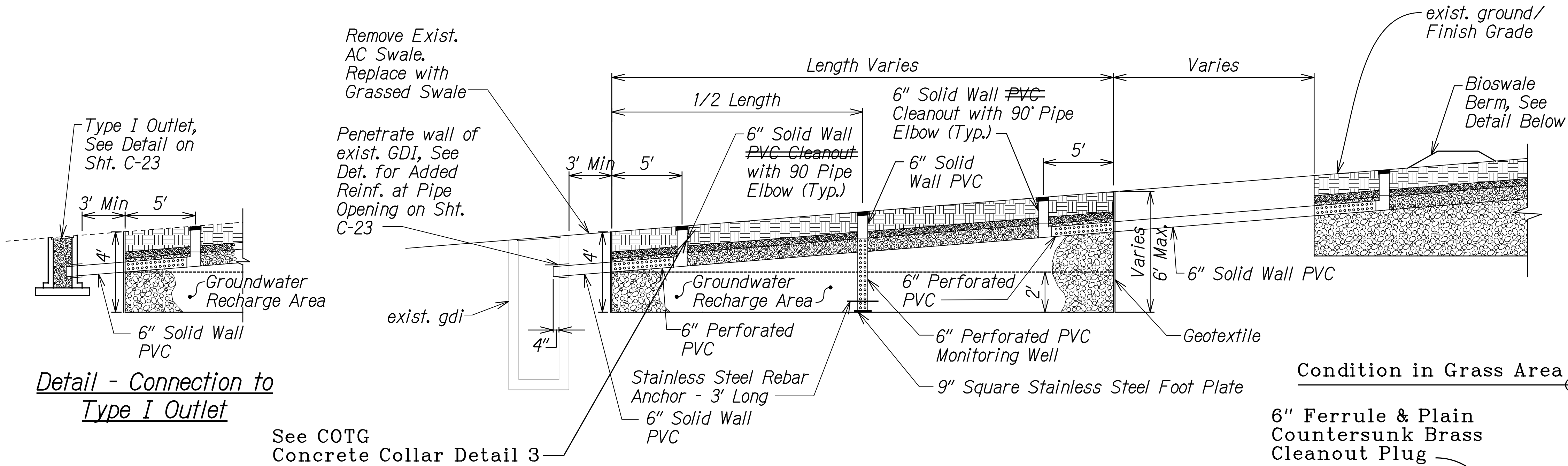
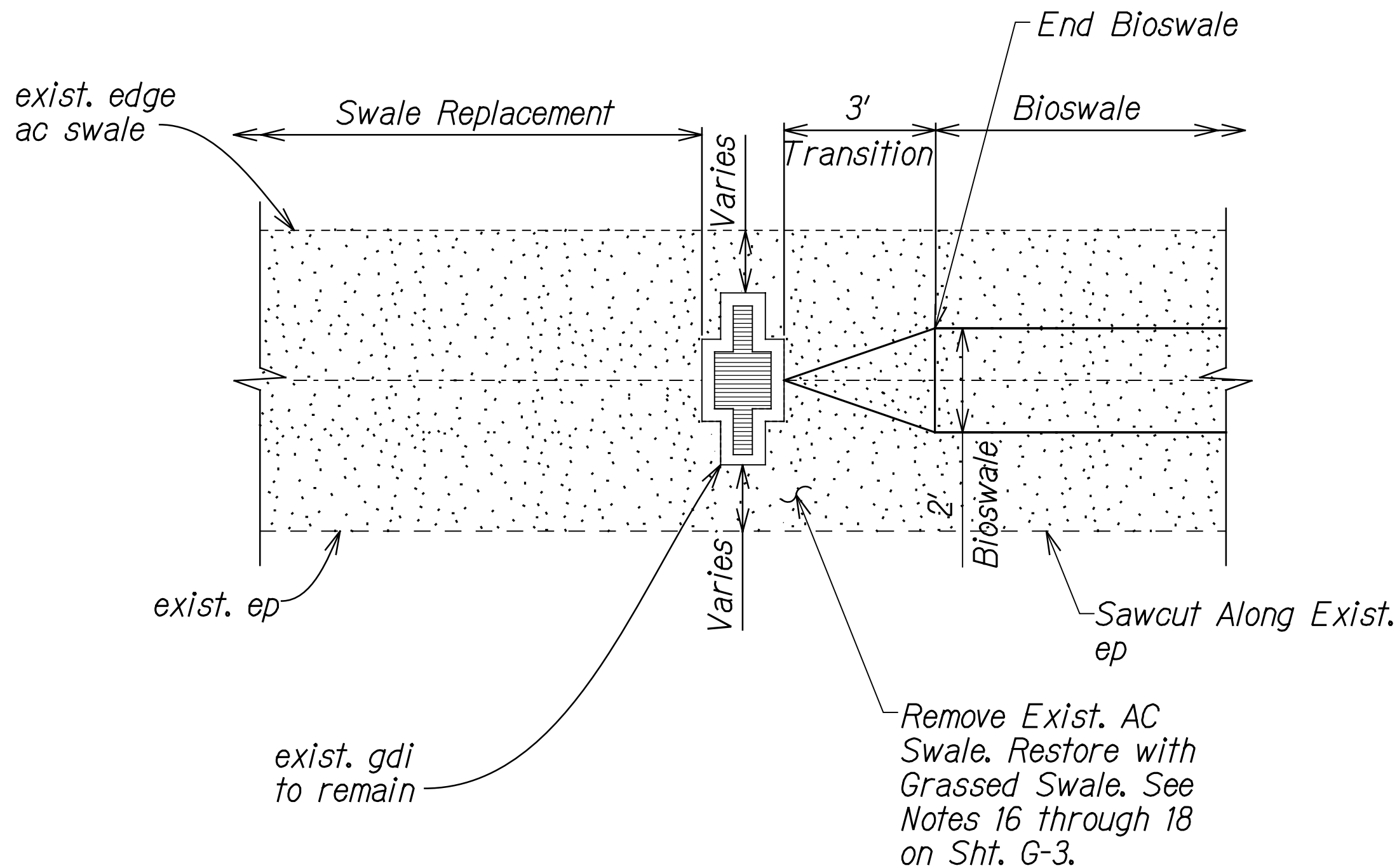


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-02-11R	2014	34	43



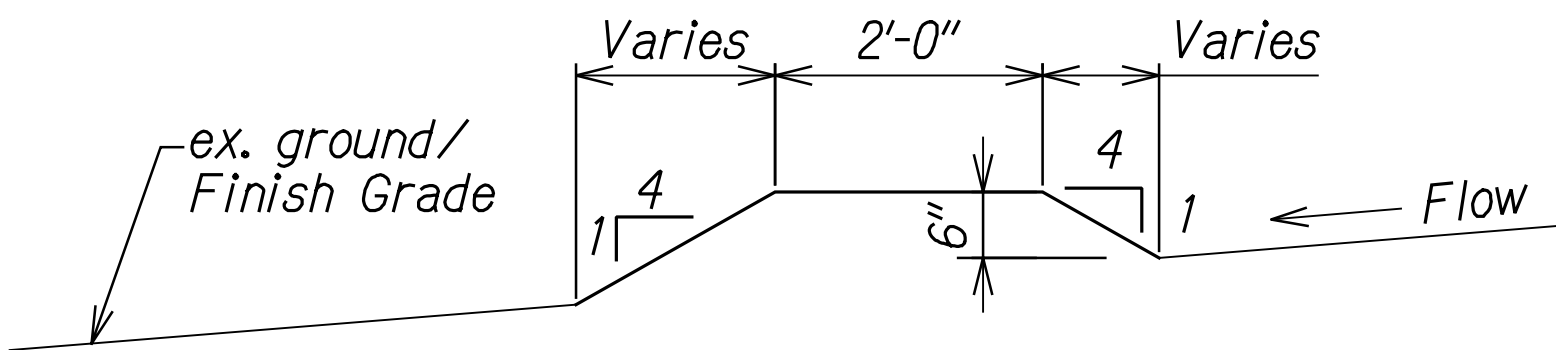
TYPICAL PROFILE - BIOSWALE (IN SERIES)
Scale: NTS



TYPICAL SWALE RESTORATION @ BIOSWALE TO EXISTING INLET CONNECTION
Scale: NTS

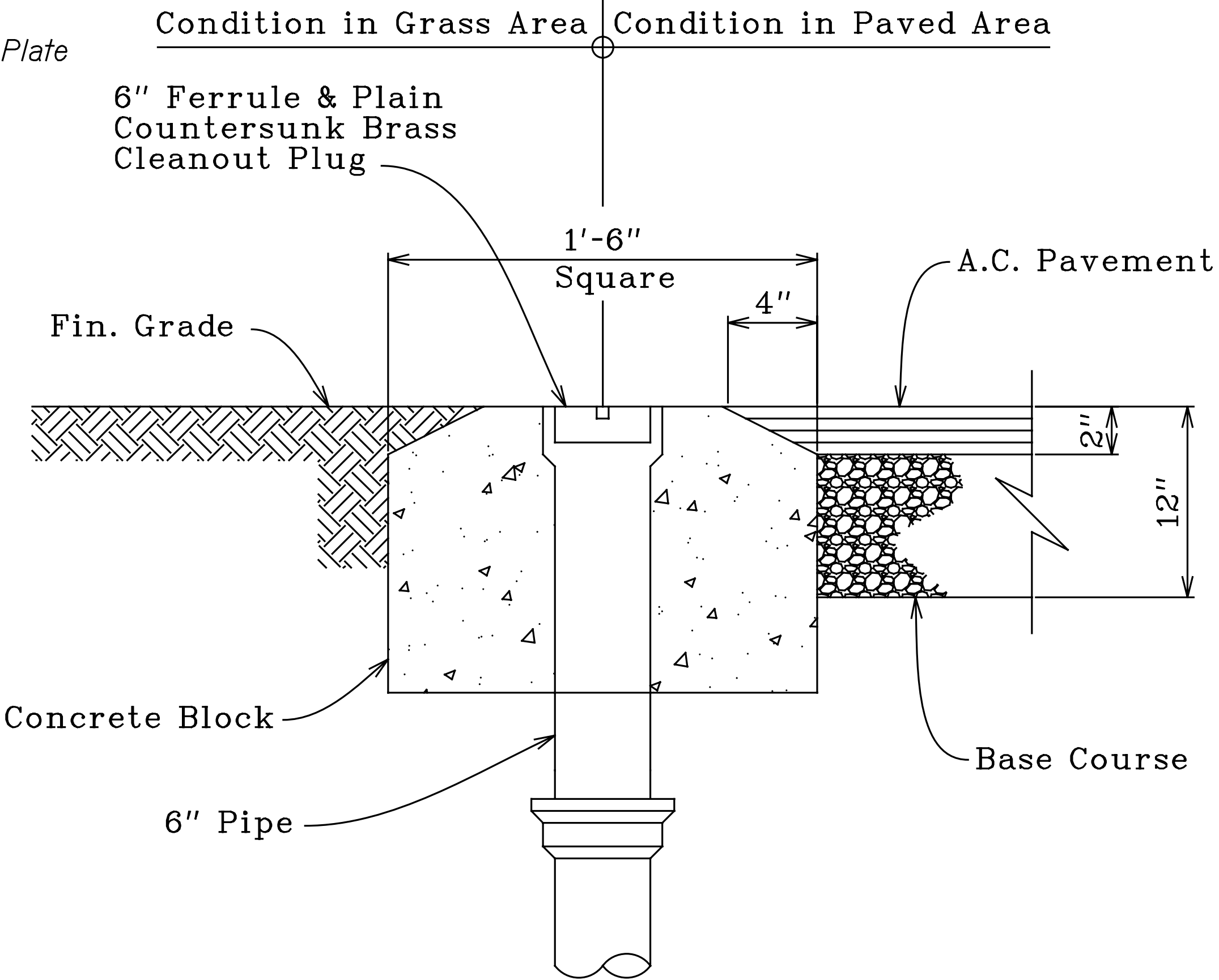
LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting

Biotrench Filter Media Legend	
	Biotention Soil Mixture (BSM)
	No. 7 Aggregate
	No. 57 Aggregate
	No. 2 Aggregate



BIOSWALE BERM DETAIL
Scale: NTS

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



COTG CONCRETE COLLAR DETAIL
Scale: NTS

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE _____ EXPIRATION DATE OF THE LICENSE 04/30/18

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BIOSWALE DETAILS

MISCELLANEOUS PERMANENT BEST MANAGEMENT PRACTICES ON OAHU
PROJECT NO. HWY-0-02-11R

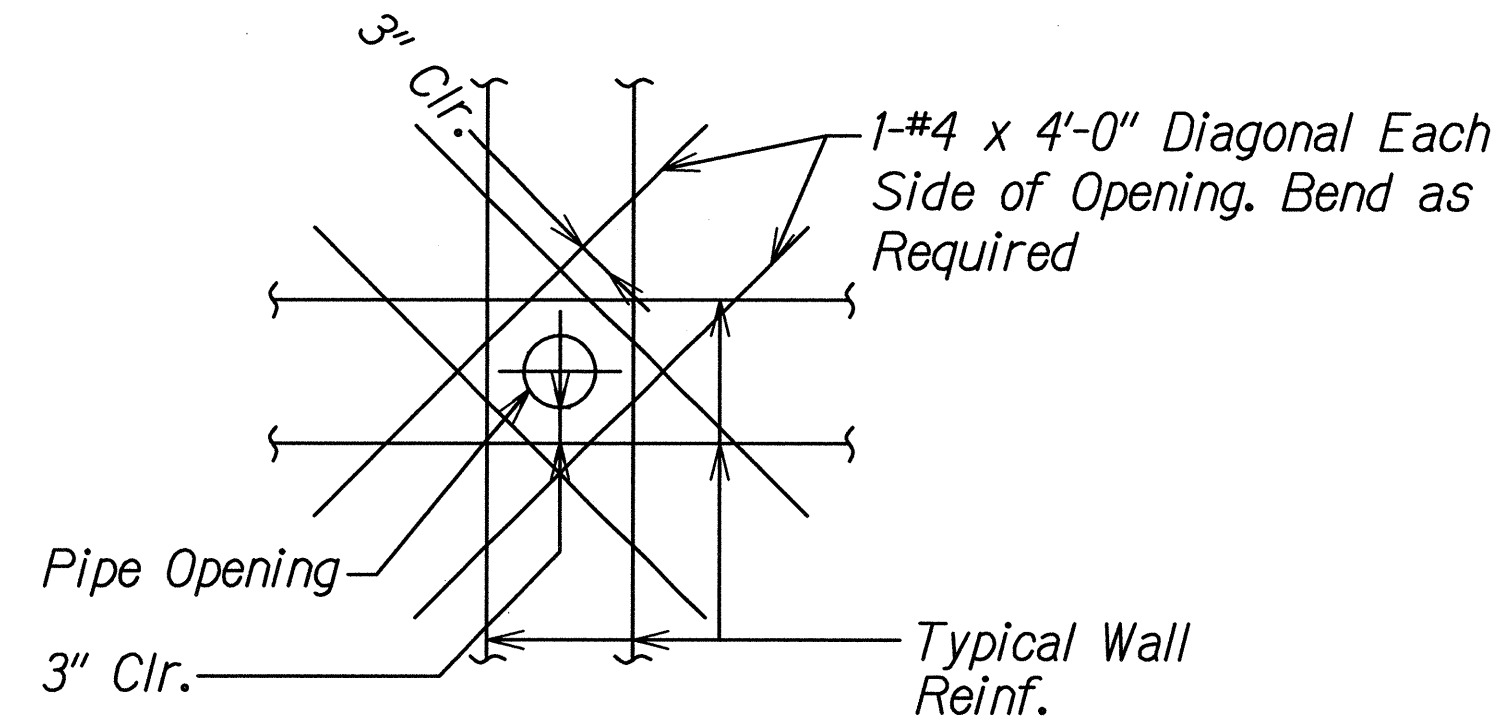
Scale: NTS Date: April, 2014

SHEET No. C-22 OF 23 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NOTE BOOK	
NO.	

T:\165234-Permanent BMP\Cadd\Sheets\Details\D-3.dgn

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-02-11R	2014	35	43

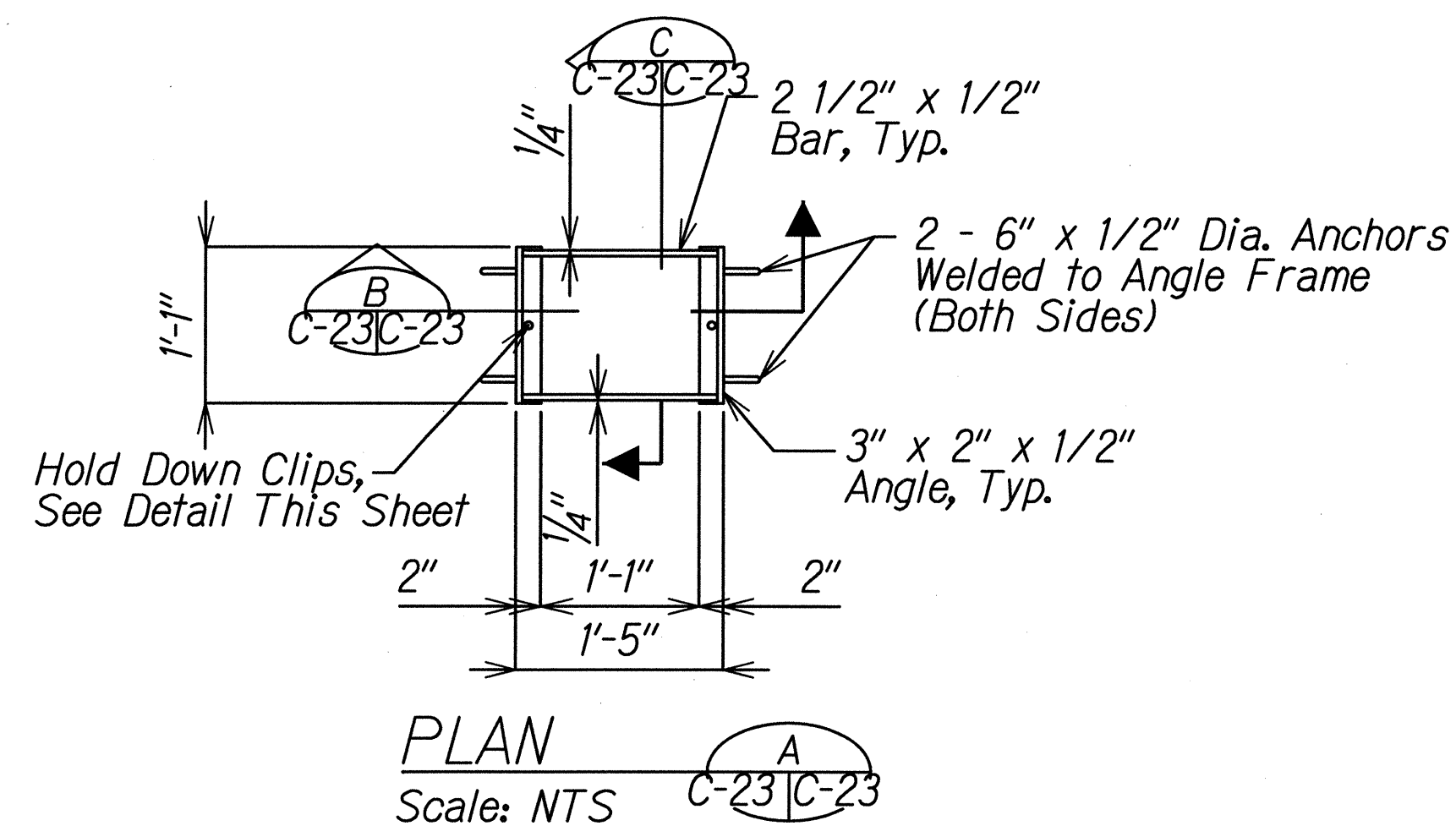


ADDED REINF. AT PIPE OPENING DETAIL

Scale: NTS

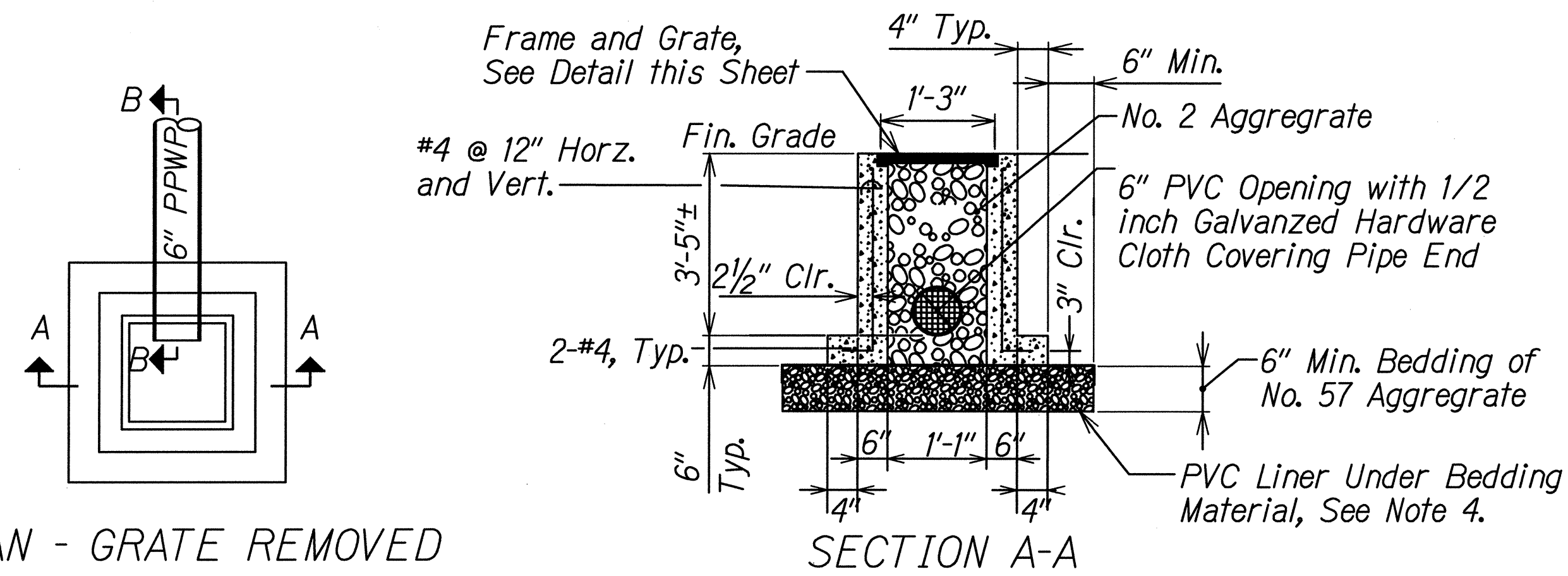
TYP. 1 OUTLET NOTES:

- 15"x15" Grate inlet with angle frame shall be cast iron, light duty (Neenah R-4550/R-4899 or approved equal.)
- Concrete 28 Day Compressive Strength shall be $f'_c=4,000$ psi.
- Reinforcing steel shall be ASTM A-615, Grade 60 deformed bars.
- PVC Liner shall be 30 Mil and conform to ASTM D7176.
- Cost of the Type I Outlet shall be incidental to the various individual Bioswales.



STEEL GRATING NOTES:

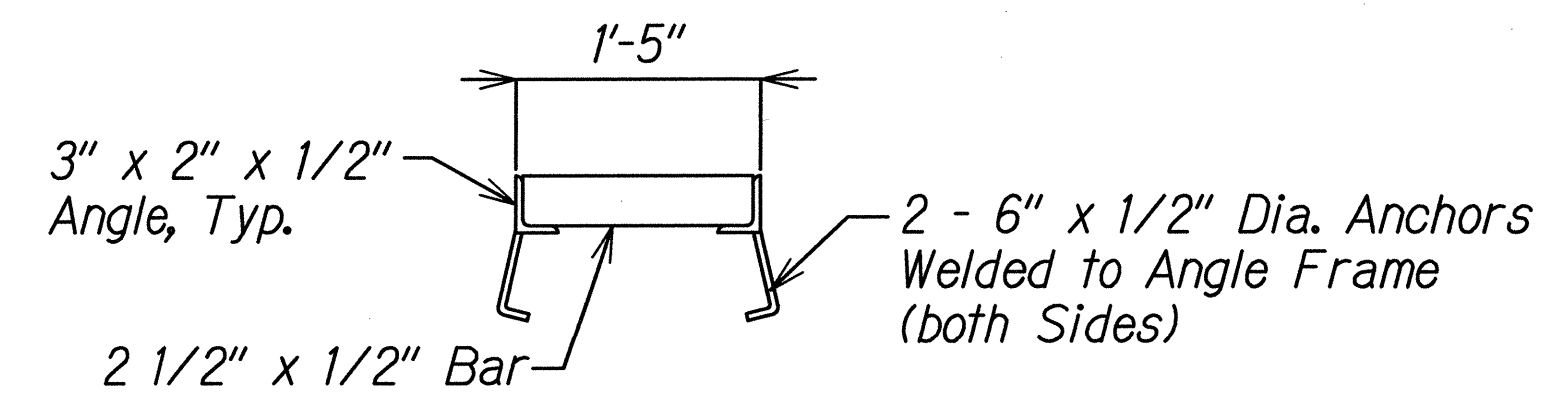
- Frames and Gratings, including Bolts, Nuts and Washers, shall be Hot-Dip Galvanized after fabrication.
- All Welds for the Frame shall be $\frac{3}{8}$ ", unless otherwise noted.
- Grind corners of Bearing Bar as required to ensure complete contact between Bearing Bars and Angle Frame.



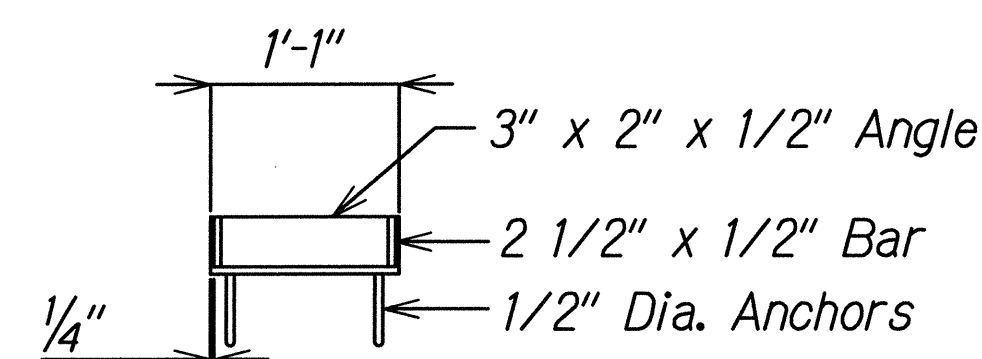
PLAN - GRATE REMOVED

BIOSWALE TO TYPE I OUTLET CONNECTION DETAILS

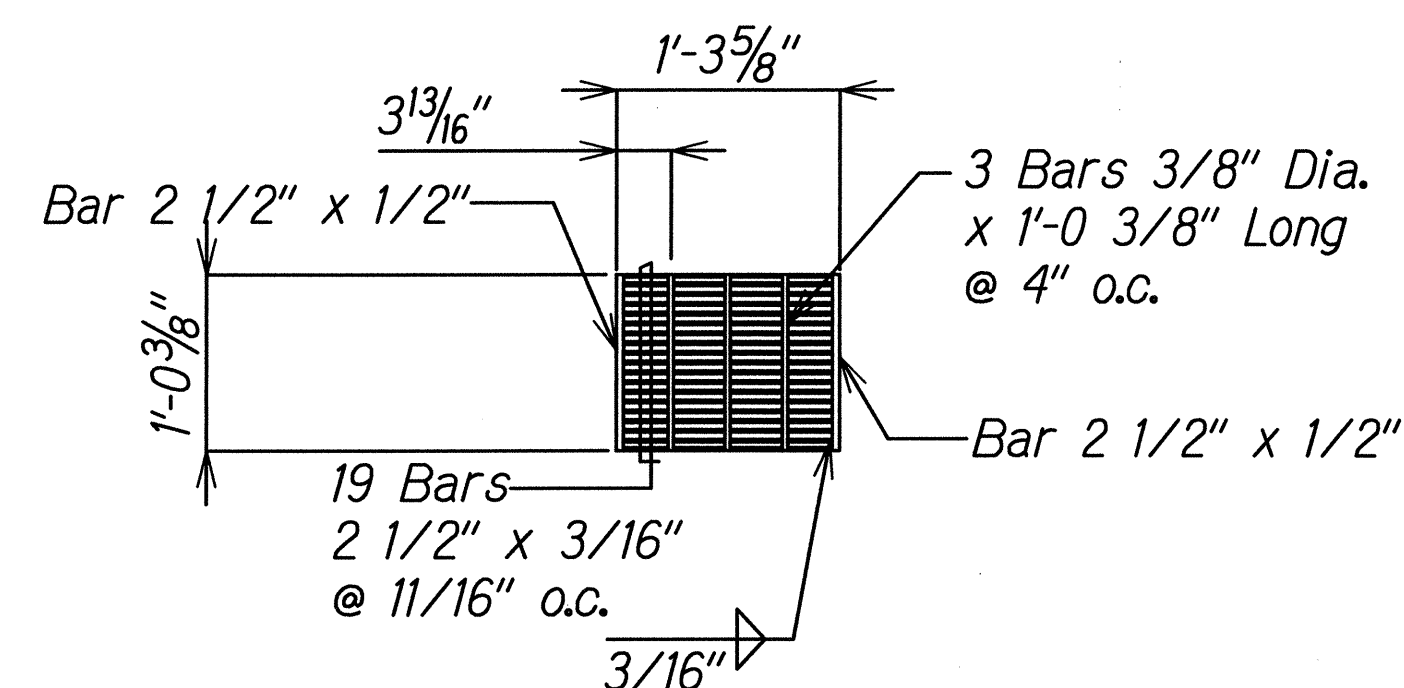
Scale: NTS



SECTION B Scale: NTS C-23 C-23



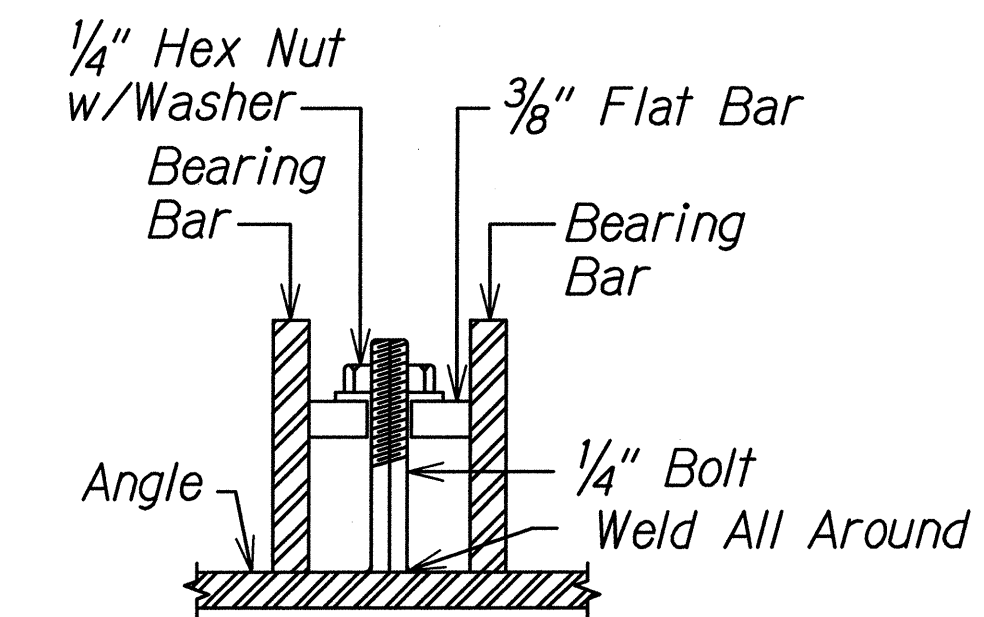
SECTION C Scale: NTS C-23 C-23



GRATE - PLAN Scale: NTS C-23 C-23

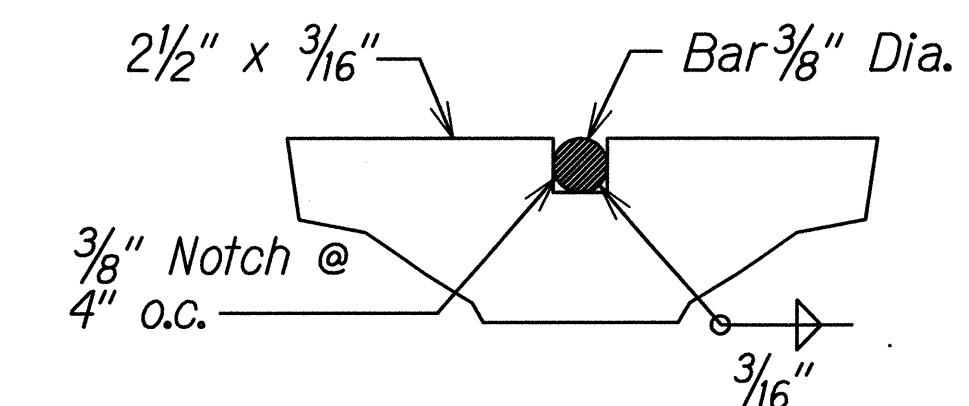
BIOSWALE TO TYPE I OUTLET FRAME AND CRATE

Scale: NTS

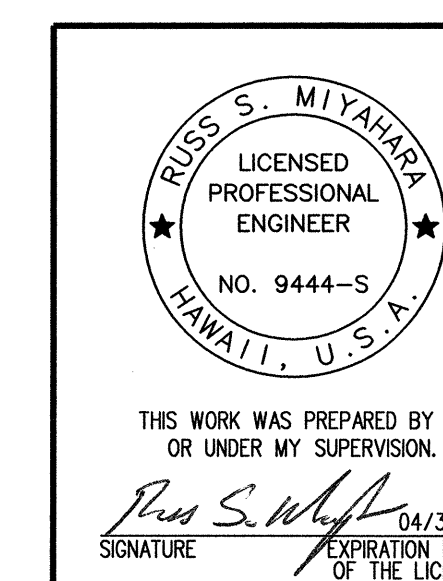


Note: 2 Clips Per Grating Panel

HOLD DOWN CLIP DETAIL Scale: NTS C-23 C-23



DETAIL 2 Scale: NTS C-23 C-23



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BIOSWALE DETAILS

MISCELLANEOUS PERMANENT BEST
MANAGEMENT PRACTICES ON OAHU
PROJECT NO. HWY-0-02-11R

Scale: NTS Date: April, 2014

SHEET No. C-23 OF 23 SHEETS