

M:\2015\2015_160.004_HDOT_KIPIMANA_TRAFFIC_SIGNAL\T_TRAFFIC_SIGNAL\09_SIGNAL_DESIGN\KIPIMANA_TRAFFIC_SIGNAL_PLAN_CAD\KIPIMANA_TRAFFIC_SIGNAL_NOTES.DWG 6/29/2020 4:02 PM LCHUN

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11N-01-19M	2019	C.O.15	26

TRAFFIC SIGNAL NOTES:

1.

The locations of the temporary traffic poles (wood), traffic controller, pullboxes, conduits, and loop detectors shall be staked out in the field by the Contractor and approval of the locations shall be obtained from the Engineer prior to construction and installation.
2.

Any required splicing shall be done in the pullboxes.
3.

Furnishing and installing controller barriers, and risers on poles will not be paid for separately but shall be considered incidental to the various contract items.
4.

A solid #8 insulated copper wire shall run with the traffic signal control cable for equipment ground. Cost shall be considered incidental to the installation of the control cable.
5.

All traffic signal controller equipment shall be completely wired in the cabinet and shall control the traffic signals as called for in the plans.
6.

The Contractor shall install the meter pedestal as shown in the electrical drawings.
7.

Should any defect be encountered during the controller warranty period, the Manufacturer will be notified and he shall promptly correct such defect. Service call (by factory qualified representative) during the warranty period for repairs or other maintenance shall be answered within 24 hours and shall be done at no expense whatsoever to the state. All repairs shall be done as soon as possible.
8.

Restoration of existing pavements and improvements unavoidably damaged shall be incidental to the various contract items. Restoration shall be to original or better condition.
9.

The Contractor shall provide off-duty police officer(s) to control the flow of traffic as required by the Engineer and the Traffic Control Plans.
10.

The Contractor shall notify the County of Hawaii, Department of Public Works, Traffic Engineer [(808) 961-8341], and Department of Transportation Hawaii District Office [(808) 933-8866], three (3) days prior to commencing work on the traffic signal system.
11.

The Contractor shall verify all work in the field prior to submitting of bid, ordering of materials, fabrication of brackets, etc.
12.

The Contractor shall not construct conduits, pullboxes, temporary traffic poles (wood), etc. outside of state or county right-of-way unless shown otherwise on the plans.
13.

All traffic signal work shall conform to the requirements of the State of Hawaii Department of Transportation, Highway Division, Standard Plans, 2008, and the Federal Highways Administration, 'Manual on Uniform Traffic Control Devices for Streets and Highways', 2009 Edition, and Amendments.

14.

All conduits located beneath paved areas shall be encased in concrete. conduits located in unpaved areas shall be direct buried.
15.

Signal faces for traffic signal system shall be covered until the signal is activated.
16.

All traffic signal heads attached to overhead wire shall have vented backplates with one-inch retroreflective strip along its borders.
17.

Precast foundations shall conform to Section 615-Precast Concrete Foundations of the contract special provisions of this project.
18.

Type II object markers shall be affixed to all new temporary traffic poles (wood) conforming to the requirements of the Standard Plan TE-15, State of Hawaii Department of Transportation, Highway Division, Standard Plans, 2008.
19.

Span Wire Signal System shall conform to "AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals," 2018.
20.

All cable and elements for grounding shall be new.
21.

Cables between signal faces, Opticom detectors and the nearest pullbox or temporary traffic signal pole (wood) are not called out on the plan, but shall be furnished and installed in sufficient numbers and lengths as required. Cost shall be considered incidental to various traffic signal contract items.
22.

Conduits and cables installed on temporary traffic signal poles (wood) shall be in sufficient number as required. Cost shall be considered incidental to the installation of the span wire system.

CONSTRUCTION NOTES:

1.

Locations of existing structures and utilities such as pipe-lines, conduits, cables, etc., shown on plans are approximate only. It is not the intent of these plans to show the exact location of all utilities and structures. It is the responsibility of the contractor to verify the locations of all existing utilities with the respective owners. Existing utilities damaged by the contractor shall be repaired by the contractor at his own cost.
2.

The contractor shall verify and check all dimensions and details shown on the drawings prior to the start of construction. Any discrepancy shall be immediately brought to the attention of the engineer for clarification.
3.

The contractor shall notify all agencies to verify, tone and locate their existing utilities within the project area prior to excavating. The contractor shall coordinate all work.
4.

The locations of the new temporary traffic signal (wood) poles and guy caisson foundations shall be staked out in the field by the contractor and approval of the locations shall be obtained from the engineer prior to construction and installation.
5.

Maintenance of traffic through the construction area shall be in accordance with part VI of the "Manual On Uniform Traffic Control Devices for Streets and Highways, 2009 Edition", Federal Highway Administration as amended and as specified in the special provisions. The contractor shall furnish and maintain adequate barricades, blinkers, construction signs, etc., for the safety of the motoring public.
6.

At the end of each day's work, the contractor shall remove all equipment and other obstruction to permit free and safe passage of public traffic.
7.

The contractor shall submit product data for guy wires, messenger, and tether cables, cable fittings, and hardware for engineer review and approval.
8.

No signage, signals, or other appurtenances shall be added beyond what is shown in the drawings without engineer review and approval.

Michael Y. Packard

LICENSED PROFESSIONAL ENGINEER

NO. 13441-C

HAWAII USA

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Signature

APRIL 30, 2022

EXPIRATION DATE OF THE LICENSE

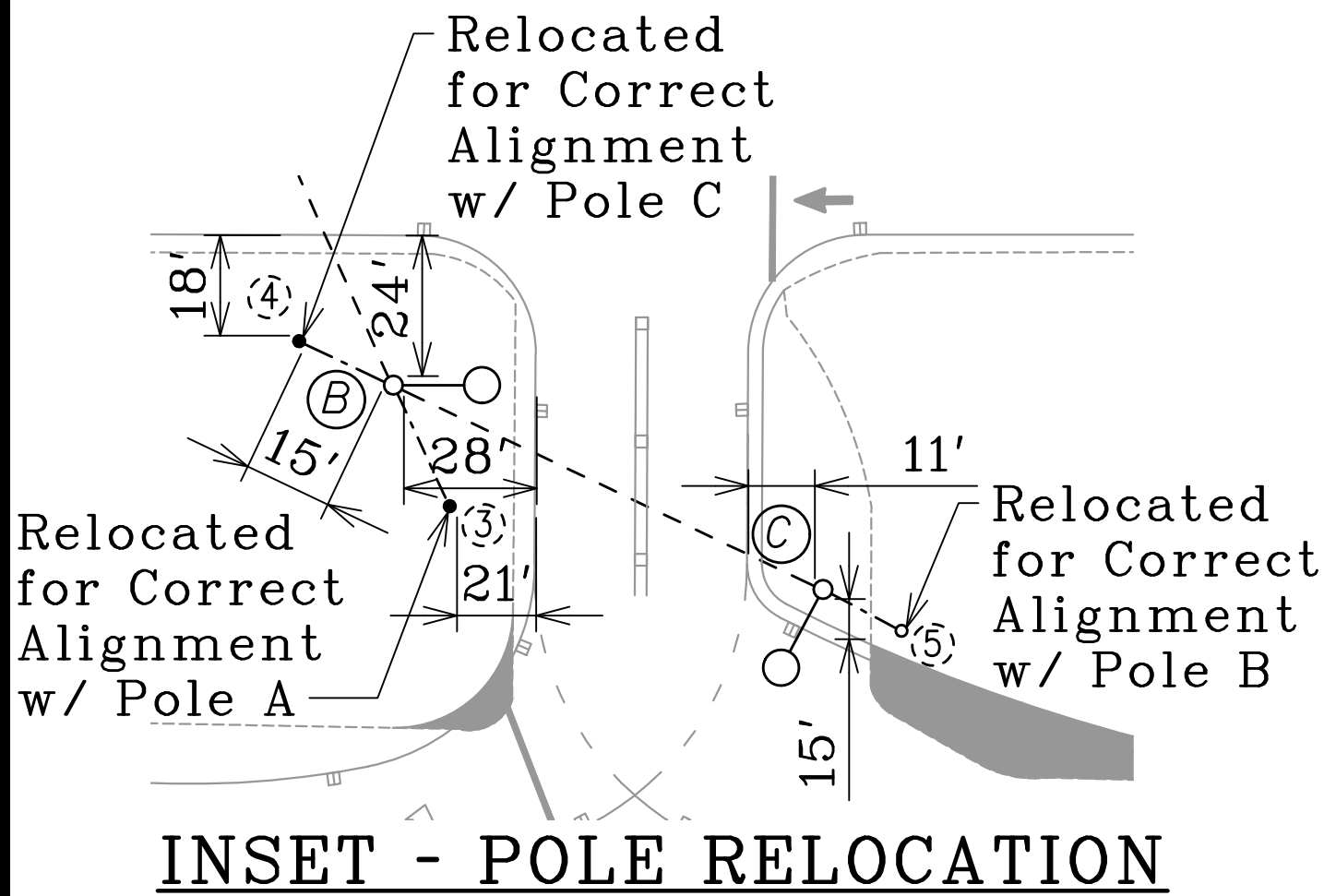
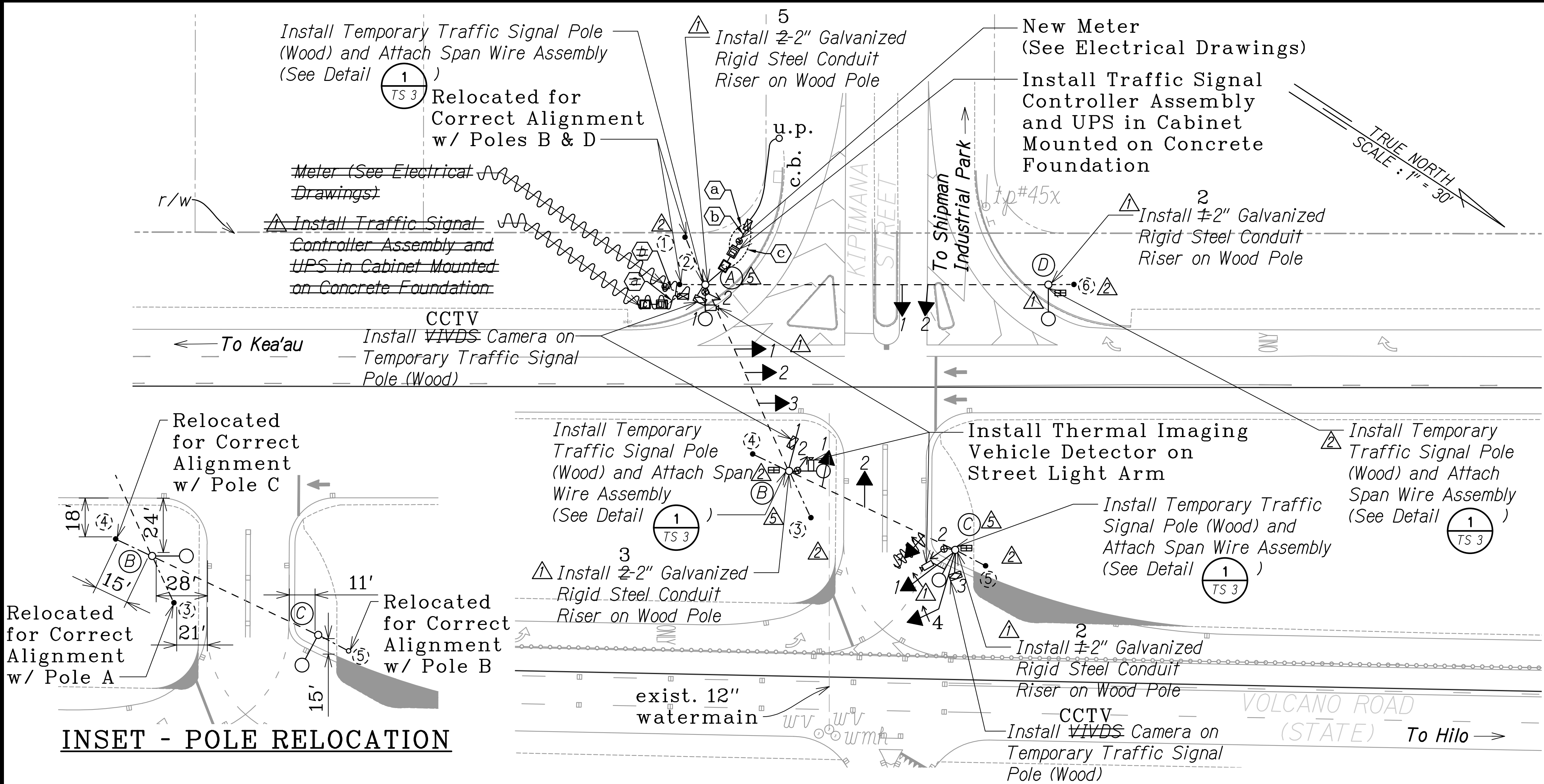
6/21/2019	Added construction notes
	Updated note number 14-18, added note 19-22
6/10/2019	Made revisions to note 4, note 16 and note 18
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
TRAFFIC SIGNAL NOTES	
VOLCANO ROAD TEMPORARY SIGNAL INSTALLATION	
At Kipimana Street	
Project No. 11N-01-19M	
Scale: 1" = 30'	Date: June, 2020
SHEET No. 1 OF 5 SHEETS	

C.O.15

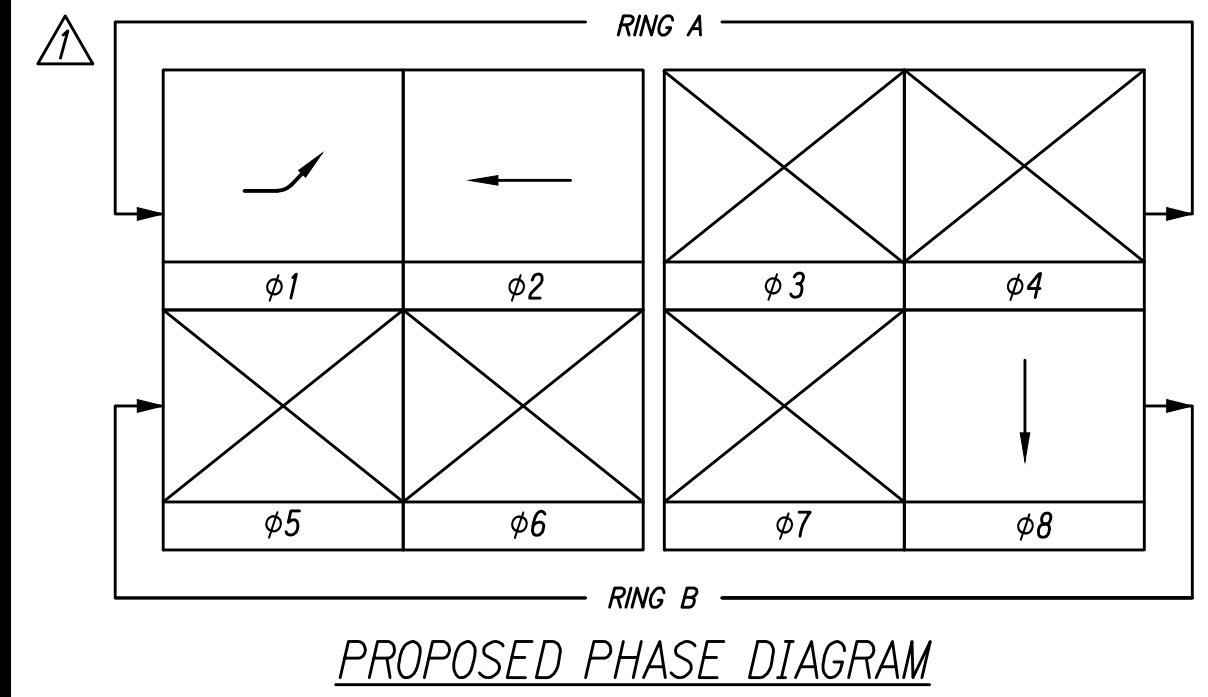
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11N-01-19M	2019	C.O.16	26

TRAFFIC SIGNAL LEGEND:

- Traffic Signal Controller Assembly and UPS
 Span Wire Assembly
 Conduit
 12" RYG Traffic Signal Head
 12" RYG Traffic Signal Head
 Temporary Traffic Signal Pole (Wood)
 Type B Pullbox See Standard Plan TE-37
 Type C Pullbox See Standard Plan TE-37
 Opticom Receiver
 CCTV VIVDS Camera
 Wireless Sensor
 Guy Caisson
 Temporary Traffic Signal Pole Designation
 Conduit Designation (See Schedule Below)
 Guy Caisson Designation
 Thermal Imaging Vehicle Detector
 Street Light and Arm



- NOTES:
- Temporary Traffic Signal Pole (wood) dimensions can be found on detail .
 - Guy wire and caisson schedule can be found on detail .



LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting

STANDARDS, SIGNAL HEAD AND APPURTENANCES				
POLE/SPANWIRE LETTER	Number	MOUNT TYPE	TRAFFIC SIGNAL HEAD AND APPURTENANCES	SIGNAL PHASE
A	1	POLE BRACKET, ONE WAY	CCTV VIVDS CAMERA	Ø2
	2	POLE BRACKET, ONE WAY	OPTICOM RECEIVER	-
AB	1	SPAN WIRE MOUNT, ONE WAY	RYG	Ø2
	2	SPAN WIRE MOUNT, ONE WAY	RYG	Ø2
	3	SPAN WIRE MOUNT, ONE WAY	RYG	Ø2
B	1	POLE BRACKET, ONE WAY	CCTV VIVDS CAMERA	Ø8
	2	POLE BRACKET, ONE WAY	OPTICOM RECEIVER	-
BC	1	SPAN WIRE MOUNT, ONE WAY	RYG	Ø8
	2	SPAN WIRE MOUNT, ONE WAY	RYG	Ø8
	3	SPAN WIRE MOUNT, ONE WAY	RYG	Ø8
C	1	POLE BRACKET, ONE WAY	OPTICOM RECEIVER	-
	2	POLE BRACKET, ONE WAY	OPTICOM RECEIVER	-
	3	POLE BRACKET, ONE WAY	CCTV VIVDS CAMERA	Ø1
	4	POLE BRACKET, ONE WAY	CCTV VIVDS CAMERA	Ø1
AD	1	SPAN WIRE MOUNT, ONE WAY	RYG	Ø1
	2	SPAN WIRE MOUNT, ONE WAY	RYG	Ø1

TRAFFIC SIGNAL HEAD SCHEDULE

TETHER CABLE SCHEDULE		
TETHER CABLE	DIAMETER	# OF WIRE STRANDS
AB	5/16	7
BC	5/16	7
AD	5/16	7

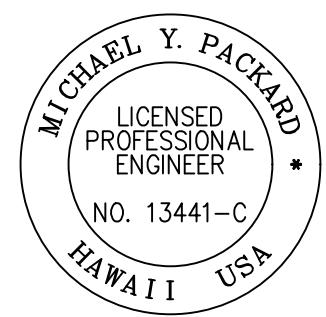
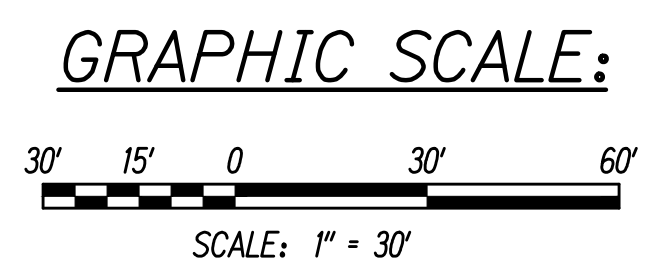
TETHER CABLE SCHEDULE

MESSENGER WIRE SCHEDULE			
Messenger Wire	Diameter	# of Wire Strands	Cable
AB	1/2"	7	1 - TYPE 1 2 - TYPE 7
BC	1/2"	7	1 - TYPE 1 1 - TYPE 7
AD	1/2"	7	1 - TYPE 1

MESSENGER WIRE SCHEDULE

CONDUIT AND CABLE SCHEDULE		
DESIGNATION	CONDUITS	CABLES
A	1-2" (NEW)	1 - TYPE 1 3 - TYPE 7
	1-2" (NEW)	SPARE
B	1-2" (NEW)	1 - TYPE 6 SPARE
	1-2" (NEW)	SPARE
C	8-2" (NEW)	SPARE

CONDUIT AND CABLE SCHEDULE



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Signature
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APRIL 30, 2022
EXPIRATION DATE OF THE LICENSE

DATE	REVISION
6/29/2020	Relocation of Temporary Traffic Signal Poles B and C and Guy Caissons. Added VIVDS Cameras to poles A, B and C. Relocated the Opticom Receiver onto poles A, B and C Updated Traffic Signal Legend Updated Traffic Signal Head Schedule and Messenger Wire Schedule
12/6/2019	Edited Messenger Wire Schedule Added Tether Cable Schedule
6/21/2019	Updated wireless sensor detail on site plan, and traffic signal legend Added Guy caisson designation, span wire schedule, note 2 and 3, and callout for pole D.
6/10/2019	Edited callout for traffic signal controller to include UPS. Added temporary wood pole D, span wire AD, RYG traffic signal heads AD-1 and AD-2, and guy caissons. Relocated traffic signal head BC-4 onto pole C and renumbered signal heads. Identified traffic signals BC-5 and C-1 as RYG Added RYG traffic signal head AB-4. Updated Conduit and Cable Schedule Updated traffic signal head schedule Added callouts for cable schedule 3, 4, 5 Added Type B pullbox to wood pole D and wood pole C Updated proposed phase diagram Updated callouts for pole B, C, D

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN

VOLCANO ROAD TEMPORARY SIGNAL INSTALLATION

At Kipimana Street

Project No. 11N-01-19M

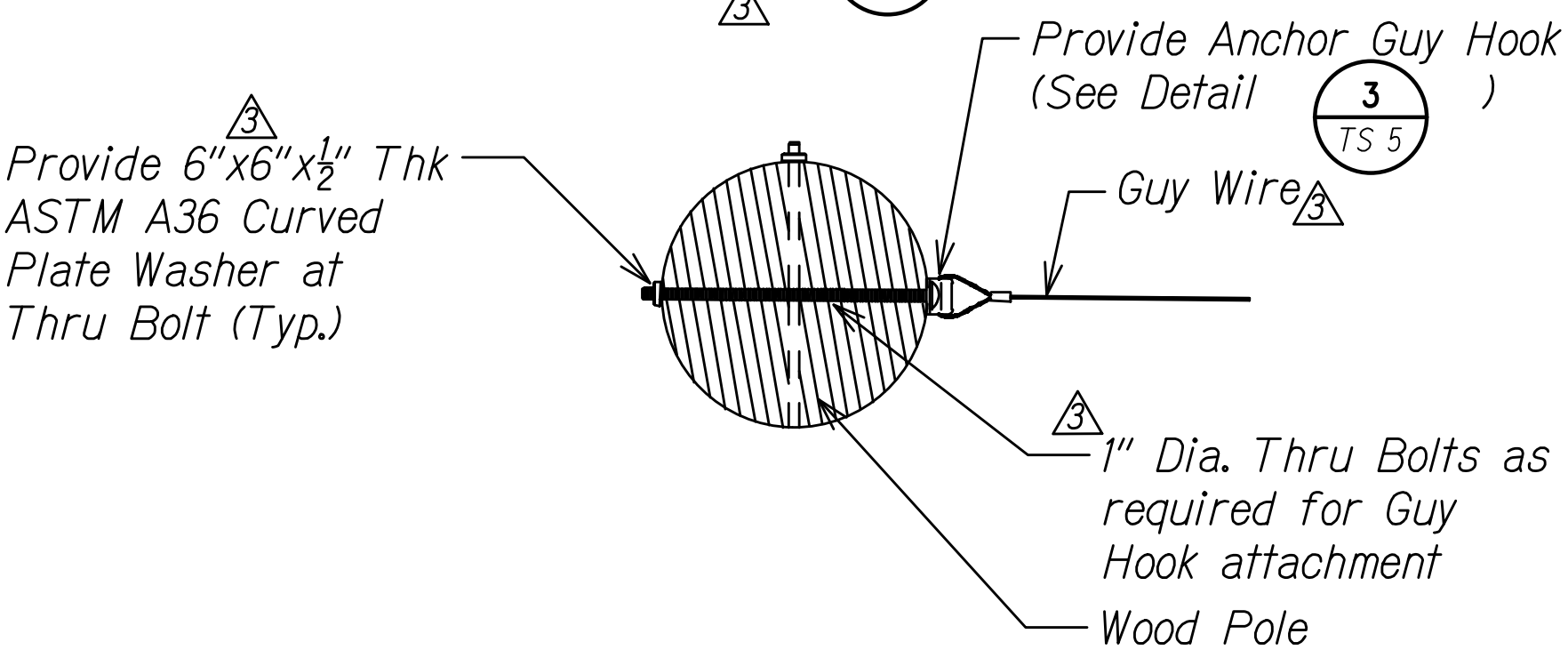
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SHEET No. 2 OF 5 SHEETS

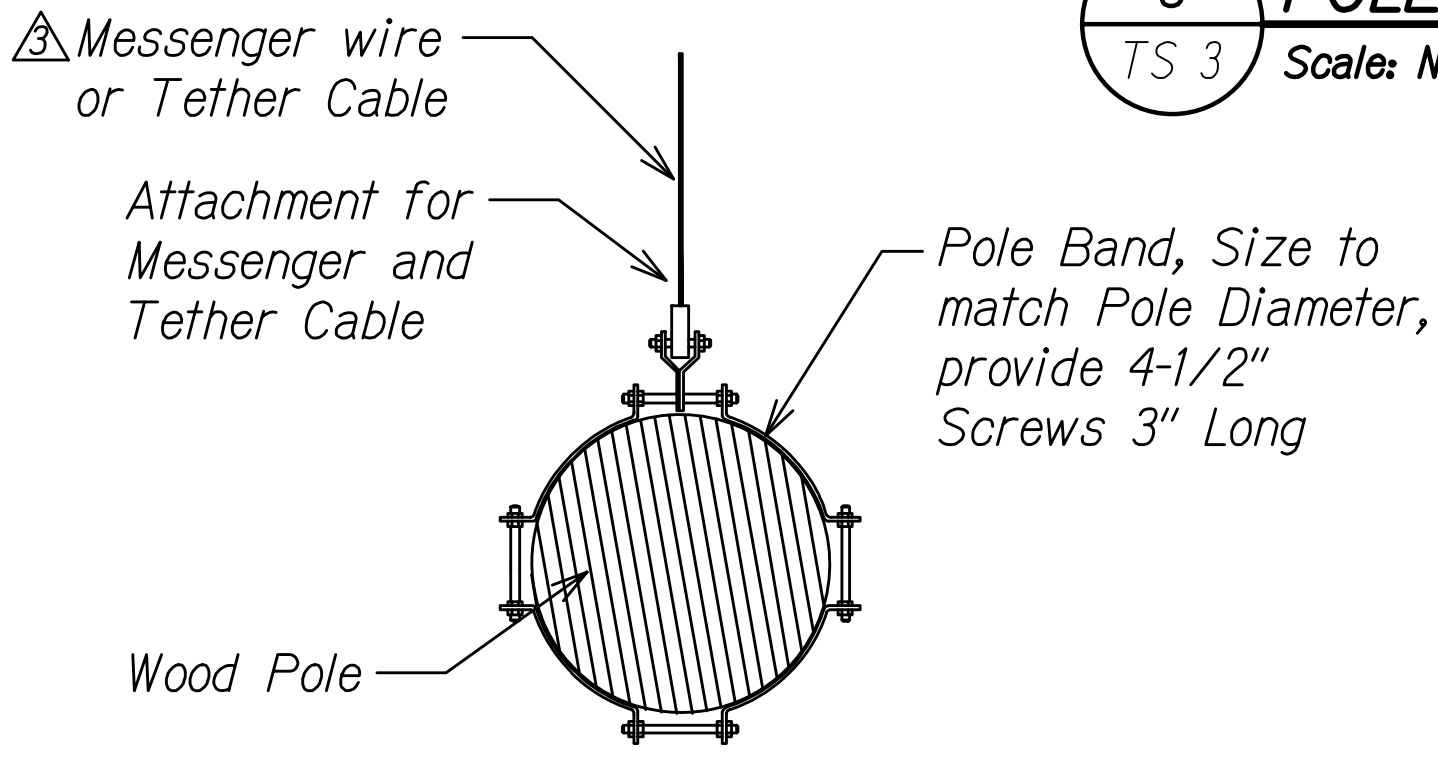
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11N-01-19M	2019	C.O.17	26

GENERAL NOTES:

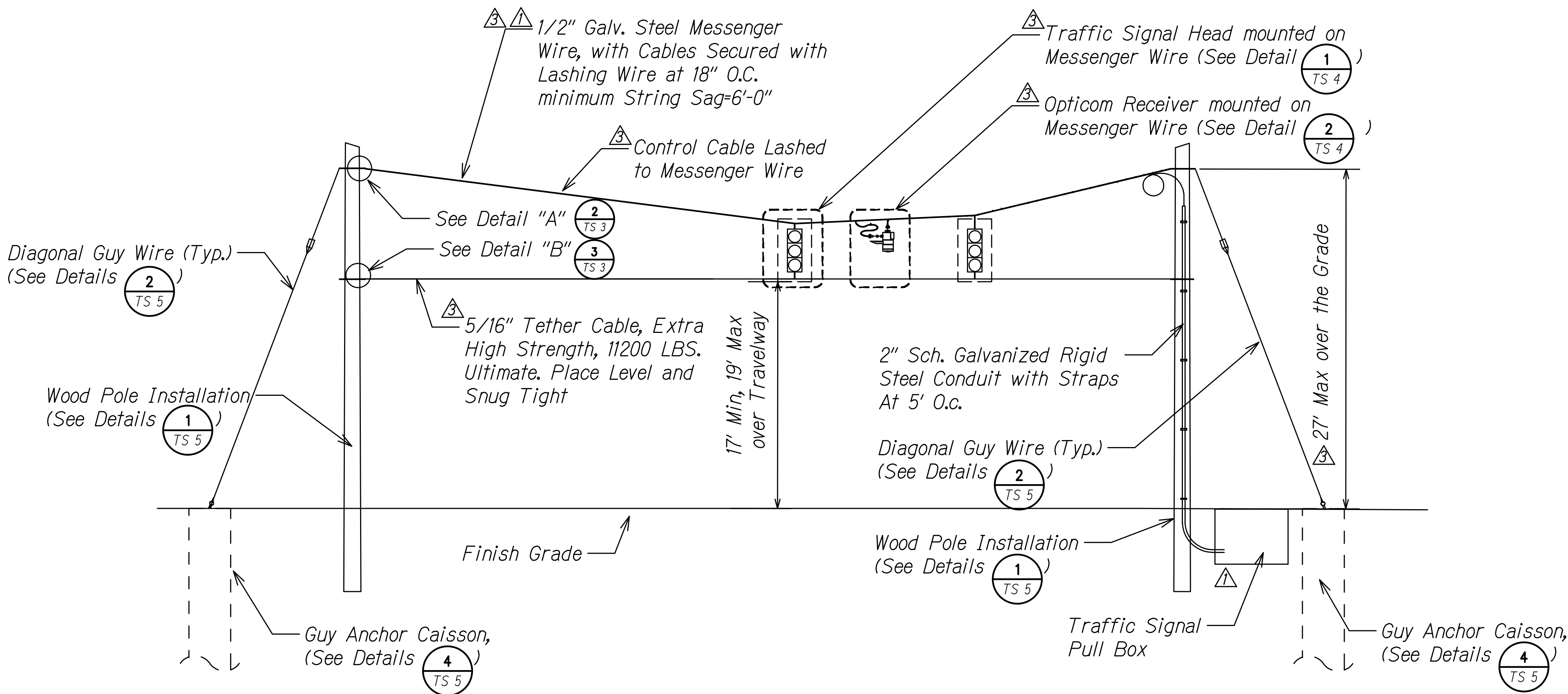
- 1. Guy wires, messenger wire, and tether cable shall conform to ASTM A 475, Extra high strength, Class "C" Coating.
- 2. All cable fittings shall be galvanized.
- 3. Conduit riser shall be mounted on the backside of the wood pole away from approaching traffic.
- 4. All cable connection hardware shall have capacity greater than or equal to the minimum breaking strength of attached cables.
- 5. Installation of all hardware shall be as recommended by the manufacturer.
- 6. All hardware shall be hot dip galvanized.
- 7. See pole hardware for messenger wire and tether cables
- 8. See pole hardware for guy wire



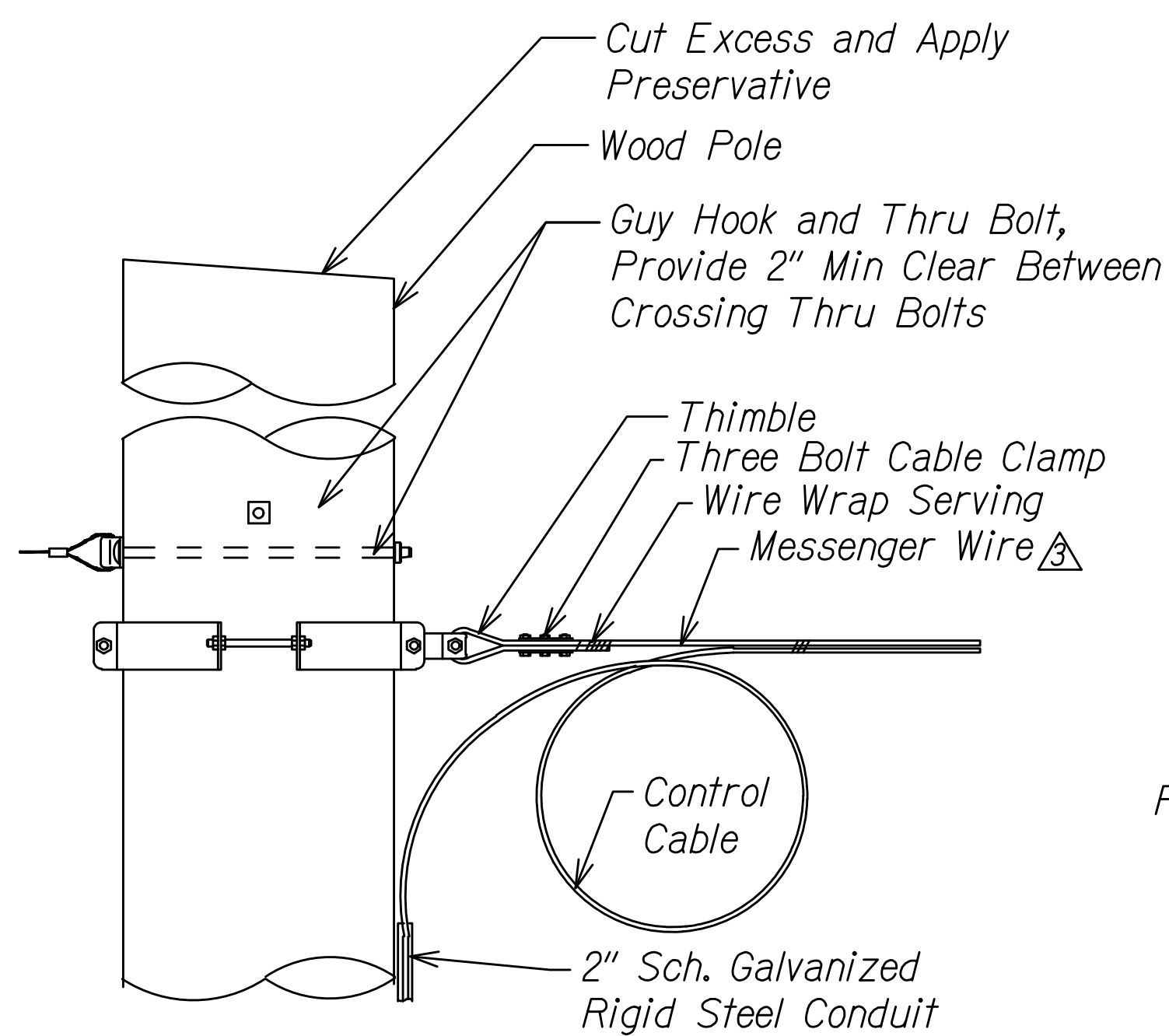
5 POLE HARDWARE FOR GUY WIRE
Scale: Not to Scale



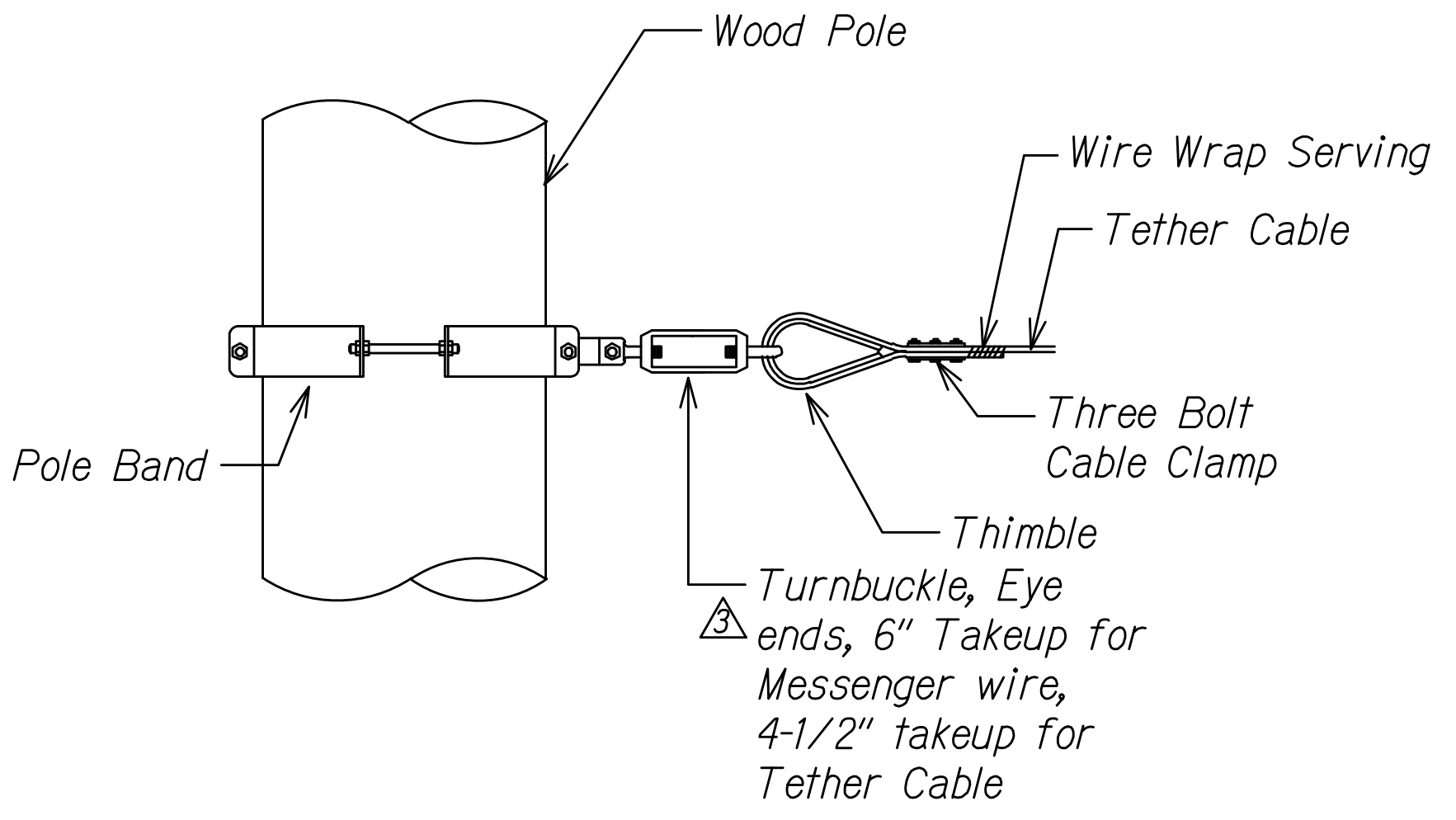
4 POLE HARDWARE FOR MESSENGER WIRE AND TETHER CABLES
Scale: Not to Scale



1 TYPICAL SPAN WIRE ASSEMBLY INSTALLATION
Scale: Not to Scale

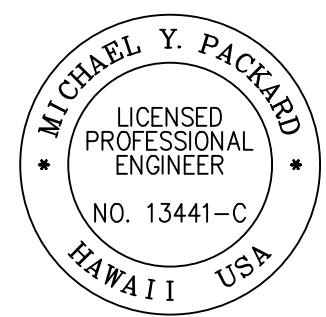


2 DETAIL "A"
Scale: Not to Scale



3 DETAIL "B"
Scale: Not to Scale

Note: Messenger wire attachment height shall not exceed 27'-0" from finish grade.



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Signature: M. Packard
Date: APRIL 30, 2022
Expiration Date of License: APRIL 30, 2022

DATE	REVISION
12/6/2019	Updated General Notes
6/21/2019	Updated callout for Detail 1/TS3, 2/TS3, 3/TS3, 4/TS3, 5/TS3
6/10/2019	Updated general note 1
	Updated Detail 1/TS3
Scale: N/A Date: June, 2020	
SHEET No. 3 OF 5 SHEETS	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

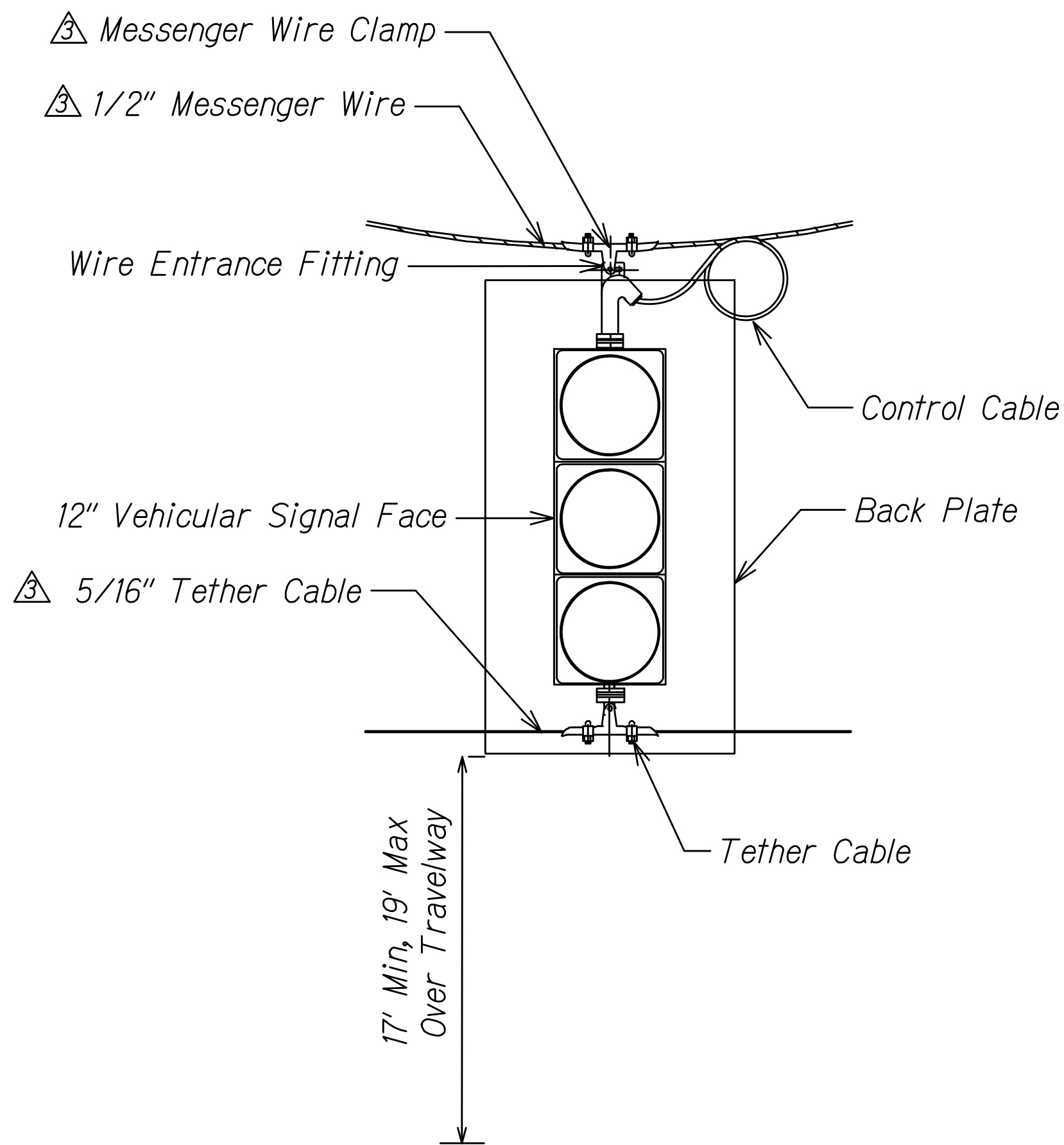
TRAFFIC SIGNAL DETAILS

VOLCANO ROAD TEMPORARY SIGNAL INSTALLATION

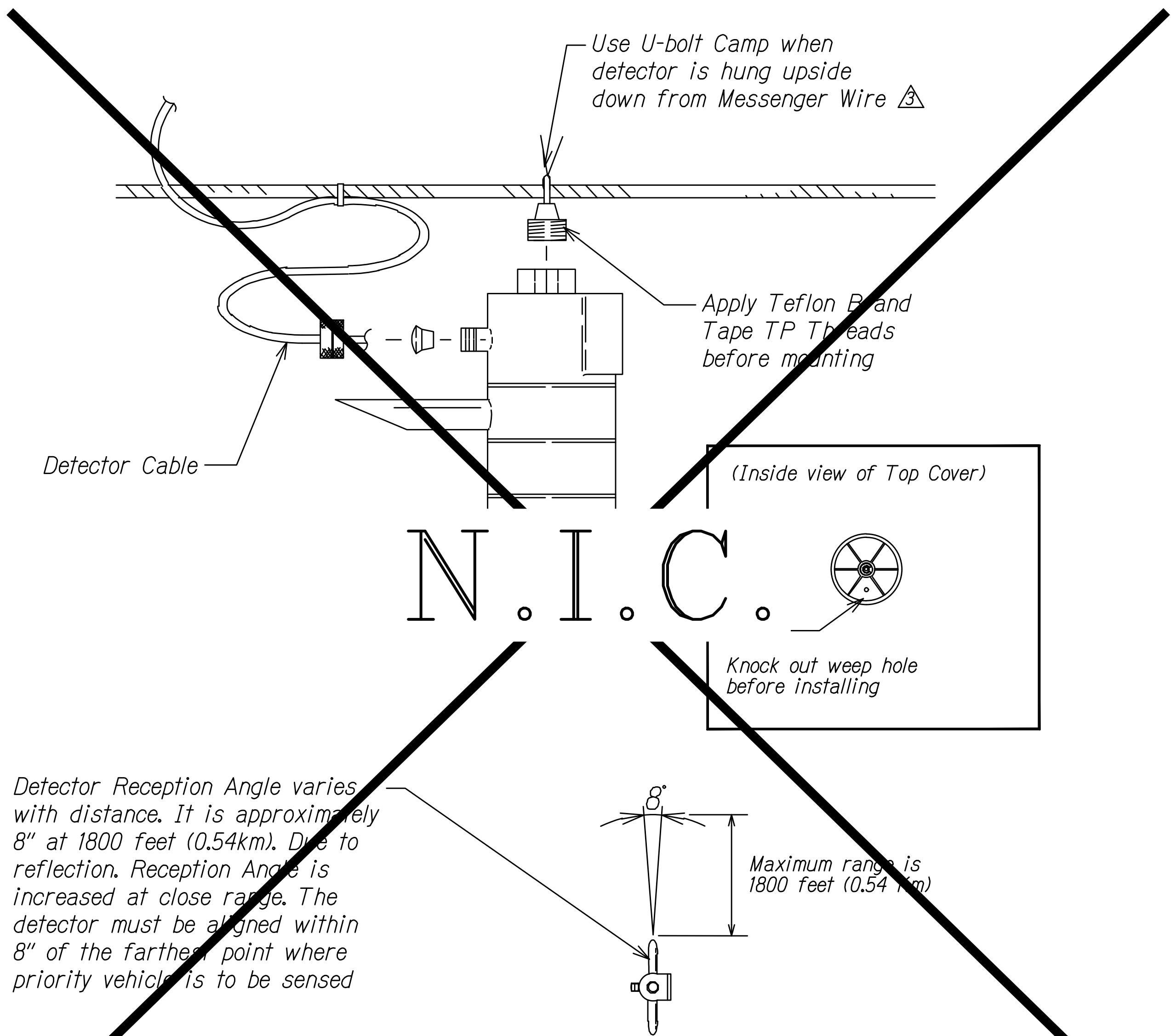
At Kipimana Street

Project No. 11N-01-19M

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11N-01-19M	2019	C.O.18	26



1 **TRAFFIC SIGNAL HEAD SPAN WIRE MOUNTING**
TS 4 Scale: Not to Scale



2 **OPTICOM RECEIVER SPAN WIRE MOUNTING**
TS 4 Scale: Not to Scale

LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting

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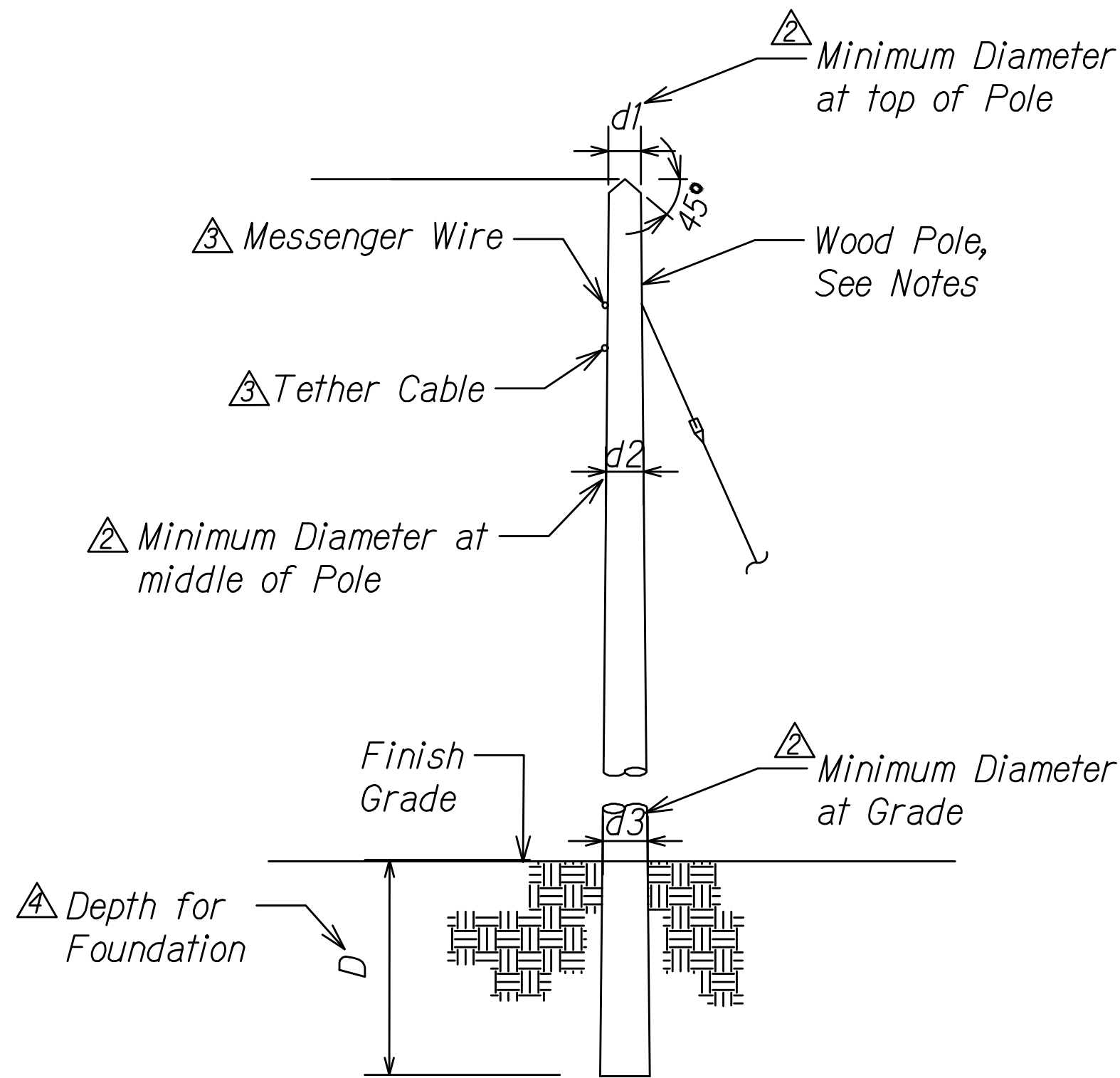
Michael Y. Packard
SIGNATURE

APRIL 30, 2022
EXPIRATION DATE OF THE LICENSE

3	12/6/2019	Updated callout for Detail 1/TS4, 2/TS4
DATE		REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION		
<u>TRAFFIC SIGNAL DETAILS</u>		
<u>VOLCANO ROAD TEMPORARY SIGNAL INSTALLATION</u>		
<u>At Kipimana Street</u>		
<u>Project No. 11N-01-19M</u>		
Scale: N/A		Date: June, 2020
SHEET No. 4 OF 5 SHEETS		

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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11N-01-19M	2019	C.O.19	26

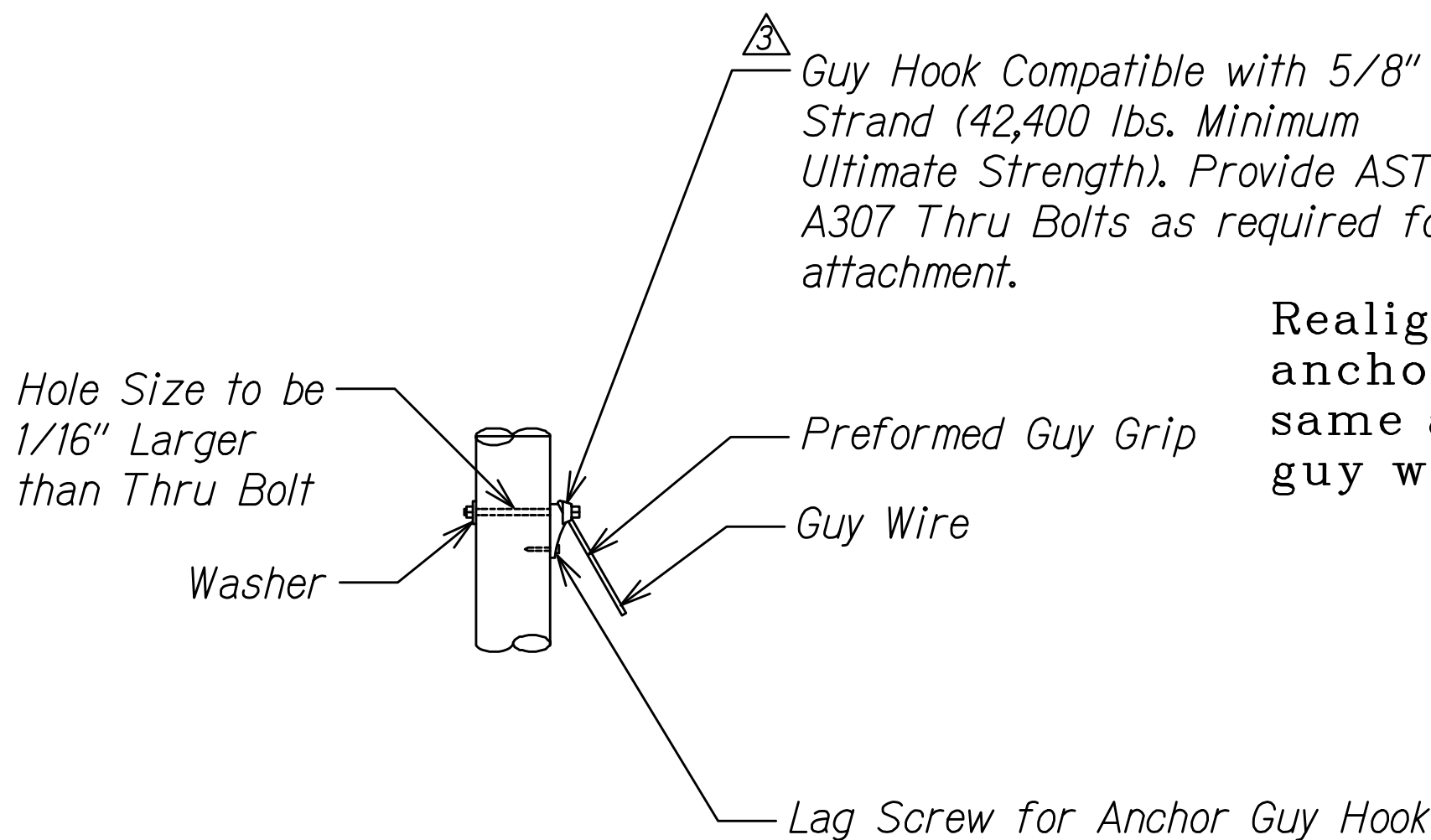


NOTES:

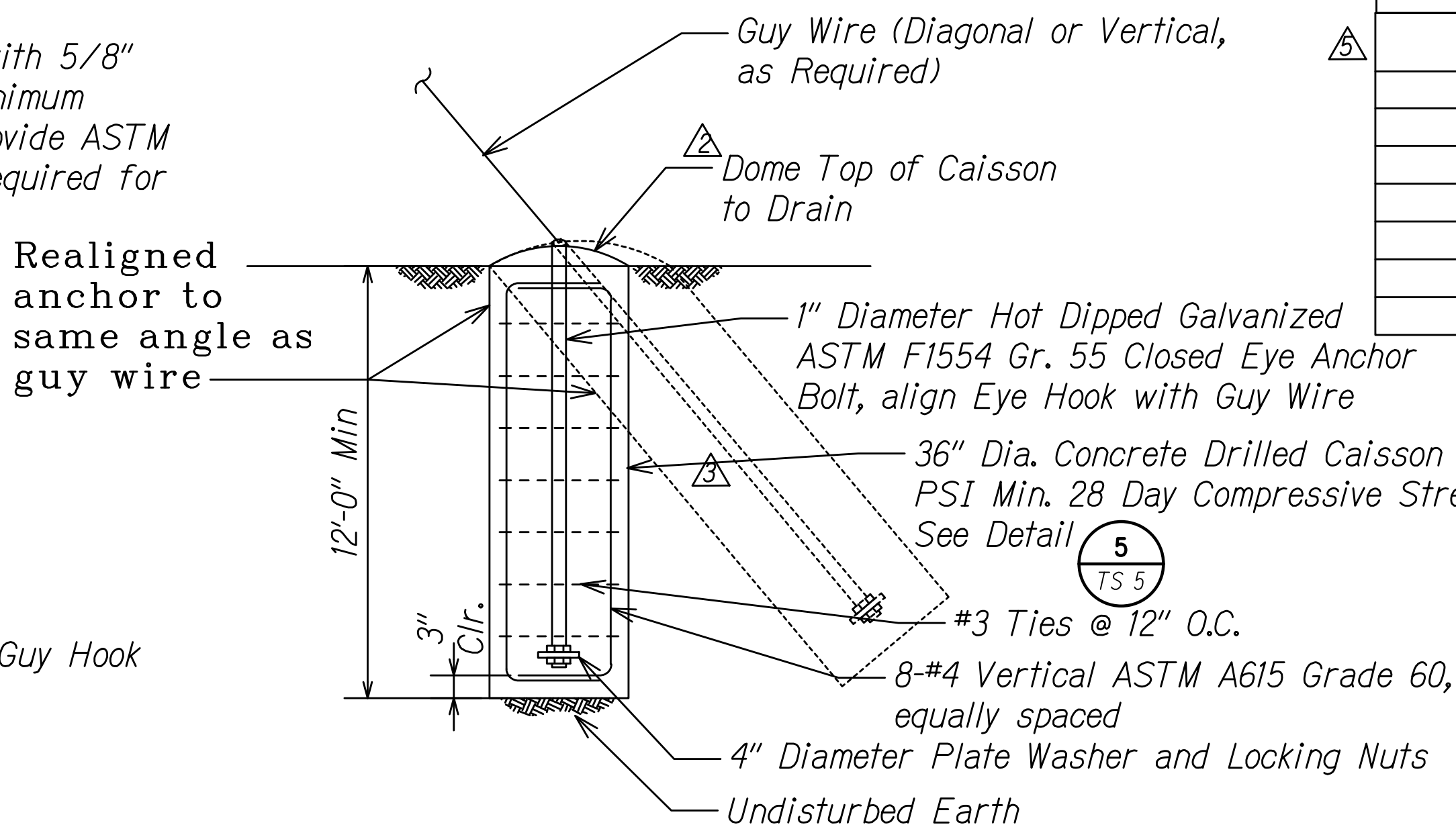
- Wood poles shall meet the requirements of the American National Standards Institute, Inc. and the American Wood Preservers Association.
- Wood poles shall be Douglas-Fir.
- Pole shall be treated with Pentachlorophenol using the "Celon" Process, by a licensed termite treatment company.
- Termite treat the bottom of the hole and backfill material with Aqueous Chemical Solution Consisting of 0.5% Aldrin or 0.5% Dursban. Minimum 5 gallons of the solution shall be used for each hole. Application shall be performed by contractor licensed for this type of work. Treatment shall be done as the hole is being backfilled.
- Install Termi mesh and Shade cloth around the bottom of pole that is buried below grade. Use suitable backfill so Termi mesh won't be damaged.

TEMPORARY TRAFFIC SIGNAL POLE (WOOD) DIMENSIONS				
Pole	d1	d2	d3	D
A	15"	17"	19"	10' Min. to 20' Max.
B	15"	17"	19"	10' Min. to 20' Max.
C	15"	17"	19"	10' Min. to 20' Max.
D	15"	17"	19"	10' Min. to 20' Max.

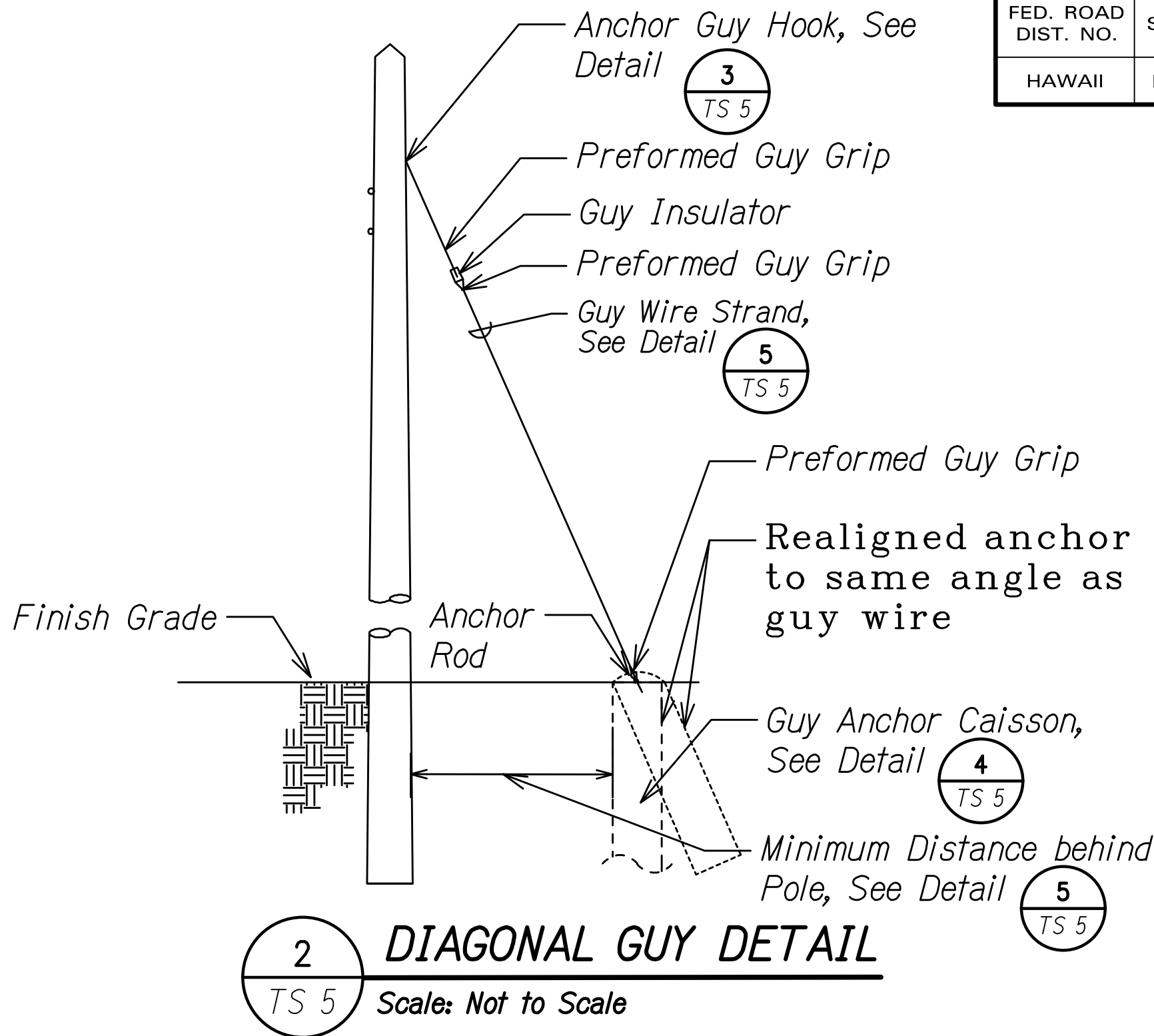
1 **TEMPORARY TRAFFIC SIGNAL POLE (WOOD) INSTALLATION DETAIL**
TS 5 Scale: Not to Scale



3 **ANCHOR GUY HOOK ATTACHMENT DETAIL**
TS 5 Scale: Not to Scale



4 **GUY ANCHOR CAISSON DETAIL**
TS 5 Scale: Not to Scale



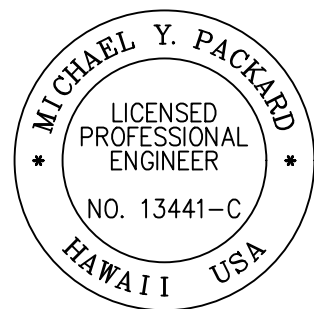
2 **DIAGONAL GUY DETAIL**
TS 5 Scale: Not to Scale

GUY WIRE SCHEDULE				
Guy Wire	Pole	Caisson	Diameter	# of Wire Strands
A1	A	1	5/8"	7
A2	A	2	5/8"	7
B3	B	3	5/8"	7
B4	B	4	5/8"	7
C5	C	5	5/8"	7
D6	D	6	5/8"	7

GUY CAISSON SCHEDULE			
Guy Caisson	Pole	Minimum Distance behind the Pole	Minimum Diameter
1	A	20'	36"
2	A	30'	36"
3	B	20'	36"
4	B	15'	36"
5	C	15'	36"
6	D	30'	36"

5 **GUY WIRE AND CAISSON SCHEDULE**
TS 5 Scale: Not to Scale

DATE	REVISION
6/29/2020	Updated Guy Caisson Schedule
6/18/2020	Updated Detail 1/TS5
12/6/2019	Updated callout for Detail 1/TS5, 3/TS5, 4/TS5, 5/TS5
6/21/2019	Added temporary traffic signal pole (wood) schedule, guy wire and caisson schedule
	Added callouts for pole diameter
6/10/2019	Updated callout for Detail 1/TS5
	Updated callout for Detail 4/TS5



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M. Packard
SIGNATURE

APRIL 30, 2022
EXPIRATION DATE OF THE LICENSE

LEGEND FOR AS-BUILT POSTINGS

- Squiggly line for as-built deletion
- Double line for as-built deletion
- Roadway Text for as-built posting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

VOLCANO ROAD TEMPORARY SIGNAL INSTALLATION

At Kipimana Street

Project No. 11N-01-19M

Scale: N/A Date: June, 2020

SHEET No. 5 OF 5 SHEETS

"AS-BUILT"

C.O.19

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11N-01-19M	2019	C.O.20	26

NOTES:

- Hole shall be 4.5" in diameter x 2.75" deep, cored by using a diamond-tipped bit.
- Clamshell housing for sensor shall be used.
- Self leveling epoxy equivalent or better than Fabrick M-PP-450 shall be used at the bottom of the cored hole for leveling of the sensor.
- The sensor shall be aligned with the arrow on the top of the sensor pointed in the direction of travel.
- Sensor address shall be compiled and identified to locations by the County of Hawaii, traffic division personnel prior to installation in the roadway.
- Presence sensor located closest to stop bar shall be located 3' away from stop bar with 10' between each presence sensor.
- Near and far dilemma zone sensors shall be located as indicated below.

Install Detection, (Typ.) Far Dilemma Zone Detection. 330' from Stop Bar along Volcano Rd, 285' from Stop Bar along Kipimana Street

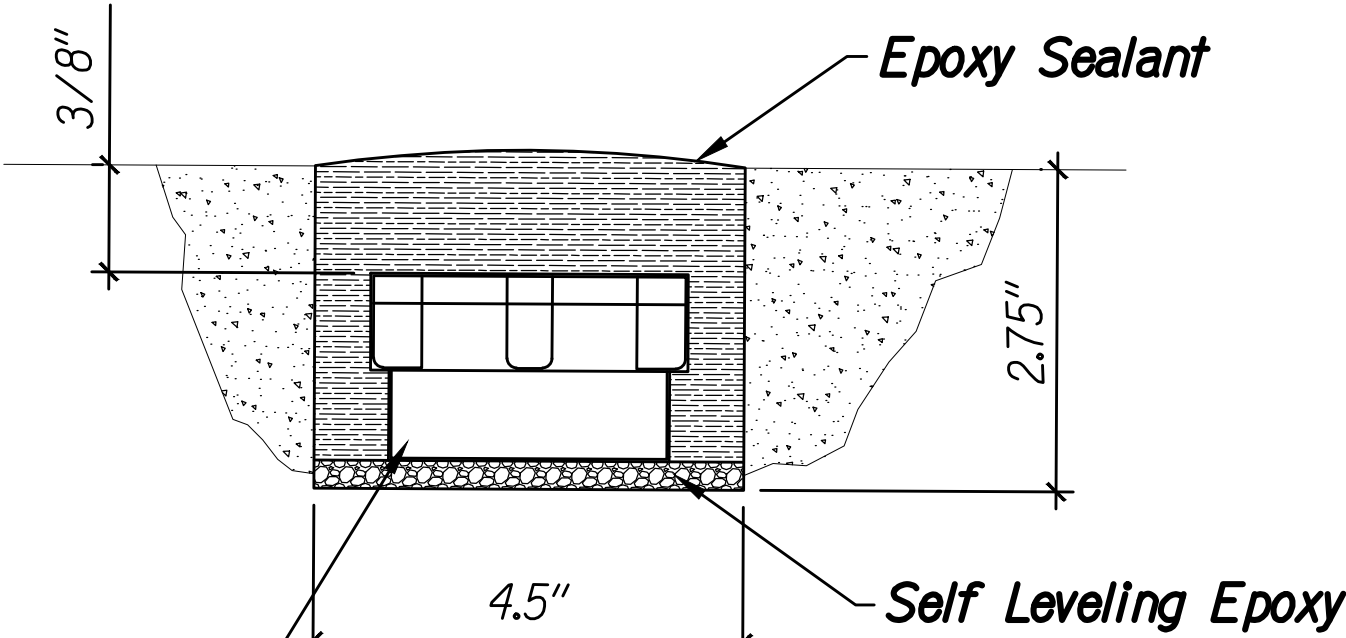
Install Detection, (Typ.) Near Dilemma Zone Detection. 210' from Stop Bar along Volcano Rd, 190' from Stop Bar along Kipimana Street

Phase (6) 6 2 4
Wireless Detector Position (4th From Stop Bar)
Lane Position (2nd Outside)

Sensor ID Example

Far Dilemma Zone Sensors
Near Dilemma Zone Boundary Sensor
Last Pr

Sensor Layout Detail for Thru-Lane



2 WIRELESS SENSOR
TS 6 Scale: Not to Scale

10' 10' 10' 10' 10' 10' 3'

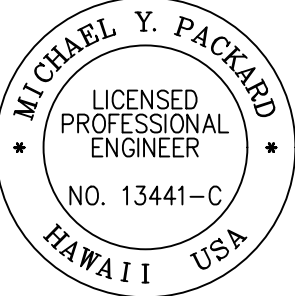
Last Presence Sensor of Front (Stop Bar) Sensors

Sensor Layout Detail for Left-Turn Lane

1 SENSOR LAYOUT DETAIL
TS 6 Scale: Not to Scale

LEGEND FOR AS-BUILT POSTINGS

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- Roadway Text for as-built posting



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SIGNATURE: [Signature] APRIL 30, 2022 EXPIRATION DATE OF THE LICENSE

6/21/2019	Updated wireless sensor detail on site plan and callout
	Made revisions to notes and 2/TS6
	Updated Detail 1/TS6
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WIRELESS SENSOR DETAILS

VOLCANO ROAD TEMPORARY SIGNAL INSTALLATION

At Kipimana Street

Project No. 11N-01-19M

Scale: 1" = 30' Date: June, 2020

SHEET No. 6 OF 6 SHEETS

"AS-BUILT"

C.O.20