

STRUCTURAL NOTES

GENERAL SPECIFICATIONS:  
Hawaii Standard Specifications For Road, Bridge, And Public Works Construction (2005), together with Special Provisions prepared for this Contract.

DESIGN SPECIFICATIONS:  
AASHTO LRFD Bridge Design Specifications (2007), 4th edition, including subsequent Interim Specifications.

- DESIGN LOADS:
- A. Dead Load:
1. An allowance of 25 psf (from curb-to-curb) has been provided for in the design for future wearing surface.
- B. Live Load: HL-93
- C. Seismic Load: Acceleration Coefficient = 0.09  
Seismic Performance Zone = 1  
Importance Category = Essential Bridge  
Site Class D

- MATERIALS:
- A. All concrete shall be 4,000 psi (at 28 days) minimum, unless noted otherwise. The maximum w/c ratio shall be 0.45. Vehicular traffic shall not be allowed on new concrete slab until the concrete has attained a minimum compressive strength of 3,000 psi.
- B. All reinforcing steel shall conform to ASTM A615, Grade 60, unless noted otherwise.
- C. Polyethylene film under concrete slab shall be a minimum of 6 mil thick. Cost for polyethylene film shall be incidental to concrete.

- REINFORCEMENT:
- A. Reinforcing bars shall be detailed in accordance with AASHTO LRFD Bridge Design Specifications, 4th Edition, 2007, including subsequent Interim Revisions, unless noted otherwise.
- B. Unless noted otherwise, the covering measured from the surface of the concrete to the face of any reinforcing bars shall be as follows:
1. Slab Top Bars = 2" clr (with tolerances of -0 inch and +3/8 inch)
2. Formed Surfaces exposed to earth and weather = 2" clr
3. Slab Bottom Bars and Sides Of Slab where concrete deposited on grade = 3" clr
- C. Minimum clear spacing between parallel bars shall be 1-1/2 times the diameter of the bar (for non bundled bars) or 1-1/2 times the diameter derived from the equivalent total area of the bars (for bundled bars), but in no case shall the clear distance between the parallel bars be less than 1-1/2 times the maximum size of the coarse aggregate or 1-1/2 inches.
- D. All dimensions relating to reinforcing bars (e.g. spacing of bars, etc.) are to center of bars, unless noted otherwise.
- E. Reinforcing bars shall be securely tied at all intersections and lap splices except where the spacing of the intersections is less than 12 inches in each direction, in which case alternate intersections shall be tied.
- F. No lap splices will be allowed in bottom longitudinal reinforcing bars. For top longitudinal reinforcing bars and transverse reinforcing bars, lap splices shall be staggered a minimum of 2'-0". Minimum lap splice length shall be 40 bar diameters.
- G. In order to expedite the work, the Contractor may prefabricate reinforcing cage(s).

- GENERAL CONSTRUCTION NOTES:
- A. See Standard Specifications and Special Provisions.
- B. 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.
- C. The Contractor shall comply with all construction permits for this project. In addition, the Contractor shall comply with all applicable laws of the Federal, State and County governments.
- D. The Contractor shall verify all site conditions before commencing with work.
- E. During construction work, The Contractor shall not damage the existing bridge concrete head walls or slab and the existing metal guardrails and posts. Any damage caused during construction work shall be repaired or replaced at no cost to the State.
- F. All items noted incidental will not be paid for separately.
- G. Unless noted otherwise, all vertical dimensions are measured plumb.
- H. Unless noted otherwise, all exposed concrete edges shall be chamfered 3/4" x 3/4".
- I. For concrete finish, see Standard Specifications.
- J. Bottom of new concrete slab shall bear on firm undisturbed on-site soils.
- K. The Foundation Design Parameters were based on recommendations contained in Memorandum HWY-LS 2.1181 dated 12/08/2000 titled Soil Design Parameters. Assumed soil Type I.
- L. Vehicular traffic shall not be allowed on new concrete slab until the concrete has attained a minimum compressive strength of 3,000 psi.

SYMBOLS AND ABBREVIATIONS

Detail or Section designation	Sheet No. Section is cut or Detail Location	Sheet No. Detail is drawn	F.F. Fig. Fin. Fin. Gr. Ftg.	Front Face Figure Finish Finish Grade Footing	P.B. P.C. PL Pvmt.	Pull Box Portland Cement Concrete Plate Pavement
Abut. AC Approx. Az.	Abutment Asphaltic Concrete Approximate Azimuth		Ga. Galv. G.R.P. Gr. Grd.	Gage, Gauge Galvanized Grouted Rubble Paving Grade Ground	R Rdwy Ref. Reinf. Ret. Req'd R.F. Rt. R/W	Radius Roadway Reference Reinforcement Retaining Required Rear Face Right Right Of Way
⊕ Bal. B.F. B.F.E. Bk. Blt. Bm. B, Bot., Bott. Br.	Baseline Balance Back Face Bottom Footing Elevation Back Bolt Beam Bottom Bridge		Horiz. Ht. Hwy. I.B. I.F. In. Int. Inv.	Horizontal Height Highway Inbound Inside Face Inch Interior Invert	S S.B. Sect. SF Shldr. Sht. Spec. Sta. Std. Stirr. Str. Struct. Symm.	South Southbound Section Square Feet Shoulder Sheet Specification Station Standard Stirrup Straight Structural Symmetrical
⊕ C.F. Cl., Clr. Conc. Conn. Const. Cont. CRM C.Y., Cu. Yd.	Center Line Cubic Feet Clear Concrete Connection Construction Continuous Cement Rubble Masonry Cubic Yards		Jt. L LBS., lb., lbs. L.F., Lin. Ft. Lg. Longit. L.S. Lt. Ltg. Std. Max. Mech. Min. Misc.	Joint Length Pound, Pounds Linear Feet Long Longitudinal Lump Sum Left Lighting Standard Maximum Mechanical Minimum Miscellaneous	Thk. Typ. Var. Vert. w/	Thick, Thickness Typical Varies Vertical With
Def. Dia., ⌀ Dim. Dwg., Dwgs.	Detail Diameter Dimension Drawing, Drawings		EA, Ea., ea. E.F. Elec. El., Elev. Emb. E.P. Eq. Est. E.W. Exc. Exist.	Each Each Face Electrical Elevation Embankment Edge of Pavement Equal Estimated Each Way Excavation Existing	N N.B. N.F. No., # N.T.S. O.B. o.c. o/s, O/S	North Northbound Near Face Number Not To Scale Outbound On Center Offset

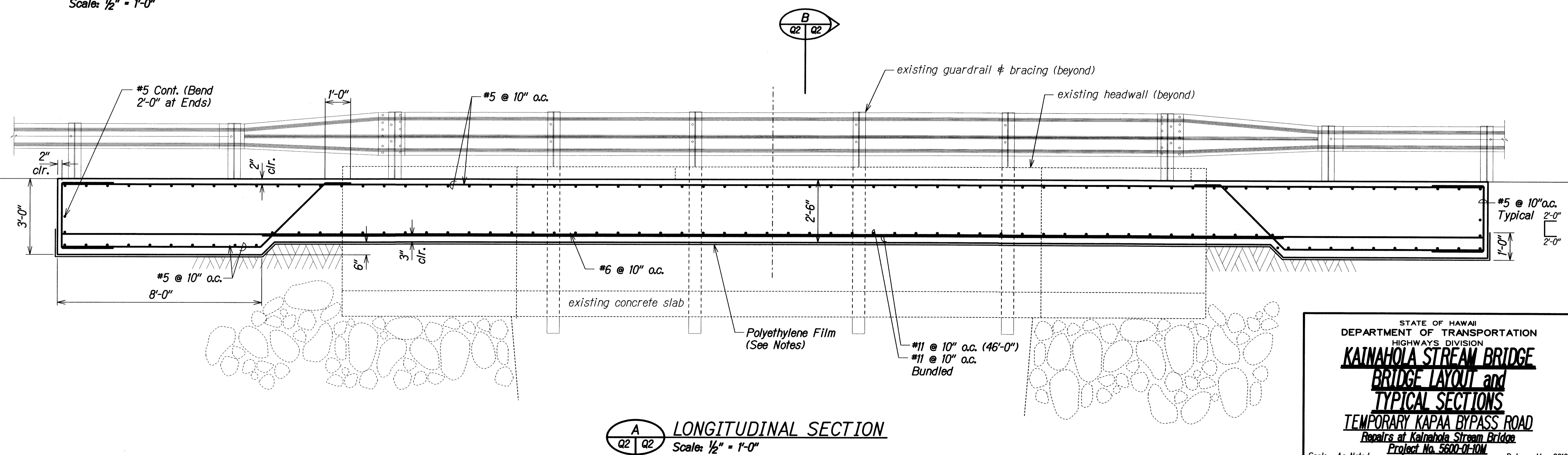
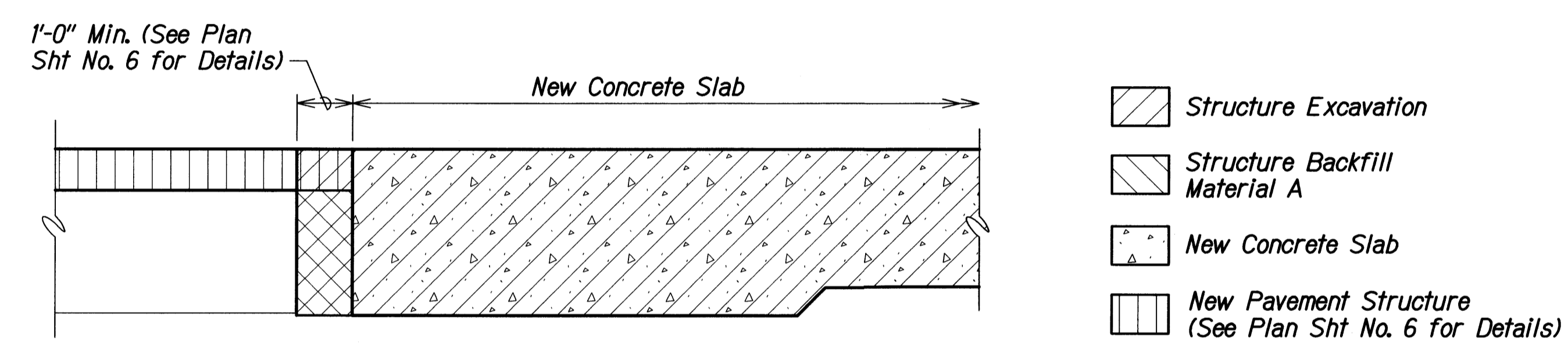
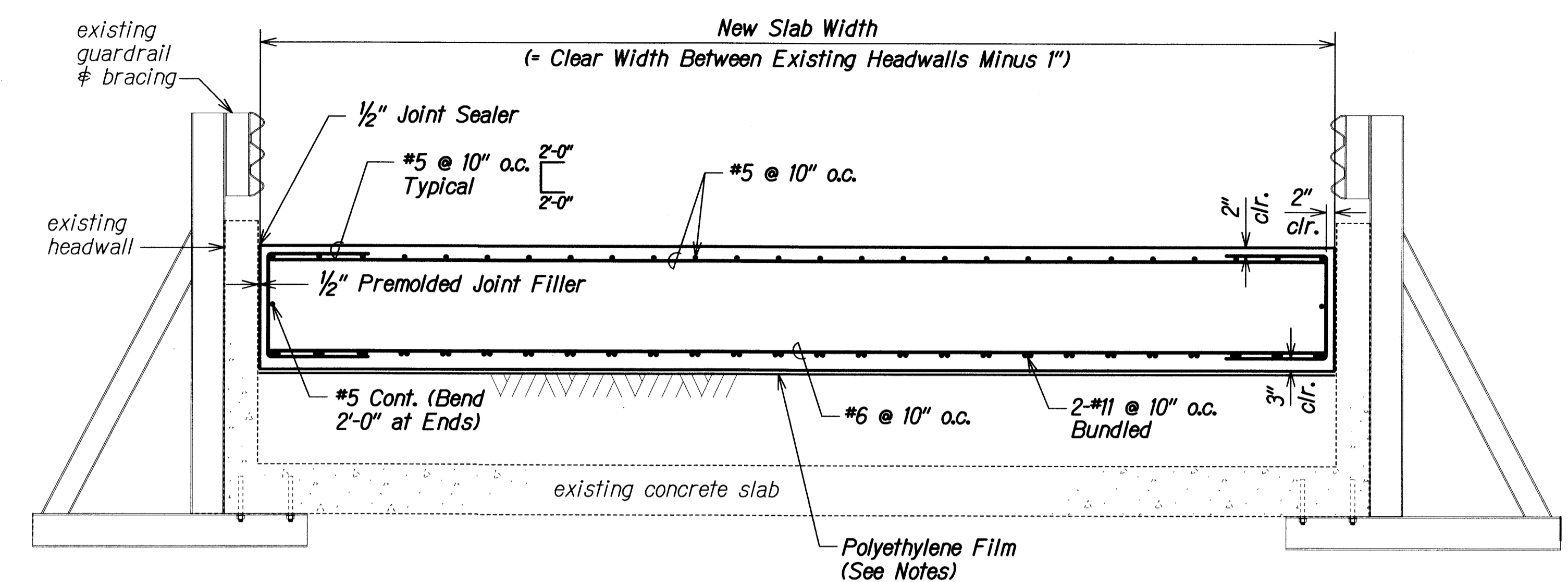
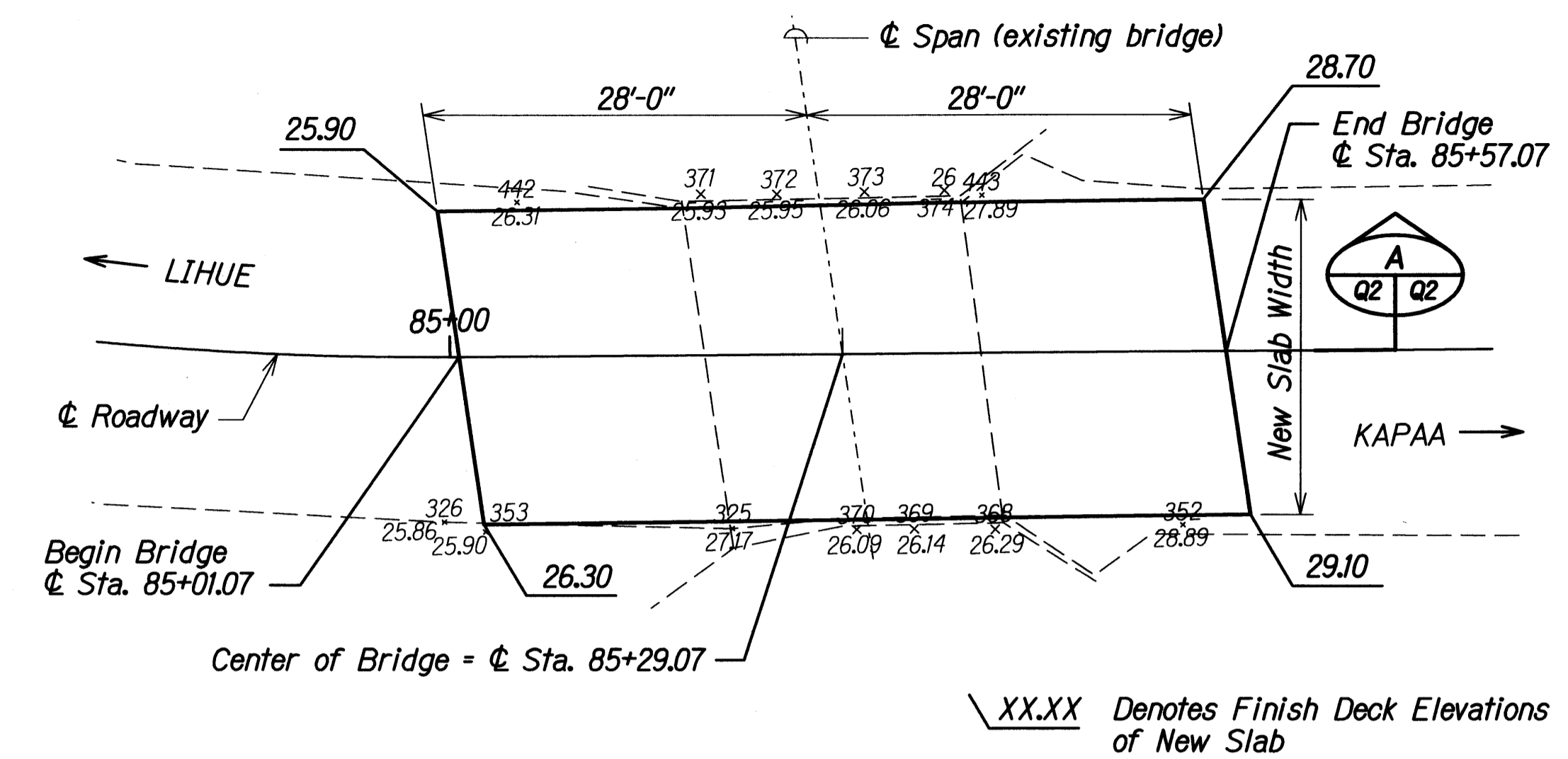
INDEX TO DRAWINGS

SHEET. #	DESCRIPTION
Q1	Structural Notes, Symbols and Abbreviations and Index to Drawings
Q2	Bridge Layout and Typical Sections

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5600-01-10M	2010	8	12

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**KAINAHOLA STREAM BRIDGE**  
STRUCTURAL NOTES, SYMBOLS and ABBREVIATIONS  
and INDEX to DRAWINGS  
TEMPORARY KAPAA BYPASS ROAD  
Repairs at Kainahole Stream Bridge  
Project No. 5600-01-10M  
Scale: As Noted Date: May 2010  
SHEET No. Q1 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5600-01-10M	2010	9	12



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
3tkbq02	CHECKED BY	

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**KAINAHOLA STREAM BRIDGE**  
**BRIDGE LAYOUT and**  
**TYPICAL SECTIONS**  
**TEMPORARY KAPAA BYPASS ROAD**  
**Repairs at Kainahola Stream Bridge**  
**Project No. 5600-01-10M**

Scale: As Noted  
Date: May 2010

SHEET No. Q2 OF 2 SHEETS