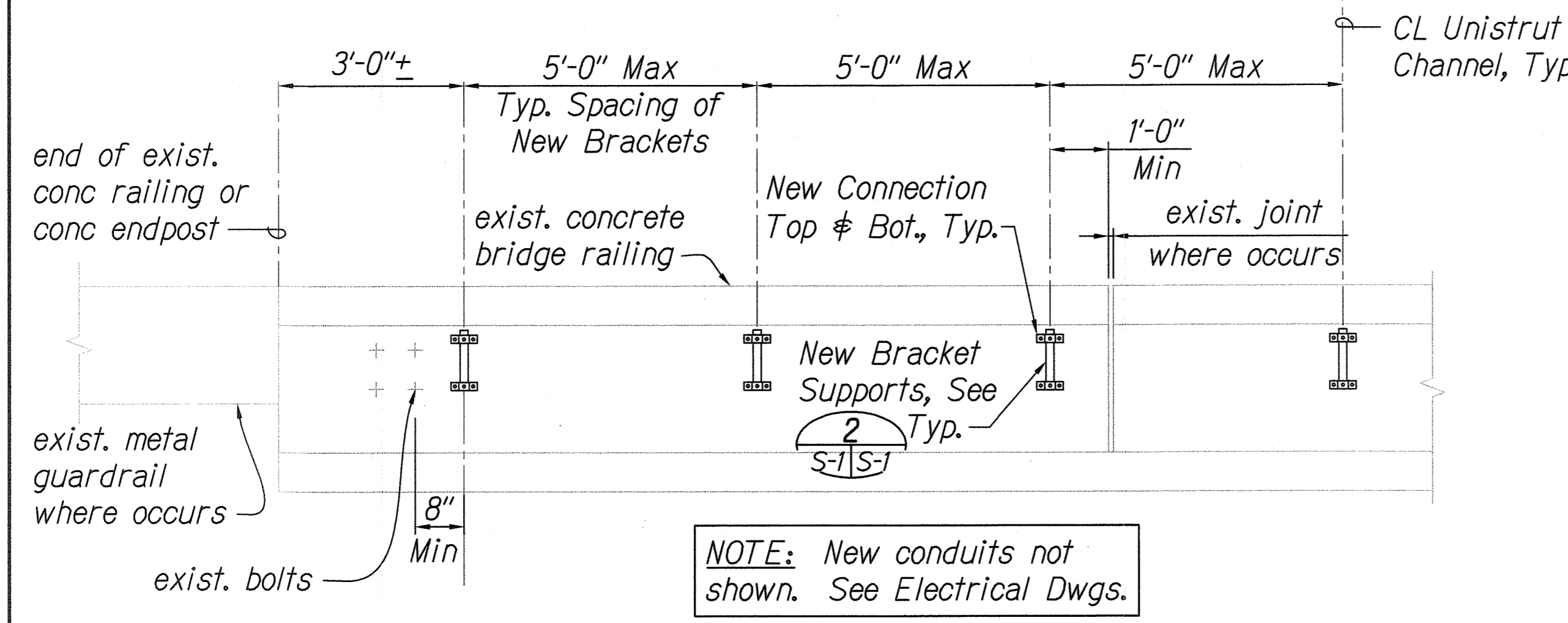
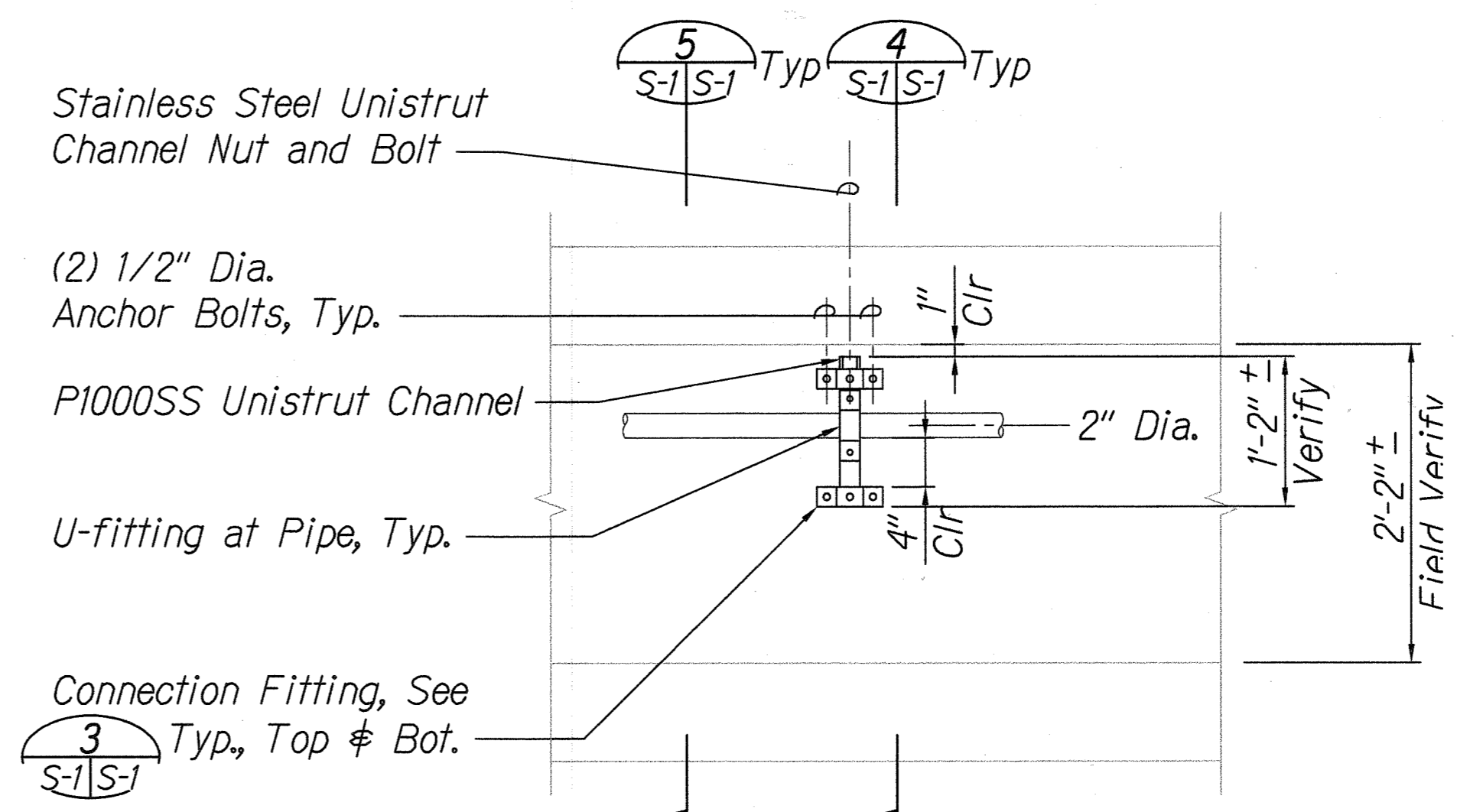


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HIA/D-01-10M	2011	37	56

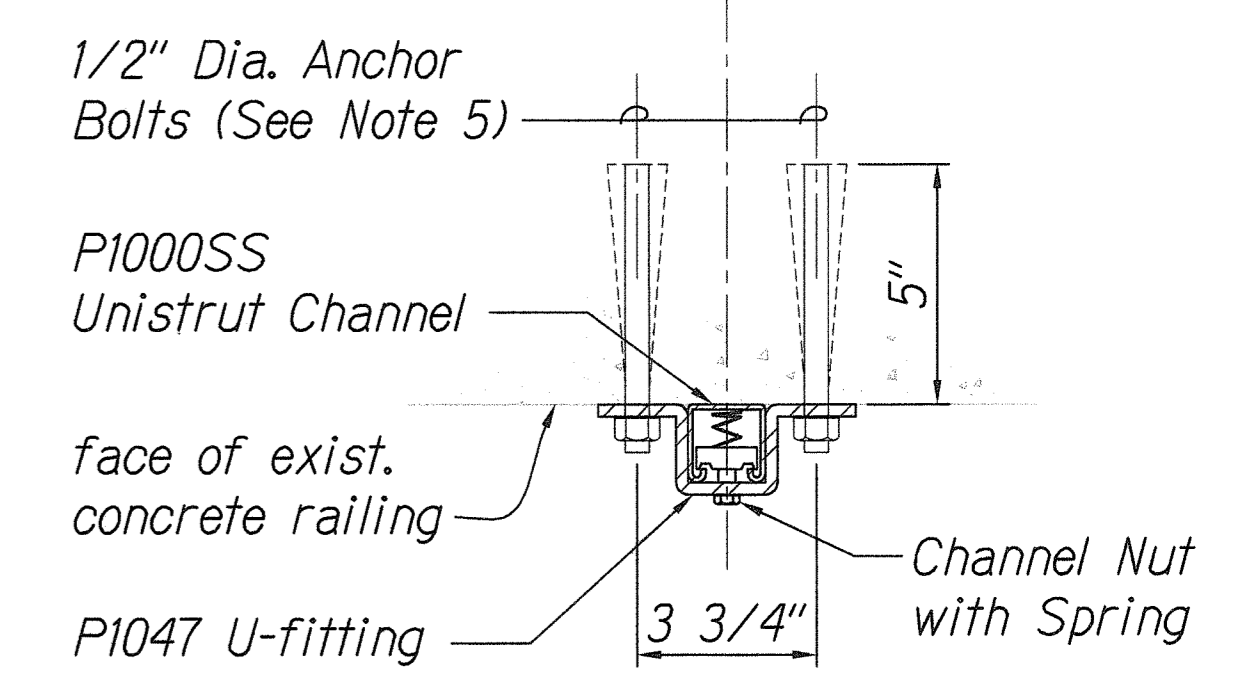


**1** TYPICAL EXTERIOR ELEVATION AT BRIDGE RAILING  
SCALE: 1/2" = 1'-0"

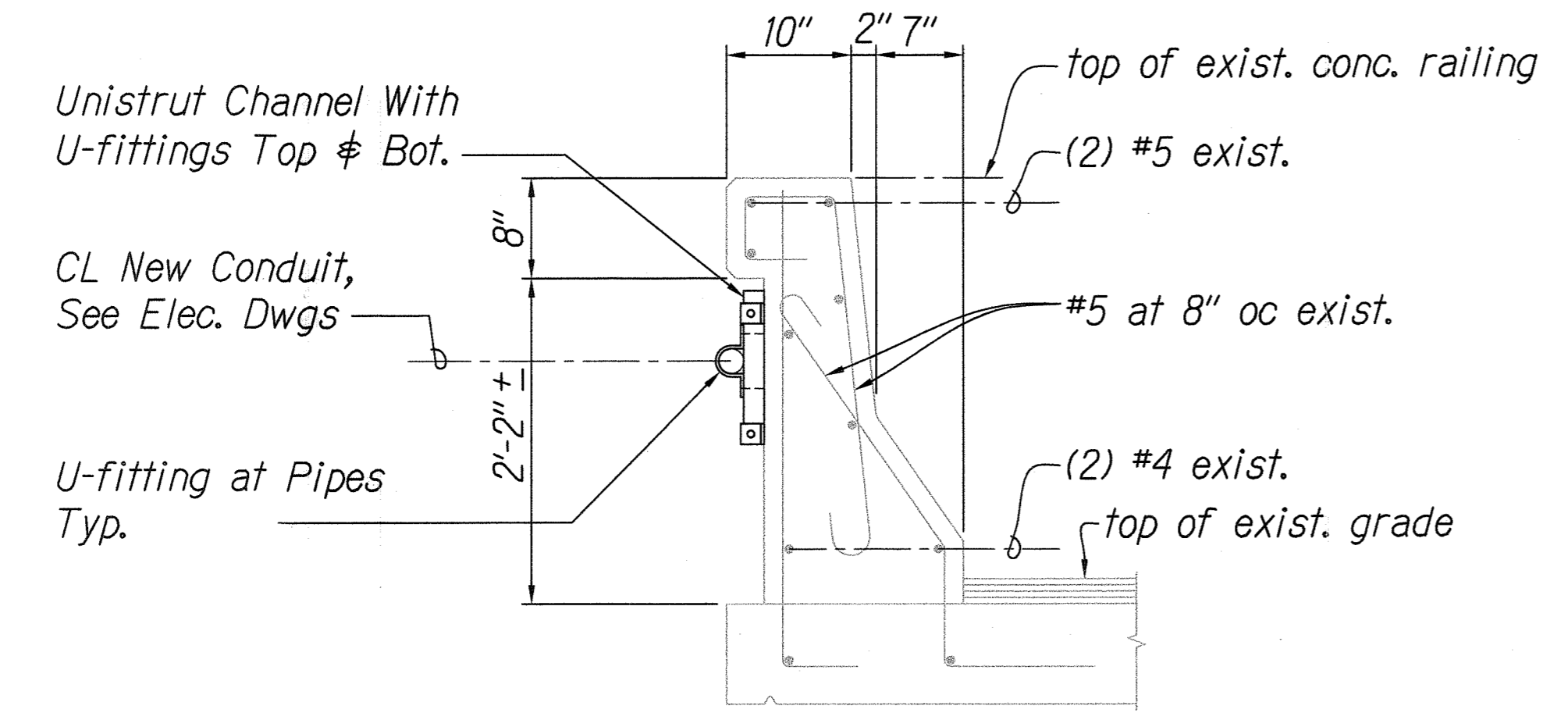
NOTE: New conduits not shown. See Electrical Dwg.



**2** NEW BRACKET SUPPORT (TYP.)  
SCALE: 1" = 1'-0"

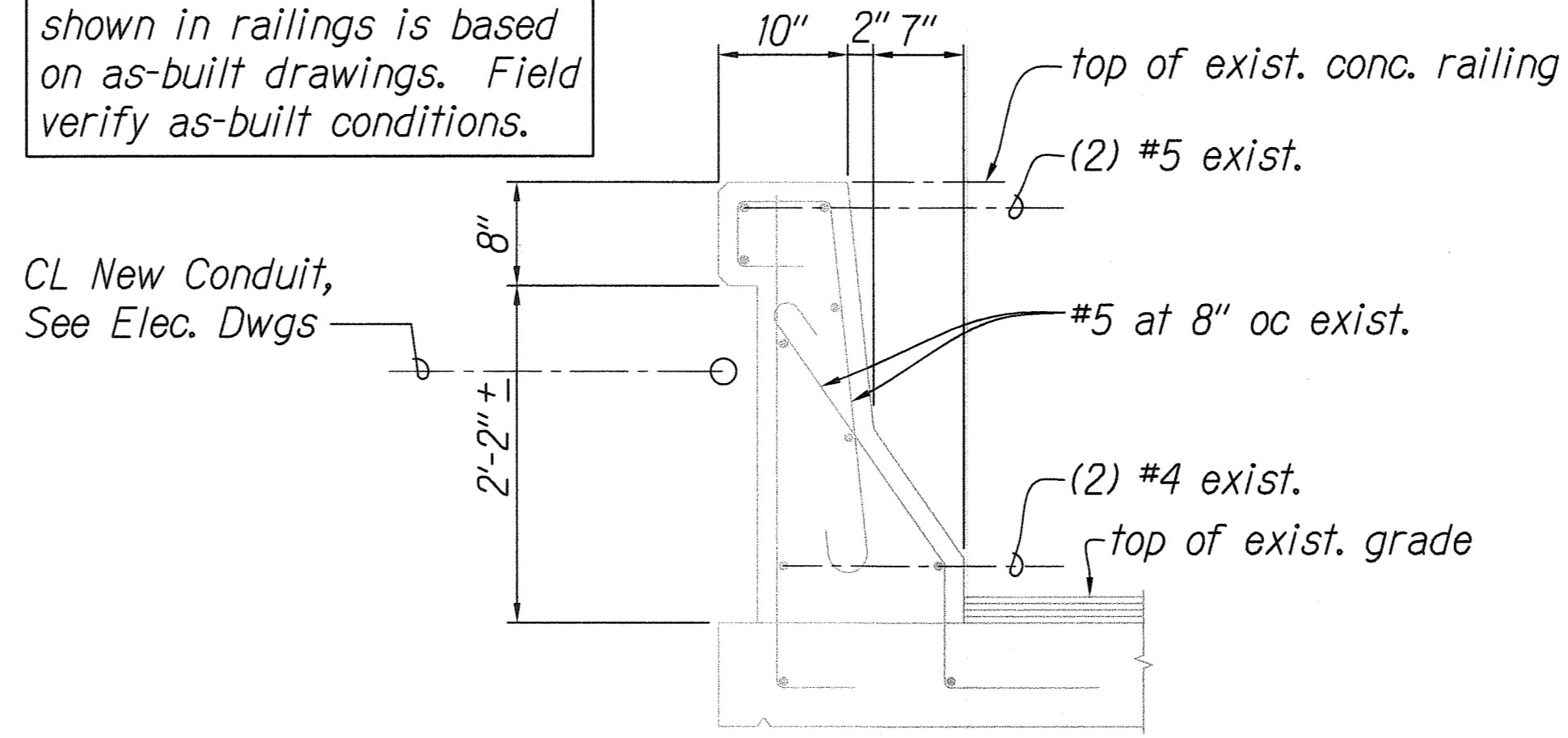


**3** CONNECTION DETAIL (TYP.)  
SCALE: 3" = 1'-0"



**4** SECTION AT NEW BRACKETS (TYP.)  
SCALE: 1" = 1'-0"

NOTE: Exist. reinf. steel shown in railings is based on as-built drawings. Field verify as-built conditions.

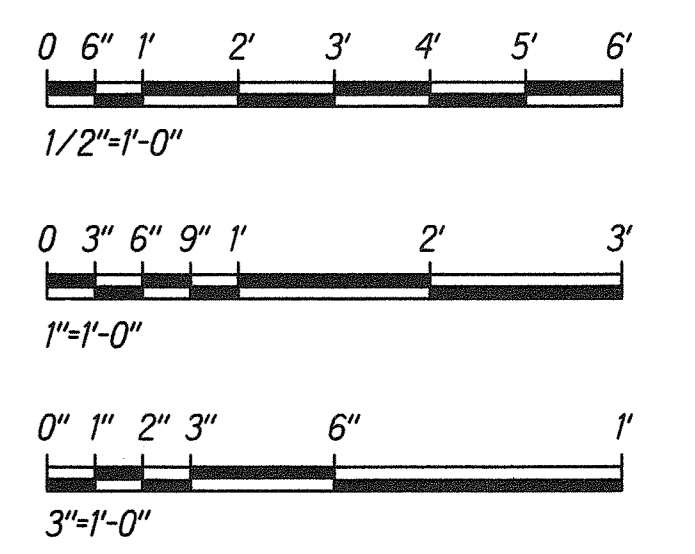


**5** SECTION BETWEEN NEW BRACKETS (TYP.)  
SCALE: 1" = 1'-0"

**GENERAL STRUCTURAL NOTES**

- Unless otherwise noted, all materials and workmanship shall conform to the "Hawaii Standard Specifications for Road and Bridge Construction", State of Hawaii, 2005.
- 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 shall be resolved prior to proceeding with any work or ordering of materials.
- Unistrut channels and fittings shall be Stainless Steel Type 316.
- Unistrut channel nut, bolts and other hardware shall be Stainless Steel Type 316.
- Anchor bolts into existing concrete structures shall be undercut type of anchor bolts. All anchor bolts, nuts and washers shall be Stainless Steel Type 316. Acceptable products are "Titen HD" by Simpson Strong-Tie, "HAD-P" by Hilti Corp, or pre-approved equal.
- Locate anchor bolt locations using non-destructive methods. Do not damage existing concrete and reinforcing steel. Location of new bracket supports shall be adjusted as necessary to avoid conflicts with existing reinforcing steel. Provide template of anchor bolt locations prior to installation of anchor bolts and bracket supports.
- All holes for anchor bolts shall be drilled, not cored. All abandoned drilled holes shall be filled with non-shrink grout. All holes, including abandoned holes, shall be cleaned of all dust and foreign matter with motor driven compressed air and nylon brush prior to installing new anchor bolts and epoxy, or grouting of abandoned holes.
- All undercut type anchor bolts shall be installed with epoxy. Acceptable products are "Set-XP" by Simpson Strong-Tie, Hilti Hit Adhesive Anchor System by Hilti, or pre-approved equal.
- All items shown on drawings are new unless otherwise noted.
- See Electrical Drawings for plan location, and size and number of new conduits.

**GRAPHIC SCALES**



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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**CONDUIT BRACKET CONN.  
DETAILS & STRUCT. NOTES**

Interstate Route H1  
Freeway Lighting System Reconductoring  
Makakilo Interchange to Wahiawa Interchange  
Project No. HIA/D-01-10M

Scale: As Shown Date: Aug. 2010

SHEET No. S-1 OF 1 SHEETS

DWIGHT M. OKAWA  
LICENSED PROFESSIONAL ENGINEER  
NO. 4545-S  
HAWAII, U.S.A.  
LICENSE EXPIRES: 4/30/12  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.