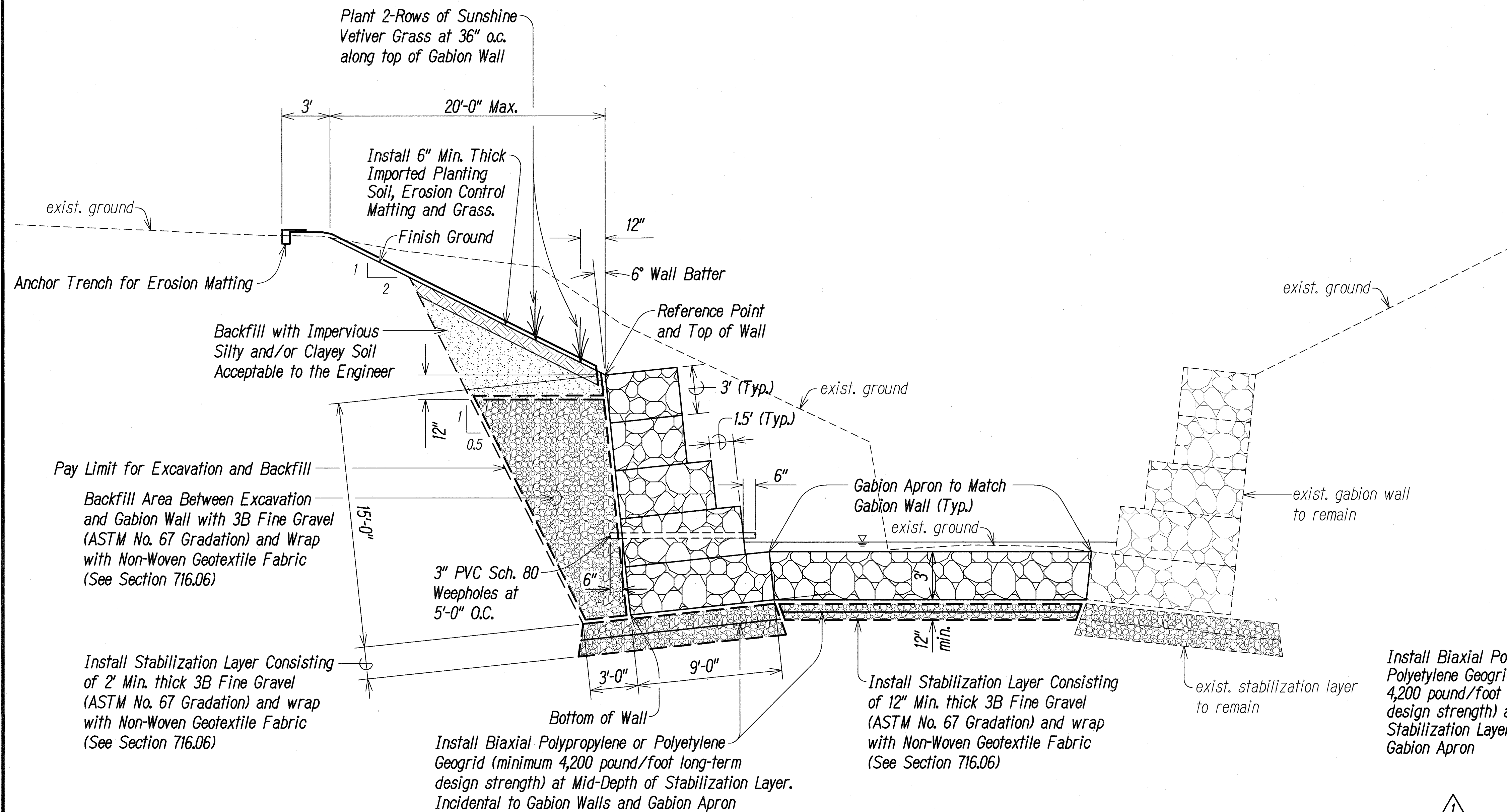


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(125)	2011	ADD. 17	55

NOTES:

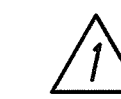
1. The excavation, 2-feet min. thick stabilization layer, backfill, including 3B fine gravel (ASTM No. 67 Gradation), non-woven geotextile fabric, impervious silty and/or clayey soil, 3-inch PVC Schedule 80 weepholes and filter mattress toe protection shall be considered incidental to Item 515.0100 Gabion Walls.
2. The excavation, 12-inches min. thick stabilization layer, including 3B fine gravel (ASTM No. 67 Gradation), and non-woven geotextile fabric shall be considered incidental to Item 515.0200 Gabion Apron.
3. The design, installation, maintenance and removal of the temporary cofferdam will be paid for under Item 515.0300 Temporary Cofferdam for Gabion Walls
4. See special provisions Section 515 - Gabion Walls and Apron for additional requirements.



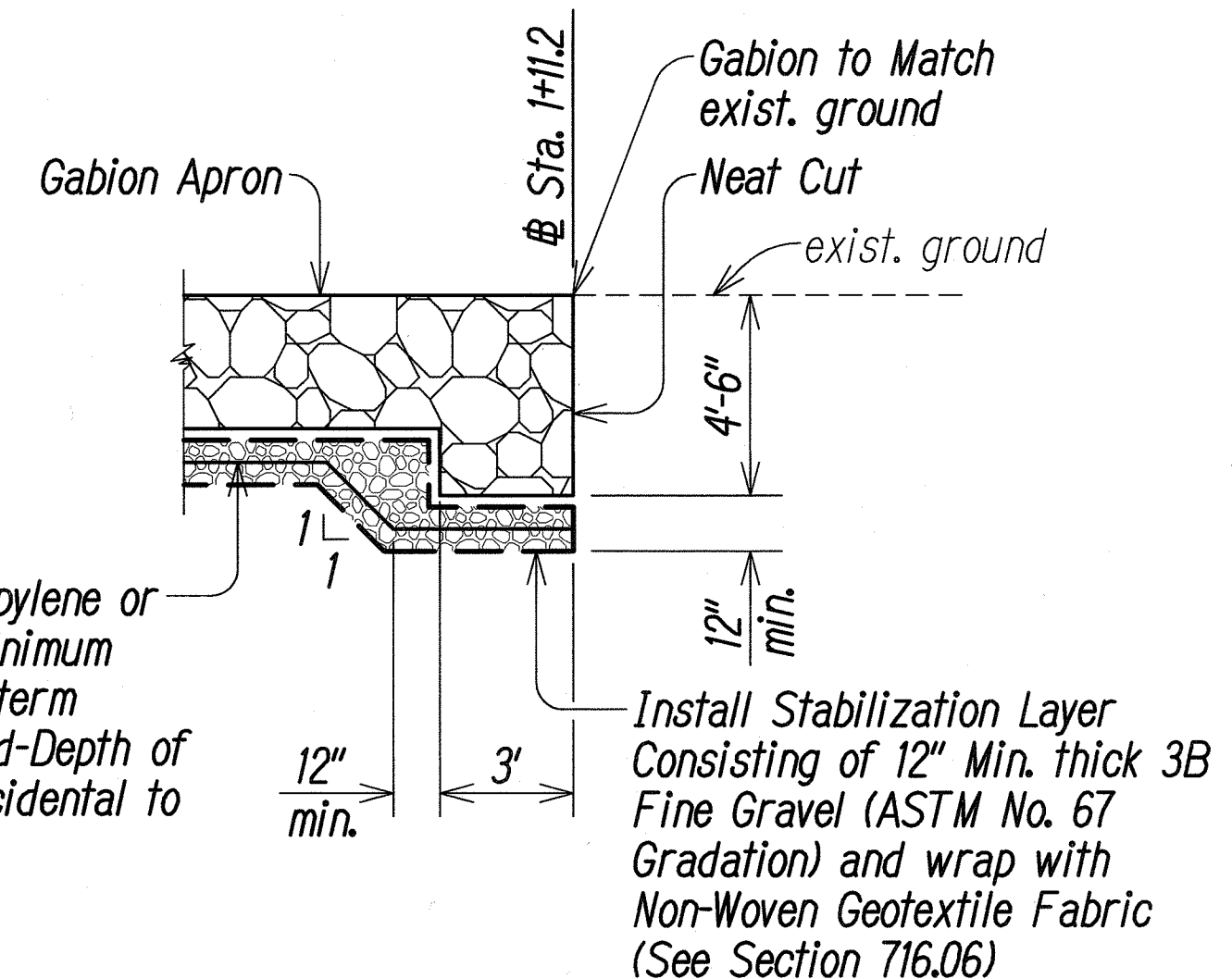
(Sta. 0+00 to Sta. 0+24)

15-Ft. HIGH GABION WALL AND GABION APRON DETAIL

SCALE: 1/4" = 1'-0"

1
C4.1/C5.1**GABION CUTOFF WALL DETAIL**

SCALE: 1/4" = 1'-0"

2
C4.1/C5.1

Install Biaxial Polypropylene or Polyethylene Geogrid (minimum 4,200 pound/foot long-term design strength) at Mid-Depth of Stabilization Layer. Incidental to Gabion Apron



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Russell M. Araki
 P.E., Inc.
 dba PARK ENGINEERING
 APRIL 30, 2012
 LIC. EXP. DATE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
GABION WALL AND APRON DETAIL	
CASTLE HILLS ACCESS ROAD Drainage Improvements, Phase 2 FEDERAL-AID PROJECT NO. STP-0300(125)	
Scale: As Shown	Date: December 2011
SHEET No. C5.1 OF C5.4 SHEETS	



1/19/12

Deleted Stations. Added Gabion Cutoff Wall Detail.

DATE

REVISION

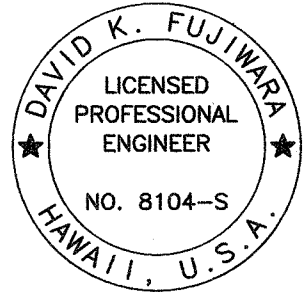
ADD. 17

May 23, Jan 2012 - 10:02am
 D:\Projects\STP0300\DESIGN\PHASE 2\ADD\17-Cashills-ph2-Gabion Apron_ADD.dwg

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(125)	2011	ADD. 35	55

- Notes:**
1. The Contractor shall install a cofferdam, with a minimum depth of 50 feet measured from the highest adjacent existing grade, to construct the drop structure. Except for the minimum depth, the exact location, details, and extent of the cofferdam shall be determined by the Contractor.
 2. The adequacy and safety of the cofferdam and temporary excavation shall be the sole responsibility of the Contractor. See Foundation Notes on sheet no. S0.1.
 3. The Contractor shall hire a civil engineer experienced in geotechnical engineering and a structural engineer, both licensed in State of Hawaii, to evaluate and provide design calculations and shop drawings for the cofferdam and temporary excavation. Plans and calculations shall be submitted to the Engineer for review and acceptance prior to performing any work on the cofferdam or excavation for the drop structure. The work for the evaluation, design, construction, and removal of the cofferdam and the temporary excavation will not be paid for separately but shall be considered incidental to Item No. 205.0400 Temporary Cofferdam for Concrete Drop Structure.
 4. The construction sequence, access and method for the drop structure, including but not limited to the cofferdam and excavation, shall be submitted to the Engineer for review and acceptance prior to performing any work related to the drop structure. This work will not be paid for separately but shall be considered incidental to Item No. 205.0400 Temporary Cofferdam for Concrete Drop Structure.
 5. During the installation and removal of the cofferdam, the Contractor shall ensure no damage is caused to any adjacent structures. If any damage does occur to any adjacent structures, the Contractor shall repair the structures to pre-construction conditions at no cost to the State.



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David K. Fujimura
KSF, INC. APRIL 30, 2012
LIC. EXP. DATE

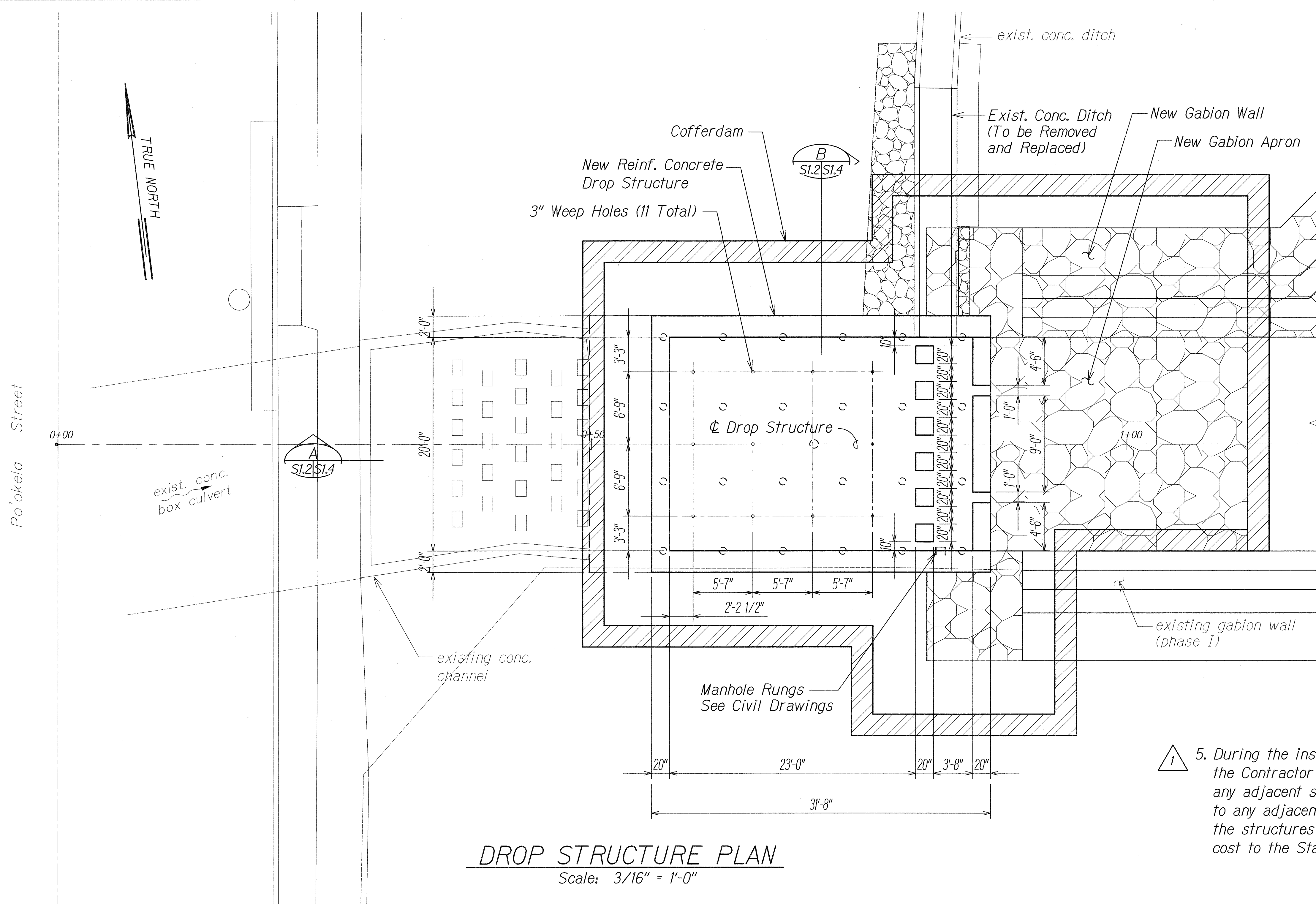
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DROP STRUCTURE PLAN AND NOTES

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Federal-Aid Project No. STP-0300(125)

Scale: As Shown Date: Dec. 2011

SHEET No. S1.2 OF 17 SHEETS



DROP STRUCTURE PLAN
Scale: 3/16" = 1'-0"

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

DRAWING NAME: Z:\00 ONGOING\9041-CASTLE HILLS KAPUNAHALA STR DRAINAGE IMPROVEMENT\01-19-12 ADD\CH-S102 ADD1.DWG PLOT TIME: 01-20-12, 8:43 AM

01/19/12 Added Note

DATE	REVISION
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FED. ROAD DIST. NO.	STATE	FED. AID	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(125)	2011	ADD. 37	55

DEWATERING NOTES:

The Engineer has obtained a NGPC, NPDES from the State of Hawaii, DOH-CWB for the discharge of construction activity dewatering (File No. HI 09GD389). The Contractor shall comply with all requirements and conditions of the NGPC, including but not limited to preparing and submitting an updated construction schedule, site-specific dewatering plan, site-specific dewatering system maintenance plan and site-specific construction pollution prevention plan.

Dewatering by means of a well point system along the outside of the excavations is not permitted. The potential impact of the dewatering system selected on depressing the natural groundwater table shall be carefully evaluated by the Contractor prior to dewatering. The Contractor shall retain a qualified geotechnical engineer licensed in the State of Hawaii to design and evaluate the dewatering system used. Drawings and design calculations, stamped by Hawaii Licensed Civil Engineer specialized in Geotechnical Engineering shall be submitted for the Engineer's review and approval.

The Contractor is responsible for selection of dewatering equipment/method and construction dewatering. The Contractor shall be aware that modifications to the dewatering system may be required during construction depending on the conditions encountered. The dewatering method selected shall have minimal impact on the groundwater level surrounding the proposed excavation. The dewatering operations shall be coordinated with the cofferdam structure such that the stability of the excavations is not jeopardized. The operations shall be carried-out without softening the bottom of the excavations.

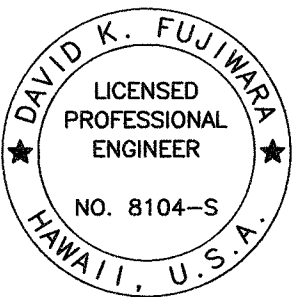
The Contractor shall carefully evaluate the potential impact of the dewatering system selected on depressing the natural groundwater table prior to dewatering. The Contractor shall be solely responsible for the impact and safety of the dewatering operations, and promptly observe the effects of dewatering during construction and implement, as soon as possible, necessary precautionary or remedial measures including, but not limited to, slowing down or stopping the dewatering operations.

Where encountered at the bottom of excavations, permeable granular subsoils may be susceptible to piping and "quick" conditions. The dewatering operations shall be carried-out without creating a "quick" condition or softening at the excavation bottoms. The dewatering operations shall be performed without pumping out soil fines (pumping clear water only) and shall be coordinated with the cofferdam installation such that the excavation stability is not adversely affected. Excessive pumping, which removes soil fines, and result in "blowing" or heaving of the excavation bottom or sides shall be avoided.

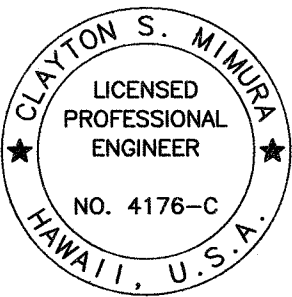
Cofferdam using sheet piles, shall be considered to aid in dewatering the excavation. The Contractor shall submit drawings and design calculations, stamped by Hawaii Licensed Structural Engineer, showing proposed method of cofferdam construction and other details for the State's review and approval.

Sumps shall be used to collect water that percolates up into the base of the excavation or infiltrates through the sheet piles. The sheet piles shall be driven to a sufficient depth to reduce the potential for areal ground subsidence and to reduce the amount of dewatering within the excavations.

See Foundation Notes on Sheet No. S01.



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David K. Fujinaka
 KSF, INC. APRIL 30, 2012 LIC. EXP. DATE



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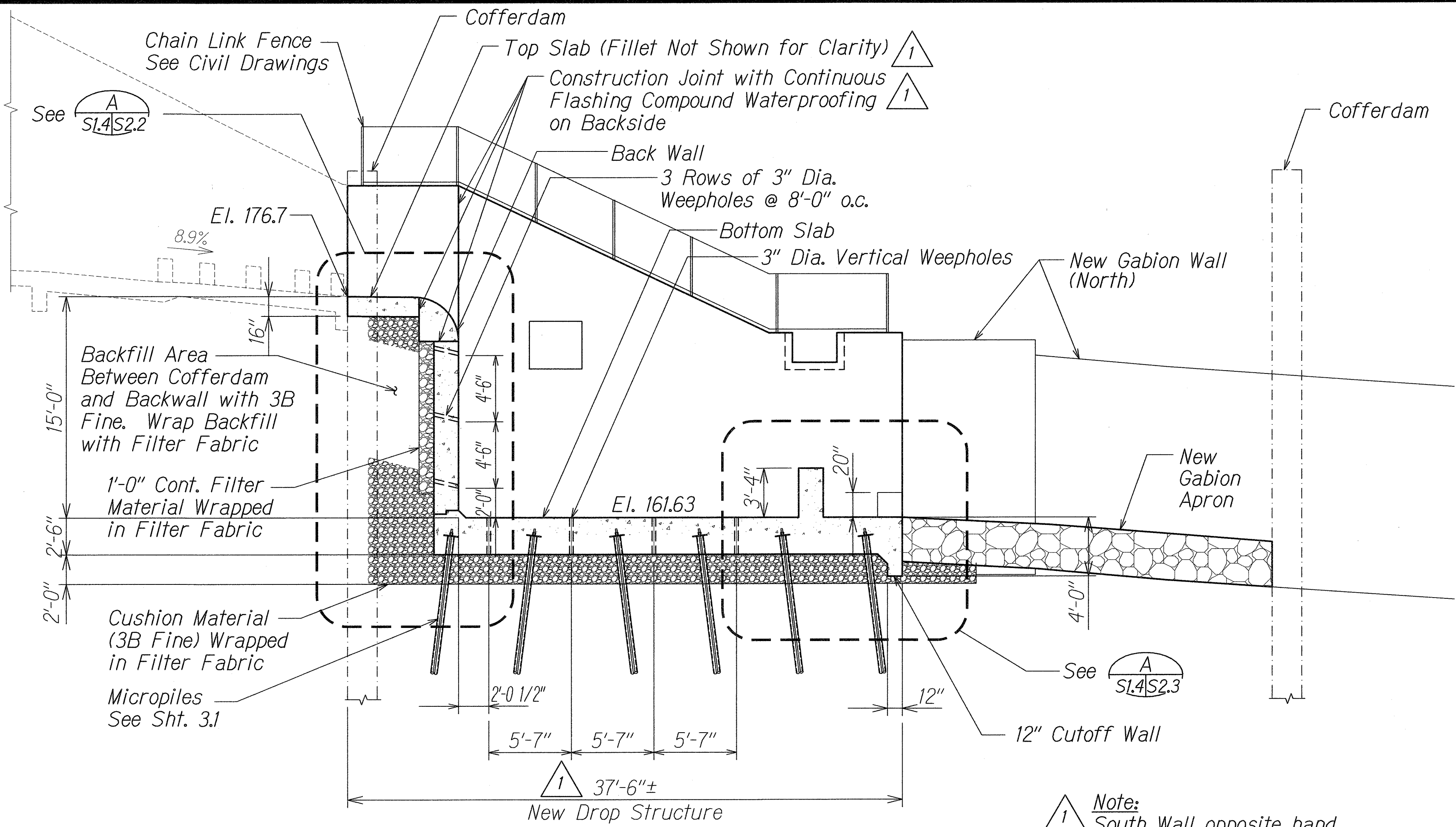
Clayton S. Mimura
 SIGNATURE EXPIRATION DATE OF THE LICENSE 4-30-12

01/19/12	Added Construction Joint. Note Clarification.
DATE	REVISION

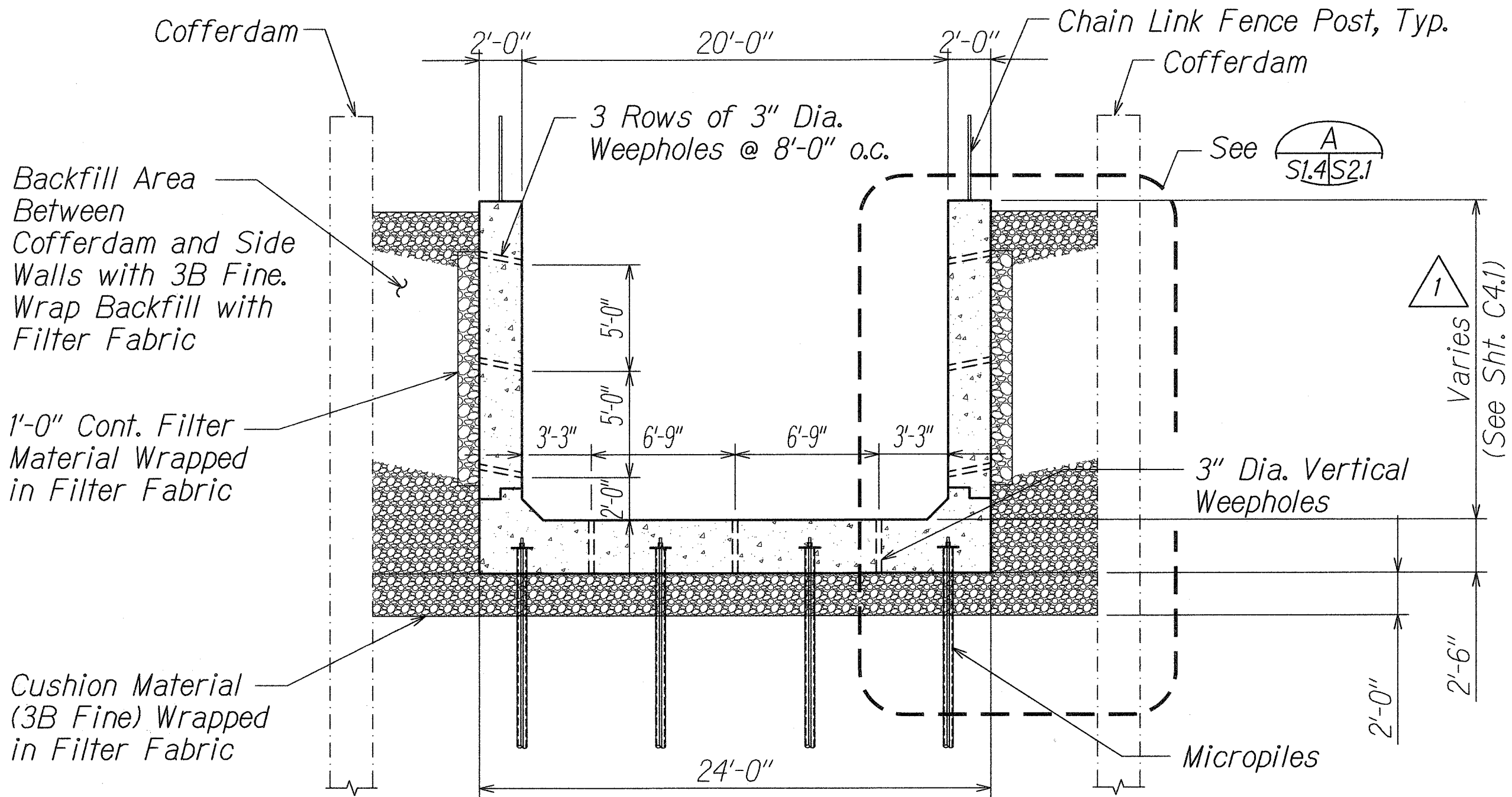
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DROP STRUCTURE
SECTIONS AND NOTES
CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Federal-Aid Project No. STP-0300(125)

Scale: As Shown
Date: Dec. 2011

SHEET No. **S14** OF 17 SHEETS



LONGITUDINAL SECTION A
 Scale: 3/16" = 1'-0"
 S1.2, S1.3, S1.4

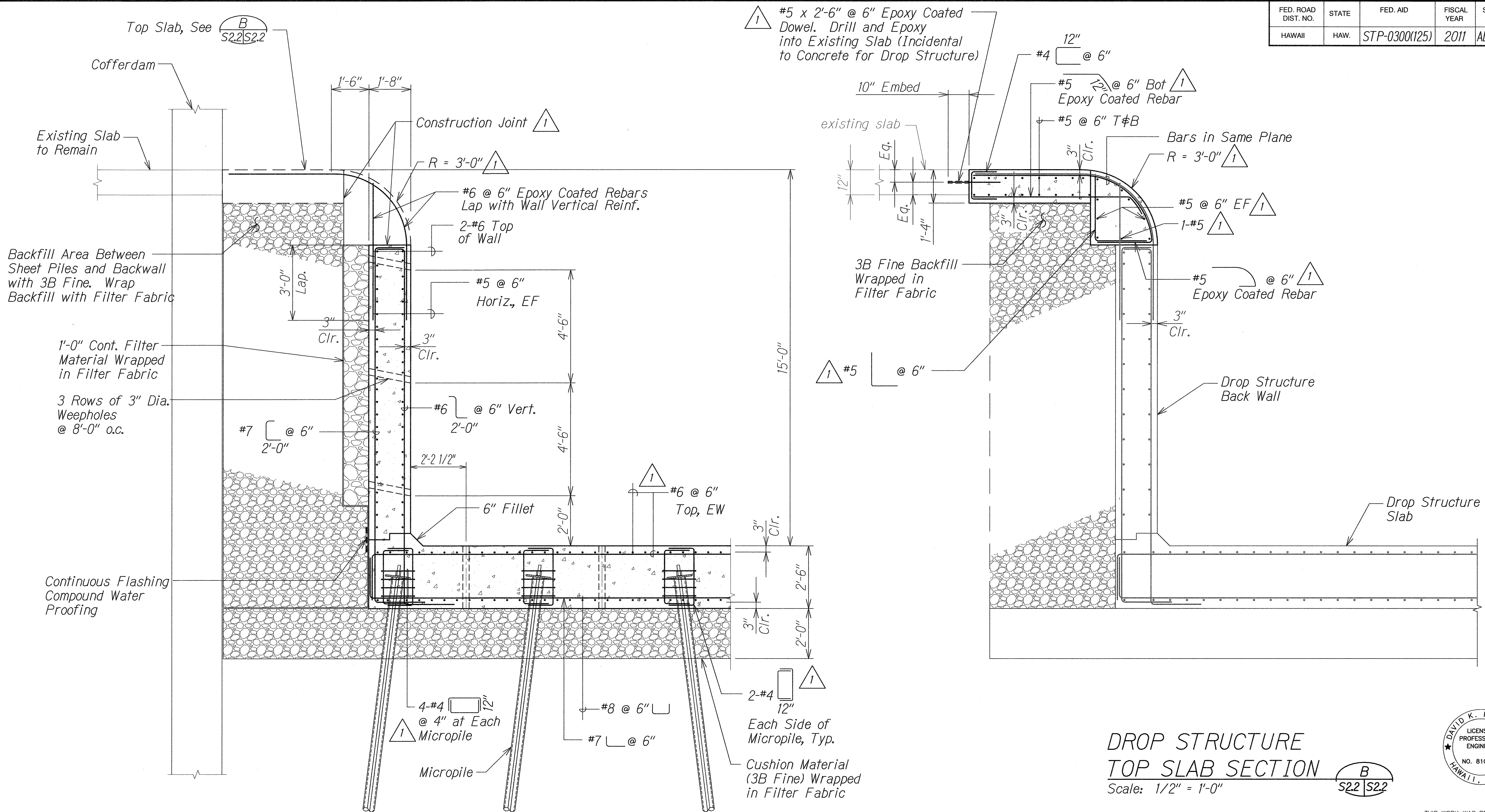


TRANSVERSE SECTION B
 Scale: 3/16" = 1'-0"
 S1.2, S1.3, S1.4

ORIGINAL PLAN	DATE
NO. 1	
NO. 2	
NO. 3	
NO. 4	
NO. 5	
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DRAWING NAME: Z:\00 ONGOING\041-CASTLE HILLS KAPUNAHALA STR DRAINAGE IMPROVEMENT\01-19-12 ADD\CH-S104 ADD1.DWG PLOT TIME: 01-20-12, 8:43 AM

FED. ROAD DIST. NO.	STATE	FED. AID	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(125)	2011	ADD. 39	55

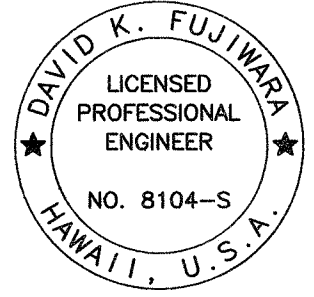


ORIGINAL PLAN	DATE
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NO. 55	

DRAWING NAME: Z:\00 ONGOING\9041-CASTLE HILLS KAPUNAHALA STR DRAINAGE IMPROVEMENT\01-19-12 ADD\CH-S201 ADD1.DWG PLOT TIME: 01-20-12, 1:12 PM

DROP STRUCTURE
 BACK WALL SECTION
 Scale: 1/2" = 1'-0"
 S1.4 S2.2

DROP STRUCTURE
 TOP SLAB SECTION
 Scale: 1/2" = 1'-0"
 B S2.2 S2.2



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 David K. Fujimura
 KSF, INC. APRIL 30, 2012 LIC. EXP. DATE

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 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

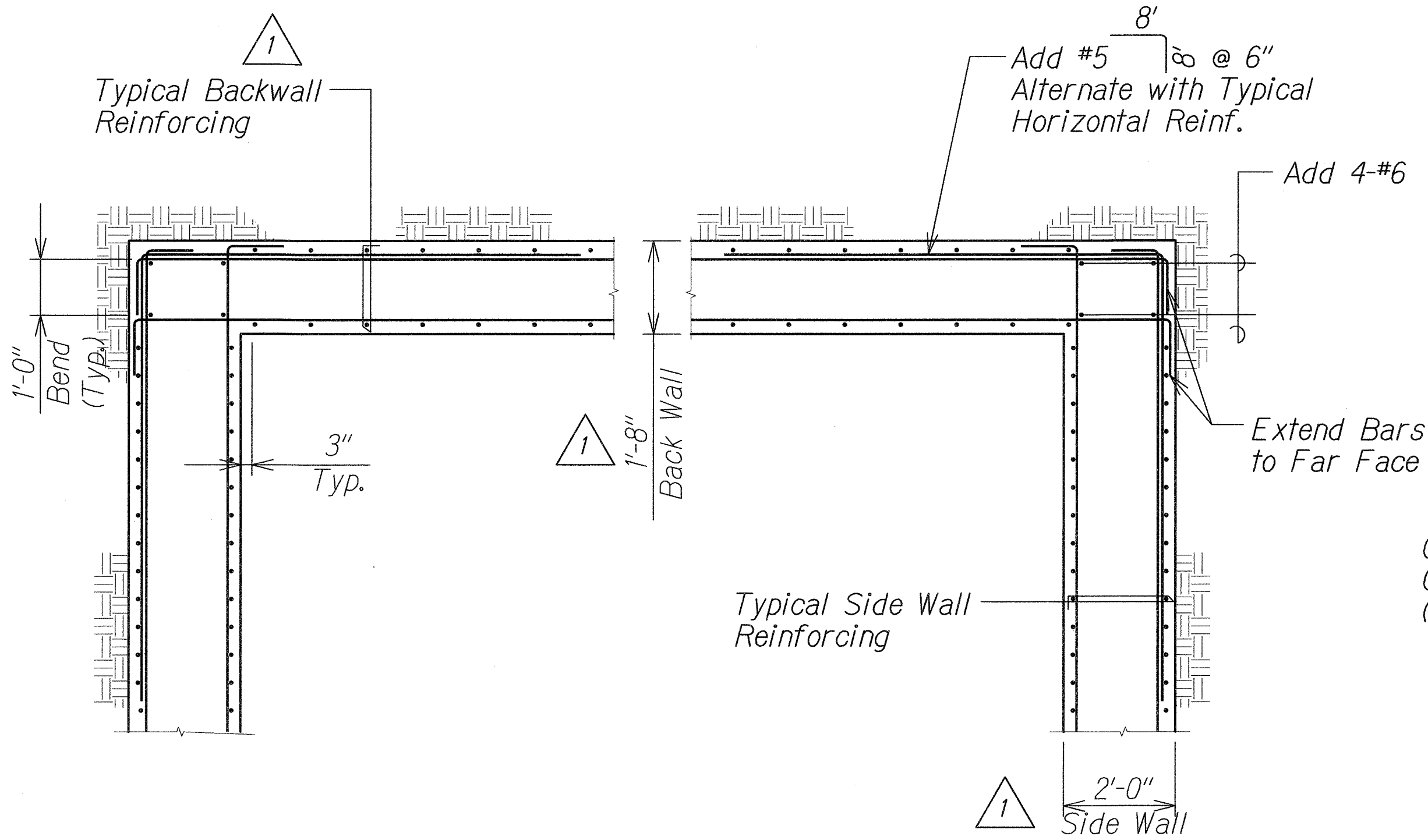
BACK WALL SECTIONS
 CASTLE HILLS ACCESS ROAD
 Drainage Improvements, Phase 2
 Federal-Aid Project No. STP-0300(125)

Scale: As Shown
 Date: Dec. 2011

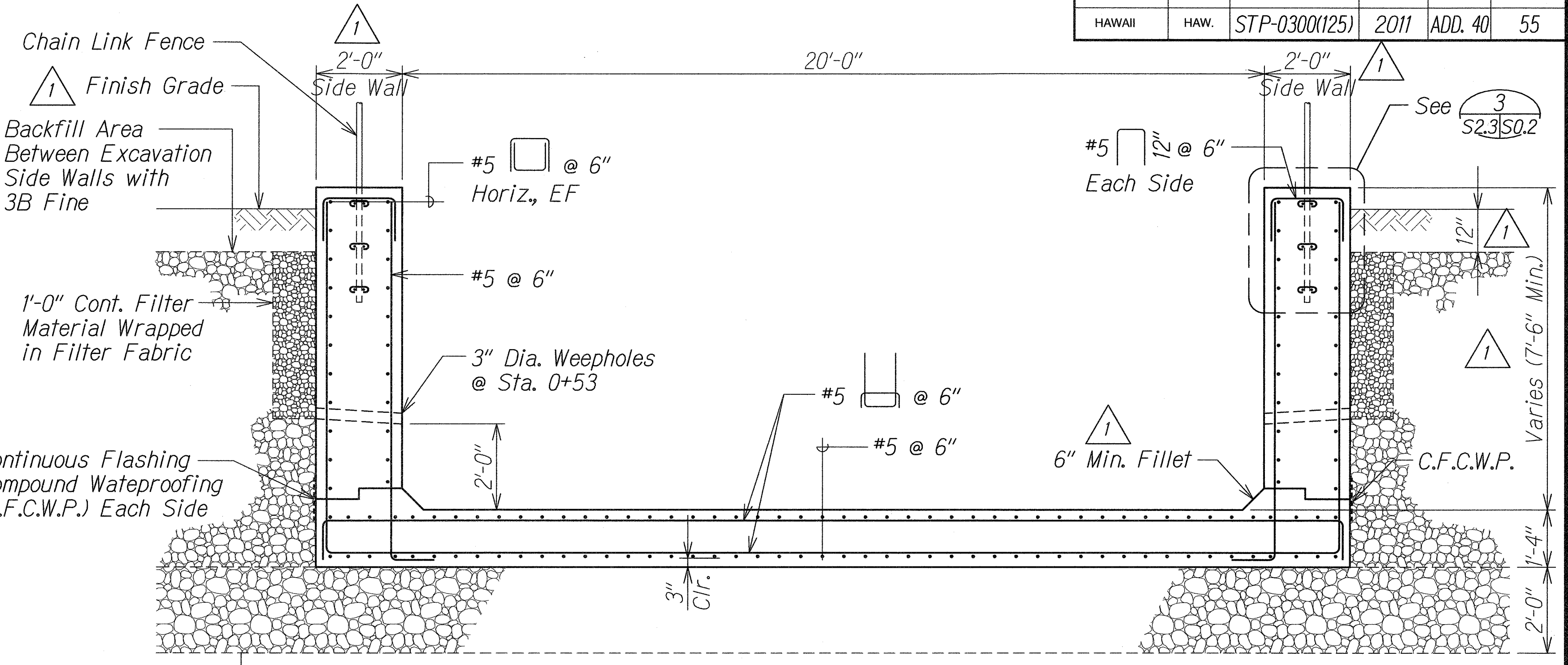
SHEET No. S2.2 OF 17 SHEETS

01/19/12	1	Clarified Notes. Added Construction Joint. Revised Reinforcing
DATE	REVISION	

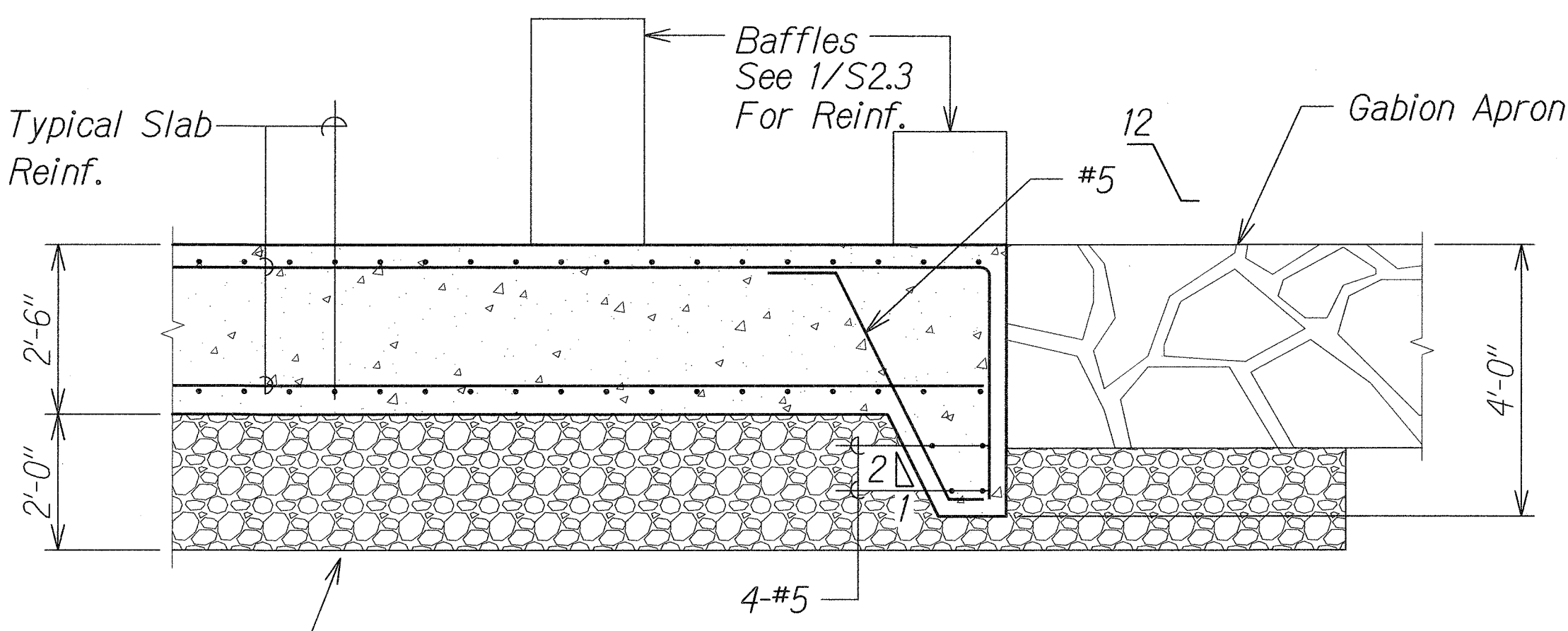
FED. ROAD DIST. NO.	STATE	FED. AID	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(125)	2011	ADD. 40	55



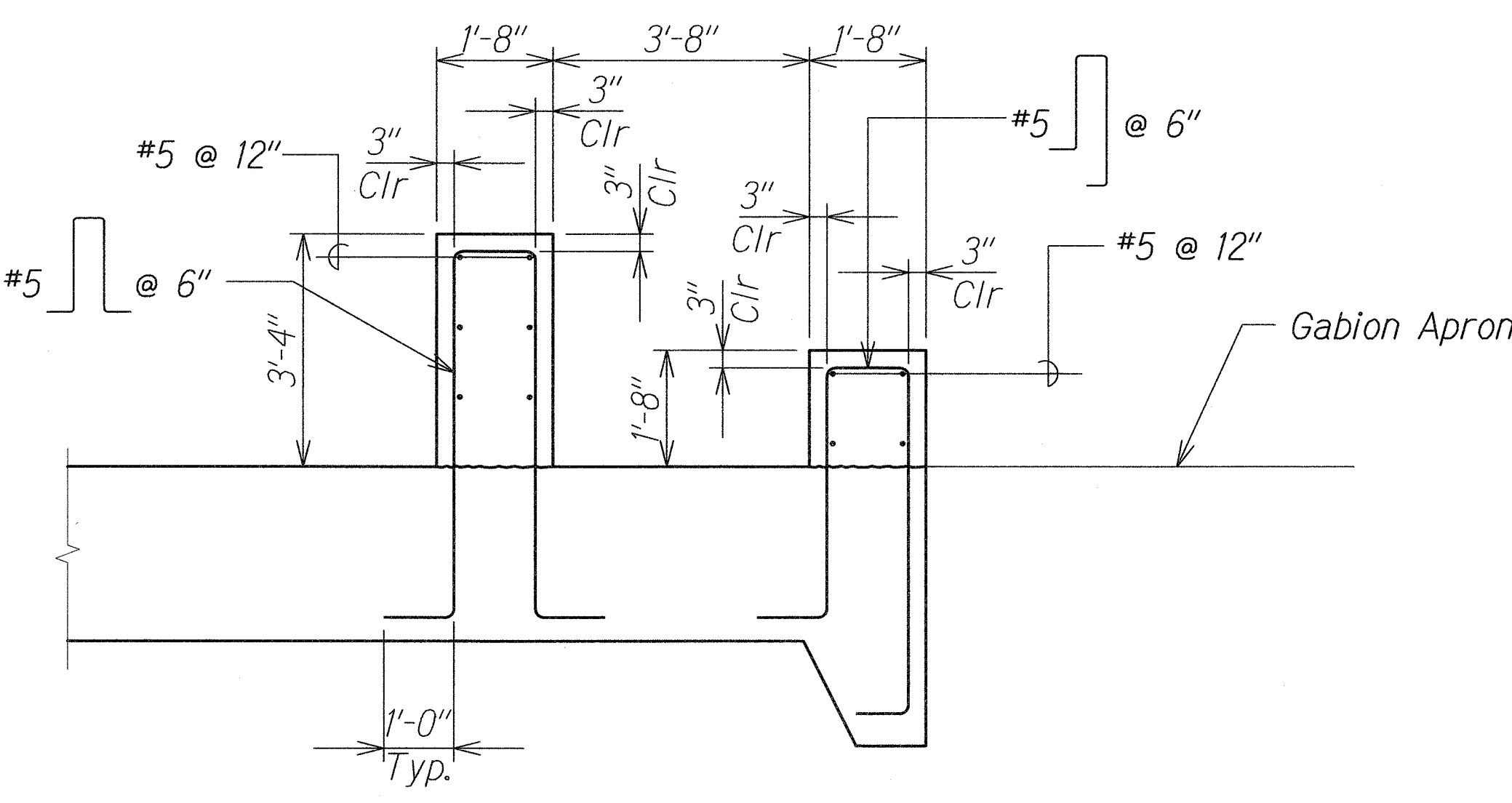
PLAN AT BACKWALL
AND SIDEWALL CORNER A
Scale: 1/2" = 1'-0" S2.3 | S2.3



UPPER SLAB
TRANSVERSE SECTION B
Scale: 1/2" = 1'-0" S1.3 | S2.3



DROP STRUCTURE
CUTOFF WALL SECTION C
Scale: 1/2" = 1'-0" S1.4 | S2.3



BAFFLES DETAIL 1
Scale: 1/2" = 1'-0" S2.3 | S2.3

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	No.

DRAWING NAME: Z:\00 ONGOING\9041-CASTLE HILLS KAPUNAHALA STR DRAINAGE IMPROVEMENT\01-19-12 ADD\CH-S201 ADD1.DWG PLOT TIME: 01-20-12, 11:42 AM

01/19/12	1 Note Clarification.
DATE	REVISION

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David K. Fujimura
KSF, INC. APRIL 30, 2012
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**DROP STRUCTURE PLAN,
SECTIONS AND DETAIL**

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Federal-Aid Project No. STP-0300(125)

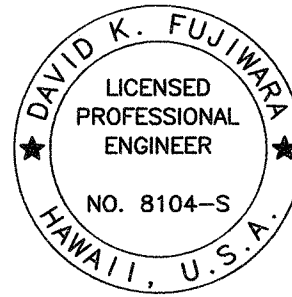
Scale: As Shown Date: Dec. 2011

SHEET No. S2.3 OF 17 SHEETS

MICROPILE NOTES:

- All nuts and bar couplings shall develop 100% of the bar's ultimate tensile strength.
- Splices within steel casing shall develop 100% of the steel casing's ultimate tensile strength.
- All accessories such as nuts, couplings, washers, and steel plates shall be hot-dip galvanized according to ASTM A-153.
- Material Properties of Accessories:
 - Steel Plates - ASTM A36
 - Hex Nuts - ASTM A108
 - Couplings - ASTM A108
 - Washers - ASTM F436
- The bonded length is estimated. The actual bonded length will be determined by the Engineer after the preproduction micropile load test.

Micropile Load Combination (Demand)			1
	Axial Load (kips)	Moment (k-ft)	
Strength Limit State	80 Compression	30	1
Strength Limit State	30 Tension	30	1



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David K. Fujimura
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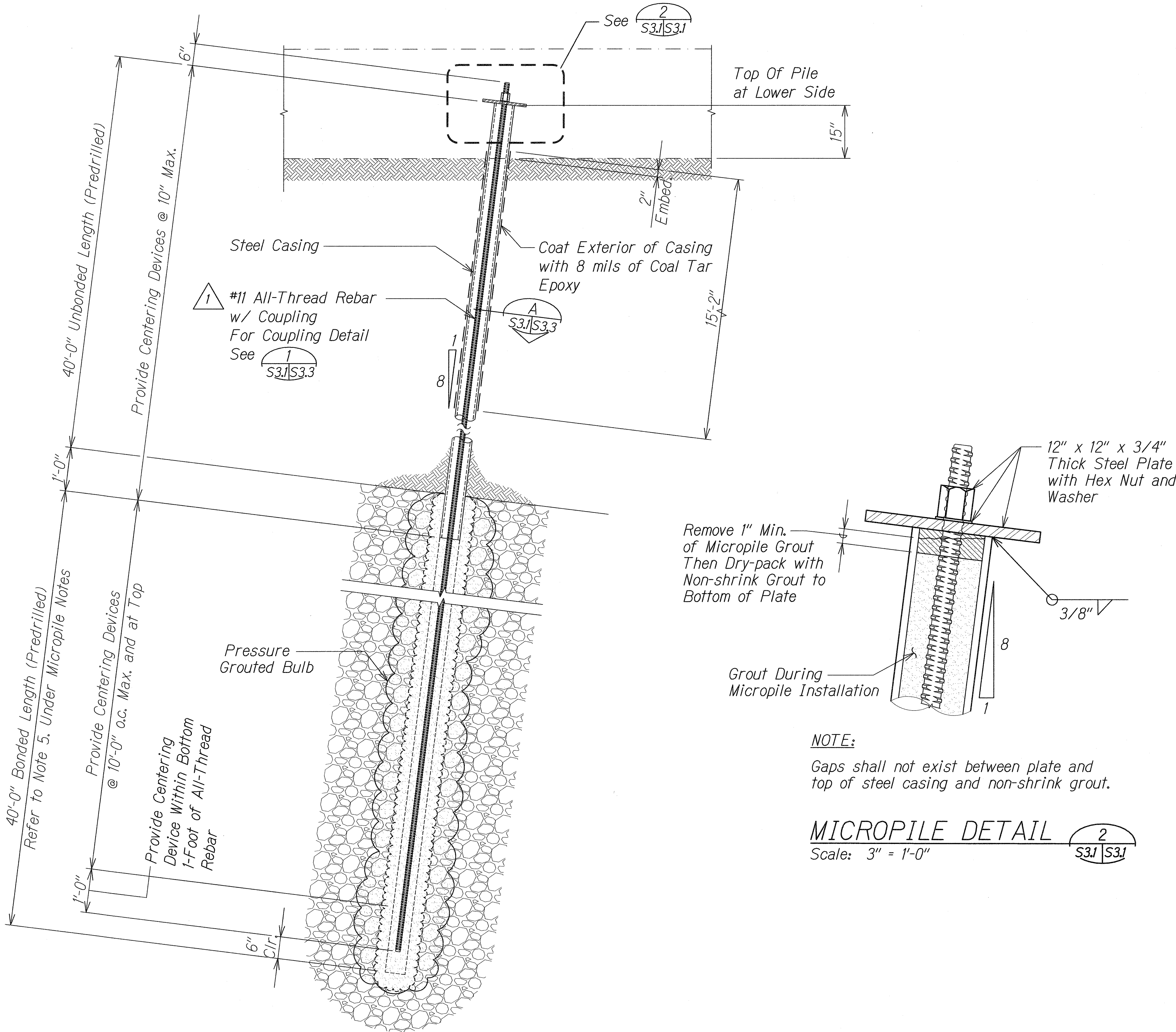
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MICROPILE DETAILS AND NOTES

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Federal-Aid Project No. STP-0300(125)

Scale: As Shown Date: Dec. 2011

SHEET No. S3J OF 17 SHEETS



TYPICAL MICROPILE DETAIL
Scale: 3/4" = 1'-0"

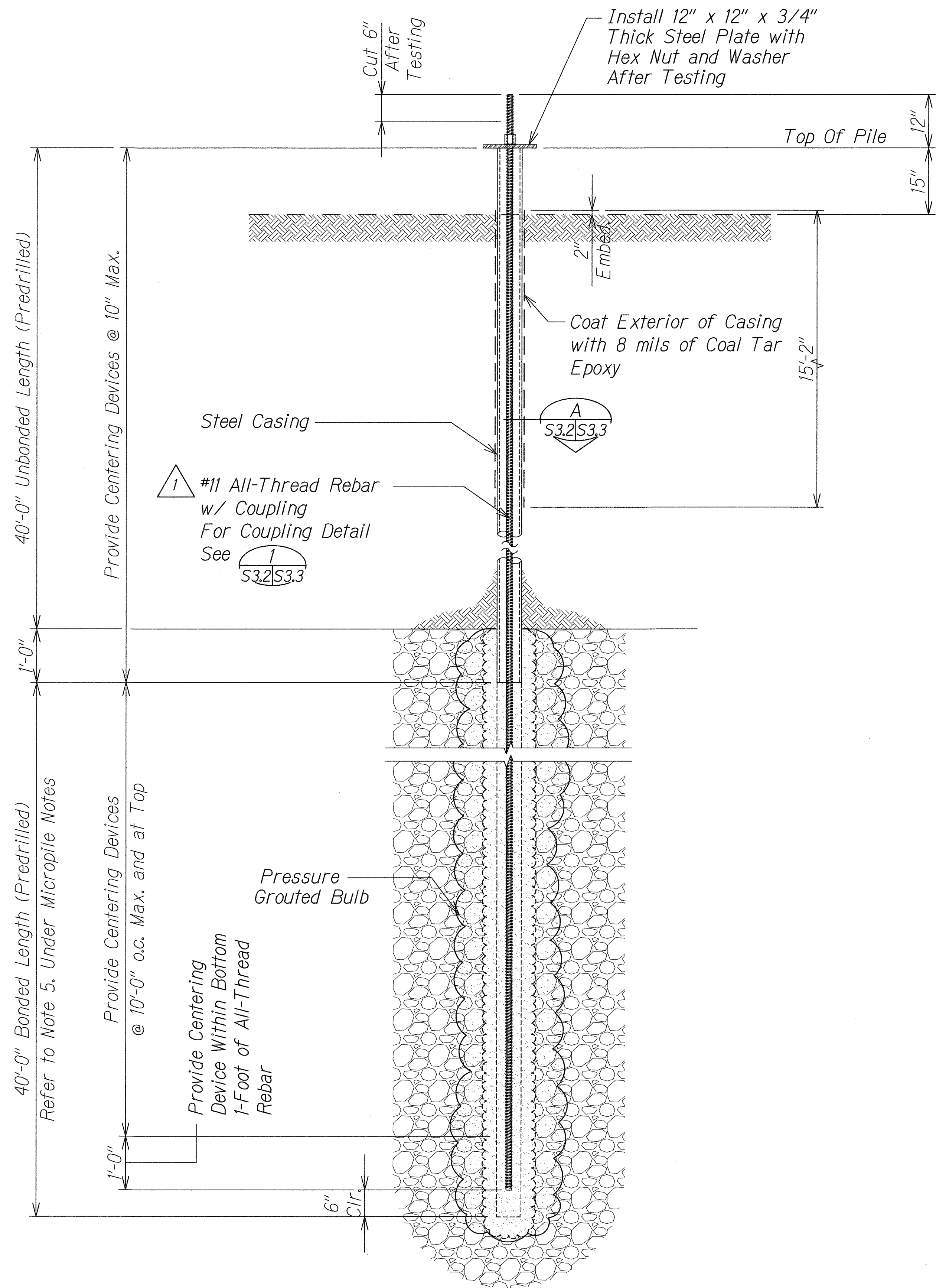
MICROPILE DETAIL
Scale: 3" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	CHECKED BY	

DRAWING NAME: Z:\00 ONGOING\9041-CASTLE HILLS KAPUNAHALA STR DRAINAGE IMPROVEMENT\01-19-12 ADD\CH-S301 ADD.DWG PLOT TIME: 01-20-12, 8:38 AM

01/19/12	1	Revised Bar Size. Revised Demand Loads.
DATE	REVISION	

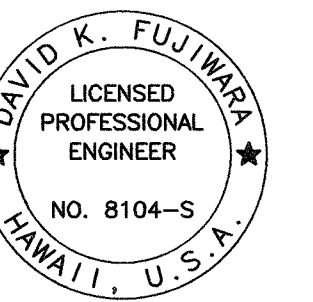
FED. ROAD DIST. NO.	STATE	FED. AID	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(125)	2011	ADD. 43	55



TYPICAL PREPRODUCTION MICROPILE DETAIL
 Scale: 3/4" = 1'-0"
 S3.2 S3.2

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	TRACED BY	
	QUANTITIES BY	
	CHECKED BY	

DRAWING NAME: Z:\00 ONGOING\9041-CASTLE HILLS KAPUNAHALA STR DRAINAGE IMPROVEMENT\01-19-12 ADD\CH-S301 ADD.DWG PLOT TIME: 01-20-12, 8:44 AM



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 KSF, INC. APRIL 30, 2012
 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PREPRODUCTION MICROPILE DETAIL

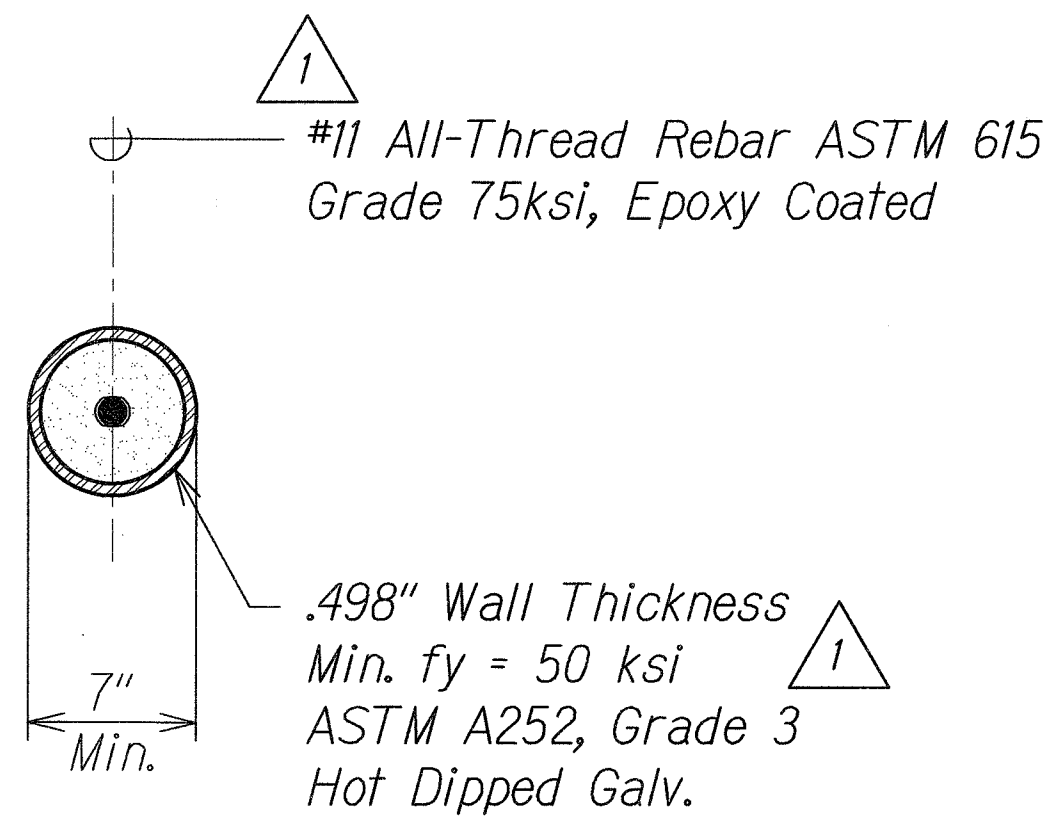
CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Federal-Aid Project No. STP-0300(125)

Scale: As Shown Date: Dec. 2011

SHEET No. S3.2 OF 17 SHEETS

01/19/12	1 Revised Bar Size.
DATE	REVISION

FED. ROAD DIST. NO.	STATE	FED. AID	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(125)	2011	ADD. 44	55

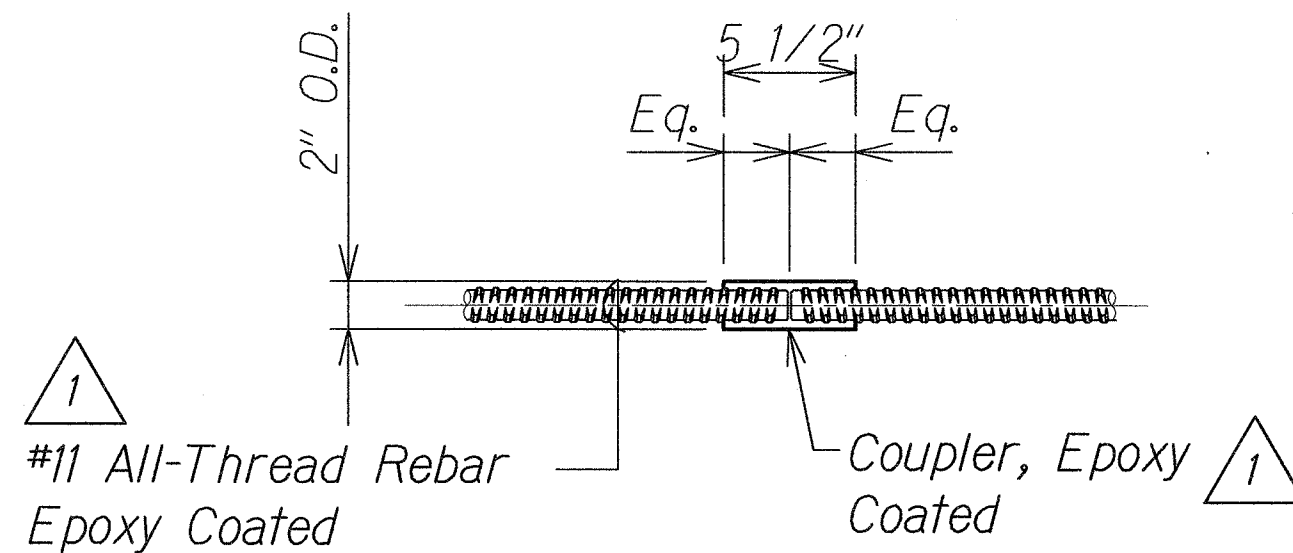
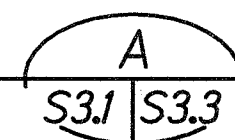


NOTES:

1. Centering devices (centralizers) shall be fabricated from plastic or material non-detrimental to the reinforcing steel.
2. The centralizer shall support the reinforcing such that a minimum of 2" of grout cover is provided and shall permit grout to flow freely up the drill hole.

TYPICAL MICROPILE SECTION

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

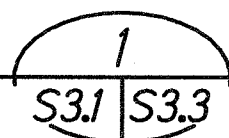


NOTE:

Coupler to develop full ultimate tensile strength of All-Thread Rebar.

COUPLER DETAIL OF ALL-THREAD REBAR

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



COUPLER INSTALLATION PROCEDURE

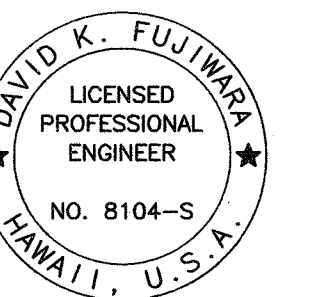
1. Apply corrosion inhibiting grease to the bare ends of the bars and the inside of the coupler.
2. Connect the two bar ends with the coupler. Each end shall be screwed into the coupler half the length of the coupler.
3. Add another coat of grease to bare bar and coupler and wrap with two layers of denso tape.

PREPARATION FOR FIELD CUT BARS

1. Cut corrosion protection and all-thread rebar with an abrasive saw (DO NOT USE A TORCH).

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
CHECKED BY	
QUANTITIES BY	
CHECKED BY	

DRAWING NAME: Z:\00 ONGOING\9041-CASTLE HILLS KAPUNAHALA STR DRAINAGE IMPROVEMENT\01-19-12 ADD\CH-S303 ADD1.DWG PLOT TIME: 01-20-12, 8:45 AM



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David K. Fujimura
KSF, INC. APRIL 30, 2012
LIC. EXP. DATE

01/19/12

Revised Bar Size. Revised Casing
Properties. Revised Coupler
Properties.

DATE

REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MICROPILE DETAIL AND SECTION

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Federal-Aid Project No. STP-0300(125)

Scale: As Shown Date: Dec. 2011

SHEET No. S3.3 OF 17 SHEETS

