

# MINNESOTA DEPARTMENT OF TRANSPORTATION

## CONSTRUCTION PLAN FOR CHANNELIZATION AND SIGNAL SYSTEM

LOCATED ON T.H. 242 FROM 0.3 MI. W. OF CO. RD. 78 TO 0.3 MI. E. OF CO. RD. 78 IN COON RAPIDS

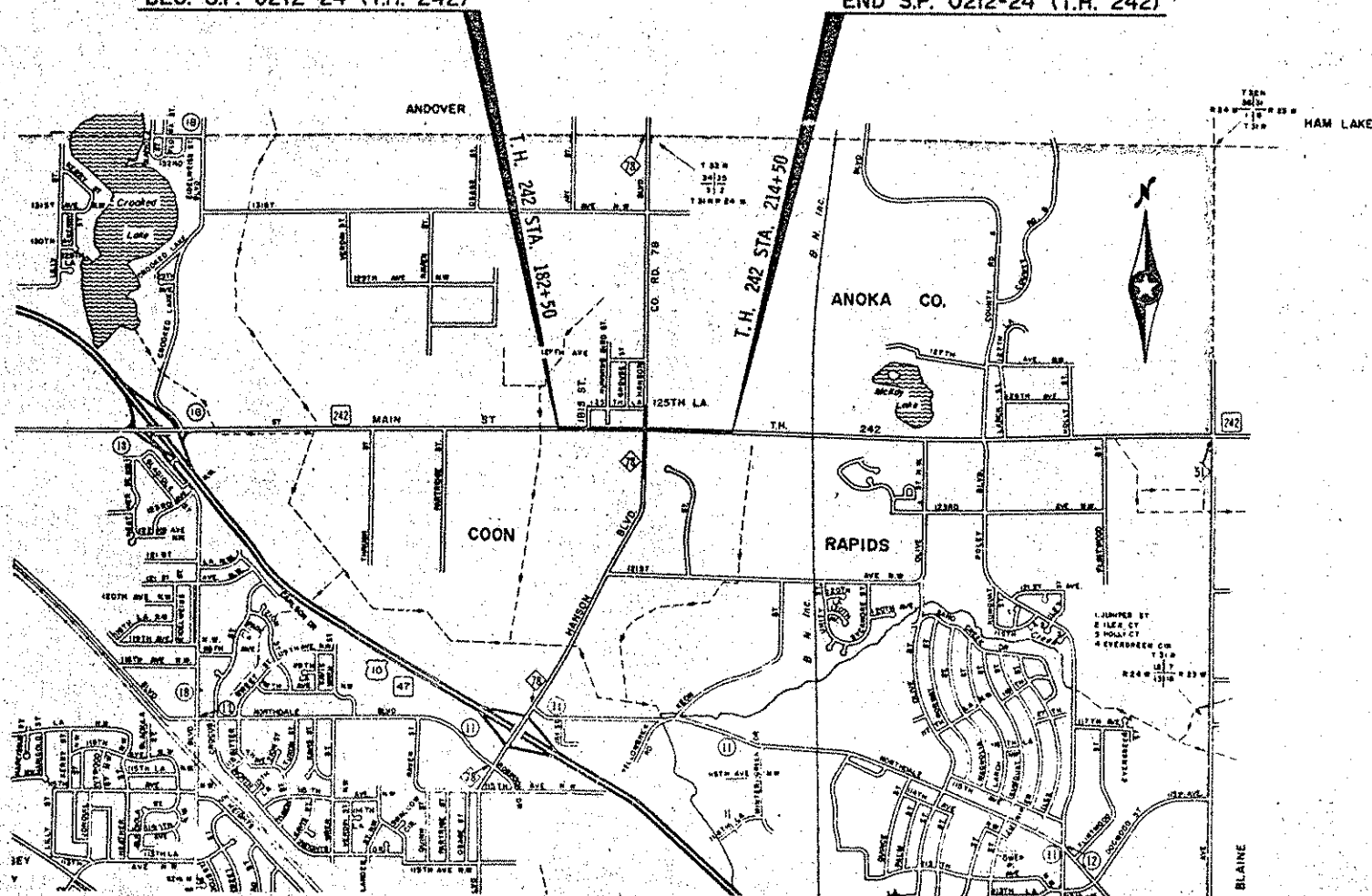
STATE PROJ. NO. 0212-24  
 MINN. PROJ. NO. HES 5424 ( 4 )  
 GROSS LENGTH 3200 FEET 0.606 MILES  
 BRIDGES-LENGTH 0 FEET 0.000 MILES  
 EXCEPTIONS-LENGTH 0 FEET 0.000 MILES  
 NET LENGTH 3200 FEET 0.606 MILES  
 MILE POINT 3.94 TO MILE POINT 4.54

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 \_\_\_\_\_

NOTE:  
 LENGTH OF PROJECT BASED ON  
 INPLACE T.H. 242 ALINEMENT

BEG. MN. PROJ. HES 5424 ( 4 )  
 BEG. S.P. 0212-24 (T.H. 242)

END MN. PROJ. HES 5424 ( 4 )  
 END S.P. 0212-24 (T.H. 242)



FED. PROJ. NO. HES 5424 ( 4 )

### GOVERNING SPECIFICATIONS

THE 1978 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION  
 "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" SHALL GOVERN.

### INDEX

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1	TITLE SHEET
2	ESTIMATED QUANTITIES
3	STANDARD PLATES, SOILS NOTES
4-7	DETAILS
8-9	TYPICAL SECTIONS
10-12	TABULATIONS
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15-18	CONSTRUCTION PLAN
19-20	PROFILES
21-24	SIGNING AND SIGNAL PLAN
25-45	CROSS SECTIONS

THIS PLAN CONTAINS 45 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 2/10/81 REG. NO. 9078 ENGR. Timothy C. Johnson  
 DESIGN SQUAD HOWARD F. McDERMOTT, P.E.

Right of Way Approval \_\_\_\_\_ 1981  
 DIRECTOR, RIGHT OF WAY OPERATIONS

Recommended for Approval De Hanning 2-10 1981  
 ASST. DISTRICT ENGINEER

Recommended for Approval Raymond K. K... 3/24 1981  
 TRANS. PLANS ENGINEER

Recommended for Approval ... 1981  
 DESIGN SERVICES ENGINEER

Recommended for Approval \_\_\_\_\_ 1981  
 (SHEETS 21 THRU 24 ONLY) DIRECTOR, TRAFFIC ENGINEERING

Approved ... 1981 ...  
 DIRECTOR, OFFICE OF ENGINEERING SERVICES

DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 APPROVED  
 DIVISION ADMINISTRATOR DATE

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

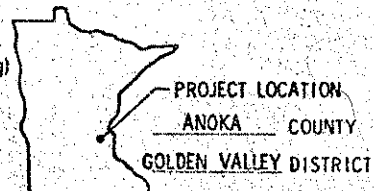
STATE PROJ. NO.	AREA	JOB
0212-24		

SCALES

PLAN	50'
PROFILE	100'
INDEX MAP	1600'
GENERAL LAYOUT	

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

DESIGN DESIGNATION  
 ADT (Current Year) 1981 = 10,785 Design Speed 60 MPH  
 ADT (Future Year) 2,000 = 28,000 Based on 1,000' Sight Distance (Non-Striping)  
 DHV (Design Hr. Vol.) 3,000 = 2,725 Height of eye 4.5' Height of object 4.5'  
 D (Directional Distr.) = 52 W.B. % Design Speed not achieved at: \_\_\_\_\_  
 T (Heavy Commercial) = 4.5 % STA. \_\_\_\_\_ TO STA. \_\_\_\_\_ MPH  
 STA. \_\_\_\_\_ TO STA. \_\_\_\_\_ MPH



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		
2101.501	CLEARING	ACRE	0.4	
2101.502	CLEARING	TREE	33	
2101.506	GRUBBING	ACRE	0.4	
2101.507	GRUBBING	TREE	28	
2104.501	REMOVE PIPE CULVERTS	LIN. FT.	10	
2104.521	SALVAGE PIPE CULVERT	LIN. FT.	611	
0104.607	HAUL SALVAGED MATERIAL (1)	LUMP SUM		
2105.501	COMMON EXCAVATION	CU. YD.	8407 (P)	
2105.507	SUBGRADE EXCAVATION	CU. YD.	907 (P)	
2105.521	GRANULAR BORROW (LV)	CU. YD.	2344	
2105.522	SELECT GRANULAR BORROW (LV)	CU. YD.	5461	
2105.525	TOPSOIL BORROW (LV)	CU. YD.	2030	
2130.501	WATER (2)	1000 (M) GAL.	10	
2221.501	AGGREGATE SHOULDERING CLASS 1 (3)	TON	234	
2221.501	AGGREGATE SHOULDERING CLASS 3	TON	69	
2221.501	AGGREGATE SHOULDERING CLASS 5	TON	644	
2331.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	357	
2331.510	BINDER COURSE MIXTURE	TON	1618	
2331.512	LEVELING COURSE MIXTURE	TON	3273	
2331.514	BASE COURSE MIXTURE	TON	2540	
2331.516	SHOULDER MIXTURE (4)	TON	377	
2331.531	TEMPORARY LANE MARKING (SKIP) (5)	ROAD STA.	187	
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	2317	
2361.504	ASPHALT CEMENT	TON	64	
2361.508	WEARING COURSE MIXTURE	TON	977	
2501.511	18" C. S. PIPE CULVERT	LIN. FT.	208	
2501.515	18" G. S. PIPE APRONS	EACH	6	
0501.602	F. & I. 18" C. S. SAFETY APRON	EACH	6	
ALTERNATE 1-1				
ALT. 1-1	2501.511	18" C. M. PIPE CULVERT	LIN. FT.	170
	2501.515	18" C. M. PIPE APRONS	EACH	12
ALTERNATE 1-2				
ALT. 1-2	2501.511	18" R. C. PIPE CULVERT (6)	LIN. FT.	122
	2501.515	18" R. C. PIPE APRONS	EACH	12
	2501.515	18" R. C. PIPE APRONS	EACH	6
	2503.511	12" R. C. PIPE SEWER	LIN. FT.	100
	2503.511	18" R. C. PIPE SEWER (15)	LIN. FT.	548
	2506.507	CONSTRUCT CATCH BASINS DESIGN A OR F	LIN. FT.	7
	2506.507	CONSTRUCT CATCH BASINS DESIGN C OR G	LIN. FT.	15
	2506.507	CONSTRUCT CATCH BASINS DESIGN C, G OR H	LIN. FT.	8
	2506.516	CASTING ASSEMBLIES (6)	EACH	7

STATEMENT OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL ESTIMATED QUANTITIES	TOTAL FINAL QUANTITIES
2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN. FT.	1084	
2531.501	CONCRETE CURB AND GUTTER DESIGN D424	LIN. FT.	287	
2531.503	CONCRETE MEDIAN	SQ. YD.	2686	
2535.501	BITUMINOUS CURB	LIN. FT.	313	
2554.509	GUIDE POSTS TYPE B (7)	EACH	6	
2564.531	FURNISH AND INSTALL SIGN PANELS TYPE D - SIGNALS	SQ. FT.	132	
2565.501	FULL TRAFFIC - ACTUATED TRAFFIC CONTROL SYSTEM	SIG. SYSTEM	1	
2575.501	ROADSIDE SEEDING (8)(9)	ACRE	6 (P)	
2575.502	SEED MIXTURE 5 MODIFIED (10)	POUND	360	
2575.505	SODDING	SQ. YD.	6783	
2575.511	MULCH MATERIAL TYPE 1 (11)	TON	12	
2575.519	DISC ANCHORING	ACRE	6 (P)	
0575.602	HAY OR STRAW BALES (12)	EACH	100	
0575.607	COMMERCIAL FERTILIZER, ANALYSIS 10-20-20 (13)	POUND	2400	

- (1) STATE FUNDS.
- (2) TO BE USED FOR DUST CONTROL AS DIRECTED BY THE ENGINEER.
- (3) INCLUDES 136 TONS TO BE USED FOR GRAVEL ENTRANCES AS DIRECTED BY THE ENGINEER.
- (4) INCLUDES 16 TONS FOR ENTRANCES.
- (5) CONSISTS OF 88 ROAD STA. OF YELLOW AND 99 ROAD STA. OF WHITE.
- (6) FOR CASTING SUMMARY SEE SHEET NO. 11.
- (7) FOR CULVERT MARKERS.
- (8) SEED ALL DISTURBED AREAS EXCEPT AREAS TO BE SODDED.
- (9) 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.
- (10) CONSISTS OF 40 LBS. OF MIXTURE 5 SEED, 6 LBS. OF CRESTED WHEATGRASS, 3 LBS. OF SAND DROPSEED AND 11 LBS. OF HAIRY VETCH APPLIED AT A RATE OF 60 LBS. /ACRE.
- (11) MULCH ALL AREAS TO BE SEEDED.
- (12) TO BE USED FOR EROSION CONTROL AS DIRECTED BY THE ENGINEER.
- (13) TO BE APPLIED AT THE RATE OF 350 POUNDS PER ACRE, OR ITS EQUIVALENT, TO ALL SEEDED AND SODDED AREAS.
- (14) INCLUDES 36 TIED JOINTS.
- (15) INCLUDES 18 TIED JOINTS.

ESTIMATED QUANTITIES

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

STANDARD PLATES	
PLATE NO.	DESCRIPTION
0003A	SPECIFICATION REFERENCE TO STANDARD PLATES
30001	REINFORCED CONCRETE PIPE
3040F	CORRUGATED METAL PIPE CULVERT
3007A	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3100F	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3123H	METAL APRON FOR C. M. PIPE
3124A	METAL APRON CONNECTION
3128C	SAFETY APRON
3145A	CONCRETE PIPE JOINT TIES
3221B	CORRUGATED STEEL PIPE COUPLING BAND
4000H (1)	MANHOLE OR CATCH BASIN - DESIGN A
4002D	MANHOLE OR CATCH BASIN - DESIGN C
4005K (1)	MANHOLE OR CATCH BASIN - DESIGN F
4006J	MANHOLE OR CATCH BASIN - DESIGN G AND DESIGN H
4010E	CONCRETE SHORT CONE AND ADJUSTING RING
4011D	PRECAST CONCRETE BASE
4129C	CATCH BASIN FRAME CASTING - CASTING NO. 802A
4132B	CATCH BASIN FRAME CASTING - CASTING NO. 805
4152B	CATCH BASIN GRATE CASTING - CASTING NO. 814
4160C	CURB BOX CASTING FOR CATCH BASIN - CASTING NO. 823A
4180G	MANHOLE OR CATCH BASIN STEP
7035J	CONCRETE WALK AND CURB RETURNS AT ENTRANCES
7065C	BITUMINOUS CURB
7100E	CONCRETE CURB AND GUTTERS
7107F (2)	ENTRANCE NOSE
7111E	INSTALLATION OF CATCH BASIN CASTINGS
8000H	STANDARD BARRICADES
8003B	BREAKAWAY SIGN SUPPORT
8110C	TRAFFIC SIGNAL BRACKETING
8115C	PEDESTRIAN PUSH BUTTON INSTALLATION
8116C	STEEL GUARD POST
8117F	PRECAST CONCRETE HANDHOLE (OR PULL BOX)
8118C	SERVICE EQUIPMENT AND POLE TRAFFIC CONTROL SIGNALS
8119C	GROUND MOUNTED CABINET FOUNDATION
8123A	POLE AND MAST ARM
8124C	MAST ARM SIGNAL HEAD MOUNTS
8125A	SWING-AWAY HINGE
8126A	A 100 MAST ARM POLE FOUNDATION
8130D	SAW CUT LOOP DETECTORS
8150B	INSTALLATION OF CULVERT MARKERS
9102C	SODDING AT PIPE CULVERT ENDS
9000B (3)	APPROACHES & ENTRANCES

- ① STRUCTURES SHALL BE STEPPED
- ② FOR CURB AND GUTTER DETAIL ONLY
- ③ 6:1 APPROACH SLOPES SHALL BE BUILT ON EXISTING ENTRANCES.

CONSTRUCTION AND SOILS NOTES

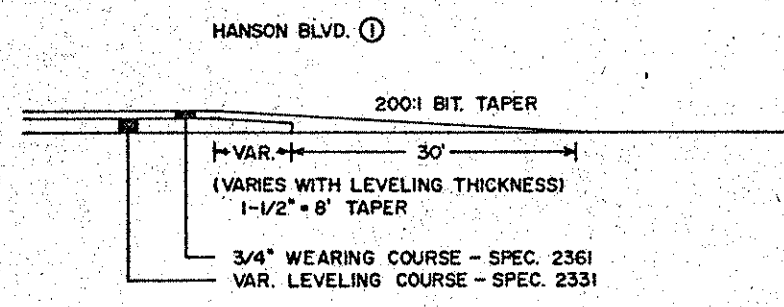
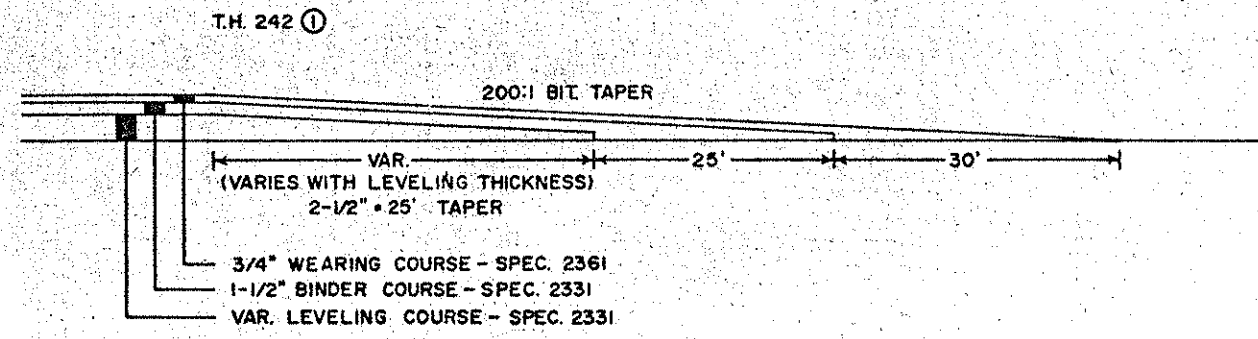
1. Selected grading material shall consist of granular material and selected granular material.
2. Granular material, regardless of source, shall meet the requirements of Spec. 3149. 2A.
3. Selected granular material, regardless of source, shall meet the requirements of Spec. 3149. 2B.
4. Unless otherwise recommended, in any new construction (fill section) the upper 4.0' of the grading subgrade shall be constructed of granular material, the upper 1.0' of which shall be selected granular material.
5. Strip and reuse as slope dressing, all topsoil and in place slope dressing in areas to be disturbed by construction. Approximate dimensions are 1" minimum, 9" maximum and 4" average.
6. Bituminous surfacing and concrete items disturbed by this construction shall be disposed of by the contractor off the right of way.
7. Compaction on all bituminous and grading items shall be obtained in accordance with the "Ordinary Compaction Method" requirements.
8. Test rolling will not be required.
9. The bottom of all excavations shall be compacted by a minimum of four passes with an approved compacting device. Compaction shall be completed to the satisfaction of the Engineer.
10. Stabilizing aggregate whether obtained locally or from borrow shall meet the requirements of Spec. 3149. 2C.
11. Stabilization shall be accomplished as directed by the Engineer in accordance with Spec. 2105. 3G.
12. Embankment widening on T. H. 242 Sta. 182+50+ to 185+00+ and Sta. 211+00+ to 214+50+ shall be placed using normal construction procedures outlined in Spec. 2105 modified so that embankment construction shall proceed from the toe of proposed slope inward toward the existing fill slope. Some settlement of the underlying soft soils can be expected. If settlement occurs, the contractor shall place additional fill to maintain the slope to planned elevation. Strip topsoil and in place slope dressing from the existing slopes, but on the natural ground at the toe of the existing inslope do not disturb the existing vegetation. Unless otherwise recommended by the Engineer, mulching and turf establishment on the slope shall be delayed for approximately 30 days after the completion of embankment widening.
13. Use selected grading materials behind all curbs unless otherwise noted.
14. Provide vertical curb height transition at terminal ends of curb and gutter as directed by the Engineer.

GRAVEL PITS (5)			
PIT NO.	COUNTY	LEGAL DESCRIPTION	MATERIAL AVAILABLE
3125	Hennepin	S.W. 1/4 of S.E. 1/4 Sec. 14, T119N, R22W	③ ④
4381A	Hennepin	S. 1/2 of S.W. 1/4 of Sec. 24, T119N, R22W	③

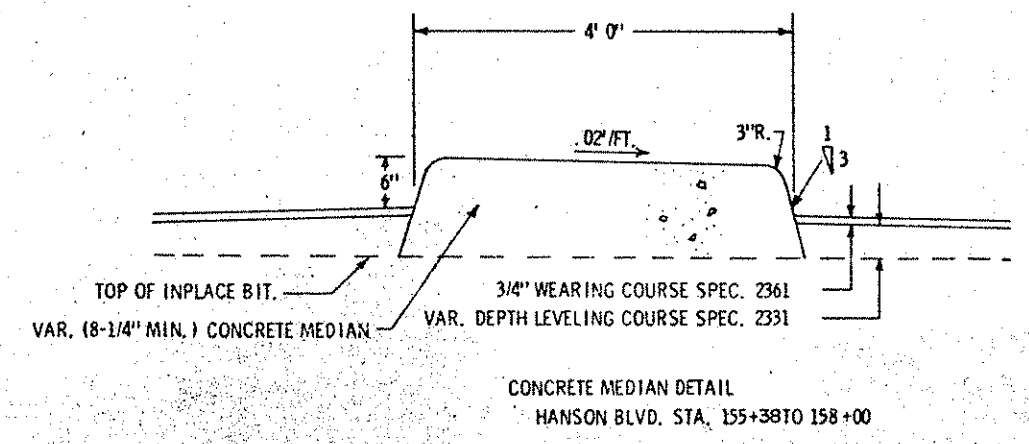
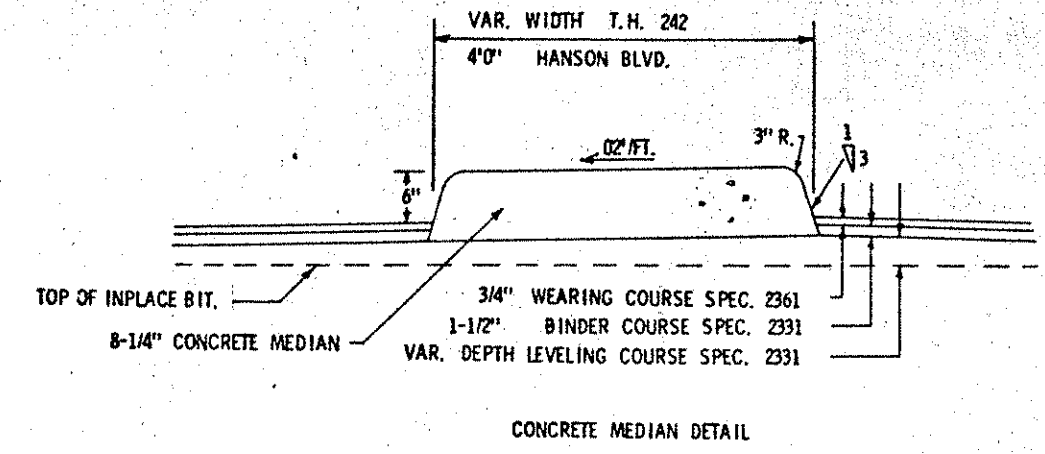
- ③ Possible source of aggregates for all bituminous items except 2361 Wearing and as a source of stabilizing aggregate. A gradation correction may be required.
- ④ Possible source of granular and selected granular material. However, material meeting the gradation requirements for BA-3 or better shall not be used for "Granular Borrow".
- ⑤ Pit sheets are not included in this plan. Prints of pit sheets may be obtained at the time plans and proposals are purchased.

EARTHWORK SUMMARY	
EXCAVATION (CU. YD.)	
EXCAVATION 9314	Common Exc. 8407 { Topsoil 3359 Rubble 134 Suitable Grading 4914 Subgrade Exc. 907 (Suitable Grading)
EMBANKMENT (CU. YD.)	
EMBANKMENT 9789	Topsoil 3849 { 2399 Topsoil Borrow 1450 (2030 L.V.) Granular Borrow 1674 (2344 L.V.) Select Granular Borrow 3901 (5461 L.V.) Regular 4214

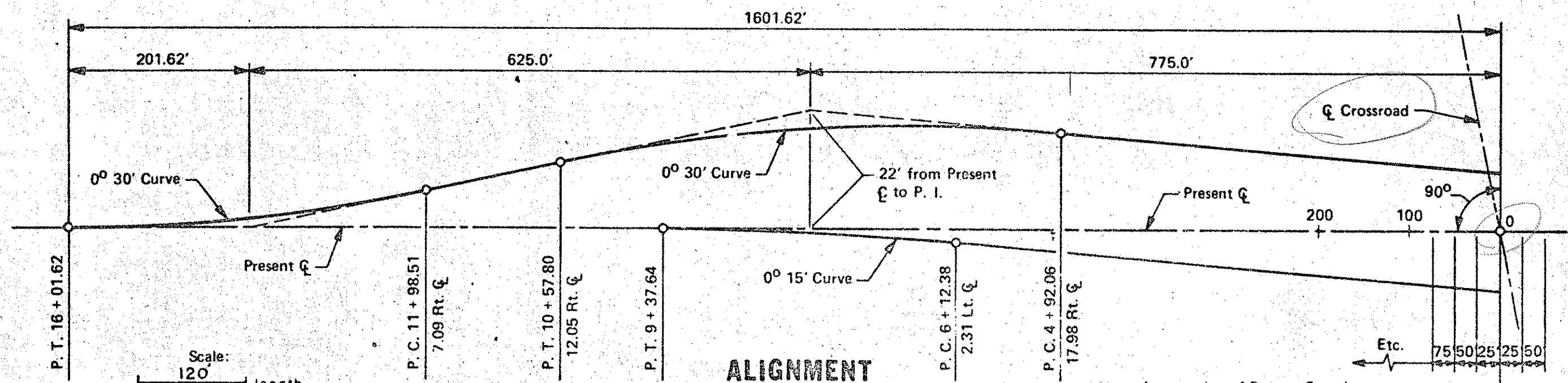
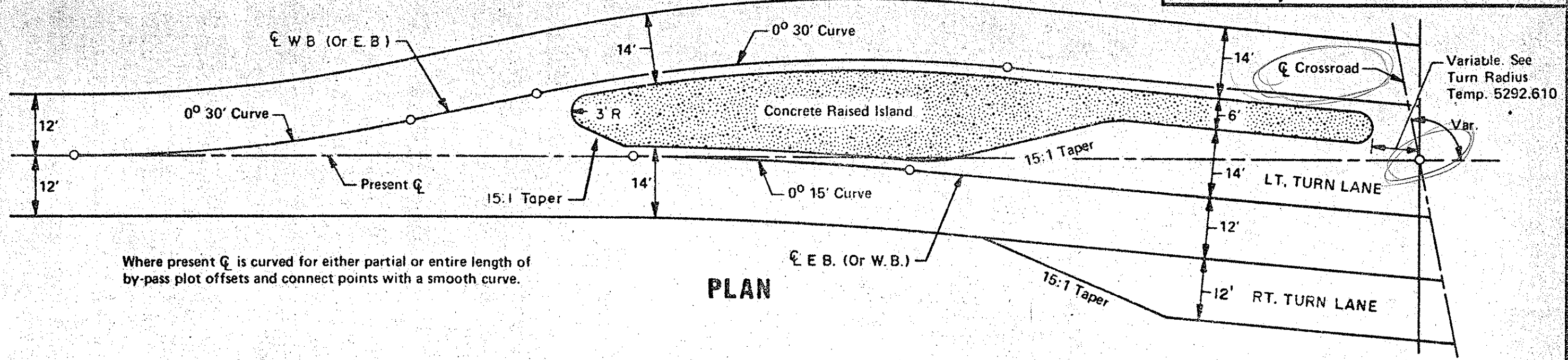
TABULATION  
 STANDARD PLATES  
 CONSTRUCTION AND SOILS NOTES  
 GRAVEL PITS  
 EARTHWORK SUMMARY



① TO BE USED AT PROJECT LIMITS.



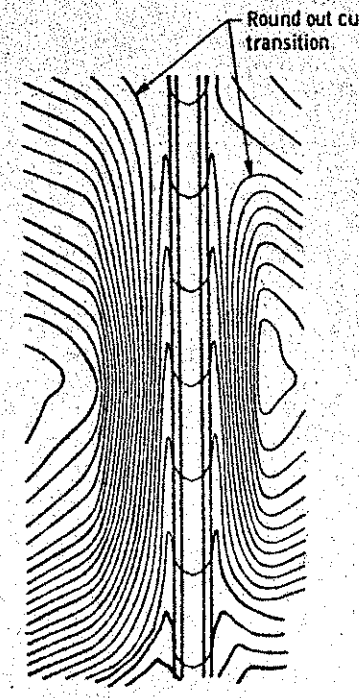
DETAILS  
CONCRETE MEDIAN  
BITUMINOUS TAPERS



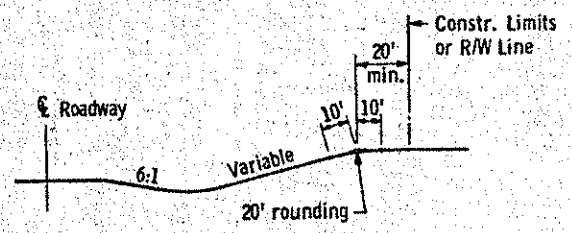
OFFSETS FROM PRESENT  $\mathcal{C}$  TO EDGE OF THRU LANES

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 $\mathcal{C}$	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 $\mathcal{C}$	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 $\mathcal{C}$	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 $\mathcal{C}$	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 $\mathcal{C}$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Right $\mathcal{C}$	10.56	9.68	8.80	7.92	7.09	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	

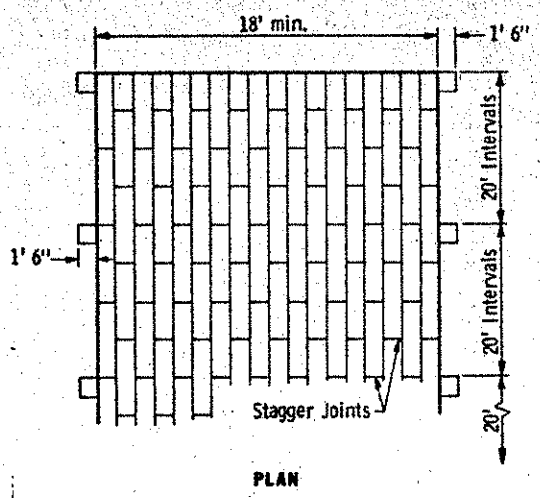
LEFT TURN LANE BY-PASS



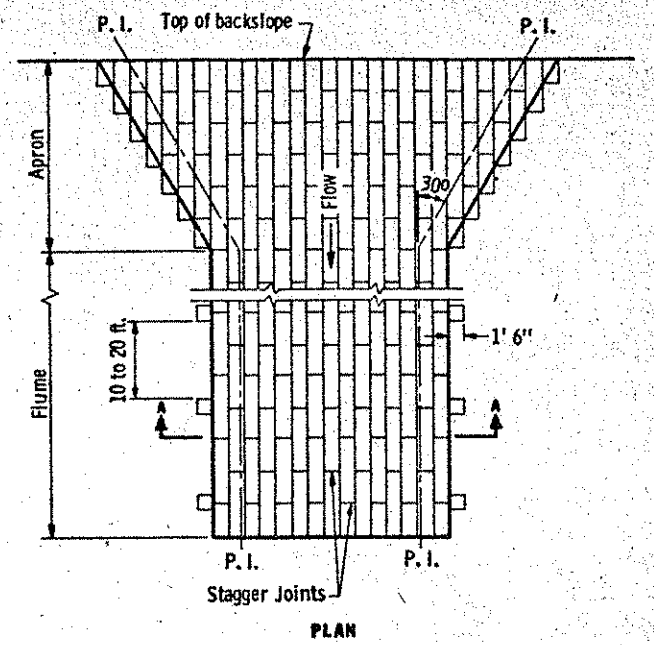
CONTOURING ROAD CUTS



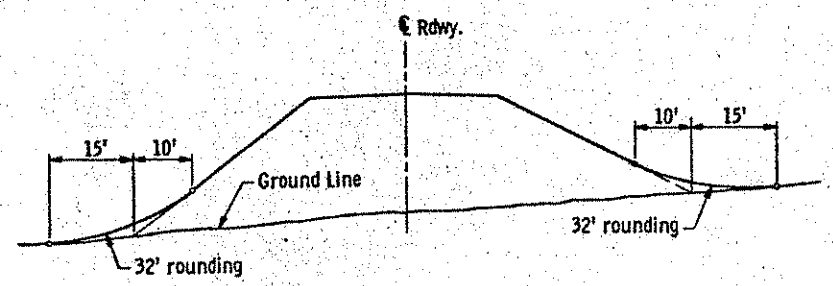
ROUNDING BACK SLOPES



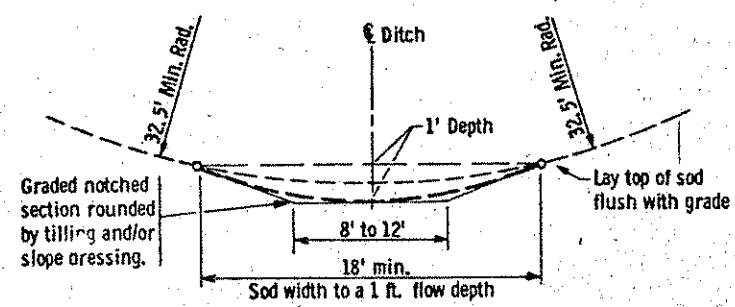
PLAN



PLAN

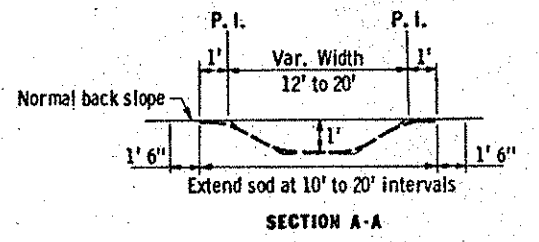


SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES

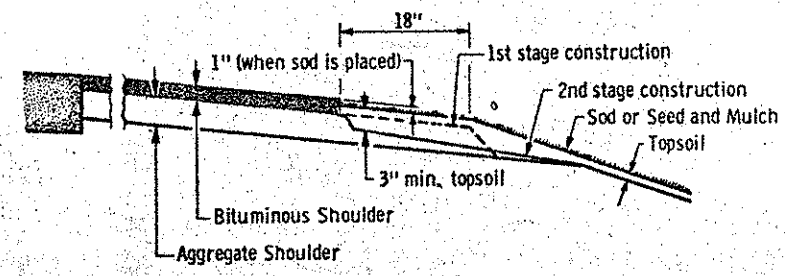


SODDED DITCH CROSS SECTION

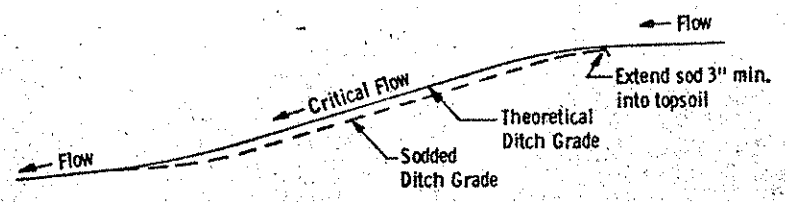
Ditches having a minimum radius of 32.5 feet and requiring sod shall be constructed according to the above details. Where ditch radius is less than 32.5 feet, notching is not required. Sod a minimum of 18 feet in width.



SECTION A-A

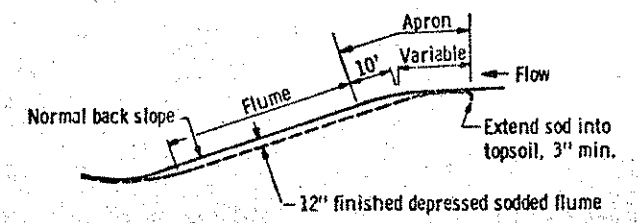


SHAPING AND TOPSOILING INSLOPES



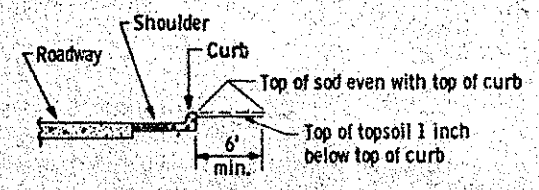
DITCH PROFILE

SODDED DITCH DETAILS



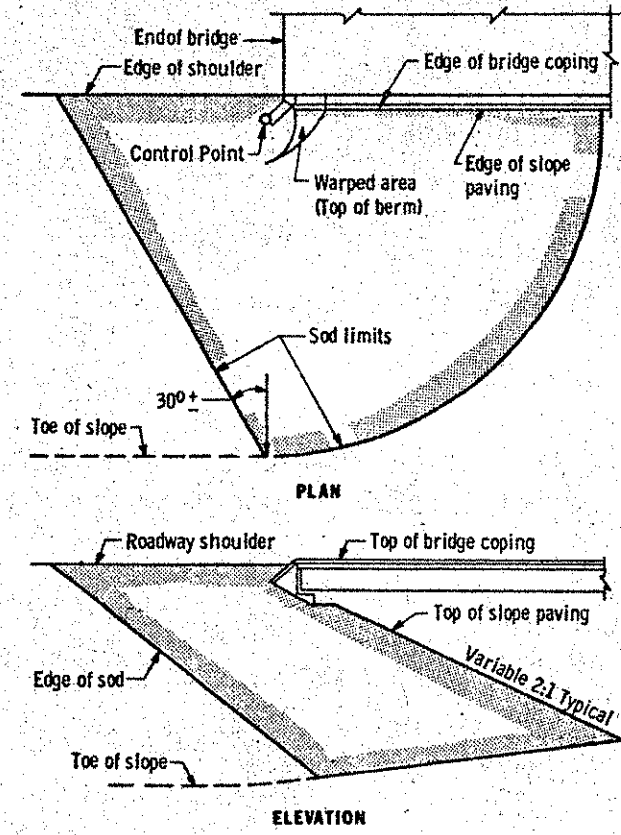
LONGITUDINAL CROSS SECTION

SODDED FLUME DETAILS

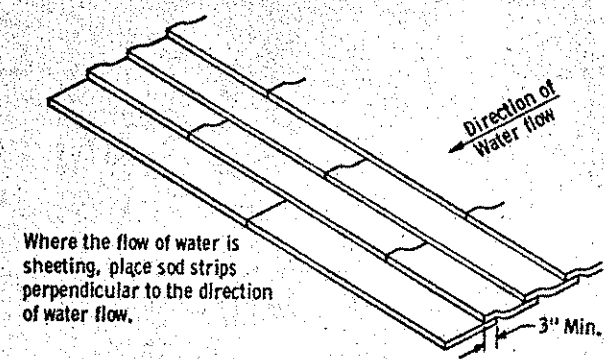


SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED

APPROVED Dec. 17, 1976  
*Lemuel S. Eitzer*  
 Engineering Specialist, Engineer  
 MATERIALS RESEARCH AND  
 STANDARDIZATION DIVISION

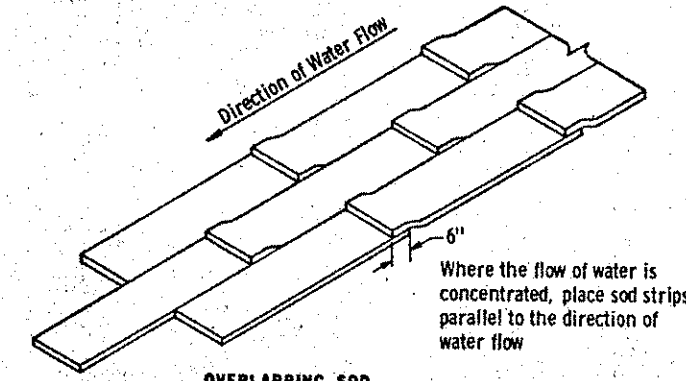


SODDING LIMITS AT BRIDGE APPROACH FILLS



Where the flow of water is sheeting, place sod strips perpendicular to the direction of water flow.

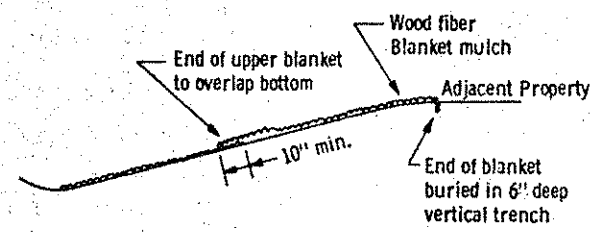
SHINGLING SOD



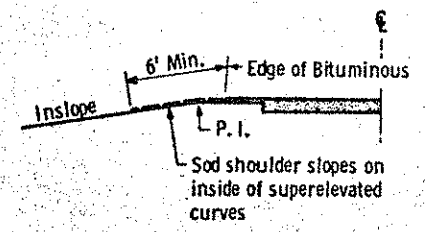
Where the flow of water is concentrated, place sod strips parallel to the direction of water flow

OVERLAPPING SOD

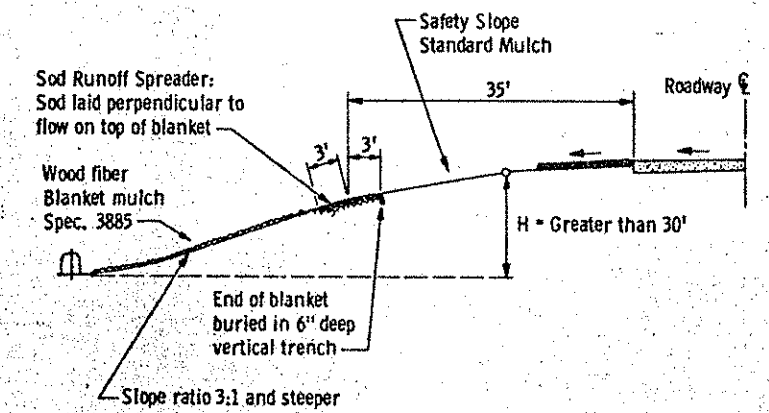
SPECIAL SOD PLACEMENT TECHNIQUES



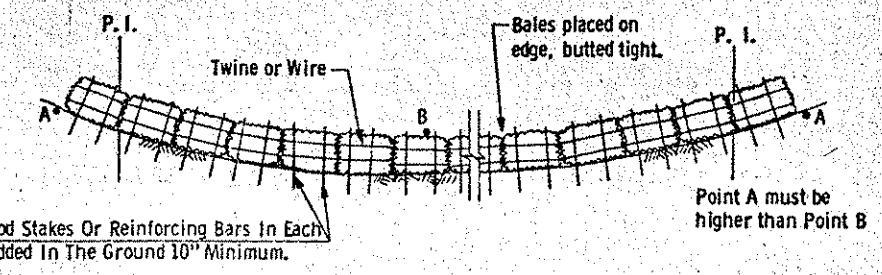
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE (WHEN REQUIRED)



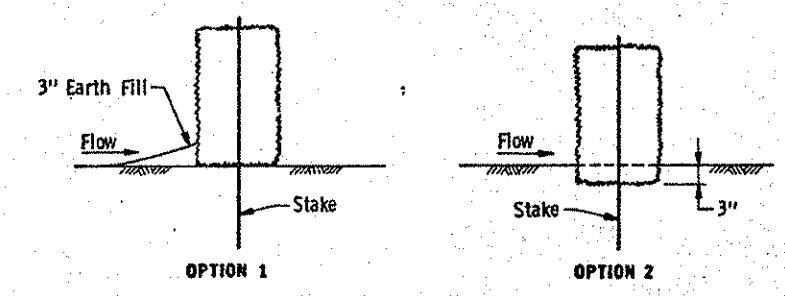
SODDING INSLOPES OF SUPERELEVATED CURVES



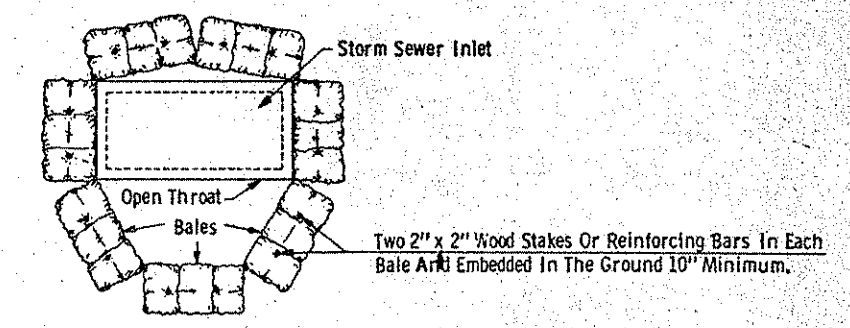
WOOD FIBER BLANKET INSTALLATION ON A SAFETY FILL SLOPE (WHEN REQUIRED)



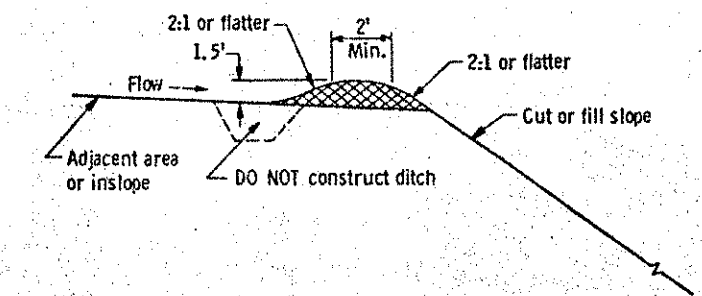
BALE HAY OR STRAW DITCH CHECK



DITCH CHECK SECTIONS

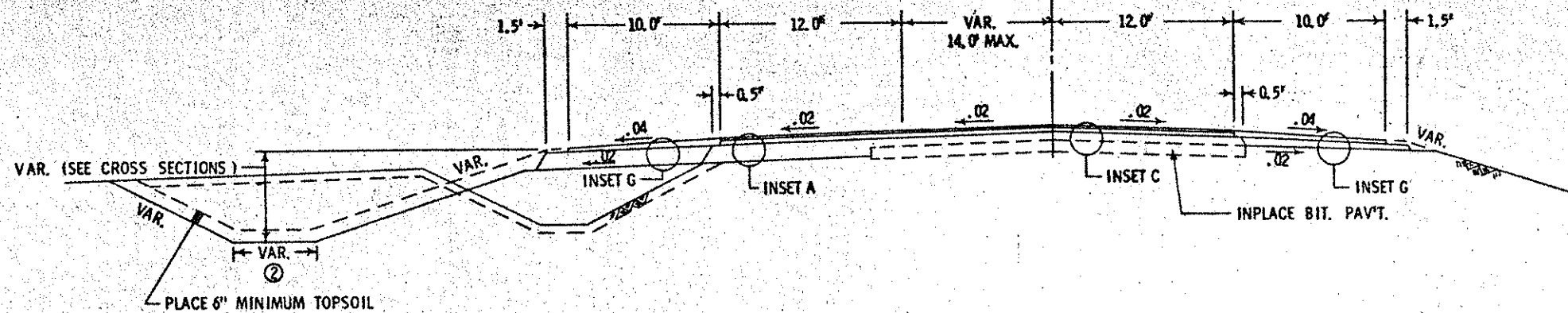


BALE DIVERSION TO PROTECT STORM SEWER INLETS

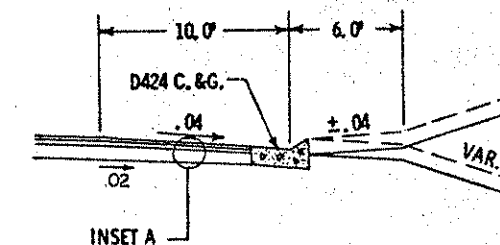


TEMPORARY OR PERMANENT SLOPE PROTECTION DIKE

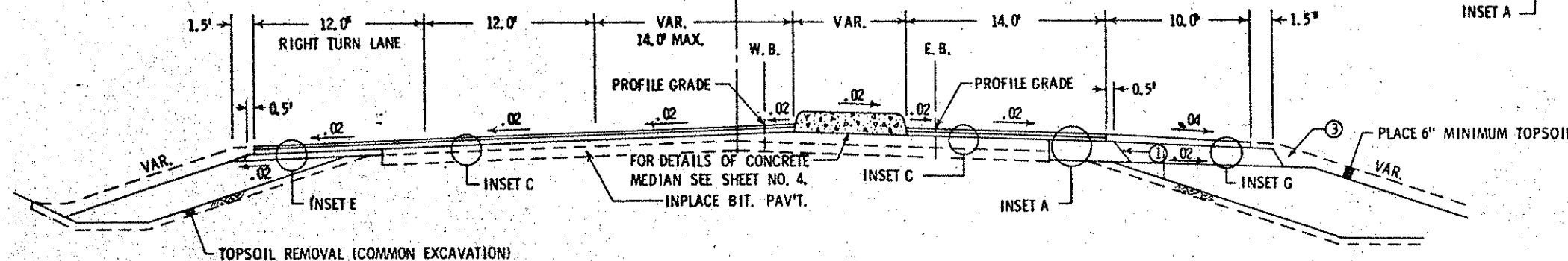
C.T.H. 242 STA. 182+50 TO 188+27  
STA. 208+80 TO 214+50



DETAIL 1  
STA. 199+40 TO 201+50 RT.

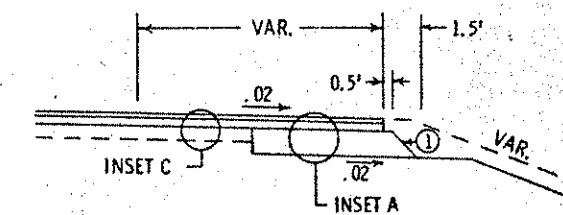


C.T.H. 242 STA. 188+27 TO 208+80

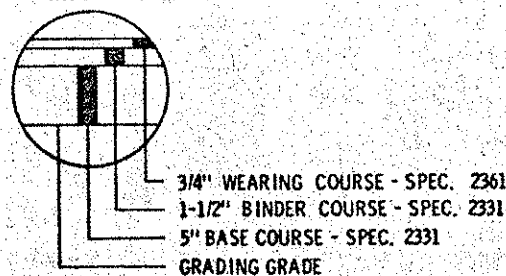


- ① 1:1 OR STEEPER, STEPPING PERMITTED.
- ② DITCH BOTTOM WIDTHS VARY FROM 0' TO 8' AND SHALL BE CONSTRUCTED TO THE APPROXIMATE WIDTHS AS SHOWN ON THE CROSS SECTIONS.
- ③ FOR SHAPING AND TOPSOILING INSLOPES SEE SHEET NO. 6.

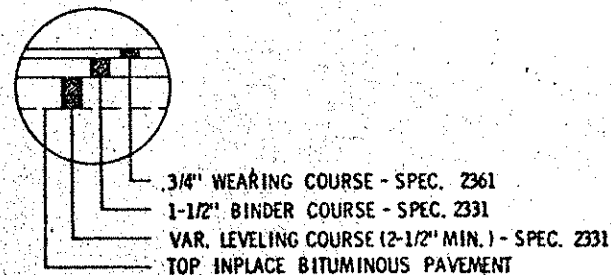
DETAIL 2  
STA. 182+50 TO 190+50 RT. (BYPASS LANE)  
STA. 188+06 TO 193+85 LT. (RIGHT TURN LANE)  
STA. 193+85 TO 198+10 LT. (SHOULDER)



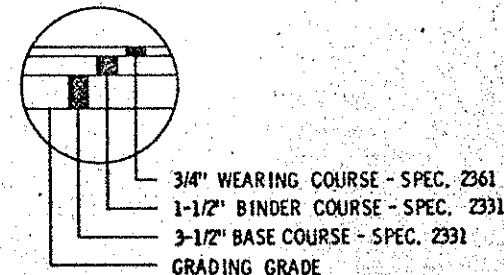
INSET A (WIDENING)



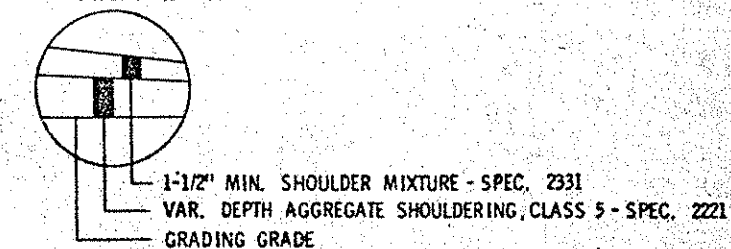
INSET C (OVERLAY)



INSET E (RIGHT TURN LANE)

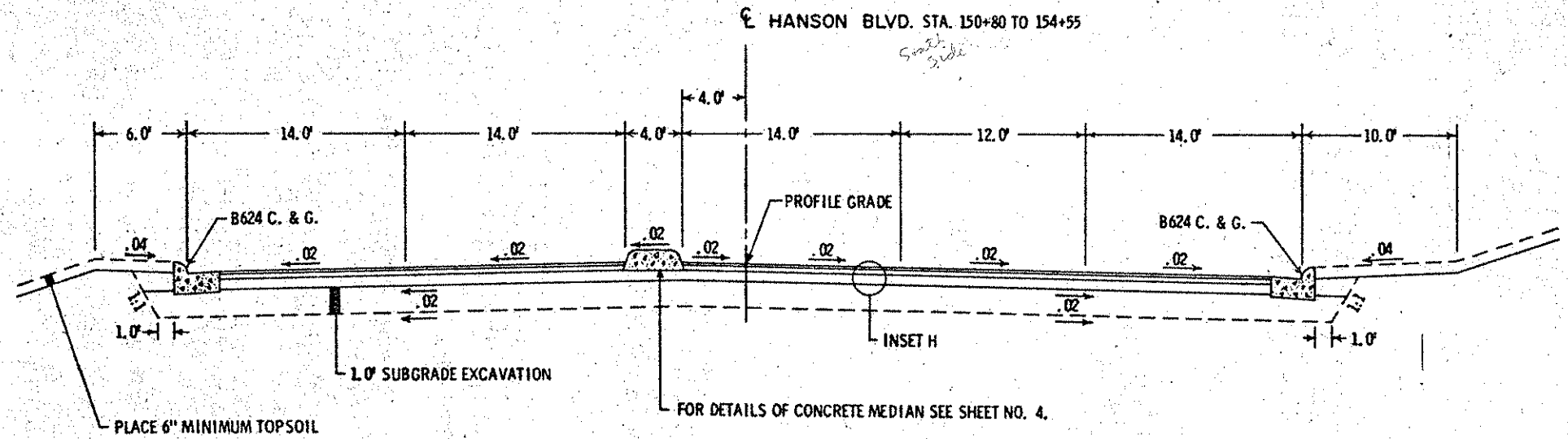
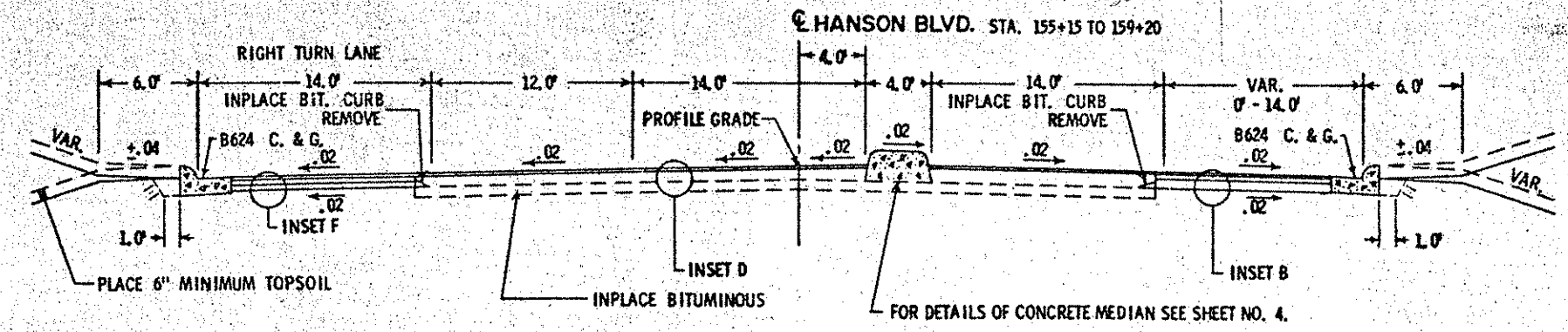


INSET G (SHOULDER)

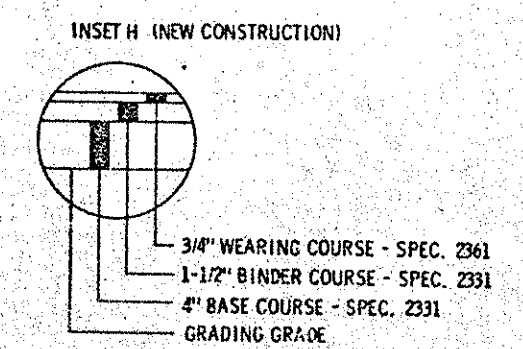
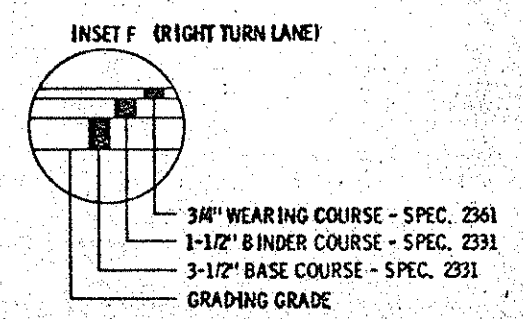
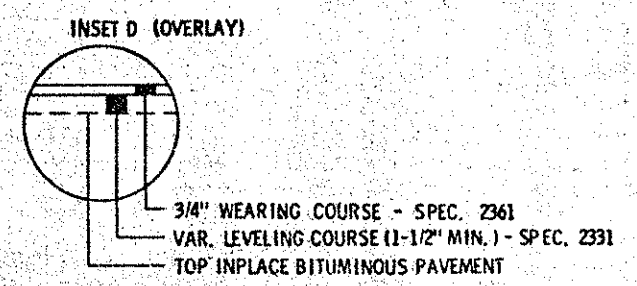
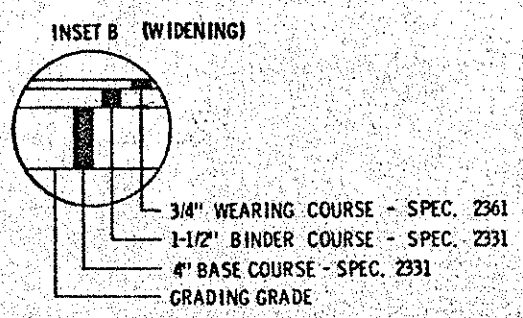
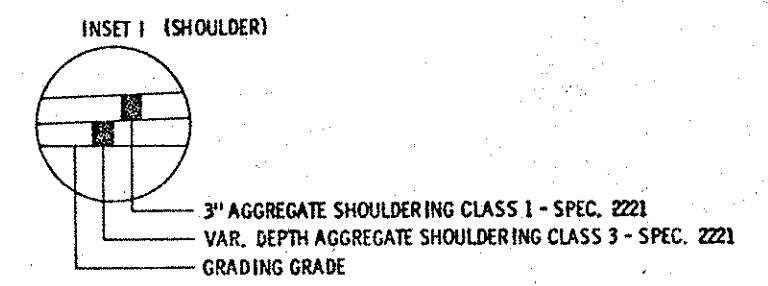
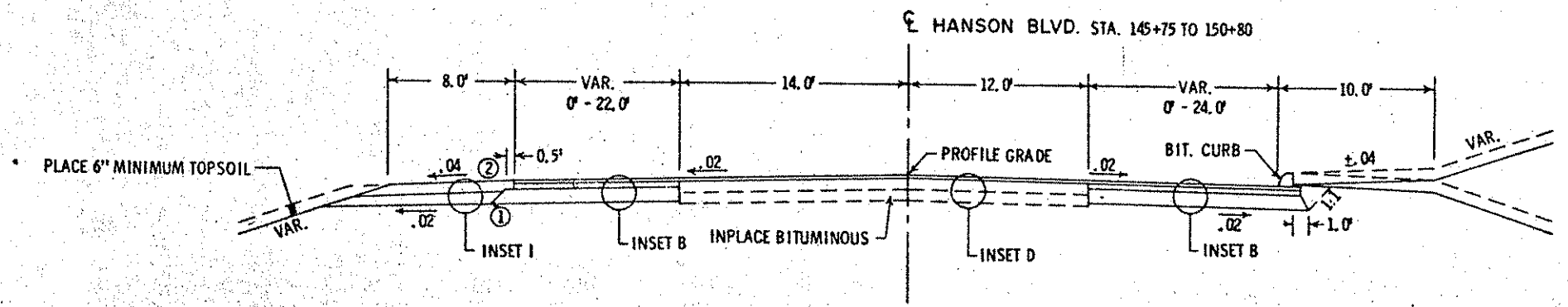


TYPICAL SECTIONS  
T.H. 242





- ① 1:1 OR STEEPER, STEPPING PERMITTED.
- ② FROM STA. 147+92 TO 151+22 LEFT USE 1.5' EARTH SHOULDER



TYPICAL SECTIONS  
HANSON BLVD.

PUBLIC UTILITIES

STATION	LOCATION	ITEM INPLACE	REMARKS	OWNERSHIP
T.H. 242				
180+00 - 183+00	45' LT.	4" GAS MAIN	2	A
183+00 - 206+30	45' LT.	4" GAS MAIN	1	A
206+30 - 209+10	45' LT.	4" GAS MAIN	2	A
209+10 - 214+25	45' LT. - 38' LT.	4" GAS MAIN	1	A
214+25 - 215+00	38' LT.	4" GAS MAIN	2	A
198+88	58' LT.	GAS VENT	3	A
180+85	72' RT.	T.P.P.	2	B
182+39	72' RT.	T.P.P.	2	B
183+80	71' RT.	T.P.P.	2	B
185+23	71' RT.	T.P.P.	2	B
186+45	100' LT.	T.P.P.	2	B
186+73	71' RT.	T.P.P. & ANCHOR	2	B
188+19	36' LT.	P.P. & LIGHT	3	B
188+20	69' RT.	T.P.P.	2	B
189+80	71' RT.	T.P.P.	2	B
190+98	47' LT.	P.P. & LIGHT	3	B
191+09	70' RT.	T.P.P.	2	B
192+43	70' RT.	T.P.P.	2	B
193+85	70' RT.	T.P.P.	2	B
195+29	71' RT.	T.P.P.	2	B
196+76	71' RT.	T.P.P. & ANCHOR	2	B
199+95	70' RT.	T.P.P. & ANCHOR	2	B
201+83	71' RT.	T.P.P.	2	B
203+34	71' RT.	T.P.P.	2	B
204+34	71' RT.	T.P.P.	2	B
205+05	32' LT.	T.P.	3	B
205+69	71' RT.	T.P.P.	2	B
205+69 - 206+38	71' RT.	P - BUR	2	B
206+38	71' RT. - SOUTH	P - BUR	2	B
206+68	70' RT. - SOUTH	P - BUR	1	B
206+68 - 207+04	70' RT.	P - BUR	1	B
207+04	70' RT.	T.P.P. & ANCHOR	2	B
208+00	77' LT.	P.P.	2	B
208+52	69' RT.	T.P.P.	1	B
210+02	69' RT.	T.P.P.	2	B
211+45	69' RT.	T.P.P.	2	B
212+85	69' RT.	T.P.P. & ANCHOR	2	B
212+99	74' LT.	T.P.P.	2	B
214+35	70' RT.	T.P.P.	2	B
198+26	54' RT.	P.P., LIGHT & ANCHOR	4	D
198+50	6' RT.	SIGNAL LIGHT	4	D
198+58	10' LT.	SIGNAL LIGHT	4	D
198+89	52' LT.	P.P., LIGHT, SIG. CONTROLLER	4	D

PUBLIC UTILITIES

STATION	LOCATION	ITEM INPLACE	REMARKS	OWNERSHIP
T.H. 242				
180+00 - 199+81	15' RT.	T - BUR.	2	C
199+81	15' RT. - 69' RT.	T - BUR.	1	C
199+81	69' RT.	T. PED	1	C
199+81 - 215+00	15' RT.	T - BUR.	2	C
196+76 - 198+81	71' RT. - 51' RT.	T - BUR.	1	C
198+81	51' RT.	TEL. M.H.	1	C
198+93	51' RT. - 67' LT.	T - BUR.	1	C
198+81 - 199+95	51' RT. - 70' RT.	T - BUR.	1	C
198+81 - 199+95	51' RT. - 64' RT.	T - BUR.	1	C
199+95 - 210+55	64' RT.	T - BUR.	1	C
212+85 - 212+99	64' RT. - 74' LT.	T - BUR.	2	C
212+99	74' LT.	T. PED	2	C
210+55 - 215+00	64' RT.	T - BUR.	2	C
HANSON BLVD.				
146+00 - 149+72	27' RT. - 29' RT.	T - BUR.	1	C
149+72	29' RT.	TEL. M.H.	1	C
149+72 - 149+86	29' RT.	T - BUR.	1	C
149+86	29' RT.	TEL. M.H.	1	C
149+86 - 154+30	29' RT. - 27' RT.	T - BUR.	1	C
155+50 - 159+20	35' RT. - 37' RT.	T - BUR.	1	C
155+50 - 155+58	44' RT. - 38' RT.	T - BUR.	1	C
155+58 - 159+20	38' RT. - 39' RT.	T - BUR.	1	C
155+50 - 155+83	39' RT. - 22' RT.	T - BUR.	1	C
155+83 - 160+00	22' RT. - 19' RT. - 22' RT.	T - BUR.	2	C
158+47 - 158+60	22' RT. - 33' RT.	T - BUR.	1	C
149+90	28' LT.	TRANSMISSION TOWER	3	B & E
154+06	29' LT.	TRANSMISSION TOWER	3	B & E
157+05	33' RT.	P.P. & ANCHOR	3	B
157+67	59' RT.	P.P. & ANCHOR	3	B
158+60	33' RT.	P.P., LIGHT & 2 ANCHORS	3	B
158+61	28' LT.	TRANSMISSION TOWER	3	B & E

OWNERSHIP CODE  
 A - NORTH CENTRAL GAS  
 B - ANOKA ELECTRIC COOP.  
 C - NORTHWESTERN BELL TELEPHONE  
 D - MN/DOT  
 E - UNITED POWER ASSOC.

UTILITY CODE  
 1 - ADJUST BY OTHERS  
 2 - LEAVE AS IS  
 3 - RELOCATE BY OTHERS  
 4 - RELOCATE

TABULATION  
 PUBLIC UTILITIES

CLEARING AND GRUBBING					
STATION TO STATION	LOCATION	CLEARING		GRUBBING	
		TREE	ACRE	TREE	ACRE
T.H. 242					
191+70 - 195+50	57' - 80' LT.		0.2		0.2
201+33	59' LT.	1		1	
201+50	59' LT.	1		1	
201+68	61' LT.	1		1	
201+82	62' LT.	1		1	
201+88	67' LT.	1		1	
202+25	58' RT.	1		1	
202+25	63' RT.	1		1	
202+25	74' RT.	1		1	
202+42	63' RT.	1		1	
202+70	55' RT.	1		1	
202+96	71' RT.	1		1	
203+23	57' RT.	1		1	
203+42	57' RT.	1		1	
204+66	52' RT.	3		1	
205+61	50' RT.	2		1	
206+23	60' RT.	1		1	
206+37	57' RT.	1		1	
206+64	64' RT.	1		1	
206+83	63' RT.	1		1	
206+89	63' RT.	2		1	
207+07	67' RT.	1		1	
207+08	61' RT.	1		1	
207+23	62' RT.	1		1	
207+36	62' RT.	1		1	
207+49	62' RT.	1		1	
207+64	64' RT.	2		1	
207+77	63' RT.	1		1	
207+92	65' RT.	1		1	
HANSON BLVD.					
147+40 - 154+00	33' - 54' RT.		0.2		0.2

CURB & GUTTER, BIT. CURB, CONCRETE MEDIAN					
STATION TO STATION	LOCATION	CURB & GUTTER		BIT. CURB	CONCRETE MEDIAN
		DESIGN			
		B624	D424	LIN. FT.	SQ. YD.
T.H. 242					
188+24 - 197+97	LT.				1215
199+05 - 208+83	RT.				1219
187+77 (IBIS ST.)	53' - 75' LT.			22	
188+05 (IBIS ST.)	56' - 75' LT.			19	
198+90 - 201+50	RT.		287		
HANSON BLVD.					
150+00 - 151+22	RT.			122	
151+22 - 154+00	RT.	278			
151+22 - 154+00	LT.	278			
151+22 - 154+32	LT.				137
155+42 - 157+70	RT.	228			
155+42 - 158+23	LT.	300			
155+38 - 158+00	RT.				115
157+70 - 159+20	RT.			150	

SODDING ②			
STATION TO STATION	LOCATION	SODDING	
		WIDTH	AREA
		FT.	SQ. YD.
HANSON BLVD.			
155+55 to 159+20	RT.	9'	350
T.H. 242			
198+90 to 208+00	LT.	Var.	2820
201+43 to 209+83	RT.	Var.	2820
Miscellaneous Areas	①	Var.	600

- ① To be used as directed by the Engineer.
- ② For additional quantities, see Drainage Tabulation, Sheet No. 12.

BITUMINOUS SUMMARY						
STATION TO STATION	LOCATION	SPEC. 2331				SPEC. 2361
		LEVELING	BASE	BINDER	SHOULDER	WEARING
		TON	TON	TON	TON	TON
T.H. 242						
183+05 TO 213+95	LT. & RT.	2160				
184+00 TO 198+15	LT.		494			
203+85 TO 208+00	LT.		22			
198+90 TO 213+00	RT.		610			
182+50 TO 188+27	LT. & RT.			144		77
188+27 TO 208+80	LT.			378		190
188+27 TO 208+80	RT.			347		174
208+80 TO 214+50	LT. & RT.			140		74
188+05 TO 192+85						
RT. TURN LANE	LT.		172	51		26
198+95 TO 203+85						
RT. TURN LANE	LT.	73	90	51		26
182+50 TO 190+50						
BYPASS LANE	RT.	180	67	85		43
193+20 TO 198+15						
RT. TURN LANE	RT.	63	91	51		26
182+50 TO 187+55	SHLD. LT.					58
203+85 TO 214+50	SHLD. LT.					122
190+35 TO 193+20	SHLD. RT.					32
201+50 TO 214+50	SHLD. RT.					149
3 BIT. ENTRANCES						16
IBIS STREET		23				7
HANSON BLVD.						
145+75 TO 150+80	LT. & RT.	312	190	69		95
150+80 TO 154+55	LT. & RT.		513	186		94
155+13 TO 159+20	LT. & RT.	462				105
155+20 TO 159+20	RT.		103	37		
150+80 TO 154+55						
RT. TURN LANE	RT.		110	46		23
155+15 TO 158+20						
RT. TURN LANE	LT.		78	33		17

CASTING ASSEMBLIES			
KEY	FRAME	GRATE	CURB BOX
B-3	802A	814	823A
D-3	805	814	

CASTING SUMMARY				
	802A	805	814	823A
NUMBER REQUIRED	4	3	7	4

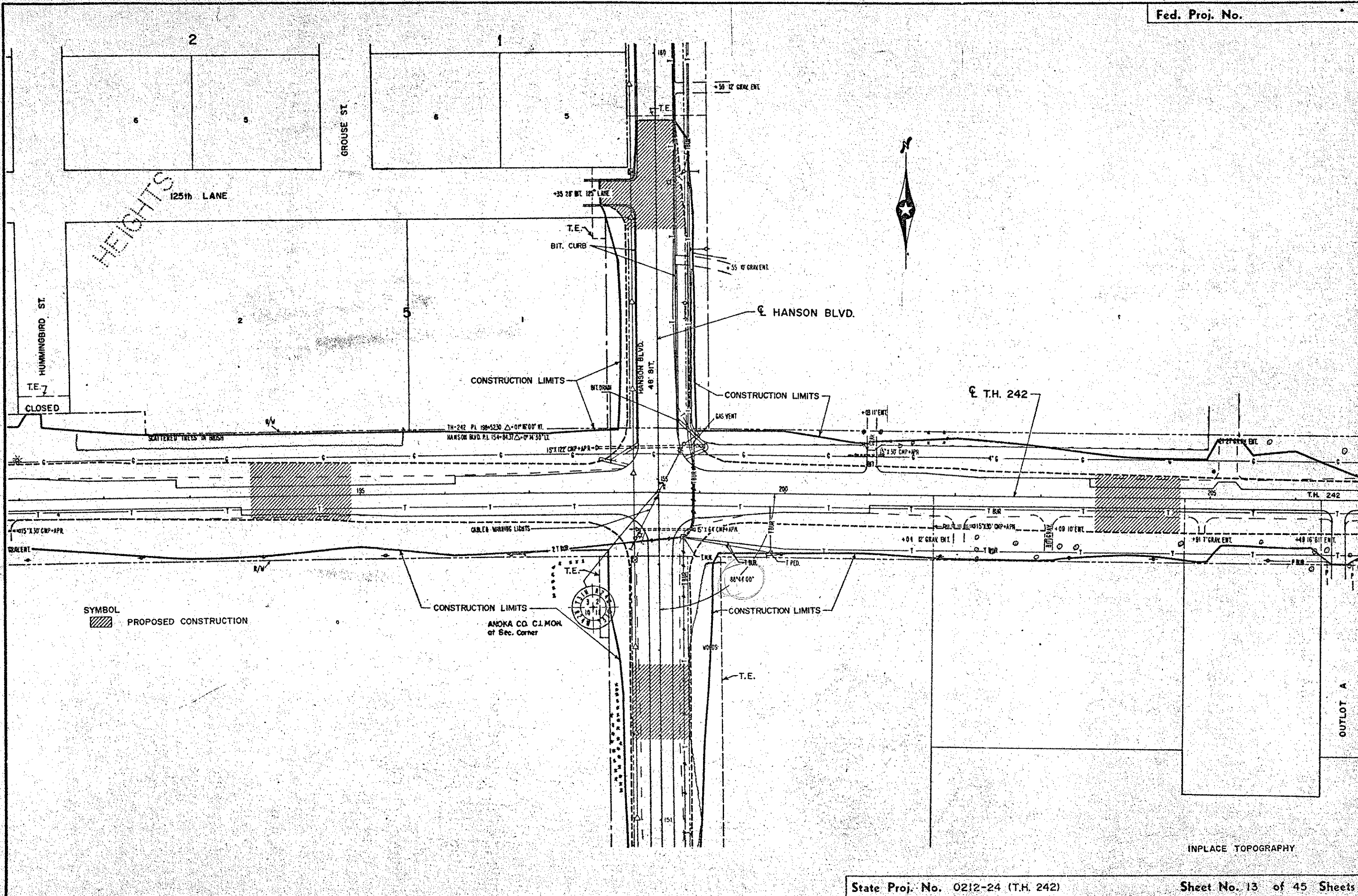
TABULATIONS  
 CURB AND GUTTER, CONC. MEDIAN  
 CASTING ASSEMBLIES  
 CASTING SUMMARY  
 BITUMINOUS SUMMARY  
 CLEARING AND GRUBBING  
 SODDING


**DRAINAGE****Fed. Proj. No.**

STRUCTURE NO.	STATION	LOCATION	ITEM INPLACE	REMARKS	REMOVE PIPE CULVERT	SALVAGE PIPE CULVERT	CONSTRUCT		TOP OF CASTING OR PIPE INLET	STRUCT. OUTLET	CASTING ASSY.	PIPE DIAM.	PIPE SEWER R. C.	PIPE CULVERT					APRONS			PIPE CLASS	DRAINS TO			CULVERT MARKERS	SOODING	STRUCTURE NO.		
							DESIGN	PAY HEIGHT						C. S.	C. M.	R. C.	INLET	OUTLET	G. S.	C. M.	R. C.		STRUCT. NO.	GRADE	INLET					
							C. B.	LIN. FT.						LIN. FT.	LIN. FT.	LIN. FT.	ELEV.	ELEV.	EACH	INCHES	LIN. FT.		LIN. FT.	ELEV.	ELEV.				EACH	EACH
	T.H. 242																													
	185+19	ENT. 50' LT.	15" C.M.P. 37' LT.	ALTERNATE 1-1		32					18		30			859.78	859.34		2											23
	185+19	ENT. 50' LT.		ALTERNATE 1-2							18			22(5)	859.72	859.40			2											
	185+33	ENT. 40' RT.	15" C.M.P. 34' RT.			32					18		26		861.02	860.76	2	(1)												23
	187+90	IBIS STREET LT.	15" C.M.P.+2 APRONS 48' LT.			59					18		34		868.97	868.35	2	(1)												23
	190+82	ENT. 43' RT.	15" C.M.P.+2 APRONS 36' RT.			34					18																			23
	191+09	HUMMING BIRD STREET LT.	15" C.M.P.+2 APRONS 76' LT.	ALTERNATE 1-1		50					18		28		872.05	868.71		2												23
	191+09			ALTERNATE 1-2							18			20(5)	871.57	869.19			2											
	198+53	HANSON BLVD LT.	15" C.M.P.+2 APRONS 54' LT.			126																								
	198+55	HANSON BLVD RT.	15" C.M.P.+2 APRONS 43' RT.			68																								
	201+03	ENT. 54' LT.	15" C.M.P.+2 APRONS 46' LT.	ALTERNATE 1-1		34					18		30		886.14	885.84		2												
	201+03	ENT. 54' LT.		ALTERNATE 1-2							18			22(5)	886.10	885.88			2											
	202+04	ENT. 62' RT.	15" C.M.P.+2 APRONS 35' RT.	ALTERNATE 1-1		34					18		28		886.44	886.04		2												
	202+04	ENT. 62' RT.		ALTERNATE 1-2							18			20(5)	886.38	886.10			2											
	203+09	ENT. 62' RT.		ALTERNATE 1-1							18		26		887.89	887.53		2												
	203+09	ENT. 62' RT.		ALTERNATE 1-2							18			18(5)	887.83	887.59			2											
	206+49	ENT. 58' RT.									18		40		887.24	887.00	2	(1)												
	207+07	ENT. 58' RT.									18		40		886.84	886.60	2	(1)												
	209+22	ENT. 36' LT.	15" C.M.P.+2 APRONS 36' LT.			32					18		28		886.96	886.40	2	(1)												23
	209+89	ENT. 48' RT.	15" C.M.P.+2 APRONS 35' RT.			30					18		40		885.21	884.97	2	(1)												12
	210+82	ENT. 45' LT.	15" C.M.P.+2 APRONS 37' LT.	ALTERNATE 1-1		32					18		28		883.80	883.24		2												23
	210+82	ENT. 45' LT.		ALTERNATE 1-2							18			20(5)	883.72	883.32			2											
	211+78	ENT. LT.	15" C.M.P. 50' LT.	REMOVE ENT.		48																								
	HANSON BLVD.																													
	148+95	SIDEWALK RT.	9" C.M.P. 27' RT.			10																								
1	155+95	35' LT.					C, G, or H	3.7	885.54	881.76	B-3	12	50								2	1.0	881.31						1	
2	155+46	40' LT.					A or F	6.6	885.01	878.35	B-3	18	38(5)								(2)	3.3	877.16(3)						2	
3	155+95	35' RT.					C, G, or H	3.7	885.70	881.96	B-3	12	50								4	1.0	881.51						3	
4	155+46	39' RT.					C or G	4.4	885.35	880.96	B-3	18	80								2	3.3	878.48						4	
	155+46 (3)	57' RT.		APRON INLET					881.62(3)		18	18(5)									1	4	3.3	881.09	1					
	155+46 (3)	78' LT.		APRON OUTLET																	1				1	11				
5	154+24	42' RT.					C or G	3.3	885.49	882.18	D-3	18	98(5)								(2)	1.3	880.93(3)						5	
	T.H. 242																													
	201+46 (3)	62' RT.		APRON INLET					885.45(3)		18	25(5)									1	5	1.3	882.23	1					
	197+97 (3)	57' RT.		APRON OUTLET																	1				1	11				
	188+19 (3)	62' LT.		APRON INLET					864.10(3)		18	16(5)									1	7	1.6	863.88	1				10	
7	188+03	60' LT.					C or G	3.4	867.25	863.82	D-3	18	26								6	1.6	863.47						7	
6	187+77	58' LT.					C or G	3.7	867.16	863.41	D-3	18	22(5)								(2)	1.6	863.09(3)						6	
	187+55 (3)	56' LT.		APRON OUTLET																	1				1	11				

- (1) INCLUDES 1 SAFETY APRON.
- (2) APRON OUTLET.
- (3) END OF BARREL.
- (4) CLASS II UNLESS OTHERWISE NOTED.
- (5) LAST 3 JOINTS AT APRON END SHALL BE TIED.

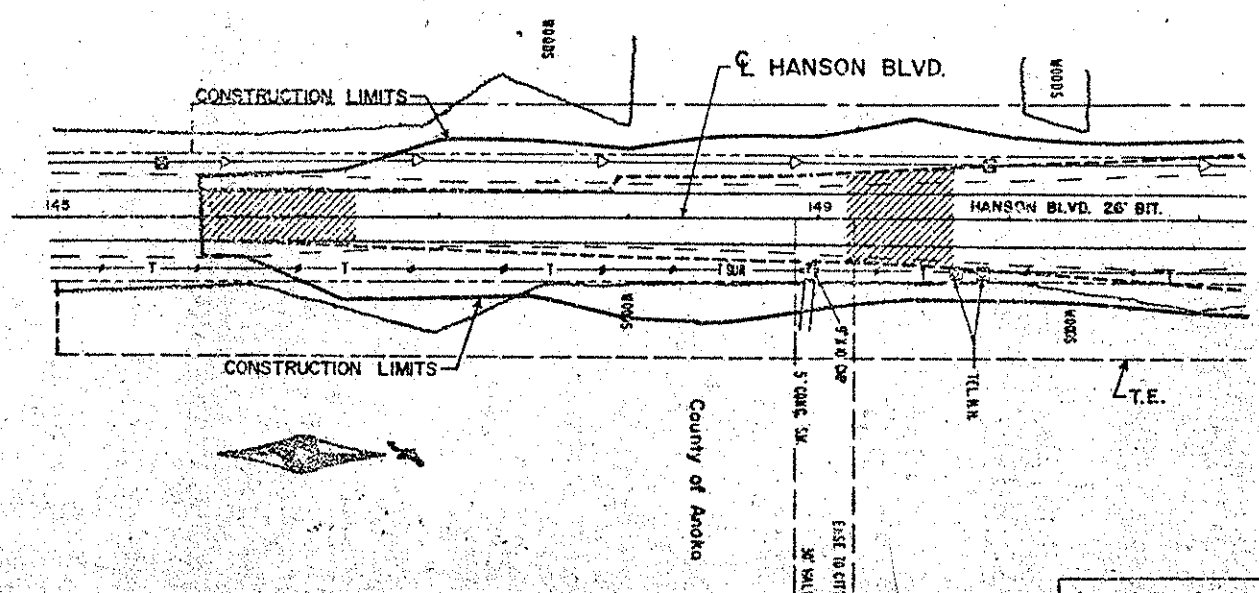
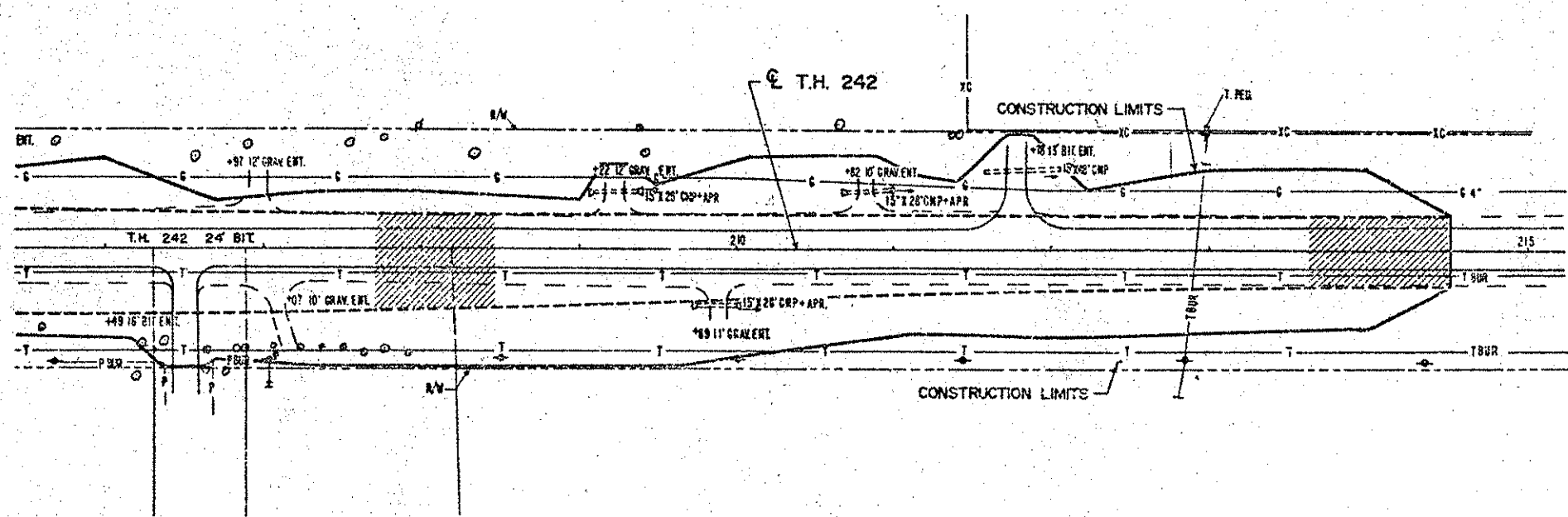
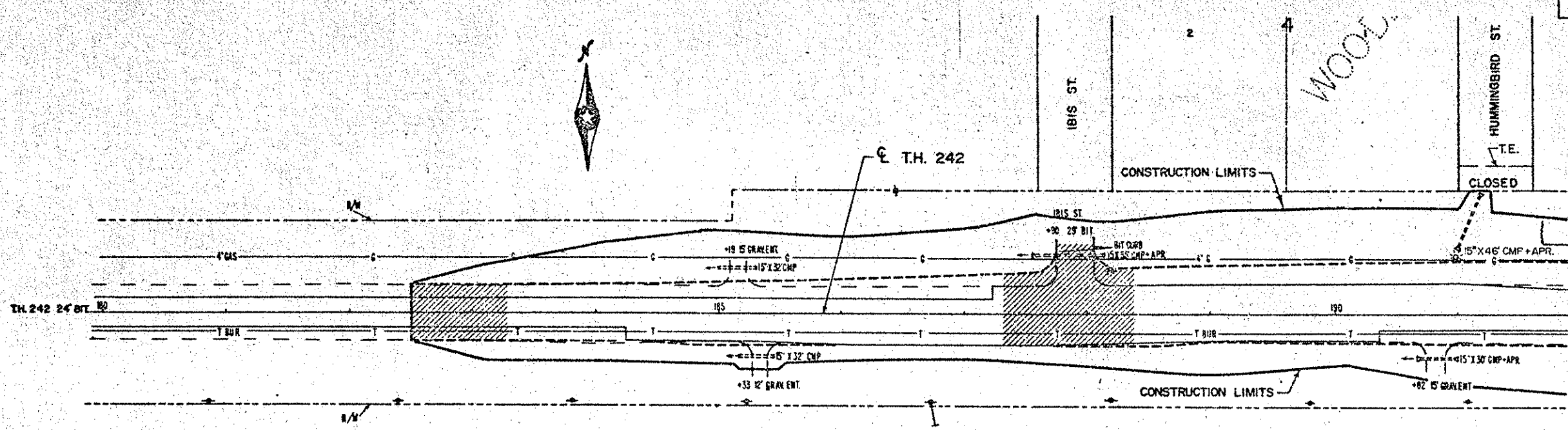
TABULATION  
DRAINAGE




SYMBOL  
 PROPOSED CONSTRUCTION

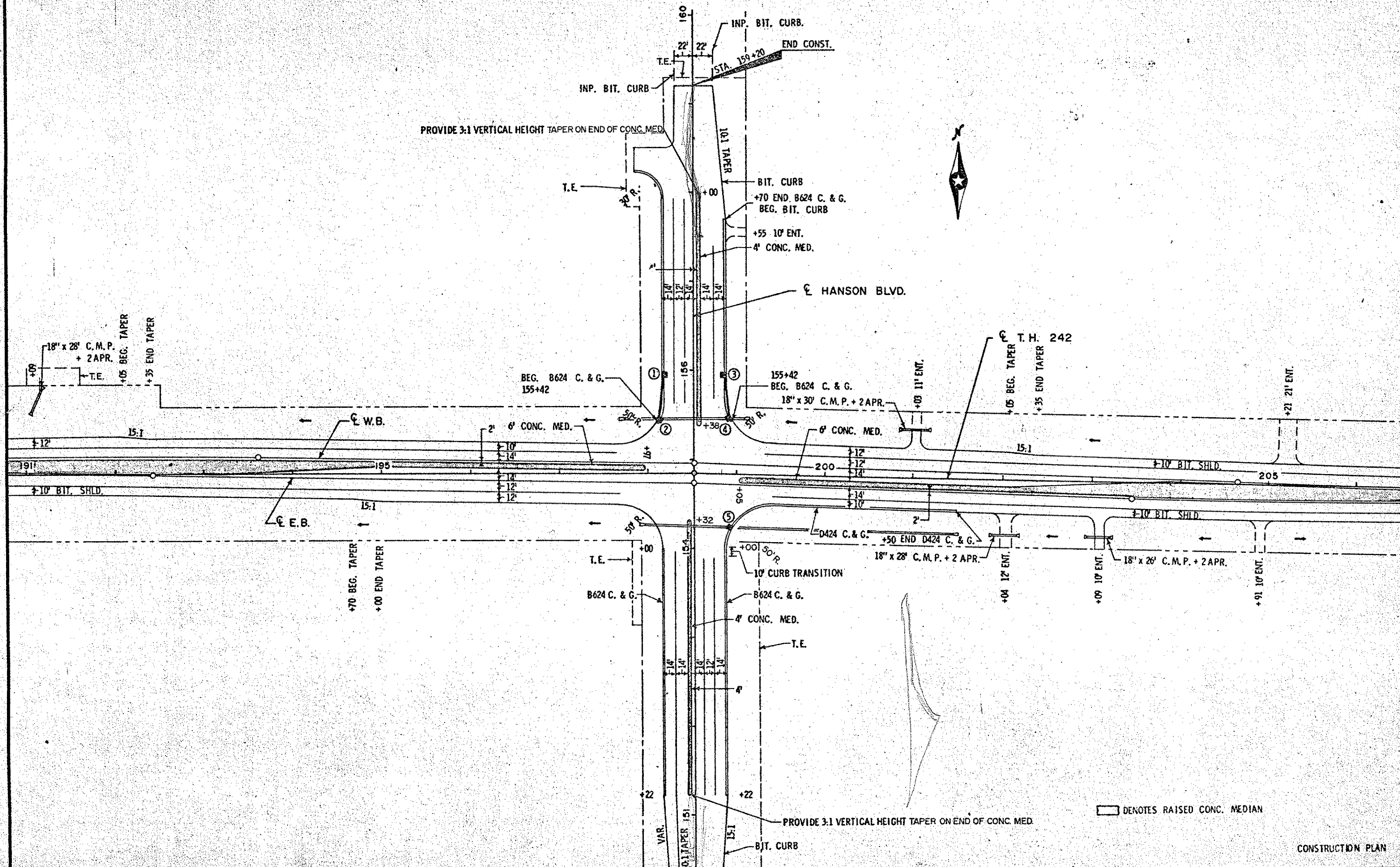
CONSTRUCTION LIMITS  
 ANOKA CO. C.I. MON.  
 at Sec. Corner

INPLACE TOPOGRAPHY



SYMBOL  
 PROPOSED CONSTRUCTION

INPLACE TOPOGRAPHY



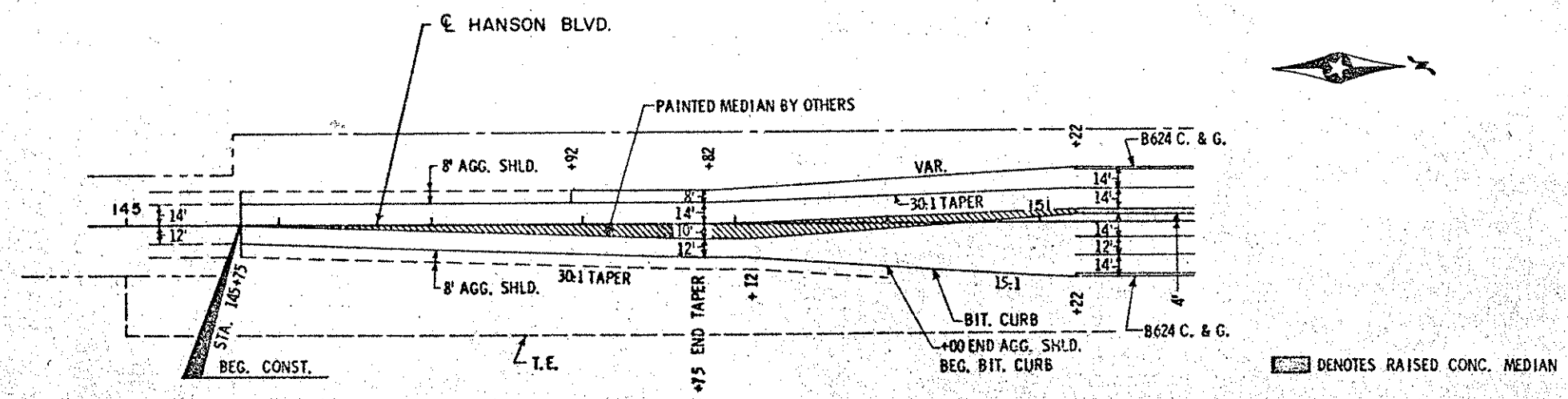
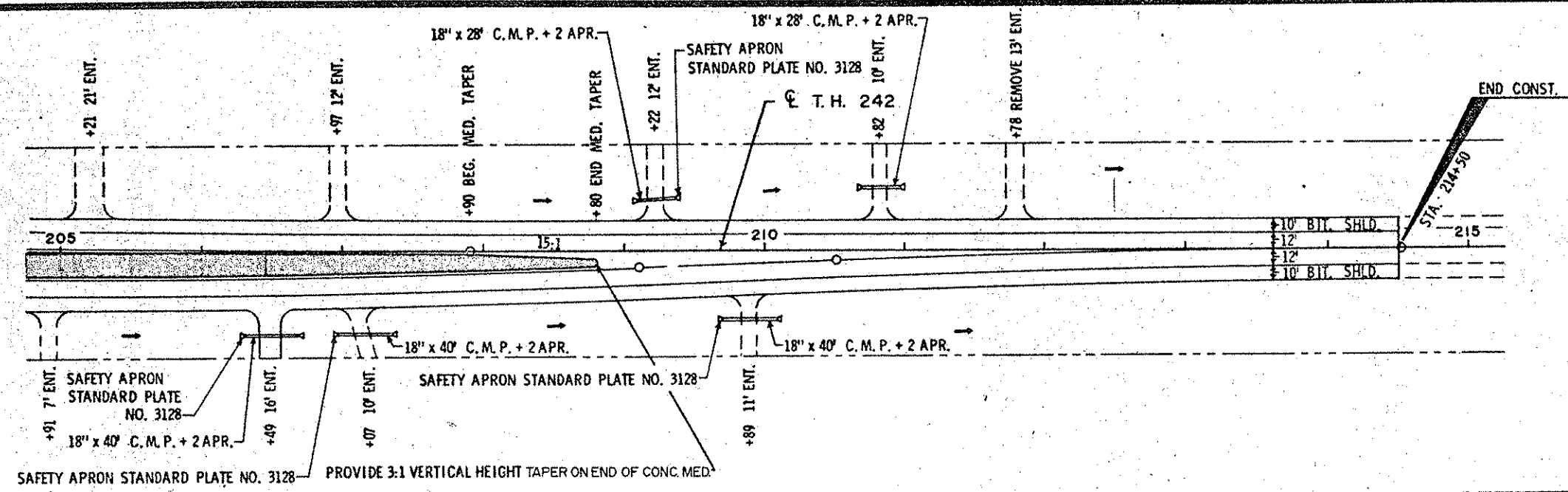
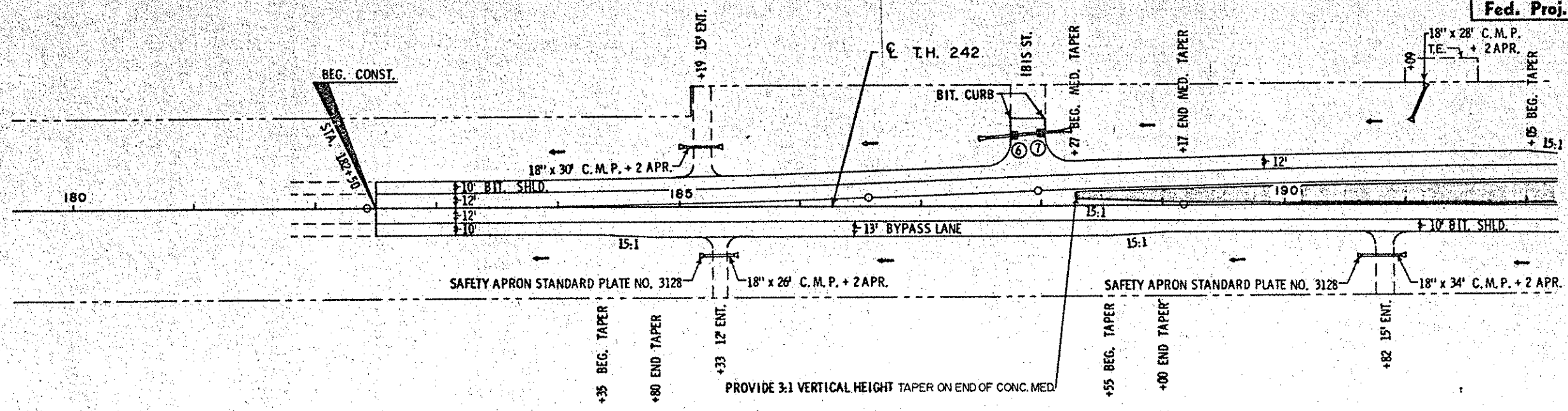
PROVIDE 3:1 VERTICAL HEIGHT TAPER ON END OF CONC. MED.



□ DENOTES RAISED CONC. MEDIAN






PROVIDE 3:1 VERTICAL HEIGHT TAPER ON END OF CONC. MED.

CONSTRUCTION PLAN

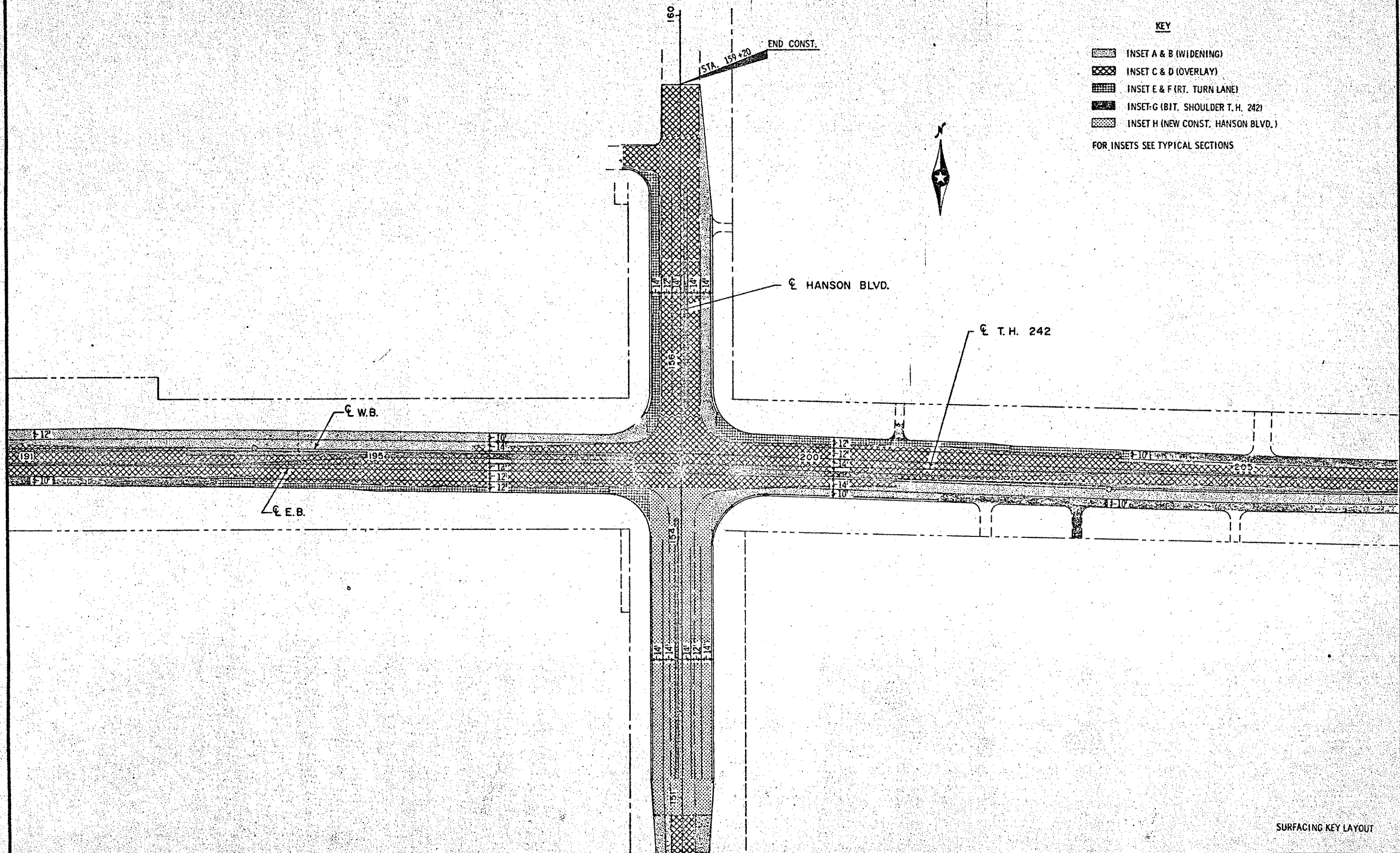




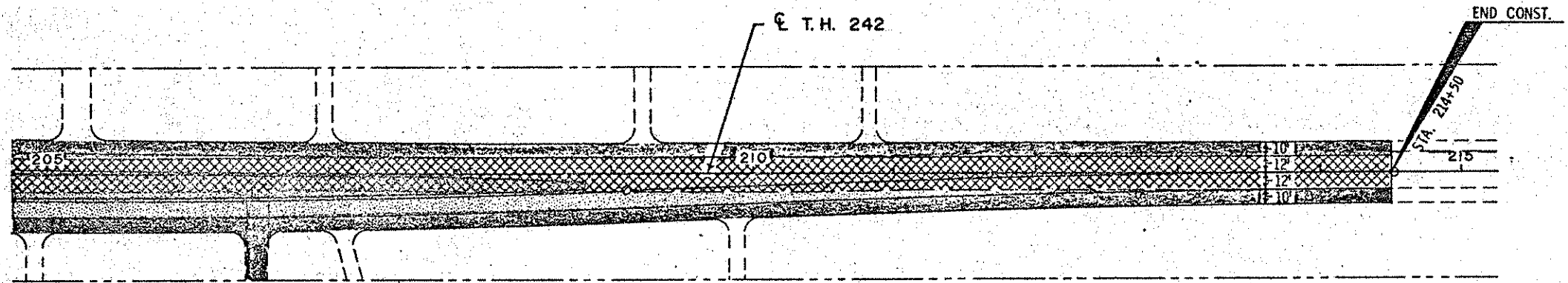
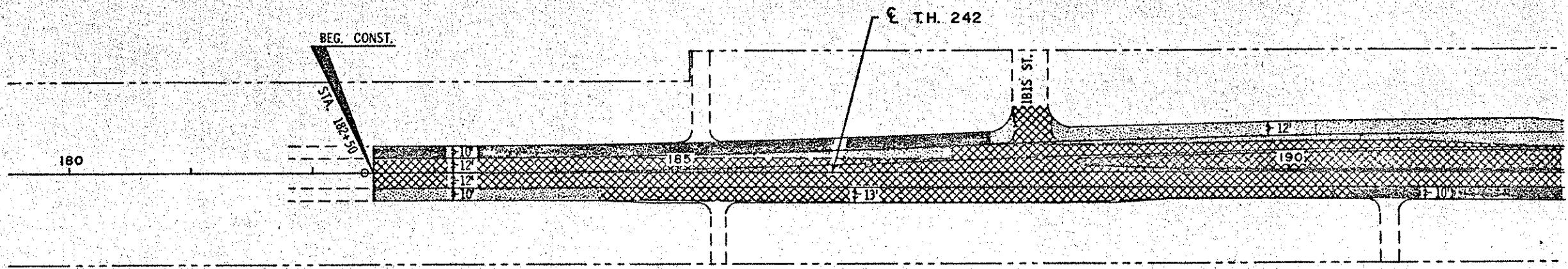
KEY

-  INSET A & B (WIDENING)
-  INSET C & D (OVERLAY)
-  INSET E & F (RT. TURN LANE)
-  INSET-G (BIT. SHOULDER T. H. 242)
-  INSET H (NEW CONST. HANSON BLVD.)

FOR INSETS SEE TYPICAL SECTIONS



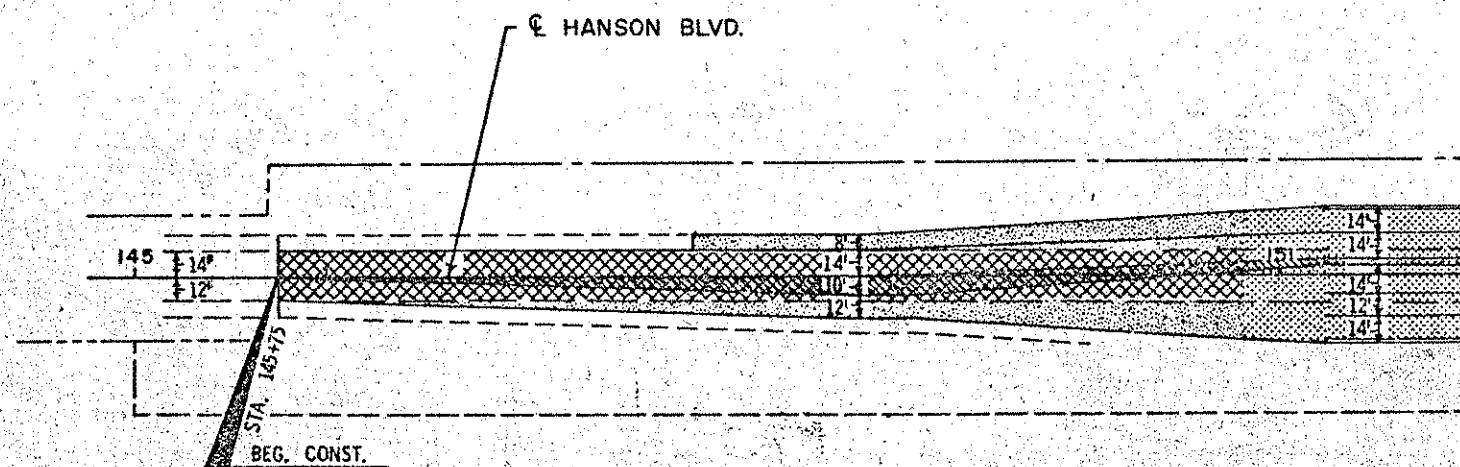
SURFACING KEY LAYOUT



**KEY**

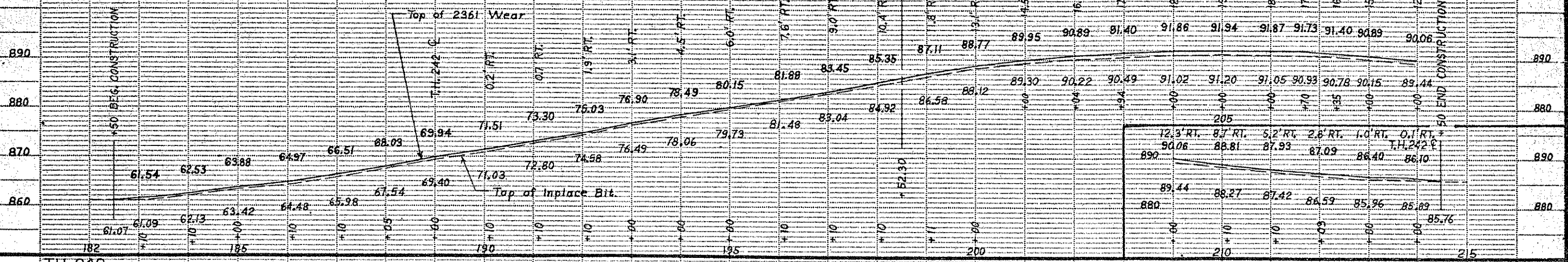
- INSET A & B (WIDENING)
- INSET C & D (OVERLAY)
- INSET G (BIT. SHOULDER T.H. 242)
- INSET H (NEW CONST. HANSON BLVD.)

FOR INSETS SEE TYPICAL SECTIONS

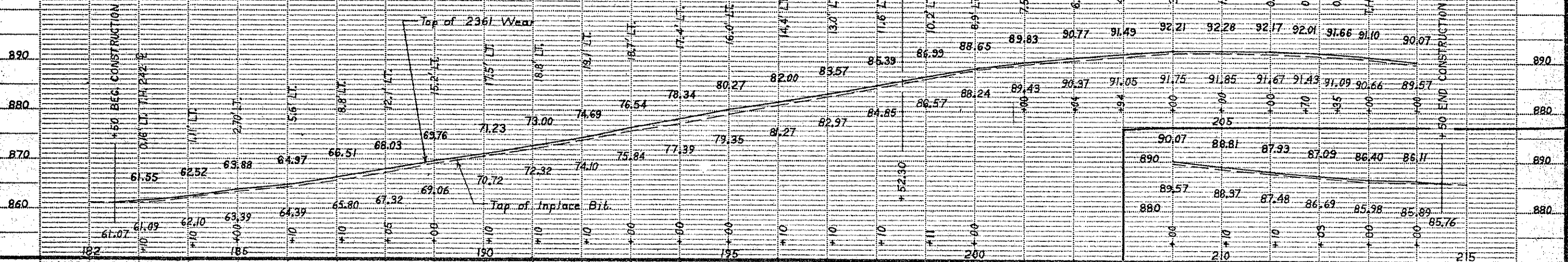


SURFACING KEY LAYOUT

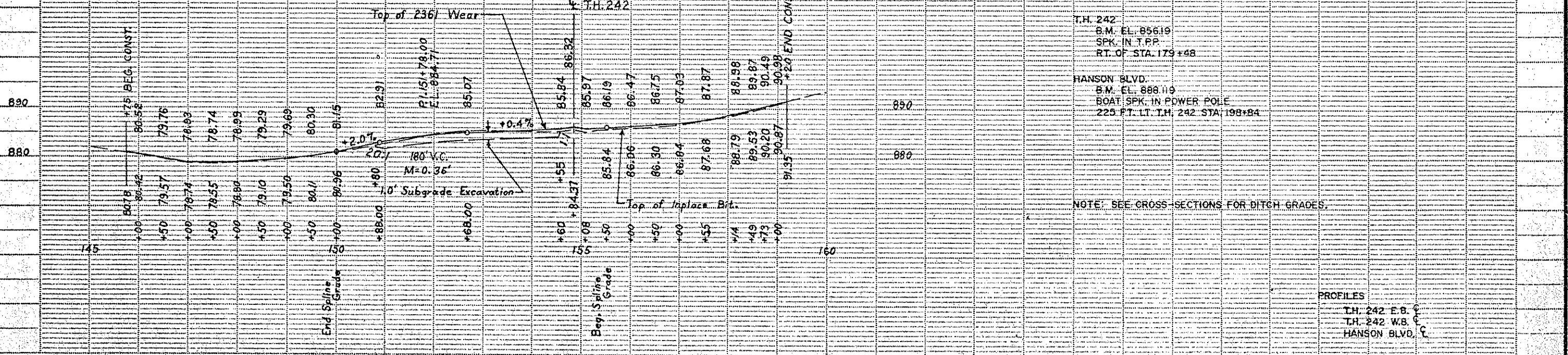
T.H. 242  
PROFILE ON E.B. OF 2361 WEAR



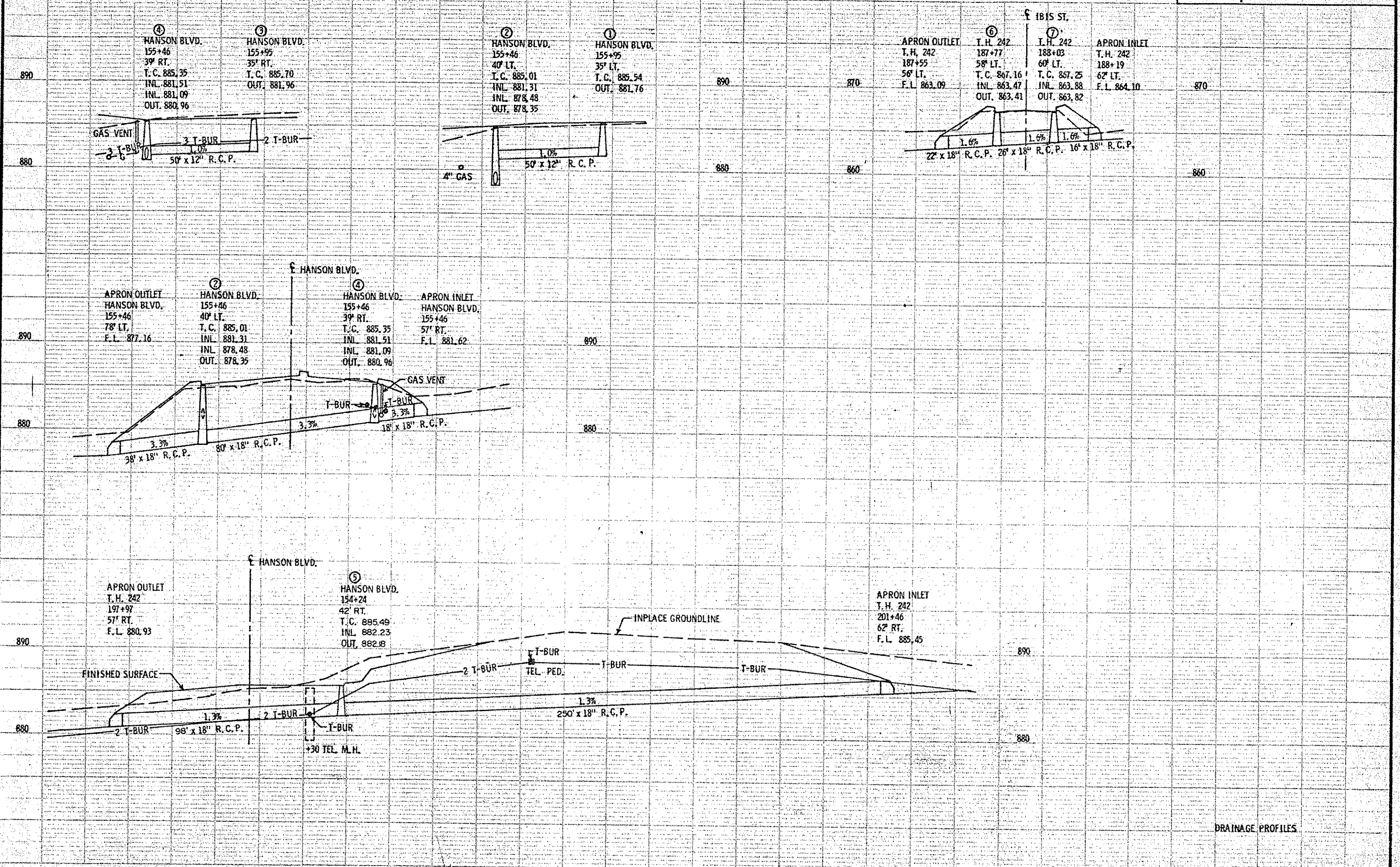
T.H. 242  
PROFILE ON W.B. OF 2361 WEAR



HANSON BLVD.  
PROFILE ON E.B. OF 2361 WEAR



TELEPHONE POST FULL PROFILE - 1054-74



④ HANSON BLVD.  
155+46  
39' RT.  
T.C. 885.35  
INL. 881.51  
OUT. 881.09

③ HANSON BLVD.  
155+95  
35' RT.  
T.C. 885.70  
OUT. 881.96

② HANSON BLVD.  
155+46  
40' LT.  
T.C. 885.01  
INL. 881.31  
INL. 878.48  
OUT. 878.35

① HANSON BLVD.  
155+95  
35' LT.  
T.C. 885.54  
OUT. 881.76

APRON OUTLET  
T.H. 242  
187+55  
50' LT.  
F.L. 863.09

⑥ I.H. 242  
187+77  
58' LT.  
T.C. 867.16  
INL. 863.47  
OUT. 863.41

⑦ I.H. 242  
188+03  
60' LT.  
T.C. 867.25  
INL. 863.88  
OUT. 863.82

APRON INLET  
T.H. 242  
188+19  
62' LT.  
F.L. 864.10

APRON OUTLET  
HANSON BLVD.  
155+46  
78' LT.  
F.L. 877.16

② HANSON BLVD.  
155+46  
40' LT.  
T.C. 885.01  
INL. 881.31  
INL. 878.48  
OUT. 878.35

④ HANSON BLVD.  
155+46  
39' RT.  
T.C. 885.35  
INL. 881.51  
INL. 881.09  
OUT. 880.96

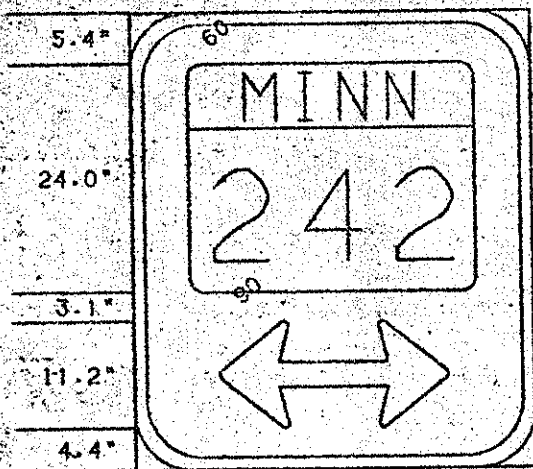
APRON INLET  
HANSON BLVD.  
155+46  
57' RT.  
F.L. 881.62

APRON OUTLET  
T.H. 242  
197+97  
57' RT.  
F.L. 880.93

⑤ HANSON BLVD.  
154+24  
42' RT.  
T.C. 885.49  
INL. 882.23  
OUT. 882.18

APRON INLET  
T.H. 242  
201+46  
62' RT.  
F.L. 885.45

DRAINAGE PROFILES



42" X 48", 6" R. D 2

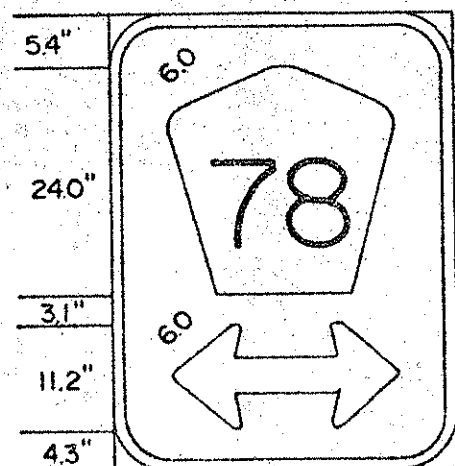
LINE 1 30.0 : 30" X 24" -- 10" NUM.  
 LINE 2 24.0 : 5-24 DBL. AR.

**OVERLAYS**

Code No.	Quan.	Size	Legend	Sq. Ft.
MI-6B	2	30" x 24"	MINN. 242	5.0
MI-5A	2	24" x 24"	CO. 78	4.0

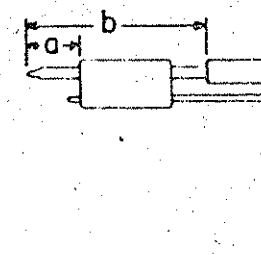
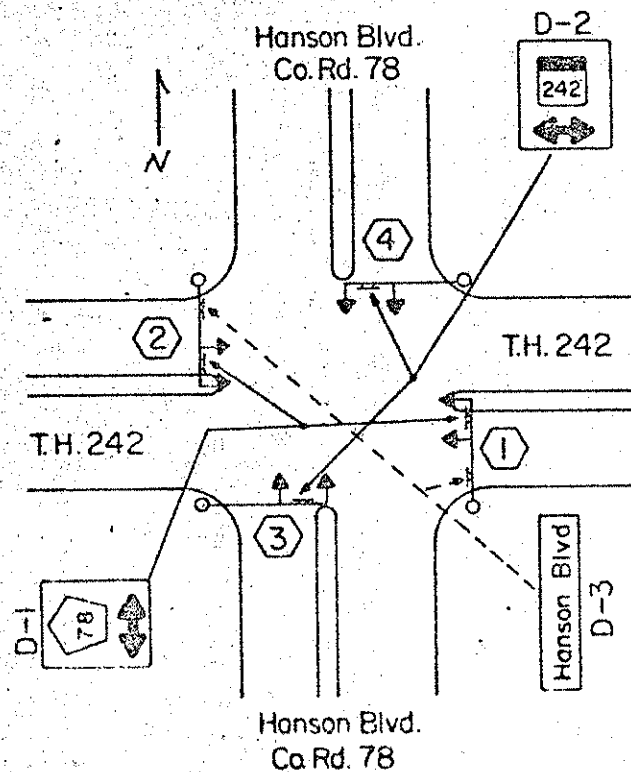
**TYPE "D" SIGNS**

Sign Panel	Size	No. Req.	No. Posts	Post Spacing	Sq. Ft.	a	b
D-1	36" x 48"	2	2	24"	12.0	4'	
D-2	42" x 48"	2	2	24"	14.0	4'	
D-3	120" x 24"	2	3	45" °	20.0		20'

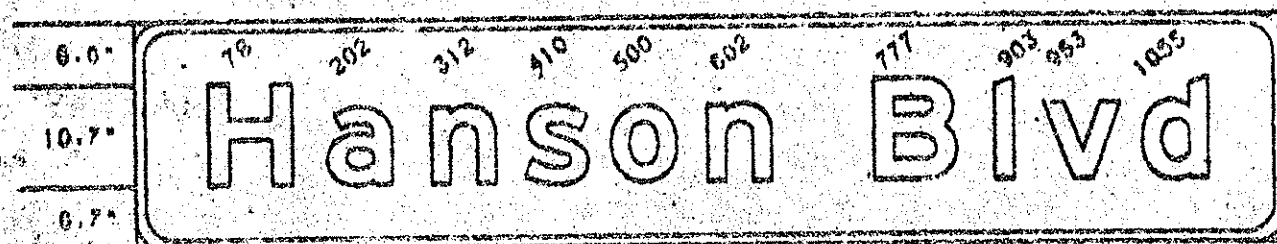


36" x 48" 6" R. D-1

LINE 1 24.0 : 24" x 24" - 10" NUMS.  
 LINE 2 24.0 : 5-24 DBL HD. ARROW.



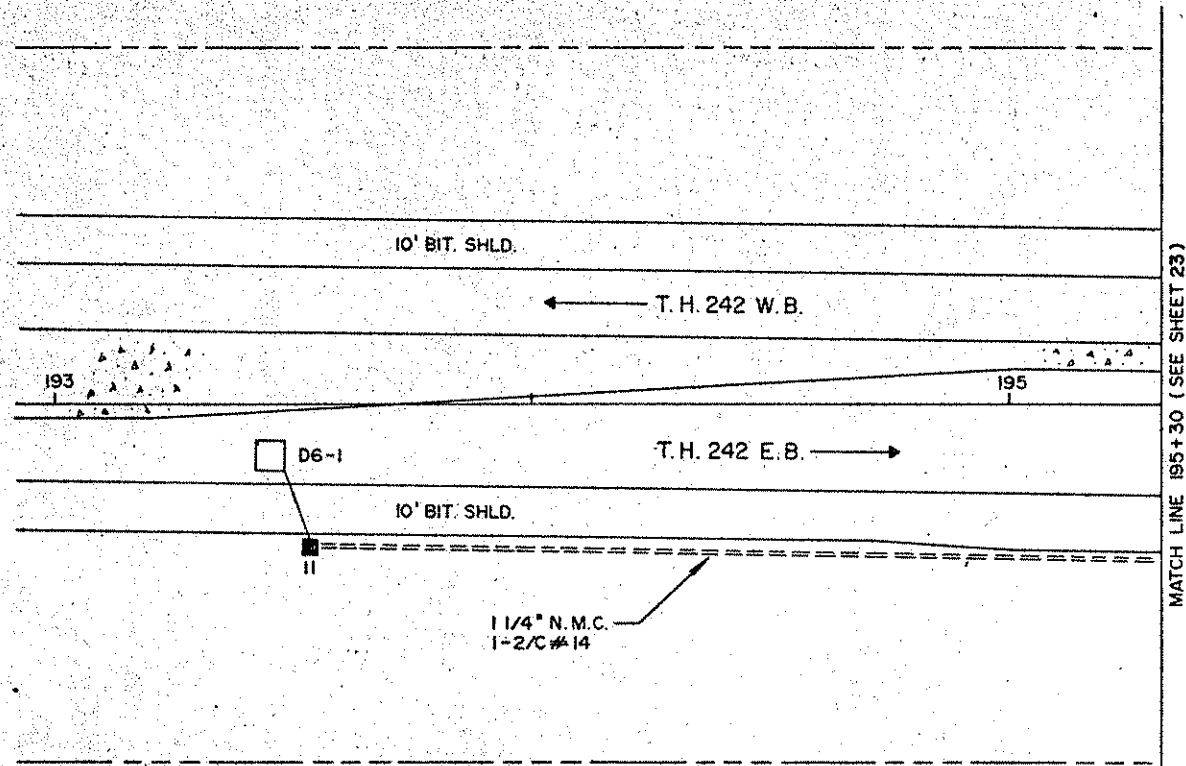
- NOTES: 1. Color - white legend and border on green background, fully reflectorized.  
 2. Corners extending beyond the border shall not be trimmed  
 3. Borders shall be 1.25" for D-1 & D-2, 1.00" for D-3.  
 4. See Standard Signs Manual for arrow and overlay details.  
 5. For structural details, Type D signs, see Standard Signs Manual, pages 105A & 105B.  
 6. For Type D Stringer and Panel-Joint Detail, see Standard Signs Manual.



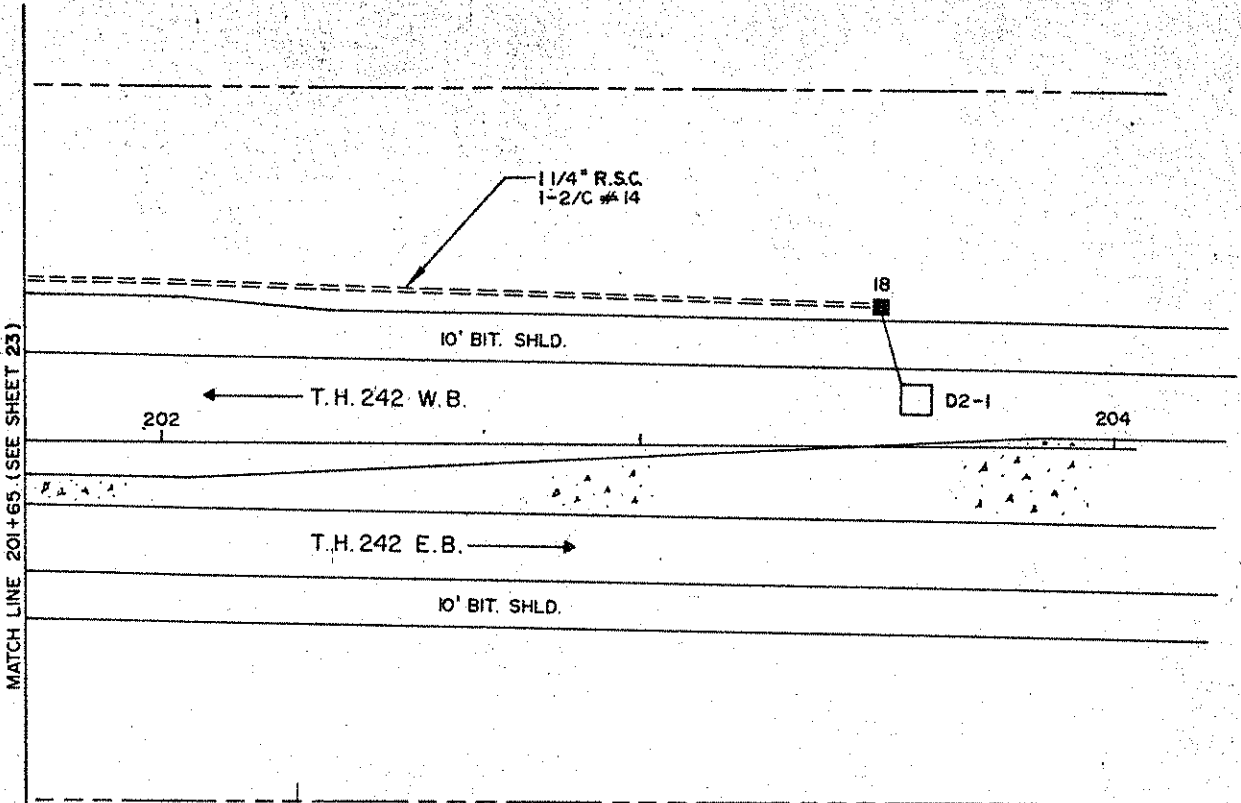
120" X 24", 3" R. D 3

LINE 1 104.9 : 10.7" - 27 E MOD.

**TYPE "D" SIGN DATA**



MATCH LINE 195+30 (SEE SHEET 23)



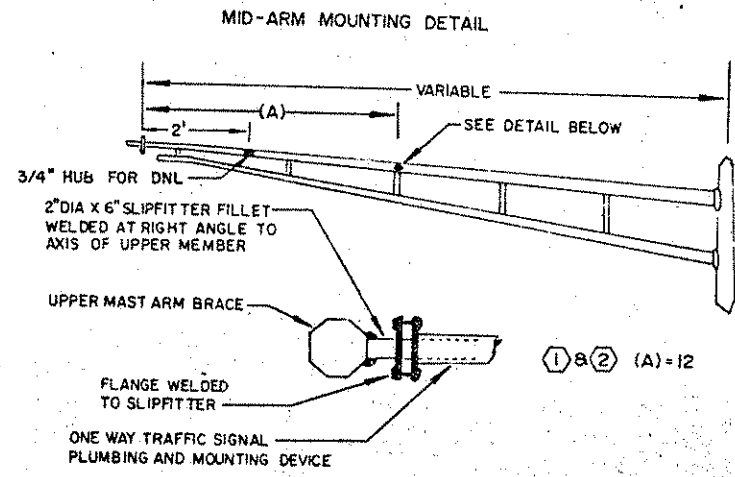
MATCH LINE 201+65 (SEE SHEET 23)

**ABBREVIATIONS**

- |   |  |
|---|--|
| YEL - YELLOW                                | R - RED                                |
| GRN - GREEN                                 | O - ORANGE                             |
| WLK - WALK                                  | BL - BLUE                              |
| NEU - NEUTRAL                               | WH - WHITE                             |
| DWK - DON'T WALK                            | R/BLK - RED WITH BLACK TRACER          |
| LUM - LUMINAIRE                             | O/BLK - ORANGE WITH BLACK TRACER       |
| ONL - DOWNLIGHT                             | BL/BLK - BLUE WITH BLACK TRACER        |
| SW - SWITCH                                 | WH/BLK - WHITE WITH BLACK TRACER       |
| SWD - SWITCHED                              | BLK - BLACK                            |
| CH.SW. - CHECK SWITCH                       | BLK/WH - BLACK WITH WHITE TRACER       |
| H.H. - HANDHOLE                             | G/BLK - GREEN WITH BLACK TRACER        |
| J.B. - JUNCTION BOX                         | G - GREEN                              |
| G.R. - GROUND ROD                           | CLR - CLEAR                            |
| SERV. - SERVICE                             | BR. GR. - BARE GROUND                  |
| SP. - SPLICE                                |  |
| THA - THRU ARROW                            |  |
| LTA - LEFT TURN ARROW                       |  |
| RTA - RIGHT TURN ARROW                      |  |
| TRA - THRU AND RIGHT ARROW                  |  |
| RTHA(eg) - THRU ARROW-RED                   |  |
| GLTA(eg) - LEFT TURN ARROW-GREEN            |  |
| YRTA(eg) - RIGHT TURN ARROW-YELLOW          |  |
| PI-1(eg) - PEDESTRIAN INDICATIONS-PHASE "1" |  |
| PB2-2(eg) - PUSH BUTTON-PHASE "2"           |  |
| 3-2(eg) - SIGNAL HEADS-PHASE "3"            |  |
| DI-2 - DETECTOR PHASE "1"                   | EGG CONNECTION                         |
| PE.C. - PHOTOELECTRIC CELL                  | TDW - TELEPHONE DROP WIRE              |
| ST.LHT. - STREET LIGHT                      | F & I - FURNISH AND INSTALL            |
| S.O.P. - SOURCE OF POWER                    | R & S. - REMOVE AND SALVAGE            |
| EGG - EQUIPMENT GROUND                      | FL - FLASH/FLASHING                    |
| SPR - SPARE CONDUCTORS                      | E.V.P. - EMERGENCY VEHICLE PRE-EMPTION |
| R.S.C. - RIGID STEEL CONDUIT                | E.V.P. DETECTOR DIRECTION              |
| N.M.C. - NON METALLIC CONDUIT               | Ⓢ - SIGNAL BASE NO.                    |
| H.P.S. - HIGH PRESSURE SODIUM               | Ⓣ - SIGNAL FACE NO.                    |
|   | Ⓛ - LUMINAIRE NO.                      |

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

THESE ABBREVIATIONS APPLY TO SHEETS  
22 - 24 ONLY



I HEREBY CERTIFY THAT SHEETS 22 THROUGH 24 OF THIS PLAN WERE 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.

*Dennis R. Cyler*

DATE 12/19/80 REG. NO. 10793

DESIGN SQUAD BILL STUART

**DETAILS**

T.H. 242 AT HANSON BLVD.  
COON RAPIDS

SIGNAL INDICATION CHART

FACE	PHASE	FLASH	TYPE AND SIZE IN INCHES				
			R	Y	G	Y	G
2-1	2	R	12"	12"	12"	—	—
2-2			8"	8"	8"	—	—
2-3			12"	12"	12"	—	—
6-1	6	R	12"	12"	12"	—	—
6-2			8"	8"	8"	—	—
6-3			12"	12"	12"	—	—
4-1	4	R	12"	12"	12"	—	—
4-2			12"	12"	12"	—	—
4-3			12"	12"	12"	—	—
4-4			12"	12"	12"	—	—
4-5			12"	12"	12"	—	—
4-6			12"	12"	12"	—	—
1-1	1		12"	12"	12"	—	—
5-1	5		12"	12"	12"	—	—

\* SHALL HAVE LOUVERS

DETECTOR CHART				DISTANCE FROM STOP BAR
DESIGNATION	PHASE	SIZE IN FT.	FUNCTION	
DI-1	1	MULTIPLE	(1)	—
D5-1	5	MULTIPLE	(1)	—
D2-1	2	1-6' X 6'	(1)	450'
D6-1	6	1-6' X 6'	(1)	450'
D4-1	4	2-6' X 6'	(2)	150'
D4-2	4	1-6' X 6'	(1)	40'
D4-3	4	1-6' X 6'	(1)	40'
D4-4	4	2-6' X 6'	(2)	150'
D4-5	4	2-6' X 6'	(1)	—
D4-6	4	2-6' X 6'	(1)	—
D4-7	4	3-6' X 6'	(3)	—
D4-8	4	3-6' X 6'	(3)	—

- (1) CALL AND EXTEND
- (2) EXTEND ONLY
- (3) CALL AFTER DELAY, EXTEND NORMALLY

- ① AND ② TYPE A-40-D40-9  
2-ONE WAY SIGNALS (OVERHEAD)  
TYPE 10A - POLE MOUNTED AT 270°  
TYPE 30A - POLE MOUNTED AT 90°  
LUMINAIRE AT 355° - P.E.C.  
2-SWING-AWAY HINGES  
1-PEDESTRIAN PUSHBUTTON
- ③ AND ④ TYPE A-40  
2-ONE WAY SIGNALS (OVERHEAD)  
TYPE 10B - POLE MOUNTED AT 270°  
TYPE 10A - POLE MOUNTED AT 90°  
LUMINAIRE AT 355° - P.E.C.  
1-PEDESTRIAN PUSHBUTTON  
3-STEEL GUARD POSTS
- ① EXTEND INTO H.H. 12; 3" R.S.C.  
1-12/C #12, 3-3/C #12 AND 2-1/C #10
- ② EXTEND INTO H.H. 7; 3" R.S.C.  
1-12/C #12, 2-3/C #12 AND 2-1/C #10  
3-STEEL GUARD POSTS
- ③ EXTEND INTO H.H. 4; 3" R.S.C.  
2-12/C #12 AND 2-3/C #12
- ④ EXTEND INTO H.H. 15; 3" R.S.C.  
2-12/C #12 AND 1-3/C #12

(SEE SHEET 22)

195+30

MATCH LINE

MATCH LINE

MATCH LINE

MATCH LINE

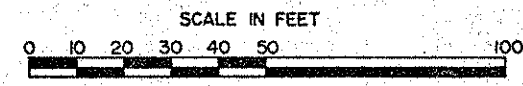
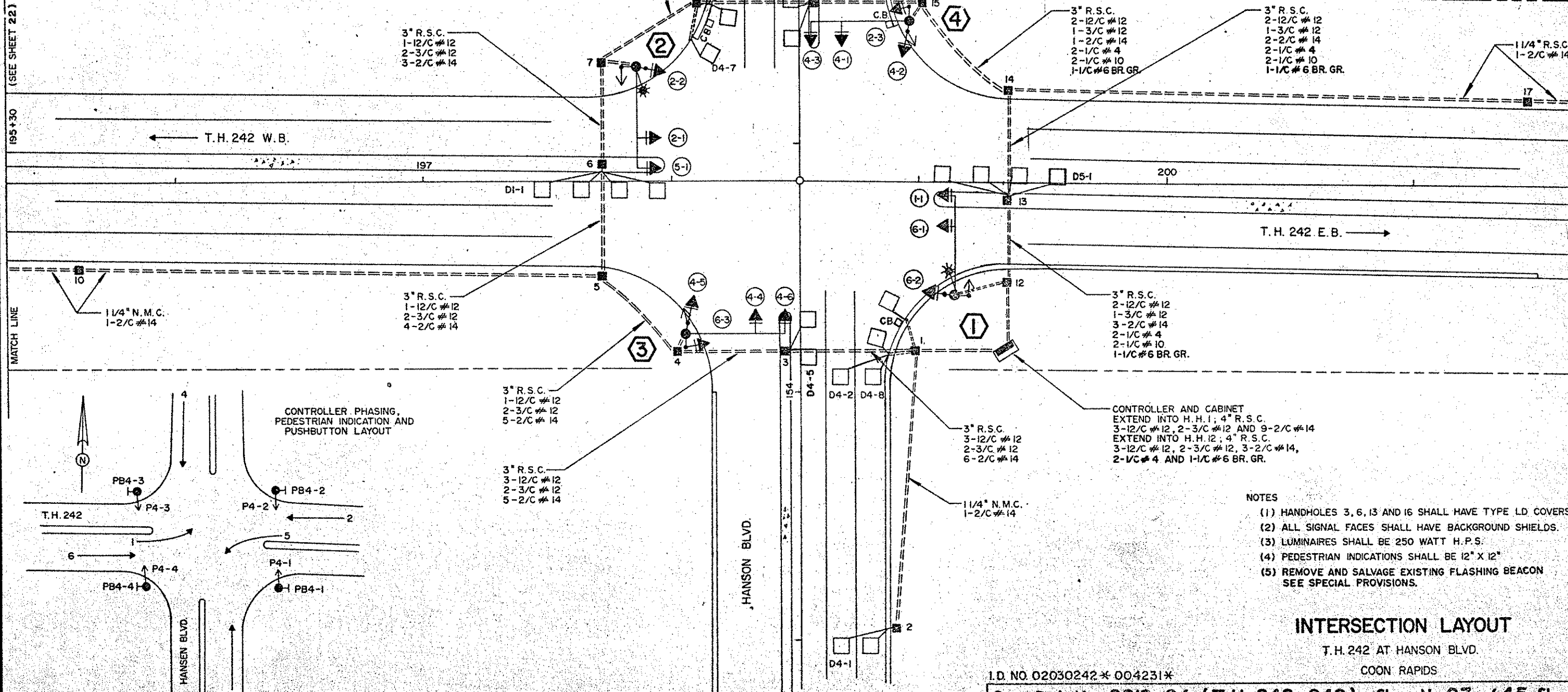
(SEE SHEET 22)

201+65

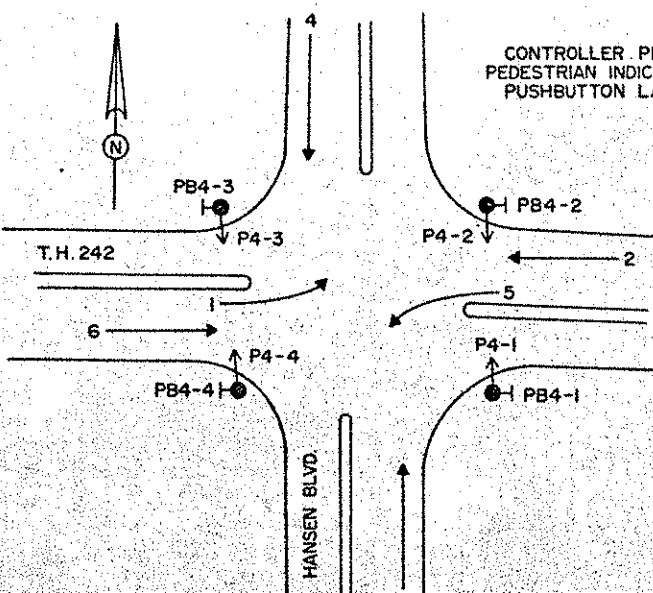
MATCH LINE

MATCH LINE

MATCH LINE



CONTROLLER PHASING,  
PEDESTRIAN INDICATION AND  
PUSHBUTTON LAYOUT

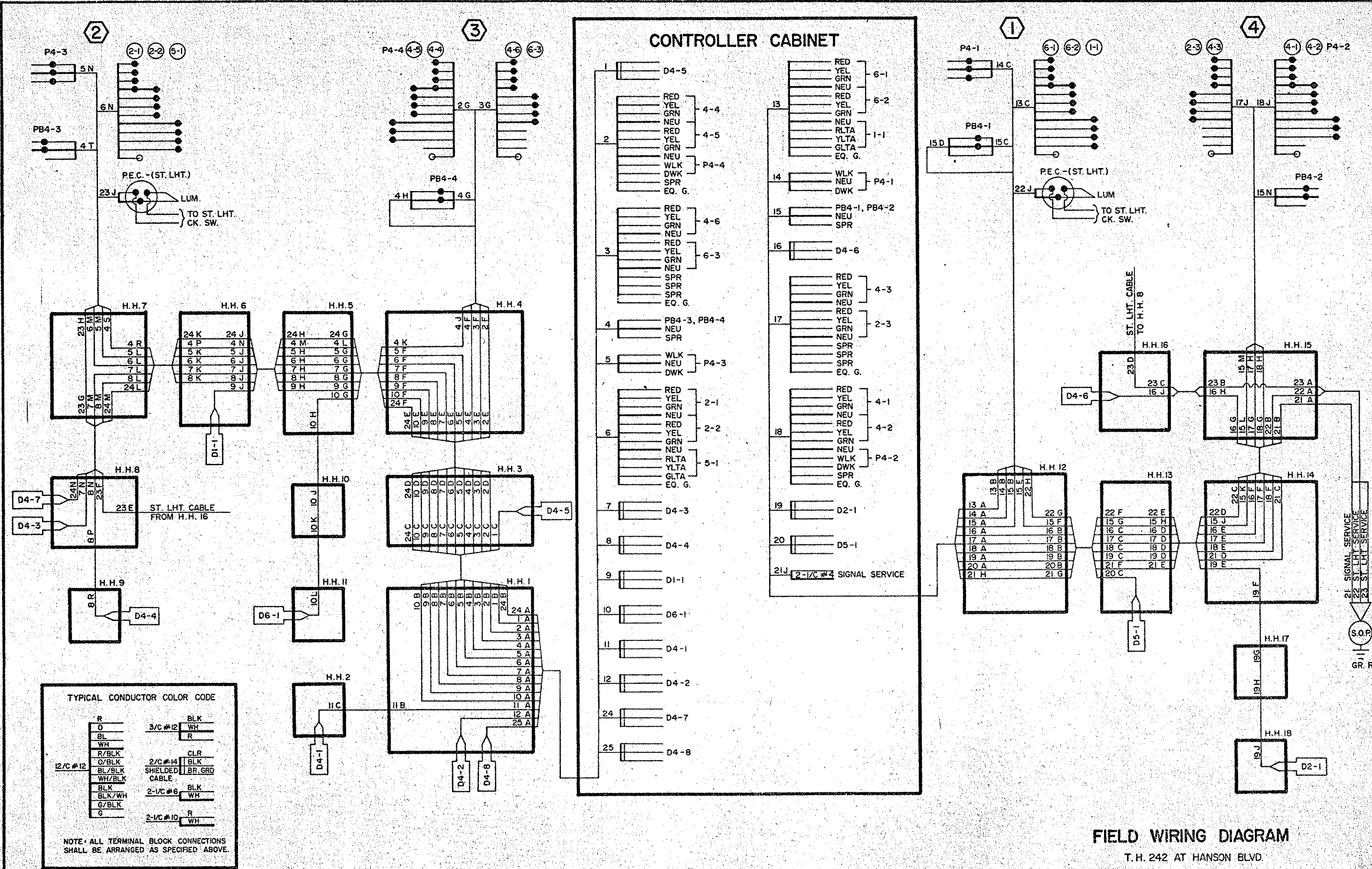


- NOTES
- (1) HANDHOLES 3, 6, 13 AND 16 SHALL HAVE TYPE LD COVERS.
  - (2) ALL SIGNAL FACES SHALL HAVE BACKGROUND SHIELDS.
  - (3) LUMINAIRES SHALL BE 250 WATT H.P.S.
  - (4) PEDESTRIAN INDICATIONS SHALL BE 12" X 12"
  - (5) REMOVE AND SALVAGE EXISTING FLASHING BEACON SEE SPECIAL PROVISIONS.

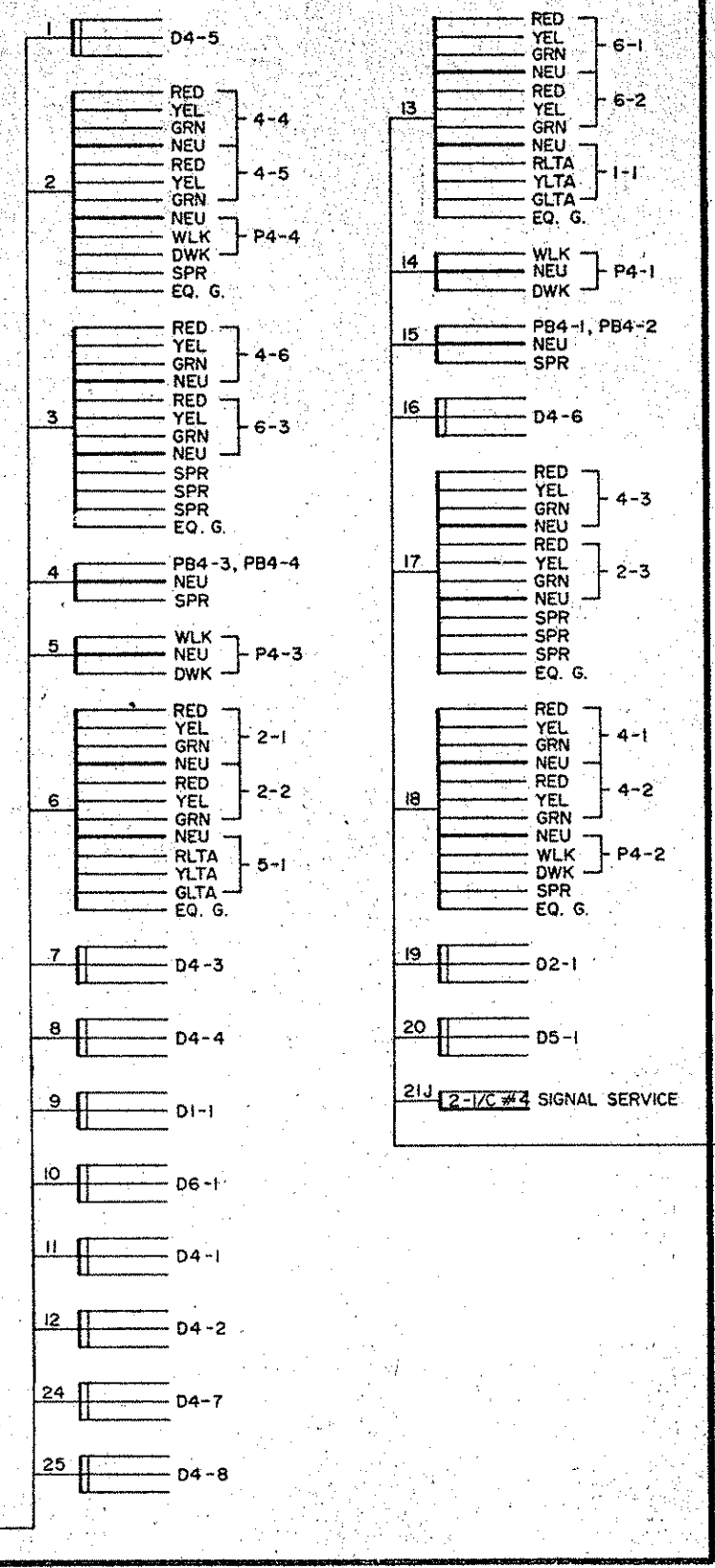
INTERSECTION LAYOUT

T.H. 242 AT HANSON BLVD.  
COON RAPIDS

I.D. NO. 02030242\*004231\*



**CONTROLLER CABINET**



**TYPICAL CONDUCTOR COLOR CODE**

R	BLK
O	3/C #12 WH
BL	R
WH	CLR
R/BLK	2/C #14 BLK
O/BLK	SHIELDED CABLE BR. GRD
BL/BLK	2-1/C #6 BLK
WH/BLK	2-1/C #6 WH
BLK	2-1/C #10 R
BLK/WH	2-1/C #10 WH
G/BLK	
G	

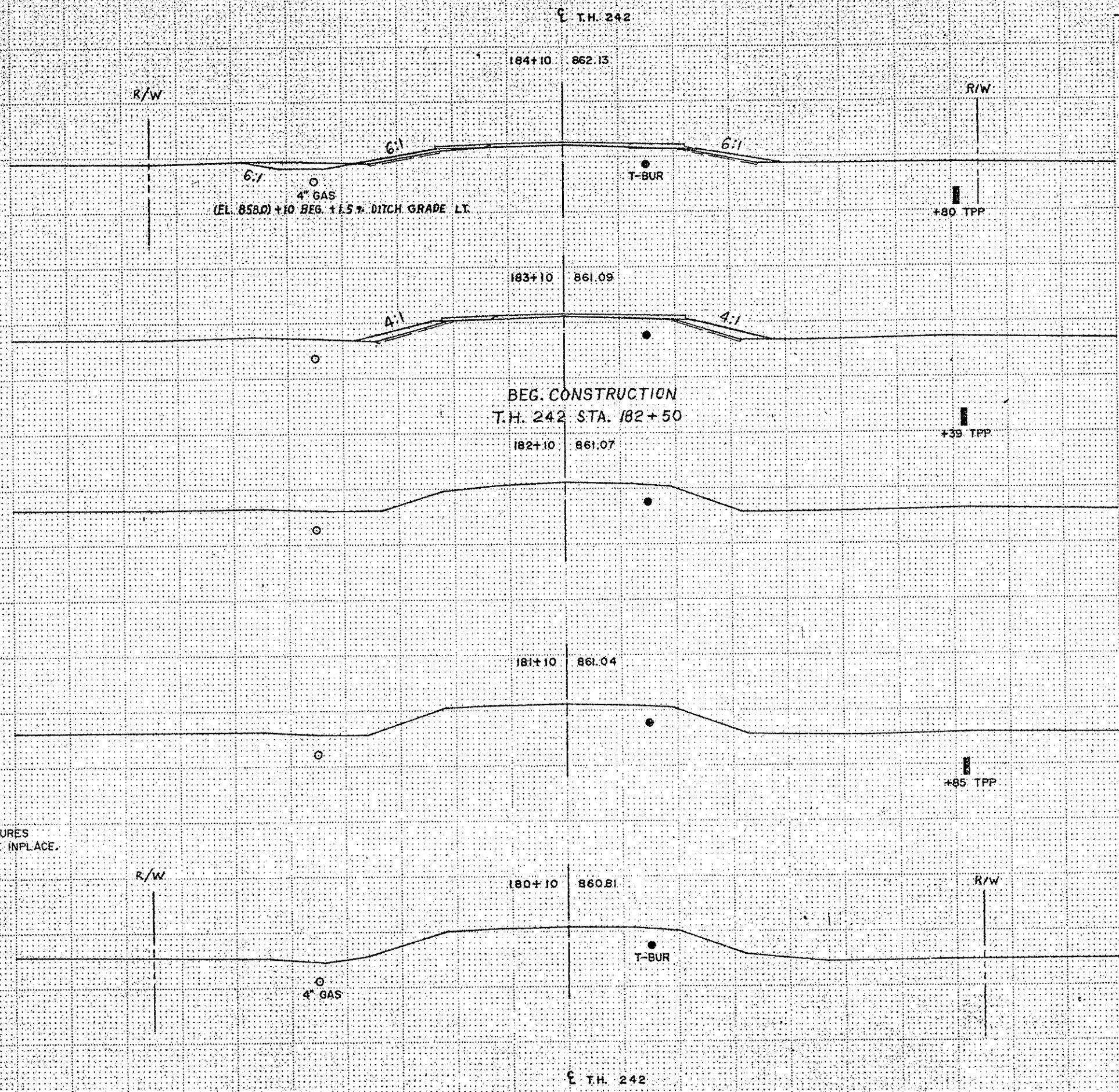
NOTE: ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE.

**FIELD WIRING DIAGRAM**  
 T.H. 242 AT HANSON BLVD.  
 COON RAPIDS



EXCAVATION  
CU YD

EMBANKMENT  
CU YD

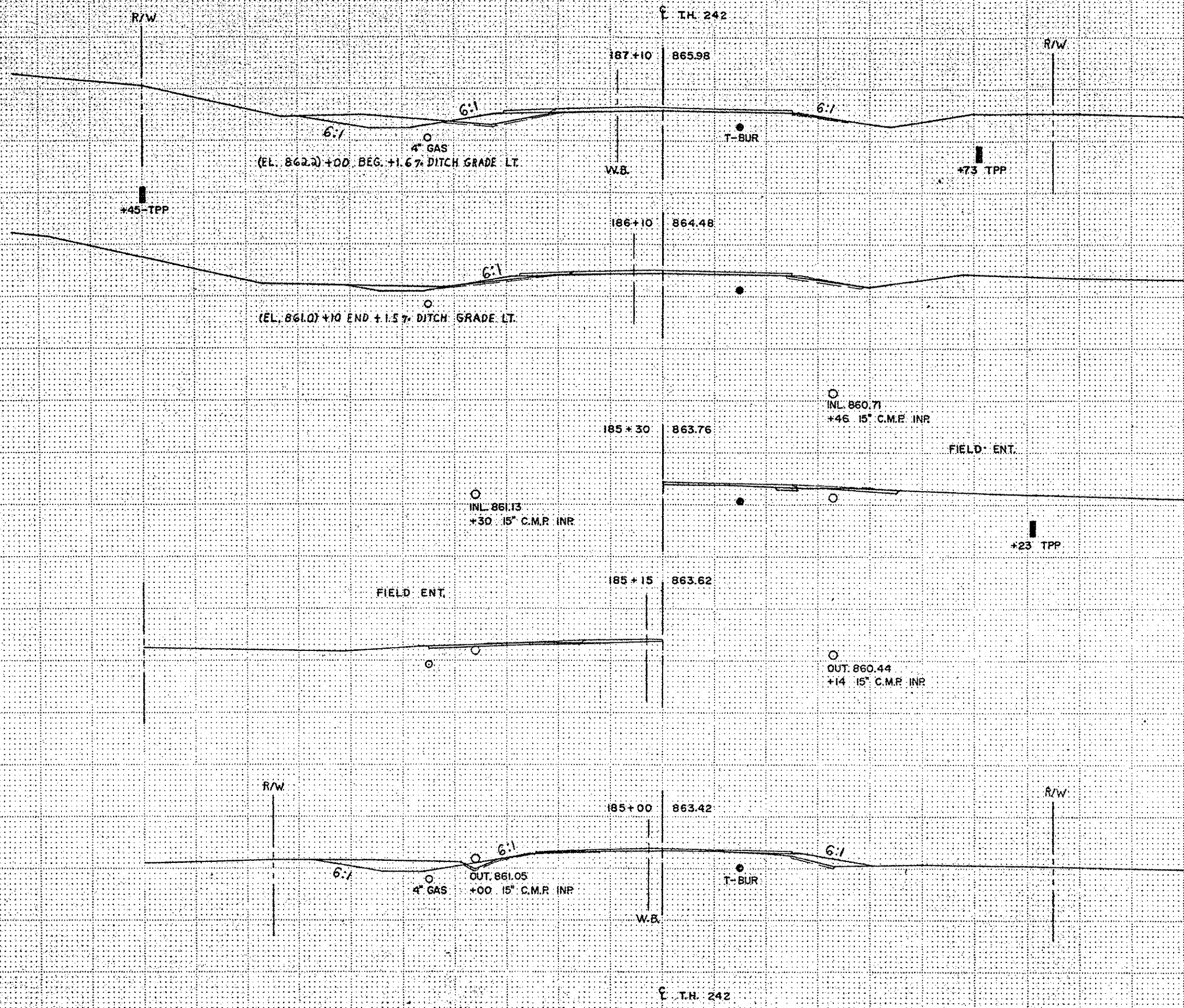


BEG. CONSTRUCTION  
T.H. 242 STA. 182+50

NOTE: ALL UTILITIES AND DRAINAGE STRUCTURES  
SHOWN ON THE CROSS-SECTIONS ARE INPLACE.

T.H. 242  
STA 180+10 - 184+10

NATIONAL ROAD CROSS SECTION - 1971



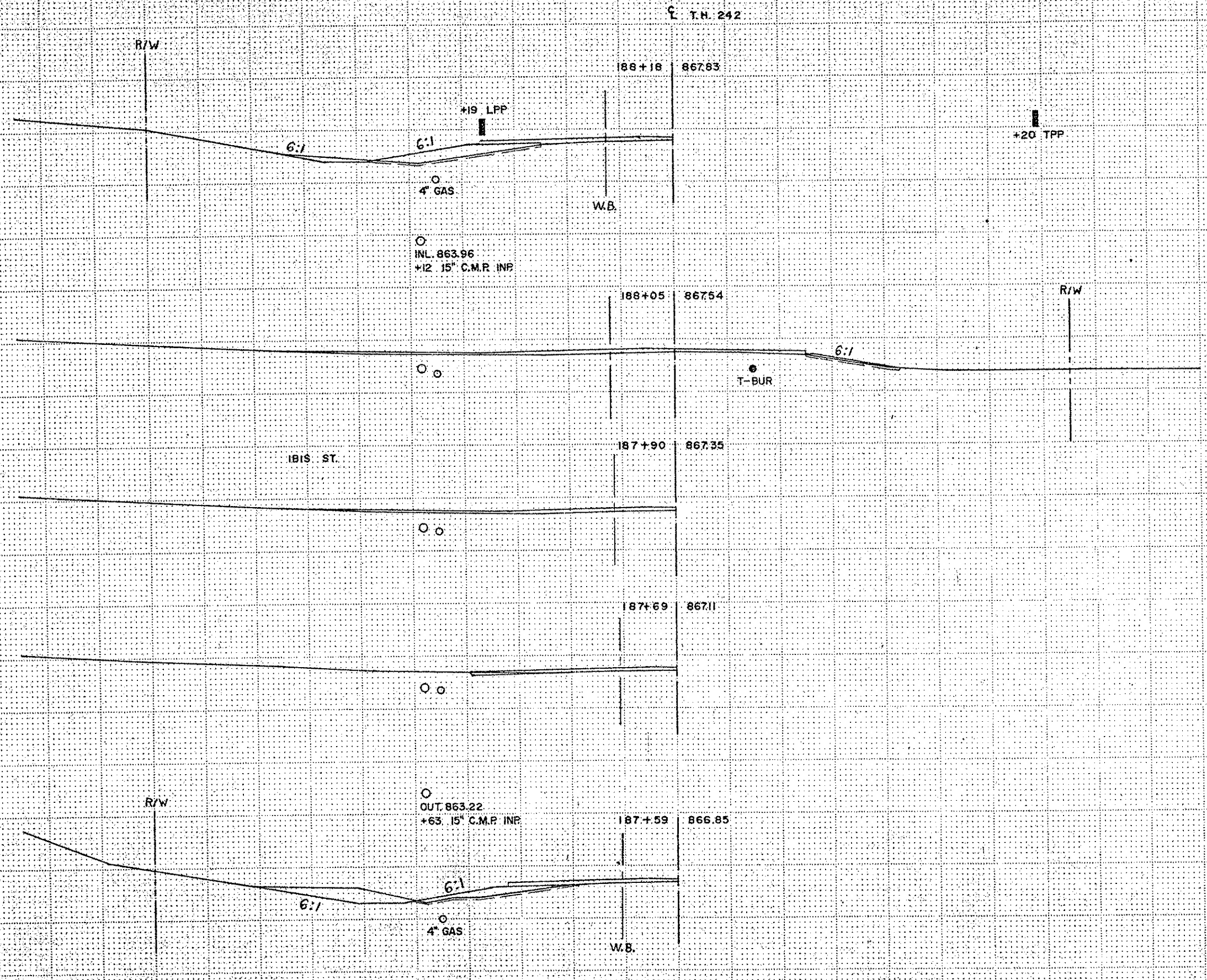
EXCAVATION CU YD	EMBANKMENT CU YD
---------------------	---------------------

156	98
-----	----

87	63
----	----

144	113
-----	-----

T.H. 242  
STA. 185+00 TO 187+10



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

125	246
-----	-----

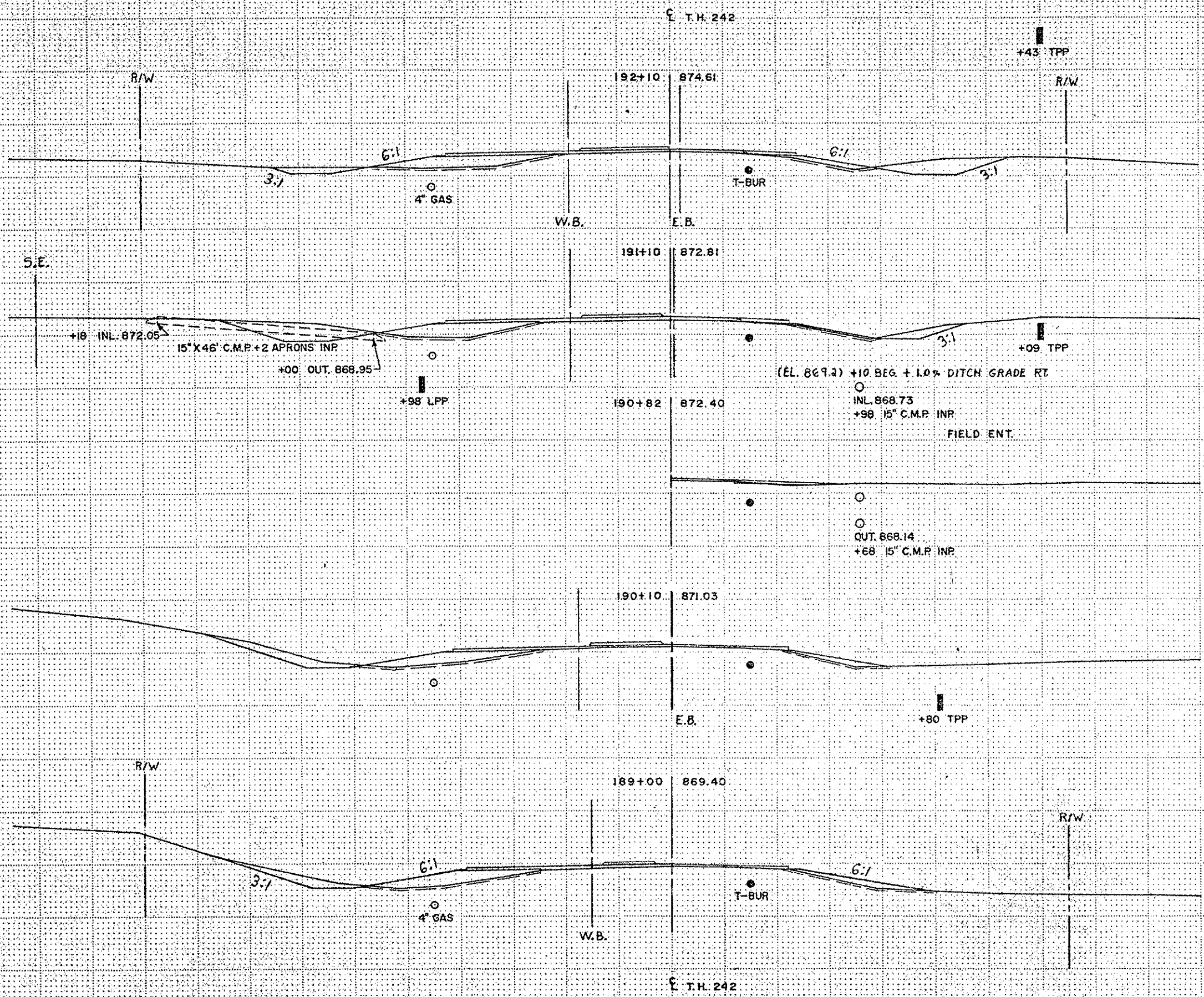
134	88
-----	----

T.H. 242

T.H. 242

T.H. 242  
STA. 187+59 TO 188+18

THE UNIVERSITY OF MICHIGAN LIBRARY SYSTEM  
 300 N ZEEB RD  
 ANN ARBOR MI 48106-1500



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

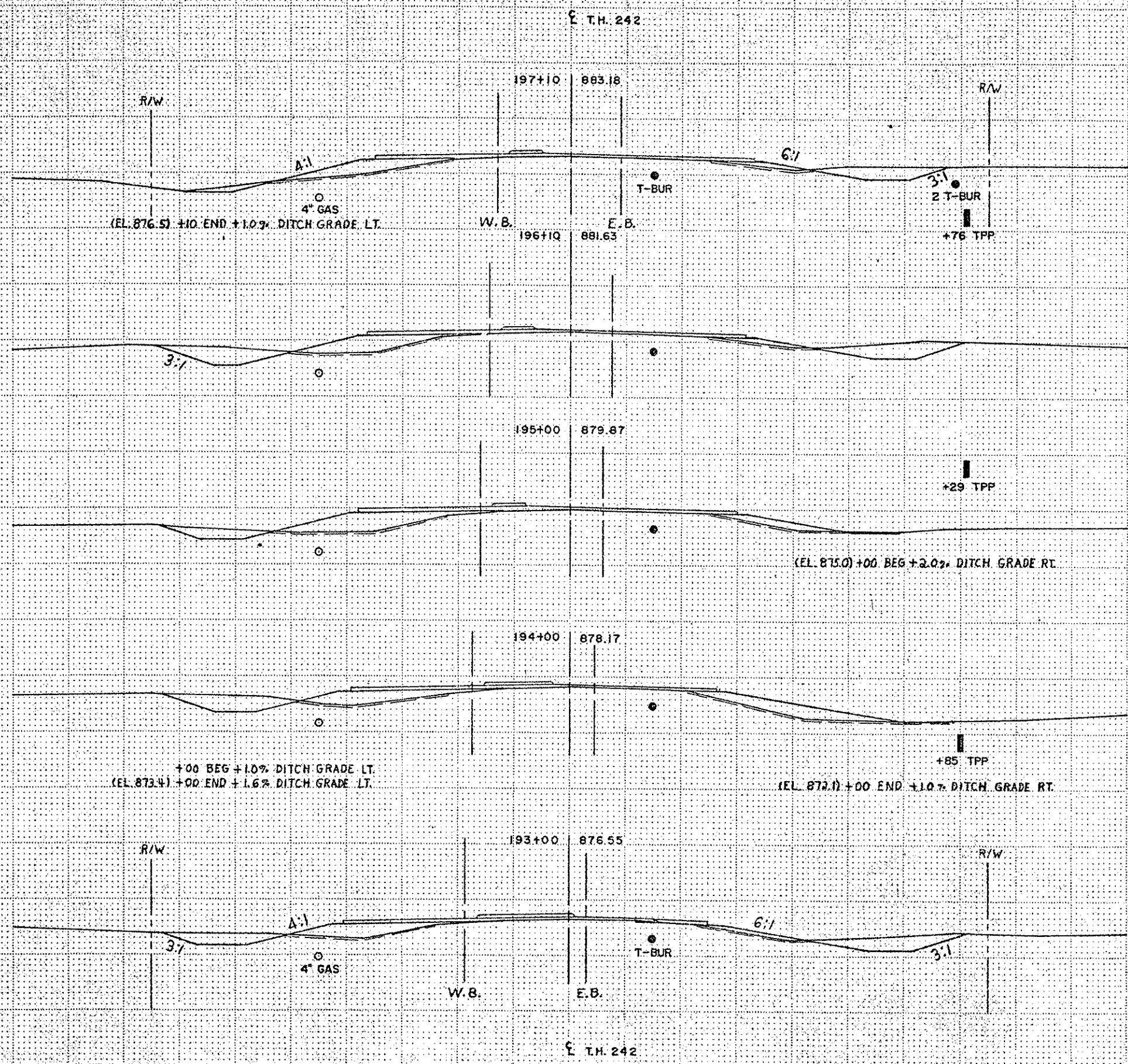
346	269
-----	-----

243	235
-----	-----

206	324
-----	-----

T.H. 242  
STA 189+00 TO 192+10

THE ENGINEER HAS REVIEWED THIS PLAN AND APPROVES IT FOR CONSTRUCTION.



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

341	280
-----	-----

332	448
-----	-----

217	480
-----	-----

307	346
-----	-----

290	247
-----	-----

T.H. 242

T.H. 242

T.H. 242  
STA. 193+00 TO 197+00

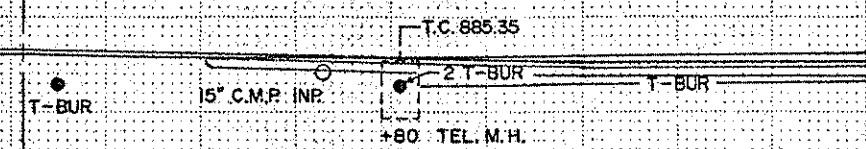
\* ELEVATION NOT CROSS SECTION DATA \*

EXCAVATION  
CU YD

EMBANKMENT  
CU YD

T.H. 242

198+79 886.15



198+55 885.75

HANSON BLVD S.

16 8

HANSON BLVD N.

198+53 885.75

15\"/>

W.B.

OUT. 882.56  
+28 15\"/>

198+10 884.96

3:1

T-BUR  
E.B.  
2 T-BUR

R/W

197+82 884.42

OUT. 879.21  
+83 15\"/>

(EL. 880.4) +70 END +2.0% DITCH GRADE RT.

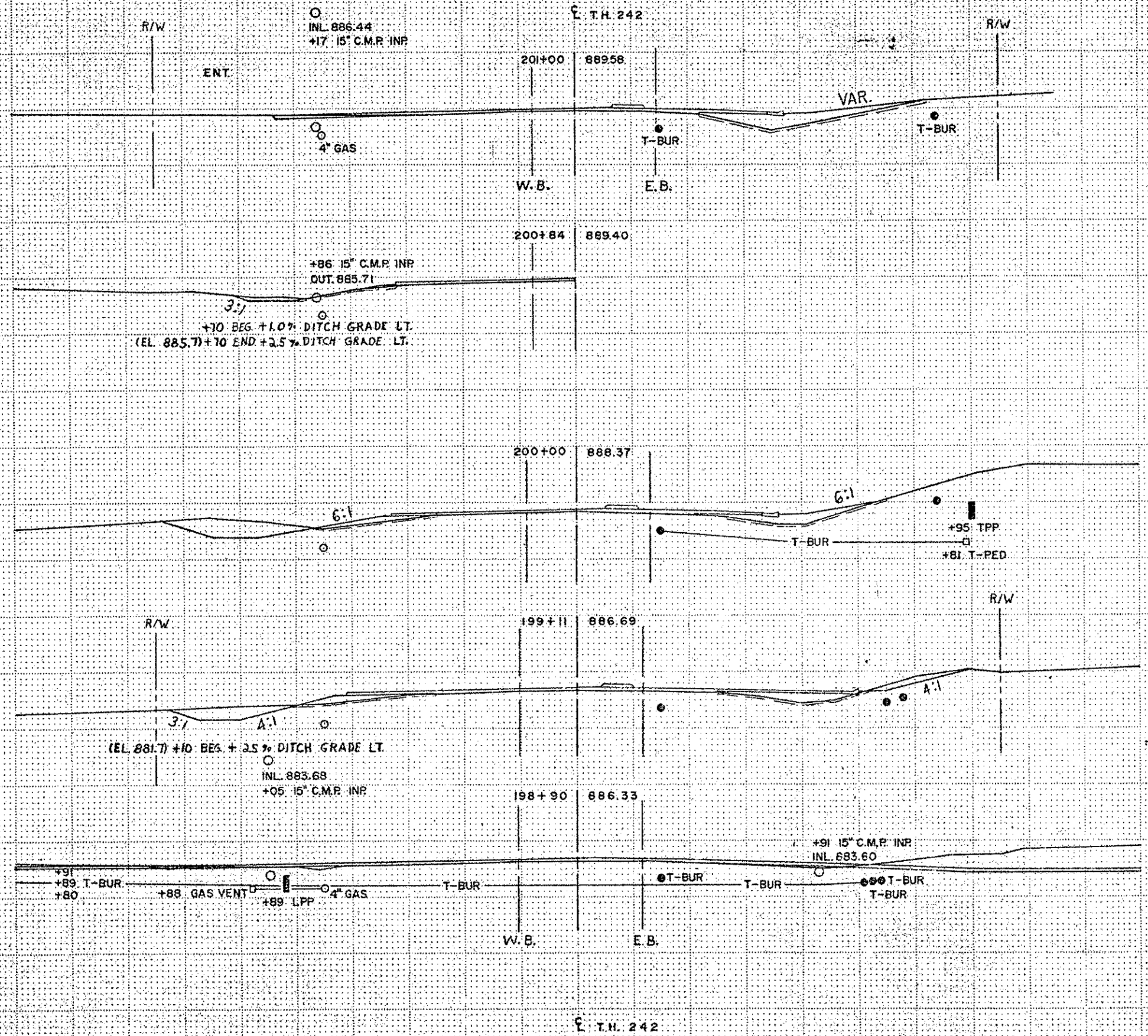
W.B.

T.H. 242

166 268

T.H. 242  
STA. 197+82 TO 198+79

SEE OVER NOT CROSS SECTION UNIT 57A



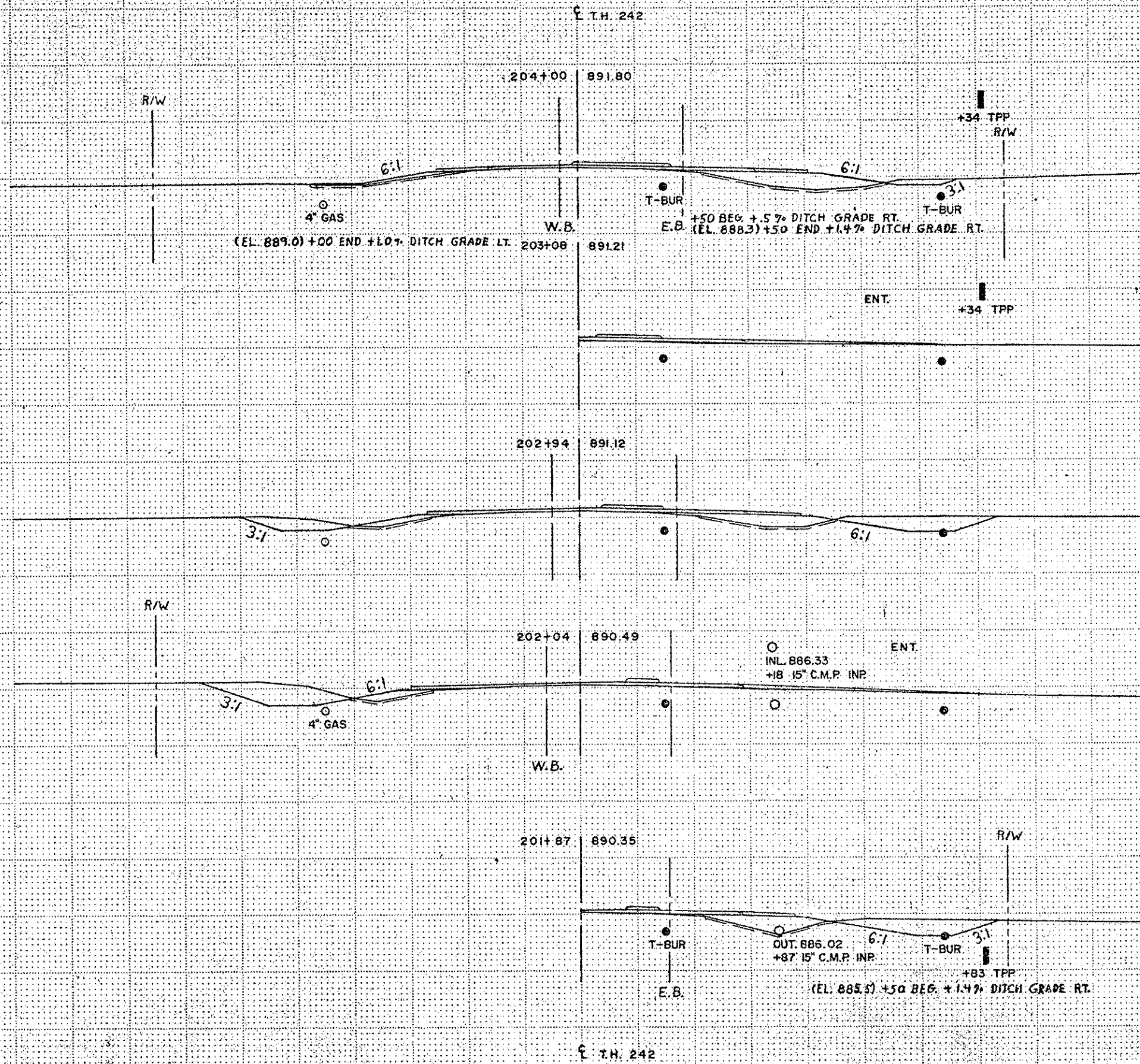
EXCAVATION CU YD	EMBANKMENT CU YD
------------------	------------------

155	258
-----	-----

217	174
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T.H. 242  
STA. 198+90 TO 201+00

10 ENGINE POST OFFICE SECTION 187 9



150 267

312 162

326 241

T.H. 242

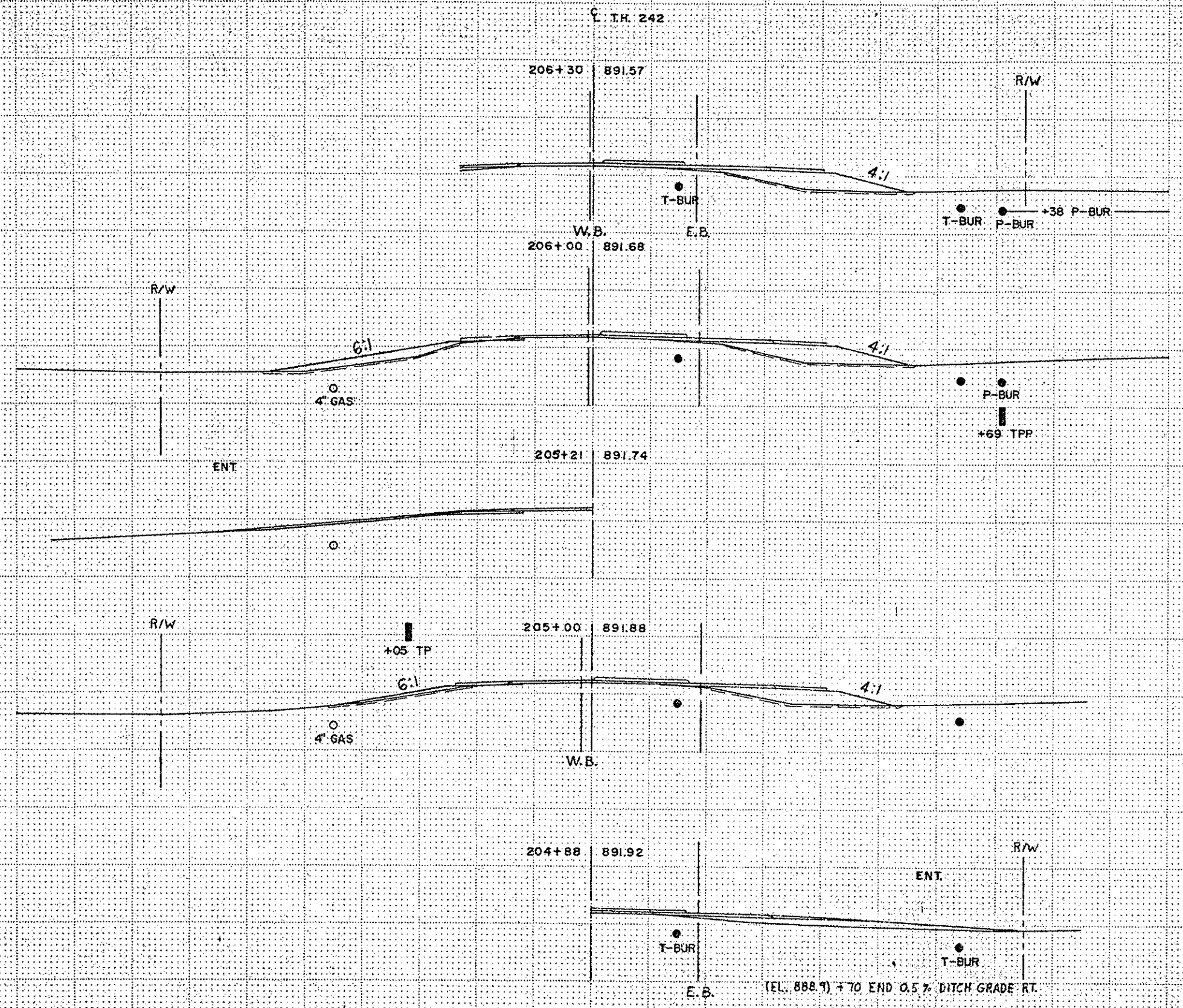
T.H. 242

T.H. 242  
STA. 201+87 TO 204+00

FILED IN 1951 CROSS SECTION 1017 7/28



EXCAVATION CU YD	EMBANKMENT CU YD
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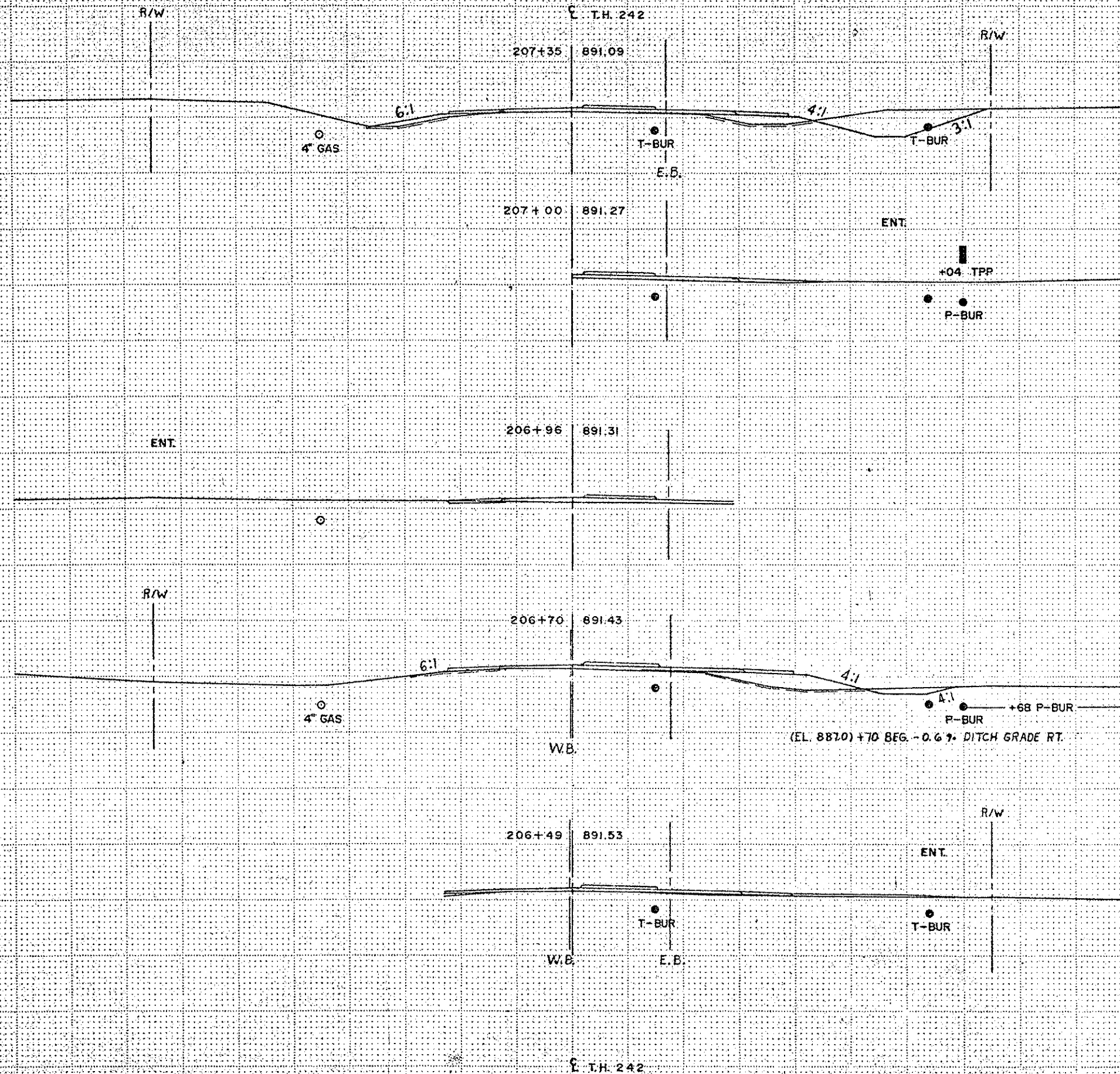


67	350
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74	293
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(EL. 888.9) +70 END 0.5% DITCH GRADE RT.

REPRODUCED FROM ORIGINAL DRAWING



EXCAVATION CU YD	EMBANKMENT CU YD
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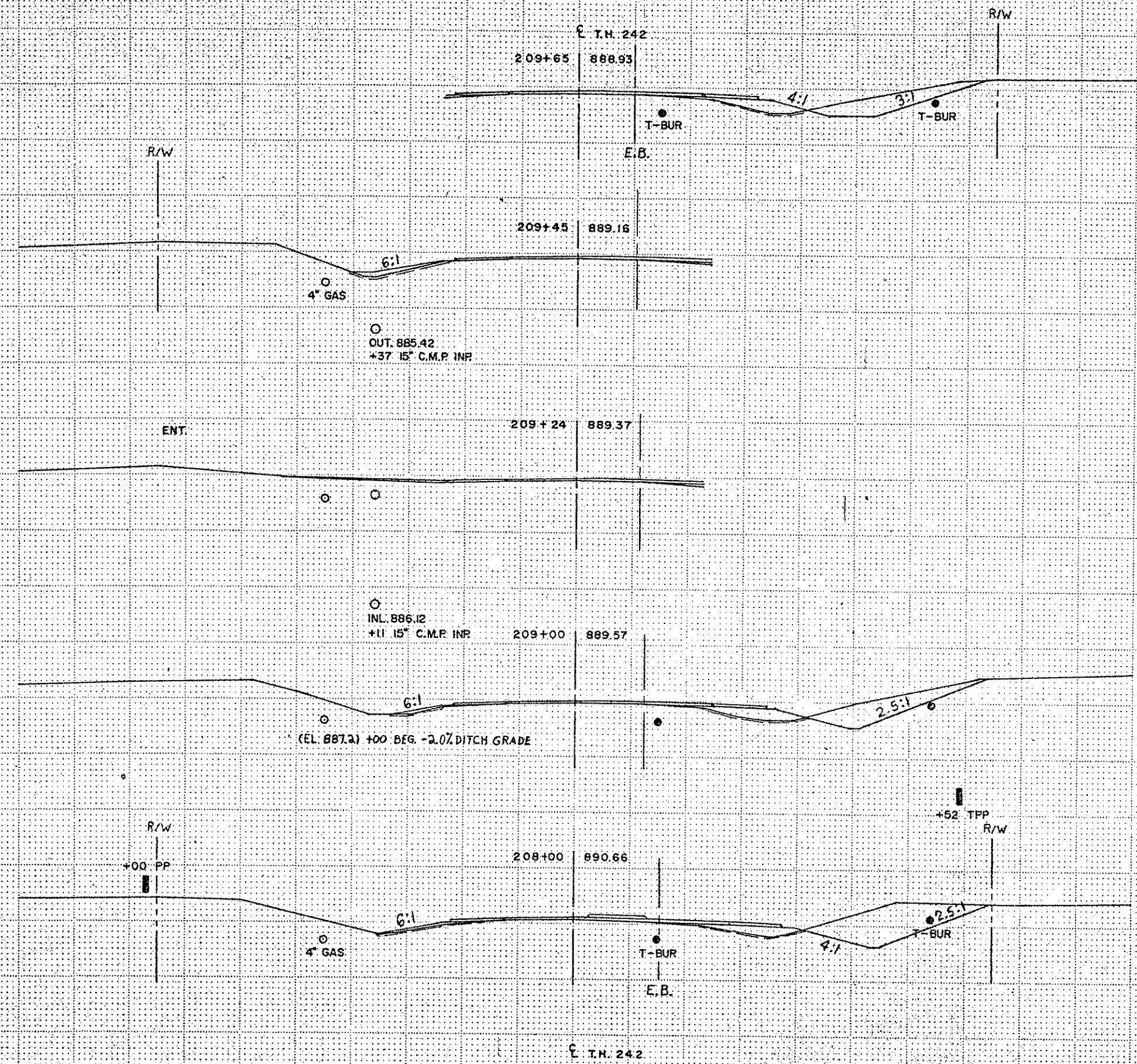
35	86
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35	152
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T.H. 242  
STA. 206+49 TO 207+35

IMPRV POT CROSS SECTION 011 7/78

EXCAVATION CU YD	EMBANKMENT CU YD
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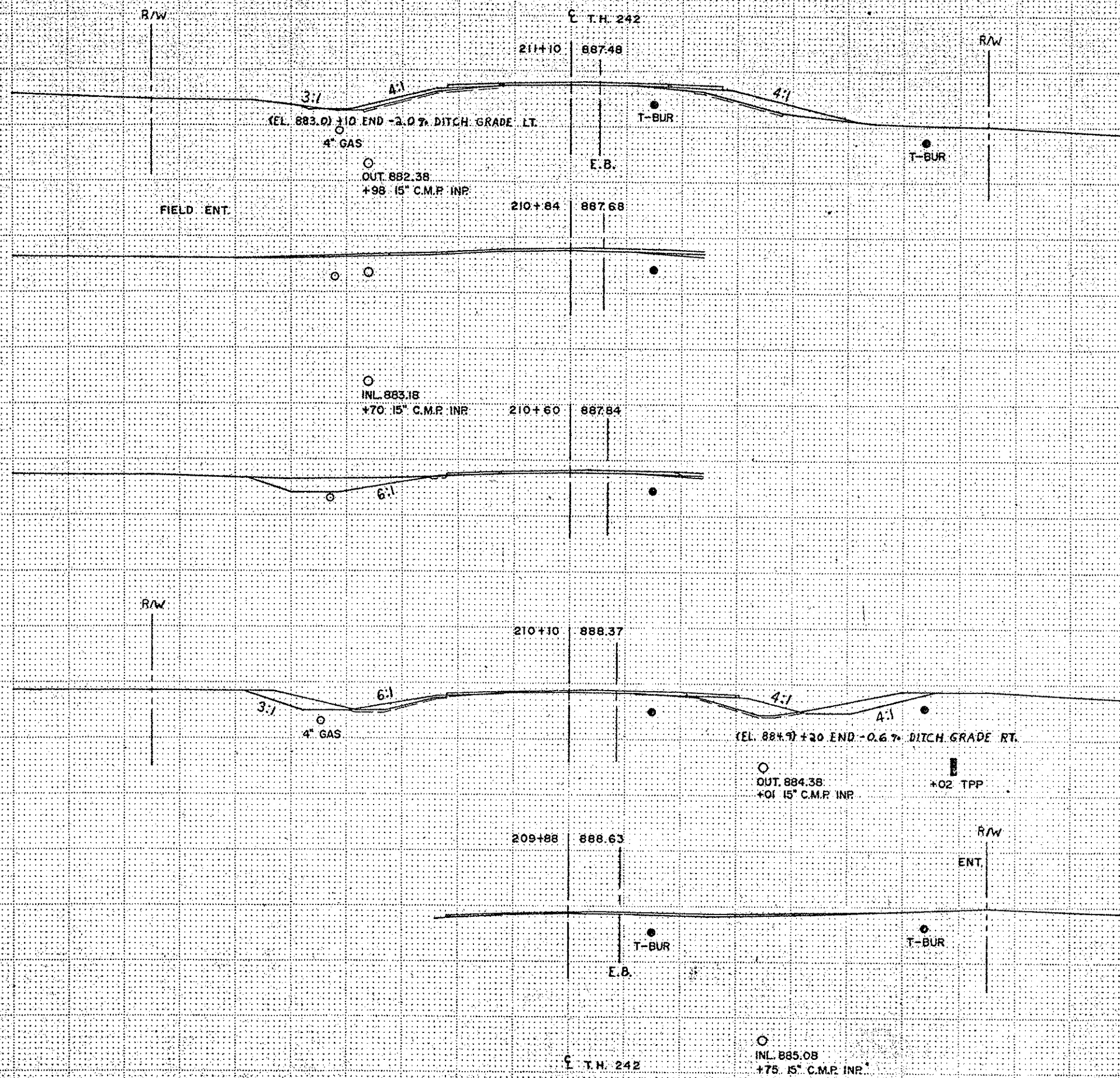


415 157

304 112

T.H. 242  
STA. 208+00 TO 209+65

11/20/64 RGT CROSS SECTION 1011 27/2



EXCAVATION CU YD	EMBANKMENT CU YD
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208	191
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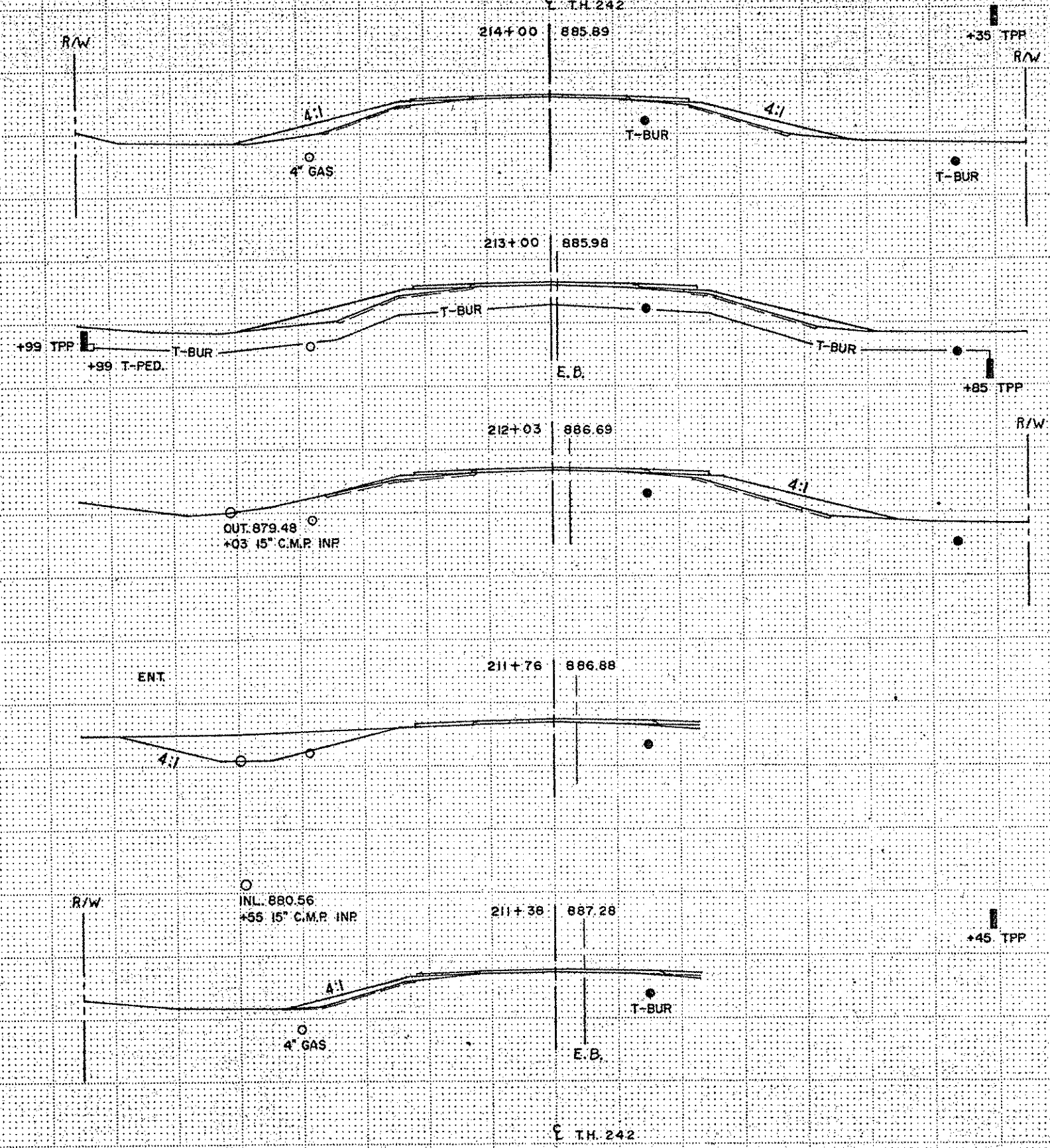
252	139
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T.H. 242  
STA 209+88 TO 211+10

Vertical Curve Section 1011 174

END CONSTRUCTION  
T.H. 242 STA. 214+50

Fed. Proj. No.



EXCAVATION  
CU YD

EMBANKMENT  
CU YD

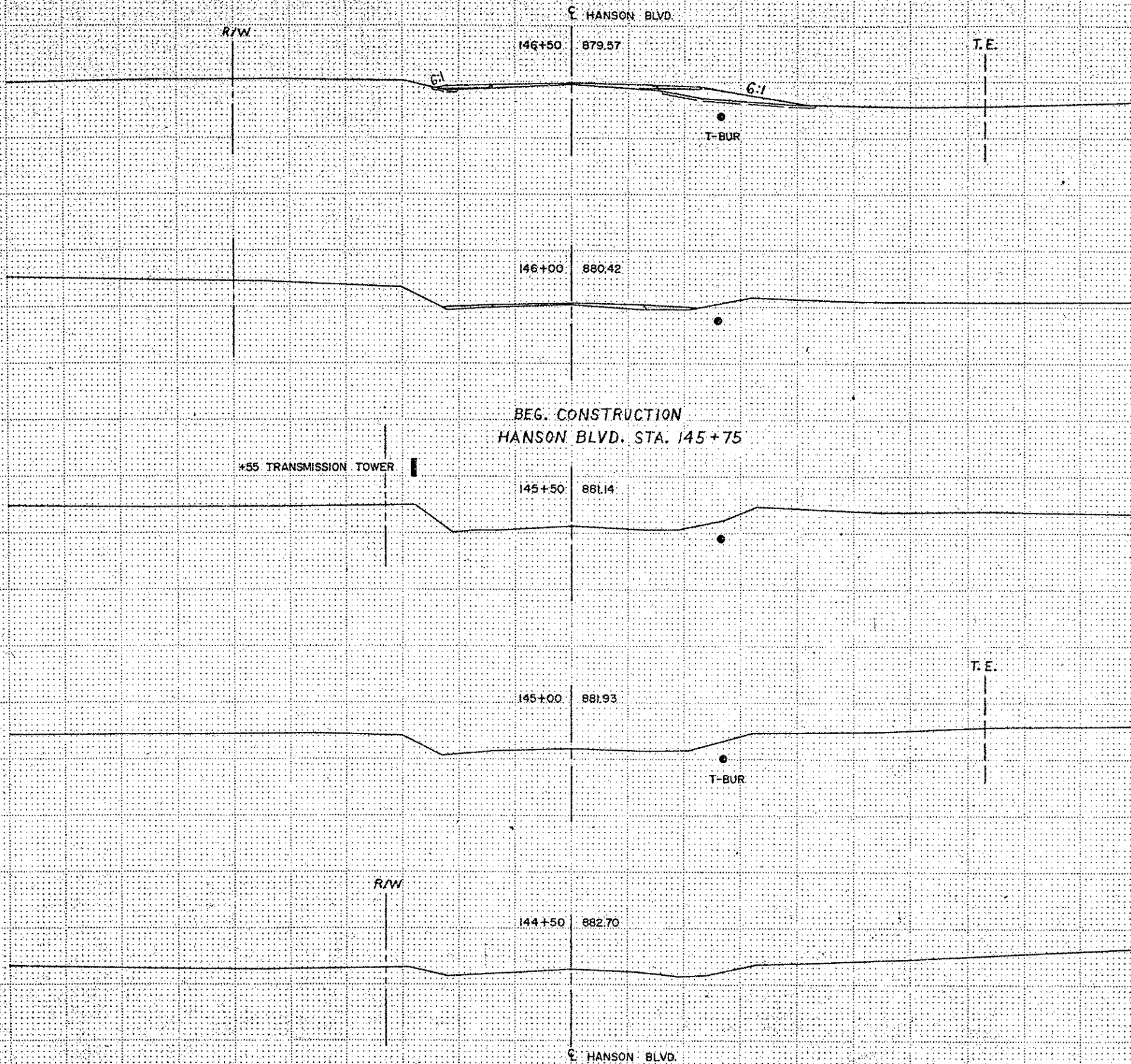
117 461

77 280

175 252

T.H. 242  
STA. 211+38 TO 214+00

11/25/57 RBT 2425 SECTION 242 574



EXCAVATION  
CU YD

10

41

EMBANKMENT  
CU YD

BEG. CONSTRUCTION  
HANSON BLVD. STA. 145+75

\*55 TRANSMISSION TOWER

T.E.

T.E.

R/W

HANSON BLVD.

HANSON BLVD. STA. 144+50 TO 146+50

R/W

HANSON BLVD

T.E.

149+00 879.50

EXCAVATION  
CU YD      EMBANKMENT  
CU YD

6:1

6:1

3:1

INL 877.01 +00 9° C.M.P. INP  
 T-BUR (EL. 877.0 +00 END +1.0% DITCH GRADE RT.)  
 OUT 877.12  
 +90 9° C.M.P. INP

55 145

148+50 879.10

71 95

148+00 878.80

(EL. 876.0) +00 BEG +1.0% DITCH GRADE RT.

51 117

147+50 878.55

32 174

R/W

147+00 878.74

T.E.

6:1

6:1

T-BUR

HANSON BLVD

27 140

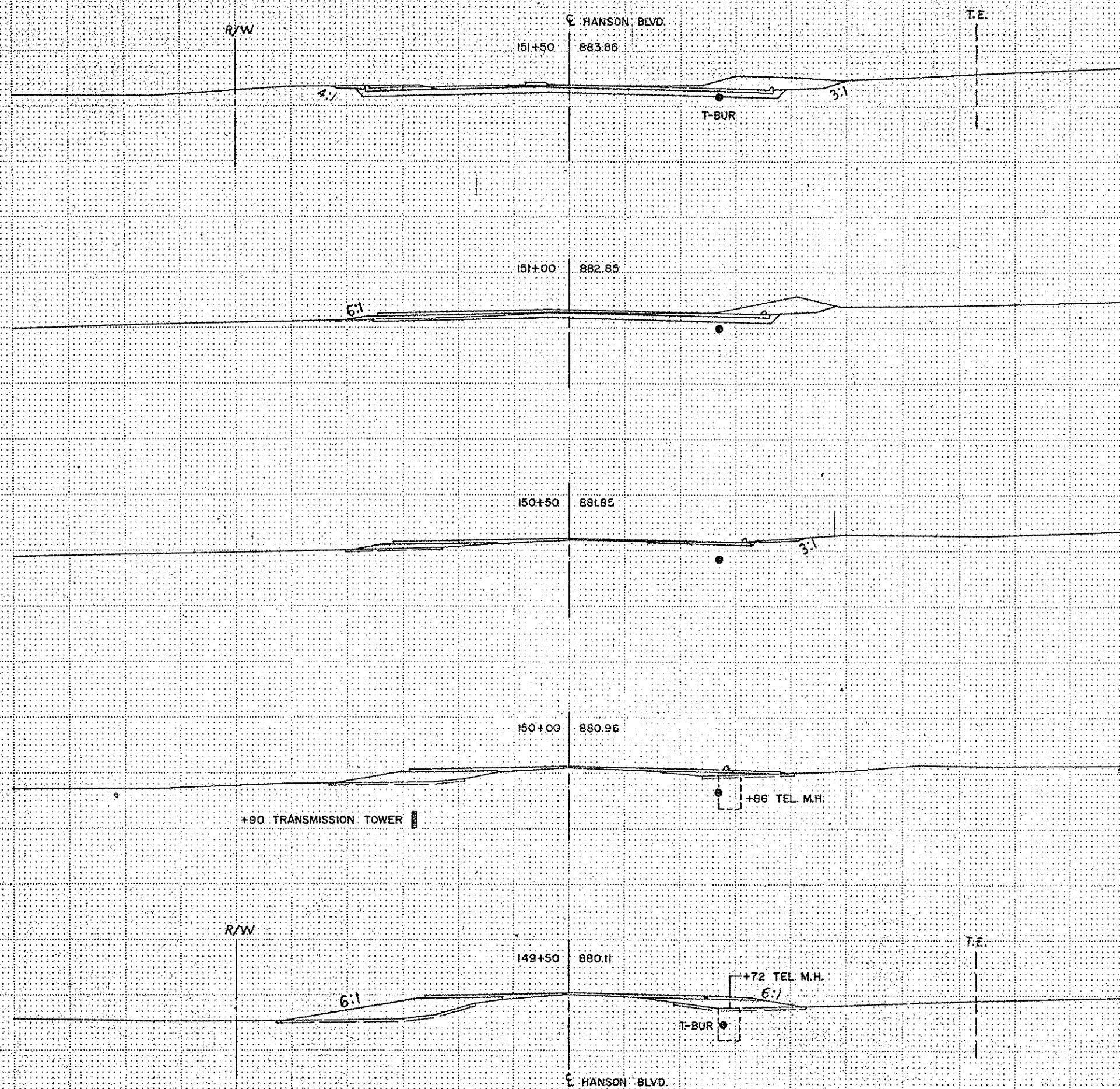
HANSON BLVD STA 147+00 TO 149+00

REVISION 02/15/03 SECTION 101 1/2"

Fed. Proj. No.

EXCAVATION  
CU YD

EMBANKMENT  
CU YD



244 136

59 52

27 72

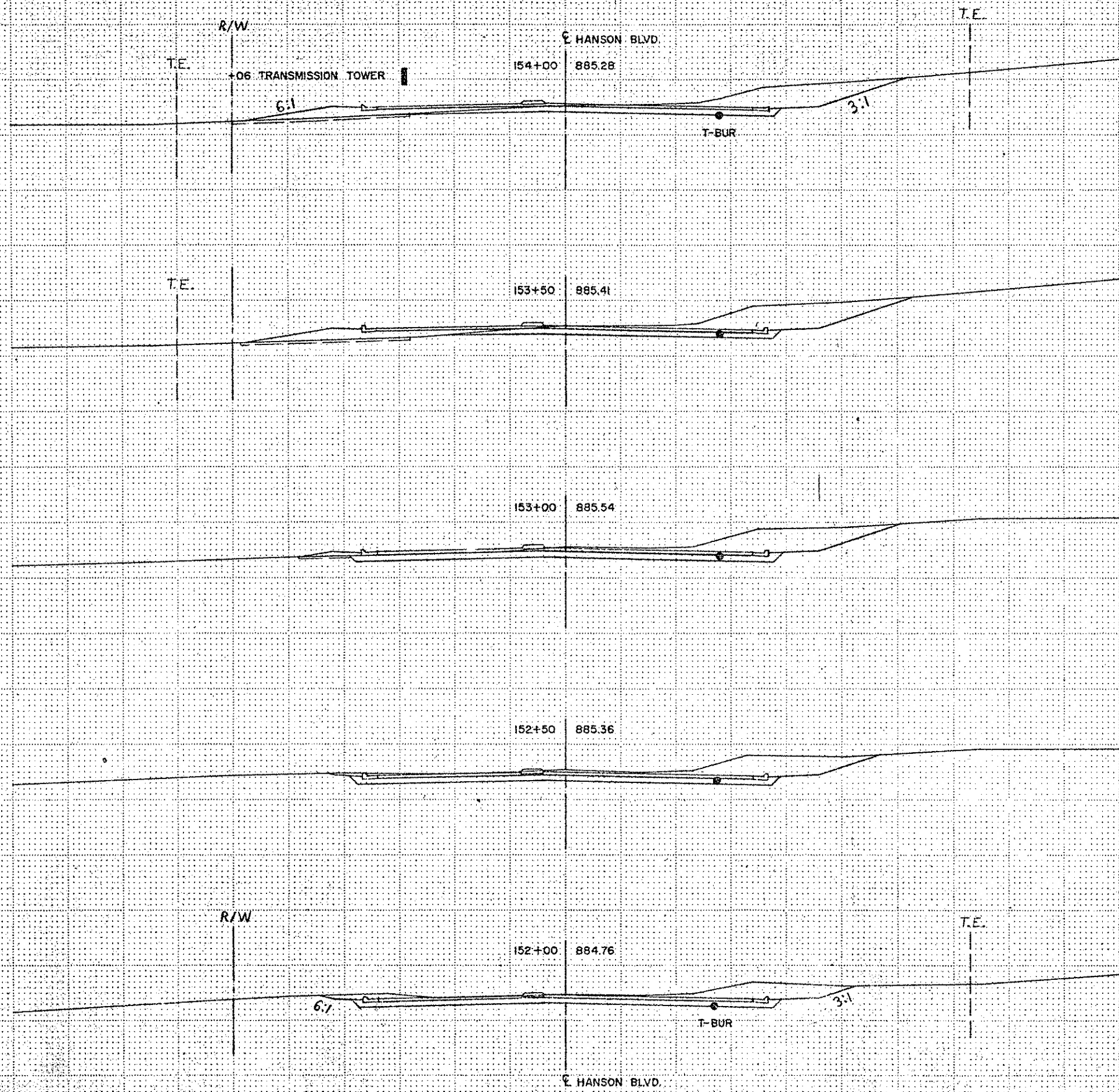
32 165

37 201

HANSON BLVD. STA. 149+50 TO 151+50

REPLANT POST CROSS SECTION, INT. P/W





EXCAVATION  
CU YD

EMBANKMENT  
CU YD

387 206

418 186

415 153

392 144

335 144

HANSON BLVD. STA. 152+00 TO 154+00

REVISION NO. 1  
 DATE 12/15/11  
 BY J. H. H.

HANSON BLVD.

154+82 885.84

T-BUR

154+57 885.41

154+51 885.35

154+40 885.29

T.C. 885.35

6:1

2 T-BUR

OUT. 882.50

+40 15" X 64' C.M.P. +2 APRONS INF.

+30 TEL. M.H. L.

T-BUR

INL. 883.59

2 T-BUR

+29 LPP

154+14 885.28

6:1

T-BUR

3:1

HANSON BLVD.

EXCAVATION  
CU YD

EMBANKMENT  
CU YD

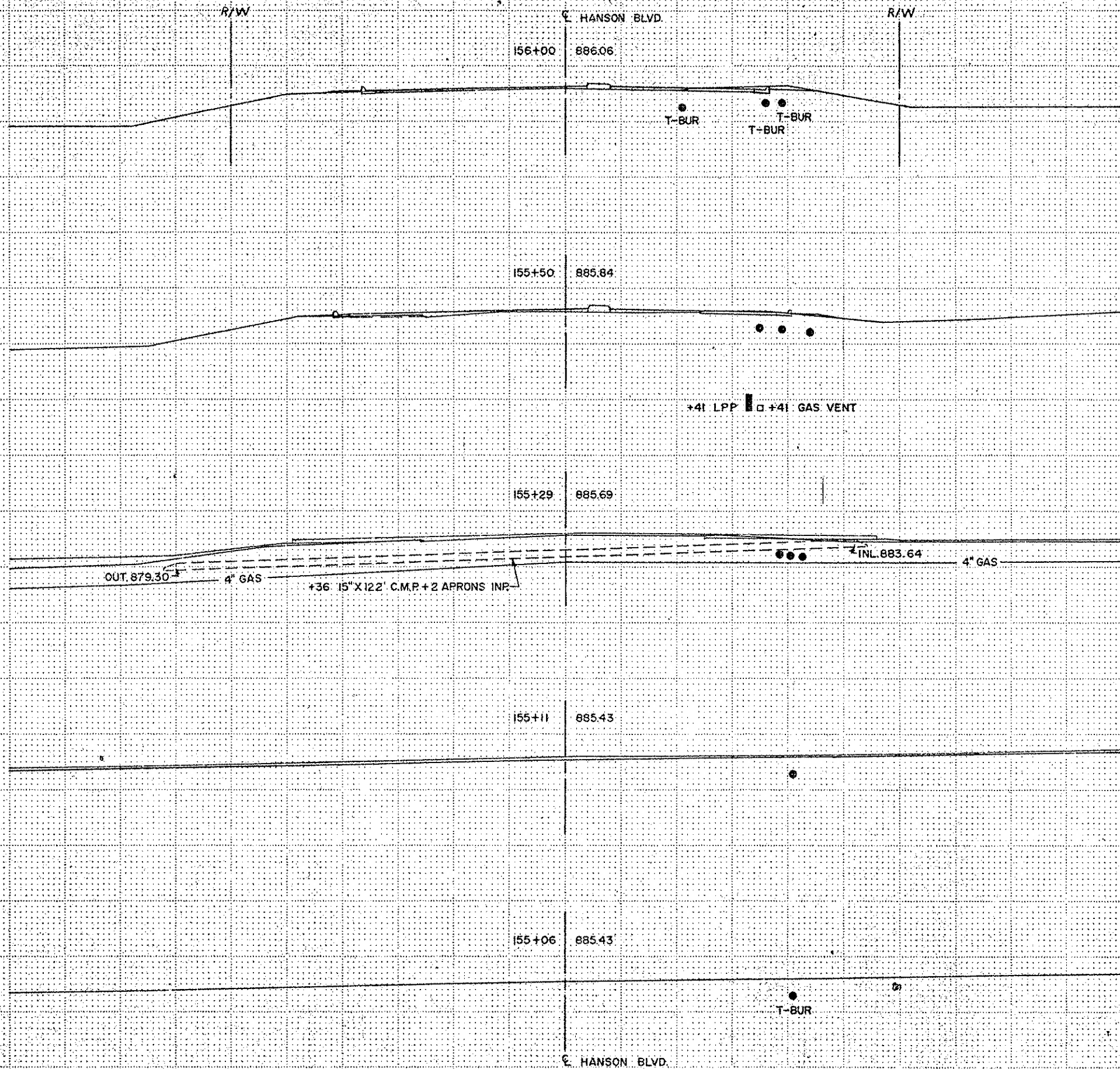
30 48

134 119

103 50

HANSON BLVD. STA. 154+14 TO 154+82

LANSING PORT DISTRICT SECTION REF. 87A



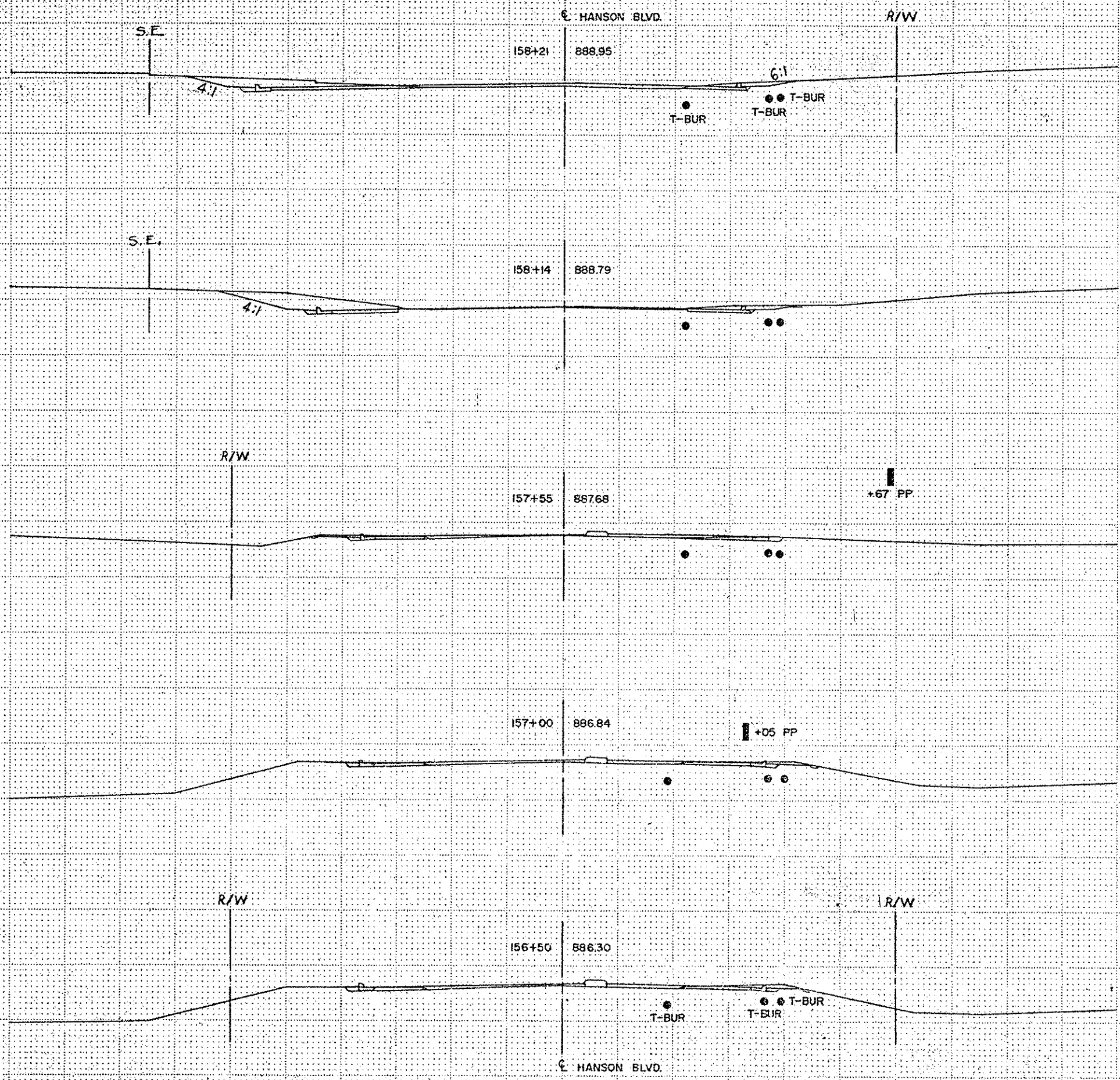
EXCAVATION CU YD	EMBANKMENT CU YD
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41	12
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10	4
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HANSON BLVD. STA. 155+06 TO 156+00

REPRODUCED FROM ORIGINAL DRAWING BY THE STATE OF CALIFORNIA



EXCAVATION CU YD	EMBANKMENT CU YD
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18	1
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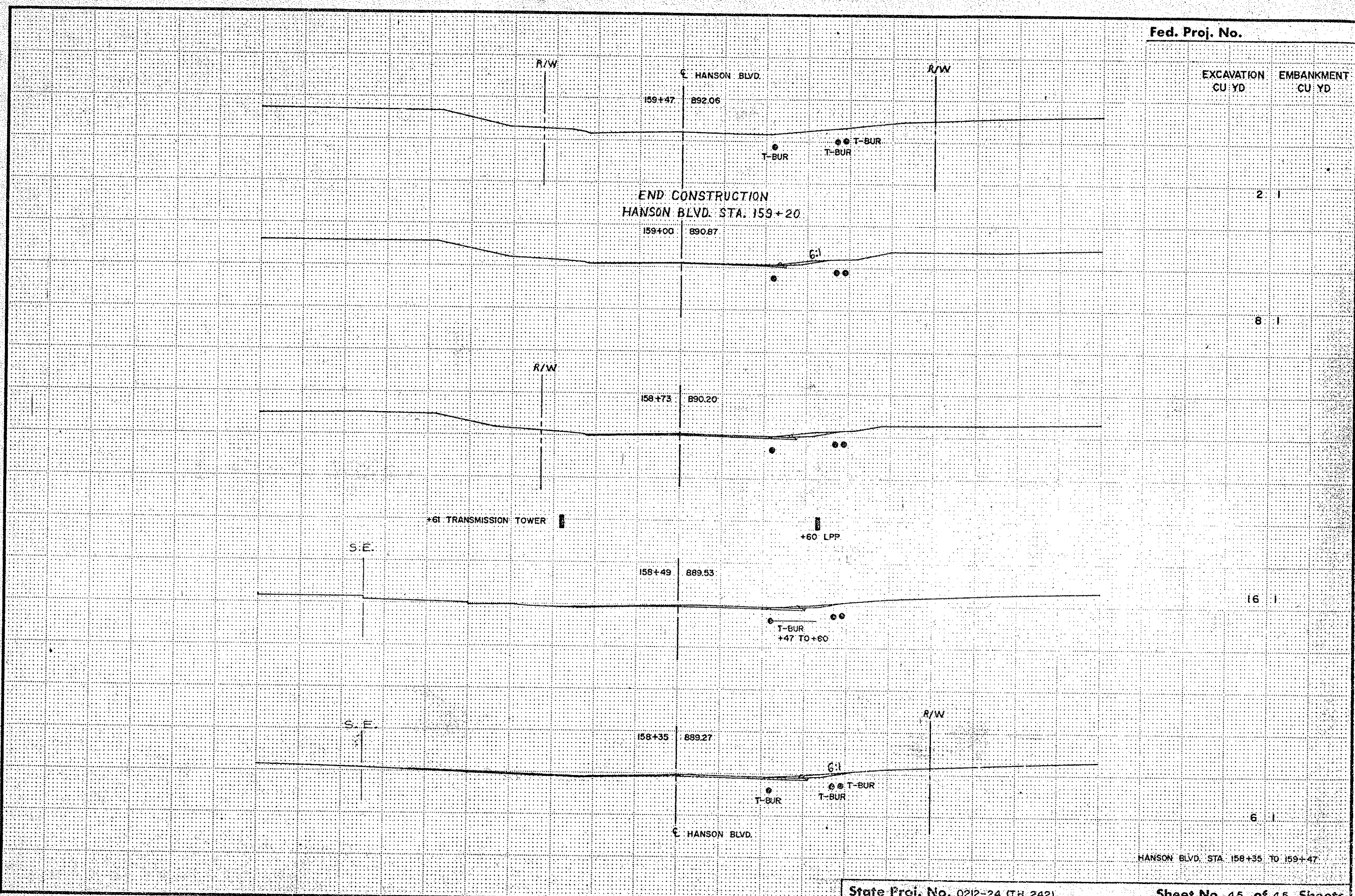
104	11
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33	8
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77	14
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HANSON BLVD. STA. 156+50 TO 158+21

EXCAVATION CU YD	EMBANKMENT CU YD
	2
	8
	16
	6



INTERNAL POLYGRAPH SECTION 1017 1/2 x 1/2