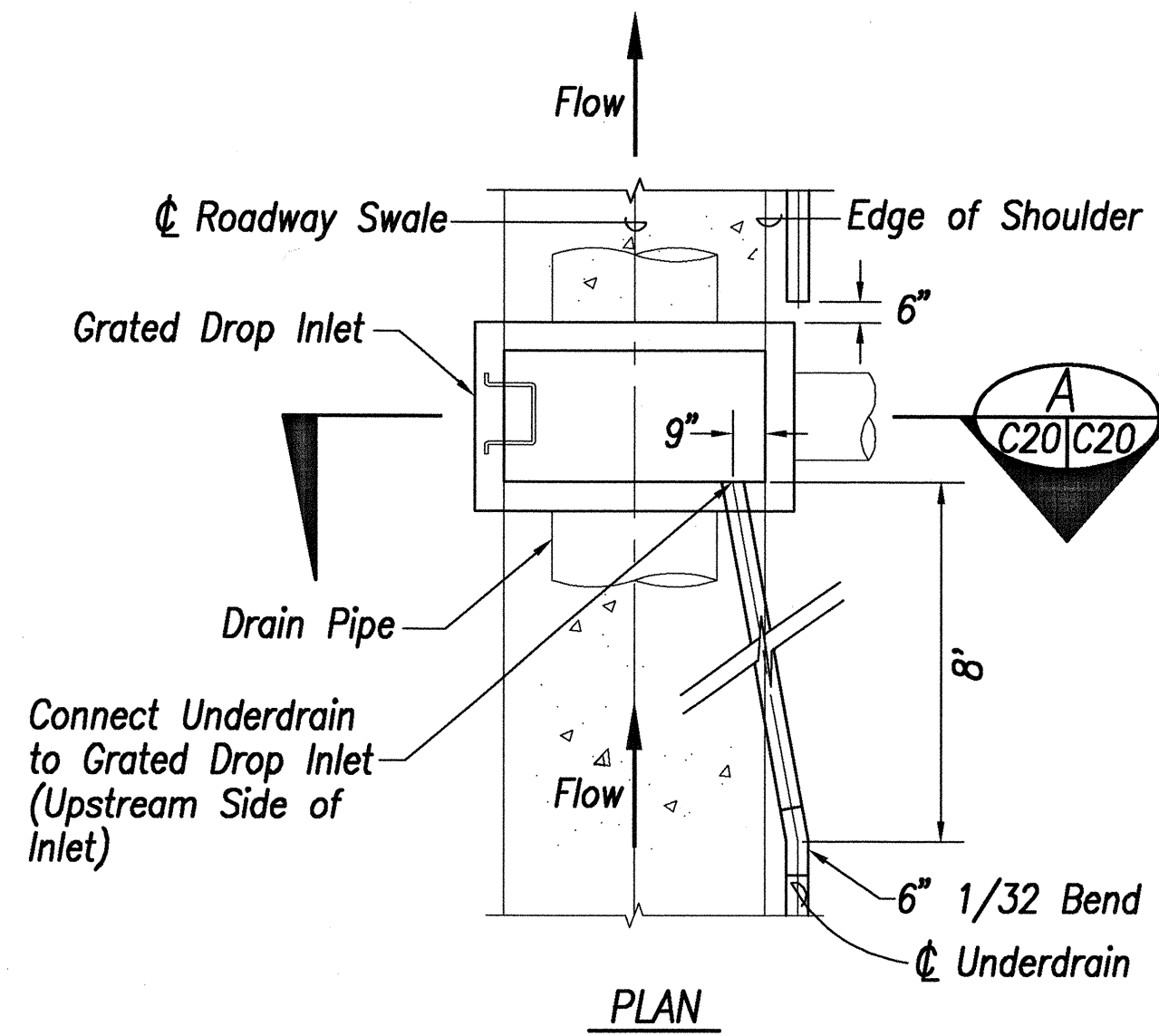
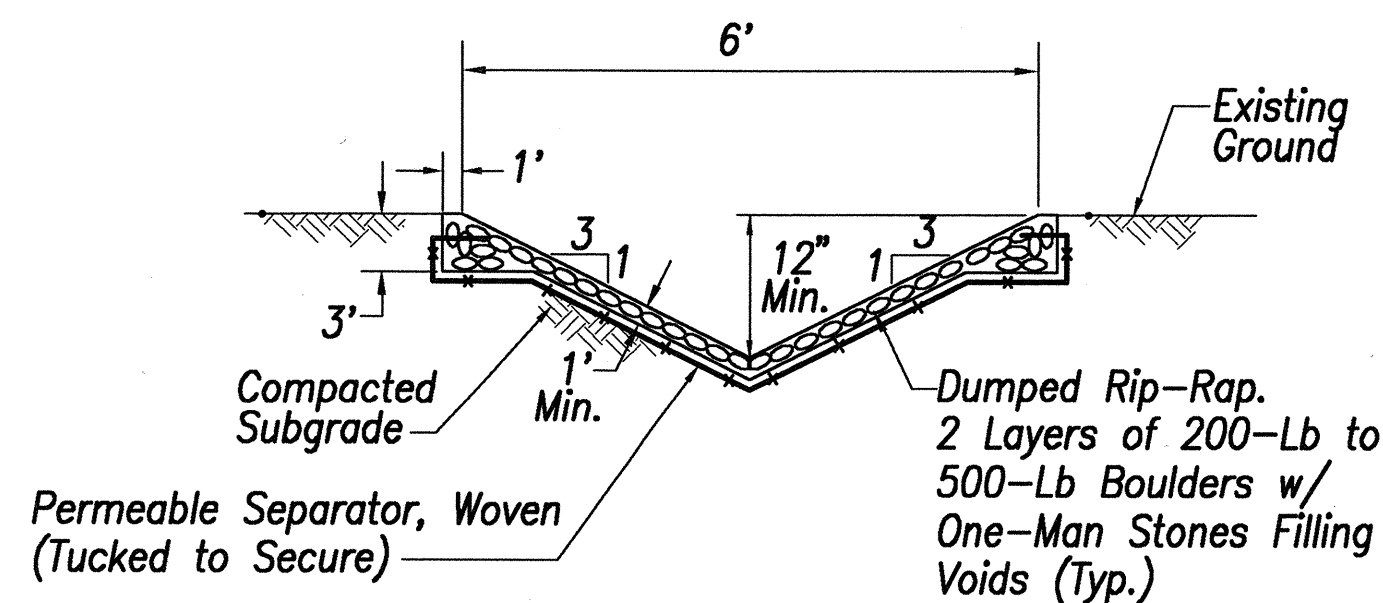


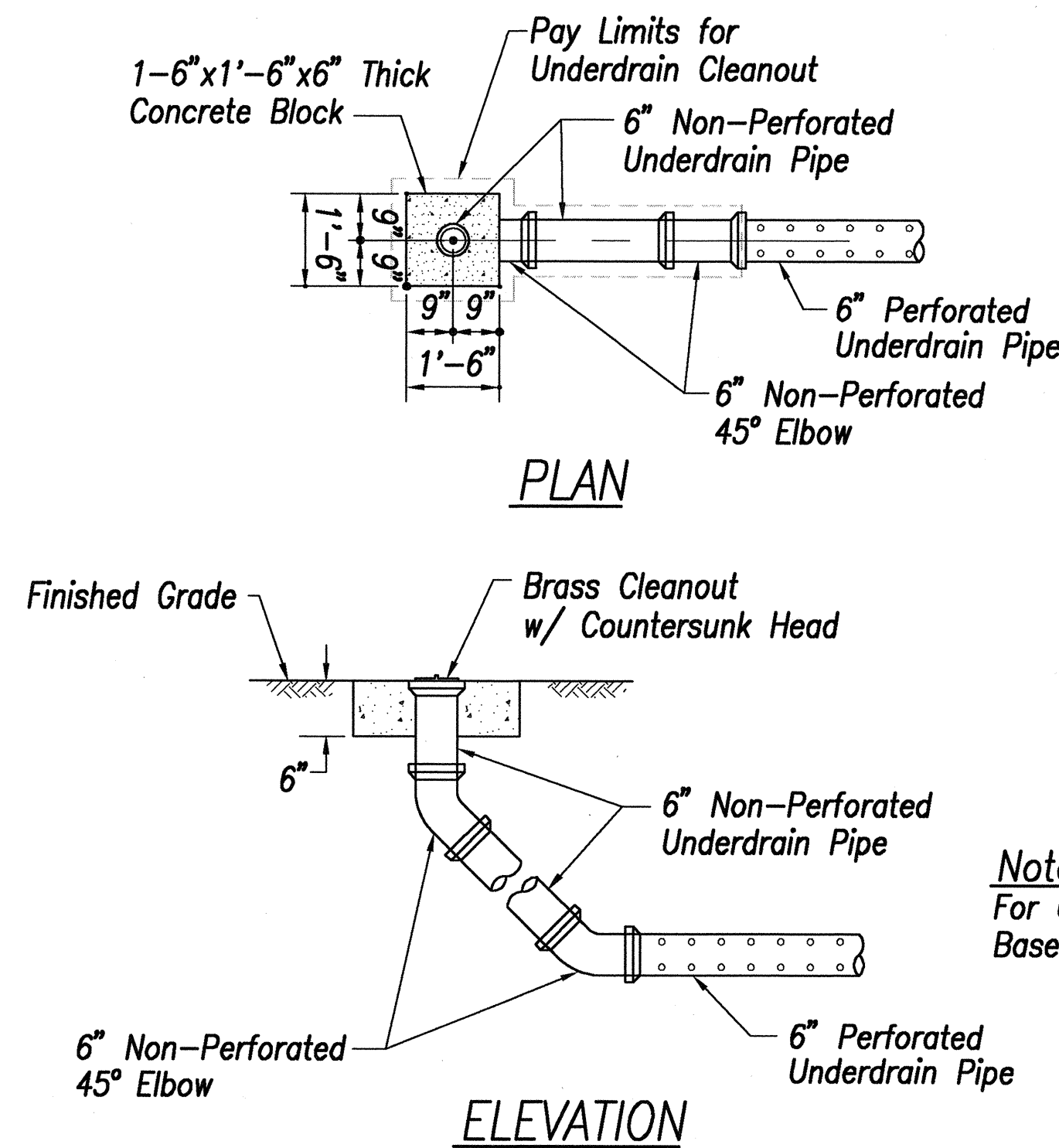
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-036-1(15)	2000	22	89



1 UNDERDRAIN CONNECTION DETAIL  
C20/C20 SCALE: 1/4" = 1'-0"



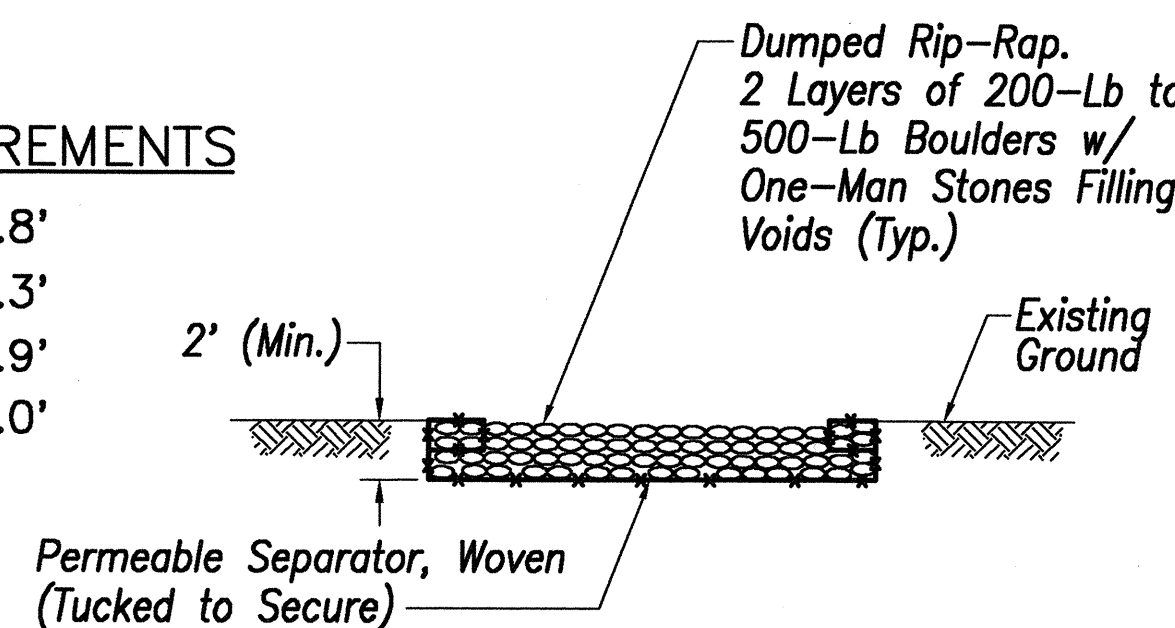
4 RIP-RAP CHANNEL  
C14/C20 N.T.S.  
C16,C17



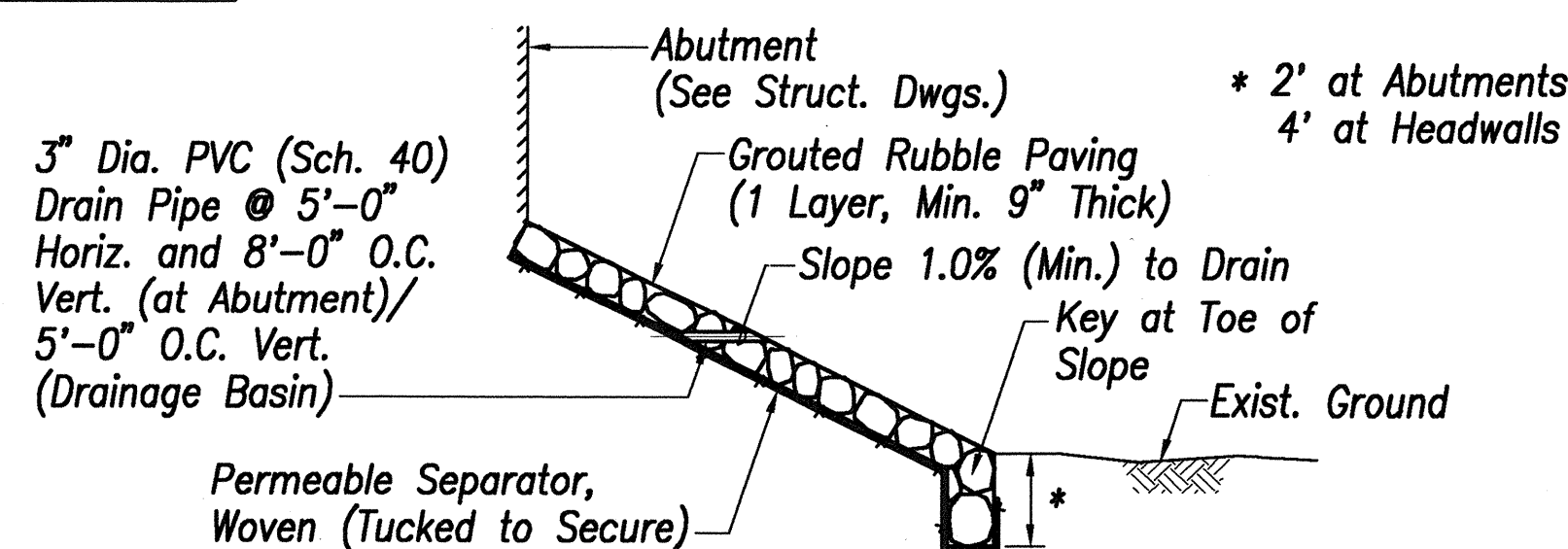
2 UNDERDRAIN CLEANOUT DETAIL  
C20/C20 SCALE: 1" = 2'

#### DUMPED RIP-RAP GRADATION REQUIREMENTS

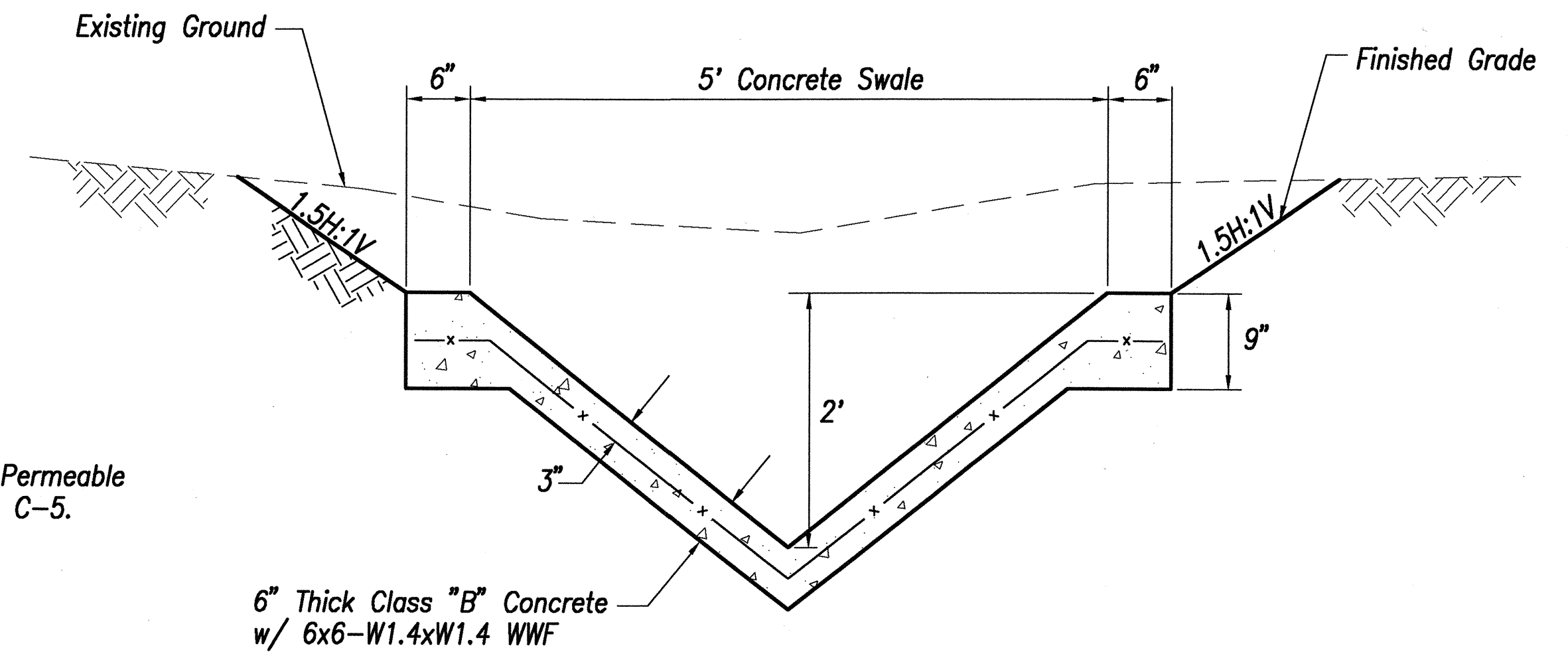
$D_{100} = 2.5' \text{ TO } 2.8'$   
 $D_{85} = 2.0' \text{ TO } 2.3'$   
 $D_{50} = 1.6' \text{ TO } 1.9'$   
 $D_{15} = 0.7' \text{ TO } 1.0'$



5 DUMPED RIP-RAP SECTION  
C12/C20 N.T.S.  
C14,C16,C17



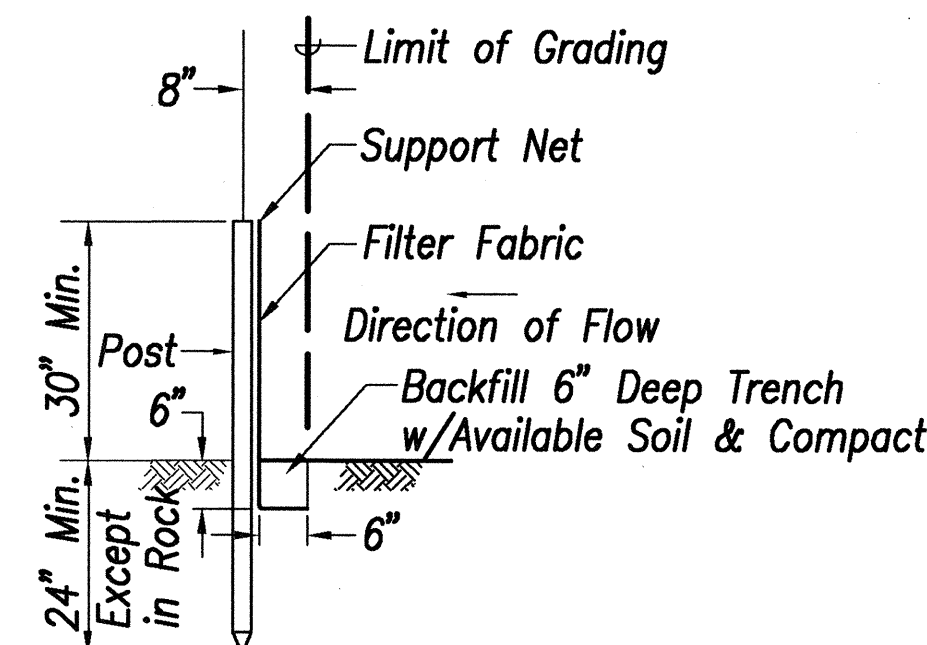
6 GROUTED RUBBLE PAVING  
C11/C20 N.T.S.



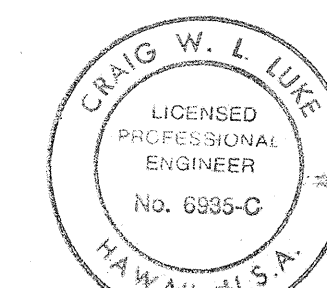
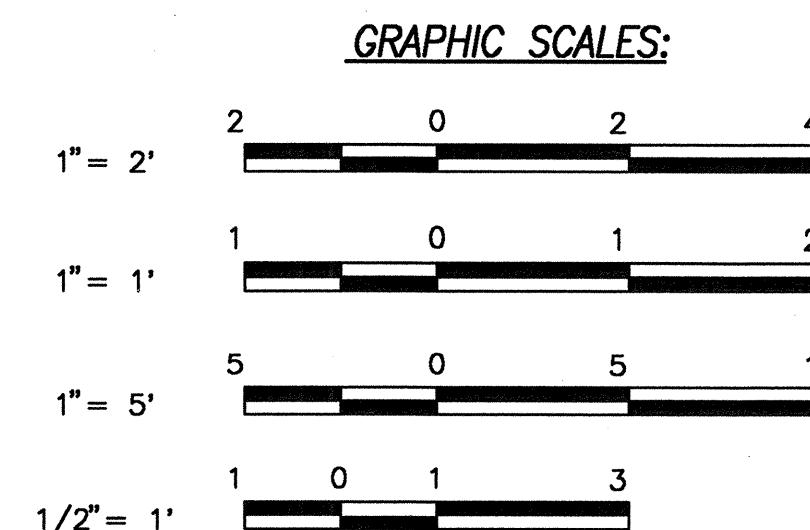
3 CONCRETE SWALE "B-1"  
C11/C20 SCALE: 1" = 1'-0"  
C12,C14

#### Temporary Silt Fence Notes:

- Filter fabric shall be approved by the Engineer, and shall be installed with a support net of polyester netting or approved equal. The filter fabric shall be a minimum of 36" wide and the support net a minimum of 30".
- If silt fence is obtained from a manufacturer as a package (i.e., fabric attached to posts), the manufacturer's installation instructions shall be adhered to.
- Posts shall be metal whenever possible. Cross section of posts shall be substantial enough to support a loaded silt fence without bending. Post spacing shall be 4' to 8', depending on post size.
- Temporary silt fence shall be installed prior to beginning of grading work, and shall not be removed until permanent grassing has been established.



7 TEMPORARY SILT FENCE  
C11,C12/C20 SCALE: 1" = 2'

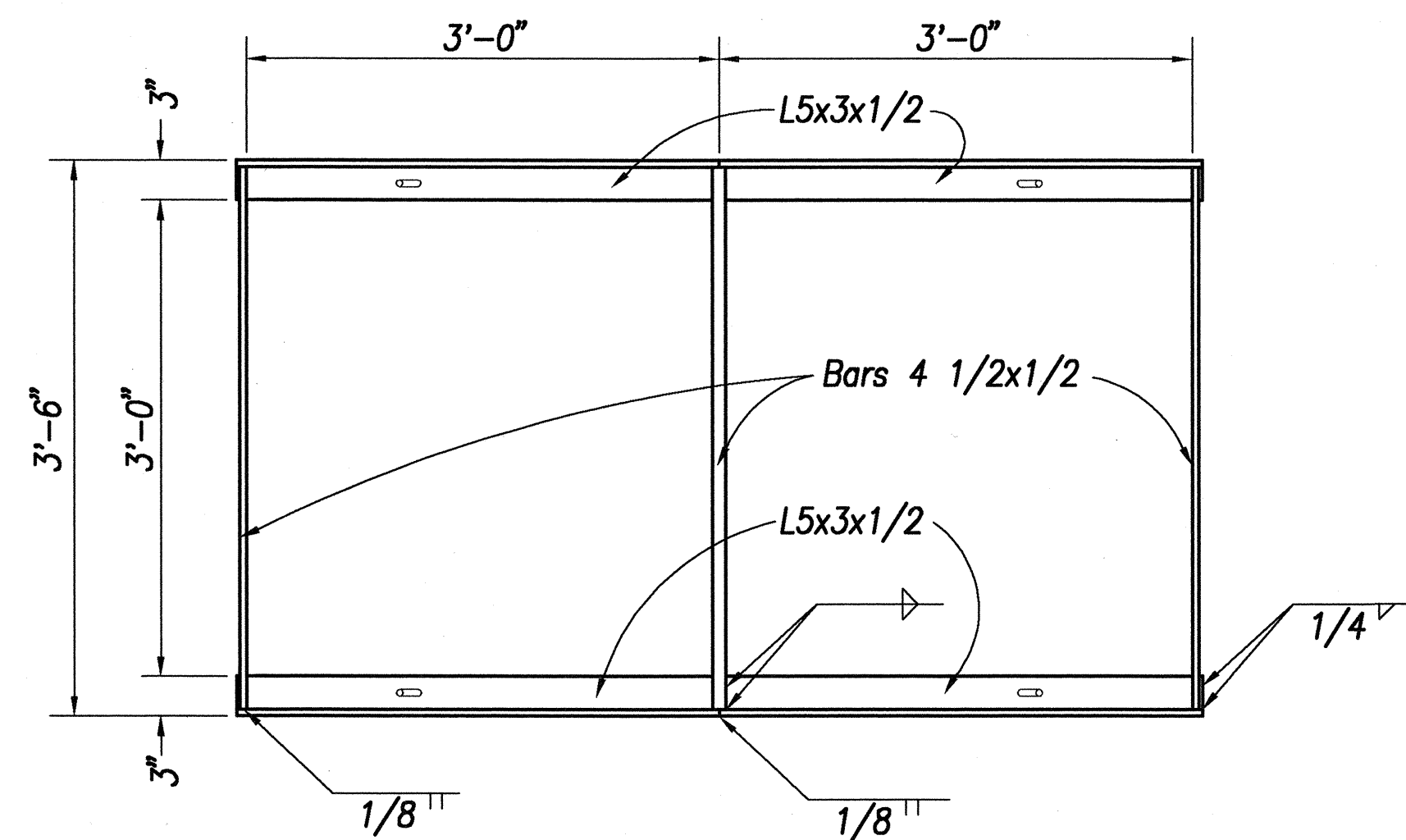


THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

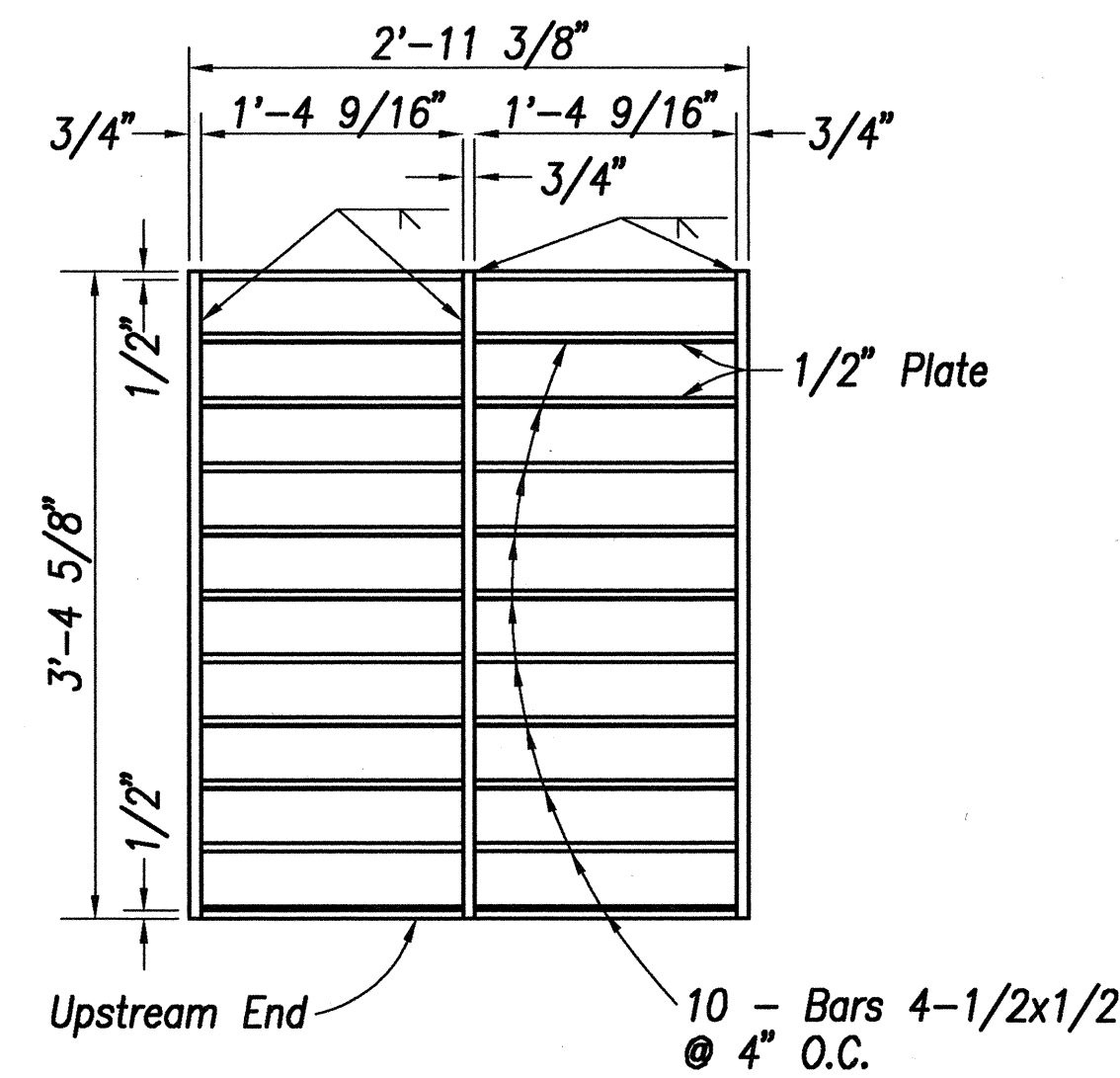
SIGNATURE DATE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>DRAINAGE DETAILS - 1</b>	
HANA HIGHWAY REPLACEMENT OF KAUPAKULUA BRIDGE AND APPROACHES F.A.P. Proj. No. BR-036-1(15)	
Scale: As Shown	Date: June 30, 2000
SHEET No. C-20 OF 89 SHEETS	

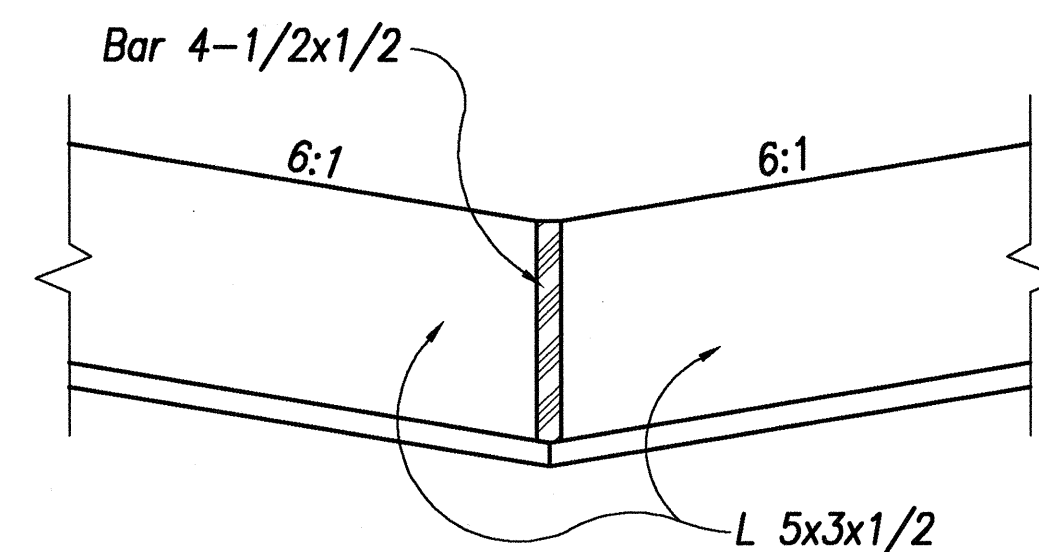
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-036-1(15)	2000	23	89



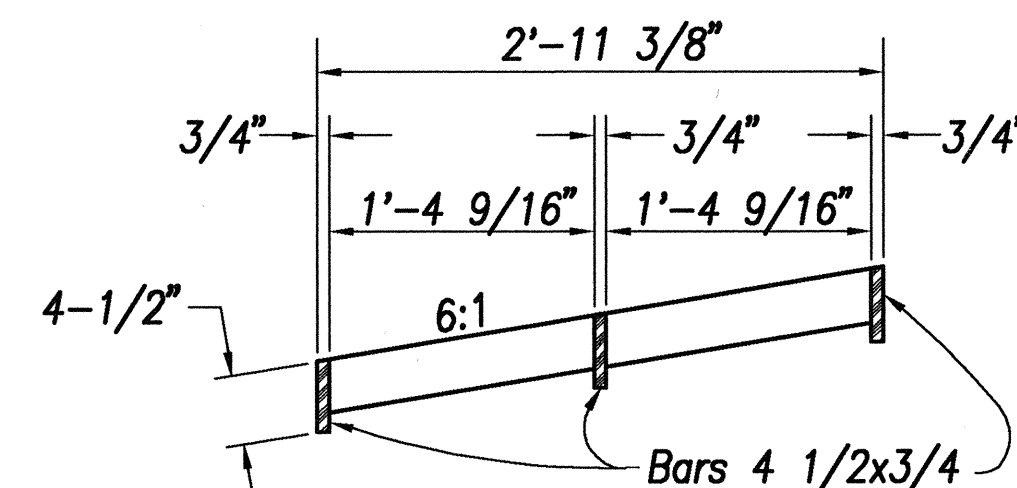
PLAN - FRAME



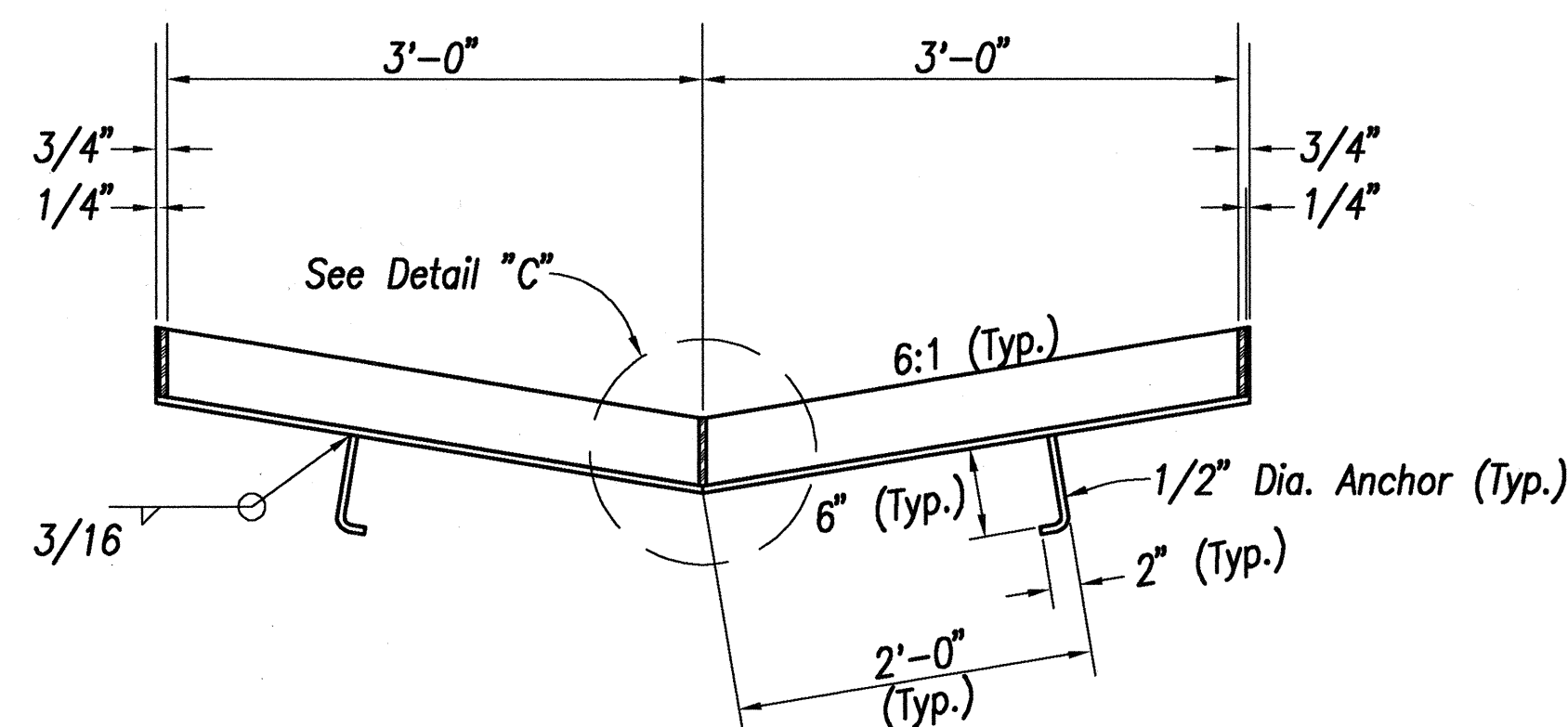
PLAN - GRATE



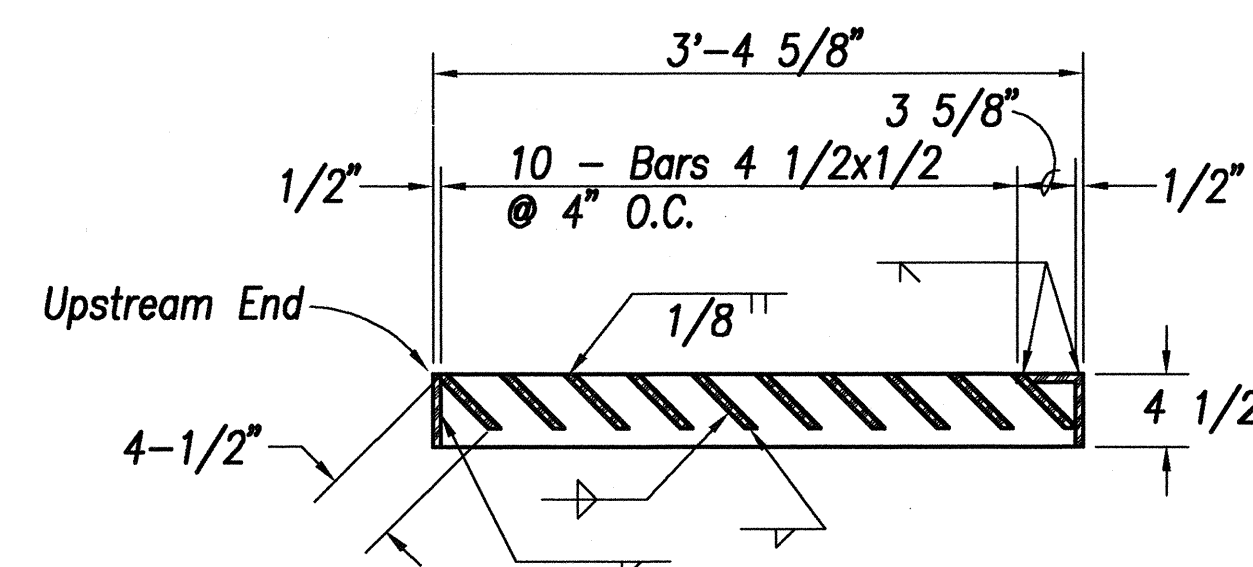
DETAIL "C"



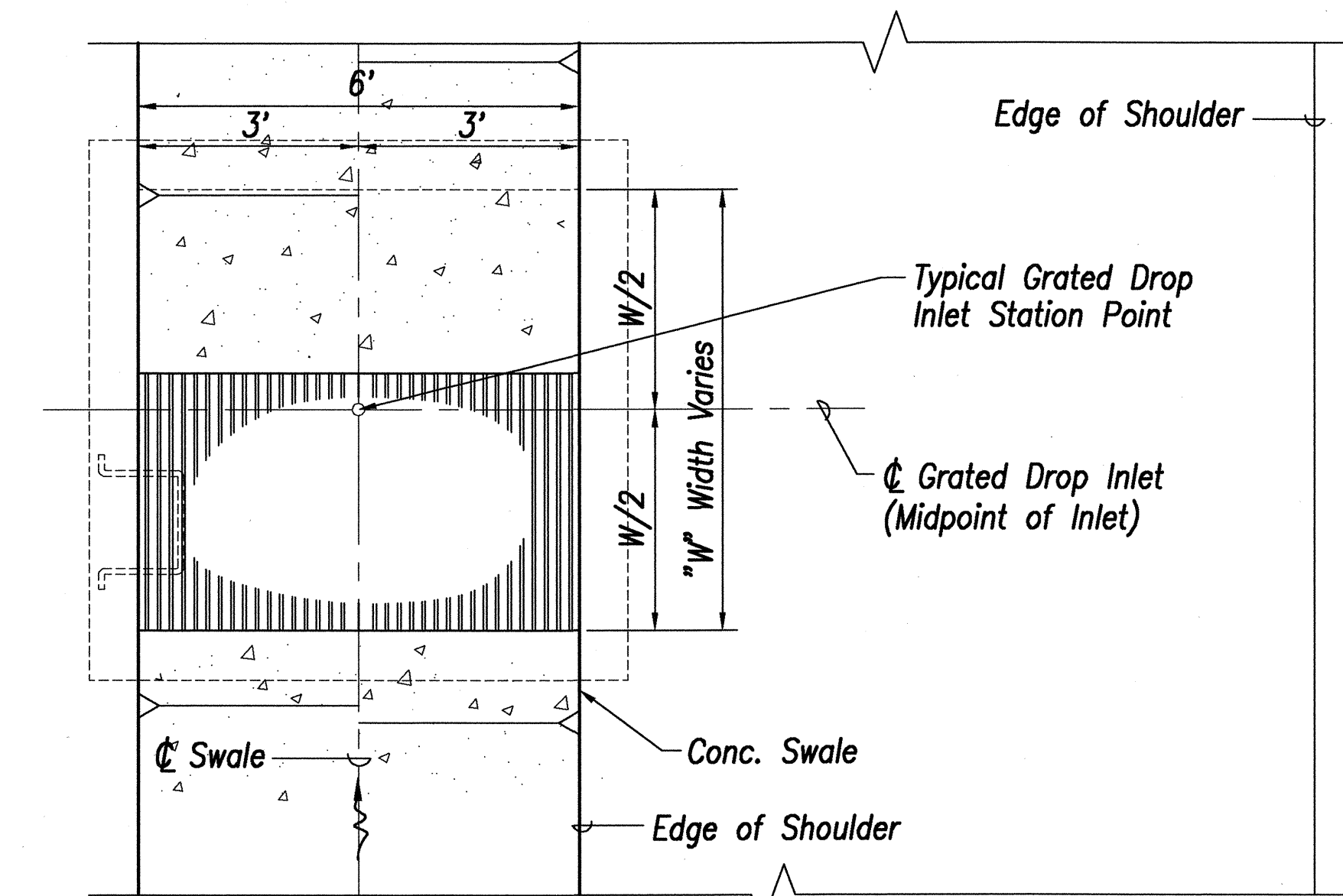
CROSS SECTION



LONGITUDINAL SECTION



LONGITUDINAL SECTION

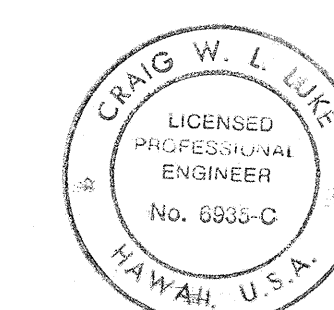
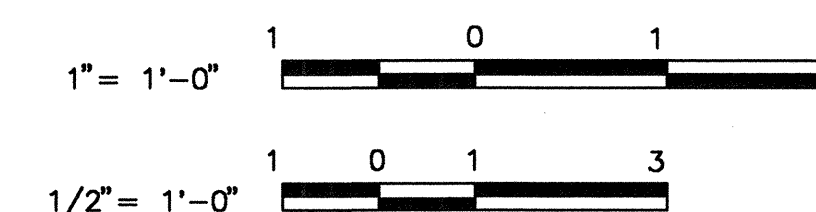


8 GRATED DROP INLET BOX STATION REFERENCE POINT  
C21/C21 SCALE: 1/2" = 1'-0"

7 61616B FRAME AND GRATE  
C11/C21 SCALE: 1" = 1'-0"

C12,C14

GRAPHIC SCALES:



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature: [Signature] Date: 11/6/00

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**DRAINAGE DETAILS - 2**

HANA HIGHWAY  
REPLACEMENT OF KAUPAKULUA BRIDGE  
AND APPROACHES

F.A.P. Proj. No. BR-036-1(15)

Scale: As Shown Date: June 30, 2000

SHEET No. C-21 OF 89 SHEETS