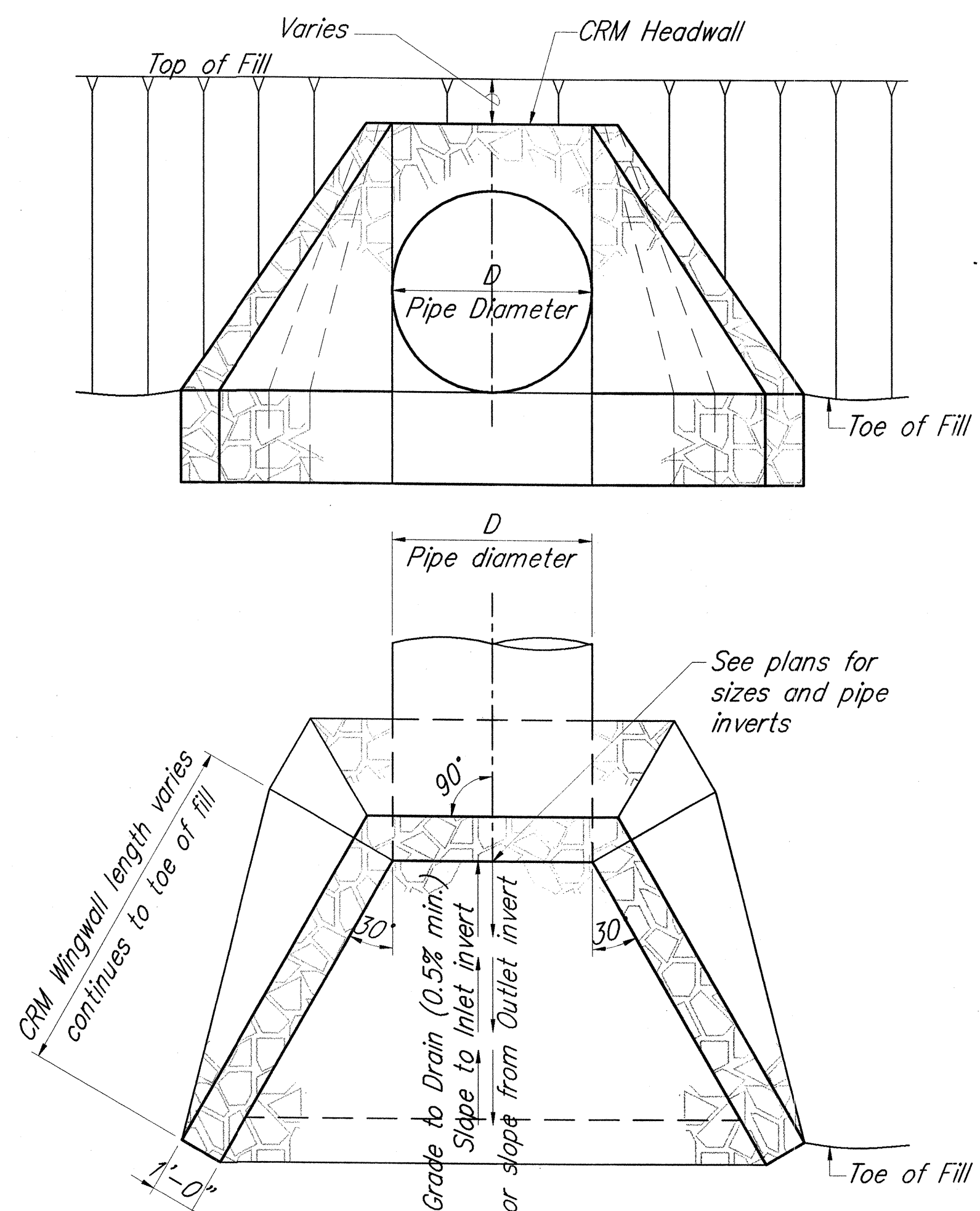
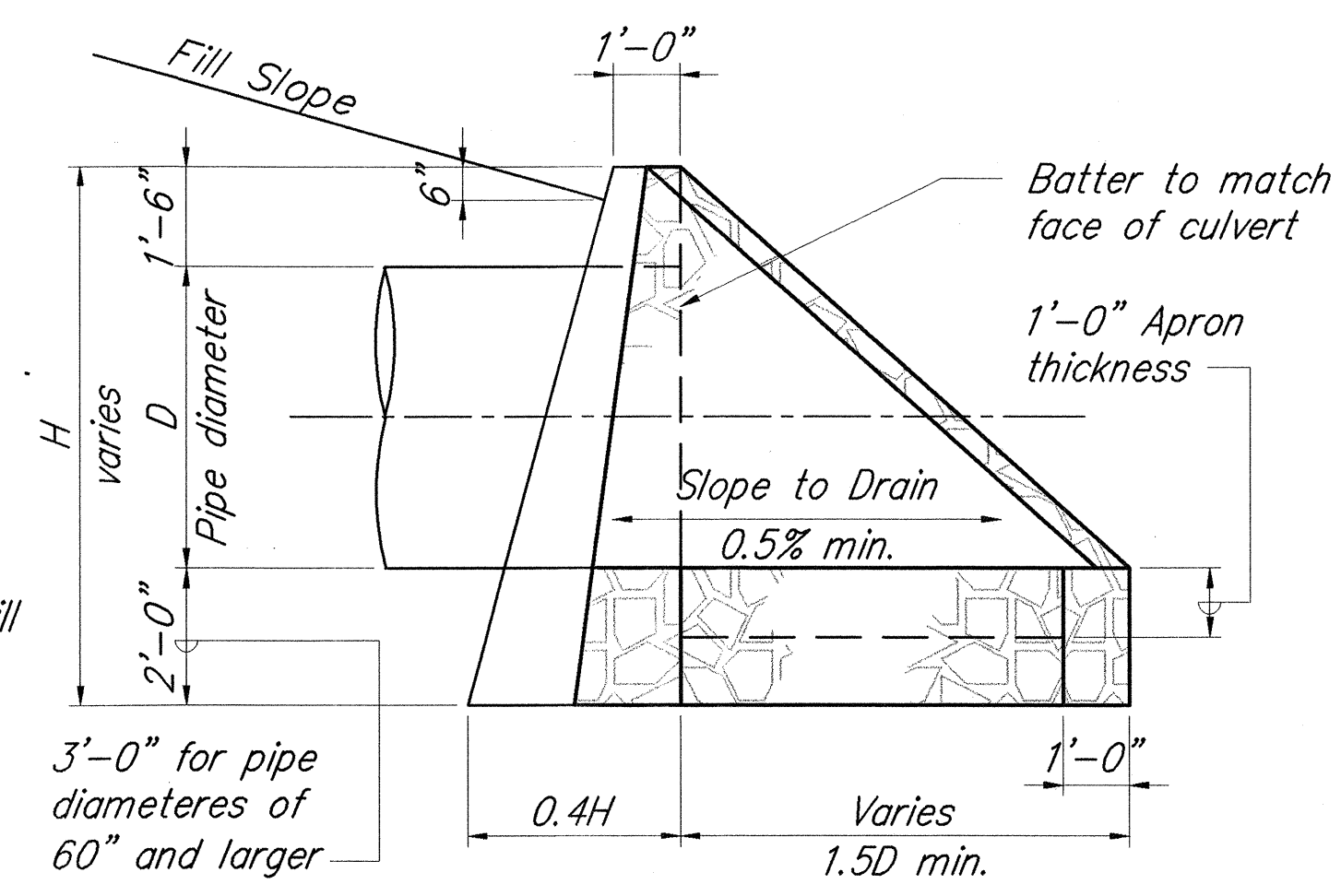


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(35)	2004	37	70

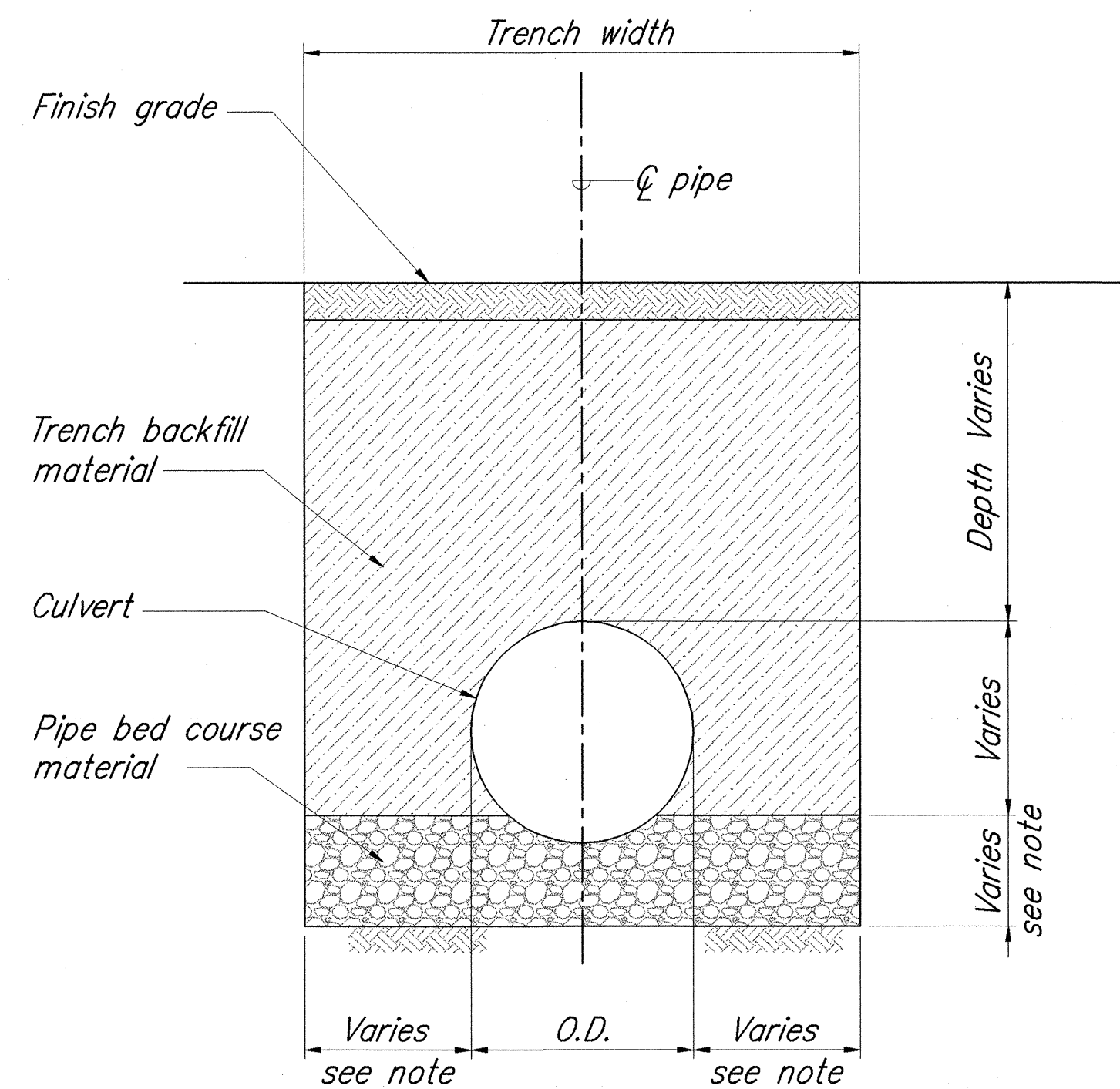


### DETAILS OF CRM INLET OR OUTLET STRUCTURES

Scale: 3/8" = 1'-0"

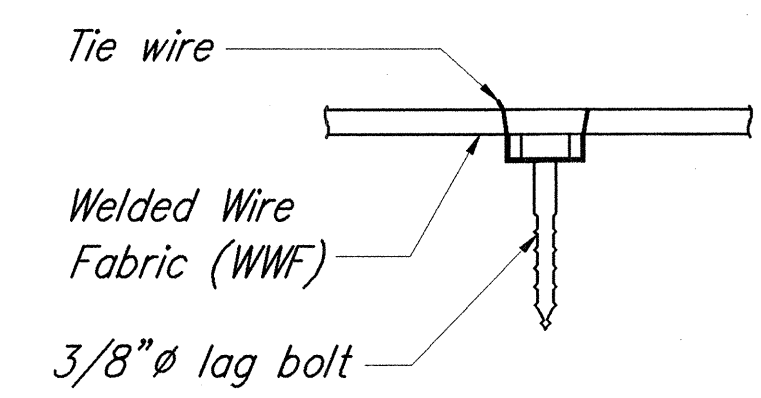


**Note:**  
Payment for concrete rubble masonry (CRM) drainage structures shall be paid for under 508.0100 - Concrete Rubble Masonry.



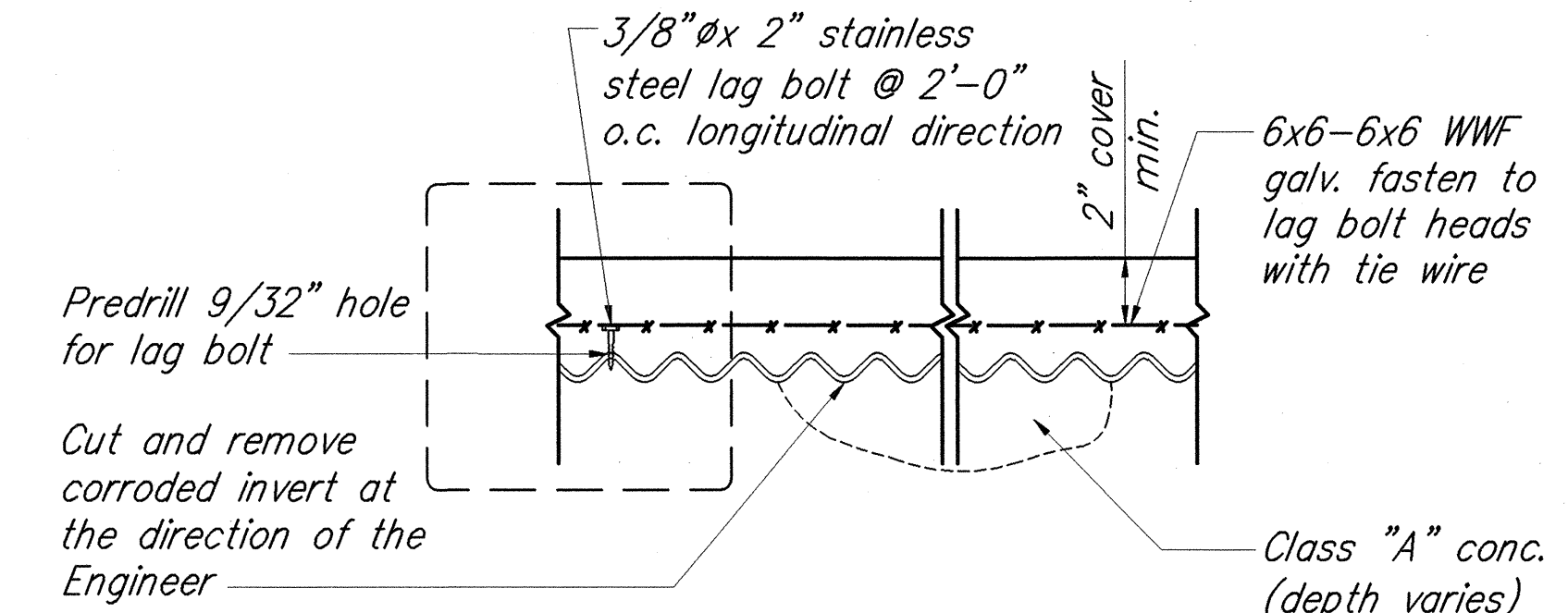
### CULVERT TRENCH DETAIL

Not to Scale



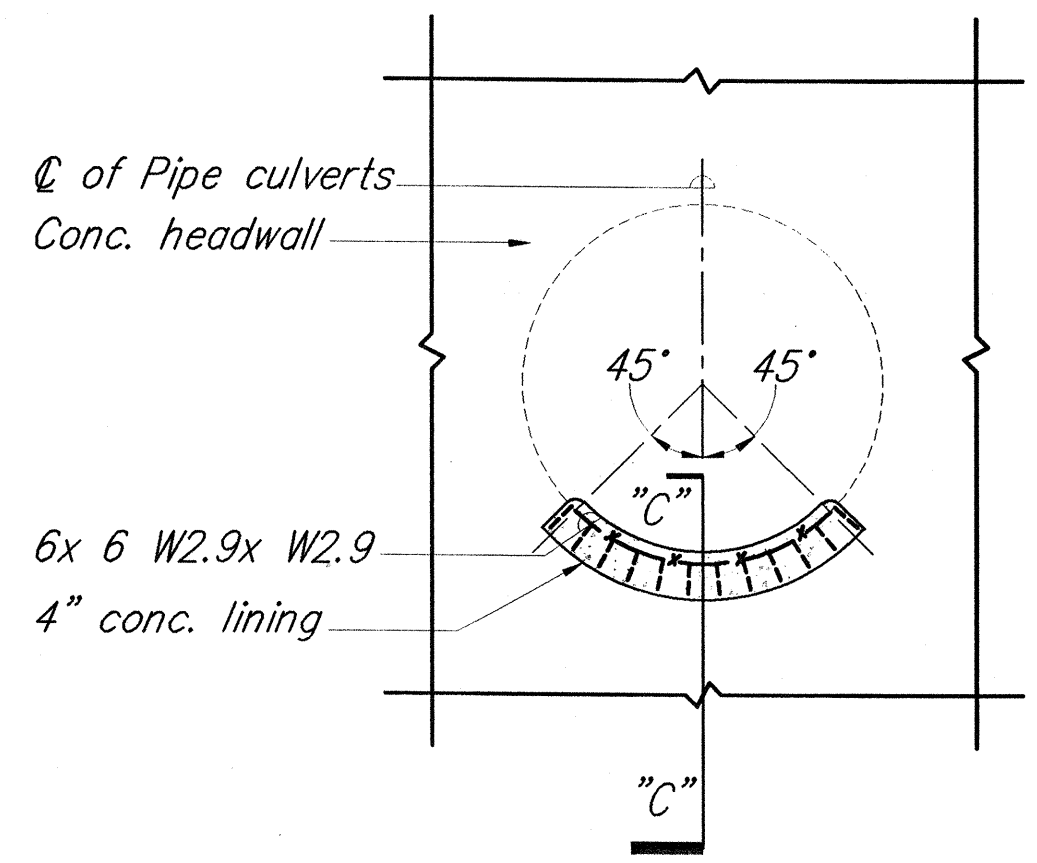
### TIE WIRE DETAIL

Not to scale



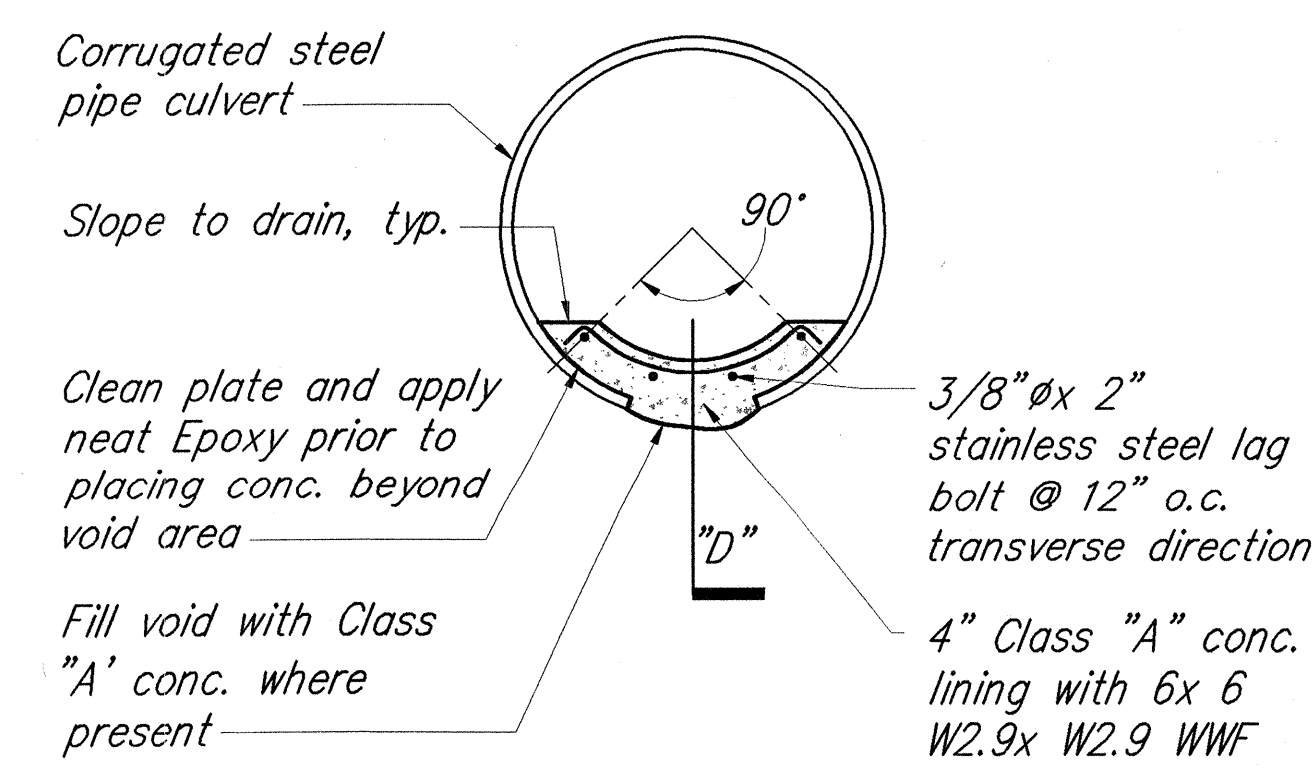
### SECTION "D-D"

Not to scale



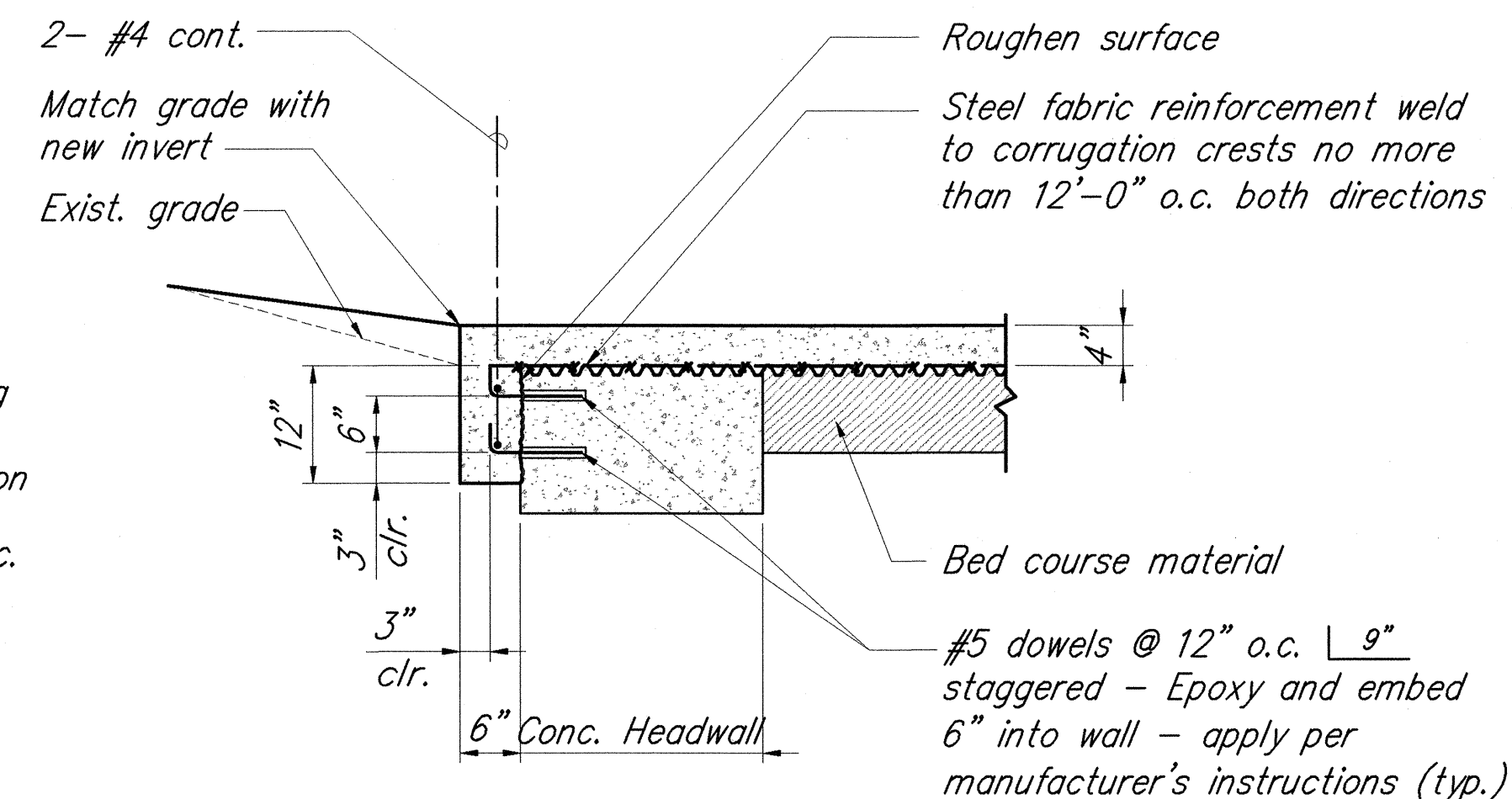
### TYPICAL ELEVATION AT EXIST. CULVERT INLET (CULVERT OUTLET - SIMILAR)

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



### TYPICAL CMP CULVERT SECTION IN VOID AREA

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

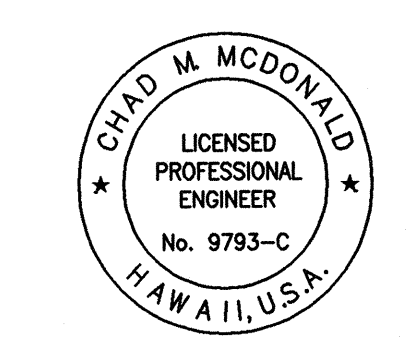


### SECTION "C-C"

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

### CULVERT 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. 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.
6. 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.
7. The welded wire fabric steel reinforcement shall be placed two inches above the crest of corrugations by tying to stainless steel lag bolts. The lag bolts shall be drilled and tapped to the sectional plate culvert at two feet on centers longitudinally and 1'-0" transversally. If lapping of the welded wire fabric is necessary, it shall be lapped a minimum of six inches.
8. The welded wire fabric, lag bolts and epoxy compound shall not be paid for separately but shall be considered incidental to Contract Items.
9. The concrete culvert lining shall be scored 3/4" deep laterally along the crest of corrugation, 20 feet on center. (Control Joint)



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
CHAD W. McDONALD  
MITSUNAGA & ASSOCIATES

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
  
**DRAINAGE DETAILS**  
  
**QUEEN KAAHUMANU HIGHWAY**  
**Resurfacing and Intersection Improvements**  
**Federal-Aid Project No. NH-019-1(35)**  
Scale: As Noted      Date: March 2004  
SHEET No. **C-35** OF **68** SHEETS

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