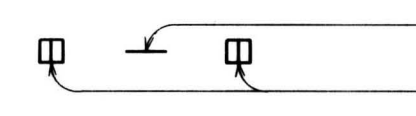
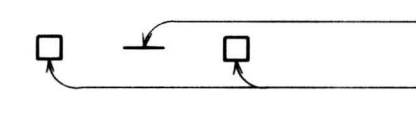
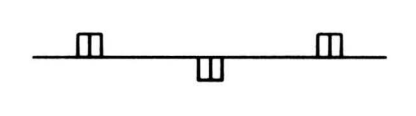



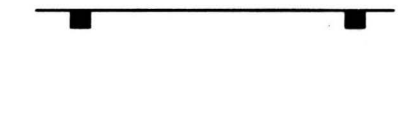
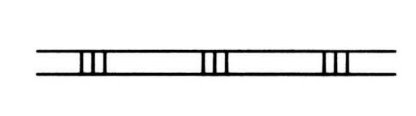





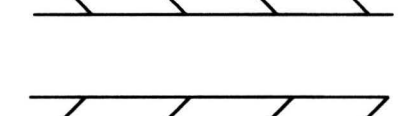








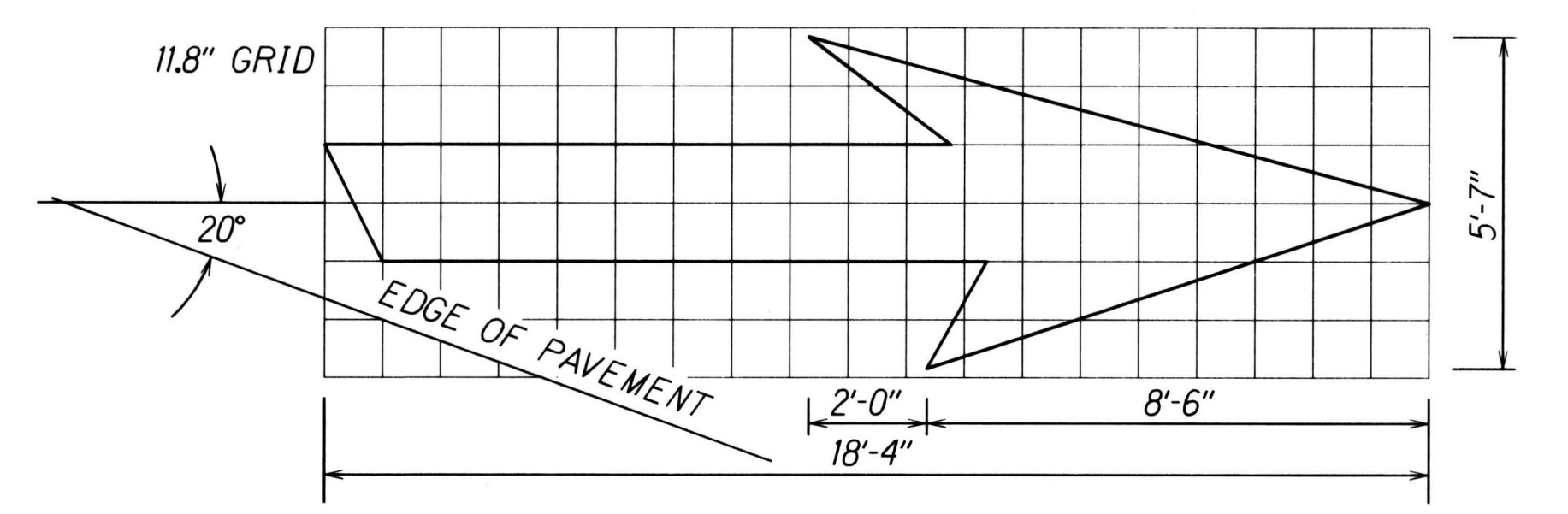
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(011)	2017	64	80

**LEGEND**

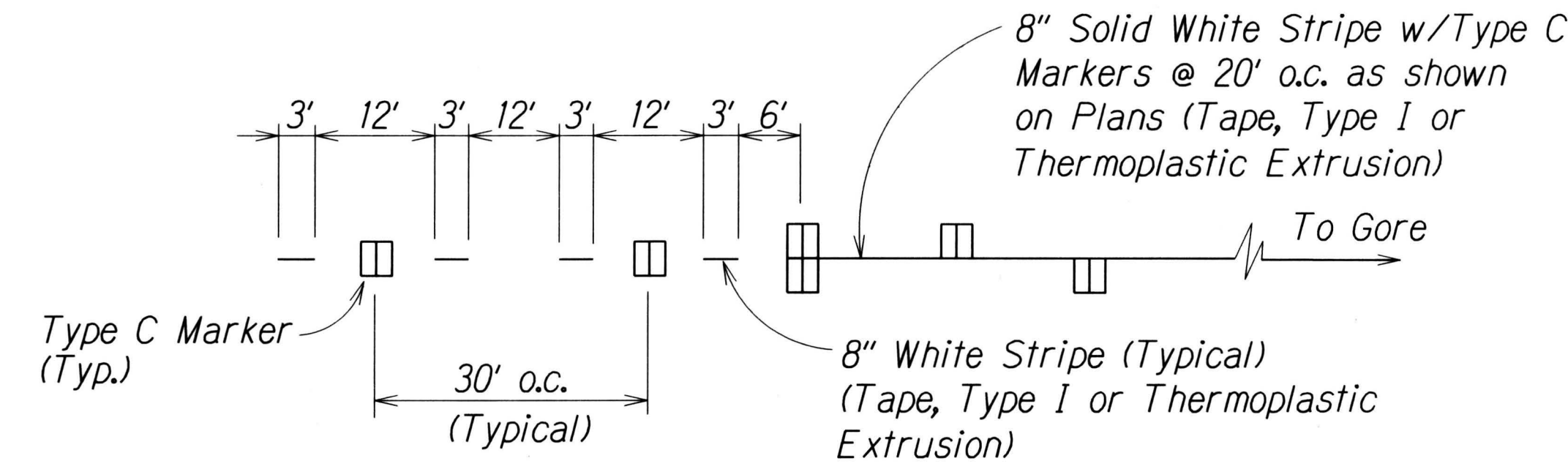
-  4 each Type A Raised Pavement Markers  
Type C Raised Pavement Markers @ 40'-0" o.c.
-  4 each Type J Raised Pavement Markers  
Type D Raised Pavement Markers @ 40'-0" o.c.
-  8" White Stripe with Type C Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion)
-  4" Double Solid Yellow with Type D Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion))
-  4" Double Solid Yellow Stripes with Type H Raised Pavement Markers @ 20'-0" o.c. (Tape, Type II or Thermoplastic Extrusion))
-  4" Yellow Edge Stripe with Type H Raised Pavement Markers @ 40'-0" o.c. (Tape, Type II or Thermoplastic Extrusion))
-  4" Double Solid White Stripes with Type C Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion)
-  Lane Change Restriction Marking  
4 each Type A Raised Pavement Markers  
Type C Raised Pavement Markers @ 20'-0" o.c.  
4" White Stripe (Tape, Type I or Thermoplastic Extrusion)
-  4" or 8" White Edge Stripe with Type C Raised Pavement Markers @ 40'-0" o.c. (Tape, Type II or Thermoplastic Extrusion)
-  4" White Guide Lines (Tape, Type III or Thermoplastic Extrusion except for bus bays)
-  Transverse Median Marking (Tape, Type II or Thermoplastic Extrusion)
-  Transverse Shoulder Marking (Tape, Type II or Thermoplastic Extrusion)
-  Channelizing Island or Deceleration Lane Gore (Tape, Type II or Thermoplastic Extrusion)
-  Crosswalk and Stop Line. All Stop Lines shall be 10'-0" from Crosswalk unless otherwise noted. The circled number indicates the number of lanes for payment (Tape, Type III or Thermoplastic Extrusion)
-  Pavement Arrow (Tape, Type III or Thermoplastic Extrusion)
-  Pavement Word (Tape, Type III or Thermoplastic Extrusion)
-  STOP
-  4 Each Type J Raised Pavement Markers  
Type D Raised Pavement Markers @ 40'-0" o.c.  
Type H Raised Pavement Markers (Reflective Surface facing no-passing direction)  
4" Single Solid Yellow Stripe (Tape, Type I or Thermoplastic Extrusion)
-  Extension of Edge Line, 4" Wide x 2'-0" Long White Stripe @ 10'-0" o.c. w/Type C Markers @ 40'-0" o.c. (Tape, Type III or Thermoplastic Extrusion)
-  Reflector Marker (RM-5) Mounted on New and Existing Metal Guardrail

**NOTES**

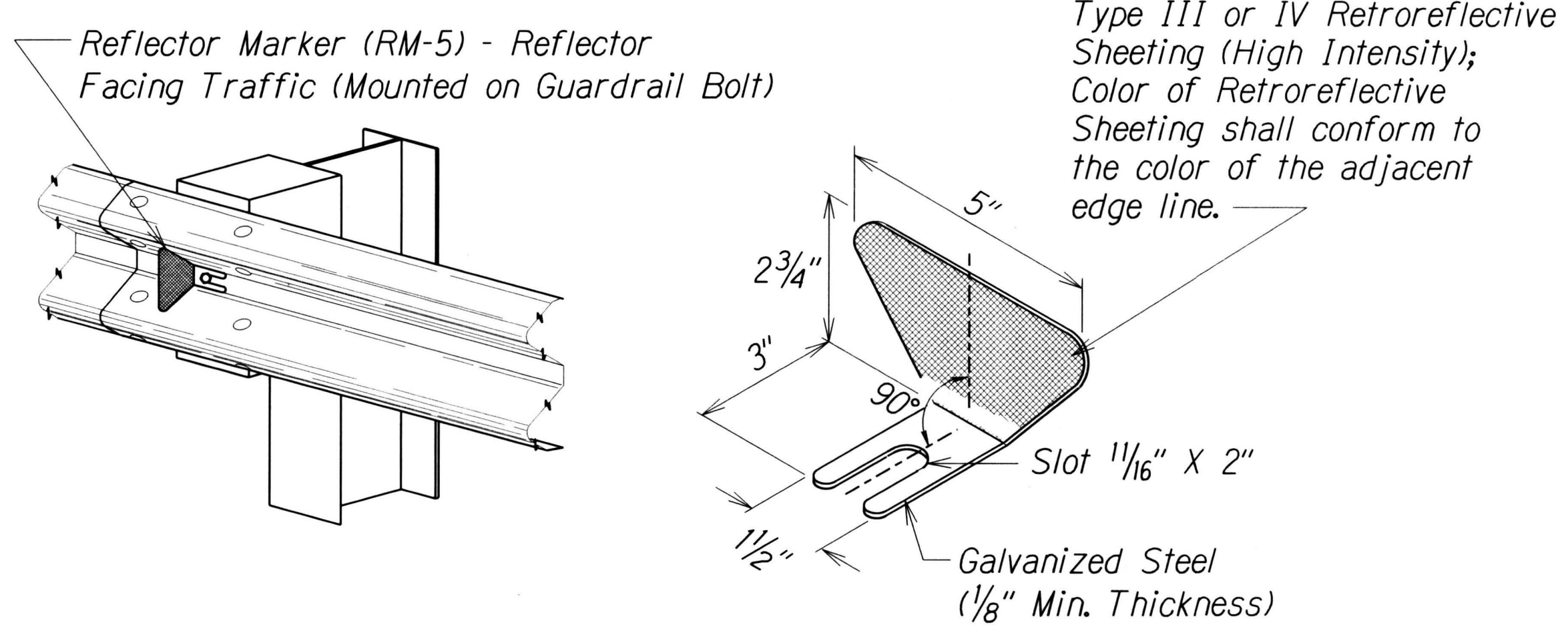
1. Layout of pavement markings and striping shall be done by the Contractor and approved by the Engineer prior to any installation work.
2. Existing pavement markings not incorporated in the final traffic pattern shall be removed as directed by the Engineer. Costs shall be incidental to the various pavement marking items.
3. Raised pavement markers shall not be installed within crosswalks.
4. Final locations of all signs shall be approved by the Engineer prior to any installation work.
5. Existing signs not shown on these plans shall remain as posted unless otherwise directed by the Engineer. Removal and disposal of existing signs and/or posts as designated on these plans shall be incidental to the various signing items.
6. Final locations of all Stop Lines shall be approved by the Engineer prior to installation.
7. All pavement striping shall be as noted on the legend or plans.
8. All preformed pavement marking tapes over existing pavement shall be applied with an approved primer as recommended by the tape manufacturer and as approved by the Engineer. The primer shall be allowed to dry to the tacky stage prior to tape application.
9. All Pedestrian warning signs with supplemental sign shall be on a fluorescent yellow-green retroreflective background with a legend and border.



**TYPE VI ARROW**  
RIGHT LANE DROP ARROW  
(FOR LEFT LANE,  
USE MIRROR IMAGE)



**LANE DROP MARKING**  
Not to Scale



**REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION**

**Note:**  
Reflector Markers (RM-5) mounted on guardrails shall be spaced every 25 feet. RM-5's shall not be installed on Terminal Sections. Furnishing and installing of each RM-5 shall be paid for under Contract Item No. 632.4200 - Reflector Marker (RM-5) mounted on new and existing guardrail. The Contractor shall be responsible for mounting RM-5's on all new and existing metal guardrails even when not shown on plans.

SURVEY PLOTTED BY	DATE
DESIGNED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
DATE	
NO.	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PAVEMENT MARKING**  
**LEGEND, DETAILS & NOTES**

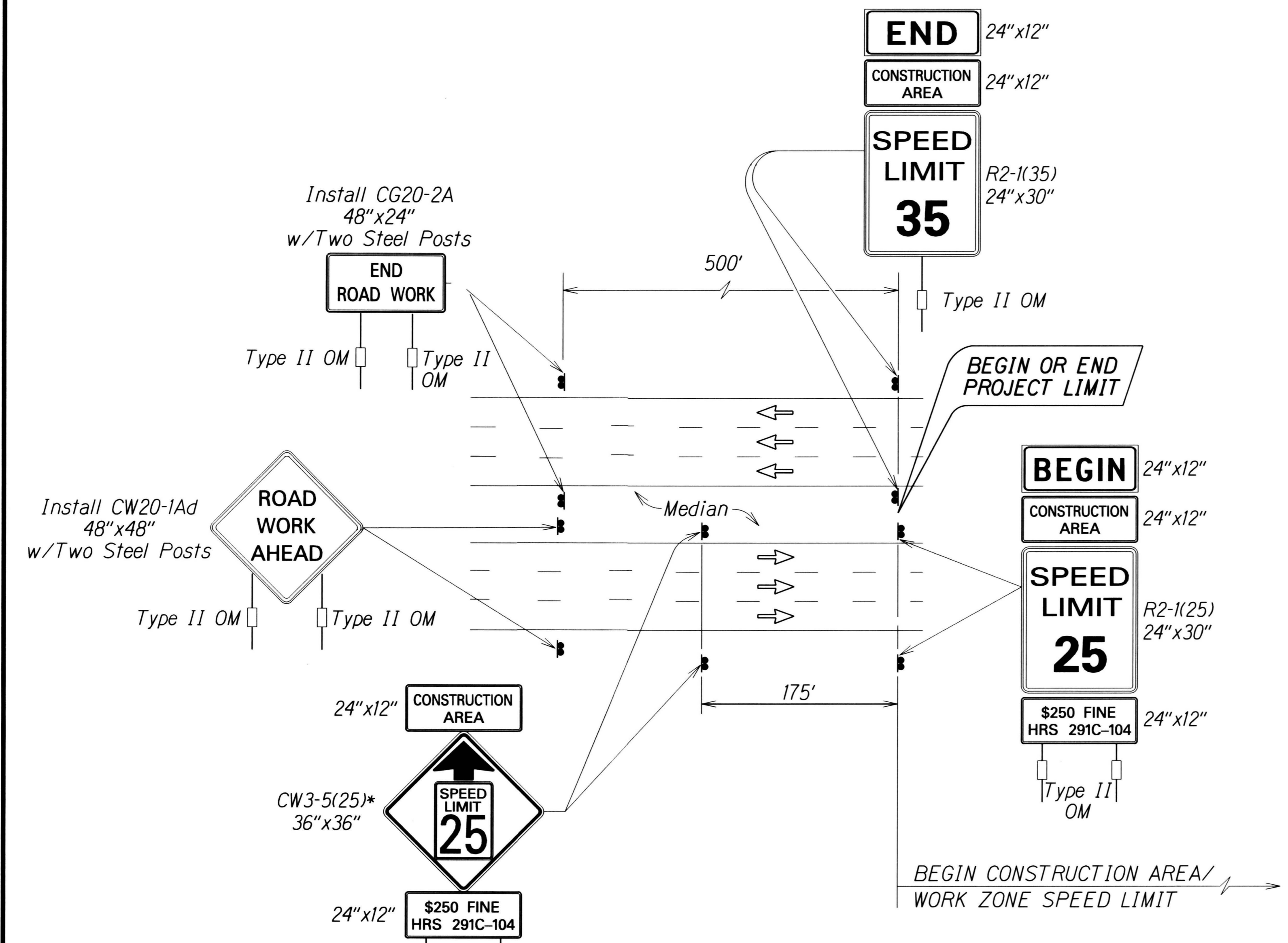
MOKAPU SADDLE ROAD REHABILITATION  
Nanamoana Street to Oneawa Street  
Federal Aid Project No. STP-065-1(011)

Scale: As Noted      Date: March 2017

SHEET No. 71 OF 17 SHEETS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(011)	2017	66	80



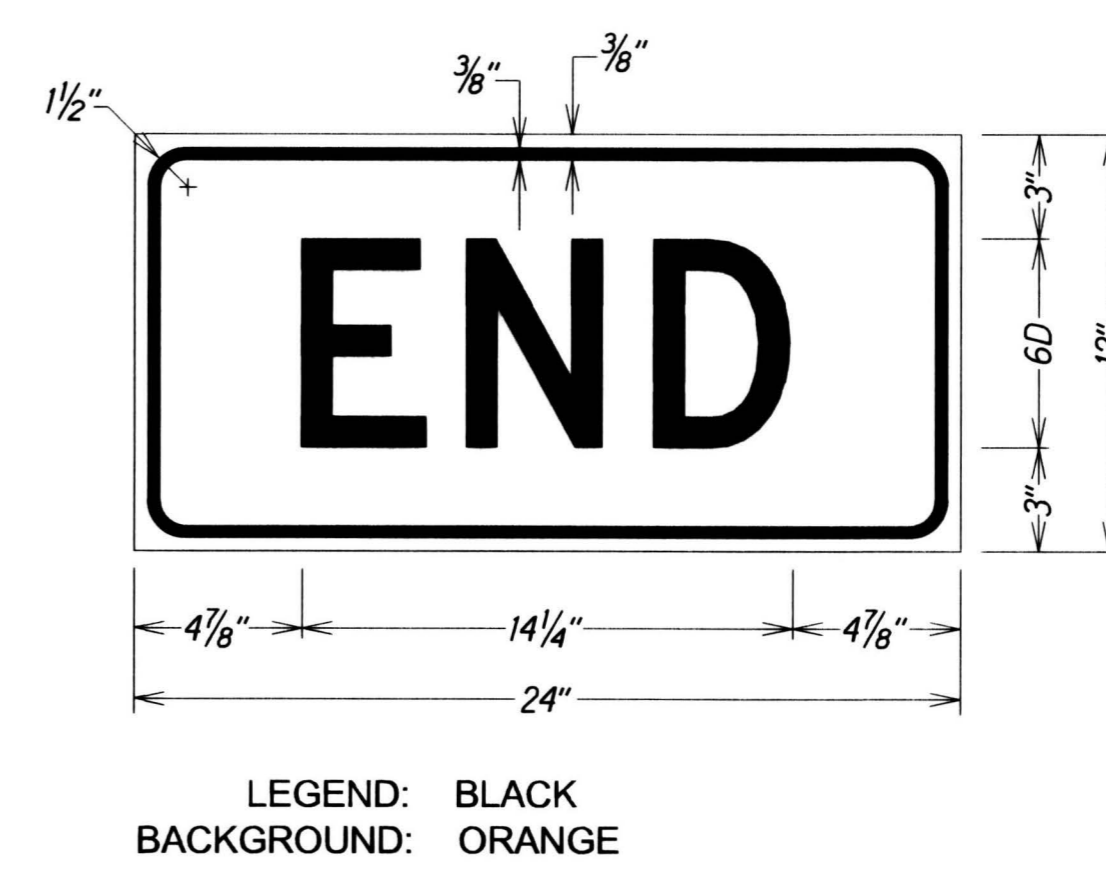
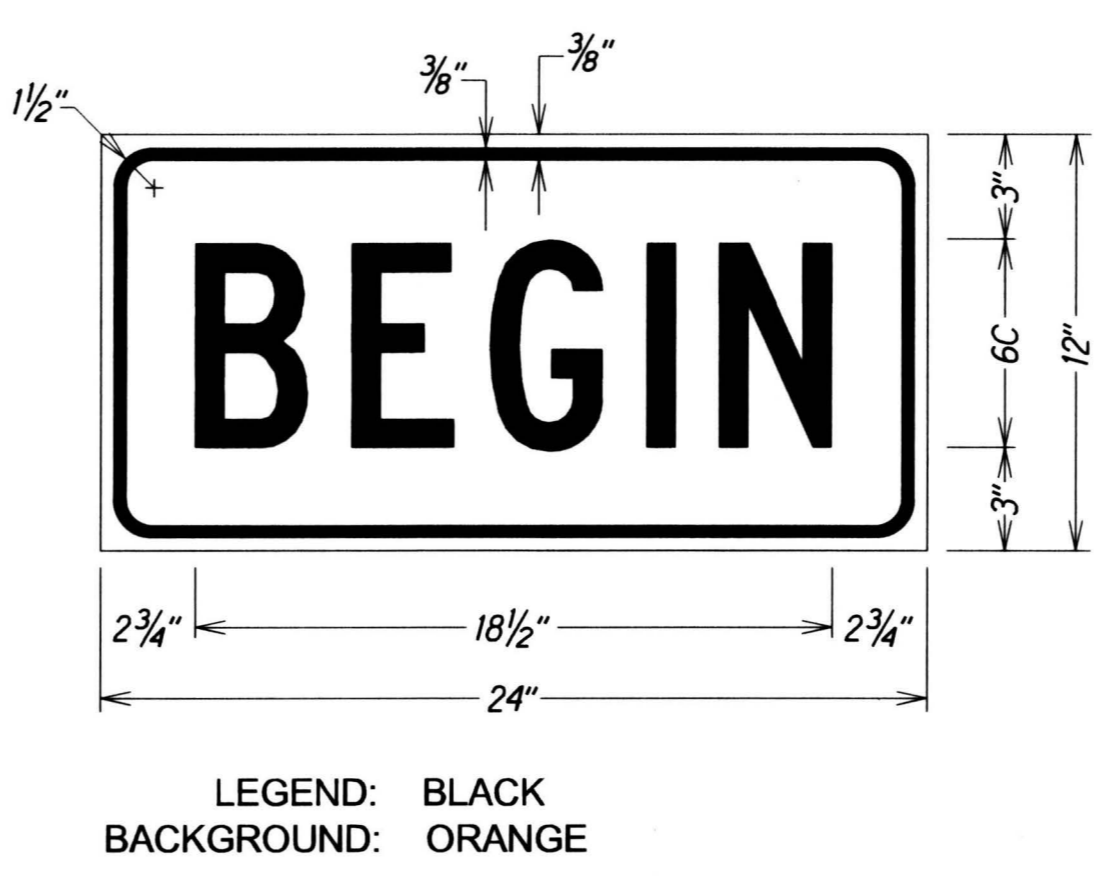
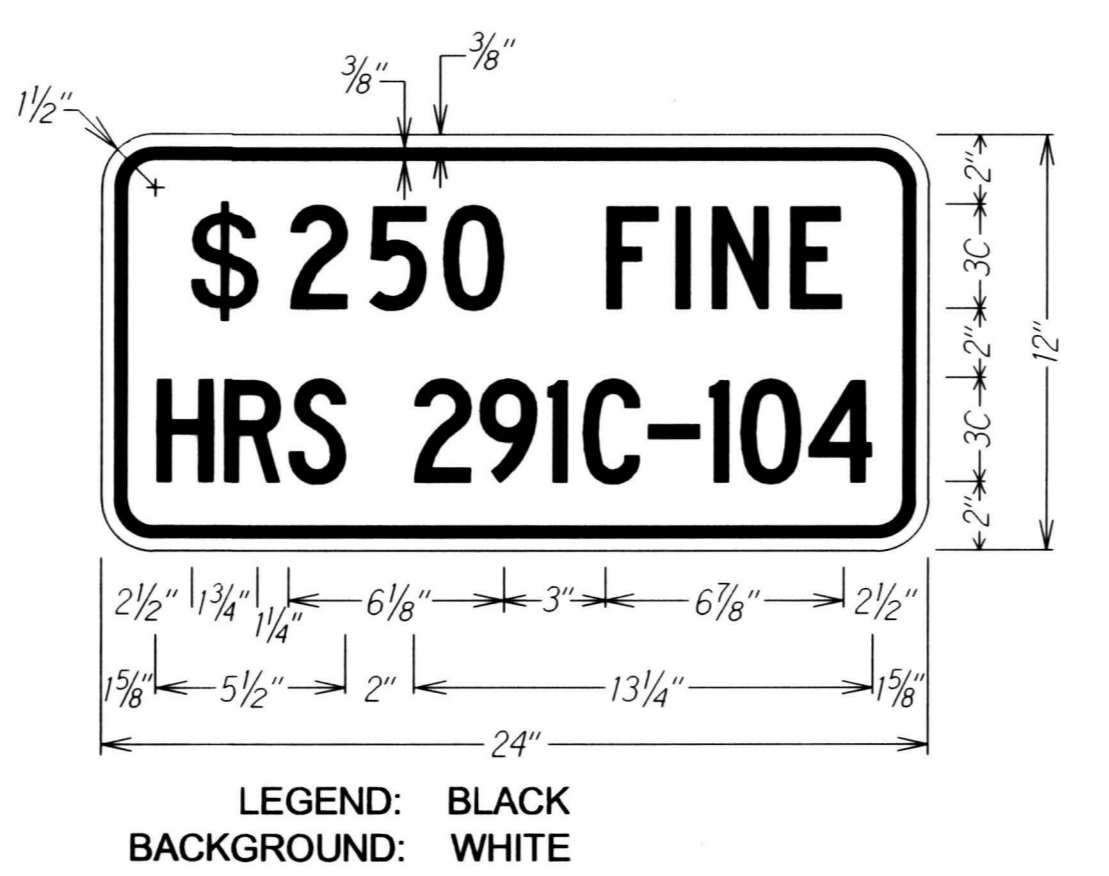
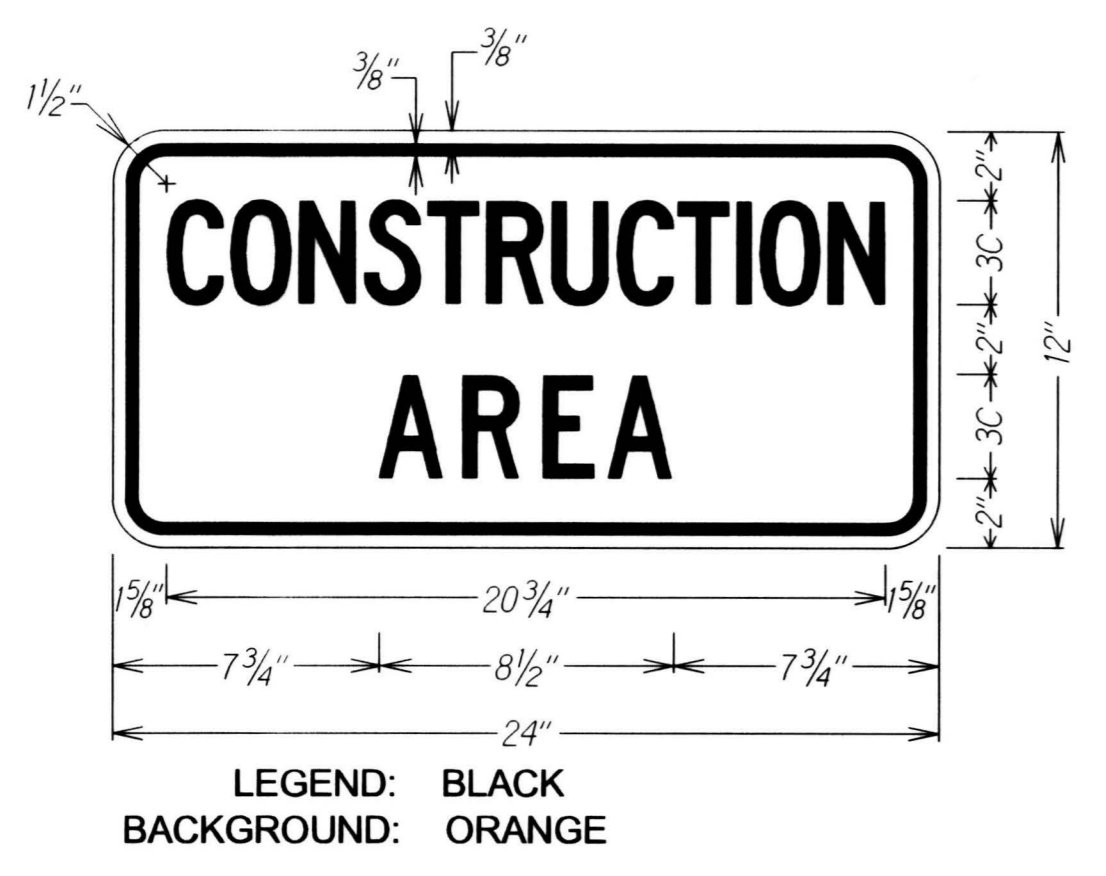
\*Note:  
 Legend: Black  
 Background: Orange  
 Speed Limit: Black on White

TYPICAL DETAIL FOR CONSTRUCTION SIGNS  
 ON MULTILANE DIVIDED LOW SPEED HIGHWAY

Work Zone Notes:

1. This Work Zone Sign Plan is intended for use on long-term stationary work zones/construction phases (3 days or more). All work zones or construction phases less than 3 days duration will use Traffic Control Plans shown in Section 645 of the Standard Specifications and/or Special Provisions.
2. All existing regulatory speed limit signs with posts within the work zone/project limits shall be removed and replaced with work zone speed limit sign assemblies (R2-1(25) and CW3-5(25) with "CONSTRUCTION AREA" and "\$250 FINE HRS 291C-104" Supplemental Signs).
3. Construction sign assemblies shall be installed on both the approaching and trailing ends of each work zone as shown on this plan.
4. Each construction warning sign shall have a minimum of two (2) Type II OM. Each work zone speed limit assembly shall have a minimum of one (1) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 645.1000, Traffic Control.
5. Upon the completion of all physical work or as directed by the Engineer, all construction signs and work zone speed limit assemblies shall be removed. All speed limit signs and posts that were existing at the start of the project within the work zone/project limits shall be restored back to their original locations and configurations.
6. Placement of construction signs shall not obstruct the path of pedestrians and bicyclists.
7. The removal and restoration of existing regulatory speed limit signs with new posts along with the installation, maintenance and removal of work zone speed limit sign assemblies shall be considered incidental to Item No. 645.1000, Traffic Control.

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
NO.	

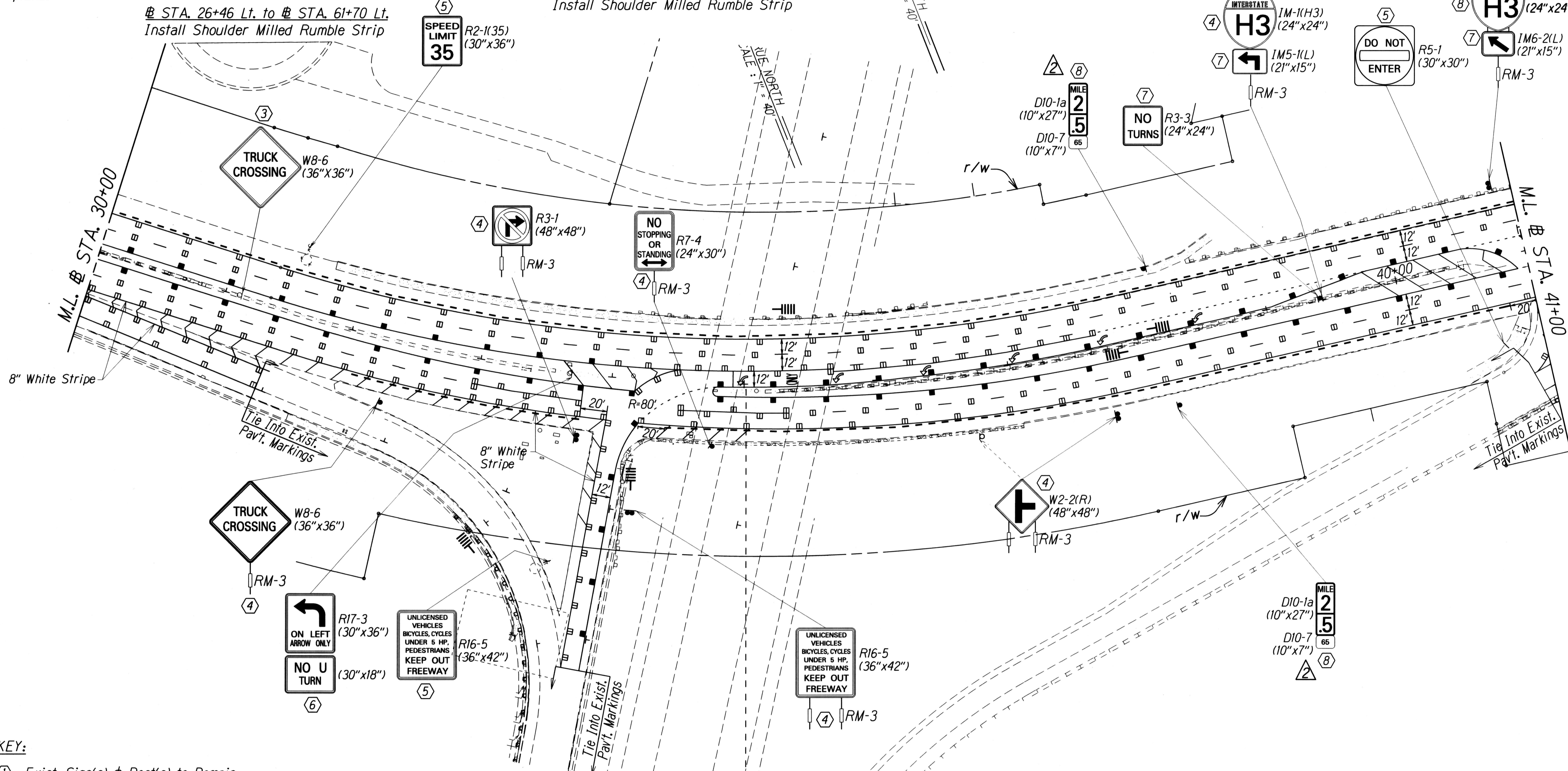


STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**LOW SPEED DIVIDED HIGHWAY**  
**WORK ZONE SIGNING PLAN, NOTES&DETAILS**  
 MOKAPU SADDLE ROAD REHABILITATION  
 Nanamoana Street to Oneawa Street  
 Federal Aid Project No. STP-065-1(011)  
 Scale: As Noted Date: March 2017  
 SHEET No. T3 OF 17 SHEETS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(011)	2017	ADD. 68	80

|||— Reflector Markers (RM-5) mounted on guardrails shall be spaced every 25 feet. RM-5's shall not be installed on Terminal Sections. Furnishing and installing of each RM-5 shall be paid for under Contract Item No. 632.4200 - Reflector Marker (RM-5) mounted on new and existing Guardrail. The Contractor shall be responsible for mounting RM-5's on all new and existing metal guardrails even when not shown on plans.



**KEY:**

- ① Exist. Sign(s) & Post(s) to Remain
- ② Remove Exist. Sign(s) & Post(s)
- ③ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Post(s)
- ④ Remove Exist. Sign(s) & Post(s) & Install New Sign(s) w/ Post(s)
- ⑤ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Light Pole
- ⑥ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Traffic Signal Standard
- ⑦ Install New Sign(s)
- ⑧ Install New Sign(s) w/ Post(s)
- ⑨ Install New Sign(s) on Exist. Light Pole

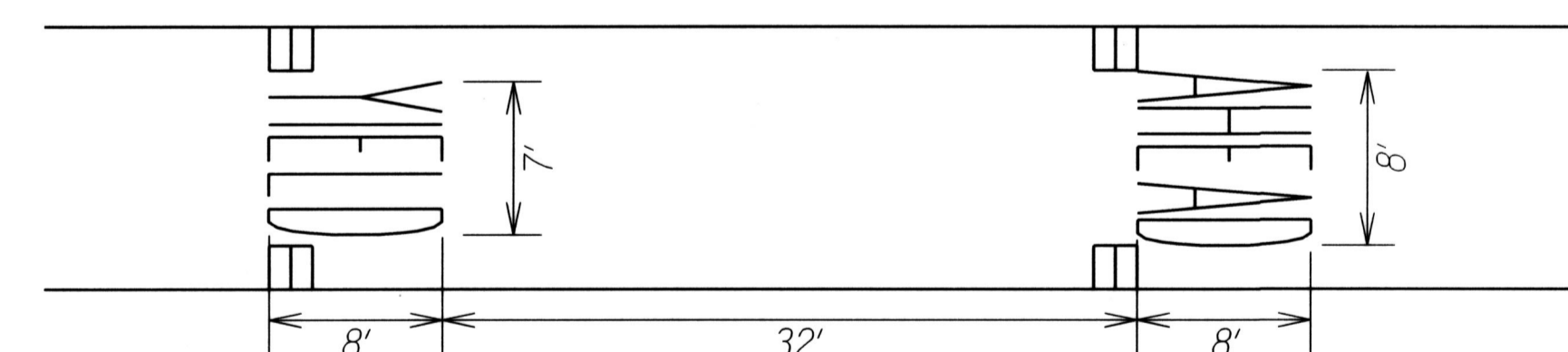
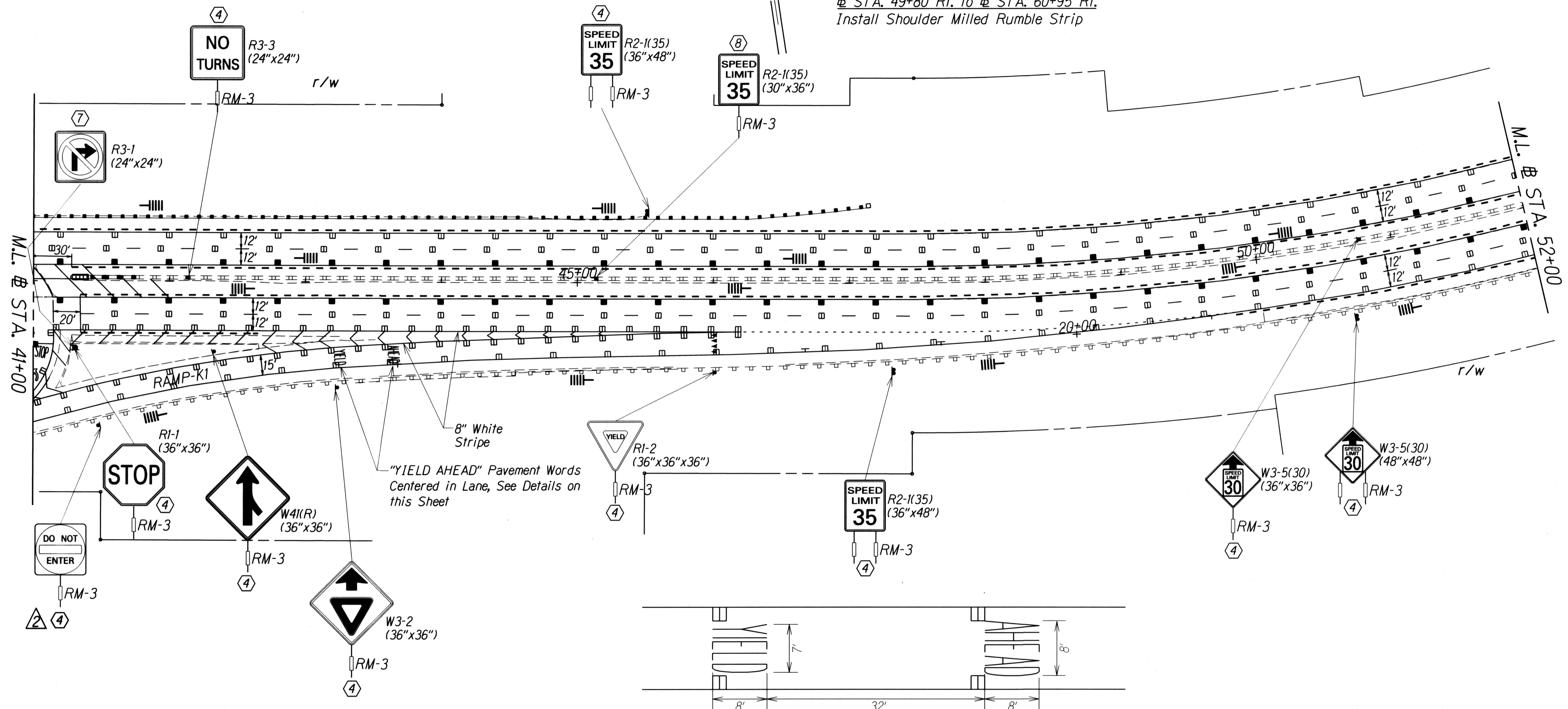
DATE	_____
DESIGNED BY	_____
TRACED BY	_____
NOTE BOOK	_____
QUANTITIES BY	_____
CHECKED BY	_____

DATE	REVISION
5/25/17	Added route marker assembly, and deleted RM-3 from milepost marker.

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**PAVEMENT MARKING & SIGNING PLAN**  
 MOKAPU SADDLE ROAD REHABILITATION  
 Nanamoana Street to Oneawa Street  
 Federal Aid Project No. STP-065-1(011)  
 Scale: 1"=40' Date: March 2017  
 SHEET No. T5 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(011)	2017	ADD. 69	80

@ STA. 26+46 Lt. to @ STA. 61+70 Lt.  
 Install Shoulder Milled Rumble Strip  
 @ STA. 41+38 Lt. (Median) to @ STA. 58+72 Lt. (Median)  
 Install Shoulder Milled Rumble Strip  
 @ STA. 41+34 Rt. (Median) to @ STA. 52+60 Rt. (Median)  
 Install Shoulder Milled Rumble Strip  
 @ STA. 41+34 Rt. to @ STA. 42+62 Rt.  
 Install Shoulder Milled Rumble Strip  
 @ STA. 49+80 Rt. to @ STA. 60+95 Rt.  
 Install Shoulder Milled Rumble Strip



**YIELD AHEAD**  
 Pavement Words  
 Not to Scale

|||||— Reflector Markers (RM-5) mounted on guardrails shall be spaced every 25 feet. RM-5's shall not be installed on Terminal Sections. Furnishing and installing of each RM-5 shall be paid for under Contract Item No. 632.4200 - Reflector Marker (RM-5) mounted on new and existing Guardrail. The Contractor shall be responsible for mounting RM-5's on all new and existing metal guardrails even when not shown on plans.

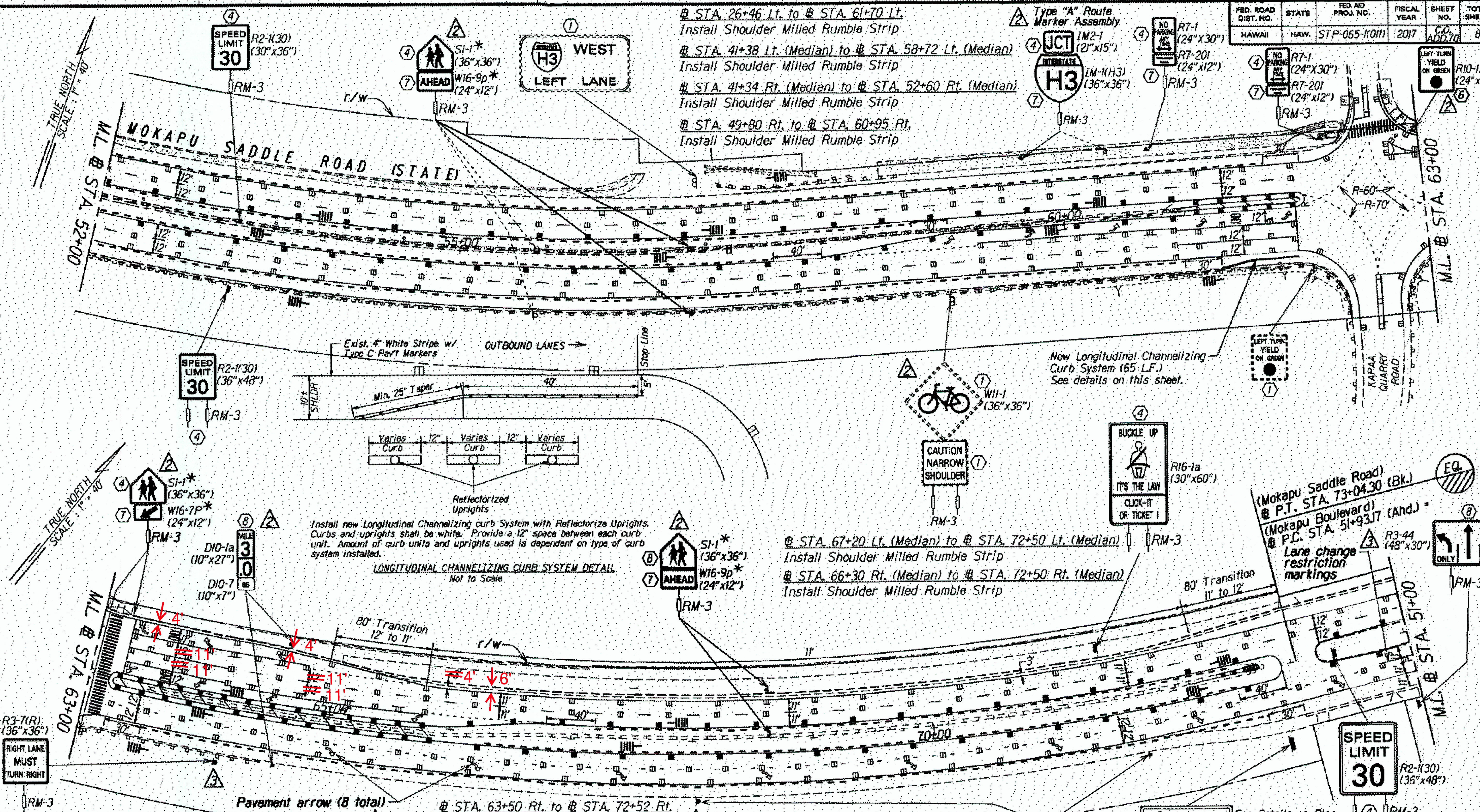
- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
  - ② Remove Exist. Sign(s) & Post(s)
  - ③ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Post(s)
  - ④ Remove Exist. Sign(s) & Post(s) & Install New Sign(s) w/ Post(s)
  - ⑤ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Light Pole
  - ⑥ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Traffic Signal Standard
  - ⑦ Install New Sign(s)
  - ⑧ Install New Sign(s) w/ Post(s)
  - ⑨ Install New Sign(s) on Exist. Light Pole

DATE	REVISION
5/25/17	Revised sign key

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**PAVEMENT MARKING & SIGNING PLAN**  
 MOKAPU SADDLE ROAD REHABILITATION  
 Nanamoana Street to Oneawa Street  
 Federal Aid Project No. STP-065-1(011)  
 Scale: 1"=40' Date: March 2017  
 SHEET No. T6 OF 17 SHEETS

SURVEY PLOTTED BY	DATE
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

FED. ROAD DIST. NO.	STATE	FED. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-10(11)	2017	C.O. ADD.70	80



@ STA. 26+46 Lt. to @ STA. 61+70 Lt.  
 Install Shoulder Milled Rumble Strip  
 @ STA. 41+38 Lt. (Median) to @ STA. 58+72 Lt. (Median)  
 Install Shoulder Milled Rumble Strip  
 @ STA. 41+34 Rt. (Median) to @ STA. 52+60 Rt. (Median)  
 Install Shoulder Milled Rumble Strip  
 @ STA. 49+80 Rt. to @ STA. 60+95 Rt.  
 Install Shoulder Milled Rumble Strip

Install new Longitudinal Channelizing curb System with Reflectortize Uprights. Curbs and uprights shall be white. Provide a 12" space between each curb unit. Amount of curb units and uprights used is dependent on type of curb system installed.  
**LONGITUDINAL CHANNELIZING CURB SYSTEM DETAIL**  
 Not to Scale

@ STA. 63+50 Rt. to @ STA. 72+52 Rt.  
 Install Shoulder Milled Rumble Strip

@ STA. 67+20 Lt. (Median) to @ STA. 72+50 Lt. (Median)  
 Install Shoulder Milled Rumble Strip  
 @ STA. 66+30 Rt. (Median) to @ STA. 72+50 Rt. (Median)  
 Install Shoulder Milled Rumble Strip

REVISIONS:  
 DATE REVISION  
 7/2/18 Added pavement arrows and R3-7(R) signs.  
 5/25/17 Added lane change restriction markings.  
 Added route marker assembly, revised sign key, deleted RM-3 from milepost marker and added signs & note.

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
  - ② Remove Exist. Sign(s) & Post(s)
  - ③ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Post(s)
  - ④ Remove Exist. Sign(s) & Post(s) & Install New Sign(s) w/ Post(s)
  - ⑤ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Light Pole
  - ⑥ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Traffic Signal Standard
  - ⑦ Install New Sign(s)
  - ⑧ Install New Sign(s) w/ Post(s)
  - ⑨ Install New Sign(s) on Exist. Light Pole
- LEGEND FOR AS-BUILT POSTINGS:**
- SQUIGGLY LINE FOR AS-BUILT DELETION
  - == DOUBLE LINE FOR AS-BUILT DELETION
  - TEXT FOR AS-BUILT POSTING

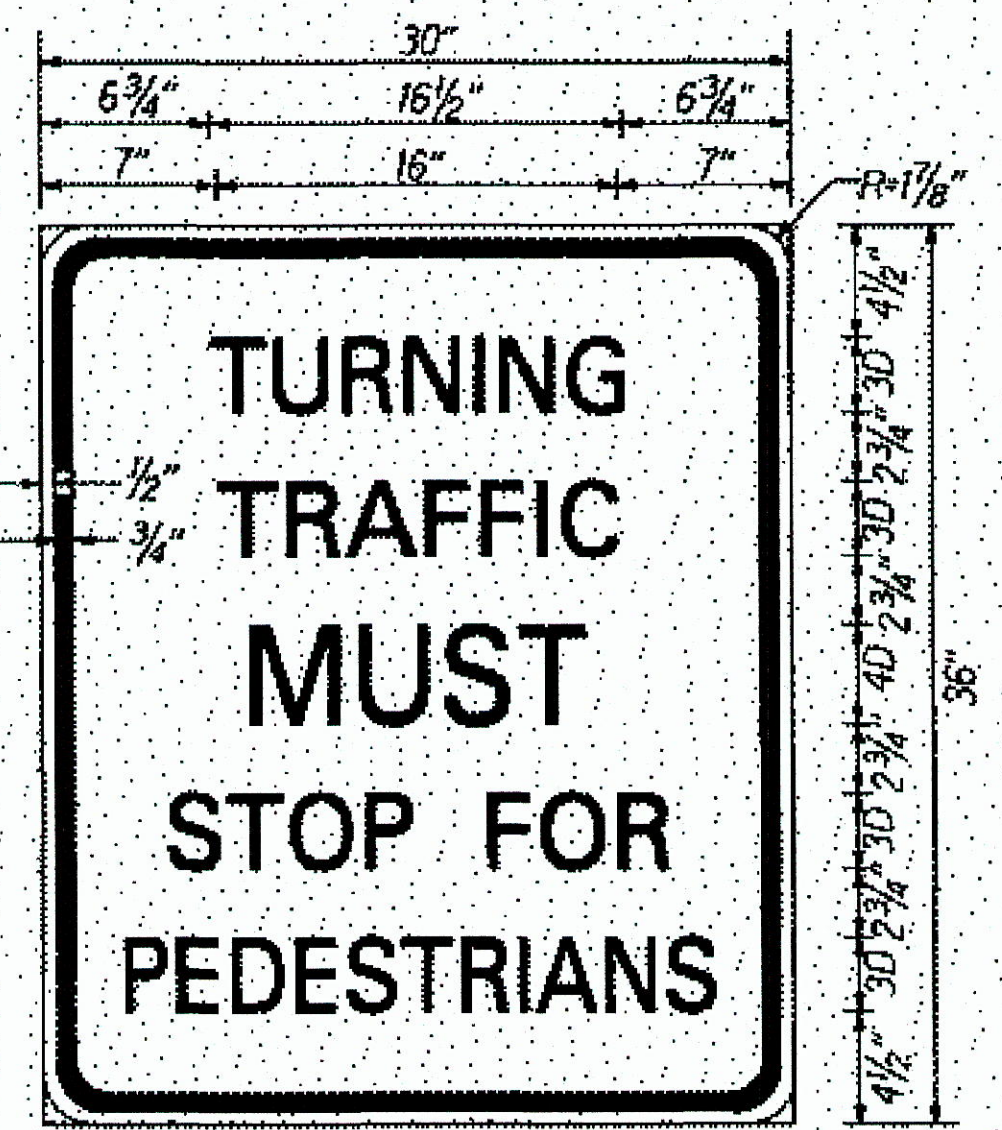
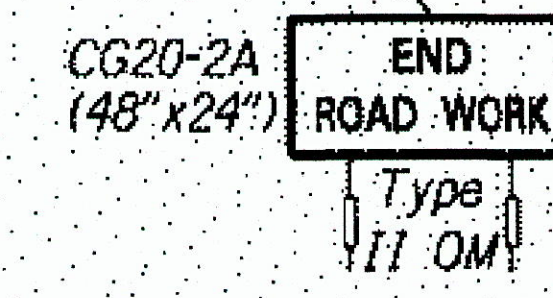
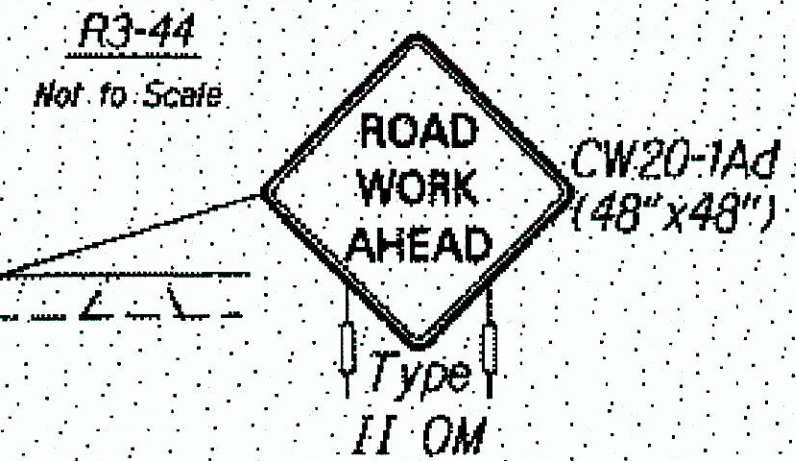
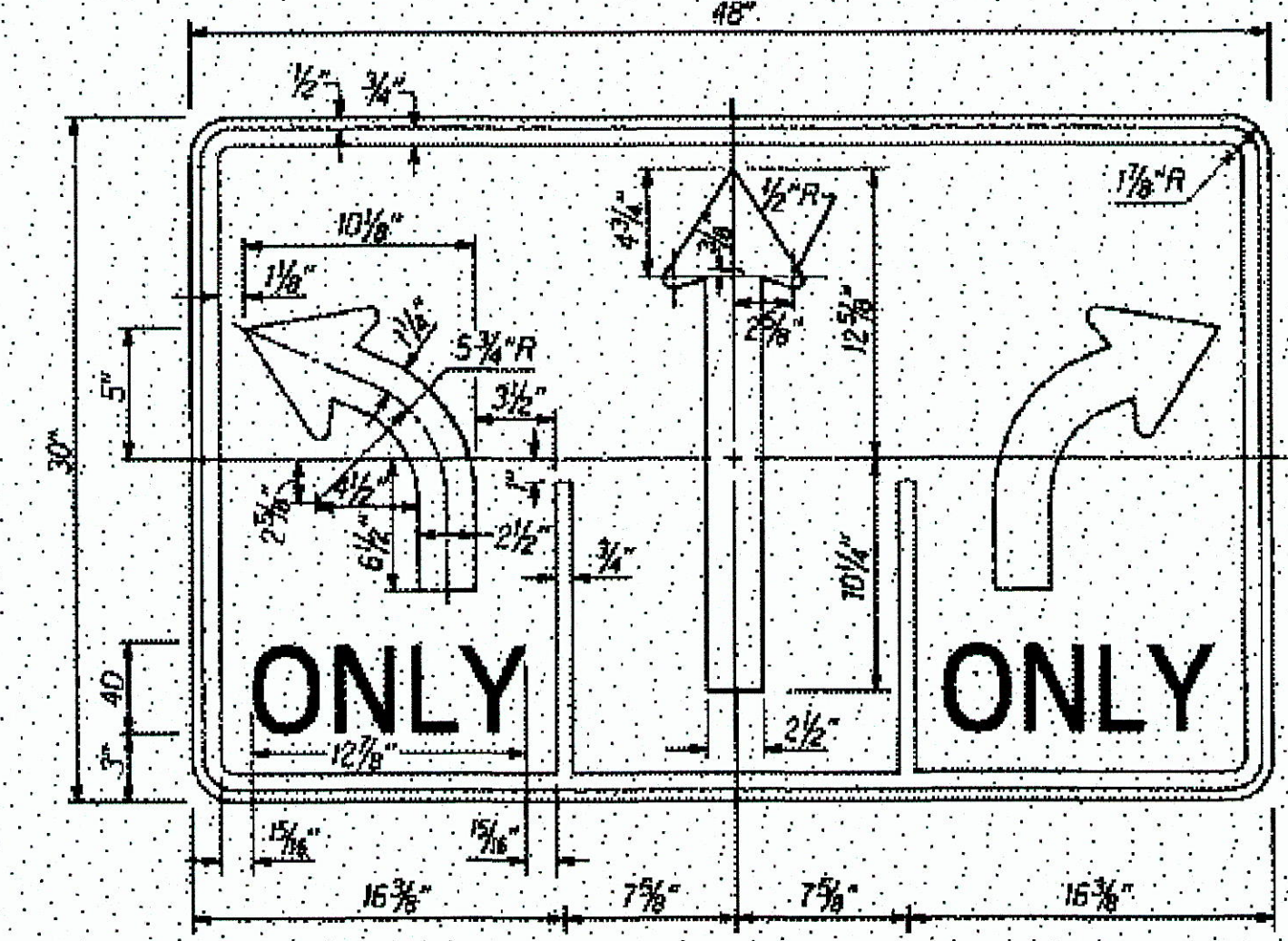
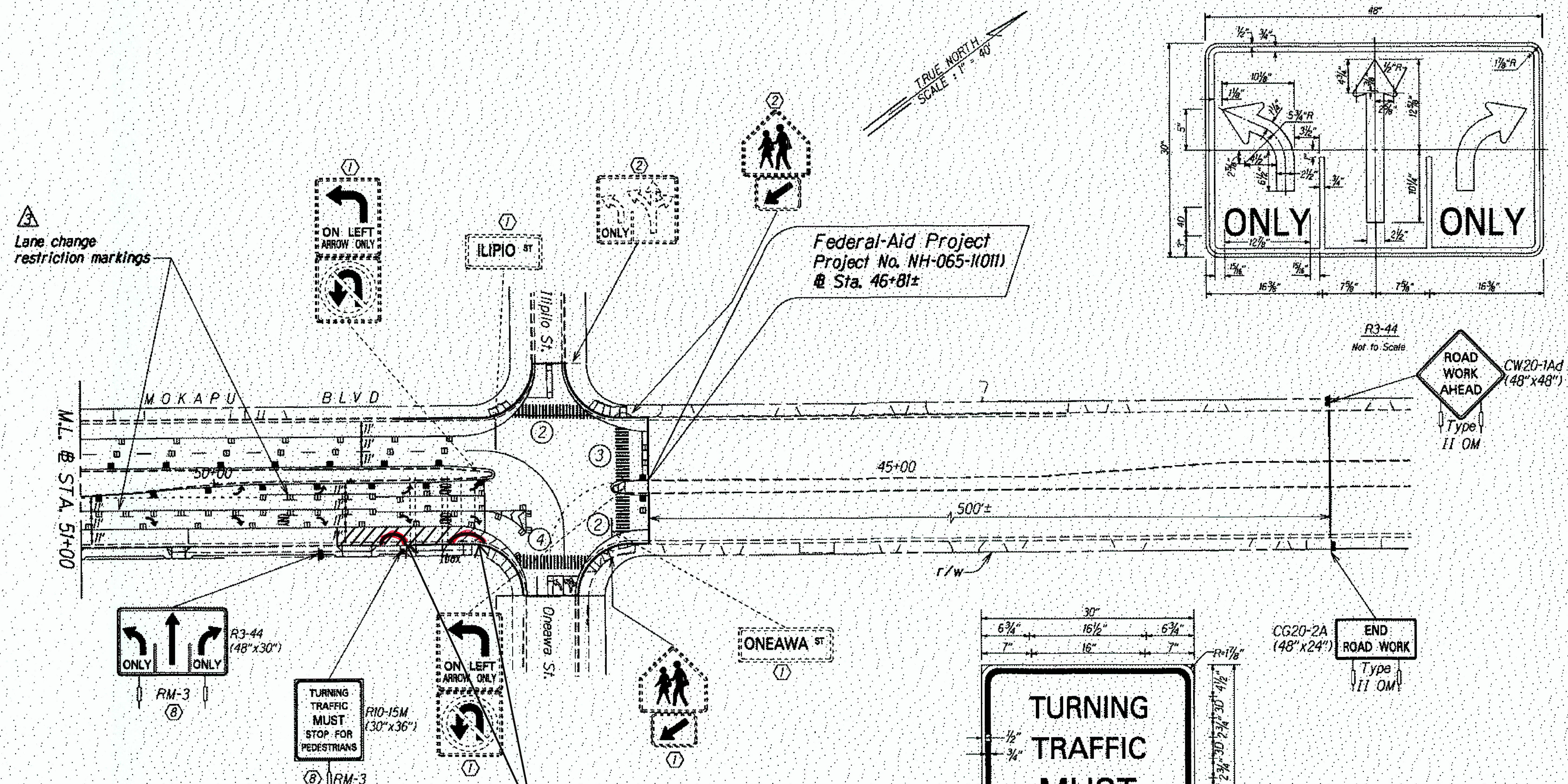
Reflector Markers (RM-5) mounted on guardrails shall be spaced every 25 feet. RM-5's shall not be installed on Terminal Sections. Furnishing and installing of each RM-5 shall be paid for under Contract Item No. 632.4200 - Reflector Marker (RM-5) mounted on new and existing Guardrail. The Contractor shall be responsible for mounting RM-5's on all new and existing metal guardrails even when not shown on plans.

\*Fluorescent yellow-green sign sheeting

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**PAVEMENT MARKING & SIGNING PLAN**  
**MOKAPU SADDLE ROAD REHABILITATION**  
 Nanamoana Street to Oneawa Street  
 Federal Aid Project No. STP-065-10(11)  
 Scale: 1"=40' Date: March 2017  
 SHEET No. 77 OF 17 SHEETS

**AS-BUILT C.O. ADD. 70**

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(011)	2017	C.O. 71	80



- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
  - ② Remove Exist. Sign(s) & Post(s)
  - ③ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Post(s)
  - ④ Remove Exist. Sign(s) & Post(s) & Install New Sign(s) w/ Post(s)
  - ⑤ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Light Pole
  - ⑥ Remove Exist. Sign(s) & Install New Sign(s) on Exist. Traffic Signal Standard
  - ⑦ Install New Sign(s)
  - ⑧ Install New Sign(s) w/ Post(s)
  - ⑨ Install New Sign(s) on Exist. Light Pole

**New Longitudinal Channelizing Curb System**

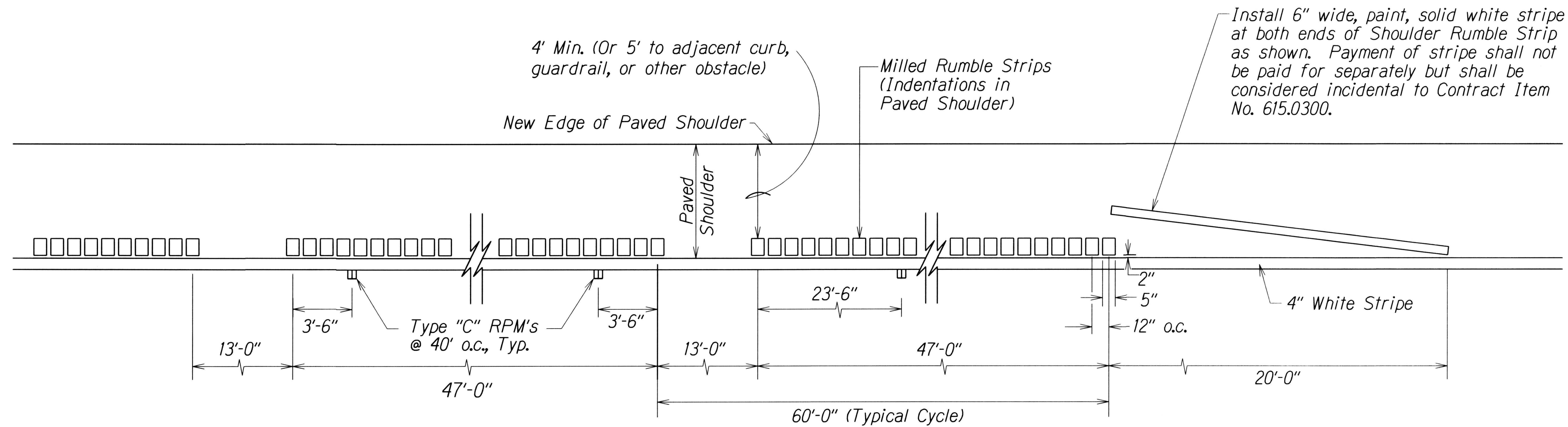
LEGEND FOR AS-BUILT POSTINGS	
	SQUIGGLY LINE FOR AS-BUILT DELETION
	DOUBLE LINE FOR AS-BUILT DELETION
	TEXT FOR AS-BUILT POSTING

7/2/18	Added lane change restriction markings
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>PAVEMENT MARKING &amp; SIGNING PLAN</b>	
MOKAPU SADDLE ROAD REHABILITATION Nanamoana Street to Oneawa Street Federal Aid Project No. STP-065-1(011)	
Scale: 1"=40'	Date: March 2017
SHEET No. 78 OF 17 SHEETS	

**AS-BUILT**

**C.O. 71**

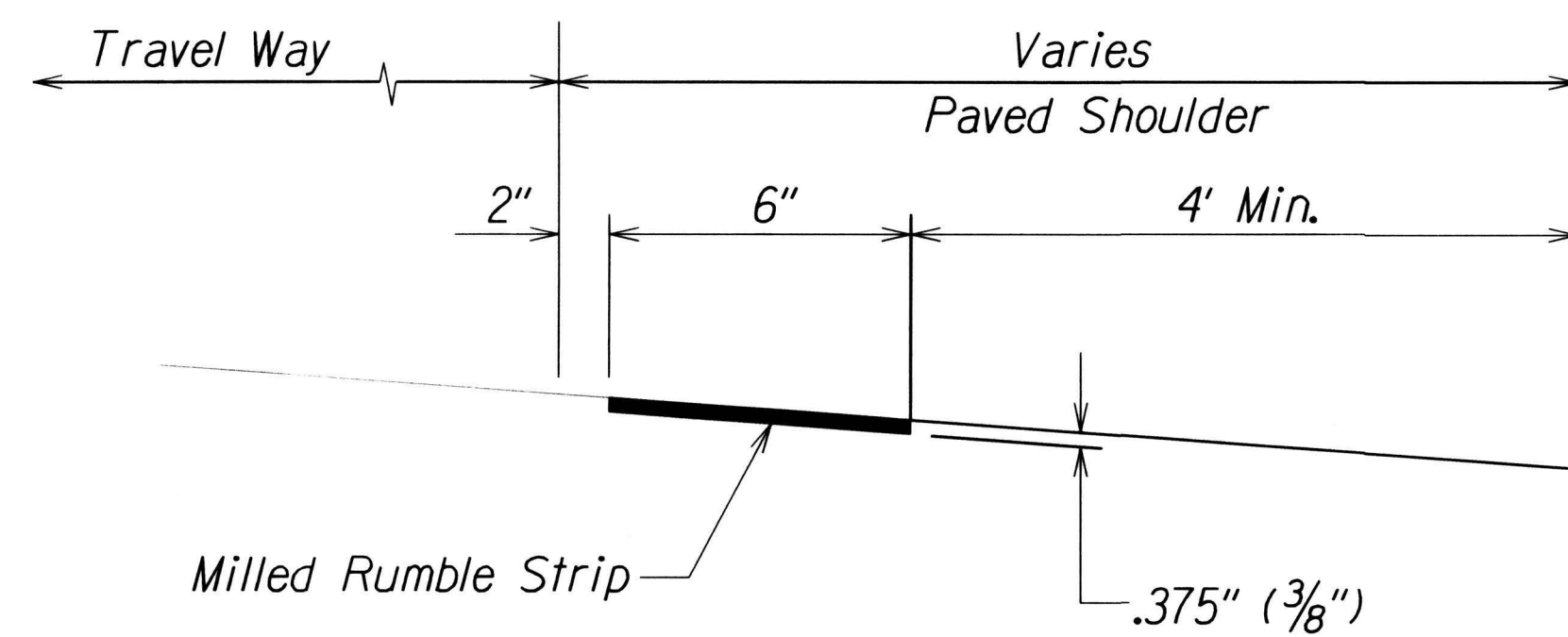
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(011)	2017	72	80



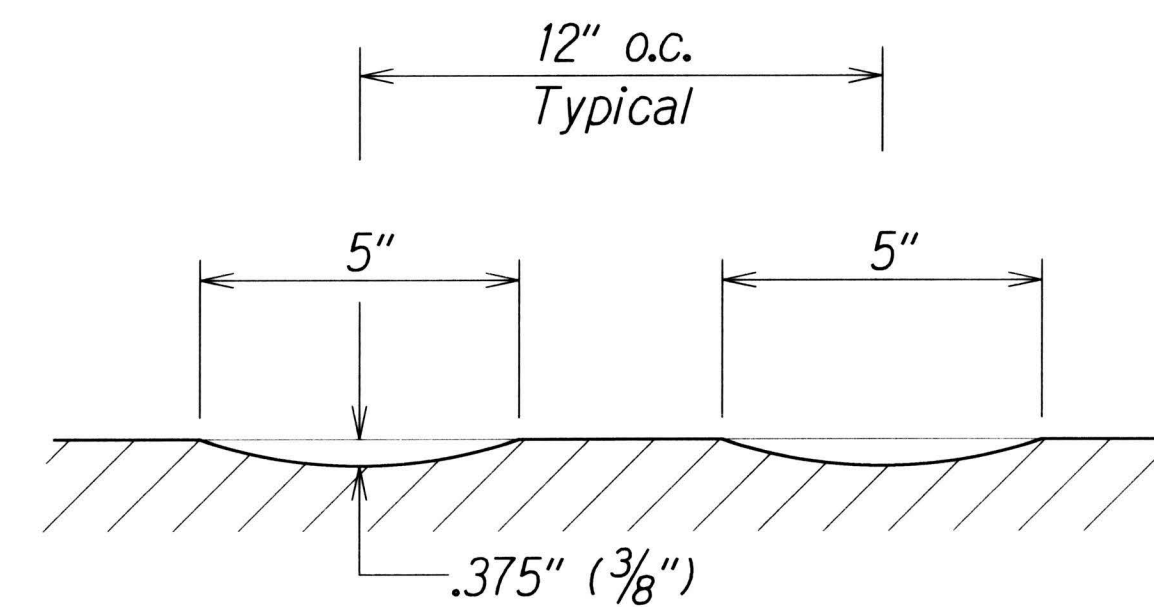
**PLAN - MILLED RUMBLE STRIP**  
Not to Scale

**NOTES:**

1. The method of constructing the modified edgeline milled rumble strip shall be submitted to the Engineer for acceptance prior to the actual work.
2. Dimensions shown are approximate. Adjust rumble strip spacing to coordinate with pavement marking prior to installation.
3. The construction of the shoulder milled rumble strip and 13-foot gaps shall be paid for under Item No. 615.0300 - 6-Inch Milled Rumble Strip, Shoulder.
4. The milling apparatus will not be paid for separately and shall be considered incidental to Item 615.0300 - 6-Inch Milled Rumble Strip, Shoulder.
5. Rumble strips shall be installed along all shoulders, except at right turn deceleration and acceleration lanes, as noted on the plans.
6. Do not install shoulder rumble strips on bridge decks.
7. Where at-grade bridges are present, rumble strips shall end/begin 20 L.F. beyond the existing bridge deck joints/concrete approach slab.
8. Do not place Type "C" Markers within 2 feet of the 13 foot rumble strip opening.



**LONGITUDINAL SECTION - MILLED RUMBLE STRIP**



**CROSS SECTION - MILLED RUMBLE STRIP**  
Not to Scale

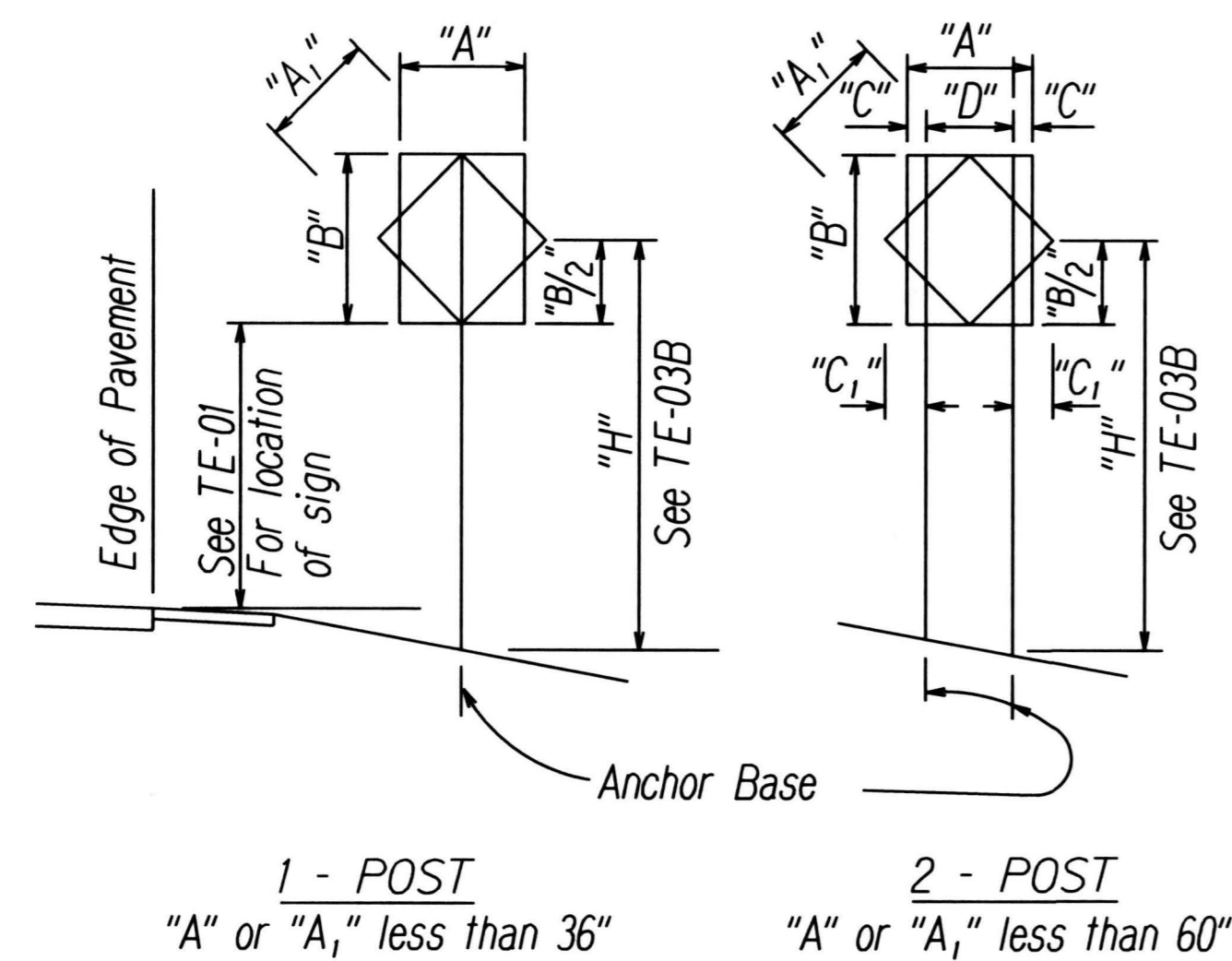
ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
NOTE BOOK DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**SHOULDER MILLED RUMBLE STRIP DETAIL**

MOKAPU SADDLE ROAD REHABILITATION  
Nanamoana Street to Oneawa Street  
Federal Aid Project No. STP-065-1(011)  
Scale: As Shown Date: March 2017

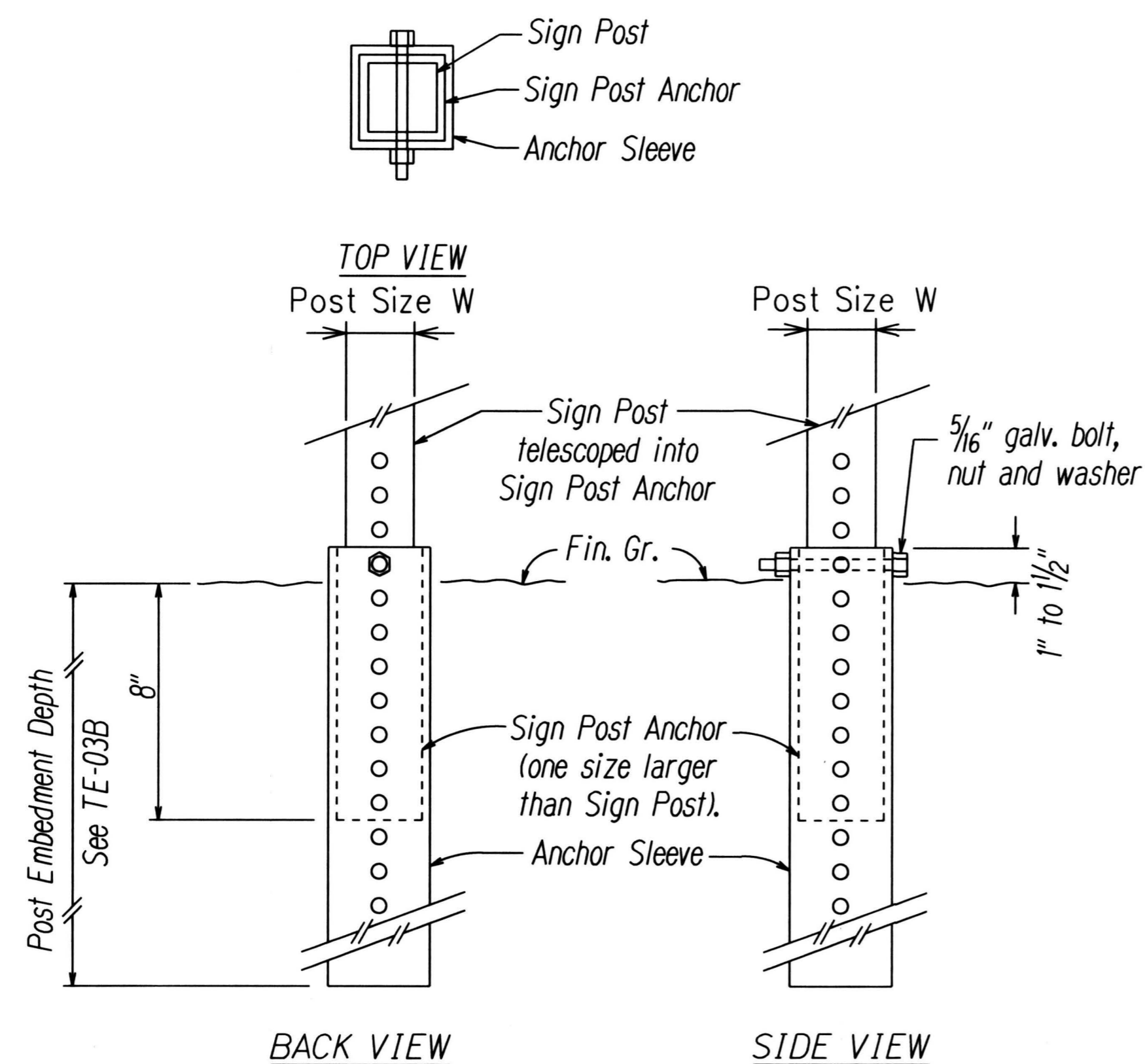
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(011)	2017	73	80



"A" or "A <sub>1</sub> "	"C"	"C <sub>1</sub> "
Less than 36"	6"	-
Greater than 36" and less than 48"	9"	19"
Greater than 48"	12"	24"

NOTE: Frame stiffeners are required when D is greater than 24"  
See General Notes.

### TYPICAL INSTALLATION



### SIGN POST INSTALLATION

### ANCHOR BASE DETAIL

### GENERAL NOTES

#### 1. Design Specifications:

- Design shall conform w/ the latest AASHTO Standard Specifications for the Structural Supports for Highway Signs, Luminaires & Traffic Signals and its interim supplements and modifications by the Highways Division, Department of Transportation State of Hawaii.
- Latest HDOT Memorandum with subject title "Design Criteria for Bridges and Structures."

#### 2. Loads:

- Basic Wind Speed: 105 mph.
- Recurrence Interval of 10 years.

#### 3. Materials:

- Post shall conform to the Standard Specifications.
- All connection bolts shall be AASHTO M164 bolts and anchor bolts shall be AASHTO M314-105 bolt.
- Lap splice nuts and bolts shall be M180, with an ultimate tensile strength of 180 ksi, min.
- Aluminum members and surfaces in contact with structural steel shall be isolated with neoprene material as approved by the Engineer.

#### 4. General:

- See General Notes on B-01, TE-01, and TE-03B for additional information.
- All square tube posts shall be 12 gauge unless otherwise specified or shown on the plans.
- Square tube posts shall be perforated with 7/16"  $\phi$  holes, 1" o.c., 4 sides, along entire length of post.
- All accessories, fittings and stiffener details (as required) shall be submitted to the Engineer for approval 20 days prior to installation.
- Alternate designs in accordance with the plans and specifications shall use the Service Load Design Method and shall be stamped by a registered structural engineer of the State of Hawaii and submitted to the Engineer for approval.
- All sign support posts without break away anchor base shall be outside of the clear zone or shielded by an appropriate traffic barrier system. The traffic barrier system shall be submitted to the Engineer for his approval.
- The Contractor shall use templates while installing the anchor bolts. Anchor bolts shall be vertical.
- Excavation and backfill shall be considered incidental to the cost of the sign foundation.

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**GALVANIZED SQUARE TUBE  
SIGN POST MOUNTING**

MOKAPU SADDLE ROAD REHABILITATION  
Nanamoana Street to Oneawa Street  
Federal Aid Project No. STP-065-1(011)

Scale: As Noted Date: March 2017

SHEET No. T10 OF 17 SHEETS