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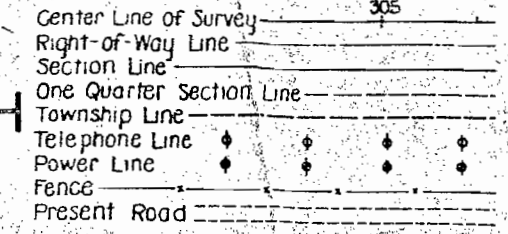
# COLORADO STATE HIGHWAY DEPARTMENT

## PLAN AND PROFILE OF PROPOSED U.S. WORKS PROGRAM HIGHWAY PROJECT NOW P.M.H. 299-H STATE HIGHWAY NO. 6 MESA COUNTY

### SCALES ON ORIGINAL TRACINGS

ON PLAN, 1 IN. = 100 FT.  
ON PROFILE 1 IN. = 100 FT. HORIZONTAL  
1 IN. = 10 FT. VERTICAL  
GRADE LINE ON PROFILE IS SHOWN AS GRADE OF FINISHED ROAD  
GROSS LENGTH OF PROJECT } 21,649.6 FEET = 4.100 MILES  
NET LENGTH OF PROJECT }

### CONVENTIONAL SIGNS

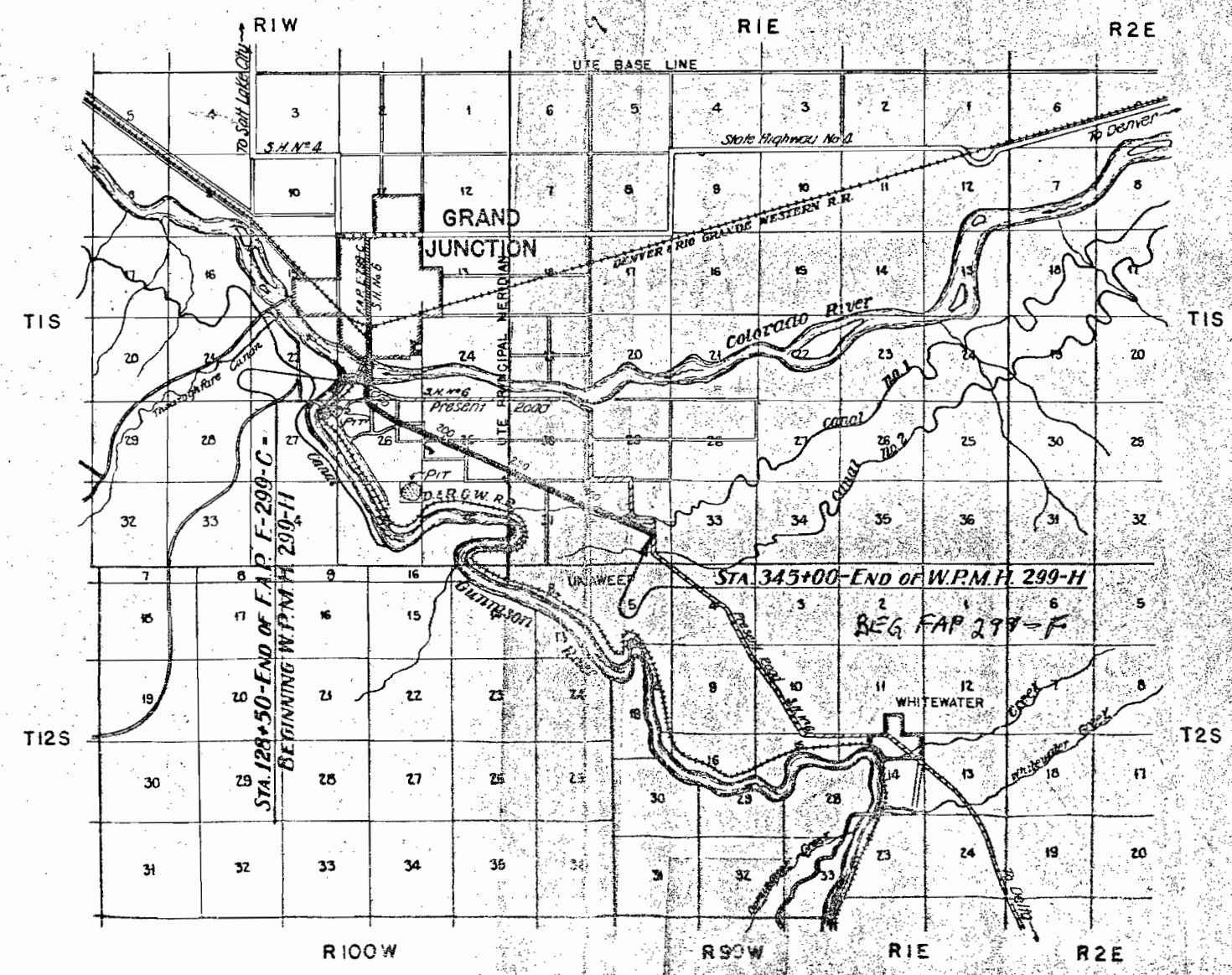


RECEIVED APR 1

COPY TO  
RESIDENT ENGINEER  
APR 18

### NOTE

It is recommended that bidders on this project go over the plan details with one of the following field representatives of this department.  
J.J. Vandemoer, Division Engineer, Grand Junction, Colo.  
A.H. Batten, Resident Engineer, Grand Junction, Colo.



RECOMMENDED FOR APPROVAL  
J. J. Vandemoer  
ASSISTANT  
APPROVED  
Chas. D. V.  
STATE HIGHWAY  
RECOMMENDED FOR APPROVAL  
DIST. ENG. BUREAU PUB.  
RECOMMENDED FOR APPROVAL  
CHAS. D. V.  
APPROVED  
BUREAU PUB.



LIST OF STRUCTURES

| STATION                                                                           |  | DESCRIPTION                                                                                                                                                 | REM. STRUCTURES NO. | EXCAVATION                  |      | STRUCTURAL CULYDS *  | CONCRETE REINFC |                        |            | CORR. METAL CULVERT PIPE |     | CORR. METAL SIPHON PIPE LIN. FT. | WIRE CALD. FENCE LIN. FT. | MISCELLANEOUS                          |
|-----------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------|------|----------------------|-----------------|------------------------|------------|--------------------------|-----|----------------------------------|---------------------------|----------------------------------------|
|                                                                                   |  |                                                                                                                                                             |                     | CU. YDS.                    | EMB. |                      | CL. A           | CL. B                  | STEEL LBS. | 18" 24" 30" 36" 60"      | 18" |                                  |                           |                                        |
| 128+50<br>134+10                                                                  |  | Project Marker<br>18" 183 Siphon (H-45), Remove Str.<br>& Ditches<br>Side Drain & Rd. Approach Lt & Rt<br>Remove Str.                                       | 1<br>1              | 10<br>50                    |      | 50                   | 3.50            |                        | 255        | 36<br>36                 |     | 93.9                             |                           | 1-Project Marker<br>2-18" Trash Guards |
| 135+57<br>138+20                                                                  |  | Cross Culvert (Slew 75) Ditch Change Lt.<br>Remove Str.                                                                                                     | 1                   | 30                          |      | 220                  | 6.75            |                        | 241        |                          |     | 160                              |                           |                                        |
| 139+15<br>139+25<br>139+35<br>139+85<br>145+93                                    |  | Road Approaches Lt & Rt<br>Road Drain & Road Appr. Lt & Rt<br>Side Drains & Road Appr. Lt & Rt                                                              | 1<br>1<br>1         | 50<br>6500                  |      |                      |                 |                        |            |                          |     |                                  |                           |                                        |
| 149+30-155+85<br>149+31<br>149+60-156+25<br>153+00<br>155+80                      |  | Ditch Change, Lt<br>Cross Culvert (Slew 65), & Ditches<br>Ditch Change, Rt<br>Side Drain & Road Appr. Rt & Lt<br>Cross Culvert & Ditch Change Rt & Lt       |                     | 75<br>180<br>10<br>75<br>50 |      | 15                   |                 | 1.10                   |            | 60<br>60<br>60<br>62     |     |                                  |                           |                                        |
| 156+50<br>156+55<br>156+70-161+70<br>157+00<br>161+70                             |  | Cross Culvert (Slew 64)<br>Side Drain, Left<br>Intercepting Ditch, Left<br>Side Drain, Rt<br>Road Appr. Rt & Lt                                             | 1                   | 5<br>100<br>150             |      | 25<br>10<br>10       |                 | 3.00                   |            | 100<br>30<br>30          |     |                                  |                           |                                        |
| 161+80<br>162+80-164+30<br>164+80<br>169+35-171+00<br>171+10                      |  | Cross Culvert & Ditch Change Rt & Lt<br>Ditch Change, Left<br>Cross Culvert & Ditch Change Rt & Lt<br>Ditch Change, Rt<br>Road Appr. Rt & Lt, Beam Str.     |                     | 5<br>15<br>10<br>15<br>100  |      | 5<br>10<br>15        |                 | 1.10                   |            | 70<br>70<br>70<br>30     |     |                                  |                           |                                        |
| 172+00<br>183+32<br>185+70<br>186+00-192+80<br>186+50                             |  | Cross Culvert & Ditch Change<br>Road Appr. Lt & Rt<br>Ditch Change, Left<br>Cross Culvert                                                                   | 1                   | 5<br>80                     |      | 10<br>5<br>10        |                 | 1.10                   |            | 50<br>68<br>64           |     |                                  |                           |                                        |
| 186+50-193+30<br>189+83<br>193+00<br>200+24<br>200+40                             |  | Ditch Change, Right<br>Cross Culvert (Slew 65)<br>Cross Culvert (Slew 65)<br>Cross Culvert (Slew 67)<br>Side Drain, Left                                    |                     | 80                          |      | 10<br>10<br>20<br>10 |                 | 1.10                   |            | 58<br>68<br>64<br>30     |     |                                  |                           |                                        |
| 201+80<br>204+00<br>205+00-213+00<br>212+90<br>213+50                             |  | Rd. Appr. Rt & Lt, Side Drain Lt<br>Cross Culvert & Ditch Change Rt & Lt<br>Intercepting Ditch, Lt<br>Side Drain Lt<br>Cross Culvert (Slew 55)              |                     | 100<br>15<br>160            |      | 10<br>10<br>50       |                 | 3.00                   |            | 70<br>58<br>30           |     |                                  |                           |                                        |
| 213+75<br>213+80-228+25<br>244+10-225+50<br>221+52<br>225+50                      |  | Side Drain, Rt & Lt<br>Intercepting Ditch Lt<br>Intercepting Ditch Rt<br>Cross Culvert (Slew 68)<br>Cross Culvert & Ditches                                 |                     | 300<br>220<br>10            |      | 20<br>10<br>10       |                 |                        |            | 130<br>130<br>56<br>56   |     |                                  |                           |                                        |
| 228+55<br>228+60-238+30<br>228+84<br>229+00-235+50<br>232+00                      |  | Cross Culvert (Slew 68)<br>Ditch Change, Left<br>Cross Culvert (Slew 68)<br>Ditch Change, Right<br>Cross Culvert & Ditches                                  |                     | 110<br>85<br>5              |      | 10<br>10<br>5        |                 | 1.10                   |            | 62<br>62<br>54           |     |                                  |                           |                                        |
| 235+50<br>236+78<br>237+10-237+82<br>238+10<br>239+45-239+17                      |  | Cross Culvert & Ditches<br>Cross Culvert (Slew 22)<br>Wire Cable Guard Fence, Rt<br>Cross Culvert (Slew 22)<br>Wire Cable Guard Fence, Lt                   |                     | 5                           |      | 10<br>10<br>50       |                 | 1.10                   |            | 54<br>54<br>146          |     | 72<br>72                         |                           | 2-18" Trash Guards                     |
| 239+50<br>239+60-260+80<br>239+75<br>240+00-270+30<br>249+34                      |  | Side Drain, Right<br>Ditch Change, Right<br>Side Drain, Left<br>Ditch Change, Left<br>Cross Culvert (Slew 68)                                               |                     | 340<br>350                  |      | 10<br>10             |                 |                        |            | 30<br>30                 |     |                                  |                           |                                        |
| 252+86<br>256+56<br>256+78<br>261+10                                              |  | Cross Culvert (Slew 68)<br>Cross Culvert (Slew 68)<br>Cross Culvert (Slew 69) & Ditches<br>18" 183 Siphon (H-20) & Ditch Change<br>Right, Left              |                     | 10<br>30                    |      | 10<br>10<br>60       |                 | 1.10                   |            | 58<br>56<br>56           |     | 92.4                             |                           |                                        |
| 270+25<br>270+35<br>270+60<br>271+10<br>271+33                                    |  | Road Approach Left<br>Cross Culvert & Ditches Boxes, Rt & Lt<br>Side Drain, Right<br>Rd. Appr. Lt & Rt, Remove Str.<br>Cross Culvert (Slew 62), Remove Str. | 1<br>1              | 50<br>100                   |      | 20<br>10             |                 | 3.50<br>12.80<br>12.40 | 255        | 102<br>98<br>64          |     |                                  |                           |                                        |
| 271+70<br>273+10<br>278+30<br>278+40<br>282+50                                    |  | Road Appr. Lt & Rt<br>Side Drain Left<br>Road Appr. Lt & Rt<br>Cross Culvert (Slew 62)<br>Cross Culvert & Ditch Change                                      |                     | 100<br>100                  |      | 15<br>15             |                 | 1.10                   |            | 24<br>60<br>60           |     |                                  |                           |                                        |
| 285+90<br>290+03<br>293+80<br>297+80<br>300+00                                    |  | Cross Culvert (Slew 62)<br>Cross Culvert (Slew 45)<br>Cross Culvert & Ditch Change<br>18" 183 Siphon (H-55) & Ditch Change<br>Cast Iron Box Drain Line &    |                     | 20<br>20<br>20              |      | 10<br>10<br>50       |                 | 1.10                   |            | 60<br>100<br>62          |     | 94.5                             |                           | 2-18" Trash Guards                     |
| 300+67<br>300+67<br>301+00<br>301+29                                              |  | Fill Septic Tank, Right<br>Road Appr. Right<br>Cross Culvert (Slew 62)<br>Rd. Appr. Rt & Lt                                                                 |                     | 50<br>100                   |      | 50<br>25             |                 |                        |            |                          |     |                                  |                           | 104" 4" C.I. Pipe                      |
| 302+14<br>306+19<br>306+35<br>306+35-308+00<br>309+80                             |  | Cross Culvert (Slew 62)<br>Cross Culvert & Ditch Change<br>Cross Culvert & Ditch Change<br>Intercepting Ditch, Right<br>Cross Culvert & Channel Change      |                     | 10<br>10<br>10<br>40        |      | 20<br>15             |                 | 1.10                   |            | 80<br>80<br>54<br>84     |     |                                  |                           |                                        |
| 311+80<br>319+75<br>323+00-328+00<br>323+25<br>323+30-327+00                      |  | Cross Culvert & Ditch Change<br>6" 12" 12" C.B.C. & Channel Change<br>Ditch Change, Left<br>Cross Culvert (Slew 62)<br>Intercepting Ditch, Right            |                     | 10<br>50<br>55              |      | 20<br>156<br>10      |                 | 1.10<br>38.71          |            | 64<br>60                 |     |                                  |                           |                                        |
| 326+00<br>328+00<br>330+50-343+40<br>331+80                                       |  | 18" 183 Siphon (H-9) & Ditches<br>Cross Culvert<br>Road Appr. Lt & Rt<br>Ditch Change, Left                                                                 |                     | 10<br>140<br>5              |      | 65<br>10<br>10       |                 | 3.50                   |            | 255<br>60                |     | 93.0                             |                           | 2-18" Trash Guards                     |
| 331+80-344+40<br>338+06<br>338+12<br>342+00<br>344+65                             |  | Intercepting Ditch, Right<br>Cross Culvert (Slew 62)<br>Cross Culvert (Slew 62)<br>18" 183 Siphon (H-65)<br>Cross Culvert                                   |                     | 260                         |      | 10<br>10<br>60<br>10 |                 | 1.10                   |            | 60<br>60<br>86           |     |                                  |                           |                                        |
| 137+00-139+32<br>137+10-139+80<br>139+80-141+00<br>141+00-141+00<br>141+00-141+00 |  | Wire Cable Guard Fence, Left<br>Wire Cable Guard Fence, Right<br>Wire Cable Guard Fence, Left<br>Wire Cable Guard Fence, Right<br>Road Appr. Lt & Rt        |                     | 2500                        |      |                      |                 |                        |            |                          |     | 232<br>241<br>286<br>120<br>40   |                           | 2-18" Trash Guards                     |

FOR EMBANKMENT REQUIREMENTS

# IRRIGATION DIVISION BOXES



The estimated overhaul on borrow is shown in the tabulation below. If the Contractor, for his own convenience elects to use pits other than those designated, actual overhaul will be paid, provided however that overhaul in excess of the Department's plan will not be allowed.

| MATERIAL REQUIRED<br>Station to Station | QUANTITY<br>Cu. Yds. | SOURCE            | OVERHAUL |          |
|-----------------------------------------|----------------------|-------------------|----------|----------|
|                                         |                      |                   | Sta Yds  | Yd Miles |
| 139+15 ~ 141+00                         | 5546                 | Spoil Bank A.B.C. | 61010    | 1180     |
| 158+10 ~ 159+90                         | 954                  | " " A.B.C         | 8110     |          |
| 159+90 ~ 166+95                         | 4454                 | " " C             | 48970    | 410      |
| 171+30 ~ 184+00                         | 2843                 | " " C             | 31030    | 290      |
| 184+00 ~ 193+50                         | 3839                 | " " E.F           | 41110    | 200      |
| 193+50 ~ 199+55                         | 2422                 | " " F             | 28840    | 370      |
| 200+59 ~ 201+00                         | 124                  | " " F             | 1360     | 10       |
| 201+00 ~ 210+00                         | 3154                 | " " F             | 34690    | 420      |
| 210+00 ~ 212+00                         | 513                  | " " G             | 770      |          |
| 213+00 ~ 244+00                         | 4338                 | " " G             | 38850    | 480      |
| 244+00 ~ 252+00                         | 2133                 | " " M             | 23390    | 840      |
| 261+00 ~ 271+00                         | 952                  | " " M             | 10470    | 30       |
| 271+00 ~ 275+00                         | 941                  | " " M             | 5950     |          |
| TOTALS                                  | 52013                |                   | 334350   | 4230     |



All work shall be done according to Specifications of the Colorado State Department, adopted August 1, 1935.

All concrete shall be class \_\_\_\_\_.

Forms for concrete surfaces shall be \_\_\_\_\_.

finished work shall be constructed of tongue and groove lumber S3S \_\_\_\_\_.

All exposed surfaces shall be \_\_\_\_\_.

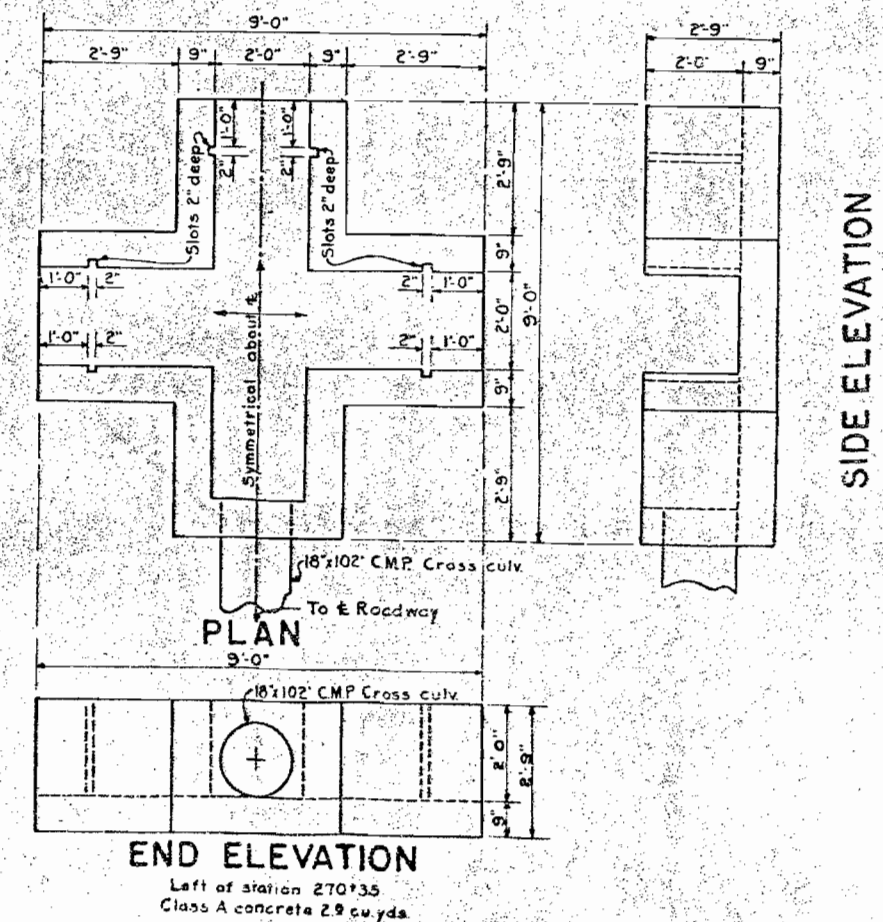
all form marks \_\_\_\_\_.

All exposed corners shall be beveled \_\_\_\_\_.

98" CMP side drain \_\_\_\_\_.

All construction joints shall be \_\_\_\_\_.

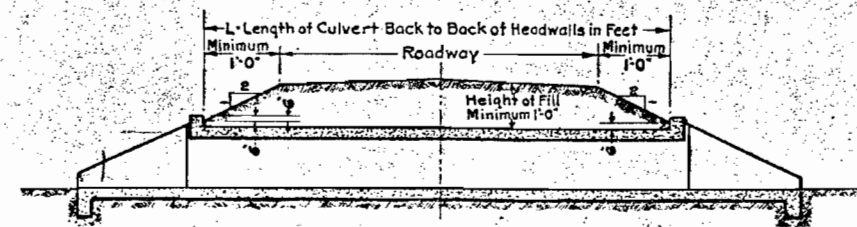
cleaned before fresh concrete is placed \_\_\_\_\_.



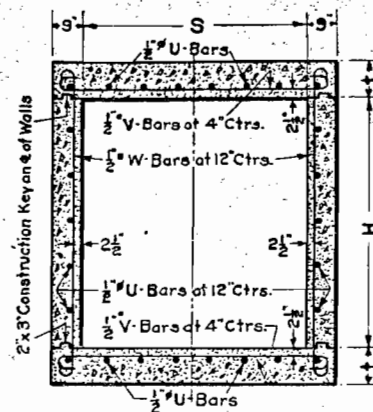
Revised Nov. 26, 1934 - Headwall  
Steel, ALC & etc.  
REVISED 3-18-35 W.K.D. DEFORMED BARS.  
REVISED 9-16-35 H.S.D. (NEW SPECIFICATIONS)

# STANDARD M-103-D

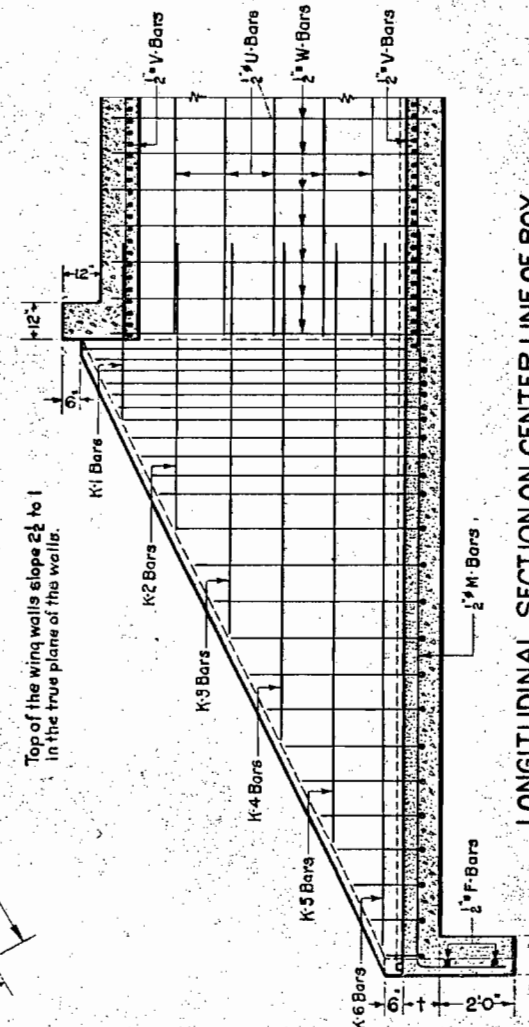
| FED. ROAD DIST. No. | STATE | PROJ. No. | SHEET No. |
|---------------------|-------|-----------|-----------|
| 3                   | COLO  | 299H      | 5         |



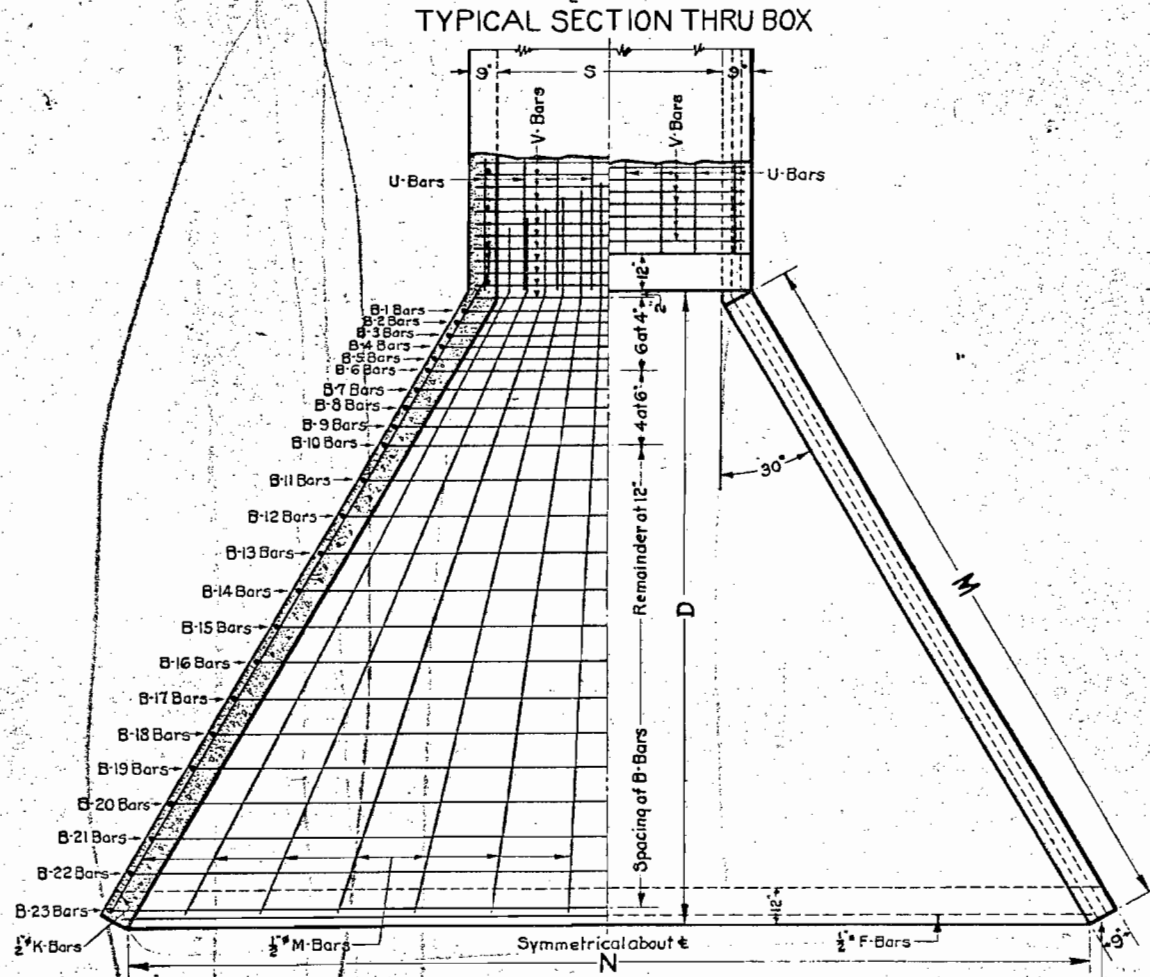
TYPICAL SECTION SHOWING RELATION OF CULVERT TO ROADWAY



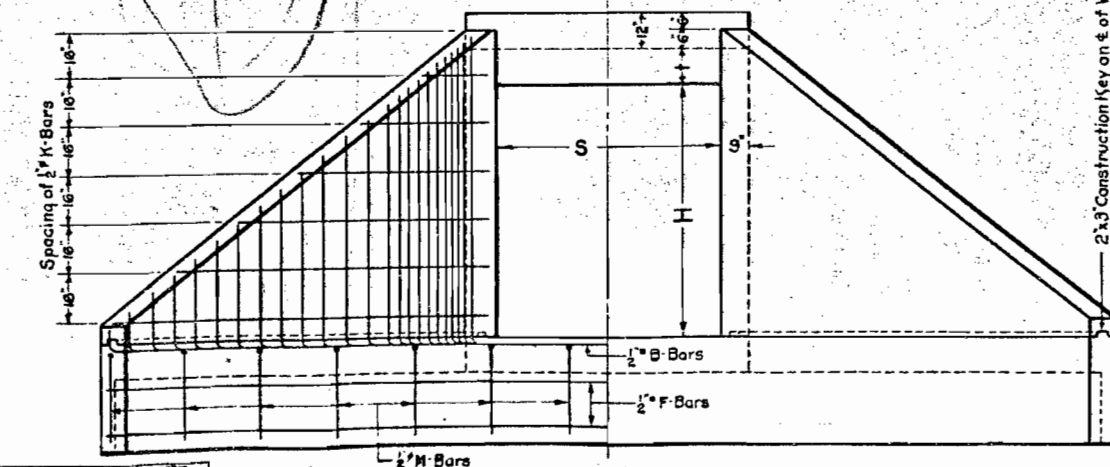
TYPICAL SECTION THRU BOX



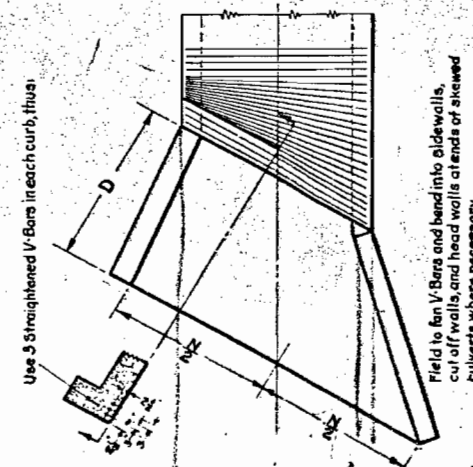
LONGITUDINAL SECTION ON CENTER LINE OF BOX



PART PLAN



END VIEW



PART PLAN FOR SKEWED HEADWALLS

| REINFORCEMENT BAR LIST |      |      |             |             |             |              |                                  |  |  | BENDING DIAGRAM                  |  |
|------------------------|------|------|-------------|-------------|-------------|--------------|----------------------------------|--|--|----------------------------------|--|
| USE BARS FOR           | MARK | SIZE | NUMBER      | DIMENSION P | DIMENSION Q | TOTAL LENGTH | ALL DIMENSIONS ARE TO 1/4 OF BAR |  |  | ALL DIMENSIONS ARE TO 1/4 OF BAR |  |
| ALL SIZES              | V    | 1/2" | (6+L)/14    | S+10'       |             | S+2'-2"      |                                  |  |  |                                  |  |
| "                      | W    | 1/2" | (2+L)/6     | H+10'       |             | H+2'-2"      |                                  |  |  |                                  |  |
| "                      | F    | 1/2" | 4           |             |             | N+0'-3"      |                                  |  |  |                                  |  |
| "                      | U    | 1/2" | SEE # BELOW |             |             | L+1'-8"      |                                  |  |  |                                  |  |
| "                      | K-1  | 1/2" | 4           |             | 3'-4"       | 5'-4"        |                                  |  |  |                                  |  |
| H=2'-0" OR MORE        | K-2  | 1/2" | 4           |             | 6'-8"       | 8'-8"        |                                  |  |  |                                  |  |
| H=3'-0" "              | K-3  | 1/2" | 4           |             | 10'-0"      | 12'-0"       |                                  |  |  |                                  |  |
| H=5'-0" "              | K-4  | 1/2" | 4           |             | 13'-4"      | 15'-4"       |                                  |  |  |                                  |  |
| H=6'-0" "              | K-5  | 1/2" | 4           |             | 16'-8"      | 18'-8"       |                                  |  |  |                                  |  |
| H=7'-0" "              | K-6  | 1/2" | 4           |             | 20'-0"      | 22'-0"       |                                  |  |  |                                  |  |
| ALL SIZES              | B-1  | 1/2" | 2           | S+1'-6"     | H+1'-3"     |              |                                  |  |  |                                  |  |
| "                      | B-2  | 1/2" | 2           | S+1'-11"    | H+1'-1"     |              |                                  |  |  |                                  |  |
| "                      | B-3  | 1/2" | 2           | S+2'-3"     | H+0'-11"    |              |                                  |  |  |                                  |  |
| "                      | B-4  | 1/2" | 2           | S+2'-8"     | H+0'-9"     |              |                                  |  |  |                                  |  |
| "                      | B-5  | 1/2" | 2           | S+3'-0"     | H+0'-8"     |              |                                  |  |  |                                  |  |
| "                      | B-6  | 1/2" | 2           | S+3'-5"     | H+0'-6"     |              |                                  |  |  |                                  |  |
| "                      | B-7  | 1/2" | 2           | S+4'-0"     | H+0'-3"     |              |                                  |  |  |                                  |  |
| "                      | B-8  | 1/2" | 2           | S+4'-7"     | H+0'-0"     |              |                                  |  |  |                                  |  |
| "                      | B-9  | 1/2" | 2           | S+5'-2"     | H+0'-3"     |              |                                  |  |  |                                  |  |
| H=1'-6" OR MORE        | B-10 | 1/2" | 2           | S+5'-9"     | H+0'-5"     |              |                                  |  |  |                                  |  |
| H=2'-0" "              | B-11 | 1/2" | 2           | S+6'-11"    | H+0'-11"    |              |                                  |  |  |                                  |  |
| H=3'-0" "              | B-12 | 1/2" | 2           | S+8'-1"     | H+1'-4"     |              |                                  |  |  |                                  |  |
| H=3'-0" "              | B-13 | 1/2" | 2           | S+9'-3"     | H+1'-10"    |              |                                  |  |  |                                  |  |
| H=3'-0" "              | B-14 | 1/2" | 2           | S+10'-5"    | H+2'-3"     |              |                                  |  |  |                                  |  |
| H=4'-0" "              | B-15 | 1/2" | 2           | S+11'-7"    | H+2'-9"     |              |                                  |  |  |                                  |  |
| H=4'-0" "              | B-16 | 1/2" | 2           | S+12'-9"    | H+3'-3"     |              |                                  |  |  |                                  |  |
| H=5'-0" "              | B-17 | 1/2" | 2           | S+13'-11"   | H+3'-8"     |              |                                  |  |  |                                  |  |
| H=5'-0" "              | B-18 | 1/2" | 2           | S+15'-1"    | H+4'-2"     |              |                                  |  |  |                                  |  |
| H=6'-0" "              | B-19 | 1/2" | 2           | S+16'-3"    | H+4'-7"     |              |                                  |  |  |                                  |  |
| H=6'-0" "              | B-20 | 1/2" | 2           | S+17'-5"    | H+5'-1"     |              |                                  |  |  |                                  |  |
| H=6'-0" "              | B-21 | 1/2" | 2           | S+18'-7"    | H+5'-6"     |              |                                  |  |  |                                  |  |
| H=7'-0" "              | B-22 | 1/2" | 2           | S+19'-9"    | H+6'-0"     |              |                                  |  |  |                                  |  |
| H=7'-0" "              | B-23 | 1/2" | 2           | S+20'-11"   | H+6'-5"     |              |                                  |  |  |                                  |  |
| ALL SIZES              | M    | 1/2" | (S+1)x4     | D+3'-0"     |             | D+5'-3"      |                                  |  |  |                                  |  |

\* See Table of Dimensions and Quantities

| TABLE OF DIMENSIONS AND QUANTITIES                                                                   |          |                        |             |             |             |                   |                          |                                                     |            |                                               |            |                                 |  |
|------------------------------------------------------------------------------------------------------|----------|------------------------|-------------|-------------|-------------|-------------------|--------------------------|-----------------------------------------------------|------------|-----------------------------------------------|------------|---------------------------------|--|
| STEEL QUANTITIES GIVEN BELOW INCLUDE ALLOWANCE FOR OVERRUN OF 1%                                     |          |                        |             |             |             |                   |                          |                                                     |            |                                               |            |                                 |  |
| TOTAL QUANTITIES FOR ONE BOX EQUALS THE QUANTITY FOR TWO HEADWALLS PLUS (L x QUANTITY FOR ONE LINEAL |          |                        |             |             |             |                   |                          |                                                     |            |                                               |            |                                 |  |
| SPAN S                                                                                               | HEIGHT H | HEIGHT OF FILL ALLOWED | DIMENSION M | DIMENSION N | DIMENSION D | THICKNESS OF SLAB | NUMBER OF U-BARS PER BOX | QUANTITIES FOR ONE LINEAL FLOO BOX CONCRETE CU YDS. | STEEL LBS. | QUANTITIES FOR TWO HEADWALLS CONCRETE CU YDS. | STEEL LBS. | STRUCTURAL TWO HEADWALLS 50 FT. |  |
| 1'-6"                                                                                                | 1'-6"    | 29'-6"                 | 5'-6 1/4"   | 7'-2 3/4"   | 5'-1 1/8"   | 8 1/2"            | 8                        | 0.241                                               | 30.6       | 4.5                                           | 320        | 116.91                          |  |
| 2'-0"                                                                                                | 2'-0"    | 22'-6"                 | 6'-9 1/4"   | 8'-11 1/8"  | 6'-2 1/8"   | 8 1/2"            | 8                        | 0.295                                               | 34.0       | 6.1                                           | 430        | 153.44                          |  |
| 3'-0"                                                                                                | 1'-0"    | 19'-0"                 | 4'-7"       | 7'-9 3/8"   | 4'-4 1/8"   | 10"               | 8                        | 0.332                                               | 37.5       | 5.0                                           | 360        | 116.50                          |  |
| 3'-0"                                                                                                | 2'-0"    | 19'-0"                 | 7'-1"       | 10'-3 3/8"  | 6'-6 1/8"   | 10"               | 10                       | 0.388                                               | 40.5       | 7.7                                           | 495        | 178.11                          |  |
| 3'-0"                                                                                                | 3'-0"    | 19'-0"                 | 9'-7"       | 12'-9 3/8"  | 8'-8 1/8"   | 10"               | 12                       | 0.444                                               | 43.6       | 11.0                                          | 680        | 250.88                          |  |
| 4'-0"                                                                                                | 2'-0"    | 15'-0"                 | 7'-1"       | 11'-3 3/8"  | 6'-6 1/8"   | 10"               | 12                       | 0.450                                               | 47.0       | 8.5                                           | 565        | 195.13                          |  |
| 4'-0"                                                                                                | 3'-0"    | 15'-0"                 | 9'-7"       | 13'-9 3/8"  | 8'-8 1/8"   | 10"               | 14                       | 0.506                                               | 50.0       | 12.0                                          | 755        | 272.24                          |  |
| 4'-0"                                                                                                | 4'-0"    | 15'-0"                 | 12'-1"      | 16'-3 3/8"  | 10'-10 1/8" | 10"               | 16                       | 0.562                                               | 53.1       | 16.0                                          | 910        | 359.71                          |  |
| 5'-0"                                                                                                | 3'-0"    | 11'-6"                 | 9'-7"       | 14'-9 3/8"  | 8'-8 1/8"   | 10"               | 16                       | 0.567                                               | 56.6       | 12.8                                          | 835        | 293.60                          |  |
| 5'-0"                                                                                                | 4'-0"    | 11'-6"                 | 12'-1"      | 17'-3 3/8"  | 10'-10 1/8" | 10"               | 18                       | 0.623                                               | 59.6       | 17.1                                          | 995        | 385.43                          |  |
| 5'-0"                                                                                                | 5'-0"    | 11'-6"                 | 14'-7"      | 19'-9 3/8"  | 13'-0"      | 10"               | 20                       | 0.679                                               | 62.7       | 21.9                                          | 1220       | 488.07                          |  |
| 6'-0"                                                                                                | 2'-0"    | 10'-0"                 | 7'-4 1/4"   | 13'-7 1/8"  | 6'-9 3/8"   | 11 1/2"           | 16                       | 0.645                                               | 60.0       | 11.3                                          | 705        | 239.30                          |  |
| 6'-0"                                                                                                | 3'-0"    | 10'-0"                 | 9'-10 1/4"  | 16'-1 1/8"  | 8'-11 1/8"  | 11 1/2"           | 18                       | 0.699                                               | 63.0       | 15.3                                          | 920        | 325.95                          |  |
| 6'-0"                                                                                                | 4'-0"    | 10'-0"                 | 12'-4 1/4"  | 18'-7 1/8"  | 11'-1 1/8"  | 11 1/2"           | 20                       | 0.755                                               | 66.2       | 20.1                                          | 1090       | 423.57                          |  |
| 6'-0"                                                                                                | 5'-0"    | 10'-0"                 | 14'-10 1/4" | 21'-1 1/8"  | 13'-3 1/8"  | 11 1/2"           | 22                       | 0.810                                               | 69.2       | 25.6                                          | 1320       | 532.02                          |  |
| 6'-0"                                                                                                | 6'-0"    | 10'-0"                 | 17'-4 1/4"  | 23'-7 1/8"  | 15'-5 1/8"  | 11 1/2"           | 24                       | 0.866                                               | 72.3       | 31.7                                          | 1620       | 651.45                          |  |
| 6'-0"                                                                                                | 7'-0"    | 10'-0"                 | 19'-10 1/4" | 26'-1 1/8"  | 17'-7 1/8"  | 11 1/2"           | 26                       | 0.923                                               | 75.3       | 38.5                                          | 1900       | 781.58                          |  |

## GENERAL NOTES

ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS OF THE COLORADO STATE HIGHWAY DEPARTMENT ADOPTED AUG. 1, 1935.  
ALL CONCRETE SHALL BE CLASS "A".  
ALL EXPOSED SURFACES SHALL BE RUBBED FREE OF FORM MARKS.  
ALL WALLS SHALL HAVE FORMS ON BOTH SIDES.  
MINIMUM DISTANCE BETWEEN CENTER LINE OF BAR AND EDGE OF CONCRETE TO BE 2 1/2".  
ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS POURED.  
FOOTINGS IN ROCK SHALL BE POURED OUT TO THE ROCK AND NOT FORMED.  
FOR CULVERTS REQUIRED AND GOVERNING DIMENSIONS SEE SHEET NO. 1.  
ALL REINFORCING BARS SHALL BE DEFORMED.  
ALL REINFORCING BARS SHALL BE TAGGED WITH THE STATION NUMBER AND LETTER DESIGNATION.  
SECONDARY BARS WHEN SPLICED SHALL BE GIVEN A LAP OF 80 DIAMETERS.  
MAIN BARS SHALL NOT BE SPLICED.  
SOUNDINGS AND DEPTH OF FOOTINGS SHOWN ARE ACCORDING TO THE BEST AVAILABLE DATA. IF ESSENTIALLY DIFFERENT CONDITIONS ARE ENCOUNTERED, THE ENGINEER WILL INSPECT AND DETERMINE IF REVISION IS NECESSARY.  
POUR WING FOOTINGS MONOLITHICALLY WITH FLOOR OF BOX.  
THE USE OF ADDITIONAL CONSTRUCTION JOINTS UNDESIRABLE. SHOULD FIELD CONDITIONS REQUIRE, CONSTRUCTION JOINTS MAY BE MADE ON A VERTICAL PLANE PERPENDICULAR TO CENTERLINE OF CULVERT AND SHALL HAVE A 5' STRUT.  
THIS DESIGN NOT TO BE USED WHEN HEIGHT OF FILL EXCEEDS THE ALLOWABLE TABULATED. SUPPORTING SOILS FOR ALL CULVERTS MUST BE COMPOSED OF FIRM AND UNIFORM MATERIAL THROUGHOUT.  
ALL BACKFILLING IN APPROACHES, TO AND OVER CULVERTS, SHALL BE LAID IN LAYERS NOT EXCEEDING 8" IN DEPTH AND EACH LAYER SHALL BE ROLLED OR HAND TAMPED WHERE ACCESSIBLE TO ROLLERS, ALSO MOISTENED WHEN NECESSARY.

LEADING DATA  
LL-AASHO AUG 1934

COLORADO

STATE HIGHWAY DEPT  
CONCRETE BOX CULVERT  
1 1/2 x 1 1/2 4 x 2 5 x 4  
2 x 2 4 x 5 5 x 5  
3 x 1 4 x 4 6 x 2  
3 x 2 5 x 3 6 x 3  
3 x 3

Designed by A.S.A. Approved by A.G.  
Made by A.E.K. Built by E.K.  
Checked by W.E.C. Date 11/1/34

| ORIGINAL    | INITIAL | DATE |
|-------------|---------|------|
| CHECKED BY  |         |      |
| DESIGNED BY |         |      |
| CHECKED BY  |         |      |

Add Sheet, March 18, 1936 by M.D., headwalls. See

RECEIVED APR 17

# BAR LIST

| MARK         | SIZE | NO. REQD | LENGTH                   | BENDING DIAGRAM, dimensions to center |
|--------------|------|----------|--------------------------|---------------------------------------|
| B 51         | 5/8" | 12       | 7'6"                     | radius = 7"                           |
| B 52         | 5/8" | 12       | 7'0"                     | B 51 - 5'9"                           |
| B 53         | 5/8" | 12       | 6'7"                     | B 52 - 5'3"                           |
| B 54         | 5/8" | 12       | 6'2"                     | B 53 - 4'10"                          |
|              |      |          |                          | B 54 - 3'5"                           |
| C            | 5/8" | 30       | 4'8"                     | rad 2' 2"                             |
| D            | 1/2" | 10       | 39'6"                    | 2' 2"                                 |
| K 21         | 1/2" | 10       | 9'6"                     | 2' 2"                                 |
| K 22         | 1/2" | 2        | 3'6"                     | 2' 2"                                 |
| K 23         | 1/2" | 2        | 27'0"                    | 2' 2"                                 |
| U 1          | 1/2" | 20       | 21'6"                    | 2' 2"                                 |
| U 1          | 1/2" | 20       | 123'8"                   | 2' 2"                                 |
| K 11         | 1/2" | 10       | 13'4"                    | 2' 2"                                 |
| K 12         | 1/2" | 2        | 7'4"                     | 2' 2"                                 |
| V 1          | 1/2" | 746      | 8'2"                     | 2' 2"                                 |
| W 1          | 1/2" | 284      | 6'2"                     | 2' 2"                                 |
| V 2 to V 8   | 1/2" | 2 each   | 5'1" to 7'4" by 4 1/2"   | 2' 2"                                 |
| V 9 to V 13  | 1/2" | 2 each   | 7'8" to 8'8" by 3"       | 2' 2"                                 |
| V 14 to V 19 | 1/2" | 2 each   | 8'10" to 9'10" by 2 1/2" | 2' 2"                                 |
| V 20 to V 26 | 1/2" | 2 each   | 10'0" to 11'0" by 2"     | 2' 2"                                 |
| V 27 to V 33 | 1/2" | 2 each   | 3'5" to 5'8" by 4 1/2"   | 2' 2"                                 |
| V 34 to V 38 | 1/2" | 2 each   | 6'11" to 6'11" by 3"     | 2' 2"                                 |
| V 39 to V 44 | 1/2" | 2 each   | 7'7" to 8'2" by 2 1/2"   | 2' 2"                                 |
| V 45 to V 51 | 1/2" | 2 each   | 8'3" to 9'3" by 2"       | 2' 2"                                 |
| V 52         | 1"   | 8        | 22'0"                    | 2' 2"                                 |

## SUMMARY OF BAR LIST

|                                                |      |
|------------------------------------------------|------|
| 3324-lin ft. of 1/2" bars @ 0.668-lbs. per ft. | 2224 |
| 9009 " " " " " "                               | 7650 |
| 467 " " " " " "                                | 48   |
| 176 " " " " " "                                | 47   |

Plus 1% for over-run = 10.

TOTAL = 10,924

- 746 V-bars ordered and on hand.
- 250 W- " " " " " "
- 20-lins of U-bars on hand
- This total includes 8315-lbs. of bars on hand. (U,V,W)

Note: This sheet to be worked with Sheet No. 5

## GENERAL NOTES

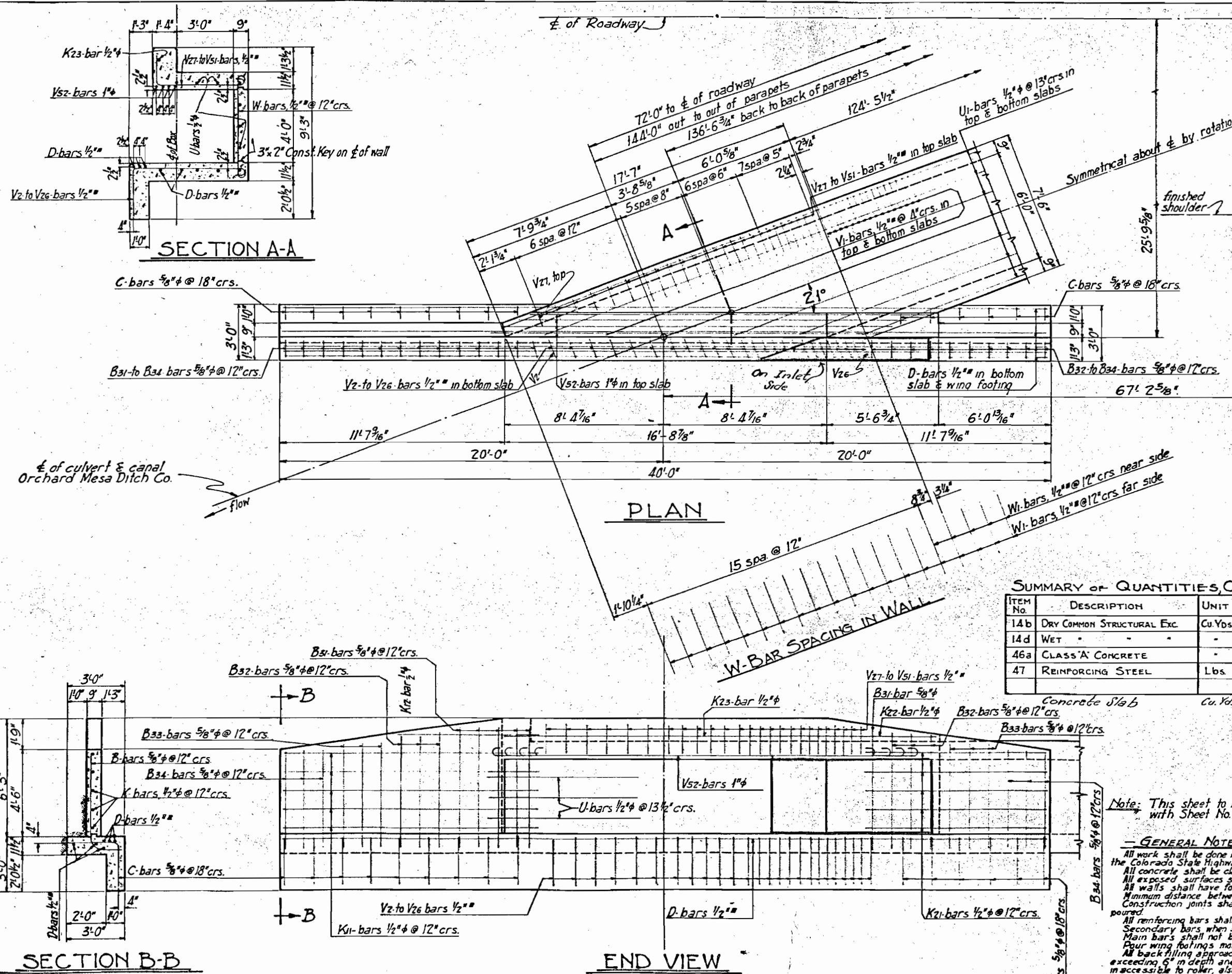
All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department adopted Aug. 1, 1935.  
 All concrete shall be class 'A'.  
 All exposed surfaces shall be rubbed free of form marks.  
 All walls shall have forms on both sides.  
 Minimum distance between center of bar and face of concrete to be 2 1/2".  
 Construction joints shall be thoroughly cleaned before fresh concrete is poured.  
 All reinforcing bars shall be round or square deformed as shown.  
 Secondary bars when spliced shall be lapped 50 diameters.  
 Main bars shall not be spliced.  
 Pour wing footings monolithically with floor of box.  
 All backfilling approaches to and over culvert shall be laid in layers not exceeding 6" in depth and each layer shall be rolled or hand tampered where inaccessible to roller, also moistened when necessary.

LOADING DATA  
 LIVE LOAD A.A.S.H.O. AUG. 1928  
 DEAD LOAD ASD. MES. 18 LBS. PER SQ. FT.  
 ADDITIONAL WEARING SURFACE WHICH SHALL BE CONCRETE MONOLITHIC WEARING SURFACE

COLORADO  
 STATE HIGHWAY DEPT.  
 6' x 4' CONCRETE  
 BOX CULVERT  
 IN ORCHARD MESA DITCH CO.  
 Sta. 318 + 50  
 Near GRAND JUNCTION, CO. 32' IS

Designed by M.D.  
 Made by t.c.  
 Check Design by M.D.  
 Check Detail by M.D.  
 Approved by J.  
 Bridge Eng.  
 Date: Nov. 20

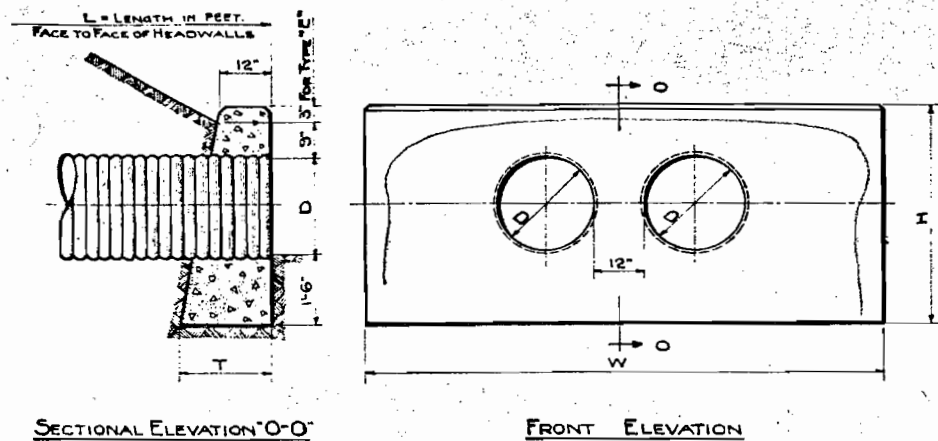
COPY TO AHB APR 18 1936  
 RESIDENT ENGINEER



## SUMMARY OF QUANTITIES, COMPLETE

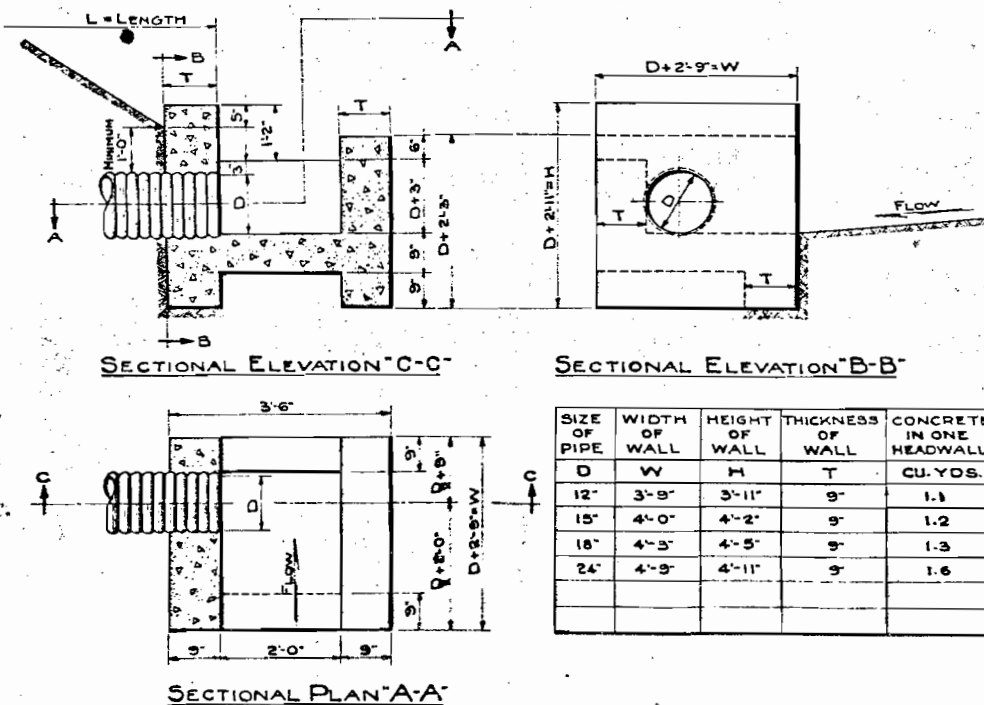
| ITEM NO. | DESCRIPTION                | UNIT     | QUANTITY |
|----------|----------------------------|----------|----------|
| 14b      | DRY COMMON STRUCTURAL EXC. | Cu. Yds. | 100      |
| 14d      | WET " " " "                | "        | 40       |
| 46a      | CLASS 'A' CONCRETE         | "        | 129      |
| 47       | REINFORCING STEEL          | Lbs.     | 10,940   |

Concrete 8' x 4' Cu. Yds. 1.44

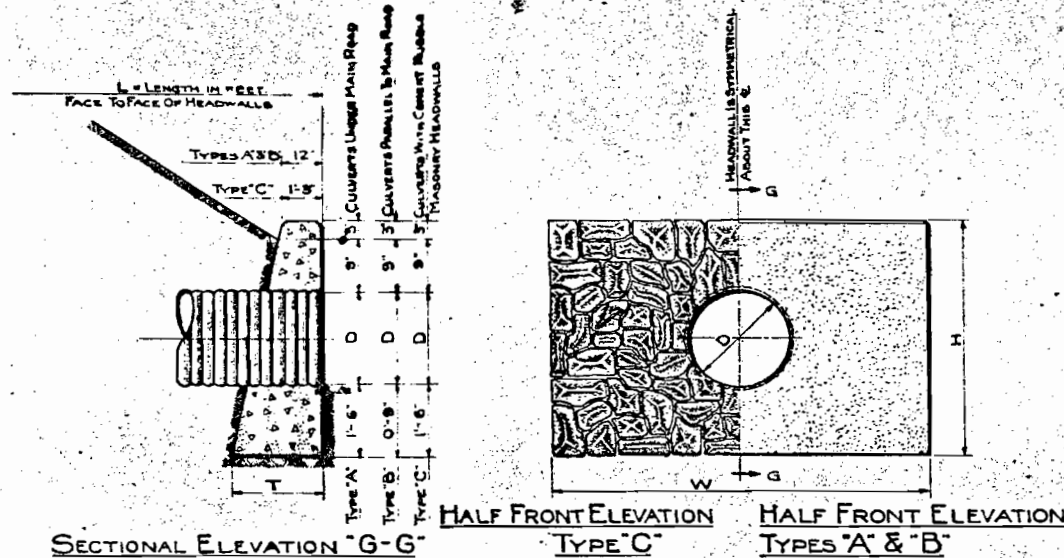


|          | D   | W      | H     | T      | CL. B CONCRETE FOR 2 HEADWALLS | CORRUGATED METAL PIPE    | CEMENT RUBBLE MASONRY |
|----------|-----|--------|-------|--------|--------------------------------|--------------------------|-----------------------|
| TYPE "E" | 15' | 7'-6"  | 3'-9" | 1'-6"  | 2.2 Cu. Yds.                   | 16 GAGE 2 x L = LIN. FT. |                       |
|          | 18' | 8'-6"  | 4'-0" | 1'-7"  | 3.1 do                         | 2 x L = do               |                       |
|          | 24' | 10'-6" | 4'-6" | 1'-10" | 4.5 do                         | 2 x L = do               |                       |
|          | 30' | 12'-6" | 5'-0" | 2'-0"  | 6.5 do                         | 2 x L = do               |                       |
|          | 36' | 14'-6" | 5'-6" | 2'-2"  | 7.6 do                         | 2 x L = do               |                       |
| TYPE "F" |     |        |       |        |                                |                          |                       |

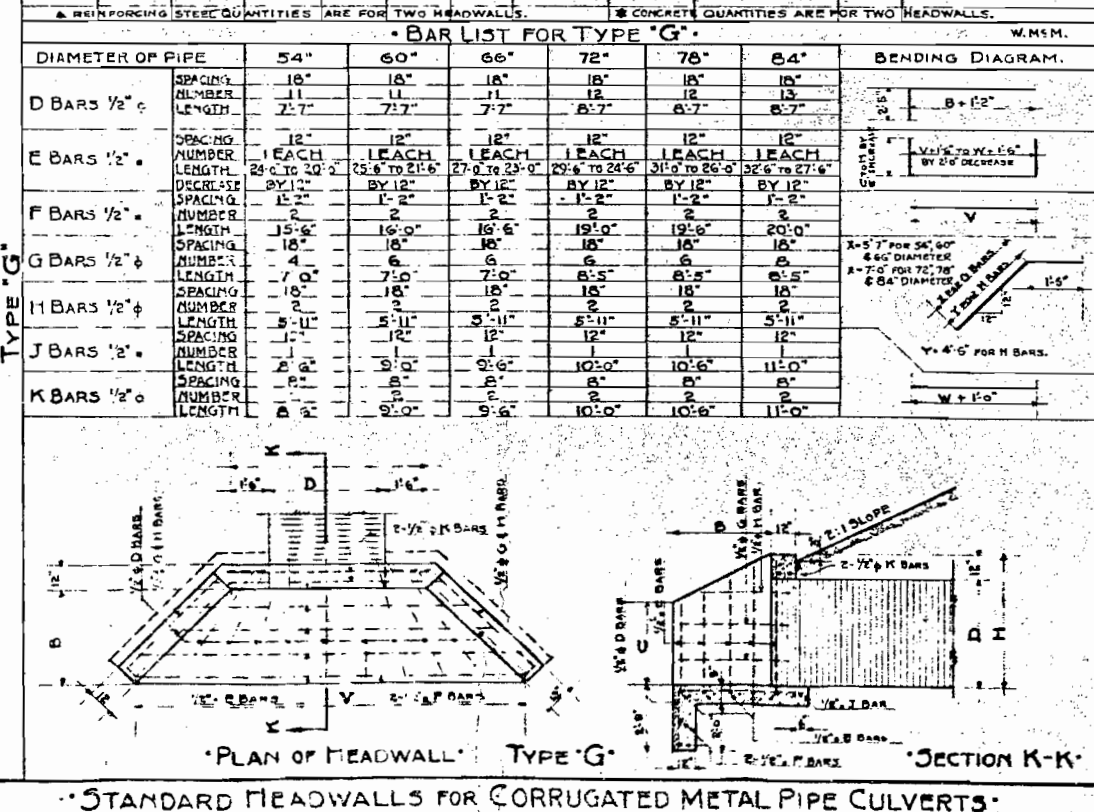
STD. HEADWALLS FOR DOUBLE CORRUGATED METAL PIPE CULVERTS.



INTERCEPTING HEADWALLS.



|          | D   | W      | H     | T      | CL. B CONCRETE FOR 2 HEADWALLS | CORRUGATED METAL PIPE | CEMENT RUBBLE MASONRY |
|----------|-----|--------|-------|--------|--------------------------------|-----------------------|-----------------------|
| TYPE "A" | 12' | 4'-6"  | 3'-6" | 1'-5"  | 1.4 Cu. Yds.                   | 16 GAGE L = LIN. FT.  |                       |
|          | 15' | 5'-3"  | 3'-9" | 1'-6"  | 1.8 do                         | L = do                |                       |
|          | 18' | 6'-0"  | 4'-0" | 1'-7"  | 2.2 do                         | L = do                |                       |
|          | 24' | 7'-6"  | 4'-6" | 1'-10" | 3.5 do                         | L = do                |                       |
|          | 30' | 9'-0"  | 5'-0" | 2'-0"  | 4.5 do                         | L = do                |                       |
|          | 36' | 10'-6" | 5'-6" | 2'-2"  | 6.0 do                         | L = do                |                       |
|          | 42' | 12'-0" | 6'-0" | 2'-5"  | 8.0 do                         | L = do                |                       |
|          | 48' | 13'-6" | 6'-6" | 2'-7"  | 10.0 do                        | L = do                |                       |
| TYPE "B" | 12' | 4'-0"  | 2'-9" | 1'-0"  | 0.8 Cu. Yds.                   | 16 GAGE L = LIN. FT.  |                       |
|          | 15' | 4'-3"  | 3'-0" | 1'-3"  | 0.9 do                         | L = do                |                       |
|          | 18' | 4'-6"  | 3'-3" | 1'-5"  | 1.1 do                         | L = do                |                       |
|          | 24' | 5'-0"  | 4'-3" | 1'-7"  | 1.2 do                         | L = do                |                       |
| TYPE "C" | 12' | 4'-6"  | 3'-6" | 2'-0"  | 1.6 Cu. Yds.                   | 16 GAGE L = LIN. FT.  |                       |
|          | 15' | 5'-3"  | 3'-9" | 2'-0"  | 1.8 do                         | L = do                |                       |
|          | 18' | 6'-0"  | 4'-0" | 2'-1"  | 2.0 do                         | L = do                |                       |
|          | 24' | 7'-6"  | 4'-6" | 2'-4"  | 3.0 do                         | L = do                |                       |
|          | 30' | 9'-0"  | 5'-0" | 2'-6"  | 4.0 do                         | L = do                |                       |
|          | 36' | 10'-6" | 5'-6" | 2'-8"  | 5.0 do                         | L = do                |                       |

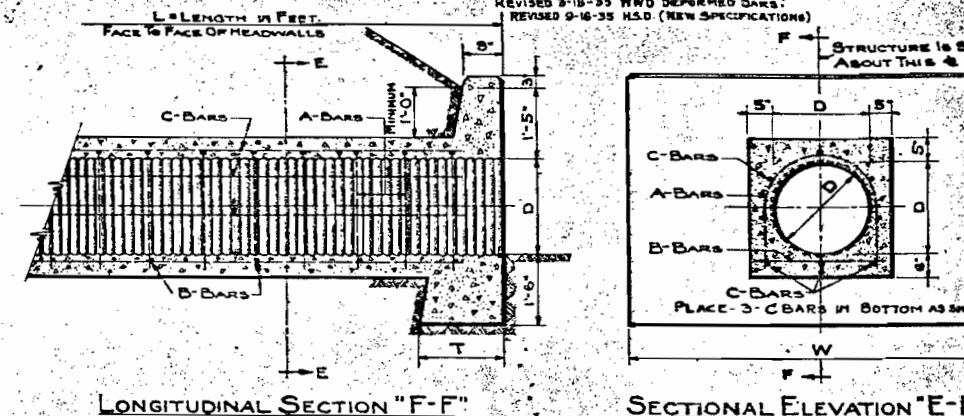


STANDARD HEADWALLS FOR CORRUGATED METAL PIPE CULVERTS.

# STANDARD M-102-E

| FED. ROAD DIST. No. | STATE    | PROJECT No. | SHEET No. |
|---------------------|----------|-------------|-----------|
| 3                   | COLORADO | 299H        | 6         |

Revised 10-24-33 A.G.M. Corrected Gauge on 24" & 36" Type "C" Culverts  
Revised 9-18-35 H.W.D. DEFORMED BARS  
Revised 9-18-35 H.S.D. (NEW SPECIFICATIONS)



| DIAMETER OF PIPE       | D       | 12"       | 15"       | 18"       | 24"       | 30"       |
|------------------------|---------|-----------|-----------|-----------|-----------|-----------|
| WIDTH OF HEADWALL      | W       | 4'-6"     | 5'-3"     | 6'-0"     | 7'-6"     | 9'-0"     |
| HEIGHT OF HEADWALL     | H       | 4'-2"     | 4'-5"     | 4'-8"     | 5'-2"     | 5'-8"     |
| WIDTH OF HEADWALL BASE | T       | 1'-7"     | 1'-8"     | 1'-9"     | 2'-0"     | 2'-3"     |
| A-BARS                 | SPACING | 12"       | 12"       | 12"       | 12"       | 12"       |
|                        | NUMBER  | L-1       | L-1       | L-1       | L-1       | L-1       |
|                        | LENGTH  | 3'-9"     | 4'-5"     | 5'-0"     | 6'-4"     | 7'-7"     |
| B-BARS                 | SPACING | 2'-0"     | 2'-0"     | 2'-0"     | 2'-0"     | 2'-0"     |
|                        | NUMBER  | 5L        | 5L        | 5L        | 5L        | 5L        |
|                        | LENGTH  | 1'-7"     | 1'-10"    | 2'-1"     | 2'-7"     | 3'-1"     |
| C-BARS                 | SPACING | 6"        | 8"        | 8"        | 8"        | 8"        |
|                        | LENGTH  | L-(2'-0") | L-(2'-0") | L-(2'-0") | L-(2'-0") | L-(2'-0") |

★ CONCRETE QUANTITIES SHOWN ABOVE INCLUDE TWO HEADWALLS  
© WHEN L = 40 FT. OR MORE ADD 10.6 LBS. FOR LAP IN C-BARS  
▼ WHEN L = 40 FT. OR MORE ADD 14.7 LBS. FOR LAP IN C-BARS

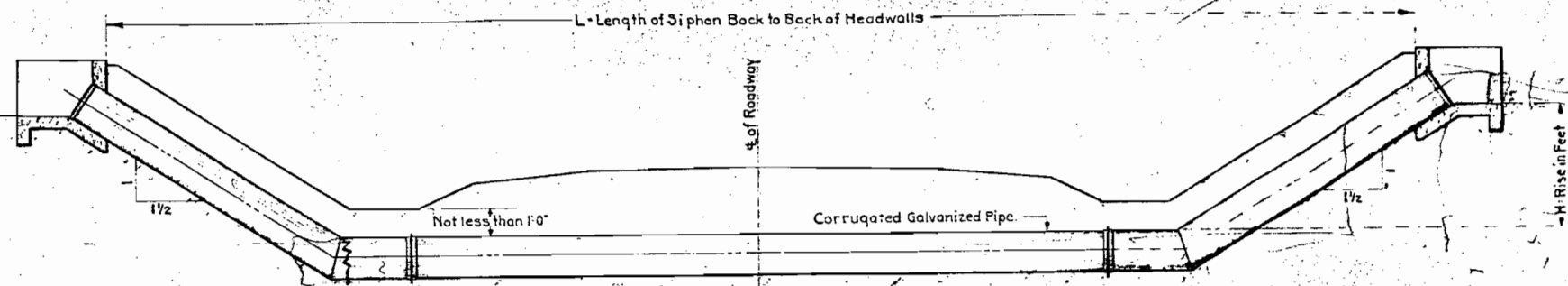
**SPECIAL NOTES**  
ALL REINFORCING BARS SHALL BE 1/2"  
MINIMUM DISTANCE 4" OF BAR TO SURFACE OF CONCRETE SHALL BE 2"  
PIPE SHALL BE THOROUGHLY CLEANED BEFORE INCASING WITH CONCRETE

## INCASED PIPE CULVERTS.

## GENERAL NOTES FOR ALL STRUCTURES

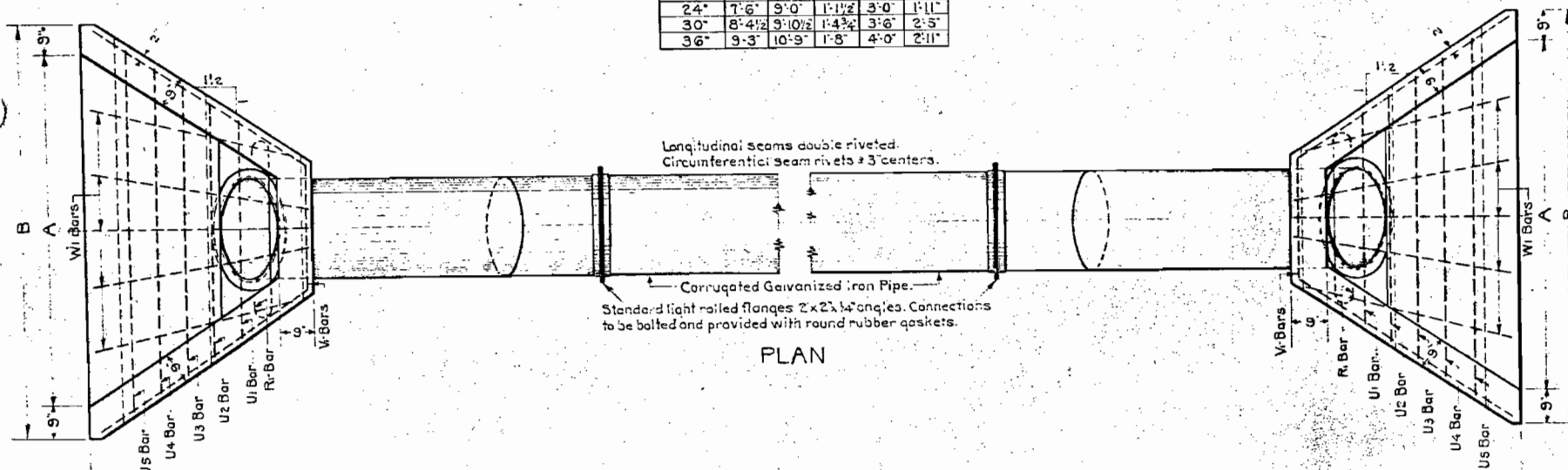
ALL WORK SHALL BE DONE ACCORDING TO THE STANDARD SPECIFICATIONS FOR COLORADO STATE HIGHWAY DEPARTMENT, ADOPTED AUG. 1, 1935.  
ALL CONCRETE SHALL BE CLASS "A" EXCEPT TYPES A & B WHICH SHALL BE CLASS "B".  
ALL EXPOSED SURFACES SHALL BE RUBBED FREE OF FORM MARKS.  
ALL EXPOSED CORNERS SHALL BE DEVELOPED TO A 2" FACE.  
ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS POURED.  
ALL WALLS SHALL HAVE FORMS ON BOTH SIDES.  
ALL REINFORCING BARS SHALL BE DEFORMED.  
ALL REINFORCING BARS SHALL BE TAGGED WITH THE STATION NUMBER AND LETTER DESIGNATION.  
SECONDARY BARS WHEN SPLICED SHALL BE GIVEN A LAP OF 30 DIAMETERS.  
MAIN BARS SHALL NOT BE SPLICED.  
MINIMUM FILL OVER TOP OF CULVERTS SHALL BE 1'-0".  
WHEN CULVERT IS SLOPED HEADWALLS SHALL BE PLACED PARALLEL TO E. OF ROADWAY.  
MINIMUM GRADE OF PIPE SHALL BE 1%.  
FOR SIZE AND LOCATION OF CULVERTS SEE SHEET NO. 2.  
FOOTINGS IN ROCK SHALL BE POURED OUT TO THE ROCK AND NOT FORMED.

**COLORADO**  
STATE HIGHWAY DEPARTMENT  
STANDARD HEADWALL  
INTERCEPTING HEADWALL  
INCASED METAL PIPE  
WITH HEADWALL  
FOR  
CORRUGATED METAL PIPE  
Designed by PLANNING  
Made by G.A.D. & H.W.D.  
Checked by G.A.D. & H.W.D.  
Approved by G.A.D. & H.W.D.  
Date: 10-24-33

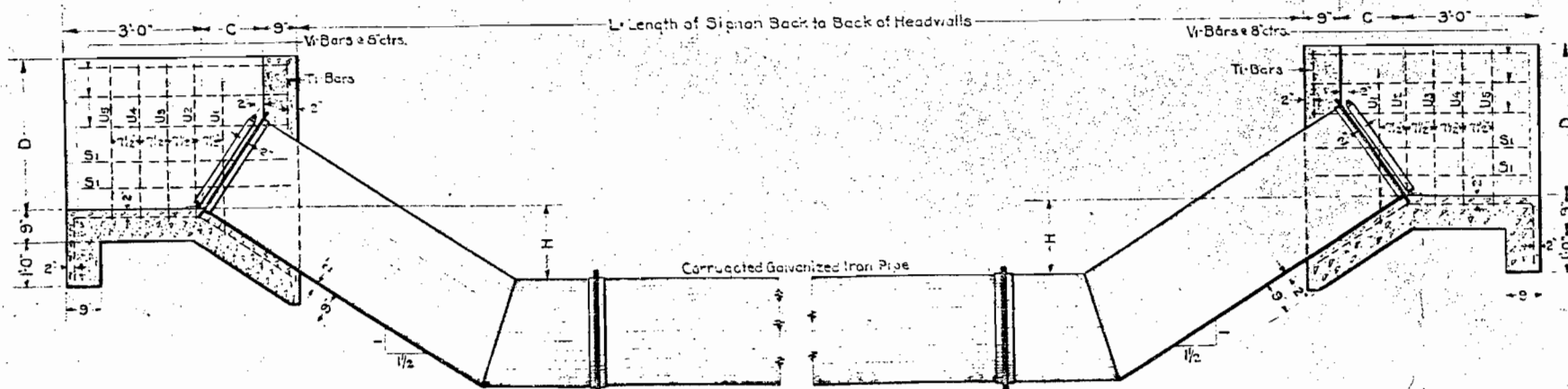
REVISED 3-15-35 NEW DEFORMED BARS  
 REVISED 9-16-35 H.S.D. (NEW SPECIFICATIONS)


SECTIONAL ELEVATION OF SIPHON

| TABLE OF DIMENSIONS |           |            |           |       |        |
|---------------------|-----------|------------|-----------|-------|--------|
| DIAMETER OF SIPHON  | A         | B          | C         | D     | E      |
| 18"                 | 6'-7 1/2" | 8'-1 1/2"  | 0'-10"    | 2'-6" | 1'-5"  |
| 24"                 | 7'-6"     | 9'-0"      | 1'-1 1/2" | 3'-0" | 1'-11" |
| 30"                 | 8'-4 1/2" | 9'-10 1/2" | 1'-4 3/4" | 3'-6" | 2'-5"  |
| 36"                 | 9'-3"     | 10'-9"     | 1'-8"     | 4'-0" | 2'-11" |



PLAN

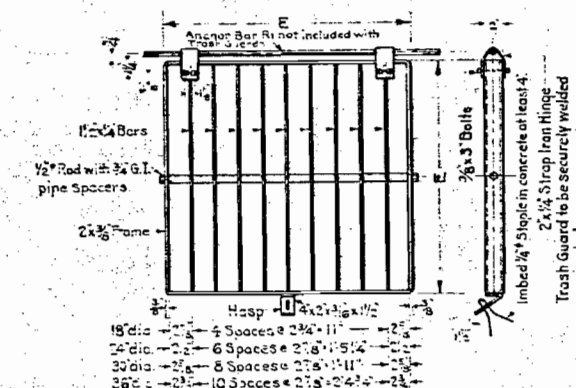
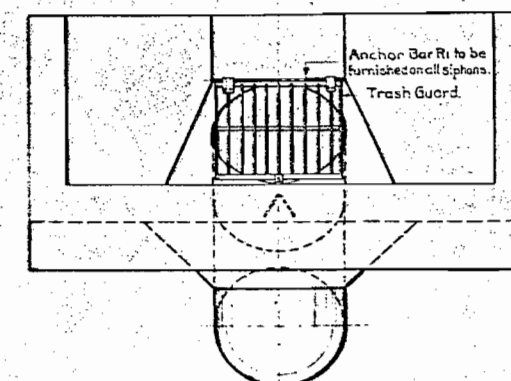


SECTIONAL ELEVATION

| DIAMETER<br>18" AND 24" |        |                                        | BAR LIST FOR ONE SIPHON                                |  |  | DIAMETER<br>30" AND 36"                |        |                      |
|-------------------------|--------|----------------------------------------|--------------------------------------------------------|--|--|----------------------------------------|--------|----------------------|
| MARK                    | NUMBER | LENGTH                                 | BENDING DIAGRAM<br>ALL BARS 1/2" EXCEPT ANCHOR BAR R1. |  |  | LENGTH                                 | NUMBER | MARK                 |
| 18"<br>R1               | 2      | 4'-11"                                 |                                                        |  |  | 5'-11"                                 | 2      | 30"<br>R1            |
| 24"<br>R1               | 2      | 5'-5"                                  |                                                        |  |  | 6'-5"                                  | 2      | 36"<br>R1            |
| 18"<br>S1               | 8      | 4'-2"                                  |                                                        |  |  | 4'-9"                                  | 8      | 30"<br>S1            |
| 24"<br>S1               | 8      | 4'-5"                                  |                                                        |  |  | 5'-0"                                  | 8      | 36"<br>S1            |
| 18"<br>T1               | 4      | 4'-0"                                  |                                                        |  |  | 5'-4"                                  | 4      | 30"<br>T1            |
| 24"<br>T1               | 4      | 4'-6"                                  |                                                        |  |  | 5'-10"                                 | 4      | 36"<br>T1            |
| 18" & 24"<br>Ultra Us   | 2 Each | 8'-6" to 11'-10"<br>Increase<br>by 10" |                                                        |  |  | 10'-4" to 15'-8"<br>Increase<br>by 10" | 2 Each | 30" &<br>Ultra<br>Us |
| 18"<br>V1               | 6      | 12'-0"                                 |                                                        |  |  | 14'-0"                                 | 6      | 30"<br>V1            |
| 24"<br>V1               | 6      | 13'-0"                                 |                                                        |  |  | 15'-0"                                 | 6      | 36"<br>V1            |
| 18" & 24"<br>W1         | 10     | 5'-6"                                  |                                                        |  |  | 6'-0"                                  | 10     | 30" &<br>W1          |

QUANTITIES FOR ONE SIPHON

| SIPHON SIZE  | PIPE GAUGE U.S. STD. | CONCRETE CLASS 'A' | REINFORCING STEEL | TRASH GUARDS   |
|--------------|----------------------|--------------------|-------------------|----------------|
| 18" Diameter | 16                   | 3.50 Cu. Yds.      | 255 Lbs.          | 2#30 Lbs. Each |
| 24" Diameter | 14                   | 4.25 Cu. Yds.      | 260 Lbs.          | 2#40 Lbs. Each |
| 30" Diameter | 14                   | 5.25 Cu. Yds.      | 310 Lbs.          | 2#60 Lbs. Each |
| 36" Diameter | 12                   | 6.25 Cu. Yds.      | 320 Lbs.          | 2#80 Lbs. Each |

DETAIL OF TRASH GUARD  
2 Required per Siphon

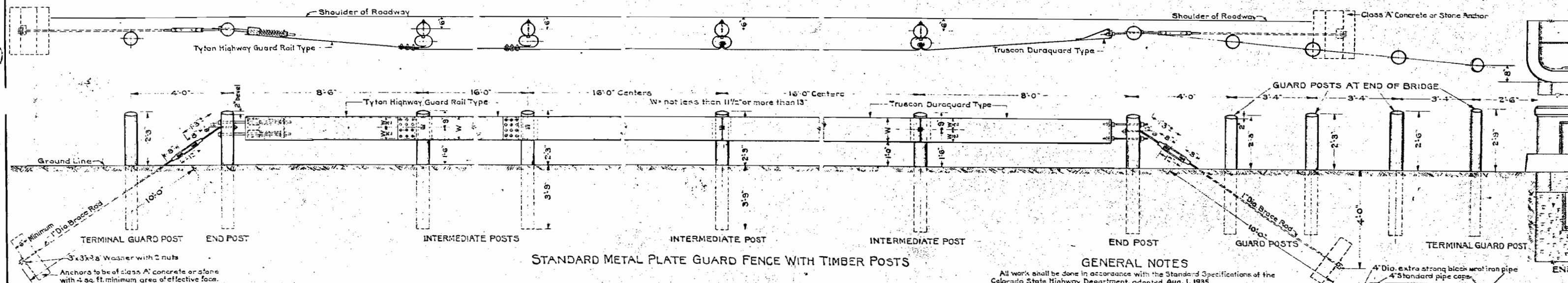
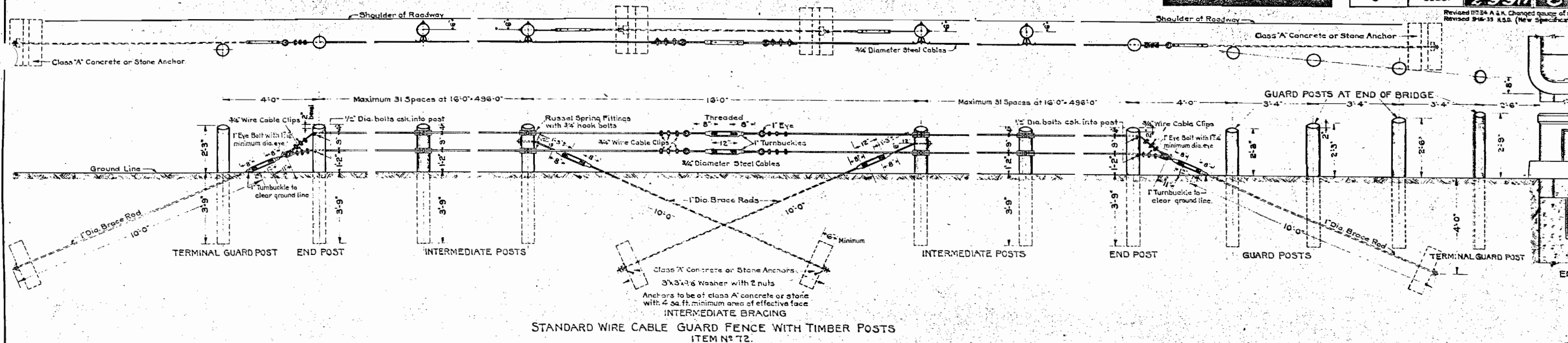
FRONT ELEVATION

| TABLE OF PIPE LENGTHS IN FEET MEASURED ON CENTER |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 18" DIAMETER                                     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| L                                                | 22   | 25   | 28   | 31   | 34   | 37   | 40   | 43   | 46   | 49   | 52   | 55   | 58   | 61   | 64   |
| 0                                                | 25.2 | 28.2 | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 |
| 1                                                | 28.2 | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 |
| 2                                                | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 |
| 3                                                | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 |
| 4                                                | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 |
| 5                                                | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 |
| 6                                                | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 |
| 7                                                | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 |
| 8                                                | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 |
| 9                                                | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 | 94.2 |
| 10                                               | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 | 94.2 | 97.2 |
| FOR H=1 FT. INCREMENT 0.6 LIN. FT.               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| FOR L=3 FT. INCREMENT 3.0 LIN. FT.               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| 24" DIAMETER                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| L                                  | 22   | 25   | 28   | 31   | 34   | 37   | 40   | 43   | 46   | 49   | 52   | 55   | 58   | 61   | 64   |
| 0                                  | 25.2 | 28.2 | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 |
| 1                                  | 28.2 | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 |
| 2                                  | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 |
| 3                                  | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 |
| 4                                  | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 |
| 5                                  | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 |
| 6                                  | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 |
| 7                                  | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 |
| 8                                  | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 |
| 9                                  | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 | 94.2 |
| 10                                 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 | 94.2 | 97.2 |
| FOR H=1 FT. INCREMENT 0.6 LIN. FT. |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| FOR L=3 FT. INCREMENT 3.0 LIN. FT. |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| 30" DIAMETER                       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| L                                  | 22   | 25   | 28   | 31   | 34   | 37   | 40   | 43   | 46   | 49   | 52   | 55   | 58   | 61   | 64   |
| 0                                  | 25.2 | 28.2 | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 |
| 1                                  | 28.2 | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 |
| 2                                  | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 |
| 3                                  | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 |
| 4                                  | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 |
| 5                                  | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 |
| 6                                  | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 |
| 7                                  | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 |
| 8                                  | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 |
| 9                                  | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 | 94.2 |
| 10                                 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 | 94.2 | 97.2 |
| FOR H=1 FT. INCREMENT 0.6 LIN. FT. |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| FOR L=3 FT. INCREMENT 3.0 LIN. FT. |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| 36" DIAMETER |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| L            | 22   | 25   | 28   | 31   | 34   | 37   | 40   | 43   | 46   | 49   | 52   | 55   | 58   | 61   | 64   |
| 0            | 25.2 | 28.2 | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 |
| 1            | 28.2 | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 |
| 2            | 31.2 | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 |
| 3            | 34.2 | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 |
| 4            | 37.2 | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 |
| 5            | 40.2 | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 |
| 6            | 43.2 | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 |
| 7            | 46.2 | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 |
| 8            | 49.2 | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 |
| 9            | 52.2 | 55.2 | 58.2 | 61.2 | 64.2 | 67.2 | 70.2 | 73.2 | 76.2 | 79.2 | 82.2 | 85.2 | 88.2 | 91.2 | 9    |

Revised 10-34 A.S.K. Changed name of project  
Revised 9-16-35 H.S.D. (New Specifications)

## GENERAL NOTES

All work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department, adopted Aug. 1, 1935.

The length of guard fence to be paid for and designated on plans shall be measured from terminal guard post to terminal guard post.

When continuous wire cable fence is more than 500 ft. in length it shall have intermediate bracing complete with turnbuckles.

All wood posts shall be made from seasoned, straight, sound lodge pole pine, southern yellow pine or west coast douglas fir.

No section of wood posts shall be less than 6" diameter.

All wood posts shall be entirely peeled and shaved, thoroughly seasoned and dry, with beveled tops and all holes drilled before treatment is applied.

All wood posts shall be pressure treated with creosote for the full length of posts, as provided for in the specifications.

All wood posts shall be set and tamped in plumb and firm, to the lines and grades directed by the engineer.

All fittings, cables and hardware shall be hot dip galvanized steel with sizes as noted and located as shown.

Eye bolts shall be welded or drop forged.

Standard cast iron O.G. washers shall be used under all bolt heads and nuts coming in contact with wood posts.

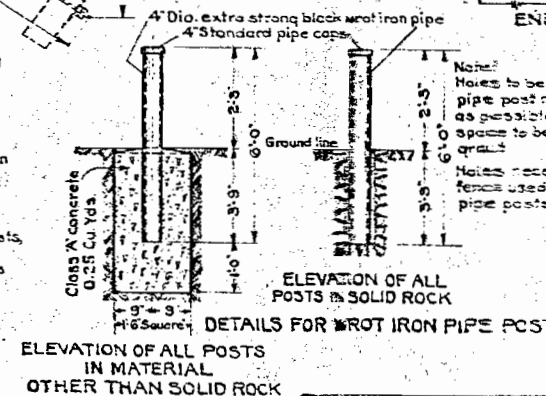
In lieu of the Russell Spring fitting, the contractor may use the Hubbard malleable offset casting fitting, the Blackburn "U" bolt offset fitting, the standard Blackburn offset fitting or other equivalent fittings providing a minimum offset of 3/2" from face of post to centerline of cable and approved by the engineer.

Wedge fittings or other fittings equivalent to those shown on plans and approved by the engineer may be used in lieu of turnbuckles, eye bolts and clips shown on plans.

Only one style of offset fittings, turnbuckles, eye bolts and clips may be used on a project.

Metal plates for metal plate guard fence shall be not lighter than No. 14 gauge.

In lieu of the metal plate guard fence types shown on this sheet, other equivalent types of plate guard fence approved by the engineer and complying with the specifications may be used. Only one type of plate guard fence may be used on a project.

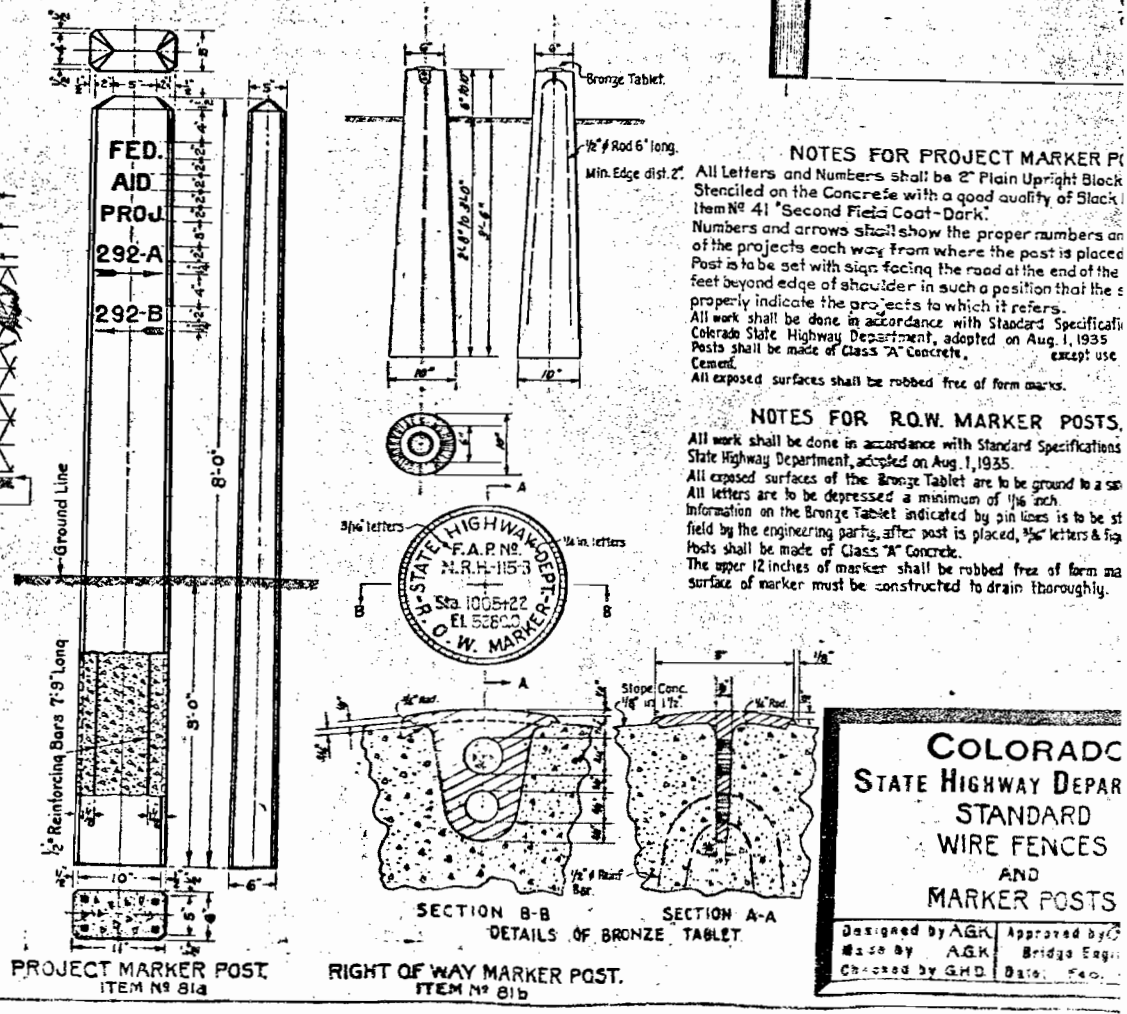
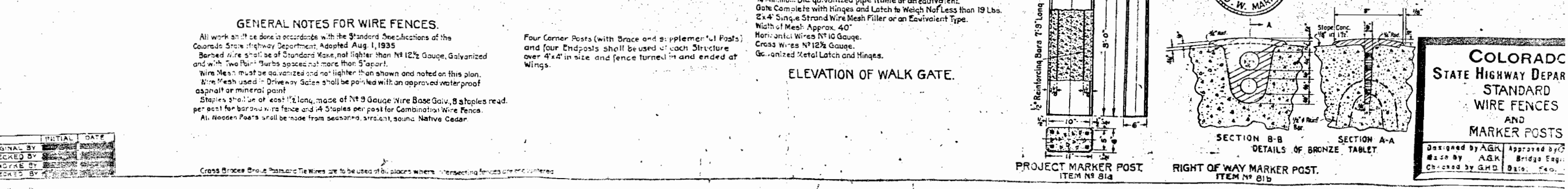
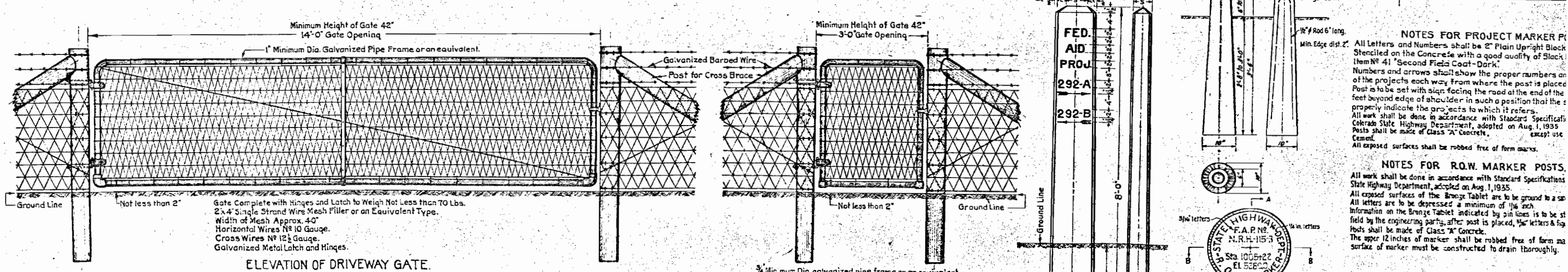
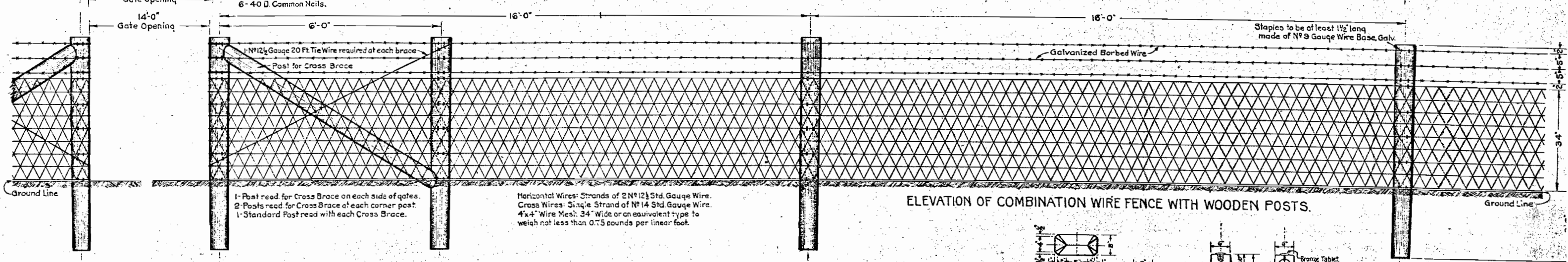
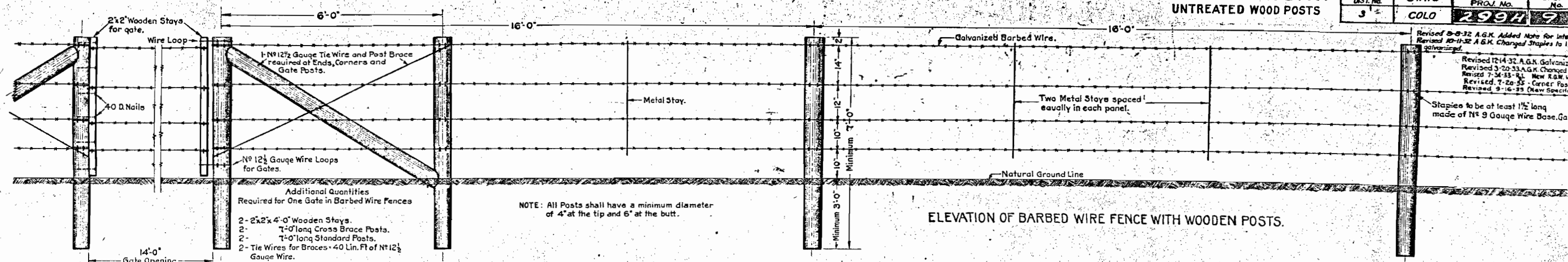


COLORADO  
STATE HIGHWAY DEPARTMENT  
STANDARD  
WIRE CABLE & METAL PLATE  
GUARD FENCE

Designed by A.S.K.  
Made by A.S.K.  
Checked by A.S.K.

# STANDARD M-24-FX UNTREATED WOOD POSTS

| FED. ROAD DIST. No. | STATE | PROJECT No. | SHEET No. |
|---------------------|-------|-------------|-----------|
| 3                   | COLO  | 2994        | 9         |



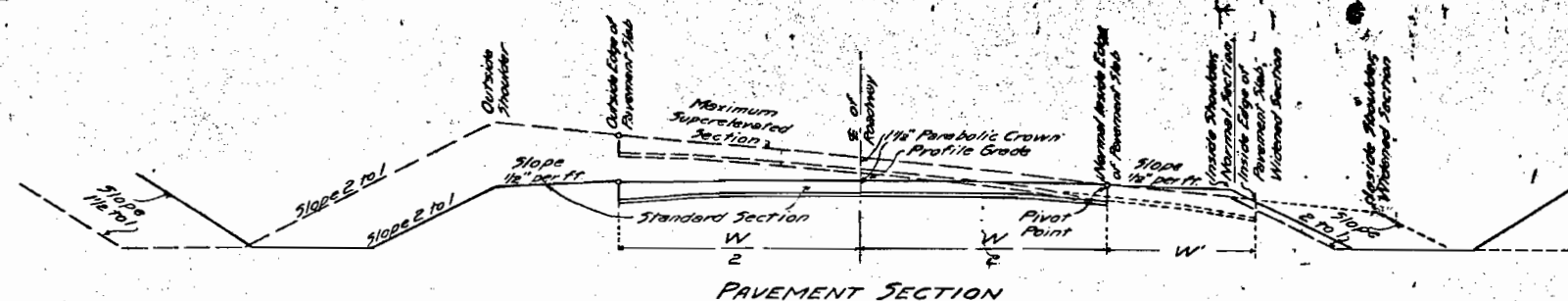
| INITIAL     | DATE |
|-------------|------|
| ORIGINAL BY |      |
| CHECKED BY  |      |
| DRAWN BY    |      |
| CHECKED BY  |      |

Cross Braces, Braces, Posts and Tie Wires are to be used at all places where intersecting fences are encountered.

## STANDARD M-I-A

| FED. ROAD DIST. No. | STATE    | PROJECT No. | SHEET No. |
|---------------------|----------|-------------|-----------|
| 3                   | COLORADO | 2994        | 10        |

Revised 8-17-32 S.B.L. (200' Length)  
 Revised 8-31-32 S.B.L.  
 Revised 2-7-34 S.B.L.  
 Revised 8-24-34 S.B.L. (Special Cases)  
 Revised 9-16-35 H.S.D. (New Specifications)



## SUPERELEVATION AND WIDENING NOTES FOR PAVEMENT SECTION

Curves on projects using the pavement section are to be super-elevated and widened as indicated in the accompanying drawings and table.

The normal inside edge of the pavement slab is to remain at the standard elevation of 0.125 ft. below the profile grade, and the outside edge of the slab is to be super-elevated at the rate per foot width of roadway given in the table or graph. The section is to be rotated about the normal inside edge of the pavement.

When the degree of curvature exceeds 10°, the inside portion of the pavement slab is to be widened from the normal inside edge as per the table below. Curves of 10° or less are not to be widened. The 1/4" parabolic crown is to be used for curves of 10° and under. The widened section is to have a flat crown.

The slope of the shoulders shall conform to the rate per foot width of roadway required except that the inside shoulder shall maintain the standard slope of 0.0417 ft. per foot width until the super-elevation rate exceeds this standard slope.

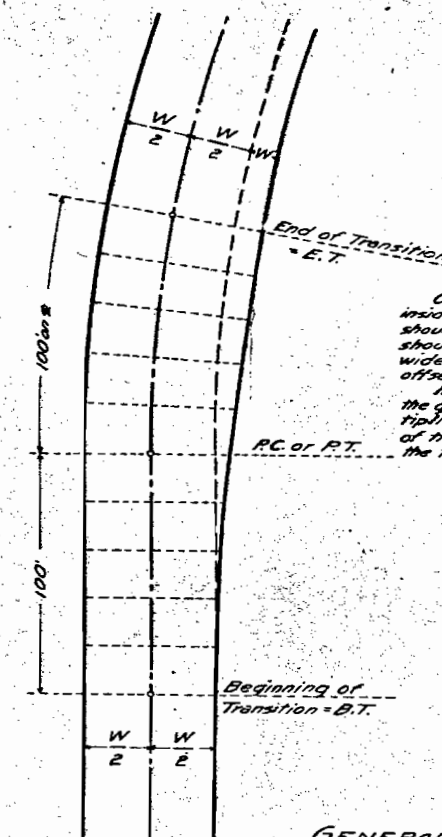
The outside ditch along a super-elevated section is to be modified from the standard where a deeper ditch is required to provide drainage.

Details of plans for super-elevating and widening are shown on the General Plan for Widening and the Graph of Super-elevation Factors.

The subgrade for future pavement is to be constructed to conform to the super-elevation and widening requirements for the pavement section.

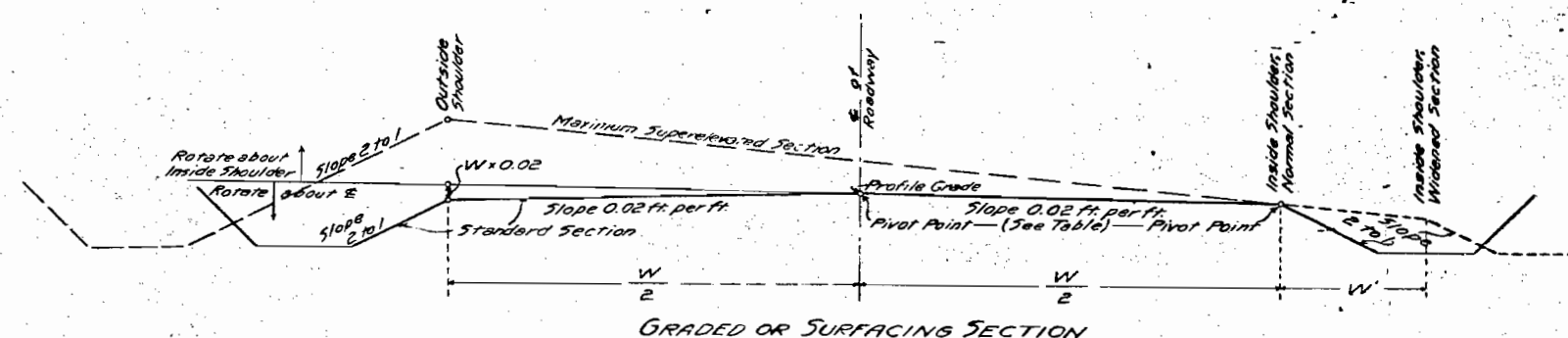
## SUPERELEVATION FACTORS AND OFFSETS FOR WIDENING FOR PAVEMENT SECTION

| Distance from B.T.                | 20 Ft.                                                      | 40 Ft. | 60 Ft. | 80 Ft. | 100 Ft. = P.C. | 120 Ft. | 140 Ft. | 160 Ft. | 180 Ft. | 200 Ft. = E.T. | On Curve |
|-----------------------------------|-------------------------------------------------------------|--------|--------|--------|----------------|---------|---------|---------|---------|----------------|----------|
| Factor                            | 0.02                                                        | 0.08   | 0.18   | 0.32   | 0.50           | 0.68    | 0.82    | 0.92    | 0.98    | 1.00           | V. 1.00  |
| Degree of Curve                   | Rate of Super-elevation (in Feet) per Foot Width of Roadway |        |        |        |                |         |         |         |         |                |          |
| 2° and Under                      | 0.0004                                                      | 0.0017 | 0.0038 | 0.0067 | 0.0105         | 0.0143  | 0.0172  | 0.0193  | 0.0206  | 0.0210         | 0.0210   |
| 3°                                | 0.0006                                                      | 0.0025 | 0.0057 | 0.0101 | 0.0158         | 0.0214  | 0.0258  | 0.0290  | 0.0309  | 0.0315         | 0.0315   |
| 4°                                | 0.0008                                                      | 0.0034 | 0.0076 | 0.0134 | 0.0210         | 0.0286  | 0.0344  | 0.0386  | 0.0412  | 0.0420         | 0.0420   |
| 5°                                | 0.0010                                                      | 0.0042 | 0.0094 | 0.0168 | 0.0262         | 0.0357  | 0.0430  | 0.0483  | 0.0514  | 0.0525         | 0.0525   |
| 6°                                | 0.0013                                                      | 0.0050 | 0.0113 | 0.0202 | 0.0315         | 0.0428  | 0.0517  | 0.0580  | 0.0617  | 0.0630         | 0.0630   |
| 7°                                | 0.0015                                                      | 0.0059 | 0.0132 | 0.0235 | 0.0368         | 0.0500  | 0.0603  | 0.0676  | 0.0720  | 0.0735         | 0.0735   |
| 8°                                | 0.0017                                                      | 0.0067 | 0.0151 | 0.0269 | 0.0420         | 0.0571  | 0.0689  | 0.0773  | 0.0823  | 0.0840         | 0.0840   |
| 9°                                | 0.0019                                                      | 0.0076 | 0.0170 | 0.0302 | 0.0472         | 0.0643  | 0.0775  | 0.0869  | 0.0926  | 0.0945         | 0.0945   |
| 10° and Over                      | 0.0020                                                      | 0.0080 | 0.0180 | 0.0320 | 0.0500         | 0.0680  | 0.0820  | 0.0920  | 0.0980  | 0.1000         | 0.1000   |
| Offsets for Widening-W' (in Feet) |                                                             |        |        |        |                |         |         |         |         |                |          |
| Over 10° - Under 12°              | 0.06                                                        | 0.24   | 0.54   | 0.96   | 1.50           | 2.04    | 2.46    | 2.76    | 2.94    | 3.00           | 3.00     |
| 12° - " 15°                       | 0.08                                                        | 0.32   | 0.72   | 1.28   | 2.00           | 2.72    | 3.28    | 3.68    | 3.92    | 4.00           | 4.00     |
| 15° - " 20°                       | 0.10                                                        | 0.40   | 0.90   | 1.60   | 2.50           | 3.40    | 4.10    | 4.60    | 4.90    | 5.00           | 5.00     |
| Over 20°                          | 0.12                                                        | 0.48   | 1.08   | 1.92   | 3.00           | 4.08    | 4.92    | 5.52    | 5.88    | 6.00           | 6.00     |



GENERAL PLAN FOR WIDENING

Curves of over 10° are to have the inside portion of the pavement slab and shoulder, or the inside portion and shoulder in a graded or surfacing section, widened in accordance with the plan, offsets for widening, and cross sections. In the graph below the values for the graph labeled '10° and Over,' multiplied by 1,000 gives the percentage of the total widening at any point on the transition.



## SUPERELEVATION AND WIDENING NOTES FOR GRADED OR SURFACING SECTIONS

Curves on projects using the graded or surfacing section are to be super-elevated and widened as indicated in the accompanying sketches and table.

The normal inside shoulder and ditch are to remain as shown in the typical section shown on sheet #2. The outside shoulder is to be the high point of the section.

The outside ditch along a super-elevated section is to be modified from the standard where a deeper ditch is required to provide drainage.

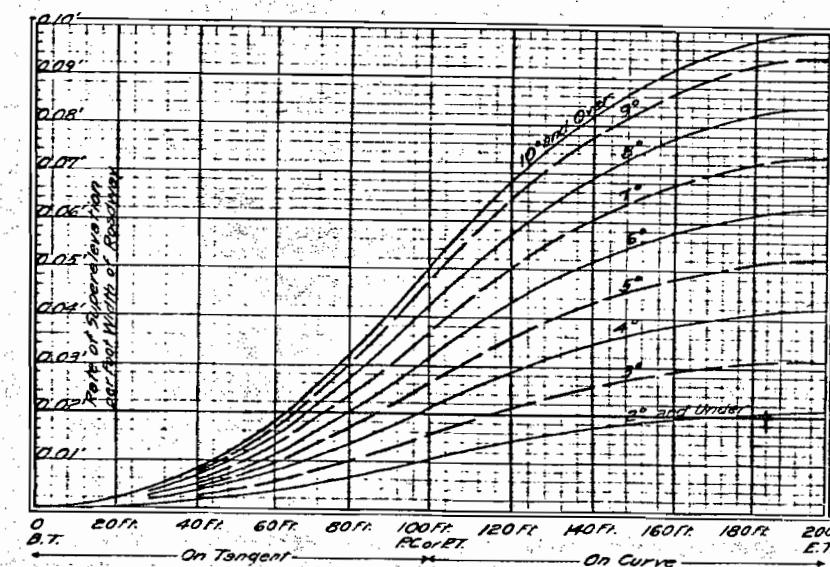
The center line pivot point is to be used as long as the super-elevation does not exceed 0.02 feet per foot width of roadway. The normal inside shoulder pivot point is to be used for a super-elevation rate in excess of 0.02 ft. per foot width of roadway.

When the degree of curvature exceeds 10° the inside shoulder is to be widened from the normal inside shoulder line as shown by the table and cross section. Curves of 10° and less are not to be widened.

Details of plans for super-elevating and widening are shown on the General Plan for Widening and the Graph of Super-elevation Factors.

## SUPERELEVATION FACTORS AND OFFSETS FOR WIDENING FOR GRADED OR SURFACING SECTIONS

| Distance from B.T.                | 20 Ft.                                                      | 40 Ft. | 60 Ft. | 80 Ft. | 100 Ft. = P.C. | 120 Ft. | 140 Ft. | 160 Ft. | 180 Ft. | 200 Ft. = E.T. | On Curve | Length of Transition Rotated about |
|-----------------------------------|-------------------------------------------------------------|--------|--------|--------|----------------|---------|---------|---------|---------|----------------|----------|------------------------------------|
| Factor                            | 0.02                                                        | 0.08   | 0.18   | 0.32   | 0.50           | 0.68    | 0.82    | 0.92    | 0.98    | 1.00           | 1.00     | Center Line Inside Shoulder        |
| Degree of Curve                   | Rate of Super-elevation (in Feet) per Foot Width of Roadway |        |        |        |                |         |         |         |         |                |          |                                    |
| 2° and Under                      | 0.0004                                                      | 0.0017 | 0.0038 | 0.0067 | 0.0105         | 0.0143  | 0.0172  | 0.0193  | 0.0206  | 0.0210         | 0.0210   | 169 ft.                            |
| 3°                                | 0.0006                                                      | 0.0025 | 0.0057 | 0.0101 | 0.0158         | 0.0214  | 0.0258  | 0.0290  | 0.0309  | 0.0315         | 0.0315   | 115 "                              |
| 4°                                | 0.0008                                                      | 0.0034 | 0.0076 | 0.0134 | 0.0210         | 0.0286  | 0.0344  | 0.0386  | 0.0412  | 0.0420         | 0.0420   | 90 "                               |
| 5°                                | 0.0010                                                      | 0.0042 | 0.0094 | 0.0168 | 0.0262         | 0.0357  | 0.0430  | 0.0483  | 0.0514  | 0.0525         | 0.0525   | 87 "                               |
| 6°                                | 0.0013                                                      | 0.0050 | 0.0113 | 0.0202 | 0.0315         | 0.0428  | 0.0517  | 0.0580  | 0.0617  | 0.0630         | 0.0630   | 80 ft.                             |
| 7°                                | 0.0015                                                      | 0.0059 | 0.0132 | 0.0235 | 0.0368         | 0.0500  | 0.0603  | 0.0676  | 0.0720  | 0.0735         | 0.0735   | 74 "                               |
| 8°                                | 0.0017                                                      | 0.0067 | 0.0151 | 0.0269 | 0.0420         | 0.0571  | 0.0689  | 0.0773  | 0.0823  | 0.0840         | 0.0840   | 69 "                               |
| 9°                                | 0.0019                                                      | 0.0076 | 0.0170 | 0.0302 | 0.0472         | 0.0643  | 0.0775  | 0.0869  | 0.0926  | 0.0945         | 0.0945   | 63 "                               |
| 10° and Over                      | 0.0020                                                      | 0.0080 | 0.0180 | 0.0320 | 0.0500         | 0.0680  | 0.0820  | 0.0920  | 0.0980  | 0.1000         | 0.1000   | 63 "                               |
| Offsets for Widening-W' (in Feet) |                                                             |        |        |        |                |         |         |         |         |                |          |                                    |
| Over 10° - Under 12°              | 0.06                                                        | 0.24   | 0.54   | 0.96   | 1.50           | 2.04    | 2.46    | 2.76    | 2.94    | 3.00           | 3.00     |                                    |
| 12° - " 15°                       | 0.08                                                        | 0.32   | 0.72   | 1.28   | 2.00           | 2.72    | 3.28    | 3.68    | 3.92    | 4.00           | 4.00     |                                    |
| 15° - " 20°                       | 0.10                                                        | 0.40   | 0.90   | 1.60   | 2.50           | 3.40    | 4.10    | 4.60    | 4.90    | 5.00           | 5.00     |                                    |
| Over 20°                          | 0.12                                                        | 0.48   | 1.08   | 1.92   | 3.00           | 4.08    | 4.92    | 5.52    | 5.88    | 6.00           | 6.00     |                                    |



GRAPH OF SUPERELEVATION TRANSITION FACTORS

The rate of super-elevation per foot width of roadway to be applied at the outside edge of the pavement slab, and at the outside shoulder of the roadway, is computed as follows:

The full super-elevation per foot width of roadway rate for a given degree of curvature is

0.0105 ft. x Degree of Curvature.

The maximum super-elevation of 0.10 ft. per foot width, applying to curves of 10° and over, is not to be exceeded.

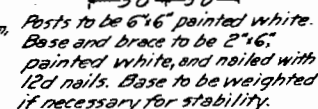
The above graph has been prepared from the rates of super-elevation shown in the tabulations.

SPECIAL CASES - When the roadway alignment does not permit the use of the 200 ft. transition lengths, the segment lengths may be proportionately shortened. A minimum distance of 200 ft. between the points of full super-elevation shall be used.

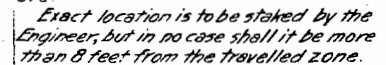
COLORADO  
 STATE HIGHWAY DEPT.  
 STANDARD MET.  
 FOR SUPERELEVAT.  
 WIDENING OF CU.

Designed by J.B.L. Approved by  
 Made by S.B.L.  
 Checked by J.B.L. Date Aug.

|                        |       |           |              |
|------------------------|-------|-----------|--------------|
| FED. ROAD<br>DIST. NO. | STATE | PROJ. NO. | SHEET<br>NO. |
| 3                      | COLO. | 299H      | 1            |



*This Distance to be governed by the maximum day and night visibility which is influenced by grade, curvature, interference of local signs, shrubbery, fences etc*



Technical drawing of a double-headed arrow. The overall width is 2' 7". The length of each arrowhead is 6". The thickness of the arrow shaft is 3". The distance between the arrowheads is 5' 3/4". The height of the arrowhead is 10". The distance from the centerline to the tip of the arrowhead is 1/2".

2 Contractor shall be required to have at least two such arrows for use on barricades at the ends of each project.

Reflector Buttons shall be of a type and size, and the sign shall be subject to Department approval.

A hand-drawn diagram illustrating a road closure for one traffic lane. At the top, a COLO. 85 shield is positioned above a 'ROAD CLOSED' sign. Below the sign is a 'ROAD CLOSED' banner. The diagram shows a 'Sufficient distance for one traffic lane' leading to the closure. The distance from the sign to the start of the closure is marked as 20' 11 1/2" Min. The closure is supported by 6" x 6" Posts. The diagram also shows a 'ROAD CLOSED' sign and a 'ROAD CLOSED' banner. The distance from the sign to the start of the closure is marked as 20' 11 1/2" Min. The closure is supported by 6" x 6" Posts. The diagram also shows a 'ROAD CLOSED' sign and a 'ROAD CLOSED' banner.

Diagram of a rectangular sign with dimensions and text layout:

- Overall Dimensions:** 3'4" (height) x 5'0" (width).
- Text Layout:**
  - SLOW** (top line, 8" high)
  - ROAD UNDER** (middle line, 6" high)
  - CONSTRUCTION** (bottom line, 6" high)
  - CONTRACTOR'S NAME** (bottom line, 12" high)
- Vertical Spacing (from top):**
  - 4" (margin)
  - 8" (SLOW)
  - 5" (margin)
  - 6" (ROAD UNDER)
  - 6" (CONSTRUCTION)
  - 3" (margin)
  - 12" (CONTRACTOR'S NAME)
- Horizontal Spacing:**
  - 3" (margin)
  - 5'0" (total width)

*Sign to be made on 1" material with at least three cleats on the back. Background to be white, SLOW and underline to be red, and other lettering to be black. Sign to be set on 2-6"x6" posts 4 ft. in the ground.*

[illegible]

Diagram illustrating a vertical curve section, divided into two parts: **1/2 CUT SECTION** and **1/2 FILL SECTION**.

**1/2 CUT SECTION:** Shows a 40' Vertical Curve with a 20' shoulder line. The grade is 0.0%.

**1/2 FILL SECTION:** Shows a 40' Vertical Curve with a 20' shoulder line. The grade is 2%.

Labels include: "Not steeper than 8%", "Shoulder Line", and "40' Vertical Curve".

[illegible]

The maximum grades shown are to be the limiting grades for all except extreme cases.

When the length of the approach as determined by the intersection of these grades with the natural ground is such as to damage the Property so served, or cause unreasonable conditions, the grades may be modified.

In such cases, methods used, and maximum grades, shall be as indicated on the plans, or provided by work order.

All Work shall be done in accordance with the Standard Specifications of the Colorado State Highway Department adopted August 1, 1954. Whenever traffic is permitted on a road while under construction, the Contractor shall at all times adequately and appropriately mark a and all hazards on the Project with well painted, well maintained barricades, and standard caution and warning signs. The Contractor shall mark with standard directional signs any places where the direction of the flow of traffic is not plain.

Whenever traffic is prohibited from a Project under construction, the Detour will be marked by the Department and the barricades at the end of the Project shall be erected and maintained by the Contractor.

All signs and barricades shall be immediately moved, added to, removed, or changed to appropriately mark hazards, or conditions altered, corrected, or changed by construction progress.

The Contractor shall furnish:

- (1) All barricade material. It shall always be well painted, as per sketch, and well maintained.
- (2) A reflectorized arrow of an approved type for each barricade at the ends of the Project, and at other barricades required where traffic is permitted on road under construction.
- (3) "SLOW-ROAD UNDER CONSTRUCTION" signs as required.
- (4) Any special signs the Department may deem necessary for the protection of traffic over the Project.
- (5) At least three (3) flares or torches for each barricade, and other flares to illuminate such signs as are called for on these plans, or as the Department may direct.

Flares or torches shall be placed between 3 and 5 feet ahead of the sign or object to be illuminated, and shall be kept burning from sunset to sunrise.

Costs of all of the foregoing materials and work by the Contractor shall be included in the original contract prices for the Project.

The Highway Department will furnish all standard signs not required to be furnished by the Contractor.

**COLORADO**  
**STATE HIGHWAY DEPARTMENT**  
**TYPICAL**  
**SIDE APPROACH ROADWAY CONSTRUCTION**  
**TRAFFIC SIGN**

|                         |                        |
|-------------------------|------------------------|
| Des. good by <i>JAN</i> | Approved by <i>JAN</i> |
| Made by <i>SOL</i>      | Date <i>Aug</i>        |
| Checked by <i>JAN</i>   |                        |
| Drawn by <i>JAN</i>     |                        |

**COLORADO**  
**STATE HIGHWAY DEPARTMENT**  
**TYPICAL**  
**SIDE APPROACH**  
**ROADWAY CONSTRUCTION**  
**TRAFFIC SIGNS**

Des-good by JSM  
Made by SOL  
Check JSM  
Cash HAN

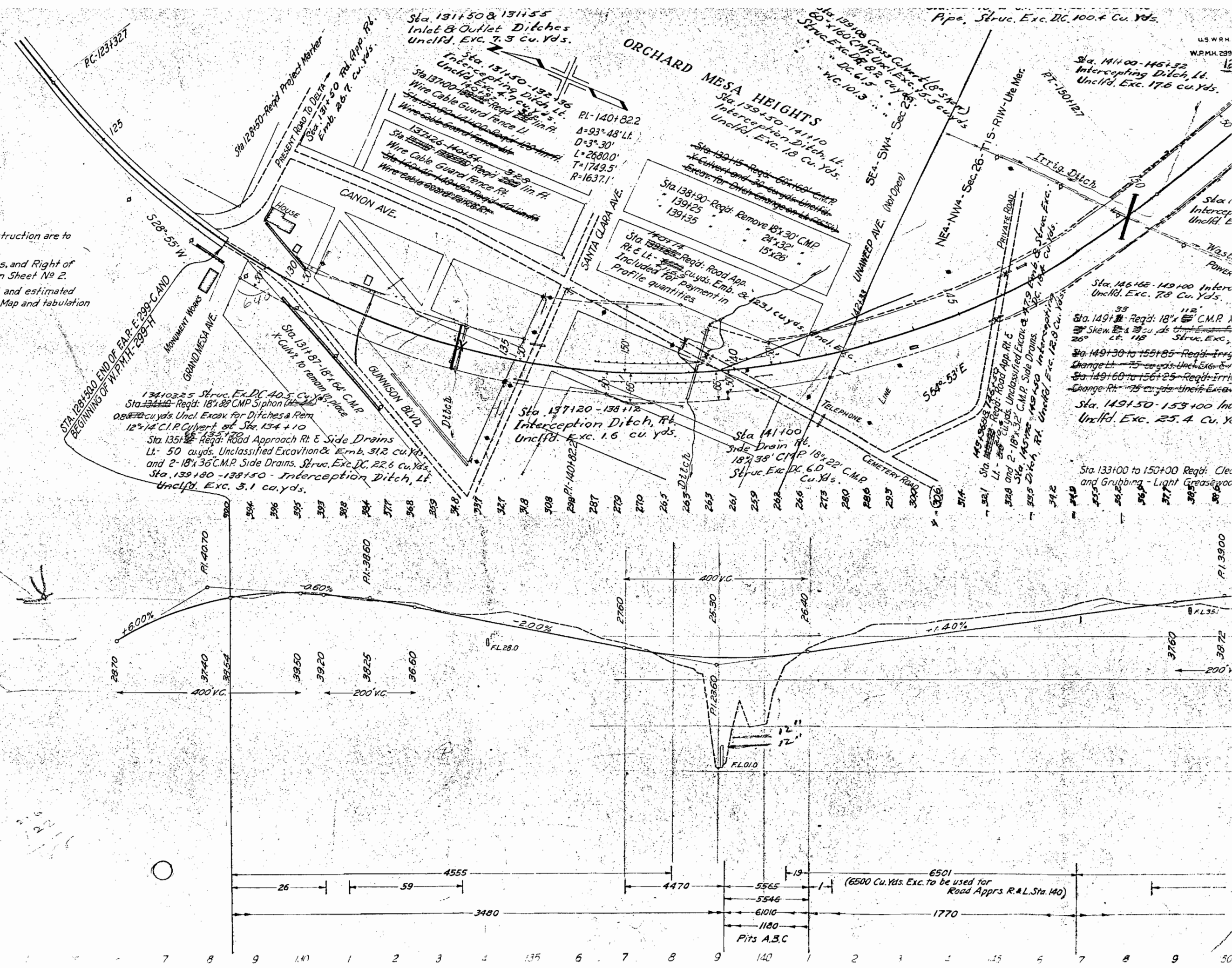
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JSM  
Date Aug

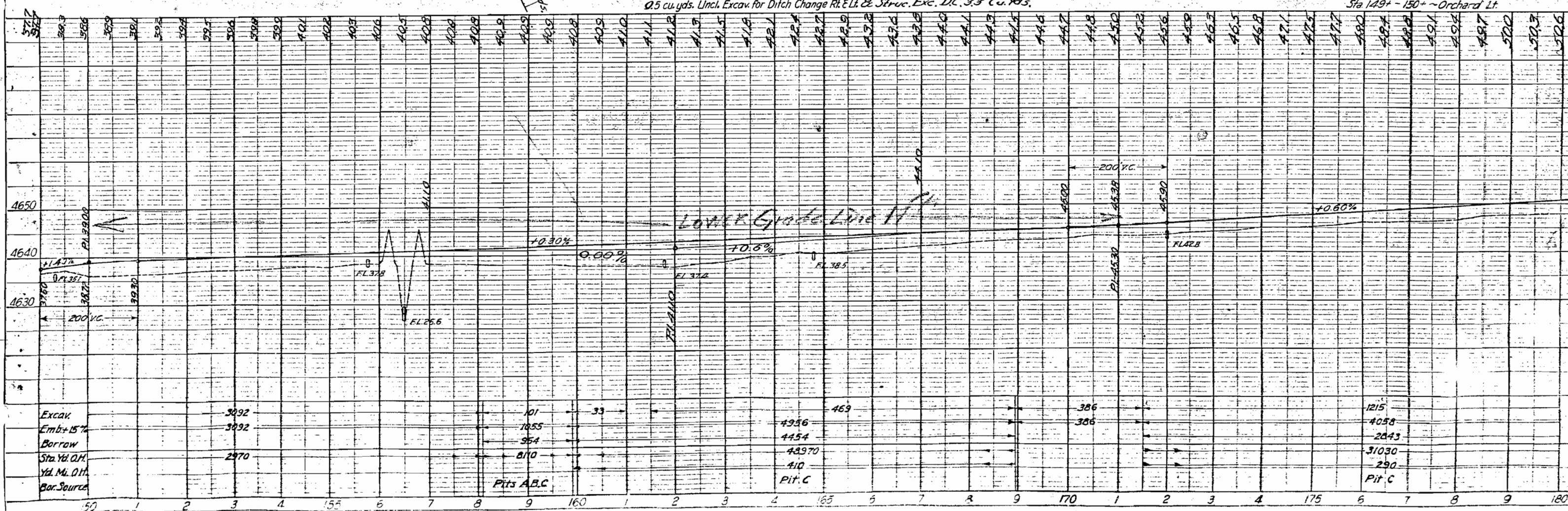
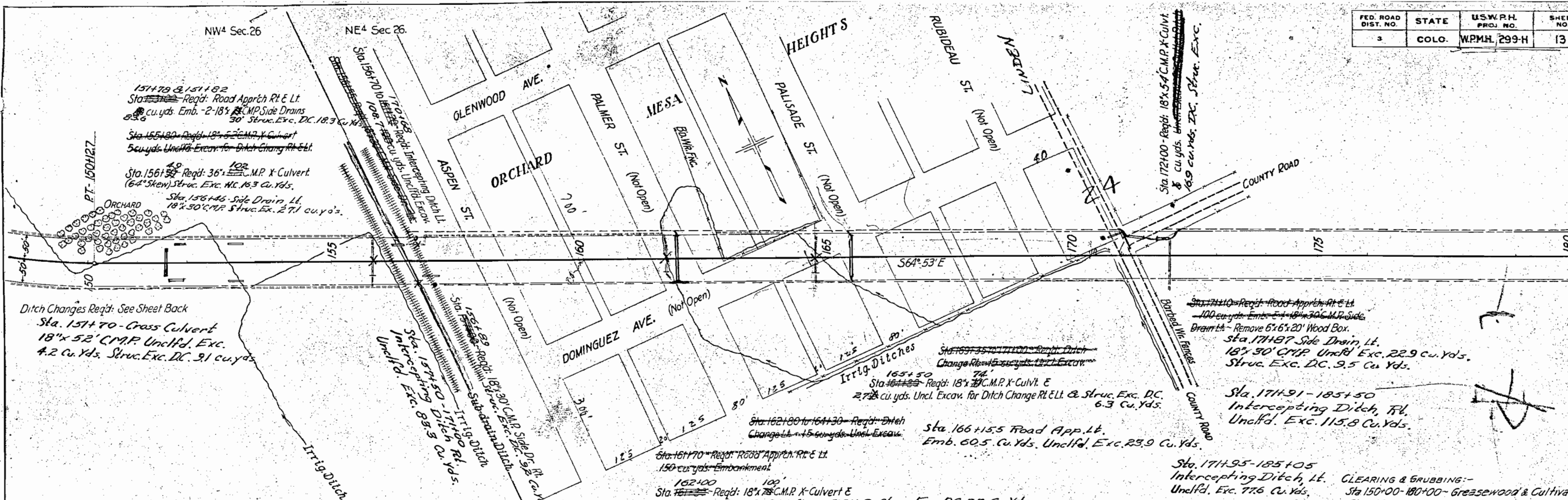
NOTE: All poles encroaching on construction are to be moved by owners.  
 Fencing Requirements, Gates, and Right of Way Markers are tabulated on Sheet No 2.  
 Sources of Borrow Material and estimated Overhaul indicated by Sketch Map and tabulation on Sheet No 4.

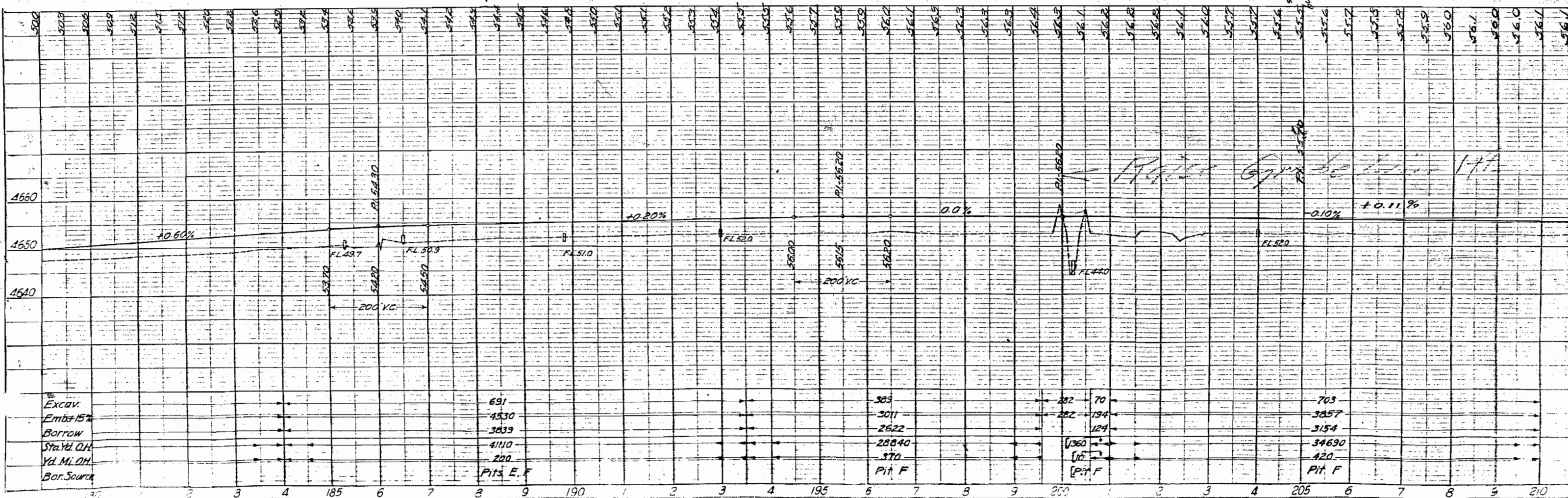
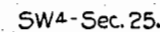
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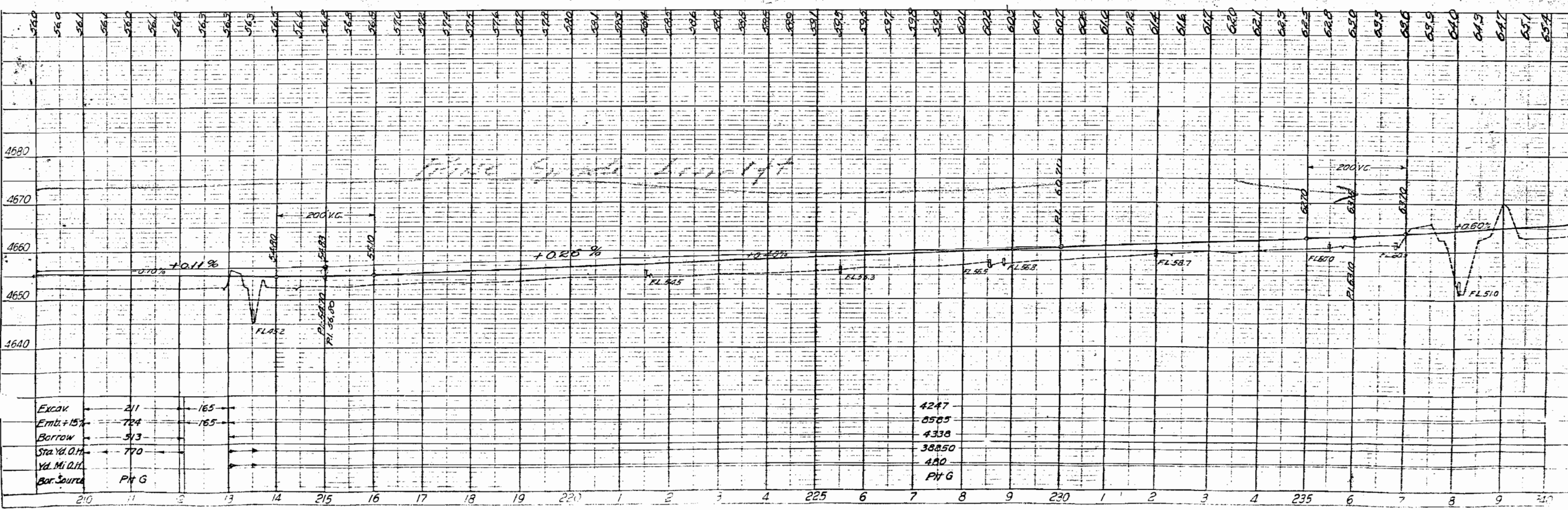
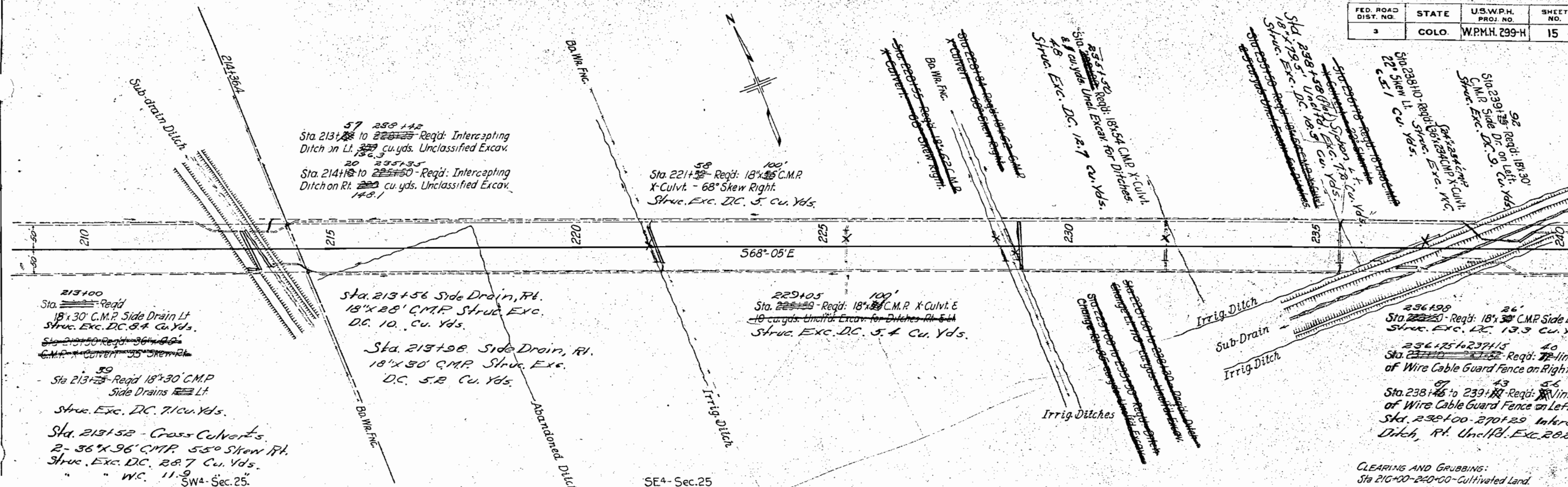
4650  
4640  
4630  
4620  
4610  
4600  
4590  
4580

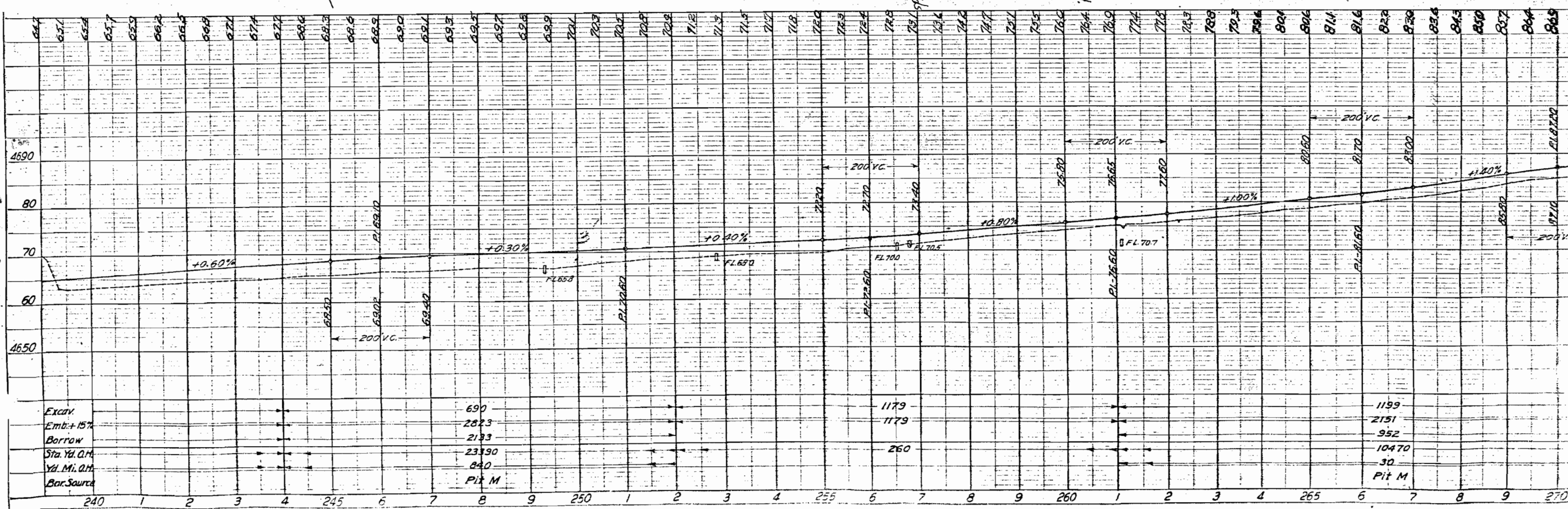
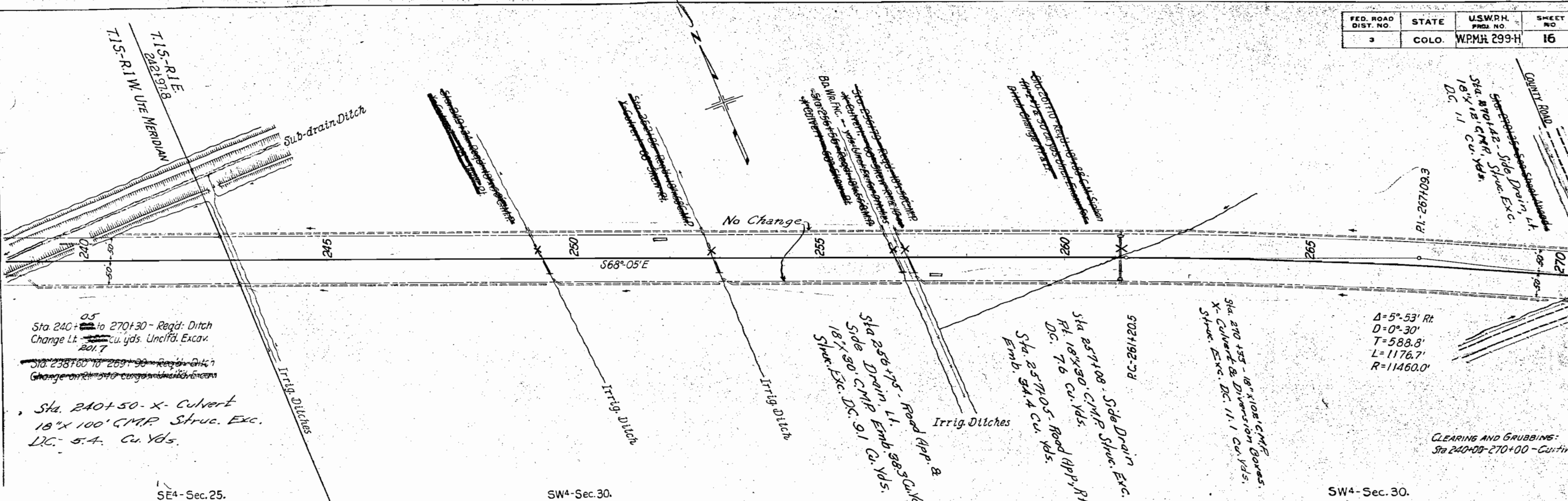
Excav  
Emb. +15%  
Borrow  
Sta Yd. O.H.  
Yd. Mi. O.H.  
Bor. Source

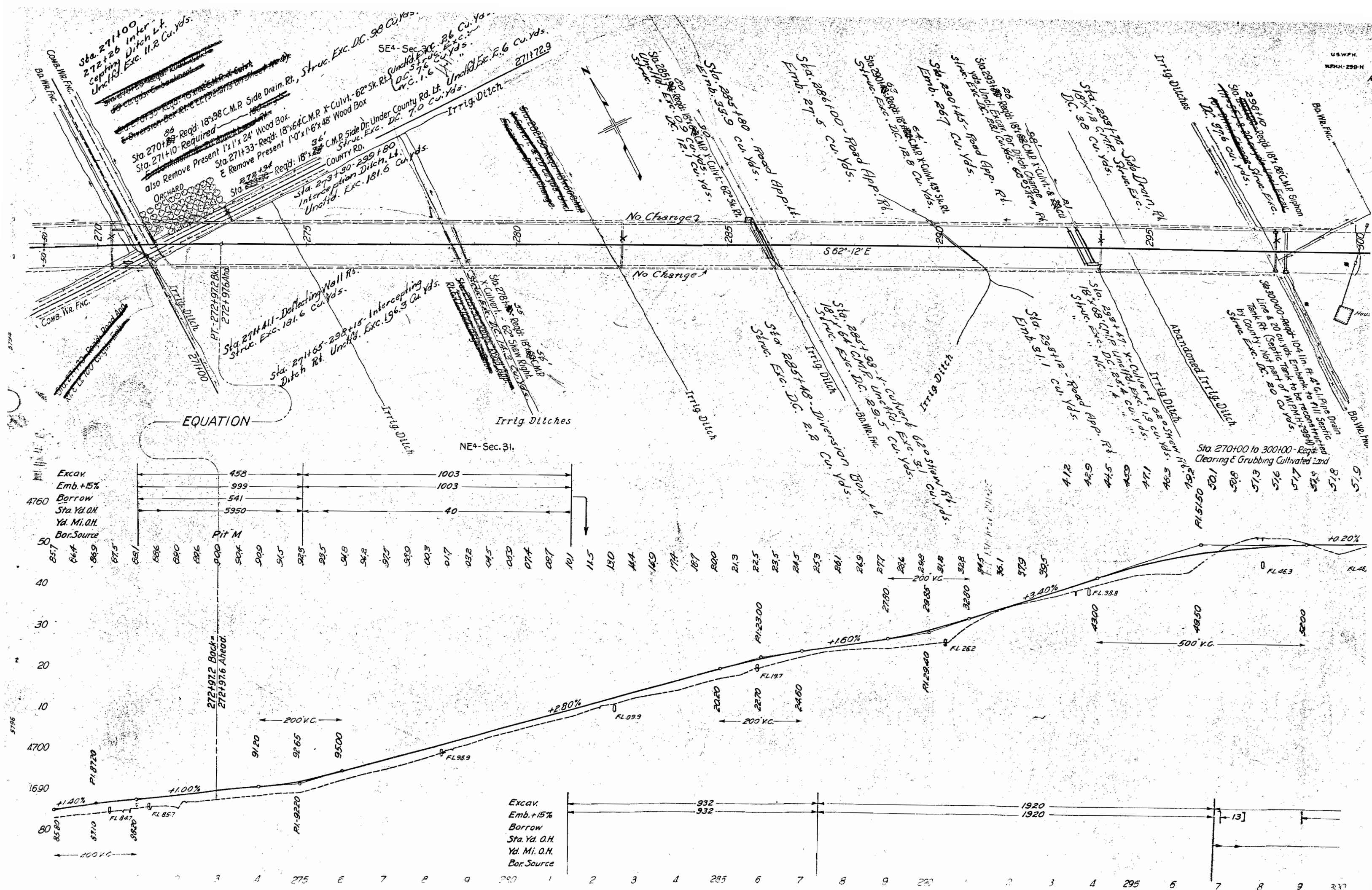


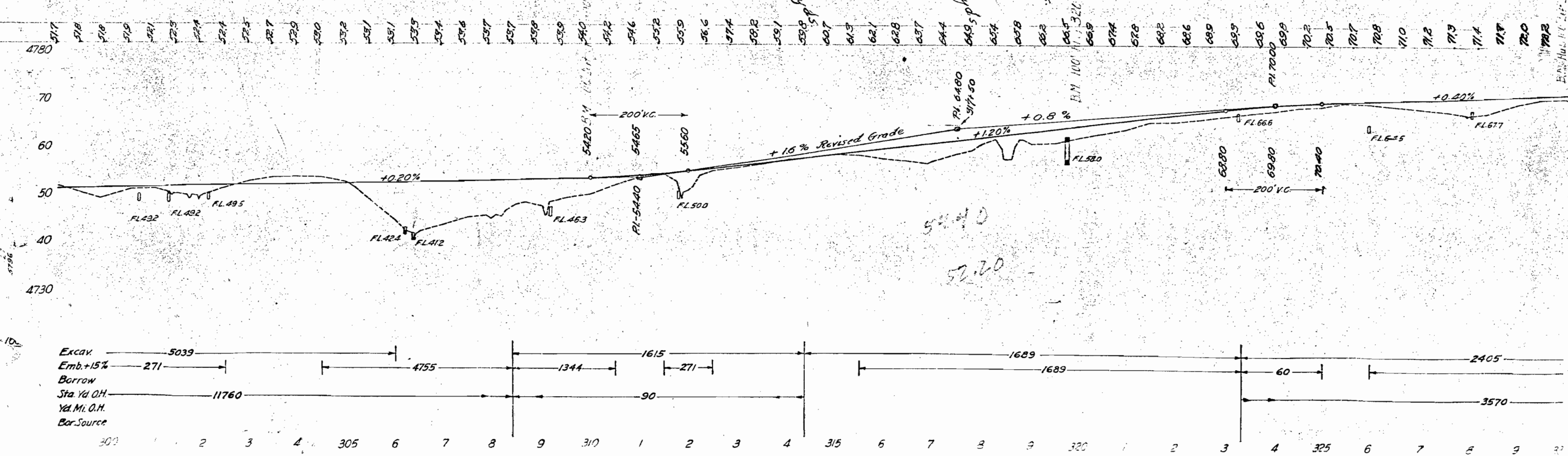
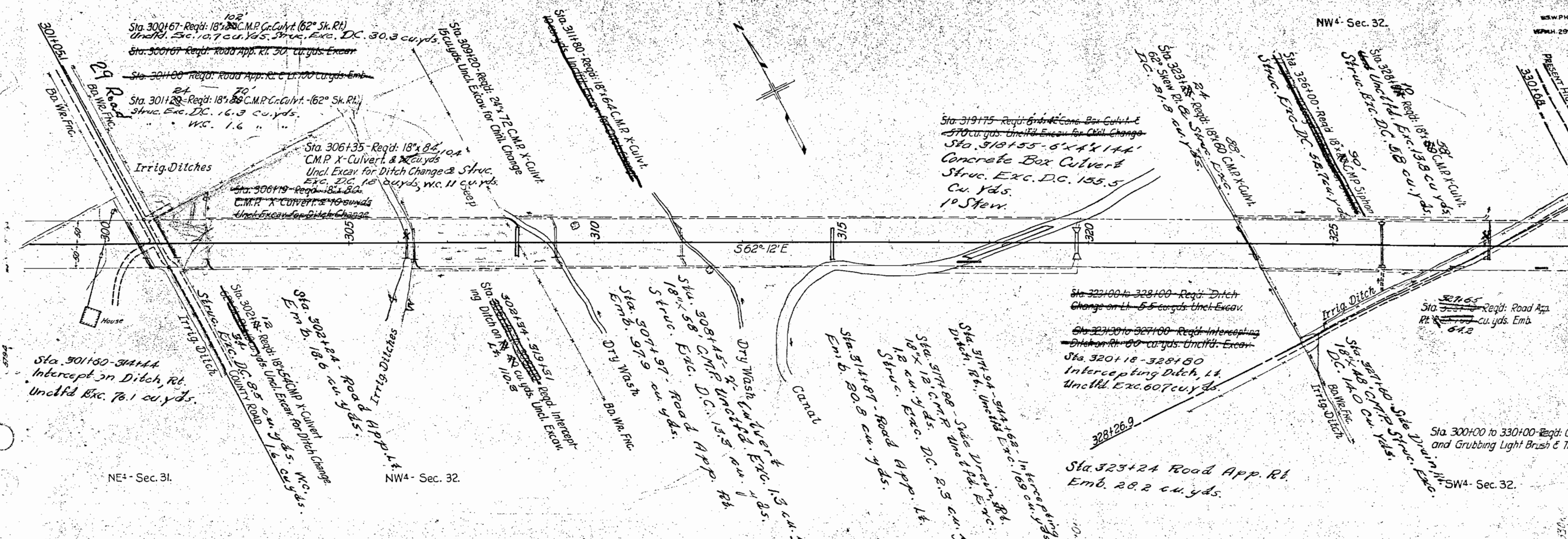














W.H. Haun Lots 17 to 24 O.M.H. Sub-Div. Canon's Add.  
Benton Canon Estate Lots 14 to 28 Block 20  
Sophia Vartimer Lots 29 to 30 Block 20  
L.F. Fowler & William Drabble Lots 2 to 8, 11 to 16 Block 25. Lots 1 to 3 Block 26  
Katherine Gerhart Lots 6 to 8 Block 24  
Lots 19 to 23 Block 21

