FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAWAII	61D-02-06	2006	36	57

GENERAL NOTES:

1. General:
   - A. Workmanship and materials shall conform to the AASHTO LRFD Bridge Design Specification, 3rd Edition interims, and the Hawaii Standard Specifications for Bridge and Road Construction, as modified by the State of Hawaii Department of Transportation.
   - B. The Contractor shall compare the Civil and Structural drawings with each other and report in writing to the Engineer, inconsistencies or omissions.
   - C. The Contractor shall take field measurements and verify field conditions and shall compare such field measurements and conditions with the drawings before commencing the work. Report in writing to the Engineer all inconsistencies or omissions.
   - D. The Contractor shall be responsible for methods of construction, workmanship and job safety. The Contractor shall provide temporary shoring and bracing as required for stability of structural members and systems.
   - E. Details noted as typical on structural drawings shall apply in all conditions unless specifically shown or noted otherwise.
   - F. The Contractor shall be responsible for coordinating the work of all trades.
   - G. The Contractor shall be responsible for protection of the adjacent properties, structures, streets, and utilities during the construction period. Any damage or deteriorated property shall be restored to the same or better condition at no cost to the State.

2. Design Criteria (Assumed):
   - A. Lateral Earth Pressures
     - Earth Pressure 2:1 Slope ——— 55 pcf
     - Earth Pressure without Slope ——— 40 pcf
     - Passive Earth Pressure ——— 250 pcf
   - B. Soil Bearing Capacity ——— 3000 psf
   - C. Friction Factor ——— 0.4
   - D. Live Load ——— HL-93

3. Foundation:
   - A. Contractor shall provide for de-watering of excavation from either surface water, ground water or seepage. NPDES permit required for discharging into State waters.
   - C. Contractor shall provide for design and installation of all cribbing, sheeting, and shoring necessary for personnel safety and to preserve excavations and earth banks, and adjacent structures and property for damage.
   - D. Excavation boundaries and grade elevations for footing shall be approved by the Engineer prior to placing the concrete and reinforcing.
   - E. Fill and backfill shall consist of non-expansive granular material such as crushed coral or basalt. The select granular fill shall be well graded from coarse to fine with no particles larger than 3 inches in largest dimension. The material also shall contain less than 15 percent particles passing the No. 200 sieve. The material shall have a laboratory CBR value of 25 or more and shall have a maximum swell value of 1 percent or less.
   - F. Fill and backfill shall be placed in uniform lifts of no more than 8 inches in loose thickness, moisture-conditioned to within 3 percent of the optimum moisture content, and uniformly compacted to at least 90 percent, but should not exceed 95 percent relative compaction to minimize the lateral earth pressure against the wall.

4. Reinforcing Steel:
   - A. Reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60.
   - B. Clear concrete coverage for reinforcing bars shall be as follows, unless otherwise noted:
     - a. Footing, Wall, ETC. Cast against earth ——— 3"
     - b. Footing, Wall, ETC. Formed and exposed to earth ——— 2"
     - c. Wall faces exposed to each or weather ——— 2"
     - d. Top slabs
       - i. Top bars ——— 2 1/2"
       - ii. Bottom bars ——— 1 1/2"
   - C. Splices:
     - a. Reinforcing steel shall be spliced only where indicated on plans. Provide lap splice length per typical details and schedule, unless otherwise noted.
     - b. Mechanical splice connectors shall develop in tension 90 percent of the specified ultimate tensile strength of unspliced reinforcing steels.
   - D. Bar bends and hook shall be "standard hooks" in accordance with AASHTO 5.11.2.

5. Concrete:
   - A. Concrete shall be regular weight hard rock concrete and shall have the following minimum 28-day compressive strengths:
     - a. Concrete Interceptor Trench ——— 4000 psi
     - b. Baffle Apron ——— 4000 psi
     - c. Manhole ——— 4000 psi
     - g. All other concrete ——— Class "A"

     All concrete shall have maximum w/c ratio of 0.45 except for Class "A" which shall be as specified in the standard specifications.
   - B. A corrosion inhibiting admixture shall be included in the concrete mix for all concrete . The corrosion inhibiting admixture shall contain a minimum of 30% calcium nitrate by mass and shall be added at a dosage rate of 4.0 gallons per cubic yard of concrete. The admixture shall be Rheocrete CNI Calcium Nitrite-Based corrosion inhibitor, DCI S corrosion inhibitor, or an approved equal. Addition of corrosion inhibiting admixture shall be as recommended by the manufacturer.
   - C. All inserts, anchor bolts, plates, etc. embedded in concrete shall be hot-dip galvanized unless otherwise noted.
   - D. Conduits, pipes, and sleeves passing through a wall not conforming to typical details shall be located and submitted to the Engineer for approval.
   - E. Construction joints may be located by the Contractor and submitted to the Engineer for approval. Construction joints shall be made and located as not to impair the strength of the structure and to minimize shrinkage stresses. All construction joints shall be cleaned, laitance removed and wetted. See typical details for specific requirements.
   - F. Non-shrink grout shall be a premixed compound consisting of non-staining, non-metallic aggregate, cement, water reducing and plasticizing agents capable of developing minimum compressive strength of 4,000 psi in 3 days and 7,000 psi in 28 days.
   - G. Joint filler shall be ASTM D1751 or ASTM D994; asphalt impregnated fiberboard or felt 1/2 inch thick.
   - H. Unless otherwise noted, chamfer all concrete edges 3/4".
   - I. Concrete delivery tickets shall record all free water in the mix: at batching by plant, for consistency by driver, and any additional request by Contractor if permitted by the mix design.
   - J. Reinforcing bars, anchor bolts, inserts and other items to be cast in the concrete shall be secured in position prior to placement of concrete.

6. Structural Steel:
   - A. Fabrication and erection of structural steel shall conform to the AASHTO LRFD Bridge Construction Specifications, Third Edition. Steel Construction, Ninth Edition.
   - B. Structural steel shall conform to ASTM A36, unless otherwise noted.
   - C. Bolts shall conform to ASTM A307, Grade A, unless otherwise noted.
   - D. Welds and welding procedures shall conform to the structural welding code AWS D1.1 of the American Welding Society.
   - E. Welding shall be performed by welders prequalified for welding procedures to be used.
   - F. Welding electrodes shall be E70XX.
   - G. Steel shall be hot-dip galvanized after fabrication According to ASTM 123.

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

KEN KAZUO HAYASHIDA
LICENSED PROFESSIONAL ENGINEER
No. 6818-S
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2008
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

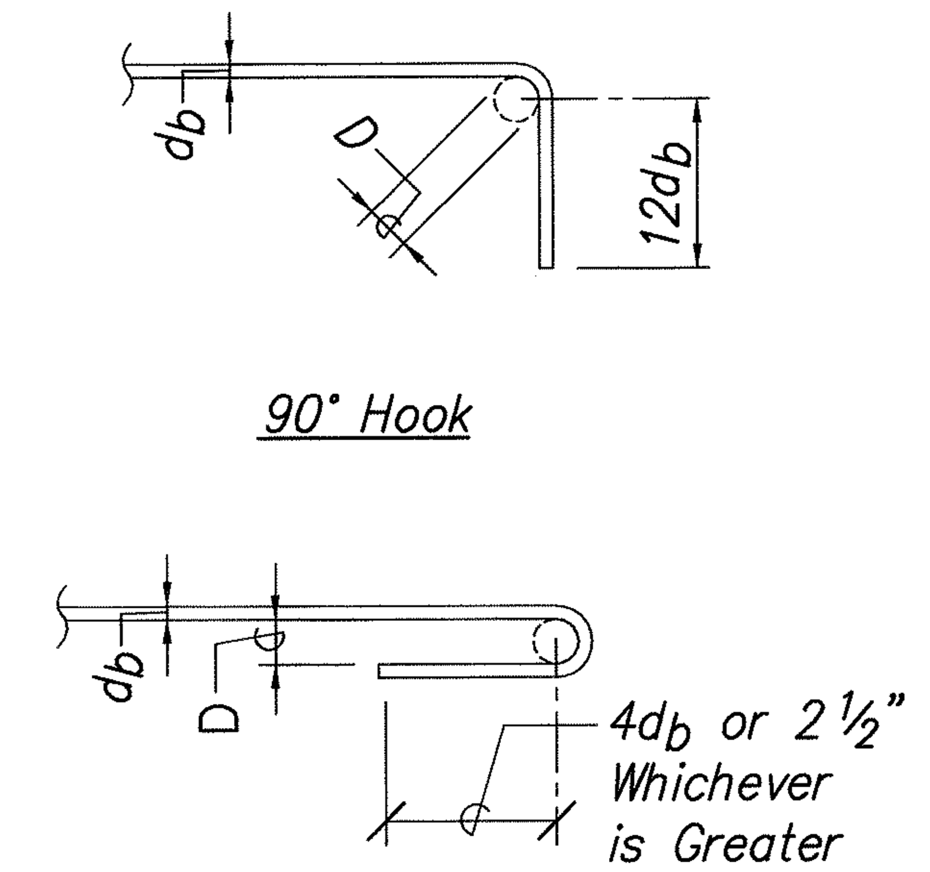
KAILUA ROAD PERMANENT ROCKFALL AND LANDSLIDE MITIGATION PROJECT NO. 61D-02-06

Scale: As Noted Date: Aug 2006

SHEET No. S0.1 OF 8 SHEETS

MINIMUM SPLICE & EMBED LENGTHS										
	CONCRETE STRENGTH = 4,000 PSI					CONCRETE STRENGTH = 5,000 PSI				
	LAP SPLICE		EMBED			LAP SPLICE		EMBED		
			STRAIGHT					STRAIGHT		
BAR SIZE	BOT BAR OR WALL BAR	TOP BAR	BOT BAR OR WALL BAR	TOP BAR	WITH STANDARD 90° HOOK	BOT BAR OR WALL BAR	TOP BAR	BOT BAR OR WALL BAR	TOP BAR	WITH STANDARD 90° HOOK
#3,#4	19"	24"	15"	19"	7"	17"	22"	13"	17"	6"
#5	23"	30"	18"	23"	9"	21"	27"	16"	21"	8"
#6	28"	36"	22"	28"	10"	25"	33"	19"	25"	9"
#7	33"	42"	25"	33"	12"	29"	38"	23"	29"	11"
#8	39"	51"	30"	39"	14"	35"	46"	27"	35"	12"
#9	50"	64"	38"	50"	15"	44"	58"	34"	44"	14"
#10	63"	82"	48"	63"	17"	56"	73"	43"	56"	15"
#11	77"	100"	59"	77"	19"	69"	90"	53"	69"	17"

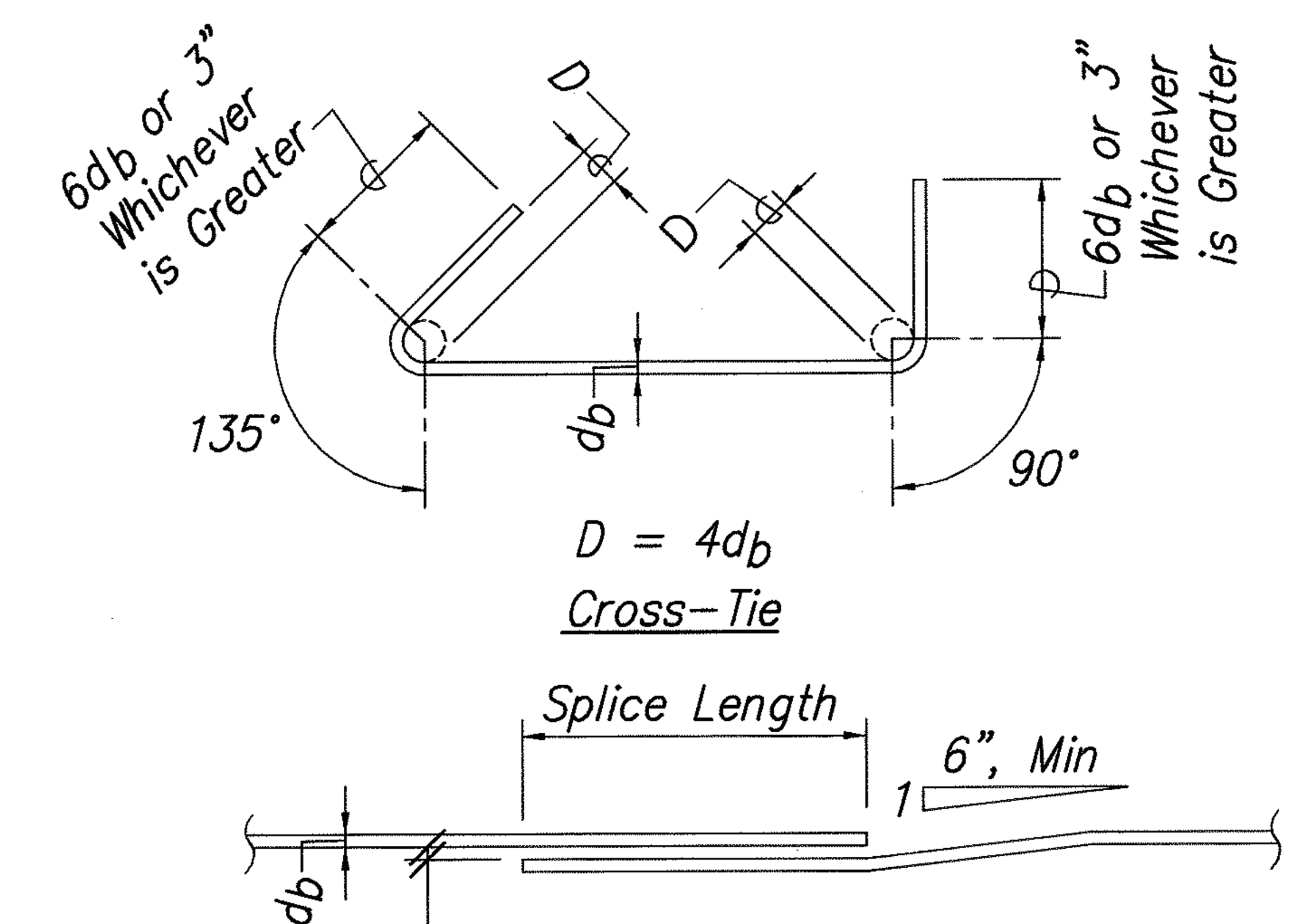
TYPICAL Rebar SPLICE AND EMBED LENGTH SCHEDULE 1 S0.2 | S0.2



90° Hook

180° Hook

D = 6db for #8 and Smaller
D = 8db for #9 to #11

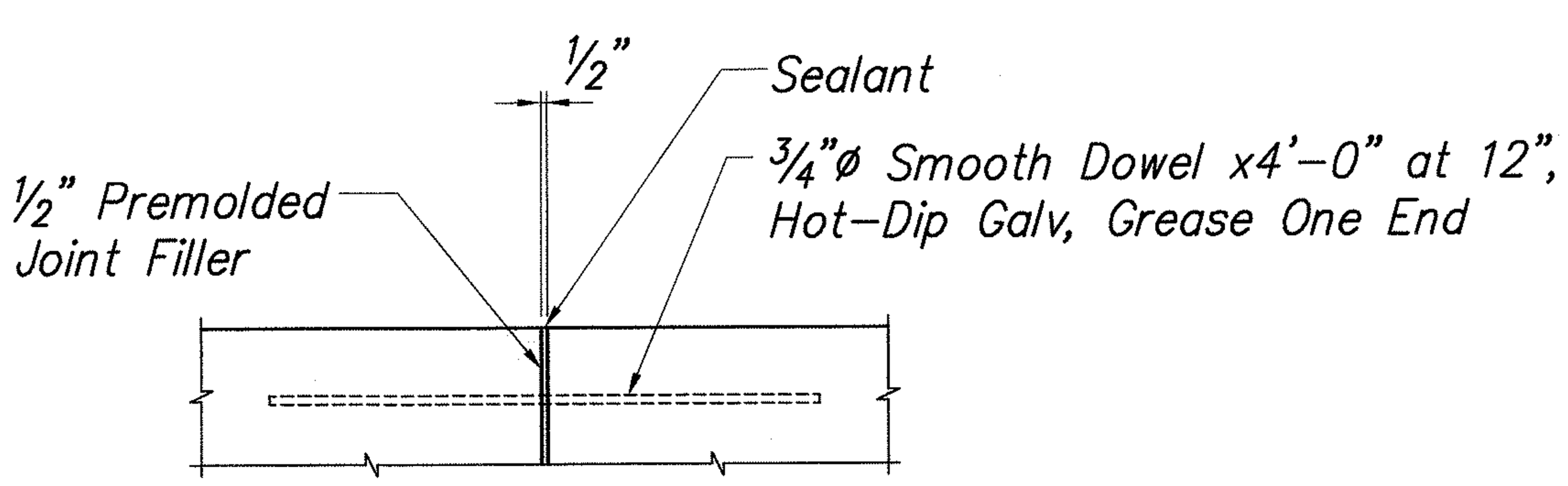


D = 4db
Cross-Tie

Bar Lap

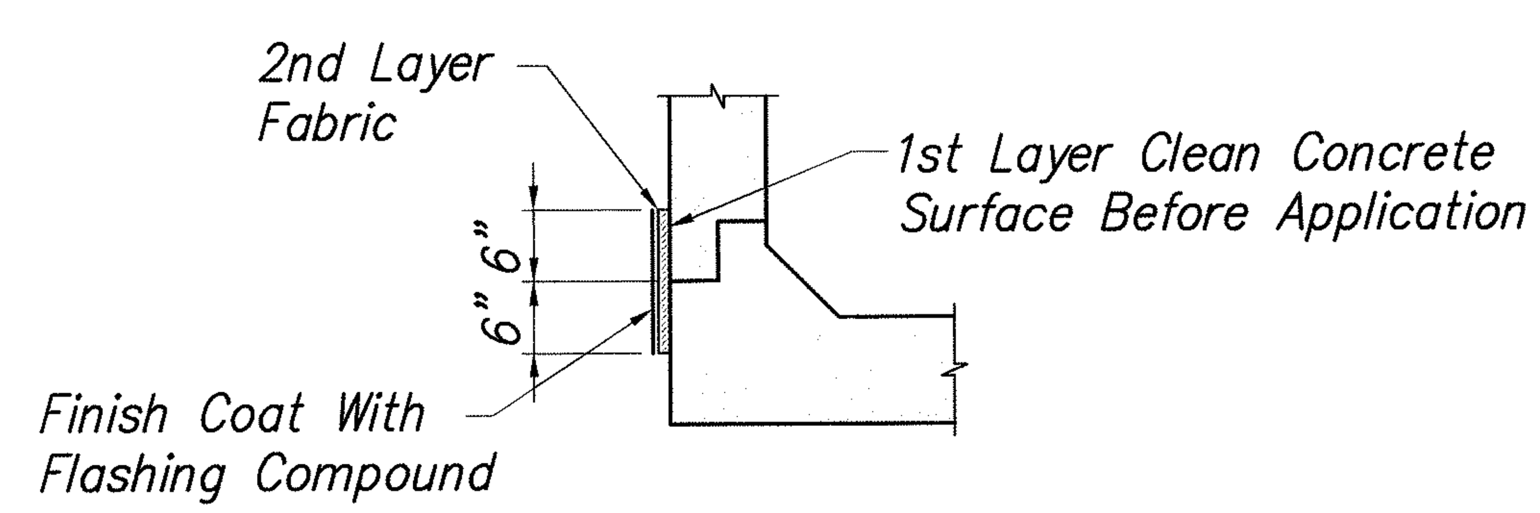
STANDARD HOOKS AND CROSS-TIE DETAIL 2 S0.2 | S0.2

NOT TO SCALE

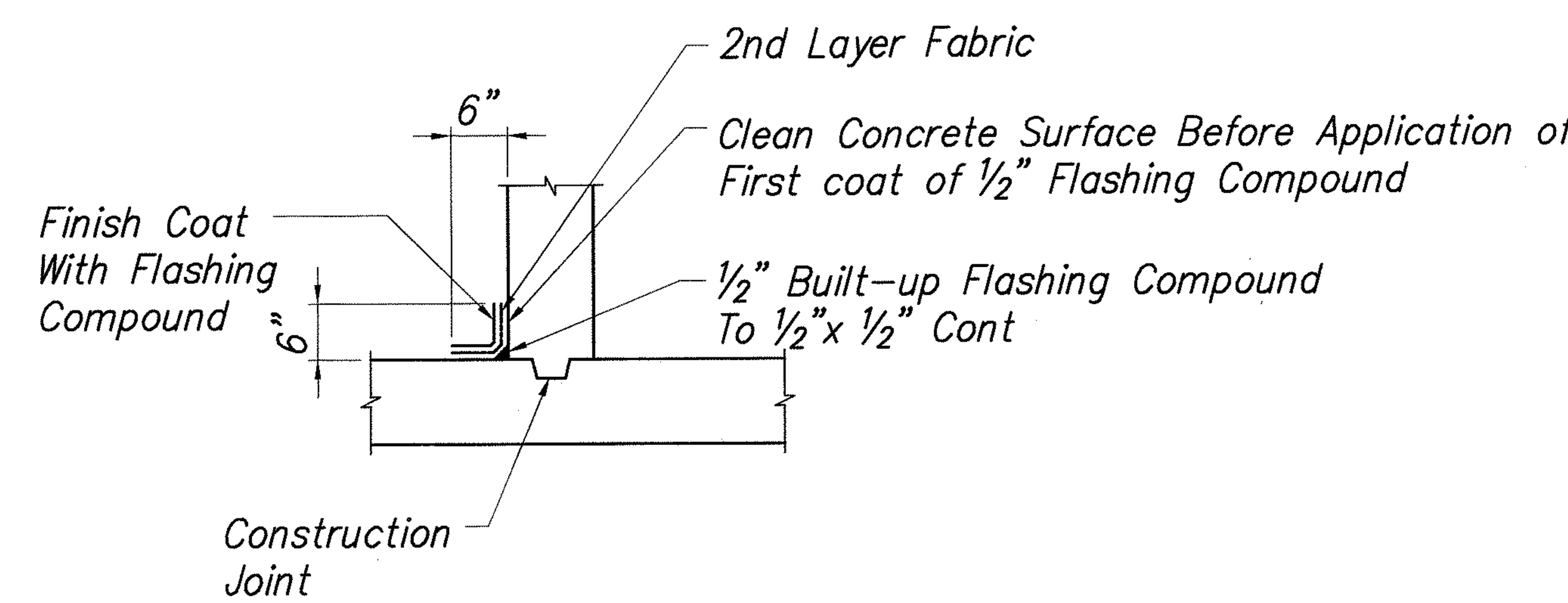


EXPANSION JOINT DETAIL 3 S0.2 | S0.2

NOT TO SCALE



CONSTRUCTION JOINT DETAIL



CORNER DETAIL

TYPICAL WATERPROOFING DETAIL 4 S0.2 | S0.2

NOT TO SCALE

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TYPICAL DETAILS

KAILUA ROAD PERMANENT ROCKFALL AND LANDSLIDE MITIGATION PROJECT NO. 61D-02-06

Scale: As Noted | Date: Aug 2006

SHEET No. S0.2 OF 8 SHEETS

ORIGINAL PLAN
NOTE BOOK
No.
SURVEY PLOTTED BY
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DATE