

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

HAWAII HAW. HWY-0-02-11 2012 ADD. 34 43

NOTES:

- 1. Bioswale trench shall be excavated when soil is dry and friable. Construction in wet soil will couse smearing and compaction which will decrease the soil's ability to absorb water.
- 2. The sides and bottom of the trench shall be raked to depth of 1 inch to expose natural soil structure and to remove any smeared and compacted soil surface before filter media is installed.

Biotrench Filter Media Legend

Bioretention Soil Mixture (BSM)

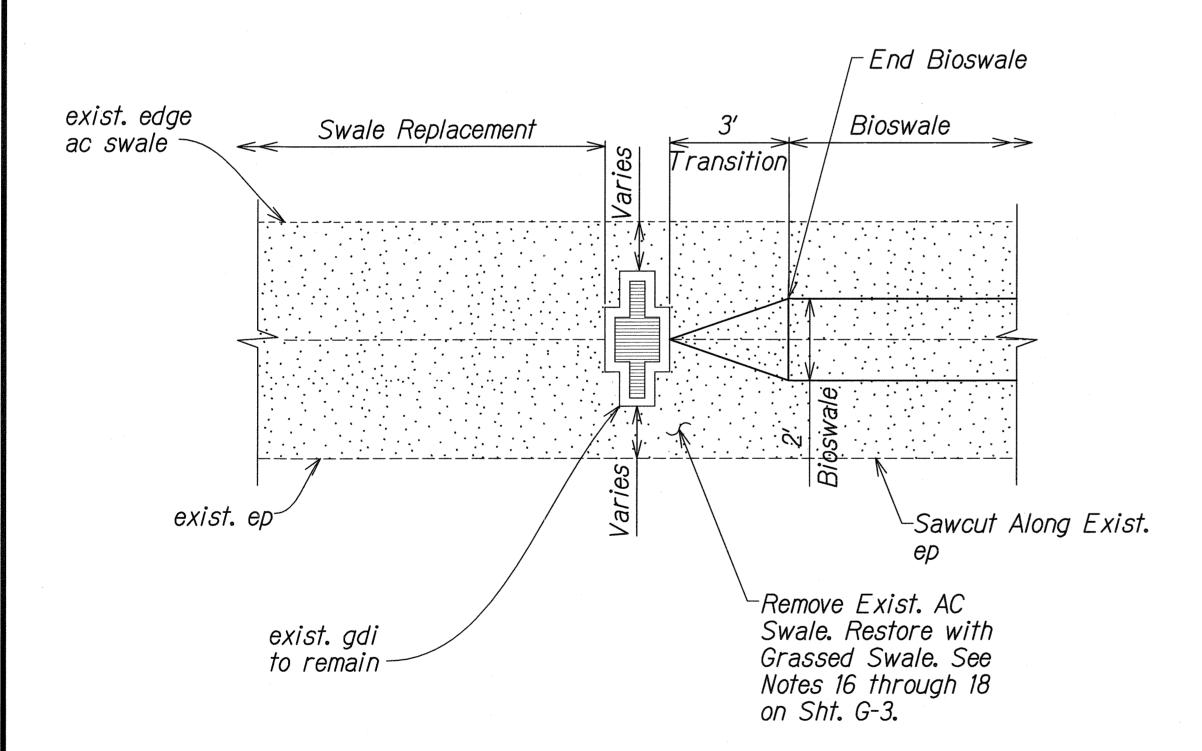


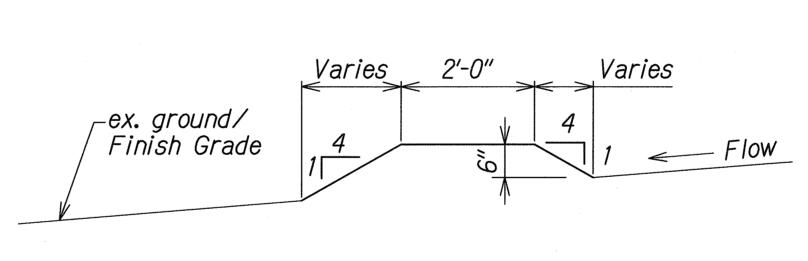
No. 57 Aggregate

No. 7 Aggregate



No. 2 Aggregate





Scale: NTS

TYPICAL PROFILE - BIOSWALE (IN SERIES)

Scale: NTS

length of BIOSWALE BERM DETAIL

Note:
Install Bioswale Berm at 50
feet intervals along entire
length of Bioswale.

TYPICAL SWALE RESTORATION @

BIOSWALE TO EXISTING INLET CONNECTION

Scale: NTS

LICENSED PROFESSIONAL ENGINEER
No. 10377-C

WAII, U.S.P.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

04/30/14
SIGNATURE

OF THE LICENSE

STATE OF HAWAII

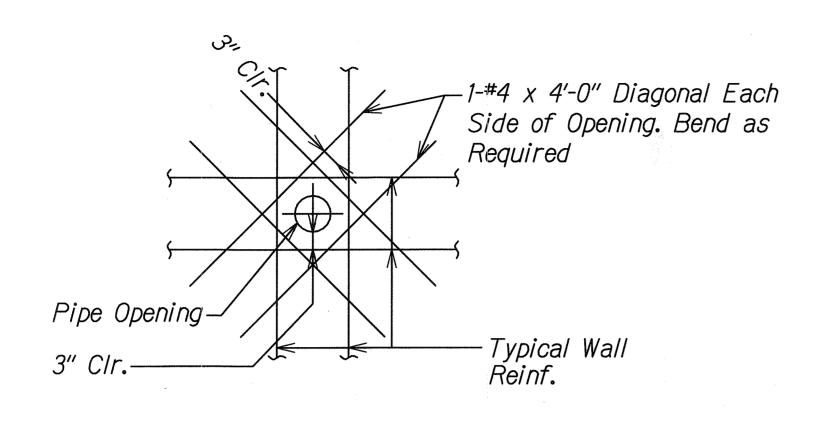
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BIOSWALE DETAILS

MISCELLANEOUS PERMANENT BEST
MANAGEMENT PRACTICES ON OAHU
PROJECT NO. HWY-0-02-11
Scale: NTS Date: May, 2012

SHEET No. C-22 OF 23 SHEETS

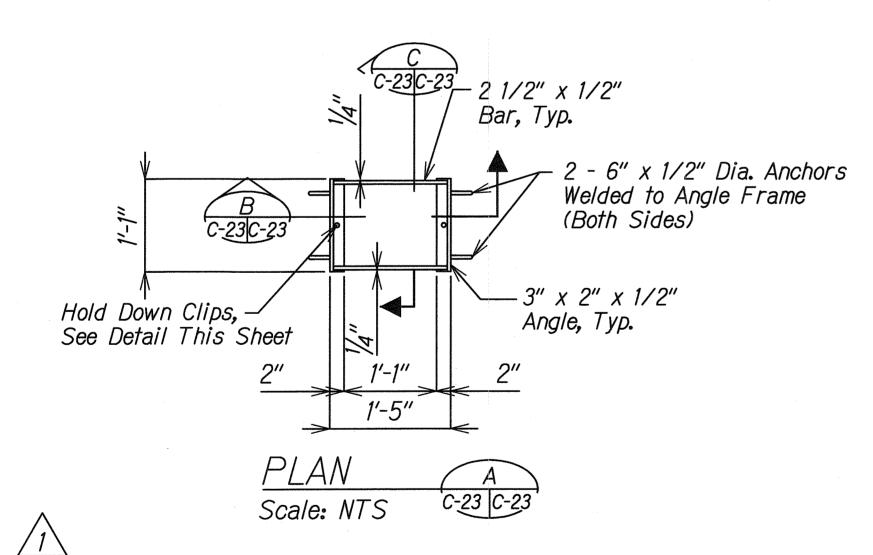
ADD. 34



ADDED REINF. AT PIPE OPENING DETAIL Scale: NTS

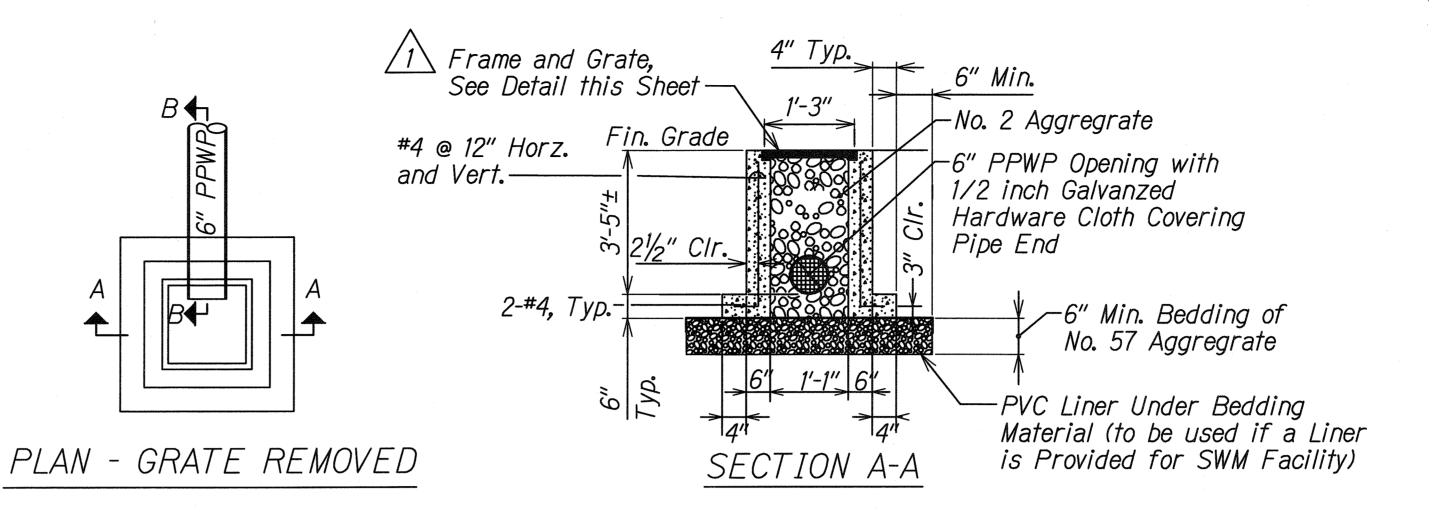
TYP. 1 OUTLET NOTES:

- 1. 15"x15" Grate inlet with angle frame shall be cast iron, light duty (Neenah R-4550/R-4899 or approved equal.)
- 2. Concrete 28 Day Compressive Strength shall be f'c=4,000 psi.
- 3. Reinforcing steel shall be ASTM A-615, Grade 60 deformed bars.
- 4. Cost of the Type I Outlet shall be incedental to the various individual Bioswales.



STEEL GRATING NOTES:

- Frames and Gratings, including Bolts, Nuts and Washers, shall be Hot-Dip Galvanized after fabrication...
- All Welds for the Frame shall be $\frac{3}{8}$ ", unless otherwise noted.
- Grind corners of Bearing Bar as required to ensure complete contact between Bearing Bars and Angle Frame.

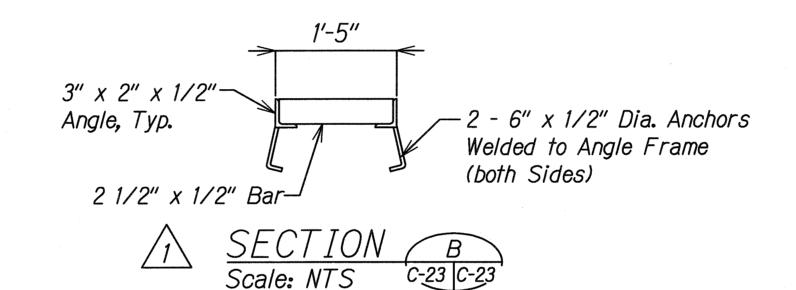


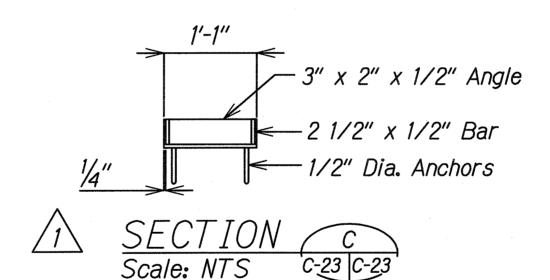
FISCAL SHEET TOTAL YEAR NO. SHEETS PROJ. NO. 2012 ADD. 35 43 HAW. HWY-0-02-11 See Detail for Added Reinf. at 1 Pipe Opening — Lap-Type Coupling Band 1/2 Inch Galvanized PPWP Hardware Cloth Covering Pipe End -SECTION B-B

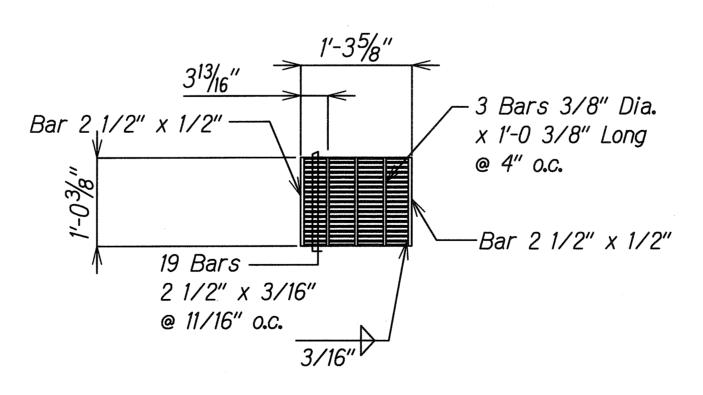
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BIOSWALE TO TYPE I OUTLET CONNECTION DETAILS

Scale: NTS

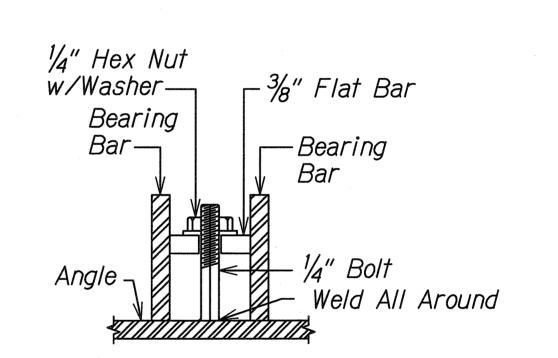






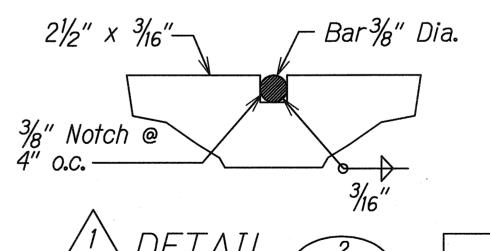


Scale: NTS



Note: 2 Clips Per Grating Panel





<u>DETAIL</u> Revised outlet details. Added 6/13/12 Frame and Grate details. Date Revision

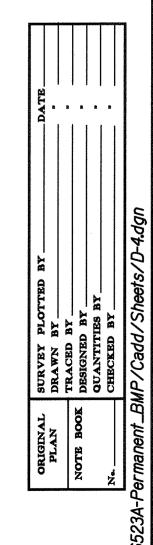
> LICENSED PROFESSIONAL ENGINEER THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. SIGNATURE SUPPRATION DATE OF THE LICENSE

STATE OF HAWAII **DEPARTMENT OF TRANSPORTATION**

BIOSWALE DETAILS

MISCELLANEOUS PERMANENT BEST MANAGEMENT PRACTICES ON OAHU PROJECT NO. HWY-0-02-11 Scale: NTS Date: May, 2012

SHEET No. C-23 OF 23 SHEETS



ADD. 35