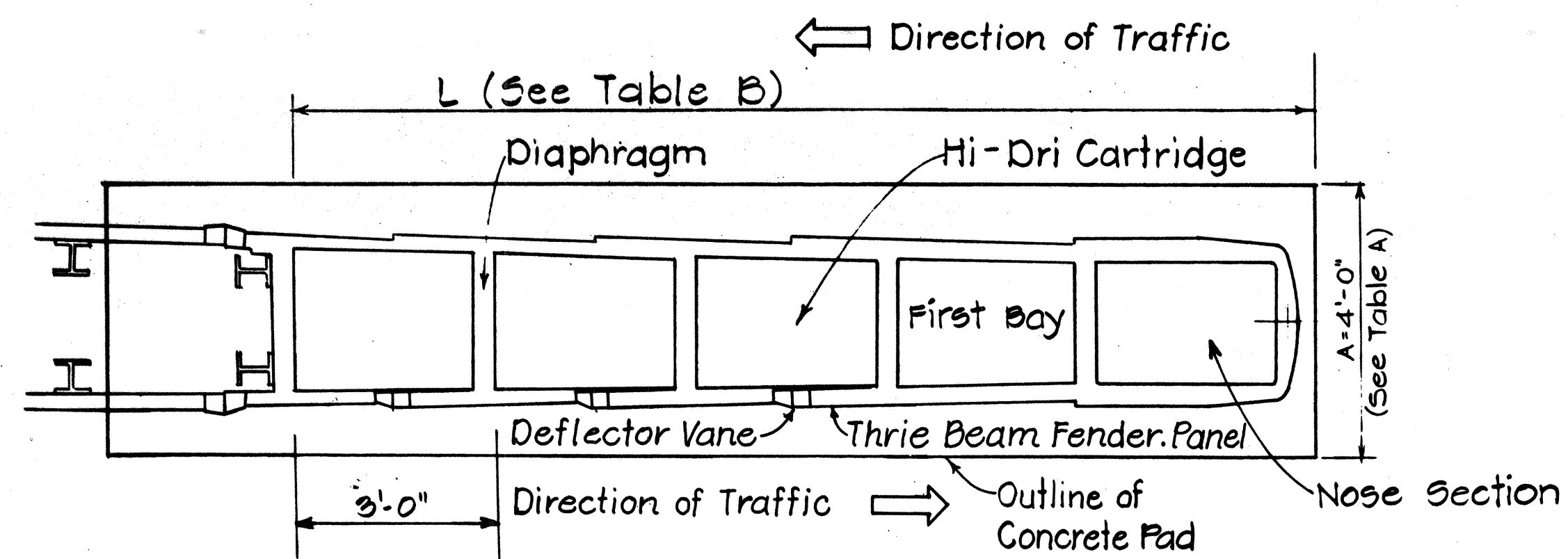
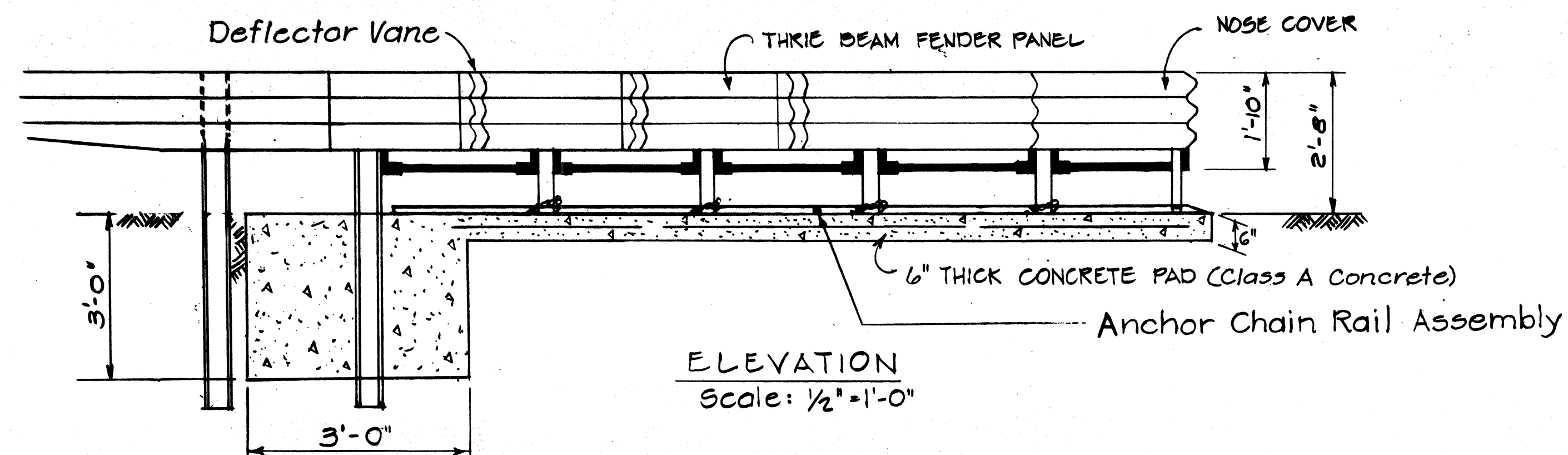


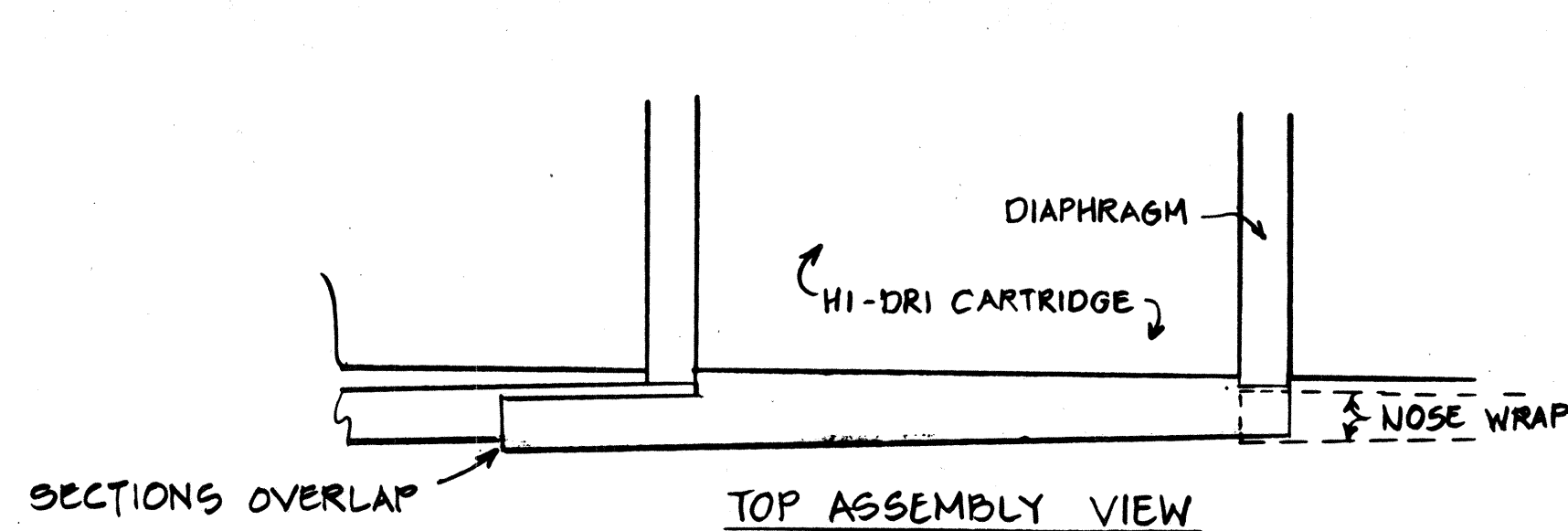
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | IR-HH-1(150)       | 1980        | 6         | 25           |



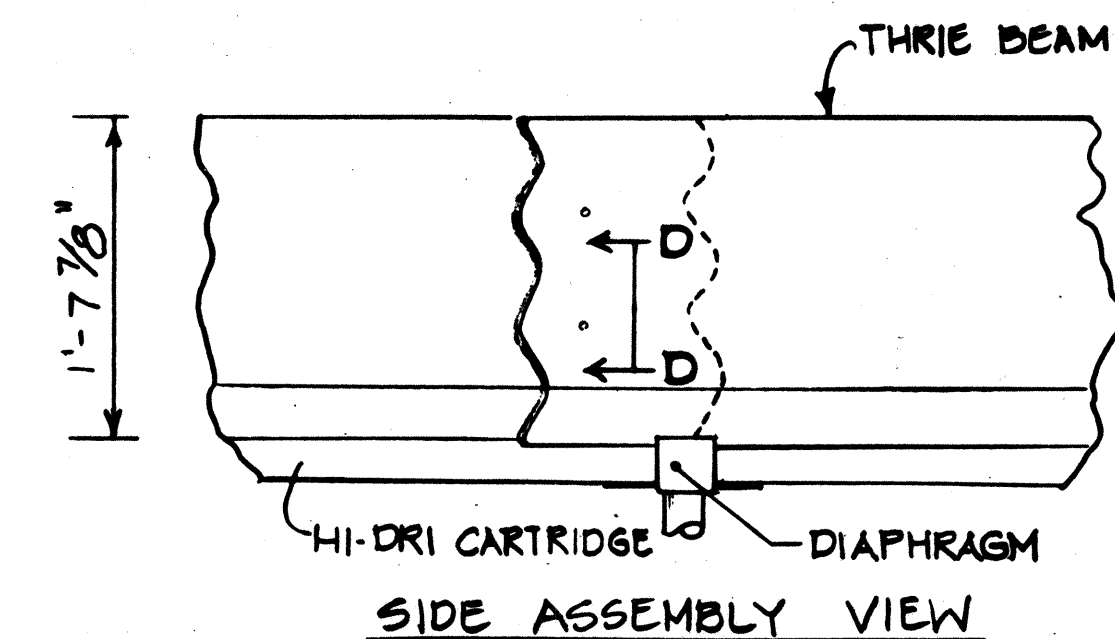
PLAN  
Scale: 1/2"=1'-0"



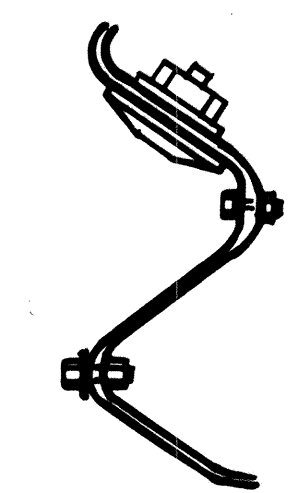
ELEVATION  
Scale: 1/2"=1'-0"



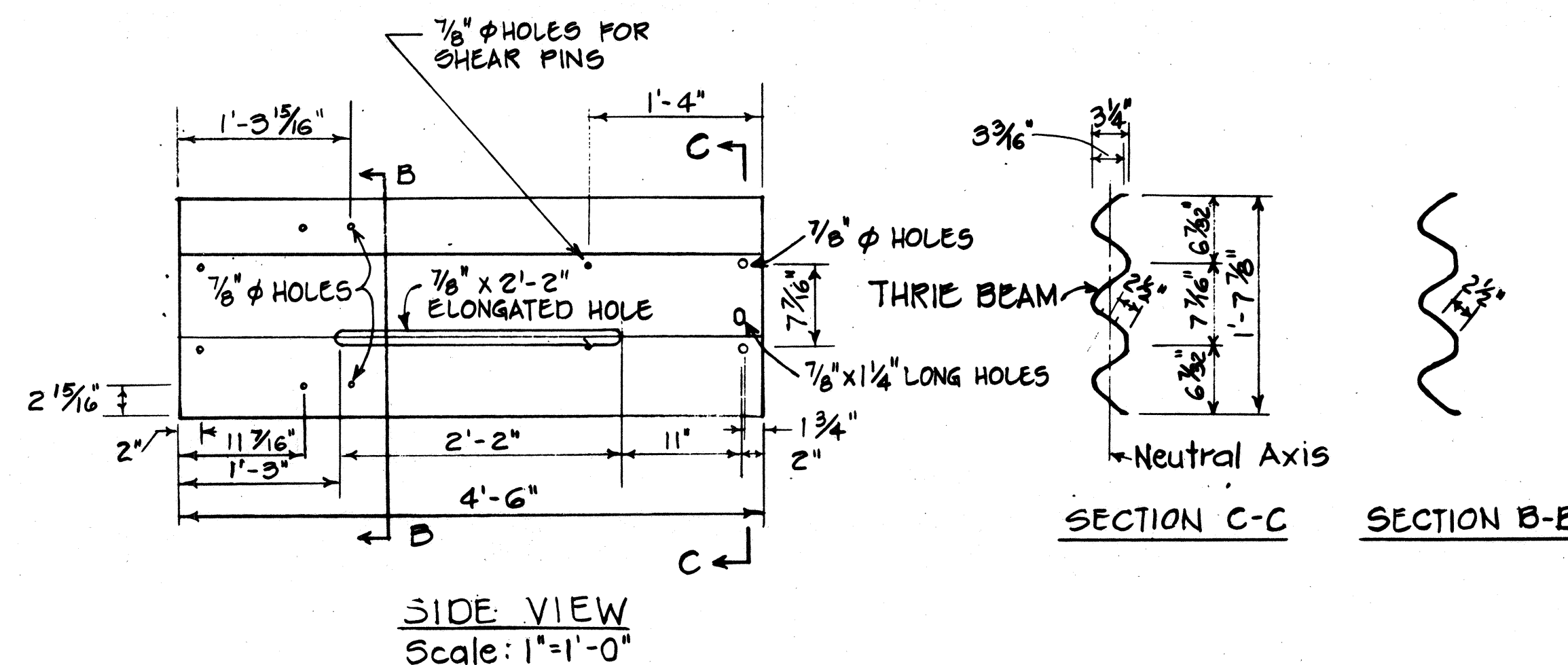
TOP ASSEMBLY VIEW



SIDE ASSEMBLY VIEW



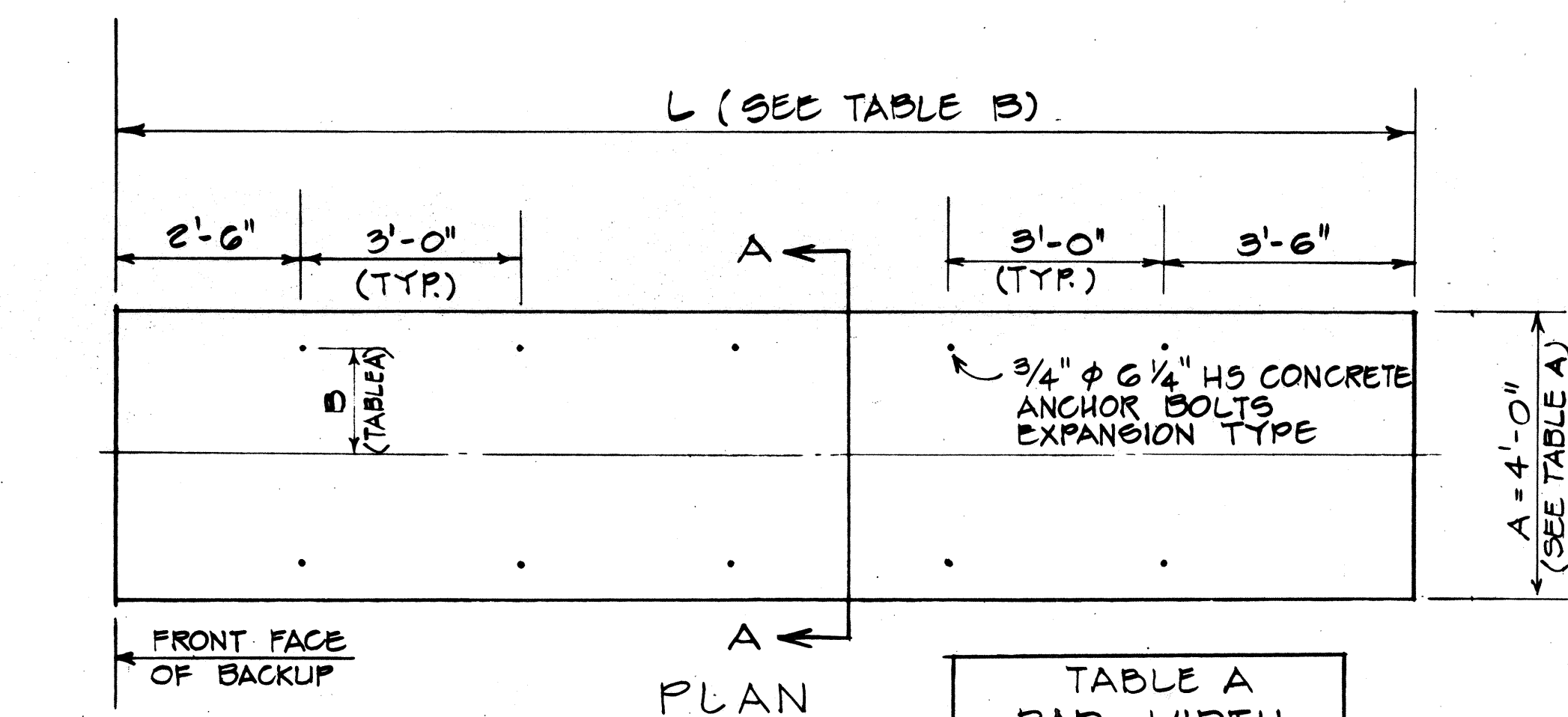
SECTION D-D



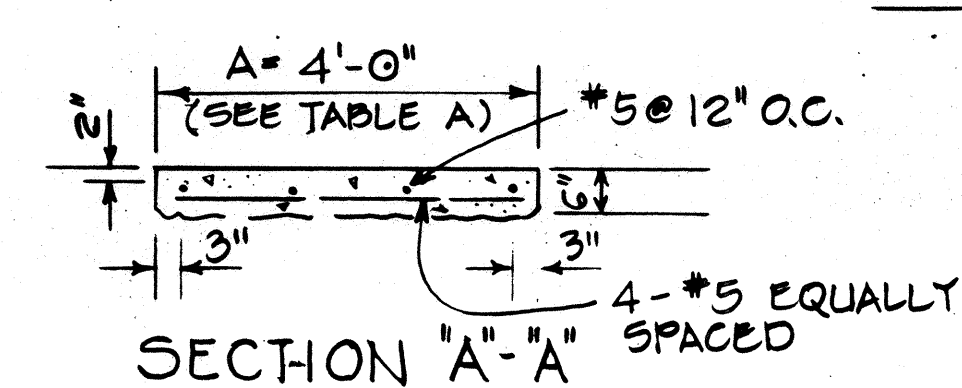
SIDE VIEW  
Scale: 1"=1'-0"

NOTE:

1. The Contractor shall verify with the manufacturer, any amendments or revisions thereof as may be made from time to time, shall be used in this project.
2. Constant longitudinal and transverse slope throughout Concrete Pad.
3. Concrete Pad cross slope shall not exceed 3%.
4. Outline of concrete pad shall match grades with surrounding median area.



PLAN



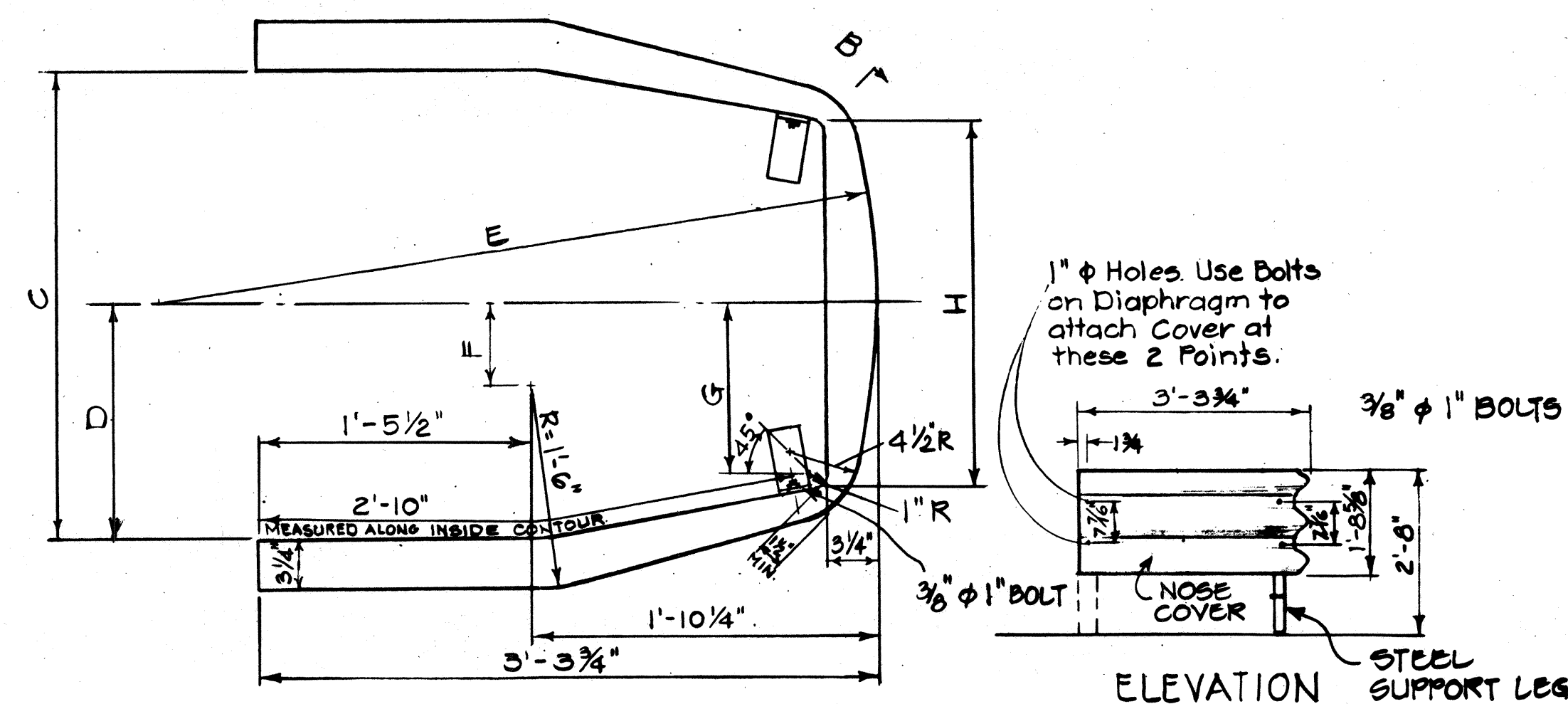
SECTION "A-A"

CONCRETE PAD DETAILS

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

| MODEL NO. | A     | B     |
|-----------|-------|-------|
| 200200    | 4'-0" | 1'-0" |
| 206206    | 4'-0" | 1'-3" |
| 300300    | 4'-0" | 1'-6" |

| NO. OF BAYS | L      | ANCHOR BOLTS QUAN. |
|-------------|--------|--------------------|
| 4           | 15'-6" | 14                 |
| 5           | 18'-6" | 16                 |
| 6           | 21'-6" | 20                 |
| 7           | 24'-6" | 22                 |
| 8           | 27'-6" | 24                 |
| 9           | 30'-6" | 26                 |
| 10          | 33'-6" | 30                 |
| 3           | 12'-6" | 12                 |



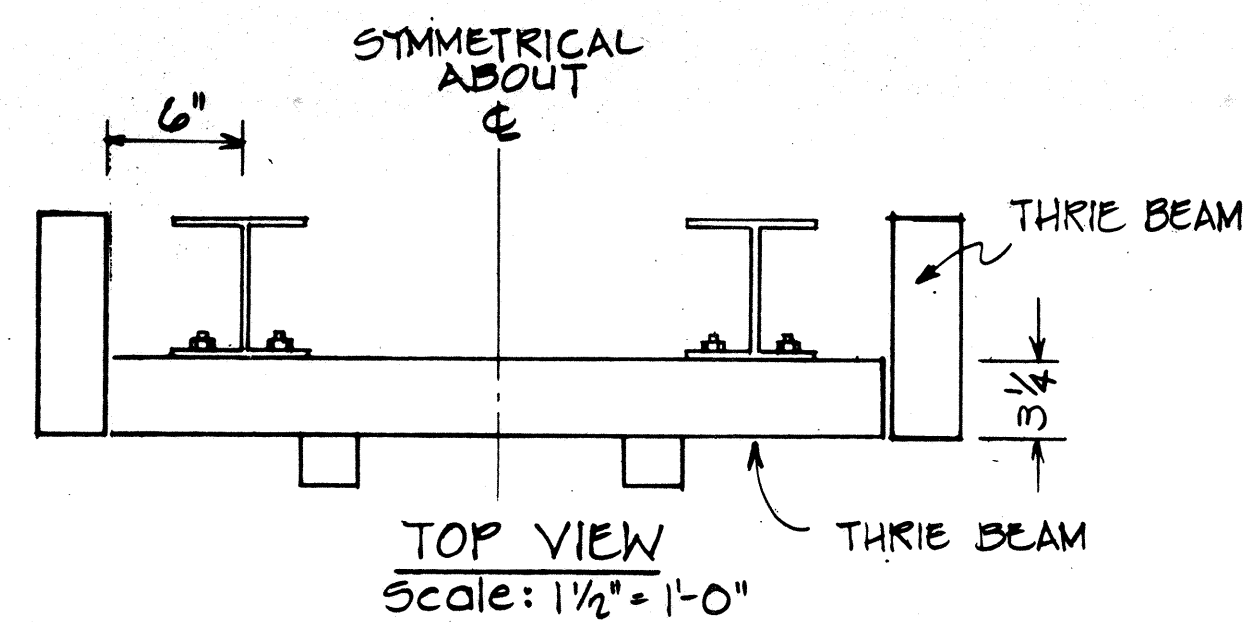
ELEVATION

PLAN  
N.T.S.

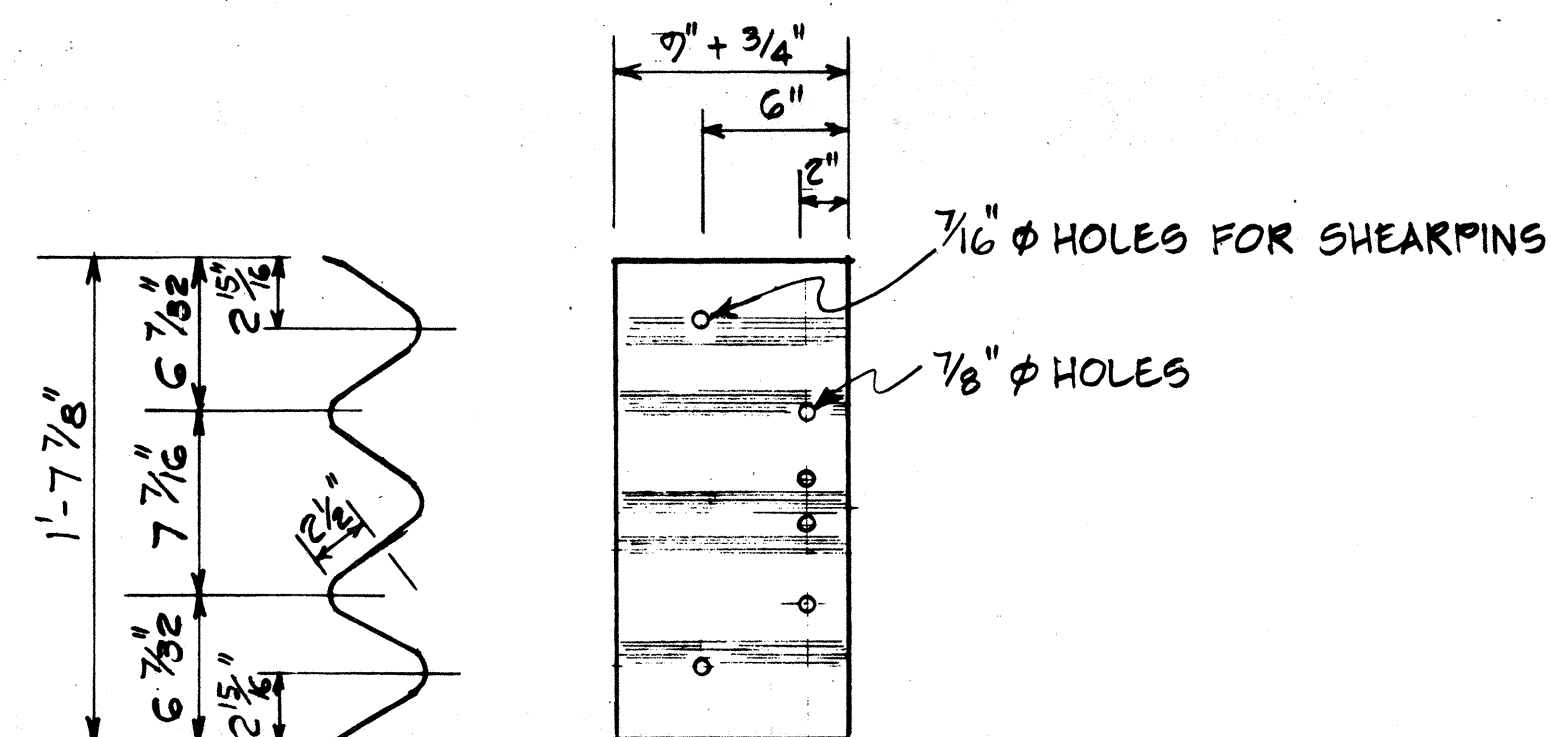
| UNIT SIZE | ASST. NO. | C     | D     | E         | F      | G   | H     |
|-----------|-----------|-------|-------|-----------|--------|-----|-------|
| 2'-0"     | 35-02-031 | 2'-0" | 1'-0" | 2'-1 1/8" | 3 1/4" | 8"  | 1'-6" |
| 2'-6"     | 35-02-032 | 2'-6" | 1'-3" | 3'-10"    | 6 1/4" | 11" | 2'-0" |
| 3'-0"     | 35-02-032 | 2'-6" | 1'-3" | 3'-10"    | 6 1/4" | 11" | 2'-0" |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION  
**DETAILS OF GUARD RAIL  
ENERGY ABSORBING TERMINAL**  
Scale: As Shown Date: 1975  
SHEET NO. 7 OF 7 SHEETS

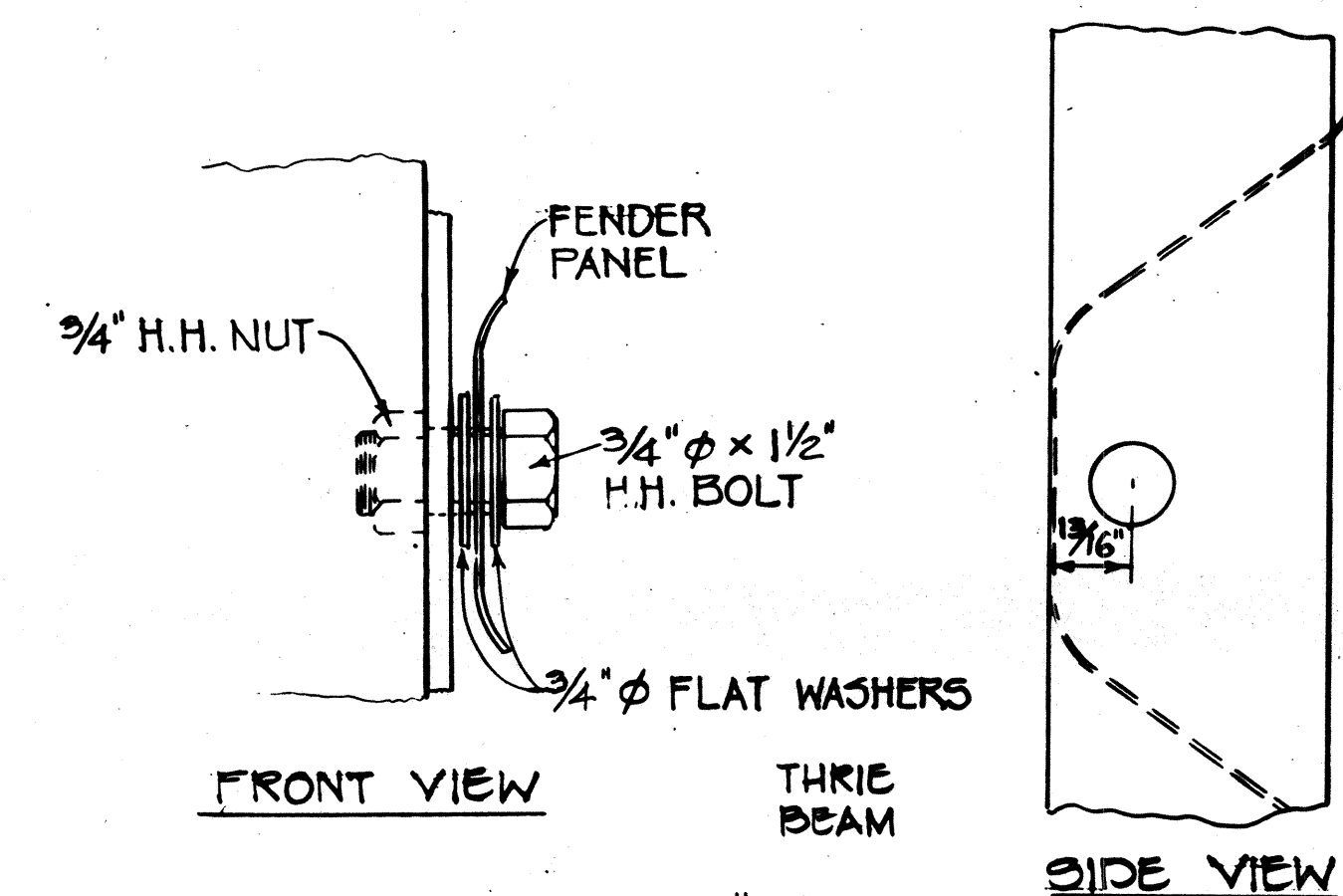
| FED. ROAD<br>DIST. NO. | STATE | FED. AID<br>PROJ. NO. | FISCAL<br>YEAR | SHEET<br>NO. | TOTAL<br>SHEETS |
|------------------------|-------|-----------------------|----------------|--------------|-----------------|
| HAWAII                 | HAW.  | I-IR-HI-1(159)        | 1980           | 7            | 25              |



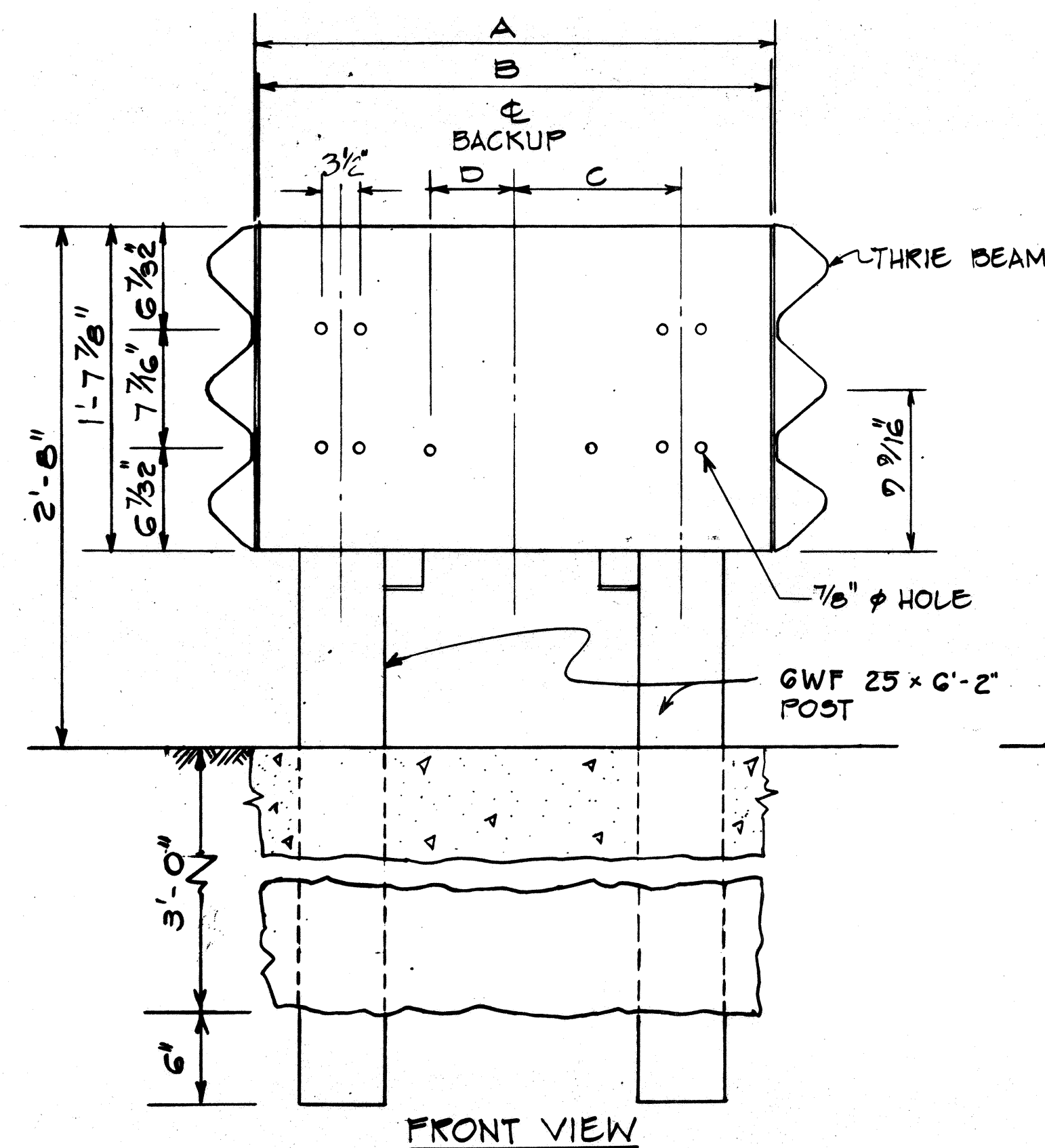
| UNIT WIDTH | A     | B       | C     | D  |
|------------|-------|---------|-------|----|
| 2'-0"      | 2'-0" | 1'-11½" | 0'-6" | 2" |
| 2'-6"      | 2'-6" | 2'-5½"  | 0'-9" | 5" |
| 3'-0"      | 3'-0" | 2'-11½" | 1'-0" | 8" |



DETAIL OF THIRIE BEAM  
LEFT SIDE PANEL SHOWN  
RIGHT SIDE OPPOSITE

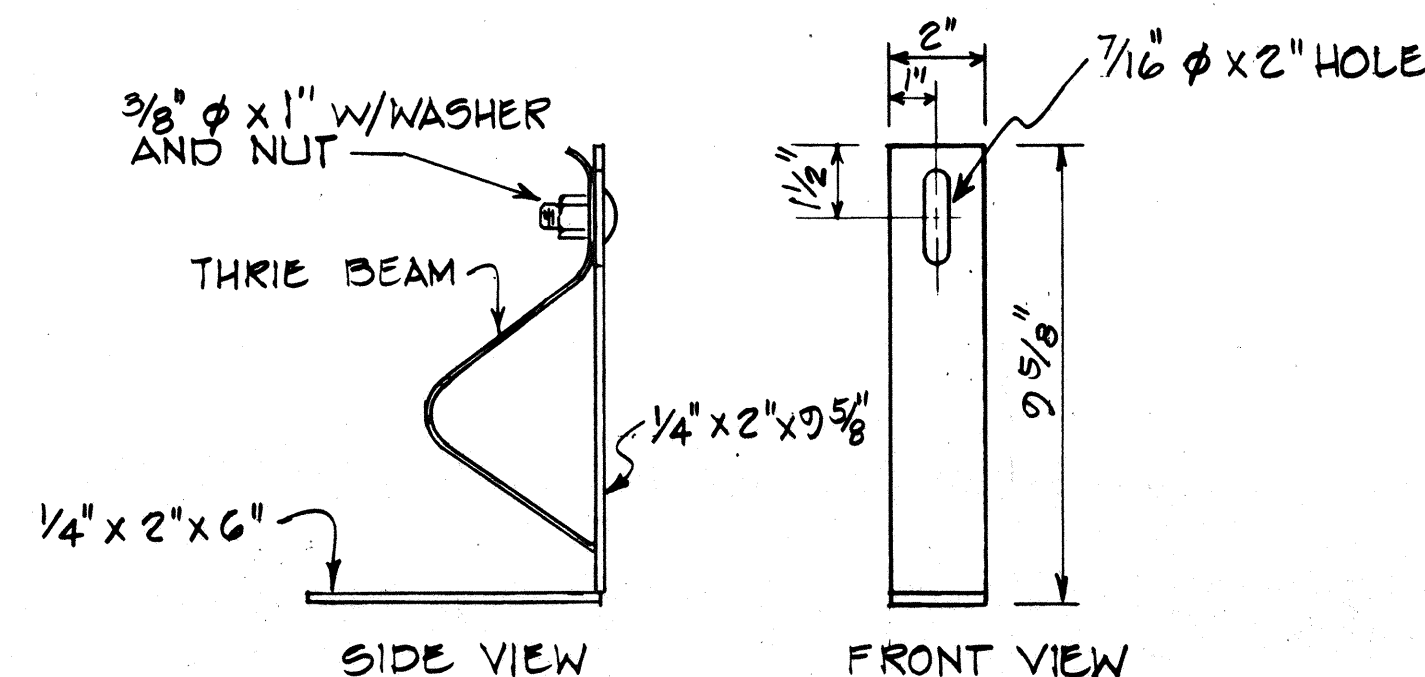
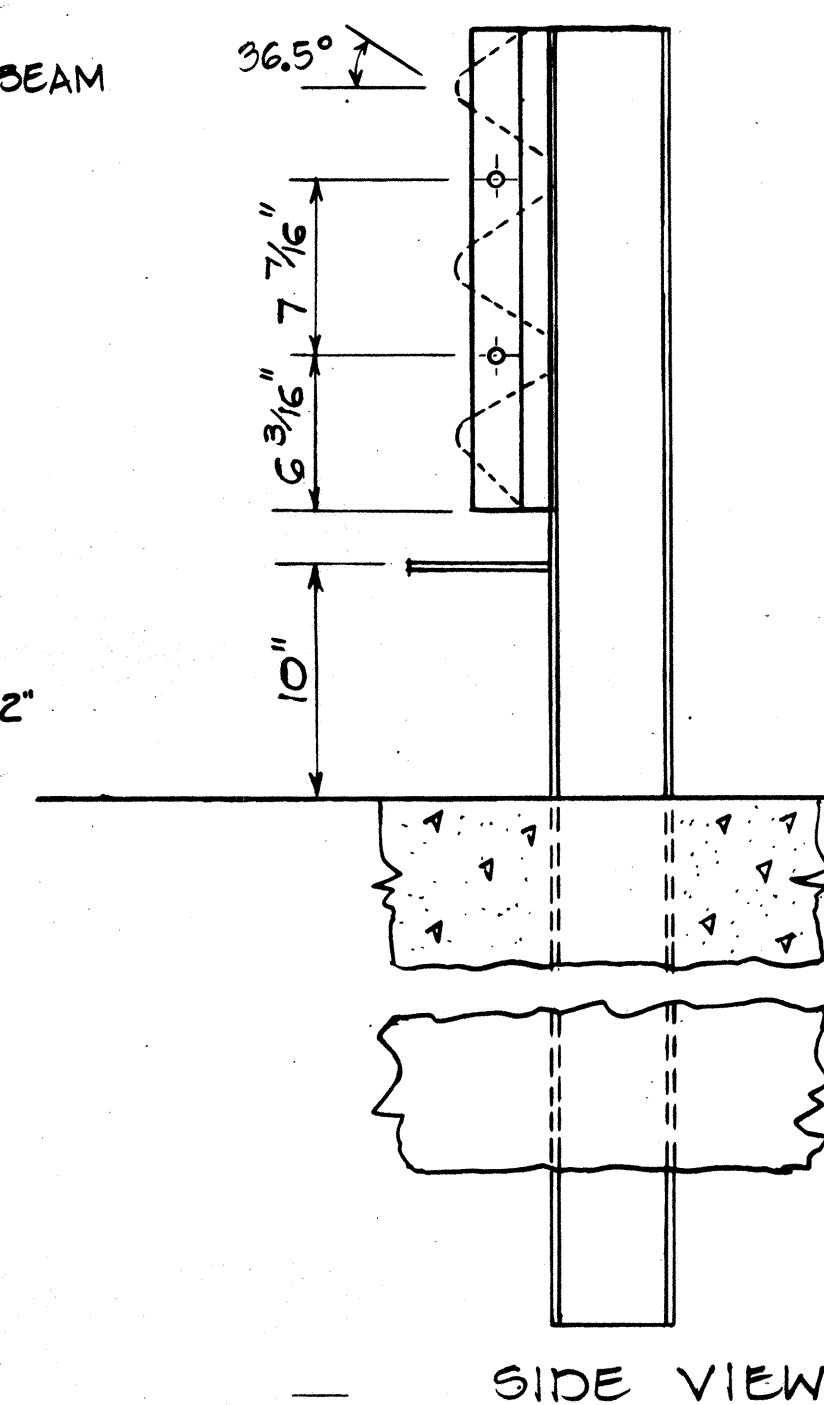


DETAIL "A"  
Scale:  $\frac{1}{2}'' = 1''$

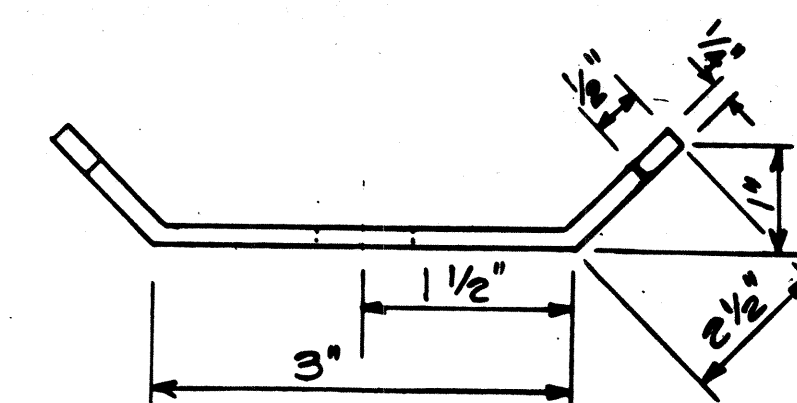
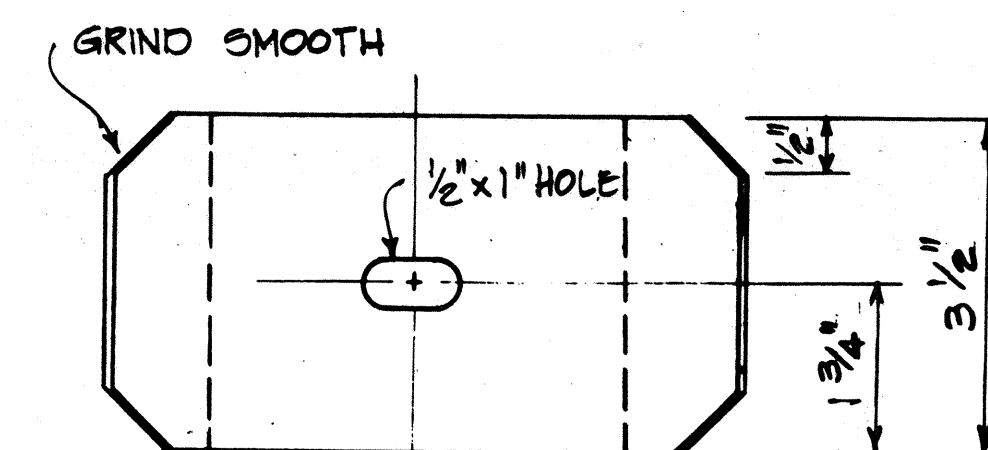


FRONT VIEW

WIDE FLANGE BACKUP  
(FOR NARROW UNITS)  
Scale:  $1\frac{1}{2}" = 1'-0"$

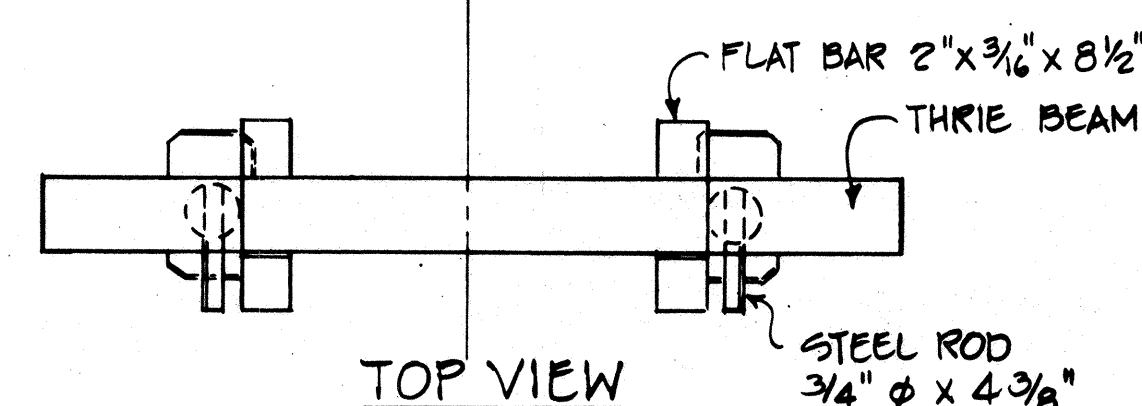


CARTRIDGE CLIP DETAIL  
Scale: 3" = 1'-0"

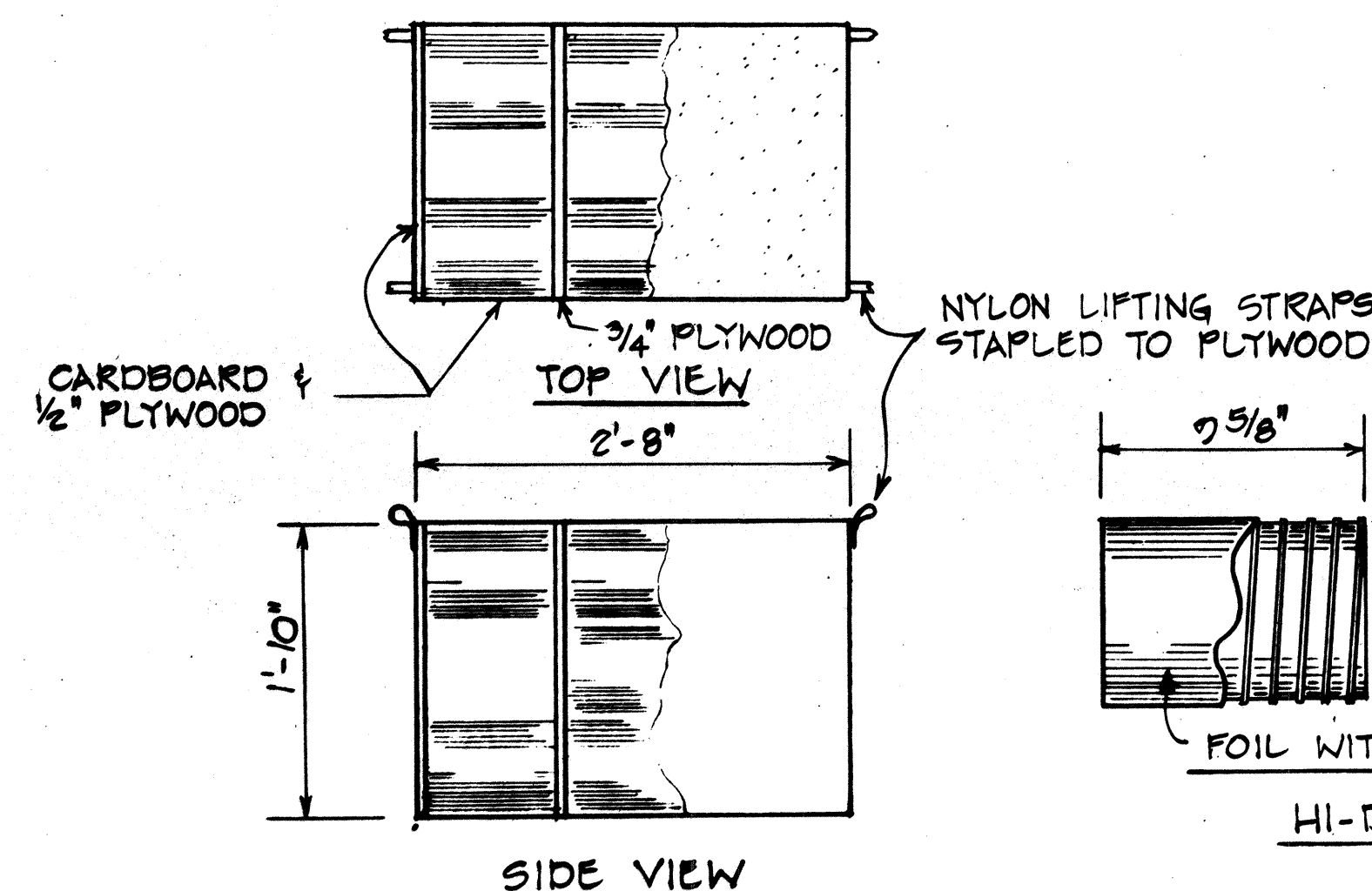


DETAIL B  
Scale: 6" = 1'-0"

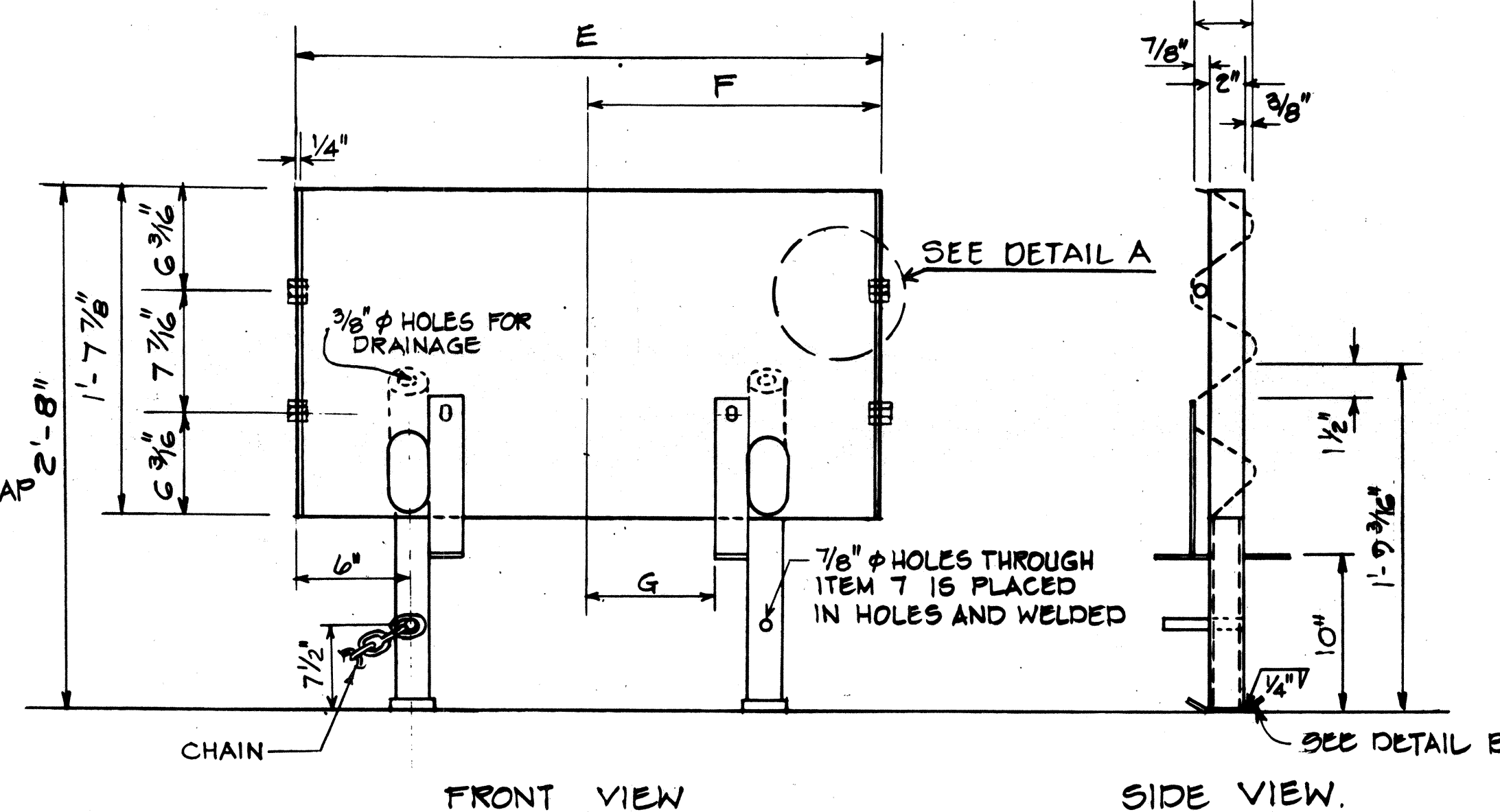
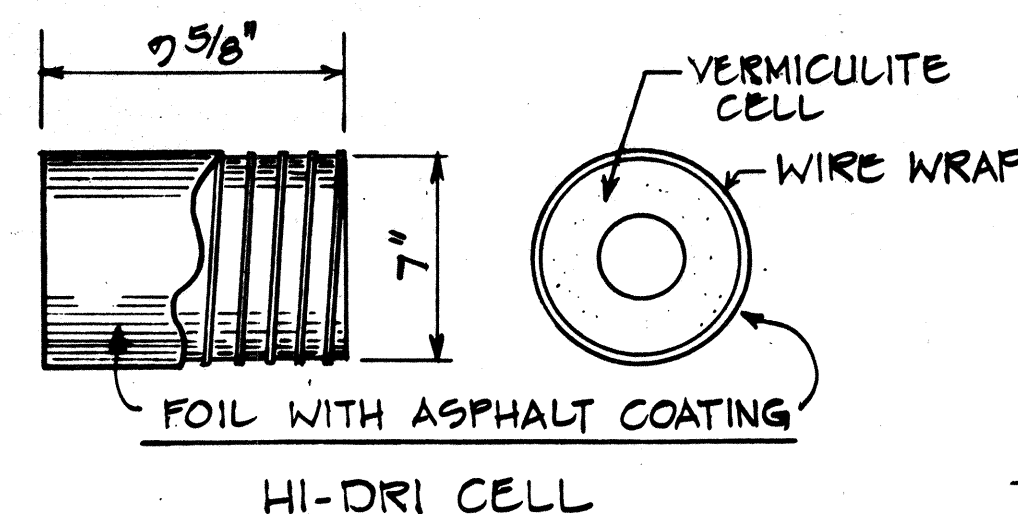
| MODEL NO | E     | F     | G      |
|----------|-------|-------|--------|
| 200200 S | 2'-0" | 1'-0" |        |
| 206206 S | 2'-6" | 1'-3" | 5 3/4' |
| 300300 S | 3'-0" | 1'-6" | 8 3/4' |



TOP VIEW

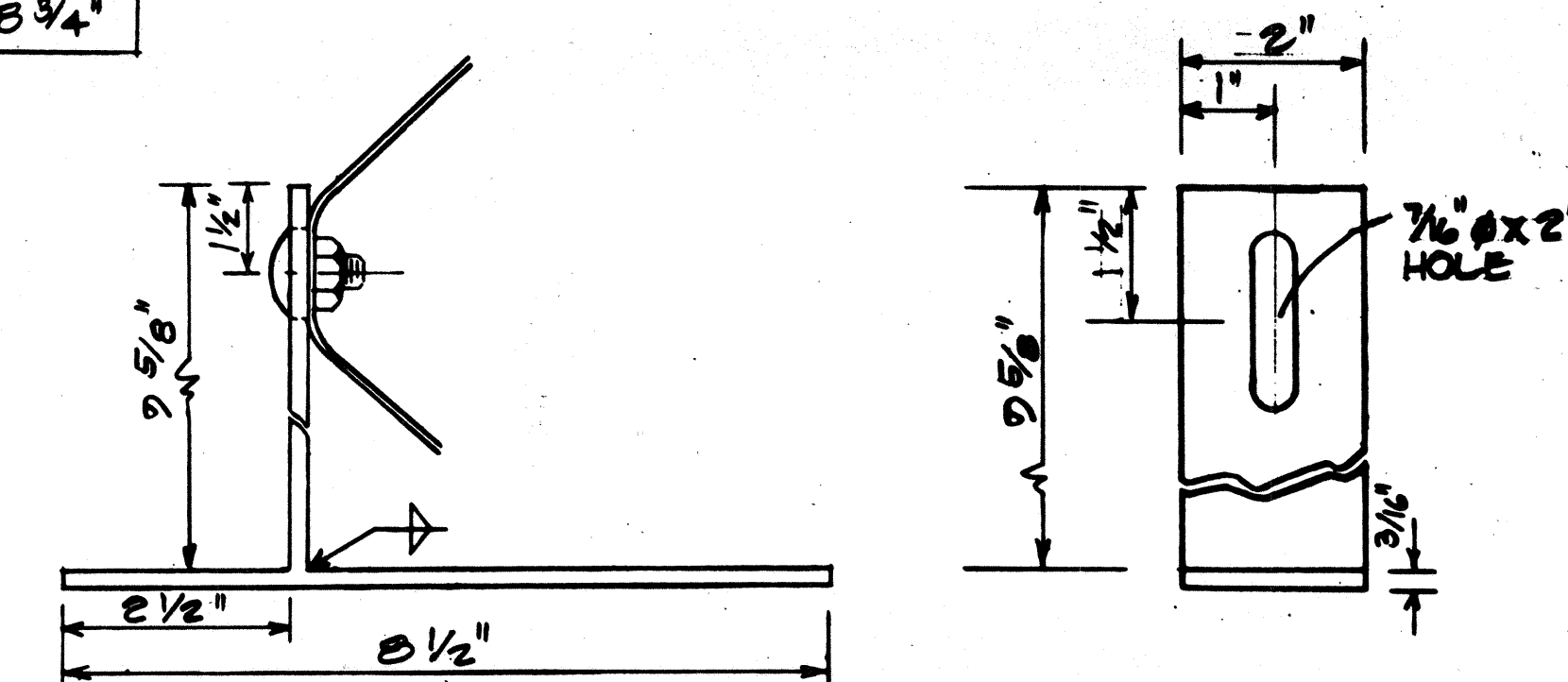


HI - DRI CARTRIDGE  
Not to Scale



### THREE BEAM DIAPHRAGM DETAILS

Scale:  $1\frac{1}{2}" = 1'-0"$



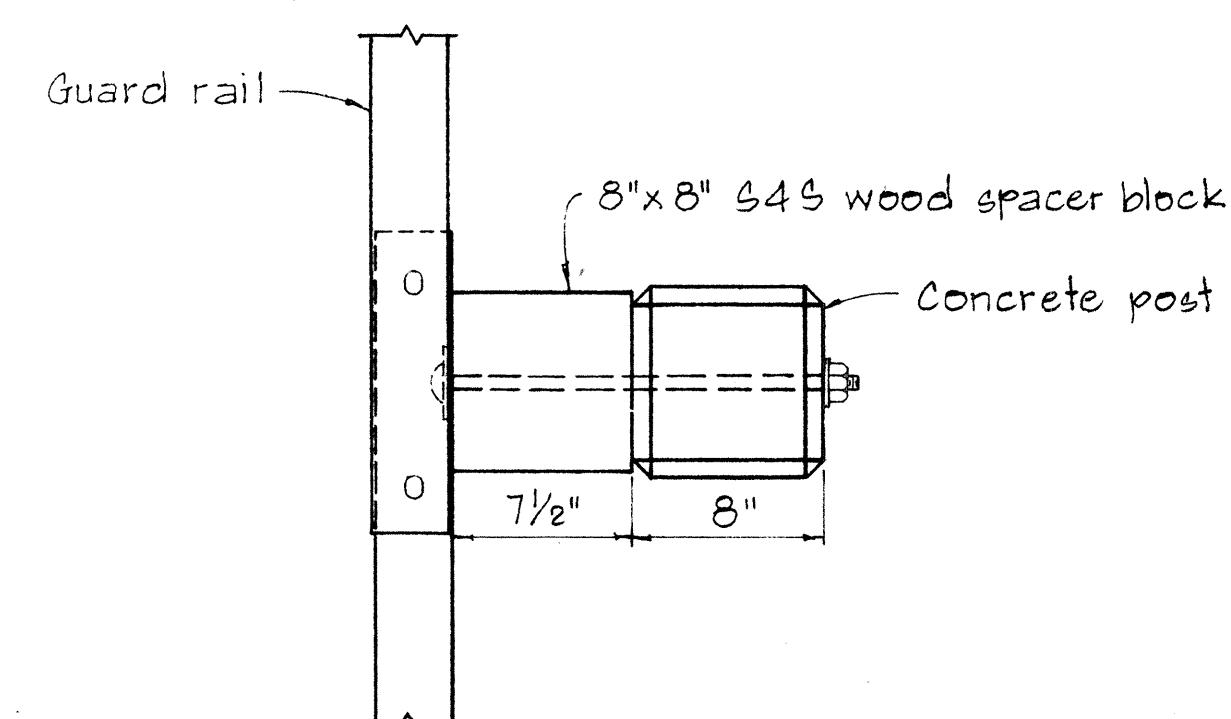
### CARTRIDGE CLIP DETAIL

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION  
DETAILS OF GUARD RAIL  
ENERGY ABSORBING TERMINAL

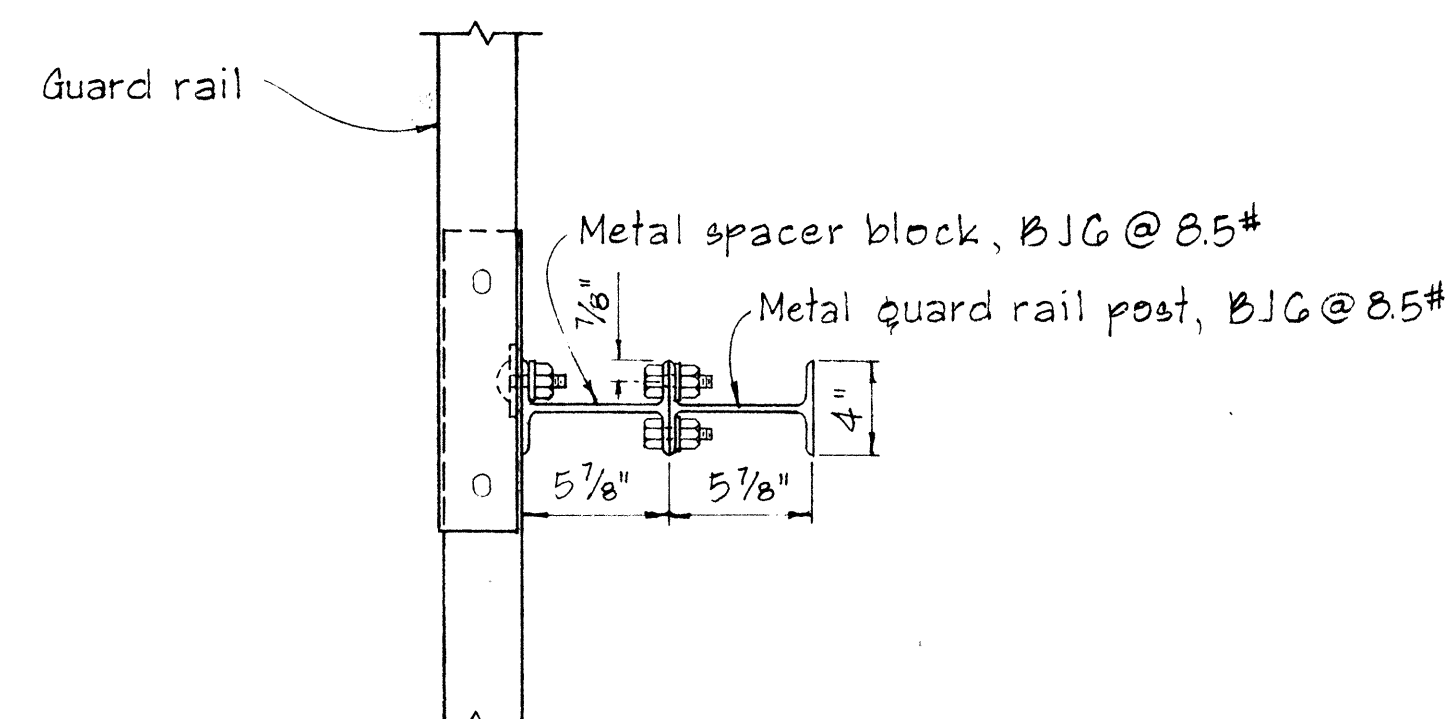
Scale: As Shown Date: 1978  
SHEET NO. 2 OF 7 SHEETS

|           |                  |      |
|-----------|------------------|------|
| GENERAL   | PRINT PLOTTED BY | DATE |
| PLAN      | DRAWN BY         |      |
|           | TRACED BY        |      |
| NOTE BOOK | DESIGNED BY      |      |
|           | QUANTITIES BY    |      |
| No.       | CHECKED BY       |      |

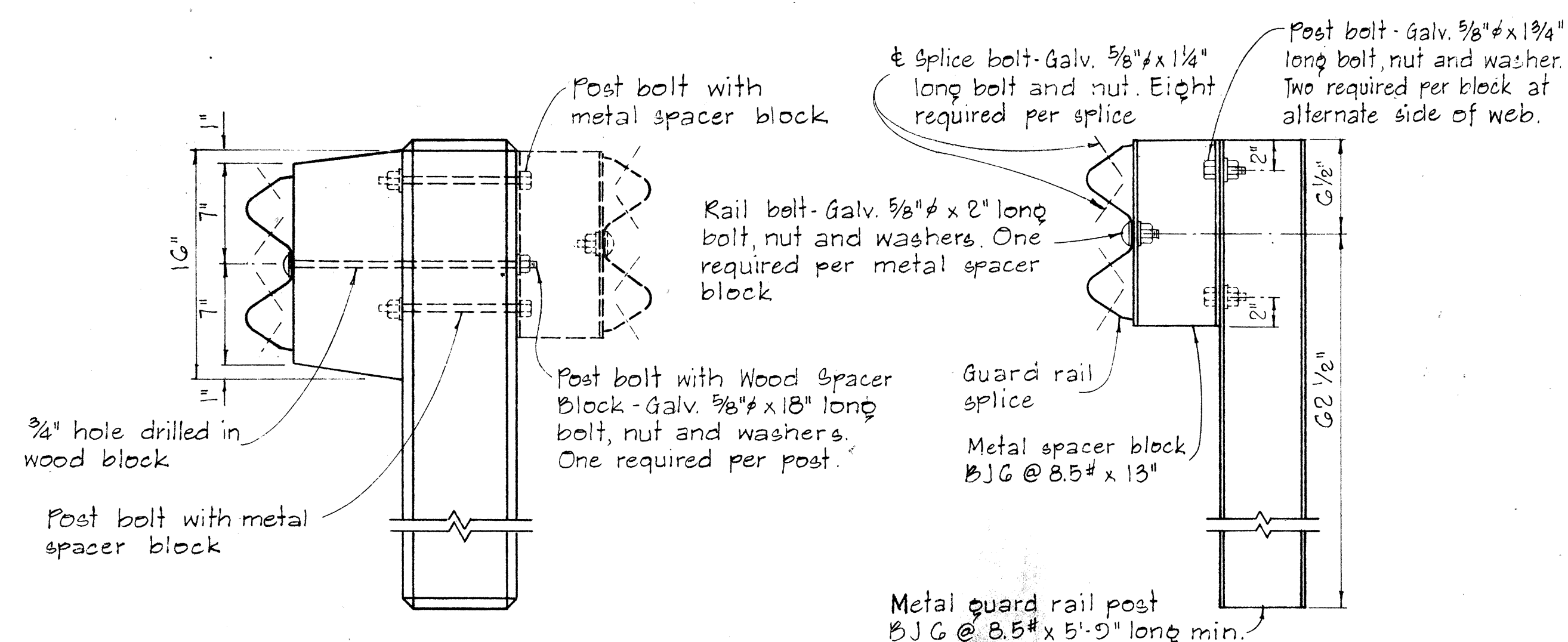
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 1-IR-H-1(15)       | 1980        | 8         | 25           |



PLAN

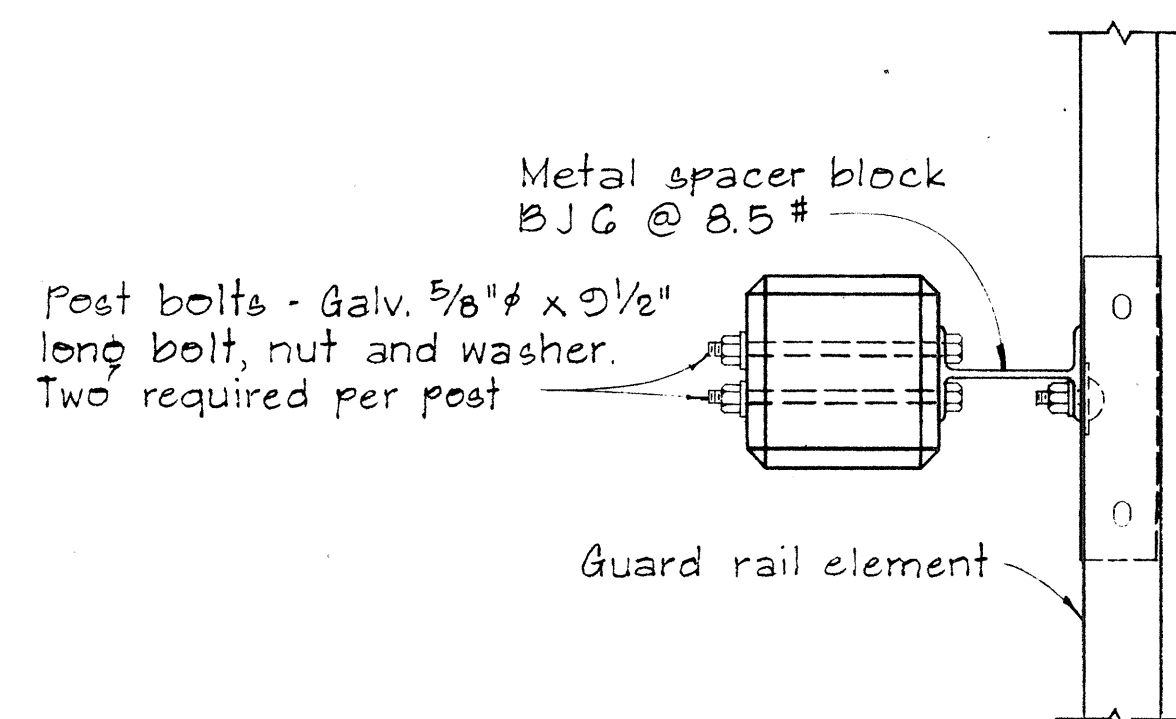


PLAN



SINGLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

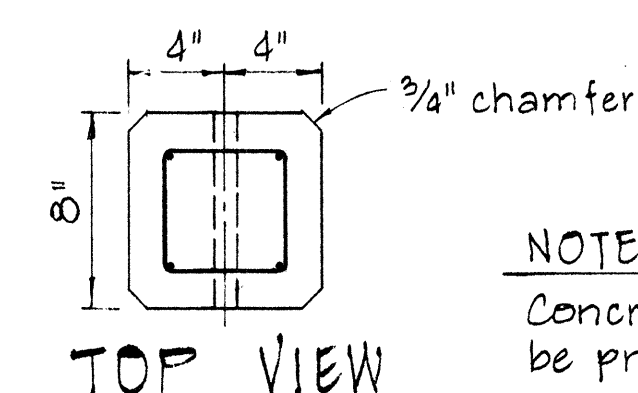
SCALE: 1 1/2" = 1'-0"



PLAN

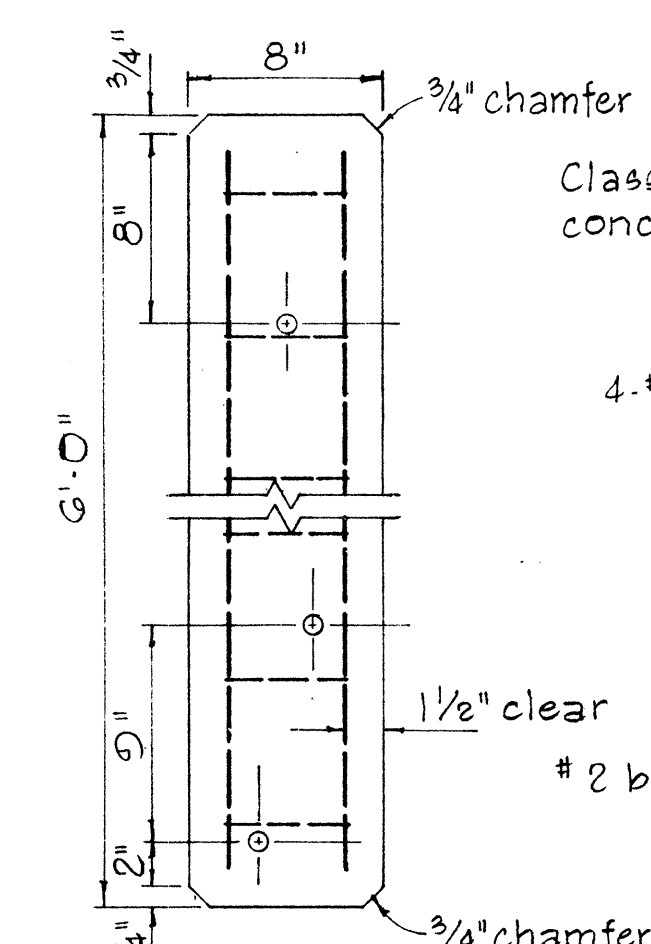
SINGLE METAL GUARD RAIL ON PRECAST CONCRETE POST WITH WOOD OR METAL SPACER BLOCK

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

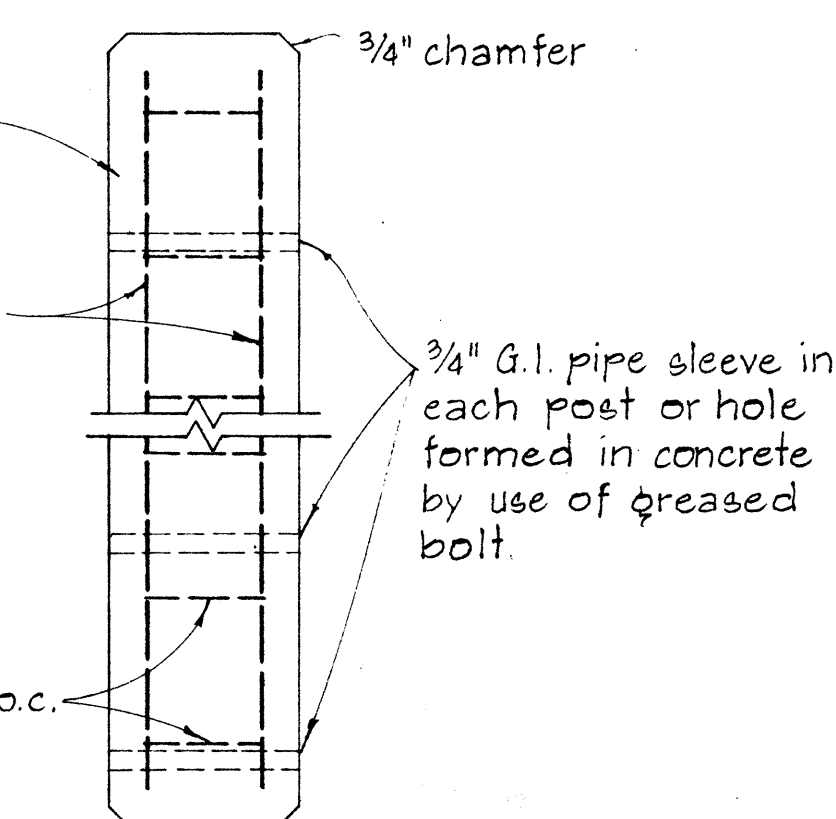


TOP VIEW

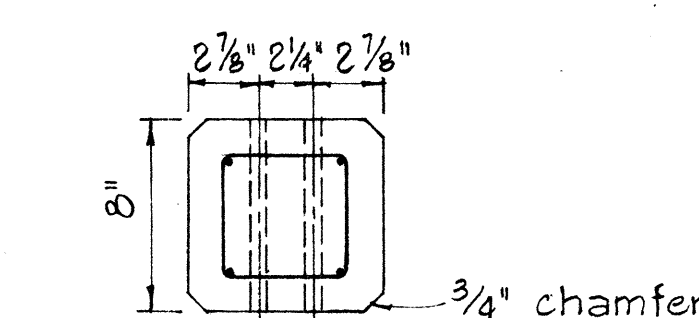
NOTE: Concrete post shall be precast.



FRONT VIEW



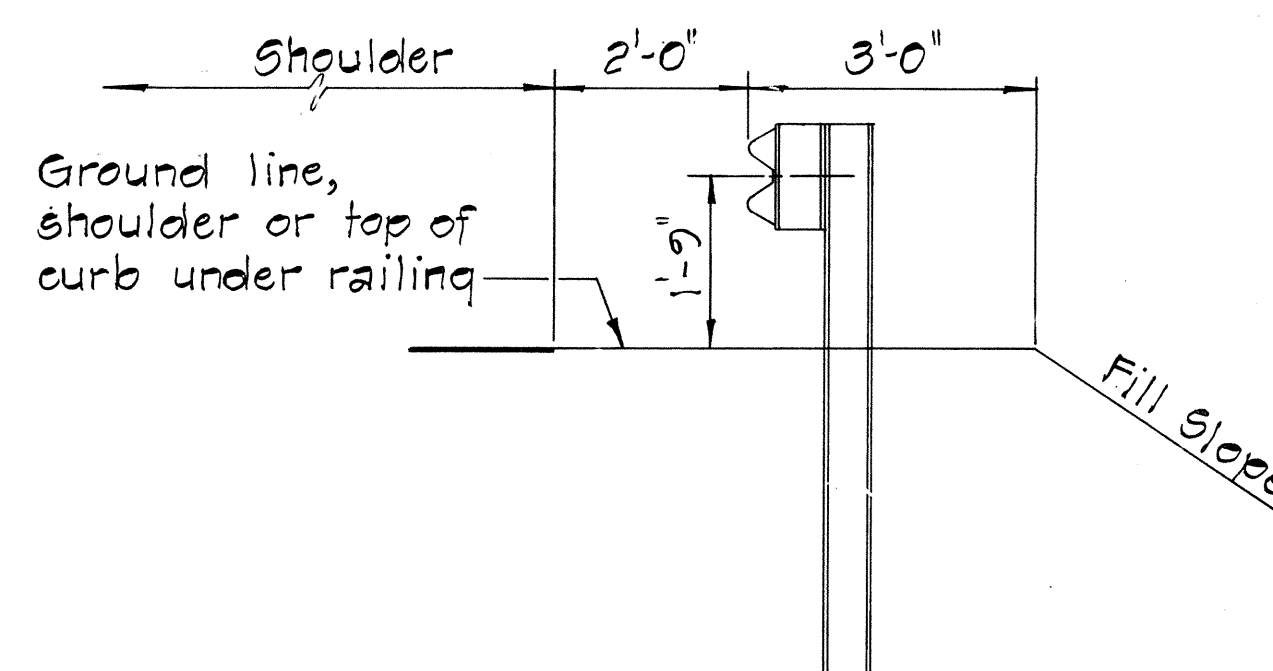
SIDE VIEW



BOTTOM VIEW

DETAIL OF CONCRETE POST

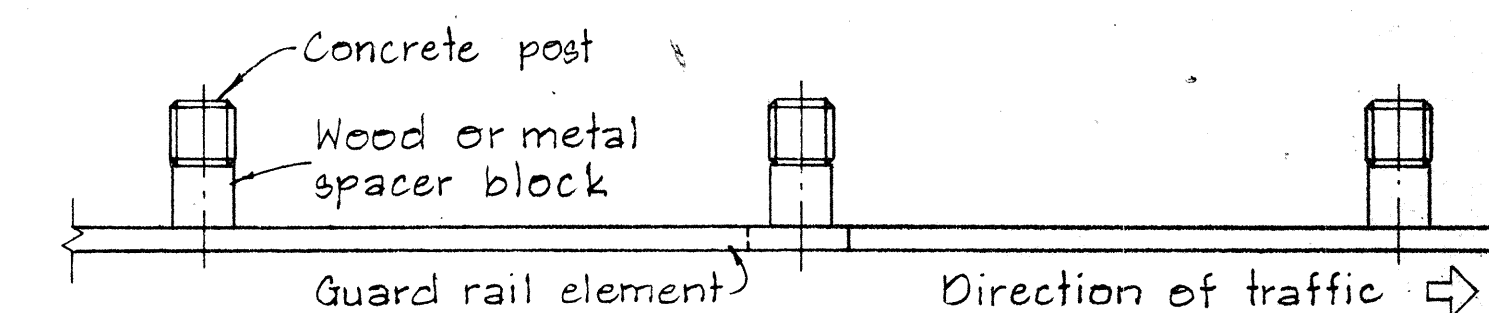
SCALE: 1 1/2" = 1'-0"



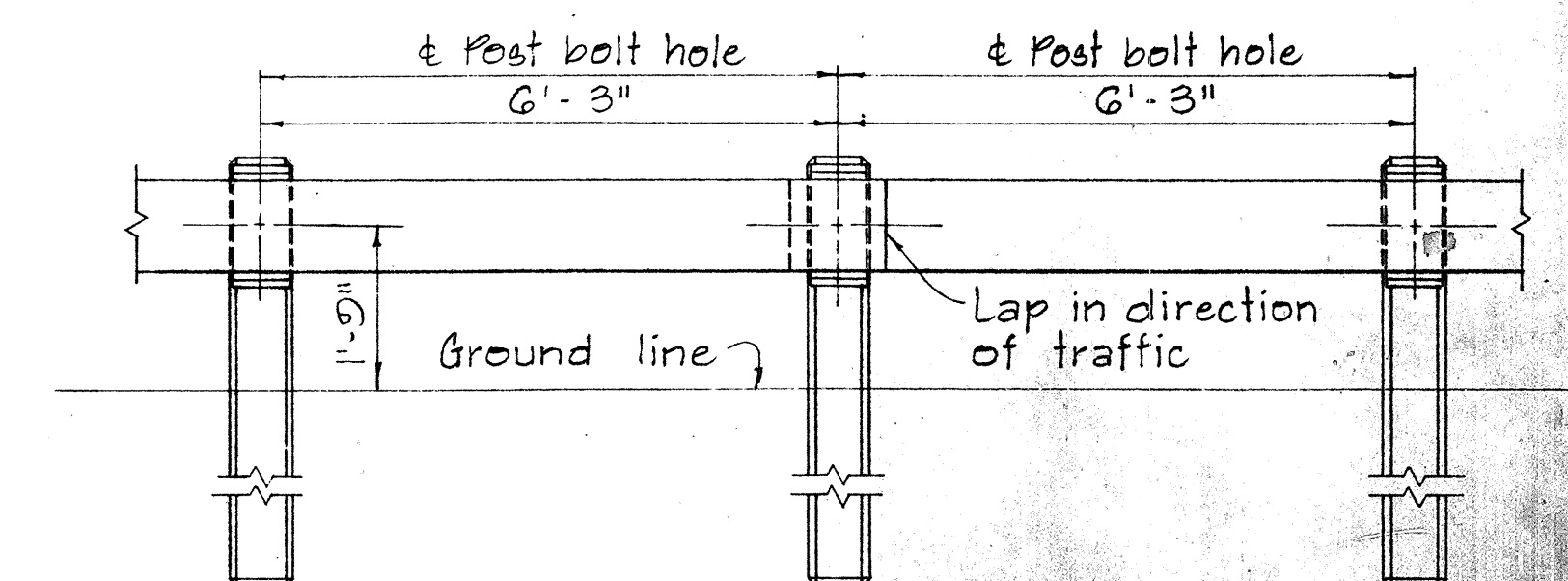
AT SHOULDER SECTION

TYPICAL METAL GUARD RAIL DETAIL

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



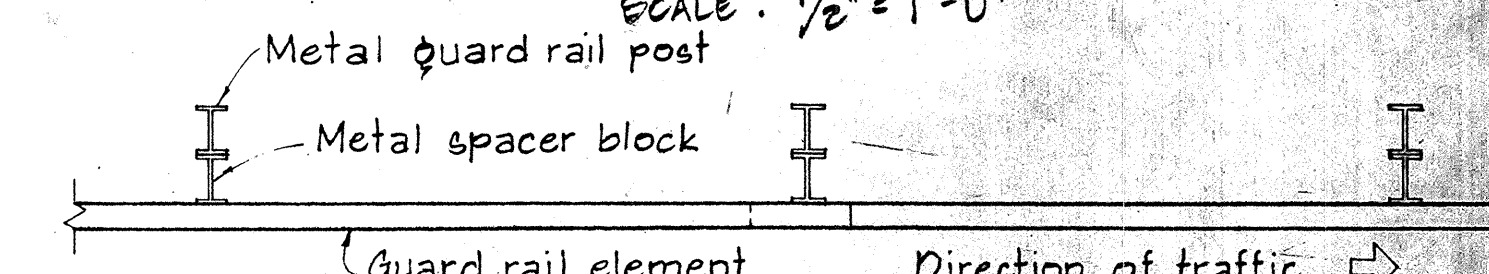
PLAN



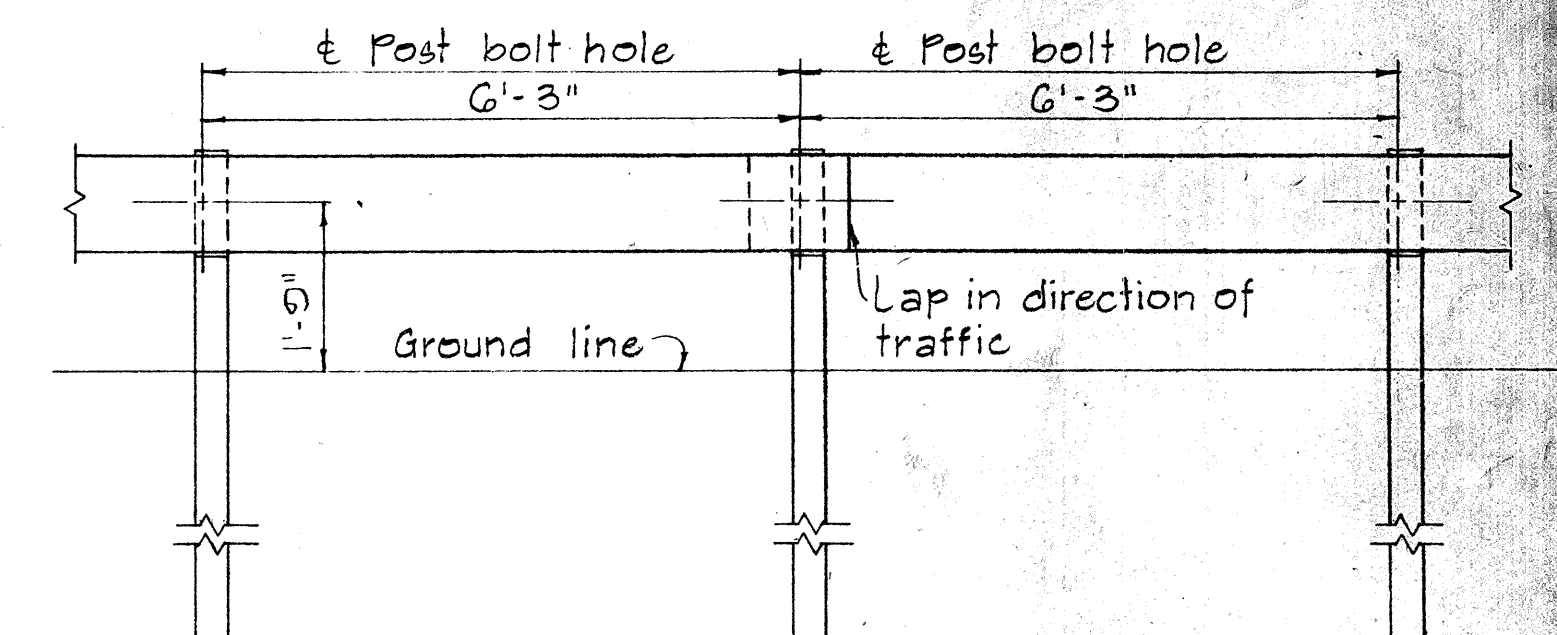
ELEVATION

METAL GUARD RAIL ON CONCRETE POST WITH WOOD OR METAL SPACER BLOCK

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



PLAN



ELEVATION

METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

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

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

APPROVAL RECOMMENDED:  
TRAFFIC ENGINEER

12/29/62  
DATE

APPROVED:  
ASSISTANT CHIEF, ENGINEERING

12-30-69  
DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS  
METAL GUARD RAIL

SCALE: AS SHOWN NOV. 1968

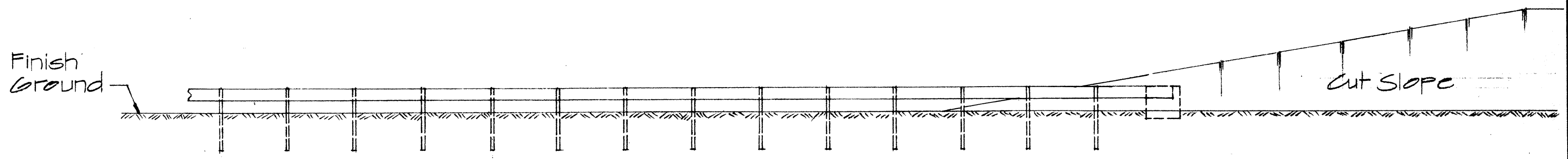
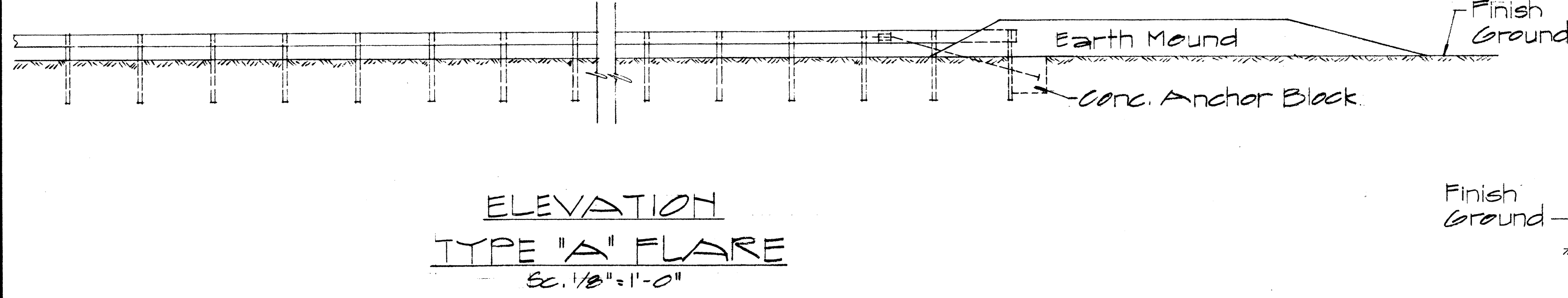
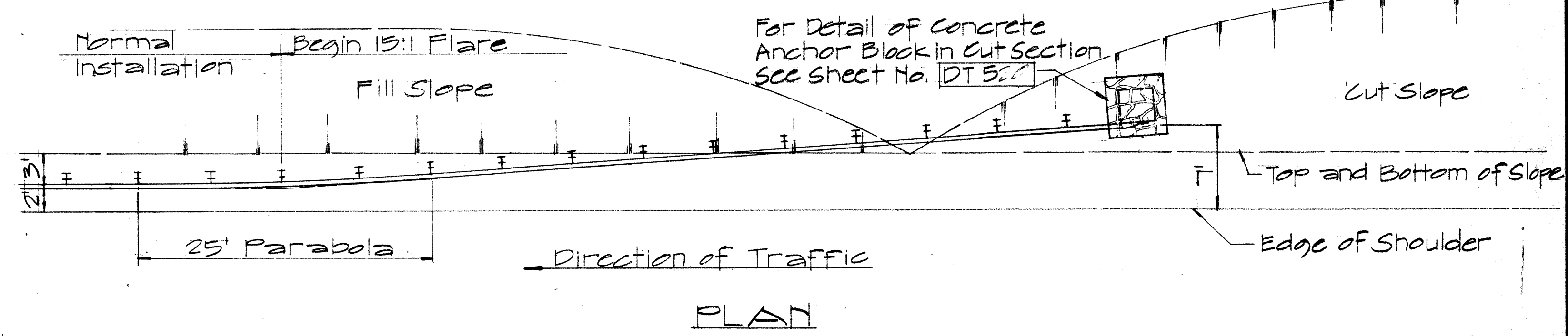
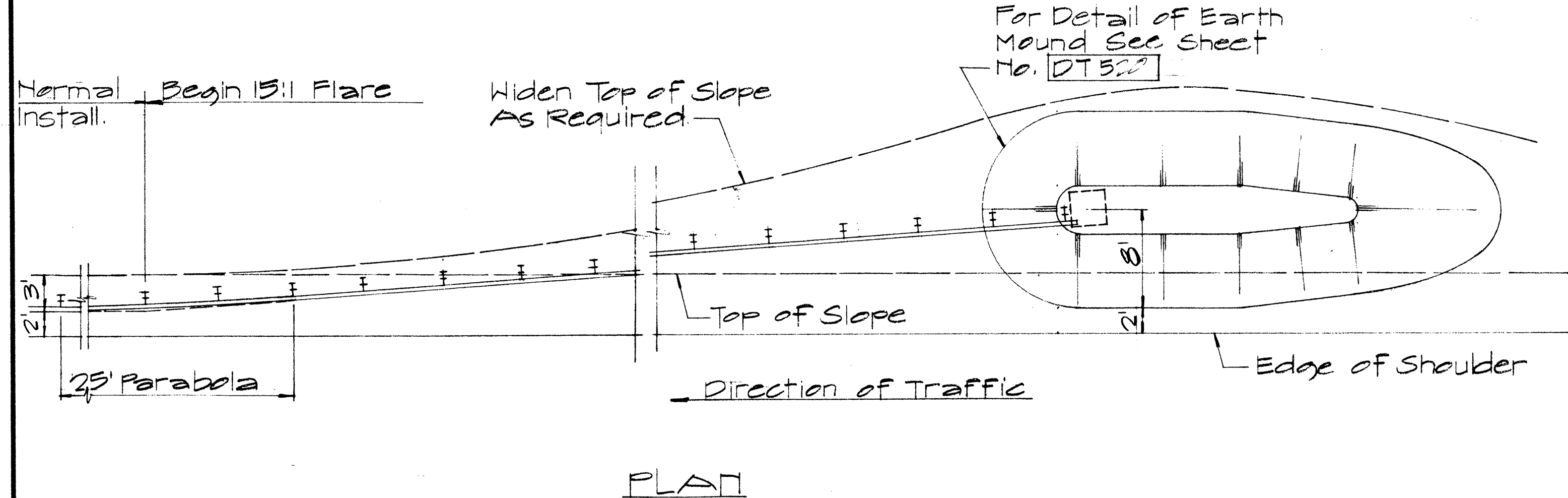
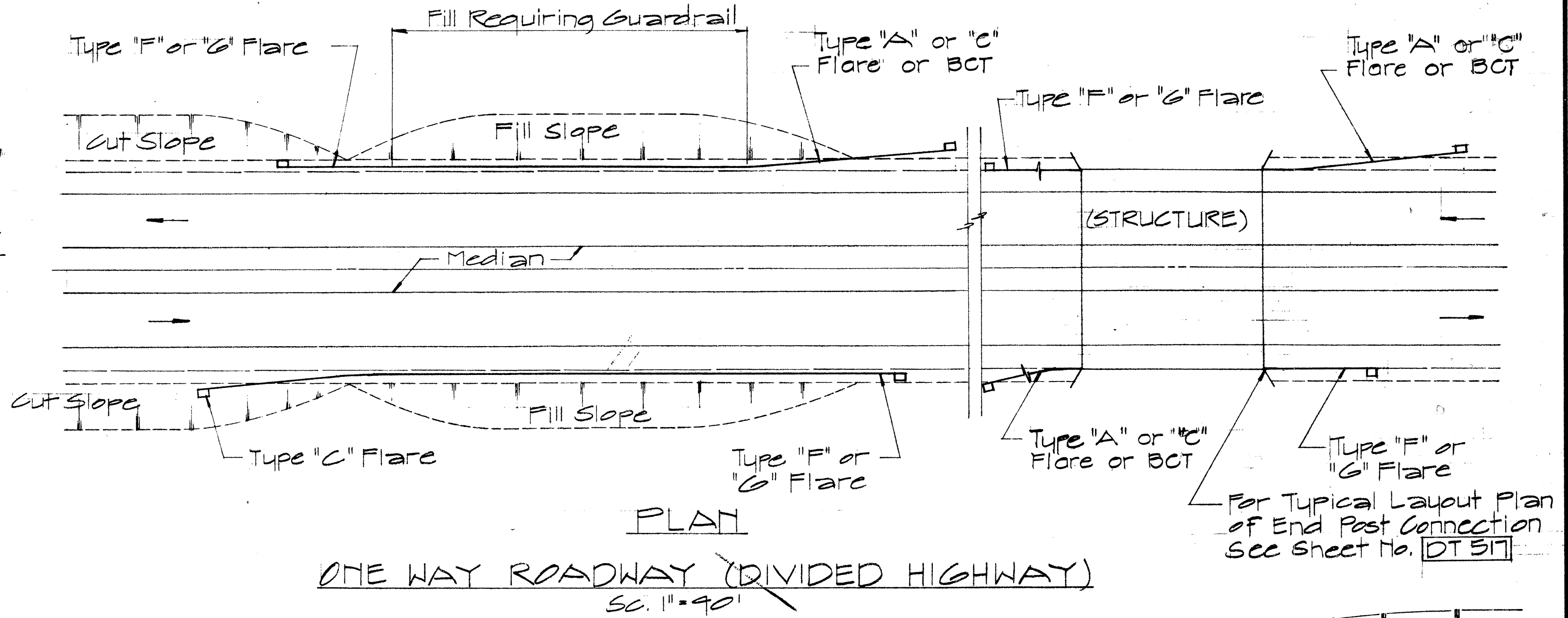
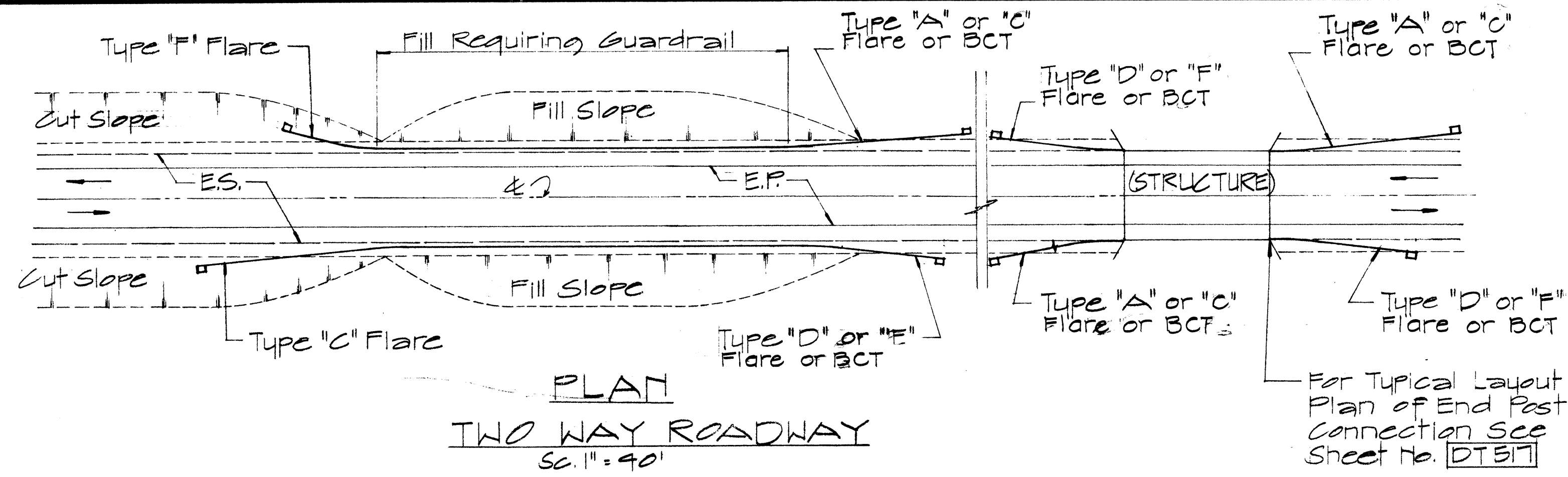
SHEET No. 8 OF 7 SHEETS DT 500



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 1-1R-H-1(150)      | 1980        | 10        | 25           |

# NOTE:

1. Metal guard rail connection to structures requires End Post Connection. See structure plans.
2. For detail of Breakaway Cable Terminal (BCT) See Sheet No. DT 519



APPROVAL RECOMMENDED:  
*Eishi Tanaka* 12/29/69  
TRAFFIC ENGINEER DATE

APPROVED:  
*W. S. S. S.* 12-30-69  
ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION                                 | APPROVED BY | DATE    |
|-----|------------------------------------------|-------------|---------|
| 1   | Delete Type "B" Flare and Type "E" Flare | H.T.        | 6/15/88 |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

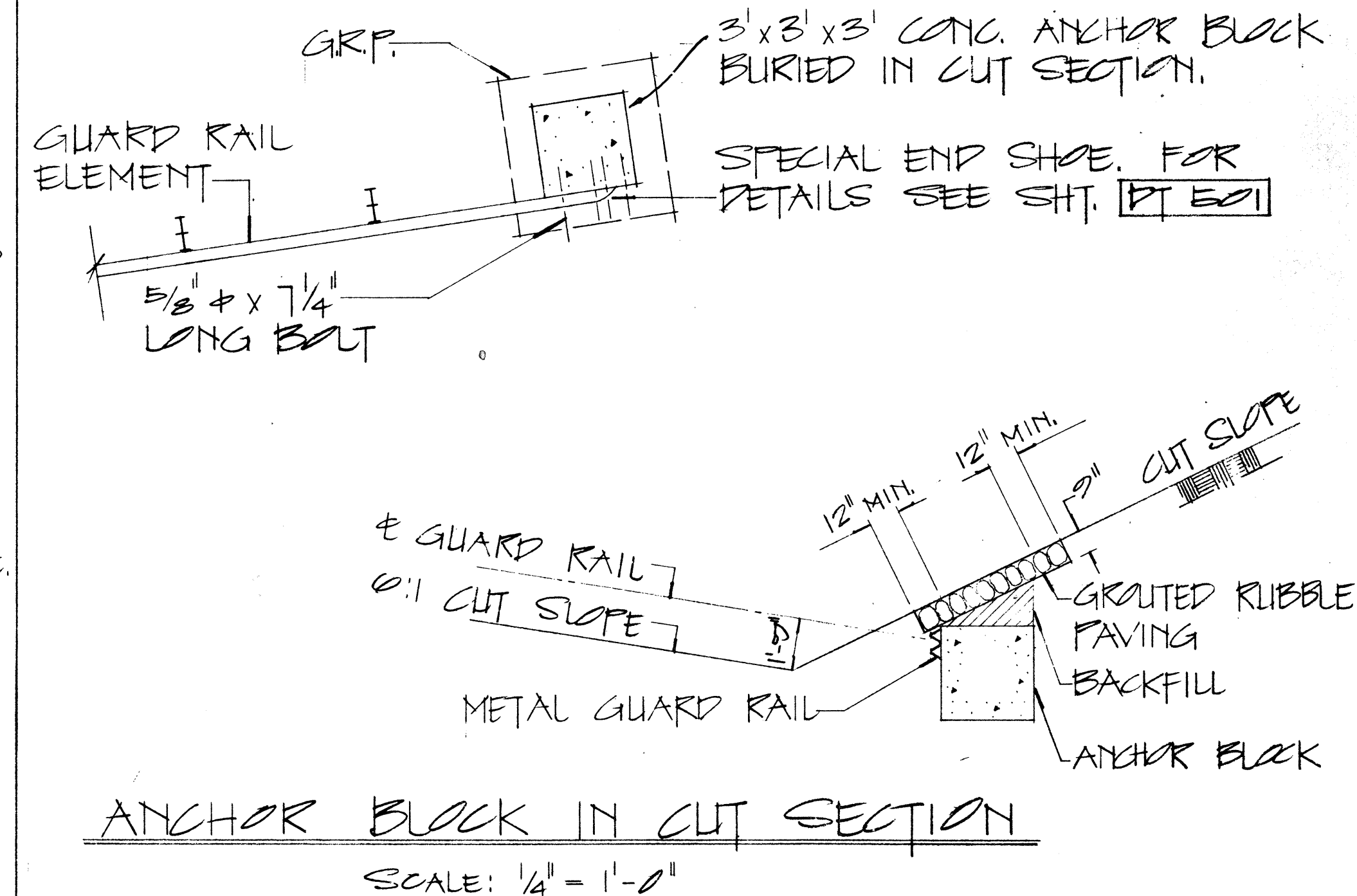
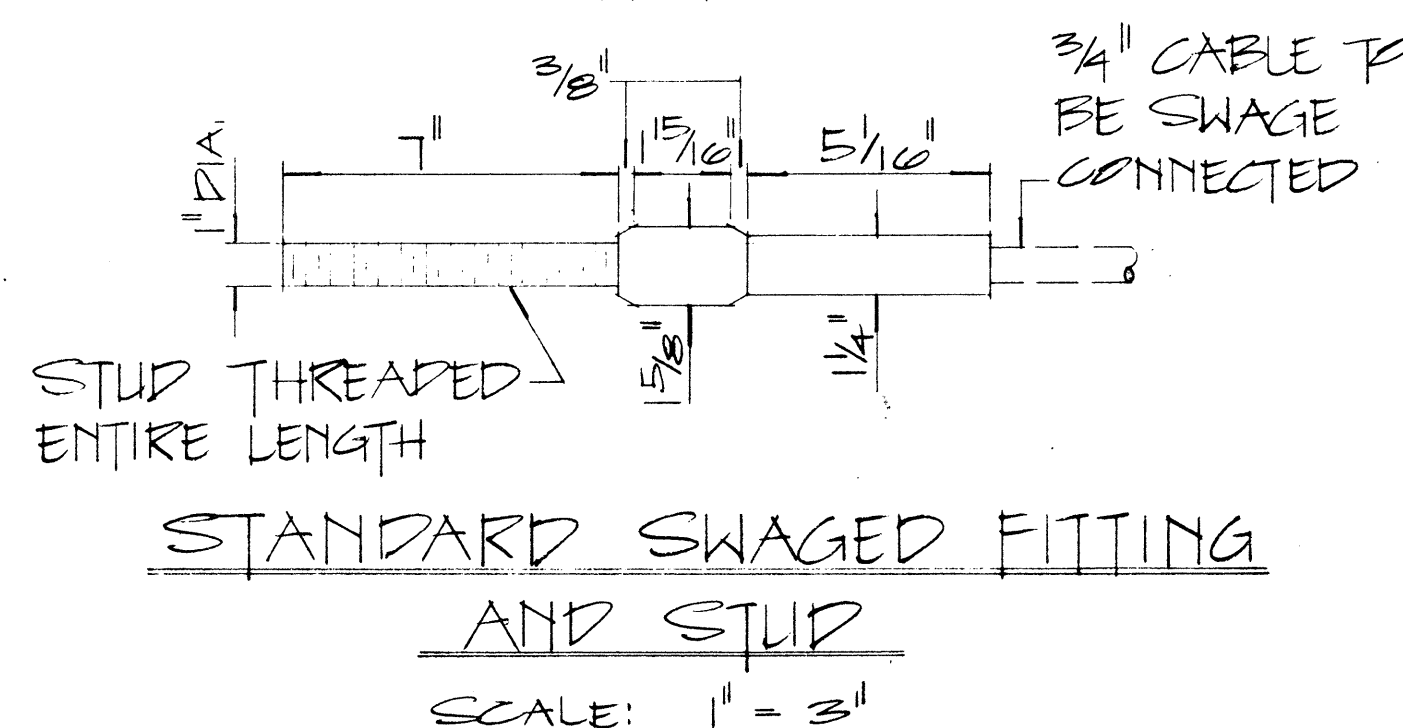
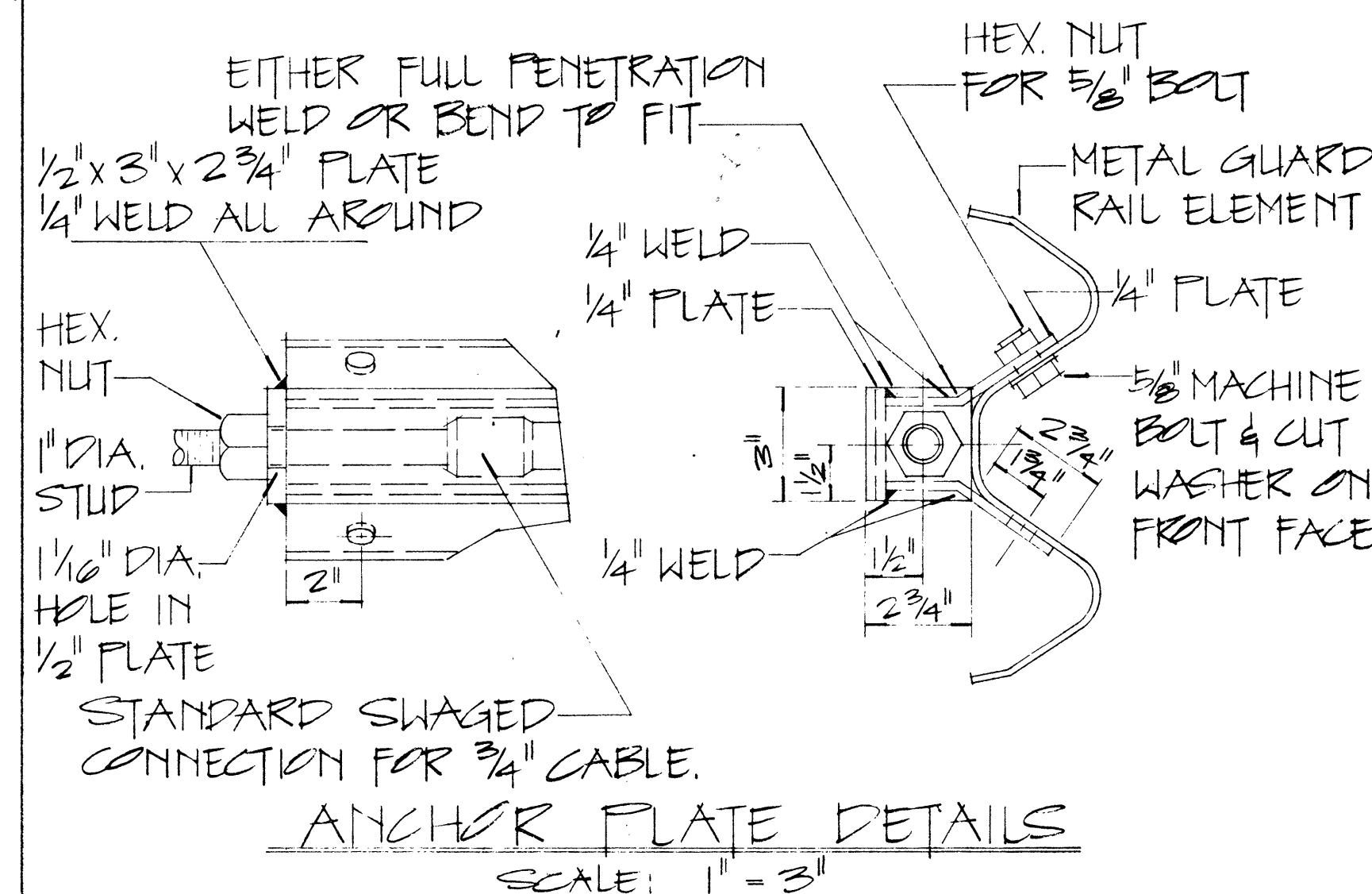
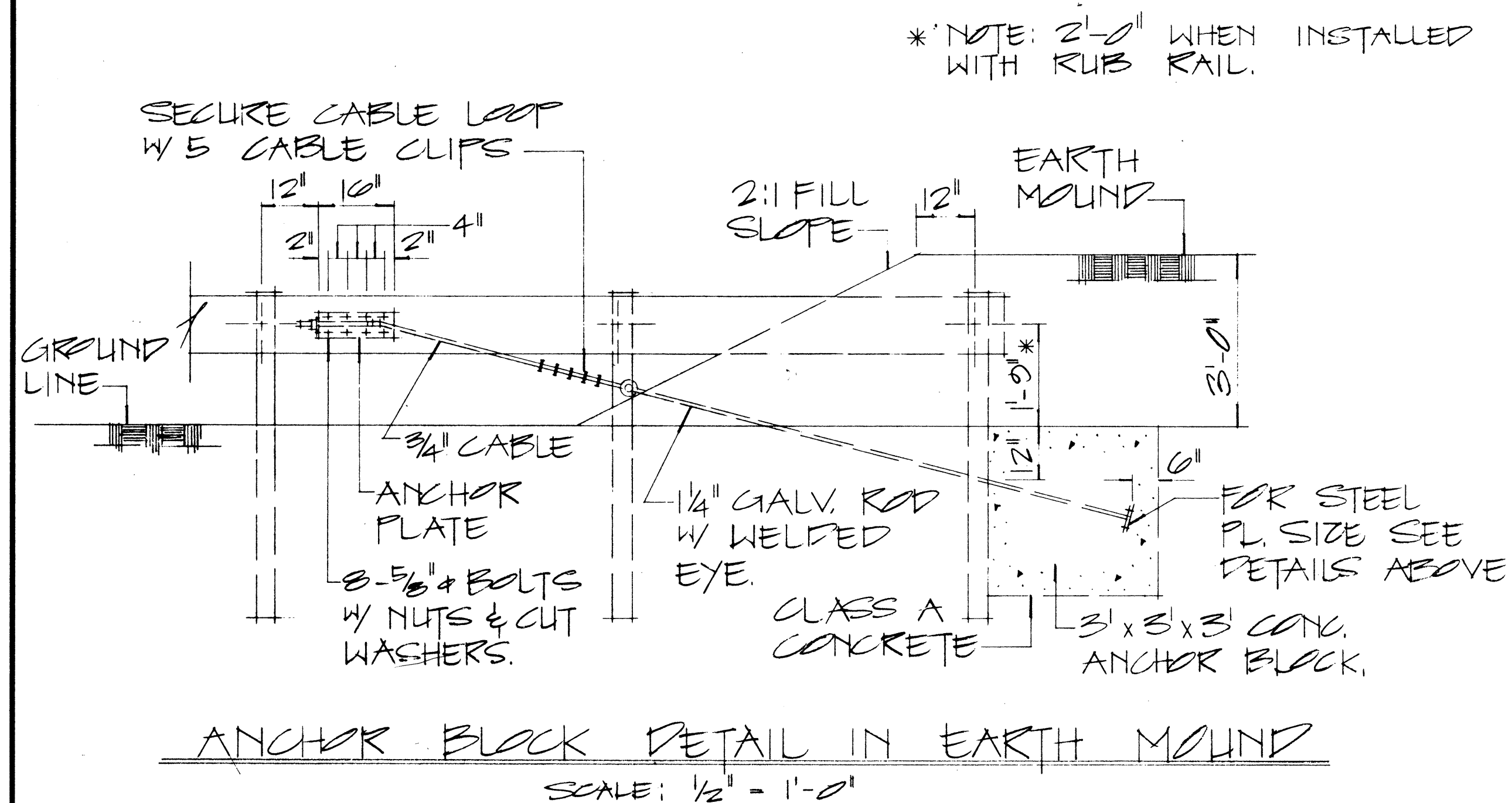
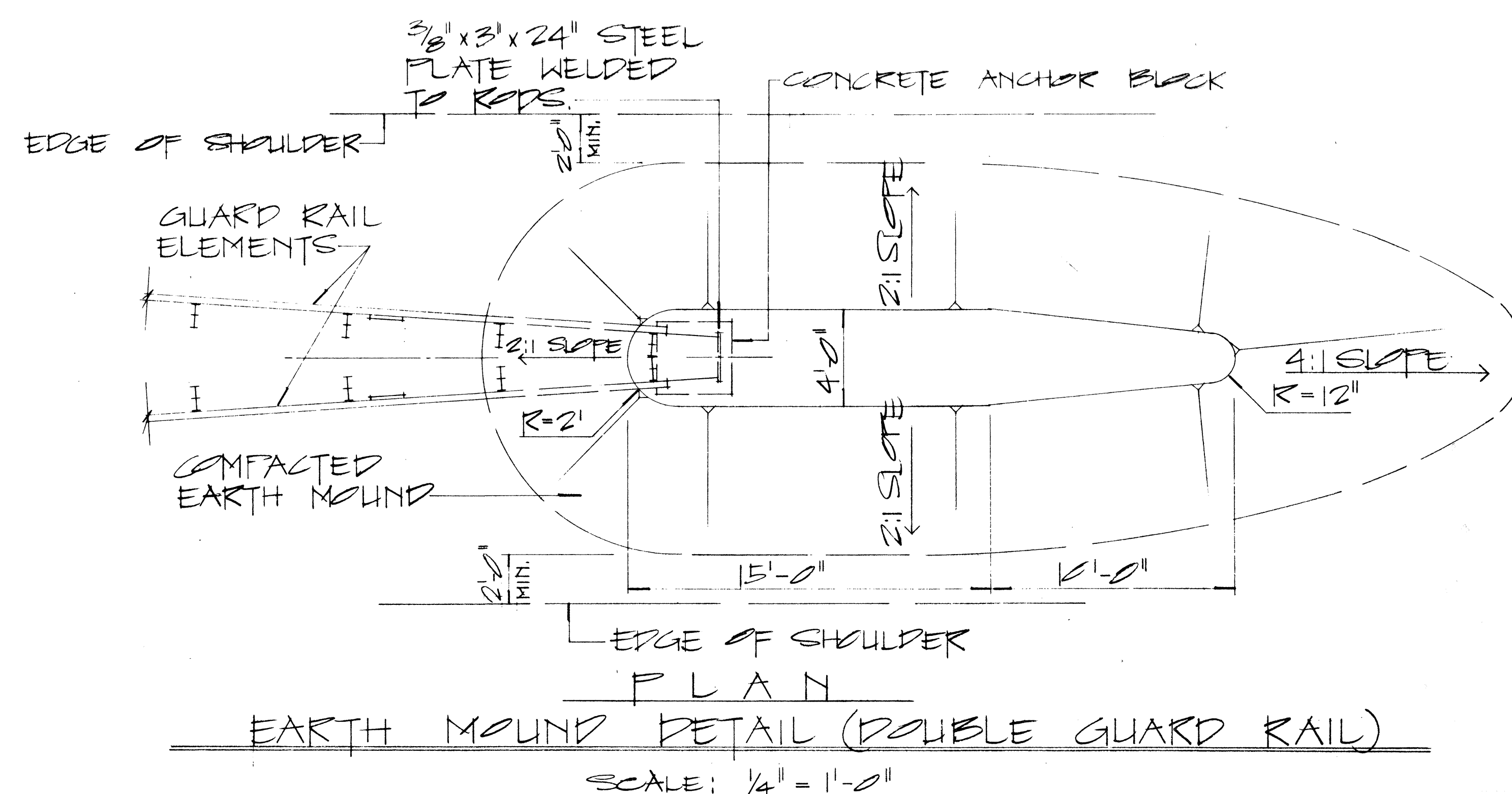
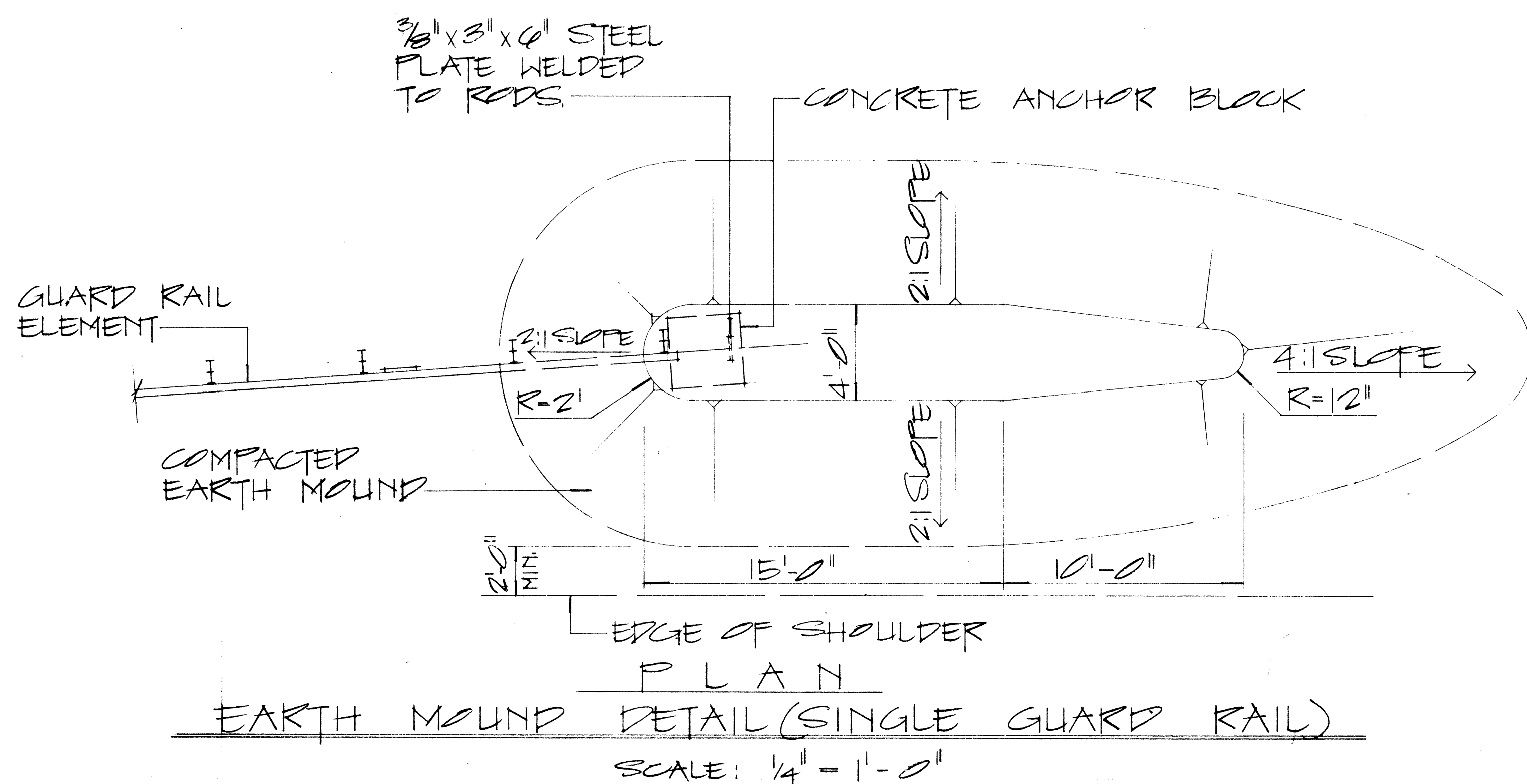
**STANDARD DETAILS  
OF APPROACH END  
FLARE - ONE & TWO  
WAY ROADWAY**

SC. As Noted April 1969  
SHEET No. 5 OF 7 SHEETS DT 516

|                   |  |
|-------------------|--|
| DATE              |  |
| SURVEY PLOTTED BY |  |
| DRAWN BY          |  |
| DESIGNED BY       |  |
| QUANTITIES BY     |  |
| CHECKED BY        |  |
| ORIGINAL PLAN     |  |
| NOTE BOOK         |  |
| NO.               |  |



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | IIR-III-1(15)      | 1980        | 12        | 25           |



NOTE:

1. GALVANIZED ANCHOR ROD, METAL GUARD RAIL AND POST BURIED IN GROUND SHALL BE COVERED WITH A MIN. 20-MIL thickness of COAL TAR ENAMEL, conforming to AWWA Standard: C 203
2. CONCRETE, GRP, EXCAVATION, EARTH MOUND, ANCHOR RODS AND MISCELLANEOUS APPURTENANCES NECESSARY TO ANCHOR THE GUARD RAIL ENDS SHALL BE INCIDENTAL TO THE METAL GUARD RAIL.

|                              |          |             |      |
|------------------------------|----------|-------------|------|
| APPROVAL RECOMMENDED:        |          |             |      |
| TRAFFIC ENGINEER             |          | DATE        |      |
| APPROVED:                    |          | DATE        |      |
| ASSISTANT CHIEF, ENGINEERING |          | DATE        |      |
| NO.                          | REVISION | APPROVED BY | DATE |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION

STANDARD DETAILS

EARTH MOUND AND ANCHOR BLOCK DETAILS

SCALE: AS SHOWN

SHEET No. 7 OF 7 SHEETS

|               |             |            |
|---------------|-------------|------------|
| DATE          | DESIGNED BY | CHECKED BY |
| 12/23/62      | 12/30/69    |            |
| ORIGINAL PLAN | NOTE BOOK   | NO.        |