FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-2(71)	2018	42	68

GENERAL NOTES

DESIGN SPECIFICATIONS:

A. AASHTO 2010 LRFD Bridge Desigh Specifications, Third Edition, including all interim revisions.

MATERIALS:

A. Reinforced Concrete: Class A, unless otherwise noted
B. Reinforcing Steel: ASTM A 615, Grade 60
C. Admixture in concrete: See Special Provisions
D. All expansion and premolded joint filler shall be incidental to concrete and will not be paid for separately.
E. All structural steel shall be ASTM A 36, hot-dip galvanized after fabrication.
F. All welding shall be in accordance with the current edition of Bridge Welding Code ANSI/AASHTO/AWS D 1.5
G. All anchor bolts, washers and nuts shall be ASTM F 1554, Gr. 55, hot-dip galvanized after fabrication, unless noted otherwise. All threaded rods (studs) shall be ASTM A 449 Type 1, hot-dip galvanized after fabrication.
H. Epoxy shall be "Glass Vial" or "Double Cartridge" type. Epoxies that require manual measuring or mixing will not be allowed. Epoxy shall meet the requirements of ASTM C 881, Type IV, Grade 3, Class C.

CONSTRUCTION METHODS:

A. Refer to Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 2005 Edition and Special Provisions.
B. Except as noted otherwise, all vertical dimensions are measured plumb.
C. For steel reinforcing, stagger all splices where possible.
D. Steel reinforcing shall be supported, bent and placed per LRFD Bridge Design Specifications.
E. For cast-in-place concrete, minimum reinforcement cover:
Concrete cast against earth: 3"
Walls: 2"
F. At time concrete is placed, reinforcing shall be free from mud, oil, laitance or other coatings adversely affecting bond capacity.
G. Reinforcement, dowels and other embedded items shall be positively secured before pouring.
H. Minimum clear spacing between parallel bars shall be one and one-half ($1\frac{1}{2}$) times the diameter of the bars (for bundled bars). But in no case shall the clear distance between the bars be less than one and one-half ($1\frac{1}{2}$) times the maximum size of the course aggregate.
I. All dimensions relating to reinforcing bars (e.g. spacing of bars, etc.) are to centers of bars unless noted otherwise.
J. All footings shall bear on firm undisturbed natural ground or properly compacted structural fill.
K. In the event of over-excavation, the space between the footing/slab/wall and the ground shall be filled with a minimum of Class D concrete at the Contractor's expense at no cost to the State.
L. Where the plans call for reinforcement bars to be embedded or anchored into existing concrete, see Special Provisions Section 674--Concrete Retrofit.
M. Where the plans call for placing fresh plastic concrete against existing concrete, see Special Provisions Section 674--Concrete Retrofit.
N. All existing reinforcing and anchor bolts that cannot be incorporated in the new work shall be completely removed or removed to a minimum depth of $1\frac{1}{2}$ inches below finish grade and the area patched with mortar.
O. All existing concrete faces receiving new concrete in the finish product shall be roughened to a min. ¼" amplitude and cleaned prior to placement of the new pour, unless indicated otherwise or as directed by the Engineer.
P. Existing structure shown by dashed lines. Limits of removal of existing structure shown by x-hatched lines. Saw-cut 1" deep along cut line of existing structure. Removal shall be done in such a manner as to preclude any damage to the existing structures. Large vibratory type of equipment will not be permitted in the removal operation, nor for drilling of holes. Only small vibratory hand tools (15-lbs. max.) approved by the Engineer will be allowed. Any damage to the existing structure due to the Contractor's operation or negligence shall be repaired at his expense with no additional cost to the State, and to the satisfaction of the Engineer.

REFERENCE:

A. Refer to Standard Plans for additional details and notes not covered by details and typical drawings.

GENERAL:

A. All items noted incidental will not be paid for separately.
B. The Contractor shall verify the locations of all existing utility lines and notify their respective owners before commencing with any work.
C. The Contractor shall verify all grades and dimensions before commencing with any work.
D. The Contractor shall be solely responsible for the protection of adjacent property, utilities and existing and new structures from damage due to construction. Repairing any damage shall be at the Contractor's own expense, to the satisfaction of the Engineer. He shall conduct his work in such a manner and provide such temporary shoring or other measures as may be necessary to insure the safety of all concerned and to protect existing structures
E. The Conctractor shall provide temporary shoring or other measures as may be necessary to insure the safety of all concerned and to protect existing structures.
F. Unless noted otherwise, all exposed concrete edges shall be chamfered ¾".

METAL GUARDRAIL TYPE 3 THRIE BEAM:

A. The work necessary to install guardrail shall include all labor, materials, tools, equipment and incidentals necessary to complete the work and will not be paid for separately.
B. Terminal Connector, Transition Section and Thrie Beam shall be fabricated from 10-gauge steel conforming to the requirements of AASHTO M 180, Type II, Class B.
C. Terminal Connector, Standard Spacer, including all anchor bolts, cap PL, nuts and washers, shall be hot-dip galvanized after fabrication. Supports shall be spaced as shown on the detail drawings with rail parallel to roadway, unless conditions at site renders it impossible to do so. Flare point to be determined in field.
D. Cap PL shall be fabricated from ASTM A 36. All steel shapes, rails and plates shall conform to ASTM A 36 specifications.
E. Anchor bolt length shall be such that a snug fit of the elements and full thread engagement plus ¼" (max) is attained.
F. Heads of through anchor bolts shall be placed on the traffic side of the rail.
G. Where double (nested) beam occur, 12" "Back-up Plate" not required.

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE MAY 2018
	DRAWN BY	
NOTE BOOK	TRACED BY	MAY 2018
	DESIGNED BY	MAY 2018
	QUANTITIES BY	MAY 2018
	CHECKED BY	

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURAL GENERAL NOTES

HAWAII BELT ROAD GUARDRAIL AND SHOULDER IMPROVEMENTS

Vicinity of Kalopa Bridge and Kaumoali Bridge to E. Paauilo Bridge
Federal-Aid Project No. NH-019-2(71)

Scale: As Noted Date: Nov., 2018

SHEET No. Q1 OF 27 SHEETS

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INDEX TO DRAWINGS

SYMBOLS and ABBREVIATIONS

Detail or Section designation: XXX over XXX | XXX
Sheet No. Section is cut or Detail Location — Sheet No. Detail is drawn

Abbreviation	Meaning
Adj.	Adjacent
Alt.	Alternate
Approx.	Approximate
℄ (B/L)	Baseline
Bal.	Balance
Bet., Btwn.	Between
B.F.	Back Face
B.F.E.	Bottom Footing Elevation
Bk.	Back
Blt.	Bolt
B, Bot., Bott.	Bottom
B.O.S.	Bottom of Slab
℄	Center Line
CiP	Cast in Place
Cl., Clr.	Clear
Conc.	Concrete
Cont.	Continuous
C.Y., Cu. Yd.	Cubic Yards
Det.	Detail
Dia., ø	Diameter
Dim.	Dimension
Dwg., Dwgs.	Drawing, Drawings
EA, Ea., ea.	Each
E.F.	Each Face
El., Elev.	Elevation
Eq.	Equal
Est.	Estimated
E.W.	Each Way
Exc.	Excavation
Exist.	Existing
Exp., (E)	Expansion
Ext.	Exterior
F.F.	Front Face
Fin.	Finish
Fin. Gr.	Finish Grade
Ftg.	Footing
Gr.	Grade
Grd.	Ground
Horiz.	Horizontal
Hwy.	Highway
I.B.	Inbound
I.F.	Inside Face
In.	Inch
Int.	Interior
Inv.	Invert
Jt.	Joint
L	Length
L.F., Lin. Ft.	Linear Feet
Lg.	Long
Longit.	Longitudinal
L.S.	Lump Sum
Lt.	Left
Max.	Maximum
Min.	Minimum
Misc.	Miscellaneous
N	North
N.F.	Near Face
No., #	Number
N.T.S.	Not To Scale
O.B.	Outbound
o.c.	On Center
Opn'g	Opening
R	Radius
Rdwy	Roadway
Ref.	Reference
Reinf.	Reinforcement
Ret.	Retaining
Req'd	Required
R.F.	Rear Face
Rt.	Right
R/W	Right Of Way
Sect.	Section
Shldr.	Shoulder
Sht.	Sheet
Spc.	Space
Spcd.	Spaced
Spcg.	Spacing
Spec.	Specification
Sta.	Station
Std.	Standard
Stirr.	Stirrup
Str.	Straight
Struct.	Structural
Symm.	Symmetrical
T	Top
Temp.	Temporary
Thk.	Thick, Thickness
T.O.S.	Top of Slab
T.O.W.	Top of Wall
Tot.	Total
Transv.	Transverse
Typ.	Typical
Var.	Varies
Vert.	Vertical
w/	With
W.P.	Working Point
W.W.	Wingwall

ORIGINAL PLAN — SURVEY PLOTTED BY KSG, DATE OCT 2006; DRAWN BY; TRACED BY; DESIGNED BY PW, JFU, OCT 2006; QUANTITIES BY PW, JFU, OCT 2006; CHECKED BY PYS, OCT 2006; NOTE BOOK No. kmp_q1.dgn

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

INDEX to DRAWINGS and SYMBOLS and ABBREVIATIONS

HAWAII BELT ROAD GUARDRAIL AND SHOULDER IMPROVEMENTS

Vicinity of Kalopa Bridge and Kaumoali Bridge to E. Paauilo Bridge
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