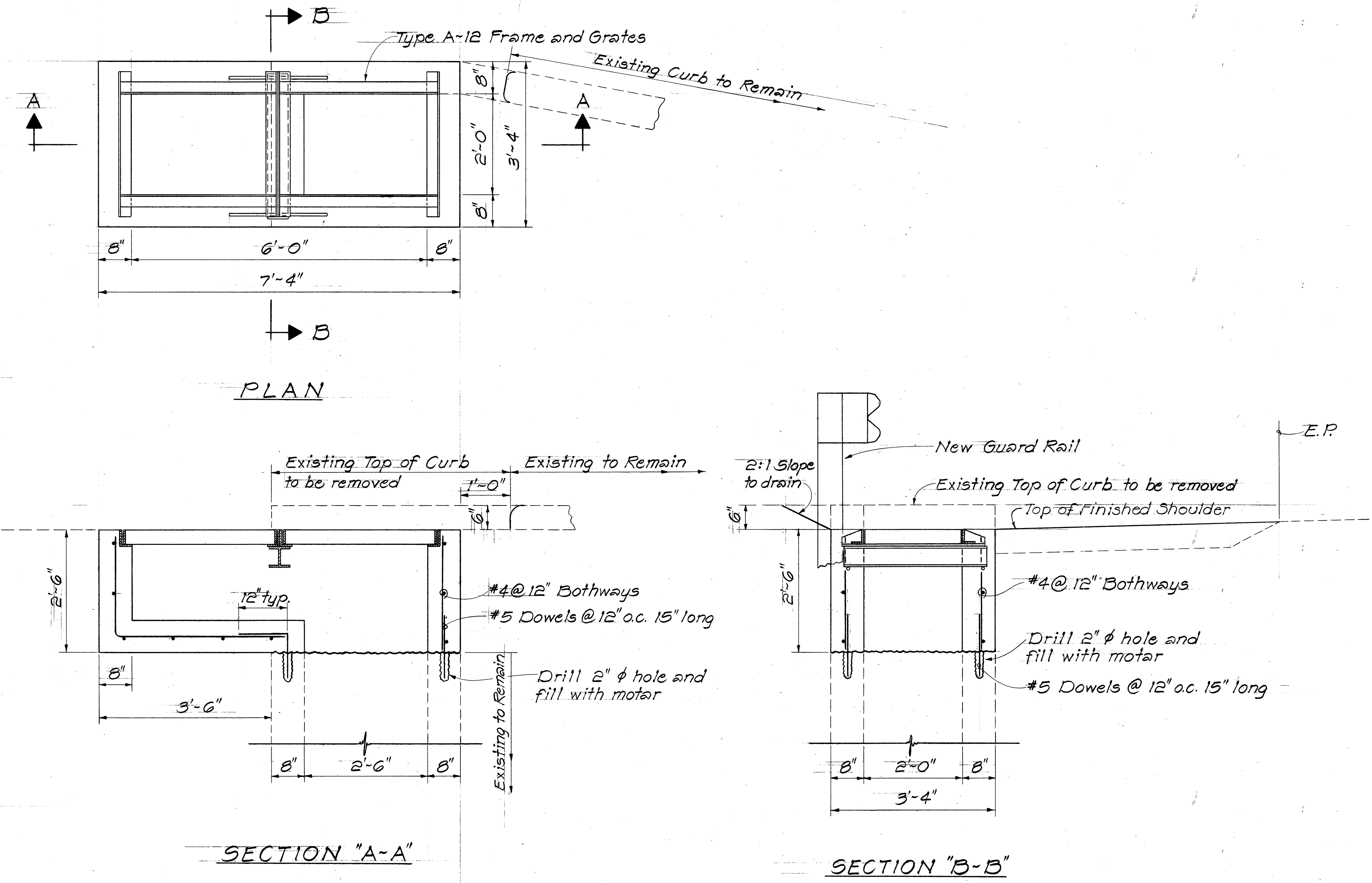


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HES-R05-061-1(22)	1982	20	51

GENERAL NOTES:

1. Demolishing, removing, and disposing a portion of the entire existing structure shall not be paid for separately, but shall be incidental to the various contract items in the proposal.
2. Concrete shall be Type Class "A" for Spillway and Concrete Drop Intake modification.
3. Reconstruction of existing concrete curb, concrete curb and gutter, concrete channel and transition shall be considered incidental to the various contract items in the proposal.
4. 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 2 inches, and voids after installing dowels shall be filled with mortar as directed by the Engineer. The work (Drilling 2" holes and filling voids with mortar) as mentioned above shall be considered incidental to the various contract items in the proposal.
5. All cast iron frames and covers for existing manholes and catch basins which are to be partially or completely demolished shall be stockpiled in a neat and orderly manner at the project site as directed by the Engineer and shall remain the property of the State. Payment shall be incidental to the various contract items in the proposal.
6. The Contractor's attention is directed to Subsection 107.13 - "Public Convenience and Safety", and Subsection 107.14 - "Barricades and Warning Signs" of the Special Provisions pertaining to hours of operations, detouring, submitting a traffic control plan and other requirements necessary to maintain traffic safety through the project areas.
7. Where removal of guard rails are necessary to reconstruct drainage structures, the guard rails shall be reconstructed upon completion of drainage structure reconstruction. Reconstruction of guard rails shall be in accordance with Section 606 - "Guard Rail".
8. In the event of plan alterations causing increase or decrease to the quantity of specified lump sum work the following estimated quantities shall be used to determine theoretical unit price as defined in subsection 104.02(B) lump sum items:

TYPE	STATION	LUMP SUM ITEM NO.	206	503	602
			1001	0011	1001
		UNIT USED	C.Y.	C.Y.	LBS.
Spillway	Sta. 222+90 Rt.			3.5	
CDI	Sta. 227+02%50± Lt.		1.0	1.8	150
Spillway	Sta. 237+75 Rt.			3.5	
Spillway	Sta. 243+53 Rt.			3.5	
Spillway	Sta. 250+78 Lt.			3.5	
Spillway	Sta. 256+49 Lt.			3.5	
Median CDI	Sta. 270+50		4.0	1.5	150
Spillway	Sta. 280+00 Lt.			3.5	
CDI	Sta. 294+60 %37 Lt.		4.0	1.5	100
CDI	Sta. 304+10 %80 Rt.		3.0	1.0	70
	TOTAL		12.0	26.8	470



CDI MODIFICATION AT STA. 294+60± %37± Lt.
Scale: 3/4" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

KALANIANA'OLE HIGHWAY

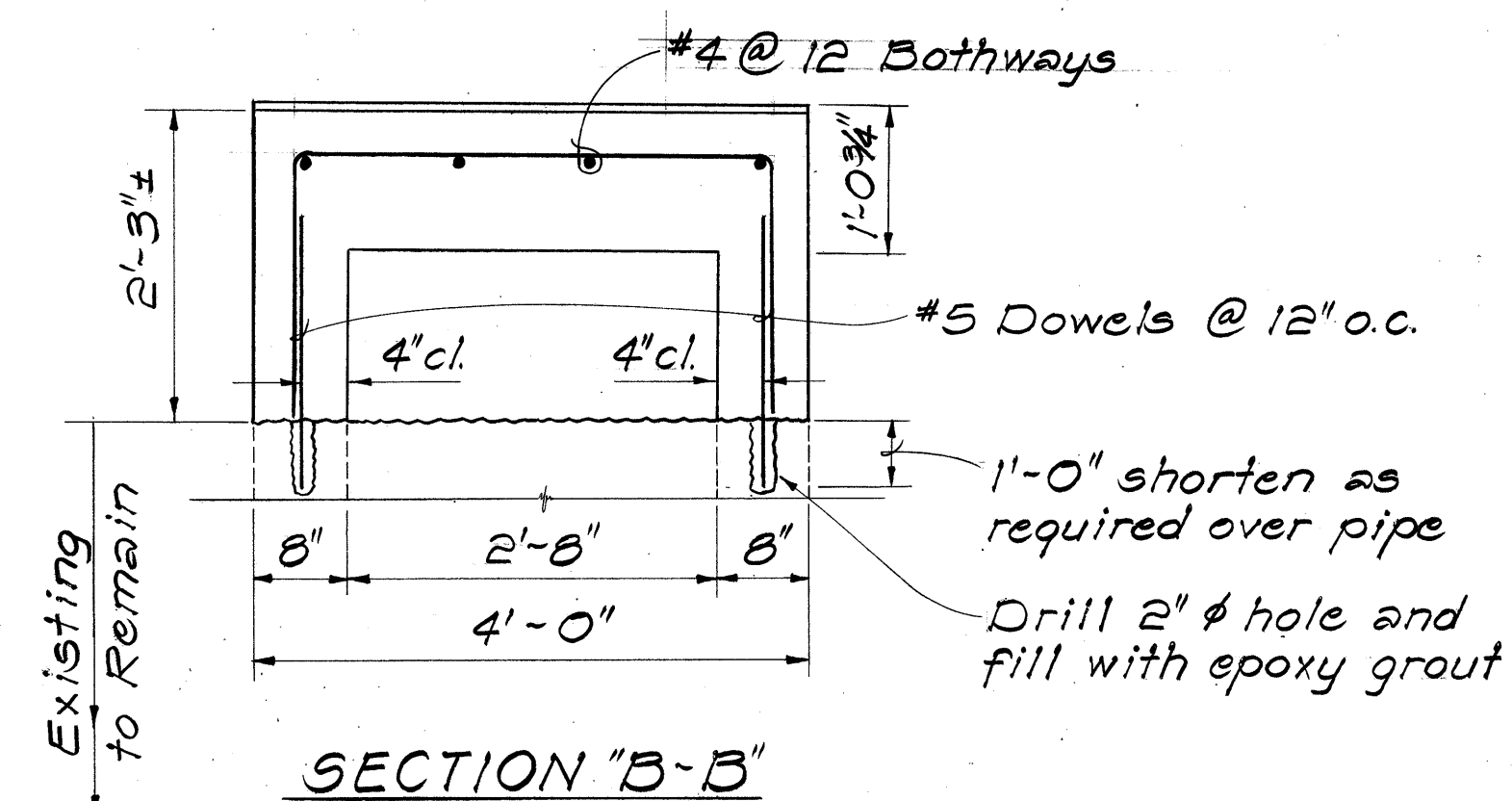
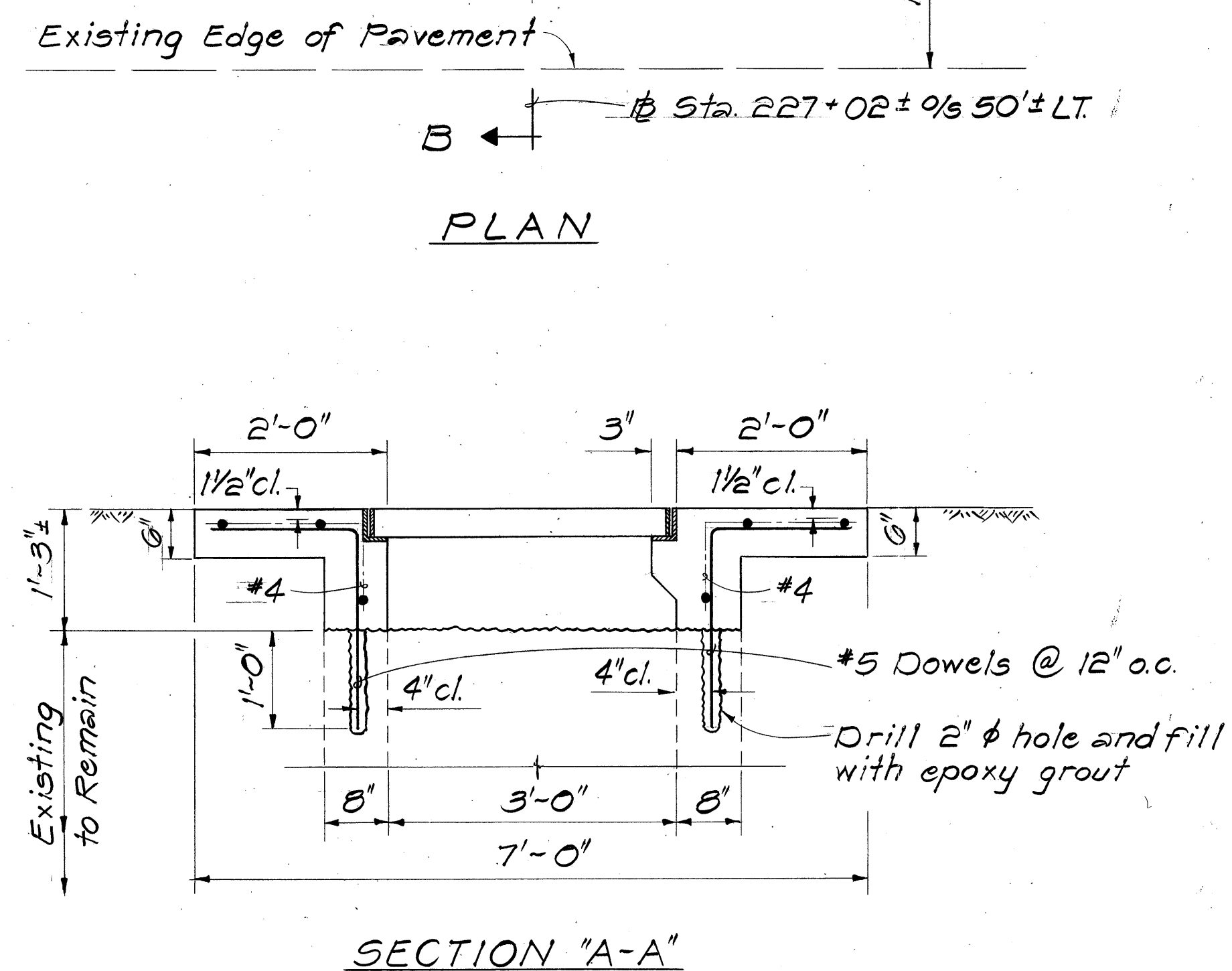
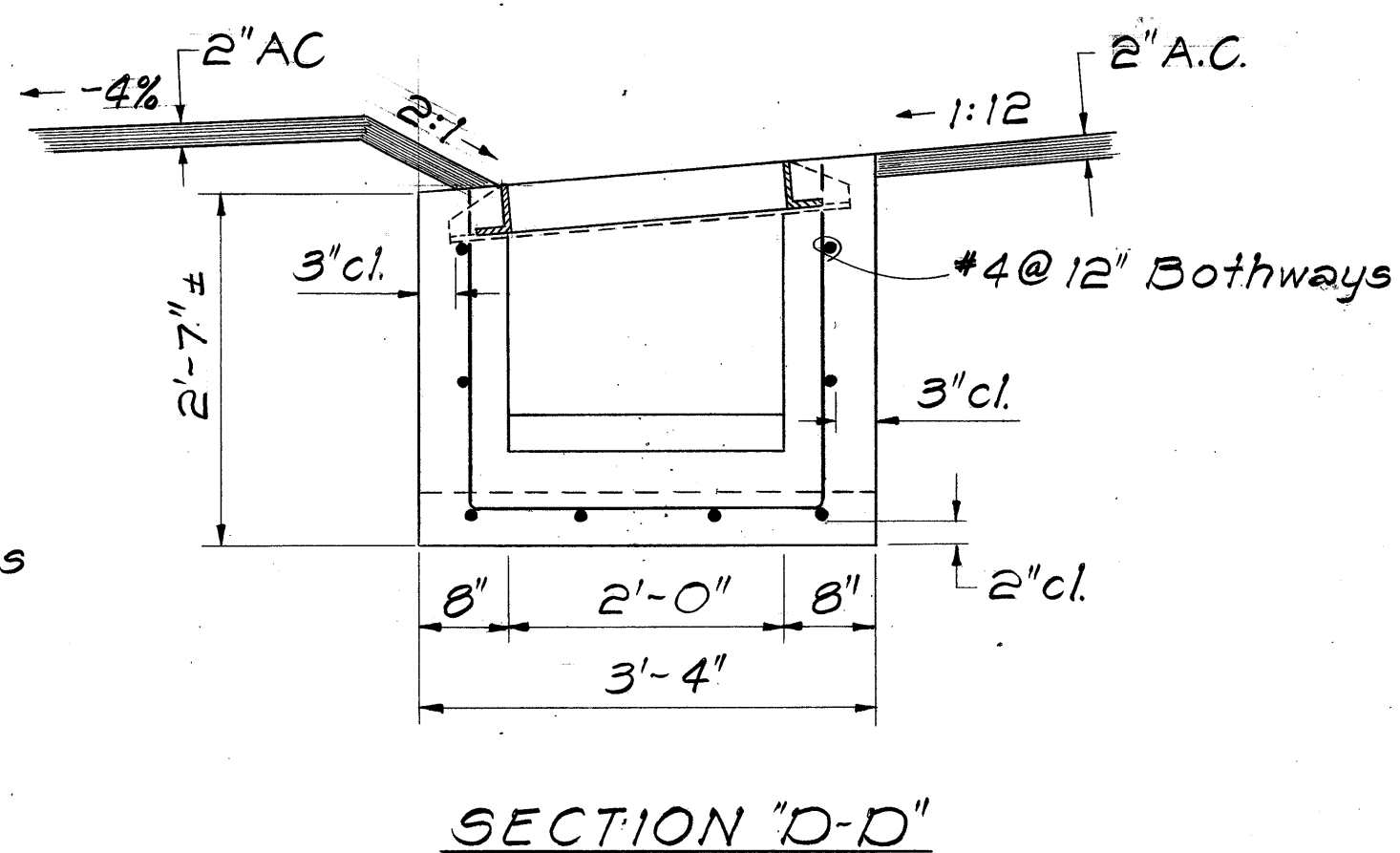
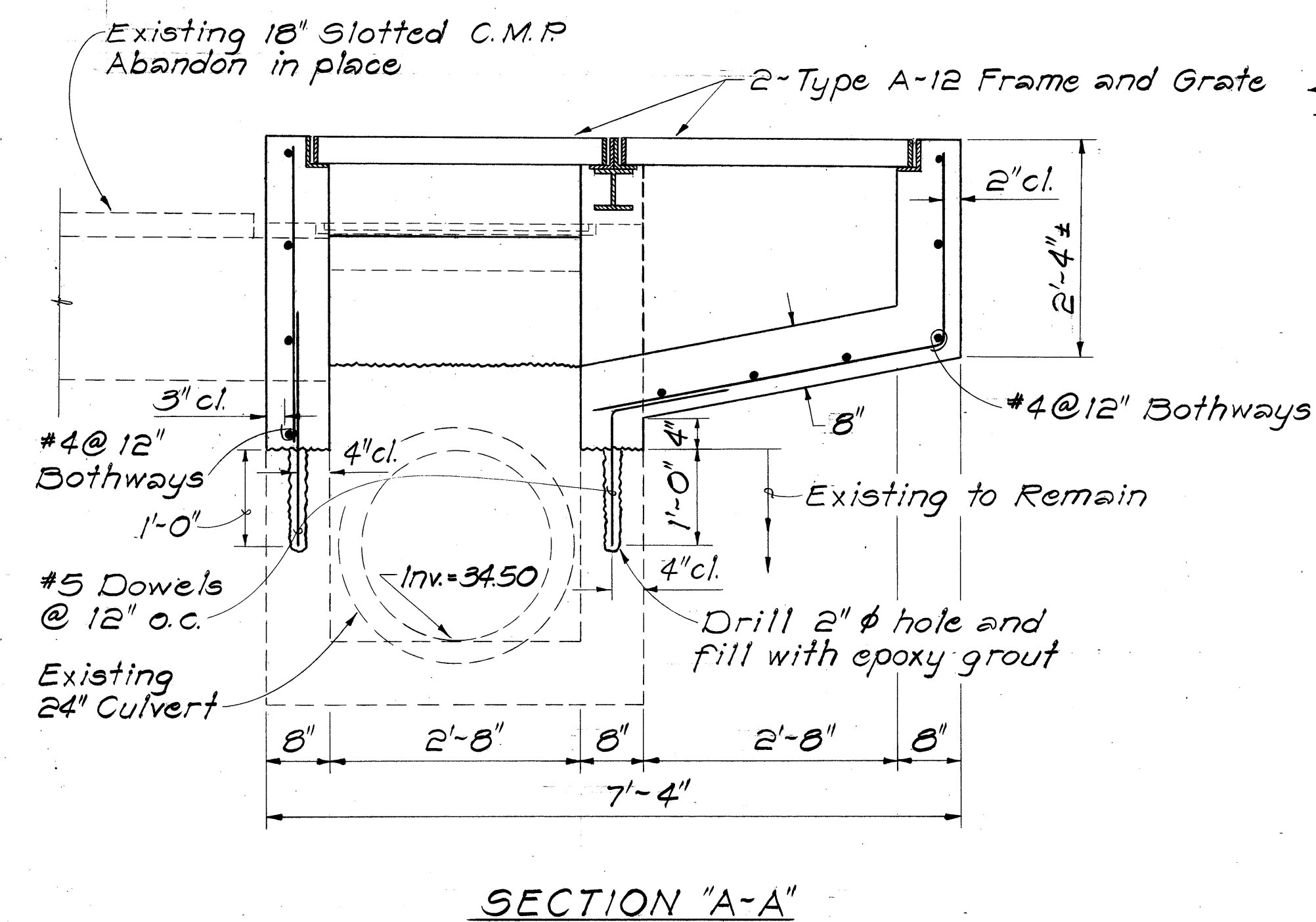
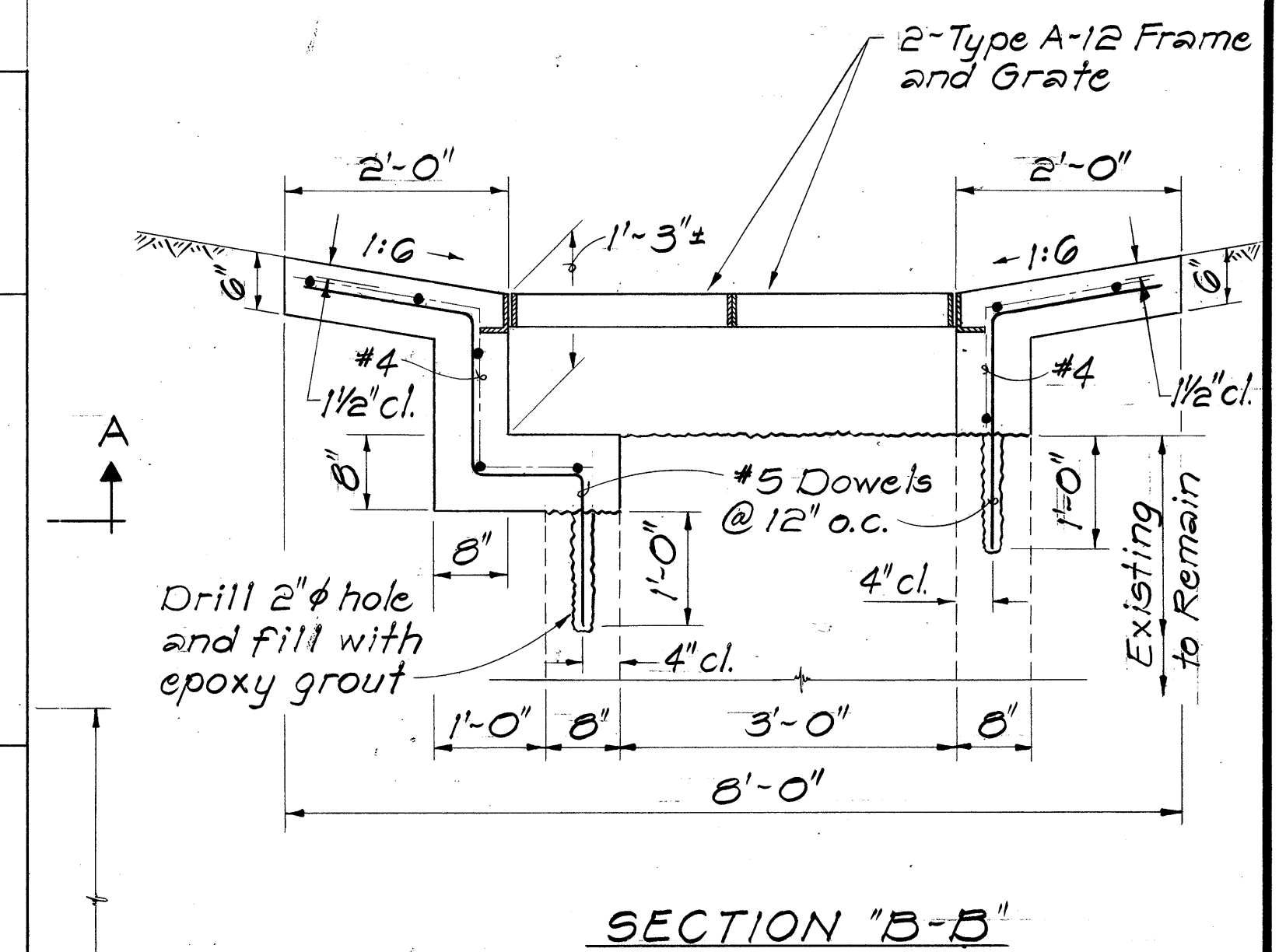
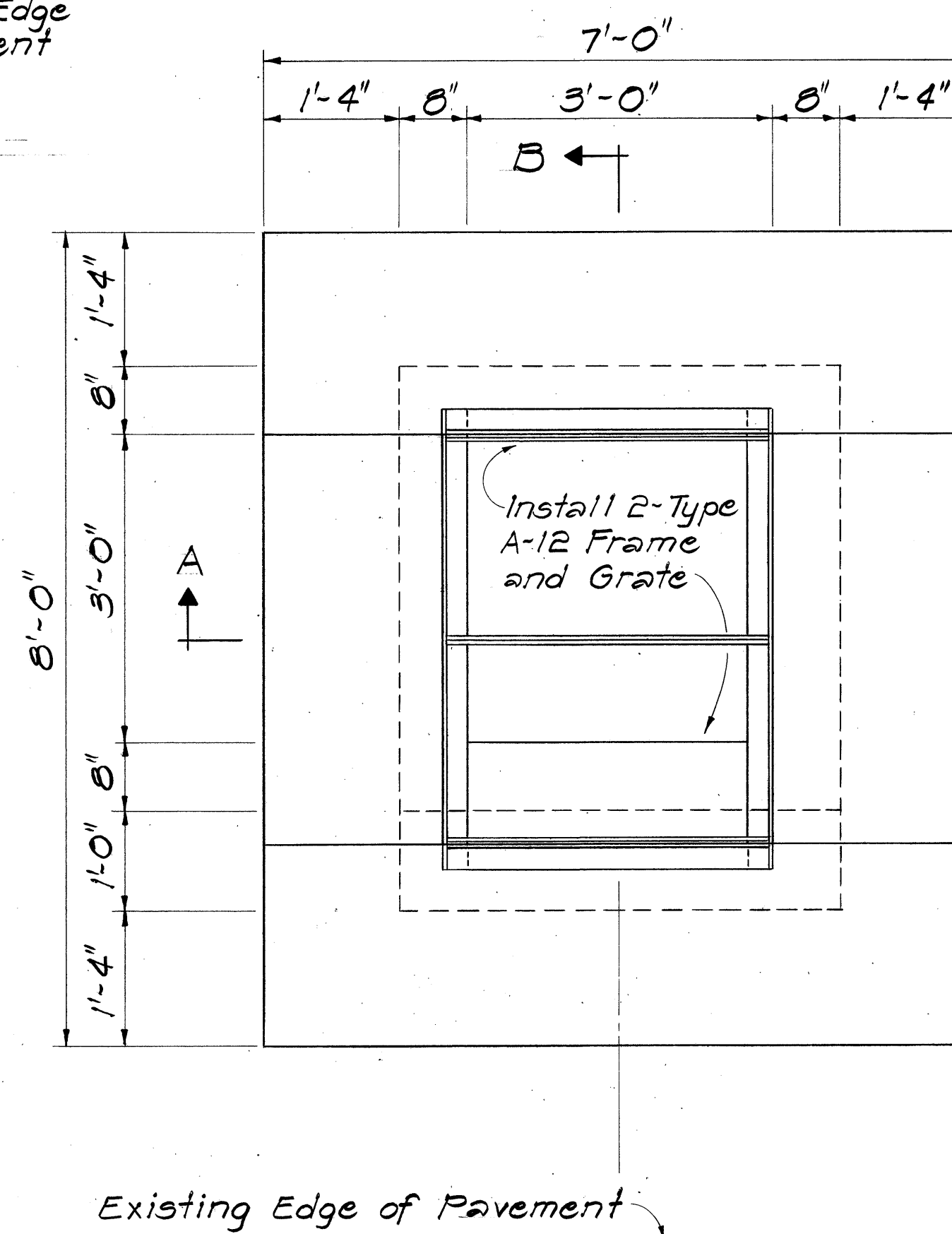
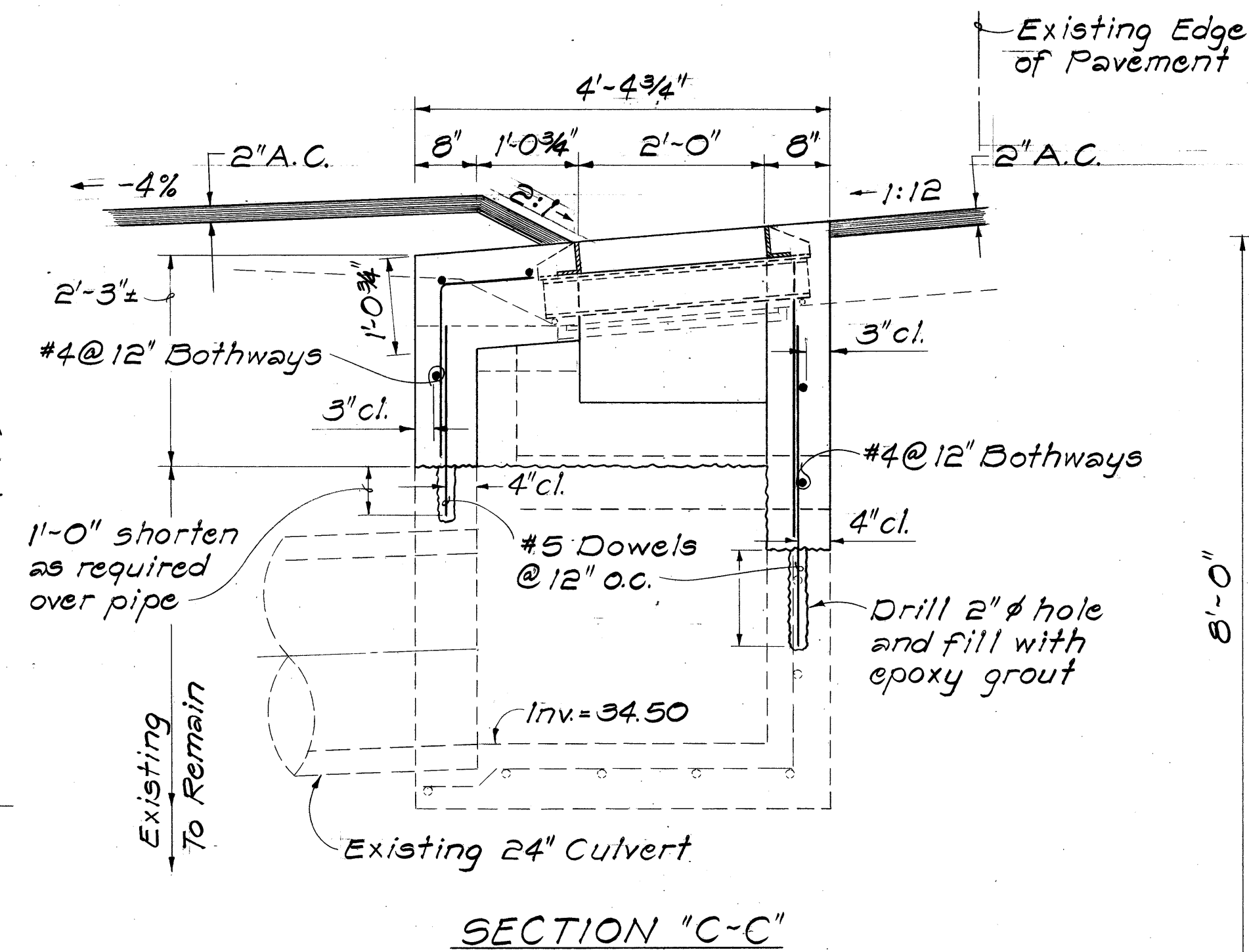
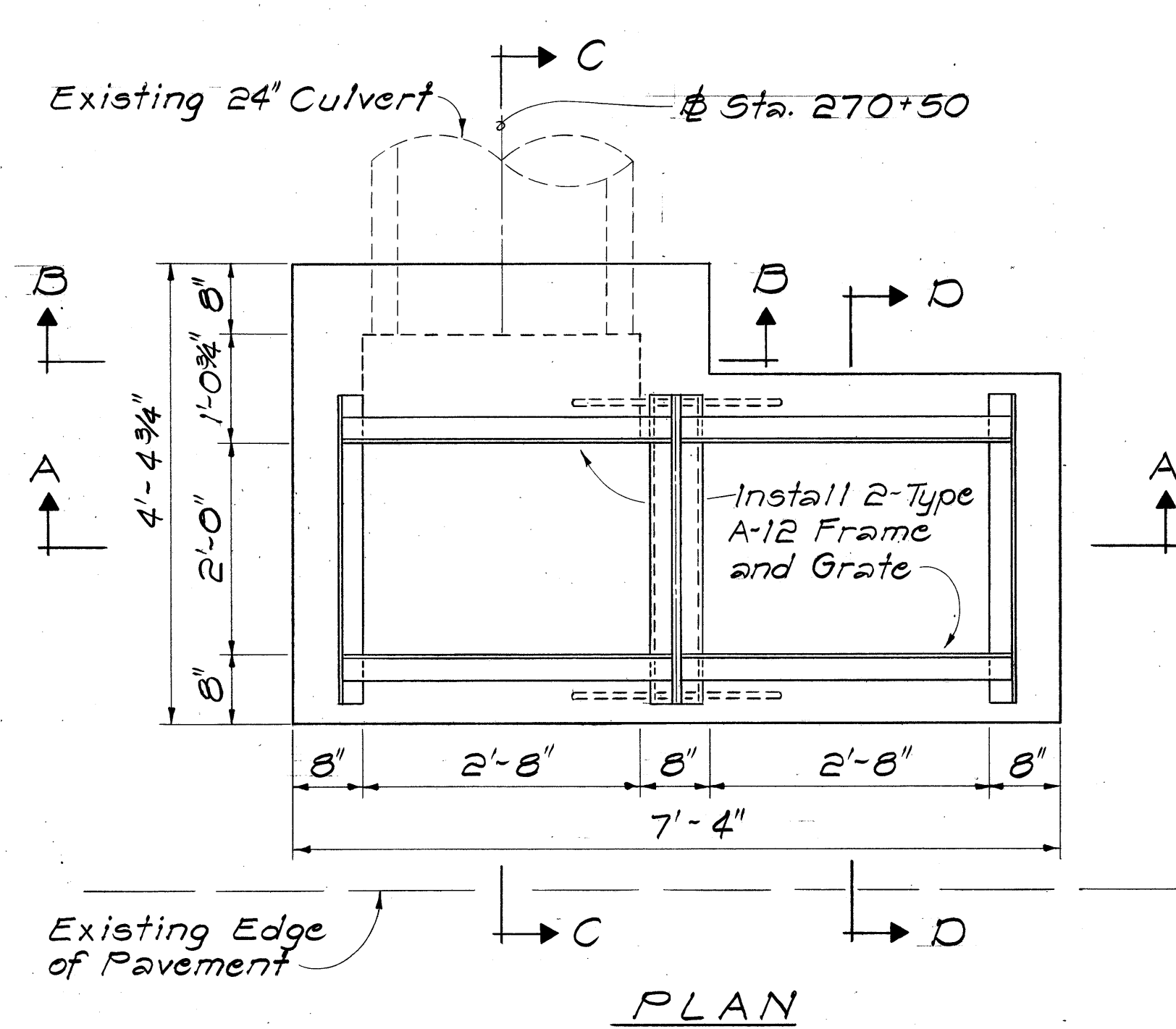
SAFETY IMPROVEMENTS

KAMEHAMEHA HWY. TO KAILUA RD.
F.A.P. NO. HES-R05-061-1(22)

Scale: As Shown Date: Mar. 1981

SHEET No. 1H OF 5H SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HES-R05-061-1102	1982	30	51



CDI MODIFICATION AT STA. 227+02 ± ½ 50' ± LT.
Scale: ¾" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

KALANIANA'OLE HIGHWAY

SAFETY IMPROVEMENTS

KAMEHAMEHA HWY. TO KAILUA RD.

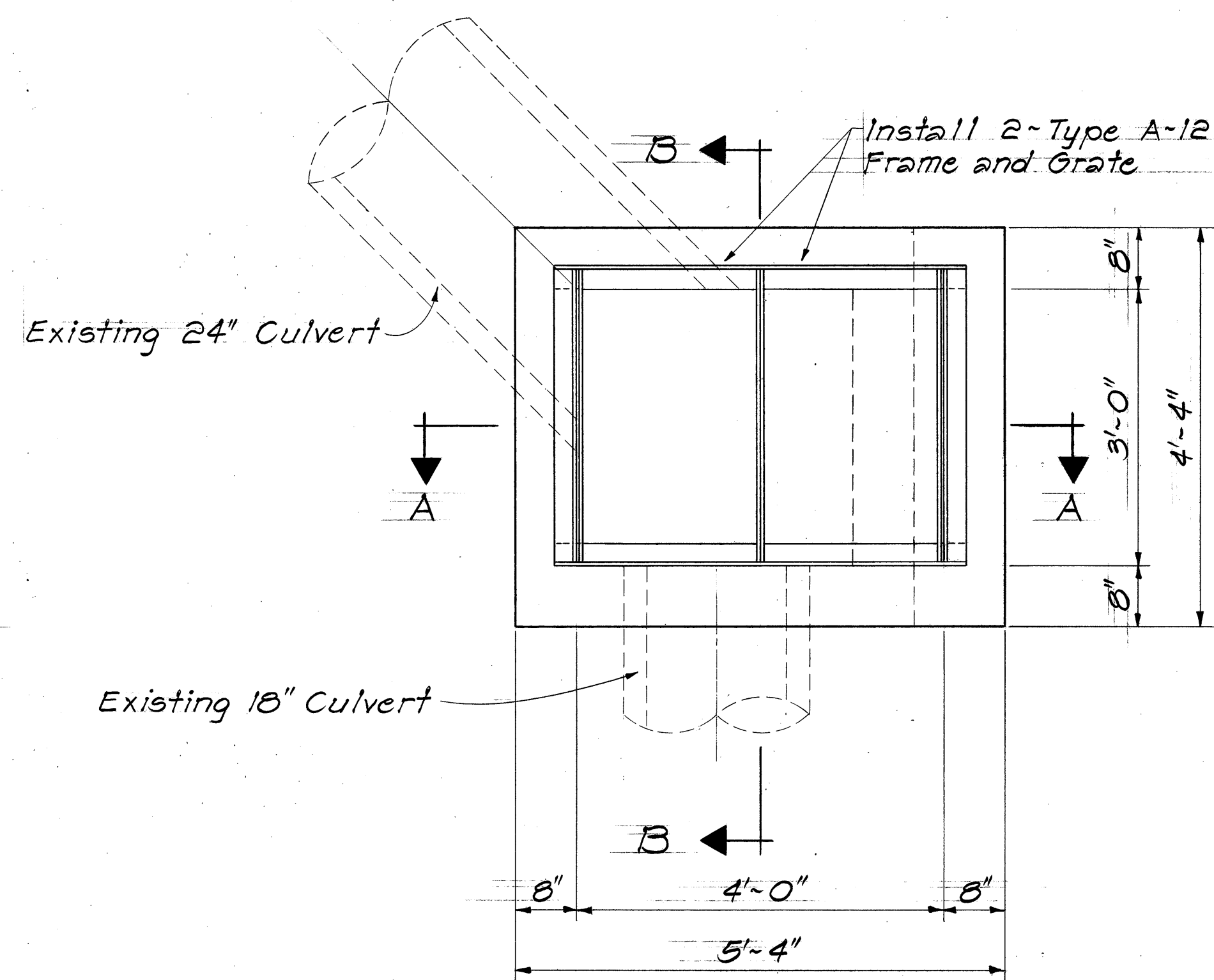
F.A.P. NO. HES-ROS-061-1(22)

Scale: As Shown Date: Mar. 1981

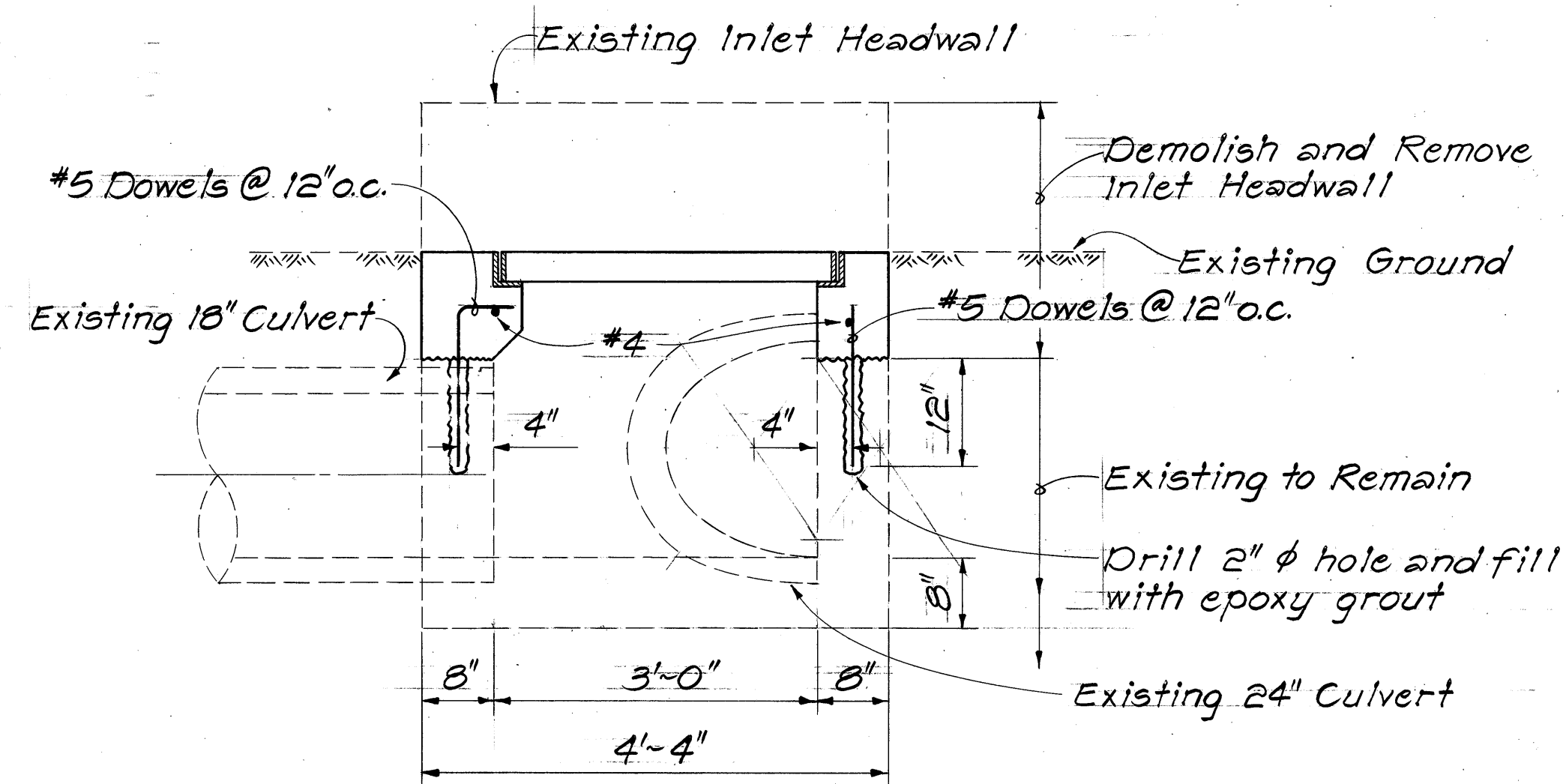
SHEET No. 2H OF 5H SHEETS

30

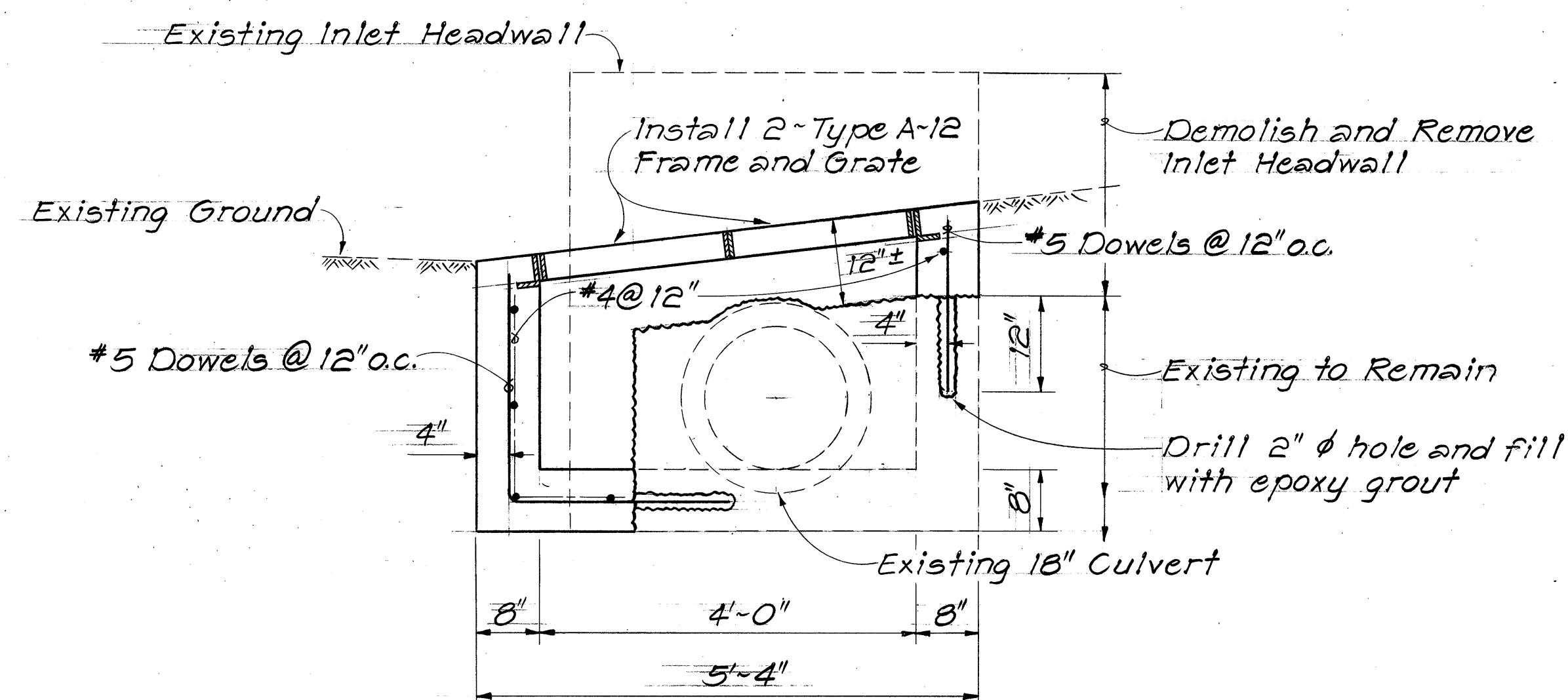
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HES-R05-061-1(22)	1982	31	51



PLAN



SECTION "B-B"



SECTION "A-A"

CDI MODIFICATION AT STA. 304+10 9/8 80' RT.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

KALANIANA'OLE HIGHWAY

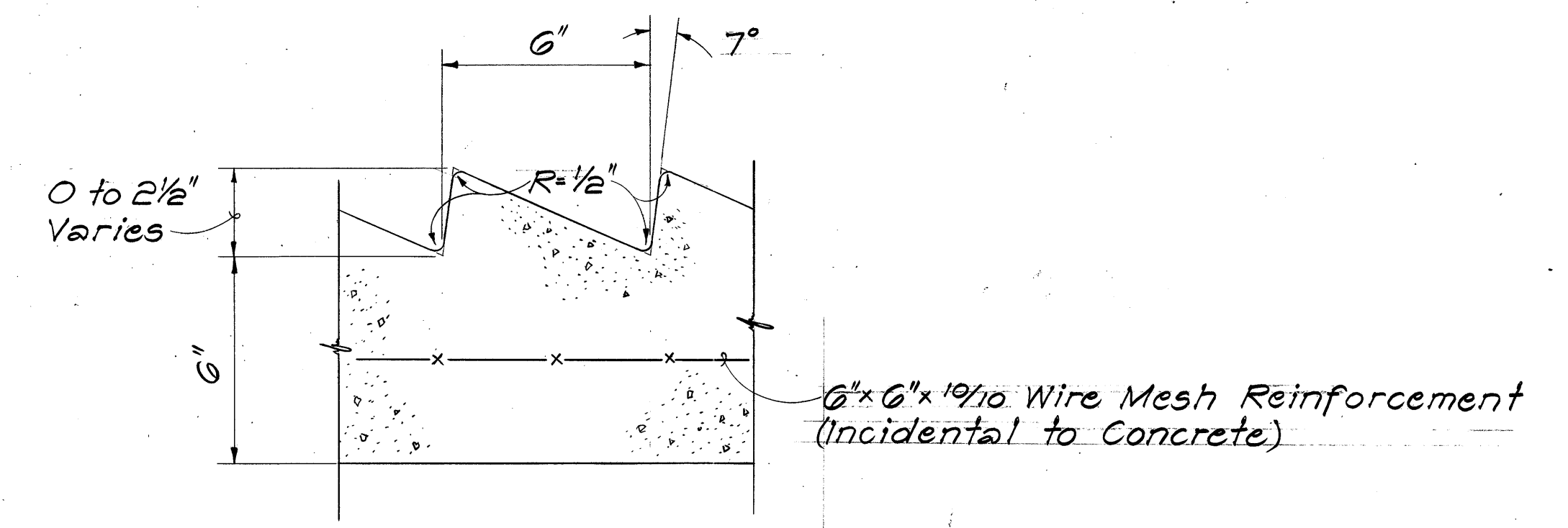
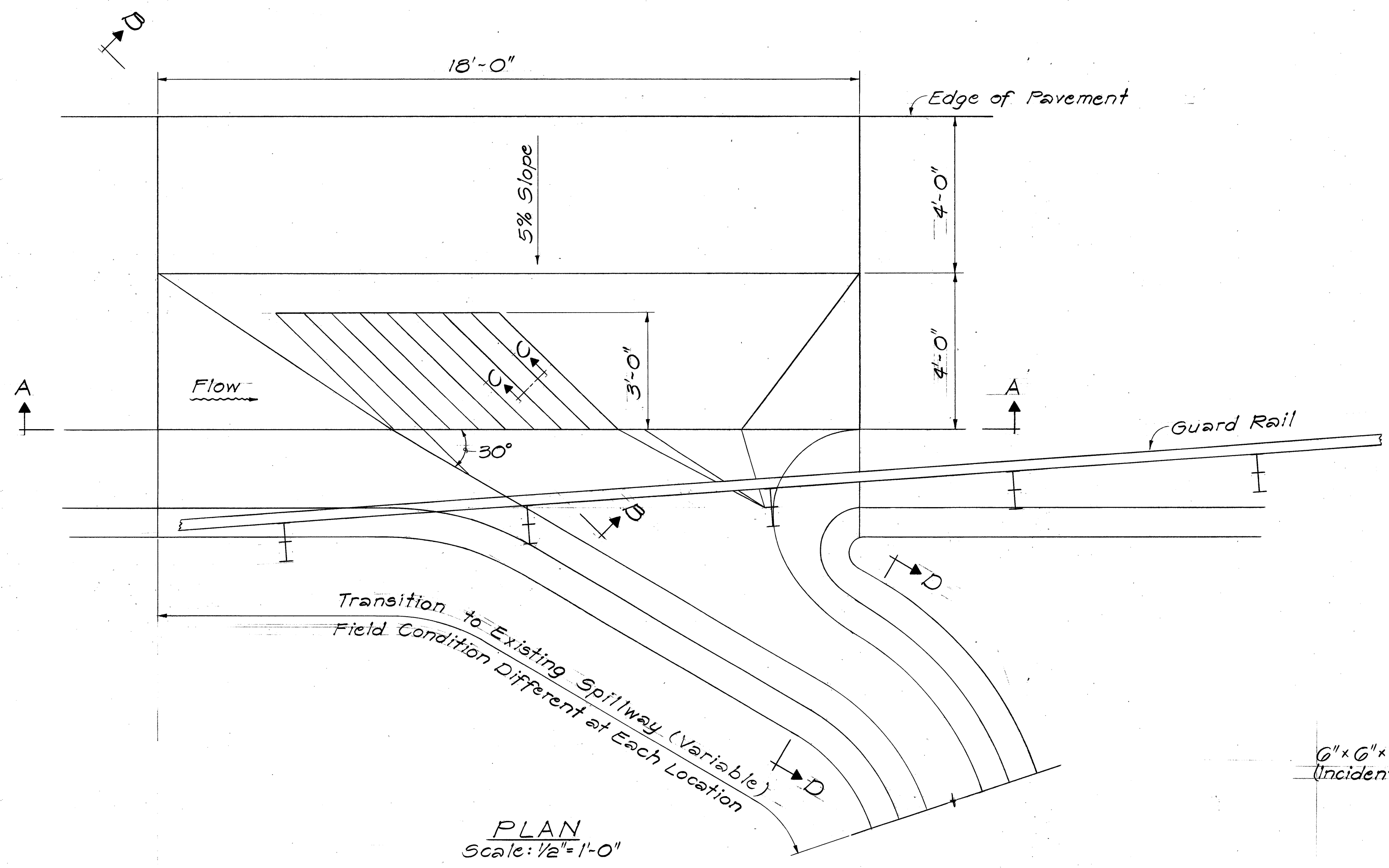
SAFETY IMPROVEMENTS

KAMEHAMEHA HWY. TO KAILUA RD.
F.A.P. NO. HES-R05-061-1(22)

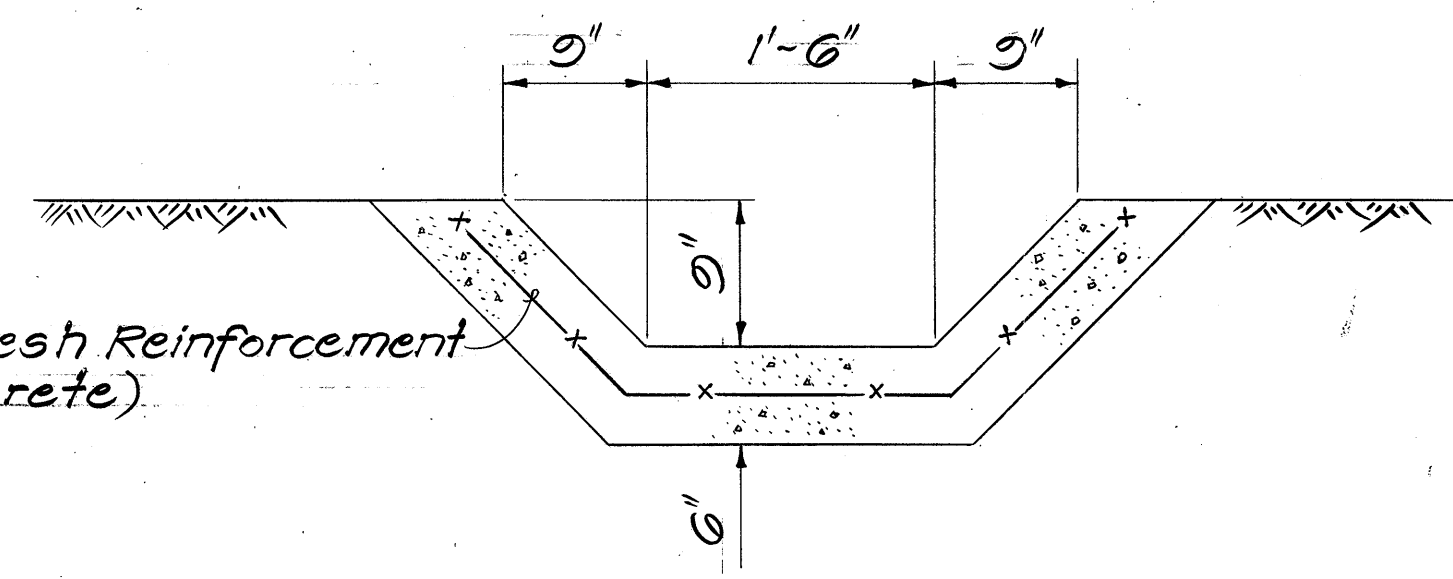
Scale: As Shown Date: Mar. 1981

SHEET No. 3H OF 5H SHEETS

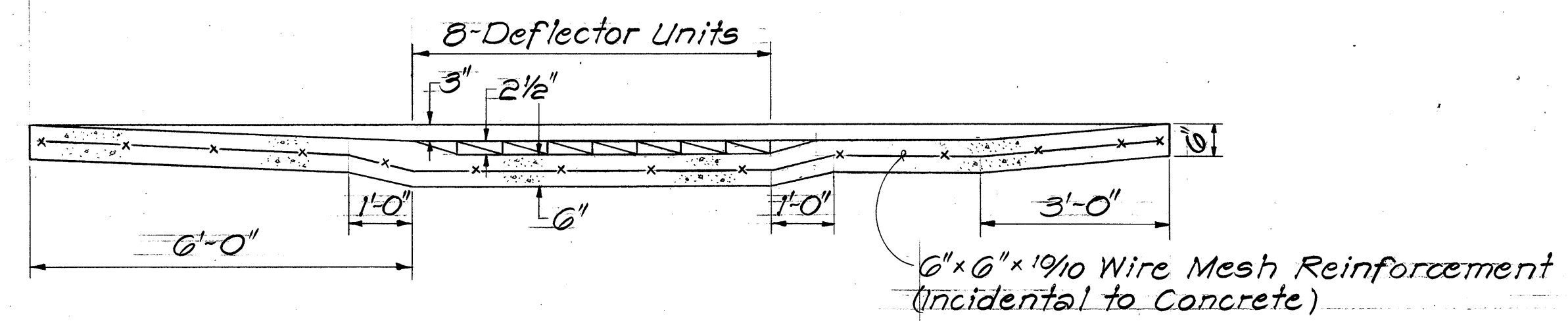
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	125-105-06-1(22)	1982	32	51



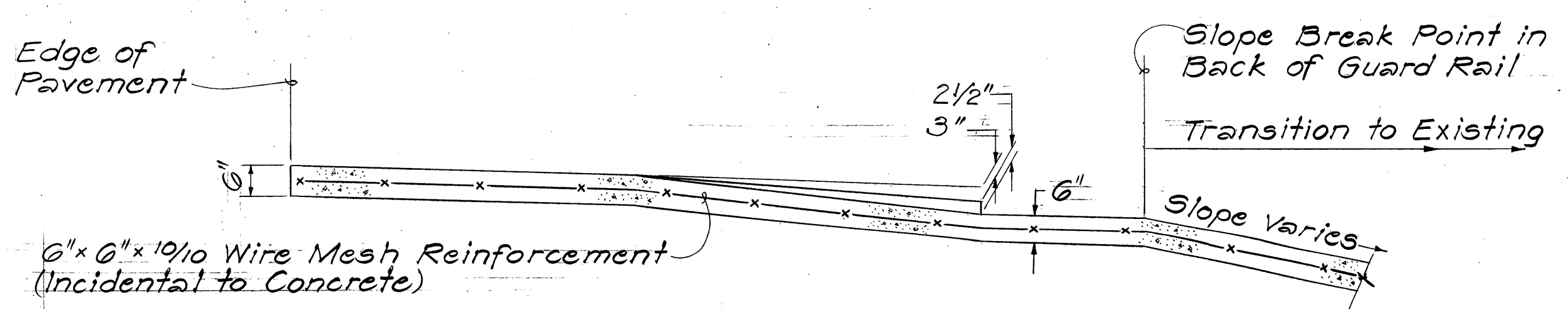
SECTION "C-C"
Scale: 3" = 1'-0"



SECTION "D-D"
Scale: 1" = 1'-0"



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



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

SPILLWAY MODIFICATION DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

KALANIANA'OLE HIGHWAY

SAFETY IMPROVEMENTS

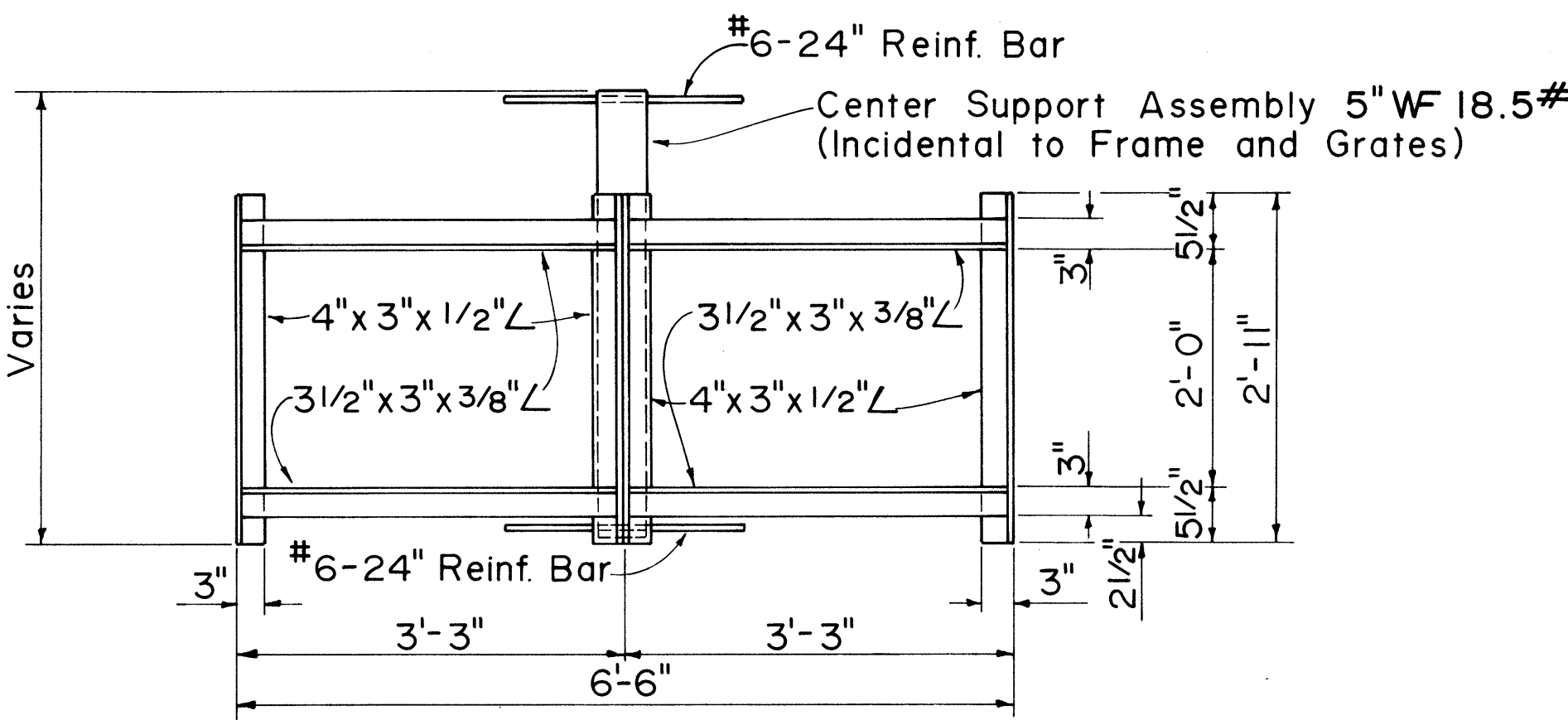
KAMEHAMEHA HWY. TO KAILUA RD.

F.A.P. NO. HES-RO6-061-1(22)

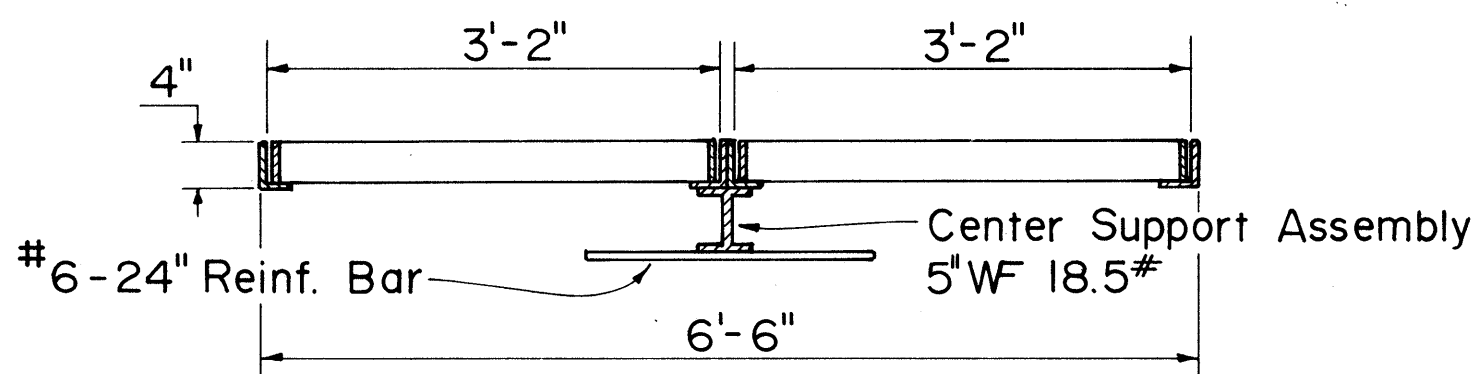
Scale: As Shown Date: Mar. 1981

SHEET No. 4H OF 5H SHEETS

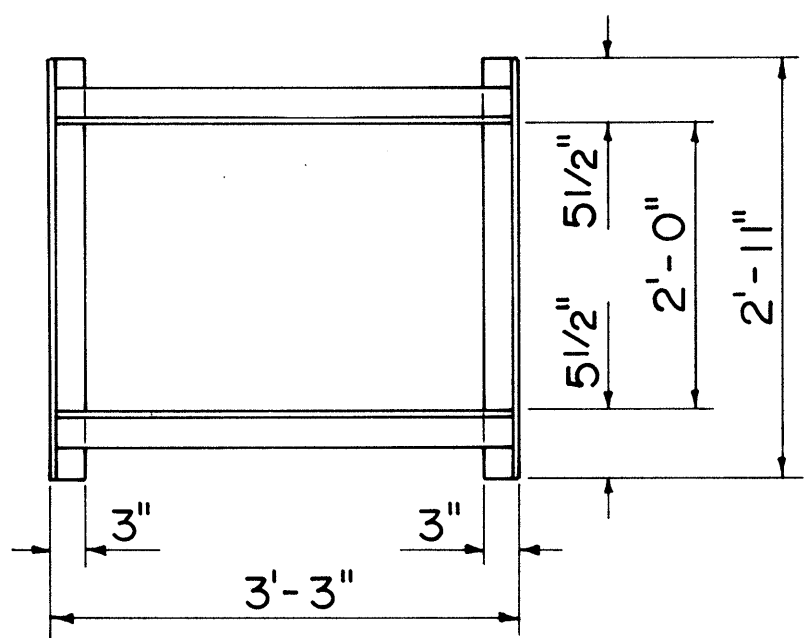
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HIS-105-061-102	1982	23	51



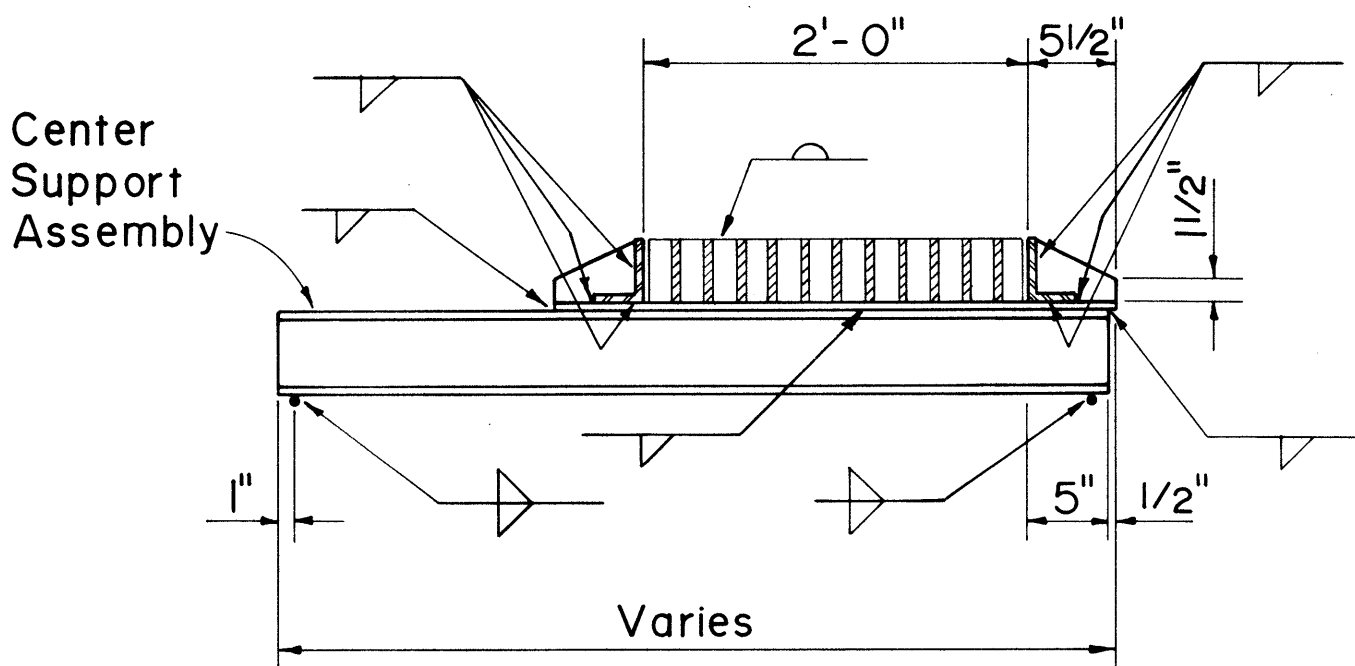
PLAN
(Two or More Grates)



LONGITUDINAL SECTION
(Thru Frame & Grate)

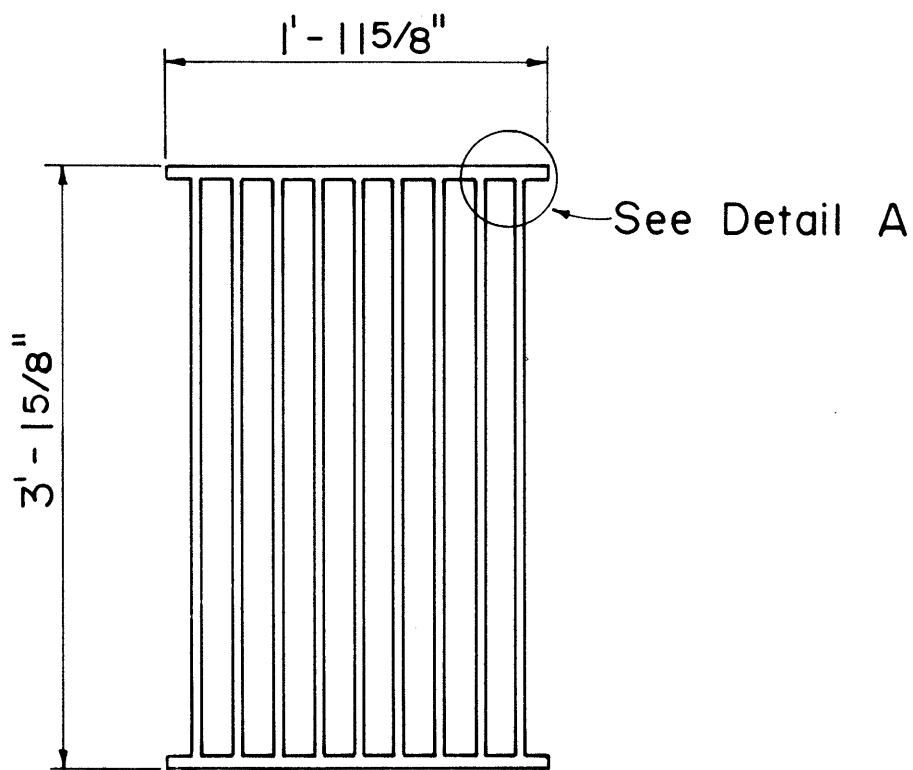


PLAN
(Single Grate)

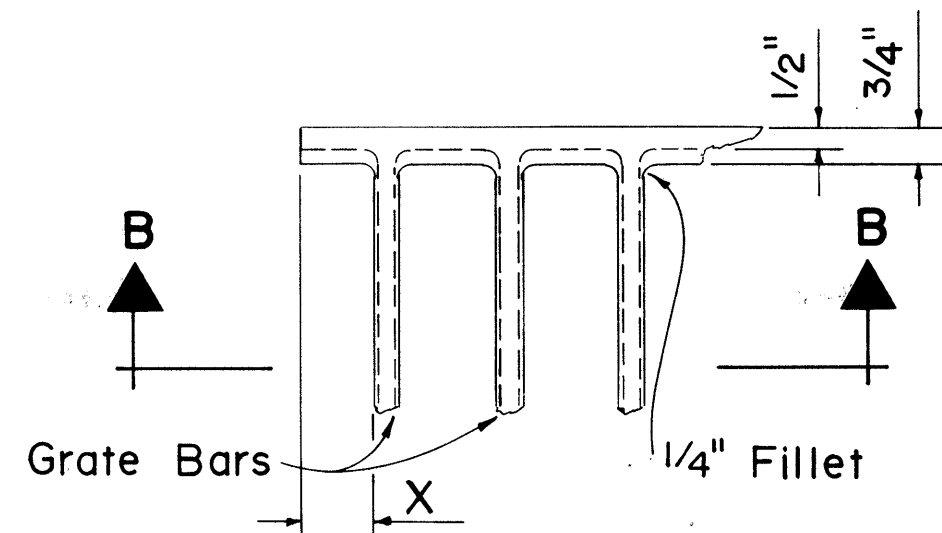


CROSS SECTION
(Thru Frame & Grate)

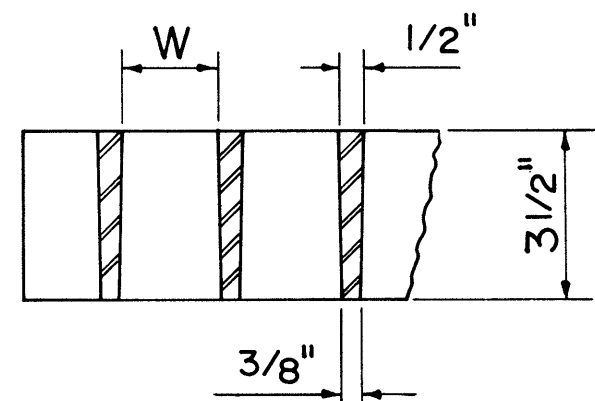
FRAME DETAILS



PLAN

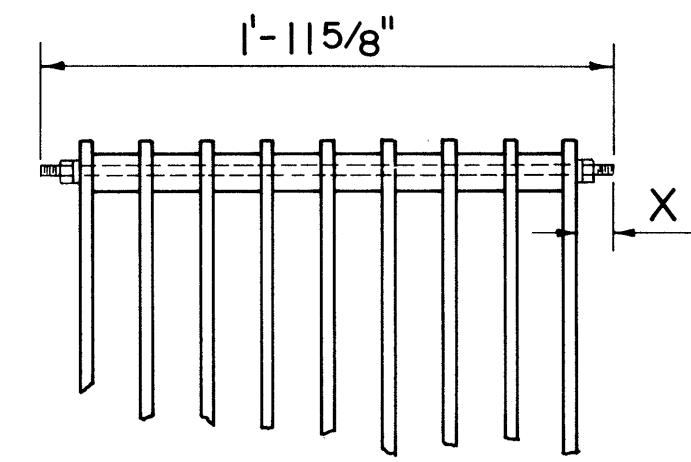


DETAIL A

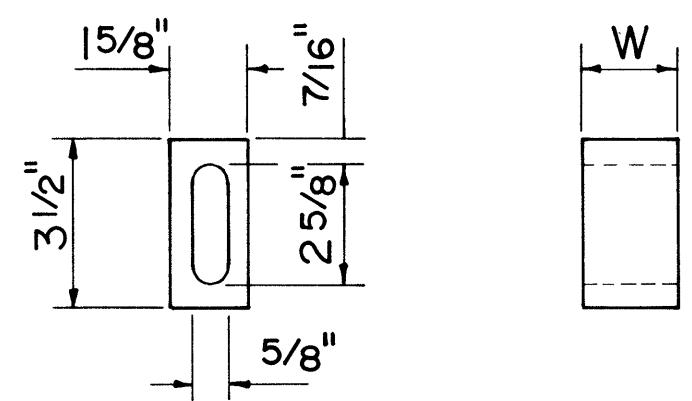


SECTION B-B

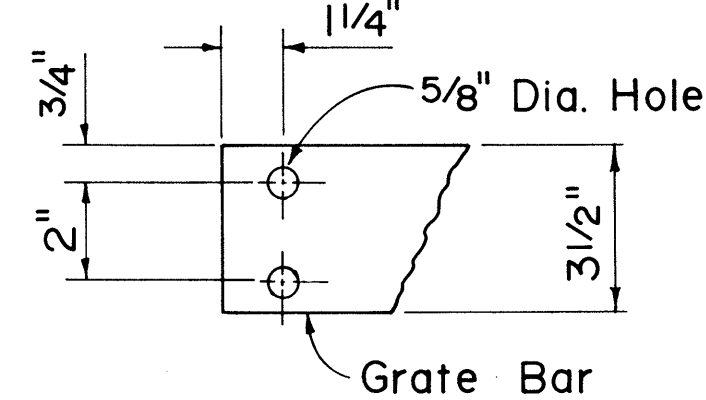
ALTERNATIVE CAST MALLEABLE IRON
OR CAST STEEL GRATE



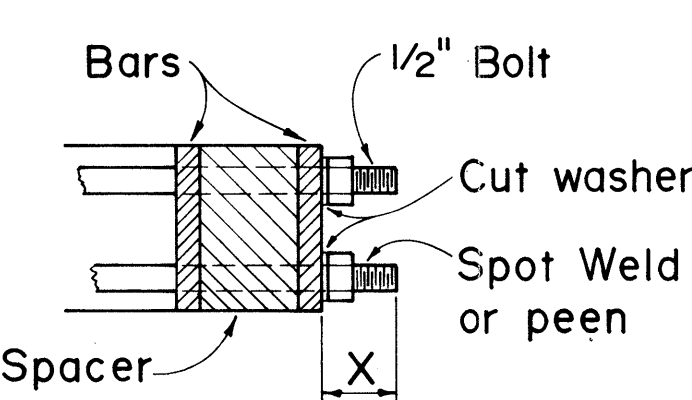
BOLTED END BLOCK



BAR SPACER

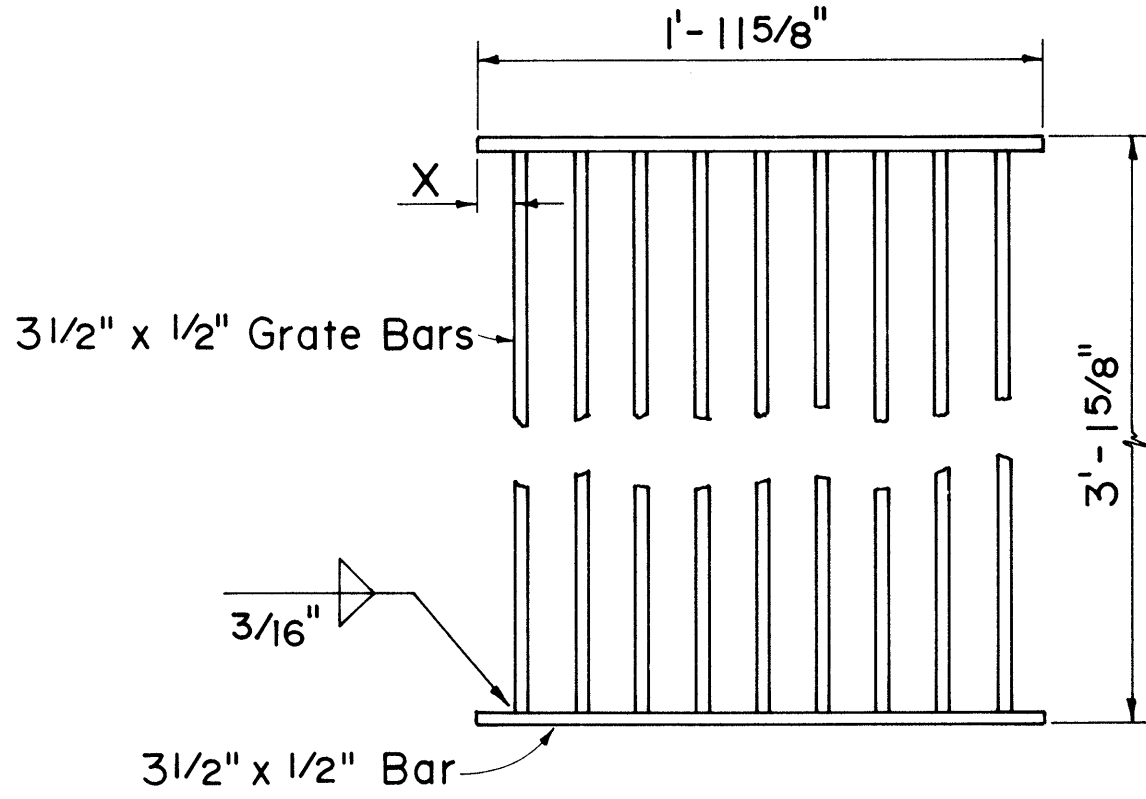


END OF BAR



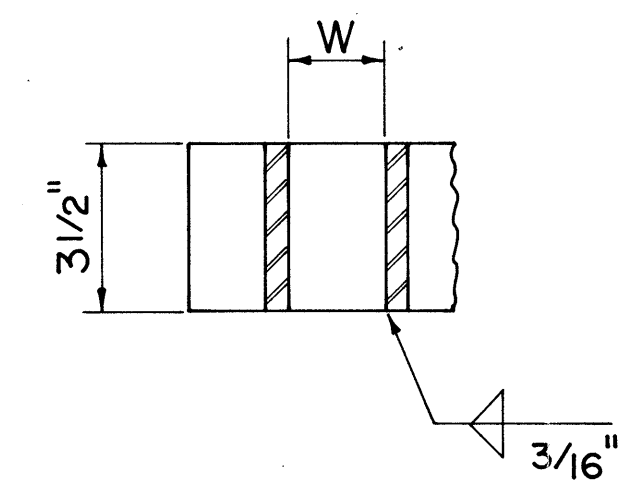
BOLTING DETAIL

ALTERNATIVE BOLTED GRATE



PLAN

ALTERNATIVE WELDED GRATE



SECTION

GRATE BAR SPACING TABLE			
TYPE	NO. BARS	CLEAR BAR SPACING-W	X
A-9	9	2"	1 9/16"
A-12	12	1 3/8"	1 1/4"

NO.	REVISION	APPROVED BY	DATE
1.	Supersedes Sht. DH 7 approved 12-17-69	H.T.	6/22/79

APPROVAL RECOMMENDED:
J. J. J.
 HYDRAULIC DESIGN ENGINEER 6-19-79
 DATE

APPROVED:
Herbert Zalewski
 ASSISTANT CHIEF, ENGINEERING 6-22-79
 DATE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
STANDARD DETAILS TYPE A-9 AND A-12 FRAMES AND GRATES
Not To Scale Date: Mar. 1981
SHEET NO. 5H OF 5H SHEETS DH 7