FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(19)	2006	13	58

BRIDGE GENERAL NOTES

1. General Specifications: Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994, together with Special Provisions prepared for this contract.

2. Design Specifications:
   (A) AASHTO 2004 LRFD Bridge Design Specifications (Third Edition) and its subsequent interim specifications with interim supplements and modifications by Highways Division, Department of Transportation, State of Hawaii.

   (B) AASHTO 2001 Standard Specifications for Structural supports for Highway Signs, Luminaries and Traffic Signals (Fourth Edition) and its subsequent interim specifications with interim supplements and modifications by the Highways Division, Department of Transportation, State of Hawaii.

   (C) HDOT Memorandum HWY-DB 2.6843, dated February 14, 2005 with subject title "Design Criteria for Bridges and Structures".

3. Loads:
   (A) Live Load: 100 psf

   (B) Seismic Loads: Acceleration coefficient - 0.18
   Seismic Performance Zone - 2
   Importance Category - Other Bridges
   Soil Profile - Type IV

   (C) Wind Load:

   (1) 105 mph. Value is a 3 second gust speed at 32.8 ft above ground for Exposure C category and is associated with an annual probability of 0.02 (50 year mean recurrence interval).

   (2) Recurrence interval of 100 years.

   (3) Vortex shedding induced loads shall be considered for cantilevered mast arms and pole shafts that do not have tapers or have tapers of less than 0.14 in/ft.

4. Materials:

   (A) All concrete strengths shall be as noted below:

Item No.	Structural Parts	Classes of Concrete	Compressive Strength, f'c (28 Days)
(1)	Abutment Wall	-	5000 PSI
(2)	Wing Wall (Lightweight Conc.)	-	Refer to Note 4.(M) 2
(3)	Pile Cap	-	6000 PSI
(4)	Precast Pile	-	6000 PSI
(5)	Precast Girder and Deck Topping	-	5000 PSI
(6)	Beams over Abutment Wall and Pile Cap	-	5000 PSI
(7)	Approach Slab	-	5000 PSI 2
(8)	Railing Pedestal	-	4000 PSI
(9)	Except as noted otherwise, all others	A	3000 PSI

4. Materials (Cont.):

   All concrete with the exception of Class A concrete shall have a maximum W/C Ratio of 0.45. The W/C Ratio for Class A concrete shall follow the Standard Specifications. Railing pedestal concrete shall be colored using "Desert Sand" coloring admixture by L.M. Scofield Company or Degussa.

   (B) Tetraguard AS20 shrinkage reducing admixture (SRA) shall be included in the concrete mix for the precast girder, beams over abutment walls, beams over pile caps, deck topping, abutment walls and approach slab. The required dosage shall be 128 ounces per cubic yard of concrete and follow all manufacturer's recommendations. CORTEC MCI-2005 NS Corrosion Inhibitor shall be added to bridge concrete for curbing, railing pedestal, abutment wall, pile cap, precast pile, precast girder, deck topping and beam over abutment walls, beam over pile caps, wingwalls and approach slab at the rate of 1.5 pints per cubic yard of concrete. The same corrosion inhibitor shall also be added to the grout for filling the blockouts for railing posts. 2 2 2

   (C) All reinforcing steel shall be ASTM A615 Grade 60 unless otherwise noted.

   (D) Reinforcing steel shall be ASTM A706 where welded connections are required.

   (E) Material and construction for the Glass Fiber Reinforced Polymer (GFRP) rebars shall conform to ACI 440.1 R-01 "Guide for Design and Construction of Concrete Reinforced with FRP Bars".

   (F) All structural steel shall be ASTM A36 hot dip galvanized after fabrication and structural steel tubes shall be ASTM 500 Grade B hot dip galvanized after fabrication, unless otherwise noted.

   (G) All anchor bolts, washers and nuts, including threaded rods, shall be ASTM A307 Grade A hot dip galvanized after fabrication, unless otherwise specified. All anchor bolts, washers and nuts for light standard shall be ASTM A325 hot dip galvanized after fabrication.

   (H) Stainless steel bolts, nuts and washers shall be ASTM A193, UNS S31600 Class I. Stainless steel and dissimilar metals, such as reinforcing steel shall be separated with teflon tape at contact area.

   (I) Paint for metal railing shall be Benjamin Moore Classic Control #637, Gothic Green. Contractor shall prepare surfaces of hot dip galvanized steel specified by ASTM D6386 prior to painting over hot-dipped galvanized steel surfaces.

   (J) Asphalt roll roofing shall conform to ASTM D6380 Class S Type III.

   (K) Unistrut P1000SS shall be per Manufacturer's approved shop drawings.

   (L) Rock veneer shall conform to Section 503.

   (M) Lightweight concrete shall have a maximum unit weight of 115 pcf and a 56-day compressive strength of 4,500 psi.

   (N) Low density concrete shall have a maximum unit weight of 65 pcf and a minimum 28-day compressive strength of 100 psi.

   (O) A water curing equivalent (WCE) shall be used to cure the concrete construction joints and other surfaces when approved by the Engineer. The WCE shall penetrate the concrete and react with calcium compounds within the concrete to form additional calcium silicate. Its capabilities shall be proven by extensive laboratory and field testing.

5. Reinforcement:

   (A) The minimum covering measured from the surface of the concrete to the face of any reinforcing bars shall be as follows, except as otherwise shown:

   (1) Deck and Precast Girder.

   A. Top bars = 2" with a tolerances of -0 inch and +3/8 inch.

   B. Bottom bars = 1 1/2" except as otherwise noted.

   (2) Abutment Walls, Pier Walls, Wing Walls = 2" to ties or outermost reinforcing except as otherwise noted.

   (3) Approach slab top bars = 2".
   Approach slab bottom bars = 2". 2

   (4) Concrete cast against and permanently exposed to earth = 3".

   (5) All others unless otherwise noted = 2".

   (B) Reinforcing bars shall be detailed in accordance with CRSI Manual of Standard Practice and the latest edition of the Design Specifications in note 2 above unless otherwise noted.

   (C) Minimum clear spacing between parallel bars shall be 1 1/2 times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate or 1 1/2" (except at approach slab dowel).

   (D) All dimensions relating to reinforcing bars are to centers of bars unless otherwise noted.

   (E) Reinforcing bars shall be securely tied at all intersections and lap splices except where the spacing of intersections is less than one foot in each direction, in which case alternate intersections shall be tied.

   (F) Vertical wall bars shall be arranged in such a manner as to avoid interference with girder, deck and pile cap bars above as directed by the Engineer.

6. Girder Bearings:

   (A) Girder concrete bearing seats shall be poured monolithically with supporting structure. Top of concrete bearing seat shall be finished with a steel trowel to a smooth level surface to the elevation shown on the plans. Grind down high spots as needed to provide an even bearing surface to 1/16"± tolerance.

DAVID K. FUJIWARA
LICENSED PROFESSIONAL ENGINEER
NO. 8104-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

David K. Fujiwara 4-30-08
SIGNATURE EXPIRATION DATE OF THE LICENSE

DATE	REVISION
9/30/09	3 As Built
12/10/08	2 Revise Concrete Properties

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BRIDGE GENERAL NOTES

Fort Weaver Road Widening
Honouliuli Stream Pedestrian Bridge
Vicinity of Aawa Drive to Geiger Road
Federal Aid Project No. CMAQ-076-1(9)

Scale: None Date: Feb. 29, 2008

SHEET No. HS0.2 OF 33 SHEETS

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

AS-BUILT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-076-1(19)	2006	14	58

BRIDGE GENERAL NOTES

7. Construction Notes:

(A) See Standard Specifications and Special Provisions.

(B) In general, top of concrete deck slab shall be constructed to follow the bridge vertical and horizontal curves and superelevations.

(C) Except as otherwise noted, all vertical dimensions are measured plumb.

(D) The Contractor shall verify all site conditions and not rely upon these plans for stream location, etc. Conditions may differ from those shown.

(E) The Contractor shall verify the location of all utility lines and notify the respective owners before commencing with excavation, and any temporary piling or sheeting.

(F) For concrete finish see Standard Specifications and Special Provisions.

(G) Construction joints may be relocated or additional ones added subject to the approval of the Engineer.

(H) Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4"x3/4".

(I) Precast girder shall attain 28-day compressive concrete strength and ten days age prior to handling and form release.

(J) Closure pour beam at abutments shall be poured between the hours of 12:00 midnight and 3:00 AM.

(K) When pouring deck topping, concrete within 1/4 span of piers shall remain plastic (semifluid) until the deck topping is completed in the spans on each side of the pier.

(L) Embed precast piles one inch into abutment cap and pile cap.

8. General:

(A) Standard detail drawings refer to all structures in general, except for modifications as may be required for special conditions. For such modifications refer to the corresponding detailed drawings.

9. Foundation:

(A) Subgrade reactions

1. Longitudinal subgrade reaction in soil per pile for extreme event = 30 pci.

2. Transverse subgrade reaction in soil per pile for extreme event = 20 pci.

3. Subgrade reaction behind abutment for extreme event = 200 pci. (Deflection not to exceed .2 inch)

(B) Vertical pile capacity

Strength Limit State = 140 kips

Extreme Event Limit State = 230 kips (Compression)
= 115 kips (Tension)

9. Foundation (Cont.):

(C) Pile driving

1. All pile locations situated within 50-feet of existing structures shall be pre-drilled to a minimum depth of 10-feet. The pre-drilled holes shall be slightly larger than the pile diameter. The annular space between the pile and the sidewalls of the pre-drilled hole shall be backfilled with either clean sand, compacted by water jetting, or sand cement grout.

2. All piles shall be driven to the pile tip elevation of minus 68 feet or deeper, as directed by the Engineer.

For additional information, see soils report dated April 20, 2007 prepared by Hirata & Associates, Inc.

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

DAVID K. FUJIMARA
LICENSED PROFESSIONAL ENGINEER
NO. 8104-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

David K. Fujimara 4-30-08
SIGNATURE EXPIRATION DATE OF THE LICENSE

DATE	REVISION
9/30/09	3 As Built

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BRIDGE GENERAL NOTES

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SHEET No. HS0.3 OF 33 SHEETS