

REPAIR NOTES:

1. All pipe surfaces in contact with concrete shall have all rust scale and debris removed prior to placement of concrete.

2. Remove all foreign materials trapped at hole locations before placement of concrete.

3. The work shall be finished to a smooth surface acceptable to the Engineer. Within 18 hours after finishing, the surface of the concrete shall be protected by either an approved curing compound. Inverts exposed to sunlight should be protected in such a fashion immediately after the finishing operations have been completed and the surface water has evaporated.

4. Provide sealant approved by the Engineer along edges of concrete.

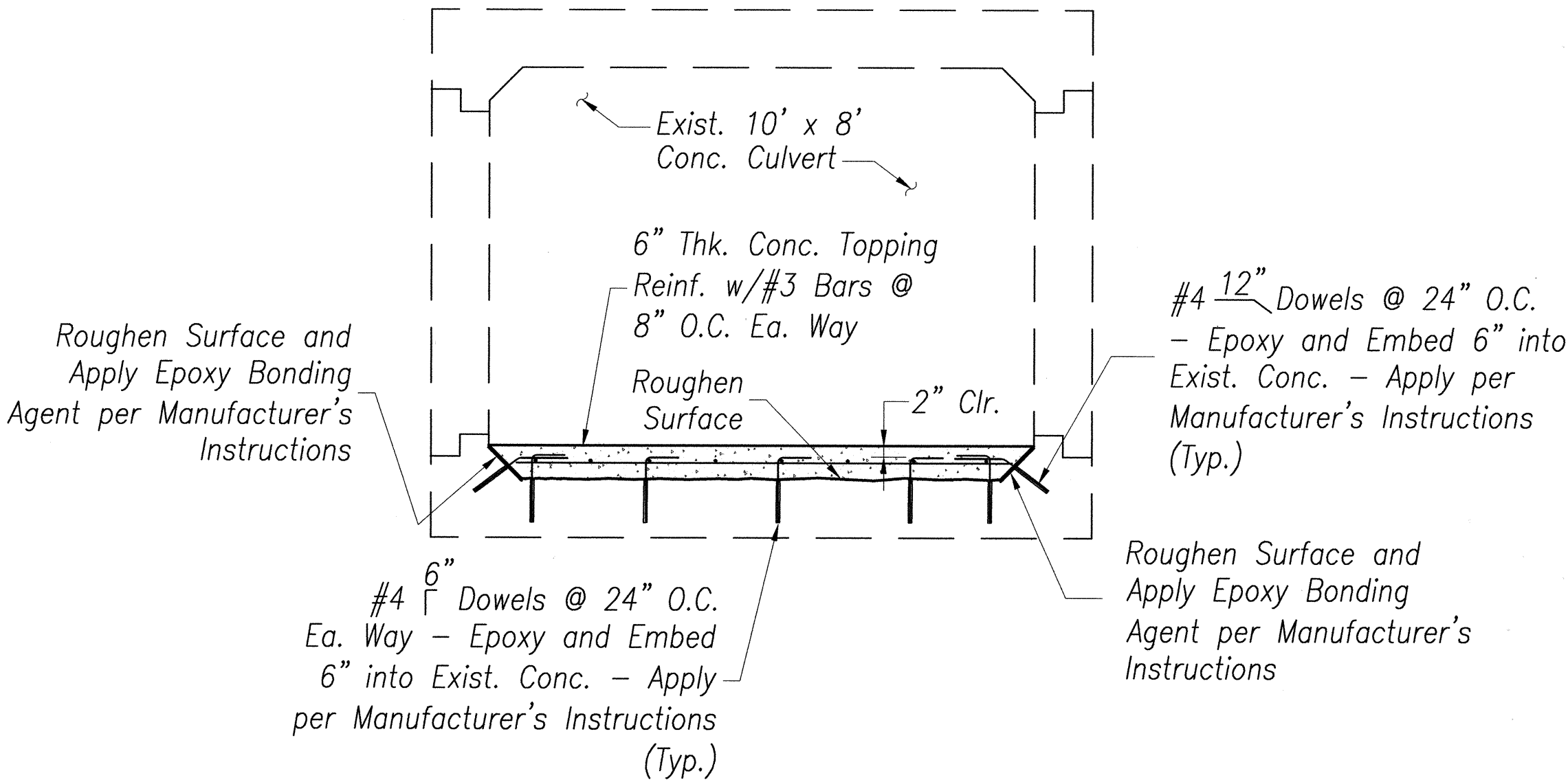
5. Contractor shall ensure adequate bypass drainage until Culvert has been completely repaired and accepted by the Engineer.

6. The concrete placed in the culvert shall be allowed to cure for a minimum of 48 hours before water is allowed to flow on the invert.
7. The culvert surface to be in contact with concrete shall be cleaned to the satisfaction of the Engineer. Badly corroded sections shall be cut and removed, provided the structural integrity of the culvert is not compromised. Epoxy Bonding Compound shall be neatly applied to the clean metal surface prior to placing concrete.

8. The welded wire fabric steel reinforcement shall be placed two inches above the crest of corrugations by tying to stainless steel lag bolts. The lagbolts shall be drilled and tapped to the sectional plate culvert at two feet on centers longitudinally and 1'-0" transversely. If lapping of the welded wire fabric is necessary, it shall be lapped a minimum of six inches.

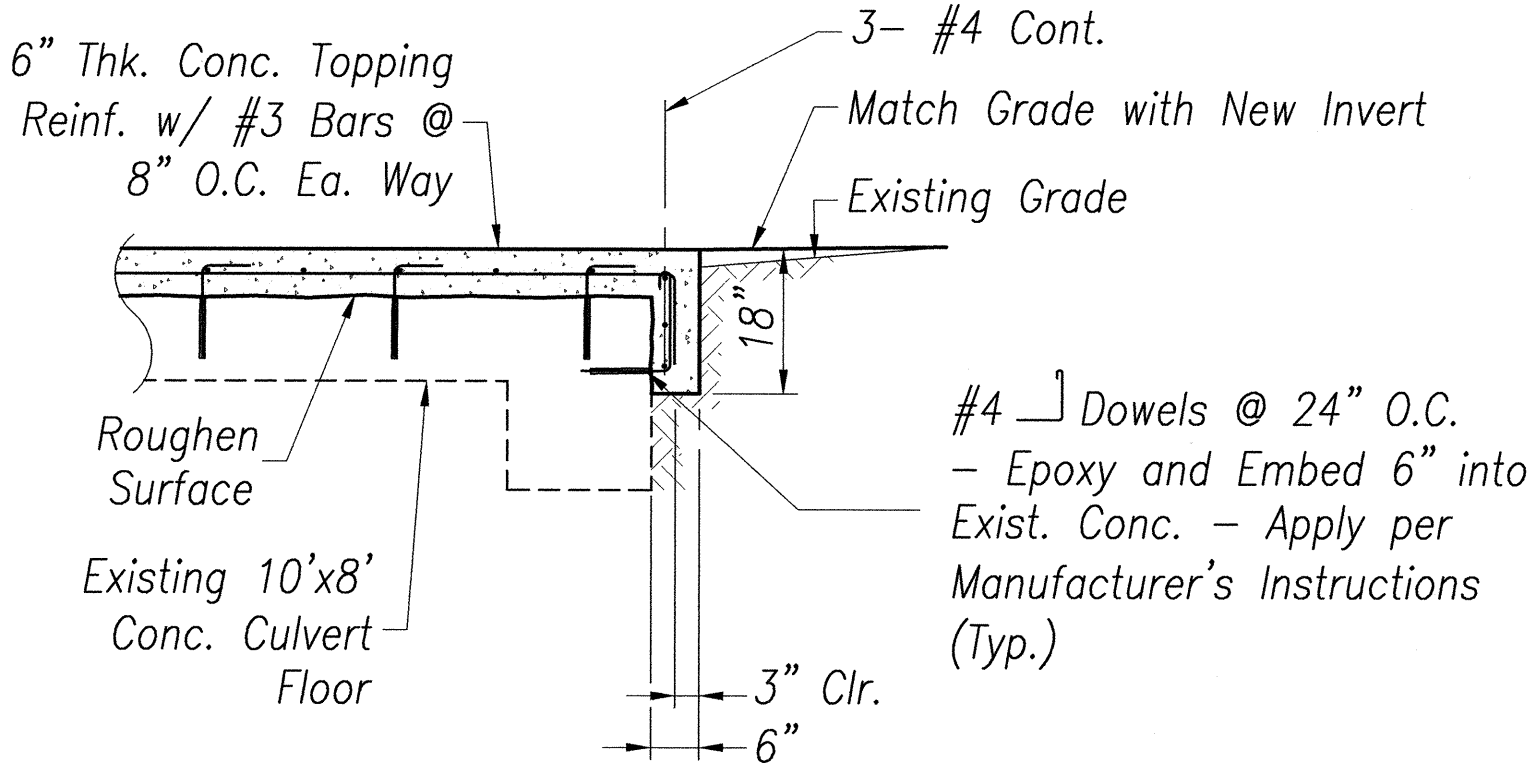
9. The welded wire fabric, lag bolts and epoxy bonding compound shall not be paid for separately but shall be considered incidental to Contract Items.

10. The concrete culvert lining shall be scored 3/4" deep laterally along the crest of corrugations, 20 feet on center. (Control Joint)



TYPICAL CROSS SECTION

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



CONDITION AT CULVERT INLET
(CULVERT OUTLET - SIMILAR)

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

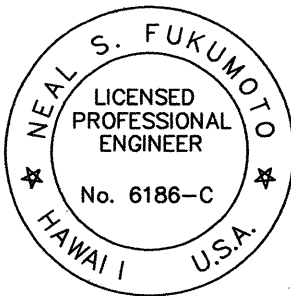
CONCRETE CULVERT REPAIR
SCALE AS NOTED

Culvert Location		No. of Culverts	Size	Lin. Ft.	Angle "A"	Conc. Pad Thickness	Wire Mesh Size	Bolt Size	Headwall Repair	Remarks
Route No.	Mile Post									
240	2.21	1	108"	80.0'	90°	4"	6x6W2.9xW2.9 WWF			See Detail ②
240	2.33	1	84"	72.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	3.44	1	60"	60.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	3.86	1	84"	53.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	4.30	1	12'6" x 7'11"	52.0'	*12'6"	4"	6x6W2.9xW2.9 WWF			See Detail ③
240	4.69	1	144"	144.0'	90°	4"	6x6W2.9xW2.9 WWF			See Detail ②
240	4.76	1	108"	103.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	5.06	1	156"	154.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	5.43	1	48"	72.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	5.78	2	72"	149.5'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	6.05	1	54"	122.9'	90°	4"	6x6W2.9xW2.9 WWF			See Detail ②
240	6.12	1	72"	98.8'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	6.64	1	66"	72.9'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	6.92	1	66"	72.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	7.16	2	84"	264.0'	90°	4"	6x6W2.9xW2.9 WWF			See Detail ②
240	7.25	1	54"	60.5'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	7.37	1	66"	125.1'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	7.49	3	60"	193.7'	90°	4"	6x6W2.9xW2.9 WWF	See Detail ①		See Detail ②
240	7.62	1	84"	120.5'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
240	8.32	1	60"	50.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
19	42.26	1	10' x 8' Conc.	69.0'		6"	#3 Bars @ 8" O.C. Ea. Way	See Detail ①		See Detail ②
19	44.38	1	90"	98.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
19	45.74	1	48"	74.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
19	46.05	1	54"	54.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
19	47.52	1	84"	126.0'	90°	3"	6x6W2.9xW2.9 WWF			See Detail ②
19	49.71	1	11'5" x 7'3"	52.0'	*11'5"	3"	6x6W2.9xW2.9 WWF			See Detail ③

*Width of Culvert Repair is Assumed to be Full Width. Adjustment to be determined by the Engineer in the Field.

EXISTING CULVERT REPAIR SCHEDULE
SCALE AS NOTED

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

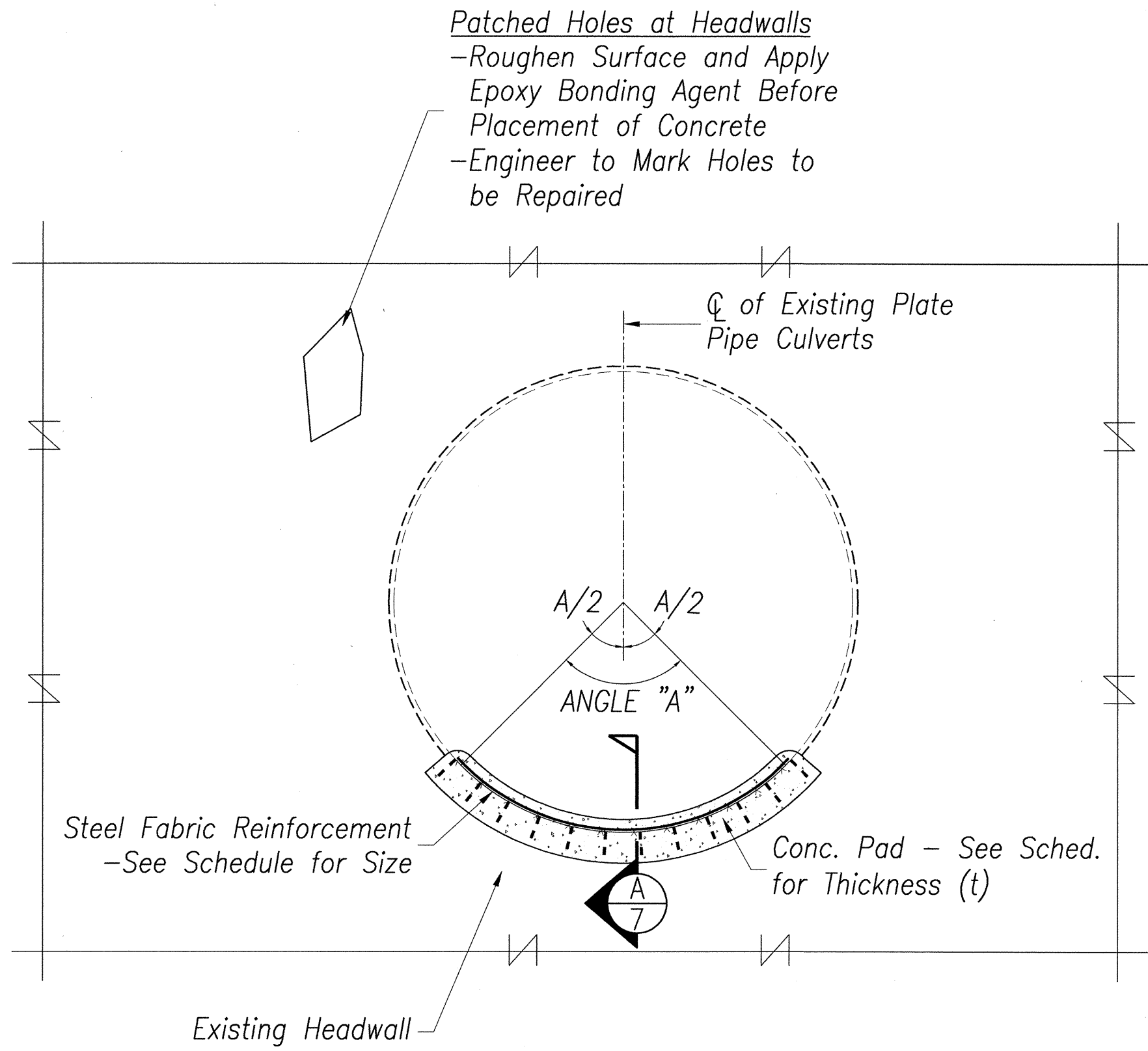


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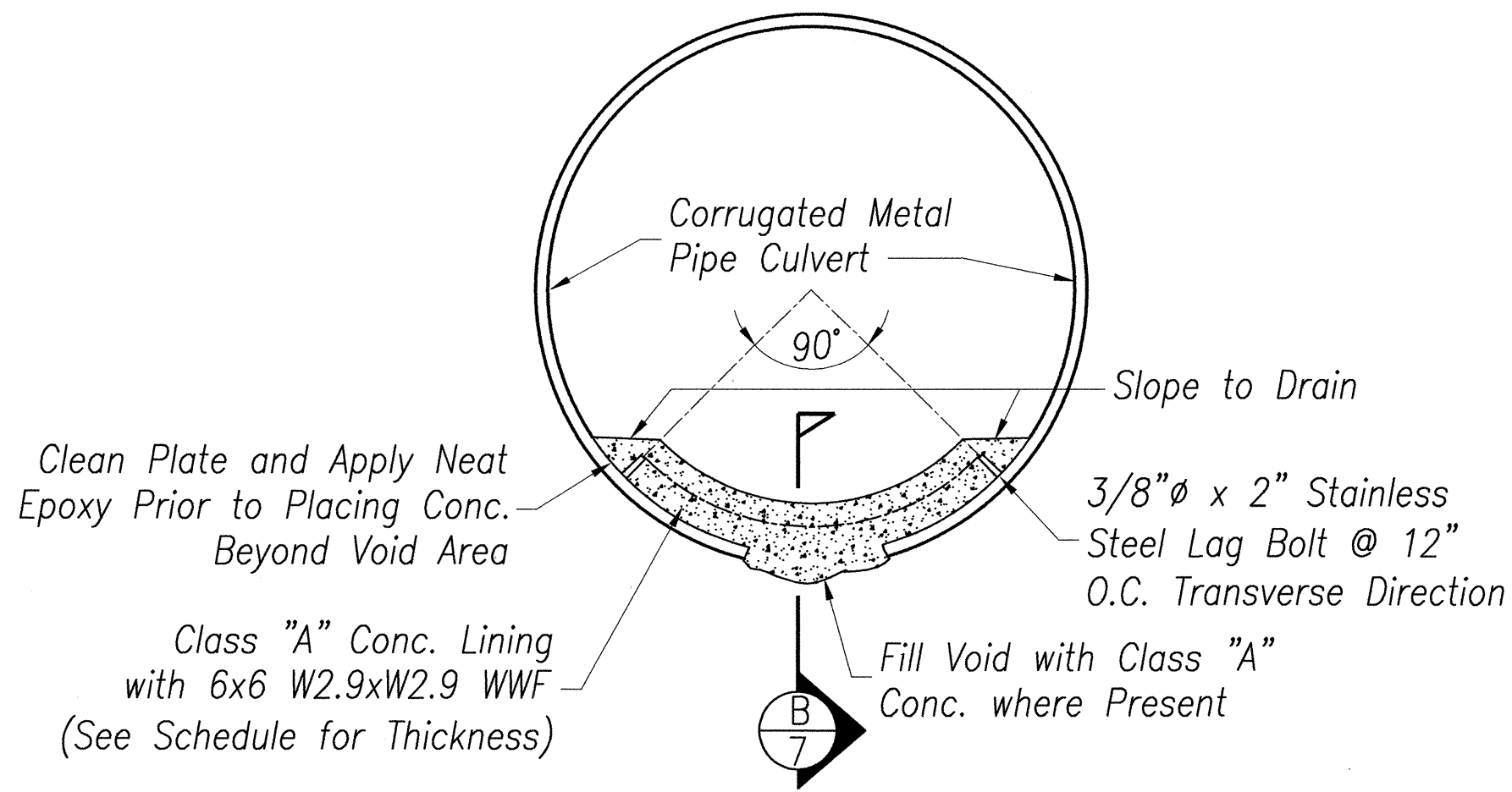
Wesley R. Segawa & Associates, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DETAILS
HONOKAA-WAIIPO ROAD AND
HAWAII BELT ROAD REPAIR OF
DRAINAGE STRUCTURES AT
VARIOUS LOCATIONS
PROJECT NO. HWY-H-06-96M
SCALE: AS NOTED
Date: May, 1999
SHEET No. 6 OF 8 SHEETS

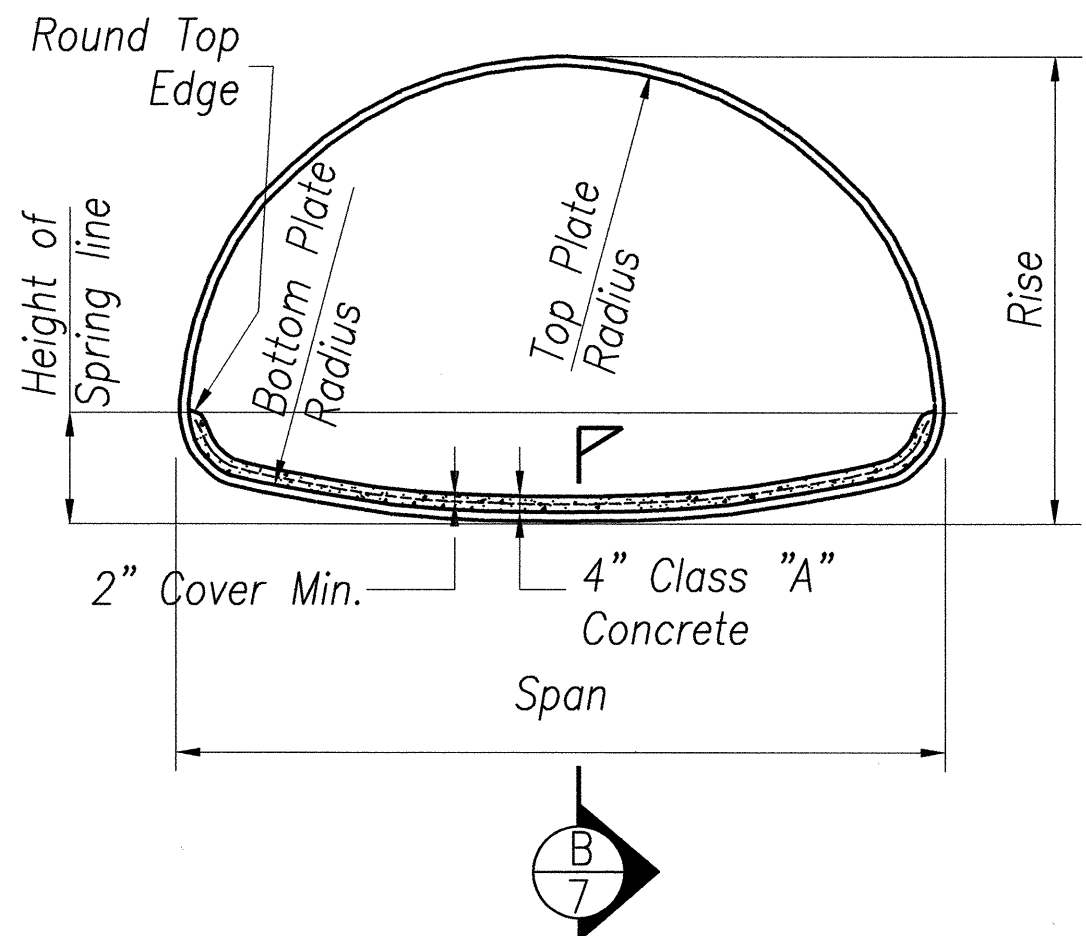
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-H-06-96M	1999	7	8



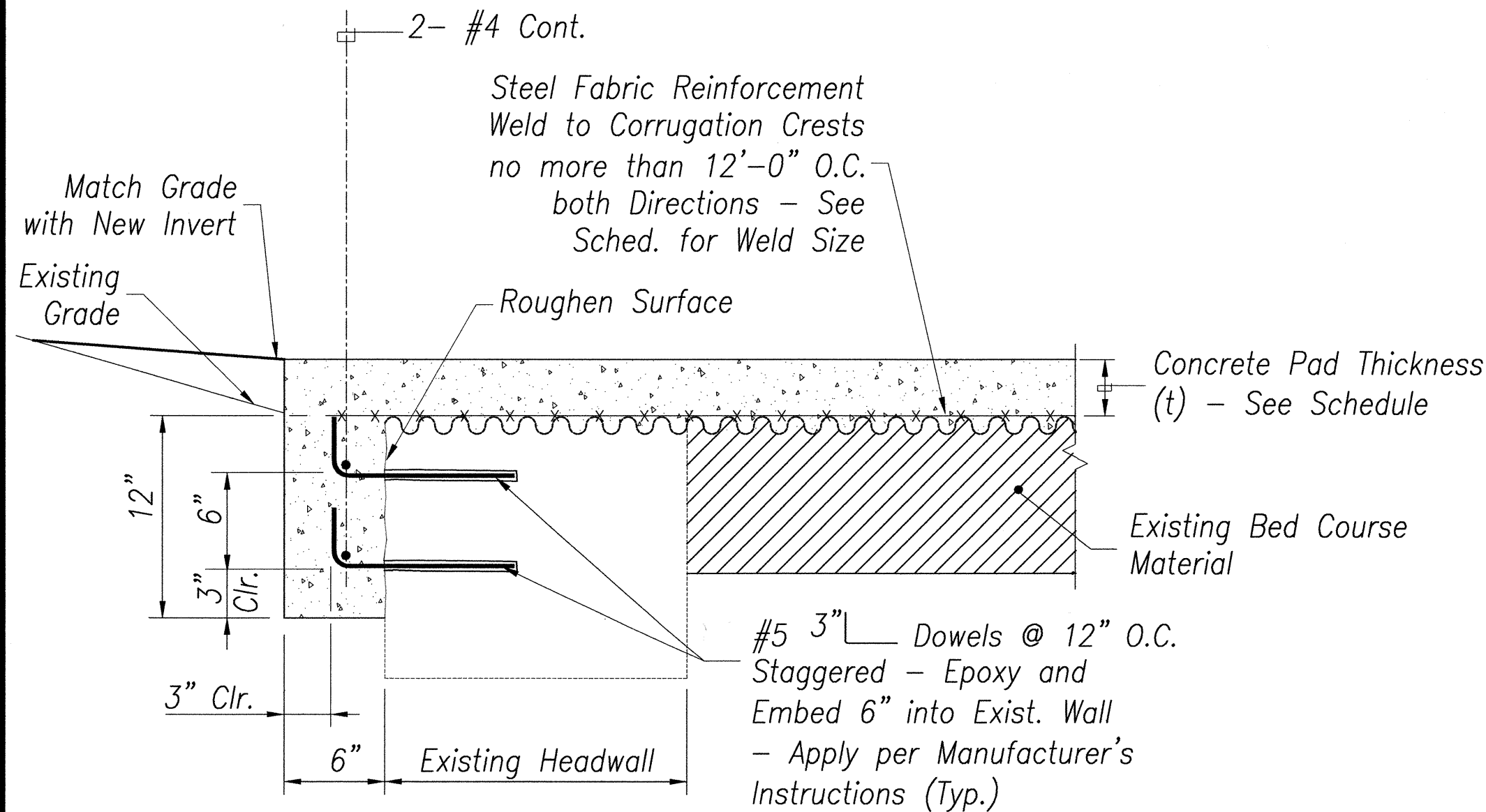
1
7
TYPICAL ELEVATION AT EXIST. CULVERT INLET
(CULVERT OUTLET - SIMILAR)
NOT TO SCALE



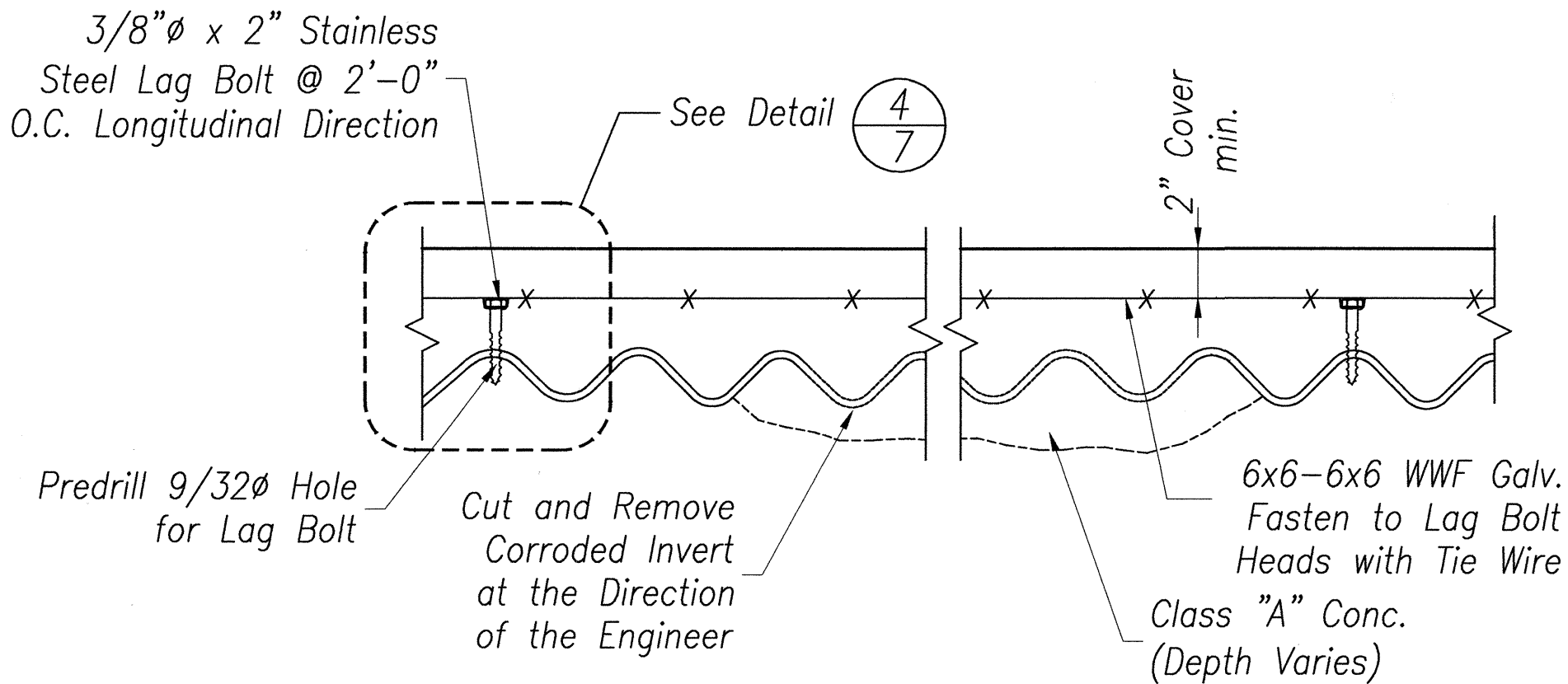
2
7
TYPICAL CMP CULVERT
SECTION IN VOID AREA
NOT TO SCALE



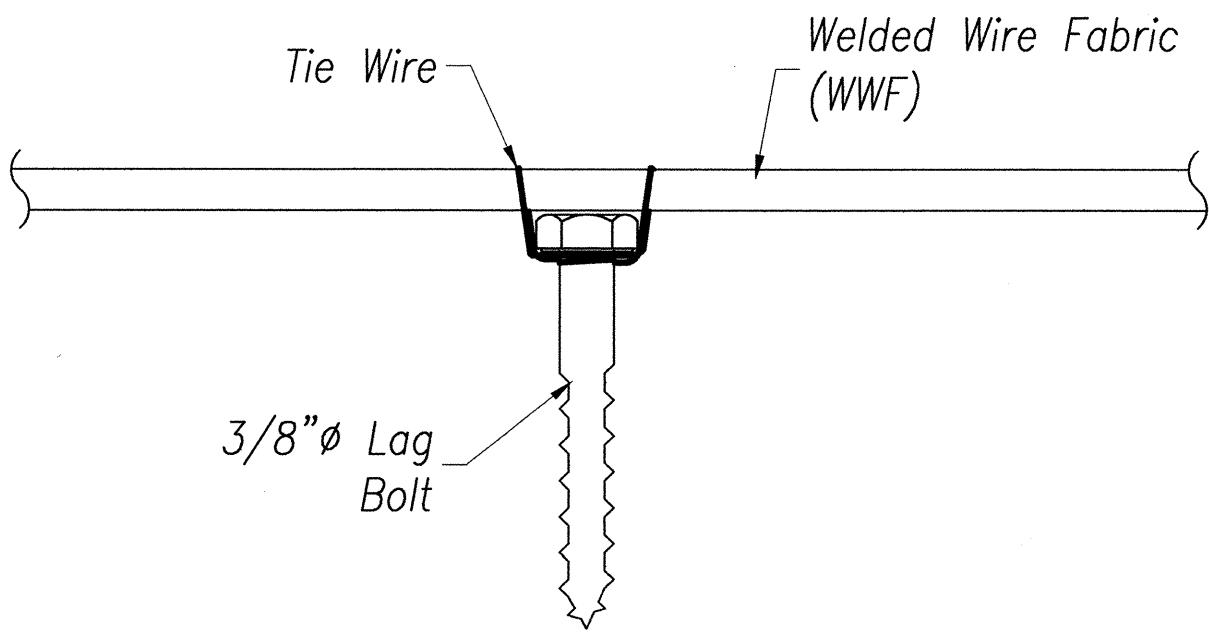
3
7
TYPICAL PIPE ARCH CULVERT
NOT TO SCALE



A
7
SECTION
NOT TO SCALE

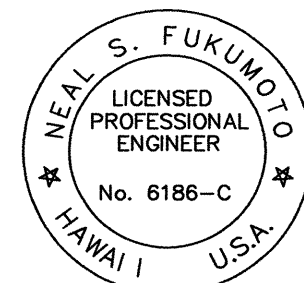


B
7
SECTION
NOT TO SCALE



4
7
TIE WIRE DETAIL
NOT TO SCALE

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NOTE BOOK	
No.	



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Neal S. Fukumoto
Wesley R. Segawa & Associates, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETAILS
HONOKAA-WAIPIO ROAD AND
HAWAII BELT ROAD, REPAIR OF
DRAINAGE STRUCTURES AT
VARIOUS LOCATIONS
PROJECT NO. HWY-H-06-96M

SCALE: AS NOTED
Date: May, 1999