FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	72B-01-13M	2013	7	34

STRUCTURAL NOTES

A. GENERAL

1. Hawaii Standard Specifications for Road & Bridge Construction 2005 and the Special Provisions shall be complied with. For any conflict between the Standard Specifications Special Provisions and these drawings, the more stringent requirement shall apply.
2. Omissions and/or conflicts with the Drawings Special Provisions, and Specifications shall be brought to the attention of the Engineer for resolution before proceeding with the work.
3. Information shown on the drawings has been obtained from field observations conducted in February and March of 2012 and record drawings of the original construction. The accuracy and completeness of the plans, including as-built dimension, are not guaranteed. Dimensions shown on the drawings may not be exact. Contractor shall verify all existing conditions and dimensions before commencing work. Notify the Engineer of any discrepancies.
4. Verify concrete repair quantities for each type of repair with the Engineer before proceeding with the work.
5. Details shown on the drawings shall be typical for all similar conditions. Modify details for special conditions as directed by the Engineer.
6. The Contractor shall provide all necessary measures to protect the new work and existing structures during the construction.
7. The Contractor is responsible for scaffolding, barricades, work platforms, and safety at the job site. Temporary bracing and shoring of elements under repair as required for structural stability shall be the responsibility of the Contractor.
8. No penetrations shall be allowed through any concrete member unless shown on the drawings or approved by the Engineer.
9. Contractor's suppliers and Manufacturer's representative shall visit the site to instruct all Contractor's personnel performing the work, before work begins, on the proper mixing, surface preparation and application of the repair material and shall be available on an on-call basis throughout the extent of the project. Any cost associated with this requirement shall be included in the contract price.
10. Contractor shall refer to Special Provisions Section 509 "Concrete Rehabilitation."
11. Contractor shall refer to Special Provisions Proposal Schedule for list of pay items.

B. REPAIR NOTES

1. Spalls and delaminations are called out as "Spalls". No separate distinction is made between them since the repairs are the same.
2. Unless otherwise indicated on the repair details chip out areas shall extend a minimum of 3" beyond the spall size as indicated in the repair schedule.
3. Chamfers indicated on the drawings are minimums. Match the existing chamfer on the element being repaired if it exceeds the chamfer shown on the repair drawings.
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 to a depth of 3/4" unless otherwise shown on the repair details. Adjust depth of saw cutting to avoid cutting existing rebars. Jackhammer 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 S-15. All exposed rebars shall be cleaned of all scale, rust, dirt, oil and other deleterious materials.
7. Fresh concrete and water with cementitious particles shall be prevented from entering the channel 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. Do not feather edge repairs.
9. 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.
10. Unsound patches shall be removed and the underlying structural elements shall be repaired as a spall.
11. After repairs are completed and accepted by Contractor's quality control specialist, coat repaired areas and all existing concrete areas with Sika FerroGard 903 or equal.

C. CONCRETE

1. Surface repair mortar shall be a factory blended surface repair material combined with a polymer type admixture having a minimum compressive strength of 7,000 PSI at 28 days and used for repairs where forming is not required and for areas less than 2 square feet. Use Sikatop 123 or equal. Install per Manufacturer's recommendations.
2. Polymer modified concrete shall be a mixture of cement, fine aggregate, coarse aggregate, polymer type admixture, super-plasticizing admixture, corrosion inhibitor admixture and water. It shall have a minimum compressive strength of 2,000 psi at 6 hours and 7,000 psi at 28 days and shall be used for repairs where forming is required.
3. Unless otherwise indicated, admixtures shall be used at the Contractor's option subject to approval of the Engineer.
4. Use of calcium chloride in any concrete is prohibited.
5. The patch material shall attain 4,000 psi concrete strength prior to opening lane(s) above to traffic.

D. REINFORCING STEEL (NON-PRESTRESSED)

1. Detailing of concrete reinforcement shall be in accordance with ACI 315.
2. All reinforcing steel shall be high strength deformed bars conforming to ASTM A615, grade 60, unless otherwise noted.
3. Coat existing exposed reinforcing steel with ASTM C881 Sikadur 32 HiMod or approved equal after cleaning.
4. Reinforcement hooks and bends shall be standard hooks conforming to the provisions of the American Concrete Institute (ACI 318-01), unless otherwise noted.
5. Reinforcement shall be lapped 48 bar diameters minimum at splices. Stagger splices wherever possible, unless shown otherwise, or refer to weld splice detail on sheet S-15.

E. CRACK REPAIRS

1. Crack sealer shall be Sikaflex-1a or approved equal.
2. Epoxy injected in cracks shall be Sikadur 35 HiMod LV LPL or approved equal.
3. Install per Manufacturer's recommendations.

F. TRAFFIC CONTROL

1. For traffic control plans and notes, see Civil sheets.
2. For vehicular traffic restrictions on bridge during construction, refer to drawing sheet S-19 and to Special Provisions Section 509.03(H)(3) Traffic Control.
3. Vehicular traffic on bridge shall not exceed 25 mph, or a lessor speed limit when specified elsewhere.

ABBREVIATIONS

a.b.	Anchor Bolt
Abut	Abutment
a.c.	Asphalt Concrete
Approx	Approximate
BL	Baseline
Bm	Beam
Bot	Bottom
CL	Center Line
Clr	Clear
Col	Column
Conc	Concrete
Demo	Demolish
Det	Detail
Dia	Diameter
Ea	Each
Elev	Elevation
Exist	Existing
Gr	Grade
Horiz	Horizontal
Min	Minimum
M.S.L.	Mean Sea Level
mtl	Metal
O.C.	On Center
Reinf	Reinforcing

ABBREVIATIONS (CONT.)

Sect	Section
Sq	Square
Sta	Station
Typ	Typical
Vert	Vertical
V.I.F.	Verify-in-Field

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

NORMAN K. NAGANINE
LICENSED PROFESSIONAL ENGINEER
No. 5479-S
HAWAII, U.S.A.

LICENSE EXPIRES: 4/30/14

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Norman K. Naganine

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURAL NOTES

KALANIANAOLE HIGHWAY
Emergency Repairs of Ihiihilauakea Bridge
Project No. 72B-01-13M

Scale: None Date: Jan. 16, 2013

SHEET No. S-4 OF 26 SHEETS