Construction Plans for
Castle Hills Access Road
Drainage Improvements, Phase 2
Project No. (to be determined)

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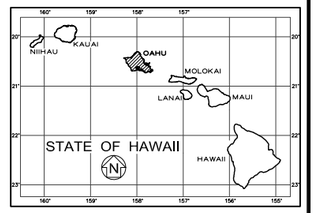
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	1	33

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

HONOLULU, HAWAII



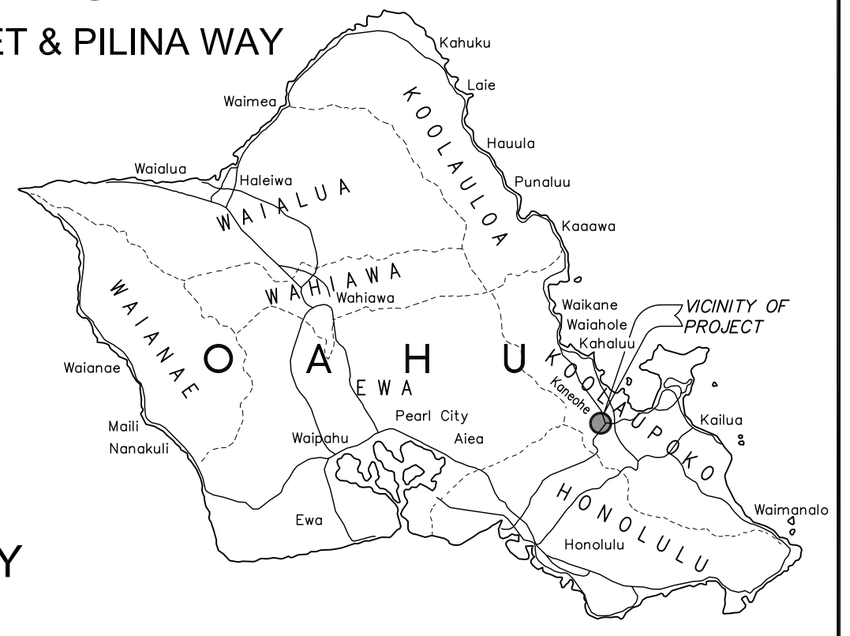
PLANS FOR

CASTLE HILLS ACCESS ROAD
DRAINAGE IMPROVEMENTS, PHASE 2

VICINITY OF POOKELA STREET, KUPOHU STREET & PILINA WAY

PROJECT NO.

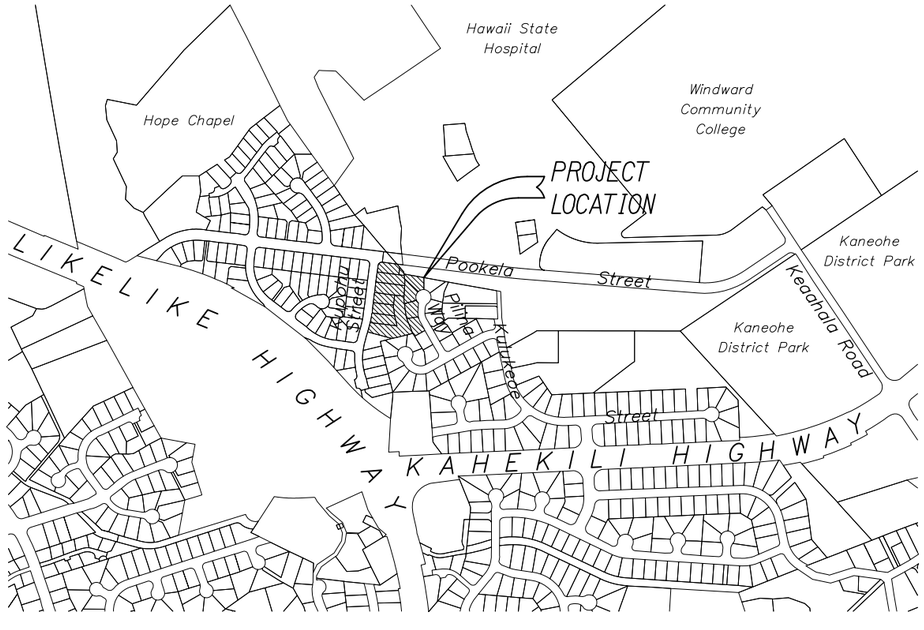
DISTRICT OF KOOLAUPOKO
ISLAND OF OAHU



PRELIMINARY

VICINITY MAP
NOT TO SCALE

4 0 4 8
SCALE IN MILES



400 0 200 400
SCALE IN FEET

LAYOUT PLAN

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	
APPROVED:	
DIR. OF TRANSPORTATION	DATE

PAREN, INC. — DESIGNED BY
HWY-DS — MANAGED BY
692-7552 — PHONE
APRIL 2010 — DATE

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

Wed, 19 May 2010 - 9:20am
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STANDARD PLANS SUMMARY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	2	33

STANDARD PLAN NO.	TITLE	DATE
B-01 ●	NOTES & MISCELLANEOUS DETAILS	05/31/07
B-03 ●	BACKFILL DETAILS AT EARTH RETAINING STRUCTURES	05/31/07
B-12	PRESTRESSED CONCRETE PILES & COMPRESSION SPLICE	05/31/07
	CAN DETAILS	
B-12A	PRESTRESSED CONCRETE PILES, PILE & COMPRESSION	05/31/07
	SPLICE CAN DETAILS & NOTES	
B-12B	PILE INTERACTION DIAGRAM	05/31/07
B-13	PRESTRESSED CONCRETE PILE BUILD-UP DETAILS	05/31/07

D-01	CATTLE GATE	05/31/07
D-02	CHAIN LINK FENCE WITH TOPRAIL	05/31/07
D-03	CHAIN LINK FENCE WITHOUT TOPRAIL	05/31/07
D-04	WIRE FENCE WITH METAL POSTS	05/31/07
D-05	TYPICAL DETAILS OF CURBS AND/OR GUTTERS	05/31/07
D-06	TYPICAL DETAIL OF REINFORCED CONCRETE DROP DRIVEWAY	05/31/07
D-07	CENTERLINE AND REFERENCE SURVEY MONUMENTS	05/31/07
D-08	STREET SURVEY MONUMENT	05/31/07
D-15	CONCRETE SIDEWALK	05/31/07
D-16	P.C.C. BUS PAD	05/31/07
D-17	P.C.C. BUS PAD	05/31/07
D-18	P.C.C. PAVEMENT LAYOUT	05/31/07
D-19	P.C.C. PAVEMENT W/ PERMEABLE BASE JOINT DETAILS	05/31/07
D-20	P.C.C. PAVEMENT W/ PERMEABLE BASE JOINT DETAILS	05/31/07
D-21	P.C.C. LONGITUDINAL JOINT DETAILS	05/31/07
D-22	P.C.C. CONNECTION TO CURBS AND GUTTERS	05/31/07
D-23	JOINTS	05/31/07

L-01	TREE PLANTING	08/16/06
L-02	TREE PLANTING	08/16/06
L-03	TREE TRANSPLANTING	08/16/06
L-04	PALM PLANTING	08/16/06
L-05	SHRUB PLANTING	08/16/06
L-06	LANDSCAPE DETAILS	08/16/06
L-07	LANDSCAPE DETAILS	08/16/06
L-08	LANDSCAPE DETAILS	08/16/06
L-09	LANDSCAPE DETAILS	08/16/06
L-10	LANDSCAPE DETAILS	08/16/06
L-11	PLANTING NOTES	08/16/06
L-12	IRRIGATION DETAILS	08/16/06
L-13	IRRIGATION DETAILS	08/16/06
L-14	IRRIGATION DETAILS	08/16/06
L-15	IRRIGATION DETAILS	08/16/06
L-16	IRRIGATION DETAILS	08/16/06
L-17	IRRIGATION DETAILS	08/16/06
L-18	IRRIGATION DETAILS	08/16/06
L-19	IRRIGATION DETAILS	08/16/06
L-20	IRRIGATION DETAILS	08/16/06
L-21	IRRIGATION DETAILS	08/16/06
L-22	IRRIGATION DETAILS	08/16/06
L-23	IRRIGATION DETAILS	08/16/06
L-24	IRRIGATION NOTES	08/16/06

STANDARD PLAN NO.	TITLE	DATE
H-01A	TYPE A CATCH BASIN	05/31/07
H-01B	TYPE B CATCH BASIN	05/31/07
H-01C	TYPE C CATCH BASIN	05/31/07
H-01D	TYPE D CATCH BASIN	05/31/07
H-01E	CATCH BASIN SECTIONS	05/31/07
H-02A	TYPE A1 CATCH BASIN	05/31/07
H-02B	TYPE B2 CATCH BASIN	05/31/07
H-02C	TYPE C1 CATCH BASIN	05/31/07
H-02D	TYPE D1 CATCH BASIN	05/31/07
H-02E	CATCH BASIN SECTION	05/31/07
H-03	TYPE A,B, AND C STORM DRAIN MANHOLE	05/31/07
H-04	TYPE D STORM DRAIN MANHOLE	05/31/07
H-05	TYPICAL REINFORCING DETAILS FOR DRAINAGE STRUCTURES	05/31/07
H-06	TYPICAL REINFORCING DETAILS FOR DRAINAGE STRUCTURES	05/31/07
H-07	CATCH BASIN AND MANHOLE CASTINGS	05/31/07
H-08	TYPE 1A-9 AND 1A-9P GRATED DROP INLET	05/31/07
H-09	TYPE 2A-9 AND 2A-9P GRATED DROP INLET	05/31/07
H-10	TYPE A-9 OR A-9P STEEL FRAMES	05/31/07
H-11	TYPE A-9 AND A-9P STEEL GRATES	05/31/07
H-12	TYPE 61614P AND 1211214P GRATED DROP INLET	05/31/07
H-13	TYPE 61616P AND 1211216P GRATED DROP INLET	05/31/07
H-14	TYPE 61214P GRATED DROP INLET	05/31/07
H-15	TYPE 1211214, 1211214P, 1211216, 1211216P STEEL	05/31/07
	FRAME AND GRATES	
H-16	TYPE 61614, 61614P, 61616, 61616P STEEL FRAME	05/31/07
	AND GRATES	
H-17	TYPE 61214 STEEL FRAMES AND GRATES	05/31/07
H-18	TYPE 61214P STEEL GRATES	05/31/07
H-19	TYPE 61614B STEEL FRAME AND GRATES	05/31/07
H-20	CEMENT RUBBLE MASONRY STRUCTURES	05/31/07
H-21	CONCRETE AND CEMENT RUBBLE MASONRY STRUCTURES	05/31/07
H-22	INLET/OUTLET STRUCTURE	05/31/07
H-23	INLET/OUTLET STRUCTURE	05/31/07
H-24	FLARED END SECTION FOR CULVERTS	05/31/07
H-25	FLARED END SECTION FOR CULVERTS	05/31/07
H-26	CONCRETE SPILLWAY INLET	05/31/07
H-27	CAP COUPLING DETAILS STANDARD JOINT	05/31/07
H-28	REINFORCED CONCRETE COLLAR & JACKET	05/31/07
H-29	UNDERDRAIN CLEANOUT STEEL FRAME AND COVER	05/31/07
H-30	UNDERDRAIN CONNECTION TO DRAINAGE STRUCTURE	05/31/07

TE-01	SIGN HEIGHT AND LOCATION	07/11/08
TE-1A	SIGN INSTALLATION	07/11/08
TE-02A	GALVANIZED FLANGED CHANNEL SIGN POST MOUNTING	05/31/07
TE-02B	GALVANIZED FLANGED CHANNEL SIGN POST MOUNTING	05/31/07
TE-02C	GALVANIZED FLANGED CHANNEL SIGN POST MOUNTING	05/31/07
TE-03A	GALVANIZED SQUARE TUBE SIGN POST MOUNTING	05/31/07
TE-03B	GALVANIZED SQUARE TUBE SIGN POST MOUNTING	05/31/07
TE-04	REGULATORY SIGNS	07/11/08
TE-05	WARNING SIGNS	07/11/08
TE-06	MISCELLANEOUS SIGNS	07/11/08
TE-07	CONSTRUCTION SIGNS	07/11/08
TE-08	MISCELLANEOUS INTERSECTION SIGNS	07/11/08

STANDARD PLAN NO.	TITLE	DATE
TE-09	BIKE ROUTE SIGN & SUPPLEMENTARY PLATES	07/11/08
TE-10	INTERSTATE ROUTE MARKER	07/11/08
TE-11	STATE ROUTE MARKER AND AUXILIARY MARKERS	07/11/08
TE-12	STATE ROUTE MARKER AND BORDER DETAIL FOR	07/11/08
	GUIDE SIGNS	
TE-12A	ROUTE SIGN ASSEMBLIES	07/11/08
TE-13	STREET NAME SIGN ON MAST ARM	07/11/08
TE-14	MISCELLANEOUS REFLECTOR MARKERS	07/11/08
TE-15	OBJECT MARKERS	07/11/08
TE-16	MILE POSTS	07/11/08
TE-17A	CANTILEVER OVERHEAD SIGN ELEVATION & DETAILS	05/31/07
TE-17B	CENTILEVER SIGN FRAME DETAIL AND SECTION	05/31/07
TE-17C	CANTILEVER SIGN FRAME DETAIL	05/31/07
TE-17D	CENTILEVER SIGN FRAME SECTION	05/31/07
TE-17E	CENTILEVER SIGN FRAME DETAILS	05/31/07
TE-18A	TWO POST OVERHEAD SIGN FRAME ELEVATIONS	05/31/07
TE-18B	TWO POST SIGN FRAMING PLAN SECTION	05/31/07
TE-18C	TWO POST SIGN FRAMING SECTIONS AND DETAILS	05/31/07
TE-18D	TWO POST SIGN FRAME DETAILS	05/31/07
TE-18E	TWO POST SIGN FRAME DETAILS	05/31/07
TE-19A	OVERHEAD SIGN FRAMING SCHEDULE	05/31/07
TE-19B	SIGN POST DRILLED SHAFT FOUNDATION	05/31/07
TE-19C	SPREAD FOOTING	05/31/07
TE-19D	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.1	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.2	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.3	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.4	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.5	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19E	ANCHORAGE DETAILS	05/31/07
TE-19F	ANCHORAGE DETAILS	05/31/07
TE-19G	MISCELLANEOUS SIGN FRAME DETAILS	05/31/07
TE-19H	LUMINAIRE WALKWAY SUPPORT	05/31/07
TE-19J	FIXED MESSAGE LUMINAIRE SUPPORT	05/31/07
TE-19K	MISCELLANEOUS SIGN DETAILS	05/31/07
TE-19L	MISCELLANEOUS SIGN DETAILS	05/31/07
TE-19M	MISCELLANEOUS SIGN FRAME DETAILS	05/31/07
TE-20	SUPPORTS FOR GROUND MOUNTED GUIDE SIGN	05/31/07
TE-20A	SUPPORTS FOR GROUND MOUNTED GUIDE SIGN	05/31/07
TE-20B	SUPPORTS FOR GROUND MOUNTED GUIDE SIGN	05/31/07
TE-20C	SUPPORTS FOR GROUND MOUNTED GUIDE SIGN	05/31/07
TE-21A	SIGN BREAKAWAY MOUNTS	05/31/07
TE-21B	SIGN BREAKAWAY MOUNTS	05/31/07
TE-22	LAMINATED ALUMINUM SIGN PANELS (OVERHEAD)	07/11/08
TE-23	LAMINATED ALUMINUM SIGN PANELS (GROUND MOUNTED)	05/31/07
TE-24	SOLID ALUMINUM EXTRUDED SIGN PANEL AND	05/31/07
	ACCESSORY DETAILS	
TE-25	GUIDE SIGNS LUMINAIRE MOUNTINGS	05/31/07
TE-26	RAISED PAVEMENT MARKERS AND STRIPING	07/11/08
TE-27	RAISED PAVEMENT MARKERS AND STRIPING	07/11/08
TE-28	ENTRANCE AND EXIT PAVEMENT MARKINGS	07/11/08
TE-28A	MISCELLANEOUS PAVEMENT MARKINGS	07/11/08
TE-29	PAVEMENT ARROWS AND SYMBOLS	07/11/08
TE-30	PAVEMENT ALPHABETS, NUMBERS & SYMBOLS	07/11/08

STANDARD PLAN NO.	TITLE	DATE
TE-31	PAVEMENT ALPHABETS, NUMBERS & SYMBOLS	07/11/08
TE-32	TYPE I & II TRAFFIC SIGNAL SYSTEM MISC. DETAILS	05/31/07
TE-33	TYPE II TRAFFIC SIGNAL SYSTEM	08/16/06
TE-33A.1	TYPE II TRAFFIC SIGNAL STANDARD	05/31/07
TE-33A.2	TYPE II TRAFFIC SIGNAL STANDARD	05/31/07
TE-34	LOOP DETECTOR DETAILS	07/11/08
TE-35	LOOP DETECTORS & DUCT DETAILS	07/11/08
TE-36	TRAFFIC SIGNAL DETAILS	07/11/08
TE-37	PULLBOX & COVER DETAILS	07/11/08
TE-37A	TYPE "A" TRAFFIC PULLBOX	05/31/07
TE-37B	TYPE "A" TRAFFIC PULLBOX REINFORCING	05/31/07
TE-37C	TYPE "B" TRAFFIC PULLBOX	05/31/07
TE-37D	TYPE "B" TRAFFIC PULLBOX REINFORCING	05/31/07
TE-37E	TYPE "B" TRAFFIC PULLBOX FOUNDATION	05/31/07
TE-37F	TYPE "C" TRAFFIC PULLBOX	05/31/07
TE-37G	TYPE "C" TRAFFIC PULLBOX REINFORCING	05/31/07
TE-37H	TYPE "C" TRAFFIC PULLBOX FOUNDATION	05/31/07
TE-37J	TRAFFIC PULLBOX COVER AND DETAILS	05/31/07
TE-38	TYPE III TRAFFIC SIGNAL STANDARD	05/31/07
TE-38A.1	TYPE III TRAFFIC SIGNAL STANDARD	05/31/07
TE-38A.2	TYPE III TRAFFIC SIGNAL STANDARD	05/31/07
TE-39	METAL GUARDRAIL CONNECTION TO CONCRETE BARRIER	07/11/08
TE-40	CONCRETE BARRIER TRANSITION	05/31/07
TE-40A	CONCRETE BARRIER TRANSITION SECTIONS	05/31/07
TE-41	GUARDRAIL TYPE 4 (RIGID BARRIER)	05/31/07
TE-42	PORTABLE CONCRETE BARRIER	05/31/07
TE-43	PORTABLE CONCRETE BARRIER	05/31/07
TE-44	GUARDRAIL TYPE 4 MISCELLANEOUS DETAILS	05/31/07
TE-45	BARRICADES	07/11/08
TE-46	DELINEATION & PAVEMENT MARKINGS AT NARROW BRIDGES	07/11/08
TE-47	HIGHWAY LIGHT STANDARD	05/31/07

NOTE:

STANDARD PLAN APPLICABLE TO THIS PROJECT ARE INDICATED BY A "●" NEXT TO THE STANDARD PLAN NO. (B-01 ●)

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

RUSSELL M. ARAKAKI
LICENSED PROFESSIONAL ENGINEER
No. 8297-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

ParEn, Inc.
dba PARK ENGINEERING

APRIL 30, 2010
LIC. EXP. DATE

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLANS SUMMARY

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: None *Date: April 2010*

SHEET No. *1* OF *1* SHEETS

DATE	REVISION

Wed, 19 May 2010 - 9:21am
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	3	33

LEGEND

- Existing Overhead Utility Line (o/h u)
- Existing Power Pole (pp)
- Existing 8" Water Line (w-8)
- Existing Water Manhole (wmh)
- Existing Water Valve Box (wv)
- Existing Street Monument
- Existing Drain Line (d)
- Existing Underdrain Line (ud)
- Existing Drain Manhole (dmh)
- Existing Drop Intake (di)
- Existing Catch Basin (cb)
- Existing Traffic Sign
- Existing Light Standard (lt std)
- Existing Fire Hydrant (fh)
- Existing Tree
- Existing Contour, Elev.=175-ft. (175)
- Finish Contour, Elev.=180-ft. (180)
- Existing Grouted Rubble Paving
- New Erosion Control Mating
- New Pavement Areas

ABBREVIATIONS:

AC	Asphalt Concrete
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
ARV	Air Relief Valve
℄, B.L.	Baseline
BB	Bottom of Bank
BC	Bottom of Curb
BPU	Backflow Prevention Unit
BVC	Begin Vertical Curve
BW	Bottom of Wall
BWE	Bottom of Wall Elevation
CATV	Cable Television
CB	Catch Basin
C & C	City and County of Honolulu
℄, C.L.	Centerline
CLF	Chain Link Fence
CMP	Corrugated Metal Pipe
CNR	Corner
CO	Cleanout
CONC	Concrete
CRM	Cement Rubble Masonry
CULV	Culvert
D/W	Driveway
DET.	Detail
D.I.	Ductile Iron
D.L.	Drain Line
DMH	Drain Manhole
DSYL	Double Solid Yellow Pavement Stripe
DWL	Dashed White Pavement Stripe
ECM	Erosion Control Matting
EP	Edge of Pavement
EQN.	Equation
EQUIV.	Equivalent
ES	Edge of Shoulder
ESMT	Easement
EVC	End Vertical Curve
EXIST	Existing
FH	Fire Hydrant
FRP	Fiberglass Reinforced Plastic
FT.	Foot, Feet
GA	Guy Anchor
GALV.	Galvanized
GAP	Guy Anchor Pole
G.C.	Grade Control
GDI	Grated Drop Inlet
GRD	Ground
GRP	Grouted Rubble Paving
GUT	Gutter
HDPE	High Density Polyethylene
HDWL	Headwall
HMA	Hot Mix Asphalt
HT	Hawaiian Telcom
HWY	Highway
INV.	Invert
LT.	Left
Maint.	Maintenance
M.B.	Mail Box
N.T.S.	Not To Scale
O/S	Offset
PAVT	Pavement
PIVC	Point of Intersection on Vertical Curve
POC	Point on Curve
PRVC	Point of Reverse Vertical Curvature
PVGC	Point of Vertical Grade Change
RCP	Reinforced Concrete Pipe
R/W	Right-Of-Way
RT.	Right
SCF	Sediment Control Filter
S.E.	Superelevation
SHLDR.	Shoulder
SHT	Sheet
SL.	Slope
S.L.	Street Light
SLB	Street Light Box
SLP	Street Light Pole
SMH	Sewer Manhole
SRAP	Spiral Rib Aluminum Pipe
STA.	Station
STD.	Standard
S/W	Sidewalk
SWL	Solid White Pavement Stripe
SYL	Solid Yellow Pavement Stripe
TB	Top of Bank
TC	Top of Curb
TFE	Top of Footing Elevation
T & G	Tongue and Groove
TW	Top of Wall
TWE	Top of Wall Elevation
V.C.	Vertical Curve
W.L.	Water Line
WM	Water Meter
WMH	Water Manhole
WWF	Welded Wire Fabric
WV	Water Valve

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

RUSSELL M. ARAKAKI
LICENSED PROFESSIONAL ENGINEER
No. 8297-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

ParEn, Inc.
dba PARK ENGINEERING

APRIL 30, 2010
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LEGEND & ABBREVIATIONS

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. 1 OF 1 SHEETS

DATE	REVISION

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

Wed, 19 May 2010 - 9:21am
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	4	33

CONSTRUCTION NOTES:

GENERAL:

1. The scope of work for this project includes demolition of existing homes, walls and other existing improvements; construction of a new gabion wall, vinyl fencing and gates with concrete mow strip and concrete driveway; grading and various appurtenant and incidental work.

2. Construction and restoration of all existing highway facilities within State highway right-of-way shall be done in accordance with all applicable sections of the current "Standard Specifications For Road and Bridge Construction" and the Project Plans and Special Provisions.

3. The existence and location of underground utilities, manholes, monuments and structures as shown on the plans are from the latest available data but the accuracy is not guaranteed. The encountering of other obstacles during the course of work is possible. The Contractor shall tone for all utility lines before starting any work. The Contractor shall be held liable for any damages incurred to the existing facilities and/or improvements as a result of his operations.

4. Smooth riding connections shall be constructed at the limits of roadway resurfacing, including the beginning and end of project, connecting approaches, side streets and driveways as shown on the plans and/or as directed by the Engineer.

5. All saw cutting work shall be considered incidental to Roadway Excavation. The Contractor shall clean up any cuttings and shall not wash down material into the storm drain or sewer systems.

6. All work specified in the contract but not listed separately in the proposal schedule shall be considered incidental to other various contract items and shall not be paid for separately.

7. All work to remove temporary facilities by the Contractor shall be considered incidental to the various contract items in the proposal.

NOTIFICATION:

8. The Contractor shall obtain a Permit to Perform Work Upon State Highways from the Oahu District Engineer, State Highways, at 727 Kakoi Street, prior to commencement of work within the State's highway right-of-way.

9. The Permit to Perform Work Upon State Highways may be revoked because of default in any of the following, but not limited to, conditions:
   a. Work performed before or after permitted hours.
   b. Failure to maintain roadway surfaces in a smooth and safe condition.
   c. Failure to clean up construction debris generated from project work.
   d. Failure to provide proper traffic control.
   e. Failure to replace damaged pavement markings and signs.

   Any revocation of the permit shall be at the Contractor's expense and no additional cost to the State and no additional contract time will be added.

10. The Contractor shall notify the Engineer in writing, two (2) weeks prior to starting paving operations.

11. The Contractor shall notify the Honolulu Fire and Police Departments, Ambulance and the Oahu Transit Services, Inc. (OTS), Ed Sniffen at 848-4571, or Lowell Tom at 848-1578, two (2) weeks prior to commencing any work. The Contractor shall inform OTS of the location and scope of work, proposed closure of any street or traffic lanes, and the need to relocate any bus stop.

12. The Contractor shall inform the State Highways' Permit Office (831-6712) at least two (2) days prior to closing any lanes or performing any trench restoration work. This work shall include any backfilling and compacting of trench material; placing and compacting of base course material; and any paving operations. Any trench restoration work performed by the Contractor that is not witnessed by a State Representative will be required to be removed and restored with a State Representative present. All restoration work will be at the Contractor's expense.

13. In the event any artifacts or human remains are uncovered during construction operations, the Contractor shall immediately suspend work and notify the Honolulu Police Department, the State Department of Land and Natural Resources-Historic Preservation Division (692-8015), and the State's Engineer.

PRECAUTION:

14. The Contractor shall exercise care to minimize damages to existing highway and roadway improvements. All damages shall be repaired by the Contractor, at his expense, to the satisfaction of the Engineer.

15. The Contractor shall exercise care when performing work in or adjacent to the State highway right-of-way. Damages to the existing facilities shall be immediately reported to the respective utility company, private owner, and/or City/State agency. The repair work shall be done at the Contractor's expense.

16. Contractor shall take proper precautions when working near overhead lines.

WORK EXECUTION:

17. Work may be performed only between the hours of 8:30 a.m. to 3:00 p.m., Monday through Friday, except holidays, unless otherwise permitted by the Engineer. During work hours, only one lane of traffic shall be closed, unless otherwise approved in writing by the Engineer.

18. No material and/or equipment shall be stockpiled or otherwise stored within the Highway Right-of-Way except at locations designated in writing and approved by the Engineer.

19. The Contractor shall reference, to the satisfaction of the Engineer, all existing traffic signs, posts & pavement markings prior to the commencement of construction. The Contractor shall replace or repair all traffic signs, posts & pavement markings disturbed by his activities, at his expense, unless directed otherwise by the Engineer or his representative.

20. All regulatory, guide and construction signs and barricades shall have a high intensity reflective background. Portable concrete barriers shall be reflectorized in accordance with the "Standard Plans", State of Hawaii, Department of Transportation.

21. All traffic control devices including: signs, barricades, vertical panels, drums, warning lights, arrow boards, changeable message signs, cones, delineators and markers shall conform to the American Traffic Safety Services Association (ATSSA) "Quality Standard for Work Zone Traffic Control Devices" dated 2003, and the MUTCD. Compliance with these requirements shall be as described in Section 645 - Work Zone Traffic Control.

22. The Contractor shall provide, install, and maintain all necessary signs, lights, flares, markers, barricades, cones, and other protective facilities, and shall take all necessary precautions for the protection, convenience, and safety of public traffic. All such protective facilities and precautions to be taken shall conform with the "Administrative Rules of Hawaii Governing the Use of Traffic Control Devices at Work Sites on or Adjacent to Public Streets and Highways", adopted by the Director of Transportation, and the current U.S. Federal Highways Administration "Manual on Uniform Traffic Control Devices, Part VI - Temporary Traffic Control and NCHRP350.

23. Traffic signals shall be kept operational during construction. Temporary operational microwave or other approved detection devices shall be installed three (3) working days prior to any signalized intersection excavation work. All work shall be done in accordance to the requirements of the Department of Transportation Services, City and County of Honolulu, and paid for by the Contractor.

24. All construction signs shall be left in place until all construction items have been completed unless otherwise directed by the Engineer. The Contractor shall obtain prior approval from the Engineer to remove construction signs.

25. After the project is completed, the Contractor shall restore grades and ground cover within the project limits to a condition equal or better than the existing condition prior to construction.

ACCESS:

26. Existing pedestrian routes shall be maintained in an ADA accessible condition or an alternate route must be provided around the construction area. Per Americans with Disabilities Act Accessibility Guidelines (ADAAG) Section 4.1.1.(4), the temporary accessible route shall comply with the guidelines found in ADAAG Section 4.3, "Accessible Route".

27. Where pedestrian walkways exist, they shall be maintained in a safe and passable condition, or other facilities for pedestrians shall be provided. Passages between walkways at intersections shall likewise be provided. All walkways shall conform to ADA requirements.

28. Driveways shall be kept open unless the owners of the properties using these rights-of-way are otherwise provided for satisfactorily.

29. The minimum clearance around fire hydrants, utility poles, light standard, or any other obstruction shall be 3'-0".

30. A minimum of 36" clear width and 80" headroom clearance height shall be maintained along sidewalk and potential walkways.

31. The Contractor shall provide for access to and from all existing side streets, sidewalks, ADA access routes complying with ADAAG 4.3, driveways and adjacent properties at all times.

32. Design and construction of public access shall be in accordance with the Americans with Disabilities Act.

TRENCHING:

33. The Contractor shall take a profile along the centerline of the proposed utility trench both before commencing trench excavation work and after trench has been repaved. Profiles shall be submitted to the District Engineer and shall used to verify the roadway surface has been restored to its original condition or smoother.

34. Unless otherwise noted, no trench shall be opened more than 300 feet in advance of installed and tested pipeline and/or ductline.

35. The Contractor shall provide an adequate and safe non-skid bridging material, including shoring, over trenches in pavement areas. The bridging shall be able to support all types of vehicular traffic.

36. The Contractor will make every effort to minimize the use and the duration of use of steel plates. All steel plates shall have a non-skid surface. The State may require the backfilling of patches of trenches due to the excessive usage of steel plates.

37. Temporary cold mix trench patches will be permitted in any given area for a maximum duration of two weeks, and shall be a minimum of 2-inches thick. All temporary patches shall be placed over properly placed and compacted backfill and base course layers. The Contractor shall be responsible for maintaining all temporary patches and to make repairs to unsatisfactory patches within 24 hours.

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

RUSSELL M. ARAKAKI
LICENSED PROFESSIONAL ENGINEER
No. 8297-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

ParEn, Inc.
dba PARK ENGINEERING

APRIL 30, 2010
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION NOTES

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: None Date: April 2010

SHEET No. 1 OF 3 SHEETS

DATE	REVISION

ORIGINAL PLANS
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
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No.

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	5	33

CONSTRUCTION NOTES (CONTINUED):

38. At the end of each day's work, the Contractor shall remove all equipment and other obstructions to permit free and safe passage of traffic.

39. Existing drainage systems will be functional at all times during construction. The Contractor shall furnish materials, equipment, labor, tools and incidentals necessary to accomplish maintenance and control of flow. The cost shall be incidental to the various Contract Items.

DRAINAGE:

40. The Contractor shall verify the locations of all existing culverts and utilities in the field. Any existing culverts and utilities damaged during construction shall be repaired or replaced by the Contractor at his own expense.

41. Only non-pneumatic type of drill as approved by the Engineer will be permitted for drilling holes in concrete. Where indicated on Plans, the approximate diameter of drilled holes for installation of dowels shall be 7/8"Ø, and voids after installing dowels shall be filled with non-gaseous, non-shrink epoxy grout. Locate existing rebars before drilling and drill holes so they miss the existing rebars.

42. The existing drainage system and longitudinal drainage along the highway will be maintained and be functional at all times during construction. The Contractor shall furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. This work shall be considered incidental to the various contract items.

43. The Contractor shall remove all silt and debris deposited in drainage facilities, on roadways and in other areas resulting from his work. The costs incurred for any necessary remedial action by the Engineer shall be payable by the Contractor.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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No.	QUANTITIES BY	
	CHECKED BY	

REDUCED PLAN
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dba PARK ENGINEERING

APRIL 30, 2010
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION NOTES

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: None Date: April 2010

SHEET No. 2 OF 3 SHEETS

DATE	REVISION

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	6	33

WATER NOTES:

1. Unless otherwise specified, all materials and construction of the water system facilities and appurtenances shall be in accordance with the Standard Specifications For Road and Bridge Construction, dated 1994, as amended, of the Hawaii Highways Division, Department of Transportation, and the City and County of Honolulu Board of Water Supply's "Water System Standards", dated 2002, the "Water System External Corrosion Control Standards", Volume 3, dated 1991, and all subsequent amendments and additions.

2. All plans approved by the Board of Water Supply are based solely on the adequacy of the water supply. All other features of the water system, such as lines, grades, fittings, drainage, etc., and other features of improvements shall not be the responsibility of the Board of Water Supply.

3. The existence and location of underground utilities and structures as shown on the plans are from the latest available data but is not guaranteed as to the accuracy or the encountering of other obstacles during the course of the work. The Contractor shall be responsible and pay for all damages to existing utilities. The Contractor shall not assume that where no utilities are shown, that none exist.

4. Re-approval shall be required if this project is not under construction within a period of two years.

5. The Contractor shall be responsible for the protection of all water lines during construction. The Contractor shall be especially careful when excavating behind water lines, tees, and bends wherever there is a possibility of water line movement due to the removal of the supporting earth beyond the existing reaction blocks. The Contractor shall take whatever measure necessary to protect the water lines, such as constructing special reaction blocks (with BWS approval) and/or modifying his construction method.

6. Prior to any excavating, the Contractor shall verify in the field the location of existing water mains and appurtenances.

7. The Contractor shall have existing water mains toned before construction of work in vicinity of water mains, call the Investigation Section at 748-5381 for toning services. Guardrail post locations are to be kept to a minimum clear distance of 18 inches to any 2-1/2 inch water lines and meter boxes. No post driving will be allowed when post is to be installed closer than 3 feet from water mains. Excavated areas shall be restored to their original condition.

8. The Contractor shall verify all existing service lateral locations whether shown or not shown on the plans prior to commencing with any of the work and shall not assume that where no services are shown none exists.

GRADING NOTES:

1. All grading work shall be done in accordance with Chapter 14, Articles 13, 14, 15 and 16, as related to Grading, Soil Erosion and Sediment Control of the Revised Ordinances of Honolulu, 1990, as amended, and Soils Report by Geolabs, Inc., dated April 29, 2009.

2. No Contractor shall perform any grading operation so as to cause falling rocks, soil or debris in any form to fall, slide or flow onto adjoining properties, streets or natural watercourses. Should such violation occur, the Contractor may be cited and the Contractor shall immediately make all remedial actions necessary.

3. The Contractor, at his own expense, shall keep the project area and surrounding area free from dust nuisance. The work shall be in conformance with the air pollution control standards contained in the Hawaii Administrative Rules, Title 11, Chapter 60.1, "Air Pollution Control".

4. The underground pipes, cables or ductlines known to exist by the engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depth prior to excavation for the new lines.

5. Adequate provisions shall be made to prevent surface waters from damaging the cut face of an excavation or the sloped surfaces of a fill. Furthermore, adequate provisions shall be made to prevent sediment-laden runoff from leaving the site.

6. All slopes and exposed areas shall be sodded or planted as soon as final grades have been established. Planting shall not be delayed until all grading work has been completed. Grading to final grade shall be continuous, and any area within which work has been interrupted or delayed shall be planted.

7. Fills on slopes steeper than 5:1 shall be keyed.

8. The City shall be informed of the location of the borrow/ disposal site for the project when the application for a grading permit is made. The borrow/disposal site must also fulfill the requirements of the grading ordinance.

9. No grading work shall be done on Saturdays, Sundays and holidays at any time without prior notice to the Director, DPP, provided such grading work is also in conformance with the community noise control standards contained in the Hawaii Administrative Rules, Title 11, Chapter 46, "Community Noise Control".

10. The limits of the area to be graded shall be flagged before the commencement of the grading work.

11. All grading operations shall be performed in conformance with the applicable provisions of the water quality and water pollution control standards contained in Hawaii Administrative Rules, Title 11, Chapter 54, "Water Quality Standards" and Title 11, Chapter 55 "Water Pollution Control" and if applicable, the NPDES permit for the project.

12. Where applicable and feasible the measures to control erosion and other pollutants shall be in place before any earth moving phase of the grading is initiated. The Contractor shall incorporate the measures described in the "Water Pollution and Erosion Control" notes.

13. Temporary erosion controls shall not be removed before permanent erosion controls are in-place and established.

14. Temporary Erosion Control Procedures shall be submitted for approval prior to application for grading permit.

15. If the grading work involves contaminated soil, then all grading work shall be done in conformance with applicable State and Federal requirements.

16. Pursuant to Chapter 6E, HRS, in the event any artifacts or human remains are uncovered during construction operations, the Contractor shall immediately suspend work and notify the Honolulu Police Department, the State Department of Land and Natural Resources-Historic Preservation Division (692- 8015) and the Engineer. In addition, for non-City projects, the Contractor shall inform the Civil Engineering Branch, DPP (768-8084)

17. Non-compliance to any of the above requirement shall mean immediate suspension of all work, and the remedial work shall commence immediately. All costs incurred shall be billed to the violator. Furthermore, violators shall be subjected to administrative, civil and/or criminal penalties.

18. For all projects, which disturb one (1) acre or more of land, the contractor shall not start construction until a notice of general permit coverage (NGPC) is received from the Dept. of Health, State of Hawaii, and has satisfied any other applicable requirements of the NPDES permit program. Also, for non-city and other non-governmental agency projects, the contractor shall provide a written copy of the NGPC to the Permitting and Inspection Section, Civil Engineering Branch, DPP, at least seven (7) calendar days before the start of the construction. For City or other governmental projects, the contractor should provide a written copy of the NGPC to the appropriate city department or governmental agency per their requirements.

19. All grading and construction work shall implement measures to ensure that the discharge of pollutants from the construction site will be reduced to the maximum extent practicable and will not cause or contribute to an exceedance of water quality standards.

20. For Benchmarks, see Sheets GP1 AND GP2.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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HAWAII, U.S.A.

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PartEn, Inc.
dba PARK ENGINEERING

APRIL 30, 2010
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION NOTES

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: None Date: April 2010

SHEET No. 3 OF 3 SHEETS

DATE	REVISION

Wed, 19 May 2010 - 9:25am
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	7	33

WATER POLLUTION AND EROSION CONTROL NOTES:

A. GENERAL:

1. See Section 209 - Water Pollution and Erosion Control. Section 209 describes but is not limited to: submittal requirements; scheduling of a water pollution and erosion control conference with the Engineer; construction requirements; method of measurement; and basis of payment.
2. Effective October 1, 2008, follow the guidelines in the "Construction Best Management Practice Field Manual", dated January 2008 in developing, installing and maintaining the Best Management Practices (BMP) for the project.
3. Follow the guidelines in the Honolulu's City & County "Rules Relating to Soil Erosion Standards and Guidelines" along with applicable Soil Erosion Guidelines for projects on Maui, Molokai, Kauai, and Hawaii.
4. The Engineer may assess liquidated damages of up to $27,500 for non-compliance of each BMP requirement and each requirement stated in Section 209, for every with day of non-compliance. There is no maximum limit on the amount assessed per day.
5. The Engineer will deduct the cost from the progress payment for all citations received by the Department for non-compliance, or the Contractor shall reimburse the State for the full amount of the outstanding cost incurred by the State.
6. For projects that require an NPDES Permit from the Department of Health, install a rain gage prior to any field work including the installation of any site-specific best management practices. The rain gage shall have a tolerance of at least 0.05 inches of rainfall, and have an opening of at least one-inch in diameter. Install the rain gage on the project site in an area that will not deter rain from entering the gage opening. The rain gage installation shall be stable and plumbed. Do not begin field work until the rain gage is installed and site-specific best management practices are in-place.

B. WASTE DISPOSAL:

1. Waste Materials
   Collect all waste materials in a in a securely lidded metal dumpster. The dumpster shall meet all local and State solid waste management regulations. Deosit all trash and construction debris from the site in the dumpster. The dumpster shall be emptied a minimum of twice per week or as often as is deemed necessary. Do not bury construction waste materials onsite. The Contractor's supervisory personnel shall be instructed regarding the correct procedure for waste disposal. Post notices stating these practices shall be posted in the office trailer and the Contractor shall be responsible for seeing that these procedures are followed.
2. Hazardous Waste
   Dispose hazardous waste materials in a manner specified by local or State regulations and by the manufacturer. The Contractor's site personnel shall be instructed in these practices and shall be responsible for seeing that these practices are followed.
3. Sanitary Waste
   Collect all sanitary waste from the portable units a minimum of once per week, or as required.

C. EROSION & SEDIMENT CONTROL INSPECTION & MAINTENANCE PRACTICES:

1. Inspect all control measures shall at least once each week and within 24 hours of any rainfall event of 0.5 inches or greater within a 24 hour period.
2. Maintain all measures in good working order. If repair is necessary, it shall be initiated within 24 hours after the inspection.
3. Remove built-up sediment from silt fence when it has reached one-third the height of the fence.
4. Inspect silt screen or fence for depth of sediment, tears, to verify that the fabric is securely attached to the fence posts or concrete slab and to verify that the fence posts are firmly in the ground. Inspect and verify the bottom of the silt screen is buried a minimum of 6 inches below the existing ground.
5. Inspect temporary and permanent seeding and planting for bare spots, washouts and healthy growth.
6. Make a maintenance inspection report promptly after each inspection. Submit a copy to the Engineer no later than one week from the date of the inspection.
7. Provide a stabilized construction entrance to reduce vehicle tracking of sediments. Include stabilized construction entrance in the Water Pollution, Dust, and Erosion Control submittals. Minimum length should be 50 feet. Minimum width should be 30 feet. Minimum depth should be 12 inches or as recommended by the Soils Engineer and underlain with geo-textile fabric. Clean the paved street adjacent to the site entrance daily or as required to remove any excess mud, cold planed material, dirt or rock tracked from the site. Cover dump trucks hauling material from the construction site with a tarpaulin.
8. Include designated Concrete Washout Area(s) in the Water Pollution, Dust, and Erosion Control submittals
9. Submit the name of a specific individual designated responsible for inspections, maintenance and repair activities and filling out the inspection and maintenance report.
10. Personnel selected for the inspection and maintenance responsibilities shall receive training from the Contractor. They shall be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order.
11. Contain, remove and dispose of slurry generated from saw cutting of pavement in accordance with approved BMP practices. Payment for confinement, removal and disposal of slurry shall be considered incidental to the various contract items.

D. GOOD HOUSEKEEPING BEST MANAGEMENT PRACTICES:

1. Materials Pollution Prevention Plan
   a. Applicable materials or substances listed below are expected to be present onsite during construction. Other materials and substances not listed below shall be added to the inventory.

Concrete	Fertilizers
Detergents	Petroleum Based Products
Paints (enamel and latex)	Cleaning Solvents
Metal Studs	Wood
Tar	Masonry Block

   b. Use Material Management Practices to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff. Make an effort to store only enough product as is required to do the job.
   c. Store all materials stored onsite in a neat, orderly manner in their appropriate containers and if possible under a roof or other enclosure.
   d. Keep products in their original containers with the original manufacturer's label.
   e. Do not mix substances with one another unless recommended by the manufacturer.
   f. Whenever possible, a product shall be used up completely before disposing of the container.
   g. Follow Manufacturer's recommendations for proper use and disposal.
   h. Conduct a daily inspection to ensure proper use and disposal of materials onsite.
2. Hazardous Material Pollution Prevention Plan
   a. Keep products in original containers unless they are not resealable.
   b. Retain original labels and material safety data sheets (MSDS).
   c. Dispose of surplus products according to manufacturers' instructions and local and State regulations.
3. Onsite and Offsite Product Specific Plan
   The following product specific practices shall be followed onsite:
   a. Petroleum Based Products:
      Monitor all onsite vehicles for leaks and perform regular preventive maintenance to reduce the chance of leakage. Store petroleum products in tightly sealed containers which are clearly labeled. Apply asphalt substances used onsite according to the manufacturer's recommendation.
   b. Fertilizers:
      Fertilizers used shall be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer shall be worked into the soil to limit exposure to storm wafer. Storage shall be in a covered shed. Transfer the contents of any partially used bags of fertilizer to a sealable plastic bin to avoid spills.
   c. Paints:
      Seal and store all containers when not required for use. Do not discharge excess paint to the highway drainage system. Dispose properly according to manufacturers' instructions or State and local regulations.
   d. Concrete Trucks:
      Wash out or discharge concrete truck drum wash water at a designated site. Do not discharge water in the highway drainage system or waters of the United States. Contact Drinking Water Branch, Department of Health at 586-4258 to receive permission to designate a disposal site. Clean disposal site as required or as requested by the Owner's representative.
4. Spill Control Plan
   a. Post a spill prevention plan to include measures to prevent and clean up each spill.
   b. The Contractor shall be the spill prevention and cleanup coordinator. Designate at least three site personnel who shall receive spill prevention and cleanup training. These individuals shall each become responsible for a particular phase of prevention and cleanup. Post the names of responsible spill personnel in the material storage area and in the office trailer onsite.
   c. Clearly post manufacturers' recommended methods for spill cleanup. Make site personnel aware of the procedures and the location of the information and cleanup supplies.
   d. Keep materials and equipment necessary for spill cleanup in the material storage area onsite.
   e. Clean up all spills immediately after discovery.
   f. Keep the spill area well ventilated. Personnel shall wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
   g. Report spills of toxic hazardous material to the appropriate State or local government agency, regardless of the size.

E. PERMIT REQUIREMENTS:

1. If a National Pollutant Discharge Elimination System (NPDES) Permit is required for Construction Activities of one acre or more, submit to the Engineer six sets of the Water Pollution and Erosion Control Submittals as detailed in Subsection 209.03 of the specifications.
2. If an NPDES Permit for Construction Dewatering is require, the Contractor shall be responsible to obtain the Permit from the Department of Health, Clean Water Branch.
3. Comply with all applicable State and Federal Permit conditions. Permits may include but are not limited to the following:
   a. NPDES Permit for Construction Activities
   b. NPDES Permit for Construction Dewatering
   c. Section 401 Water Quality Certification
   d. Stream Channel Alteration Permit
   e. Section 404 Army Corps of Engineer Permit
   f. Coastal Zone Management Federal Consistency Review

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER POLLUTION AND EROSION CONTROL NOTES
CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: None Date: April 2010

SHEET No. 1 OF 3 SHEETS

DATE	REVISION

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

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	8	33

BEST MANAGEMENT PRACTICES (BMP's) NOTES:

1. The Contractor shall install the erosion control measures at the locations shown, or as directed by the Engineer, as soon as practicable.

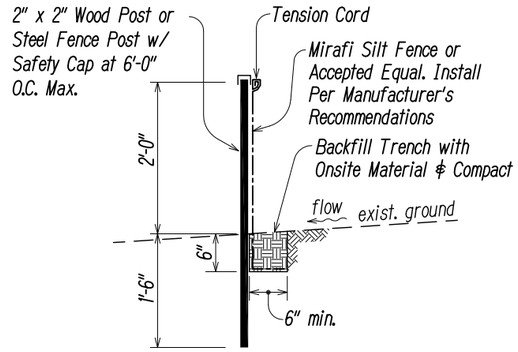
2. The stabilized construction entrance (ingress and egress) shall be constructed with 12" min. thick crushed rock (#2 coarse) layer over geotextile fabric (Geotex 250ST or accepted equal) to the dimensions and at the locations shown on the erosion control plan. Should the Contractor require an ingress and egress other than what is shown on the plans, the Contractor shall be responsible to obtain all necessary approvals, including relocating the crushed rock area as required.

3. Slopes and exposed areas shall be sodded or planted as soon as final grades have been established. Planting shall not be delayed until all grading has been completed. Grading to final grade shall be continuous and any area within which work has been interrupted or delayed shall be planted.

4. All Best Management Practices (BMP's) shall not be removed until all permanent erosion control controls are in place and established.

5. The Contractor shall cover the openings to all existing and proposed storm drain inlets with a filter system until permanent ground cover is established. Maintenance of inlet filters by the Contractor shall be included for the duration of the project.

6. At the ending of grading operations, existing storm drain inlets and manholes surrounding the project site shall be inspected and any accumulated sediment and debris found in the drain structures shall be removed. Flushing into the inlets and manholes is prohibited.



SECTION

TYPICAL SILT FENCE DETAIL
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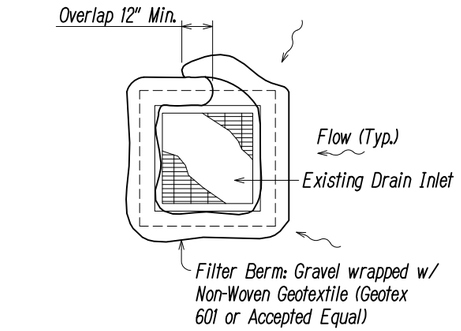

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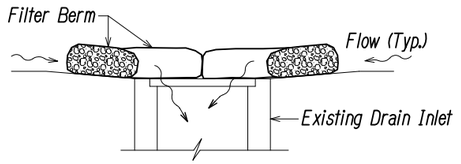
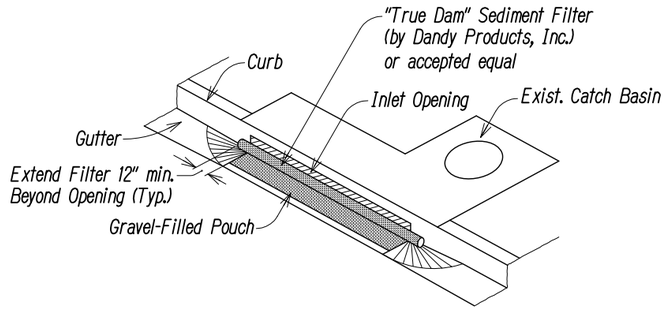


SECTION

TYPICAL FILTER BERM DETAIL
Not to Scale



NOTES:

1. Sediment control filters shall be installed and maintained at all designated existing catch basins at the project site. It shall also be installed at catch basin downstream of the projects site on Pilina Way and Kupohu Street.
2. The contractor shall remove filters at times of above normal rainfall events and replace them when the event has passed.

SEDITMENT FILTER CONTROL AT CATCH BASIN
Not to Scale

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

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APRIL 30, 2010
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EROSION CONTROL NOTES AND DETAILS

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. 2 OF 3 SHEETS

DATE	REVISION

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

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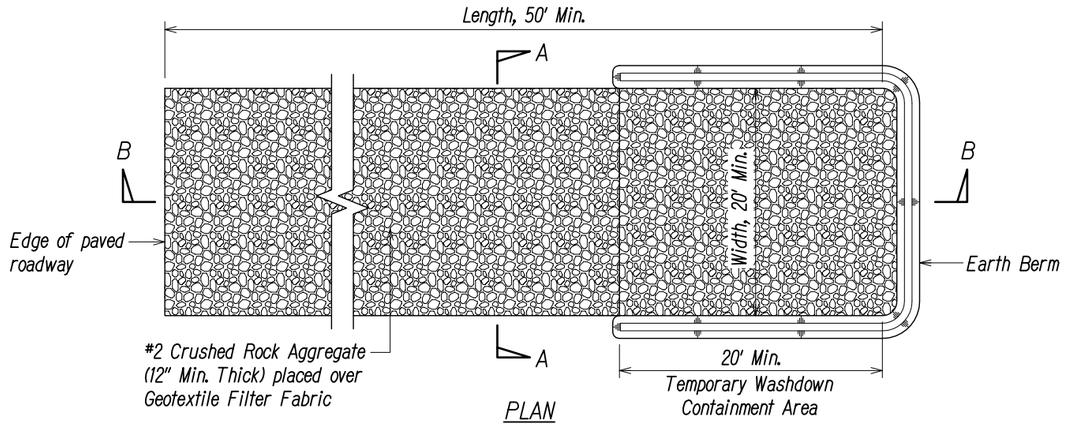
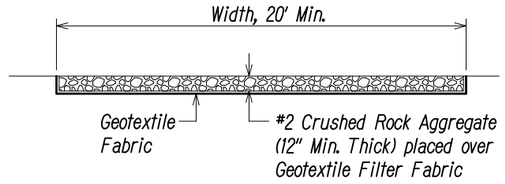
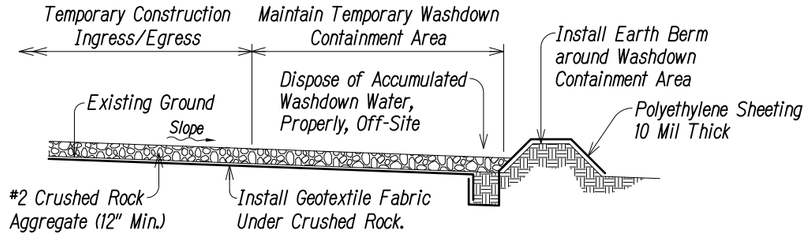
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	9	33



PLAN



SECTION A-A



SECTION B-B

TEMPORARY STABILIZED CONSTRUCTION INGRESS/EGRESS AND WASHDOWN CONTAINMENT AREA

Not to Scale

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

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

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HIGHWAYS DIVISION

EROSION CONTROL DETAILS

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. 3 OF 3 SHEETS

DATE	REVISION

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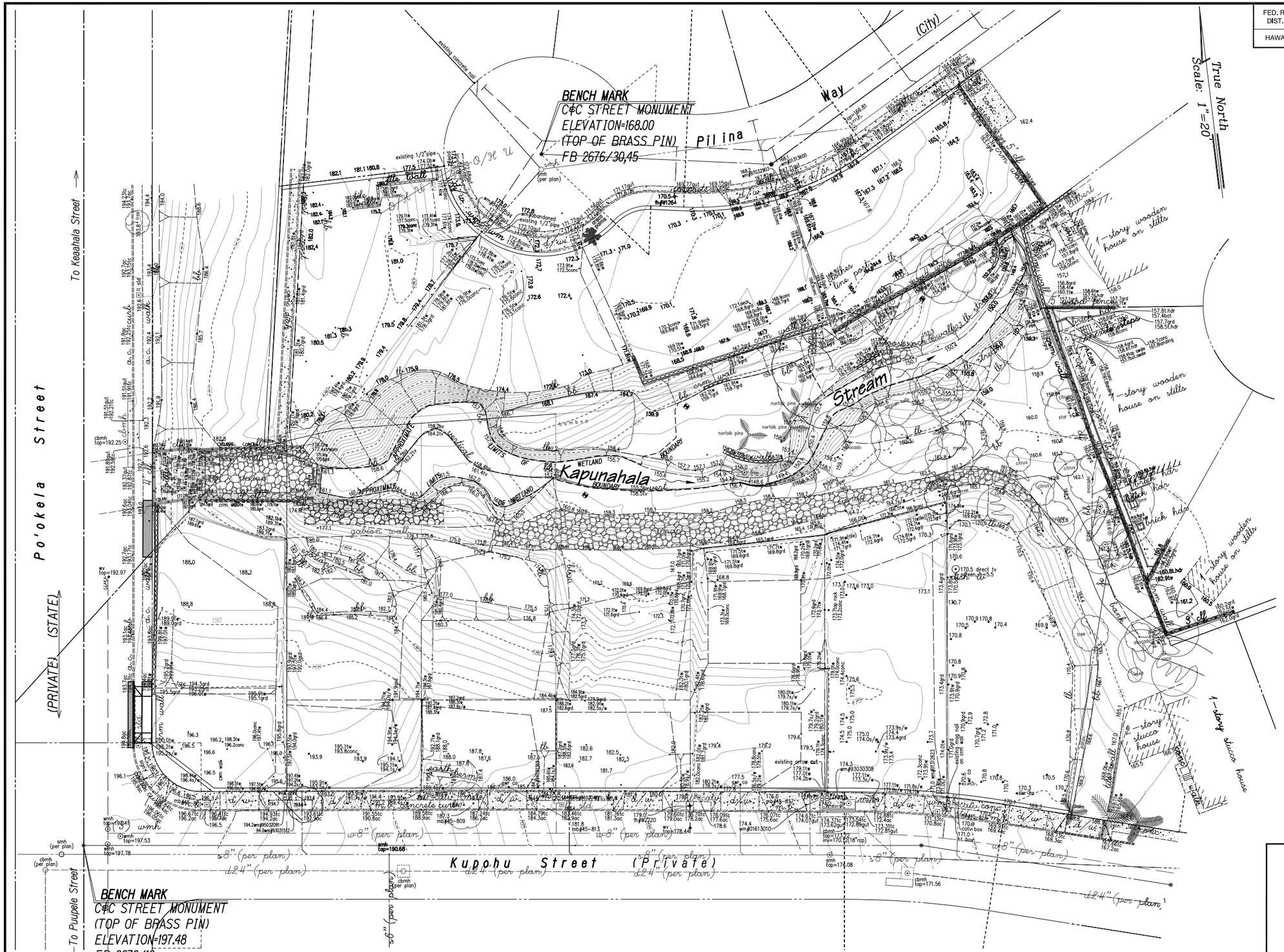
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	10	33



REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

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LIC. EXP. DATE

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	TRACED BY	
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No.	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXISTING CONDITIONS

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

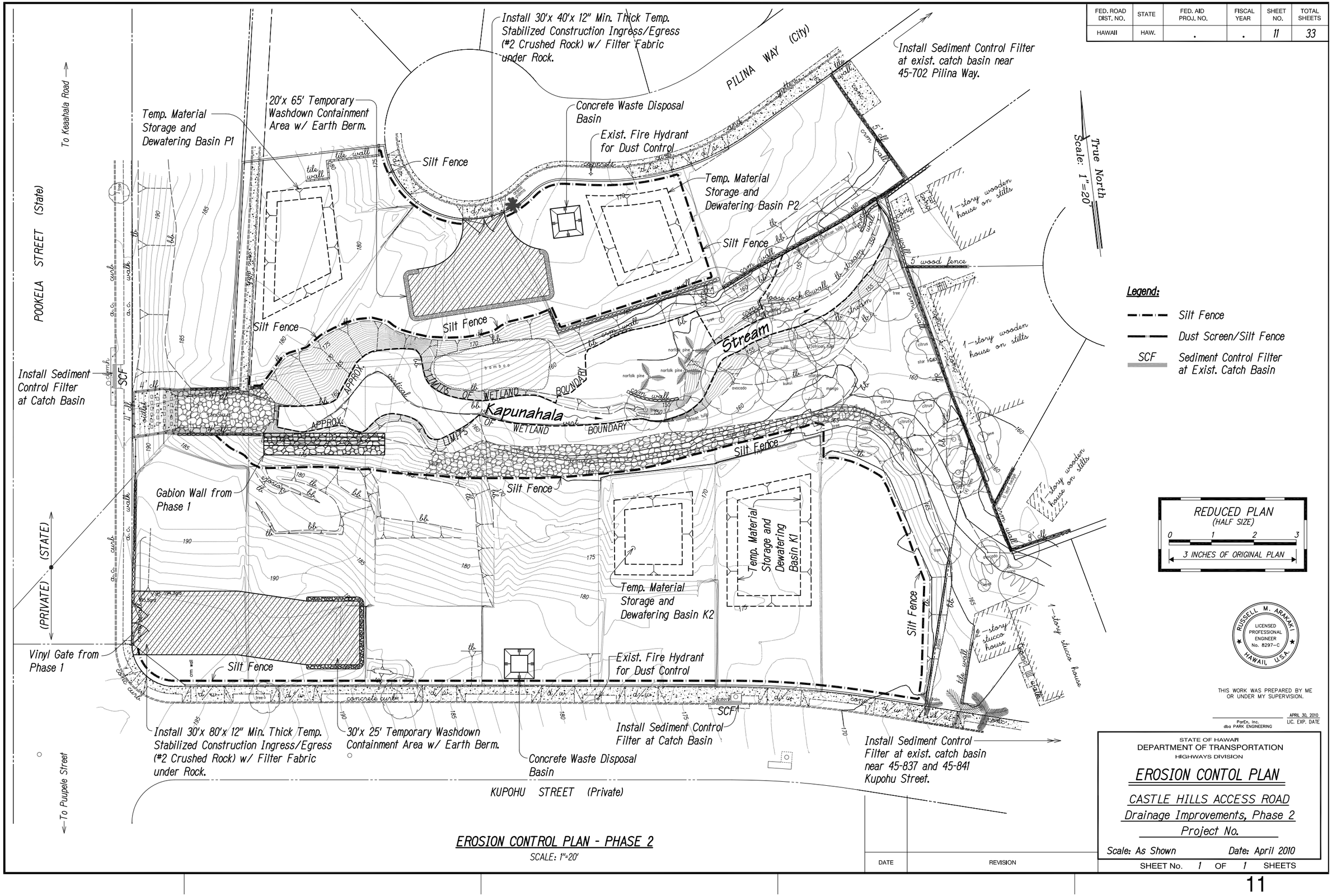
Scale: As Shown Date: April 2010

SHEET No. 1 OF 1 SHEETS

EXISTING CONDITIONS
SCALE: 1"=20'

DATE	REVISION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	11	33



Legend:

- Silt Fence
- Dust Screen/Silt Fence
- SCF — Sediment Control Filter at Exist. Catch Basin

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EROSION CONTOL PLAN

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. 1 OF 1 SHEETS

EROSION CONTROL PLAN - PHASE 2

SCALE: 1"=20'

DATE	REVISION

ORIGINAL PLANS	SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY — DATE
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	12	33

PILINA WAY (City)

Exist. 6-ft. High Vinyl Fence (Phase 1)

Exist. CRM Wall with 5-ft. high C.L. Fence To Remain

BENCH MARK
C&C STREET MONUMENT
(TOP OF BRASS PIN)
ELEVATION=168.00
FB 2676/30,45

Exist. 6-ft. high Vinyl Fence over Ditch

Exist. 6-ft. high Vinyl Fence (Phase 1)

Exist. 6-ft. High by 15-ft Wide Double Swing Vinyl Gate (Phase 1)

Exist. 6-ft. high Vinyl Fence (Phase 1)

To Keaahala Road

POOKELA STREET

New Conc. Ditch to Connect to Exist. Conc. Ditch and to New Conc. Drop Struc. (Phase 2)

12" Thick Grouted Rip-Rap (Phase 2)

New Gabion Wall (Phase 2)

Construction and Maintenance Access

New Concrete Drop Structure (Phase 2)

Stream

Exist. Concrete Wall To Remain

Exist. CRM Wall To Remain

1-story wooden house on stilts

Exist. Box Culvert

New Gabion Apron (Phase 2)

APPROX. LIMITS OF WETLAND BOUNDARY

Kapunahala

Exist. 6-ft. High by 15-ft Wide Double Swing Vinyl Gate (Phase 1)

Maintenance Access

Exist. CRM Wall with 3-ft. High Vinyl Fence (Phase 1)

Exist. Gabion Wall (Phase 1)

Exist. CRM Wall with 3-ft. high C.L. Fence To Remain

(Private) (State)

Construction and Maintenance Access

Exist. 6-ft. High Vinyl Fence (Phase 1)

Exist. Conc. Dwy. Apron (Phase 1)

Exist. 6-ft. High by 15-ft Wide Double Swing Vinyl Gate (Phase 1)

Exist. 6-ft. High Vinyl Fence (Phase 1)

d24" (per plan)

KUPOHU STREET (Private)

BENCH MARK
C&C STREET MONUMENT
(TOP OF BRASS PIN)
ELEVATION=197.48
FB 2676/10

To Puupele Street

True North
Scale: 1"=20'

Legend:

- Gabion Wall or Gabion Apron
- Grouted Rip-Rap
- 6-ft High Vinyl Fence w/ Conc. Mow Strip
- 6-ft. High by 15-ft Wide Double Swing Vinyl Gate

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL LAYOUT

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. C1 OF C1 SHEETS

GENERAL PLAN - PHASES 1 AND 2

SCALE: 1"=20'

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
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	TRACED BY	
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No.	QUANTITIES BY	
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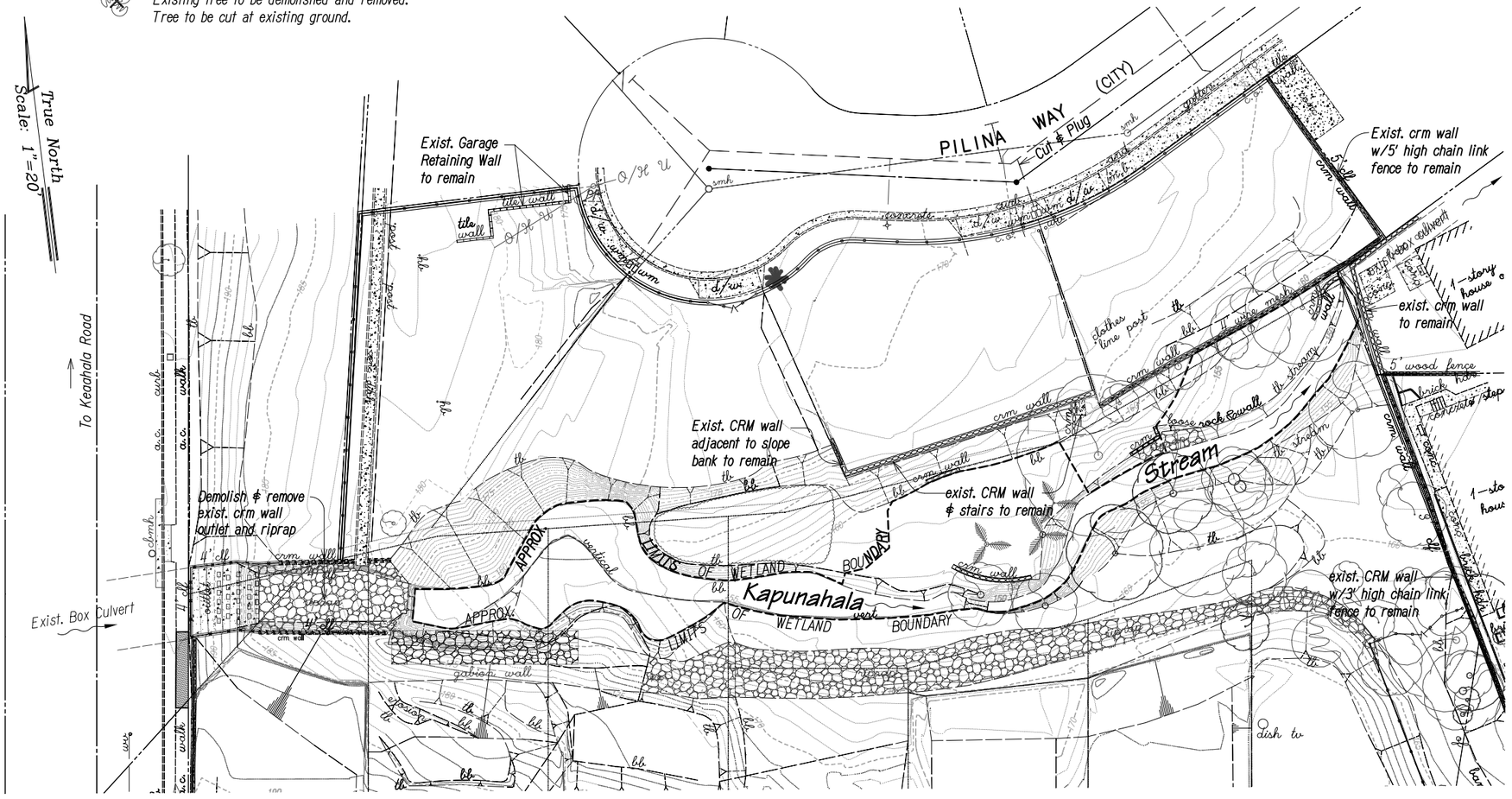
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	13	33

Legend:

- Existing structure to be demolished and removed.
- Existing pavement to be demolished and removed.
- Existing crm wall to be demolished and removed, including fencing where applicable.
- Existing cmu wall to be demolished and removed, including fencing where applicable.
- Existing foot bridge to be demolished and removed
- Existing hedge to be demolished and removed.
- Existing tree to be demolished and removed. Tree to be cut at existing ground.
- Existing tree to be demolished and removed. Tree to be cut at existing ground.
- Existing tree to be demolished and removed. Tree to be cut at existing ground.

General Demolition Notes:

1. The Contractor shall verify existing conditions prior to bidding. Any discrepancies shall be brought to the attention of Engineer for clarification.
2. The Contractor shall bring any conflicts and/or and questions to the attention of the Engineer prior to the start of demolition. Any remedial work resulting from the Contractor's failure to do so shall be paid by the Contractor at no cost to the State. All restoration work shall be paid for by the Contractor.
3. All existing improvements and utilities that are to remain within the demolition and construction areas shall be protected and maintained by the Contractor during his operations, unless otherwise noted. Any remedial work resulting from the Contractor's failure to do so shall be paid for by the Contractor at no cost to the State.
4. Backfill and compact all voids and depressions caused by demolition operations.
5. The Contractor shall properly remove and dispose offsite of all demolition materials at no additional cost to the State.
6. After completion of the demolition work, the Contractor shall clean the project limits of all demolished materials, rubbish and all other debris which shall then be transported to a legal offsite disposal site.
7. All temporary erosion control measures shall be installed prior to demolition work as shown on the erosion control plan.
8. Existing utility lines shown are based on best available as-built drawings on file with the City and County of Honolulu.
9. Prior to excavation near or around the existing utilities, the Contractor shall restrain all existing pipes, water valves, concrete block, concrete jackets, etc., as required to ensure the existing utilities are not disturbed.



DEMOLITION PLAN - NORTH OF STREAM
SCALE: 1"=20'

Notes:

1. Contractor to cut and plug existing unused water laterals at the main. Meter and valve boxes shall be demolished and removed. The damaged areas shall be repaired to an equal or better condition than the surrounding area.
2. Contractor to cut and plug existing unused sewer laterals at the property line. Existing sewer cleanouts, whether or not shown on the plans shall be demolished and removed. The existing holes shall be backfilled and compacted with aggregate based course.
3. Contractor to locate, cap, cut and plug, and abandon all existing unused electric telephone and cable conduits at the property line after removal of conductors.
4. Salvage clean and reuse rock for the new CRM Walls and grouted riprap paving (grp) slope protection.

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION PLAN
NORTH OF STREAM
CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. DP1 OF DP2 SHEETS

DATE	REVISION

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

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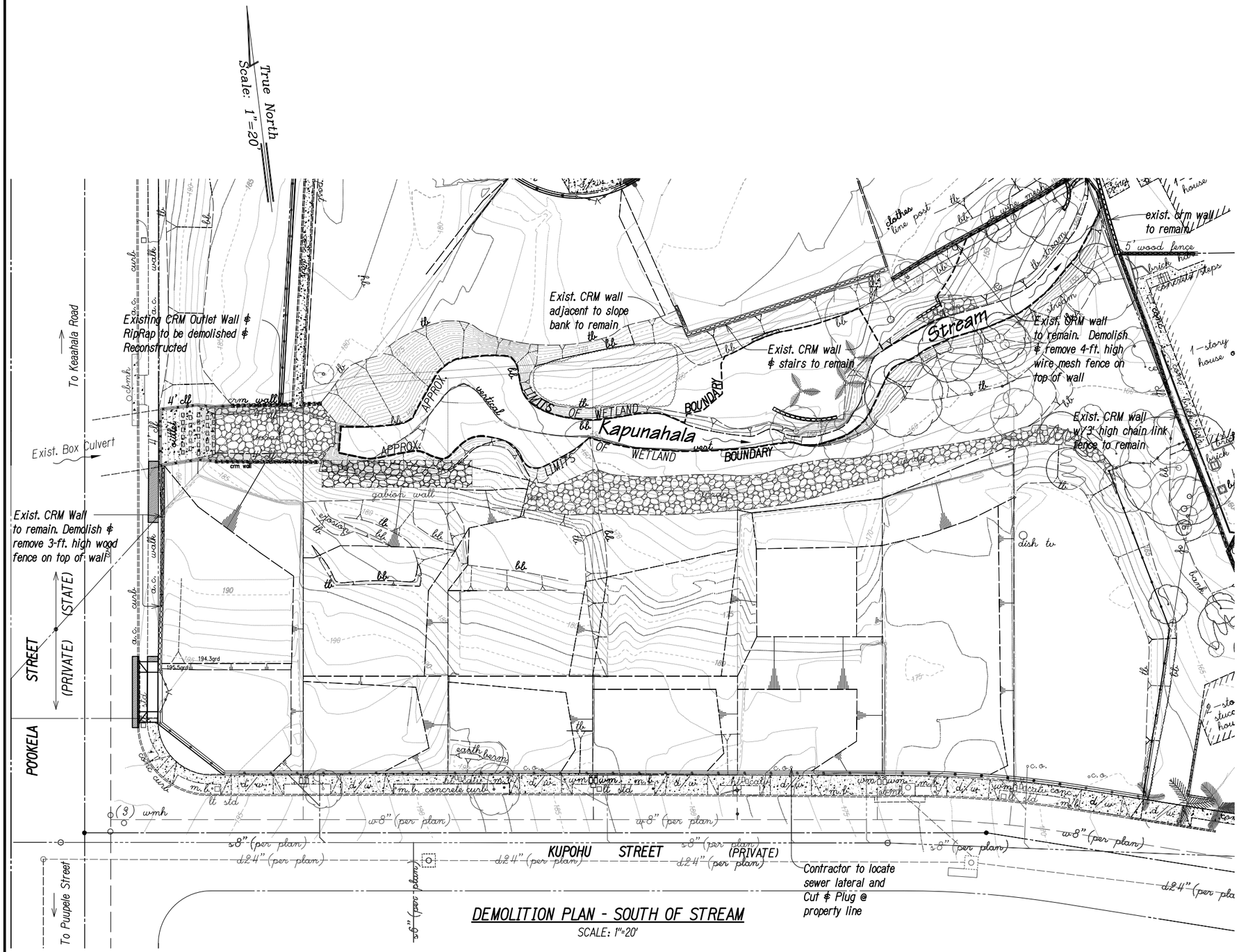
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	14	33



DEMOLITION PLAN - SOUTH OF STREAM

SCALE: 1"=20'

Legend:

- Existing structure to be demolished and removed.
- Existing pavement to be demolished and removed.
- Existing crm wall to be demolished and removed, including fencing where applicable.
- Existing cmu wall to be demolished and removed, including fencing where applicable.
- Existing foot bridge to be demolished and removed
- Existing hedge to be demolished and removed.
- Existing tree to be demolished and removed.
- Existing tree to be demolished and removed.
- Existing tree to be demolished and removed.

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

RUSSELL M. ARAKAKI
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ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NOTE BOOK	TRACED BY	
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	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION PLAN
SOUTH OF STREAM
CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. DP2 OF DP2 SHEETS

DATE	REVISION

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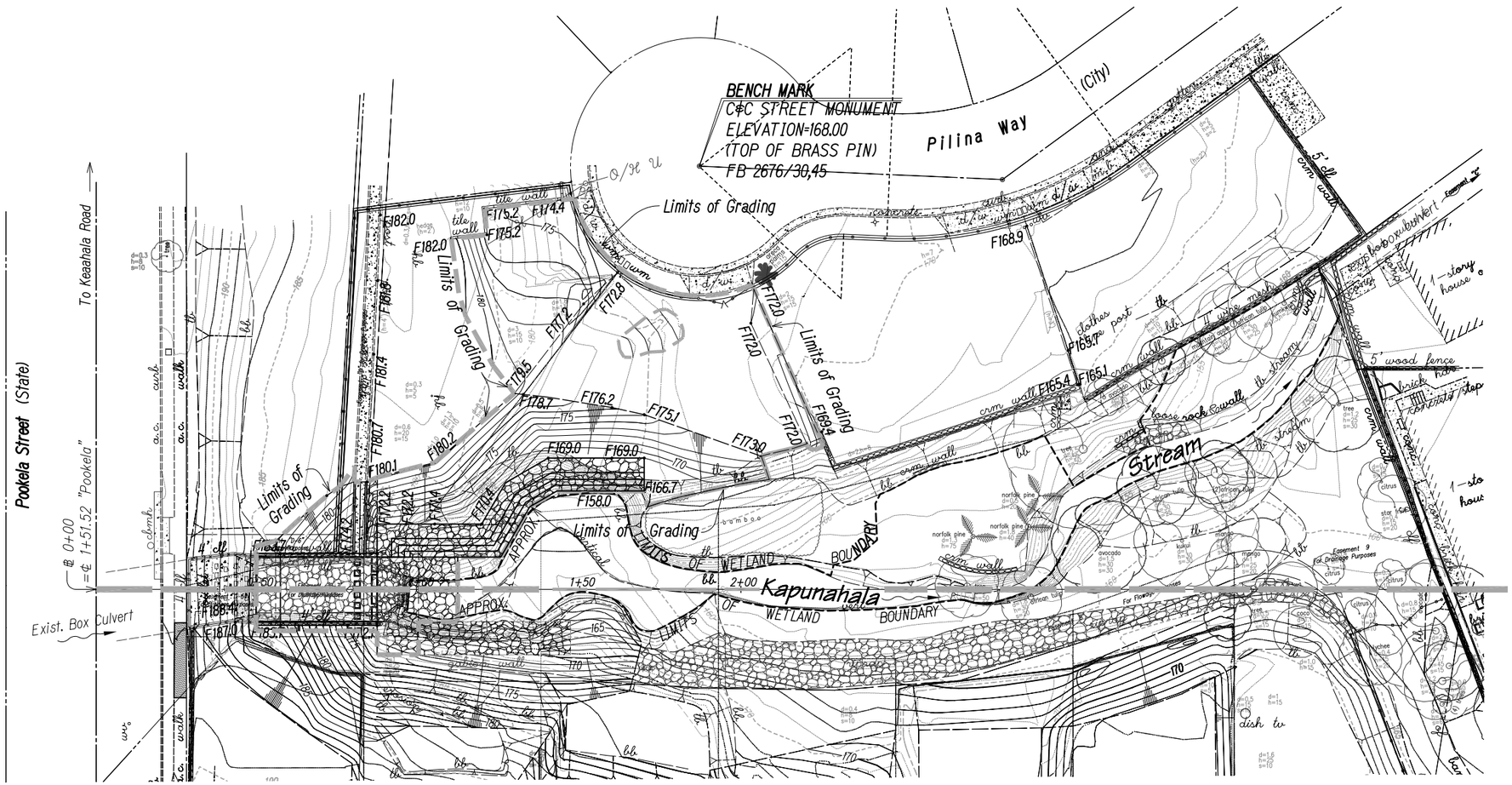
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	15	33

Legend:

- 180 — Finish 5-ft Contour
- Finish 1-ft Contour
- 170 — Existing 5-ft Contour
- Existing 1-ft Contour
- Limits of Grading
- F179.9 — Finish Grade Elevation
- 182.0 — Existing Ground Elevation
- Grade Bank

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

True North
Scale: 1"=20'



GRADING PLAN - NORTH OF STREAM
SCALE: 1"=20'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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HIGHWAYS DIVISION

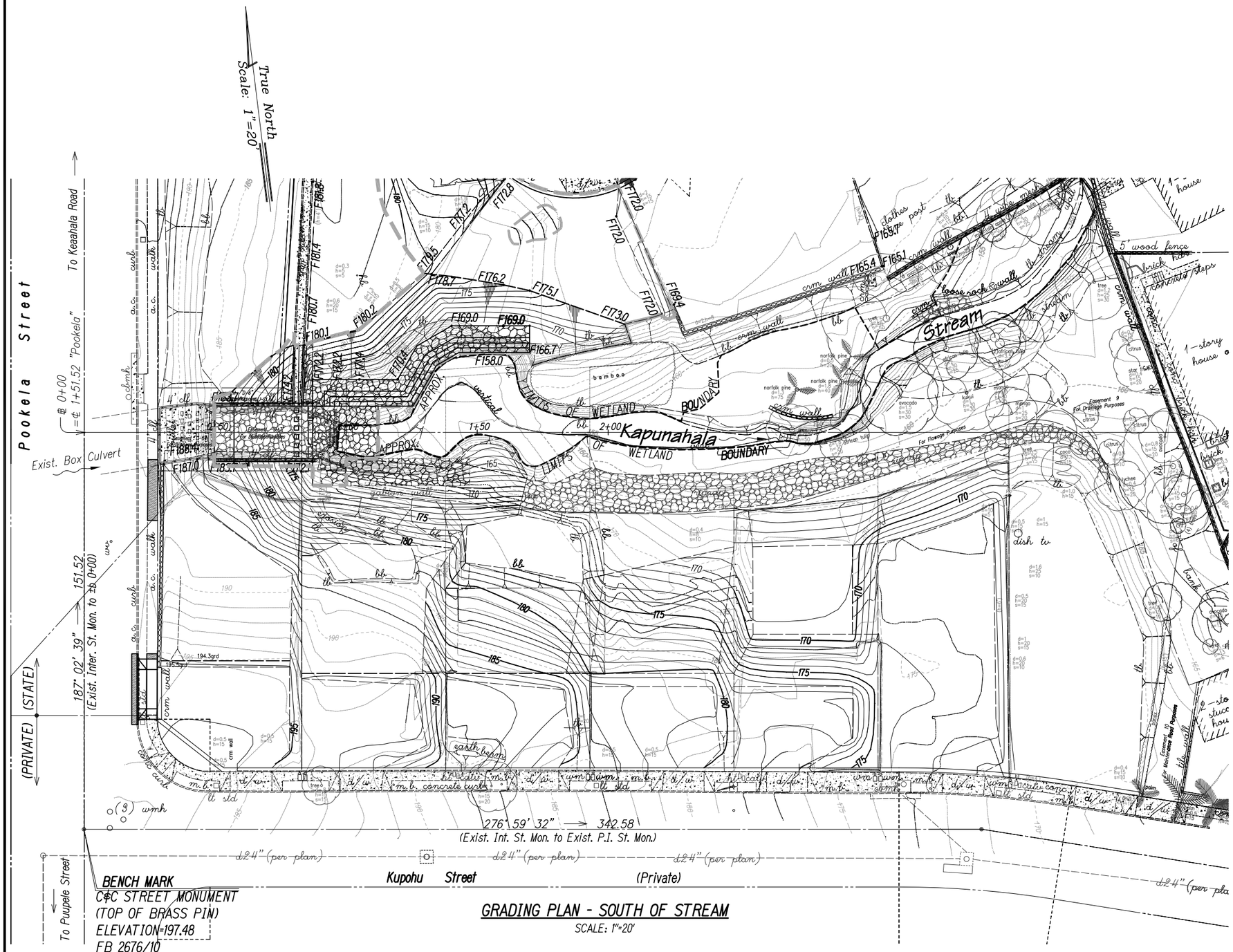
GRADING PLAN
NORTH OF STREAM
CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. GP1 OF GP2 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	16	33



GRADING PLAN - SOUTH OF STREAM

SCALE: 1"=20'

Legend:

- 180 — Finish 5-ft Contour
- Finish 1-ft Contour
- 170 - - - Existing 5-ft Contour
- Existing 1-ft Contour
- Limits of Grading
- F179.9 — Finish Grade Elevation
- 182.0 — Existing Ground Elevation
- Grade Bank

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

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APRIL 30, 2010
ParEn, Inc. dba PARK ENGINEERING — LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING PLAN
SOUTH OF STREAM

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. GP2 OF GP2 SHEETS

DATE	REVISION

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NOTE BOOK	DATE
No.	

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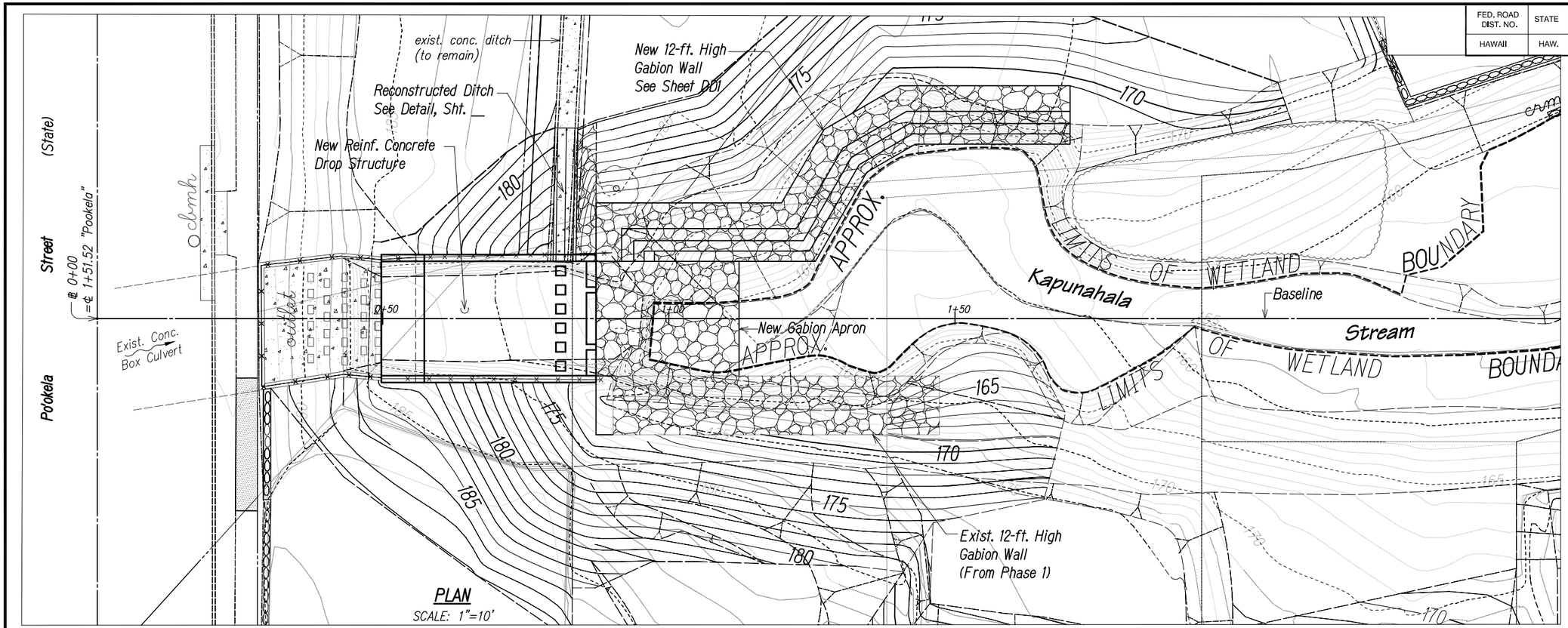
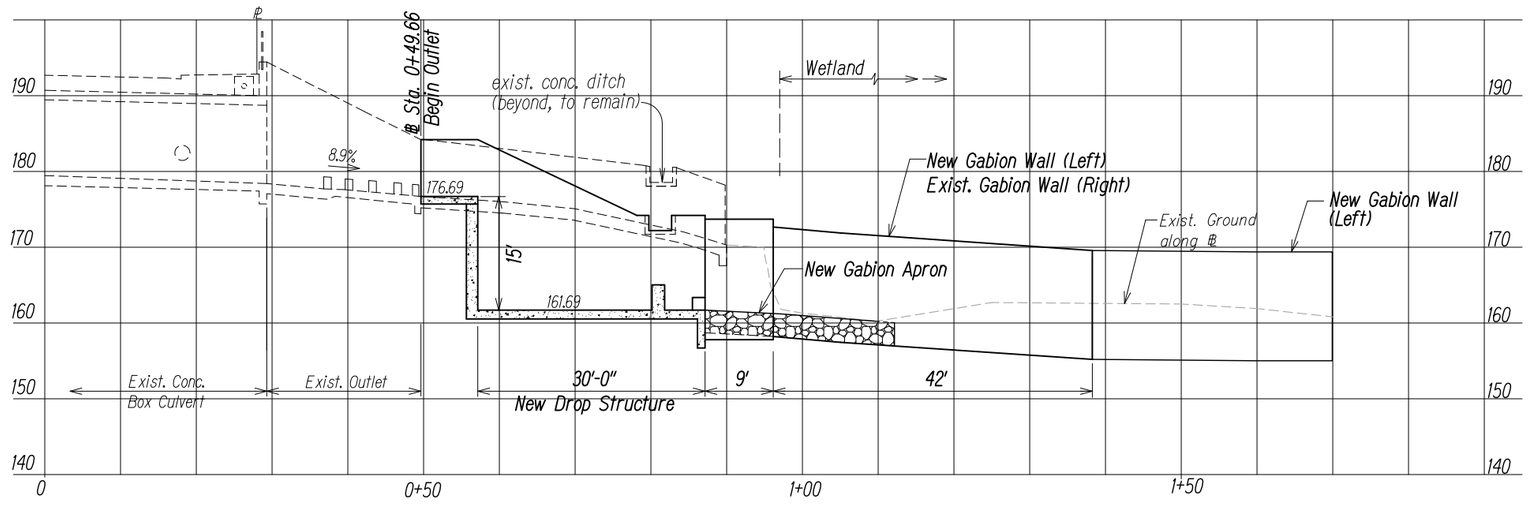
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	17	33





PROFILE
Scale: 1"=10' (Bothways)

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

RUSSELL M. ARAKAKI
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLAN AND PROFILE
NEW DRAINAGE OUTLET
CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. D1 OF D2 SHEETS

DATE	REVISION

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No.	CHECKED BY
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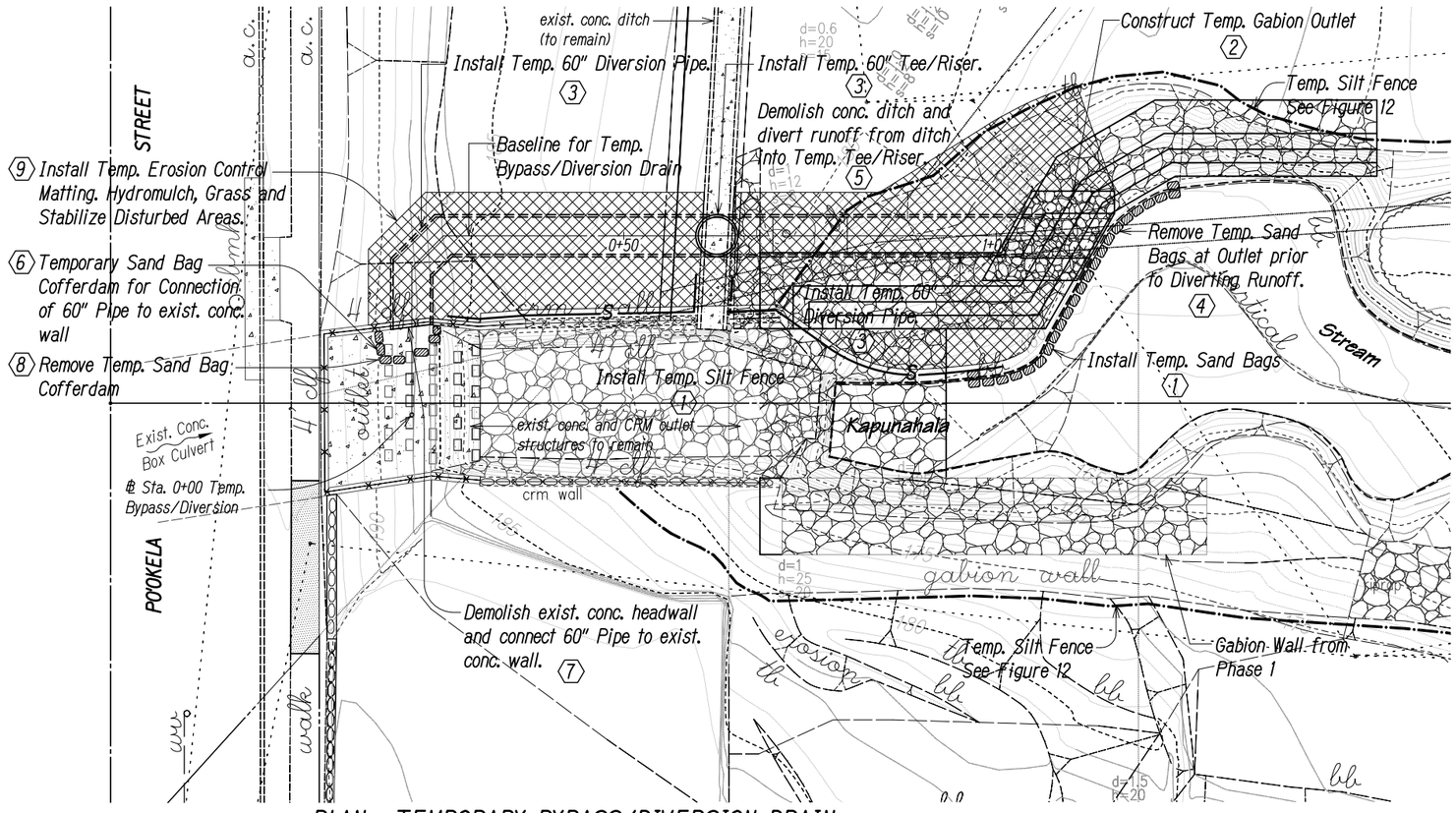
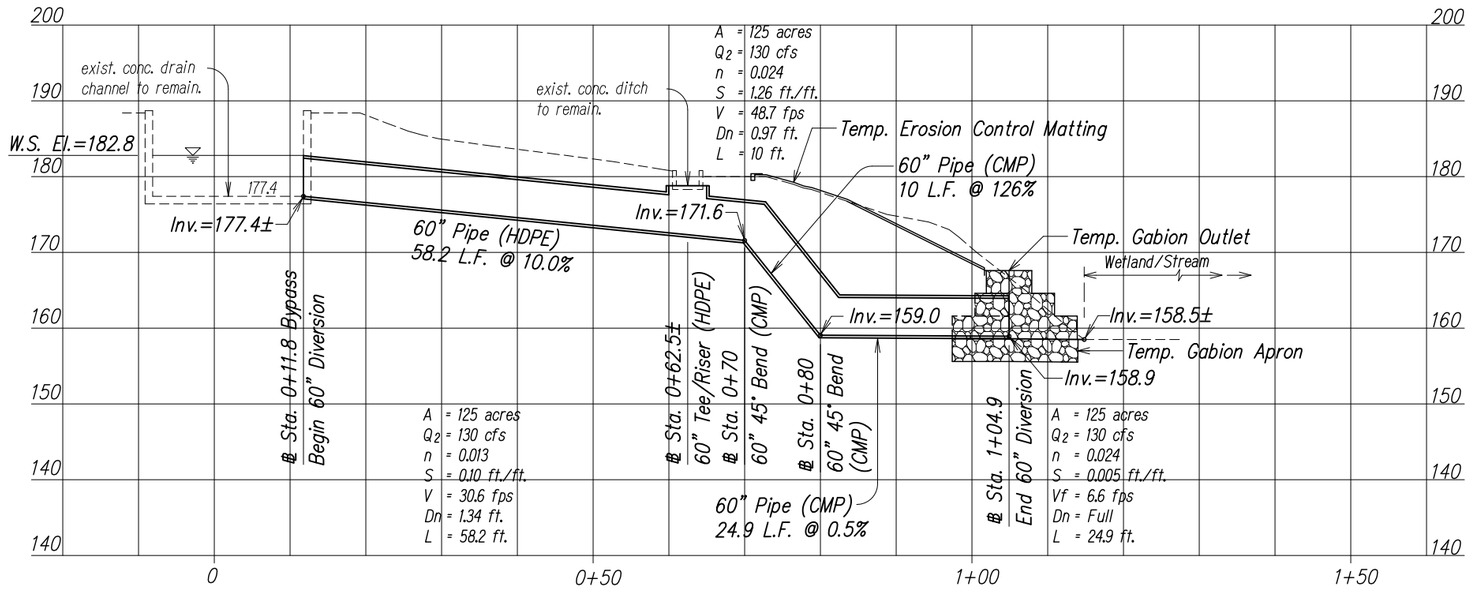
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	18	33



PLAN - TEMPORARY BYPASS/DIVERSION DRAIN

SCALE: 1"=10'



PROFILE - TEMPORARY BYPASS/DIVERSION DRAIN

Scale: 1"=10' (Bothways)

PHASE 2A: CONSTRUCTION SEQUENCE FOR TEMP. BYPASS/DIVERSION DRAIN

1. Install temporary silt fence and sand bags.
2. Excavation for and construct the temporary gabion outlet. Haul the dry excavated material to an offsite, legal disposal site. Haul the saturated excavated material to Temporary Material Storage and Dewatering Basin P1. See Figure 12 for location of basin.
3. Excavate for and Install the 60" bypass/diversion drain from temporary gabion outlet to the concrete wall. Temporarily store the dry excavated material onsite to be used for backfill material. Haul the saturated excavated material to Temporary Material Storage and Dewatering Basin P1. Backfill the trench and stabilize the area.
4. Remove a portion of the temporary sand bags at gabion outlet.
5. Demolish portions of the existing concrete ditch. Prevent debris from entering into the temporary tee/riser during demolition of the ditch. Clean all demolition debris from ditch. Divert runoff from ditch into the temporary tee/riser.
6. Install temporary sand bag cofferdam at existing concrete wall for connection of the 60" bypass/diversion pipe.
7. Demolish exist. concrete headwall for connection of the 60" bypass/diversion pipe. Connect the 60" bypass/diversion pipe. Clean all demolition and construction debris on the concrete outlet slab.
8. Remove temporary sand bag cofferdam at exist. concrete wall.
9. Install temp. erosion control matting, hydromulch, grass to stabilize the disturbed areas as soon as practicable.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	. . . . .
NOTE BOOK	TRACED BY	
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No. 8297-C
HAWAII, U.S.A.

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ParEn, Inc. dba PARK ENGINEERING — APRIL 30, 2010 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

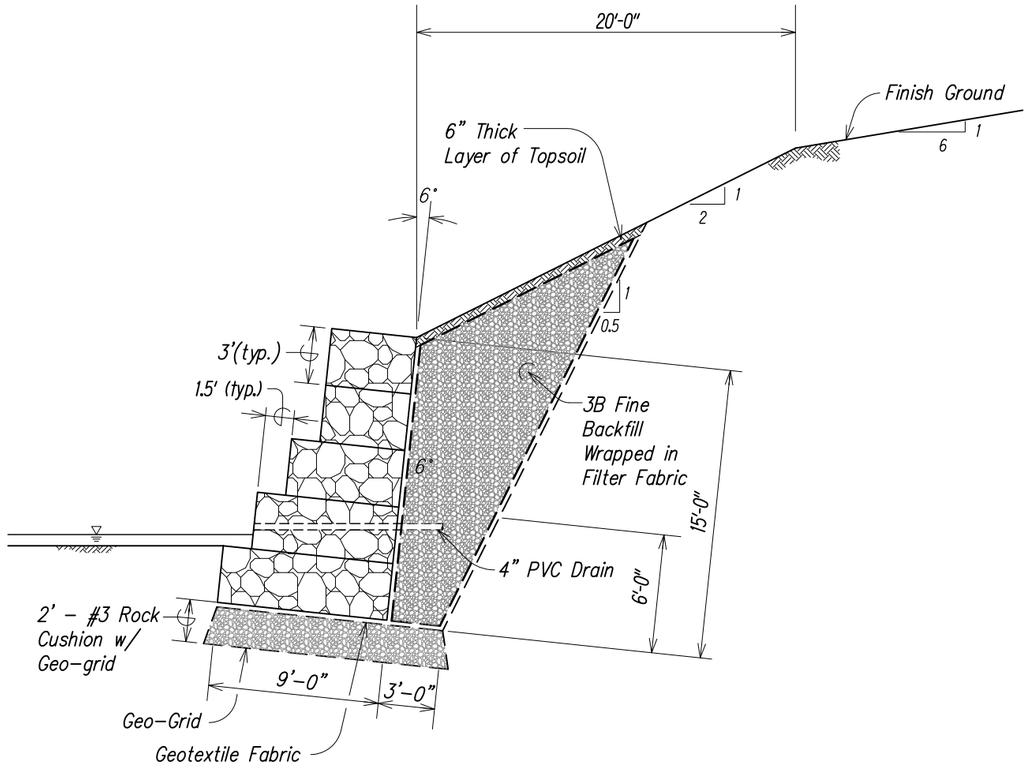
TEMPORARY STREAM DIVERSION PLAN

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

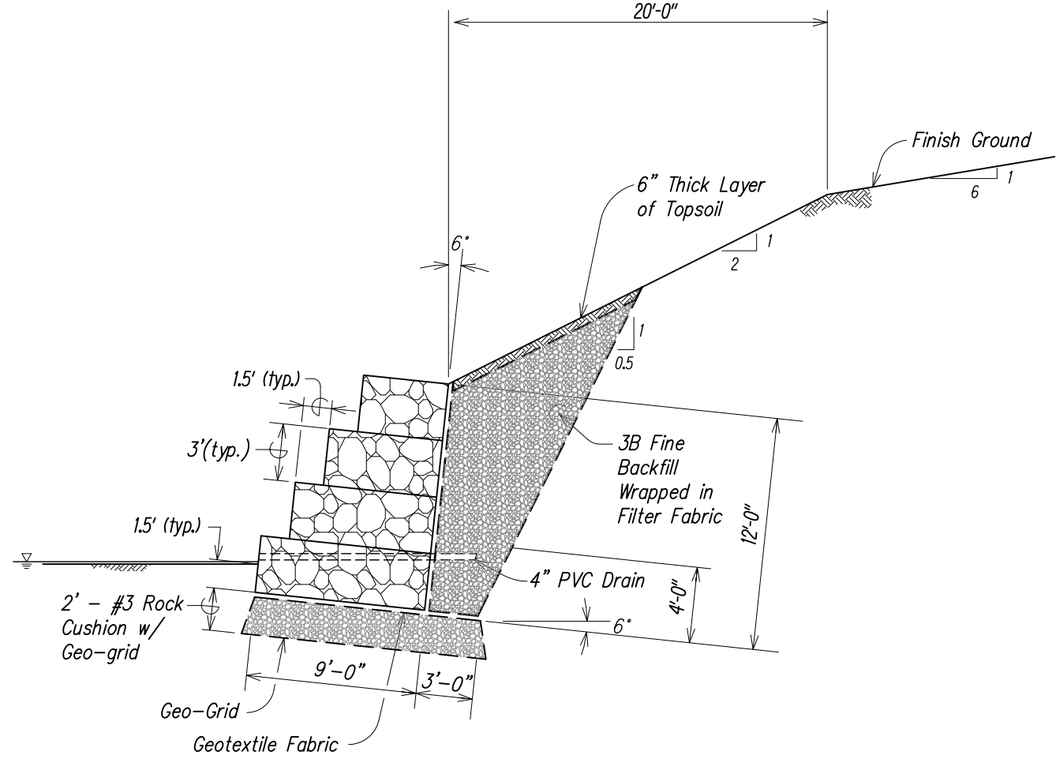
SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	19	33



15-FT HIGH GABION WALL SECTION (TYPICAL)

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



12-FT HIGH GABION WALL SECTION (TYPICAL)

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

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

RUSSELL M. ARAKAKI
LICENSED PROFESSIONAL ENGINEER
No. 8297-C
HAWAII, U.S.A.

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ParEn, Inc.
dba PARK ENGINEERING

APRIL 30, 2010
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETAILS

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

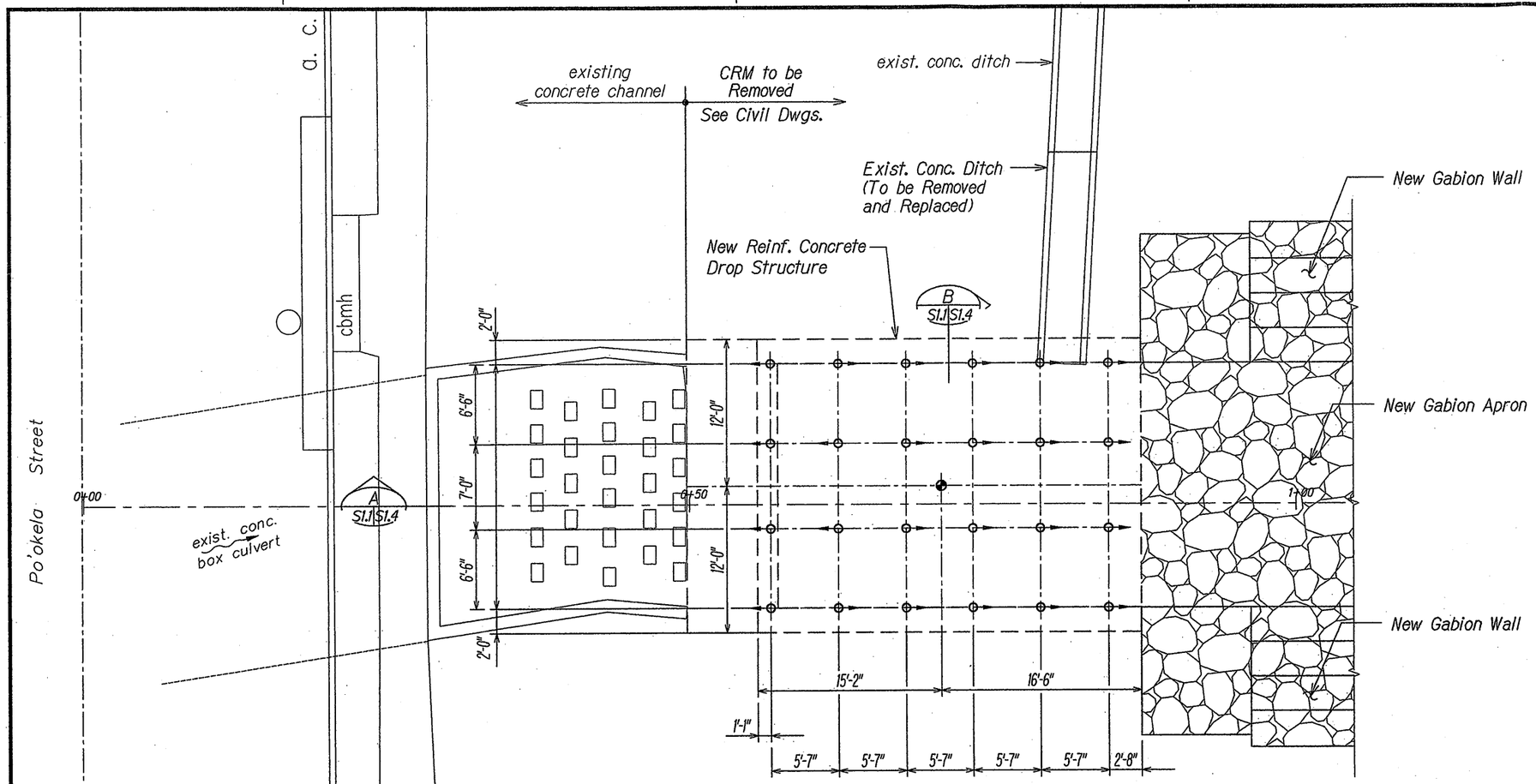
SHEET No. DD1 OF DD2 SHEETS

DATE	REVISION

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

Wed, 19 May 2010 - 9:41am
D:\Projects\Castle Hills Access Road\PHASE 2\19-Cashills-Details.dwg

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



LEGEND:

- Direction of Battered Micropile (1H:8V)
- Preproduction Micropile

MICROPILE LAYOUT PLAN

Scale: 3/16" = 1'-0"

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

DATE	REVISION

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KSF, INC. — APRIL 30, 2010 LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

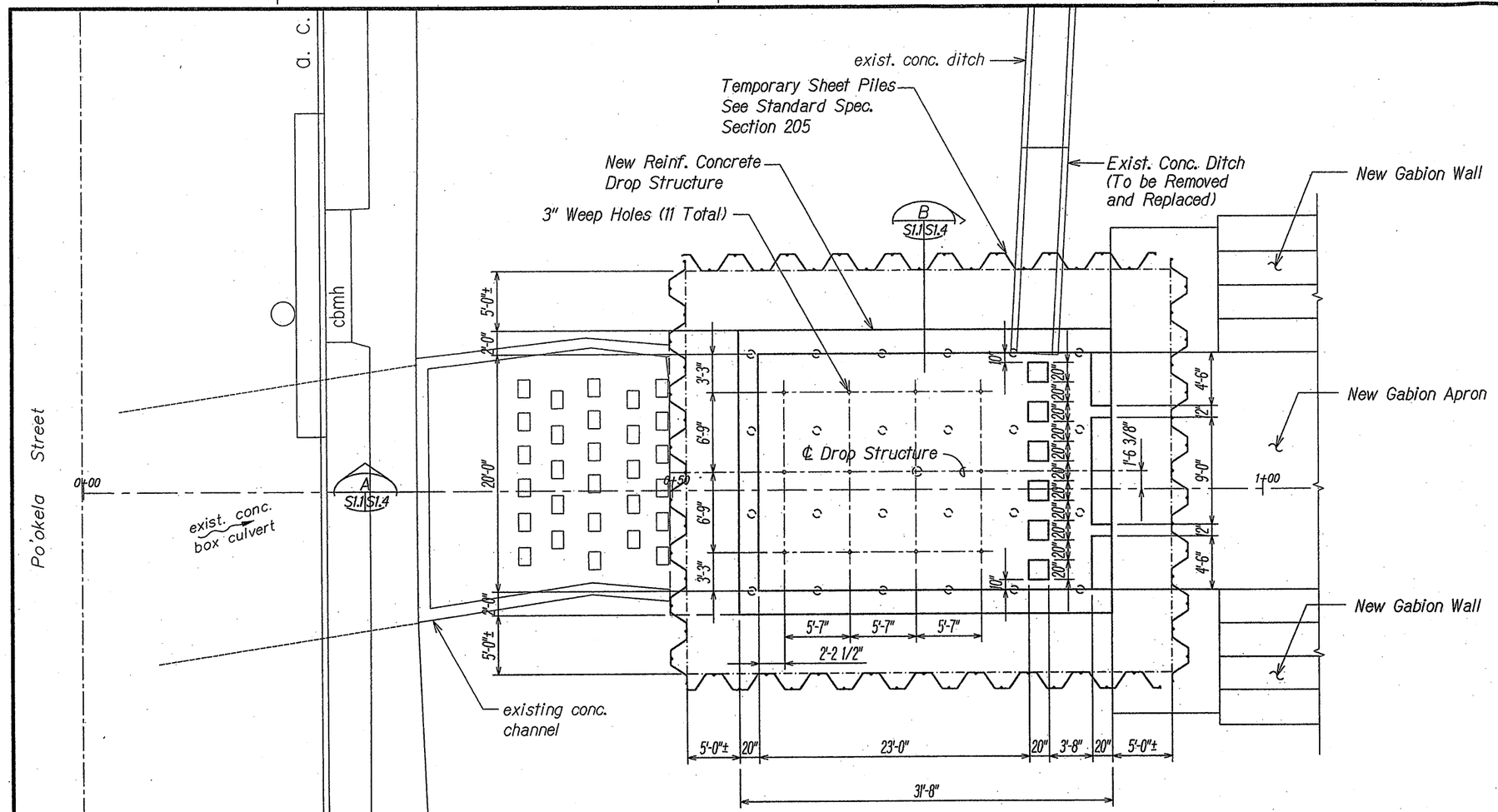
MICROPILE LAYOUT PLAN

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown — Date: March 2009

SHEET No. S1.1 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



DROP STRUCTURE PLAN

Scale: 3/16" = 1'-0"

DATE	REVISION

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

ORIGINAL PLAN
NOTE BOOK
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KSF, INC. — APRIL 30, 2010 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DROP STRUCTURE PLAN

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S1.2 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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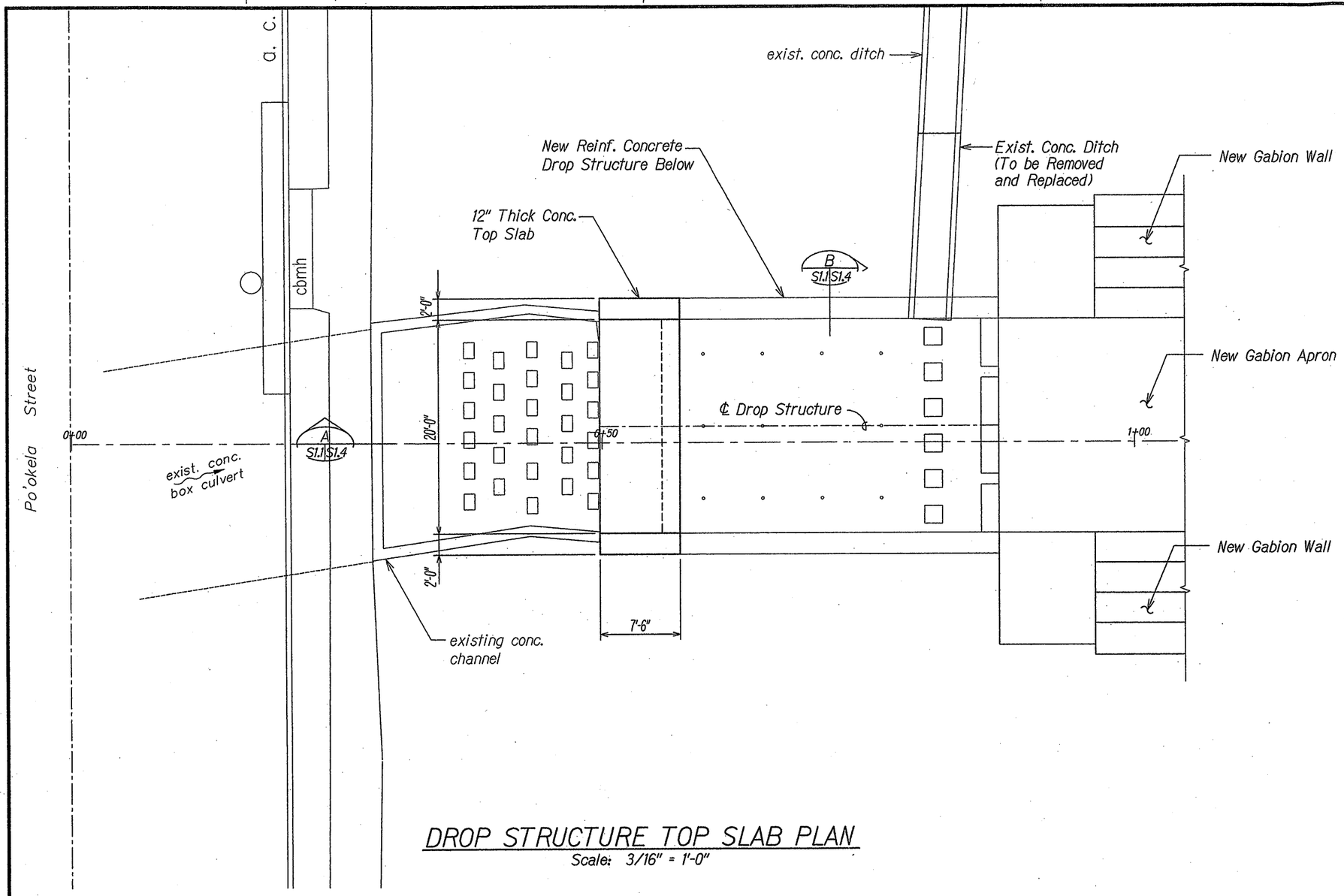

DROP STRUCTURE TOP SLAB PLAN

Scale: 3/16" = 1'-0"

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DROP STRUCTURE TOP SLAB PLAN

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S1.3 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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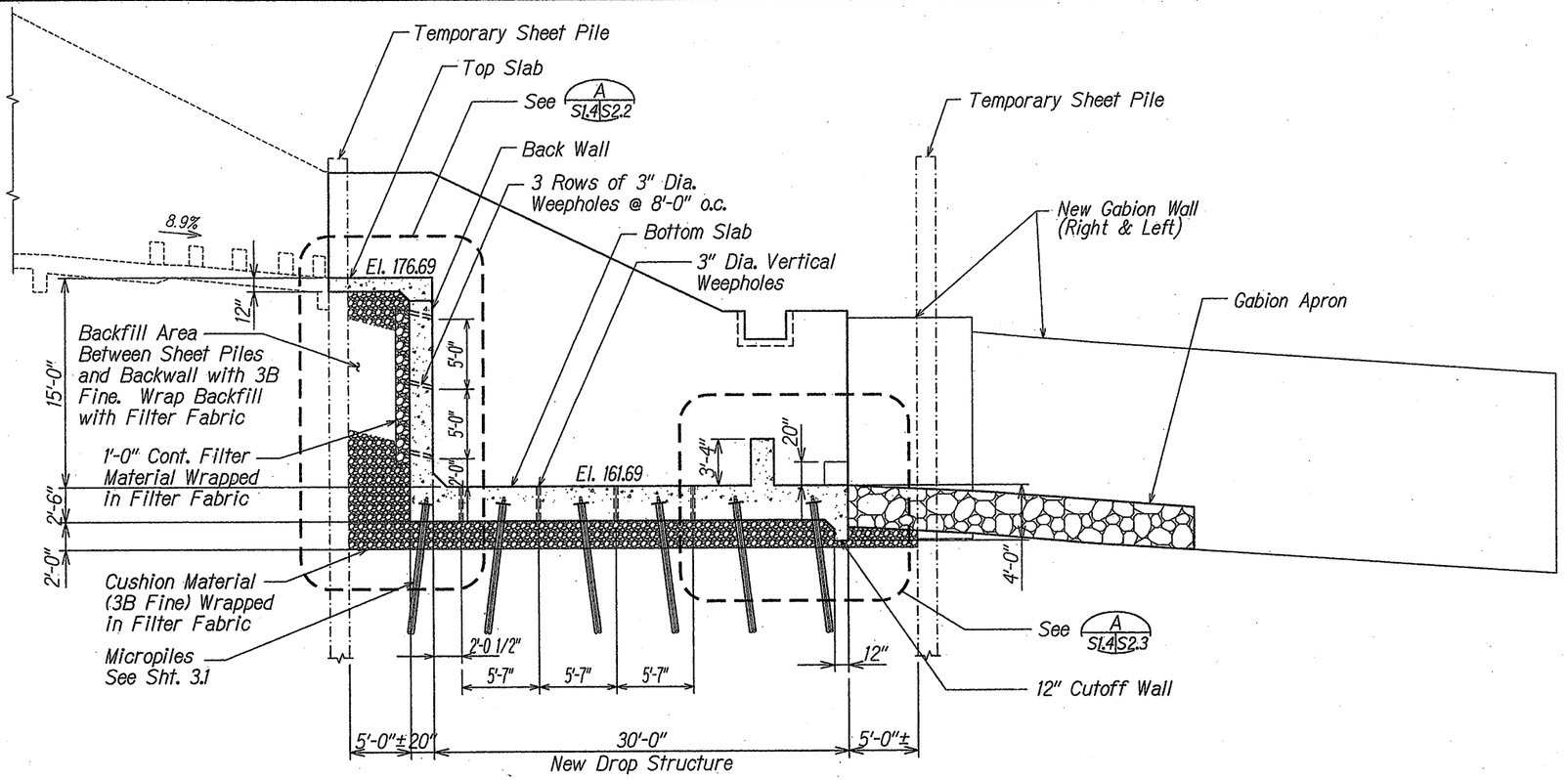
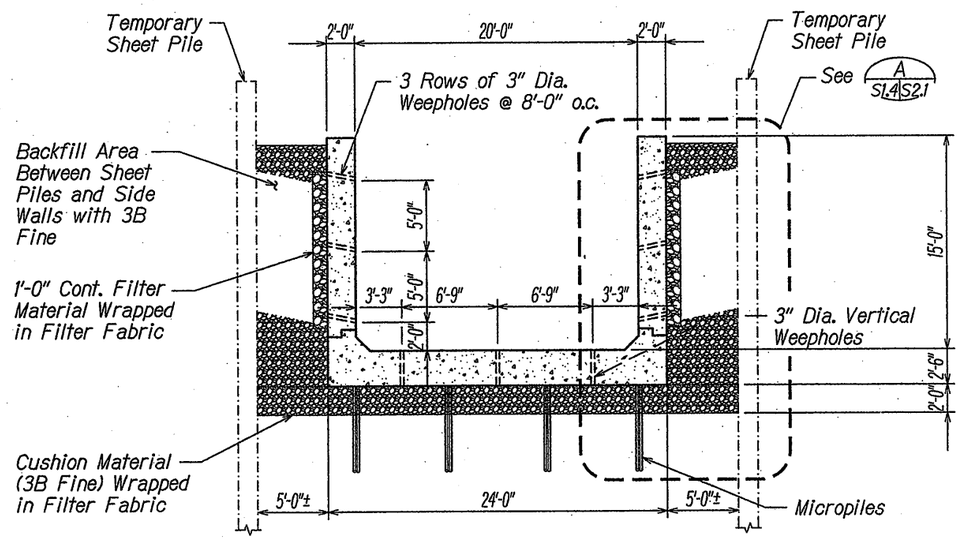


LONGITUDINAL SECTION A S1.1 | S1.4

Scale: 3/16" = 1'-0"



TRANSVERSE SECTION B S1.1 | S1.4

Scale: 3/16" = 1'-0"

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

ORIGINAL PLAN
NOTE BOOK
No.

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KSF, INC.

APRIL 30, 2010
LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DROP STRUCTURE SECTIONS

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S1.4 OF 11 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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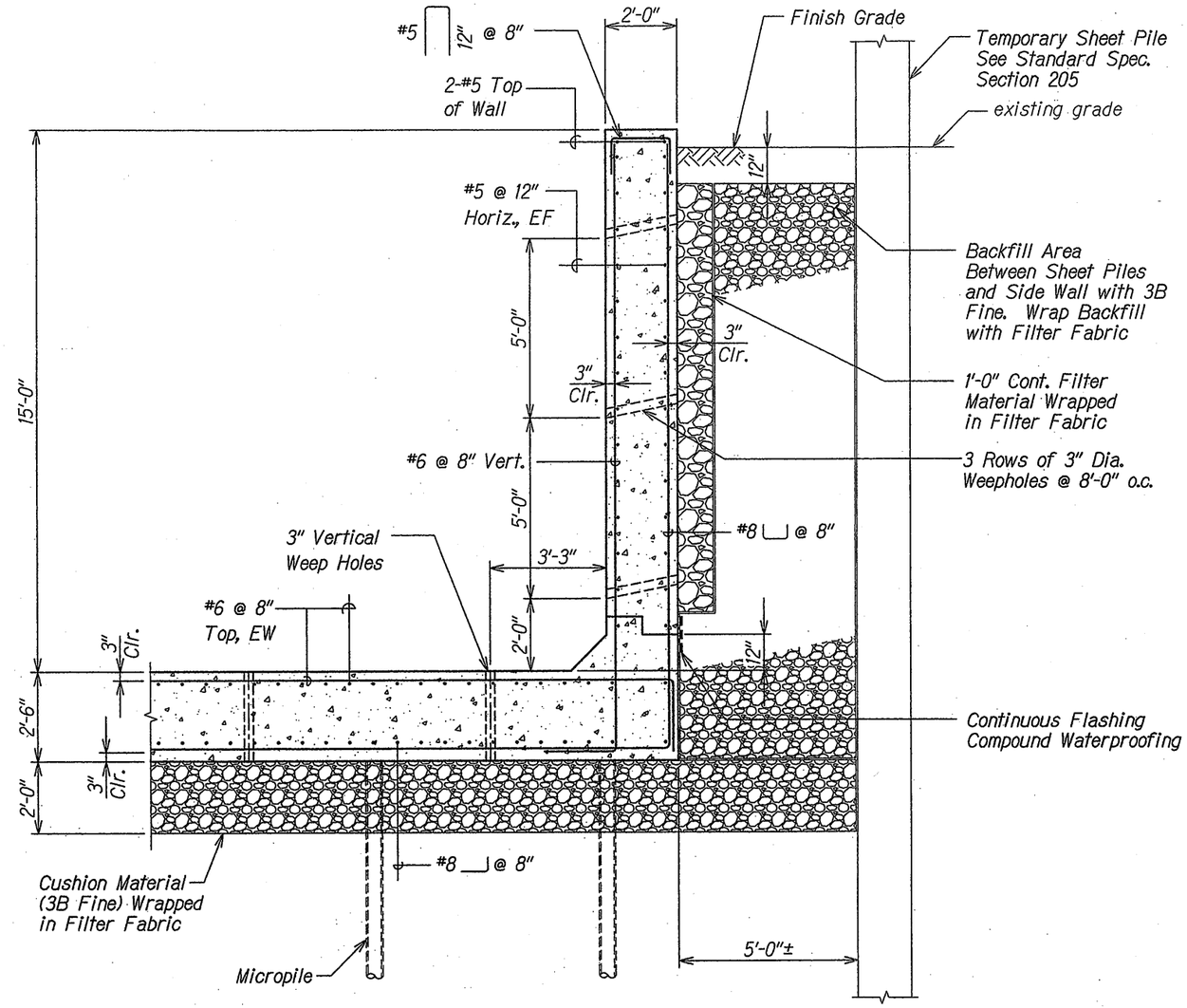

DROP STRUCTURE SECTION

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

A
S1.4 | S2.1

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
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KSF, INC. — APRIL 30, 2010 LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HEAD WALL SECTION

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown — Date: March 2009

SHEET No. S2.1 OF 11 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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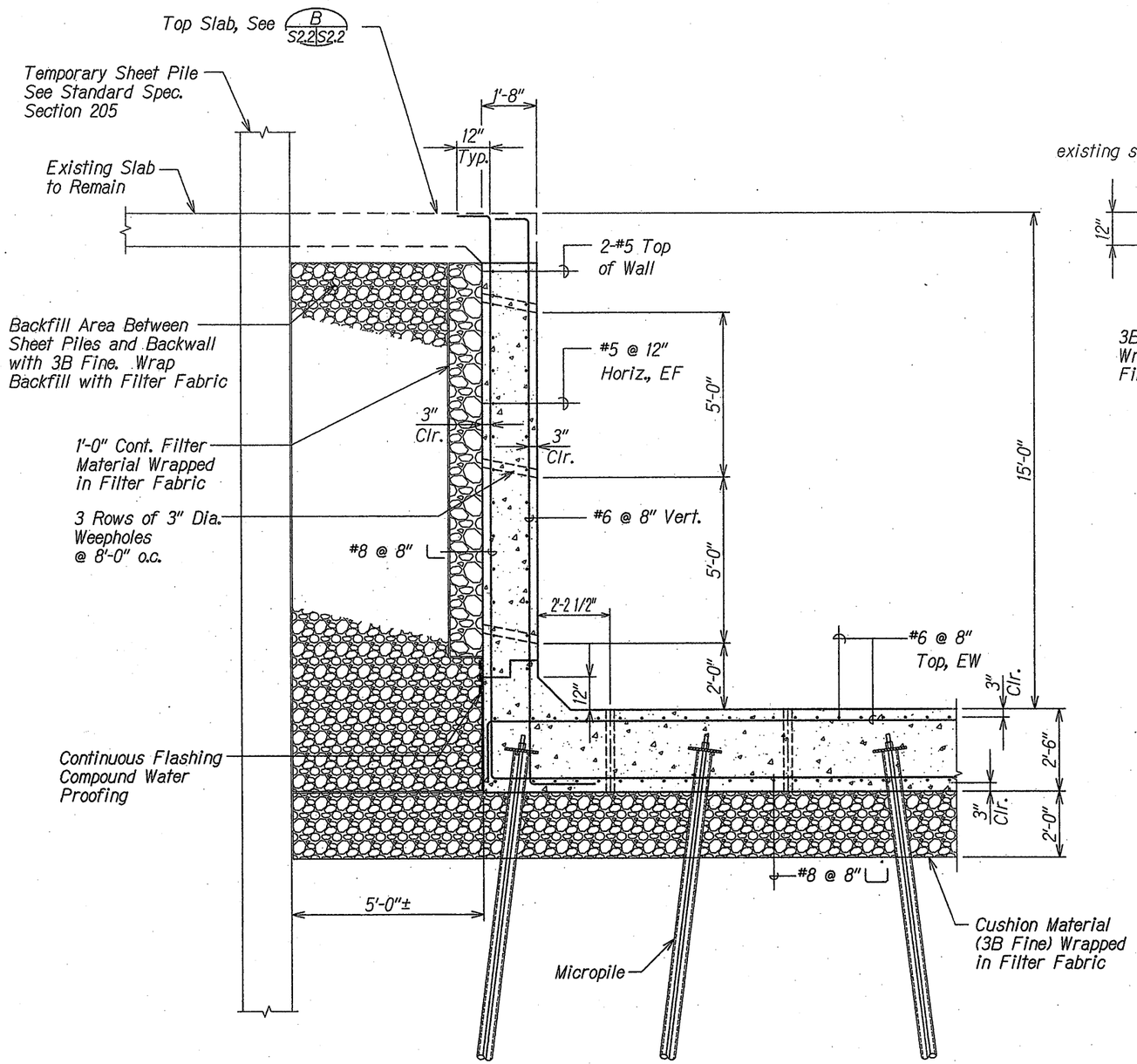
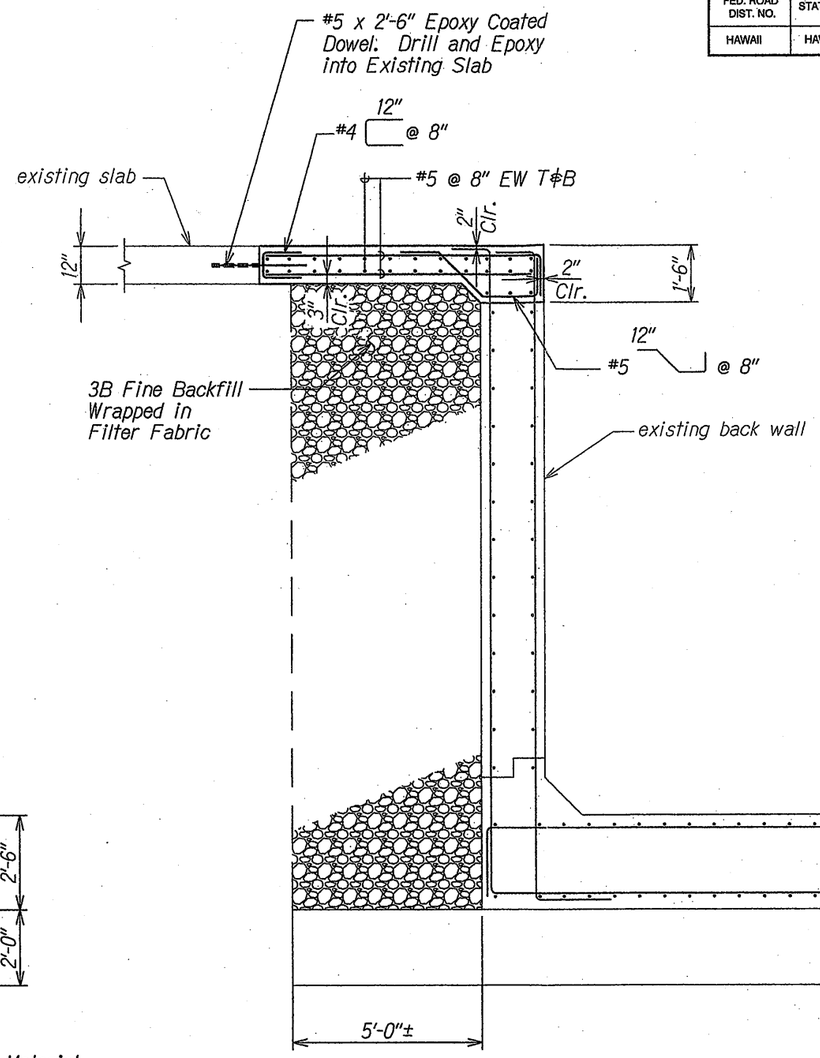


DROP STRUCTURE BACK WALL SECTION (A S1.4 S2.2)

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



DROP STRUCTURE TOP SLAB SECTION (B S2.2 S2.2)

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

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KSF, INC. — APRIL 30, 2010 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DROP STRUCTURE SECTIONS

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown — Date: March 2009

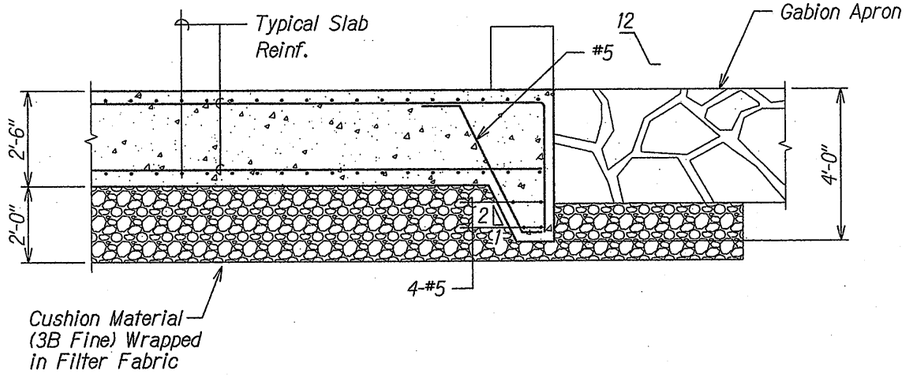
SHEET No. S2.2 OF 11 SHEETS

DATE	REVISION

ORIGINAL PLAN
NOTE BOOK
No.

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



DROP STRUCTURE CUTOFF WALL SECTION

A
S1.4 | S2.3

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

ORIGINAL PLAN
NOTE BOOK No.

SURVEY PLOTTED BY _____ DATE
DRAWN BY _____ "
TRACED BY _____ "
DESIGNED BY _____ "
QUANTITIES BY _____ "
CHECKED BY _____ "

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[redacted] KSF, INC.

APRIL 30, 2010 LIC. EXP. DATE

STATE OF HAWAI'I
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HIGHWAYS DIVISION

DROP STRUCTURE SECTION

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S2.3 OF 11 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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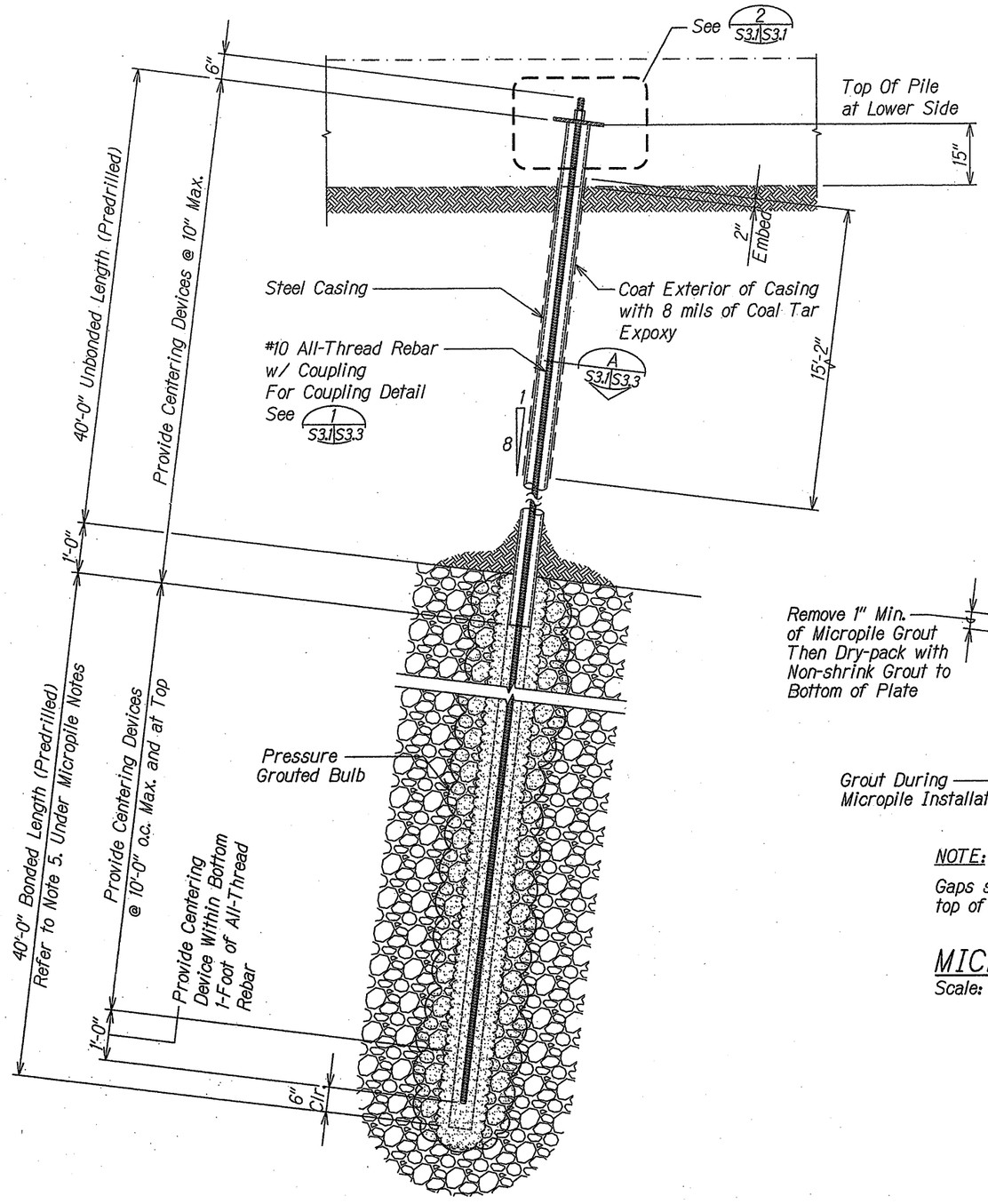
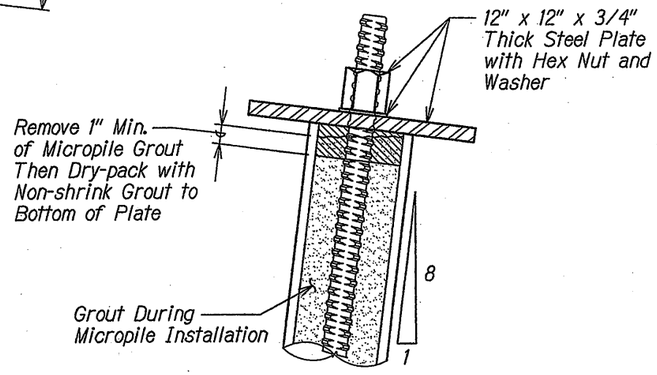


TYPICAL MICROPILE DETAIL 1 S3.1 S3.1

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



NOTE:

Gaps shall not exist between plate and top of steel casing and non-shrink grout.

MICROPILE DETAIL 2 S3.1 S3.1

Scale: 3" = 1'-0"

MICROPILE NOTES:

1. All nuts and bar couplings shall develop 100% of the bar's ultimate tensile strength.
2. Splices within steel casing shall develop 100% of the steel casing's ultimate tensile strength.
3. All accessories such as nuts, couplings, washers, and steel plates shall be hot-dip galvanized according to ASTM A-153.
4. Material Properties of Accessories:
   (a) Steel Plates - ASTM A36
   (b) Hex Nuts - ASTM A108
   (c) Couplings - ASTM A108
   (d) Washers - ASTM F436
5. The bonded length is estimated. The actual bonded length will be determined by the Engineer after the preproduction micropile load test.
6.

Micropile Load Combination (Demand)		
	Axial Load (kips)	Moment (k-ft)
Strength Limit State	80 Compression	50
Strength Limit State	50 Tension	50

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STATE OF HAWAI'I
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HIGHWAYS DIVISION

MICROPILE DETAIL AND SECTION

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S3.1 OF 11 SHEETS

DATE	REVISION

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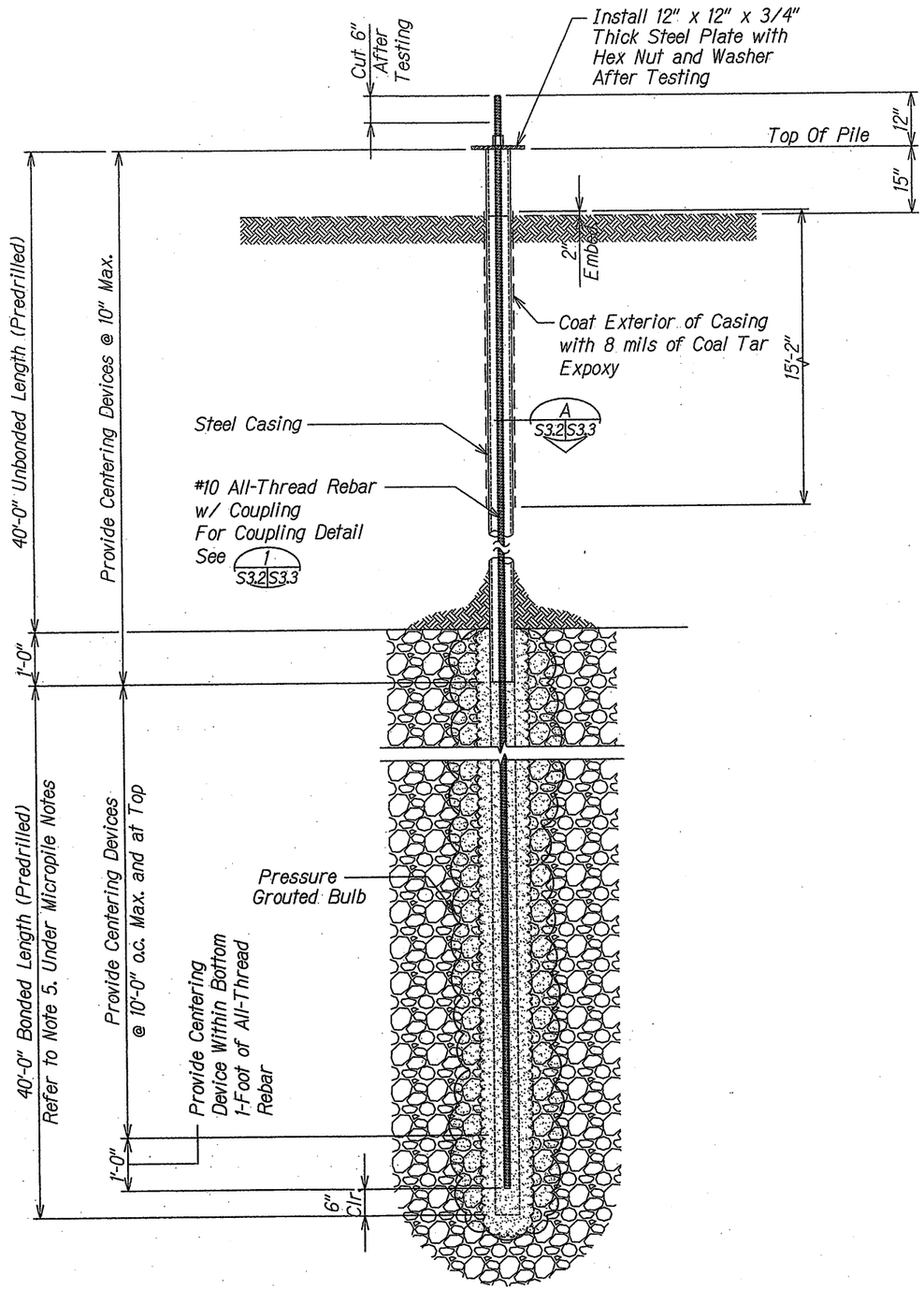
CHECKED BY

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



TYPICAL PREPRODUCTION MICROPILE DETAIL

1 S3.2 S3.2

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

ORIGINAL PLAN

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

DATE	REVISION

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KSF, INC. — APPR. 30, 2010 LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

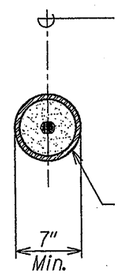
PREPRODUCTION MICROPILE DETAIL

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No: [redacted]

Scale: As Shown Date: March 2009

SHEET No. S3.2 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



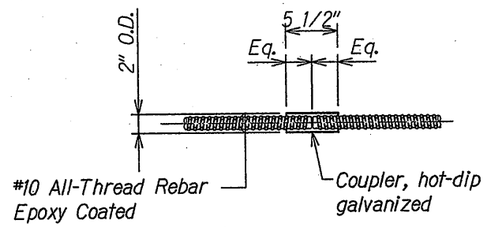
NOTES:

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

A
S3.1 | S3.3

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



NOTE:

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

COUPLER DETAIL OF ALL-THREAD REBAR

1
S3.1 | S3.3

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).

ORIGINAL PLAN
NOTE BOOK
No.
SURVEY PLOTTED BY
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MICROPILE DETAIL AND SECTION

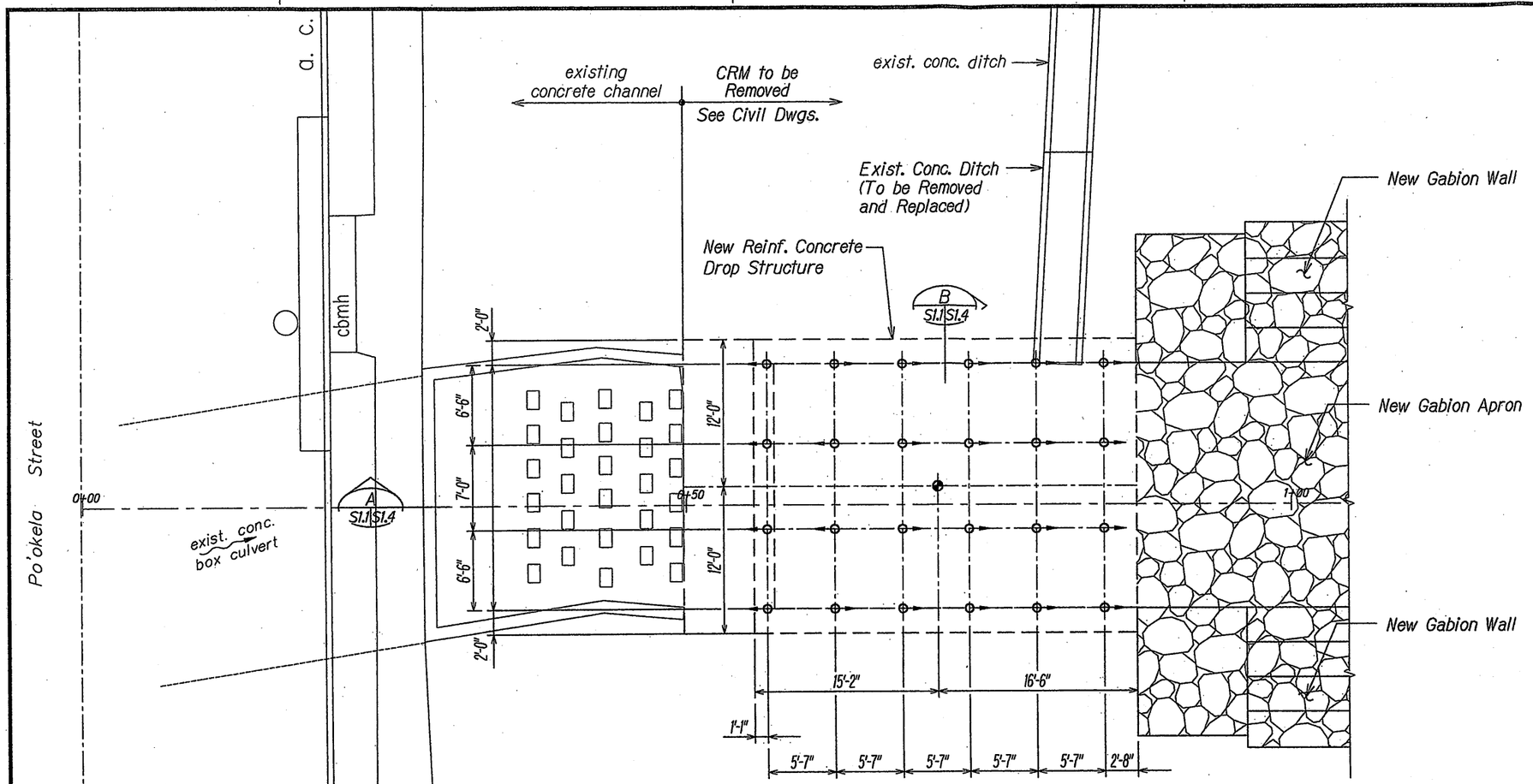
CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S3.3 OF 11 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



LEGEND:

- Direction of Battered Micropile (1H:8V)
- Preproduction Micropile

MICROPILE LAYOUT PLAN

Scale: 3/16" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NOTE BOOK	TRACED BY	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

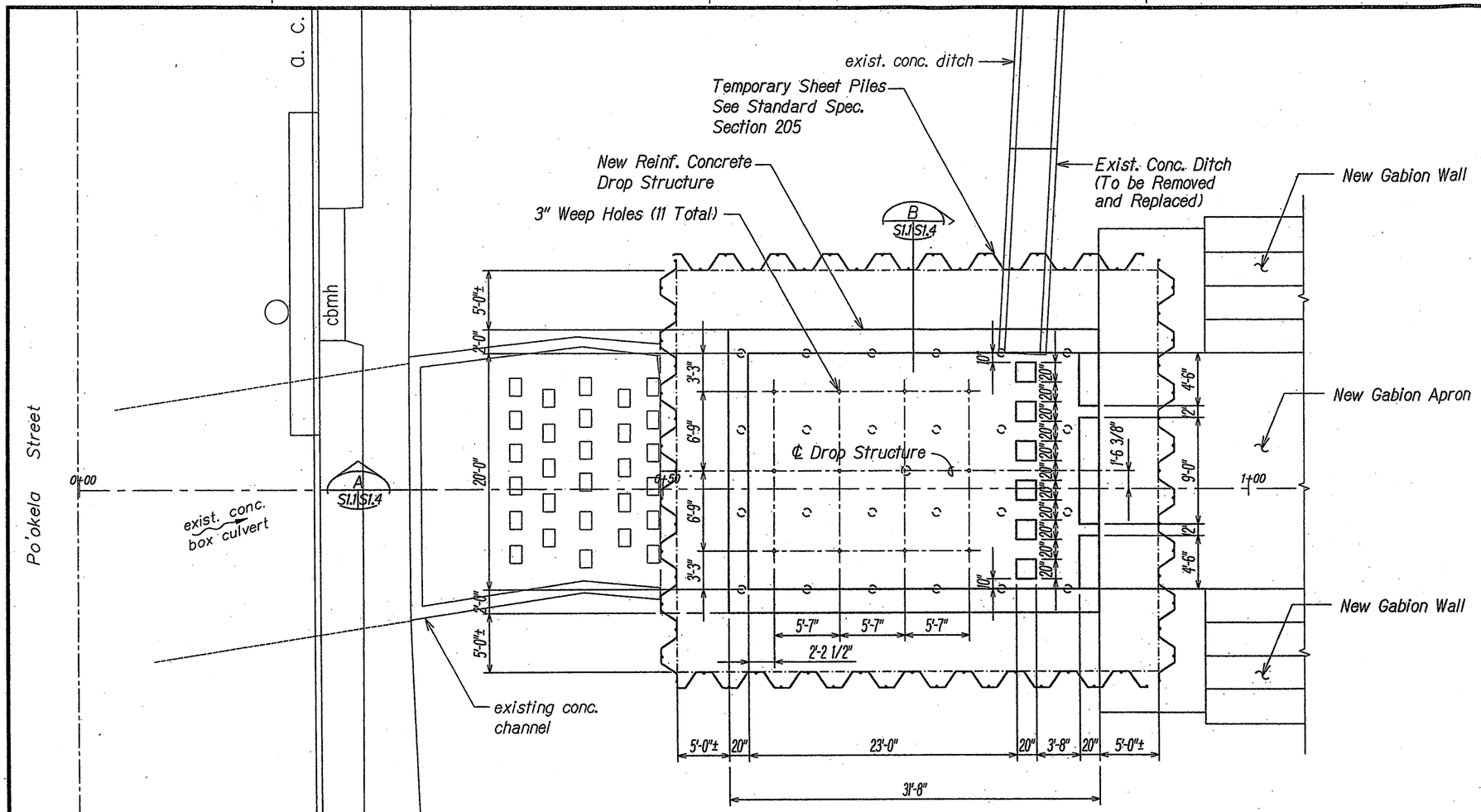
MICROPILE LAYOUT PLAN

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S1.1 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



DROP STRUCTURE PLAN

Scale: 3/16" = 1'-0"

DATE	REVISION

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KSF, INC. — APRIL 30, 2010 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DROP STRUCTURE PLAN

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S1.2 OF 11 SHEETS

ORIGINAL PLAN
NOTE BOOK No.
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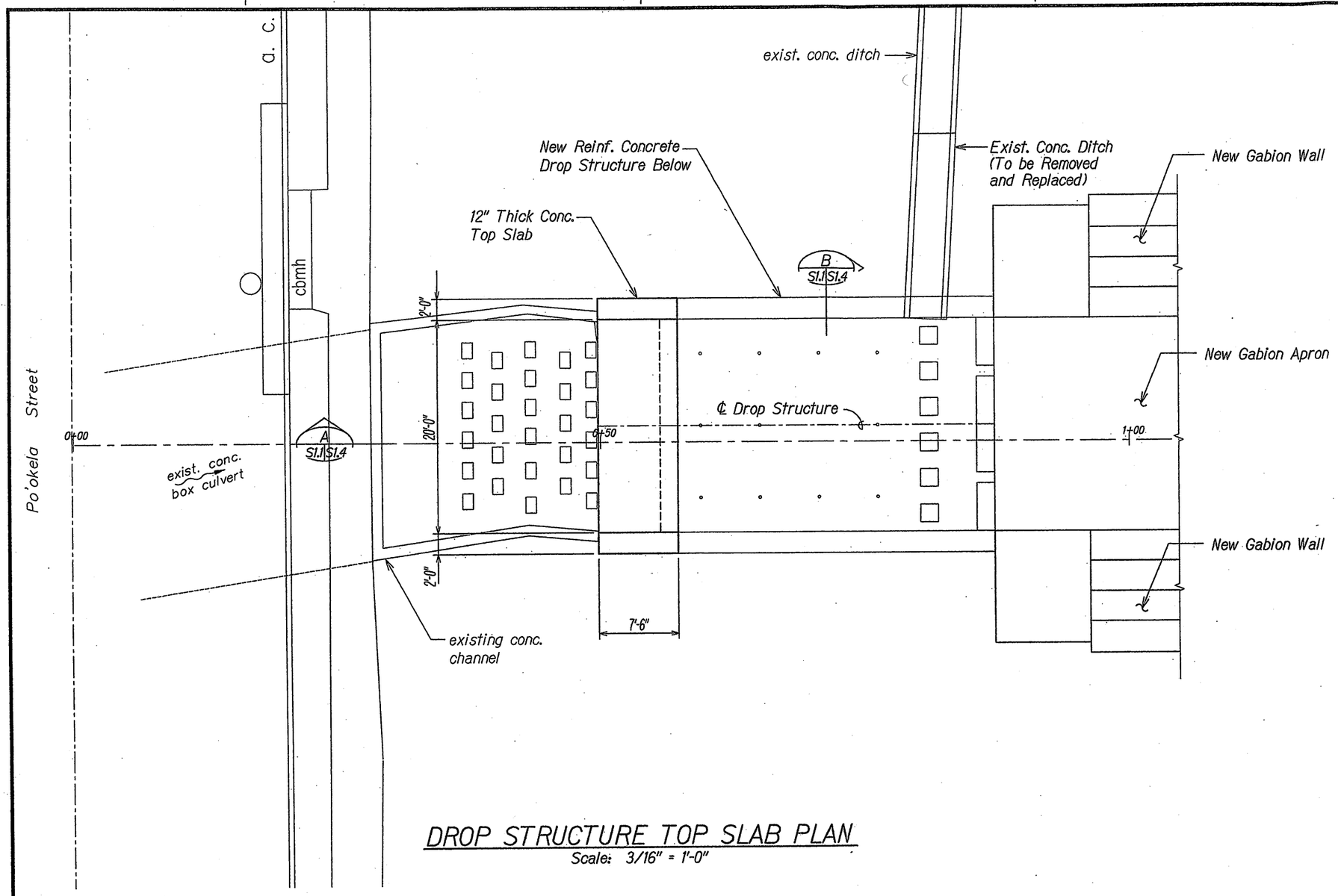
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



DROP STRUCTURE TOP SLAB PLAN

Scale: 3/16" = 1'-0"

SURVEY PLOTTED BY
DRAWN BY
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ORIGINAL PLAN
NOTE BOOK
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DROP STRUCTURE TOP SLAB PLAN

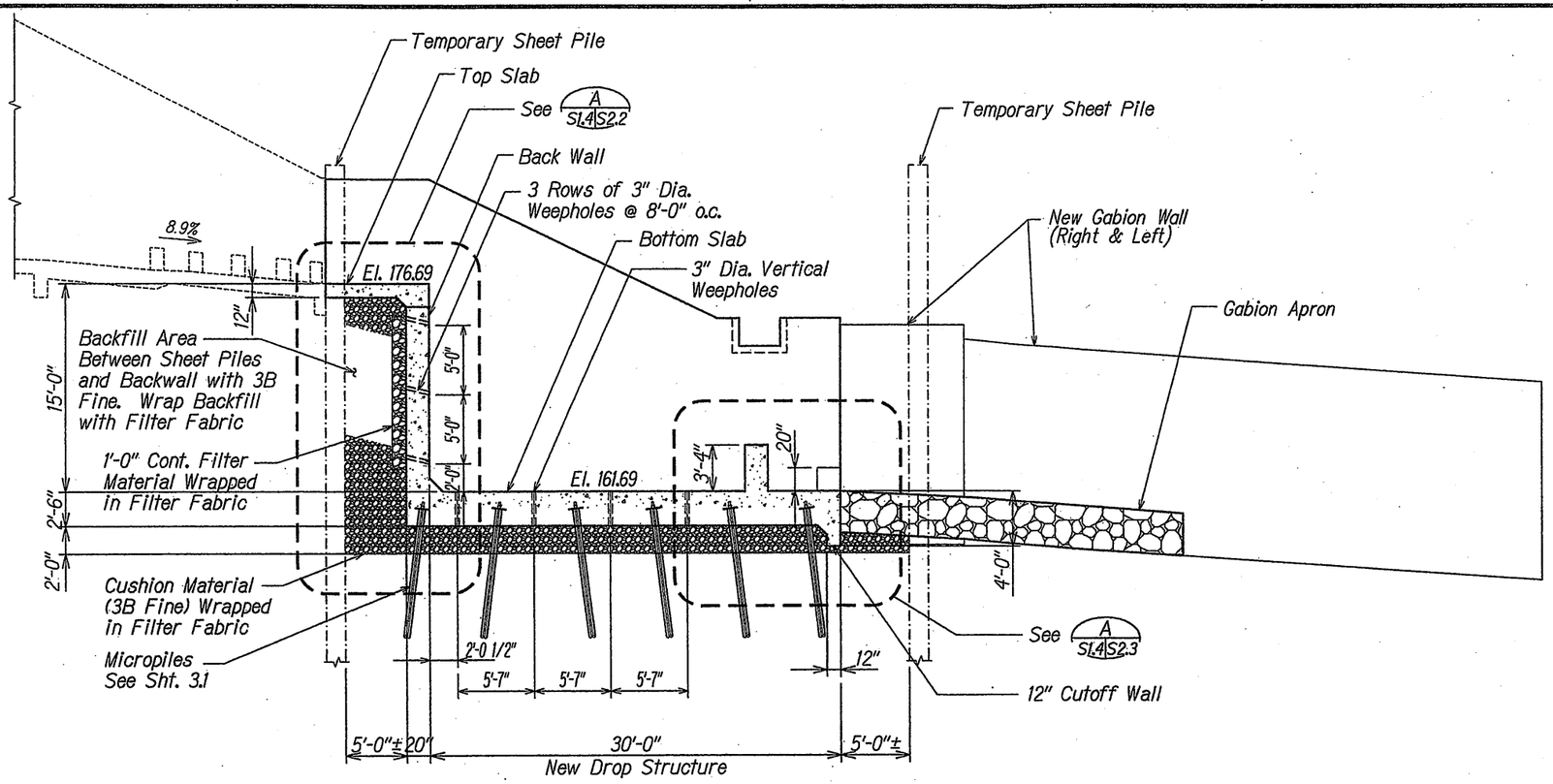
CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

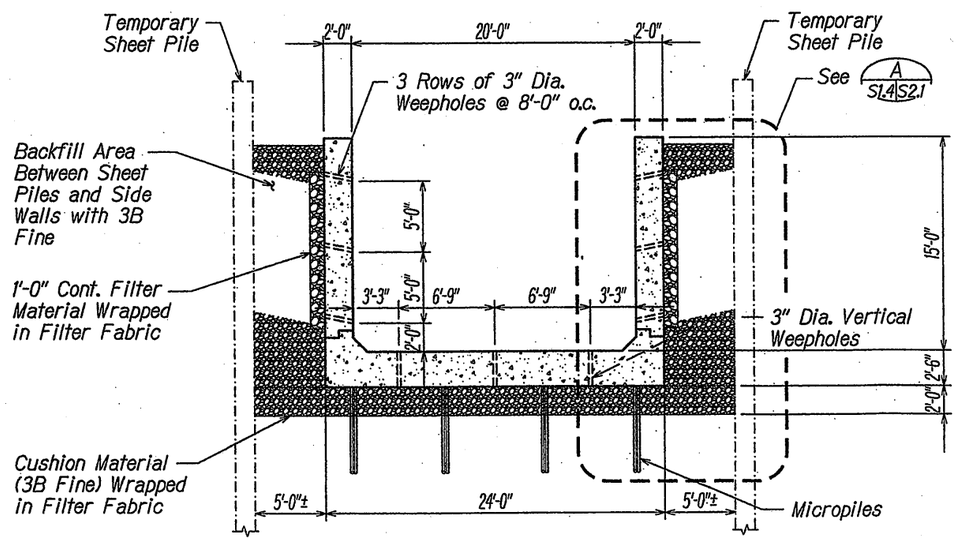
SHEET No. S1.3 OF 11 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



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



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

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

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KSF, INC.

APRIL 30, 2010
LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION.

DROP STRUCTURE SECTIONS

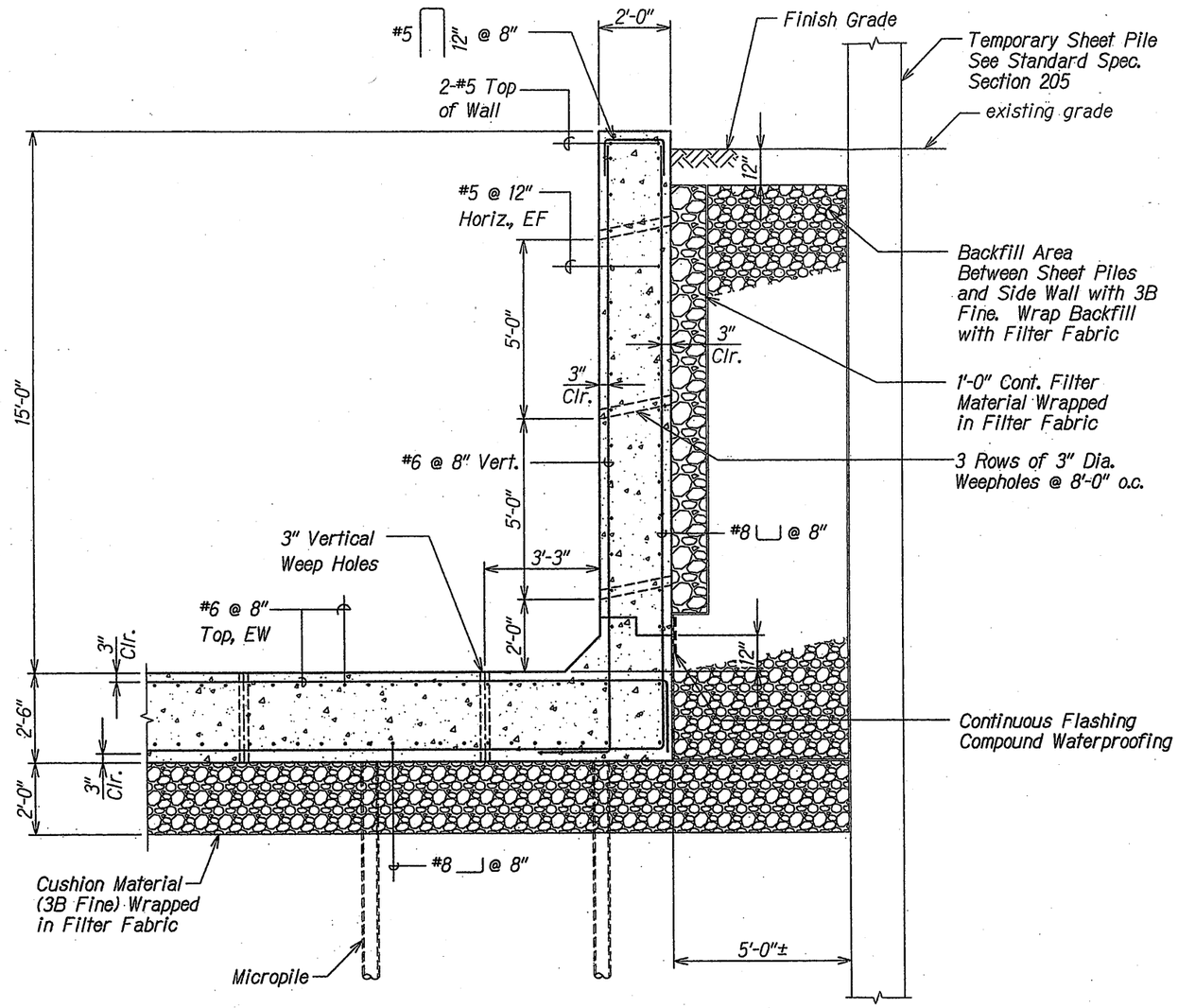
CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown
Date: March 2009

SHEET No. S1.4 OF 11 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



DROP STRUCTURE SECTION (A)

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

S1.4 | S2.1

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STATE OF HAWAII
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HEAD WALL SECTION

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S2.1 OF 11 SHEETS

DATE	REVISION

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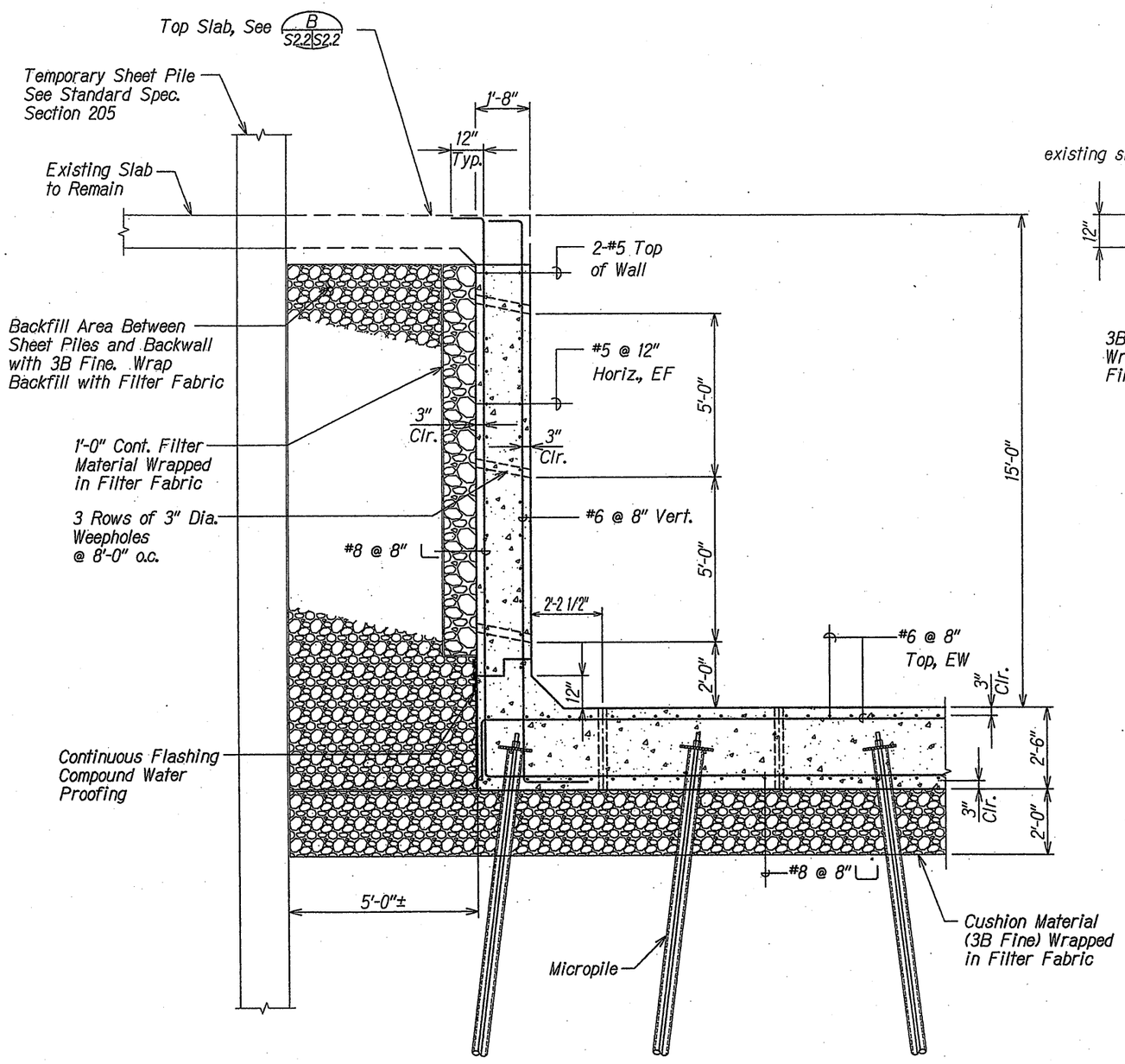
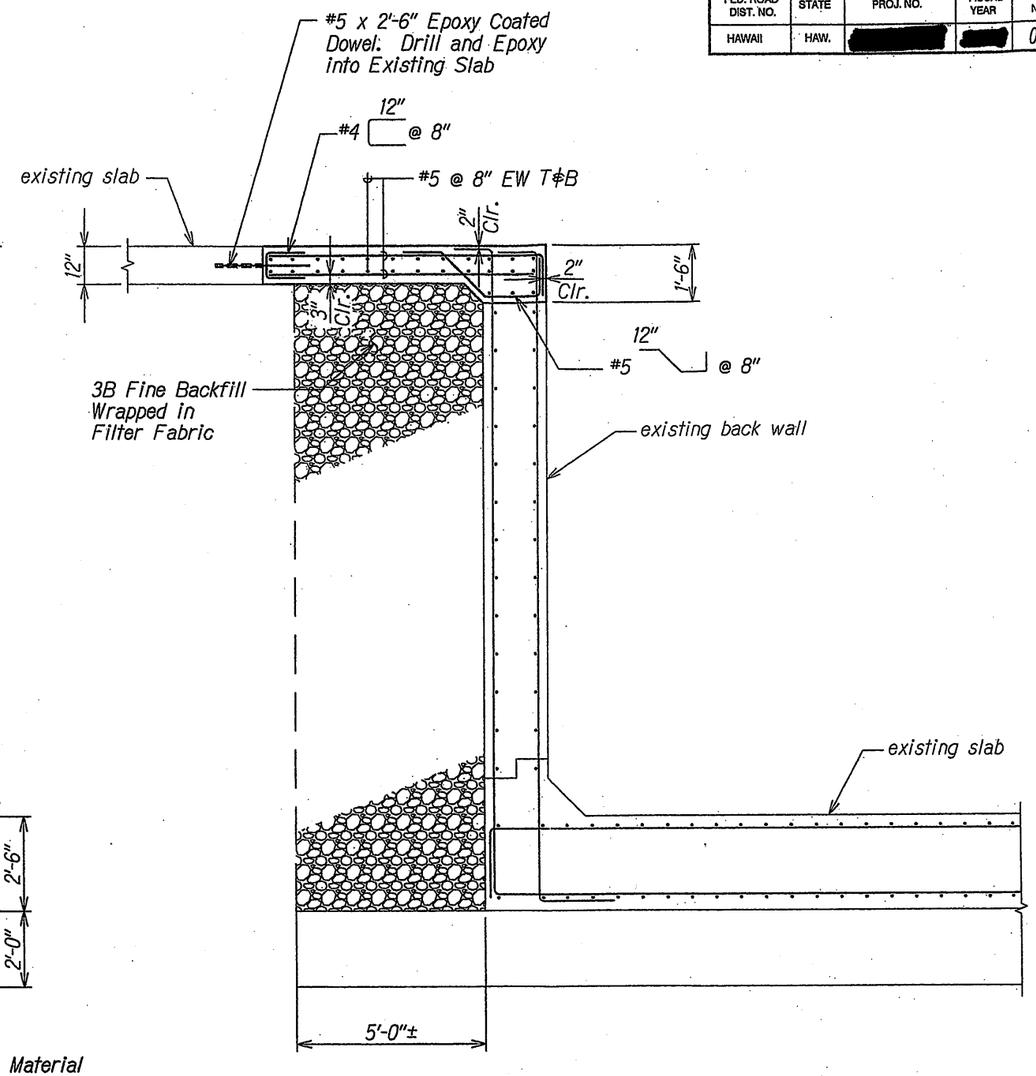
HAWAII	HAW.	[redacted]	[redacted]	00	X



DROP STRUCTURE BACK WALL SECTION (A S1.4 S2.2)

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



DROP STRUCTURE TOP SLAB SECTION (B S2.2 S2.2)

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DROP STRUCTURE SECTIONS

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown — Date: March 2009

SHEET No. S2.2 OF 11 SHEETS

DATE	REVISION

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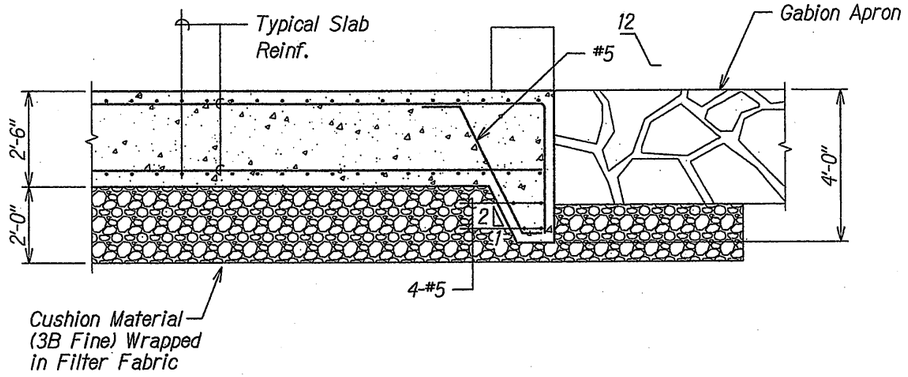
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



DROP STRUCTURE CUTOFF WALL SECTION

A
S1.4 | S2.3

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

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DROP STRUCTURE SECTION

CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown — Date: March 2009

SHEET No. S2.3 OF 11 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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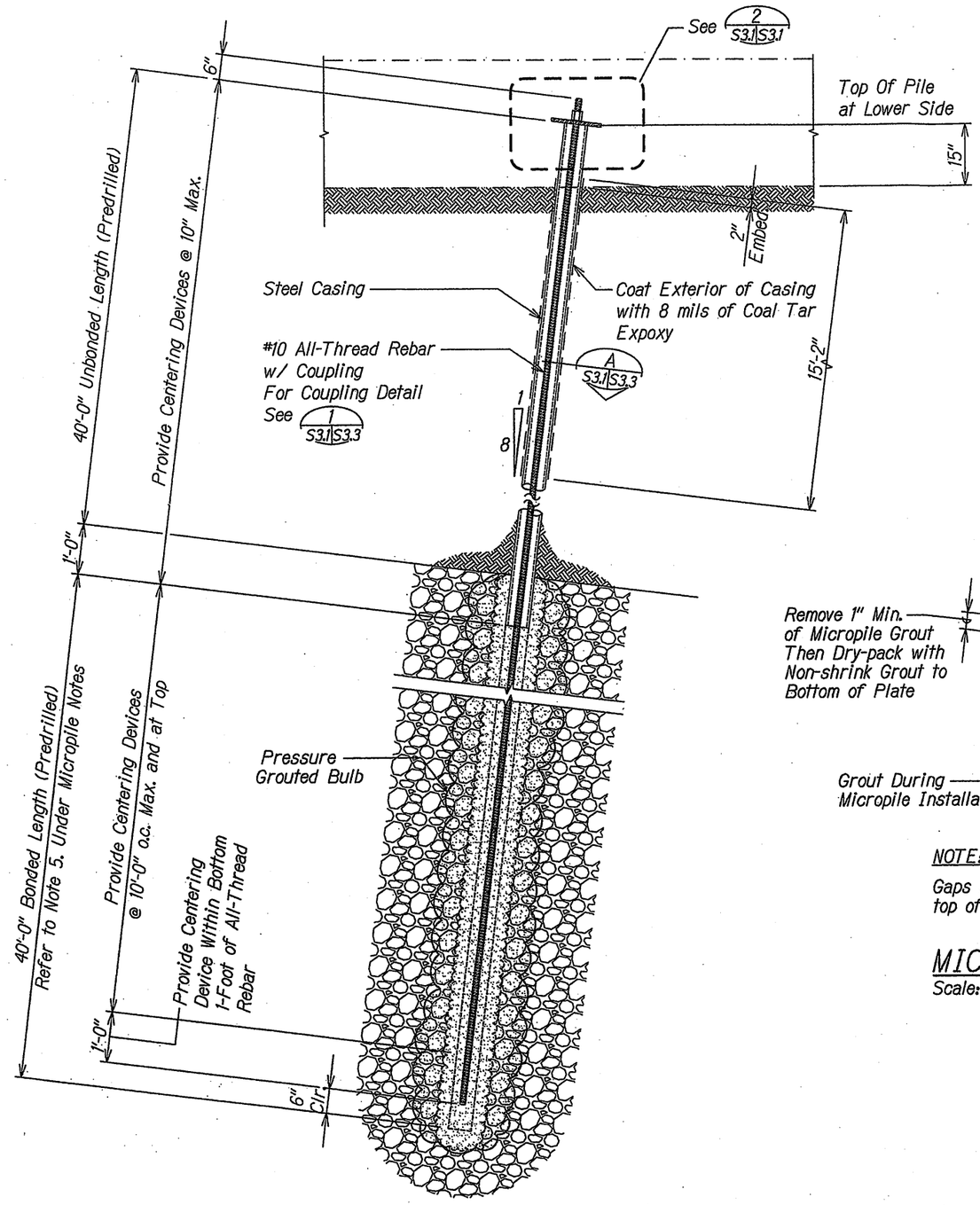
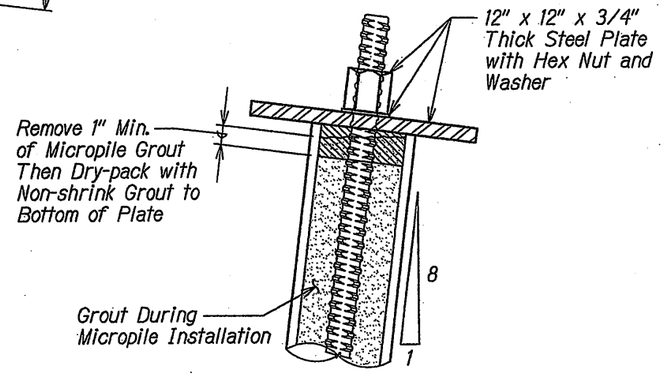


TYPICAL MICROPILE DETAIL 1 S3.1 S3.1
Scale: 3/4" = 1'-0"



NOTE:

Gaps shall not exist between plate and top of steel casing and non-shrink grout.

MICROPILE DETAIL 2 S3.1 S3.1
Scale: 3" = 1'-0"

MICROPILE NOTES:

1. All nuts and bar couplings shall develop 100% of the bar's ultimate tensile strength.
2. Splices within steel casing shall develop 100% of the steel casing's ultimate tensile strength.
3. All accessories such as nuts, couplings, washers, and steel plates shall be hot-dip galvanized according to ASTM A-153.
4. Material Properties of Accessories:
   (a) Steel Plates - ASTM A36
   (b) Hex Nuts - ASTM A108
   (c) Couplings - ASTM A108
   (d) Washers - ASTM F436
5. The bonded length is estimated. The actual bonded length will be determined by the Engineer after the preproduction micropile load test.
6.

Micropile Load Combination (Demand)		
	Axial Load (kips)	Moment (k-ft)
Strength Limit State	80 Compression	50
Strength Limit State	50 Tension	50

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MICROPILE DETAIL AND SECTION

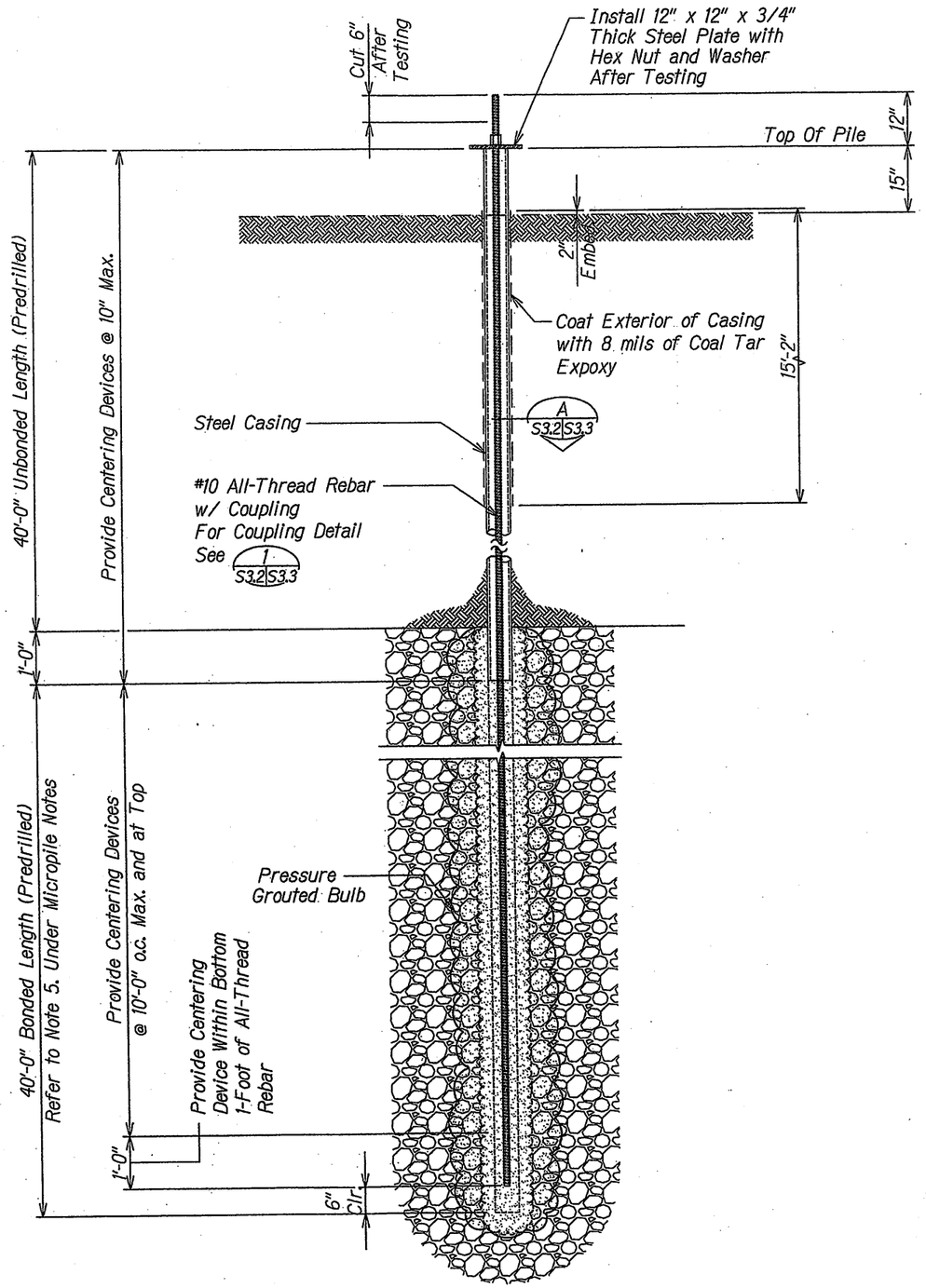
CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No. [redacted]

Scale: As Shown Date: March 2009

SHEET No. S3.1 OF 11 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



TYPICAL PREPRODUCTION MICROPILE DETAIL

1 S3.2 S3.2

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

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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PREPRODUCTION MICROPILE DETAIL

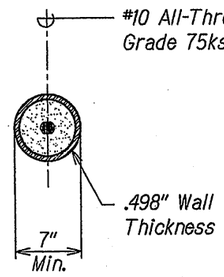
CASTLE HILLS ACCESS ROAD
Drainage Improvements
Project No: [redacted]

Scale: As Shown Date: March 2009

SHEET No. S3.2 OF 11 SHEETS

DATE	REVISION

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[redacted]	[redacted]	00	X



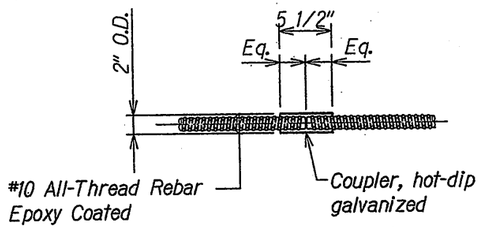
NOTES:

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

A
S3.1 | S3.3

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



NOTE:

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

COUPLER DETAIL OF ALL-THREAD REBAR

1
S3.1 | S3.3

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).

ORIGINAL PLAN | NOTE BOOK | No. | DATE
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MICROPILE DETAIL AND SECTION

CASTLE HILLS ACCESS ROAD
Drainage Improvements
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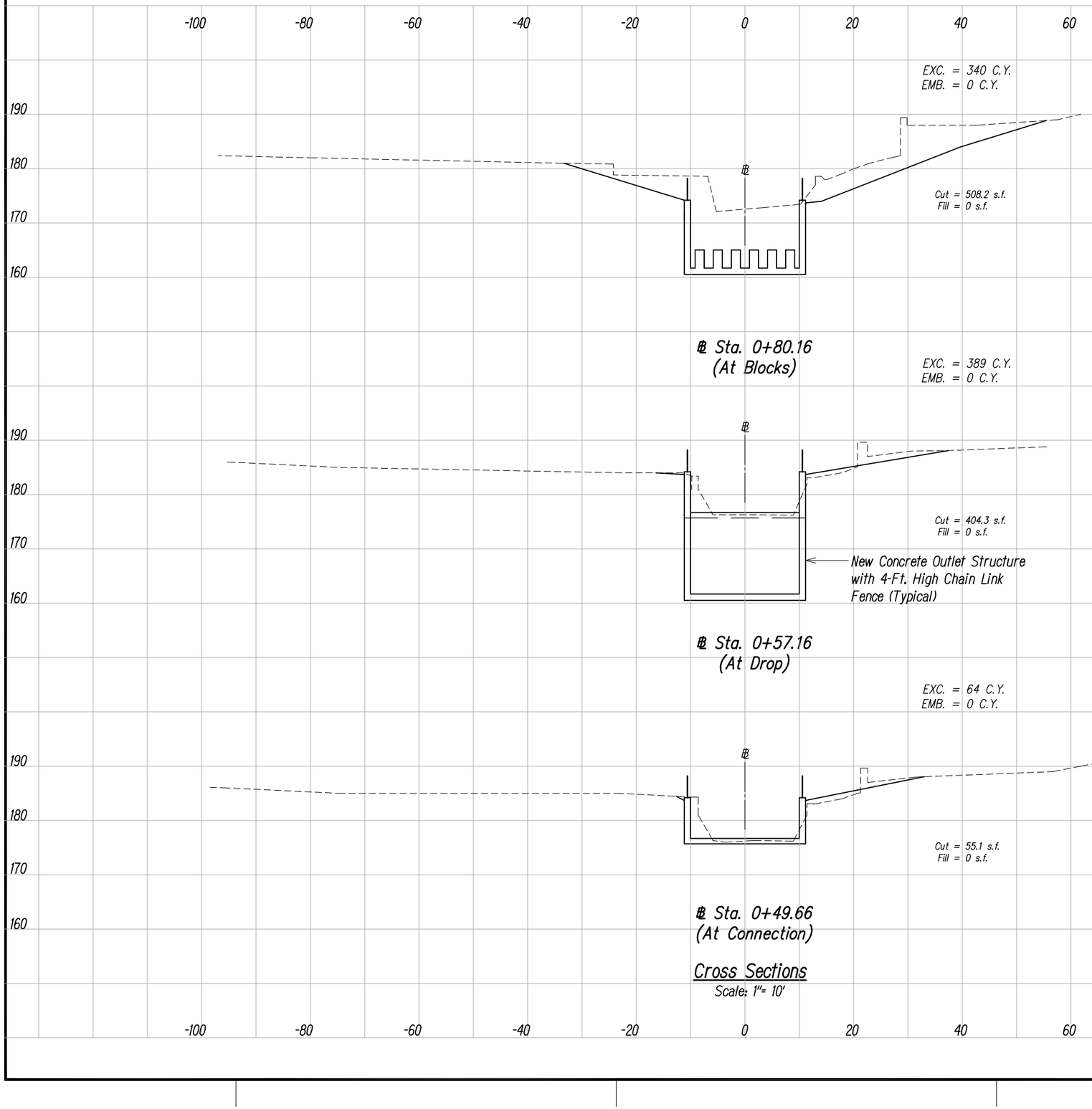
Scale: As Shown Date: March 2009

SHEET No. S3.3 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	.	.	20	33



REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

ORIGINAL PLANS
NOTE BOOK
No.

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RUSSELL M. ARAKAKI
LICENSED PROFESSIONAL ENGINEER
No. 8297-C
HAWAII, U.S.A.

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HIGHWAYS DIVISION

CROSS SECTIONS

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. XS1 OF XS3 SHEETS

DATE	REVISION

20

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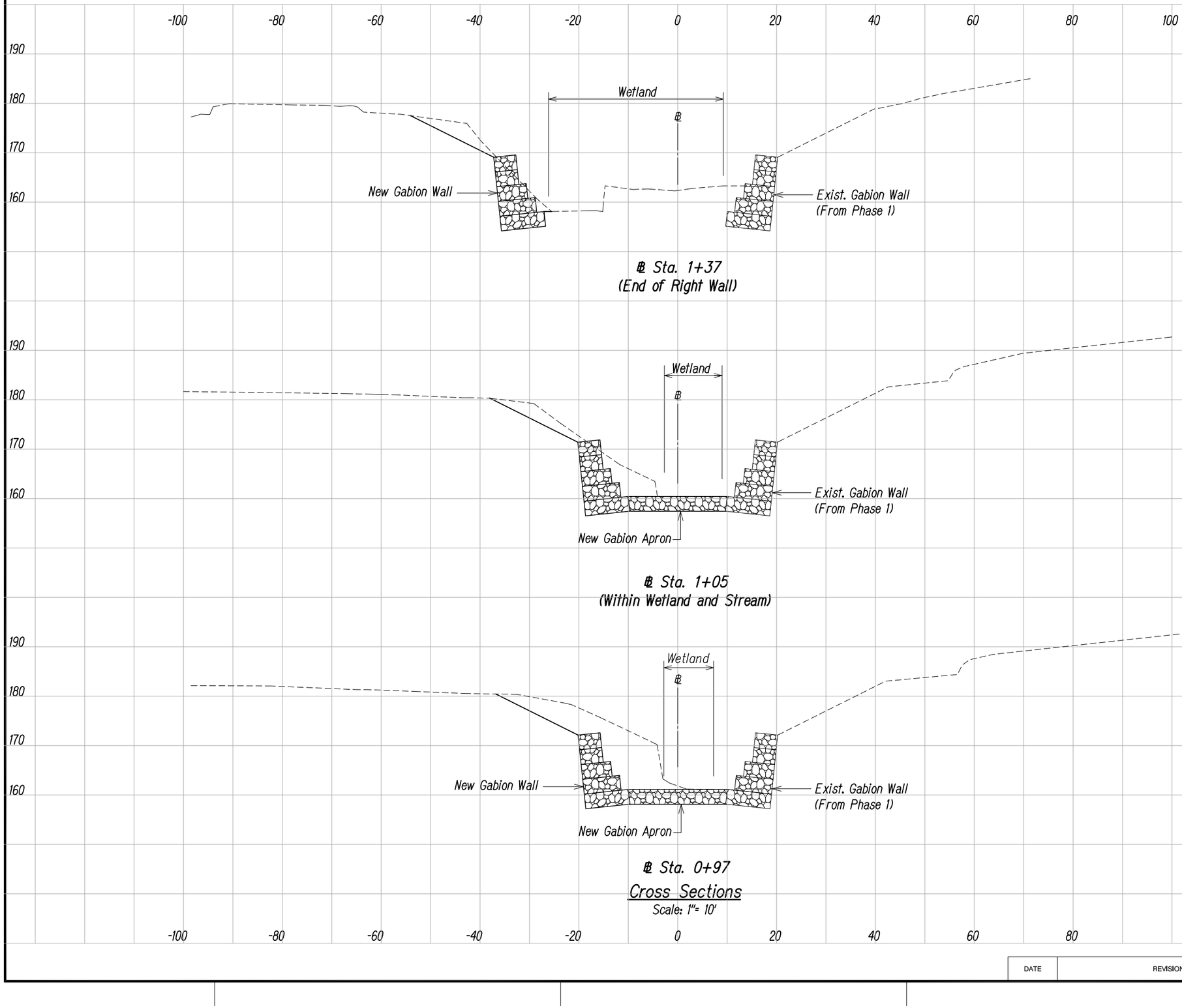

Cross Sections

Scale: 1"= 10'

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

RUSSELL M. ARAKAKI
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HIGHWAYS DIVISION

CROSS SECTIONS

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

Scale: As Shown Date: April 2010

SHEET No. XS2 OF XS3 SHEETS

DATE	REVISION

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	DATE

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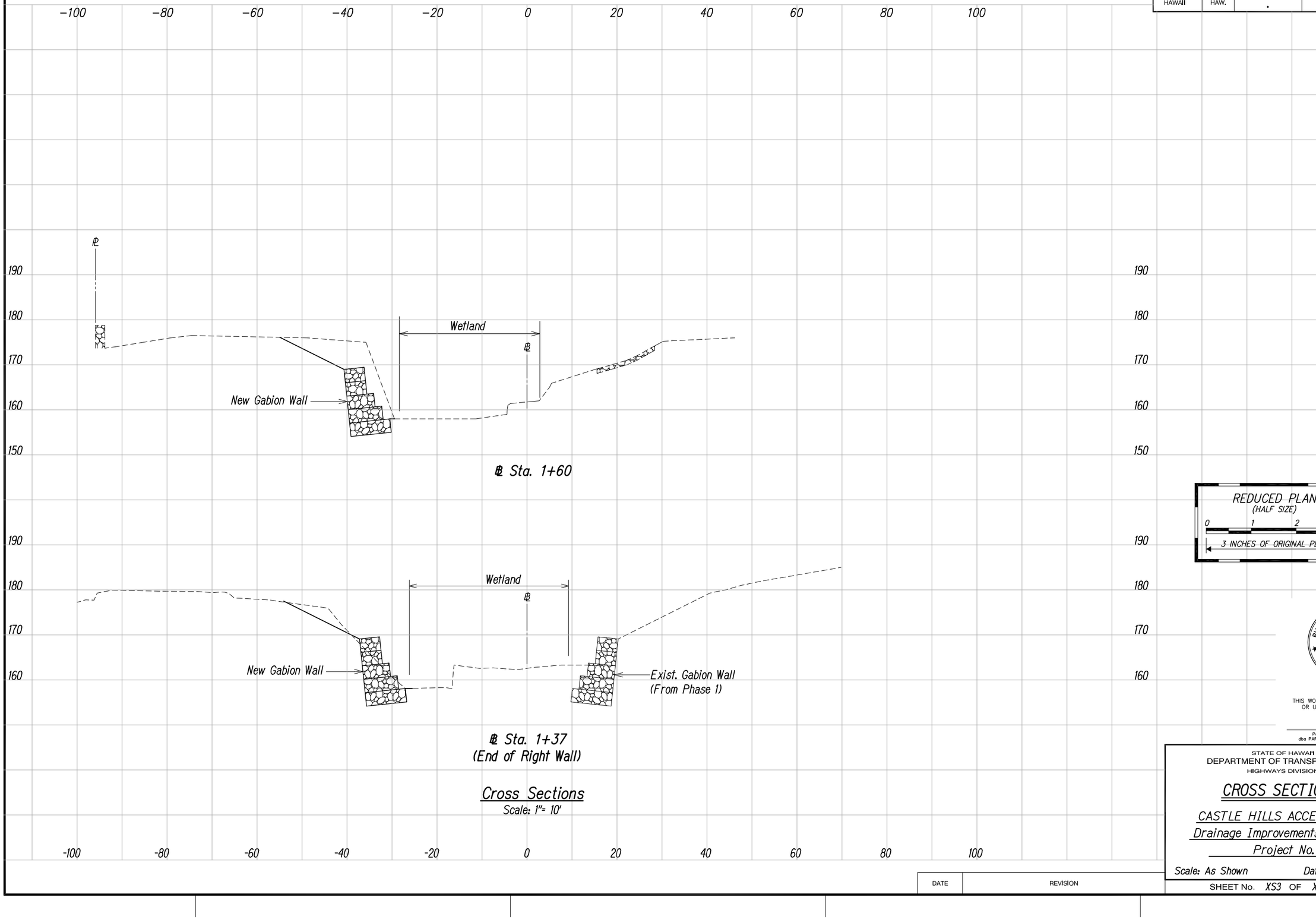

Cross Sections

Scale: 1"= 10'

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES OF ORIGINAL PLAN

RUSSELL M. ARAKAKI
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CROSS SECTIONS

CASTLE HILLS ACCESS ROAD
Drainage Improvements, Phase 2
Project No.

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SHEET No. XS3 OF XS3 SHEETS

DATE	REVISION

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