FED. ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-080-1(012)	2014	20	82

GENERAL STRUCTURAL NOTES

1. The scope of work is to repair deteriorated steel bridge framing and connections, repair concrete cracks and spalls in concrete deck slab and abutments, repair deteriorated steel bridge railings, repainting of steel bridge, and temporary traffic control.
2. All materials shall conform to the drawings, Hawaii Standard Specifications for Road and Bridge Construction (2005 Edition) and Special Provisions.
3. The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work.
4. Standard detail drawings refer to all structures in general except for modifications as may be required for special conditions. For such modifications refer to corresponding detailed drawings.
5. The Contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to falsework such as bracing, shoring for loads due to construction equipment, winds, seismic, etc. Falsework shall be designed, constructed and maintained to support required loads. Contractor shall submit plans and calculations stamped and signed by Contractor's Structural Engineer for review.
6. The Contractor shall be solely responsible for coordinating the work of all trades and shall check all dimensions for existing and new construction. All discrepancies shall be called to the attention of the Engineer and be resolved before proceeding with the work.
7. Shop drawings required by the standard specifications and special provisions shall be submitted to the Engineer for review prior to fabrication or ordering of materials.
8. At the end of each night's work, the Contractor shall remove all equipment and other obstructions to permit free and safe passage of public traffic.
9. The Contractor shall notify in writing, Lance Santos (848-4571) or Tracie Coelho (772-7020) Oahu Transit Services Roads Supervision Office, Department of Transportation Services Public Transit Division (768-8396), Major Moana Heu (723-8703) Honolulu Police Department - Wahiawa, Jeffery Farris (723-7182) Honolulu Fire Department, Frederick Makinney (656-6750) Directorate of Emergency Services Operations Branch at Schofield Barracks, Chris Bingham (christopher.j.bingham4.civ@mail.mil) Naval Computer and Telecommunications Area Master Station, Gareth Sakakida (833-6628) Hawaii Transportation Association, Dara Young (dara_young@hawaiidoe.org) State Department of Education, Melvin Kaku (723-8951) City and County of Honolulu Department of Emergency Management, and Patty Dukes pdukes@honolulu.gov or Wayne Kruse (723-7809) wkruse@honolulu.gov Emergency Services of the scope of work, location, proposed closure of any streets, traffic lanes, walkways, bus stops, vehicle height clearance and duration of project at least fourteen (14) days prior to construction and at least fourteen (14) days prior to full bridge closure dates.
10. The Contractor shall also notify the public, area neighborhood board, nearby federal, state and city and county agencies in the nearby vicinity of the project. The Contractor shall develop a web page and maintain a 24/7 hotline for comments. The Contractor is responsible for providing public outreach campaign to inform the public of the project and its purpose and goals in accordance with Section 697 of the Special Provisions. See "Section 697 - Public Educational Campaign" for more information.

SPECIAL NOTE

Should there be any conflict between Plans (drawings), Special Provisions and Standard Specifications, the most stringent requirement shall govern.

REINFORCING STEEL

1. Reinforcing steel bars shall be ASTM A615 Grade 60, unless otherwise noted. Welded reinforcing steel bars shall be ASTM A706, Grade 60.
2. Reinforcing steel splices shall be located only where indicated on the drawings.
3. Lap splice length for reinforcing steel shall be as indicated on drawings. Where not indicated, minimum splice length shall be 52 bar diameters or 2'-4", whichever is longer.
4. All reinforcing steel bars, anchor bolts, dowels and other embedded items shall be securely tied in place before concrete pour.
5. All reinforcing steel bar bends shall be made cold.
6. Reinforcing steel shall be detailed in accordance with the AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications, Fifth Edition, 2010, including Interim revisions, unless otherwise noted.
7. Welding of reinforcing steel shall not be permitted unless otherwise shown on the drawings. Welding of reinforcing steel shall conform to AWS D1.4-05 "AWS Structural Welding Code - Reinforcing Steel" of the American Welding Society.

STRUCTURAL STEEL

1. All structural steel shall conform to AASHTO M270 (ASTM A709), Grade 36, unless otherwise noted. All steel railings shall conform to ASTM A36.
2. Unless otherwise noted, all structural steel shall be hot dip zinc coated after fabrication.
3. All anchor bolts, threaded rods and other hardware, including nuts and washers, which connect steel to concrete shall conform to ASTM A36, unless otherwise noted. All hardware shall be hot dip zinc coated.
4. All button head bolts shall be high strength tension controlled bolts conforming to ASTM A325 and ASTM F1852 and shall be mechanically galvanized. Other bolts which connect steel to steel shall be high-strength bolts conforming to ASTM A325, Type 1, unless otherwise noted. Provide direct tension indicator washers for ASTM A325 Type 1 high-strength bolts. All bolts, nuts and washers shall be hot dip zinc coated, unless otherwise noted. Refer to Standard Specifications Section 501 "Steel Structures" and Special Provisions for Bolting Requirements such as hardened washers, tightening, pretensioning, etc.
5. All welds shall be in conformity with the structural welding code AWS D1.1-08 of the American Welding Society. Electrodes shall be E70.
6. Special Welding Note: For all members and where noted on the drawings, welds shall be installed slowly to minimize build-up of heat in steel. Continuous welds shall be installed in intermittent, staggered welds of 1-inch lengths. 1-inch lengths of welds shall be allowed to cool to touch before proceeding with next segment. The final completed weld shall be continuous weld with no gaps between segments.
7. Field welding to existing steel shall not be permitted unless specifically shown or noted on drawings. See standard specifications and special provisions for pre-heat and other requirements.

GENERAL NOTES FOR EPOXY GROUTED DOWELS AND BOLTS

1. See Special Provision and Standard Specifications Section 656 for reinforcing steel dowels.
2. Contractor shall locate existing reinforcing prior to drilling holes for new epoxy grouted reinforcing steel dowels. Do not damage existing reinforcing.
3. Epoxy grout for reinforcing steel dowels shall conform to Standard Specifications Section 712.04(B).
4. Clean holes of all dust and residue before filling holes with epoxy grout.
5. Where noted on drawings, installation of epoxy grout and reinforcing dowels shall be inspected by the Engineer.
6. After epoxy grout has cured, dowels shall be pull-tested as directed by the Engineer.
7. Epoxy grouted reinforcing steel dowels shall be incidental to Section 602 reinforcing steel and will not be paid for separately.
8. All drilled holes shall be cleaned, filled with epoxy and reinforcing dowels and installed prior to end of work day.

CONCRETE REPAIR NOTES

1. High early strength concrete shall be a mixture of cement, fine aggregate, coarse aggregate, plasticizing admixture, corrosion inhibitor admixture, fiber and water. It shall have a minimum compressive strength of 3,000 PSI when opened to traffic and no later than 2 hours after casting. Minimum compressive strength of concrete shall be 8,000 PSI at 7 days. Manufacturer's representative shall be present on site during the first 14 days of casting concrete. See Specifications for additional requirements.
2. Spalls and delaminations are called out as "spalls". No separate distinction is made between them since the repairs are the same.
3. Unless otherwise indicated on the repair details chip out areas shall extend a minimum of 1/2" beyond the spall size as indicated in the repair schedule.
4. Chipped out area when rebars are exposed shall not be less than 3/4" clear around the bars.
5. Edges of chipped out areas shall be square cut by saw cutting for a minimum depth of 1/2" unless otherwise shown on the repair details. Adjust depth of saw cutting to avoid cutting existing rebars. Chipping gun shall be limited to 15 lbs or less.
6. See repair notes and details on other sheets. Replace existing rebars as required per Table 1 on Sheet S7.5. All exposed rebars shall be cleaned of all scale, rust, dirt, oil and other deleterious materials. Cleaning of rebars shall be performed using hand tools (e.g. wire brush). Blasting using abrasive media or water is not acceptable.
7. Fresh concrete and water with cementitious particles shall be prevented from entering the stream during all concreting work. All forms shall be water tight. Concrete and water with cementitious particles shall not overflow formwork. Formwork and joints shall be sealed to prevent concrete and water with cementitious particles from leaking.
8. Test all repairs after the repair material is cured to verify the bond between the repair material and the existing concrete. A hollow sound when tapped with a hammer indicates unsatisfactory bond and shall be rejected. All rejected repairs shall be redone and retested until a satisfactory bond is achieved, at no additional cost to the State.
9. After repairs are completed and accepted by the Engineer, coat repaired areas with concrete anti-corrosive coating (migrating corrosion inhibitor). The coated area shall extend 12" beyond the repaired area. See Special Provisions Section 509 for additional requirements.

SURVEY PLOTTED BY: DATE
DRAWN BY:
TRACED BY:
DESIGNED BY:
QUANTITIES BY:
CHECKED BY:
ORIGINAL PLAN
NOTEBOOK:
No.

GEORGE D. GUTIERREZ JR. LICENSED PROFESSIONAL ENGINEER NO. 12107-S HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURAL NOTES

KAMEHAMEHA HIGHWAY
Repair and Repaint Karsten Thot Bridge
Federal Aid Project No. BR-080-1(012)

Scale: None Date: Sept 2014

SHEET No. S1.1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-080-1(012)	2014	21	82

CONSTRUCTION NOTES

1. See Standard Specifications and Special Provisions.
2. All items noted as incidental will not be paid for separately.
3. Except as otherwise noted, all vertical dimensions are measured plumb.
4. Contractor shall field verify all dimensions.
5. Contractor shall submit detailed 3-week work schedules to the Engineer. See Standard Specifications.
6. The Contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to falsework such as bracing, shoring for loads due to construction equipment, winds, seismic, etc. Falsework shall be designed, constructed and maintained to support required loads. Contractor shall submit plans and calculations stamped and signed by Contractor's Structural Engineer for review.
7. For falsework or temporary shoring, Contractor shall refer to the current version of the AASHTO "Guide Specification for Temporary Works" and the "Construction Handbook for Bridge Temporary Works", including interim revisions.
8. Replacement of top lateral bracing shall be completed in one day before commencing work in another day.
9. During concrete casting, speed limit shall be temporarily reduced to 5 mph (Refer to Traffic Control Plans for further information). 60 minutes minimum after placement of last concrete load is complete, speed limit shall be returned to 15 mph per traffic control plans.
10. All concrete work shall be completed a minimum of 60 minutes prior to end of temporary traffic control for that day.
11. The Contractor shall complete above deck structural steel repairs and painting prior to starting repair and repaint work below deck. Contractor to remove above deck scaffolding immediately following above deck repair and painting work.
12. The Contractor shall provide overhead scaffolding and temporary barrier(s) to provide safe travel and access for pedestrians and vehicles at all times during construction.
13. The Contractor shall provide temporary overhead height clearance traffic guard indicating reduced vehicle height clearance of 12'-0". Temporary traffic guard shall be placed at both the Haleiwa and Wahiawa sides of the bridge. Refer to Traffic Control Plans for detailed location of traffic guards. Temporary traffic guard shall remain until it is safe for bridge height clearance to return to 14'-4". Contractor shall submit plans of overhead height clearance traffic guard for Engineer's review at least 30 days prior to start of construction. Overhead traffic guard shall be completely mounted and stabilized above ground. No work below grade is permitted for traffic guard.

INSPECTION REQUIREMENTS

1. Contractor shall refer to Standard Specifications Section 105.11 - "Inspection of the Work and Materials."
2. The work items that will require inspection by the Engineer shall be, but not be limited to, the following items:

   a. High-strength bolting
   b. Field welding
   c. Reinforcing Steel
   d. Cast-In-Place Concrete
   e. Epoxy Grouted Reinforcing Dowels

   Contractor shall notify the Engineer at least 7 working days prior to the above inspections.

EXISTING BRIDGE GENERAL NOTES

1. See general structural notes on sheet S1.1 and S1.2 for additional information.
2. Existing bridge must remain open to traffic during the construction period, except for periods of full bridge closures subject to approval by the Engineer.
3. Existing conditions are shown on the drawings to the best of our knowledge. Dimensions and member sizes where shown on the drawings are based on available as-built bridge plans. Existing dimensions shown may not be exact and are provided for information only. Contractor shall field verify all existing dimensions prior to construction. Contractor shall schedule work to be done in two phases. The first phase shall consist of contractor survey work for inspection and verification of existing bridge conditions and verification of quantity of structural members to be repaired or replaced. All discrepancies shall be promptly called to the attention of the Engineer and shall be resolved prior to proceeding with the demolition and construction work. The second phase shall be the construction phase including repair and repaint work indicated in plans and special provisions.
4. As-built plans of the existing bridge are available for review from the State of Hawaii Department of Transportation, Highways Division, Design Branch, Kakuhihewa Building Room 609, 601 Kamokila Boulevard, Kapolei, Hawaii 96707, Phone no. 808-692-7586.
5. Protect from damage existing structures to remain. Protect from damage and clean existing reinforcing steel to be incorporated in new concrete work. See Standard Specifications Section 202 "Removal of Structures and Obstructions".

HAZARDOUS MATERIALS NOTES

1. Portions of existing bridge structure are known to contain lead-based paint. Bridge will be encapsulated except in certain areas of bridge where abatement will be required for repairs. Contractor shall refer to the report prepared by Bureau Veritas North America, Inc. and entitled "Hazardous Materials Assessment with Soil and Sediment Sampling and Analysis, Repair and Repaint Karsten Thot Bridge, District of Wahiawa, Island of Oahu, dated March 2013.
2. Refer to Special Provisions Section 695 "Lead in Construction" for removal and disposal of lead in construction.

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

GEORGE O. GUTIERREZ JR.
LICENSED PROFESSIONAL ENGINEER
NO. 12107-S
HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/16
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURAL NOTES

KAMEHAMEHA HIGHWAY
Repair and Repaint Karsten Thot Bridge
Federal Aid Project No. BR-080-1(012)

Scale: No Scale Date: Sept 2014

SHEET No. S1.2 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-080-1(012)	2014	22	82

ABBREVIATIONS:

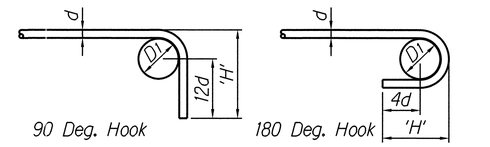
℄	And
A.B.	Anchor Bolt
Abut.	Abutment
A.C.	Asphalt Concrete
Approx.	Approximate
BL	Baseline
Blk.	Block
Bm	Beam
Bot., (B)	Bottom
Brg.	Bearing
c.c.	Center to Center
CL	Centerline
Clr.	Clear
Col.	Column
Conc.	Concrete
Conn.	Connection
Const. Jt.	Construction Joint
Cont.	Continuous
C.P.	Complete Penetration
Dbl.	Double
Deg.	Degrees
Demo	Demolish
Det.	Detail
Dia	Diameter
Dwg	Drawing
Ea.	Each
E.F.	Each Face
El, Elev.	Elevation
Eq.	Equal
Est.	Estimated
E.W.	Each Way
Exist., (E)	Existing
Exp.	Expansion
Ext.	Exterior
Fin.	Finish
Fin. Gr.	Finish Grade
Ft.	Feet, Foot
Ftg.	Footing
Galv	Galvanized

ABBREVIATIONS (CONTINUE):

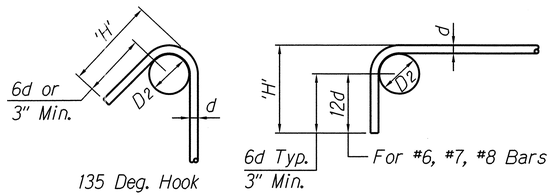
HDG	Hot-Dip Galvanized
Hk.	Hook
Horiz., (H)	Horizontal
H.S.	High Strength
ID	Inside Diameter
in.	Inch
Int.	Interior
Jt.	Joint
L.F.	Linear Foot (Feet)
Lg.	Long
Longit.	Longitudinal
Max.	Maximum
Min.	Minimum
(N)	New
No.	Number
N.T.S.	Not to Scale
O.C.	On Center
Opn'g	Opening
Opp.	Opposite
Pavt.	Pavement
PL	Plate
Qty.	Quantity
Ref.	Reference
Reinf	Reinforcing
Std.	Standard
Sht.	Sheet
Sim.	Similar
SL	Slope
Spc.	Spacing
Sta.	Station
Stl.	Steel
Struct.	Structural
Symm.	Symmetrical
T℄B	Top and Bottom
Thk.	Thick
(T)	Top
Tw	Top of Wall
Typ.	Typical

ABBREVIATIONS (CONTINUE):

UON	Unless Otherwise Noted
Vert., (V)	Vertical
w/	With
≤	Less Than or Equal To
>	Greater Than



PRINCIPAL REINFORCING



TIE OR STIRRUP

HOOK LENGTHS (H) (IN INCHES), UON

Bar Size	Standard Hooks		Stirrup or Tie Hook			
	90 Deg. Hook	180 Deg. Hook	90 Deg. Hook	135 Deg. Hook	D_2	D_1
#3	6	4	3-1/2	4	1-1/2	2-1/4
#4	8	4-1/2	4-1/2	4-1/2	2	3
#5	10	5	5-1/2	5-1/2	2-1/2	3-3/4
#6	12	6	12	7-1/2	4-1/2	4-1/2
#7	14	7	14	9	5-1/4	5-1/2
#8	16	8	16	10	6	6
#9	19	10	-	-	-	9
#10	22	11-1/2	-	-	-	10
#11	24	13	-	-	-	11-1/4
#14	31	-	-	-	-	18-1/4
#18	41	-	-	-	-	24

1 / S1.3 | S1.3 REINFORCING STEEL BAR BENDS AND HOOKS Not to Scale

Notes:

1. All bends shall be made cold.
2. #14 and #18 bars shall be bend-tested and approved prior to bending.
3. Bar bend dimension (hook length) where shown on drawings shall govern if dimension is greater than shown in table.

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STRUCTURAL NOTES LEGEND & ABBREVIATIONS

KAMEHAMEHA HIGHWAY
Repair and Repaint Karsten Thot Bridge
Federal Aid Project No. BR-080-1(012)

Scale: No Scale Date: Sept 2014

SHEET No. S1.3 OF 4 SHEETS