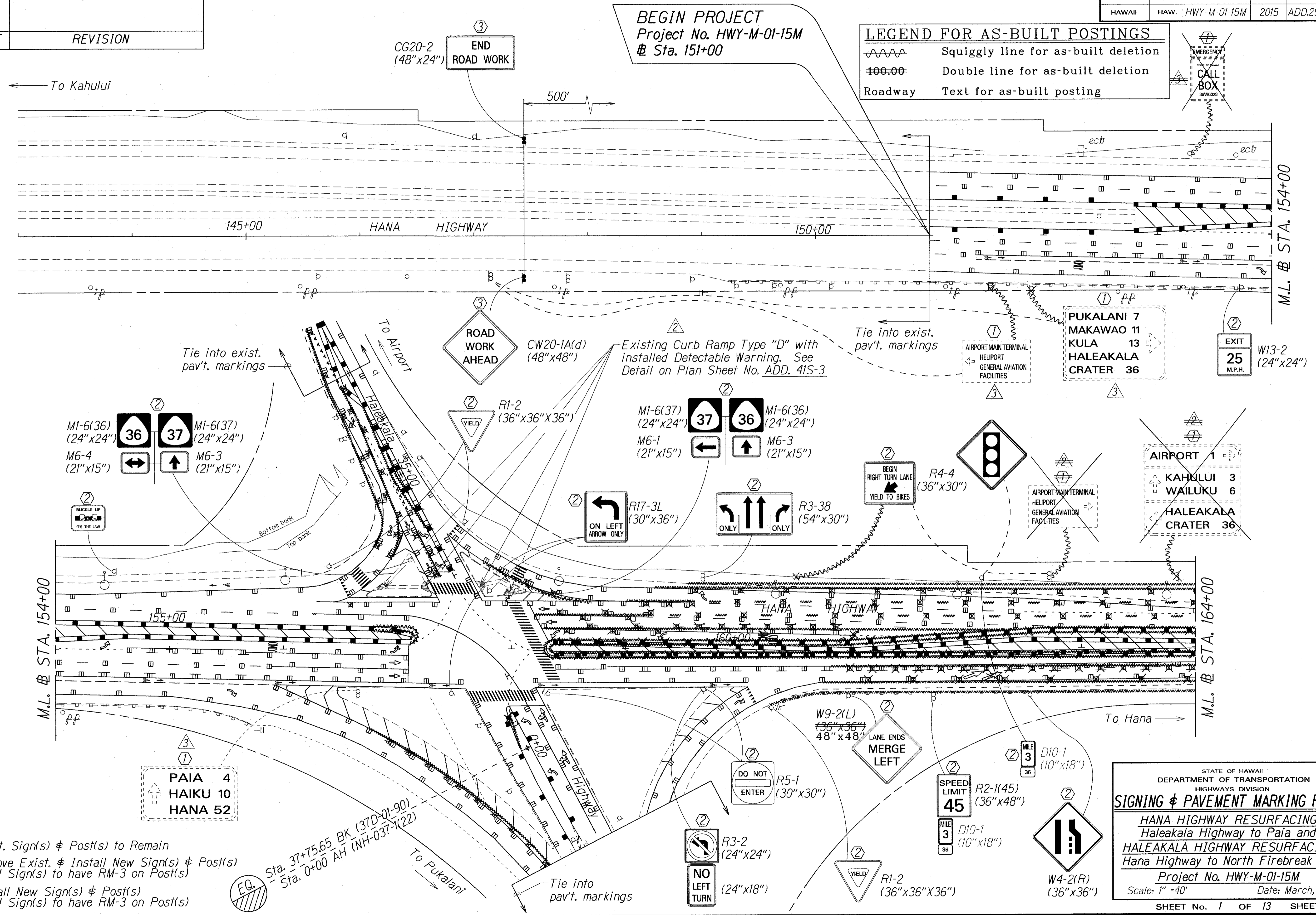


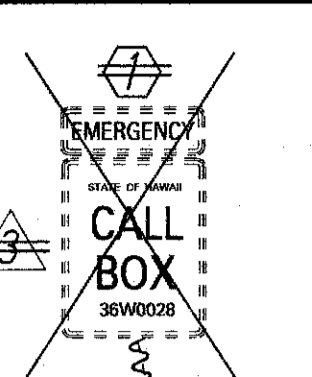
4-15-16	Destination Signs and Notes.
DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	ADD.29	41



LEGEND FOR AS-BUILT POSTINGS

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



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

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)

Sta. 37+75.65 BK (37D-01-90)
 Sta. 0+00 AH (NH-037-122)

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

HANA HIGHWAY RESURFACING
 Haleakala Highway to Paia and
 HALEAKALA HIGHWAY RESURFACING
 Hana Highway to North Firebreak Rd.

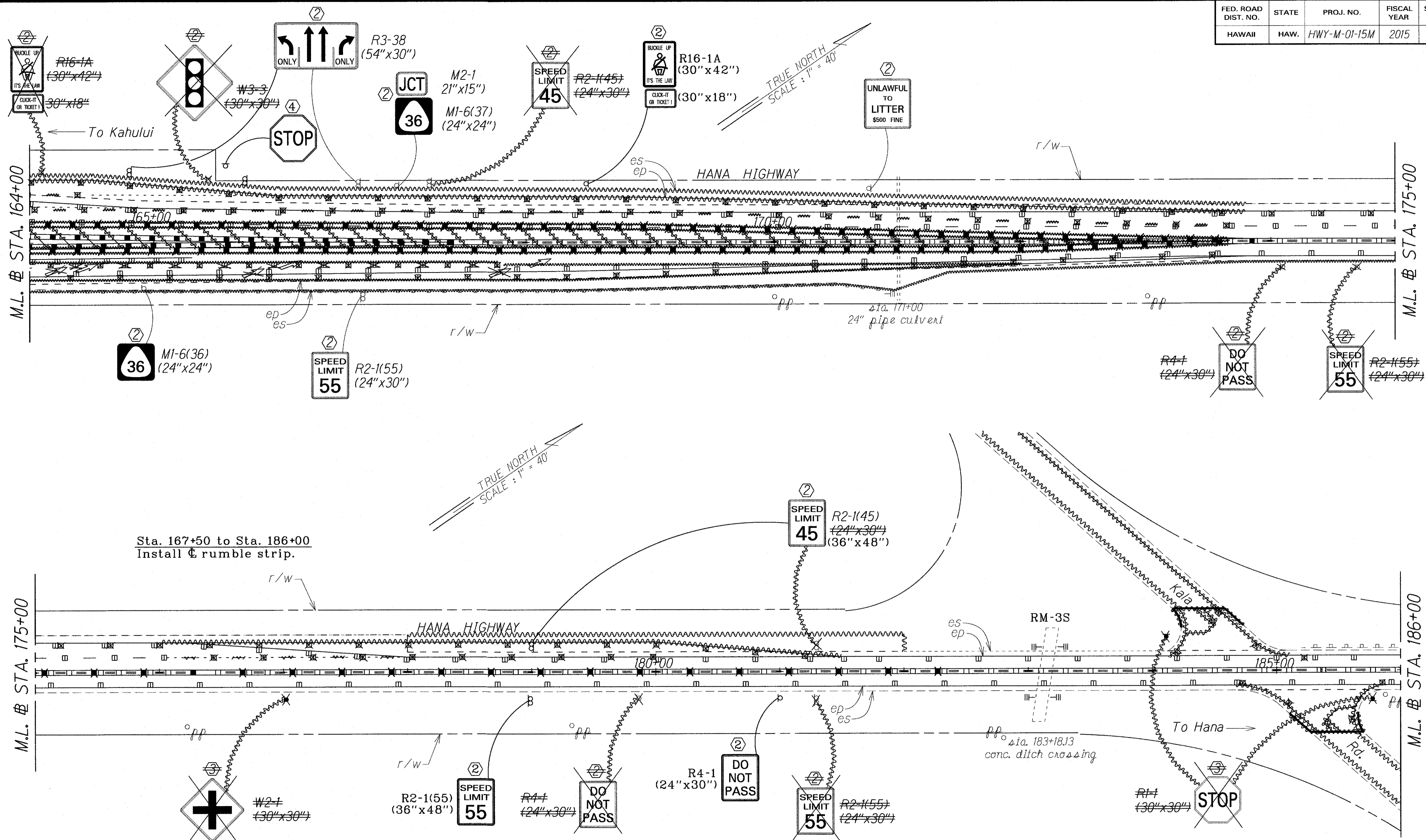
Project No. HWY-M-01-15M
 Scale: 1" = 40' Date: March, 2015

SHEET No. 1 OF 13 SHEETS

"AS-BUILT"

ADD. 29

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	30	41



Sta. 167+50 to Sta. 186+00
Install $\text{\textcircled{C}}$ rumble strip.

LEGEND FOR AS-BUILT POSTINGS

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

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)
 - ④ Remove sign and post

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.

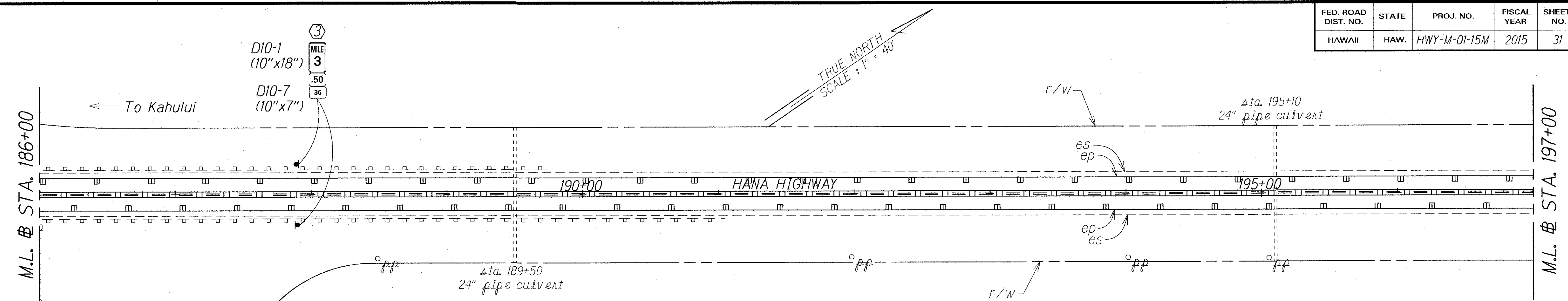
Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015

SHEET No. 2 OF 13 SHEETS

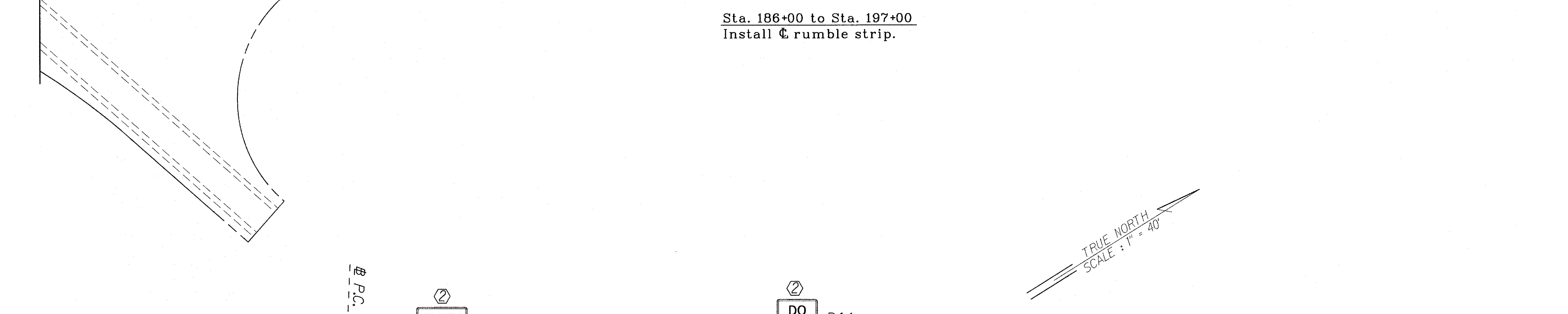
SURVEY PLOTTED BY	DATE
DRAWN BY	12/2/13
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	31	41



Sta. 186+00 to Sta. 197+00
Install C rumble strip.



Sta. 197+00 to Sta. 208+00
Install C rumble strip.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
TRACED BY		12/03
NOTES FOR CONTRACTORS BY		
CHECKED BY		

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

- KEY:
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s)
& All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s)
& All Sign(s) to have RM-3 on Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

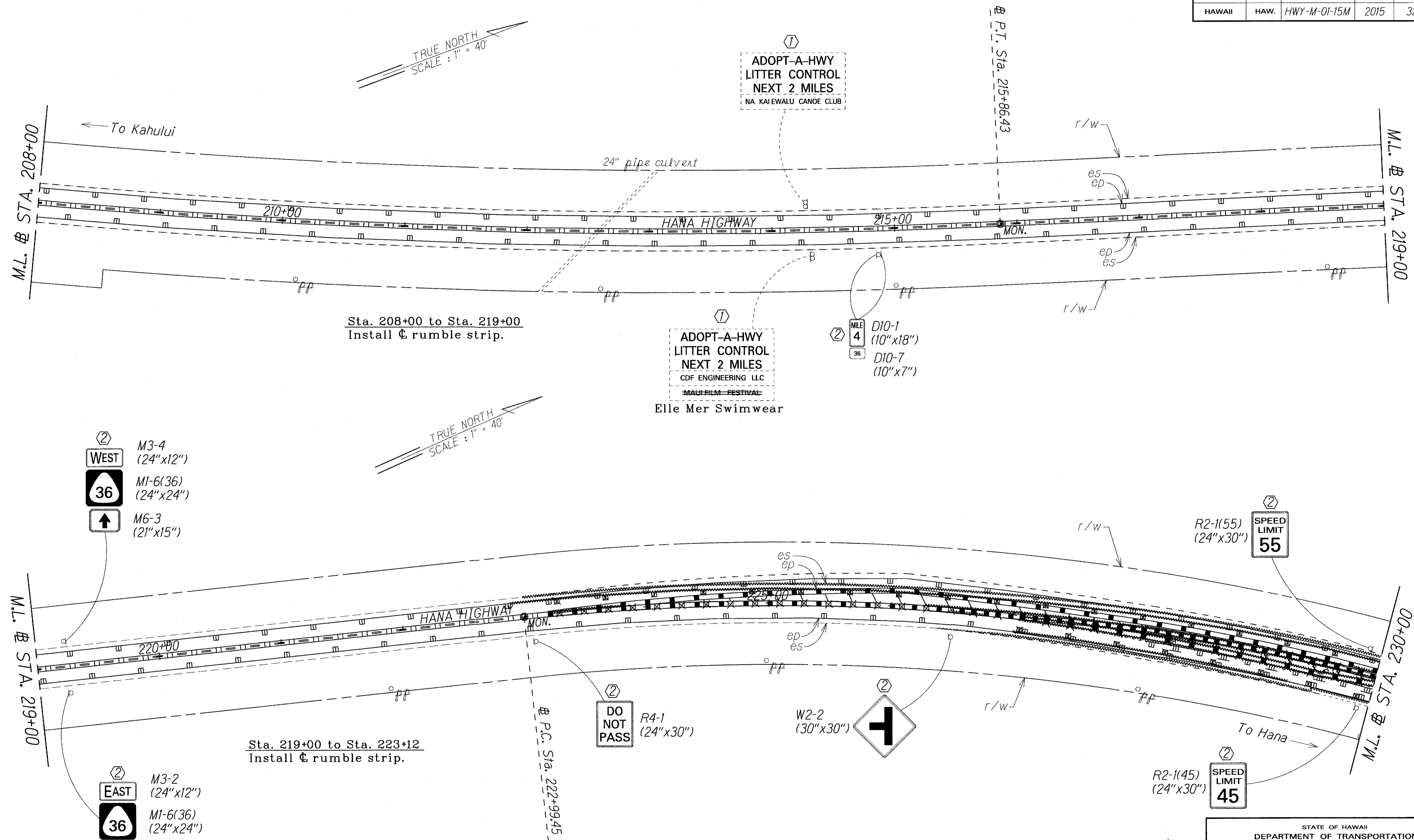
*HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.*

Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015

SHEET No. 3 OF 13 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	32	41



- WEST (24"x12")
- M3-4 (24"x12")
- M1-6(36) (24"x24")
- M6-3 (21"x15")

- EAST (24"x12")
- M3-2 (24"x12")
- M1-6(36) (24"x24")
- M6-3 (21"x15")

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

- KEY:
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)

SURVEY PLOTTED BY	DATE
DRAWN BY	12/03
NOTE BOOK	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

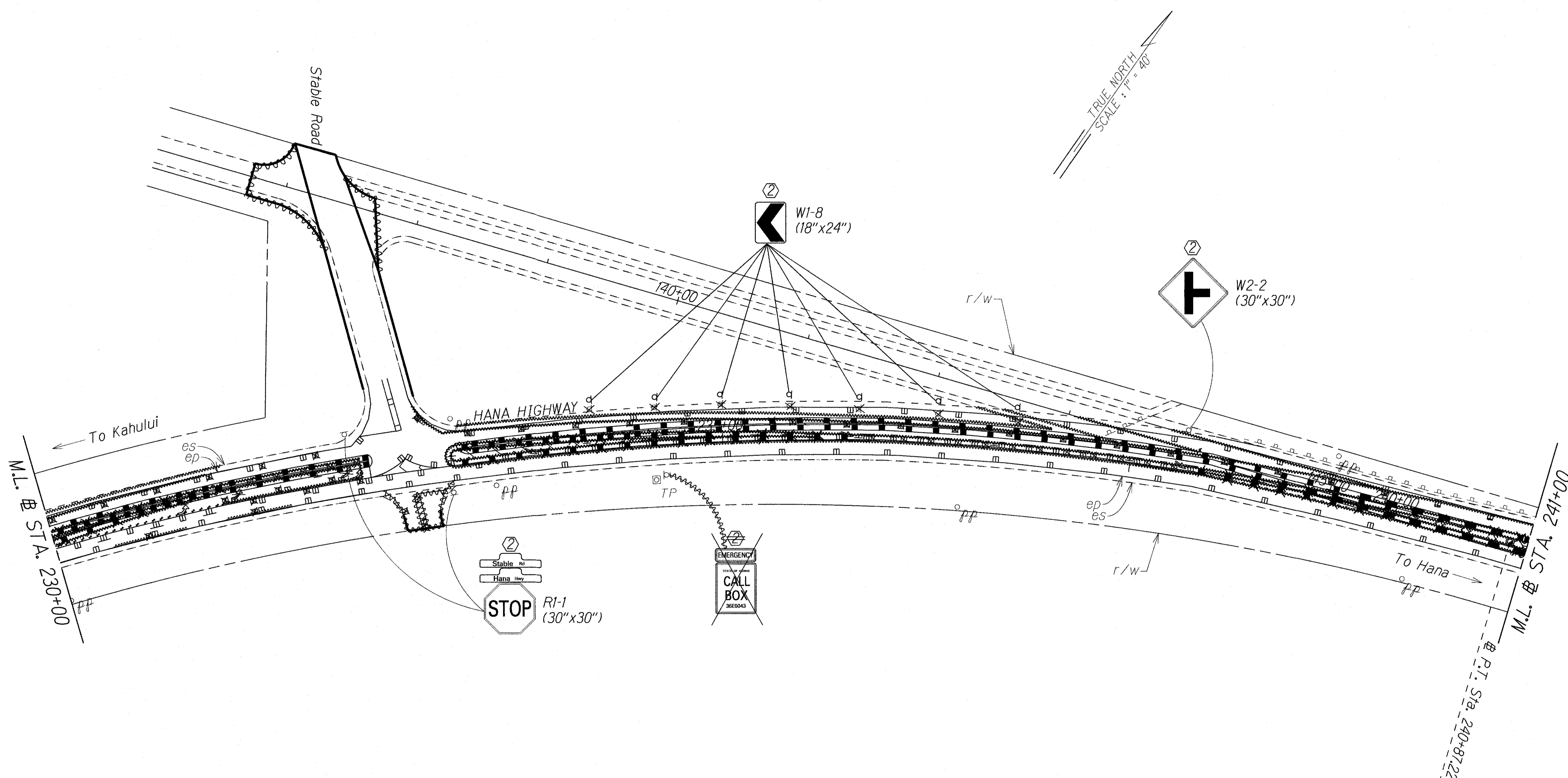
HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.

Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015

SHEET No. 4 OF 13 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	33	41



SURVEY PLOTTED BY	DATE
DRAWN BY	12/02
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

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

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s)
& All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s)
& All Sign(s) to have RM-3 on Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

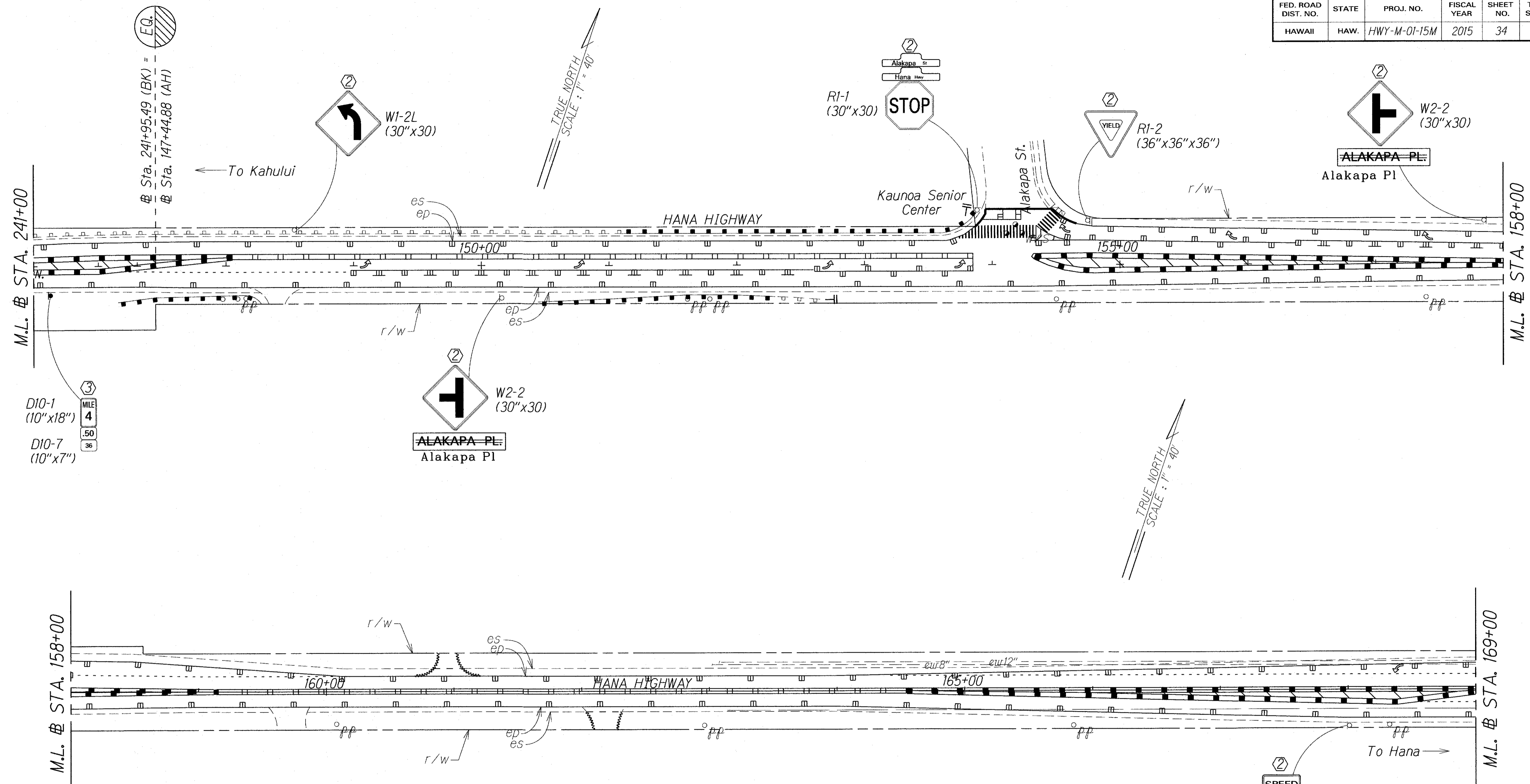
HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.

Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015

SHEET No. 5 OF 13 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	34	41



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	12/2013
QUANTITIES BY	CHECKED BY	

LEGEND FOR AS-BUILT POSTINGS

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

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

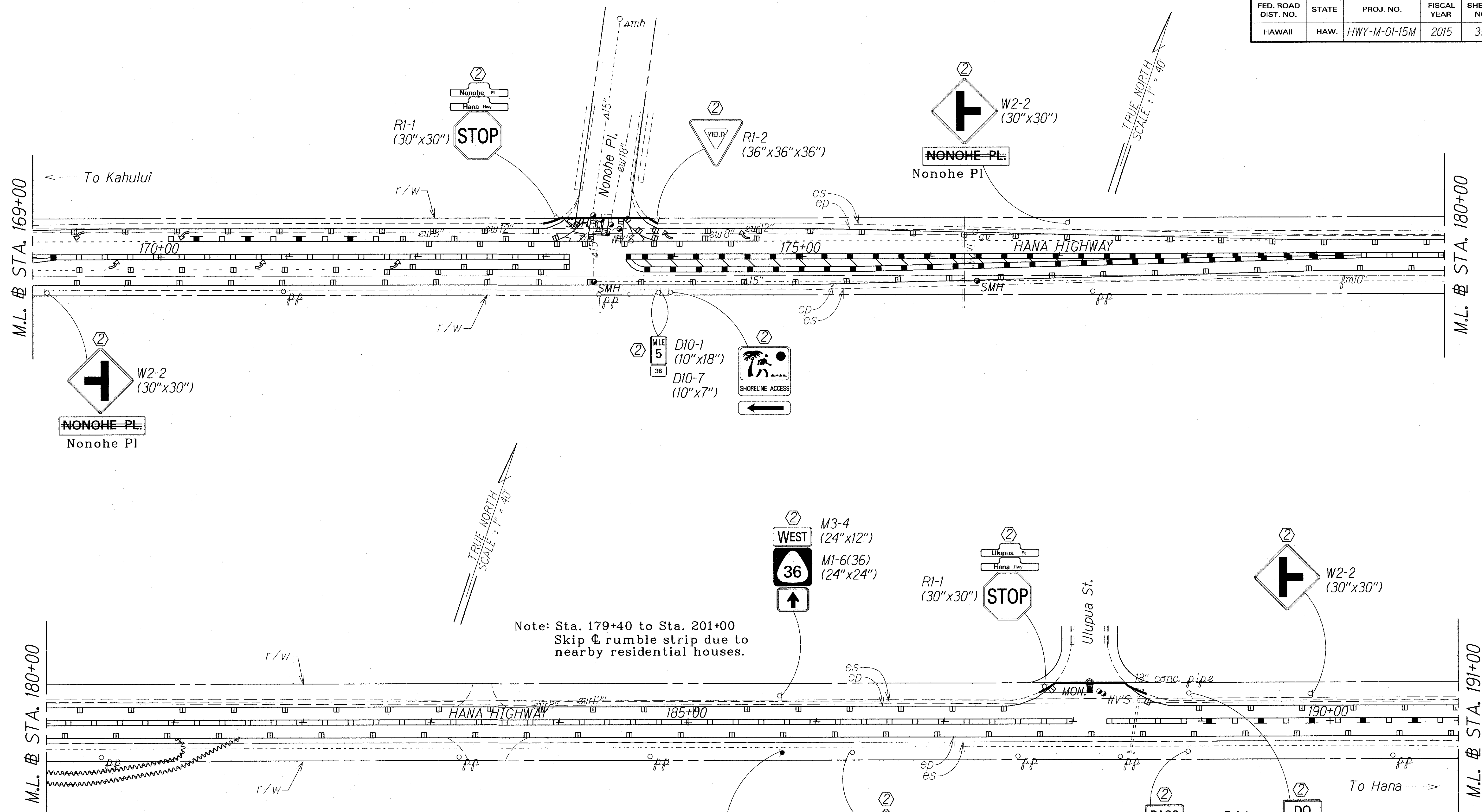
*HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.*

Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015

SHEET No. 6 OF 13 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	35	41



Note: Sta. 179+40 to Sta. 201+00
Skip \oslash rumble strip due to nearby residential houses.

SURVEY PLOTTED BY	DATE
DRAWN BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

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

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

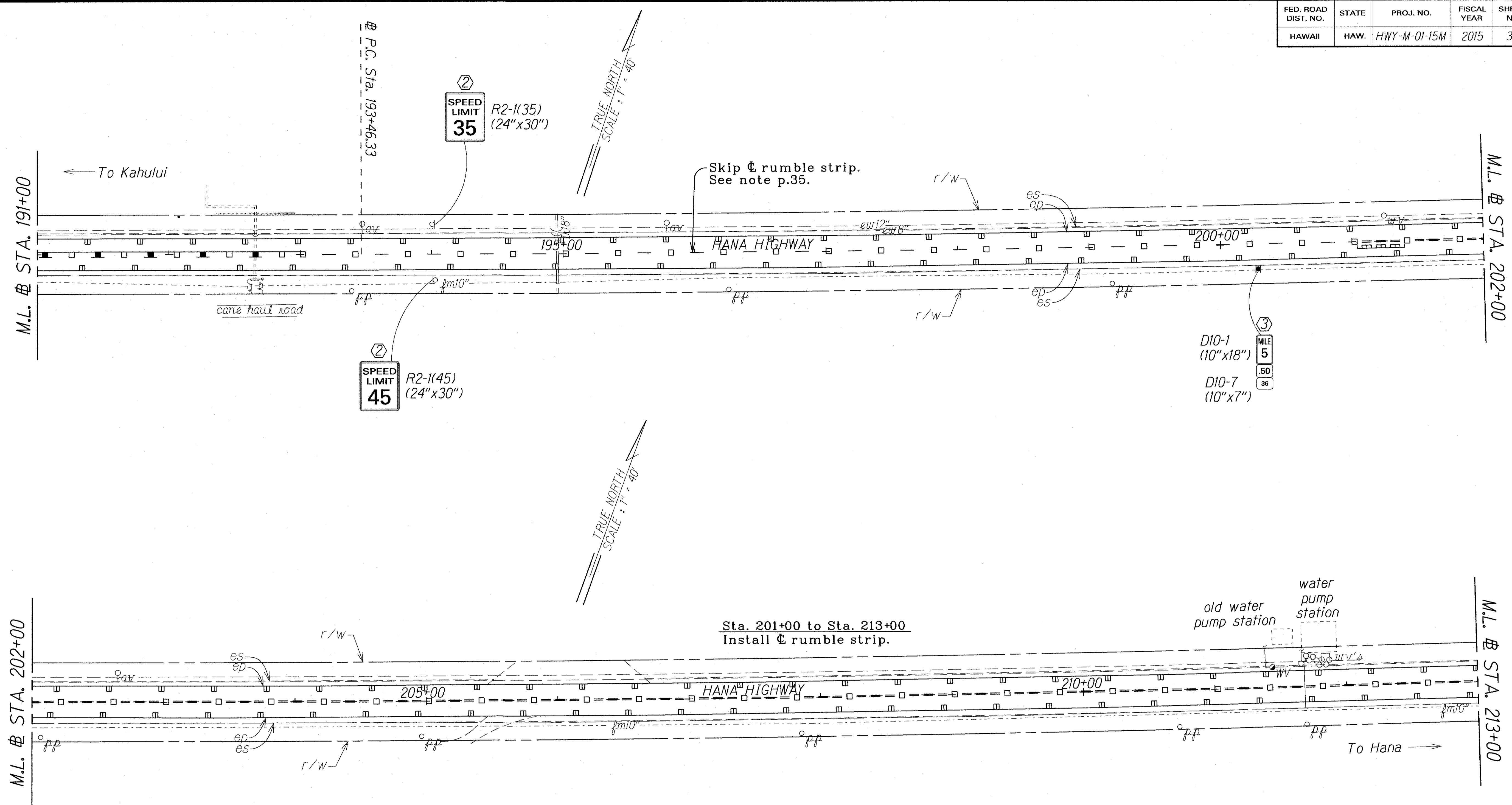
*HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.*

Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015

SHEET No. 7 OF 13 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	36	41



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

LEGEND FOR AS-BUILT POSTINGS

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

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
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& All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s)
& All Sign(s) to have RM-3 on Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

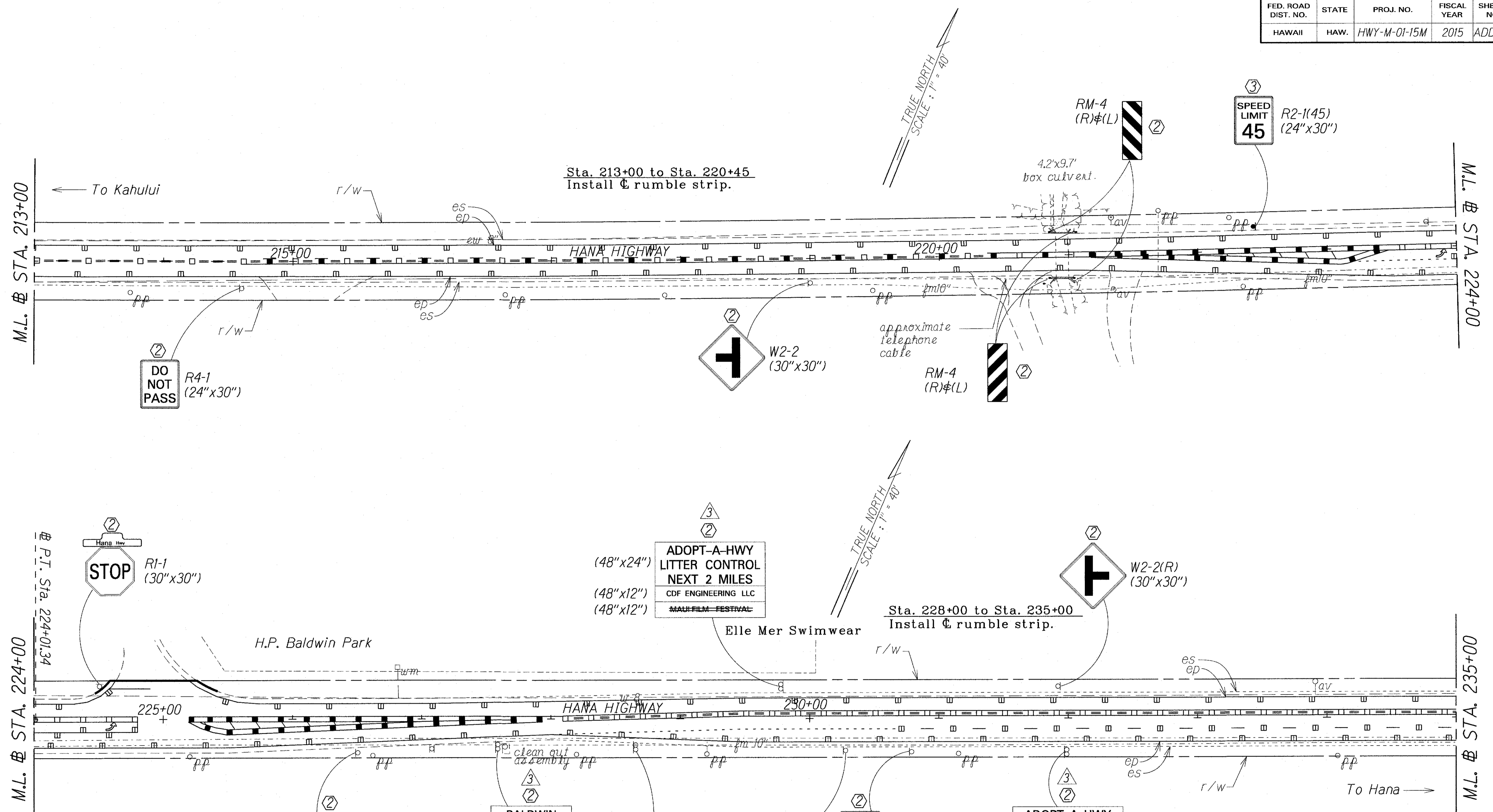
HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.

Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015

SHEET No. 8 OF 13 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	ADD.37	41



SURVEY PLOTTED BY	DATE
DRAWN BY	
NOTED BY	
CHECKED BY	

4-15-16	Signs & Pavement Markings.
DATE	REVISION

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s)
& All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s)
& All Sign(s) to have RM-3 on Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

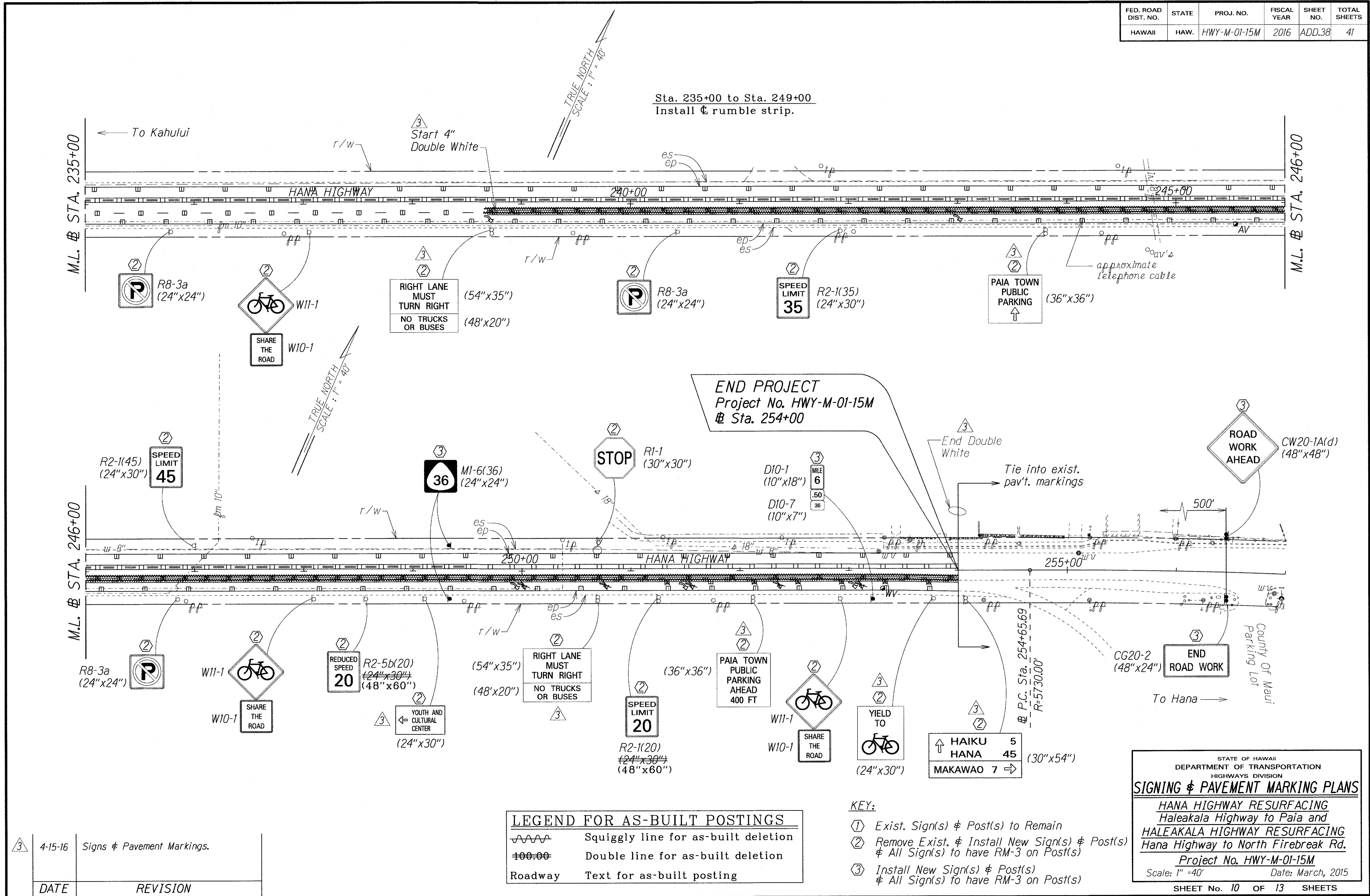
SIGNING & PAVEMENT MARKING PLANS

*HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.*

Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015

SHEET No. 9 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2016	ADD.38	41



SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	

DATE	REVISION
4-15-16	Signs & Pavement Markings.

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

- KEY:
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

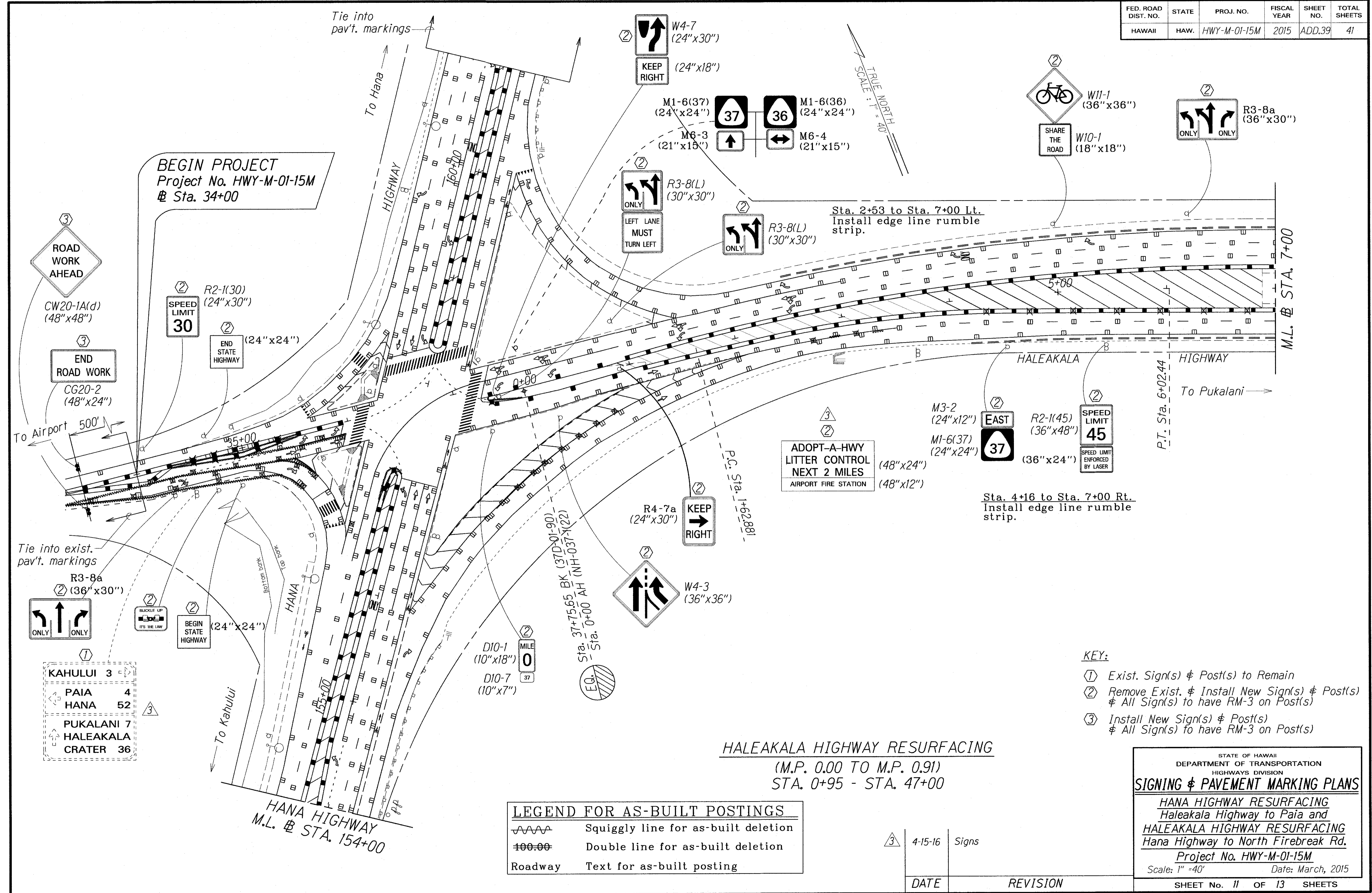
HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.

Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015
SHEET No. 10 OF 13 SHEETS

"AS-BUILT"

ADD. 38

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	ADD.39	41



BEGIN PROJECT
Project No. HWY-M-01-15M
Sta. 34+00

ROAD WORK AHEAD
CW20-1A(d)
(48"x48")

END ROAD WORK
CG20-2
(48"x24")

SPEED LIMIT 30
R2-1(30)
(24"x30")

END STATE HIGHWAY
(24"x24")

Tie into exist. pav't. markings

R3-8a
(36"x30")

BUCKLE UP IT'S THE LAW

BEGIN STATE HIGHWAY
(24"x24")

KAHULUI	3
PAIA	4
HANA	52
PUKALANI	7
HALEAKALA CRATER	36

HANA HIGHWAY
M.L. # STA. 154+00

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

HALEAKALA HIGHWAY RESURFACING
(M.P. 0.00 TO M.P. 0.91)
STA. 0+95 - STA. 47+00

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
 - ② Remove Exist. & Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)
 - ③ Install New Sign(s) & Post(s) & All Sign(s) to have RM-3 on Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.
Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015
SHEET No. 11 OF 13 SHEETS

4-15-16 Signs

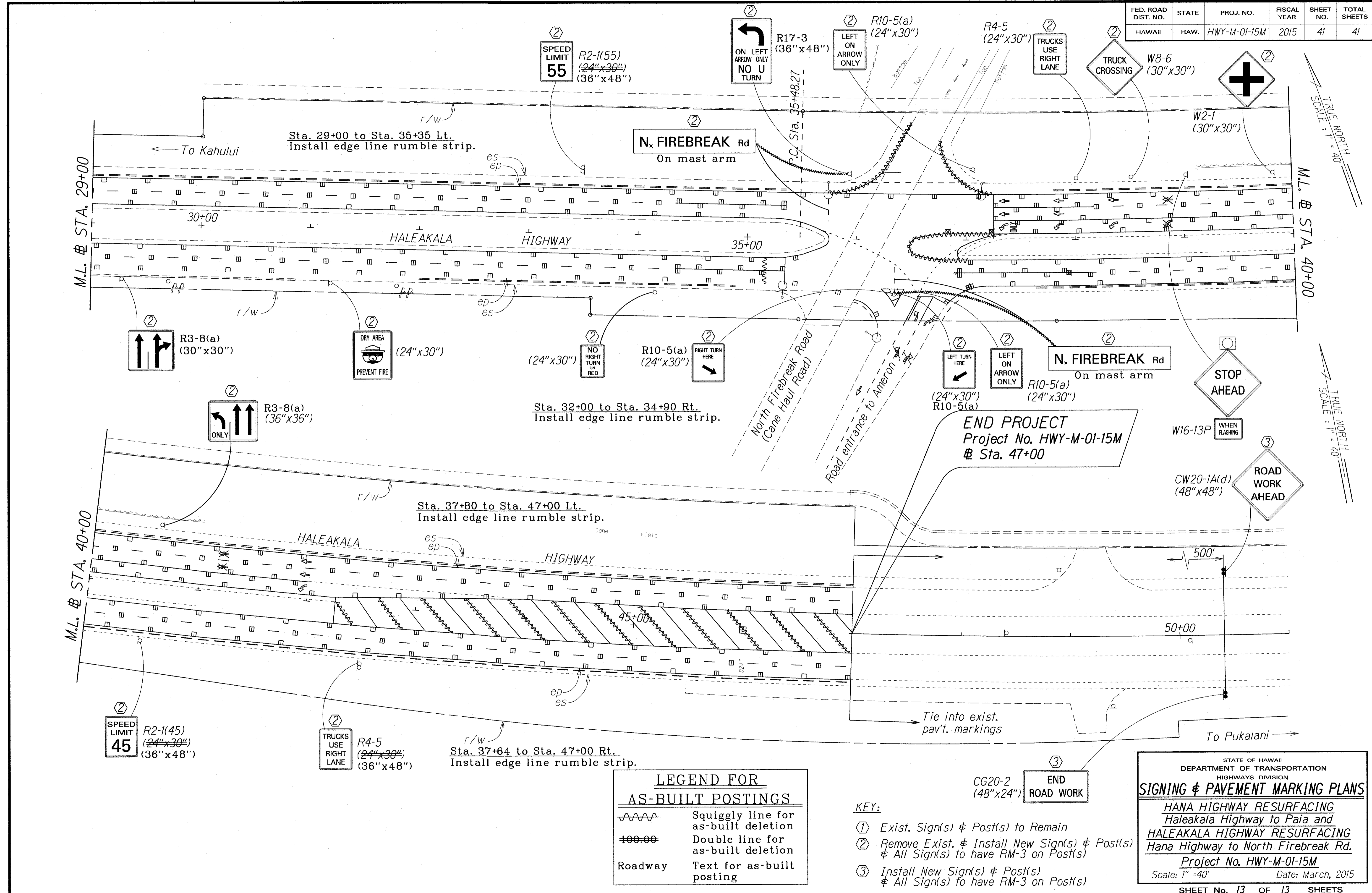
DATE	REVISION
------	----------

"AS-BUILT"

ADD. 39

SURVEY PLOTTED BY	DATE
DESIGNED BY	10/05
TRACED BY	
NOTE BOOK	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2015	41	41



TRUE NORTH
SCALE: 1" = 40'

TRUE NORTH
SCALE: 1" = 40'

SURVEY PLOTTED BY	DATE
DESIGNED BY	10/05
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
DATE	
CHECKED BY	

LEGEND FOR AS-BUILT POSTINGS

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

- KEY:**
- ① Exist. Sign(s) & Post(s) to Remain
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING & PAVEMENT MARKING PLANS

HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.

Project No. HWY-M-01-15M
Scale: 1" = 40' Date: March, 2015

SHEET No. 13 OF 13 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2016	ADD.41S-1	41

CURB RAMP AND SIDEWALK NOTES:

1. These typical details are intended as curb ramp guidelines for design and construction. These guidelines shall not replace site specific curb ramp plans.
2. A 2% maximum cross slope shall be maintained in the direction of pedestrian traffic.
3. Subject to field conditions, the Engineer shall determine the final location of curb ramps.
4. All pullboxes shall be installed away from the curb ramp and within the sidewalk/unpaved area to the maximum extent feasible.
5. Where necessary, existing pullboxes, handholes, manholes, etc. shall be adjusted to match curb ramp grade. Adjustments shall not be paid for separately but shall be considered incidental to the various curb ramp items unless indicated otherwise.
6. Transitions from ramps to gutters and roadways shall be flush.
7. Curb ramps and sidewalks shall be constructed to eliminate ponding to the maximum extent feasible.
8. The pedestrian push button shall meet operational and reach requirements of the American with Disabilities Act Accessibility Guidelines (ADAAG):
 - a) Forward Reach. The maximum height for forward reach shall be 48".
 - b) Side Reach. The maximum height for side reach shall be 48".
 - c) Operation. Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 5 lbf.
9. The maximum slopes of adjoining gutters or road surface immediately fronting the curb ramp shall not exceed 5% for Type A, D and Combination ramps and 8.33% for Type B, C, and E ramps.
10. There shall be a 30"x48" level ground surface (2% max. cross slope, both directions) for a forward or side approach, as appropriate, to a pedestrian push button.
11. Construction joints are required to join curb ramps with sidewalks.
12. Unless otherwise noted, new gutters are required as shown.
13. All curb ramps shall be reinforced with 6x6 W1.4/W1.4 welded wire fabric.
14. Surface of sidewalks and curb ramps shall be firm, stable, and slip-resistant. This includes the surfaces of pullboxes, valve covers, manhole covers, etc.
15. Bed course material is required for curb ramps, sidewalks, and gutters.
16. All sidewalks shall provide a minimum clear width of 3'-0" (excluding curb) for pedestrian circulation. If this cannot be met, a minimum 32-inch clear width is allowed for a distance of 24-inches.
17. Passing spaces along new sidewalks with 5' clear width or less shall be provided at maximum 200' intervals as required by ADA guidelines. The passing area shall be a minimum 5' wide by 5' long as feasible.
18. If possible, install utility poles, fire hydrants, light poles, sign posts, pullboxes, etc. off of sidewalk but within the right-of-way.
19. Objects protruding from utility poles and walls adjacent to the sidewalks (i.e. wall mounted fire hydrants, telephones, meters on poles, etc.) shall be mounted to meet the current American with Disabilities Act Accessibility Guidelines (ADAAG) and will be subject to Engineer's approval.
20. If a curb ramp is not constructed according to the plans, the Contractor shall reconstruct the curb ramp at no cost to the State. Construction tolerance for Portland Cement Concrete shall be based on 1/4 inch per 10 ft. (±0.2%). Remedial measures will not be accepted.
21. Additional information is available from:
 - a) American with Disabilities Act Accessibility Guidelines (ADAAG), Jan. 1998, The Access Board.
 - b) Accessible Rights-of-Way: A Design Guide, Nov. 1999, The Access Board.
 - c) Designing Sidewalks and Trails for Access, Part 1, July 1999, FHWA.
 - d) Designing Sidewalks and Trails for Access, Part 2, Sept. 2001, FHWA.
22. Pay limits for the various types of curb ramps are as shown on these typical details.
23. For curb ramps at curb returns, install Construction Joints per Standard full width sidewalk at curb return.
24. When directed by the Engineer, Sidewalk Transition Area shall be extended beyond shown plan limits to match the nearest scoreline.

R 03-02-11 TE-00 sheet 1 of 9
 tdl/ustr2/traffic/std/curbramp/rampramp-r03-02-11.dgn

ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	

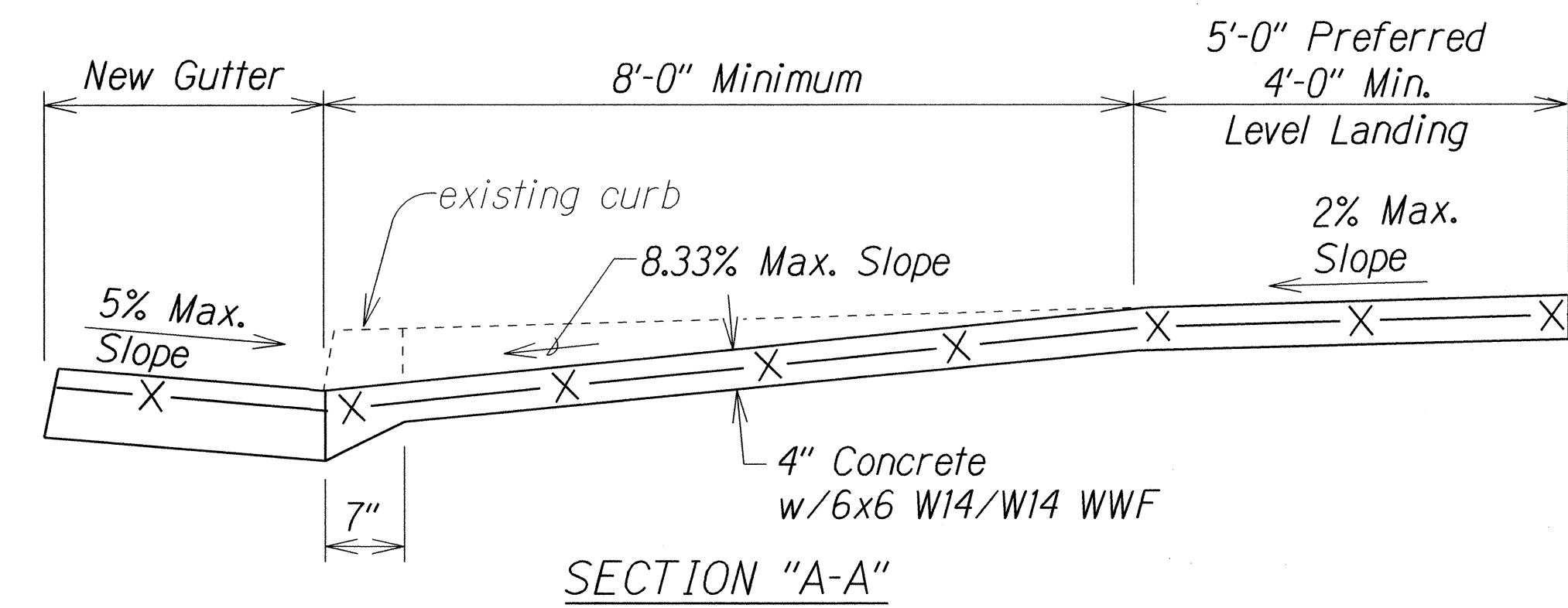
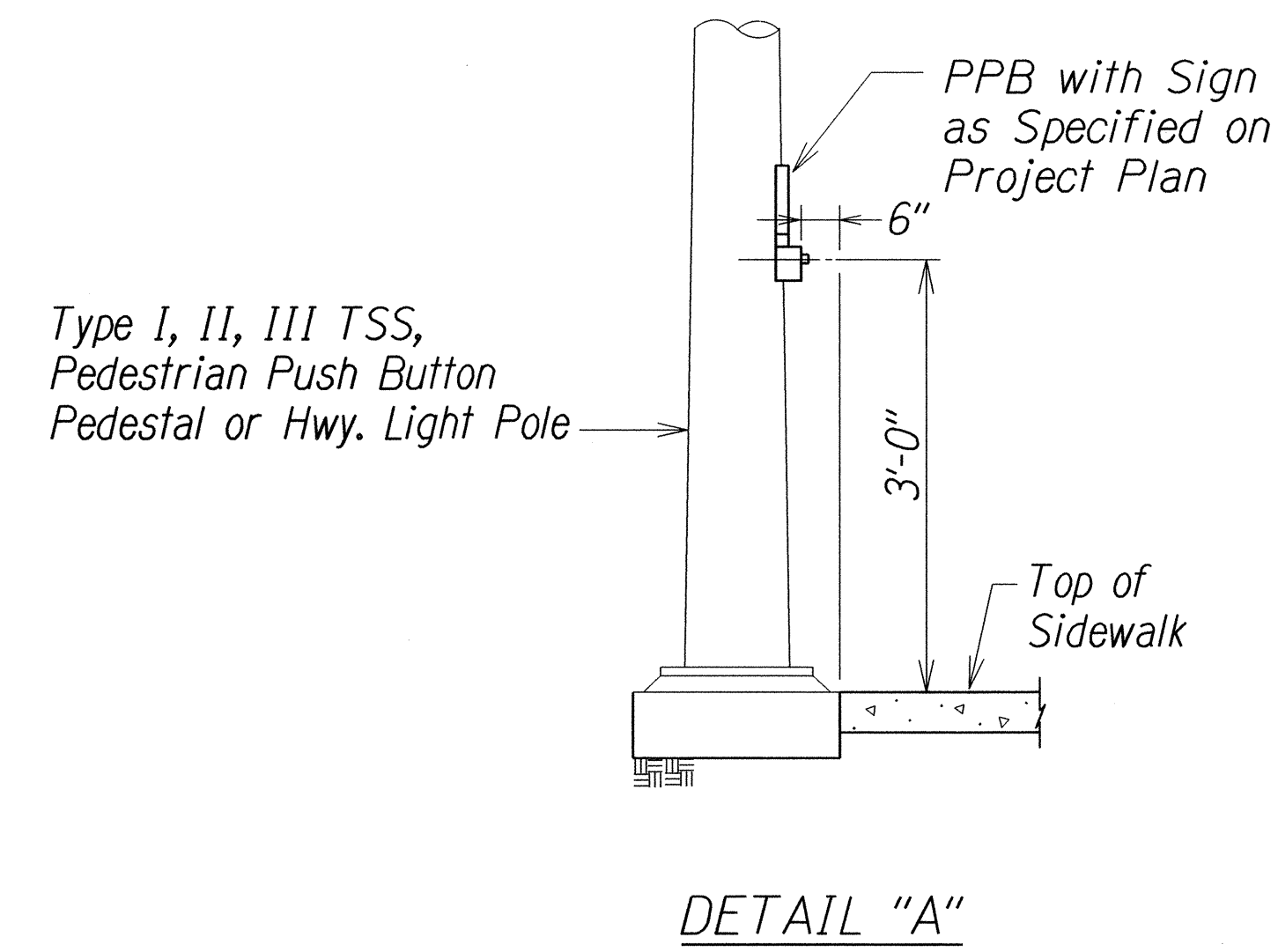
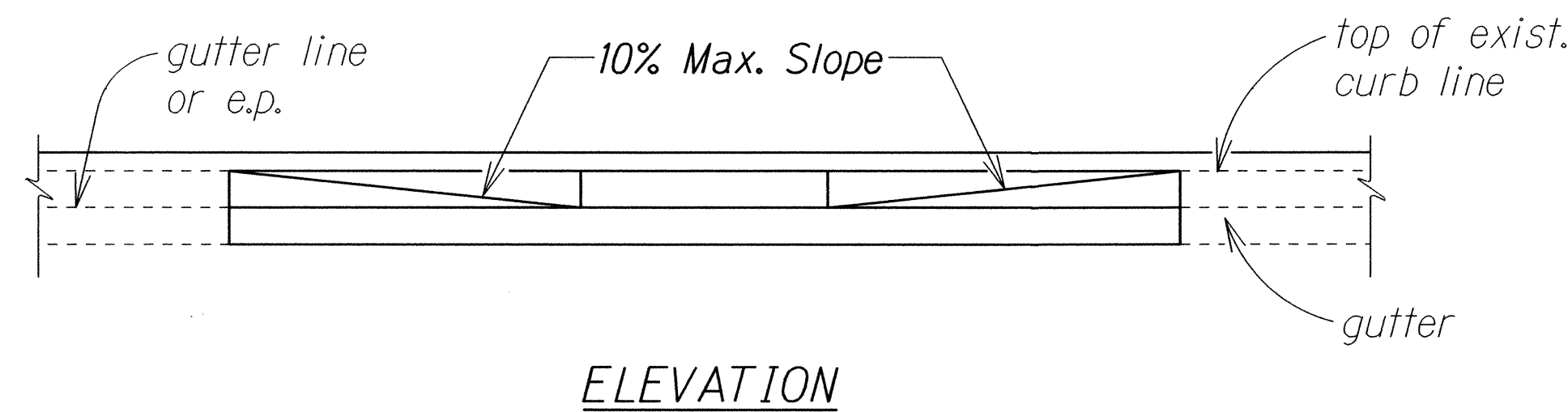
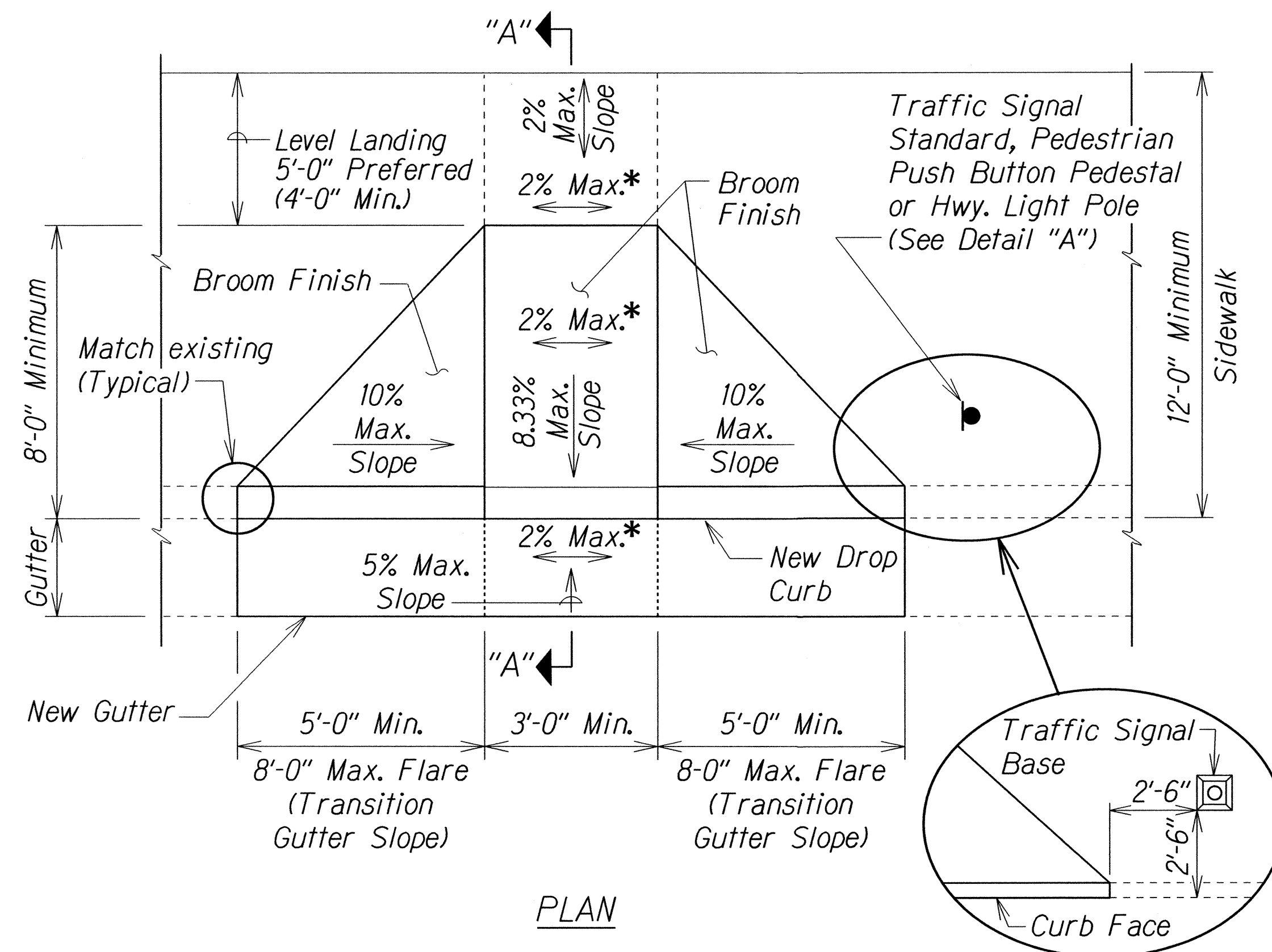
4-28-16 Added Sheet.

DATE REVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
CURB RAMP AND SIDEWALK NOTES
 HANA HIGHWAY RESURFACING
 Haleakala Highway to Paia and
 HALEAKALA HIGHWAY RESURFACING
 Hana Highway to North Firebreak Rd.
 Project No. HWY-M-01-15M
 Date: April, 2016

SHEET No. 1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2016	ADD.41S-2	41



CURB RAMP - TYPE "A"
 SIDEWALK WIDTH 12'-0" OR GREATER

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

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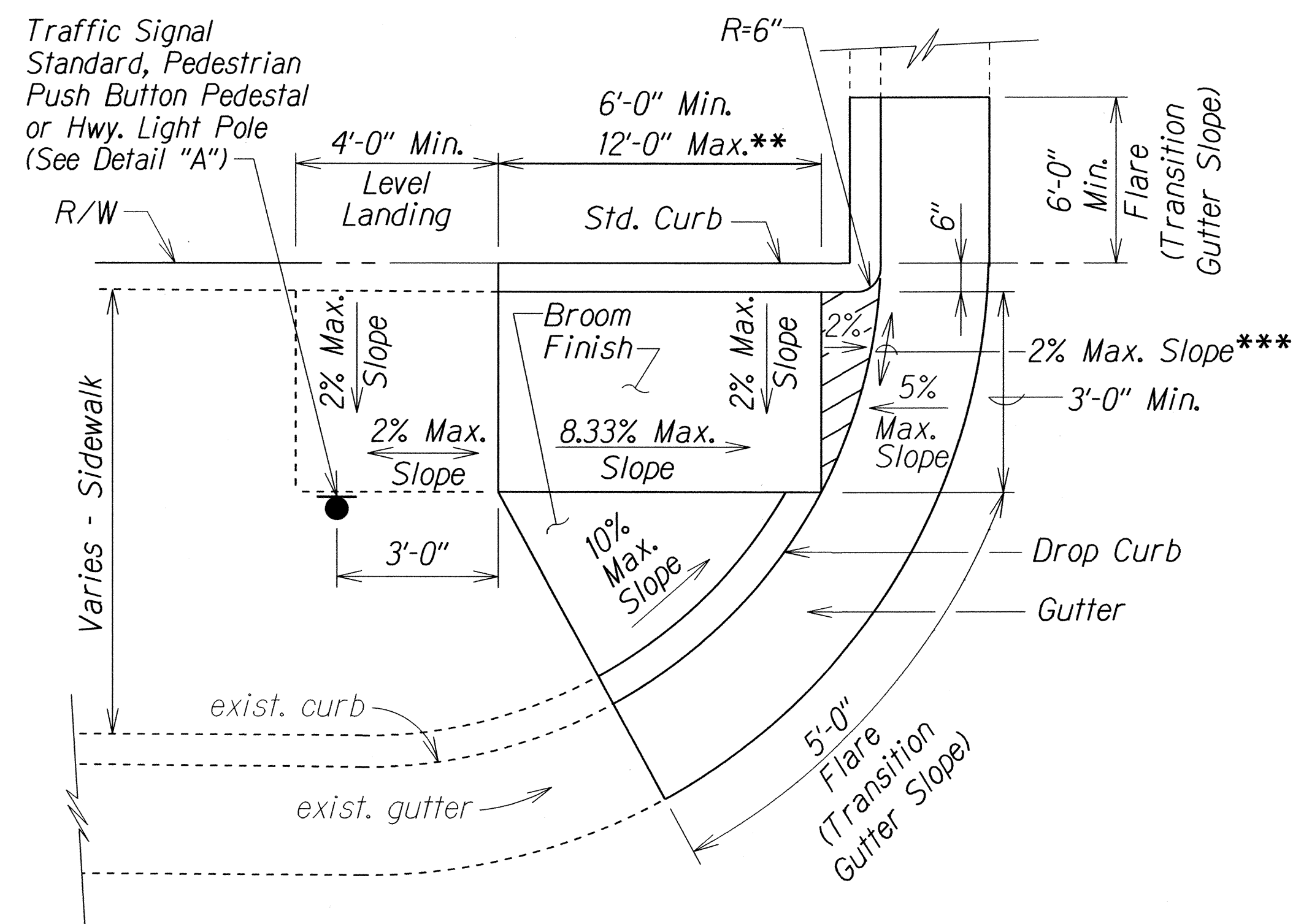
R12-06-06 TE-XX sht. 2 of 9

4-28-16 Added Sheet.

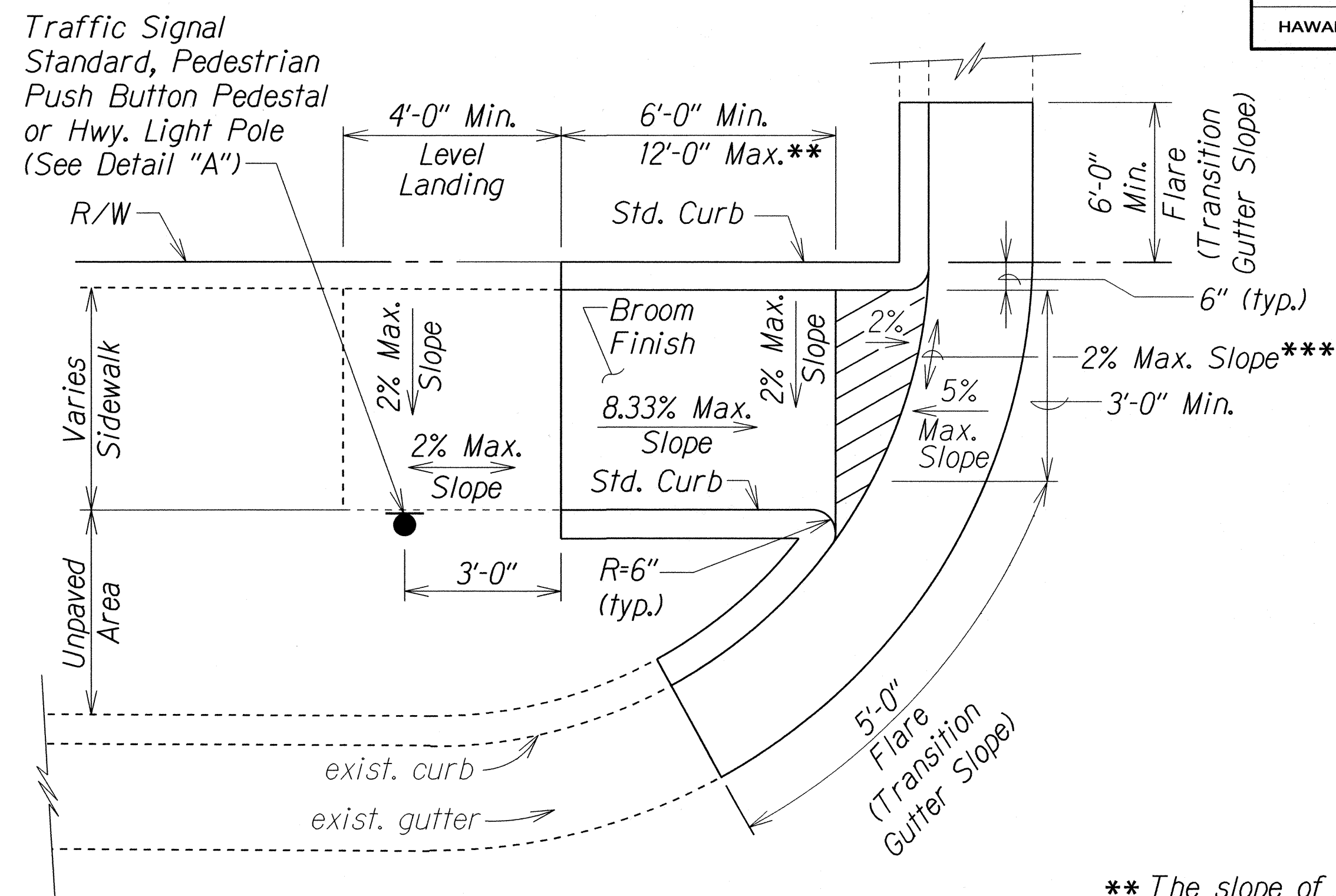
DATE REVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
CURB RAMP DETAILS
 HANA HIGHWAY RESURFACING
 Haleakala Highway to Paia and
 HALEAKALA HIGHWAY RESURFACING
 Hana Highway to North Firebreak Rd.
 Project No. HWY-M-01-15M
 Not to Scale Date: April, 2016
 SHEET No. 2 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2016	ADD.41S-3	41



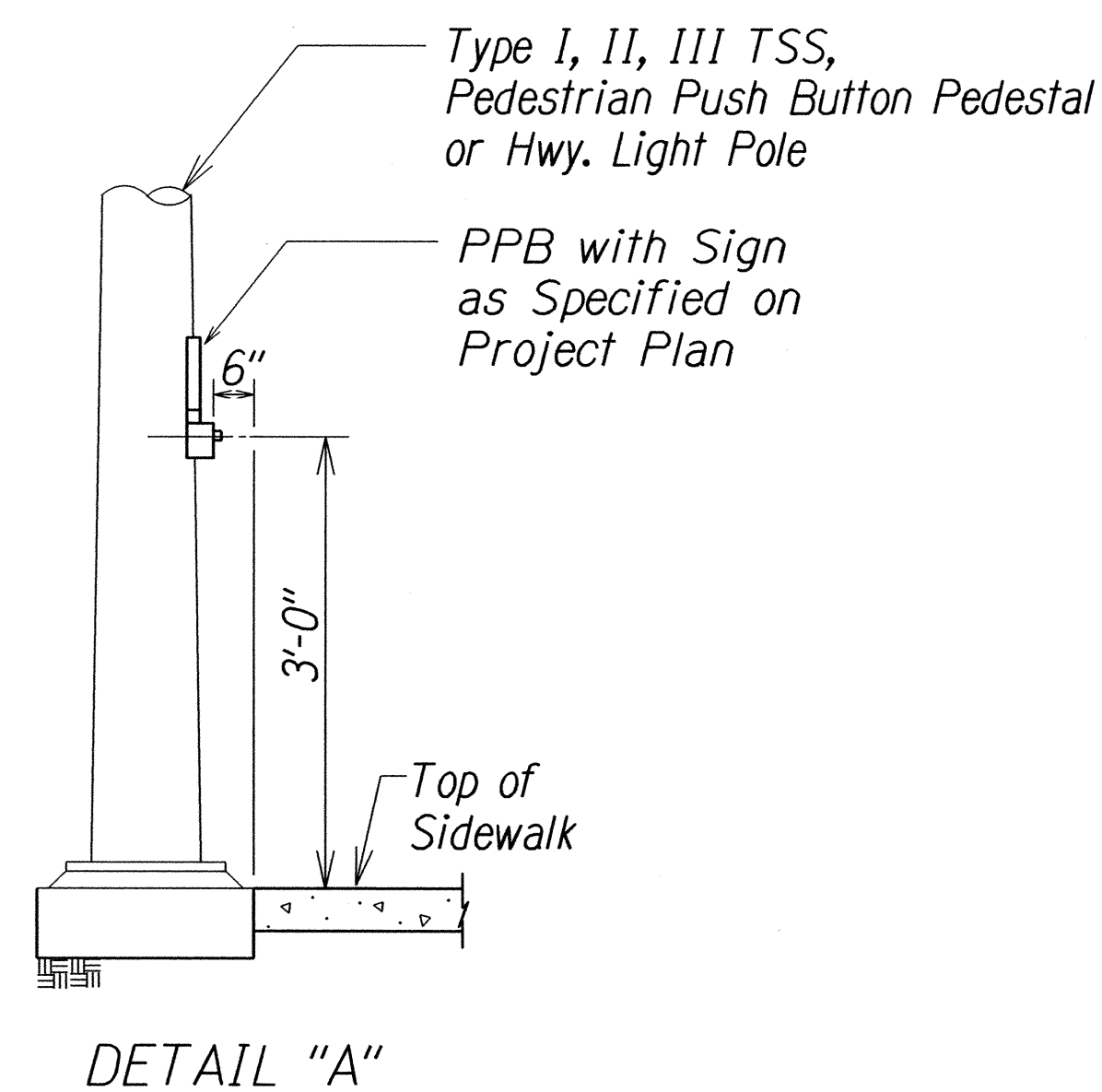
CURB RAMP - TYPE "D"



CURB RAMP - TYPE "D" MODIFIED

** The slope of the ramp shall take precedence over the length of the ramp. If the maximum slope of a ramp cannot be met within a length of 12 feet, then the slope of the ramp shall be set when the length of the ramp is set at the maximum of 12 feet.

*** If Roadway Slope >2% Conform to Roadway Slope and File a Technical Infeasibility (TI) Statement



DETAIL "A"

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

td1/ust2/traffic/std/curbramp/rampcd-r12-06-06.dgn

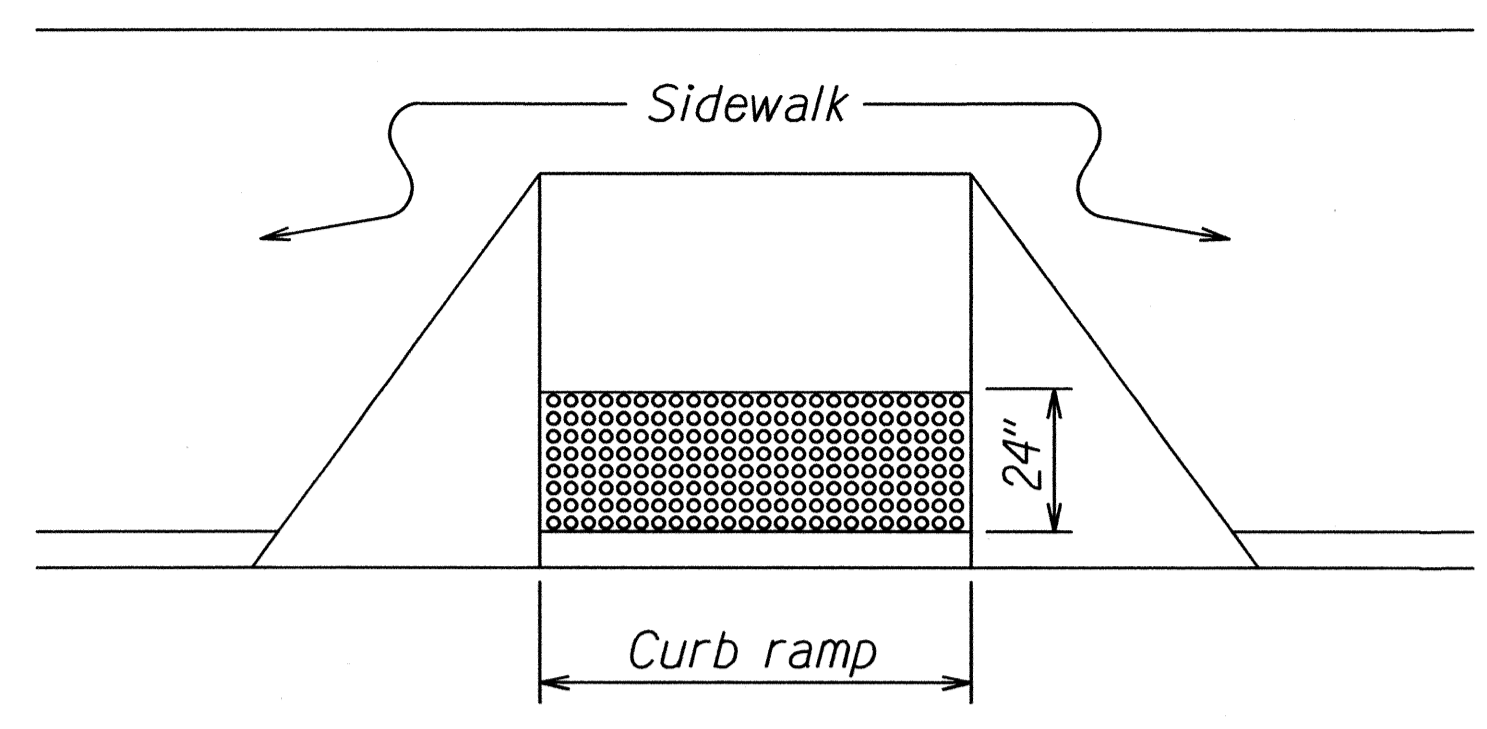
R12-06-06 T.E.XX shi. 5 of 9

4-28-16 Added Sheet.

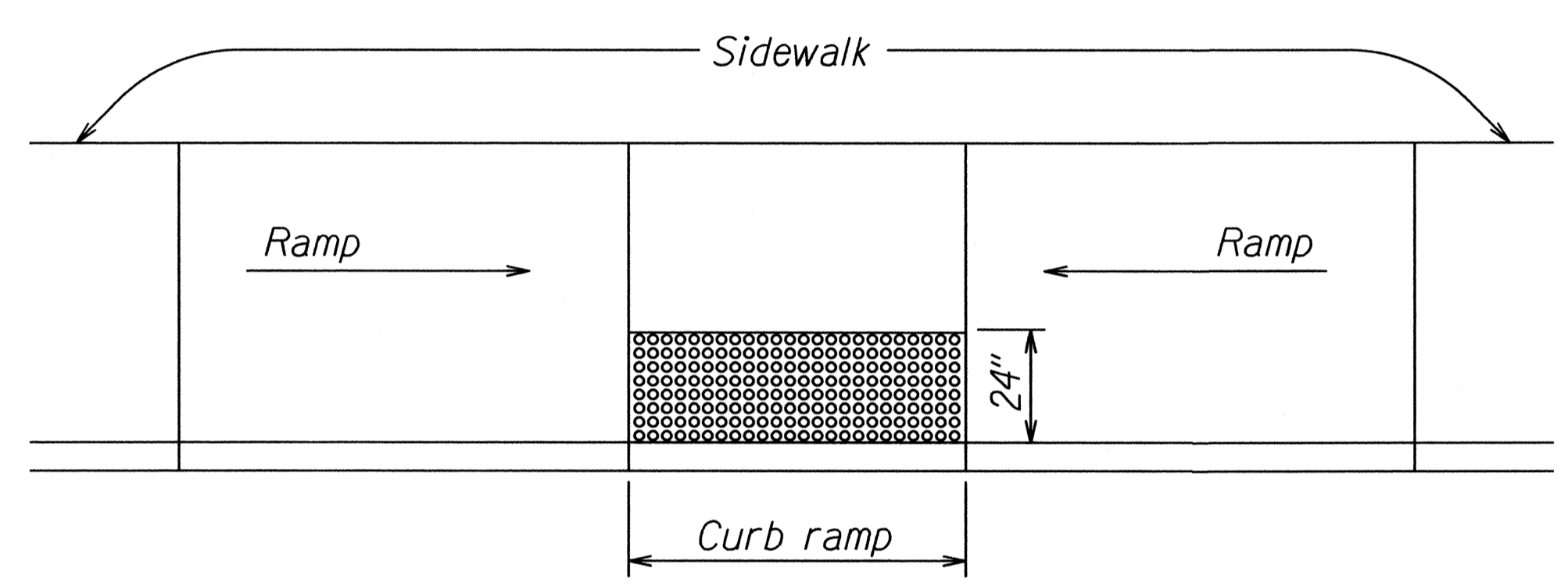
DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
CURB RAMP DETAILS
HANA HIGHWAY RESURFACING
Haleakala Highway to Paia and
HALEAKALA HIGHWAY RESURFACING
Hana Highway to North Firebreak Rd.
Project No. HWY-M-01-15M
Not to Scale Date: April, 2016
SHEET No. 3 OF 5 SHEETS

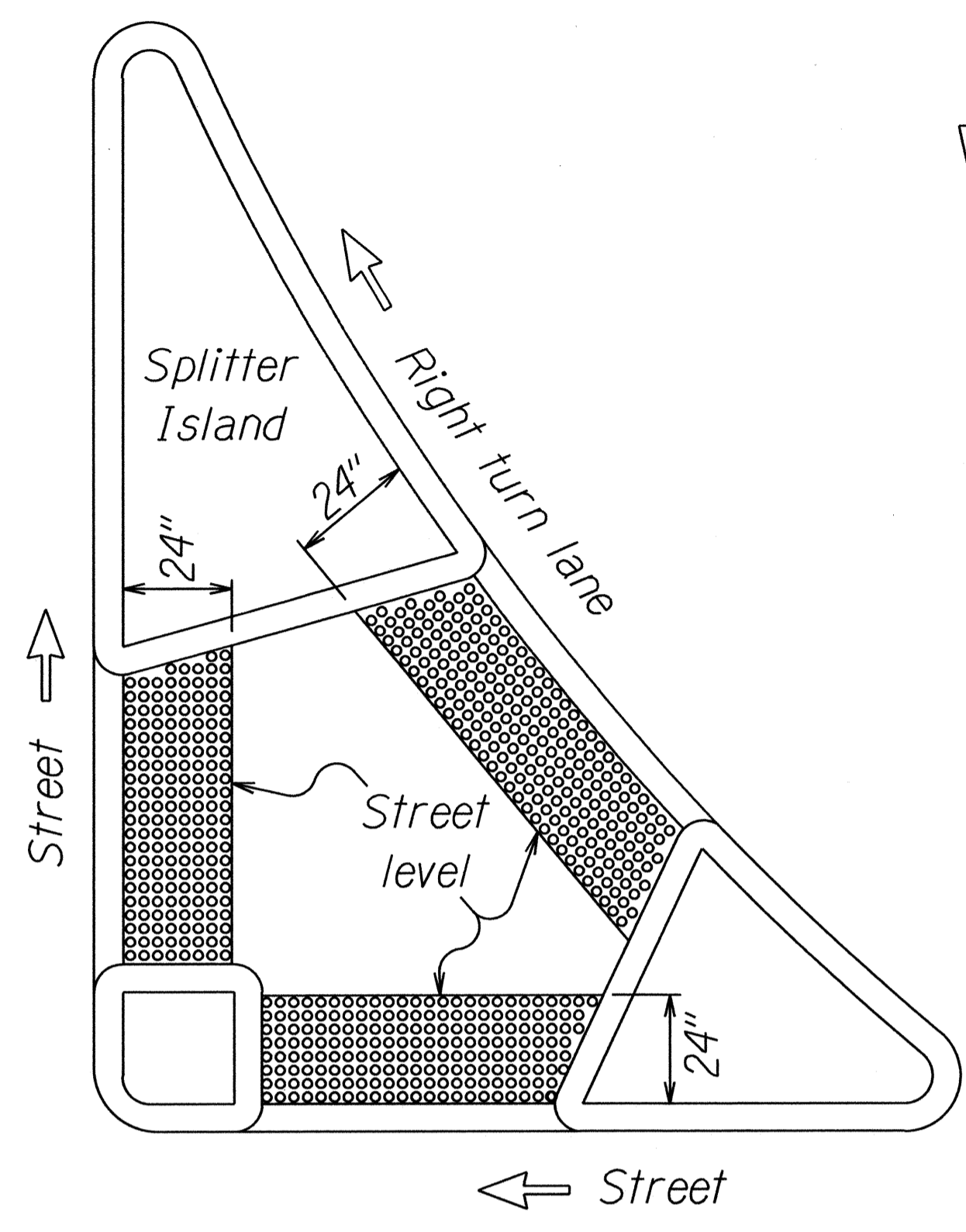
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2016	ADD.41S-4	41



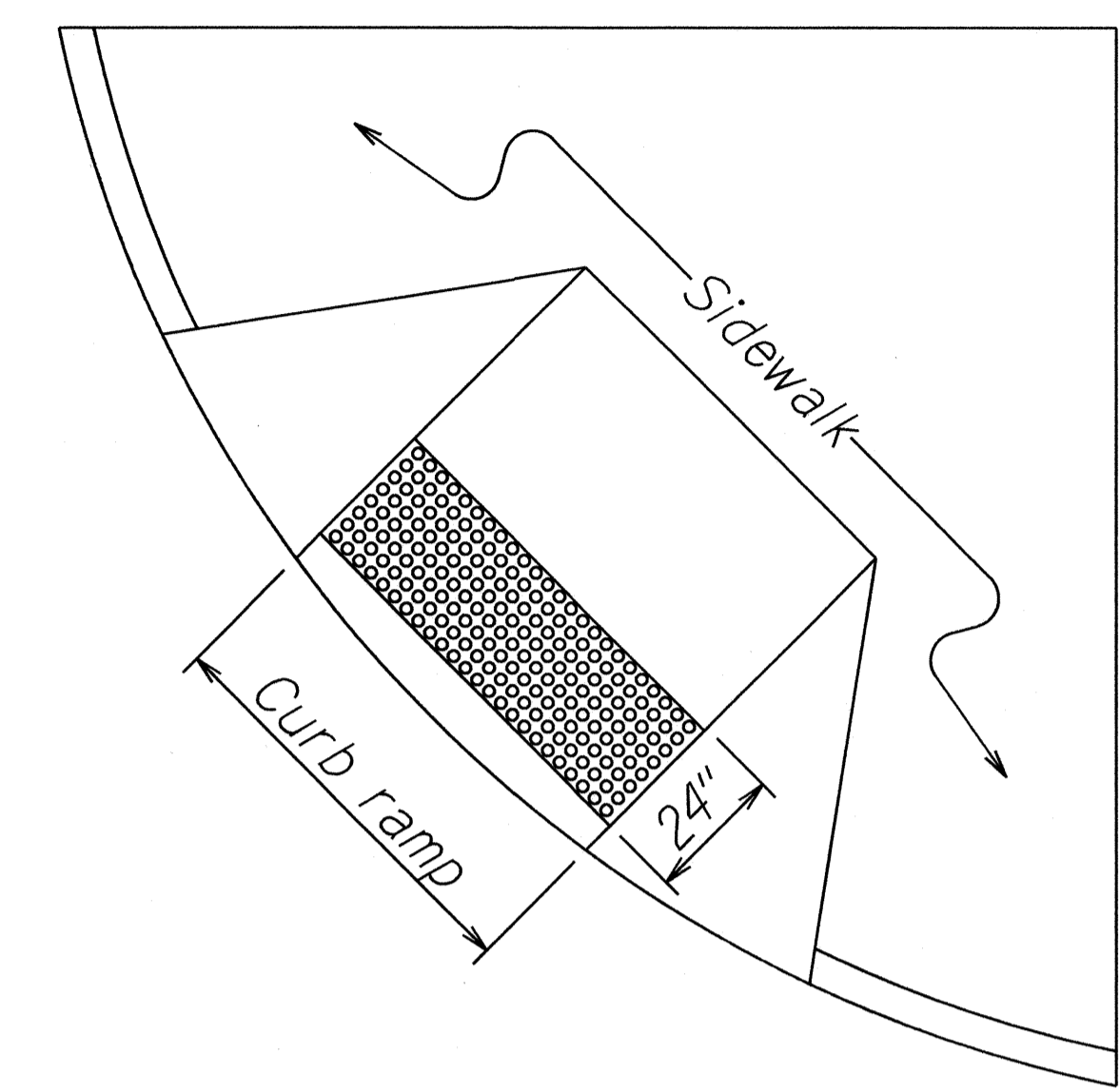
DETECTABLE WARNING AT CURB RAMP



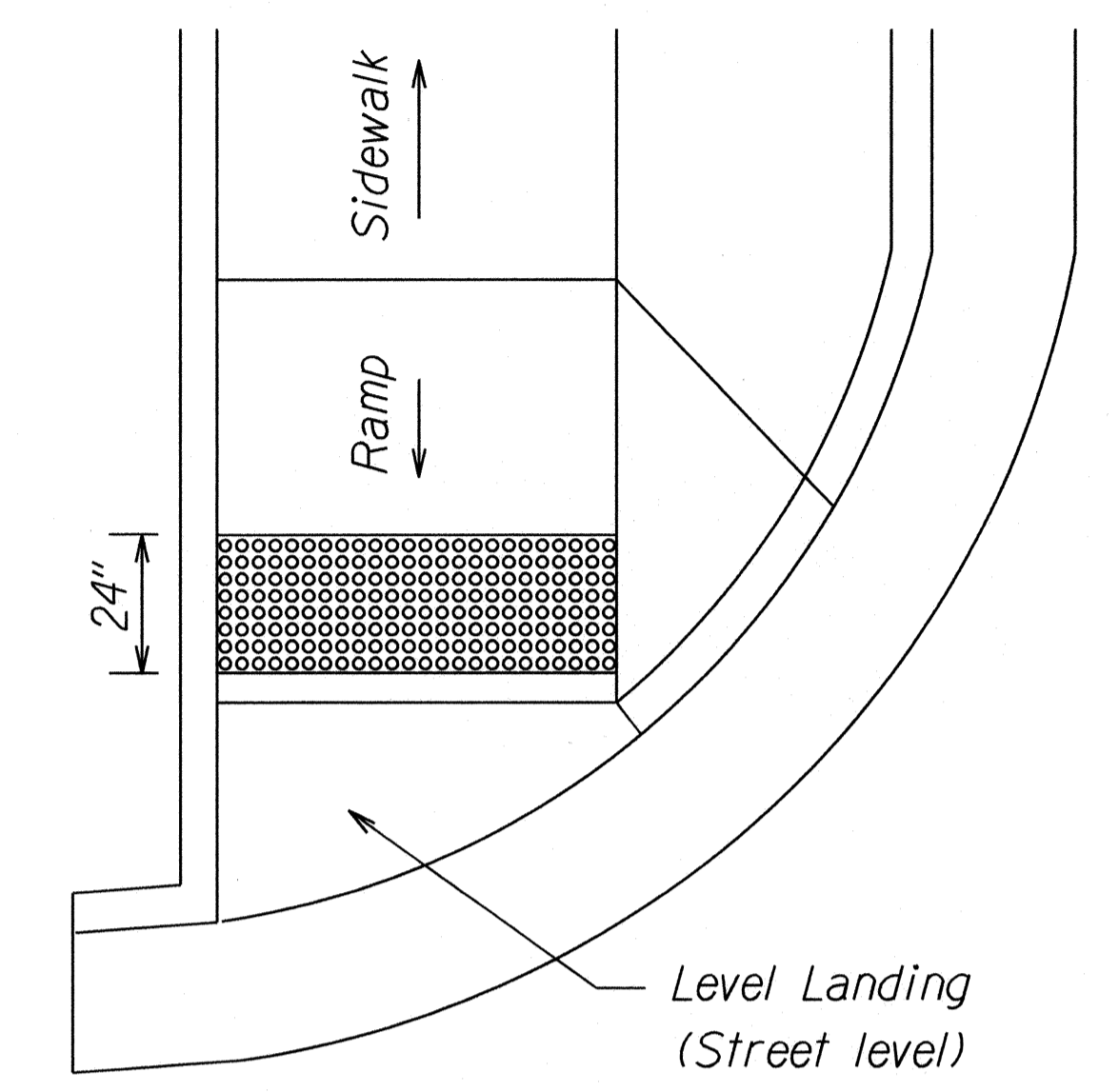
TRANSITION RAMP WITH DETECTABLE WARNING



REFUGE ISLAND WITH DETECTABLE WARNING



SHARED CURB RAMP WITH DETECTABLE WARNING



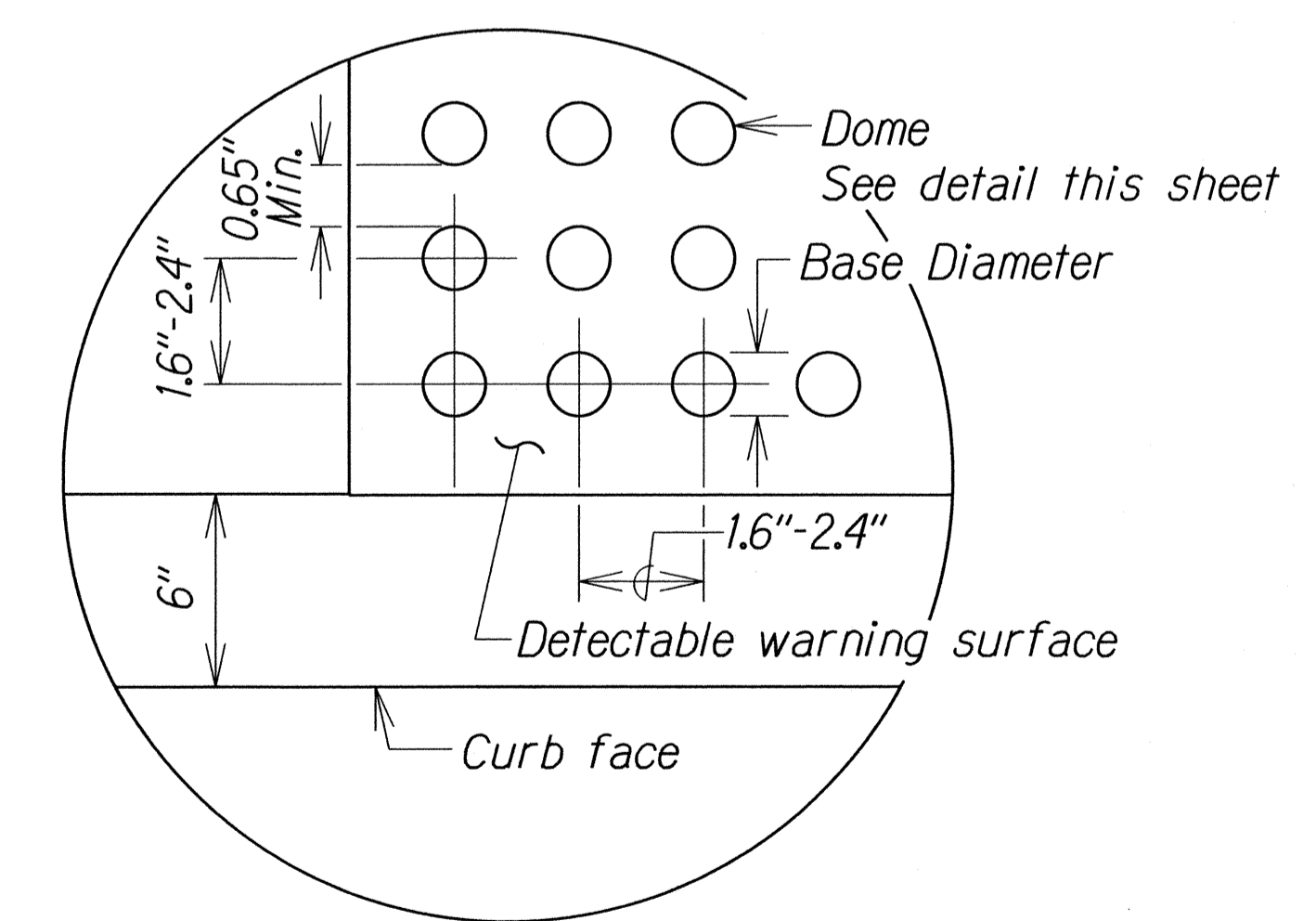
END OF SIDEWALK CURB RAMP WITH DETECTABLE WARNING

TYPICAL INSTALLATION OF DETECTABLE WARNINGS

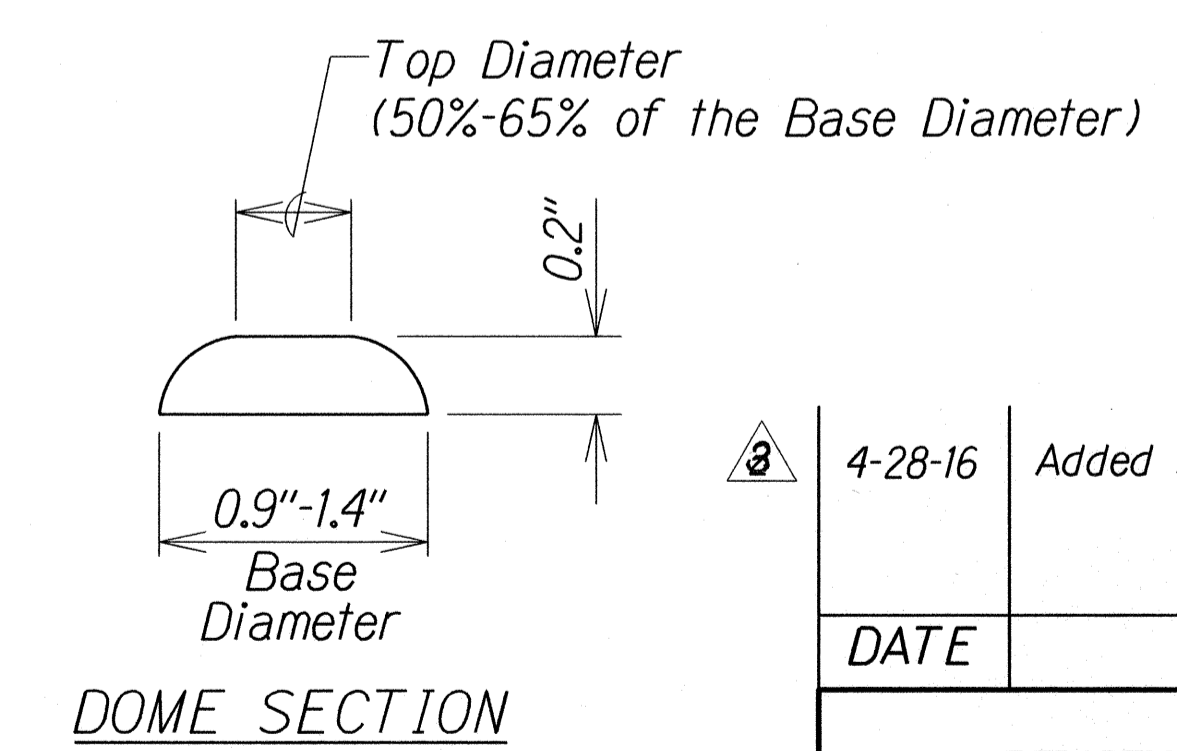
Not to Scale

NOTES:

1. Detectable warnings shall be 24 inches in the direction of travel and extend the full width of the curb ramp or flush surface (does not include flares).
2. Truncated domes shall have a diameter of 0.9 to 1.4 inch at the bottom, a diameter of 50%-65% of the base diameter at the top, a height of 0.2 inch and a center-to-center spacing of 1.6 to 2.4 inches measured along one side of a square arrangement.
3. Domes shall be aligned on a square grid in the predominant direction of travel to permit wheels to roll between the domes.
4. There shall be a minimum of 70 percent contrast in light reflectance between the detectable warning and an adjoining surface, or the detectable warning shall be "safety yellow".
5. The material used to provide visual contrast shall be an integral part of the detectable warning surface.
6. The detectable warning shall be located so that the edge nearest the curb line or other potential hazard is 6 to 8 inches from the curb line.



ENLARGEMENT



DOMES SECTION

DETECTABLE WARNING DETAIL

Not to Scale

4-28-16	Added Sheet.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION DETECTABLE WARNING DETAILS HANA HIGHWAY RESURFACING Haleakala Highway to Paia and HALEAKALA HIGHWAY RESURFACING Hana Highway to North Firebreak Rd. Project No. HWY-M-01-15M Scale: As Shown Date: April, 2016	
SHEET No. 4 OF 5 SHEETS	

ORIGINAL PLAN DATE
 DRAWN BY
 CHECKED BY
 SURVEY PLOTTED BY
 TRACED BY
 QUANTITIES BY
 R12-06-06 TE-XX stt. 9 of 9
 tdl/usr2/traffic/std/curbramp/detect-r12-06-06.dgn

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2016	ADD.41S-6	41

ELECTRONIC VEHICLE COUNTING (EVC) SYSTEM NOTES

- The location of new sensor loops and piezo sensors shall be staked out in the field by the Contractor and approved by the Engineer prior to installation.
- The Contractor shall inform the Engineer at least three days prior to saw-cutting pavement and installing sensor loops and piezo sensors.
- Pull in in-bound lanes sensor loop cable and piezo sensor lead cables into conduit, where indicated. Cables shall be tested for acceptance before and after installation into conduit.
- Piezo lead cables shall be continuous with no splices.
- The Contractor shall restore all affected areas to their original condition. This item of work shall not be paid for separately, but shall be considered incidental to work of other paid items.
- The Contractor shall verify the location of the existing utilities and underground structures whether or not it is shown on the plans.
- The Contractor shall assume that existing underground utilities not shown on the plans may exist. The Contractor shall be responsible for contacting the different utility companies for information and toning.
- The Contractor shall be held liable for any damages incurred to the existing utilities and underground structures as a result of his operations. All damaged portions shall be replaced in accordance with the standards and specifications of the affected utility company at no cost to the State.
- Changes to the contract plans and specifications will not be permitted, unless approved by the Engineer in writing.
- All cables are to be terminated within the EVC cabinet and shall have a minimum 12" additional slack.
- Highway crossing conduit shall be provided with 36" cover.
- Vacuum, pressure wash and air dry by air compressor and clean sawcut thoroughly before installing sensors and/or cables and filling with epoxy loop sealant or PU200 Piezo Installation Resin.
- All Saw-cutting Slurry shall be Wet Vacuumed, either simultaneous with or immediately after the Saw-cutting operations. The collected Slurry shall be disposed of appropriately (i.e., either, placed in a Filter Fabric Lined Filtration Box or in a Filter Fabric Lined Dug Up Retention/Percolation Basin, and after Filtration/Percolation, the Filter Fabric and the retained sediments, disposed of appropriately).
- Dry saw-cutting shall not be permitted.

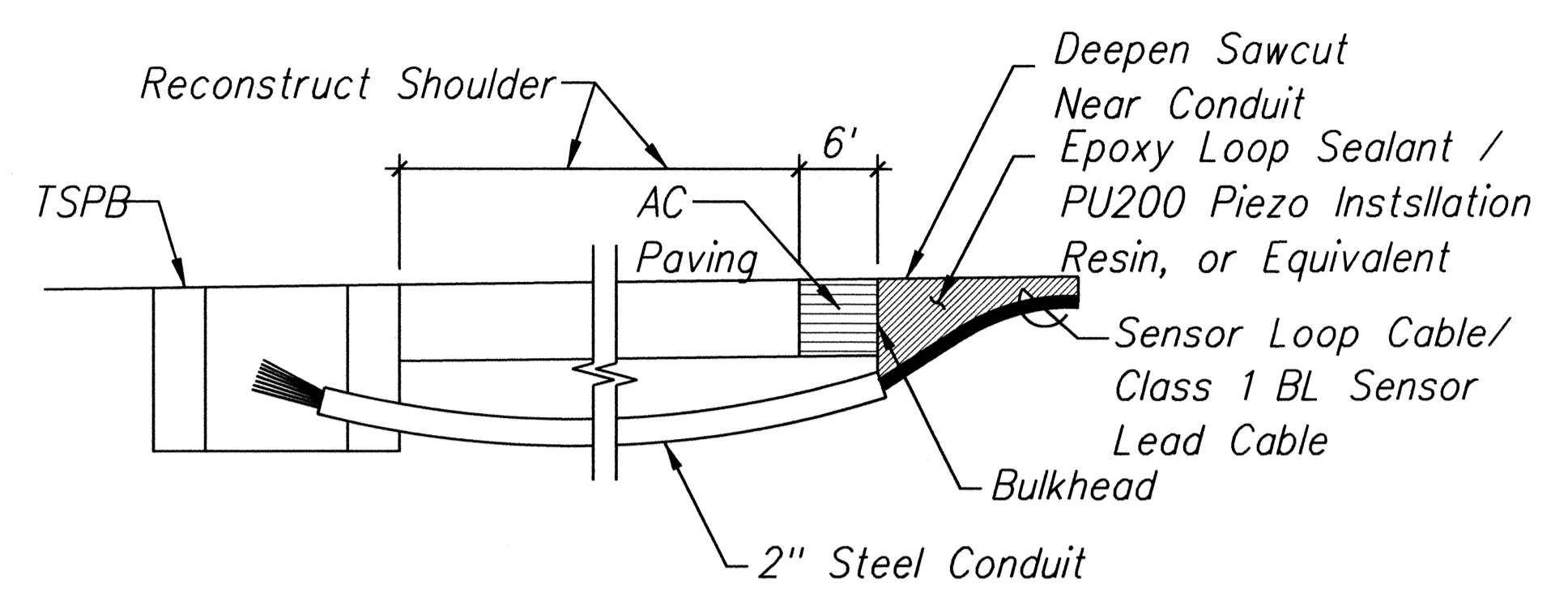
SENSOR LOOP LAYOUT NOTES

- Detector loop shall consist of four turns of 1C #14 cable meeting IMSA Spec 51-3 or equivalent embedded in a 3/8" wide by 4" deep sawcut, except as noted. Detector loop shall be provided a minimum 2" cover.
- Sensor loop and lead cable shall be one continuous wire. Lead wires from the same loop shall be twisted in pairs, five twists per foot from the edge of paved shoulder to the pullbox. Do not twist one loop pair with another loop pair.
- Continuity of sensor loops and lead-in wires shall be tested and warranted for one year from the date of acceptance by the Contractor.
- Sensor loop lead cables shall be spliced only at the final pullbox to the EVC cabinet. Splice point of cables must be suspended near the top of the pullbox with a j-hook.
- Splices shall be made by use of a splice kit.
- All sensor loop lead cables shall be crimped with open end lugs that will fit into the terminal board slots snugly.
- Stagger sensor loops on roadways with lanes that are less than 12 feet in width.
- The Contractor shall connect the sensor loop wires on each terminal slot, as shown on plans.
- The left lane in the direction of traffic flow is designated as lane 1, and the next lane to its right as lane 2 and so on as indicated on plans.
- All sensor loop lead wires in the EVC cabinet and the pullboxes shall be identified and labeled by direction of traffic flow and lane number as shown on plans.
- Only one sensor loop shall be placed per saw cut.

ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	

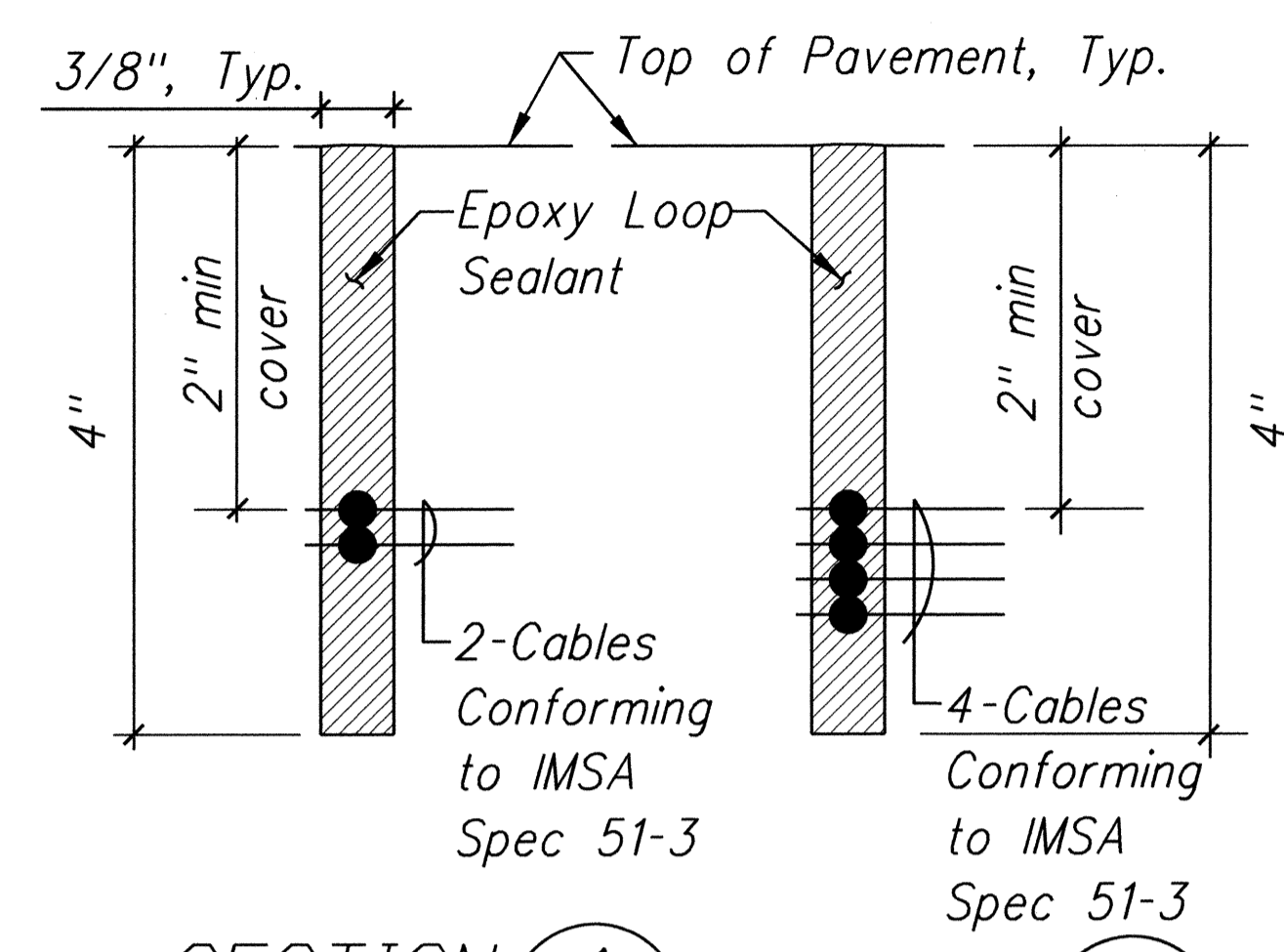
3	4/28/16	Added Sheet
DATE	REVISION	
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION EVC TRAFFIC COUNTING SYSTEM NOTES HANA HIGHWAY RESURFACING Haleakala Highway to Paia HALEAKALA HIGHWAY RESURFACING Hana Highway to North Firebreak Road Project No. HWY-M-01-15M Date: April, 2016		
SHEET No. 1 OF 4 SHEETS		

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2016	ADD.41S-7	41



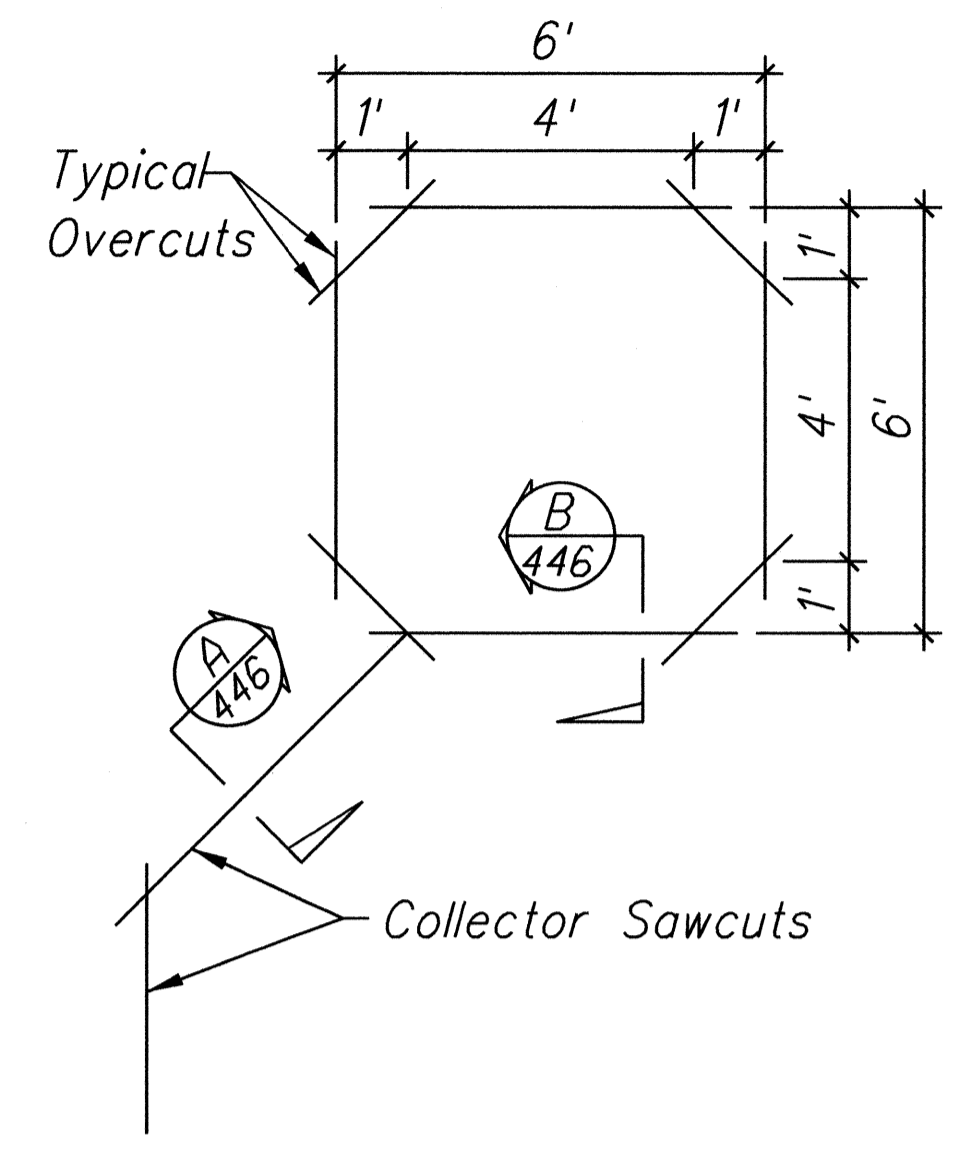
NOTES ON CONSTRUCTION AT END OF SAWCUT:

1. Seal roadway end of conduit after installation of conductors.
2. Install bulkhead across conduit trench.
3. Place Epoxy Loop Sealant or PU200 Piezo Installation Resin or Equivalent in sawcut.
4. Backfill over conduit with new AC.
5. Reconstruct curb and gutter as required.



SECTION A SECTION **B**
Not to Scale **446** Not to Scale **446**

TYPICAL SECTION THROUGH SENSOR LOOP
Not to Scale

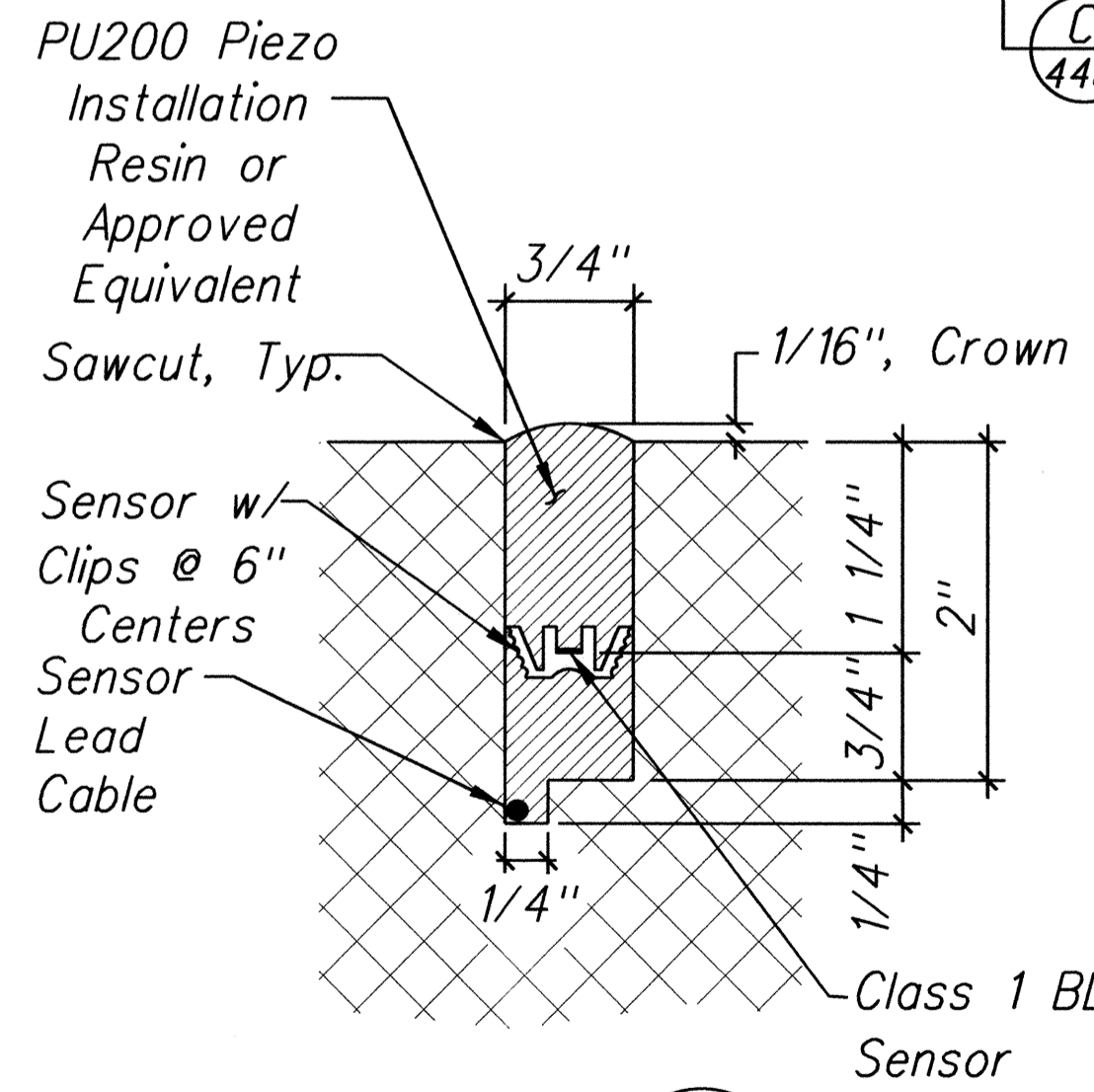
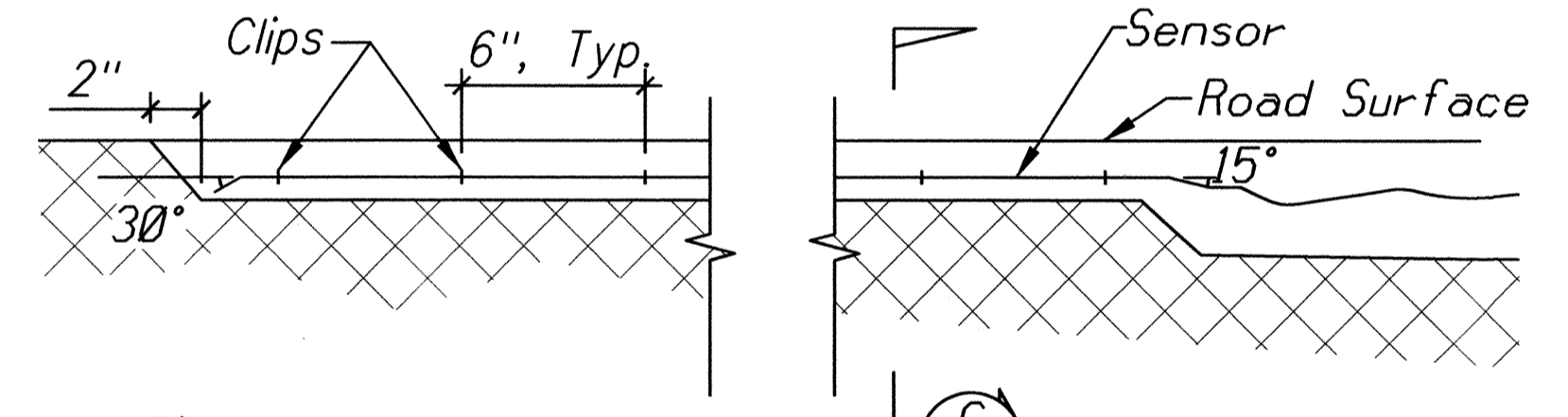


TYPICAL SENSOR LOOP SAWCUT DETAIL
Not to Scale

NOTES:

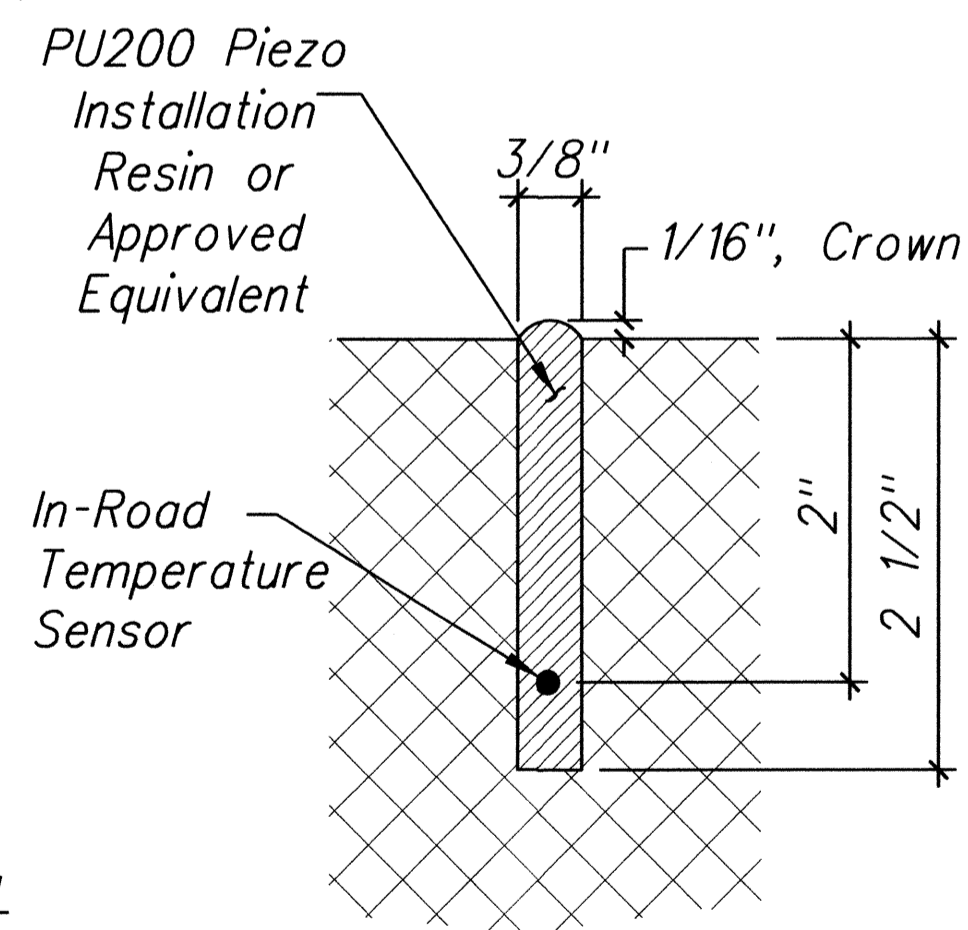
1. Length of overcuts shall be kept to a minimum. All overcuts shall be backfilled with 3M Loop sealant.
2. All saw-cutting slurry shall be wet vacuumed, either simultaneous with or immediately after the saw-cutting operations, and the collected slurry disposed of appropriately (i.e., either, placed in a filter fabric lined filtration box or in a filter fabric lined dug up retention/percolation basin, and after filtration/percolation, the filter fabric and the retained sediments, disposed of appropriately).

DETAIL OF SENSOR LOOP/CLASS 1 BL SENSOR AT EDGE OF ROADWAY
Not to Scale

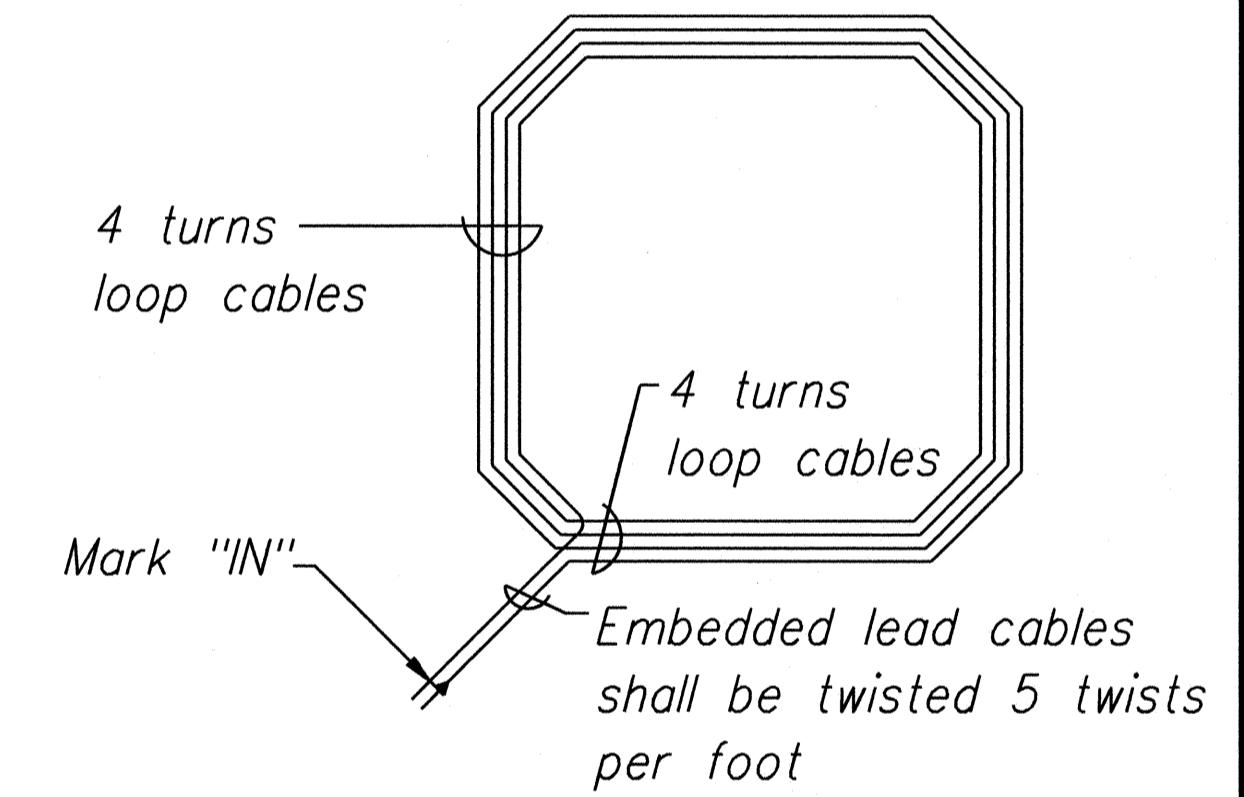


SECTION C
Not to Scale **446**

PIEZOELECTRIC SENSOR INSTALLATION DETAIL
Not to Scale



IN-ROAD TEMPERATURE SENSOR INSTALLATION DETAIL
Not to Scale



TYPICAL SENSOR LOOP WIRING DIAGRAM
Not to Scale

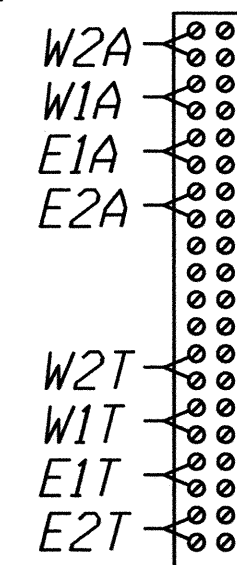
DATE	
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DRAWN BY	
DESIGNED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

3	4/28/16	Added Sheet
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DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
EVC TRAFFIC COUNTING SYSTEM DETAILS	
HANA HIGHWAY RESURFACING	
Haleakala Highway to Paia HALEAKALA HIGHWAY RESURFACING Hana Highway to North Firebreak Road Project No. HWY-M-01-15M Date: April, 2016	
SHEET No. 2 OF 4 SHEETS	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-01-15M	2016	ADD.41S-8	41

Top of Terminal Block

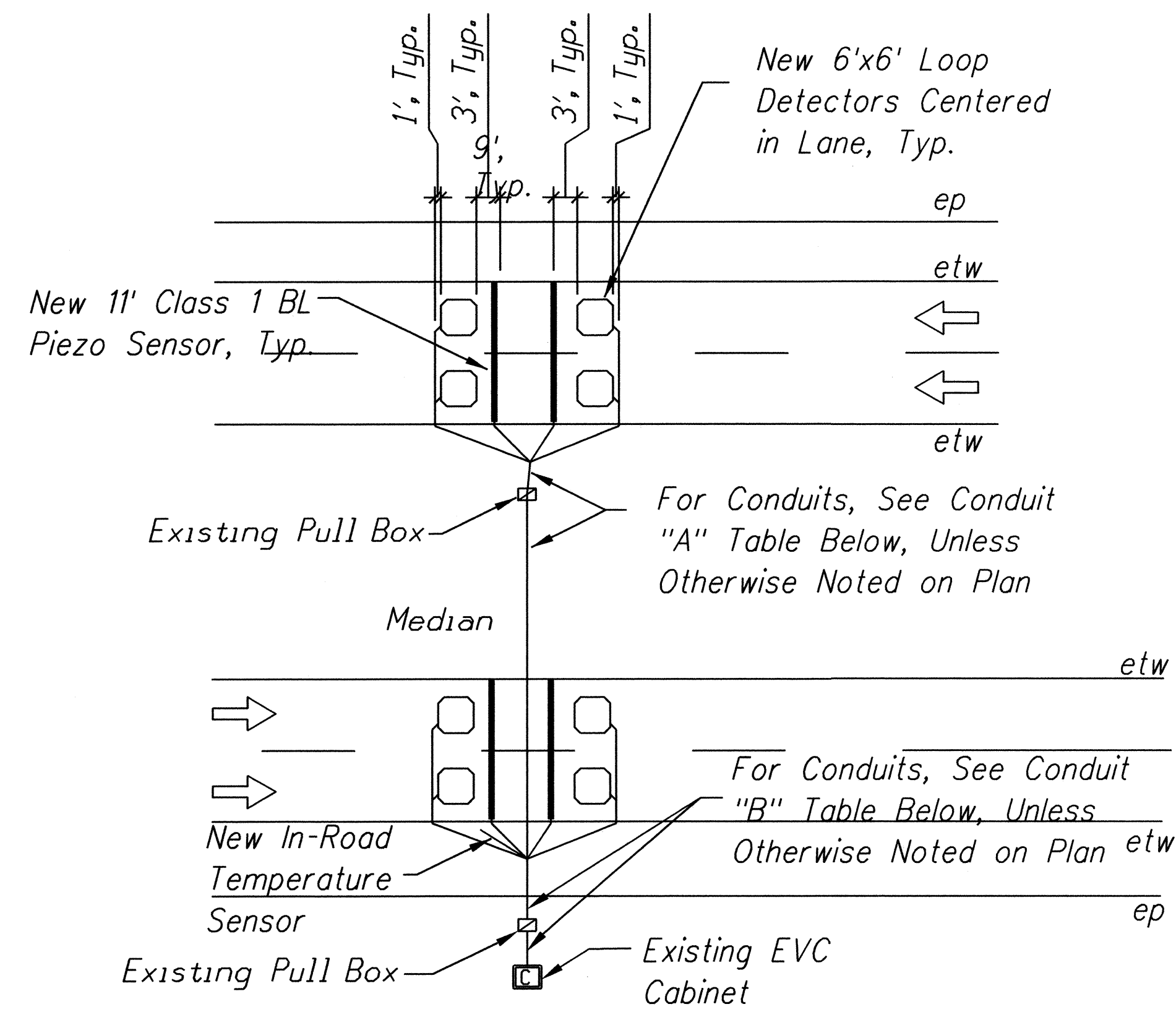


Bottom of Terminal Block

Connecting layout of loop lead-in wires to terminal block inside cabinet

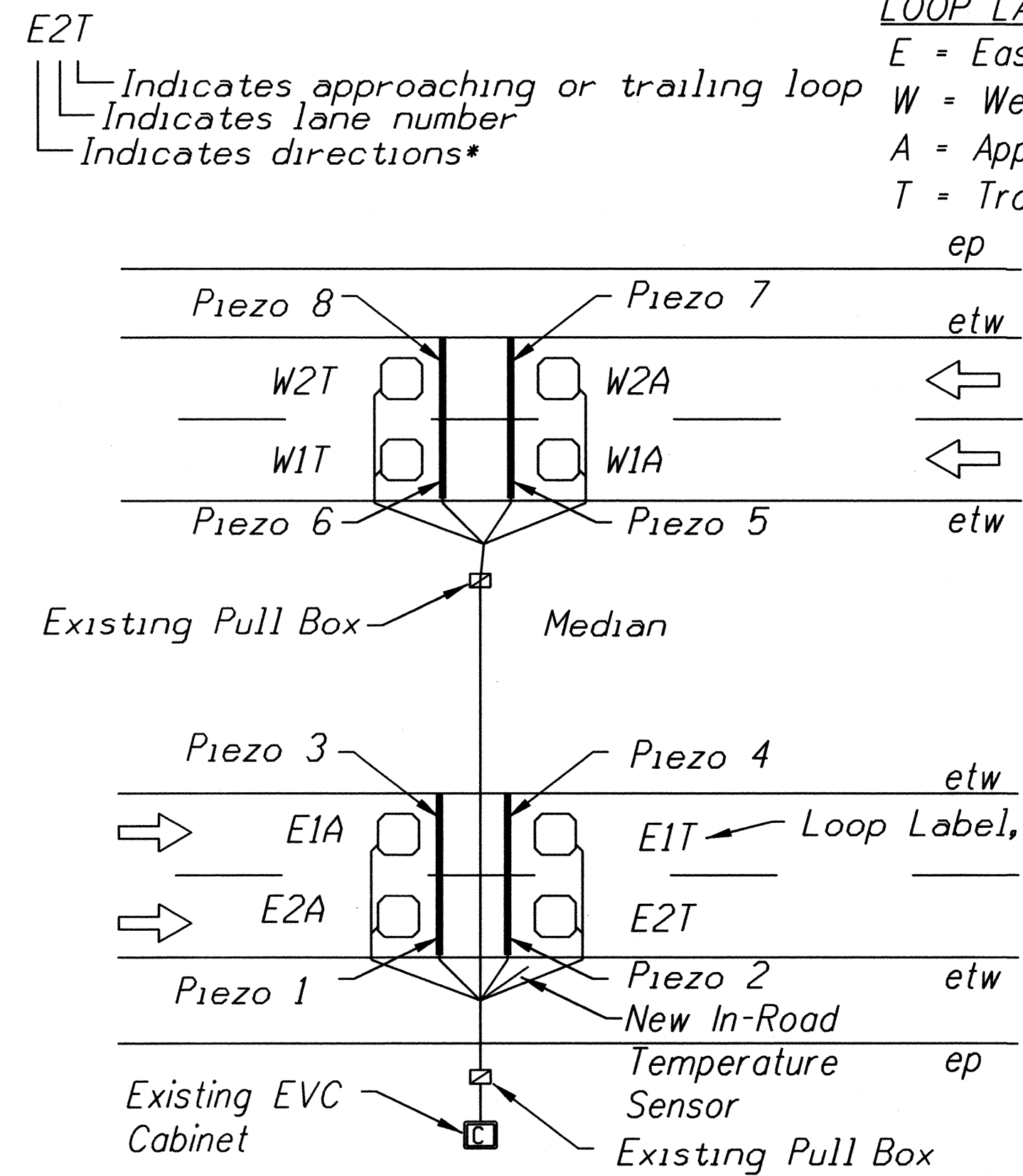
TYPICAL FOUR-LANE ROADWAY TERMINAL BLOCK WIRING DETAILS

Not to Scale



LOOP LABEL LEGEND:
 E = East
 W = West
 A = Approaching
 T = Trailing

ep
 etw
 etw
 ep



LABELING OF LOOPS AND PIEZOS

Not to Scale

Conduit "A" Table:

Conduit* #-Size	Class 1 BL Sensor Lead Cables	2C #18 Loop Detector Cable
Existing	4	4

Conduit "B" Table:

Conduit* #-Size	Class 1 BL Sensor Lead Cables	2C #18 Loop Detector Cable	In-Road Temperature Sensor Cable
Existing	8	8	1

*Conduits under pavement and at utility crossings shall be concrete encased.

*NOTES:

- All dimensions and callouts are typical unless otherwise noted on plan.
- Contractor shall coordinate service agreements and connections to electrical and communication service. Contractor shall also contact the appropriate State Dept of Transportation Representative for service agreement. (Highways Planning, Contact, Goro Suljoadikusumo, P.E., at 587-1839).

EVC COUNTING SYSTEM LAYOUT DETAIL

Not to Scale

DATE	
DESIGNED BY	
CHECKED BY	
DATE	
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CHECKED BY	
DATE	
DESIGNED BY	
CHECKED BY	

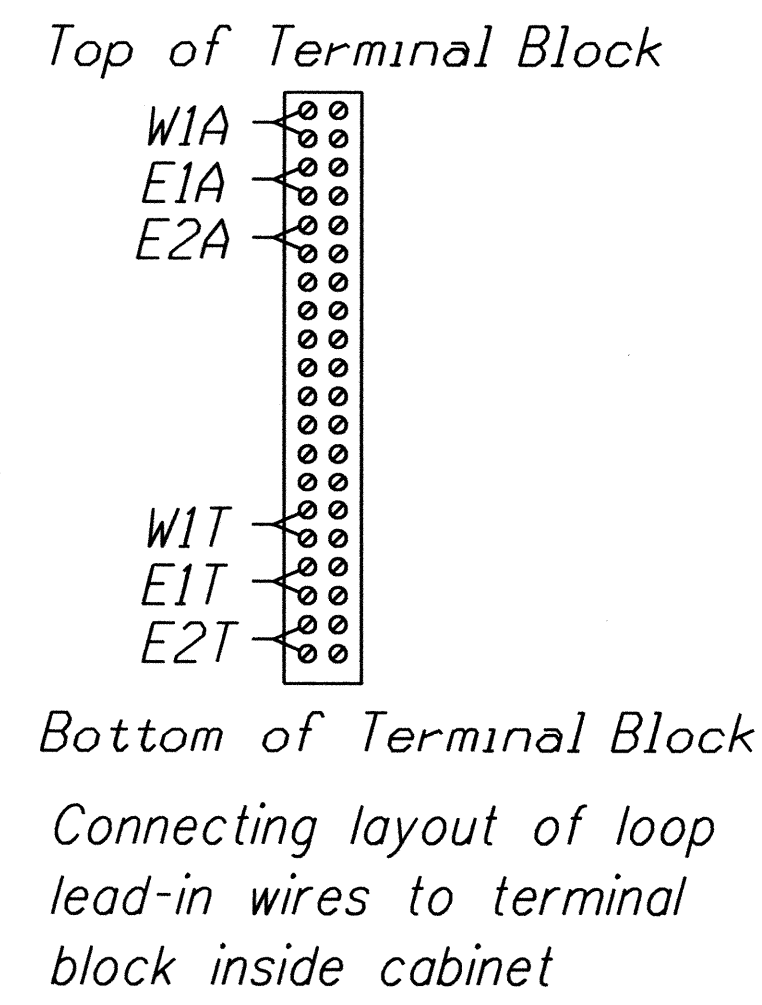
3 4/28/16 Added Sheet

DATE	REVISION
4/28/16	Added Sheet

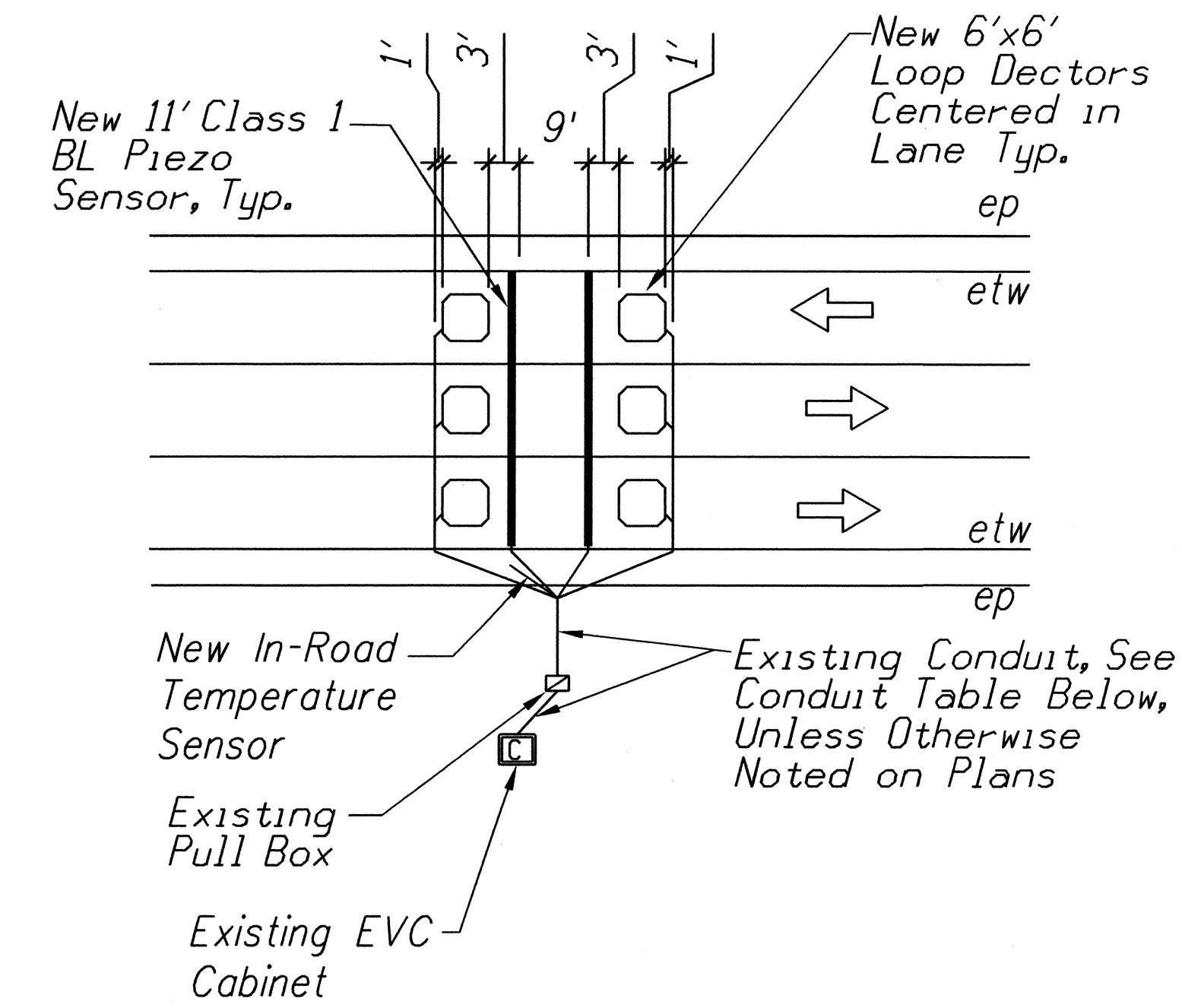
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
EVC TRAFFIC COUNTING SYSTEM LAYOUT
HALEAKALA HIGHWAY MP 0.61
HANA HIGHWAY RESURFACING
 Haleakala Highway to Paia
 Haleakala Highway Resurfacing
 Hana Highway to North Firebreak Road
 Project No. HWY-M-01-15M
 Date: April, 2016

SHEET No. 3 OF 4 SHEETS

ADD. 41S-8



TYPICAL THREE-LANE ROADWAY TERMINAL BLOCK WIRING DETAILS
Not to Scale



LOOP LABEL LEGEND:
 E = East
 W = West
 A = Approaching
 T = Trailing

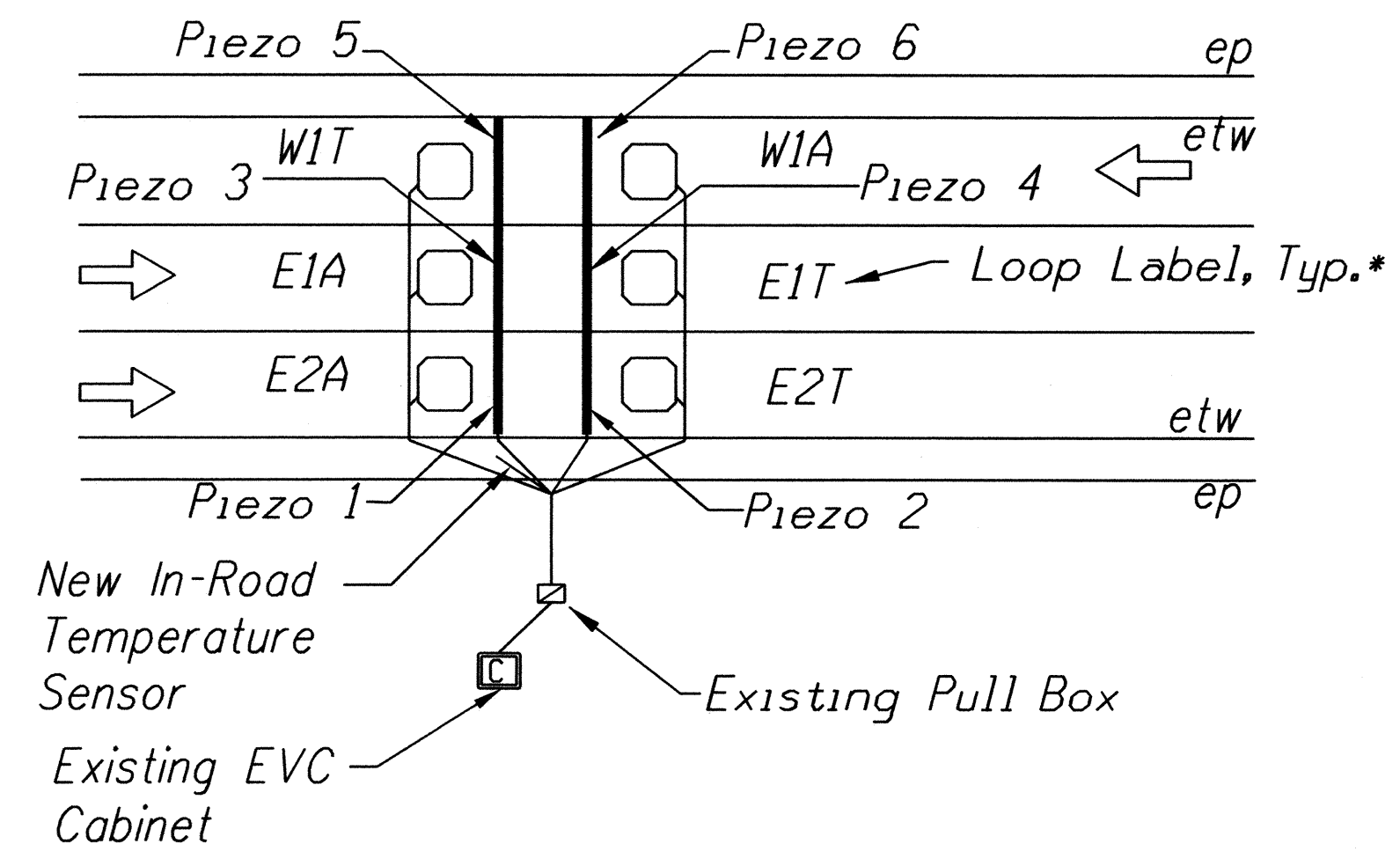
E2T
 ↳ Indicates approaching or trailing loop
 ↳ Indicates lane number
 ↳ Indicates directions*

Conduit Table:

Conduit* #-Size	Class 1 BL Sensor Lead Cables	2C #18 Loop Detector Cable	In-Road Temperature Sensor Cable
Existing	6	6	1

*Conduits under pavement and at utility crossings shall be concrete encased.

- *NOTES:**
- All dimensions and callouts are typical unless otherwise noted on plan.
 - Contractor shall coordinate service agreements and connections to electrical and communication service. Contractor shall also contact the appropriate State Dept of Transportation Representative for service agreement. (Highways Planning, Contact, Goro Sulijoadikusumo, P.E., at 587-1839).



LABELING OF LOOPS AND PIEZOS
Not to Scale

EVC COUNTING SYSTEM LAYOUT DETAIL
Not to Scale

3	4/28/16	Added Sheet
DATE	REVISION	
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION EVC TRAFFIC COUNTING SYSTEM LAYOUT HANA HIGHWAY MP 6.28 HANA HIGHWAY RESURFACING Haleakala Highway to Paia HALEAKALA HIGHWAY RESURFACING Hana Highway to North Firebreak Road Project No. HWY-M-01-15M Date: April, 2016		
SHEET No. 4 OF 4 SHEETS		

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