

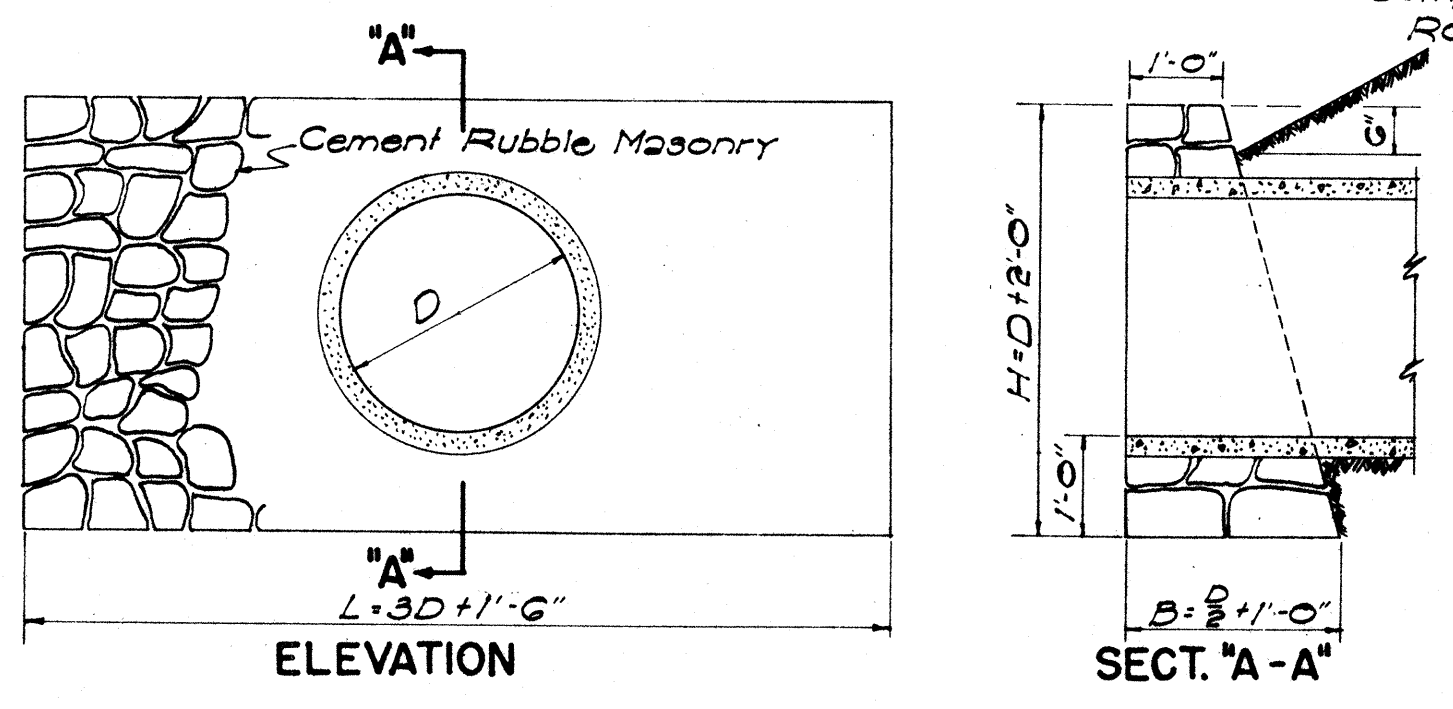
| D   | W   | H     | T=H+H | Where Variables Equal |
|-----|-----|-------|-------|-----------------------|
| 18" | 24" | 2'-0" | 4'-0" | 4'-0"                 |
| 24" | 30" | 2'-0" | 4'-0" | 4'-0"                 |
| 30" | 30" | 2'-0" | 5'-0" | 5'-0"                 |
| 36" | 36" | 3'-0" | 6'-0" | 6'-0"                 |

**DETAIL OF OUTLET DITCH**  
Scale: 1/2" = 1'-0"

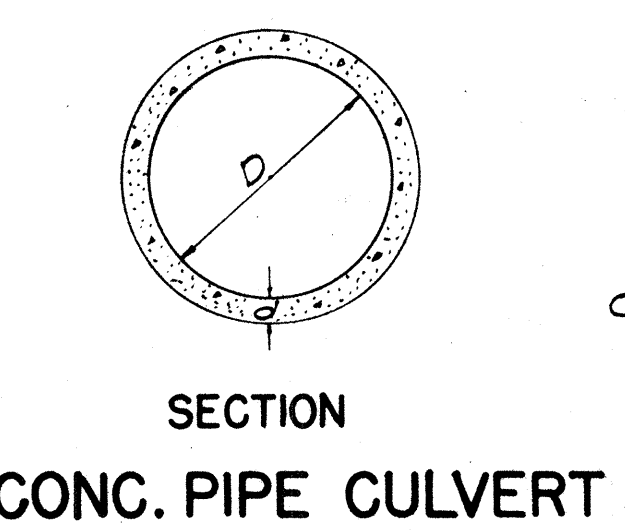
| D'  | D   | L=D+G' | Cu Yds | Where Variables Equal |
|-----|-----|--------|--------|-----------------------|
| 23" | 18" | 2'-5"  | 3.02   | 4'-0"                 |
| 30" | 24" | 3'-0"  | 3.61   | 5'-0"                 |
| 37" | 30" | 3'-7"  | 4.21   | 5'-0"                 |
| 44" | 36" | 4'-2"  | 4.85   | 6'-0"                 |

NOTE: Dimension "X" is assumed as 2'-4" in figuring the above quantities.

| D   | H     | B     | L      | Cast-in-Place Conc. Culvert Cu Yds | Corrugated Pipe Culvert Cu Yds |
|-----|-------|-------|--------|------------------------------------|--------------------------------|
| 18" | 3'-6" | 1'-0" | 6'-0"  | 0.85                               | 0.03                           |
| 24" | 4'-0" | 2'-0" | 7'-0"  | 1.28                               | 1.41                           |
| 30" | 4'-6" | 2'-3" | 8'-0"  | 1.83                               | 2.00                           |
| 36" | 5'-0" | 2'-6" | 10'-0" | 2.40                               | 2.72                           |



**DETAIL OF MASONRY HEADWALL**  
Scale: 1/2" = 1'-0"

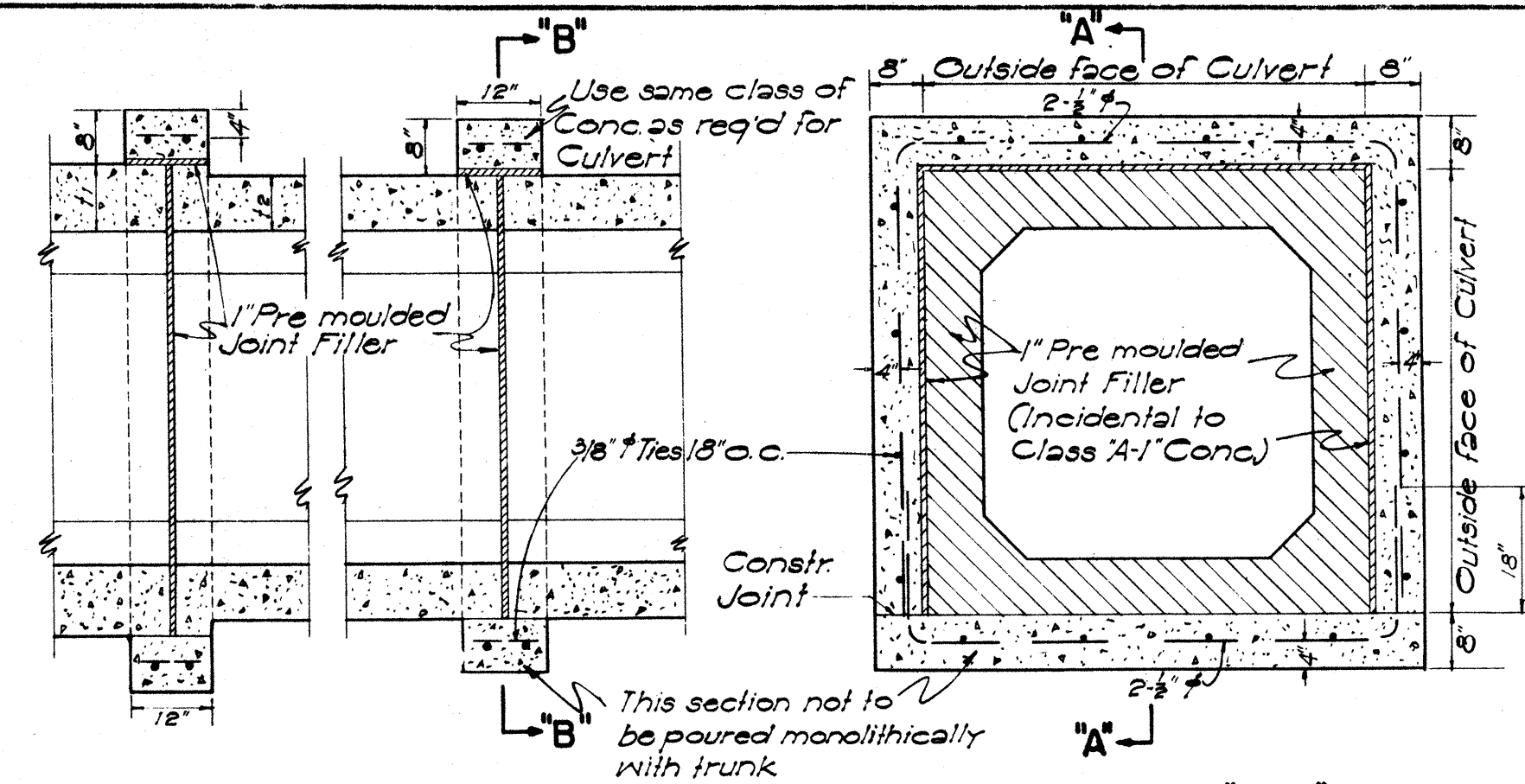


**SECTION CONG. PIPE CULVERT**

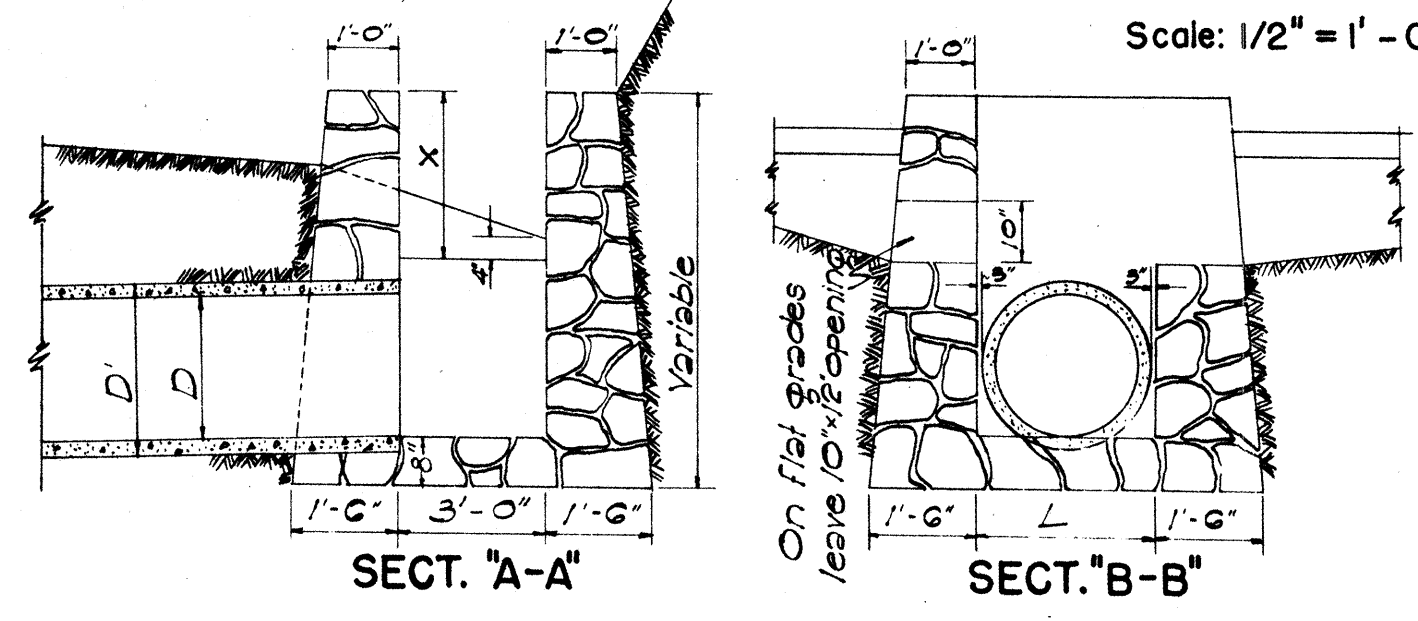
NOTE: Thickness 't', reinforcing, and concrete used are to conform with the approved design as provided by the Specifications.

| D   | d      | W      | Cu Yds per ft |
|-----|--------|--------|---------------|
| 18" | 4"     | 2'-2"  | 0.11          |
| 24" | 4 1/2" | 2'-0"  | 0.14          |
| 30" | 5"     | 3'-4"  | 0.19          |
| 36" | 5 1/2" | 3'-11" | 0.26          |

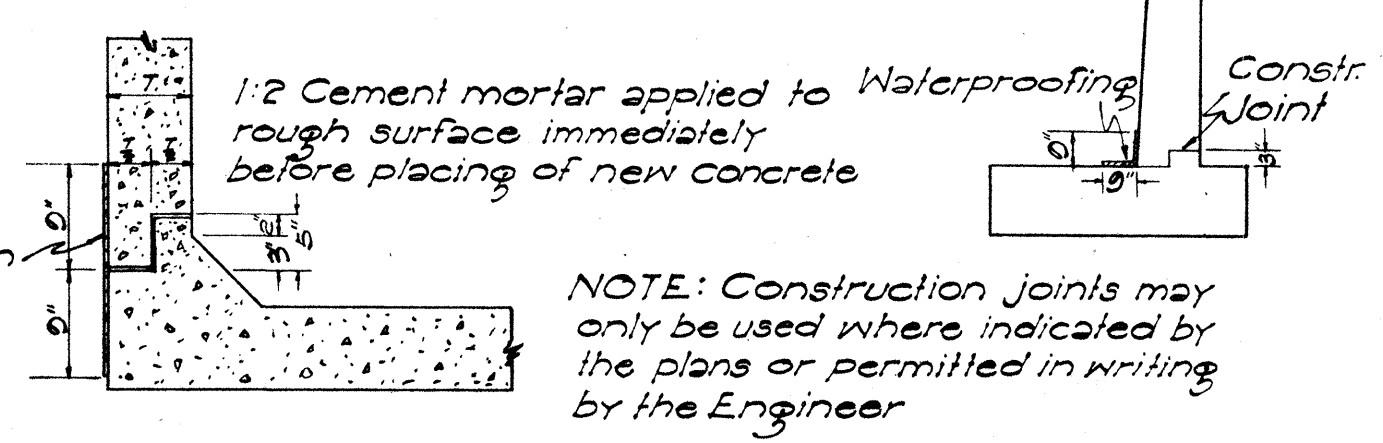
**CAST-IN-PLACE CONG. CULVERT**



**SECTION "A-A" SECTION "B-B" CONG. COLLAR FOR CONG. BOX CULVERT**  
Scale: 1/2" = 1'-0"

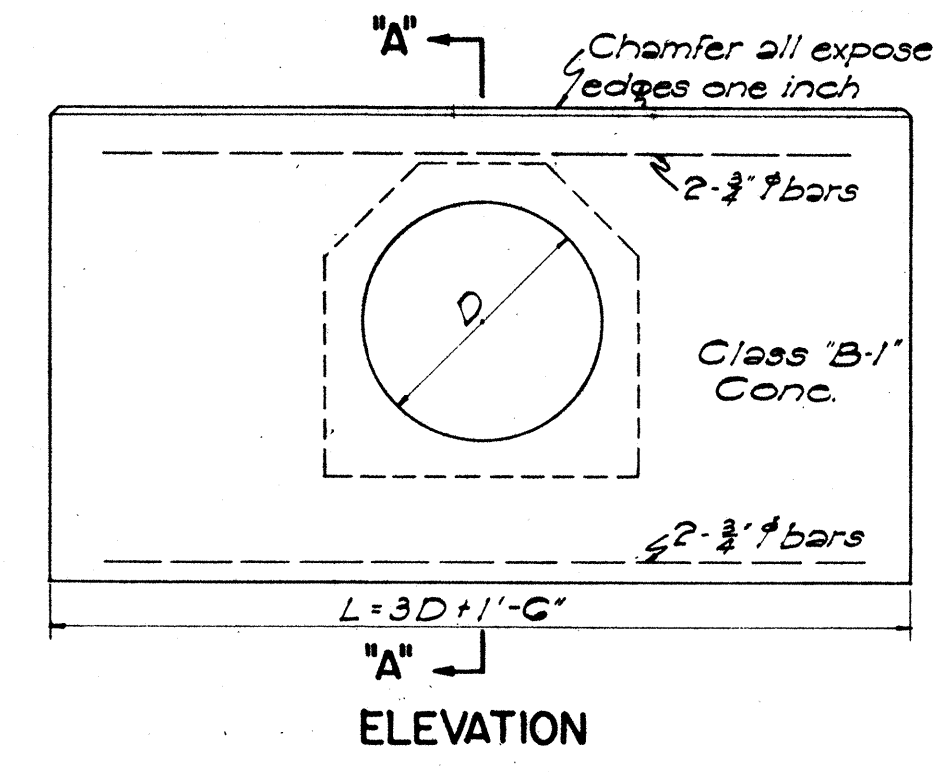


**DETAIL OF MASONRY DROP INTAKE**  
Scale: 3/8" = 1'-0"



**CONSTR. JOINT DETAILS**

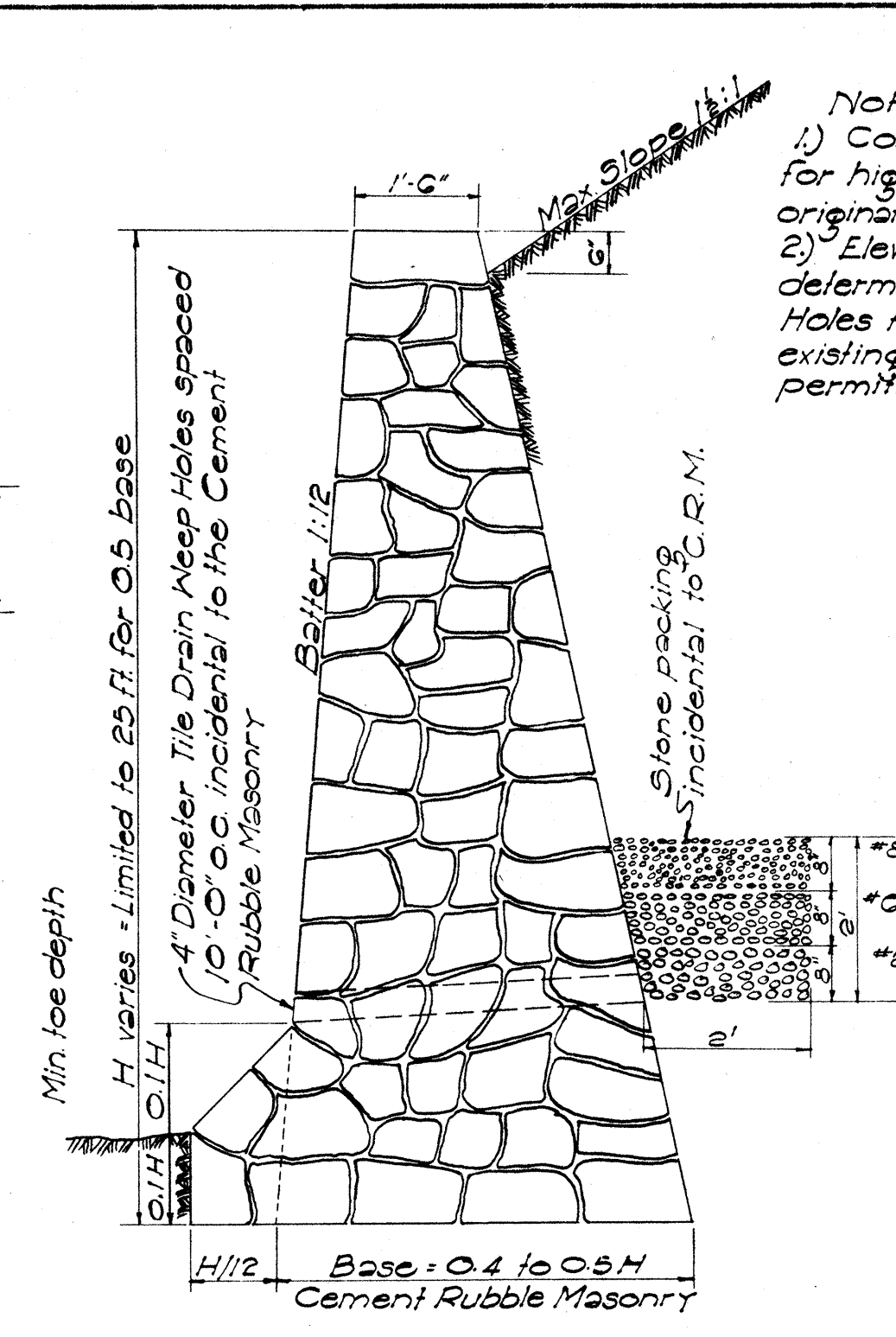
METHOD OF APPLYING CONSTR. JOINT WATERPROOFING  
(1) Map surface either side of joint as required with asphalt 50-100 penetration (A.S.T.M. Desig. D 5-25) applied at 200°F.  
(2) Apply one layer of 55-1b composition roofing to hot asphalt.  
(3) Map surface of composition roofing and 3" beyond all around with thick coat of asphalt as specified under (1).  
The above work is incidental to concrete and will not be paid for separately.



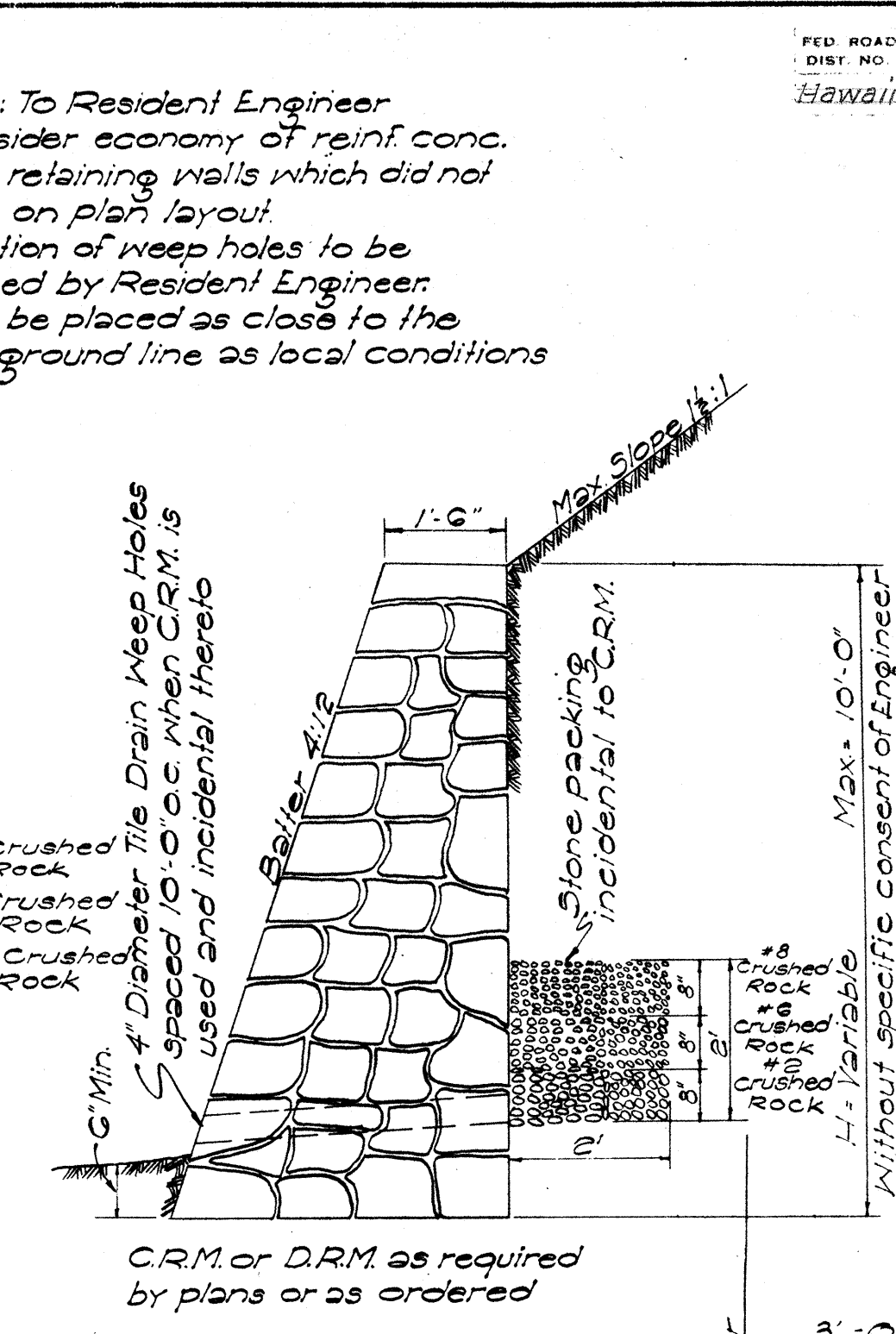
**ELEVATION SECTION "A-A"**

| D   | B     | L      | H     | Cast-in-Place Conc. Culvert Cu Yds | Corrugated Pipe Culvert Cu Yds | Steel For One Headwall No. of Bars Size Length Lbs. |
|-----|-------|--------|-------|------------------------------------|--------------------------------|-----------------------------------------------------|
| 18" | 1'-6" | 6'-0"  | 4'-0" | 0.02                               | 1.00                           | 4 3/4" 2'-0" 33                                     |
| 24" | 1'-6" | 7'-0"  | 4'-0" | 1.28                               | 1.38                           | 4 3/4" 7'-0" 42                                     |
| 30" | 2'-0" | 8'-0"  | 5'-0" | 1.95                               | 2.17                           | 4 3/4" 8'-0" 51                                     |
| 36" | 2'-0" | 10'-0" | 5'-0" | 2.45                               | 2.74                           | 4 3/4" 10'-0" 60                                    |
| 42" | 2'-6" | 12'-0" | 6'-0" | 3.87                               | 4.66                           | 4 3/4" 11'-0" 69                                    |
| 48" | 2'-6" | 13'-0" | 6'-0" | 4.66                               | 5.66                           | 4 3/4" 13'-0" 78                                    |

**DETAIL OF CONCRETE HEADWALL**  
Scale: 1/2" = 1'-0"



**SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL**

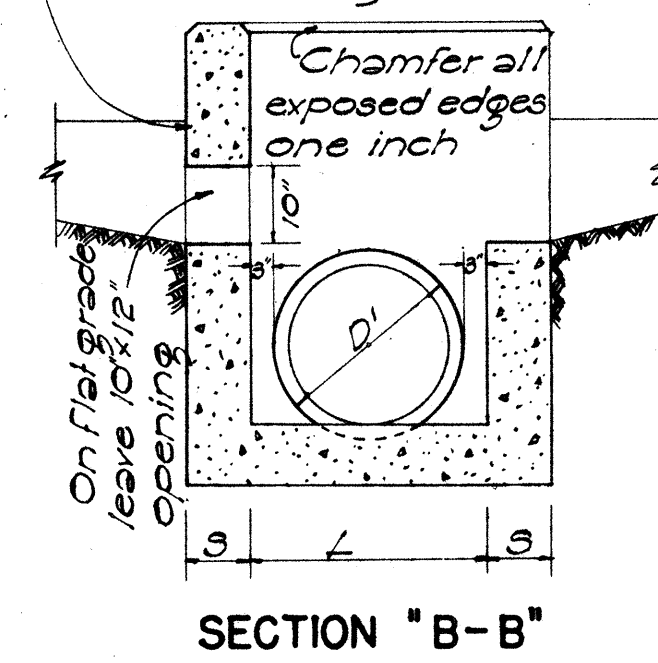


**SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL**

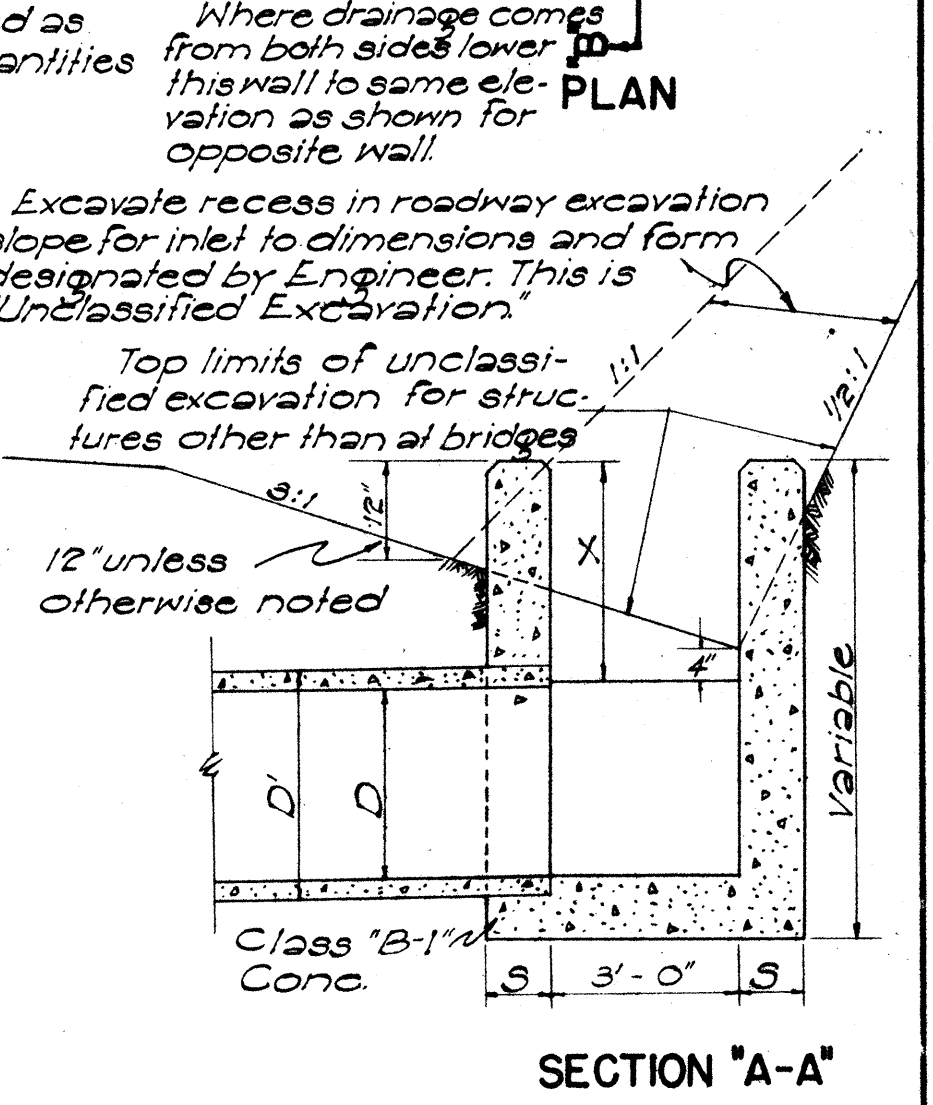
| D'  | D   | L=D+G' | Cu Yds | Where Variables Equal |
|-----|-----|--------|--------|-----------------------|
| 23" | 18" | 2'-5"  | 1.41   | 4'-0"                 |
| 30" | 24" | 3'-0"  | 1.72   | 5'-0"                 |
| 37" | 30" | 3'-7"  | 2.32   | 5'-0"                 |
| 44" | 36" | 4'-2"  | 2.73   | 6'-0"                 |
| 51" | 42" | 4'-9"  | 3.54   | 6'-0"                 |
| 58" | 48" | 5'-4"  | 4.01   | 7'-0"                 |

Note: Dimension "X" is assumed as 2'-4" in figuring the above quantities.

Note: This type of structure shall also be used for the Drop Intakes of Siphons connected with Irrigation Ditches or Flumes with appropriate changes to dimensions. In this case all joints must be made water tight.

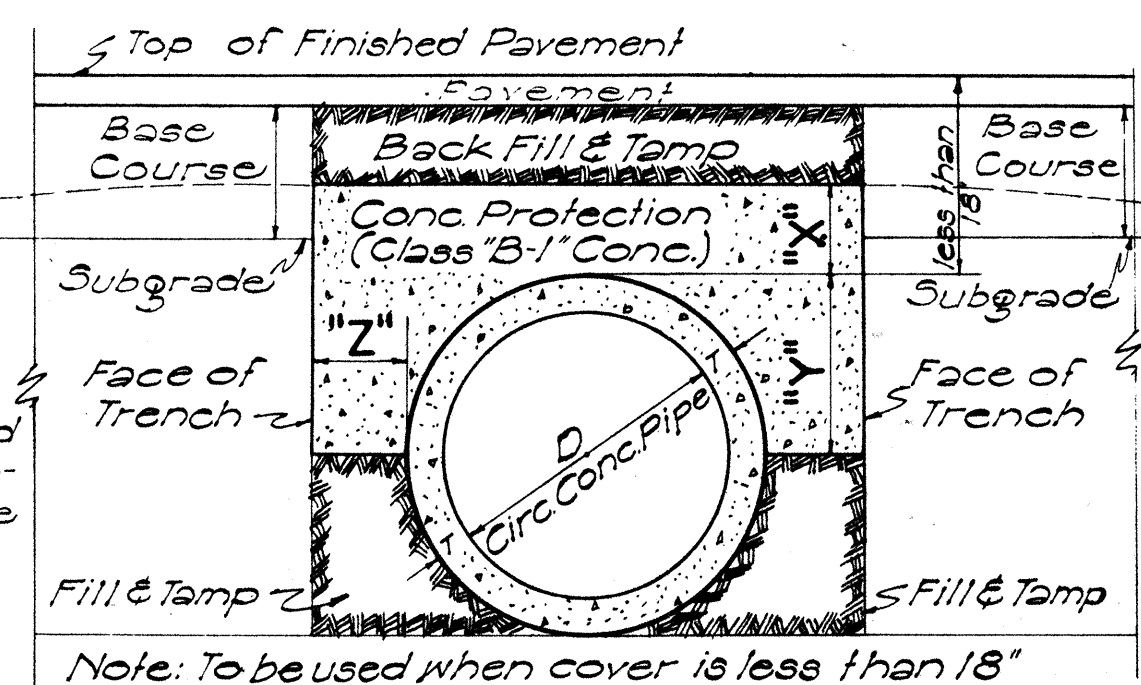


**SECTION "B-B"**



**SECTION "A-A"**

**DETAIL OF CONCRETE DROP INTAKE**  
Scale: 1/2" = 1'-0"



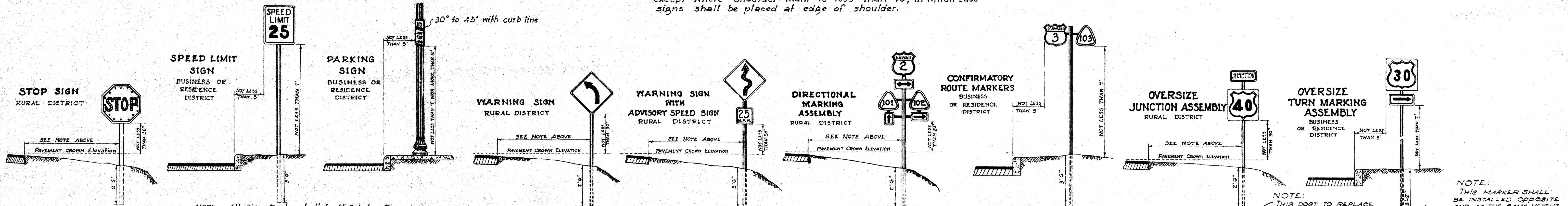
| X           | Y | Z |
|-------------|---|---|
| 6" for 18"D |   |   |
| 7" " 24"D   |   |   |
| 8" " 30"D   |   |   |
| 9" " 36"D   |   |   |
| 10" " 42"D  |   |   |
| 11" " 48"D  |   |   |
| 12" " 54"D  |   |   |

**SECT. OF CULVERT WITH CONG. PROTECTION**  
Scale: 1" = 1'-0"

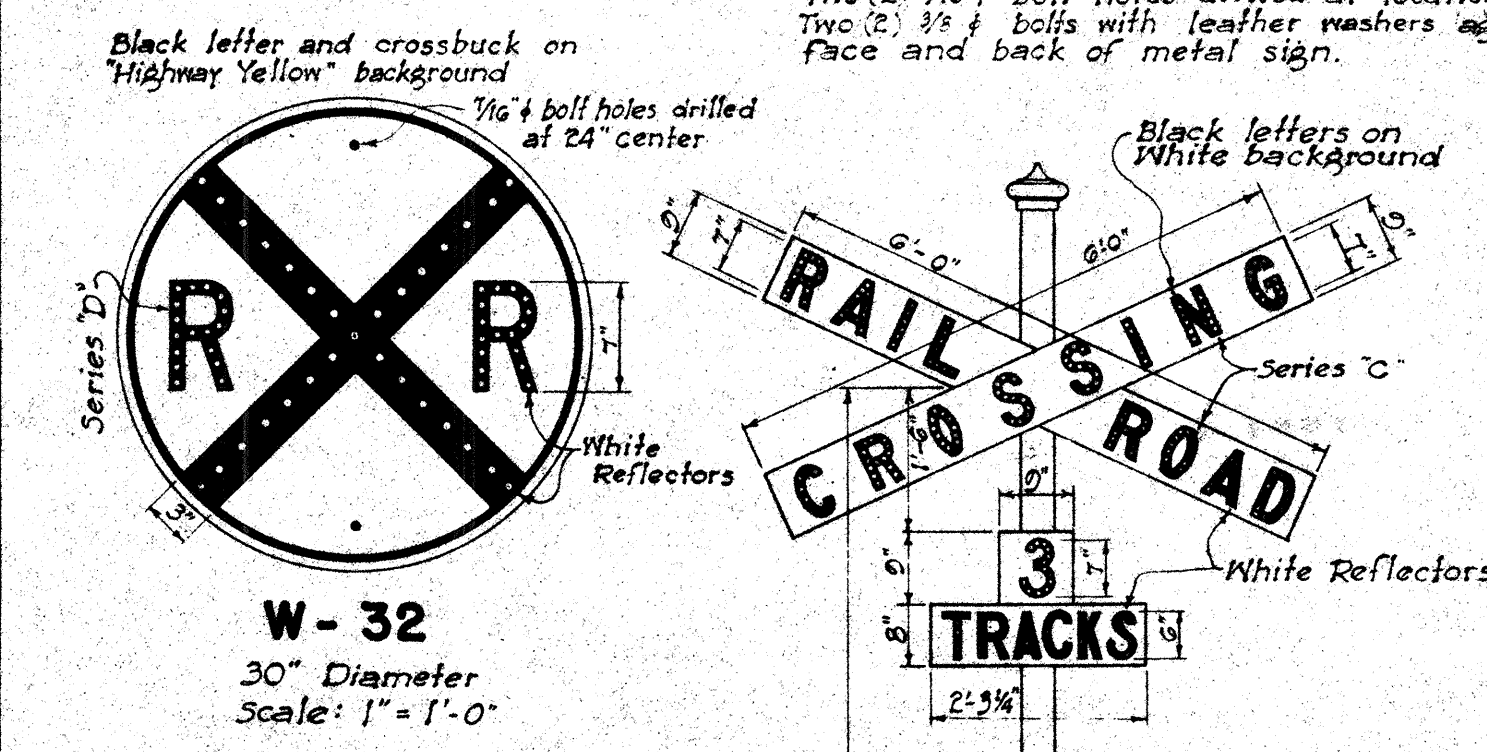
APPROVED: *B. E. Hunter*  
TERRITORIAL HIGHWAY ENGINEER

TERRITORIAL HIGHWAY DEPARTMENT  
TERRITORY OF HAWAII  
STANDARD DETAILS  
DROP INTAKES, RETAINING WALLS,  
HEADWALLS, CONSTRUCTION JOINTS  
SCALES AS NOTED

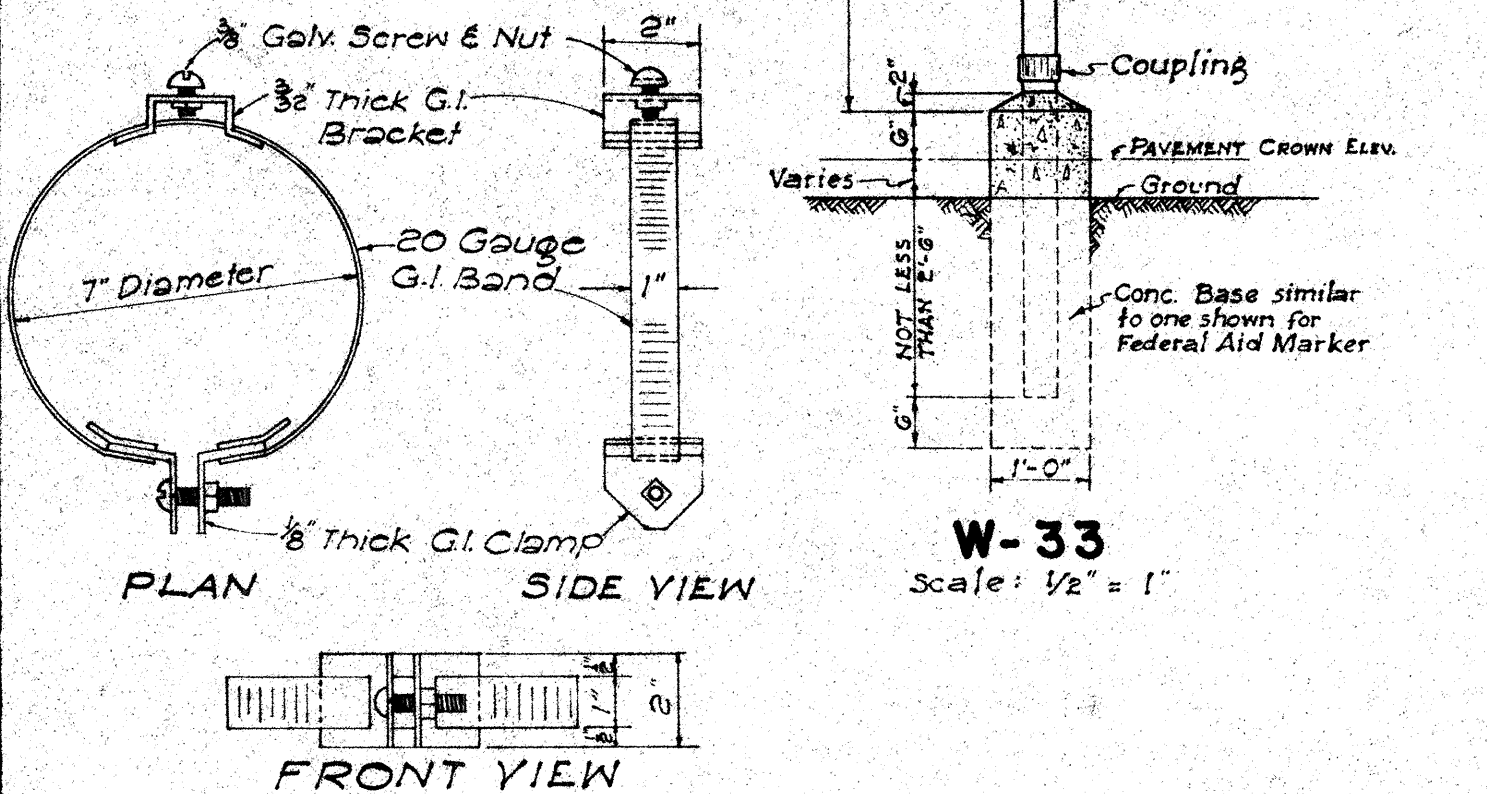
NOTE: All signs shall be placed 10' from edge of pavement except where shoulder width is less than 10'; in which case signs shall be placed at edge of shoulder.



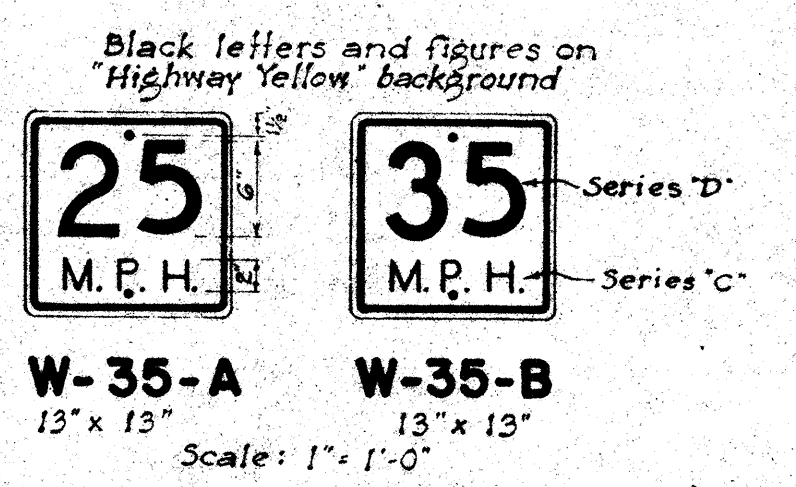
HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATIONS  
Scale: 1" = 3'-0"



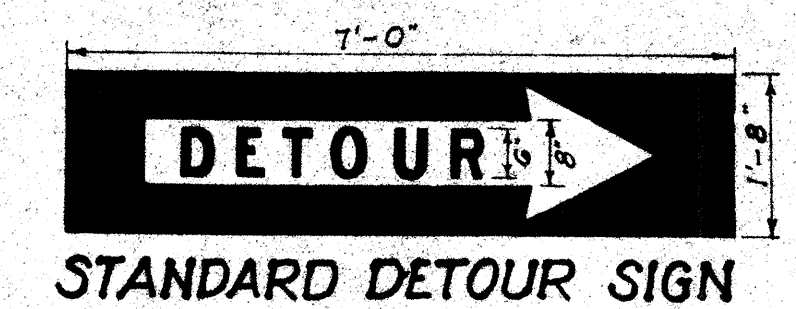
NOTE: This sign shall be placed from 300 to 500 feet from R. R. intersections in rural areas and a minimum distance of 100 feet from R. R. intersections in Residence or Business districts.



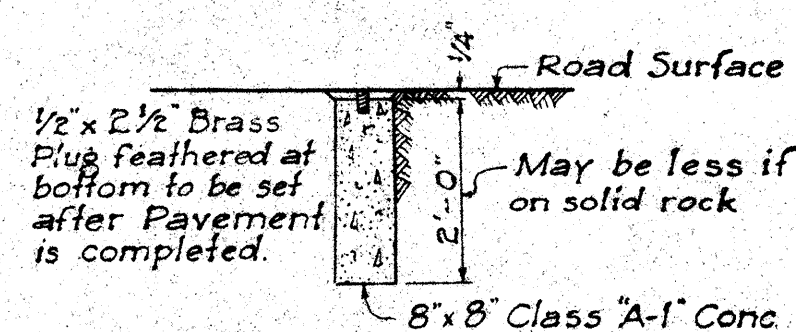
ADJUSTABLE BAND BRACKET FOR SUPPORTING TRAFFIC SIGNS ON MONOTUBE LIGHTING STANDARDS  
Scale: 3" = 1'-0"



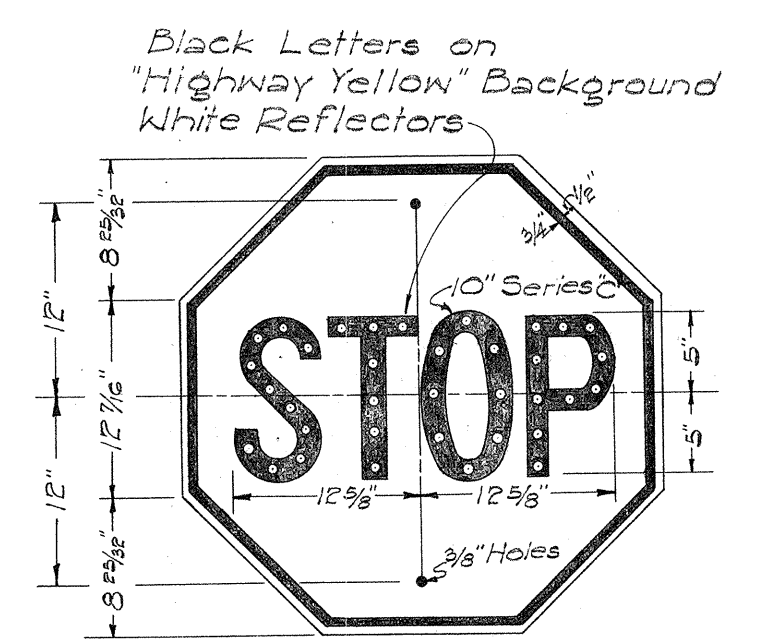
W-35-A W-35-B  
Scale: 1" = 1'-0"



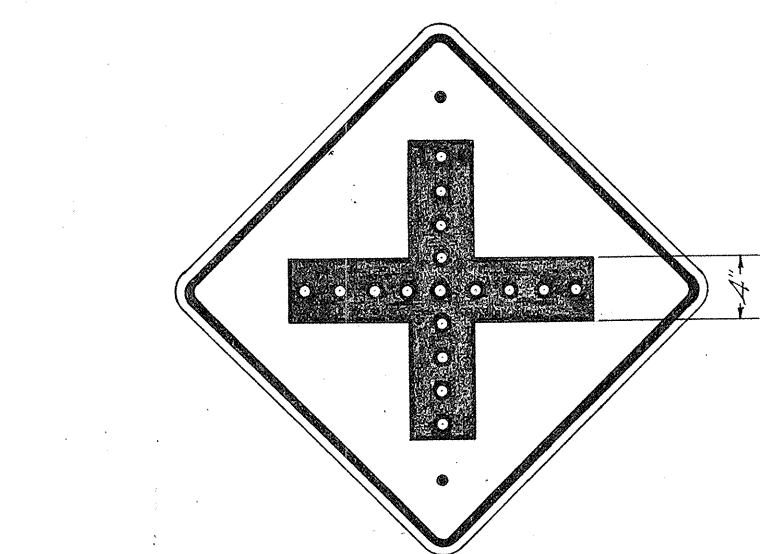
STANDARD DETOUR SIGN  
Scale: 1" = 1'-0"



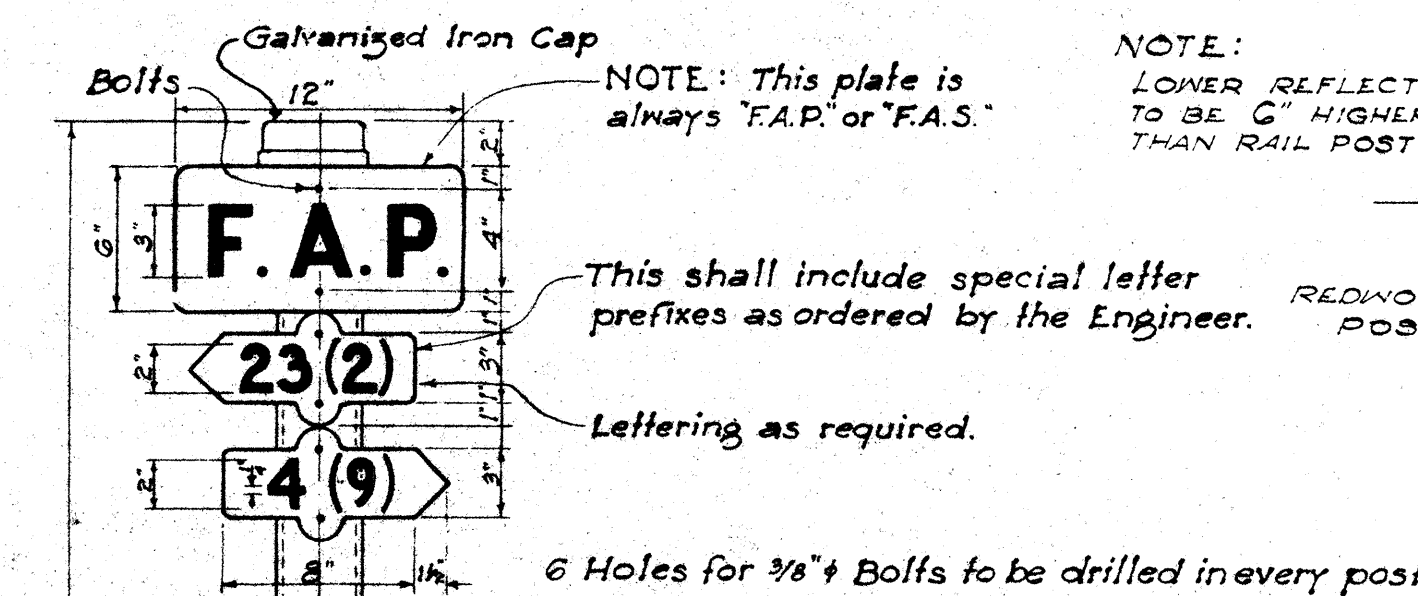
W-G  
24" x 24"  
Scale: 1" = 1'-0"



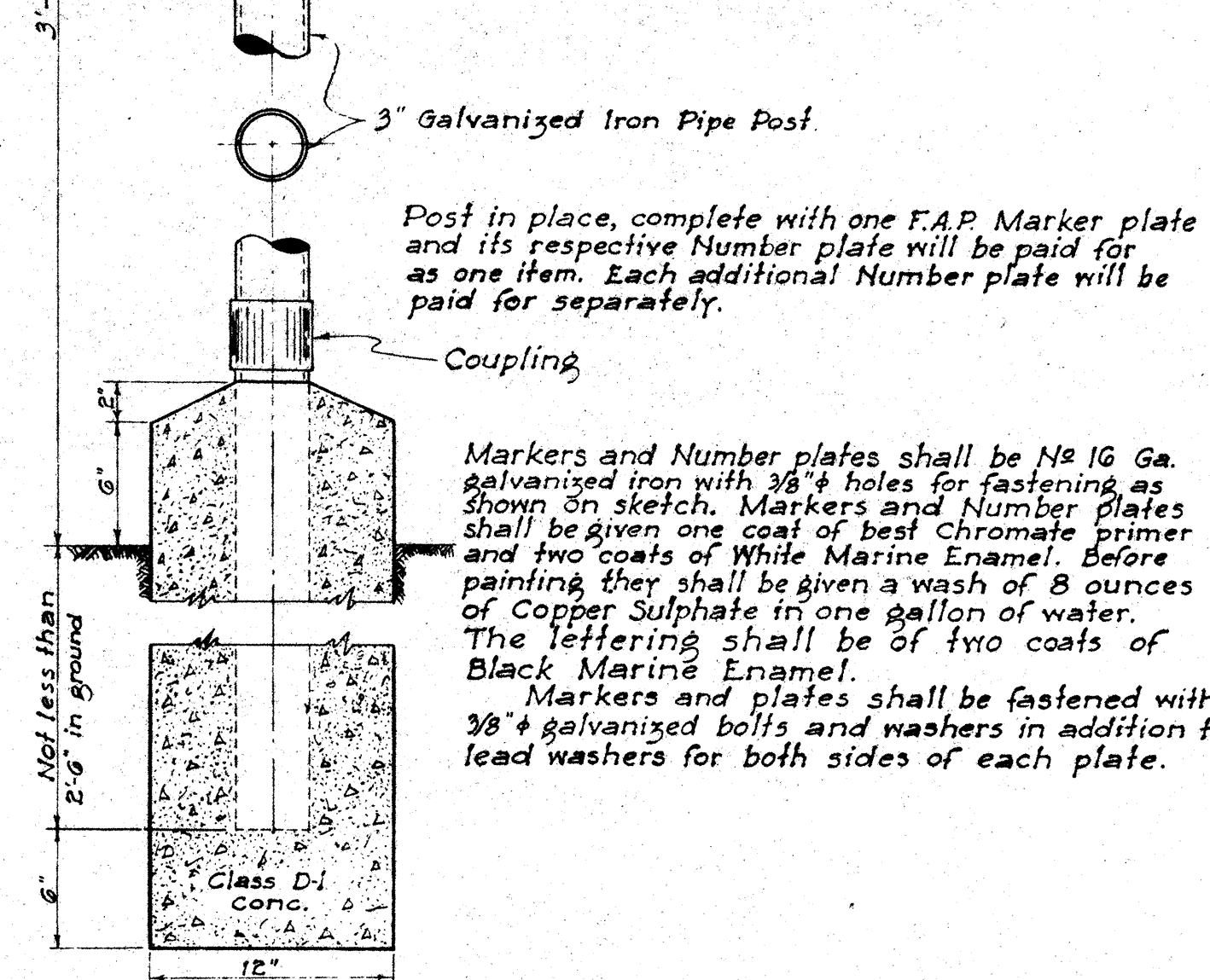
R-1  
30" x 30"  
Scale: 1" = 1'-0"



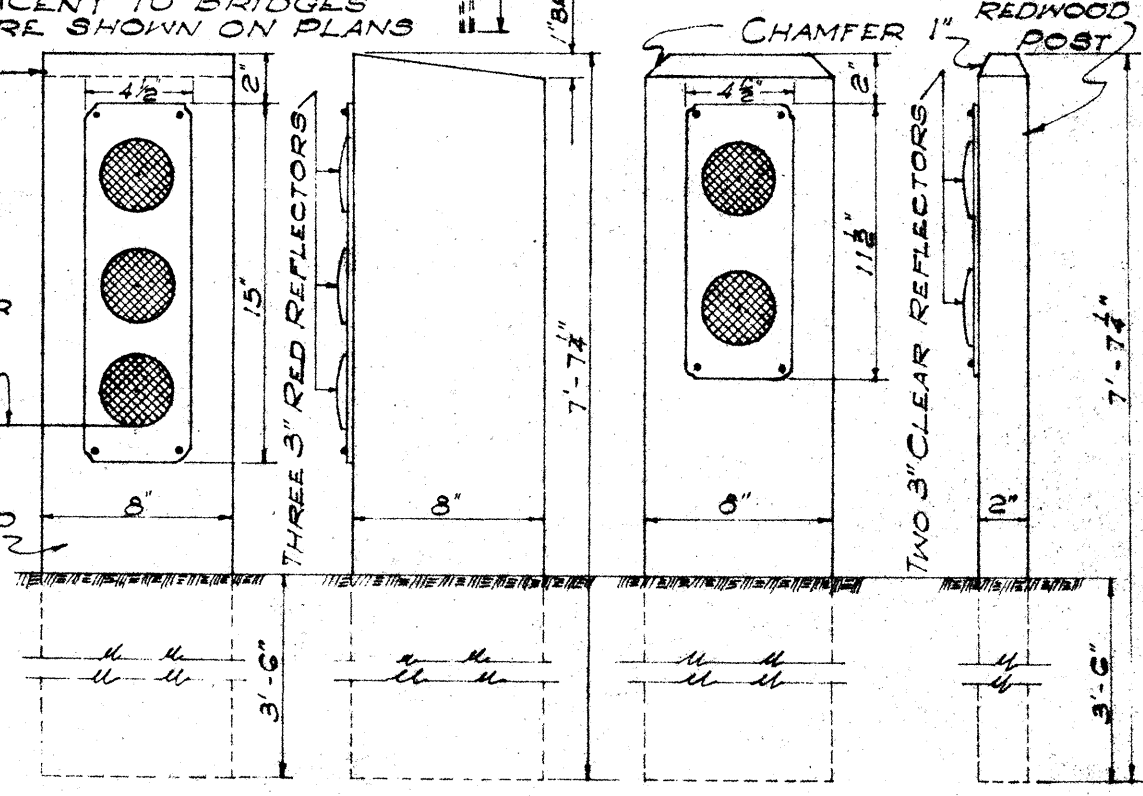
W-G  
24" x 24"  
Scale: 1" = 1'-0"



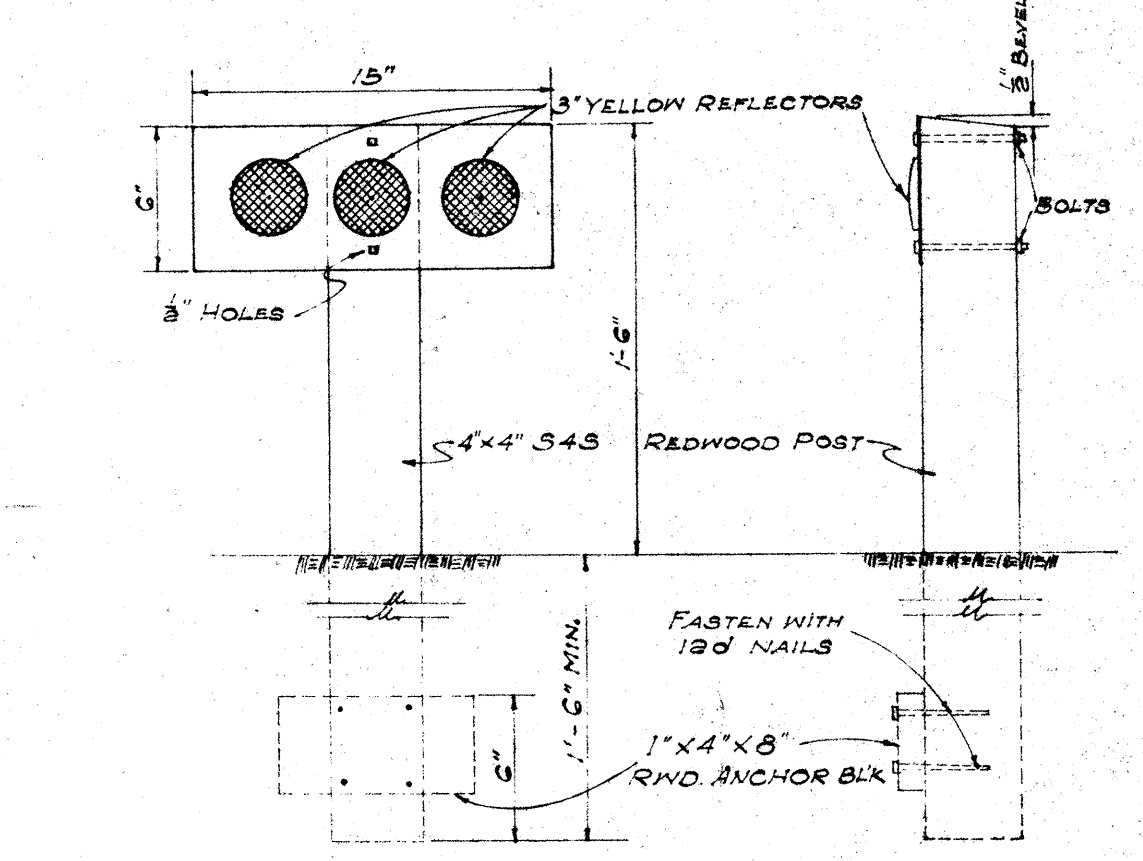
ARRANGEMENT OF MARKERS  
One F.A.P. Marker and one plate shall be placed at the beginning and end of each isolated F.A. Project. Where two F.A. Projects adjoin, a single marker and two Number plates shall be placed, each Number plate pointing in the direction of the project to which it refers.



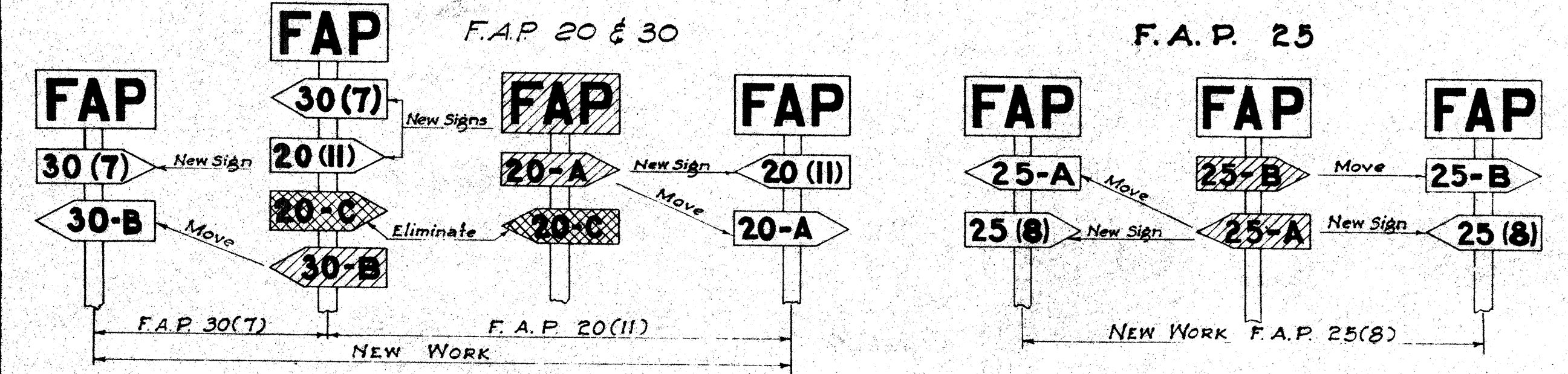
FEDERAL AID MARKER  
Scale: 1 1/2" = 1'-0"



W-42 W-43  
Scale: 1 1/2" = 1'-0"

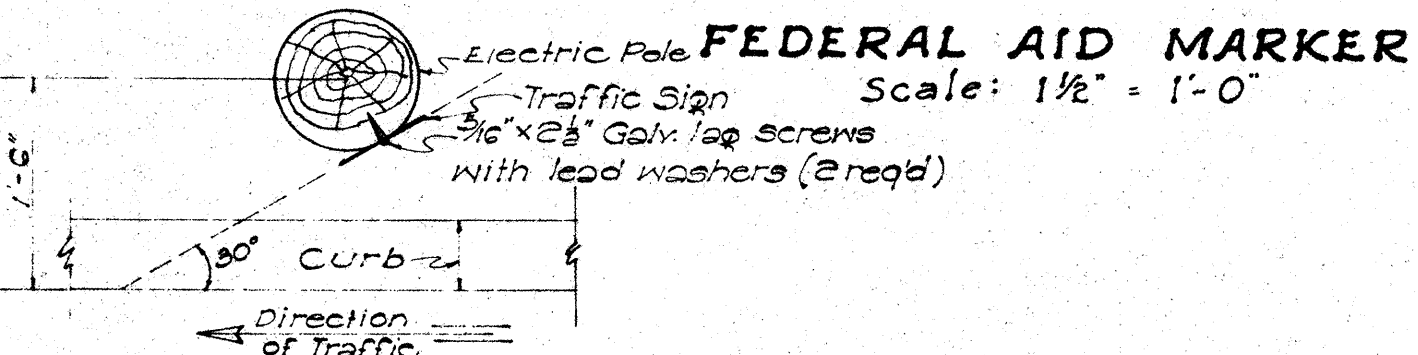


W-41  
DETAIL OF SIGNS  
SCALE: 1 1/2" = 1'-0"



NOTE: Federal Aid Markers should be placed at the termini of suffix designated sections. Intermediate letter designated markers of adjacent sections located within the limits of new improvements should be moved to the termini of the new work. The same procedure would be followed on each successive improvement until all markers for letter designated sections are eventually eliminated.

METHOD OF MARKING F.A. PROJECTS AT OVERLAPS  
(USING NUMBER SUFFIX ON NEW WORK)



DETAIL SHOWING ANGLE OF TRAFFIC SIGNS AND CURB LINE  
Scale: 1" = 1'-0"

APPROVED: *Ben E. Hunter*  
TERRITORIAL HIGHWAY ENGINEER

TERRITORIAL HIGHWAY DEPARTMENT  
TERRITORY OF HAWAII  
STANDARD DETAILS  
F.A. MARKERS, MONUMENTS  
SIGNS & LOCATION OF SIGNS  
SCALES AS NOTED