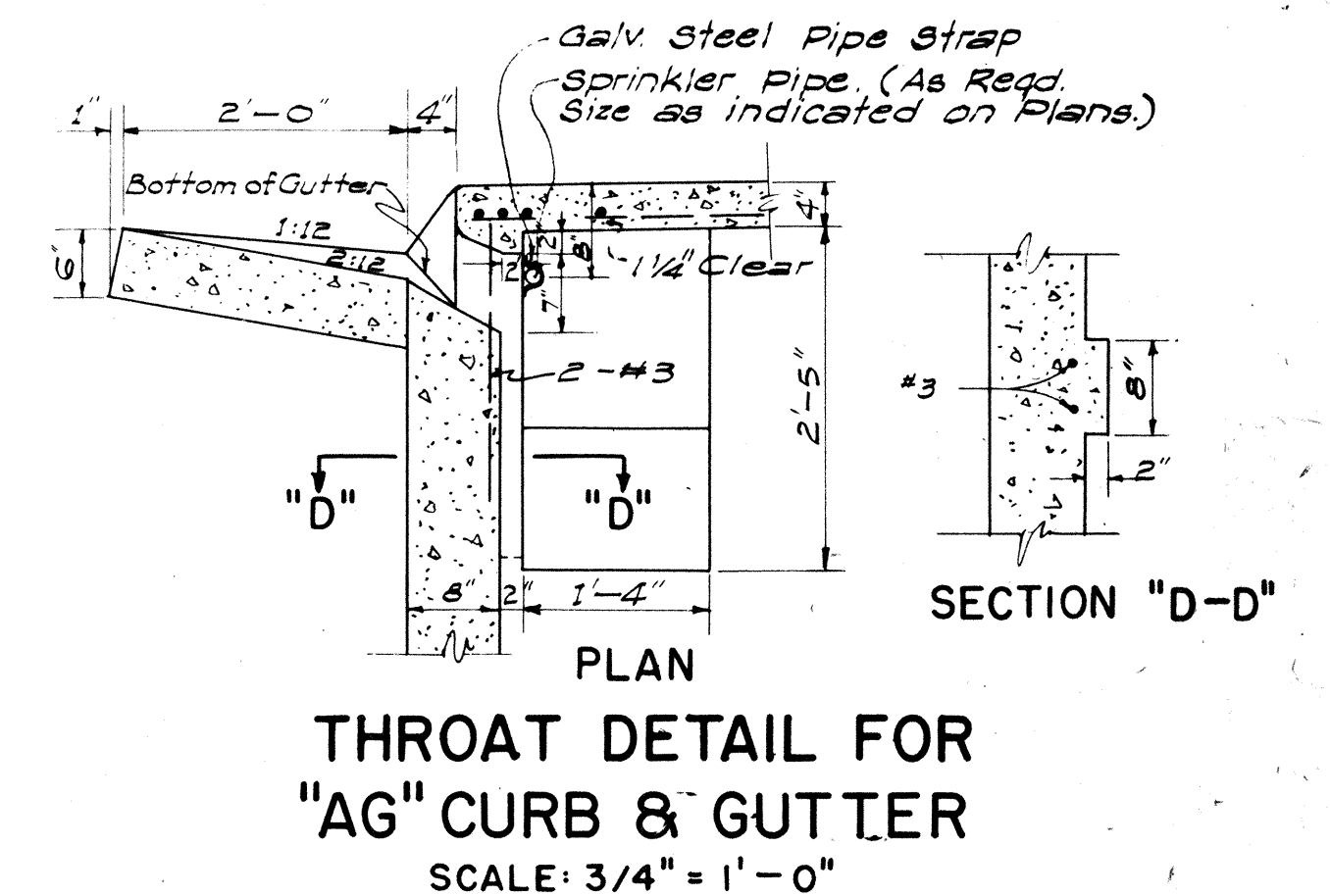
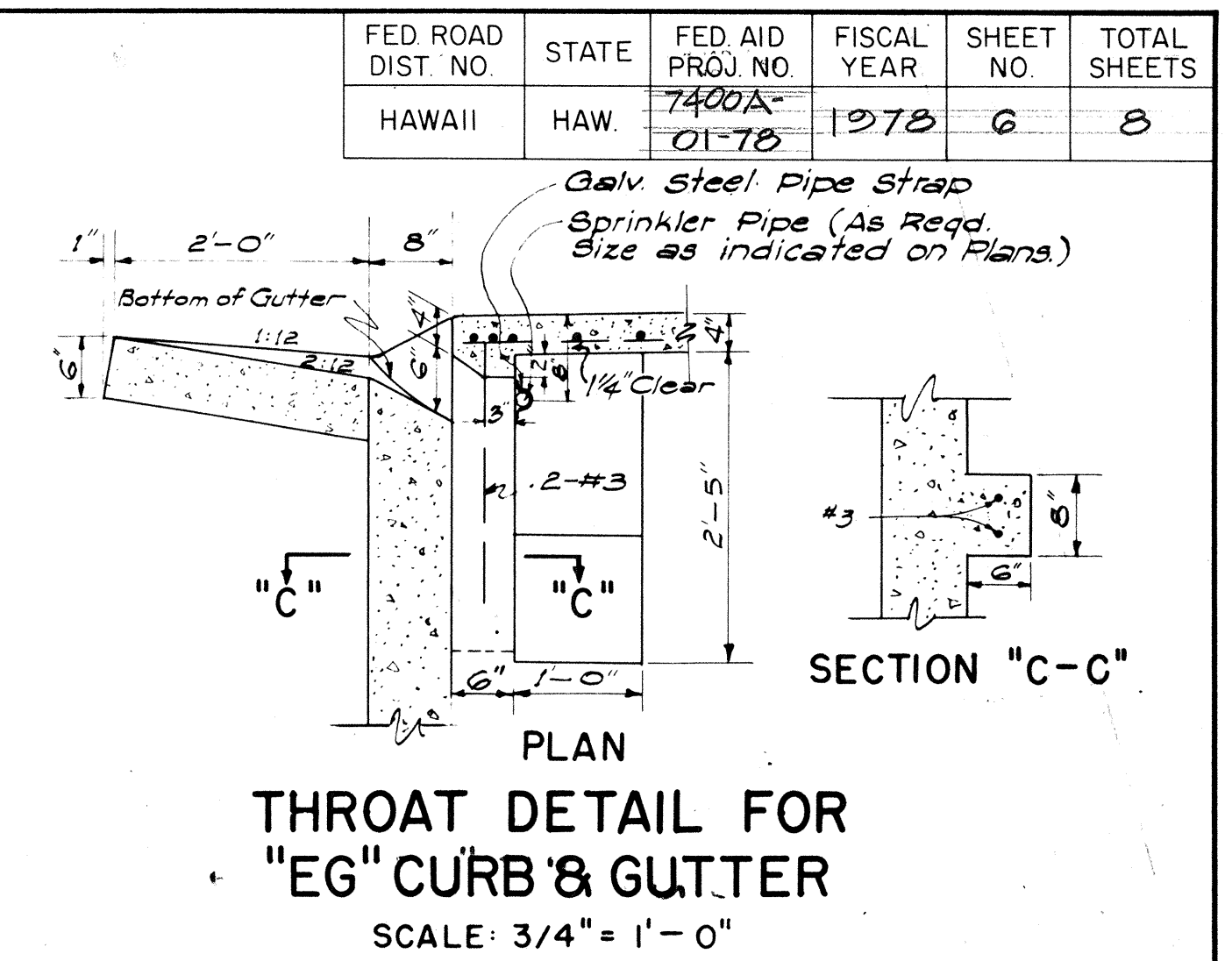
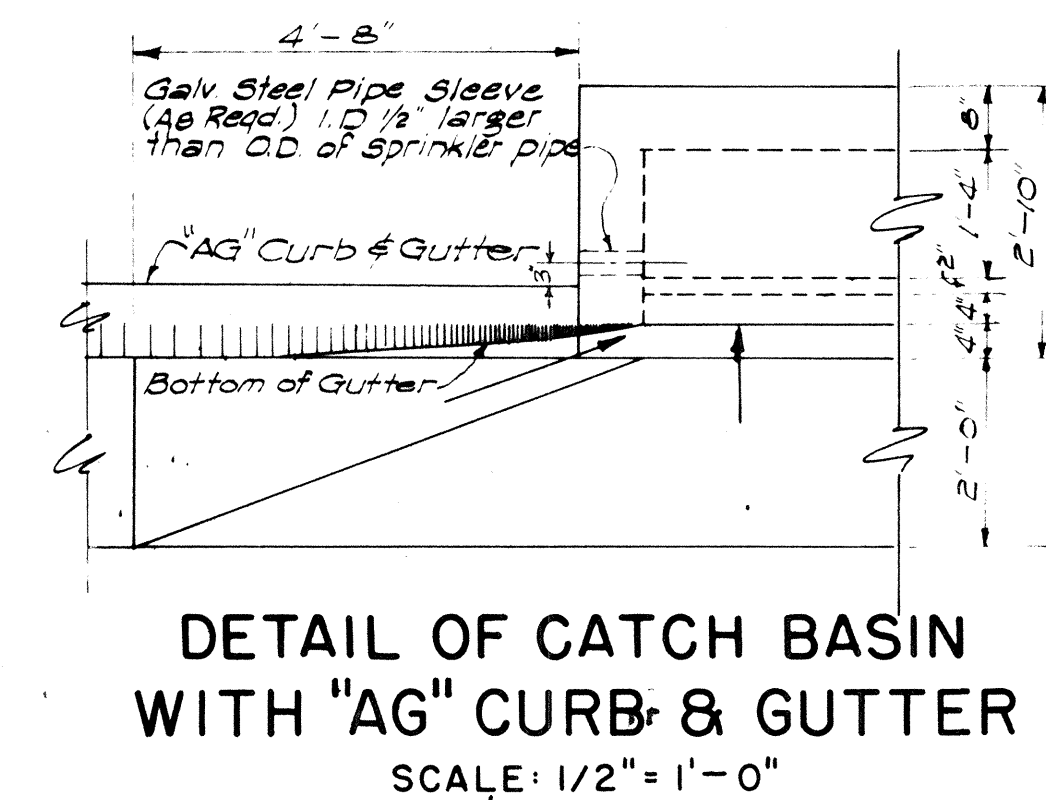
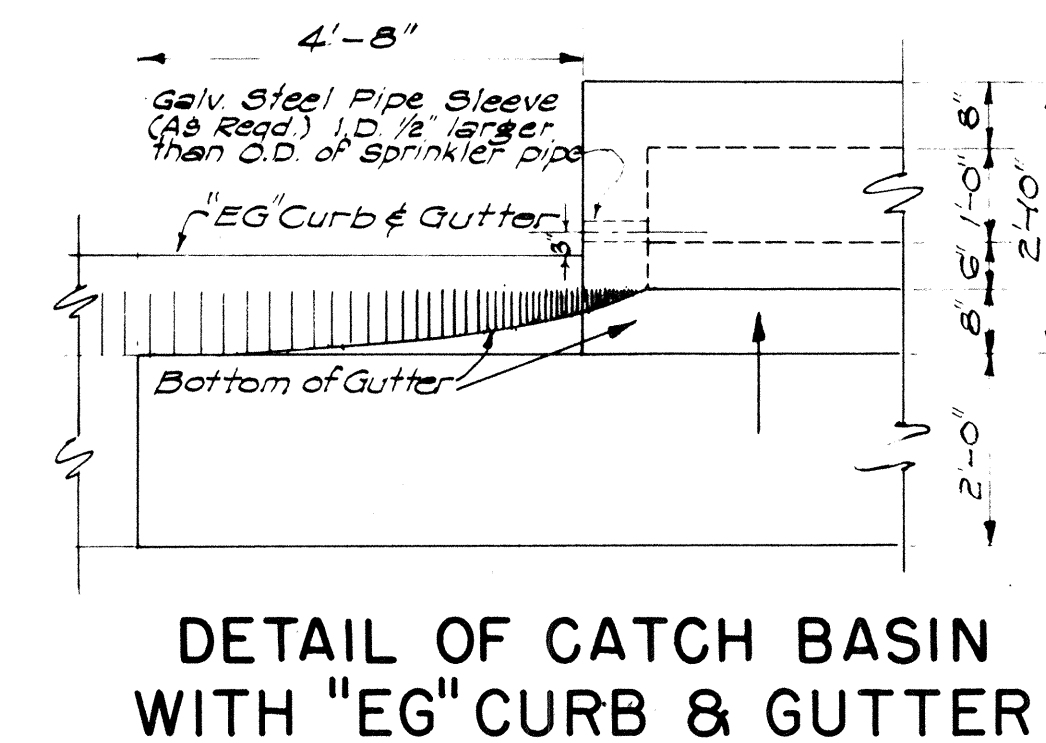
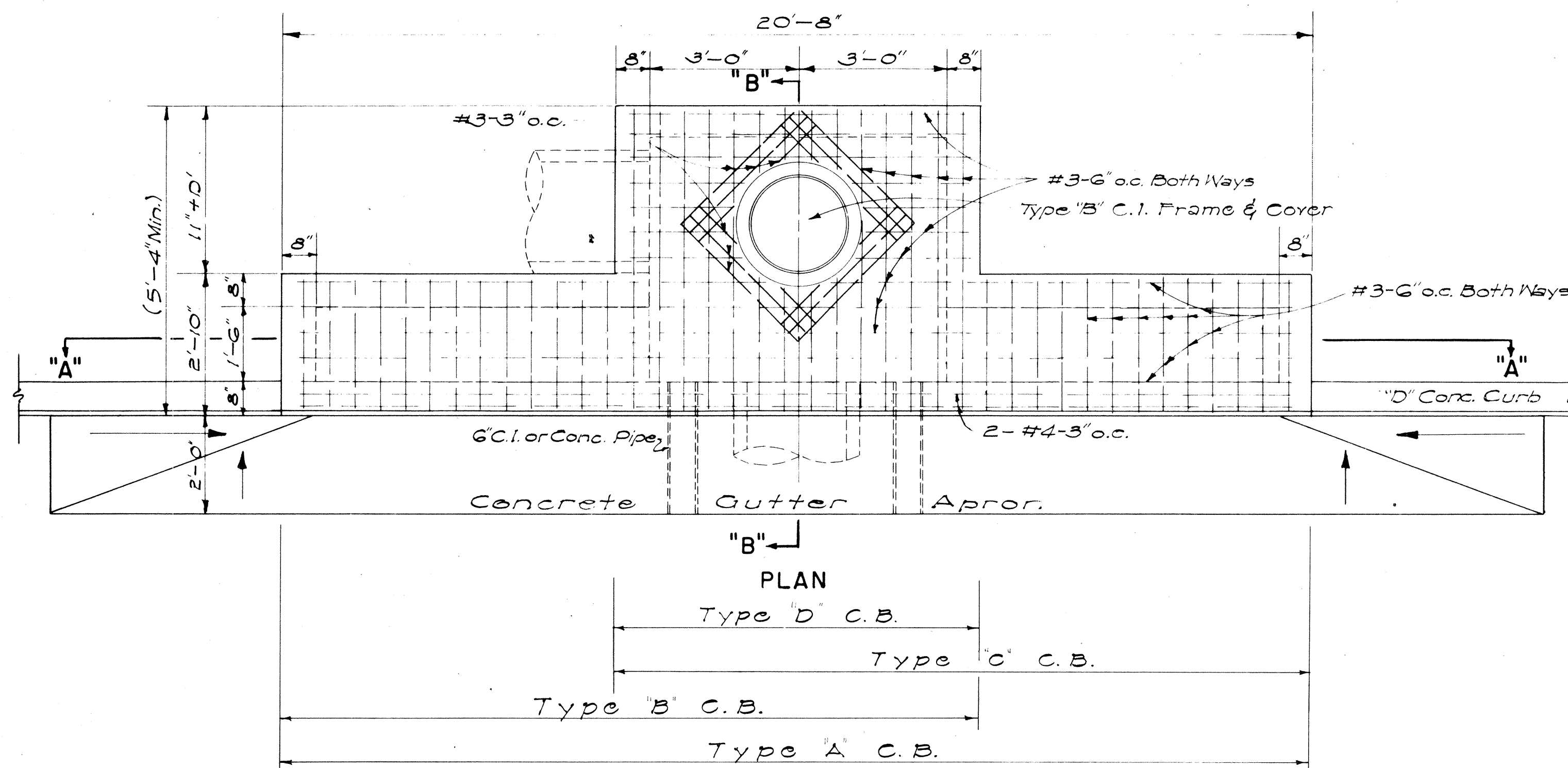
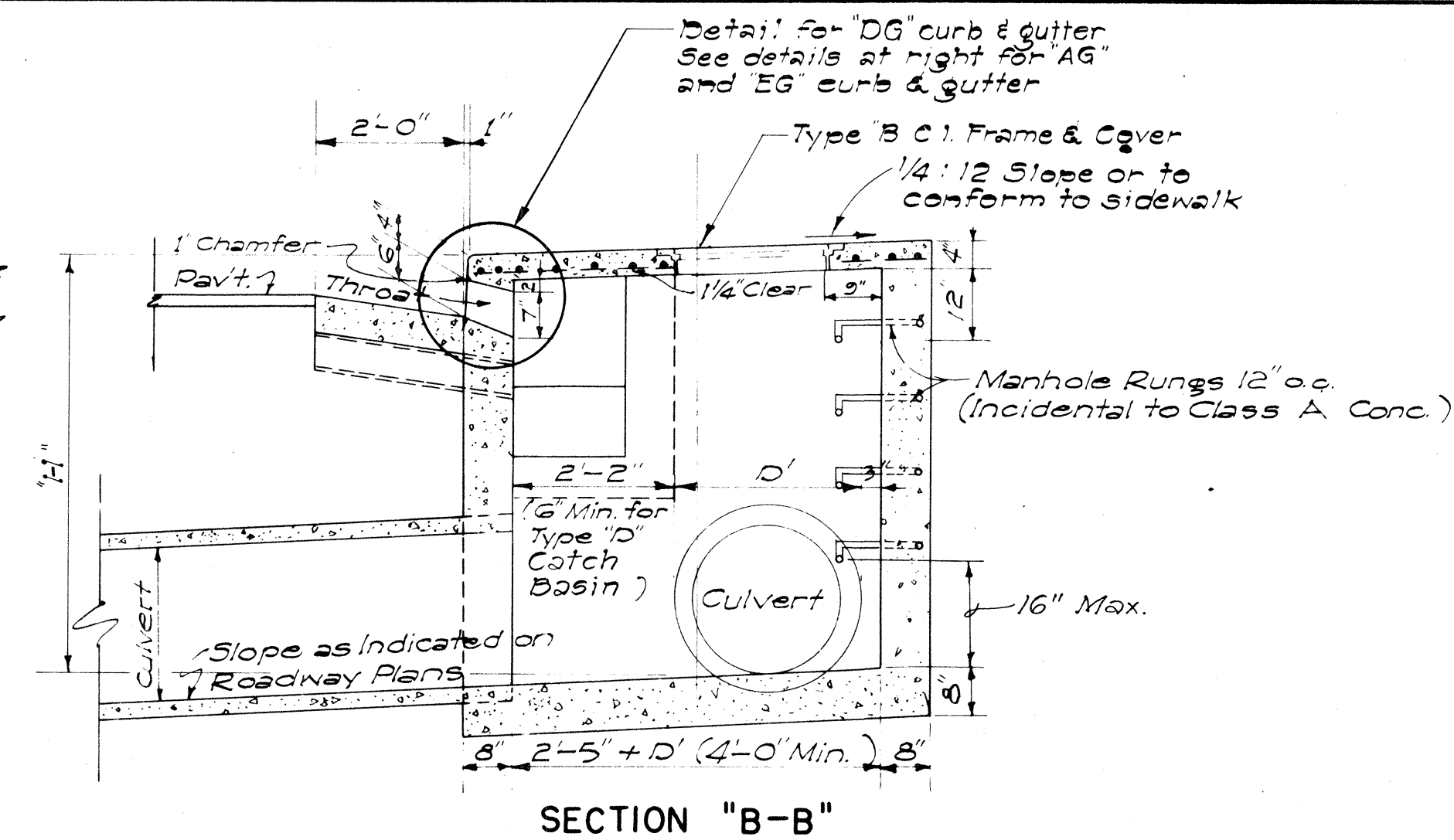
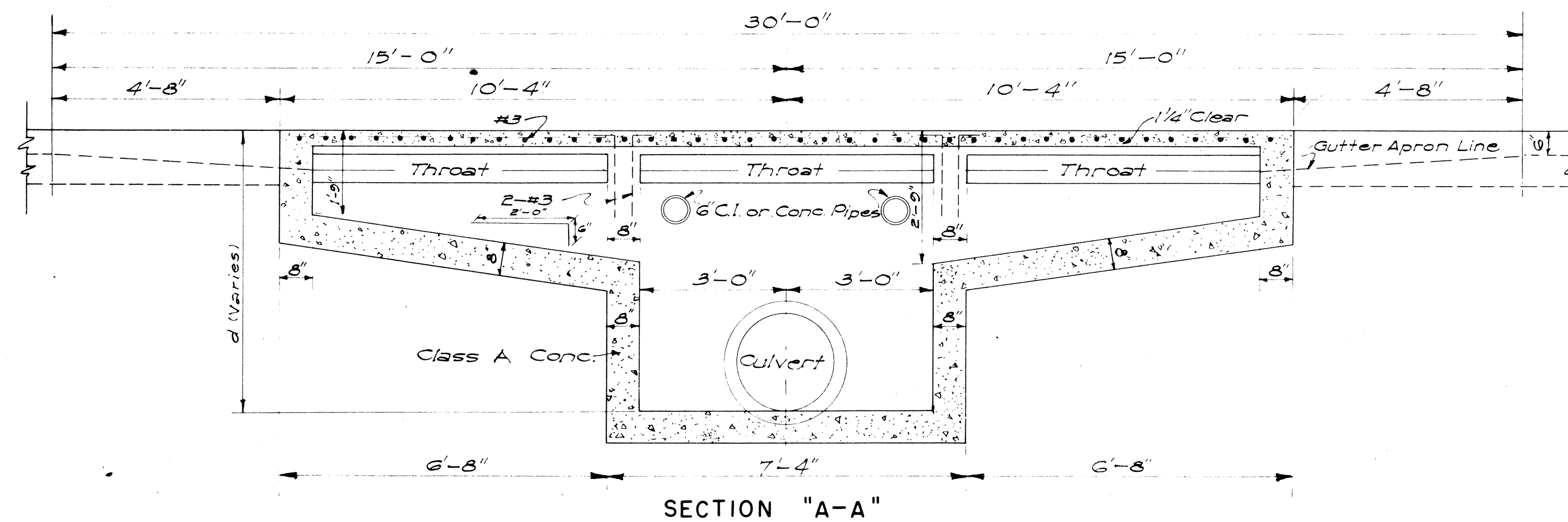


|               |                             |           |
|---------------|-----------------------------|-----------|
| ORIGINAL PLAN | SURVEY PLOTTED BY.....      | DATE..... |
|               | DESIGNED BY $\mathcal{C}_M$ | 44        |
|               | DRAWN BY $\mathcal{U}_Y$    | 45        |
|               | TRACED BY.....              | 46        |
|               | QUANTITIES BY.....          | 47        |
|               | CHECKED BY.....             | 48        |
| No. ....      |                             |           |



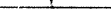
### DETAILS OF TYPES "A", "B", "C" AND "D" CATCH BASINS

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

## GENERAL NOTES

1. Quantities based on  $d' = 5.75'$  and  $D' = 30'$ .
2. Quantities do not include concrete for Gutter Apron.
3. The Contractor shall install two 6" Cast Iron or Concrete Pipes as incidental to Class A Concrete for Construction Drainage. The Engineer shall determine the exact location in the field.
4. Culvert shall leave C.B. from any position and any direction indicated by plans or ordered by the Engineer. Culvert may both enter and leave C.B. so that C.B. will also act as Manhole.
5. The Contractor shall install Galvanized Steel Pipe Sleeves and Straps as incidental to Sprinkler System.
6. The type of curb and/or gutter (Type 1, 2, 3, etc.) shall conform to the type specified on the roadway plans.
7. 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. Type "B" Cast Iron Frame and Cover and Manhole Rungs may be placed at any location as ordered by the Engineer.

## ESTIMATED QUANTITIES

| Type                                                                                    | Class A Conc. | Struct. Exc. | Reinf. Steel | Gutter Length |
|-----------------------------------------------------------------------------------------|---------------|--------------|--------------|---------------|
| "A"  | 7.5 c.y.      | 24.7 c.y.    | 145 lb.      | 30' - 0"      |
| "B"  | 6.0 c.y.      | 21.5 c.y.    | 108 lb.      | 23' - 4"      |
| "C"  | 6.0 c.y.      | 21.5 c.y.    | 108 lb.      | 23' - 4"      |
| "D"  | 4.9 c.y.      | 16.5 c.y.    | 77 lb.       | 16' - 8"      |

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

APPROVAL RECOMMENDED:

J. Takano 12-17-69  
HYDRAULIC DESIGN ENGINEER DATE

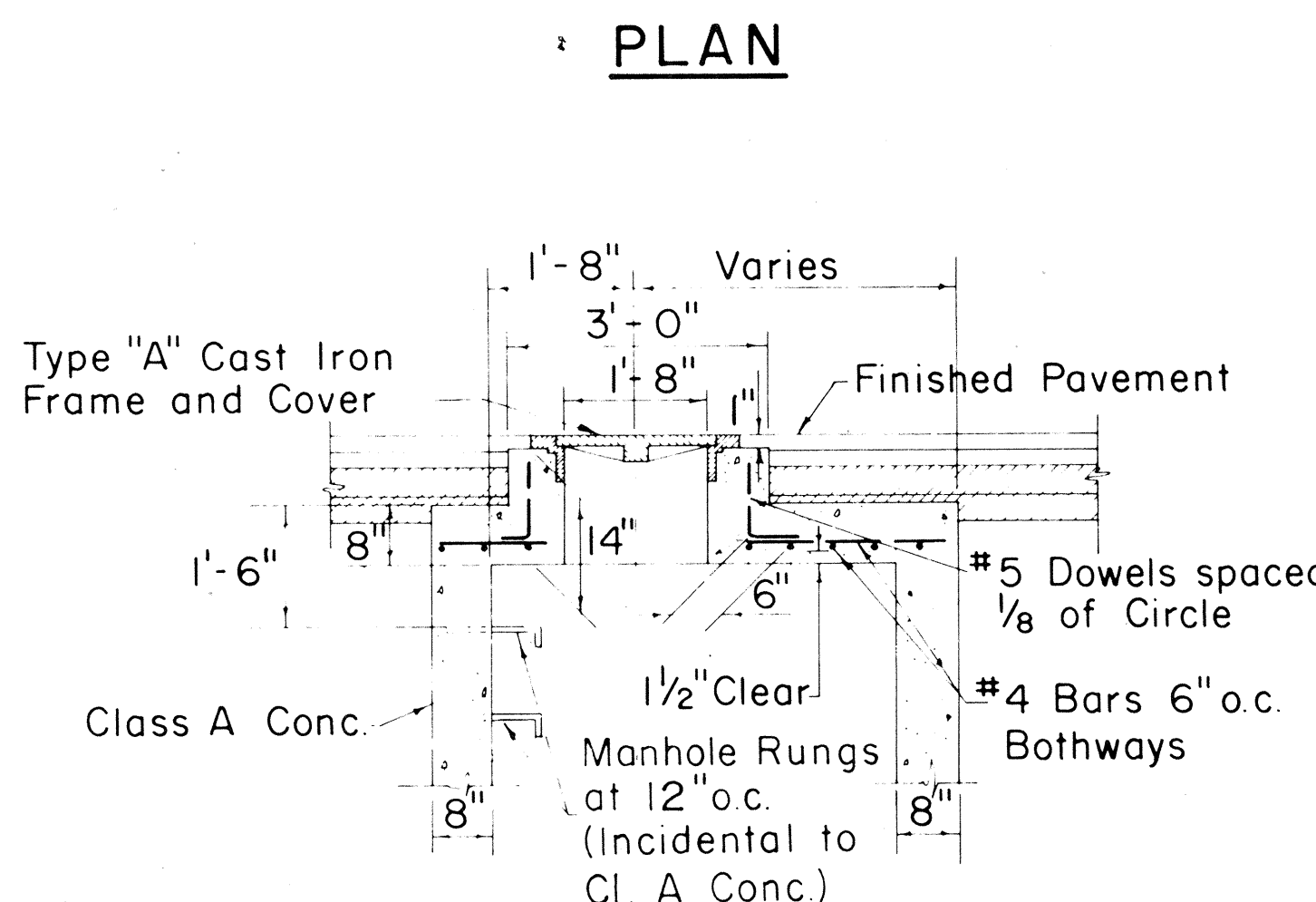
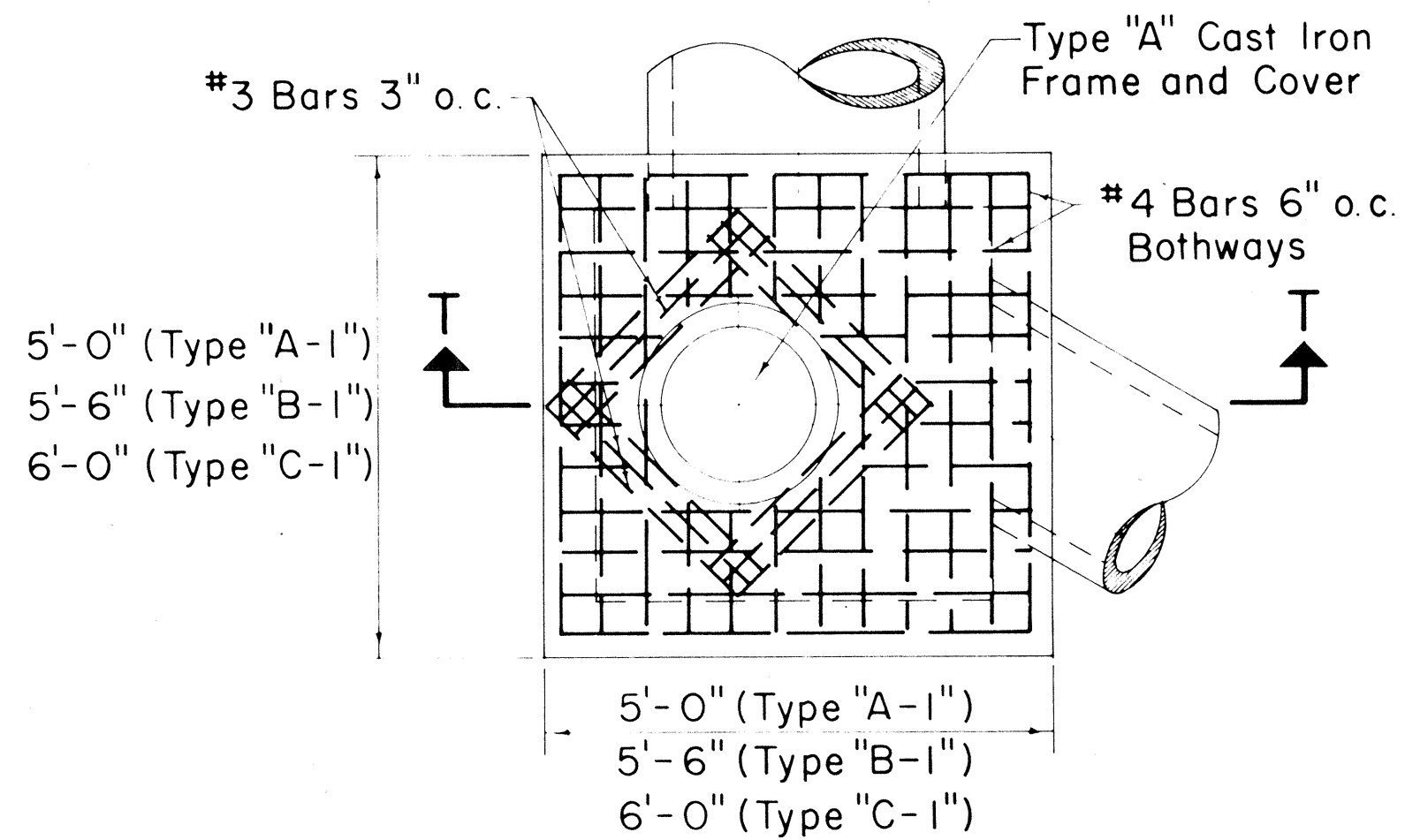
APPROVED:

Andrew S. Zahid 12-17-69  
ASSISTANT CHIEF, ENGINEERING - DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
STANDARD DETAILS  
CATCH BASINS

Scale: As Noted Date: July, 1969  
SHEET NO 1 OF 3 SHEETS DH 1

| FED. ROAD DIST. NO. | STATE  | FED. AID PROJECT | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|--------|------------------|-------------|-----------|--------------|
| HAWAII              | HAWAII | 7400A-01-78      | 1978        | 7         | 8            |

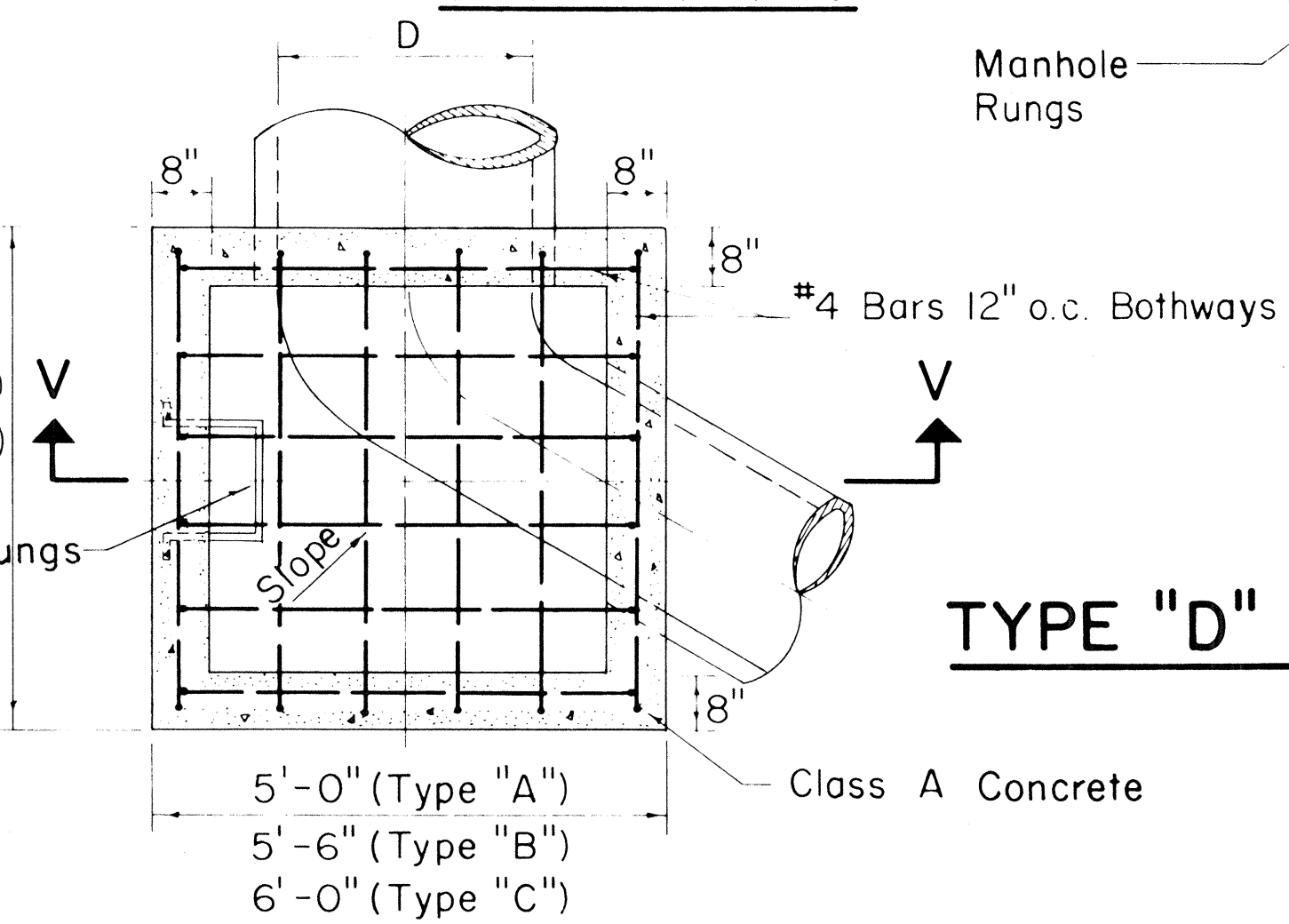
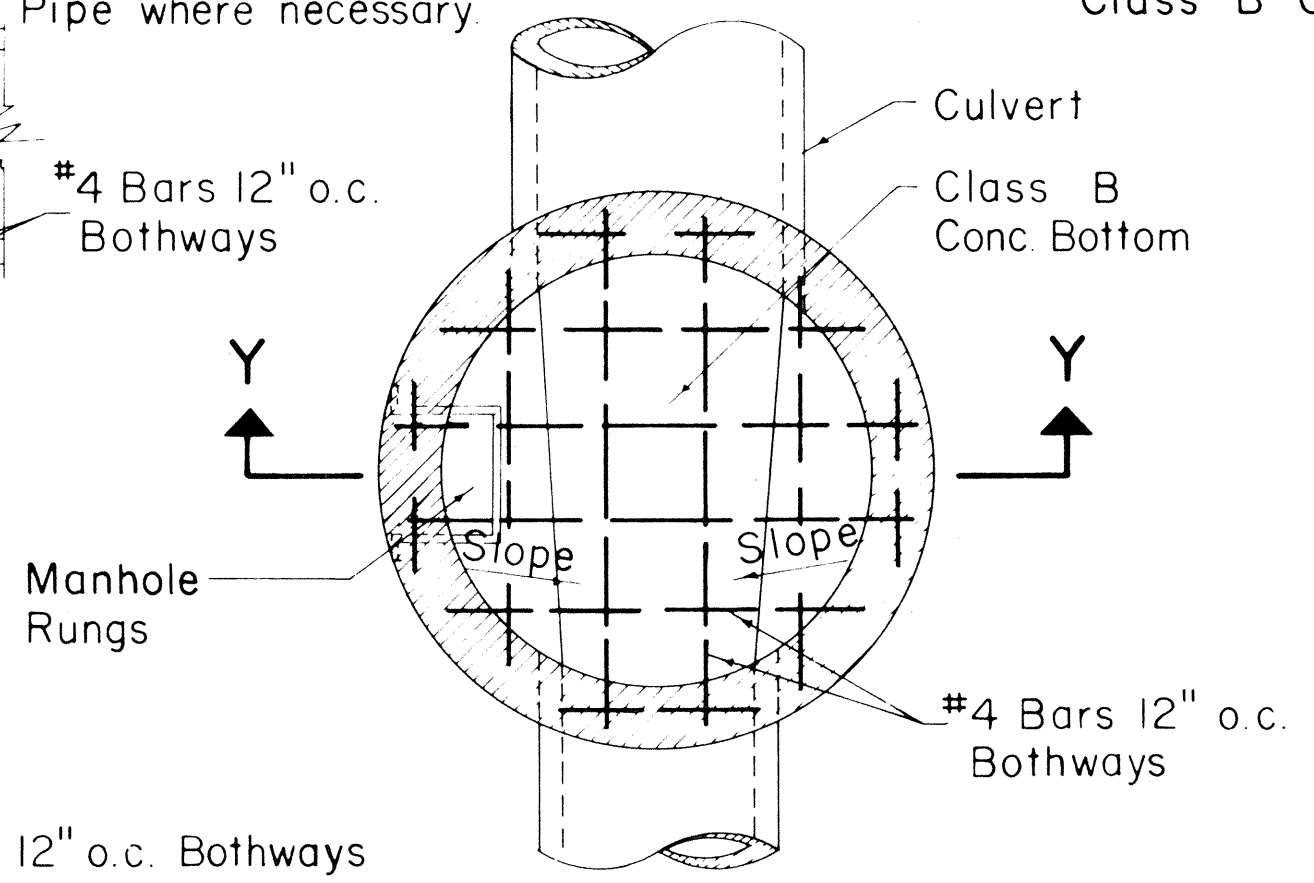
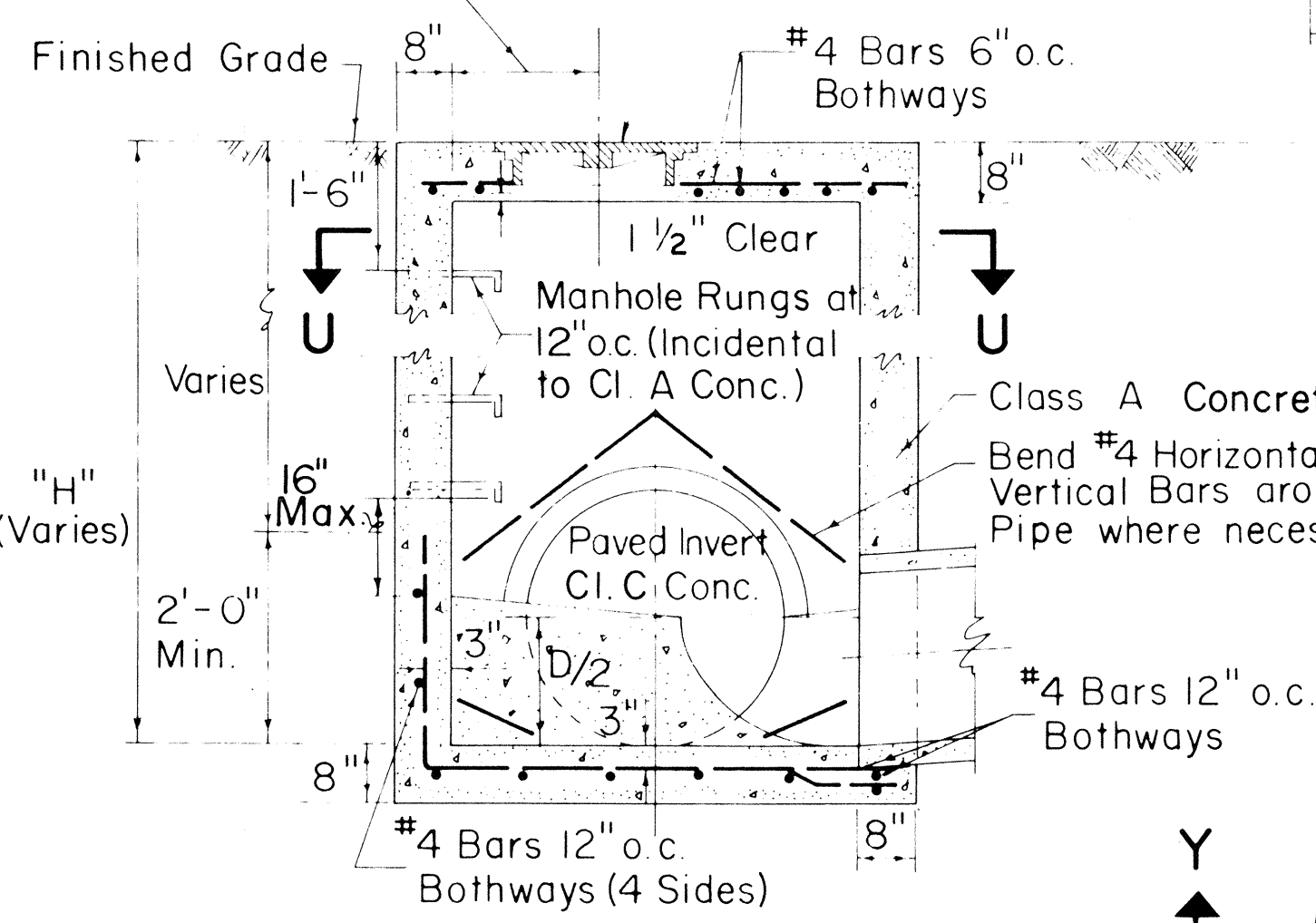
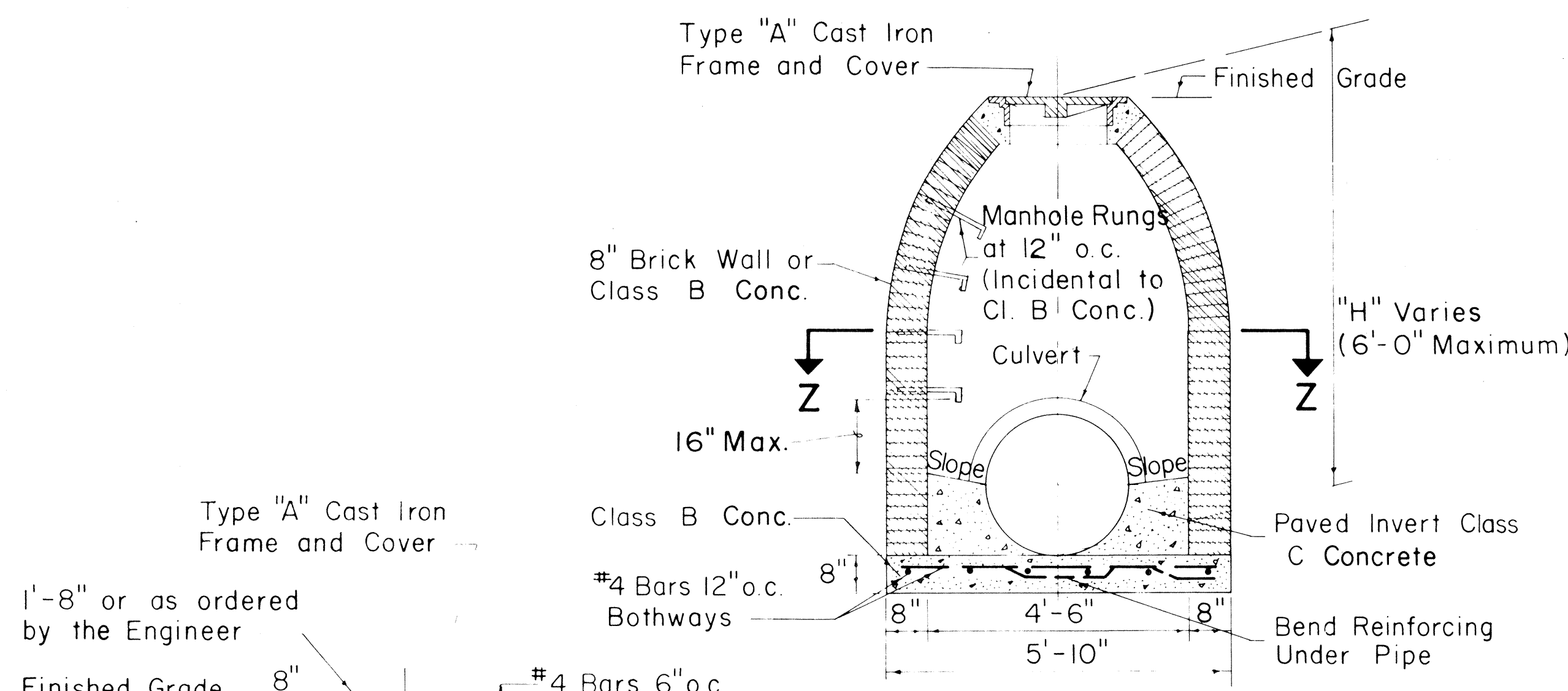


Note:  
Bottom detail similar to Type "A", "B", & "C"

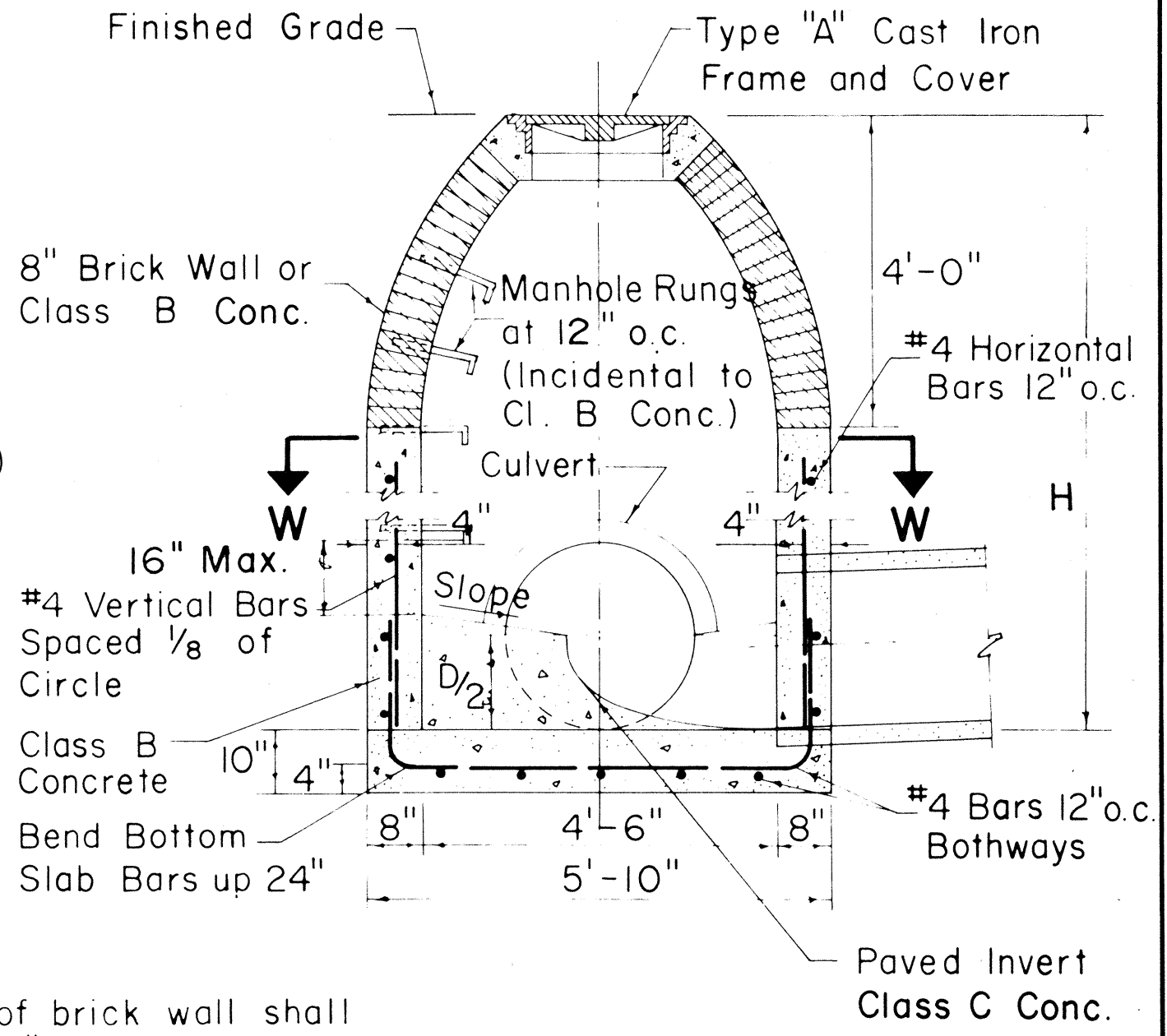
TYPE "A-I", "B-I", & "C-I"  
STORM DRAIN MANHOLE  
TOP DETAIL UNDER PAVEMENT  
Scale: 1/2" = 1'-0"

GENERAL NOTES

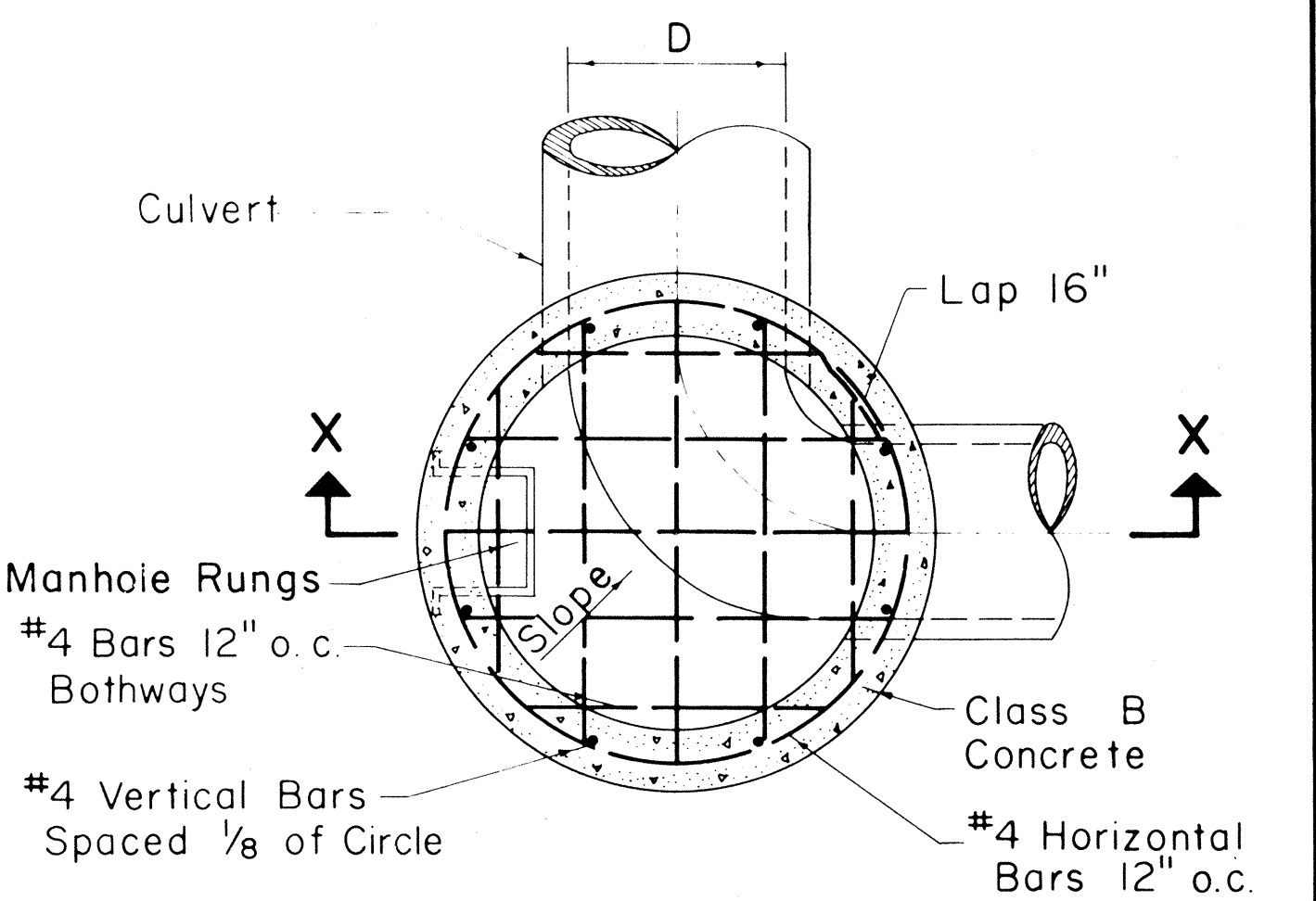
- Culvert shall enter and leave S.D.M.H. from any position and in the direction indicated by the plans or ordered by the Engineer.
- Manhole Rungs (12" o.c.) are required when "H" is greater than 4'-6". Only one rung (16" from the bottom) is required if "H" is 4'-6" or less. Type "A" C.I. Frame and Cover and Manhole Rungs may be placed at any location as ordered by the Engineer.



TYPE "A", "B", & "C"  
S.D.M.H.  
Scale: 1/2" = 1'-0"



- NOTE:
- Exterior surface of brick wall shall be plastered with 1" thickness of 1:2 Cement Mortar.
  - Number, size and direction of culvert at manhole to be as shown on plans.
  - Paved invert not required at drop manholes.
  - All Class C Concrete to be incidental to Class B Concrete.



TYPE "E" STORM DRAIN MANHOLE  
Scale: 1/2" = 1'-0"

TYPE "D" STORM DRAIN MANHOLE  
Scale: 1/2" = 1'-0"

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

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

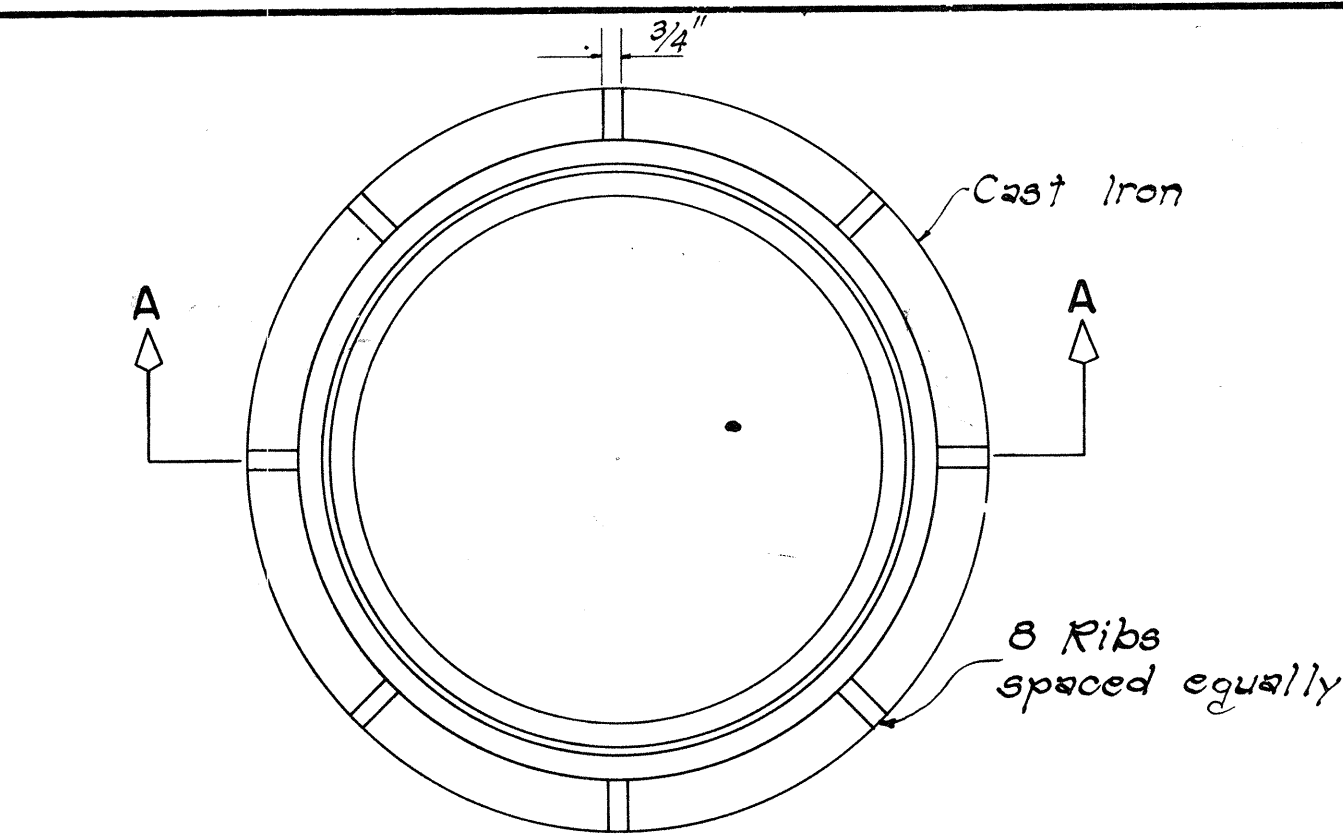
APPROVED:  
*[Signature]*  
ASST. CHIEF, ENGINEERING 12-11-69 DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

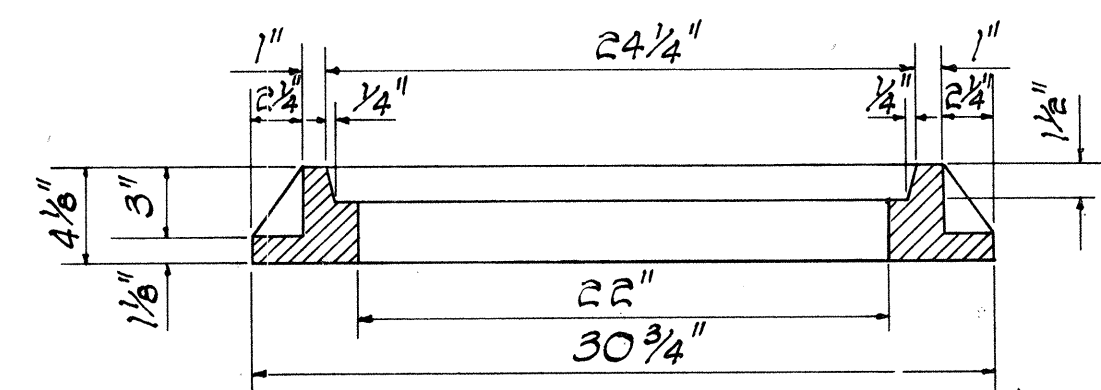
STANDARD DETAILS  
STORM DRAIN MANHOLES

Scales: As Noted Date: July, 1969

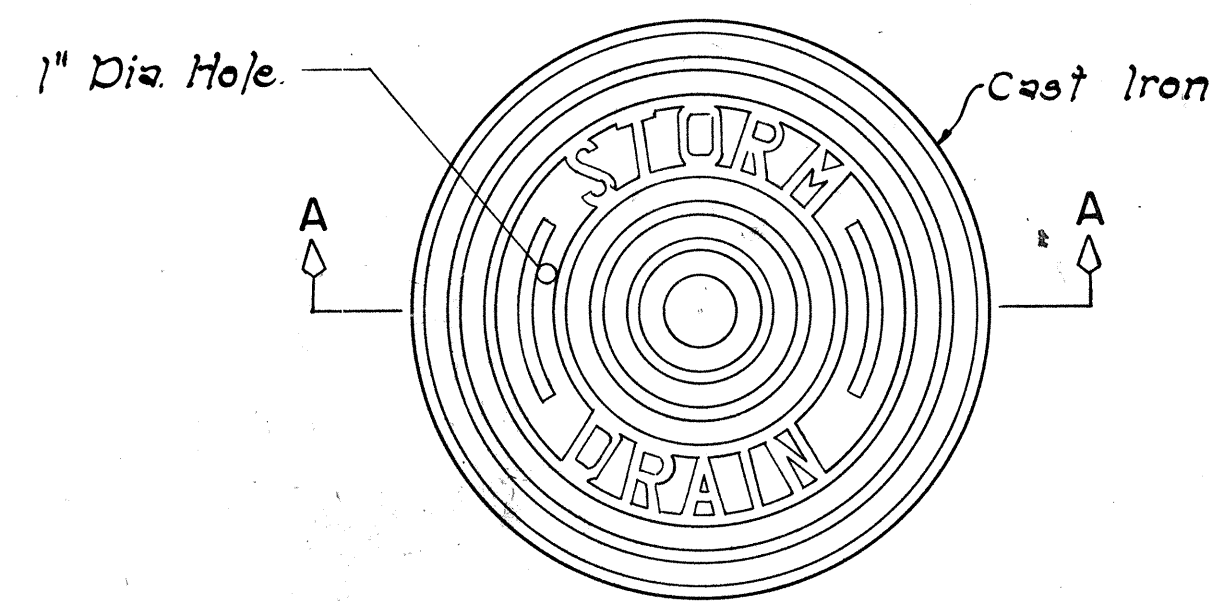
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 7400A-01-78        | 1978        | 8         | 8            |



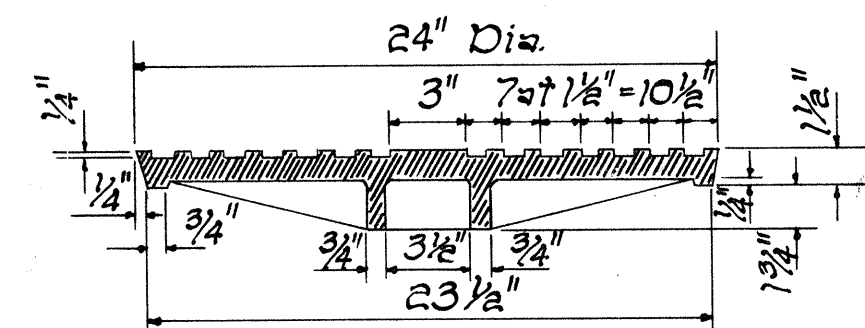
PLAN



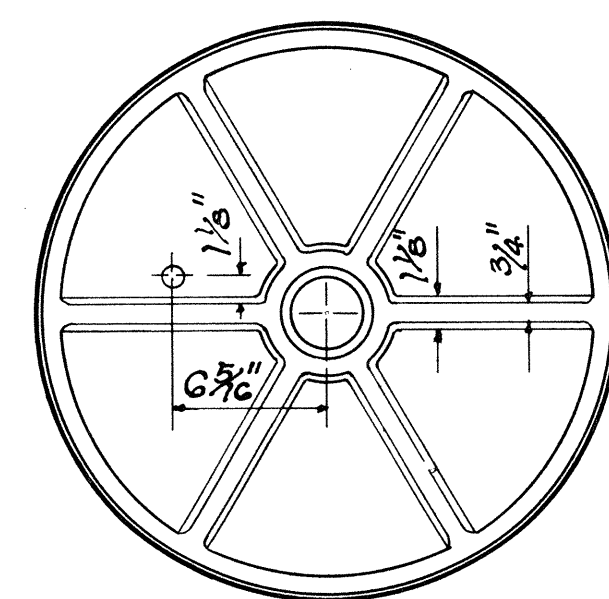
SECTION A-A



PLAN



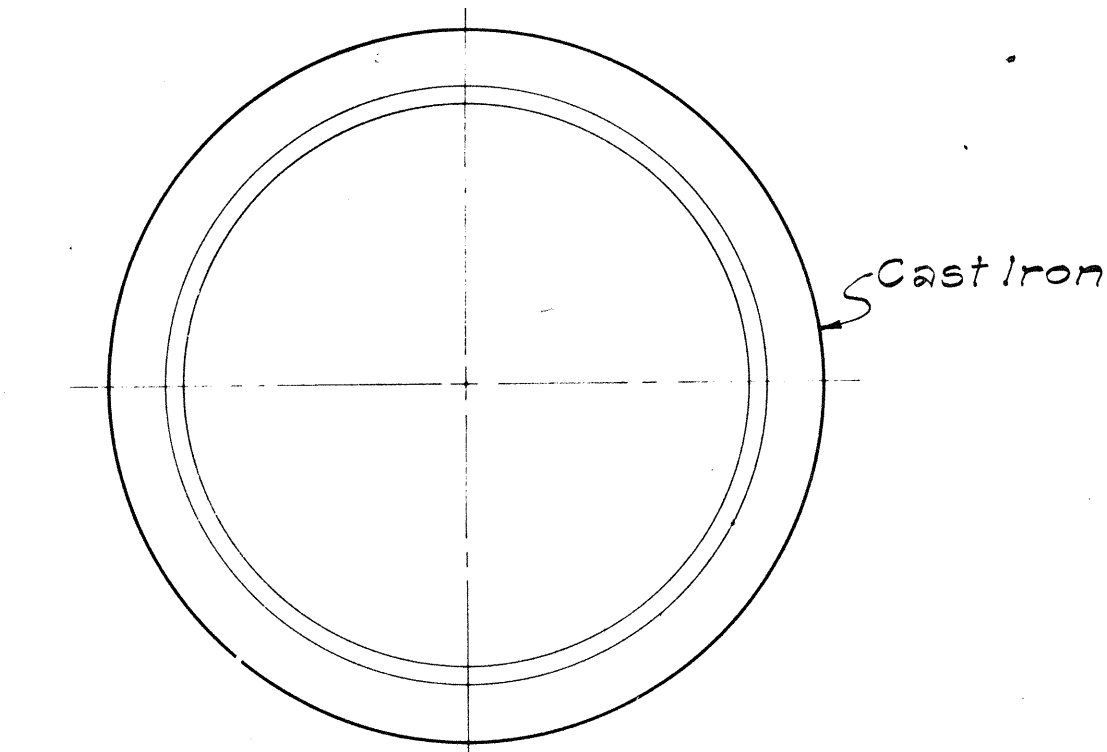
SECTION A-A



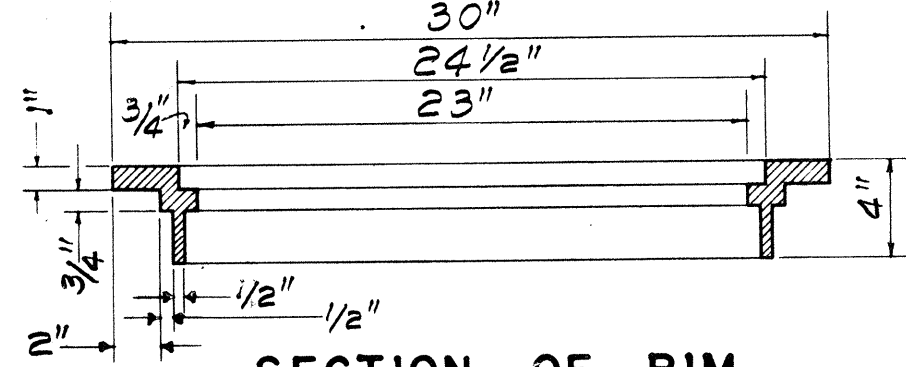
BOTTOM VIEW OF COVER

DETAILS OF TYPE "P"  
CAST IRON FRAME AND COVER

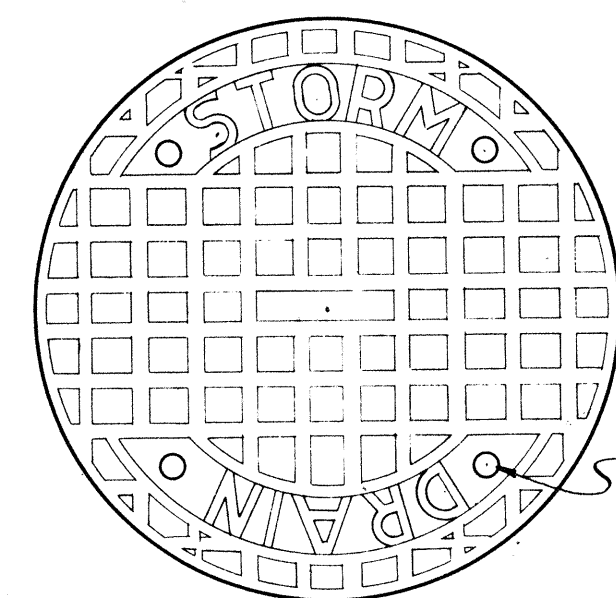
SCALE: 1-1/2" = 1'-0"



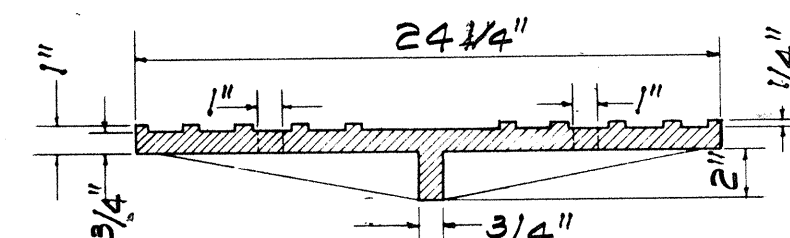
PLAN OF RIM



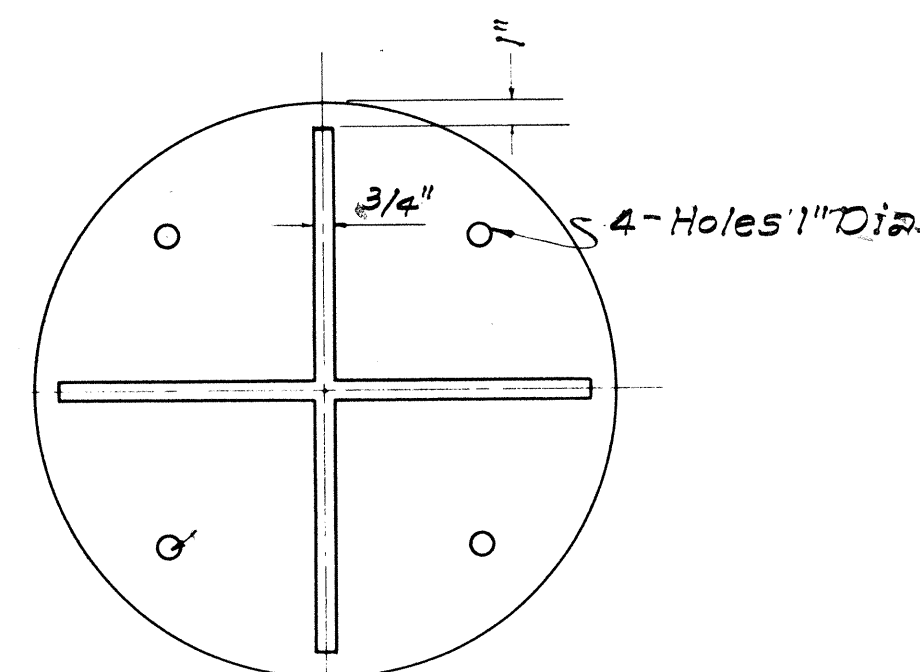
SECTION OF RIM



TOP VIEW OF COVER



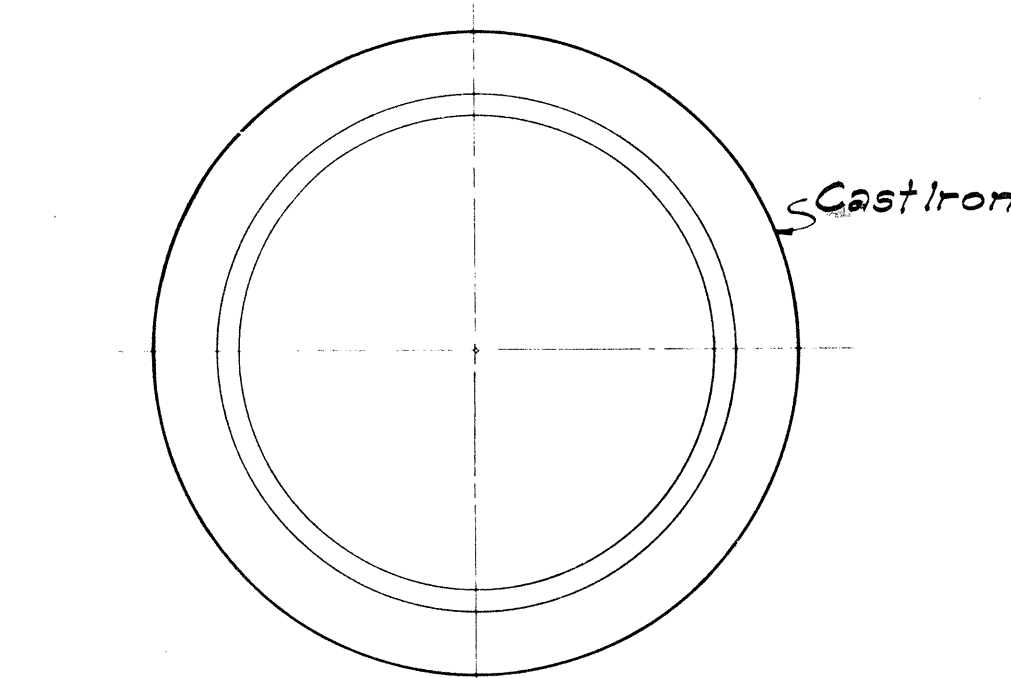
SECTION



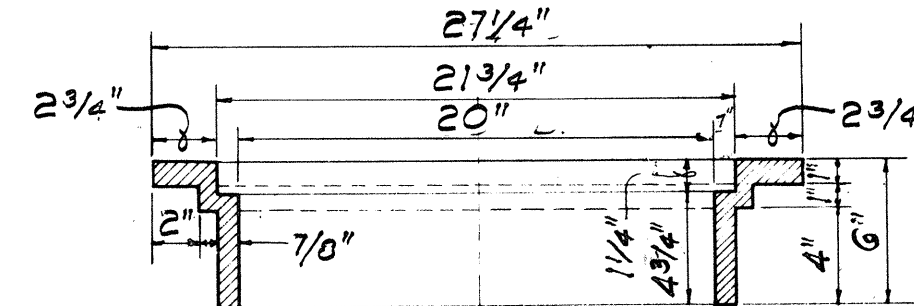
BOTTOM VIEW OF COVER

DETAILS OF TYPE "B"  
CAST IRON FRAME AND COVER

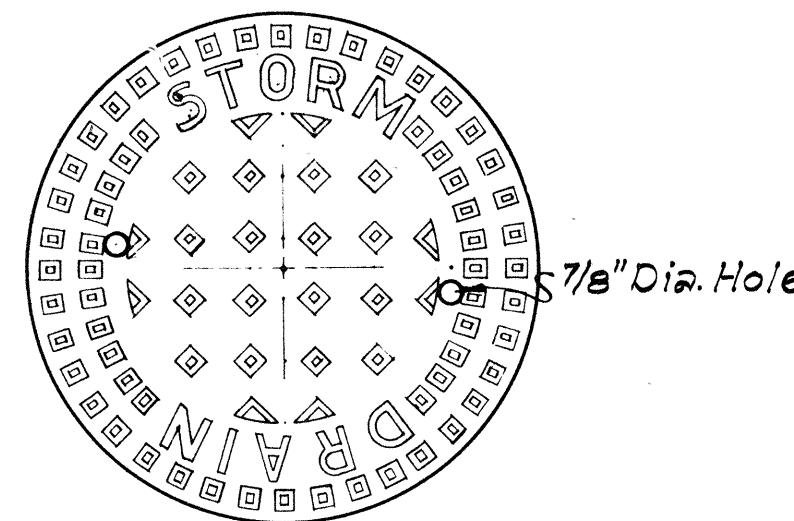
SCALE: 1-1/2" = 1'-0"



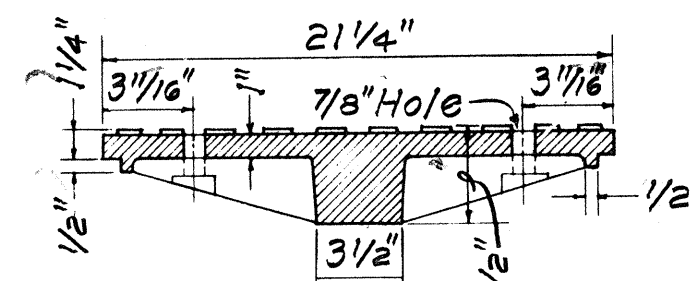
PLAN OF RIM



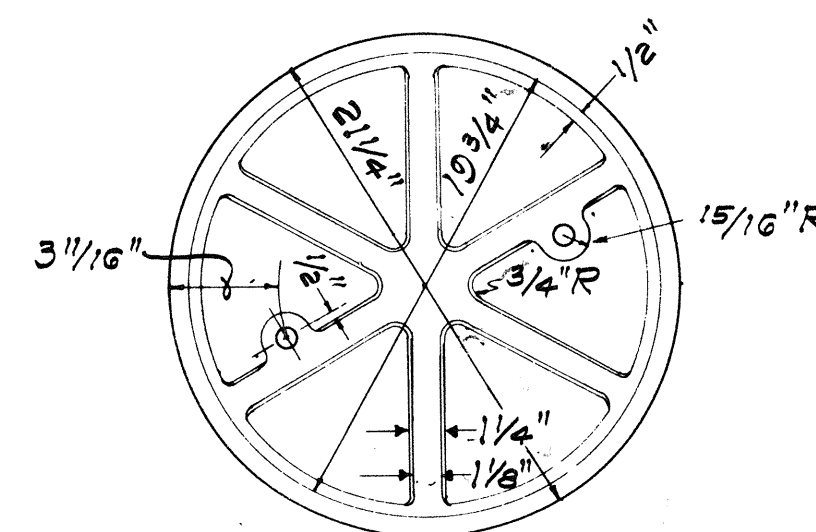
SECTION OF RIM



TOP VIEW OF COVER



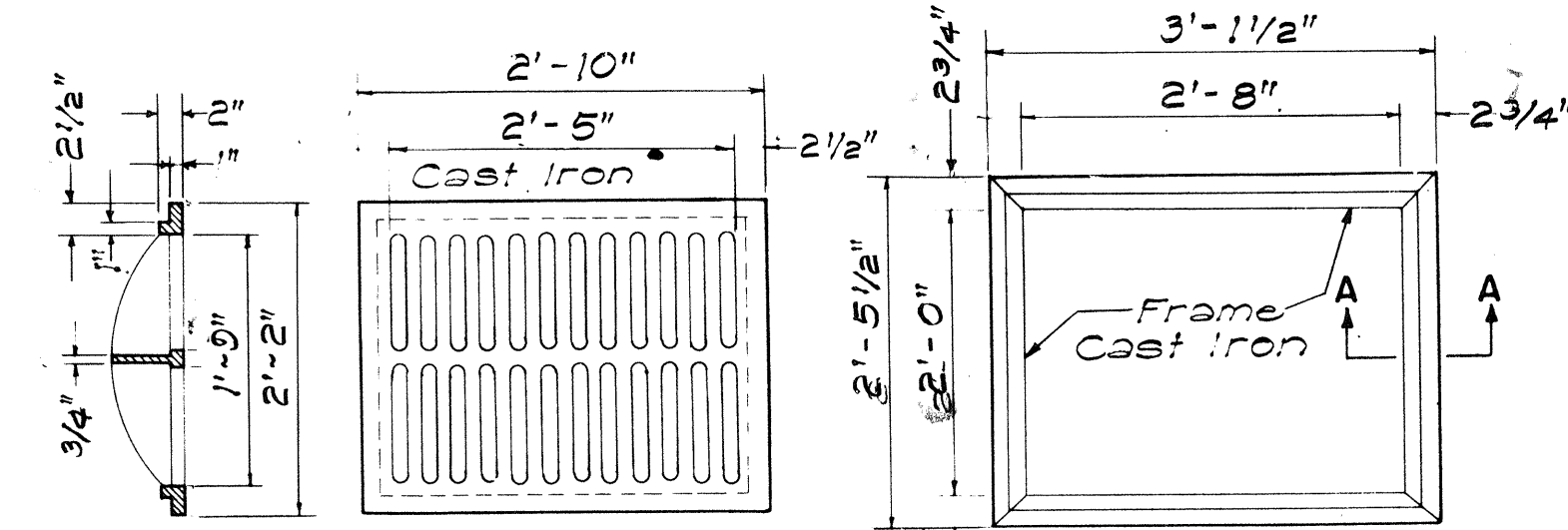
SECTION



BOTTOM VIEW OF COVER

DETAILS OF TYPE "A"  
CAST IRON FRAME AND COVER

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



SECTION

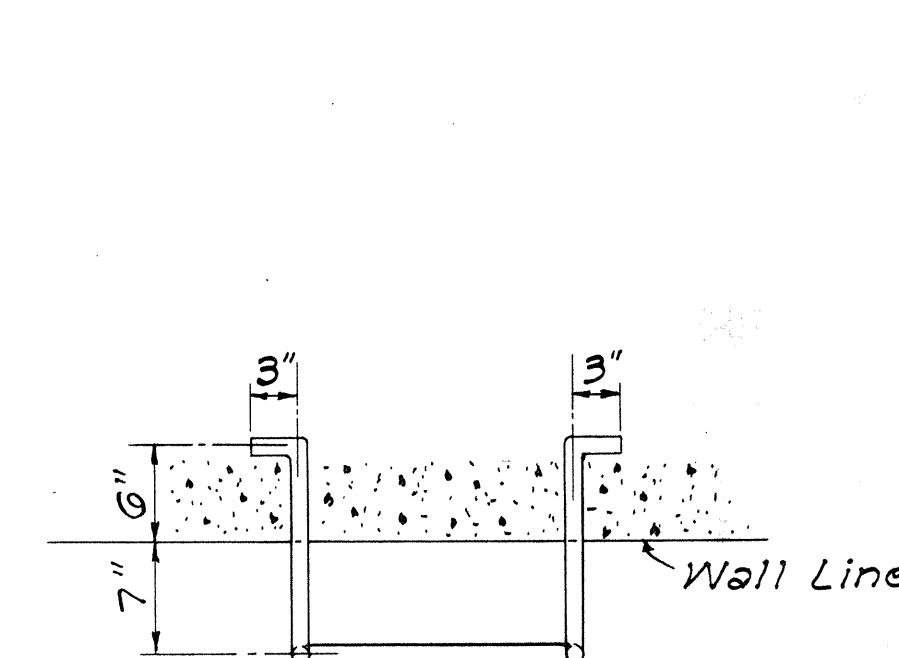
TOP VIEW

TOP VIEW

TYPE C C.I. FRAME AND GRATE

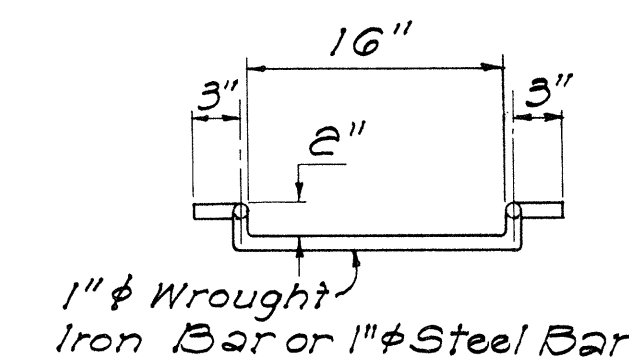
SCALE: 3/4" = 1'-0"

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

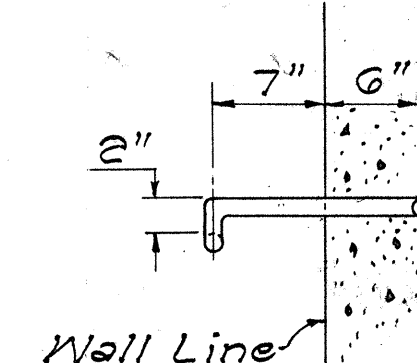


P L A N

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                                     |
| SHEET NO. 3 OF 3 SHEETS                                              |