FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	109	220

GENERAL NOTES

1. All materials shall conform to the drawings, Hawaii Standard Specifications for Road, Bridge and Public Works Construction (2005 Edition) and Special Provisions for Federal Aid Project No. IM-0300(138) Freeway Management System Interstate H-1, H-2 and Moanalua Freeway (H-201) Phase 1C, Part 2.

2. The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing with work. See Civil drawings for additional information.

3. Standard detail drawings refer to structures in general except for modifications as may be required for special conditions. For such modifications refer to corresponding detailed drawings.

4. The Contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to, bracing, shoring for loads due to construction be equipment, winds, seismic, etc.

5. The Contractor shall be solely responsible for all excavation and dewatering procedures including lagging, shoring and protection of streets and utilities, including treatment and discharge of pumped water.

6. The Contractor shall be solely responsible for coordinating the work of all trades and shall check all dimensions. All discrepancies shall be called to the attention of the Engineer and be resolved before proceeding with the work.

7. Shop drawings required by the standard specifications and special provisions shall be submitted to the Engineer for review prior to fabrication or ordering of materials. Shop drawings shall not be reproduction of contract drawings.

8. Notes and details on drawings shall take precedence over General Notes unless stricter requirements are noted in General Notes. Special provisions shall take precedence over Standard Specifications.

9. Except as otherwise noted, all vertical dimensions are measured plumb.

10. Variable Message Sign shall not exceed 6,000 lbs or be greater than 31'-0" x 8'-6" in size.

11. Design Criteria

    A. Codes:
    AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 2013, 6th Edition and AASHTO LRFD Bridge Design Specifications, 6th Edition, 2012

    Design Criteria for Bridges and Structures, January 7 2014 State of Hawaii Department of Transportation Highways Division

    B. Design Live Loads:
    Walkway Maximum Uniform Load = 100 psf
    Walkway Maximum Concentrated Load = 300 lbs
    Walkway Maximum Total Load = 900 lbs

    C. Seismic Design Category: D

    D. Wind:

Wind Design Properties				
Location	Pole Ht (Ft)	K_{ZT}	V (Mph)	Ir
Kahuapaani CCTV	60	1.2	105	1.0
Airport/Paiea CCTV	-	1.2	105	1.0
Ola Lane CCTV	50	1.4	110	1.0
Kalihi CCTV	50	1.4	110	1.0
Aala CCTV	25	1.2	110	1.0
Puowaina CCTV	50	1.2	110	1.0
McCully CCTV	50	1.4	120	1.0
Manoa CCTV	50	1.4	120	1.0
Radford VMS	≈30	1.1	105	1.15
Puuloa VMS	≈30	1.35	110	1.15
Waikele VMS	≈30	1.25	105	1.15
Kalihi VMS	≈30	1.3	110	1.15

    E. Fatigue:
    Importance Factor, IF, shall be based on Fatigue Category I.

    VMS Structures shall be designed for a truck induced gust based on a truck speed of 20 mph over posted speed limit.

STRUCTURAL STEEL

1. All structural steel shall be detailed, fabricated and erected in accordance with the Specifications.

2. Structure Materials shall be as follows:

VMS Monotube	ASTM A53 Gr B
Steel Plates	AASHTO M270 (ASTM A572, Grade 50)
Bolts (except Anchor Bolts)	AASHTO M164 (ASTM F1852 and ASTM A325, Type 1)
Anchor Bolts	AASHTO M-314, Grade 55 ksi (ASTM F1554, Grade 55 ksi)
Nuts for Anchor Bolts	AASHTO M292 (ASTM A563, Grade A)
Washers for Anchor Bolts	AASHTO M293 (ASTM F436, Type 1)
Stainless Steel Screws	AISI, Type 316
Wide Flange	ASTM A992, Grade 50
Hollow Structural Sections (HSSx)	ASTM A500, Grade B

3. All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). Electrodes shall be E70.

4. All Steel items shall be galvanized as follows:

All Nuts, Bolts and Washers	AASHTO M232 (ASTM F2329)
All other steel items (including Pole & Monotube Arm)	AASHTO M111 (ASTM A123)

5. Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16 ", prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 1/4 ".

6. Variable message signs attached to the Monotube shall be located as shown on the construction documents.

7. The Pole shall be installed plumb vertically and level horizontally. Arm Camber shall be accounted for when installing walkways and variable message signs.

8. All Variable Message Signs shall be installed vertically.

9. Monotube Arm & Poles shall be fabricated from round pipe.

10. All structural steel shall be hot dip zinc coated after fabrication.

11. All holes including bolt holes and drainage holes shall be pre-punched before coating steel.

12. All anchor bolts, threaded rods and other hardware, including nuts and washers, which connect steel to concrete shall conform to ASTM F1554 Grade 55 as noted and shall be hot dip galvanized.

13. All bolts which connect steel to steel shall be high-strength bolts conforming to AASHTO M164 (ASTM A325) and shall be "Twist off" typ ASTM F1852, unless otherwise noted. All bolts, nuts and washers shall be hot dip zinc coated. All bolts shall be pre-loaded to slip critical tension per special provisions Section 718 Steel Fasteners.

14. Paint per Special Provisions Section 708. Epoxy primer and intermediate coat with Fluorourethane top coats "Dark Green".

15. Stainless steel surfaces in contact with galvanized structural steel shall be isolated with neoprene material pre-reviewed by the Engineer or coated with epoxy. Aluminum shall be isolated from dissimilar metals per Standard Specification Section 715.02

16. All threaded rods shall be cut off clean between 3 and 6 threads past the nut and ground smooth. Threads shall be spoiled and all terminations shall be neat and consistent.

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

INFO\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\1_GENERAL\S0-1 S0-2.DWG Oct 15, 2014-10:55 AM

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURAL GENERAL NOTES

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S0-1 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	110	220

CONCRETE

1. Schedule of Structural Concrete 28-Day strength and water cement ratio:

Concrete Barriers	= 5,000 psi (W/C = 0.45)
Drilled Shafts and Pile Caps	= 5,500 psi (W/C = 0.40)
Concrete Pedestal (Aala)	= 5,000 psi (W/C = 0.45)

2. Non-Shrink Grout shall have a minimum 28-day compressive strength of 8,900 psi and shall be nonmetallic and nonstaining. See Specification Table 712.04-02 for additional information. Grout at the base of uprights shall be installed a minimum of 7 days prior to the installation of signals or sign panels. The standoff distance (the distance between the bottom of the leveling nut and the top of the foundation) shall not exceed one anchor bolt diameter.

3. Concrete mix design shall be submitted to the Engineer for review.

4. Minimum clear coverage of concrete over outer reinforcing bars or ties shall be as follows, unless otherwise noted. See Standard Specification Table 602.03-2 for additional information.

Pile Caps and Drilled Shafts	3"
Concrete directly against Earth	3"
All other exterior concrete	2"

5. Concrete admixtures containing chloride salts shall not be used.

6. All roughened surfaces in concrete shall be made with a minimum amplitude of 1/4".

7. Unless otherwise noted on drawings, all exterior corners and re-entrant angles 90 degrees or less in concrete work shall be chamfered 3/4"x3/4".

REINFORCING STEEL

1. Reinforcing steel bars shall be ASTM A-615 Grade 60, typical unless otherwise noted.

2. Reinforcing steel bars shall be uncoated, unless otherwise noted.

3. Reinforcing steel splices shall be made only where indicated on the drawings.

4. All reinforcing steel bars, anchor bolts, dowels and other embedded items shall be securely tied in place before concrete pour.

5. All reinforcing steel bar bends shall be made cold.

6. Welding of reinforcing steel shall not be permitted unless otherwise shown on the drawings. Welding of reinforcing steel shall conform to AWS D1.4-05 "AWS Structural Welding Code - Reinforcing Steel" of the American Welding Society.

GENERAL NOTES FOR EPOXY GROUTED DOWELS & BOLTS

1. See Special Provisions Section 503 Concrete Structures and Standard Specifications Section 656 for reinforcing steel dowels.

2. Contractor shall locate existing reinforcing prior to drilling holes for new epoxy grouted reinforcing steel dowels and steel anchor bolts. Do not damage existing reinforcing.

3. Epoxy grout for reinforcing steel dowels and steel anchor bolts shall conform to Standards Specifications Section 712.04(B).

4. Clean holes of all dust and residue before filling holes with epoxy grout.

5. Where noted on drawings, installation of epoxy grout and reinforcing dowels and steel anchor bolts shall be inspected by the Engineer.

6. Epoxy grouted reinforcing steel dowels shall be incidental to Section 602 reinforcing steel and will not be paid for separately.

7. Epoxy grouted steel anchor bolts shall be incidental to Section 501 Steel Structures and will not be paid for separately.

8. All drilled holes shall be cleaned, filled with epoxy, and reinforcing dowels and anchor bolts installed prior to end of work day.

EXISTING & DEMOLITION GENERAL NOTES

1. Demolition work shall be coordinated with construction of new work. Contractor shall submit proposed schedule and sequence of demolition work for Engineer's review prior to commencing with demolition work.

2. Known existing conditions are shown on the drawings. Dimensions and member sizes where shown on the drawings are based on available as-built plans. Existing dimensions shown may not be exact and are provided for information only. Contractor shall field verify all existing dimensions prior to construction. All discrepancies shall be promptly called to the attention of the Engineer and shall be resolved prior to proceeding with the demolition work.

3. As-built plans are available for review from the State of Hawaii Department of Transportation, Highways Division, Design Branch, Kakuhihewa Building Room 609, 601 Kamokila Boulevard, Kapolei, Hawaii 96707, Phone no. 808-692-7585.

4. Protect from damage existing structures to remain. Protect from damage and clean existing reinforcing steel to be incorporated in new concrete work. See Standard Specifications Section 202 "Removal of Structures and Obstructions".

5. Where existing reinforcing steel is not required to be incorporated in new concrete work, cut ends of reinforcing steel shall be recessed 1-1/2" minimum below existing concrete surface. Resulting pockets in existing concrete shall be filled with non-shrink grout. This work shall be incidental to Section 202 "Removal of Structures and Obstructions".

INSPECTION REQUIREMENTS

1. Contractor shall refer to Standard Specifications Section 105.11 - "Inspection of the Work and Materials."

2. The work items that will require inspection by the Engineer shall be, but not be limited to, the following items:

   A. Reinforcing steel
   B. Concrete
   C. Epoxy grouted reinforcing dowels and steel anchor bolts
   D. Anchor bolts cast-in concrete
   E. High-strength bolting
   F. Field welding

Contractor shall notify the Engineer at least 7 working days prior to the above inspections

ABBREVIATIONS

Bm	Beam	Jt	Joint
Bot	Bottom	Manu	Manufacturer
CC	Center to Center	Max	Maximum
Clr	Clear	Min	Minimum
Col	Column	(N)	New
Conc	Concrete	Open'g	Opening
Cont	Continuous	SS	Stainless Steel
Dia	Diameter	Std	Standard
Diag	Diagonal	T&B	Top and Bottom
DO	Ditto	Thk	Thick
El	Elevation	Typ	Typical
(E), exist	Existing	UON	Unless Otherwise Noted
Flr	Floor	Vert	Vertical
Ga	Gauge	W	Width
H	Height	W/	With
Horiz	Horizontal		

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

PW:F:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_1 13040\STRUCT_13040\DWGS_13040\1_GENERAL\S0-1 S0-2.DWG Oct 15, 2014 - 10:55 AM

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

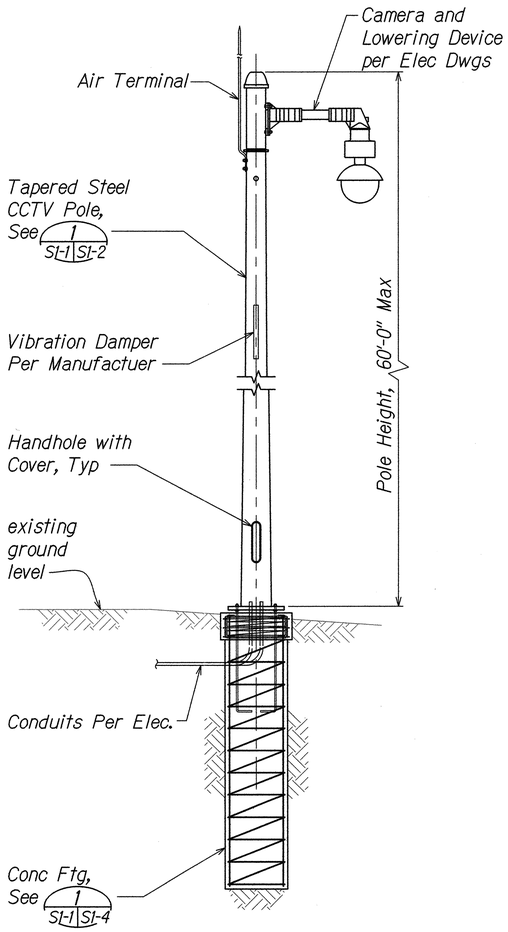
STRUCTURAL GENERAL NOTES

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S0-2 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	111	220



1 SI-1 SI-1 CCTV TYPICAL POLE DETAIL

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

CCTV GENERAL NOTES

1. Galvanizing/Painting:
   - A. Poles, plates and bases shall be hot dipped galvanized per AASHTO M 111 (ASTM A 123).
   - B. Hardware and anchors bolts shall be per ASTM A307 and AASHTO M 314 (ASTM F1554, Gr 55), respectively, and hot dipped galvanized per AASHTO M 111 (ASTM A 123).
   - C. CCTV Poles shall be painted per Special Provisions Section 708 - Paints. Color shall be "Aluminum" to match Aluminum light poles.
2. Materials
   - A. 50' - 60' poles shall be ASTM A572 Grade 65 with a yield stress of 65 ksi. 25' pole shall be ASTM A572 Grade 55 with a yield stress of 55 ksi.
   - B. Base plates, shall be AASHTO M270 GR 50.
3. Welds:
   - A. All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (Current Edition).
   - B. Longitudinal seam welds by submerged arc at 75% penetration and circumferential butt welds at complete penetration shall conform to section 5.15 of the AASHTO Standard Specifications For Structural Supports For Highway Signs, Luminaries. and Traffic Signals (Latest Edition) and have optional back up rings. All exposed butt welds shall be ground flush.
   - C. Deburr all sharp edges for wire protection.
4. All poles shall have first and/or second mode vibration dampers as required by manufacturer.
5. An internal camera lowering device and pole shall be used for each CCTV camera installation, unless otherwise noted. Camera installation details shall be provided by manufacturer. Details to be approved by the Engineer before installation.
6. Pole mounted details for cabinet shall be provided by manufacturer. Details to be approved by the Engineer before installation.
7. The contractor shall verify, in the field all dimensions, elevations, and details pertaining to the structures before proceeding with the work. Any discrepancies shall be brought to the attention of the Engineer.
8. Pole shall be located outside of roadway clear zone or protected behind barrier per AASHTO Roadside Design Guide (Latest Edition). Where potential for vehicle impact exists, and only VDS are mounted on pole, control cabinet shall be mounted downstream of traffic flow.

CCTV DESIGN DATA

Design is in accordance with the AASHTO "Standard Specifications For Structural Supports For Highway Signs, Luminaries and Traffic Signals." 6th Edition, 2013.

Wind Velocity:	: See Wind Table on S0-1
Gust Effect Factor, G	: 1.14
Exp Cat	: C
CCTV Camera Face Area	= 2 Sq Ft
CCTV Camera Wind Drag Coefficient, C_d	= 1.2
CCTV Camera Weight	= 40 LBS
Cabinet Dimensions	= 24" x 24" x 36"
Maximum Pole Deflection	= 1" at 30 MPH, non-gust
Maximum Pole Deflection	= 2" at 70 MPH, non-gust

Cabinet weight including equipment contents not to exceed 500 LBS.

Camera Lowering Device Design Data

Camera lowering device arm, disconnect, and camera caries weight of 96 LBS and EPA of 2.00 Sq Ft. This weight does not include the cable.

Camera Lowering Device
Wind Drag Coefficient, C_d = 1.45

Vehicle Detection Unit Design Data

Face Area	= 2 Sq Ft
Wind Drag Coefficient, C_d	= 1.7
Weight	= 35 LBS

GRAPHIC SCALE

0 1' 2' 4' 8' 12'

1/4"=1'-0"

0 1 2

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CCTV TYPICAL DETAIL AND GENERAL NOTES

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase IC, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. SI-1 OF 54 SHEETS

ORIGINAL PLAN | NOTEBOOK No.
SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY / DATE

P:\N\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\1_GENERAL\S1-1.DWG Oct 15, 2014-10:55 AM

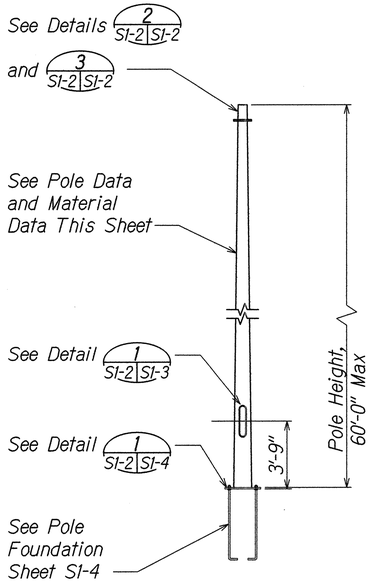
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	112	220

Notes:

1. See Civil drawings for camera orientation details.
2. 25' pole at Aala does not have a lowering device.

POLE DATA				
Pole Height (Ft)	TUBE			
	Min Base Diameter O.D. (In)	Min Top Diameter O.D. (In)	Min Thickness (In)	Taper (In/Ft)
25	10	5.75	0.25	0.170
50	17.90	11.28	0.188	0.132
60	20	12.04	0.219	0.133

MATERIAL DATA		
Component	ASTM Designation	Min Yield (KSI)
Pole Shaft - 50' - 60'	A 572, Gr 65	65
Pole Shaft - 25'	Alum 6063-T6	31
Base Plates	M270 Gr 50	50
Pole Top Plate	M270 Gr 50	50
Tenon Tubing	M270 Gr 50	50
Anchor Bolts	F1554, Gr 55	55
Galvanizing - Structure	A 123	--
Galvanizing - Hardware	A 153	--



1 CCTV POLE = 60' AND LESS
SI-1, SI-2 SI-2 Scale: 1/4" = 1'-0"
SI-6

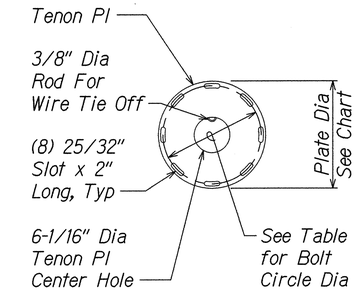
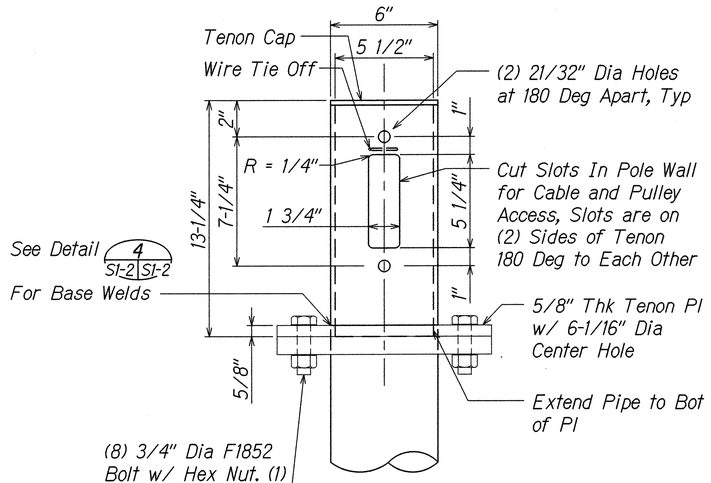
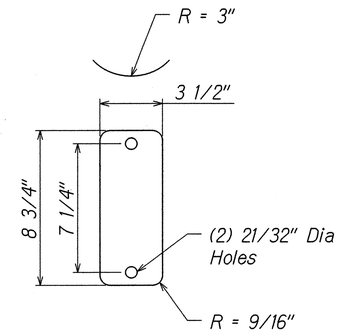


Table - Pole Top Plate Properties			
Pole Height (Ft)	Pole Top Diameter (In)	Plate Diameter (In)	Bolt Circle (In)
25	5.75	11.75	9.75
50	11.28	19	17
60	12.04	19	17



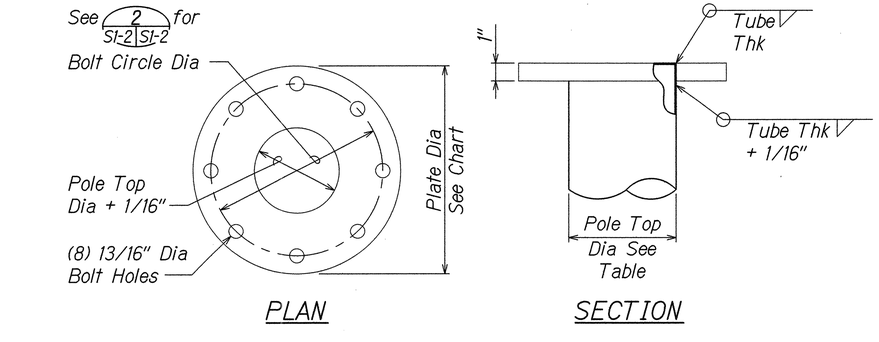
2 DETAIL - TENON ASSEMBLY
SI-2 SI-2 Scale: 3" = 1'-0"



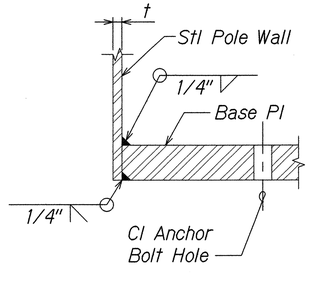
TENON DOOR DETAIL

Note:

One Door Required Per Tenon Plate. To Be Secured Using (2) 1/2" x 1-1/4" Galvanized Bolts and (2) Nuts and Lock Washers. Door Thickness No Greater than 1/4" or Less Than 1/16".



3 DETAIL - POLE TOP PLATE
SI-2 SI-2 Scale: 3" = 1'-0"



4 DETAIL - BASE WELD DETAIL
SI-2, SI-4 SI-2 TOP PLATE (SIM) Not To Scale

Note:

Baseplate weld applies to steel CCTV poles only. For 25' aluminum pole cast aluminum base shall be used per Manufacturer.

GRAPHIC SCALE

0 1' 2' 4' 8' 12'
1/4"=1'-0"
0 1" 2" 4" 8" 1'
3"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CCTV TYPICAL DETAILS

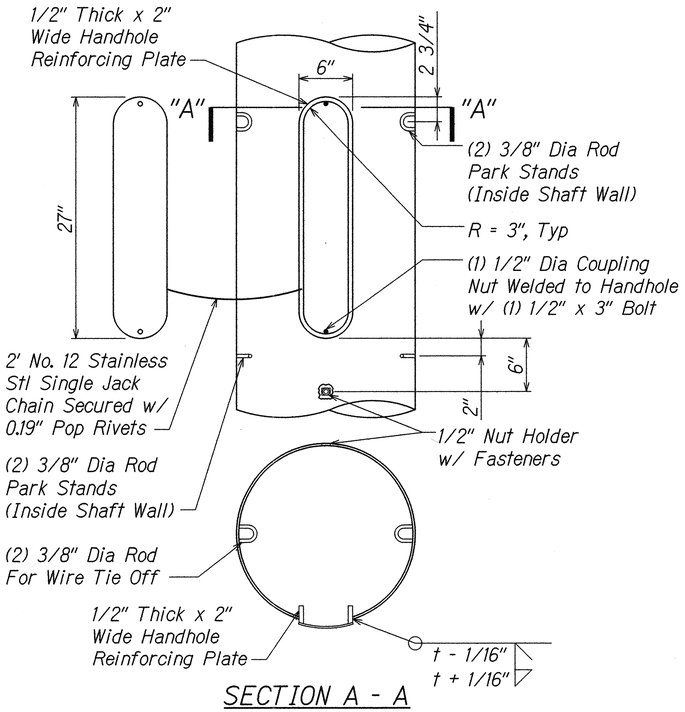
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase IC, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. SI-2 OF 54 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	113	220



SECTION A - A

HANDHOLE NOTES:

Handhole reinforcement shall be AASHTO M270 Grade 50.

Reinforcement shall be welded to the post shaft in the 90 degree location, prior to galvanizing pole shaft. Cover shall be fabricated from 3/16" steel. Steel Cover is galvanized according to ASTM A 153. Cover shall be equipped with two (2) AISI 304 stainless steel 1/4" - 20UNC x 3/4" LB hex cap screw and two (2) captive washers.

Provision for internal grounding shall be provided by a tapped hole.

1 / S1-2 | S1-3 DETAIL - CAMERA LOWERING DEVICE HANDHOLE

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

GRAPHIC SCALE

0 1' 2'

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

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

FN:F:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\1_GENERAL\S1-3.DWG Oct 15, 2014 - 10:55 AM

0 1 2

LINE IS 2 INCHES AT FULL SIZE
(If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

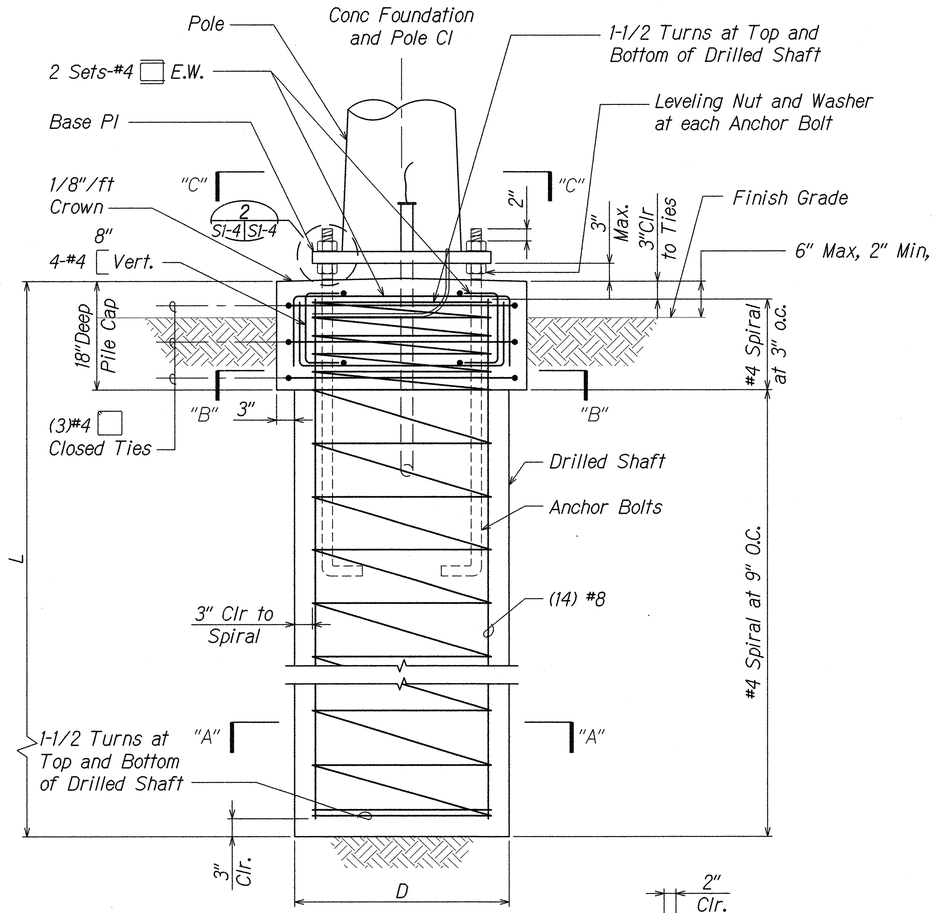
CCTV TYPICAL DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase IC, Part 2

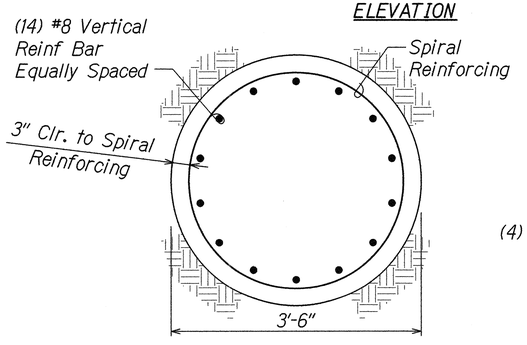
Scale: As Shown Date: 8/7/14

SHEET No. S1-3 OF 54 SHEETS

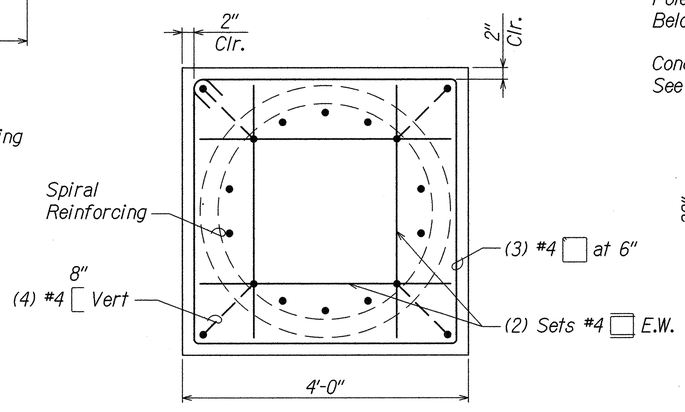
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	114	220



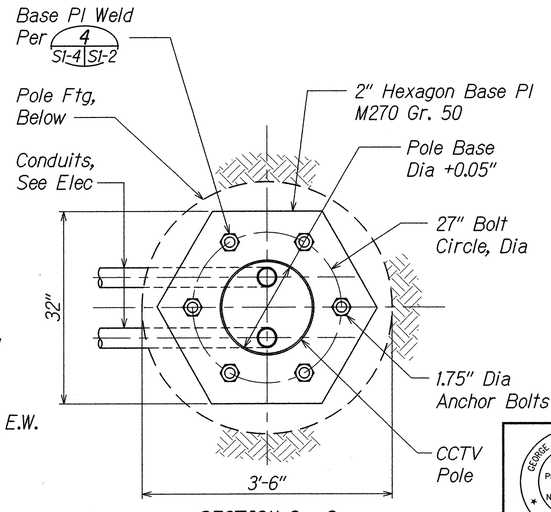
ELEVATION



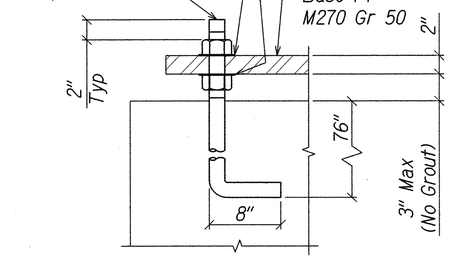
SECTION A - A



SECTION B - B



SECTION C - C



2 SI-4 SI-4 ANCHOR BOLT DETAIL

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

CCTV FOUNDATION GENERAL NOTES:

1. Reinforcing steel (rebar) shall conform to AASHTO M 31 (ASTM A 615) Grade 60. Dimensions refer to the centerline of reinforcing steel unless otherwise noted on the plans. All reinforcing shall be incidental to concrete.
2. Anchor Bolts shall be ASTM F1554 Grade 55. Provide a top hex nut, bottom leveling nut, and 2 washers for each bolt at base plate. Bolts shall be galvanized.
3. Prior to tightening anchor bolts, leveling nuts shall be adjusted so that they bear uniformly against the base plates.
4. Tighten the anchor bolt nuts two or more times in the cross patterns (tightening nuts diametrically opposite) to ensure even tightening. The bolts shall be torqued according to the specifications.
5. After torquing, tack weld the top of nuts to the anchor bolts to ensure that the nuts will not loosen.

CCTV Drilled Shaft Depths		
Location	Diameter, D (Ft)	Length, L (Ft)
Kahuapaani	3'-6"	16'-0"
Ola Lane	3'-6"	16'-0"
Kalihi	3'-6"	16'-0"
Puowaina	3'-6"	16'-0"
McCully	3'-6"	16'-0"
Manoa	3'-6"	21'-0"

1 SI-1, SI-2, SI-4 SI-4 DETAIL - DRILLED SHAFT FOUNDATION FOR CCTV POLE (60' MAX)

Not To Scale

GRAPHIC SCALE

0 3" 6" 1' 2'

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

0 1 2

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

CCTV FOUNDATION DETAILS

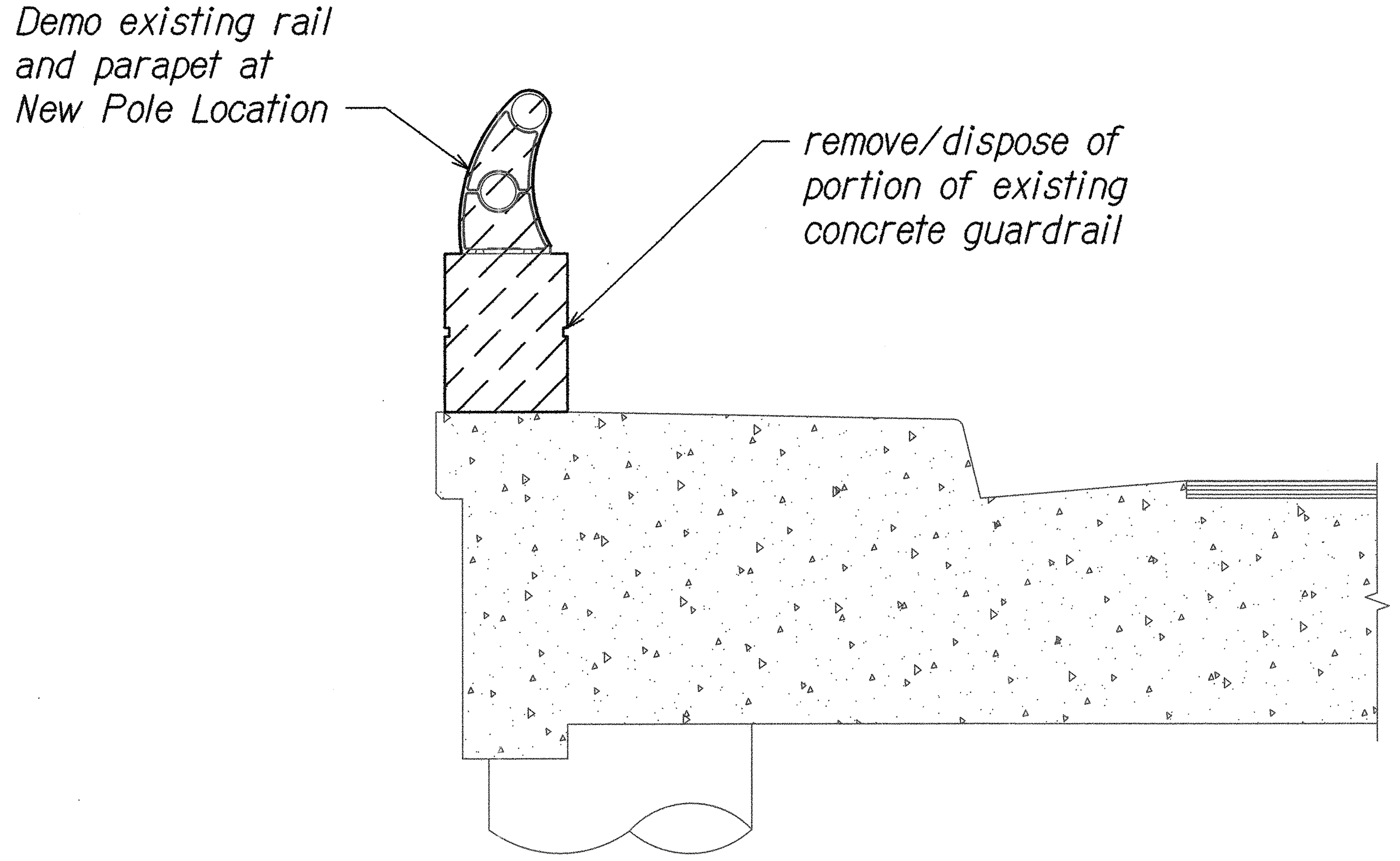
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase IC, Part 2

Scale: As Shown Date: 8/7/14

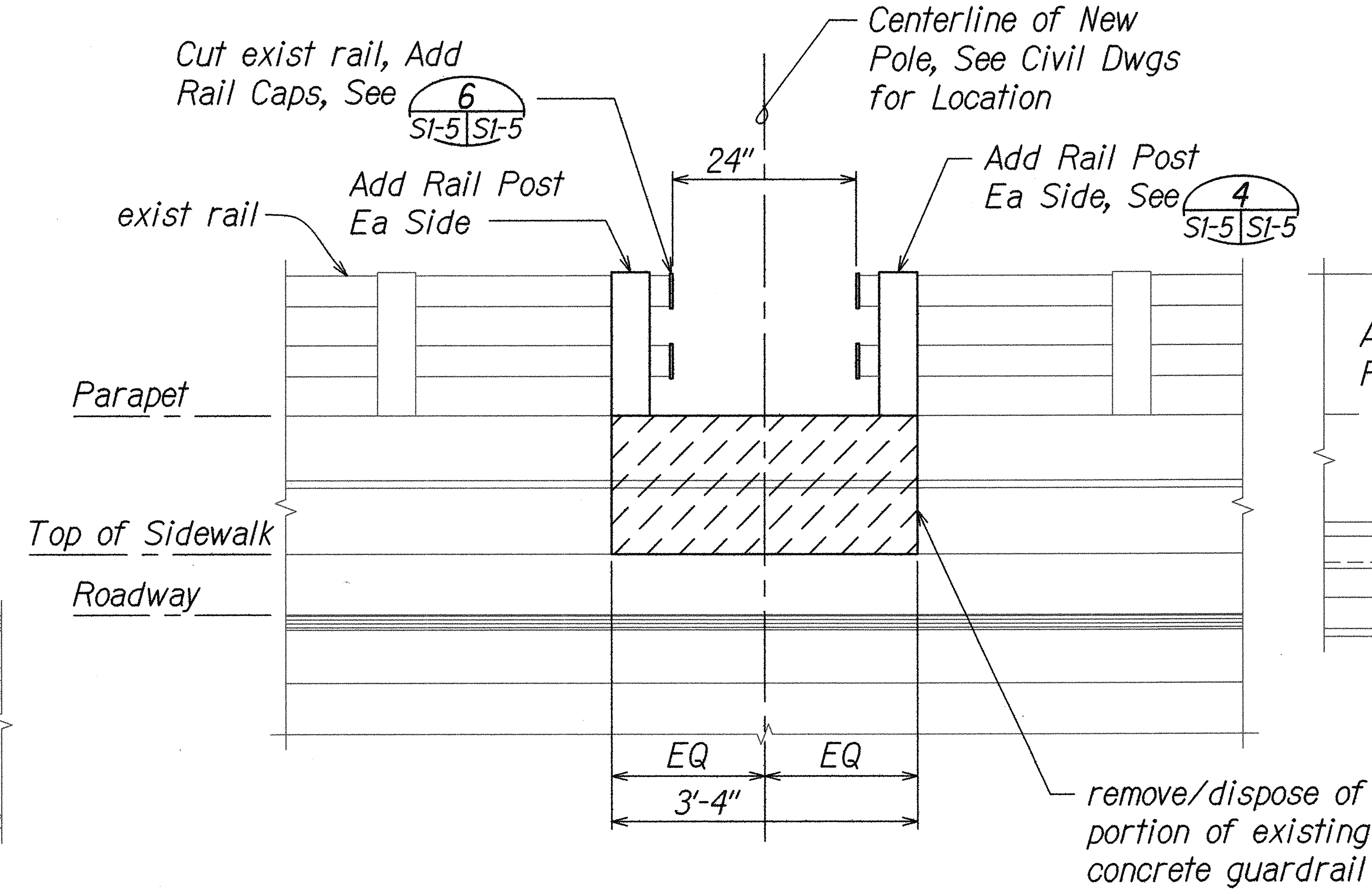
SHEET No. SI-4 OF 54 SHEETS

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

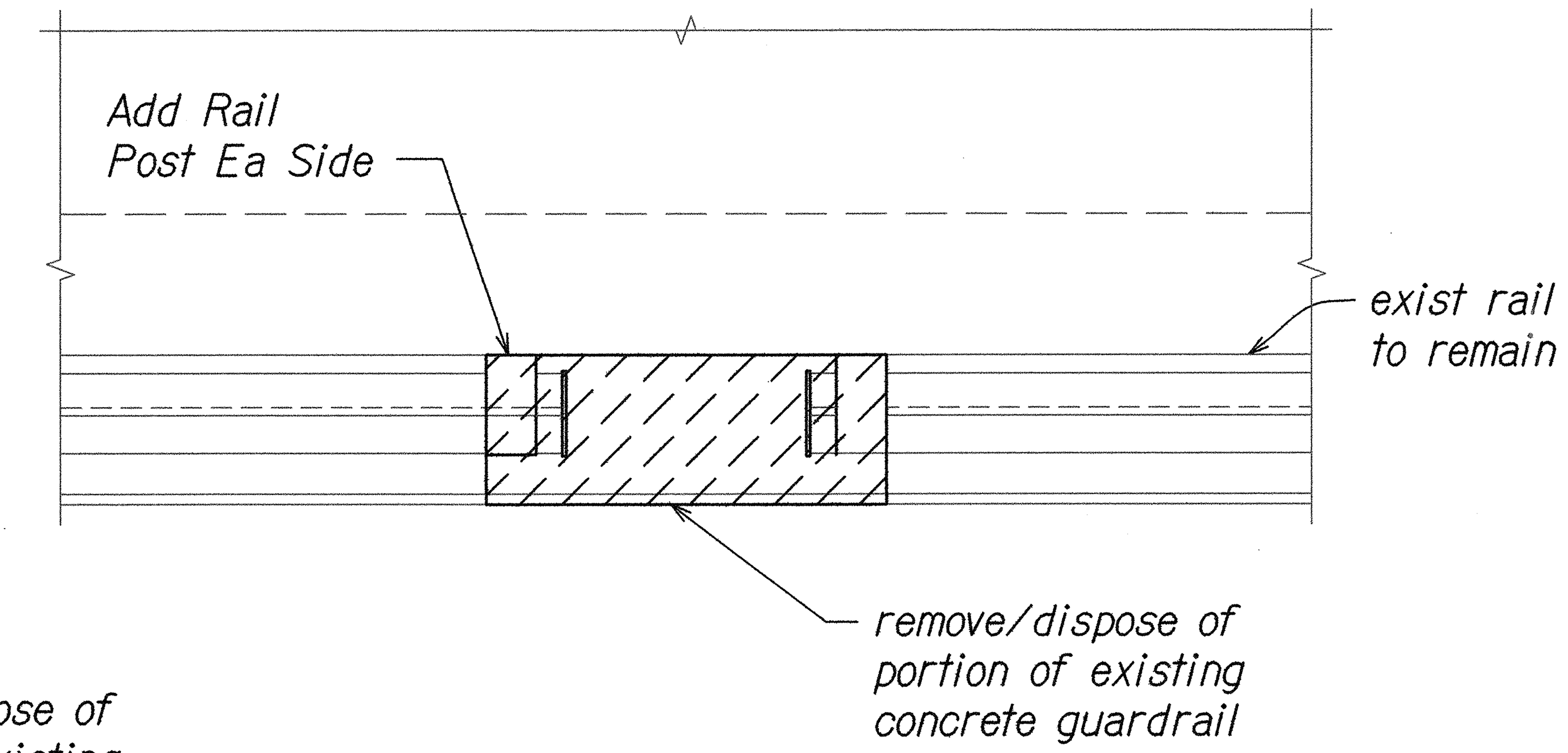
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	115	220



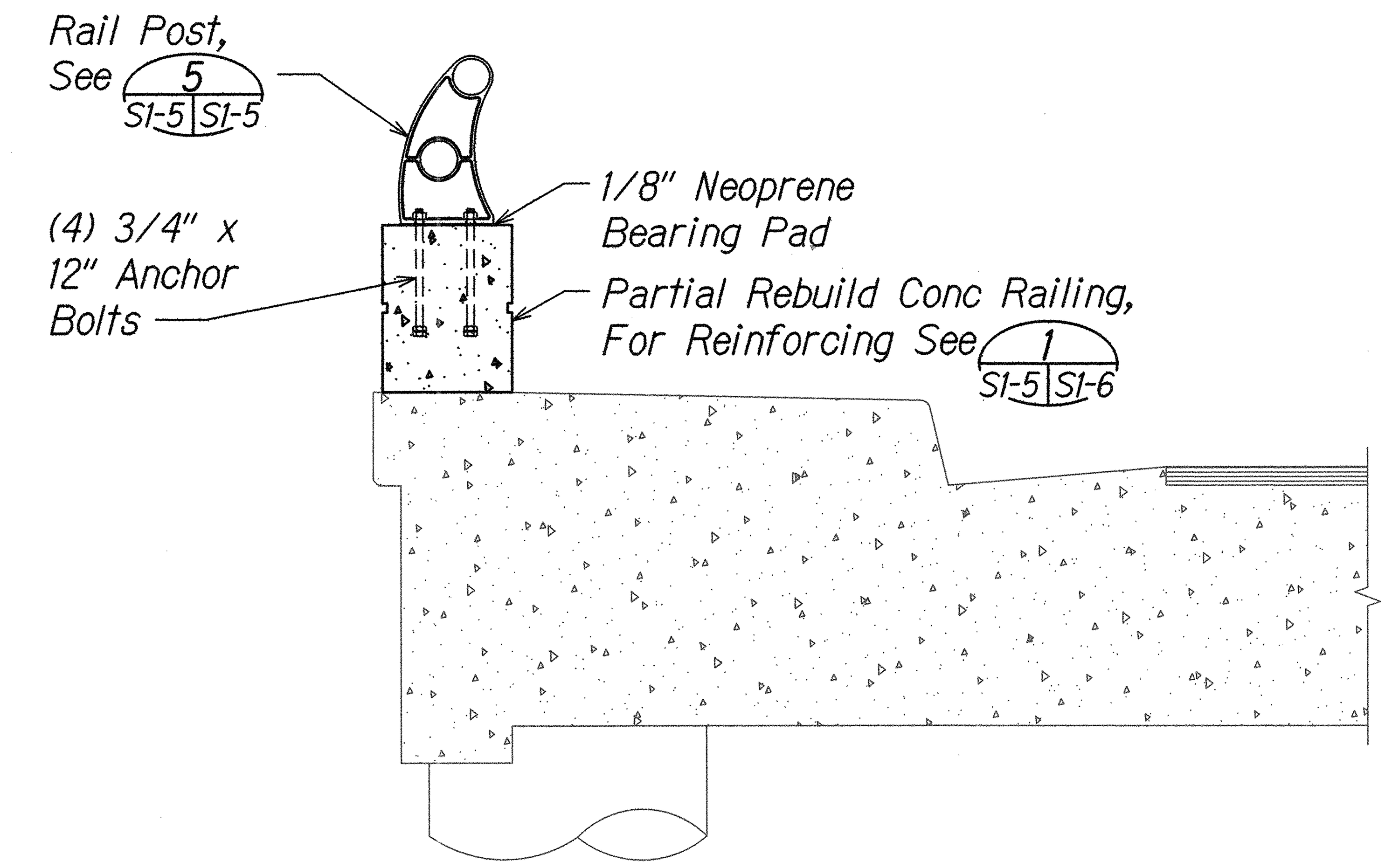
1 / S1-5 | S1-5 DEMOLISH EXISTING RAIL/PARAPET
Scale: 3/4" = 1'-0"



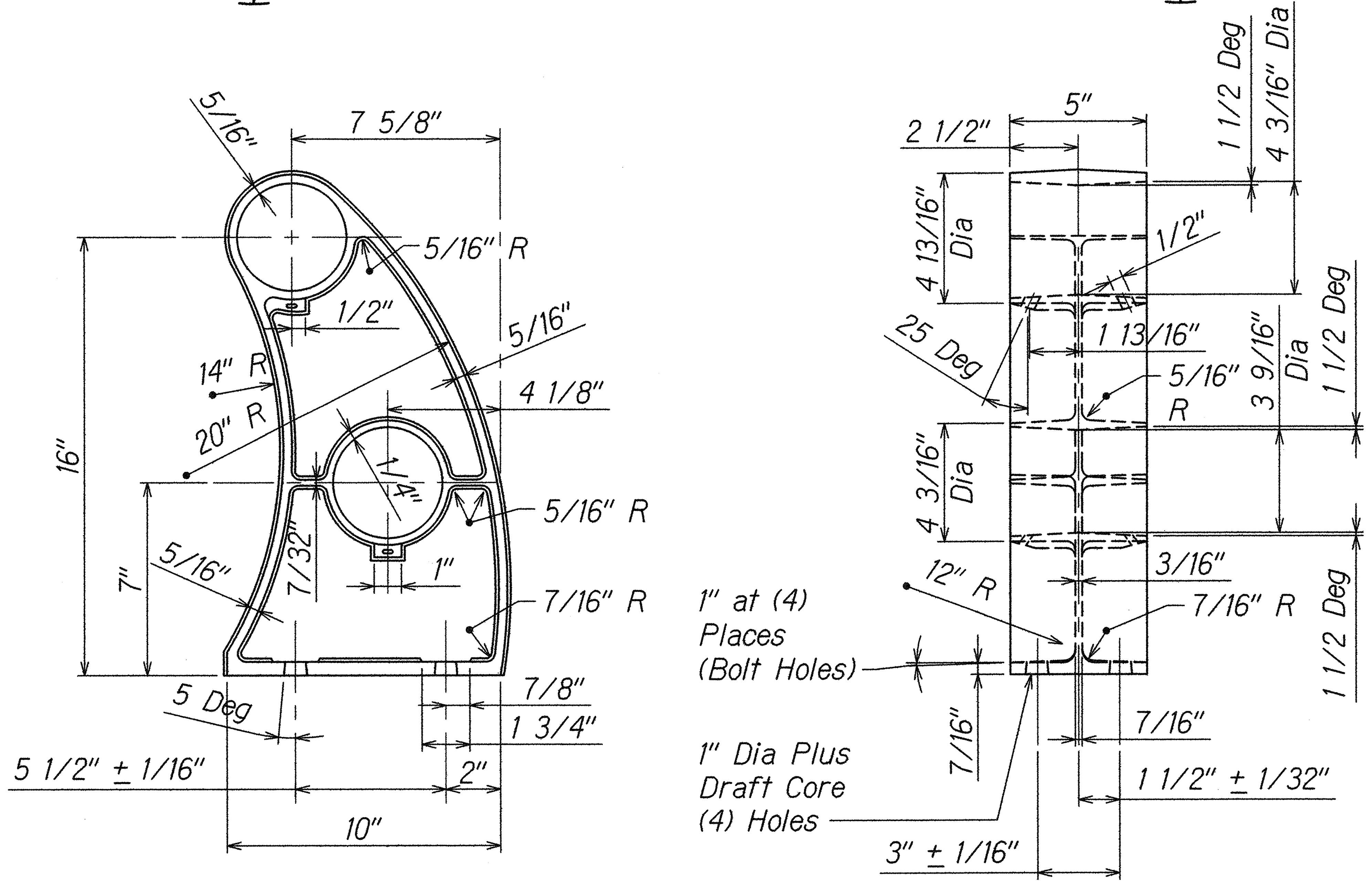
2 / S1-5 | S1-5 PARAPET DEMOLITION ELEVATION
Scale: 3/4" = 1'-0"



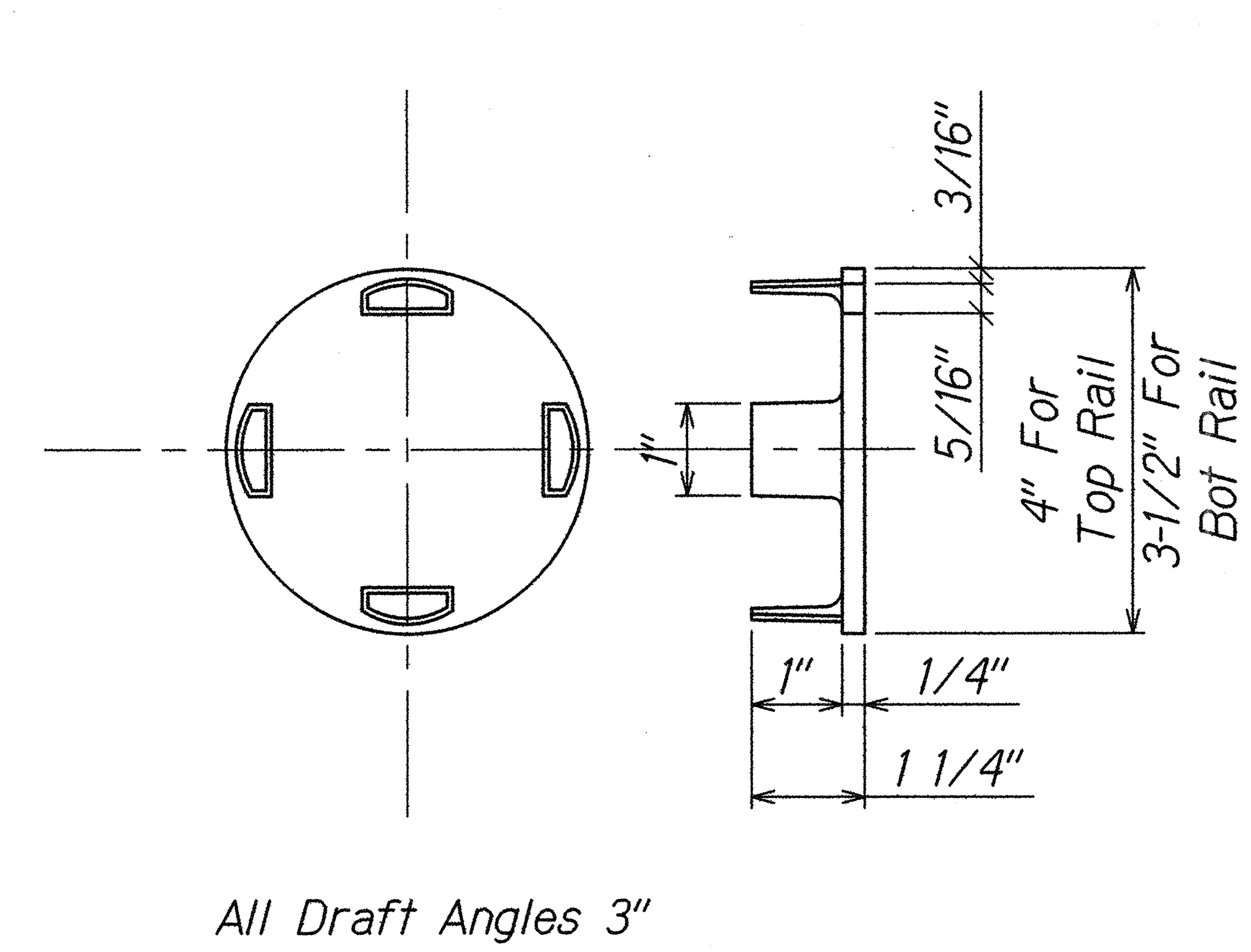
3 / S1-5 | S1-5 PARAPET DEMOLITION PLAN
Scale: 3/4" = 1'-0"



4 / S1-5 | S1-5 NEW RAIL POST
Scale: 3/4" = 1'-0"



5 / S1-5 | S1-5 RAIL POST DETAIL
Scale: 3" = 1'-0"



6 / S1-5 | S1-5 RAIL CAP DETAIL
Scale: 6" = 1'-0"

GRAPHIC SCALE

0 6" 1' 2' 4'
3/4"=1'-0"

0 1' 2' 3'
1"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CCTV FOUNDATION DETAILS

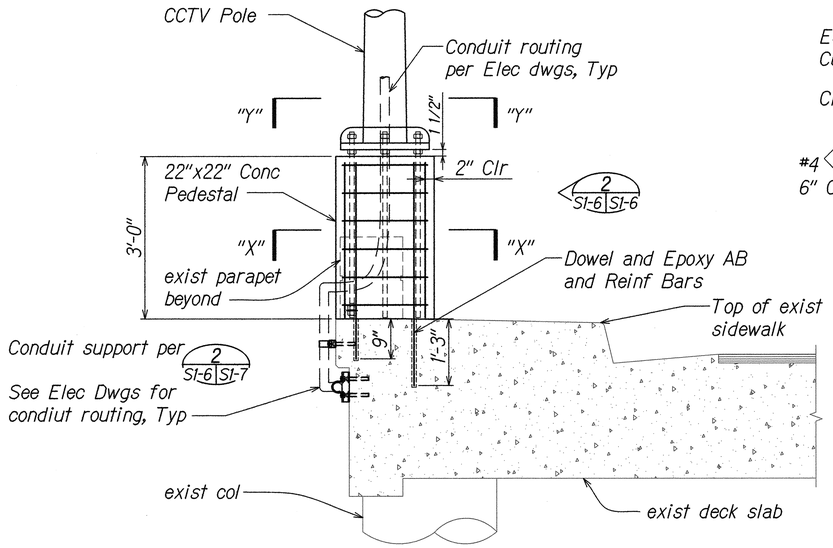
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase IC, Part 2

Scale: As Shown Date: 8/7/14

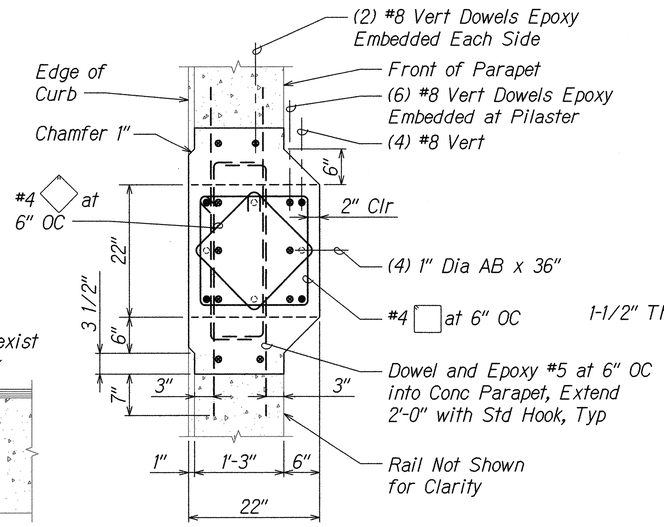
SHEET No. S1-5 OF 54 SHEETS

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

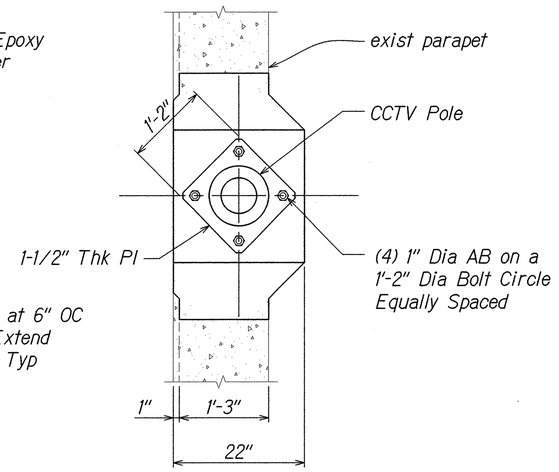
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	116	220



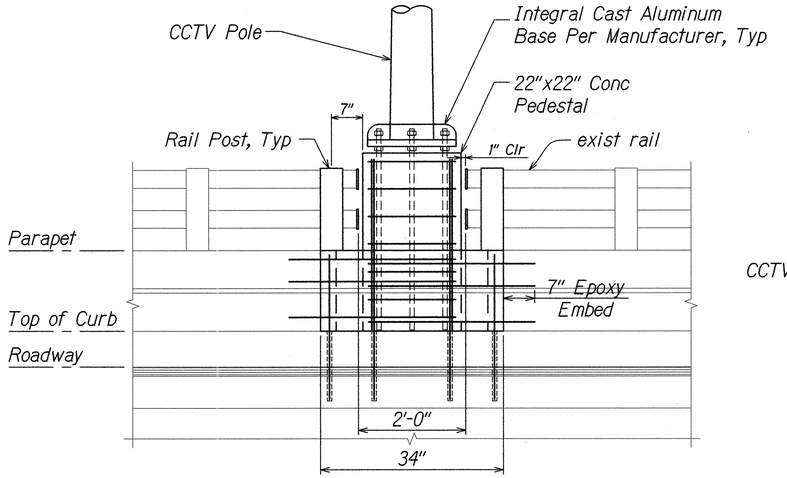
1 S1-5 S1-6 **NEW CONCRETE PEDESTAL FOR 25' CCTV POLE**
Scale: 3/4" = 1'-0"



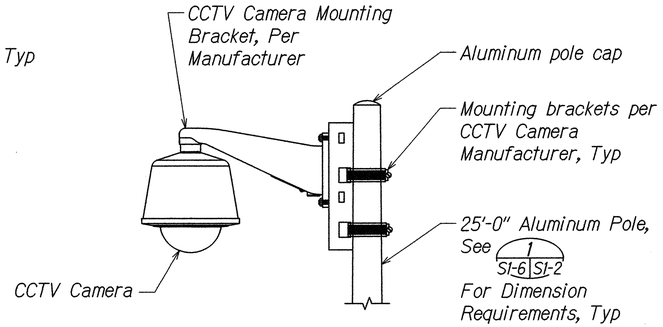
Section X - X
Scale: 1" =1'-0"



Section Y - Y
Scale: 1" =1'-0"



2 S1-6 S1-6 **PARAPET NEW ELEVATION**
Scale: 3/4" = 1'-0"



Notes:

1. See civil drawings for orientation of CCTV camera and additional information for Manufacturer mounting.
2. 25'-0" CCTV is not provided with a lowering device.

3 S1-6 S1-6 **25'-0" POLE - TOP CONN**
Scale: 3/4" = 1'-0"

GRAPHIC SCALE

0 6" 1' 2' 4'
3/4"=1'-0"

0" 3" 6" 1' 2'
1-1/2"=1'-0"

0 1' 2' 3'
1"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CCTV FOUNDATION DETAILS

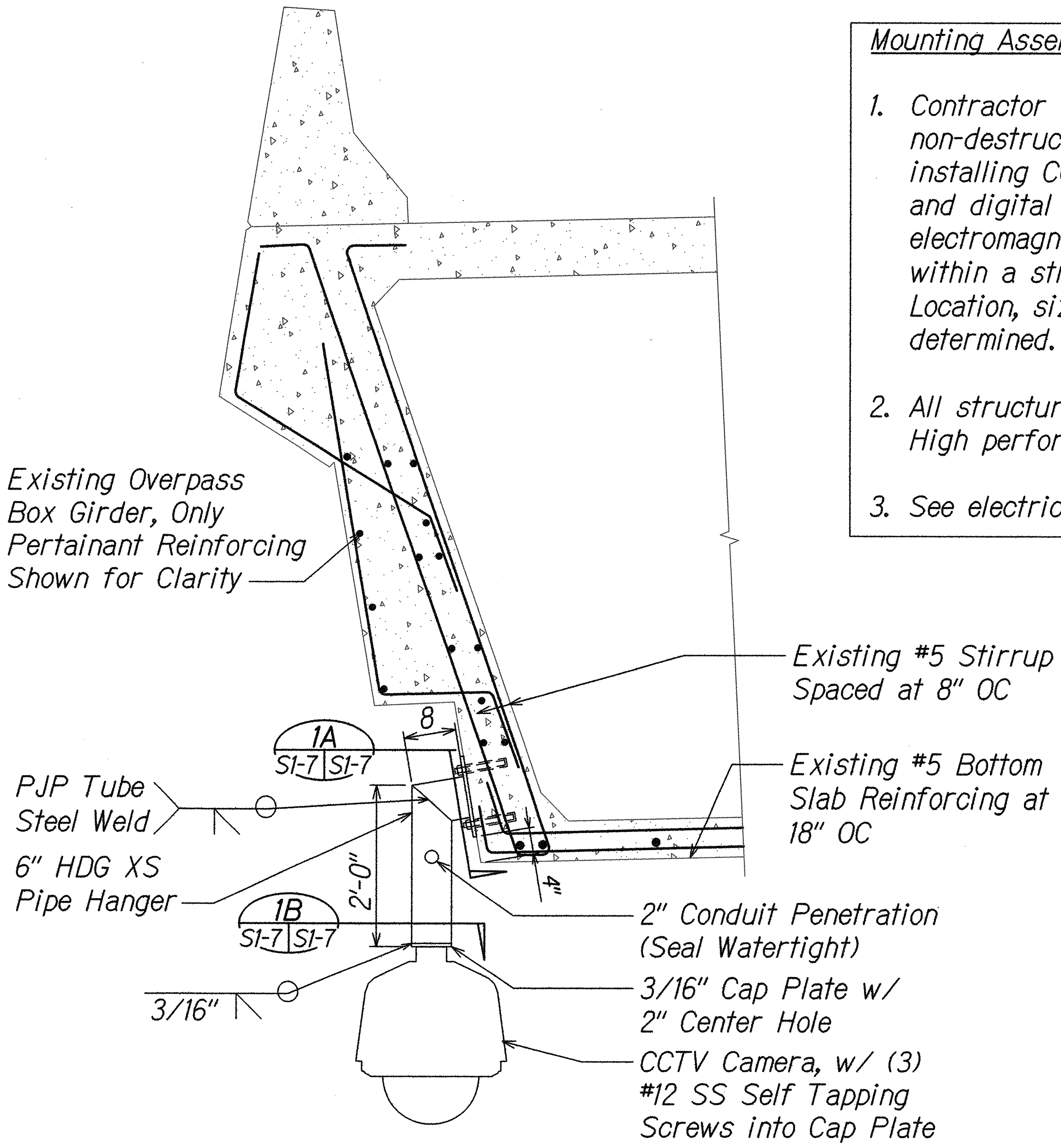
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S1-6 OF 54 SHEETS

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

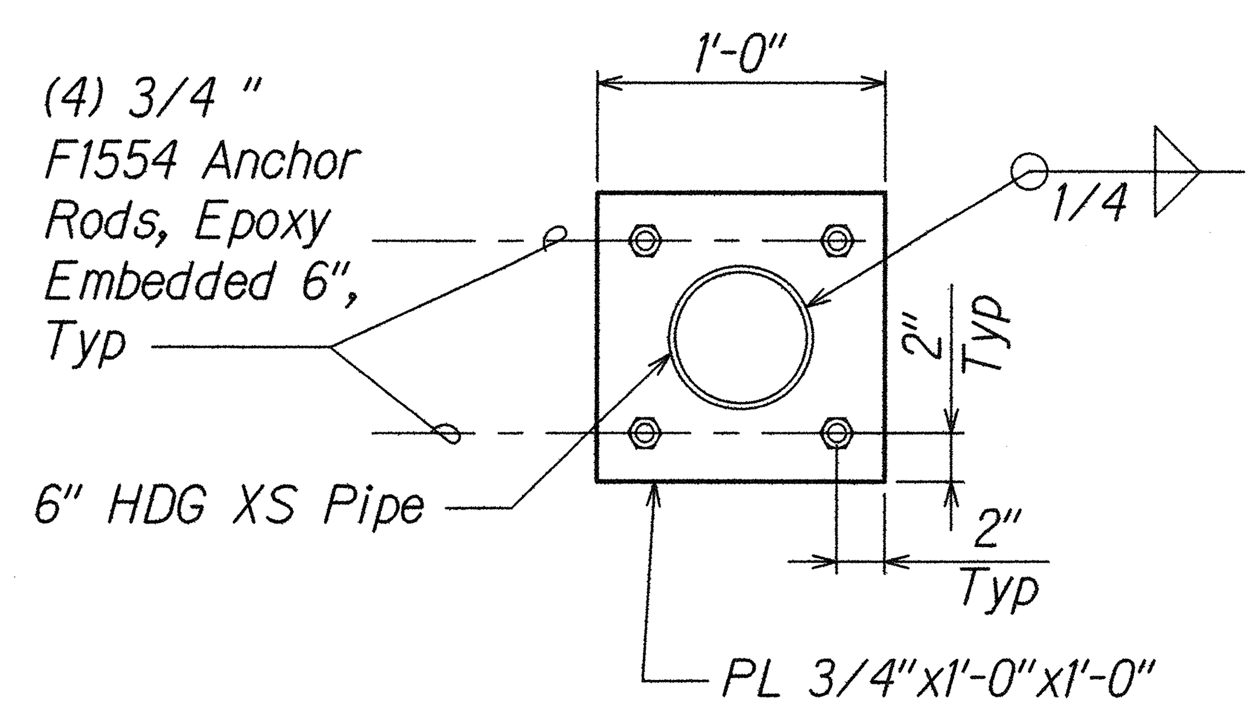
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	117	220



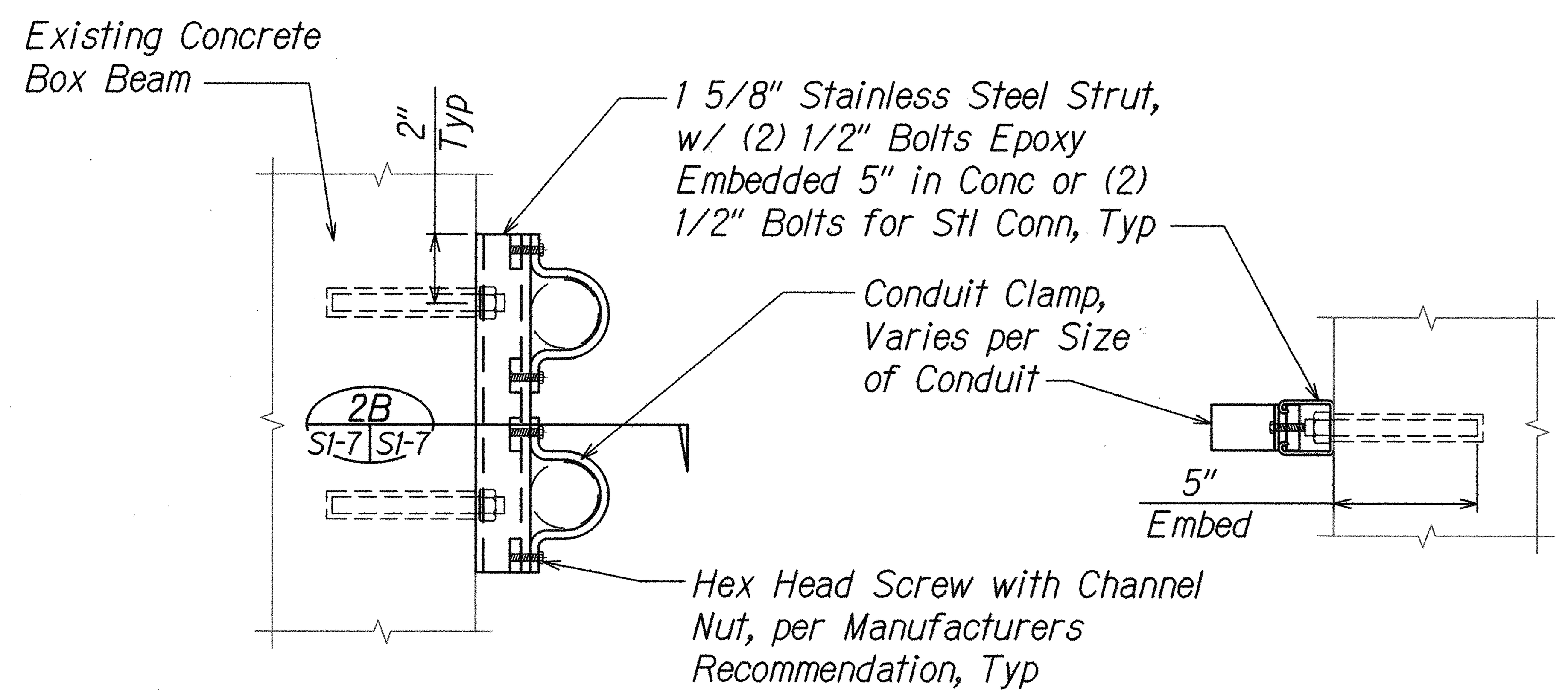
1 (S1-7 | S1-7) MOUNTING ASSEMBLY AIRPORT/PAIEA
Scale: 3/4" = 1'-0"

Mounting Assembly Note:

1. Contractor shall locate reinforcing by non-destructive testing (NDT) methods prior to installing CCTV mount. Ground penetrating radar and digital meters that use low frequency electromagnetic fields to locate ferrous objects within a structure are acceptable NDT methods. Location, size and depth of reinforcing shall be determined.
2. All structural steel shall be hot dipped galvanized. High performance coating per specifications.
3. See electrical drawings for conduit routing.



1A (S1-7 | S1-7) MOUNTING BASEPLATE
Scale: 1-1/2" = 1'-0"



2A (S1-7 | S1-7) CONDUIT SECTION (SIDE/BOT)

2B (S1-7 | S1-7) TOP VIEW

2 (S1-6, S1-7, S2-2, S3-2, S4-2, S5-2, S6-7, S6-8, S6-15 | S1-7) CONDUIT ATTACHMENT
Scale: 3" = 1'-0"

Notes:

1. Conduit attachments may be made to the side or bottom of existing box girders per Elec/Telcom drawings.
2. Contractor shall locate existing reinforcing in box beam using non-destructive testing.
3. Drilling equipment shall not consist of cutting bits capable of cutting reinforcing steel.
4. Threaded rods shall be extended 1/2" past nuts and be spoiled to prevent loosening.
5. Provide strut support at 5'-0" on center max.

GRAPHIC SCALE

0" 3" 6" 1' 2' — 1-1/2"=1'-0"

0 6" 1' 2' 4' — 3/4"=1'-0"

0 1' 2' 3' — 1"=1'-0"

0 1 2 — LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ, JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

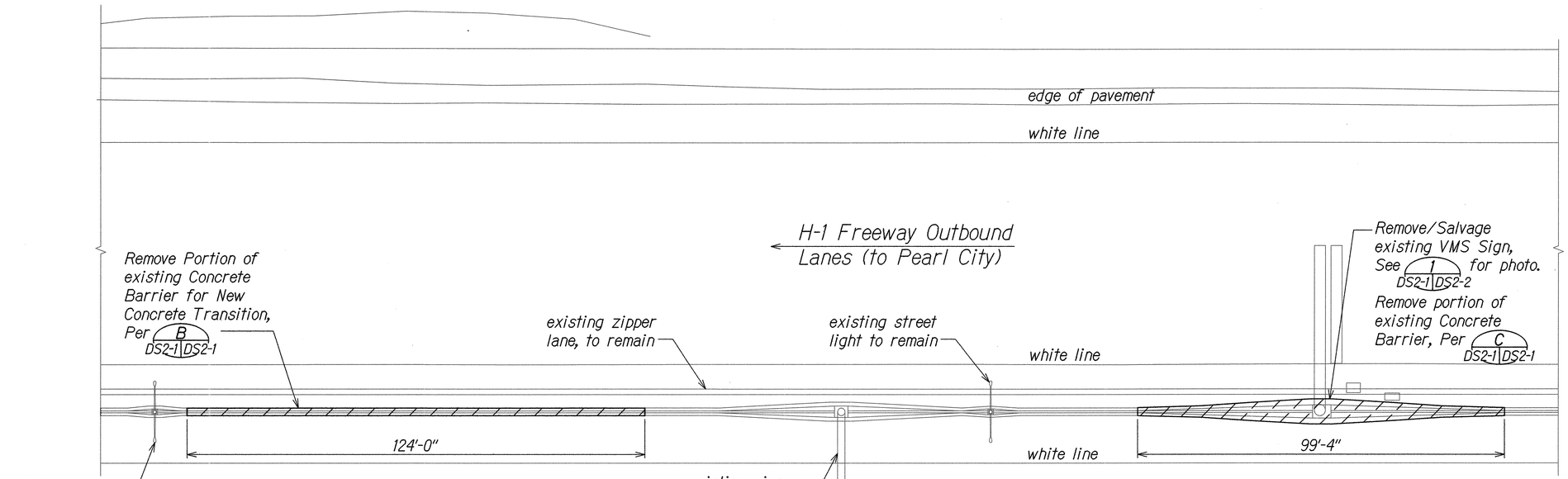
AIRPORT/PAIEA CCTV

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

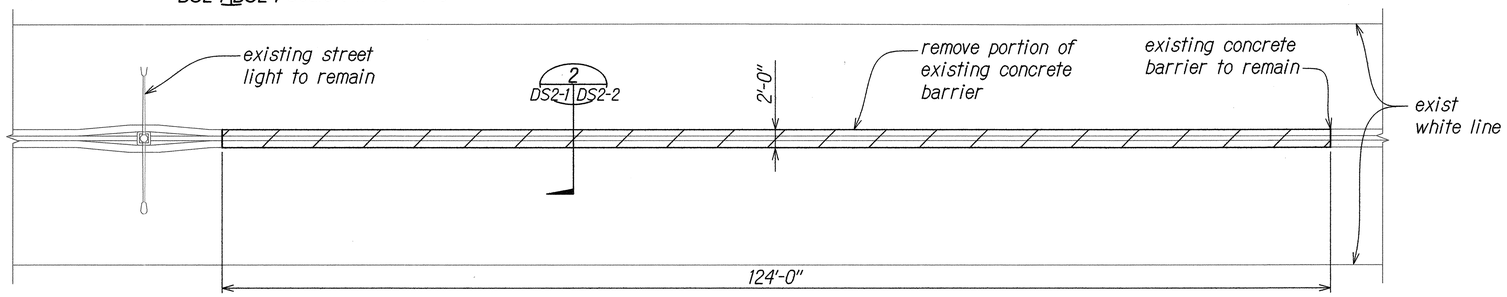
Scale: As Shown Date: 8/7/14

SHEET No. S1-7 OF 54 SHEETS

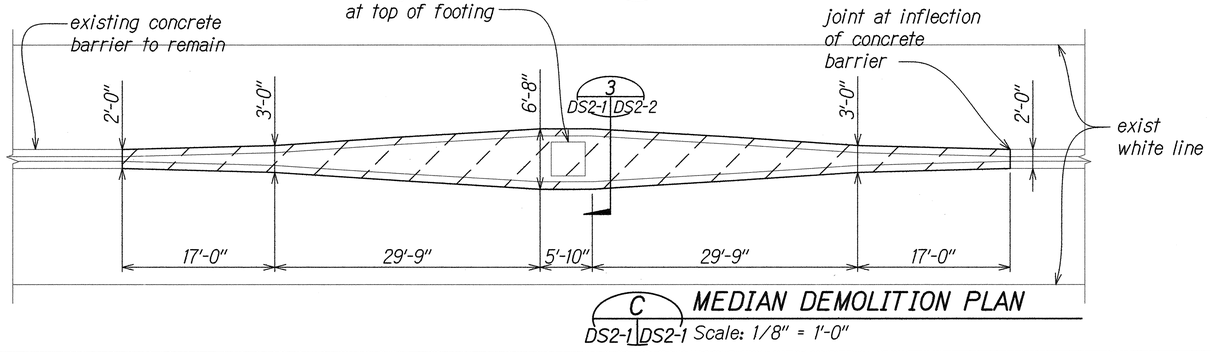
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	118	220



A DS2-1 DS2-1 **H-1 RADFORD VMS KEY PLAN**
Scale : 1/16" = 1'-0"



B DS2-1 DS2-1 **MEDIAN DEMOLITION PLAN**
Scale: 1/8" = 1'-0"



C DS2-1 DS2-1 **MEDIAN DEMOLITION PLAN**
Scale: 1/8" = 1'-0"

Graphics Scale

01' 2' 4' 6' 8' 16' 24'
1/8"=1'-0"

01'2'4'8' 16' 32'
1/16"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

Demolition Notes:

1. See Civil drawings for additional information not shown on structural drawings.
2. Dimensions shown on demolition drawings are approximate for demolition purposes only. Dimensions and location of new concrete barrier and VMS sign foundation shall be as shown on civil and structural drawings.
3. Contractor shall be responsible for all Best Management Practices (BMP) outlined in the Specifications. For demolition, this includes but is not limited to dust control and environmental control during construction. Debris shall not be allowed to runoff into storm drain or streams.
4. Existing VMS sign shall be delivered to HI-DOT Baseyard: 727 Kakoi Street, Honolulu, HI 96819
5. Contractor shall coordinate all work with zipper lane barrier operations.

GEORGE O. GUTIERREZ JR.
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 RADFORD VMS DEMOLITION PLAN

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

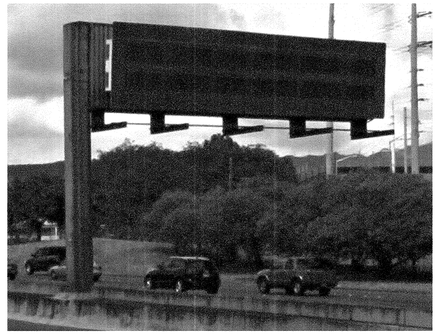
SHEET No. DS2-1 OF 54 SHEETS

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTEBOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	119	220

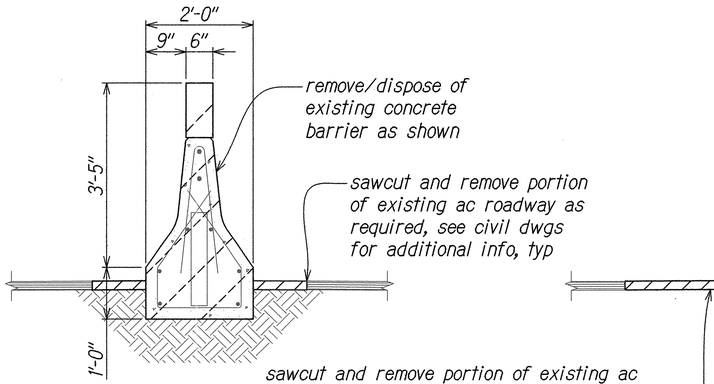
existing zipper lane barrier to remain, contractor shall coordinate all work with zipper lane

EXISTING MEDIAN TO BE REMOVED

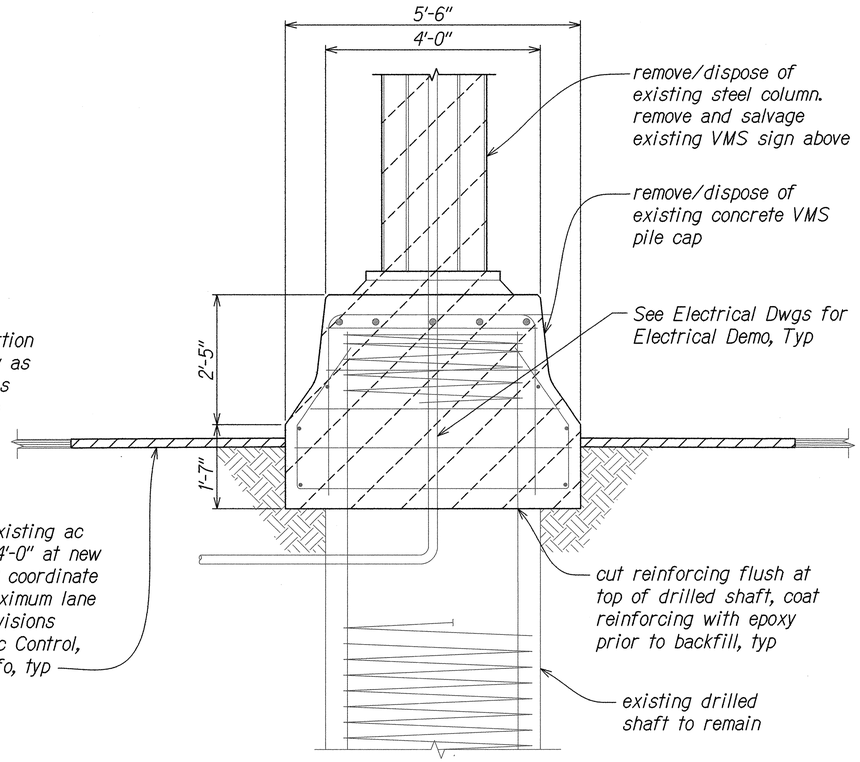


EXISTING SIGN TO BE REMOVED/SALVAGED

1 DS2-1 DS2-2 **PHOTOS - EXISTING CONDITIONS** Not to Scale



2 DS2-1 DS2-2 **TYPICAL CONC BARRIER DEMO** Scale: 3/4" = 1'-0"



3 DS2-1 DS2-2 **VMS PILE CAP DEMO** Scale: 3/4" = 1'-0"

Graphics Scale

0 6" 1' 2' 3' 4'

3/4"=1'-0"

0 1 2

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

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

ORIGINAL PLAN
NOTEBOOK
No.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

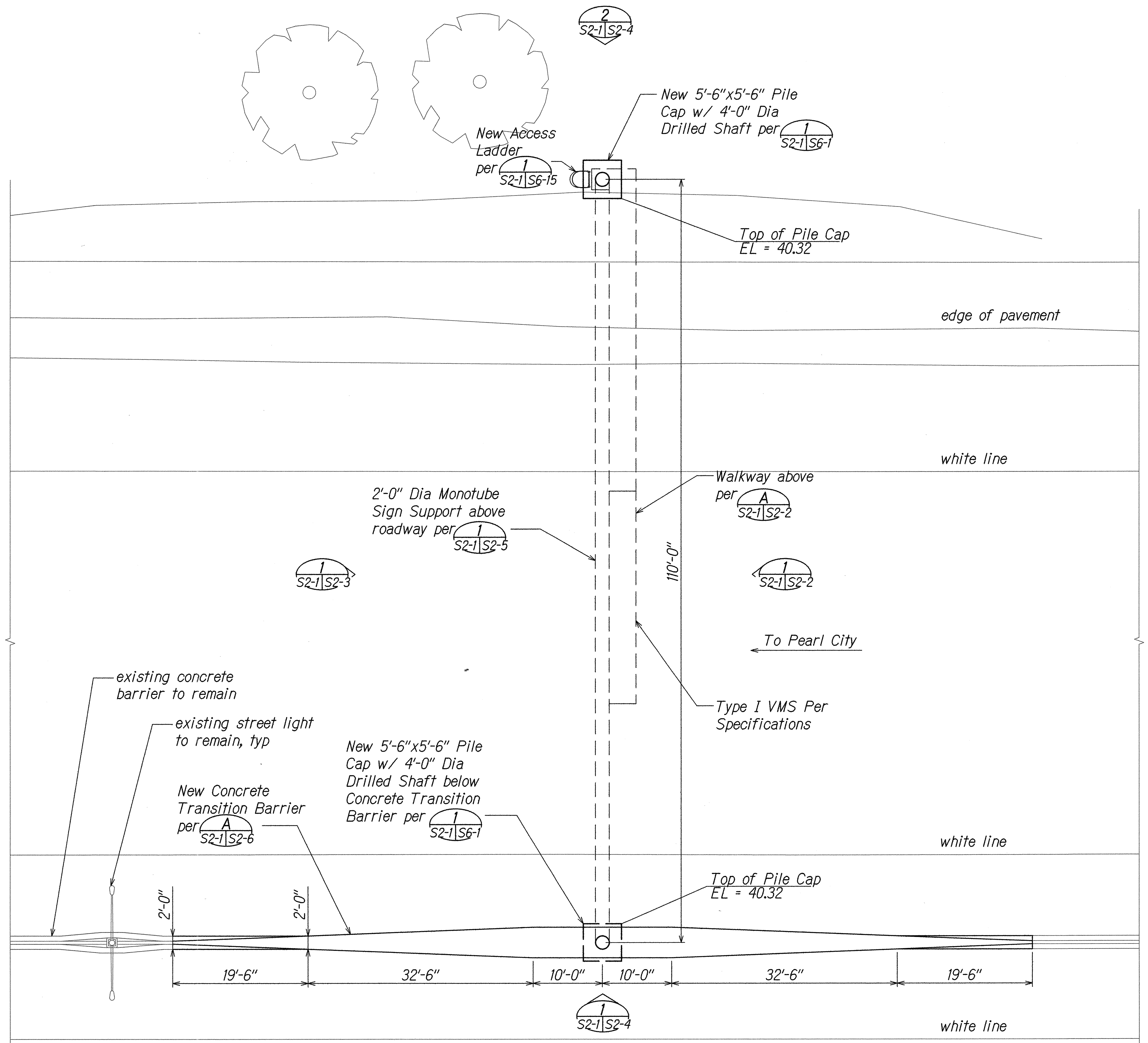
H-1 RADFORD VMS DEMOLITION DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. DS2-2 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	120	220



A S2-1 S2-1 **H-1 RADFORD VMS FOUNDATION PLAN**
Scale: 1/8" = 1'-0"

NORTH

NOTES:

1. Refer to general notes on sheet S0-1 and S0-2 and typical detail sheets S6-1 through S6-17 for additional information.
2. Refer to civil drawings for VMS location, dimensions and other information not shown on structural drawings.
3. Refer to electrical and telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all existing dimensions and clearances. Any discrepancies shall be brought to the attention of the engineer prior to fabrication.

Graphics Scale
0 1' 2' 4' 6' 8' 16' 24'
1/8"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ, JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

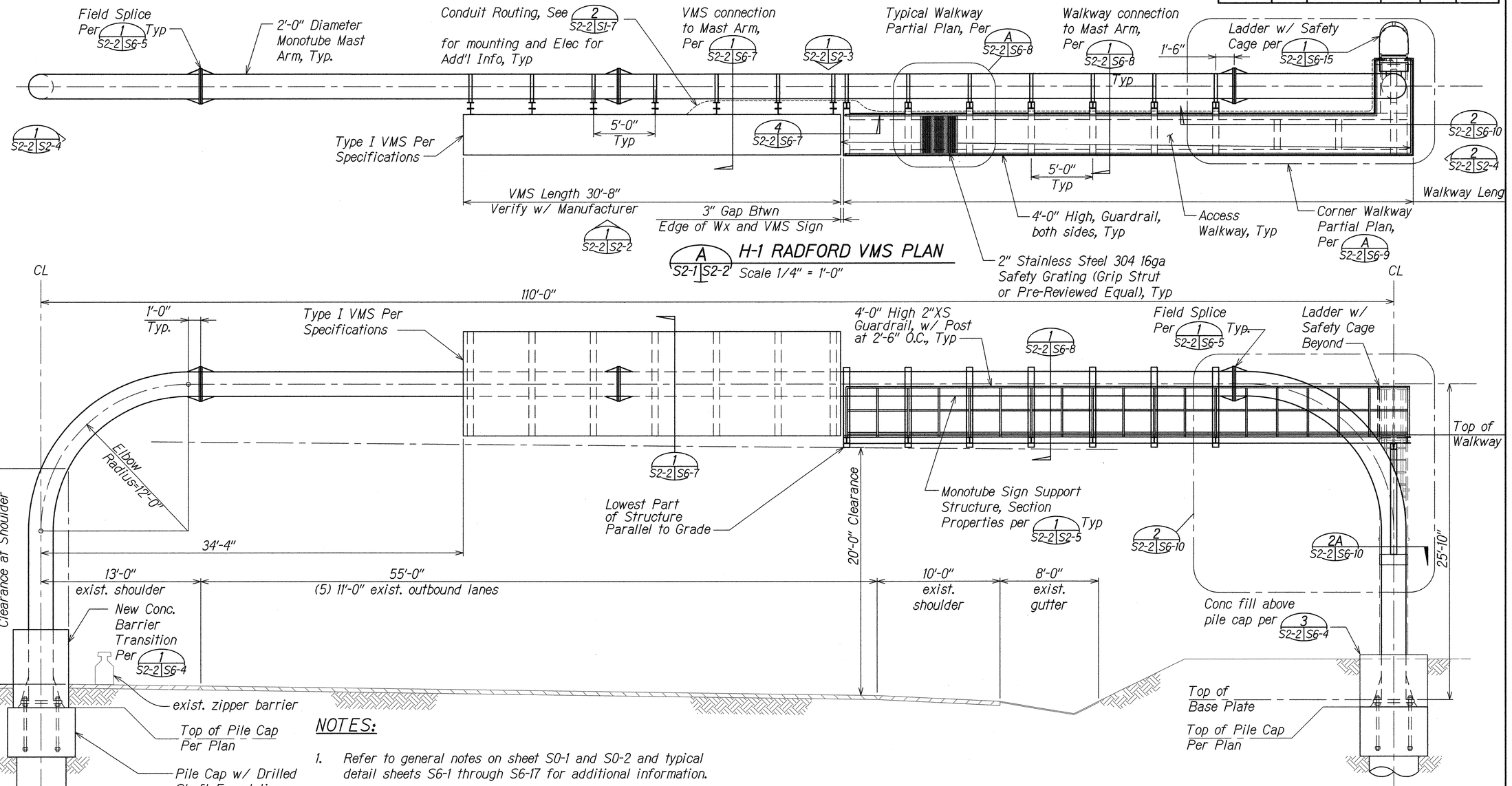
H-1 RADFORD VMS FOUNDATION PLAN

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S2-1 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	121	220



NOTES:

1. Refer to general notes on sheet S0-1 and S0-2 and typical detail sheets S6-1 through S6-17 for additional information.
2. Refer to civil drawings for VMS location, dimensions and other information not shown on structural drawings.
3. Refer to electrical and telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all existing dimensions and clearances. Any discrepancies shall be brought to the attention of the engineer prior to fabrication.

1 S2-1, S2-2 | S2-2 **H-1 RADFORD VMS SOUTH ELEVATION**
Scale: 1/4" = 1'-0"

Graphics Scale
0 1' 2' 4' 8' 12'
1/4"=1'-0"
0 1 2
LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
ORIGINAL SCALE
NOTEBOOK
No.

PW:F:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\2_RADFORD\S2-2.DWG Oct 15, 2014-10:56 AM

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

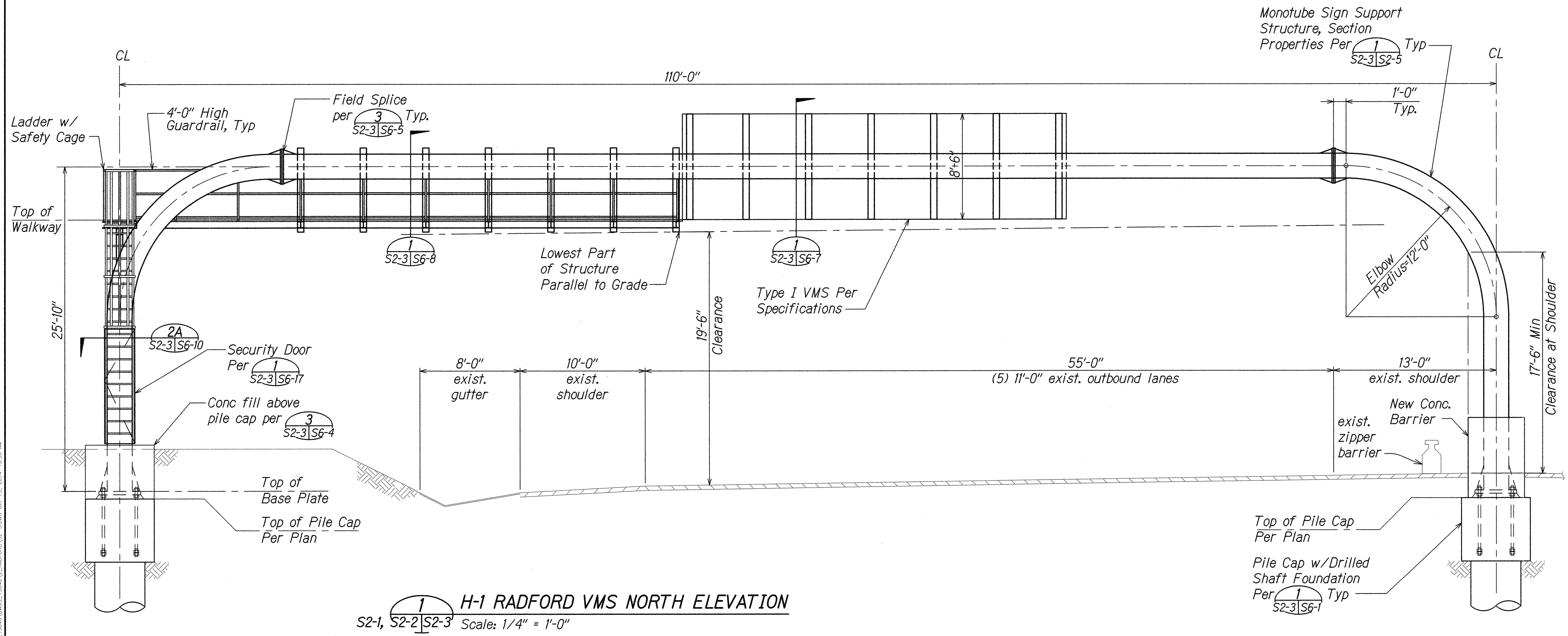
H-1 RADFORD VMS TOP PLAN AND SOUTH ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S2-2 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	122	220



S2-1, S2-2 | S2-3 — 1 — **H-1 RADFORD VMS NORTH ELEVATION**
Scale: 1/4" = 1'-0"

Graphics Scale
0 1' 2' 4' 8' 12'
1/4"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

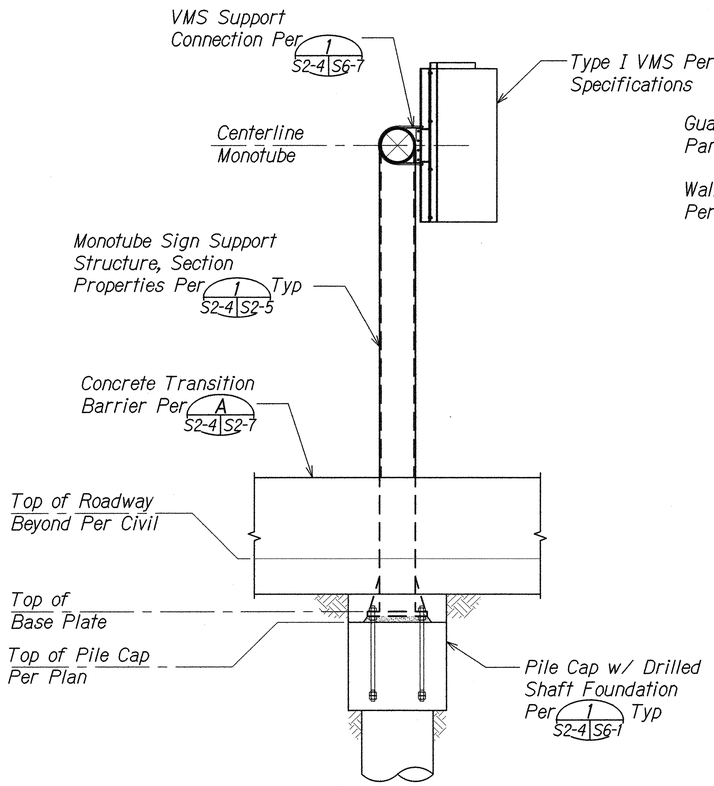
H-1 RADFORD VMS NORTH ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

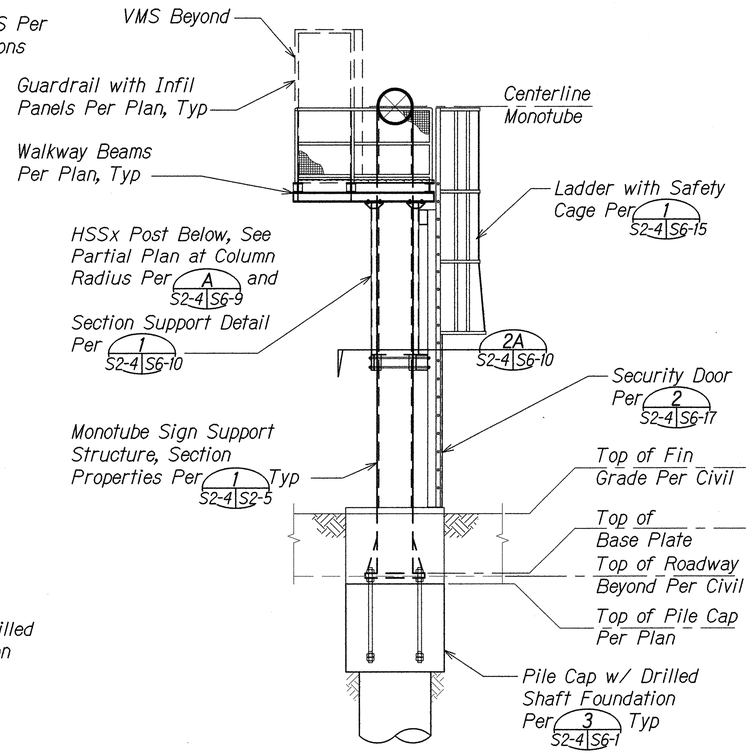
Scale: As Shown — Date: 8/7/14

SHEET No. S2-3 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	123	220



1 S2-1, S2-2 S2-4 **H-1 RADFORD WEST ELEVATION**
Scale: 1/4" = 1'-0"



2 S2-1, S2-2 S2-4 **H-1 RADFORD EAST ELEVATION**
Scale: 1/4" = 1'-0"

Graphics Scale
0 1' 2' 4' 8' 12'
1/4"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 RADFORD VMS EAST AND WEST ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

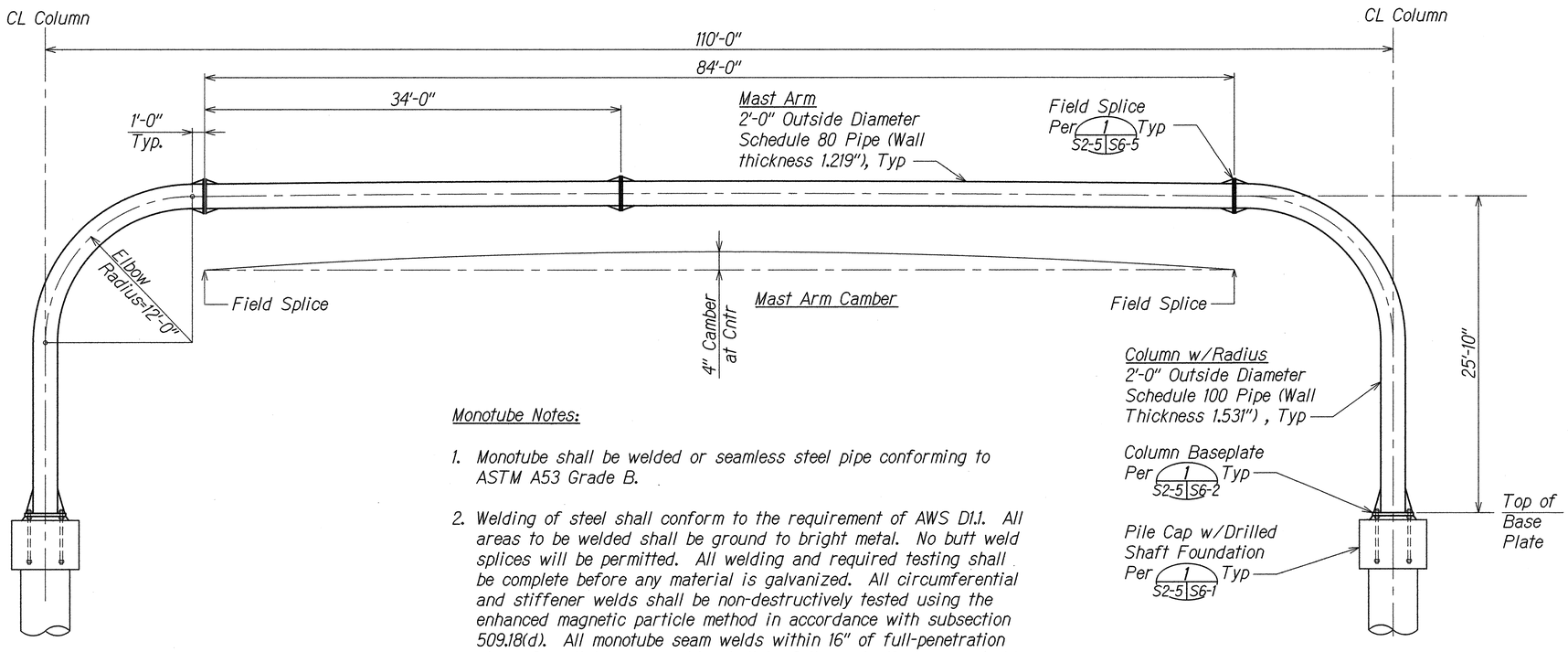
Scale: As Shown Date: 8/7/14

SHEET No. S2-4 OF 54 SHEETS

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

F:\F\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\2_RADFORD\S2-4.DWG Oct 15, 2014 - 10:56 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	124	220



Monotube Notes:

1. Monotube shall be welded or seamless steel pipe conforming to ASTM A53 Grade B.

2. Welding of steel shall conform to the requirement of AWS D1.1. All areas to be welded shall be ground to bright metal. No butt weld splices will be permitted. All welding and required testing shall be complete before any material is galvanized. All circumferential and stiffener welds shall be non-destructively tested using the enhanced magnetic particle method in accordance with subsection 509.18(d). All monotube seam welds within 16" of full-penetration circumferential groove welds shall be full penetration groove welds and shall be inspected as specified above. Maximum weld undercut shall be 0.01".

3. Notch toughness of all structural steel members and plates greater than 1/2" thick shall conform to Zone 2 requirements of AASHTO M270 Supplementary Requirement S5 (ASTM A709 Supplementary Requirement S83).

4. Monotube members shall be hot-dipped galvanized inside and outside after fabrication per ASTM A123.

1 H-1 RADFORD MONOTUBE ELEV
S2-1, S2-2, S2-3, S2-4 S2-5 Scale: 3/16" = 1'-0"

ORIGINAL PLAN | SURVEY PLOTTED BY ____ DATE | DRAWN BY ____ | TRACED BY ____ | DESIGNED BY ____ | QUANTITIES BY ____ | CHECKED BY ____ | NOTEBOOK No. ____

FN:F:\13JOB.DIR\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\2_RADFORD\S2-5.DWG Oct 15, 2014-10:56 AM

Graphics Scale
0 1' 2' 4' 8' 16'
3/16"=1'-0"

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If not 2 inches: scale accordingly)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

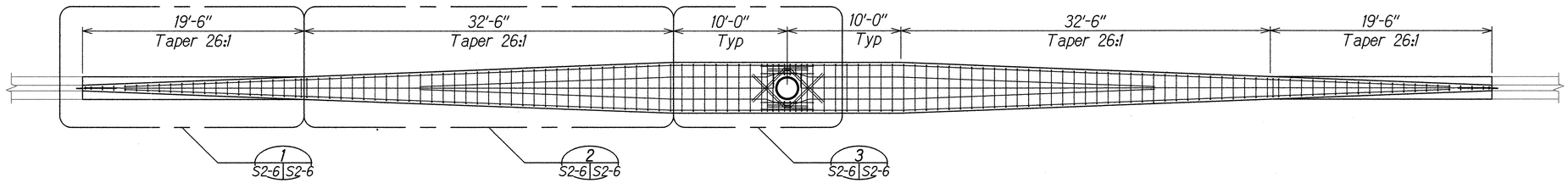
H-1 RADFORD VMS MONOTUBE DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

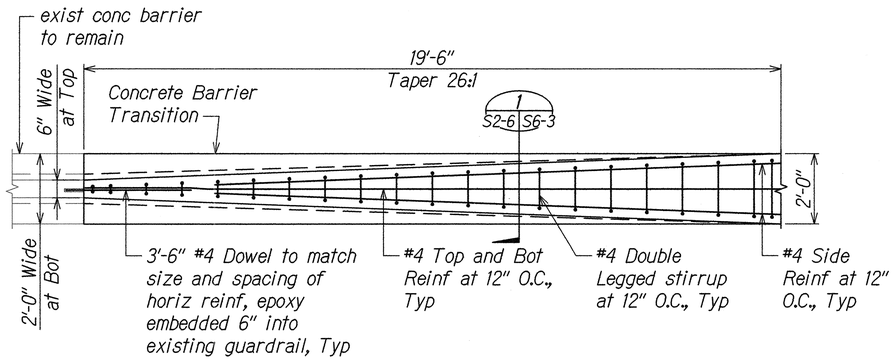
Scale: As Shown Date: 8/7/14

SHEET No. S2-5 OF 54 SHEETS

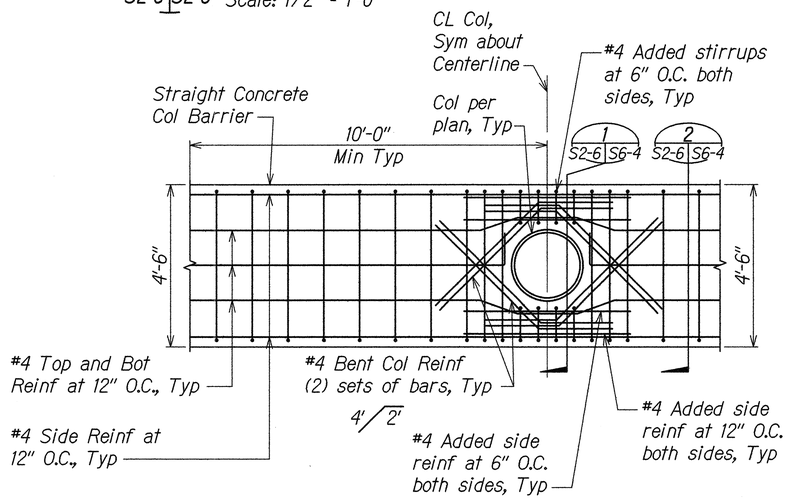
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	125	220



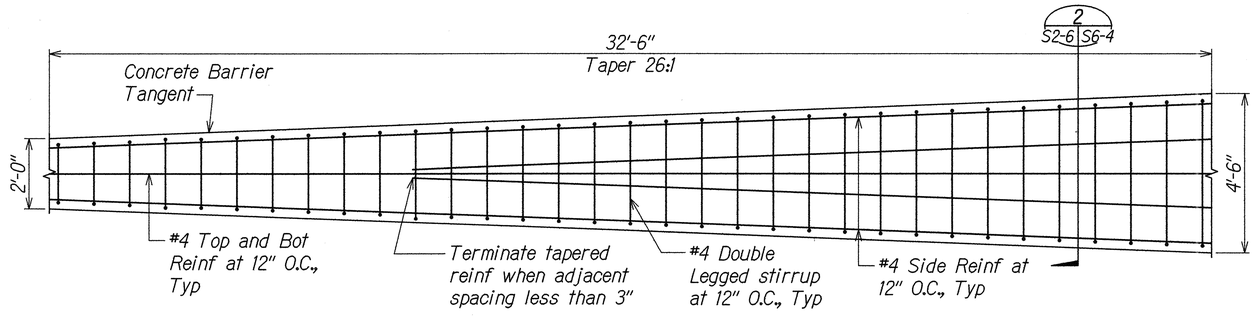
A PLAN - CONCRETE BARRIER TRANSITION
S2-1 | S2-6 Scale: 3/16" = 1'-0"



1 DETAIL - CONCRETE BARRIER TRANSITION
S2-6 | S2-6 Scale: 1/2" = 1'-0"



3 DETAIL - CONCRETE BARRIER AT COL
S2-6 | S2-6 Scale: 1/2" = 1'-0"



2 DETAIL - CONCRETE BARRIER TANGENT
S2-6 | S2-6 Scale: 1/2" = 1'-0"

NOTES:

1. Refer to general notes on sheet S0-1 and S0-2 and typical detail sheets S6-3 through S6-4 for additional information.
2. Refer to civil drawings for dimensions and other information not shown on structural drawings.
3. Refer to electrical and telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all existing dimensions and clearances. Any discrepancies shall be brought to the attention of the engineer prior to fabrication.
5. See HI DOT Standard Plans TE-40 for reference.

0 1" 2" 4" 8" 16"
3/16"=1'-0"

0 6" 1' 2' 4' 6'
1/2"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/15
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 RADFORD VMS CONCRETE BARRIER TRANSITION PLAN

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

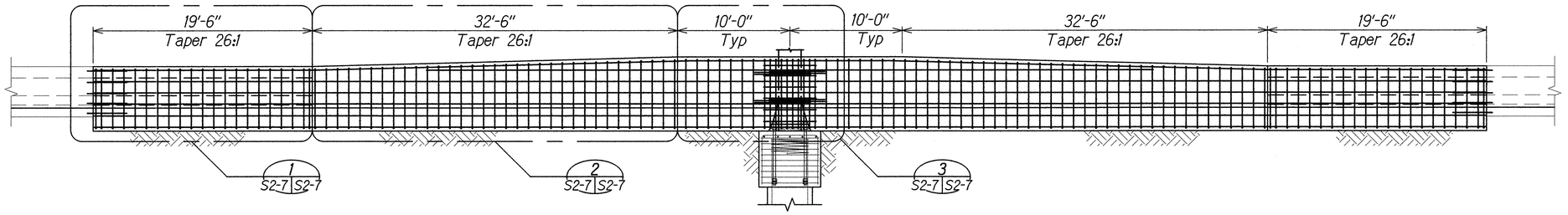
Scale: As Shown Date: 8/7/14

SHEET No. S2-6 OF 54 SHEETS

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

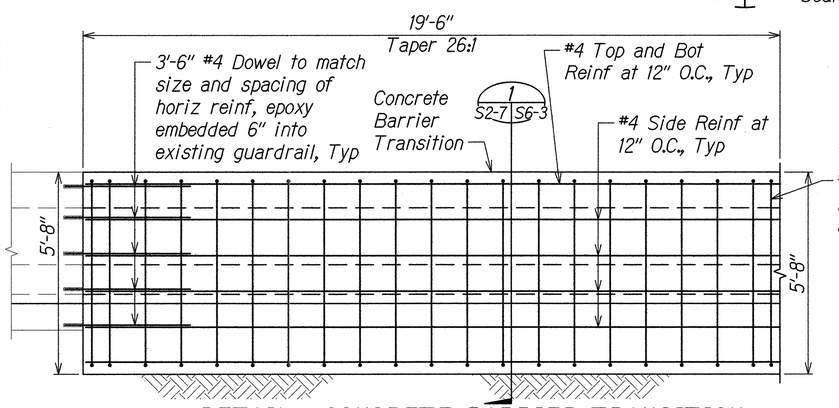
FN:F:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\V2_RADFORD\S2-6.DWG Oct 15, 2014-10:56 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	126	220



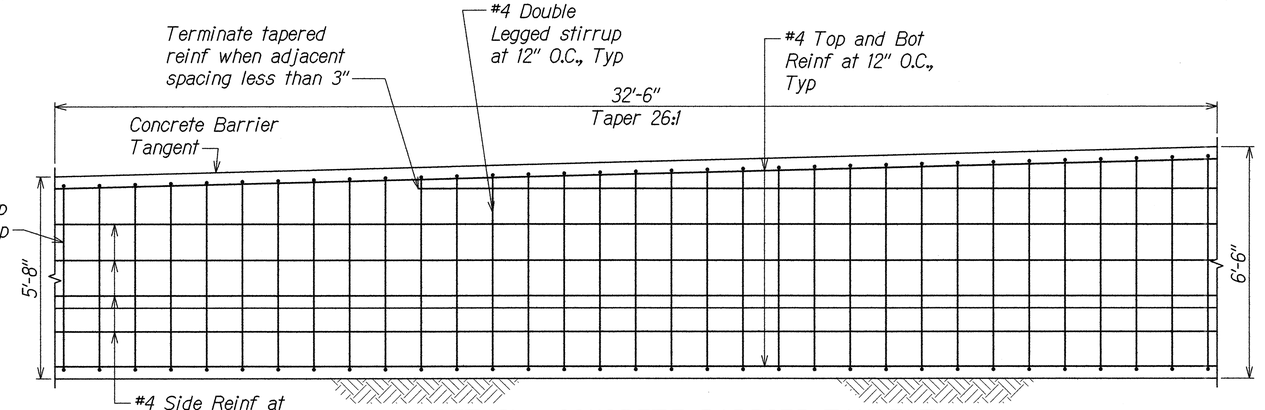
A S2-4 S2-7 ELEVATION - CONCRETE BARRIER TRANSITION

Scale: 3/16" = 1'-0"



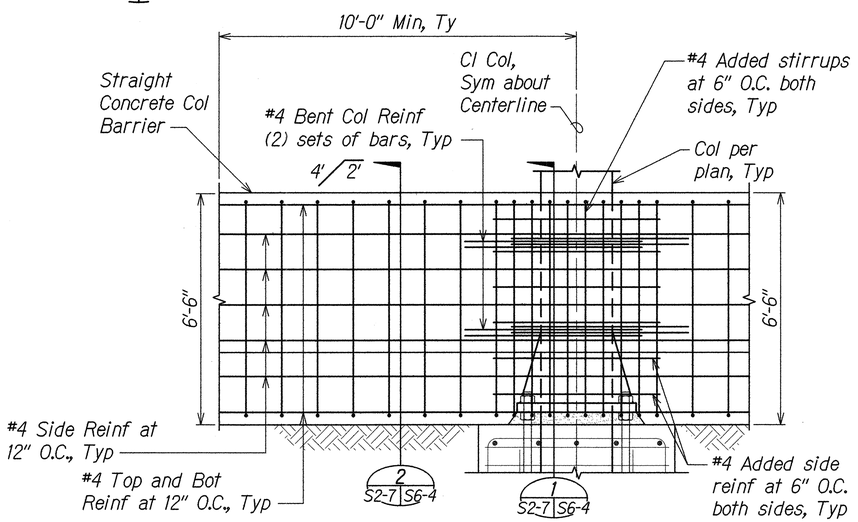
1 S2-7 S2-7 DETAIL - CONCRETE BARRIER TRANSITION

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



2 S2-7 S2-7 DETAIL - CONCRETE BARRIER TANGENT

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



3 S2-7 S2-7 DETAIL - CONCRETE BARRIER AT COL

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

NOTES:

1. Refer to general notes on sheet S0-1 and S0-2 and typical detail sheets S6-3 through S6-4 for additional information.
2. Refer to civil drawings for dimensions and other information not shown on structural drawings.
3. Refer to electrical and telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all existing dimensions and clearances. Any discrepancies shall be brought to the attention of the engineer prior to fabrication.
5. See HI DOT Standard Plans TE-40 for reference.

0 1' 2' 4' 8' 16'
3/16"=1'-0"

0 6" 1' 2' 4' 6'
1/2"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 RADFORD VMS CONCRETE BARRIER TRANSITION ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

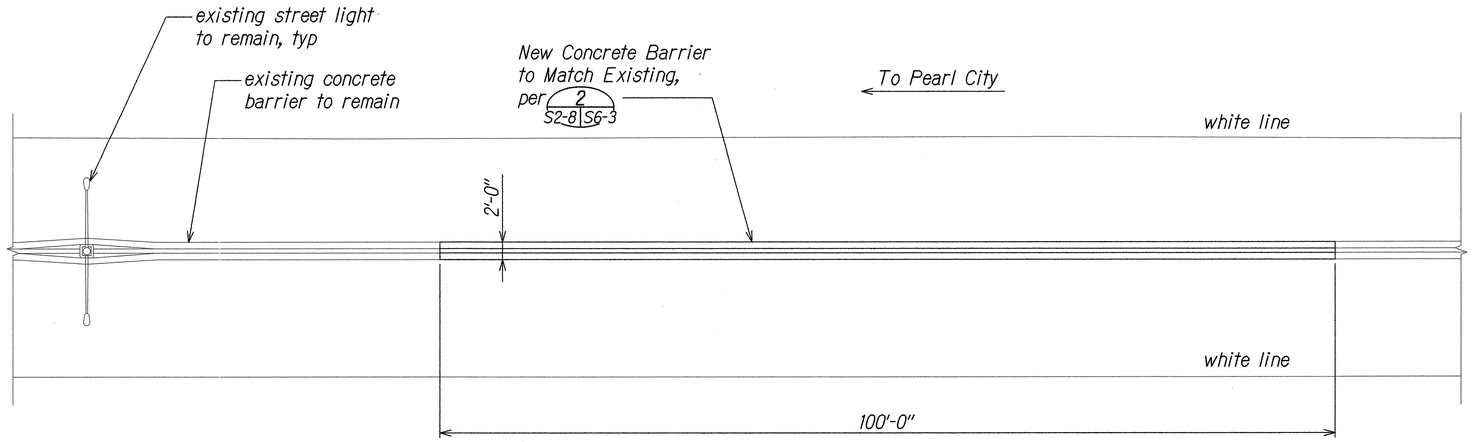
Scale: As Shown Date: 8/7/14

SHEET No. S2-7 OF 54 SHEETS

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

PW:\13\DB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\2_RADFORD\S2-7.DWG Oct 15, 2014 - 10:56 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	127	220



A S2-8 S2-8 H-1 RADFORD BARRIER REPLACEMENT AT LOCATION OF DEMOLISHED VMS Scale: 1/8" = 1'-0"

NORTH

NOTES:

1. Refer to general notes on sheet S0-1 and S0-2 and typical detail sheet S6-3 additional information. Refer to demolition sheet DS2-1 for relative location of guardrail replacement.
2. Refer to civil drawings for dimensions and other information not shown on structural drawings.
3. Refer to electrical and telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all existing dimensions and clearances. Any discrepancies shall be brought to the attention of the engineer prior to fabrication.
5. See HI DOT Standard Plans TE-41 for reference.

ORIGINAL PLANS | SURVEY PLOTTED BY ____ DATE
DRAWN BY ____ "
TRACED BY ____ "
NOTEBOOK DESIGNED BY ____ "
No. ____ QUANTITIES BY ____ "
CHECKED BY ____ "

PW:F:\13081.0WG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\2_RADFORD\S2-8.DWG Oct 15, 2014-10:56 AM

Graphics Scale
0 1' 2' 4' 6' 8' 16' 24'
1/8"=1'-0"
0 1 2
LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

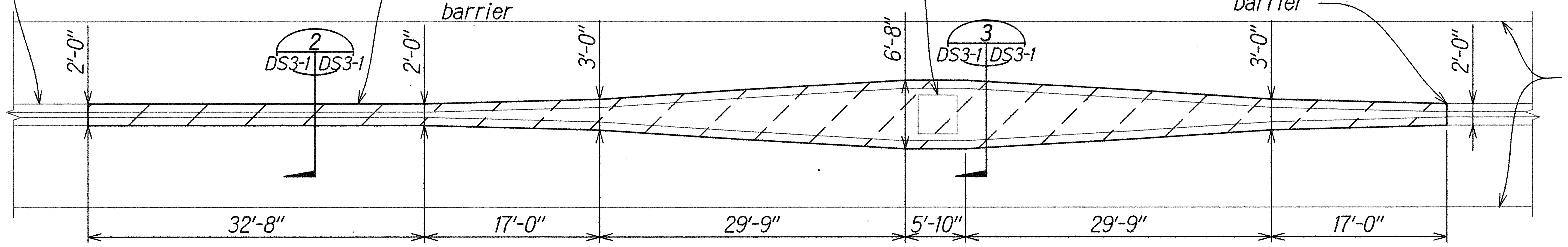
H-1 RADFORD VMS CONCRETE BARRIERS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S2-8 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	128	220

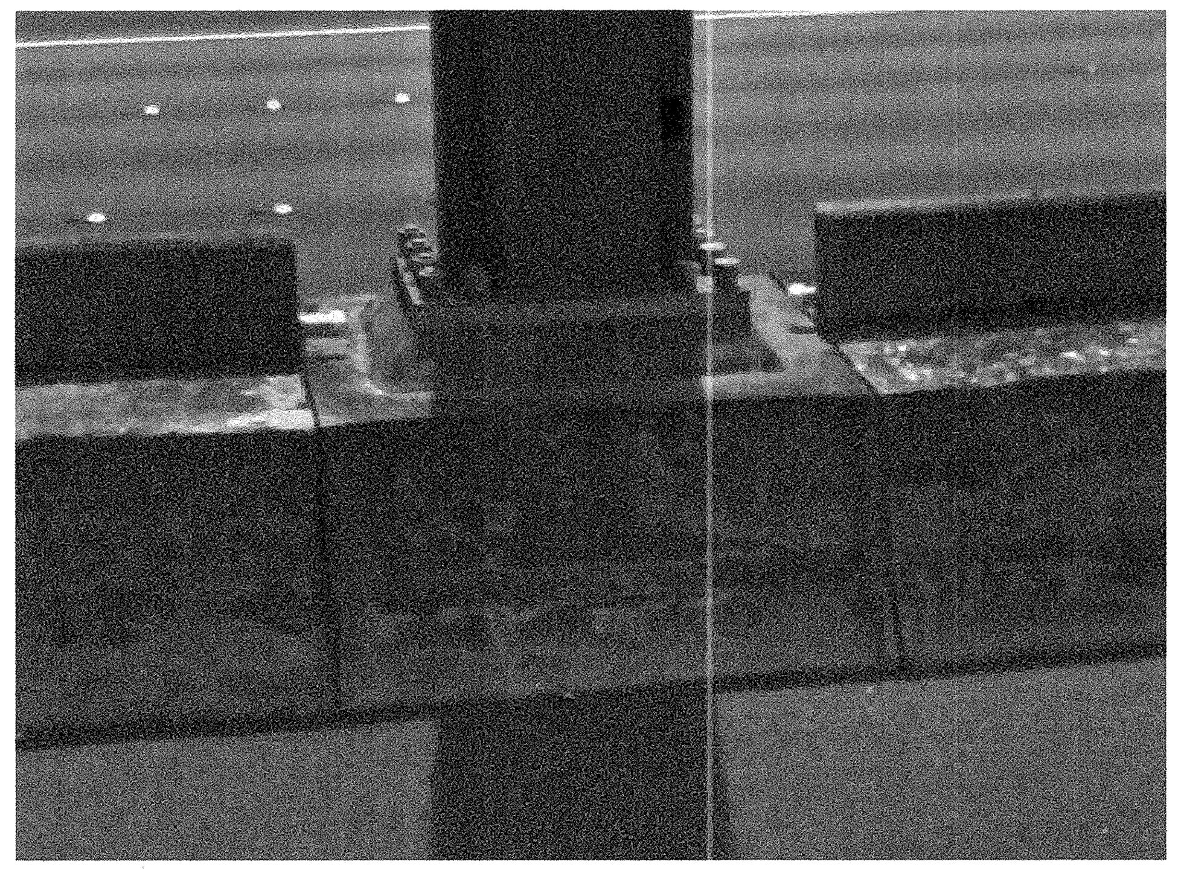


A DS3-1 DS3-1 MEDIAN DEMOLITION PLAN
Scale: 1/8" = 1'-0"

NORTH

Demolition Notes:

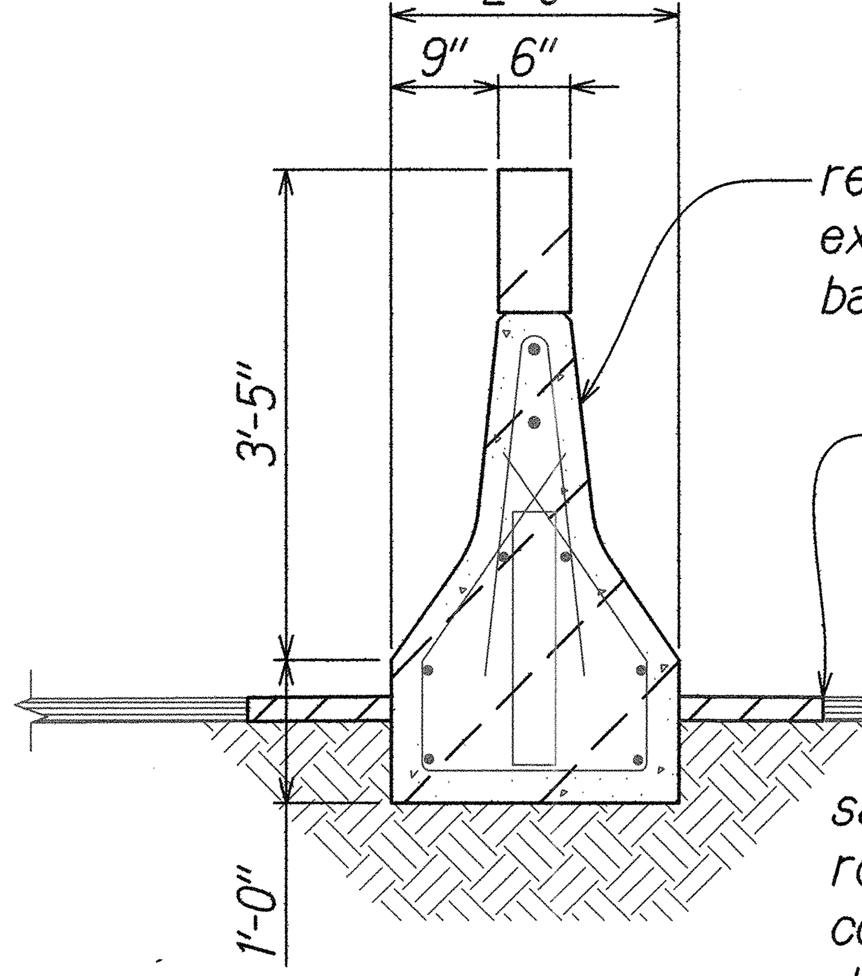
1. See Civil drawings for additional information not shown on structural drawings.
2. Dimensions shown on demolition drawings are approximate for demolition purposes only. Dimensions and location of new concrete barrier and VMS sign foundation shall be as shown on civil drawings and subsequent design plans.
3. Contractor shall be responsible for all Best Management Practices (BMP) outlined in the Specifications. For demolition, this includes but is not limited to dust control and environmental control during construction. Debris shall not be allowed to runoff into storm drain or streams.
4. Existing VMS sign shall be delivered to HI-DOT Baseyard: 727 Kakoi Street, Honolulu, HI 96819



EXISTING MEDIAN TO BE REMOVED

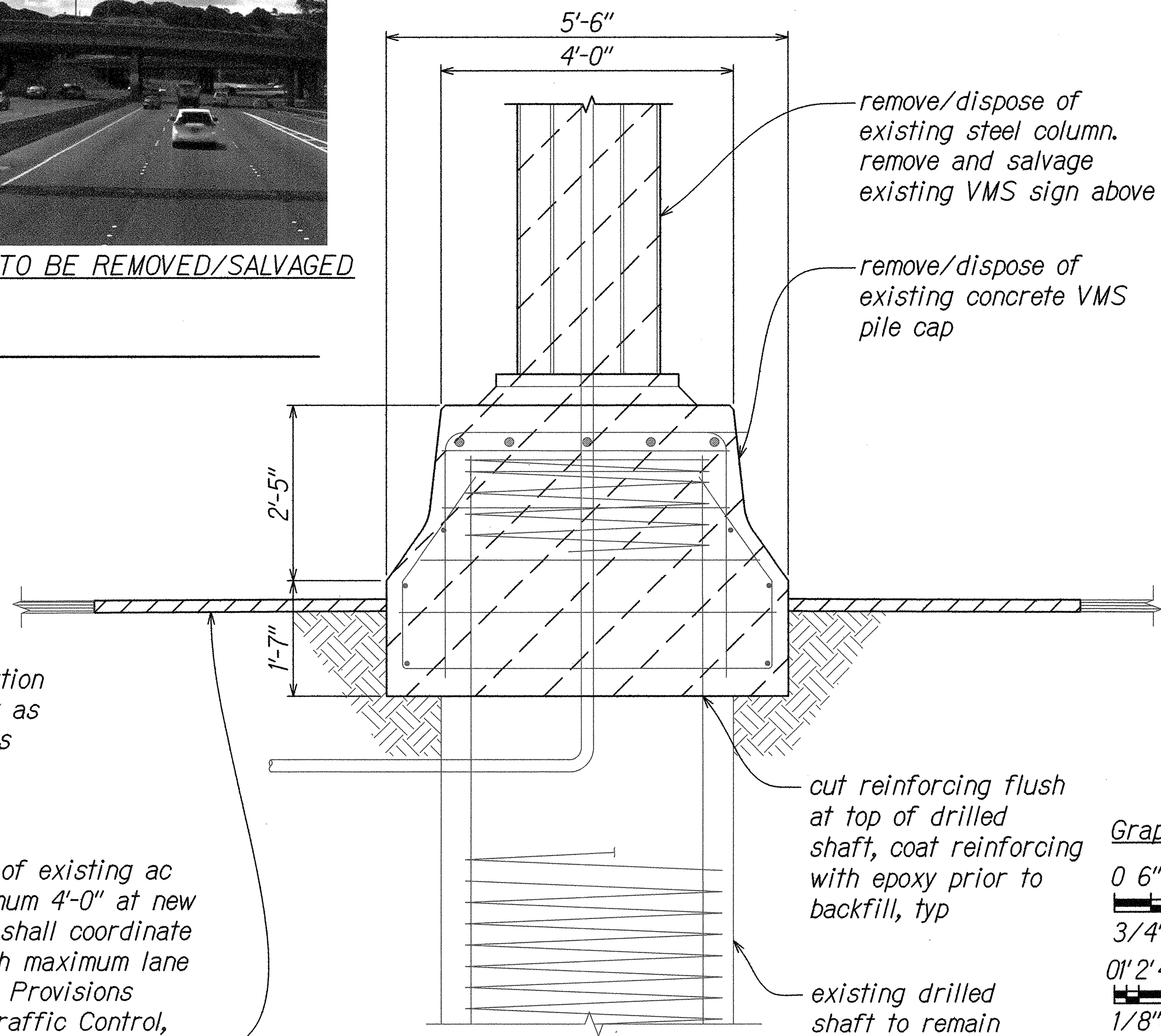
EXISTING SIGN TO BE REMOVED/SALVAGED

1 DS3-1 DS3-1 PHOTOS - EXISTING CONDITIONS
Not to Scale

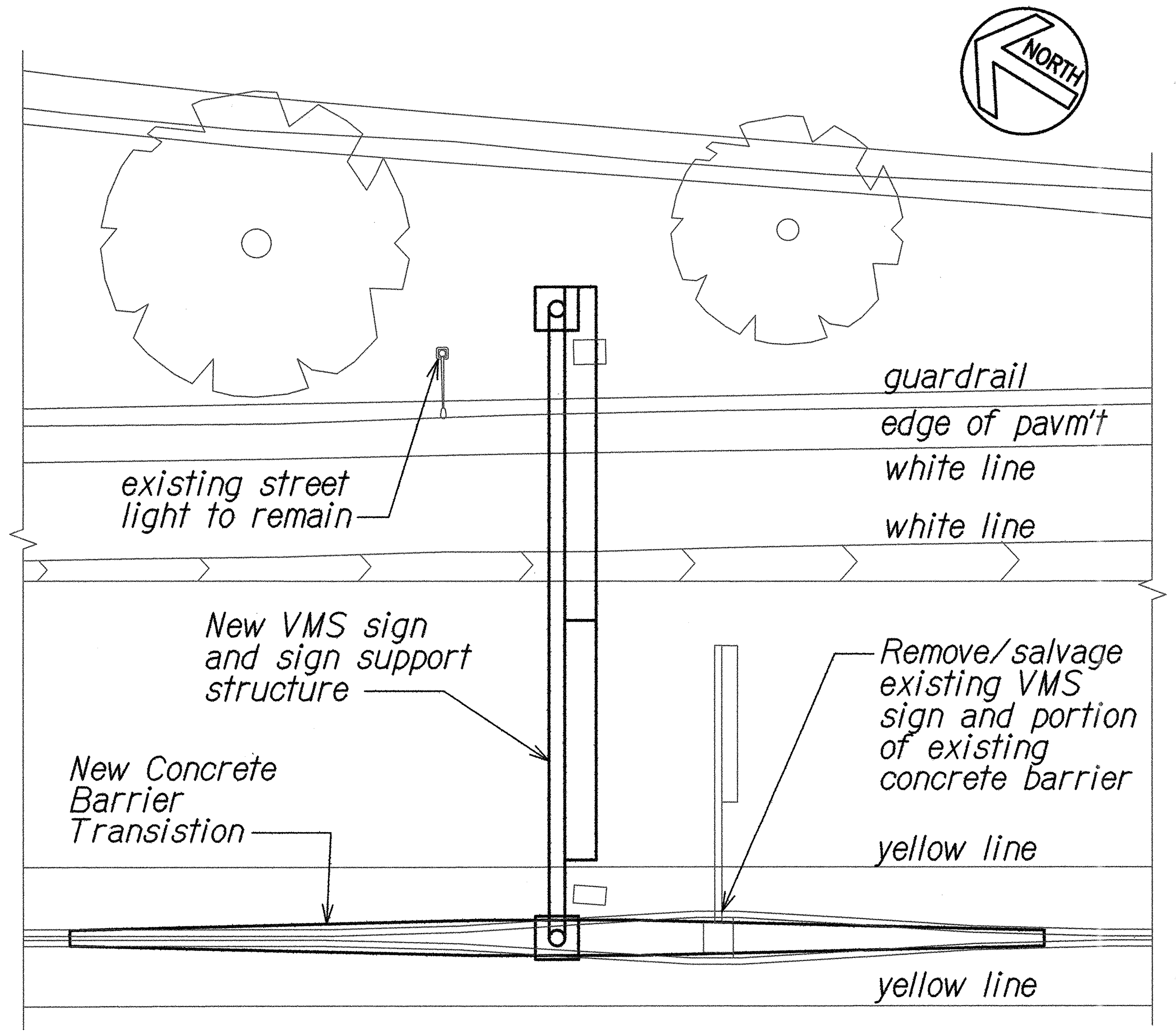


sawcut and remove portion of existing ac roadway as required, maximum 4'-0" at new column location. Contractor shall coordinate demolition requirements with maximum lane closure allowed per Special Provisions Section 645 - Work Zone Traffic Control, see civil dwgs for additional info, typ

2 DS3-1 DS3-1 TYPICAL CONC BARRIER DEMO
Scale: 3/4" = 1'-0"



3 DS3-1 S3-1 VMS PILE CAP DEMO
Scale: 3/4" = 1'-0"



B DS3-1 DS3-1 H-201 PUULOA VMS KEY PLAN
Scale: 1/16" = 1'-0"

Graphics Scale

0 6" 1' 2' 3' 4'
3/4"=1'-0"
0 1' 2' 4' 6' 8' 16' 24'
1/8"=1'-0"
0 1' 2' 4' 8' 16' 32'
1/16"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-201 PUULOA VMS DEMOLITION PLAN

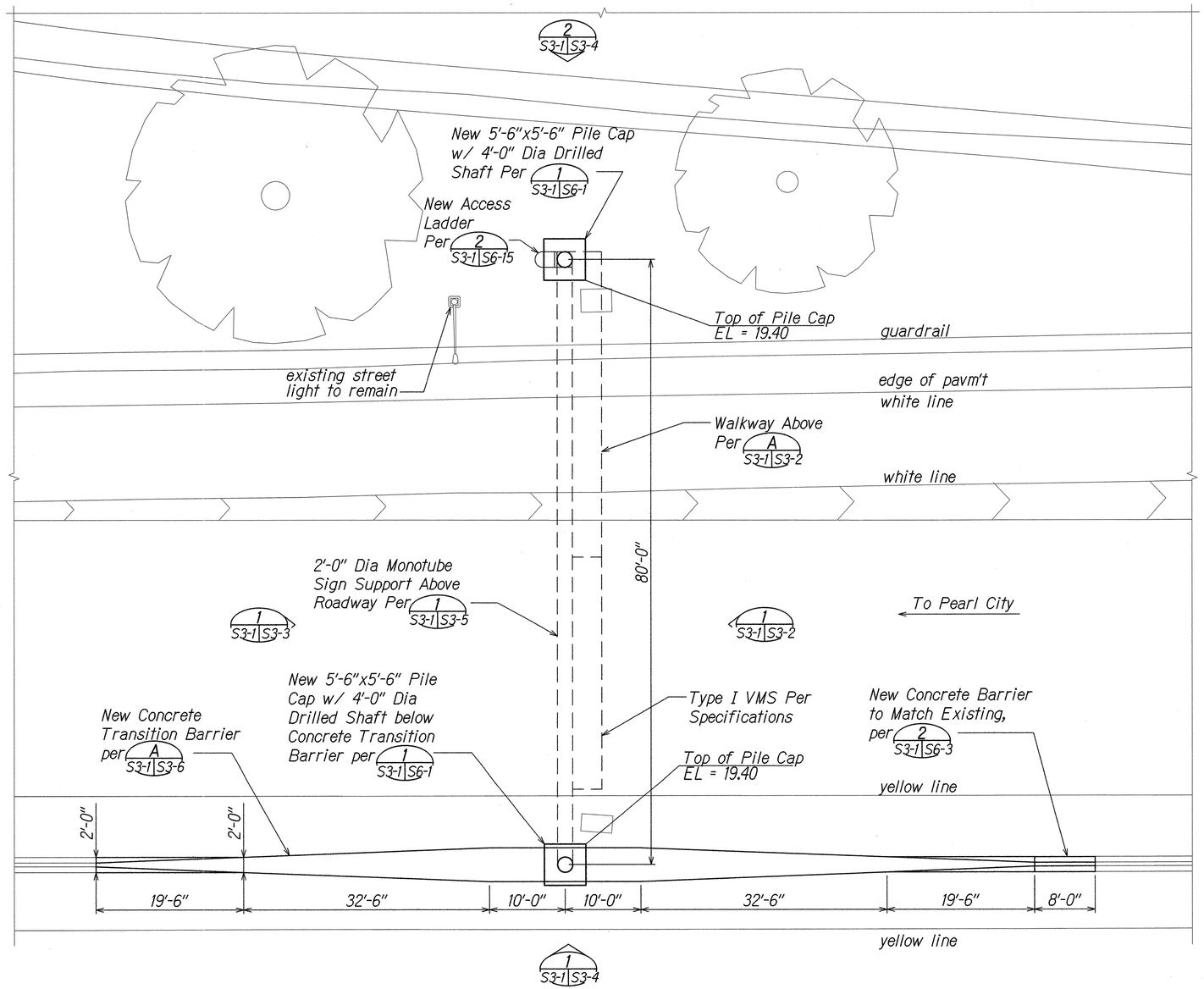
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase IC, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. DS3-1 OF 54 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	129	220



A S3-1 S3-1 *H-201 PUULOA VMS FOUNDATION PLAN*
Scale: 1/8" = 1'-0"

NORTH

Graphics Scale
0 1' 2' 4' 6' 8' 16' 24'
1/8"=1'-0"
0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

NOTES:

1. Refer to general notes on sheet S0-1 and S0-2 and typical detail sheets S6-1 through S6-17 for additional information.
2. Refer to civil drawings for VMS location, dimensions and other information not shown on structural drawings.
3. Refer to electrical and telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all existing dimensions and clearances. Any discrepancies shall be brought to the attention of the engineer prior to fabrication.

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

ENG\13JOB DWG\3040 HDOT H-1 PHASE 1 PS&E\DWGS_3040\STRUCT_3040\DWGS_3040\S_PUULOA\S3-1.DWG Oct 15, 2014 - 10:57 AM

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

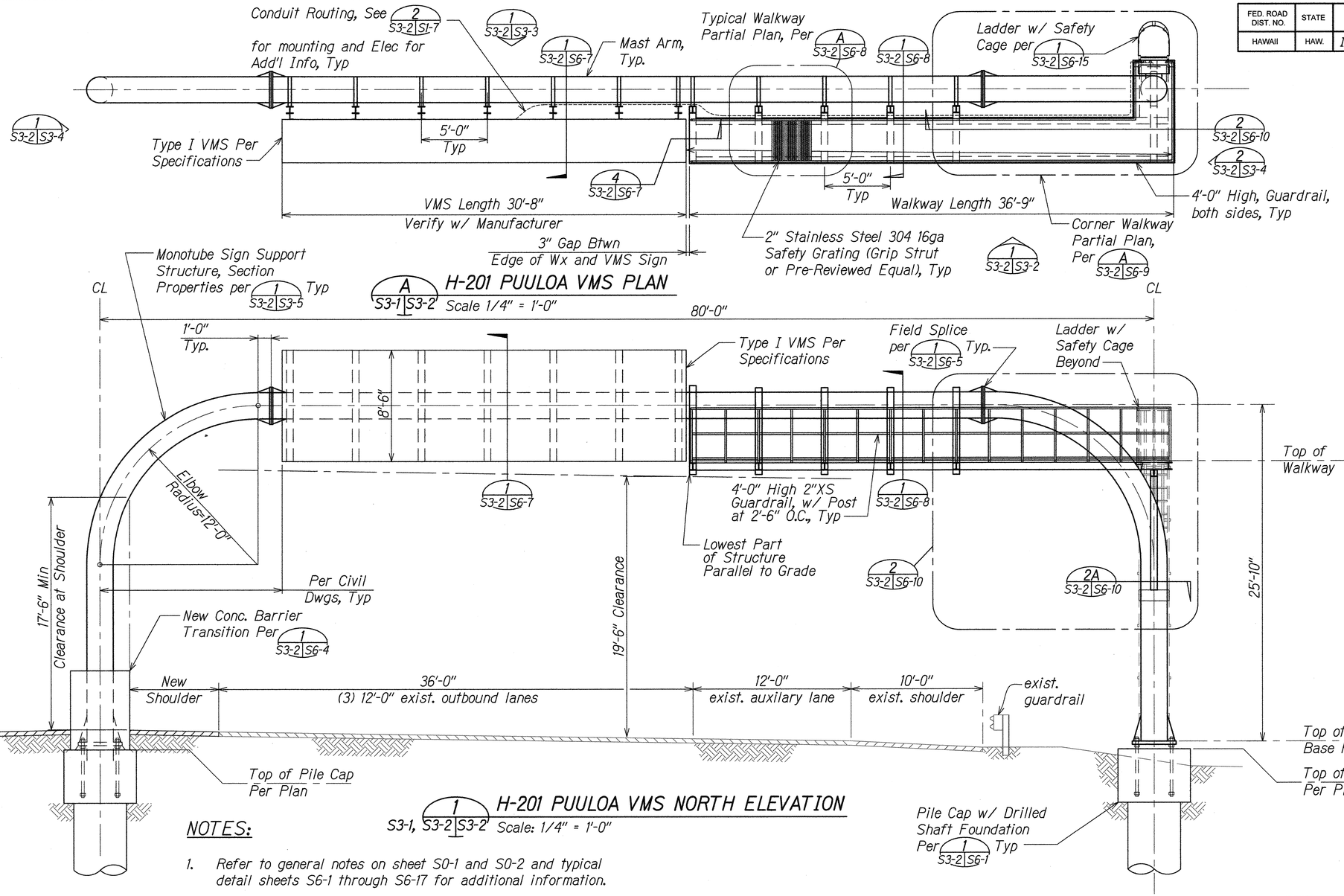
H-201 PUULOA VMS FOUNDATION PLAN

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S3-1 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	130	220



NOTES:

1. Refer to general notes on sheet S0-1 and S0-2 and typical detail sheets S6-1 through S6-17 for additional information.
2. Refer to civil drawings for VMS location, dimensions and other information not shown on structural drawings.
3. Refer to electrical and telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all existing dimensions and clearances. Any discrepancies shall be brought to the attention of the engineer prior to fabrication.

Graphics Scale

0 1' 2' 4' 8' 12'

1/4"=1'-0"

0 1 2

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

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

PN:F:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_1304O\STRUCT_1304O\DWGS_1304O\3_PUULOA\S3-2.DWG Oct 15, 2014-10:57 AM

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

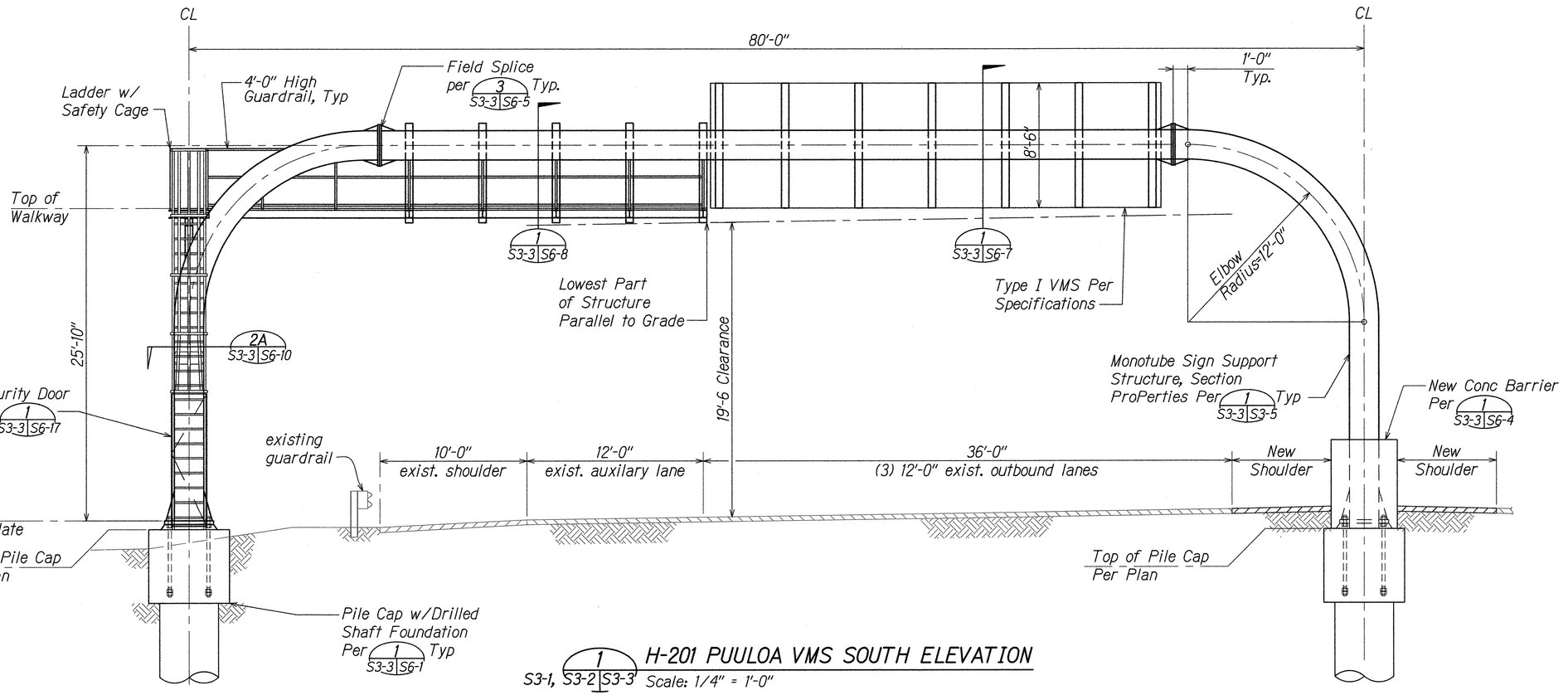
H-201 PUULOA VMS TOP PLAN AND NORTH ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S3-2 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	131	220



1 S3-1, S3-2 | S3-3 H-201 PUULOA VMS SOUTH ELEVATION
Scale: 1/4" = 1'-0"

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

FN:F:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\S3_PUULOA\S3-3.DWG Oct 15, 2014-10:57 AM

Graphics Scale
0 1' 2' 4' 8' 12'
1/4"=1'-0"
0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR.
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

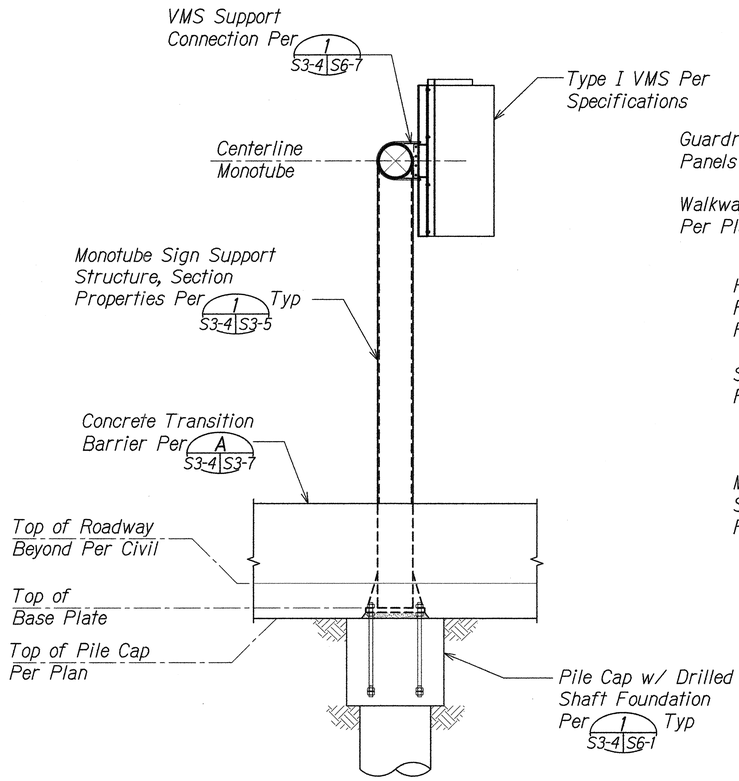
H-201 PUULOA VMS SOUTH ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

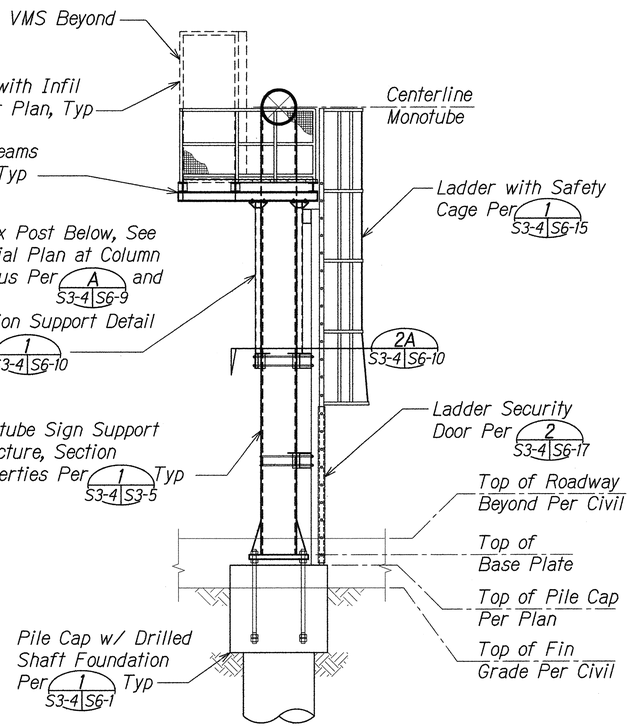
SHEET No. S3-3 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	132	220



1 H-201 PUULOA WEST ELEVATION

S3-1, S3-2 | S3-4 Scale: 1/4" = 1'-0"



2 H-201 PUULOA EAST ELEVATION

S3-1, S3-2 | S3-4 Scale: 1/4" = 1'-0"

Graphics Scale

0 1' 2' 4' 8' 12'

1/4"=1'-0"

0 1 2

LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-201 PUULOA VMS EAST AND WEST ELEVATION

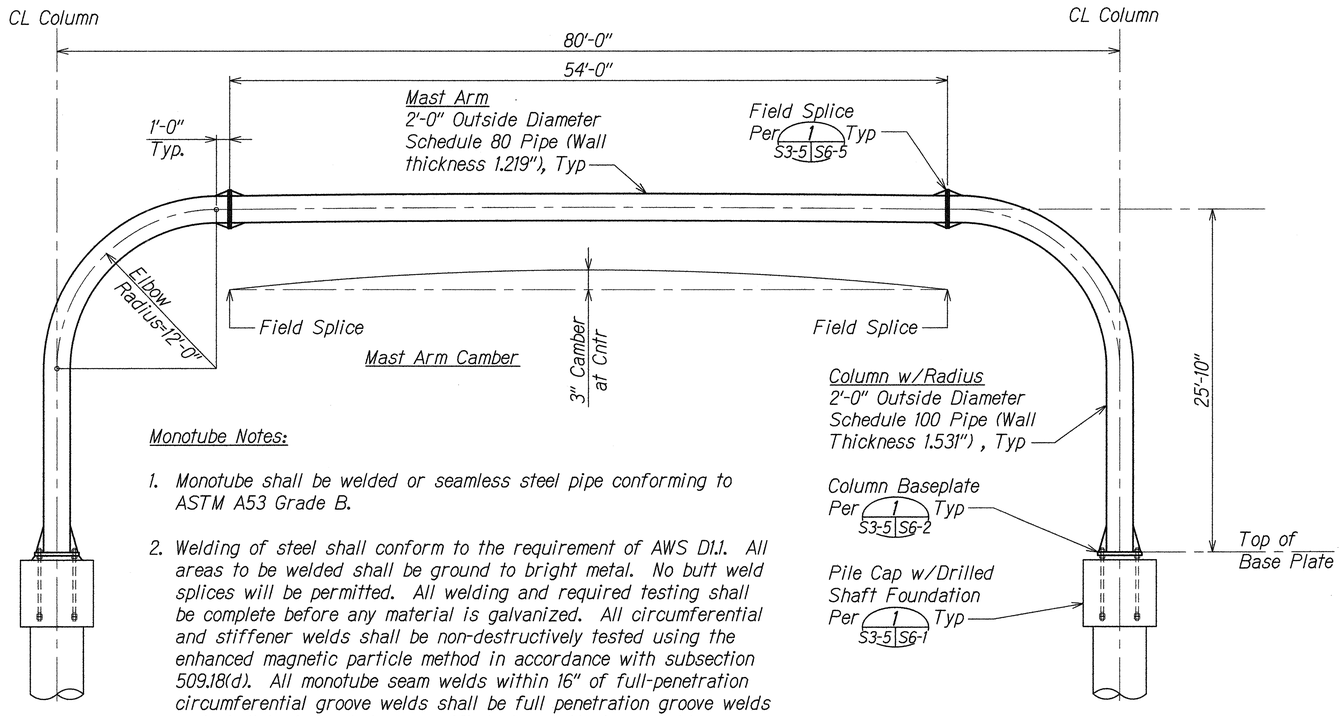
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S3-4 OF 54 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	133	220



Monotube Notes:

1. Monotube shall be welded or seamless steel pipe conforming to ASTM A53 Grade B.

2. Welding of steel shall conform to the requirement of AWS D1.1. All areas to be welded shall be ground to bright metal. No butt weld splices will be permitted. All welding and required testing shall be complete before any material is galvanized. All circumferential and stiffener welds shall be non-destructively tested using the enhanced magnetic particle method in accordance with subsection 509.18(d). All monotube seam welds within 16" of full-penetration circumferential groove welds shall be full penetration groove welds and shall be inspected as specified above. Maximum weld undercut shall be 0.01".

3. Notch toughness of all structural steel members and plates greater than 1/2" thick shall conform to Zone 2 requirements of AASHTO M270 Supplementary Requirement S5 (ASTM A709 Supplementary Requirement S83).

4. Monotube members shall be hot-dipped galvanized inside and outside after fabrication per ASTM A123.

S3-1, S3-2, S3-3, S3-4 | S3-5 — 1 H-201 PUULOA MONOTUBE ELEV
Scale: 3/16" = 1'-0"

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

PW:\13JOB DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\3_PUULOA\S3-5.DWG Oct 15, 2014-10:57 AM

Graphics Scale
0 1' 2' 4' 8' 16'
3/16"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR.
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

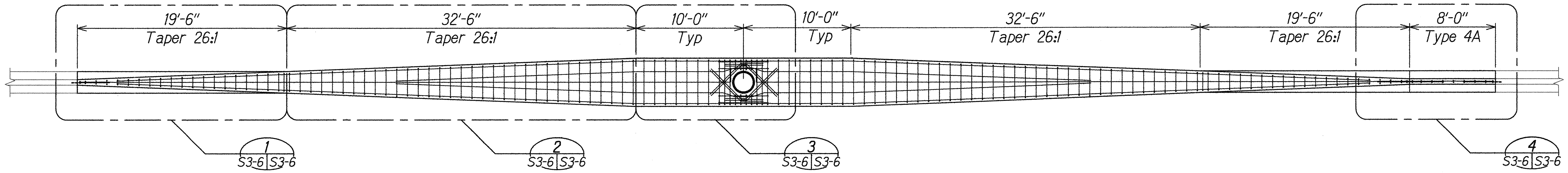
H-201 PUULOA VMS MONOTUBE DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

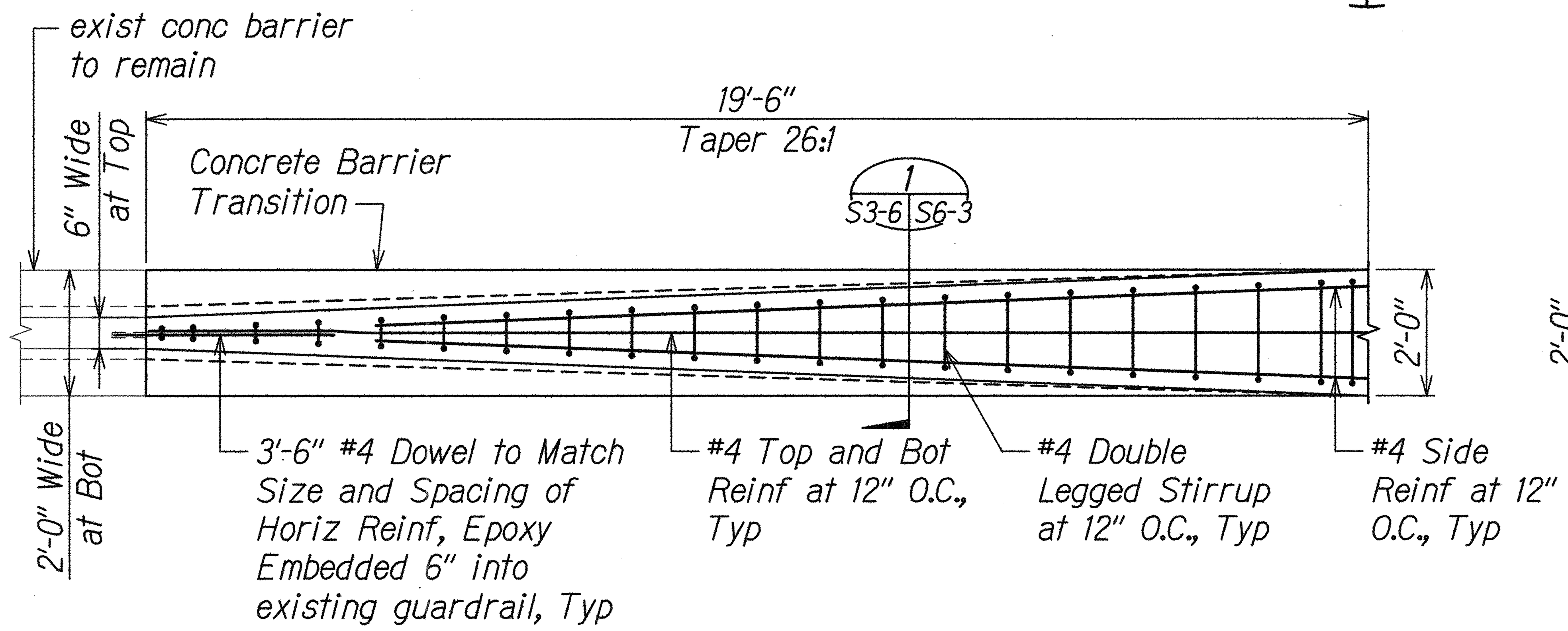
Scale: As Shown Date: 8/7/14

SHEET No. S3-5 OF 54 SHEETS

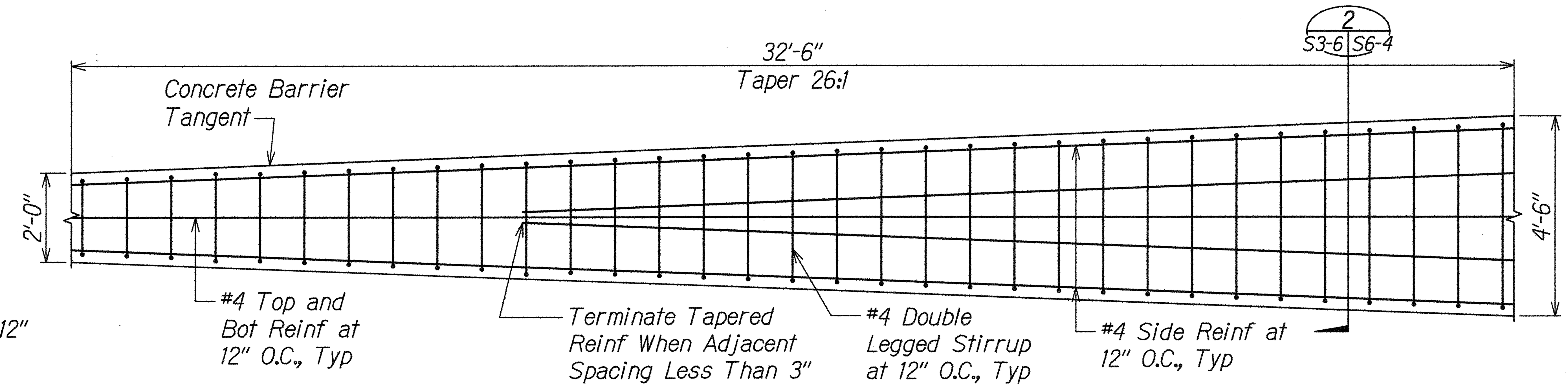
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	134	220



A S3-1 S3-6 PLAN - CONCRETE BARRIER TRANSITION
Scale: 3/16" = 1'-0"



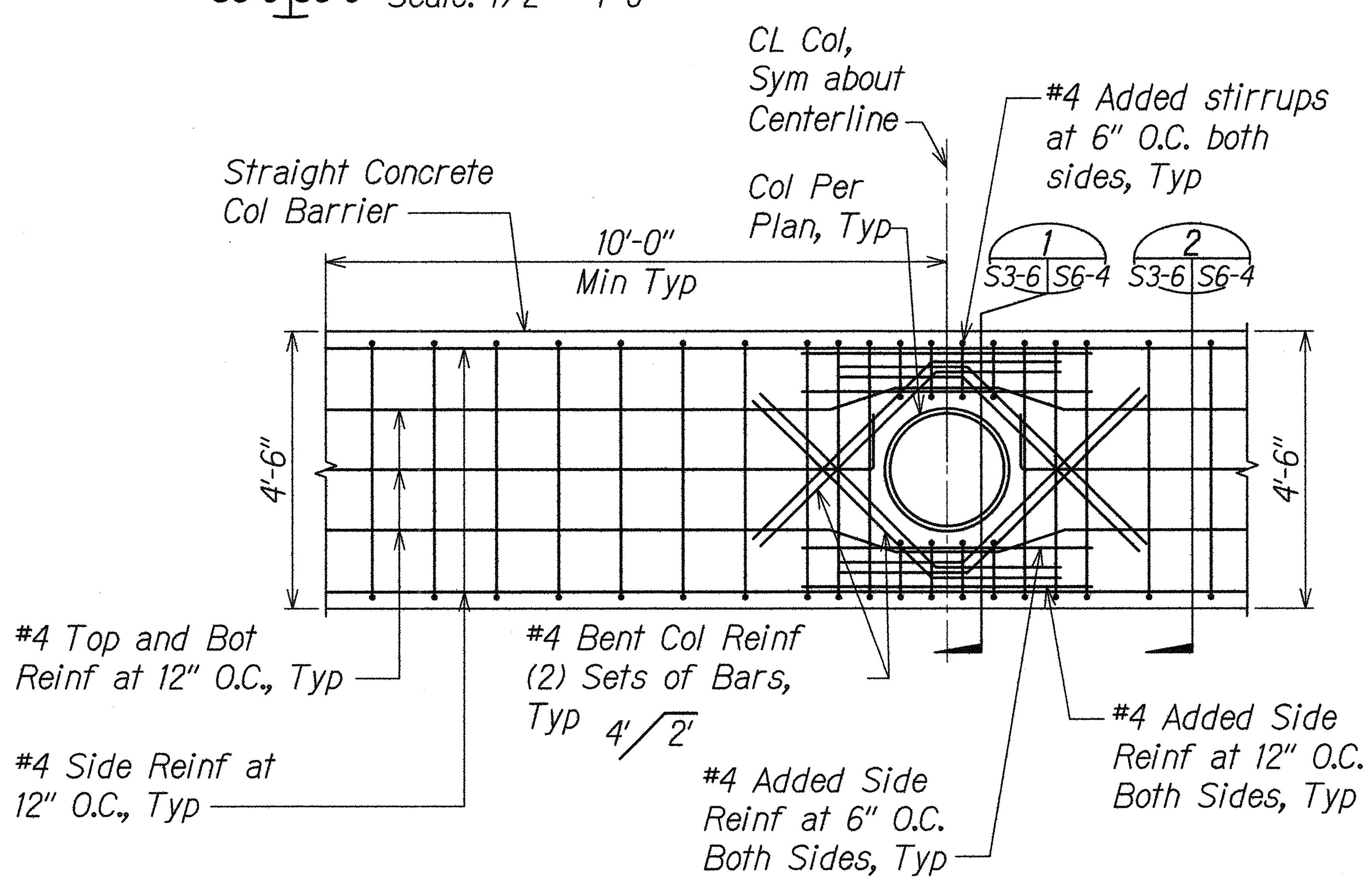
1 S3-6 S3-6 DETAIL - CONCRETE BARRIER TRANSITION
Scale: 1/2" = 1'-0"



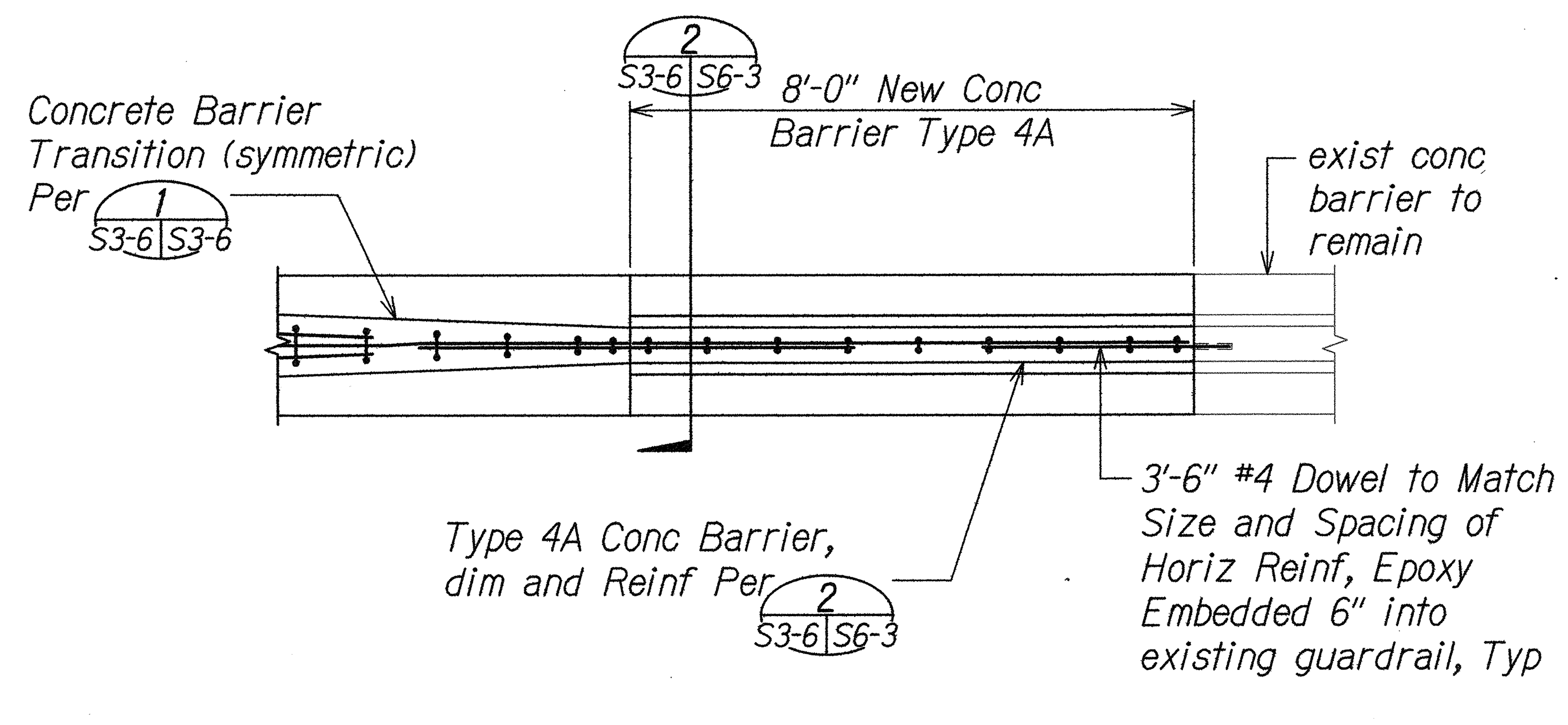
2 S3-6 S3-6 DETAIL - CONCRETE BARRIER TANGENT
Scale: 1/2" = 1'-0"

NOTES:

1. Refer to general notes on sheet S0-1 and S0-2 and typical detail sheets S6-3 through S6-4 for additional information.
2. Refer to civil drawings for dimensions and other information not shown on structural drawings.
3. Refer to electrical and telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all existing dimensions and clearances. Any discrepancies shall be brought to the attention of the engineer prior to fabrication.
5. See HI DOT Standard Plans TE-40 for reference.



3 S3-6 S3-6 DETAIL - CONCRETE BARRIER AT COL
Scale: 1/2" = 1'-0"



4 S3-6 S3-6 DETAIL - NEW CONCRETE BARRIER
Scale: 1/2" = 1'-0"

Graphics Scale

0 1' 2' 4' 8' 16' — 3/16"=1'-0"

0 6" 1' 2' 4' 6' — 1/2"=1'-0"

0 1 2 LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-201 PUULOA VMS
CONCRETE BARRIER TRANSITION

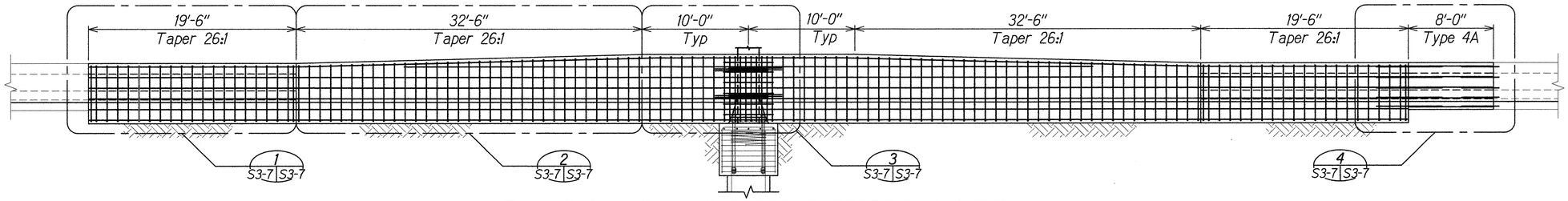
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S3-6 OF 54 SHEETS

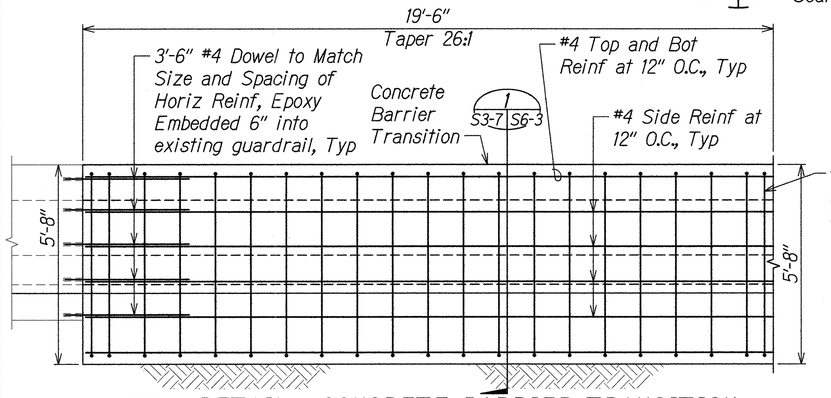
ORIGINAL PLAN | NOTEBOOK | No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	135	220



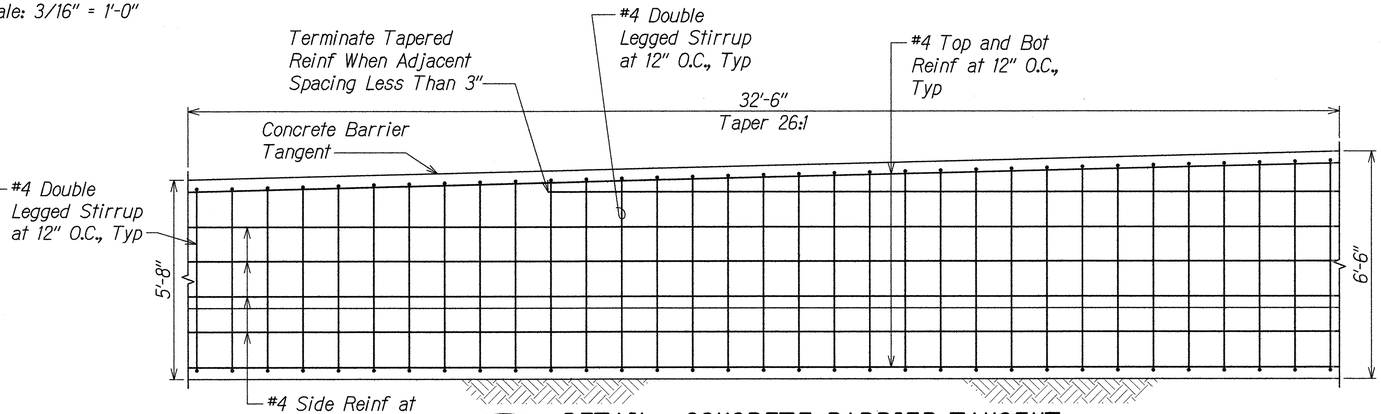
A ELEVATION - CONCRETE BARRIER TRANSITION

A S3-4 S3-7 Scale: 3/16" = 1'-0"



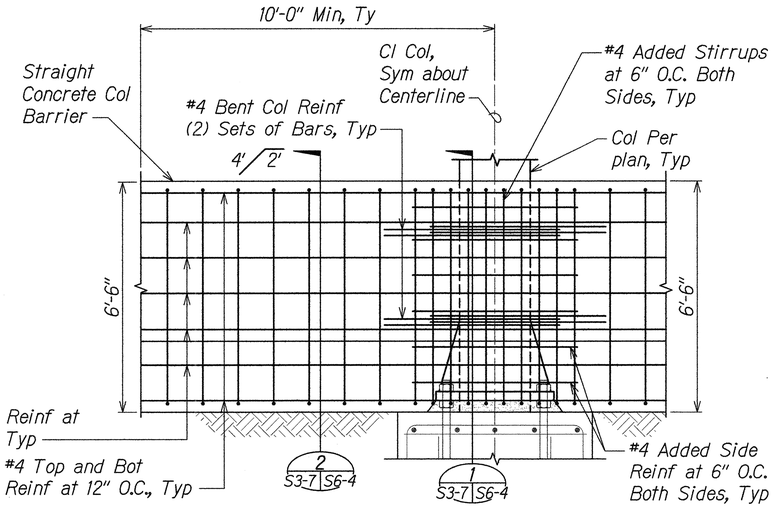
1 DETAIL - CONCRETE BARRIER TRANSITION

1 S3-7 S3-7 Scale: 1/2" = 1'-0"



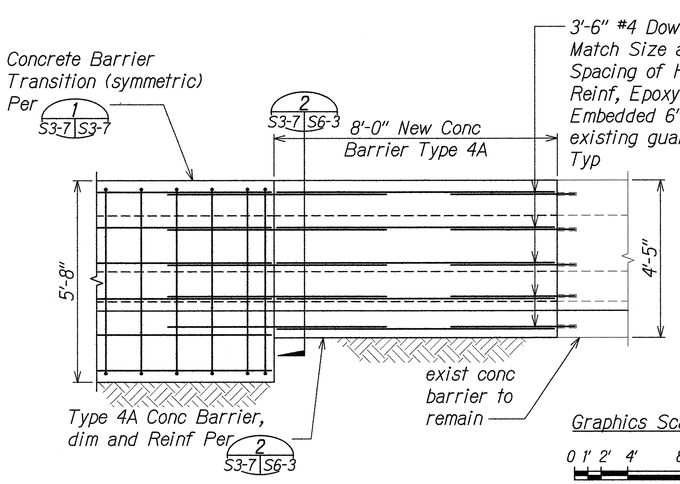
2 DETAIL - CONCRETE BARRIER TANGENT

2 S3-7 S3-7 Scale: 1/2" = 1'-0"



3 DETAIL - CONCRETE BARRIER AT COL

3 S3-7 S3-7 Scale: 1/2" = 1'-0"



4 DETAIL - NEW CONC BARRIER

4 S3-7 S3-7 Scale: 1/2" = 1'-0"

NOTES:

1. Refer to general notes on sheet S0-1 and S0-2 and typical detail sheets S6-3 through S6-4 for additional information.
2. Refer to civil drawings for dimensions and other information not shown on structural drawings.
3. Refer to electrical and telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all existing dimensions and clearances. Any discrepancies shall be brought to the attention of the engineer prior to fabrication.
5. See HI DOT Standard Plans TE-40 for reference.

Graphics Scale

0 1' 2' 4' 8' 16'
3/16"=1'-0"
0 6" 1' 2' 4' 6'
1/2"=1'-0"
0 1 2
LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

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

D:\F\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\3_PUULOA\S3-7.DWG Oct 15, 2014 - 10:57 AM

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

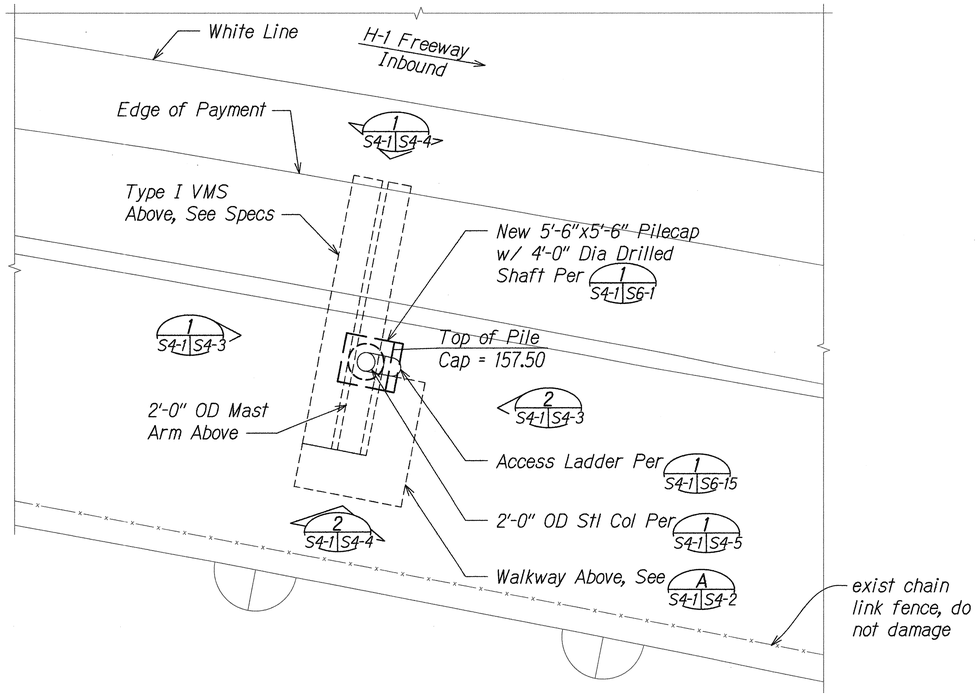
H-201 PUULOA VMS
CONCRETE BARRIER TRANSITION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S3-7 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	136	220



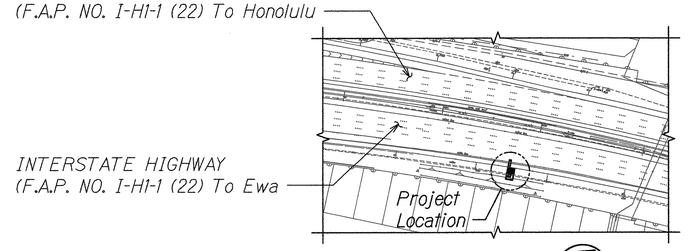
A S4-1 S4-1 H-1 WAIKELE VMS - FOUNDATION PLAN

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

NORTH

Notes

1. Refer to General Notes on sheet S0-1 and S0-2 and Typical Detail sheets S6-1 through S6-17 for additional information.
2. Refer to Civil drawings for VMS location, dimensions and other information not shown on Structural drawings.
3. Refer to Electrical and Telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all dimensions and clearances and any discrepancies shall be brought to the attention of the Engineer prior to fabrication.



Keyplan

NORTH

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If not 2 inches: scale accordingly)

Graphics Scale

01' 2' 4' 6' 8' 16' 24'

1/8"=1'-0"

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 WAIKELE VMS - FOUNDATION PLAN

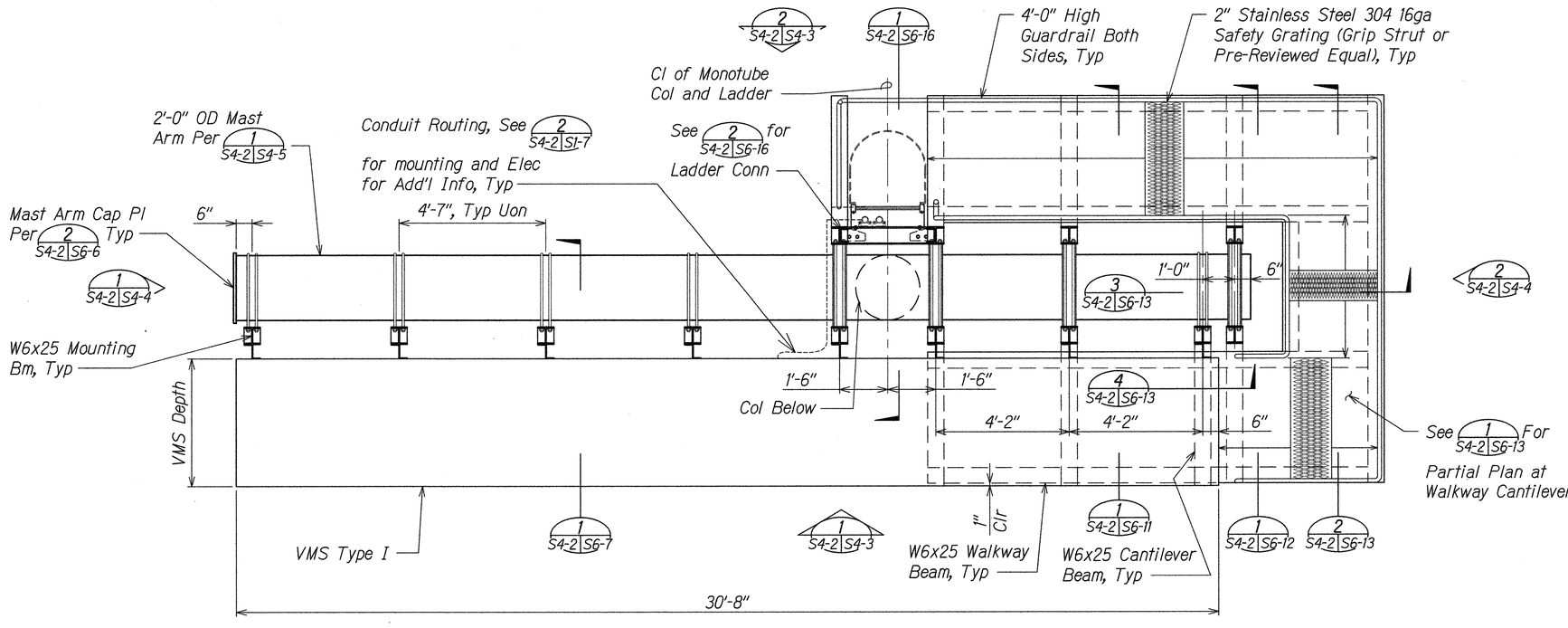
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S4-1 OF 54 SHEETS

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

IN:\13-068.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\A_WAIKELE\S4-1.DWG Oct 15, 2014 - 10:57 AM



A S4-1 S4-2 *H-1 WAIKELE VMS - WALKWAY FRAMING PLAN*

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	137	220

Notes

1. Refer to General Notes on sheet S0-1 and S0-2 and Typical Detail sheets S6-1 through S6-17 for additional information.
2. Refer to Civil drawings for VMS location, dimensions and other information not shown on Structural drawings.
3. Refer to Electrical and Telecommunication drawings for locations of all pipes, conduits, equipment, etc.
4. Contractor shall field verify all dimensions and clearances and any discrepancies shall be brought to the attention of the Engineer prior to fabrication.

Graphics Scale

0 6" 1' 2' 4' 6'

1/2"=1'-0"

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

0 1 2

LINE IS 2 INCHES AT FULL SIZE
(If not 2 inches: scale accordingly)

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

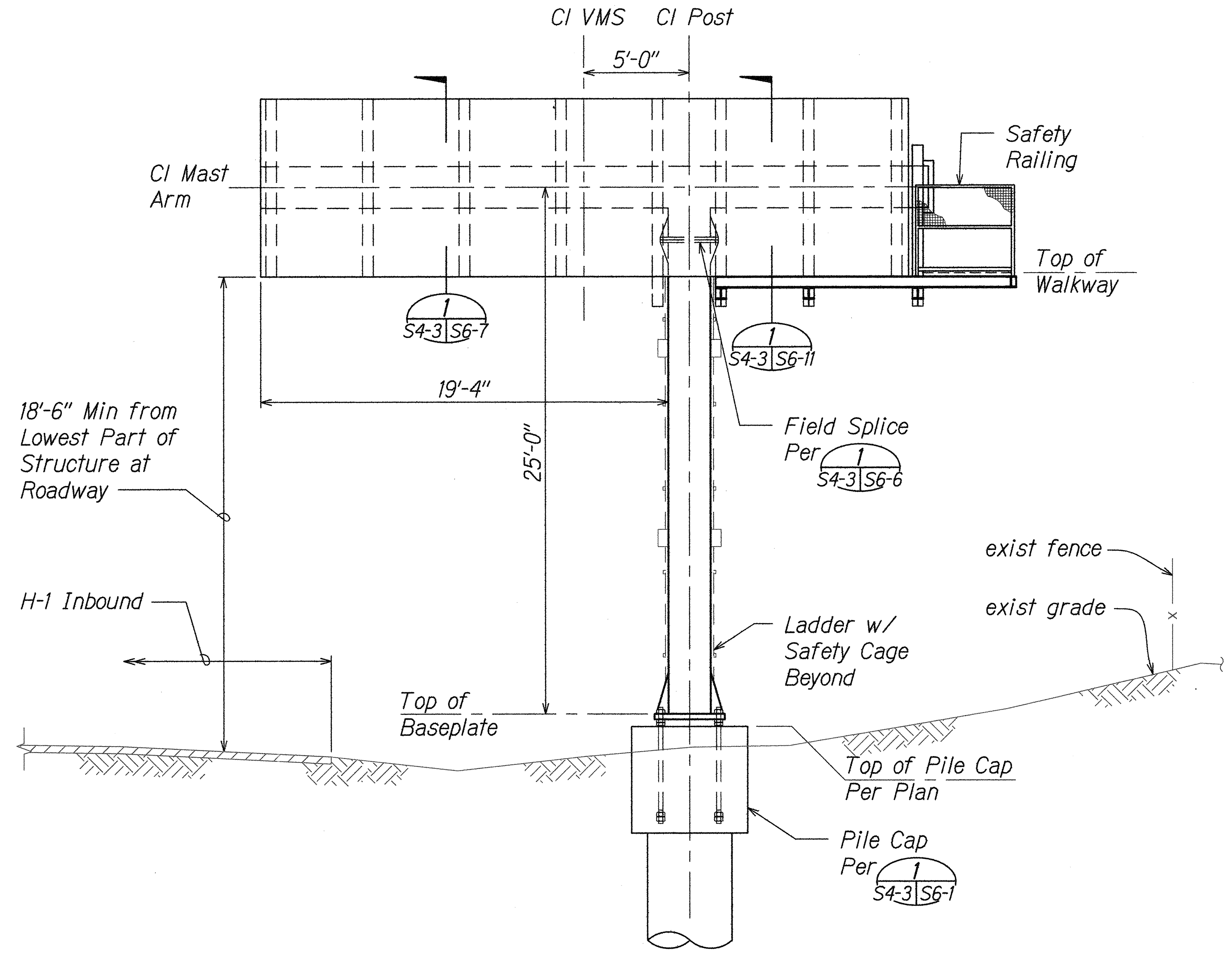
H-1 WAIKELE VMS - WALKWAY PLAN

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

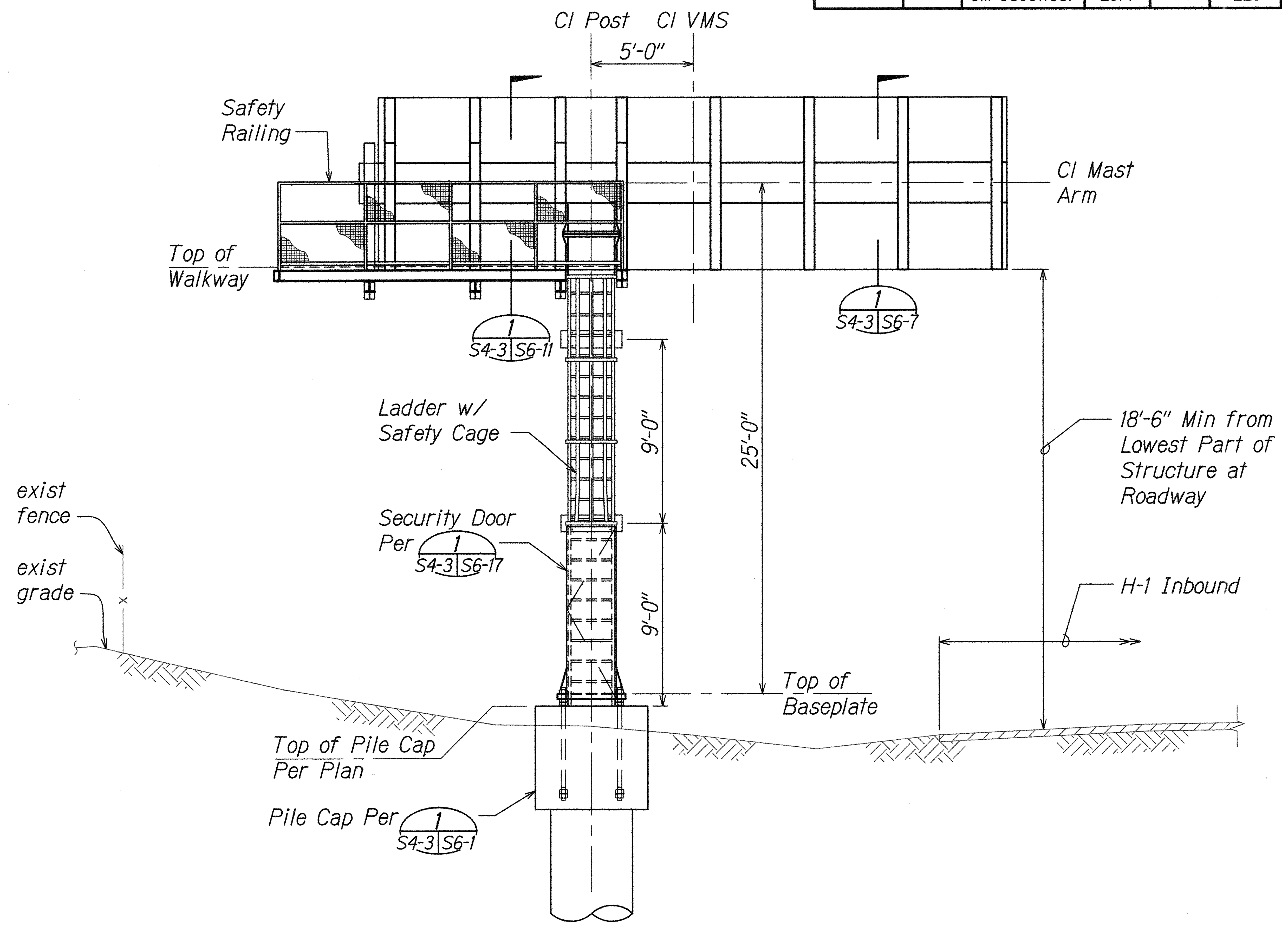
SHEET No. S4-2 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	138	220



S4-1, 1 S4-2 S4-3 H-1 WAIKELE VMS - WEST ELEAVATION

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



S4-1, 2 S4-2 S4-3 H-1 WAIKELE VMS - EAST ELEVATION

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

Graphics Scale

0 6" 1' 2' 3' 5' 7' 9' 11'

1/4"=1'-0"

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

0 1 2

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ, JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

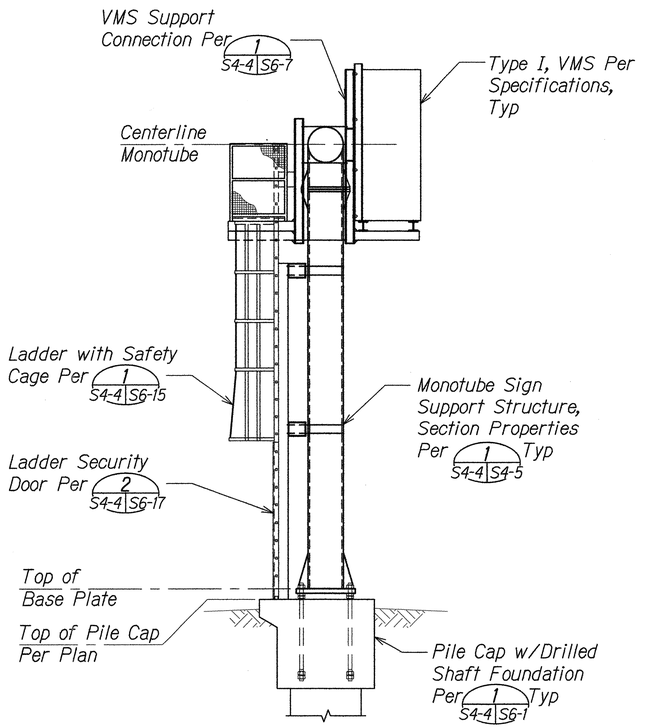
H-1 WAIKELE VMS - EAST AND WEST ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

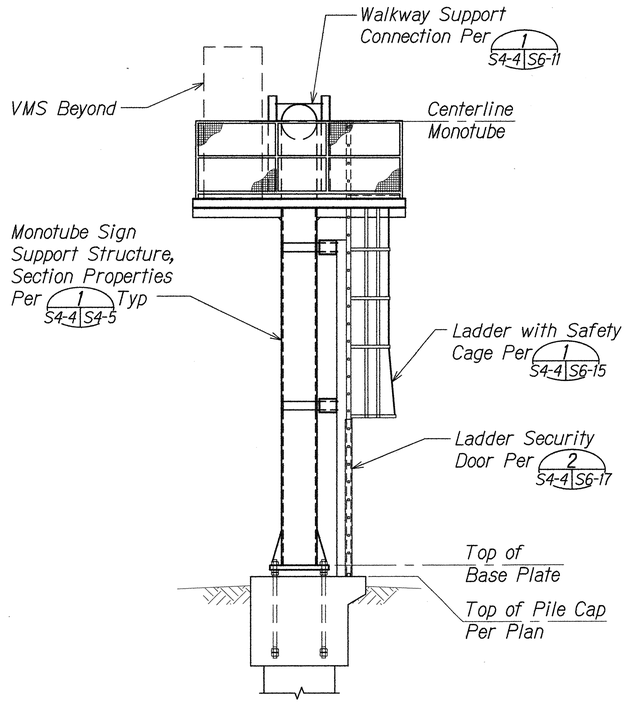
Scale: As Shown Date: 8/7/14

SHEET No. S4-3 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	139	220



1 H-1 WAIKELE VMS - NORTH ELEVATION
S4-1, S4-2 | S4-4 Scale: 1/4" = 1'-0"



2 H-1 WAIKELE VMS - SOUTH ELEVATION
S4-1, S4-2 | S4-4 Scale: 1/4" = 1'-0"

Graphics Scale

0 1' 2' 4' 8' 12'
1/4"=1'-0"

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

PW:F:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\S4_WAIKELE\S4-4.DWG Oct 15, 2014-10:57 AM

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

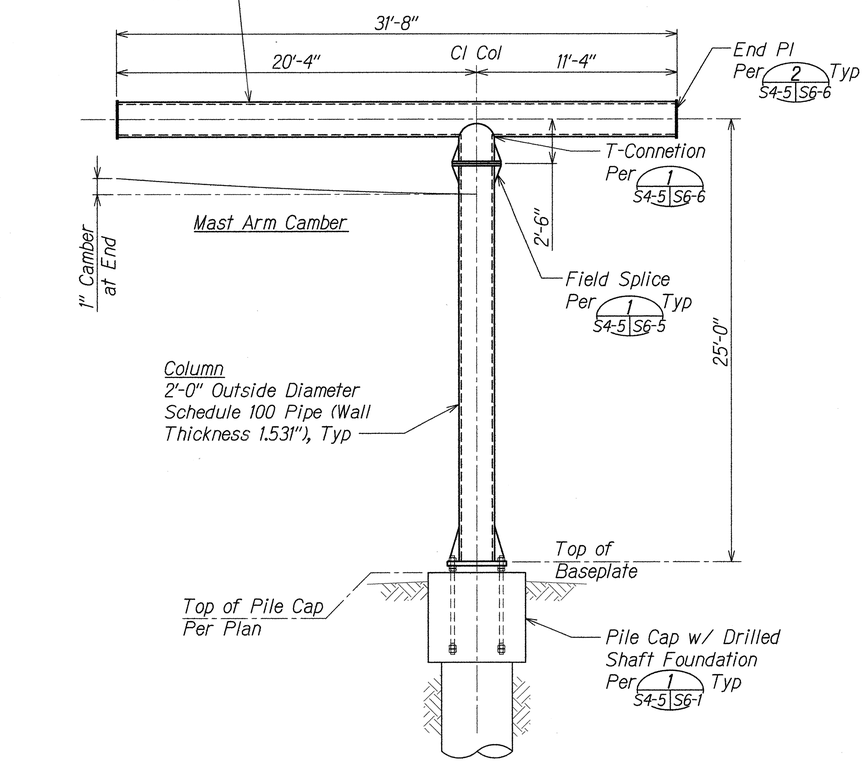
H-1 WAIKELE VMS - NORTH AND SOUTH ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S4-4 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	140	220



1 / S4-1, S4-2, S4-4 | S4-5 — H-1 WAIKELE VMS - MONOTUBE ELEVATION

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

Monotube Notes:

1. Monotube shall be welded or seamless steel pipe conforming to ASTM A53 Grade B.
2. Welding of steel shall conform to the requirement of AWS D1.1. All areas to be welded shall be ground to bright metal. No butt weld splices will be permitted. All welding and required testing shall be complete before any material is galvanized. All circumferential and stiffener welds shall be non-destructively tested using the enhanced magnetic particle method in accordance with subsection 509.18(d). All monotube seam welds within 16" of full-penetration circumferential groove welds shall be full penetration groove welds and shall be inspected as specified above. Maximum weld undercut shall be 0.01".
3. Notch toughness of all structural steel members and plates greater than 1/2" thick shall conform to Zone 2 requirements of AASHTO M270 Supplementary Requirement S5 (ASTM A709 Supplementary Requirement S83).
4. Monotube members shall be hot-dipped galvanized inside and outside after fabrication per ASTM A123.

Graphics Scale

0 1' 2' 4' 8' 12'

1/4"=1'-0"

0 1 2

LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR.
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 WAIKELE VMS - MONOTUBE DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

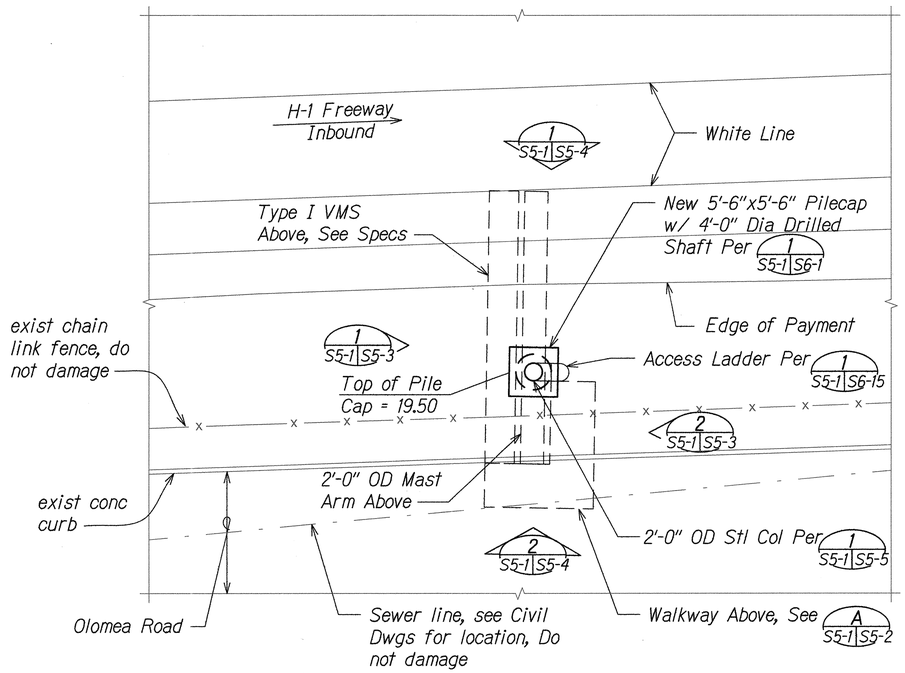
Scale: As Shown Date: 8/7/14

SHEET No. S4-5 OF 54 SHEETS

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

PW:\13308.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\S4-5.DWG Oct 15, 2014-10:58 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	141	220

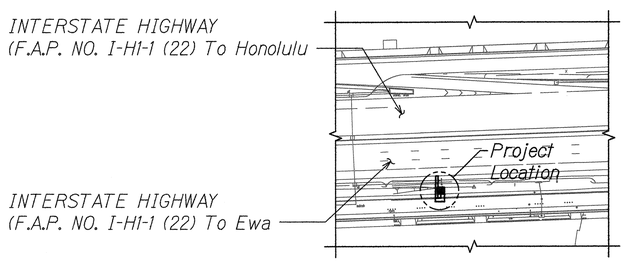


Notes

1. *Refer to General Notes on sheet S0-1 and S0-2 and Typical Detail sheets S6-1 through S6-17 for additional information.*
2. *Refer to Civil drawings for VMS location, dimensions and other information not shown on Structural drawings.*
3. *Refer to Electrical and Telecommunication drawings for locations of all pipes, conduits, equipment, etc.*
4. *Contractor shall field verify all dimensions and clearances and any discrepancies shall be brought to the attention of the Engineer prior to fabrication.*

A / S5-1|S5-1 H-1 KALIHI VMS - FOUNDATION PLAN

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



Keyplan

LINE IS 2 INCHES AT FULL SIZE
(If not 2 inches: scale accordingly)

Graphics Scale

0 1' 2' 4' 6' 8' 16' 24'

1/8"=1'-0"

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

F:\F\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\S_KALIHI\S5-1.DWG Oct 15, 2014 - 10:58 AM

GEORGE O. GUTIERREZ JR
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

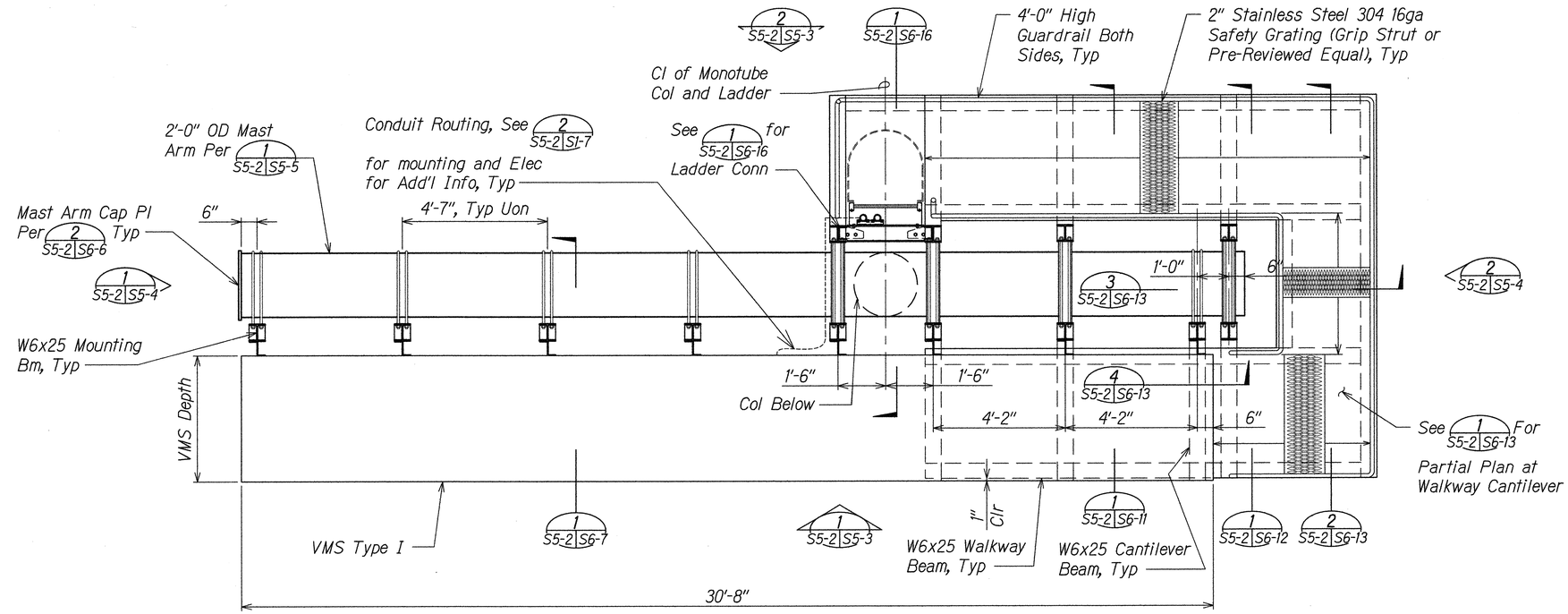
H-1 KALIHI VMS - FOUNDATION PLAN

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S5-1 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	142	220



A S5-1 S5-2 *H-1 KALIHI VMS - WALKWAY FRAMING PLAN*

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

Notes

1. *Refer to General Notes on sheet S0-1 and S0-2 and Typical Detail sheets S6-1 through S6-17 for additional information.*
2. *Refer to Civil drawings for VMS location, dimensions and other information not shown on Structural drawings.*
3. *Refer to Electrical and Telecommunication drawings for locations of all pipes, conduits, equipment, etc.*
4. *Contractor shall field verify all dimensions and clearances and any discrepancies shall be brought to the attention of the Engineer prior to fabrication.*

Graphics Scale

0 6" 1' 2' 4' 6'

1/2"=1'-0"

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

0 1 2

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

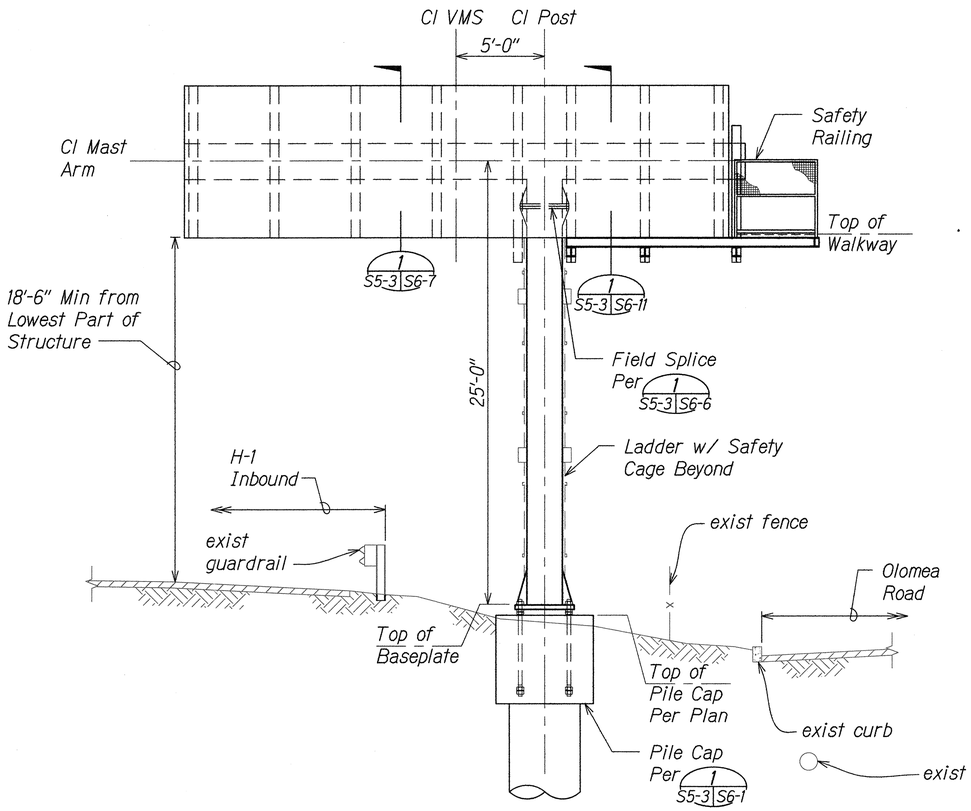
H-1 KALIHI VMS - EAST ELEVATION AND WALKWAY FRAMING PLAN

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

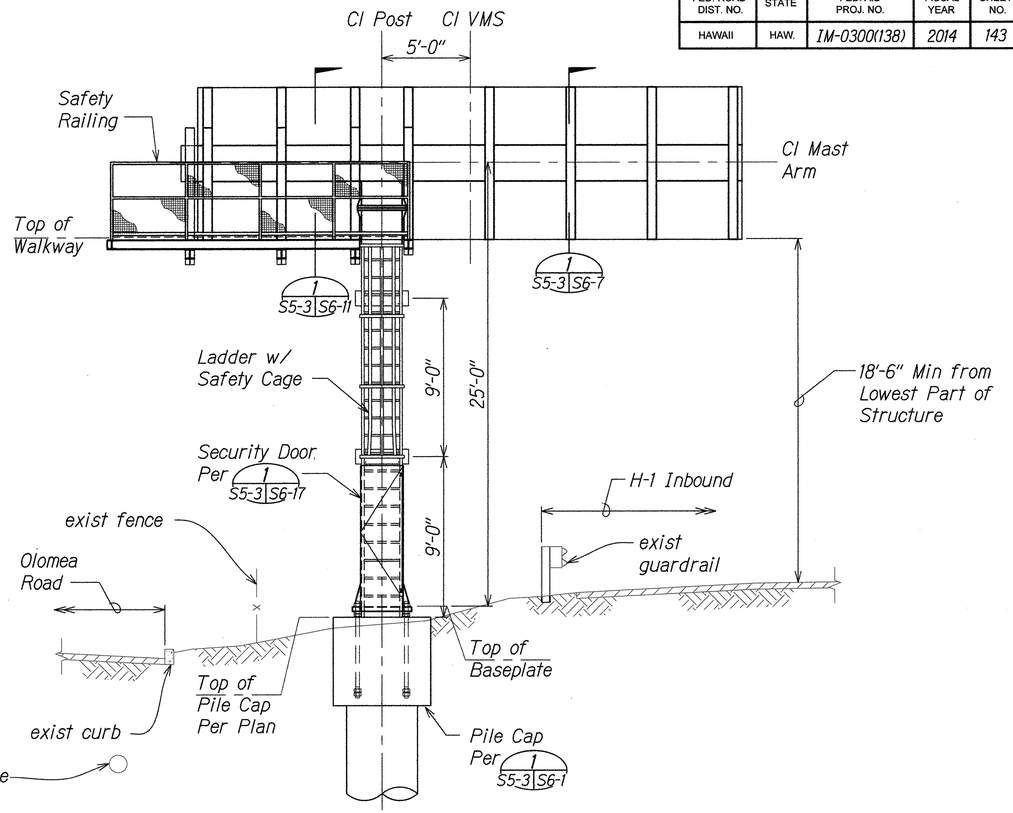
Scale: As Shown Date: 8/7/14

SHEET No. S5-2 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	143	220



1 S5-1, S5-2 | S5-3 H-1 KALIHI VMS - EAST ELEAVATION
Scale: 1/4" = 1'-0"



2 S5-1, S5-2 | S5-3 H-1 KALIHI VMS - WEST ELEVATION
Scale: 1/4" = 1'-0"

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

D:\F\13JOB\DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\S_KALIHI\S5-3.DWG Oct 15, 2014 - 10:58 AM

Graphics Scale
0 6" 1' 2' 3' 5' 7' 9' 11'
1/4"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR.
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

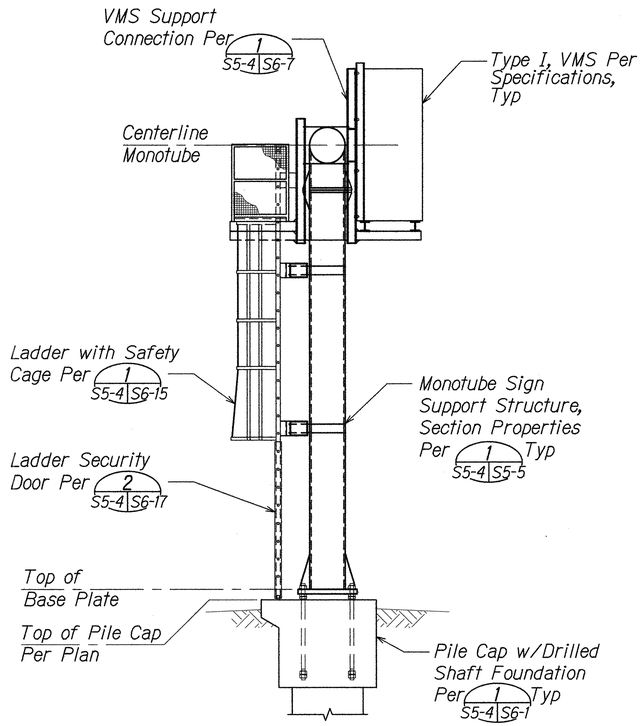
H-1 KALIHI VMS - EAST AND WEST ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

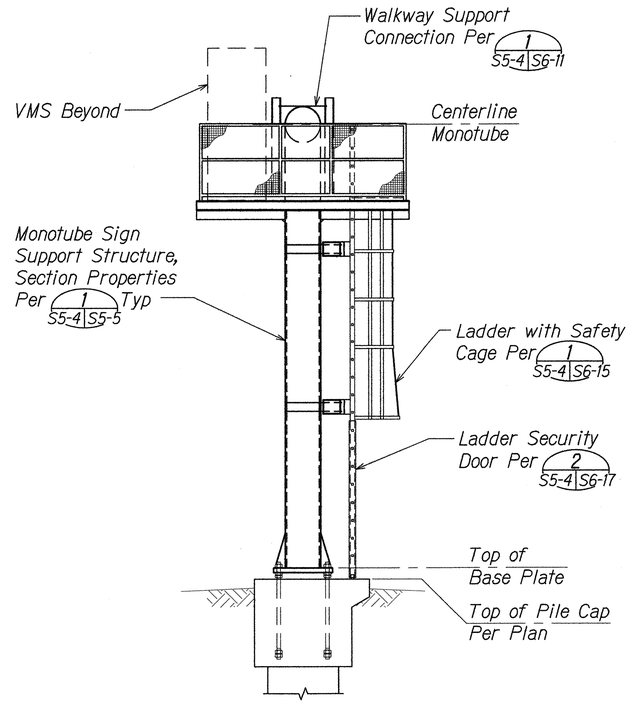
Scale: As Shown Date: 8/7/14

SHEET No. S5-3 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	144	220



1 H-1 KALIHI VMS - NORTH ELEVATION
S5-1, S5-2 | S5-4 Scale: 1/4" = 1'-0"



2 H-1 KALIHI VMS - SOUTH ELEVATION
S5-1, S5-2 | S5-4 Scale: 1/4" = 1'-0"

Graphics Scale

0 1' 2' 4' 8' 12'
1/4"=1'-0"

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

PW:F:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\S_KALIHI\S5-4.DWG Oct 15, 2014-10:58 AM

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR.
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

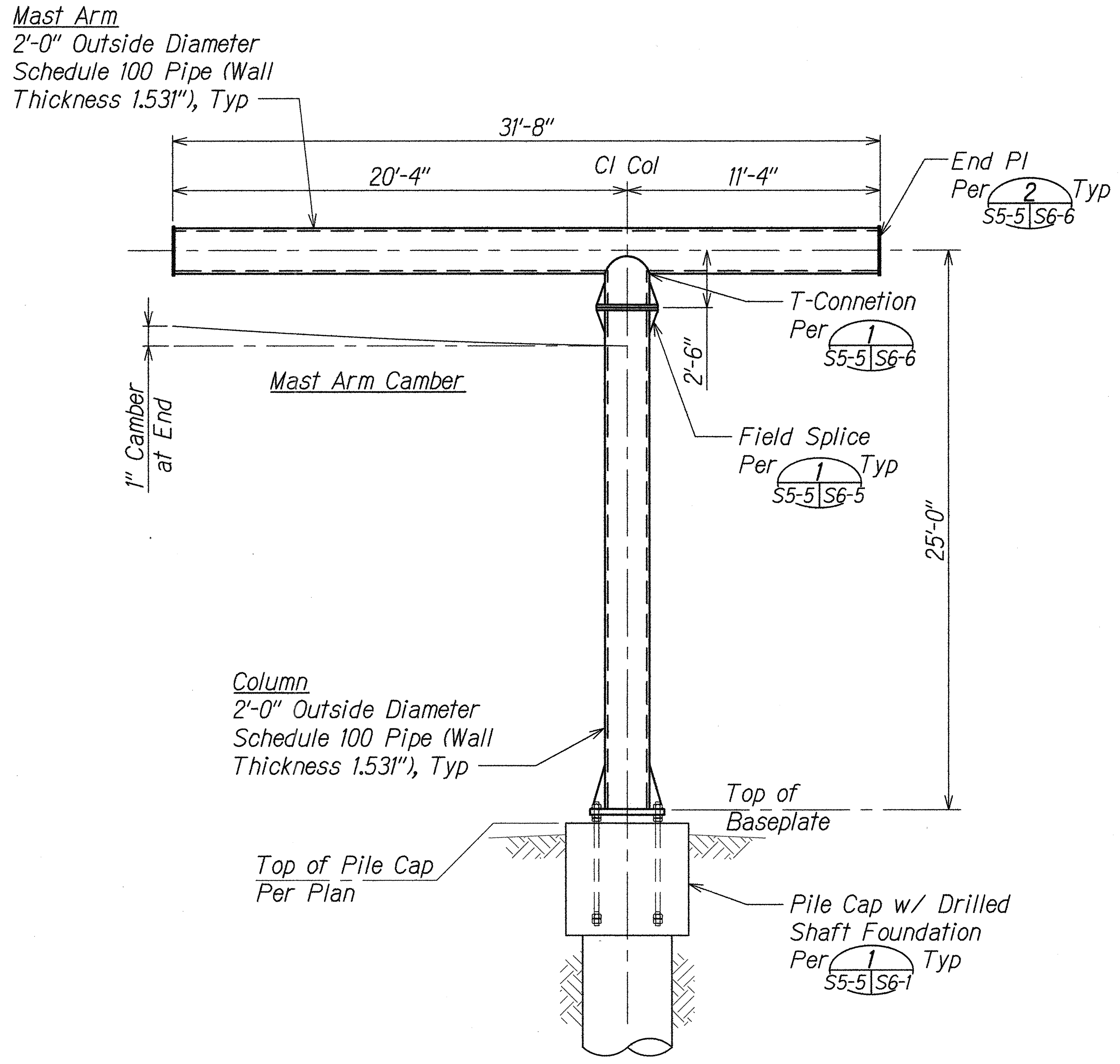
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 KALIHI VMS - NORTH AND SOUTH ELEVATION

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S5-4 OF 54 SHEETS



1 H-1 KALIHI VMS - MONOTUBE ELEVATION
S5-1, S5-2, S5-4 | S5-5 Scale: 1/4" = 1'-0"

Monotube Notes:

1. Monotube shall be welded or seamless steel pipe conforming to ASTM A53 Grade B.

2. Welding of steel shall conform to the requirement of AWS D1.1. All areas to be welded shall be ground to bright metal. No butt weld splices will be permitted. All welding and required testing shall be complete before any material is galvanized. All circumferential and stiffener welds shall be non-destructively tested using the enhanced magnetic particle method in accordance with subsection 509.18(d). All monotube seam welds within 16" of full-penetration circumferential groove welds shall be full penetration groove welds and shall be inspected as specified above. Maximum weld undercut shall be 0.01".

3. Notch toughness of all structural steel members and plates greater than 1/2" thick shall conform to Zone 2 requirements of AASHTO M270 Supplementary Requirement S5 (ASTM A709 Supplementary Requirement S83).

4. Monotube members shall be hot-dipped galvanized inside and outside after fabrication per ASTM A123.

Graphics Scale
0 1' 2' 4' 8' 12'
1/4"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

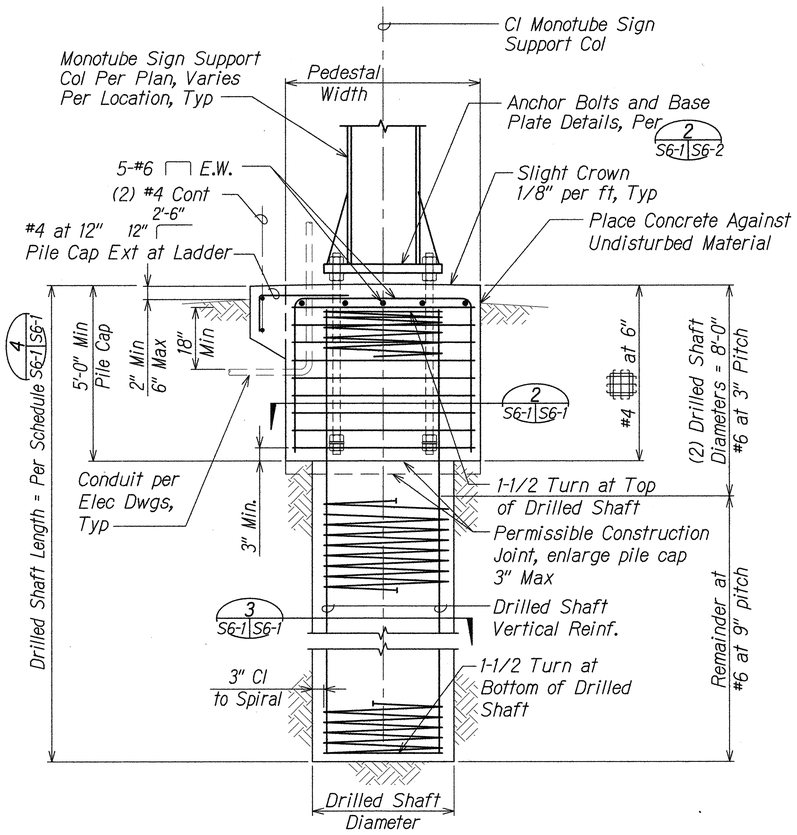
H-1 KALIHI VMS - MONOTUBE DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2
Scale: As Shown Date: 8/7/14
SHEET No. S5-5 OF 54 SHEETS

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

FNF:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\5_KALIHI\S5-5.DWG Oct 15, 2014-10:58 AM

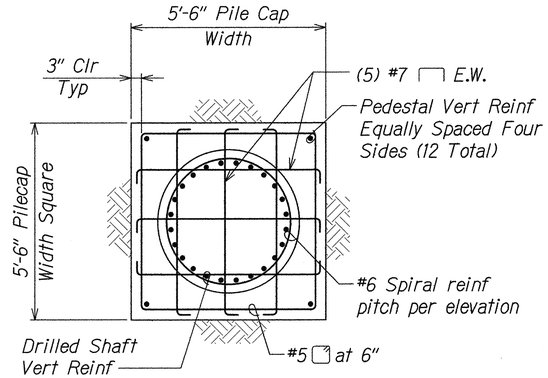
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	146	220



1 S6-1 S6-1 PILE CAP AND DRILLED SHAFT ELEVATION

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

S2-1 to S2-5
S3-1 to S3-5
S4-1 to S4-5
S5-1 to S5-5
S6-2, S6-4, S6-17

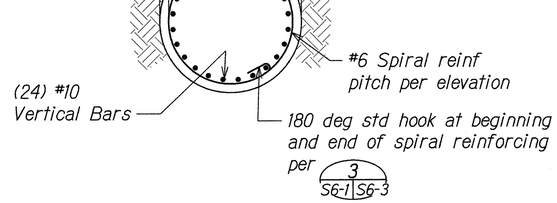


2 S6-1 S6-1 SECTION - PILE CAP

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

LOCATION	DIAMETER	DEPTH
Radford	4'-0"	30'-0"
Puuloa	4'-0"	40'-0"
Waikele	4'-0"	20'-0"
Kalihi	4'-0"	20'-0"

4 S6-1 S6-1 DRILLED SHAFT SCHEDULE



3 S6-1 S6-1 SECTION - DRILLED SHAFT

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

Graphics Scale

0 6" 1' 2' 4' 6'

1/2"=1'-0"

0 1 2

LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PILECAP AND DRILLED SHAFT DETAILS AND SCHEDULE

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S6-1 OF 54 SHEETS

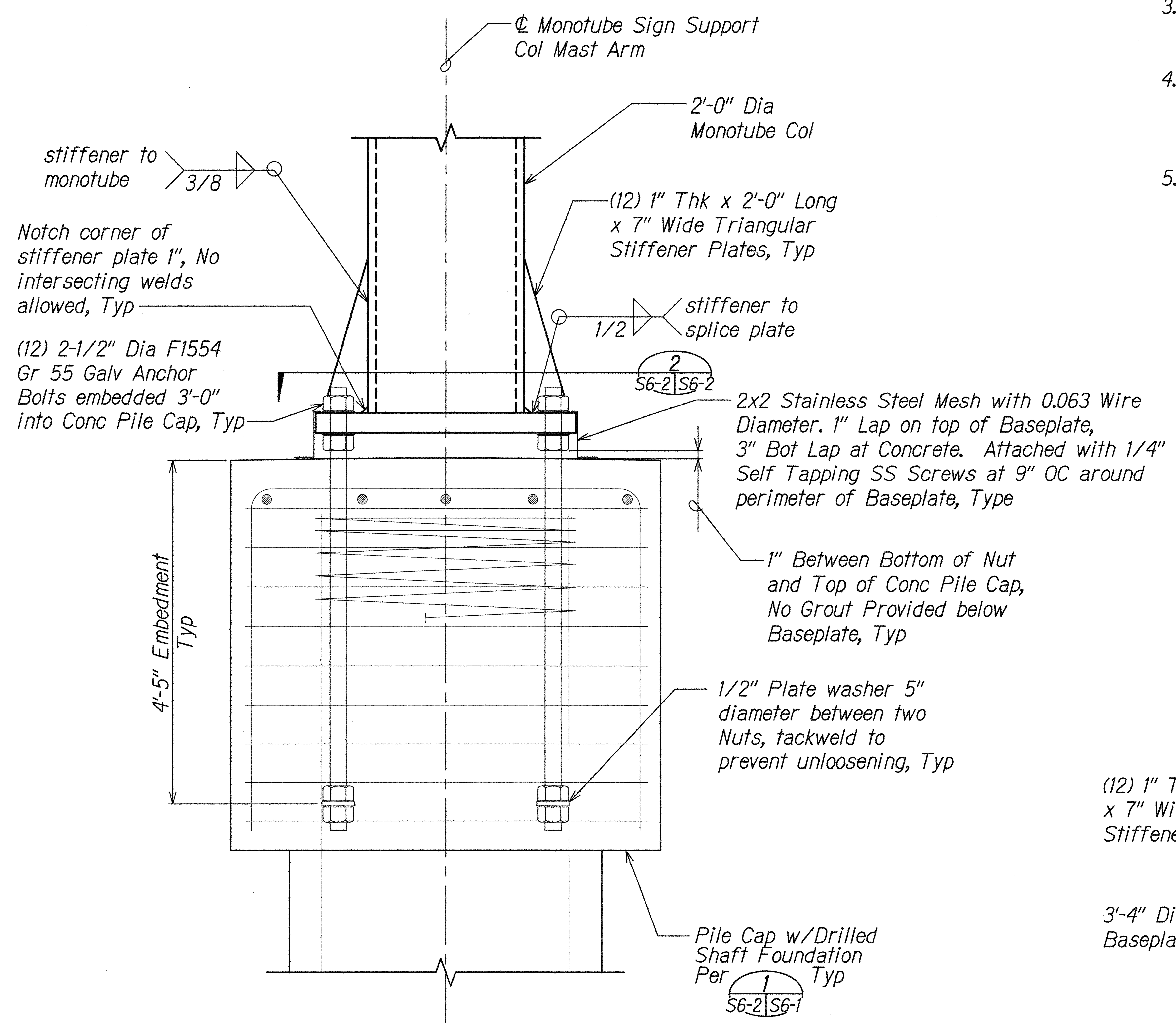
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTEBOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

I:\F\13\08.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\6_DETAILS\S6-1.DWG Oct 15, 2014 - 10:58 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	147	220

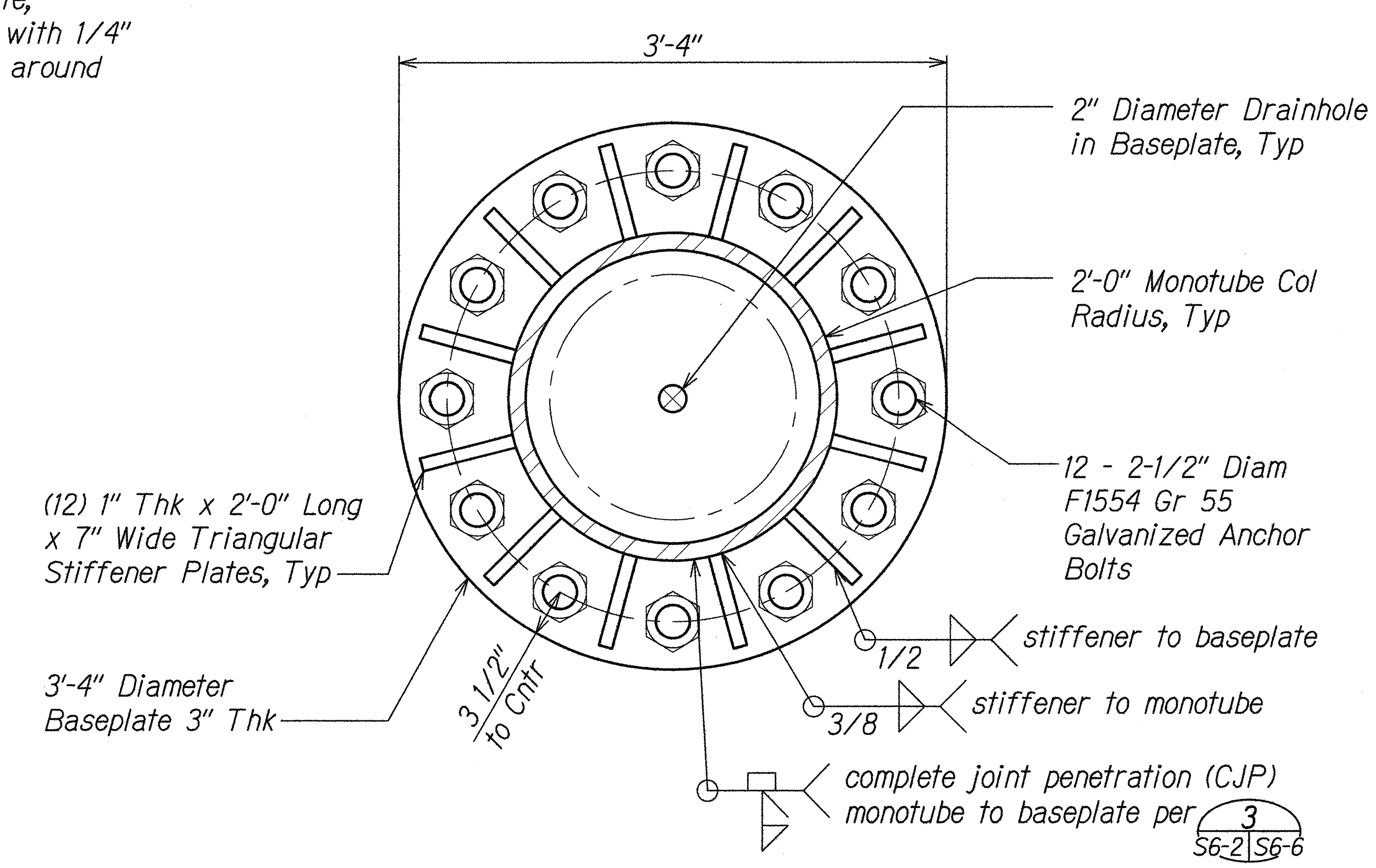
Base Plate Notes:

1. Thread upper 10" of the anchor bolts.
2. Anchor bolts shall be set with a steel template until the concrete has cured.
3. Anchor bolts shall be provided with top bolt with washer and bottom bolt with washer.
4. There shall be no grout pad installed on top of the foundations unless otherwise noted. Grout shall be provided below baseplates when baseplates are encased in concrete below grade.
5. The anchor bolts shall be tightened using the turn-of-nut method or provided with direct tension indicator washers. If the turn of nut method is used. The anchor bolts shall first be tightened to snug tight. The upper and lower nuts shall each then be rotated an additional 1/12 turn. Top nuts shall then be rotated an additional 2/3 turn (240 degrees). Minimum anchor rod pretension shall be 116,000 lbs for 2 1/4" anchor rods. See Specification Section 718.05 for additional information. Please note that the turn of nut method requires testing with Skidmore-Wihelm Calibrator or pre-reviewed equivalent device.



1 SECTION - BASEPLATE

S2-5, S3-5, S4-5 | S6-2 Scale: 1" = 1'-0"
S5-5, S6-1,
S6-17



2 DETAIL - BASEPLATE

S6-2, S6-17 | S6-2 Scale: 1-1/2" = 1'-0"

Graphics Scale

0 3" 6" 9" 1' 2' 3'
1"=1'-0"

0" 3" 6" 1' 2'
1-1/2"=1'-0"

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If not 2 inches: scale accordingly)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BASEPLATE DETAILS

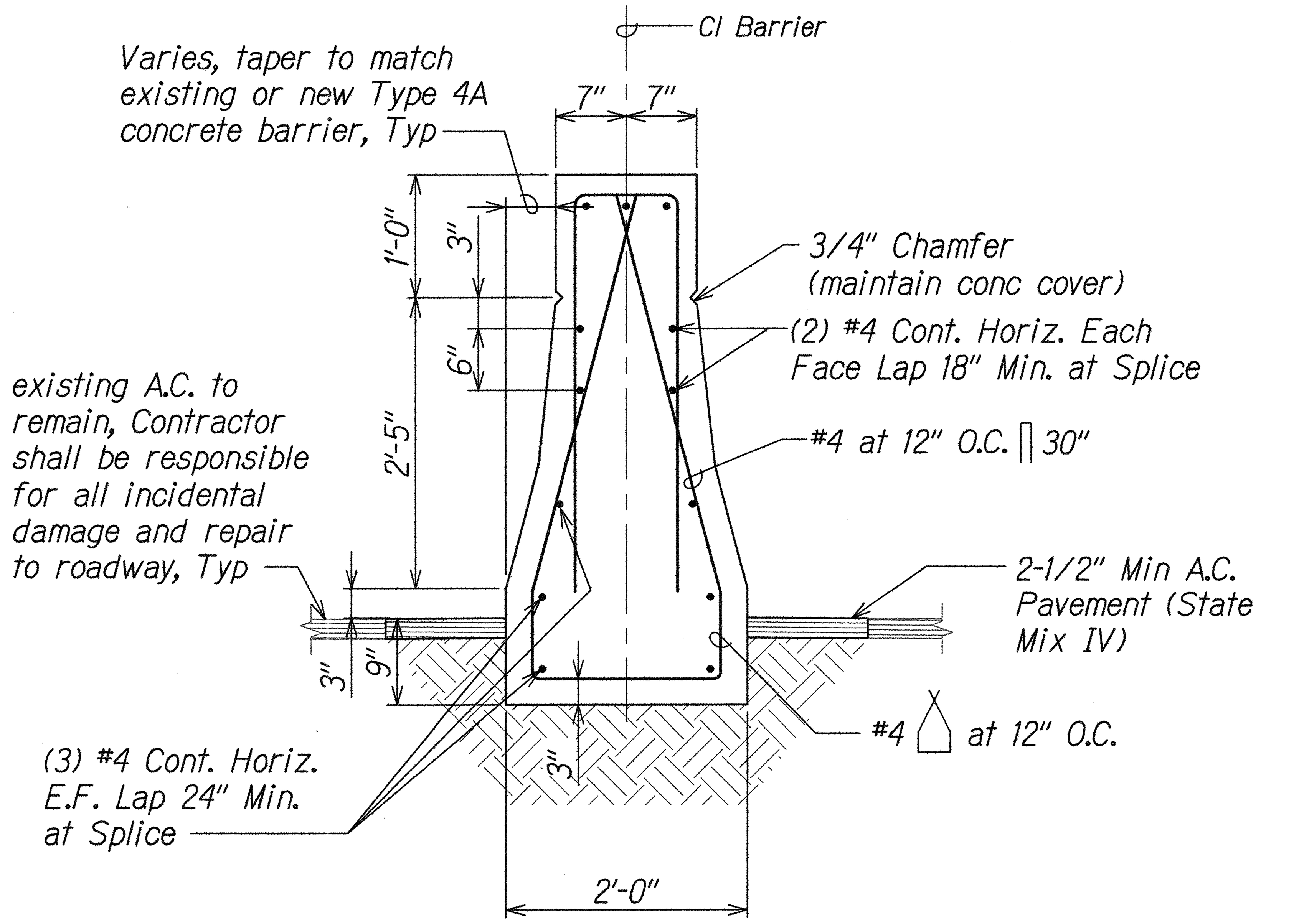
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S6-2 OF 54 SHEETS

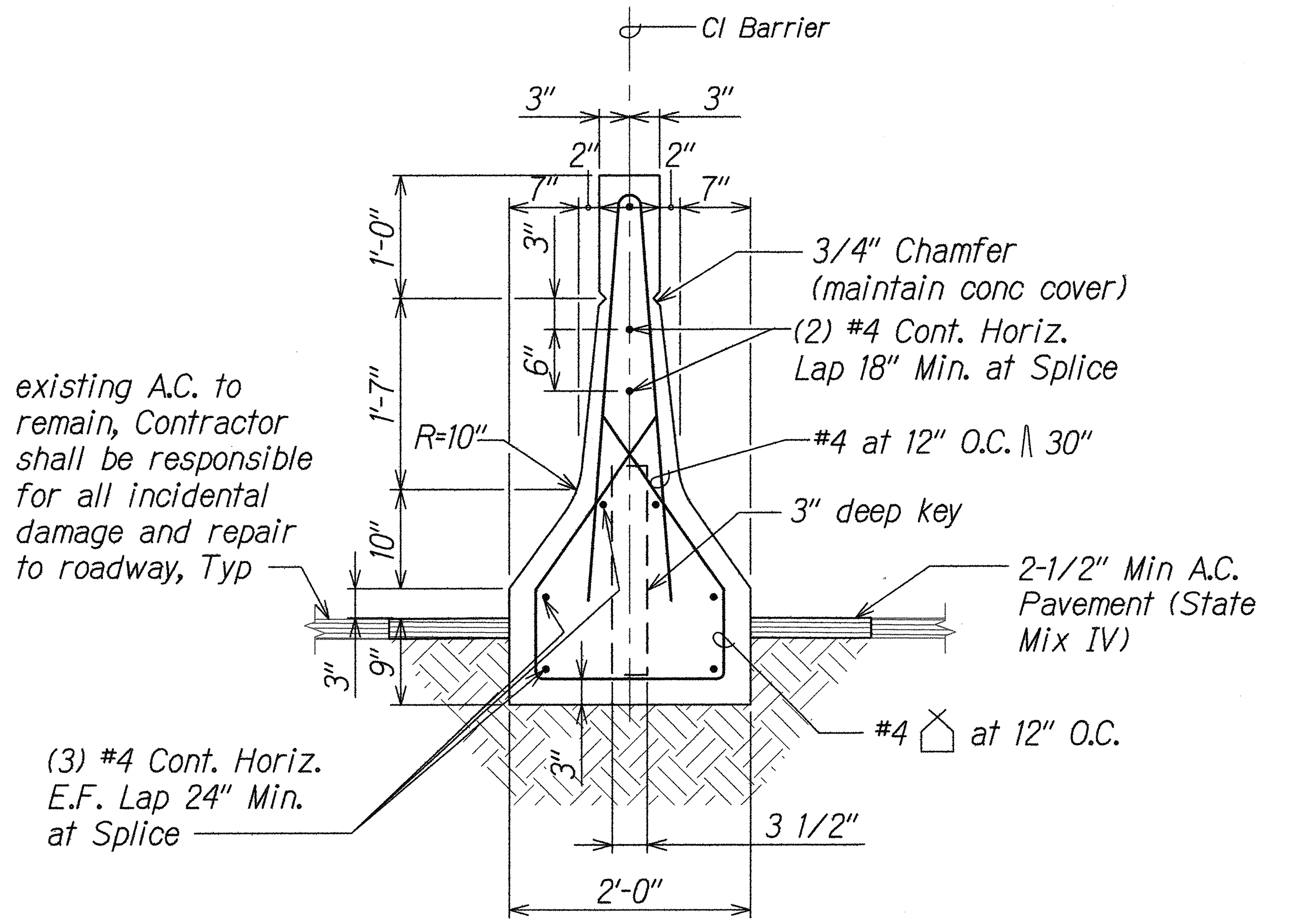
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTEBOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	148	220



1 SECTION - CONCRETE BARRIER TRANSITION

S2-6, S2-7, S6-3, S3-6, S3-7 Scale: 1" = 1'-0"



2 SECTION - MODIFIED TYPE 4A CONC BARRIER WITH INTERGRAL GLARE SCREEN

S2-8, S3-1, S6-3, S3-6, S3-7 Scale: 1" = 1'-0"

Notes:

1. Precast Rigid Barrier Guardrail may be installed as an option to cast-in-place Modified Type 4A Rigid Barrier Guardrail. Contractor shall submit shop drawings to Engineer for approval. Please note that all Rigid Barriers shall have integral glare screen to match existing.

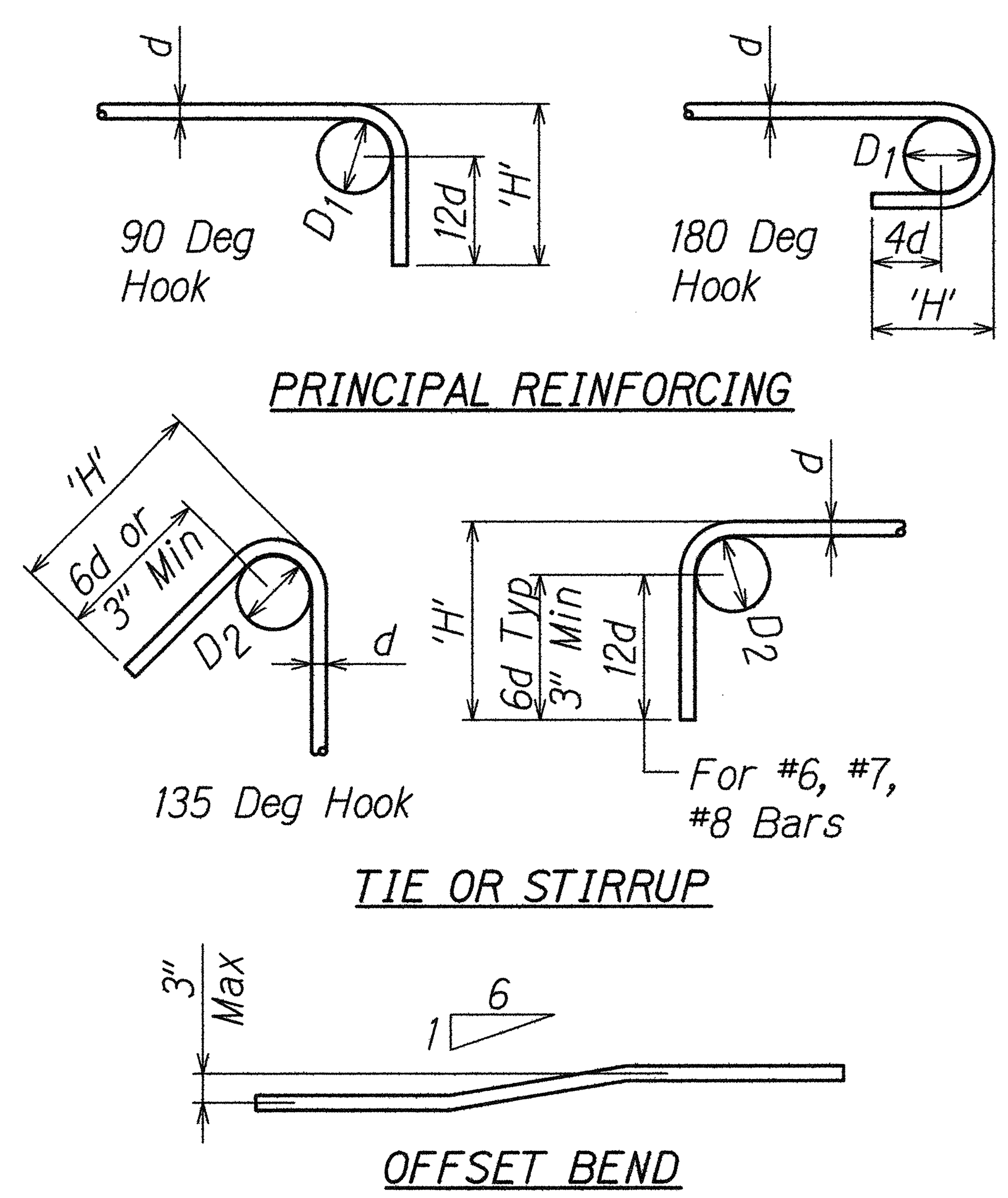
2. The exterior surface and vertical alignment of the Type 4 Rigid Barrier Guardrail shall be constructed to give a uniform and presentable appearance. Variation of more than 1/4" in 20' max. and 1/2" in 40' or more will be considered objectionable. The Engineer will determine the acceptability of the work. During the course of the work, samples may be tested and measurements made to establish whether or not the specified values or dimensions are being met. If the specified values or dimensions are not being met, the Engineer will determine the degree of the non-conformance, the effect on the serviceability of the project, whether the work be accepted and remain in place and, if so, the amount to be paid for such work, or whether the work shall be removed and replaced or otherwise corrected at the Contractor's expense.

HOOK LENGTHS (H) (IN INCHES), UON

Bar Size	Standard Hooks 90 Deg. Hook	Standard Hooks 180 Deg. Hook	Stirrup or Tie Hook 90 Deg. Hook	Stirrup or Tie Hook 135 Deg. Hook	D_2	D_1
#3	6	4	3-1/2	4	1-1/2	2-1/4
#4	8	4-1/2	4-1/2	4-1/2	2	3
#5	10	5	5-1/2	5-1/2	2-1/2	3-3/4
#6	12	6	12	7-1/2	4-1/2	4-1/2
#7	14	7	14	9	-	5-1/2
#8	16	8	-	-	-	6

Note:

1. All bends shall be made cold.



3 BAR BEND AND HOOKS

S6-1, S6-3 Scale: Not to Scale

TENSION LAP SPLICE LENGTHS (CLASS B) (INCHES)

GRADE 60

f'c / Bar Size	Min C TO C Bar Spacing	5000 PSI
#3	1.4"	17
#4	2.0"	22
#5	2.5"	28
#6	3.0"	33
#7	3.5"	48
#8	4.0"	55
#9	4.5"	62
#10	5.1"	69

Note:

1. Splices based on minimum cover as shown on plans.

4 CONCRETE SPLICE TABLE

S6-3, S6-3 Scale: Not to Scale

Graphics Scale

0 3" 6" 1' 2' 3'

1"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ, JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONCRETE BARRIER DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

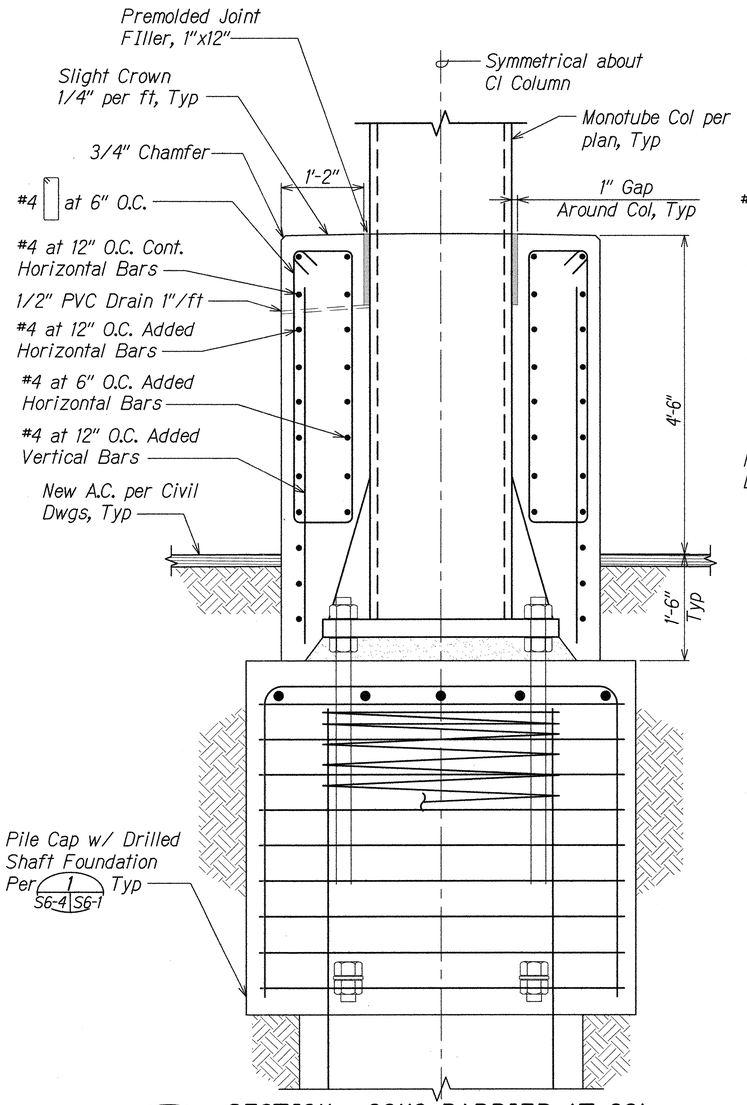
Scale: As Shown Date: 8/7/14

SHEET No. S6-3 OF 54 SHEETS

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

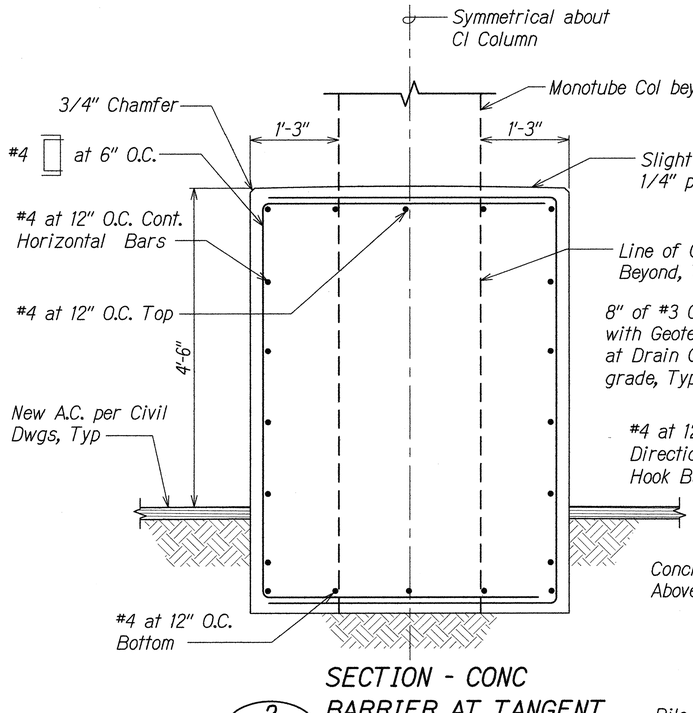
FNF:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\6_DETAILS\S6-3.DWG Oct 15, 2014-10:58 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	149	220



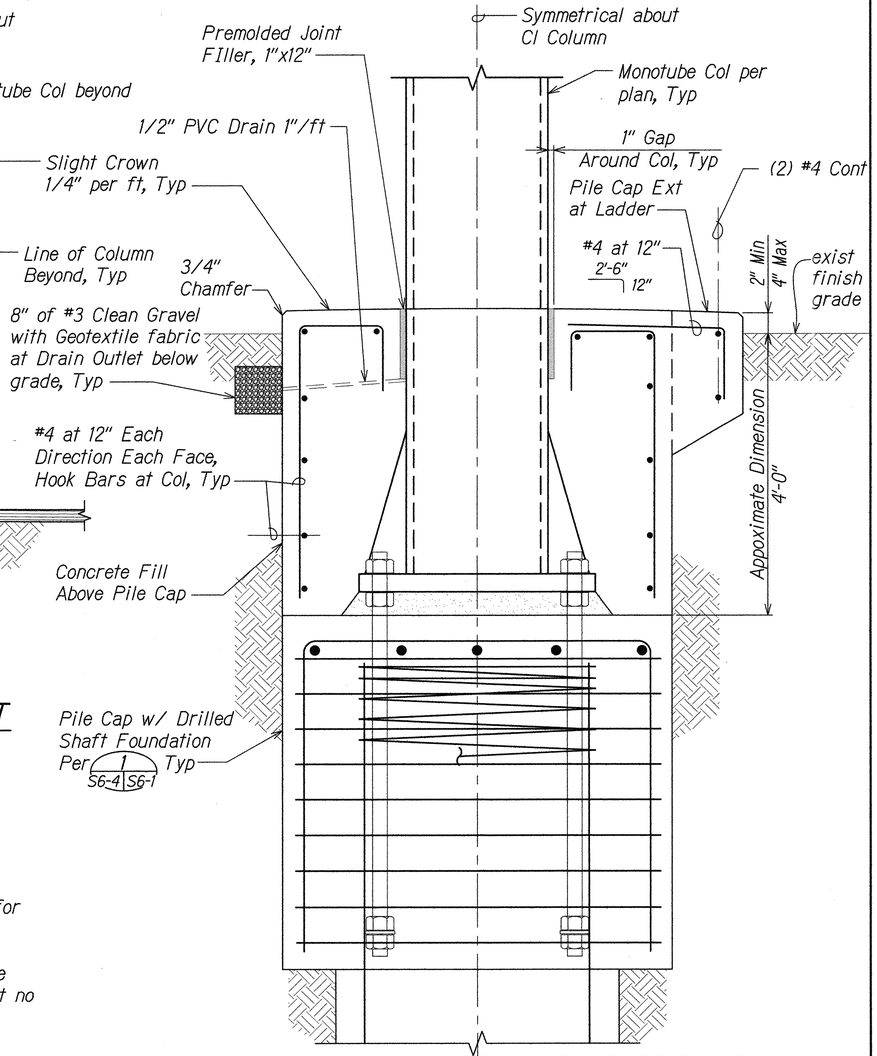
1 SECTION - CONC BARRIER AT COL

S2-2, S2-3, S2-6, S6-4, S2-7, S3-2, S3-3, S3-6, S3-7 Scale: 1" = 1'-0"



2 SECTION - CONC BARRIER AT TANGENT

S2-6, S2-7, S3-6, S6-4, S3-7 Scale: 1" = 1'-0"



3 SECTION - CONC FILL ABOVE PILE CAP

S2-2, S2-3, S2-4, S6-4 Scale: 1" = 1'-0"

Notes:

1. *Contractor shall submit shop drawings to Engineer for approval.*
2. *Pourable expansion joint seal around column shall be installed with a slight crown over concrete such that no water ponding will occur at the joint.*
3. *See barrier notes on Sheet S6-3 for tolerance and acceptance criteria for barrier work.*

Graphics Scale

0 3" 6" 1' 2' 3'
1"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

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

I:\F\13\02\DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\6_DETAILS\S6-4.DWG Oct 15, 2014-10:58 AM

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

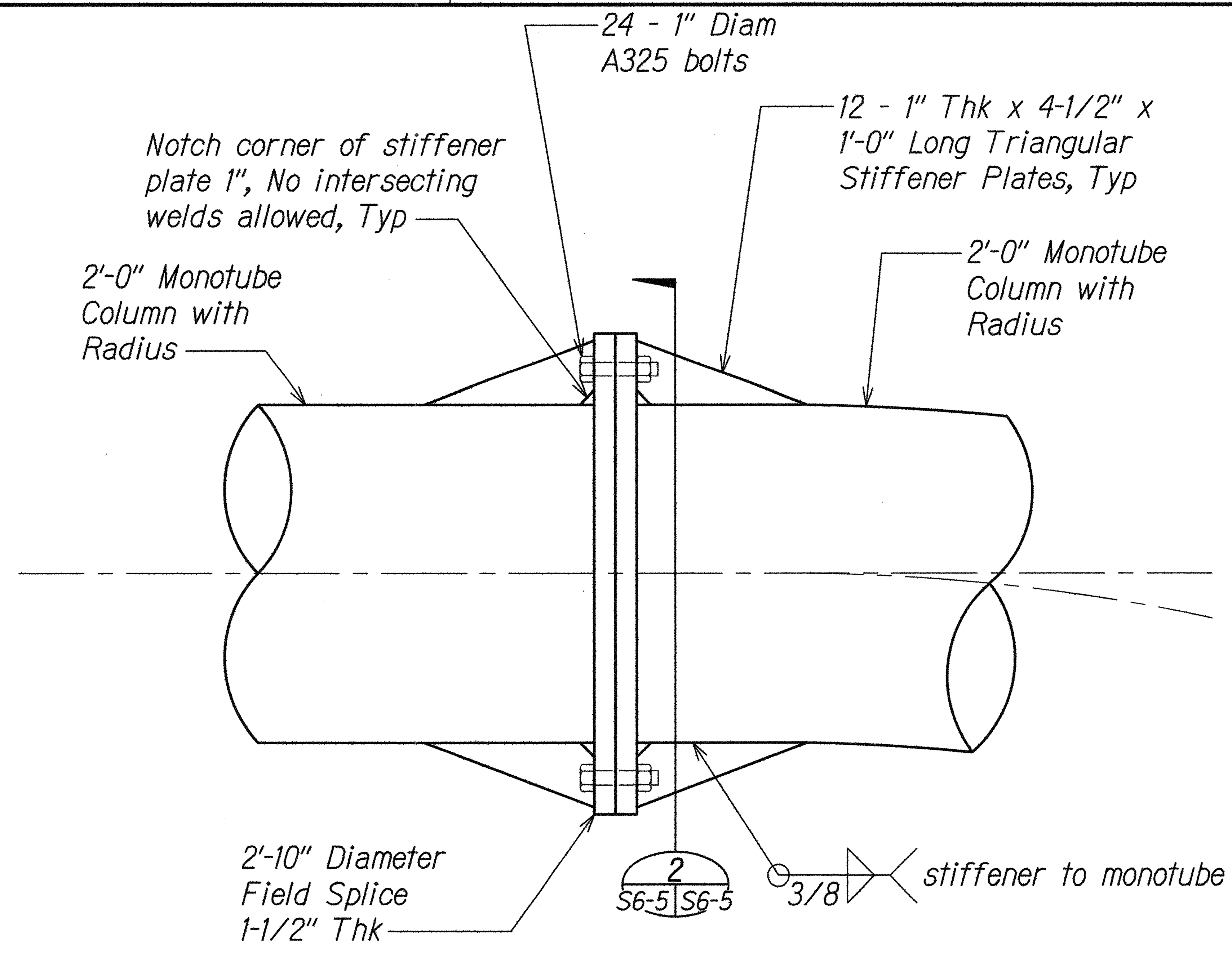
CONCRETE BARRIER TRANSITION DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S6-4 OF 54 SHEETS

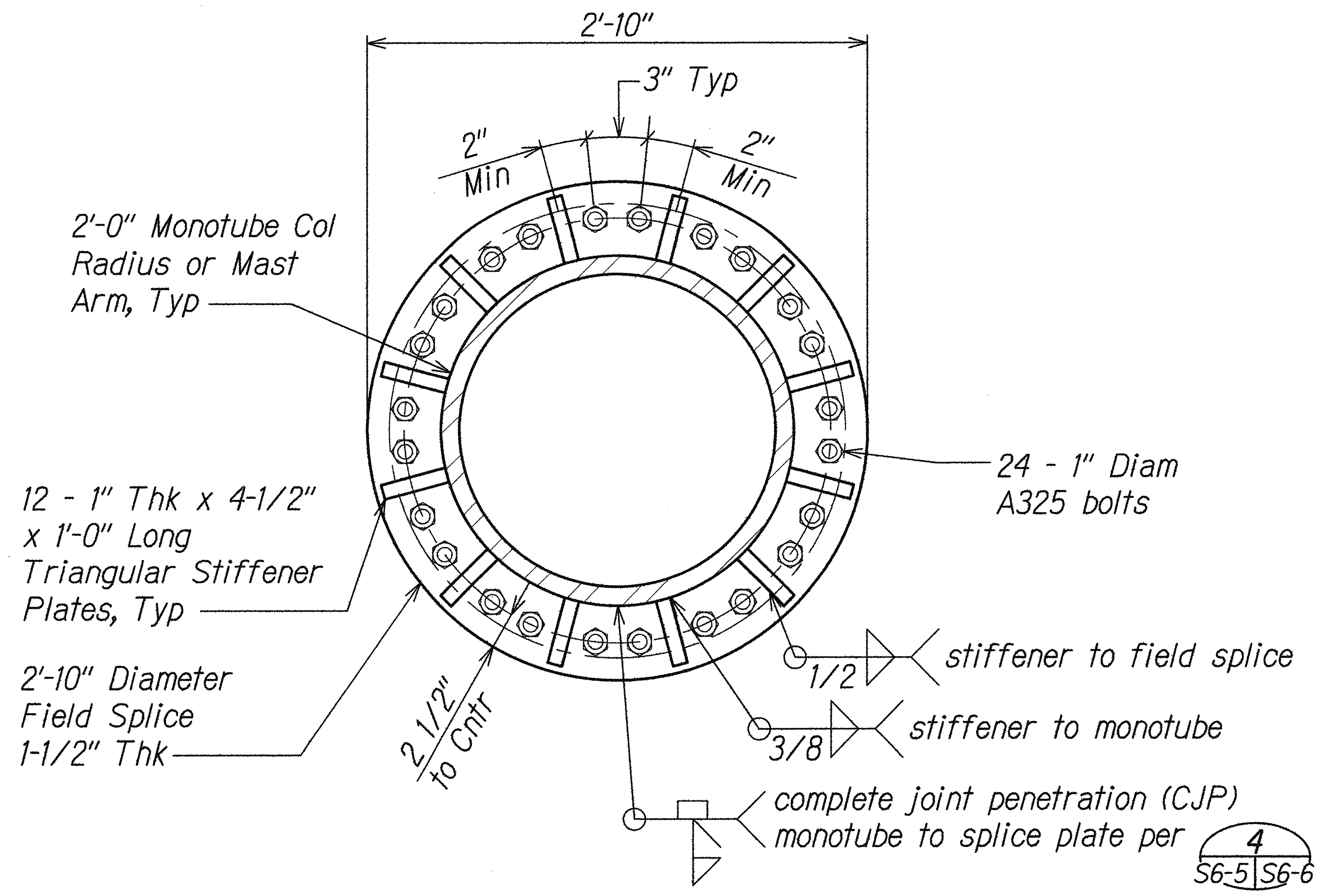
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	150	220



1 DETAIL - FIELD SPLICE

S2-2, S2-3, S2-5 | S6-5 Scale: 1-1/2" = 1'-0"

S3-2, S3-3, S3-5,
S4-5, S5-5, S6-6,
S6-9, S6-10, S6-16



2 DETAIL - FIELD SPLICE

S6-5, S6-6 | S6-5 Scale: 1-1/2" = 1'-0"

Field Splice Notes:

1. Field splice bolts shall be tightened using "twist off" F1852 bolts to achieve Slip Critical Pre-Tension. Field splice plate surface shall be galvanized Class C surface (roughened by wire brush).

2. Welding of steel shall conform to the requirement of AWS D1.1. All areas to be welded shall be ground to bright metal. No butt weld splices will be permitted. All welding and required testing shall be complete before any material is galvanized. All circumferential and stiffener welds shall be non-destructively tested using the enhanced magnetic particle method in accordance with subsection 509.18(d). All monotube seam welds within 16" of full-penetration circumferential groove welds shall be full penetration groove welds and shall be inspected as specified above. Maximum weld undercut shall be 0.01".

Graphics Scale

0 3" 6" 1' 2'

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

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

0 1 2

LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

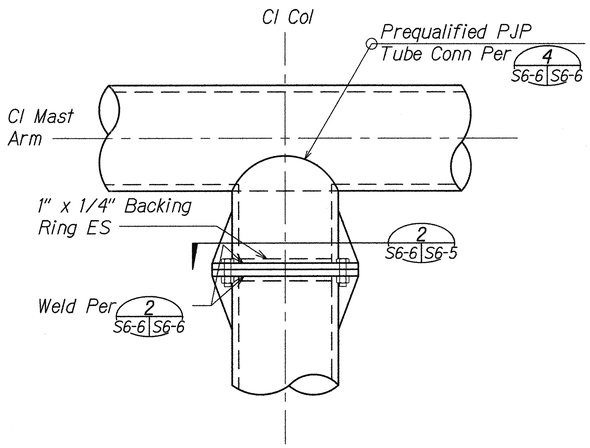
MONOTUBE DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

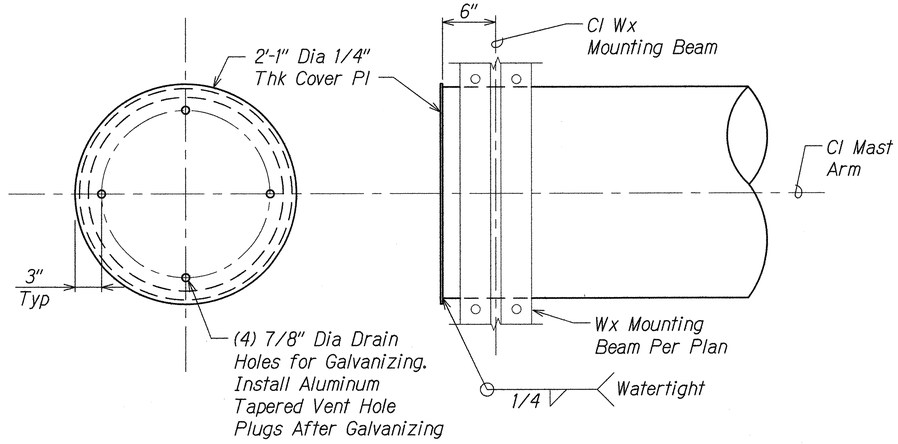
SHEET No. S6-5 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	151	220



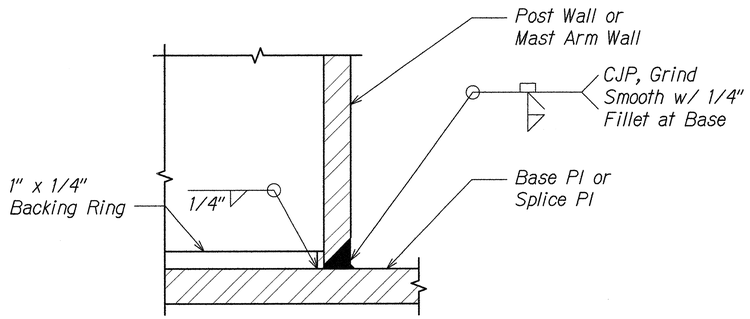
1 T-CONNECTION DETAIL

S4-3, S4-5, S5-3, S6-6 Scale: 3/4" = 1'-0"
S5-5



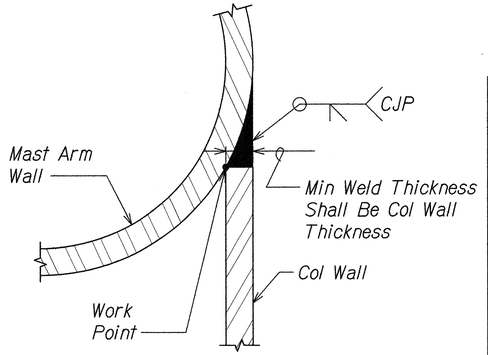
2 DETAIL - MAST ARM END

S4-2, S4-5, S5-2, S6-6 Scale: 1-1/2" = 1'-0"
S5-5, S6-13



3 WELD DETAIL

S6-2, S6-5, S6-6 S6-6 Scale: 3" = 1'-0"



4 WELD DETAIL

S6-6 S6-6 Scale: 3" = 1'-0"

Note:

1. See 18th Edition AISC Table 8-2 for Additional Information.
2. Per Table 8-2 Prequalified Welded Joints PJP T-Connection tangent line at Working Point Exceeds 45 degrees, No Z Loss Dimension is required for Column Wall to Mast Arm Connection as Shown.

Graphics Scale

0 6" 1' 2' 3' 4'
3/4"=1'-0"

0 3" 6" 1' 2'
1-1/2"=1'-0"

0" 1" 2" 3" 6" 1'
3"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MONOTUBE DETAILS

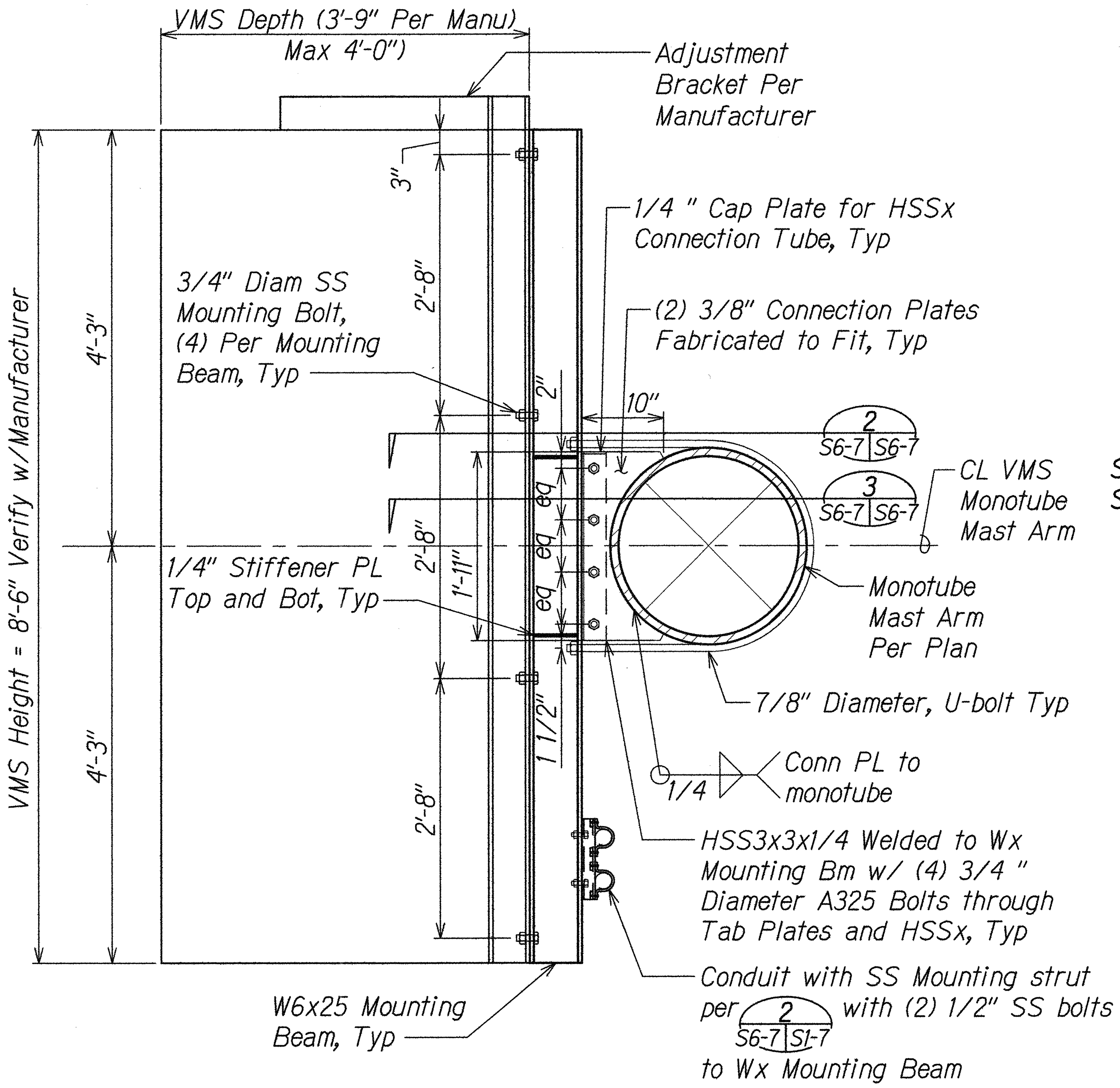
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

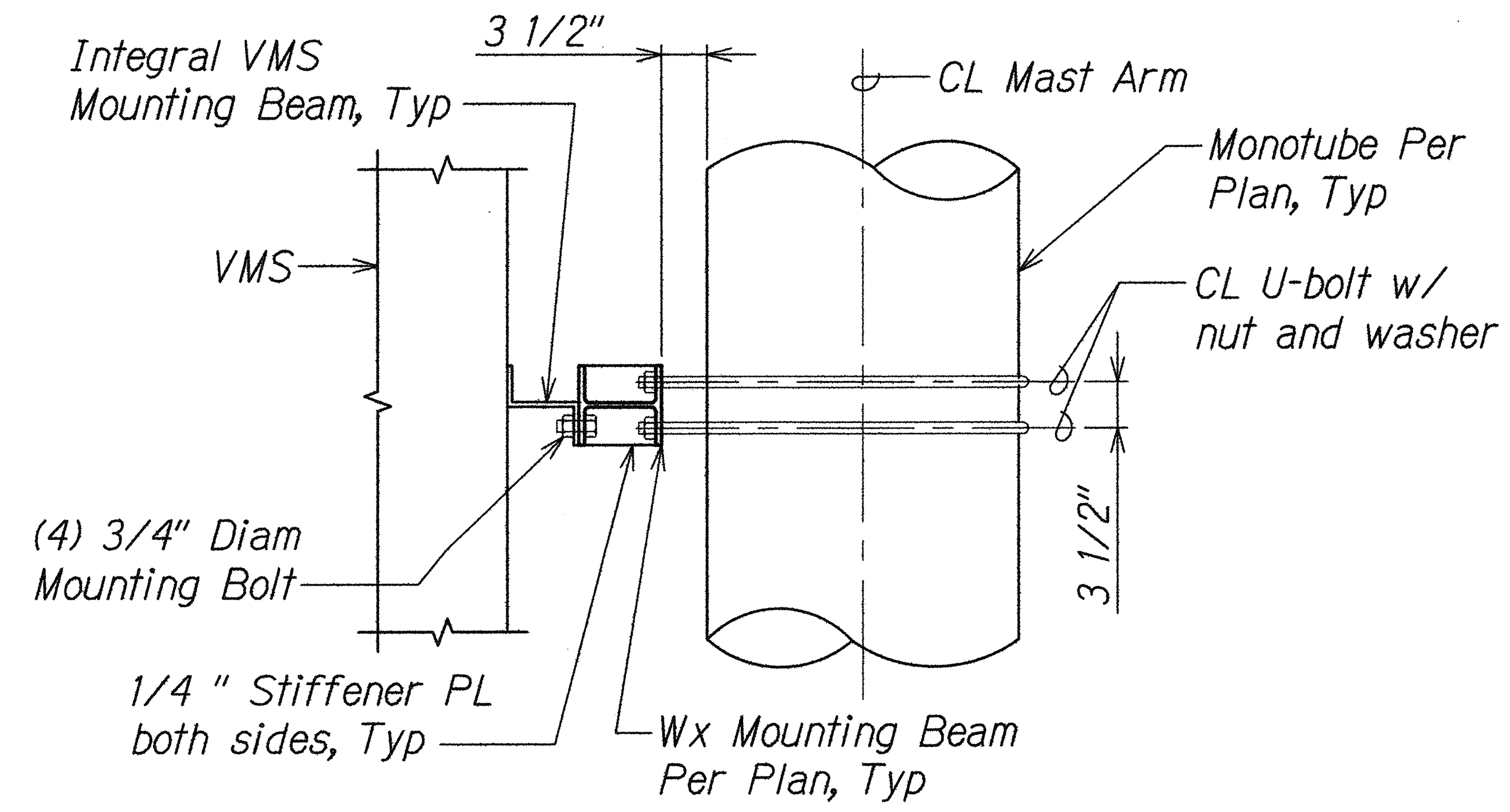
SHEET No. S6-6 OF 54 SHEETS

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

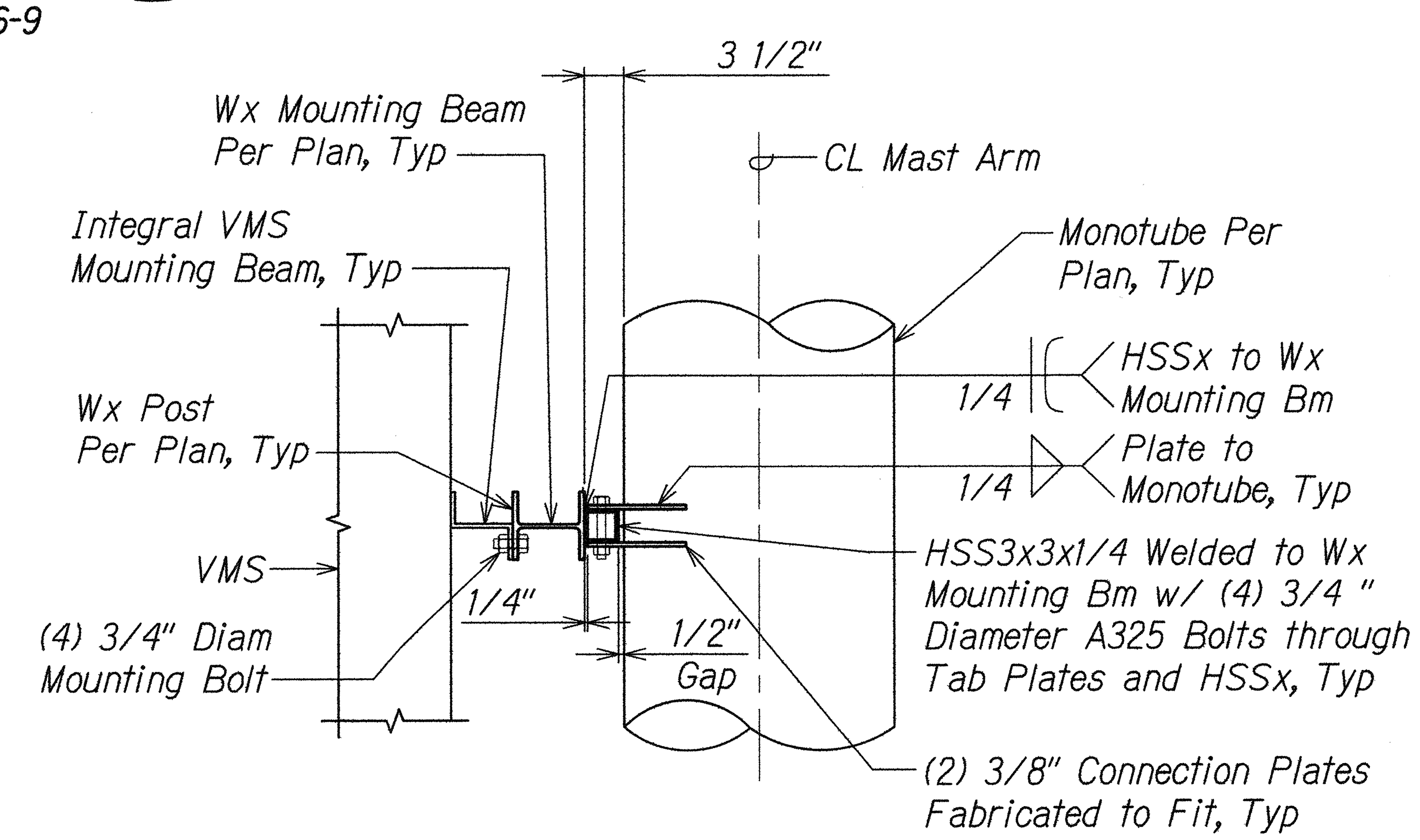
PW:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\S6-6 DETAILS\S6-6.DWG Oct 15, 2014 - 10:58 AM



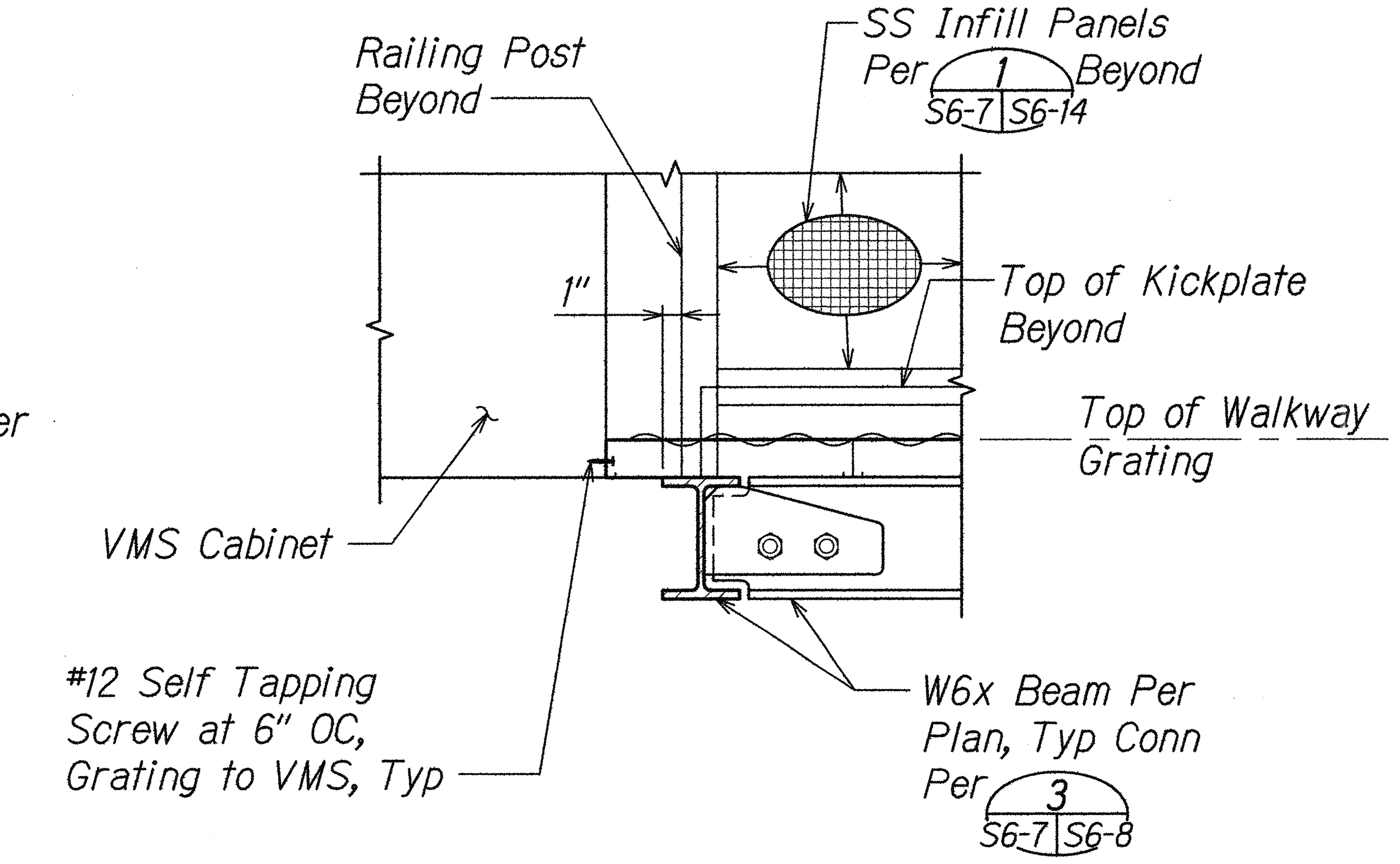
1 MONOTUBE VMS DETAIL
S2-2 to S2-4 | S6-7 Scale: 1" = 1'-0"
S3-2 to S3-4
S4-2 to S4-4
S5-2 to S5-4
S6-7, S6-11, S6-12



2 DETAIL - MOUNTING BEAM CONNECTION
S6-7, S6-8, S6-9 | S6-7 Scale: 1" = 1'-0"



3 DETAIL - MOUNTING BEAM CONNECTION
S6-7, S6-8, S6-9 | S6-7 Scale: 1" = 1'-0"



4 DETAIL - WALKWAY TO VMS
S2-2, S3-2 | S6-7 Scale: 1-1/2" = 1'-0"

Graphics Scale
0 3" 6" 1' 2' 3'
1"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONNECTION DETAILS

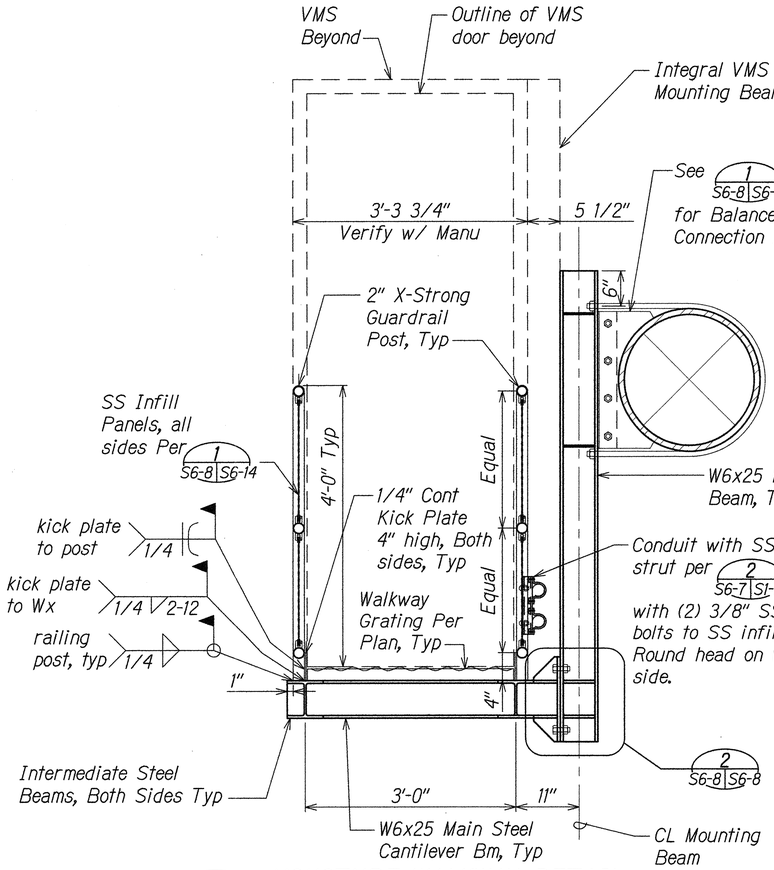
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S6-7 OF 54 SHEETS

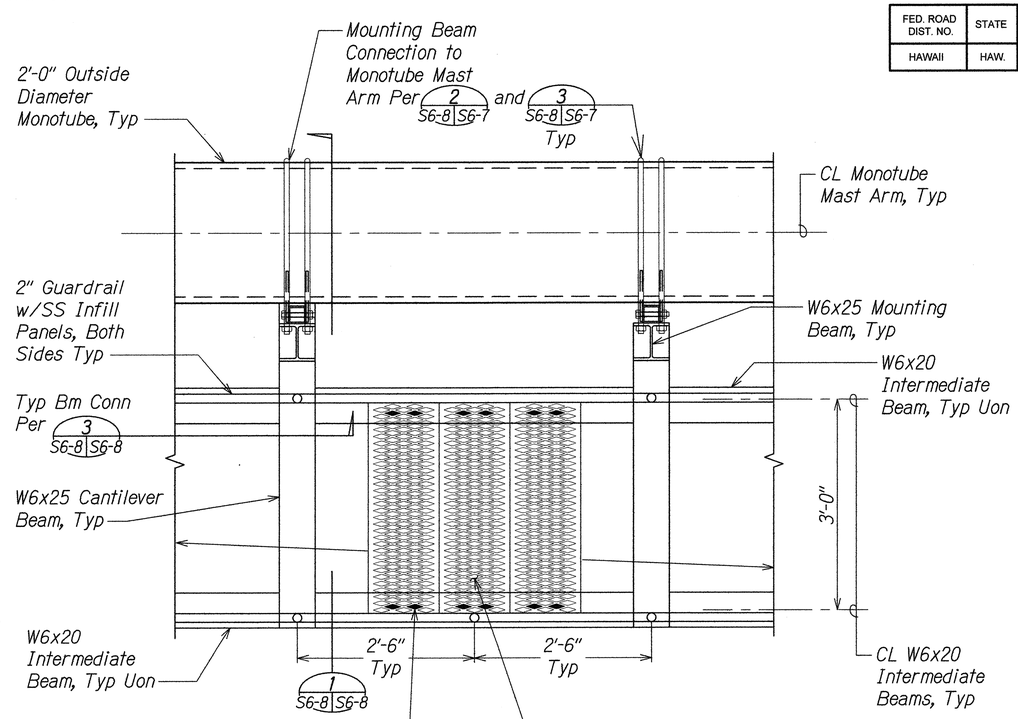
ORIGINAL PLAN | NOTEBOOK | No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	153	220



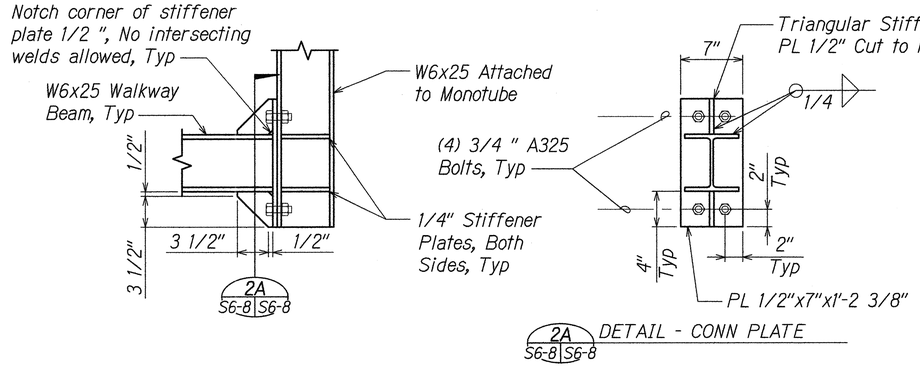
1 MONOTUBE WALKWAY DETAIL

S2-2, S2-3, S3-2|S6-8, S3-3, S6-8, S6-9, S6-10, S6-11, S6-12 Scale: 1" = 1'-0"



A PARTIAL PLAN - TYPICAL WALKWAY

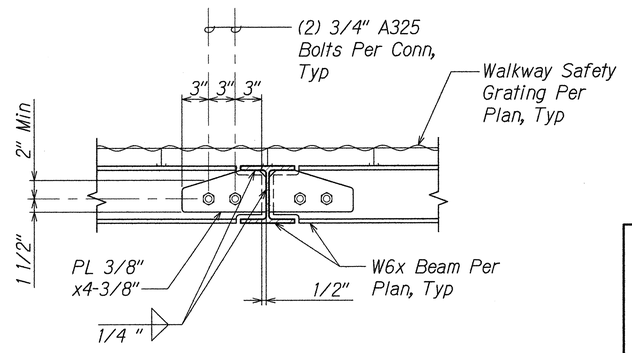
S2-2, S3-2|S6-8 Scale: 1" = 1'-0"



2A DETAIL - CONN PLATE

2 DETAIL - CANTILEVER CONN

S6-8, S6-11, S6-12|S6-8, S6-13 Scale: 1-1/2" = 1'-0"



3 DETAIL - W6x BM TO BM CONN

S6-7, S6-8, S6-9|S6-8, S6-13, S6-16 Scale: 1-1/2" = 1'-0"

Graphics Scale

0" 3" 6" 1' 2'
1-1/2"=1'-0"

0 3" 6" 1' 2' 3'
1"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WALKWAY DETAILS

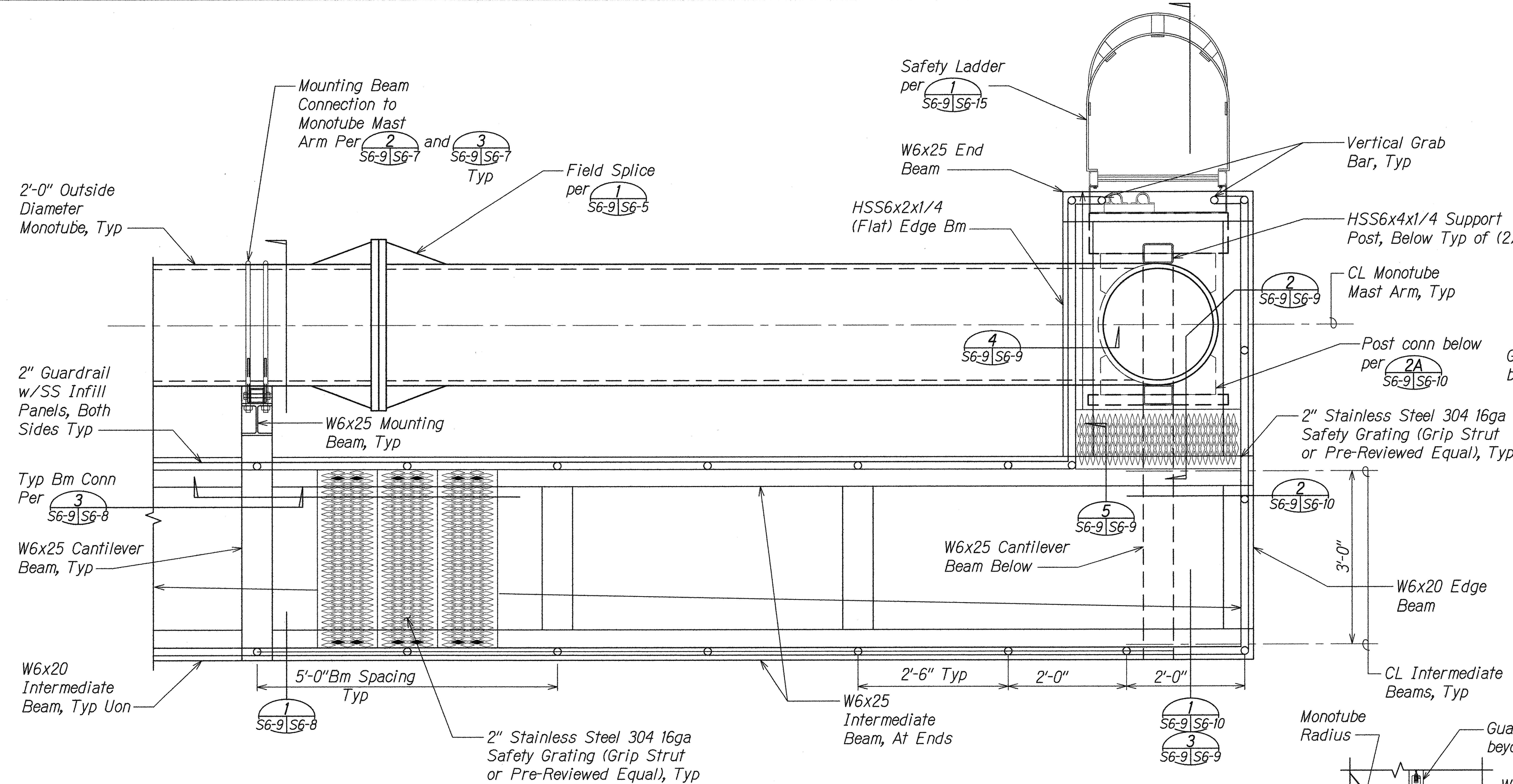
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

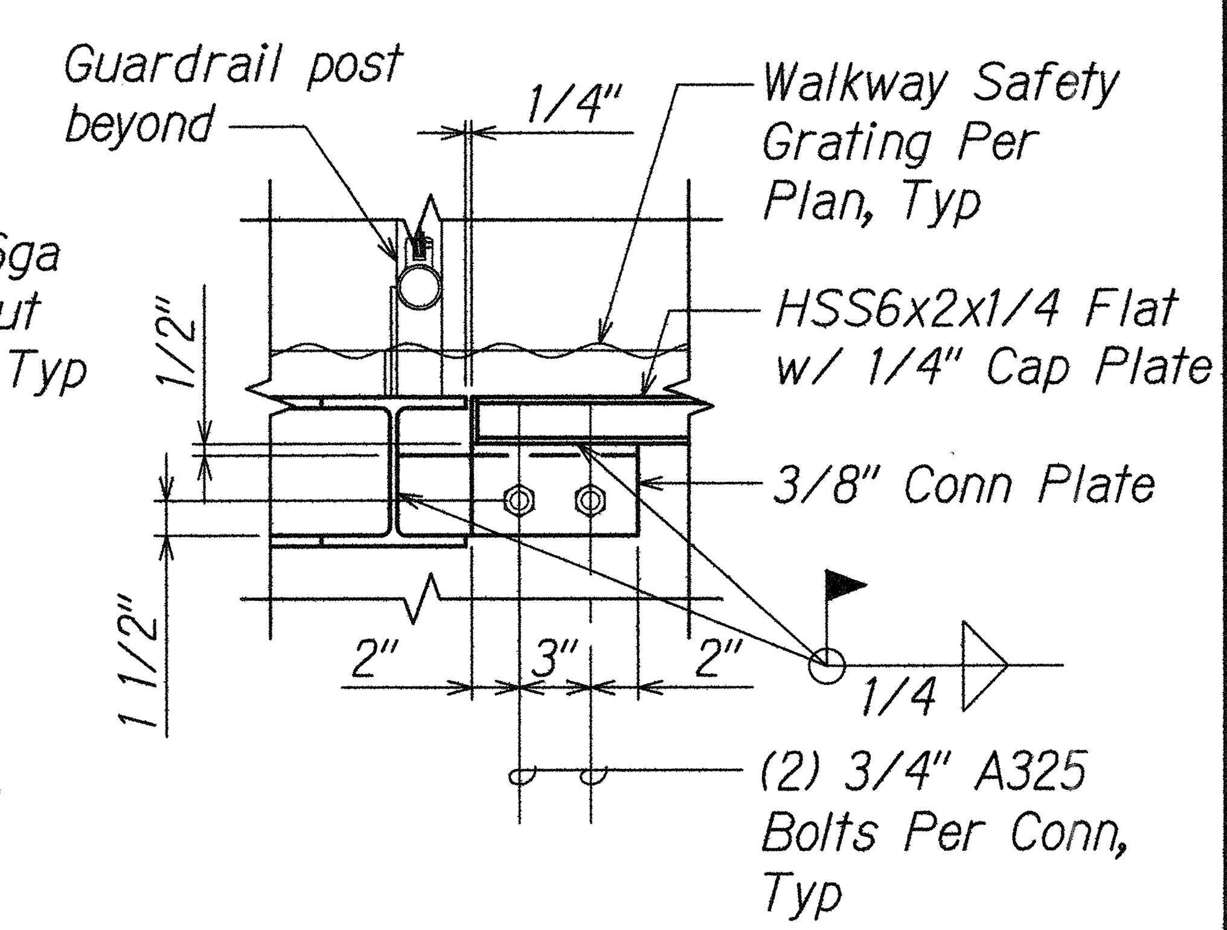
SHEET No. S6-8 OF 54 SHEETS

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

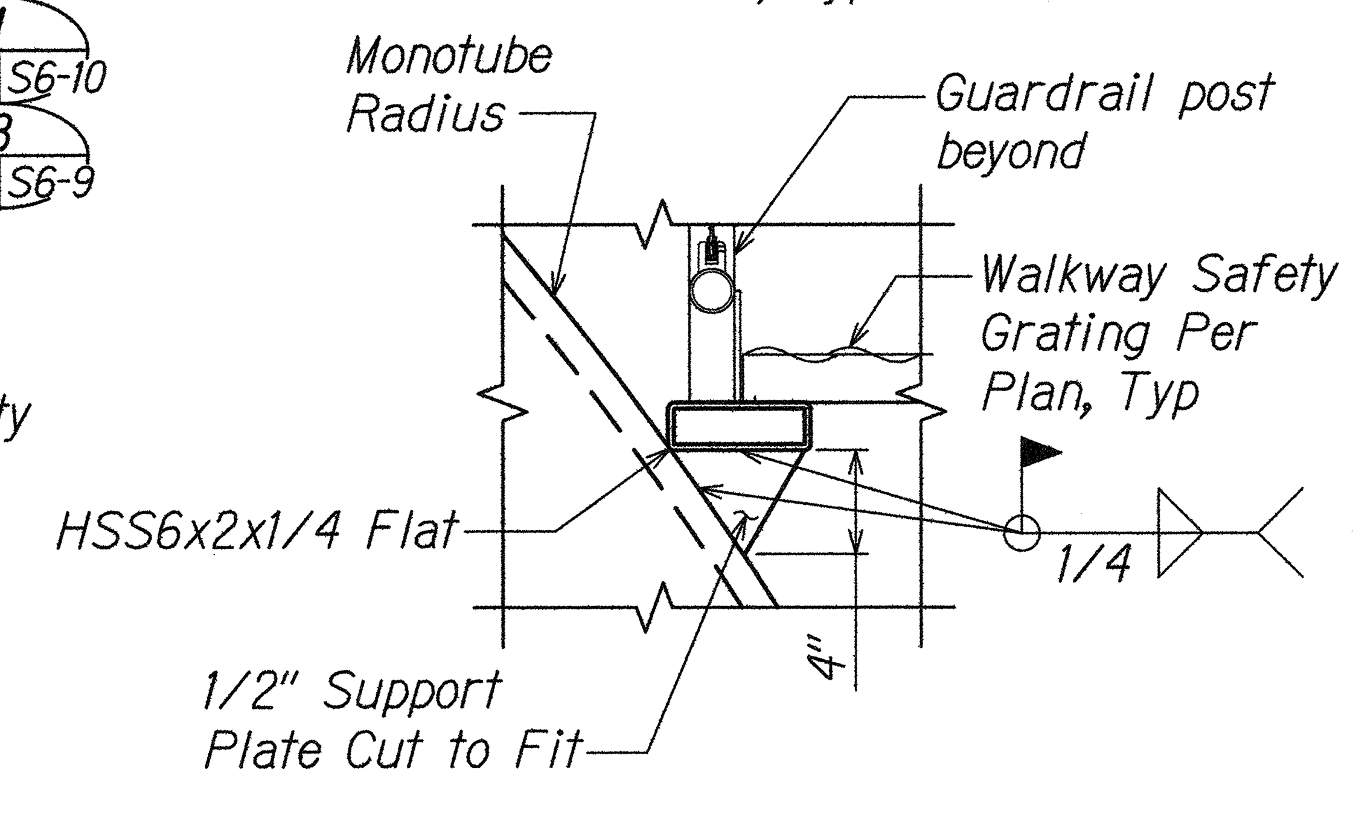
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	154	220



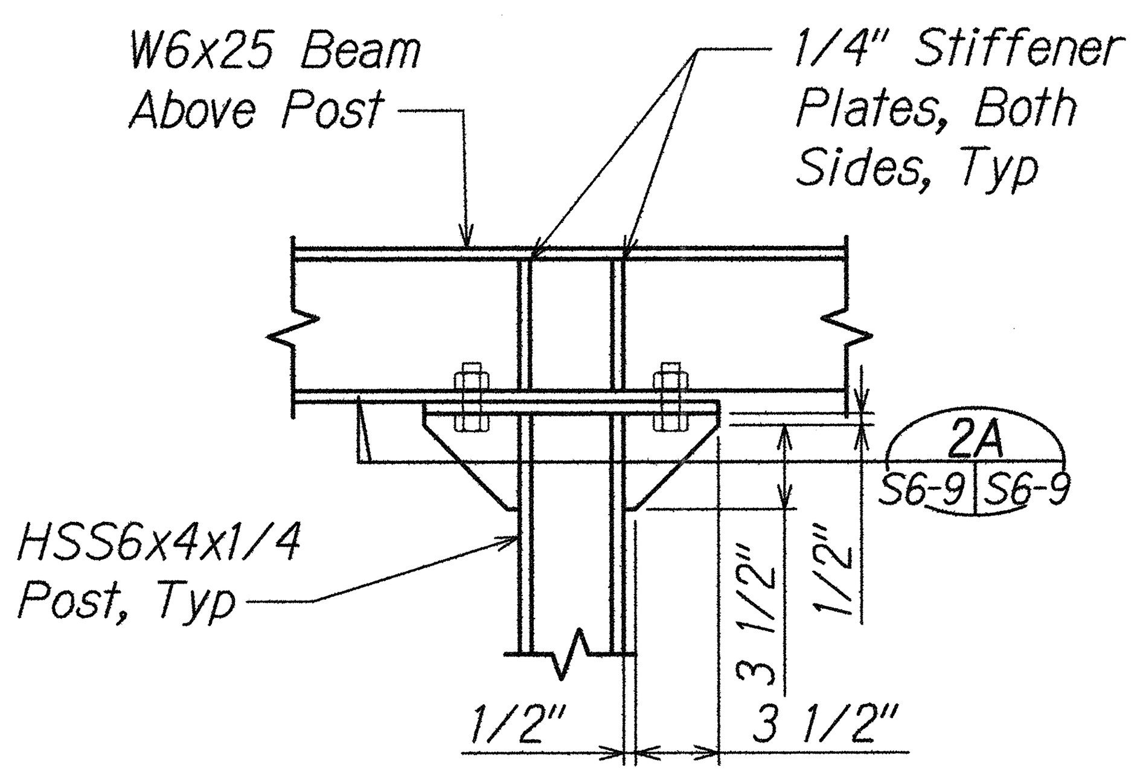
A PARTIAL PLAN - WALKWAY AT ENDS
S2-2, S2-4, S3-2, S3-4 | S6-9 Scale: 1" = 1'-0"



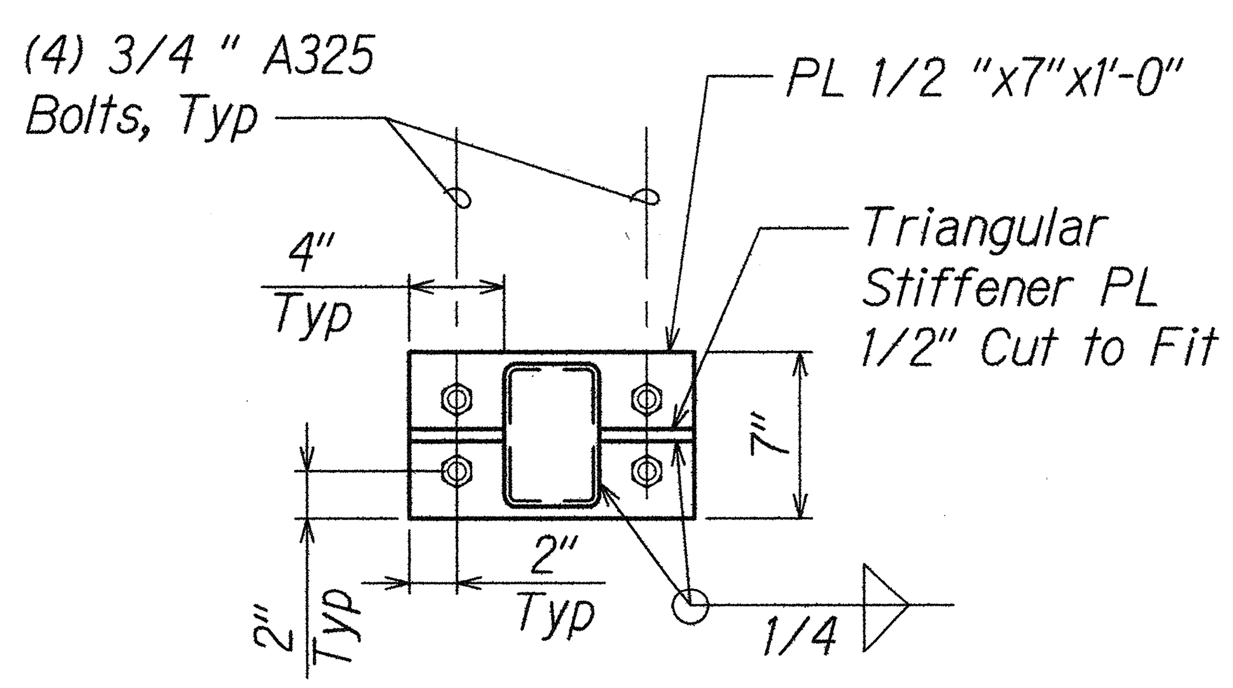
5 DETAIL - HSSx CONN
S6-9 | S6-9 Scale: 1-1/2" = 1'-0"



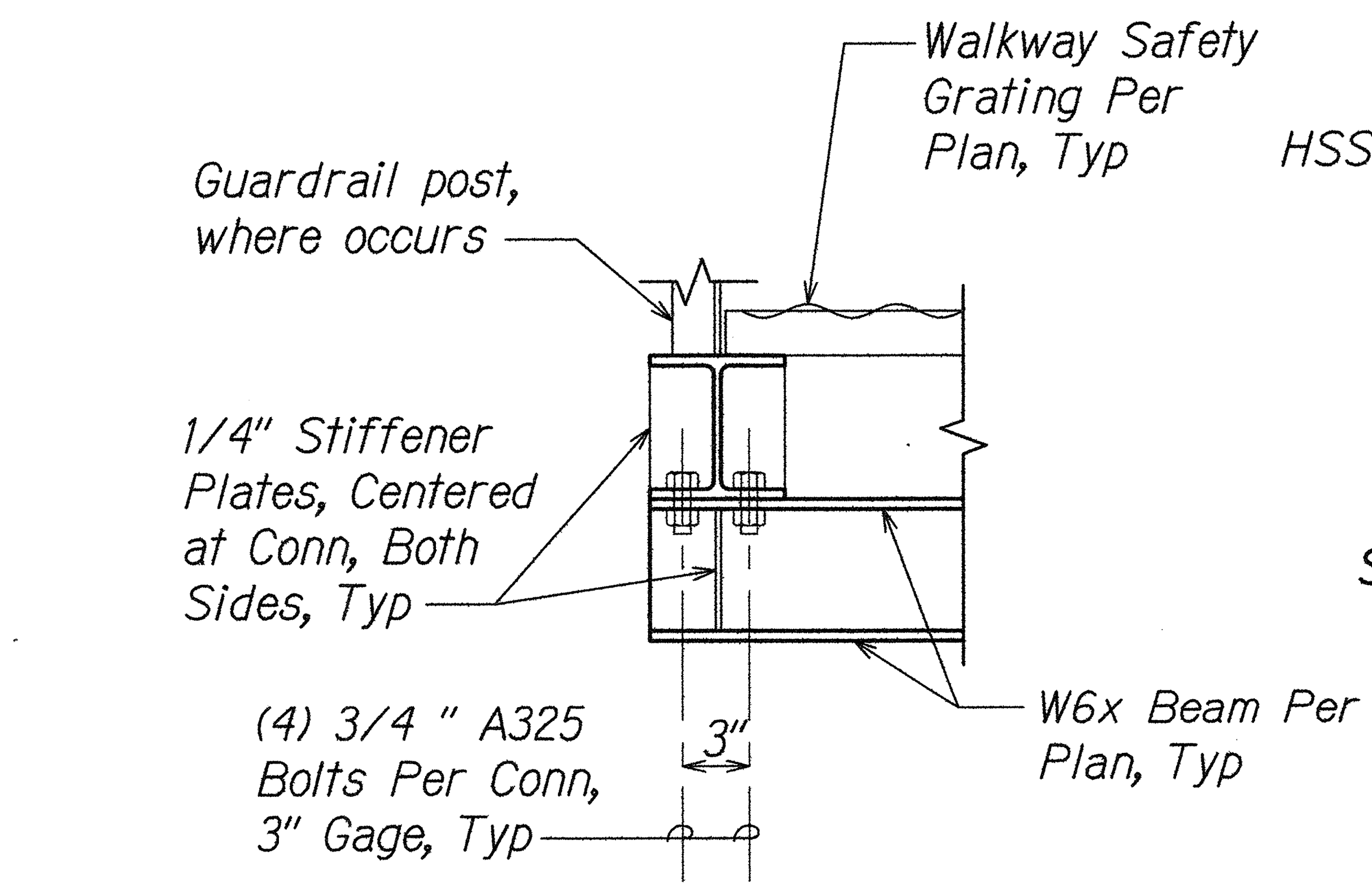
4 DETAIL - SUPPORT PLATE
S6-9, S6-10 | S6-9 Scale: 1-1/2" = 1'-0"



2 DETAIL - POST CONN
S6-9, S6-10 | S6-9 Scale: 1-1/2" = 1'-0"



2A DETAIL - CONN PLATE
S6-9 | S6-9



3 DETAIL - Wx BM Above Wx BM
S6-9, S6-10 | S6-9 Scale: 1-1/2" = 1'-0"

Graphics Scale

0" 3" 6" 1' 2'
1-1/2"=1'-0"

0 3" 6" 1' 2' 3'
1"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WALKWAY DETAILS

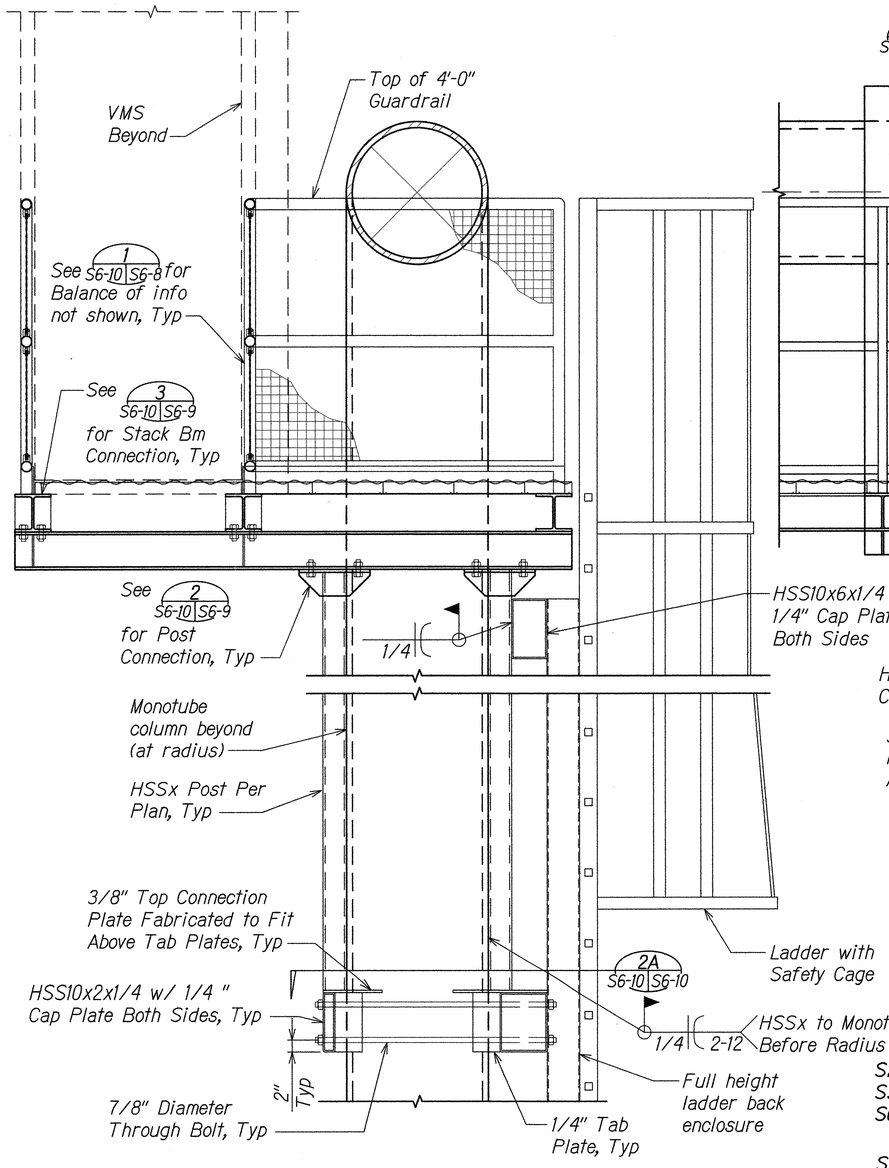
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S6-9 OF 54 SHEETS

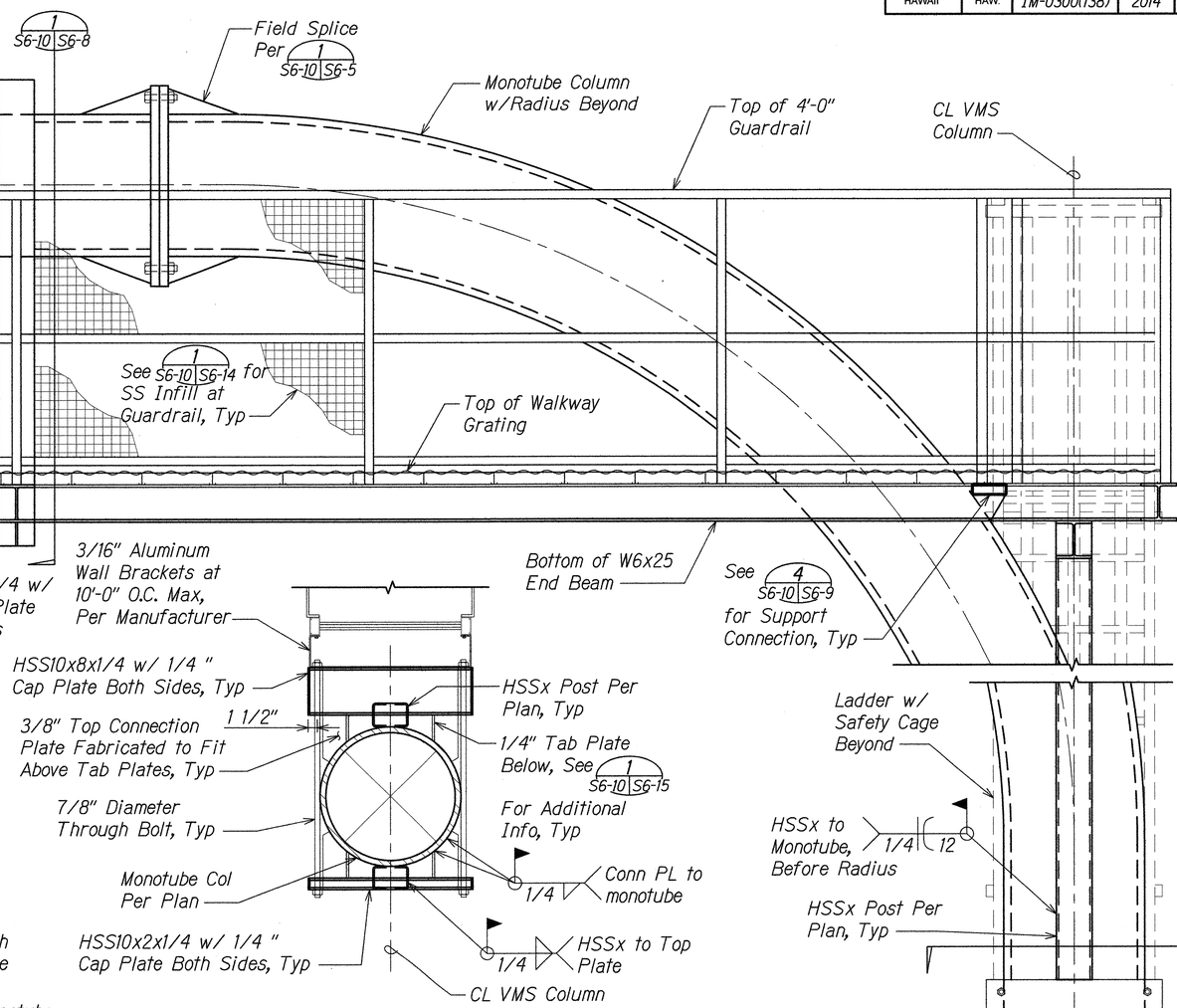
ORIGINAL PLAN | NOTEBOOK | No.
SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY / DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	155	220



1 S6-10 S6-8 SECTION - MONOTUBE WALKWAY ABOVE RADIUS

S2-2, S2-4, S3-2, S3-4, S6-9, S6-10 Scale: 1" = 1'-0"



2A S6-10 S6-10 DETAIL - CONN AT RADIUS

S2-2, S2-3, S2-4, S6-10, S3-2, S3-3, S3-4, S6-9, S6-10 Scale: 1" = 1'-0"

2 SECTION - WALKWAY AT RADIUS

S2-2, S3-2, S6-9, S6-10 Scale: 1" = 1'-0"

Graphics Scale

0 3" 6" 1' 2' 3'
1"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WALKWAY DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

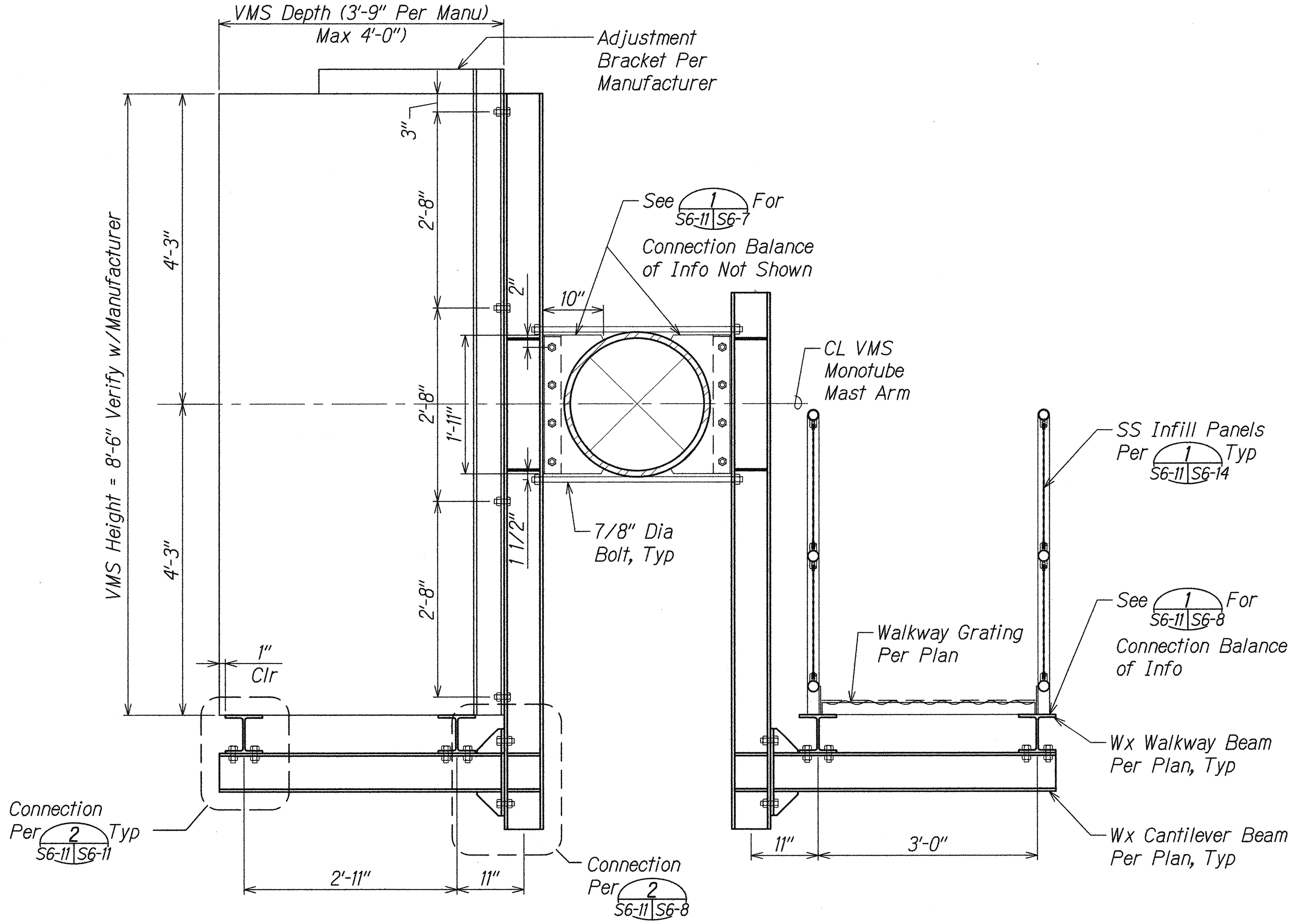
Scale: As Shown Date: 8/7/14

SHEET No. S6-10 OF 54 SHEETS

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTEBOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

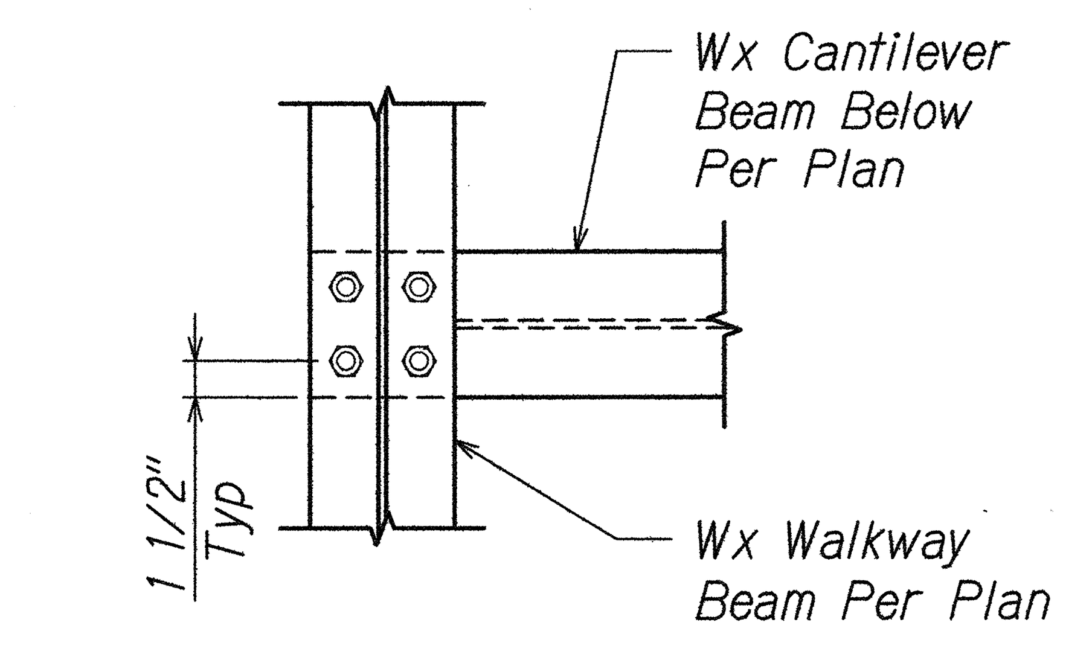
I:\F1\13-008.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\S6-10_DETAILS\S6-10.DWG Oct 15, 2014-10:59 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	156	220



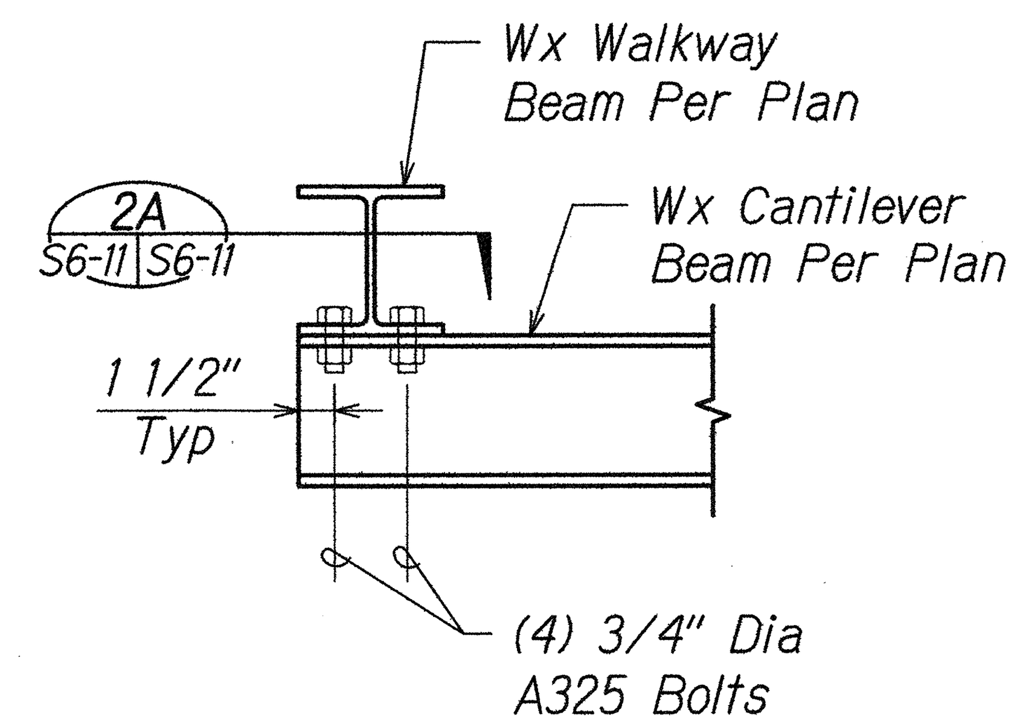
1 VMS AND WALKWAY DETAIL

S4-2, S4-3, S4-4, S5-2, S5-3, S5-4, S6-11 | S6-11 Scale: 1" = 1'-0"



2A SECTION

S6-11 | S6-11 Scale: 1-1/2" = 1'-0"



2 DETAIL

S6-11, S6-12, S6-13 | S6-11 Scale: 1-1/2" = 1'-0"

Graphics Scale

0 3" 6" 1' 2' 3'
1"=1'-0"

0 3" 6" 1' 2'
1-1/2"=1'-0"

GEORGE O. GUTIERREZ, JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

0 1 2
LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WALKWAY DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

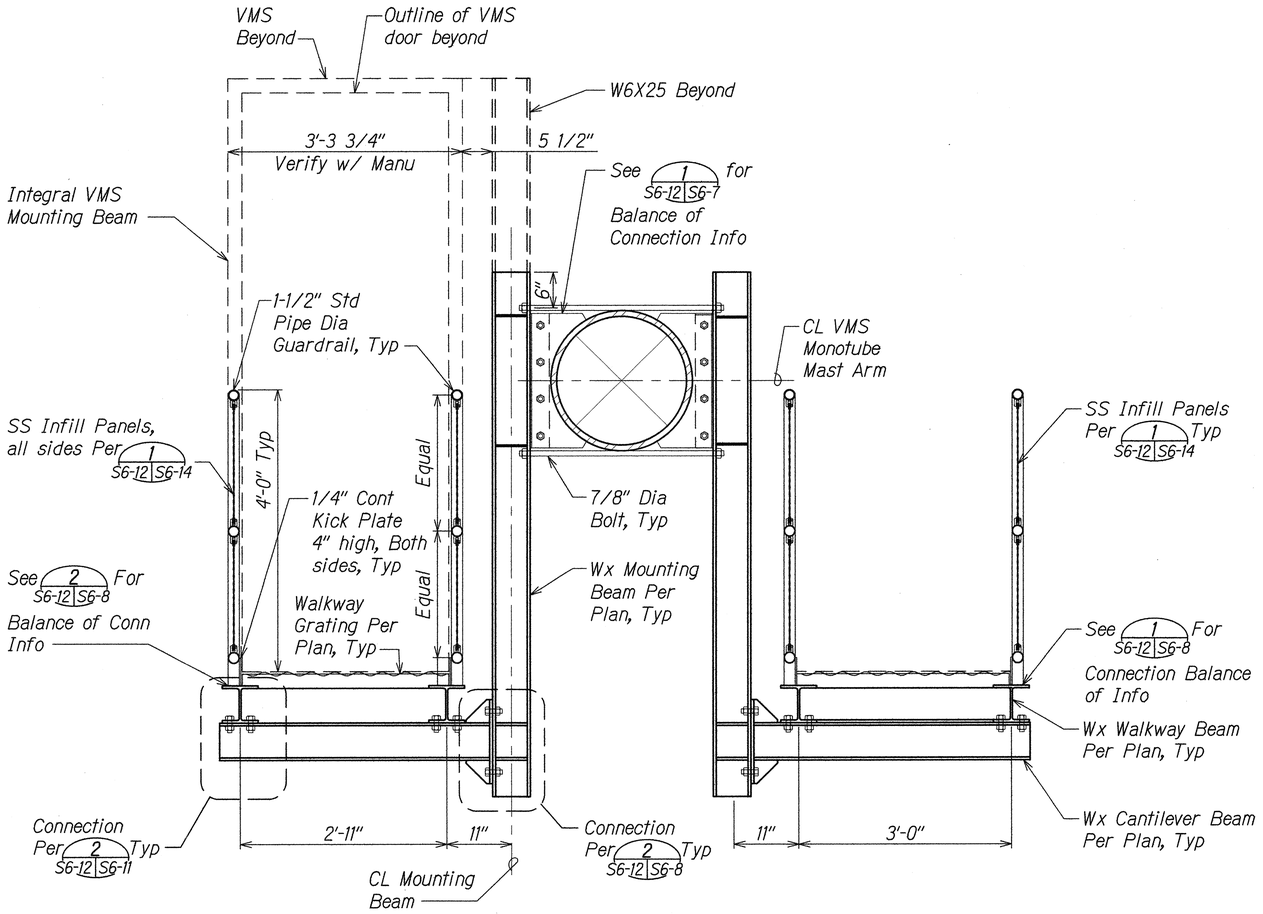
Scale: As Shown   Date: 8/7/14

SHEET No. S6-11 OF 54 SHEETS

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

FNF:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\6_DETAILS\S6-11.DWG Oct 15, 2014-10:59 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	157	220



1 MONOTUBE WALKWAY DETAIL

S4-2, S5-2, S6-13 | S6-12 Scale: 1" = 1'-0"

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

Graphics Scale

0 3" 6" 1' 2' 3'
1"=1'-0"

0 3" 6" 1' 2'
1-1/2"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR.
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

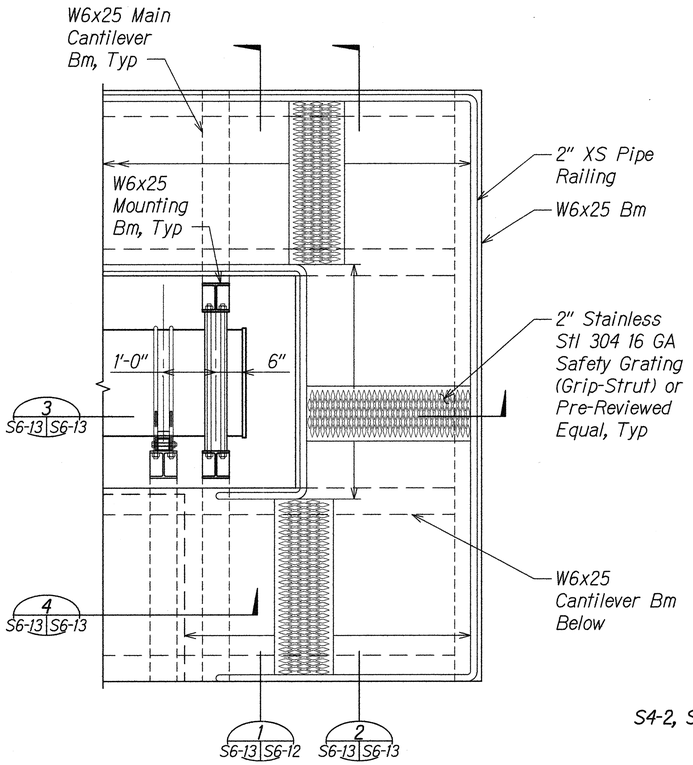
WALKWAY DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

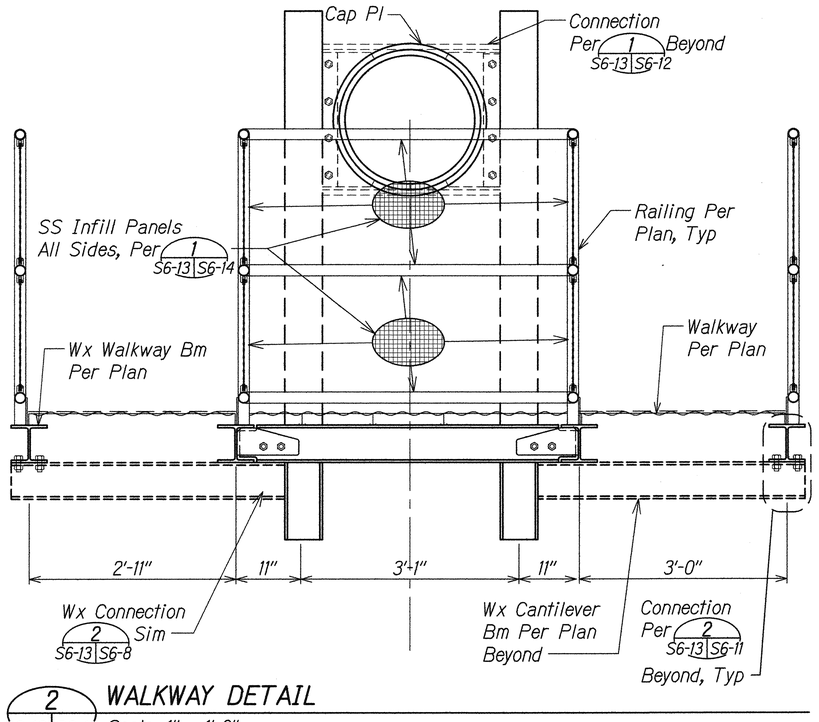
SHEET No. S6-12 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	158	220



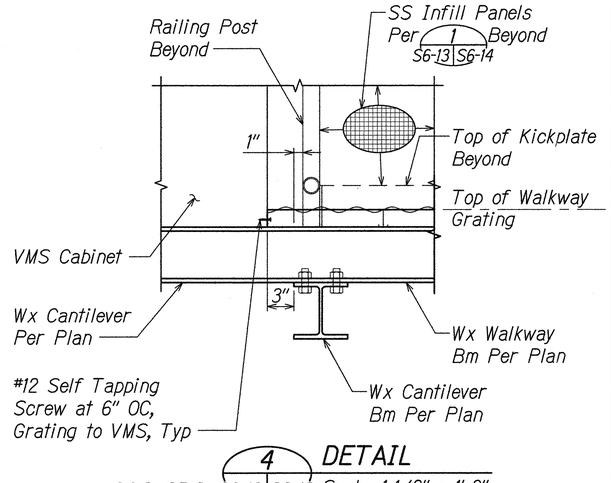
1 PARTIAL PLAN - WALKWAY

S4-2, S5-2, S6-13 Scale: 3/4" = 1'-0"



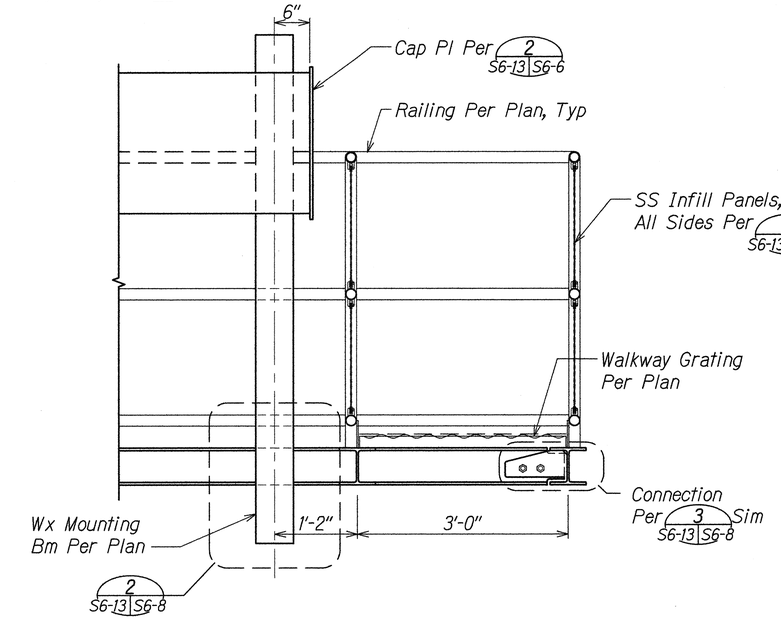
2 WALKWAY DETAIL

S4-2, S5-2, S6-13 S6-13 Scale: 1" = 1'-0"



4 DETAIL

S4-2, S5-2, S6-13 S6-13 Scale: 1-1/2" = 1'-0"



3 WALKWAY DETAIL

S4-2, S5-2, S6-13 S6-13 Scale: 1" = 1'-0"

Graphics Scale

0 6" 1' 2' 3' 4'
3/4"=1'-0"

0 3" 6" 1' 2' 3'
1"=1'-0"

0 3" 6" 1' 2'
1-1/2"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

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

PW:\13JOB.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\6_DETAILS\S6-13.DWG Oct 15, 2014-10:59 AM

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

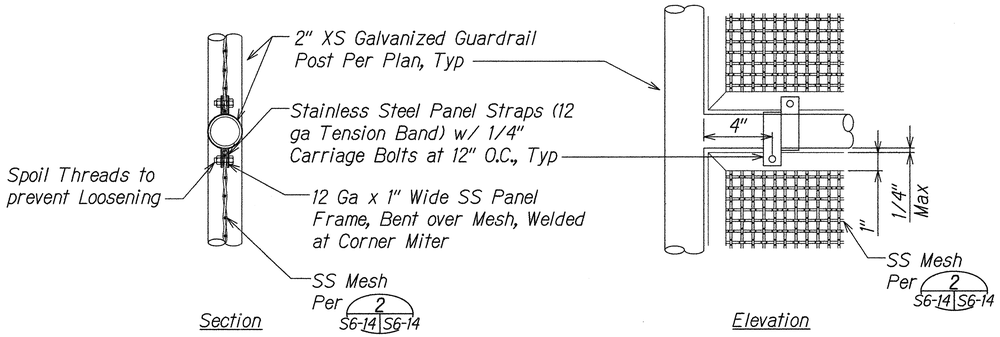
WALKWAY DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S6-13 OF 54 SHEETS

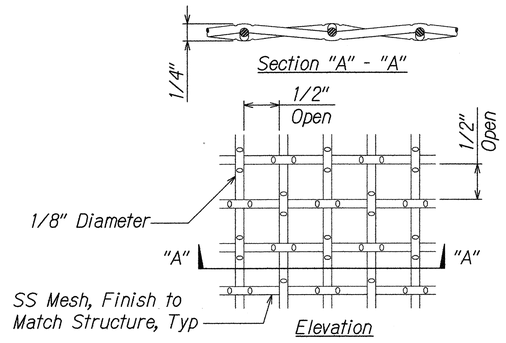
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	159	220



1 DETAIL - GUARDRAIL INFILL PANEL

S6-7, S6-8, S6-10, S6-14
S6-11, S6-12, S6-13,
S6-16

Scale: 3" = 1'-0"



2 DETAIL - CRIMPED MTL MESH

S6-14 S6-14

Scale: 12" = 1'-0"

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

I:\13-08.DWG\13040 HDOT H-1 PHASE 1 PS&E\DWGS_13040\STRUCT_13040\DWGS_13040\E-DETAILS\S6-14.DWG Oct 15, 2014 - 10:59 AM

Graphics Scale

0 1" 2" 4" 8" 1'
3"=1'-0"

0 1" 2"
12"=1'-0"

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If not 2 inches: scale accordingly)

GEORGE D. GUTIERREZ JR.
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

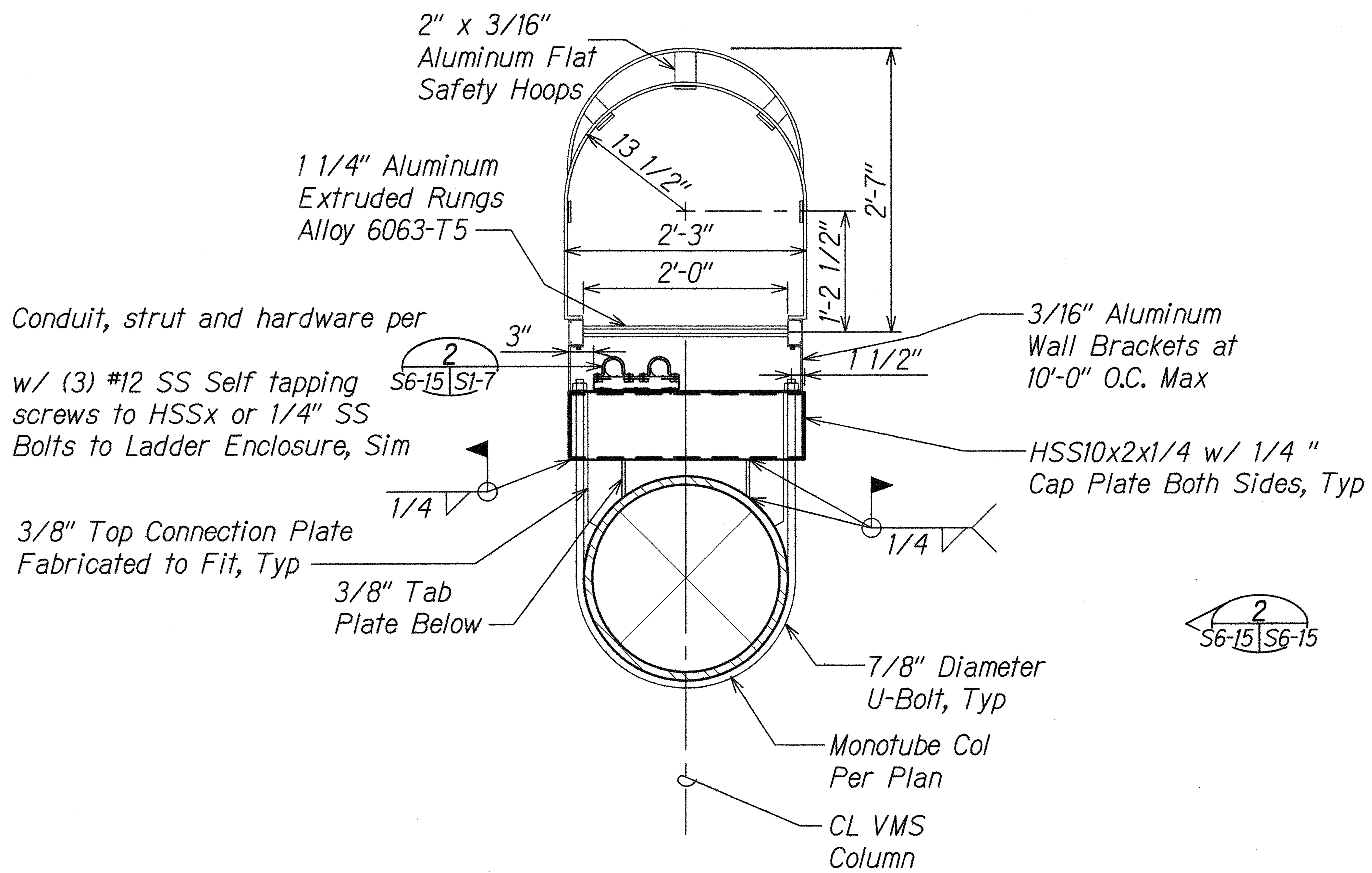
GUARDRAIL DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

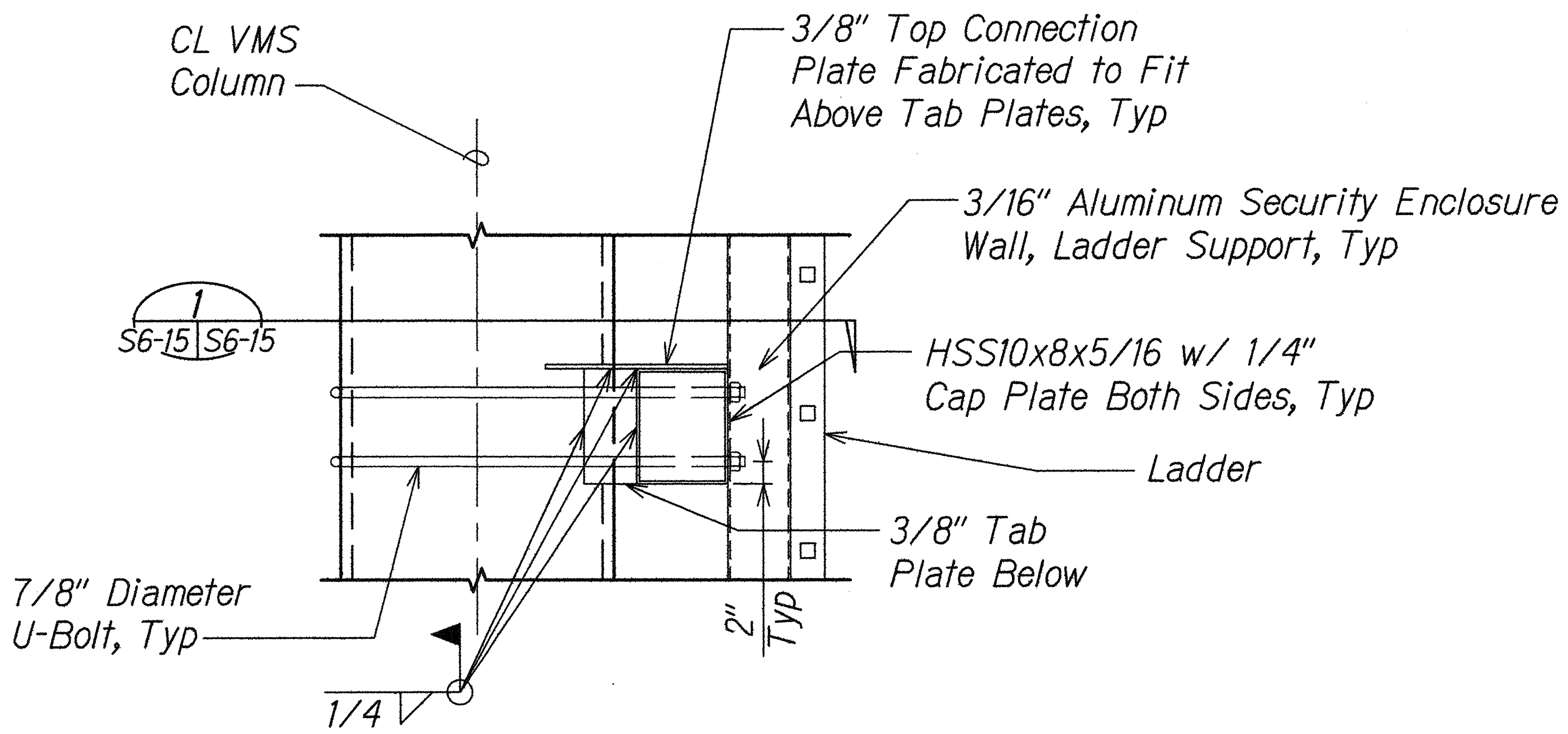
Scale: As Shown Date: 8/7/14

SHEET No. S6-14 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	160	220



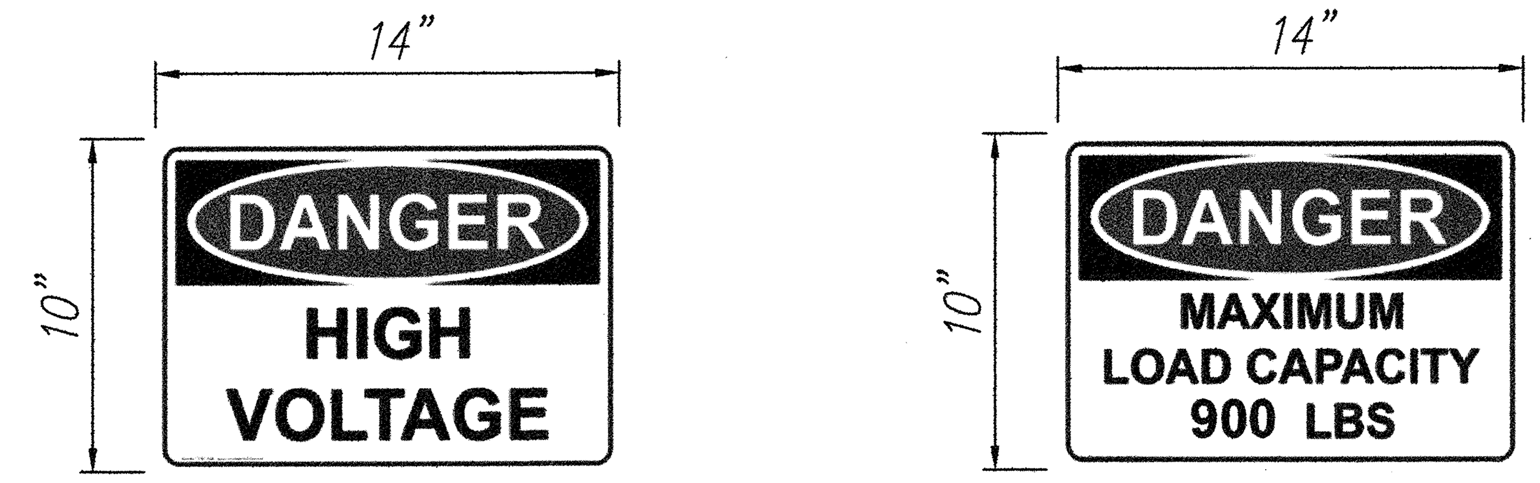
1 MONOTUBE LADDER CONN DETAIL
S2-1 to S2-4 | S6-15 Scale: 1" = 1'-0"
S3-1 to S3-4
S4-1 to S4-4
S5-1 to S5-4
S6-9, S6-10,
S6-15, S6-16,
S6-17



2 MONOTUBE LADDER CONN DETAIL
S6-15, S6-16 | S6-15 Scale: 1" = 1'-0"

SIGNAGE NOTES:

1. All signs shall be sheet aluminum with minimum thickness 0.063 in per ASTM B 209, alloy 6061-T6 and painted per standard DOT specification 750.
2. Signs shall be isolated from steel structure with neoprene washers.
3. Maximum load capacity signs shall be attached to exterior screen with stainless steel fasteners.
4. High voltage sign shall be attached to Wx mounting beam with (4) self tapping stainless screws (#10).



High Voltage Sign

Maximum Load Capacity Sign

3 SIGNAGE
S6-17 | S6-15 Not To Scale

LADDER NOTES:

1. Ladder shall be O'Keeffe's Aluminum Standard Safety Cage Ladder or Pre-reviewed equal. All components shall be aluminum, all hardware shall be stainless steel.
2. Security door shall be provided on the back and the front at the base of the ladder per 1 S6-15 | S6-17 and 2 S6-15 | S6-17

Graphics Scale
0 3" 6" 1' 2' 3'
1"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS. STATE OF HAWAII

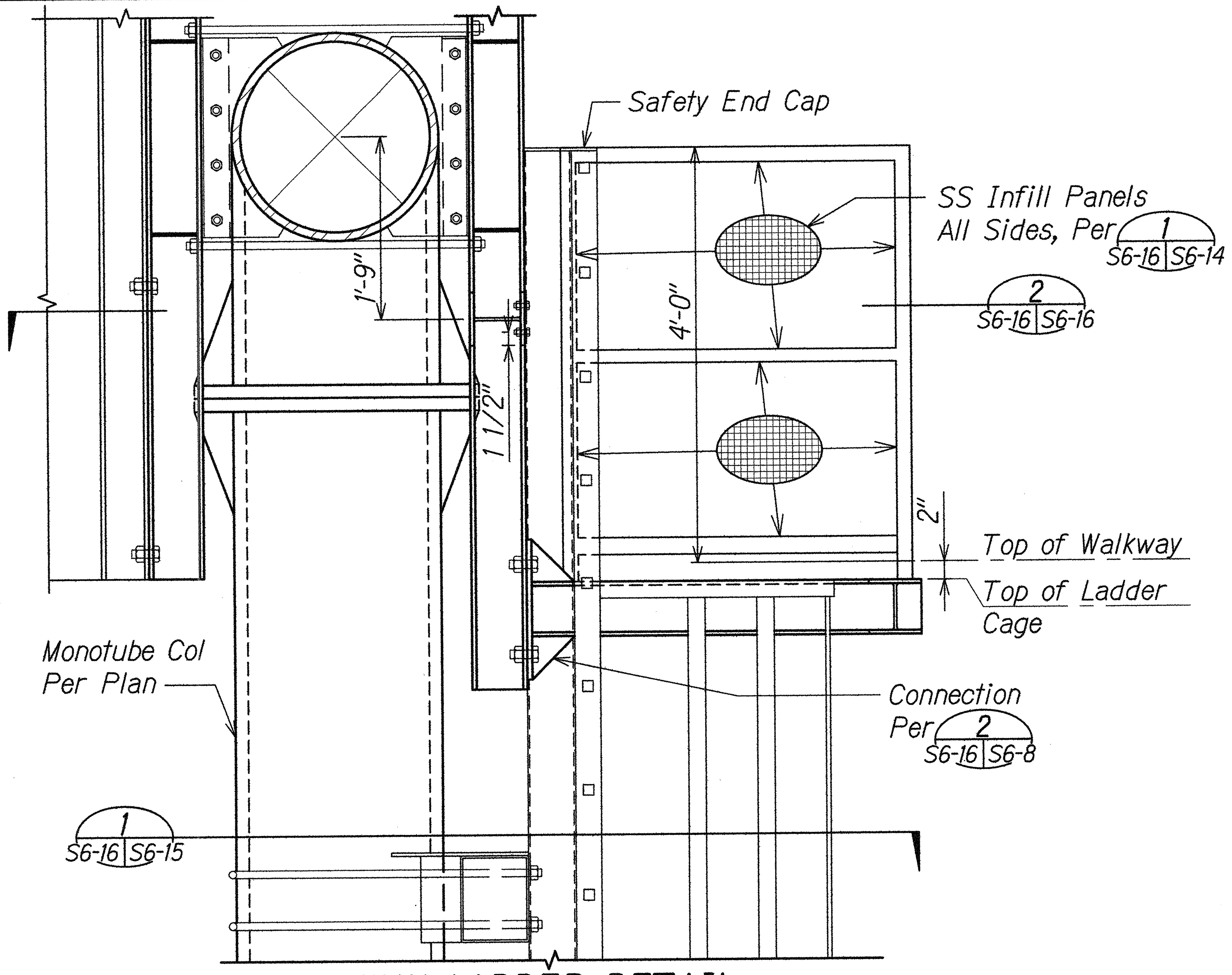
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LADDER DETAILS

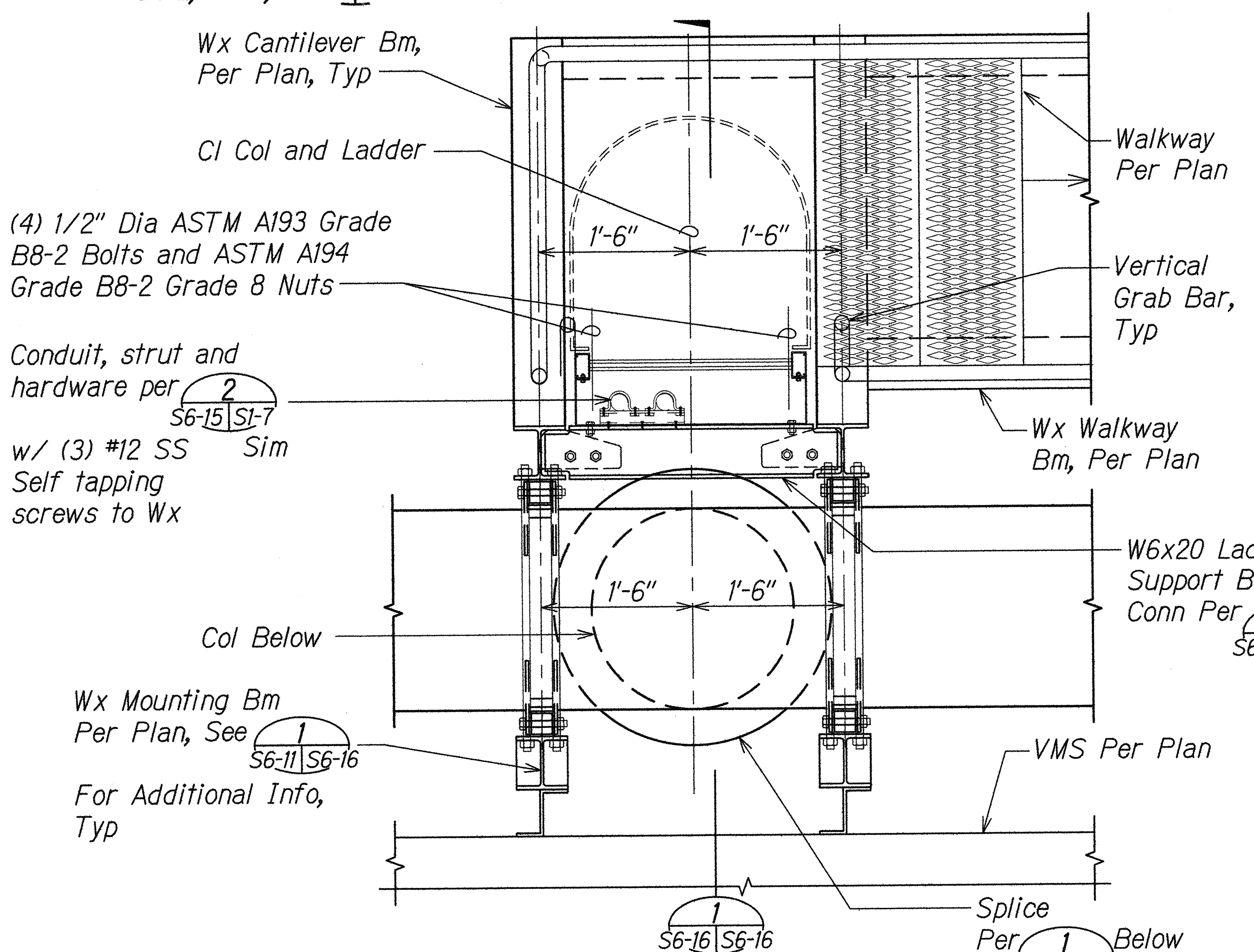
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2
Scale: As Shown Date: 8/7/14
SHEET No. S6-15 OF 54 SHEETS

ORIGINAL PLAN | NOTEBOOK | No.
SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY | DATE

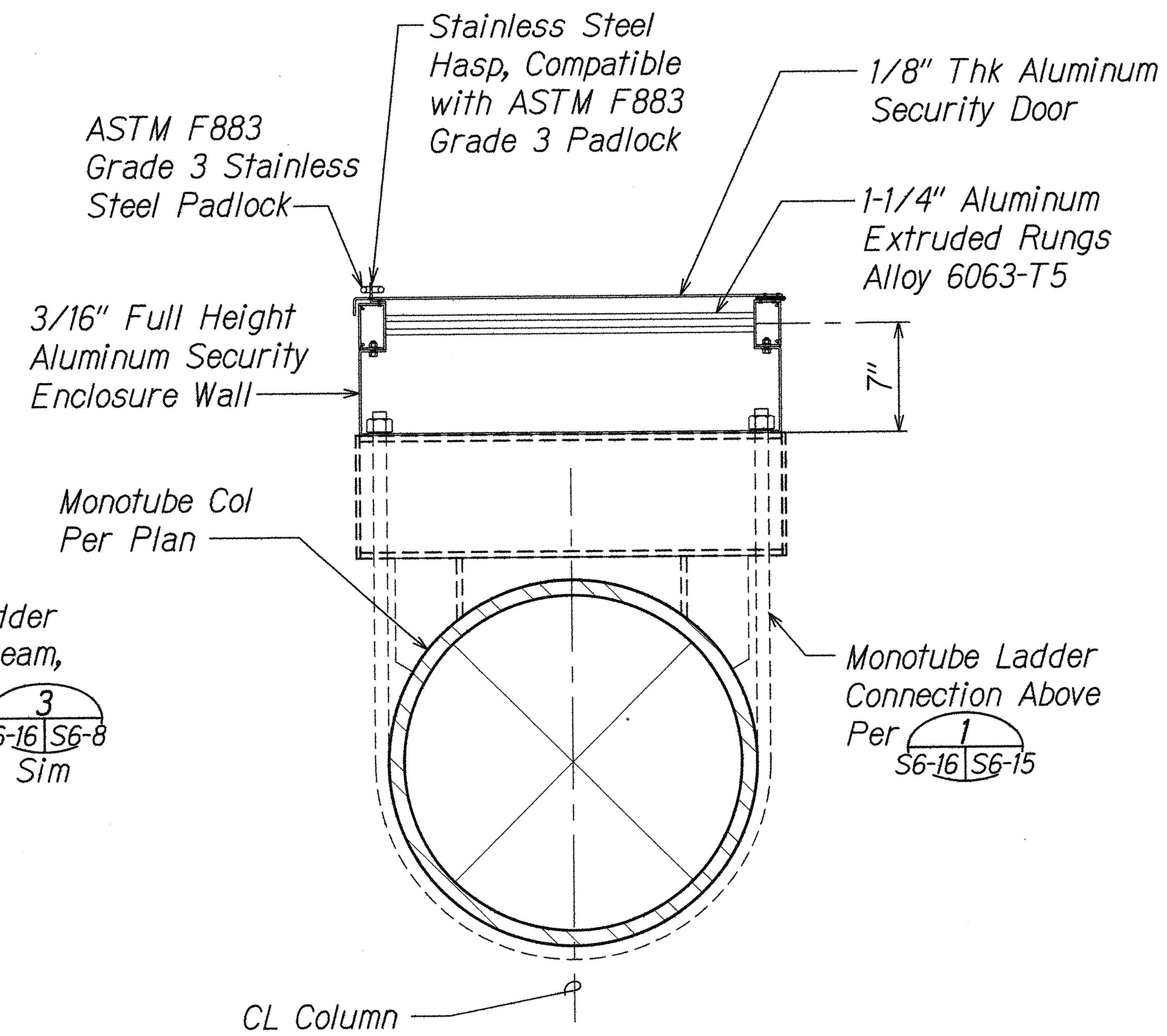
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	161	220



1 WALKWAY LADDER DETAIL
S4-2, S5-2, S6-16 S6-16 Scale: 1" = 1'-0"



2 PLAN - SECTION AT TOP
S4-2, S5-2, S6-16 S6-16 Scale: 1" = 1'-0"



3 LADDER SECURITY DOOR
S6-17 S6-16 Scale: 1-1/2" = 1'-0"

Graphics Scale
0 3" 6" 1' 2' 3'
1"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (if not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LADDER DETAILS

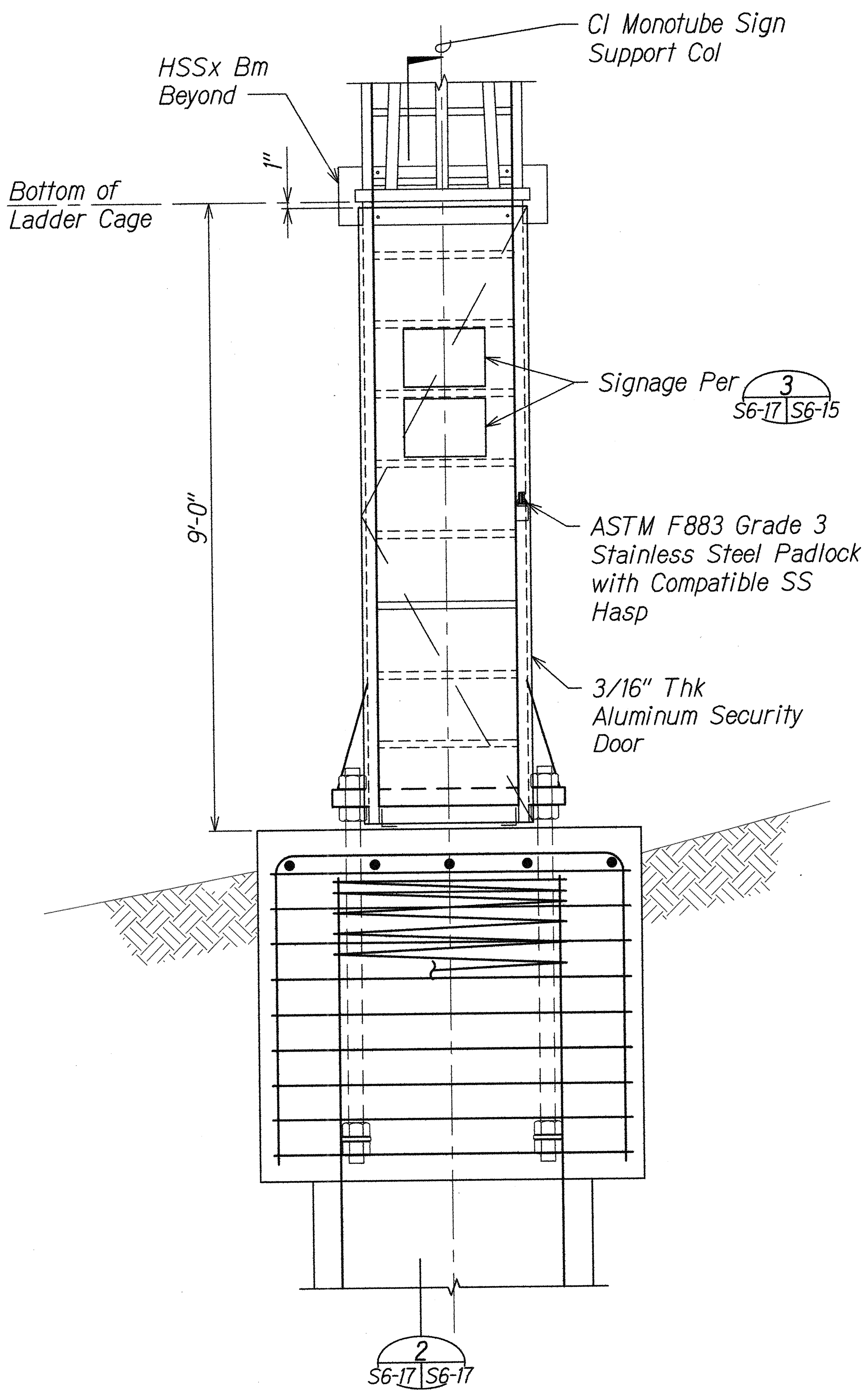
Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

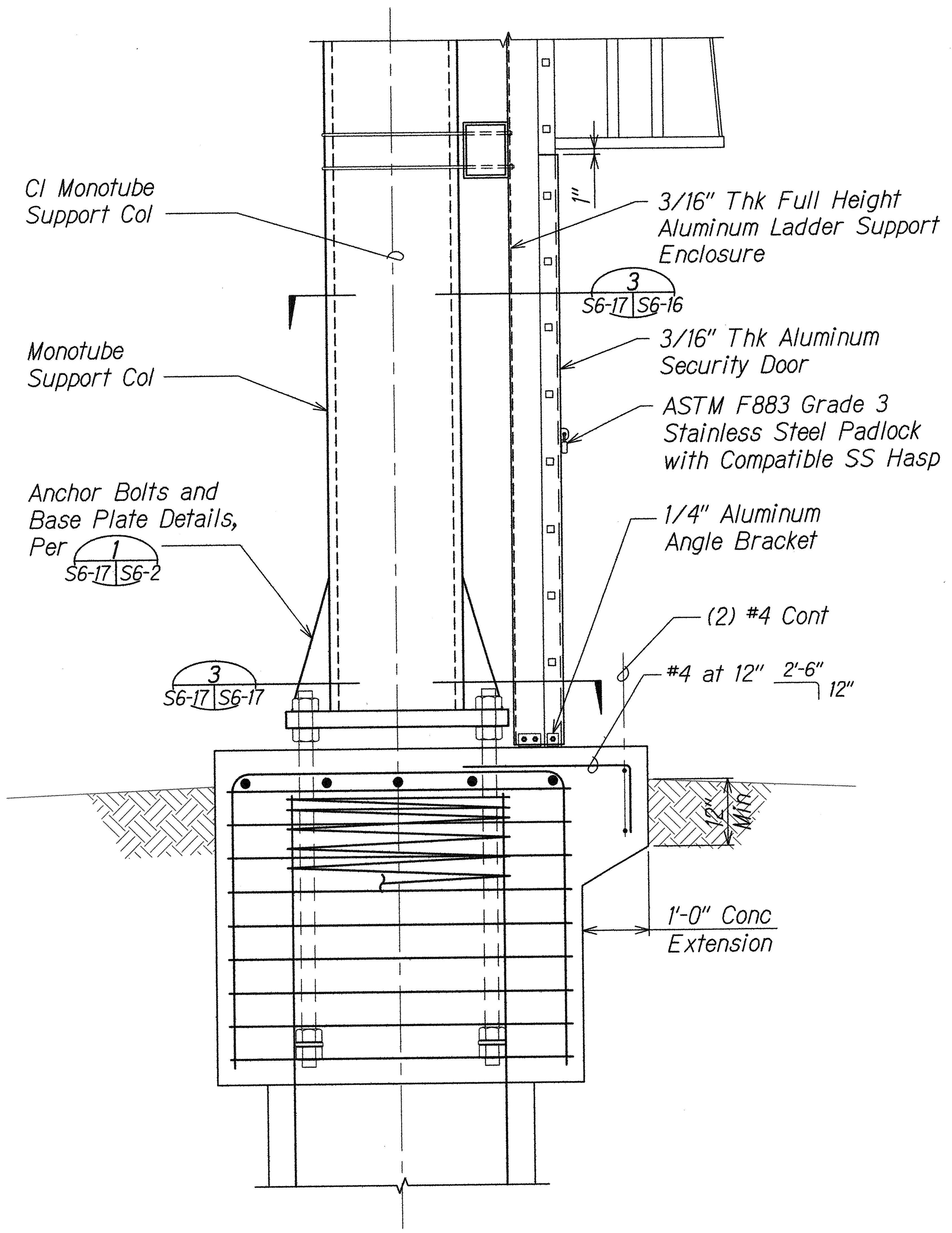
SHEET No. S6-16 OF 54 SHEETS

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

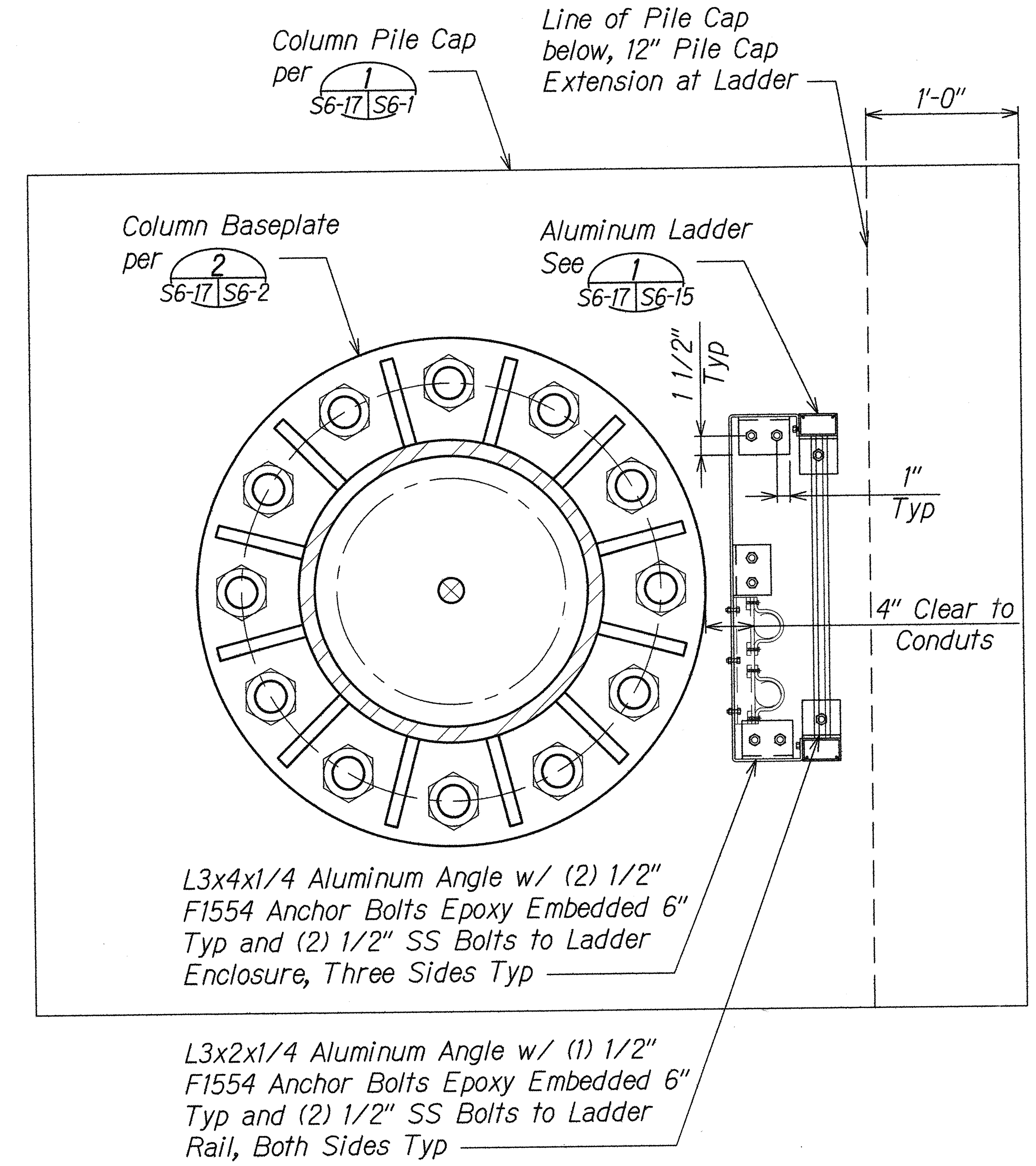
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-0300(138)	2014	162	220



1 SECURITY DOOR ELEVATION
S2-3, S3-3, S4-3, S5-3, S6-15 | S6-17 Scale: 3/4" = 1'-0"



2 SECURITY DOOR SECTION
S2-4, S3-4, S4-4, S5-4, S6-15 | S6-17 Scale: 3/4" = 1'-0"



3 PLAN - TOP OF PILE CAP
S6-17 | S6-17 Scale: 1-1/2" = 1'-0"

Graphics Scale
0" 3" 6" 1' 2'
1-1/2"=1'-0"
0 6" 1' 2' 4'
3/4"=1'-0"

LINE IS 2 INCHES AT FULL SIZE (If not 2 inches: scale accordingly)

GEORGE O. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.
LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LADDER DETAILS

Federal Aid Project No. IM-0300 (138)
Freeway Management System
Interstate H-1, H-2 and Moanalua Freeway (H-201)
Phase 1C, Part 2

Scale: As Shown Date: 8/7/14

SHEET No. S6-17 OF 54 SHEETS

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