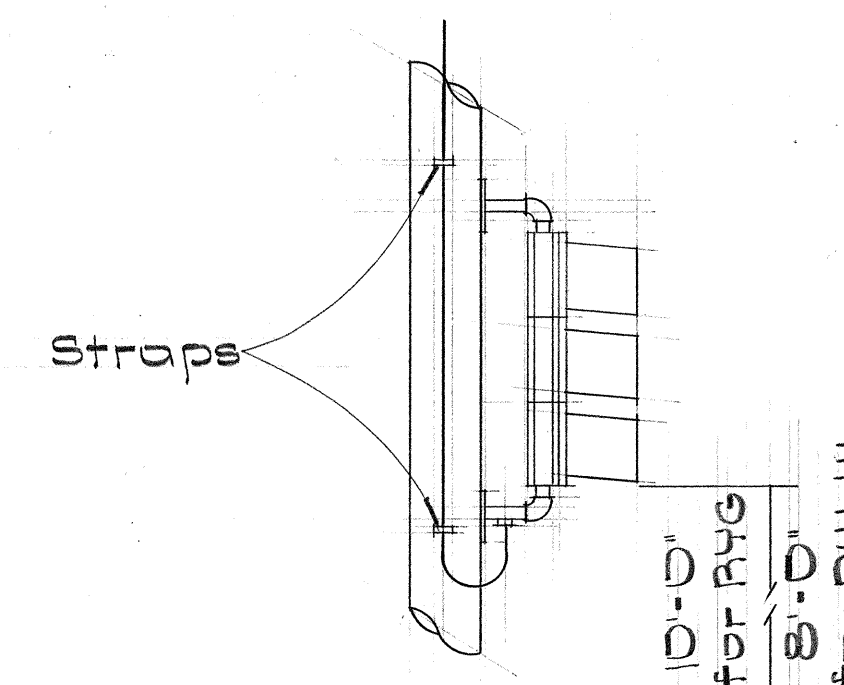


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1000	1966	127	235

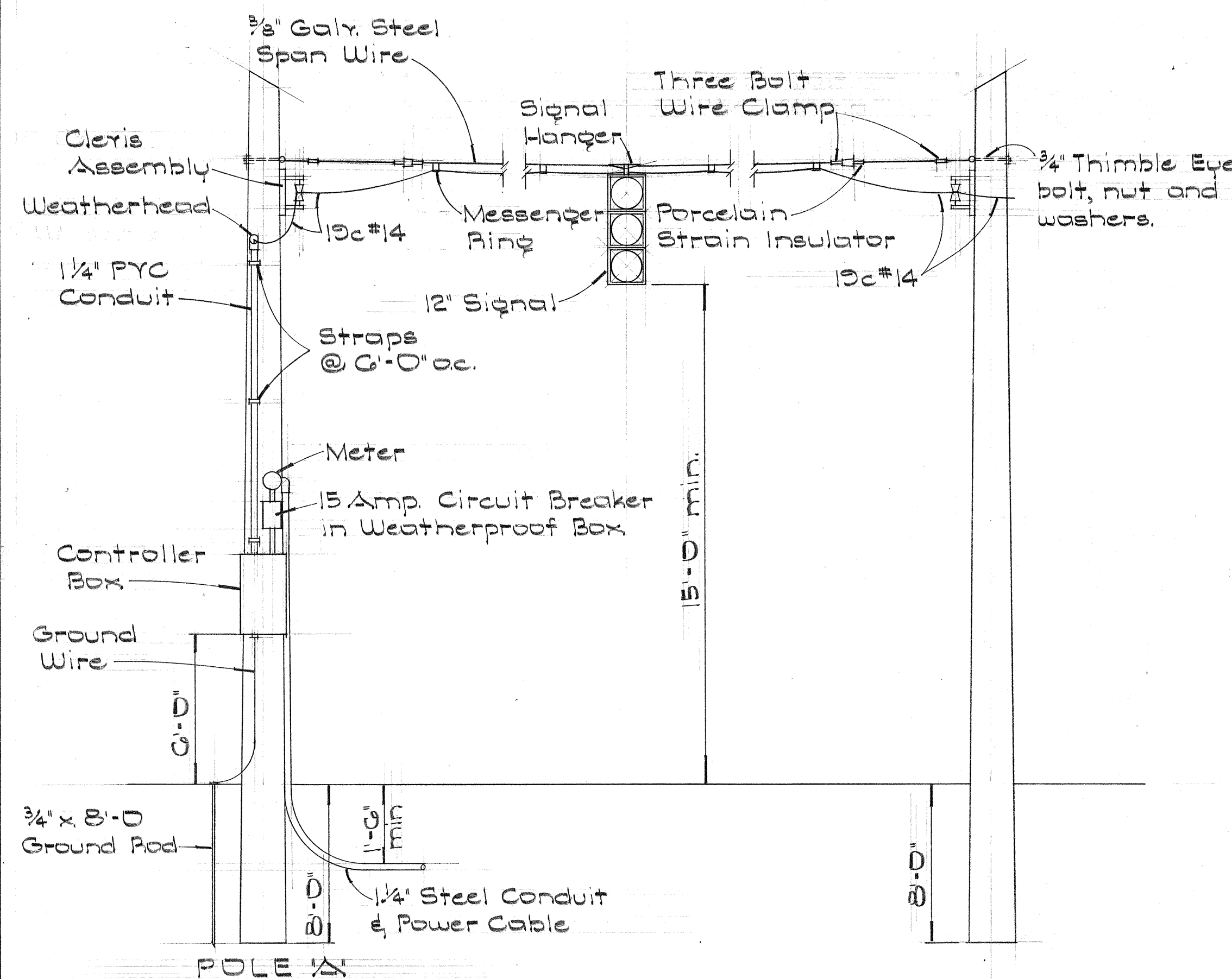


TYPICAL TRAFFIC SIGNAL MOUNTING ON WOOD POLE

No Scale

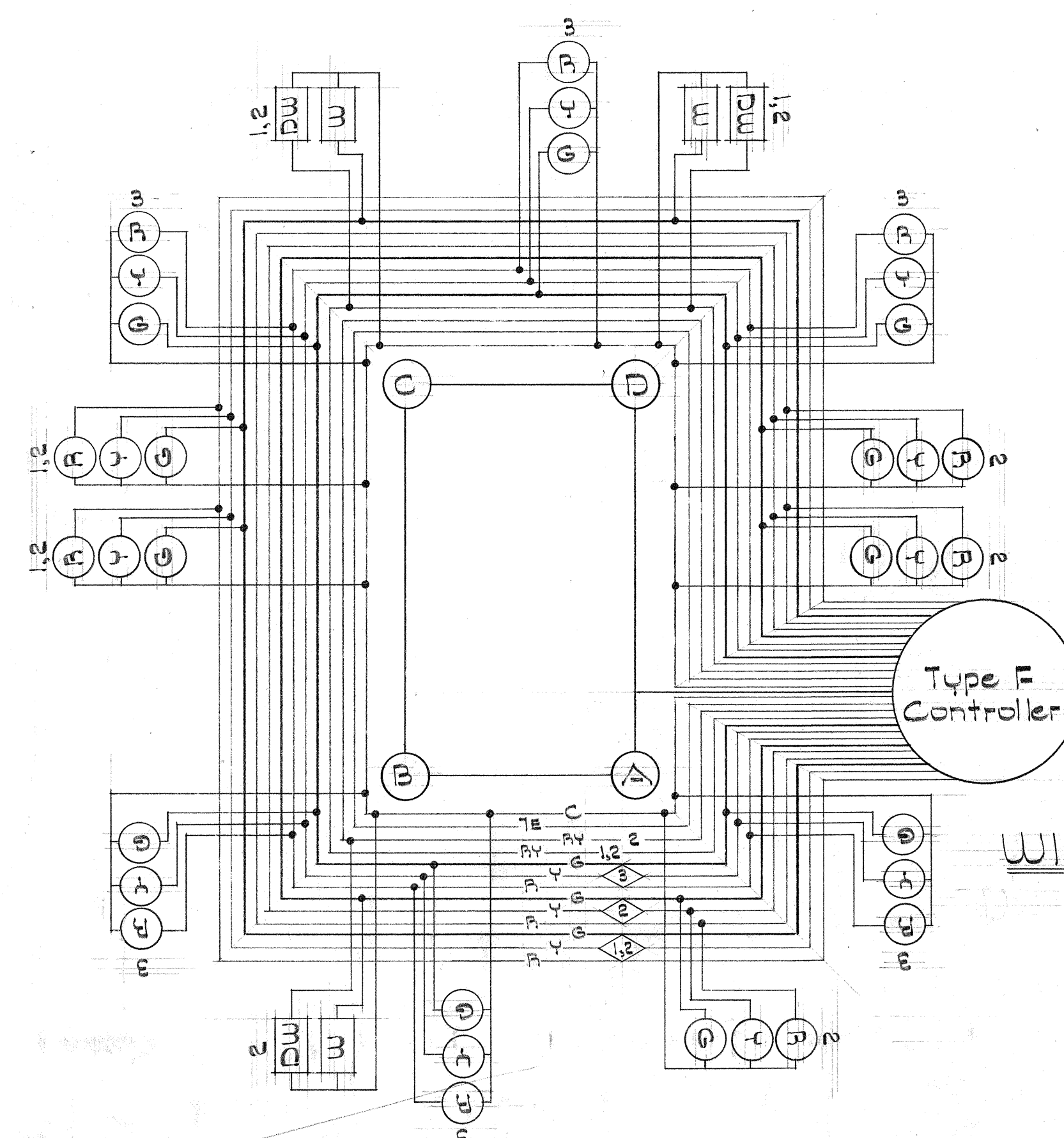
NOTES:

- Contractor shall furnish and install all materials necessary to complete the system, except the controller & signal heads.
- Existing signals shall be used.
- Controller equipment shall be furnished and installed by the State's electricians.
- Exact location of poles to be determined in the field by the Engineer.
- Poles shall be 35'.



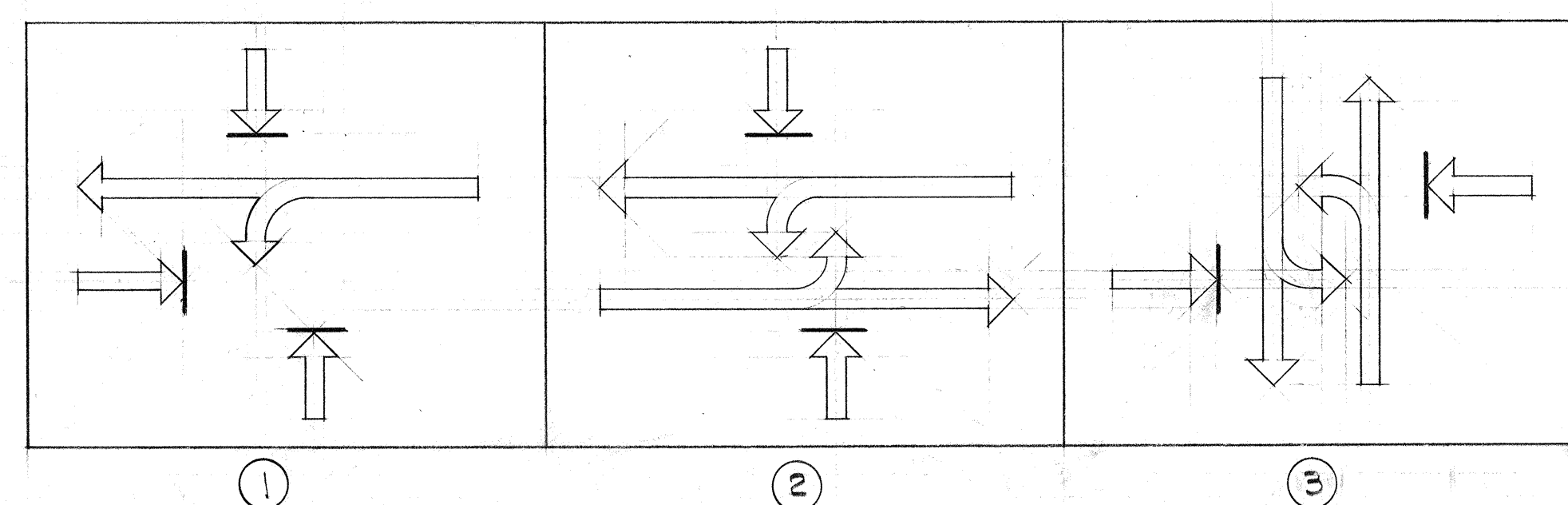
TYPICAL DETAIL OVERHEAD SIGNALS

No Scale



WIRING DIAGRAM

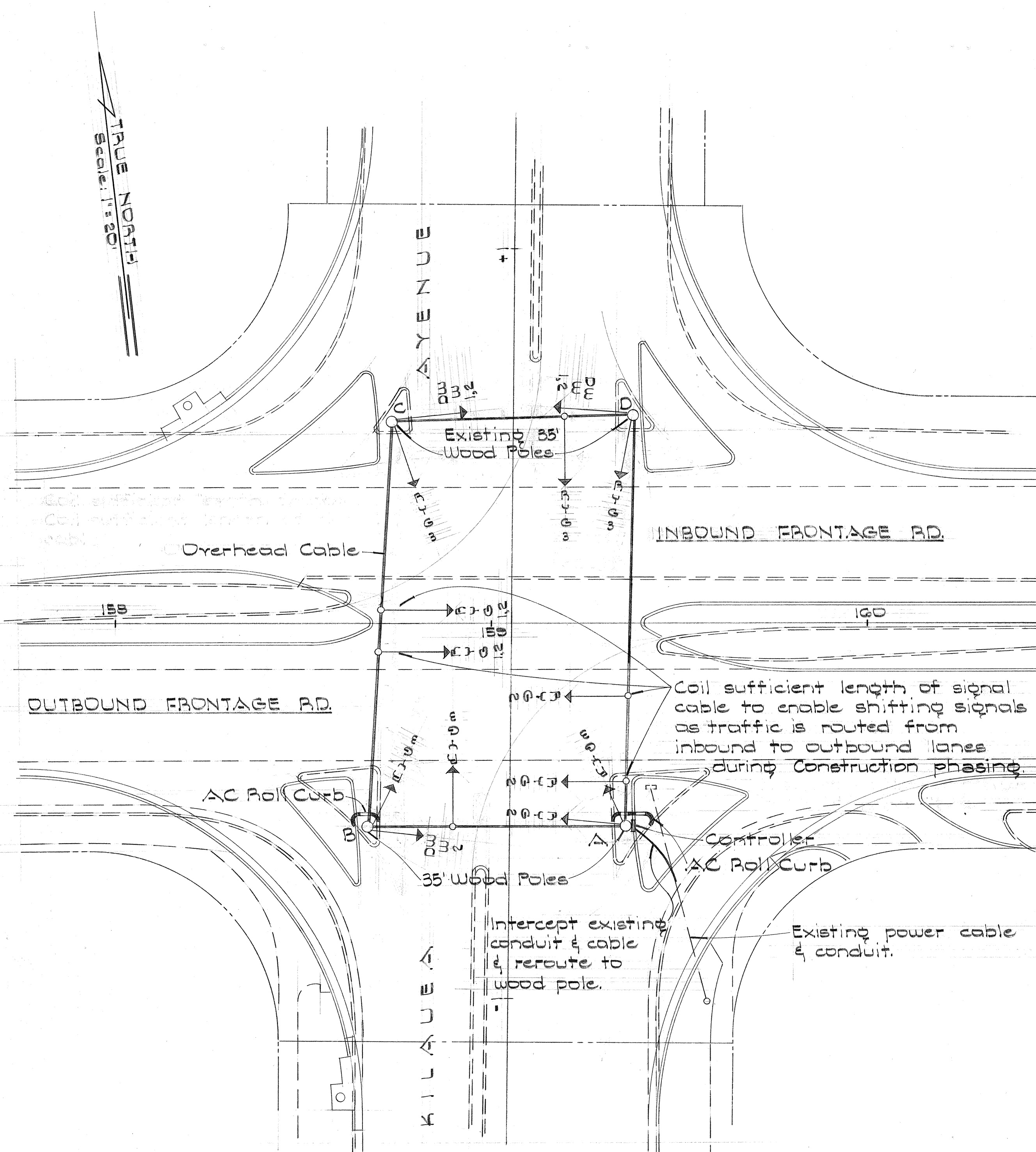
No Scale



PHASE DIAGRAMS

PLAN

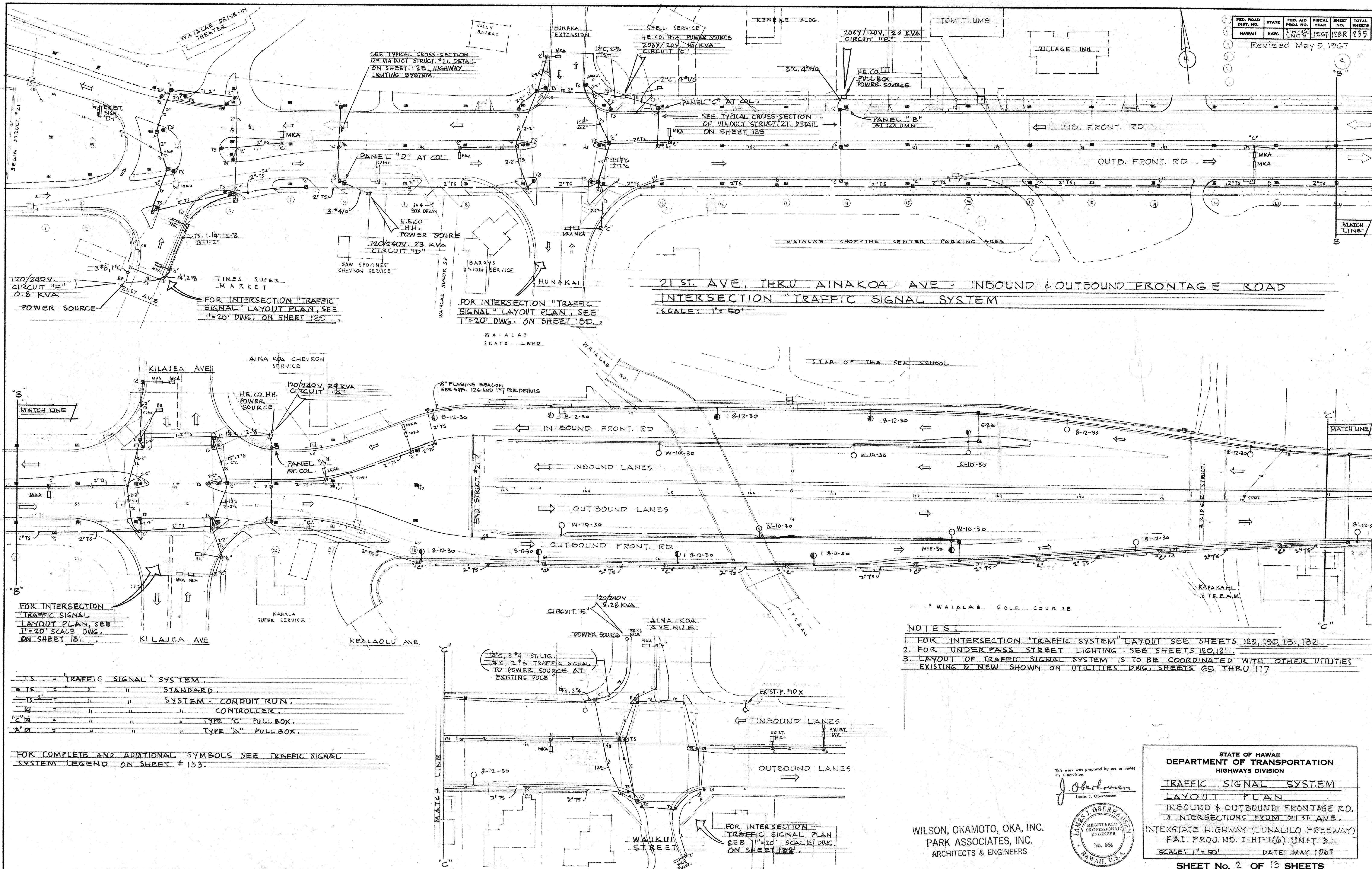
Scale: 1" = 20'



DATE	10/1/66
SURVEY PLOTTED BY	...
DRAWN BY	...
NOTED BY	...
CHECKED BY	...
NO.	...

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TEMPORARY TRAFFIC SIGNAL SYSTEM
Waialae Ave. at Kilauea Ave.
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
F.A.I. Proj. No. I-11-1(G) UNIT 3
Scale: As Shown Aug. 1966
SHEET No. 1 OF 13 SHEETS

26



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	00175	1967	128	235

Revised May 5, 1967

FOR INTERSECTION "TRAFFIC SIGNAL" LAYOUT PLAN, SEE "1"=20' SCALE DWG. ON SHEET 131.

FOR INTERSECTION "TRAFFIC SIGNAL" LAYOUT PLAN, SEE "1"=20' SCALE DWG. ON SHEET 132.

FOR INTERSECTION "TRAFFIC SIGNAL" LAYOUT PLAN, SEE "1"=20' SCALE DWG. ON SHEET 133.

FOR COMPLETE AND ADDITIONAL SYMBOLS SEE TRAFFIC SIGNAL SYSTEM LEGEND ON SHEET #133.

- NOTES:
- FOR INTERSECTION "TRAFFIC SIGNAL" LAYOUT SEE SHEETS 129, 130, 131, 132.
 - FOR UNDER PASS STREET LIGHTING - SEE SHEETS 120, 121.
 - LAYOUT OF TRAFFIC SIGNAL SYSTEM IS TO BE COORDINATED WITH OTHER UTILITIES EXISTING & NEW SHOWN ON UTILITIES DWG. SHEETS 65 THRU 117.

DATE	_____
ORIGINAL PLAN	_____
DRAWN BY	_____
CHECKED BY	_____
NOTE BOOK	_____
NO.	_____

This work was prepared by me or under my supervision.

J. Oberhausen

JAMES I. OBERHAUSEN
REGISTERED PROFESSIONAL ENGINEER
No. 664
HAWAII, U.S.A.

WILSON, OKAMOTO, OKA, INC.
PARK ASSOCIATES, INC.
ARCHITECTS & ENGINEERS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

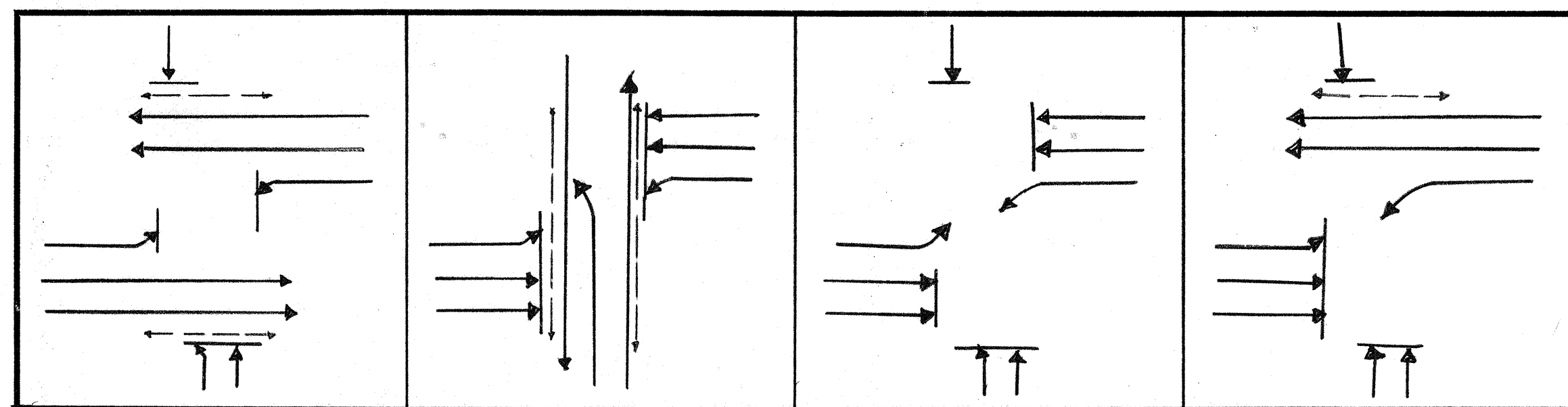
TRAFFIC SIGNAL SYSTEM
LAYOUT PLAN
INBOUND & OUTBOUND FRONTAGE RD.
& INTERSECTIONS FROM 21ST AVE.
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
F.A.I. PROJ. NO. I-HI-1(6) UNIT 3
SCALE: 1"=50' DATE: MAY 1967

SHEET No. 2 OF 13 SHEETS

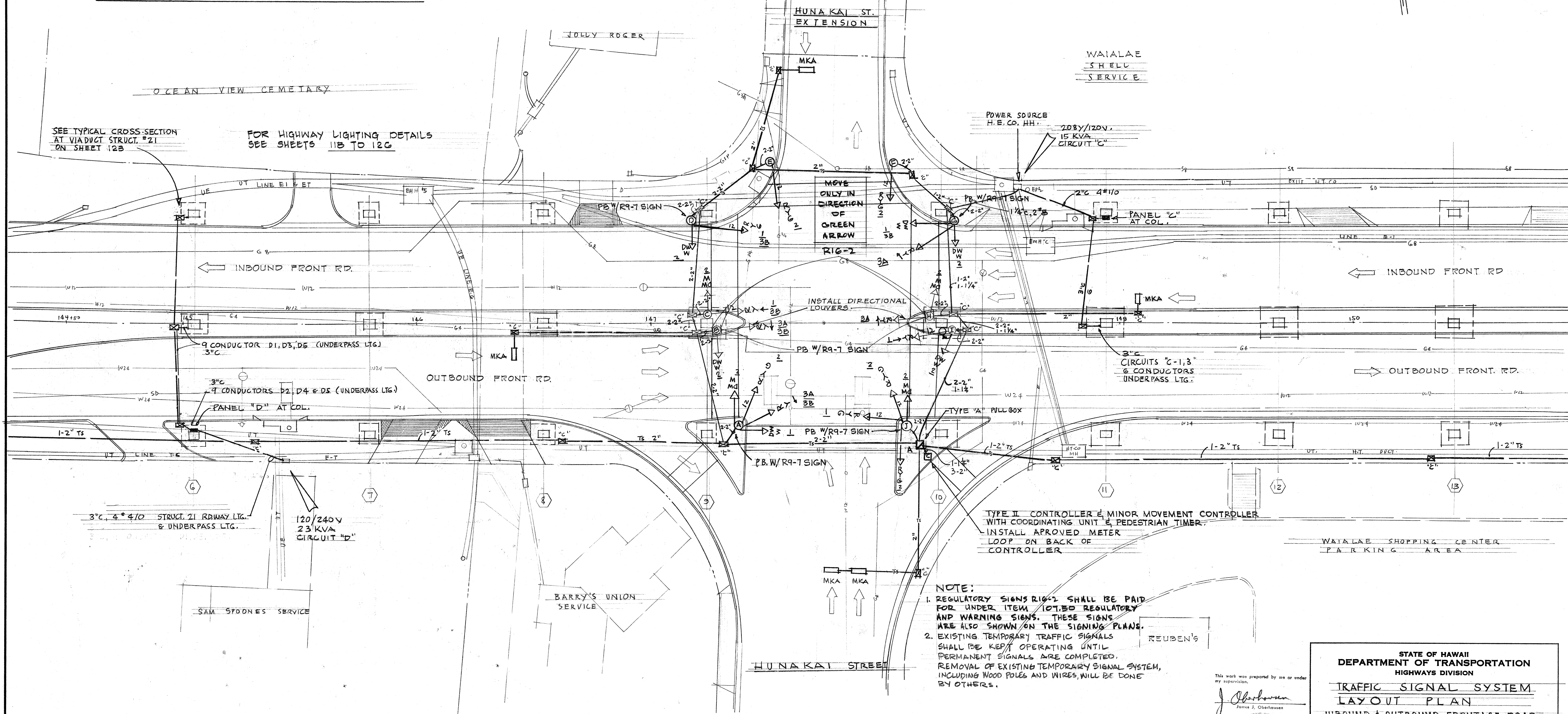
128 IR

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	UN103	1966	130	235

TRUE NORTH
SCALE: 1"=20'

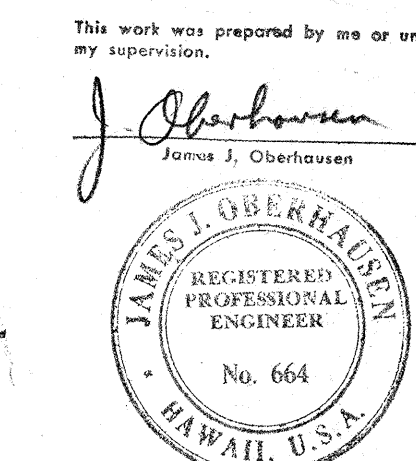


PHASE DIAGRAM



- NOTE:
1. REGULATORY SIGNS RIG-2 SHALL BE PAID FOR UNDER ITEM 107.30 REGULATORY AND WARNING SIGNS. THESE SIGNS ARE ALSO SHOWN ON THE SIGNING PLANS.
 2. EXISTING TEMPORARY TRAFFIC SIGNALS SHALL BE KEPT OPERATING UNTIL PERMANENT SIGNALS ARE COMPLETED. REMOVAL OF EXISTING TEMPORARY SIGNAL SYSTEM, INCLUDING WOOD POLES AND WIRES, WILL BE DONE BY OTHERS.

WILSON, OKAMOTO, OKA, INC.
PARK ASSOCIATES, INC.
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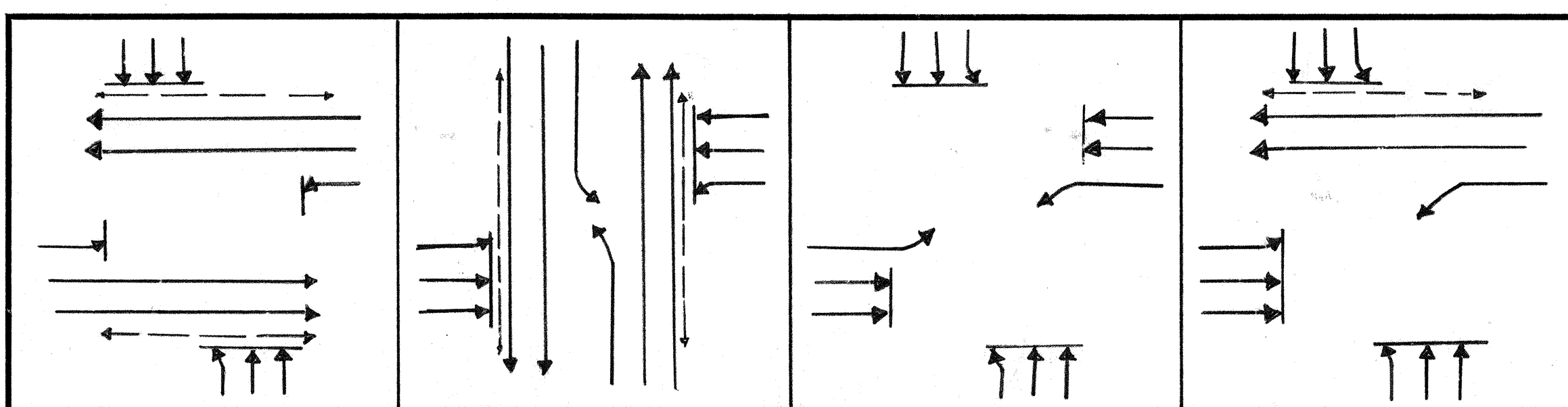


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

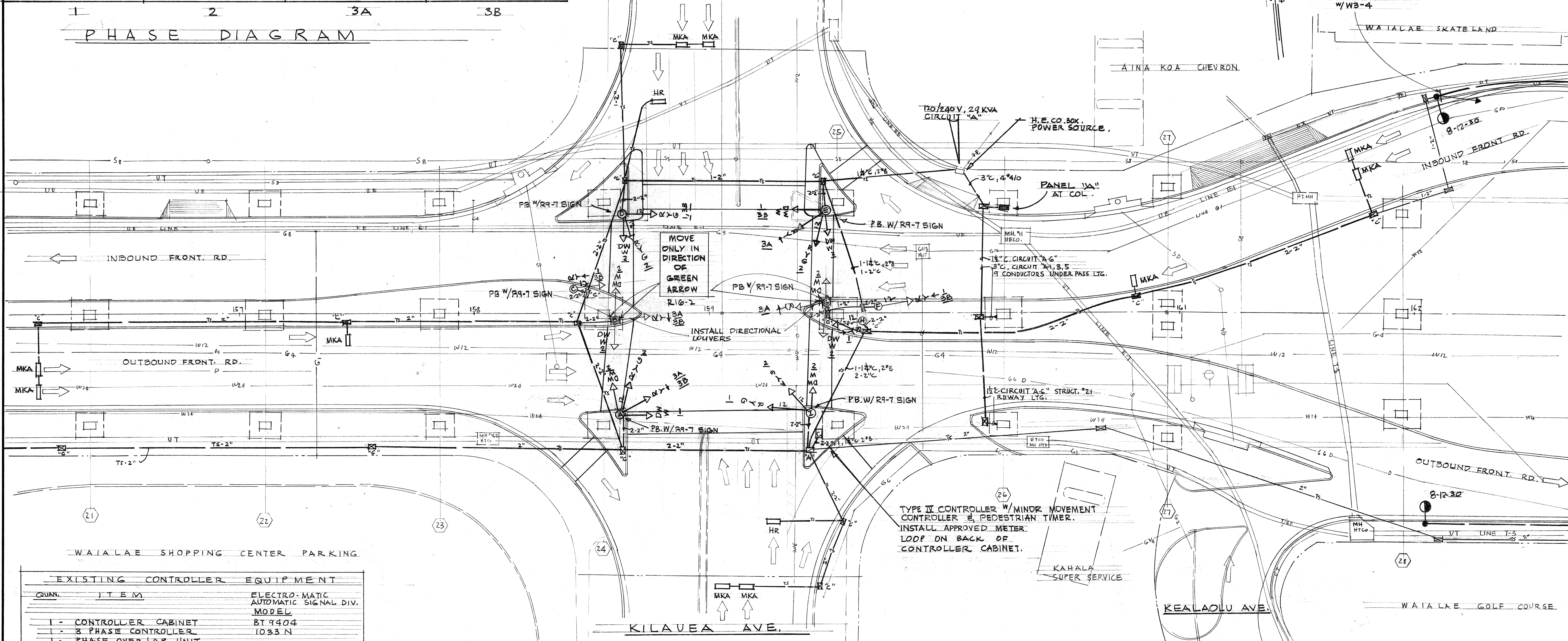
TRAFFIC SIGNAL SYSTEM
LAYOUT PLAN

INBOUND & OUTBOUND FRONTAGE ROAD
HUNAKAI ST. INTERSECTION
INTERSTATE HIGHWAY (LUNALILO EXT.)
F.A.I. PROJ. NO. I-HI(6) UNIT 3
SCALE: 1"=20' DATE: AUG. 1966

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



PHASE DIAGRAM



DATE: _____
 SURVEY PLOTTED BY: _____
 DRAWN BY: _____
 CHECKED BY: _____
 NOTE BOOK: _____
 NO. _____

QUAN.	ITEM	ELECTRO-MATIC AUTOMATIC SIGNAL DIV. MODEL
1	CONTROLLER CABINET	BT 9404
1	3 PHASE CONTROLLER	1033 N
1	PHASE OVER LAP UNIT	
1	PUSHBUTTON RELAY UNIT	
1	FLASHER - SINGLE CIRCUIT	F-1
2	FLASHER - "EAGLE SIGNAL CORP."	TYPE HT722AG22
3	MAG. DETECTOR RELAY	MR-1
4	TERMINAL BLOCK (EACH WITH 12TER)	
1	REMOTE FLASHER RELAY	A15814
1	MINOR MOVEMENT	MM3
1	MCH TERMINAL UNIT	A13065
1	LINE FILTER 25AMP AC	
1	CONTROL SW. IN POLICE PANEL	
1	"SQ-D" SWITCH	
1	"SANGAMO" TIME SW. 1P-1 THROW	
5	SIGNAL RELAYS	SR-4
* = EQUIPMENT NOT - ELECTRO-MATIC.		

NOTE:
 1. EXISTING PEDESTRIAN PBs TO BE REUSED.
 2. ALL EXISTING SIGNAL HEADS TO BE REUSED HERE OR AT OTHER INTERSECTIONS. SEE SPECS.
 3. FLASHER SHALL BE PAID FOR UNDER ITEM 113.04, "TRAFFIC SIGNAL SYSTEM ON WAIALAE AVE. AT KILAUEA AVE".
 4. REGULATORY SIGNS R10-2 SHALL BE PAID FOR UNDER ITEM 107.50 REGULATORY AND WARNING SIGNS. WARNING SIGN W3-4 SHALL BE PAID FOR UNDER ITEM 107.54 INTERSTATE REGULATORY AND WARNING SIGN WITH SPECIAL MOUNTING.

WILSON, OKAMOTO, OKA, INC.
 PARK ASSOCIATES, INC.
 ARCHITECTS & ENGINEERS

This work was prepared by me or under my supervision.
 J. Oberhausen
 REGISTERED PROFESSIONAL ENGINEER
 No. 664
 HAWAII, U.S.A.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 TRAFFIC SIGNAL SYSTEM
 LAYOUT PLAN
 INBOUND & OUTBOUND FRONTAGE ROAD
 KILAUEA AVE. INTERSECTION.
 INTERSTATE HIGHWAY (LUNALILU Fwy)
 F.A.I. PROJ. NO. I-HI-1(6) UNIT 3
 SCALE: 1" = 20' DATE: AUG 1996

50' POLE (HECO)
126/240V
8.28 KVA
CIRCUIT "E"

14" 2" 8' FOR T.S.
14" 3" 4' FOR ST. LIT.

NEW FOOTING FOR
MAST ARM &
STANDARD.
INTERCEPT
EXIST. CONDUIT
FROM (B)

NEW BASE AND STANDARD
INTERCEPT CONDUIT FROM (P)

60' P (HECO)

50' POLE H.E.CO.
EP #11-X

EXIST. DETECTOR TO BE ABANDONED

INTERCEPT EXISTING
CONDUIT WITH TYPE
"C" PULL BOX

NEW TYPE
"C" PULL BOX

EXISTING DETECTORS
TO REMAIN

EXISTING DETECTOR TO BE ABANDONED

EXIST. PULL BOX

EXISTING PEDESTRIAN PUSHBUTTON

2 - HR. DETECTORS TO BE ABANDONED

2 - HR. DETECTORS TO REMAIN
NEW CONTROLLER, USE N

4 - EXISTING POLE BASES TO

2 - NEW MAST ARM FOOTING
(C AND D)

5 - NEW POLE BASES TO BE
(B, AND I)

ALL EXISTING SIGNAL POLES SHALL

ALL NEW SIGNAL POLES TO

ALL EXISTING SIGNAL HEADS
OR AT OTHER INTERSECTION

EXISTING CONTROLLER EQUIPMENT

QUAN.	ITEM	ELECTRO-MATIC AUTO-SIGNAL DIV. MODEL
1	CABINET	9434

WILSON, OK

- WILSON, OKAMOTO, OKA, INC.
PARK ASSOCIATES, INC.
ARCHITECTS & ENGINEERS

SCALE: 1" = 20' DATE: Aug. 1966
SHEET No. 6 OF 13 SHEETS



* = EQUIPMENT NOT - ELECTRO-MATIC

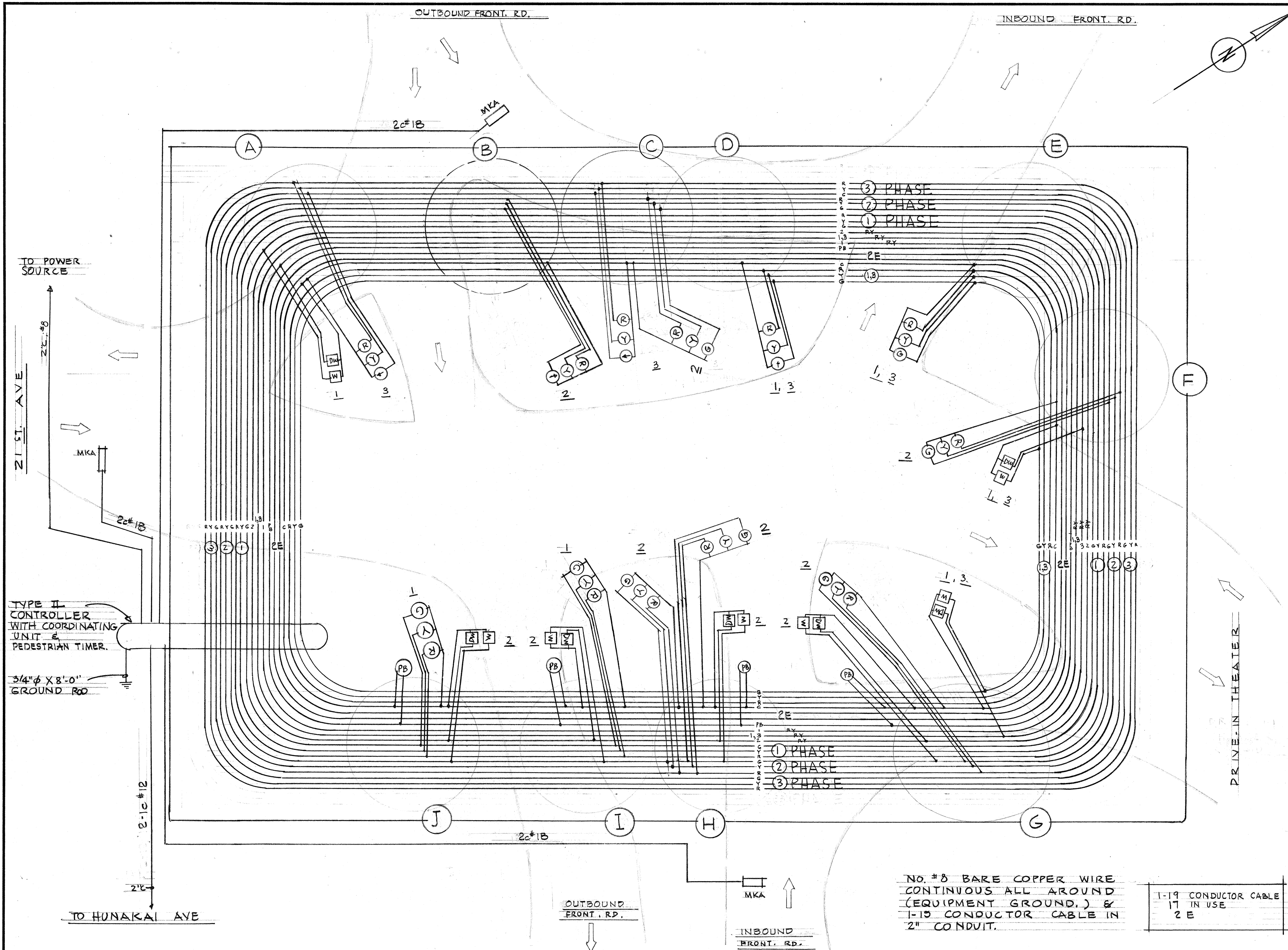
ORIGINAL PLAN	SURVEY PLOTTED BY.....	DATE.....
	DRAWN BY.....	
	TRACED BY.....	
NOTE BOOK	DESIGNED BY.....	
	QUANTITIES BY.....	
	CHECKED BY.....	
No.....		

TRAFFIC SIGNAL SYSTEM - LEGEND

SYMBOLS	DESCRIPTION
(A) 12	"A" DENOTES TRAFFIC SIGNAL POST DESIGNATION.
(A) 12	NEW 12" LENS ASSEMBLY & STANDARD.
(A) 2	2 = PHASE NUMBER. SEE PHASE DIAGRAM.
(A) 8	NEW 8" LENS ASSEMBLY & STANDARD.
(R)	RED - STOP
(Y)	YELLOW - CAUTION
(G)	GREEN - GO
(G) (D)	GREEN - GO (DIRECTIONAL)
(RW)	RY - DON'T WALK
(W)	GREEN - WALK
1, 2, 3A, 3B	PHASE NO. DESIGNATION. SEE PHASE DIAGRAM.
(PB)	PUSH BUTTON
PB. W/SIGN	"PUSH BUTTON WITH SIGN," TRAFFIC SIGNAL STANDARD WITH PUSH BUTTON FOR WALK SIGNAL (R9-7) SIGN.
MKA	NEW MAGNETIC VEHICLE DETECTOR.
PS	NEW PRESSURE SENSITIVE DETECTOR.
(C)	NEW TRAFFIC SIGNAL CONTROLLER.
(C)	NEW TYPE "C" PULL BOX.
(A)	NEW TYPE "A" PULL BOX.
(E)	EXISTING TRAFFIC SIGNAL SYSTEM UNDERGROUND DUCT SYSTEM TO BE RE-USED, UNLESS NOTED OTHERWISE.
(E)	EXISTING TRAFFIC SIGNAL SYSTEM PULL BOX TO REMAIN, OR AS NOTED.
TS 2"	SYMBOL AT INTERSECTIONS. TRAFFIC SIGNAL SYSTEM UNDERGROUND DUCT. RIGID STEEL CONDUIT WITH 2 COATS OF BITUMASTIC PAINT OR POLYVINYLCHLORIDE (PVC) UNDERGROUND 15" MINIMUM COVER. AT ROADWAY CROSSINGS RIGID STEEL CONDUIT TO BE CONCRETE ENCASED WITH 3" CONC. ENVELOPE & 1 1/2" SEPARATION BETWEEN CONDUITS.
TS 2"	SYMBOL BETWEEN INTERSECTIONS. TRAFFIC SIGNAL SYSTEM UNDERGROUND DUCT. CEMENT ASBESTOS CONCRETE ENCASED WITH 3" CONC. ENVELOPE & 1 1/2" SEPARATION BETWEEN DUCTS.
(A) 20'	NEW 12" LENS ASSEMBLY AND STANDARD. WITH 20' MAST ARM.
(E)	E = SPARE 3E = 3 SPARE CONDUCTORS
(C)	C = COMMON
(F)	FLASHING
(PB)	PUSH BUTTON

GENERAL NOTES:

- EXACT LOCATIONS OF THE TRAFFIC SIGNAL STANDARDS, PULL BOXES, AND CONTROLLER SHALL BE DETERMINED IN THE FIELD BY THE PROJECT ENGINEER.



NO. 8 BARE COPPER WIRE CONTINUOUS ALL AROUND (EQUIPMENT GROUND.) & 1-19 CONDUCTOR CABLE IN 2" CONDUIT.

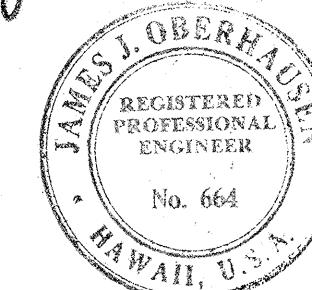
1-19 CONDUCTOR CABLE 17 IN USE 2 E

INBOUND & OUTBOUND FRONTAGE RD. & 21 ST. AVE. INTERSECTION.

WILSON, OKAMOTO, OKA, INC.
PARK ASSOCIATES, INC.
ARCHITECTS & ENGINEERS

This work was prepared by me or under my supervision.

James J. Oberhausen
James J. Oberhausen



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL SYSTEM
WIRING DIAGRAM

INBOUND & OUTBOUND FRONTAGE ROAD
21 ST. AVE. INTERSECTION
INTERSTATE HIGHWAY (LUNALILO FKY)
FAI PROJ. NO. I-HI-1(6) UNIT 3

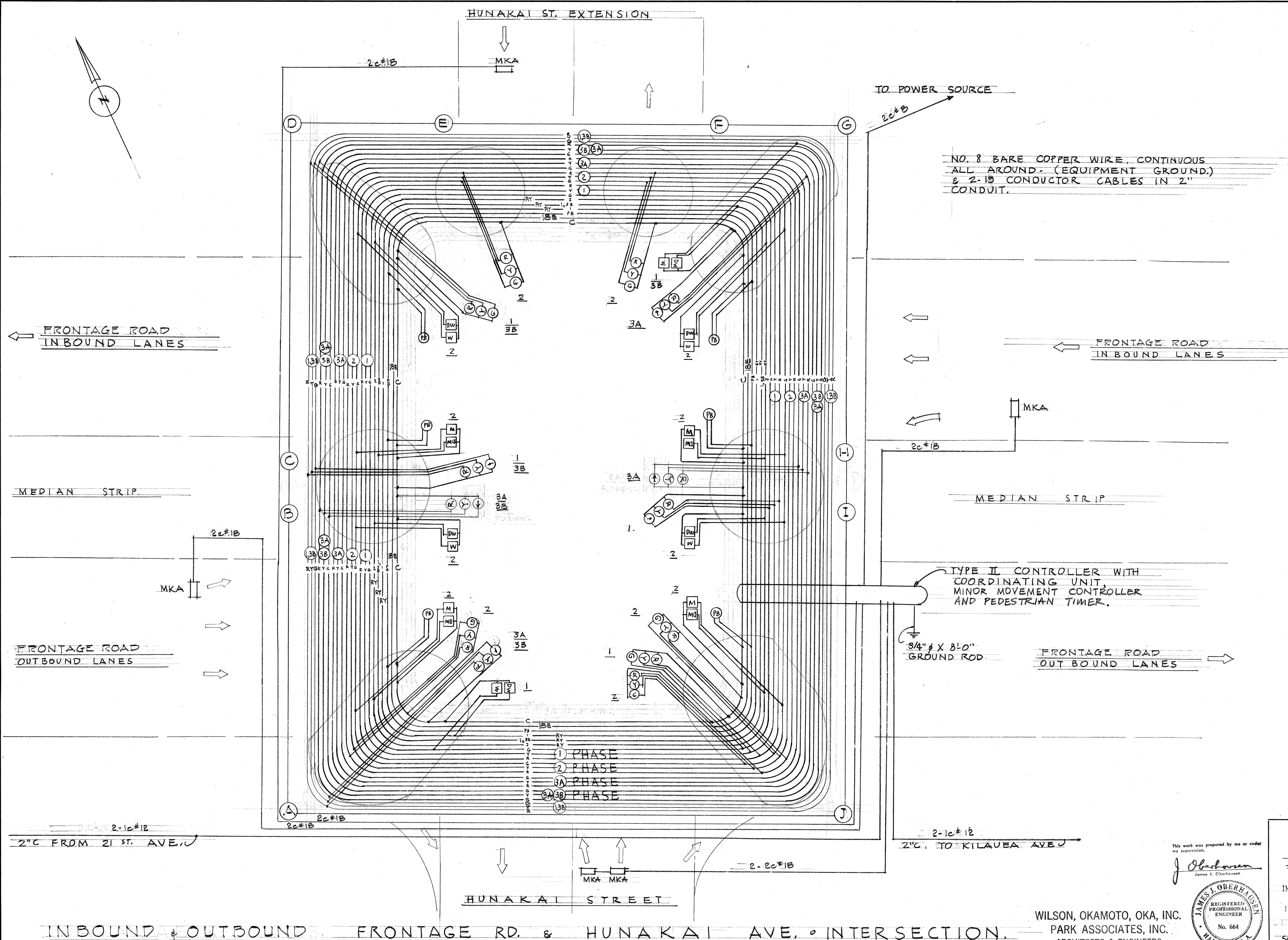
SCALE: NO SCALE DATE: AUG 1966

SHEET No. 7 OF 13 SHEETS

1 3 3

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
CHECKED BY	
NOTED BY	
CHECKED BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1(6) UNIT 8	1966	134	235



2-19 CONDUCTOR CABLES	38	"	"
2-10 CONDUCTOR CABLES	20	"	"
2-10 CONDUCTOR CABLES	18	"	"
2-10 CONDUCTOR CABLES	18	"	"

NO. 8 BARE COPPER WIRE, CONTINUOUS
ALL AROUND - (EQUIPMENT GROUND.)
2-10 CONDUCTOR CABLES IN 2"
CONDUIT.

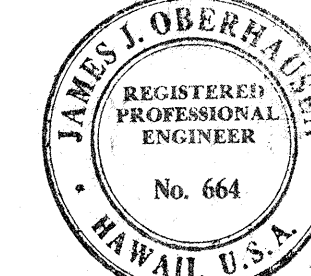
TYPE II CONTROLLER WITH
COORDINATING UNIT,
MINOR MOVEMENT CONTROLLER
AND PEDESTRIAN TIMER.

3/4" X 8'-0"
GROUND ROD

FRONTAGE ROAD
OUTBOUND LANES

WILSON, OKAMOTO, OKA, INC.
PARK ASSOCIATES, INC.
ARCHITECTS & ENGINEERS

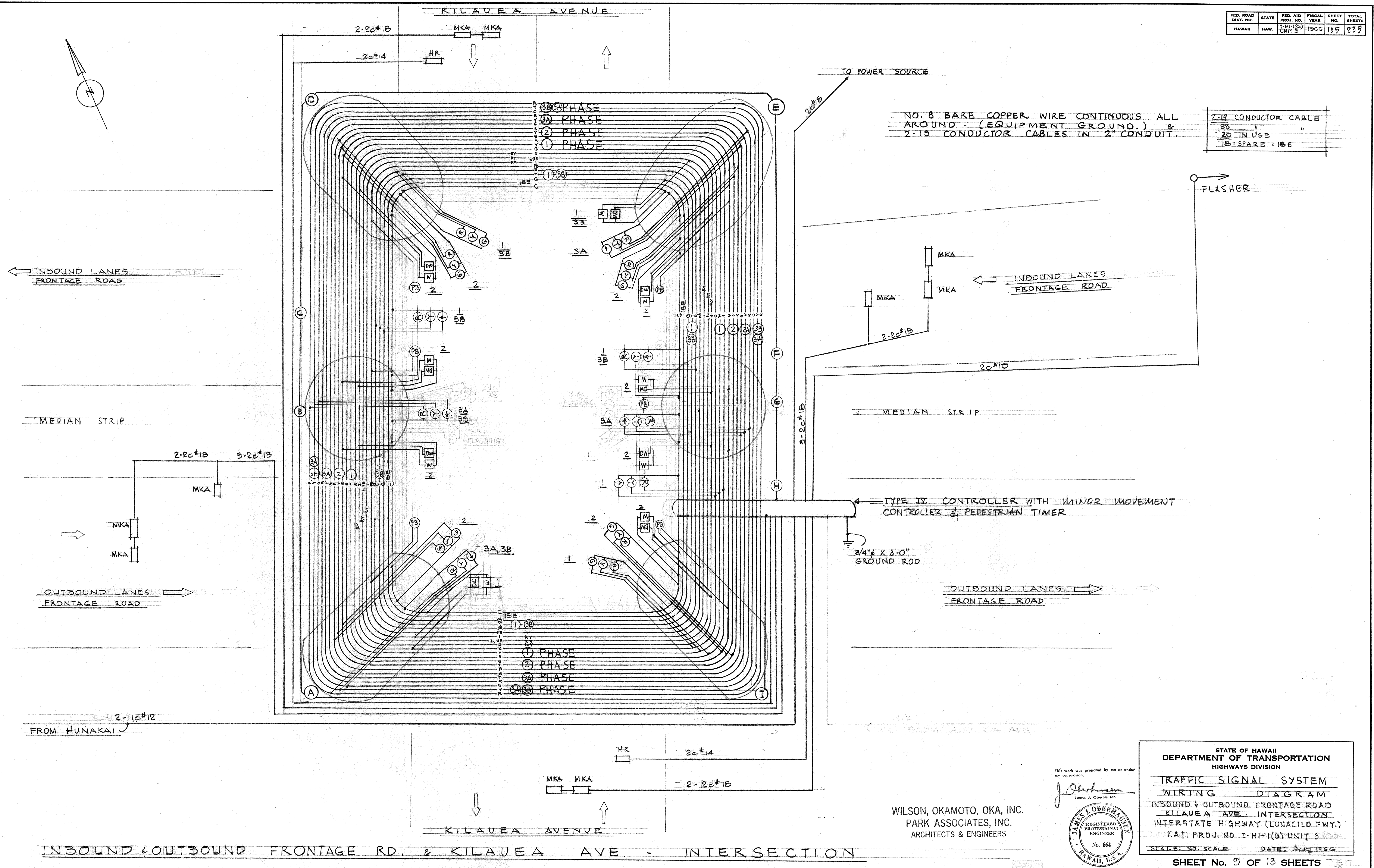
This work was prepared by me or under
my supervision.
James J. Oberhausen



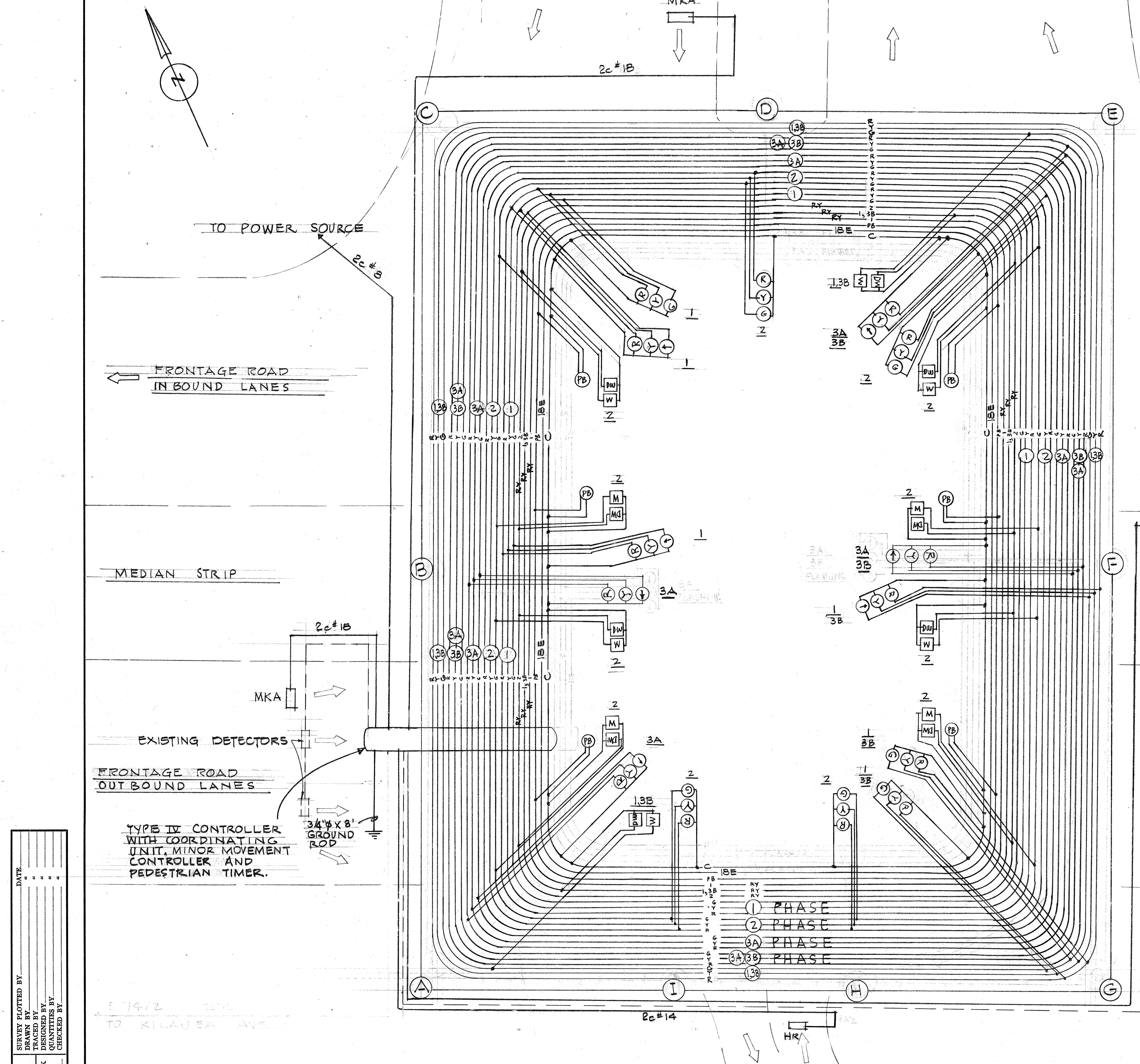
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TRAFFIC SIGNAL SYSTEM
WIRING DIAGRAM
INBOUND & OUTBOUND FRONTAGE ROAD
HUNAKAI AVE. INTERSECTION
INTERSTATE HIGHWAY (LUNALILO FWY.)
F.A.I. PROJ. NO. I-HI-1(6) UNIT 8
SCALE: NO. SCALE: DATE: Aug. 1966
SHEET No. 8 OF 13 SHEETS

DESIGNED BY	DATE
DRAWN BY	"
CHECKED BY	"
NOTED BY	"
NO.	"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-HI-107 UNIT 3	1966	135	235



ORIGINAL PLAN	DATE
NOTED BY	DESIGNED BY
QUANTITIES BY	CHECKED BY
NO.	



NO. 8 BARE COPPER WIRE CONTINUOUS ALL AROUND (EQUIPMENT GROUND) & 2-19 CONDUCTOR CABLES IN 2" CONDUIT.

2-19 CONDUCTOR CABLE			
38	"	"	
20	IN USE		
18	SPARE = 18E		

EXISTING DETECTORS

FRONTAGE ROAD INBOUND LANES

MEDIAN STRIP

FRONTAGE ROAD OUTBOUND LANES

MEDIAN STRIP

FRONTAGE ROAD OUTBOUND LANES

TYPE IV CONTROLLER WITH COORDINATING UNIT, MINOR MOVEMENT CONTROLLER AND PEDESTRIAN TIMER.

DATE	7/14/72
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
NOTE BOOK	
CHECKED BY	
No.	

INTERSECTION AT INBOUND & OUTBOUND FRONTAGE RD. & AINAKOA AVE. - WAIKUI STREET

WILSON, OKAMOTO, OKA, INC.
PARK ASSOCIATES, INC.
ARCHITECTS & ENGINEERS

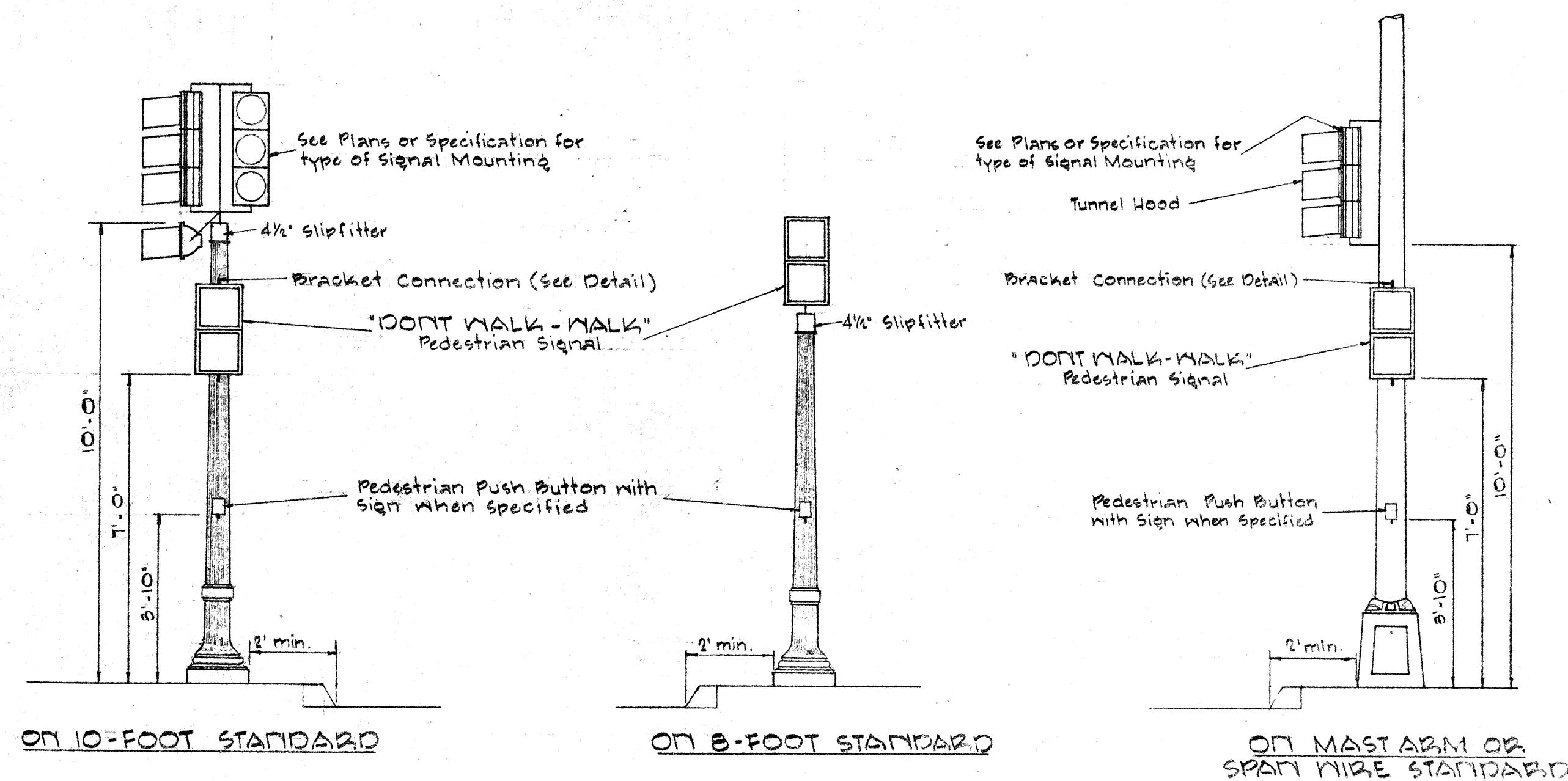
This work was prepared by me or under my supervision.
J. Oberhausen
James J. Oberhausen
REGISTERED PROFESSIONAL ENGINEER
No. 664
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL SYSTEM
WIRING DIAGRAM

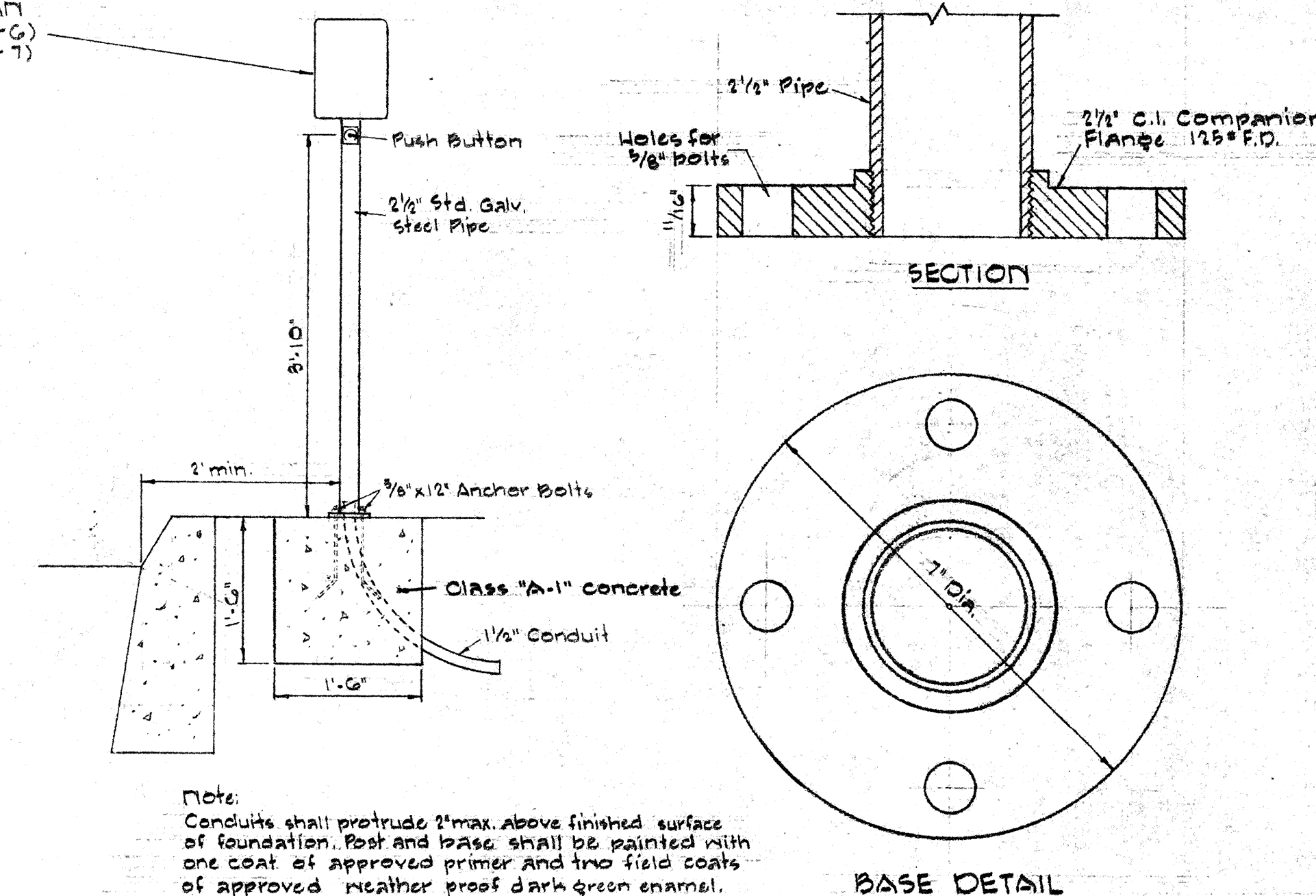
INBOUND & OUTBOUND FRONTAGE ROAD
AINAKOA AVE. & WAIKUI ST.
INTERSECTION
INTERSTATE HIGHWAY (LUNALILO Fwy.)
F.A.I. PROJ. NO. I-HI-1(6) UNIT 3
SCALE: NO SCALE DATE: AUG. 1966

SHEET No. 10 OF 13 SHEETS

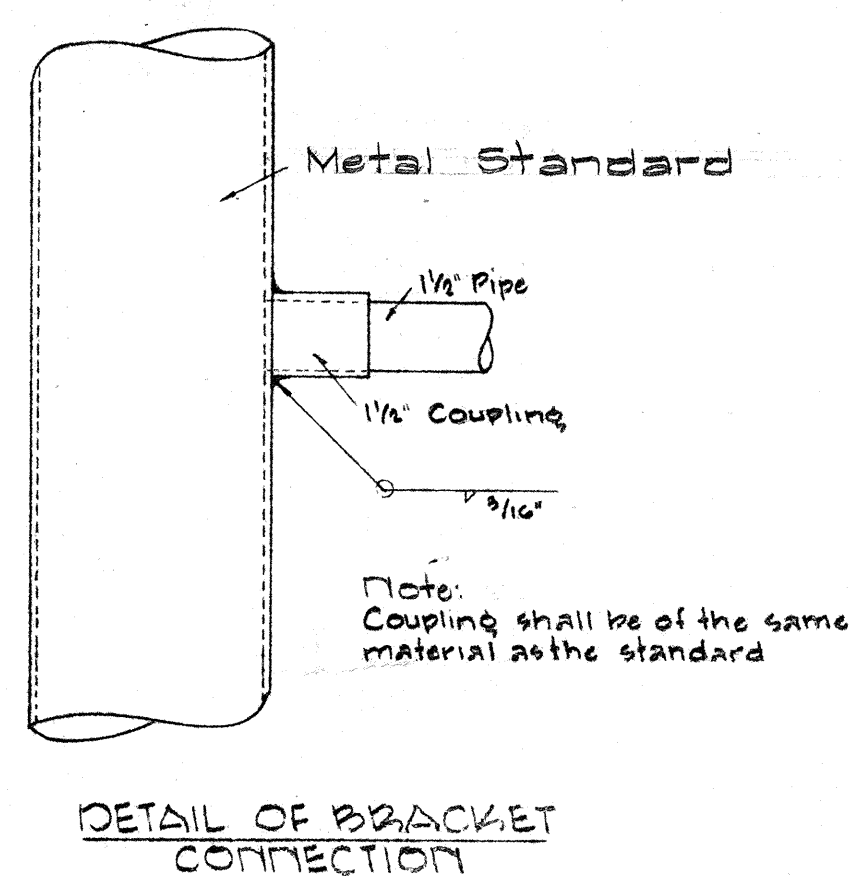


TYPICAL EQUIPMENT MOUNTING

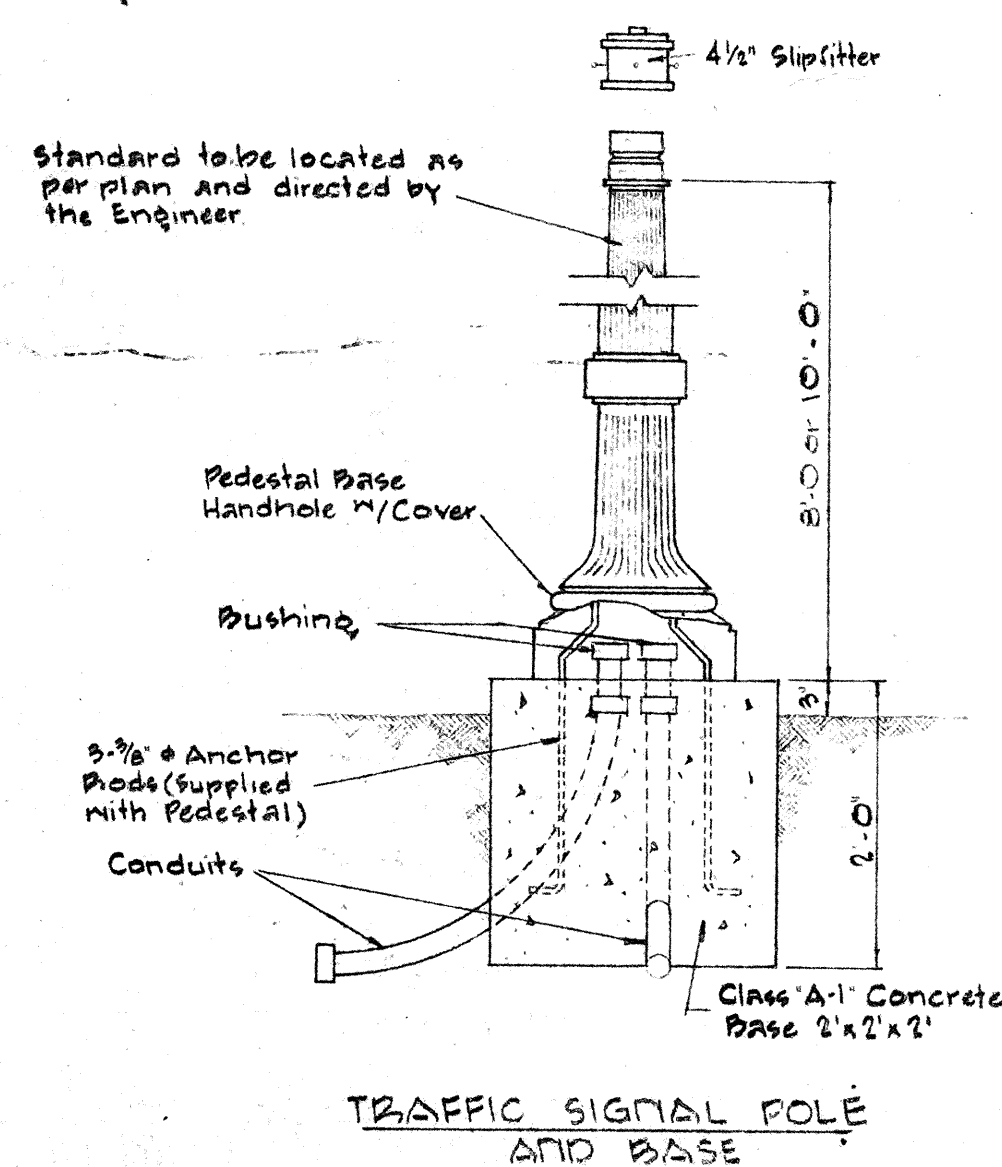
TRAFFIC SIGNAL AS SPECIFIED IN PLAN
 1. "Push Button for Green Light" (B-2-G)
 2. "Push Button for Walk Signal" (B-2-W)



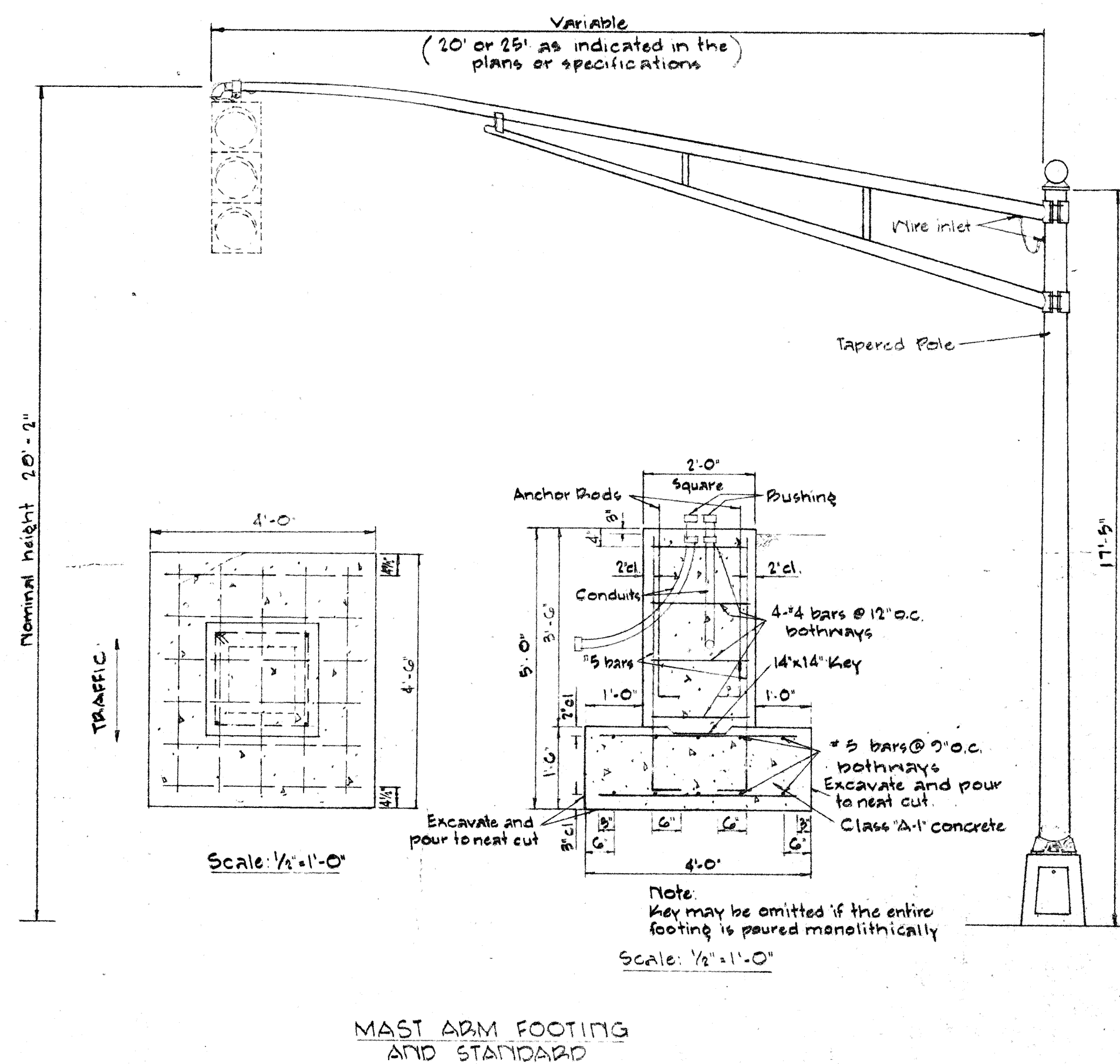
PEDESTRIAN PUSH BUTTON POST



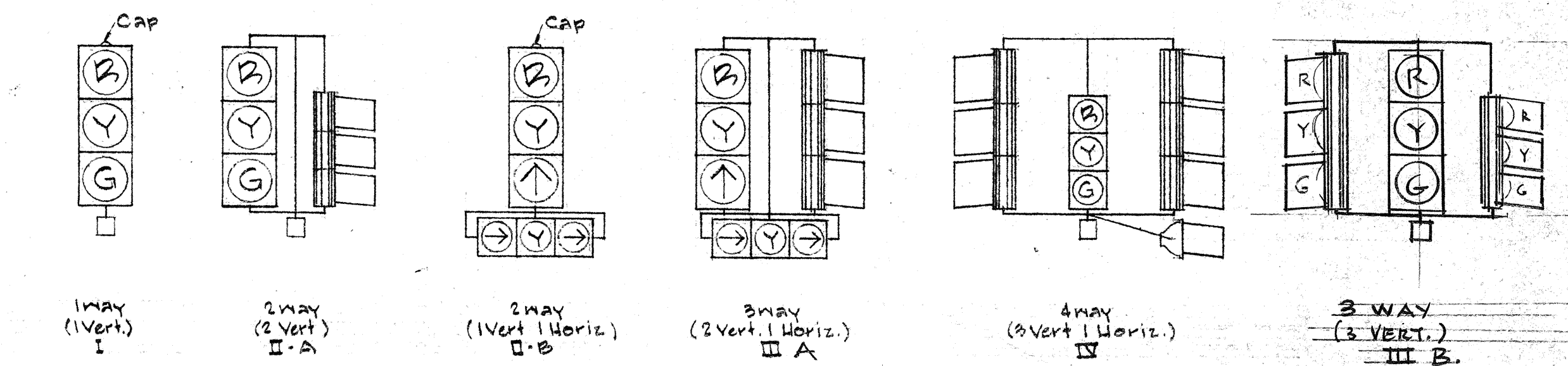
DETAIL OF BRACKET CONNECTION



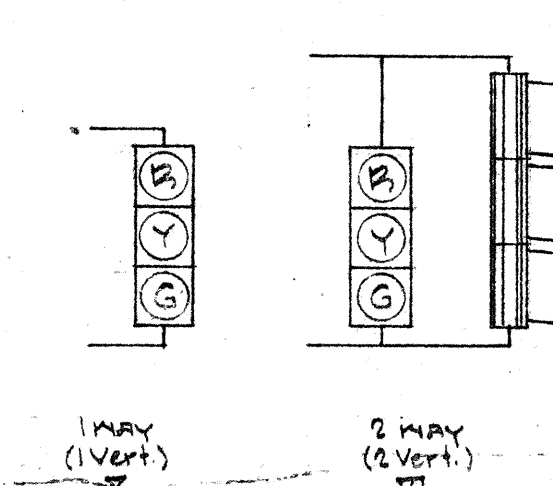
TRAFFIC SIGNAL POLE AND BASE



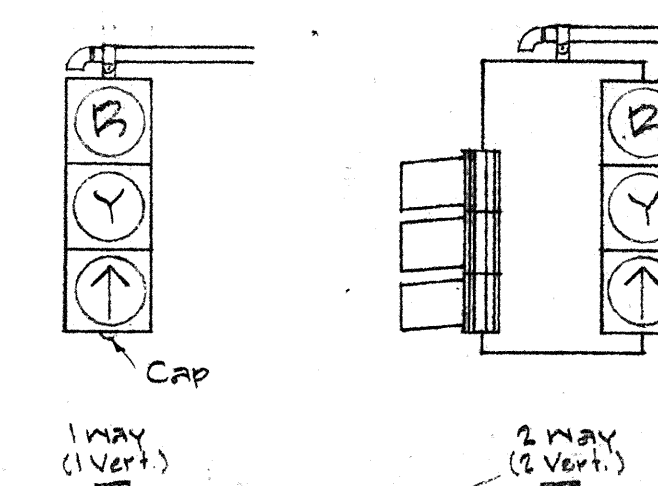
MAST ARM FOOTING AND STANDARD



SLIPFITTER MOUNTINGS

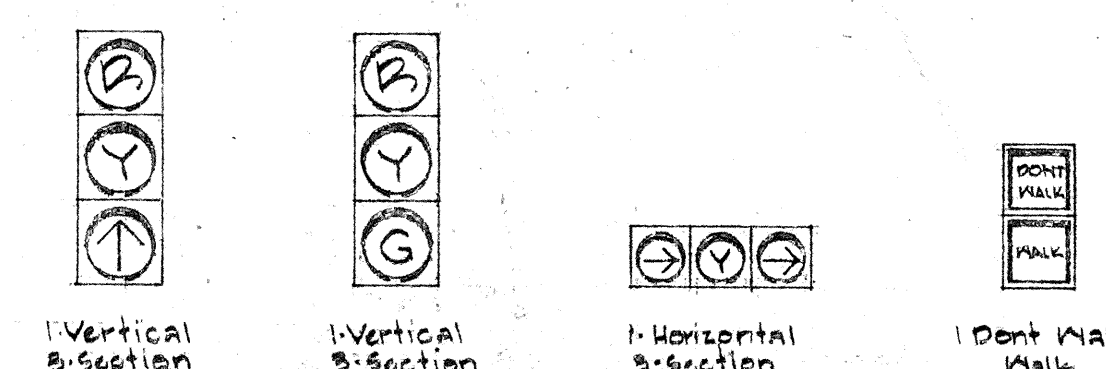


BRACKET MOUNTINGS



MAST ARM MOUNTINGS

TYPICAL VEHICULAR AND PEDESTRIAN SIGNAL MOUNTINGS

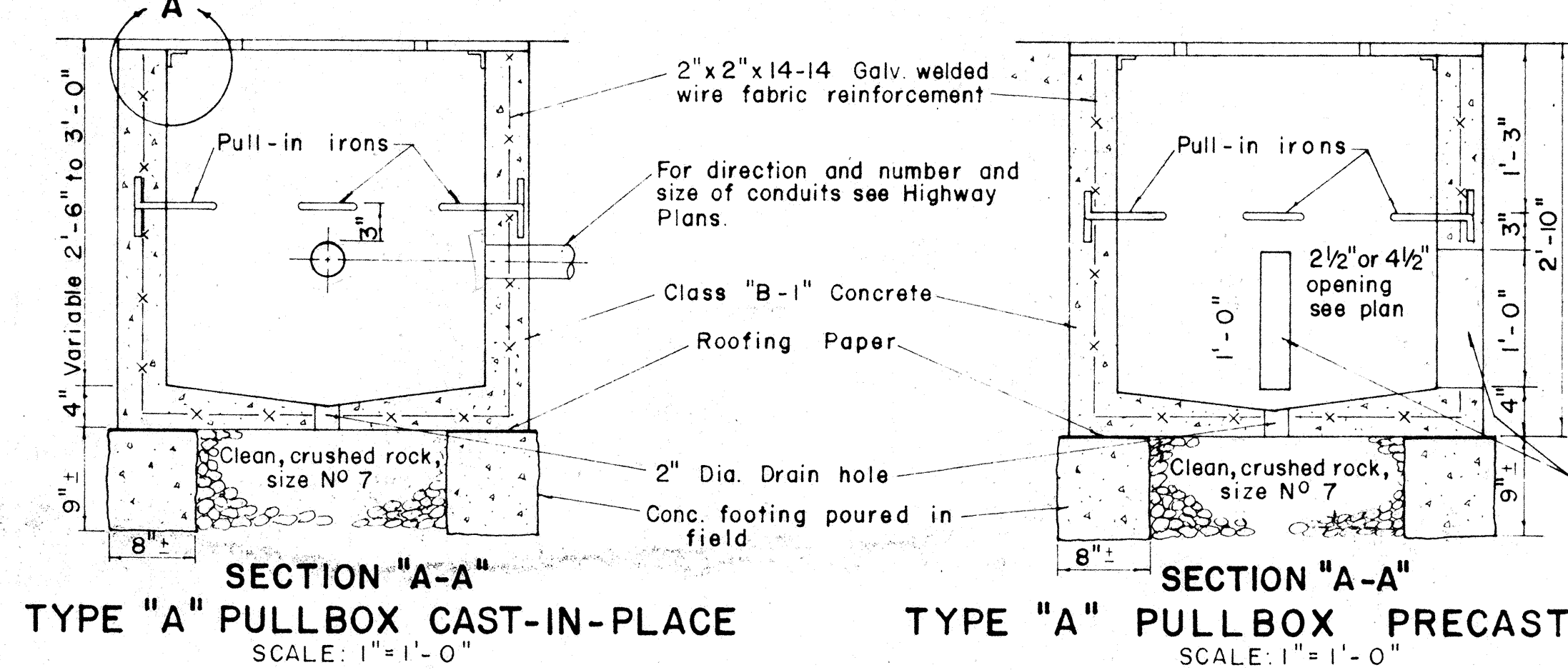
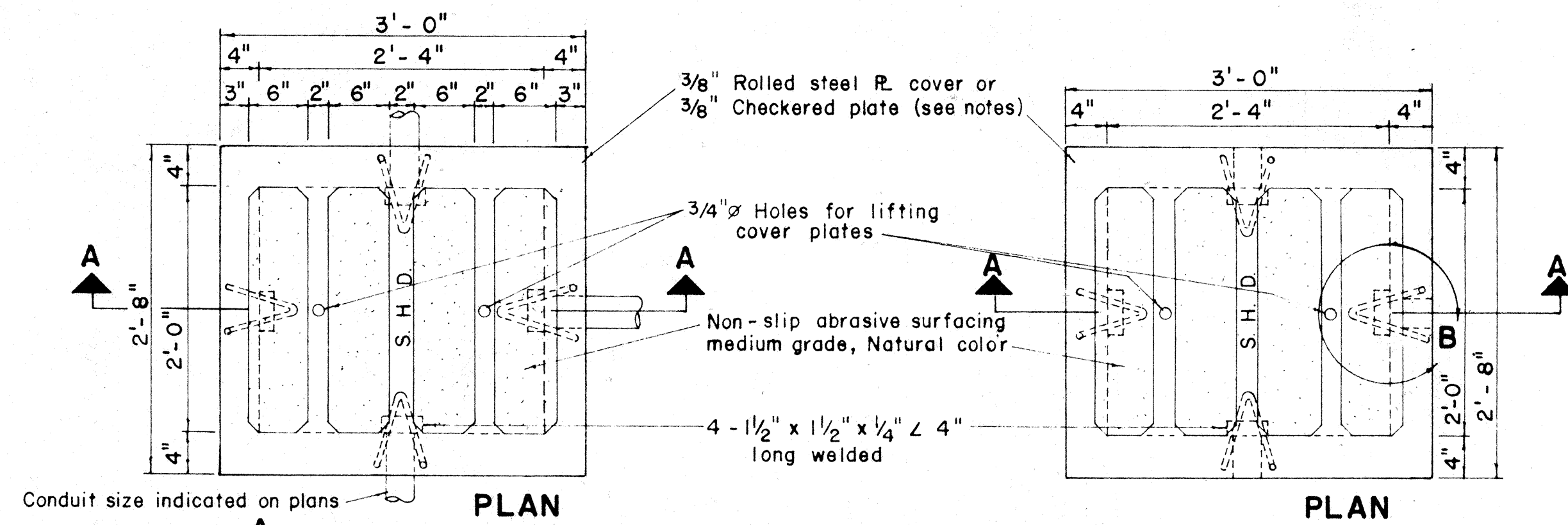


TYPICAL SIGNAL ARRANGEMENTS

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

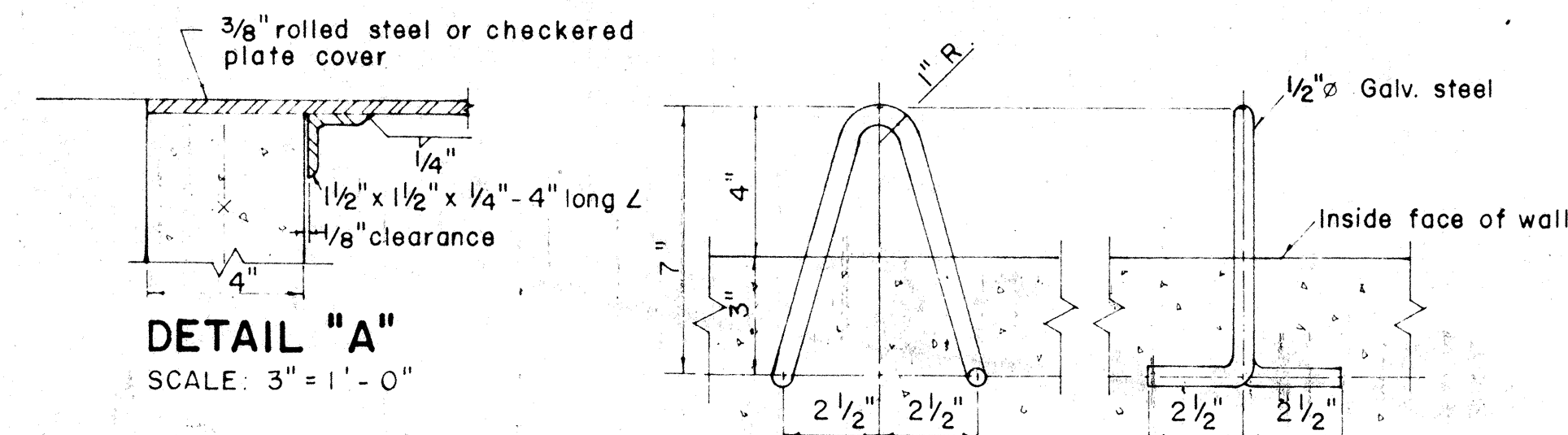
MISCELLANEOUS DETAILS
 TRAFFIC SIGNAL SYSTEM
 INTERSTATE HIGHWAY (LUNALILO FWY.)
 F.A.I. PROJ. NO. I-H1-1(6) UNIT 3
 SCALE: AS SHOWN DATE: AUG. 1966

SHEET No. 11 OF 13 SHEETS



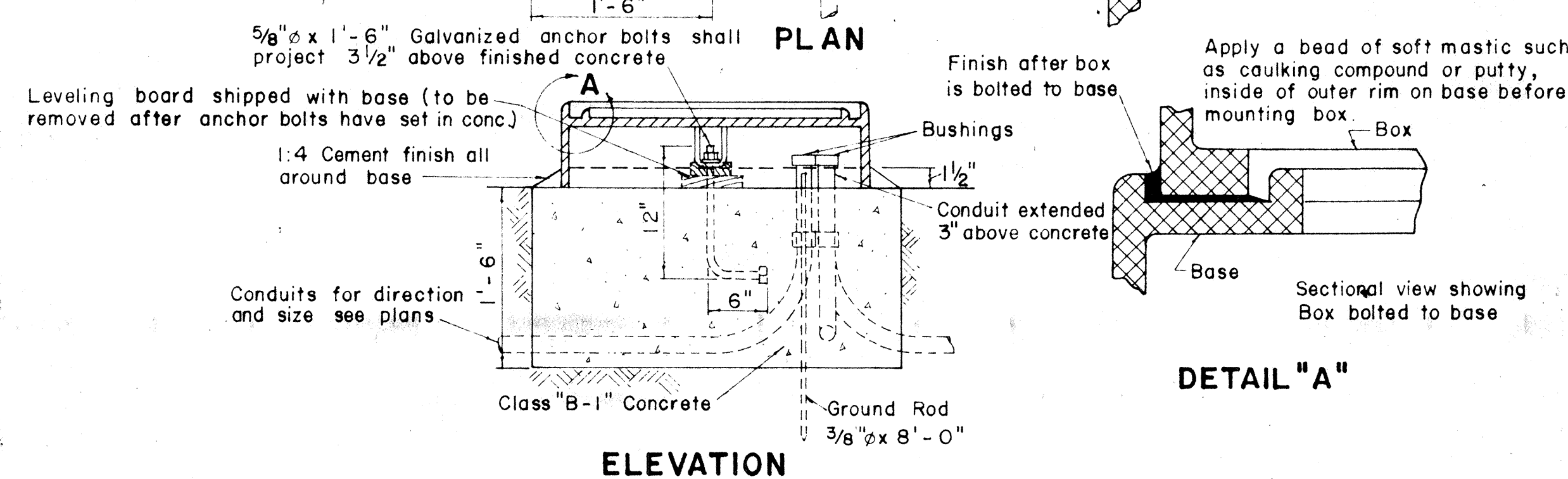
NOTE: (FOR TYPE "A" PULLBOX)

- 3/8" Rolled steel plate cover with non-slip abrasive surfacing medium grade, natural color shall be used on all pullboxes located on sidewalk areas where pedestrians are walking.
- 3/8" Checkered plate cover shall be used on all pullboxes located in median areas and other locations where there are no pedestrians walking.
- Pull irons shall be placed opposite each conduit slot.
- Covers on all pullboxes located in sidewalk areas shall be set flush with the concrete sidewalk.
- Each pullbox shall have a pair of pull irons opposite each other for lifting purposes.



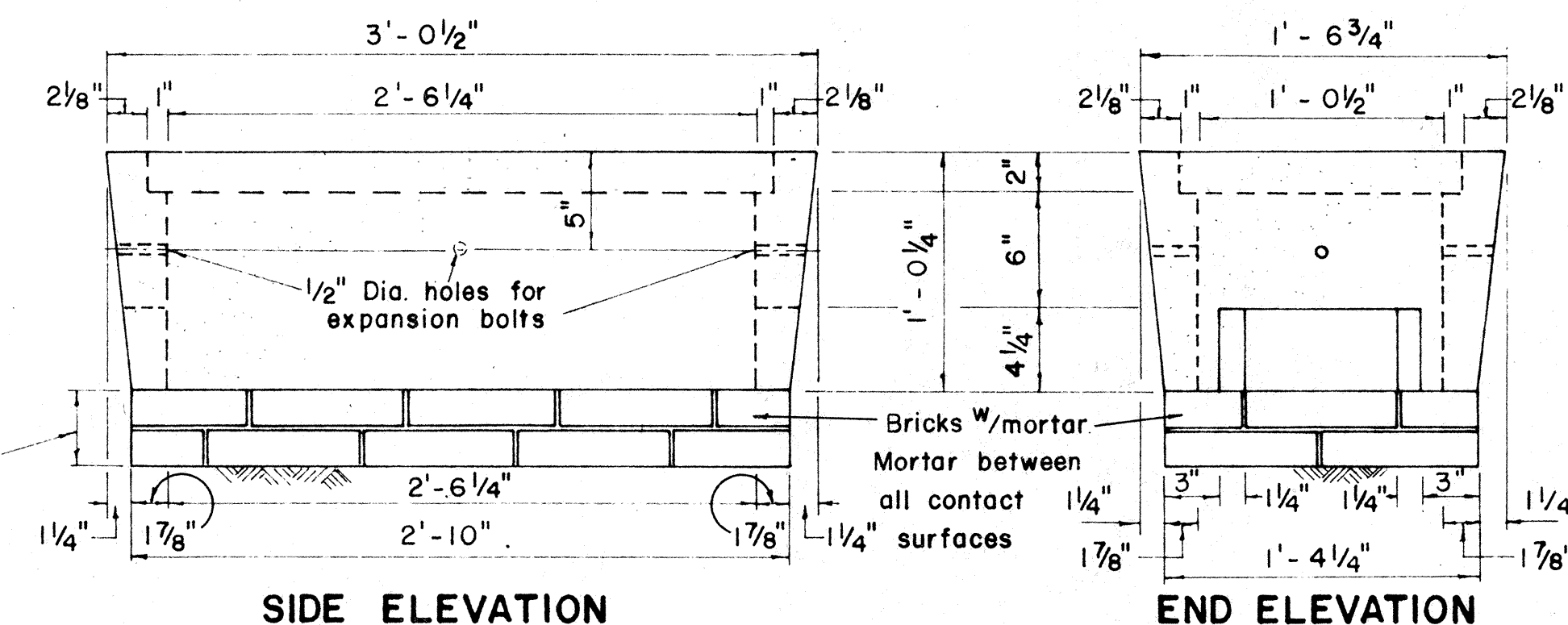
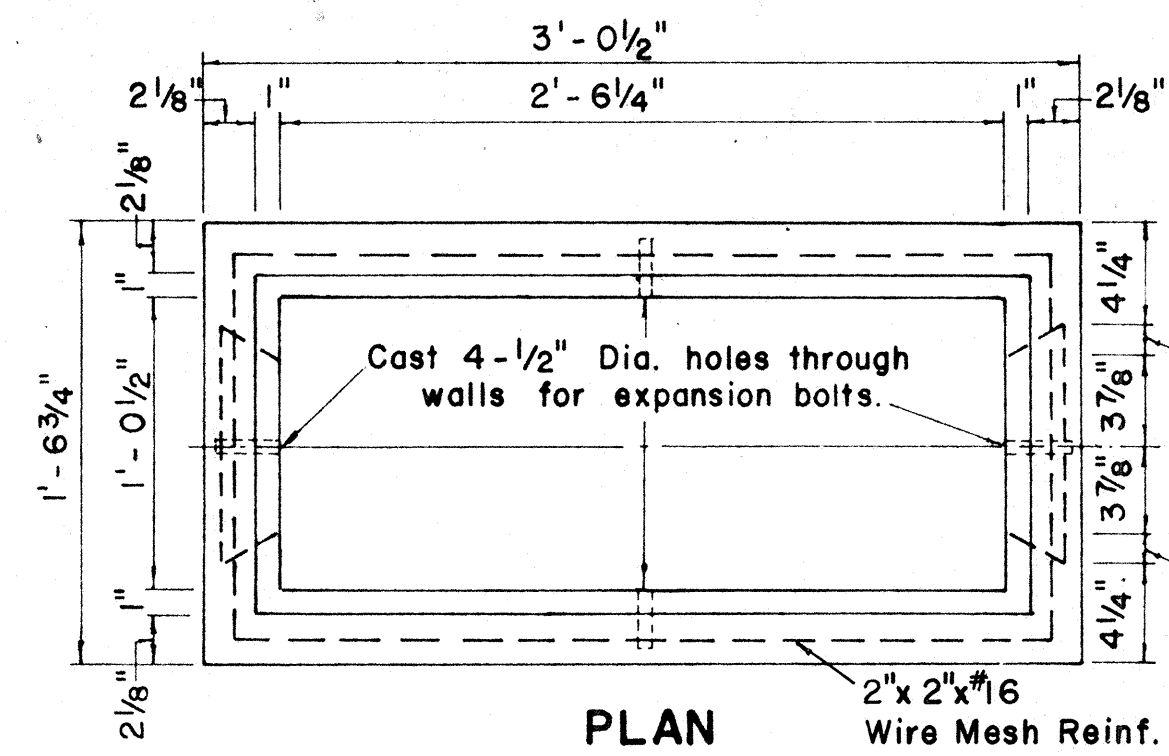
PULL-IN IRON DETAIL "B"

SCALE: 3" = 1'-0"



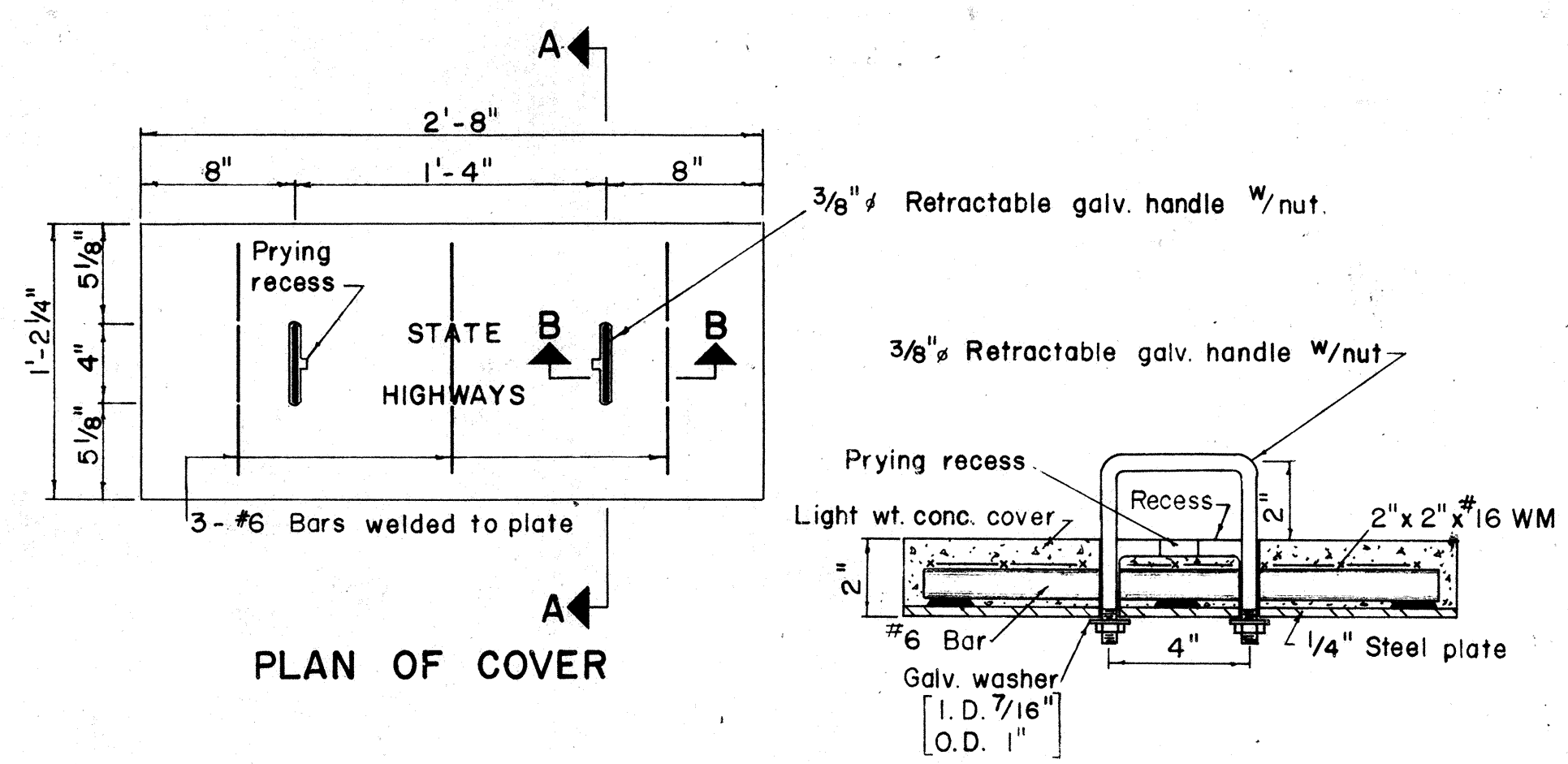
NOTE:

Dimensions and details are approximate only. Exact details and dimensions shall be furnished by the manufacturer and as directed by the Engineer.



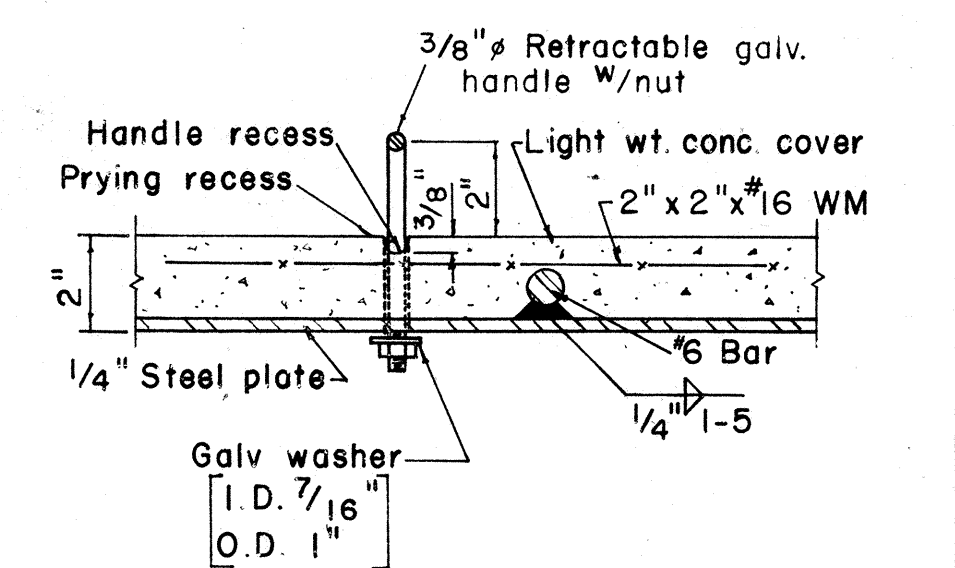
TYPE "C" PULLBOX

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



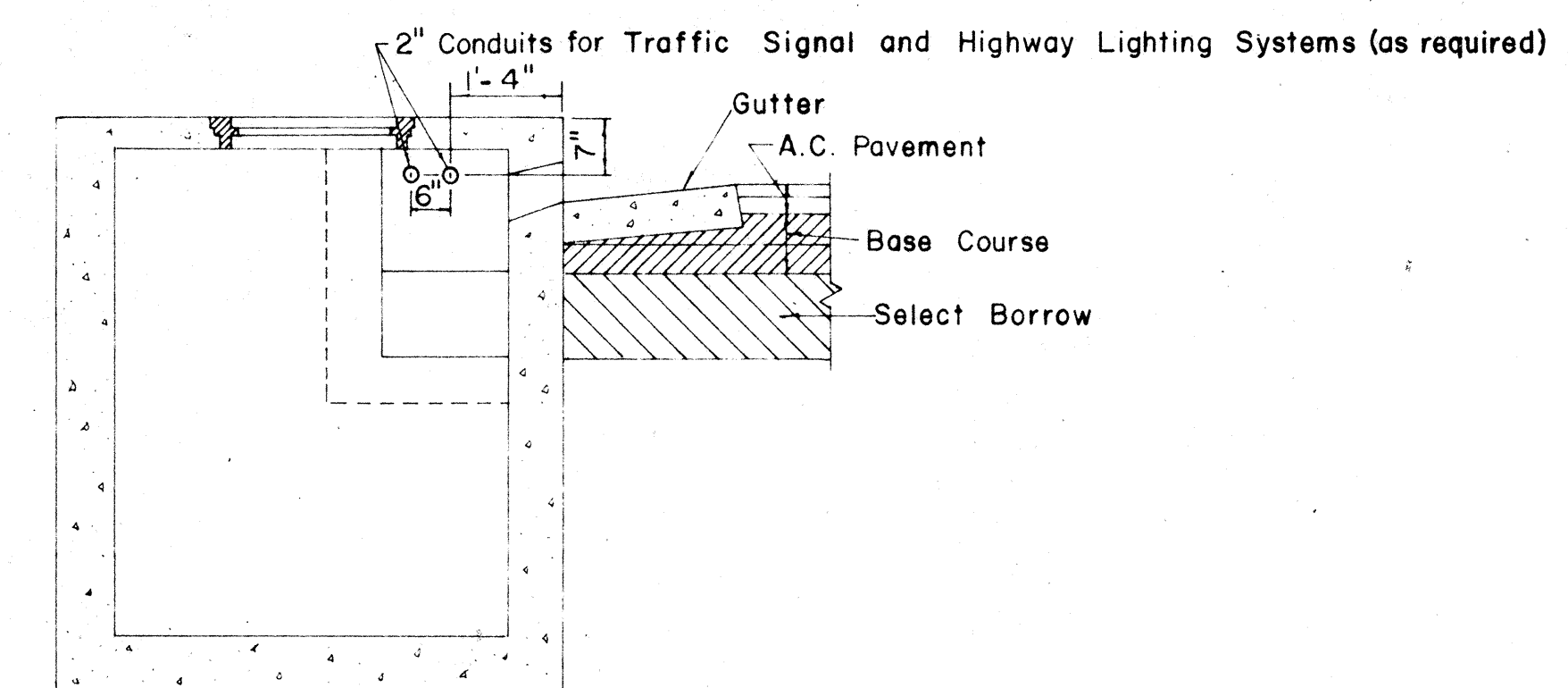
SECTION "A-A"

SCALE: 3" = 1'-0"



NOTE:

Galv. 2" conduits shall be supported by Band Hangers bolted to the top slab of Catch Basins.



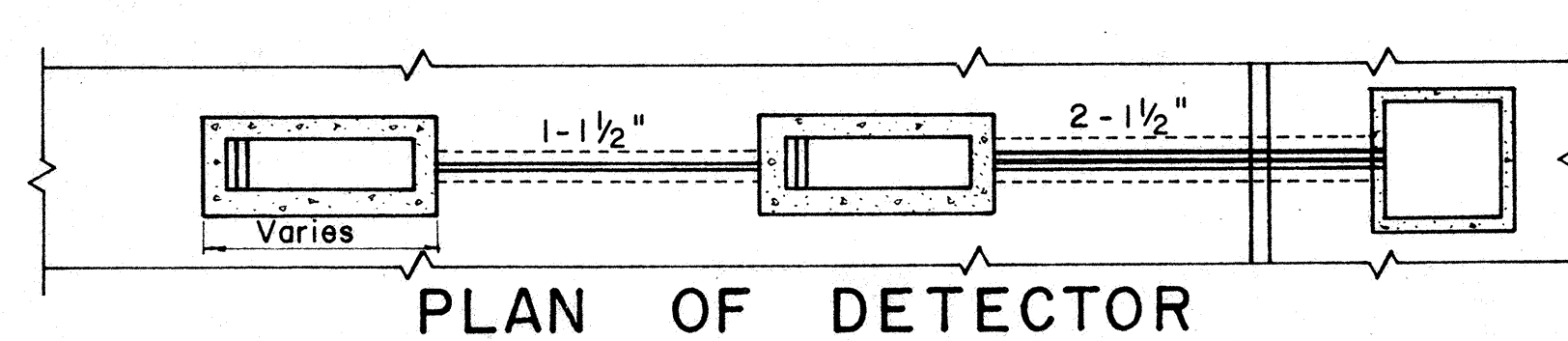
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS DETAILS
PULLBOXES, TYPE "M" CONTROLLER
BOX & CONDUITS
INTERSTATE HIGHWAY (LUNALILO FWY)
F.A.I. PROJ. NO. I-HI-1(6) UNIT 3

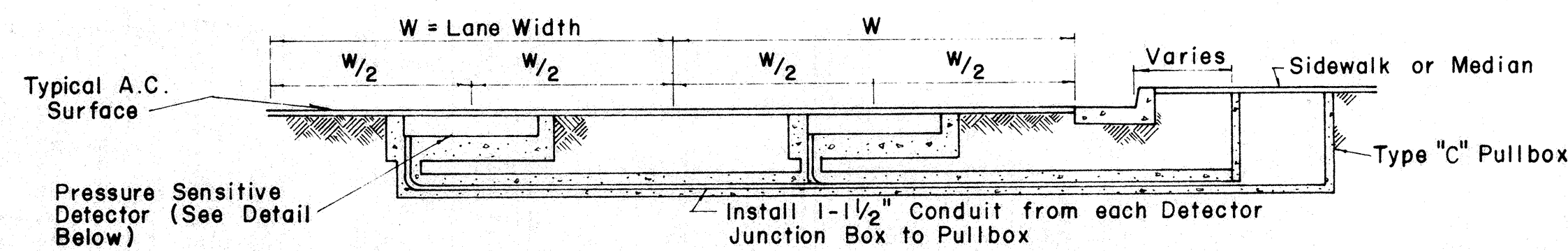
SCALE: AS NOTED

SHEET No. 12 OF 13 SHEETS

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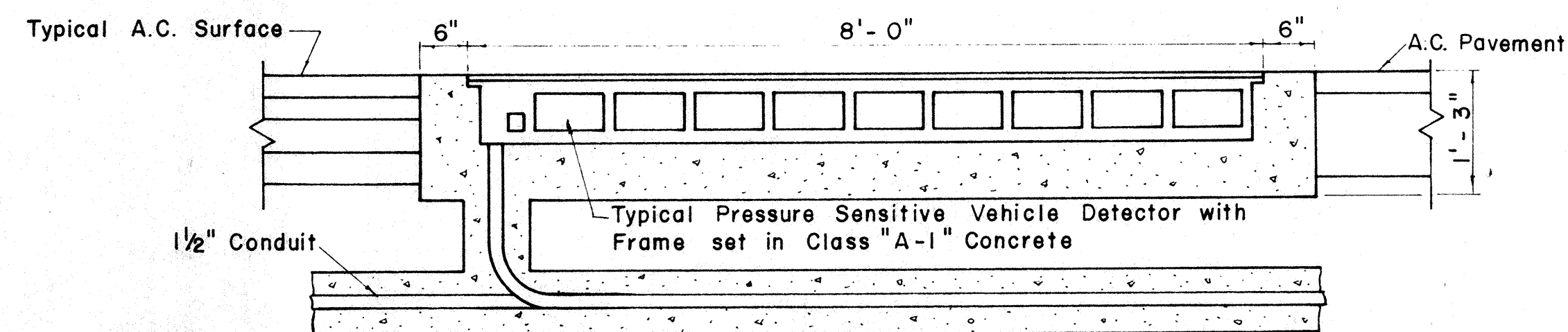


PLAN OF DETECTOR



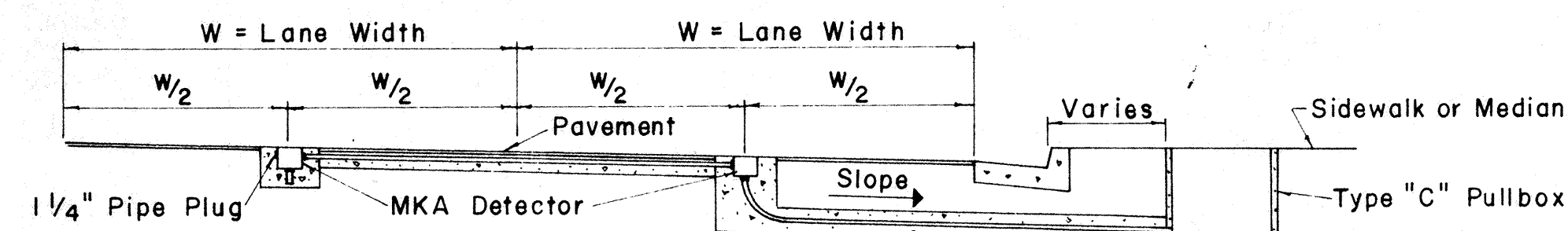
TYPICAL LAYOUT OF PRESSURE SENSITIVE DETECTOR IN CONCRETE JACKET

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



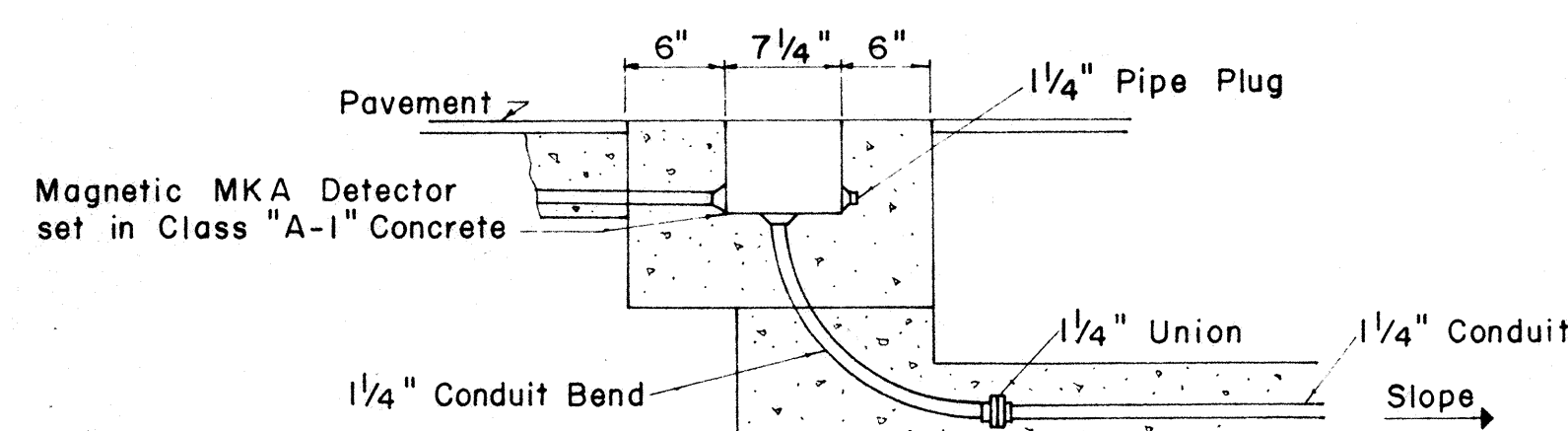
TYPICAL DETAIL OF PRESSURE SENSITIVE DETECTOR IN CONCRETE JACKET

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



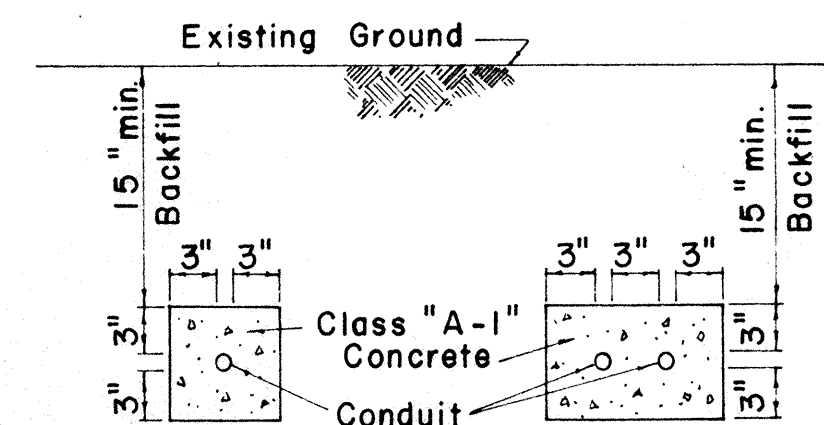
TYPICAL LAYOUT OF MKA DETECTOR

NOT TO SCALE



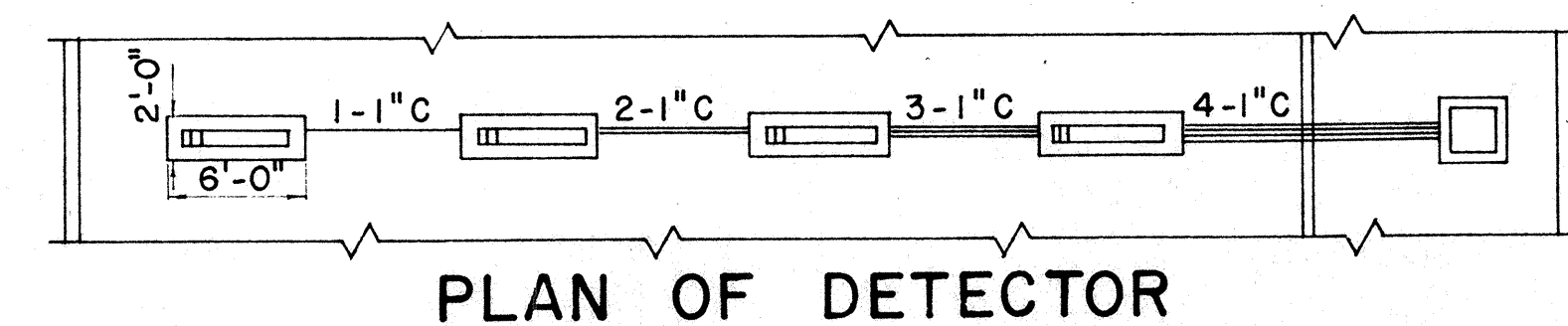
TYPICAL DETAIL OF MKA DETECTOR IN CONCRETE JACKET

SCALE: 1" = 1'-0"

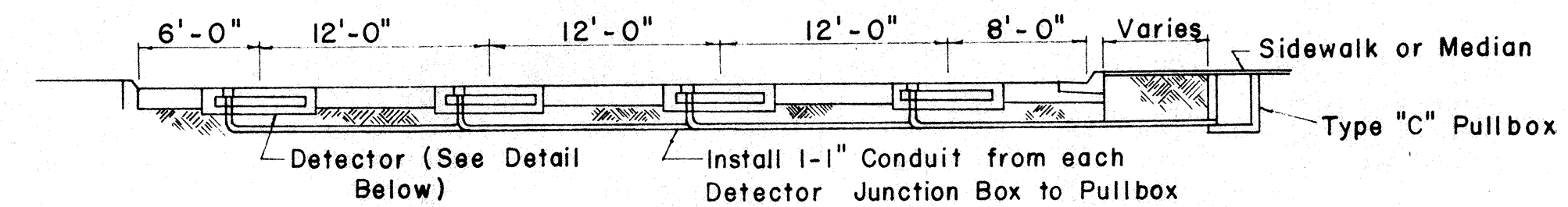


TYPICAL DETAIL OF STEEL AND ASBESTOS CEMENT CONDUITS ENCASED IN CONCRETE

NOT TO SCALE

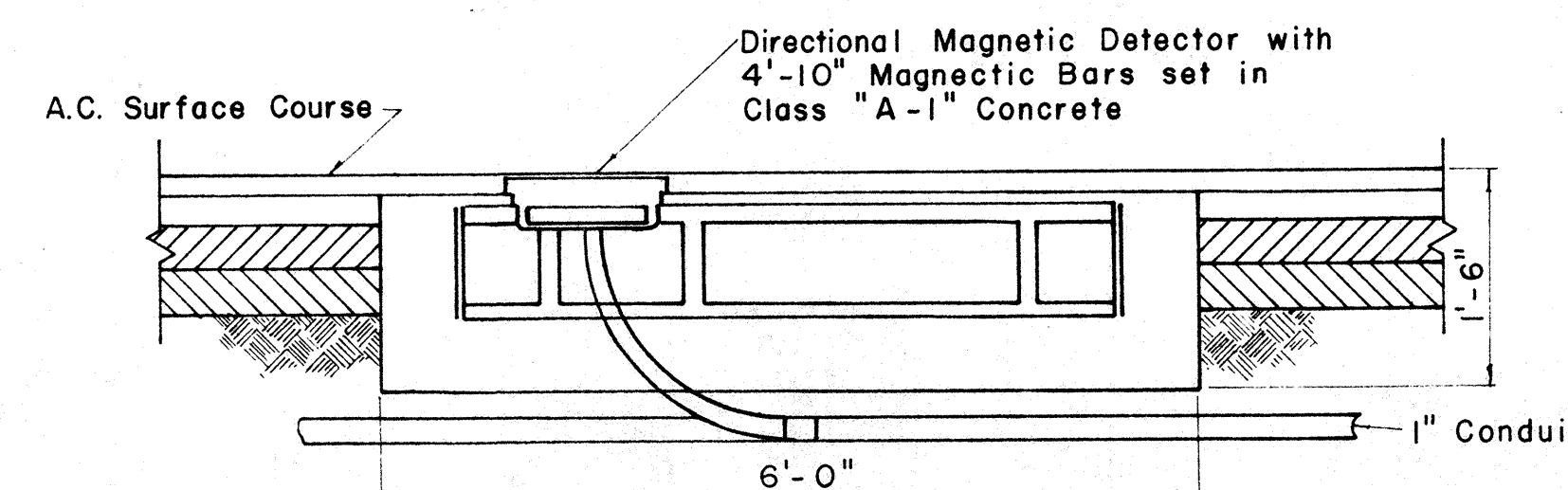


PLAN OF DETECTOR



TYPICAL LAYOUT OF DIRECTIONAL MAGNETIC DETECTORS IN CONCRETE JACKET

SCALE: 1/8" = 1'-0"



TYPICAL DETAIL OF DIRECTIONAL MAGNETIC DETECTOR IN CONCRETE JACKET

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

NOTE: Class "A-1" Concrete shall be used for Concrete Block

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
CHECKED BY
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MISCELLANEOUS DETAILS
VEHICLE DETECTORS
8
CONDUITS
F.A.I. PROJ. NO. I-H-11(6) UNIT 3
SCALE AS NOTED
SHEET No. 13 OF 13 SHEETS

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