

# MINNESOTA DEPARTMENT OF TRANSPORTATION

## CONSTRUCTION PLAN FOR GRADING, BASE & BITUMINOUS

LOCATED ON C.S.A.H. #22 FROM C.S.A.H. #5 TO A POINT 500' E. OF TH. 47

STATE PROJ. NO. 02-622-23  
 MINN. PROJ. NO.  
 GROSS LENGTH 18,272.00 FEET 3.461 MILES  
 BRIDGES-LENGTH 58.94 FEET 0.013 MILES  
 EXCEPTIONS-LENGTH 68.94 FEET 0.013 MILES  
 NET LENGTH 18,203.06 FEET 3.448 MILES  
 MILE POINT N.A. TO MILE POINT N.A.

STATE PROJ. NO. 0206-38  
 MINN. PROJ. NO.  
 GROSS LENGTH 1,000.00 FEET 0.189 MILES  
 BRIDGES-LENGTH 0.00 FEET 0.000 MILES  
 EXCEPTIONS-LENGTH 0.00 FEET 0.000 MILES  
 NET LENGTH 1,000.00 FEET 0.189 MILES  
 MILE POINT TO MILE POINT

FED. PROJ. NO.

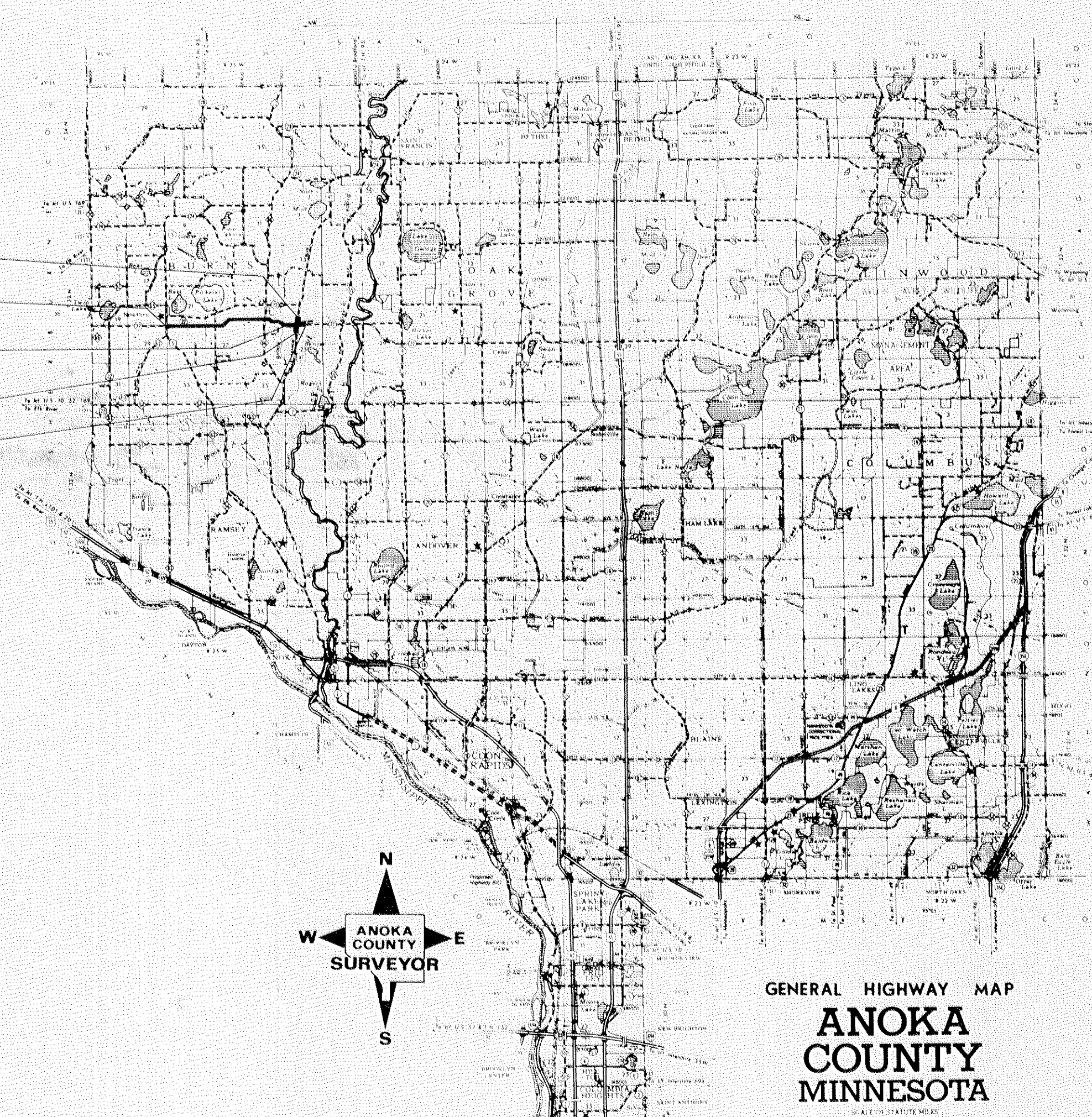
### GOVERNING SPECIFICATIONS

THE 1983 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATION FOR CONSTRUCTION" AND SUPPLEMENTAL SPECIFICATIONS, DATED MAY 19, 1987 SHALL GOVERN

### INDEX

SHEET NO.1	Title sheet
SHEET NO.2	Estimated Quantities
SHEET NO.3	Typical Sections
SHEET NO.4	Charts
SHEET NO.5	Super-Elevation Chart
SHEET NO.6	Guardrail Details
SHEET NO.7-13	C.S.A.H. #22 Plan & Profile
SHEET NO.14	T.H. #47 Plan & Profile
SHEET NO.15	T.H. #47 Alignment
SHEET NO.16-17	C.S.A.H. #22 Cross Sections
SHEET NO.18	T.H. #47 Cross Sections
SHEET NO.19-20	Traffic Control

END PROJECT T.H. 47, S.P. 0206-38  
 P.O.T. STA. 19+00.00  
 BEGIN PROJECT S.A.P. 02-622-23  
 P.O.T. STA. 22+28.00  
 BRIDGE NO. 02548 (EXCEPTION)  
 STA. 180+30.53 - STA. 180+99.47  
 BEGIN PROJECT T.H. 47, S.P. 0206-38  
 P.O.T. STA. 9+00.00  
 END PROJECT S.A.P. 02-622-23  
 P.O.T. STA. 205+00.00



THIS PLAN CONTAINS 20 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 Dec. 21, 1987 REG. NO. 6549 ENGR. Paul K. Lund  
 COUNTY ENGINEER

DESIGN SQUAD

Recommended for Approval C.E. Weichselbaum 1/5 1988  
 DISTRICT STATE AID ENGINEER

Recommended for Approval Julie Stallman 1/14 1988  
 STATE AID PLANS REVIEW

Approved Ray Haworn 1-14 1988  
 STATE AID ENGINEER

Right of Way Approval Gary W. ... 4-26 1988  
 DIRECTOR OF RIGHT OF WAY

Recommended for Approval C.E. Weichselbaum 1/5 1988  
 DISTRICT ENGINEER

Recommended for Approval P.M. Hill 4-26 1988  
 DIRECTOR, OFFICE OF TECHNICAL SUPPORT

Recommended for Approval Gerald R. ... 4-26 1988  
 DESIGN SERVICES DIRECTOR

Approved 4/6 1988 ...  
 DEPUTY DIVISION DIRECTOR  
 TECHNICAL SERVICES DIVISION

AGREEMENT NO. 64498  
 COUNTY OF ANOKA  
 S.P. 0206-38 (T.H. 47=110)  
 STATE FUNDS

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

STATE PROJ. NO.	AREA	JOB
0206-38	53	030

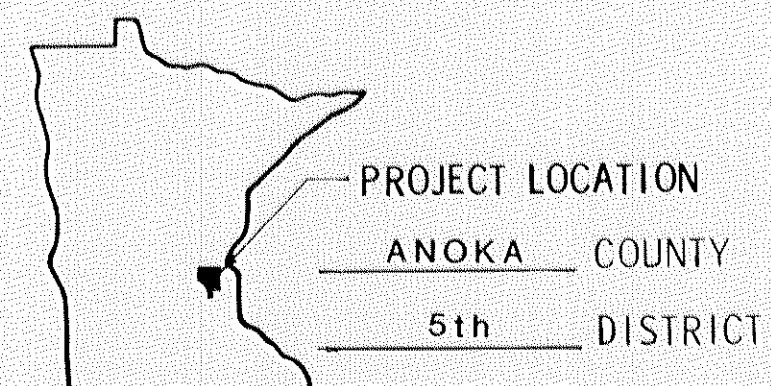
### SCALE

INDEX MAP 2.68 MI.  
 PLAN & PROFILE } HORIZ. 100'  
 VERT. 10'  
 CROSS SECTIONS 10'

Design Speed not achieved at:  
 STA. 82+00 TO STA. 93+00 MPH. 45  
 STA. 139+75 TO STA. 148+25 MPH. 50  
 STA. 165+00 TO STA. 167+00 MPH. 50  
 STA. 169+30 TO STA. 177+70 MPH. 45  
 STA. 177+70 TO STA. 183+00 MPH. 40  
 STA. 196+50 TO STA. 198+50 MPH. 45  
 STA. TO STA. MPH.  
 STA. TO STA. MPH.

### DESIGN DATA

ADT (Current Year) = 1084 (87) Design Speed 55 MPH  
 ADT (Future Year) = 1734 (07) Based on STOPPING Sight Distance  
 DHV (Design Hr. Vol.) = Height of eye 3.50' Height of object 0.50'  
 D (Directional Distr.) = % Design Speed not achieved at:  
 T (Heavy Commercial) = 150-300 Design 9 Ton  
 Soil Factor = A-6, 100



PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION  
 APPROVED  
 DIVISION ADMINISTRATOR DATE

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, OF THIS PLAN WERE MADE 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 REG. NO.

STATE AID PROJ. NO. 02-622-23 COUNTY PROJ. NO.  
 STATE PROJ. NO. 0206-38 SHEET NO. 1 OF 20 SHEETS



**STATEMENT OF ESTIMATED QUANTITIES**

ITEM NO.	ITEM	UNIT	02-622-23	0206-38	TOTAL
			ESTIMATED QUANTITY	ESTIMATED QUANTITY	ESTIMATED QUANTITY
2031.501	FIELD OFFICE TYPE "D"	EACH	1	0	1
2101.501	CLEARING	ACRE	0	0.25	0.25
2101.506	PUBBING	ACRE	0	0.25	0.25
2101.507	GRUBBING	TREE	0	3	3
2104.501	REMOVE CULVERT PIPE	LIN. FT.	118	36	154
2104.505	REMOVE BITUMINOUS PAVEMENT	SQ. YD.	2,613	2,800	5,413
2104.513	SAWING BITUMINOUS PAVEMENT	LIN. FT.	256	56	312
2104.521	SALVAGE FENCE	LIN. FT.	0	215	215
0557.603	INSTALL FENCE	LIN. FT.	0	215	215
2105.501	COMMON EXCAVATION (P)	CU. YD.	3,685	10,758	14,443
2105.535	SALVAGED TOPSOIL FROM STOCKPILE (LV)	CU. YD.	2,500	0	2,500
2130.501	WATER	M-CAL.	100	50	150
2211.503	AGGREGATE BASE PLACED, CLASS 5A (P)	CU. YD.	14,414	1,177	15,591
0211.503	6" THICK AGGREGATE BASE COURSE PLACED, CLASS 5A	SQ. YD.	896	0	896
2331.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	751	131	882
2331.510	BINDER COURSE MIXTURE	TON	4,900	480	5,380
2331.514	BASE COURSE MIXTURE	TON	6,200	2,000	8,200
2331.516	SHOULDER COURSE MIXTURE	TON	2,500	0	2,500
2331.531	TEMPORARY LANE MARKING	ROAD STA.	15	30	45
0331.601	2" THICK WEAR COURSE PLACED	SQ. YD.	222	0	222
2341.504	BITUMINOUS MATERIAL FOR MIXTURE	TON	306	32	338
2341.508	WEARING COURSE MIXTURE	TON	4,700	500	5,200
2357.502	BITUMINOUS MATERIAL FOR TACK COAT	GAL.	5,500	600	6,100
2501.511	15" C.M. PIPE CULVERT	LIN. FT.	32	0	32
2501.515	15" C.M. PIPE APRON	EACH	2	0	2
2501.521	28 1/2" SPAN R.C. PIPE-ARCH CULVERT CLASS IIA	LIN. FT.	88	0	88
2501.525	28 1/2" SPAN R.C. PIPE-ARCH CULVERT APRON	EACH	2	0	2
2506.522	ADJUST FRAME AND RING CASTINGS	EACH	1	0	1
2554.501	TRAFFIC BARRIER, DESIGN 8307N	LIN. FT.	325	0	325
2554.523	TWISTED END TREATMENT	EACH	4	0	4
2554.521	ANCHORAGE ASSEMBLIES, DESIGN 8318C	EACH	4	0	4
0563.601	TRAFFIC CONTROL	LUMP SUM	1	0	1
2535.501	BITUMINOUS CURB	LIN. FT.	779	79	858
2573.501	BALE CHECK	EACH	0	16	16
2573.508	BITUMINOUS LINED FLUME	SQ. YD.	45	0	45
2575.501	ROADSIDE SEEDING (P)	ACRE	11.9	1.2	13.1
2575.502	SEED MIXTURE #3	POUND	476	48	524
2575.505	SODDING	SQ. YD.	5,679	650	6,329
2575.511	MULCH MATERIAL, TYPE 1	TON	23.8	2.4	26.2
2575.519	DISC ANCHORING (P)	ACRE	11.9	1.2	13.1
2575.531	COMMERCIAL FERTILIZER, ANALYSIS 10-10-10	TON	3.0	0.3	3.3

- INCLUDES 420 SQUARE YARDS FOR THE REMOVAL OF INPLACE BITUMINOUS PAVEMENT ON C.R. 66.
- INCLUDES 706 CU. YDS. SUBCUT FOR COMPACTION & UNIFORMITY OF SOILS-C.S.A.H. 22; 2,076 CU. YDS.-T.H. 47.
- PROVIDED FOR TOPSOIL PLACEMENT STA. 22+28 TO STA. 199+25 AND AS TOPSOIL DRESSING IN YARD AREAS TO BE SODDED IN THE T.H. 47 CONSTRUCTION.
- PROVIDED FOR DUST CONTROL, AT THE DIRECTION OF THE ENGINEER.
- PROVIDED FOR FIELD ENTRANCE CONSTRUCTION.
- INCLUDES 591 TON FOR RIGHT TURN LANES & STREET APPROACHES-C.S.A.H. 22; 236 TON FOR RIGHT TURN LANES & STREET APPROACHES-T.H. 47.
- INCLUDES 964 TON FOR RIGHT TURN LANES & BY-PASS LANES AND STREET APPROACHES-T.H. 47.
- PROVIDED FOR ENTRANCE PAVING, PAYMENT BY THE SQUARE YARD INCLUDES 2" BITUMINOUS WEAR COURSE, BITUMINOUS MATERIAL FOR MIXTURE AND 5" AGGREGATE BASE CLASS 5.
- INCLUDES 565 TON FOR RIGHT TURN LANES & STREET APPROACHES-C.S.A.H. 22; 226 TON FOR RIGHT TURN BY-PASS LANES & STREET APPROACHES-T.H. 47; 36 TON FOR SHOULDERS-T.H. 47.
- PROVIDED FOR ADJUSTING MANHOLE AND RING CASTING STA. 22+35, 25' LT.
- PROVIDED FOR TRAFFIC DETOUR DURING T.H. 47 CONSTRUCTION.

**EARTHWORK SUMMARY**

**S.A.P. 02-622-23 QUANTITIES CSAH 22 STA. 200+61 TO STA. 205+00**

REGULAR EXCAVATION	2979 CU. YD.
SUBCUT	706 CU. YD.
COMMON EXCAVATION PAY QUANTITY	3685 CU. YD.

REGULAR EMBANKMENT (150% SHRINKAGE)	53 CU. YD.
EXCESS MATERIAL (2979-80)	2899 CU. YD.
TOPSOIL FILL	170 CU. YD.

SALVAGE TOPSOIL FROM STOCKPILE (LV) (CSAH 22 STA 22+28 TO STA 199+63)	2500 CU. YD.
--	--------------

**S.P. 0206-38 QUANTITIES TH 47 STA. 9+00 TO STA. 19+00  
CSAH 22 STA. 199+63 TO STA. 200+61**

REGULAR EXCAVATION	8682 CU. YD.
SUBCUT	2076 CU. YD.
COMMON EXCAVATION PAY QUANTITY	10758 CU. YD.

REGULAR EMBANKMENT (150% SHRINKAGE)	160 CU. YD.
EXCESS MATERIAL (8682-240)	8442 CU. YD.
TOPSOIL FILL	470 CU. YD.

**BASIS OF PLANNED QUANTITIES**

- 2331 PLANT MIXED BASE COURSE BITUMINOUS MIXTURE, 110 LBS./SQ. YD. PER 1" THICKNESS BITUMINOUS MATERIAL FOR MIXTURE, 5.3% BY WEIGHT
- 2331 PLANT MIXED BINDER COURSE BITUMINOUS MIXTURE, 110 LBS./SQ. YD. PER 1" THICKNESS BITUMINOUS MATERIAL FOR MIXTURE, 5.3% BY WEIGHT
- 2331 PLANT MIXED SHOULDER COURSE BITUMINOUS MIXTURE, 110 LBS./SQ. YD. PER 1" THICKNESS BITUMINOUS MATERIAL FOR MIXTURE, 6.5% BY WEIGHT
- 2341 PLANT MIXED WEAR COURSE BITUMINOUS MIXTURE, 110 LBS./SQ. YD. PER 1" THICKNESS BITUMINOUS MATERIAL FOR MIXTURE, 6.5% BY WEIGHT
- 2357 BITUMINOUS MATERIAL FOR TACK COAT, 0.05 GALLON PER SQ. YD.
- 2575 ROADSIDE SEEDING BASED ON HORIZONTAL MEASUREMENTS PLUS 10% FOR SLOPES SEED MIXTURE NO. 3, 45LBS. PER ACRE COMMERCIAL FERTILIZER, ANALYSIS 10-10-10, 500 LBS. PER ACRE ON ALL SEED & SOD AREAS MULCH MATERIAL TYPE 1, 2 TONS PER ACRE

**STANDARD PLATES**

PLATE NO.	DESCRIPTION
0004A	SPECIFICATION REFERENCE TO STANDARD PLATES
3014J	REINFORCED CONCRETE PIPE-ARCH DETAIL
3040F	CORRUGATED METAL PIPE CULVERT
3110G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE-ARCH
3123I	METAL APRON FOR C. S. PIPE
3145E	CONCRETE PIPE TIES
3221C	CORRUGATED STEEL PIPE COUPLING BAND
4010G	CONC. SHORT CONE & ADJUSTING RING
7065C	BITUMINOUS CURB
8000I	STANDARD BARRICADES
8307N	STEEL PLATE BEAM GUARDRAIL
8317D	GUARDRAIL ANCHORAGE ASSEMBLY FOR BRIDGES
8319G	TWISTED END TREATMENT
8318C	GUARDRAIL ANCHORAGE PLATE FOR BRIDGE
9000B	APPROACHES AND ENTRANCES
9102C	SODDING AT PIPE CULVERT ENDS

**SPECIAL DETAILS**

THE CONTRACTOR SHALL REMOVE SUFFICIENT TOPSOIL MATERIAL WITHIN THE EXCAVATION AREAS AND AREAS ON WHICH EMBANKMENTS WILL BE PLACED, TO PROVIDE A 3" MINIMUM OF TOPSOIL DRESSING ON THE FINISHED SLOPES & DITCH BOTTOMS. THIS WILL REQUIRE APPROXIMATELY 640 CU. YDS. OF TOPSOIL MATERIAL. SALVAGING & REPLACING TOPSOIL SHALL BE CONSIDERED AS INCIDENTAL TO COMMON EXCAVATION ITEMS AND NO ADDITIONAL COMPENSATION WILL BE MADE.

APPROXIMATELY 2,500 CU YDS. OF SALVAGED TOPSOIL FROM STOCKPILE SHALL BE USED AS TOPSOIL DRESSING FOR SLOPES ON C.S.A.H. 22 WEST OF T.H. 47. THIS MATERIAL WILL BE PAID FOR AS SALVAGE TOPSOIL FROM STOCKPILE, ITEM NO. 2105.535, AND NO ADDITIONAL COMPENSATION WILL BE MADE.

**CLEAR & GRUBB**

S.P. 0206-38					
STATION	LOCATION	TREE	ACRE	TREE	ACRE
TH 47 STA 10+07 TO STA 13+49	38-60' RT	-	0.25	-	0.25
TH 47 STA 10+17	34' RT	-	-	1	-
TH 47 STA 10+42	34' RT	-	-	1	-
TH 47 STA 10+75	34' RT	-	-	1	-
<b>TOTALS</b>		0	0.25	3	0.25

**SALVAGE & INSTALL FENCE**

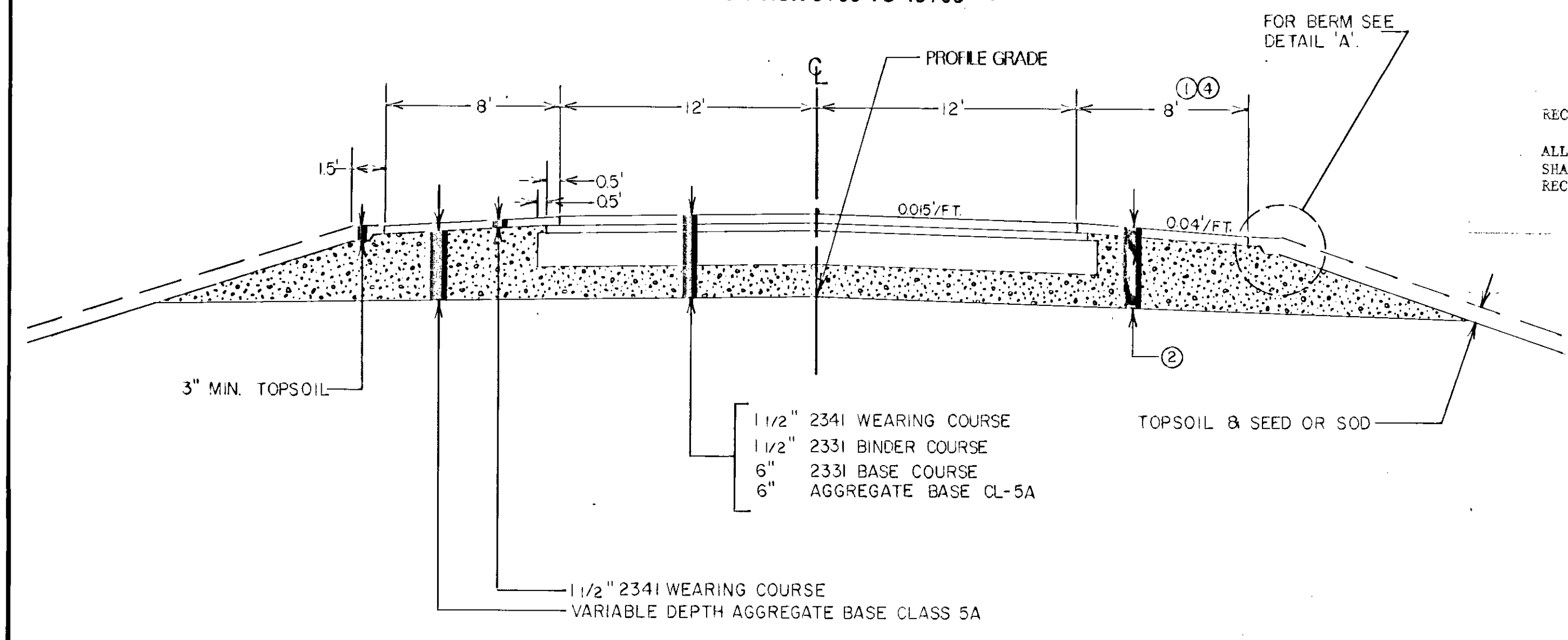
S.P.0206-38				
STATION	LOC.	SALVAGE	INSTALL	REMARKS
TH 47 STA 17+15 TO STA 19+00	LT.	215	215	INSTALL AT R/W LINE
<b>TOTALS</b>		215	215	

REVISIONS			
DATE	BY	DATE	BY



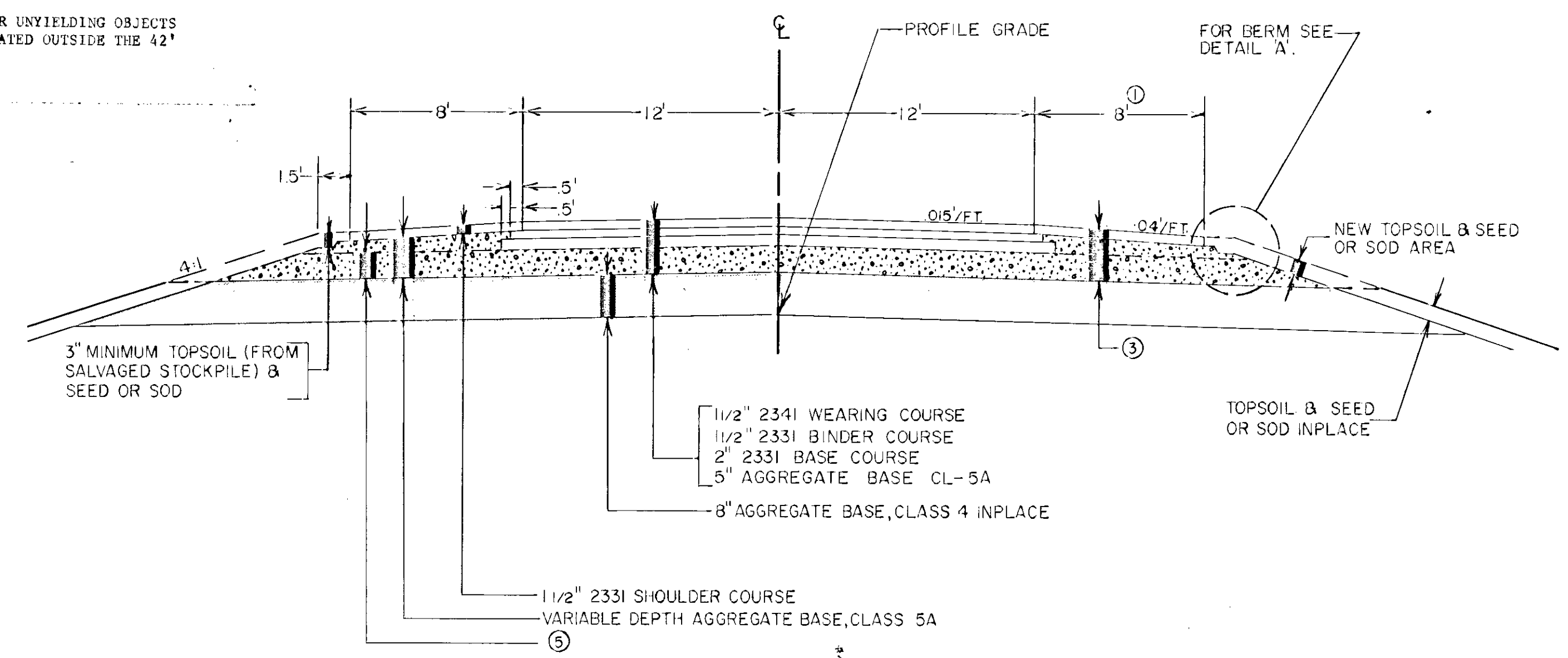
**TYPICAL BASE & SURFACING SECTION**

C.S.A.H. 22 STATION 199+13 TO 205+00  
T.H. 47 STATION 9+00 TO 19+00



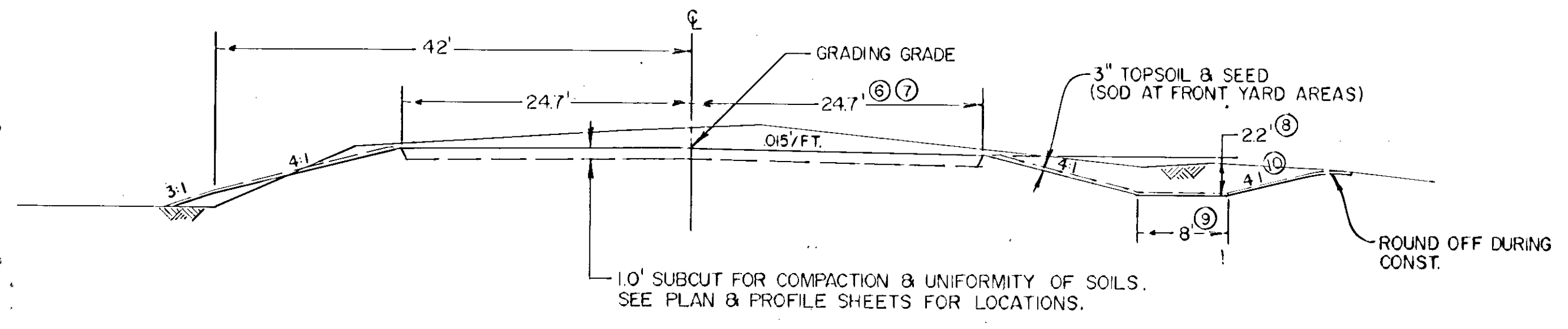
**TYPICAL BASE & SURFACING SECTION**

C.S.A.H. 22 STATION 22+28 TO 199+13

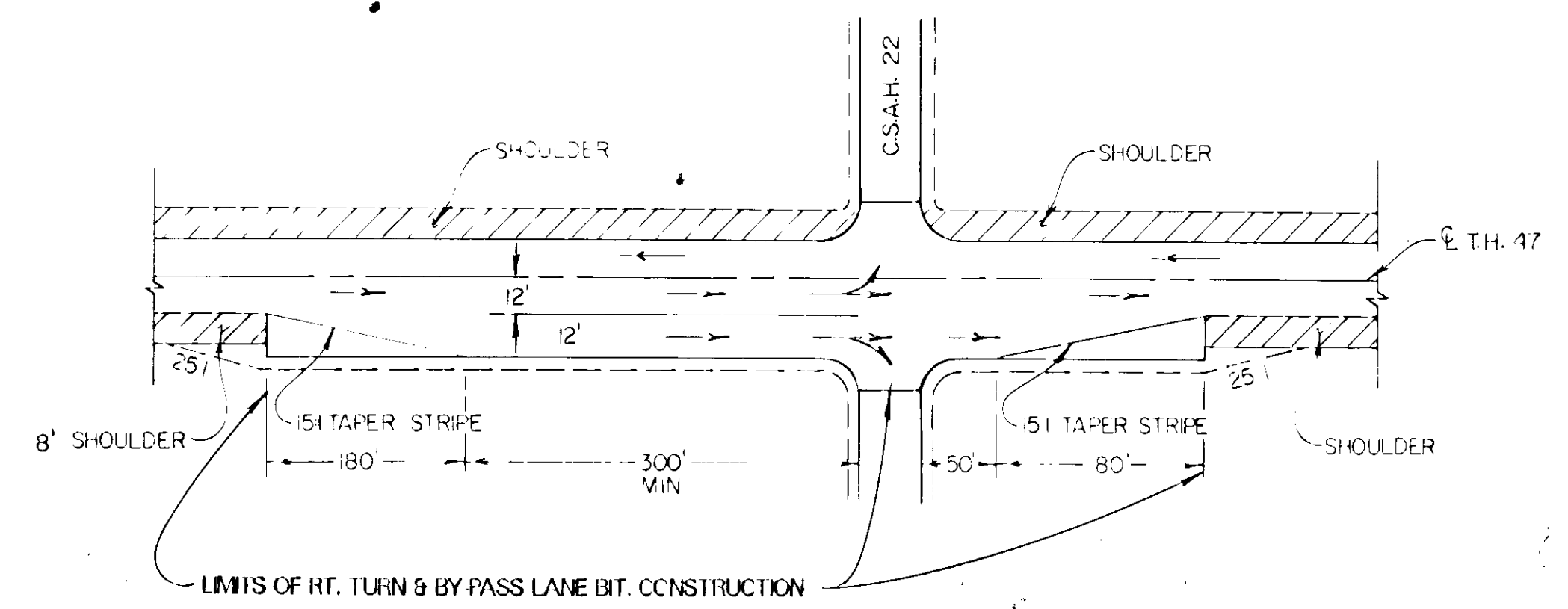


**TYPICAL GRADING SECTION**

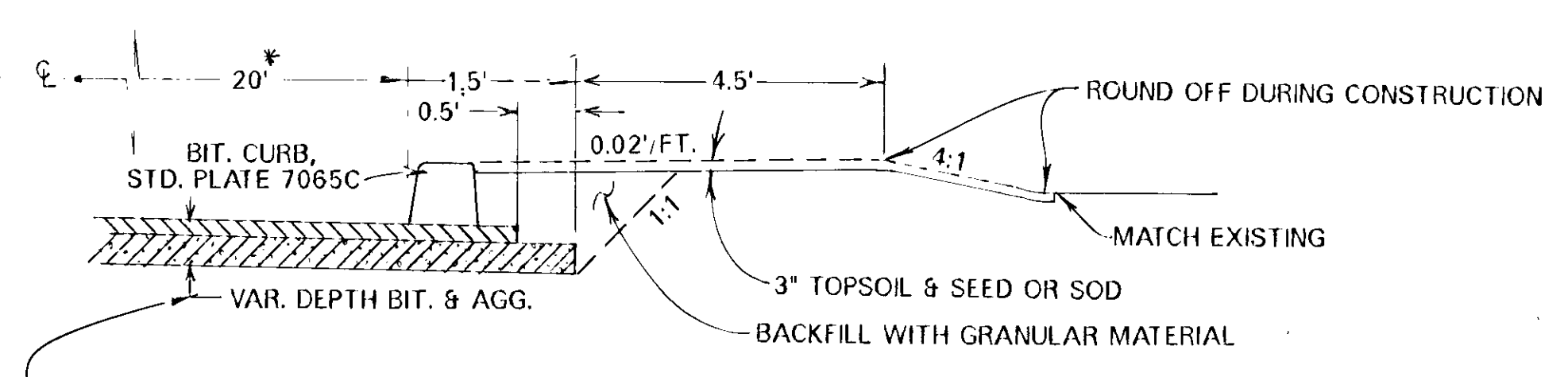
C.S.A.H. 22 STATION 199+13 TO 205+00  
T.H. 47 STATION 9+00 TO 19+00



**COMBINED RIGHT TURN AND BY-PASS LANE**



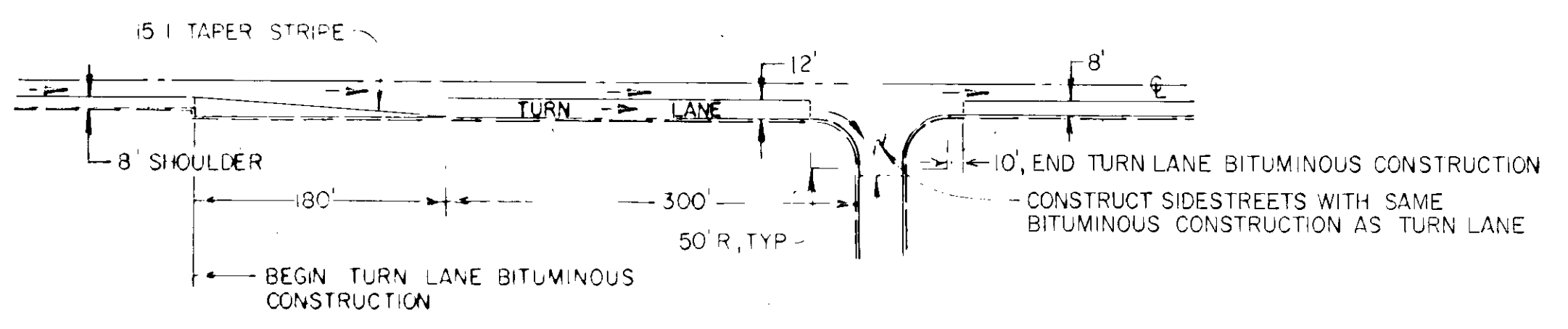
**FINISH BERM, DETAIL "A"**



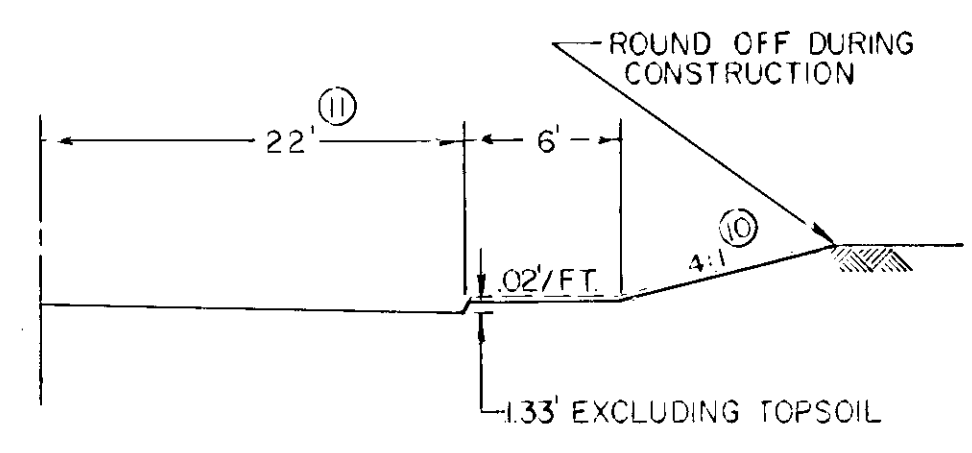
SEE TYPICAL BASE & SURFACING SECTION FOR BITUMINOUS AND AGGREGATE CONSTRUCTION.

\* 26" IN TURN LANE OR BY-PASS LANE AREAS.

**TYPICAL RIGHT TURN LANE**



**GRADING BERM**



- ① 4' WIDER IN RIGHT TURN & BY-PASS LANE AREAS, 0.02'/FT. SLOPE.
- ② CONSTRUCT RIGHT TURN & BY-PASS LANES USING 1 1/2" 2341 WEAR COURSE, 1 1/2" 2331 BINDER COURSE, 6" 2331 BASE COURSE & VAR. DEPTH AGG. BASE CLASS 5A.
- ③ CONSTRUCT RIGHT TURN LANES USING 1 1/2" 2341 WEAR COURSE, 1 1/2" 2331 BINDER COURSE, 2" 2331 BASE COURSE & VARIABLE DEPTH AGGREGATE BASE CLASS 5A.
- ④ VARIES FROM 2' TO 3' T.H. 47 STA. 9+00 TO 9+60 LT.,  
" " 2' TO 12' " " " 9+00 TO 10+00 RT.,  
" " 12' TO 2' " " " 13+00 TO 19+00 LT.,  
VARIES FROM 8' TO 2' T.H. 47 STA. 13+40 TO 19+00 RT.
- ⑤ 5" OF AGGREGATE BASE CLASS 5 INPLACE C.S.A.H. 22 STA. 87+20 TO 88+44,  
" " " " " " 154+50 TO 153+50,  
" " " " " " 173+37 TO 174+61,  
5" OF AGGREGATE BASE CLASS 5 INPLACE C.S.A.H. 22 STA. 194+00 TO 199+13.
- ⑥ 29.3' FOR RIGHT TURN & BY-PASS LANE AREAS.
- ⑦ VARIABLE WIDTH T.H. 47 STA. 9+00 TO 10+00 & T.H. 47 STA. 13+00 TO 19+00. SEE BASE & SURFACING TYPICAL FOR WIDTHS.
- ⑧ SEE CROSS-SECTIONS FOR SPECIAL DITCH DEPTHS.
- ⑨ SEE CROSS-SECTIONS FOR MODIFIED DITCH WIDTHS.
- ⑩ SEE CROSS-SECTIONS FOR MODIFIED SLOPES.
- ⑪ 6.0' WIDER FOR RIGHT TURN & BY-PASS LANE AREAS.

REVISIONS			
DATE	BY	DATE	BY

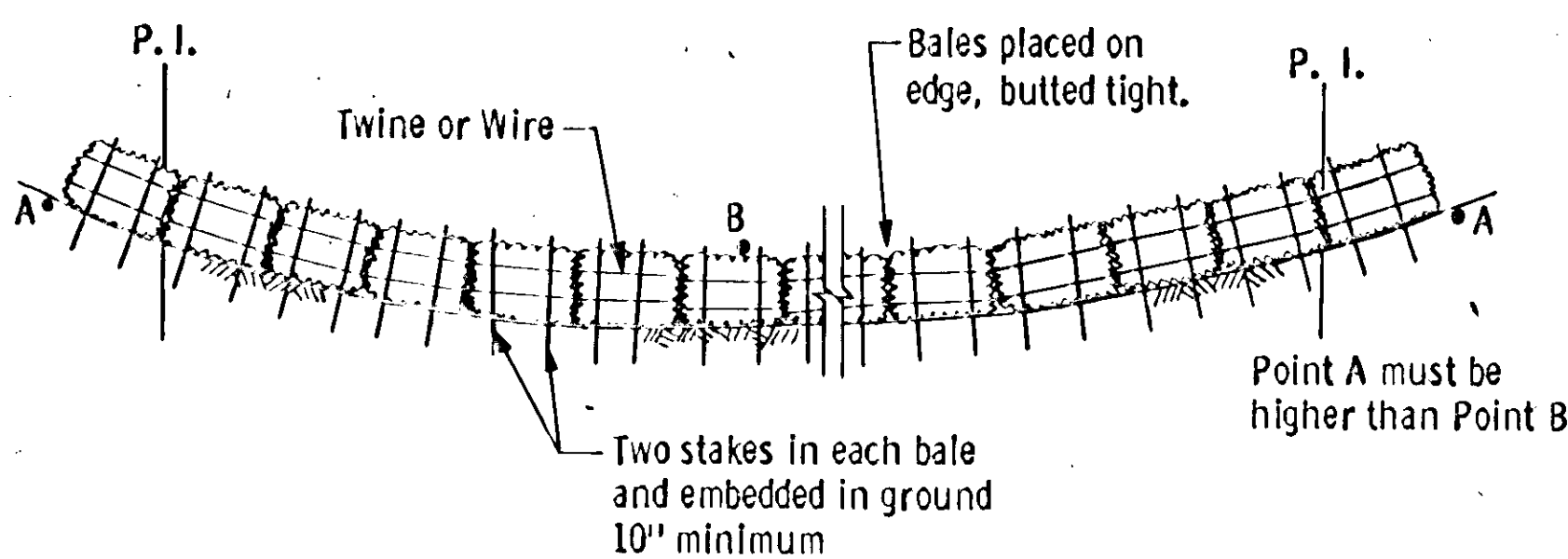
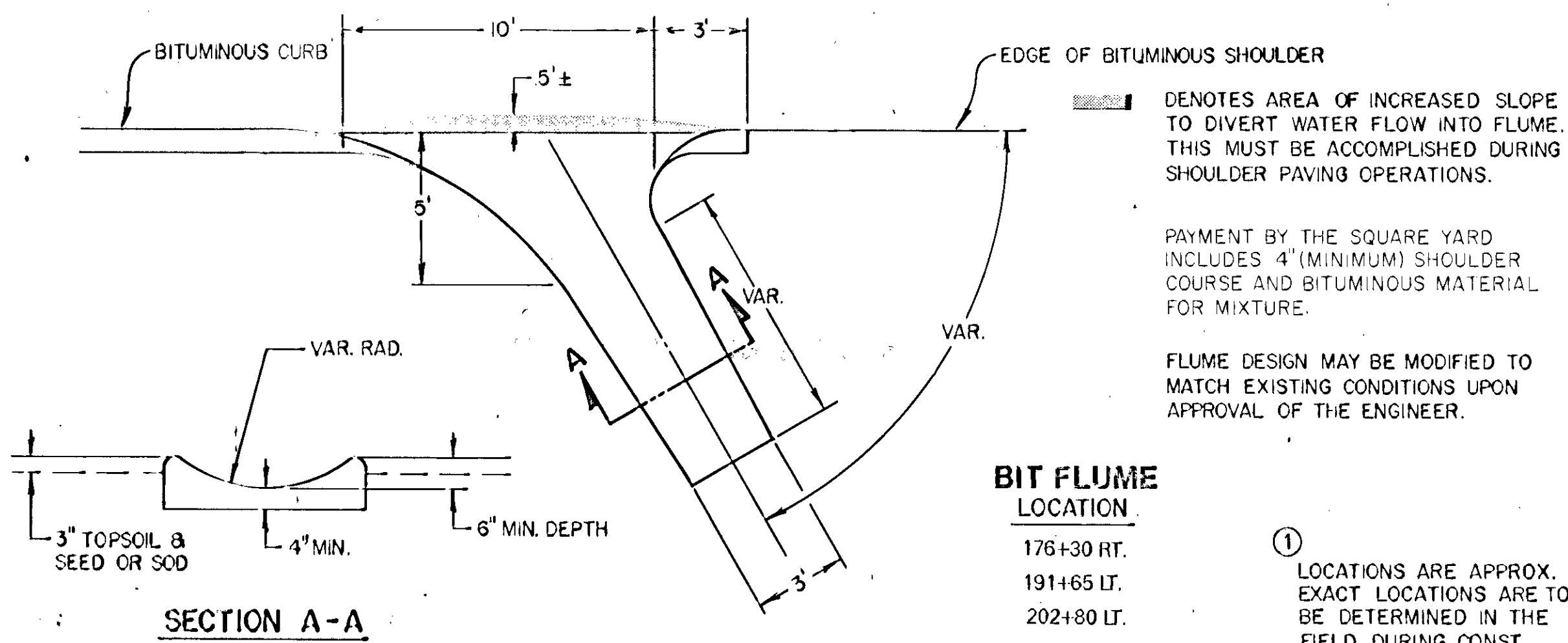
S.A.P. 02-622-23 S.P. 0206-38 C.P.



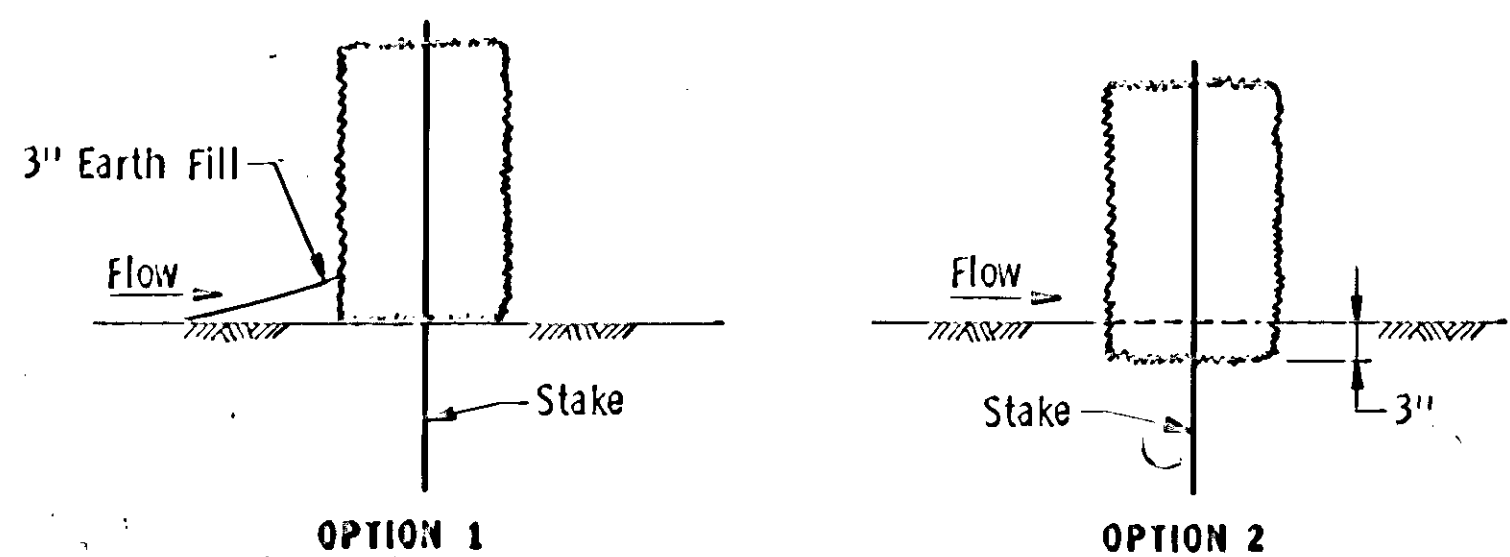
DRAINAGE CHART																
STATION	LOC.	INPLACE	REMARKS	SODDING		REMOVE		SALVAGE		15" CMP		28-1/2" RCP-A		"		
				SQ. YD.	LIN. FT.	AP	LIN. FT.	AP	LIN. FT.	AP	LIN. FT.	AP	LIN. FT.	AP	LIN. FT.	AP
199+40	C/I		28 1/2" ARCH RCP CL3	29									88	2		
199+80	C/I	18" X 36' CMP	NO CULV REQ		36											
200+70	RT	15" X 28' CMP	NO CULV REQ		28											
203+00	LT	15" X 30' CMP	NO CULV REQ		30											
203+80	RT	15" X 30' CMP	NO CULV REQ		30											
204+20	LT	15" X 30' CMP		17	30				32	2						
TOTALS				46	154				32	2			88	2		

② THE PIPE ARCH REQUIRES CLASS B BEDDING. THIS BEDDING IS CONSIDERED INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE.

TYPICAL BITUMINOUS FLUME



BALE HAY OR STRAW DITCH CHECK



DITCH CHECK SECTIONS

BALE CHECK LOCATIONS

- 9+00 LT.
- 10+00 RT.
- 15+00 RT.
- 17+50 LT.

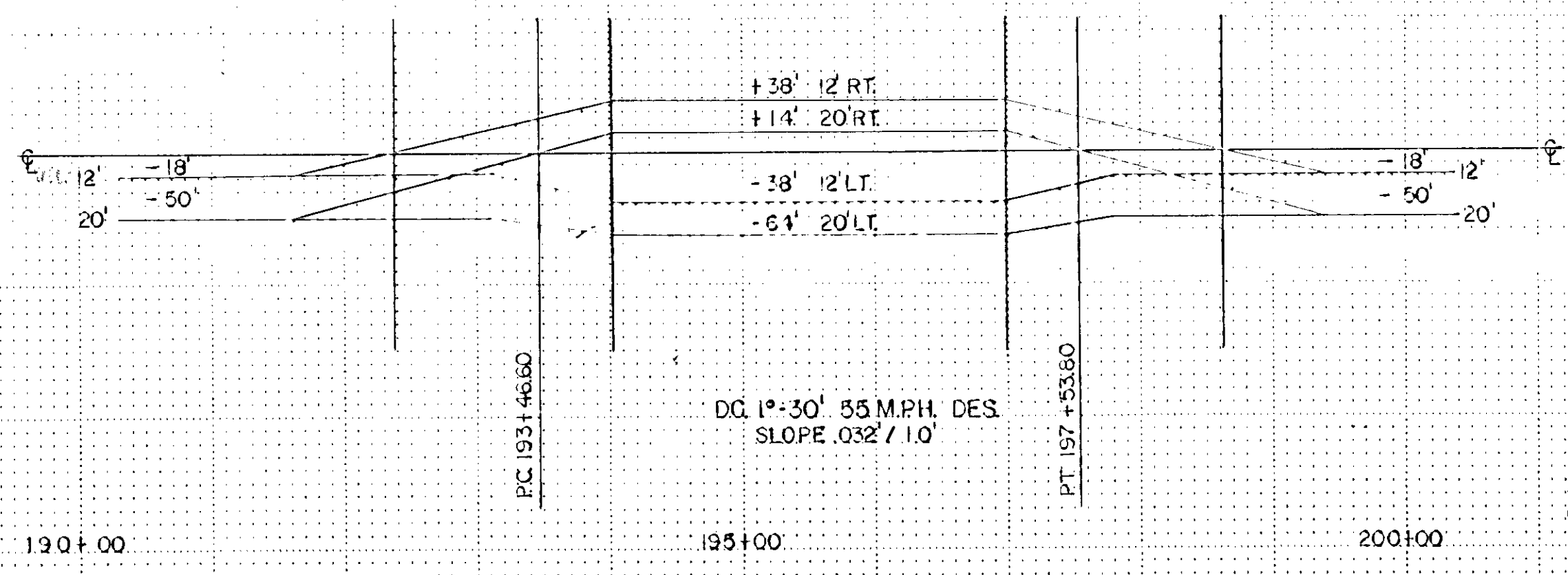
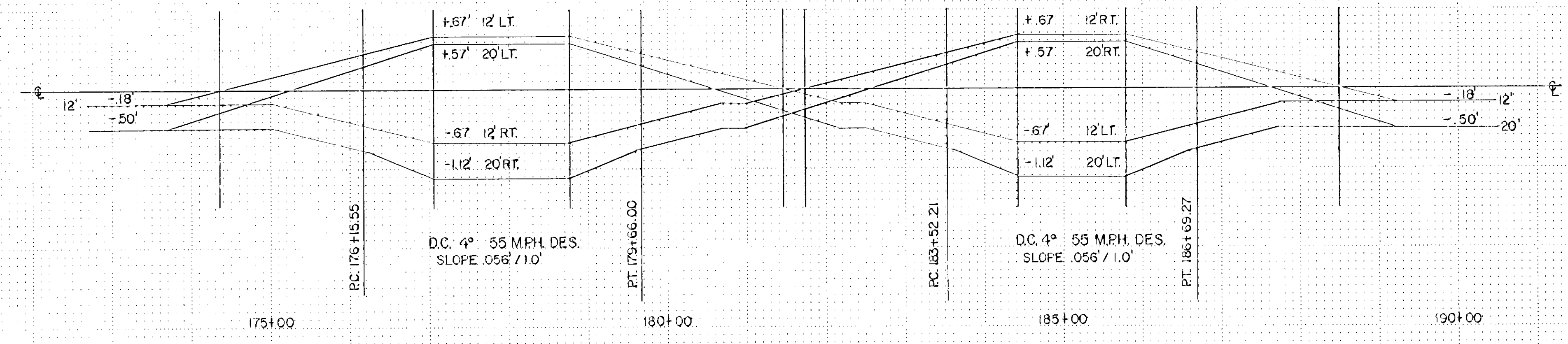
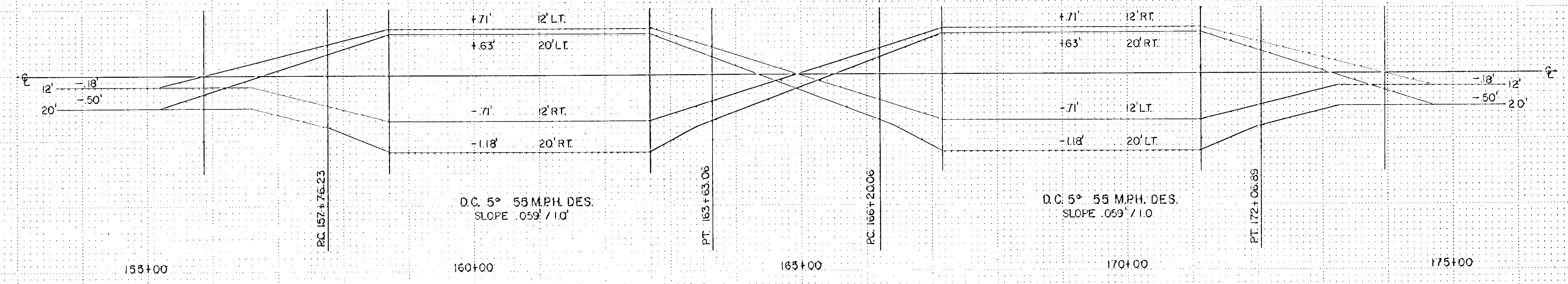
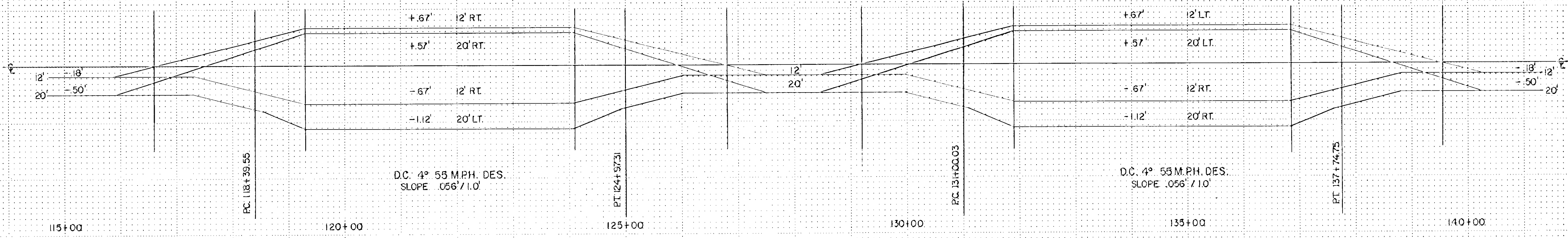
ENTRANCE CONSTRUCTION				
STATION	LOC.	AGG. SQ. YDS.	BIT. SQ. YDS.	REMARKS
29+60	LT.	56	0	FIELD ENTRANCE, PAVE 2' APRON
36+80	LT.	56	0	" " " "
57+35	LT.	56	0	" " " "
57+35	RT.	56	0	" " " "
66+00	RT.	56	0	" " " "
97+25	RT.	56	0	" " " "
110+00	LT.	56	0	" " " "
110+00	RT.	56	0	" " " "
141+50	LT.	56	0	" " " "
149+30	LT.	56	0	" " " "
150+00	RT.	56	0	" " " "
133+00	LT.	56	0	" " " "
186+00	RT.	56	0	" " " "
187+00	LT.	56	0	" " " "
191+60	LT.	56	0	FIELD ENTRANCE, PAVE 2' APRON
194+76	LT.	0	74	RES. ENT., PAVE TO END OF RAD.
200+71	RT.	56	0	FIELD ENTRANCE, PAVE 2' APRON
203+00	LT.	0	74	RES. ENT., PAVE TO END OF RAD.
203+81	RT.	56	0	FIELD ENTRANCE, PAVE 2' APRON
204+24	LT.	0	74	RES. ENT., PAVE TO END OF RAD.
TOTALS		896	222	

NOTE: 2' X 60' BITUMINOUS APRON SHALL BE INCIDENTAL TO SHOULDER PAVING.

SODDING			
STATION	LOCATION	WIDTH	SQ. YD.
22+28 TO 25+00	SLOPE RT.	10'	302
118+40 TO 125+00	LOWSIDE OF CURVE LT	6'	440
131+00 TO 137+75	LOWSIDE OF CURVE RT	6'	450
157+75 TO 163+65	LOWSIDE OF CURVE RT	6'	393
166+20 TO 172+10	LOWSIDE OF CURVE LT	6'	393
175+00 TO 177+50	BERM RT.	12'	333
176+15 TO 179+70	LOWSIDE OF CURVE RT	6'	237
183+50 TO 186+70	LOWSIDE OF CURVE LT	6'	213
193+50 TO 197+50	LOWSIDE OF CURVE LT	6'	257
193+50 TO 196+50	BERM LT	12'	400
200+20 TO 205+00	BERM, DITCH & SLOPES LT.	16'	853
SODDING AT BRIDGE APPROACHES	LT & RT	-	1100
STREET APPROACH RADII	LT & RT	2'	252
PIPE CULVERT ENDS	199+45 & 202+24	-	46
S.A.P. 02-622-23 SUBTOTAL			5679
14+50 TO 16+50	SLOPES & DITCH BOT. RT	26'	578
STREET APPROACH RADII	LT & RT	2'	72
S.P.0206-38 SUBTOTAL			650

REVISIONS			
DATE	BY	DATE	BY

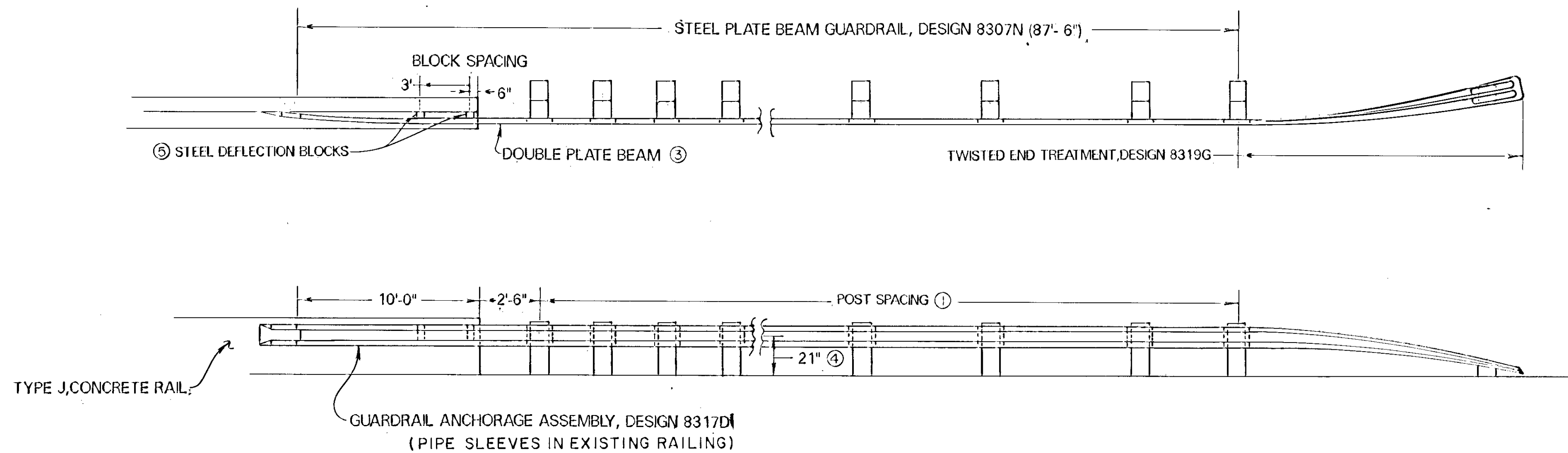




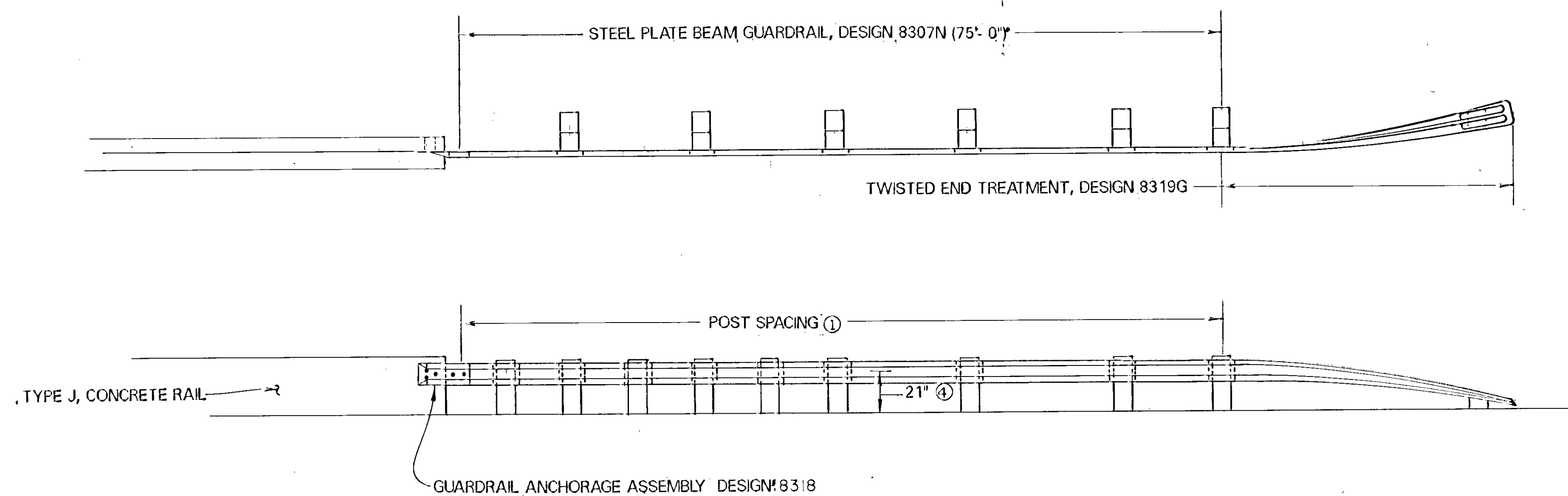
SUPERELEVATION CHART



**GUARDRAIL DETAILS - APPROACH END OF BRIDGE**

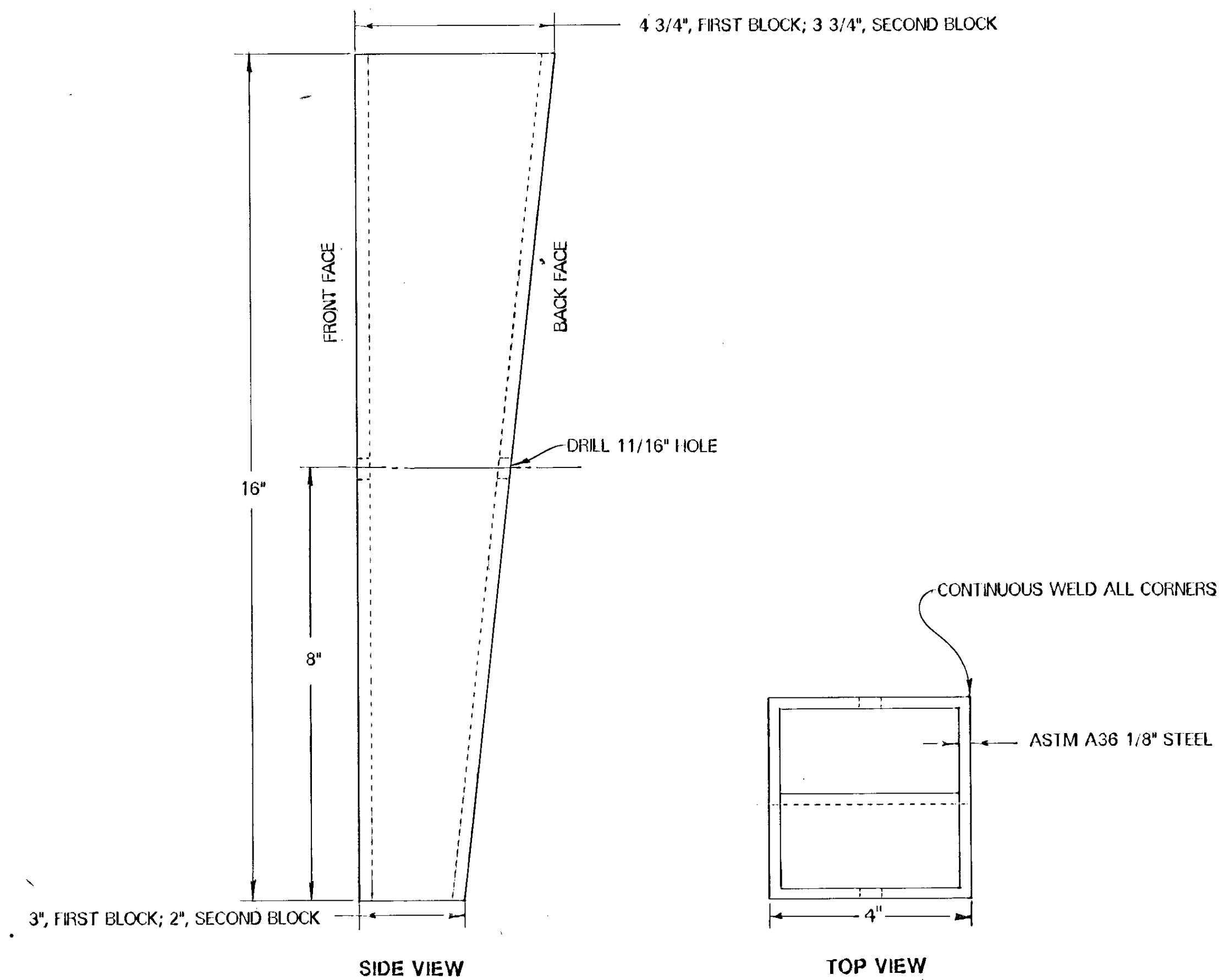


**GUARDRAIL DETAILS - OFF END OF BRIDGE**



SEE PLAN SHEET 13 FOR GUARDRAIL LOCATIONS.

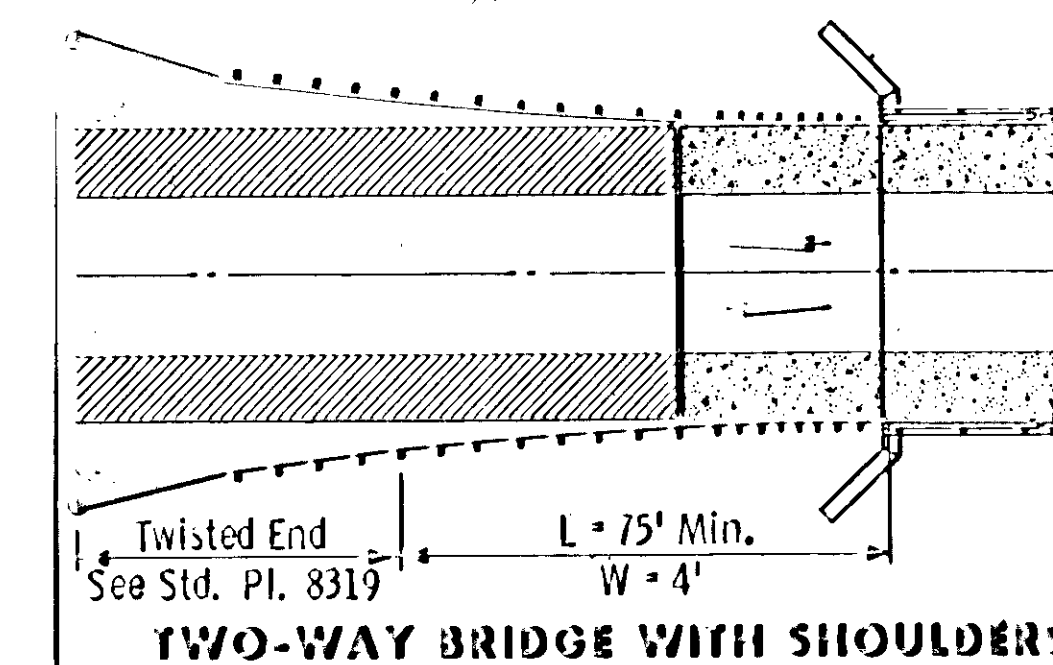
**DEFLECTION BLOCK DETAIL**



**CONSTRUCTION NOTES**

- ① Guardrail Post spacing on all end of bridge: Post spaced at 3'-1 1/2" for a distance of 25' from bridge. Post spaced at 6'-3" for the remainder of the steel plate beam guardrail, design 8307N.
- ② Deleted
- ③ Double Plate beam guardrail for the first 37'-6" (approach end only). The cost of furnishing and installing the double plate beam guardrail as shown on the plans shall be included in the bid price for Traffic Barrier, linear foot, and no additional compensation shall be made.
- ④ Distance from top of bituminous surface to center of plate beam guardrail, 21" typical. Height varies from 21" to 26" in first 25' from bridge to attach to the type J, concrete rail.
- ⑤ The two steel deflection blocks, as shown in the plans, 3" and 2" respectively, shall be constructed of ASTM 1/8" A36 or better grade steel and fastened to the guardrail using 5/8" button-head bolts. The two blocks shall be fabricated (tapered) so that the plate beam is vertical when it is fastened to the type J, concrete rail (see detail). The contractor may alter the shape of the deflection blocks, upon approval of the engineer. The cost of furnishing and installing the deflection blocks as shown on the plans shall be included in the bid price for Traffic Barrier, linear foot, and no additional compensation shall be made.

**GUARDRAIL LAYOUT**



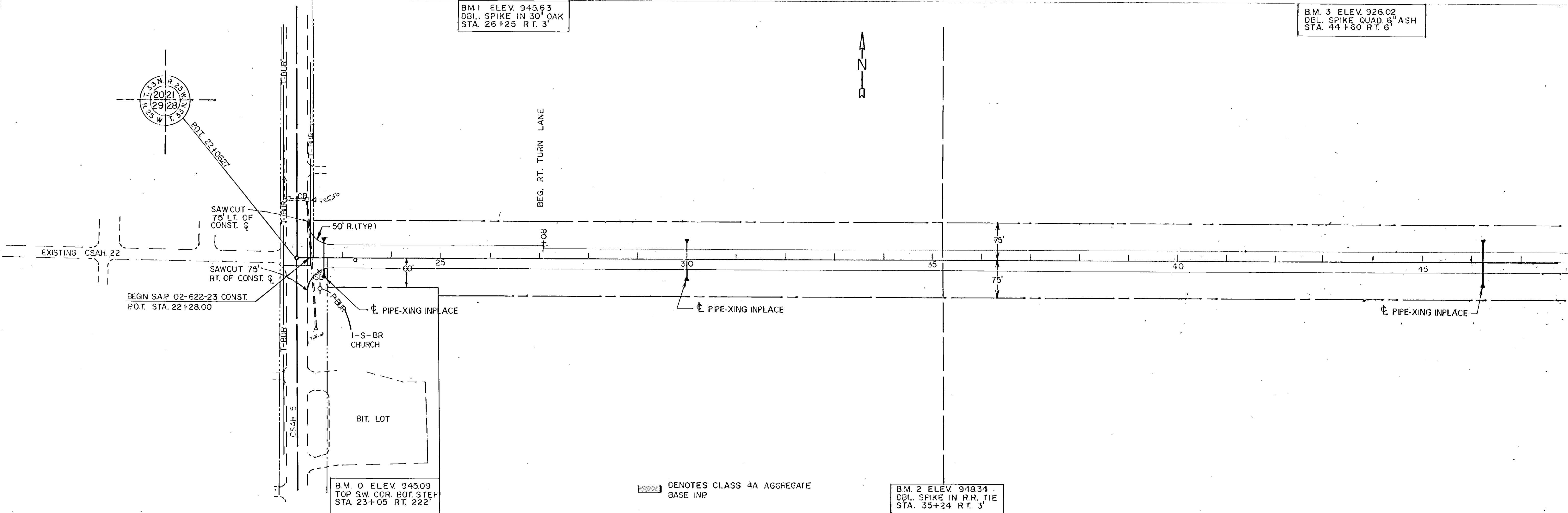
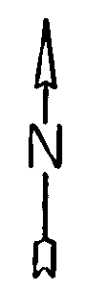
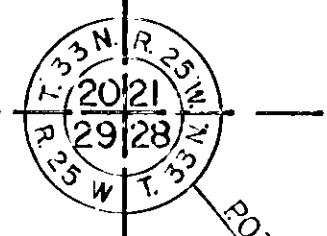
REVISIONS			
DATE	BY	DATE	BY

S.A.P. 02-622-23 S.P. 0206-38 C.P. \_\_\_\_\_



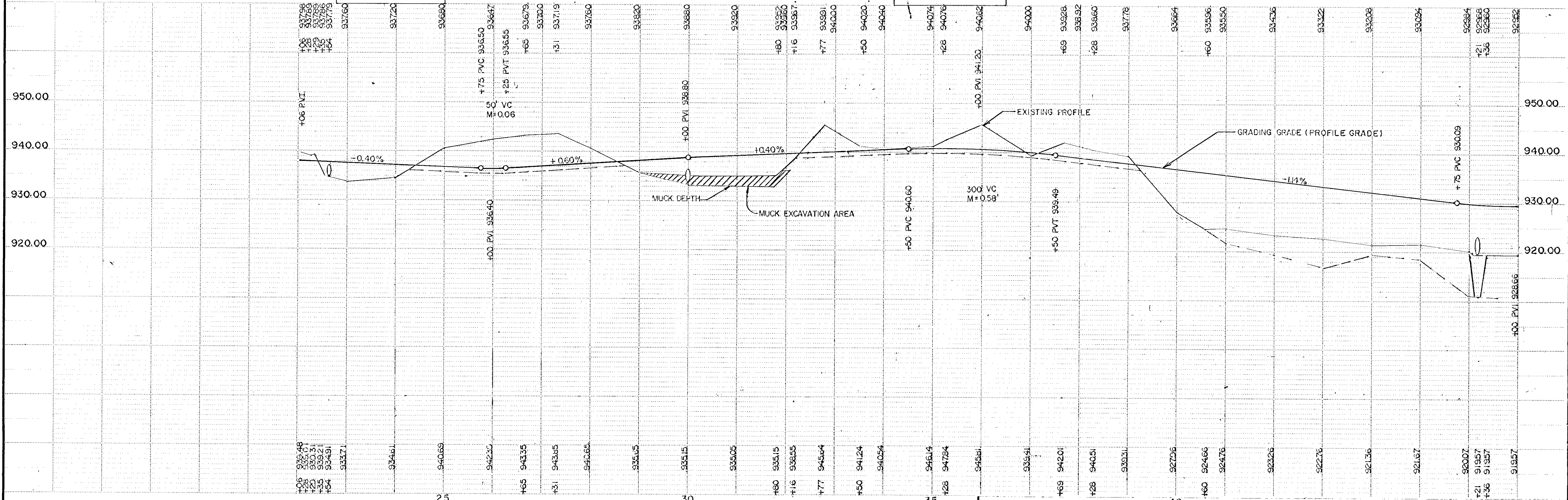
B.M. 1 ELEV. 945.63  
 DBL. SPIKE IN 30' OAK  
 STA. 26+25 RT. 3

B.M. 3 ELEV. 926.02  
 DBL. SPIKE QUAD. 8' ASH  
 STA. 44+60 RT. 6



■ DENOTES CLASS 4A AGGREGATE  
 BASE INP

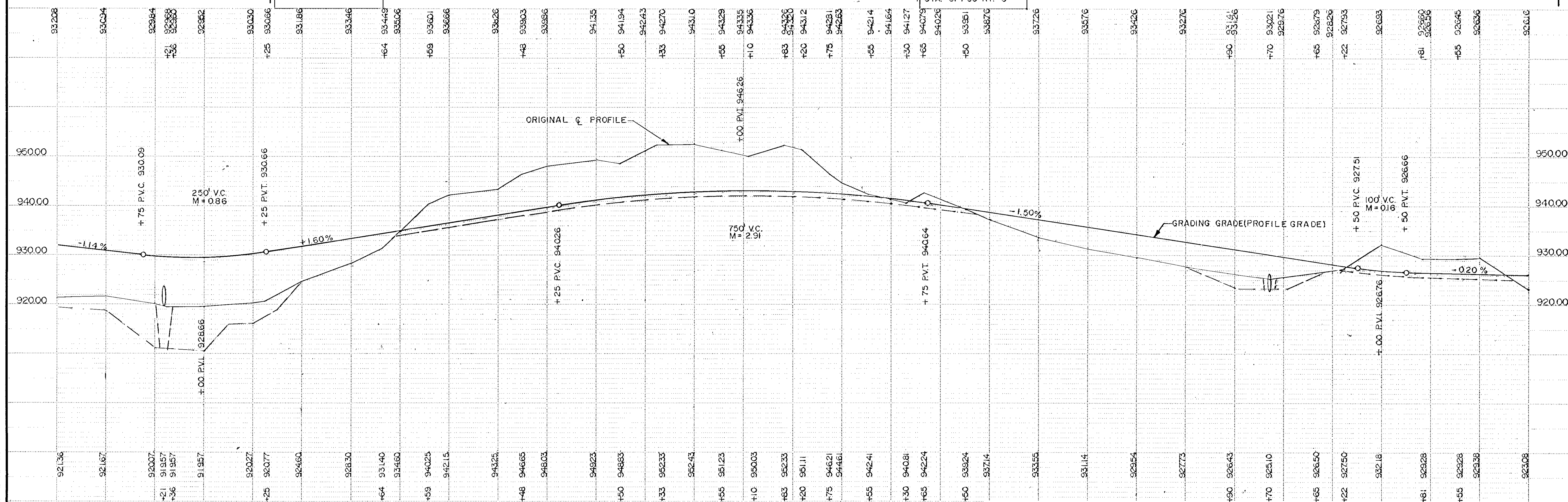
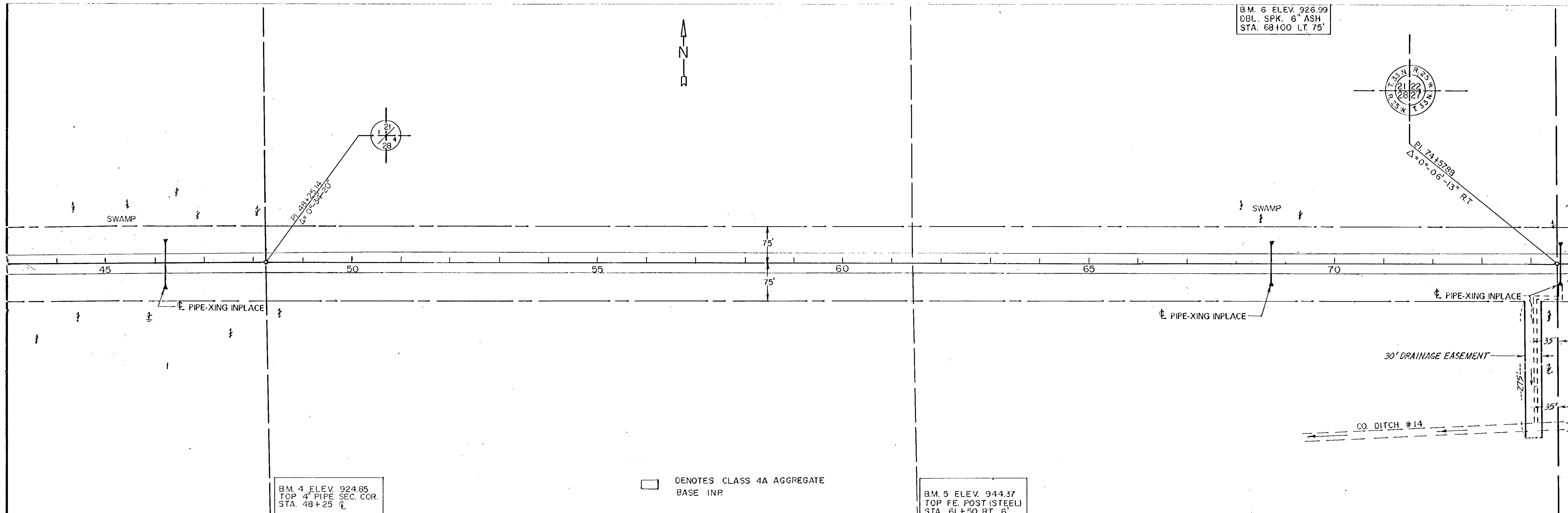
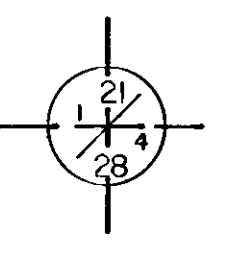
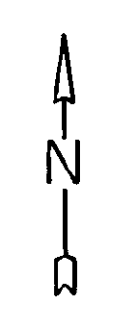
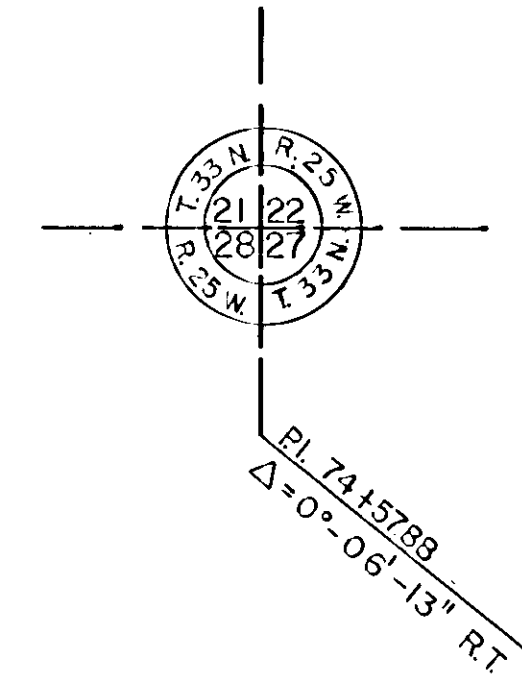
B.M. 2 ELEV. 948.34  
 DBL. SPIKE IN R.R. TIE  
 STA. 35+24 RT. 3



NATIONAL POLYMER & RUBBER CO.



B.M. 6 ELEV. 926.99  
 DBL. SPK. 6" ASH  
 STA. 68+00 LT. 75'



REVISION POST IN 2.30 10/24/24

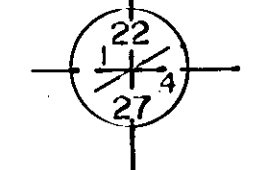
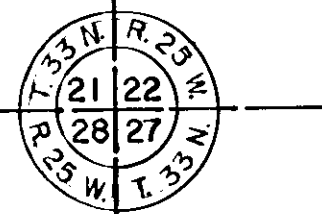


B.M. 7 ELEV. 925.33  
DBL. SPK. 6" POP  
STA. 74+30 LT. 75'

B.M. 10 ELEV. 972.87  
DBL. SPK. 6" ASH  
STA. 93+70 LT. 150'

B.M. 11 ELEV. 954.71  
DBL. SPK. 6" ELM  
STA. 95+00 LT. 150'

B.M. 12 ELEV. 936.40  
DBL. SPK. 10" BIRCH  
STA. 99+10 LT. 120'



B.M. 8 ELEV. 924.31  
DBL. SPK. TRI. 6" ELM  
STA. 80+20 RT. 150'

B.M. 9 ELEV. 955.73  
DBL. SPK. PP  
STA. 88+10 RT. 300'

- DENOTES CLASS 5A AGGREGATE BASE INP.
- DENOTES CLASS 4A AGGREGATE BASE INP.

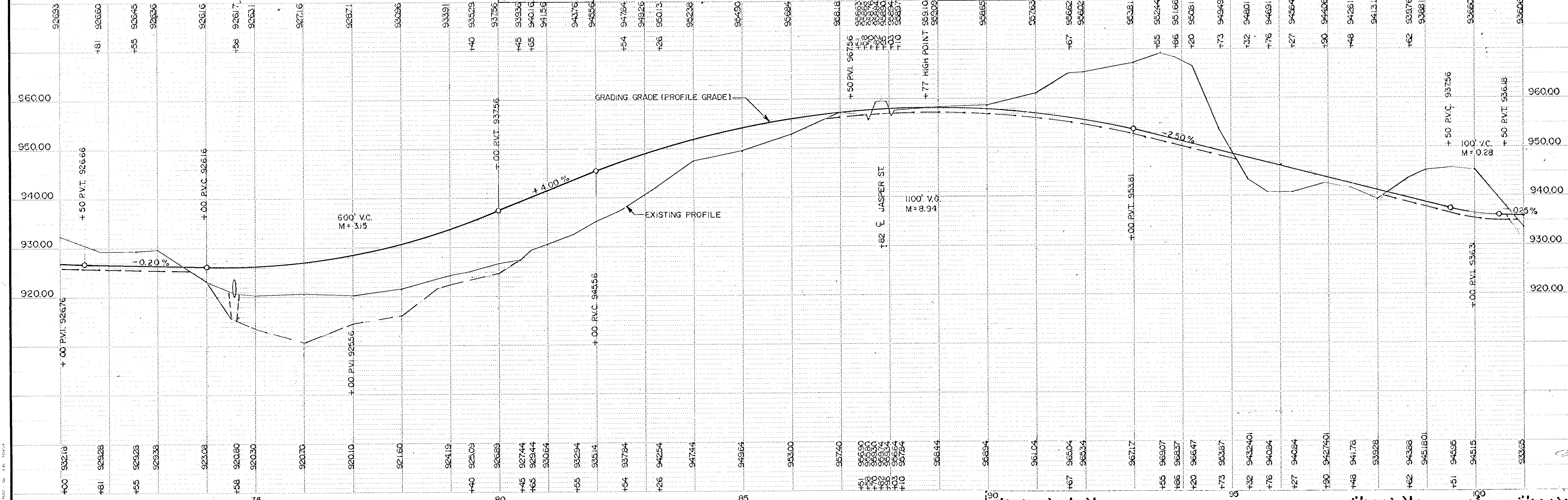
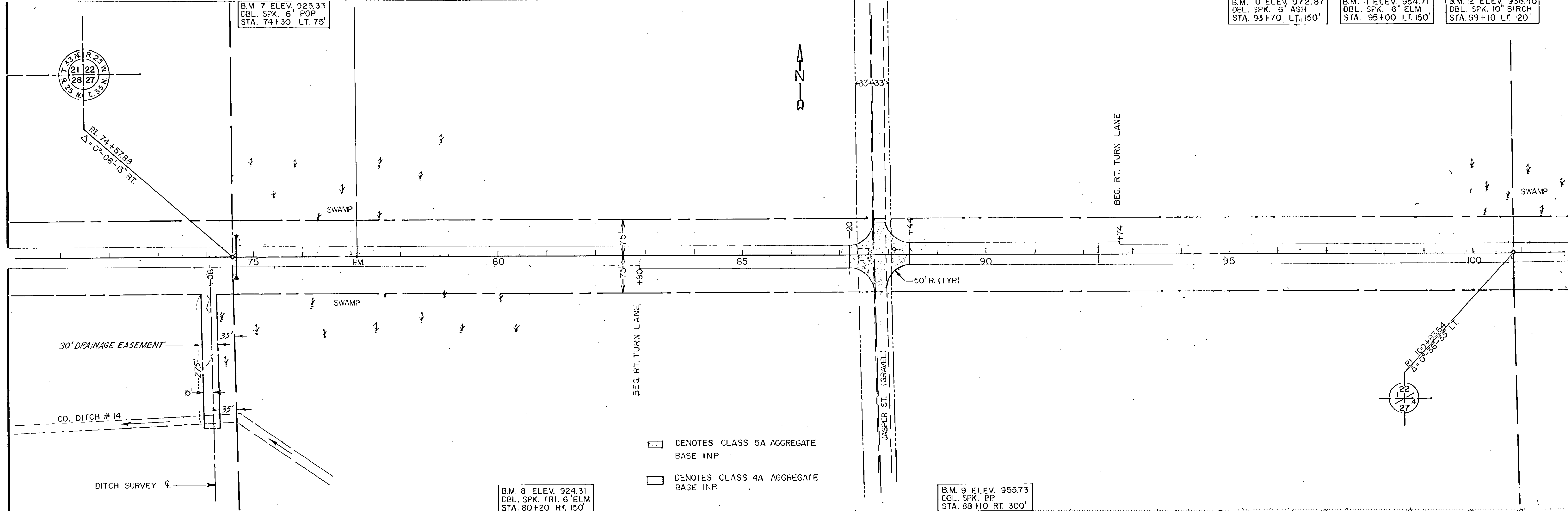


ILLUSTRATION NO. 3-D 10574



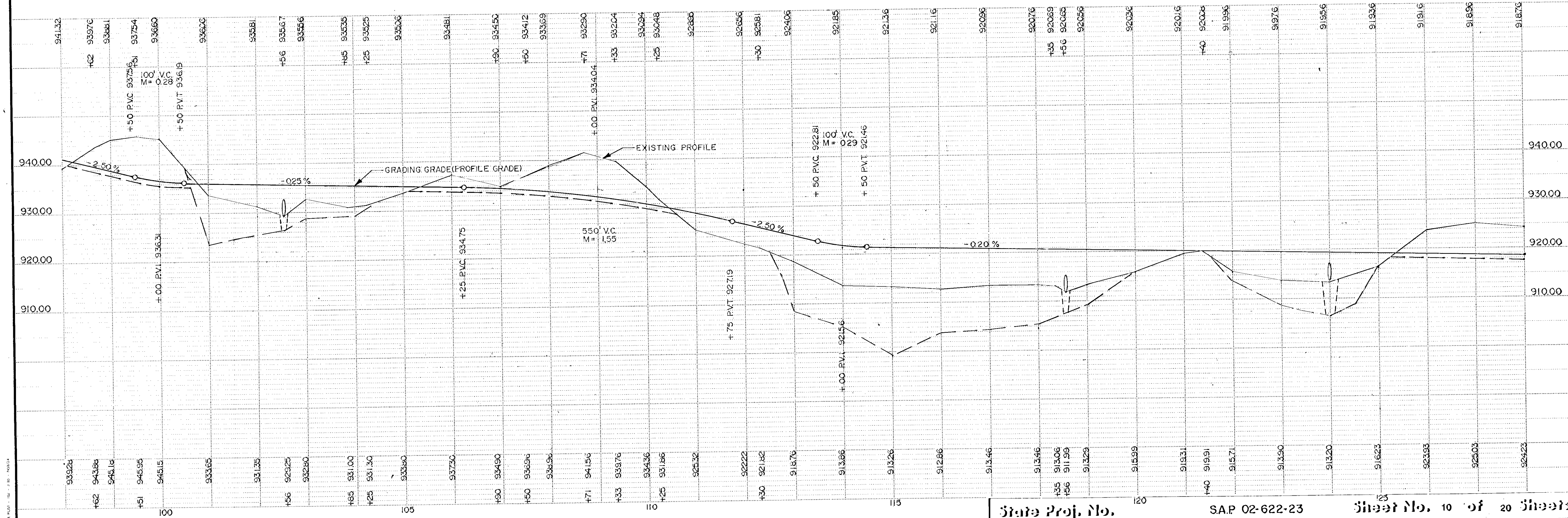
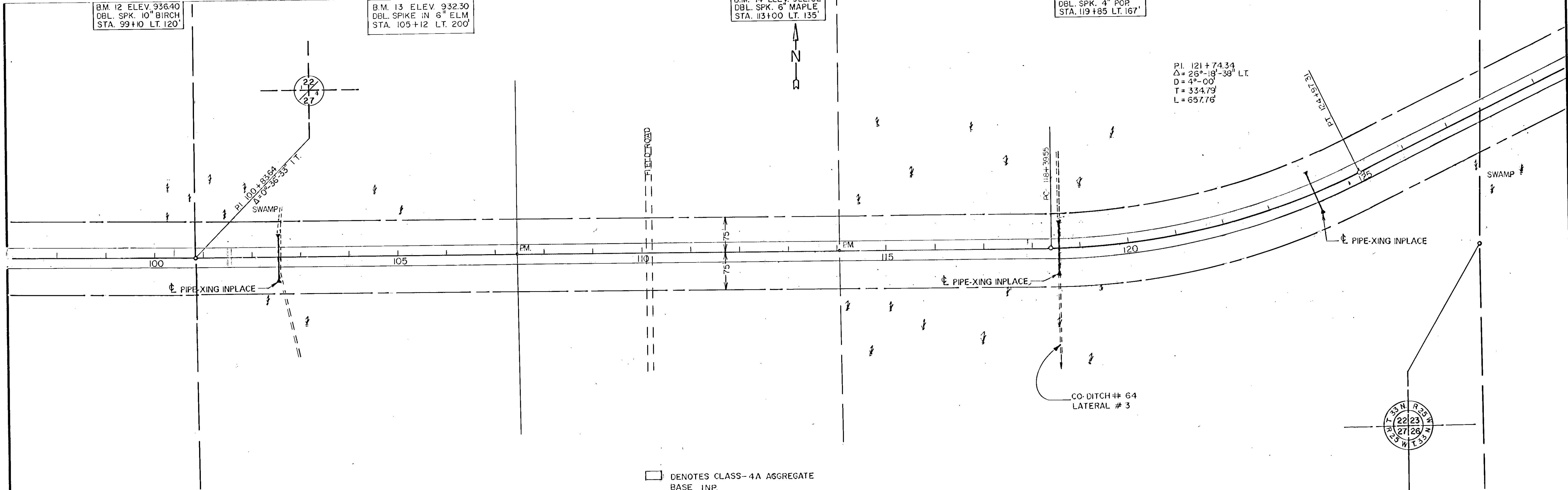
B.M. 12 ELEV. 936.40  
DBL. SPK. 10" BIRCH  
STA. 99+10 LT. 120'

B.M. 13 ELEV. 932.30  
DBL. SPIKE IN 6" ELM.  
STA. 105+12 LT. 200'

B.M. 14 ELEV. 922.02  
DBL. SPK. 6" MAPLE  
STA. 113+00 LT. 135'

B.M. 15 ELEV. 915.73  
DBL. SPK. 4" POP.  
STA. 119+85 LT. 167'

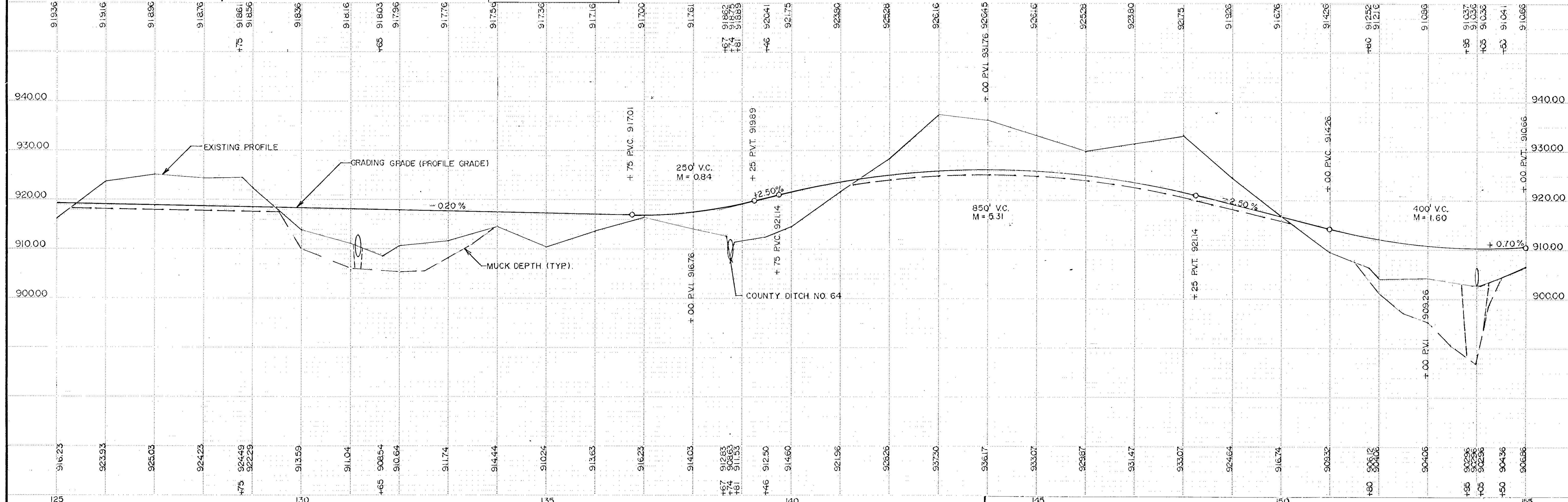
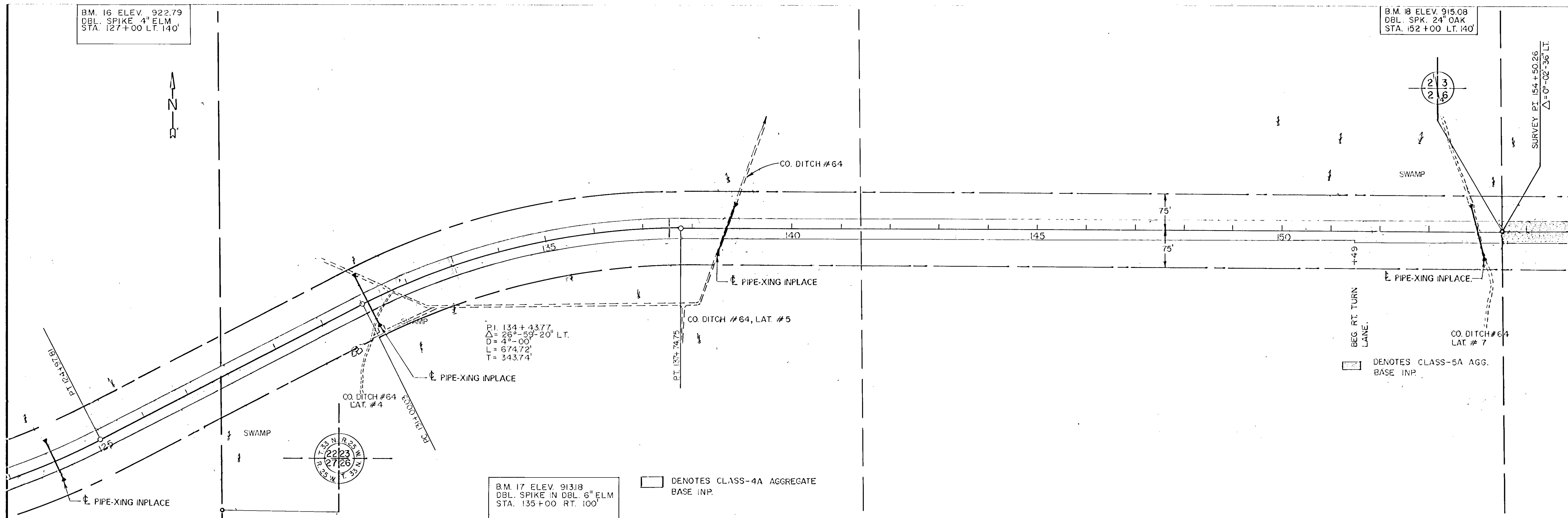
PI. 121+74.34  
 $\Delta = 26^\circ 18' 38''$  LT.  
D = 4°-00'  
T = 334.79'  
L = 657.76'





B.M. 16 ELEV. 922.79  
DBL. SPIKE, 4" ELM.  
STA. 127+00 LT. 140'

B.M. 18 ELEV. 915.08  
DBL. SPK. 24" OAK  
STA. 152+00 LT. 140'

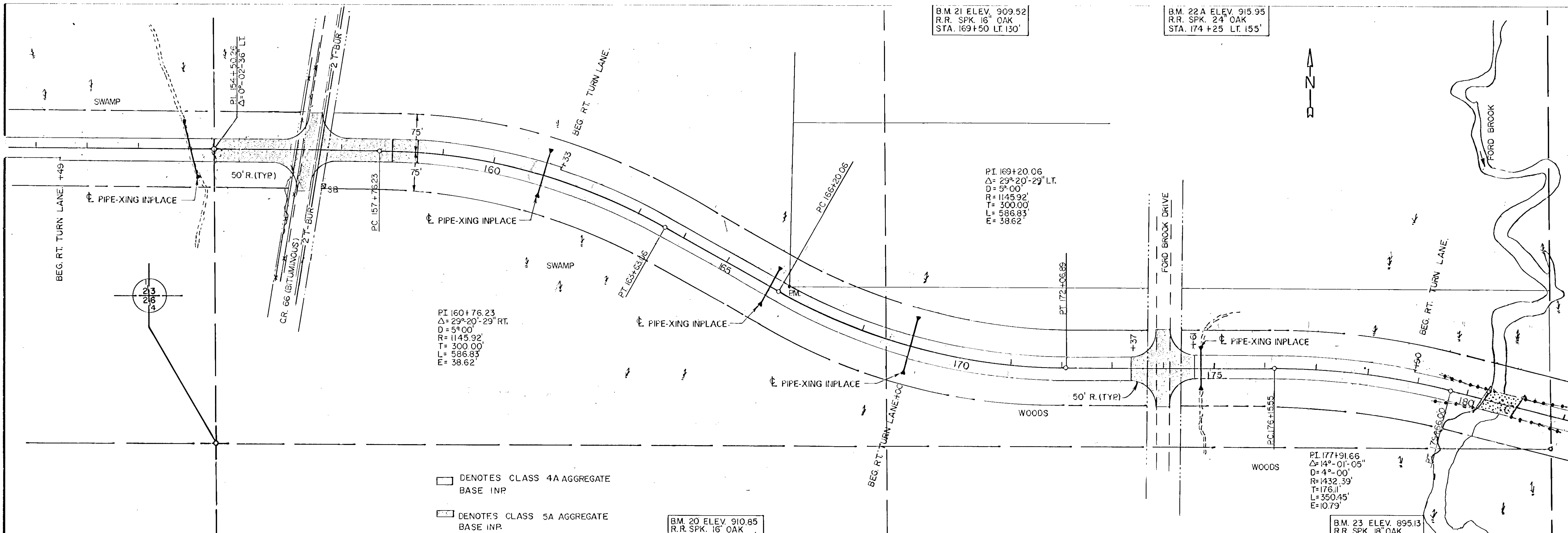


□ DENOTES CLASS-4A AGGREGATE  
BASE INP.

□ DENOTES CLASS-5A AGG.  
BASE INP.

B.M. 21 ELEV. 909.52  
R.R. SPK. 16' OAK  
STA. 169+50 LT. 130'

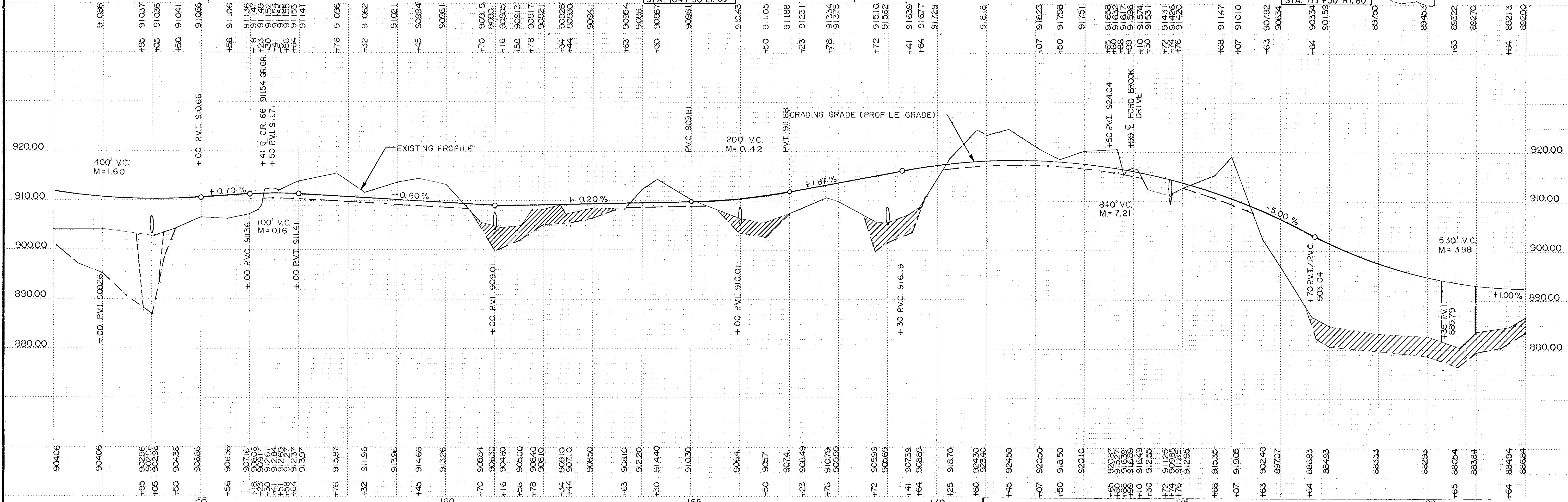
B.M. 22A ELEV. 915.95  
R.R. SPK. 24' OAK  
STA. 174+25 LT. 155'



□ DENOTES CLASS 4A AGGREGATE BASE INP  
 ■ DENOTES CLASS 5A AGGREGATE BASE INP

B.M. 20 ELEV. 910.85  
R.R. SPK. 16' OAK  
STA. 164+30 LT. 80'

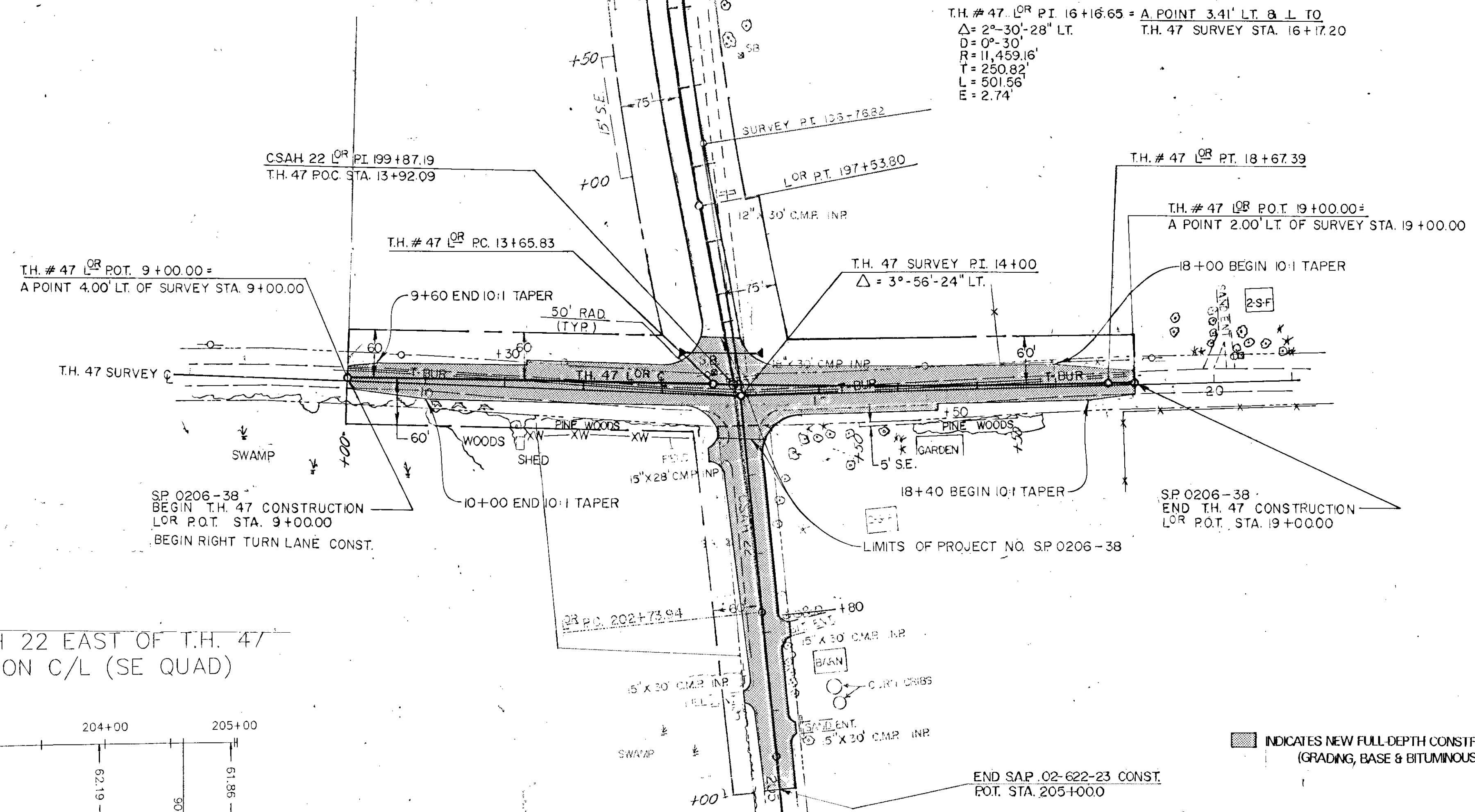
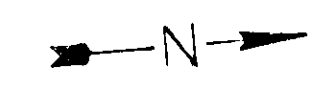
B.M. 23 ELEV. 895.13  
R.R. SPK. 18' OAK  
STA. 177+50 RT. 80'



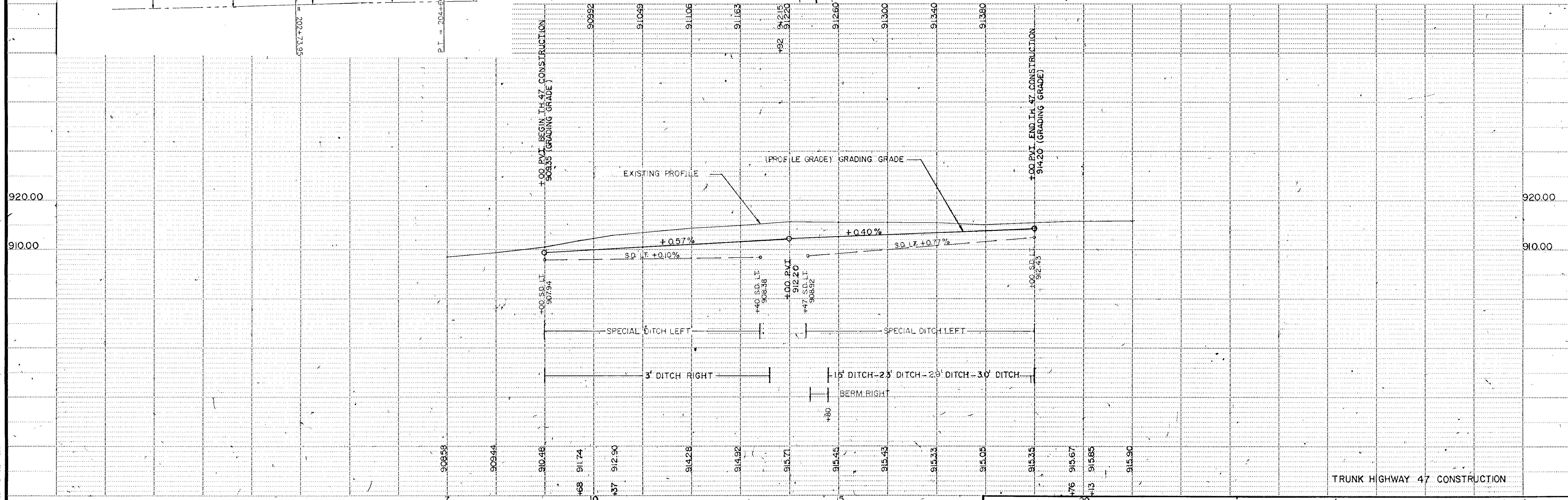
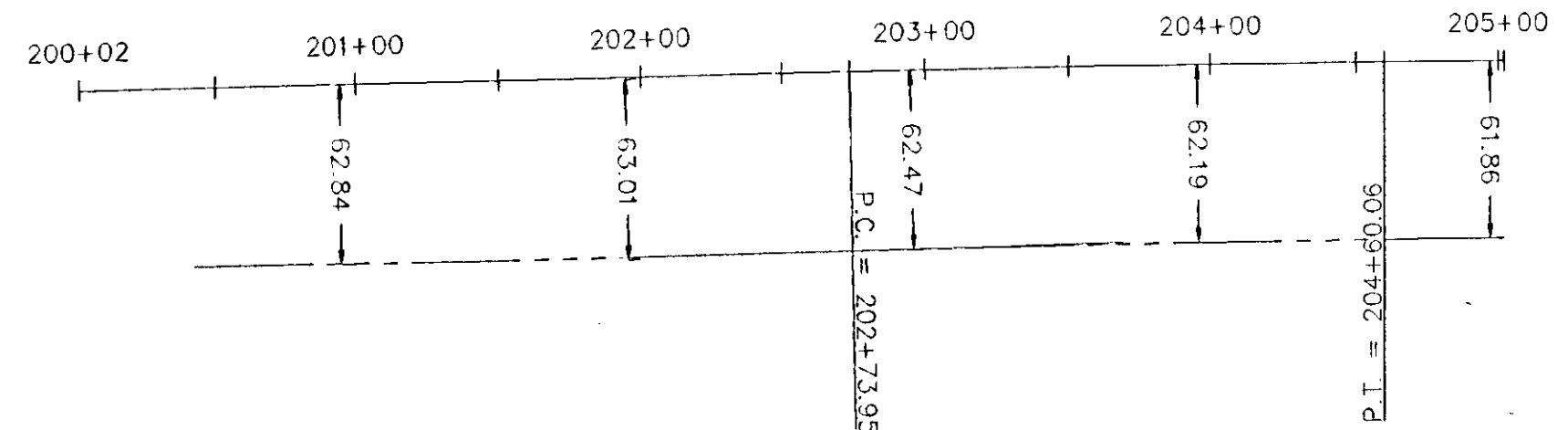




TH. # 47 LOR PI 16+16.65 = A POINT 3.41' LT. & L. TO  
 $\Delta = 2^{\circ}30'28''$  LT.  
 $D = 0^{\circ}30'$   
 $R = 11,459.16'$   
 $T = 250.82'$   
 $L = 501.56'$   
 $E = 2.74'$   
 TH. 47 SURVEY STA. 16+17.20



S.A.P. 02-622-23 CSAH 22 EAST OF T.H. 47  
R/W FROM CONSTRUCTION C/L (SE QUAD)



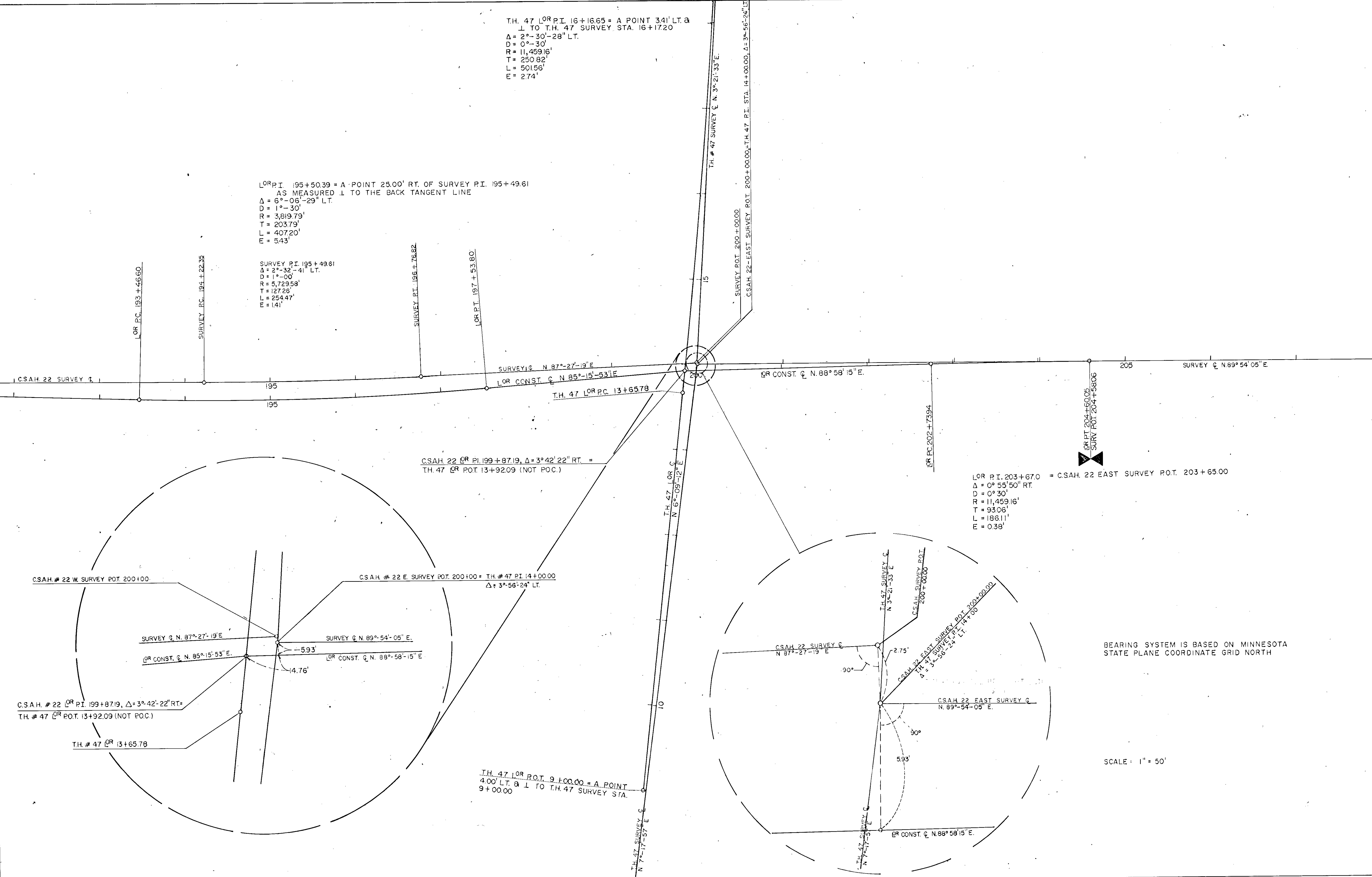
TRUNK HIGHWAY 47 CONSTRUCTION



T.H. 47 LOR P.I. 16+16.65 = A POINT 341' LT. &  
 ⊥ TO T.H. 47 SURVEY STA. 16+17.20  
 Δ = 2°-30'-28" LT.  
 D = 0°-30'  
 R = 11,459.16'  
 T = 250.82'  
 L = 501.56'  
 E = 2.74'

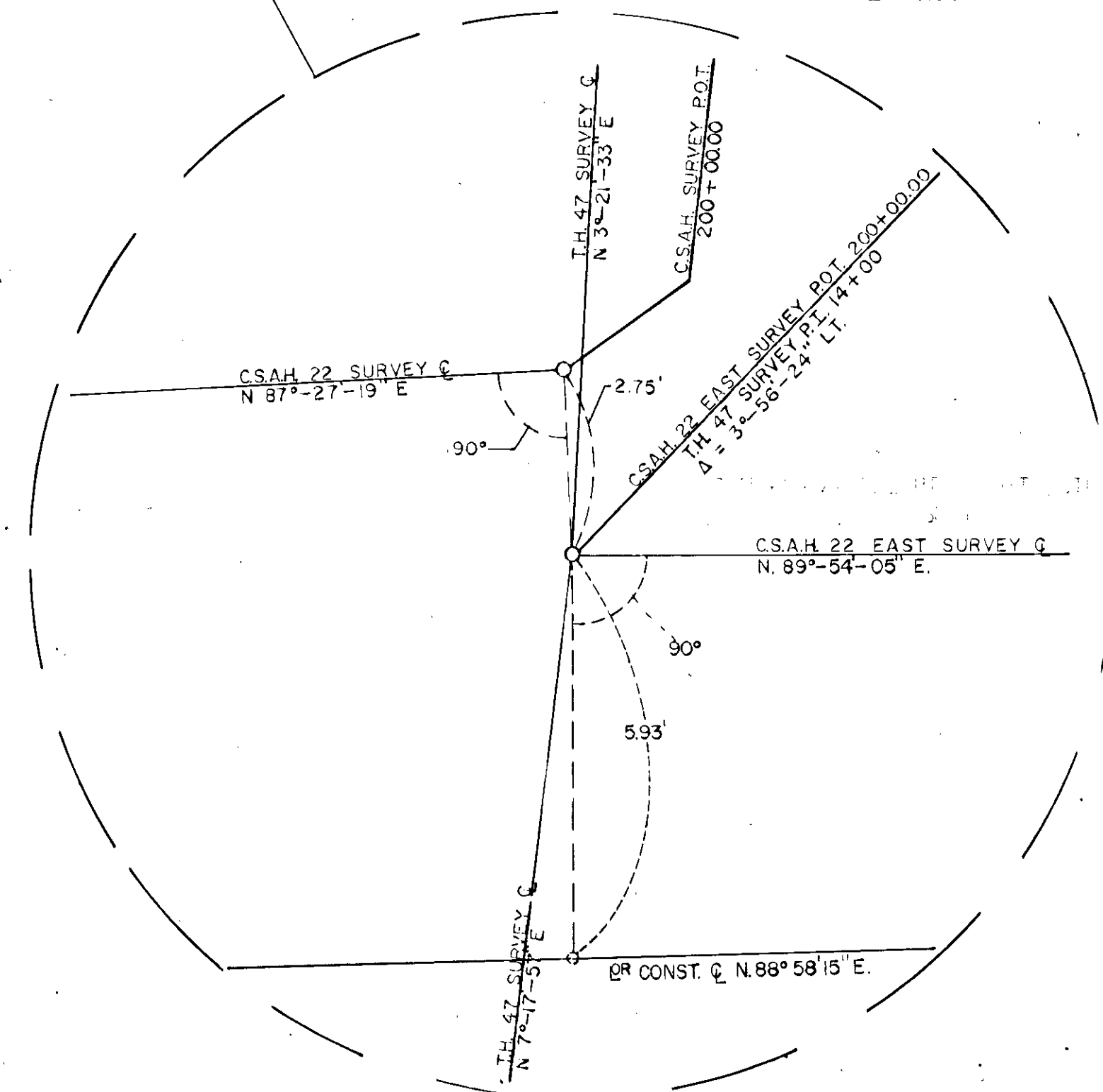
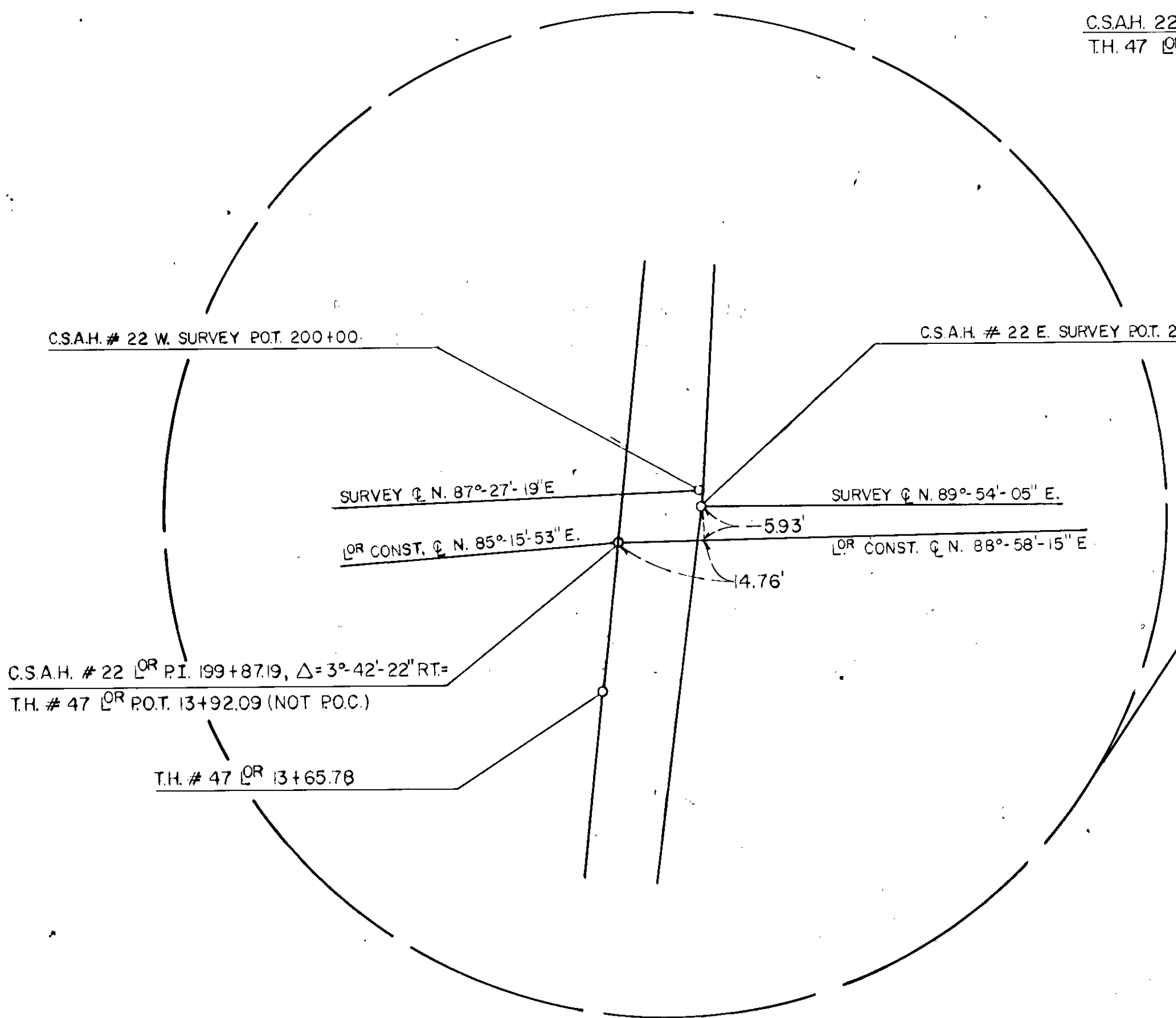
LOR P.I. 195+50.39 = A POINT 25.00' RT. OF SURVEY P.I. 195+49.61  
 AS MEASURED ⊥ TO THE BACK TANGENT LINE  
 Δ = 6°-06'-29" LT.  
 D = 1°-30'  
 R = 3,819.79'  
 T = 203.79'  
 L = 407.20'  
 E = 5.43'

SURVEY P.I. 195+49.61  
 Δ = 2°-32'-41" LT.  
 D = 1°-00'  
 R = 5,729.58'  
 T = 127.26'  
 L = 254.47'  
 E = 1.41'



C.S.A.H. #22 LOR P.I. 199+87.19, Δ = 3°-42'-22" RT. =  
 T.H. 47 LOR P.O.T. 13+92.09 (NOT P.O.C.)

C.S.A.H. #22 W. SURVEY P.O.T. 200+00.00  
 C.S.A.H. #22 E. SURVEY P.O.T. 200+00.00 = T.H. #47 P.I. 14+00.00  
 Δ = 3°-56'-24" LT.



BEARING SYSTEM IS BASED ON MINNESOTA STATE PLANE COORDINATE GRID NORTH

SCALE: 1" = 50'

EXCAVATION EMBANKMENT

Sub-Totals	Cu. Yds.	Cu. Yds.	Sub-Totals
------------	----------	----------	------------

200+19 915.47

357	0
52.70	
TS	0

200+08 915.69

357	0
52.70	
TS	0

199+93 915.46

199+87 = E. TH. 47

203	0
50.63	
TS	0

199+81 915.17

PROFILE GRADE (GRADING GRADE) : . . .

1.0' SUBCUT FOR UNIFORMITY & COMPACTION OF SOILS

199+78 915.17

63	0
50.45	
TS	0

STA. 199+63 BEGIN FULL-DEPTH CONSTRUCTION (GRADING, BASE & BITUMINOUS)

STA. 199+40

F. & I. 28' 1/2" SPAN X 88' R. C. PIPE ARCH CULV. CLASS II A.  
 F. & I. 2-28' 1/2" SPAN R.C. PIPE ARCH CULV. APRON  
 INLET 908.92, OUTLET 908.38

199+00 910.99

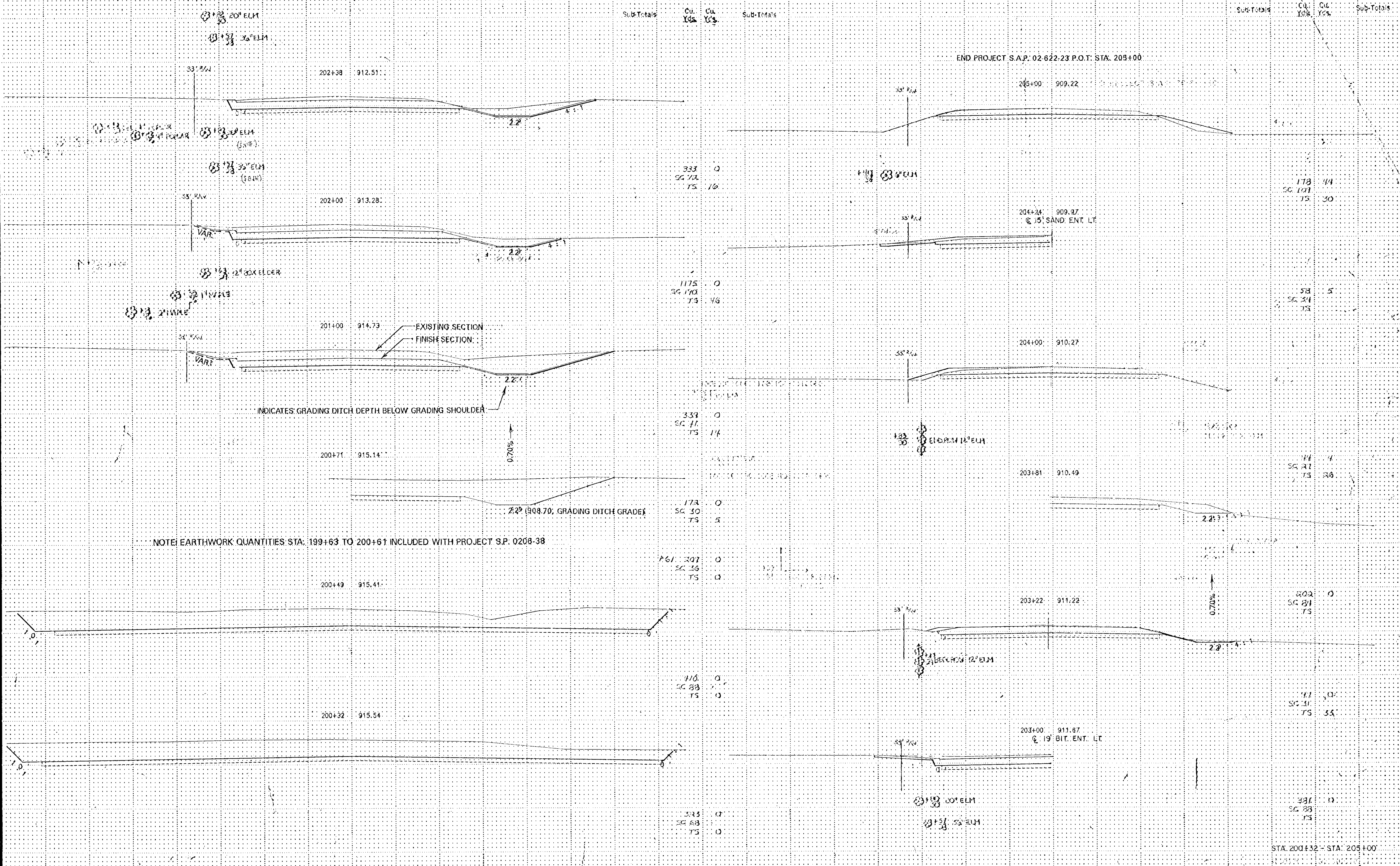
174	0
50.53	
TS	0

STA. 199+00 - STA. 200+19



EXCAVATION EMBANKMENT

EXCAVATION EMBANKMENT



Sub-Totals	Cu. Yds.	Cu. Yds.	Sub-Totals
	333	0	
	SC 173	16	
	TS		
	1175	0	
	SC 170	46	
	TS		
	339	0	
	SC 71	14	
	TS		
	173	0	
	SC 30	5	
	TS		
	161	0	
	SC 36	0	
	TS		
	118	0	
	SC 88	0	
	TS		
	325	0	
	SC 68	0	
	TS		

Sub-Totals	Cu. Yds.	Cu. Yds.	Sub-Totals
	178	44	
	SC 101	30	
	TS		
	58	5	
	SC 34		
	TS		
	11	4	
	SC 27	26	
	TS		
	202	0	
	SC 81		
	TS		
	17	0	
	SC 31	35	
	TS		
	231	0	
	SC 83		
	TS		

NOTE: EARTHWORK QUANTITIES: STA. 199+63 TO 200+61 INCLUDED WITH PROJECT S.P. 0208-38

END PROJECT S.A.P. 02-622-23 P.O.T. STA. 205+00

STA. 200+32 - STA. 205+00



**EXCAVATION EMBANKMENT**  
SUB-TOTALS CU.YDS. SUB-TOTALS

**EXCAVATION EMBANKMENT**  
SUB-TOTALS CU.YDS. SUB-TOTALS

END PROJECT S.P. 0206-38  
 P.O.T. STA. 19+00.00

172 0  
 SC 39  
 TS 21

220 46  
 SC 143  
 TS 33

881 7  
 SC 217  
 TS 15

484 28  
 SC 174  
 TS 16

1054 10  
 SC 174  
 TS 63

313 1  
 SC 208  
 TS 52

708 0  
 SC 114  
 TS 46

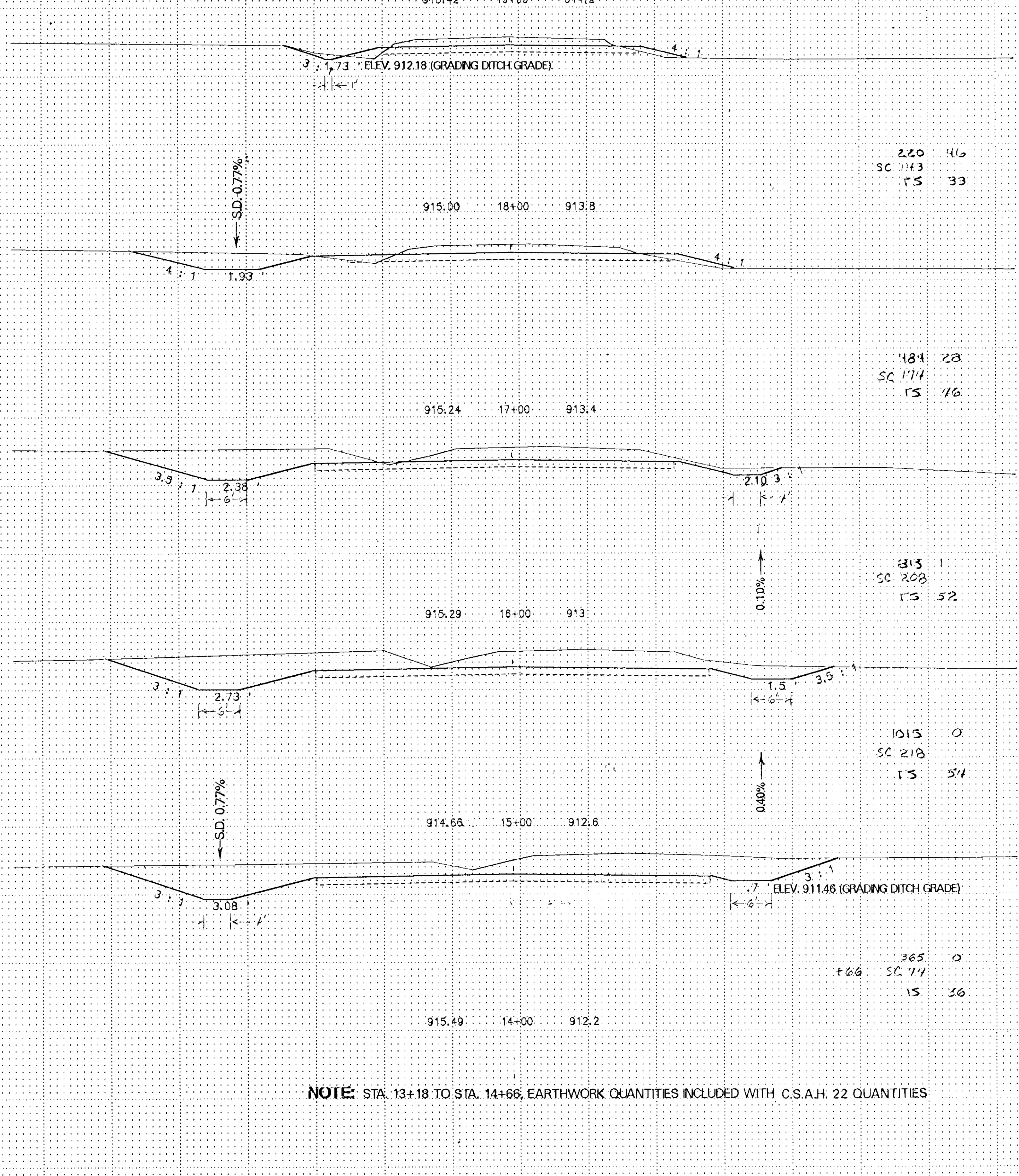
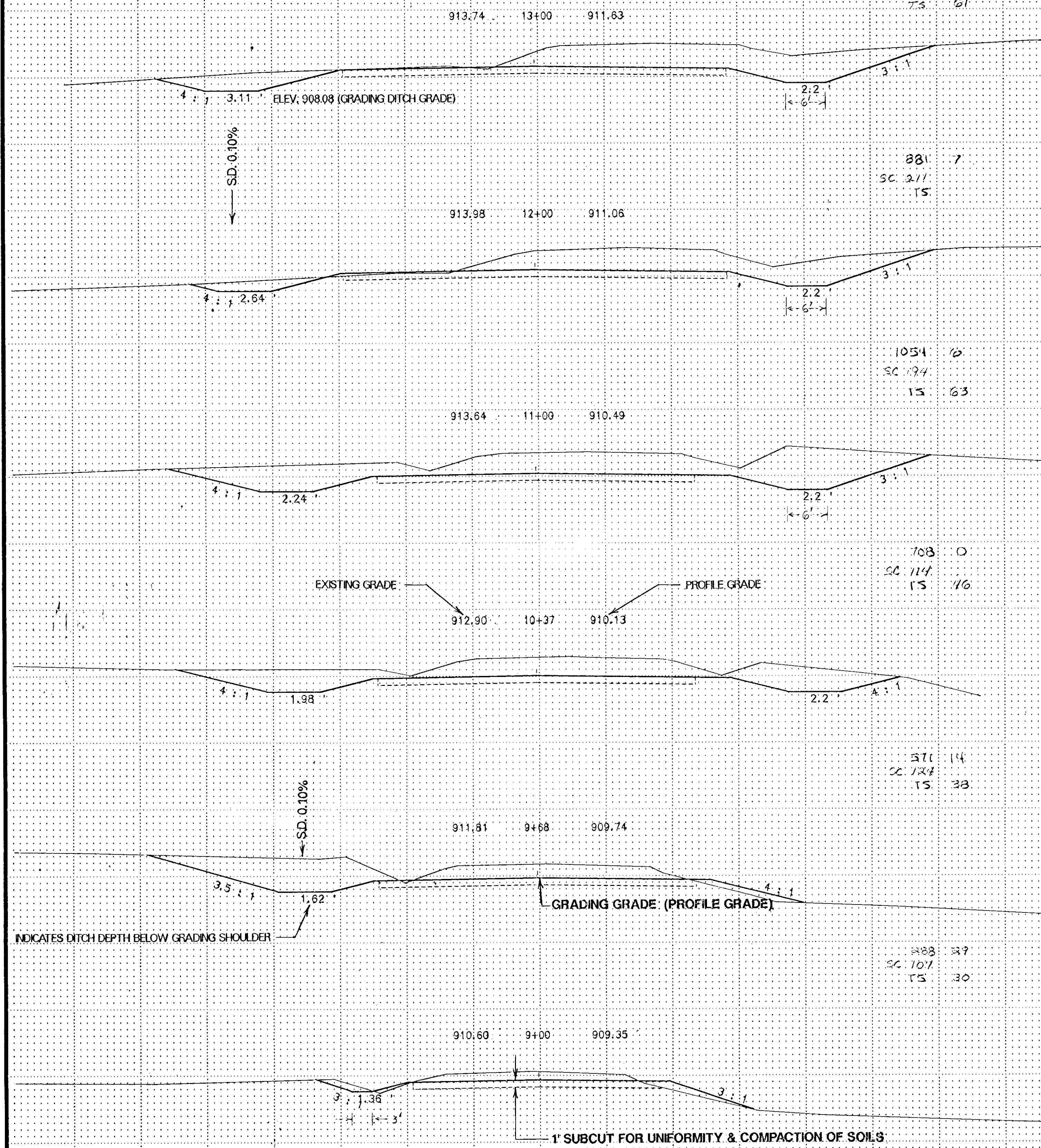
1015 0  
 SC 218  
 TS 54

371 14  
 SC 124  
 TS 38

365 0  
 SC 114  
 TS 36

388 39  
 SC 107  
 TS 30

365 0  
 SC 114  
 TS 36



NOTE: STA. 13+18 TO STA. 14+66, EARTHWORK QUANTITIES INCLUDED WITH C.S.A.H. 22 QUANTITIES

BEGIN PROJECT S.P. 0206-38  
 P.O.T. STA. 9+00.00





M.U.T.C.D. CODE	SIZE		QUANTITY	M.U.T.C.D. CODE	SIZE		QUANTITY	
STEADY RED								
R1-1	48" X 48"		6	M4-8	24" X 12"			
R1-4	18" X 6"			M3-3	24" X 12"		M5-1(R)	
				M1-5A	24" X 24"		M6-1(R)	
					15" X 21"			
YELLOW FLASH								
R11-2	48" X 30"		9	M3-3 / M3-2	24" X 12"			
TYPE III	8 FT.			M1-5A / M1-6	24" X 24"			
					24" X 12"			
YELLOW FLASH				M4-6A	24" X 12"			
R11-4	60" X 30"		2	M4-8	24" X 12"			
M4-10(R)	48" X 18"			M1-6	24" X 24"			
YELLOW FLASH				M4-8	24" X 12"			
R11-3	60" X 30"		2	M3-2	24" X 12"		M5-1(R)	
M4-10(L)	48" X 18"			M1-6	24" X 24"		M5-1(L)	
					15" X 21"		M6-1(R)	
						M6-1(L)	M6-3	
YELLOW FLASH								
W3-1	48" X 48"		3					
YELLOW FLASH				M4-8	24" X 12"		M5-1(R)	
W20-2	48" X 48"		1	M3-4	24" X 12"		M5-1(L)	
				M1-6	24" X 24"		M6-1(R)	
					15" X 21"		M6-1(L)	
							M6-3	
YELLOW FLASH								
W20-2	48" X 48"		2	M3-2	24" X 12"			
				M1-6	24" X 24"			
					24" X 12"			
YELLOW FLASH								
W20-3	48" X 48"		3	M3-4	24" X 12"			
				M1-6	24" X 24"			
					24" X 12"			
YELLOW FLASH								
W20-3	48" X 48"		2					
YELLOW FLASH								
W20-3	48" X 48"		2					
M4-6A	24" X 12"		2					
M4-8	24" X 12"							
M1-5A	24" X 24"							
M4-8	24" X 12"		3					
M1-5A	24" X 24"						M5-1(R)	
	15" X 21"						M5-1(L)	
							M6-1(R)	
							M6-1(L)	
			5			M6-3		