

1. General:

- ### 2. Design Criteria (Assumed):

- ### 3. Foundation:

- #### 4. Reinforcing Steel:

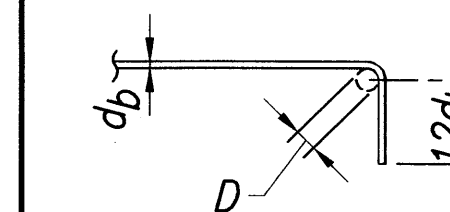
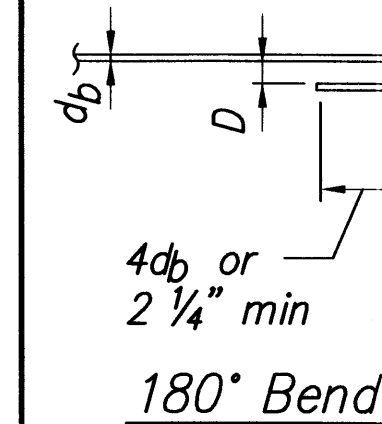
5. Concrete:

- ### 6. Structural Steel:

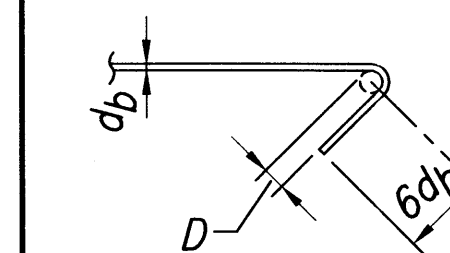
- | FED. ROAD DIST. NO. | STATE  | FEDERAL AID PROJECT NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|--------|-------------------------|-------------|-----------|--------------|
| HAWAII              | HAWAII | STP-019-2(60)           | 2010        | 29        | 36           |

Bar Size	Concrete Strength = 4,000 PSI				
	Lap Splice		Development		
	Top Bars	Other Bars	Straight		with Standard Hook
			Top Bars	Other Bars	
#3	26"	20"	20"	16"	8"
#4	34"	26"	26"	20"	10"
#5	42"	32"	32"	24"	12"
#6	50"	38"	38"	30"	16"
#7	72"	54"	54"	42"	18"
#8	82"	62"	62"	48"	20"
#9	92"	70"	70"	54"	22"
#10	102"	80"	80"	62"	26"
#11	114"	88"	88"	68"	28"

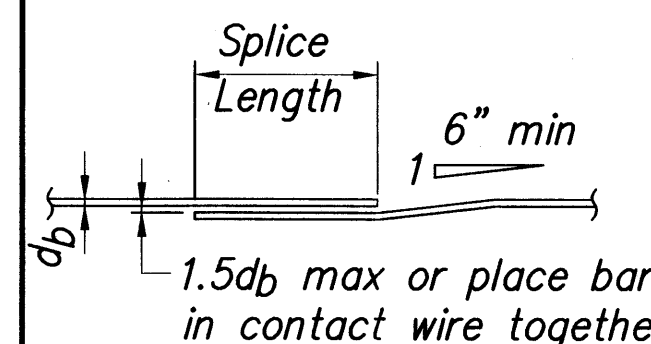
1. Lengths are for concrete with rebar space 6 bar diameters minimum. Increase 25% for bars spaced less than 6 bar diameters.
2. "Top Bars" are horizontal bars with 12" or more of concrete cast below.



90° Bend

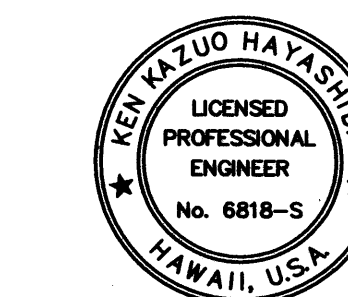
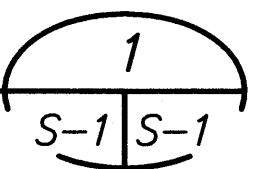


135° Bend



*Bar Lap*

Not to Scale



15/10/11 Eie  
EXPIRATION DATE OF THE LICENSE 4/30/2011  
THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION

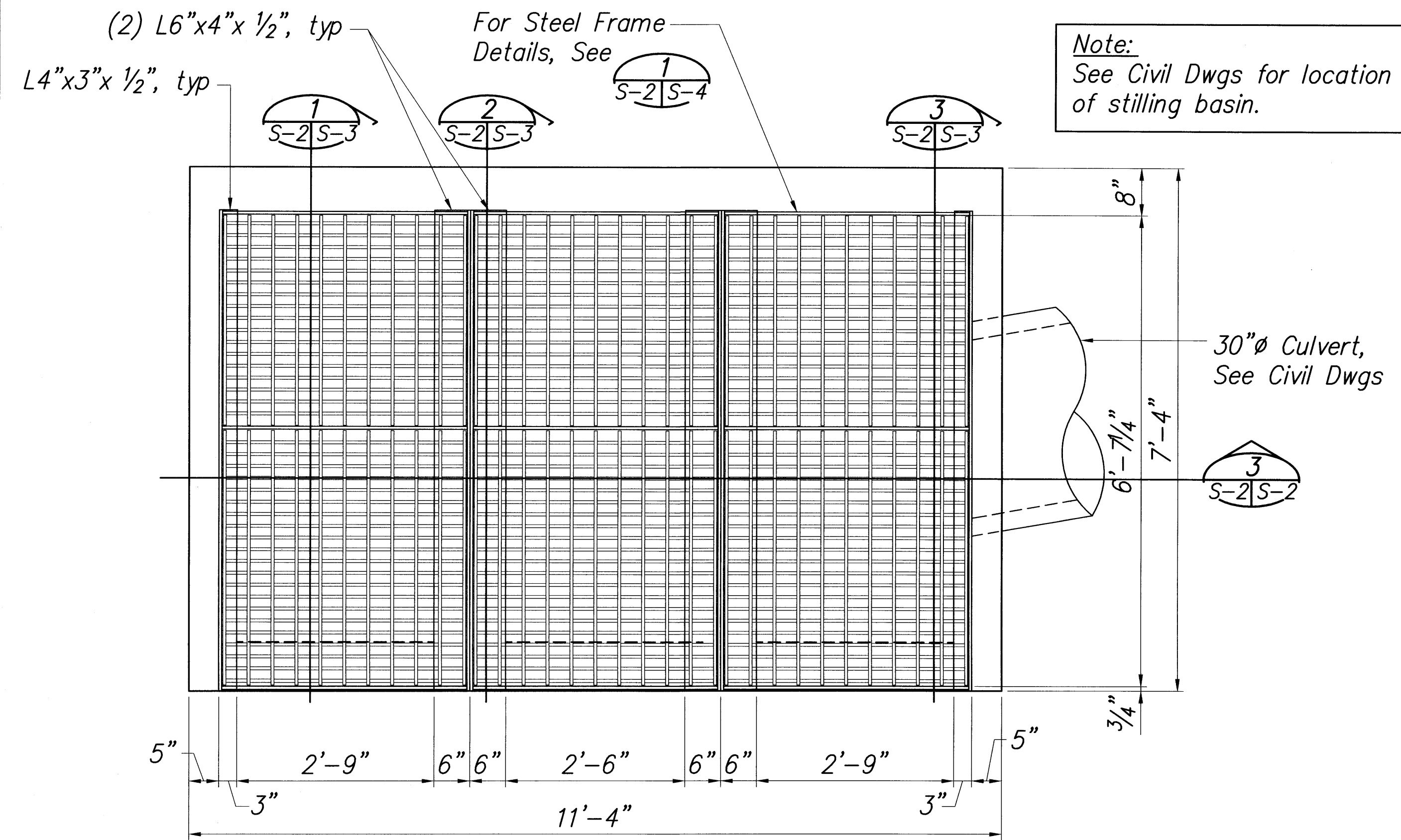
HAWAII BELT ROAD DRAINAGE  
IMPROVEMENTS, HAKALAU BRIDGE  
FEDERAL-AID PROJECT NO. STP-019-2(60)

Scale: As Noted      Date: July 2010

SHEET No. *S-1* OF *8* SHEETS

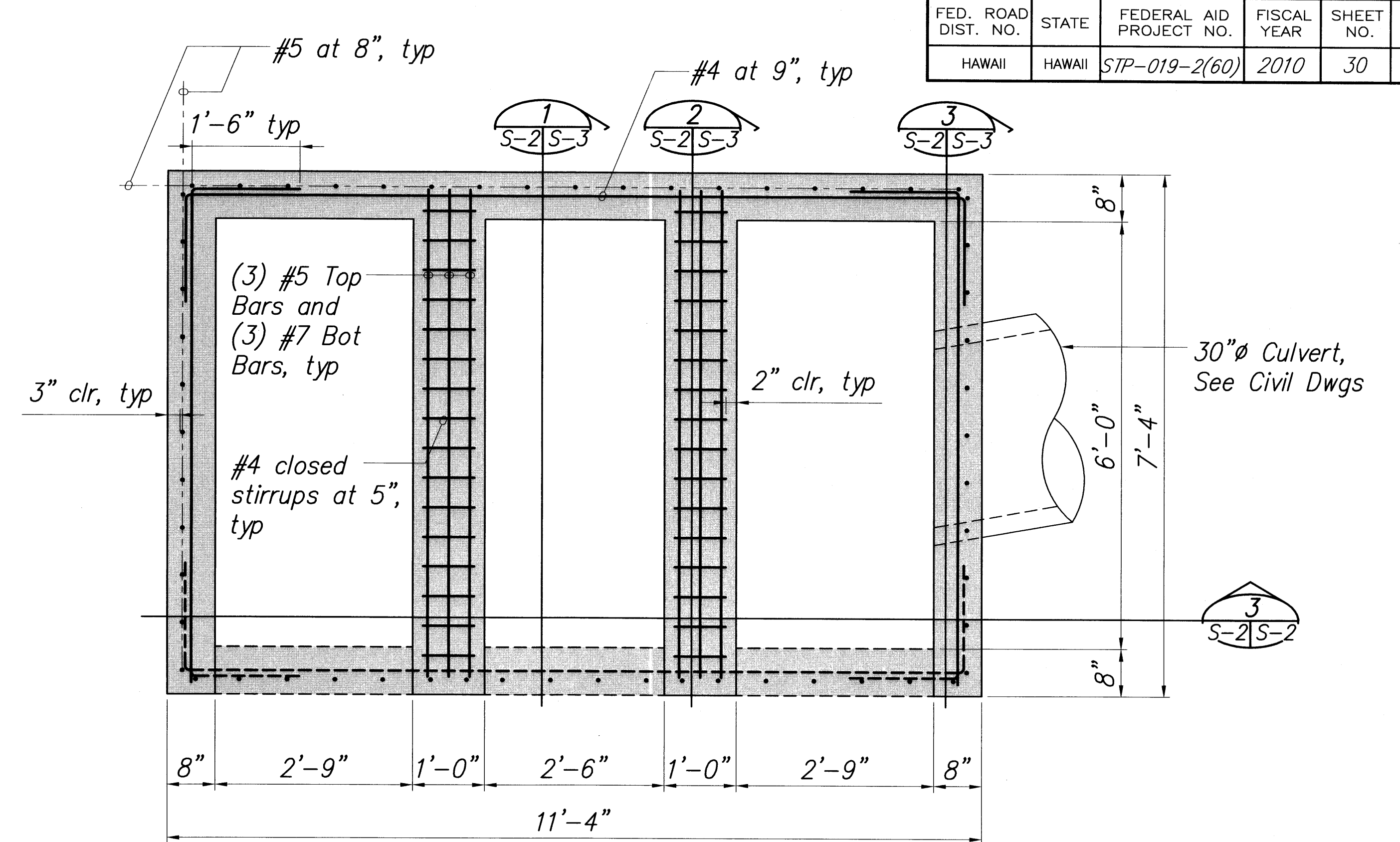


FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	STP-019-2(60)	2010	30	36



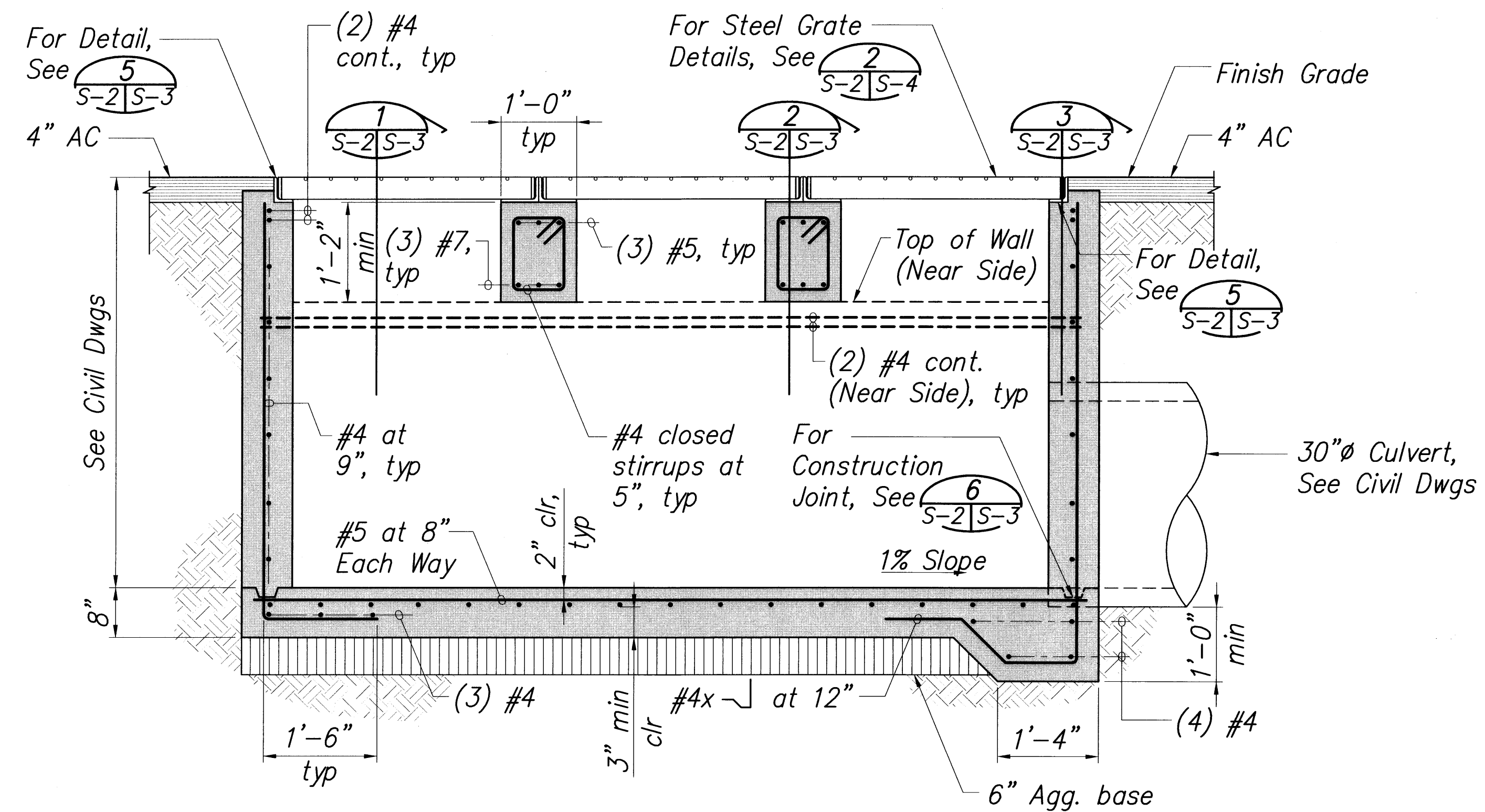
STILLING BASIN STEEL FRAME AND GRATE PLAN

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



STILLING BASIN PLAN

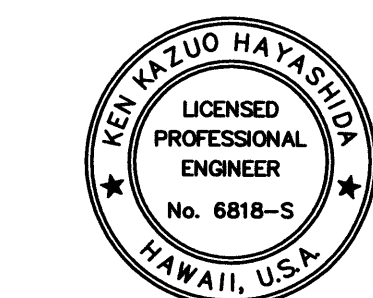
Scale: 3/4" = 1'-0"



SECTION

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

ORIGINAL PLAN	DATE
DESIGNED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	



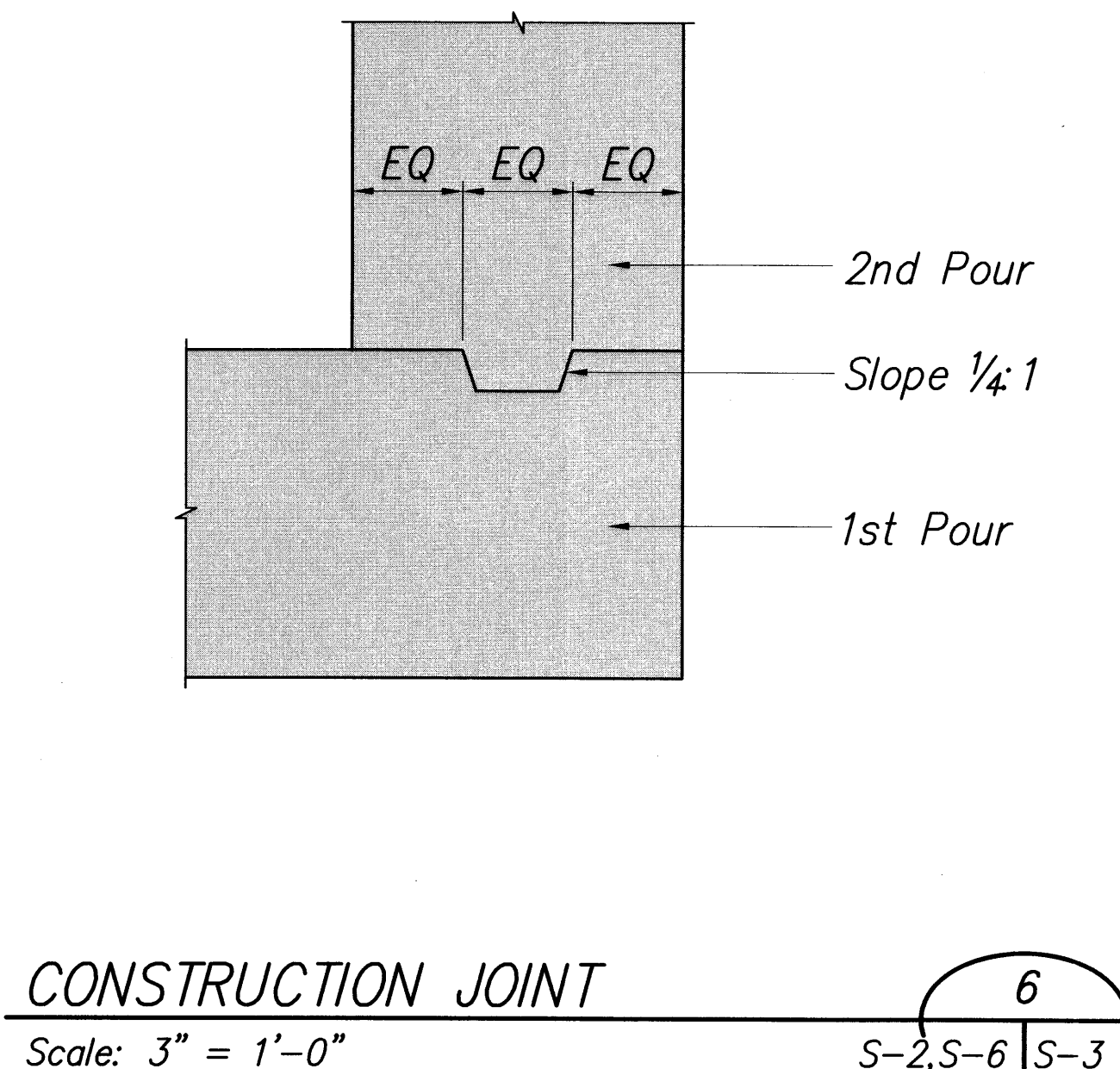
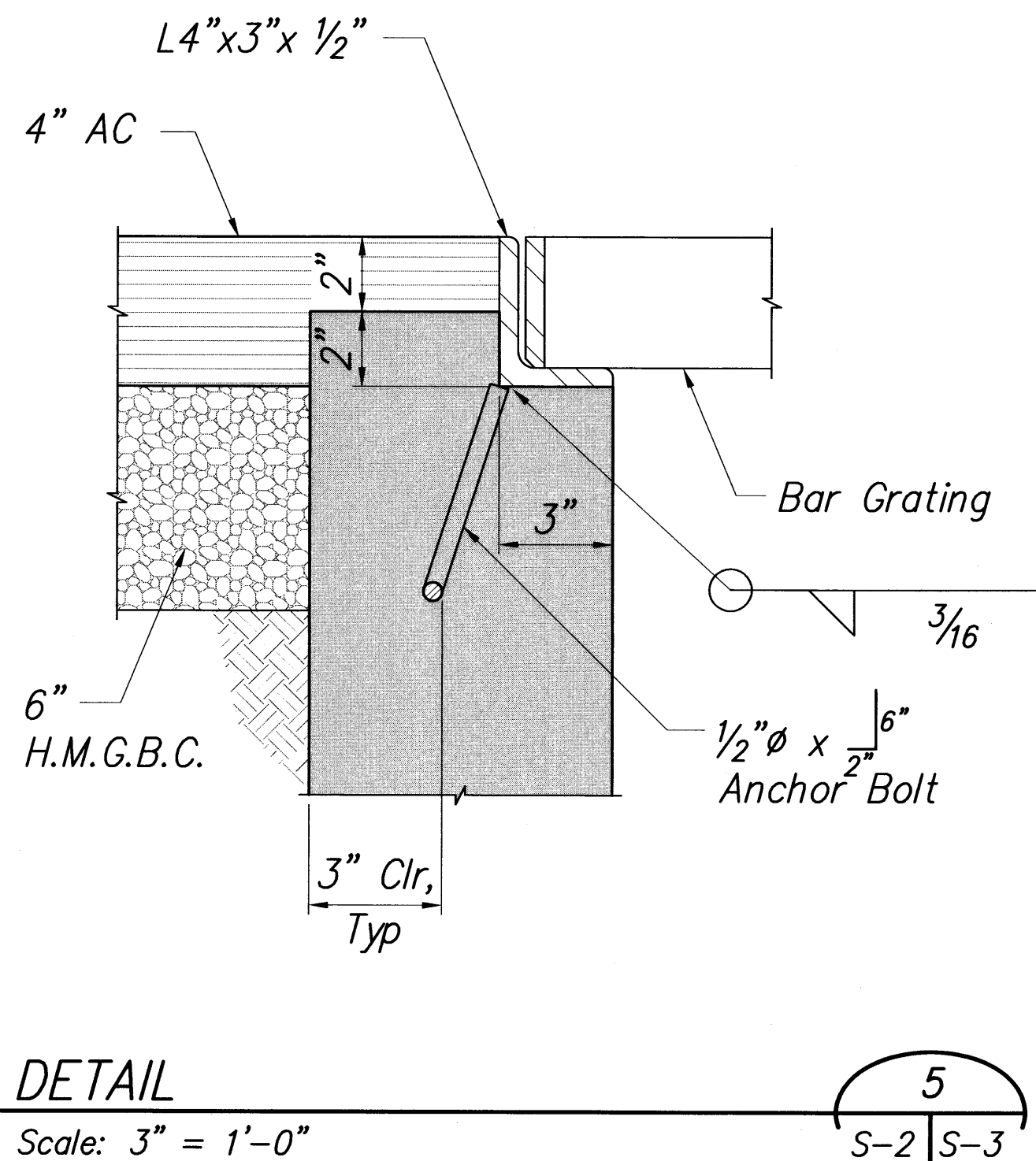
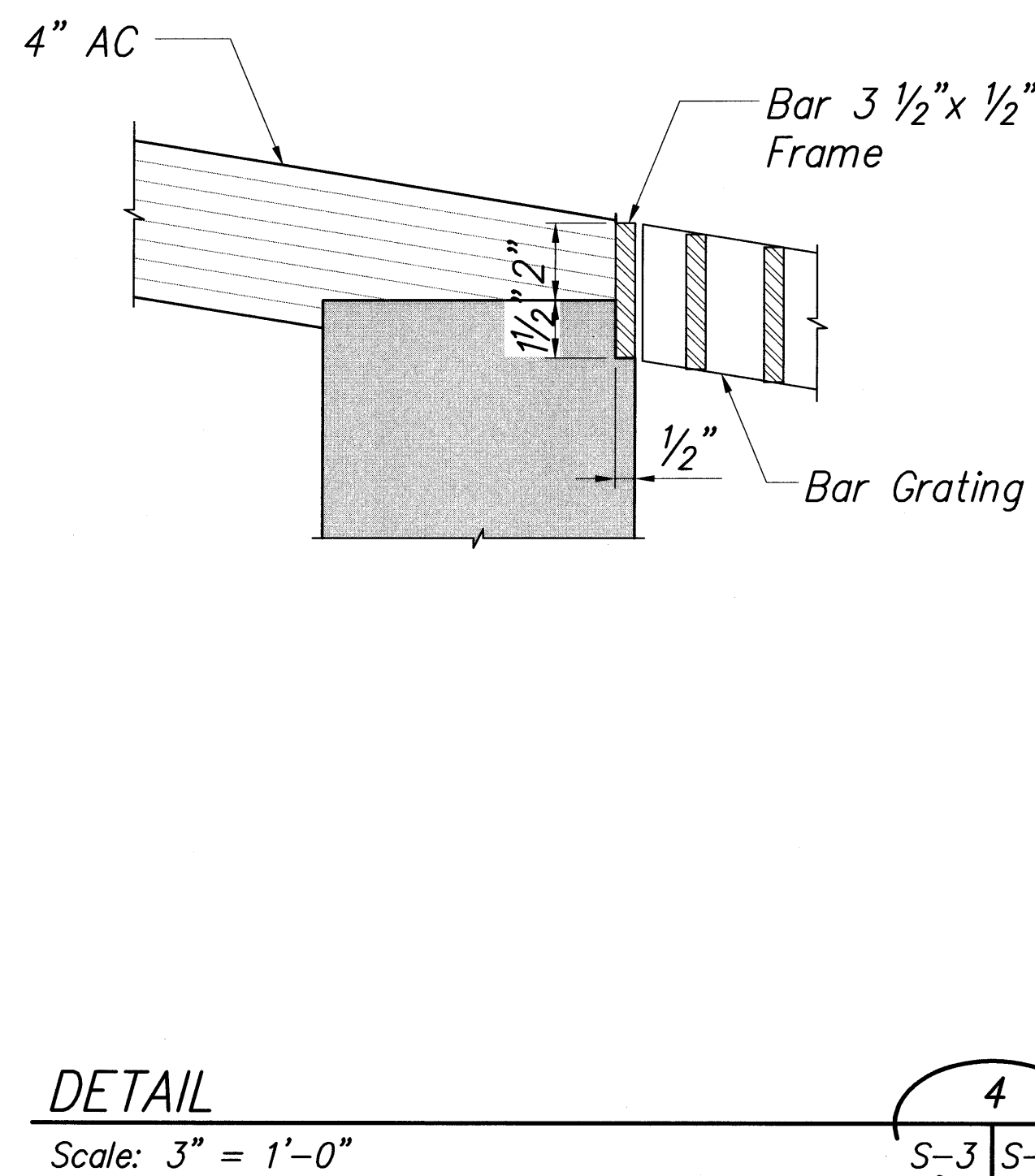
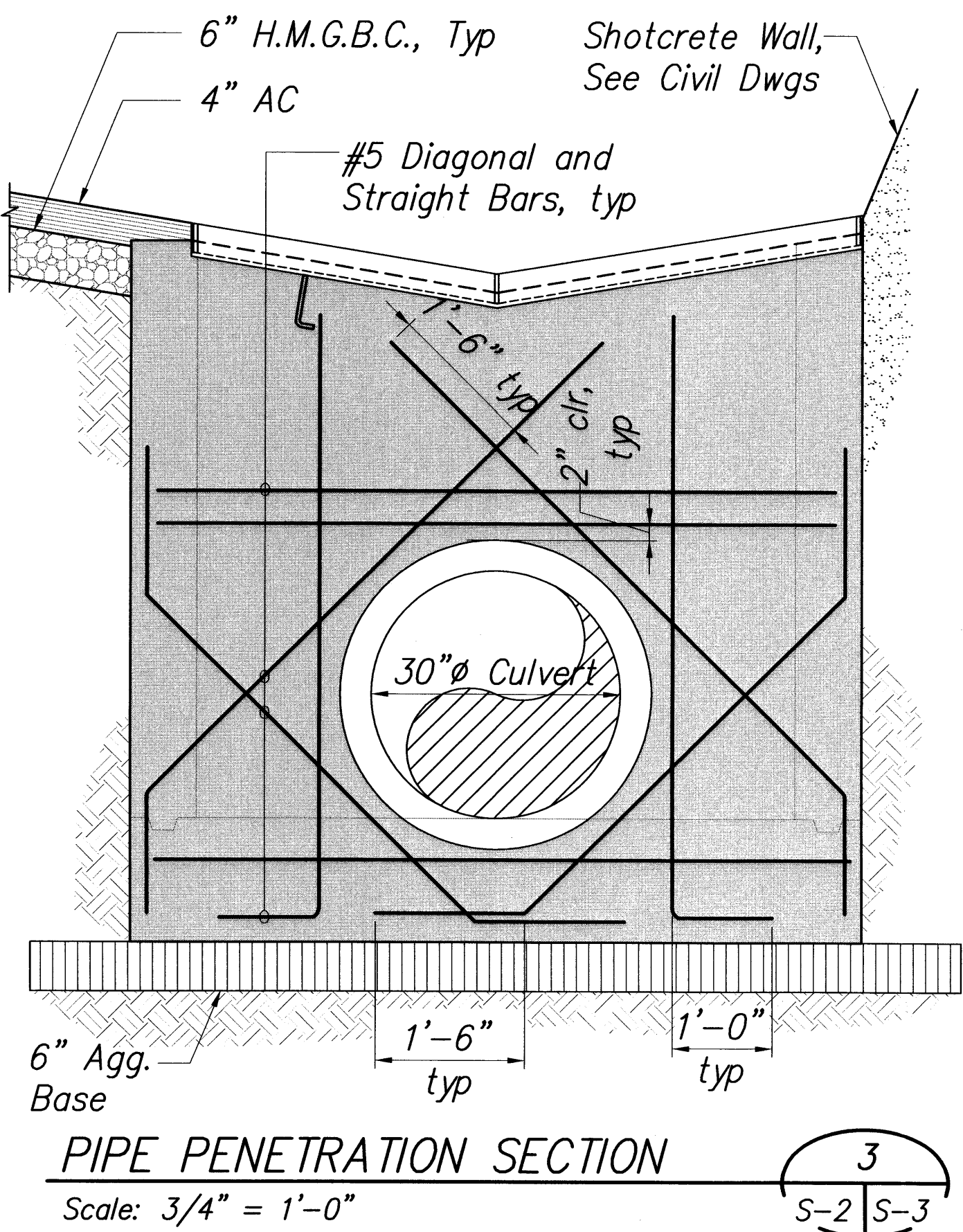
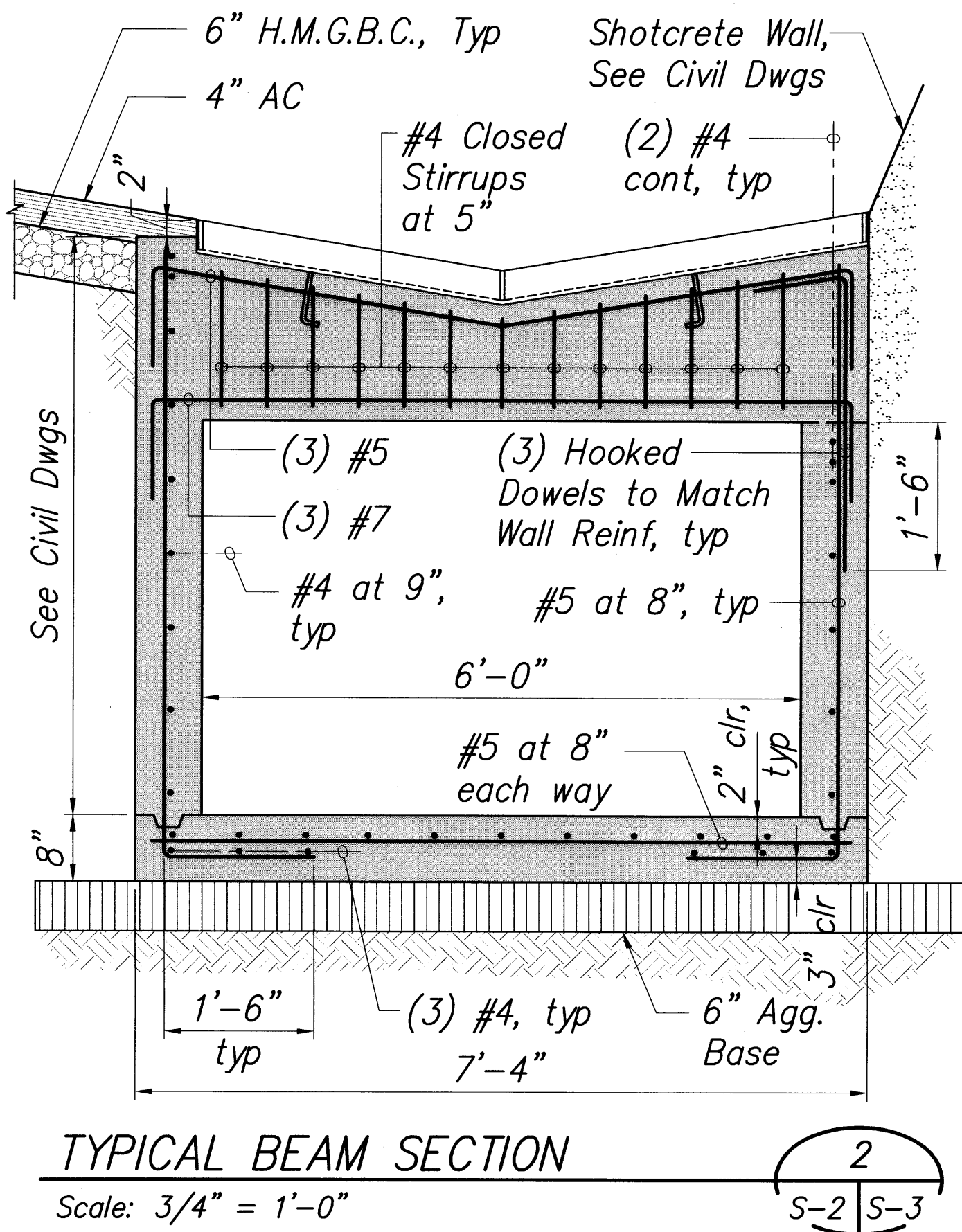
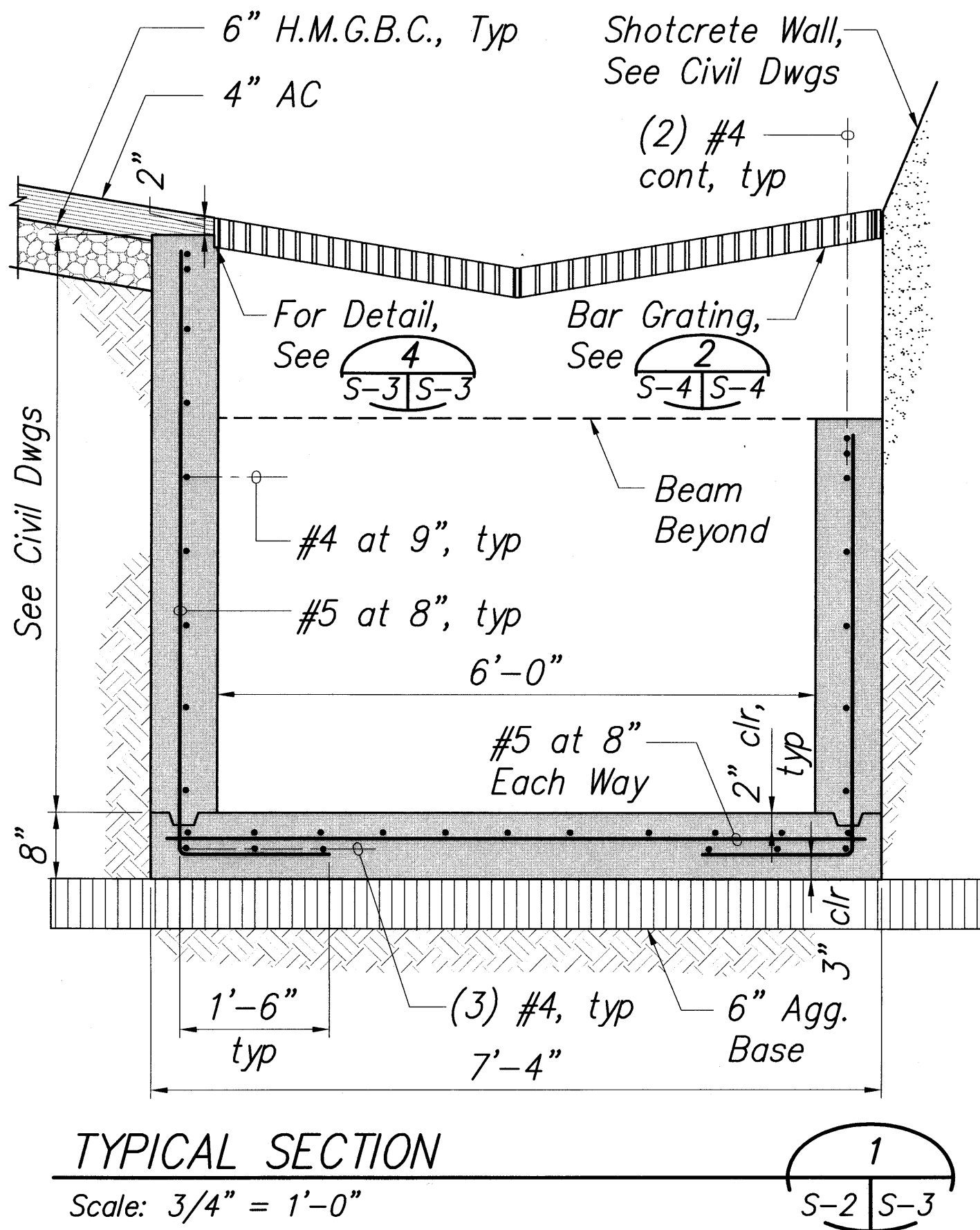
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**STILLING BASIN  
PLANS AND ELEVATIONS**  
HAWAII BELT ROAD DRAINAGE  
IMPROVEMENTS, HAKALAU BRIDGE  
FEDERAL-AID PROJECT NO. STP-019-2(60)  
Scale: As Noted Date: July 2010  
SHEET No. S-2 OF 8 SHEETS

30



FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	STP-019-2(60)	2010	31	36



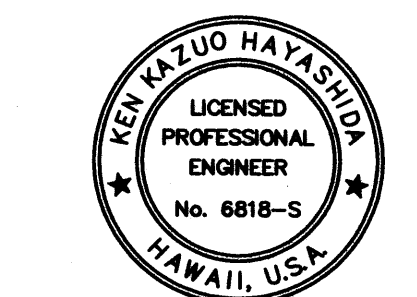
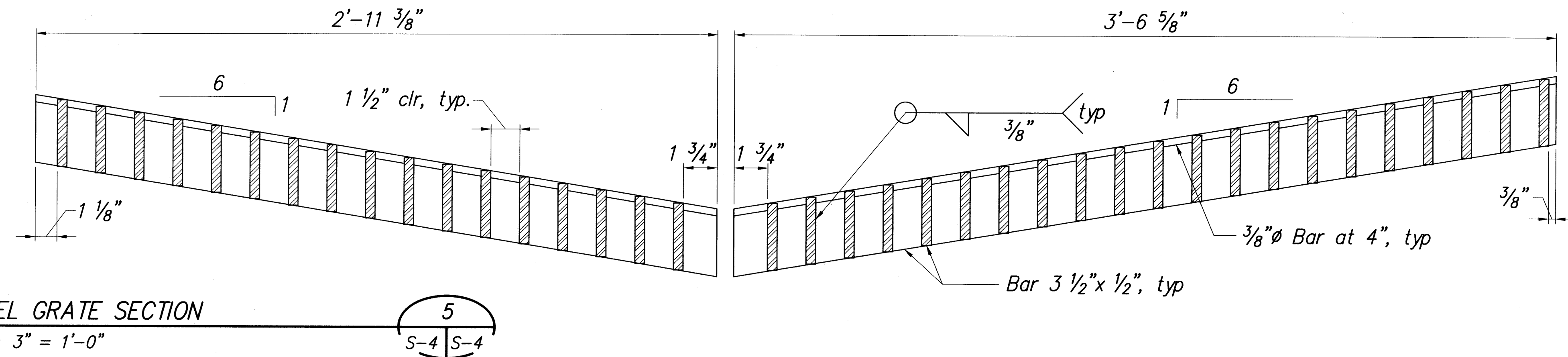
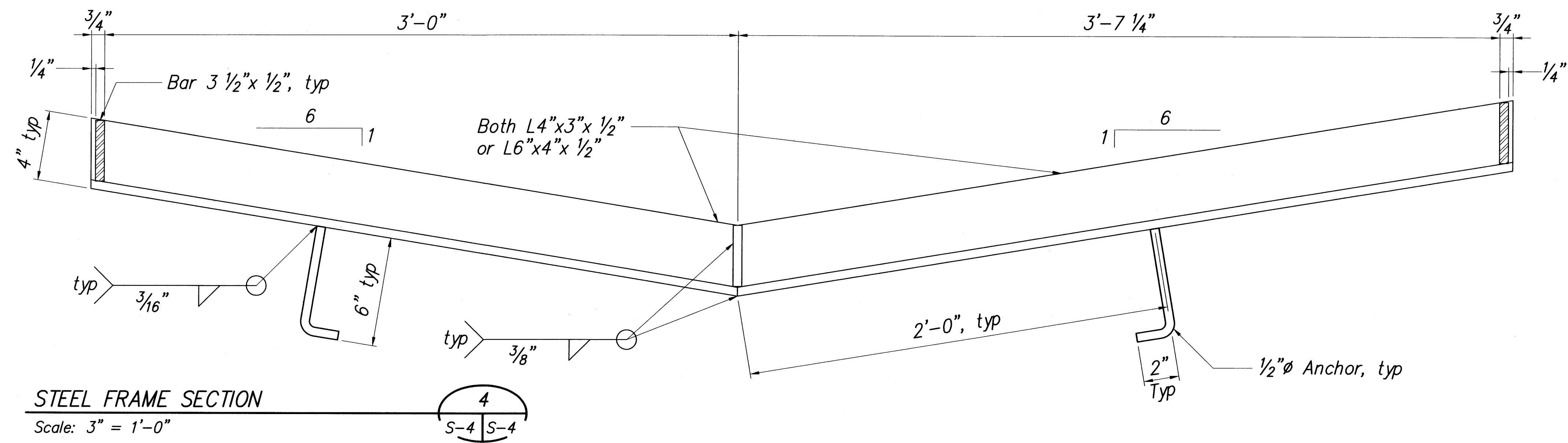
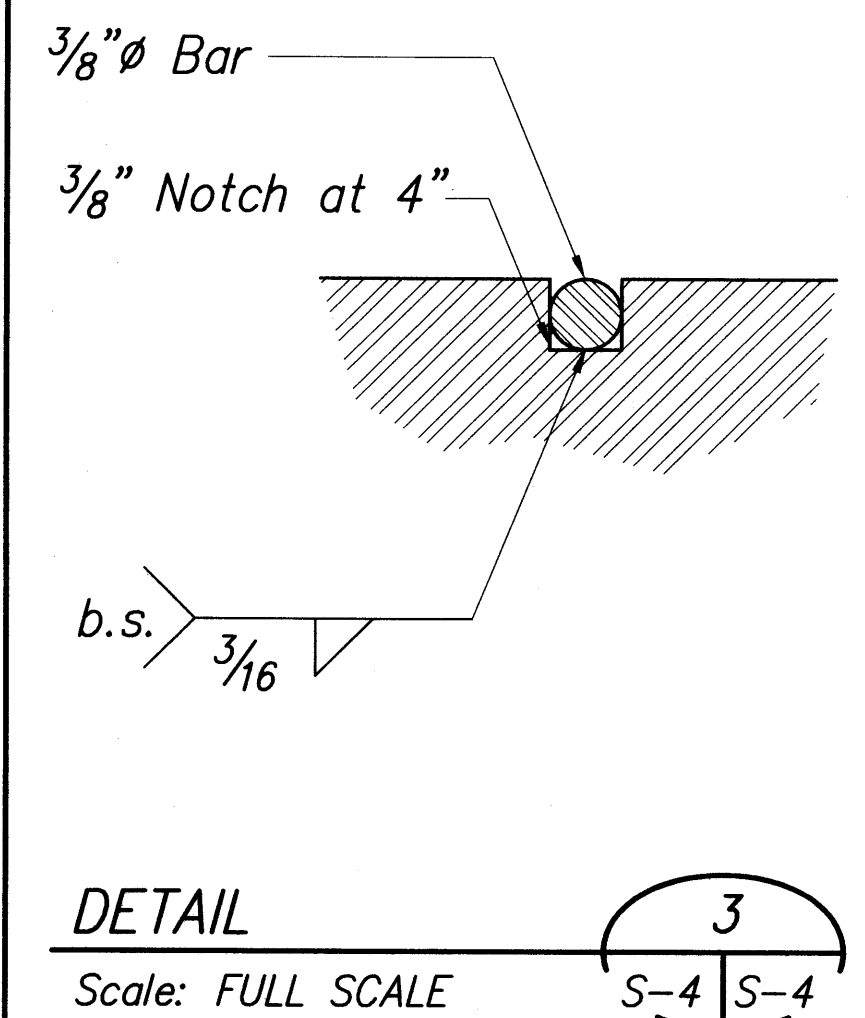
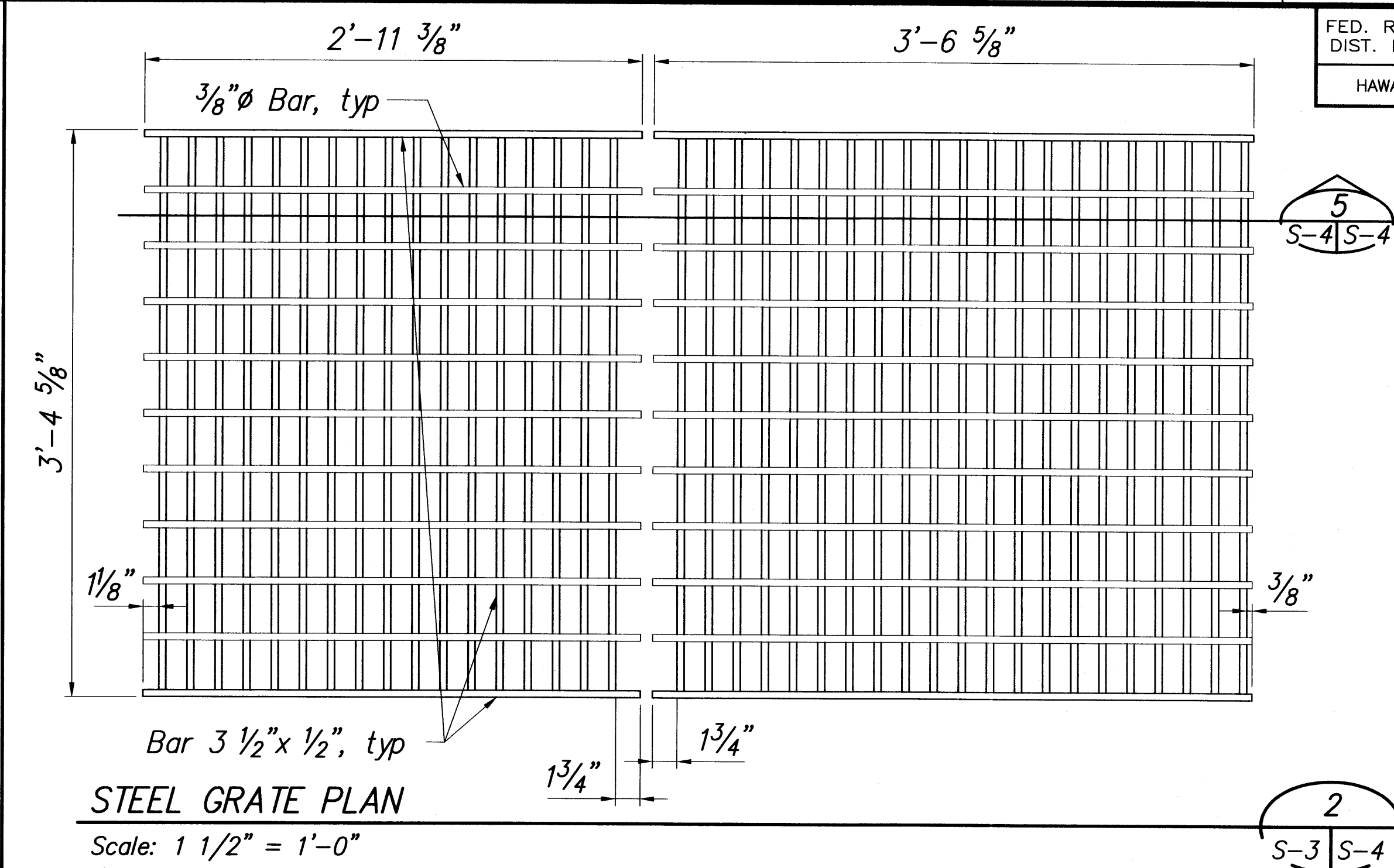
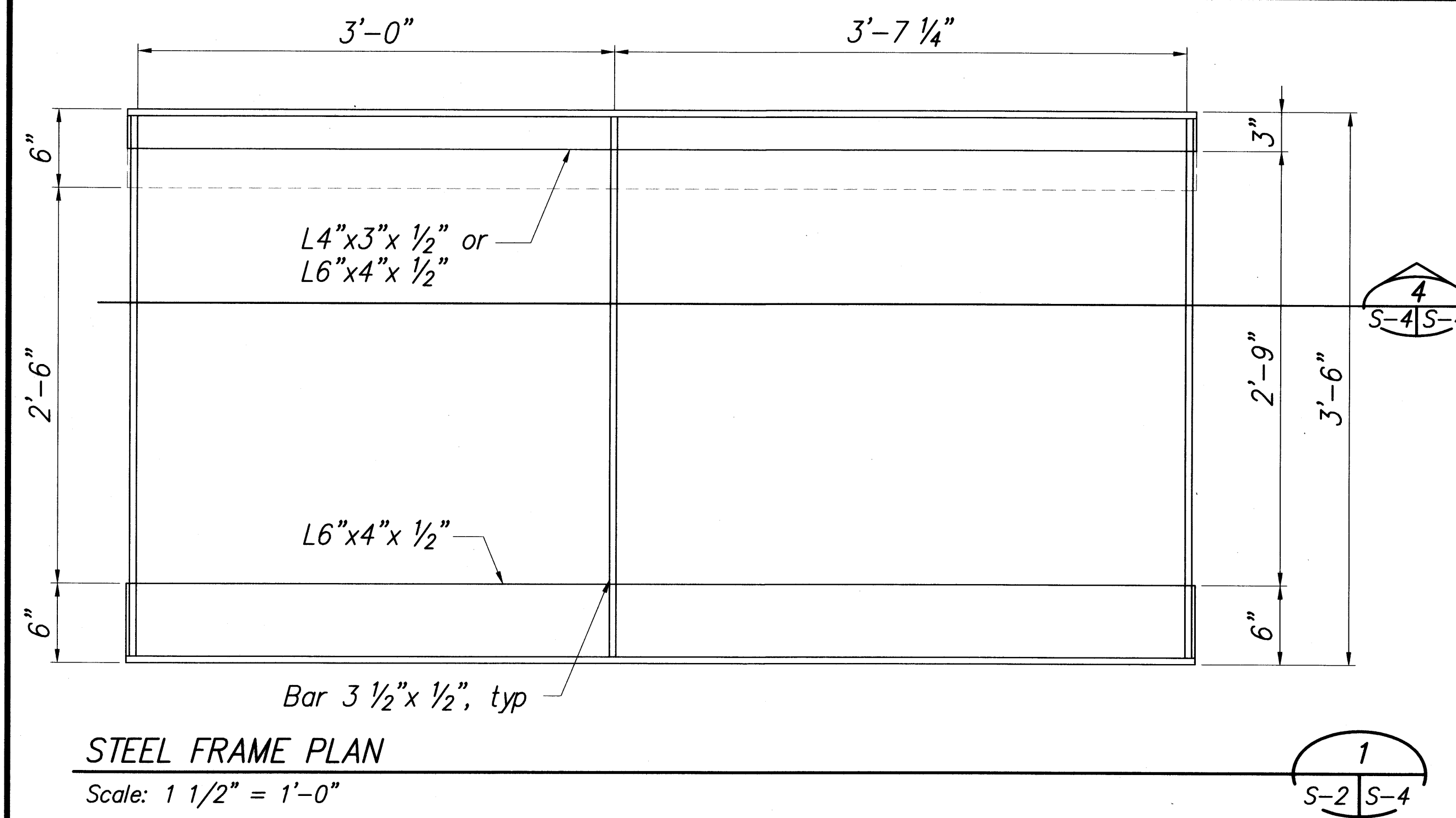
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DESIGNED BY	
	NOTED BY	
	CHECKED BY	



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**STILLING BASIN SECTIONS AND DETAILS**  
HAWAII BELT ROAD DRAINAGE IMPROVEMENTS, HAKALAU BRIDGE  
FEDERAL-AID PROJECT NO. STP-019-2(60)  
Scale: As Noted Date: July 2010  
SHEET No. S-3 OF 8 SHEETS



FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	STP-019-2(60)	2010	32	36



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**STEEL FRAME AND  
GRATE DETAILS**

HAWAII BELT ROAD DRAINAGE  
IMPROVEMENTS, HAKALAU BRIDGE  
FEDERAL-AID PROJECT NO. STP-019-2(60)

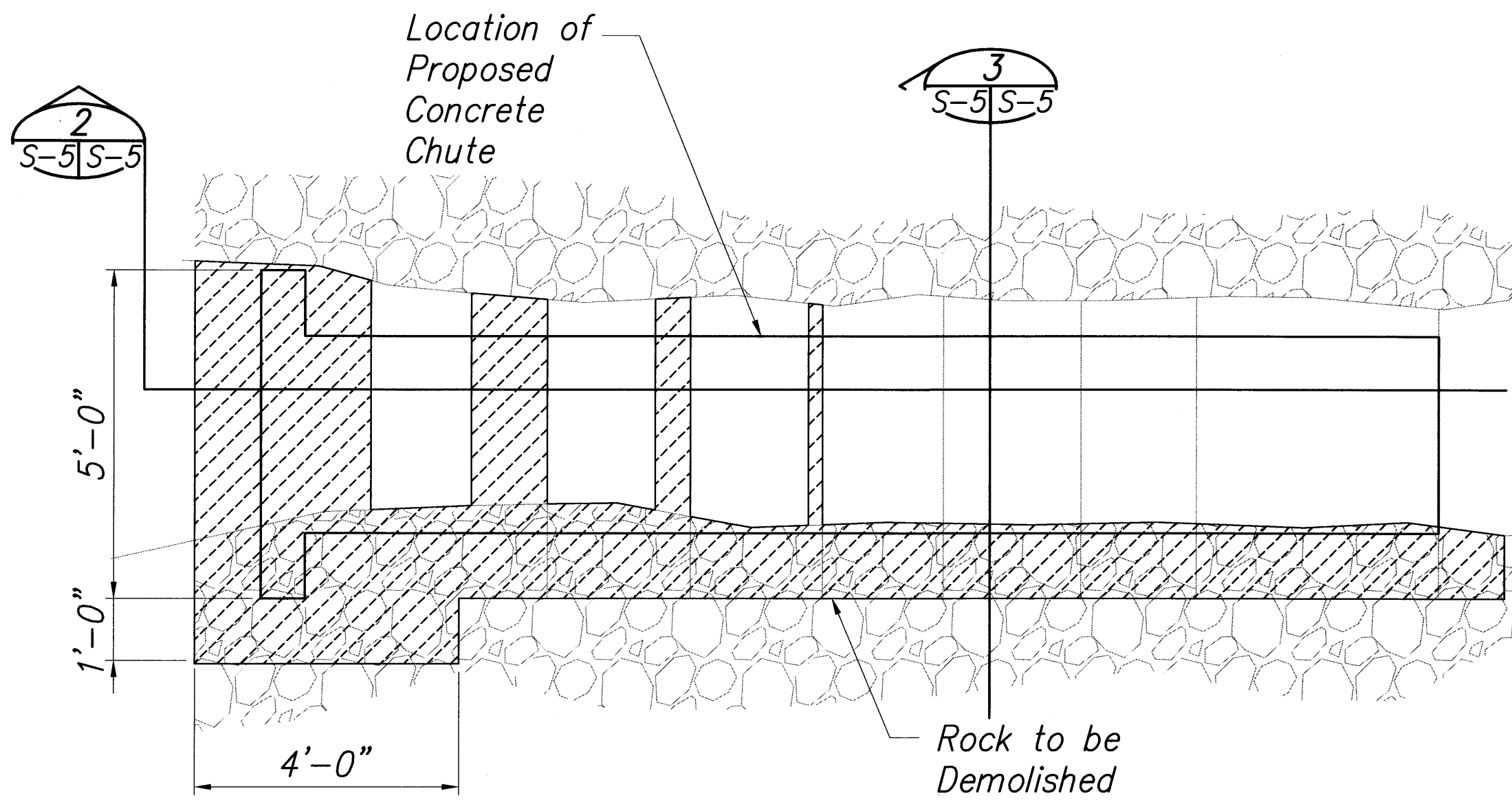
Scale: As Noted Date: July 2010

SHEET No. S-4 OF 8 SHEETS

THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION

DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
NOTED BY	_____
QUANTITIES BY	_____
DRAWN BY	_____
ORIGINAL PLAN	_____

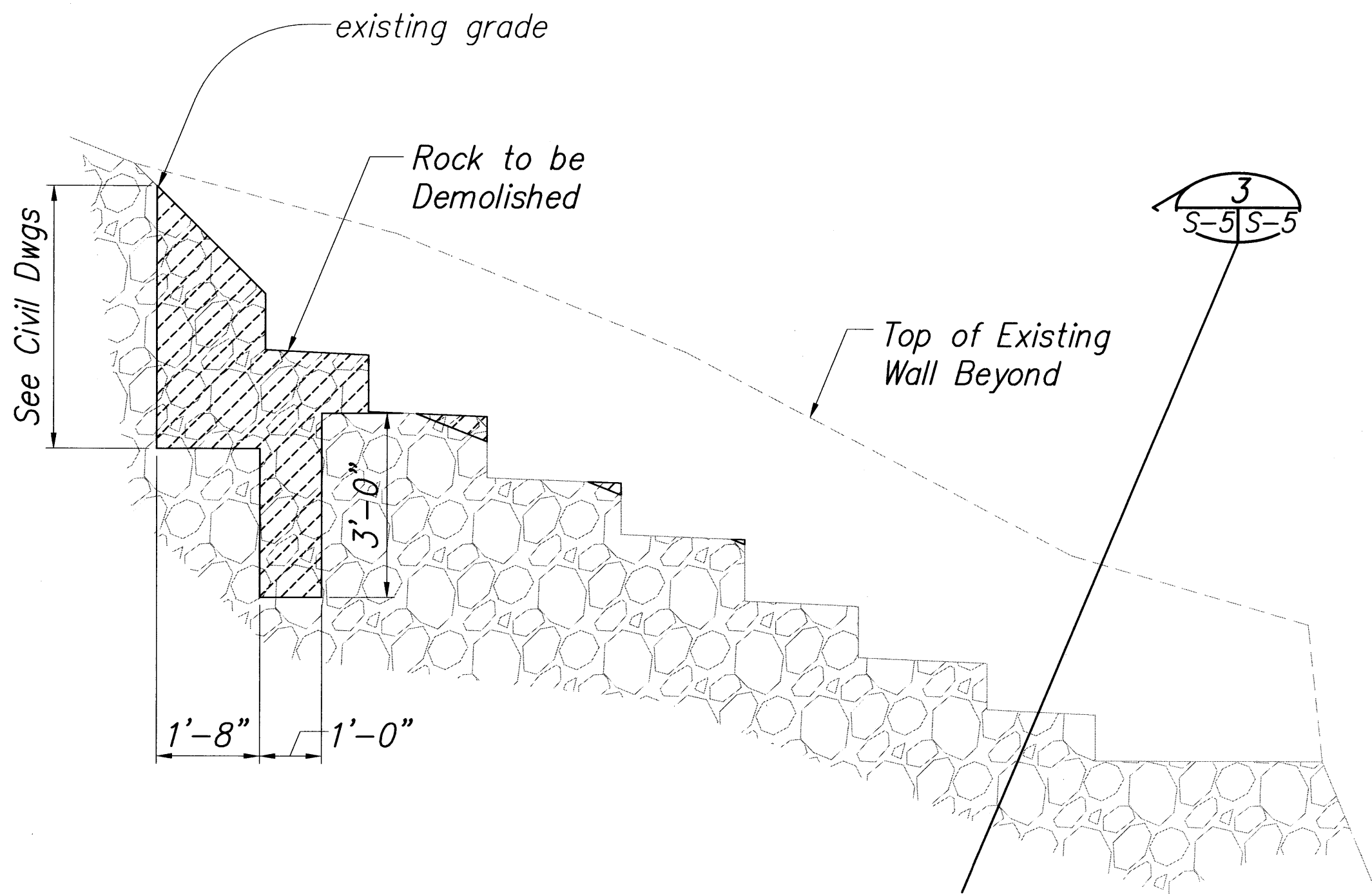
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	STP-019-2(60)	2010	33	36



CONCRETE CHUTE DEMO PLAN

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

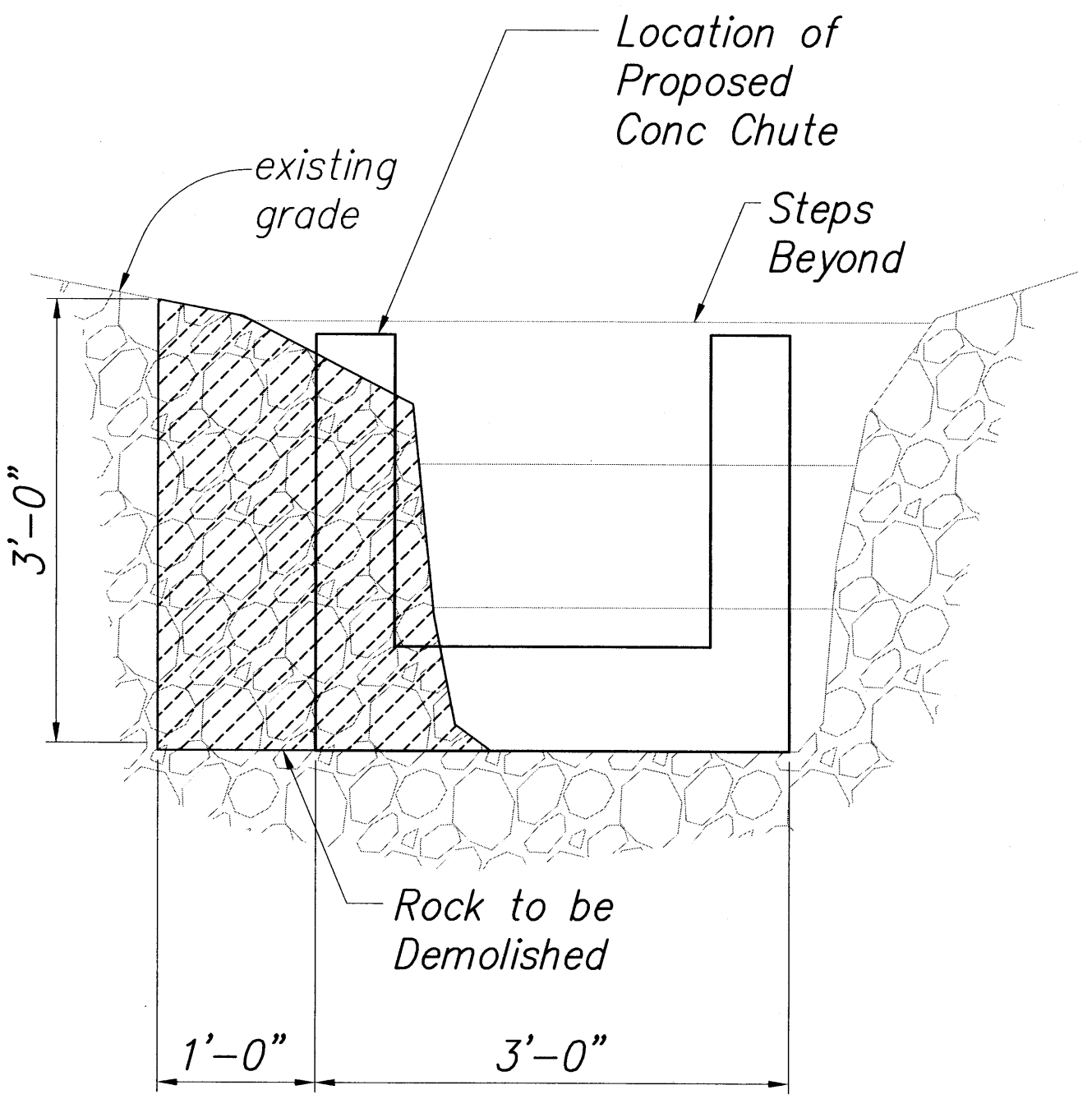
1  
S-5 S-5



DEMO ELEVATION

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

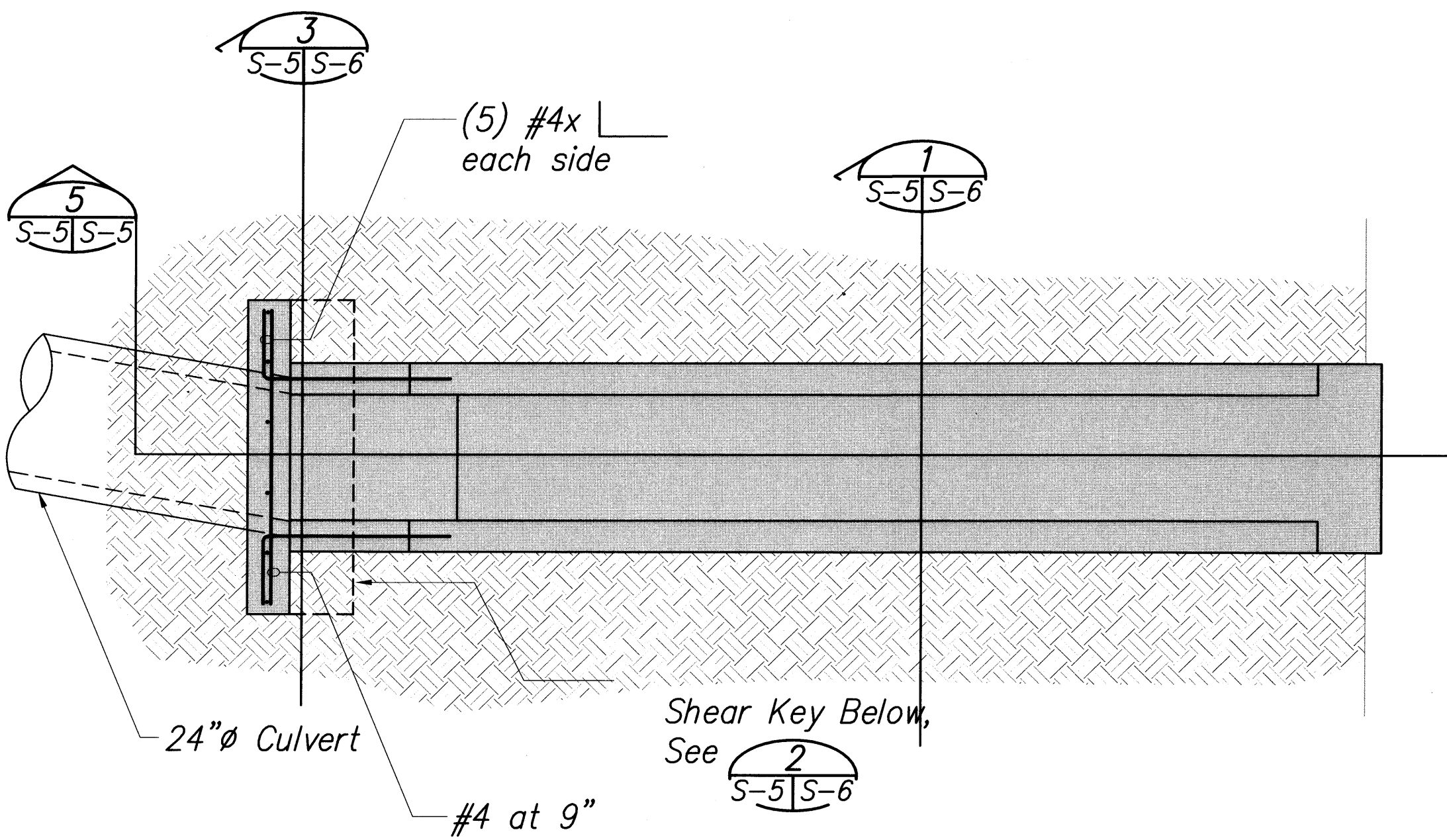
2  
S-5 S-5



DEMO SECTION

Scale: 1" = 1'-0"

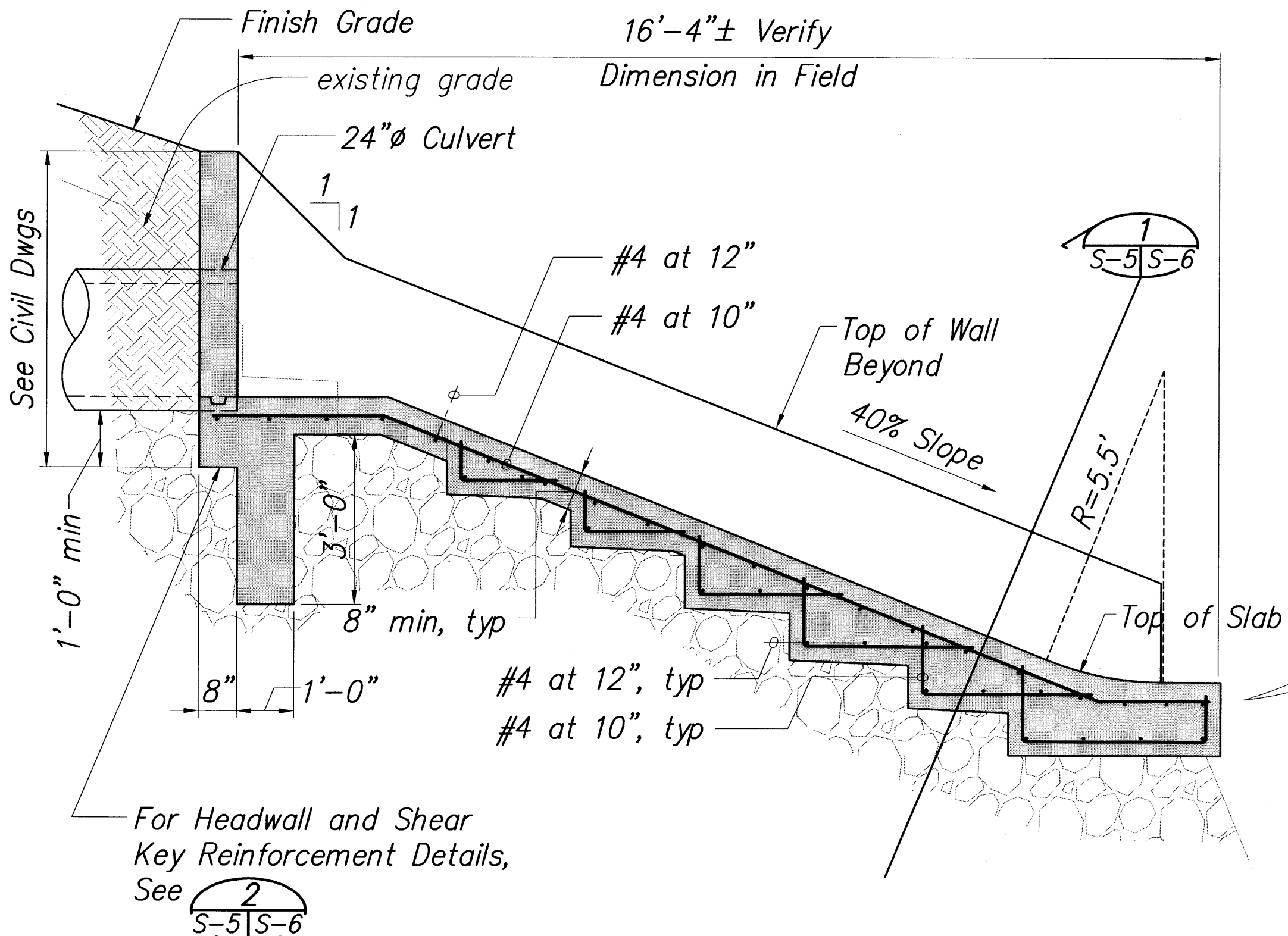
3  
S-5 S-5



CONCRETE CHUTE PLAN

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

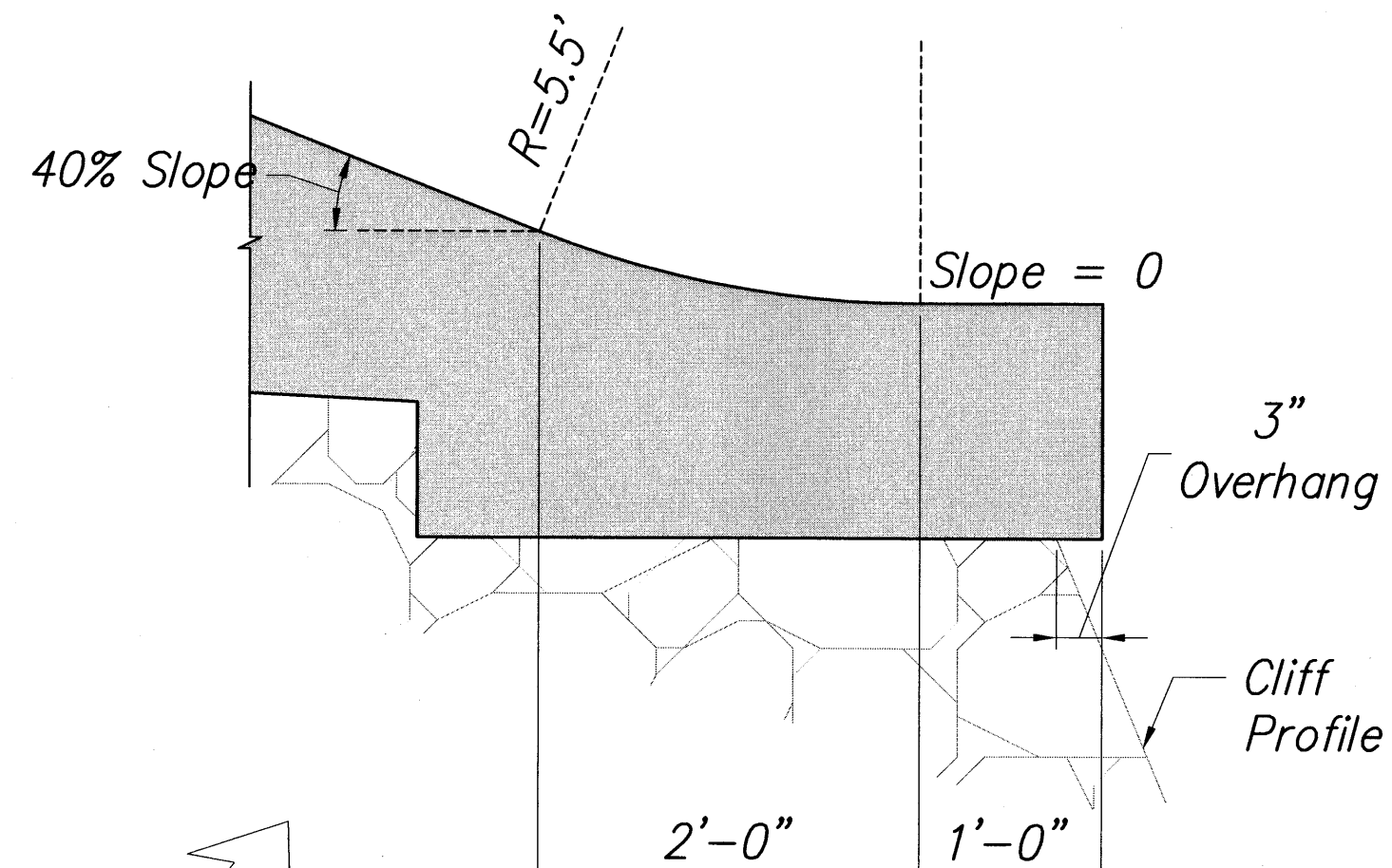
4  
S-5 S-5



ELEVATION

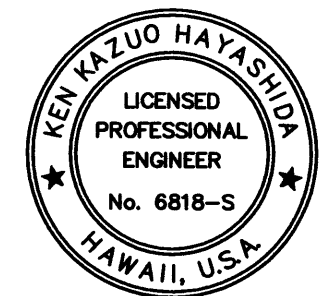
Scale: 1/2" = 1'-0"

5  
S-5 S-5



DETAIL CONCRETE CHUTE

Scale 1" = 1'-0"



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**CONCRETE CHUTE  
PLANS AND ELEVATIONS**

HAWAII BELT ROAD DRAINAGE  
IMPROVEMENTS, HAKALAU BRIDGE  
FEDERAL-AID PROJECT NO. STP-019-2(60)

Scale: As Noted Date: July 2010

SHEET No. S-5 OF 8 SHEETS

THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION

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

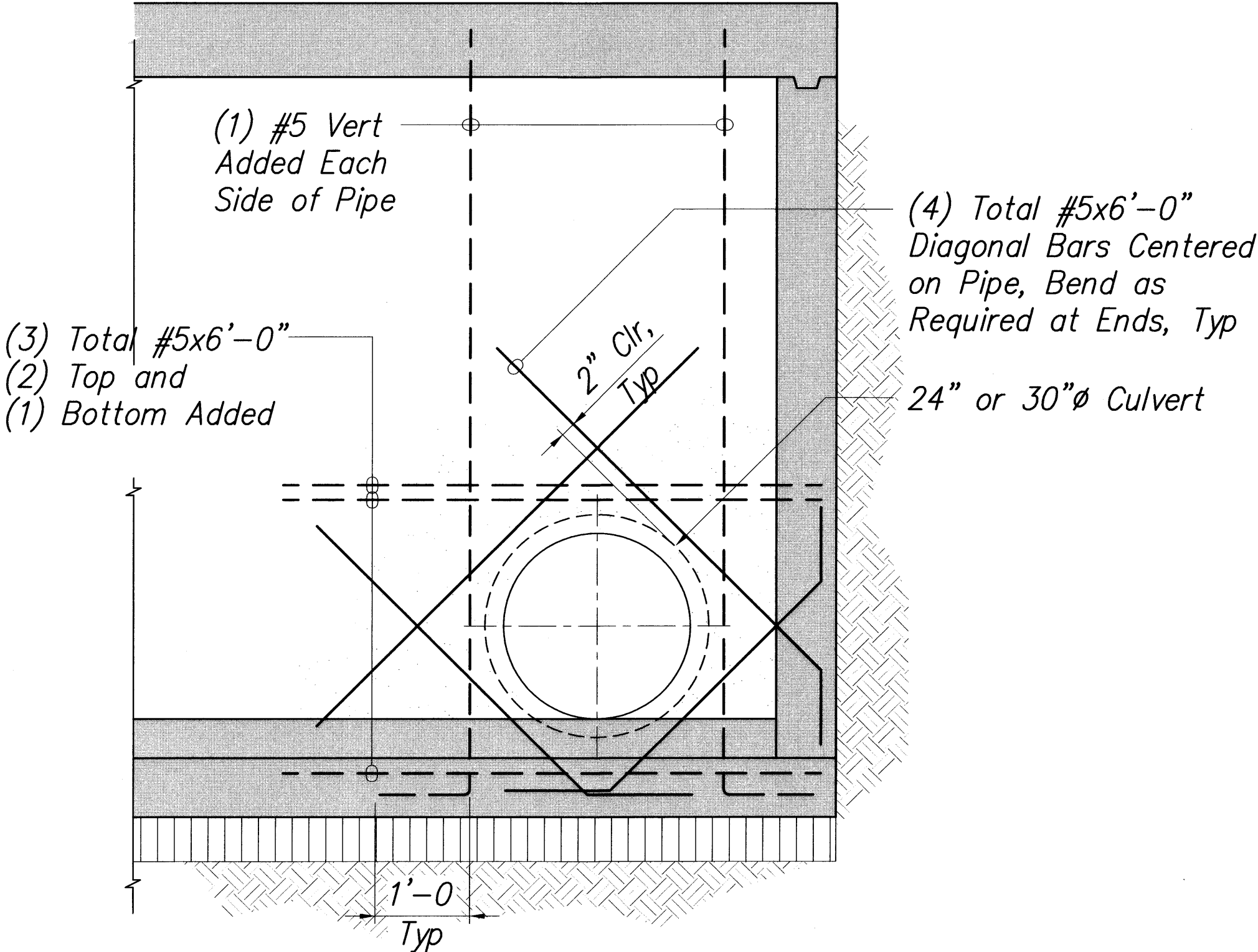






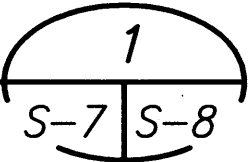


FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	STP-019-2(60)	2010	36	36

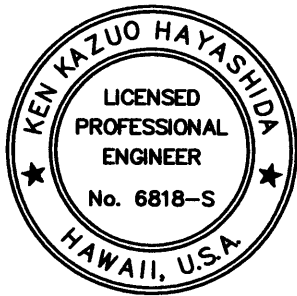


ELEVATION – TYPICAL PIPE PENETRATION AT WALL

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



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



THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

INLET JUNCTION STRUCTURE  
SECTIONS AND DETAILS

HAWAII BELT ROAD DRAINAGE  
IMPROVEMENTS, HAKALAU BRIDGE  
FEDERAL-AID PROJECT NO. STP-019-2(60)

Scale: As Noted
Date: July 2010

SHEET No. S-8 OF 8 SHEETS