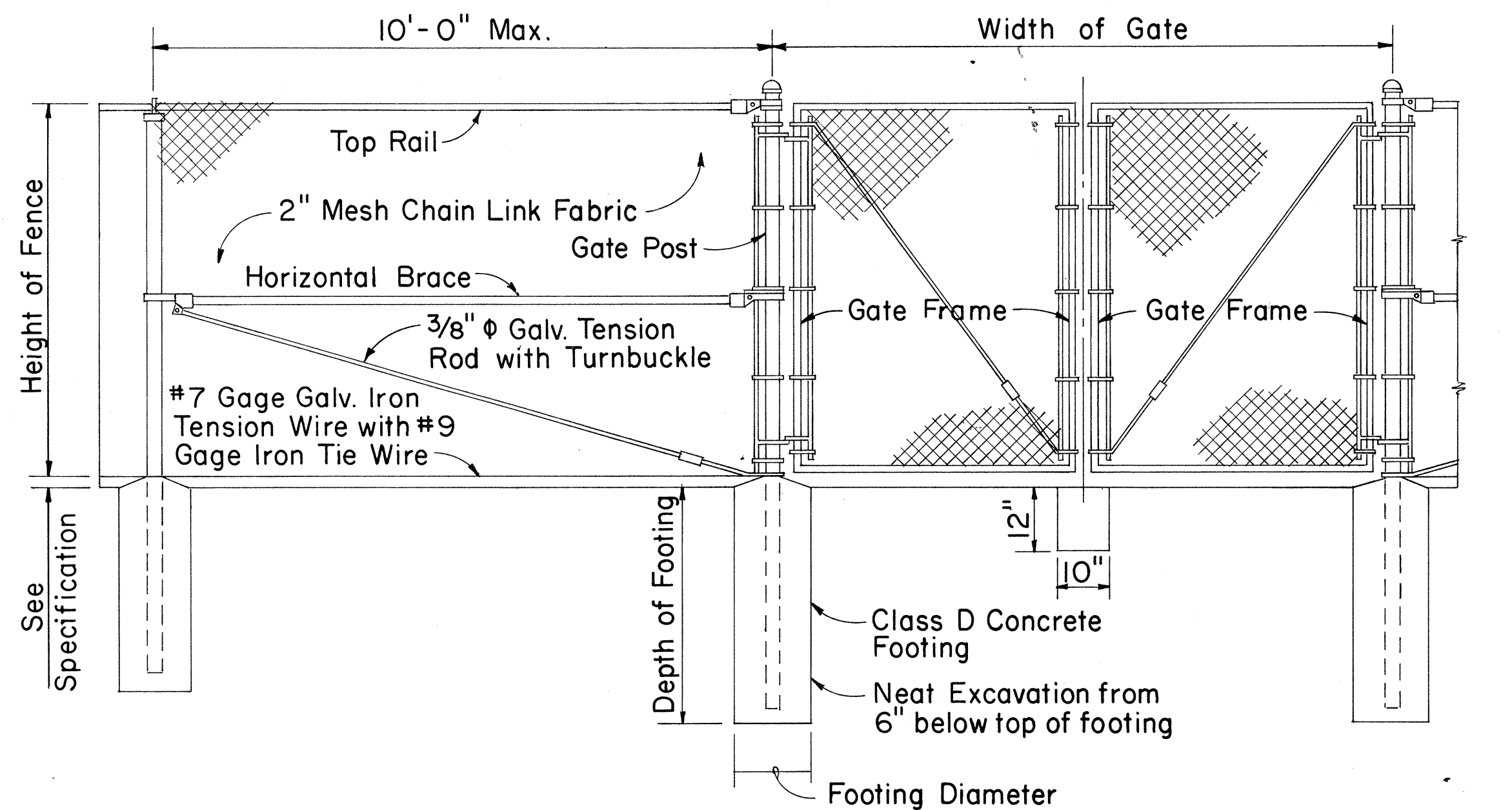
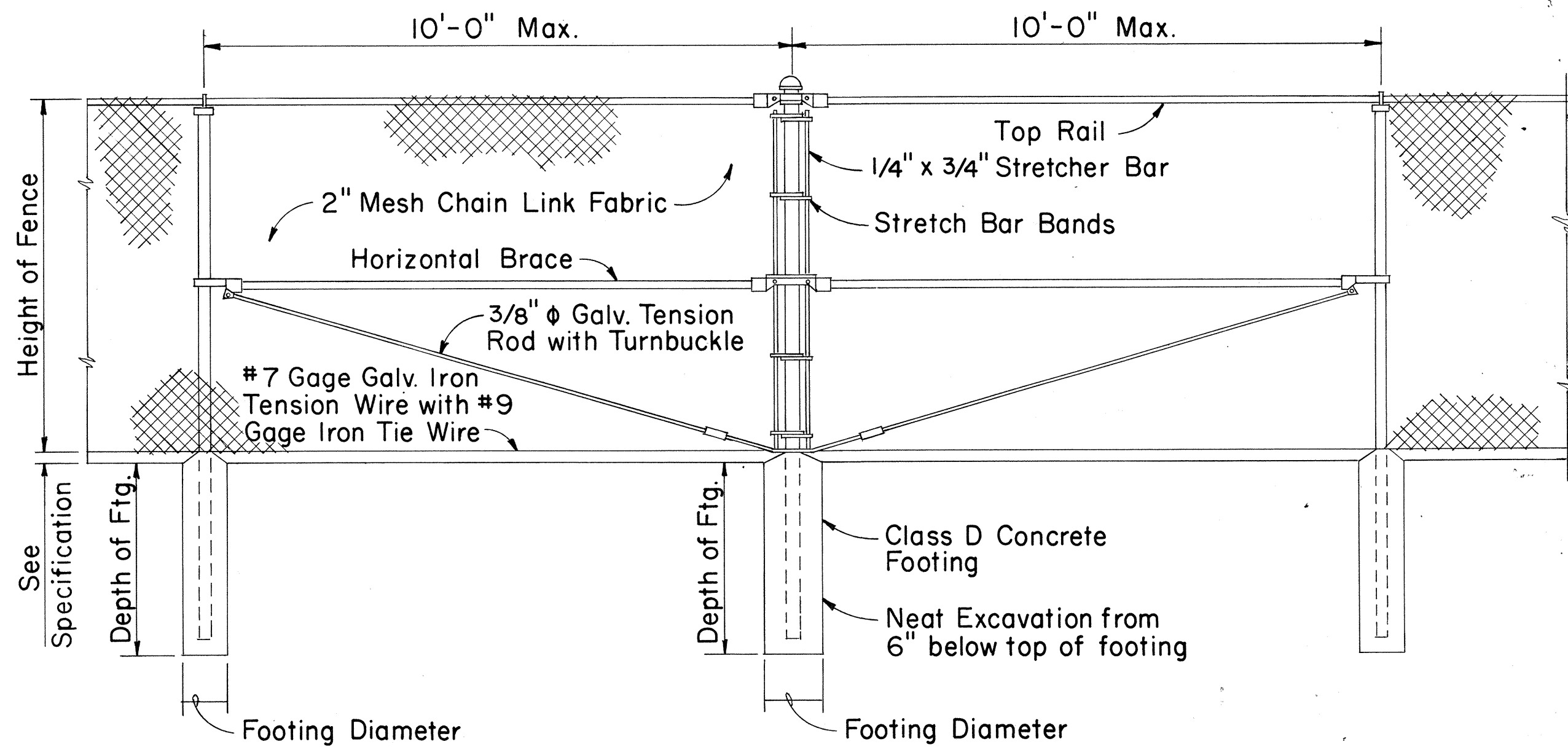




LINE POST                      GATE POST                      GATE POST

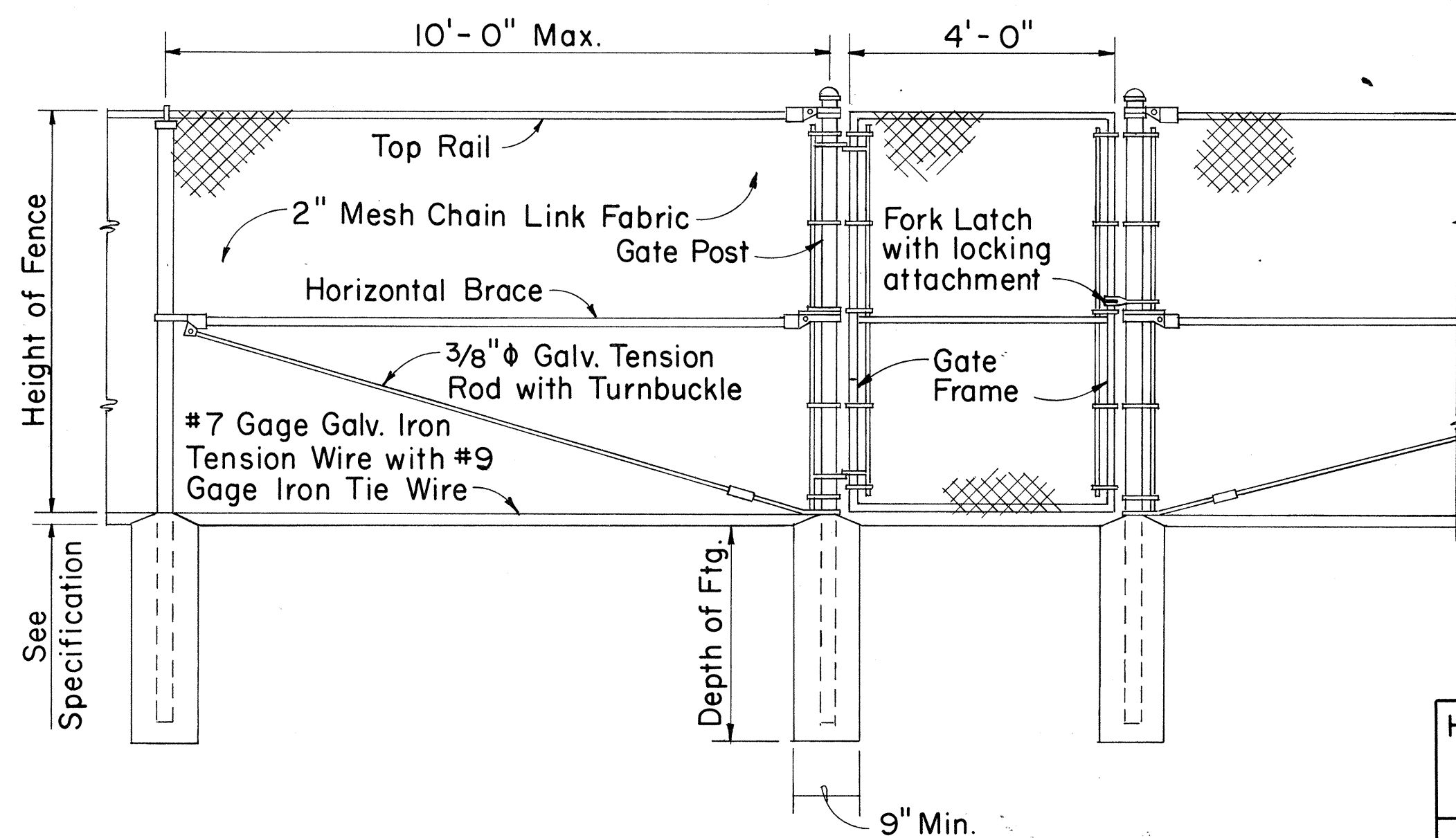


LINE POST                      PULL POST                      LINE POST

TYPICAL SECTION  
(WITH CONCRETE FOOTING)

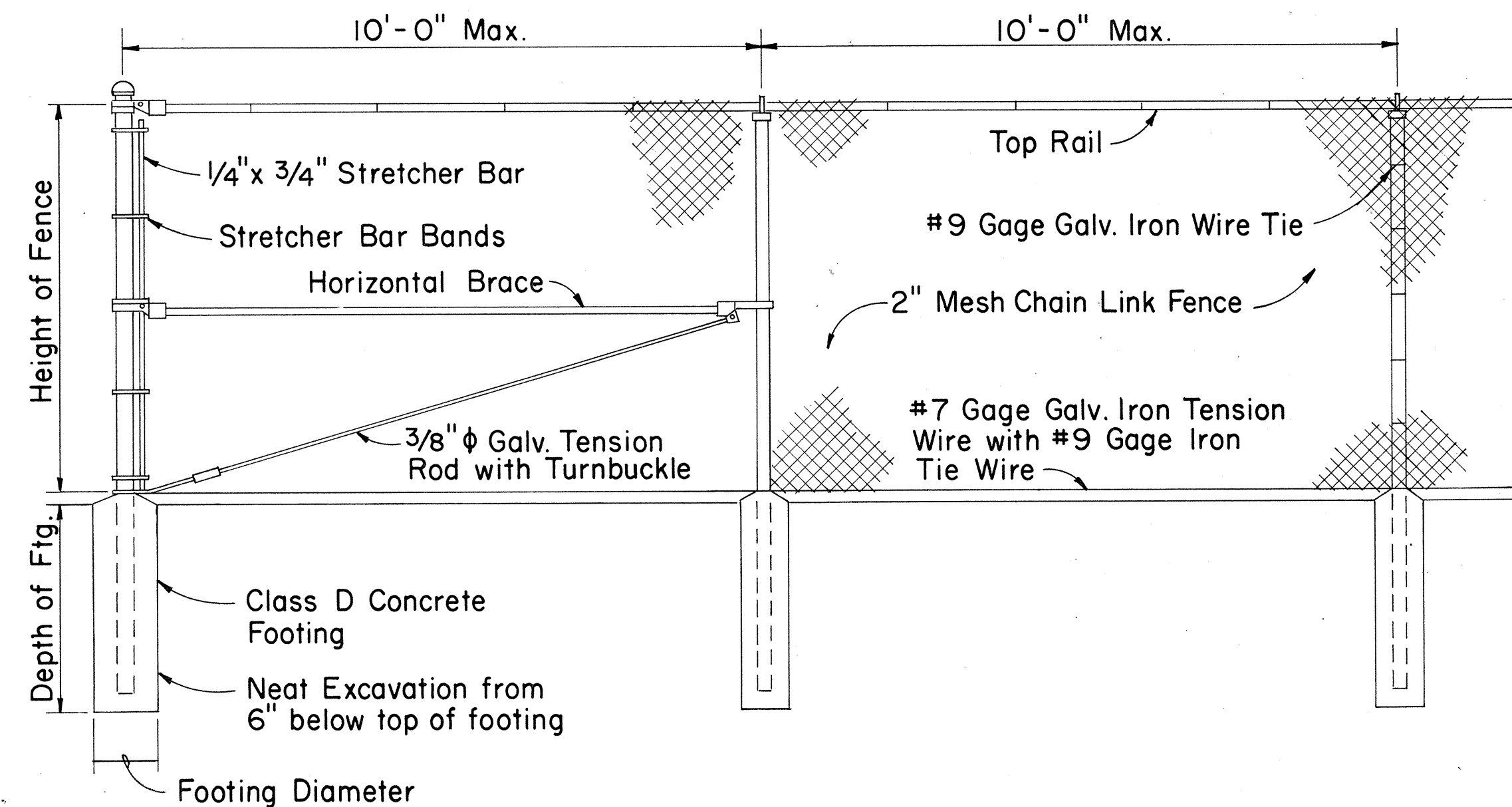
### DETAIL OF CHAIN LINK GATE

- NOTE: 1. Gate fork latch and lock, flush plate and anchor, and plunger shall be installed with Gates, and shall be considered as incidental to Chain Link Fence Gate.  
2. Gate frames shall be mitered and welded at corners.  
3. Fence detail not shown shall be in accordance with the Standard Specifications.

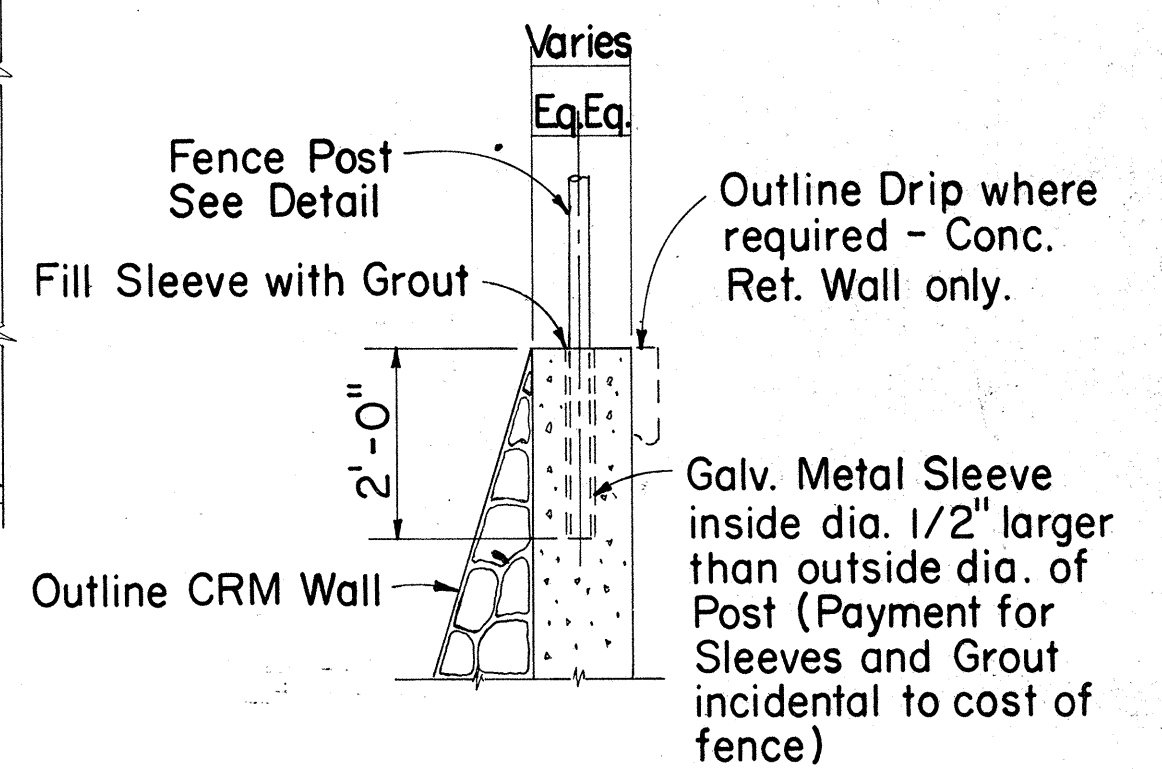


LINE POST                      GATE POST                      GATE POST

### DETAIL OF 4 FT. CHAIN LINK GATE



END POST                      LINE POST                      LINE POST



TYPICAL SECTION  
(ON CRM & CONC. RET. WALL)

### CHAIN LINK FENCE DETAILS

| Height of Fence | Minimum Depth of Footing |                                  | Minimum Footing Diameter |                            |
|-----------------|--------------------------|----------------------------------|--------------------------|----------------------------|
|                 | Line Post                | Corner, Pull, End and Gate Posts | Line Post                | Corner, Pull and End Posts |
| 3'              | 2'-0"                    | 2'-6"                            | 8"                       | 8"                         |
| 4'              | 2'-6"                    | 2'-6"                            | 8"                       | 8"                         |
| 5'              | 3'-0"                    | 3'-0"                            | 8"                       | 8"                         |
| 6'              | 3'-0"                    | 3'-0"                            | 8"                       | 9"                         |

APPROVAL, RECOMMENDED:  
  
HIGHWAY DESIGN ENGINEER      12-4-69  
DATE

APPROVED:  
  
ASSISTANT CHIEF, ENGINEERING      12-10-69  
DATE

| NO. | REVISION | APPROVED BY | DATE |
|-----|----------|-------------|------|
|     |          |             |      |

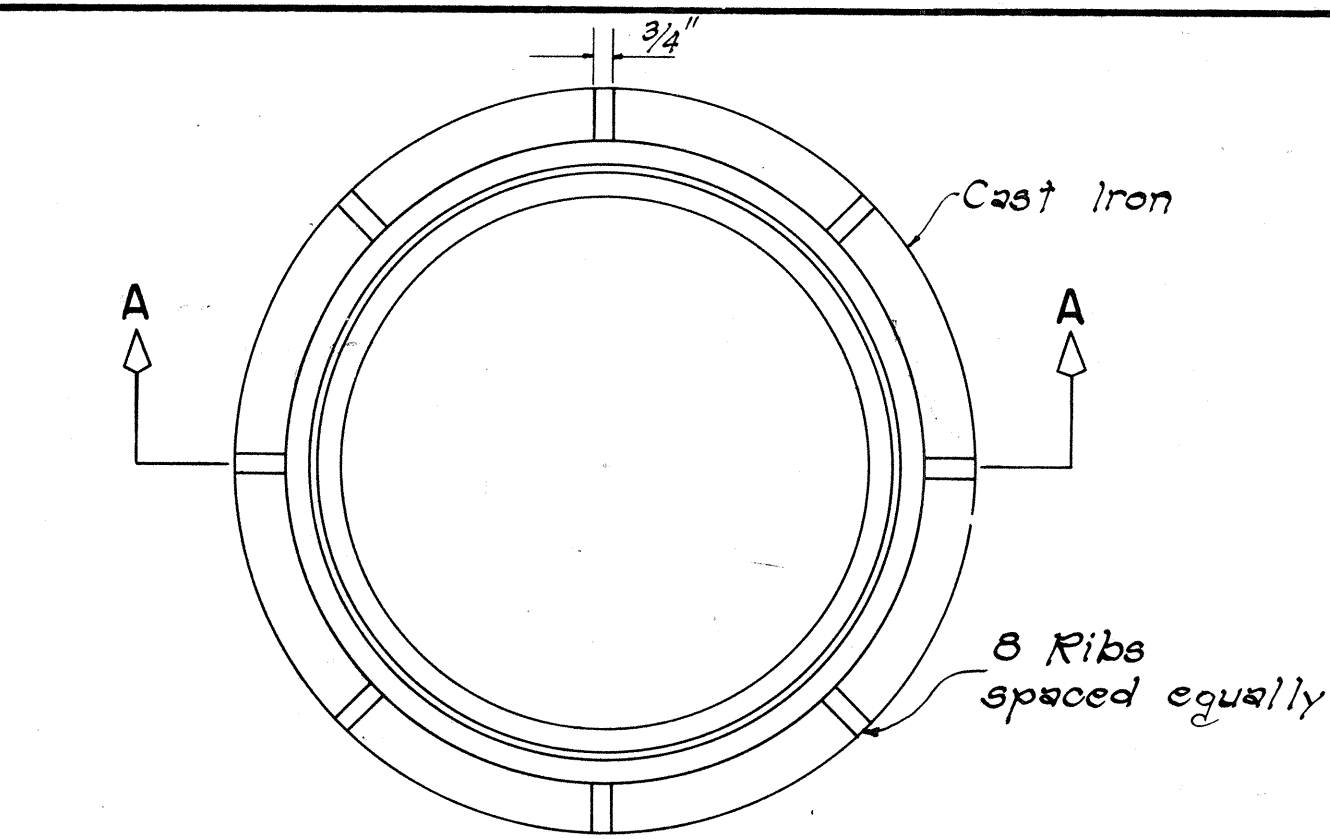
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS  
CHAIN LINK FENCE  
(WITH TOPRAIL)

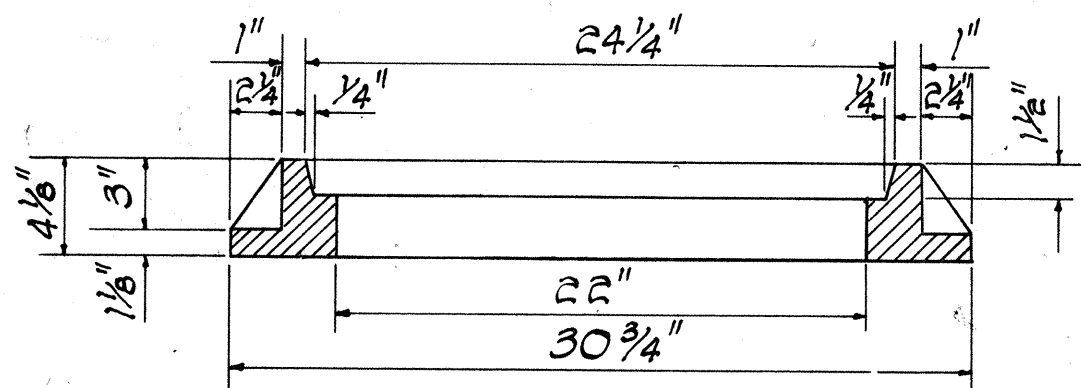
Scale: 1/2" = 1'-0"  
Date:



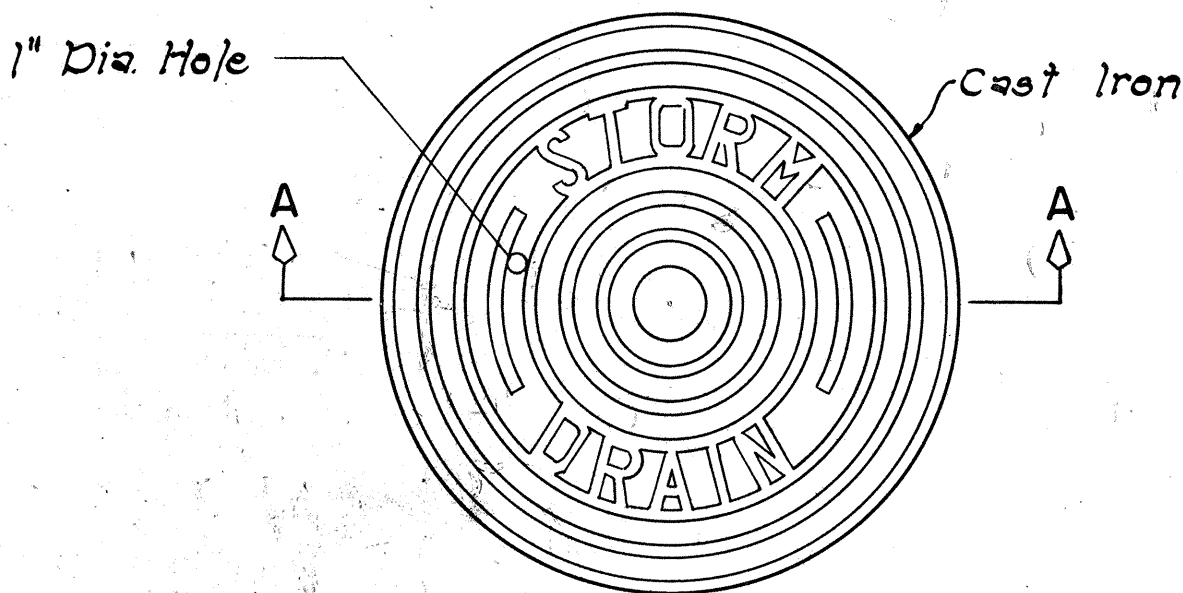
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 56D-04-75          | 1977        | 12        | 14           |



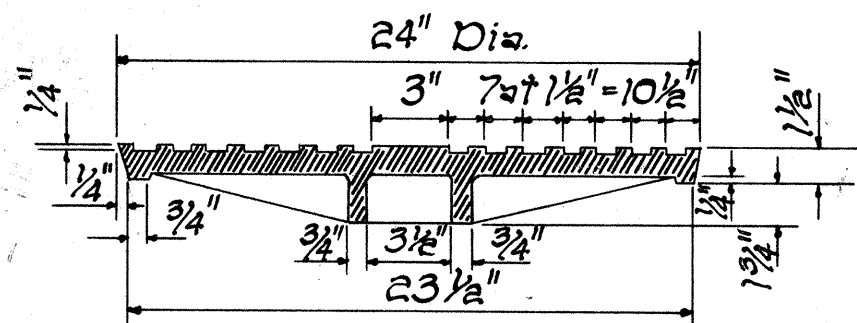
PLAN



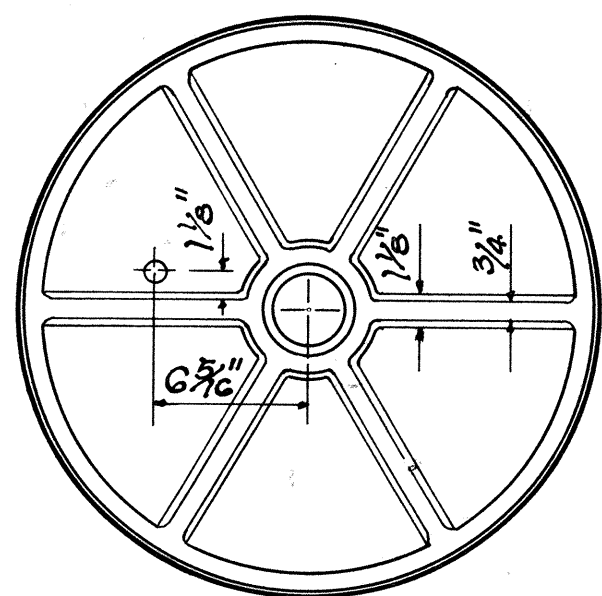
SECTION A-A



PLAN



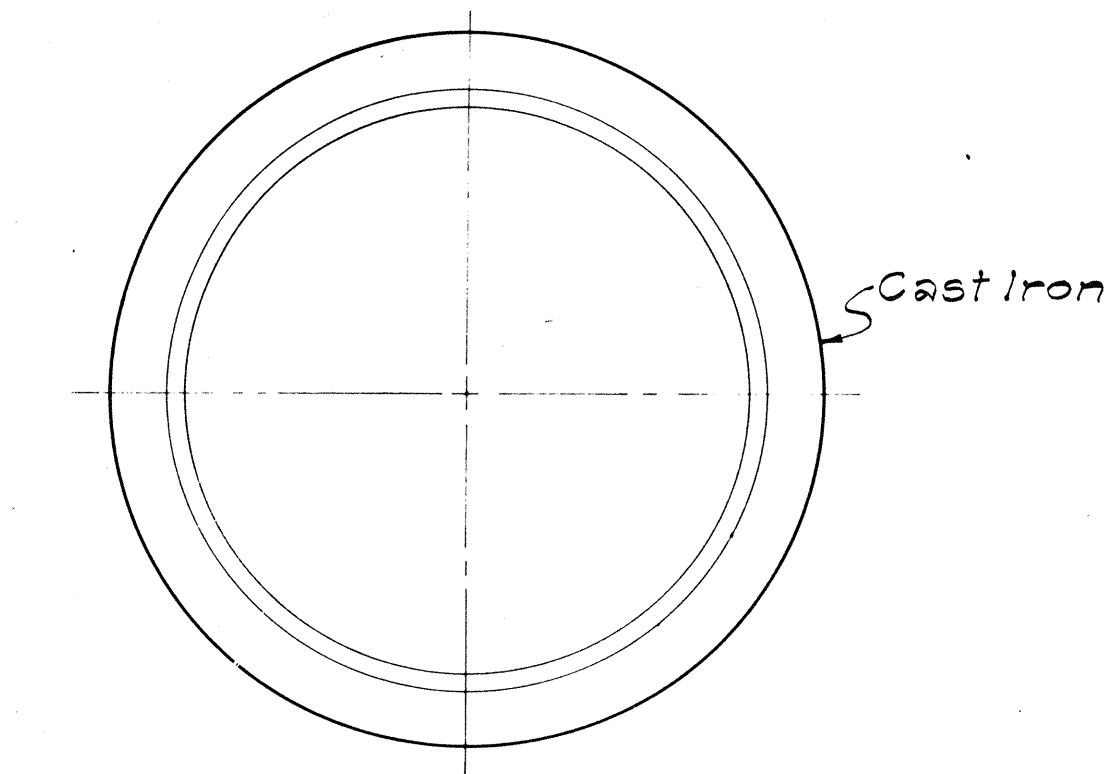
SECTION A-A



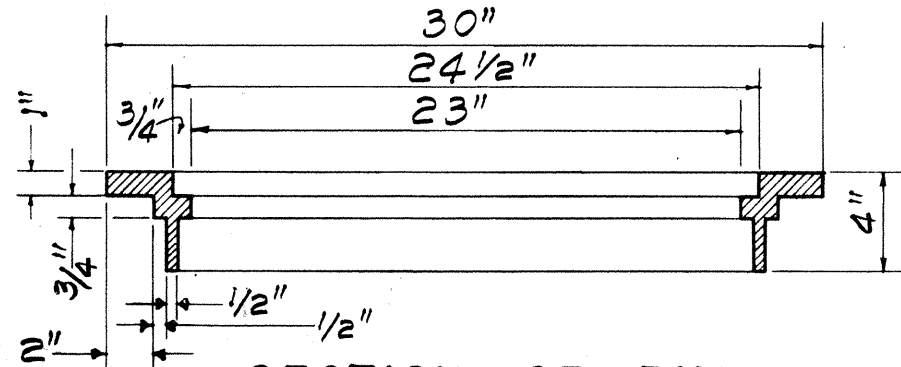
BOTTOM VIEW OF COVER

DETAILS OF TYPE "P"  
CAST IRON FRAME AND COVER

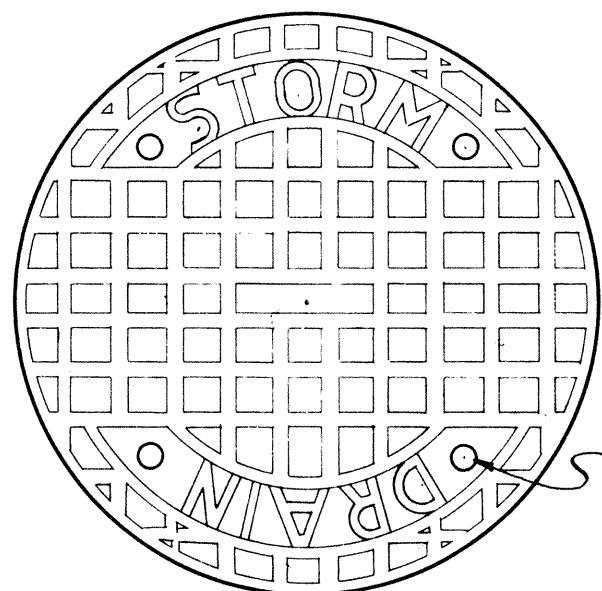
SCALE: 1-1/2" = 1'-0"



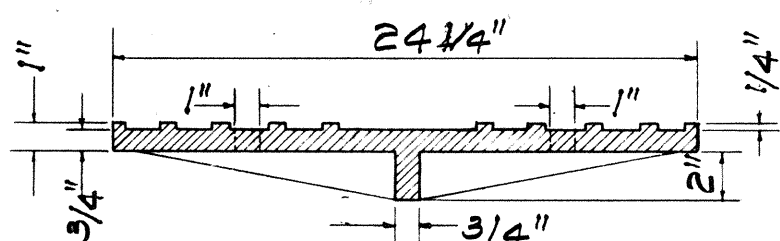
PLAN OF RIM



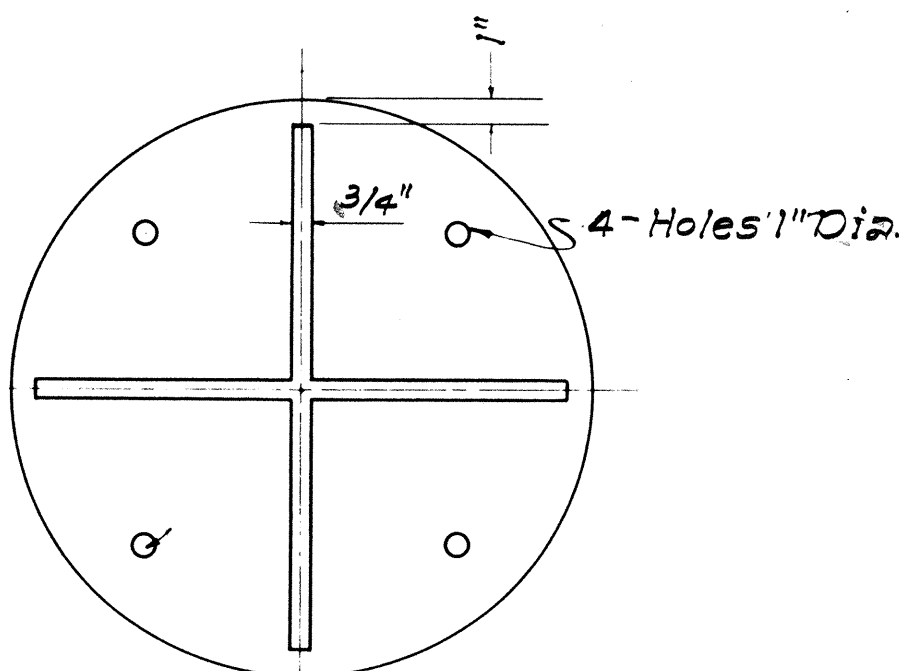
SECTION OF RIM



TOP VIEW OF COVER



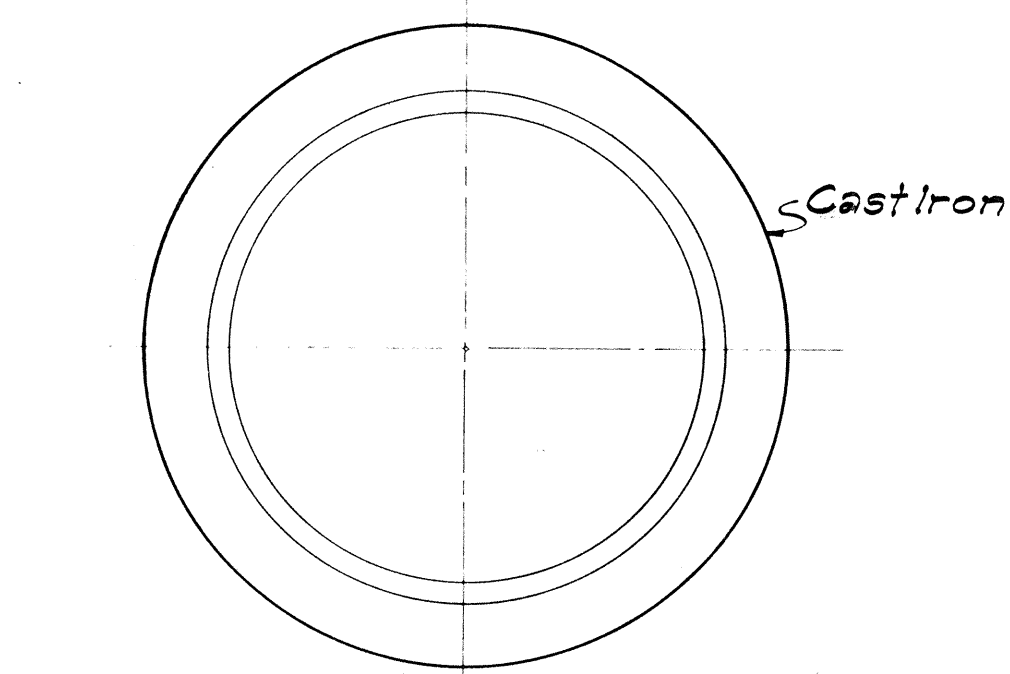
SECTION



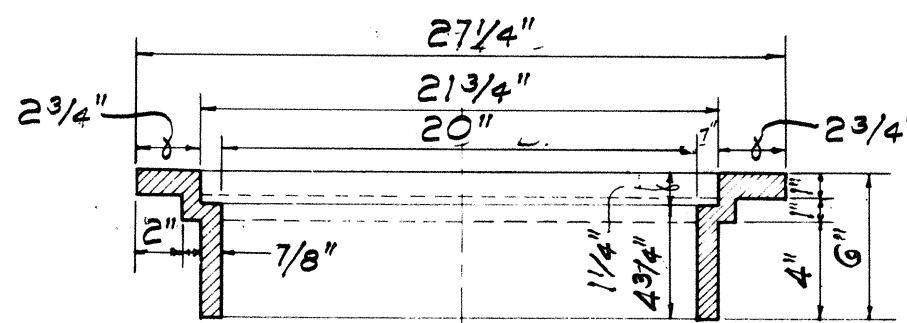
BOTTOM VIEW OF COVER

DETAILS OF TYPE "B"  
CAST IRON FRAME AND COVER

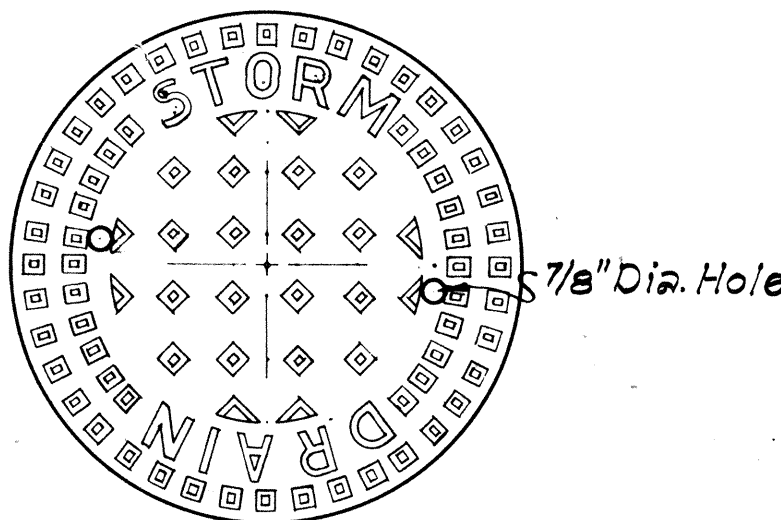
SCALE: 1-1/2" = 1'-0"



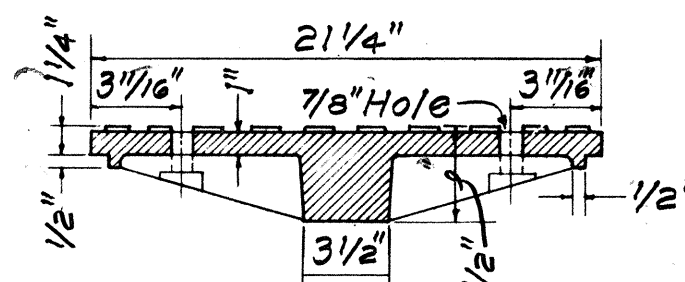
PLAN OF RIM



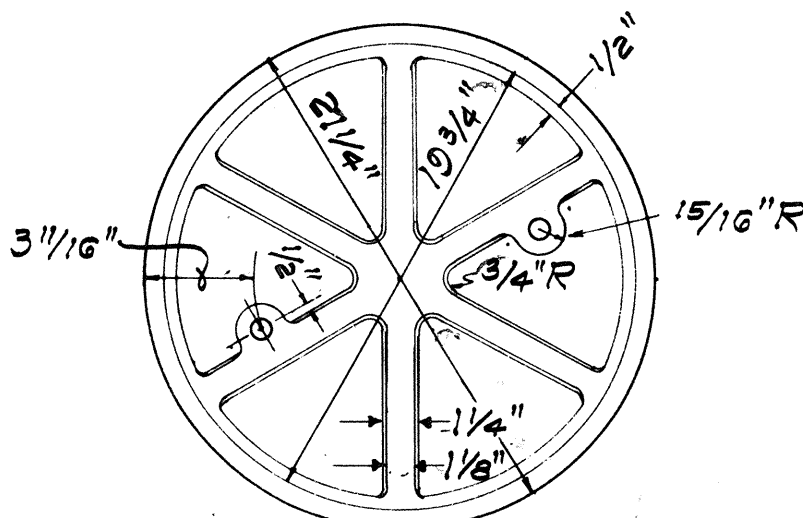
SECTION OF RIM



TOP VIEW OF COVER



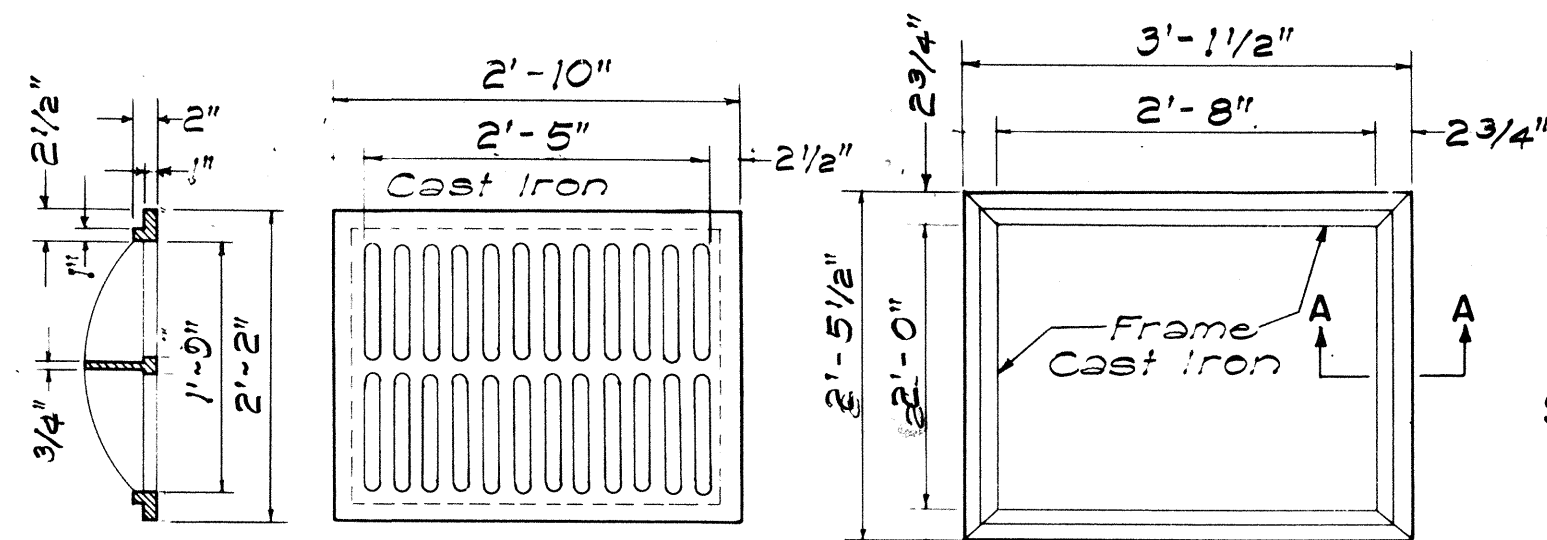
SECTION



BOTTOM VIEW OF COVER

DETAILS OF TYPE "A"  
CAST IRON FRAME AND COVER

SCALE: 1-1/2" = 1'-0"



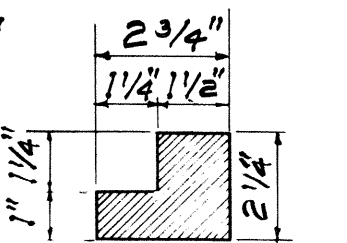
SECTION

TOP VIEW

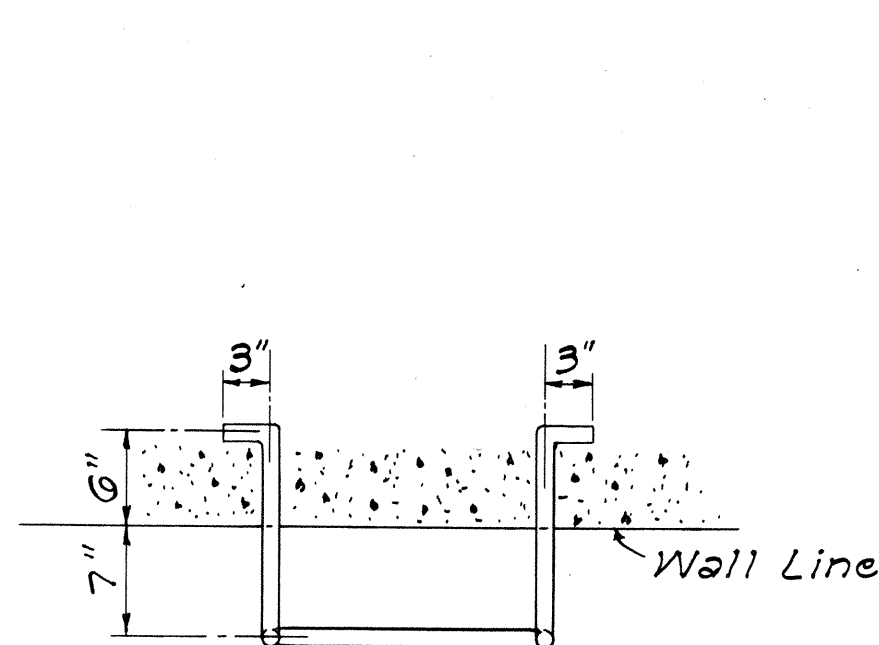
TOP VIEW

TYPE C C.I. FRAME AND GRATE

SCALE: 3/4" = 1'-0"

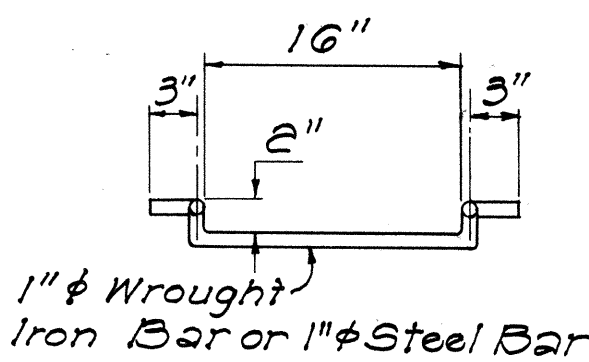


SECTION "A-A"  
SCALE 3" = 1'-0"

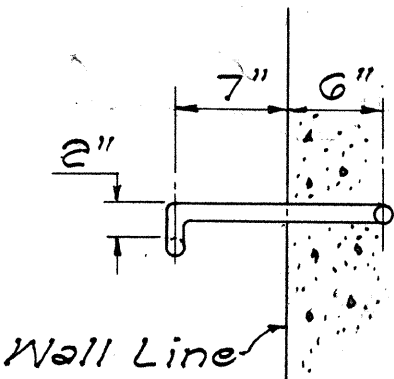


P L A N

PICTORIAL VIEW  
NOT TO SCALE



FRONT VIEW



SIDE VIEW

DETAILS OF MANHOLE RUNG

SCALE: 1" = 1'-0"

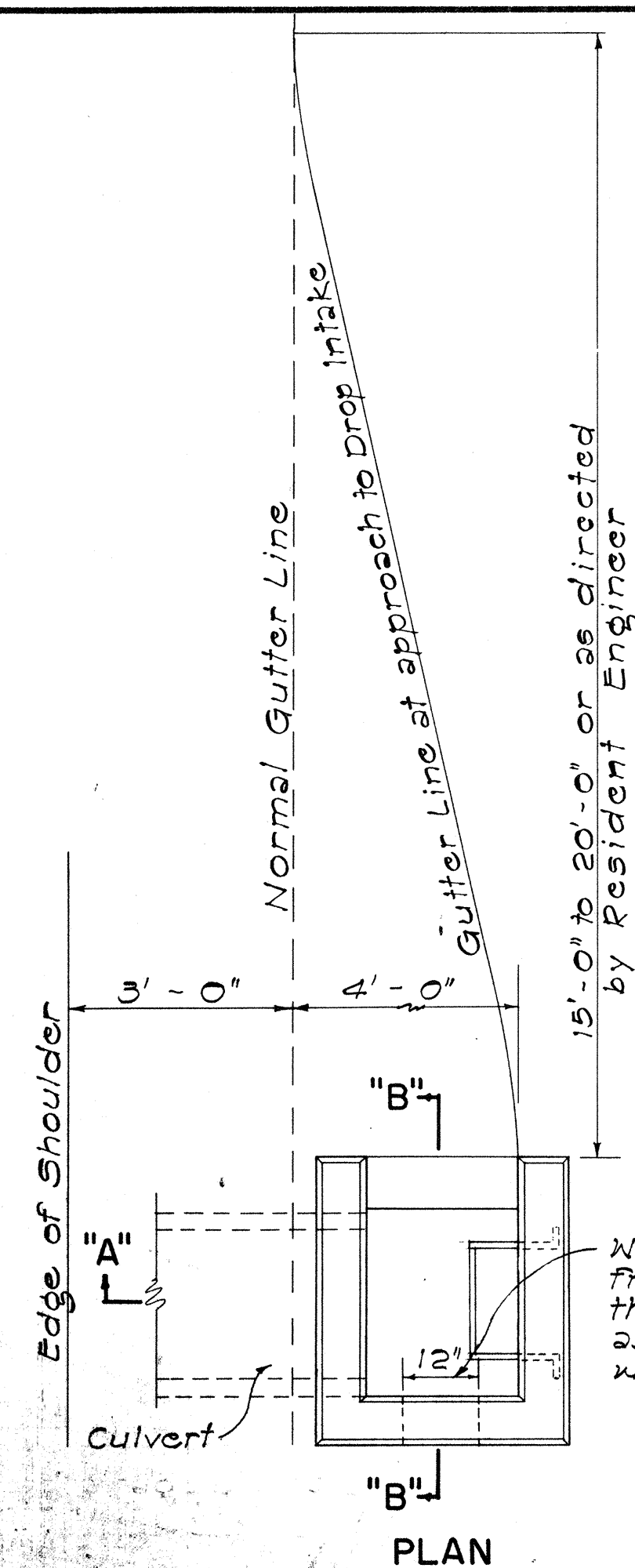
|                              |          |
|------------------------------|----------|
| APPROVAL RECOMMENDED:        | 12-17-69 |
| HYDRAULIC DESIGN ENGINEER    | DATE     |
| APPROVED:                    | 12-17-69 |
| ASSISTANT CHIEF, ENGINEERING | DATE     |

| NO. | REVISION                                     | APPROVED BY | DATE    |
|-----|----------------------------------------------|-------------|---------|
| 1.  | Detail of Type "P" Cast Iron Frame and Cover | H.T.        | 1-6-71  |
| 2.  | Details of Manhole Rungs to conform to OSHA. | H.T.        | 1-21-75 |
| 3.  | Option for Manhole Rungs                     | H.T.        | 1-18-76 |

|                                                                      |
|----------------------------------------------------------------------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION |
| STANDARD DETAILS<br>CATCH BASIN AND<br>MANHOLE CASTINGS              |

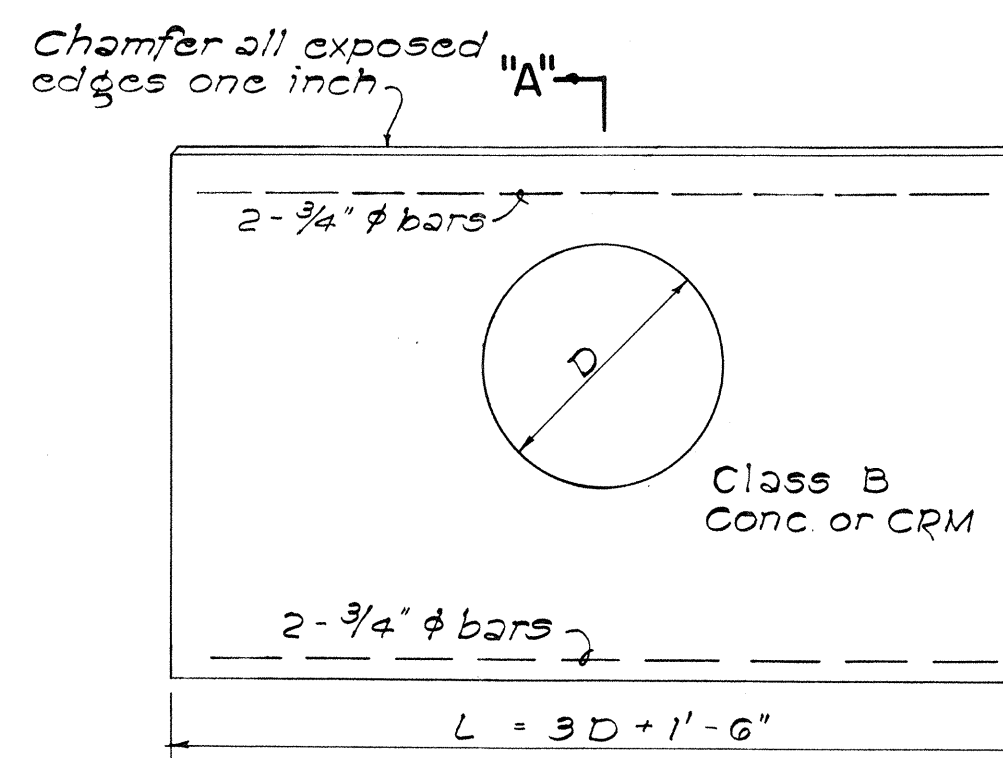
Scale: As Noted Date: July, 1969

| FED. ROAD DIST. NO. | STATE | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 56D-04-75   | 1077      | 13           |

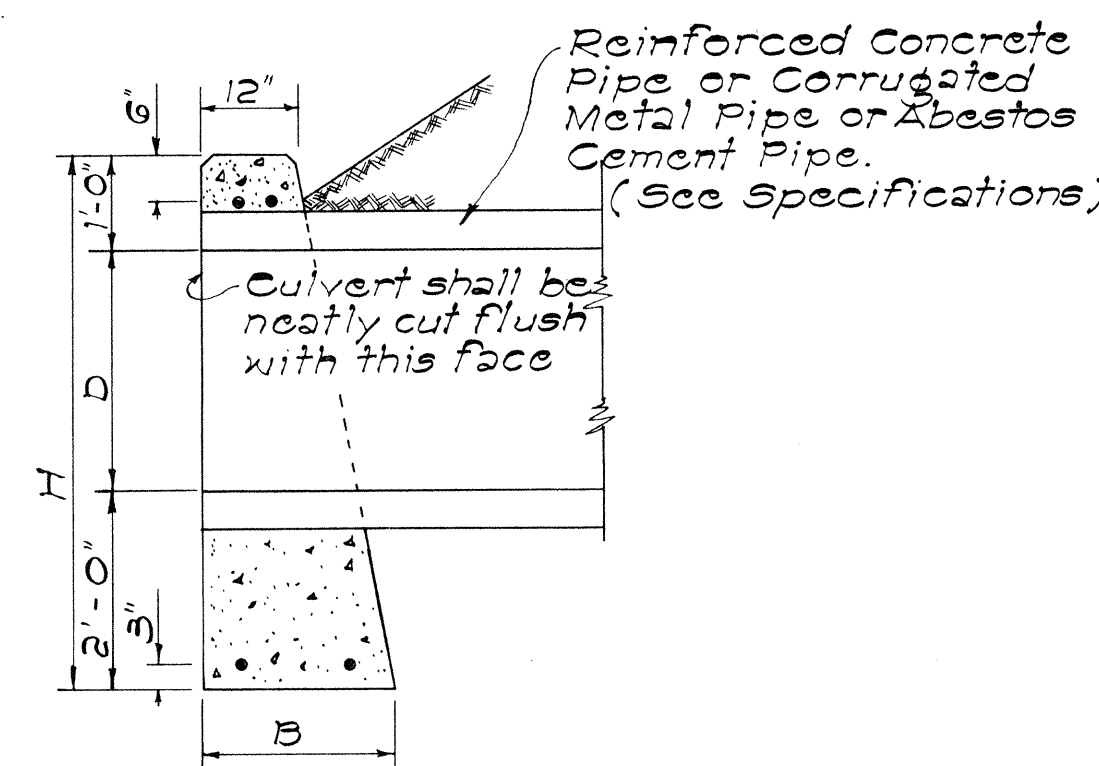


| DATA - CONC. DROP INTAKE |     |       |         |      |          | Where Variable Equals |
|--------------------------|-----|-------|---------|------|----------|-----------------------|
| D'                       | D   | L     | D' + G' | S    | Cu. Yds. |                       |
| 23"                      | 18" | 2'-5" | 8"      | 1.41 | 4'-0"    |                       |
| 30"                      | 24" | 3'-0" | 8"      | 1.72 | 5'-0"    |                       |
| 37"                      | 30" | 3'-7" | 9"      | 2.32 | 5'-6"    |                       |
| 44"                      | 36" | 4'-2" | 9"      | 2.73 | 6'-0"    |                       |
| 51"                      | 42" | 4'-9" | 10"     | 3.54 | 6'-6"    |                       |
| 58"                      | 48" | 5'-4" | 10"     | 4.01 | 7'-0"    |                       |

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



ELEVATION



SECTION "A-A"

| DATA FOR CONC. HEADWALL |       |        |       | CL. B CONC. FOR R.C.P. | CL. B CONC. FOR C.M.P. | Steel For One Headwall |      |        |
|-------------------------|-------|--------|-------|------------------------|------------------------|------------------------|------|--------|
| D                       | B     | L      | H     | Cu. Yd.                | Cu. Yd.                | No. of Bars            | Size | Length |
| 18"                     | 1'-0" | 6'-0"  | 4'-6" | 1.12                   | 1.17                   | 4                      | 3/4" | 5'-6"  |
| 24"                     | 1'-6" | 7'-6"  | 5'-0" | 1.52                   | 1.60                   | 4                      | 3/4" | 7'-0"  |
| 30"                     | 2'-0" | 9'-0"  | 5'-6" | 2.36                   | 2.49                   | 4                      | 3/4" | 8'-6"  |
| 36"                     | 2'-6" | 10'-6" | 6'-0" | 2.94                   | 3.13                   | 4                      | 3/4" | 10'-0" |
| 42"                     | 3'-0" | 12'-0" | 6'-6" | 4.19                   | 4.47                   | 4                      | 3/4" | 11'-6" |
| 48"                     | 3'-6" | 13'-6" | 7'-0" | 5.01                   | 5.36                   | 4                      | 3/4" | 13'-0" |

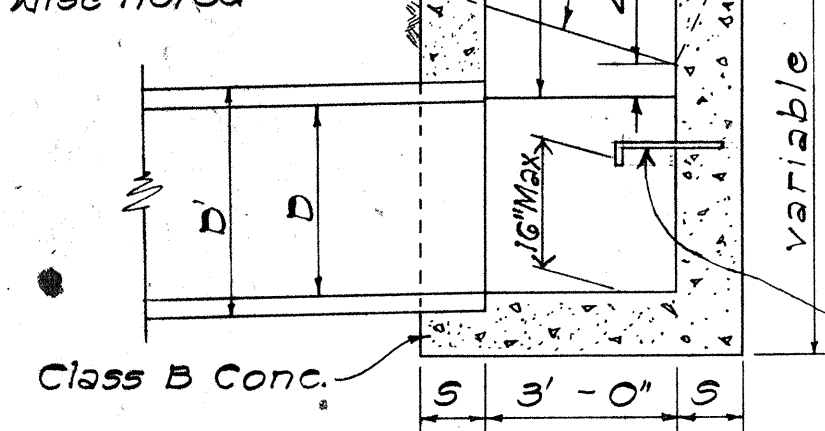
| DATA - MASONRY HEADWALL |       |        |       | CRM FOR R.C.P. | CRM FOR C.M.P. |
|-------------------------|-------|--------|-------|----------------|----------------|
| D                       | B     | L      | H     | Cu. Yd.        | Cu. Yd.        |
| 18"                     | 1'-0" | 6'-0"  | 4'-6" | 1.24           | 1.29           |
| 24"                     | 1'-6" | 7'-6"  | 5'-0" | 1.83           | 1.92           |
| 30"                     | 2'-0" | 9'-0"  | 5'-6" | 2.56           | 2.70           |
| 36"                     | 2'-6" | 10'-6" | 6'-0" | 3.45           | 3.66           |

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

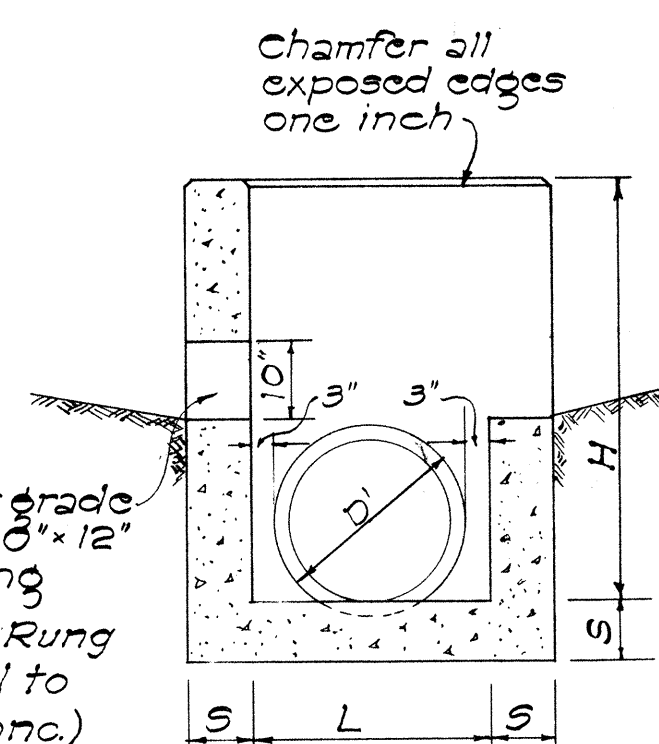
Excavate recess in roadway excavation slope for inlet to dimensions and form designated by the Engineer. This is "Unclassified Excavation."

Top limits of structure excavation other than at bridges

12" unless otherwise noted



SECTION "A-A"



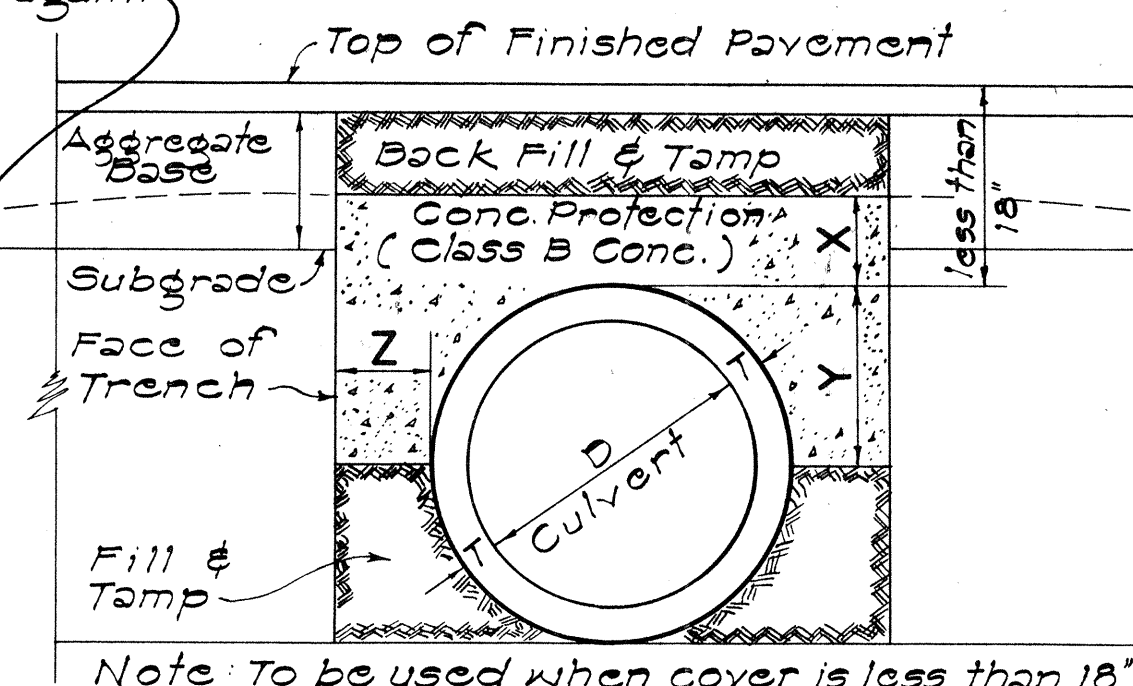
SECTION "B-B"

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

#### GENERAL NOTES

- Culvert shall enter and leave Drop Intake from any position and in the direction indicated by the plans or ordered by the Engineer.
- D' shall be the maximum outside dimension of the culvert at the Drop Intake wall.
- Manhole Rungs (12" o.c.) are required when "H" is greater than 4 feet 6 inches. Only one rung (16 inches from the bottom) is required if "H" is 4 feet 6 inches or less. Manhole Rungs may be placed at any location as ordered by the Engineer.

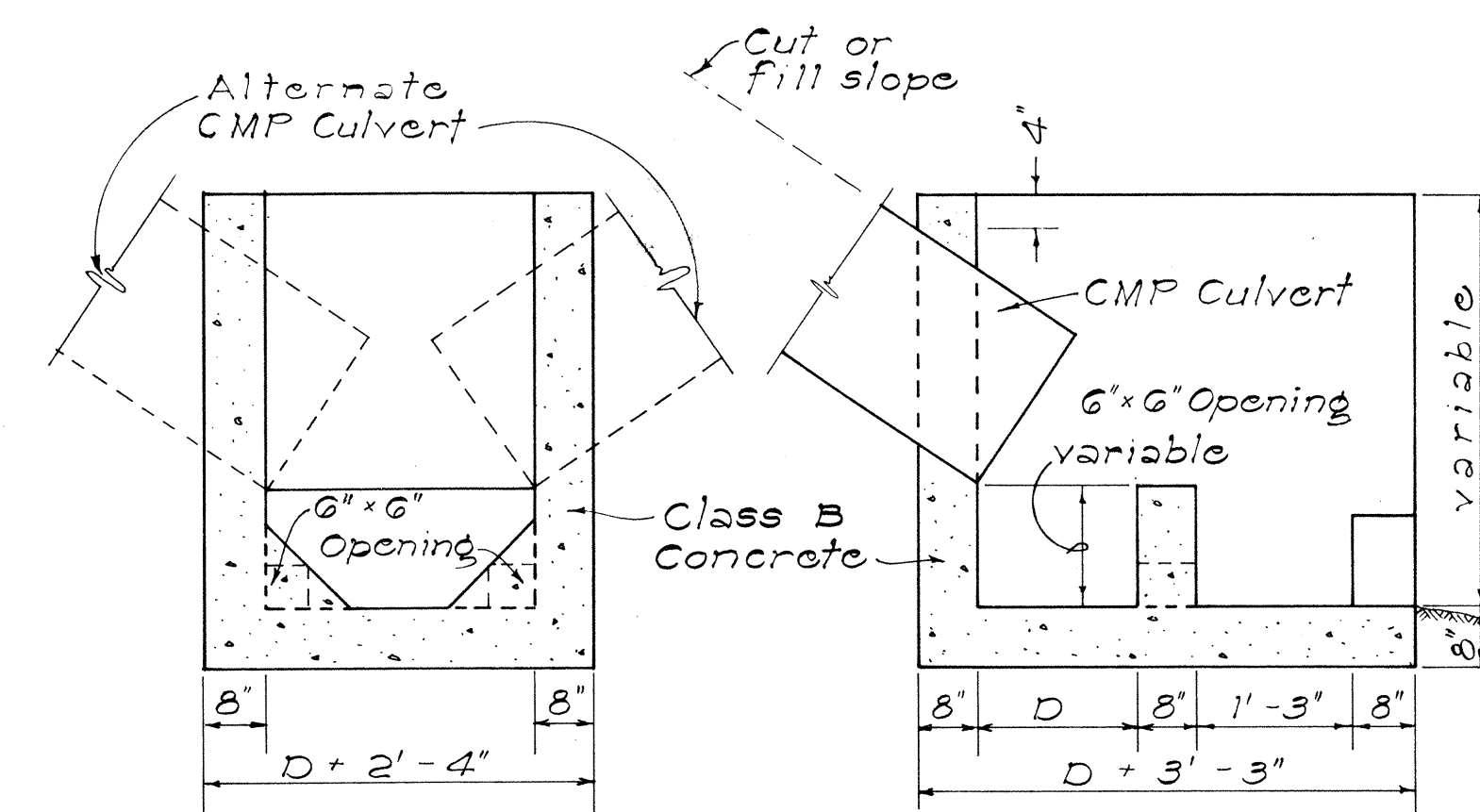
Note: When subgrade is below top of jacket, it shall be fully compacted to this line and then re-excavated (struc. exc.) to proper subgrade. This surface shall be rolled again.



Note: To be used when cover is less than 18"

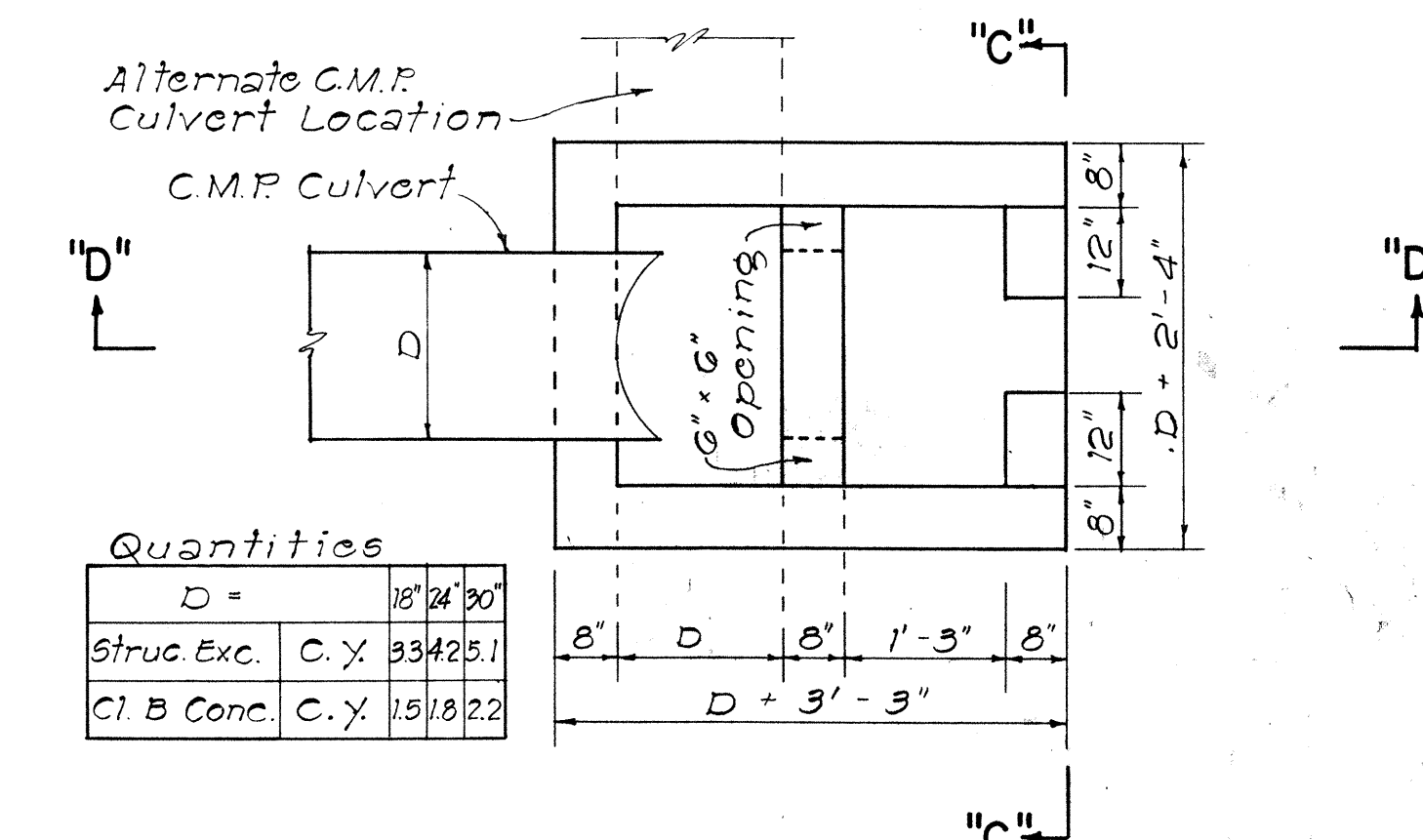
| DATA FOR CONCRETE PROTECTION OVER CULVERTS |                   |                                       |
|--------------------------------------------|-------------------|---------------------------------------|
| X                                          | Y                 | Z                                     |
| 6" for 18" D                               | $\frac{D}{2} + T$ | Z must be from pipe to face of trench |
| 7" for 24" D                               |                   |                                       |
| 8" for 30" D                               |                   |                                       |
| 9" for 36" D                               |                   | Minimum = X                           |
| 10" for 42" D                              |                   |                                       |
| 11" for 48" D                              |                   | Maximum pay quantity will be Z = 12"  |
| 12 for 54" D                               |                   |                                       |

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



SECTION "C-C"

SECTION "D-D"



| Quantities       |             |
|------------------|-------------|
| D =              | 18' 24' 30' |
| Struc. Exc. C.Y. | 3342.51     |
| Cl. B Conc. C.Y. | 1518.22     |

DETAILS OF CONC. DROP BOX AT  
OUTLET OF CULVERT PIPE  
NOT TO SCALE

APPROVAL RECOMMENDED:

HYDRAULIC DESIGN ENGINEER

12-17-69  
DATE

APPROVED:

ASSISTANT CHIEF, ENGINEERING

12-17-69  
DATE

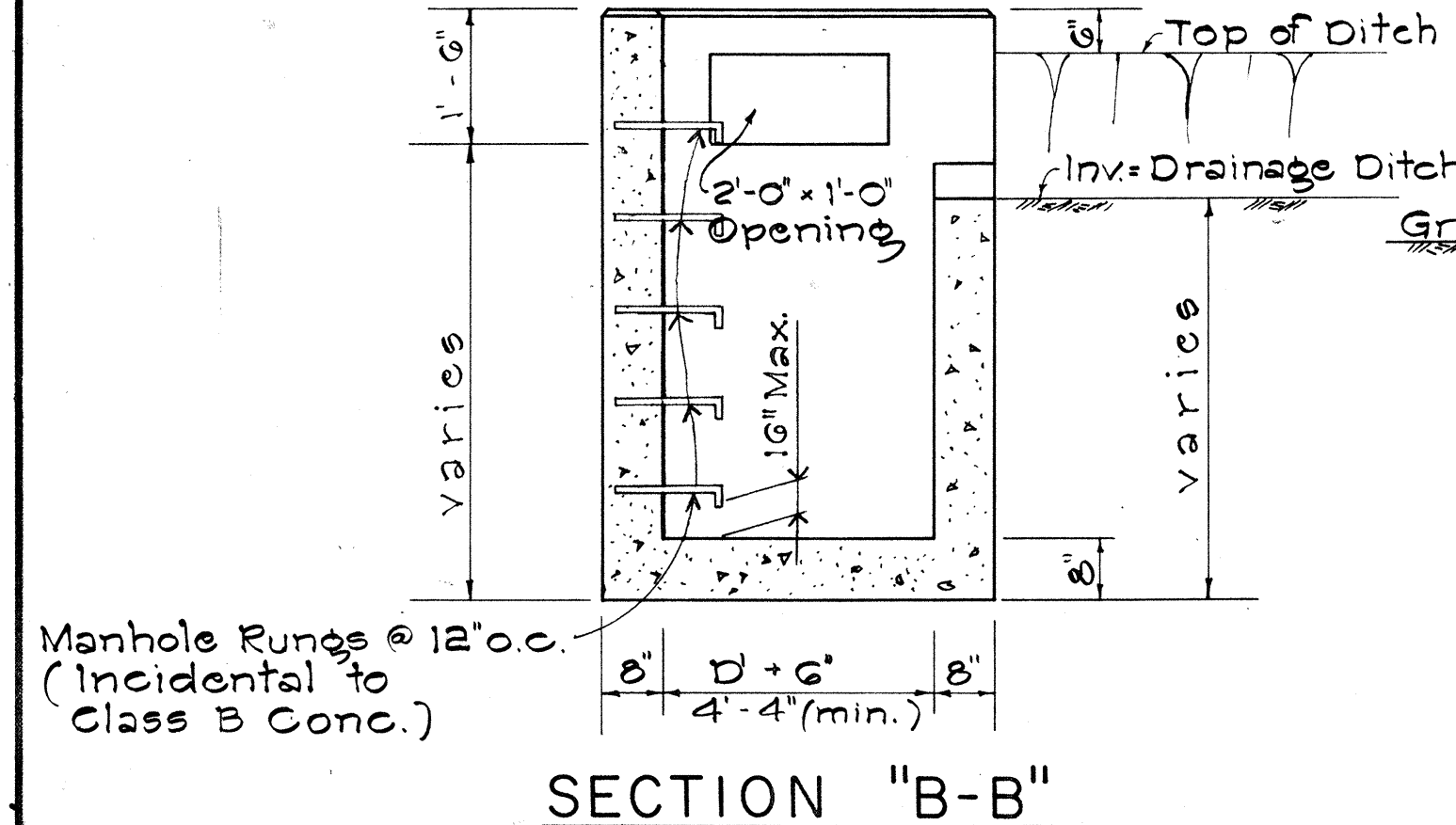
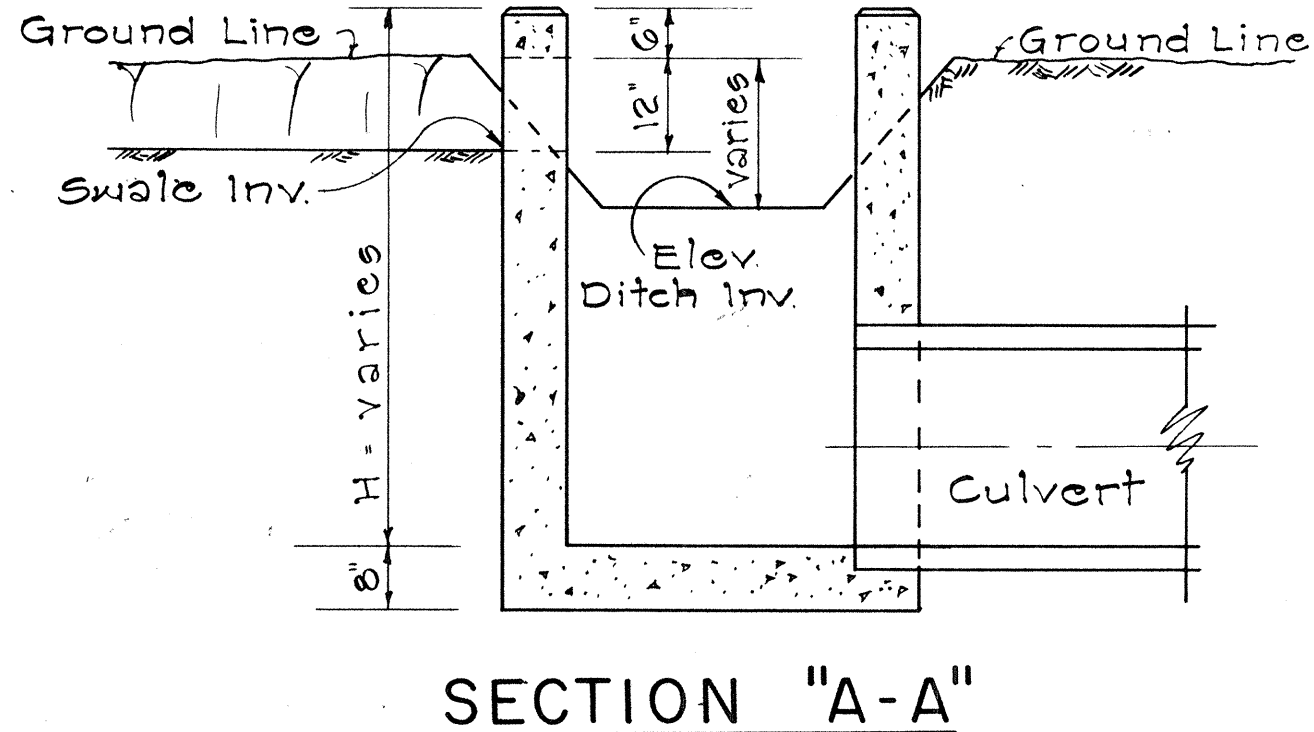
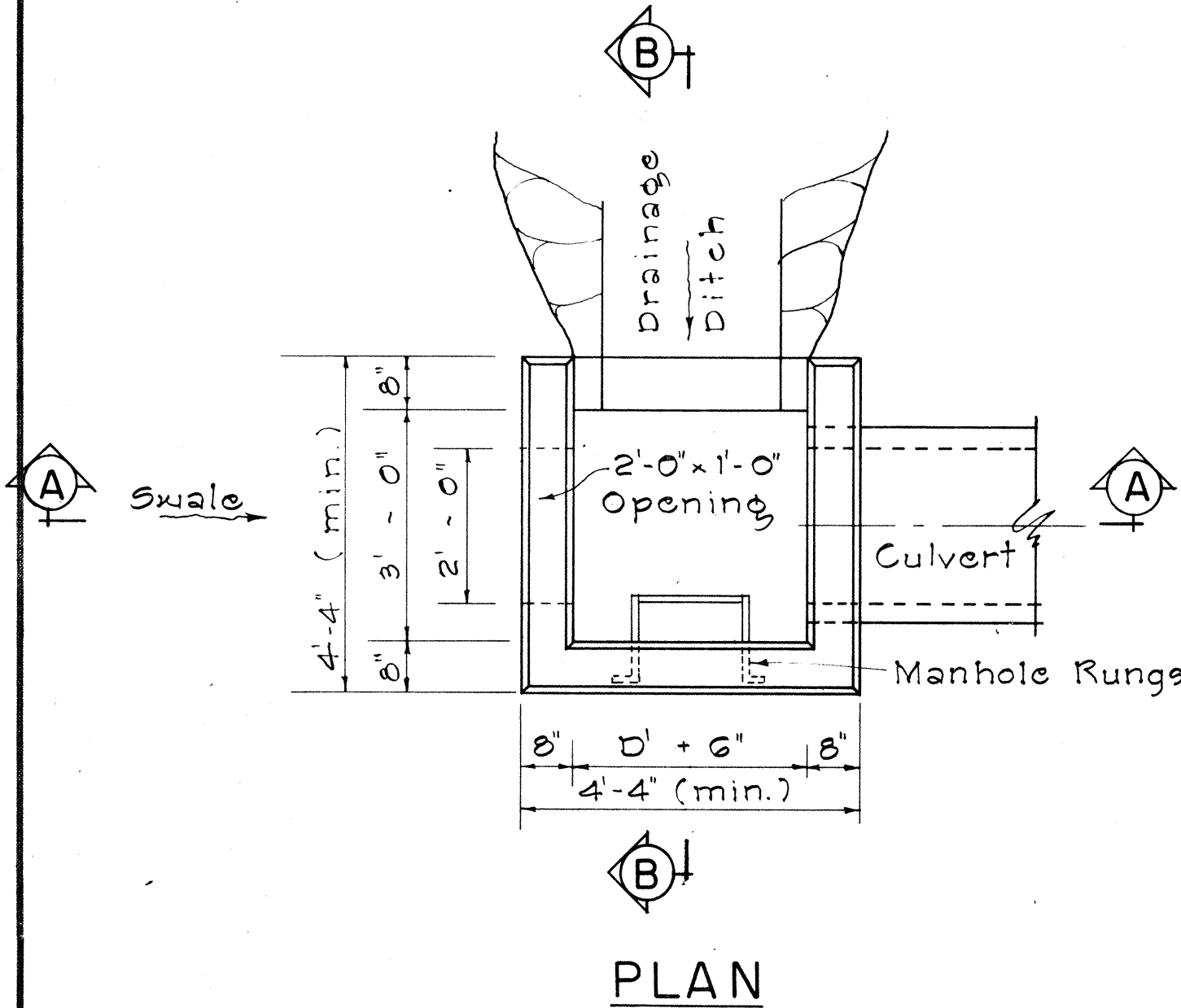
| NO. | REVISION                                     | APPROVED BY | DATE    |
|-----|----------------------------------------------|-------------|---------|
| 1   | Spacing on Manhole Rungs to conform to OSHA. | H.I.        | 1-21-75 |

|                                                                      |                 |
|----------------------------------------------------------------------|-----------------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION |                 |
| STANDARD DETAILS                                                     |                 |
| DROP INTAKE, HEADWALL &<br>CONCRETE PROTECTION                       |                 |
| Scale: As Noted                                                      | Date: Aug. 1967 |

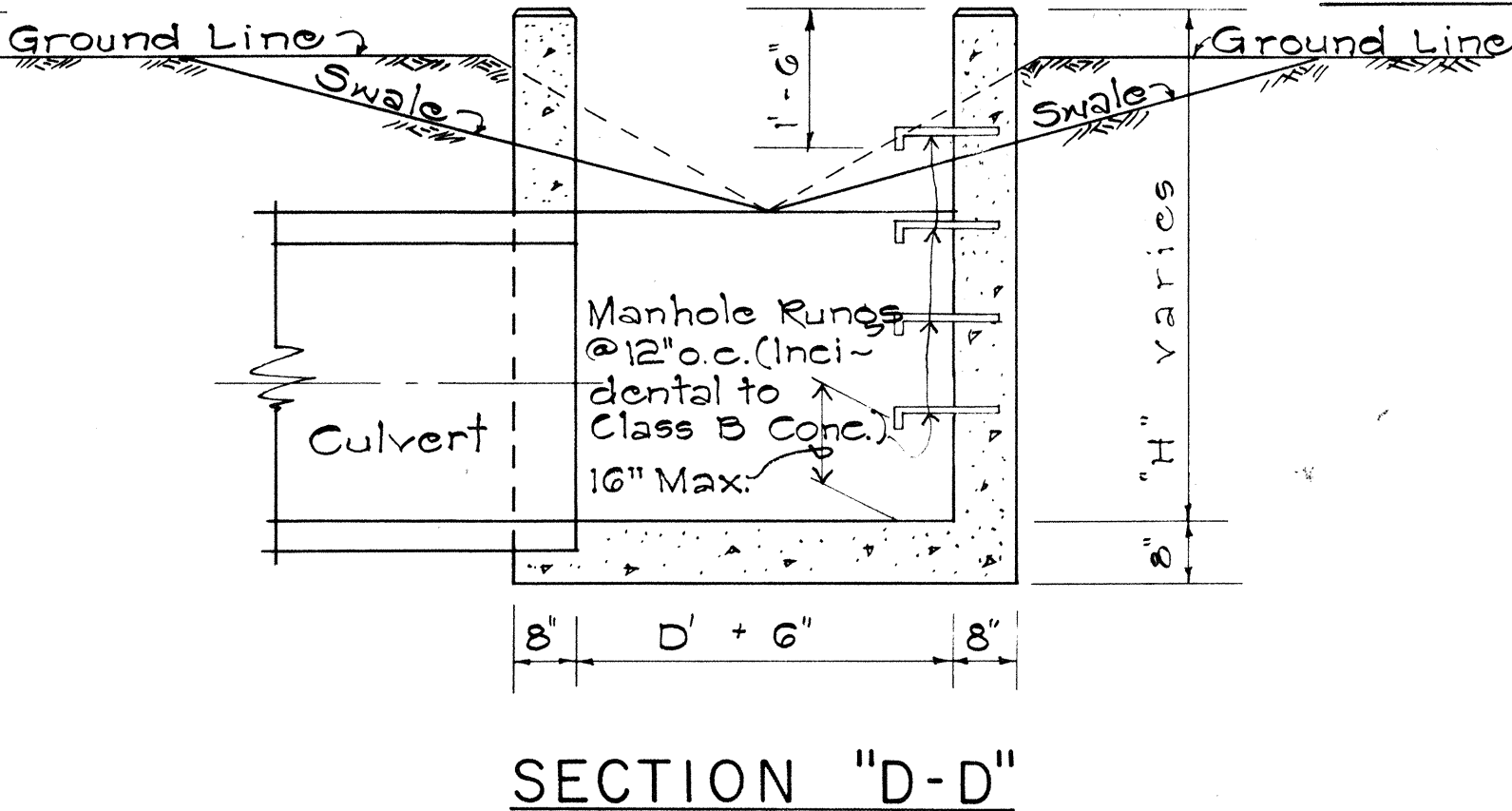
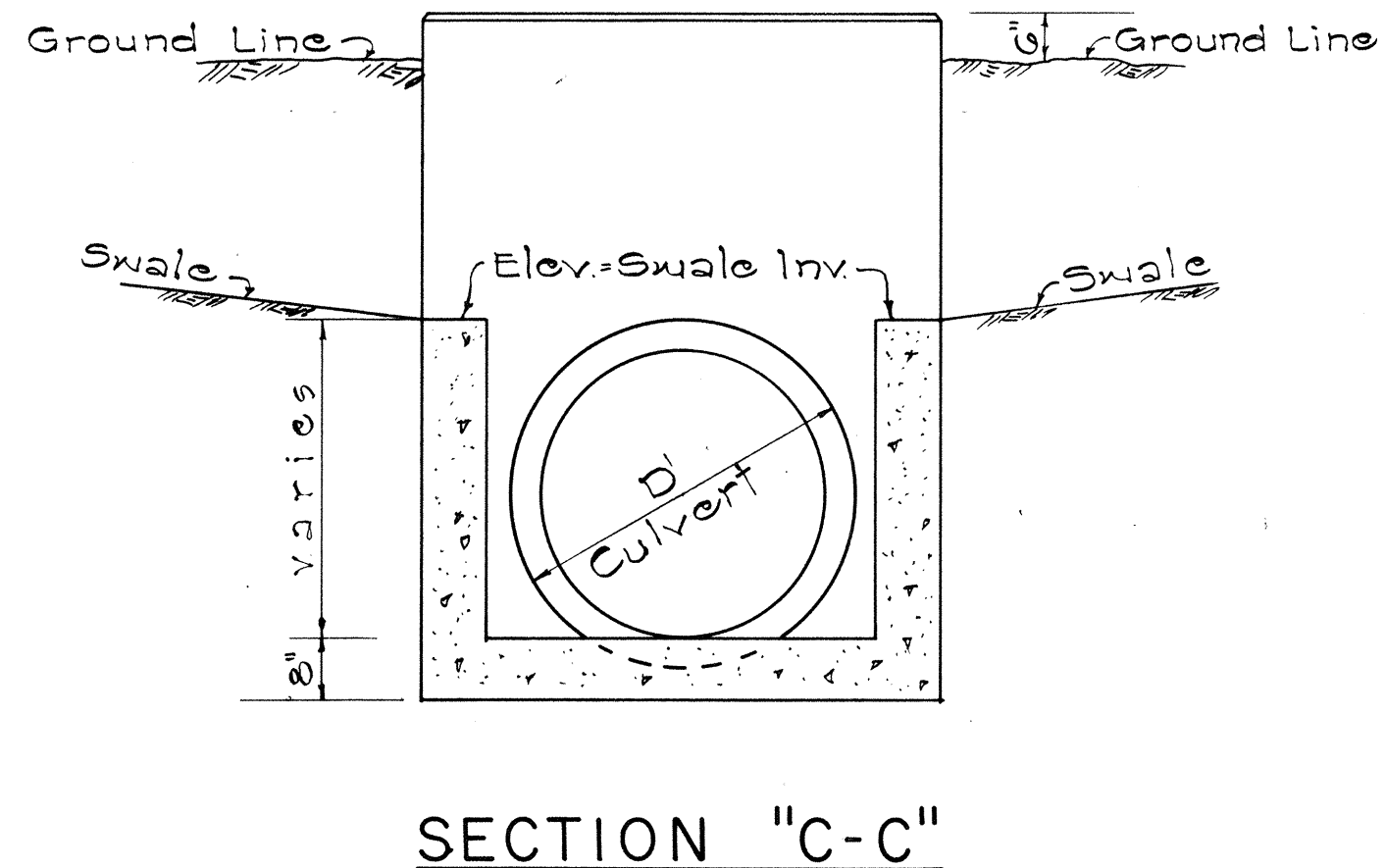
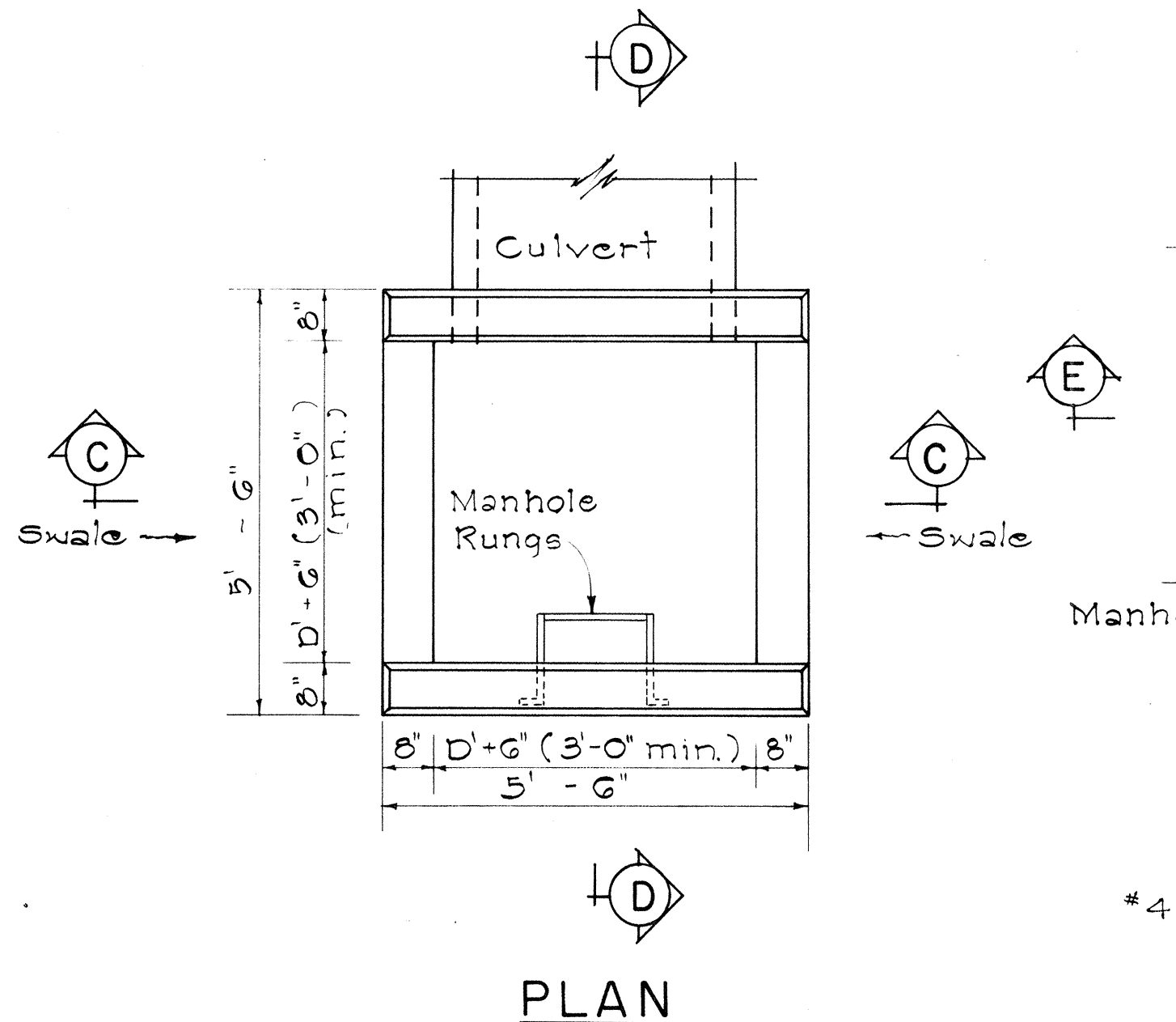
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 56D-04-75          | 1977        | 14        | 14           |

GENERAL NOTES

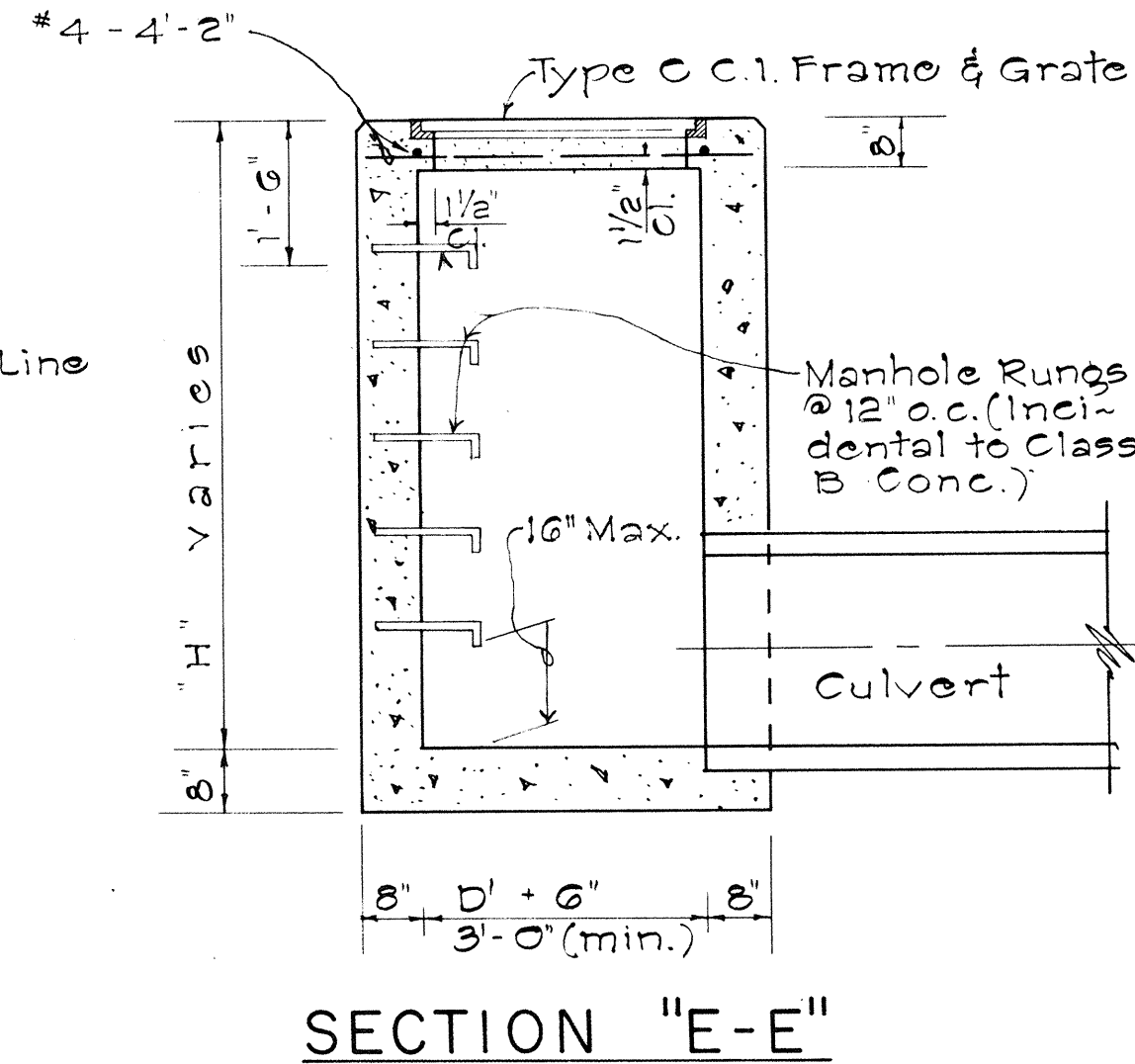
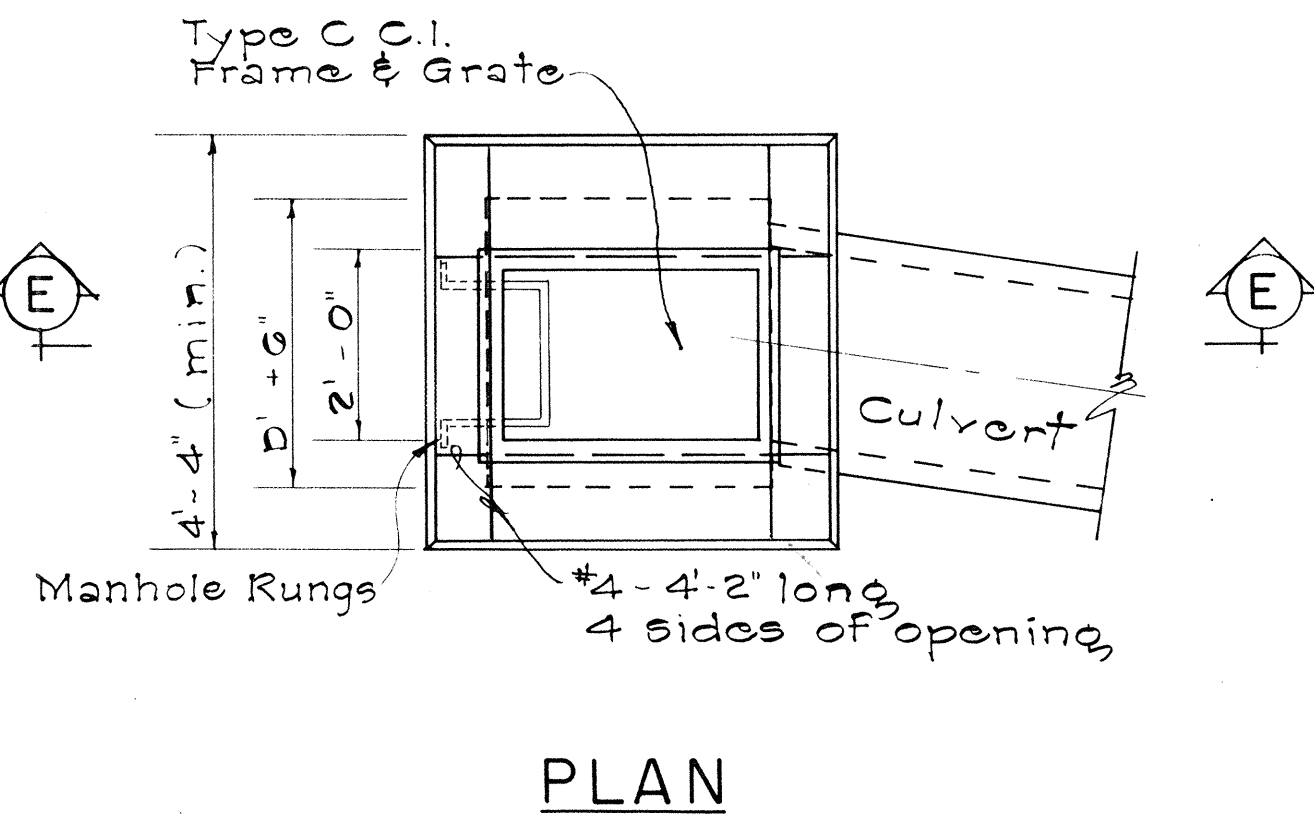
1. All concrete shall be Class "B" unless otherwise noted.
2. Exposed edges of all drainage structures shall be chamfered one inch.
3. Culvert shall enter and leave Drop Intake from any position and in the direction indicated by the plans or ordered by the Engineer.
4. Manhole Rungs (12" o.c.) are req'd. when "H" is greater than 4'-6". Only one rung (16 inches from the bottom) is required if "H" is 4'-6" or less. Manhole Rungs may be placed at any location as ordered by the Engineer.



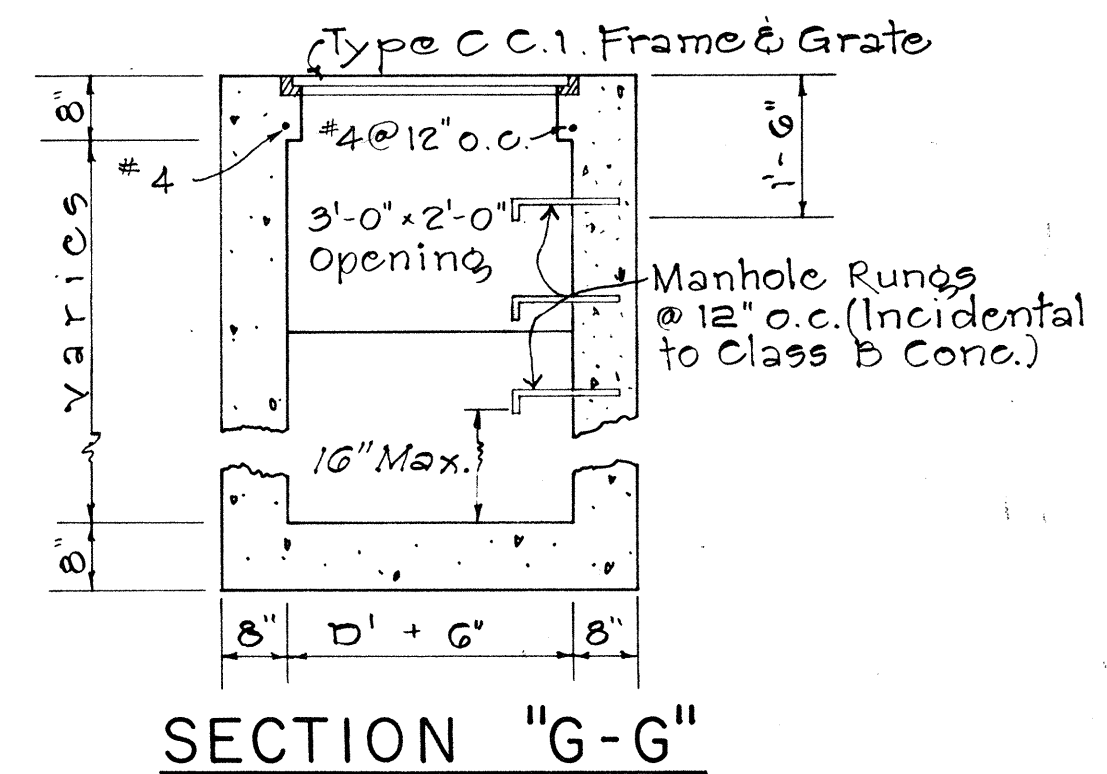
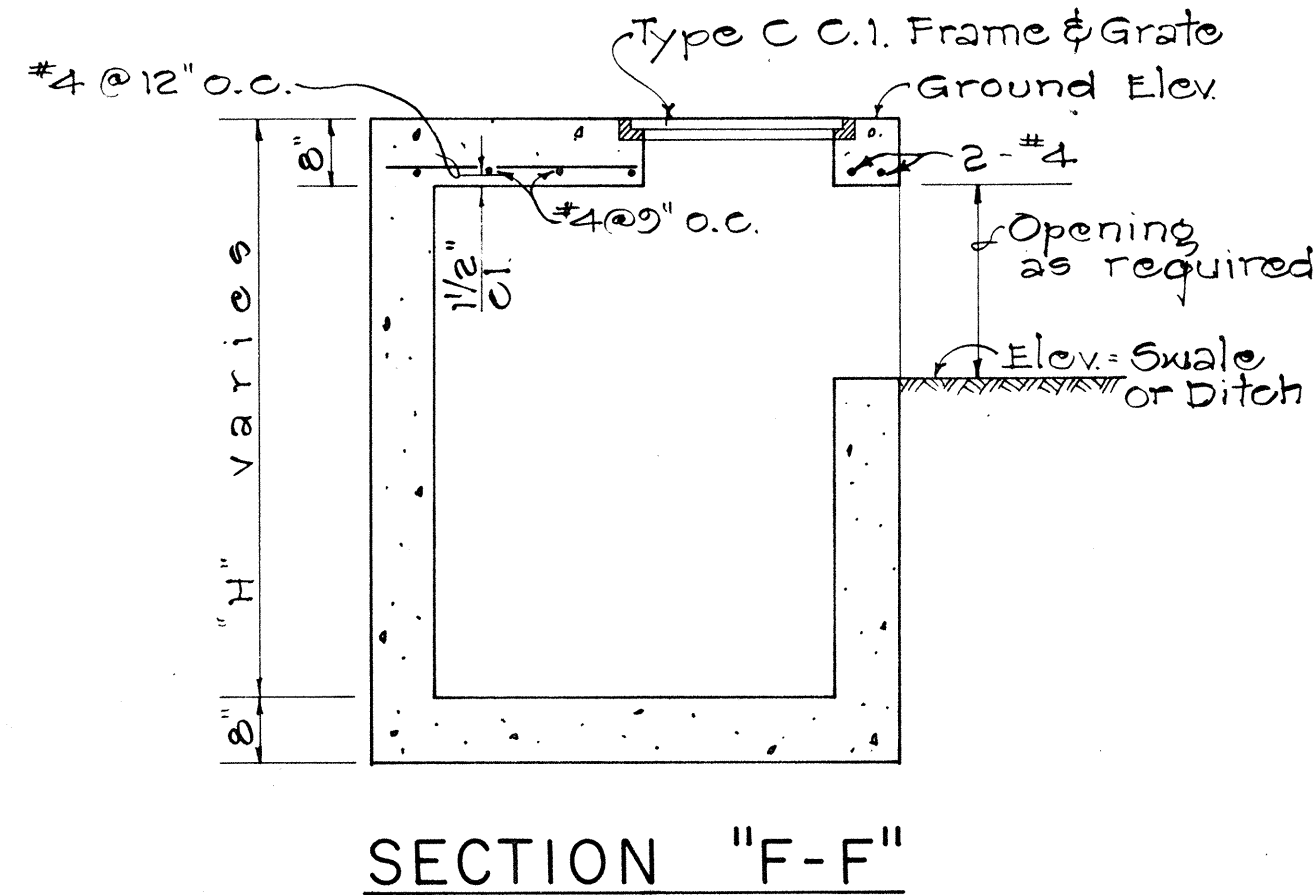
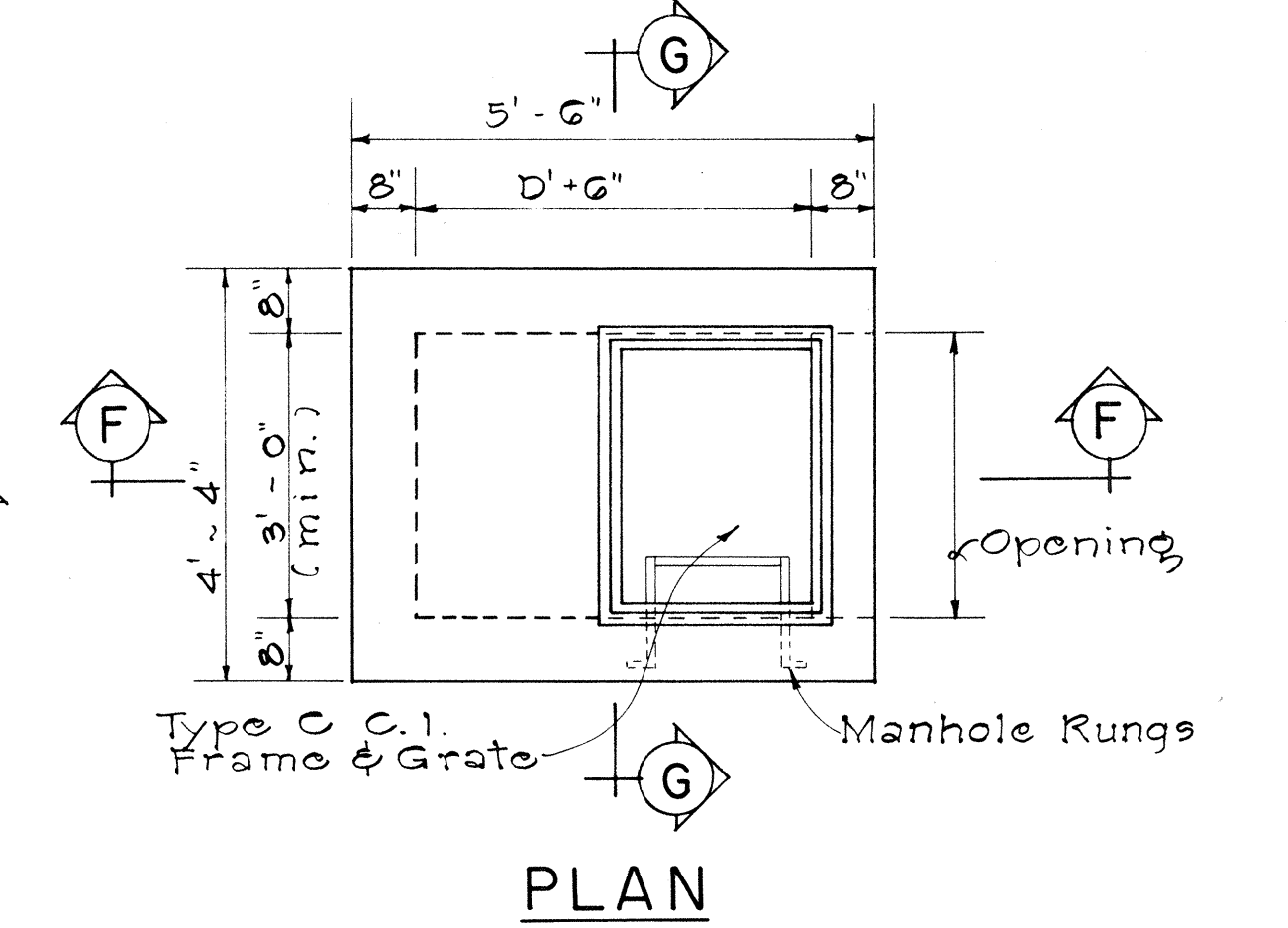
**TYPE "A"**  
**CONCRETE DROP INTAKE**  
Scale: 1/2" = 1'-0"



**TYPE "B"**  
**CONCRETE DROP INTAKE**  
Scale: 1/2" = 1'-0"



**TYPE "C" GRATED**  
**CONCRETE DROP INTAKE**  
Scale: 1/2" = 1'-0"



**TYPE "D" GRATED**  
**CONCRETE DROP INTAKE**  
Scale: 1/2" = 1'-0"

APPROVAL RECOMMENDED:  
*[Signature]* 12-17-69  
HYDRAULIC DESIGN ENGINEER DATE

APPROVED:  
*[Signature]* 12-17-69  
ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION                                     | APPROVED BY | DATE    |
|-----|----------------------------------------------|-------------|---------|
| 1   | Spacing on Manhole Rungs to conform to OSHA. | H.C.        | 1-21-75 |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
STANDARD DETAILS  
TYPE "A", "B", "C", AND "D"  
CONCRETE DROP INTAKE  
Scale: As Noted Date: July, 1969  
SHEET No. 5 OF 5 SHEETS DH19

|                   |       |
|-------------------|-------|
| DATE              | ..... |
| SURVEY PLOTTED BY | ..... |
| DRAWN BY          | ..... |
| TRACED BY         | ..... |
| DESIGNED BY       | ..... |
| CHECKED BY        | ..... |
| ORIGINAL PLAN     | ..... |
| NOTE BOOK         | ..... |
| No.               | ..... |