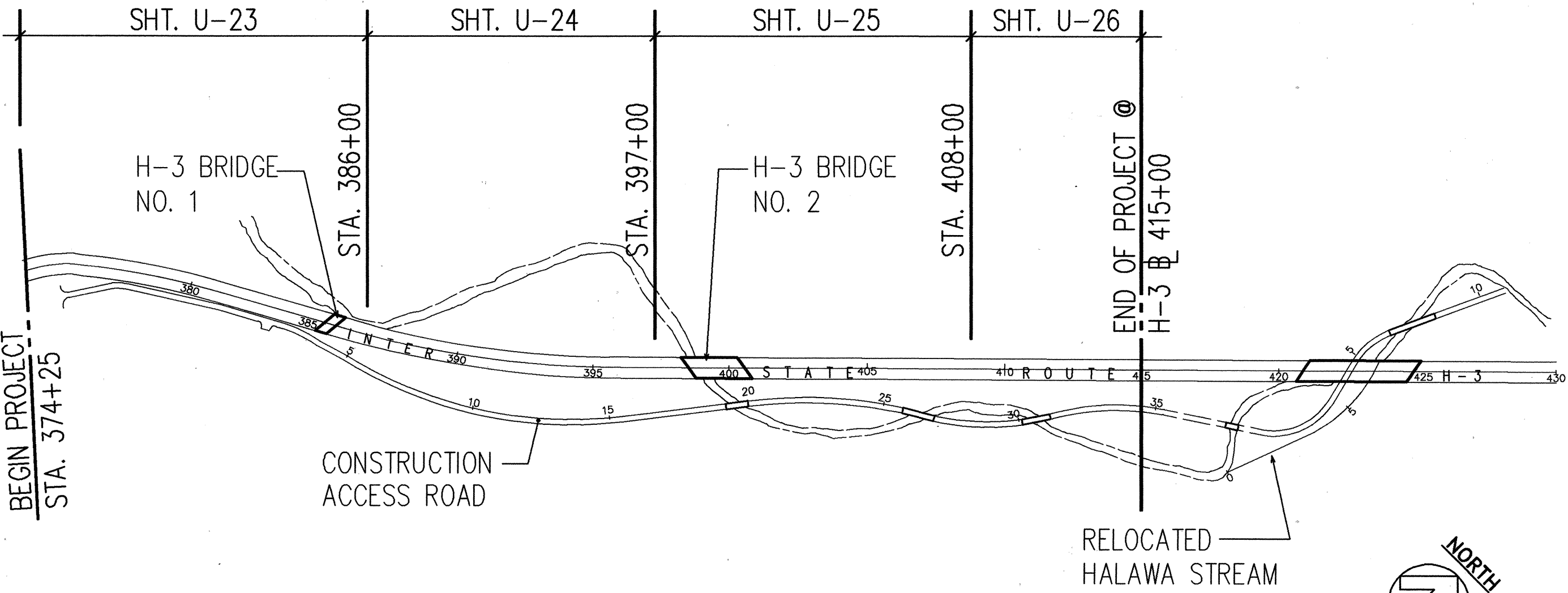
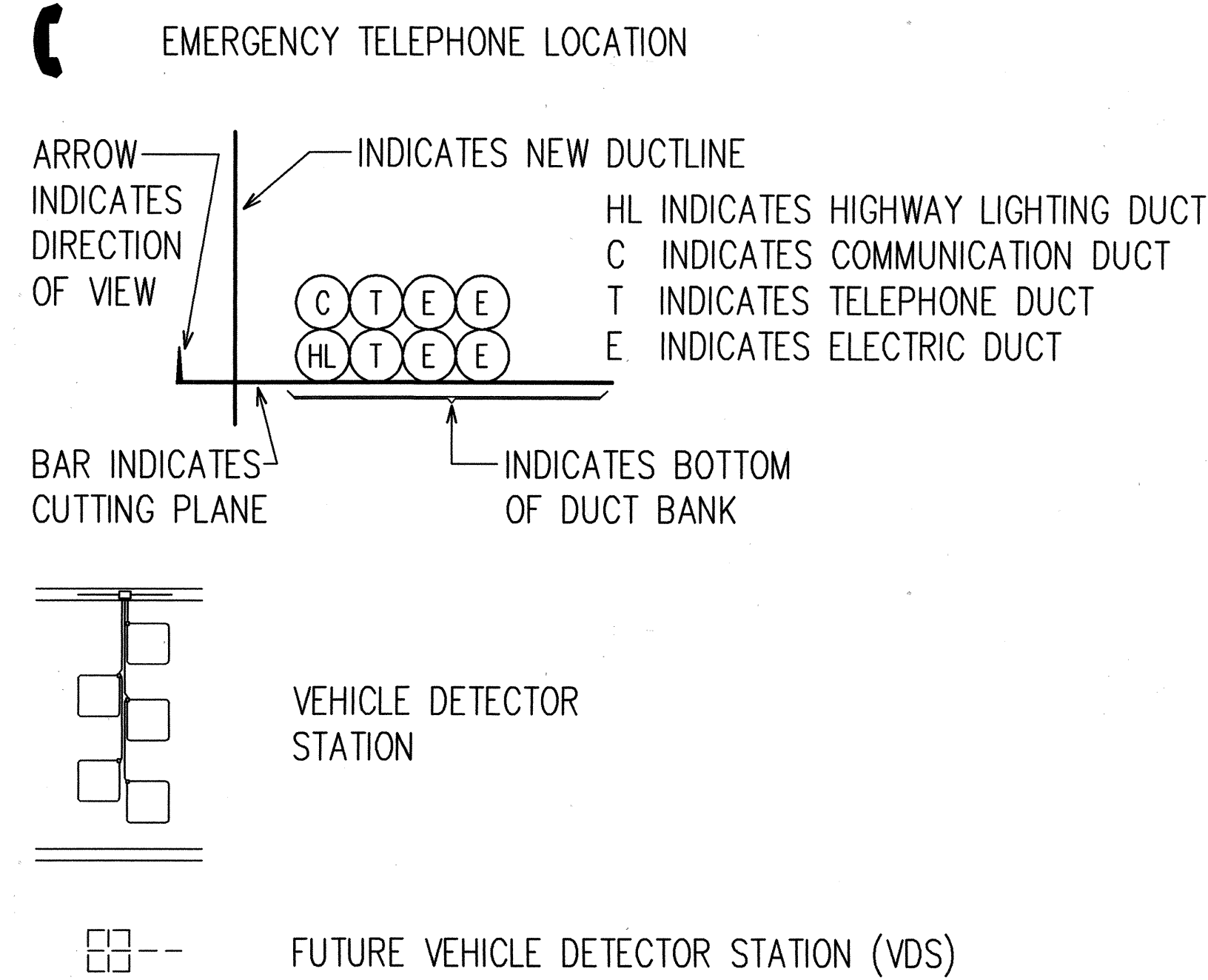
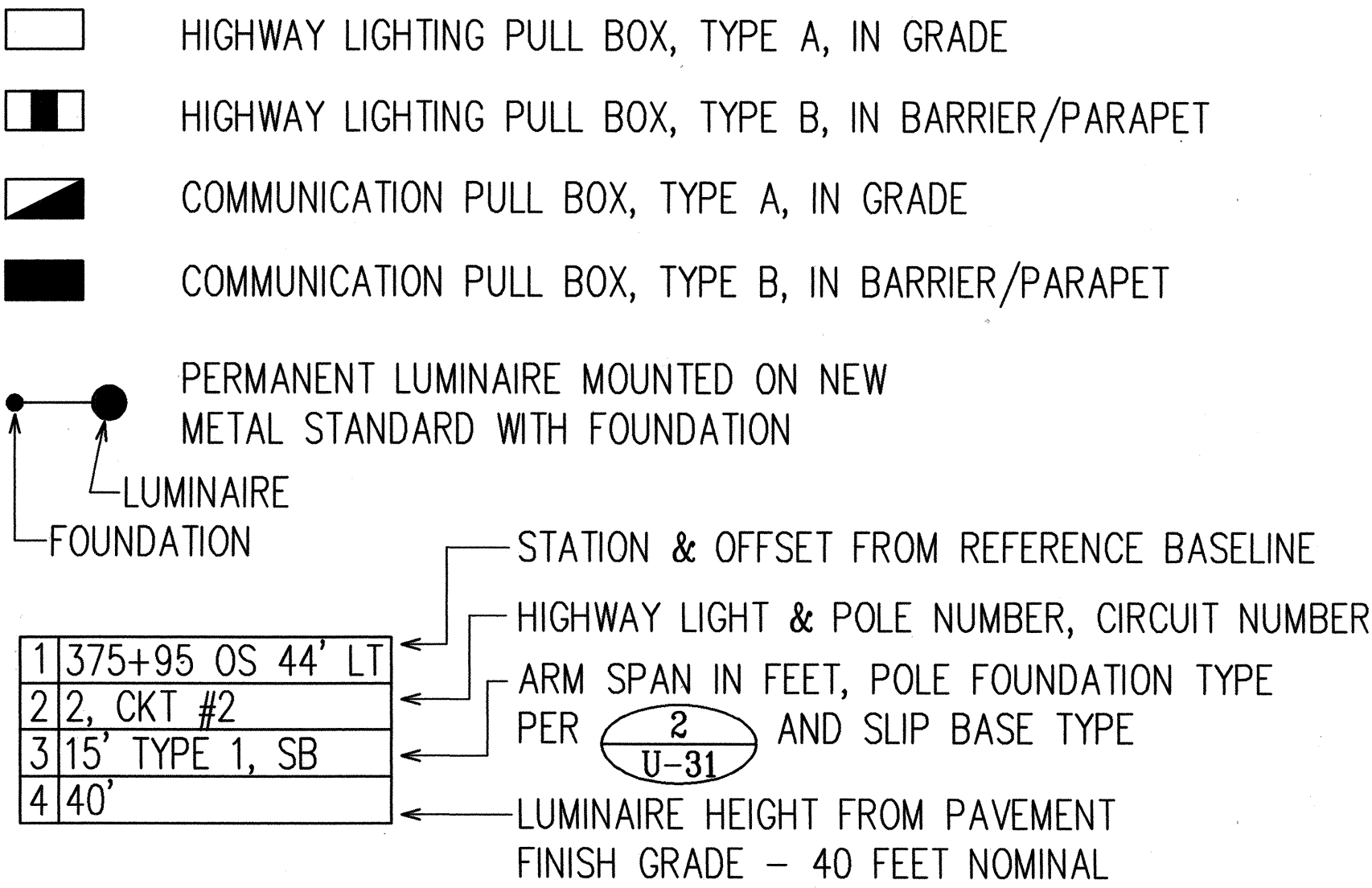


ABBREVIATIONS:

A	=	AMPS EXAMPLE: 40A = 40 AMPS
A.I.C.	=	AMPS INTERRUPTING CAPACITY
BC	=	BARE COPPER
BKR	=	BREAKER
COMM.	=	COMMUNICATION DUCT OR CIRCUIT
FC	=	FOOTCANDLE
GND	=	ELECTRICAL GROUND WIRE OR GROUND
HWY. LT.	=	HIGHWAY LIGHTING DUCT OR CIRCUIT
K	=	x 1,000 EXAMPLE: 10K = 10,000
MTD	=	MOUNTED
NA	=	SODIUM
N.E.C.	=	NATIONAL ELECTRIC CODE
TYP	=	TYPICAL
U/G	=	UNDERGROUND
XFMR	=	TRANSFORMER
HPS	=	HIGH PRESSURE SODIUM
OS	=	OFFSET FROM REFERENCE BASELINE
LT	=	LEFT
RT	=	RIGHT
E	=	ELECTRIC
T	=	TELEPHONE
SB	=	SLIP BASE PER SHT. U-34

SYMBOLS AND LEGEND:

(SEE SHEET U-9 FOR ADDITIONAL SYMBOLS AND LEGEND)



HIGHWAY LIGHTING AND COMMUNICATION LAYOUT PLAN

SCALE: 1"=400'

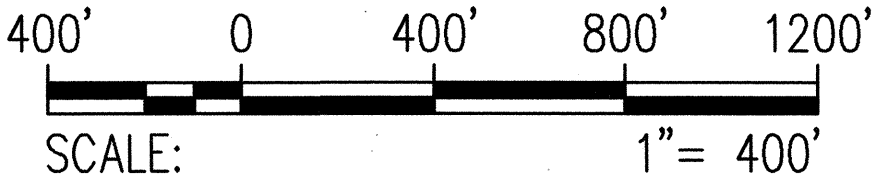
GENERAL NOTES:

- PAYMENT FOR ALL WORK RELATED TO HIGHWAY LIGHTING SYSTEM AND COMMUNICATION DUCT SYSTEM SHALL BE MADE UNDER "SECTION 622-HIGHWAY LIGHTING SYSTEM" OF THE SPECIAL PROVISIONS, PROPOSAL CONTRACT AND BOND OF THE PROJECT.
- ALL HIGHWAY LIGHTING AND COMMUNICATION DUCT MAINS TO BE 3 INCH SCHEDULE 40 PVC DUCTS ENCASED IN A 3" MINIMUM CLASS B CONCRETE JACKET.
- ALL HIGHWAY PULLBOX TO HIGHWAY LIGHTING FOUNDATION AND ALL COMMUNICATION PULLBOX TO EMERGENCY CABINET RISERS TO BE 2 INCH SCHEDULE 40 PVC DUCTS ENCASED IN A 3 INCH MINIMUM CLASS B CONCRETE JACKET.
- ALL LUMAIRES TO BE 250 WATT HIGH PRESSURE SODIUM CUT OFF TYPE III LUMAIRES.
- CONTRACTOR TO SUBMIT COMPUTERIZED POINT TO POINT FC LEVEL FOR APPROVAL.
- INSTALL ALL HIGHWAY LIGHTING LUMAIRES, POLES, IN-GRADE HIGHWAY LIGHTING POLE FOUNDATIONS, RISERS FROM IN-GRADE HIGHWAY LIGHTING PULLBOXES TO IN-GRADE FOUNDATIONS, TRANSFORMATION OF VOLTAGES, METERING REQUIREMENTS, AND WIRING AS SPECIFIED IN THESE PLANS AND IT'S SPECIFICATIONS.
- PROVIDE KNOCKOUTS IN THE HIGHWAY LIGHTING PULLBOXES FOR FUTURE DUCT ENTRANCES AS SHOWN IN THESE PLANS FOR N.I.C. ITEMS.
- INSTALL ALL COMMUNICATION DUCTS, PULLBOXES, DUCT RISERS, AS SPECIFIED IN THESE PLANS AND IT'S SPECIFICATIONS.
- CONTRACTOR TO INSTALL HIGHWAY LIGHTING AND POWER CABLES/CONDUCTORS PER HIGHWAY LIGHTING ONE-LINE DIAGRAM SHEET U-27 & U-28, HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 1985, AND THE SPECIAL PROVISIONS OF THE CONTRACT.
- CONTRACTOR TO INSTALL HIGHWAY LIGHTING AND POWER CABLES/CONDUCTORS AND MAKE CONNECTION TO EXISTING POWER CABLES/CONDUCTORS AT OR PAST PROJECT INTERFACES AS REQUIRED. IF DUCTS AT INTERFACE ARE NON-EXISTING, CONTRACTOR IS TO LEAVE A 3'-0" COIL IN HIS FIRST/LAST PULLBOX INVOLVED.
- INSTALL THE DUCT SYSTEM FOR THE DETECTOR LOOP AS SHOWN ON SHEET U-35. THE WIRING FOR THE DETECTOR LOOP TO BE N.I.C.

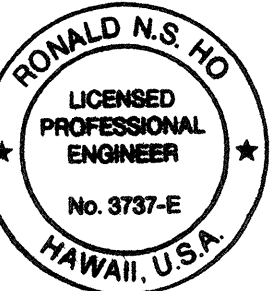
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	84	211

PERMANENT STREET LIGHTING CRITERIA:

- MINIMUM AVERAGE MAINTAINED ILLUMINATION LEVEL: 1 FC
- MAXIMUM (AVERAGE TO MINIMUM FOOTCANDLE) UNIFORMITY RATIO: 4 TO 1
- MAINTENANCE FACTOR: 0.80
- PROVIDE HIGHWAY ILLUMINATION CALCULATIONS (PER IES RECOMMENDATIONS) CERTIFYING CONFORMANCE WITH MINIMUM AVERAGE MAINTAINED ILLUMINATION LEVELS AND MAXIMUM (AVERAGE TO MINIMUM FOOTCANDLES) UNIFORMITY RATIO.



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Electrical Engineers



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HIGHWAY LIGHTING AND COMMUNICATION
LAYOUT PLAN AND GENERAL NOTES

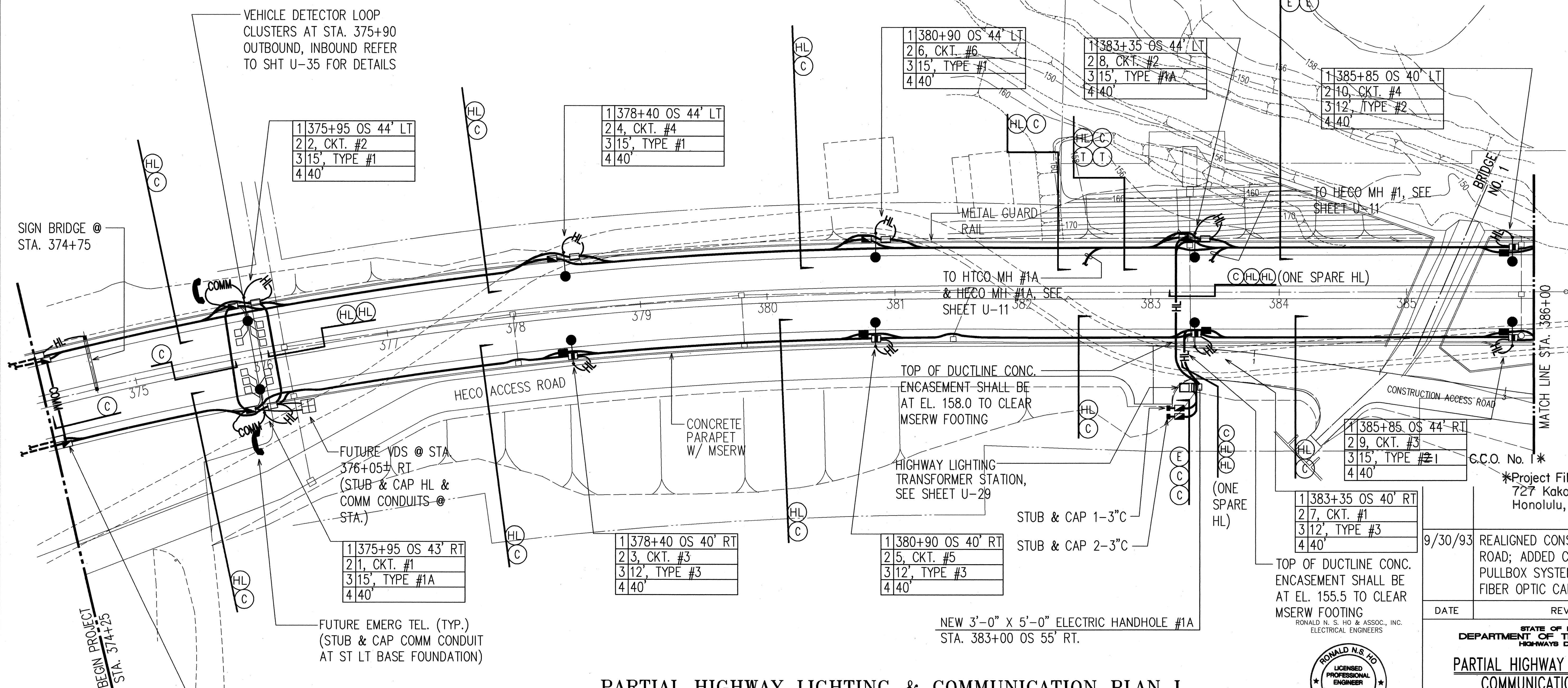
INTERSTATE ROUTE H-3
F.A.I. PROJECT NO I-H3-1(59)

SCALE: AS NOTED DATE: JUNE 1993
SHEET No. U-22 OF 35 SHEETS

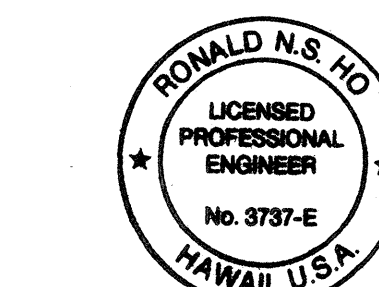
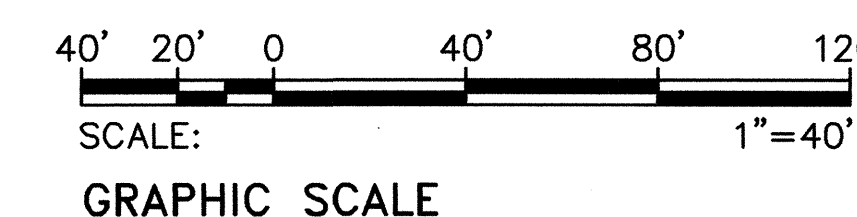
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	ADD. 85	211



NOTE:
ELECTRIC AND TELEPHONE MANHOLES/
HANDHOLES NOT SHOWN FOR CLARITY



PARTIAL HIGHWAY LIGHTING & COMMUNICATION PLAN I SCALE: 1"=40'



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*Project Files are Located at
727 Kakaio St.
Honolulu, Hi. 96819

9/30/93 REALIGNED CONSTRUCTION ACCESS
ROAD; ADDED CONDUIT AND
PULLBOX SYSTEM FOR FUTURE
FIBER OPTIC CABLE SYSTEM

DATE	REVISION
9/30/93	REALIGNED CONSTRUCTION ACCESS ROAD; ADDED CONDUIT AND PULLBOX SYSTEM FOR FUTURE FIBER OPTIC CABLE SYSTEM

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL HIGHWAY LIGHTING AND COMMUNICATION PLAN I STA. 374+25 TO STA. 386+00

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO I-H3-1(59)

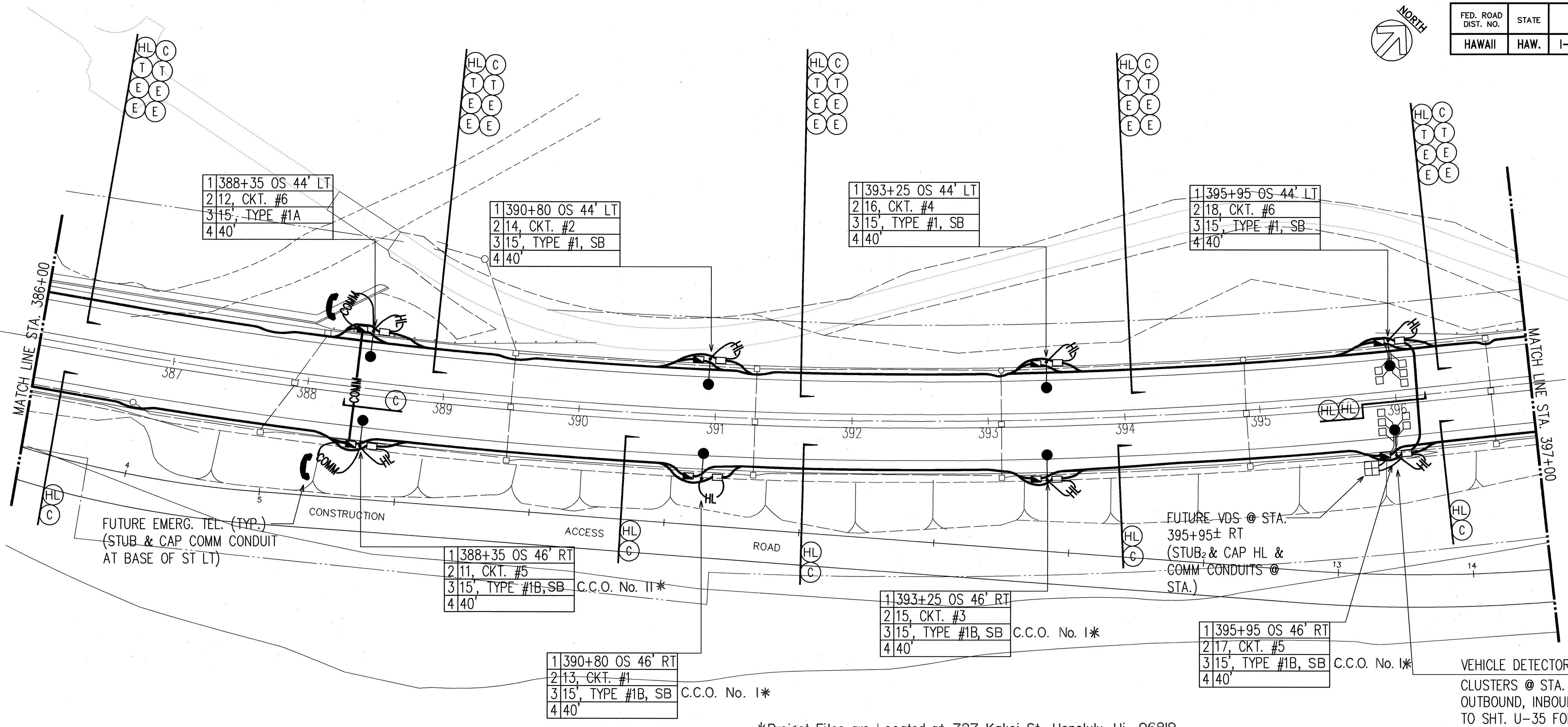
SCALE: AS NOTED DATE: JUNE 1993

SHEET No. U-23 OF 35 SHEETS

ADD. 85

ORIGINAL PLAN	DATE
DRAWN BY	
TRACED BY	
CHECKED BY	
NOTED BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	ADD. 86	211



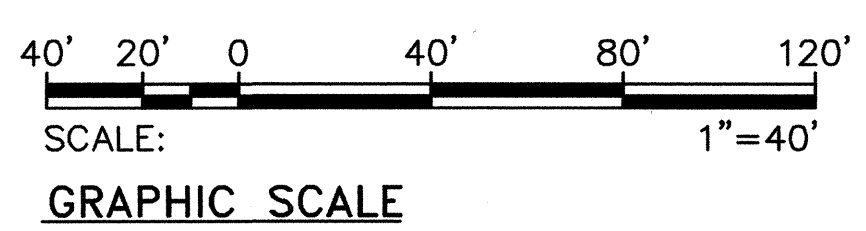
*Project Files are Located at 727 Kakoi St. Honolulu, Hi. 96819

PARTIAL HIGHWAY LIGHTING & COMMUNICATION PLAN II

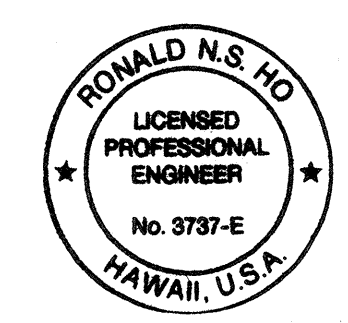
SCALE: 1"=40'

NOTE:
ELECTRIC AND TELEPHONE MANHOLES/
HANDHOLES NOT SHOWN FOR CLARITY

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	No.



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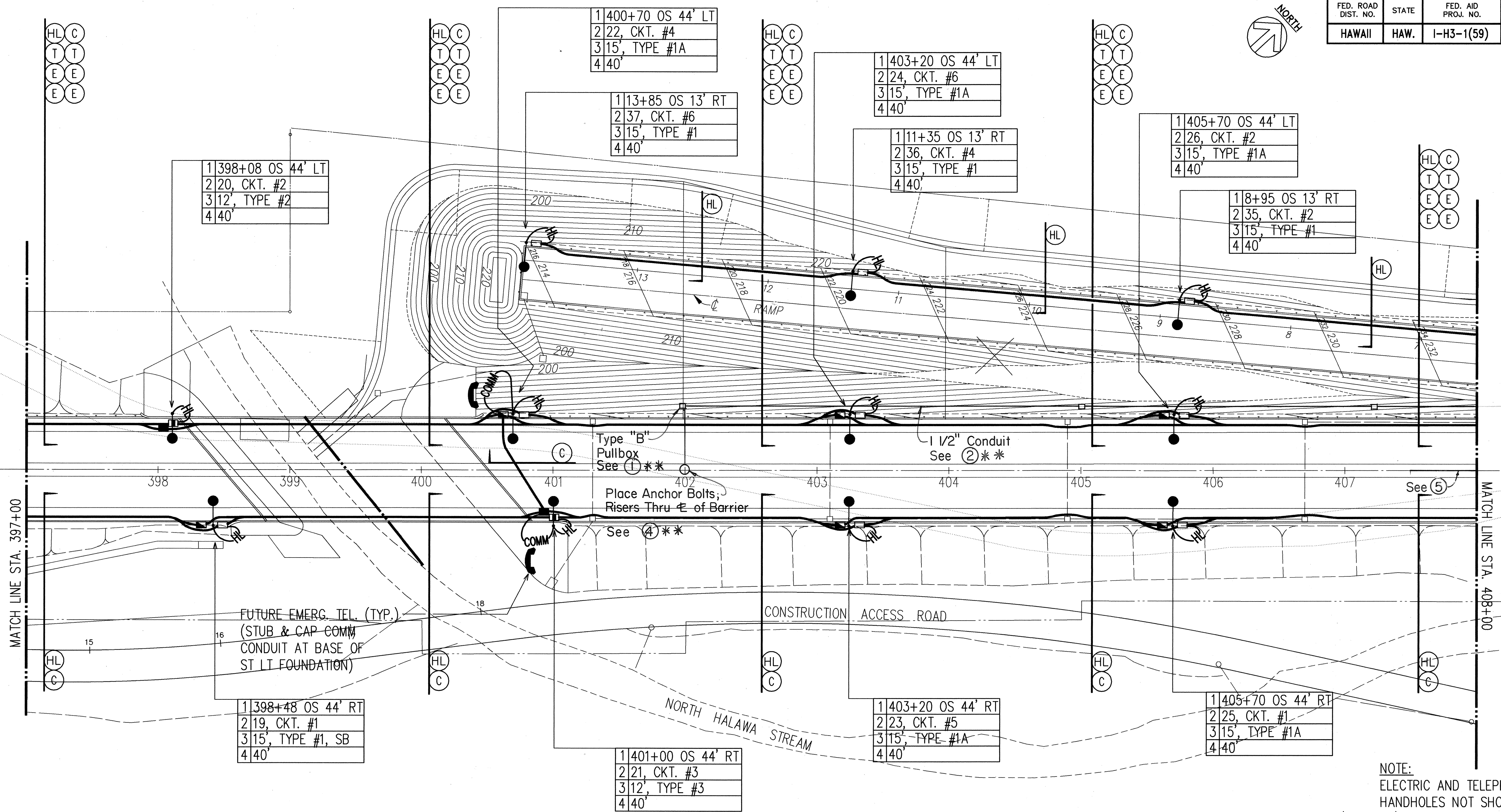


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9/30/93	REALIGNED CONSTRUCTION ACCESS ROAD
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION PARTIAL HIGHWAY LIGHTING AND COMMUNICATION PLAN II STA. 386+00 TO STA. 397+00 INTERSTATE ROUTE H-3 F.A.I. PROJECT NO I-H3-1(59)	
SCALE: AS NOTED	DATE: JUNE 1993
SHEET No. U-24 OF 35 SHEETS	

ADD. 86

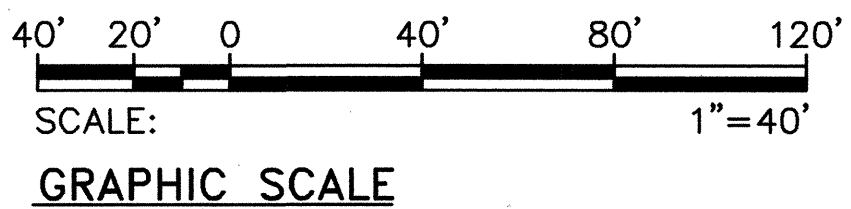
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	ADD. 87	211



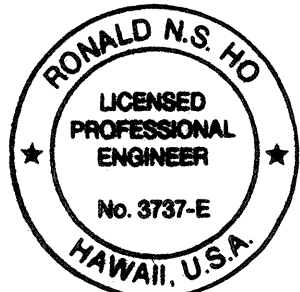
**See Sheet 88 for Notes

PARTIAL HIGHWAY LIGHTING & COMMUNICATION PLAN III

SCALE: 1"=40'



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NOTE:
ELECTRIC AND TELEPHONE MANHOLES/
HANDHOLES NOT SHOWN FOR CLARITY

9/30/93 REALIGNED CONSTRUCTION ACCESS ROAD

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL HIGHWAY LIGHTING AND COMMUNICATION PLAN III

STA. 397+00 TO STA. 408+00

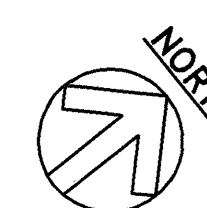
INTERSTATE ROUTE H-3
F.A.I. PROJECT NO I-H3-1(59)

SCALE: AS NOTED DATE: JUNE 1993

SHEET No. U-25 OF 35 SHEETS

ADD. 87

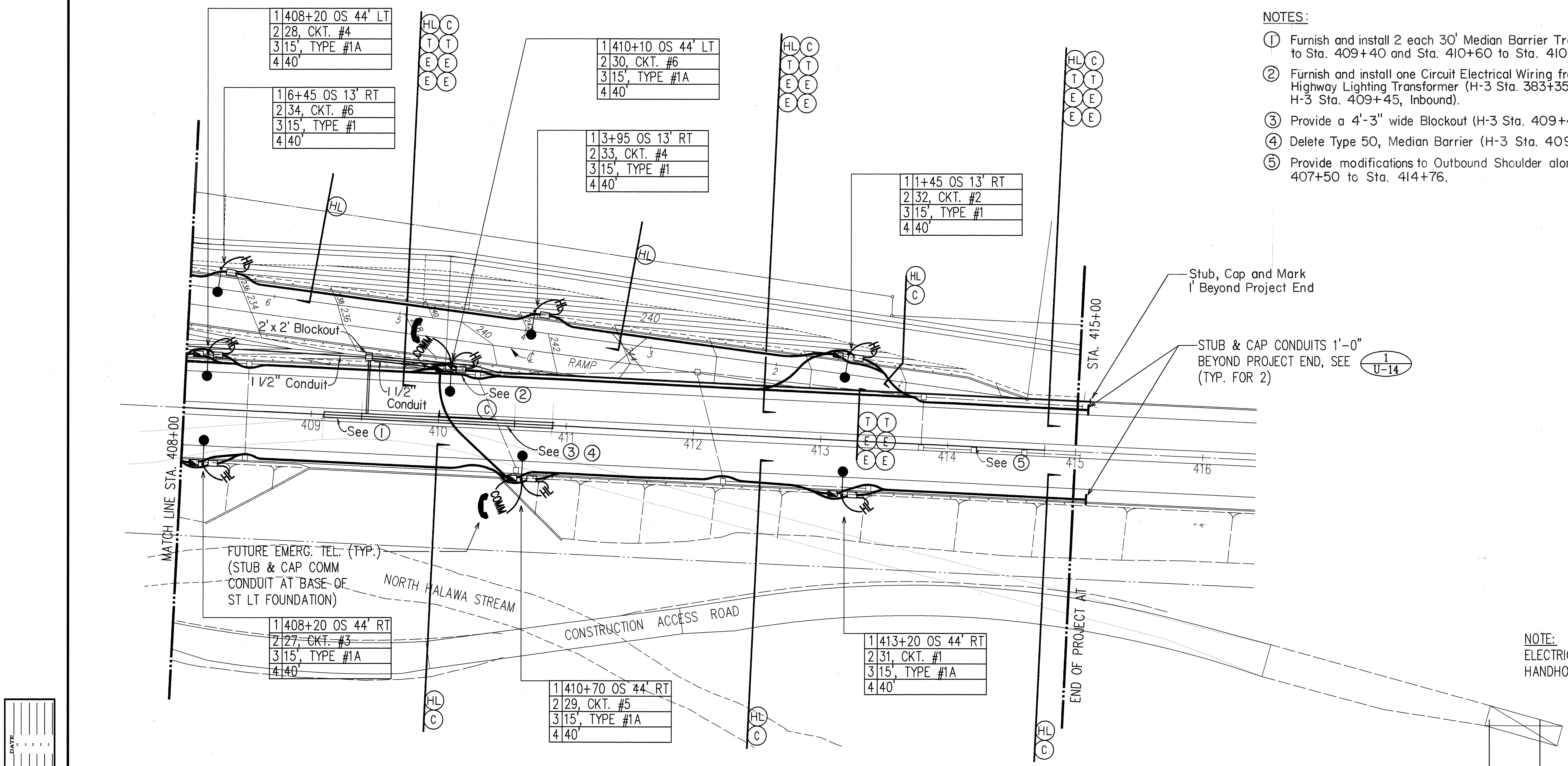
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	DESIGNED BY	
	CHECKED BY	



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	ADD. 88	211

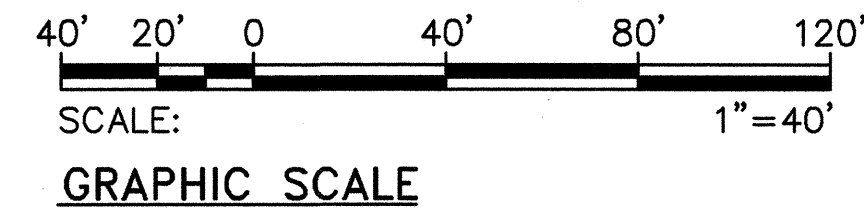
NOTES:

- ① Furnish and install 2 each 30' Median Barrier Transitions (H-3 Sta. 409+10 to Sta. 409+40 and Sta. 410+60 to Sta. 410+90).
- ② Furnish and install one Circuit Electrical Wiring from Electrical Panel "L" at the Highway Lighting Transformer (H-3 Sta. 383+35, Outbound to the Blockout at H-3 Sta. 409+45, Inbound).
- ③ Provide a 4'-3" wide Blockout (H-3 Sta. 409+40 to H-3 Sta. 410+60).
- ④ Delete Type 50, Median Barrier (H-3 Sta. 409+40 to H-3 Sta. 410+60).
- ⑤ Provide modifications to Outbound Shoulder along the Median Barrier, Sta. 407+50 to Sta. 414+76.

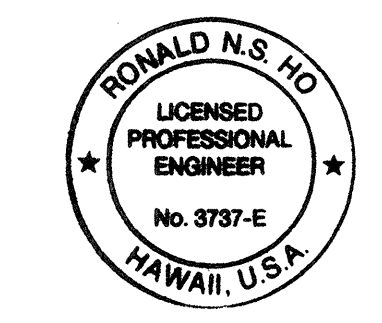


DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
No.	_____

PARTIAL HIGHWAY LIGHTING & COMMUNICATION PLAN IV
SCALE: 1"=40'



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9/30/93	REVISED DRAIN LINES
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
PARTIAL HIGHWAY LIGHTING AND COMMUNICATION PLAN IV	
STA. 408+00 TO STA. 415+00	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO I-H3-1(59)	
SCALE: AS NOTED	DATE: JUNE 1993
SHEET No. U-26 OF 35 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	C.O. ADD.89	211

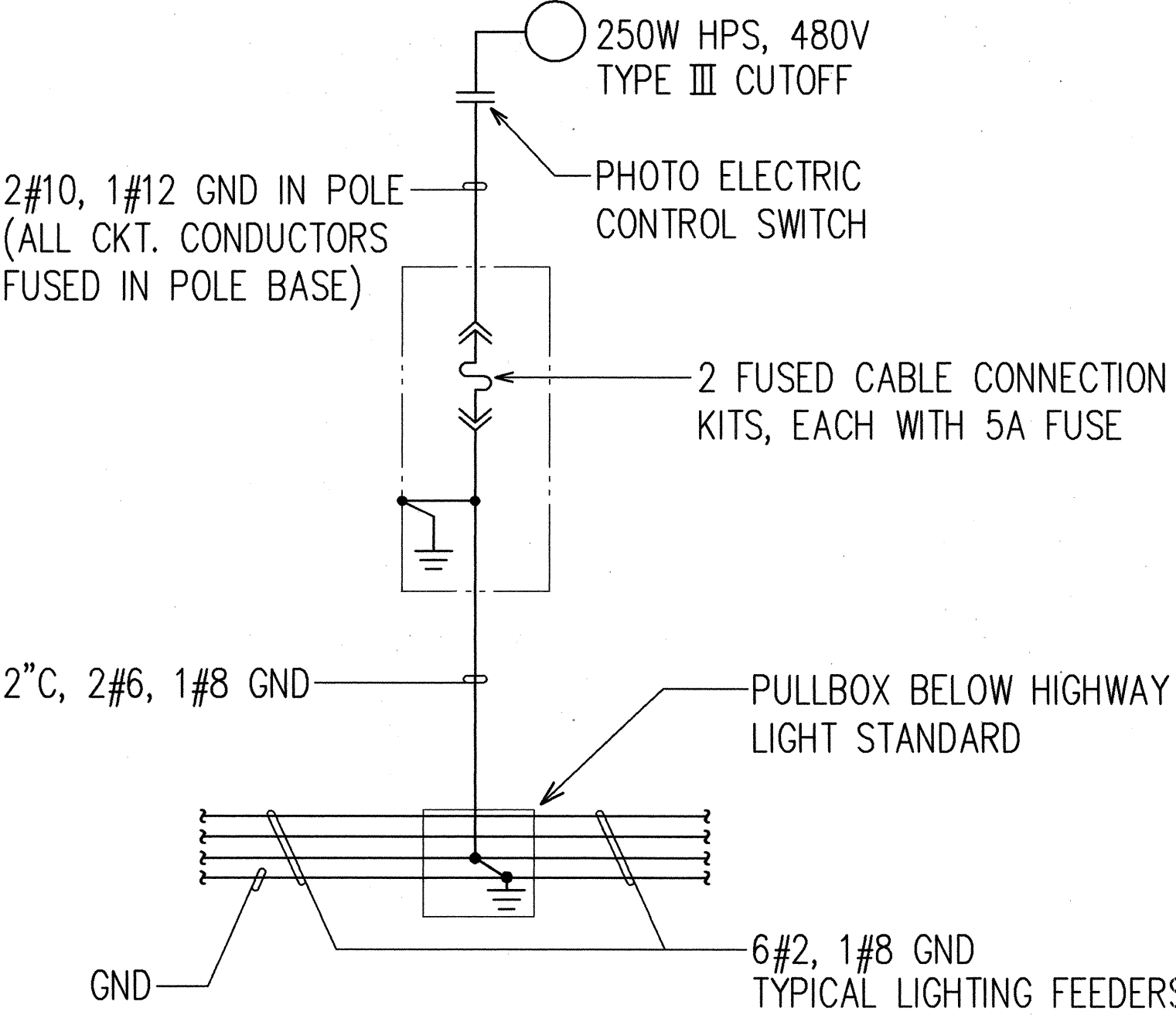
ONE-LINE DIAGRAM LEGEND:

- 5 STREET LIGHT AND CIRCUIT NUMBER
- FUSE ELEMENT - 3 AMP UNLESS NOTED OTHERWISE
- CONNECTION
- GROUND - NOTE: ALL STEEL POLES TO BE GROUNDED
- METER

PRIMARY SECONDARY
CONNECTION TO TRANSFORMER SECONDARY

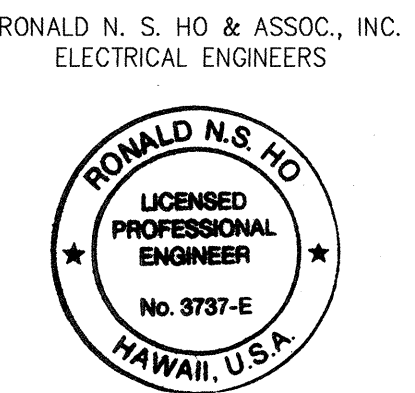
FOR WIRING DIAGRAM OF HIGHWAY LIGHT STANDARD, AND BRIDGE SIGN, SEE DIAGRAM (TYP)

2 U-27



2 U-27
TYPICAL WIRING DIAGRAM OF HIGHWAY LIGHT STANDARD OR BRIDGE SIGN LIGHT

BARRIER GATE CKT TO BE PROVIDED WITH 3'-0" OF COILED SLACK CABLES IN PULLBOX FOR FUTURE BARRIER GATE CIRCUIT



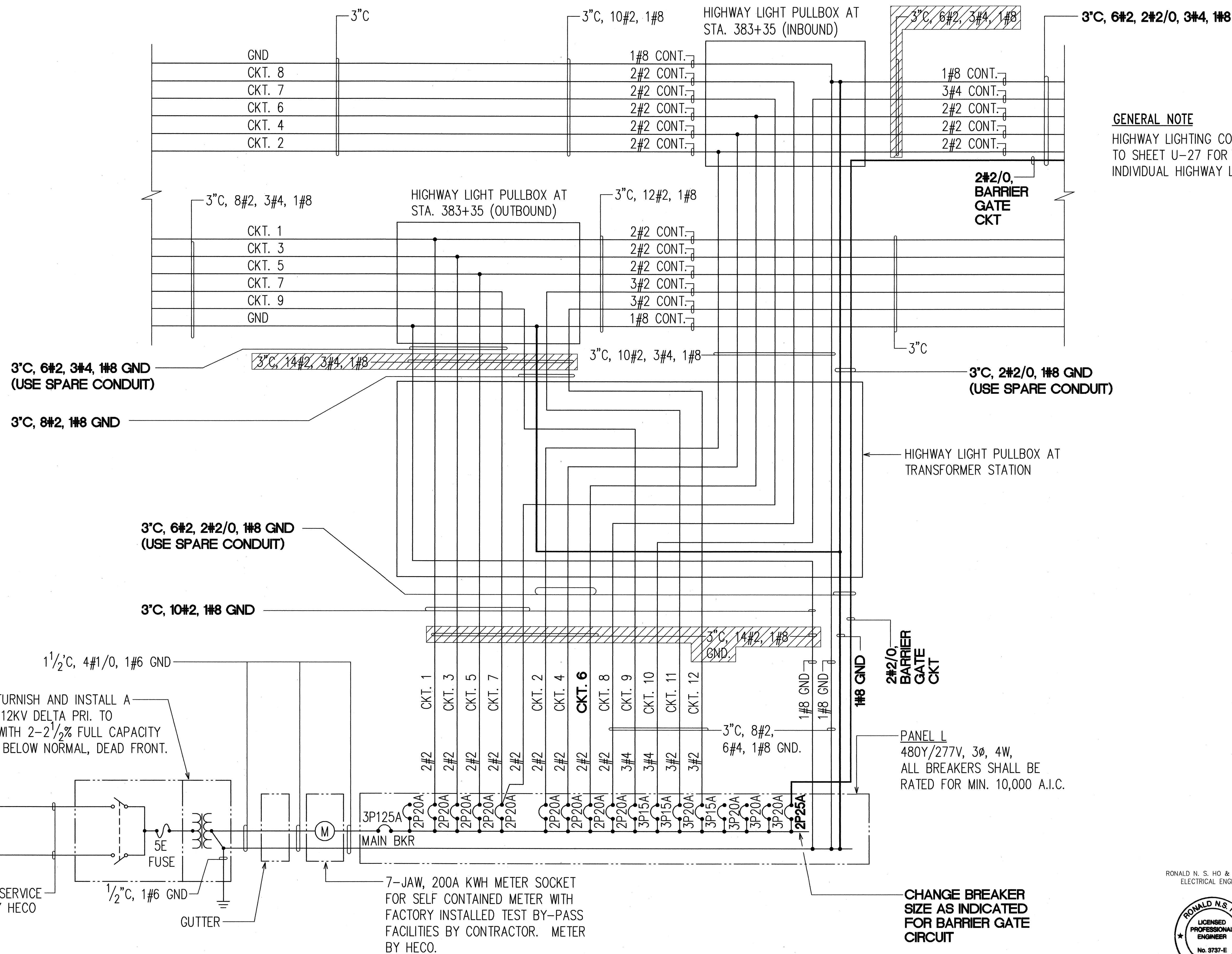
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. *Ronald N. S. Ho* 5/1/96

DATE	REVISION
5/19/95	ADDED BARRIER GATE CIRCUIT FOR FUTURE BARRIER GATE AND REDISTRIBUTED CIRCUITS IN CONDUITS
9/30/93	CORRECTED "CKT 8" TO "CKT 10"; CORRECTED SHEET "U-27" TO "U-28"
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION HIGHWAY LIGHTING ONE-LINE DIAGRAM INTERSTATE ROUTE H-3 F.A.I. PROJECT NO I-H3-1(59) SCALE: AS NOTED DATE: JUNE 1993 SHEET No. U-27 OF 35 SHEETS	

C.O. ADD. 89

SURVEY PLOTTED BY	DATE
ORIGINAL PLAN	
DRAWN 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-H3-1(59)	1993	C.O. ADD.90	211



GENERAL NOTE
 HIGHWAY LIGHTING CONNECTIONS NOT SHOWN TO PRESERVE CLARITY. REFER TO SHEET U-27 FOR TYPICAL HIGHWAY LIGHT CONNECTIONS AND INDIVIDUAL HIGHWAY LIGHT CIRCUIT ASSIGNMENT.

CONTRACTOR TO FURNISH AND INSTALL A 75KVA, 3Ø XFMR, 12KV DELTA PRI. TO 480Y/277V SEC. WITH 2-2½% FULL CAPACITY TAPS ABOVE AND BELOW NORMAL, DEAD FRONT.

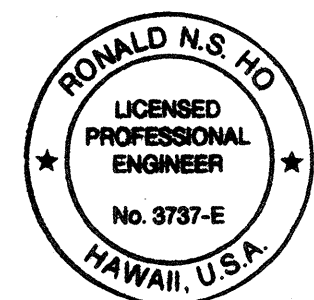
INCOMING HECO 12.47KV PRIMARY FEEDER

2-4"C. TO HECO SERVICE POINT, CABLES BY HECO

7-JAW, 200A KWH METER SOCKET FOR SELF CONTAINED METER WITH FACTORY INSTALLED TEST BY-PASS FACILITIES BY CONTRACTOR. METER BY HECO.

CHANGE BREAKER SIZE AS INDICATED FOR BARRIER GATE CIRCUIT

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 ELECTRICAL ENGINEERS

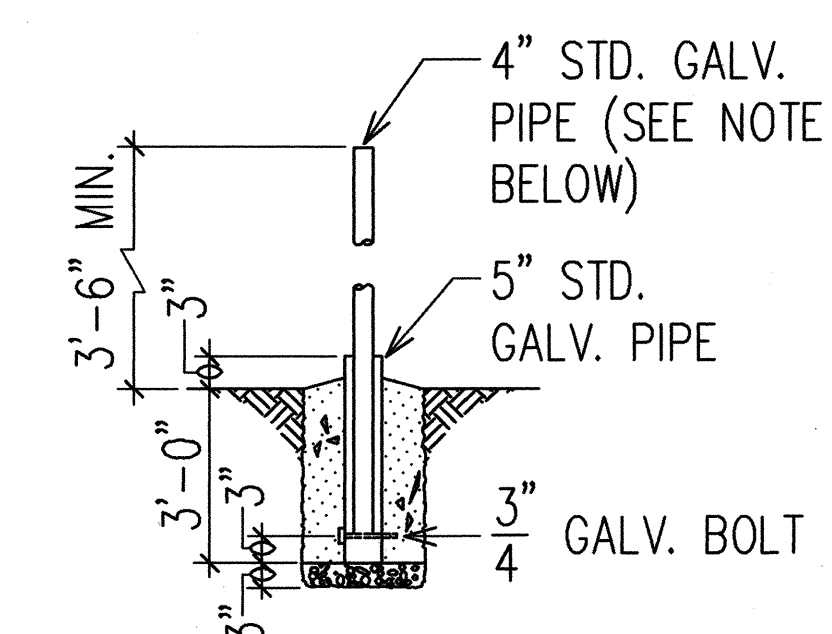
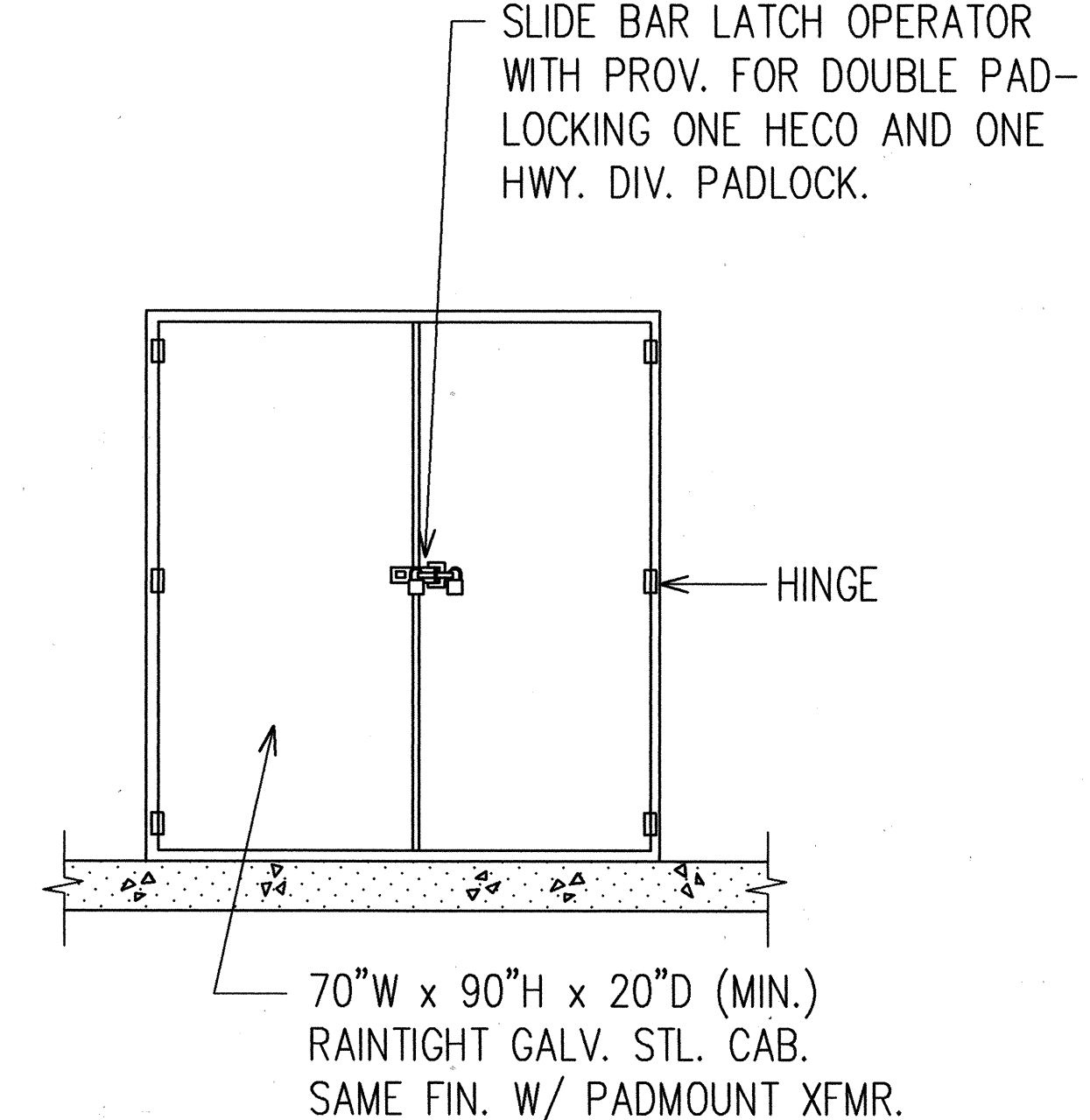
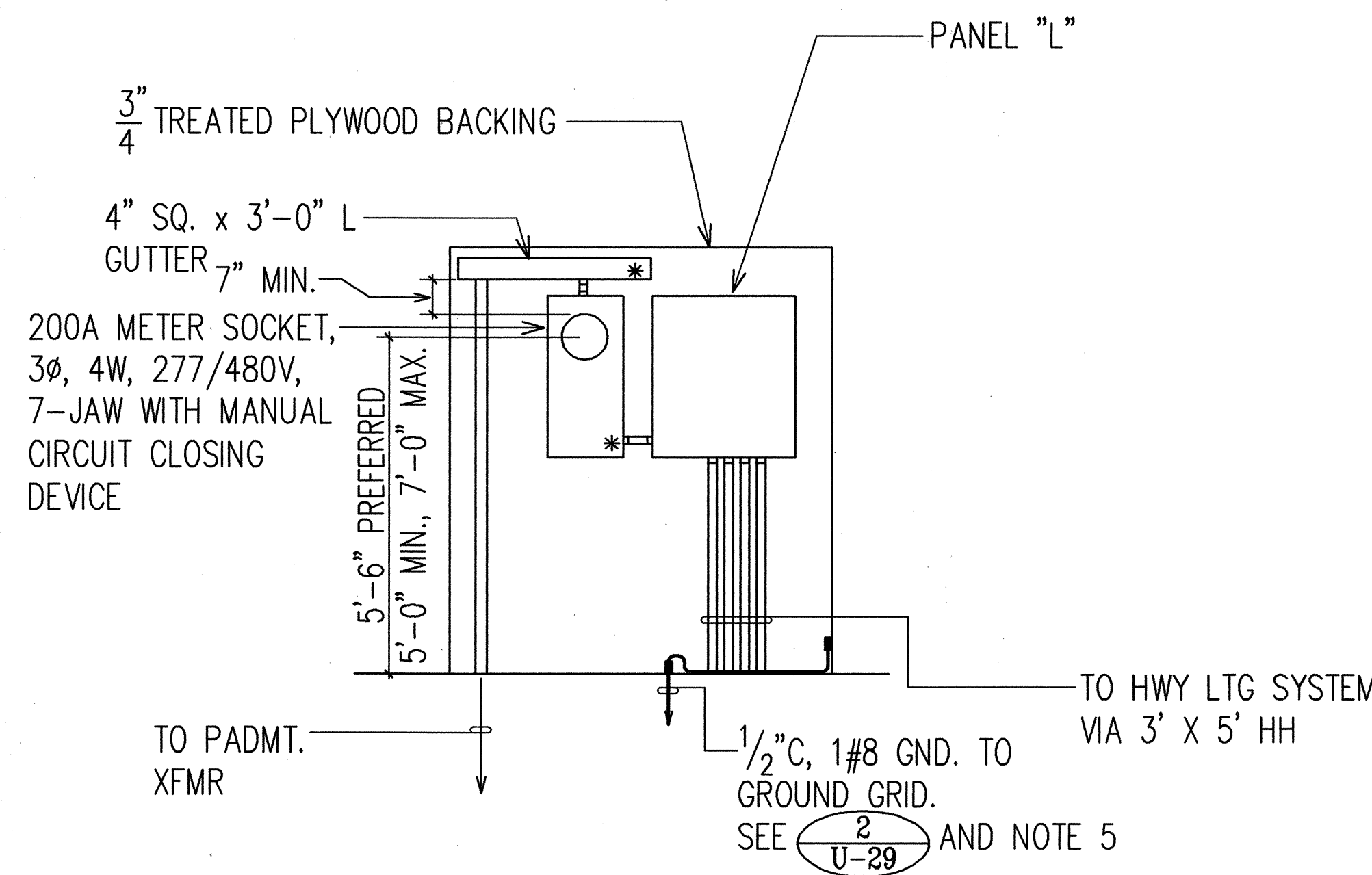


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5/19/95	ADDED BARRIER GATE CIRCUIT FOR FUTURE BARRIER GATE AND REDISTRIBUTED CIRCUITS IN CONDUITS
9/30/93	REVISED CONDUCTOR SIZES FOR CIRCUIT NOS. 9 AND 10
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION TRANSFORMER STATION ONE-LINE DIAGRAM INTERSTATE ROUTE H-3 F.A.I. PROJECT NO I-H3-1(59)	
SCALE: AS NOTED DATE: JUNE 1993 SHEET No. U-28 OF 35 SHEETS	

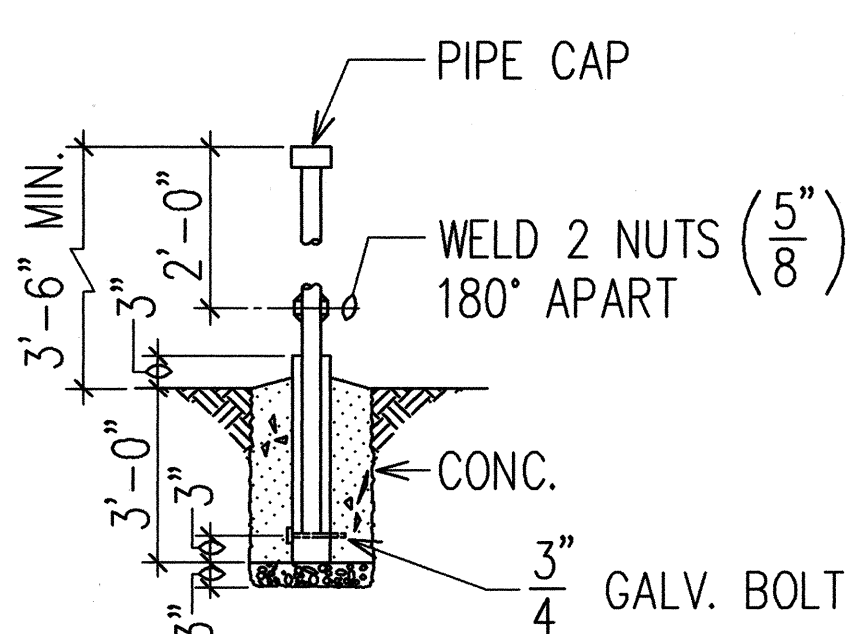
SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	ADD. 91	211



THE 4" STANDARD GALV. PIPE TO BE FILLED WITH CONCRETE TO WEIGH APPROXIMATELY 150 LBS.

DETAIL 3 U-29



THE PIPE THAT IS TO BE PLACED DIRECTLY IN FRONT OF THE DOORS SHALL NOT BE FILLED WITH CONCRETE. THE PIPE SHALL BE CAPPED AND THE WELDED NUTS ARE FOR SCREWING IN BOLTS TO ACT AS "HANDLES" FOR LIFTING. THE BOLTS ARE TO BE REMOVED AFTER INSTALLATION.

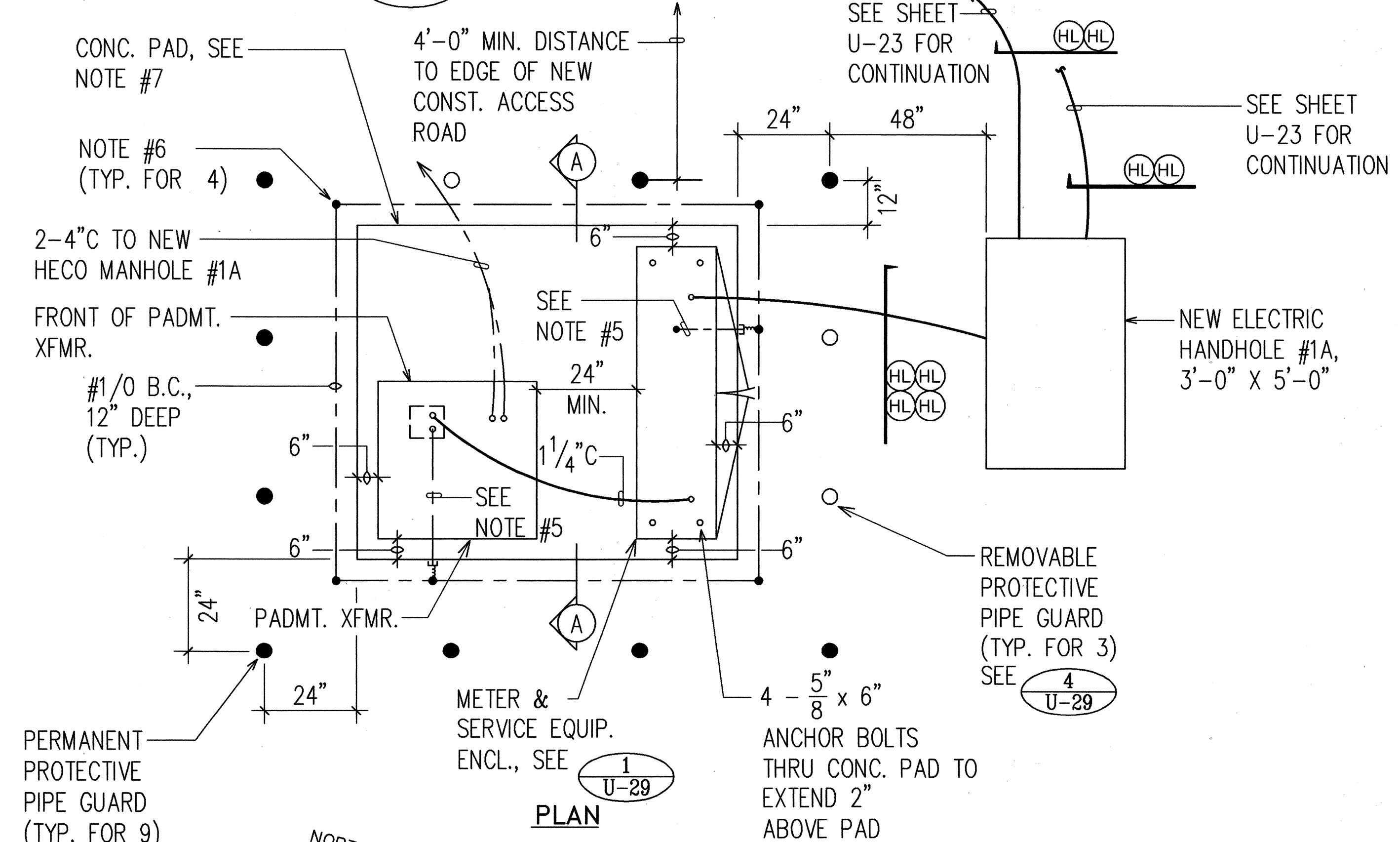
DETAIL 4 U-29

INTERIOR ELEVATION

FRONT ELEVATION

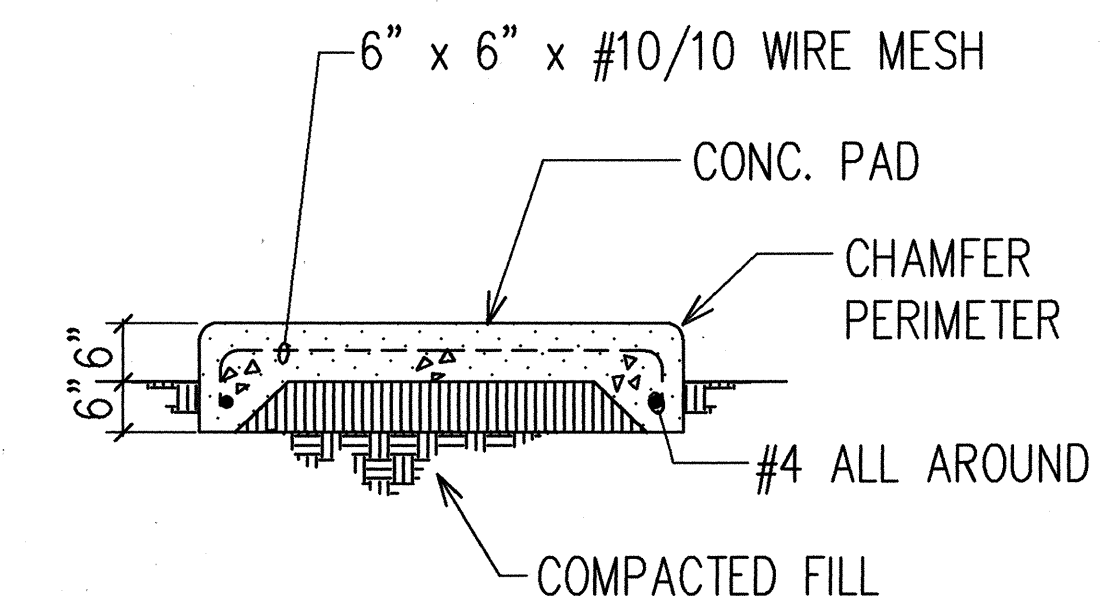
- NOTES:
- * INDICATES PROVISIONS FOR HECO SEALS.
 - WITH EXTERIOR DOORS FULLY OPEN, ALL EQUIPMENT SHALL HAVE FRONT CLEARANCES PER NEC (3'-0" MIN.)
 - LARGER CABINET SHALL BE FURNISHED IF EQUIPMENT CANNOT BE HOUSED IN MINIMUM SIZE.

1 U-29 METERING AND SERVICE EQUIPMENT CABINET N.T.S.



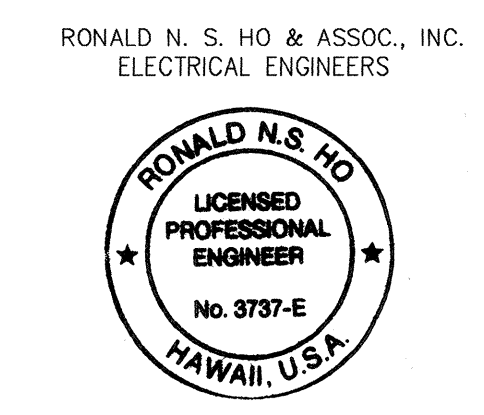
2 U-29 TRANSFORMER STATION N.T.S.

PIPE GUARD DETAILS N.T.S.



SECTION "A-A"

- NOTES:
- HARDWARE TO BE HOT DIPPED GALV. AFTER FABRICATION.
 - 1/2" C, 1#8 GND.
 - GND. ROD 5/8" x 8'-0"
 - VERIFY EQUIP. DIMENSIONS & CONC. PAD REQUIREMENTS WITH EQUIPMENTS BEING PROVIDED.



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9/30/93	DELETED ELECTRICAL EQUIPMENT IN SERVICE EQUIPMENT CABINET FOR PHOTOCCELL MASTER CONTROLS
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION HIGHWAY LIGHTING TRANSFORMER STATION LAYOUT PLAN & DETAILS INTERSTATE ROUTE H-3 F.A.I. PROJECT NO I-H3-1(59) SCALE: AS NOTED DATE: JUNE 1993 SHEET No. U-29 OF 35 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	92	211

STATE HIGHWAYS

LIGHTING

1
U-30

LIGHTING TYPE A
COVER DETAILS
N.T.S.

STATE HIGHWAYS

LIGHTING

2
U-30

LIGHTING TYPE B
COVER DETAILS
N.T.S.

STATE HIGHWAYS

COMM

3
U-30

COMM TYPE A
COVER DETAILS
N.T.S.

STATE HIGHWAYS

COMM

4
U-30

COMM TYPE B
COVER DETAILS
N.T.S.

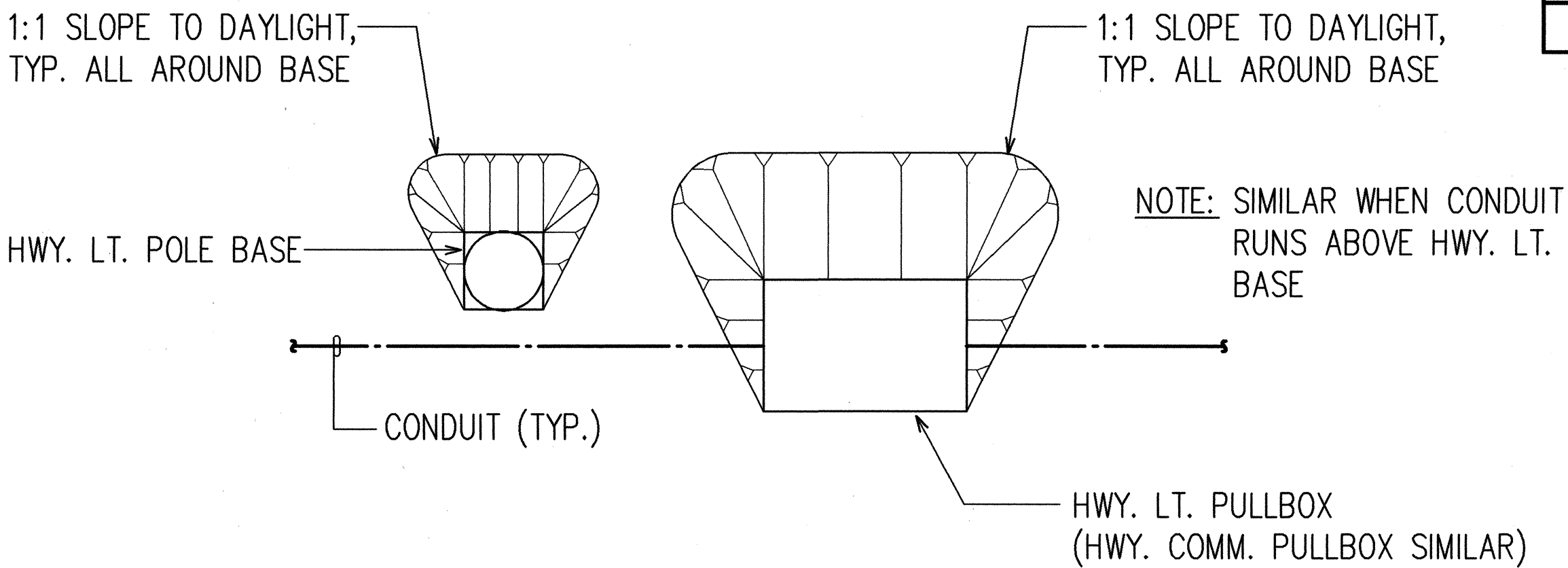
- PULLBOX REFERENCE NOTES FOR HIGHWAY LIGHTING & COMMUNICATION SYSTEMS
- HIGHWAY LIGHTING PULLBOX, TYPE A, FOR IN-GRADE INSTALLATION TO BE PER SDOT STANDARD PLAN TE-41 PULLBOXES EXCEPT INSIDE DIMENSIONS TO BE 2'-0¹/₂" x 3'-6¹/₈". COVER MARKING PER DETAILS

1
U-30
 - HIGHWAY LIGHTING PULLBOX, TYPE B, FOR CONCRETE BARRIER/ PARAPET INSTALLATION TO BE CAST METAL TYPE CONFORMING TO NEC WITH INSIDE DIMENSION 10 INCHES HIGH x 6 INCHES DEEP x 2 FEET-6 INCHES LONG. COVER MARKING PER DETAILS

2
U-30
 - COMMUNICATION PULLBOX, TYPE A, FOR IN-GRADE INSTALLATION TO BE PER SDOT STANDARD PLAN TE-41 PULLBOXES EXCEPT INSIDE DIMENSIONS TO BE 2'-0¹/₂" x 3'-6¹/₈". COVER MARKING PER DETAILS

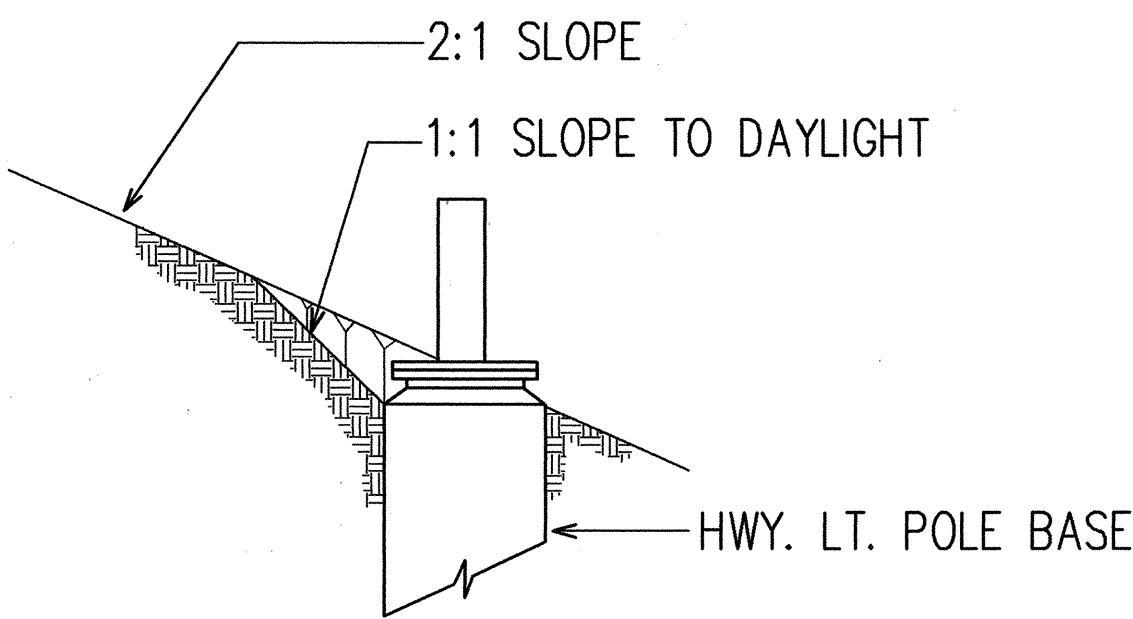
3
U-30
 - COMMUNICATION PULLBOX, TYPE B, FOR CONCRETE BARRIER/PARAPET INSTALLATION TO BE CAST METAL TYPE CONFORMING TO NEC WITH INSIDE DIMENSION 8 INCHES HIGH x 6 INCHES DEEP x 2 FEET LONG. COVER MARKING PER DETAILS

4
U-30
 - INSTALL A 5/8" DIA. x 8'-0" L. GROUND ROD IN ALL LIGHTING AND COMMUNICATION TYPE A IN-GRADE PULLBOXES.
 - IN ALL LIGHTING AND COMMUNICATIONS TYPE B PULLBOXES, INSTALL A CONTINUOUS #2 BC TIE TO THE PARAPET RE-BAR SYSTEM AND ANOTHER CONTINUOUS #2 BC RING GROUND ALONG THE PARAPET REINF. RE-BAR SYSTEM TO THE NEAREST SUPPORT COLUMN, DOWN THE COLUMN REINF. SYSTEM, AND TERMINATING IN A GROUND RING COIL 2'-6" MINIMUM BELOW GRADE IN DIRECT CONTACT WITH THE EARTH. THE COIL IS TO CONSIST OF A 20' MINIMUM LENGTH OF THE #2 BC CONDUCTOR. LEAVE 2' TAILS IN PULLBOXES.
 - MEASURE GROUNDS @ 25 OHMS MAXIMUM.



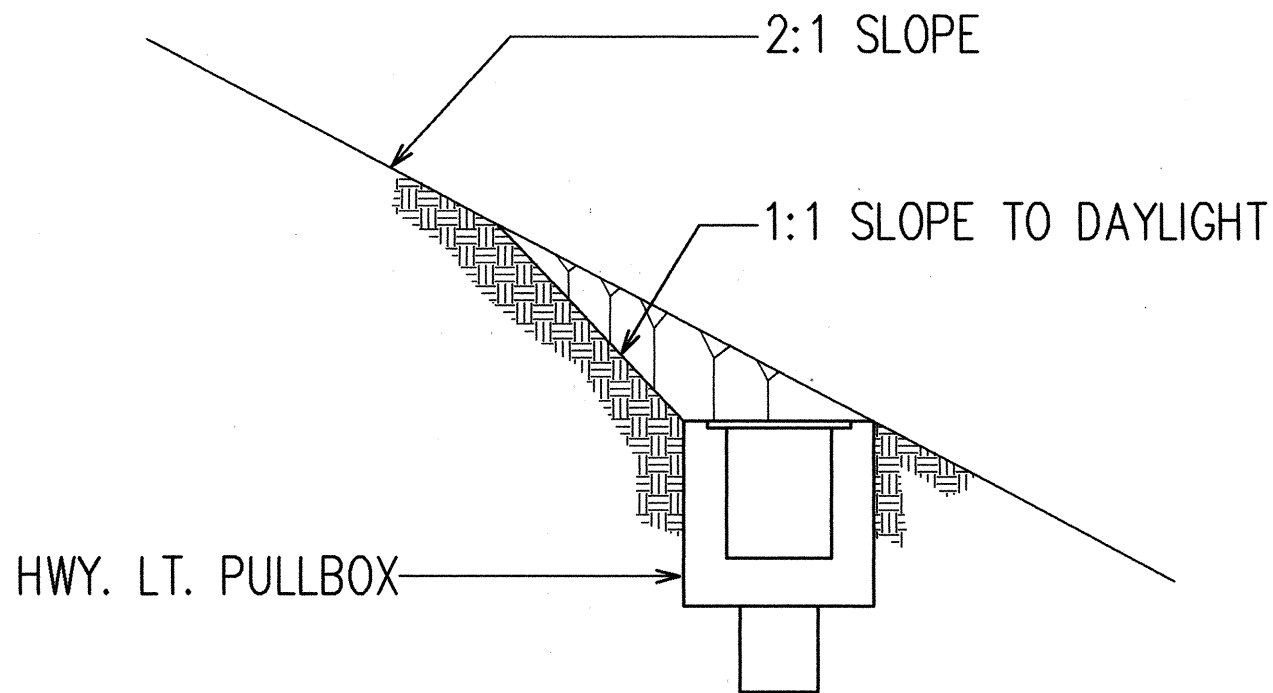
5
U-30

TYPICAL GRADING PLAN AROUND HIGHWAY
LIGHT BASE AND PULLBOX AT 2:1 SLOPE
N.T.S.



6
U-30

TYPICAL GRADING SECTION THRU
HIGHWAY LIGHT POLEBASE AT 2:1 SLOPE
N.T.S.

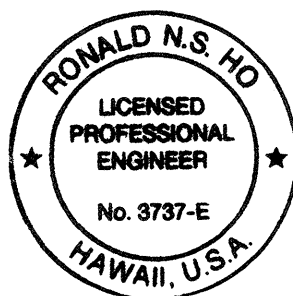


7
U-30

TYPICAL GRADING SECTION THRU
HIGHWAY LIGHT OR COMMUNICATION
PULLBOX AT 2:1 SLOPE
N.T.S.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NO. 1	DRAWN BY	
NO. 2	DESIGNED BY	
NO. 3	QUANTITIES BY	
NO. 4	CHECKED BY	
NO. 5		
NO. 6		
NO. 7		
NO. 8		
NO. 9		
NO. 10		

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ELECTRICAL ENGINEERS



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

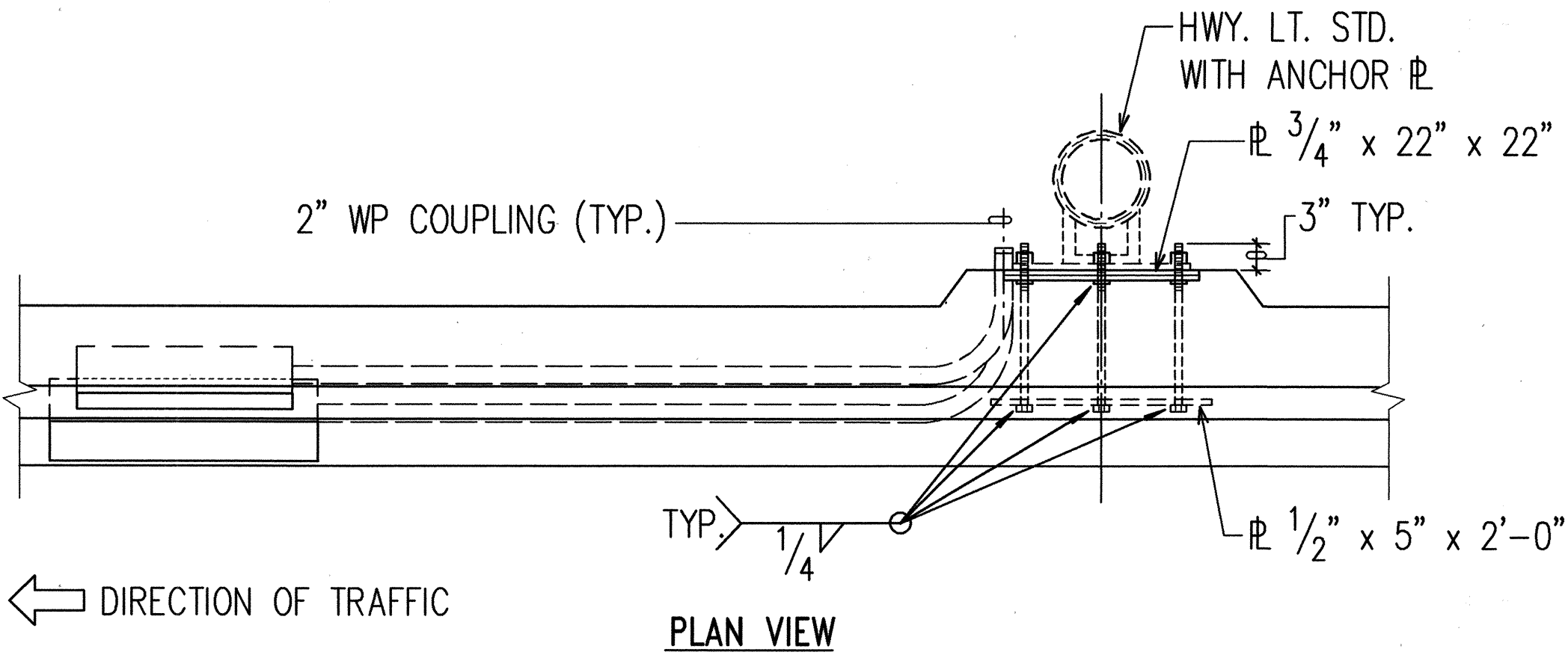
HIGHWAY LIGHTING AND COMMUNICATION
MISCELLANEOUS DETAILS I

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO I-H3-1(59)

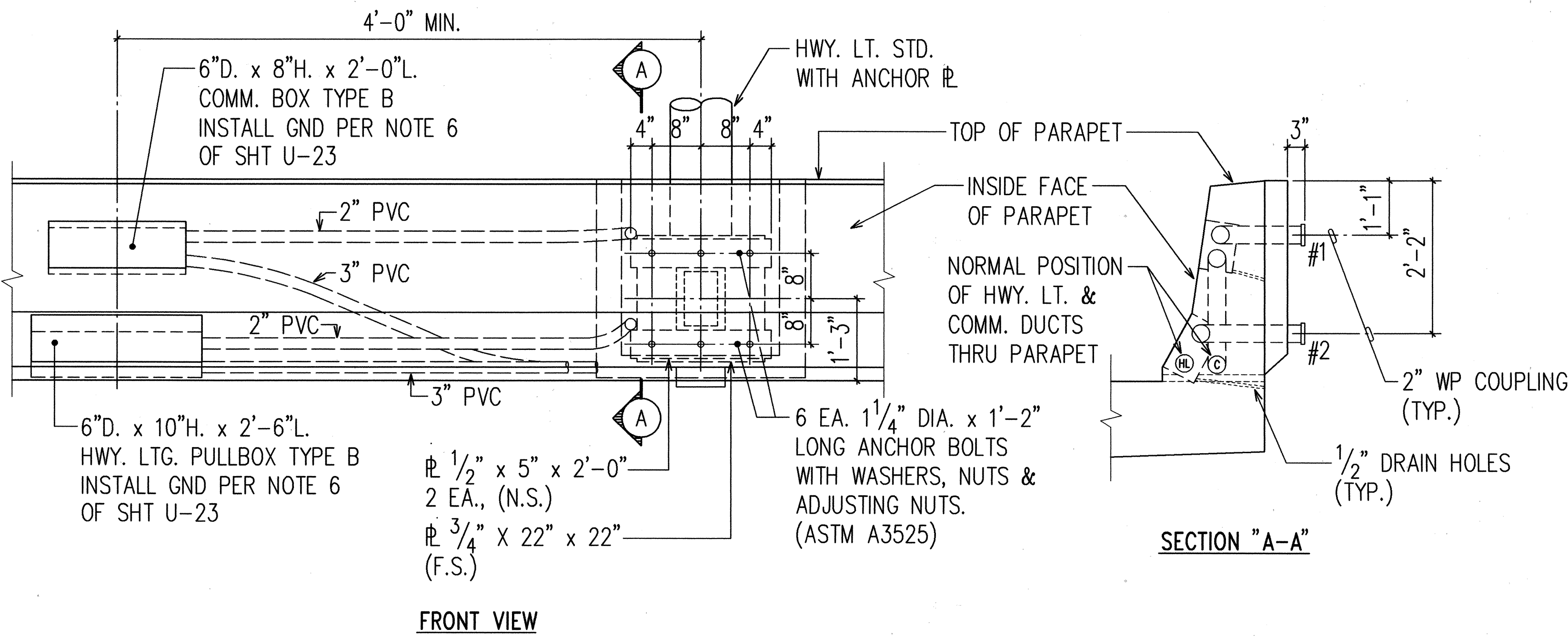
SCALE: AS NOTED DATE: JUNE 1993

SHEET No. U-30 OF 35 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	93	211

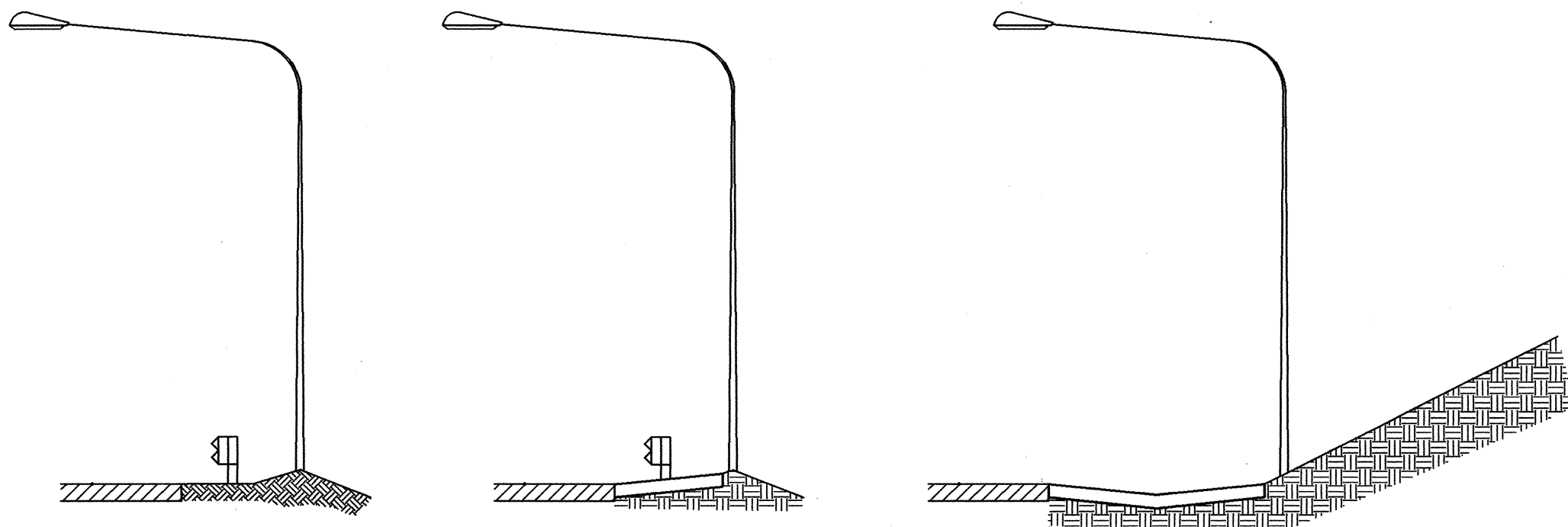


- HARDWARE NOTES**
- A. ALL B'S, BOLTS, AND NUTS TO BE HOT DIPPED GALVANIZED AFTER FABRICATION.
 - B. ALL ANCHOR BOLTS SHALL BE SET AND PLACED BY MEANS OF TEMPLATE.
 - C. REFER TO SHEET W-7 FOR REINF. DETAILS.



1
U-31

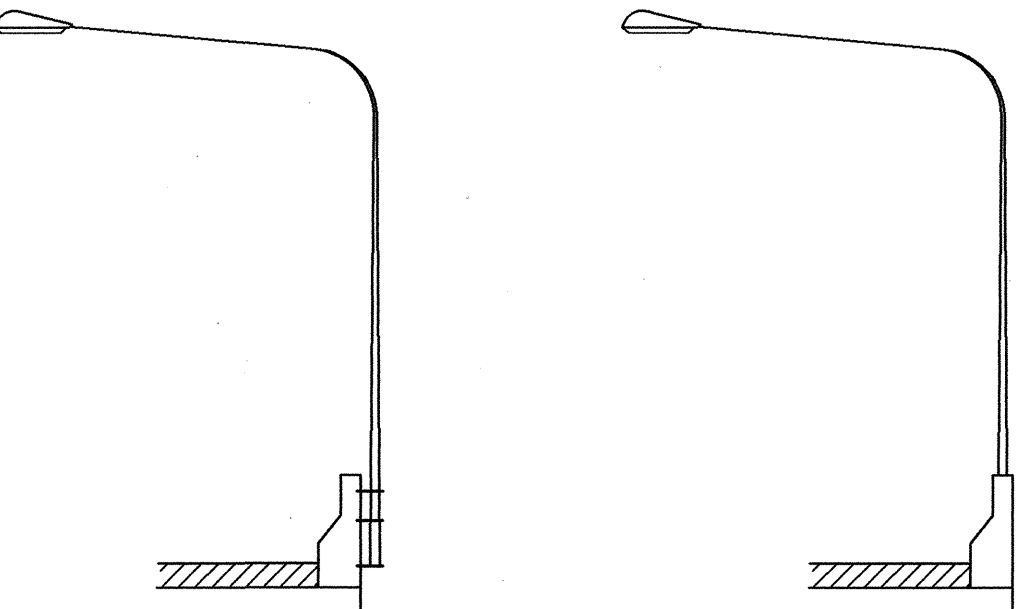
TYPICAL HIGHWAY LIGHTING AND COMMUNICATION DUCTS WITH HIGHWAY LIGHTING AND EMERGENCY TELEPHONE BEHIND CONCRETE BARRIER/PARAPET
N.T.S.



IN GRADE FOUNDATION PER 5 U-32
TYPE 1

IN GRADE FOUNDATION WITH GUTTER TYPE 2F PER 5 U-32
TYPE 1A

IN GRADE FOUNDATION WITH CONCRETE SWALE PER 5 U-32
TYPE 1B



BEHIND CONC BARRIER/ PARAPET PER 1 U-31
TYPE 2

ON TOP OF CONC BARRIER/ PARAPET PER 4 U-32
TYPE 3

Install (4) Highway Light Standards, Luminaires and Foundation Type 1B, SB, Sta. 388+35 Rt., 390+80 Rt., 393+25 Rt. and 393+95 Rt., Poles No. 11, 13, 15, 17.

Delete (4) Highway Light Standards Type 1B, Sta. 388+35 Rt., 390+80 Rt., 393+25 Rt., 395+25 Rt.

Install (1) Highway Light Standard Type 1, Sta. 385+85 Rt., Pole No. 9.

Delete (1) Highway Light Standard Type 2, Sta. 385+85 Rt..

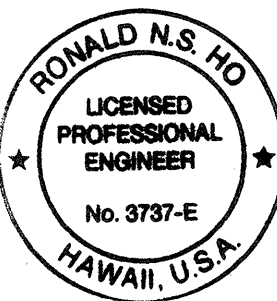
C.C.O. No. 11 Dated 8/28/95 *

*Project Files are Located at 727 Koko St. Honolulu, Hi. 96819

2
U-31

TYPICAL HWY. LT. FOUNDATION TYPES
N.T.S.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING AND COMMUNICATION
MISCELLANEOUS DETAILS II

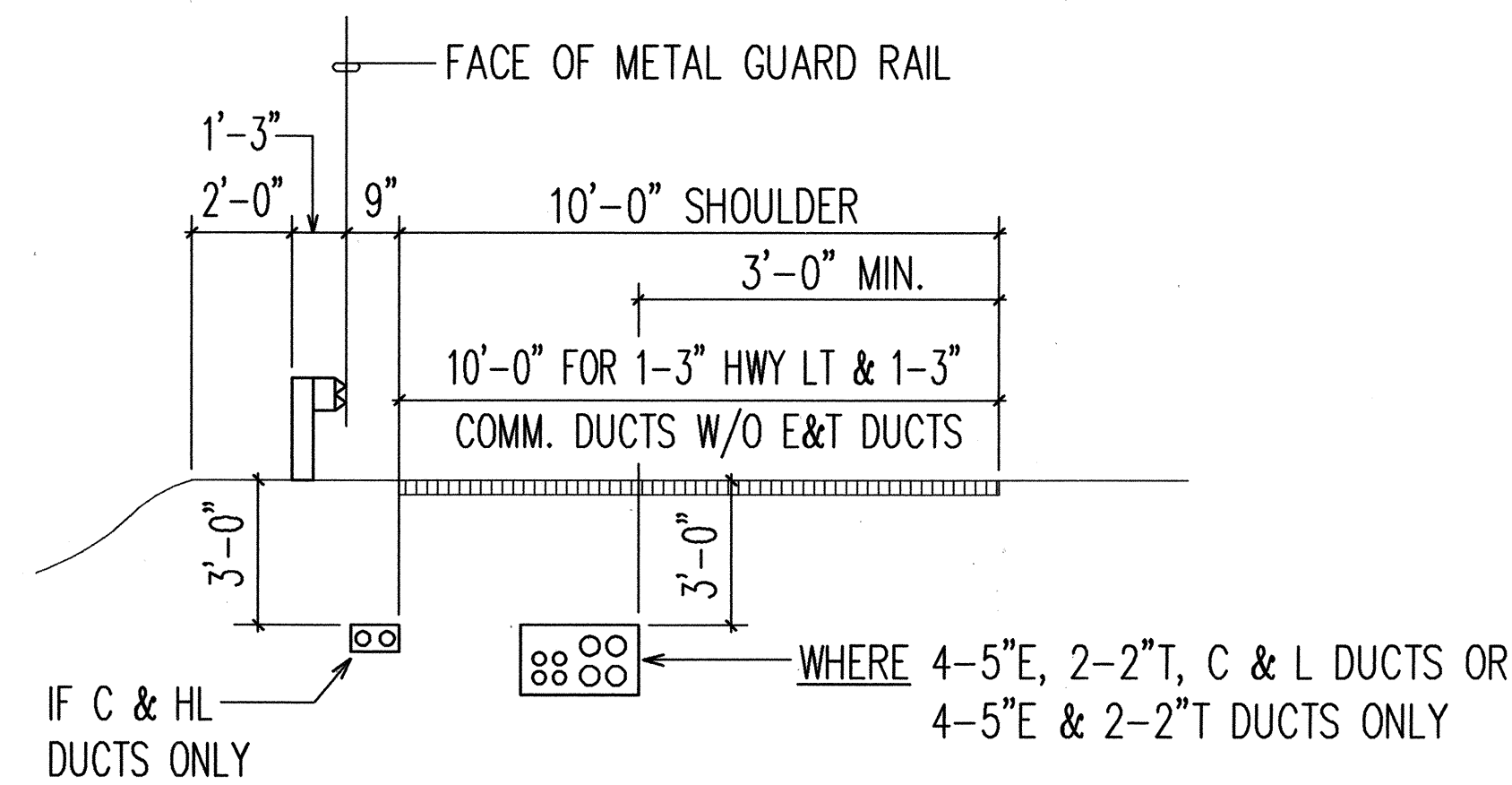
INTERSTATE ROUTE H-3
F.A.I. PROJECT NO I-H3-1(59)

SCALE: AS NOTED
DATE: JUNE 1993

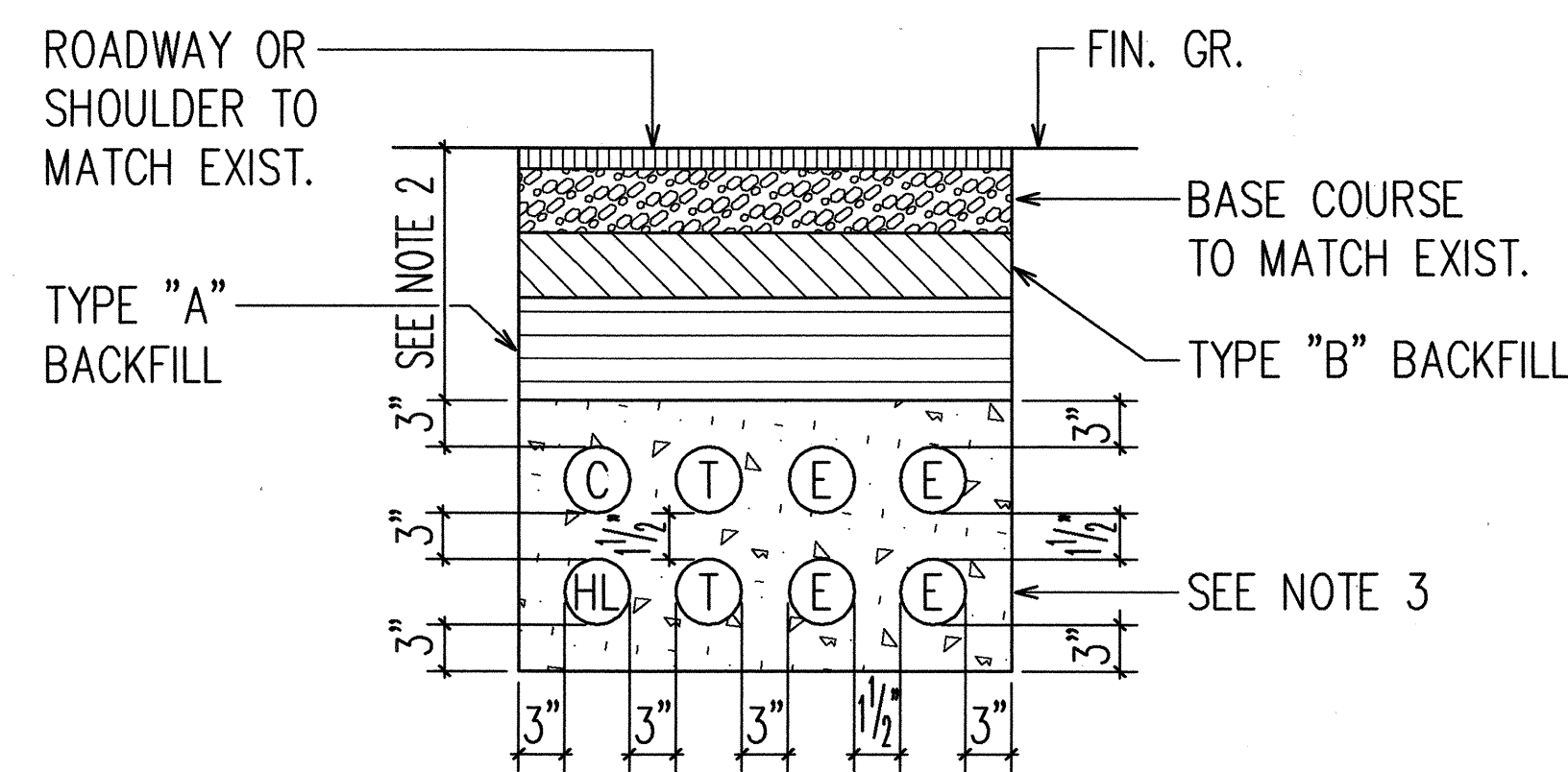
SHEET No. U-31 OF 35 SHEETS

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NO.	

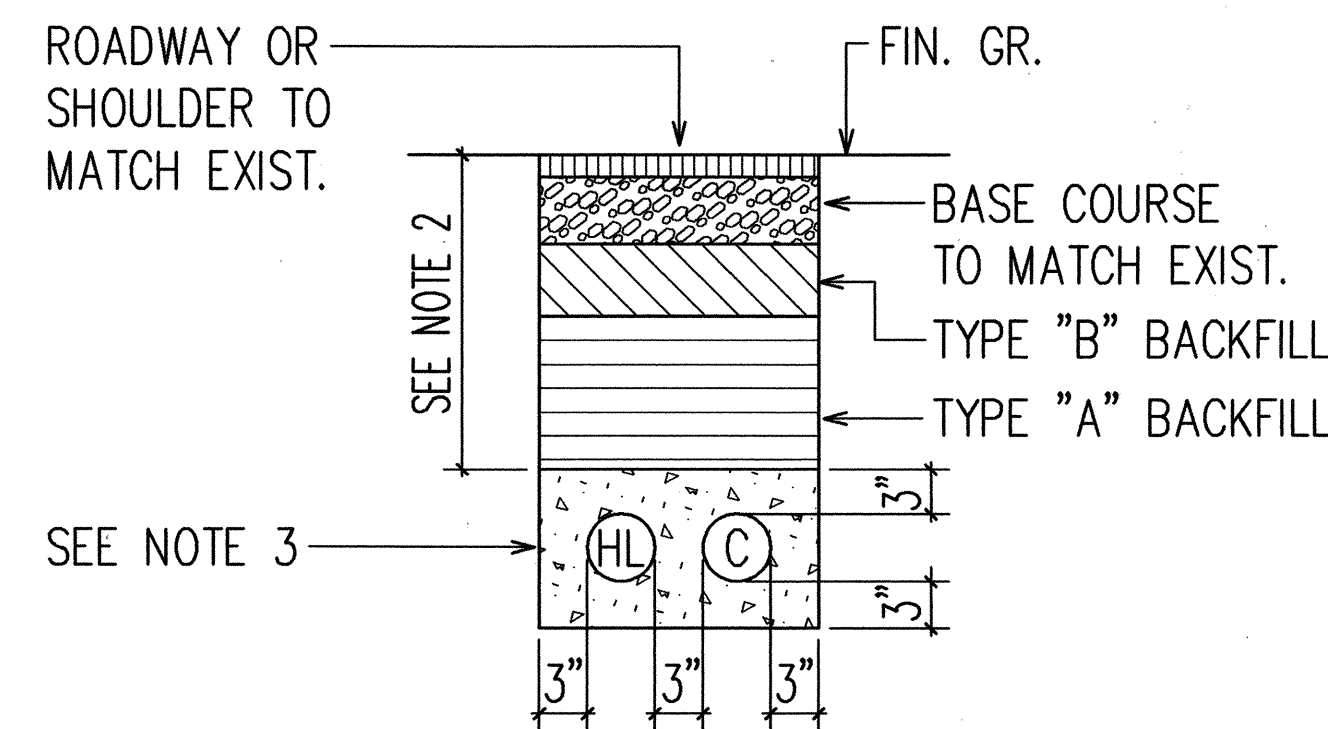
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	94	211



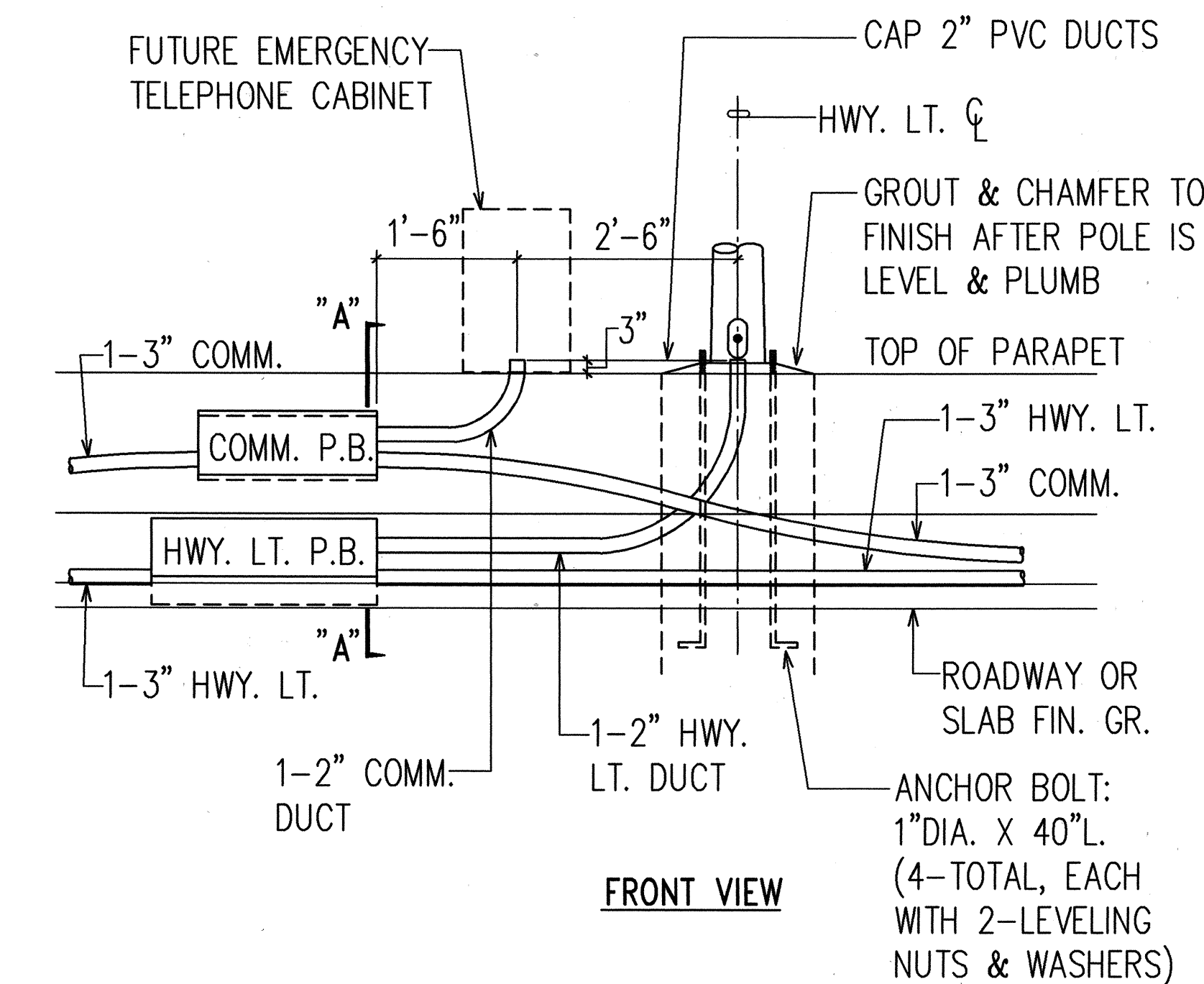
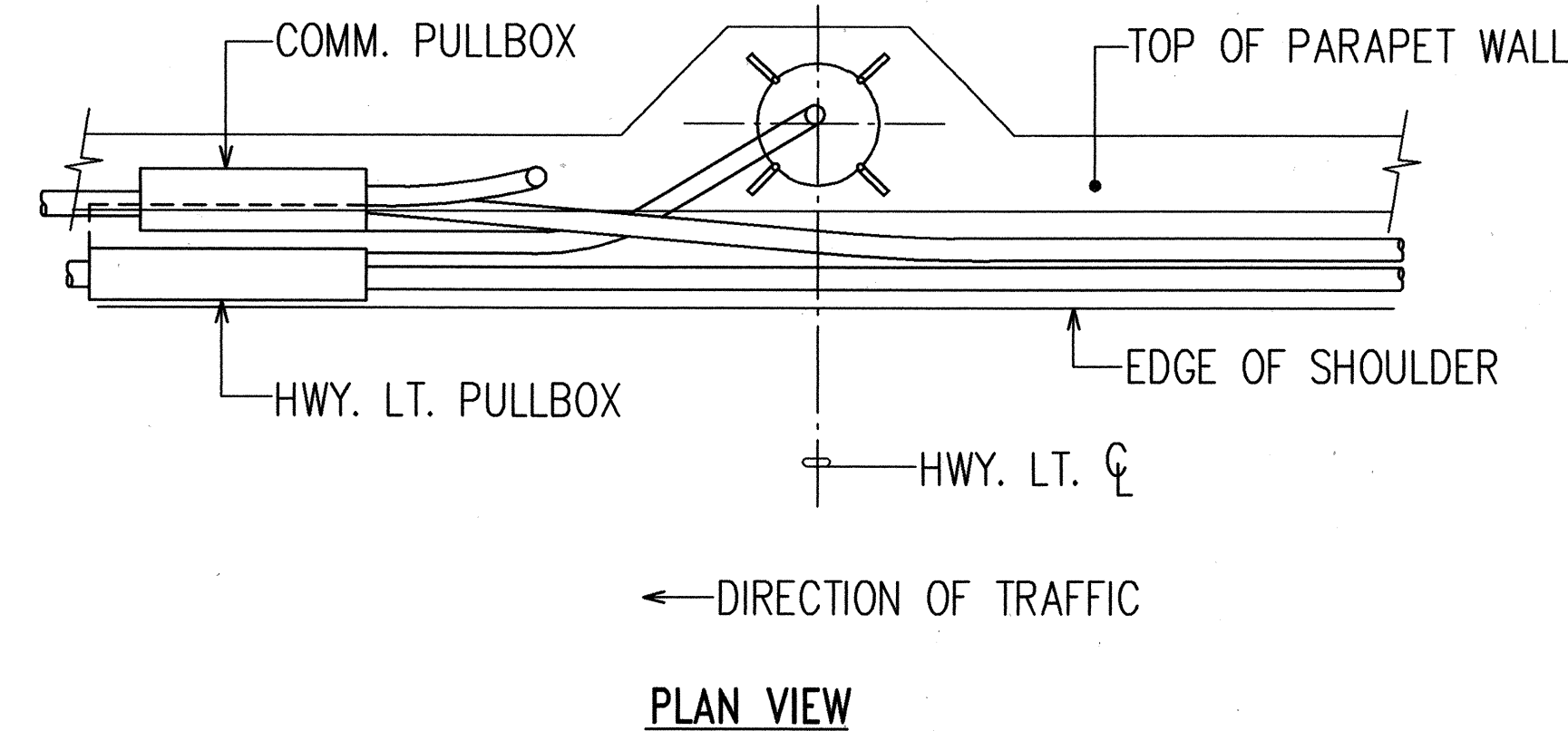
1
U-32
TYPICAL IN-GRADE CROSS-SECTION DETAIL
N.T.S.



2
U-32
TYPICAL HIGHWAY LIGHTING, COMMUNICATION, TELEPHONE AND ELECTRICAL DUCTS JOINT TRENCH DETAIL
N.T.S.

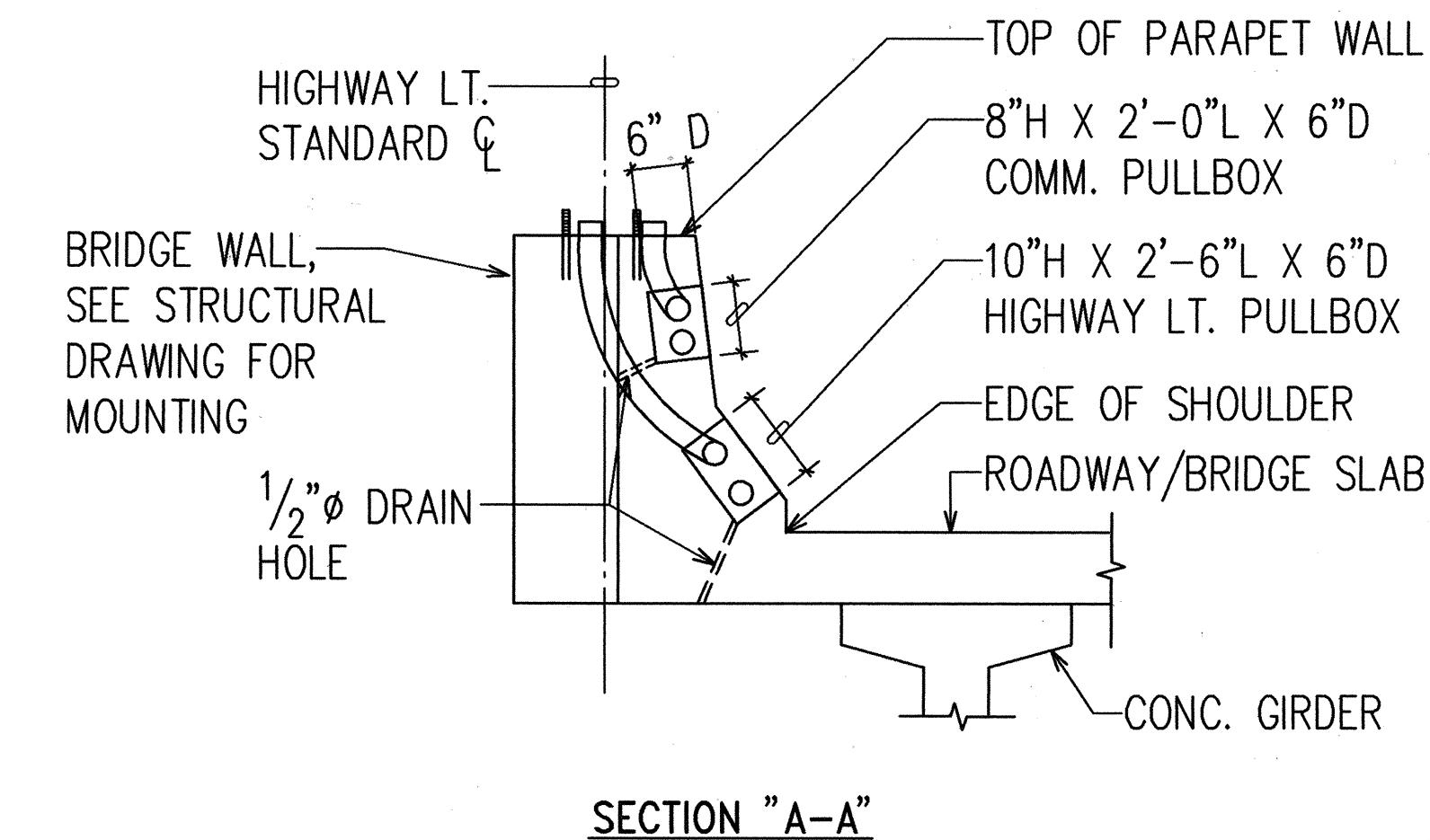


3
U-32
TYPICAL HIGHWAY LIGHTING AND COMMUNICATION DUCTS ONLY
N.T.S.



GENERAL NOTES:

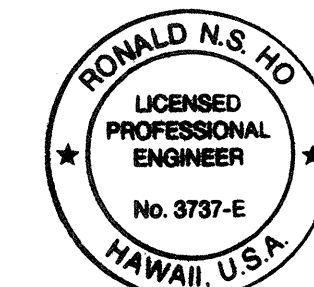
- HIGHWAY LIGHTING PULLBOX TO HIGHWAY LIGHTING CONCRETE BASE DUCTS TO BE 2" SCH. 40 PVC. ALL OTHER HIGHWAY LIGHTING DUCTS TO BE 3" SCH. 40 PVC.
- 3 FEET MINIMUM COVER OVER TOP OF CONCRETE ENCASEMENT.
- ALL DUCTS ENCASED WITH 3" MINIMUM CLASS B CONCRETE JACKET.
- INSTALL THE HIGHWAY LIGHTING CONCRETE BASE FOUNDATION SO THAT THE MINIMUM CLEARANCE BETWEEN THE BACK FACE OF GUARD RAIL AND FRONT FACE OF HIGHWAY LIGHTING POLE IS 3'-0".
- REFER TO SHEETS U-23 TO U-26 FOR SPECIFIC NUMBER OF CONDUITS.



4
U-32
TYPICAL HIGHWAY LIGHTING AND COMMUNICATION DUCTS IN CONCRETE BARRIER WALL/PARAPET WITH HIGHWAY LUMINAIRE AND EMERGENCY TELEPHONE DETAIL
N.T.S.

5
U-32
TYPICAL IN GRADE HIGHWAY LIGHTING AND COMMUNICATION PULLBOX CONNECTIONS DETAIL
N.T.S.

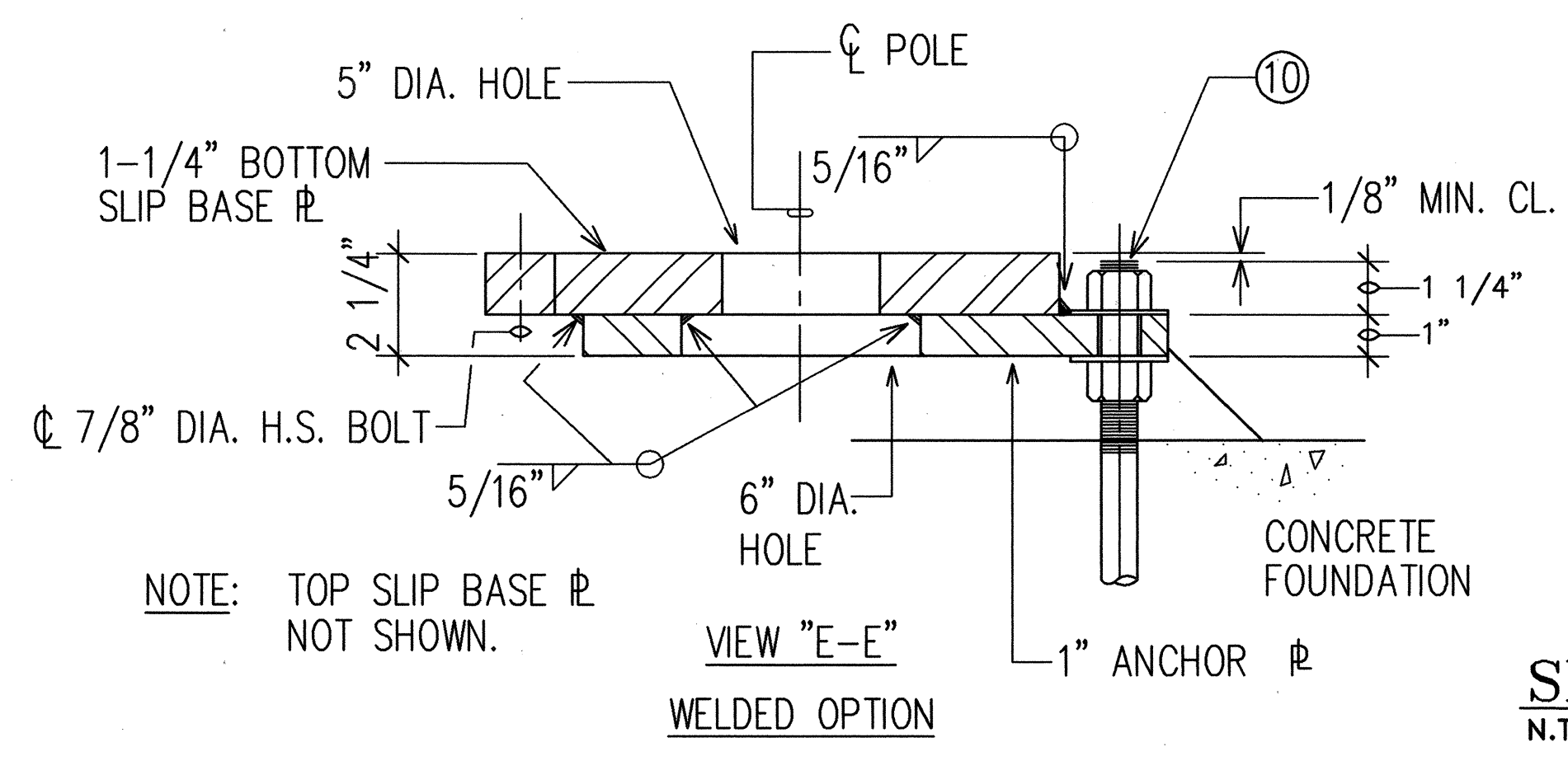
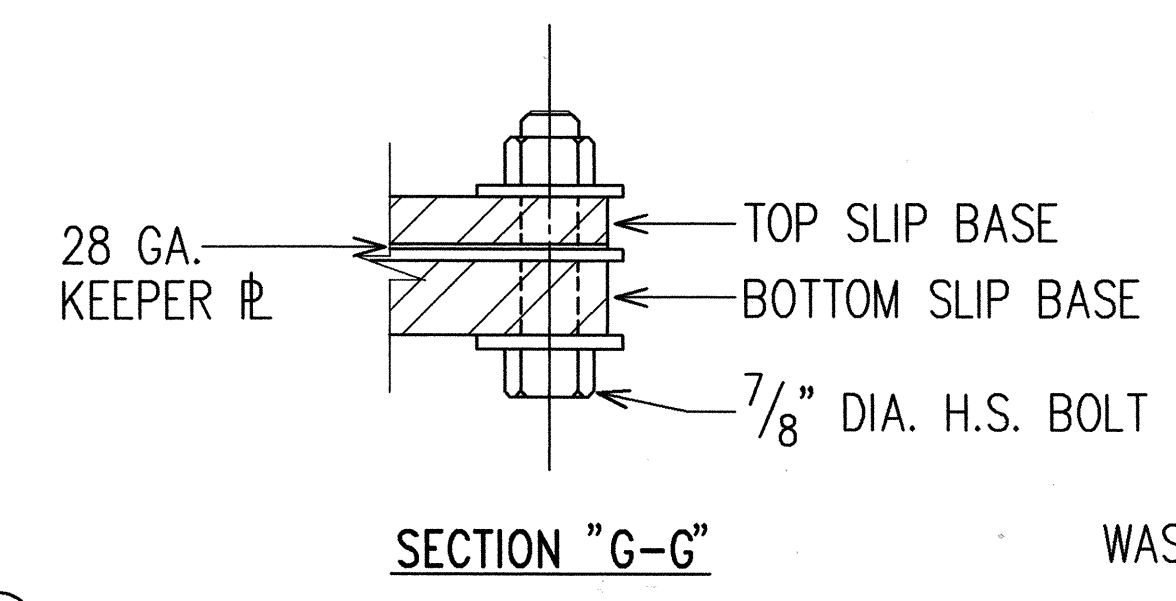
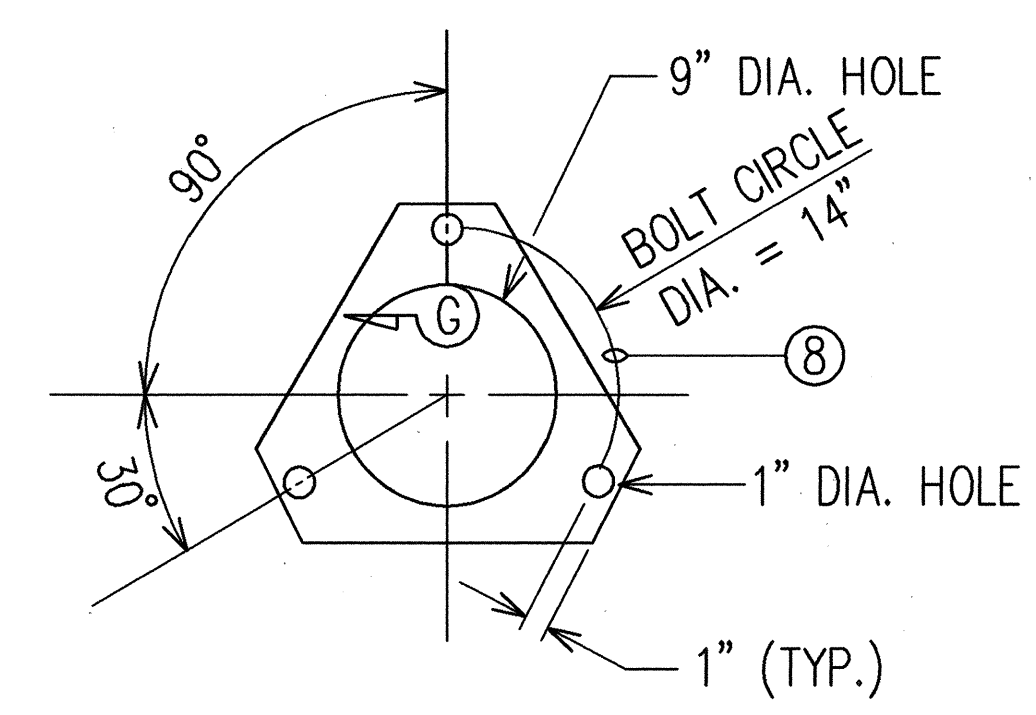
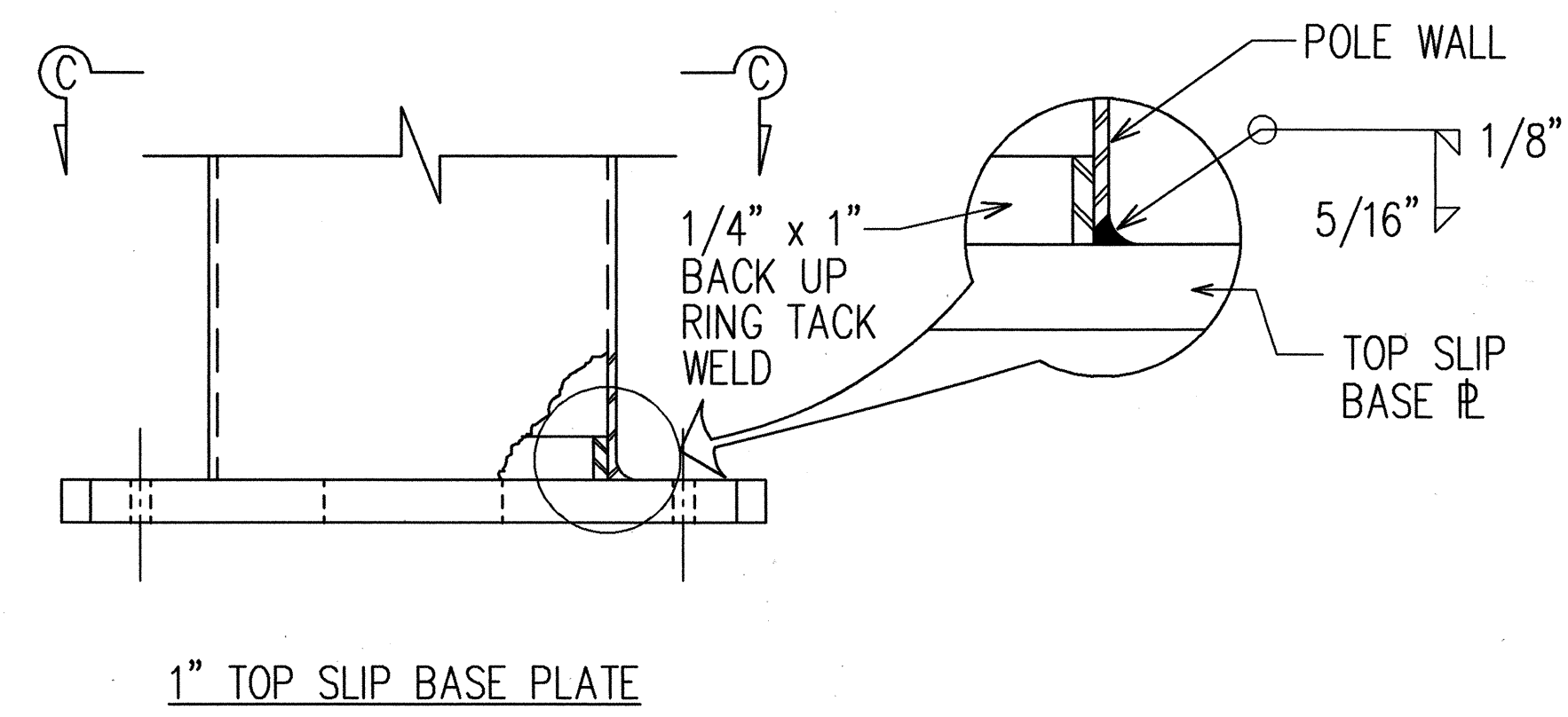
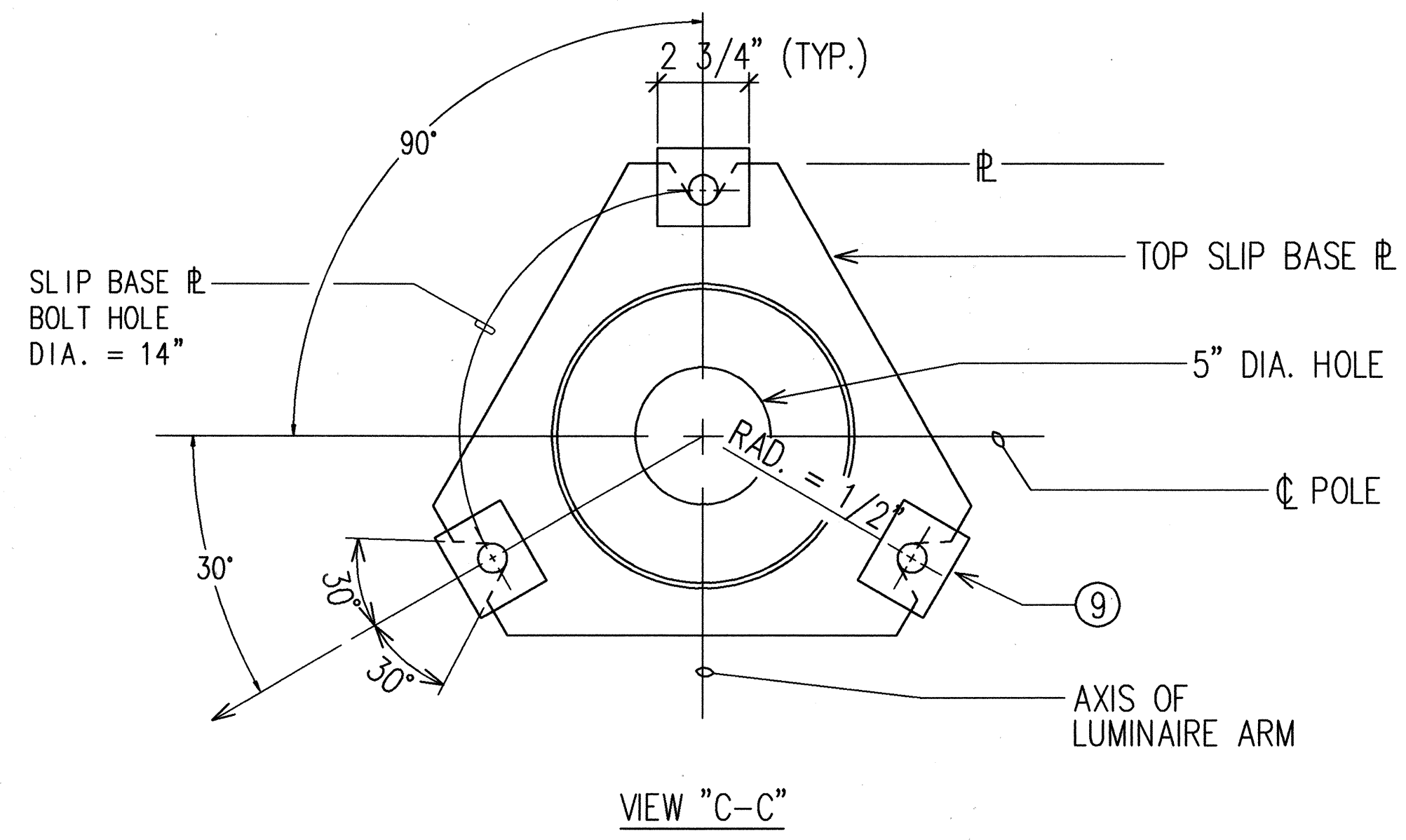
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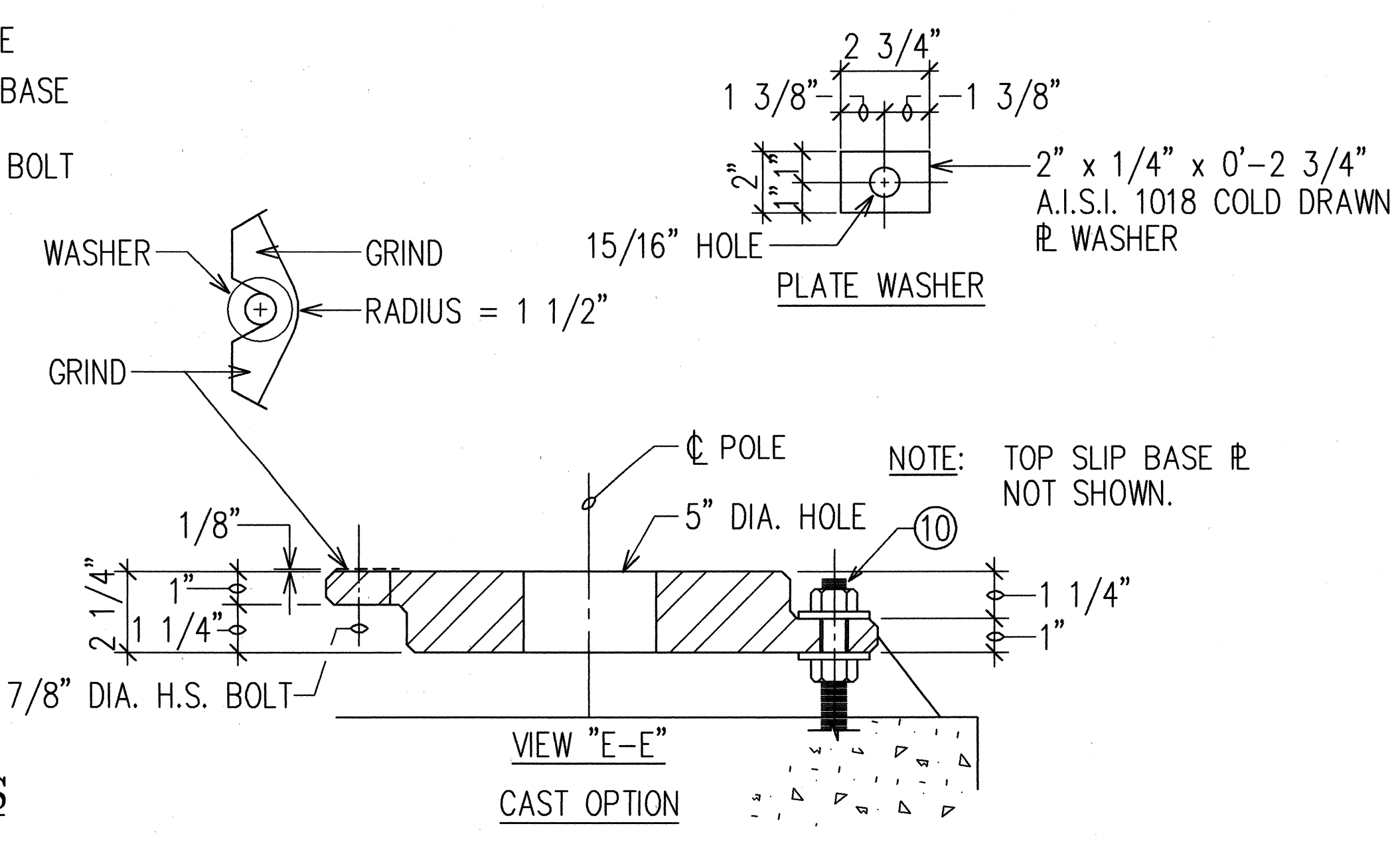
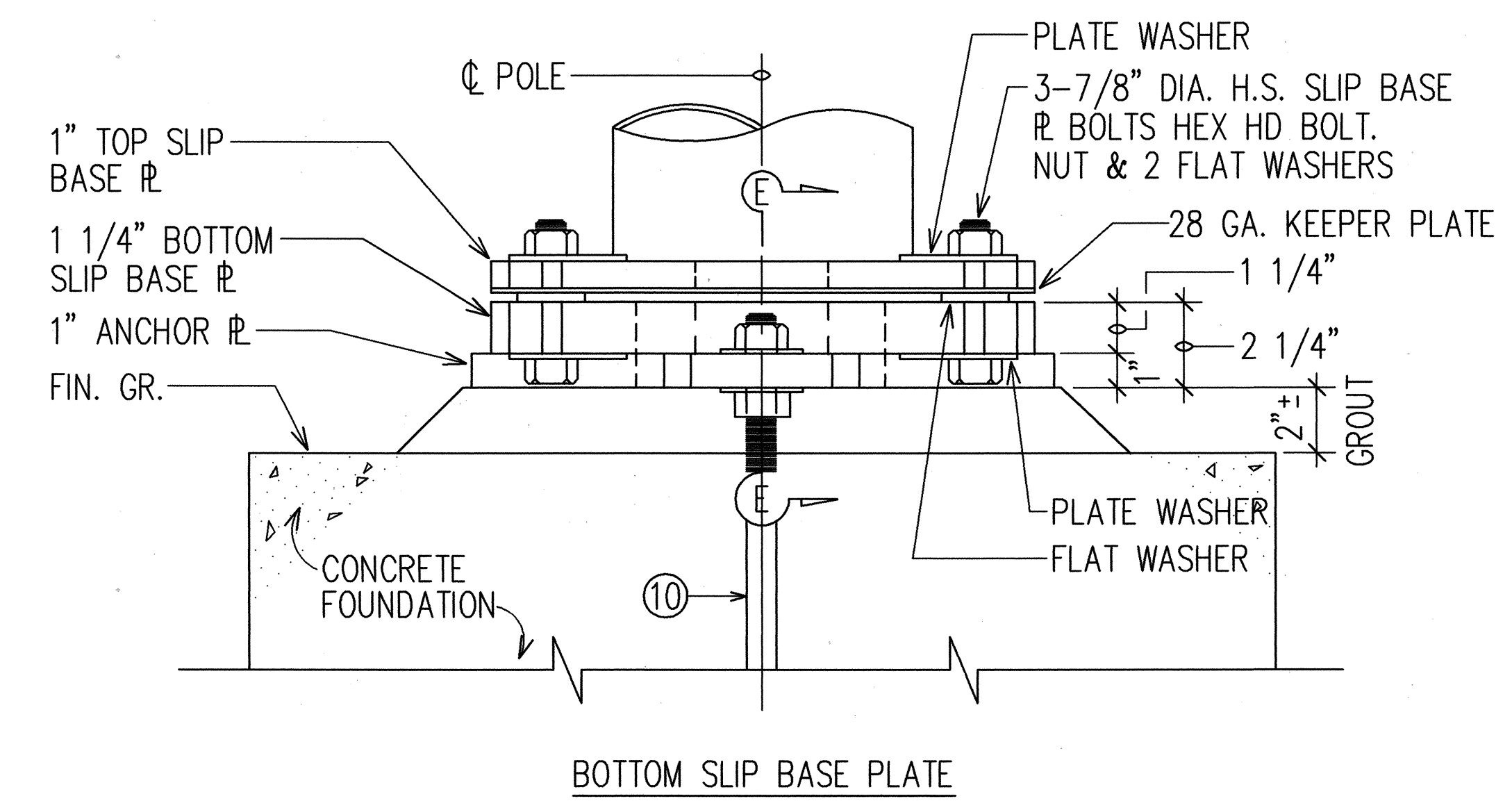
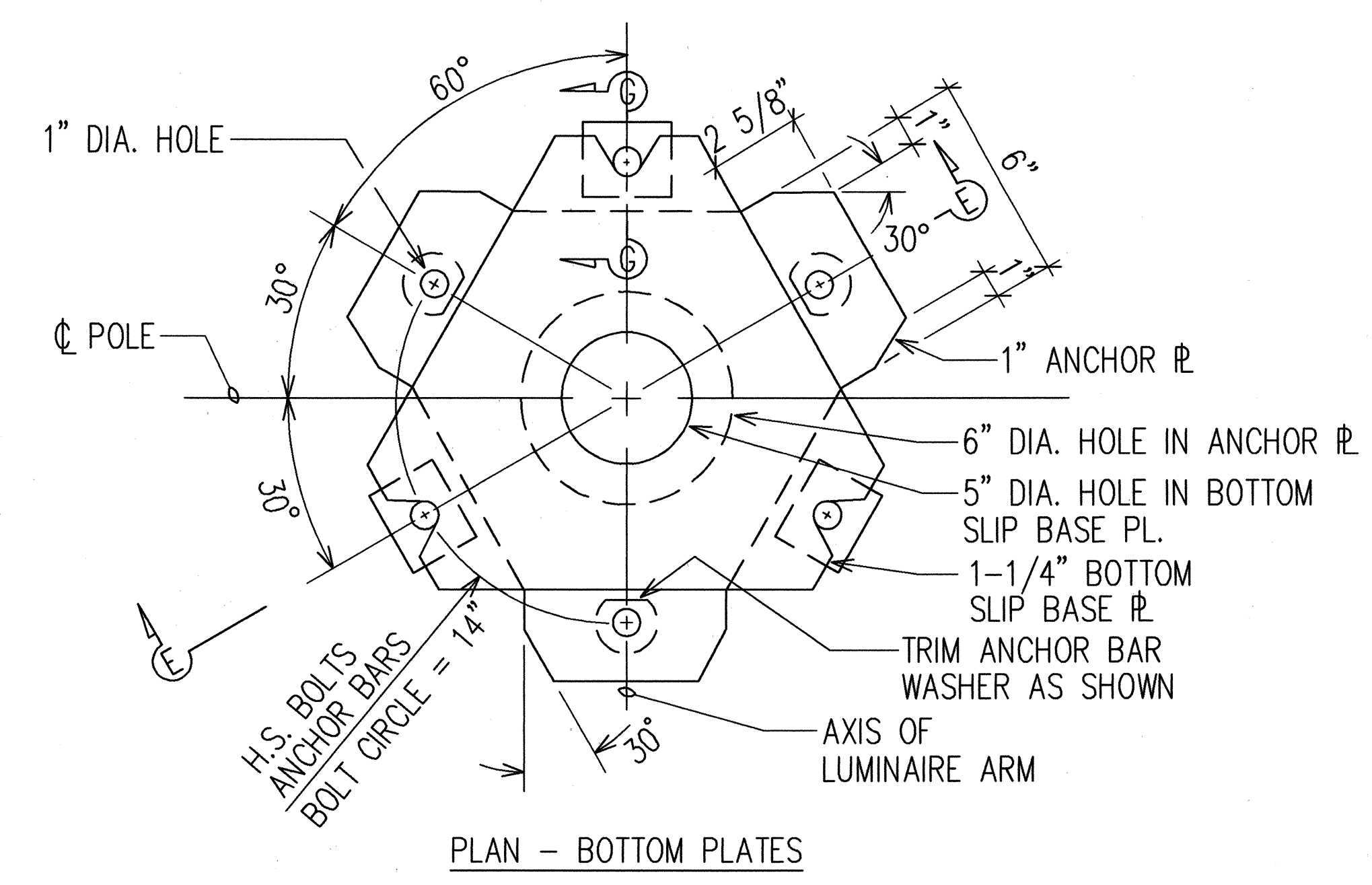
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STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HIGHWAY LIGHTING AND COMMUNICATION MISCELLANEOUS DETAILS III	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO I-H3-1(59)	
SCALE: AS NOTED	DATE: JUNE 1993
SHEET No. U-32 OF 35 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	96	211



SLIP BASE DETAILS
N.T.S.

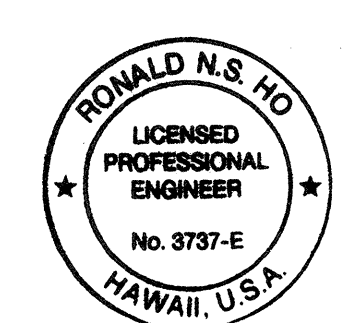


NOTES:

- ① ALL STEEL SHAFTS, PLATES, MAST ARMS, BOLTS, SCREWS, NUTS & WASHERS TO BE GALVANIZED AFTER FABRICATION OR MODIFICATION.
- ② PLATES TO CONFORM TO ASTM A-36.
- ③ CAST OPTION TO CONFORM TO ASTM A-486 CL. 90.
- ④ TORQUE 7/8" DIAMETER H.S. SLIP BASE PLATE BOLTS TO 84 FEET PER POUND.
- ⑤ 7/8" DIAMETER H.S. ANCHOR BARS, WRENCH TIGHTEN - TORQUE REQUIREMENT WAIVED.
- ⑥ FABRICATORS ELECTING LARGER THAN MINIMUM ARM DIAMETERS MUST ADJUST DETAILS AS REQUIRED TO PERMIT SOLID SEATING OF CAP SCREWS. IN LIEU OF TORQUE REQUIREMENTS FOR H.S. BOLTS, CAP SCREWS SHALL BE TIGHTENED BY THE TURN OF NUT METHOD 1/6 TURN FROM SNUG CONDITION. NO WASHER WILL BE REQUIRED.
- ⑦ 4" x 6 1/2" HANDHOLE REINFORCED WITH #3 GAUGE RING 1/2" WIDE WELDED TO OUTSIDE OF POLE COVER OF 10 GAUGE PLATE LOCATE 90 DEGREES OF MAST ARM UNLESS SHOWN OTHERWISE.
- ⑧ 28 GAUGE KEEPER PLATE, PLACE ON TOP OF MIDDLE FLAT WASHER, ASTM A-526 125 COMMERCIAL.
- ⑨ PLATE WASHER.
- ⑩ 3 - 7/8" DIAMETER H.S. BARS, THREAD 6" & GALVANIZED 10", WITH HEX., HEAD, NUT, LEVELING NUT & WASHER.
- ⑪ HEX. HEAD NUT SHOWN OR AS AN ALTERNATE DETAIL ANCHOR PLATES MAY BE RETAINED WITH 5/16" FILLET WELDS ALL AROUND OR FORMED HEADS.
- ⑫ ROUND TAPERED STEEL TUBE WITH MAXIMUM TAPER OF 0.15"/FOOT.
- ⑬ NO. 11 GAUGE SHEET STEEL OF WELDABLE GRADE ACCEPTABLE IF STEEL AFTER FABRICATION HAS A MINIMUM YIELD STRENGTH OF 40,000 P.S.I.

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

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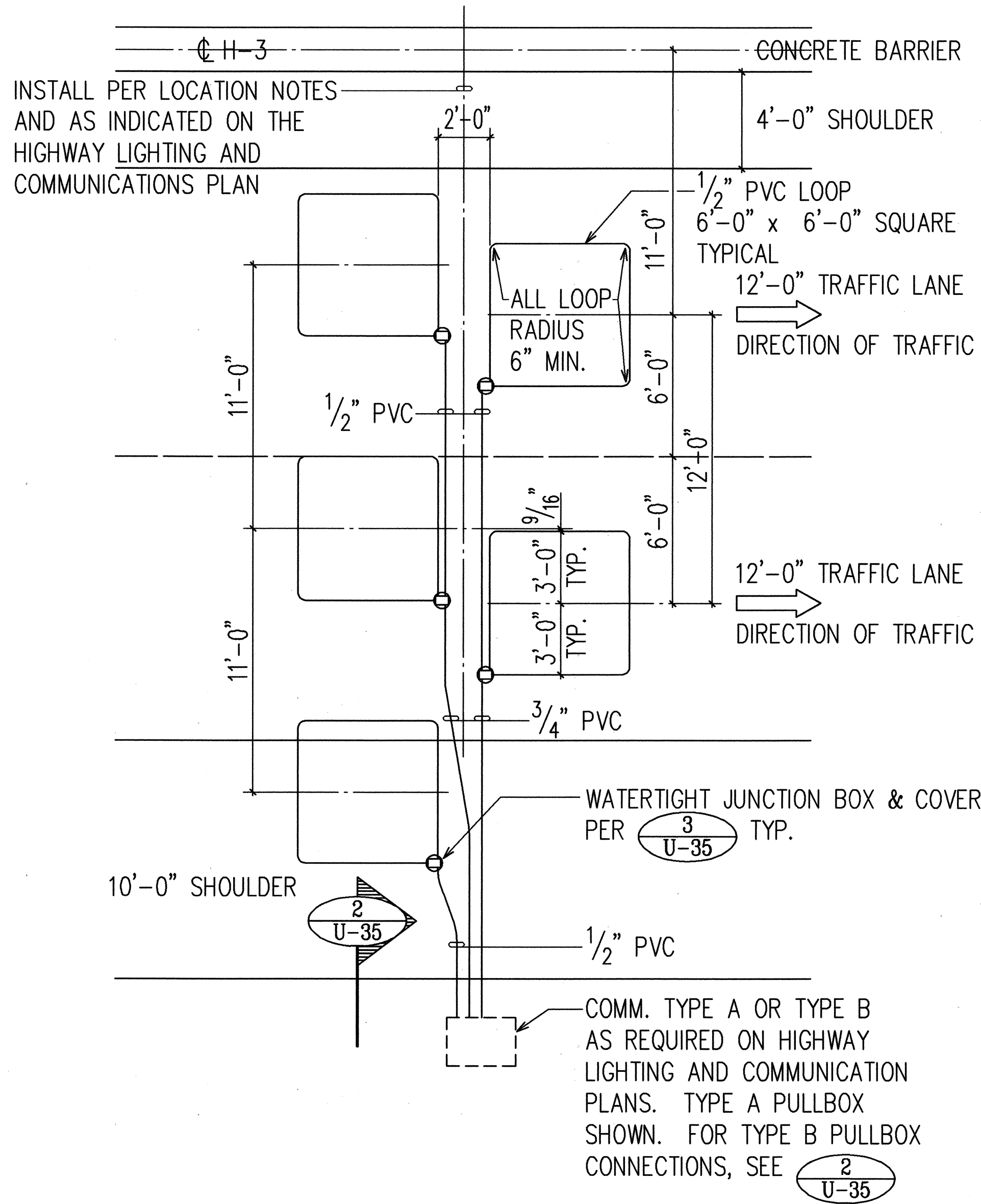
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING
SLIP BASE DETAILS

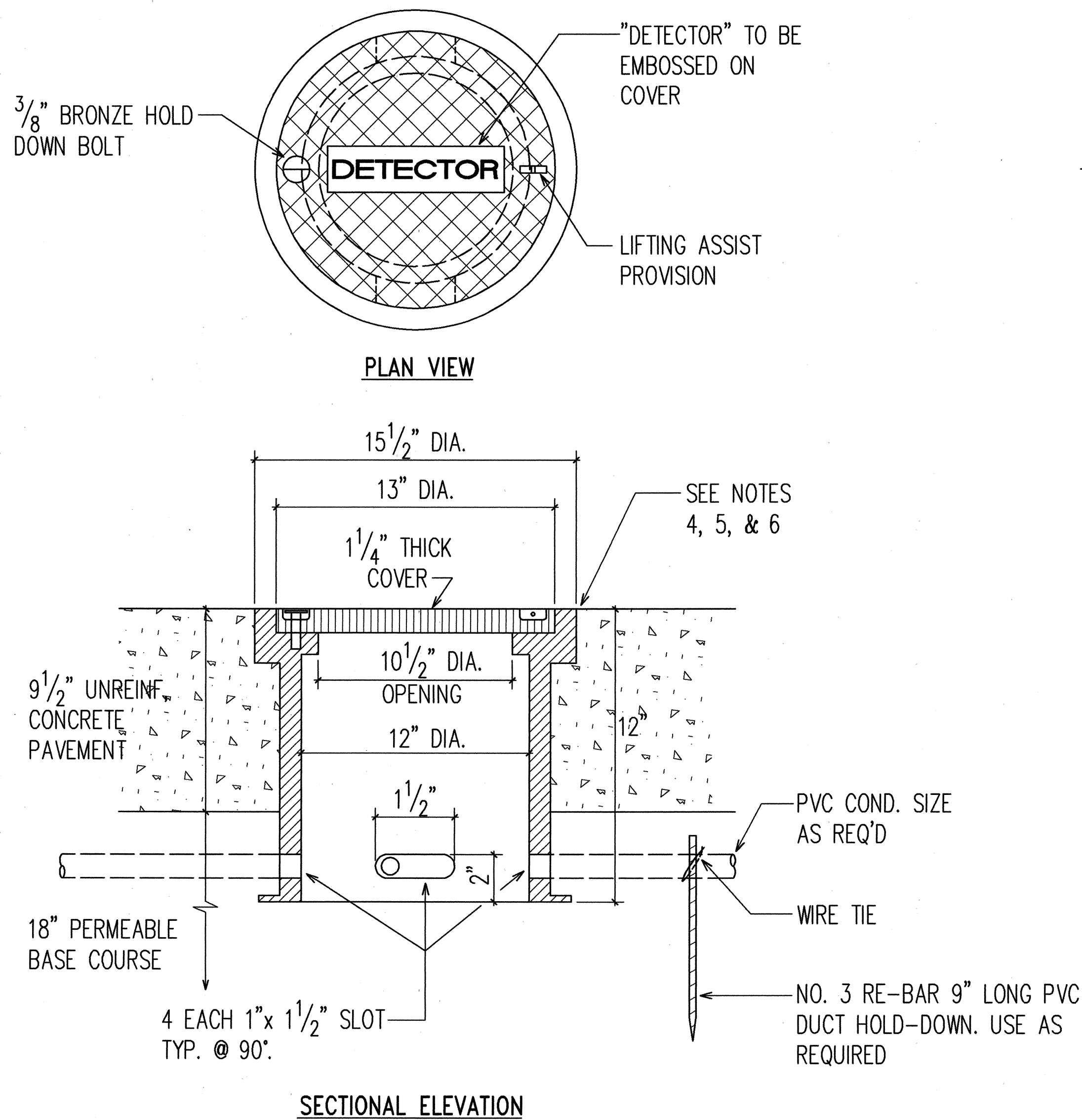
INTERSTATE ROUTE H-3
F.A.I. PROJECT NO I-H3-1(59)

SCALE: AS NOTED
DATE: JUNE 1993
SHEET No. U-34 OF 35 SHEETS

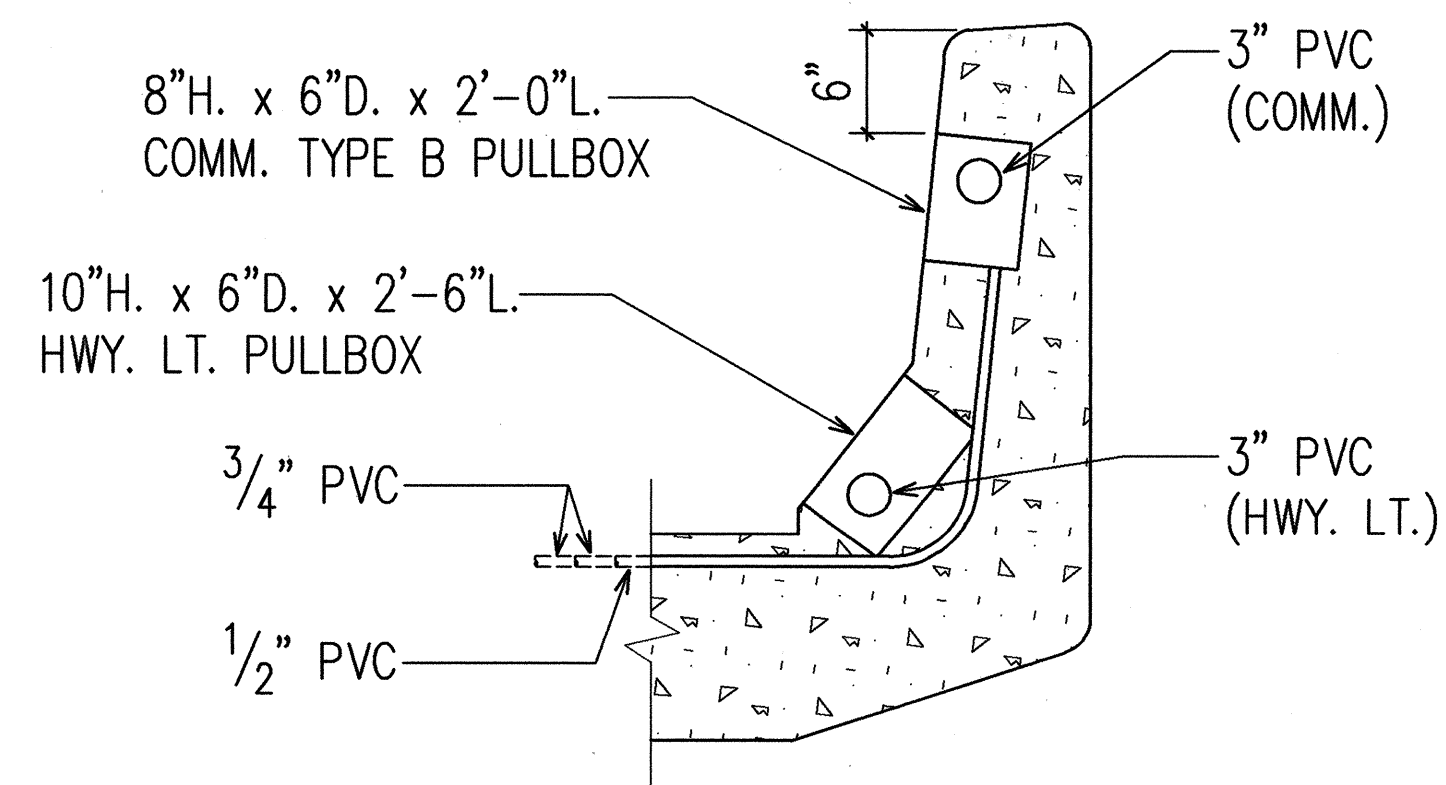
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(59)	1993	97	211



1
U-35
TYPICAL DETECTOR STATION INSTALLATION DETAILS
WITH 2 EACH 12'-0" WIDE TRAFFIC LANES
N.T.S.

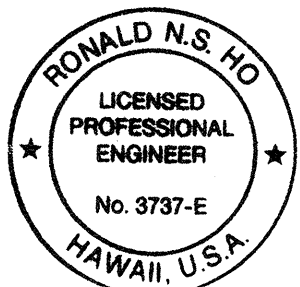


3
U-35
TYPICAL JUNCTION BOX AND PVC DUCT
HOLD-DOWN DETAILS
N.T.S.



2
U-35
TYPICAL DETECTOR LOOP CONDUIT CONNECTION
TO COMMUNICATION TYPE B PULLBOX
N.T.S.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETECTOR LOOP
LOCATIONS AND DETAILS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO I-H3-1(59)

SCALE: AS NOTED DATE: JUNE 1993

SHEET No. U-35 OF 35 SHEETS