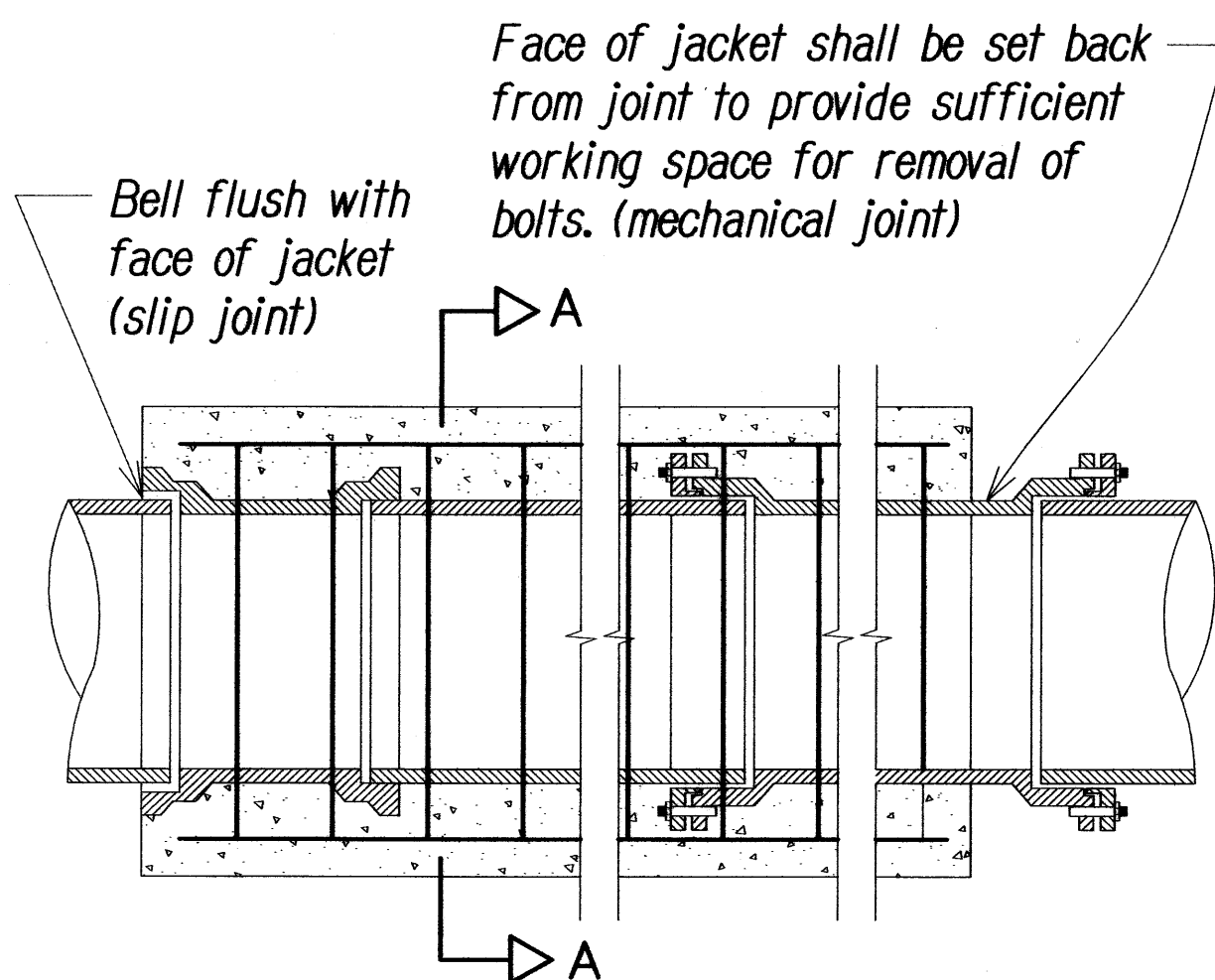
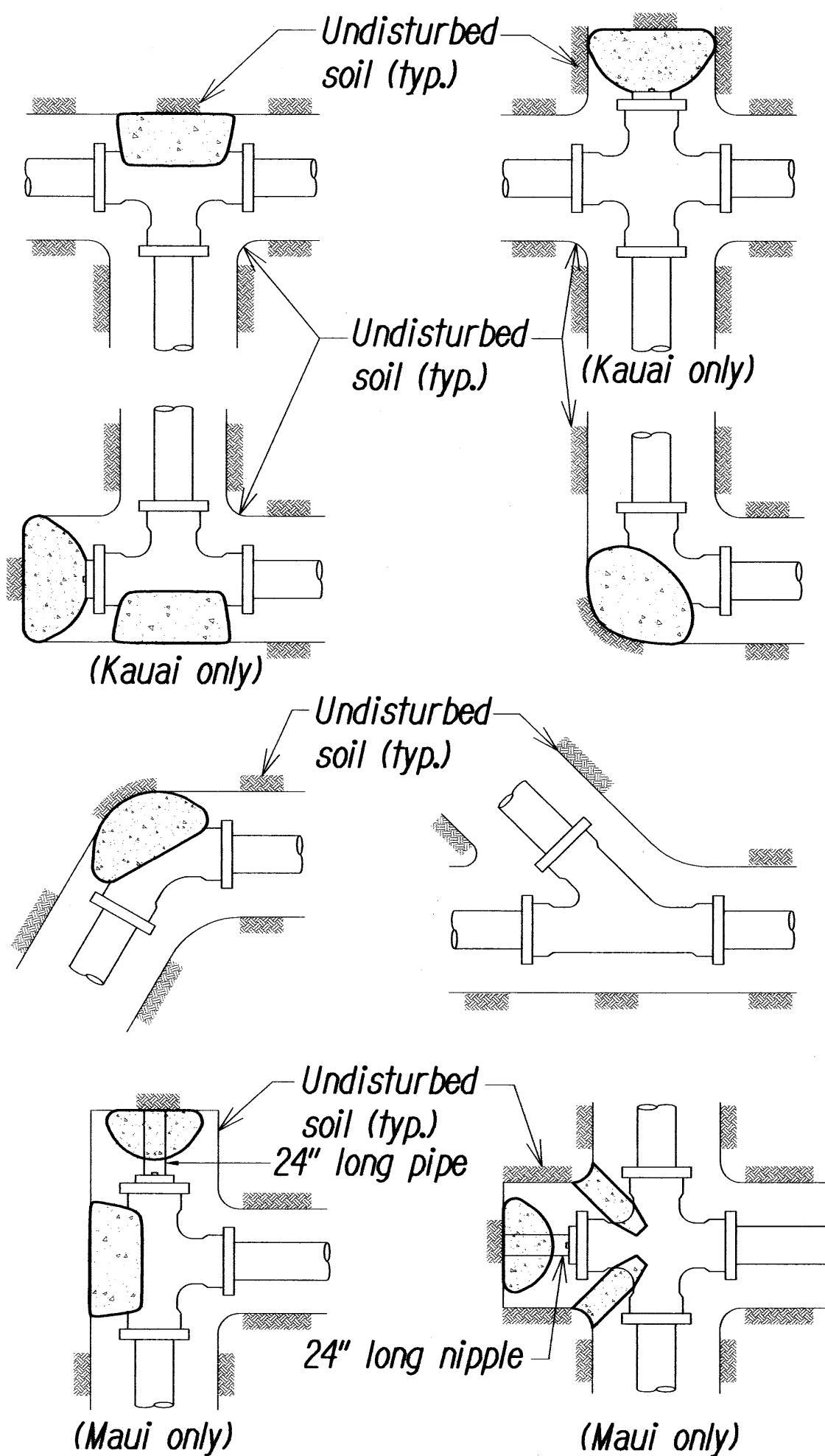


NOTES:

- Wherever construction joints are required, DWS approved 6" rubber or neoprene waterstops or concrete bonding agent approved by the manager shall be installed.
- No concrete jacketing of PVC pipe or existing AC pipe will be allowed.
- Concrete shall be DWS 2500 except under reservoir floor slab where it shall be DWS 3500.
- Reinforcing design applicable for straight pipe jacketed segment. For siphon or offset submit shop drawings.
- Precast jacketed waterline segment shall be designed and stamped by a licensed structural engineer and approved by the Manager.




REINFORCED CONCRETE JACKET
TYPICAL DETAIL
NOT TO SCALE



NOTE:

Refer to details B3, B4, & B5 for the size of reaction blocks. Reaction blocks shall bear against undisturbed soil. Concrete shall be DWS 2500.

HORIZONTAL REACTION BLOCK
NOT TO SCALE

Minimum bearing areas (SQ. FT.) for horizontal thrust blocks																								
Pipe Size	Bend	Pressure 250 PSI							Pressure 200 PSI							Pressure 150 PSI								
		Type of soil condition							Type of soil condition							Type of soil condition								
		A	B	C	D	E	F	G	A	B	C	D	E	F	G	A	B	C	D	E	F	G		
4"	TEES, CAPS	6.5	3.5	2.0	1.5	1.0	1.0	1.0																
	1/4	9.0	4.5	3.0	2.5	1.5	1.0	1.0																
	1/8	5.0	2.5	1.5	1.5	1.0	1.0	1.0																
	1/16	2.5	1.5	1.0	1.0	1.0	1.0	1.0																
	1/32	1.5	1.0	1.0	1.0	1.0	1.0	1.0																
6"	TEES, CAPS	14.0	7.0	5.0	3.5	2.5	2.0	1.5																
	1/4	20.0	10.0	7.0	5.0	3.5	2.5	2.0																
	1/8	11.0	5.5	3.5	3.0	2.0	1.5	1.0																
	1/16	5.5	3.0	2.0	1.5	1.0	1.0	1.0																
	1/32	3.0	1.5	1.0	1.0	1.0	1.0	1.0																
8"	TEES, CAPS	25.0	12.5	8.5	6.5	4.0	3.0	2.5																
	1/4	35.0	18.0	12.0	9.0	6.0	4.5	3.5																
	1/8	20.0	9.5	6.5	5.0	3.0	2.5	2.0																
	1/16	10.0	5.0	3.5	2.5	1.5	1.0	1.0																
	1/32	5.0	2.5	1.5	1.5	1.0	1.0	1.0																
12"	TEES, CAPS	56.5	28.5	19.0	14.0	9.5	7.0	5.5		45.5	22.5	15.0	11.5	7.5	5.5	4.5	34.0	17.0	11.5	8.5	5.5	4.5	3.5	
	1/4	80.0	40.0	26.5	20.0	13.5	10.0	8.0		64.0	32.0	21.5	16.0	11.0	8.0	6.5	48.0	24.0	16.0	12.0	8.0	6.0	5.0	
	1/8	43.5	21.5	14.5	11.0	7.0	5.5	4.5		35.0	17.5	11.5	9.0	6.0	4.5	3.5	26.0	13.0	8.5	6.5	4.5	3.5	2.5	
	1/16	22.0	11.0	7.5	5.5	3.5	3.0	2.5		17.5	9.0	6.0	4.5	3.0	2.5	2.0	13.0	6.5	4.5	3.5	2.0	1.5	1.5	
	1/32	11.5	5.5	4.0	3.0	2.0	1.5	1.0		9.0	4.5	3.0	2.5	1.5	1.0	1.0	7.0	3.5	2.5	2.0	1.0	1.0	1.0	

TYPE OF SOIL CONDITION

A. Soft clay; fine loose sand	500
B. Sand & Clay; mixed or in layers; fine confined sand	1000
C. Hard dry clay	1500
D. Coarse sand	2000
E. Gravel	3000
F. Soft rock	4000
G. Hardpan	5000

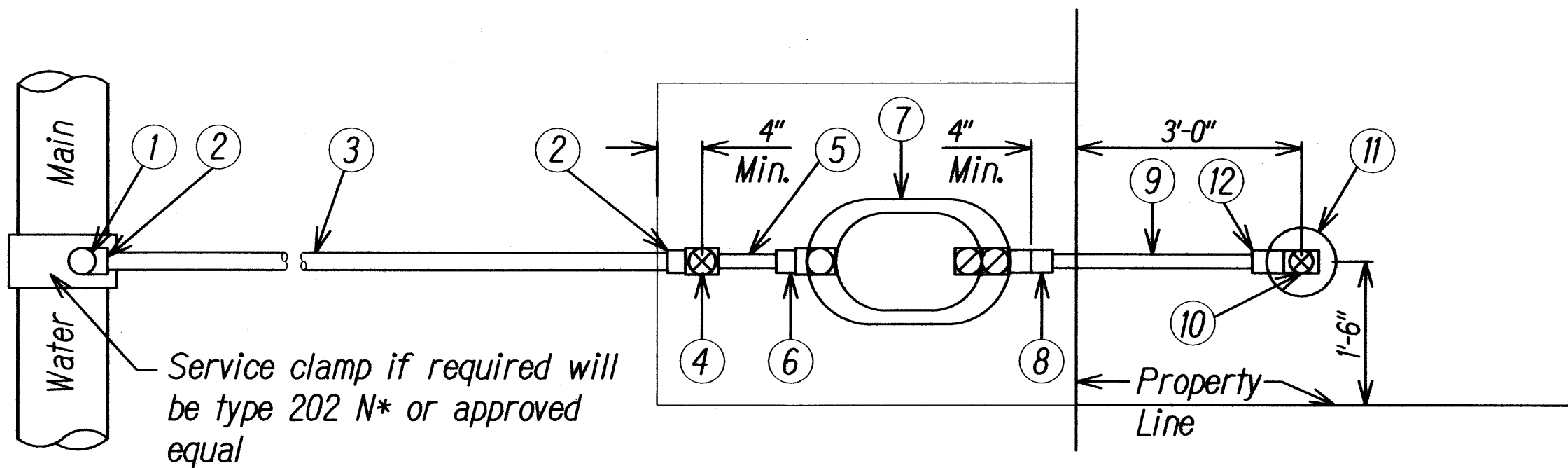
NOTE:

- Actual field conditions and soil type shall be verified in the field. The schedule, dimensions and details as shown are provided as a guide only. The Contractor or Engineer who prepared the plans shall submit the final design and details to the Manager for review and approval after field verification and prior to installation.

HORIZONTAL THRUST BLOCK
NOT TO SCALE

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION WATER LINE DETAILS KAMEHAMEHA V HIGHWAY Kawela Bridge Replacement Federal Aid Project No. BR-0450(8) Scale: AS NOTED Date: Oct. 2010
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-0450(8)	2011	52	93



- NOTES:**
- All fittings and materials shall be as listed by brand name or approved equal. For condition other than standard condition shown, the Engineer shall submit modified detail for approval.
 - Where there is no sidewalk, the 4" concrete pad shall measure 42" front-to-back and 36" along the property line, with top elevation 2" above the graded shoulder.
 - Replace plastic valve box with cast iron frame & cover if subject to traffic.

[F] Ford meter box manufacturing Co's. No.

TYPE	METER SIZE	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
		CORP. STOP	COPPER ADAPTER	COPPER SEERVICE TUBING	BRONZE BALL VALVE	BRASS NIPPLE	BRASS FITTING	CAST IRON METER BOX	COPPER ADAPTER	COPPER SERVICE TUBING	BRONZE BALL VALVE	PLASTIC VALVE BOX	DIELECTRIC COUPLING
A	5/8" x 3/4"	1" Awwa thread x Female I.P.T. FB 1600-A [F]	1" Male I.P.T. x Copper	1"	1" Female I.P.T. B 11-444 [F]	1" x 4"	N/A	1" Female I.P.T. inlet 3/4" Female I.P.T. outlet LYL B 111-343-TP (Meter shutoff and dual check valve included) [F]	3/4" Male I.P.T. x Copper	3/4"	3/4" Female I.P.T. B 11-333 HB-34S [F]	10" Ametek 10-181-014 W/Green Cover 10-181-015	3/4" Brass W/Close nipple
TYPE	METER SIZE	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
		CORP. STOP	COPPER ADAPTER	COPPER SEERVICE TUBING	BRONZE BALL VALVE	BRASS NIPPLE	BRASS FITTING	CAST IRON METER BOX	COPPER ADAPTER	COPPER SERVICE TUBING	BRONZE BALL VALVE	PLASTIC VALVE BOX	DIELECTRIC COUPLING
A	3/4" x 3/4"	1" Awwa thread x Female I.P.T. FB 1600-A [F]	1" Male I.P.T. x Copper	1"	1" Female I.P.T. B 11-444 [F]	1" x 4"	1" x 45° Elbow W/Copper nipple or 45° street elbow	1" Female I.P.T. inlet 3/4" Female I.P.T. outlet LYL B 211-343-TP (Meter shutoff and dual check valve included) [F]	3/4" Male I.P.T. x Copper	3/4"	3/4" Female I.P.T. B 11-333 HB-34S [F]	10" Ametek 10-181-014 W/Green Cover 10-181-015	3/4" Brass W/Close nipple

TYPICAL TYPE A LATERAL INSTALLATION DETAIL
NOT TO SCALE

DEANNA M. R. HAYASHI
LICENSED PROFESSIONAL ENGINEER
No. 11707-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION
Deanna M. R. Hayashi

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER LINE DETAILS
KAMEHAMEHA V HIGHWAY
Kawela Bridge Replacement
Federal Aid Project No. BR-0450(8)
Scale: AS NOTED Date: Oct. 2010
SHEET No. C5.02 OF 93 SHEETS