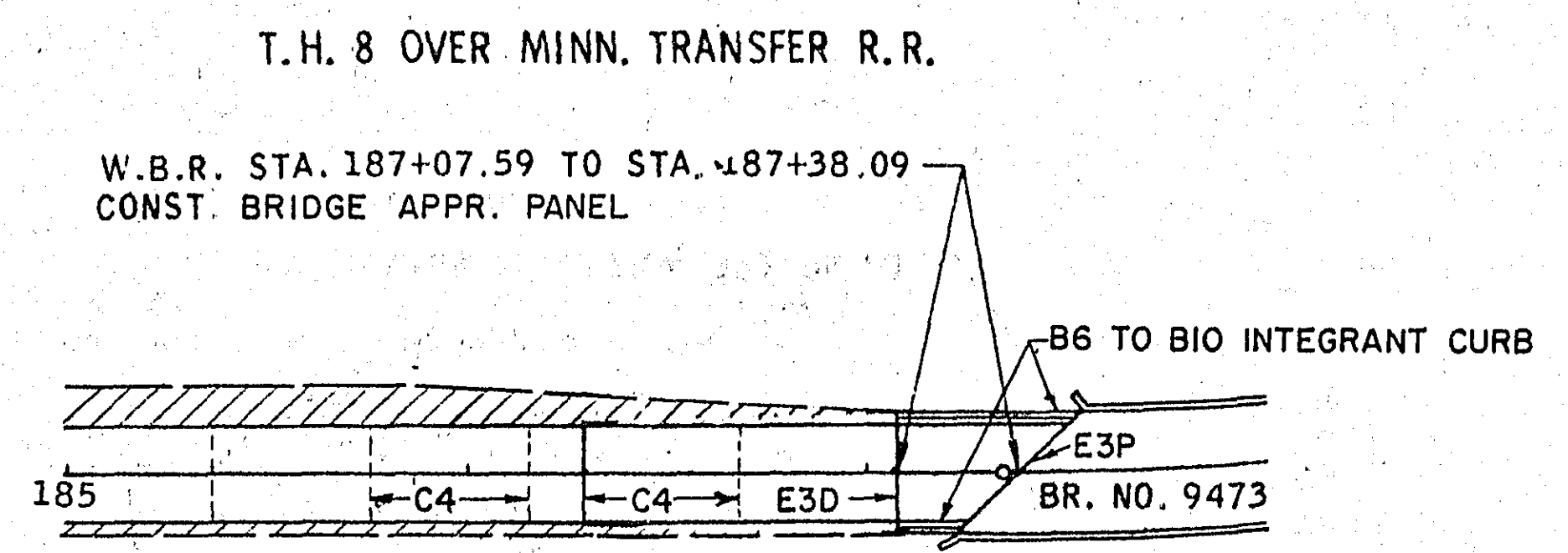
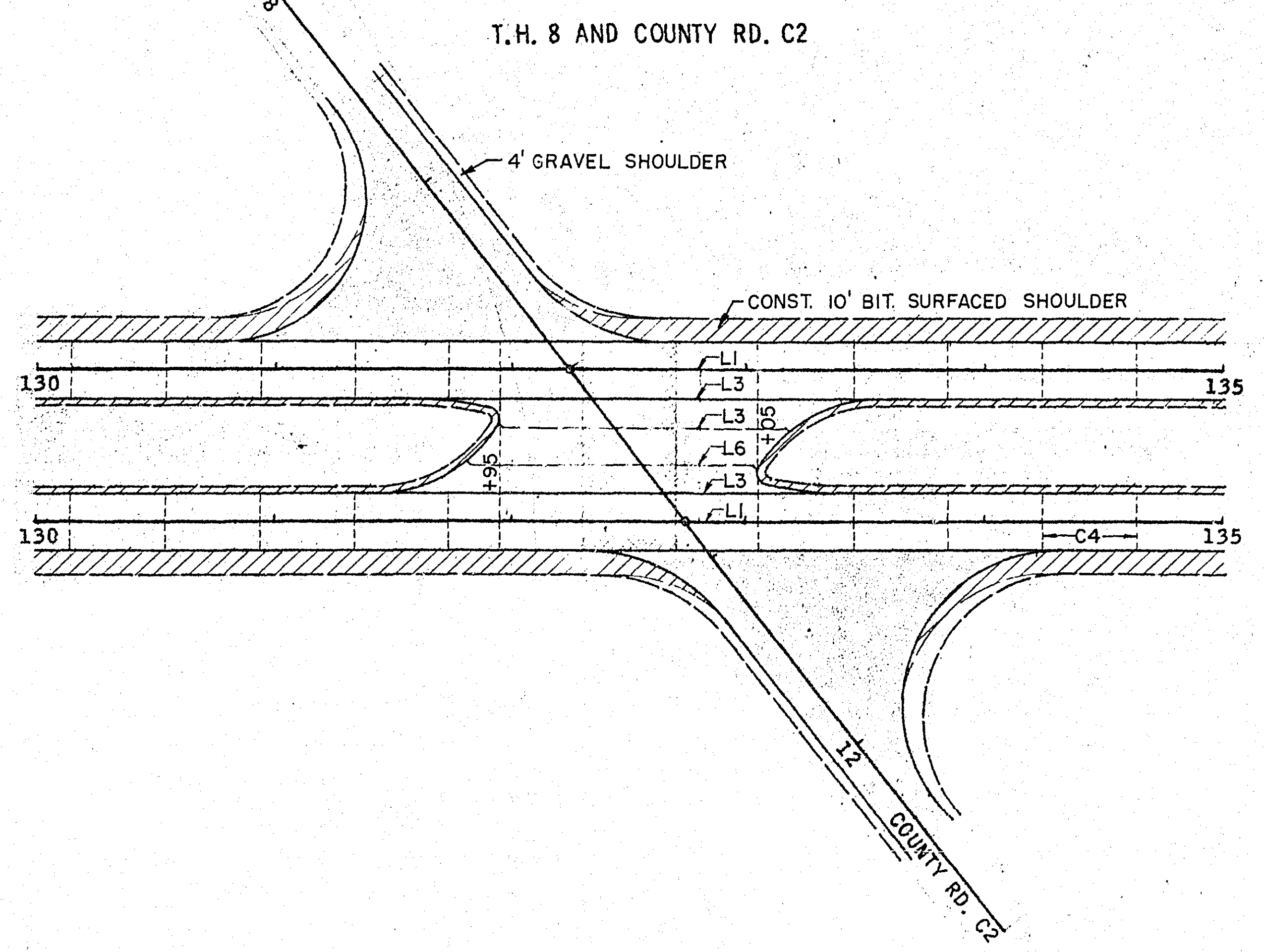
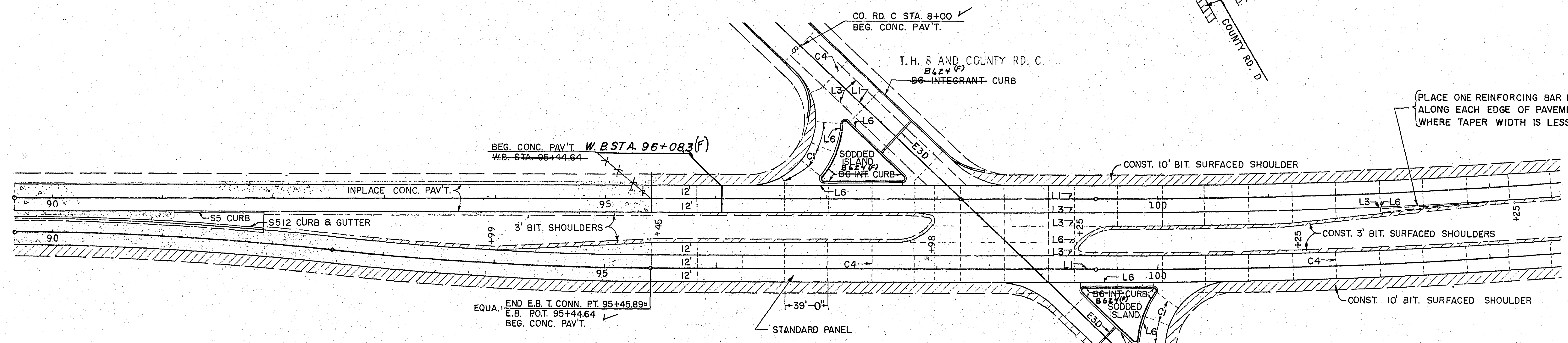
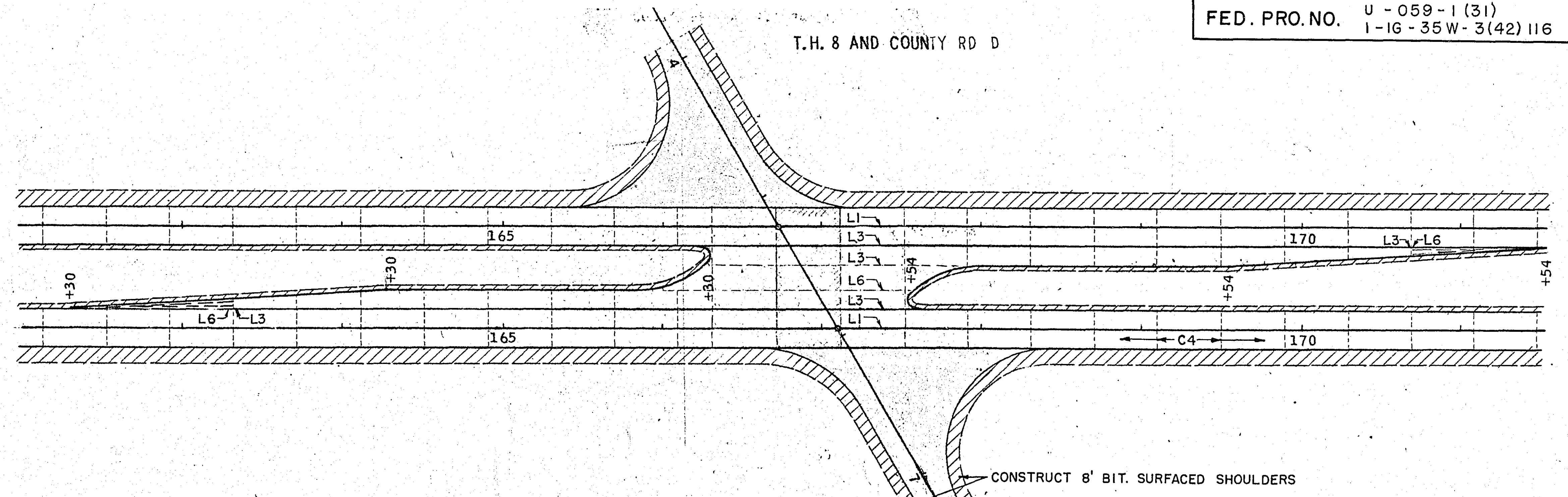
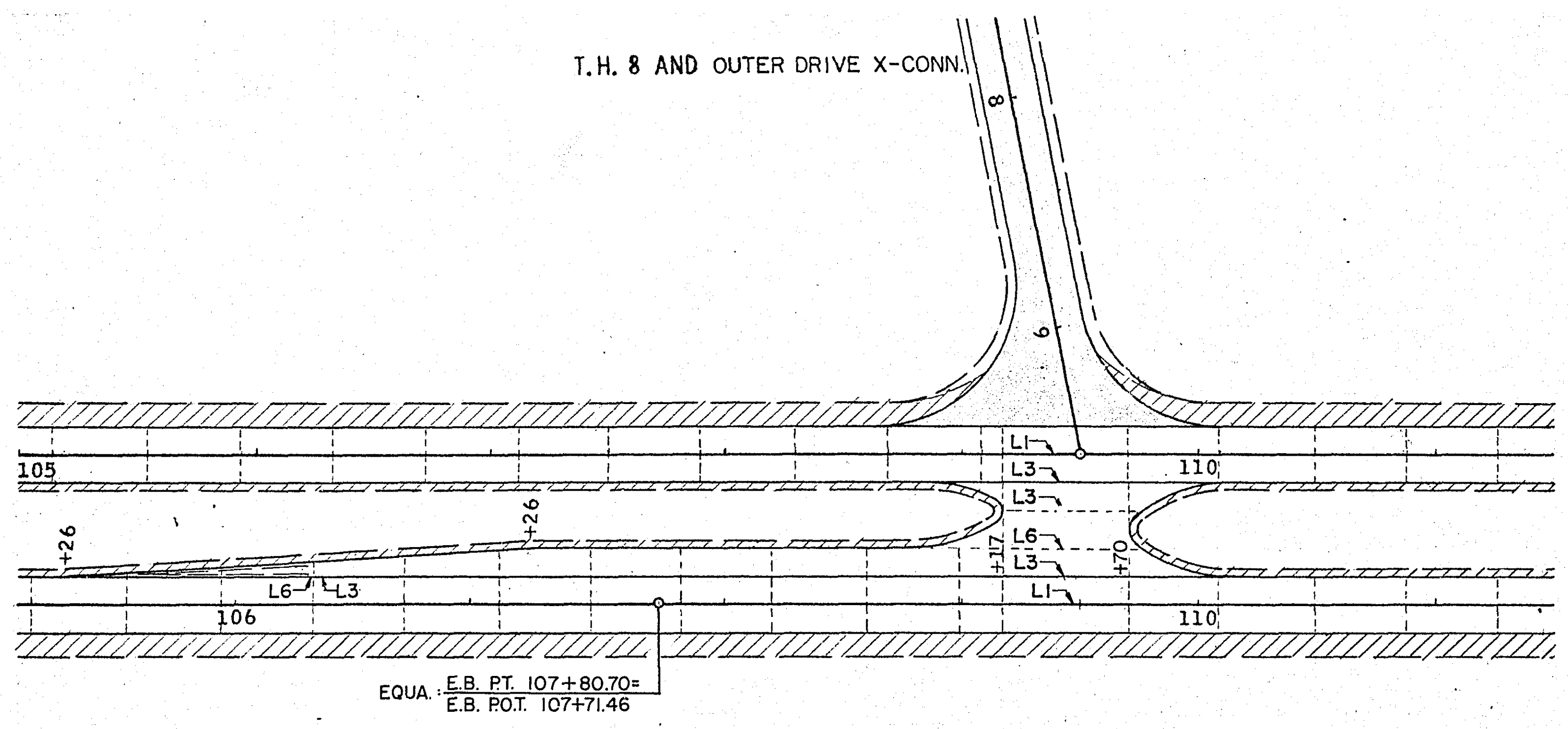
SHAPE NECESSARY FOR INSTALLATION IN 2" DEPTH JOINT

REQUIRED DIMENSIONS	
JOINT TYPE	TRANSVERSE
NOMINAL SEALER SIZE	13/16"
A	0.812 +0.125 -0.000
B	0.812 +0.062 -0.000
C	0.094 ±0.012
D	0.062 MIN.
E	0.812 +0.062 -0.000
F	0.045 ±0.012

NOTES:
 DIMENSION "F" REFERS TO ALL UNDIMENSIONED WEB AND WALL THICKNESSES.
 SHARP INTERNAL CORNERS SHALL NOT BE ALLOWED.
 ALL CORNERS SHALL BE PROVIDED WITH A SUITABLE FILLET.
 ALL TRANSVERSE CONTRACTION JOINTS SHALL BE SEALED WITH PREFORMED ELASTIC JOINT SEALER. THE COST OF THIS ITEM WILL BE INCIDENTAL.

PREFORMED CONTRACTION JOINT SEAL
 MEDIAN OPENINGS
 DETAIL OF BRIDGE APPROACH PANELS
 FOR BRIDGE NOS. 9473 & 9474

Bob Graver

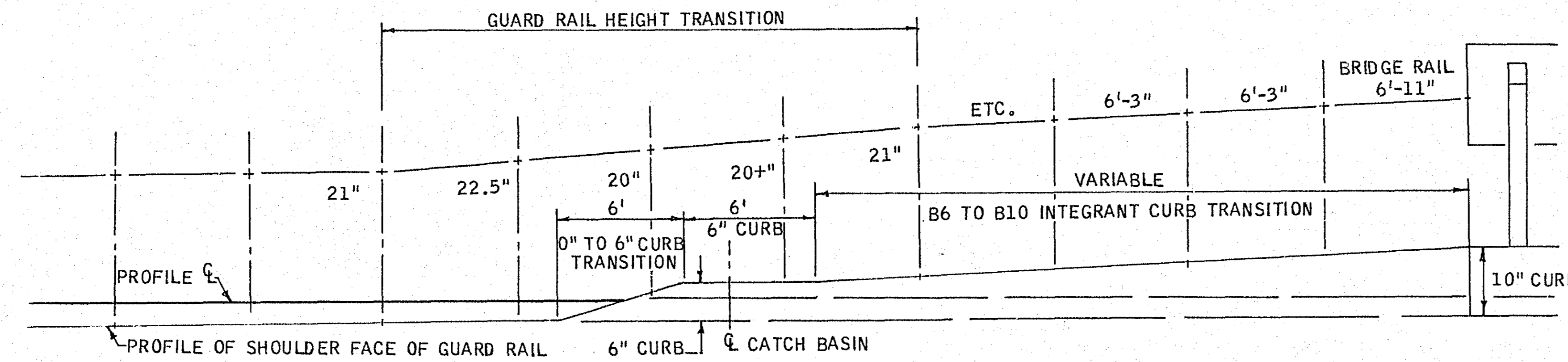


ESTIMATED HIGH EARLY STRENGTH PAVEMENT		
MAINLINE STA. 97+98 TO STA. 99+25		1242 SQ. YD.
COUNTY ROAD C STA. 8+00 TO STA. 12+00		1060 SQ. YD.
MAINLINE STA. 131+95 TO STA. 133+05		1076 SQ. YD.
MAINLINE STA. 166+30 TO STA. 167+54		1212 SQ. YD.

PAVING LAYOUTS

Handwritten signature

GUARD RAIL DETAILS



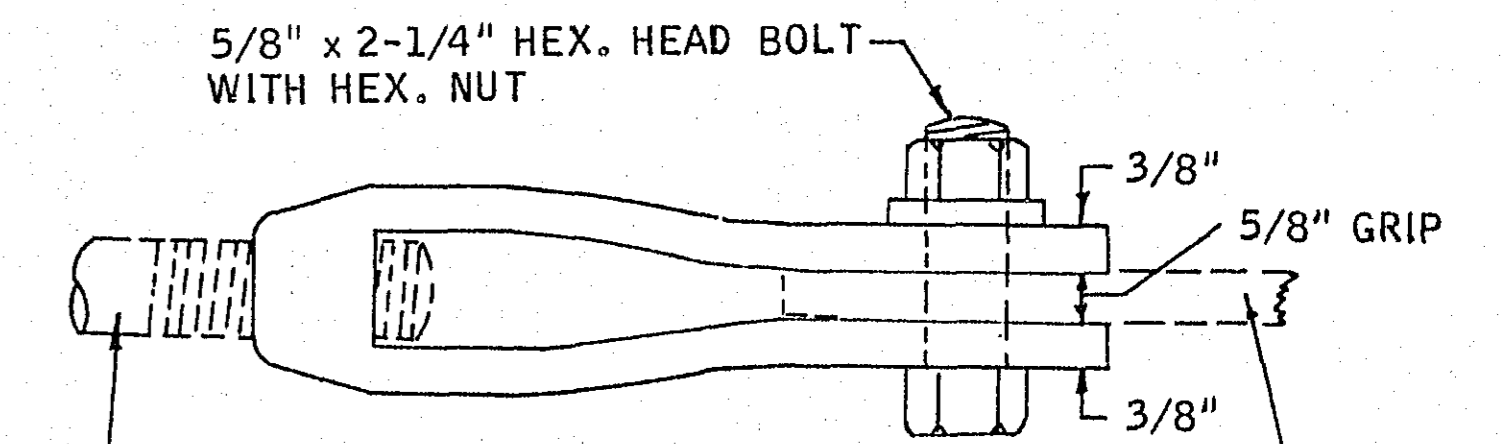
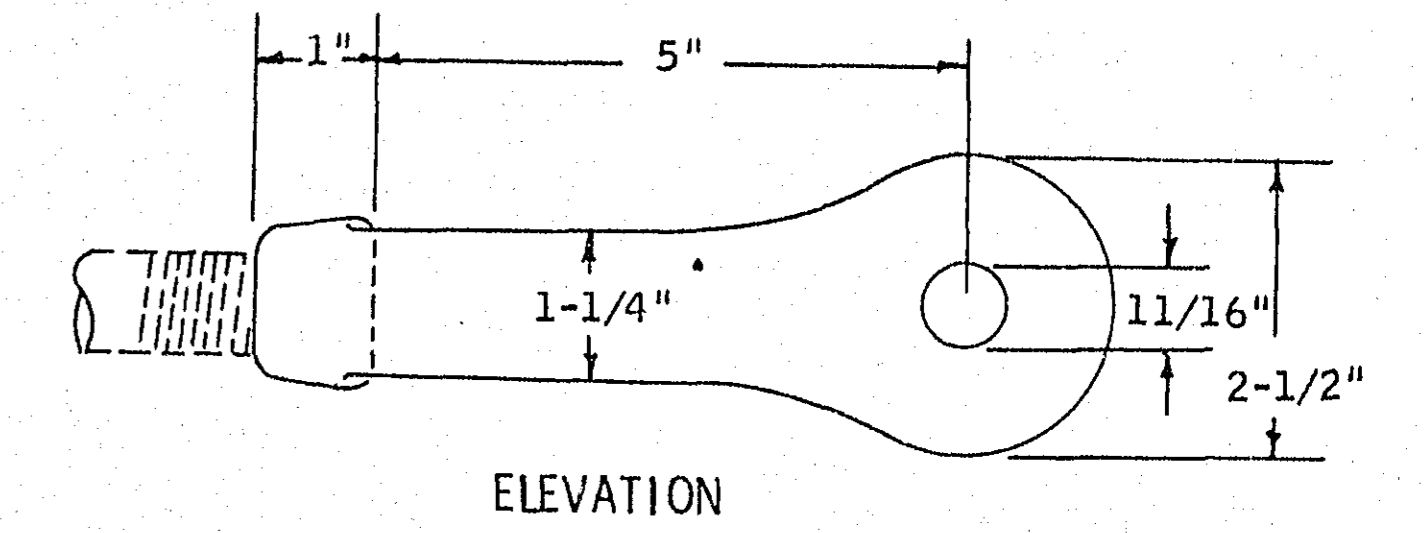
PROFILE (EXAGGERATED) SHOWING GUARD RAIL HEIGHT TRANSITION

GUARD RAIL OFFSETS (W=7')												
X	6.25	12.50	18.75	25.00	31.25	37.50	43.75	50.00	56.25	62.50	68.75	75.00
Y	0.05	0.19	0.44	0.78	1.21	1.75	2.38	3.11	3.94	4.86	5.88	7.00
X	87.5	100.0	112.5	125.0	137.5	150.0	162.5	175.0	187.5	200.0	212.5	225.0
Y	9.54	12.46	15.77	19.47	23.56	28.00	32.9	38.16	43.81	49.84	56.27	63.08

$$Y = W \frac{X^2}{L^2}$$

Y = INTERMEDIATE OFFSET
W = CONTROLLING OFFSET
X = DISTANCE FROM BEGINNING OF OFFSET
L = CONTROLLING DISTANCE FROM BEGINNING OF OFF SET - 75'

DISTANCE BETWEEN HIGHWAY CL'S	64'	68'	72'	76'	80'	84'	88'	92' & OVER
OFFSET GUARD RAIL LENGTH	125'	125'	137.5'	137.5'	150.0'	150.0'	150.0'	162.5'

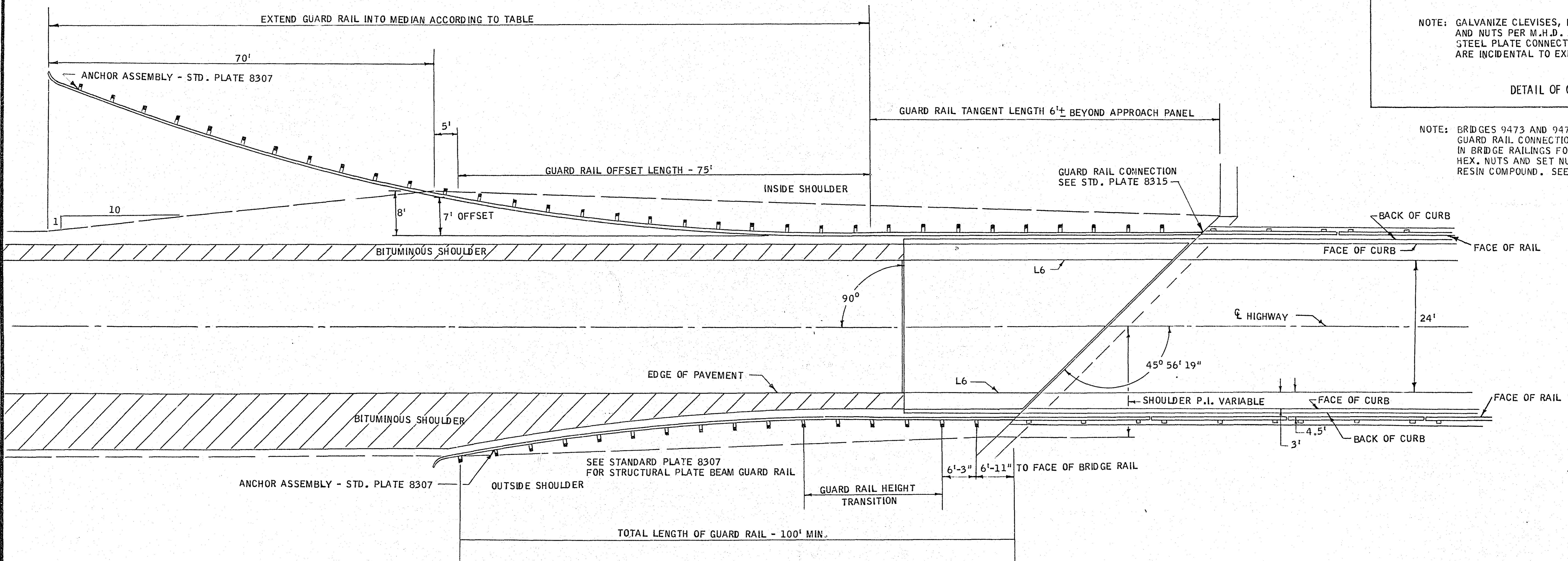


5/8" x 2-1/4" HEX. HEAD BOLT WITH HEX. NUT
3/8" x 31" HEX. HEAD BOLT OF EXPANSION ASSEMBLY SEE STD. PLATE 8314
3/8" GRIP
3/8"
3/8"
PLATE CONNECTION TO CONCRETE BRIDGE RAIL SEE STD. PLATE 8315

NOTE: GALVANIZE CLEAVES, BOLTS, WASHERS AND NUTS PER M.H.D. 3392. STEEL PLATE CONNECTIONS AND CLEAVES ARE INCIDENTAL TO EXPANSION ASSEMBLIES

DETAIL OF CLEVIS

NOTE: BRIDGES 9473 AND 9474 DO NOT HAVE GUARD RAIL CONNECTIONS. DRILL HOLES IN BRIDGE RAILINGS FOR 5/8" x 4-1/2" HEX. NUTS AND SET NUTS WITH EXPOXY RESIN COMPOUND. SEE SPECIAL PROVISIONS

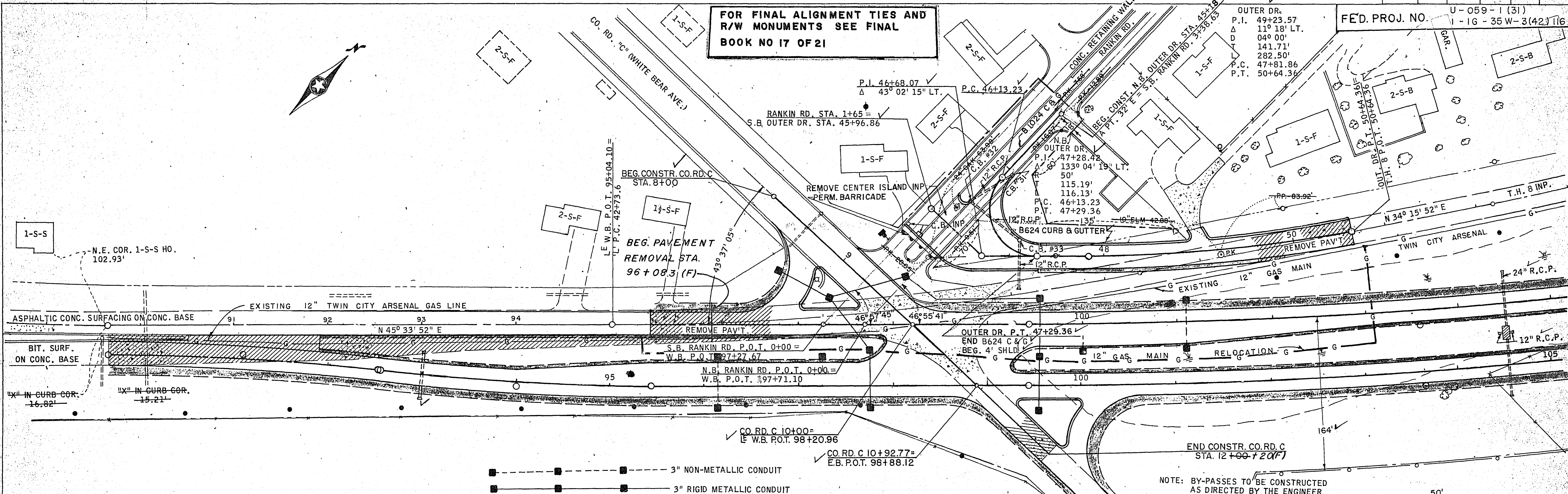
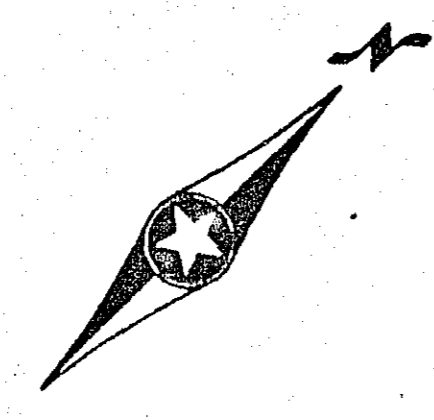


FINISHED PLAN

Bill Hays

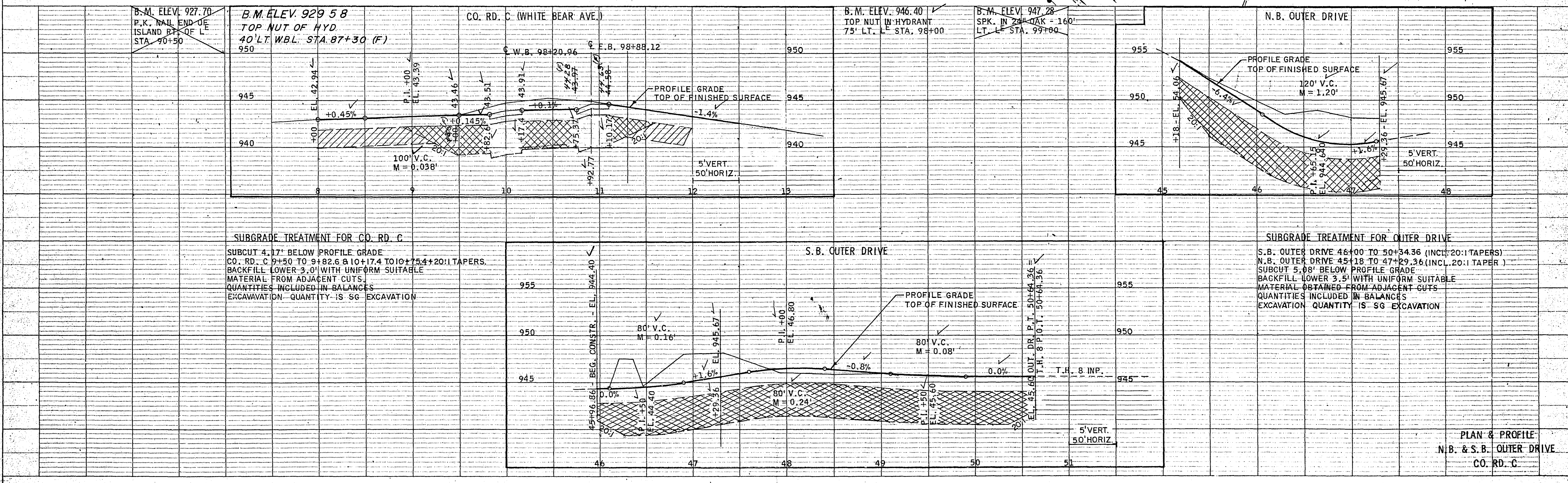
FOR FINAL ALIGNMENT TIES AND R/W MONUMENTS SEE FINAL BOOK NO 17 OF 21

FED. PROJ. NO. U-059-1(31)
I-16-35W-3(42)116



PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
NOTE BOOK NO.
DATE

PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
STRUCTURE NOTATIONS CHECKED
NOTE BOOK NO.
DATE

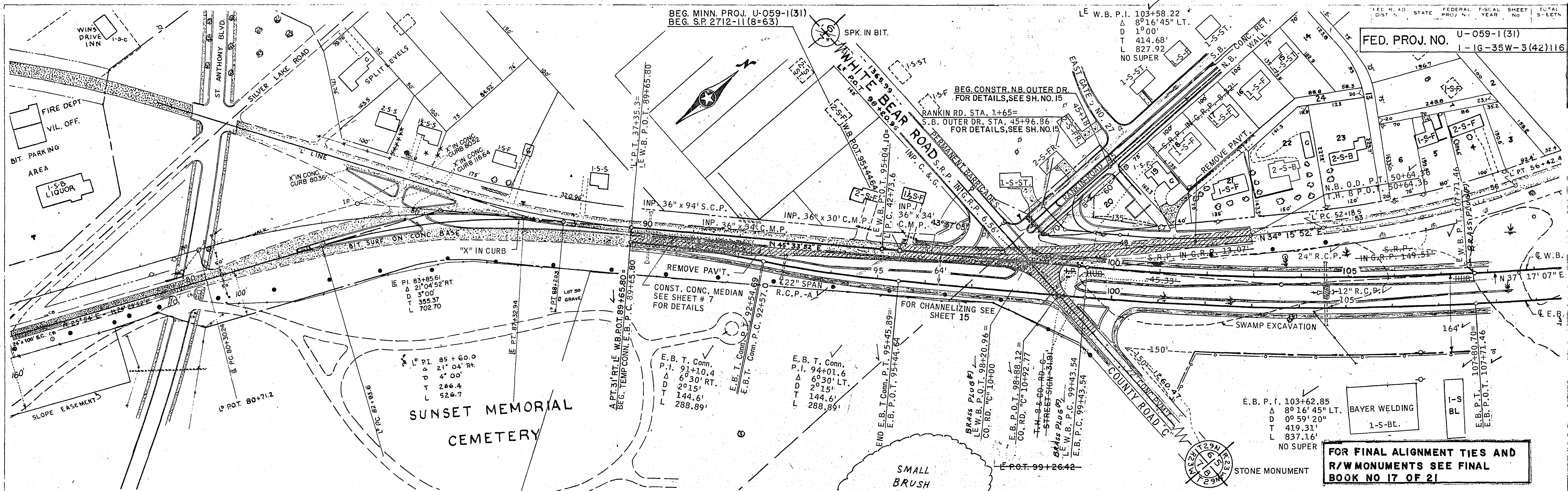


NOTE: BY-PASSES TO BE CONSTRUCTED AS DIRECTED BY THE ENGINEER

PLAN & PROFILE
N.B. & S.B. OUTER DRIVE
CO. RD. C

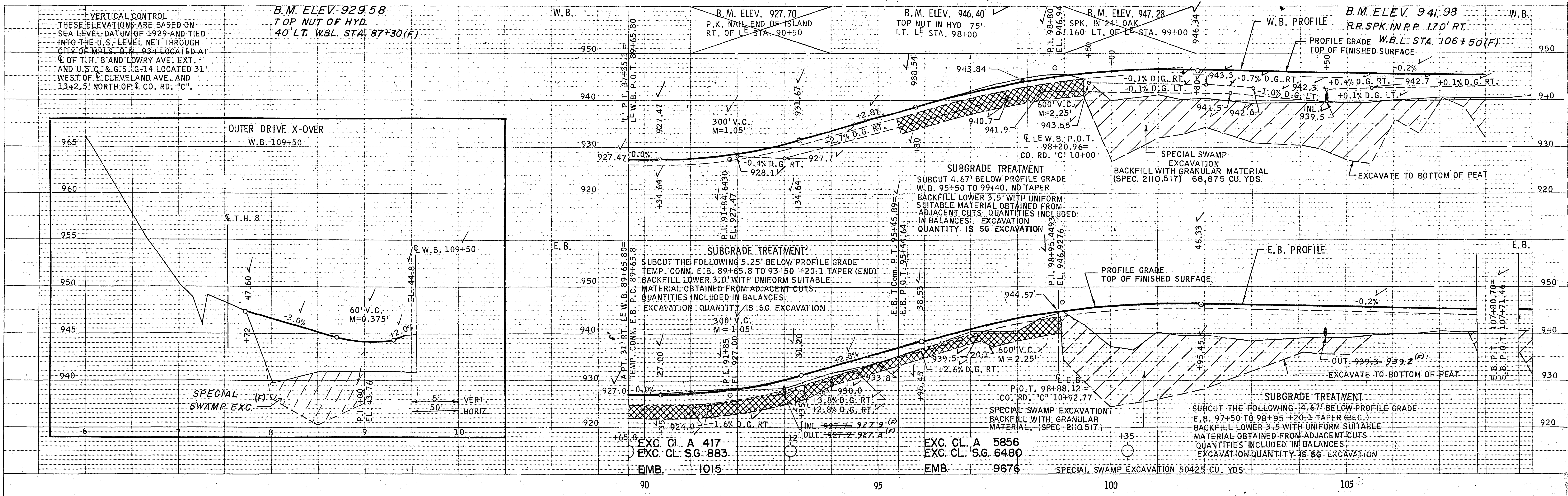
88-1

PLAN	DATE
BY	
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RT. OF WAY	
CHECKED	
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FOR FINAL ALIGNMENT TIES AND R/W MONUMENTS SEE FINAL BOOK NO 17 OF 21

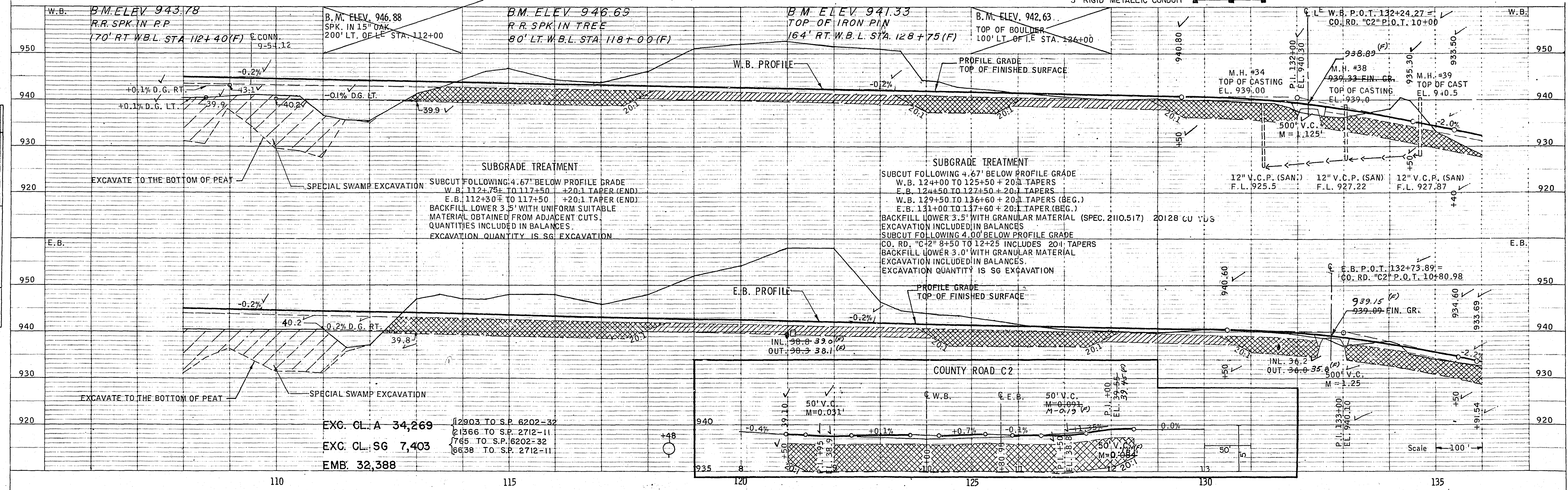
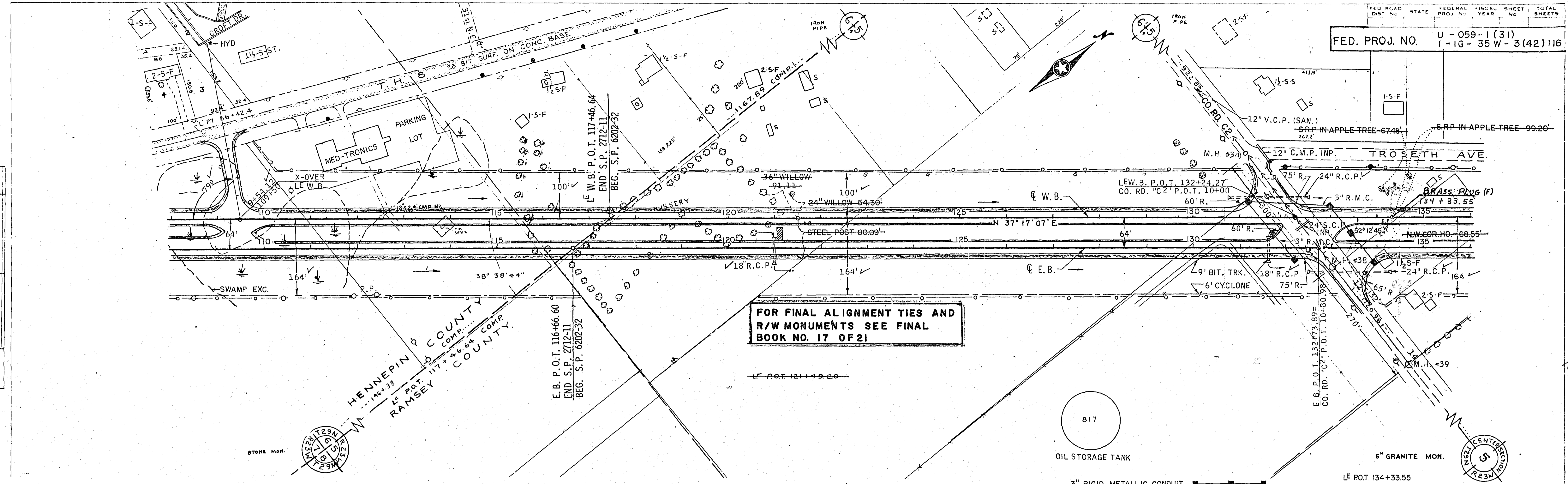
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BY	
SURVEYED	
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NO.	



Bill Bower

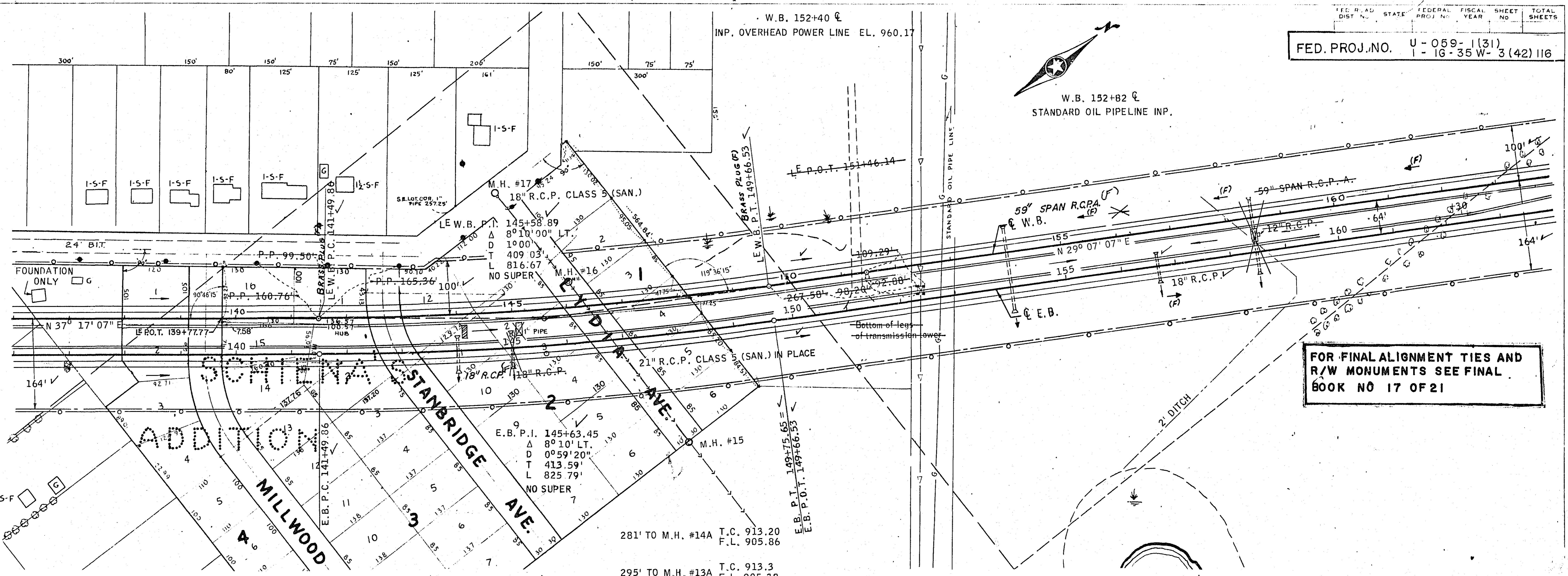
PLAN
 SURVEYED
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 ALIGNMENT CHECKED
 NOTE BOOK NO. 17 OF 21

PROFILE
 SURVEYED
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 CHECKED
 B.M. NOTED
 STRUCTURE NOTATIONS CHFD

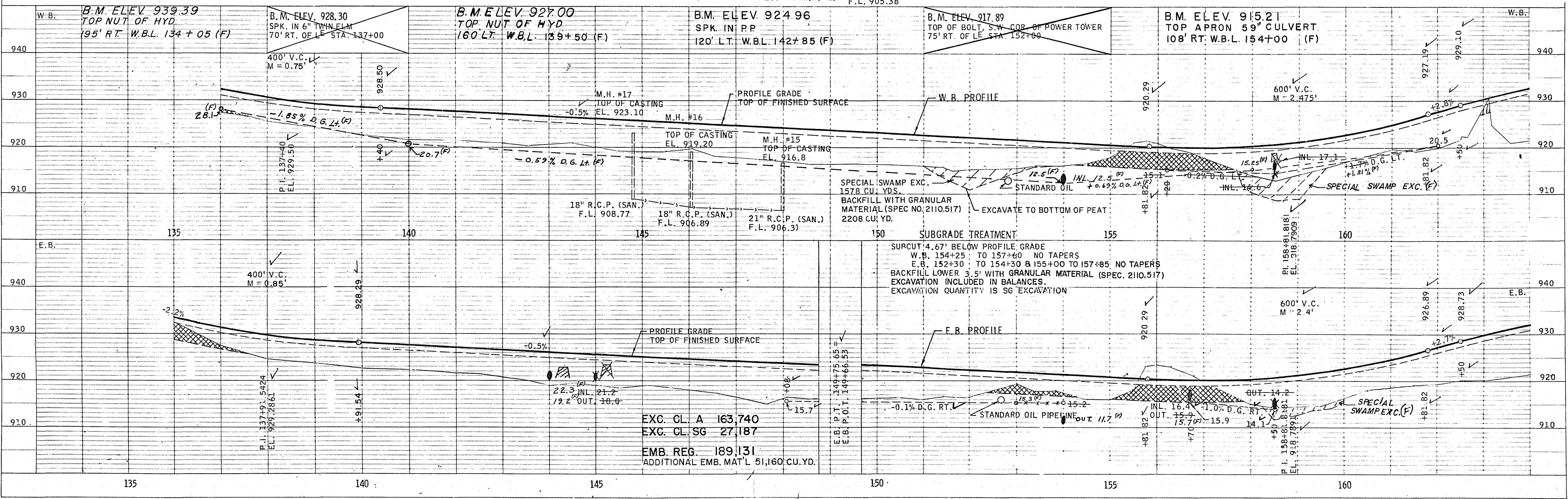


PLAN
 SURVEYED, PLOTTED, CHECKED, ALIGNED, RECHECKED, PLANNED, RECHECKED, R/W MONUMENTS CHECKED, NO. BY DATE

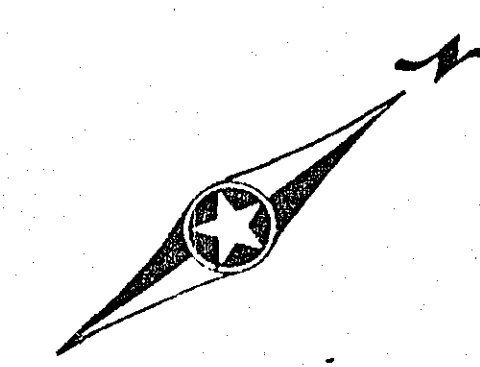
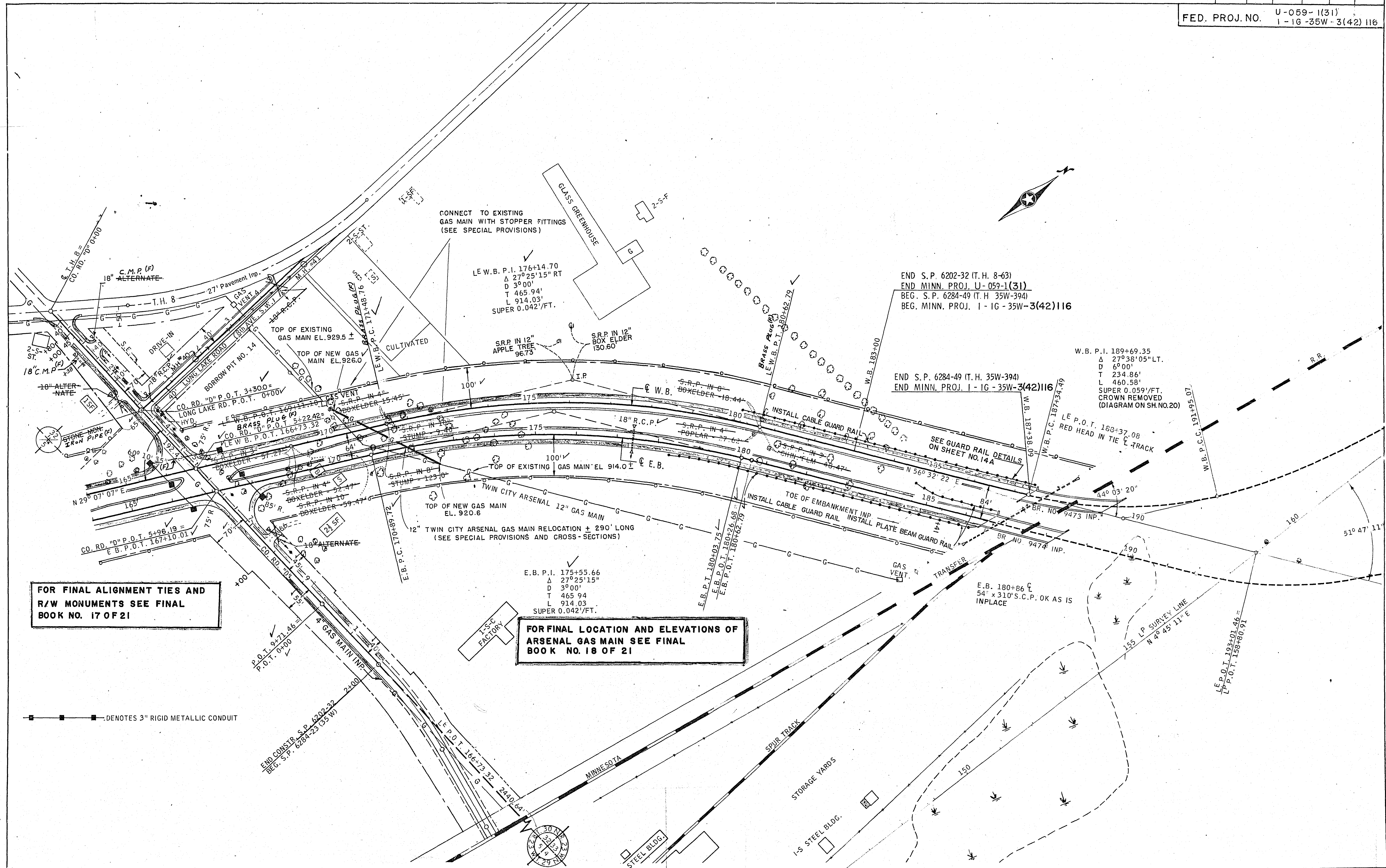
PROFILE
 SURVEYED, PLOTTED, CHECKED, B.M.'S NOTED, STRUCTURE NOTATIONS CHECKED, NO. BY DATE



FOR FINAL ALIGNMENT TIES AND R/W MONUMENTS SEE FINAL BOOK NO 17 OF 21



SINGLE PLAN & PROFILE-DOTTED
 CHARLES BRUNING COMPANY, INC.



CONNECT TO EXISTING GAS MAIN WITH STOPPER FITTINGS (SEE SPECIAL PROVISIONS)

LE W.B. P.I. 176+14.70
 Δ 27° 25' 15" RT
 D 3° 00'
 T 465.94'
 L 914.03'
 SUPER 0.042'/FT.

END S.P. 6202-32 (T.H. 8-63)
 END MINN. PROJ. U-059-1(31)
 BEG. S.P. 6284-49 (T.H. 35W-394)
 BEG. MINN. PROJ. 1-1G-35W-3(42)116

W.B. P.I. 189+69.35
 Δ 27° 38' 05" LT.
 D 6° 00'
 T 234.86'
 L 460.58'
 SUPER 0.059'/FT.
 CROWN REMOVED
 (DIAGRAM ON SH. NO. 20)

END S.P. 6284-49 (T.H. 35W-394)
 END MINN. PROJ. 1-1G-35W-3(42)116

TOP OF NEW GAS MAIN EL. 920.6
 12" TWIN CITY ARSENAL GAS MAIN RELOCATION \pm 290' LONG
 (SEE SPECIAL PROVISIONS AND CROSS-SECTIONS)

E.B. P.I. 175+55.66
 Δ 27° 25' 15"
 D 3° 00'
 T 465.94
 L 914.03
 SUPER 0.042'/FT.

FOR FINAL LOCATION AND ELEVATIONS OF ARSENAL GAS MAIN SEE FINAL BOOK NO. 18 OF 21

FOR FINAL ALIGNMENT TIES AND R/W MONUMENTS SEE FINAL BOOK NO. 17 OF 21

— DENOTES 3" RIGID METALLIC CONDUIT

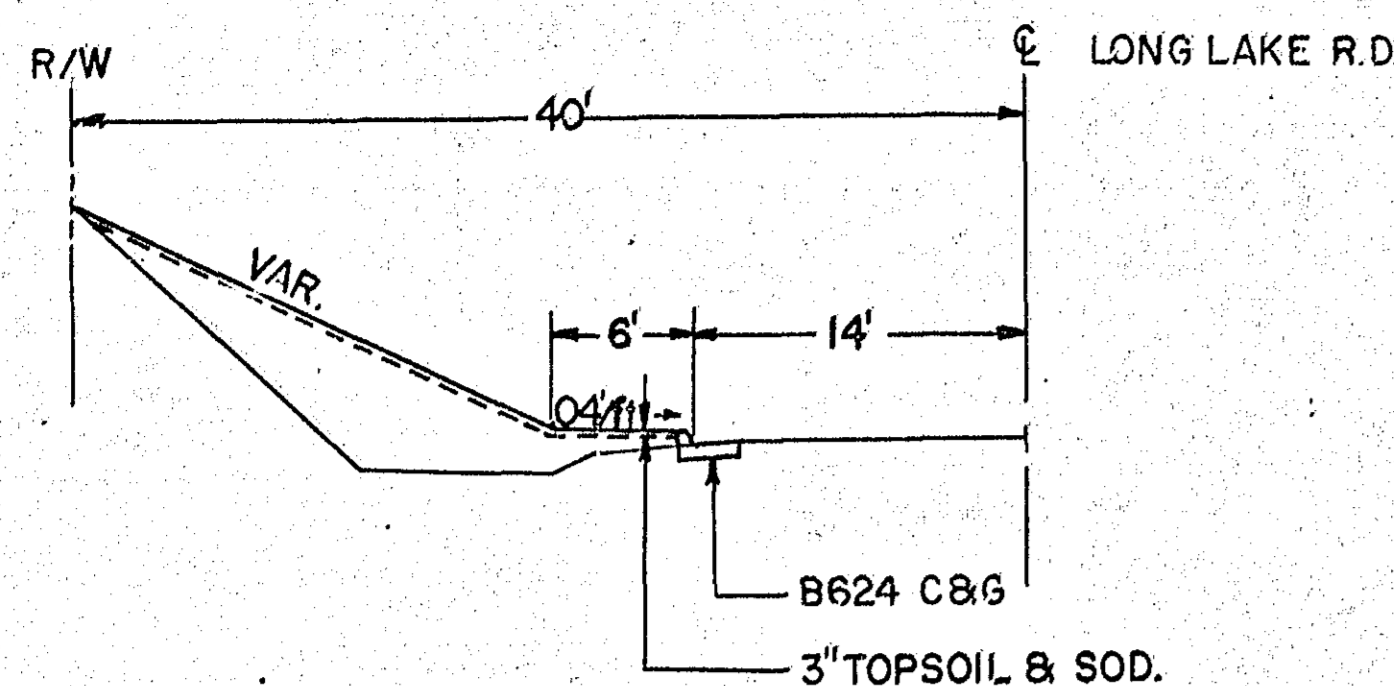
END CONSTR. S.P. 6202-32
 BEG. S.P. 6284-49 (T.H. 35W-394)

B.W. Green

8-B-1

FED. ROAD DIST. No.	STATE	FEDERAL PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
54	MINN.				

FED. PROJ. NO. U-059-1(31)
1-IG-35W-3(42)116



TYPICAL SECTION LONG LAKE RD.
SUPPLEMENTAL AGREEMENT NO. 9

CONNECT TO EXISTING GAS MAIN WITH STOPPER FITTINGS (SEE SPECIAL PROVISIONS)

END S.P. 6202-32 (T.H. 8-63)
END MINN. PROJ. U-059-1(31)
BEG. S.P. 6284-49 (T.H. 35W-394)
BEG. MINN. PROJ. 1-IG-35W-3(42)116

END S.P. 6284-49 (T.H. 35W-394)
END MINN. PROJ. 1-IG-35W-3(42)116

W.B. P.I. 189+69.35
Δ 27°38'05" LT.
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L 460.58'
SUPER 0.059'/FT.
CROWN REMOVED (DIAGRAM ON SH. NO. 20)

TOP OF NEW GAS MAIN EL. 920.6
12" TWIN CITY ARSENAL GAS MAIN RELOCATION ± 290' LONG (SEE SPECIAL PROVISIONS AND CROSS-SECTIONS)

E.B. P.I. 175+55.66
Δ 27°25'15"
D 3°00'
T 465.94
L 914.03
SUPER 0.042'/FT.

FOR FINAL LOCATION AND ELEVATIONS OF ARSENAL GAS MAIN SEE FINAL BOOK NO. 18 OF 21

FOR FINAL ALIGNMENT TIES AND R/W MONUMENTS SEE FINAL BOOK NO. 17 OF 21

— DENOTES 3" RIGID METALLIC CONDUIT

Supplementary Plans For Supplemental Agreement No. 9 To Contract NO. 12004
Date: June 7, 1966

SHEET 1 OF 2 SHEETS

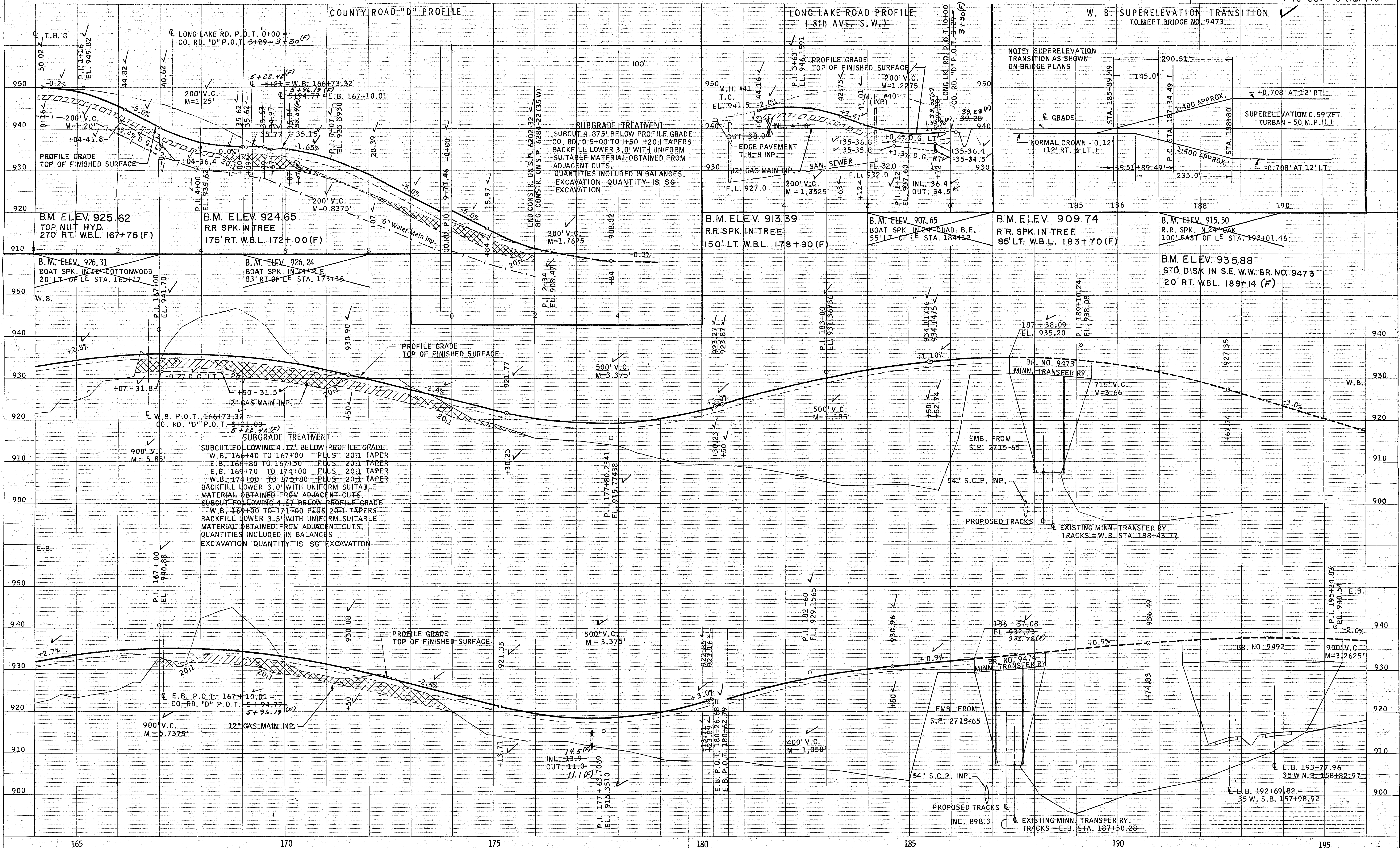
COUNTY ROAD "D" PROFILE

LONG LAKE ROAD PROFILE
(8TH AVE. S.W.)

W. B. SUPERELEVATION TRANSITION
TO MEET BRIDGE NO. 9473

DATE	BY

DATE	BY



Paul Steyer