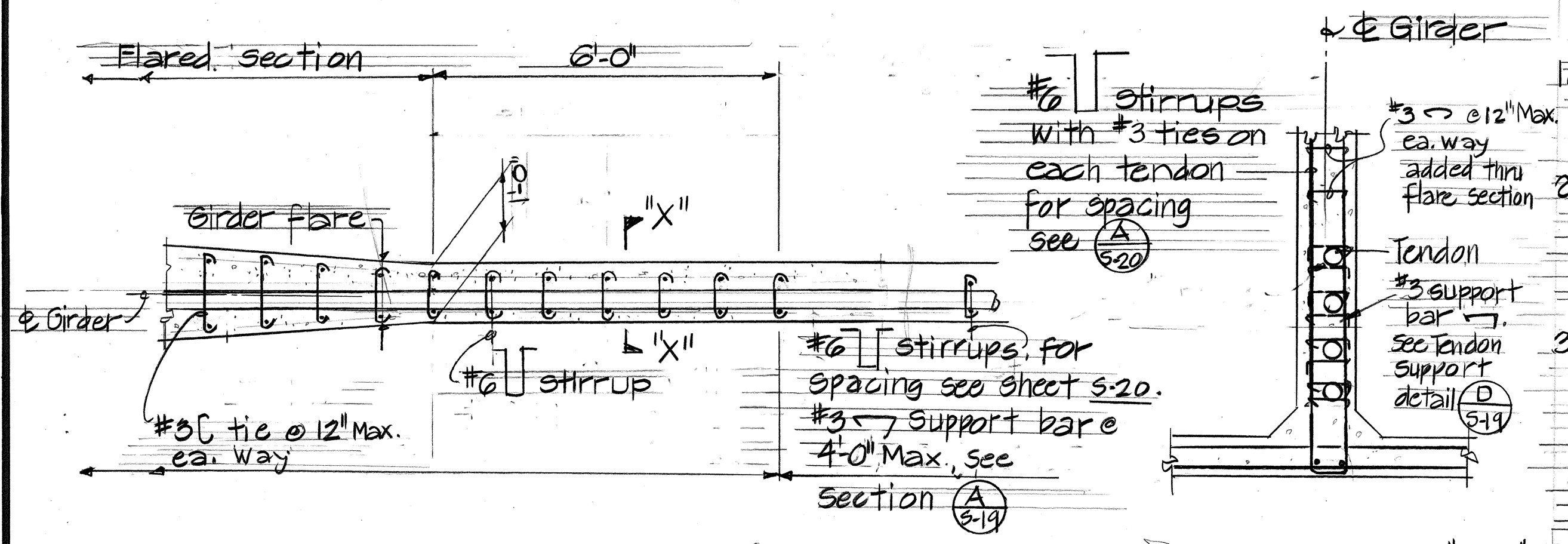


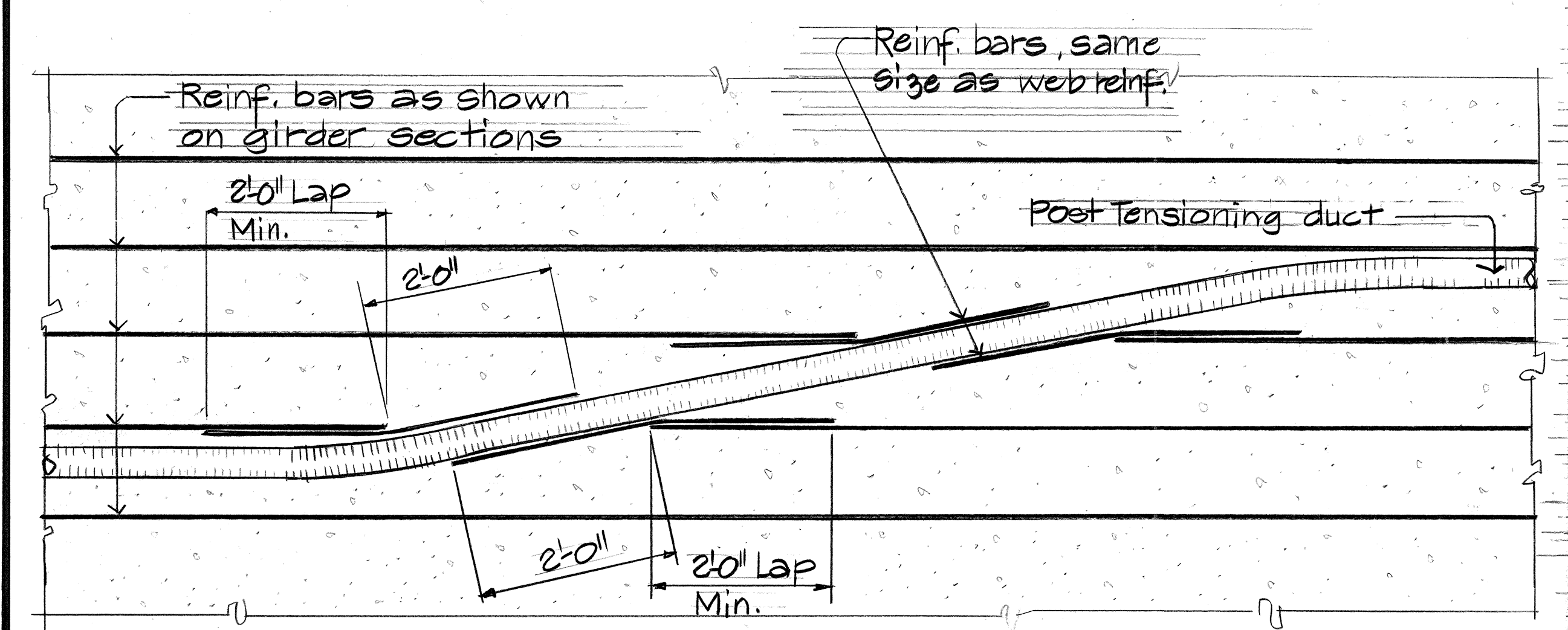


PLAN - SECTION

SECTION "X-X"

TYPICAL STIRRUP REINFORCING AT FLARE OF GIRDER STEM

Scale: 1/2" = 1'-0"



TYPICAL ADJUSTMENT OF WEB REINF. CONFLICTING WITH DUCTS

N.T.S.

GENERAL POST-TENSIONING NOTES

- All work shall conform to the Standard Specifications and Special Provisions.
- Ducts shall be placed so as to align with the center of gravity of the prestressing steel as shown on the drawing.
- All ducts shall be securely tied to the vertical stirrups at a maximum of 4 ft. e. to prevent displacement during placement of concrete. All ducts shall be free of openings and all joints adequately spliced to prevent the intrusion of concrete.
- Anchorage bearing plates shall be placed tight against the forms. Centerline of the tendon shall be normal to the plates. Forms shall be braced and anchored to support the weight of the bearing plates.
- Reinforcing steel shall be adjusted or relocated during the installation of post-tensioning ducts as required to provide intended clearance for the post-tensioning tendons, anchorages, jacks and related equipment. Reinforcing steel interfering with the post tension tendon alignment shall be adjusted as directed by the Engineer.
- Clearance for post tensioning ducts.
 - Horizontal clearance between units 2 1/2" min.
 - Units may be bundled in groups of 3 max.
 - Vertical clearance between bundled units = 3" min.
- Strands are to be placed in rigid metal ducts after the completion of bridge concrete placement. Prior to placing forms for the deck slab, the Contractor shall demonstrate to the satisfaction of the Engineer that the ducts are free from foreign material and other obstructions which would create added friction losses.
- Post tensioning strands shall be 1/2 inch dia., 270 ksi 7 wire stress relieved strands, conforming to ASTM A-416.
- No welding shall be performed in the vicinity of high tensile steel.
- The post tensioning steel shall be located in the girder stems so as to provide an equal force in each girder stem. At the contractor's option, the post tensioning force may vary $\pm 10\%$ from the theoretical equal force for each girder stem, provided the total working force indicated on the drawings is obtained and the working force is distributed symmetrically about the c.g. of the Bridge. Units are to be tensioned so as to minimize stress differentials. The stressing sequence shall be approved by the Engineer.
- Stressing Sequence:
 - No more than 1/2 of the tendons in one girder stem shall be stressed before an equal number is stressed in an adjacent girder stem.
 - At no time during the stressing operations shall more than 1/6 of the total post tensioning force be eccentric about the centerline of the Superstructure.
 - Tendons shall be stressed from two ends. The two ends need not be stressed simultaneously.
- During stressing operations no person shall be directly behind either end of the tendon.
- The working force indicated on the drawings is based on $\mu = 0.25$, $K = 0.0002$, initial jacking force based on $0.70f_p$ and loss of prestress other than friction equal to 33,000 psi. Maximum anchor set allowed 5/8".
- Shop drawings showing complete details of tendon profiles, tendon anchorages, and documented friction and wobble coefficients shall be submitted to the Engineer for approval.
- Calculations indicating final post-tensioning force obtained, specified losses and stressing sequence shall be submitted to the Engineer for approval.
- Provisions to vent the post tensioning ducts within 3' of the high point of the duct shall be provided.
- Should post tensioning ducts require placement above horizontal construction joints in girder webs, extra measures shall be taken to prevent damage and intrusion of concrete or water into ducts during construction.
- After post tensioning work is completed, a concrete cap shall be placed over the post tensioning anchorages. Coat all surfaces, including post tensioning hardware in contact with concrete cap, with a two component epoxy. Just before

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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new concrete is placed against post tensioning anchor plates, apply new coat of epoxy to increase bond with concrete. This work shall be incidental to Post Tensioning Operations in Hanamaulu Viaduct.

9. No tensioning or grouting shall be performed in the absence of the Engineer.

20. Ducts shall be placed against girder stirrups so as to obtain maximum radius of curvature for each tendon.

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

ORIGINAL PLAN	No.
NOTE BOOK	

MYRON G. OKUBO
REGISTERED PROFESSIONAL ENGINEER
No. 4320
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Myron Okubo
Signature

DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION GENERAL POST TENSIONING NOTES AND DETAILS HANAMAULU VIADUCT HANAMAULU-AHUKINI CUTOFF ROAD Ahukini Road to Kauai Hardwoods PROJECT NO. F-051-1(8) SCALE: AS SHOWN DATE: JULY 1985 SHEET NO. S-23 OF S-39 SHEETS	