

STRUCTURAL GENERAL NOTES

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(60)	2007	52	90

1. General Specifications: Hawaii Department of Transportation, Standard Specifications for Road and Bridge Construction, 2005, together with Special Provisions prepared for this contract.

2. Design Specifications:

(A) AASHTO 2004 LRFD Bridge Design Specifications (Third Edition) and its subsequent interim specifications with interim supplements and modifications by the Highways Division, Department of Transportation, State of Hawaii.

(B) AASHTO 2001 Standard specifications for structural supports for Highway Signs, Luminaries and Traffic Signals (Fourth Edition) and its subsequent interim specifications with interim supplements and modifications by the Highways Division, Department of Transportation, State of Hawaii.

3. Loads:

(A) Wind Load: 105 mph. Value is a 3 second gust speed at 32.8 ft above ground for Exposure C category and is associated with an annual probability of 0.02 (50 year mean recurrence interval).

(B) Recurrence Interval of 50 Years.

(C) Fatigue importance factor, IF, Shall be based on fatigue Category I for traffic signal structures.

(D) Vortex shedding induced loads shall be considered for cantilevered mast arms and pole shafts that do not have tapers or have tapers of less than 0.14 in/ft.

(E) Traffic signal support structures shall be designed for a truck induced gust based on a truck speed of 20 MPH over the posted speed.

(F) Galloping and natural wind gust shall be considered for cantilever traffic signal structures.

4. Materials:

(A) All concrete strengths shall be as noted below:

Item No.	Structural Parts	Classes of Concrete	Specified Compressive Strength, f'c (28 Days)
(1)	Drilled shafts	-	4500 PSI
(2)	Channel Wall	-	4000 PSI
(3)	Except as noted otherwise, all others	A	3000 PSI

All concrete with a 28 days compressive strenght of 4000 psi or greater shall have a maximum W/C Ratio of 0.45. The W/C Ratio for other class of concrete shall follow the Standard Specifications.

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

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

(D) All anchor bolts, washers and nuts shall be hot dip galvanized after fabrication, unless otherwise specified.

5. Reinforcement:

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

- (1) Concrete cast against and permanently exposed to earth = 3"  
(2) All others unless otherwise noted = 2".

(B) Reinforcing bars shall be detailed in accordance with the latest edition of the design specification in note 2 unless otherwise noted.

5. Reinforcement Cont.:

(C) Minimum clear spacing between parallel bars shall be 1 1/2 times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate or 1 1/2".

(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.

6. Construction Notes:

(A) See Standard Specifications and Special Provisions.

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

(C) The Contractor shall verify all site conditions and not rely upon these plans for stream location, etc. Conditions may differ from those shown.

(D) The Contractor shall verify the location of all utility lines and notify the respective owners before commencing with excavation, and any temporary piling or sheeting.

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

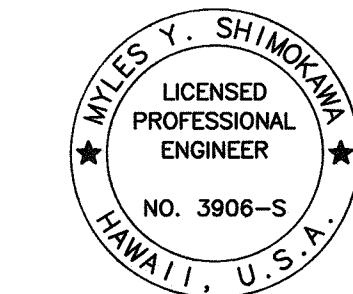
(F) Construction joints may be relocated or additional ones added subject to the approval of the Engineer.

(G) Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4"x3/4".

7. Foundation

See soils report by Geolabs, Inc. dated January 10, 2005.

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



SIGNATURE: *Miles Y. Shinokawa*  
APRIL 30, 2008

EXPIRATION DATE OF LICENSE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

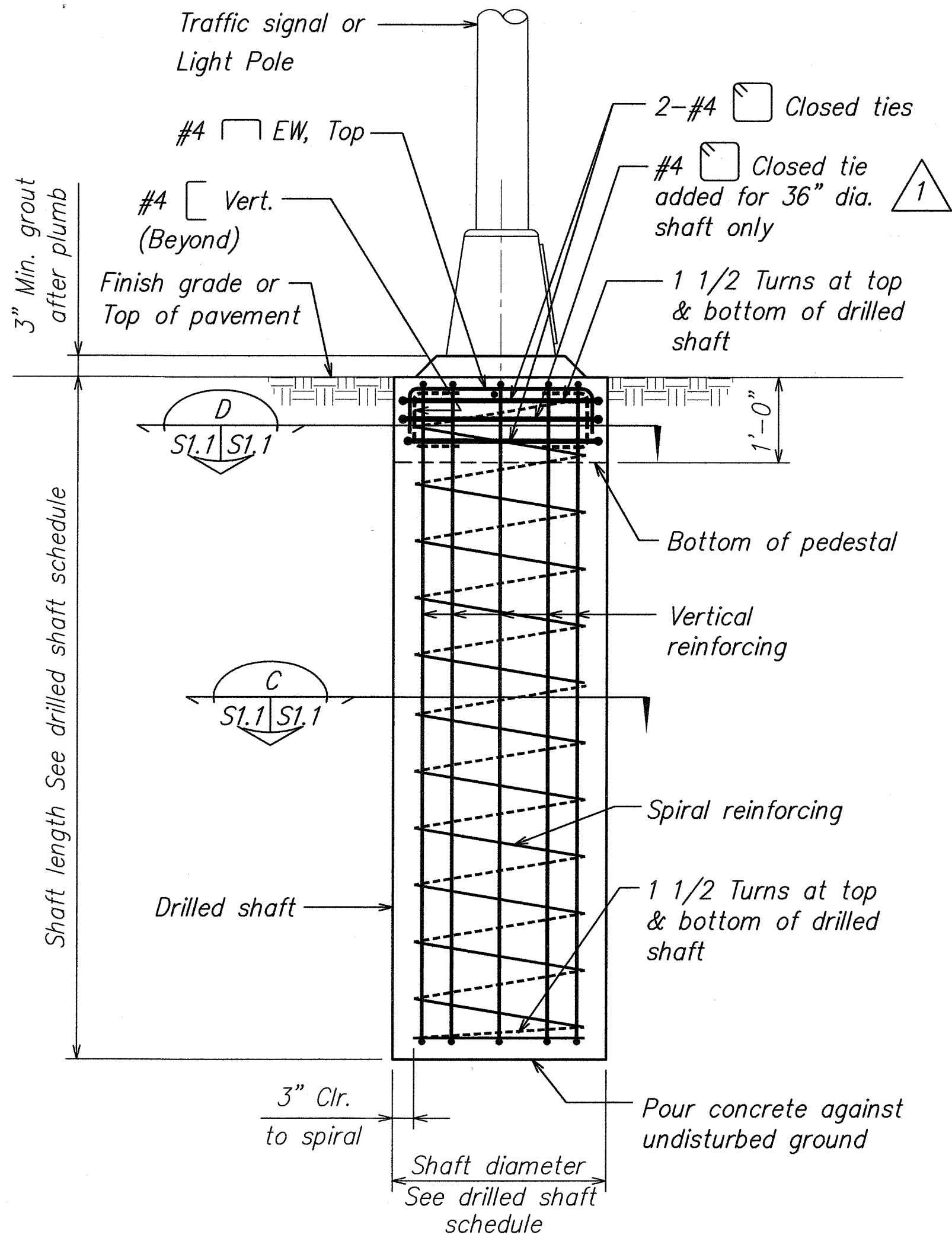
STRUCTURAL GENERAL NOTES

KAHEKILL HIGHWAY INTERSECTION IMPROVEMENTS  
VICINITY OF EAST HUI IWA STREET  
FEDERAL-AID PROJECT NO. NH-083-1(60)

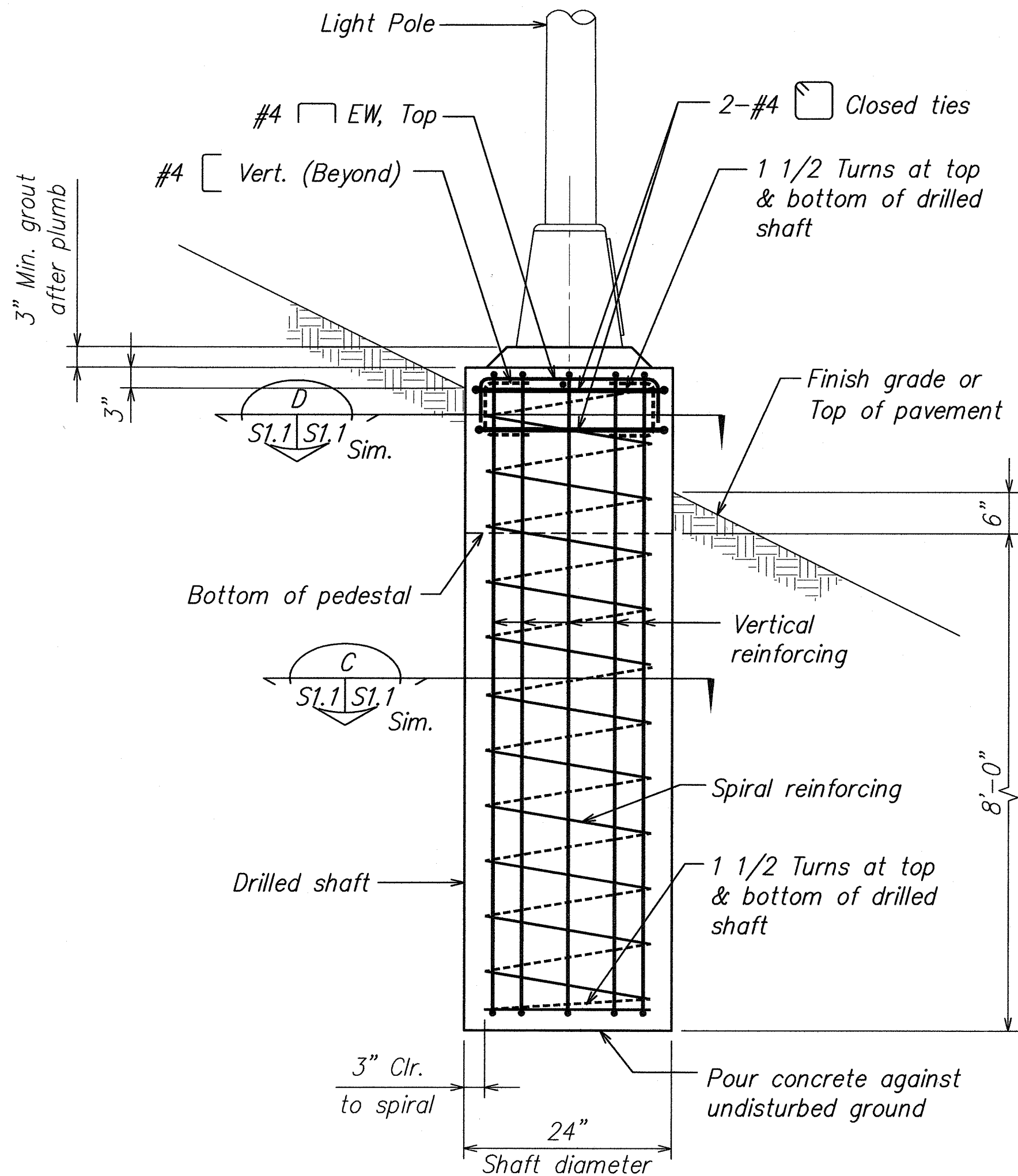
SCALE: None DATE: April 2007

SHEET No. S0.1 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(60)	2007	C.O. 53	90

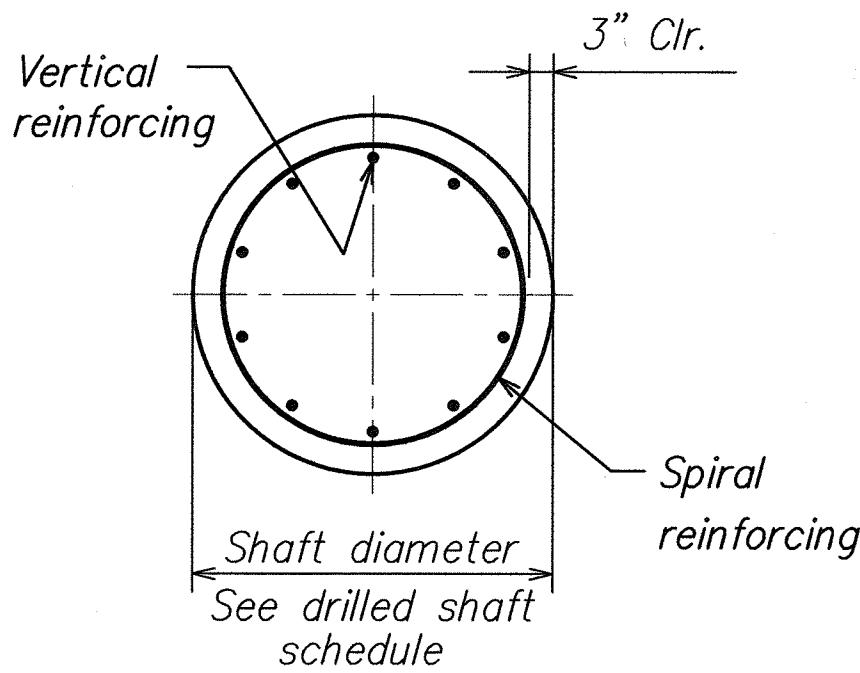


TYPICAL POLE FOUNDATION A  
SCALE: 3/4" = 1'-0" S1.1 S1.1

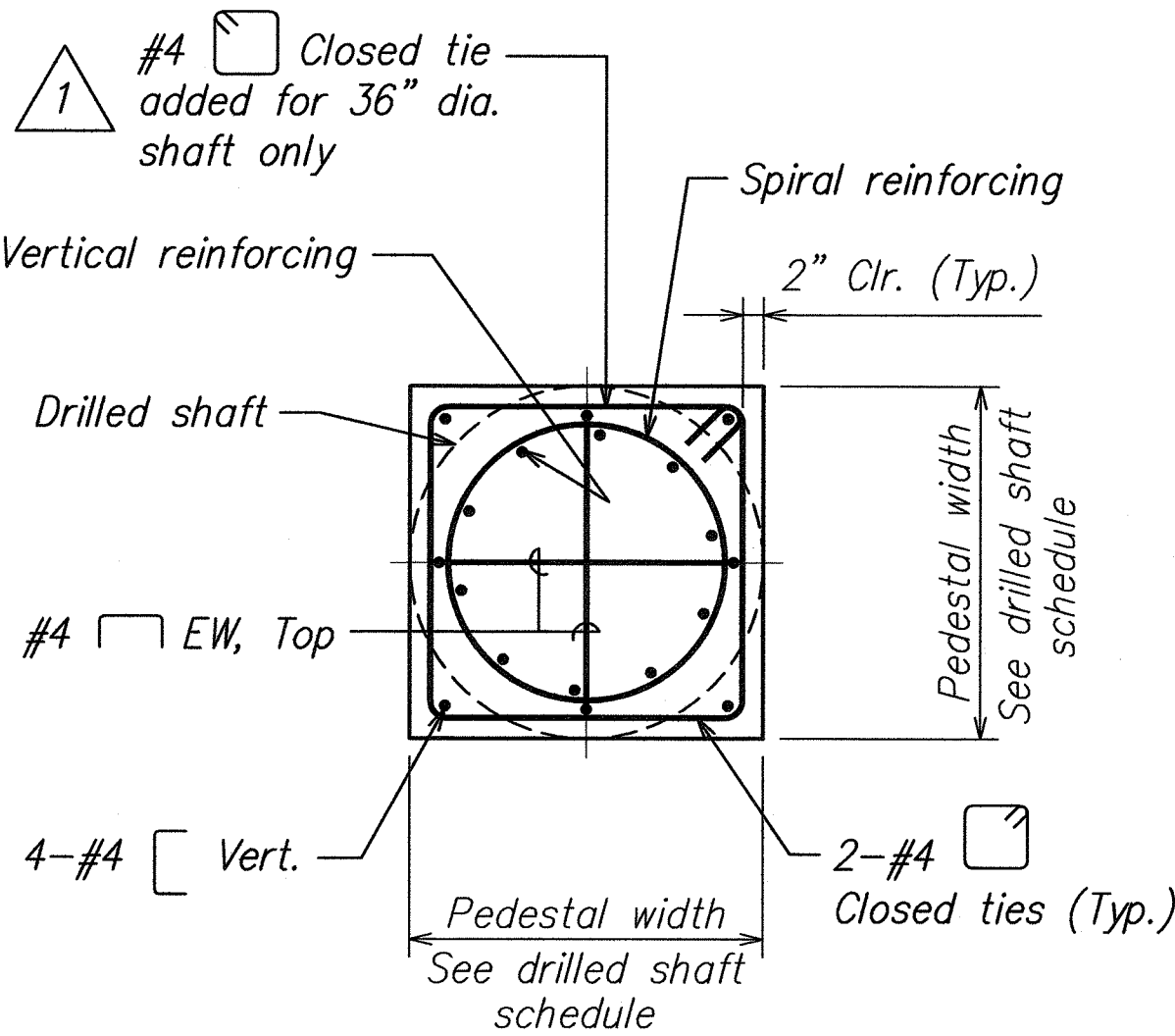


LIGHT POLE FOUNDATION AT STA. 138+36 B  
SCALE: 3/4" = 1'-0" S1.1 S1.1

Note:  
The portion of shaft and pedestal above ground will not be paid for separately and shall be considered incidental to the 8'-0" shaft embedded in the ground.



SECTION C  
SCALE: 3/4" = 1'-0" S1.1 S1.1



SECTION D  
SCALE: 3/4" = 1'-0" S1.1 S1.1

Drilled Shaft Schedule					
	Shaft diameter inch	Shaft Length feet	Pedestal Width inch	Vertical reinforcing	Spiral reinforcing
Light Pole 1	24	6	24	10-#6	#4 @ 8"
Traffic Signal Pole I	24	5	24	10-#6	#4 @ 8"
Traffic Signal Pole II with 30' arm	30	6	30	10-#8	#5 @ 8"
Traffic Signal Pole II with 35' arm	30	8	30	10-#8	#5 @ 8"
Traffic Signal Pole II with 40' arm	30	8	30	10-#8	#5 @ 8"
Traffic Signal Pole II with 50' arm	36	14	36	10-#9	#6 @ 8"

- Notes:
- See electrical drawings for additional details.
  - Traffic and light pole manufacturer's recommendations shall be followed.

ORIGINAL PLAN	DATE
DESIGNED BY	DATE
TRACED BY	DATE
NOTED BY	DATE
CHECKED BY	DATE
NO.	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
TYPICAL SIGNAL LIGHT  
POLE FOUNDATION  
KAHEKILI HIGHWAY INTERSECTION IMPROVEMENTS  
VICINITY OF EAST HUI IWA STREET  
FEDERAL-AID PROJECT NO. NH-083-1(60)  
SCALE: As Noted DATE: April 2007  
SHEET No. S1.1 OF 7 SHEETS

2/23/09	Added Signal Poles
DATE	REVISION

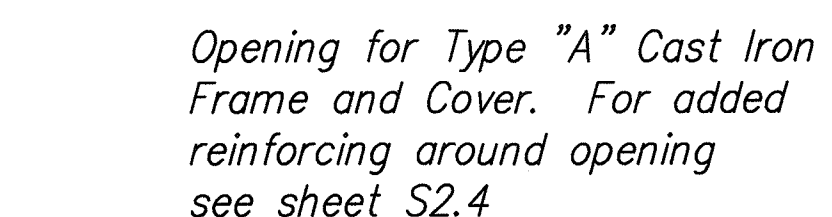




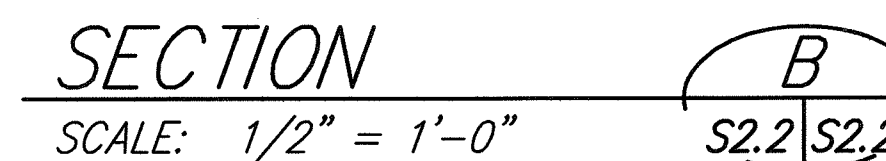
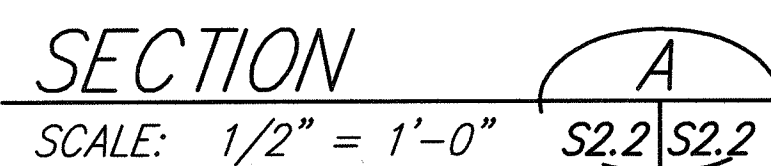
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

KAHEKILI HIGHWAY INTERSECTION IMPROVEMENTS  
VICINITY OF EAST HUI IWA STREET  
FEDERAL-AID PROJECT NO. NH-083-1(60)

**SHEET No. S2.2 OF 7 SHEETS**



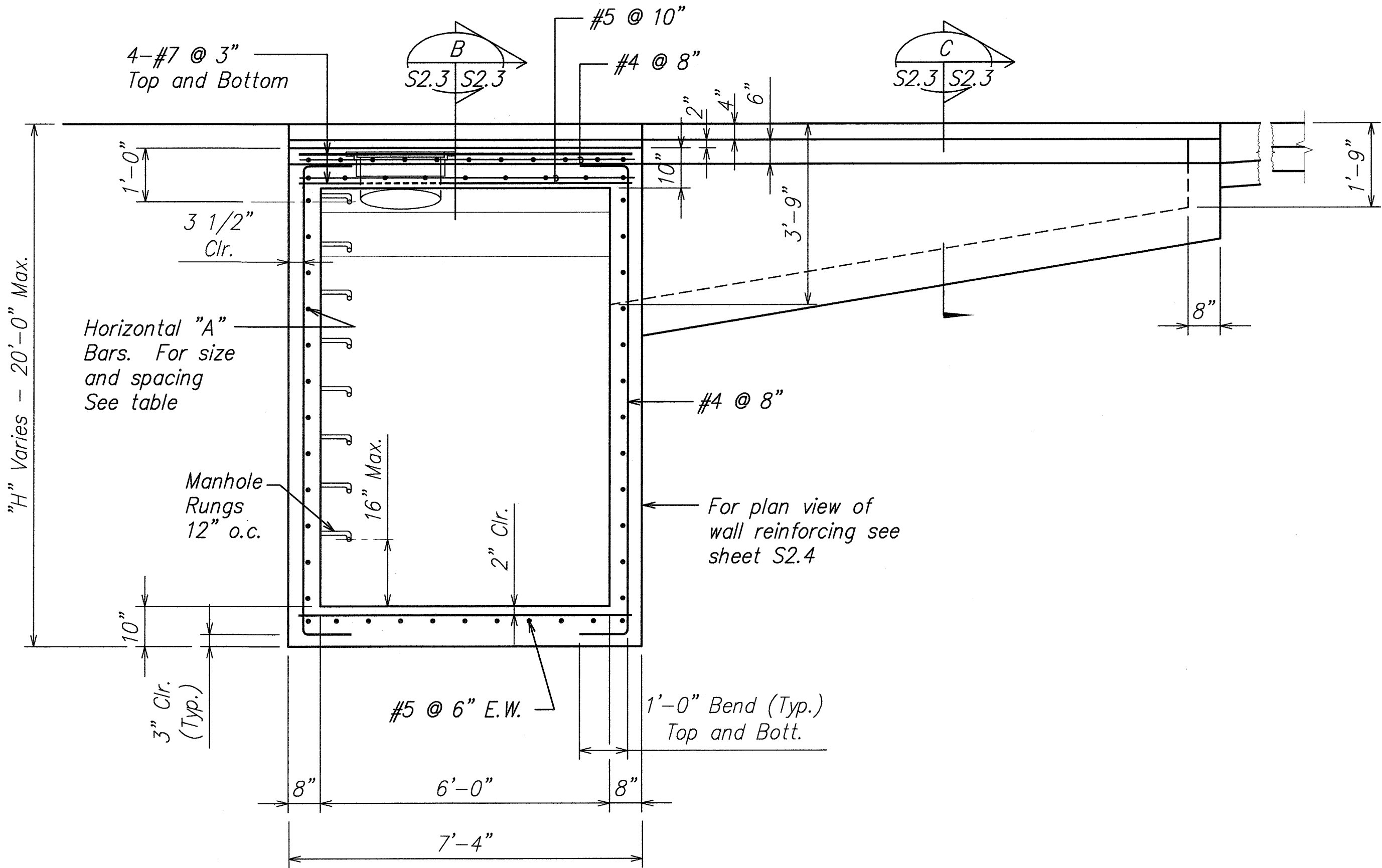
### REINFORCING BOTTOM LAYER



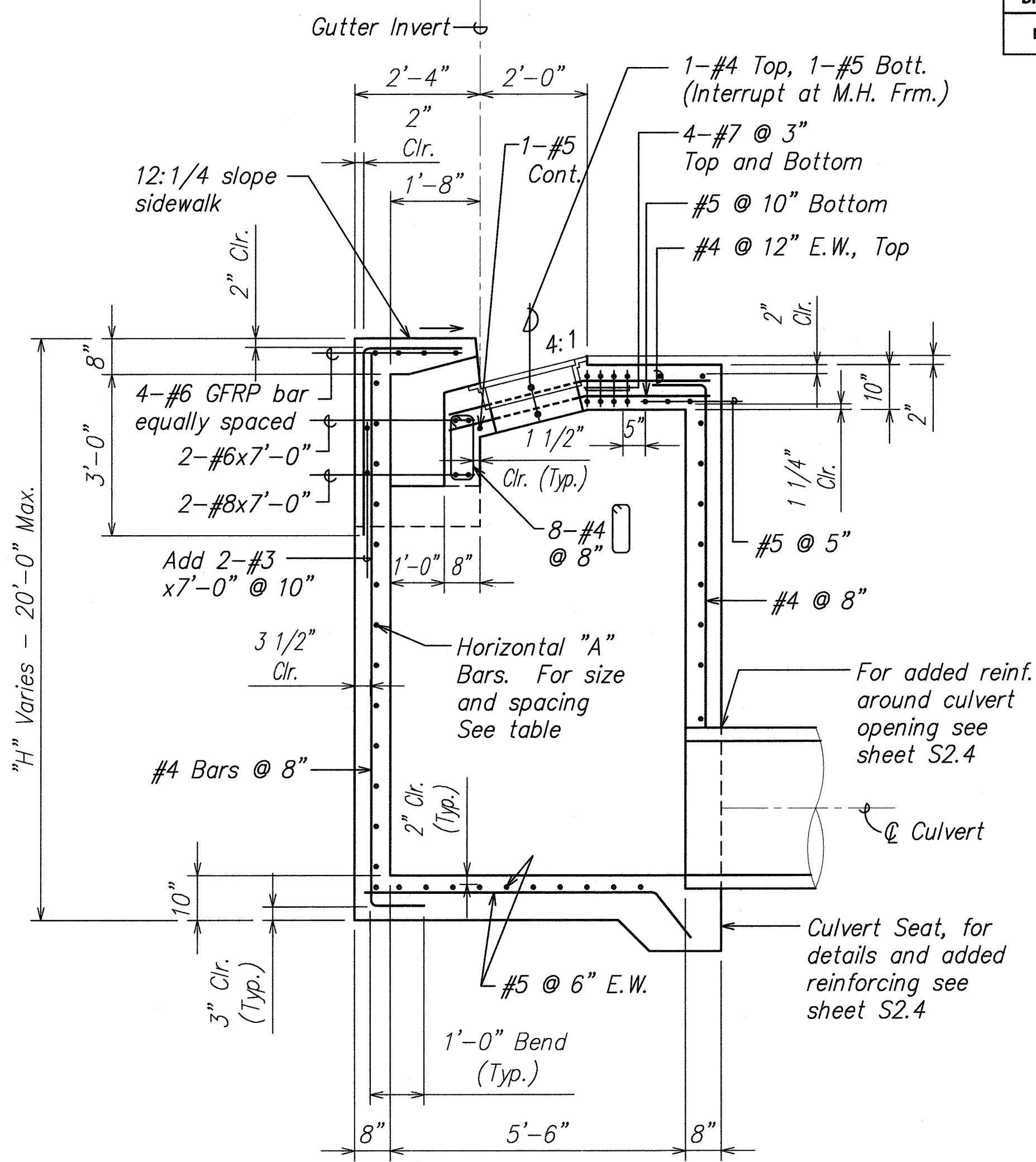
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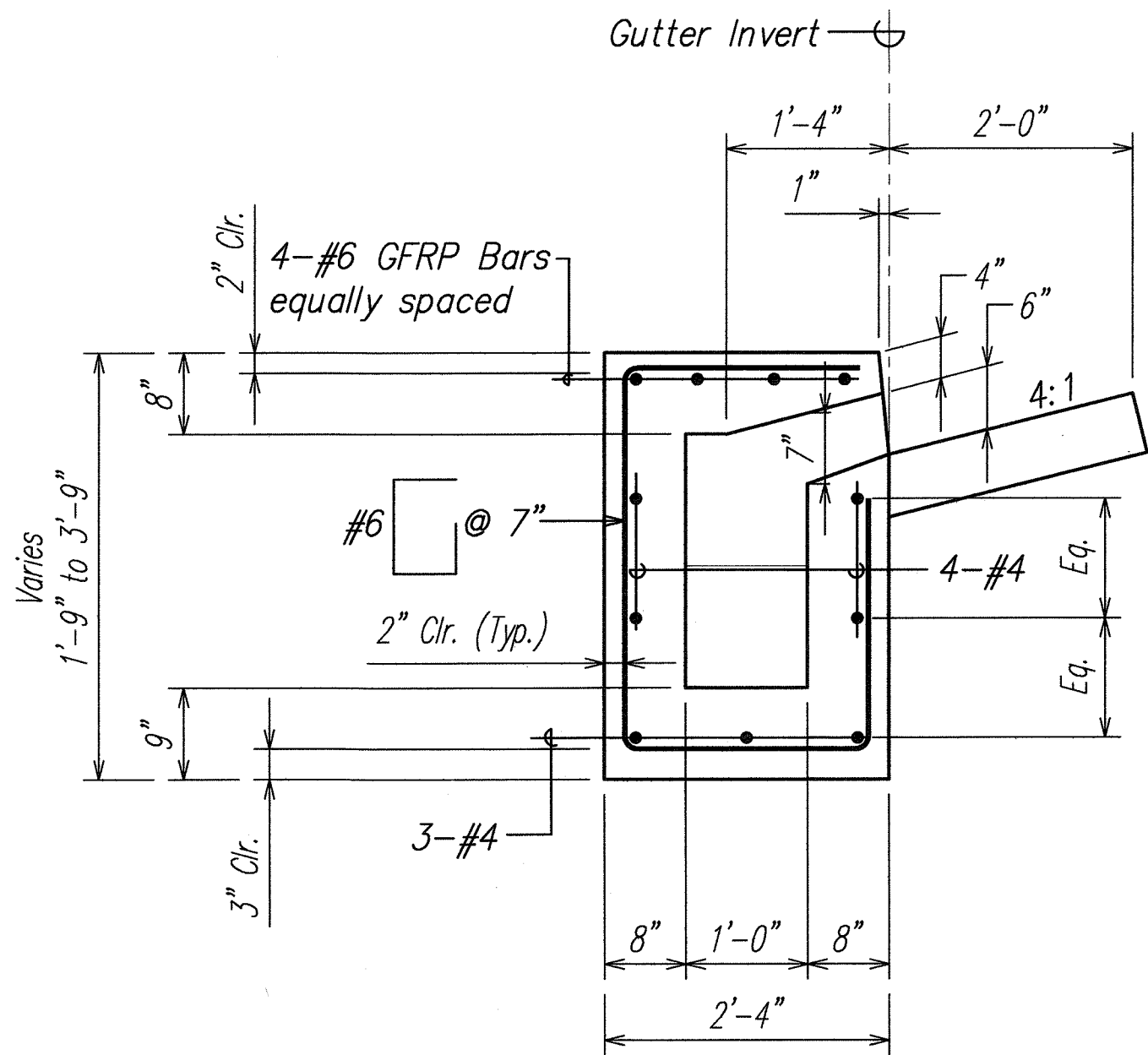
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UNDER MY SUPERVISION



SECTION A  
SCALE: 1/2" = 1'-0" S2.2 S2.3



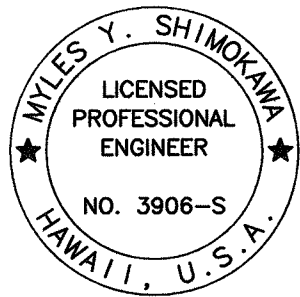
SECTION B  
SCALE: 1/2" = 1'-0" S2.3 S2.3



SECTION C  
SCALE: 3/4" = 1'-0" S2.3 S2.3

HORIZONTAL "A" BARS FOR CATCH BASINS						
DEPTH		"L" MAX.				
		4'-0"	6'-0"	7'-4"	8'-4"	9'-4"
H1	0" to 5'-0"	#5 @ 10"	#5 @ 10"	#5 @ 8"	#5 @ 6"	#5 @ 5"
H2	5'-1" to 10'-0"	#5 @ 8"	#5 @ 8"	#5 @ 6"	N.A.	N.A.
H3	10'-1" to 15'-0"	#5 @ 6"	#5 @ 6"	N.A.	N.A.	N.A.
H4	15'-1" to 20'-0"	#5 @ 6"	N.A.	N.A.	N.A.	N.A.

Note: N.A. = Not Applicable

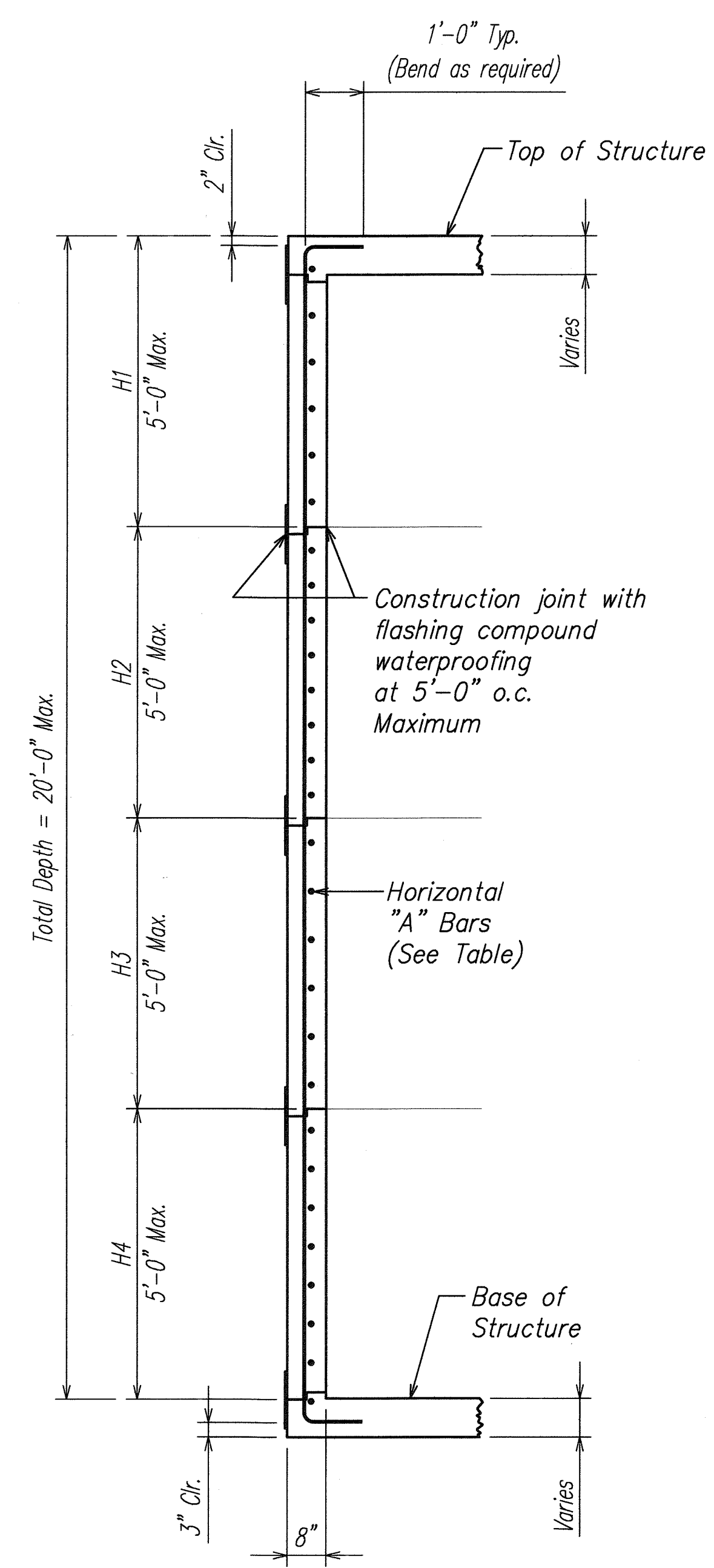


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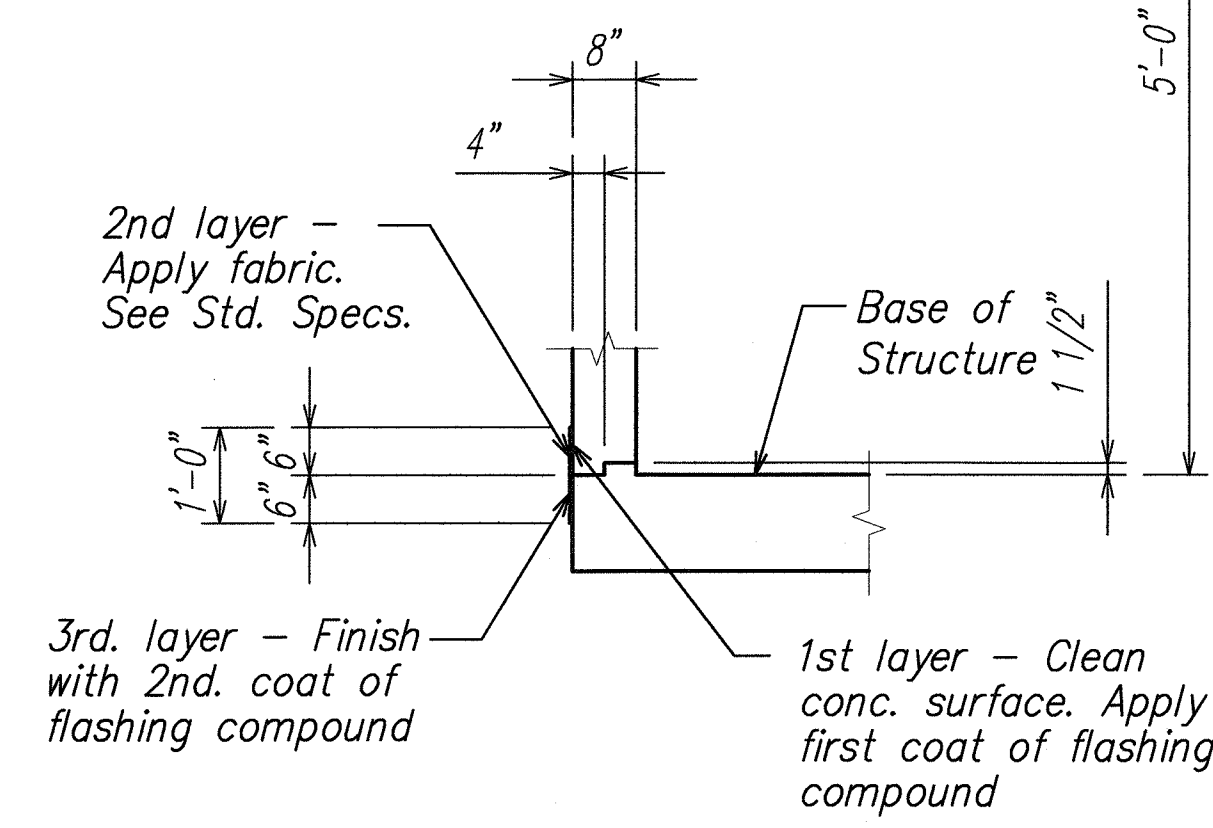
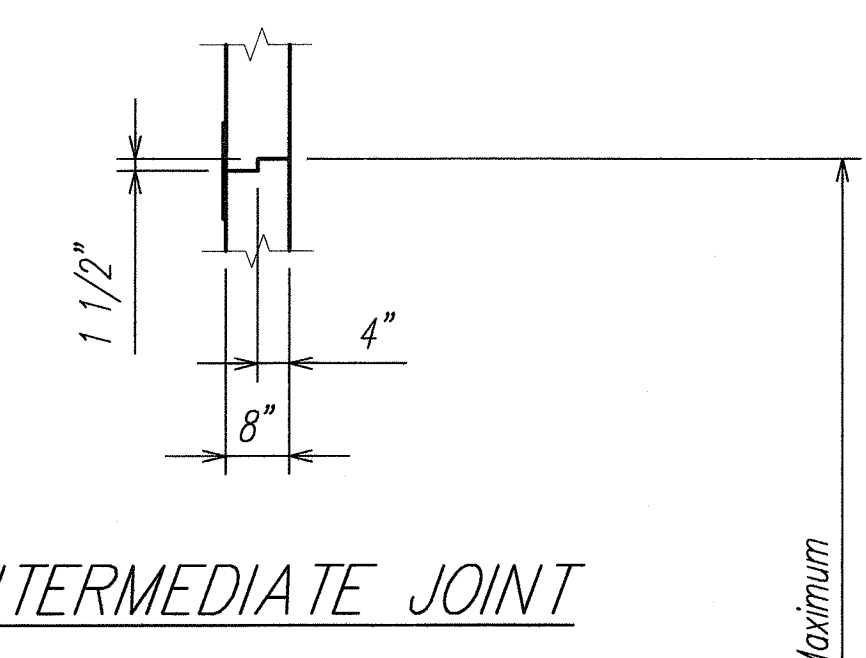
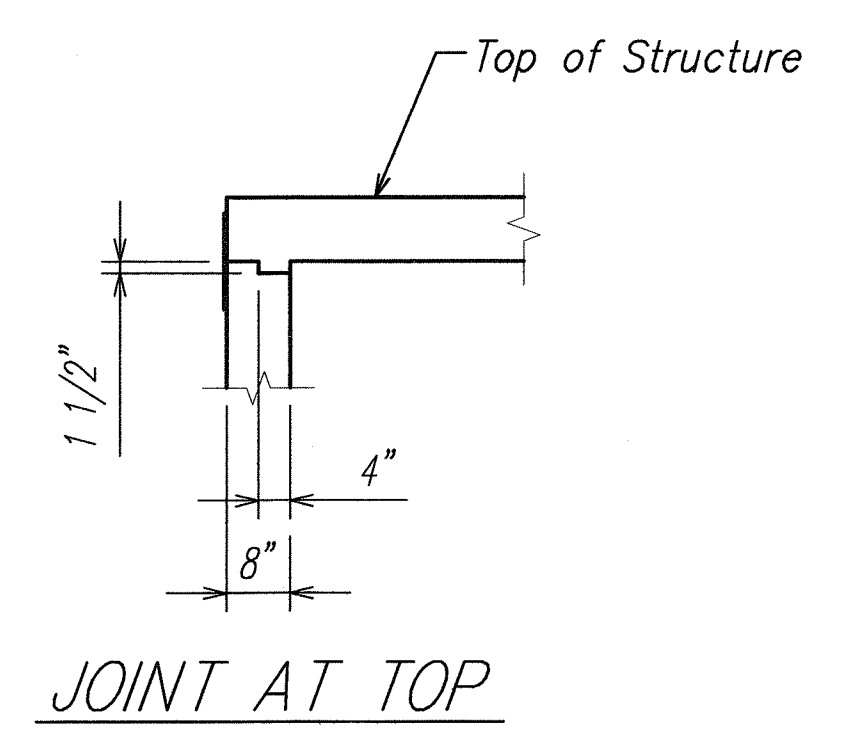
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
  
TYPE C1 CATCH BASIN  
  
KAHEKILL HIGHWAY INTERSECTION IMPROVEMENTS  
VICINITY OF EAST HUI IWA STREET  
FEDERAL-AID PROJECT NO. NH-083-1(60)  
  
SCALE: As Noted      DATE: April 2007  
  
SHEET No. S2.3 OF 7 SHEETS



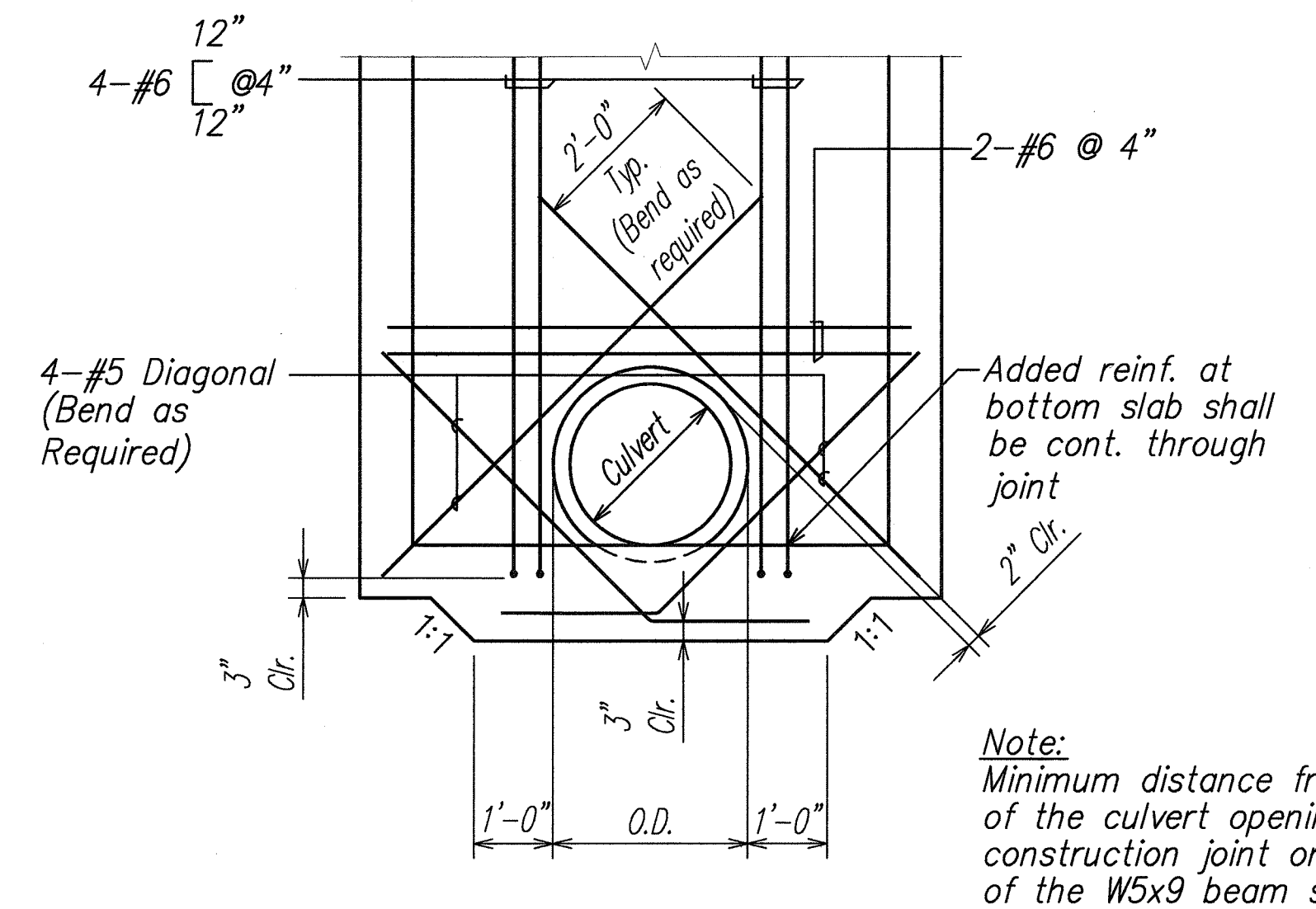
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(60)	2007	57	90



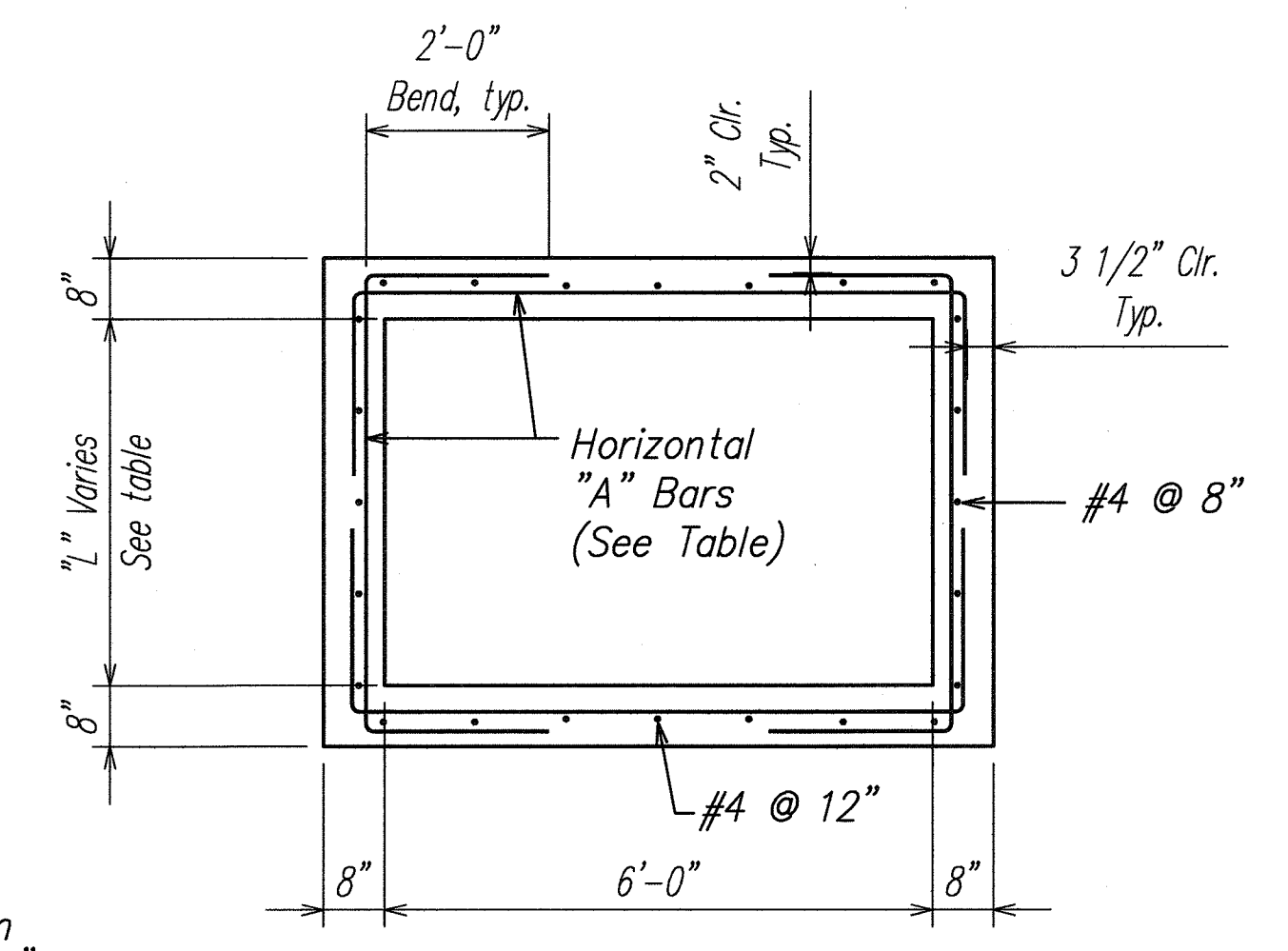
ELEVATION VIEW OF WALL SECTION  
SCALE: 1/2" = 1'-0"



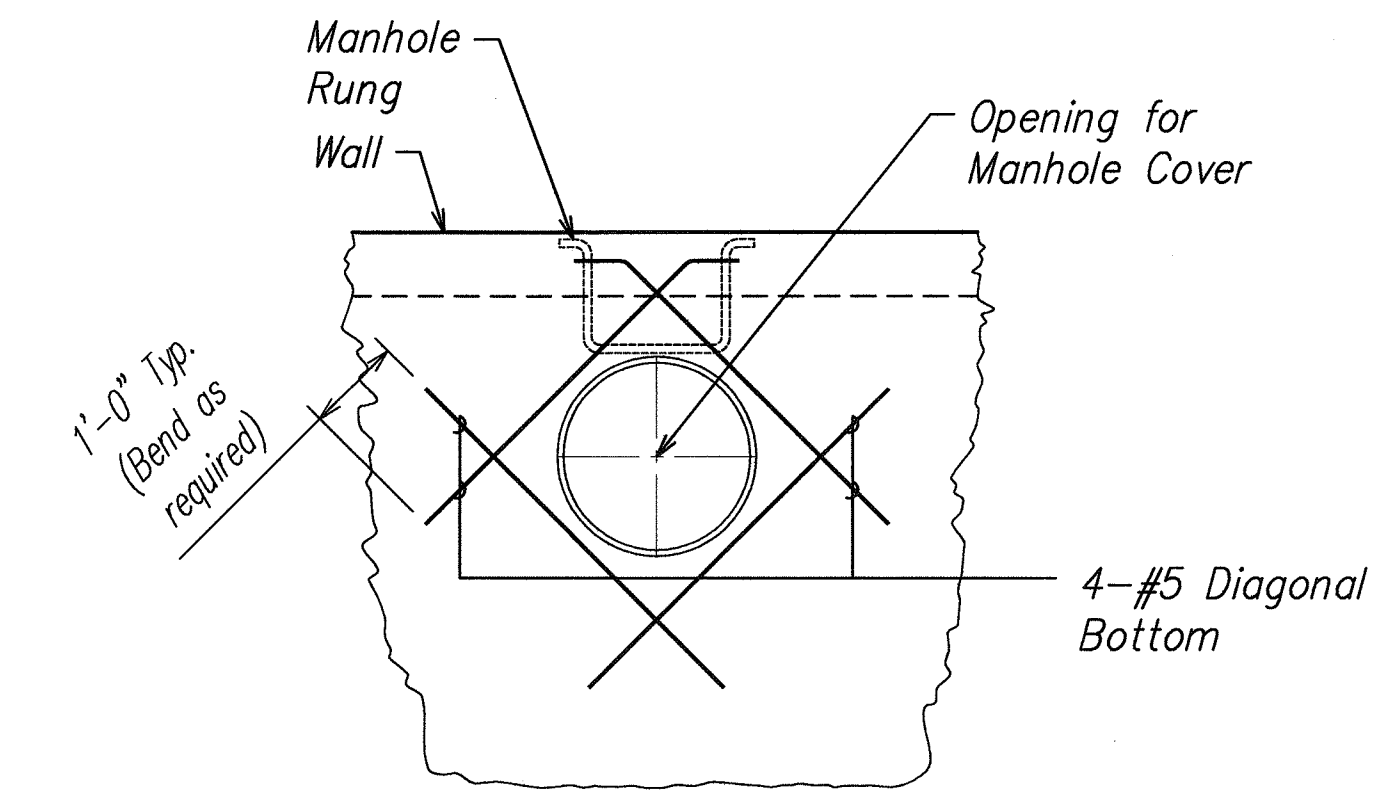
CONSTRUCTION JOINT AND WATERPROOFING DETAILS  
SCALE: 1/2" = 1'-0"



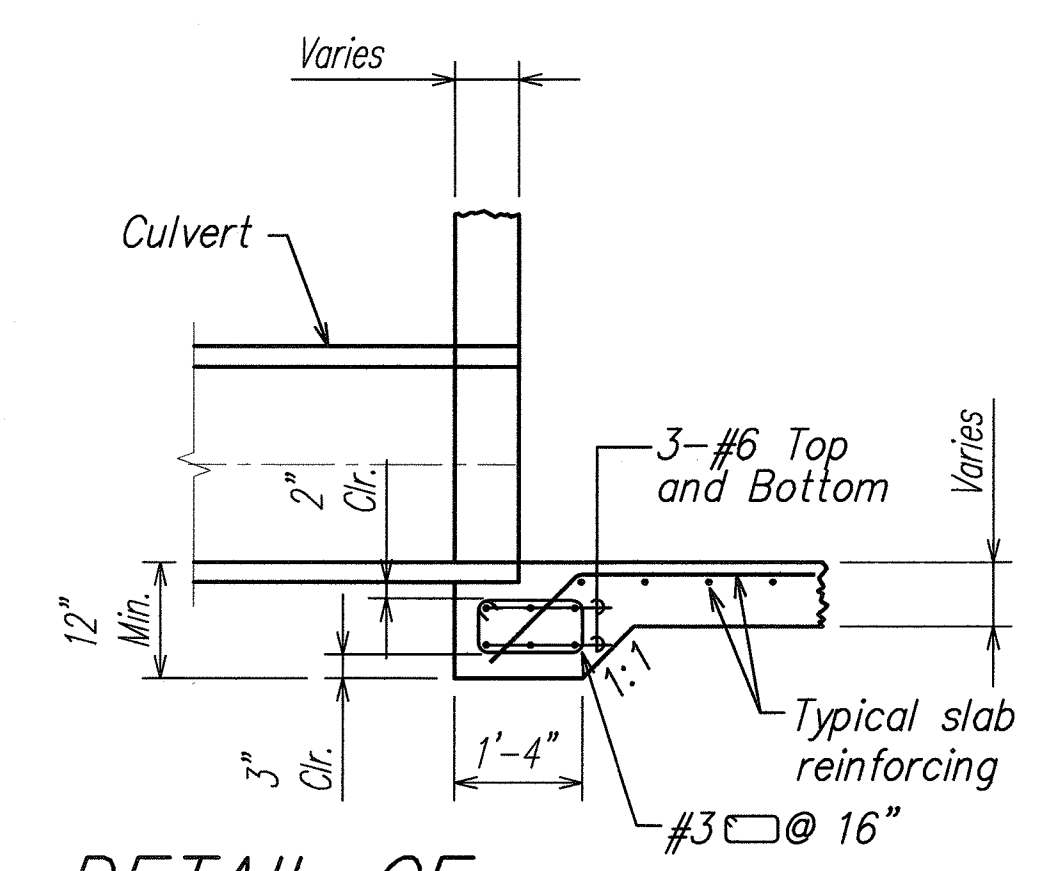
ADDED REINFORCING FOR CULVERT OPENINGS AT BOTTOM SLAB  
SCALE: 1/2" = 1'-0"



PLAN VIEW OF WALL REINFORCING  
SCALE: 1/2" = 1'-0"



ADDED REINFORCING AROUND MANHOLE OPENING  
SCALE: 1/2" = 1'-0"



DETAIL OF CULVERT SEAT  
SCALE: 1/2" = 1'-0"

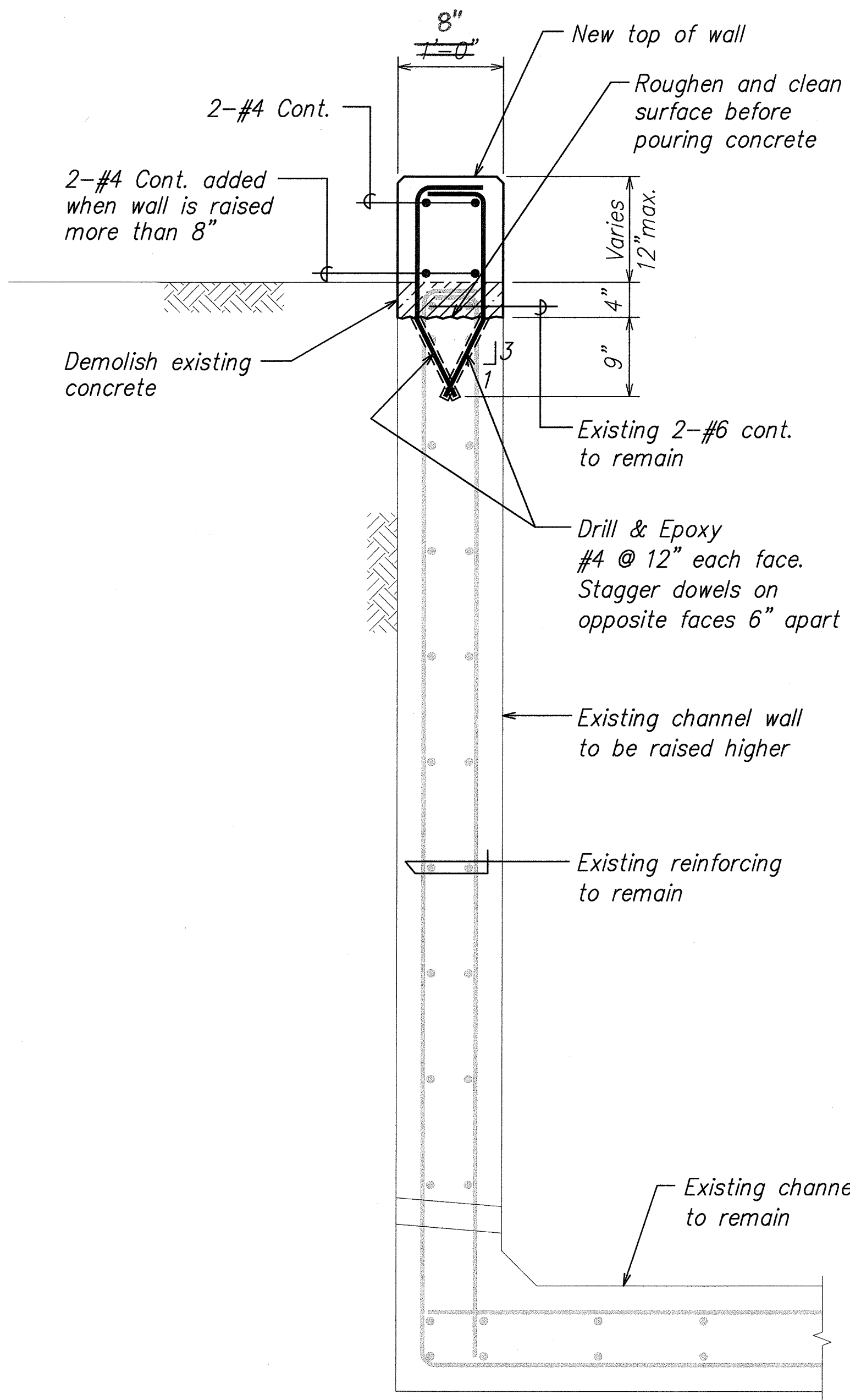
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ORIGINAL PLAN	____
NOTE BOOK	____
No.	____

Note:  
See B-01 for additional notes.

BAR	VERT. LAP LENGTH
#4	1'-8"
#5	2'-2"

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
TYPICAL REINFORCING DETAILS FOR DRAINAGE STRUCTURES  
KAHEKILI HIGHWAY INTERSECTION IMPROVEMENTS  
VICINITY OF EAST HUI IWA STREET  
FEDERAL-AID PROJECT NO. NH-083-1(60)  
SCALE: As Noted  
DATE: April 2007  
SHEET No. S2.4 OF 7 SHEETS

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- Notes:
- Demolition of concrete shall be done with small vibratory handtools (15 lb max.) Approved by the Engineer.
  - All existing reinforcing shall remain in place and shall not be damaged in any way.
  - Unused drilled holes shall be filled with epoxy grout.
  - The cost of the demolishing and disposing of the existing concrete and furnishing and installing the reinforcing steel shall be considered incidental to the cost of the concrete and shall not be paid for separately. Dowels will be paid under Section 656 of the Specifications.
  - See Civil plans for additional details.

**TYPICAL CHANNEL SECTION** *A*  
SCALE: 1" = 1'-0" *S2.5 S2.5*

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	
No.	

**MYLES Y. SHIMOKAWA**  
LICENSED PROFESSIONAL ENGINEER  
NO. 3906-S  
HAWAII, U.S.A.

*[Signature]*  
SIGNATURE  
APRIL 30, 2008  
EXPIRATION DATE OF LICENSE  
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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**TYPICAL CHANNEL SECTION**

KAHEKILI HIGHWAY INTERSECTION IMPROVEMENTS  
VICINITY OF EAST HUI IWA STREET  
FEDERAL-AID PROJECT NO. NH-083-1(60)

SCALE: As Noted DATE: April 2007

**SHEET No. S2.5 OF 7 SHEETS**

"AS-BUILT"