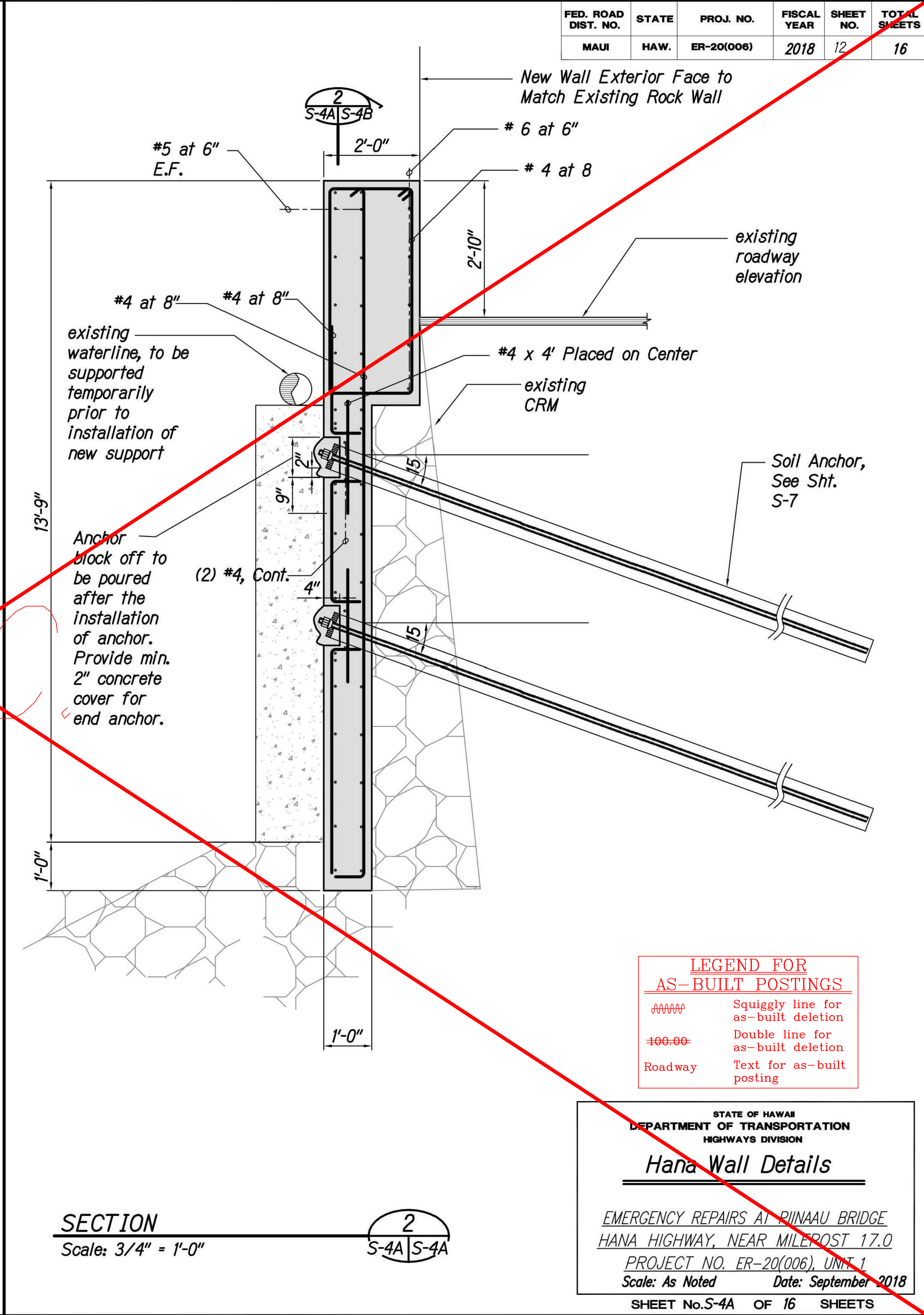
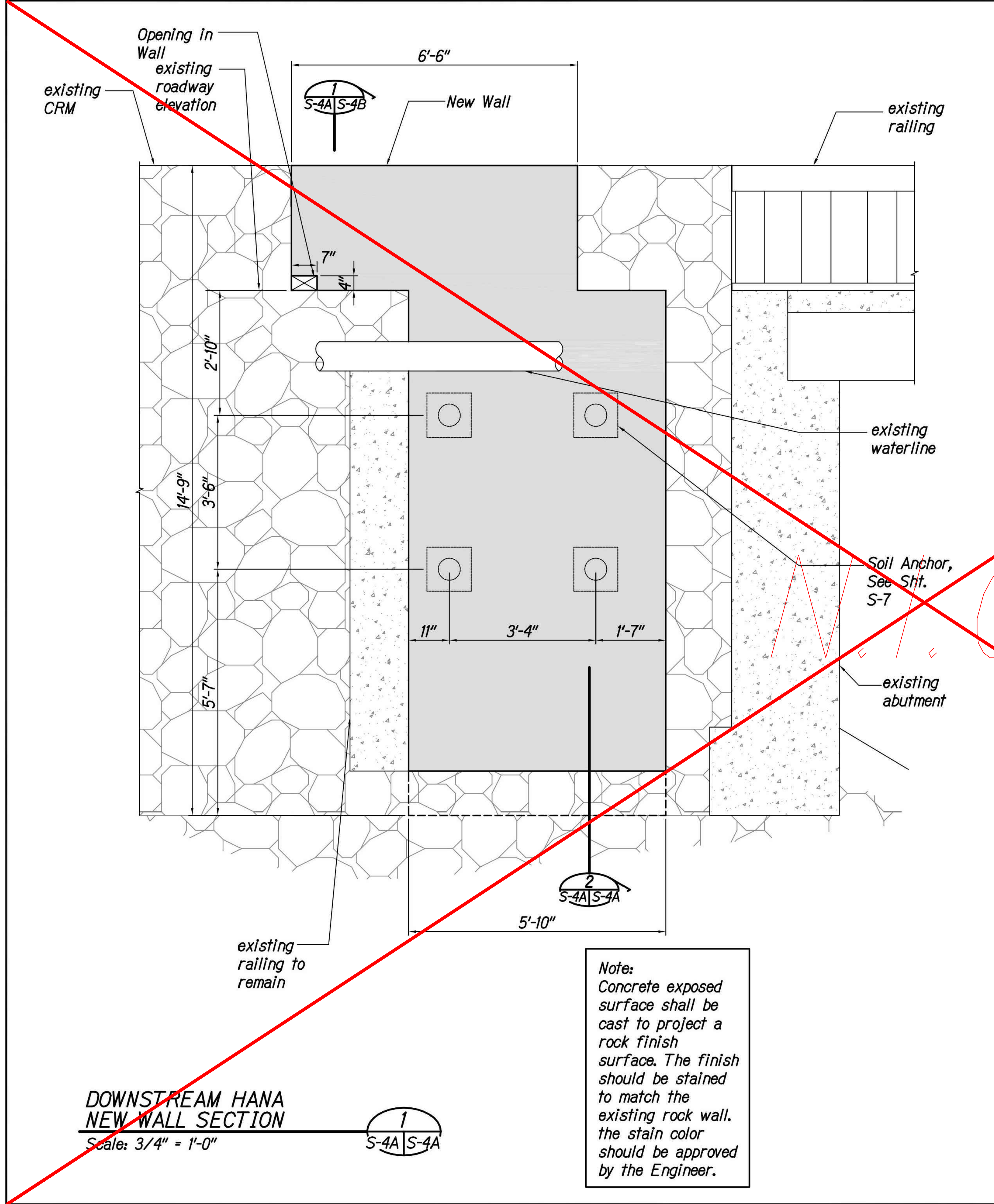


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MAUI	HAW.	ER-20(006)	2018	12	16

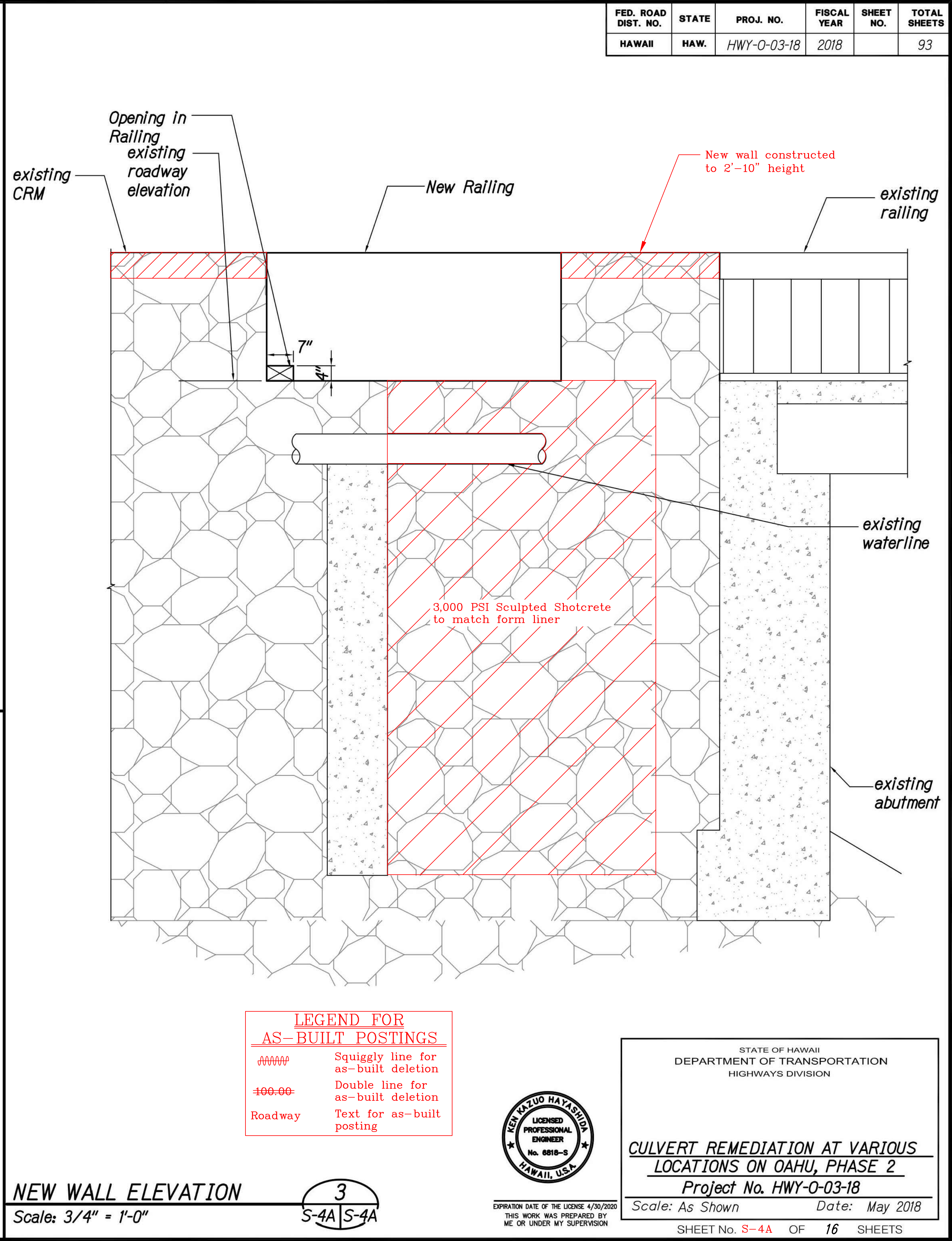
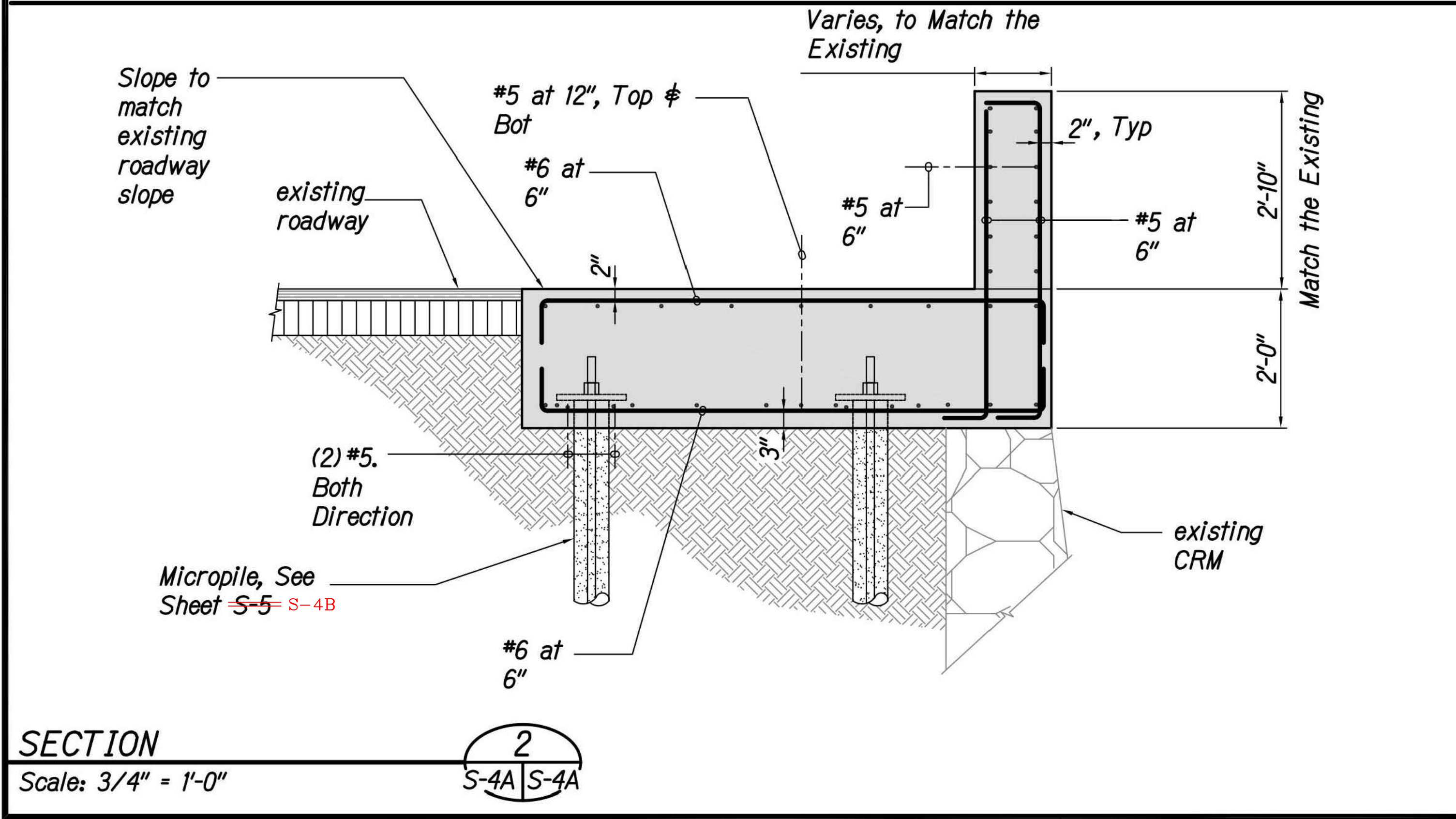
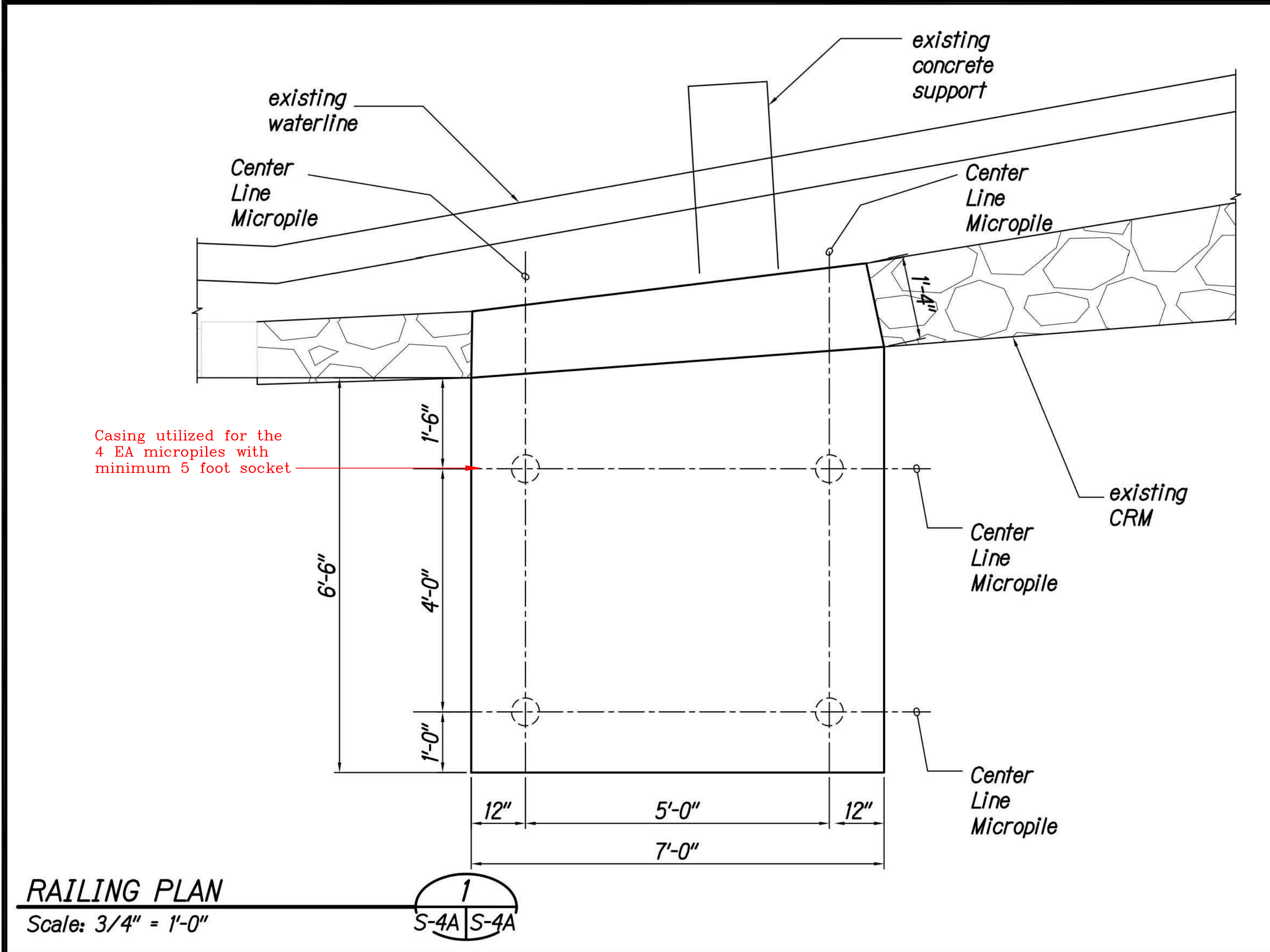


LEGEND FOR AS-BUILT POSTINGS	
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STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
Hana Wall Details	
EMERGENCY REPAIRS AT PIINAU BRIDGE HANA HIGHWAY, NEAR MILEPOST 17.0 PROJECT NO. ER-20(006), UNIT 1 Scale: As Noted Date: September 2018 SHEET No. S-4A OF 16 SHEETS	

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-03-18	2018		93



LEGEND FOR AS-BUILT POSTINGS	
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+	Text for as-built posting

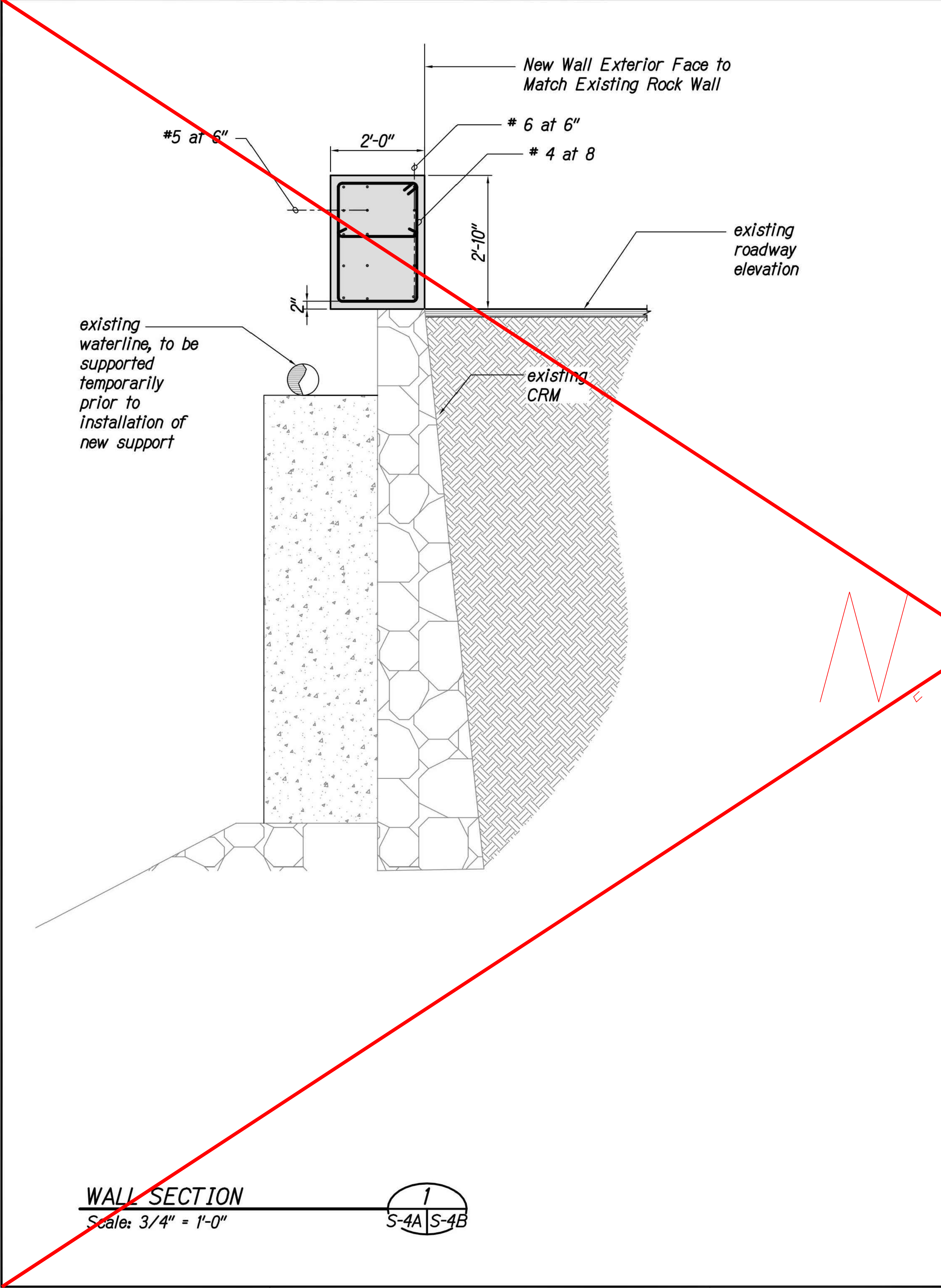


EXPIRATION DATE OF THE LICENSE 4/30/2020  
THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>CULVERT REMEDIATION AT VARIOUS LOCATIONS ON OAHU, PHASE 2</b>	
Project No. HWY-0-03-18	
Scale: As Shown	Date: May 2018
SHEET No. <b>S-4A</b> OF 16 SHEETS	

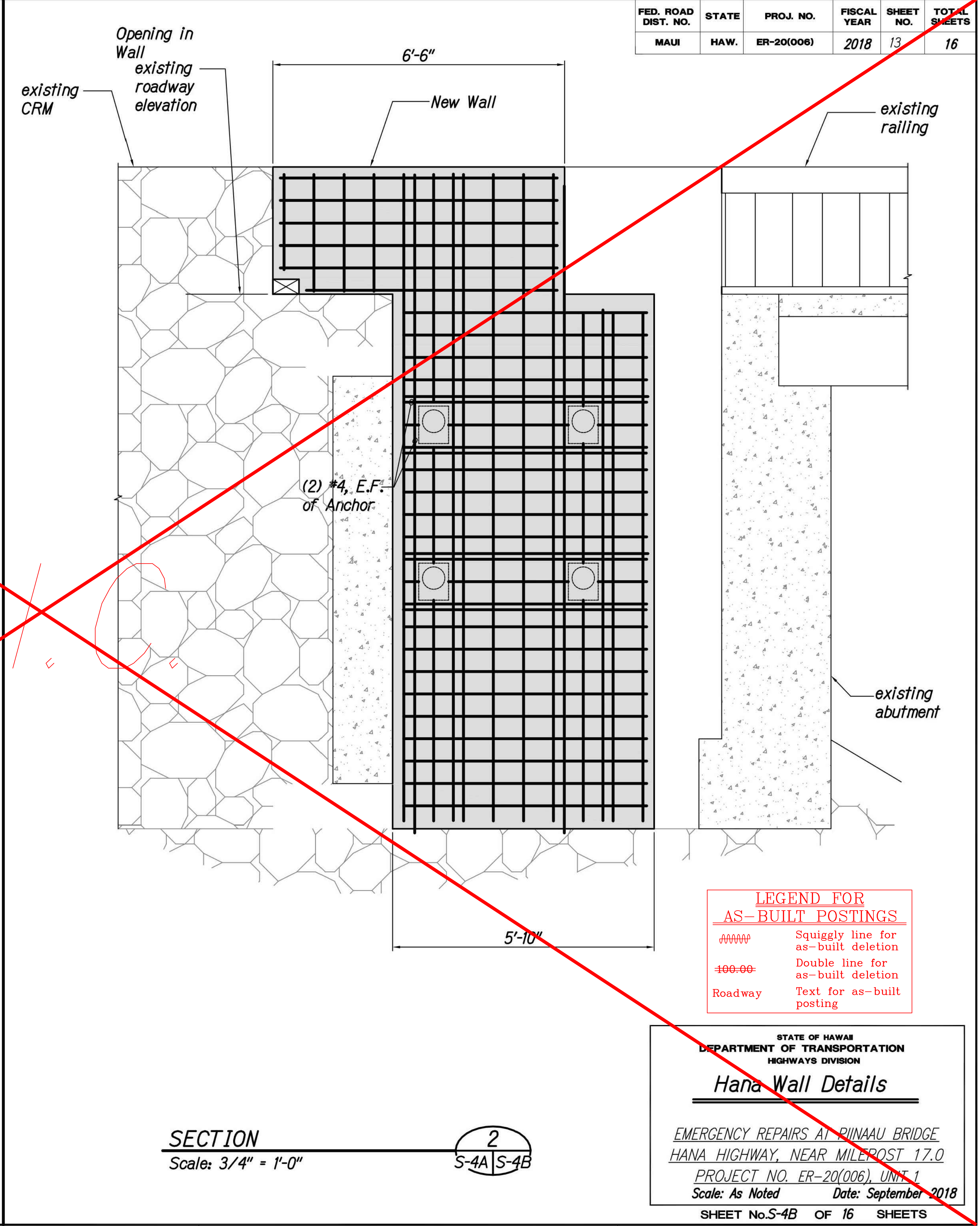
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MAUI	HAW.	ER-20(006)	2018	13	16



**WALL SECTION**  
Scale: 3/4" = 1'-0"

1  
S-4A | S-4B



**SECTION**  
Scale: 3/4" = 1'-0"

2  
S-4A | S-4B

**LEGEND FOR AS-BUILT POSTINGS**

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**Hana Wall Details**

EMERGENCY REPAIRS AT PIINAU BRIDGE  
HANA HIGHWAY, NEAR MILEPOST 17.0  
PROJECT NO. ER-20(006), UNIT 1  
Scale: As Noted      Date: September 2018  
SHEET No. S-4B OF 16 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-03-18	2018		93

Notes:

- All-thread rebar shall conform to ASTM A615, Grade 75.
- ~~Pipe casing shall conform to API N80 pipe. the contractor may need to use a casing with a larger diameter and wall thickness equal to or greater than 0.5".~~
- The entire length of the pipe casing shall be Hot Dip Galvanized per ASTM A123.
- Grout for micropiles shall be a neat cement, type I or II and shall have a minimum 28-day compressive strength of 4,000 psi. no testing or any other type of loading shall be applied to the micropiles until the grout has reached a minimum compressive strength of 4,000 psi.
- Before the installation of the production micropiles, one (1) sacrificial pre-production micropile shall be installed using the equipment and methods proposed by the contractor. the location of the pre-production micropile shall be approved by the geotechnical engineer. ~~the contractor shall load test the pre-production pile in compression to at least 125 percent of the design load for extreme event limit states twice its allowable design load in accordance with ASTM D1143-81.~~

Micropile Steel Casing. No permanent casing is required for micropiles.

Proof Tests

- Proof test a minimum 10 percent of the total number of production micropiles (minimum 2 micropiles) in addition to the pre-production micropiles. production micropiles to be proof tested will be selected by the geotechnical engineer after the installation of all production micropiles.
- The contractor shall furnish all materials, equipment and tools necessary to perform the proof tests. the geotechnical engineer retained by the contractor will be present only to observe the performance of the proof tests by the contractor.
- Perform the proof tests by incrementally loading the micropile to be tested in accordance with the following loading schedule:

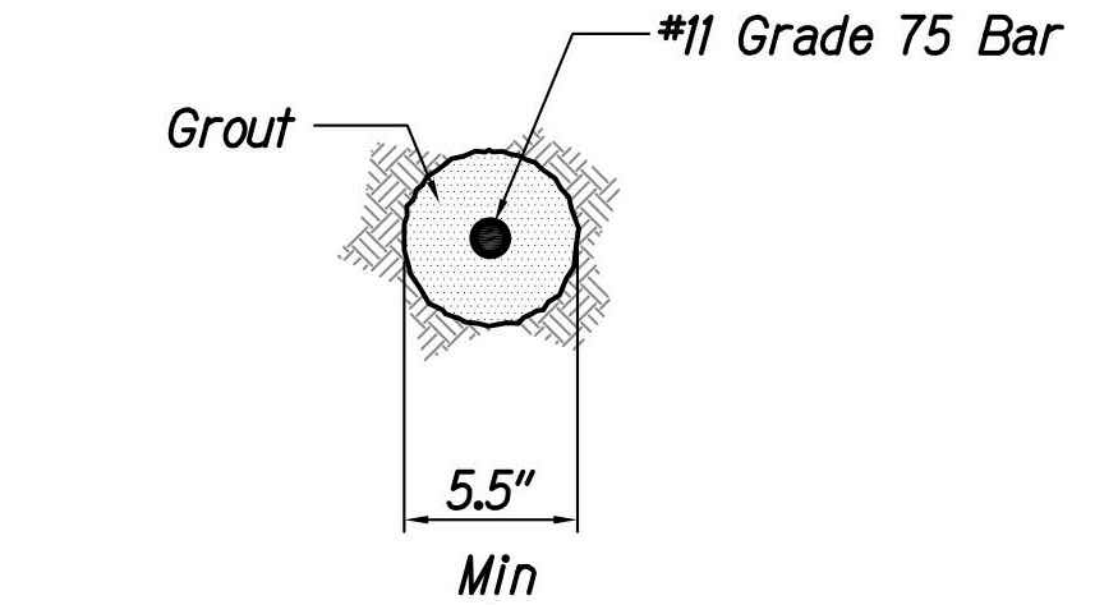
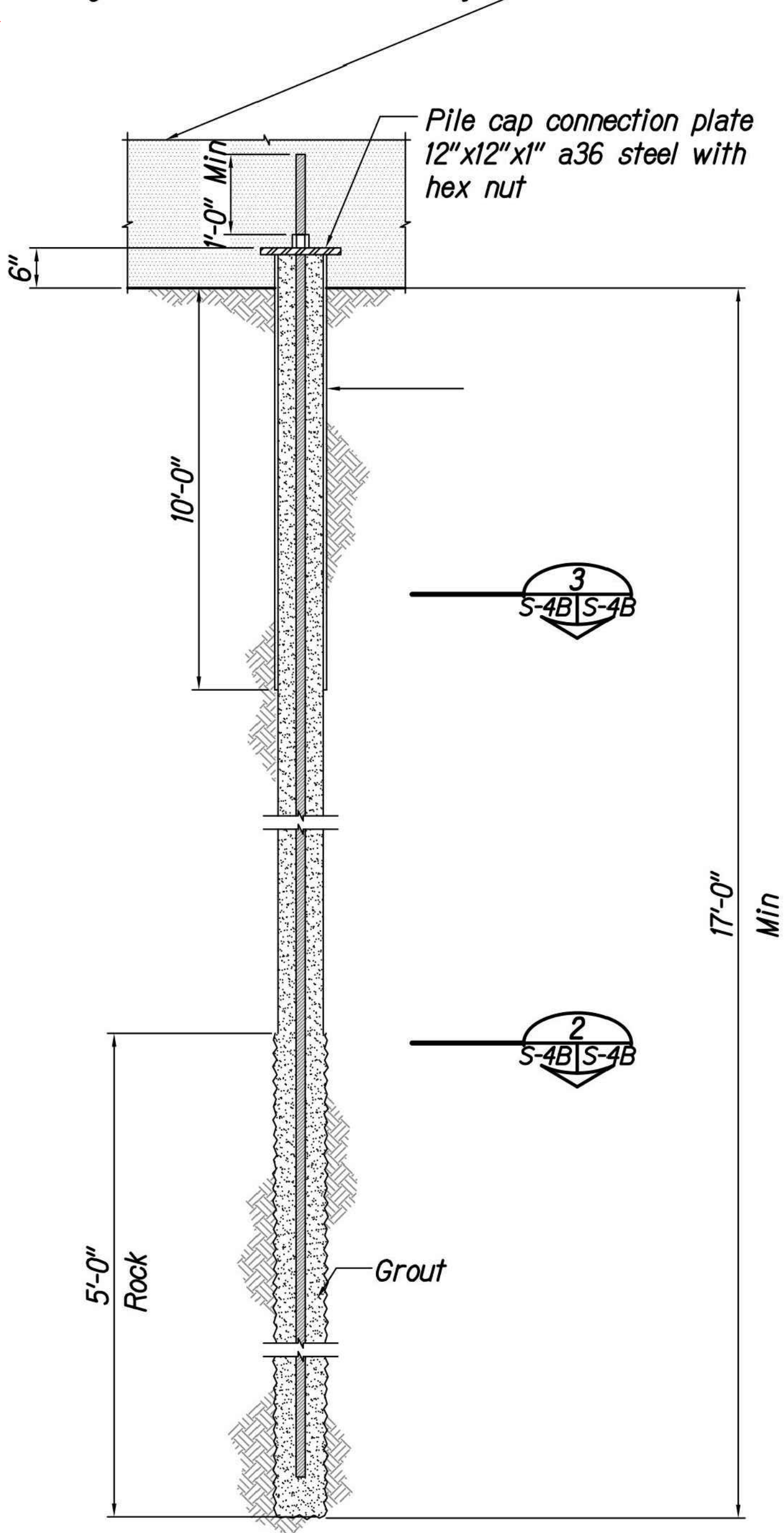
proof test schedule

0.05p  
0.25p  
0.50p  
0.75p  
1.00p  
1.25p  
1.50p

where p = allowable micropile capacity of 20 kips in compression for strength limit states.

- Hard boulders and hard basalt rock will be encountered near or at the micropile locations. therefore appropriate tools for pre-drilling through the hard boulders and hard basalt rock shall be required.

Footing reinf not shown for clarity

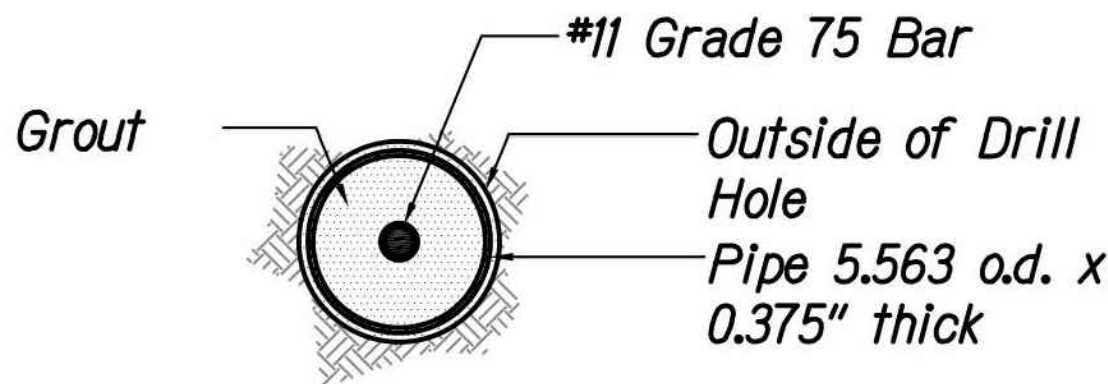


SECTION

Not to Scale

2

S-4B S-4B



Note:

The annular space between the drill hole and the o.d. of the pipe casing shall be grouted throughout the cased length in order to provide lateral support of the micropile.

SECTION

Not to Scale

3

S-4B S-4B

LEGEND FOR AS-BUILT POSTINGS	
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Roadway	Text for as-built posting

TYPICAL MICROPILE DETAIL

Not to Scale

1
S-4B S-4B S-4B



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ME OR UNDER MY SUPERVISION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
CULVERT REMEDIATION AT VARIOUS LOCATIONS ON OAHU, PHASE 2	
Project No. HWY-0-03-18	
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"AS-BUILT"