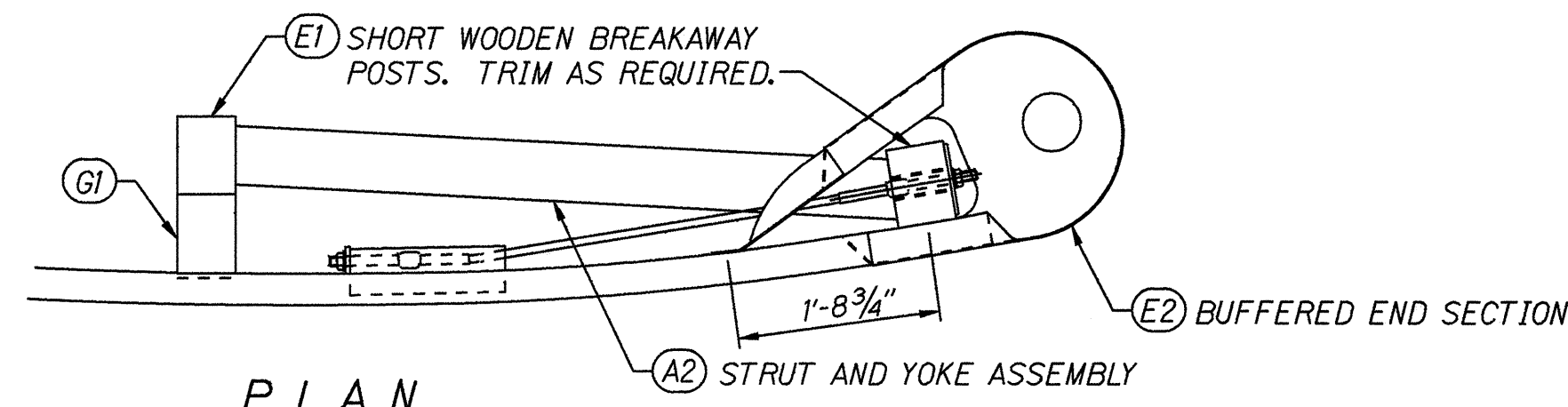


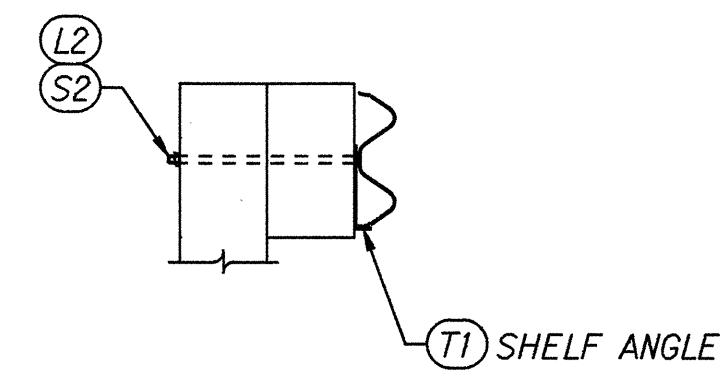
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | STP-0440(6)        | 1995        | 5         | 17           |

## NOTES

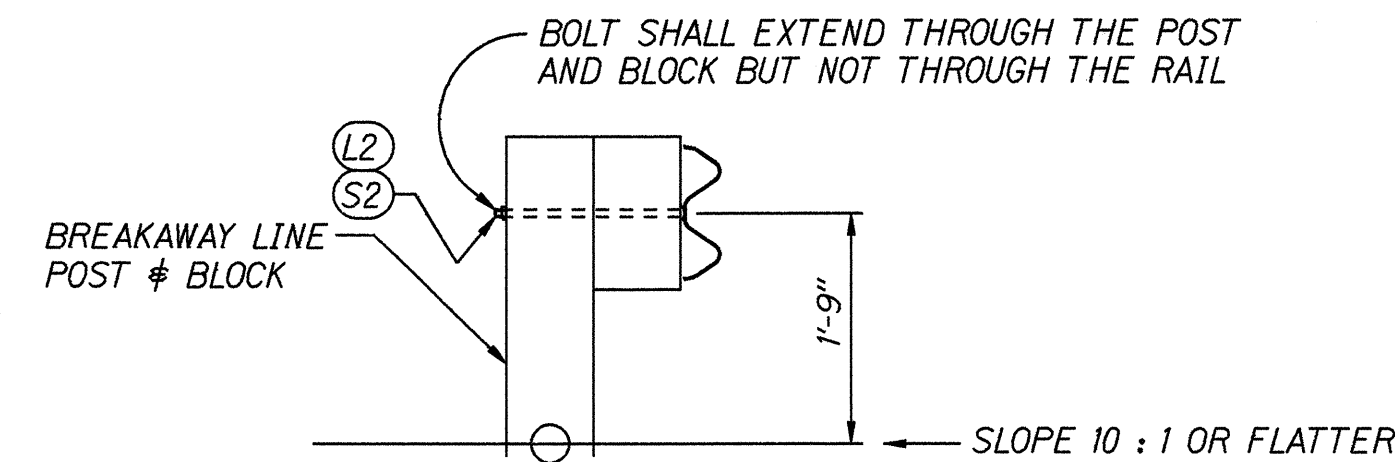
1. THE POST OFFSET DIMENSIONS ARE GIVEN TO THE CENTER OF THE TRAFFIC FACE OF THE BLOCKOUTS, EXCEPT AT THE FIRST POST, WHERE THE DIMENSION IS TO THE CENTER OF THE TRAFFIC FACE OF THE POST. OFFSET POINTS ARE TO BE LOCATED BY CHORD MEASUREMENTS AT THE BACK OF THE RAIL EQUAL TO THE NOMINAL POST SPACINGS SHOWN. POSTS ARE TO BE SET APPROXIMATELY RADIAL TO THE RAILING AT EACH POST LOCATION.



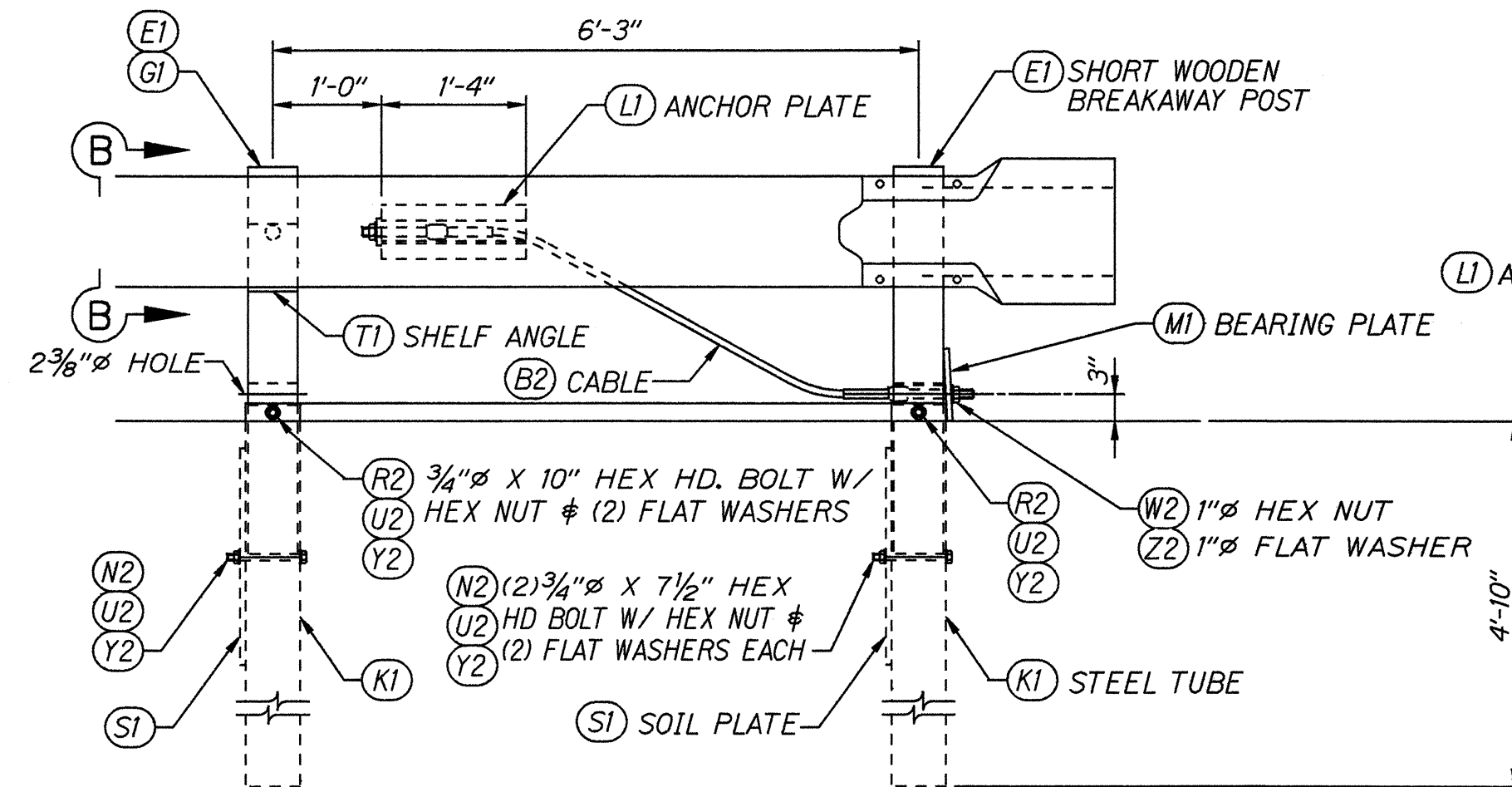
## PLAN



## SECTION N B - B

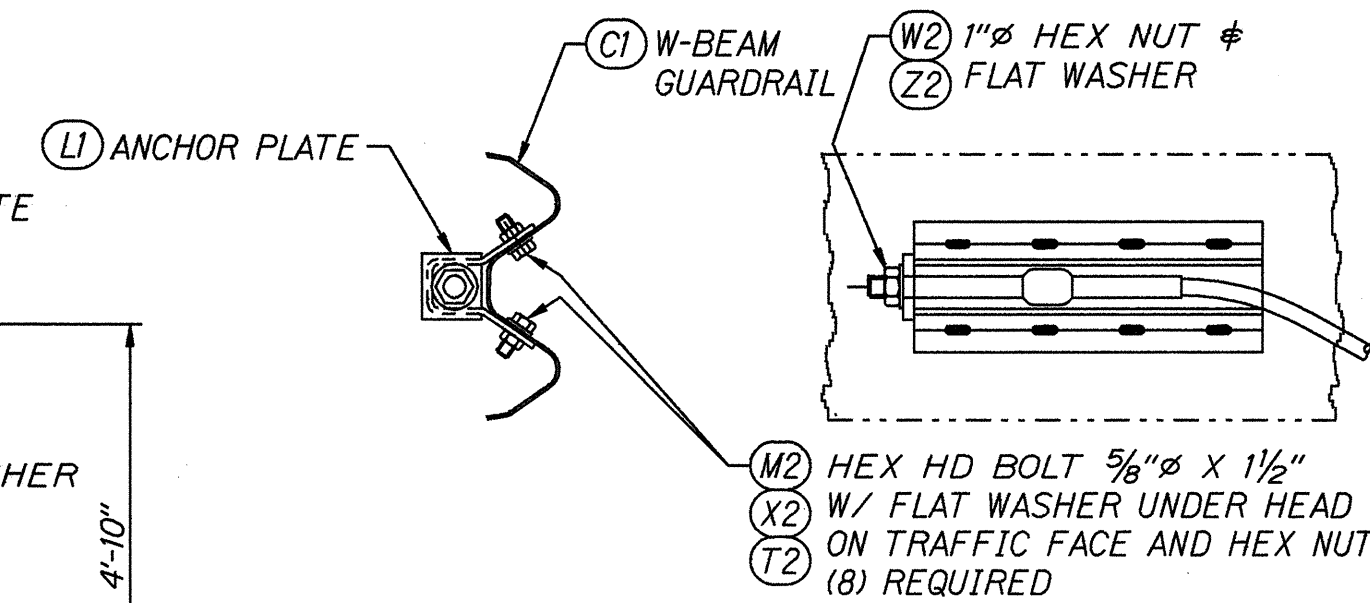


## SECTION N A - A

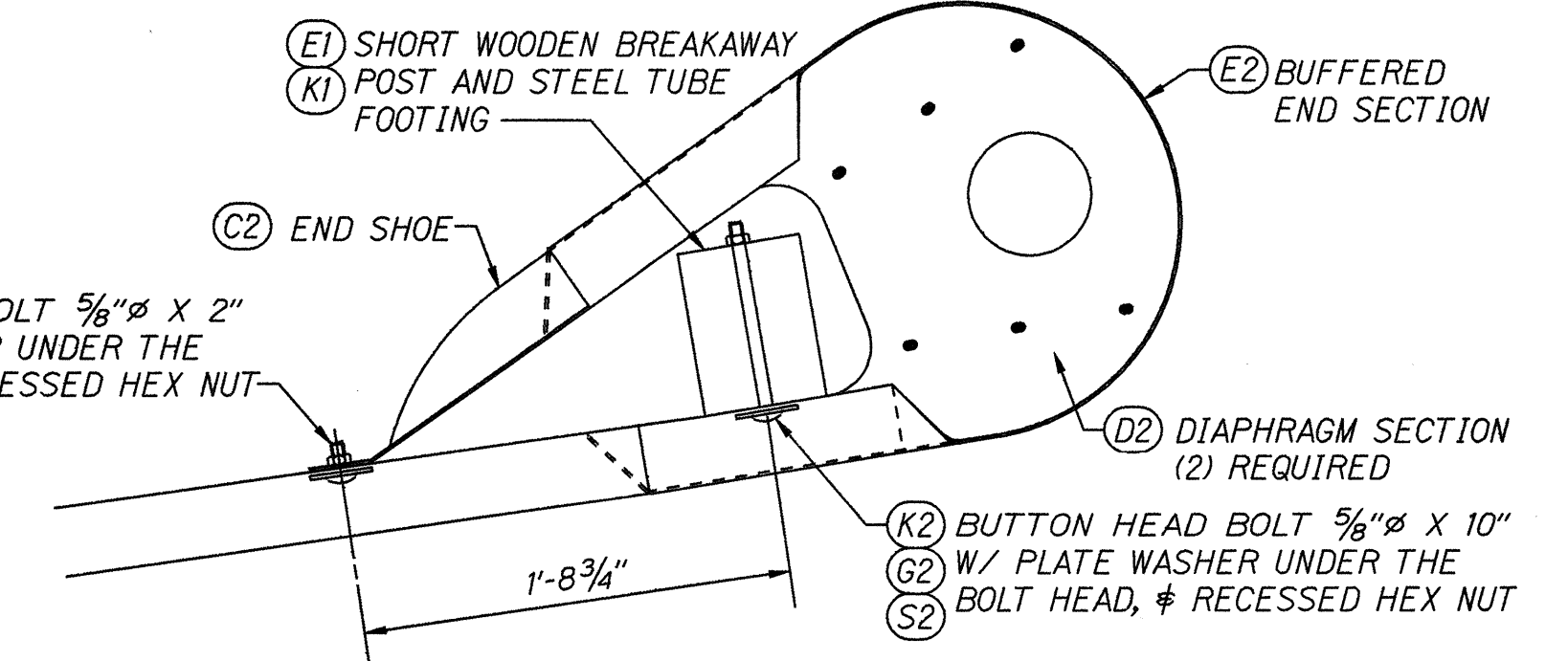


## ELEVATION

## BUFFERED END & ANCHORAGE ASSEMBLY



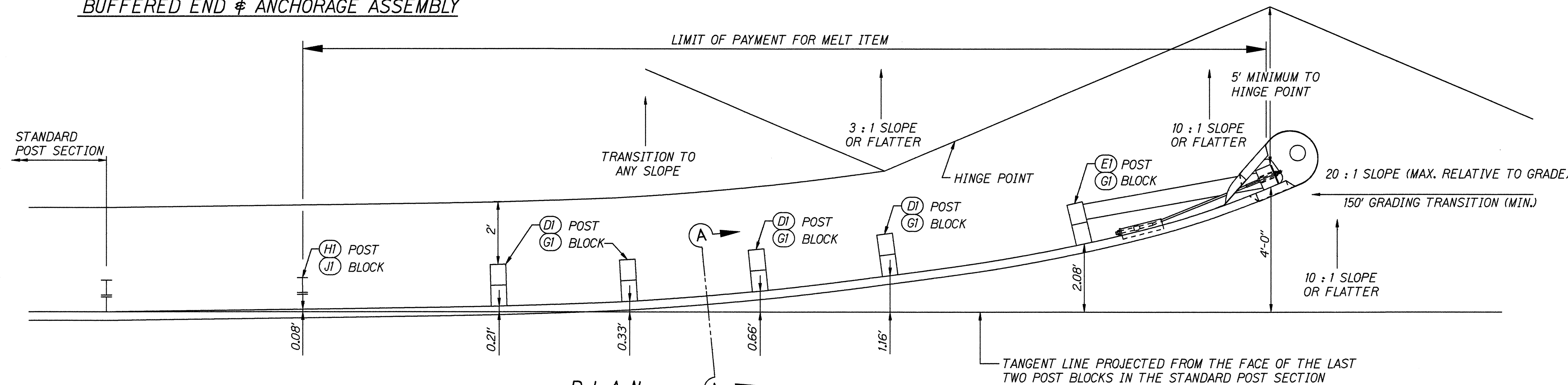
## ANCHOR PLATE ASSEMBLY DETAILS



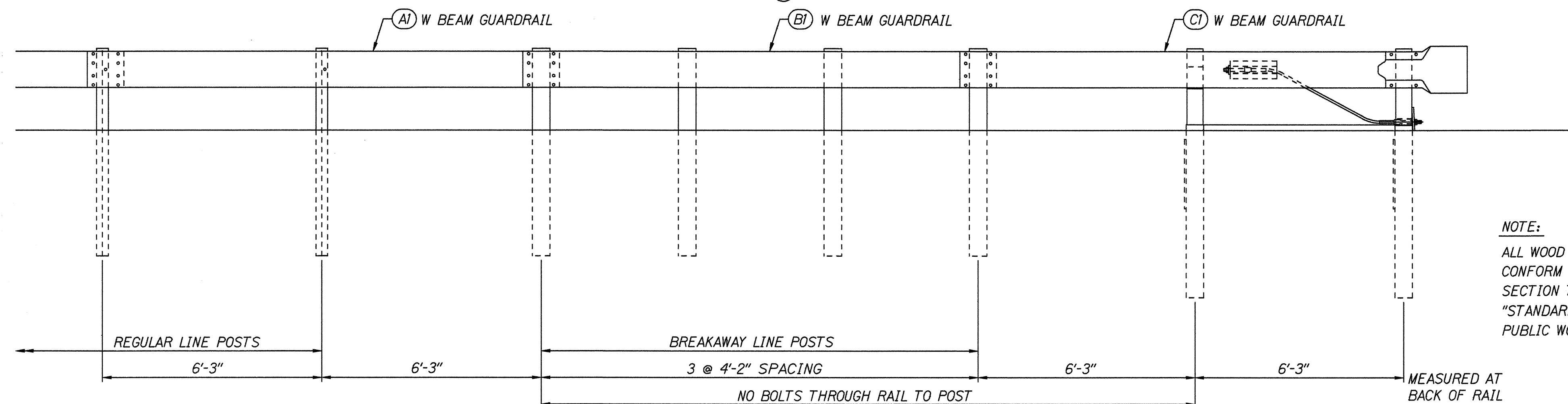
## BUFFERED END ASSEMBLY

## SUMMARY OF COMPONENTS

| FIND NO. | DESCRIPTION                                          |
|----------|------------------------------------------------------|
| (A1)     | GUARDRAIL, 12GA X 12'-6"                             |
| (B1)     | GUARDRAIL, 12GA X 12'-6"                             |
| (C1)     | GUARDRAIL, 12GA X 12'-6"                             |
| (D1)     | BREAKAWAY LINE POST, TIMBER - 6" X 8" X 6'-0"        |
| (E1)     | BREAKAWAY POST, TIMBER - 5 1/2" X 7 1/2" X 3'-6 1/2" |
| (G1)     | BLOCK, TIMBER - 5 1/2" X 7 1/2" X 1'-2"              |
| (H1)     | POST - W6 X 8.5 X 6'-0"                              |
| (J1)     | BLOCK - W6 X 8.5 X 1'-2"                             |
| (K1)     | SOIL TUBE - TS 8 X 6 X .188 X 5'-0"                  |
| (L1)     | CABLE ANCHOR BRACKET                                 |
| (M1)     | BEARING PLATE                                        |
| (R1)     | PIPE SPACER                                          |
| (S1)     | SOIL PLATE                                           |
| (T1)     | SHELF ANGLE                                          |
| (A2)     | STRUT & YOKE ASSEMBLY                                |
| (B2)     | CABLE ASSEMBLY                                       |
| (C2)     | END SHOE                                             |
| (D2)     | DIAPHRAGM PLATE                                      |
| (E2)     | BUFFERED END SECTION                                 |
| (G2)     | WASHER, PLATE                                        |
| (H2)     | BOLT, SPLICE 5/8" X 1 1/4"                           |
| (J2)     | BOLT, POST 5/8" X 2"                                 |
| (K2)     | BOLT, POST 5/8" X 10"                                |
| (L2)     | BOLT, POST 5/8" X 18"                                |
| (M2)     | BOLT, HEX 5/8" X 1 1/2"                              |
| (N2)     | BOLT, HEX 3/4" X 7 1/2"                              |
| (R2)     | BOLT, HEX 3/4" X 10"                                 |
| (S2)     | NUT, HEX, RECESSED 5/8"                              |
| (T2)     | NUT, HEX 5/8"                                        |
| (U2)     | NUT, HEX 3/4"                                        |
| (W2)     | NUT, HEX 1"                                          |
| (X2)     | WASHER, FLAT 5/8"                                    |
| (Y2)     | WASHER, FLAT 3/4"                                    |
| (Z2)     | WASHER, FLAT 1"                                      |



## PLAN



## ELEVATION

## NOTE:

ALL WOOD COMPONENTS SHALL BE TREATED TO CONFORM WITH ANY OF THE ACCEPTED METHODS IN SECTION 714 OF THE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION", 1994.

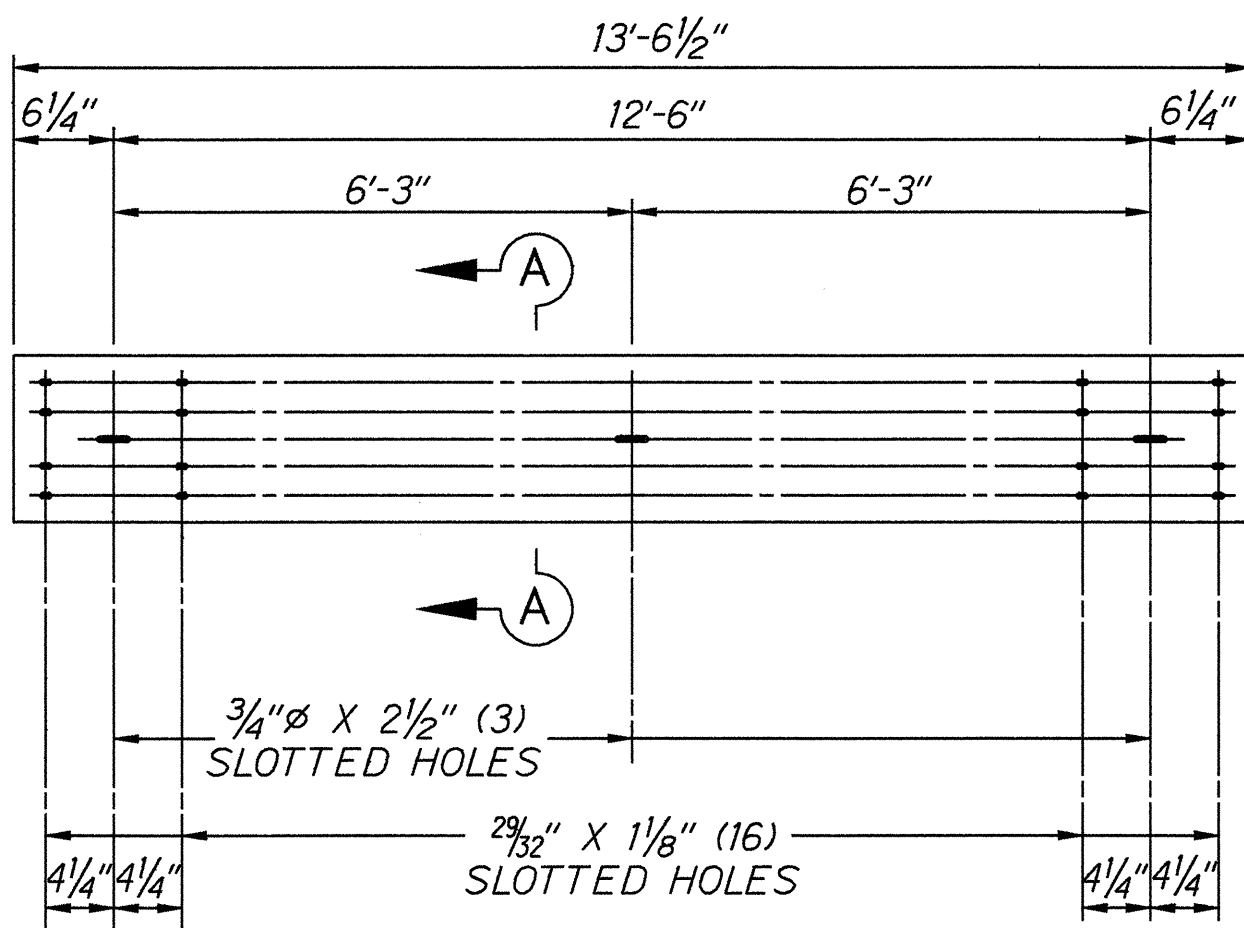
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**MODIFIED ECCENTRIC LOADER  
TERMINAL (MELT)**  
**POST LAYOUT & ERECTION DETAILS**  
**KAUALAPAU HIGHWAY RESURFACING**  
**M.P. 5.0 to End of Lanai City Spur and**  
**MANELE ROAD RESURFACING**  
**Manele Bay Hotel to Manele Bay**  
**Project No. STP-0440(6)**  
Not to Scale  
Date: Feb., 1995  
SHEET No. 1 OF 3 SHEETS



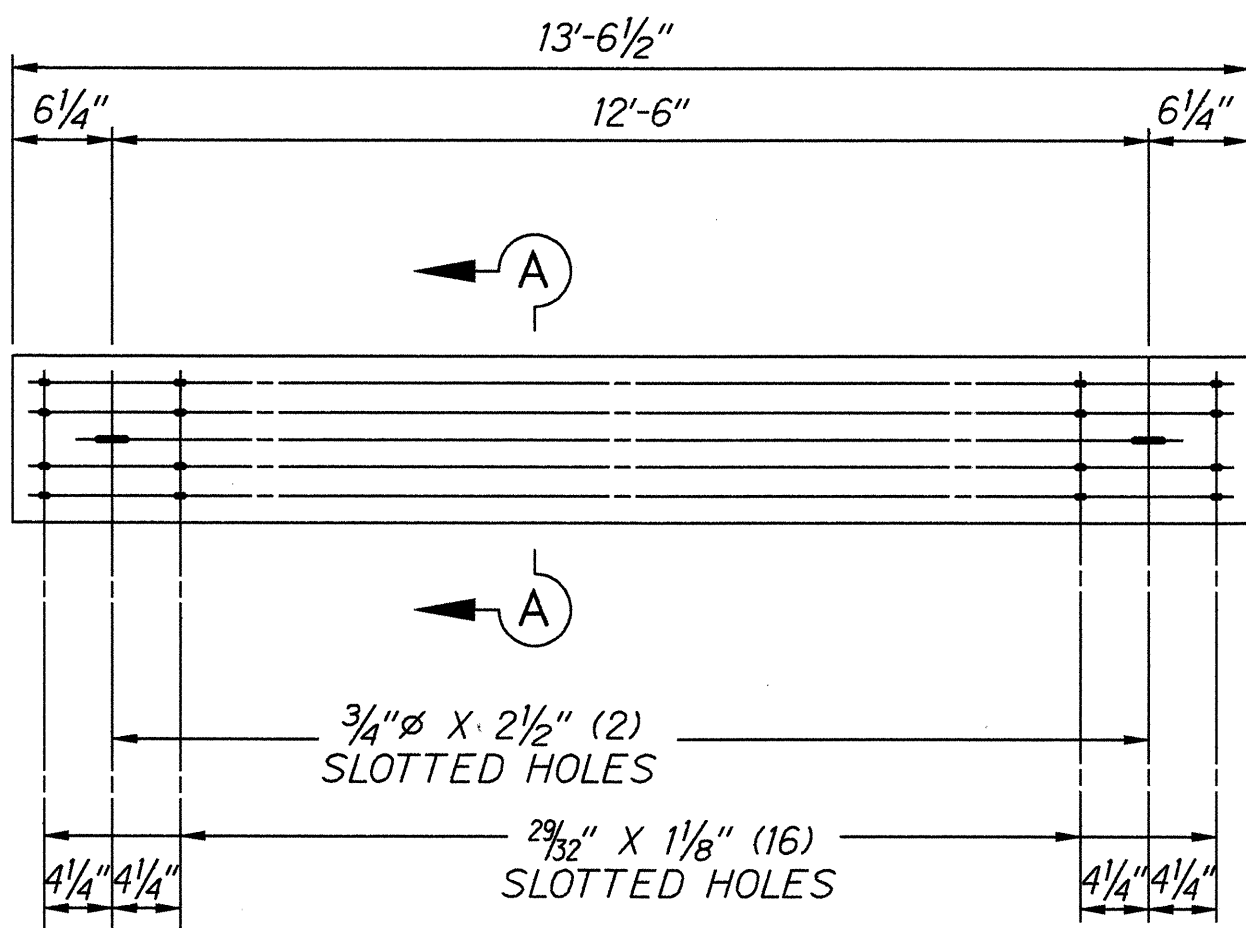
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | STP-0440(6)        | 1995        | 6         | 17           |

| MATERIAL SCHEDULE |            |                            |             |               |             |
|-------------------|------------|----------------------------|-------------|---------------|-------------|
| FIND No.          | PIECE MARK | MATERIAL                   | LENGTH FEET | WEIGHT INCHES | REMARKS     |
| AI                |            | GUARDRAIL, W-BEAM          |             |               | 95.0 AI23   |
|                   |            | 12 GA. W-BEAM GUARDRAIL    | 12          | 6             | 89.0 M180   |
| BI                |            | GUARDRAIL, W-BEAM          |             |               | 95.0 AI23   |
|                   |            | 12 GA. W-BEAM GUARDRAIL    | 12          | 6             | 89.0 M180   |
| CI                |            | GUARDRAIL, W-BEAM          |             |               | 95.0 AI23   |
|                   |            | 12 GA. W-BEAM GUARDRAIL    | 12          | 6             | 89.0 M180   |
| DI                |            | BREAKAWAY LINE POST        |             |               | 88.0        |
|                   |            | TIMBER POST 6 X 8          | 6           | 0             | 352.0 M168  |
| EI                |            | BREAKAWAY POST, SHORT      |             |               | 44.6        |
|                   |            | TIMBER POST 5 1/2 X 7 1/2  | 3           | 6 1/2         | 89.2 M168   |
| GI                |            | BLOCK                      |             |               | 16.8        |
|                   |            | TIMBER BLOCK 5 1/2 X 7 1/2 | 1           | 2             | 84.0 M168   |
| HI                |            | POST                       |             |               | 54.9 AI23   |
|                   |            | W6 X 8.5                   | 6           | 0             | 52.0 A36    |
| JI                |            | BLOCK                      |             |               | 11.0 AI23   |
|                   |            | W6 X 8.5                   | 1           | 2             | 10.1 A36    |
| KI                |            | SOIL TUBE                  |             |               | 88.9 AI23   |
|                   |            | TS 8 X 6 X .1875           | 5           | 0             | 170.8 A500B |
| LI                |            | CABLE ANCHOR BRACKET       |             |               | 19.3 AI23   |
| a                 |            | PL 1/4 X 12 3/8            | 1           | 4             | 17.6 A36    |
| b                 |            | PL 1/2 X 2 3/4             | 0           | 3             | 1.17 A36    |
| MI                |            | BEARING PLATE              |             |               | 11.9 AI23   |
| c                 |            | PL 5/8 X 8                 | 0           | 8             | 11.3 A36    |
| d                 |            | PL 3/16 X 1                | 0           | 8             | 0.4 A36     |
| RI                |            | POST SLEEVE                |             |               | 1.76 AI23   |
|                   |            | PIPE 2 STD                 | 0           | 5 1/2         | 1.67 A53    |
| SI                |            | SOIL PLATE                 |             |               | 84.8 AI23   |
|                   |            | PL 1/4 X 24                | 2           | 0             | 40.8 A36    |
| TI                |            | SHELF ANGLE                |             |               | 3.7 AI23    |
|                   |            | PL 1/4 X 6                 | 0           | 8 1/2         | 3.61 A36    |

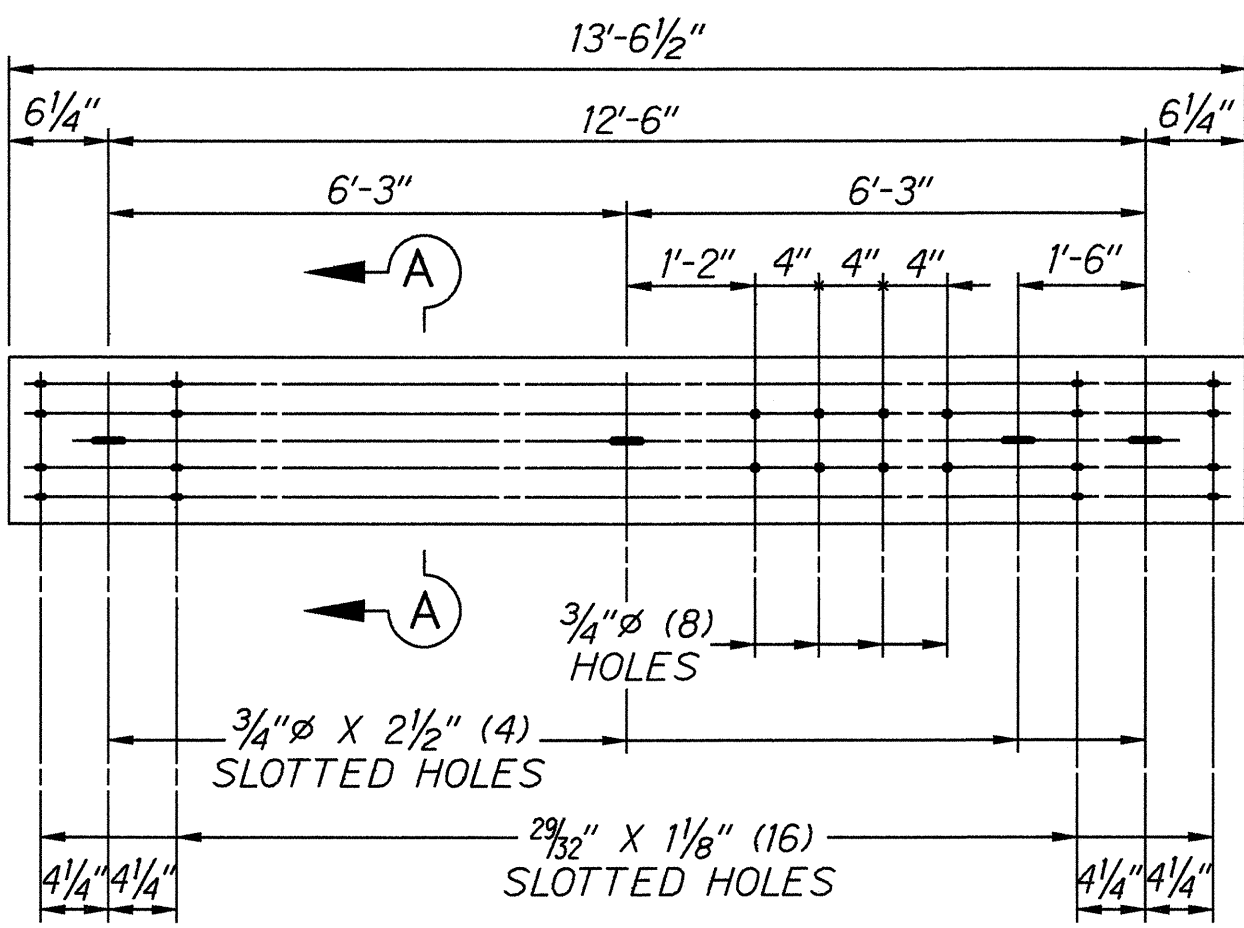
SECTION A - A



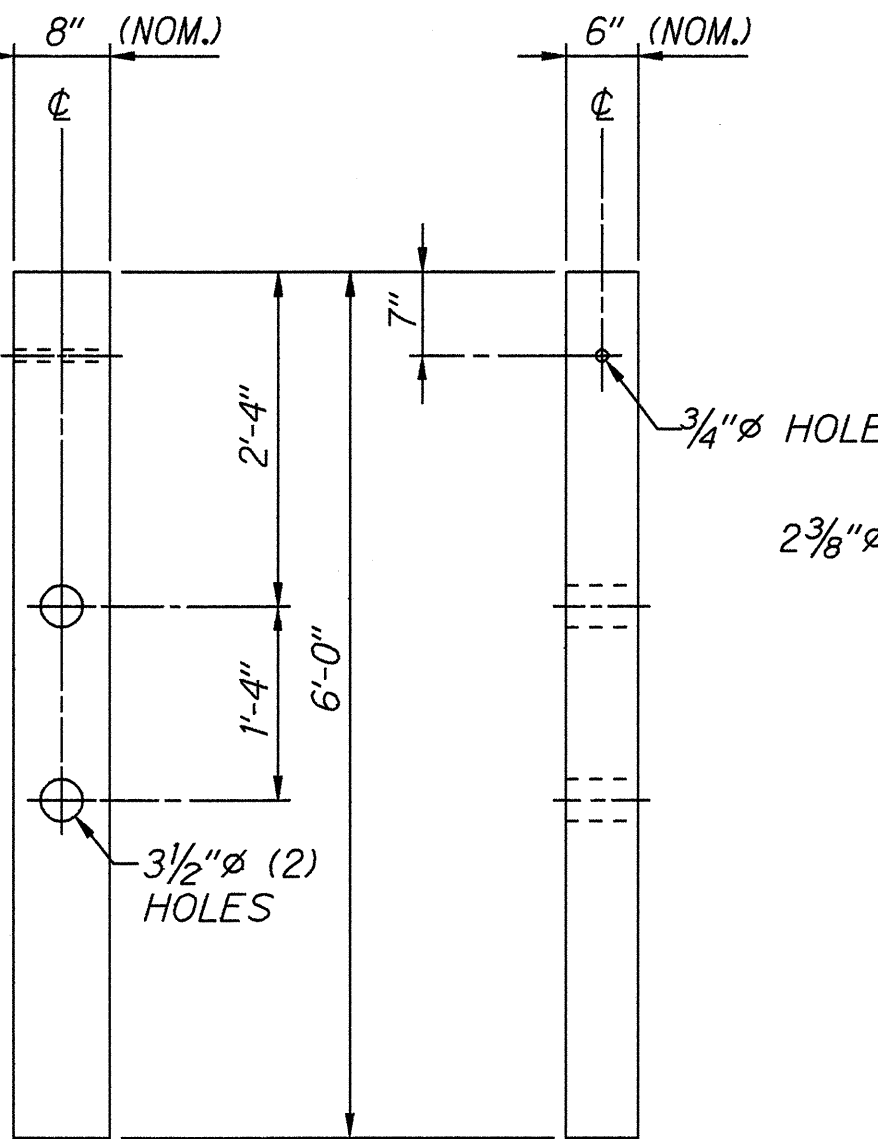
ONE - GUARDRAIL - AI



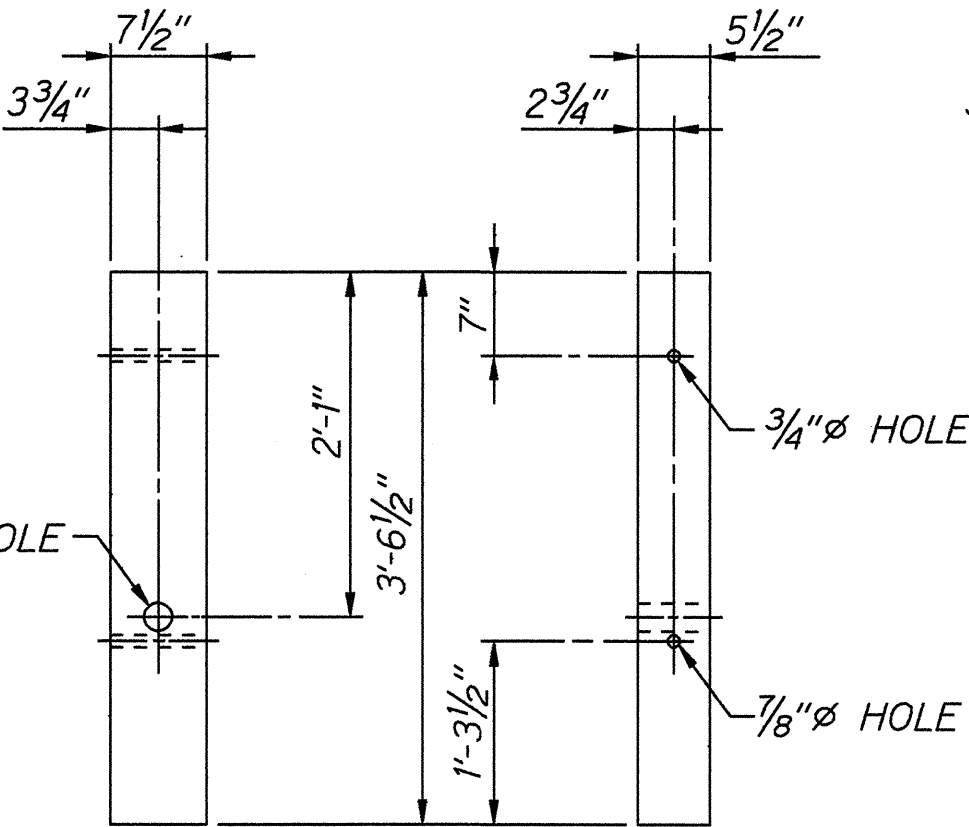
ONE - GUARDRAIL - BI



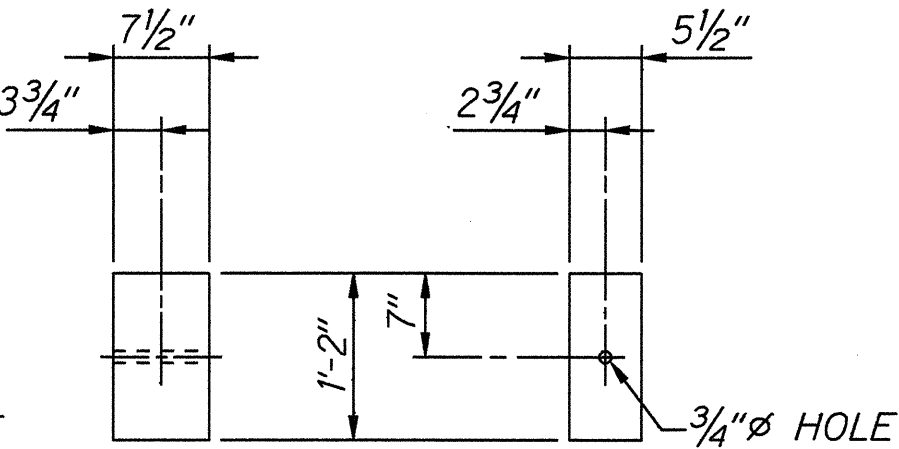
ONE - GUARDRAIL - CI



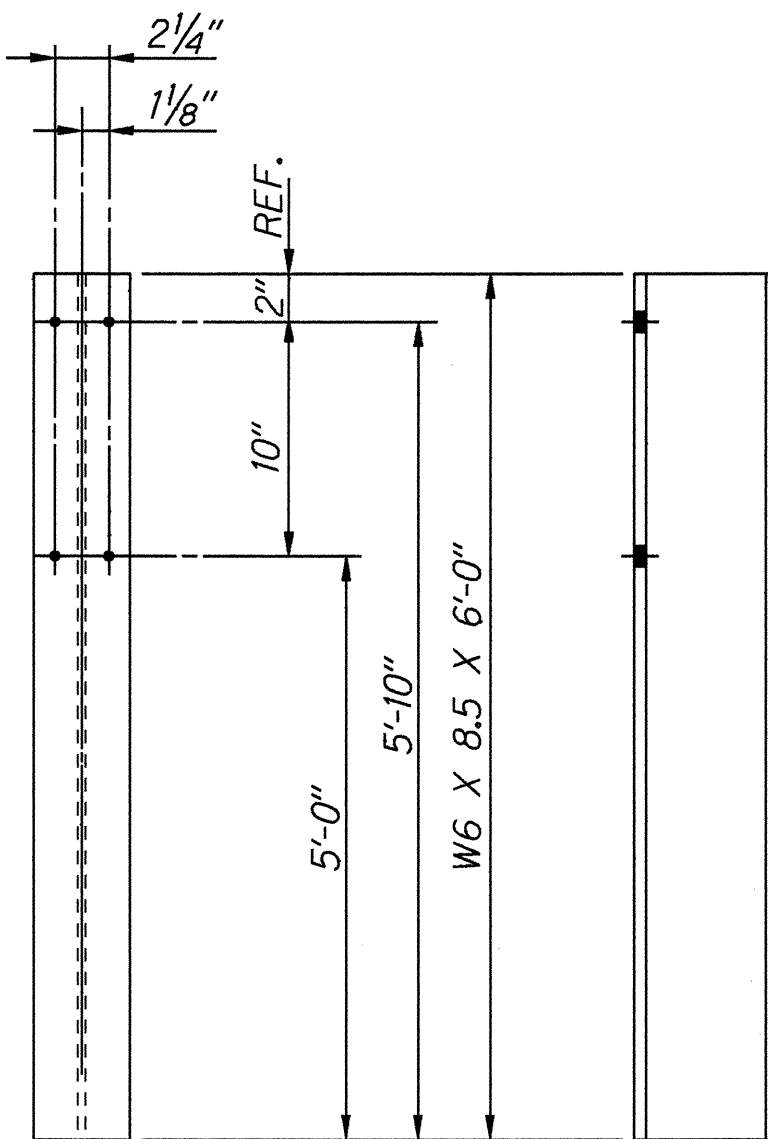
4 - WOOD POST - DI



2 - WOOD POST - EI

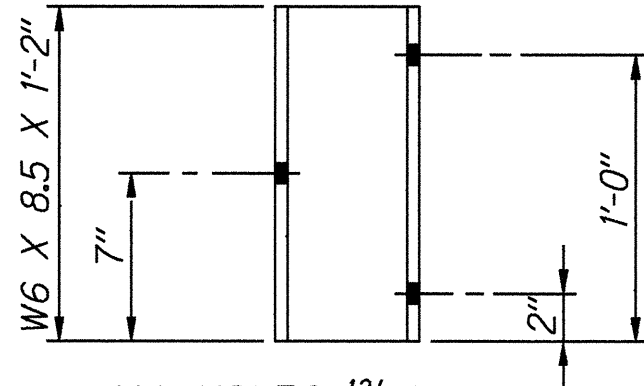


5 - WOOD BLOCK - GI



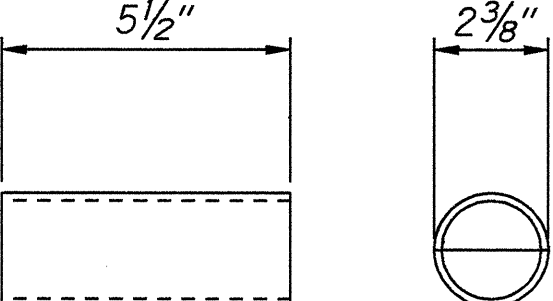
ALL HOLES 1 3/16" (4) REQUIRED

ONE - POST - HI

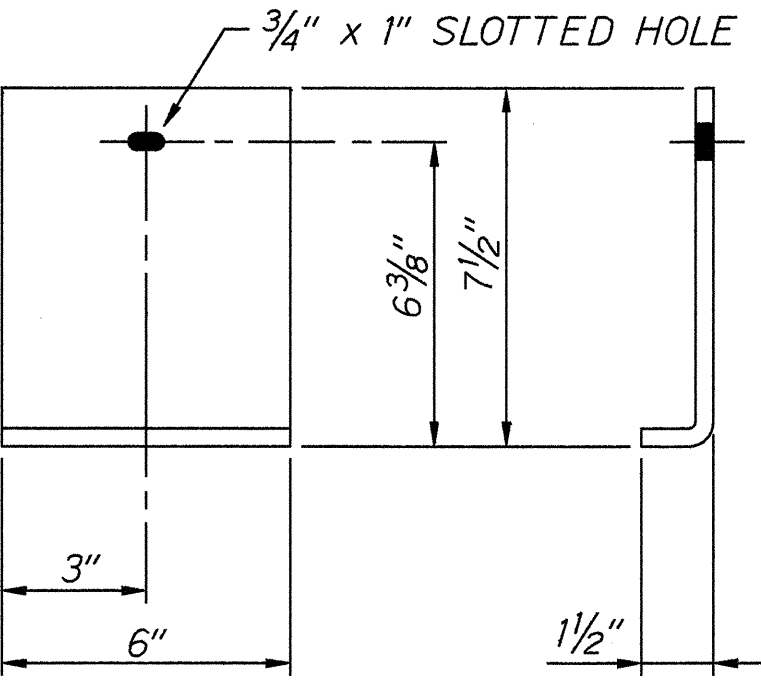


ALL HOLES 1 3/16" (6) REQD. @ 2 1/4" GA

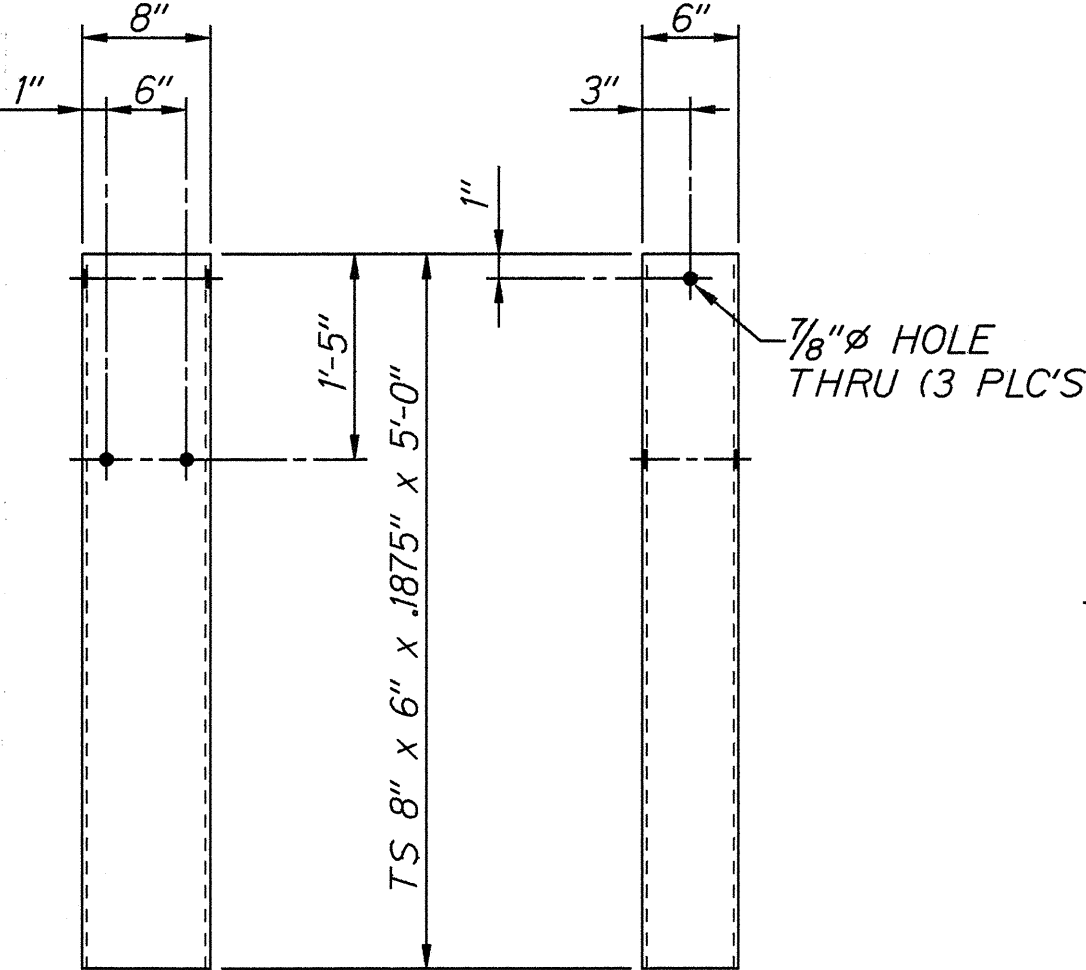
ONE - BLOCK - JI



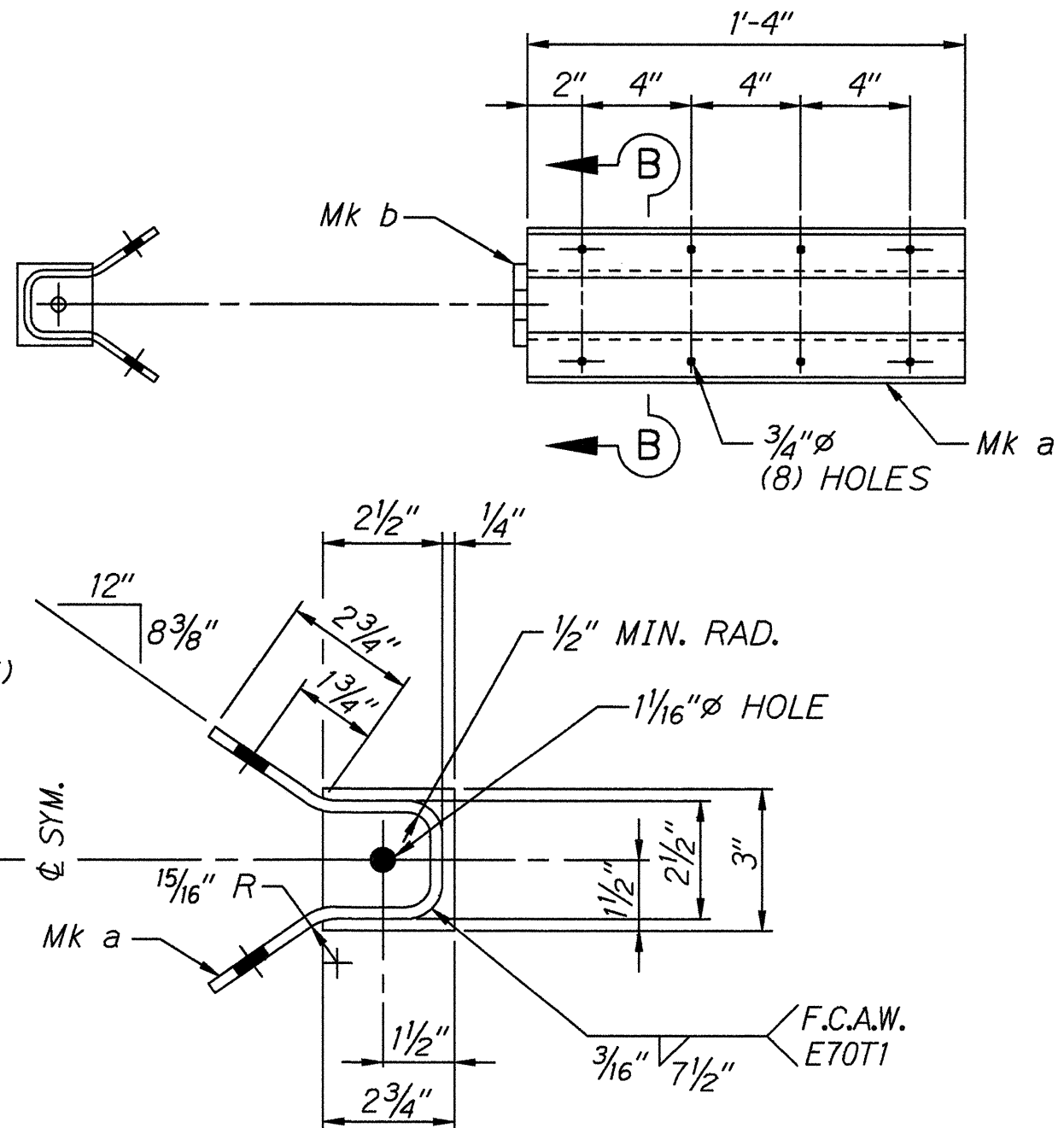
ONE - PIPE SPACER - RI



ONE - SHELF ANGLE - TI

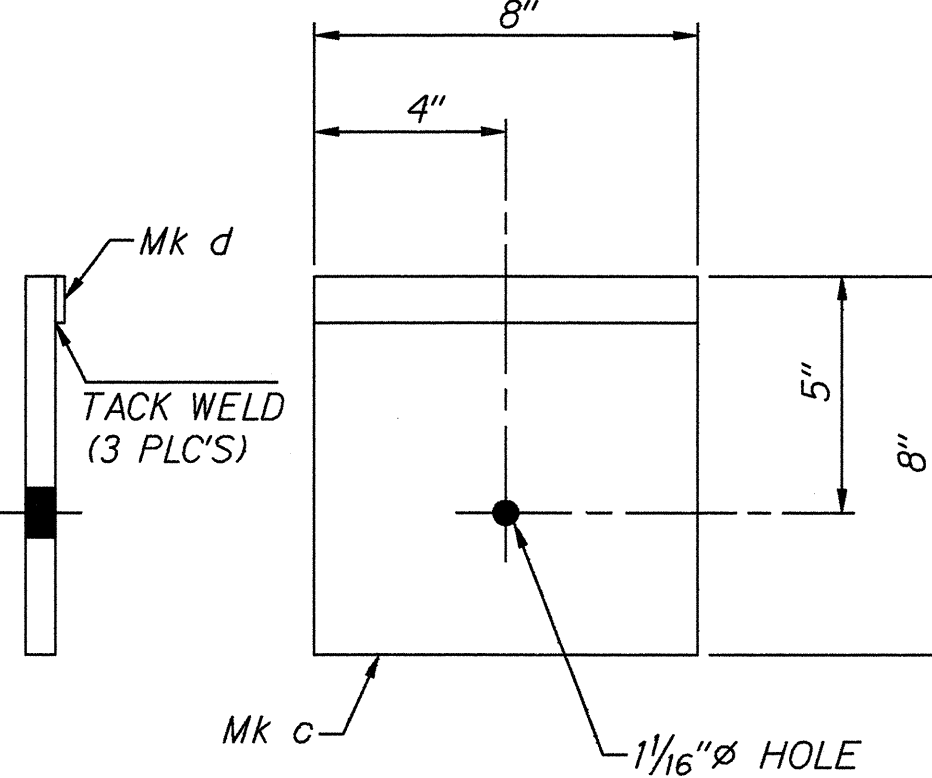


2 - SOIL TUBE - KI

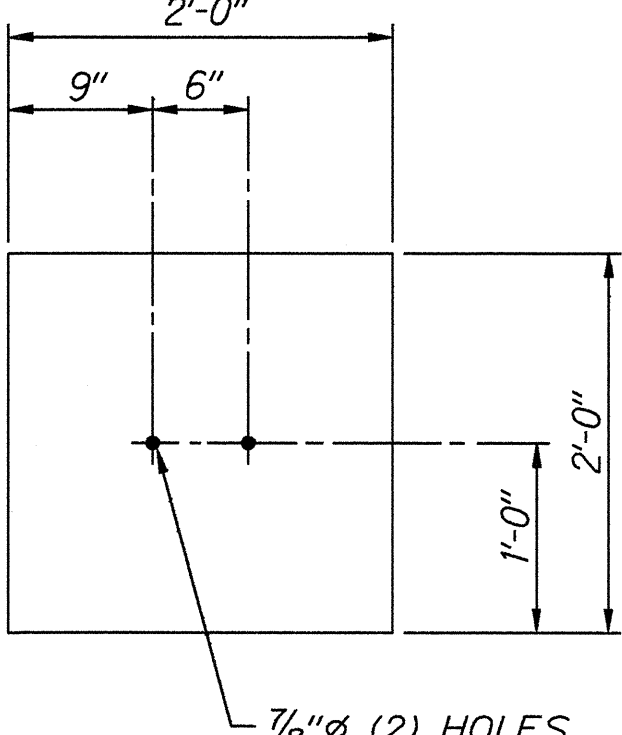


SECTION B - B

ONE - CABLE ANCHOR BRACKET - LI



ONE - BEARING PLATE - MI



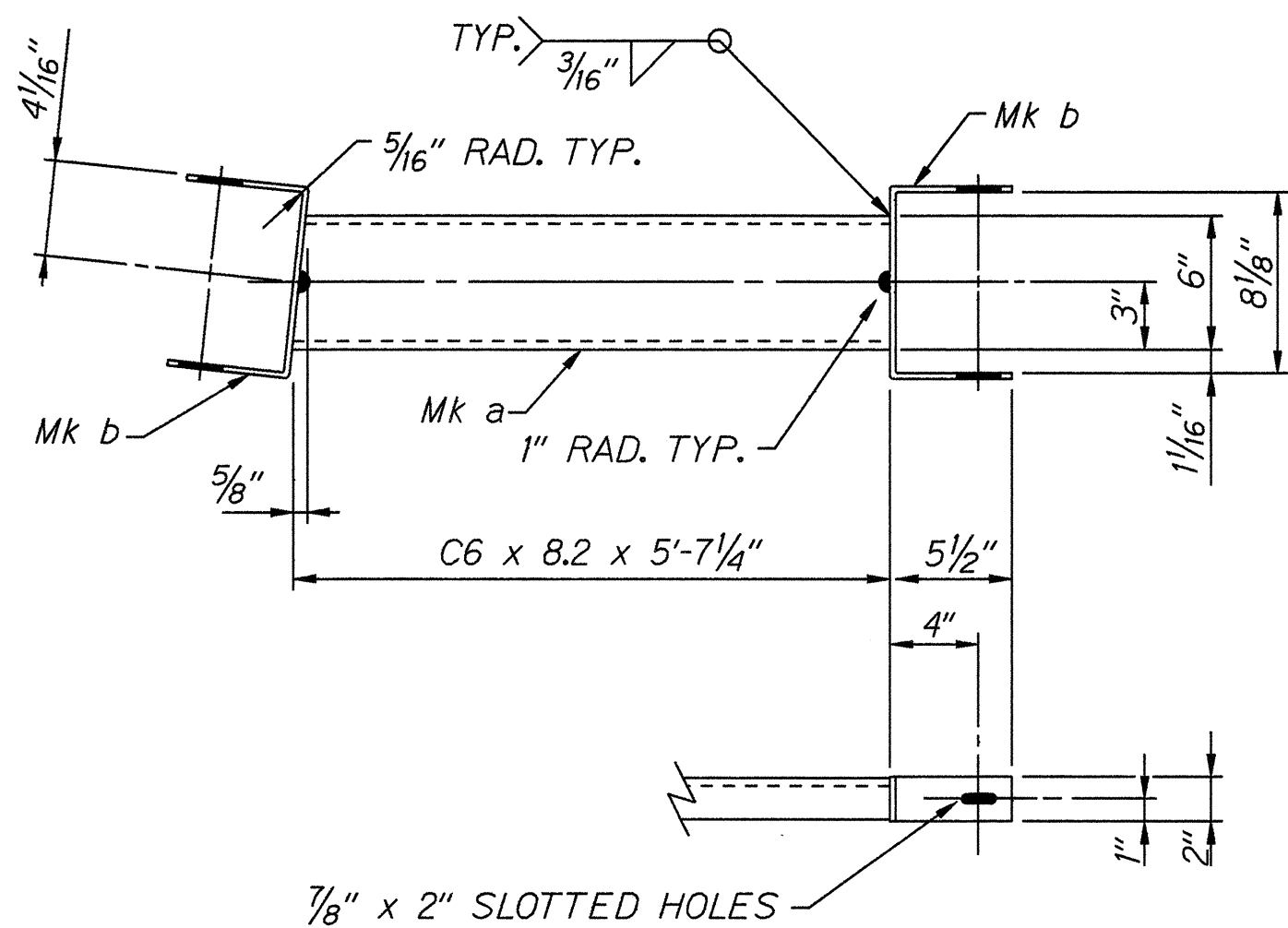
2 - SOIL PLATE - SI

|               |                   |            |
|---------------|-------------------|------------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE       |
| NOTE BOOK     | DRAWN BY          | APRIL 1995 |
| 10/16/95 greg | DESIGNED BY       |            |
| 24/04/2001    | QUANTITIES BY     |            |
|               | CHECKED BY        |            |

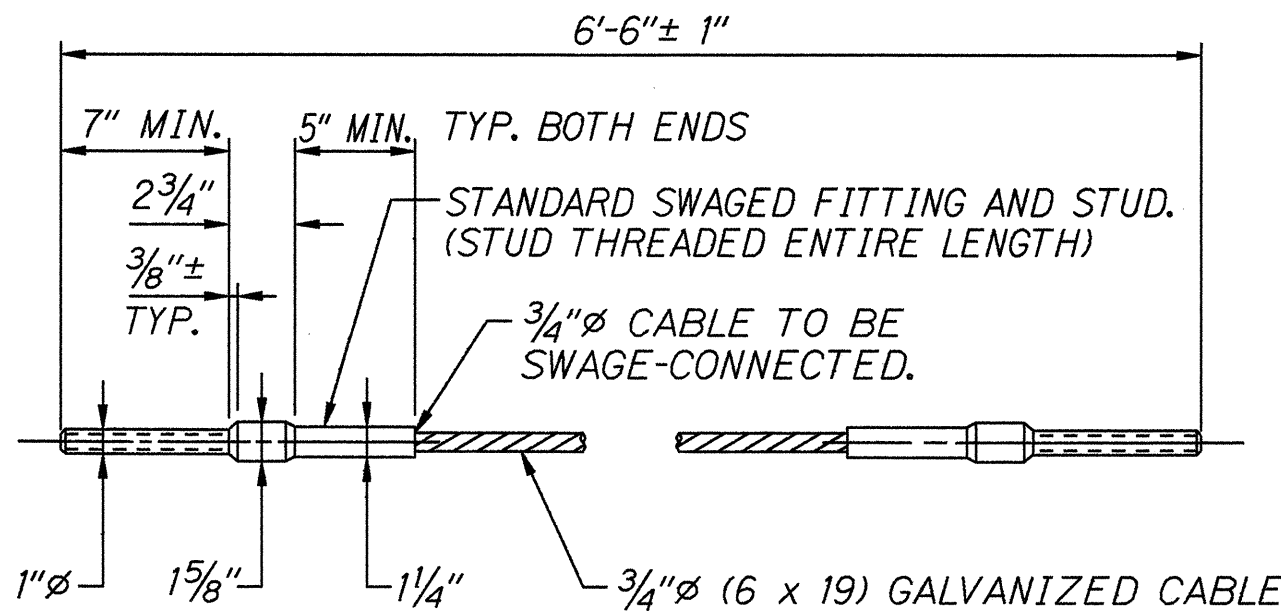
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**MODIFIED ECCENTRIC LOADER  
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Manele Bay Hotel to Manele Bay  
Project No. STP-0440(6)  
Not to Scale  
Date: Feb., 1995

SHEET No. 2 OF 3 SHEETS



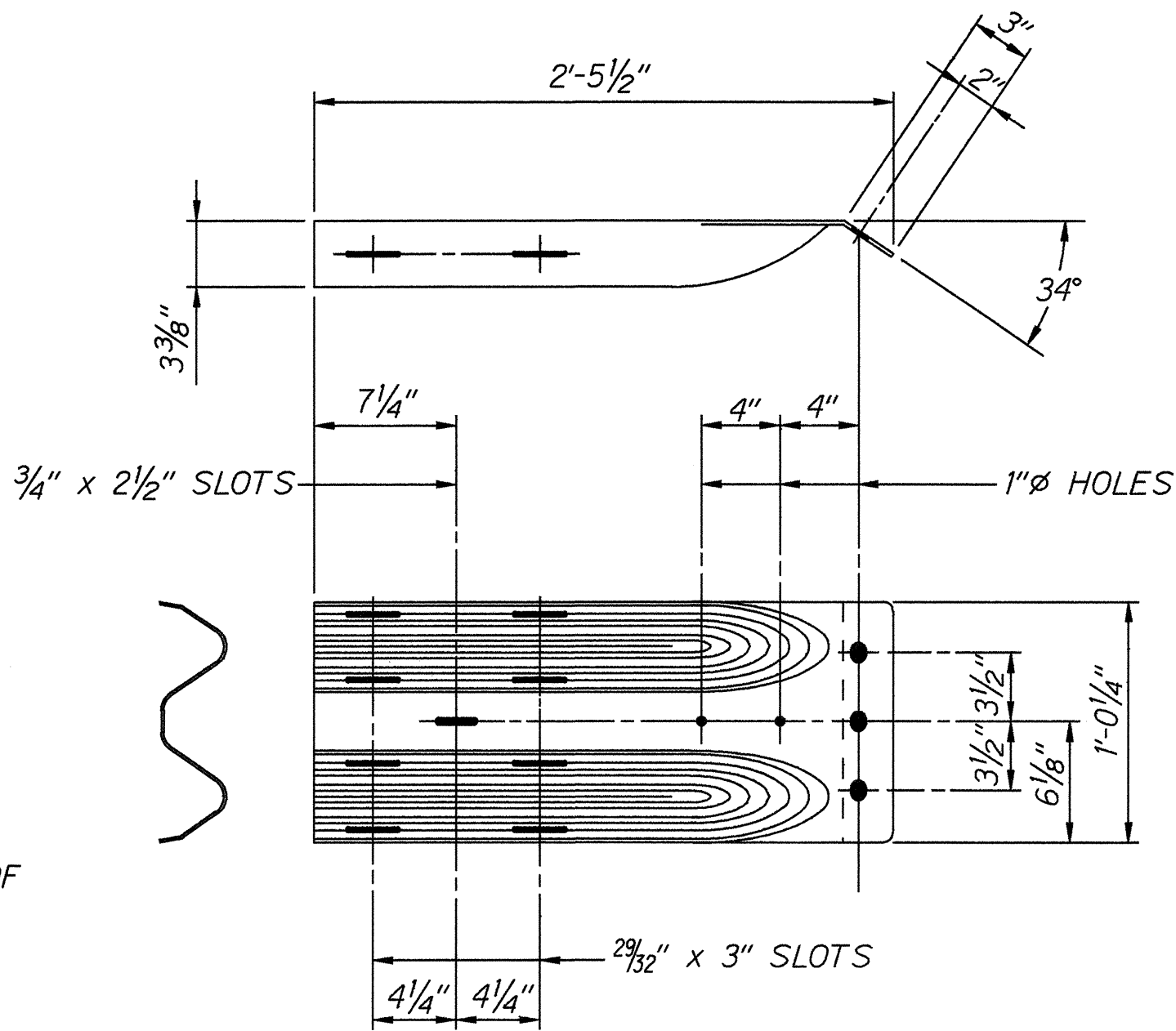


ONE - STRUT AND YOKE ASSEMBLY - A2

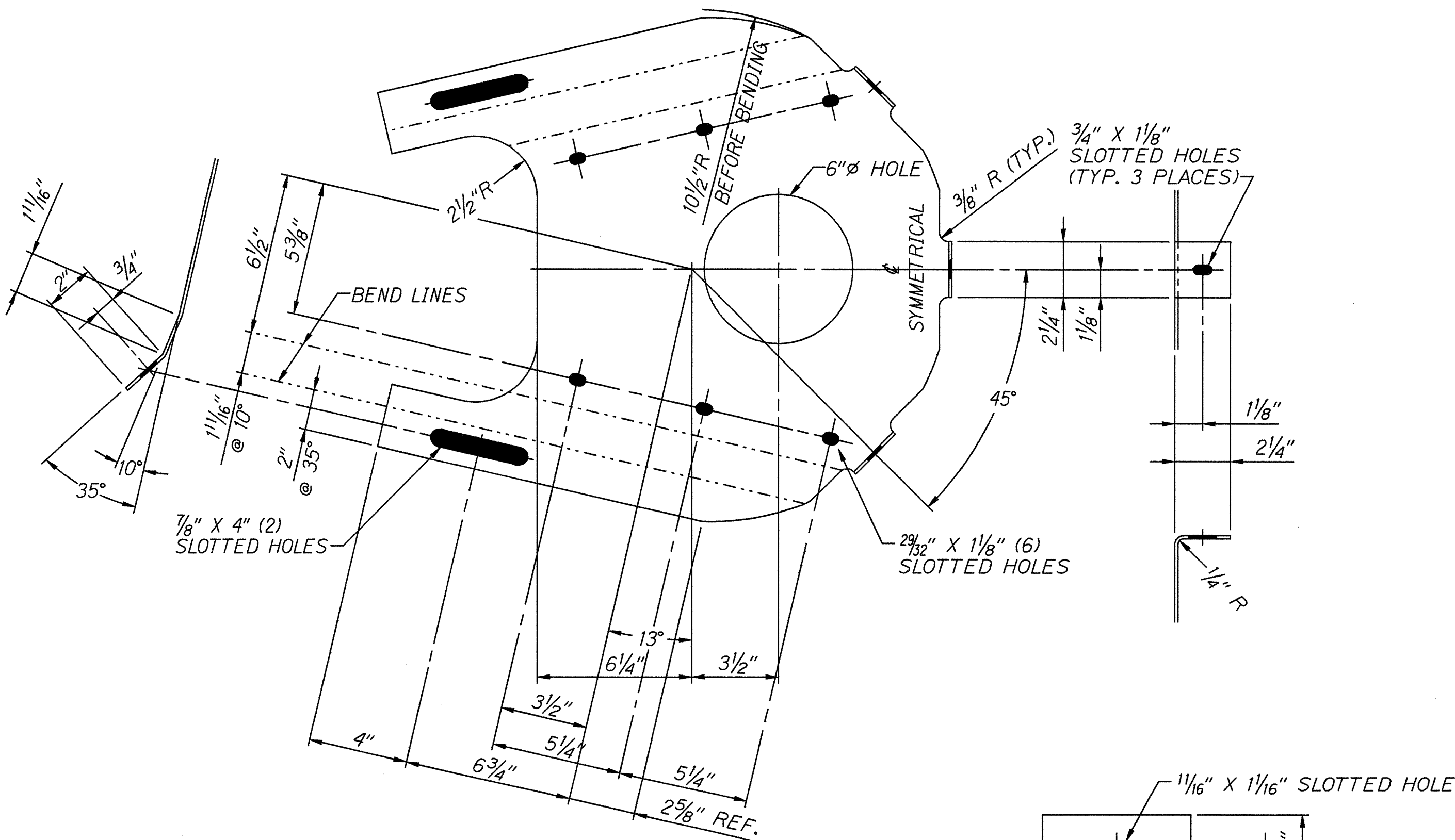


NOTES:  
THE STUD SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A449 AND SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A153. THE THREADS SHALL HAVE A CLASS 2A FIT BEFORE GALVANIZING.  
WIRE ROPE SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. M-30 AND SHALL BE 3/4-INCH PREFORMED, 6 x 19, WIRE STRAND CORE OR INDEPENDENT WIRE ROPE CORE (IWRC), GALVANIZED, RIGHT REGULAR LAY, MANUFACTURED OF IMPROVED FLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 46,000 POUNDS.  
THE SWAGED FITTING, STUD, AND NUT SHALL DEVELOP THE BREAKING STRENGTH OF THE WIRE ROPE.

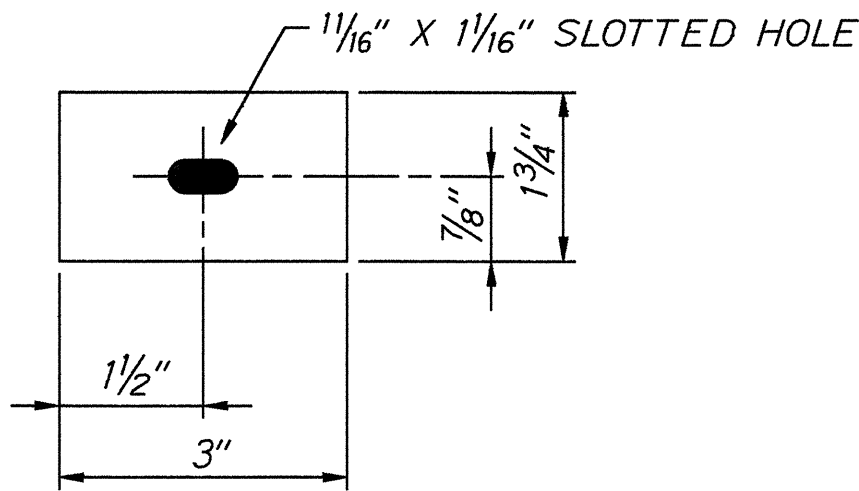
ONE - CABLE ASSEMBLY - B2



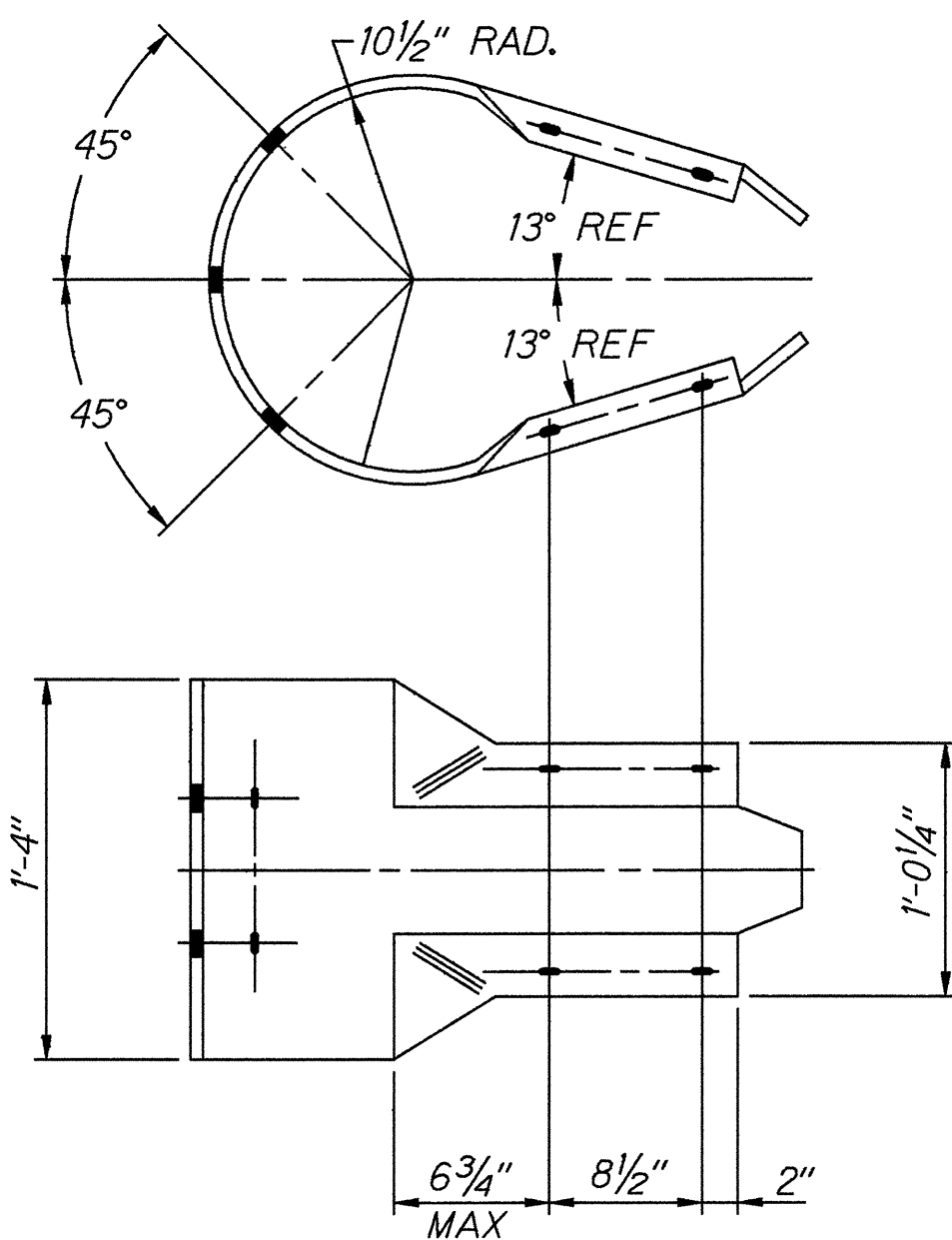
ONE - END SHOE - C2



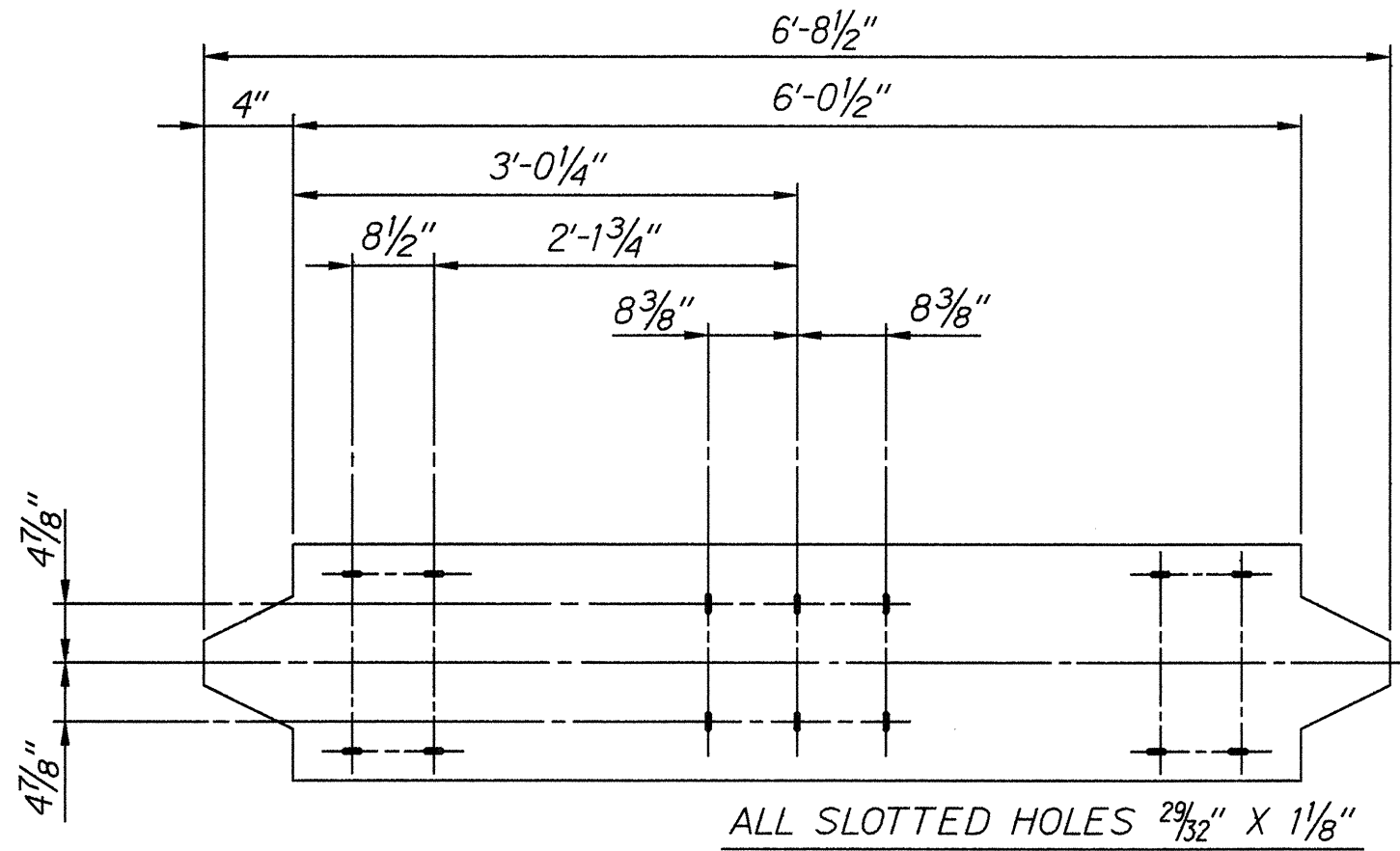
2 - DIAPHRAGM PLATE - D2



2 - WASHERS, PLATE - G2



ONE - BUFFERED END SECTION - E2



BUFFERED END SECTION, FLAT PLATE LAYOUT

| MATERIAL SCHEDULE |            |                         |        |        |        |             |            |
|-------------------|------------|-------------------------|--------|--------|--------|-------------|------------|
| FIND No.          | PIECE MARK | MATERIAL                | LENGTH |        | WEIGHT | UNIT WEIGHT | REMARKS    |
|                   |            |                         | FEET   | INCHES |        |             |            |
| A2                |            | STRUT AND YOKE ASSEMBLY |        |        |        | 52.0        | A123       |
|                   | a          | C6 X 8.2                | 5      | 7¼     | 46.0   |             | A36        |
|                   | b          | BAR 2 X 3⁄₁₆            | 1      | 6¾     | 4.0    |             | A36        |
| B2                |            | CABLE ASSEMBLY          |        |        |        | 9.6         | SEE NOTES  |
|                   |            | ¾"Ø CABLE ASSEMBLY      | 6      | 6      |        |             | SEE DETAIL |
| C2                |            | END SHOE                |        |        |        | 23.1        | A123       |
|                   |            | PL 10 GA. X 19⁄₈        | 2      | 6      | 21.9   |             | M180       |
| D2                |            | DIAPHRAGM PLATE         |        |        |        | 9.7         | A123       |
|                   |            | PL 12 GA. X 21          | 2      | 15⁄₈   | 32.6   |             | M180       |
| E2                |            | BUFFERED END SECTION    |        |        |        | 37.5        | A123       |
|                   |            | PL 12 GA. X 16          | 6      | 8½     | 39.0   |             | M180       |
| G2                |            | WASHER, PLATE           |        |        |        | .22         | A123       |
|                   |            | PL 3⁄₁₆ X 1¾            | 0      | 3      | .56    |             | A36        |
|                   |            |                         |        |        |        |             |            |
|                   |            |                         |        |        |        |             |            |
|                   |            | <u>H A R D W A R E</u>  |        |        |        |             |            |
| H2                |            | BOLT, SPLICE 5⁄₈Ø x 1¼  |        |        |        | 6.3         | A307 A153  |
| J2                |            | BOLT, POST 5⁄₈Ø X 2     |        |        |        | .44         | A307 A153  |
| K2                |            | BOLT, POST 5⁄₈Ø X 10    |        |        |        | .88         | A307 A153  |
| L2                |            | BOLT, POST 5⁄₈Ø X 18    |        |        |        | 7.75        | A307 A153  |
| M2                |            | BOLT, HEX 5⁄₈Ø X 1½     |        |        |        | 2.04        | A307 A153  |
| N2                |            | BOLT, HEX ¾Ø X 7½       |        |        |        | 4.2         | A307 A153  |
| R2                |            | BOLT, HEX ¾Ø X 10       |        |        |        | 2.66        | A307 A153  |
| S2                |            | NUT, HEX, RECESSED 5⁄₈Ø |        |        |        | 7.31        | A563 A153  |
| T2                |            | NUT, HEX 5⁄₈Ø           |        |        |        | 1.3         | A563 A153  |
| U2                |            | NUT, HEX ¾Ø             |        |        |        | .72         | A563 A153  |
| W2                |            | NUT, HEX 1Ø             |        |        |        | .57         | A563 A153  |
| X2                |            | WASHER, FLAT 5⁄₈Ø       |        |        |        | .75         | F844 A123  |
| Y2                |            | WASHER, FLAT ¾Ø         |        |        |        | .95         | F844 A123  |
| Z2                |            | WASHER, FLAT 1Ø         |        |        |        | .29         | F844 A123  |

|               |                   |            |
|---------------|-------------------|------------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE       |
| NOTE BOOK     | DRAWN BY          | APRIL 1995 |
| log/rb greg   | DESIGNED BY       |            |
| shimada       | QUANTITIES BY     |            |
|               | CHECKED BY        |            |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
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M.P. 5.0 to End of Lanai City Spur and  
MANELE ROAD RESURFACING  
Manele Bay Hotel to Manele Bay  
Project No. STP-0440(6)  
Not to Scale Date: Feb., 1995  
SHEET No. 3 OF 3 SHEETS