FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	7600B-01-82 S-RS-0760(2)	1982	97	163

GENERAL NOTES

1. GENERAL SPECIFICATIONS: HAWAII DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1976, TOGETHER WITH SPECIAL PROVISIONS PREPARED FOR THIS CONTRACT.
2. DESIGN SPECIFICATIONS: THE LATEST EDITION OF A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
3. LOADS:
   (A) DEAD LOAD: AN ALLOWANCE OF 18 P.S.F. FOR FUTURE WEARING SURFACE OF ASPHALT CONCRETE HAS BEEN PROVIDED FOR IN THE DESIGN.
   (B) LIVE LOAD: HS20-44 OR INTERSTATE LOADING.
4. MATERIALS:
   (A) ALL CONCRETE SHALL BE CLASS A UNLESS OTHERWISE NOTED.
   (B) ALL REINFORCING STEEL SHALL BE A.S.T.M. A615, GRADE 40 UNLESS OTHERWISE NOTED.
   (C) ALL STRUCTURAL STEEL SHALL BE A.S.T.M. A-36 HOT DIP GALVANIZED, UNLESS OTHERWISE NOTED.
   (D) FOR MATERIALS OF PRESTRESSED CONCRETE BEAM SEE PRESTRESSED CONCRETE NOTES.
5. DESIGN STRESSES: SHALL FOLLOW A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES IN ADDITION TO THOSE LISTED BELOW.

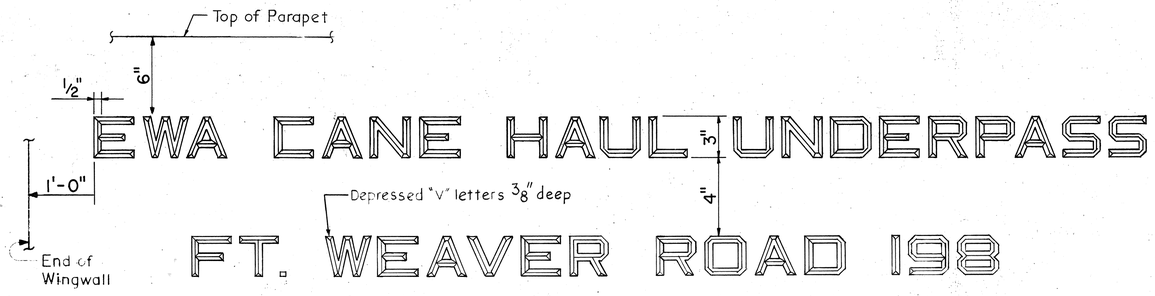
CONCRETE	CLASS A OR CLASS BD
F'c	3000 P.S.I.
Fc	1200 P.S.I.
N	9

FOR PRESTRESSED CONCRETE BEAMS, SEE PRESTRESSED CONCRETE NOTES.

6. REINFORCEMENT:
   (A) THE MINIMUM COVERING MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF ANY REINFORCING STEEL SHALL BE AS FOLLOWS UNLESS OTHERWISE SPECIFIED ON THE PLANS:
   A.1 DECK SLABS
   A. TOP BARS = 1 1/2"
   B. BOTTOM BARS = 1 1/4"
   A.2 FOR PRESTRESSED CONCRETE BEAMS SEE PRESTRESSED CONCRETE BEAM DETAILS.
   A.3 ABUTMENTS AND RETAINING WALLS = 2".
   A.4 CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH = 3".
   (B) REINFORCING BARS SHALL BE DETAILED IN ACCORDANCE WITH STATE OF HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AASHTO AND CRSI.
   (C) MINIMUM CLEAR SPACING BETWEEN PARALLEL BARS SHALL BE 1 1/2 TIMES THE DIAMETER OF BARS (FOR NON BUNDLED BARS), BUT IN NO CASE SHALL THE CLEAR DISTANCE BETWEEN THE BARS BE LESS THAN 1 1/2 TIMES THE MAXIMUM SIZE OF THE COARSE AGGREGATE (1 1/2").
   (D) ALL DIMENSIONS RELATING TO REINFORCING BARS (EG. SPACING OF BARS, ETC.,) ARE TO CENTERS OF BARS UNLESS OTHERWISE NOTED.
   (E) REINFORCING BARS SHALL BE SECURELY TIED AT ALL INTERSECTIONS AND LAP SPLICES EXCEPT WHERE THE SPACING OF INTERSECTIONS IS LESS THAN ONE FOOT IN EACH DIRECTION, IN WHICH CASE ALTERNATE INTERSECTIONS SHALL BE TIED.
7. ELASTOMERIC PADS: BOTTOM OF BRIDGE BEARING PADS SHALL BE SECURED TO THE CONCRETE SEATS, TO PREVENT DISPLACEMENT, WITH ADHESIVES APPROVED BY THE ENGINEER. ALL CONCRETE PAD ELEVATIONS ARE BASED ON STEEL LAMINATED ELASTOMERIC BEARING PADS. IF THE CONTRACTOR ELECTS TO USE FIBER GLASS LAMINATED ELASTOMERIC PADS, INSTEAD OF STEEL LAMINATED ELASTOMERIC PADS, HE SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS.
   (A) THE FIBER GLASS LAMINATED ELASTOMERIC PADS SHALL COMPLY WITH THE DETAILS SHOWN ON THE PLANS AND THE REQUIREMENTS OF THE SPECIAL PROVISIONS.
   (B) APPROPRIATE REVISIONS SHALL BE MADE TO THE CONCRETE PAD ELEVATIONS TO REFLECT THE REDUCTION IN THICKNESS FOR THE FIBER GLASS LAMINATED BEARING PADS. ANY SUCH REVISIONS SHALL BE APPROVED BY THE ENGINEER.
3. CONSTRUCTION METHODS.
   (A) SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
   (B) TOP OF CONCRETE DECK SLAB SHALL BE CONSTRUCTED TO FOLLOW GRADES AND THE ROADWAY VERTICAL AND HORIZONTAL CURVES.
   (C) GIRDER CONCRETE SEATS RECEIVING ELASTOMERIC PADS SHALL BE POURED MONOLITHICALLY WITH SUPPORTING STRUCTURE. TOP OF CONCRETE SEATS SHALL BE FINISHED WITH A STEEL TROWEL TO A SMOOTH LEVEL SURFACE TO THE ELEVATION SHOWN ON THE PLANS. BEARING AREA DEVIATION FROM PLANE SHALL NOT EXCEED 1/16 INCH.
   (D) IN THE INSTALLATION OF ANCHOR BOLTS FOR BRIDGE RAILING, THE CONTRACTOR SHALL PROVIDE A RIGID TEMPLATE TO MAINTAIN THE PROPER LOCATION AND SHALL PROTECT THEM AT ALL TIMES DURING THE PERIOD OF CONSTRUCTION. METHODS SHALL BE APPROVED BY THE ENGINEER.
   (F) EXCEPT AS OTHERWISE NOTED, ALL VERTICAL DIMENSIONS ARE MEASURED PLUMB.
9. GENERAL
   (A) ALL ITEMS NOTED INCIDENTAL WILL NOT BE PAID FOR SEPARATELY.
   (B) THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITY LINES AND NOTIFY THE RESPECTIVE OWNERS BEFORE COMMENCING THE WORK OF EXCAVATION OR THE DRIVING OF ANY TEMPORARY PILING OR SHEETING.
   (C) CONCRETE SURFACES SHALL BE FINISHED IN ACCORDANCE WITH THE HAWAII DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, TOGETHER WITH THE SPECIAL PROVISIONS FOR THIS CONTRACT.
   (D) CONSTRUCTION JOINTS MAY BE RELOCATED OR ADDITIONAL ONES ADDED SUBJECT TO THE APPROVAL OF THE ENGINEER.
   (E) UNLESS OTHERWISE NOTED, ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4" x 3/4".
   (F) FOR ELECTRICAL CONDUIT LOCATION DETAILS SEE ELECTRICAL DRAWINGS.
10. FOUNDATION NOTE: ALLOWABLE FOUNDATION PRESSURE = 5000 P.S.F. GROSS (AASHTO GROUP I).
11. REFERENCES:
   (A) FOR PRESTRESSED CONCRETE NOTES, SEE DRAWINGS FOR PRESTRESSED BEAM DETAILS.
12. SYMBOLS AND ABREVIATIONS

(E) OR (EXP.)	- EXPANSION	JT.	- JOINT
(H)	- HINGE	N.T.S.	- NOT TO SCALE
ALT.	- ALTERNATE	O.C.	- ON CENTERS
AZ.	- AZIMUTH	O/S	- OFFSET
℄	- CENTERLINE	STR.	- STRAIGHT OR STRINGER
℔	- BASELINE	STIRR.	- STIRRUP
E.F.	- EACH FACE	TYP.	- TYPICAL
B.F.	- BOTH FACES	(T) OR T.	- TOP
F.F.	- FAR FACE	(B) OR B.	- BOTTOM
N.F.	- NEAR FACE	BRG.	- BEARING
C.J.	- CONSTRUCTION JOINT	B.H. ELEV.	- BUSH HAMMER ELEVATION
CL.	- CLEAR	T.O.D.	- TOP OF DECK
EL., ELEV.	- ELEVATION	W.P.	- WORKING POINT
E.P.	- EDGE OF PAVEMENT	@	- AT
N.B.	- NORTH BOUND	Ø OR DIA	- DIAMETER
FIN. GR.	- FINISHED GRADE	℄	- PLATE
S. B.	- SOUTH BOUND	G.R.P.	- GROUTED RUBBLE PAVING
F.W.R.	- FORT WEAVER ROAD		

INDEX TO BRIDGE DRAWINGS



NOTE: FOR LOCATIONS OF NAME AND DATE, SEE SHEET NO. S-2. EXACT DETAILS AND SPACING OF LETTERS AND FIGURES SHALL BE AS DIRECTED BY THE ENGINEER.

NAME & DATE OF STRUCTURE

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY T. MIZUIRE	
NOTE BOOK	TRACED BY	
	DESIGNED BY H.P. CHEN	
No.	QUANTITIES BY	
	CHECKED BY J.P. JOHNSON	

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EWA CANE HAUL UNDERPASS
GENERAL NOTES

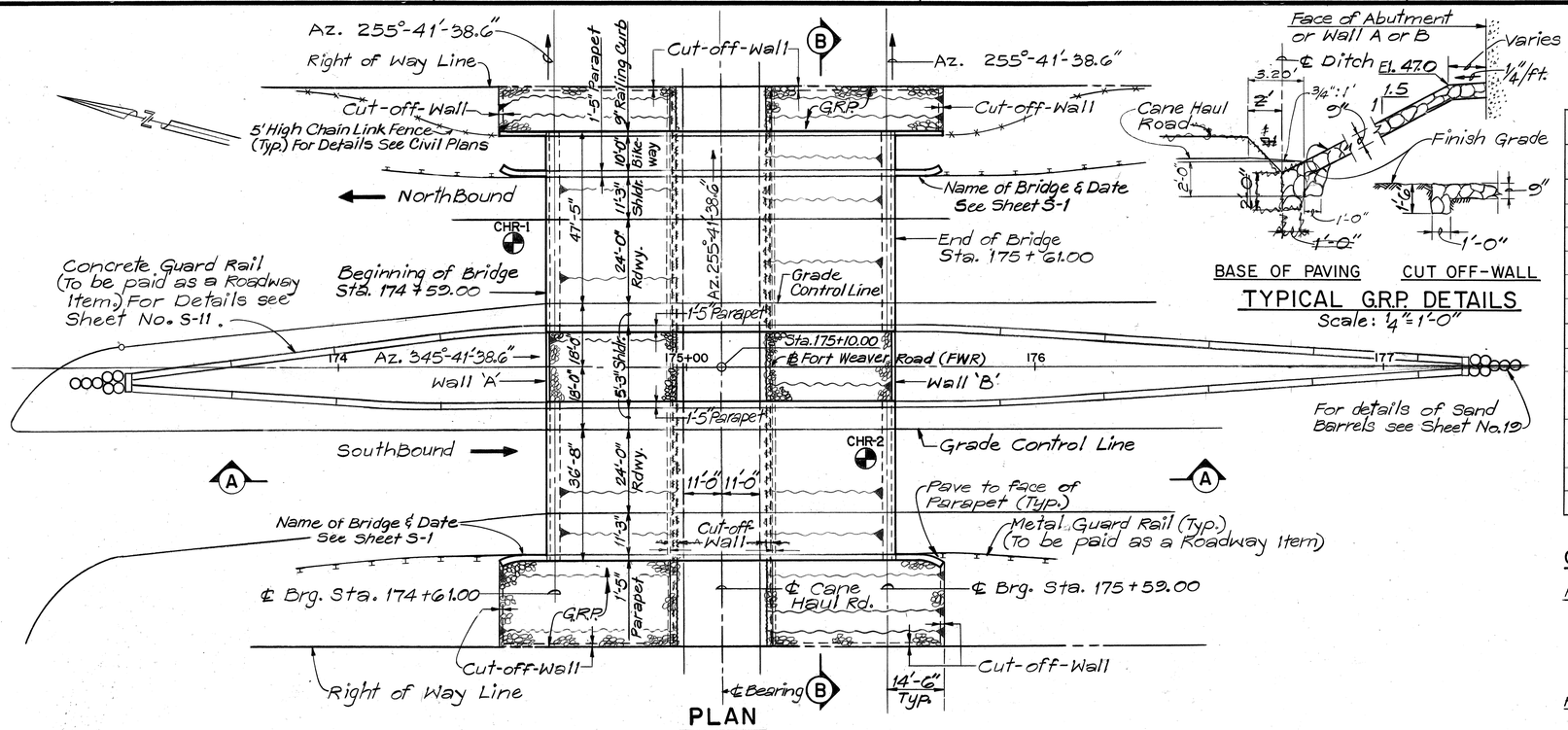
FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

SCALE: NONE DATE: APRIL 1982

SHEET No. S-1 OF S-12 SHEETS

97

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7600B-01-82 S-RS-0760(2)	1982	98	163



PLAN
SCALE: 1" = 20'-0"

BASE OF PAVING CUT OFF-WALL

TYPICAL G.R.P. DETAILS
Scale: 1/4"=1'-0"

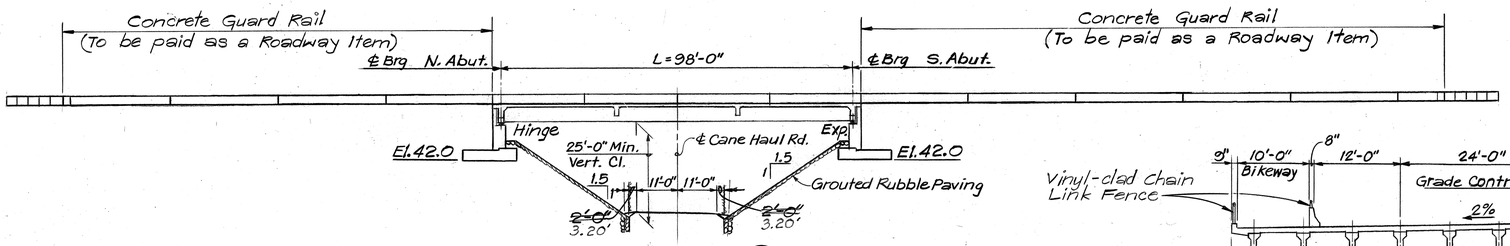
ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY
206.6000	Structure Excavation for Bridges	Cu. Yd.	1,450
206.7000	Structure Backfill	Cu. Yd.	1,220
206.8000	Filter Material	Cu. Yd.	80
503.1092	Concrete in Bridges (Except Footing)	L.S.	(550 C.Y.)
503.1093	Concrete in Bridge Footing	L.S.	(360 C.Y.)
504.4200	Type IV Prestressed Concrete Girder	Lin. Ft.	1,397
507.7100	Standard Parapet (Include End Post)	Lin. Ft.	458
602.0051	Reinforcing Steel in Bridges	L.S.	(120,000 Lbs.)
607.0255	5-Feet Vinyl-clad Chain Link Fence with Top Rail on Concrete Structure.	Lin. Ft.	127
607.0335	3-Feet Vinyl-clad Chain Link Fence without Top Rail on Concrete Structure.	Lin.Ft.	114
612.0100	Grouted Rubble Paving	Cu. Yd.	436
634.0100	Exploratory Work at Structure Footings	—	(Force Account)

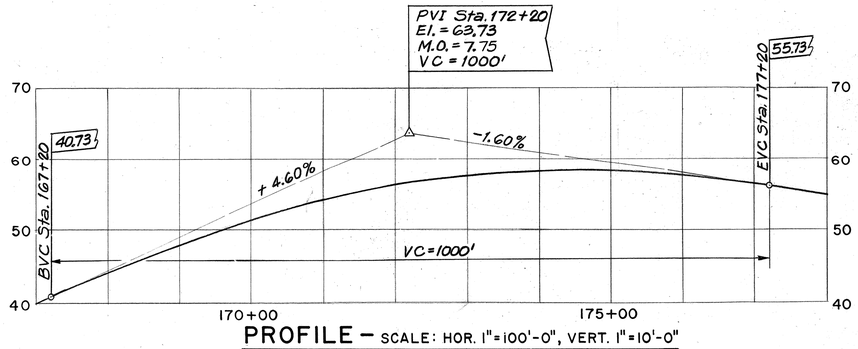
CONSTRUCTION SEQUENCE

Phase I
a) Maintain Traffic on existing Ft. Weaver Rd.
b) Excavate material from under the bridge to obtain sufficient clearance and construct Northbound Structure including Walls 'A' & 'B' and install the 16" Water Line on the bridge.

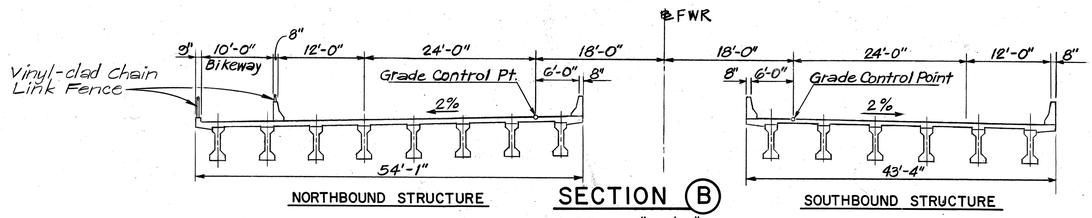
Phase II
a) Shift 2-way traffic to the completed Northbound Structure.
b) Construct the Southbound Structure including the installation of the ACC Duct Line.
c) Complete the roadway excavation under both bridges and install Grouted Rubble Paving Slope Protection.
d) Shift Southbound traffic to the completed Southbound Structure.



SECTION (A)
SCALE: 1" = 20'-0"



PROFILE — SCALE: HOR. 1"=100'-0", VERT. 1"=10'-0"



SECTION (B)
SCALE: 1" = 10'-0"

NOTES:
1. For General Notes see Sheet No. S-1.
2. For boring logs of Borings CHR-1 and CHR-2 see Sheet No. 40.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY T. MIZUIRE	
NOTE BOOK	TRACED BY	
	DESIGNED BY J. P. JOHNSON	
No.	QUANTITIES BY	
	CHECKED BY H.P. CHEN	

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

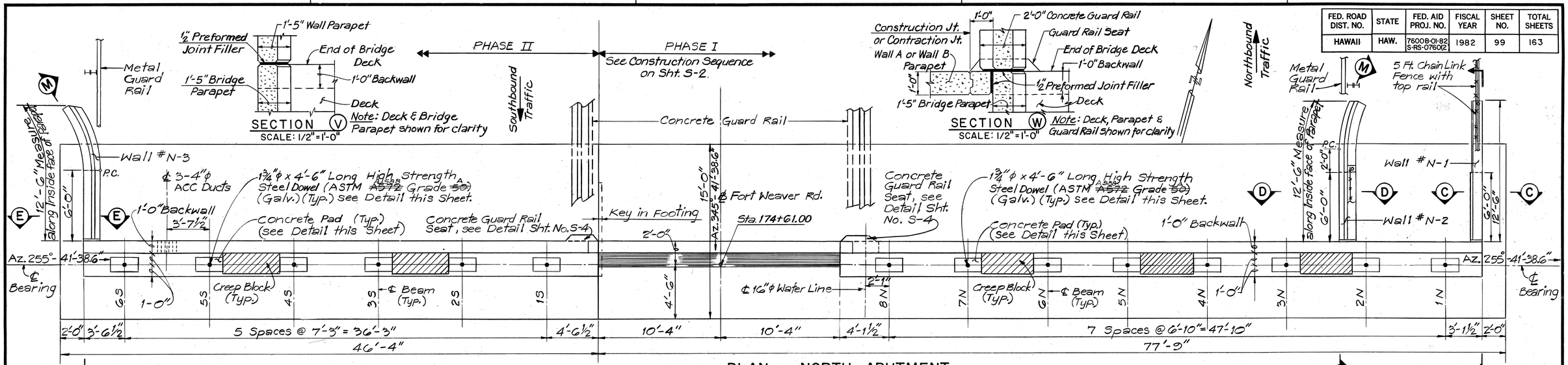
EWA CANE HAUL UNDERPASS GENERAL PLAN AND LONGITUDINAL SECTION

FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

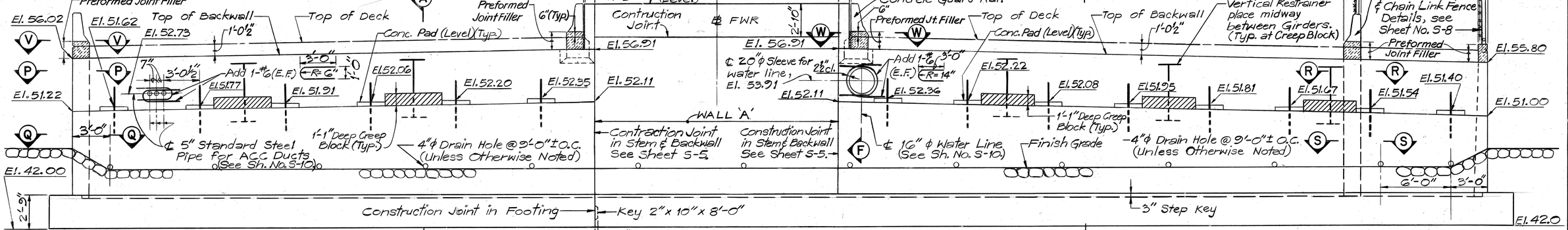
SCALE: AS SHOWN DATE: APRIL 1982

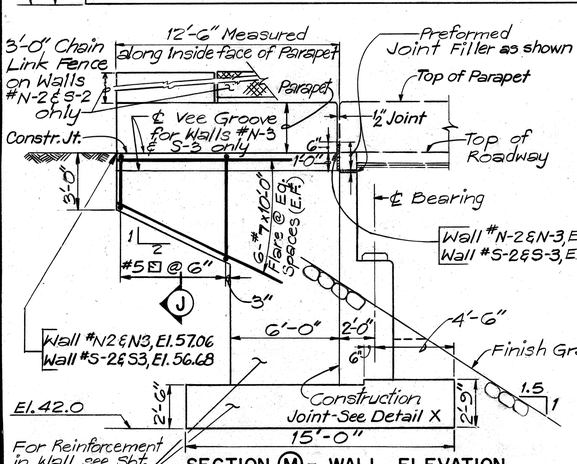
SHEET No. S-2 OF S-12 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7600B-01-82 S-RS-0760(2)	1982	99	163

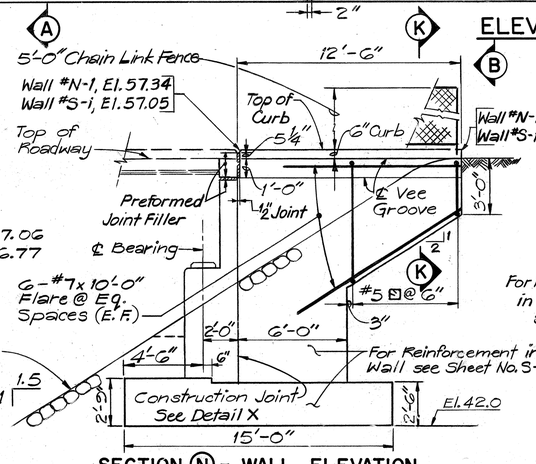


PLAN - NORTH ABUTMENT
SCALE: 1/4"=1'-0"



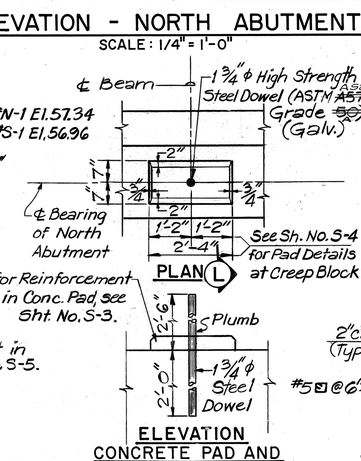


SECTION (M) - WALL ELEVATION
SCALE: 1/4"=1'-0"

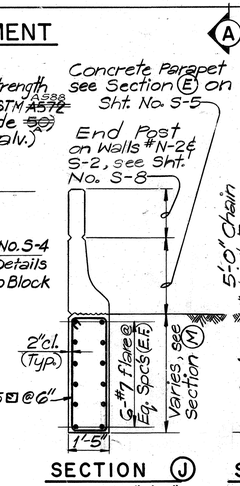


SECTION (N) - WALL ELEVATION
SCALE: 1/4"=1'-0"

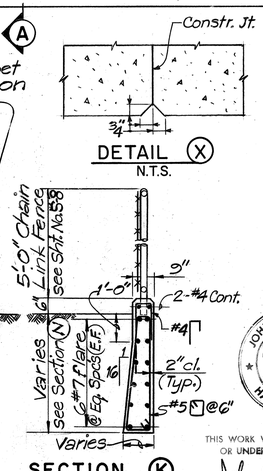
ELEVATION - NORTH ABUTMENT
SCALE: 1/4"=1'-0"



PLAN (L)
ELEVATION CONCRETE PAD AND STEEL DOWEL DETAILS
SCALE: 1/2"=1'-0"



SECTION (J)
SCALE: 3/8"=1'-0"



SECTION (K)
SCALE: 3/8"=1'-0"

NOTES:
1. For Sections A thru F see Sht. No. S-5.
2. For Elastomeric Pad Details see Sht. No. S-5.
3. For Construction & Contraction Joints Details and Payment Limits see Sht. No. S-5.
4. For Vertical Restrainer Detail see Sht. No. S-4.
5. For Horizontal Vee-Groove Detail see Detail B, Sh. No. S-8.
6. For Section L see Sheet No. S-4.

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY R. MALALUAN | TRACED BY C. SHIMIZU | DESIGNED BY C. SHIMIZU | QUANTITIES BY | CHECKED BY H.P. CHEN | DATE | NOTE BOOK | No.

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

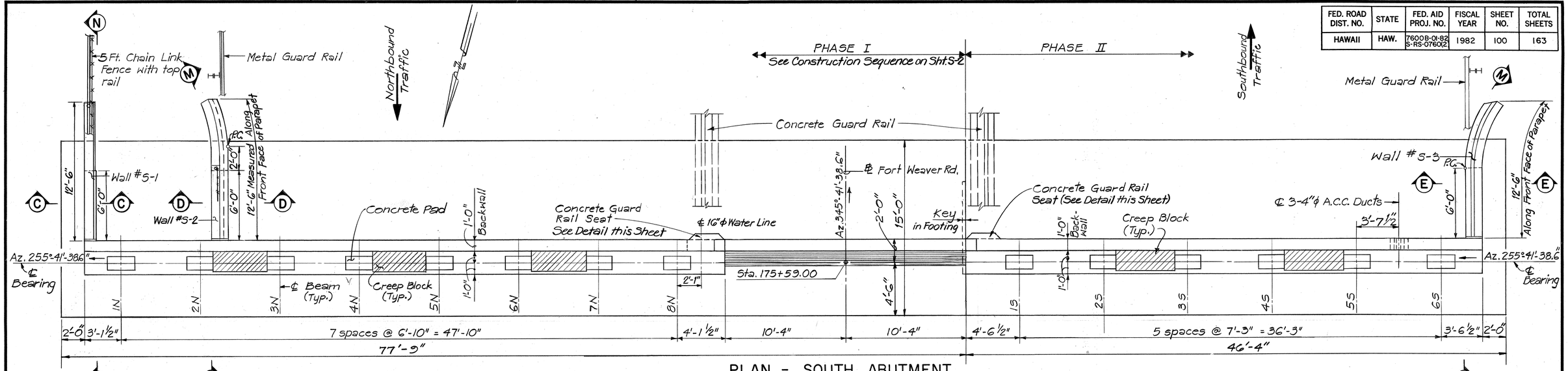
EWA CANE HAUL UNDERPASS
ABUTMENT SHEET 1 OF 3

FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

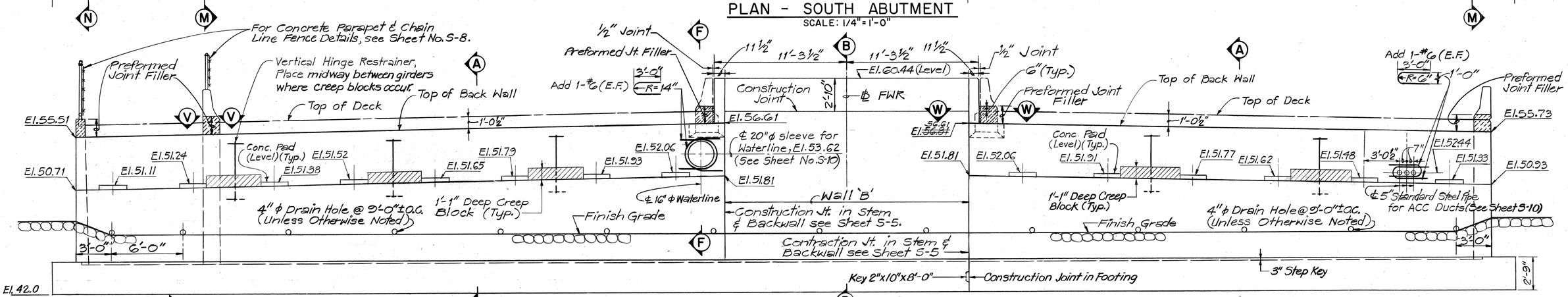
SCALE: AS SHOWN DATE: APRIL 1982

SHEET No. S-3 OF S-12 SHEETS

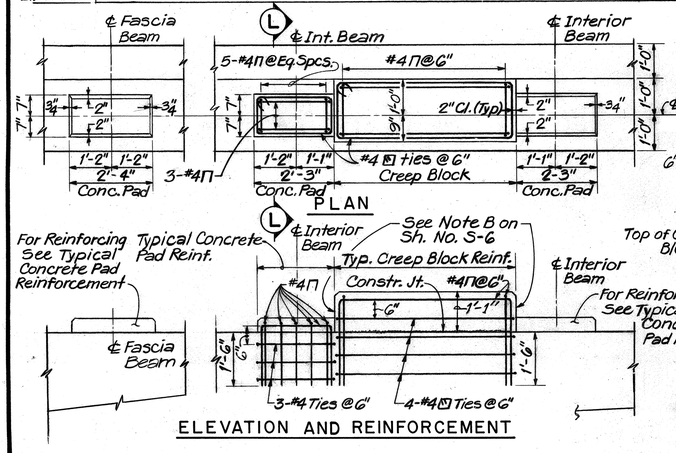
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	76008-01-82 S-RS-0760(2)	1982	100	163



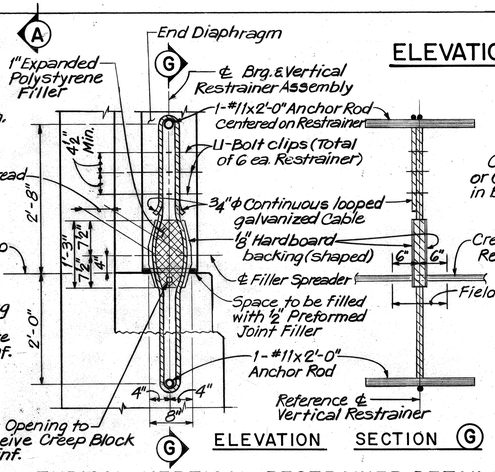
PLAN - SOUTH ABUTMENT
SCALE: 1/4"=1'-0"



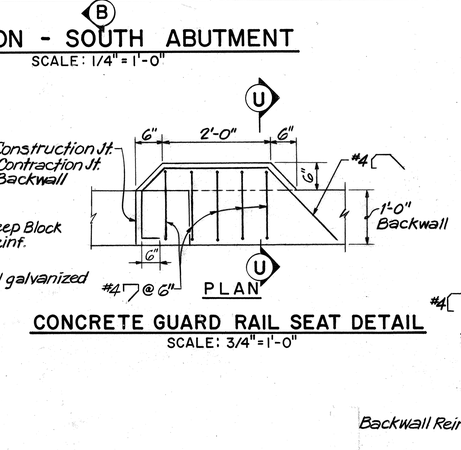
ELEVATION - SOUTH ABUTMENT
SCALE: 1/4"=1'-0"



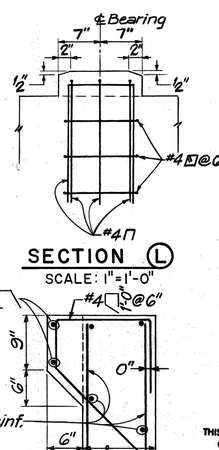
CREEP BLOCK AND CONCRETE PAD DETAILS
SCALE: 1/2" = 1'-0"



TYPICAL VERTICAL RESTRAINER DETAILS
SCALE: 3/4" = 1'-0"



CONCRETE GUARD RAIL SEAT DETAIL
SCALE: 3/4" = 1'-0"



Notes:
1. For Sections A thru F see Sheet No. S-5.
2. For Sections M, N, V & W see Sheet No. S-3.
3. For Elastomeric Pad Details see Sheet No. S-5.
4. For Construction & Contraction Joints Details and Payment Limits see Sheet No. S-5.
5. Vertical Restrainers are incidental to Concrete in Bridges.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY R. MALALUAN	
NOTE BOOK	DESIGNED BY C. SHIMIZU	
No.	QUANTITIES BY	
	CHECKED BY H. P. CHEN	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EWA CANE HAUL UNDERPASS
ABUTMENT SHEET 2 OF 3

FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

SCALE: AS SHOWN DATE: APRIL 1982

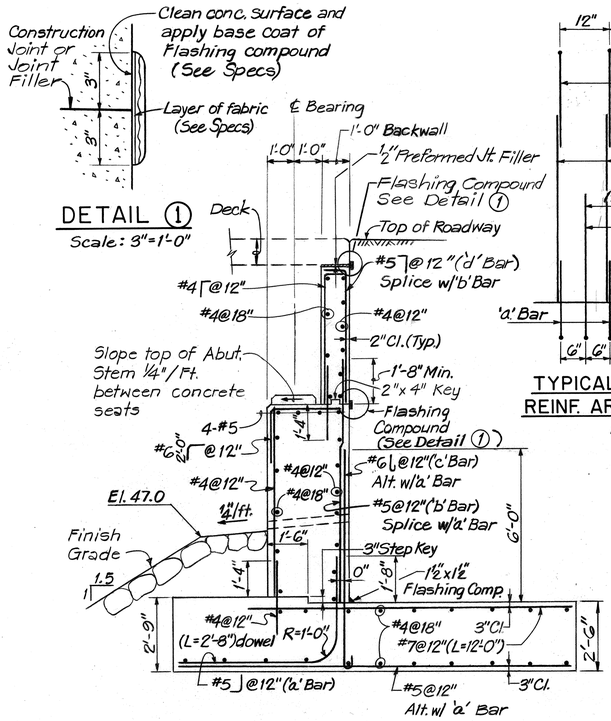
SHEET No. S-4 OF S-12 SHEETS

JOHN P. JOHNSON
REGISTERED PROFESSIONAL ENGINEER
No. 3647
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

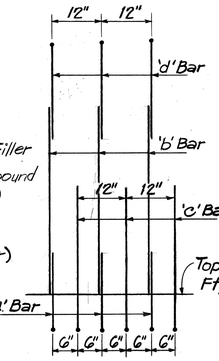
John P. Johnson

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7600B-01-82 S-RS-0760(2)	1982	101	163

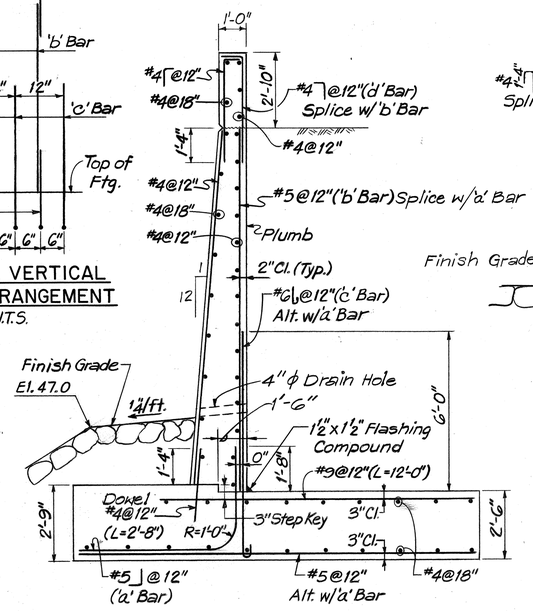


DETAIL ① Scale: 3"=1'-0"

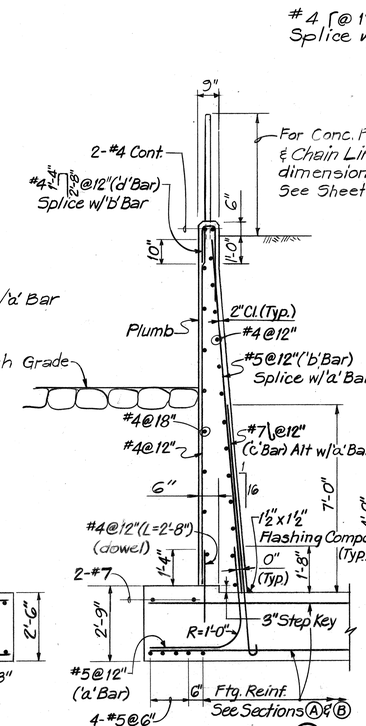
SECTION Ⓐ Scale: 3/8"=1'-0"



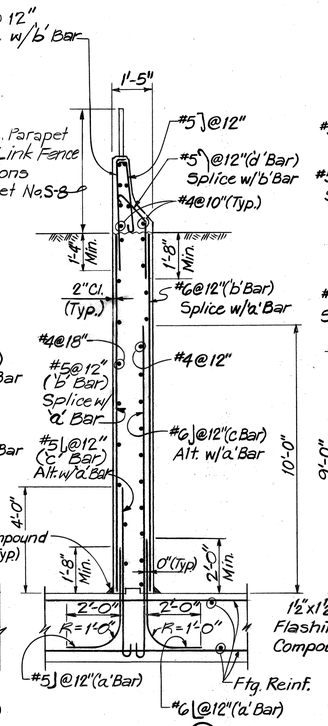
TYPICAL VERTICAL REINF. ARRANGEMENT N.T.S.



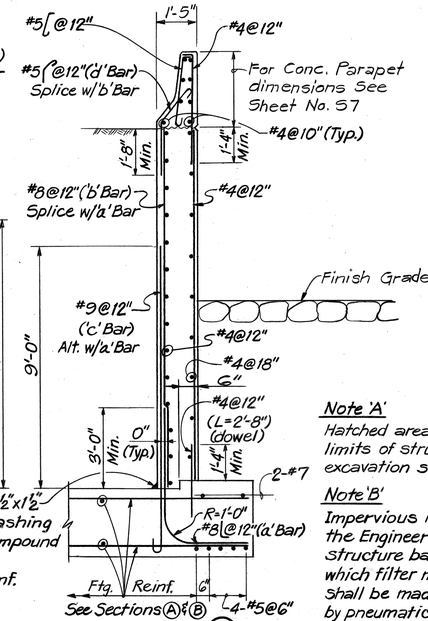
SECTION Ⓑ Scale: 3/8"=1'-0"



SECTION Ⓒ Scale: 3/8"=1'-0"



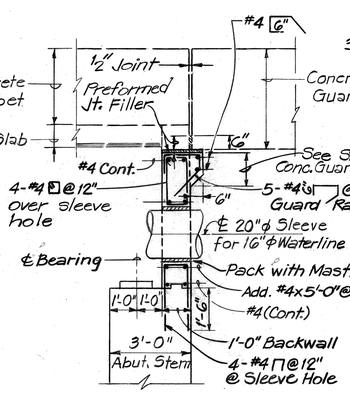
SECTION Ⓓ Scale: 3/8"=1'-0"



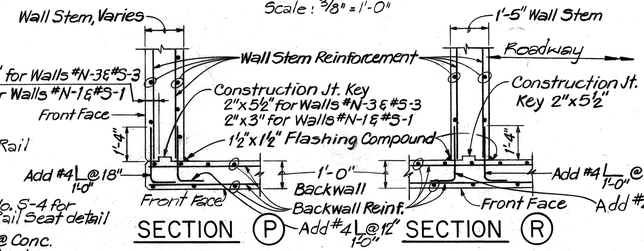
SECTION Ⓔ Scale: 3/8"=1'-0"

Note 'A'
Hatched areas denote the payment limits of structure excavation. All other excavation shall be Roadway Excavation.

Note 'B'
Impervious material as selected by the Engineer shall be incidental to structure backfill. The subgrade upon which filter material is to be placed shall be made impervious as possible by pneumatic tamping or other approved methods.



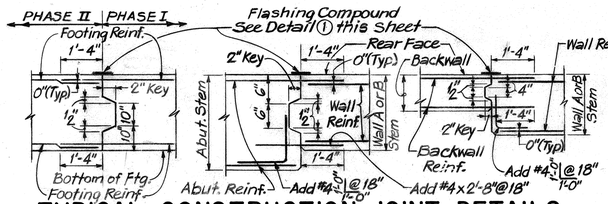
SECTION Ⓕ Scale: 3/8"=1'-0"



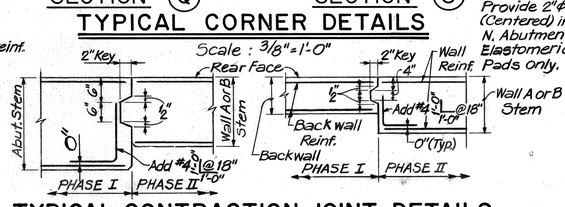
SECTION Ⓟ SECTION Ⓡ

SECTION Ⓠ SECTION Ⓢ

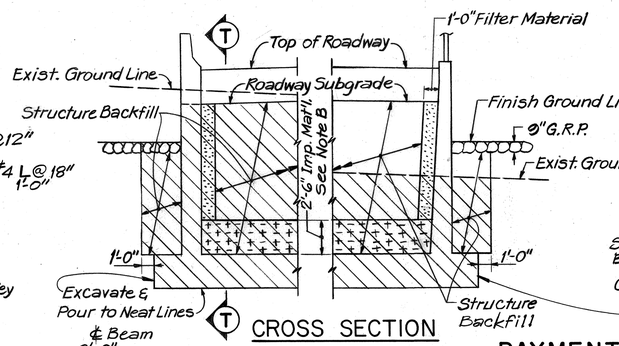
TYPICAL CORNER DETAILS Scale: 3/8"=1'-0"



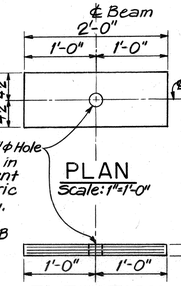
TYPICAL CONSTRUCTION JOINT DETAILS N.T.S.



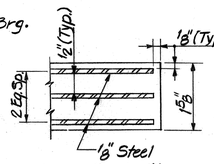
TYPICAL CONTRACTION JOINT DETAILS N.T.S.



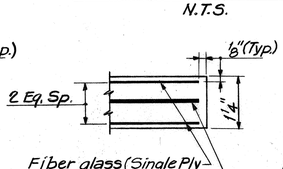
PAYMENT LIMITS N.T.S.



PLAN Scale: 1"=1'-0"



AS DETAILED N.T.S.



ALTERNATE N.T.S.

ELEVATION Scale: 1"=1'-0"

ELASTOMERIC BEARING PAD DETAILS

All Elastomeric Pads and Preformed Joint Fillers are incidental to Concrete in Bridges and will not be paid for separately.

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EWA CANE HAUL UNDERPASS
ABUTMENT SHEET 3 OF 3

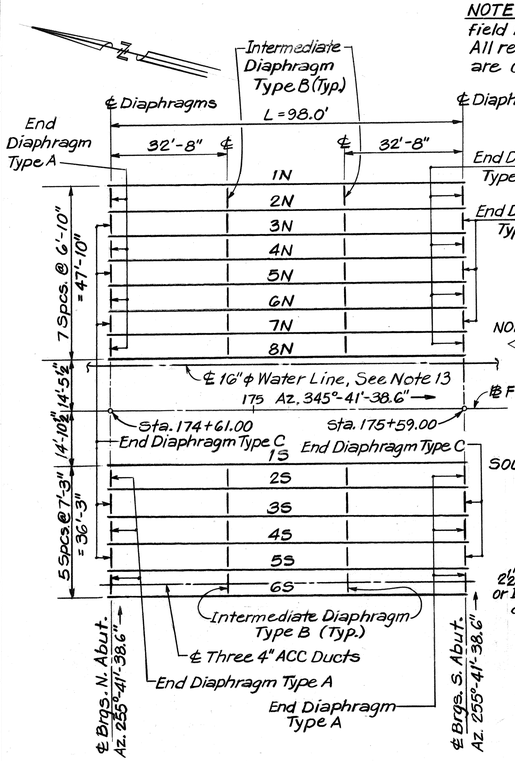
FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

SCALE: DATE: APRIL 1982

SHEET No. S-5 OF S-12 SHEETS

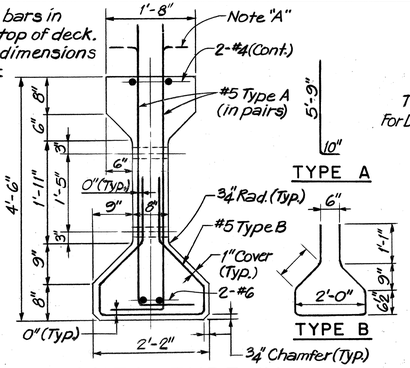
ORIGINAL PLAN	SURVEY PLOTTED BY	T. MIZUKE	DATE
	DRAWN BY	"	"
NOTE BOOK	TRACED BY	C. SHIMIZU	"
No.	DESIGNED BY	"	"
	QUANTITIES BY	"	"
	CHECKED BY	H.P. CHEN	"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	76008-01-82 S-RS-0760(2)	1982	102	163

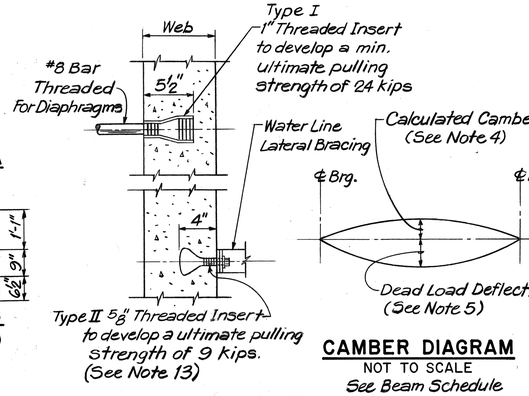


FRAMING PLAN
SCALE: 1"=20'-0"

NOTE "A": Bend bars in field 1½" below top of deck. All reinforcing dimensions are out to out.

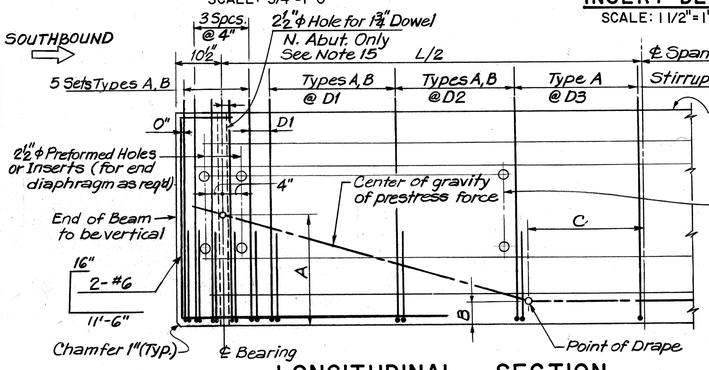


AASHTO TYPE IV TYPICAL BEAM SECTION
SCALE: 3/4"=1'-0"



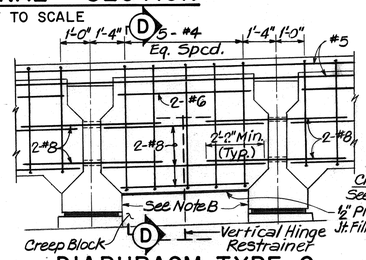
CAMBER DIAGRAM
NOT TO SCALE
See Beam Schedule

INSERT DETAIL
SCALE: 1 1/2"=1'-0"

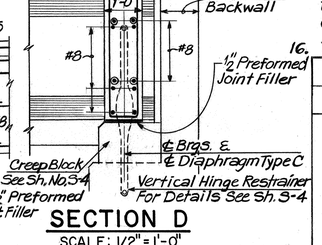


LONGITUDINAL SECTION
NOT TO SCALE

NOTE "B"
Two layers 55 lb. comp. roofing paper between creep block and girder. (Typical)



DIAPHRAGM TYPE C
SCALE: 3/8"=1'-0"



SECTION D
SCALE: 1/2"=1'-0"

BEAM SCHEDULE

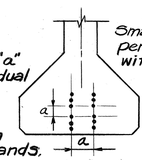
BEAM TYPE	INITIAL PRESTRESS FORCE (KIPS)	FINAL PRESTRESS FORCE (KIPS)	CALCULATED CAMBER SEE NOTE 4	DEAD LOAD DEFLECTION SEE NOTE 5	LOCATION OF CENTER OF GRAVITY OF PRESTRESS FORCE			STIRRUPS			REQUIRED MIN. U.LT. CONC. STRENGTH BEFORE RELEASE OF STRANDS (P.S.I.)
					DIST A	DIST B	DIST. TO PT. OF DRAPE C	NO. OF STIRRUPS @ SPACING D1	NO. OF STIRRUPS @ SPACING D2	SPACING D3	
IV	1400	1084	-1 3/4"	1 3/8"	15.57"	4.35"	10'-0"	11@12"	9@15"	18"	4850

NOTES FOR PRESTRESSED BEAMS:

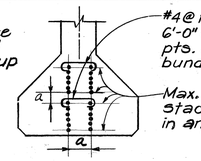
1. Concrete shall have a minimum ultimate 28 day cylinder strength of 6,000 psi.
2. Pretensioned strands shall be 7 wire ½" ϕ stress-relieved steel strands (area = 0.153 in²) with an ultimate strength of 270 ksi. For properties see State Standard Specifications.
   Initial strand stress (before any losses): 199 ksi.; Initial loss = 20,000 psi.
   Total loss due to creep, shrinkage, elastic shortening and relaxation of steel = 45,000 psi.
3. Non-prestressed reinforcing steel shall be Grade 40 unless otherwise noted. For properties see State Standard Specifications.
4. The calculated camber includes the effect of the initial prestress force and the weight of the beam after removal from bed. Negative values shown for calculated camber indicate a net upward deflection. Calculated camber values shown do not account for any camber growth of the beam. The actual camber shall not exceed the calculated camber shown on the plans by more than 100%.
5. The dead load deflection includes the combined effects of the weight of slab, haunch and diaphragm.
6. Strand pattern shall be symmetrical about the longitudinal ℄ of the beam.
7. Strand release sequence shall not induce any lateral deflection of the beam.
8. Contractor shall submit his proposed strand pattern and releasing sequence to the Engineer for approval.
9. During curing care shall be taken to avoid any lateral deflection of the beam due to improper orientation.
10. Lifting devices shall be placed as close as possible to the center line of bearings of the beam. Details and locations of lifting devices shall be submitted to the Engineer for approval. Such approval does not relieve the Contractor of his responsibilities if beam is damaged due to failure of the lifting device.
11. Length of girder shown does not include effect of elastic shortening.
12. Beams shall be stored in accordance with the specifications for at least 70 days before installation.
13. Beam No. 8N has Type II 5/8" threaded inserts for 16" ϕ Water Line Lateral Bracing. For locations see Sheet No. S-10.
14. For details of elastomeric bearing pads see Sheet No. S-5.
15. Annular space around dowel shall be filled with mastic material. Remainder of hole shall be filled with non-shrink, non-metallic premixed grout. Furnishing and placing high strength steel dowels, mastic material and grout are incidental to Concrete in Bridges.
16. Threaded inserts, Types I & II, are incidental to Type IV Prestressed Concrete Girder.

NOTES FOR PRESTRESSING REINFORCEMENT
ARRANGEMENT AND CLEARANCE FOR PRETENSIONED STRANDS

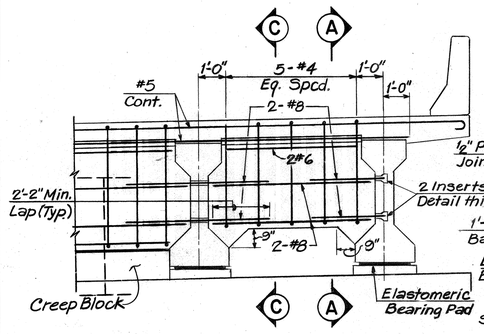
1. Strands may be bundled in groups as shown.
2. The minimum distance "a" between groups or individual strands is 2" for ½"ϕ strands.
3. "a" is measured between centers of adjacent strands.



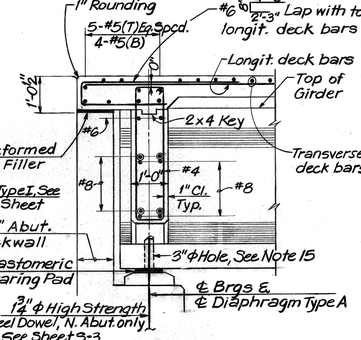
CASE I



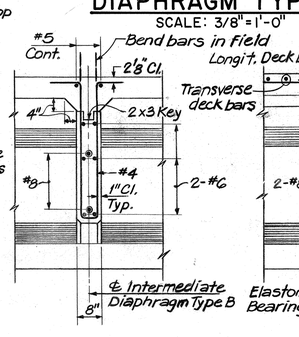
CASE II



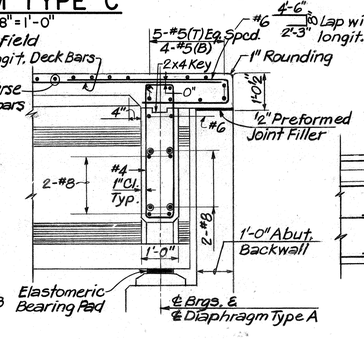
DIAPHRAGM TYPE A
SCALE: 3/8"=1'-0"



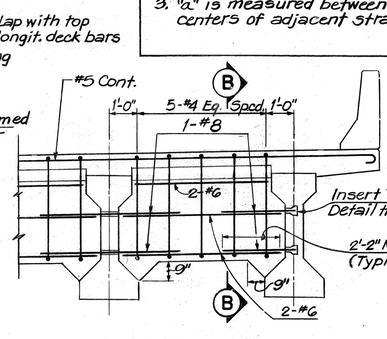
SECTION A
SCALE: 1/2"=1'-0"



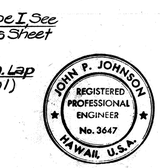
SECTION B
SCALE: 1/2"=1'-0"



SECTION C
SCALE: 1/2"=1'-0"



DIAPHRAGM TYPE B
SCALE: 3/8"=1'-0"



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

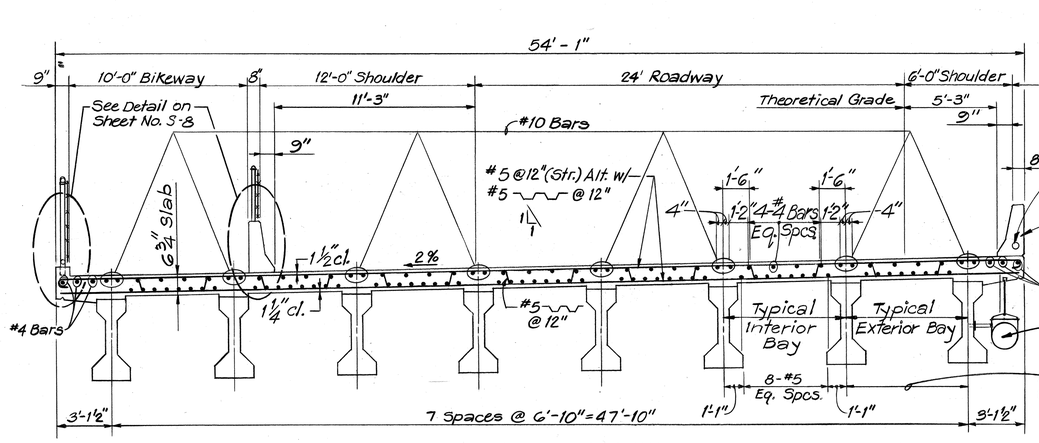
EWA CANE HAUL UNDERPASS
FRAMING PLAN AND PRESTRESSED BEAM DETAILS
FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

SCALE: AS SHOWN DATE: APRIL 1982

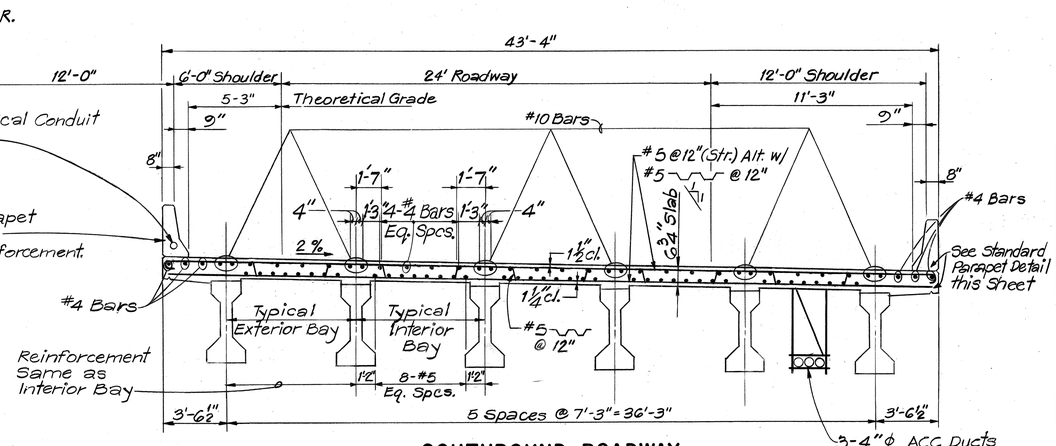
SHEET No. S-6 OF S-12 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY: T. MIZUIRE	DATE
	DRAWN BY:	
NOTE BOOK	TRACED BY: J.P. JOHNSON	
No.	DESIGNED BY:	
	QUANTITIES BY: H.P. CHEN	
	CHECKED BY:	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7600B-01-82 S-RS-0760(2)	1982	103	163



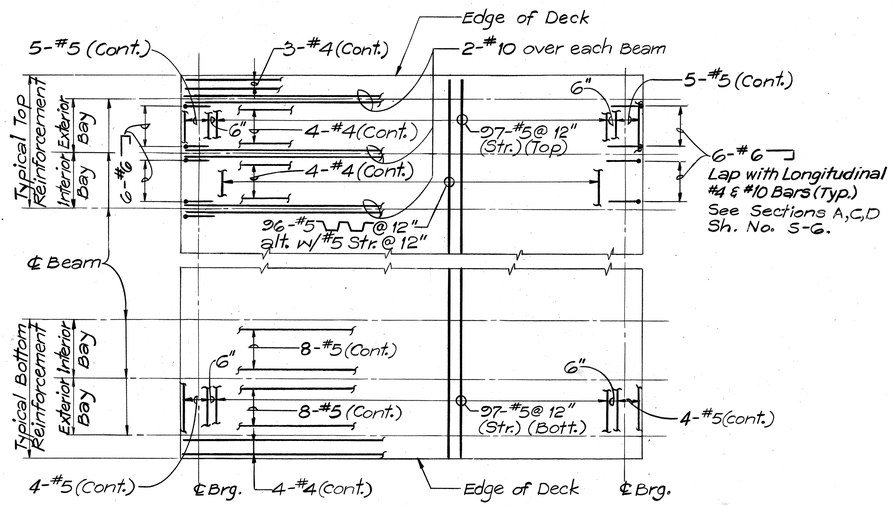
NORTHBOUND ROADWAY



SOUTHBOUND ROADWAY

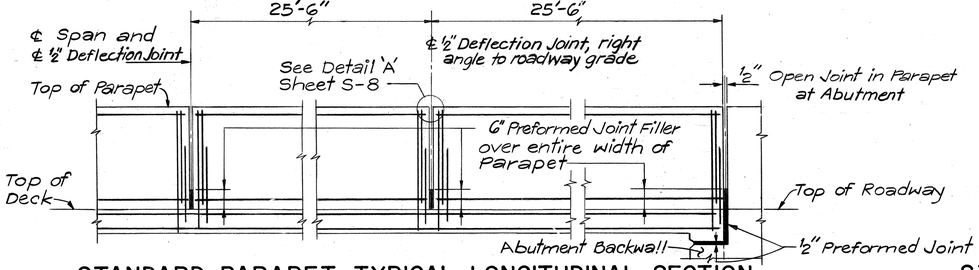
TYPICAL DECK SECTION

SCALE: 1/4" = 1'-0"



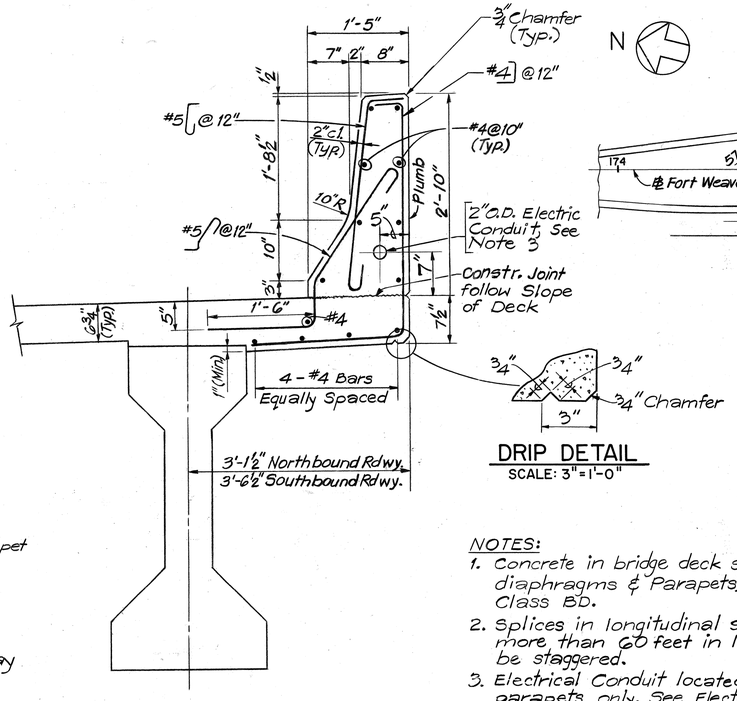
TYPICAL DECK REINF. PLAN

N.T.S.



STANDARD PARAPET TYPICAL LONGITUDINAL SECTION

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

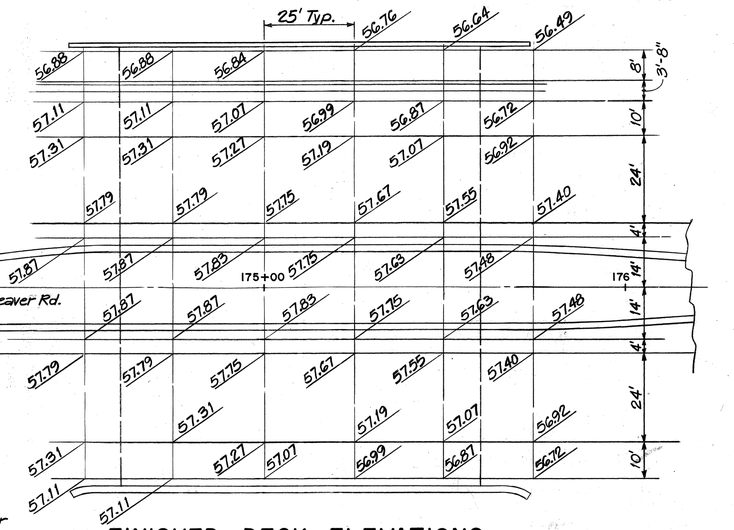


STANDARD PARAPET DETAIL

SCALE: 1" = 1'-0"

DRIP DETAIL

SCALE: 3" = 1'-0"



FINISHED DECK ELEVATIONS

(AFTER IMMEDIATE AND LONG TERM DEFLECTION)

SCALE: 1" = 20'

NOTES:

1. Concrete in bridge deck slab (excluding diaphragms & Parapets) shall be Class BD.
2. Splices in longitudinal steel which is more than 60 feet in length shall be staggered.
3. Electrical Conduit located in median parapets only. See Electrical Plans.

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

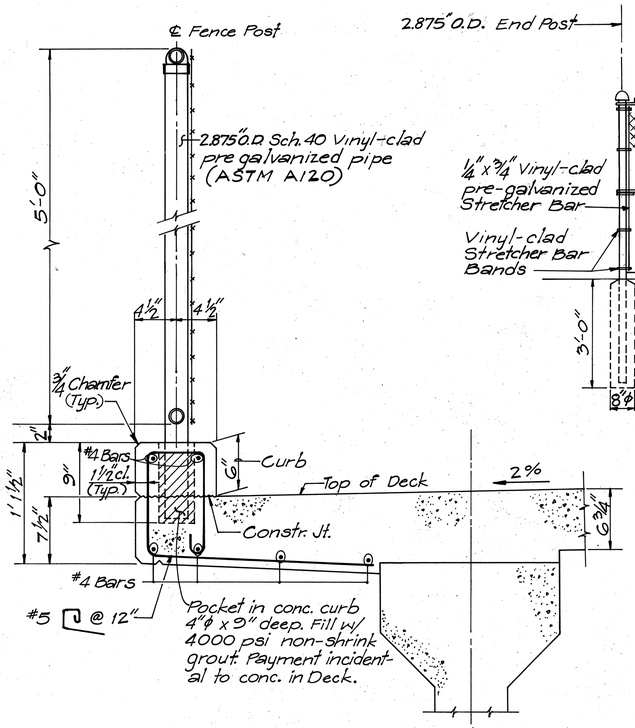
EWA CANE HAUL UNDERPASS
DECK REINFORCEMENT AND PARAPET DETAILS
FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

SCALE: AS SHOWN DATE: APRIL 1982

SHEET NO. S-7 OF S-12 SHEETS

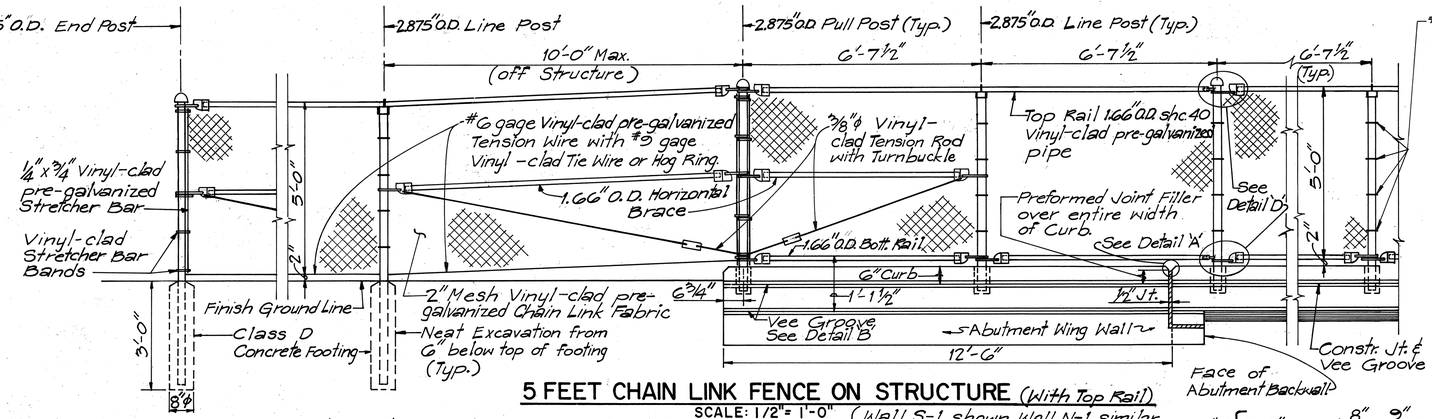
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY R. MALALUAN	
	TRACED BY	
NOTE BOOK	DESIGNED BY H.P. CHEN	
No.	QUANTITIES BY	
	CHECKED BY J.P. JOHNSON	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7600B-01-82 S-RS-0760(2)	1982	104	163



TYPICAL SECTION-5 FEET CHAIN LINK FENCE ON STRUCTURE

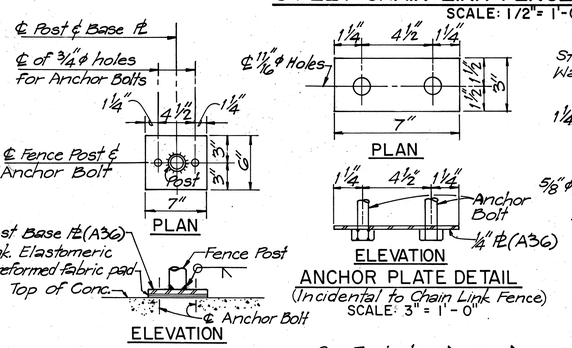
SCALE: 1 1/2"=1'-0"



5 FEET CHAIN LINK FENCE ON STRUCTURE (With Top Rail)

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

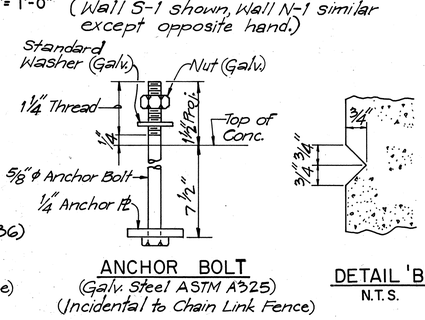
(Wall S-1 shown, Wall N-1 similar except opposite hand.)



ANCHOR PLATE DETAIL

(Incidental to Chain Link Fence)

SCALE: 3" = 1'-0"

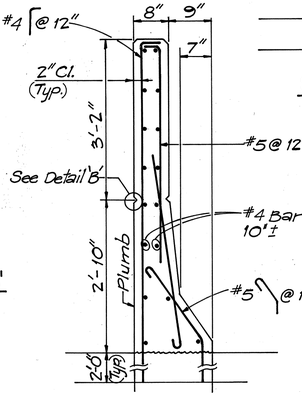


ANCHOR BOLT

(Galv. Steel ASTM A325)
(Incidental to Chain Link Fence)

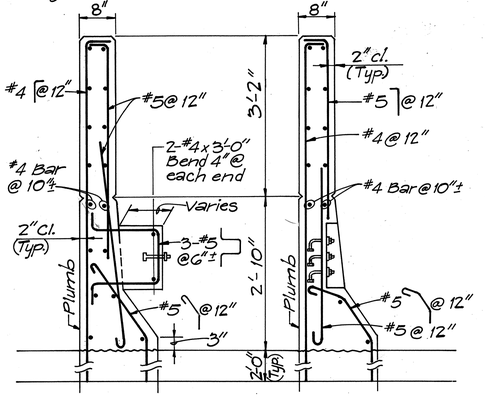
DETAIL 'B'

N.T.S.



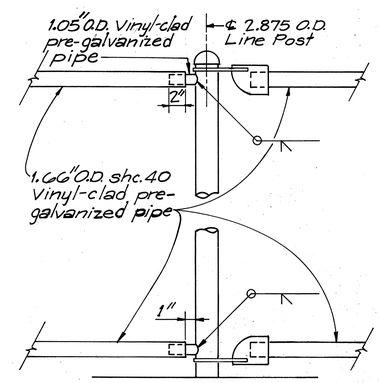
SECTION (Z)

SCALE: 3/4"=1'-0"



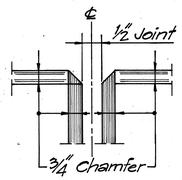
SECTION (X) SECTION (Y)

SCALE: 3/4"=1'-0"



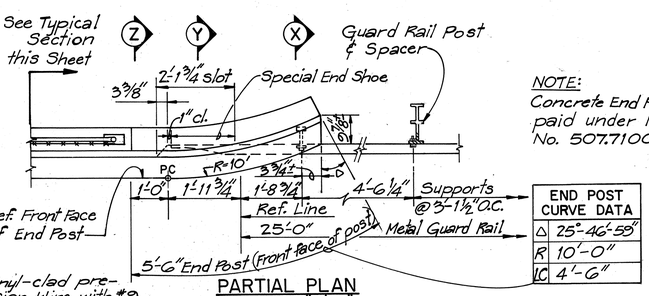
DETAIL 'D' RAIL EXPANSION JOINT

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



DETAIL 'A'

N.T.S.

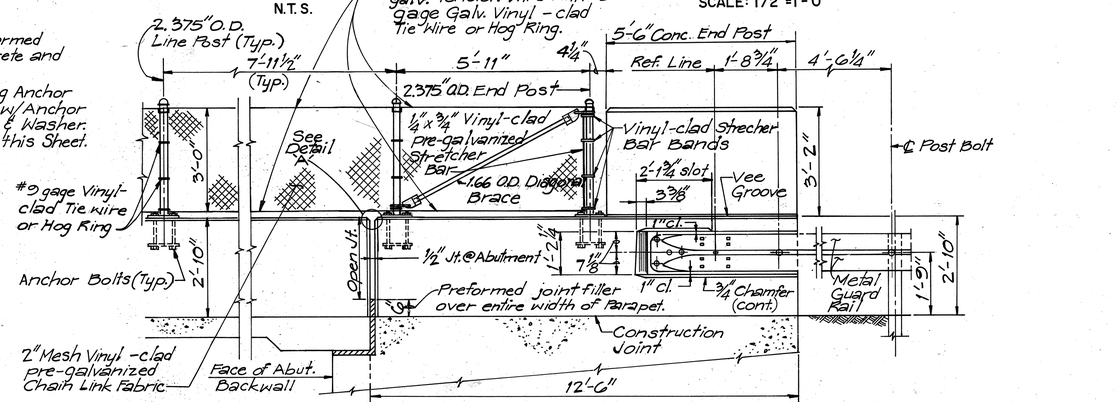


PARTIAL PLAN

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

END POST CURVE DATA	
Δ	25°-46'-55"
R	10'-0"
lC	4'-6"

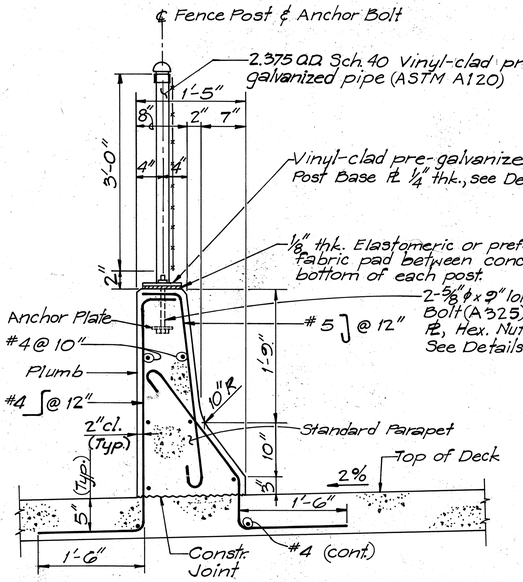
NOTE:
Concrete End Post to be paid under Item No. 507.7100



3 FEET CHAIN LINK FENCE ON STANDARD PARAPET (Without Top Rail)

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

(Wall S-2 shown, Wall N-2 similar except opposite hand.)



TYPICAL SECTION-3 FEET CHAIN LINK FENCE ON STANDARD PARAPET

SCALE: 1"= 1'-0"

ORIGINAL PLAN	
NOTE BOOK	
No.	
SURVEY PLOTTED BY	
DRAWN BY R. MALALUAN	
TRACED BY	
DESIGNED BY H. P. CHEN	
QUANTITIES BY	
CHECKED BY J. P. JOHNSON	
DATE	

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EWA CANE HAUL UNDERPASS

DETAILS OF CHAIN LINK FENCE ON STRUCTURE

FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

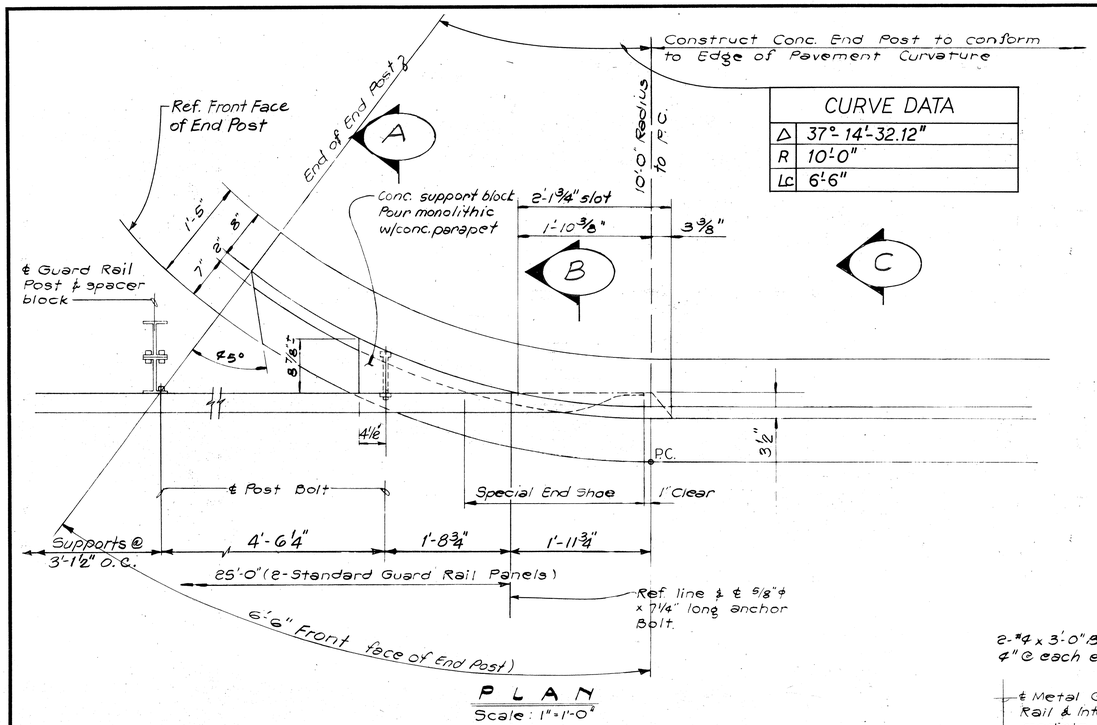
SCALE: AS SHOWN DATE: APRIL 1982

SHEET No. S-8 OF S-12 SHEETS

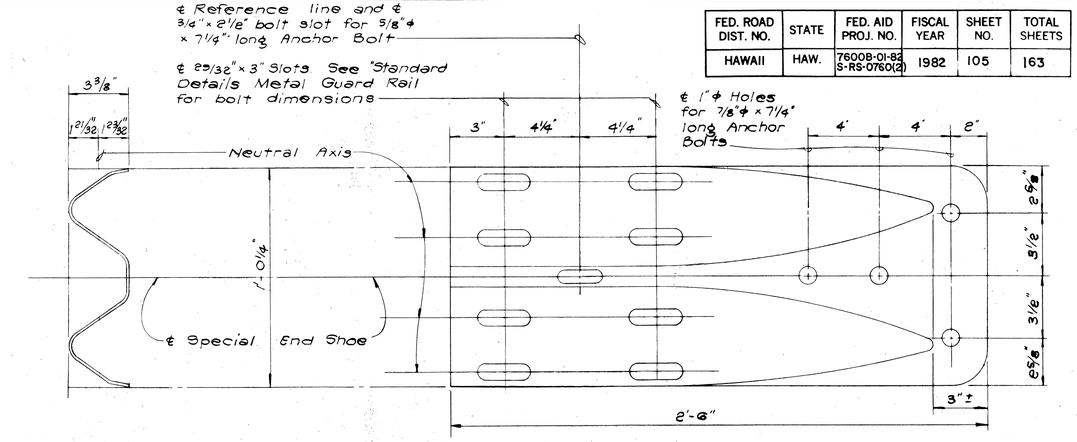
NOTES:

1. Chain link fence fabric, posts, rails, braces, bars, rods and wires shall be vinyl-clad and pre-galvanized.
2. All fittings shall be vinyl coated.
3. See Special Provisions for details of vinyl coatings.
4. Fence Post arrangement symmetrical about centerline of span.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7600B-01-82 S-RS-0760(2)	1982	105	163

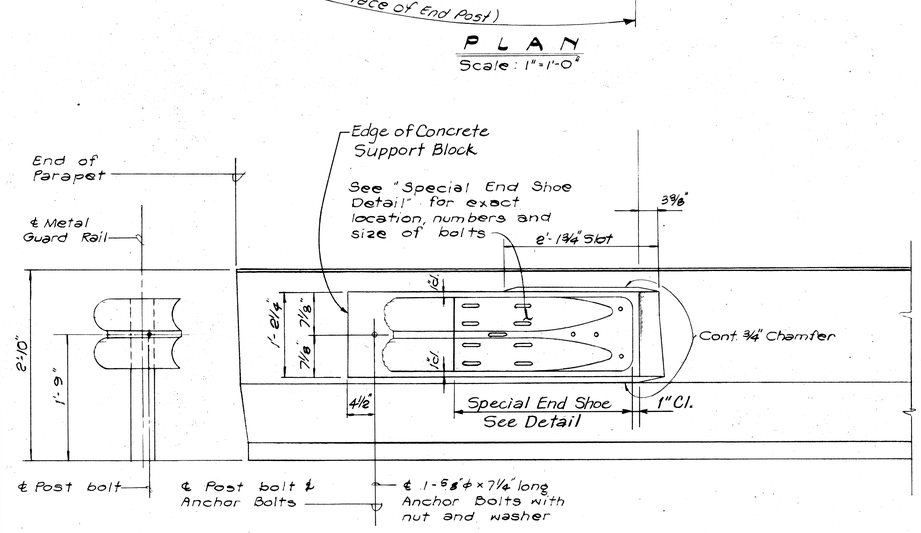


PLAN
Scale: 1" = 1'-0"

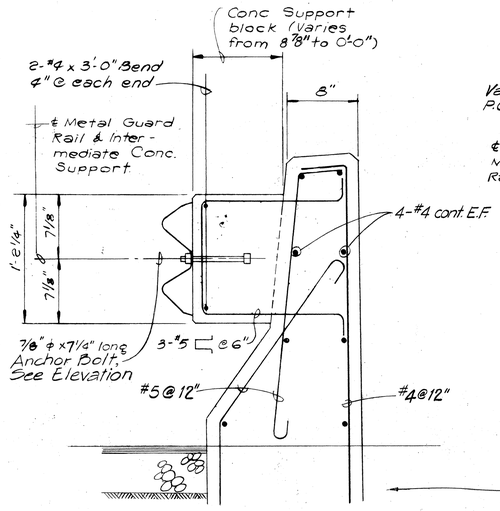


SECTION ELEVATION

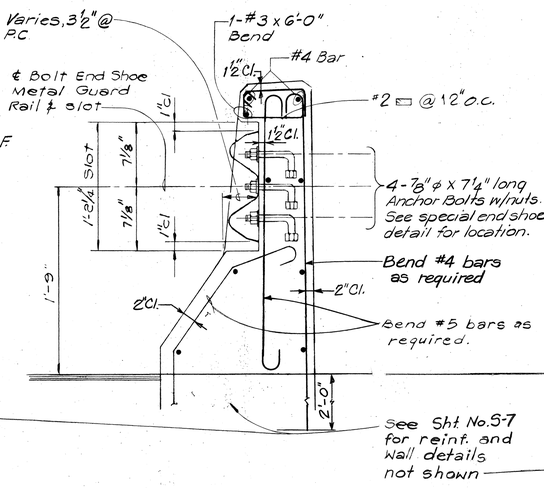
SPECIAL END SHOE DETAILS
Scale: 3" = 1'-0"



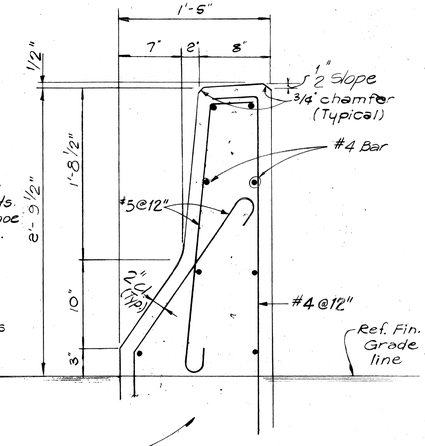
ELEVATION
Scale: 1" = 1'-0"



SECTION (A)
Scale: 1 1/2" = 1'-0"



SECTION (B)
Scale: 1 1/2" = 1'-0"



SECTION (C)
Scale: 1 1/2" = 1'-0"

NOTES:
1. All Anchor Bolts shall be High Strength bolts conforming to the requirements of ASTM A325
2. All Shoe assembly, including anchor bolts, nuts and washers shall be galvanized.
3. Special End Shoe shall be fabricated from 10 gage steel conforming to the requirements of AASHO M180
4. First 25'-0" of guard rail adjoining "Special End Shoe" shall be galvanized steel
5. Anchor Bolt length given from under bolt head
6. Front face of End Post to match front face of typical concrete parapet.
7. For End Post detail at Type II Metal Bikeway Railing", see Sheet No. S-8.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY T. MIZUIRE	
NOTE BOOK	TRACED BY	
	DESIGNED BY H.P. CHEN	
	QUANTITIES BY	
No.	CHECKED BY J.P. JOHNSON	

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

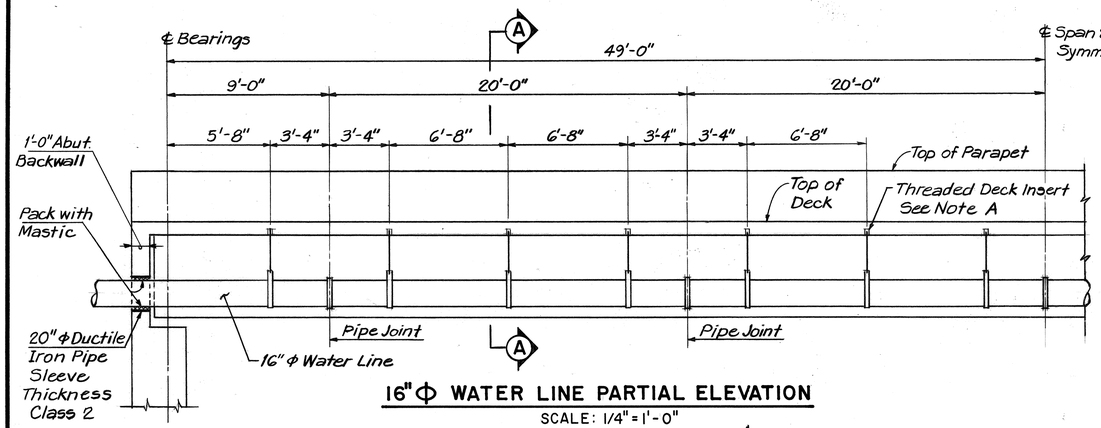
EWA CANE HAUL UNDERPASS
TYPICAL END POST DETAIL

FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

SCALE: AS SHOWN DATE: APRIL 1982

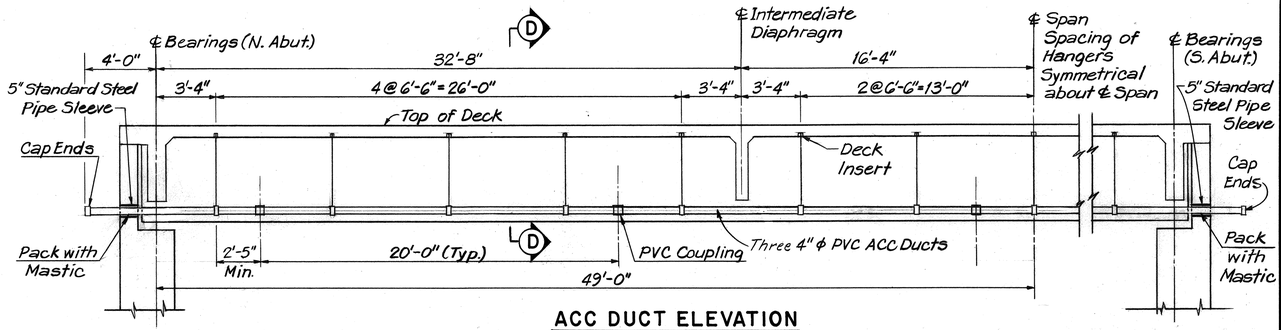
SHEET NO. S-9 OF S-12 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7600B-01-82 S-RS-0760(2)	1982	106	163



16" ϕ WATER LINE PARTIAL ELEVATION

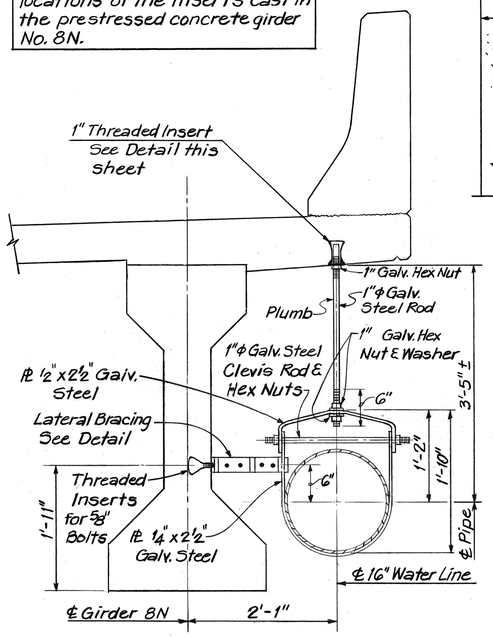
SCALE: 1/4" = 1'-0"



ACC DUCT ELEVATION

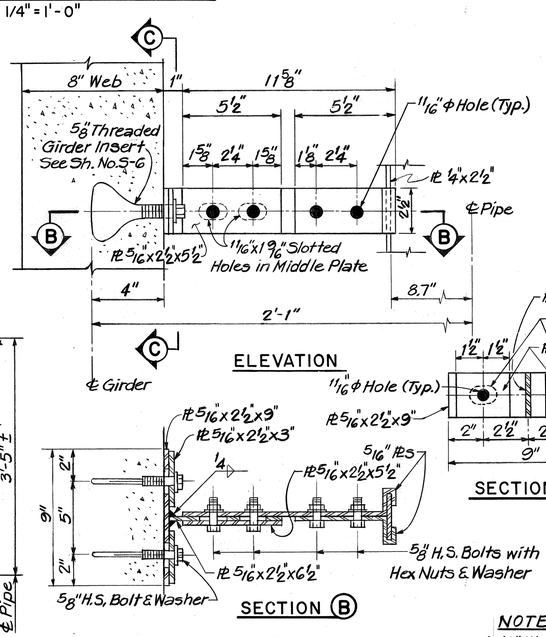
SCALE: 1/4" = 1'-0"

Note A: Inserts in deck shall be placed to match spacing and locations of the inserts cast in the prestressed concrete girder No. 8N.



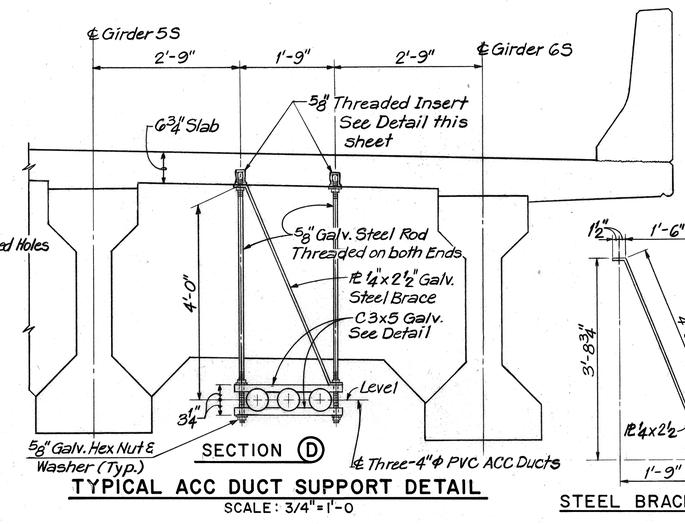
TYPICAL SECTION (A)

SCALE: 1" = 1'-0"



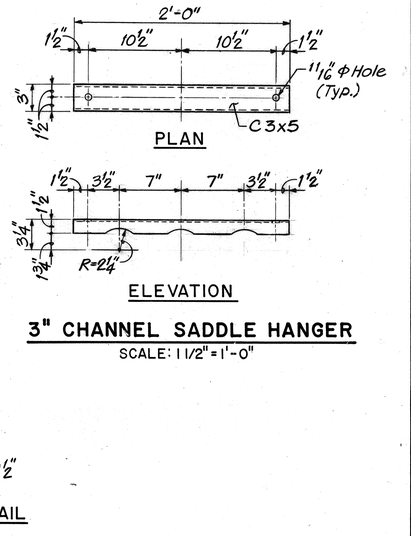
LATERAL BRACING DETAILS

SCALE: 3" = 1'-0"



TYPICAL ACC DUCT SUPPORT DETAIL

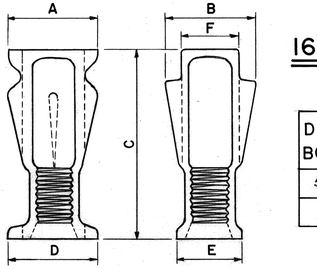
SCALE: 3/4" = 1'-0



3" CHANNEL SADDLE HANGER

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

STEEL BRACE DETAIL



THREADED INSERTS FOR DECK

16" Φ WATER LINE SUPPORT DETAILS

DIAM. BOLT	PHYSICAL DIMENSIONS A	B	C	D	E	F	ULTIMATE LOAD
5/8"	1 7/8"	1 7/8"	3 5/8"	1 7/8"	1 3/8"	1 3/16"	12,000 LBS.
1"	2 1/2"	2 1/2"	4"	2 1/2"	1 7/8"	1 5/8"	16,800 LBS.

NOTES

1. 16" Water Line shall be ductile iron, ~~mechanical~~ slip joint pipe, Class 52.
2. Pipe hangers with adjustable clevis shall conform to "ITT Grinnell Fig. 260" for 16" ϕ pipe or approved equal.
3. Threaded inserts for the rod hangers shall be malleable iron and shall conform to "Richmond Rocket Insert or approved equal.
4. Rod hangers, clevises and lateral bracing for the 16" Water Line shall be galvanized carbon steel and all parts are to be coated with an approved epoxy paint.
5. The three 4-Inch ACC Ducts shall be Polyvinyl Chloride Schedule 80 pipe.
6. Rod hangers, channel saddles, and braces for the ACC Ducts shall be galvanized carbon steel and all parts are to be coated with an approved epoxy paint.
7. Payment for furnishing and installing rod hangers, channel saddles, braces, nuts, deck inserts and sleeves is included in Item 646.1350, Install Three 4-Inch P.V.C. Schedule 80 Ducts Suspended from Bridge.
8. Furnishing and installing 20-Inch Ductile Iron Pipe Sleeve and mastic packing is incidental to Item 624.1815 Furnishing and Installing Pipe Hanger and Lateral Bracing for 16-Inch Ductile Iron Pipe.
9. 16" Water Line suspended from the Ewa Cane Haul Underpass are to be painted as required by BWS for corrosion protection.

George Yamada — HAWAIIAN TELEPHONE CO. — 4/15/82 DATE

R. Nagato — 4-26-82 — for CHIEF, PLANNING & ENGINEERING, BWS — DATE

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EWA CANE HAUL UNDERPASS
MISCELLANEOUS DETAILS

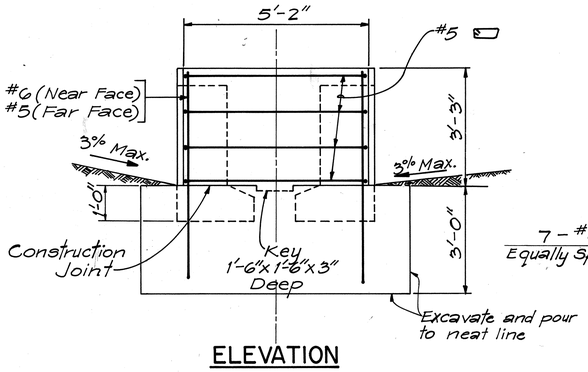
FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

SCALE: AS SHOWN DATE: APRIL 1982

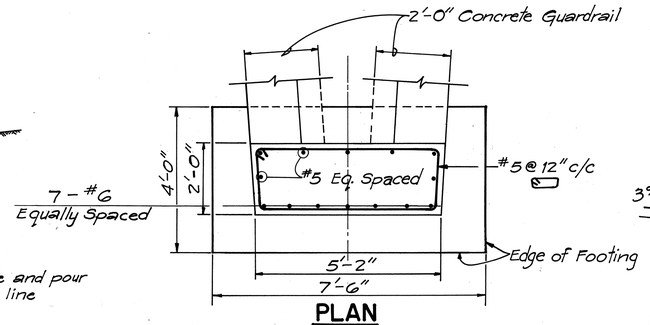
SHEET NO. S-10 OF S-12 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY T. MIZUIRE	
	TRACED BY	
NOTE BOOK	DESIGNED BY J.P. JOHNSON	
	QUANTITIES BY	
No.	CHECKED BY H.P. CHEN	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7600B-01-82 S-RS-0760(2)	1982	107	163

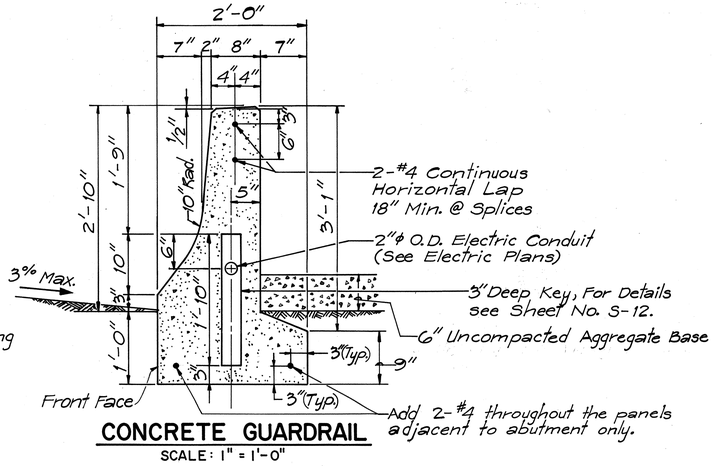


ELEVATION



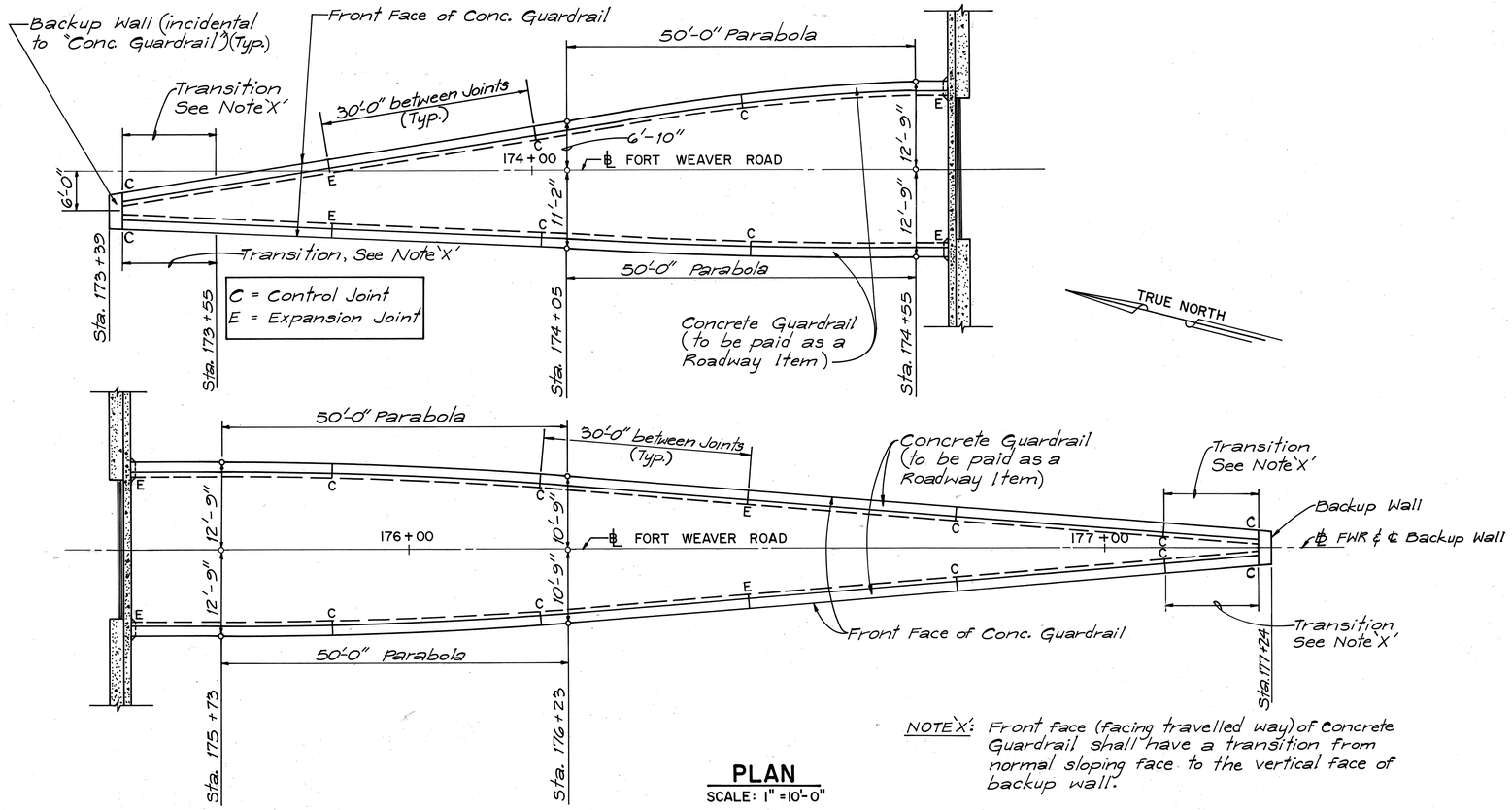
PLAN

CONCRETE BACKUP WALL
SCALE: 1/2" = 1'-0"



CONCRETE GUARDRAIL
SCALE: 1" = 1'-0"

NOTE: For Details of Concrete Guardrail Expansion and Control Joints, see Standard Details Sheet No. S-12.



PLAN
SCALE: 1" = 10'-0"

NOTE 'X': Front face (facing travelled way) of Concrete Guardrail shall have a transition from normal sloping face to the vertical face of backup wall.

ORIGINAL PLAN
SURVEY PLOTTED BY: DATE
DRAWN BY: R. MALAUAN
NOTE BOOK
TRACED BY: P. SMALL
DESIGNED BY:
QUANTITIES BY:
No.
CHECKED BY: J. P. JOHNSON

ANTHONY R. D'ALESSIO REGISTERED PROFESSIONAL ENGINEER No. 2934 HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

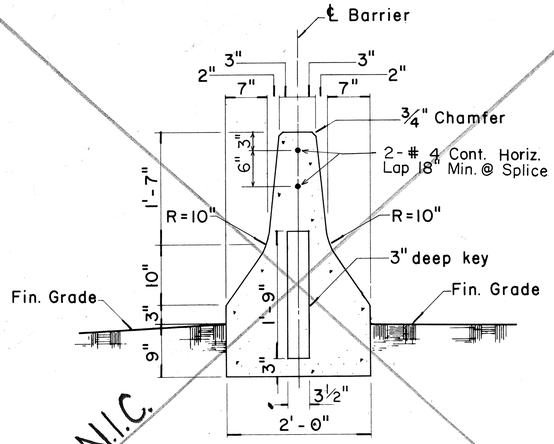
EWA CANE HAUL UNDERPASS
CONCRETE GUARDRAIL DETAILS

FORT WEAVER ROAD
VICINITY OF MANGO TREE ROAD
TO THE VICINITY OF RENTON ROAD

SCALE: AS SHOWN DATE: APRIL 1982

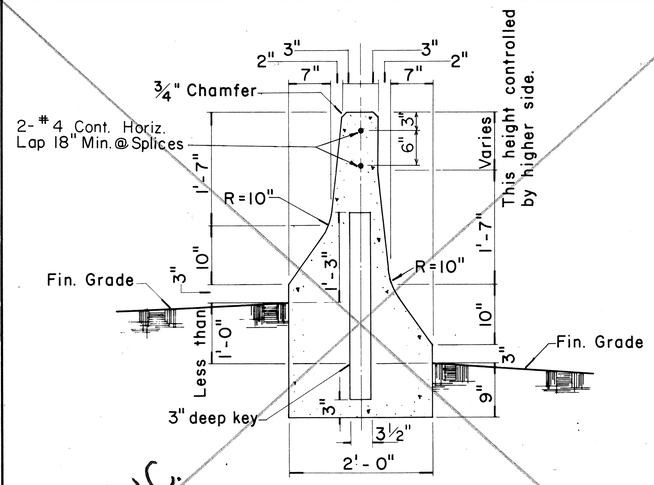
SHEET NO. S-11 OF S-12 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7600B-01-82 S-RS-0760(2)	1982	108	163



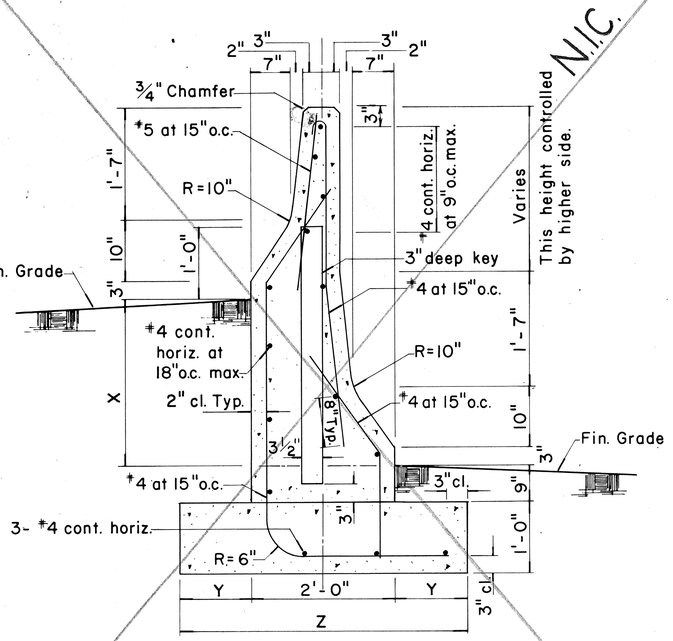
TYPE 4A

Scale: 1" = 1'-0"



TYPE 4B

Scale: 1" = 1'-0"

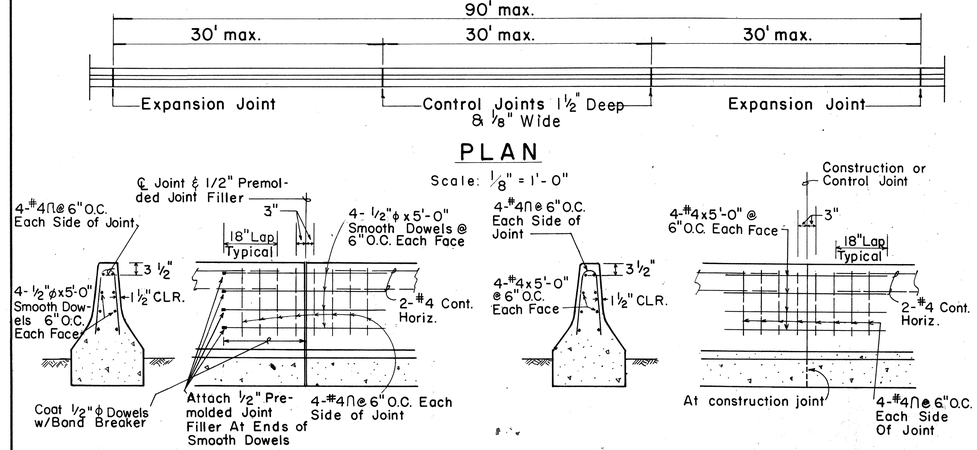


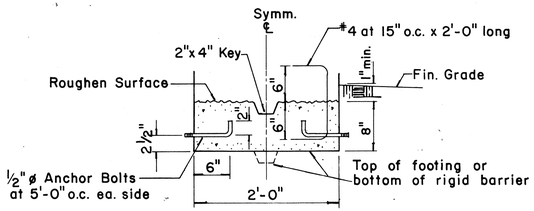
TYPE 4C & TYPE 4D

Scale: 1" = 1'-0"

TYPE	DIFFERENCE IN FIN. GRADE X	FOOTING Y	FOOTING Z
4C	1'-0" min., 2'-4" max.	1'-0"	4'-0"
4D	Greater than 2'-4", 4'-4" max.	1'-3"	4'-6"

NOTE:
Except where noted all dimensions shall be the same for Type 4C and Type 4D.





OPTIONAL CONSTRUCTION JOINT DETAILS

Scale: 1" = 1'-0"

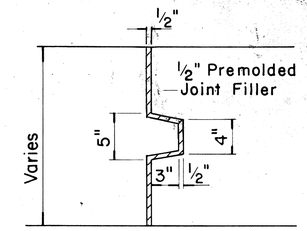
NOTE:
The intent of the optional construction joint details for the Type 4 Rigid Barrier Guard Rail is to provide a method of securing the forms and preventing uplift so that the barrier will have a uniform and presentable appearance.
The Contractor may submit an alternate method of constructing the barrier for the approval of the Engineer and for use on a trial basis. Any unsatisfactory work shall be removed or corrected as directed by the Engineer and at the Contractor's expense.

GENERAL NOTES

1. Precast Rigid Barrier Guard Rail may be installed as an option to cast-in-place Type 4 Rigid Barrier Guard Rail. Contractor shall submit shop drawings to Engineer for approval.
2. Expansion Joints shall be constructed at ninety-foot (90 ft.) maximum intervals and at existing expansion joints of structures. (Use ½" premolded joint filler, incidental to Type 4 Rigid Barrier Guard Rail). Control Joints shall be placed between expansion joints at 30' maximum. Shear keys shall be required at all construction joints.
3. The exterior surface and vertical alignment of the Type 4 Rigid Barrier Guard Rail shall be constructed to give a uniform and presentable appearance. Variation of more than ¼" in 20' max. and ½" in 40' or more will be considered objectionable. The Engineer will determine the acceptability of the work.
During the course of the work, samples may be tested and measurements made to establish whether or not the specified values or dimensions are being met. If the specified values or dimensions are not being met, the Engineer will determine the degree of the non-conformance, the effect on the serviceability of the project, whether the work be accepted and remain in place and, if so, the amount to be paid for such work, or whether the work shall be removed and replaced or otherwise corrected at the Contractor's expense.

NO.	REVISION	APPROVED BY	DATE
1	Supersede Sht. DT 521 Approved 2-10-72	H.L.	1/21/81

NOTE: 1/2" PREMOLDED JOINT FILLER IS NOT REQUIRED AT CONSTRUCTION JOINTS.



SECTION THRU KEY AT EXPANSION JOINT

Scale: 1½" = 1'-0"

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 1/20/81 DATE

APPROVED:
Henderson Sakioka — ASSISTANT CHIEF, ENGINEERING — 1/21/81 DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

GUARD RAIL TYPE 4 (RIGID BARRIER)

Scale: As Shown

SHEET No. S-12 OF S-12 SHEETS | DT 521

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE | NOTE BOOK | No.