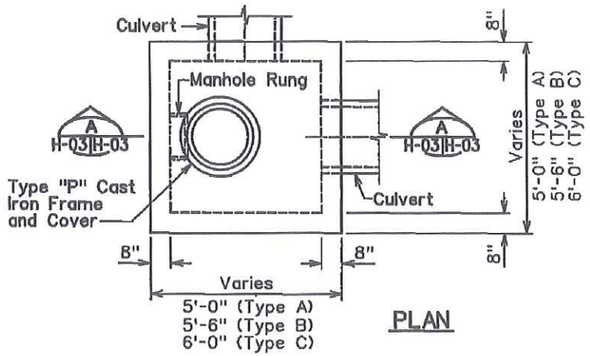
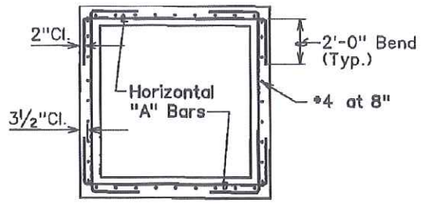
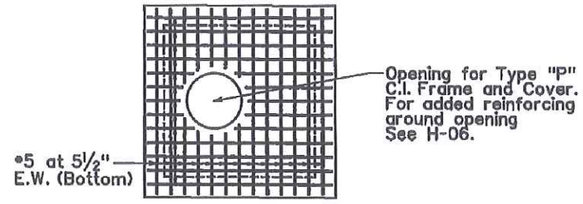
STATE	PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI A-AD 6(6)	G21	G28



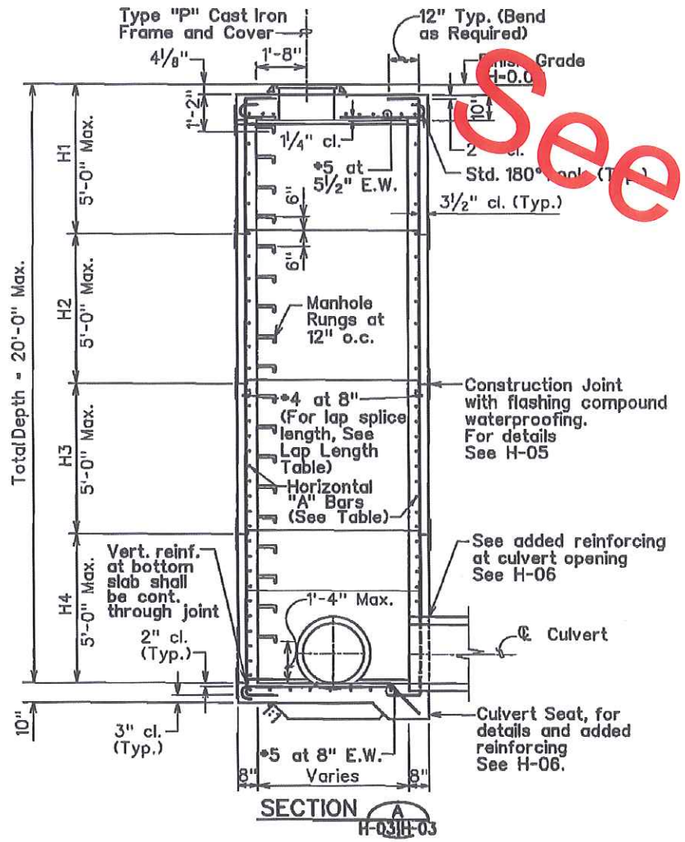
PLAN



PLAN VIEW OF WALL SECTION



PLAN VIEW OF TOP SLAB REINFORCING



HORIZONTAL "A" BARS FOR STORM DRAIN MANHOLE	
SDMH DEPTH	HORIZONTAL "A" BARS
H1 0'-0" to 5'-0"	#5 at 10"
H2 5'-1" to 10'-0"	#5 at 8"
H3 10'-1" to 15'-0"	#5 at 6"
H4 15'-1" to 20'-0"	#5 at 6"

VERT. BAR LAP SPLICE	
BAR	VERT. LAP LENGTH
#4	1'-8"
#5	2'-2"

General Notes:
1. General Criteria
   a. At-rest Horizontal Pressure = 80 pcf (2 to 1 sloping backfill, above groundwater)
   b. At-rest Vertical Pressure = 40 pcf (2 to 1 sloping backfill, above groundwater)
   c. Allowable Bearing Capacity = 1,700 psf+8 x (overburden pressure); where overburden pressure equals 100 pcf x H
   d. Live Load Surcharge (Equivalent Height of Soil)
      For H = 0' to 5'; height = 4'-0"
      For H = 5' to 20'; height = 2'-0"
2. Exposure Factor (For Crack Control) = 1.0 for Class 1 exposure

DATE	REVISION	APP'D.
X	X	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLAN H-03
TYPE A, B AND C
STORM DRAIN MANHOLE

STANDARD PLAN H-03 05/31/07

WENDY G. McLAIN
LICENSED PROFESSIONAL ENGINEER
NO. 11328-C
HAWAII USA

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4/30/2012 EXPIRATION DATE OF THE LICENSE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

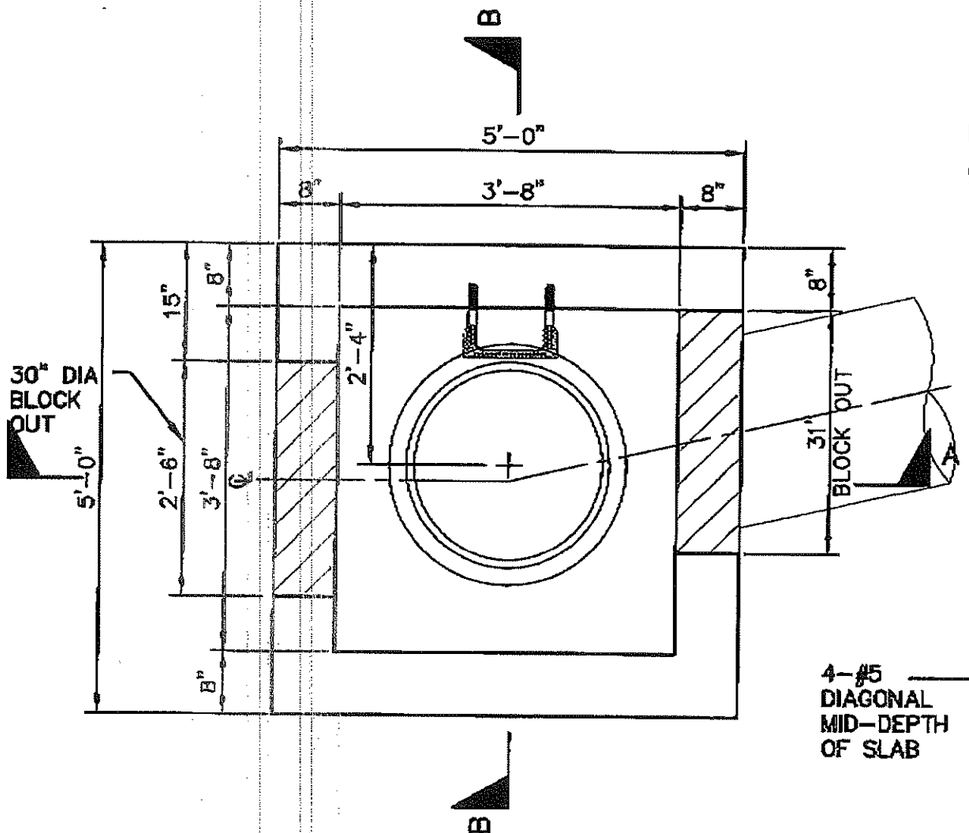
U.S. CUSTOMARY SPECIAL

(HDOT STD H-03) TYPE A, B AND C STORM DRAIN MANHOLE

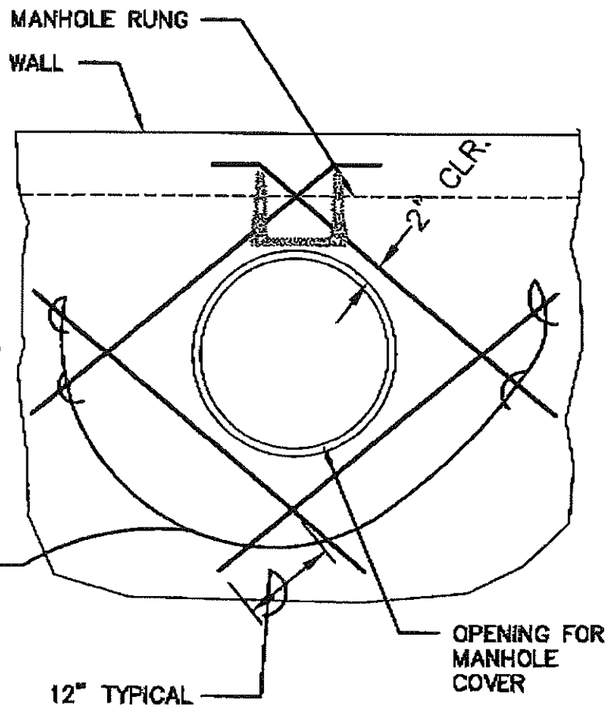
NO SCALE

SPECIAL 604-A

5/19/2011 2:23:35 PM m:\2006\2006_069.004 dfhd saddle road_west side\g drawings\contract documents\civil\HI SR 200(00)_sp604-A.dgn



PLAN



NOTES:

1 CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5,000 P.S.I. AT 28 DAYS.

2 ALL REINFORCING STEEL SHALL BE NEW STOCK DEFORMED BARS CONFORMING TO ASTM A706W GRADE 60 UNLESS OTHERWISE NOTED. PLACEMENT OF REBARS SHALL BE IN ACCORDANCE WITH ACI-315 & ACI-318. ALL BARS SHALL BE CLEAN OF RUST, GREASE OR OTHER MATERIALS LIKELY TO IMPAIR BOND. ALL BENDS SHALL BE MADE COLD.

3 ALL REINFORCING BARS SHALL BE ACCURATELY & SECURELY PLACED. ALL REINFORCING SHALL BE LAPPED 40 BAR DIAMETERS OR EIGHTEEN (18) INCHES, WHICHEVER IS GREATER AT SPLICES. ALL SPLICES SHALL BE MADE AWAY FROM POINT OF MAXIMUM STRESS. 4. CONCRETE COVER TO REINFORCING STEEL SHALL BE 1-1/2" MINIMUM.

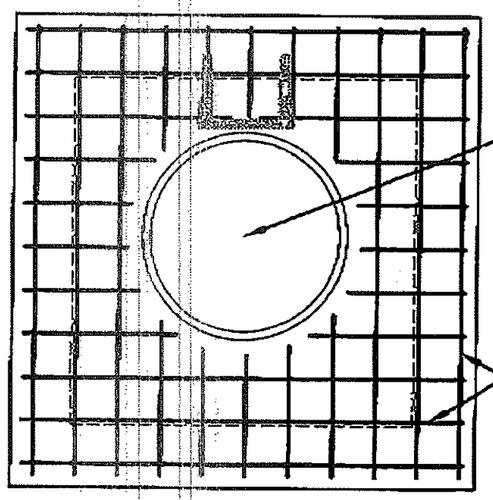
5 NON-TRAFFIC APPLICATION ONLY

6 BLOCKOUTS DIAMETER SHALL BE PIPE SPECIFIED PIPE DIAMETER PLUS 3 INCHES

WEIGHT

CONCRETE C.Y. (FOOTING)
C.Y. (WALL)

REBAR LBS



ADDED REINFORCING FOR MANHOLE OPENING

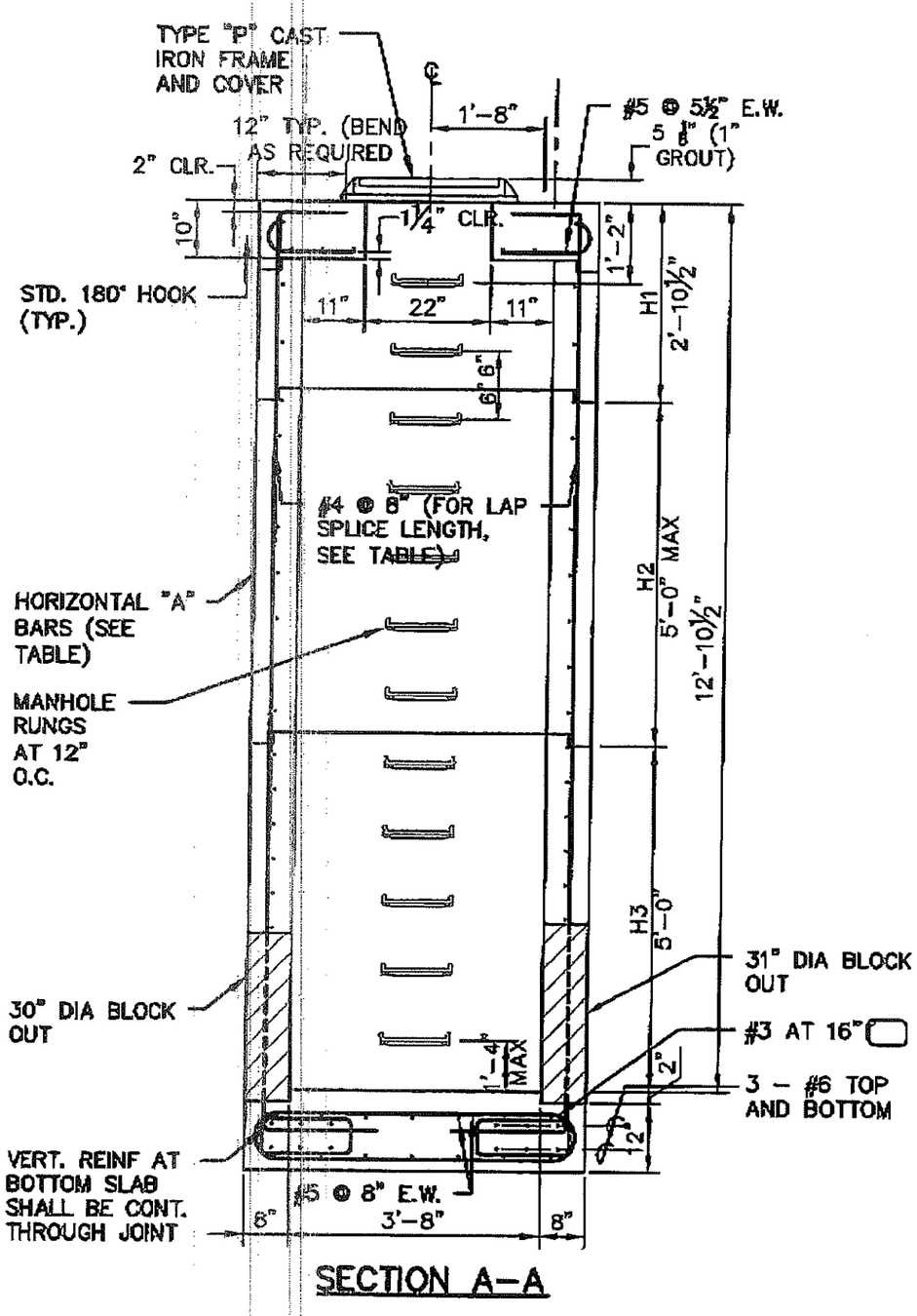
HAWAII PRECAST, INC.
P.O. BOX 160 KAILUA-KONA, HI 96745
Ph: (808) 326-7730 Fax: (808) 329-8026

CONTRACTOR: KIRKLAND CONSTRUCTION

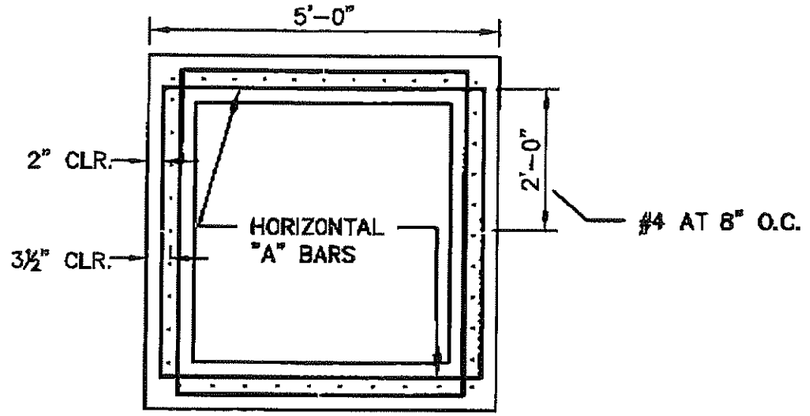
JOB: SADDLE ROAD – WEST SIDE

TYPE A STORM DRAIN MANHOLE AT STATION 783+85

SCALE: ½"-1'-0"	DRAWN BY: RT	CHECKED BY: TT
DATE: April 1, 2012	SHEET: 1 OF 3	



SECTION A-A



PLAN VIEW OF WALL SECTION

HORIZONTAL "A" BARS FOR STORM DRAIN MANHOLE	
SDMH DEPTH	HORIZONTAL "A" BARS
H1 0'-0" TO 5'-0"	#5 AT 10"
H2 5'-1" TO 10'-0"	#5 AT 8"
H3 10'-1" TO 15'-0"	#5 AT 6"
H4 15'-1" TO 20'-0"	#5 AT 6"

VERT. BAR LAP SPLICE	
BAR	VERT. LAP LENGTH
#4	1'-8"
#5	2'-2"

HAWAII PRECAST, INC.
P.O. BOX 160 KAILUA-KONA, HI 96745
Ph: (808) 326-7730 Fax: (808) 329-9026

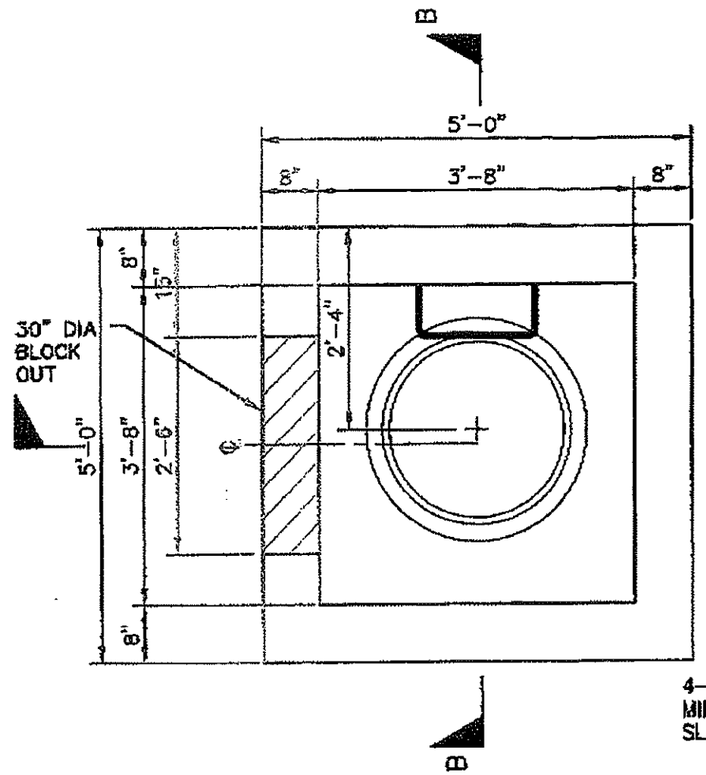
CONTRACTOR: KIRKLAND CONSTRUCTION

JOB: SADDLE ROAD - WEST SIDE

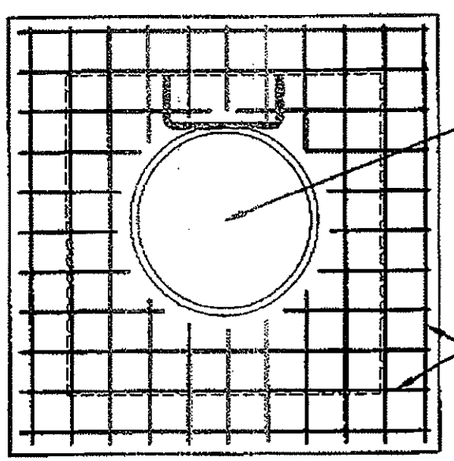
TYPE A STORM DRAIN MANHOLE AT STATION 783+85

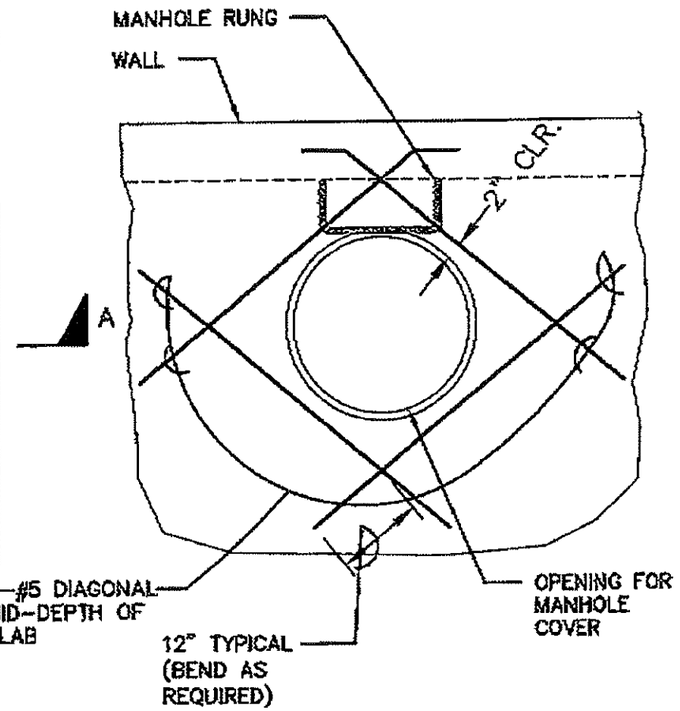
SCALE: ⅜"=1'-0" | DRAWN BY: RT | CHECKED BY: TT

DATE: April 1, 2012 | SHEET: 2 OF 3



PLAN





ADDED REINFORCING
FOR MANHOLE OPENING

NOTES:

1 CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5,000 P.S.I. AT 28 DAYS.

2 ALL REINFORCING STEEL SHALL BE NEW STOCK DEFORMED BARS CONFORMING TO ASTM A706W GRADE 60 UNLESS OTHERWISE NOTED. PLACEMENT OF REBARS SHALL BE IN ACCORDANCE WITH ACI-315 & ACI-318. ALL BARS SHALL BE CLEAN OF RUST, GREASE OR OTHER MATERIALS LIKELY TO IMPAIR BOND. ALL BENDS SHALL BE MADE COLD.

3 ALL REINFORCING BARS SHALL BE ACCURATELY & SECURELY PLACED. ALL REINFORCING SHALL BE LAPPED 40 BAR DIAMETERS OR EIGHTEEN (18) INCHES, WHICHEVER IS GREATER AT SPLICES. ALL SPLICES SHALL BE MADE AWAY FROM POINT OF MAXIMUM STRESS. 4. CONCRETE COVER TO REINFORCING STEEL SHALL BE 1-1/2" MINIMUM.

5 NON-TRAFFIC APPLICATION ONLY

6 BLOCKOUTS DIAMETER SHALL BE PIPE SPECIFIED PIPE DIAMETER PLUS 3 INCHES

WEIGHT

CONCRETE C.Y. (FOOTING)
C.Y. (WALL)

REBAR LBS

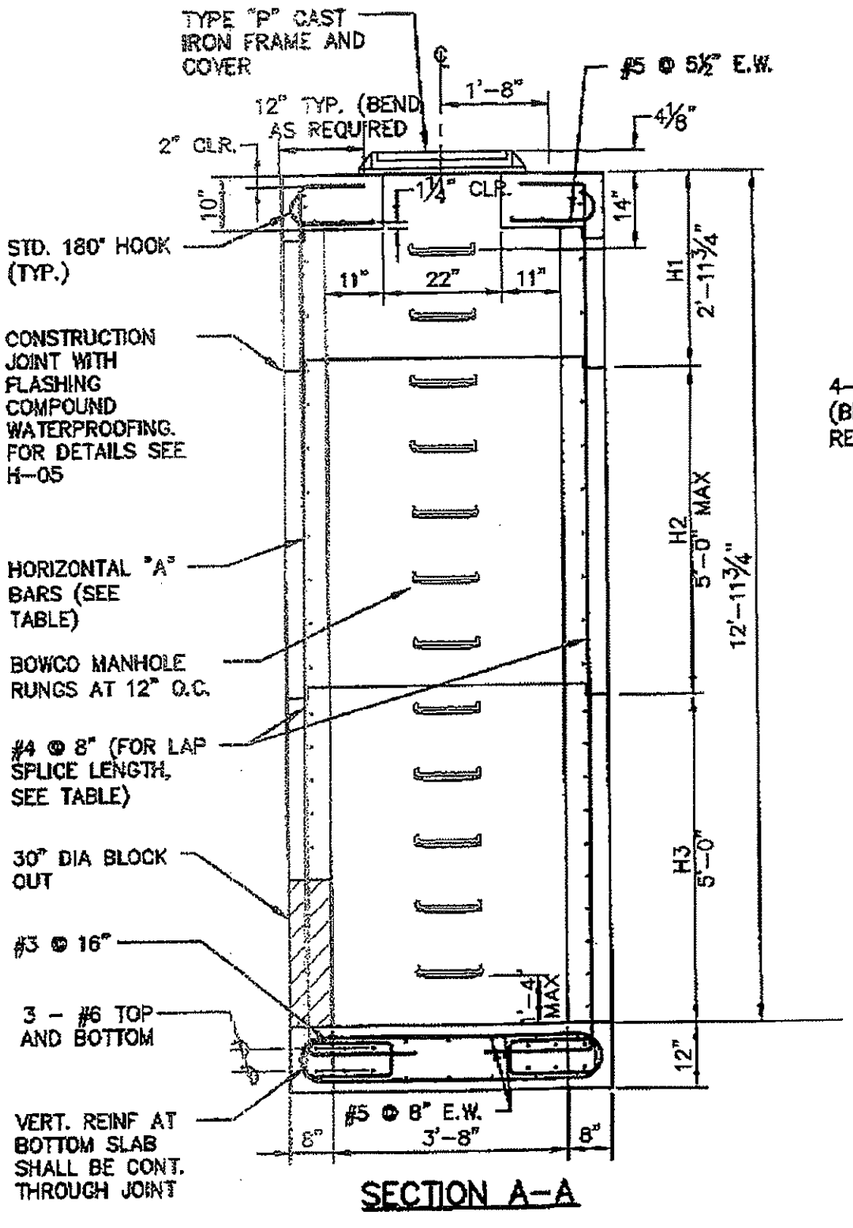
HAWAII PRECAST, INC.
P.O. BOX 160 KAILUA-KONA, HI 96745
Ph: (808) 326-7730 Fax: (808) 329-9028

CONTRACTOR: _____

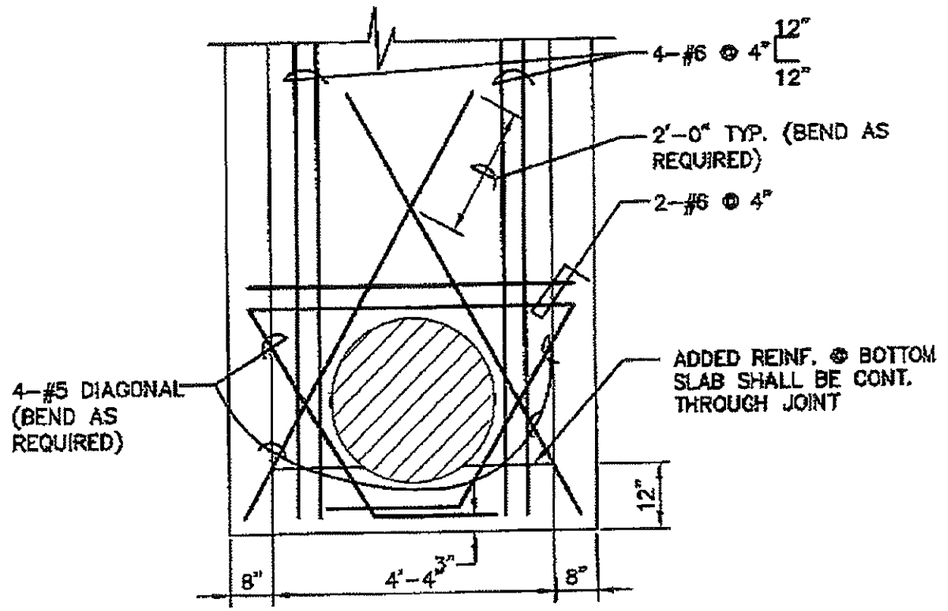
JOB: SADDLE ROAD – WEST SIDE

TYPE A STORM DRAIN
MANHOLE AT STATION 778+61

SCALE: ½"-1'-0"	DRAWN BY: RT	CHECKED BY: TT
DATE: April 1, 2012	SHEET: 1 OF 3	



SECTION A-A



ADDED REINFORCING FOR CULVERT OPENINGS AT BOTTOM SLAB

HAWAII PRECAST, INC.
P.O. BOX 160 KAILUA-KONA, HI 96745
Ph: (808) 326-7730 Fax: (808) 329-9026

CONTRACTOR: _____

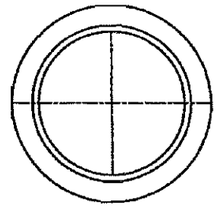
JOB: SADDLE ROAD - WEST SIDE

TYPE A STORM DRAIN MANHOLE AT STATION 778+61

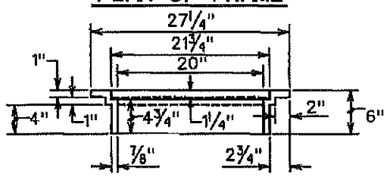
SCALE: ⅜"-1'-0"	DRAWN BY: RT	CHECKED BY: TT
DATE: April 1, 2012	SHEET: 2 OF 3	

C:\HPC-INC\CAD_FILES\SHOP_dwgs\DRAINAGE\SDOT\SDMH\Type A SDMH.dwg, 5/15/2012 9:21:00 AM

STATE	PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI A-AD 6(6)	G22	G28

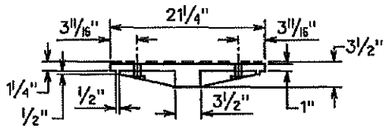


PLAN OF FRAME

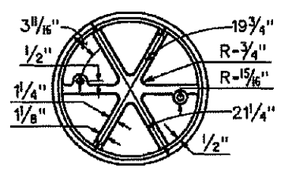


SECTION OF FRAME

TOP VIEW OF COVER

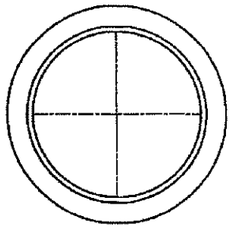


SECTION



BOTTOM VIEW OF COVER

TYPE "A" CAST IRON FRAME AND COVER



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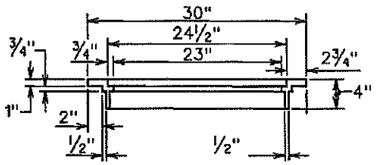
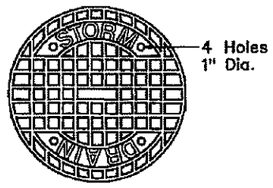
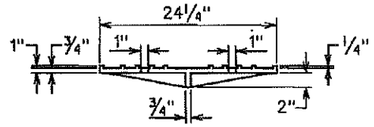


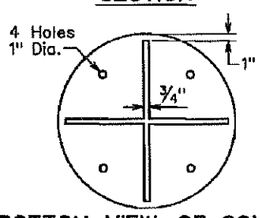
SECTION OF FRAME



TOP VIEW OF COVER

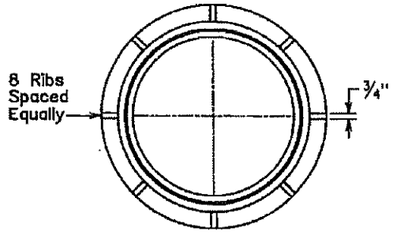


SECTION

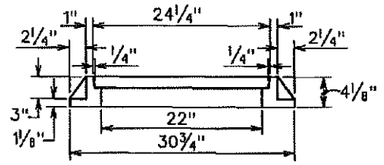


BOTTOM VIEW OF COVER

TYPE "B" CAST IRON FRAME AND COVER

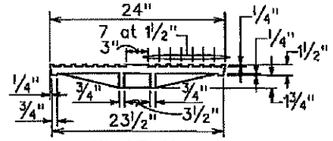


PLAN OF FRAME

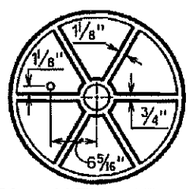


SECTION OF FRAME

TOP VIEW OF COVER

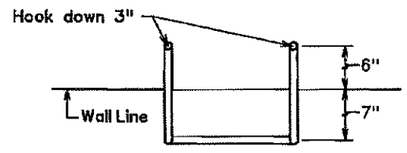


SECTION

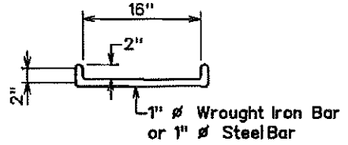


BOTTOM VIEW OF COVER

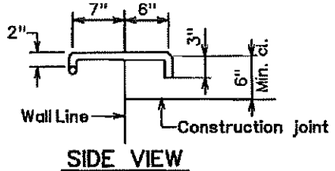
TYPE "P" CAST IRON FRAME AND COVER



PLAN



FRONT VIEW



SIDE VIEW

MANHOLE RUNG

DATE	REVISION	APP'D.
X	X	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLAN H-07

CATCH BASIN AND MANHOLE CASTINGS

STANDARD PLAN H-07 05/31/07

WENDY G. McLAIN
LICENSED PROFESSIONAL ENGINEER
NO. 11328-C
HAWAII USA

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4/30/2012 EXPIRATION DATE OF THE LICENSE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY SPECIAL

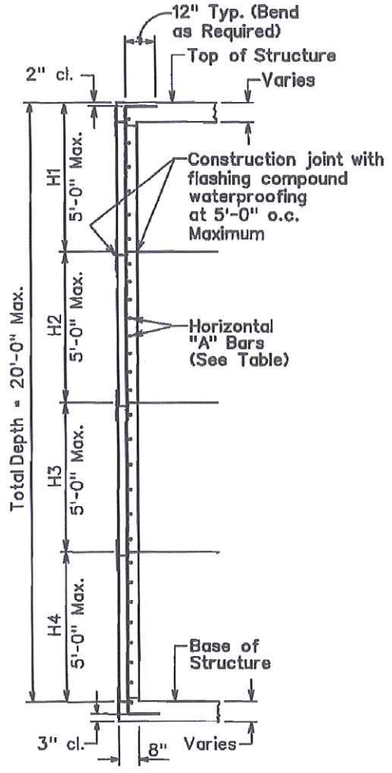
(HDOT STD H-07)
CATCH BASIN AND MANHOLE CASTINGS

NO SCALE

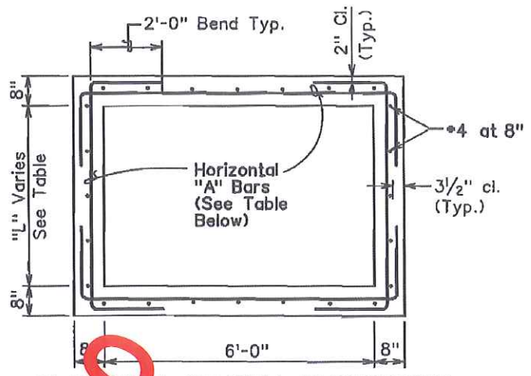
SPECIAL
604-C

5/18/2011 2:23:38 PM m:\2006\2006_069.004 offhd saddle road_west side\g drawings\contract documents\civil\HI SR 200(00)_sp604-C.dgn

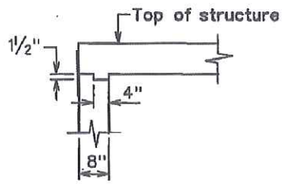
STATE	PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI A-AD 6(6)	G23	G28



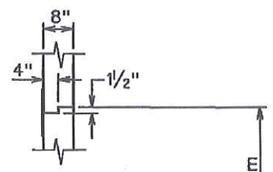
ELEVATION VIEW OF WALL SECTION



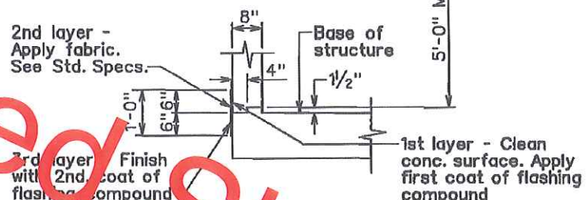
PLAN VIEW OF WALL REINFORCING



JOINT AT TOP



INTERMEDIATE JOINT



JOINT AT BASE

Note:
Waterproof all construction joints.

CONSTRUCTION JOINT AND WATERPROOFING DETAILS

General Notes:

1. General Criteria
   a. At-rest Horizontal Pressure = 80 pcf (2 to 1 sloping backfill above groundwater)
   b. At-rest Vertical Pressure = 40 pcf (2 to 1 sloping backfill above groundwater)
   c. Allowable Bearing Capacity = 1,700 psf+8 x (overburden pressure); where overburden pressure equals 100 pcf x H
   d. Live Load Surcharge (Equivalent Height of Soil)
      For H = 0' to 5; heq = 4'-0"
      For H = 5' to 20; heq = 3'-0"
2. Exposure Factor (For Crack Control) = 1.0 for Class 1 exposure

HORIZONTAL "A" BARS FOR CATCH BASINS

DEPTH	"L" MAX.				
	4'-0"	6'-0"	7'-4"	8'-4"	9'-4"
H1 0" to 5'-0"	#5 at 10"	#5 at 10"	#5 at 8"	#5 at 6"	#5 at 5"
H2 5'-1" to 10'-0"	#5 at 8"	#5 at 8"	#5 at 6"	N.A.	N.A.
H3 10'-1" to 15'-0"	#5 at 6"	#5 at 6"	N.A.	N.A.	N.A.
H4 15'-1" to 20'-0"	#5 at 6"	N.A.	N.A.	N.A.	N.A.

Note: N.A. = Not Applicable

DATE	REVISION	APP'D.
X	X	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLAN H-05
TYPICAL REINFORCING DETAILS FOR DRAINAGE STRUCTURES

STANDARD PLAN H-05 05/31/07

WENDY G. McLAIN
LICENSED PROFESSIONAL ENGINEER
NO. 11328-C
HAWAII USA

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4/30/2012 EXPIRATION DATE OF THE LICENSE

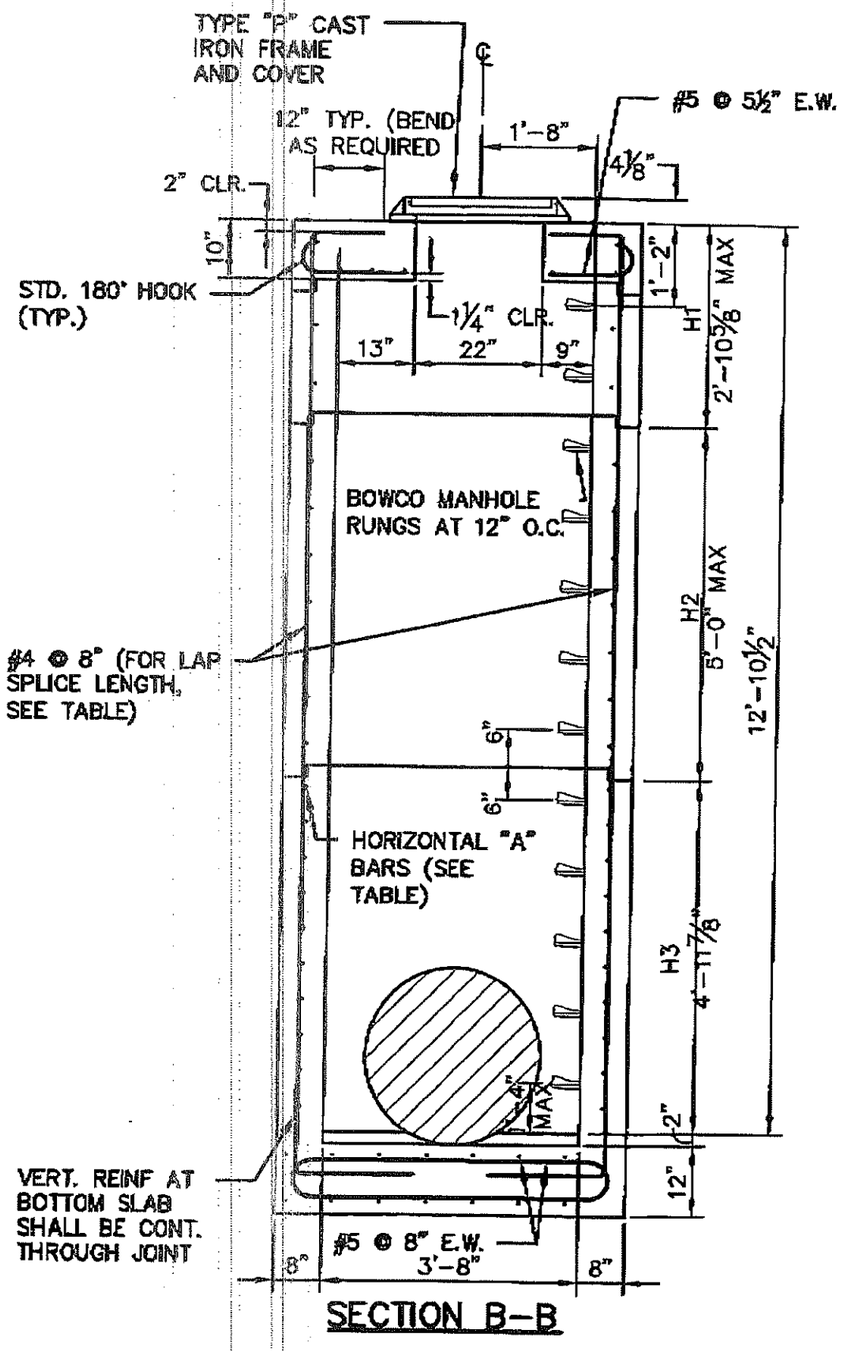
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY SPECIAL

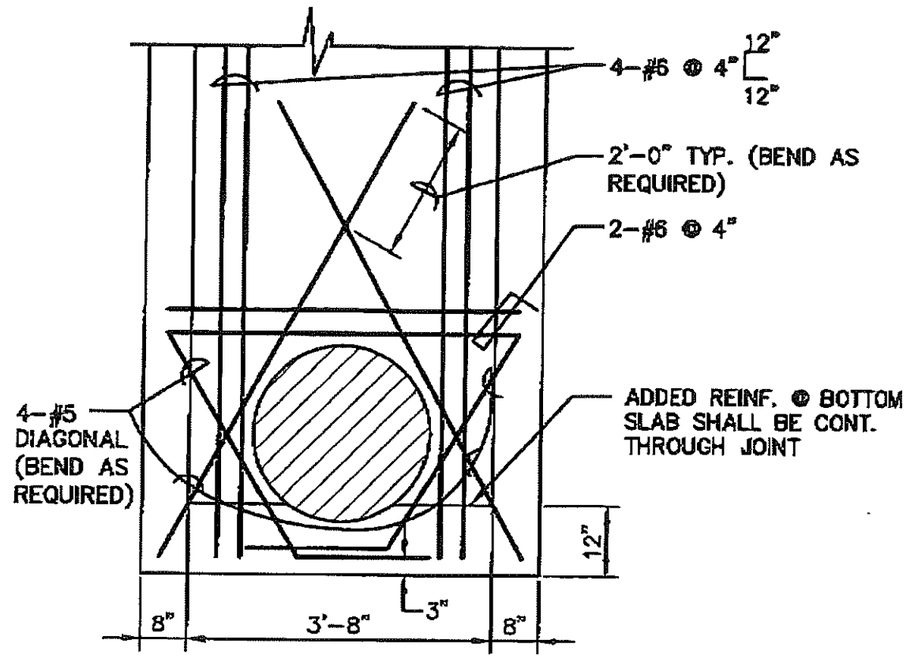
(HDOT STD H-05) TYP. REINFORCING DETAILS FOR DRAINAGE STRUCTURES

NO SCALE

SPECIAL 604-I



SECTION B-B



ADDED REINFORCING FOR CULVERT OPENINGS AT BOTTOM SLAB

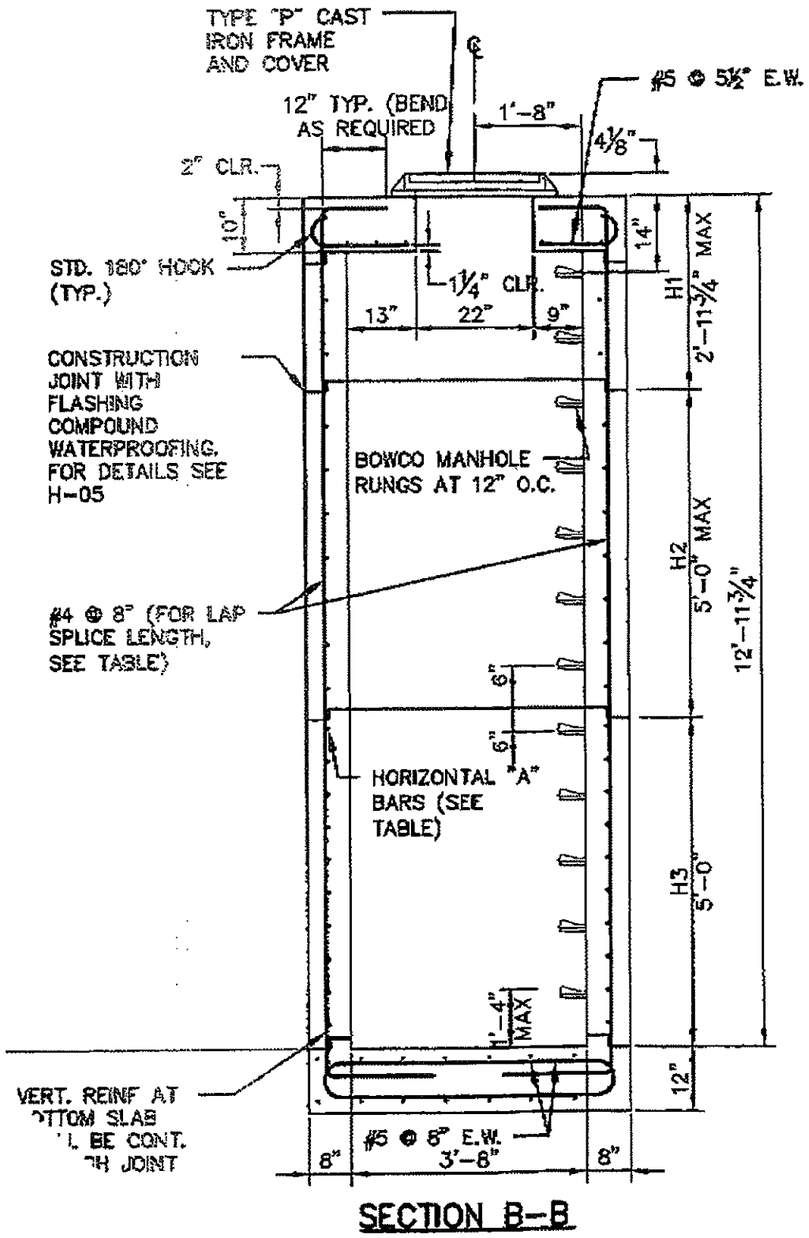
HAWAII PRECAST, INC.
P.O. BOX 160 KAILUA-KONA, HI 96745
Ph: (808) 326-7730 Fax: (808) 329-8026

CONTRACTOR: KIRKLAND CONSTRUCTION

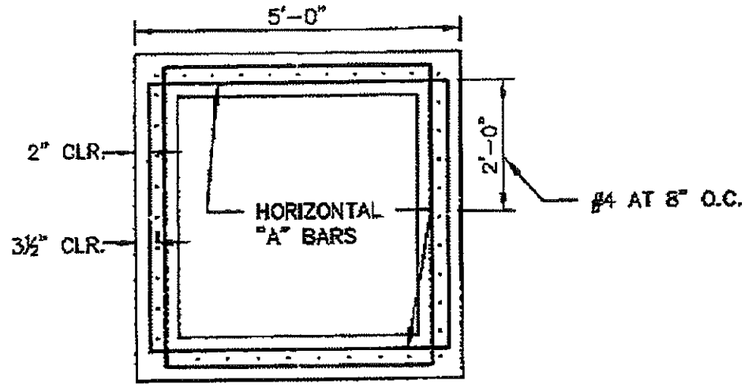
JOB: SADDLE ROAD – WEST SIDE

TYPE A STORM DRAIN MANHOLE AT STATION 783+85

SCALE: ⅜"=1'-0"	DRAWN BY: RT	CHECKED BY: TT
DATE: April 1, 2012	SHEET: 3 OF 3	



SECTION B-B



PLAN VIEW OF WALL SECTION

HORIZONTAL "A" BARS FOR STORM DRAIN MANHOLE	
SDMH DEPTH	HORIZONTAL "A" BARS
H1 0'-0" TO 5'-0"	#5 AT 10"
H2 5'-1" TO 10'-0"	#5 AT 8"
H3 10'-1" TO 15'-0"	#5 AT 6"
H4 15'-1" TO 20'-0"	#5 AT 6"

VERT. BAR LAP SPLICE	
BAR	VERT. LAP LENGTH
#4	1'-8"
#5	2'-2"

HAWAII PRECAST, INC.
P.O. BOX 160 KAILUA-KONA, HI 96745
PH: (808) 326-7730 FAX: (808) 329-9026

CONTRACTOR: _____

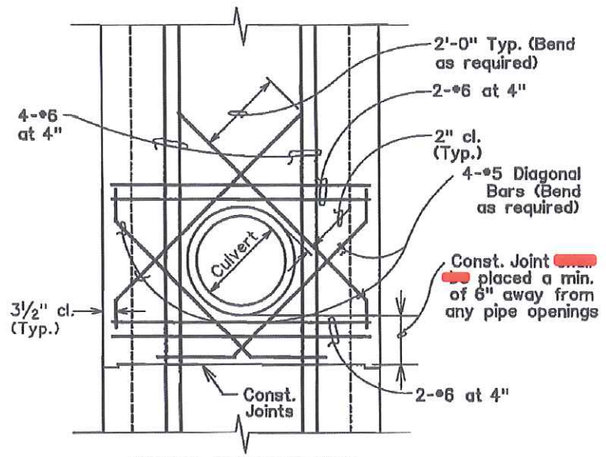
JOB: SADDLE ROAD – WEST SIDE

TYPE A STORM DRAIN MANHOLE AT STATION 778+61

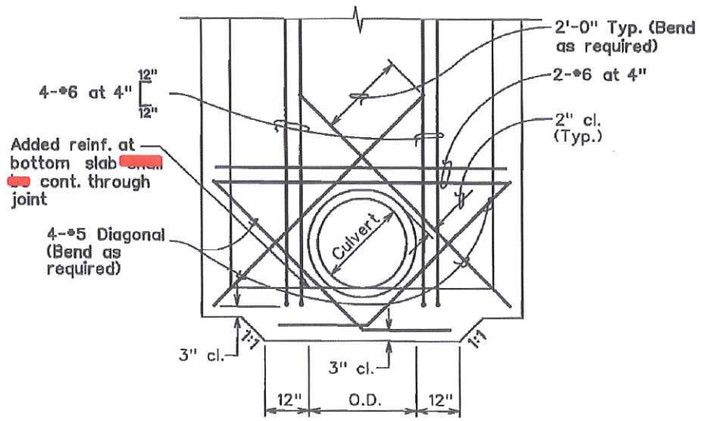
SCALE: ⅜"-1'-0" | DRAWN BY: RT | CHECKED BY: TT

DATE: April 1, 2012 | SHEET: 3 OF 3

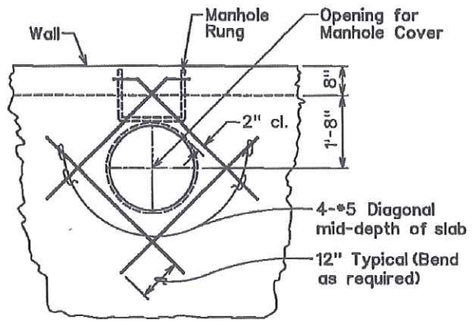
STATE	PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI A-AD 6(6)	G24	G28



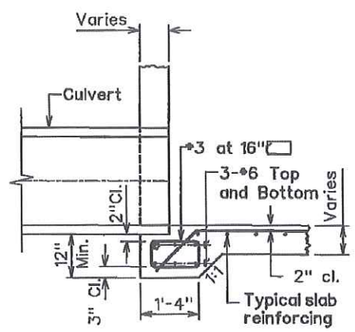
ADDED REINFORCING FOR CULVERT OPENINGS (ABOVE BOTTOM SLAB)



ADDED REINFORCING FOR CULVERT OPENINGS AT BOTTOM SLAB



ADDED REINFORCING FOR MANHOLE OPENING



DETAIL OF CULVERT SEAT

DATE	REVISION	APP'D.
X	X	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLAN H-06

TYPICAL REINFORCING DETAILS FOR DRAINAGE STRUCTURES

STANDARD PLAN H-06 05/31/07

WENDY G. McLAIN
LICENSED PROFESSIONAL ENGINEER
NO. 11328-C
HAWAII USA

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE

4/30/2012
EXPIRATION DATE OF THE LICENSE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY SPECIAL

(HDOT STD H-06) TYP. REINFORCING DETAILS FOR DRAINAGE STRUCTURES

NO SCALE

SPECIAL 604-J

5/18/2011 2:23:46 PM m:\2006\2006_069.004 cfhd saddle road_west side\g drawings\contract documents\civil\HI SR 200(00)_sp604-1.dgn