

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR CHANNELIZATION AND SIGNAL SYSTEM

LOCATED ON T.H.242=242 FROM 0.3 MI. W. OF JCT. CO. RD. 51 TO 0.3 MI. E. OF JCT. CO. RD. 51

STATE PROJ. NO. _____
 MINN. PROJ. NO. _____
 GROSS LENGTH FEET _____ MILES _____
 BRIDGES-LENGTH FEET _____ MILES _____
 EXCEPTIONS-LENGTH FEET _____ MILES _____
 NET LENGTH FEET _____ MILES _____
 MILE POINT TO MILE POINT _____

STATE PROJ. NO. 0212-18
 MINN. PROJ. NO. _____
 GROSS LENGTH 3203 FEET 0.607 MILES
 BRIDGES-LENGTH 0 FEET 0.000 MILES
 EXCEPTIONS-LENGTH 0 FEET 0.000 MILES
 NET LENGTH 3203 FEET 0.607 MILES
 MILE POINT 5.9 TO MILE POINT 6.5

Note:
 Length of Project based on in-place
 T.H. 242 alignment

FED. PROJ. NO. _____ STATE FUNDS _____

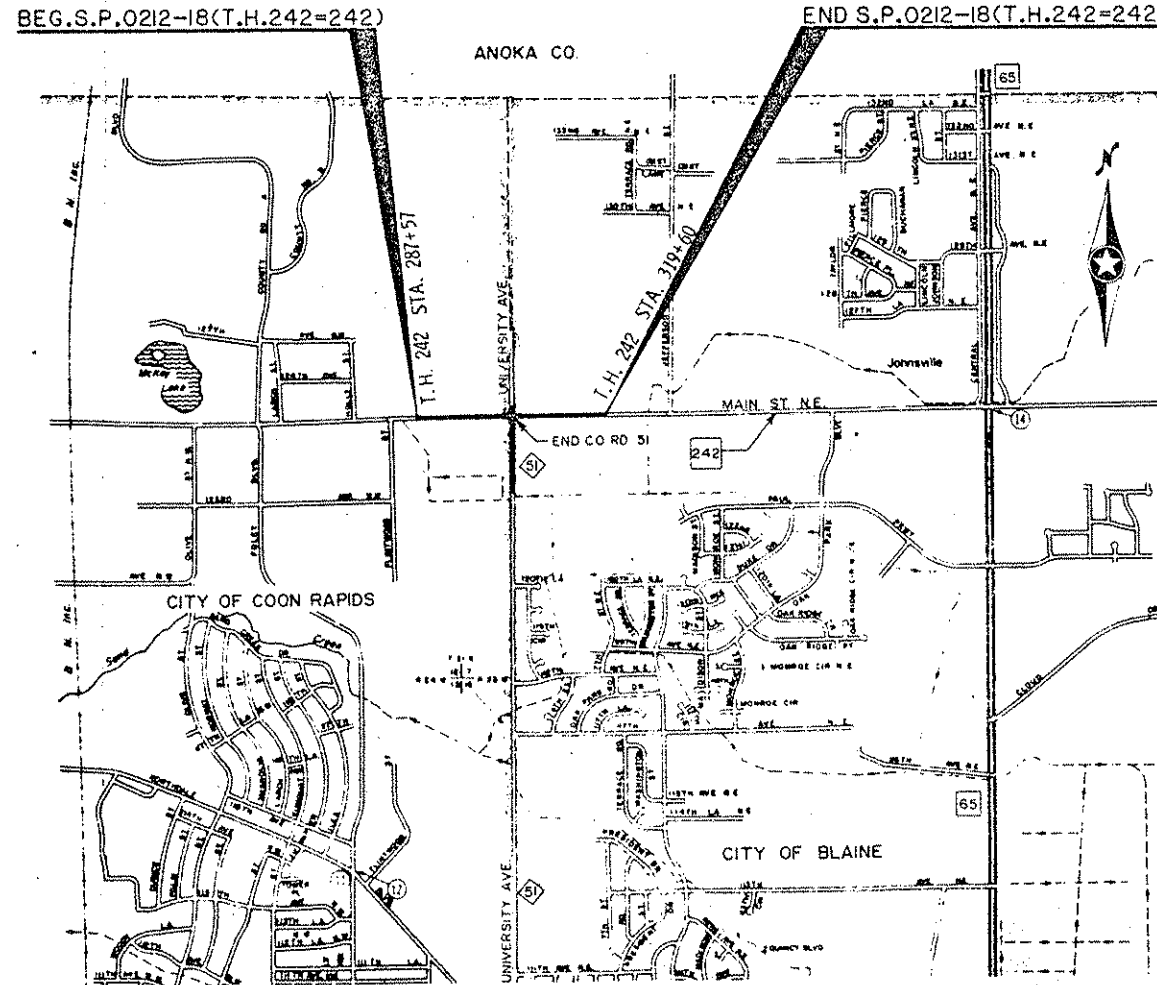
SPECIFICATIONS

The Minnesota Highway Department "Standard Specifications for Highway Construction" dated Jan. 1, 1972 as amended by "Supplemental Specifications" dated April 1, 1976, shall govern.

INDEX

SHEET NO.	DESCRIPTION
1	Title Sheet
2	Estimated Quantities and Standard Plates
3-4	Typical Sections
5	Miscellaneous Details
6	Left Turn Lane By-Pass
7-8	Tabulations
9-12	Inplace Topography and Plan
13-15E	Signal Plans
16-30	Cross Sections

THIS PLAN CONTAINS 35 SHEETS



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.

DATE 3-1-77 REG. NO. 9078 ENGR. *Timothy C. Johnson*
 DESIGN SQUAD H. F. McDERMOTT

Right of Way Approval _____ 19 _____
 DIRECTOR, RIGHT OF WAY OPERATIONS
 Recommended for Approval *[Signature]* 3-1-1977
 ASST. DISTRICT ENGINEER
 Recommended for Approval *[Signature]* 4/12/77
 PLANS ENGINEER
 Recommended for Approval *[Signature]* 4/14/1977
 DESIGN ENGINEER
 Recommended for Approval _____ 19 _____
 TRAFFIC ENGINEER
 Approved 4-15-1977 *[Signature]*
 DIRECTOR, DESIGN SERVICES

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL NO. 5-292.620A (1, 1, 73)

STATE PROJ. NO. 0212-18 AREA 54 JOB 095

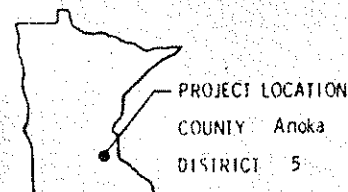
STATE PROJ. NO. 0212-18 (T.H.242=242)

SHEET NO. 1 OF 30 SHEETS

SCALES
 PLAN 50' & 30'
 PROFILE _____
 INDEX MAP 1600'
 GENERAL LAYOUT _____

DESIGN DESIGNATION

ADT (Current Year) 1975 = 5750 Design Speed 50 MPH (POSTED)
 ADT (Future Year) 1985 = 11500 Based on Sight Distance
 DHV (Design Hr. Vol.) = _____ Height of eye Height of object
 D (Directional Distr.) = _____ % Design Speed not achieved at:
 T (Heavy Commercial) = _____ % STA TO STA MPH
 STA TO STA MPH



DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION
 APPROVED _____
 DIVISION ADMINISTRATOR DATE

4815 3702 4 27 11 477

4-15-77 AWS-LER

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL ESTIMATED QUANTITIES	TOTAL FINAL QUANTITIES
2021.501	Mobilization	Lump Sum		
2031.503	Field Laboratory, Type D	Each	1	
2051.501	Maintenance and Restoration of Haul Roads	Lump Sum		
2101.502	Clearing	Tree	41	
2101.507	Grubbing	Tree	41	
2104.503	Remove Pavement Marking	Sq. Ft.	3600	
2104.501	Remove Pipe Culverts	Lin. Ft.	30	
2104.501	Remove Curb and Gutter	Lin. Ft.	64	
2104.509	Remove Manholes and Catch Basins	Each	1	
2104.521	Salvage Pipe Culvert	Lin. Ft.	367	
2105.501	Common Excavation	Cu. Yd.	6628 (P)	
2105.521	Granular Borrow (LV)	Cu. Yd.	9252	
2105.525	Topsoil Borrow (LV)	Cu. Yd.	3332	
2105.543	Stabilizing Aggregate	Ton	100	
2130.501	Water	1000 MGal.	10	
2221.501	Aggregate Shouldering, Class 1	Ton	751	
2221.501	Aggregate Shouldering, Class 5	Ton	2209	
2331.504	Bituminous Material for Mixture	Ton	360	
2331.510	Binder Course Mixture	Ton	1461	
2331.512	Leveling Course Mixture	Ton	4482	
2331.514	Base Course Mixture	Ton	1255	
2331.516	Shoulder Mixture	Ton	599	
2331.531	Temporary Lane Marking	Road Sta.	175	
2357.502	Bituminous Material for Tack Coat	Gal.	1944	
2361.504	Asphalt Cement	Ton	54	
2361.508	Wearing Course Mixture	Ton	764	
0412.625	F & I 18" C S Safety Apron	Each	2	
2501.511	12" C S Pipe Culvert	Lin. Ft.	2	
2501.511	18" C S Pipe Culvert	Lin. Ft.	174	
2501.515	18" C S Pipe Apron	Each	4	
2501.571	Install Metal Culvert	Lin. Ft.	42	
2501.573	Install Metal Apron	Each	2	
0501.608	Drainage Structure, Design 5215	Structure	1	
2531.503	Concrete Median	Sq. Yd.	3005	
2535.501	Bituminous Curb	Lin. Ft.	72	
2564.531	Furnish and Install Sign Panels, Type D	Sq. Ft.	46	
2565.501	Full Traffic Actuated Traffic Control System	Sig. Sys.	1	
2575.501	Roadside Seeding	Acre	7 (P)	
2575.502	Seed, Mixture 5	Pound	350	
2575.505	Sodding	Sq. Yd.	899	
2575.511	Mulch Material, Type 1	Ton	14	
2575.519	Disc Anchoring	Acre	7 (P)	
0575.612	Commercial Fertilizer, Analysis 10-20-20	Pound	2450	
ALTERNATE 1-1				
2501.511	18" C.M. Pipe Culvert	Lin. Ft.	148	
2501.515	18" C.M. Pipe Apron	Each	6	
ALTERNATE 1-2				
2501.511	18" R.C. Pipe Culvert	Lin. Ft.	124	
2501.515	18" R.C. Pipe Apron	Each	6	

- ① Possible sources of granular material and 2331 bituminous aggregate.
- ② To be used for dust control as directed by the Engineer.
- ③ Includes 37 Tons for entrances.
- ④ To be applied at the rate of 350 pounds per acre, or its equivalent, to all seeded and sodded areas.
- ⑤ Change specification reference from 2515 to 2501.
- ⑥ Seed all disturbed areas except area to be sodded.
- ⑦ Mulch all areas to be seeded.
- ⑧ Seeding areas have been computed by using the horizontal distance between points ten feet outside cut or fill slope stake line and the finished shoulder. Ten percent (10%) has been added to compensate for slope distances.
- ⑨ Includes 2445 cu. yd. Topsoil Excavation. See earthwork summary this sheet.
- ⑩ See sheet no. 8 for haul requirements.
- ⑪ Consists of 1 - 10° elbow.

(P) - Plan Quantity

GRAVEL PITS			
PIT NO.	COUNTY	LEGAL DESCRIPTION	MATERIAL AVAILABLE
3125	Hennepin	S.W. 1/4 of S.E. 1/4 of Sec. 14, T119N, R22W	①
4381A	Hennepin	S. 1/2 of S.W. 1/4 of Sec. 24, T119N, R22W	①

Note: Pit sheets are not included in this plan. Prints of pit sheets may be obtained at the time plans and proposals are purchased.

The following Standard Plates, approved by the Federal Highway Administration, shall apply on this project.

STANDARD PLATES	
PLATE NO.	DESCRIPTION
0002A	Specification Reference to Standard Plates
3000G	Reinforced Concrete Pipe
3100 F	Concrete Apron for R.C. Pipe
3040D	Corrugated Metal Pipe
3123G	Metal Apron For C.M. Pipe
3124A	Metal Apron Connection
3128A	Safety Apron
4010E	Conc. Short Cone & Adjusting Ring
4108D	Manhole Adjusting Rings
5215 B	⑤ Metal Shoulder Drain
7065C	Bituminous Curb
8000F	Standard Barricades
8110B	Traffic Signal Bracketing
8111A	Traffic Signal Bracketing
8112B	Pedestal Foundation
8115B	Pedestrian Push Button Installation
8116C	Steel Guard Post
8117E	Precast Concrete Handhole (or Pullbox)
8119B	Ground Mounted Cabinet Foundation
8122B	Pedestal and Pedestal Base
8123A	Pole and Mast Arm
8124B	Signal Head Mounts
8130B	Saw Cut Loop Detectors
9102C	Sodding at Pipe Culvert End

EARTHWORK SUMMARY

EXCAVATION (CU. YD.)		
COMMON EXCAVATION	6628	1828 Topsoil Removal In Fill Areas
		4800 { 617 Topsoil Removal In Cut Areas
		4183
EMBANKMENT (CU. YD.)		
EMBANKMENT	14054	4032 Topsoil { 1811 [3332 Topsoil Borrow (LV)]
		10022 { 3098 [9252 Granular Borrow (LV)]
		71 Stabilization
		6853

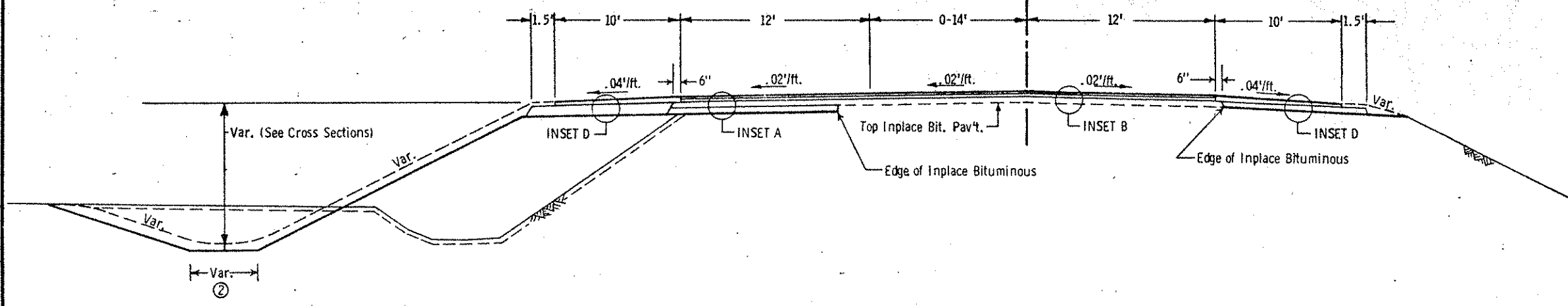
ESTIMATED QUANTITIES

TYPICAL SECTION NO. 1

T.H. 242 STA. 287+57 To 293+63
STA. 313+54 To 319+60

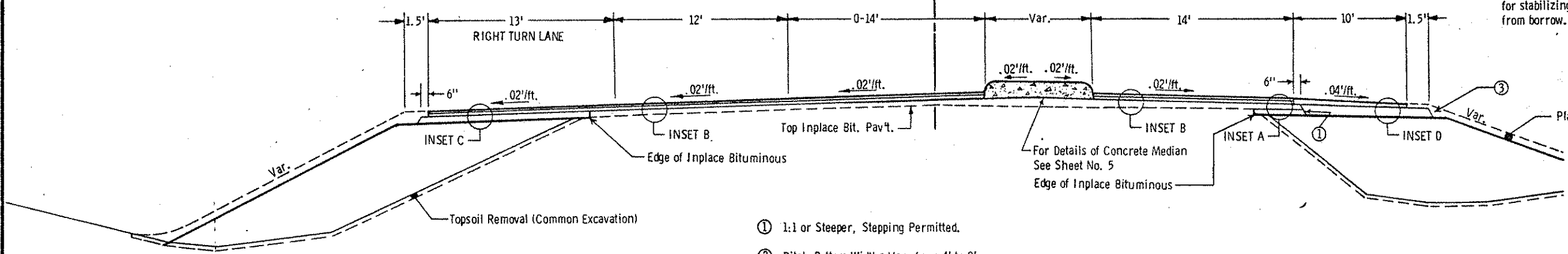
CONSTRUCTION AND SOILS NOTES

1. Selected grading materials shall consist of granular soils, excluding topsoil.
2. In any new construction, the upper 4.0' of the grading subgrade shall be constructed of selected grading material (granular soil). The remaining subgrade may be constructed of all soils encountered except highly organic soils and other unstable materials.
3. Bituminous materials and concrete items disturbed by construction shall be disposed of by the contractor off the Mn/DOT Right of Way.
4. Strip and reuse as slope dressing, in place topsoil and slope dressing from all areas to be disturbed by construction. Material in place ranges from 2" to 6" in depth and averages 3" in depth. Isolated areas containing up to 1.5' topsoil were not included in the average. Slope dressing soil is defined as the topsoil or other soil placed during prior construction to provide a medium for establishing turf.
5. Compaction of grading items, Aggregate Shoulders, 2361 Wear, and 2331 Leveling shall be in accordance with "Ordinary Compaction Method" requirements. Compaction of 2331 Binder and 2331 Base shall be in accordance with "Specified Density Method" requirements.
6. Test rolling will not be required.
7. At project limits bituminous courses shall be tapered as directed by the Engineer.
8. The ditch bottoms, toe of fill, cut runouts and the top edge of the backslopes shall be rounded as shown on typical section, regardless of the section used on the cross section sheets.
9. Side slopes of entrances on T.H. 242 shall be sloped at 6:1.
10. Provide 1" of stabilizing aggregate, Spec. 3149.2C, for stabilizing granular material not obtained from borrow.

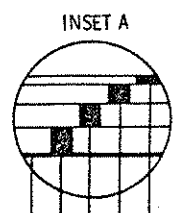


TYPICAL SECTION NO. 2

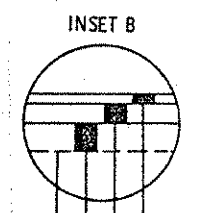
T.H. 242 STA. 293+63 To 313+54



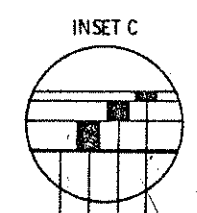
- ① 1:1 or Steeper, Stepping Permitted.
- ② Ditch Bottom Widths Vary from 4' to 8' and Shall Be Constructed to the Approximate Widths as Shown on the Cross Sections.
- ③ For Shaping and Topsoiling Inslopes See Sheet No. 5



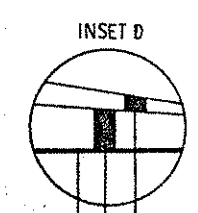
INSET A
3/4" Wearing Course - Spec. 2361
1-1/2" Binder Course - Spec. 2331
Var. Leveling Course (2" Min.) - Spec. 2331
3-1/2" Base Course - Spec. 2331
Grading Grade



INSET B
3/4" Wearing Course - Spec. 2361
1-1/2" Binder Course - Spec. 2331
Var. Leveling Course (2" Min.) - Spec. 2331
Top Inplace Bituminous Pavement



INSET C
3/4" Wearing Course - Spec. 2361
1-1/2" Binder Course - Spec. 2331
Var. Depth Base Course - Spec. 2331
Grading Grade

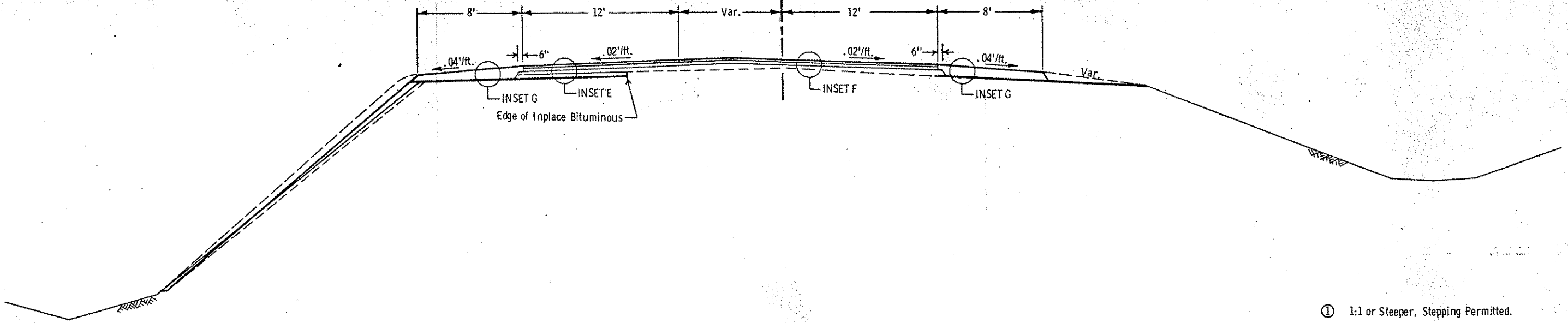


INSET D
1-1/2" Min. Shoulder Mixture - Spec. 2331
Var. Depth Aggregate Shouldering, Class 5 - Spec. 2221
Grading Grade

TYPICAL SECTIONS

TYPICAL SECTION NO. 3

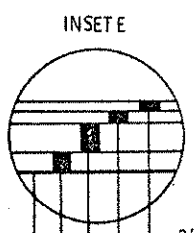
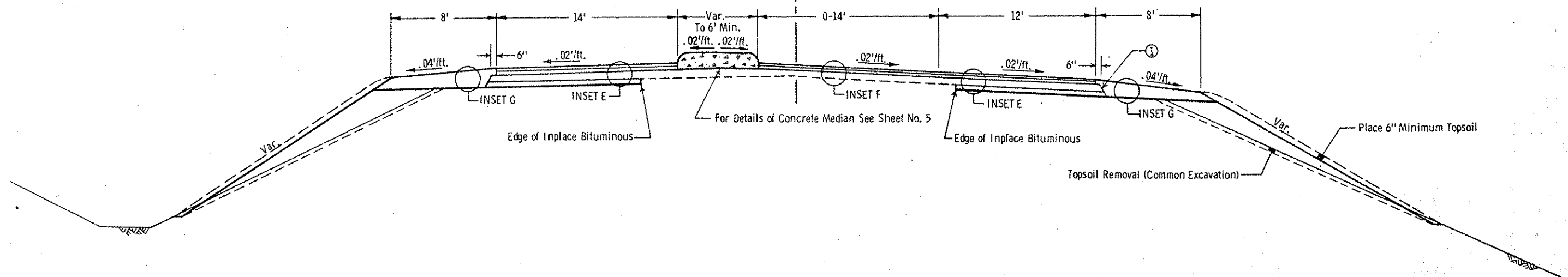
CO. RD. 51 STA. 230+60 To 235+72



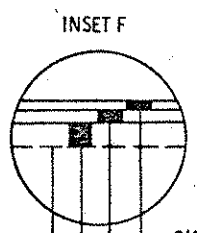
① 1:1 or Steeper, Stepping Permitted.

TYPICAL SECTION NO. 4

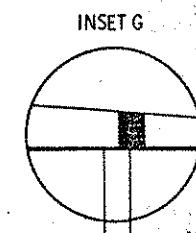
CO. RD. 51 STA. 235+72 To 242+74



- 3/4" Wearing Course - Spec. 2361
- 1-1/2" Binder Course - Spec. 2331
- Var. Leveling Course (1" Min.) - Spec. 2331
- 2-1/2" Base Course - Spec. 2331
- Grading Grade



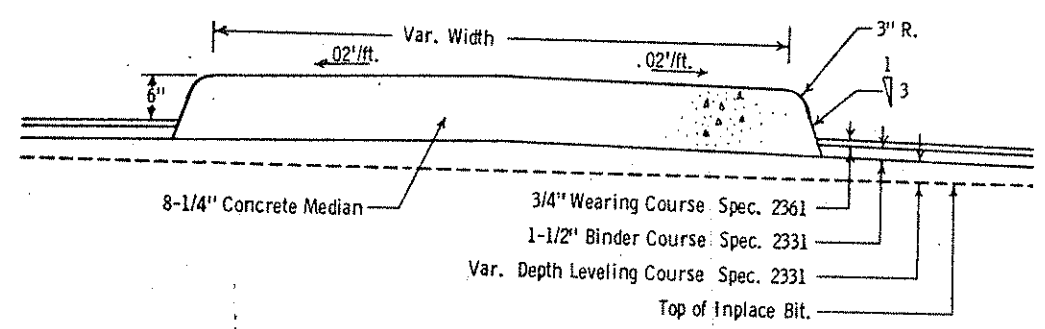
- 3/4" Wearing Course - Spec. 2361
- 1-1/2" Binder Course - Spec. 2331
- Var. Leveling Course (1" Min.) - Spec. 2331
- Top Inplace Bituminous Pavement



- Var. Depth Aggregate Shouldering, Class 1 - Spec. 2221
- Grading Grade

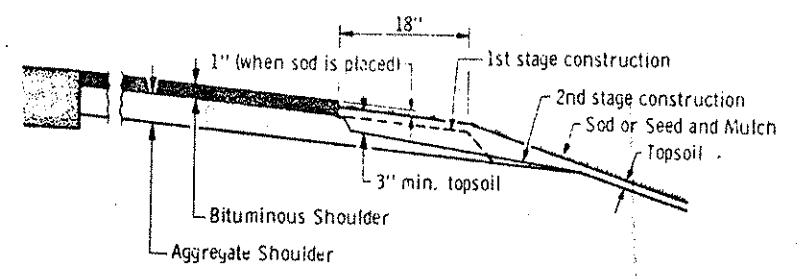
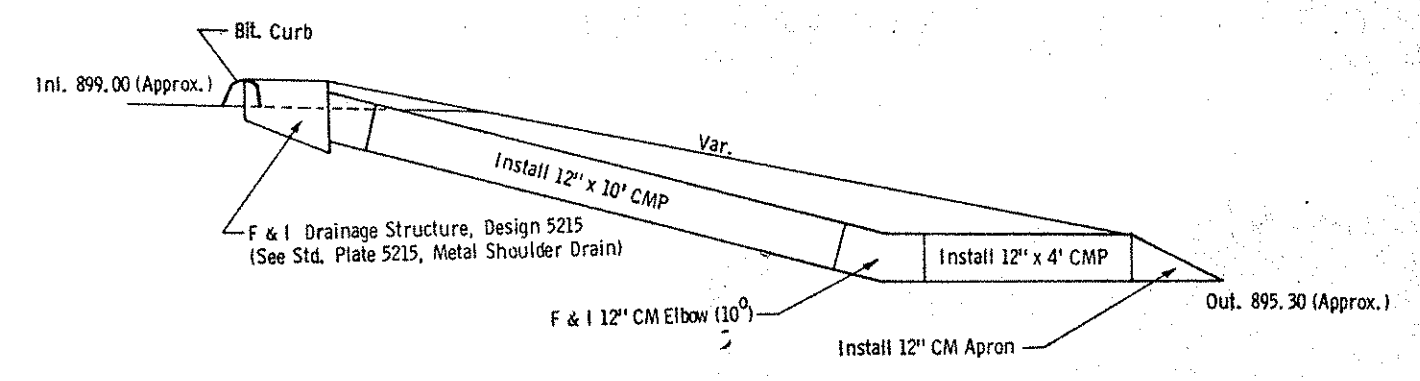
TYPICAL SECTIONS

CONCRETE MEDIAN DETAIL



NOTE: Taper the conc. median on a 3:1 slope (1.5' in length) at the following locations:
T.H. 242, Sta. 293+58 & Sta. 313+54
CO-RD. 51, Sta. 235+72

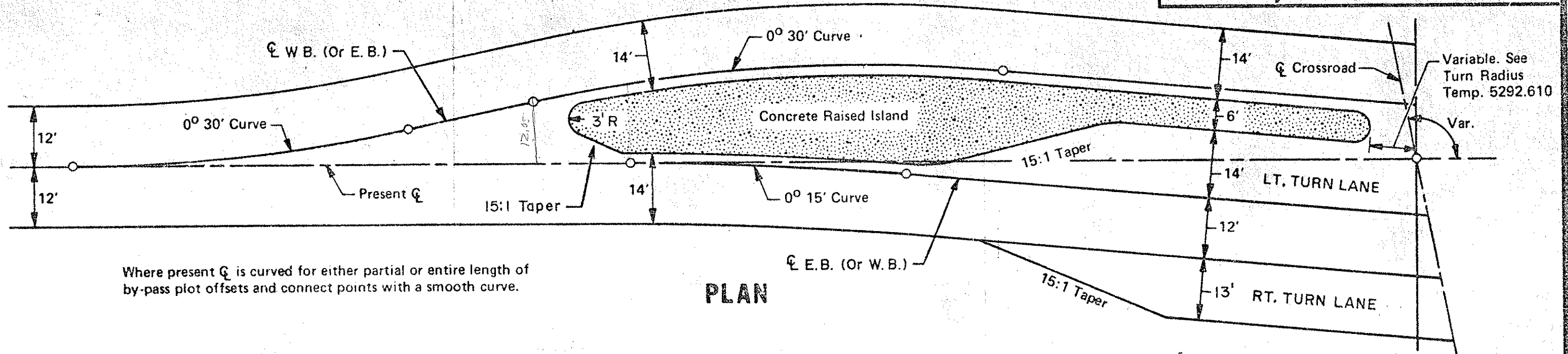
METAL SHOULDER DRAIN AND FLUME
T.H. 242 STA. 303+91 To 304+10 68'-64' LT.



SHAPING AND TOPSOILING INSLOPES

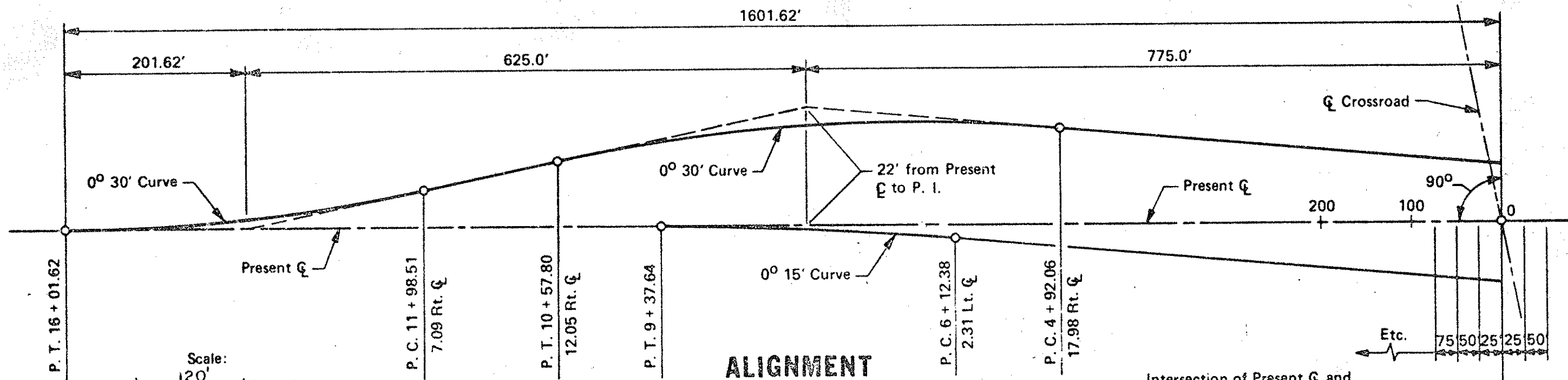
MISC. DETAILS

Fed. Proj. No.



Where present C is curved for either partial or entire length of by-pass plot offsets and connect points with a smooth curve.

PLAN



ALIGNMENT

Intersection of Present C and Crossroad C is 0 in table below.

OFFSETS FROM PRESENT C TO EDGE OF THRU LANES

Distance	0	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	492.06	500	525	550
Left C	11.00	10.65	10.29	9.94	9.58	9.23	8.87	8.52	8.16	7.81	7.45	7.10	6.74	6.39	6.03	5.68	5.32	4.97	4.61	4.26	-	3.90	3.55	3.19
Right C	11.00	11.35	11.71	12.06	12.42	12.77	13.13	13.48	13.84	14.19	14.55	14.90	15.26	15.61	15.97	16.32	16.68	17.03	17.39	17.74	17.98	18.09	18.40	18.66
Distance	575	600	612.38	625	650	675	700	725	750	775	800	825	850	875	900	925	937.64	950	975	1000	1025	1050	1057.80	1075
Left C	2.84	2.48	2.31	2.13	1.81	1.50	1.23	.99	.77	.58	.41	.28	.17	.09	.03	.00	.00	-	-	-	-	-	-	-
Right C	18.86	19.01	-	19.10	19.14	19.12	19.05	18.92	18.74	18.51	18.22	17.87	17.47	17.02	16.51	15.95	-	15.33	14.66	13.93	13.15	12.32	12.05	11.44
Distance	1100	1125	1150	1175	1198.51	1200	1225	1250	1275	1300	1325	1350	1375	1400	1425	1450	1475	1500	1525	1550	1575	1600	1601.62	
Left C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Right C	10.56	9.68	8.80	7.92	7.04	6.19	5.40	4.66	3.97	3.34	2.76	2.24	1.77	1.36	1.00	.70	.45	.26	.12	.03	.00	.00		

LEFT TURN LANE BY-PASS

PUBLIC UTILITIES

STATION	LOCATION	ITEM INPLACE	REMARKS	OWNERSHIP
CO. RD. 51				
228+86	46' Rt.	Telephone - Power Pole	Leave as is	1
230+15	99' Rt.	Power Pole	Leave as is	1
230+81	47' Rt.	Telephone - Power Pole	Leave as is	1
232+44	93' Rt.	Telephone - Power Pole	Leave as is	1
232+89	46' Rt.	Telephone - Power Pole	Leave as is	1
234+45	45' Lt.	Power Pole (3 transformers)	Leave as is	1
234+50	53' Lt.	Power Pole	Leave as is	1
234+54	49' Lt.	Concrete Motor House (7'x7')	Leave as is	1
234+73	46' Rt.	Power Pole	Leave as is	1
236+77	47' Rt.	Telephone - Power Pole	Leave as is	1
238+74	46' Rt.	Telephone - Power Pole	Leave as is	1
240+76	46' Rt.	Telephone - Power Pole	Leave as is	1
T. H. 242				
285+16	69' Rt.	Telephone - Power Pole	Leave as is	1
286+66	71' Rt.	Telephone - Power Pole	Leave as is	1
288+19	71' Rt.	Telephone - Power Pole	Leave as is	1
289+67	71' Rt.	Telephone - Power Pole	Leave as is	1
291+17	71' Rt.	Telephone - Power Pole	Leave as is	1
292+50	71' Rt.	Telephone - Power Pole	Leave as is	1
294+14	70' Rt.	Telephone - Power Pole	Leave as is	1
295+64	70' Rt.	Telephone - Power Pole	Leave as is	1
297+16	70' Rt.	Telephone - Power Pole	Leave as is	1
298+62	70' Rt.	Telephone - Power Pole	Leave as is	1
300+05	70' Rt.	Telephone - Power Pole	Leave as is	1
301+71	71' Rt.	Telephone - Power Pole	Leave as is	1
303+26	71' Rt.	Telephone - Power Pole	Relocate	1
303+26	72' Lt.	Telephone - Power-Light Pole	Leave as is	1
304+02	71' Rt.	Telephone - Power-Light Pole	Affected	1
306+54	71' Rt.	Telephone - Power Pole	Leave as is	1
309+53	71' Rt.	Telephone - Power Pole	Affected	1
312+15	70' Rt.	Telephone - Power Pole	Affected	1
312+78	72' Lt.	Power Pole	Leave as is	1
315+48	70' Rt.	Telephone - Power Pole	Leave as is	1
317+29	70' Rt.	Telephone - Power Pole	Leave as is	1
318+40	83' Lt.	Power Pole	Leave as is	1
318+41	70' Rt.	Telephone - Power Pole	Leave as is	1
321+51	69' Rt.	Telephone - Power Pole	Leave as is	1
324+49	69' Rt.	Telephone - Power Pole	Leave as is	1
CO. RD. 51				
228+00 - 234+18	22' Rt - 21' Rt.	Telephone - Buried	Leave as is	2
234+18	21' Rt.	Telephone Manhole (6' X 12')	Adjust	2
234+18 - 242+71	21' Rt. - 36' Rt.	Telephone - Buried	Leave as is	2
242+91 - 243+59	59' Lt.	Telephone - Buried	Leave as is	2
243+59 - 244+06	59' Lt. - 31' Lt.	Telephone - Buried	Affected	2
244+06 - 248+00	31' Lt. - 36' Lt.	Telephone - Buried	Leave as is	2
T. H. 242				
285+00 - 325+00	15' Rt.	Telephone - Buried	Leave as is	2
285+00 - 301+71	62' Rt. - 66' Rt.	Telephone - Buried	Leave as is	2
301+71 & 301+75	63' Rt.	Telephone Manhole (5' X 10')	Leave as is	2
301+71 - 302+00	63' Rt. - 38' Rt.	Telephone - Buried	Leave as is	2
302+00 - 303+00	38' Rt.	Telephone - Buried	Leave as is	2
301+75 - 302+09	63' Rt. - 42' Rt.	Telephone - Buried	Leave as is	2
302+09 - 316+00	42' Rt. - 36' Rt.	Telephone - Buried	Leave as is	2
316+00 - 318+00	36' Rt. - 64' Rt.	Telephone - Buried	Leave as is	2
318+00 - 325+00	64' Rt.	Telephone - Buried	Leave as is	2

PUBLIC UTILITIES

STATION	LOCATION	ITEM INPLACE	REMARKS	OWNERSHIP
T. H. 242				
301+75 - 303+93	63' Rt. - 65' Rt.	Telephone - Buried	Leave as is	2
303+28	77' Lt.	Telephone Junction Box	Leave as is	2
303+93	60' Rt.	Telephone Manhole (9' X 12')	Adjust	2
303+93 - 311+00	52' Rt - 64' Rt.	Telephone - Buried	Adjust	2
311+00 - 311+75	56' Rt. - 42' Rt.	Telephone - Buried	Adjust	2
303+93 - 307+00	60' Rt. - 37' Rt.	Telephone - 12 Duct Conduit	Leave as is	2
307+00 - 311+75	37' Rt. - 42' Rt.	Telephone - 12 Duct Conduit	Leave as is	2
311+75 & 311+79	42' Rt.	Telephone Manhole (5' X 12')	Adjust	2
311+79 - 318+00	40' Rt. - 69' Rt.	Telephone - Buried	Adjust	2
318+00 - 325+00	69' Rt. - 66' Rt.	Telephone - Buried	Leave as is	2
311+79 - 325+00	32' Rt. - 42' Rt.	Telephone - 12 Duct Conduit	Leave as is	2
CO. RD. 51				
228+00 - 243+00	32' Rt. - 25' Rt.	Gas	Leave as is	3
243+00 - 245+00	25' Rt.	Gas	Affected	3
T. H. 242				
285+00 - 325+00	67' Lt.	4" Gas	Adjust	3
302+84	74' Lt.	Gas Pressure Box	Leave as is	3
303+83	67' Lt.	Gas Valve	Adjust	3
303+86	66' Lt.	Gas Valve	Adjust	3
304+04	73' Lt.	Gas Pressure Box	Leave as is	3
312+07	69' Lt.	Gas Valve	Adjust	3

OWNERSHIP CODE

- 1 Anoka Electric Corp.
- 2 N.W. Bell Telephone Co.
- 3 N. Central Public Serv.

TABULATIONS
PUBLIC UTILITIES

DRAINAGE																
STATION TO STATION	LOCATION	ITEM INPLACE	REMARKS	REMOVE	REMOVE	SALVAGE	DRAINAGE	PIPE CULVERTS								
				CATCH	PIPE	PIPE	STRUCT.	DIAMETER	C.M.	INSTALL	INLET	OUTLET	APRONS	INSTALL	SODDING	
				BASINS	CULVERTS	CULVERTS	②	INCHES	PIPE	CULVERT	PIPE	ELEV.	ELEV.	EACH	METAL	SQ. YD.
				EACH	LIN. FT.	LIN. FT.	STRUCT.		LIN. FT.						EACH	
T.H. 242																
292+83	Ent. Lt.	18" x 26' CMP + 2 Aprons				31		18	30 (X)			891.97	891.68	2		23
298+63	Ent. Lt.	15" x 26' CMP + 2 Aprons				30		18	44			893.75	893.62	2 (5)		45
303+26 - 303+37	40'-81' Lt.	C. B. & 12" x 32' CMP + 1 Apron (4)				36										
303+15 - 303+37	65'-81' Lt.		Connect into Inplace C8					12			28 (4)	898.75	895.10		1 (4)	(6)
303+21 - 304+05	40' Lt.	15" x 84' CMP + 2 Aprons				88										
303+17 - 304+12	60' Lt.							18	90			895.30	895.10	2		(6)
303+81 - 304+09	80'-49' Lt.	C. B. & 12" x 42' CMP + 1 Apron (4)		1		46										
303+91 - 304+10	68'-64' Lt.						1	12	2 (3)	14		899.00	895.30		1	(6)
315+15	Ent. Rt.	15" x 26' CMP + 2 Aprons						18	40			895.44	894.93	2 (5)		45
315+44	Ent. Lt.	15" x 42' CMP + 1 Apron				44										
316+90	Ent. Rt.	No Culvert Inplace						18	48 (X)			893.03	892.40	2		23
316+95	Ent. Lt.	15" x 42' CMP + 2 Aprons				46										
318+23	Ent. Lt.	15" x 44' CMP + 1 Apron				46		18	70 (X)			891.44	890.62	2		23

- ① Material not reused on the project shall be delivered to Mn/DOT Truck Station located at 2315 Fernbrook Lane, Plymouth, Minnesota. Haul of salvaged culverts shall be incidental.
- ② Design 5215
- ③ Consists of 10° Elbow.
- ④ Consists of Pipe Sewer
- ⑤ Includes 1 Safety Apron
- ⑥ See Sodding Tabulations on this sheet
- ⑦ To be used as directed by the Engineer.

(X) Alternate culvert figured here. Length shortened by 8' for R.C. Culverts.

MISCELLANEOUS REMOVALS			
STATION TO STATION	LOCATION		CURB & GUTTER
			LIN. FT.
UNIV. AVE.			
244+06 - 244+70	RT.		64

CLEARING & GRUBBING			
STATION TO STATION	LOCATION	CLEARING	GRUBBING
		TREE	TREE
T.H. 242			
294+80 - 298+02	50'-75' LT.	34	34
309+07	50' LT.	1	1
309+18	53' LT.	1	1
313+36	63' RT.	1	1
314+60	60' RT.	1	1
314+89	57' RT.	1	1
315+34	60' RT.	1	1
316+78	53' LT.	1	1

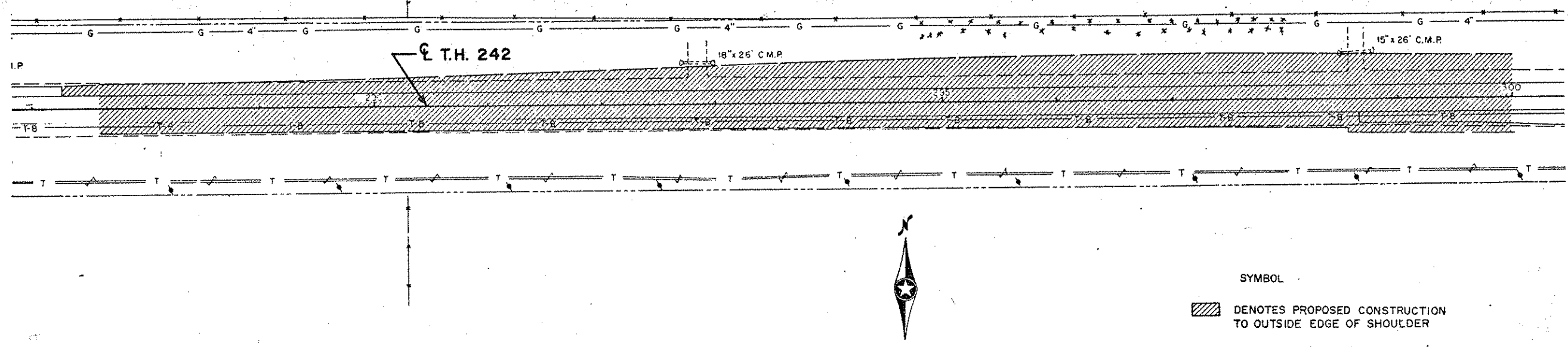
SODDING			
STATION TO STATION	LOCATION	SODDING	
		WIDTH FT.	AREA SQ. YD.
T.H. 242			
302+90 - 302+37	Radius Lt.	Var.	80
302+60 - 302+30	Radius Rt.	Var.	100
303+80 - 304+50	Radius Lt.	Var.	160
303+90 - 304+50	Radius Rt.	Var.	100
Misc. Areas	(7)	Var.	300

BITUMINOUS CURB		
STATION TO STATION	LOCATION	LIN. FT.
UNIV. AVE.		
243+88 - 244+70	RT.	72


TABLATIONS
DRAINAGE
REMOVALS
CLEARING AND GRUBBING
BITUMINOUS CURB
SODDING

B.M. Elev. 903.01
Boat Spike in P.P.
312' Left Sta. 303+26

INPLACE TOPOGRAPHY

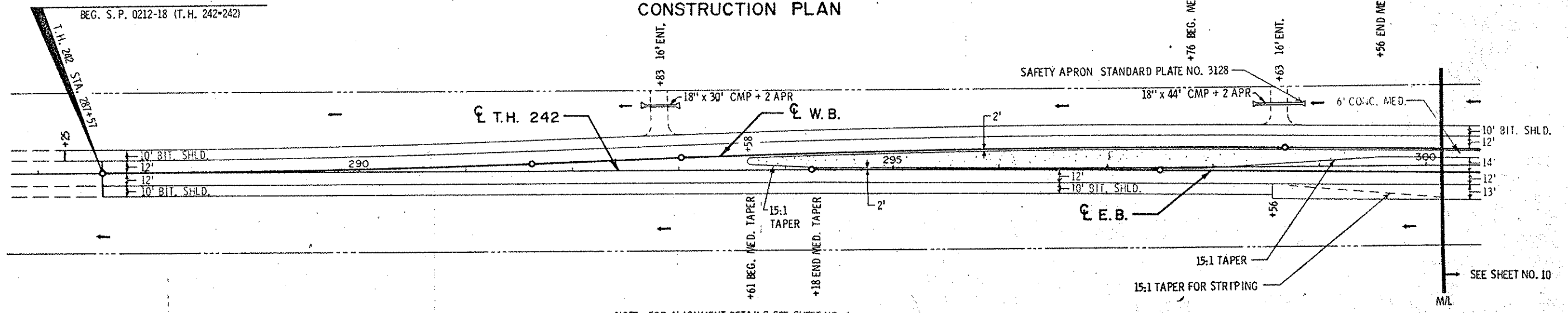


SYMBOL

 DENOTES PROPOSED CONSTRUCTION TO OUTSIDE EDGE OF SHOULDER


BEG. S.P. 0212-18 (T.H. 242-242)

CONSTRUCTION PLAN



NOTE: FOR ALIGNMENT DETAILS SEE SHEET NO. 6

SYMBOL

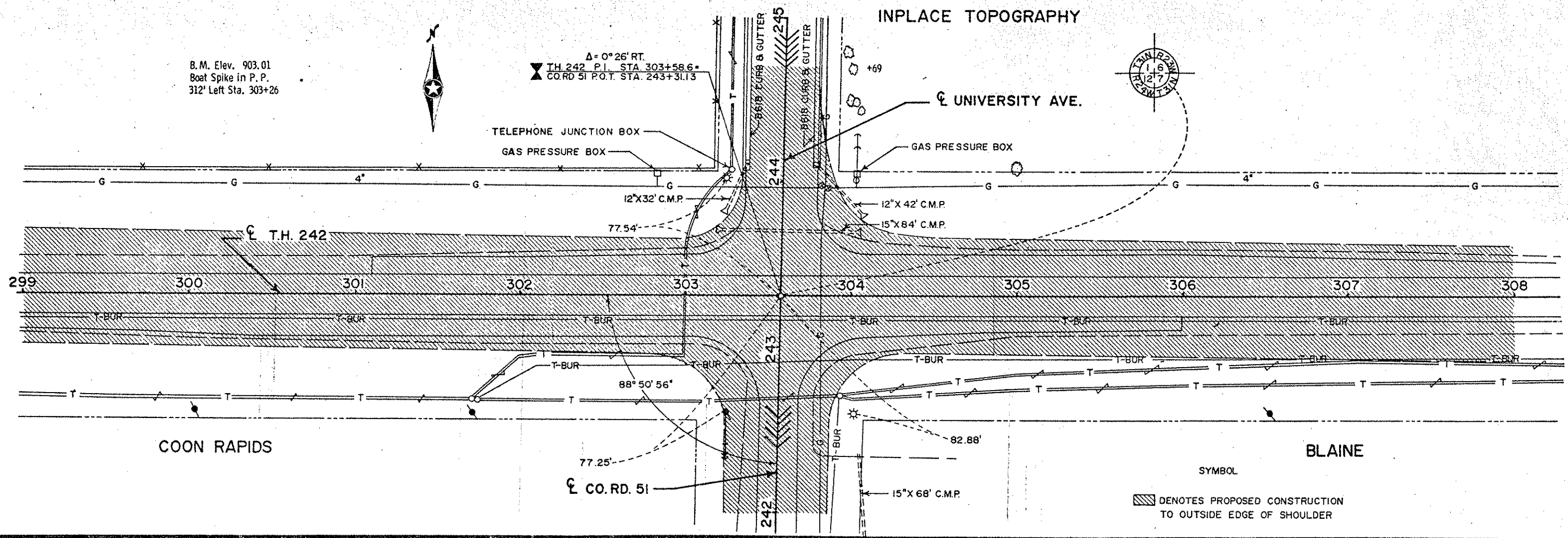
 DENOTES RAISED CONC. MEDIAN

INPLACE TOPOGRAPHY
CONSTRUCTION PLAN

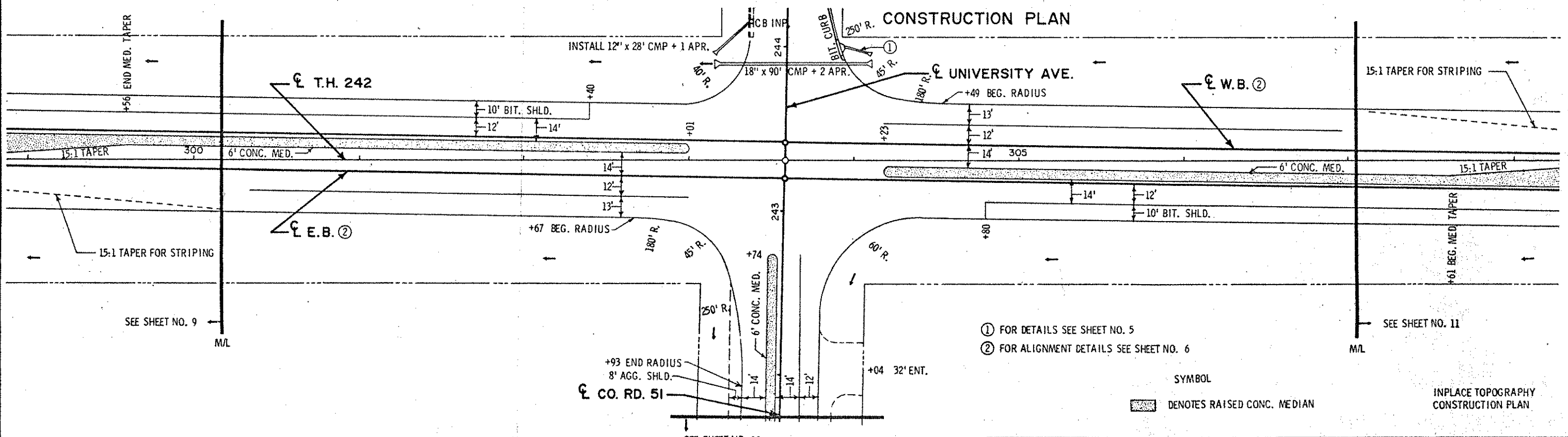
B. M. Elev. 903.01
Boat Spike in P. P.
312' Left Sta. 303+26

$\Delta = 0^\circ 26' RT.$
TH. 242 P.I. STA. 303+58.6
CORD 51 P.O.T. STA. 243+31.3

INPLACE TOPOGRAPHY

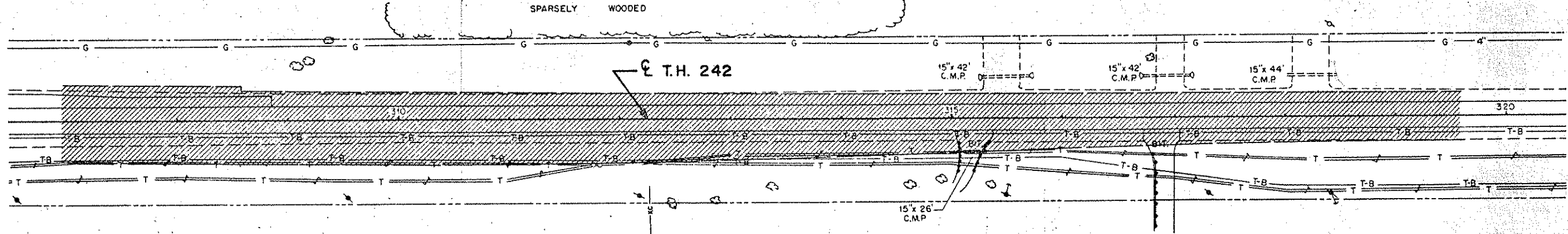


CONSTRUCTION PLAN



B. M. Elev. 903.01
 Boat Spike in P. P.
 312' Left Sta. 303+26

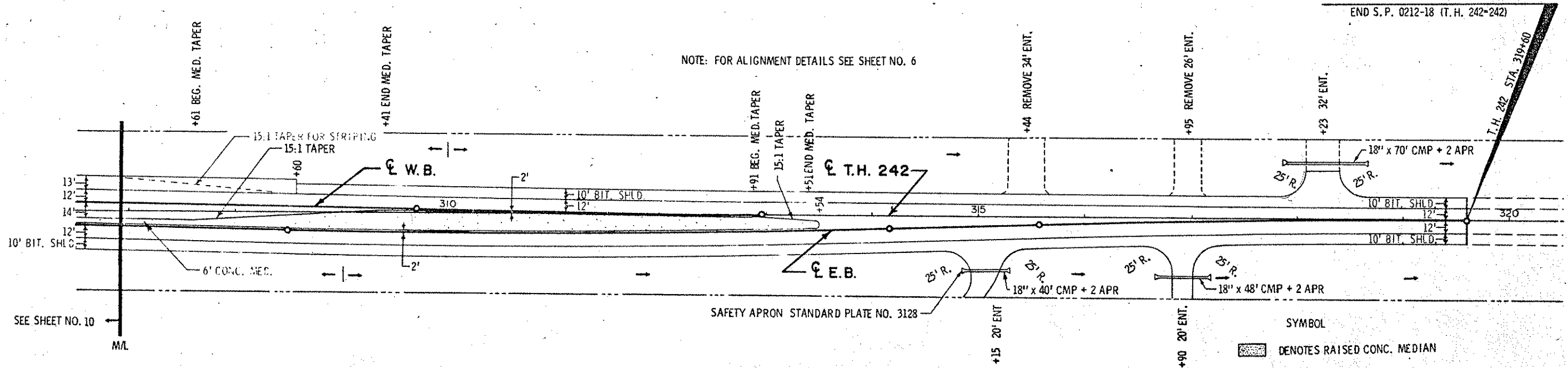
INPLACE TOPOGRAPHY



SYMBOL
 DENOTES PROPOSED CONSTRUCTION TO OUTSIDE EDGE OF SHOULDER

CONSTRUCTION PLAN

NOTE: FOR ALIGNMENT DETAILS SEE SHEET NO. 6



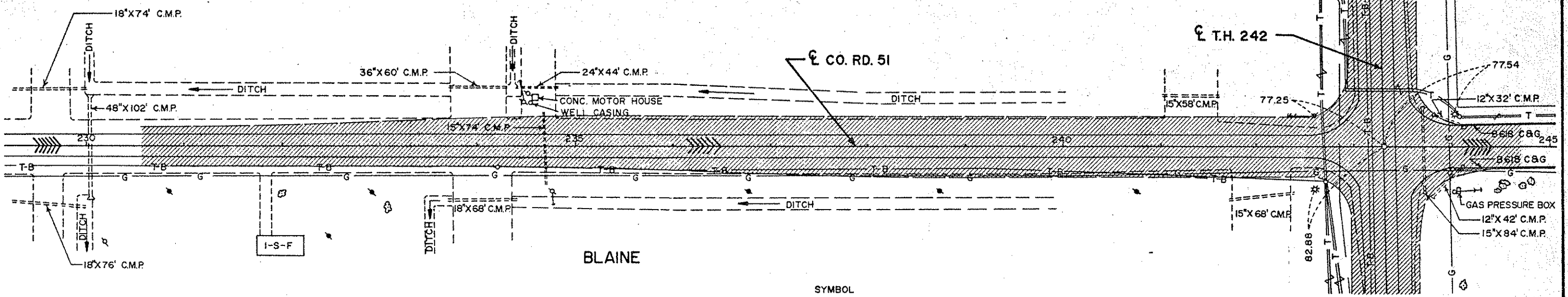
SYMBOL
 DENOTES RAISED CONC. MEDIAN

INPLACE TOPOGRAPHY
 CONSTRUCTION PLAN

INPLACE TOPOGRAPHY

B. M. Elev. 903.01
Boat Spike in P. P.
312' Left Sta. 303+26

COON RAPIDS



BLAINE

SYMBOL
 DENOTES PROPOSED CONSTRUCTION TO OUTSIDE EDGE OF SHOULDER

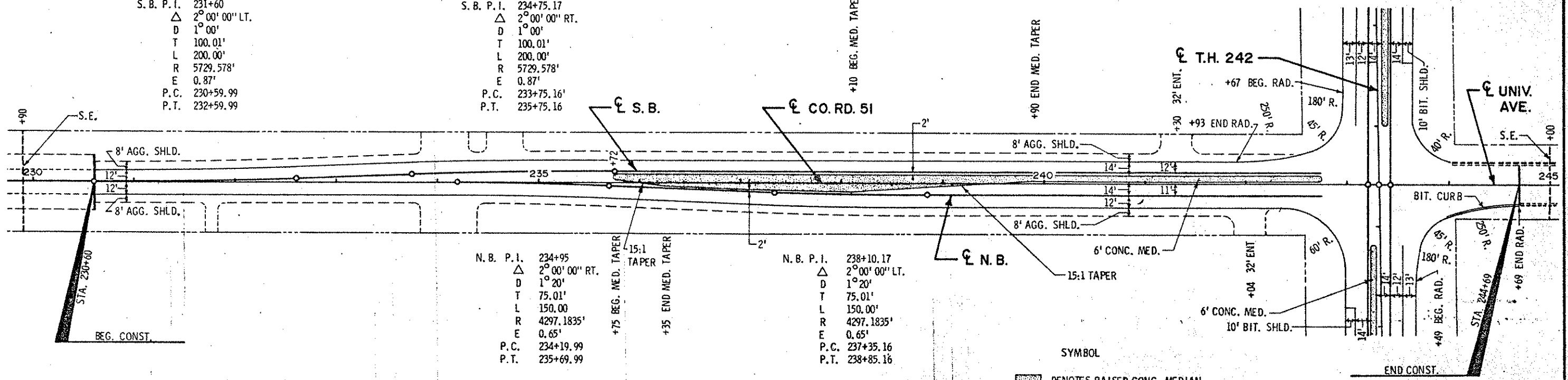
CONSTRUCTION PLAN

S. B. P. I. 231+60
 Δ 2° 00' 00" LT.
 D 1° 00'
 T 100.01'
 L 200.00'
 R 5729.578'
 E 0.87'
 P. C. 230+59.99
 P. T. 232+59.99

S. B. P. I. 234+75.17
 Δ 2° 00' 00" RT.
 D 1° 00'
 T 100.01'
 L 200.00'
 R 5729.578'
 E 0.87'
 P. C. 233+75.16
 P. T. 235+75.16

N. B. P. I. 238+10.17
 Δ 2° 00' 00" LT.
 D 1° 20'
 T 75.01'
 L 150.00'
 R 4297.1835'
 E 0.65'
 P. C. 237+35.16
 P. T. 238+85.16

N. B. P. I. 234+95
 Δ 2° 00' 00" RT.
 D 1° 20'
 T 75.01'
 L 150.00'
 R 4297.1835'
 E 0.65'
 P. C. 234+19.99
 P. T. 235+69.99



SYMBOL
 DENOTES RAISED CONC. MEDIAN

INPLACE TOPOGRAPHY
 CONSTRUCTION PLAN

SIGNAL INDICATION CHART							
FACE	PHASE	FLASH	TYPE AND SIZE (IN INCHES)				
			R	Y	G	Y	G
1-1	1	R	8 (2)	8 (2)	12		
2-1	2	R	12	12	12		
2-2	2	R	12	12	12		
4-1	4	R	12	12	12		
4-2	4	R	12	12	12		
4-3	4	R	12	12	12		
4-4	4	R	12	12	12		
4-5	4	R	12	12	12		
4-6	4	R	12	12	12		
5-1	5	R	8 (2)	8 (2)	12		
6-1	6	R	12	12	12		
6-2	6	R	12	12	12		

1/4" R.S.C.
1-2/C #14

1/4" R.S.C.
2-2/C #14

TYPE A-30-D40-9
ONE WAY SIGNAL (OVERHEAD)
TWO WAY SIGNAL (TYPE 200
POLE MOUNTED AT 270°)
LUMINAIRE 355°, 250W HPSV
2-SETS PEDESTRIAN INDICATIONS
2-PEDESTRIAN PUSHBUTTONS
EXTEND INTO H.H.9; 3" R.S.C.
1-12/C #12, 3-3/C #12 AND 2-1/C #10

3" R.S.C.
1-12/C #12
3-3/C #12
2-2/C #14
2-1/C #10

ONE WAY SIGNAL (TYPE 1A)
SIGN DOWNLIGHT
EXTEND INTO H.H.6; 3" R.S.C.
1-12/C #12
TWO STEEL GUARD POSTS

MULTIPLE LOOP DETECTOR

2-6'x6' LOOP DETECTORS

2-6'x6' LOOP DETECTORS

TYPE A-30
ONE WAY SIGNAL (OVERHEAD)
ONE WAY SIGNAL (TYPE 10C)
POLE MOUNTED 270°)
2-SETS PEDESTRIAN INDICATIONS
2-PEDESTRIAN PUSHBUTTONS
EXTEND INTO H.H.15; 3" R.S.C.
1-12/C #12, 3-3/C #12
3-STEEL GUARD POSTS

3" R.S.C.
1-12/C #12
3-3/C #12

1/4" R.S.C.
1-2/C #14

----- FUTURE CONSTRUCTION

THESE HANDHOLES SHALL
HAVE TYPE LD COVERS:
2,3,4,6,7,8,14,16, AND 17

FOR SYMBOLS, ABBREVIATIONS,
AND HANDHOLE FRAME & COVER
DETAILS, SEE SHEET NO. 15E.

6'x6' LOOP DETECTOR

KEY: INDICATIONS ARE CIRCULAR
UNLESS OTHERWISE NOTED:
(1) OPTICALLY PROGRAMMED
(2) OPTICAL ADAPTOR

← • LEFT ARROW
↑ • THRU ARROW
→ • RIGHT ARROW

6'x6' LOOP DETECTOR

T.H. 242 W.B.

T.H. 242 E.B.

MULTIPLE LOOP DETECTOR

ONE WAY SIGNAL (TYPE 1A)
SIGN DOWNLIGHT
EXTEND INTO H.H.13; 3" R.S.C.
1-12/C #12
TWO STEEL GUARD POSTS

3" R.S.C.
2-12/C #12
3-3/C #12
4-2/C #14
2-1/C #10

SERVICE EQUIPMENT PAD
SEE SHEET NO. 15

TYPE A-30-D40-9
ONE WAY SIGNAL (OVERHEAD)
TWO WAY SIGNAL (TYPE 200-
POLE MOUNTED AT 270°)
2-SETS PEDESTRIAN INDICATIONS
2-PEDESTRIAN PUSHBUTTONS
LUMINAIRE AT 355°, 250W HPSV
EXTEND INTO H.H.13; 3" R.S.C.
1-12/C #12, 4-3/C #12 AND
2-1/C #10
3-STEEL GUARD POSTS
SWING-AWAY HINGES (2)

1/4" R.S.C.
2-2/C #14

1/4" R.S.C.
1-2/C #14

3" R.S.C.
2-12/C #12
3-3/C #12
4-2/C #14
2-1/C #10

TYPE A-35
ONE WAY SIGNAL (OVERHEAD)
TWO WAY SIGNAL (TYPE 200-
POLE MOUNTED AT 270°)
2-SETS PEDESTRIAN INDICATIONS
2-PEDESTRIAN PUSHBUTTONS
EXTEND INTO H.H.5; 3" R.S.C.
1-12/C #12, 4-3/C #12 AND
3-STEEL GUARD POSTS

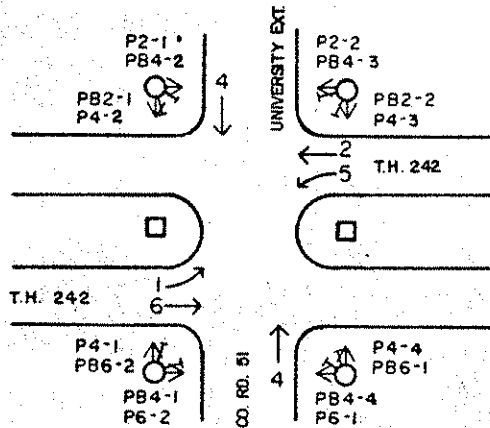
3" R.S.C.
3-12/C #12
5-3/C #12
4-2/C #14
2-1/C #10

3" R.S.C.
3-12/C #12
5-3/C #12
6-2/C #14
2-1/C #10

2-6'x6' LOOP DETECTORS

2-6'x6' LOOP DETECTORS

CONTROLLER PHASING
PEDESTRIAN INDICATION AND
PUSHBUTTON LAYOUT

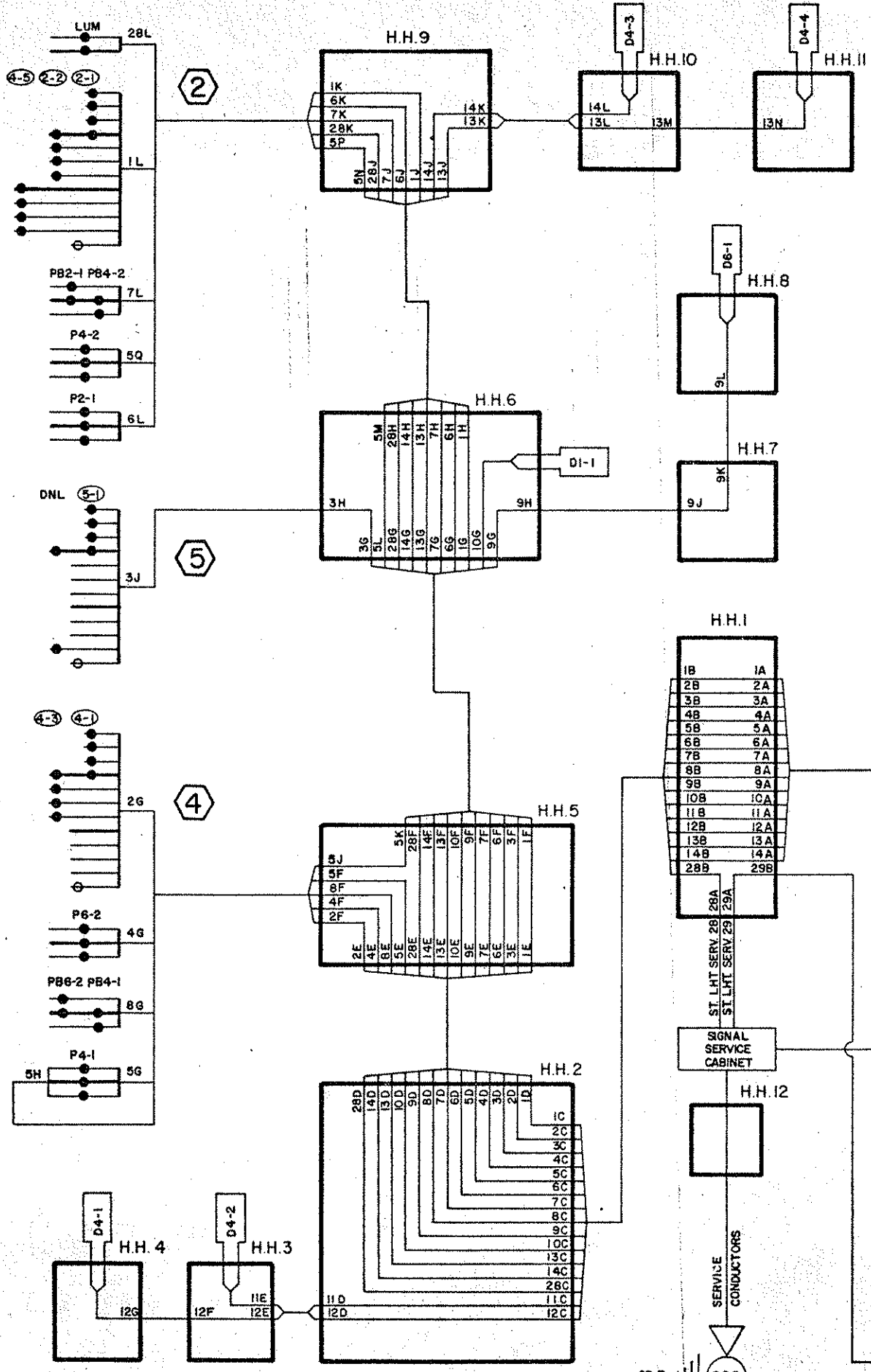


I HEREBY CERTIFY THAT SHEETS 13 THROUGH 15E OF
THIS PLAN WERE PREPARED BY ME OR UNDER MY DIRECT
SUPERVISION AND THAT I AM A DULY REGISTERED PRO-
FESSIONAL ENGINEER UNDER THE LAWS OF THE STATE
OF MINNESOTA.

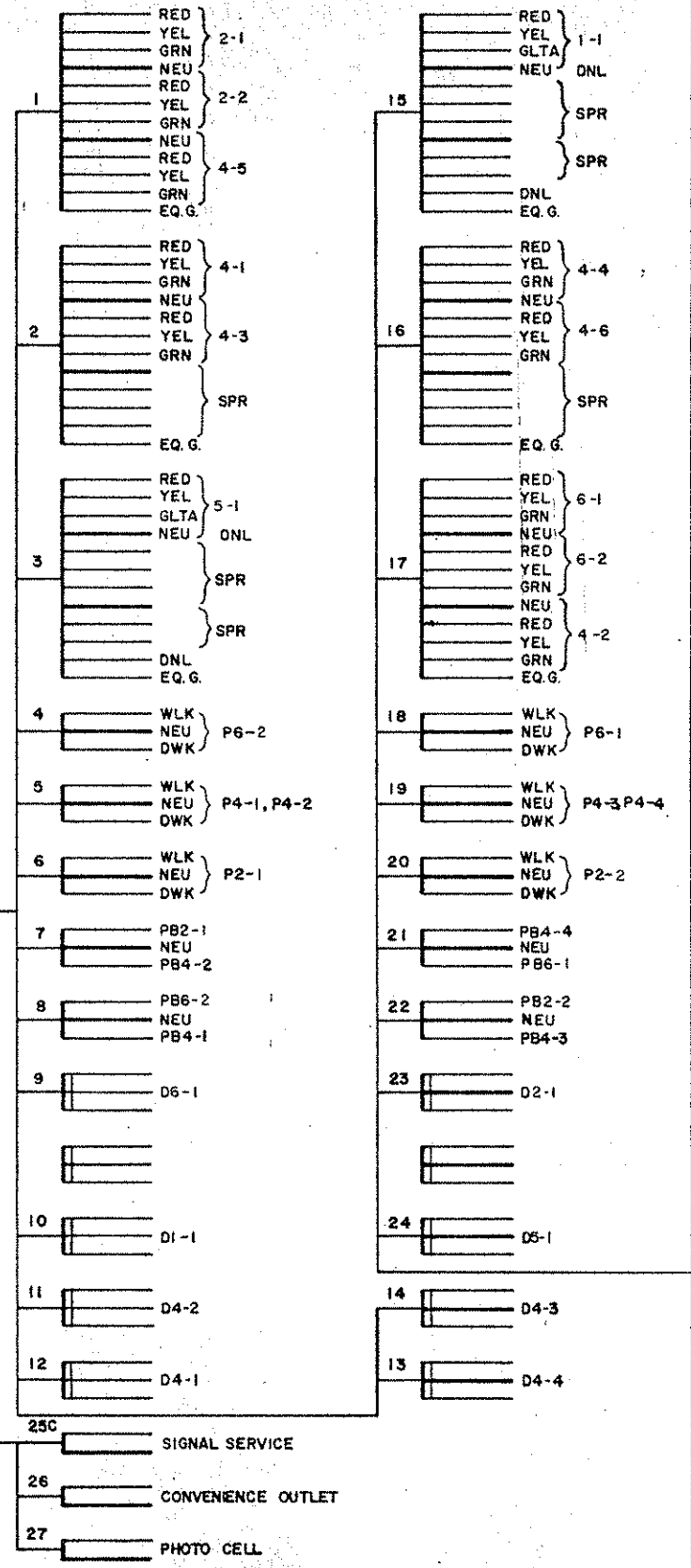
Dennis R. Gyles
DATE 7/8/77 REG. NO. 10792 DESIGN SQUAD 9 WILSON

INTERSECTION LAYOUT
INTERSECTION OF T.H. 242 AND CO. RD. 51
BLAINE AND COON RAPIDS
IN ANOKA CO.

LOCATION ID: 02030242*006200*



CONTROLLER CABINET



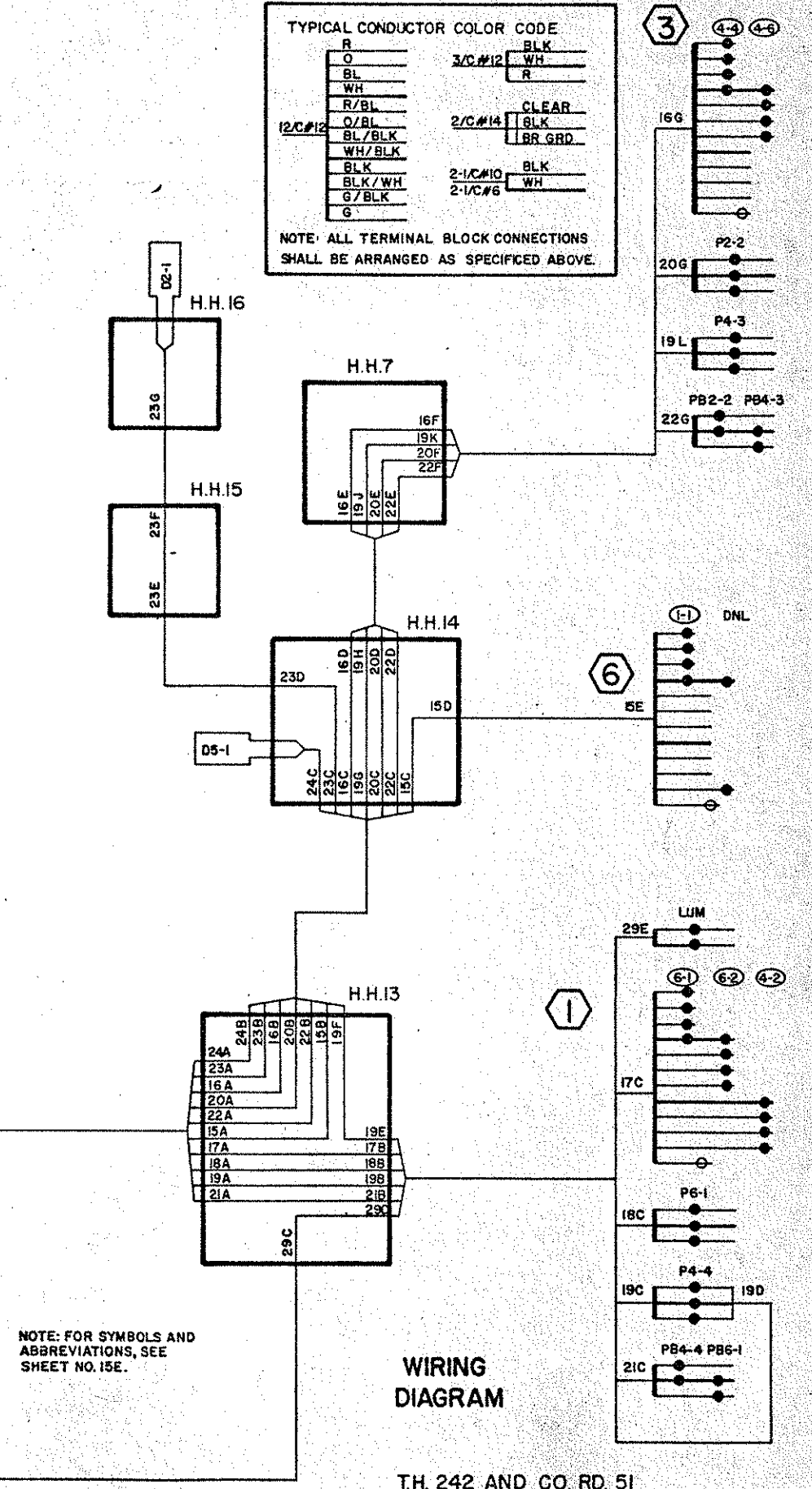
TYPICAL CONDUCTOR COLOR CODE

R	BLK
O	WH
BL	3/C#12
WH	R
R/BL	CLEAR
O/BL	2/C#14
BL/BLK	BLK
WH/BLK	BR GRD
BLK	2-1/C#10
BLK/WH	BLK
G/BLK	2-1/C#6
G	WH

NOTE: ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.

NOTE: FOR SYMBOLS AND ABBREVIATIONS, SEE SHEET NO. 15E.

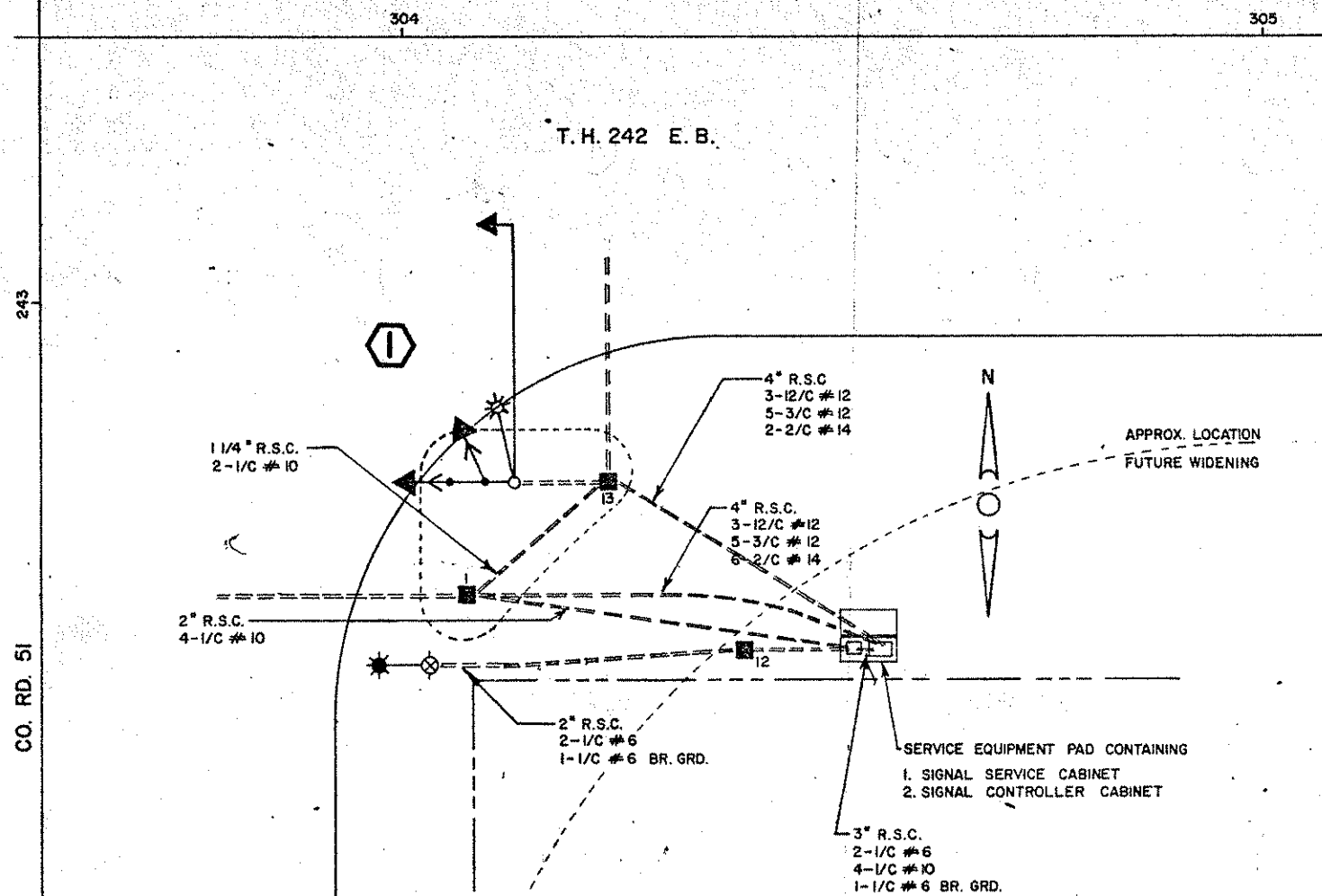
WIRING DIAGRAM



T.H. 242 AND CO RD. 51 IN ANOKA CO.

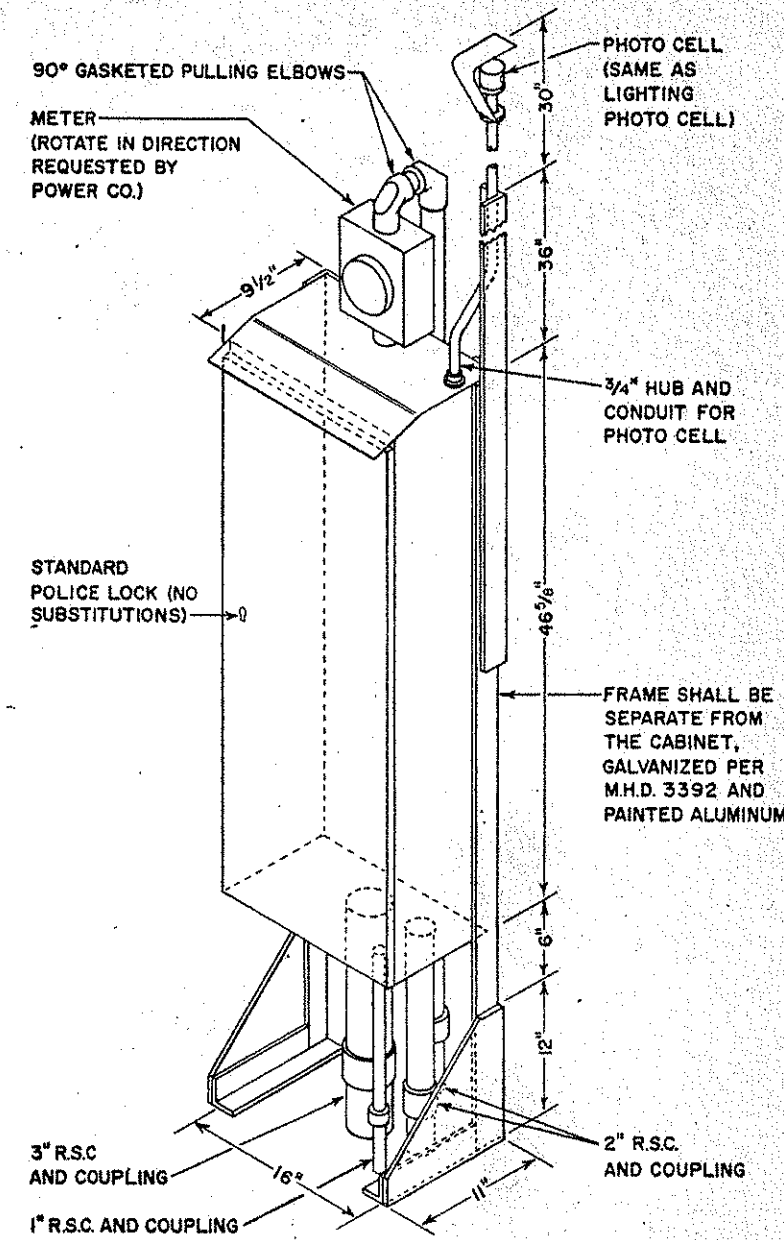
CONDUIT LAYOUT

Fed. Proj. No.

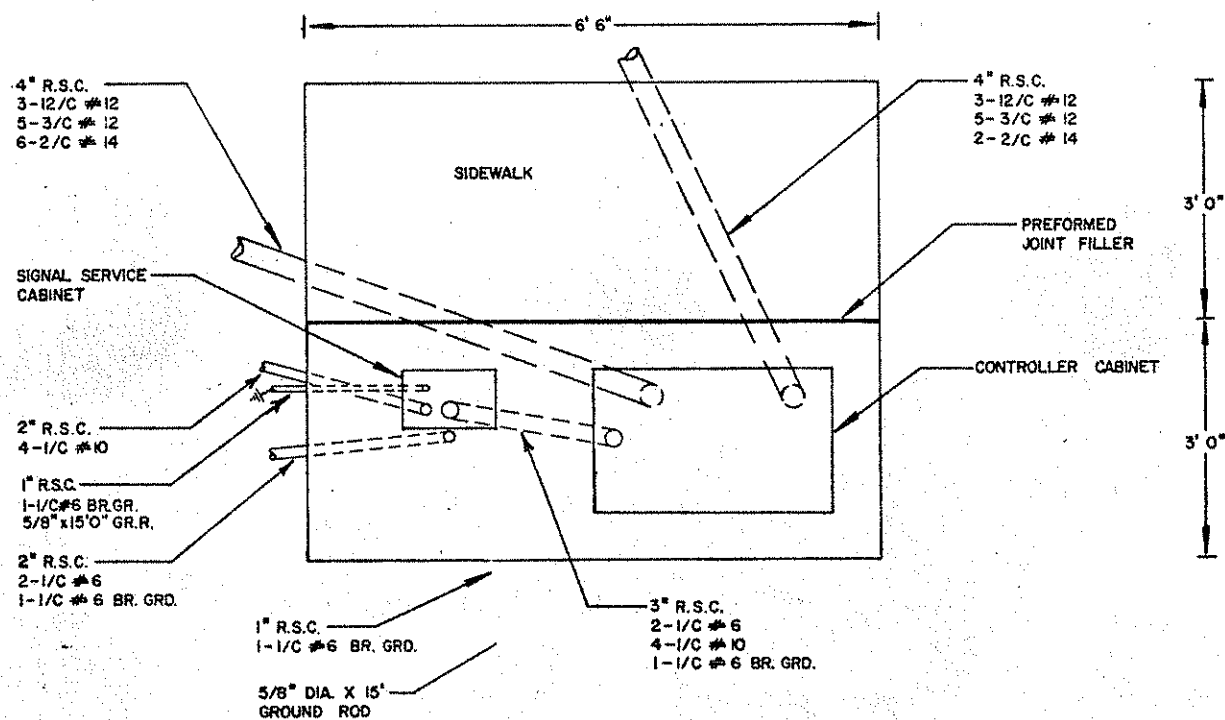


CABLE NO.*	CABLE TYPE	CIRCUIT BREAKER	TERMINAL	ITEM
25	2-1/C#6	CB4	TB5-1B	SIGNAL SERVICE
26	2-1/C#10	CB6	TB5-5B	CONVENIENCE
27	2-1/C#10	CB8	TB5-15B	DOWNLIGHT CONNECTION
28	2-1/C#10	CB10	TB5-11B	LUMINAIRE (2)
29	2-1/C#10	CB9	TB5-10B	LUMINAIRE (1)

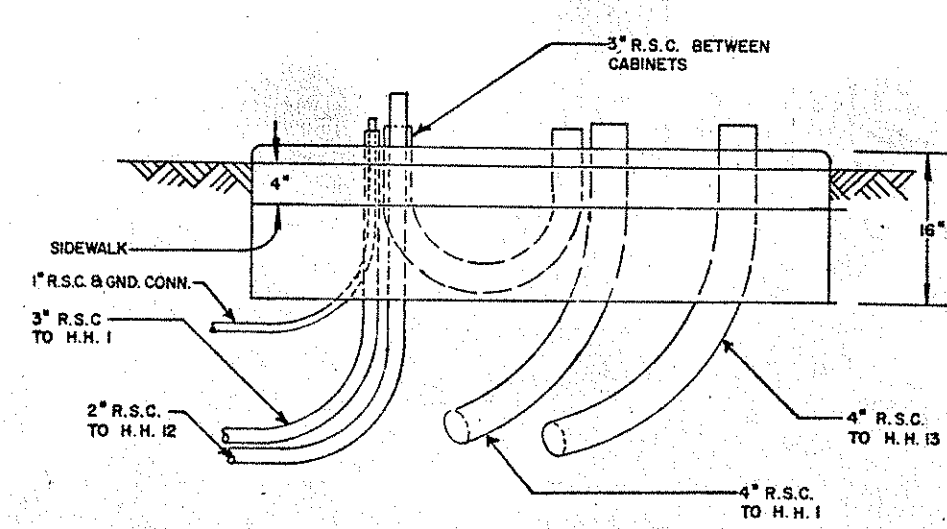
*CABLE NO. AS SHOWN ON FIELD WIRING DIAGRAM. SEE SHEET NO. 14.



SERVICE EQUIPMENT PAD

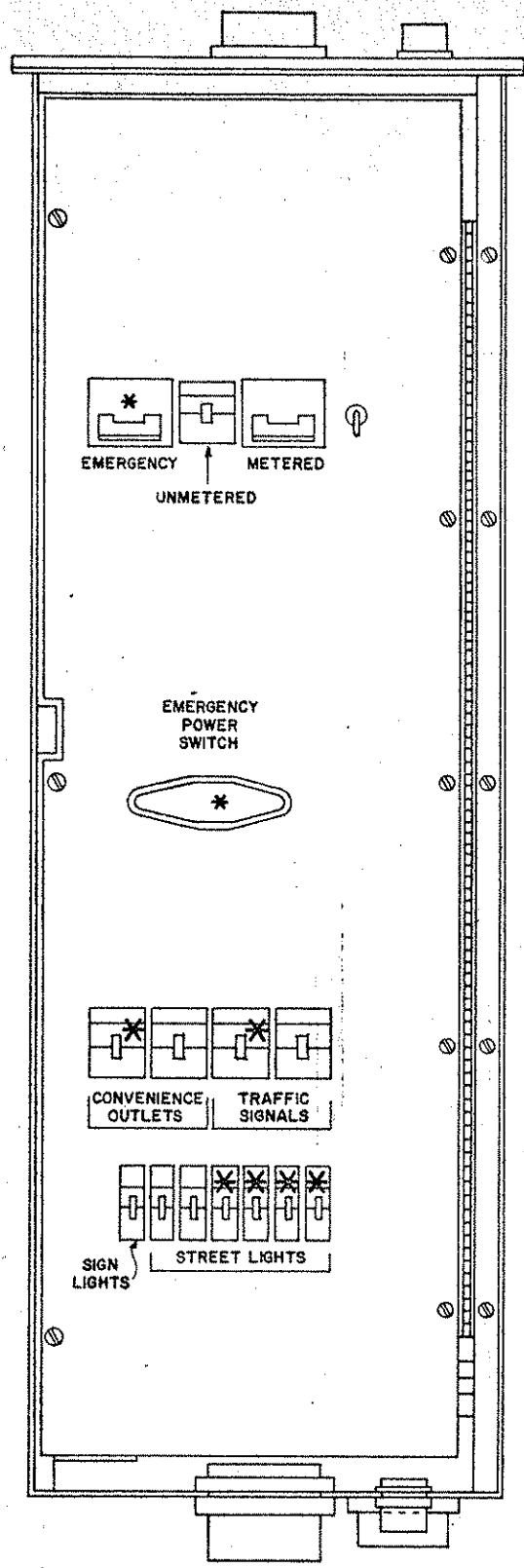


PAD ELEVATION

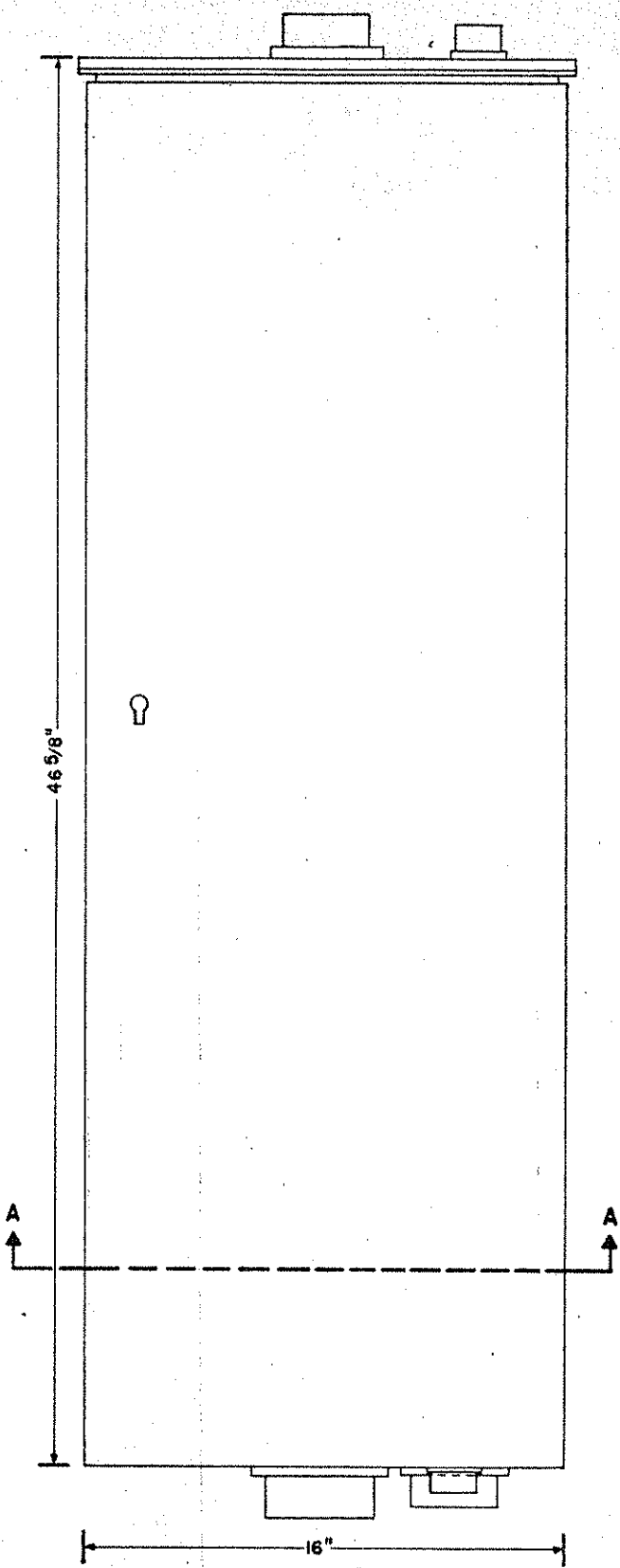


SIGNAL SERVICE CABINET

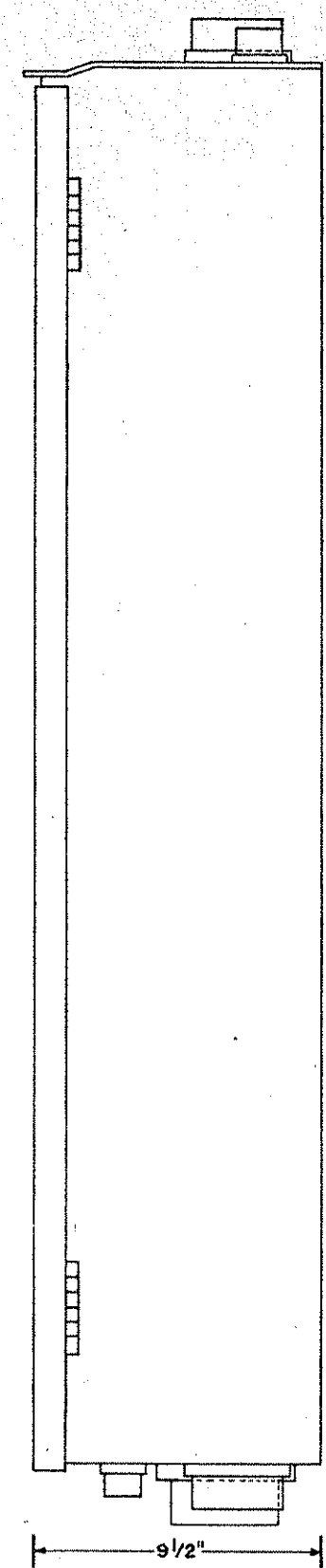
DETAILS
T.H. 242 AT CO. RD. 51
BLAINE AND COON RAPIDS



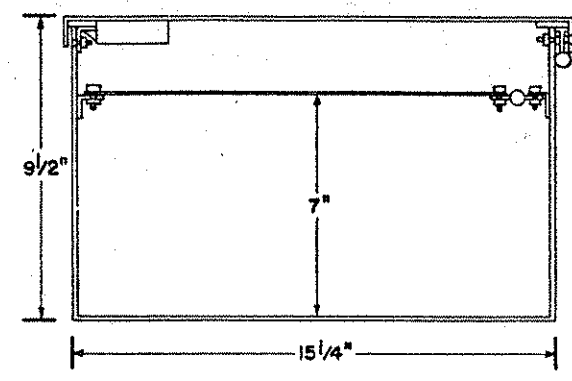
FRONT VIEW
DOOR REMOVED



FRONT VIEW
DOOR CLOSED



SIDE VIEW



SECTION A-A
BASIC FRAME

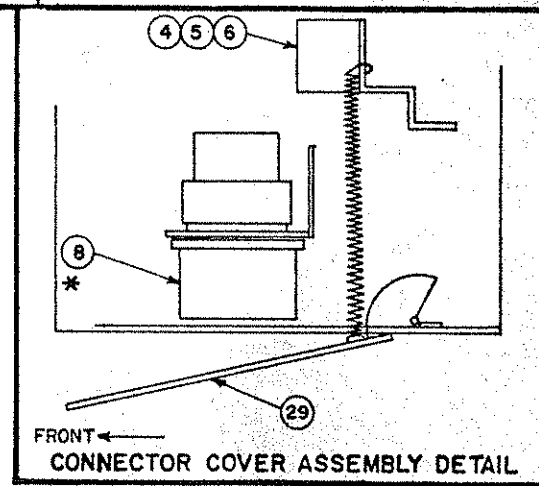
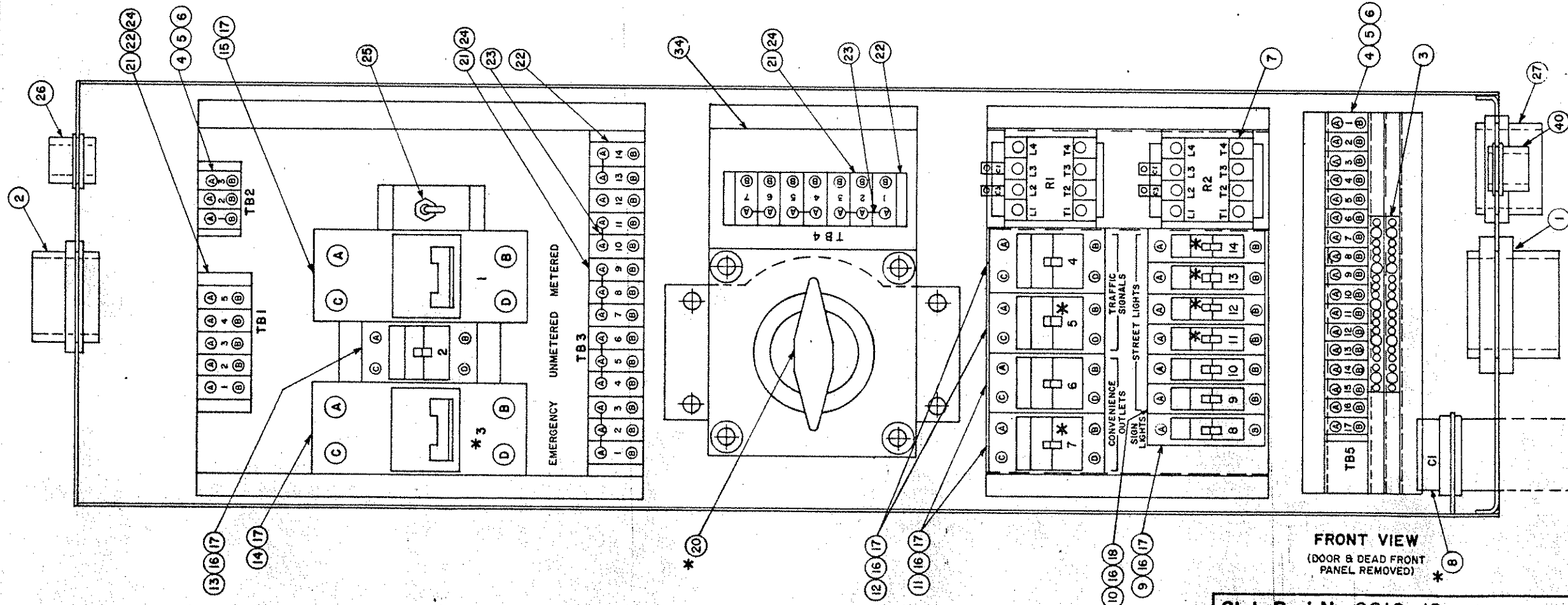
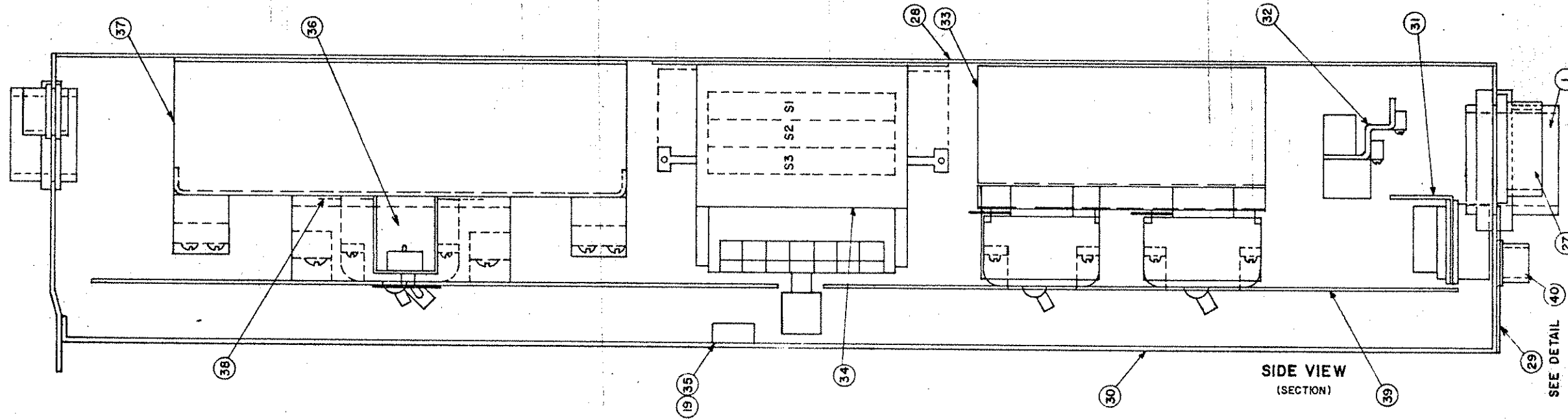
NOTES:

1. MECHANICAL DETAIL, PARTS LIST AND CONSTRUCTION INFORMATION SHALL BE OBTAINED FROM THE MINNESOTA HIGHWAY DEPARTMENT, OFFICE OF TRAFFIC ENGINEERING.
2. THE CABINET SHALL BE RAIN-TIGHT CONSTRUCTION OR BETTER. ALL GASKETING MATERIAL SHALL BE NEOPRENE OR EQUAL.
3. ALL HINGES, HINGE PINS AND LOCKS SHALL BE OF NON-CORRODING MATERIAL.
4. THE CABINET DOOR SHALL LOCK WITH A STANDARD POLICE KEY.
5. ALL SWITCHES, CIRCUIT BREAKERS AND TERMINAL STRIPS SHALL BE MARKED IN A MANNER THAT WILL NOT DETERIORATE WITH MOISTURE OR AGE.
6. FIELD CONNECTIONS SHALL BE CLEARLY MARKED AND EASILY ACCESSIBLE.
7. THE CABINET SHALL BE FABRICATED OF MINIMUM 12 GAUGE STEEL IN ACCORDANCE WITH M.H.D. 3306.
8. THE CABINET SHALL BE GALVANIZED IN ACCORDANCE WITH M.H.D. 3392.
9. THE CABINET SHALL BE PAINTED INSIDE AND OUTSIDE WITH ONE SHOP COAT OF RED LEAD PRIMER PER M.H.D. 3506. THE INSIDE OF THE CABINET SHALL BE PAINTED ONE SHOP COAT OF ALUMINUM PAINT. TWO FIELD COATS OF ALUMINUM PAINT CONFORMING TO THE REQUIREMENTS OF M.H.D. 3527 AND 3528 FOR THE FIRST AND SECOND COATS RESPECTIVELY SHALL BE APPLIED TO THE OUTSIDE.
10. * INDICATES FUTURE EQUIPMENT, NOT SUPPLIED ON THIS PROJECT. ALL MOUNTING PANELS, BRACKETS AND TERMINAL BLOCKS FOR FUTURE EQUIPMENT TO BE SUPPLIED.
11. THE SIGNAL SERVICE CABINET SHALL BE AS MANUFACTURED BY THE FOLLOWING (OR AN APPROVED EQUAL).
 (A) STATES ELECTRIC MANUFACTURING CO., MPLS., MINN.
 (B) SHALLBETTER INDUSTRIES INC., MPLS., MINN.
 (C) BECO ELECTRIC MANUFACTURING CO., MPLS., MINN.

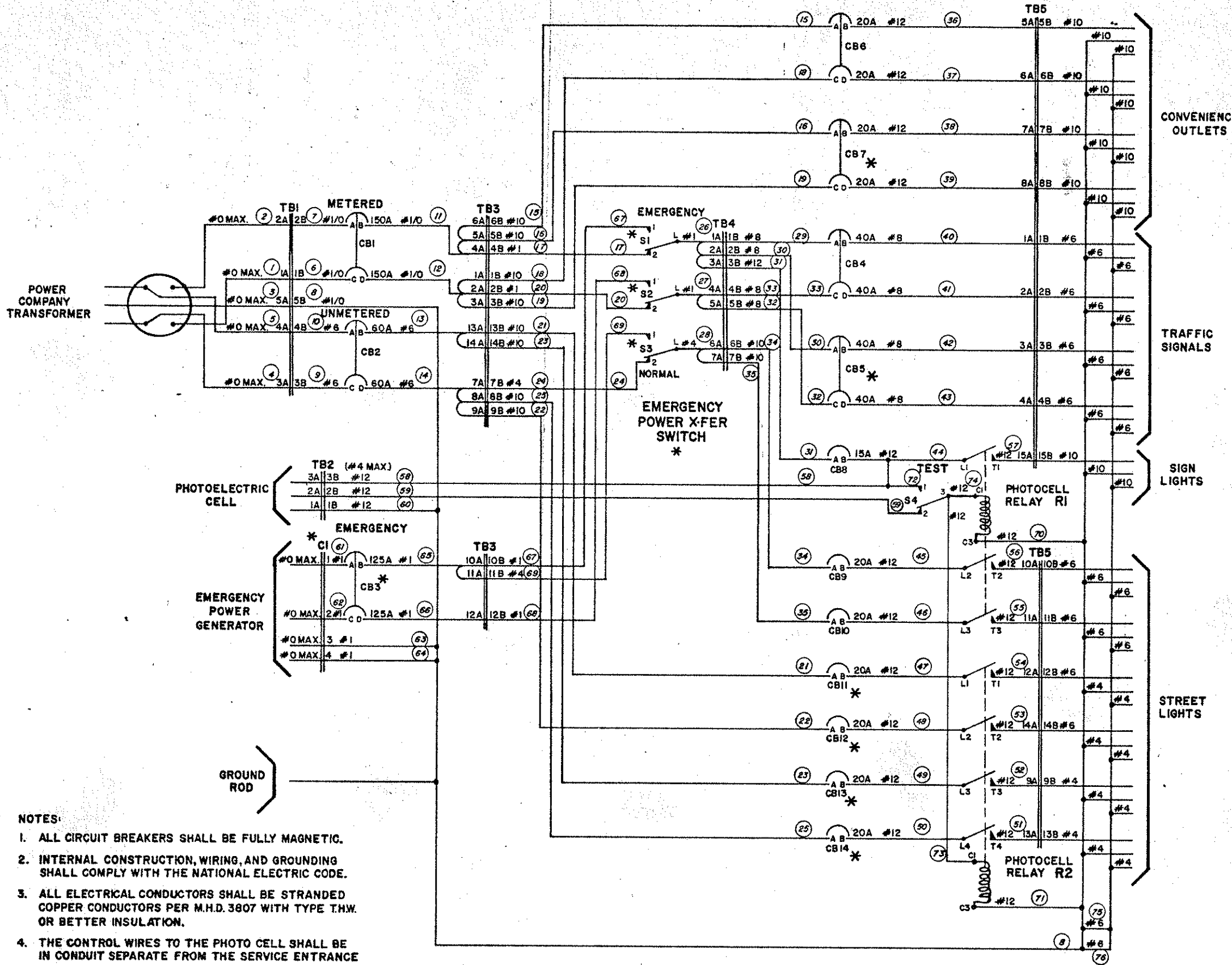
SIGNAL SERVICE CABINET
BASIC CABINET INFORMATION

BILL OF MATERIAL FOR SERVICE CABINET

ITEM	DESCRIPTION
1	3" RAIN TIGHT HUB
2	2 1/2" RAIN TIGHT HUB
3	BONDING BAR
4	TERMINAL BLOCK
5	END TERMINAL BLOCK
6	MARKING TAPE
7	PHOTOCELL RELAY
* 8	EMERGENCY POWER GENERATOR CONNECTOR
9	CIRCUIT BREAKER - 15A-1 POLE
10	CIRCUIT BREAKER - 20A-1 POLE
11	CIRCUIT BREAKER - 20A-2 POLE
12	CIRCUIT BREAKER - 40A-2 POLE
13	CIRCUIT BREAKER - 60A-2 POLE
* 14	CIRCUIT BREAKER - 125A-2 POLE
15	CIRCUIT BREAKER - 150A-2 POLE
16	MOUNTING CLAMP
17	CB 1 TO 8 IDENTIFYING TABS
18	CB 9 TO 14 IDENTIFYING TABS
19	POLICE KEY LOCK
* 20	ROTARY EMERGENCY POWER SWITCH
21	TERMINAL BLOCK
22	END TERMINAL BLOCK
23	JUMPER
24	MARKING TAPE
25	TOGGLE SWITCH
26	3/4" RAIN TIGHT HUB
27	2" RAIN TIGHT HUB
28	CABINET HOUSING ASSEMBLY
29	EMERGENCY POWER CONNECTOR COVER ASSEMBLY
30	FRONT PANEL ASSEMBLY
31	EMERGENCY POWER CONNECTOR MOUNTING BRACKET
32	TERMINAL MOUNTING BRACKET
33	CIRCUIT BREAKER MOUNTING BRACKET
34	ROTARY SWITCH TERMINAL MOUNTING BRACKET
35	POLICE KEY LOCK MOUNTING BRACKET
36	TOGGLE SWITCH MOUNTING BRACKET
37	MAIN CIRCUIT BREAKER AND TERMINAL BLOCK MOUNTING BRACKET
38	CIRCUIT BREAKER MOUNTING BRACKET
39	DEAD FRONT PANEL
40	1" RAIN TIGHT HUB



SIGNAL SERVICE CABINET DETAILS



WIRE NO.	WIRE SIZE (AWG)	APPROX. WIRE LENGTH	FROM LOCATION	TO
1.	1/0		METER HEAD OUT	TB1-1A
2.	1/0		METER HEAD OUT	TB1-2A
3.	1/0		METER HEAD GROUND	TB1-5A
4.	1/0		METER HEAD IN	TB1-3A
5.	1/0		METER HEAD IN	TB1-4A
6.	1/0	4"	TB1-1B	CB1-C
7.	1/0	4"	TB1-2B	CB1-A
8.	1/0	5"	TB1-5B	BONDING BARS
9.	6	5"	TB1-3B	CB2-C
10.	6	5"	TB1-4B	CB2-A
11.	1/0	5"	CB1-B	TB3-4A
12.	1/0	5"	CB1-D	TB3-2A
13.	6	8"	CB2-B	TB3-13A
14.	6	5-1/2"	CB2-D	TB3-7A
15.	10	3'-2"	TB3-6B	CB6-A
16.	10	3'-4"	TB3-5B	CB7-A
17.	1	1'	TB3-4B	S-1-2 TB4-1A
18.	10	3'-6"	TB3-1B	CB6-C
19.	10	3'-6"	TB3-3B	CB7-C
20.	1	1'-6"	TB3-2B	S-2-2 TB4-4A
21.	10	2'-9"	TB3-13B	CB11-A
22.	10	2'-10"	TB3-9B	CB12-A
23.	10	2'-7"	TB3-14B	CB13-A
24.	4	1'	TB3-7B	S-3-2 TB4-6A
25.	10	2'-10"	TB3-8B	CB14-A
26.	1	1'-6"	C-1-L	TB4-1A
27.	1	1'-3"	S-2-L	TB4-4A
28.	4	1'-9"	S-3-L	TB4-6A
29.	8	1'-2"	TB4-1B	CB4-A
30.	8	1'-4"	TB4-2B	CB5-A
31.	12	2'-1"	TB4-3B	CB8-A
32.	8	1'-8"	TB4-5B	CB5-C
33.	8	1'-5"	TB4-4B	CB4-C
34.	10	2'-2"	TB4-6B	CB9-A
35.	10	2'-2"	TB4-7B	CB10-A
36.	12	1'-3"	CB6-B	TB5-5A
37.	12	1'-4"	CB6-D	TB3-6A
38.	12	1'-4"	CB7-B	TB5-7A
39.	12	1'-6"	CB7-D	TB5-6A
40.	8	1'-2"	CB4-B	TB5-1A
41.	8	1'-2"	CB4-D	TB5-2A
42.	6	1'-3"	CB5-B	TB5-3A
43.	8	1'-4"	CB5-D	TB5-4A
44.	12	1'-4"	CB8-B	R1-L1
45.	12	1'-7"	CB9-B	R1-L2
46.	12	1'-8"	CB10-B	R1-L3
47.	12	1'-3"	CB11-B	R2-L1
48.	12	1'-4"	CB12-B	R2-L2
49.	12	1'-2"	CB13-B	R2-L3
50.	12	1'-1"	CB14-B	R2-L4
51.	12	1'-4"	R2-T4	TB5-13A
52.	12	1'-2"	R2-T3	TB5-9A
53.	12	1'-6"	R2-T2	TB5-14A
54.	12	1'-5"	R2-T1	TB5-12A
55.	12	1'-5"	R1-T3	TB5-11A
56.	12	1'-5"	R1-T2	TB5-10A
57.	12	1'-5"	R1-T1	TB5-15A
58.	12	2'-9"	TB2-3B	R1-L1
59.	12	1'-5"	TB2-2B	S-4-2
60.	12	4'-6"	TB2-1B	TB1-5B
61.	1	5"	O1-1	CB3-A
62.	1	5"	O1-2	CB3-D
63.	1	1'-3"	O1-3	BONDING BARS
64.	1	1'-3"	O1-4	BONDING BARS
65.	1	5"	CB3-B	TB3-10A
66.	1	5"	CB3-D	TB3-12A
67.	1	1'-7"	TB3-10B	S-1
68.	1	9"	TB3-12B	S-2
69.	4	1'-6"	TB3-11B	S-3
70.	12	1'-9"	R1-C3	BONDING BARS
71.	12	1'	R2-C3	BONDING BARS
72.	12	2'	R1-L1	S-4-1
73.	12	10"	R1-C1	R2-C1
74.	12	2"	S-4-3	R1-C1
75.	6	4"		INTERCONNECTION OF BONDING BARS
76.	6	4"		INTERCONNECTION OF BONDING BARS

- NOTES:
1. ALL CIRCUIT BREAKERS SHALL BE FULLY MAGNETIC.
 2. INTERNAL CONSTRUCTION, WIRING, AND GROUNDING SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE.
 3. ALL ELECTRICAL CONDUCTORS SHALL BE STRANDED COPPER CONDUCTORS PER M.H.D. 3807 WITH TYPE T.H.W. OR BETTER INSULATION.
 4. THE CONTROL WIRES TO THE PHOTO CELL SHALL BE IN CONDUIT SEPARATE FROM THE SERVICE ENTRANCE CONDUIT.
 5. * INDICATES FUTURE EQUIPMENT. NOT SUPPLIED ON THIS PROJECT. JUMPER WIRES BETWEEN TB3-4B AND TB4-1A, TB3-2B AND TB4-4A, TB3-7B AND TB4-6A TO BE SUPPLIED TO PROVIDE CIRCUIT CONTINUITY. ALL MOUNTING PANELS, BRACKETS AND TERMINAL BLOCKS FOR FUTURE EQUIPMENT TO BE SUPPLIED. WIRES SHOWN LINED OUT IN WIRE LIST ARE NOT TO BE SUPPLIED.

TERMINAL STRAPS ARE TO BE USED BETWEEN THE FOLLOWING POINTS IN THE CIRCUIT:

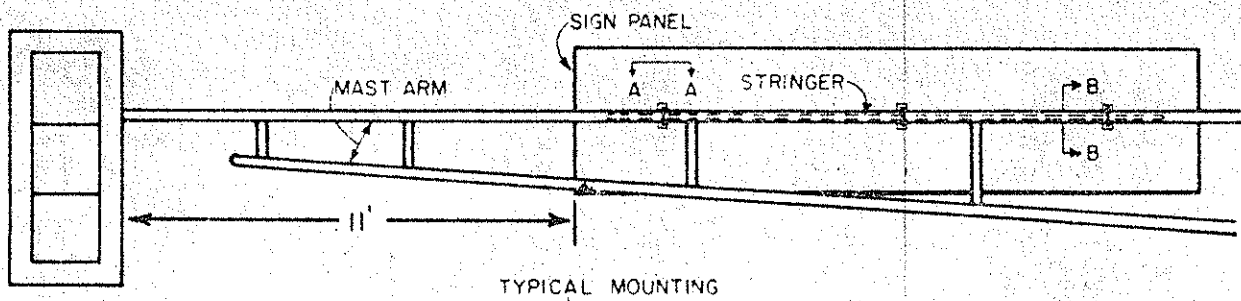
- 1A AND 2A OF TB3
- 2A AND 3A OF TB3
- 4A AND 5A OF TB3
- 5A AND 6A OF TB3
- 7A AND 8A OF TB3
- 8A AND 9A OF TB3
- 10A AND 11A OF TB3
- 13A AND 14A OF TB3
- 1A AND 2A OF TB4
- 2A AND 3A OF TB4
- 4A AND 5A OF TB4
- 6A AND 7A OF TB4

SIGNAL SERVICE CABINET WIRING DIAGRAM

TYPE "D" SIGNS

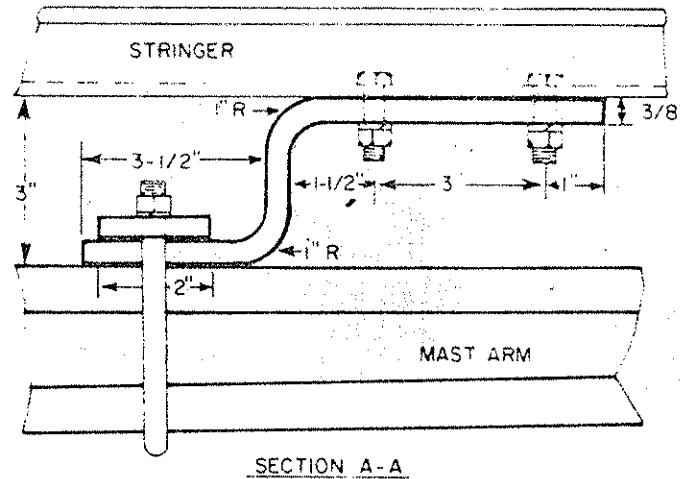
Sign Panel	Size	No. Req.	No. Brackets	Bracket Spacing	Sq. Ft.
D-1	108" x 24"	2	3	39"	18.0
D-2	24" x 30"	2	—	—	5.0

STANDARD SIGN RIO-10

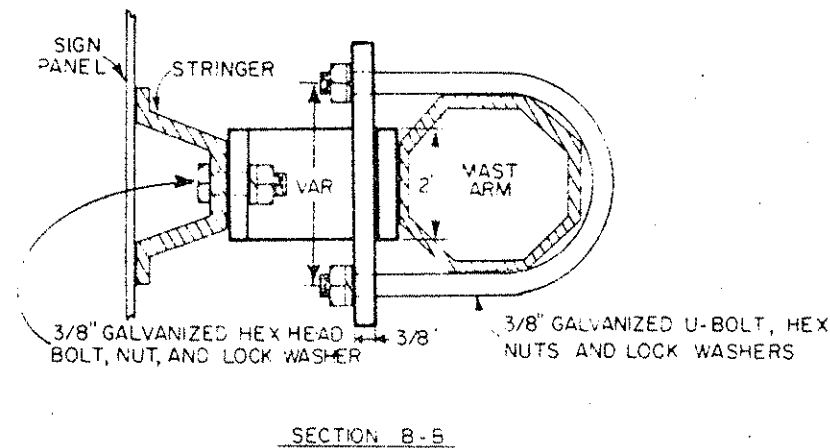


TYPICAL MOUNTING

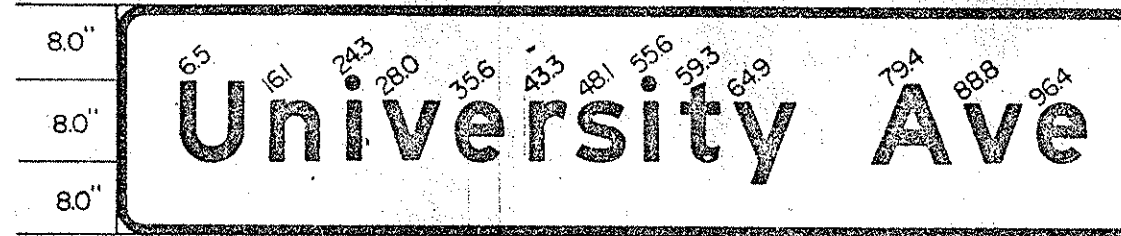
- NOTES:
- Stringers shall conform to MHD 3401 for 4" posts.
 - Structural steel shall conform to MHD 3306.
 - Galvanizing shall conform to MHD 3392 and MHD 3394.
 - Position bottom of sign 16'-6" minimum above center line elevation and edge of sign 11' from end of mast arm.
 - Sign panels shall be mounted plumb.



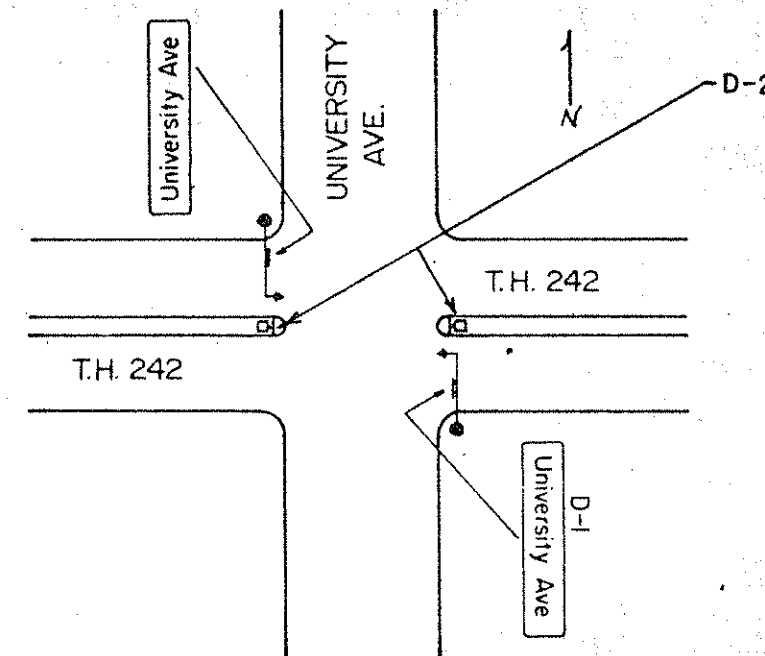
SECTION A-A



SECTION B-B



D-1 108" x 24" 3" R.
LINE 1 95.1 : 8'-6" EM.



STRUCTURAL DETAILS SIGNAL MAST ARM MOUNTED SIGNS

- NOTES:
- Color - White legend and border; Green background, fully reflectorized.
 - Corners extending beyond the border shall not be trimmed.
 - Borders shall be 1.0".
 - See Standard Signs Manual for Type D Stringer & Panel Joint Details.

TYPE "D" SIGNS

**ABBREVIATIONS
EQUIPMENT AND INDICATIONS**

RED - RED	GR.R - GROUND ROD	C3(eg) - SIGNAL HEADS-PHASE "C"
YEL - YELLOW	SERV. - SERVICE	DA(eg) - DETECTOR-PHASE "A"
GRN - GREEN	⊕ - SPLICE	PE.C - PHOTOELECTRIC CELL
WLK - WALK	THA - THRU ARROW	STLHT - STREET LIGHT
NEU - NEUTRAL	LTA - LEFT TURN ARROW	S.O.P - SOURCE OF POWER
DWK - DON'T WALK	RTA - RIGHT TURN ARROW	EQQ - EQUIPMENT GROUND
LUM - LUMINAIRE	TRA - THRU AND RIGHT ARROW	SPR - SPARE CONDUCTORS
DNL - DOWNLIGHT	RTHA(eg) - THRU ARROW-RED	R.S.C - RIGID STEEL CONDUIT
SW - SWITCH	GLTA(eg) - LEFT TURN ARROW-GREEN	N.M.C - NON METALLIC CONDUIT
SWD - SWITCHED	YRTA(eg) - RIGHT TURN ARROW-YELLOW	E.V.P - EMERGENCY VEHICLE PRE-EMPTION
CH.SW - CHECK SWITCH	PAI(eg) - PEDESTRIAN INDICATIONS-PHASE "A"	
HH - HANDHOLE	PBB2(eg) - PUSH BUTTON-PHASE "B"	

CONDUCTOR COLOR CODE

R - RED
O - ORANGE
BL - BLUE
WH - WHITE
R/BLK - RED WITH BLACK TRACER
O/BLK - ORANGE WITH BLACK TRACER
BL/BLK - BLUE WITH BLACK TRACER
WH/BLK - WHITE WITH BLACK TRACER
BLK - BLACK
BLK/WH - BLACK WITH WHITE TRACER
G/BLK - GREEN WITH BLACK TRACER
G - GREEN
CLR - CLEAR
BR. GR. - BARE GROUND

**INPLACE
UTILITIES SYMBOLS
(UNDERGROUND)**

TELEPHONE	-T-T-T-	C.B. □
POWER CABLE	-P-P-P-	M.H. ○
GAS MAIN	-G-G-G-	
WATER PIPE	-I-I-I-	
SEWER PIPE	-S-S-S-	
DRAIN TILE	-D-D-D-	
CATCH BASIN		
MANHOLE		

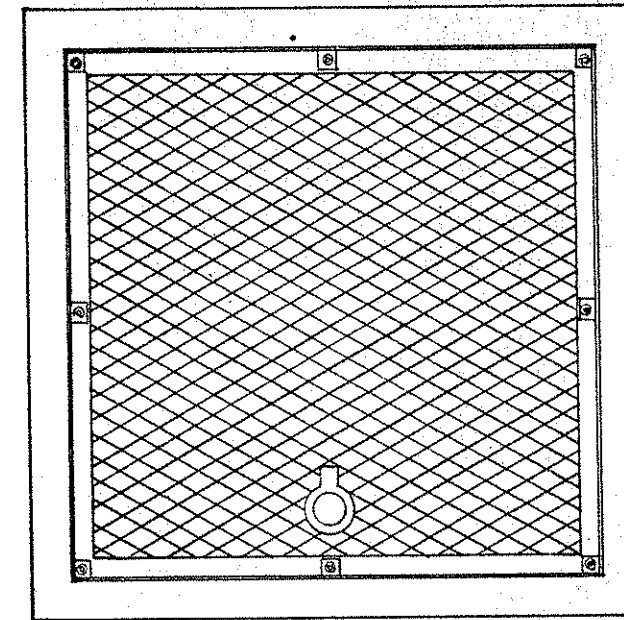
LEGEND OF SYMBOLS

SIGNAL BASE No.	Ⓜ
SIGNAL FACE No.	Ⓜ
LUMINAIRE No.	Ⓜ
CONTROLLER AND CABINET	Ⓜ
CONTROLLER AND CABINET-IN PLACE	Ⓜ
HANDHOLE	Ⓜ
HANDHOLE - IN PLACE	X
RIGID STEEL CONDUIT (R.S.C.)	Ⓜ
RIGID STEEL CONDUIT (R.S.C.) - IN PLACE	Ⓜ
SIGNAL FACE	Ⓜ
SIGNAL FACE WITH BACKGROUND SHIELD	Ⓜ
SIGNAL FACE - IN PLACE	Ⓜ
PEDESTRIAN INDICATIONS	Ⓜ
PEDESTRIAN INDICATIONS-IN PLACE	Ⓜ
PEDESTRIAN PUSH BUTTON ON PEDESTAL OR POLE	Ⓜ
PEDESTRIAN PUSH BUTTON STATION	Ⓜ
TRAFFIC SIGNAL PEDESTAL	Ⓜ
TRAFFIC SIGNAL PEDESTAL - IN PLACE	Ⓜ
TRAFFIC SIGNAL POLE AND MAST ARM	Ⓜ
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE	Ⓜ
STREET LIGHT POLE AND LUMINAIRE	Ⓜ
STREET LIGHT POLE AND LUMINAIRE - IN PLACE	Ⓜ
MAST ARM AND LUMINAIRE	Ⓜ
MAST ARM AND LUMINAIRE - IN PLACE	Ⓜ
WOOD POLE	Ⓜ
WOOD POLE - IN PLACE	Ⓜ
SOURCE OF POWER	Ⓜ
RAILROAD SIGNAL - IN PLACE	Ⓜ
RIGHT OF WAY LINE	Ⓜ
CENTER LINE	Ⓜ
EDGE OF ROADWAY	Ⓜ
SHOULDER LINE	Ⓜ
CURB LINE	Ⓜ
STOP BAR	Ⓜ
RAILROAD	Ⓜ
FIRE HYDRANT	Ⓜ

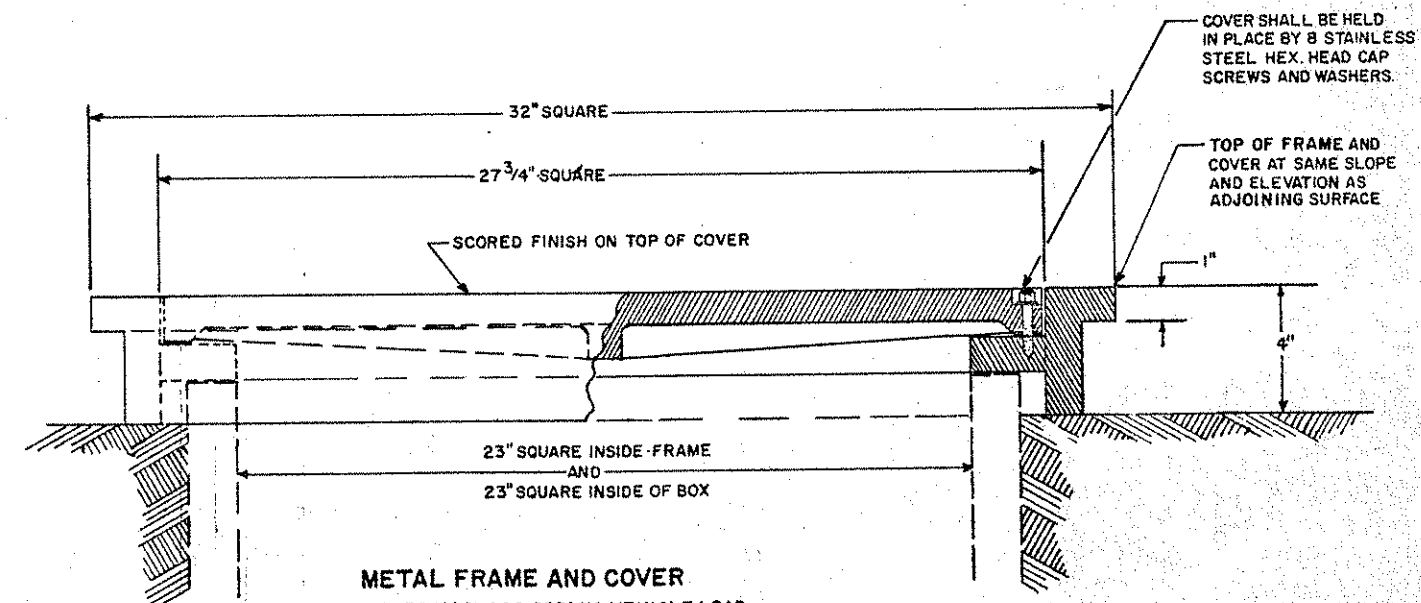
NOTE: THESE ABBREVIATIONS AND SYMBOLS APPLY TO SHEETS 13 THROUGH 15E ONLY.



- NOTES:
- BOTH TYPE LD AND TYPE HD METAL COVERS SHALL BE SECURED BY (8) EIGHT COUNTERSUNK STAINLESS STEEL HEX. HEAD CAP SCREWS WITH NEOPRENE GASKET, AND SHALL HAVE A WATER-PROOF LIFT HANDLE.
 - METAL FRAMES AND COVERS SHALL BE COATED WITH MANUFACTURER'S SHOP COAT OF ASPHALT PAINT.

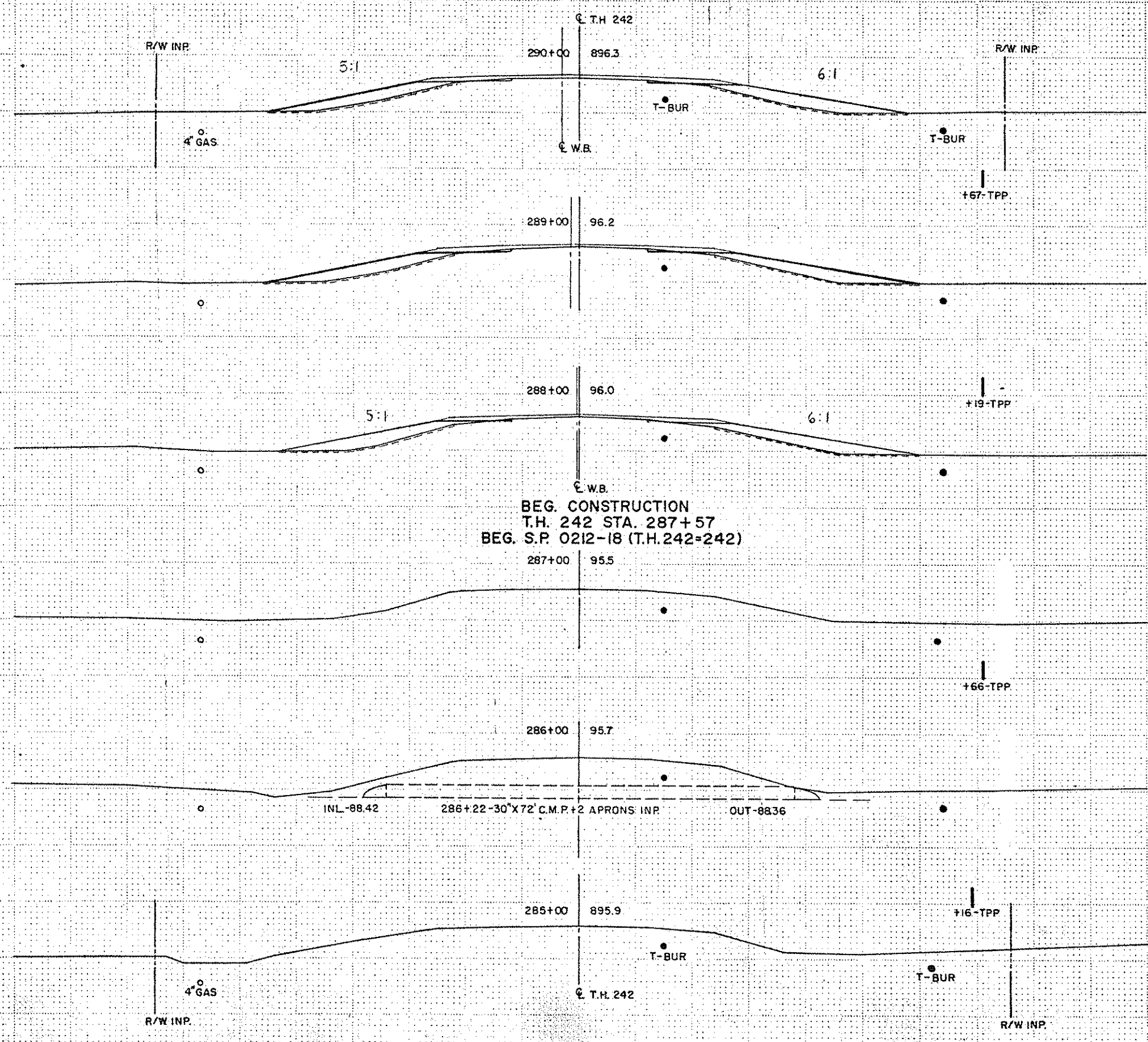


TOP VIEW
METAL FRAME AND COVER
M.H.D. 3321 (CLASS 25B) NO VEHICLE



METAL FRAME AND COVER
M.H.D. 3321 (CLASS 25B) NO VEHICLE LOAD

**LEGEND
ABBREVIATIONS
DETAILS**



EXCAVATION CU. YD.	EMBANKMENT CU. YD.
-----------------------	-----------------------

7	435
---	-----

7	441
---	-----

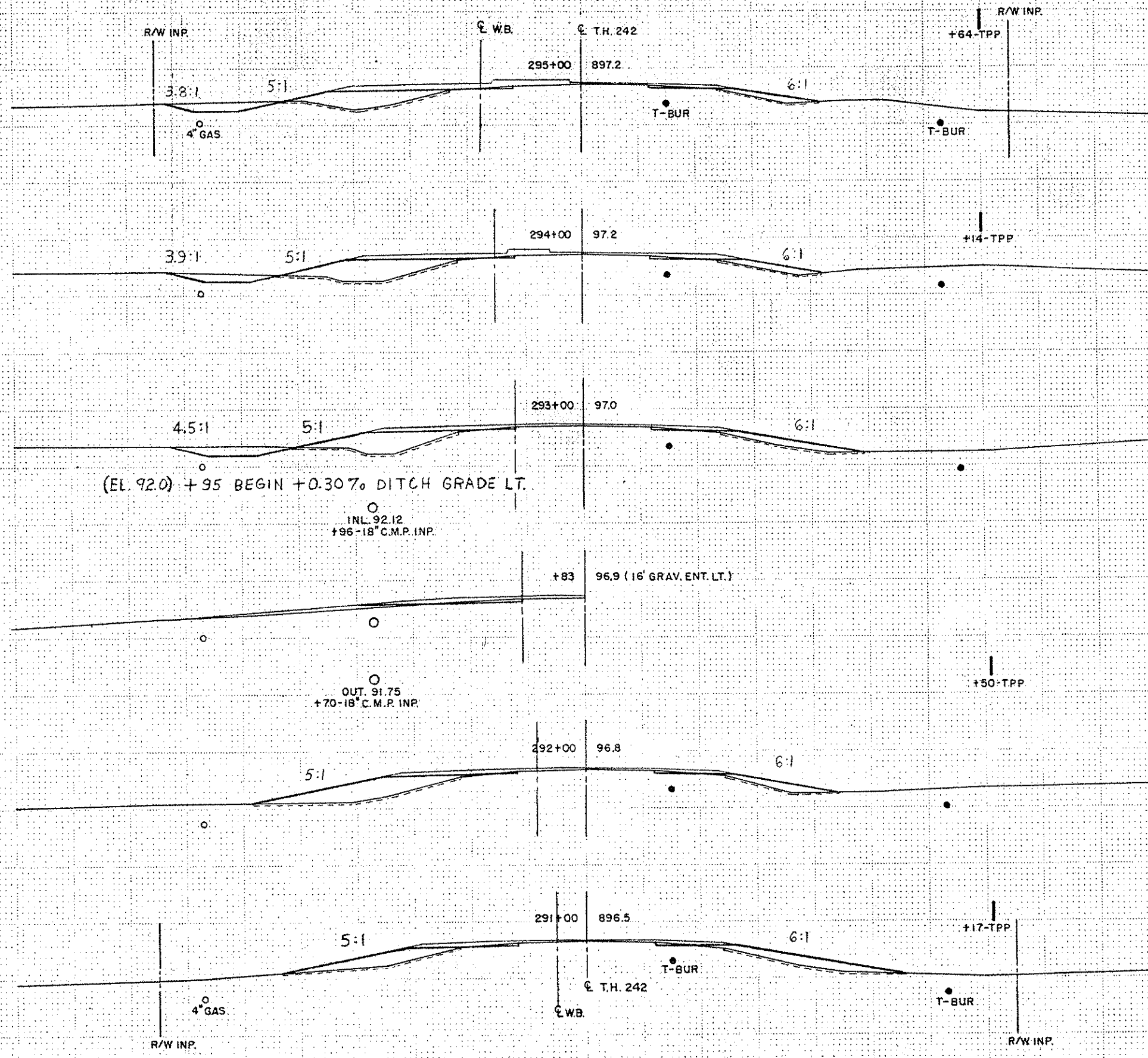
1	88
---	----

BEG. CONSTRUCTION
T.H. 242 STA. 287+57
BEG. S.P. 0212-18 (T.H. 242=242)
287+00 95.5

INL-88.42 286+22-30°X72' C.M.P.+2 APRONS INP OUT-88.36

T.H. 242
STA. 285+00 - STA. 290+00

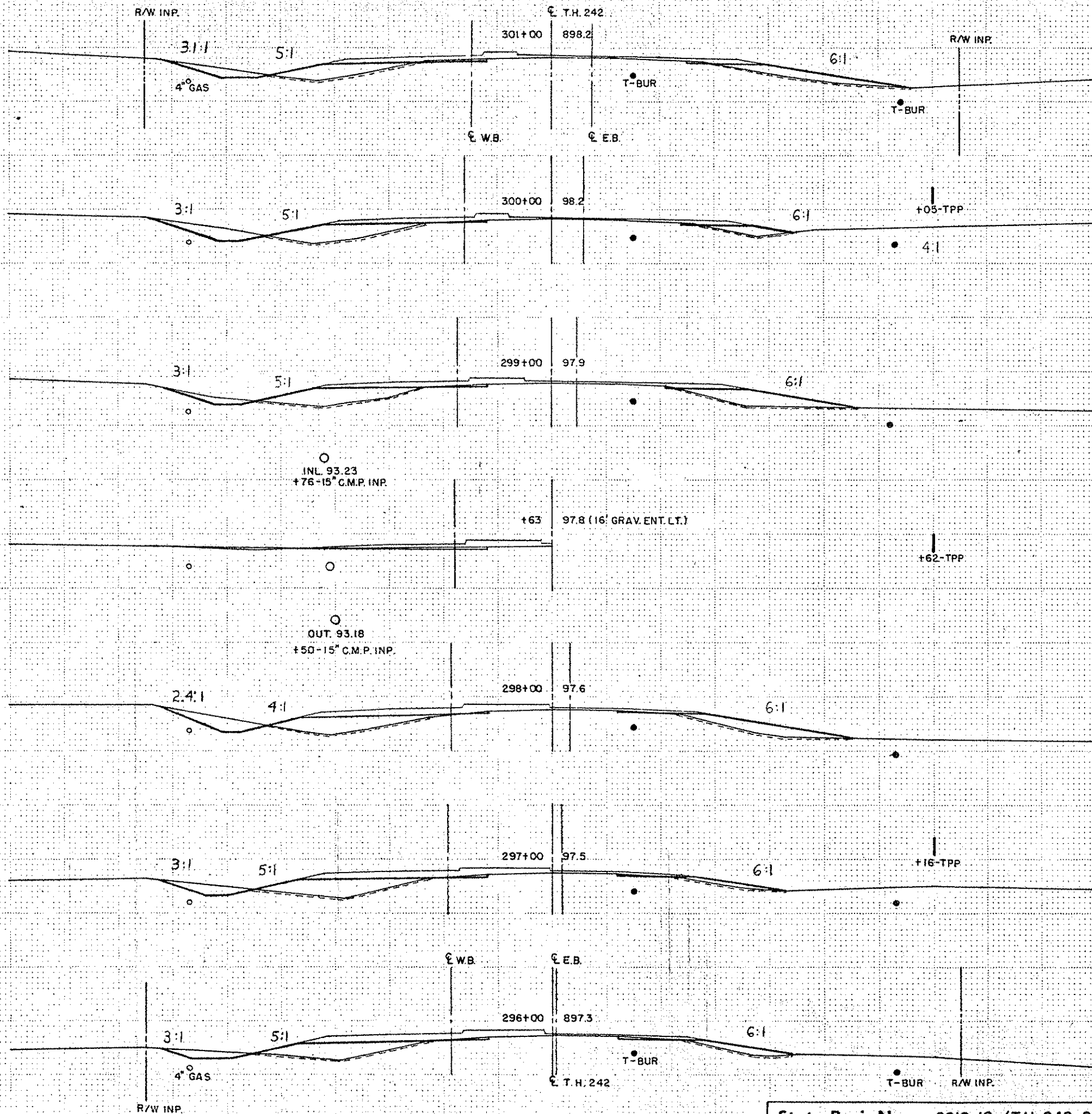
TELETYPE CROSS SECTION 10/17/74



EXCAVATION CU. YD.	EMBANKMENT CU. YD.
85	320
96	335
94	363
54	381
7	380
7	396

T.H. 242
STA. 291+00 - STA. 295+00

11/15/00 THE POST CORP. SECTION 10-11.6-74



EXCAVATION CU. YD.	EMBANKMENT CU. YD.
109	331

100 419

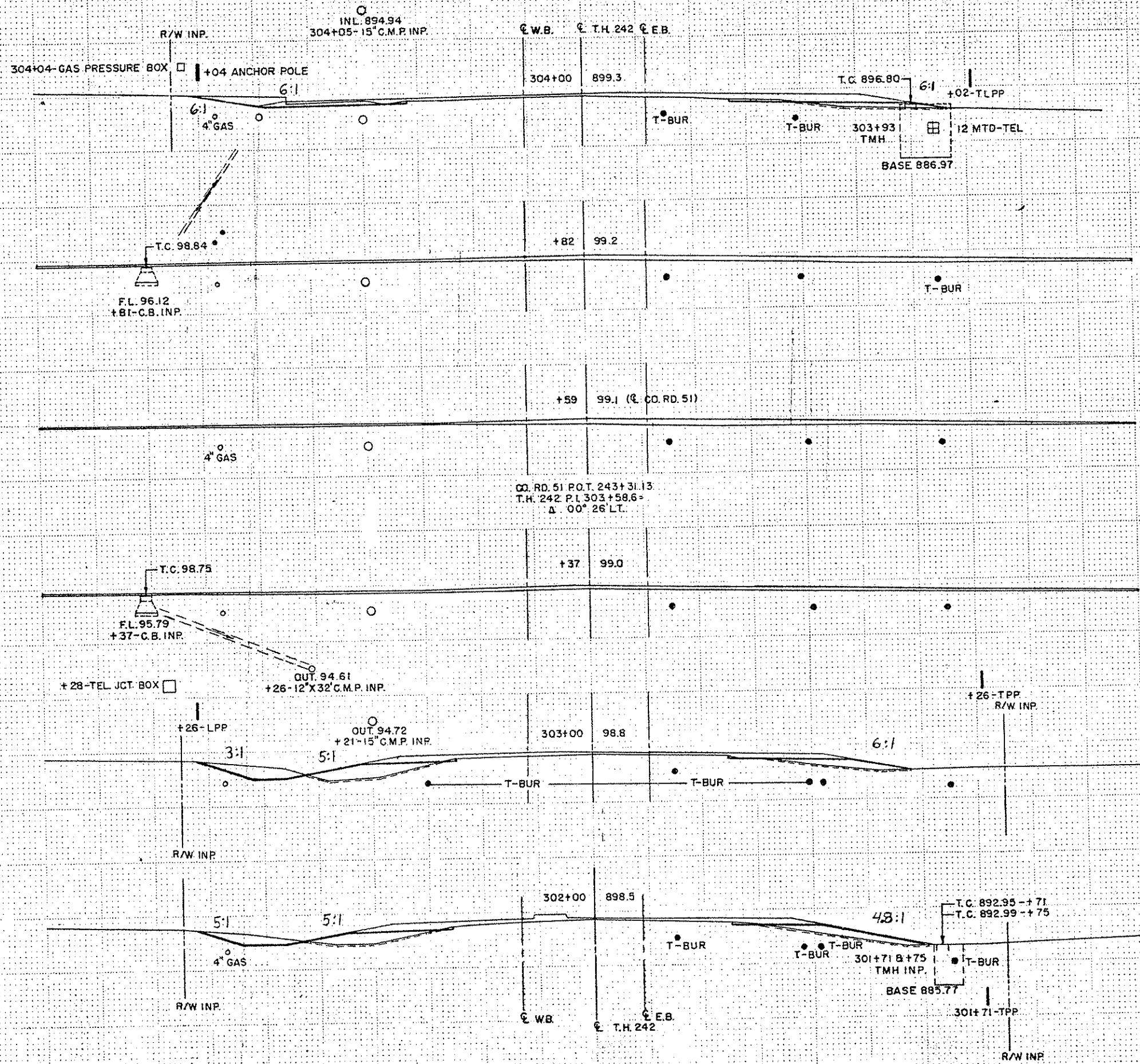
96 480

104 394

74 333

T.H. 242
STA. 296+00 - STA. 301+00

TYPICAL POST CROSS SECTION 181E2.7A



EXCAVATION
CU. YD.

6 5

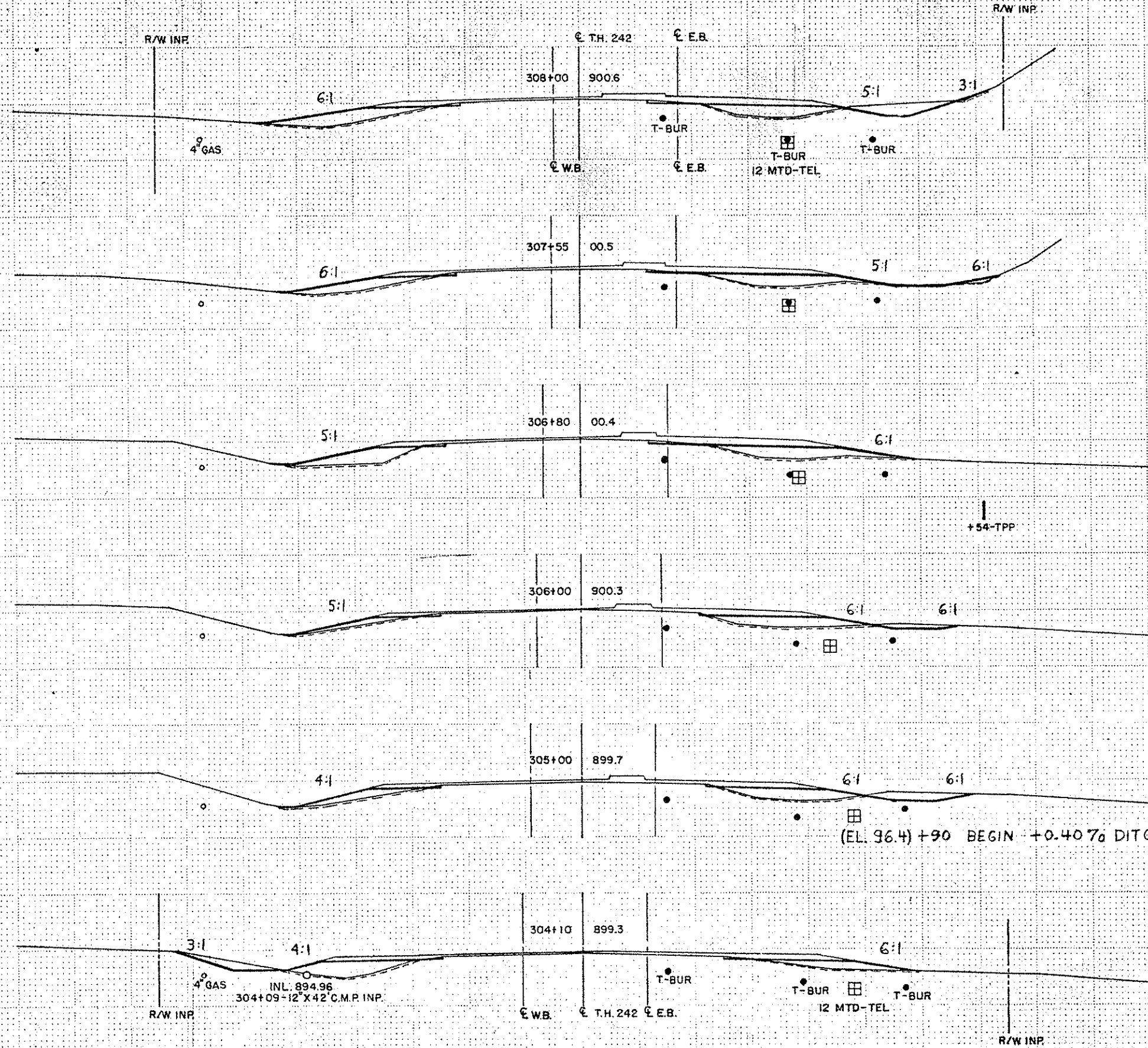
19 52

100 274

87 289

T.H. 242
STA. 302+00-STA. 304+00

TEL. 604-N.E. 1001 CROSS SECTION 1011 6/4



EXCAVATION
CU. YD.

24 145

10 253

22 239

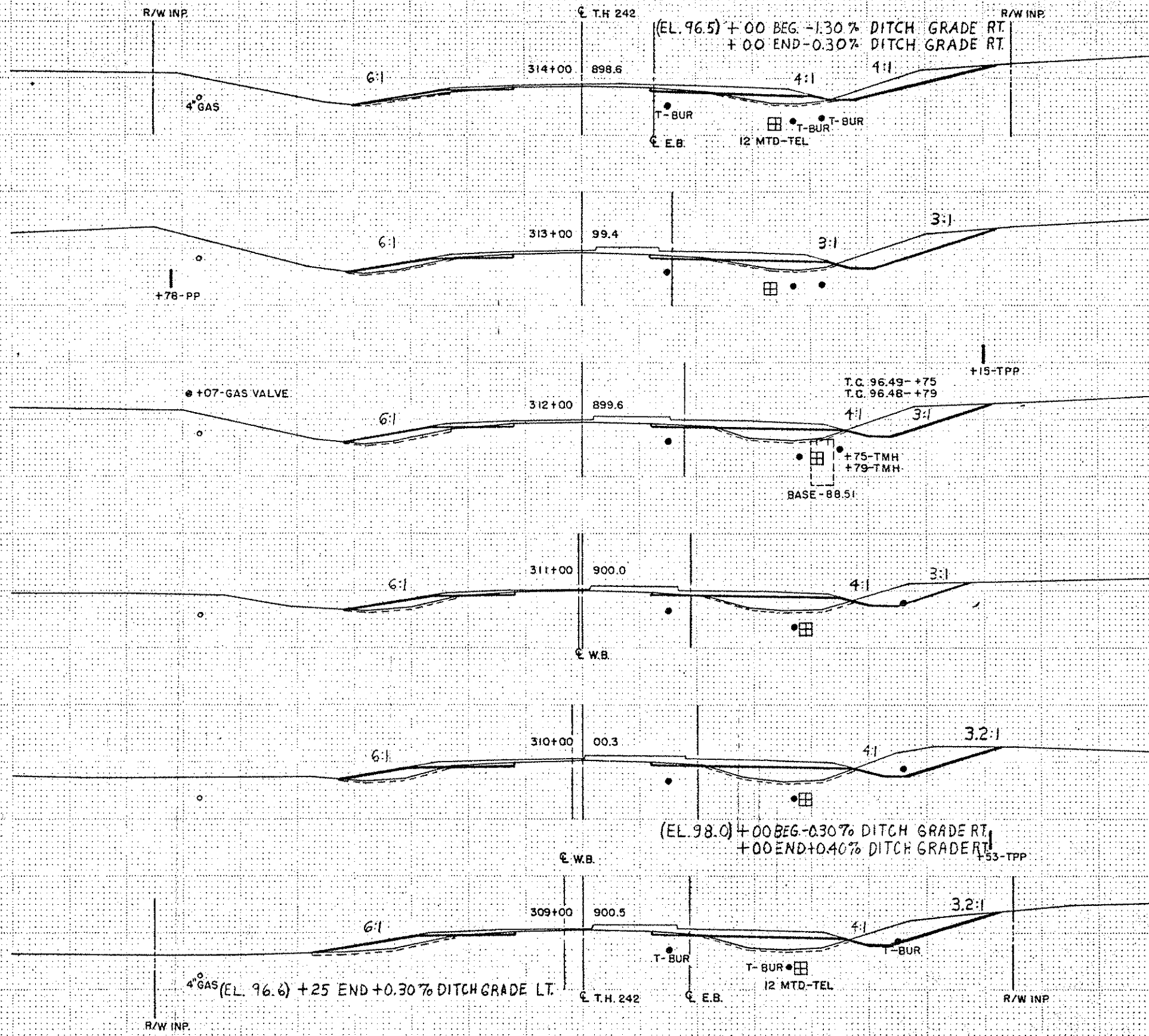
70 254

72 247

9 19

T.H. 242
STA. 304+10-STA. 308+00

TELLOYNE P&S CROSS-SECTION 1011 6/74



EXCAVATION CU. YD.	EMBANKMENT CU. YD.
-----------------------	-----------------------

198	150
-----	-----

250	194
-----	-----

230	243
-----	-----

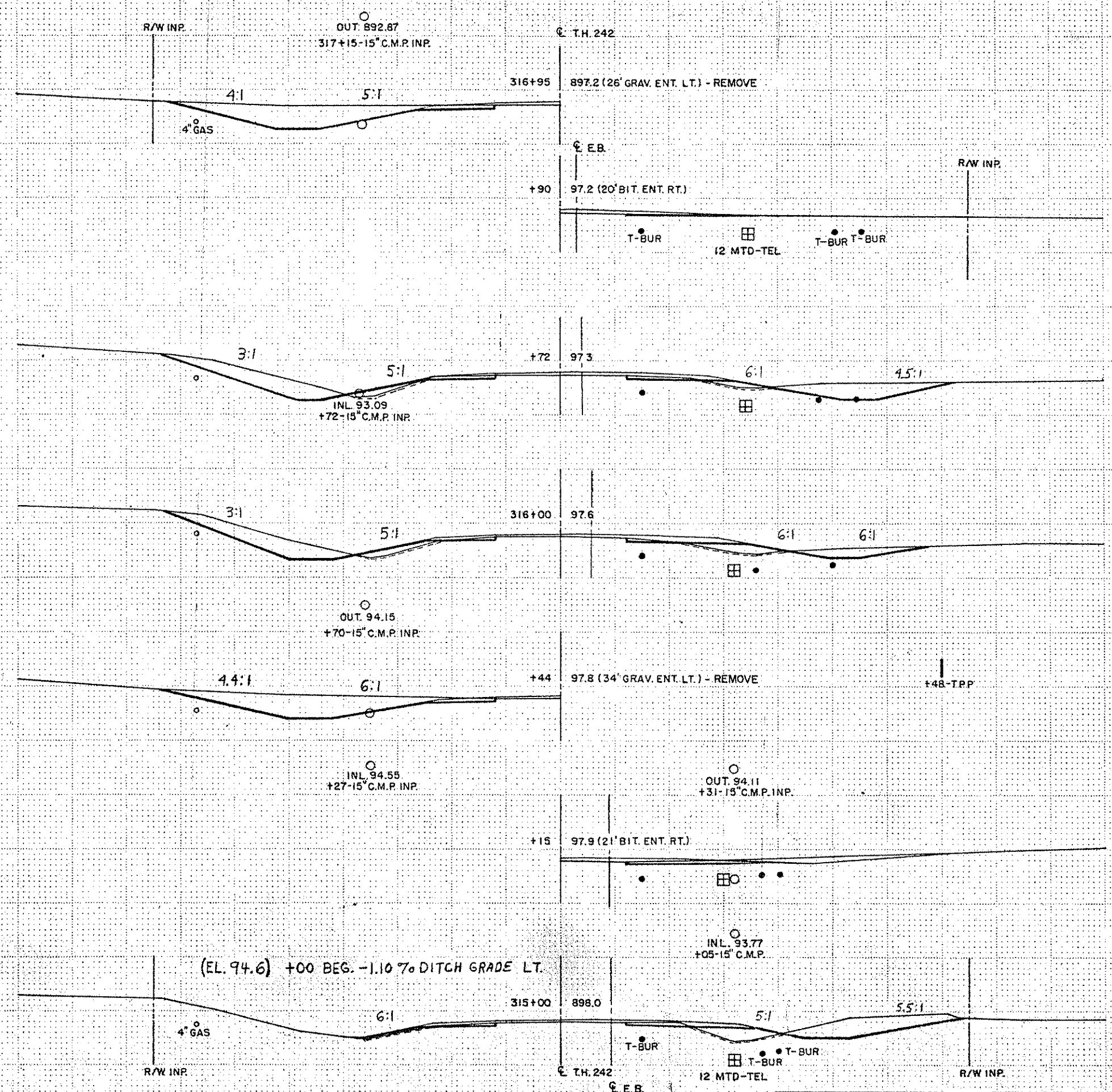
252	265
-----	-----

259	259
-----	-----

163	283
-----	-----

T.H. 242
STA. 309+00 - STA. 314+00

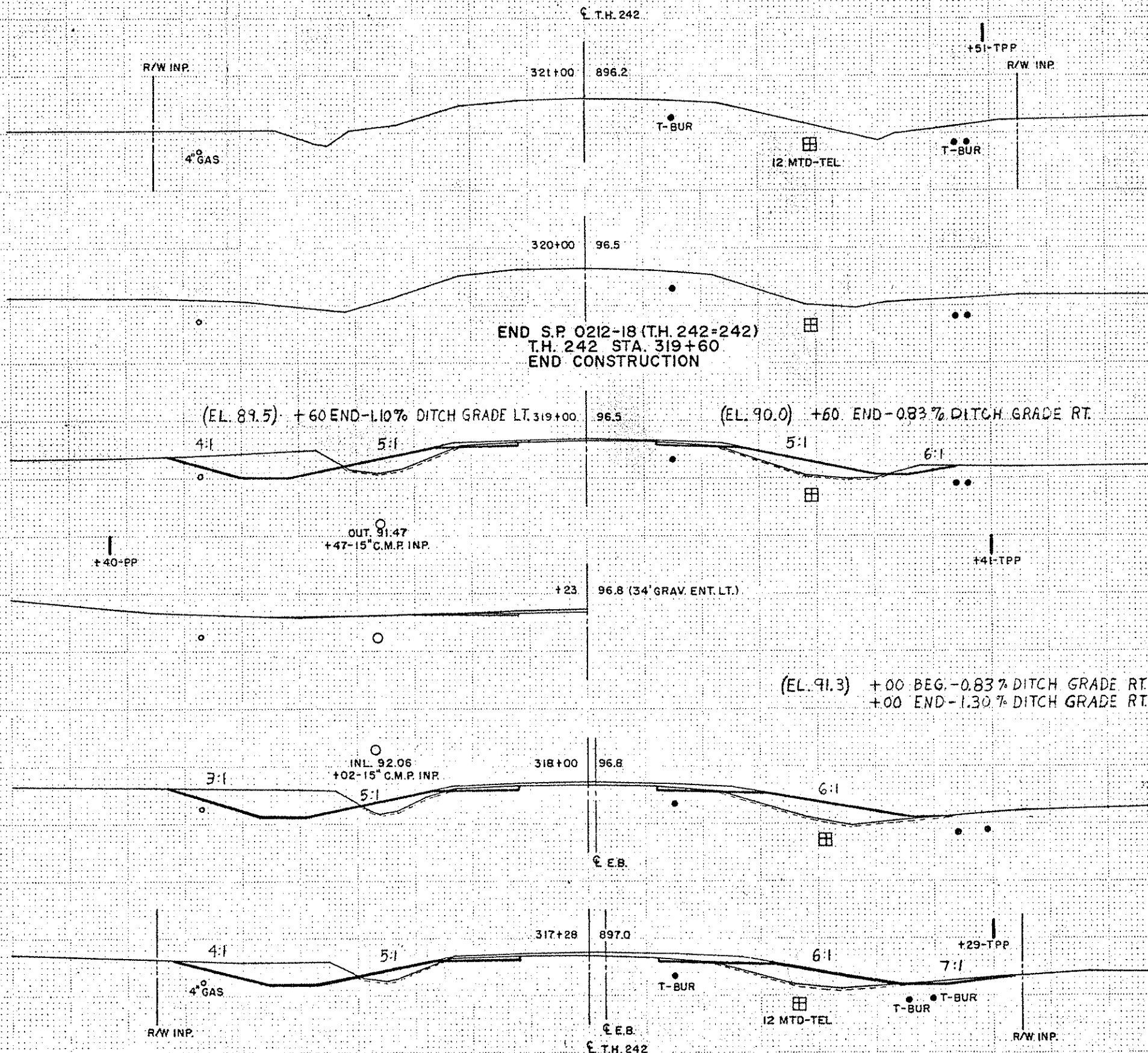
SCALE BY THE POST CHASE SECTION 1011 B74



EXCAVATION CU. YD.	EMBANKMENT CU. YD.
344	121
317	84
392	135
206	131

11/13/1986 MBS ENR/SL/CTH/101/8/24

EXCAVATION
CU. YD. EMBANKMENT
CU. YD.



END S.P. 0212-18 (T.H. 242=242)
T.H. 242 STA. 319+60
END CONSTRUCTION

(EL. 89.5) +60 END -1.10% DITCH GRADE LT. 319+00

(EL. 90.0) +60 END -0.83% DITCH GRADE RT.

+40-PP

OUT 91.47
+47-15" C.M.P. INP.

+23 96.8 (34' GRAV. ENT. LT.)

+41-TPP

(EL. 91.3) +00 BEG. -0.83% DITCH GRADE RT.
+00 END -1.30% DITCH GRADE RT.

INL. 92.06
+02-15" C.M.P. INP.

± E.B.

± E.B.

± T.H. 242

116 98

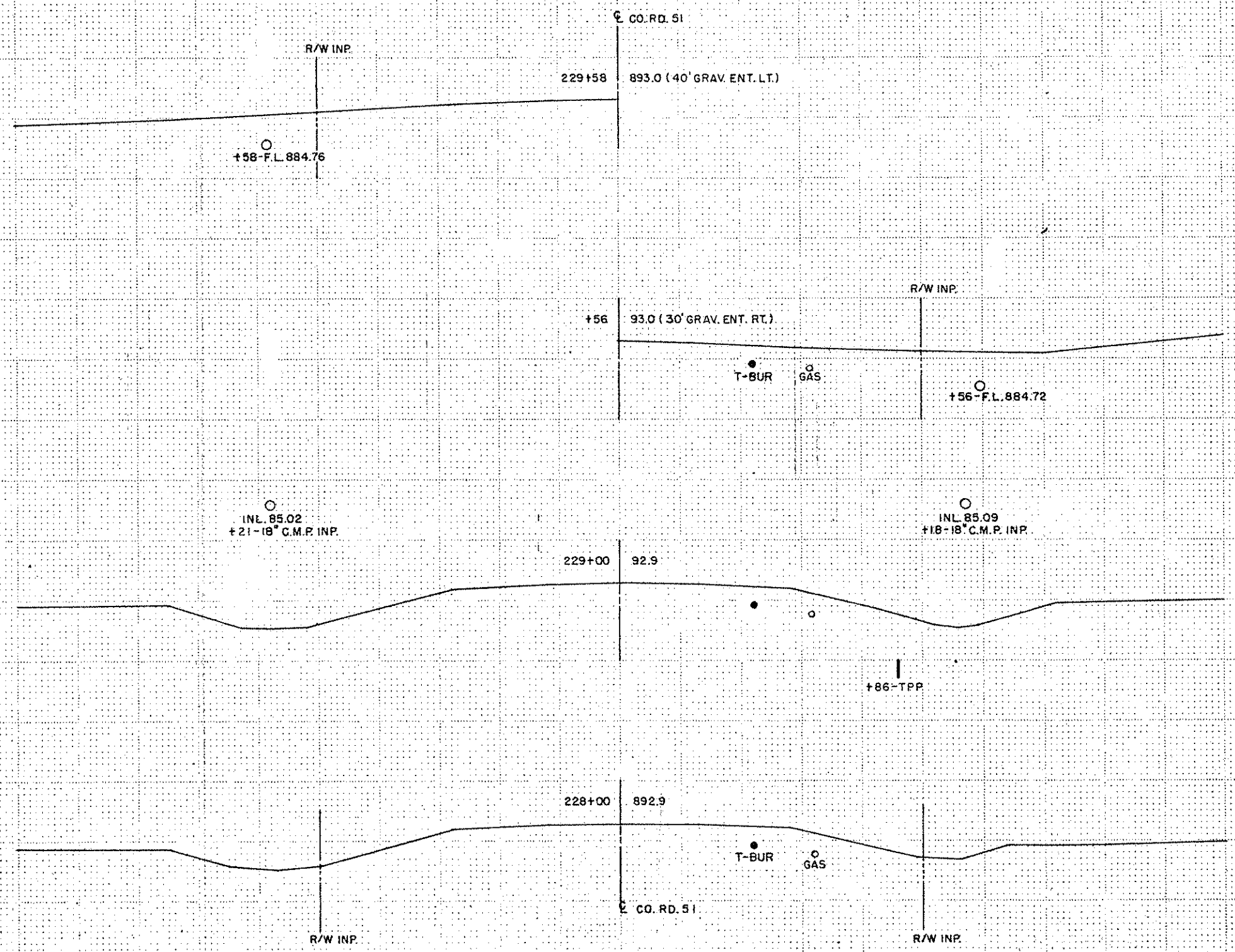
406 393

281 289

T.H. 242
STA. 317+28 - STA. 321+00

VERTICAL CURVE CROSS-SECTION

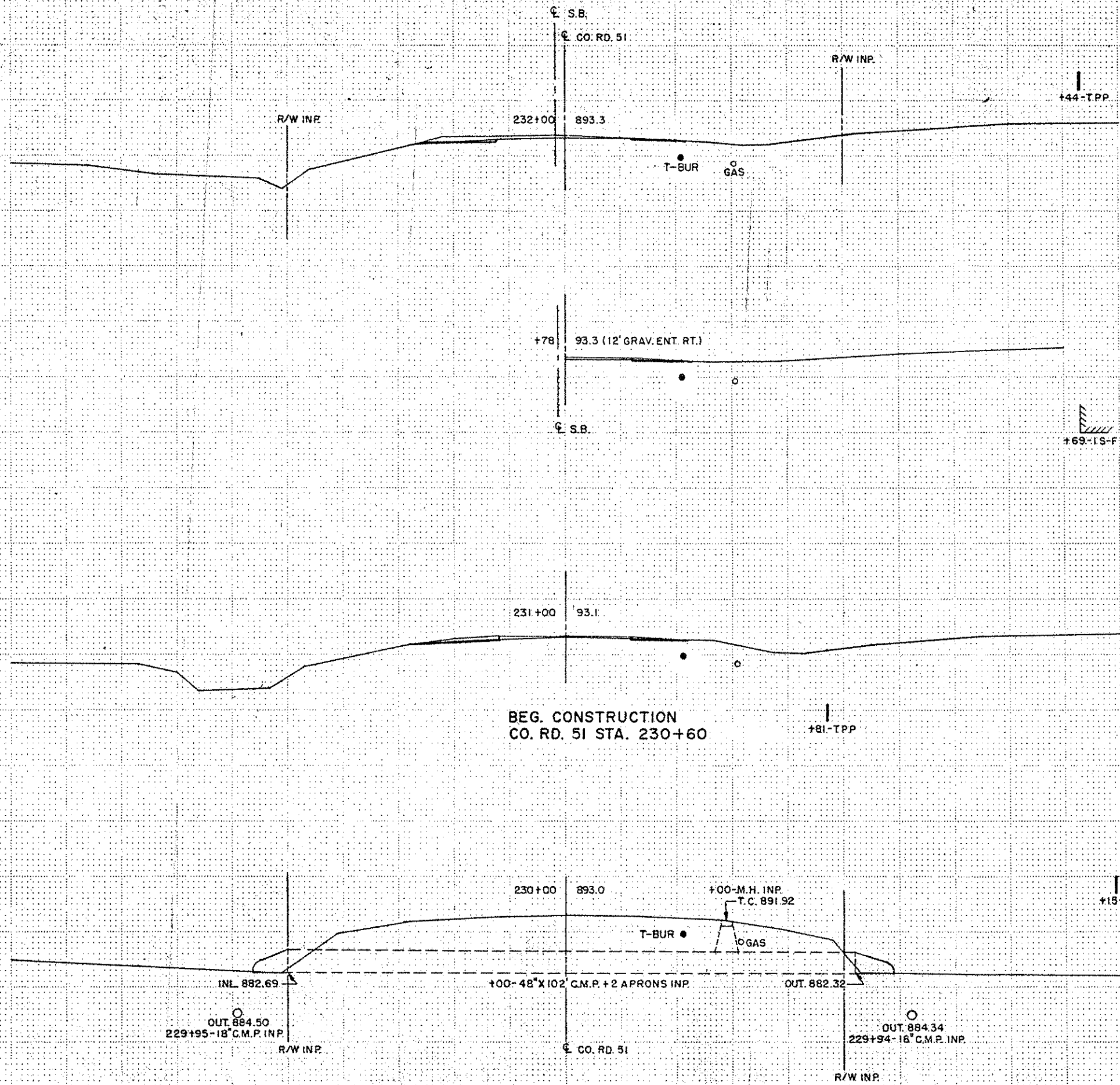
EXCAVATION	EMBANKMENT
CU. YD.	CU. YD.



CO. RD. 51
 STA. 228+00 - STA. 229+58

ELECTRIC POST CROSS SECTION 1011 10/74

EXCAVATION
CU. YD. EMBANKMENT
CU. YD.

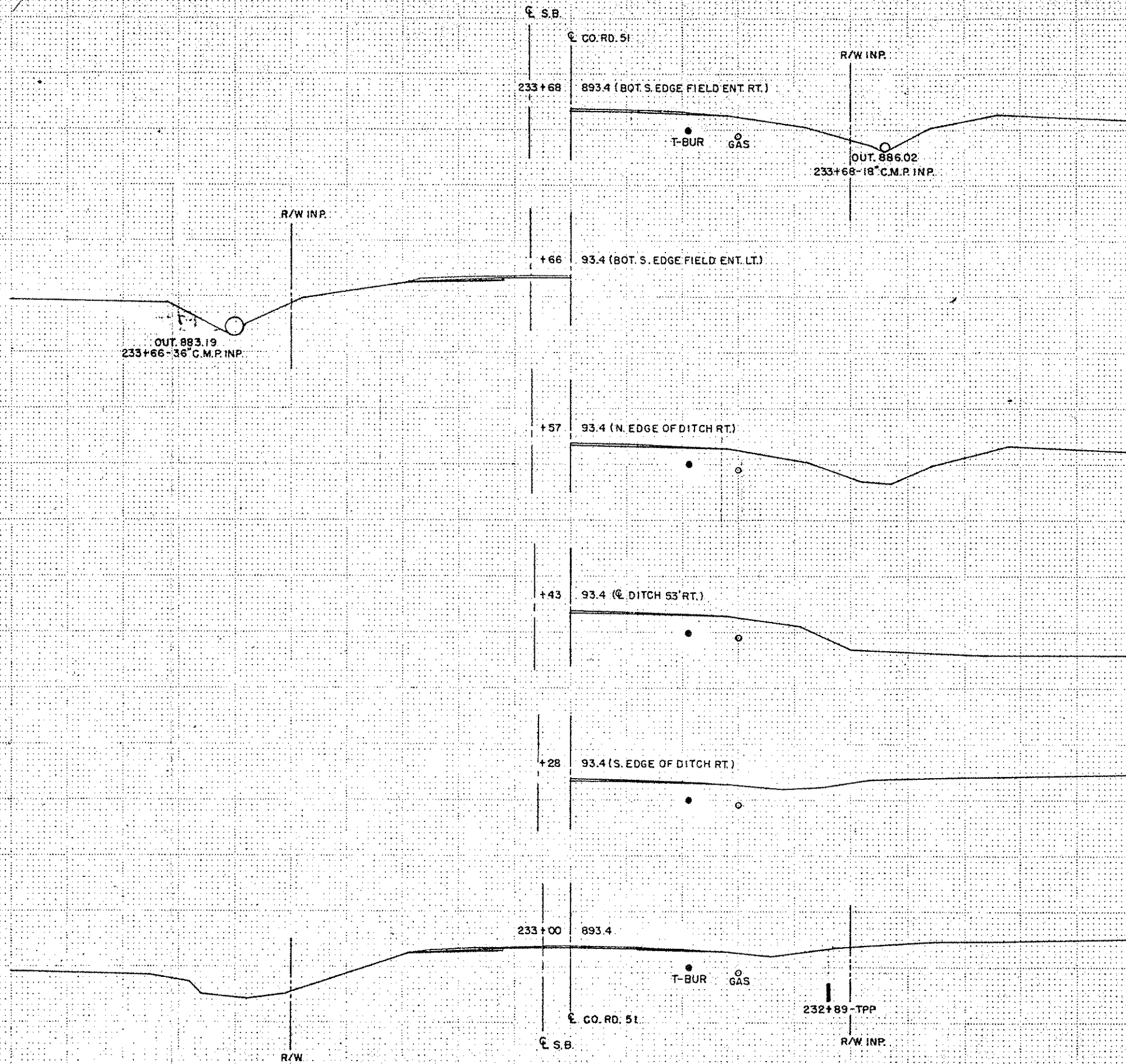


BEG. CONSTRUCTION
CO. RD. 51 STA. 230+60

CO. RD. 51
STA. 230+00- STA. 232+00

VERTICAL POST CROSS-SECTION 10/1/64

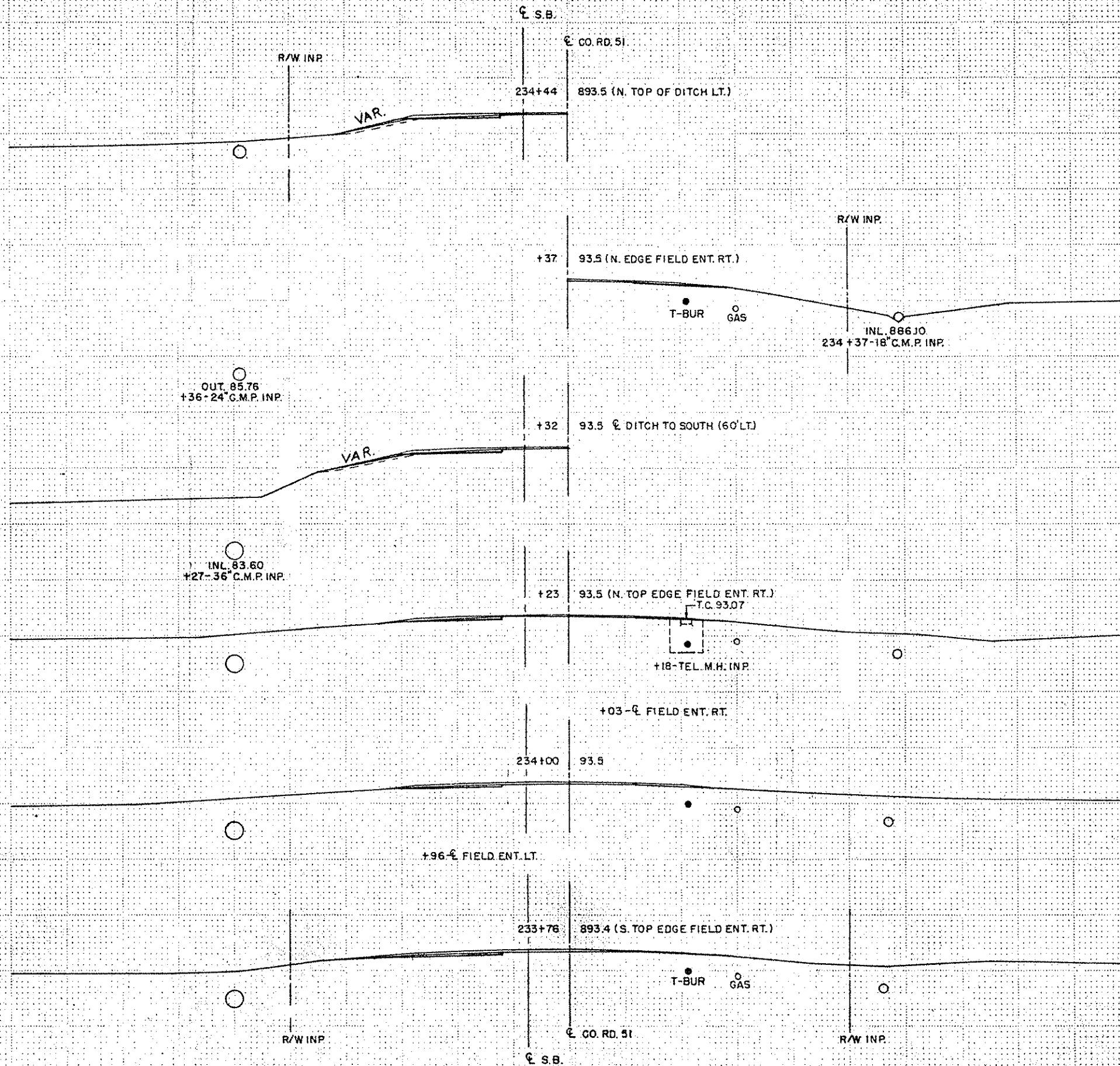
EXCAVATION
CU. YD. EMBANKMENT
CU. YD.



16

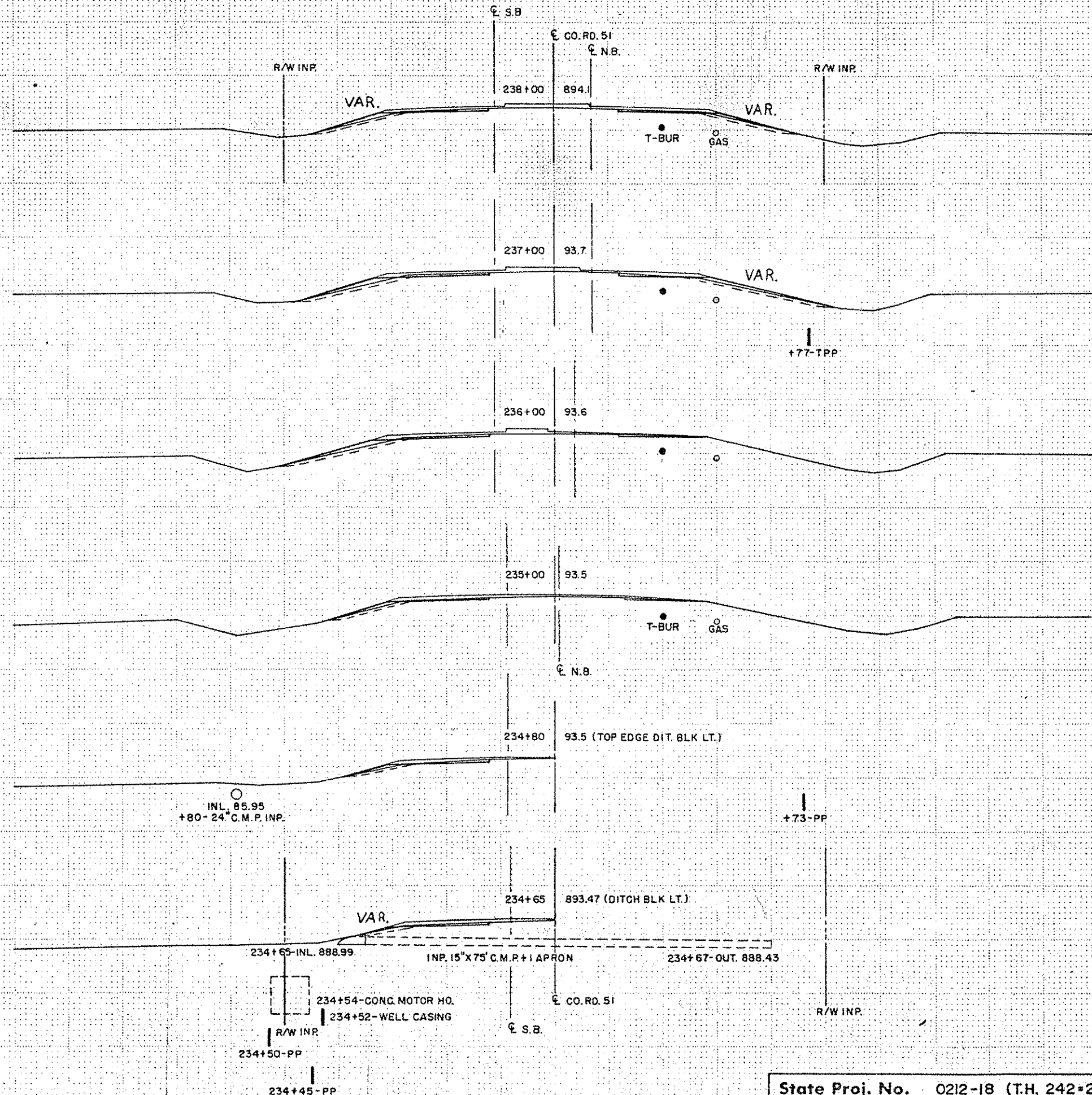
CO. RD. 51
STA. 233+00 - STA. 233+68

TELETYPE UNIT CROSS SECTION 1011 6/14



7

TELEPHONE RIGHT CROSS SECTION 101181N



EXCAVATION CU. YD.	EMBANKMENT CU. YD.
24	224
29	

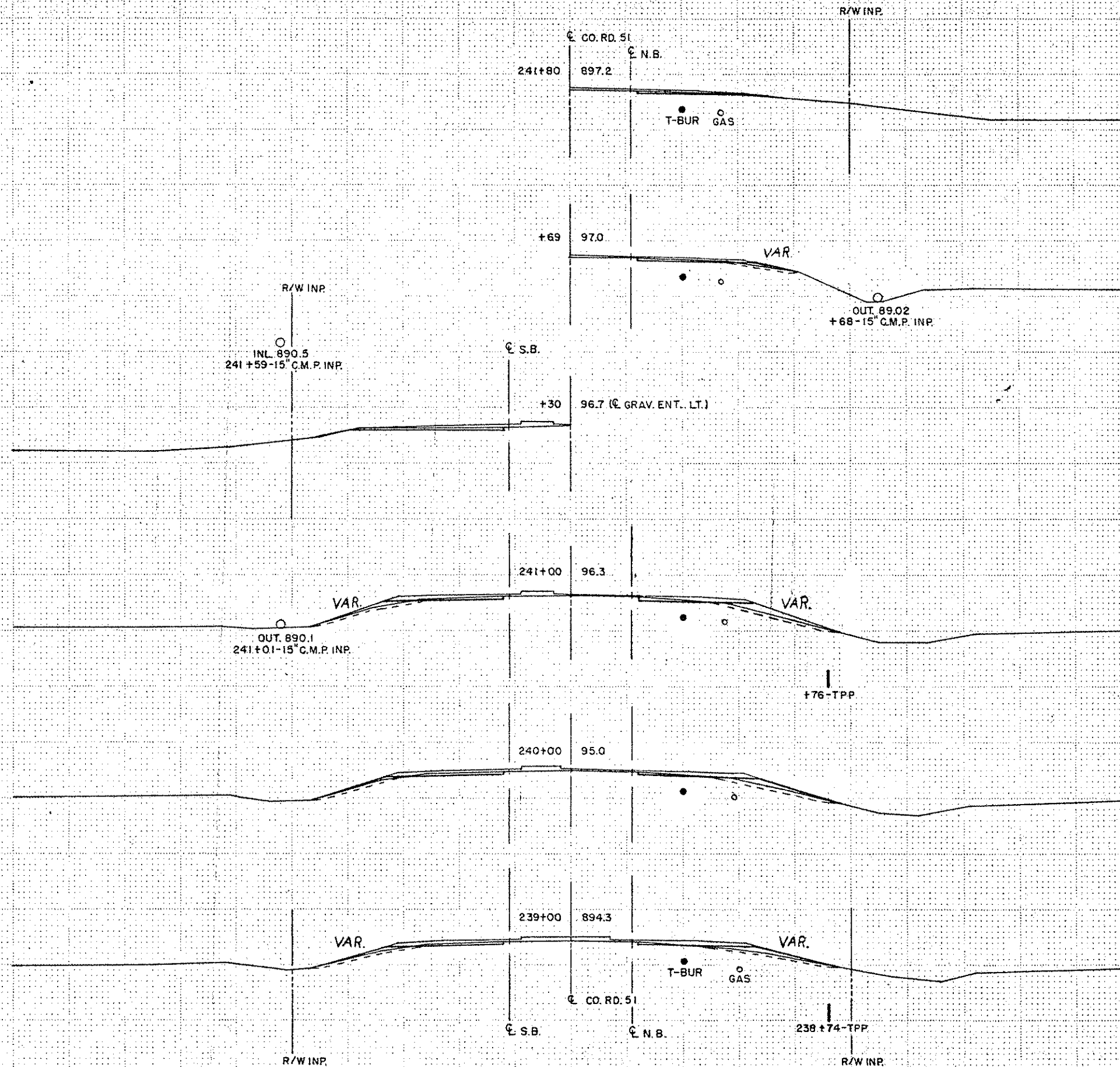
24 224

29

CO. RD. 51
STA. 234+65-STA. 238+00

VERTICAL POST EMBANKMENT

EXCAVATION CU. YD.	EMBANKMENT CU. YD.
24	121
17	145

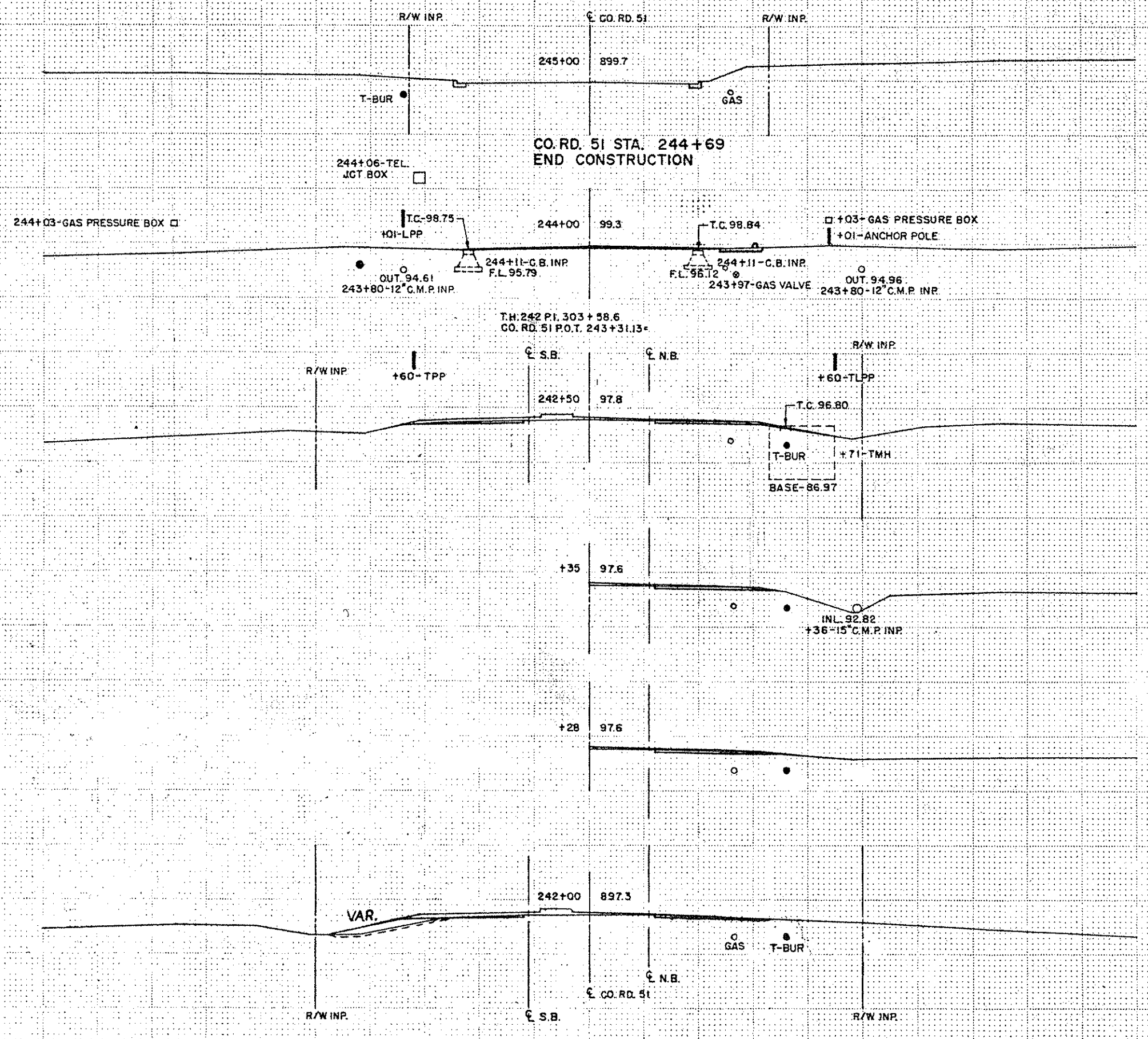


CO. RD. 51
STA. 239+00-STA. 241+80

PL. CURVE POST CROSS SECT.

EXCAVATION CU. YD.	EMBANKMENT CU. YD.
TOTALS	4800 10022

TOTALS 4800 10022



6

9 7

CO. RD. 51
STA. 242+00-STA. 245+00

TELLO-POST CROSS SECTION 10/7/87