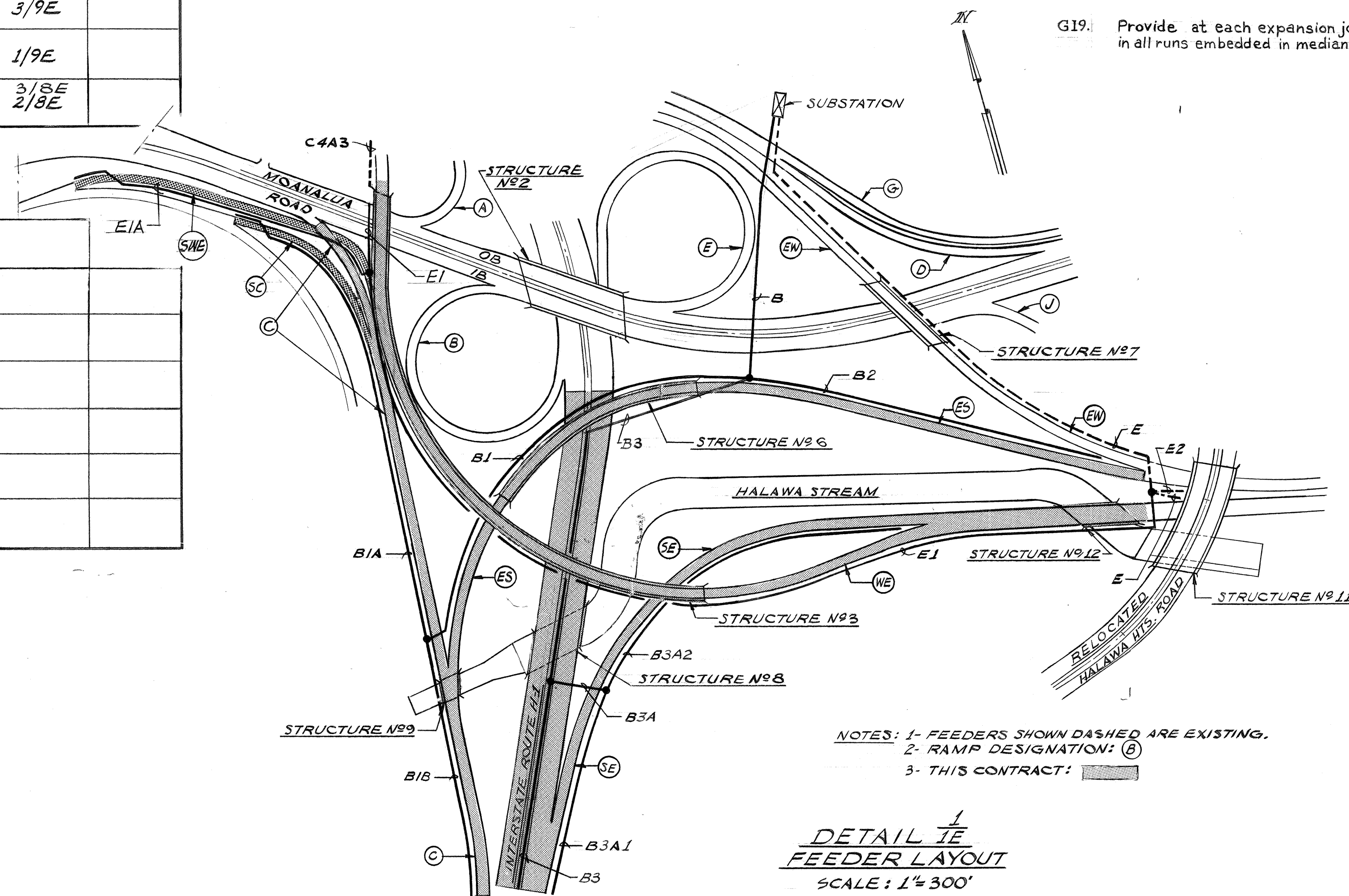


PLAN LEGEND			
SYMBOL	REPRESENTS	DETAIL Nº	NOTE Nº
C-1 C-A	LTG STD W/250 WATT LUMINAIRE & FND (LAMP # C1; FDR B1B, PHASES C&A; STA. 25+95)	1/7E 9/7E	G1
700W-	LTG STD W/700WATT LUMINAIRE & FND.	1/7E 9/7E	G1
700W-	LTG STD W/TWO 700WATT LUMINAIRES & FND.	1/7E 1/10E	G1
250W-	LTG STD W/250 WATT LUMINAIRE & ANCHORAGE	1/7E 2/8E	
- C-A	ILLUMINATED SIGN CONNECTED TO PHASES C&A OF THE INDICATED CIRCUIT	8/7E	
	CONDUIT RUN IN CONCRETE STRUCTURE OR ENCASED IN CONCRETE	7/7E	G4, G5, G8
	CONDUIT RUN IN EARTH WITHOUT ENCASEMENT		G3, G8
	CARPED CONDUIT OR CONDUIT TRANSITION AS PLAN INDICATES	6/7E	
	CONDUIT TURNING DOWN		
	CONDUIT TURNING UP		
	PULL BOX TYPE A	1/9E 2/9E	
	PULL BOX TYPE B	3/9E	
	PULL BOX TYPE S	1/9E	
M	METAL PULL BOX	3/8E 2/8E	
	RETAIN EXISTING LUMINAIRE ON METAL STANDARD		
(E)	USED IN CONJUNCTION WITH OTHER SYMBOLS TO INDICATE EXISTING CONSTRUCTION.		



- G1. The indicated locations of lighting standards, conduit and other electrical components may be adjusted as field conditions necessitate.
- G2. Conduit one-inch and smaller shall be RGS or where noted RAL.
- G3. Conduit run in non-paved areas shall be NMC, directly buried.
- G4. Conduit run under roadway shall be PVC or RGS, encased.
- G5. Conduit run in median barrier or other structure shall be NMC unless otherwise noted. See Note G19.
- G6. Provide a conduit expansion/deflection fitting at beginning and end of bridge in runs crossing bridges. See details 4/7E and 5/7E.
- G7. As indicated on plan sheets, all three phase legs shall be run to the indicated pull point to enable future extension.
- G8. Underground lighting feeders shall be run in two-inch conduit except as Note G15 provides.
- G9. None
- G10. At locations indicated connect to existing conductors.
- G11. At locations indicated, connect to existing capped conduit and extend as shown.
- G12. None
- G13. None
- G14. None
- G15. Branch taps to sign lighting systems shall be one-inch RGS concrete encased.
- G16. Connect existing wiring from lighting standard left pigtailed in the indicated pull box to the designated feeder.
- G17. None
- G18. None
- G19. Provide at each expansion joint a conduit expansion/deflection fitting in all runs embedded in median barrier. See Details 4/7E and 5/7E.

1 — Detail (or Note) numbering
2E — Sheet No. on which Detail (or Note) appears

12/14/71

ELECTRICAL SHEET 1E

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN SYMBOLS AND NOTES

HALAWA INTERCHANGE
PROJECT NO. I-HI-1(91) :13

SHEET No. 1E OF 12E SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY _____	DATE _____
NOTE BOOK	DRAWN BY _____	" _____
	TRACED BY _____	" _____
	DESIGNED BY _____	" _____
	QUANTITIES BY _____	" _____
No. _____	CHECKED BY _____	" _____

PRINTED ON NO. 1000H CLEARPRINT

NOTE:
I PROVIDE CONDUIT COUPLING FLUSH
WITH FACE OF BARRIER AND PLUG.

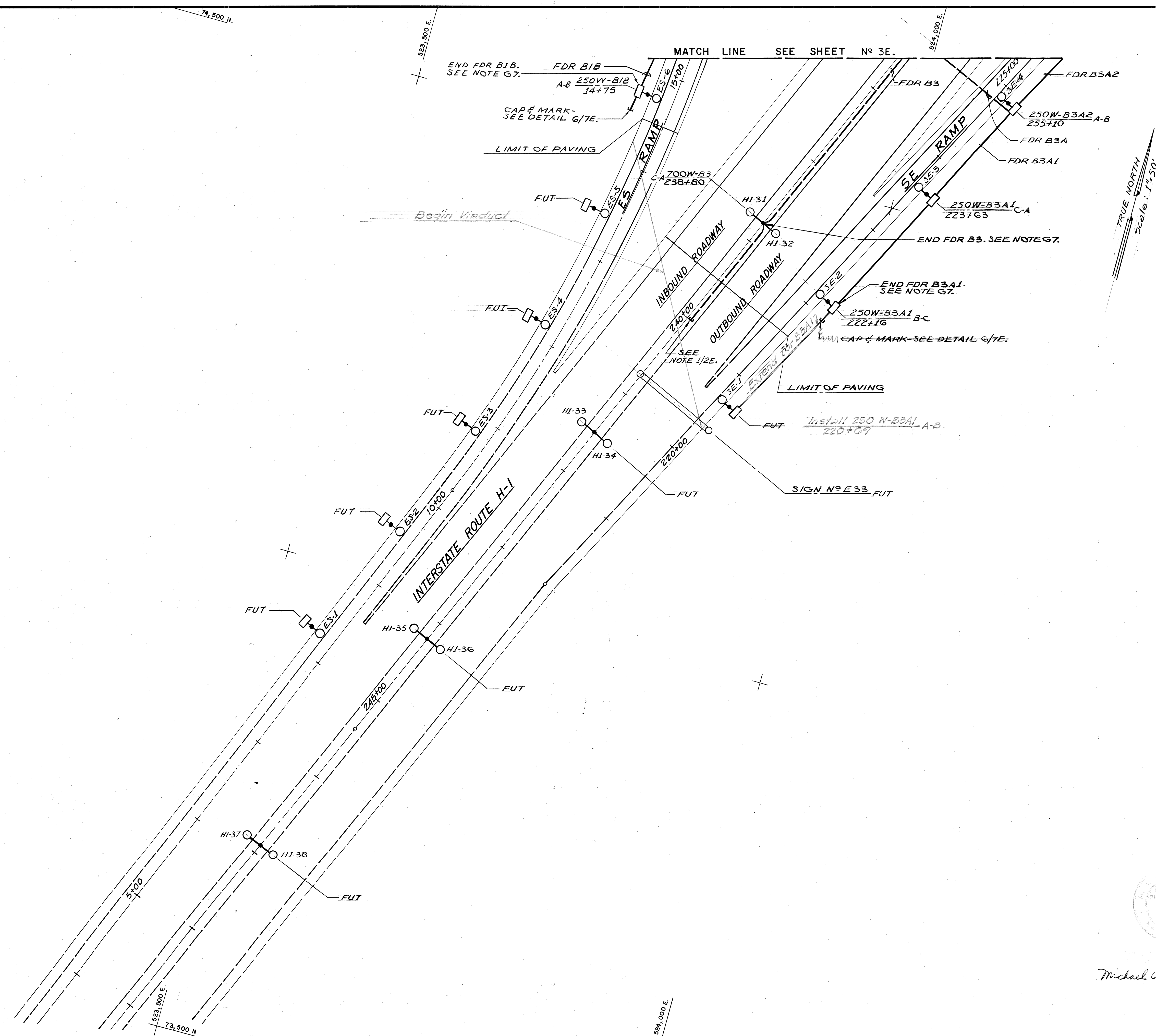
ELECTRICAL SHEET 2E

LIGHTING PLAN

PART I

SHEET No. 2E OF 12E SHEETS

91



NOTE:
1. PROVIDE CONTINUOUS #6 GND WIRE
BETWEEN LTG STDs FOR LUMINAIRES
WE 11 AND #WE24 AND BOND ALL
LTG STDs ON STRUCTURE AND SIGN
E30 POST TO IT.

3 PROVIDE CONTINUOUS #6 GND WIRE
BETWEEN LTG STDs FOR LUMINAIRES
#E3-12 AND #E3-19 AND BOND ALL
LTG STD ON STRUCTURE TO IT.



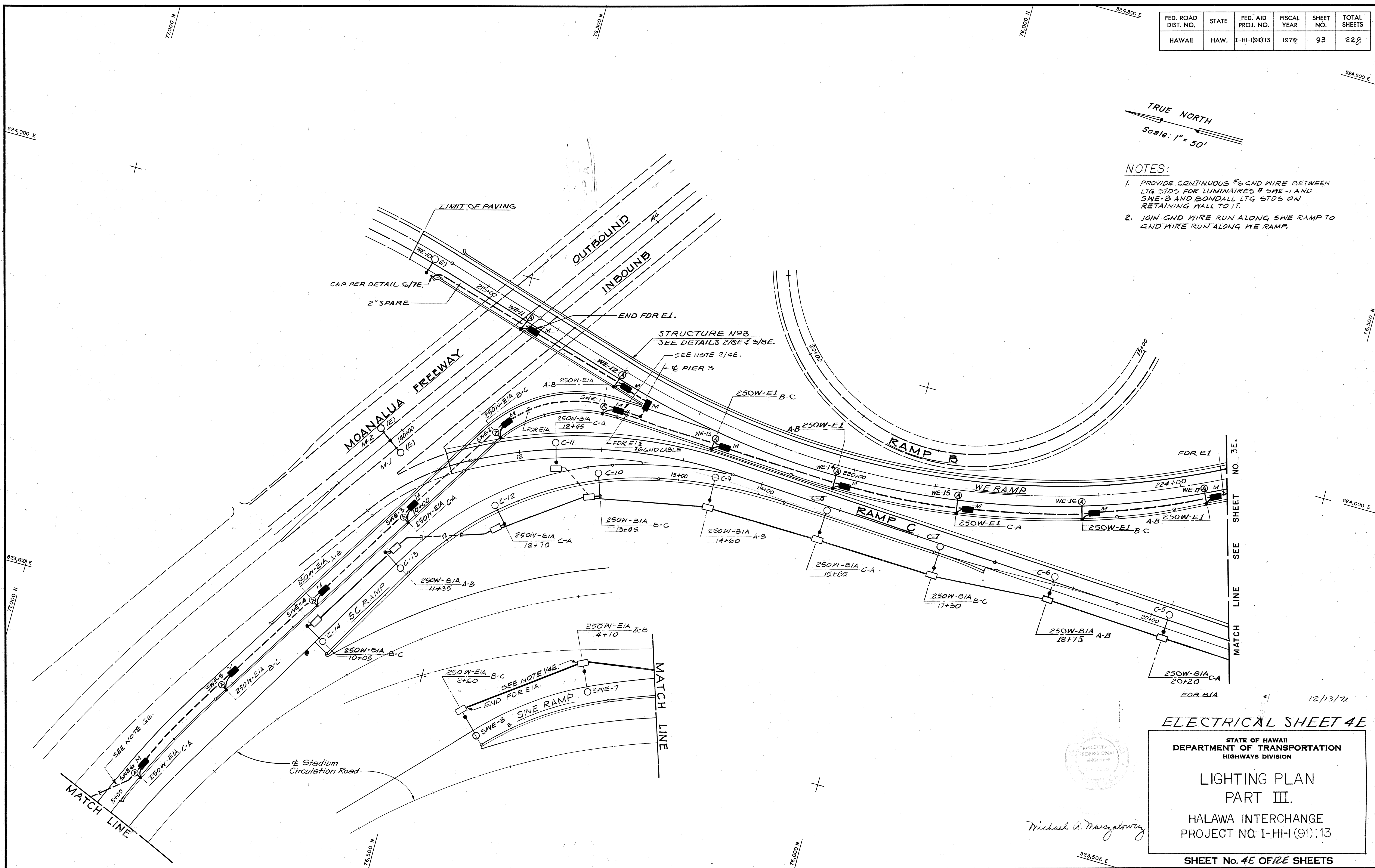
ORIGINAL PLAN	SURVEY PLOTTED BY _____ DATE: _____
NOTE BOOK	DRAWN BY _____
	TRACED BY _____
	DESIGNED BY _____
	QUANTITIES BY _____
	CHECKED BY _____
No. _____	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-(91)13	1972	93	220

TRUE NORTH
Scale: 1" = 50'

- NOTES:
1. PROVIDE CONTINUOUS #6 GND WIRE BETWEEN LTG STDs FOR LUMINAIRES & SWE-1 AND SWE-8 AND BONDALL LTG STDs ON RETAINING WALL TO IT.
 2. JOIN GND WIRE RUN ALONG SWE RAMP TO GND WIRE RUN ALONG WE RAMP.

ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
CHECKED BY	
NO.	



Michael A. Marzabovitz

ELECTRICAL SHEET 4E

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LIGHTING PLAN
PART III.

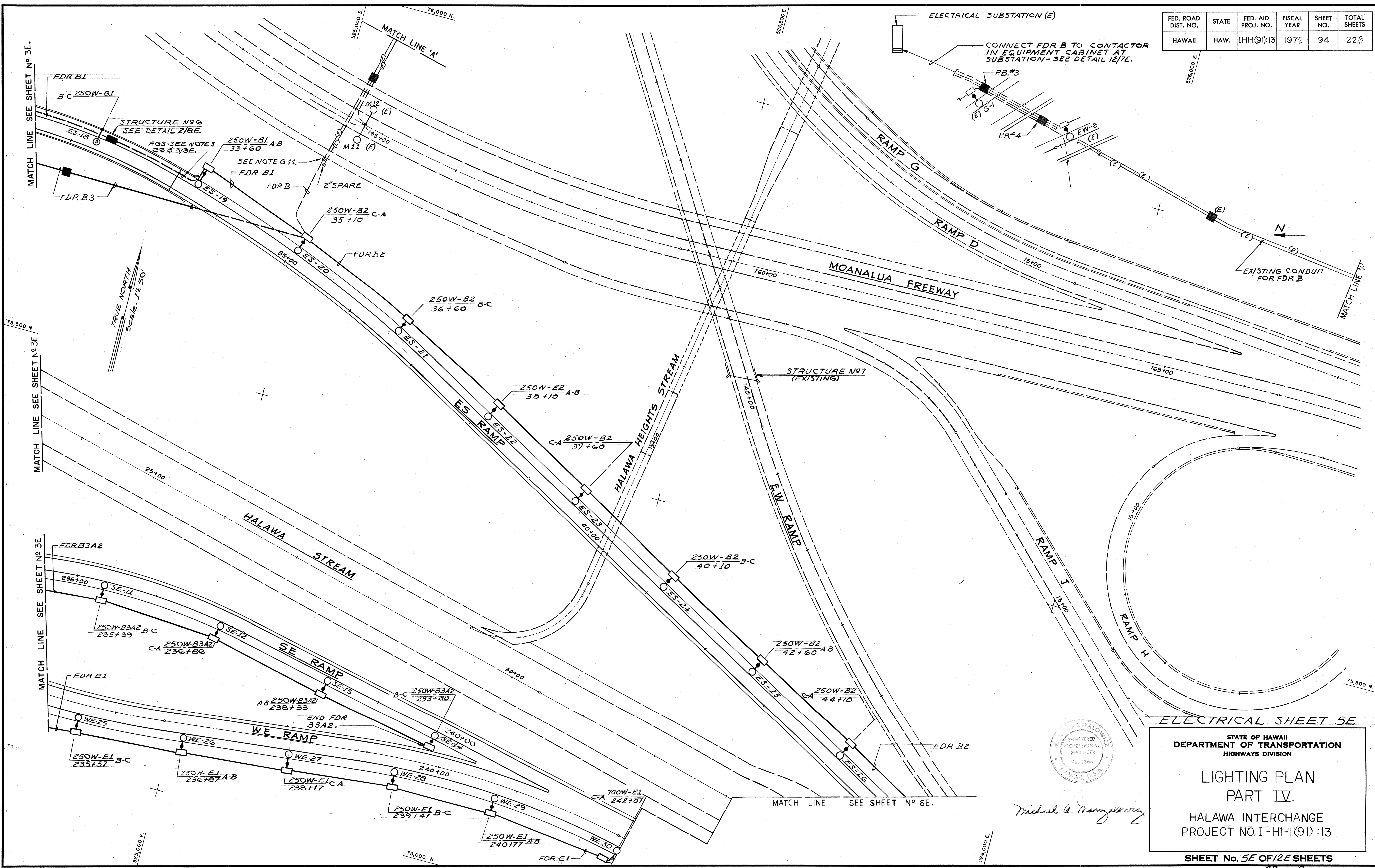
HALAWA INTERCHANGE
PROJECT NO. I-HI-1 (91)13

SHEET No. 4E OF 12E SHEETS

12/13/71

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IHH(9)13	1972	94	228

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
TRACED BY	_____
NOTED BY	_____
CHECKED BY	_____
NO.	_____



Michael A. Mangalosing

ELECTRICAL SHEET 5E

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

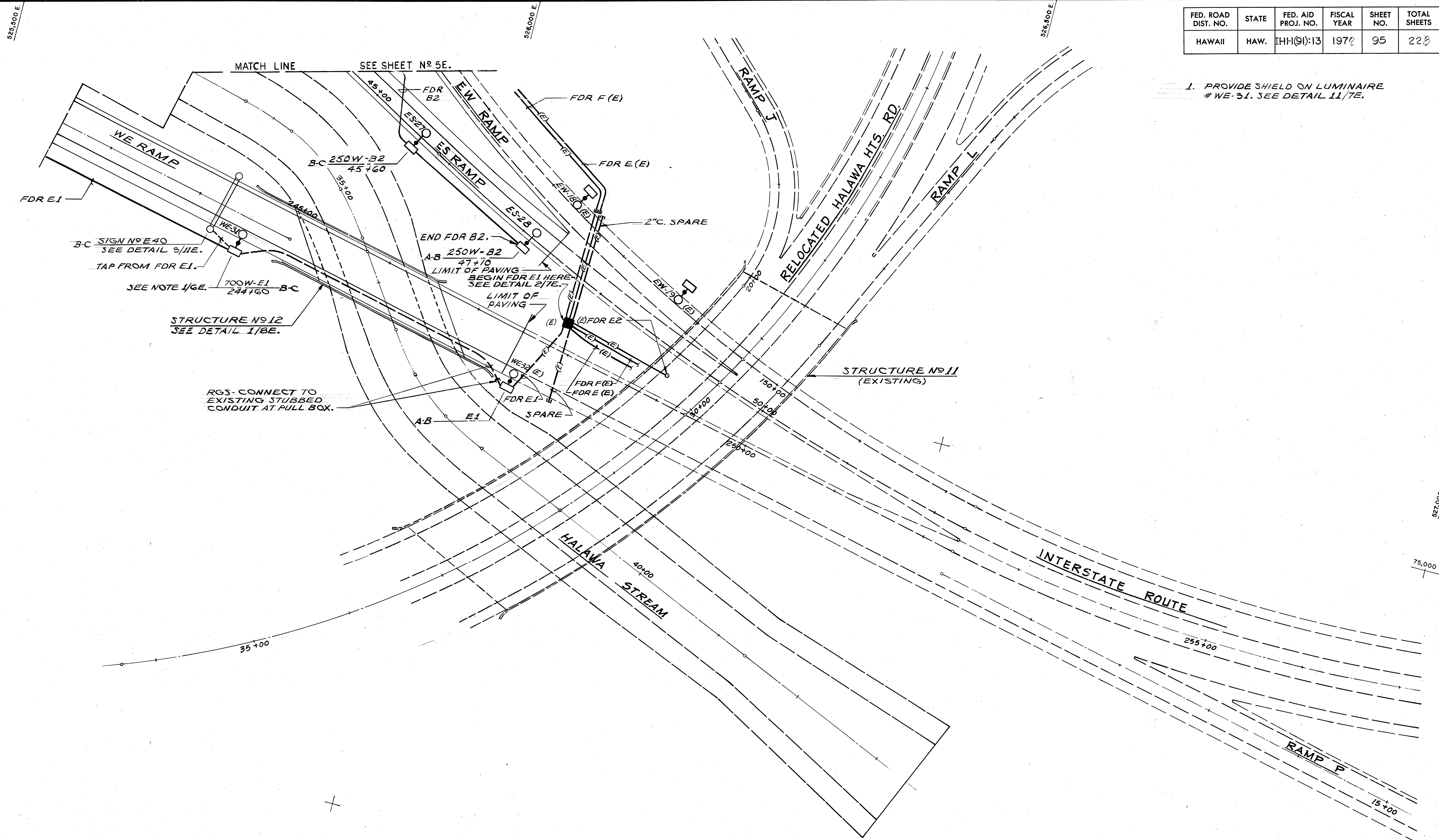
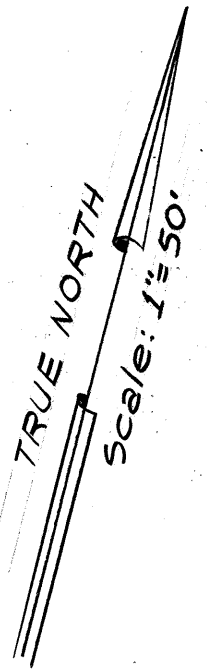
**LIGHTING PLAN
PART IV.**

HALAWA INTERCHANGE
PROJECT NO. I-HI-1(9)13

SHEET No. 5E OF 12E SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IHH(91):13	1972	95	228

1. PROVIDE SHIELD ON LUMINAIRE # WE-31. SEE DETAIL 11/7E.



ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

Michael A. Margulies

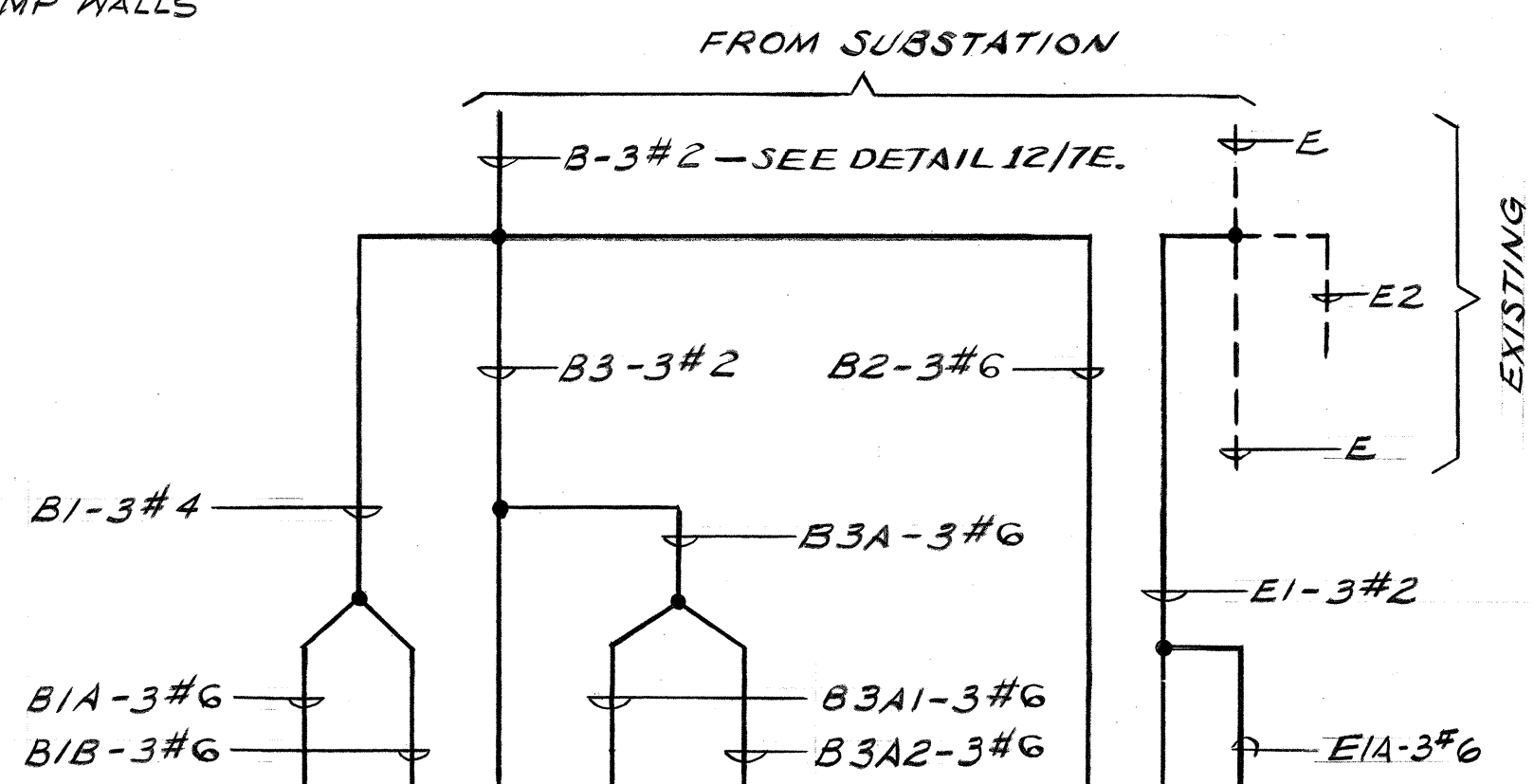
ELECTRICAL SHEET 6E

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**LIGHTING PLAN
PART V.**

HALAWA INTERCHANGE
PROJECT NO. I-HI-1(91):13

SHEET No. 6E OF 2E SHEETS



MIN. 2'0" FROM EDGE OF SHOULDER OR PULL BOX

6" IN GRADED AREAS. FLUSH IN PAVED AREAS

CAP

EMPTY CONDUIT

2" NON-METALLIC CONDUIT, CONCRETE FILLED

The image contains two technical drawings of a square foundation. The left drawing, labeled 'SECTION B-B REINFORCING PLAN', shows a square grid of reinforcement bars. It includes labels for '1 1/2" MIN. COVER (TYP)' at the corners, and dimensions 'a' and 'b' for the bar spacing. A list of specifications follows: 'ALL BARS # 4', '4 BARS "A" STRAIGHT', '5 BARS "B"', and '6 BARS "C"'. The right drawing, labeled 'SECTION A-A FOUNDATION PLAN', shows the foundation's cross-section with a central vertical line. It features labels for 'ANCHOR BOLT', 'GROUND ROD', 'PULL BOX & CONDUIT', and 'WEEP CHANNEL APPROXIMATELY 3/4" WIDE FULL HEIGHT OF CHAMFER'.

1 1/2" MIN. COVER (TYP)

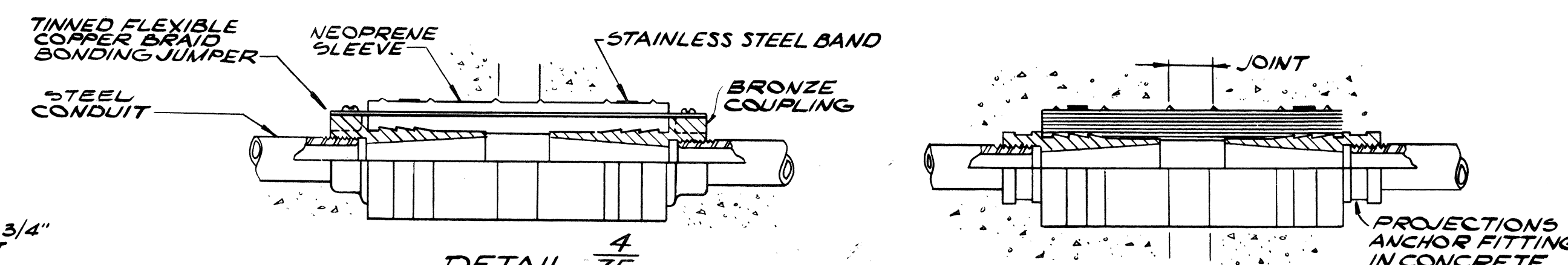
a b

ALL BARS # 4
 4 BARS "A" STRAIGHT
 5 BARS "B"
 6 BARS "C" — 8"

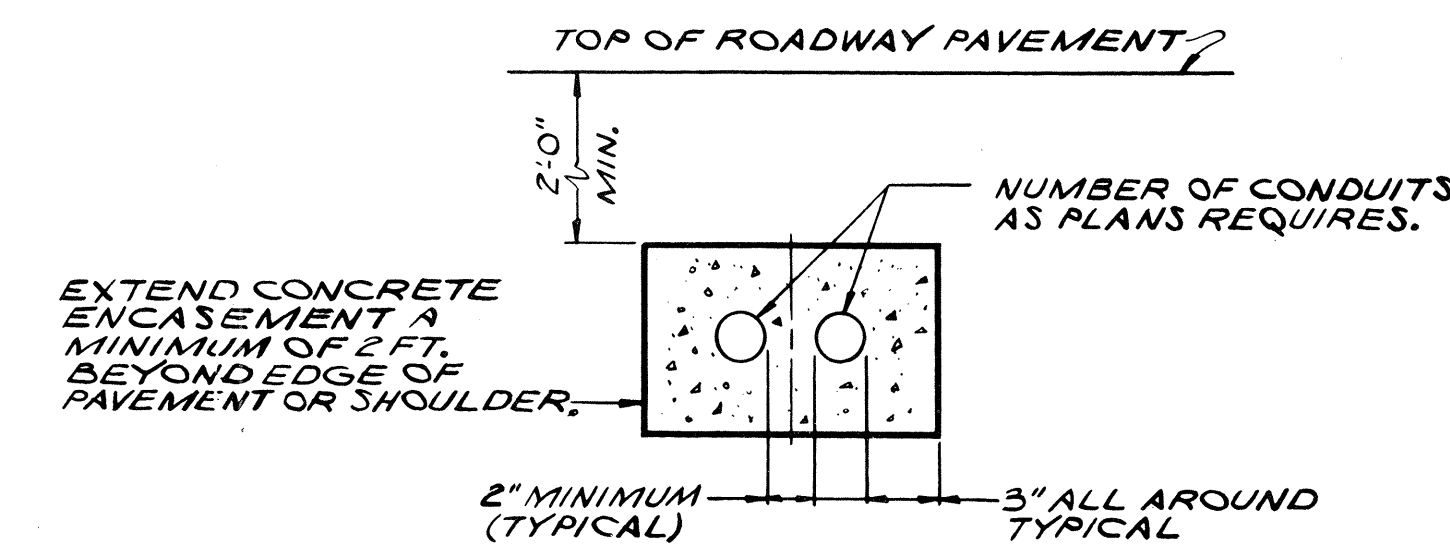
SECTION B-B
REINFORCING PLAN

ANCHOR BOLT
 GROUND ROD
 PULL BOX & CONDUIT
 WEEP CHANNEL APPROXIMATELY 3/4" WIDE FULL HEIGHT OF CHAMFER

SECTION A-A
FOUNDATION PLAN



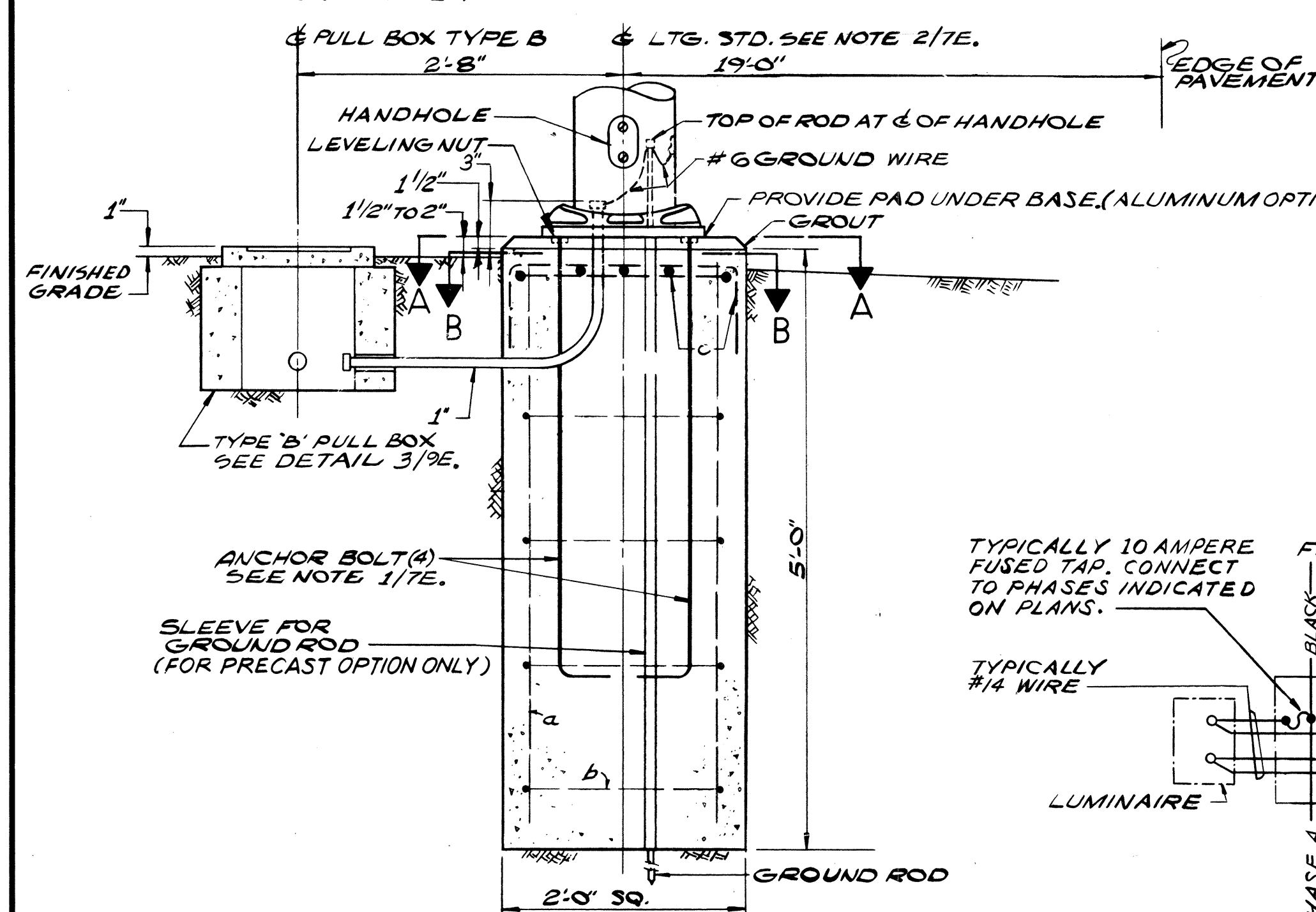
DETAIL 5
EXP/DEF. FITTING
NON-METAL CONDUIT
N.T.S.



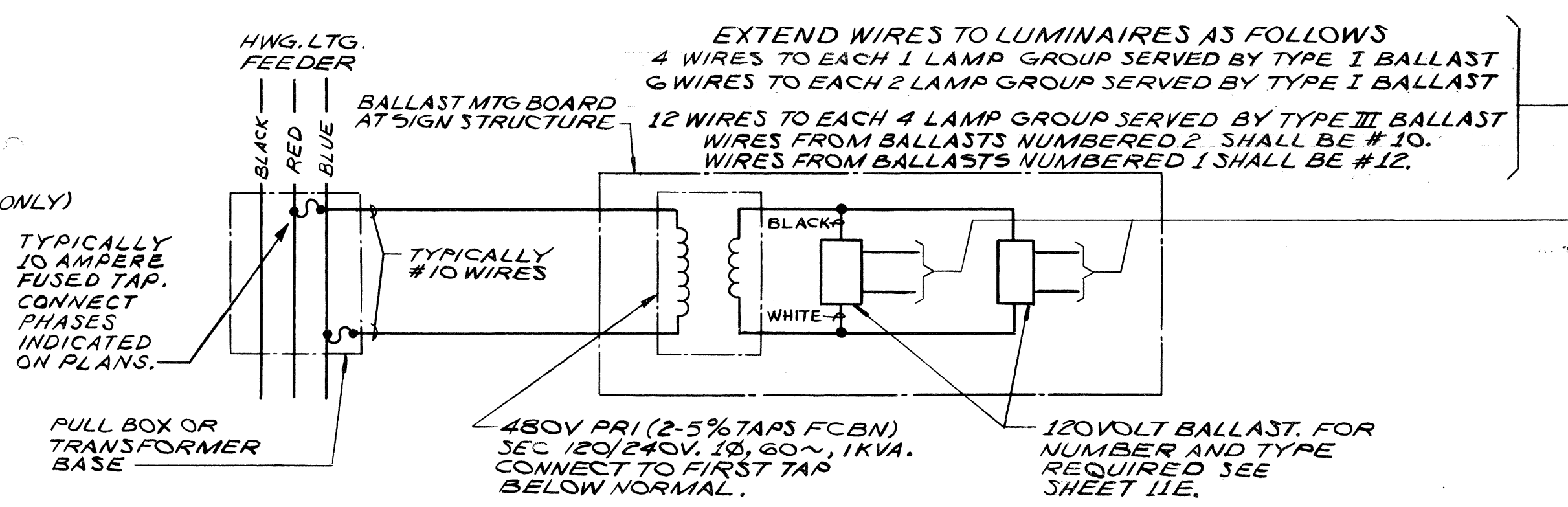
DETAIL 7E
N.T.S.

NOTE: EXCEPT THAT THE NUMBER OF CONDUITS RUNS & FEEDERS TO BE INSTALLED SHALL BE AS INDICATED ON PLAN SHEETS, THIS DETAIL IS TYPICAL FOR ALL HWY LTG SYSTEM CONDUITS UNDER ROADWAY.

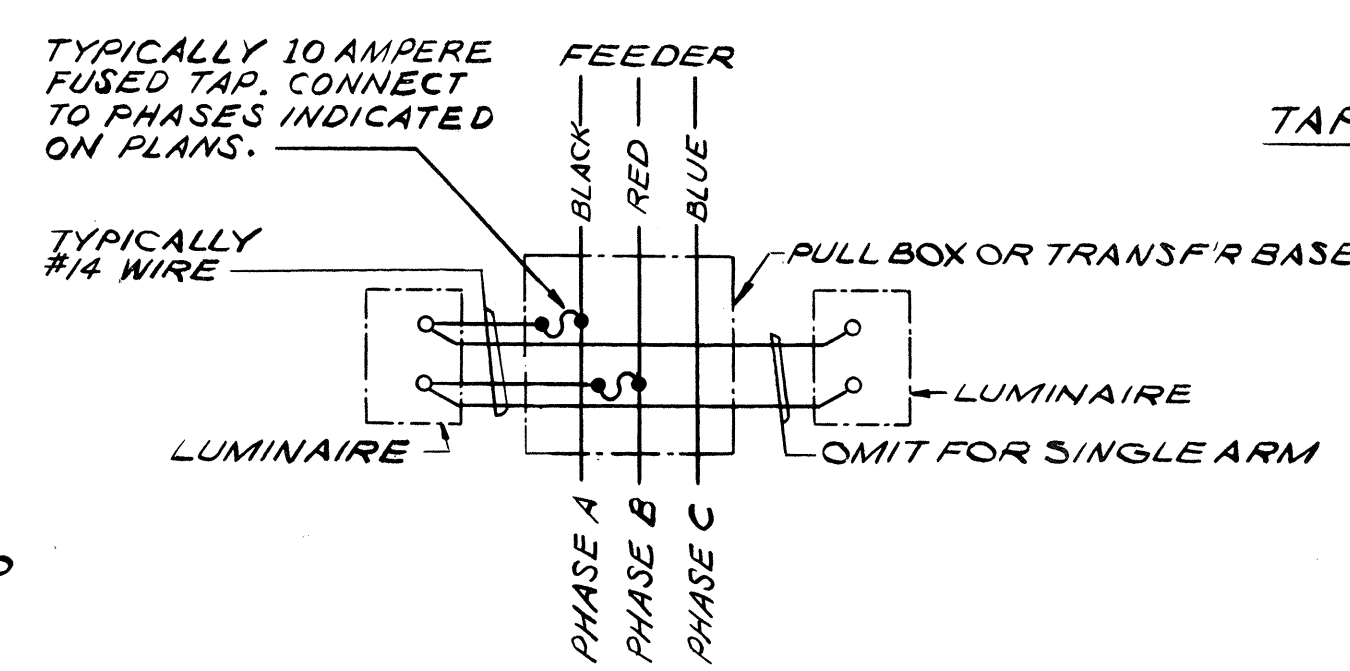
NOTES:
1- ANCHOR BOLT DIAMETER & LENGTH, LOCATION AND PROJECTION SHALL BE SUITED TO THE LIGHTING STANDARD APPROVED.
2- ALUMINUM LIGHTING STANDARD WITH SHOE BASE OPTION IS PICTURED. STEEL LIGHTING STANDARD WITH CAST ALUMINUM TRIMMER BASE OPTION NOT PICTURED BUT IS SIMILAR. FOUNDATION DETAILS APPLY TO BOTH OPTIONS.



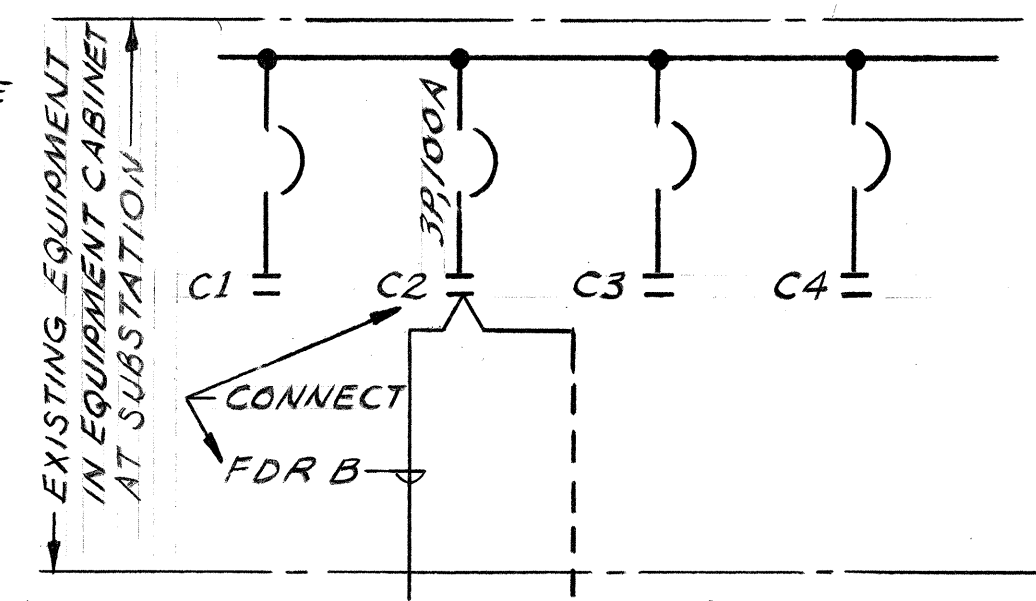
DETAIL - $\frac{9}{7E}$
LIGHT STANDARD FOUNDATION
FOR LOCATIONS BEHIND SHOULDERS
SCALE: 1"=10"



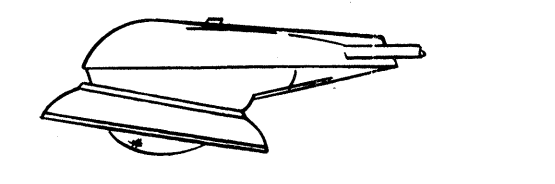
DETAIL $\frac{8}{7E}$
TAP CONNECTION TO SIGN LUMINAIRES



DETAIL 10
7E
TAP CONNECTION HWG. LTG. LUMINAIRES
TWIN ARM SHOWN: SINGLE ARM SIMILAR EXCEPT AS NOTED.



12
DETAIL 7E
CONNECTION OF FDR B AT SUBSTATION



DETAIL 11
LUMINAIRE SHIELD
N.T.S.



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION:
Michael A. Margulies

ELECTRICAL SHEET 7E

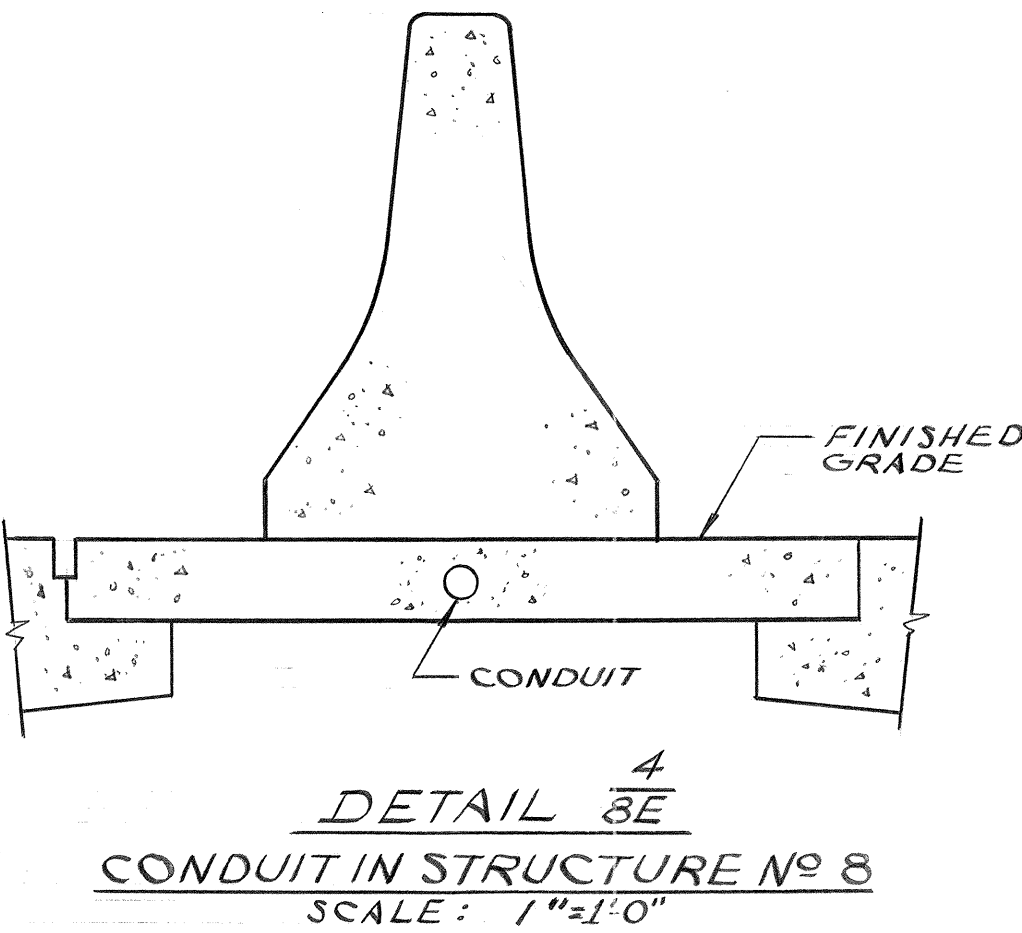
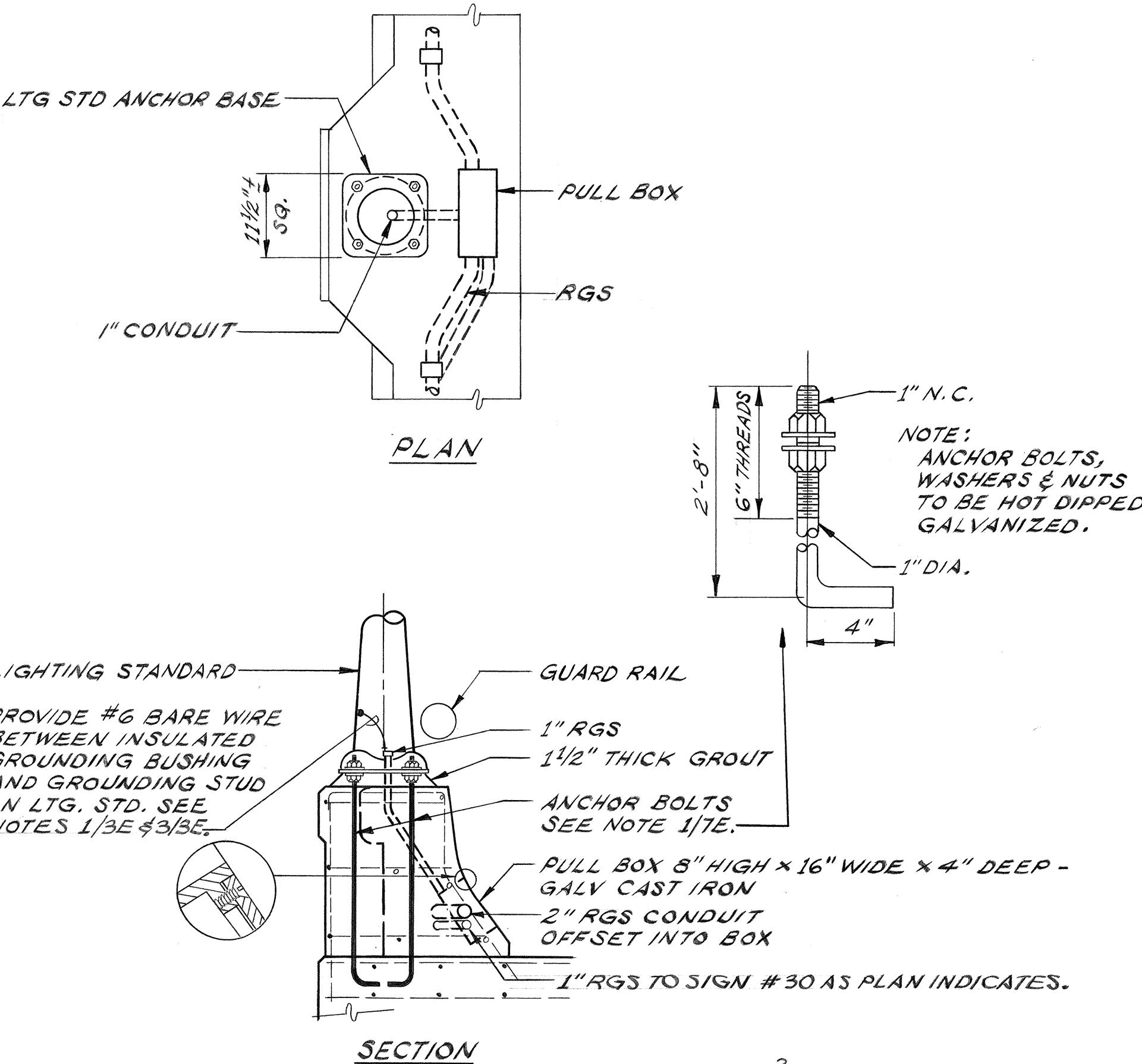
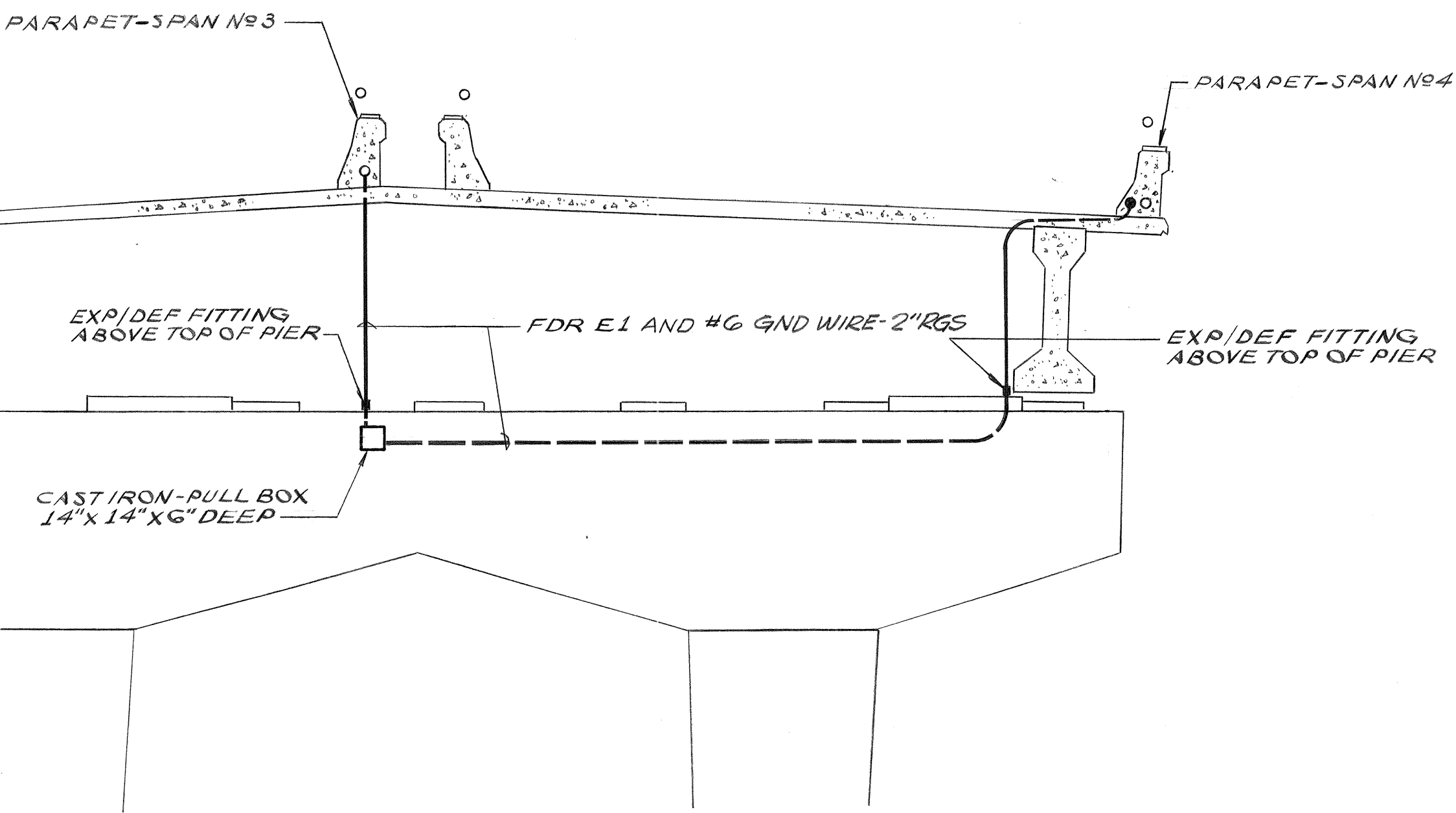
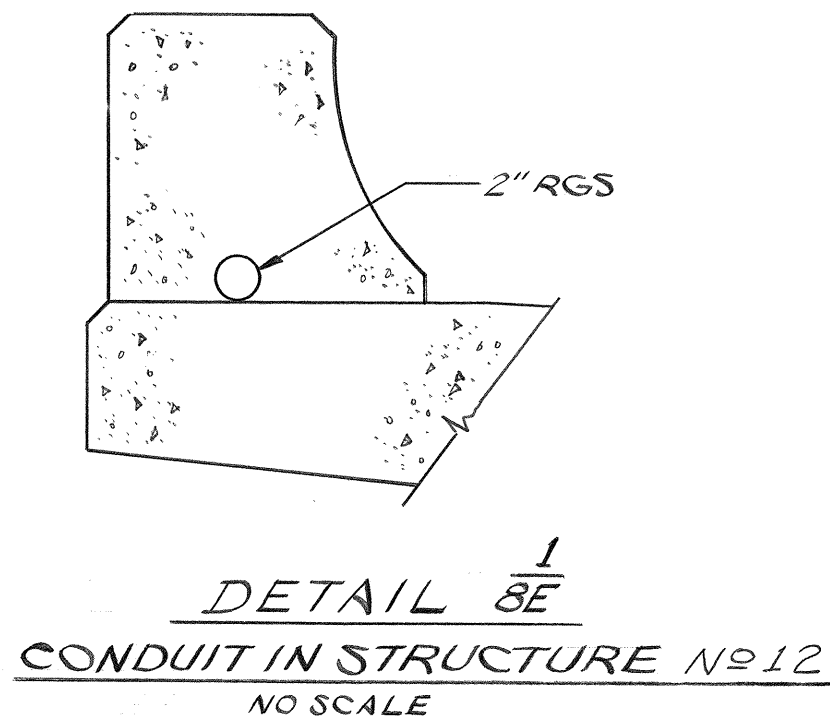
**STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**

ELECTRICAL DETAILS

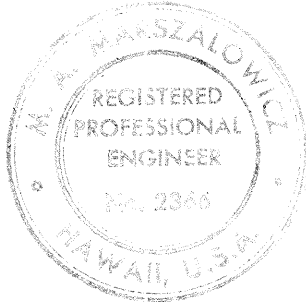
HALAWA INTERCHANGE
PROJECT NO. I-HI-1(91):13

SHEET No. 7E OF 12E SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(9):13	1972	97	220



SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
CHECKED BY	
NOTE BOOK	
No.	



Michael A. Marzalone

12/13/71

ELECTRICAL SHEET 8E

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

ELECTRICAL DETAILS

STRUCTURES

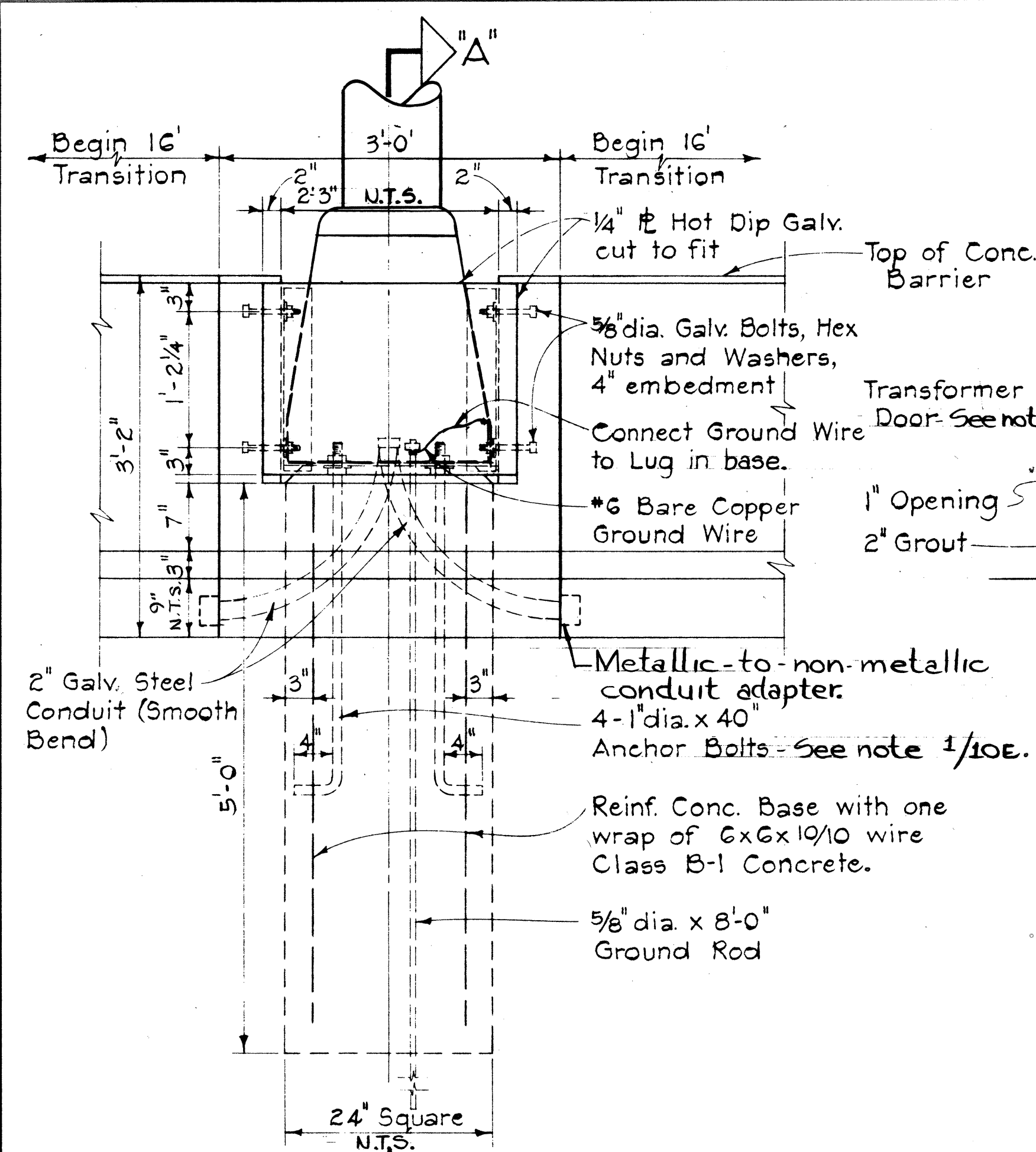
HALAWA INTERCHANGE

PROJECT NO. I-HI-1(9):13

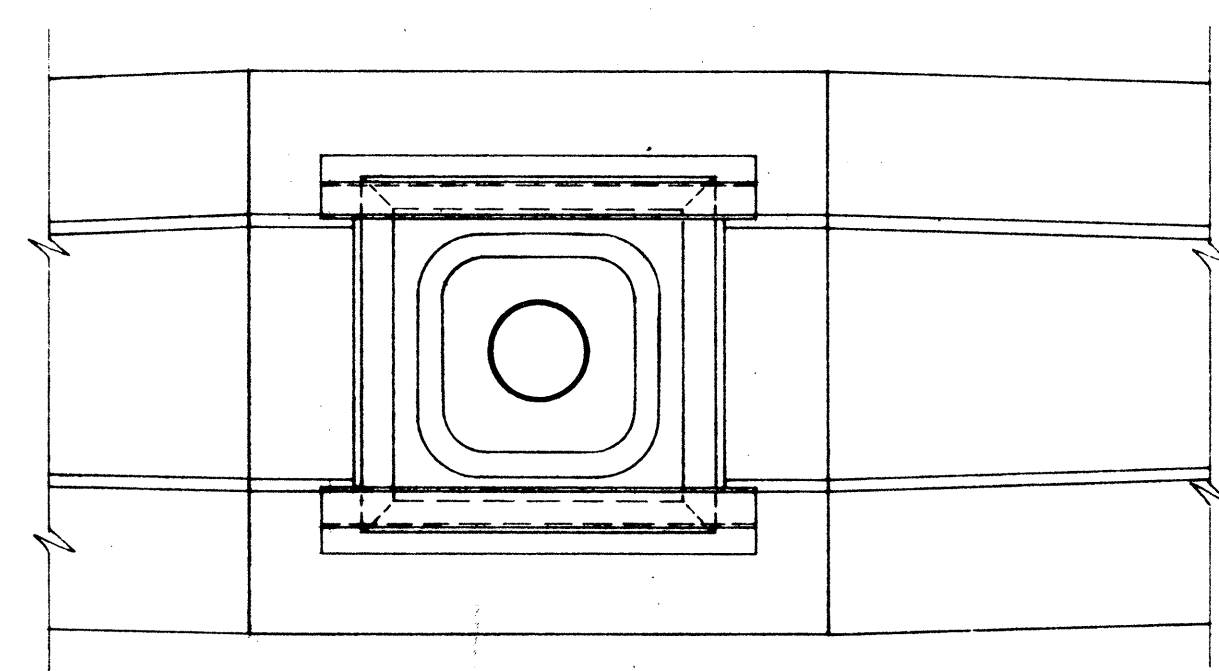
SHEET No. 8E OF 12E SHEETS

97

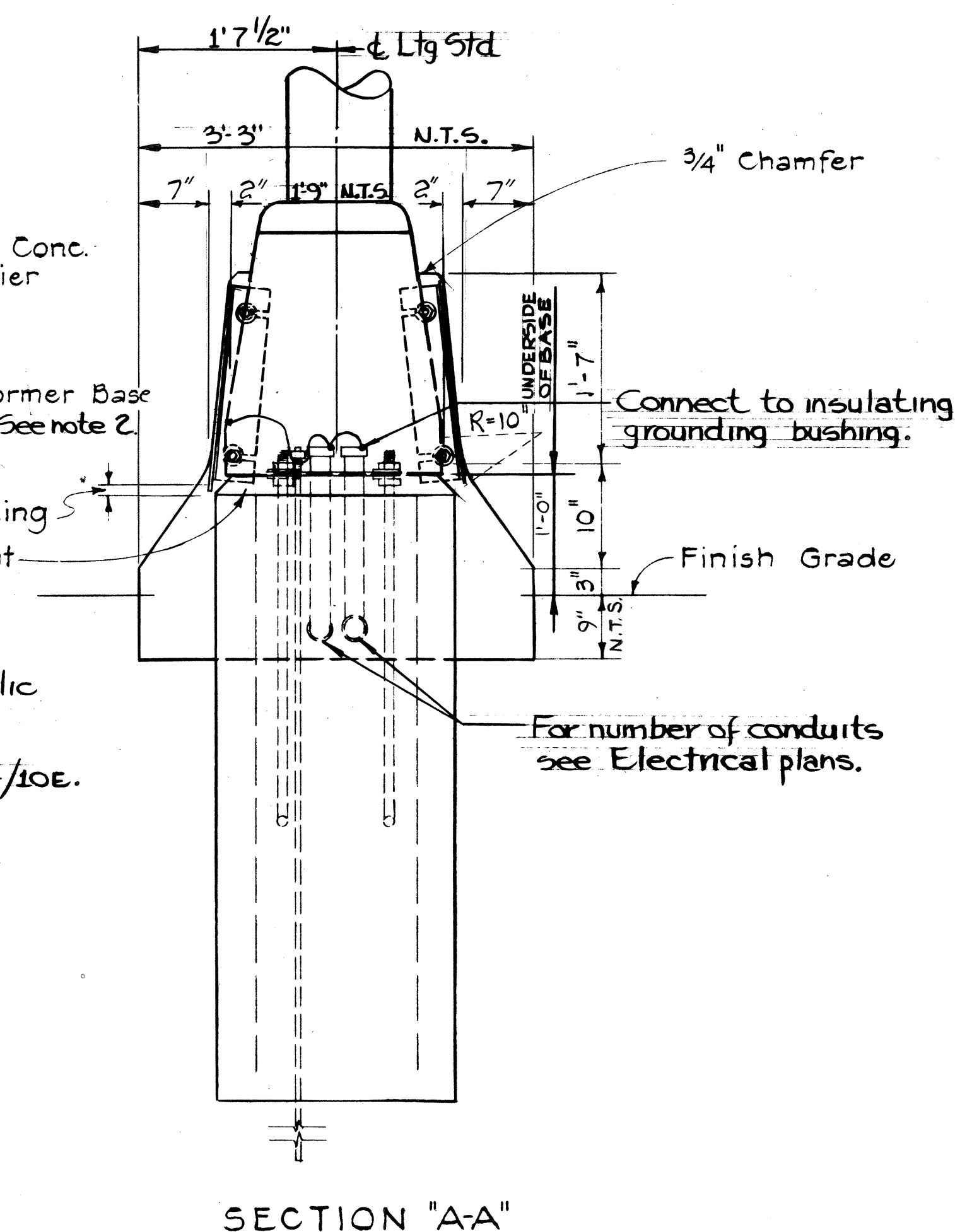
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1H(9)13	1972	99	220



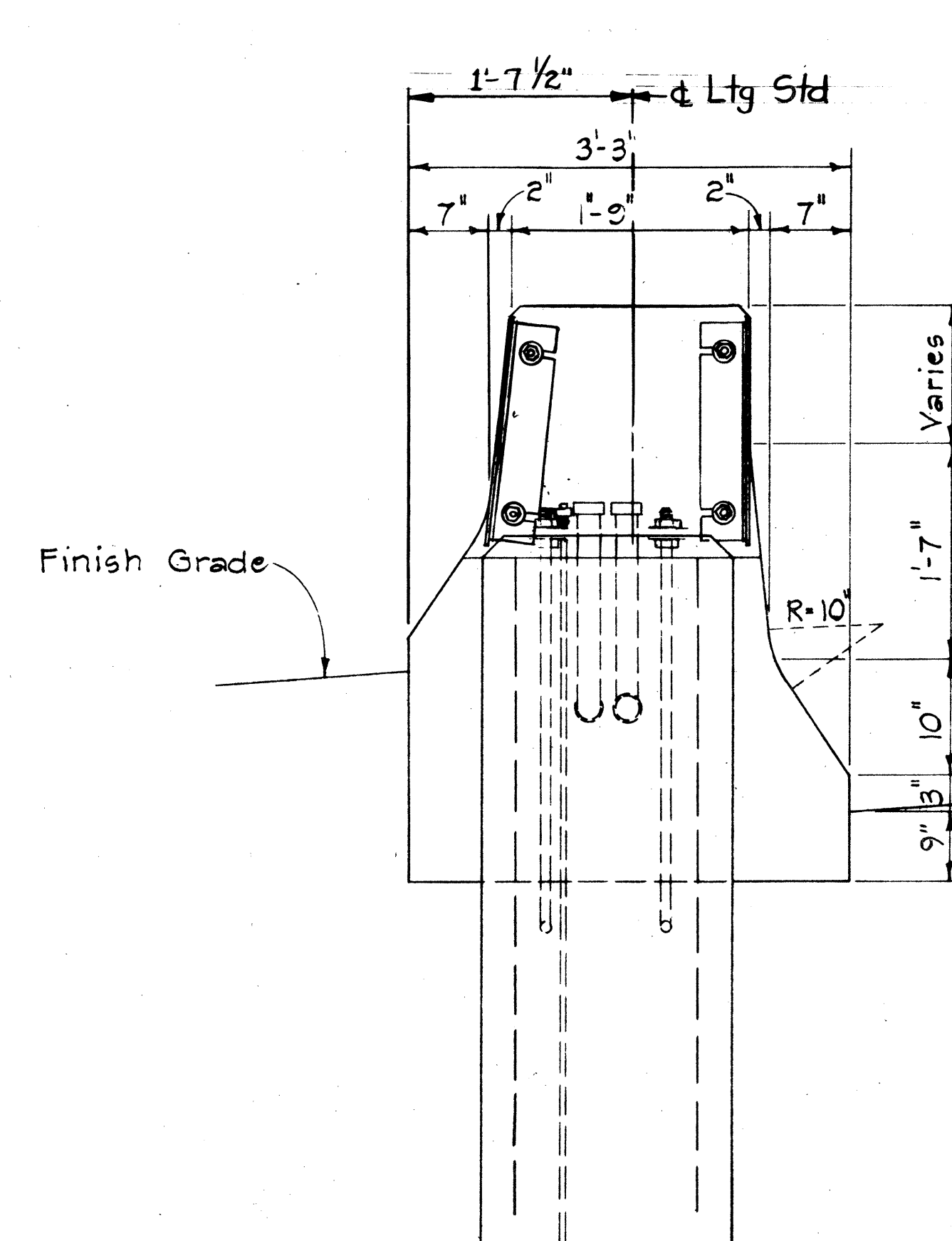
ELEVATION
DETAIL 10E
HIGHWAY LIGHTING STANDARD MOUNTING
DETAIL ON TYPE "A" CONCRETE BARRIER
Scale: 1" = 1'-0"



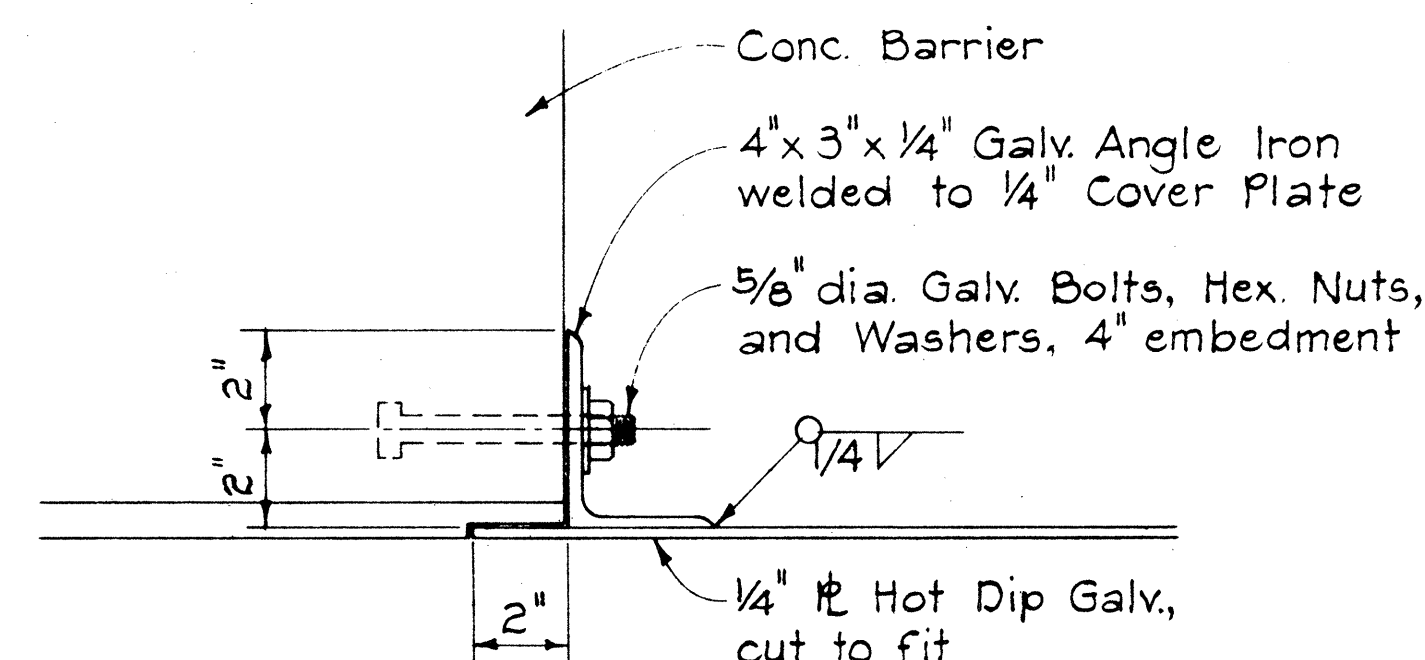
TYPICAL PLAN
Scale: 1" = 1'-0"



SECTION "A-A"



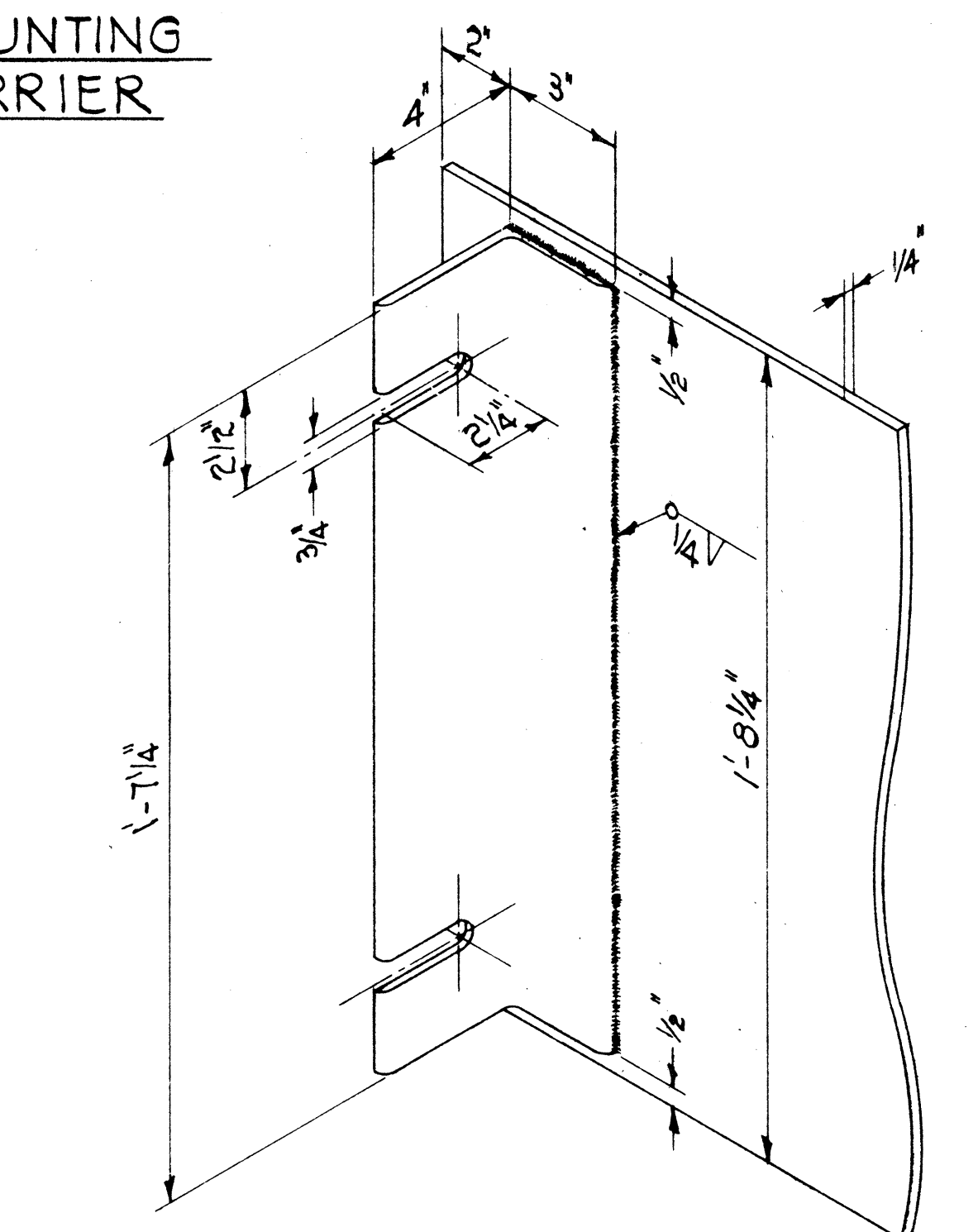
DETAIL 2
HIGHWAY LIGHTING STANDARD MOUNTING
DETAIL ON TYPE "B" CONCRETE BARRIER
Scale: 1" = 1'-0"



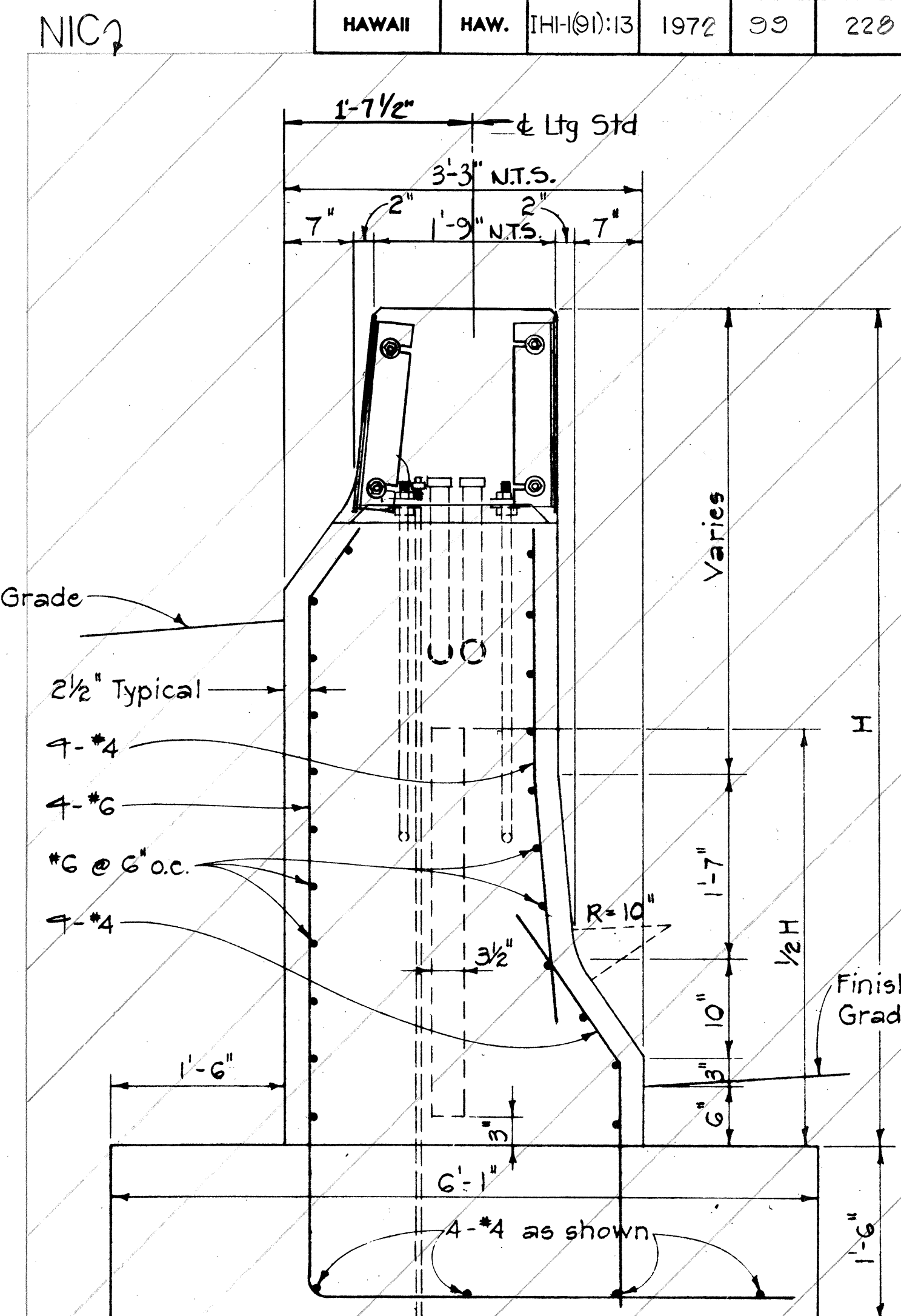
COVER PLATE ANCHOR DETAIL
Scale: 3" = 1'-0"

NOTES:

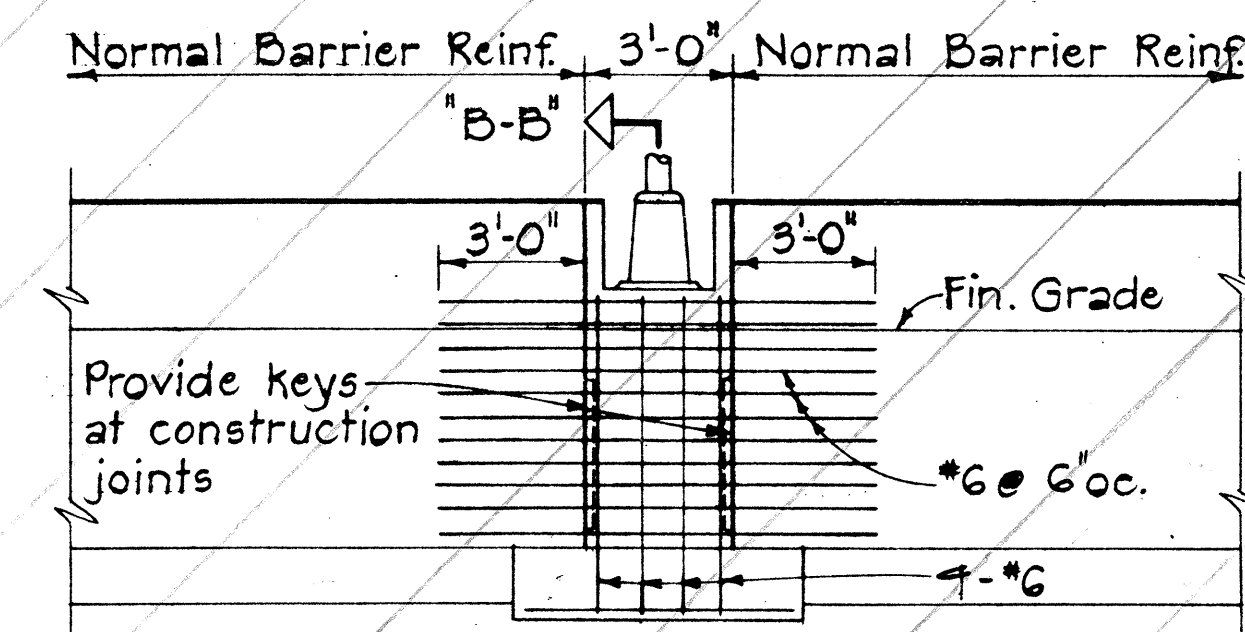
1. Provide 5-foot by 2-foot by 2-foot lighting standard foundation complete including elbows, grounding, anchor rods, reinforcing, concrete, and excavation under lighting standard item. Provide all other indicated construction under barrier item.
2. Position transformer base so that door is at right hand side of all lighting standards when looking up station.



ANGLE IRON-COVER PLATE DETAIL
Scale: 3" = 1'-0"



SECTION "B-B"



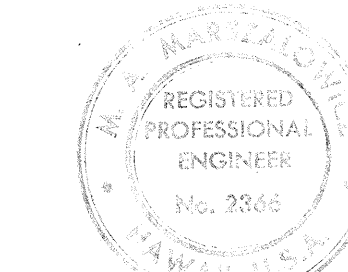
ELEVATION
Scale: 1/4" = 1'-0"
HIGHWAY LIGHTING STANDARD MOUNTING
DETAIL ON TYPE "C" CONC BARRIER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL DETAILS
LTG. STD. ON BARRIER

HALAWA INTERCHANGE
PROJECT NO. I-HI-1(9)13
Scale: As Shown Date: _____

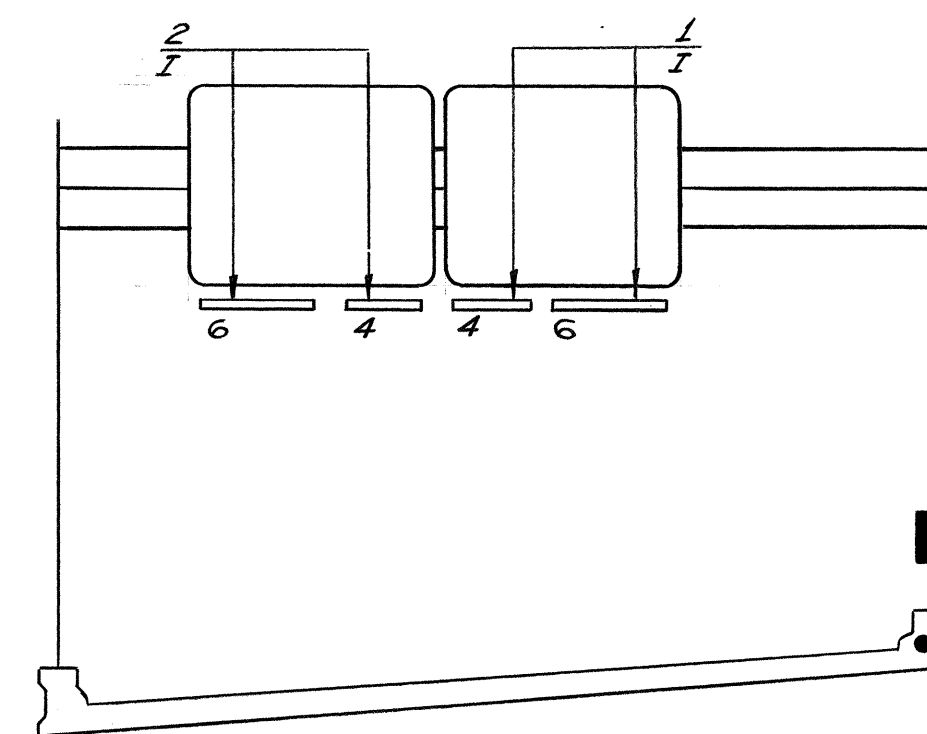
SHEET No. 10E OF 12E SHEETS



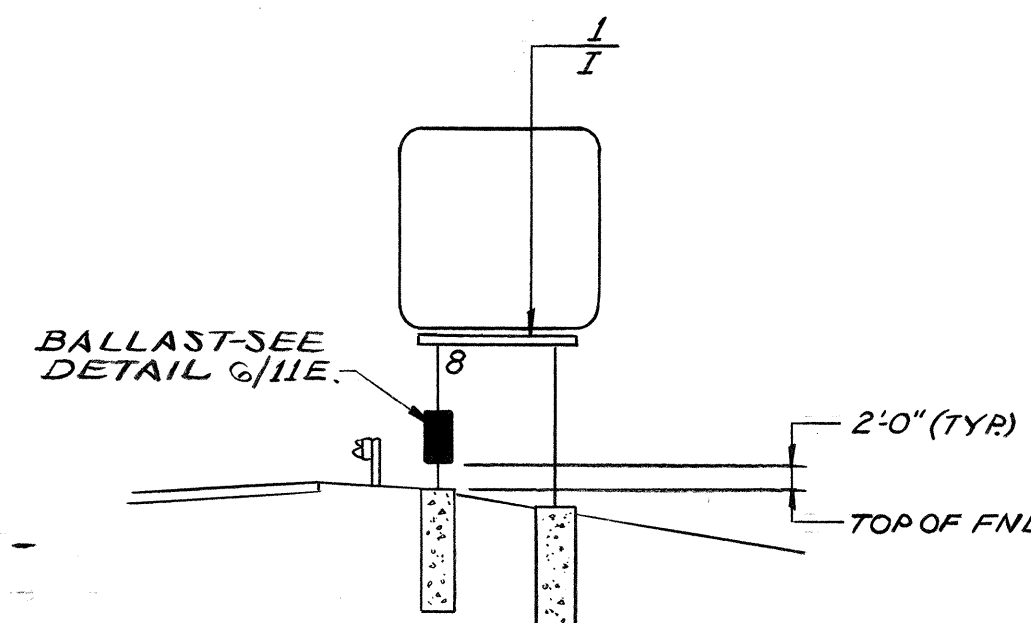
Michael A. Mangalosing

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HI-1(91):13	1972	100	222

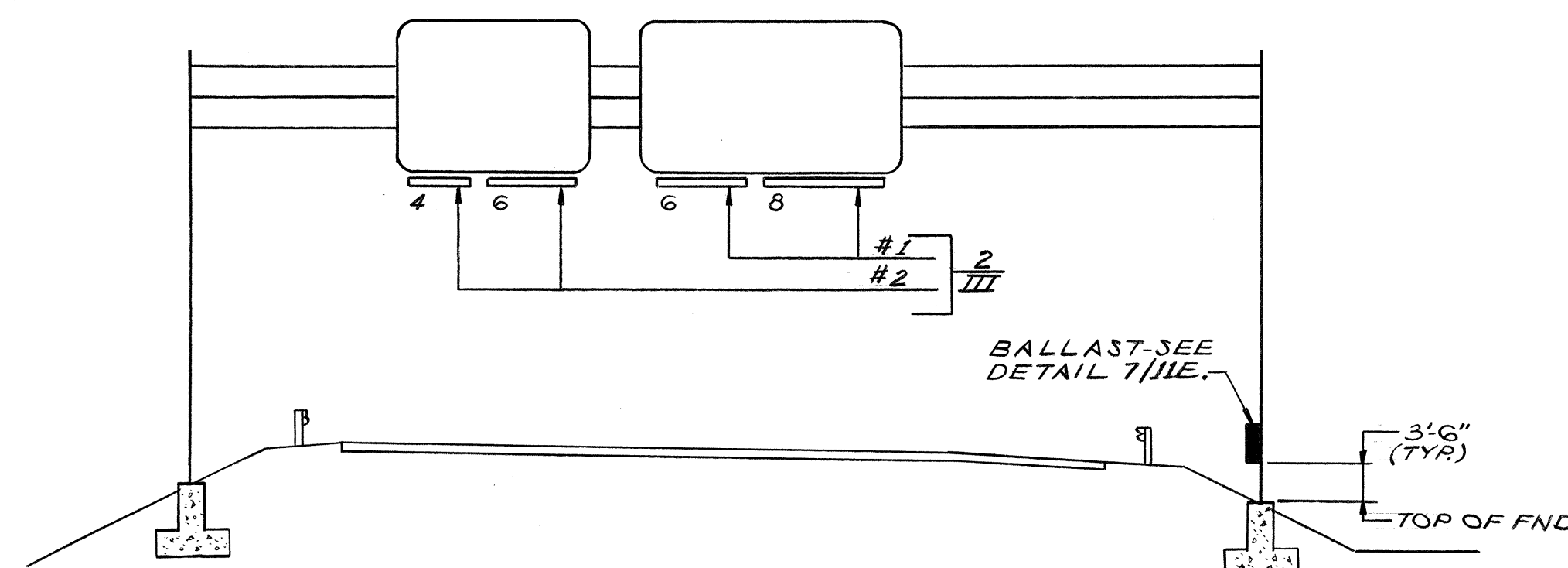
NOTES:
 1- FOR SCHEMATIC DIAGRAM OF CONNECTION TO SIGN LUMINAIRES SEE DETAIL 8/1E.
 2- FOR DETAIL OF FOUNDATION FOR OVERHEAD SIGN SEE SHEET 70.
 3- FOR DETAIL OF FOUNDATION FOR GROUND MOUNTED SIGN SEE SHEET 73.
 * ITEMS REFERENCED WITH ASTERISK SHALL BE OF ALUMINUM.
 ** ITEMS REFERENCED WITH DOUBLE ASTERISK SHALL BE OF STAINLESS STEEL.



DETAIL 1/E
SIGN NO E30

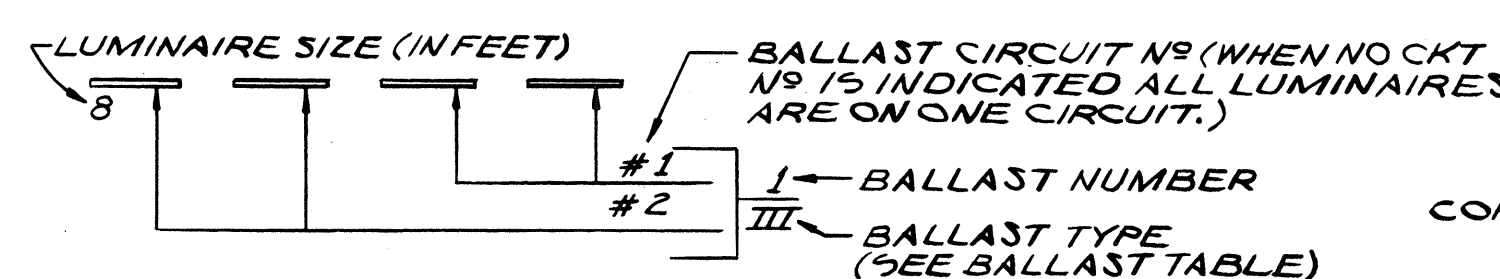


DETAIL 2/E
SIGN NO E32

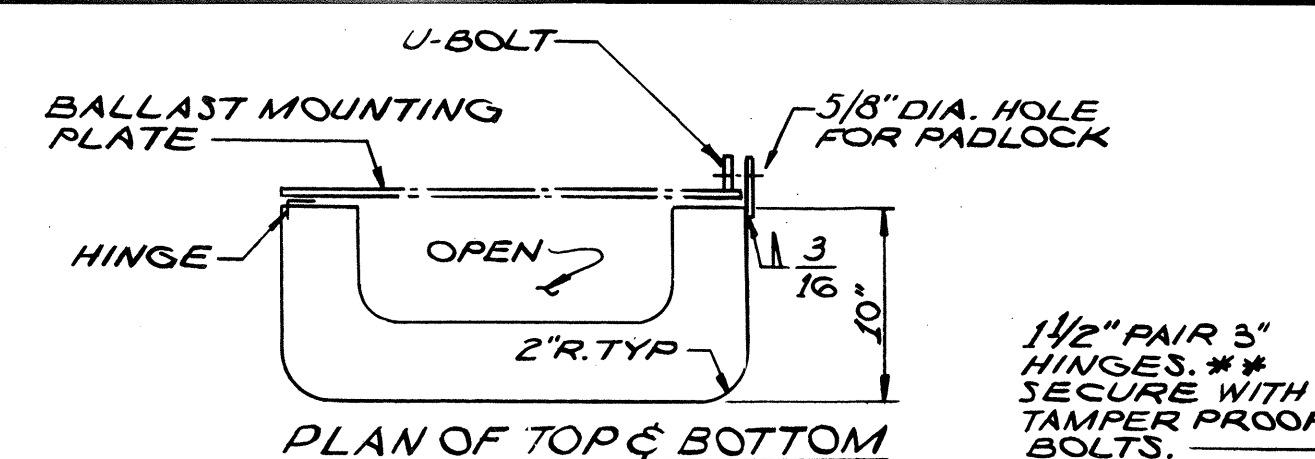


DETAIL 3/E
SIGN NO E40

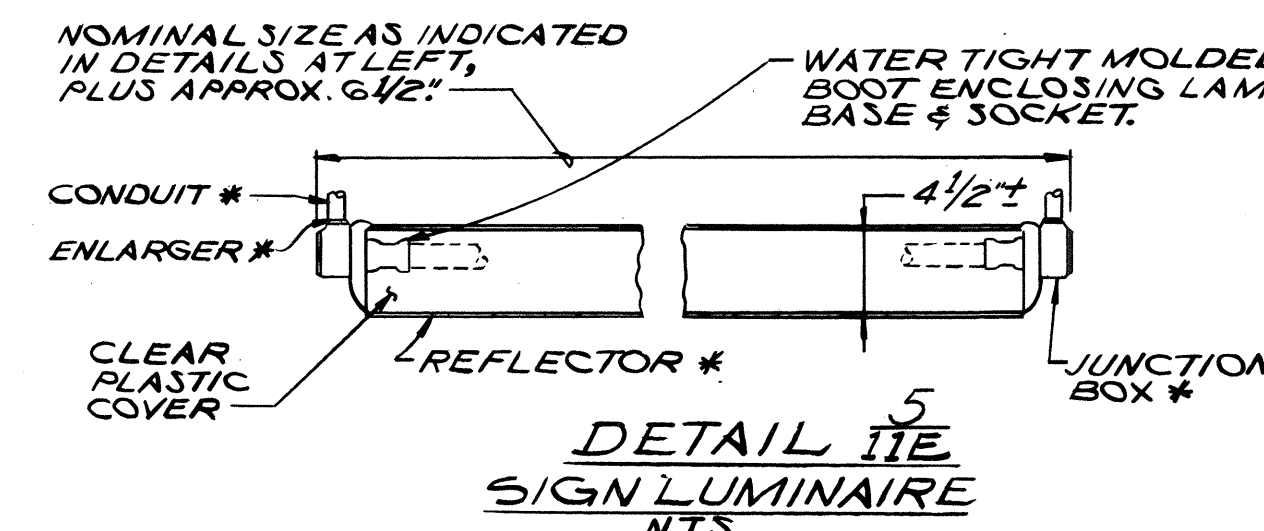
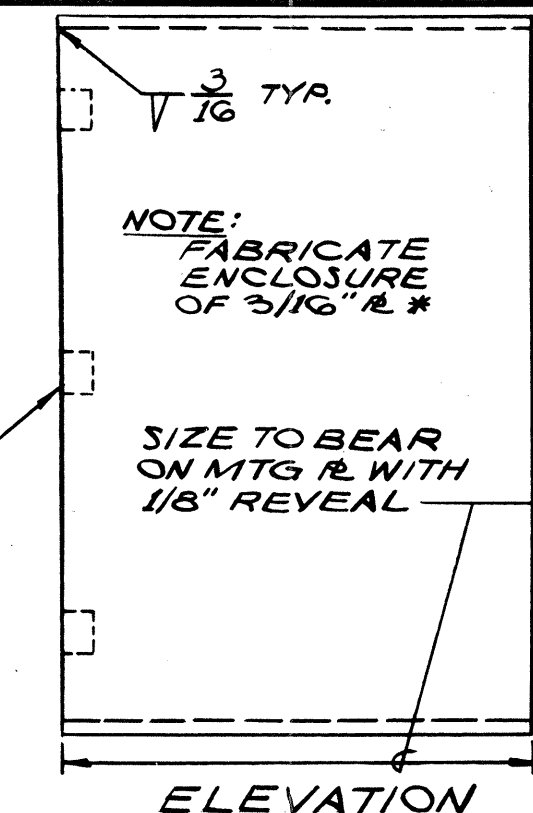
TYPE	DESCRIPTION
I	1 OR 2 LAMP COMBINATION
III	4 LAMP COMBINATION



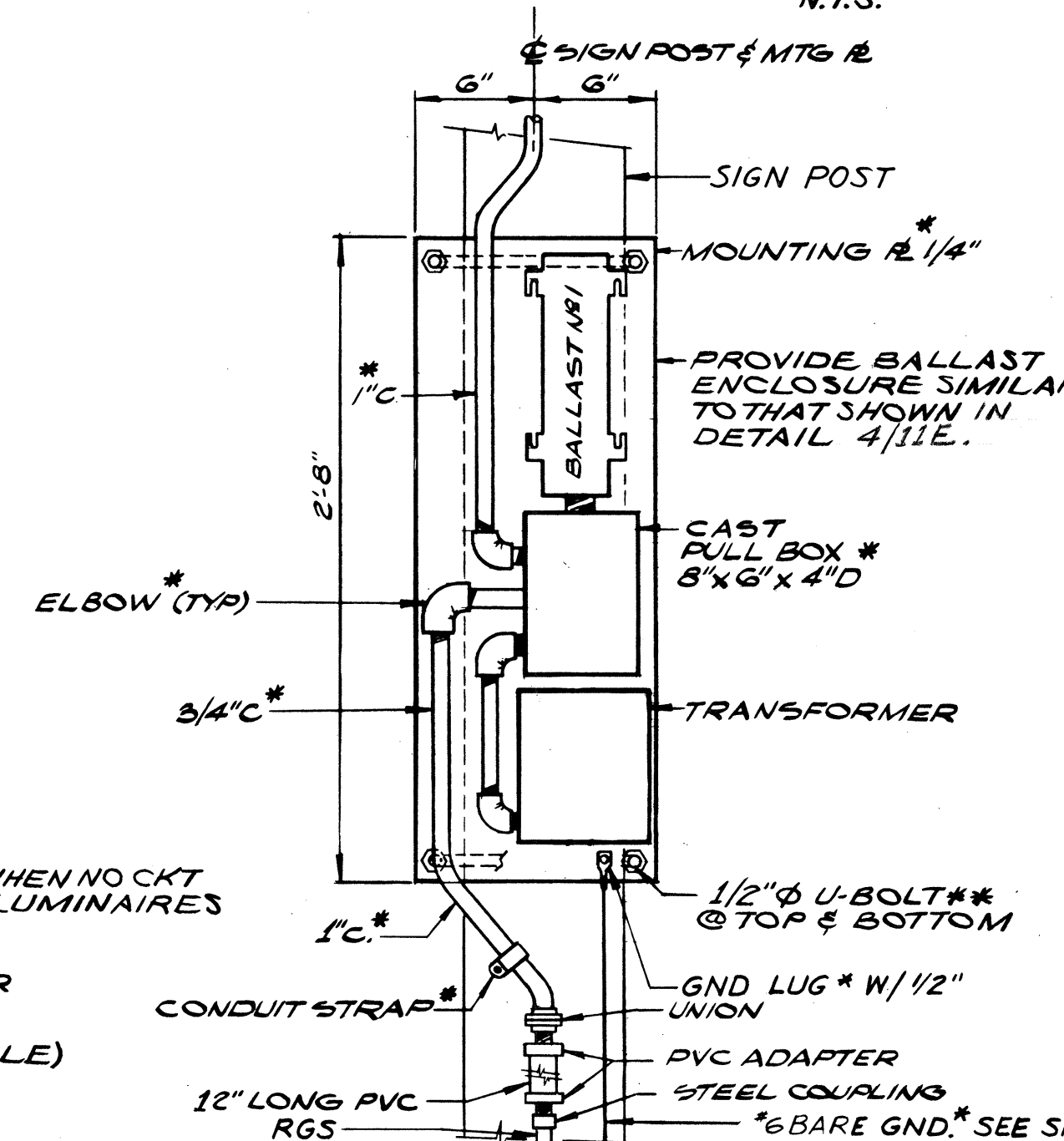
KEY
LUM-TO-BALLAST
CONNECTION



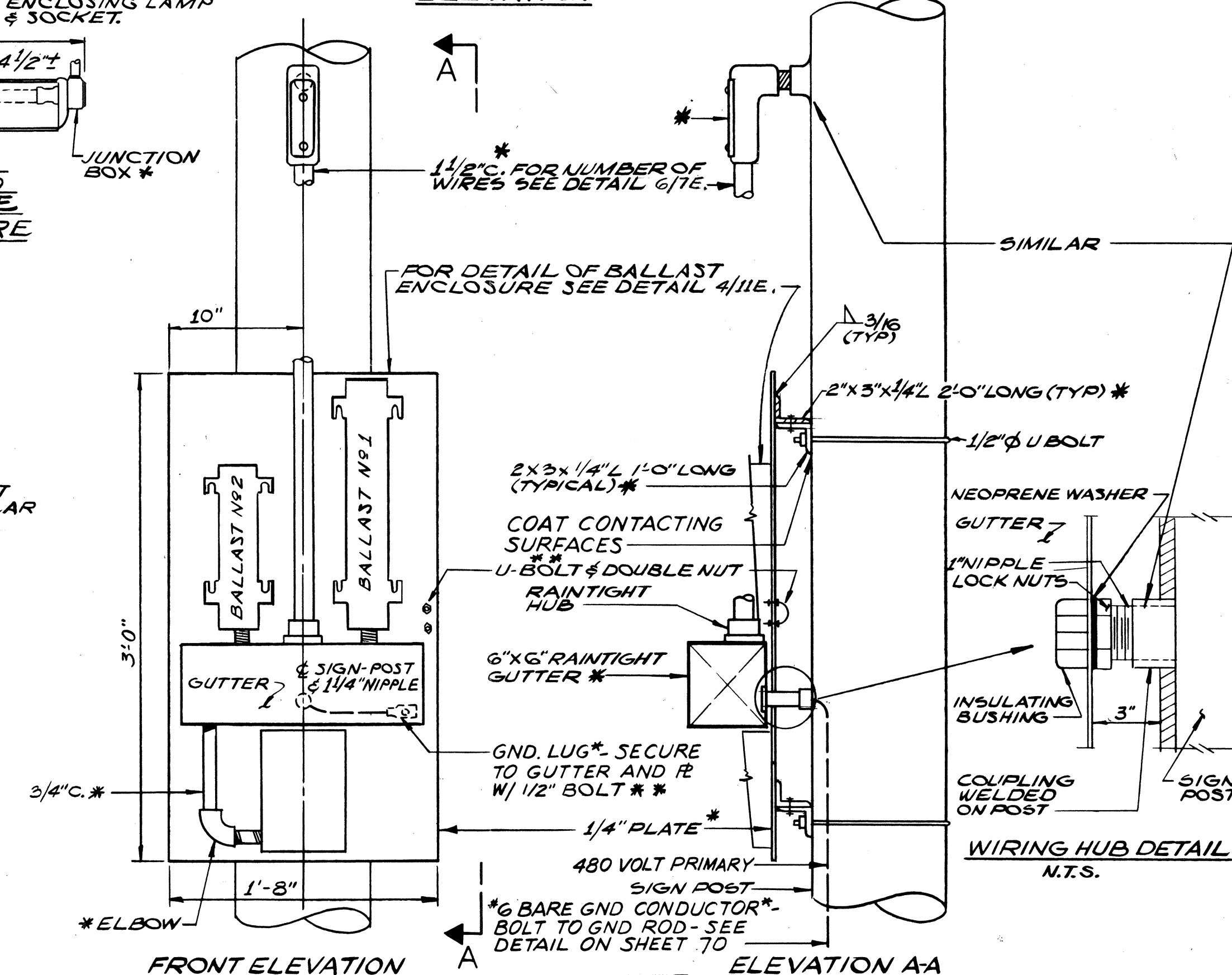
DETAIL 4/E
BALLAST ENCLOSURE
SCALE: 1/16"=1"



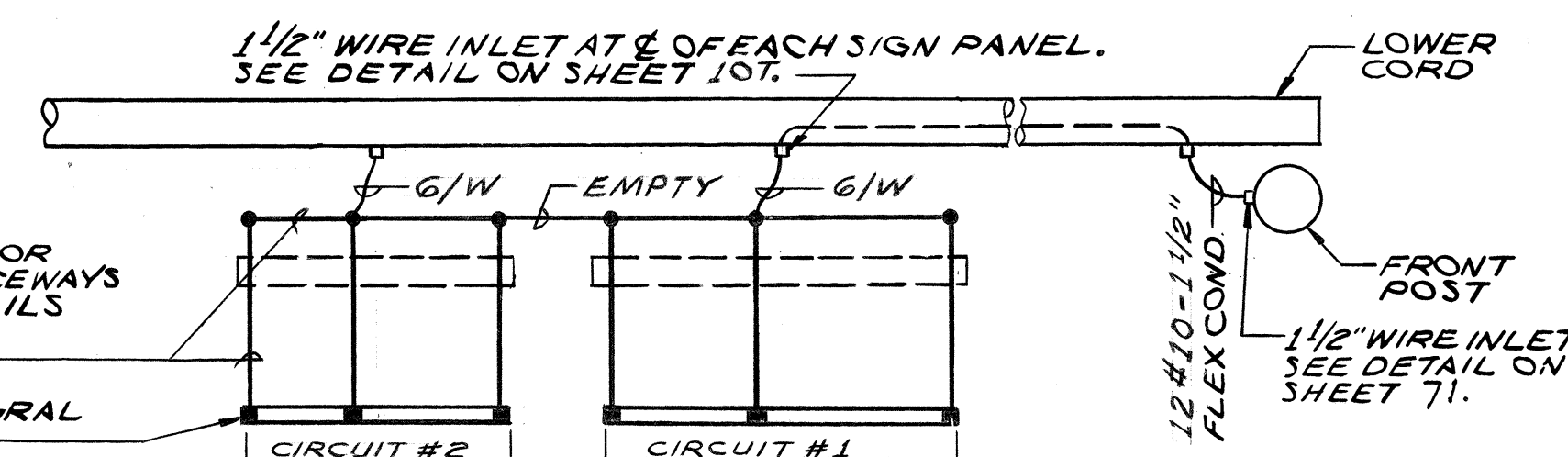
DETAIL 5/E
SIGN LUMINAIRE
N.T.S.



FRONT ELEVATION
DETAIL 6/1E
BALLAST MOUNTING
ARRANGEMENT FOR SIGN NO E32 AS SHOWN
SCALE: 1/8"=1"



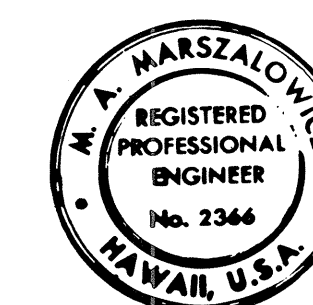
FRONT ELEVATION
DETAIL 7/E
BALLAST MOUNTING
ARRANGEMENT FOR SIGN NO E30 AS SHOWN
ARRANGEMENT FOR SIGN NO E40 SIMILAR
SCALE: 1/8"=1"



PROVIDE SUPPORT FOR LUMINAIRES AND RACEWAYS IN ACCORD WITH DETAILS ON SHEET 12E, SEE NOTE 3/12E.
 JUNCTION BOX INTEGRAL WITH LUMINAIRE

KEY
 1" RIGID ALUM CONDUIT CONTAINING 2 WIRES UNLESS OTHERWISE NOTED.
 CONDUIT PULL FITTING.
 8/W EIGHT WIRES.

PLAN
DETAIL 8/1E
RACEWAY LAYOUT FOR SIGN NO E40 SHOWN
SIGN NO E30 SIMILAR
SCALE: 1/8"=1"



THIS WORK WAS PREPARED BY
 ME OR UNDER MY SUPERVISION
 Michael A. Marzalewicz

ELECTRICAL SHEET 11E

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

ELECTRICAL DETAILS
 ILLUMINATED SIGNS
 PART I
 HALAWA INTERCHANGE
 PROJECT NO. I-HI-1(91):13

SHEET No. 11E OF 12E SHEETS

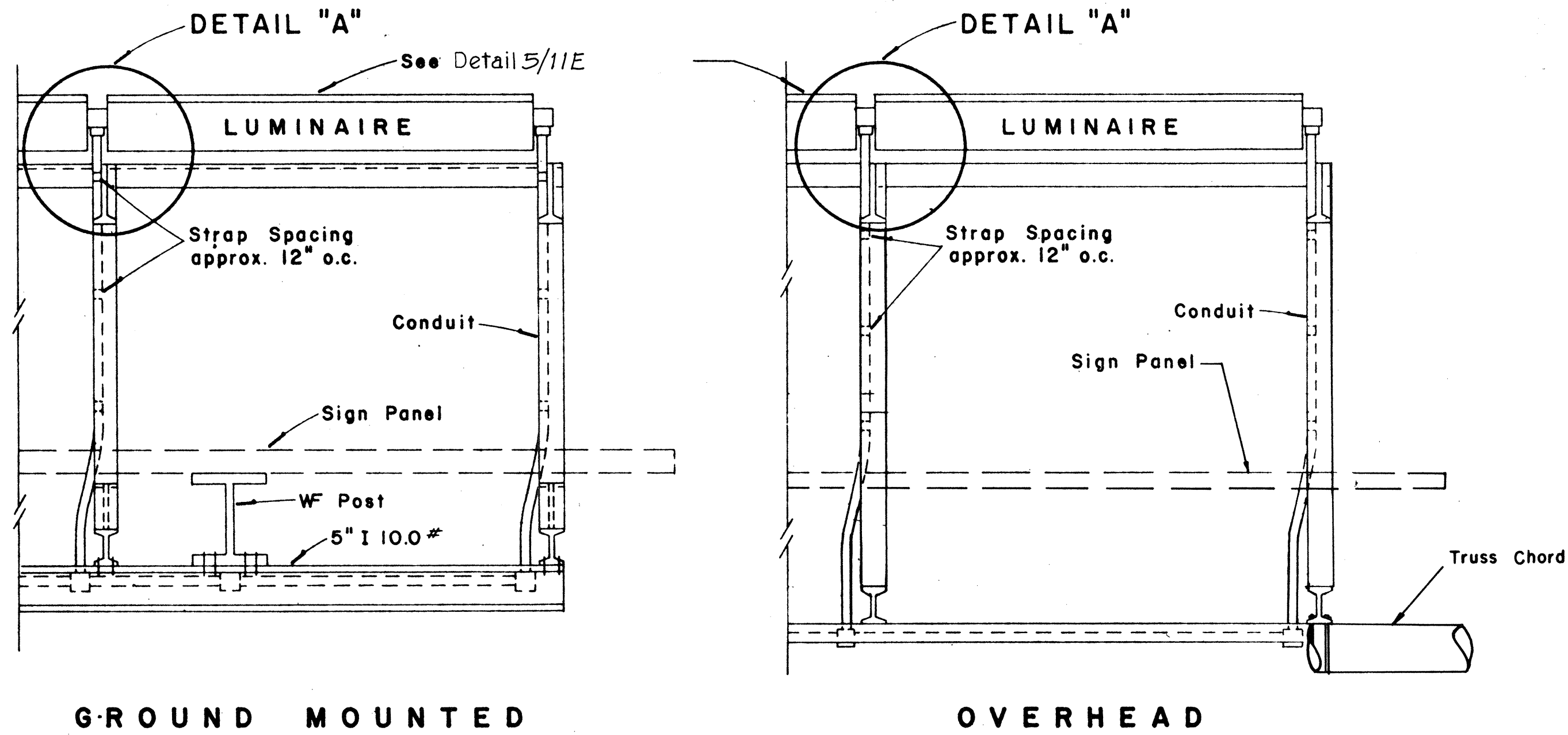
1100

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
TRACED 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.	1-111-100-13	1972	101	222

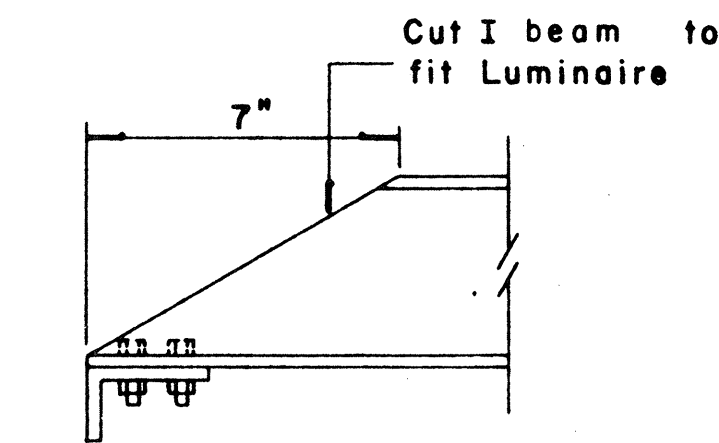
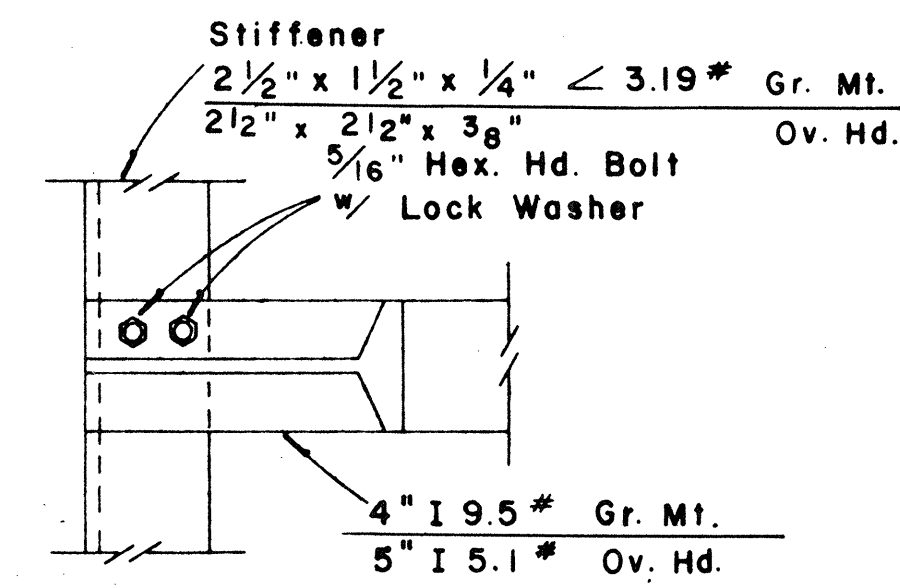
GENERAL NOTES

- For Raceway layout for sign luminaires see Detail 8/11E.
- Luminaire brackets shall be spaced to fit luminaires. See Detail 5/11E. Spacing between brackets shall not exceed 6'-9".
- Luminaire brackets shall be located behind sign panels so as to be concealed thereby from the motorist's view. Location shall also be such that a minimum conduit offset will be required.



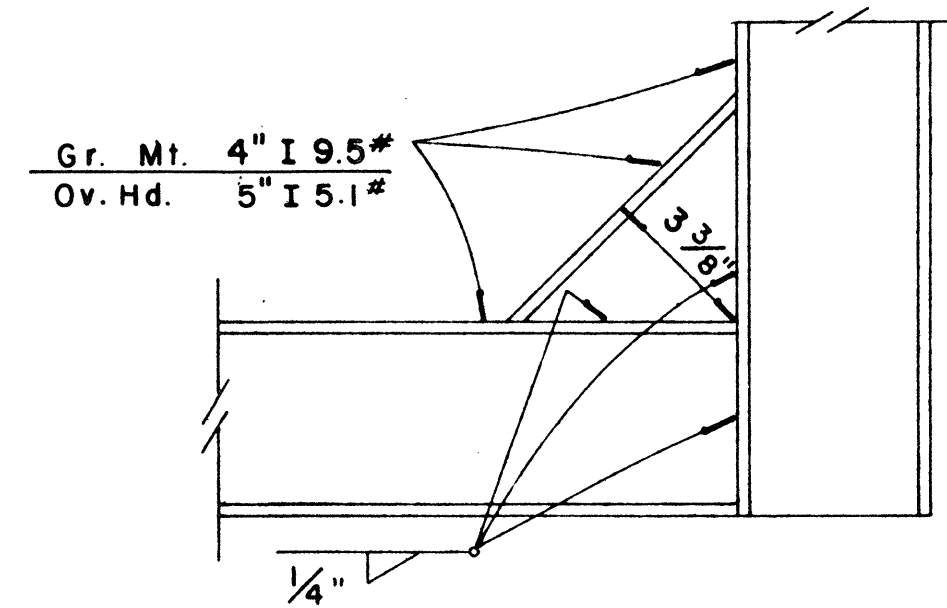
TOP VIEW LUMINAIRE MOUNTING

Scale: 1" = 1'-0"



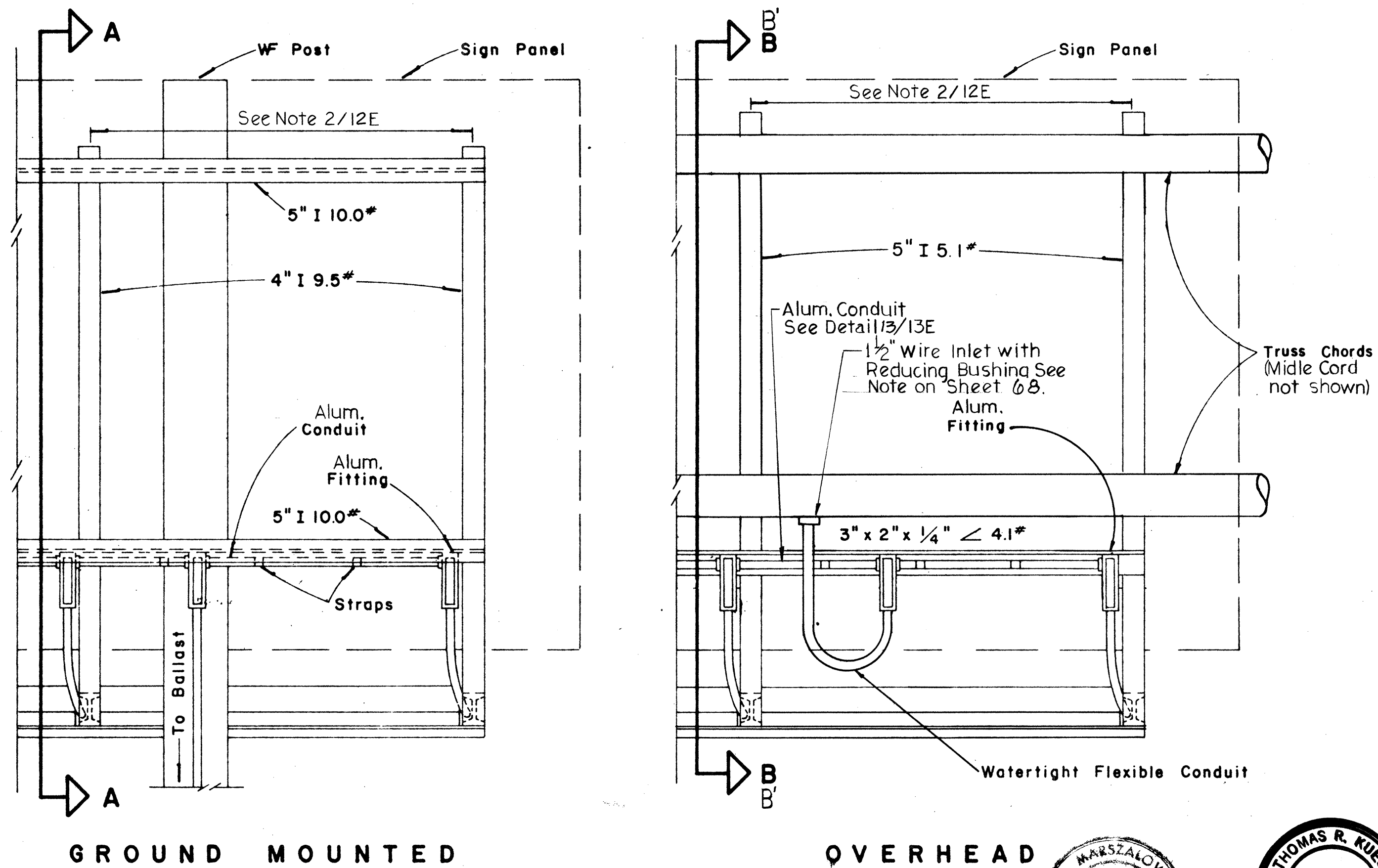
DETAIL "A"

Scale: 3" = 1'-0"



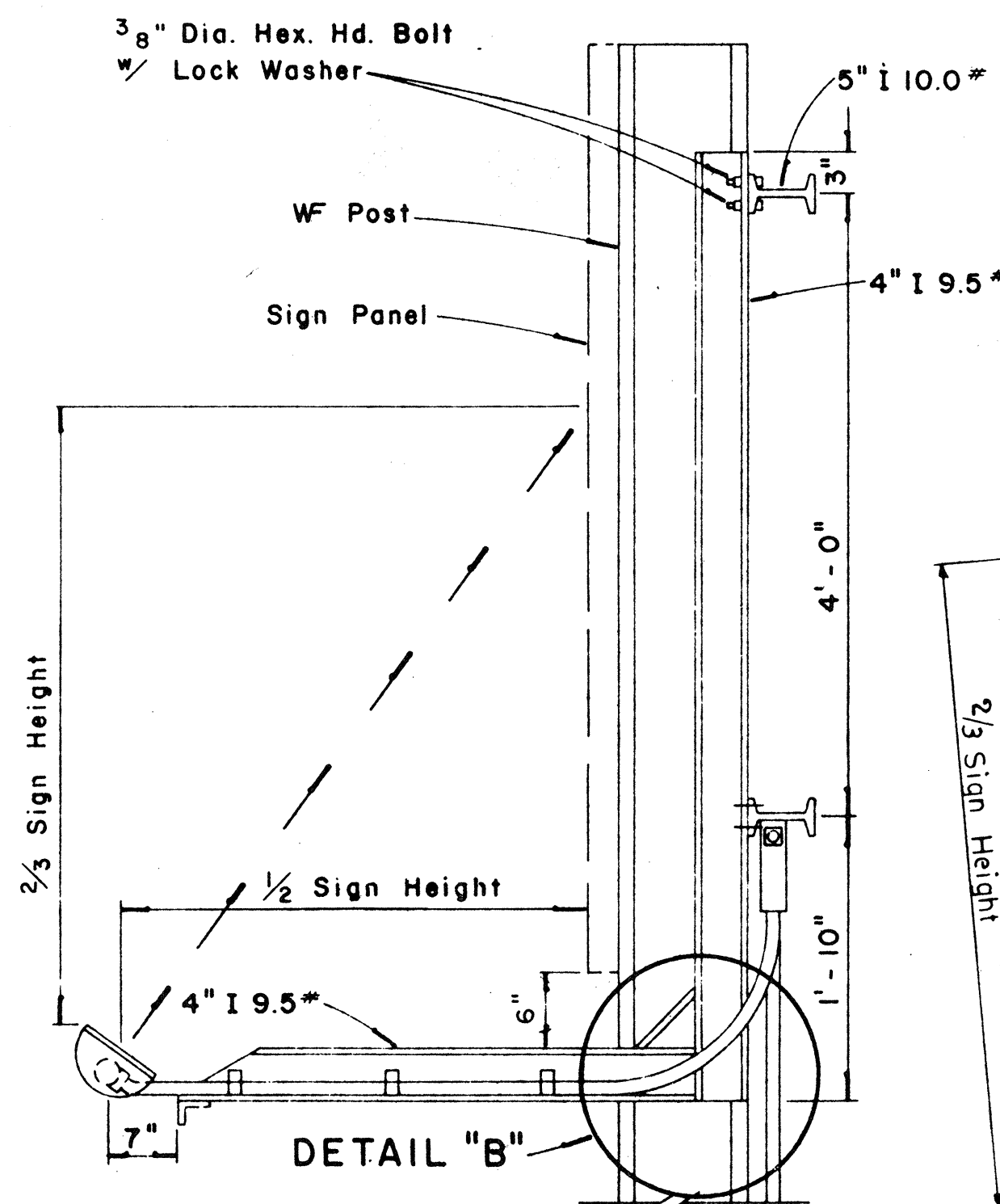
DETAIL "B"

Scale: 3" = 1'-0"



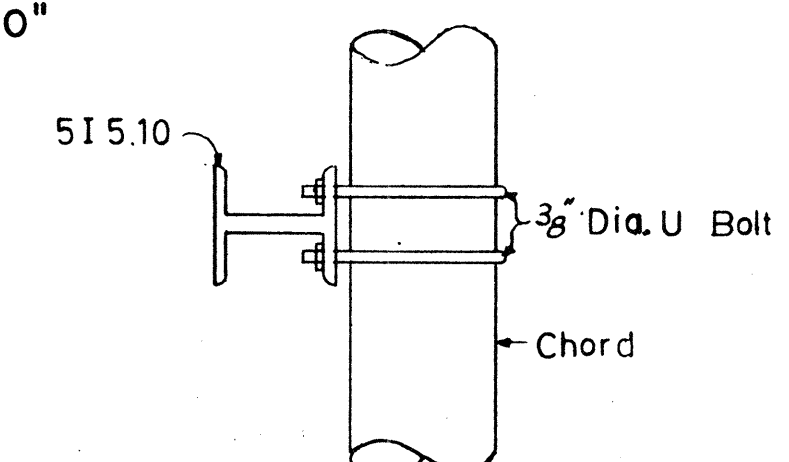
REAR VIEW LUMINAIRE MOUNTING

Scale: 1" = 1'-0"

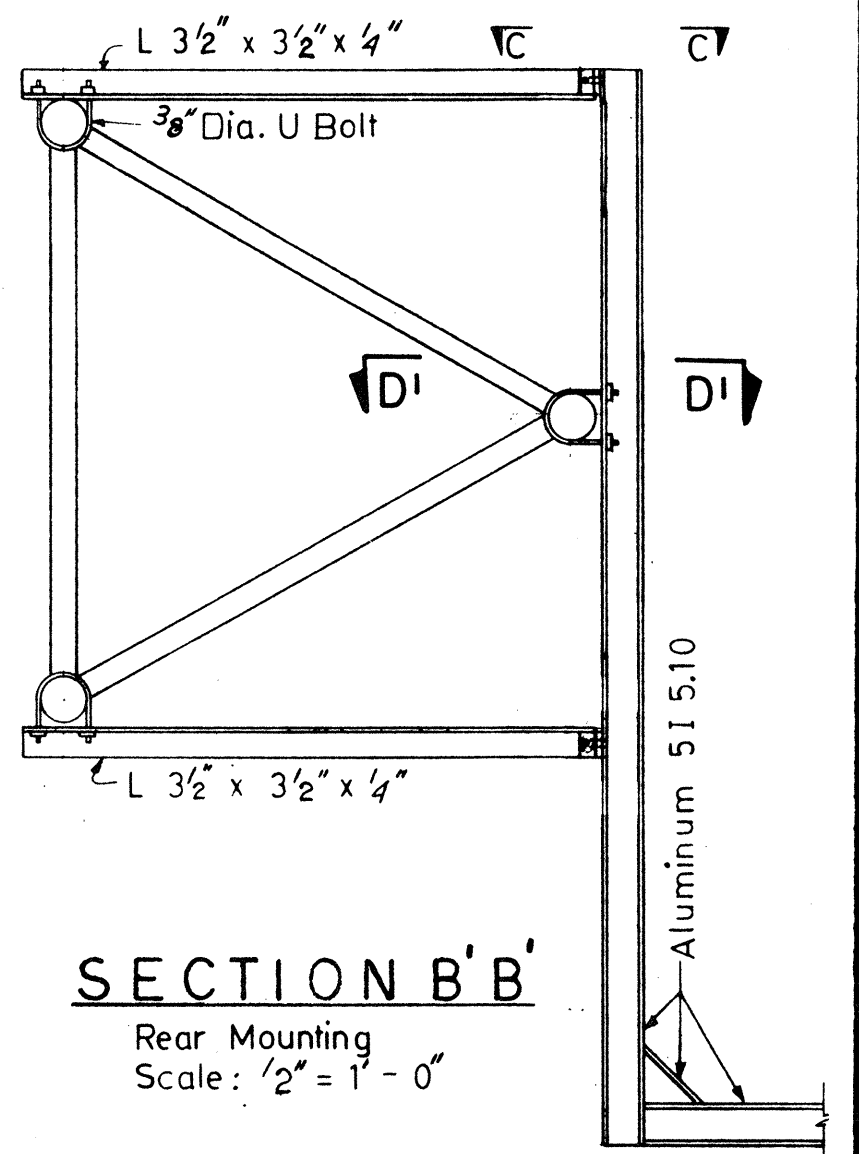


SECTION "A-A"

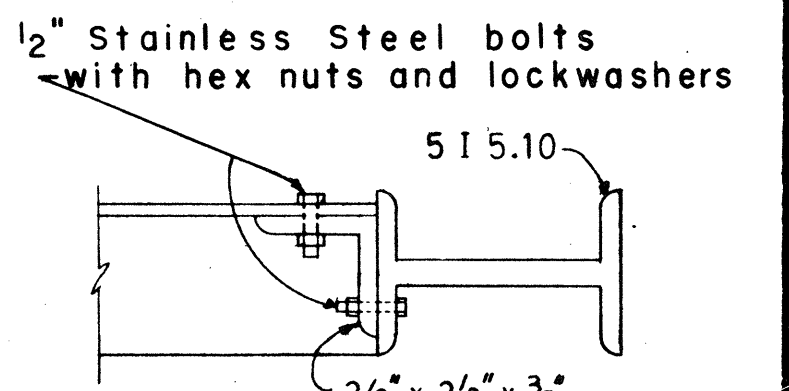
Scale: 1" = 1'-0"



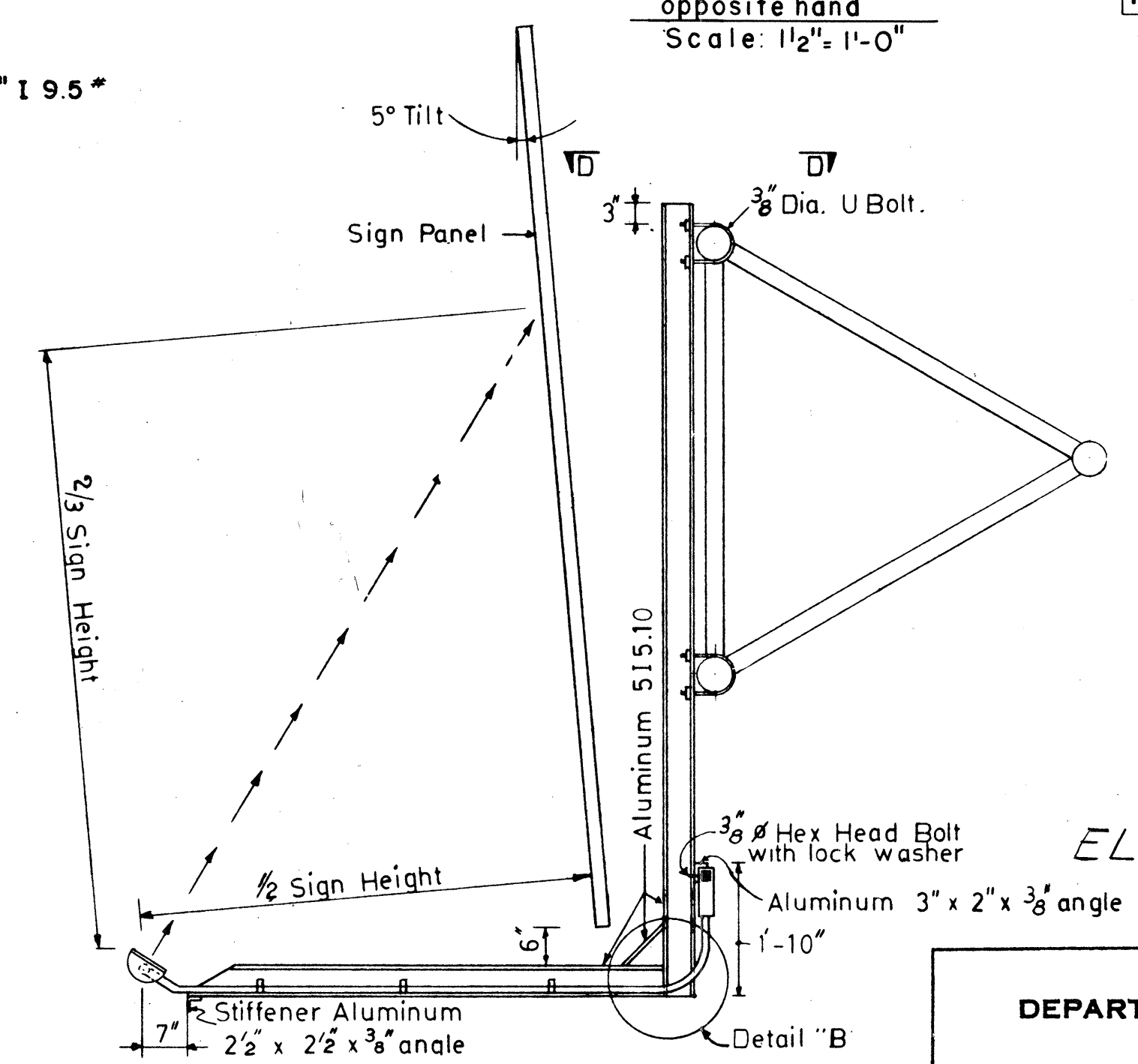
SECTION D-D Section D-D opposite hand Scale: 1/2" = 1'-0"



SECTION B'B' Rear Mounting Scale: 1/2" = 1'-0"



SECTION C-C Scale: 3" = 1'-0"



SECTION B-B Front Mounting Scale: 1/2" = 1'-0"

NOTE: 3/8" Dia. "U" bolts to be Stainless Steel with hex nuts and washers

ELECTRICAL SHEET 12 E

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

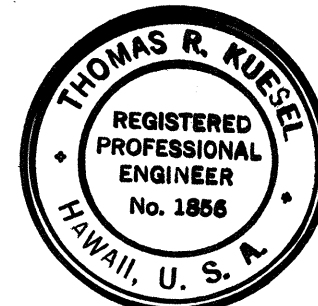
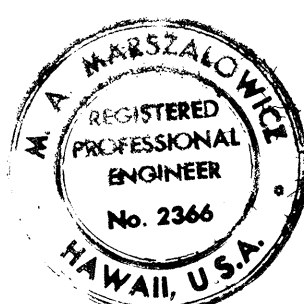
ELECTRICAL DETAILS SIGN LUMINAIRE MOUNTINGS

HALAWA INTERCHANGE
PROJECT NO. I-HH-1(91):13

Scale: As Shown DATE: APR. 15, 1971

SHEET No. 12E OF 12E SHEETS

ORIGINAL PLAN	DATE
DESIGNED BY	12/1/70
DRAWN BY	12/1/70
CHECKED BY	12/1/70
NOTED BY	12/1/70
NO.	12/1/70



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

Michael A. Marzalone Thomas R. Kuerel