

RETAINING WALLS W1, W2, W3, AND W5 GENERAL NOTES:

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	299	371

1. General Specifications:

Hawaii Department of Transportation, Standard Specifications for Road and Bridge Construction, 1994, together with Special Provisions prepared for this contract.

2. Design Specifications:

(A) AASHTO 2005 LRFD Bridge Design Specification (Third Edition) and its subsequent interim specification with interim supplements and modifications by the Highway Division, Department of Transportation, State of Hawaii.

(B) AASHTO/AWS D1.5M/D1.5, Bridge Welding Code Latest Edition.

3. Materials:

(A) All concrete except Precast Prestressed Concrete Beam shall have a 28-day cylinder compressive strength of 4,000 psi.

(B) All reinforcing steel shall be ASTM A615 Grade 60 unless otherwise noted.

(C) All structural steel shall be ASTM A36 hot dip galvanized after fabrication, unless otherwise noted.

(D) All Type I and Type II Metal Bikeway Railings shall be steel structural Tubing conforming to ASTM A500 Grade B and shall be Hot-dipped galvanized after fabrications.

(E) All Type I and Type II Metal Bikeway Railing Anchor Bolts shall be Steel Bolts conforming to ASTM A307. Anchor Bolts Shall be Hot-dipped galvanized

(F) All Type I and Type II Metal Bikeway Railing Anchor Bolt Nuts shall be Steel Nuts conforming to ASTM A536. Nuts Shall be Hot-Dipped Galvanized

(G) All Type I Metal and Type II Bikeway Railing Anchor Bolt washers shall be Steel Washers conforming to ASTM F436. Washers Shall be Hot-Dipped Galvanized

(H) All welds shall be made using E70xx electrodes. Welds shall be performed by a qualified welder.

4. Reinforcement:

(A) The minimum covering measured from the surfaces of the concrete to the face of any reinforcing bars shall be as follows, except as otherwise shown:

(1) Walls = 2" to ties or outermost reinforcing except as otherwise noted.

(2) Concrete cast against and permanently exposed to earth = 3"

(B) Reinforcing bars shall be detailed in accordance with the latest edition of ACI Detailing Manual for Reinforced Concrete Structures.

(C) Minimum clear spacing between parallel bars shall be 1½ times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1½ times the maximum size of the coarse aggregate or 1½".

(D) All dimensions relating to reinforcing bars are to centers of bars unless otherwise noted.

(E) Reinforcing bars shall be securely tied at all intersections and lap splices except where the spacing of intersections is less than one foot in each direction, in which case alternate intersections shall be tied.

5. Construction Notes:

(A) See Standard Specifications and Special Provisions.

(B) Except as otherwise noted, all vertical dimensions are measured plumb.

(C) For concrete finish see Standard Specifications and Special Provisions.

(D) Contruction joints may be relocated or additional ones added subject to the approval of the Engineer.

(E) Unless otherwise noted, all exposed concrete edges shall be chamfered ¾"x¾".

(F) Contractor shall verify footing elevations before fabricating footing and wall reinforcing.

6. Foundation:

Footing are embeded min. 1'-6" below finish grade.

(A) Allowable bearing value = 3,000 psf for service limit state
= 5,400 psf for strength limit state
= 9,000 psf for extreme event limit state

(B) Coefficient of friction = 0.49 for strength limit state
= 0.58 extreme event limit state

(C) Passive earth pressure = 235 pcf for strength limit state
= 470 pcf for extreme event limit state

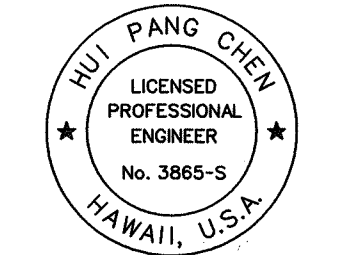
(D) Active earth pressure = 40 pcf for Level Backfill
= 50 pcf for Sloped Backfill

(E) Internal friction angle = 30 degrees

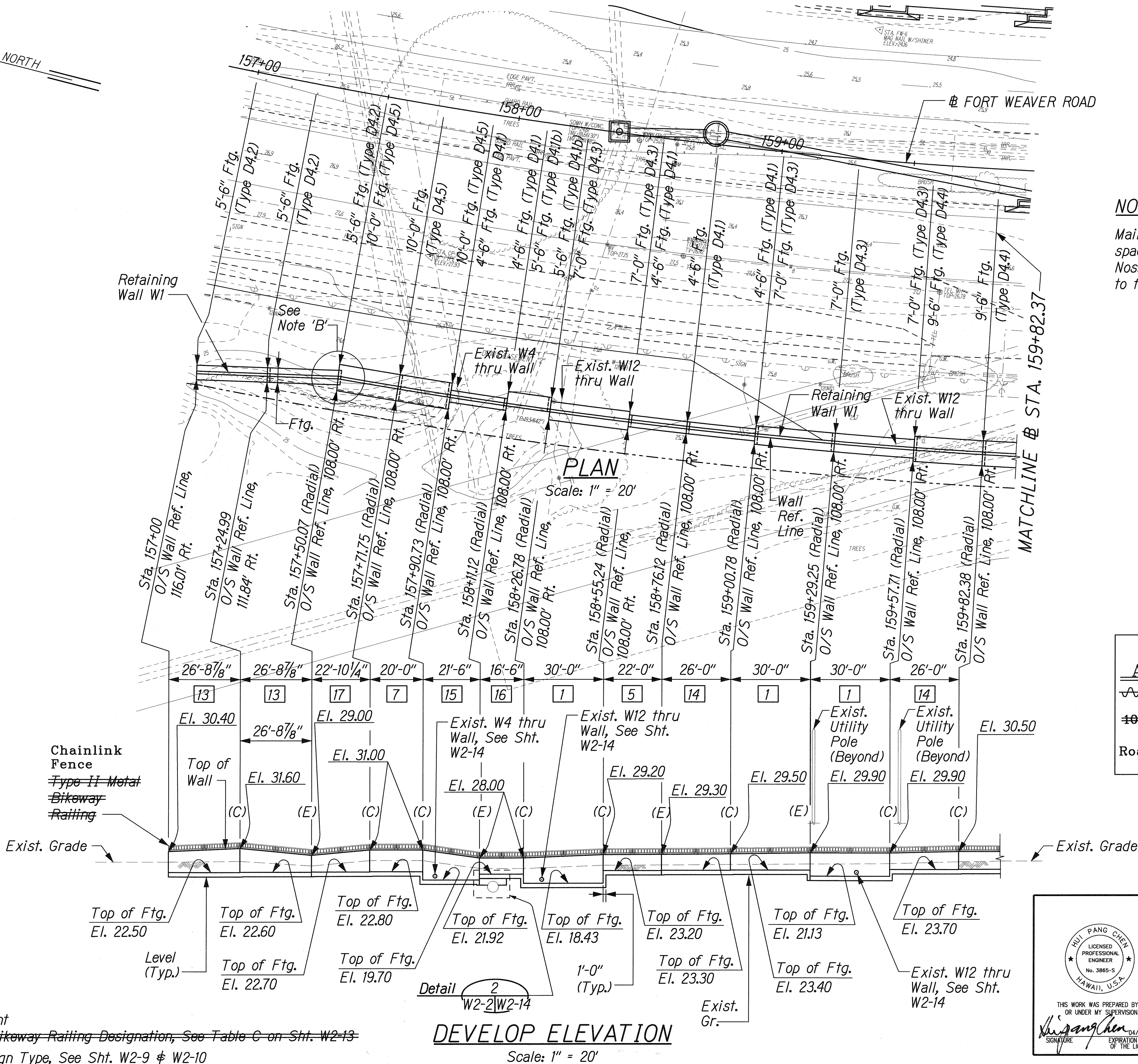
(F) Seismic Acceleration Coefficient = 0.18

DESIGNED BY	DATE
CHECKED BY	
NOTED BY	
PLANNED BY	
ENGINEER	
NO. 3865-S	

1/4 FORT WEAVER ROAD/STRUCT/struct-notes.02.dgn

 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. SIGNATURE: <i>Hui Pang Chen</i> EXPIRATION DATE: 04/30/10	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION RETAINING WALLS W1, W2, W3, AND W5 GENERAL NOTES FORT WEAVER ROAD WIDENING VICINITY OF AAWA DRIVE TO GEIGER ROAD Scale: None Date: Feb. 22, 2008
	SHEET No. W2-1 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	300	371



NOTE 'B':
 Maintain the maximum footing rebar spacing as shown on Tables of Sht. Nos. W2-9 and W2-10. Flare rebars to fit bend as required.

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

LEGEND:
 (C) : Denotes Control Joint
 (E) : Denotes Expansion Joint
 [] : Denotes Pattern # of Bikeway Railing Designation, See Table C on Sht. W2-13
 Type D12: Denotes Wall Design Type, See Sht. W2-9 & W2-10

DEVELOP ELEVATION
 Scale: 1" = 20'

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
 Signature: *Hui Pang Chen*
 EXPIRATION DATE OF THE LICENSE: 04/30/10

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

RETAINING WALL - W1 (1 of 3)
PLAN AND ELEVATION

FORT WEAVER ROAD WIDENING
 VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=20' Date: Feb. 22, 2008

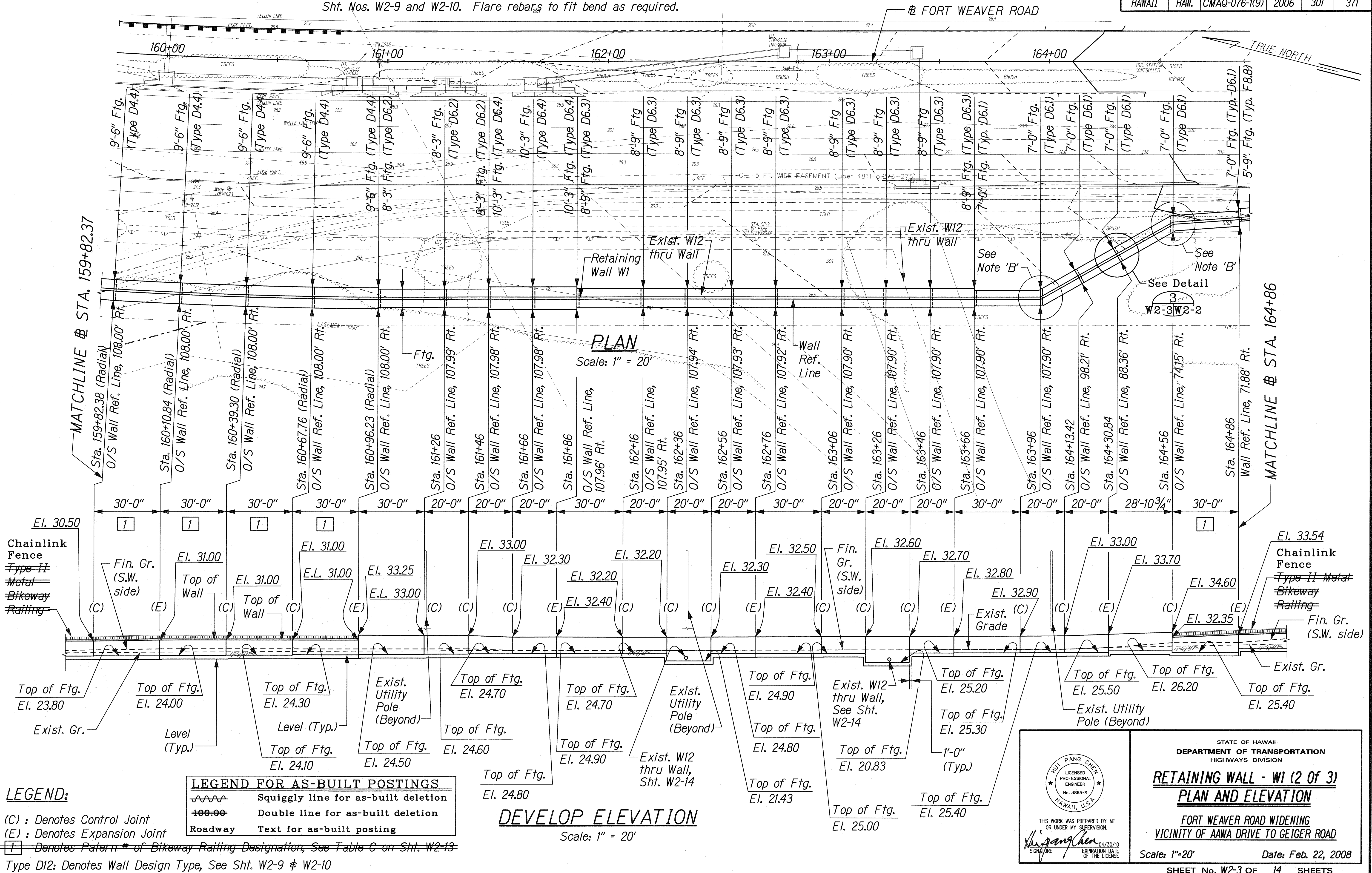
SHEET No. W2-2 OF 14 SHEETS

SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	

J:\FORT WEAVER ROAD\STRUCT\RWI\adgn

NOTE 'B': Maintain the maximum footing rebar spacing as shown on Tables of Sht. Nos. W2-9 and W2-10. Flare rebars to fit bend as required.

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(9)	2006	301	371



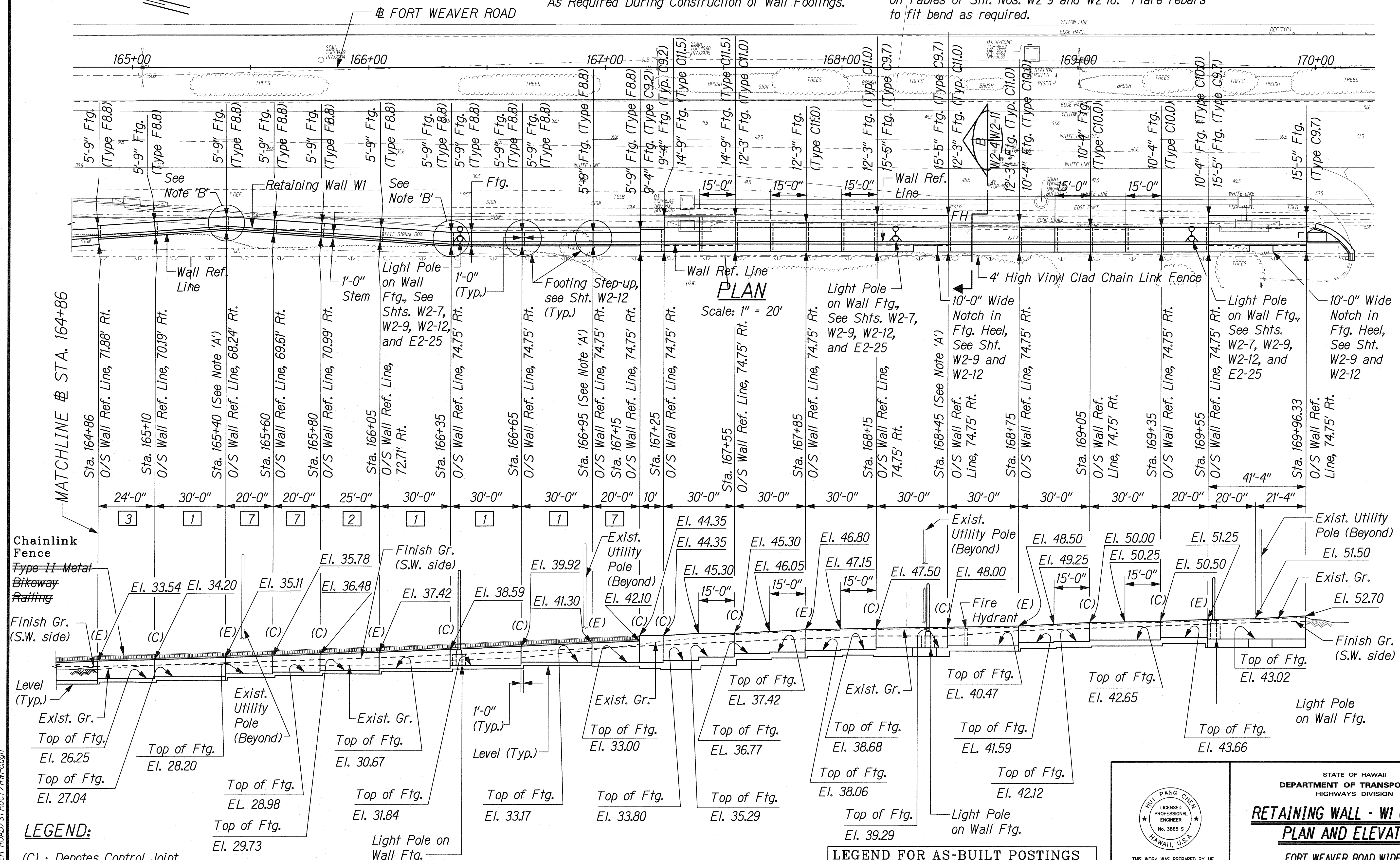
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(K9)	2006	302	371

NOTE 'A':

Provide Temporary Bracing for Near-by Utility Pole As Required During Construction of Wall Footings.

NOTE 'B':

Maintain the maximum footing rebar spacing as shown on Tables of Sht. Nos. W2-9 and W2-10. Flare rebars to fit bend as required.



LEGEND:

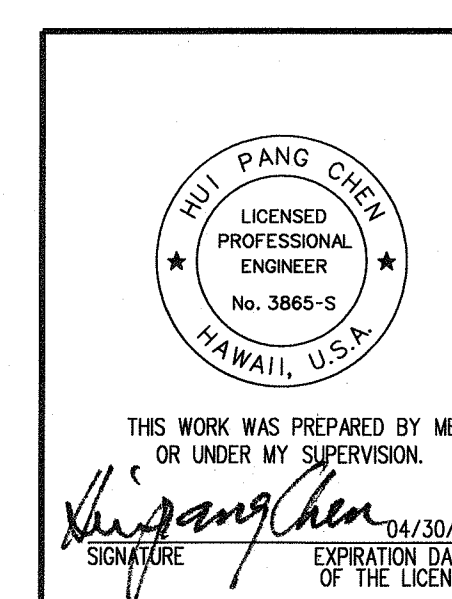
(C) : Denotes Control Joint
 (E) : Denotes Expansion Joint
 [3] : Denotes Pattern # of Metal Bikeway Railing Designation, See Table C on Sht. W2-10
 Type F8.8: Denotes Wall Design Type, See Sht. W2-9 & W2-10

DEVELOP ELEVATION

Scale: 1" = 20'

LEGEND FOR AS-BUILT POSTINGS

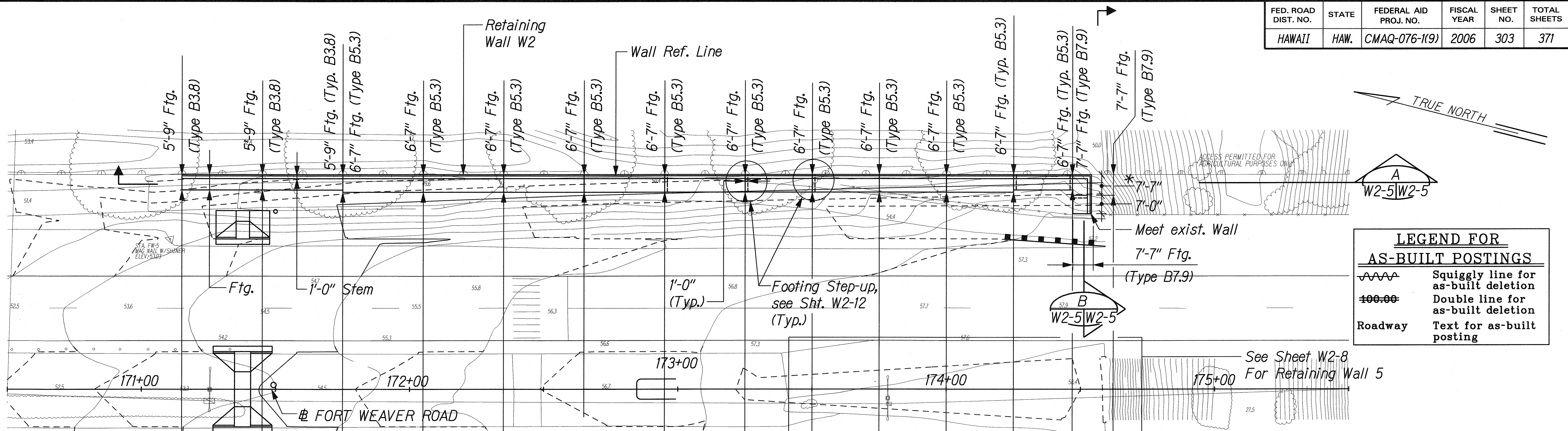
~~~~~ Squiggly line for as-built deletion  
 === Double line for as-built deletion  
 Roadway Text for as-built posting



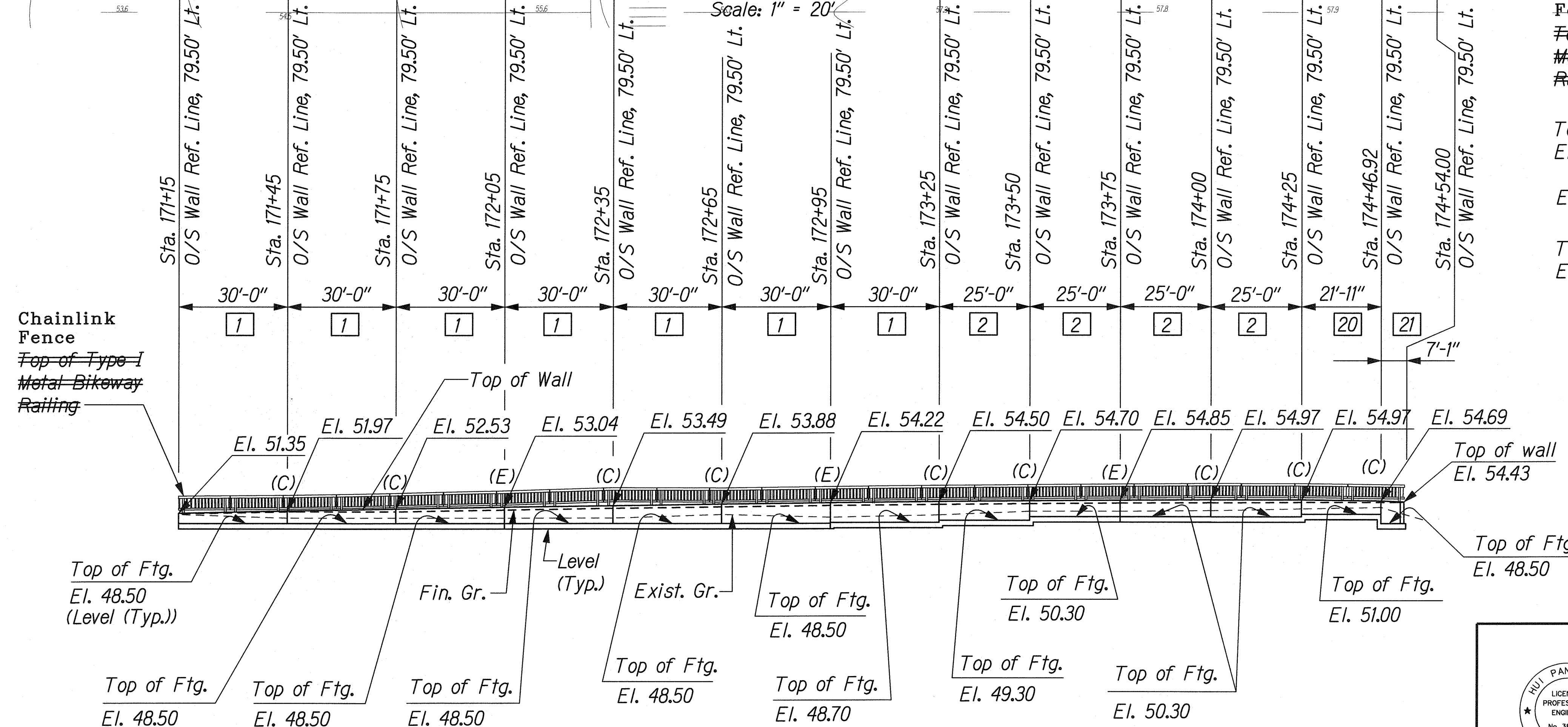
## STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION **RETAINING WALL - W1 (3 of 3)** **PLAN AND ELEVATION**

FORT WEAVER ROAD WIDENING  
 VICINITY OF AAWA DRIVE TO GEIGER ROAD  
 Scale: 1"=20' Date: Feb. 22, 2008

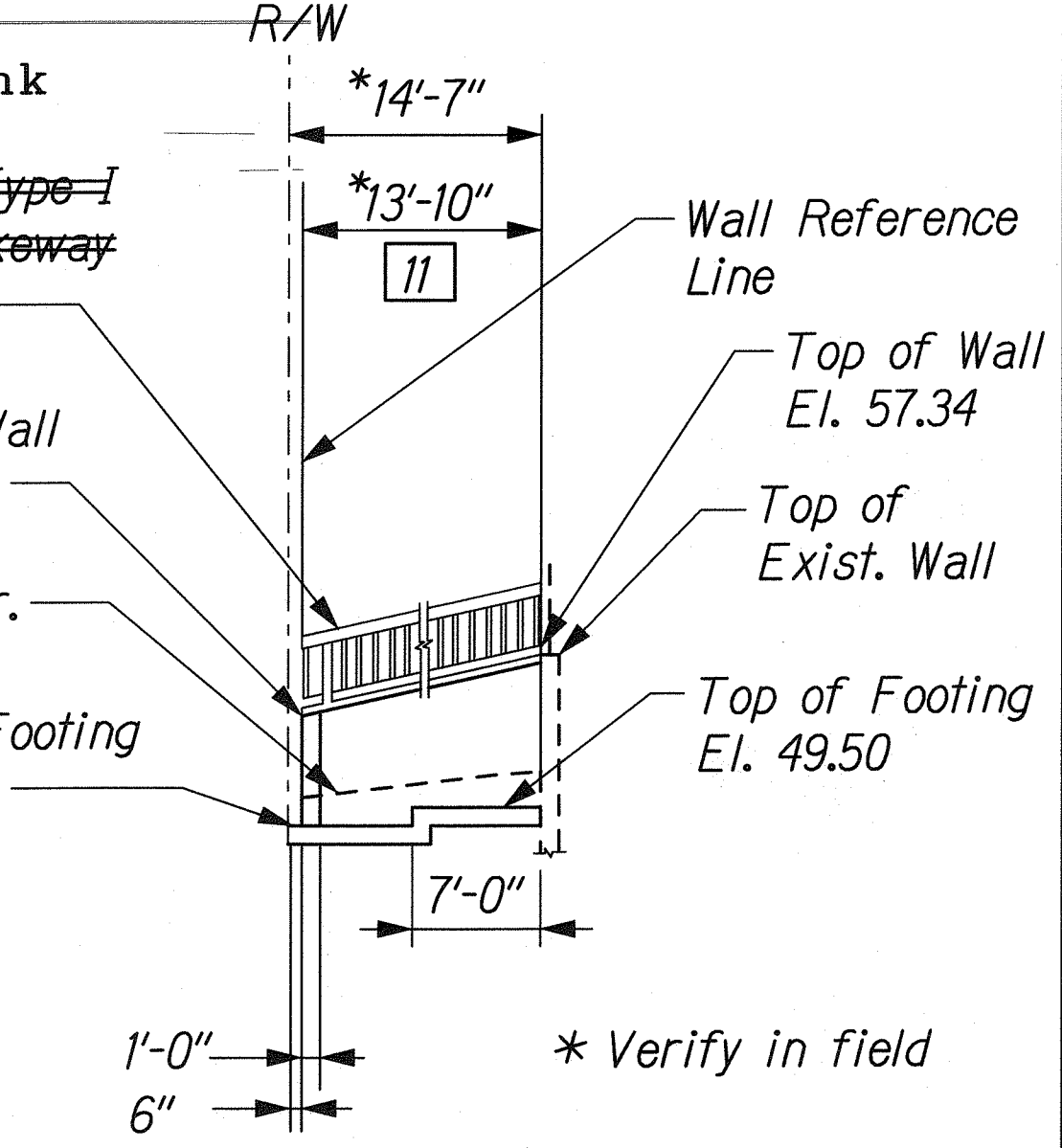
| FED. ROAD DIST. NO. | STATE | FEDERAL AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-076-1(9)         | 2006        | 303       | 371          |



**PLAN**  
Scale: 1" = 20'



**SECTIONAL ELEVATION**  
Scale: 1" = 20'



**LEGEND:**

- (C) : Denotes Control Joint
- (E) : Denotes Expansion Joint
- 1 : Denotes Pattern # of Metal Bikeway Railing Designation, See Table C on Sht. W2-13
- Type B3.8: Denotes Wall Design Type, See Sht. W2-10

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*Hui Pang Chen*  
SIGNATURE

EXPIRATION DATE OF THE LICENSE: 04/30/10

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**RETAINING WALL - W2**  
**PLAN AND ELEVATION**

FORT WEAVER ROAD WIDENING  
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=20'      Date: Feb. 22, 2008

SHEET No. W2-5 OF 14 SHEETS

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DESIGNED BY       |      |
| NOTED BY          |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     |      |
| NOTE BOOK         |      |
| NO.               |      |

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| FED. ROAD DIST. NO. | STATE | FEDERAL AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-076-1(9)         | 2006        | 304       | 371          |

### NOTE 'A':

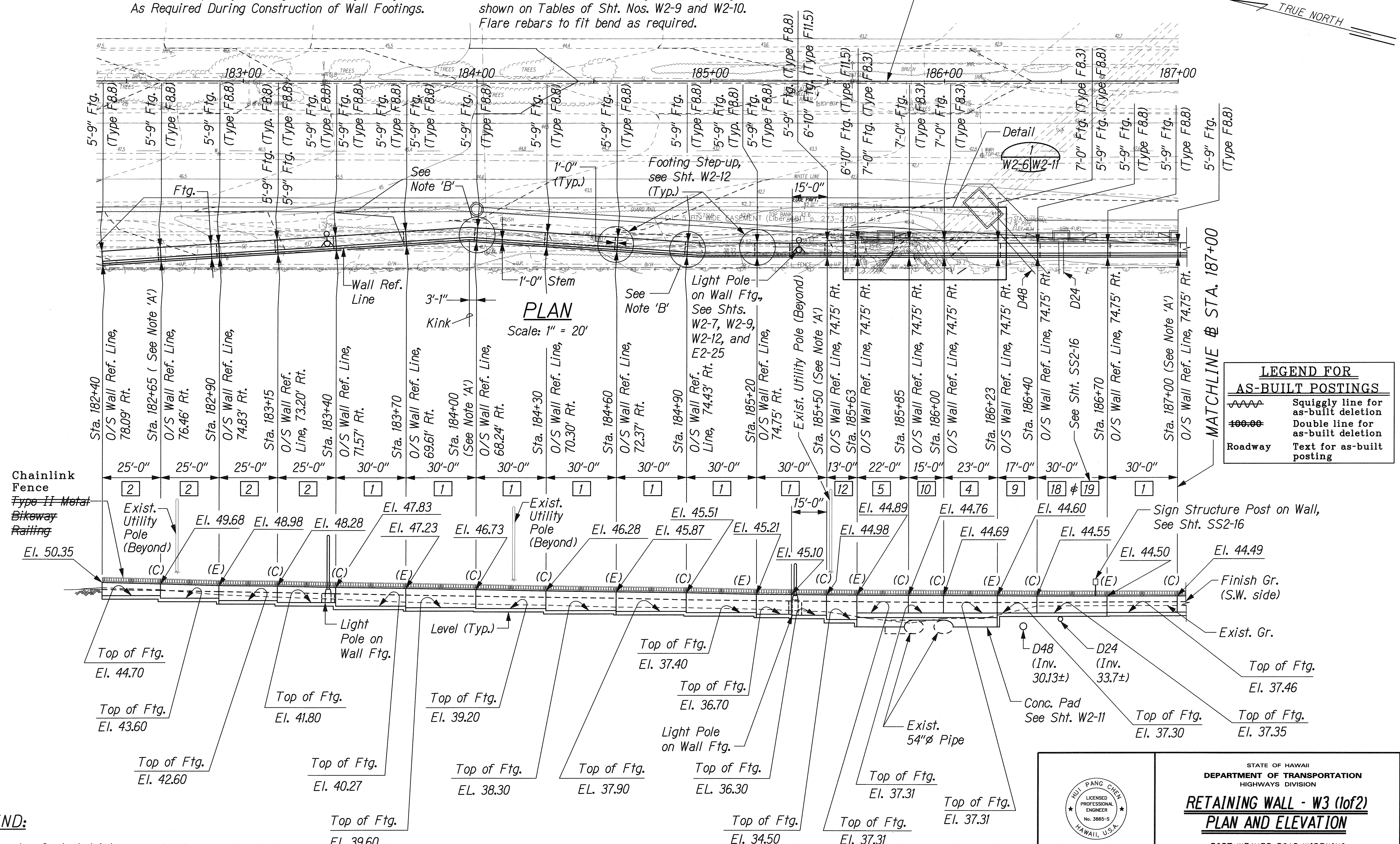
Provide Temporary Bracing for Near-by Utility Pole As Required During Construction of Wall Footings.

### NOTE 'B':

Maintain the maximum footing rebar spacing as shown on Tables of Sht. Nos. W2-9 and W2-10. Flare rebars to fit bend as required.

⊕ FORT WEAVER ROAD

TRUE NORTH



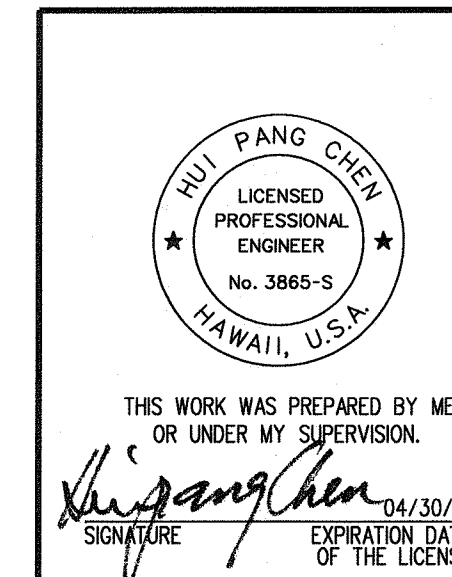
**PLAN**  
Scale: 1" = 20'

**ELEVATION**  
Scale: 1" = 20'

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

### LEGEND:

- (C) : Denotes Control Joint
- (E) : Denotes Expansion Joint
- : Denotes Patron # of Metal Bikeway Railing Designation, See Table C on Sht. W2-13
- Type F8.8: Denotes Wall Design Type, See Sht. W2-9



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**RETAINING WALL - W3 (1of2)**  
**PLAN AND ELEVATION**

FORT WEAVER ROAD WIDENING  
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: 1"=20' Date: Feb. 22, 2008

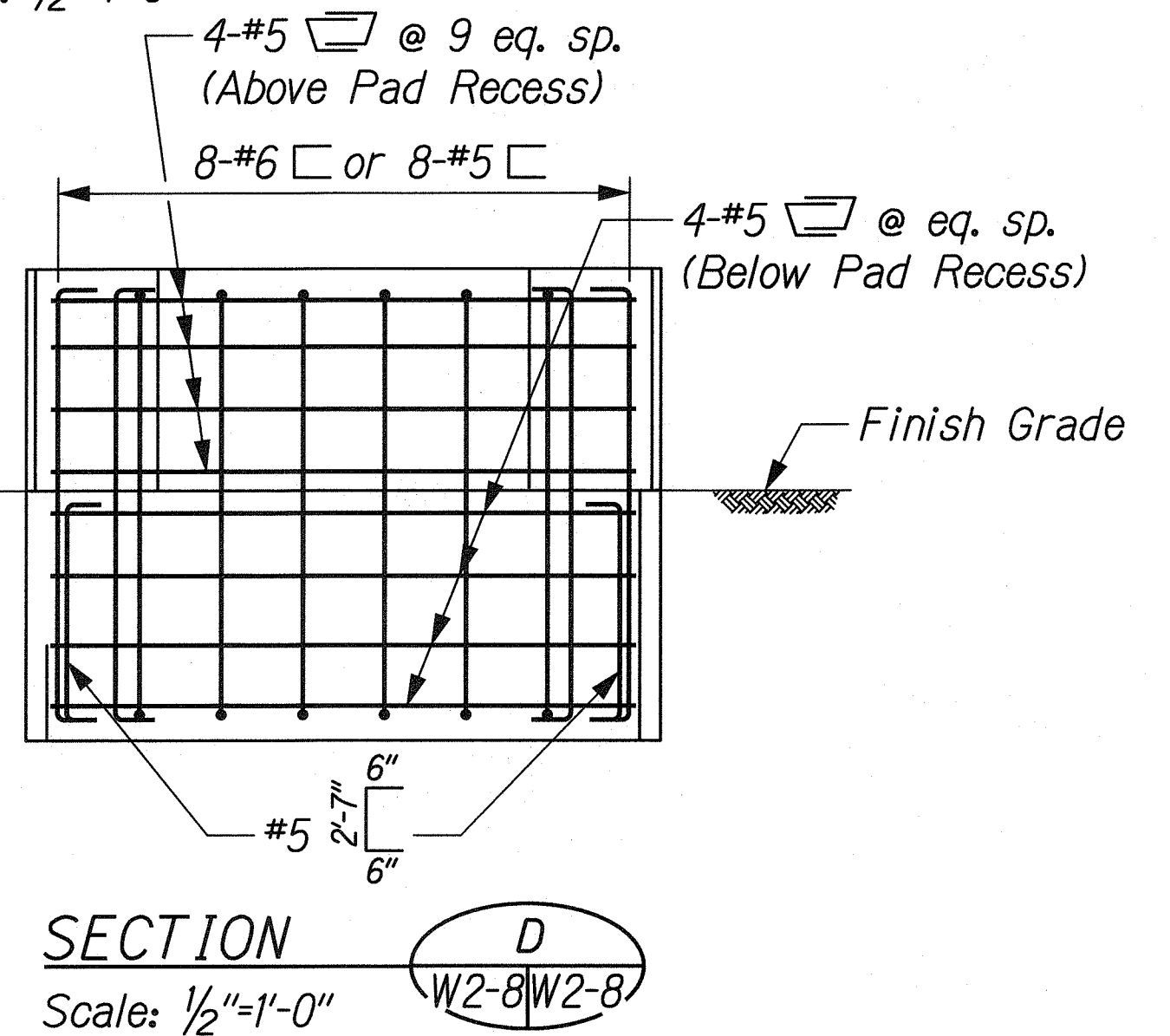
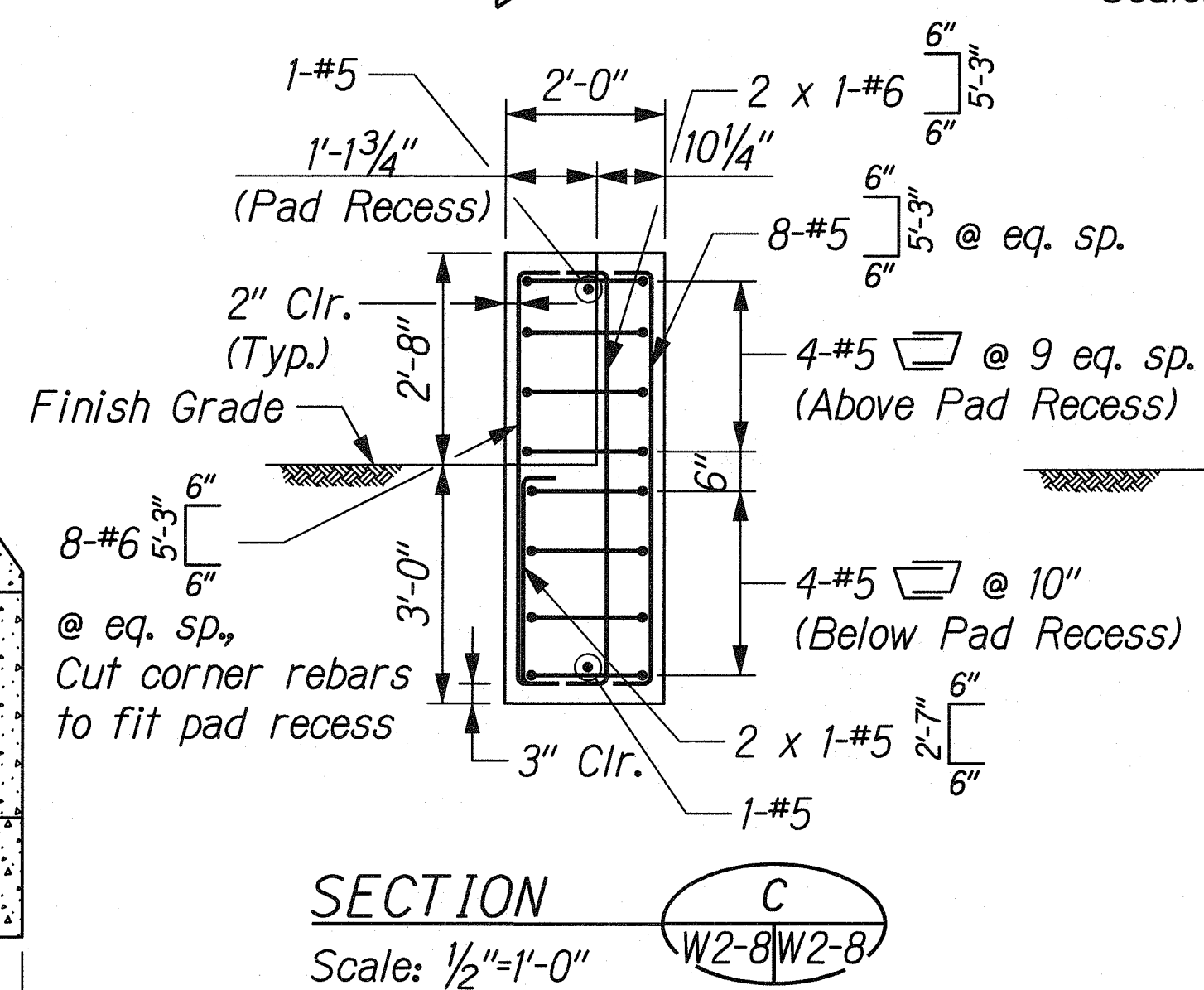
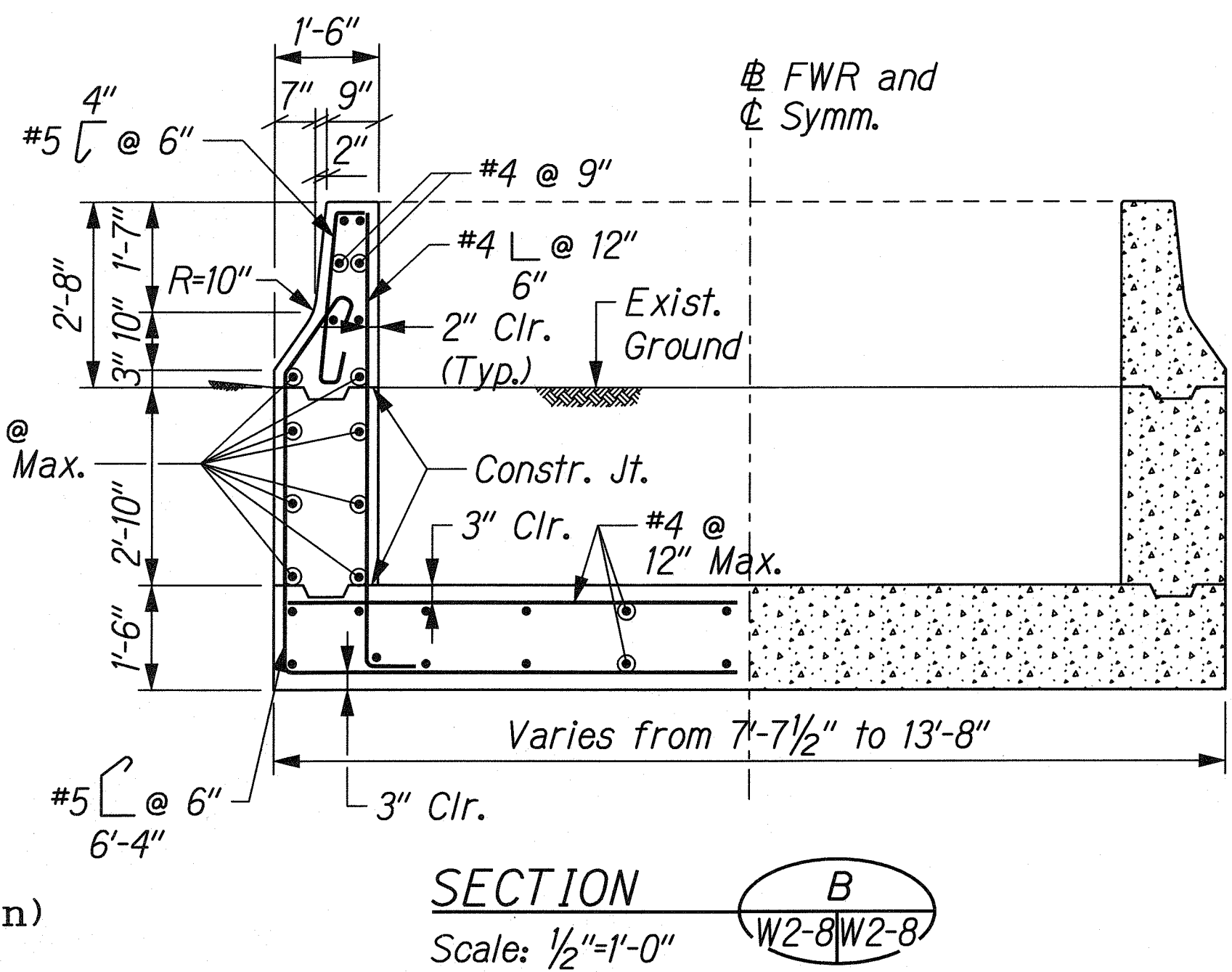
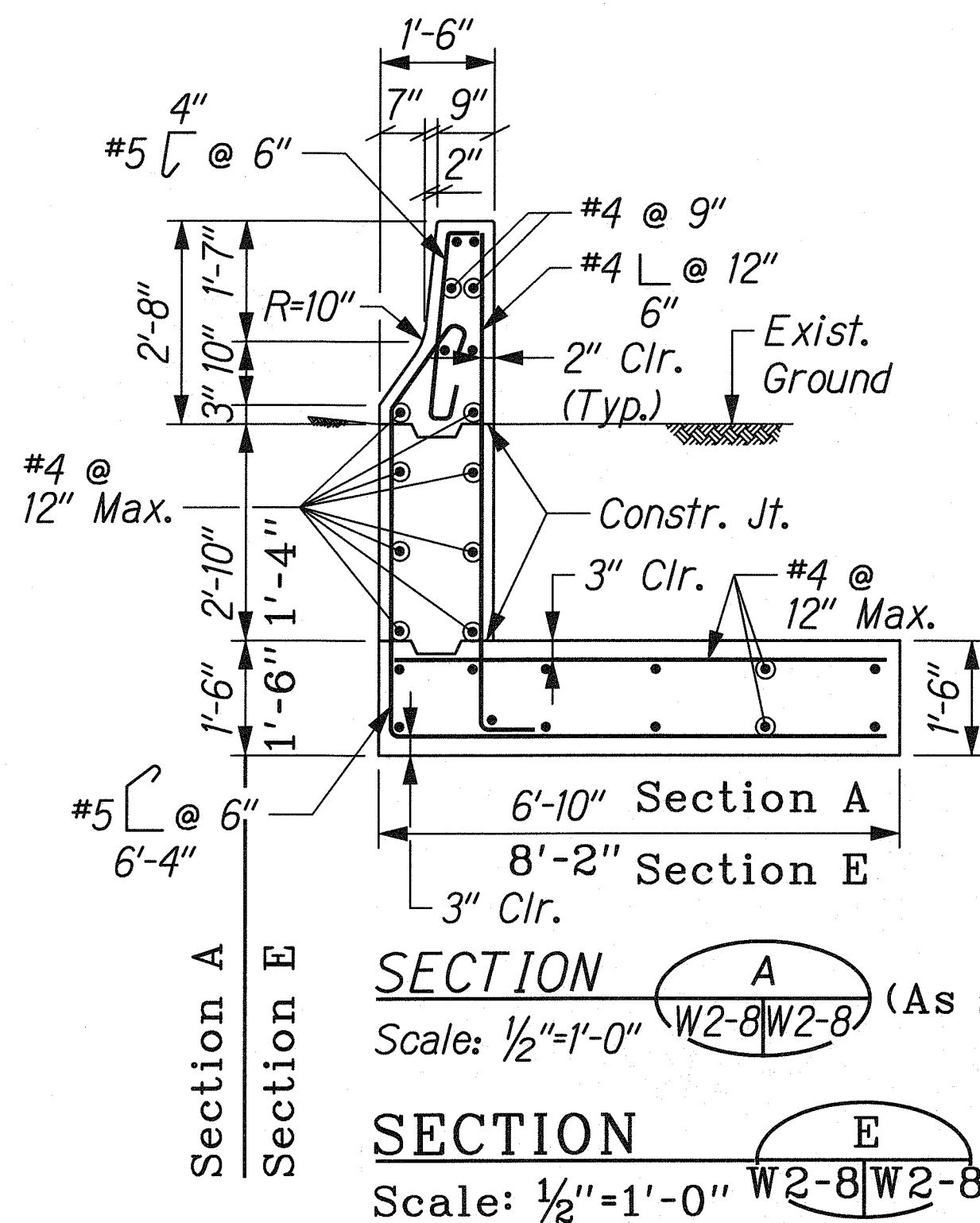
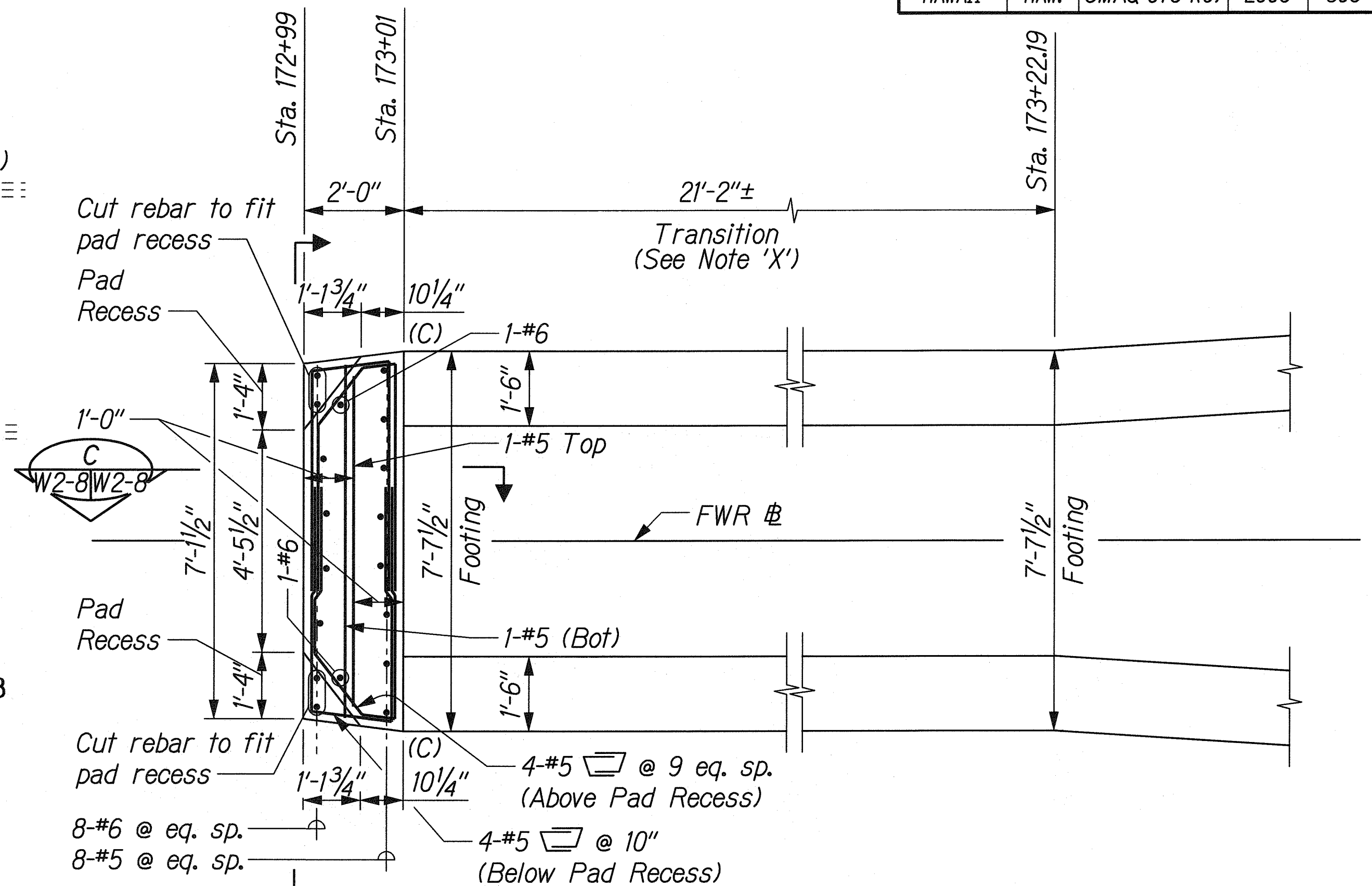
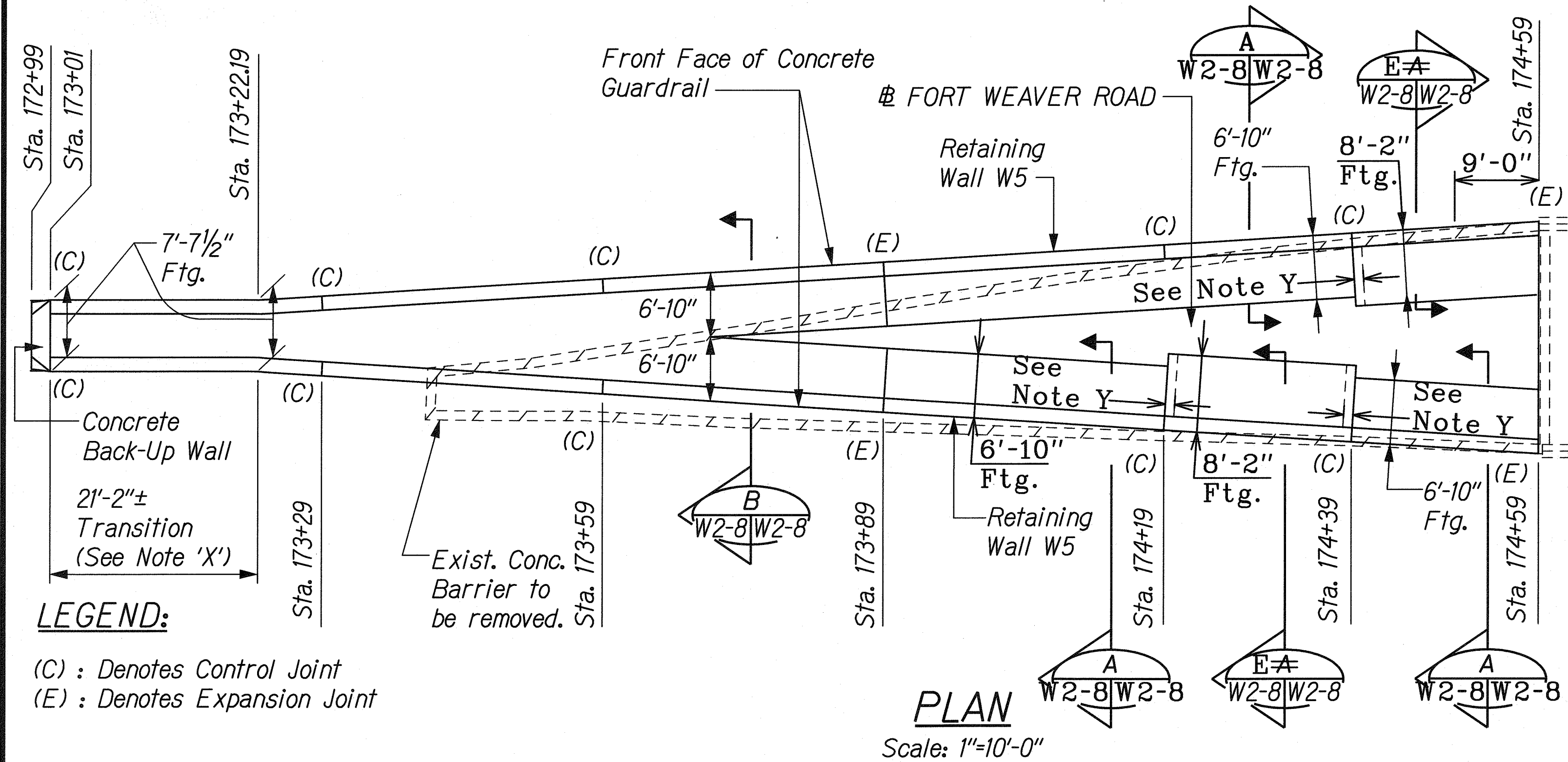
SHEET No. W2-6 OF 14 SHEETS

|             |      |
|-------------|------|
| DESIGNED BY | DATE |
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| NOTED BY    |      |
| CHECKED BY  |      |

W2-6 FORT WEAVER ROAD/STRUCT/PW3A.dgn



| FED. ROAD DIST. NO. | STATE | FEDERAL AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-076-1(9)         | 2006        | 306       | 371          |



#### NOTE 'X':

Front Face (Facing traveled way) of Concrete Guardrail shall have a transition from normal sloping face to the vertical face of concrete back-up wall.

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**RETAINING WALL - W5  
 PLAN AND SECTIONS**

FORT WEAVER ROAD WIDENING  
 VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: As Shown Date: Feb. 22, 2008

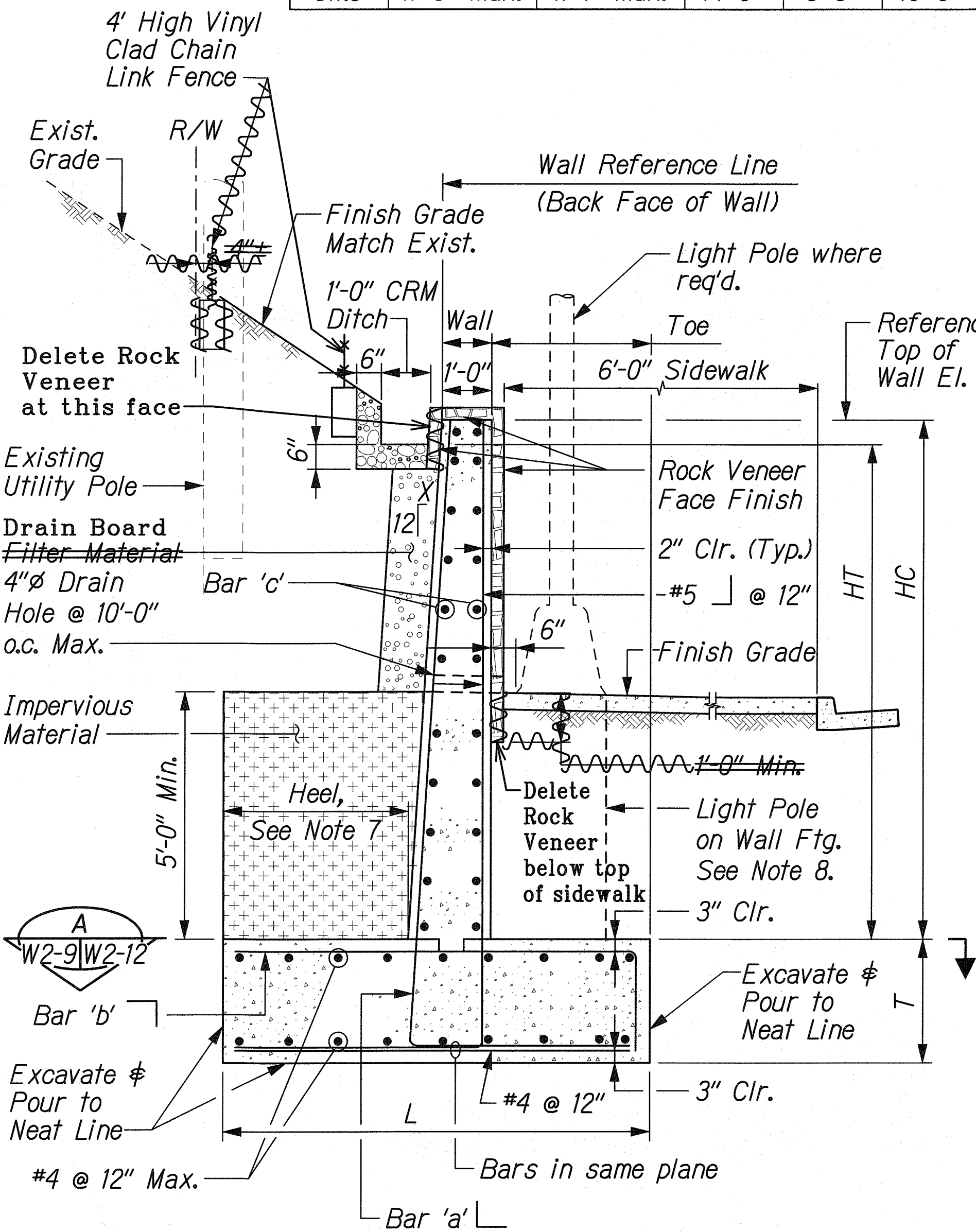
SHEET No. W2-8 OF 14 SHEETS

AS BUILT **306**

| FED. ROAD DIST. NO. | STATE | FEDERAL AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-076-1(9)         | 2006        | 307       | 371          |

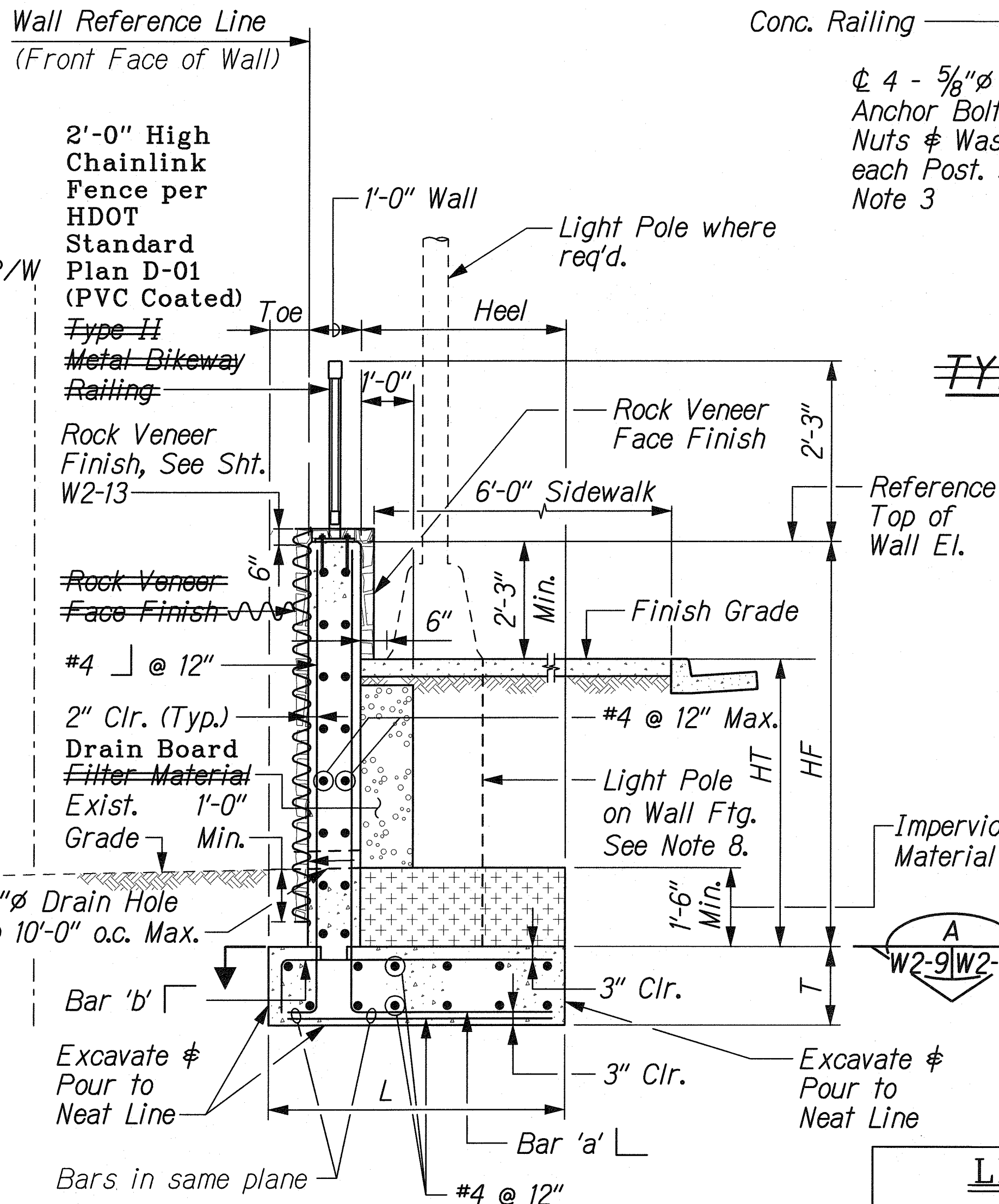
| TYPE F WALL TABLE |             |            |        |       |       |       |         |          |
|-------------------|-------------|------------|--------|-------|-------|-------|---------|----------|
| TYPE              | HF          | HT         | L      | T     | Toe   | Heel  | Bar 'a' | Bar 'b'  |
| F8.3              | 8'-4" max.  | 6'-1" max. | 7'-0"  | 1'-0" | 0'-9" | 5'-3" | #5 @ 6" | #6 @ 12" |
| F8.8              | 8'-10" max. | 6'-7" max. | 5'-9"  | 1'-6" | 0'-9" | 4'-0" | #5 @ 6" | #4 @ 12" |
| F11.50            | 11'-6" max. | 9'-3" max. | 6'-10" | 1'-6" | 0'-9" | 5'-1" | #6 @ 6" | #6 @ 12" |

| TYPE C WALL TABLE |             |             |        |       |        |       |          |          |          |                    |
|-------------------|-------------|-------------|--------|-------|--------|-------|----------|----------|----------|--------------------|
| TYPE              | HC          | HT          | L      | T     | Toe    | Heel  | Bar 'c'  | Bar 'a'  | Bar 'b'  | Stem Batter x : 12 |
| C9.2              | 9'-3" max.  | 8'-9" max.  | 9'-4"  | 2'-6" | 5'-1"  | 3'-3" | #4 @ 12" | #8 @ 6"  | #5 @ 12" | 0 : 12             |
| C9.7              | 9'-9" max.  | 9'-3" max.  | 15'-5" | 3'-8" | 11'-2" | 3'-3" | #5 @ 12" | #10 @ 6" | #6 @ 12" | 0 : 12             |
| C10.0             | 10'-0" max. | 9'-6" max.  | 10'-4" | 2'-6" | 6'-1"  | 3'-3" | #4 @ 12" | #9 @ 6"  | #5 @ 12" | 0 : 12             |
| C11.0             | 11'-0" max. | 10'-6" max. | 12'-3" | 2'-6" | 8'-0"  | 3'-3" | #4 @ 12" | #10 @ 6" | #5 @ 12" | 0 : 12             |
| C11.5             | 11'-6" max. | 11'-1" max. | 14'-9" | 3'-8" | 10'-6" | 3'-3" | #4 @ 12" | #11 @ 6" | #6 @ 12" | 0 : 12             |



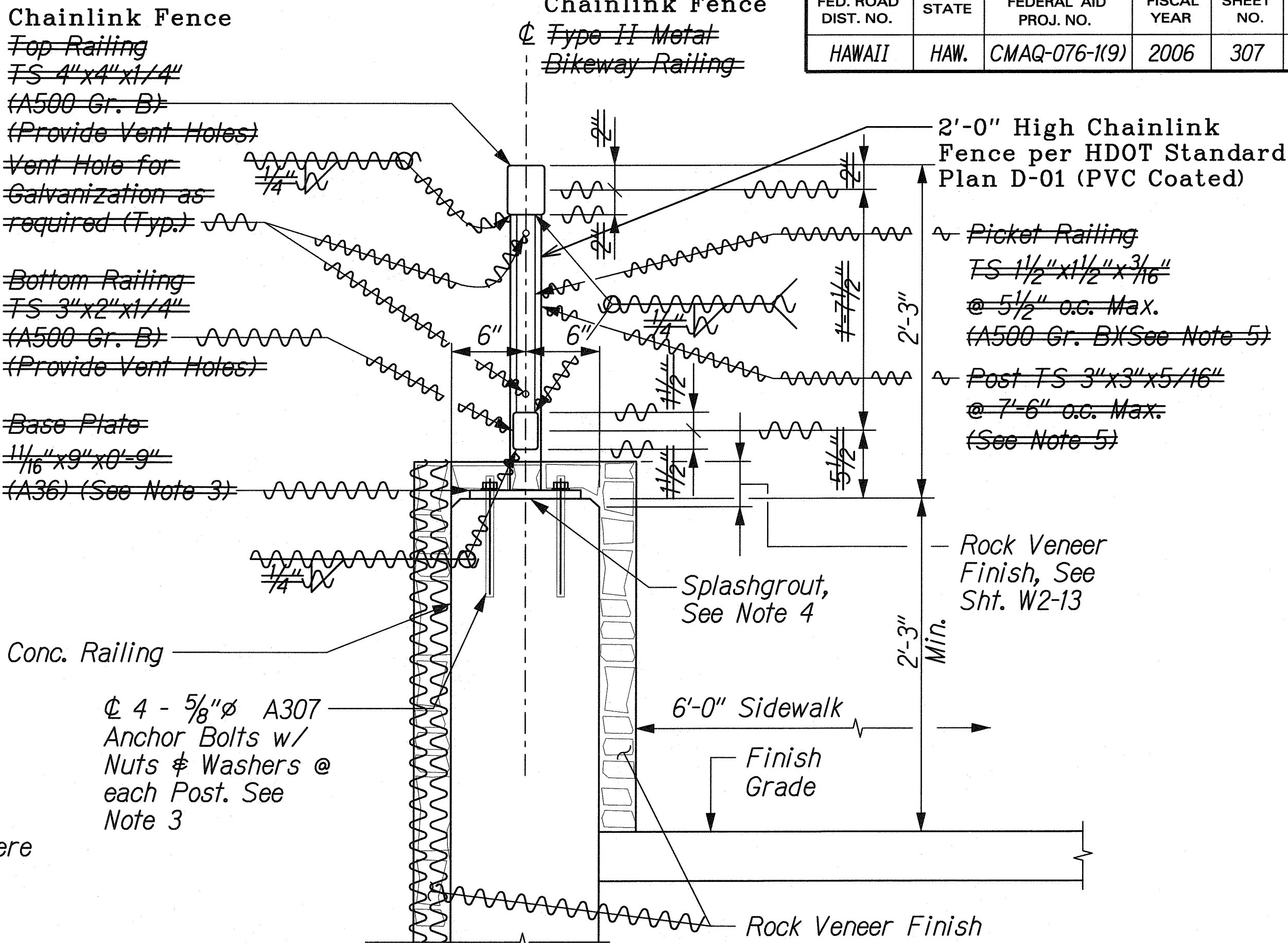
TYPE C WALL SECTION (TYPE C\_...)  
RETAINING WALL W1

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



TYPE F WALL SECTION (TYPE F\_...)  
RETAINING WALLS W1 & W3

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



TYPE II METAL BIKEWAY RAILING 2'-0" HIGH  
CHAINLINK FENCE

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

NOTES:

1. All concrete shall have 28-day compressive strength (f'c) of 4,000 psi.
2. All rebar shall be ASTM A615 Gr. 60.
3. For base plate and anchor bolt details, see sheet W2-13.
4. Provide splashgrout immediately prior to installation of railing system.
5. All railing posts and picket railings are plumb. Adjust top railing, bottom railing, and base plate to fit the slope of the wall.
6. AmerDrain 500XL may be used in lieu of 1'-0" thick Filter Material behind retaining walls not exceeding 8-ft in height.
7. Notch heel for existing utility pole at Station 168+35± and 169+75± as shown on sheet W2-4 and W2-12.
8. For detail of light pole on wall footing, see sheets W2-7 and W2-12.
9. For detail of sign structure foundation on wall footing at Station 186+65 and Station 187+50, see sheet SS2-16.

LEGEND FOR  
AS-BUILT POSTINGS

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|  | Text for as-built posting           |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**RETAINING WALLS**  
**MISCELLANEOUS DETAILS - 1**

FORT WEAVER ROAD WIDENING  
VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: As Shown Date: Feb. 22, 2008

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OR UNDER MY SUPERVISION.

*Signature*

EXPIRATION DATE OF THE LICENSE

SHEET No. W2-9 OF 14 SHEETS

| FED. ROAD DIST. NO. | STATE | FEDERAL AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-076-1(9)         | 2006        | 308       | 371          |

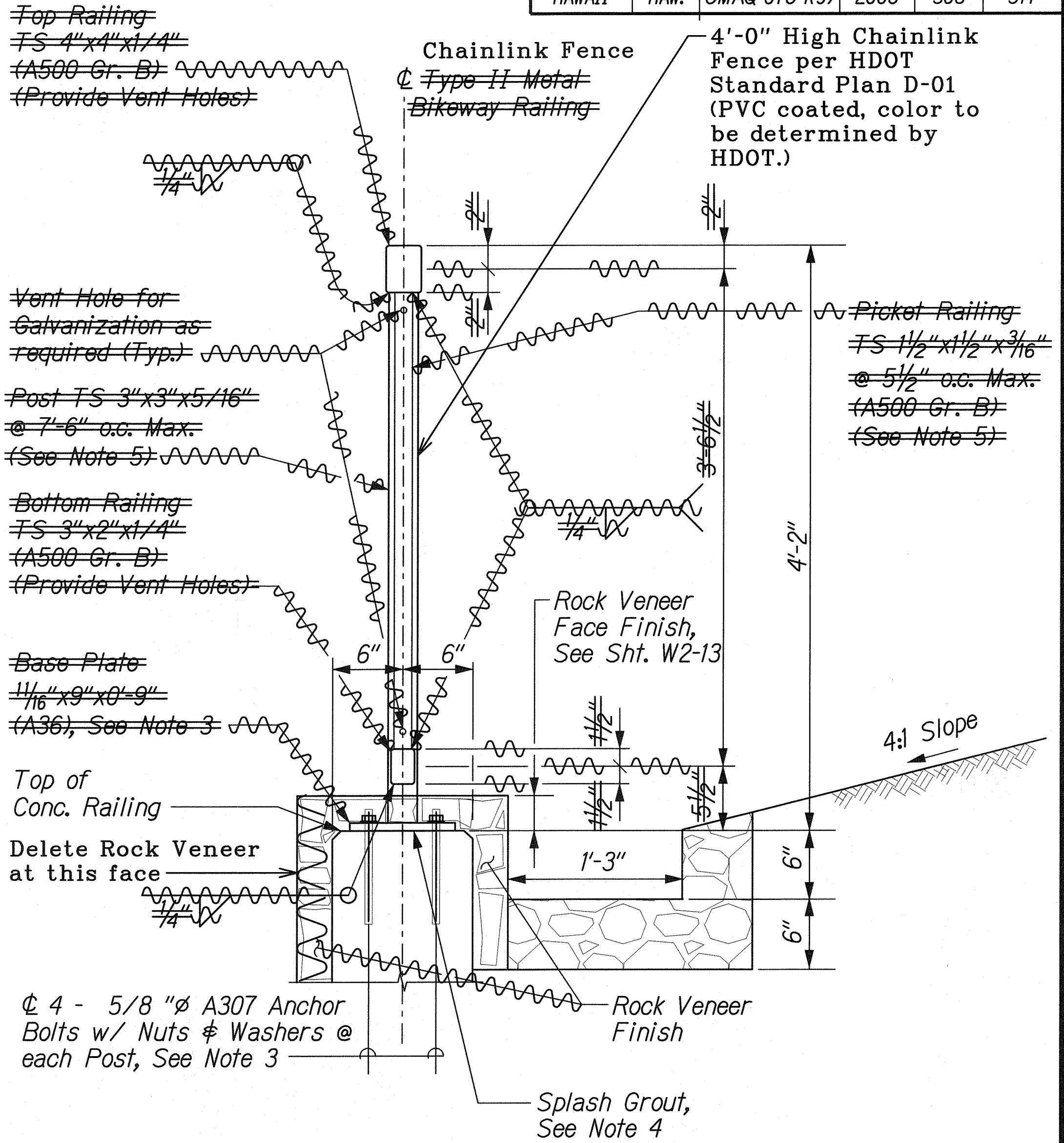
| TYPE B WALL TABLE |             |            |       |       |       |       |          |          |
|-------------------|-------------|------------|-------|-------|-------|-------|----------|----------|
| TYPE              | HB          | HT         | L     | T     | Toe   | Heel  | Bar 'a'  | Bar 'b'  |
| B3.8              | 3'-9" max.  | 3'-5" max. | 5'-9" | 1'-6" | 0'-6" | 4'-3" | #4 @ 12" | #4 @ 12" |
| B5.3              | 5'-4" max.  | 5'-0" max. | 6'-7" | 1'-6" | 0'-6" | 5'-1" | #5 @ 12" | #5 @ 12" |
| B7.9              | 7'-11" max. | 7'-5" max. | 7'-7" | 1'-6" | 0'-6" | 6'-1" | #7 @ 12" | #7 @ 12" |

| TYPE D WALL TABLE |    |            |        |       |            |            |          |          |
|-------------------|----|------------|--------|-------|------------|------------|----------|----------|
| TYPE              | HD | HT         | L      | T     | Toe        | Heel       | Bar 'a'  | Bar 'b'  |
| D4.1              | -  | 4'-0" max. | 4'-6"  | 1'-0" | 1'-9"      | 1'-9"      | #7 @ 6"  | #4 @ 12" |
| *D4.1b            | -  | 4'-0" max. | 5'-6"  | 1'-0" | -          | 4'-6"      | #7 @ 6"  | #4 @ 12" |
| D4.2              | -  | 4'-0" max. | 5'-6"  | 1'-0" | 2'-3"      | 2'-3"      | #5 @ 6"  | #4 @ 12" |
| D4.3              | -  | 4'-0" max. | 7'-0"  | 1'-0" | 3'-0"      | 3'-0"      | #7 @ 6"  | #4 @ 12" |
| D4.4              | -  | 4'-0" max. | 9'-6"  | 1'-0" | 4'-3"      | 4'-3"      | #6 @ 12" | #4 @ 12" |
| D4.5              | -  | 4'-0" max. | 10'-0" | 1'-6" | 4'-6"      | 4'-6"      | #5 @ 6"  | #4 @ 12" |
| D6.1              | -  | 6'-0" max. | 7'-0"  | 1'-0" | 3'-0"      | 3'-0"      | #5 @ 6"  | #4 @ 12" |
| D6.2              | -  | 6'-0" max. | 8'-3"  | 1'-0" | 3'-7 1/2"  | 3'-7 1/2"  | #5 @ 6"  | #4 @ 12" |
| D6.3              | -  | 6'-0" max. | 8'-9"  | 1'-0" | 3'-10 1/2" | 3'-10 1/2" | #7 @ 6"  | #4 @ 12" |
| D6.4              | -  | 6'-0" max. | 10'-3" | 1'-6" | 5'-1 1/2"  | 5'-1 1/2"  | #6 @ 12" | #4 @ 12" |

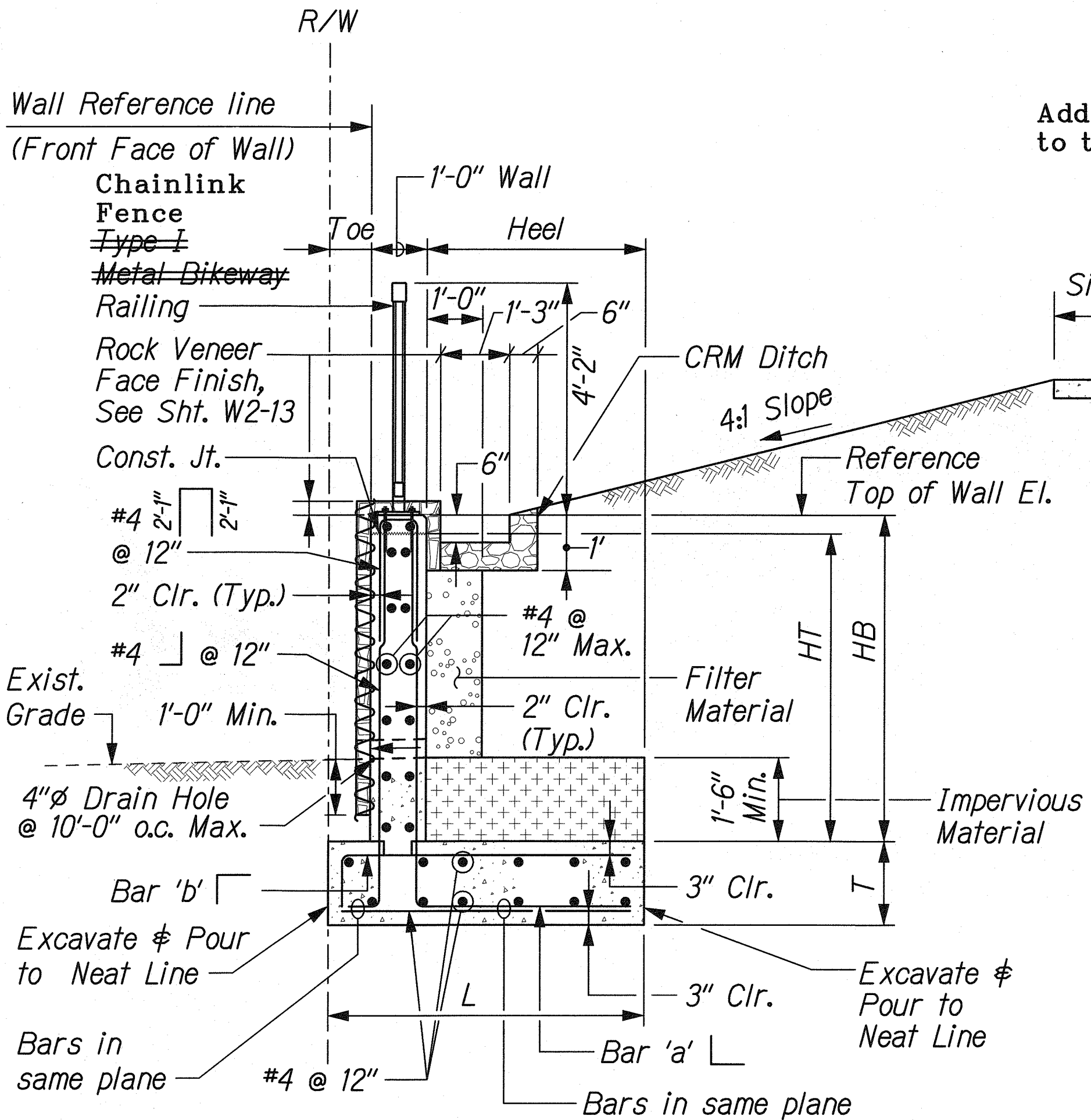
\* NOTE: See Sheet W2-14 for Detail.

### NOTES:

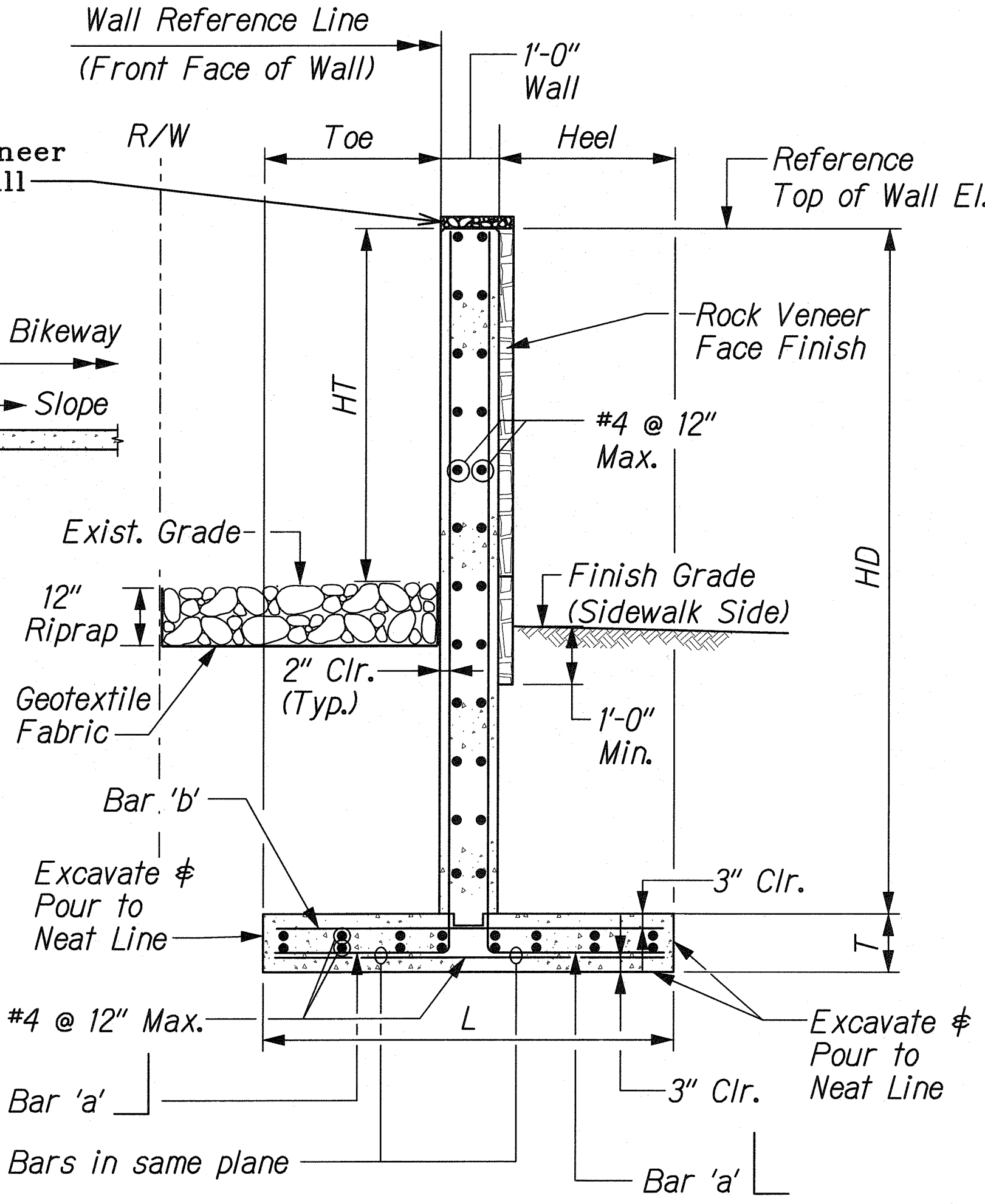
- All concrete shall have 28-day compressive strength ( $f_c'$ ) of 4,000 psi.
- All rebar shall be ASTM A615 Gr. 60.
- For Base Plate and Anchor Bolt details, see Sht. W2-13.
- Provide Splash grout (wet grout) immediately prior to installation of railing system.
- All ~~railing posts and picket railings~~ are plumb. Adjust ~~top railing, bottom railing and base plate~~ to fit slope of wall.
- AmerDrain 500XL may be used in lieu of 1'-0" thick filter material behind retaining walls not exceeding 8-ft in height.



**TYPE I METAL BIKEWAY RAILING 4'-0" HIGH**  
**TYPICAL SECTION CHAINLINK FENCE**  
 Scale: 1 1/2" = 1'-0"



**TYPE B WALL SECTION (TYPE B\_...)**  
**RETAINING WALL W2**  
 Scale: 1/2" = 1'-0"



**TYPE D WALL SECTION (TYPE D\_...)**  
**RETAINING WALL W1**  
 Scale: 1/2" = 1'-0"

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

L:\FORT WEAVER ROAD\STRUCT\ST-DET10.dgn

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.  
 SIGNATURE: *Hui Pang Chen* EXPIRATION DATE: 04/30/10

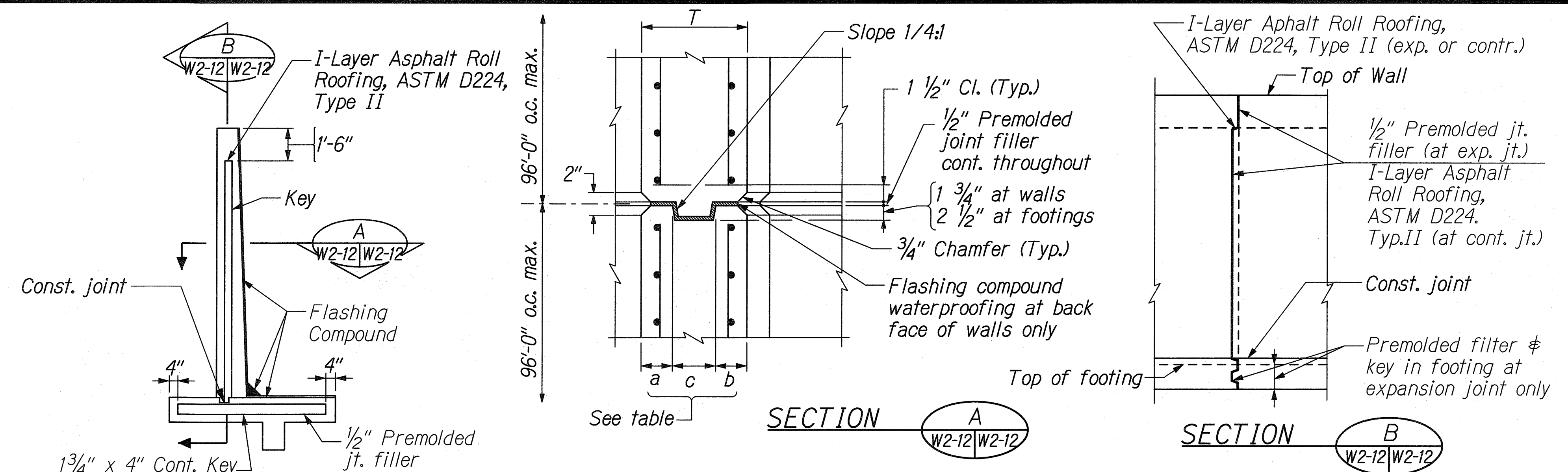
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**RETAINING WALLS**  
**MISCELLANEOUS DETAILS - 2**

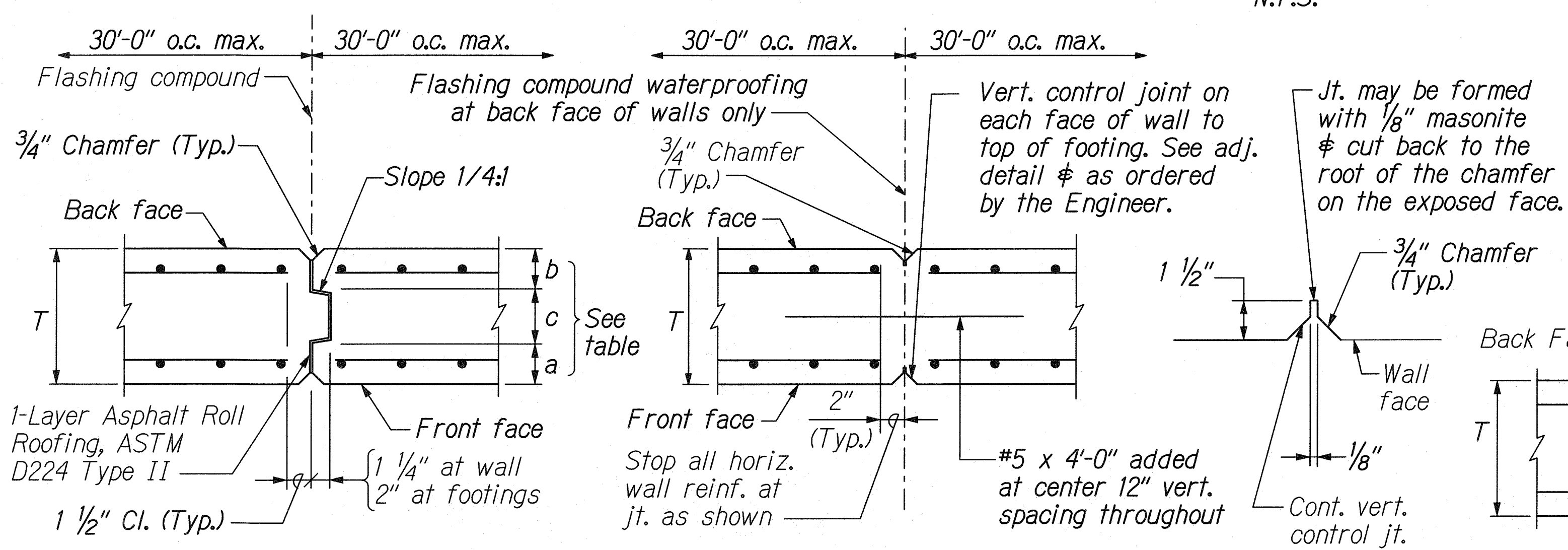
FORT WEAVER ROAD WIDENING  
 VICINITY OF AAWA DRIVE TO GEIGER ROAD

Scale: As Shown Date: Feb. 22, 2008





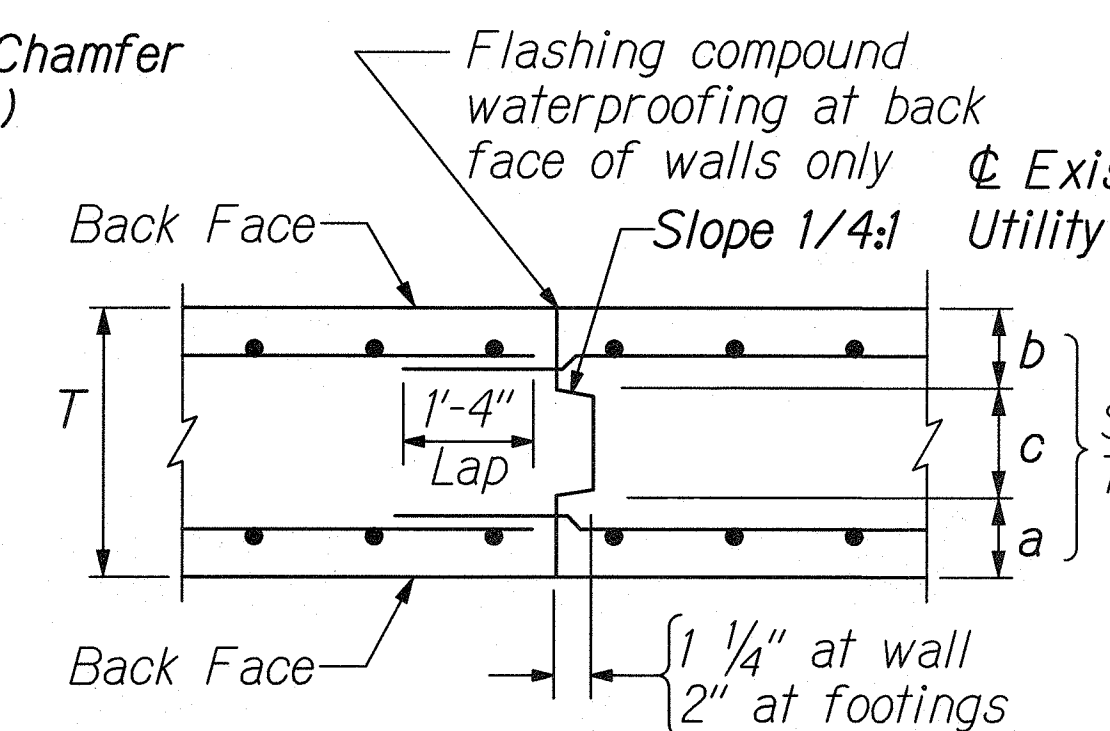
**TYPICAL EXPANSION JOINT DETAILS FOR REINF. CONC. STRUCTURE**  
 N.T.S.



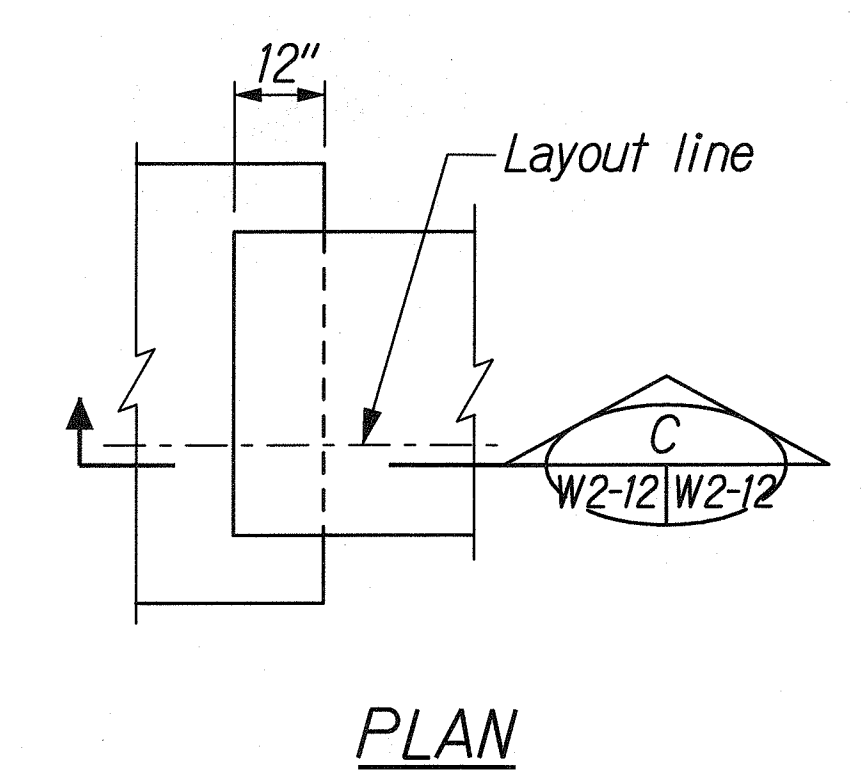
**TYPICAL JOINT DETAILS FOR REINF. CONC. STRUCTURE**  
 N.T.S.

**TABLE OF JOINT DIMENSIONS**

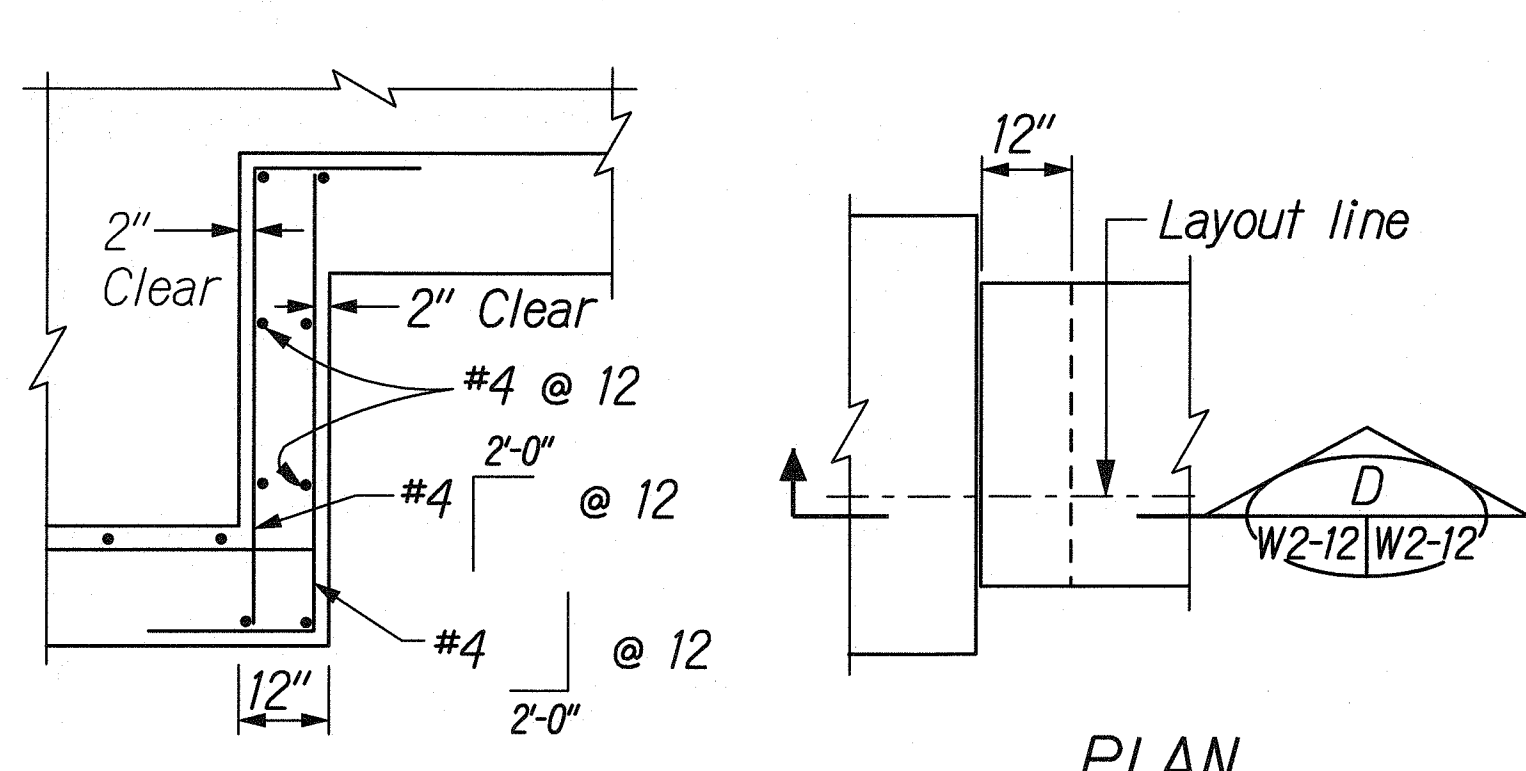
|            | a   | b   | c   |
|------------|-----|-----|-----|
| @ WALLS    | T/3 | T/3 | T/3 |
| @ FOOTINGS | T/3 | T/3 | T/3 |



**AT CONSTRUCTION JOINT**

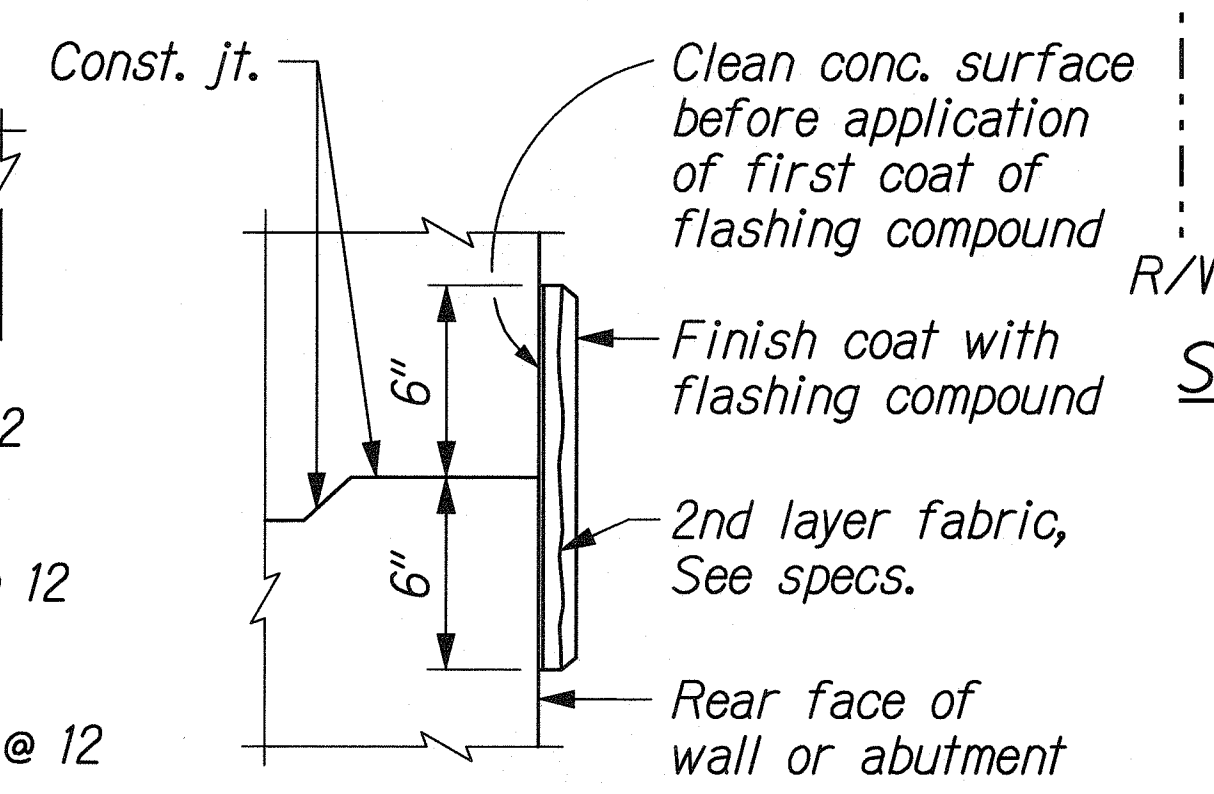


**AT CONTINUOUS FOOTING OR AT CONTROL JOINT**

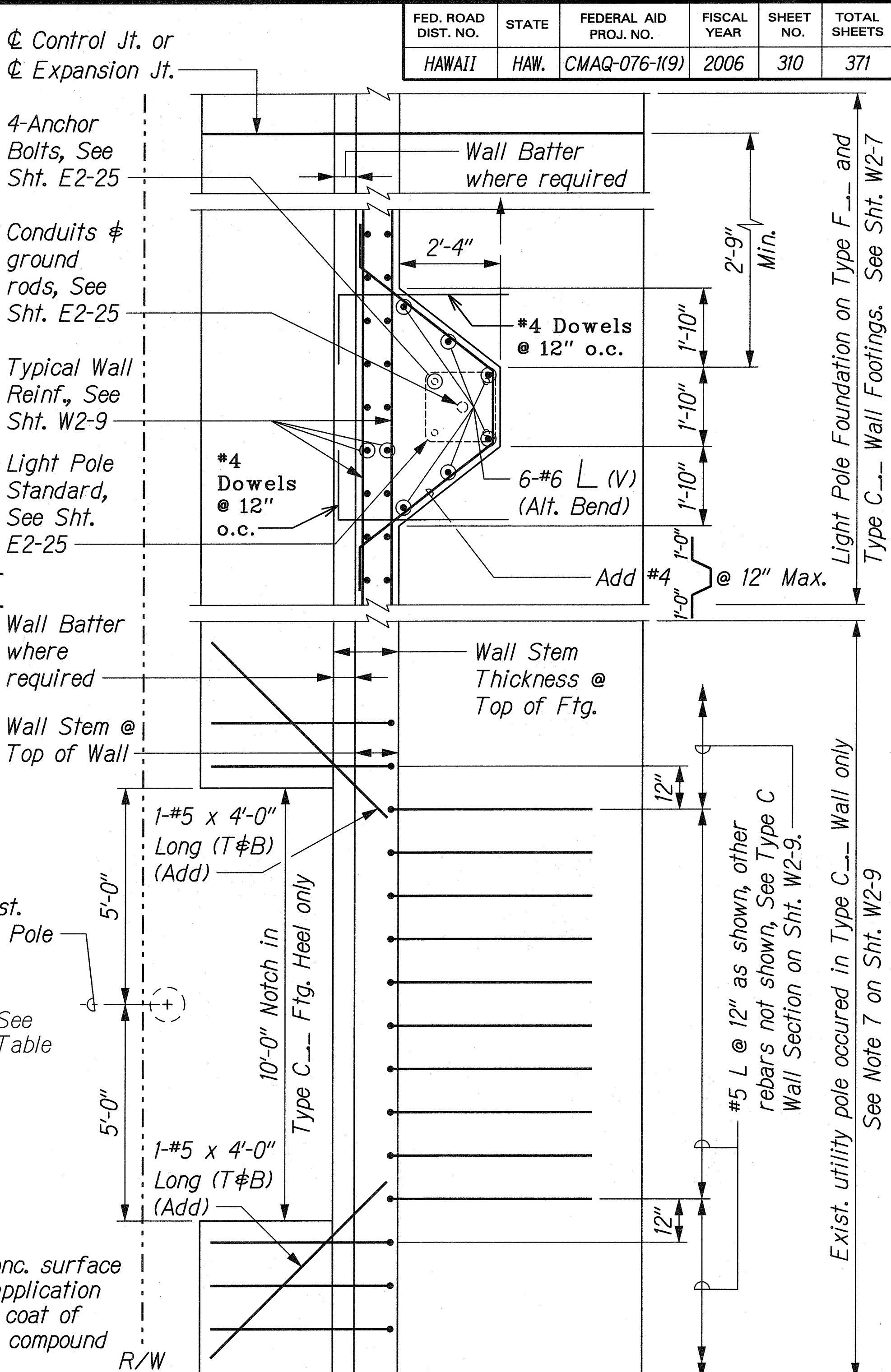


**AT EXPANSION JOINT**

**TYPICAL FOOTING STEP-UP DETAILS**  
 N.T.S.



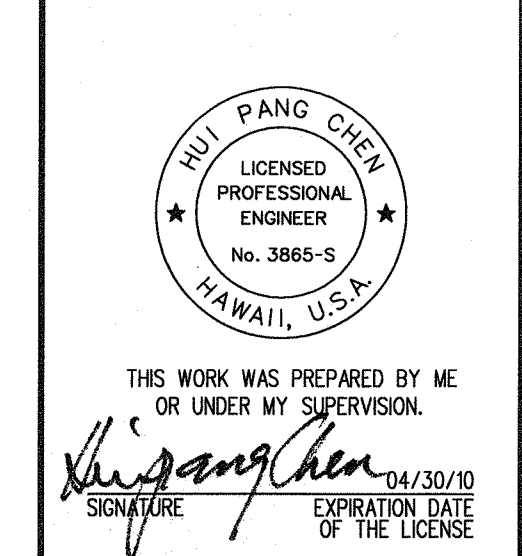
**TYPICAL FLASHING COMPOUND WATERPROOFING DETAIL**



**SECTION A**  
 W2-7|W2-12  
 N.T.S.  
 W2-9

**LEGEND FOR AS-BUILT POSTINGS**

|       |                                     |
|-------|-------------------------------------|
| ~~~~~ | Squiggly line for as-built deletion |
| ==    | Double line for as-built deletion   |
| ----  | Text for as-built posting           |



STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**RETAINING WALLS**  
**MISCELLANEOUS DETAILS-4**  
 FORT WEAVER ROAD WIDENING  
 VICINITY OF AWA DRIVE TO GEIGER ROAD  
 Scale: As Shown Date: Feb. 22, 2008  
 SHEET No. W2-12 OF 14 SHEETS

DATE  
 DRAWN BY  
 DESIGNED BY  
 NOTE BOOK  
 CHECKED BY  
 SURVEY PLOTTED BY  
 ORIGINAL PLAN  
 1/4" FORT WEAVER/STRUCT/RW-DET3.dgn

| FED. ROAD DIST. NO. | STATE | FEDERAL AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | CMAQ-076-1(9)         | 2006        | 311       | 371          |

# NOTE "A"

Provide Vent holes for galvanization as required for TS members at Top & Bottom railings, Picket railings and posts.

Table C - Metal Bikeway Railing Pattern Designations \*

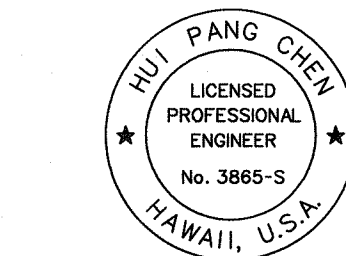
| Pattern # | Wall Length Between Joints | Panel Arrangement |               |
|-----------|----------------------------|-------------------|---------------|
|           |                            | Type I**          | Type II**     |
| 1         | 30'-0"                     | 4 - Panel (A)     | 4 - Panel (A) |
| 2         | 25'-0"                     | 4 - Panel (G)     | 4 - Panel (G) |
| 3         | 24'-0"                     | -----             | 4 - Panel (H) |
| 4         | 23'-0"                     | -----             | 4 - Panel (I) |
| 5         | 22'-0"                     | -----             | 3 - Panel (B) |
| 6         | 21'-4"                     | -----             | 4 - Panel (K) |
| 7         | 20'-0"                     | -----             | 3 - Panel (D) |
| 8         | 11'-6 7/8"                 | -----             | 3 - Panel (N) |
| 9         | 17'-0"                     | -----             | 3 - Panel (J) |
| 10        | 15'-0"                     | -----             | 2 - Panel (A) |
| 11        | 13'-10"                    | 2 - Panel (E) (D) | -----         |
| 12        | 13'-0"                     | -----             | 2 - Panel (F) |
| 13        | 26'-8 7/8"                 | -----             | 4 - Panel (M) |
| 14        | 26'-0"                     | -----             | 4 - Panel (F) |
| 15        | 21'-6"                     | -----             | 3 - Panel (L) |
| 16        | 16'-6"                     | -----             | 3 - Panel (I) |
| 17        | 22'-10 1/4"                | -----             | 4 - Panel (P) |
| 18        | 24'-8 3/4"                 | -----             | 4 - Panel (Q) |
| 19        | 4'-8 3/4"                  | -----             | 1 - Panel (R) |
| 20        | 21'-11"                    | 4 - Panel (S)     | 4 - Panel (S) |
| 21        | 7'-1"                      | 1 - Panel (T)     | 1 - Panel (T) |

\* For each Wall Length Between Joints, Pattern #, and Type of Metal Bike Railing see Elevations on sheets W2-3 through W2-6.

\*\* See Table A and Table B this sheet for Panel Arrangements and Dimensions.

## LEGEND FOR AS-BUILT POSTINGS

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



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SIGNATURE: *Hui Pang Chen* EXPIRATION DATE: 04/30/10 OF THE LICENSE

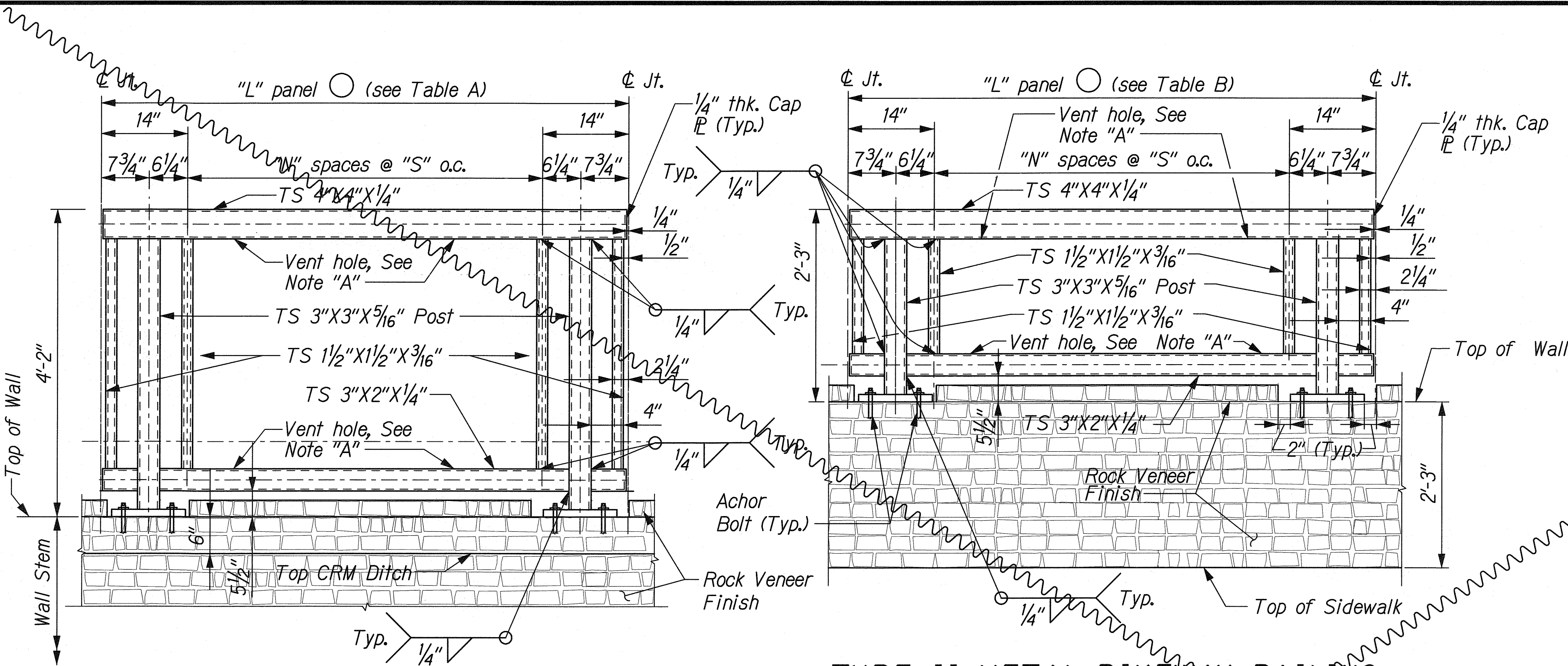
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

## RETAINING WALL MISCELLANEOUS DETAILS-5

FORT WEAVER ROAD WIDENING  
VICINITY OF AWA DRIVE TO GEIGER ROAD

Scale: As Noted Date: Feb. 22, 2008

SHEET No. W2-13 OF 10 SHEETS

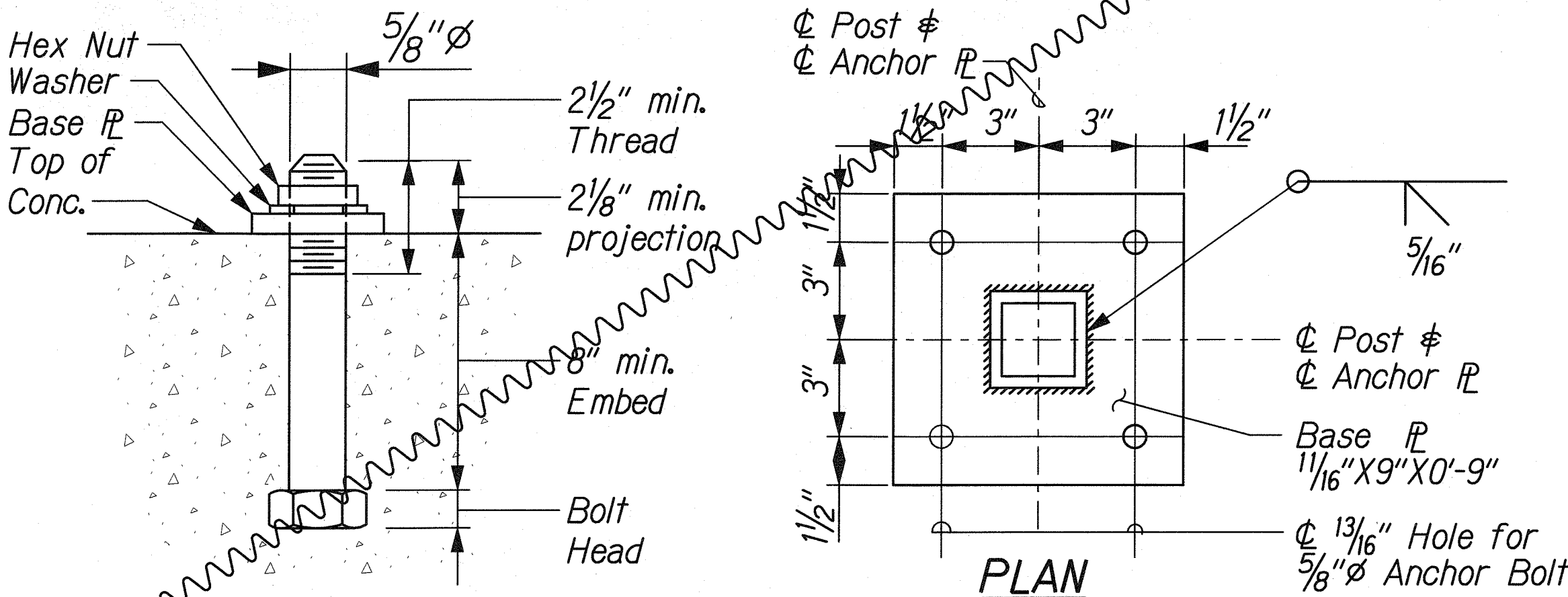


TYPE I METAL BIKEWAY RAILING  
PANEL ARRANGEMENT  
Scale: 1"=1'-0"

| Panel | Panel Length "L" | "N" Spaces | Spacing "S" |
|-------|------------------|------------|-------------|
| (A)   | 7'-6"            | 12         | 5 5/32"±    |
| (B)   | 7'-4"            | 11         | 5 15/32"±   |
| (C)   | 6'-11"           | 11         | 5"          |
| (G)   | 6'-3"            | 9          | 5 1/32"±    |
| (S)   | 5'-5 3/4"        | 7          | 5 13/32"±   |
| (T)   | 7'-1"            | 11         | 5 3/16"±    |
| (D)   | 6'-8"            | 10         | 5 7/32"±    |

TYPE II METAL BIKEWAY RAILING  
PANEL ARRANGEMENT  
Scale: 1"=1'-0"

| Panel | Panel Length "L" | "N" Spaces | Spacing "S" |
|-------|------------------|------------|-------------|
| (A)   | 7'-6"            | 12         | 5 5/32"±    |
| (B)   | 7'-4"            | 11         | 5 15/32"±   |
| (C)   | 6'-11"           | 11         | 5"          |
| (D)   | 6'-8"            | 10         | 5 7/32"±    |
| (E)   | 6'-7 11/32"      | 10         | 5 1/8"±     |
| (F)   | 6'-6"            | 9          | 5 9/16"±    |
| (G)   | 6'-3"            | 9          | 5 7/32"±    |
| (H)   | 6'-0"            | 8          | 5 1/2"±     |
| (I)   | 5'-9"            | 8          | 5 1/8"      |
| (J)   | 5'-8"            | 8          | 5"          |
| (K)   | 5'-4"            | 7          | 5 5/32"±    |
| (L)   | 7'-2"            | 11         | 5 9/32"±    |
| (M)   | 6'-8 7/32"       | 10         | 5 7/32"±    |
| (N)   | 5'-9 7/16"       | 8          | 5 3/16"±    |
| (P)   | 5'-8 9/16"       | 8          | 5 5/64"±    |
| (Q)   | 6'-2 3/16"       | 9          | 5 1/8"±     |
| (R)   | 4'-8 3/4"        | 6          | 4 25/32"±   |



ANCHOR BOLT DETAIL  
Scale: 3" = 1'-0"

BASE PLATE DETAIL  
Scale: 3" = 1'-0"

|               |       |
|---------------|-------|
| DATE          | _____ |
| DESIGNED BY   | _____ |
| CHECKED BY    | _____ |
| QUANTITIES BY | _____ |
| NOTE BOOK     | _____ |
| ORIGINAL PLAN | _____ |

L:\FORT WEAVER ROAD\STRUCT\ST-DET04A.dgn

