

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-H-02-01M	2001	3	24

General:

1. The scope of work for this project consists of repairs and renovations to four culverts along Route 19, Big Island, Hawaii. The repairs and renovations include spall and crack repair; removal and replacement of existing floor slabs; installation of new 48" RCP, reinforced concrete headwalls and retaining walls; excavation and removal of an existing culvert; construction of a GRP swale; embankment grading; and culvert headwall and wingwall extensions.
2. The Contractor is reminded of the requirements of Subsection 108.01 – Subletting of Contract, which requires him to perform work amounting to not less than 50 percent of the total contract cost less Force Account items. Non-compliance with this Subsection may be grounds for rejection of bid.
3. The Contractor's attention is directed to the following Sections of the Special Provisions: Subsection 107.13 – Public Convenience and Safety, Subsection 107.21 – Contractor's Responsibility for Utility Property and Services, Section 645 – Traffic Control.
4. At the end of each day's work, the Contractor shall remove all equipment and other obstructions to permit free and safe passage of public traffic. Any guardrails that are temporarily removed during construction shall be replaced after working hours with safety barriers that are approved by the Engineer.
5. The existence and location of underground utilities, manholes, monuments and structures as shown on the plans are from the latest available data but the accuracy is not guaranteed. The encountering of other obstacles during the course of the work is possible. The Contractor shall be held liable for any damages incurred to the existing facilities and/or improvements as result of his operations.
6. Existing drainage system will be functional at all times during construction. Contractor is to furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. This work shall be considered incidental to the various contract items.
7. Earth swale shall be graded to drain. This work shall be considered incidental to the various contract items.
8. Contractor shall provide for access to and from all existing side streets at all times.
9. Structural design, workmanship and materials shall conform to the following:
 - a. General Specifications: Hawaii Department of Transportation, Standard Specifications for Road and Bridge Construction, 1994, together with Special Provisions prepared for this contract and memorandum HWY-DB 2.6408 dated 11/22/99.
 - b. Design Specifications: AASHTO LRFD Bridge Design Specifications, 2nd Edition 1988 with 1999 and 2000 interim revisions.
10. The Contractor shall compare all the contract documents with each other and report in writing to the Engineer all inconsistencies and omissions.

11. The Contractor shall take field measurements and verify field conditions and shall compare such field measurements and conditions with the drawings before commencing work. Report in writing to the Engineer all inconsistencies and omissions.
12. The Contractor shall be responsible for coordinating the work of all trades.
13. The Contractor shall be responsible for methods of construction, workmanship and job safety. The Contractor shall provide temporary shoring and bracing as required for stability of structural members, structural systems, earth embankments and trenches. Prior to chipping away or saw cutting concrete in existing culvert ceiling and walls, adequate shoring shall be installed to prevent settlement or collapse of structure. The cost of shoring and bracing shall be incidental to the concrete work.
14. Construction loading shall not exceed design live load unless special shoring is provided. Allowable loads shall be reduced in areas where the structure has not attained full design strength.
15. The Contractor shall be responsible for protection of the adjacent properties, structures, streets and utilities during the construction period. Protection to the existing concrete culverts shall be provided to ensure that no damage to the structures is sustained during construction.
16. Details noted as typical on the structural drawings shall apply in all conditions unless specifically shown or noted.

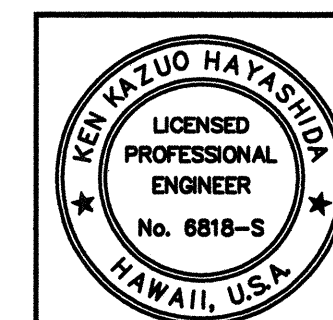
Design criteria:

1. Seismic Zone 4
2. Seismic acceleration coefficient 0.35
3. Basic wind speed and exposure 80 mph, exposure c

Foundation:

1. Contractor shall provide for de-watering of excavated areas, stream beds, and all other areas within the construction site that are affected by the work. The de-watering shall include all normal stream surface water, ground water and seepage. Contractor shall submit for and obtain any de-watering plan approval prior to beginning construction in the field. The cost for all de-watering and for plan preparation shall be incidental to Item 206, Structure Excavation and backfill.
2. Contractor shall provide for design and installation of all cribbing, sheeting, and shoring necessary to preserve excavations earth banks, and existing culvert structures.
3. Footings shall bear on undisturbed in-situ firm soils. Bottom of footings shall be compacted to provide a relatively firm and smooth bearing surface prior to placement of reinforcing steel and concrete. If soft and/or loose materials are encountered at the bottom of footing excavations, they shall be over-excavated to expose the underlying firm materials. The over-excavation shall be backfilled with Class D concrete.
4. Excavations for footings shall be approved by the Geotechnical Engineer prior to placement of concrete and reinforcing. Geotechnical Engineer shall submit letter of compliance to the Engineer.

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



THIS WORK WAS PREPARED
BY ME OR UNDER MY
SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES
HAWAII BELT ROAD
CULVERT REPAIRS AND RENOVATIONS
VARIOUS LOCATIONS, HAWAII
PROJECT NO. HWY-H-02-01M

SCALE: AS NOTED DATE: APRIL 27, 2001

SHEET No. 1 OF 2 SHEETS

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Concrete:

- Concrete construction shall conform to American Concrete Institute ACI 318R-95.
- Concrete shall be regular weight hard rock concrete and shall have the following minimum 28 day compressive strengths:
 - Spall repair 3,000 psi
 - Headwalls and footings 4,000 psi
 - Culvert floor slabs 4,000 psi
- Concrete delivery tickets shall record all free water in the mix: at batching by plant, for consistency by driver, and any additional request by contractor if permitted by the mix design.
- All inserts, anchor bolts, plates, and other items to be cast in the concrete shall be hot-dipped galvanized unless otherwise noted.
- Reinforcing bars, anchor bolts, inserts, and other items to be cast in the concrete shall be secured in position prior to placement of concrete.
- The Contractor shall locate construction joints so as not to impair the strength of the structure and to minimize shrinkage stresses. Submit location of construction joints to the engineer for approval, unless otherwise noted.
- Non-shrink grout shall be a premixed non-metallic formula, capable of developing a minimum compressive strength of 3,000 psi in 1 day and 5,000 psi in 28 days.
- Unless otherwise noted, chamfer all exposed concrete edges 3/4 inches.

Reinforcing steel:

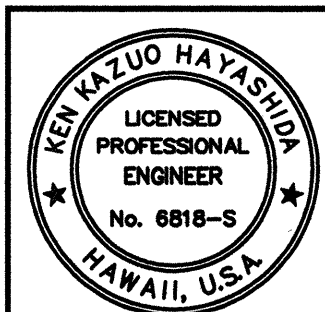
- Reinforcing steel shall be deformed bars conforming to ASTM A615, grade 60.
- Clear concrete cover for reinforcing bars shall be as follows, unless otherwise noted:
 - Cast against earth 3"
 - Formed and exposed To earth or weather 2"
 - Culvert Floors 3"
- Reinforcing steel shall be spliced where indicated on plans. Provide lap splice length per typical details and schedule, unless otherwise noted.
- Mechanical splice connectors shall develop in tension 125 percent of the specified minimum yield strength of reinforcing bars and shall be staggered.
- Bar bends and hooks shall be "standard hooks" in accordance with ACI 318.

Special Inspection:

- Contractor shall be responsible for ensuring that special inspection of portions of the work, as required by the building code of the County of Hawaii, be made at the appropriate time. The contractor shall give timely notice of when and where inspections are to be made and provide access for the inspector. The contractor shall correct defective work at no additional cost to the owner and pay for re-inspection.
- The following structural work requires special inspection:
 - Concrete
 - Bolts installed in concrete
 - Reinforcing steel[Special inspection is not required for foundation concrete and reinforcing steel. Foundations were designed with f'c = 4,000 psi.]

Abbreviations

		No or #	Number
@	At	Nts	Not to scale
Ab	Anchor bolt	Oc	On center
Arch	Architectural	Od	Outside diameter
Blkg	Blocking	Opng	Opening
Bm	Beam	Opp	Opposite
Bot	Bottom	Pl	Plate
Btwn	Between	Pp	Partial penetration
Clr	Clear	Prefab	Prefabricated
Cmu	Concrete masonry unit	Ref	Reference
Conc	Concrete	Reinf	Reinforced or reinforcing
Col	Column	Reqd	Required
Conc	Concrete	Sad	See architectural drawingiled
Cont	Continuous	Sched	Schedule
Cp	Complete penetration	Sht	Sheet
Dbl	Double	Sim	Similar
Dia	Diameter	Specs	Specifications
Dwg	Drawing	Stiff	Stiffener
Ea	Each	Sq	Square
Ef	Each face	Ss	Stainless steel
El	Elevation	Sym	Symmetrical
Elec	Electrical	Thk	Thick
Eq	Equal	Tos	Top of steel
Ew	Each way	Typ	Typical
Exist or (e)	Existing	T&b	Top and bottom
Ext	Exterior	Uon	Unless otherwise noted
Fin	Finish	Vert	Vertical
Flr	Floor	W/	With
Fp	Full penetration	W/o	Without
Ft	Foot or feet	Wp	Work point
Ftg	Footing	Wwf	Welded wire fabric
Ga	Gauge		
Galv	Galvanized		
Horiz	Horizontal		
Hsb	High strength bolts		
Id	Inside diameter		
Jst	Joist		
Lh	Long leg horizontal		
Llv	Long leg vertical		
Max	Maximum		
Mb	Machine bolt		
Mech	Mechanical		
Min	Minimum		
Misc	Miscellaneous		



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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

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CULVERT REPAIRS AND RENOVATIONS
VARIOUS LOCATIONS, HAWAII
PROJECT NO. HWY-H-02-01M

THIS WORK WAS PREPARED
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SCALE: AS NOTED DATE: APRIL 27, 2001
SHEET No. 2 OF 2 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
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QUANTITIES BY	
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ORIGINAL PLAN	
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