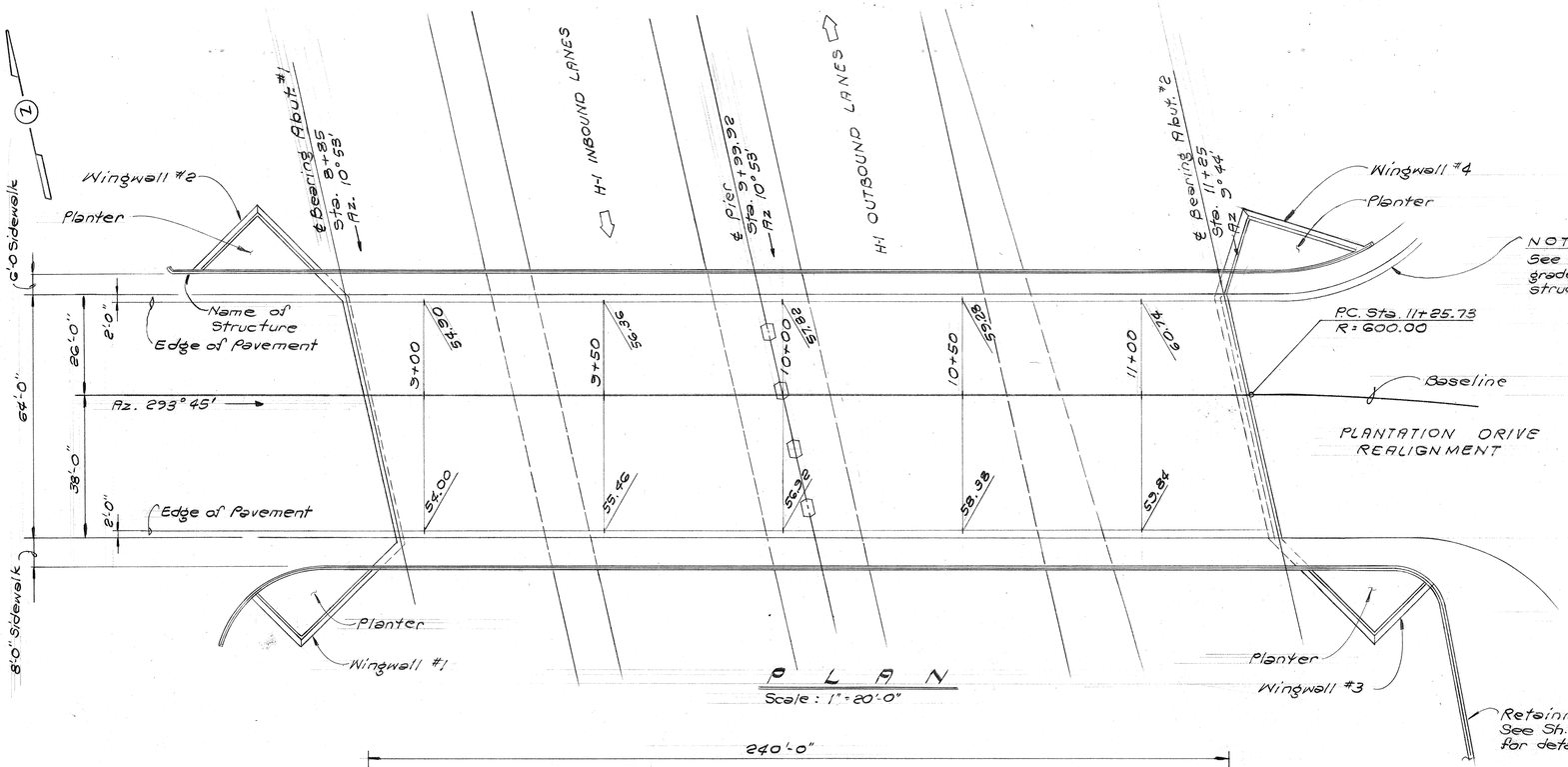
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(III):14	1974	155	234

NOTES

1. Date shown shall be the year structure is completed.
2. For letter size & detail see "Standard Bridge Detail" Sh. S-25

PEARL HARBOR INTERCHANGE
STRUCTURE #1
19 –

NAME & DATE OF STRUCTURE

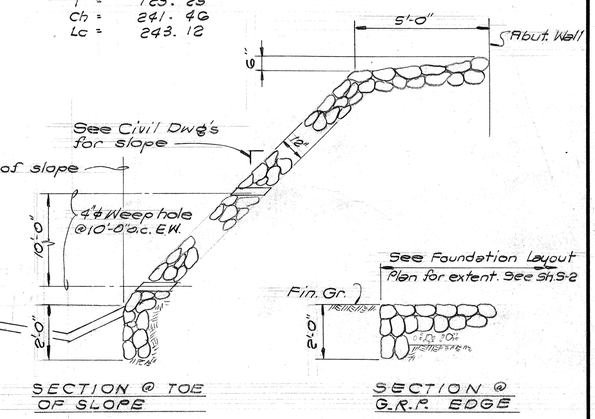


PLAN

Scale: 1" = 20'-0"

PLANTATION DRIVE
℄ CURVE DATA #2

Δ =	23° 13' 00"
Δ/2 =	11° 36' 30"
R =	600.00
T =	123.25
Ch =	241.46
Lc =	243.12



SECTION @ TOE OF SLOPE

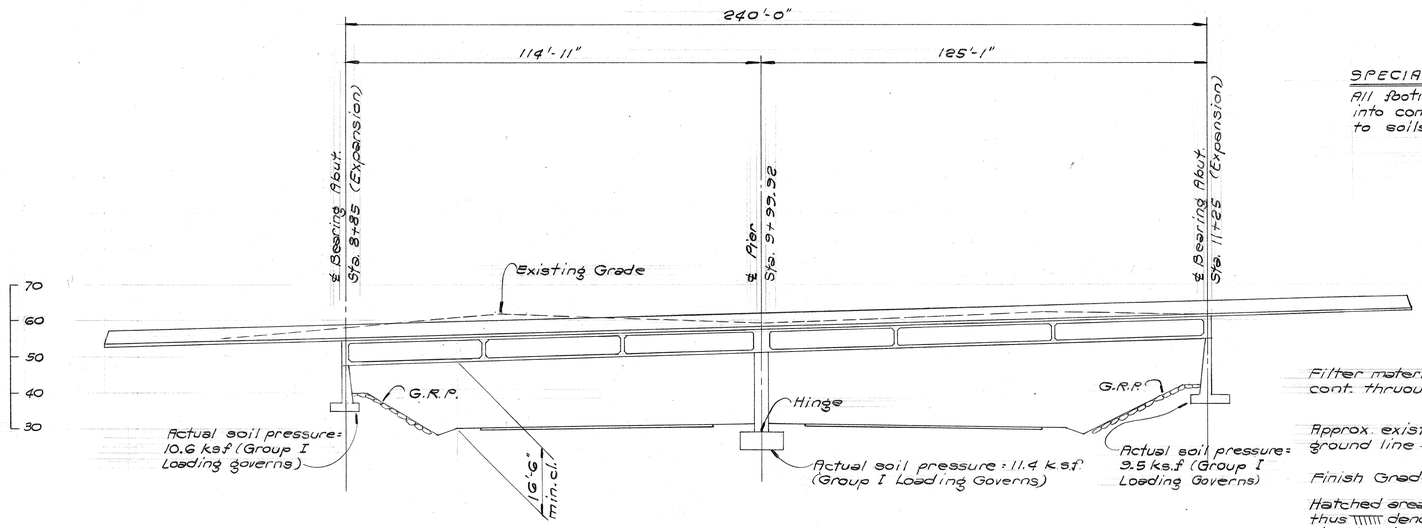
SECTION @ G.R.P. EDGE

TYPICAL G.R.P. DETAIL

3/8" = 1'-0"

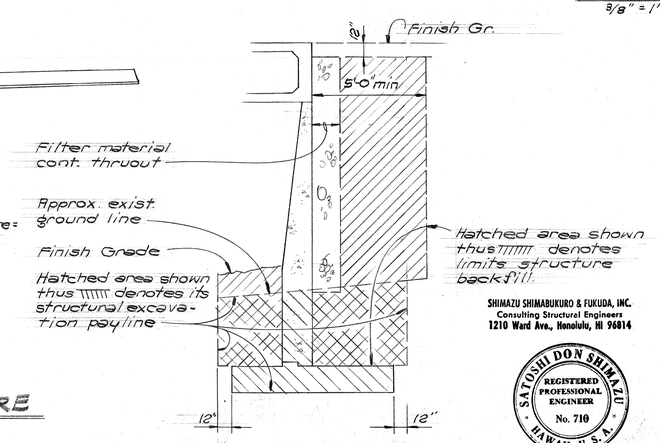
SPECIAL NOTE

All footings shall bear 1'-0" min. into competent tuff - Subject to soils Engineer's approval.



LONGITUDINAL SECTION ALONG BASELINE OF STRUCTURE

Scale: 1" = 20'-0"



STRUCTURAL EXCAVATION & BACKFILL DETAIL

N.T.S.

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

SATOSHI DON SHIMAZU
REGISTERED PROFESSIONAL ENGINEER
No. 710
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

LAYOUT PLAN & LONGITUDINAL SECTION

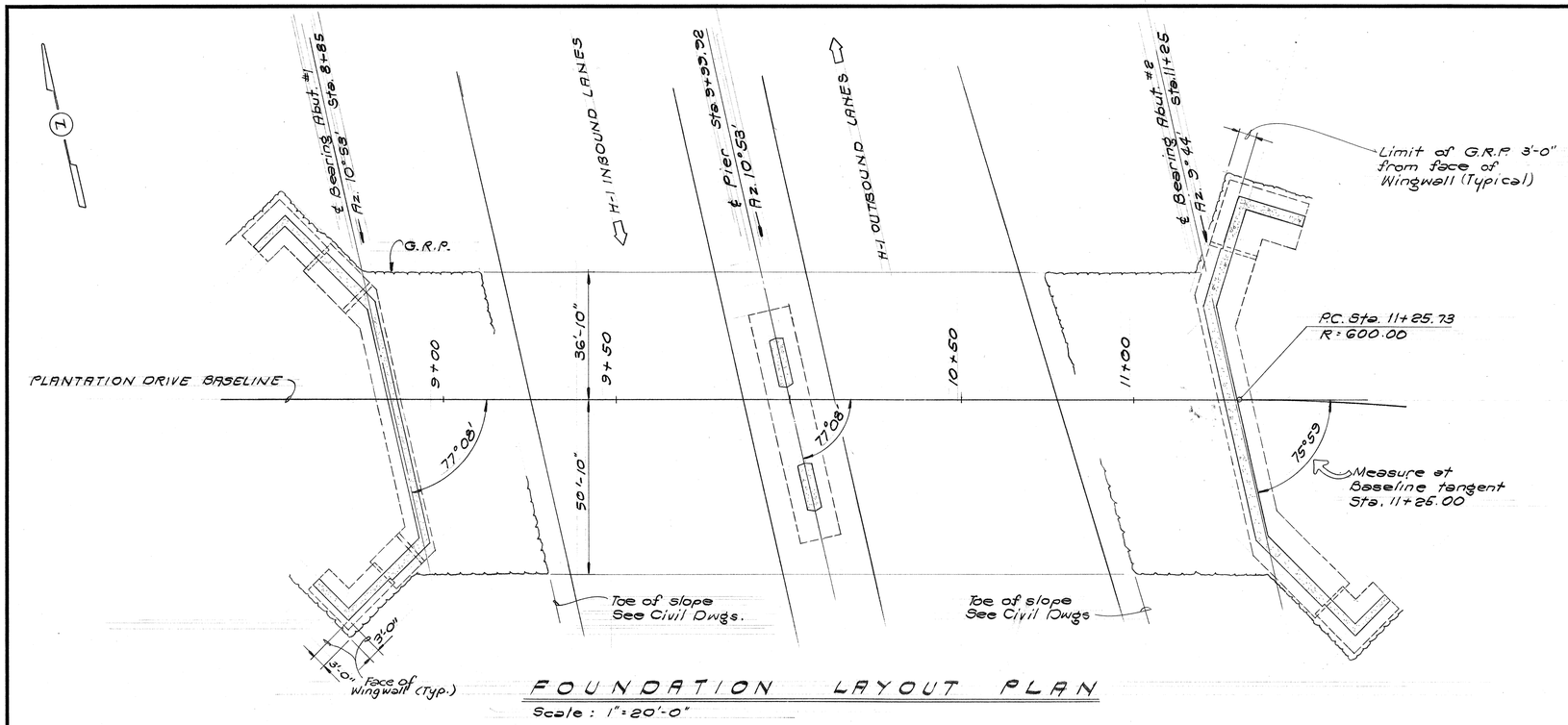
PEARL HARBOR INTERCHANGE
F.A.I.-Proj. No. I-H-1(III):14

Scale: As Shown Date: DEC. 14, 1973

SHEET No. S-1 OF 34 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	156	234



FOUNDATION LAYOUT PLAN

Scale : 1" = 20'-0"

BRIDGE QUANTITY ESTIMATES

ITEM No.	ITEM	UNIT	QUANTITY
206.60	Structural Excavation	C.Y.	4,784
206.65	Structural Backfill	C.Y.	1,782
503.071	Concrete in Footings	L.S.	513 C.Y.
504.51	Post-Tensioning Operation for Structure	L.S.	84,630#
503.072	Concrete for Cast-in-Place Structure	L.S.	2238 C.Y.
602.80	Reinforcing Steel	L.S.	648,342#
206.80	Filter Material	C.Y.	261
507.70	Concrete Bridge parapet, including End Post	L.F.	679
612.01	Grouted Rubble Paving	C.Y.	219
	Sidewalk	S.Y.	373

DESIGN CRITERIA

A. Loads = HS 20-44

B. Specifications = Standard Specifications for Highway Bridges, AASHO, 11TH Edition & Standard Specifications for Road & Bridge Construction, Hawaii, 1973

C. Allowable Foundation Pressure = 12,000 p.s.f. (Footings bearing 1'-0" min. into tuff. - subject to Soils Engineer's approval)

D. 28-Day Concrete Strengths
Superstructure, Post-Tensioned = f_c' = 5,000 p.s.i.
Abutments, walls & footings = f_c' = 3,000 p.s.i. (Class A Concrete)
Columns = f_c' = 5,000 p.s.i.

E. Reinforcing steel : ASTM A615 Grade 60

F. Prestressing Strands : 270 k.s.i. Ultimate strength, seven wire stress-relieved 1/2" ϕ strands

REFERENCE DRAWINGS

1. Abutment #1 Foundation ---- Sh. S-3
2. Abutment #2 Foundation ---- Sh. S-6

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1
FOUNDATION LAYOUT PLAN

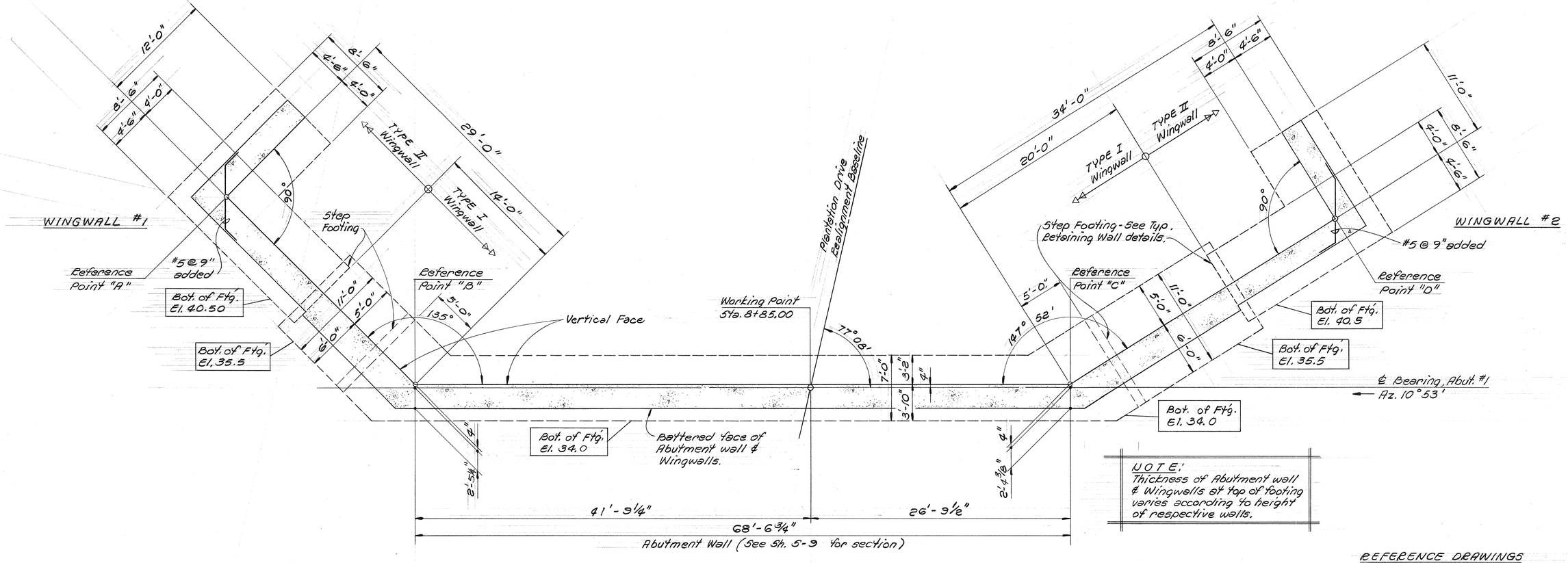
PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111):14

Scale : As Shown Date : DEC. 14, 1973

SHEET No. S-2 OF 34 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	157	234



NOTE:
Thickness of Abutment wall & Wingwalls at top of footing varies according to height of respective walls.

REFERENCE DRAWINGS

1. Typ. Abutment Sections ------- Sh. S-9
2. Wingwall Sections ---------- Sh. S-10
3. Typ. Wall & Footing Details ------ Sh. S-23

ABUTMENT #1 FOUNDATION PLAN

3/16" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	TRACING BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	COMPUTED BY	
No.	CHECKED BY	

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Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

ABUTMENT #1
FOUNDATION PLAN

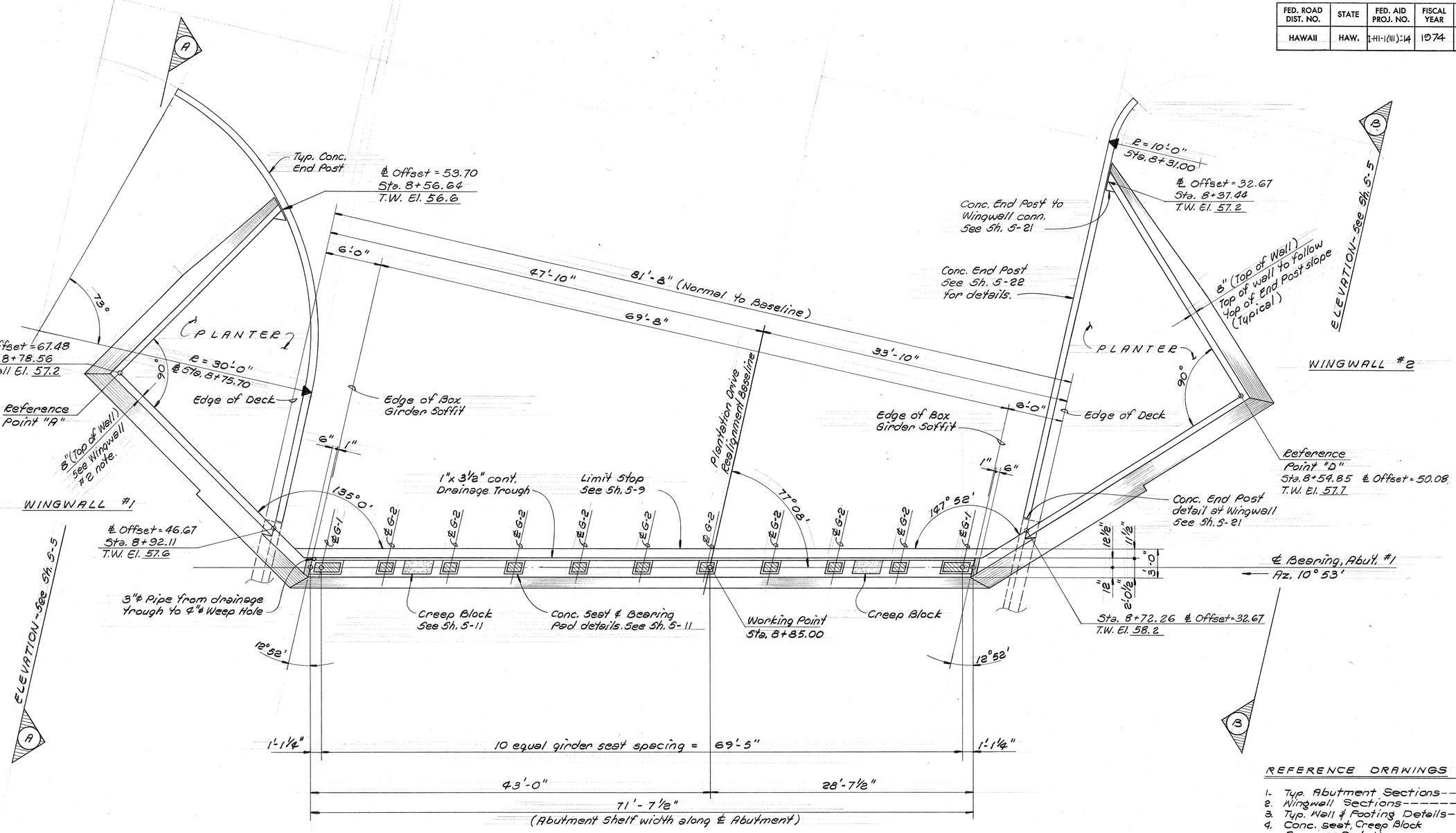
PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111):14

Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-3 OF 34 SHEETS

41'-9¼" 26'-9½"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(III):14	1974	158	234



ABUTMENT #1 ~ PLAN AT SHELF

3/16" = 1'-0"

REFERENCE DRAWINGS

1. Typ. Abutment Sections ------ Sh. 5-9
2. Wingwall Sections ---------- Sh. 5-10
3. Typ. Wall & Footing Details ---- Sh. 5-23
4. Conc. Seat, Creep Block Bearing Details ---------- Sh. 5-11

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

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1818 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1180 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

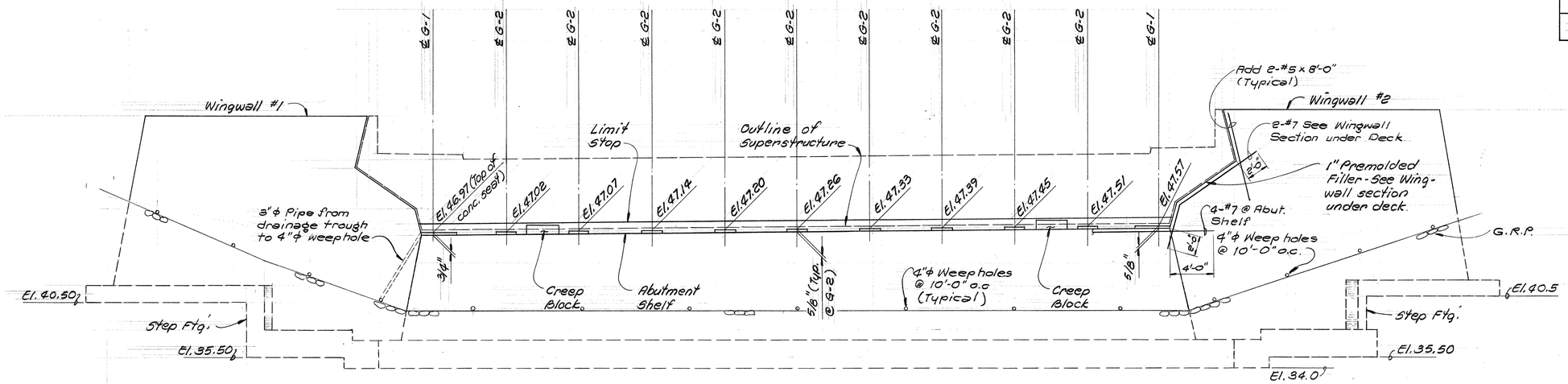
ABUTMENT #1 - PLAN AT ABUTMENT SHELF

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(III):14

Scale: As Shown — Date: DEC. 14, 1973

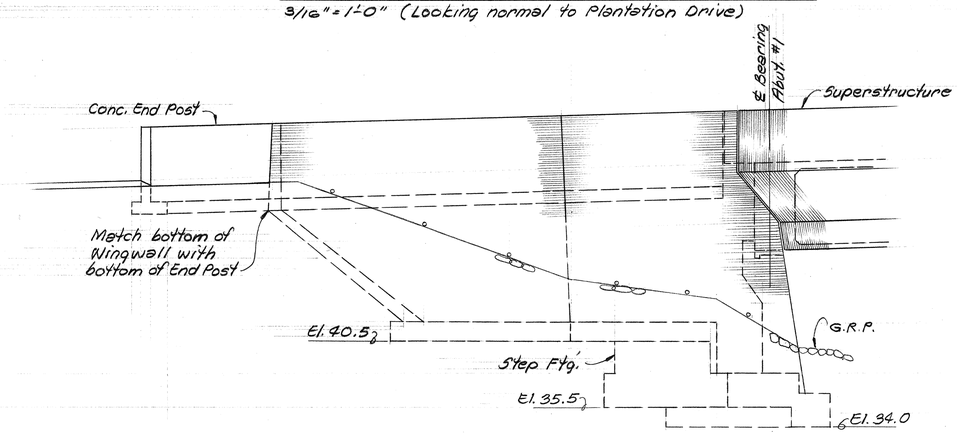
SHEET No. 5-4 OF 34 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(III):14	1974	150	234



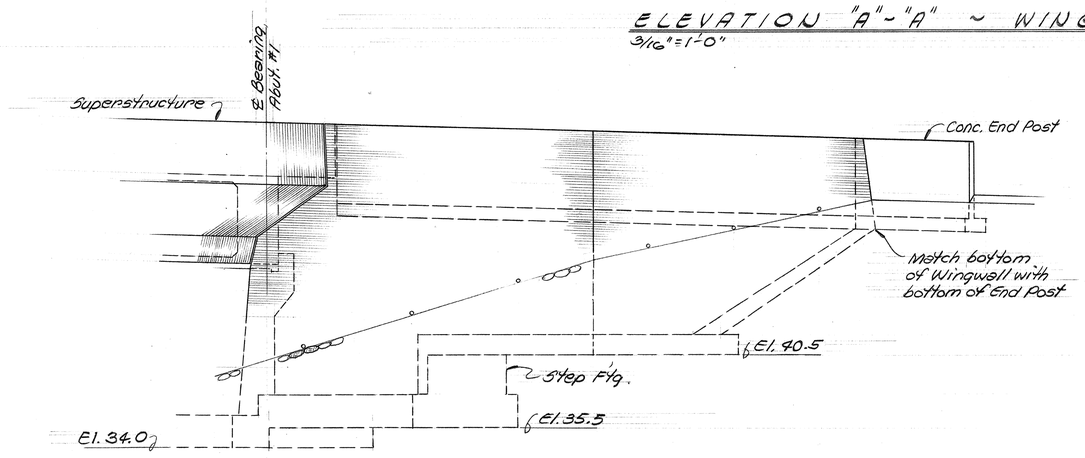
ELEVATION ~ ABUTMENT #1

3/16" = 1'-0" (Looking normal to Plantation Drive)



ELEVATION "A"-"A" ~ WINGWALL #1

3/16" = 1'-0"



ELEVATION "B"-"B" ~ WINGWALL #2

3/16" = 1'-0"

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

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Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

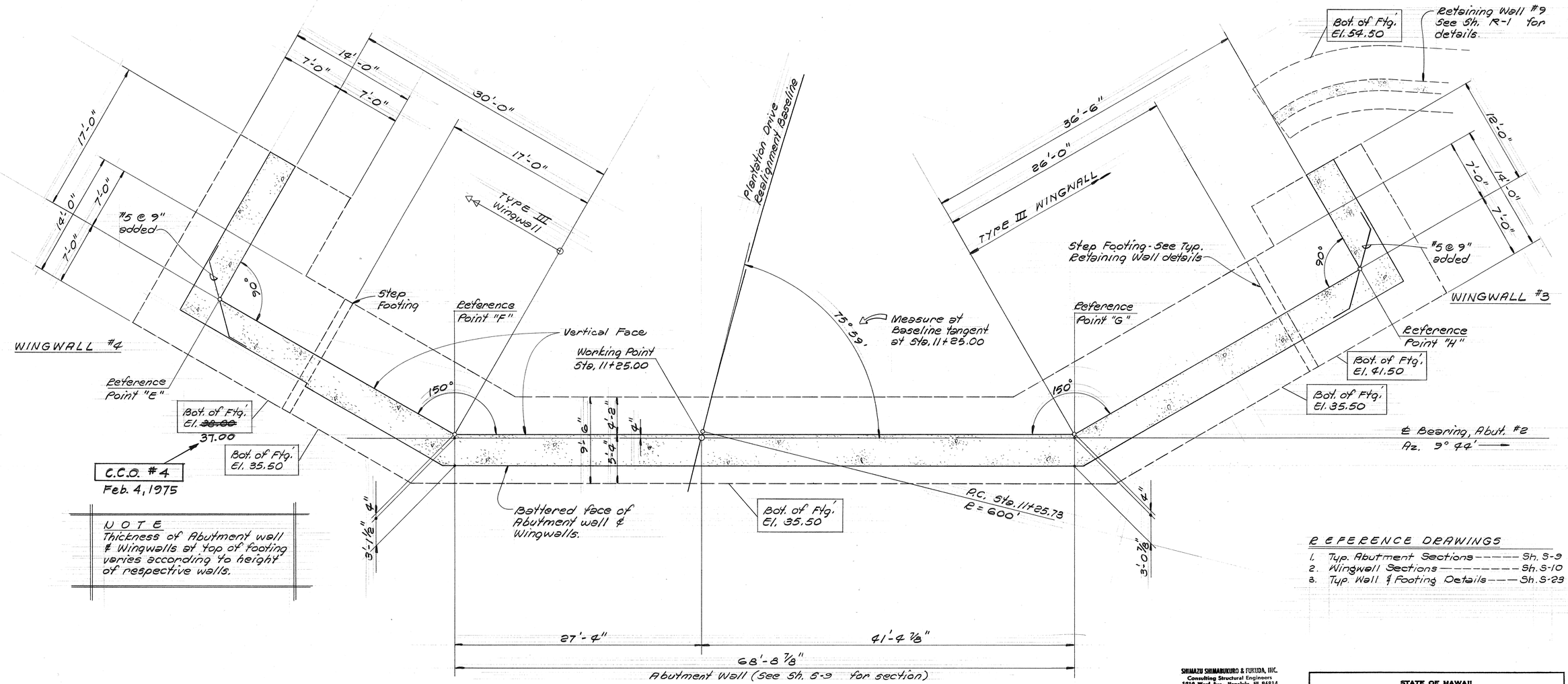
ABUTMENT #1 & WINGWALLS #1 & #2 ELEVATIONS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(III):14

Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-5 OF 34 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(III)=14	1974	160	234



NOTE
Thickness of Abutment wall & Wingwalls at top of footing varies according to height of respective walls.

REFERENCE DRAWINGS
1. Typ. Abutment Sections ------ Sh. S-9
2. Wingwall Sections ---------- Sh. S-10
3. Typ. Wall & Footing Details --- Sh. S-23

ABUTMENT #2 FOUNDATION PLAN

3/16" = 1'-0"

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

ABUTMENT #2
FOUNDATION PLAN

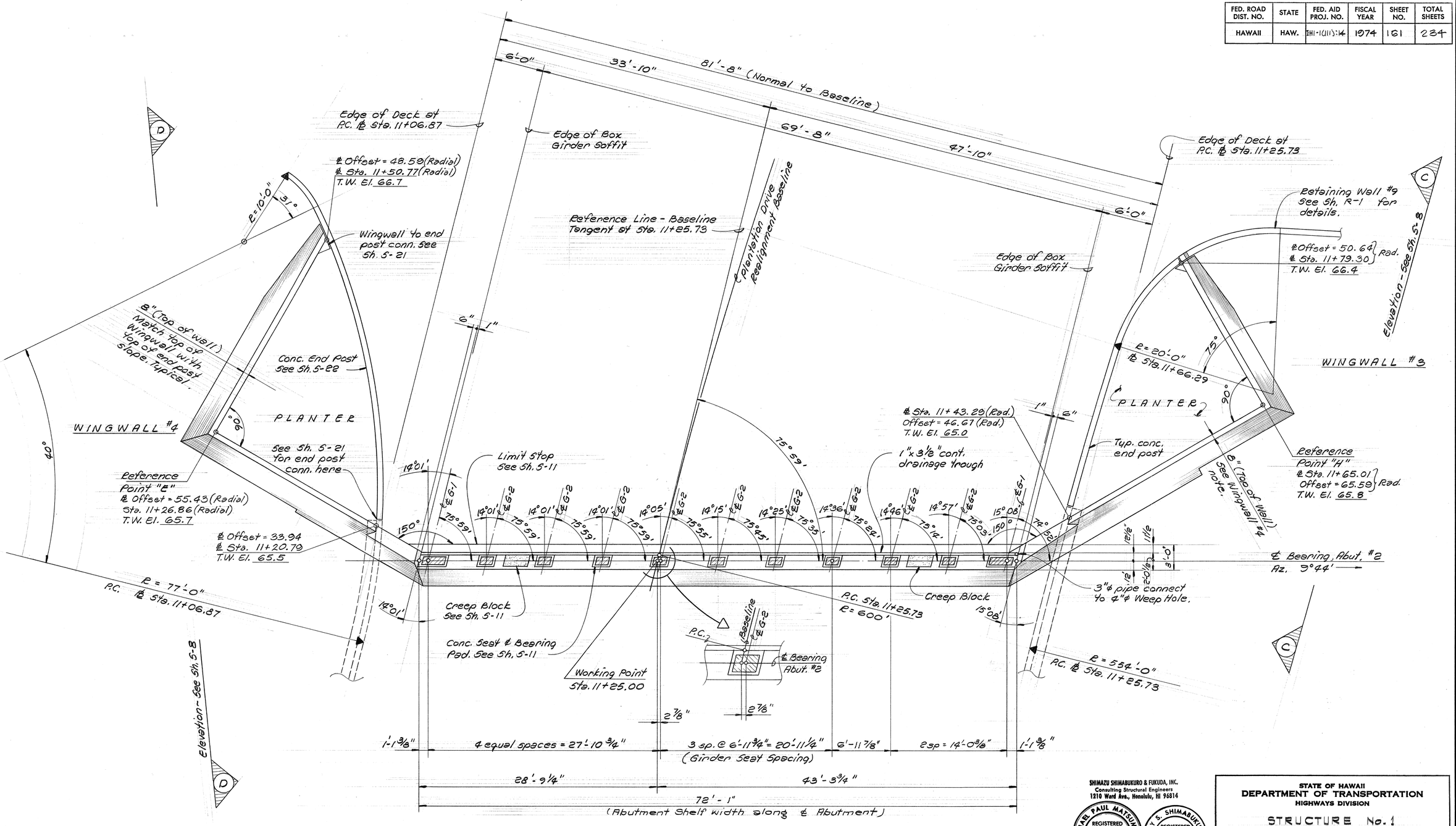
PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(III)=14

Scale: As Shown Date: DEC. 14, 1973

SHEET No. S-6 OF ~~234~~ SHEETS

ORIGINAL PLAN	SUBMITTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	(HI-1(III):14	1974	161	234



ABUTMENT #2 ~ PLAN AT ABUTMENT SHELF

3/16" = 1'-0"

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

ABUTMENT #2 - PLAN AT ABUTMENT SHELF

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(III):14

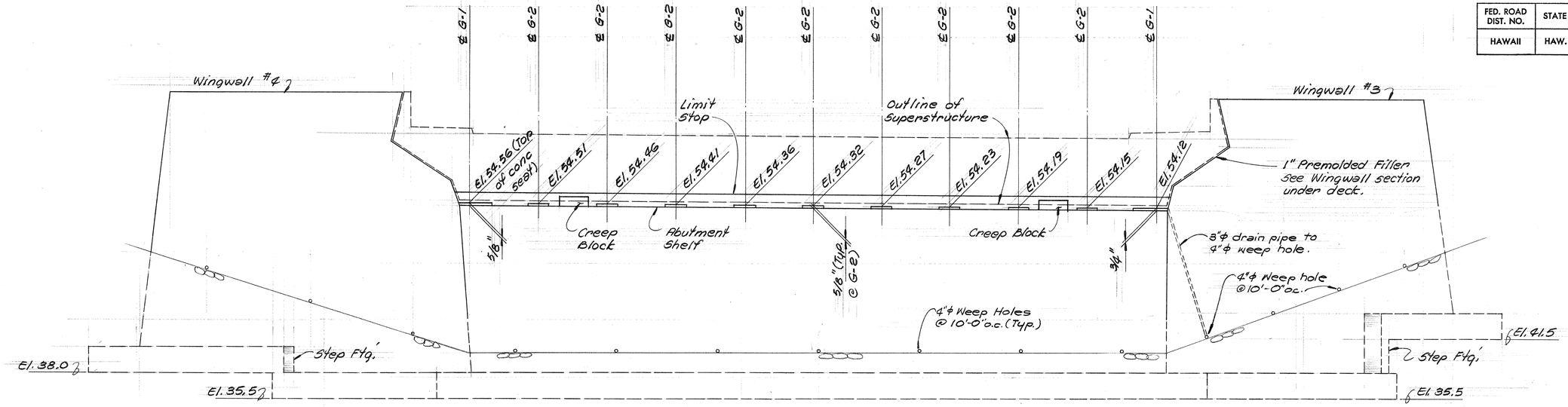
Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-7 OF 34 SHEETS

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

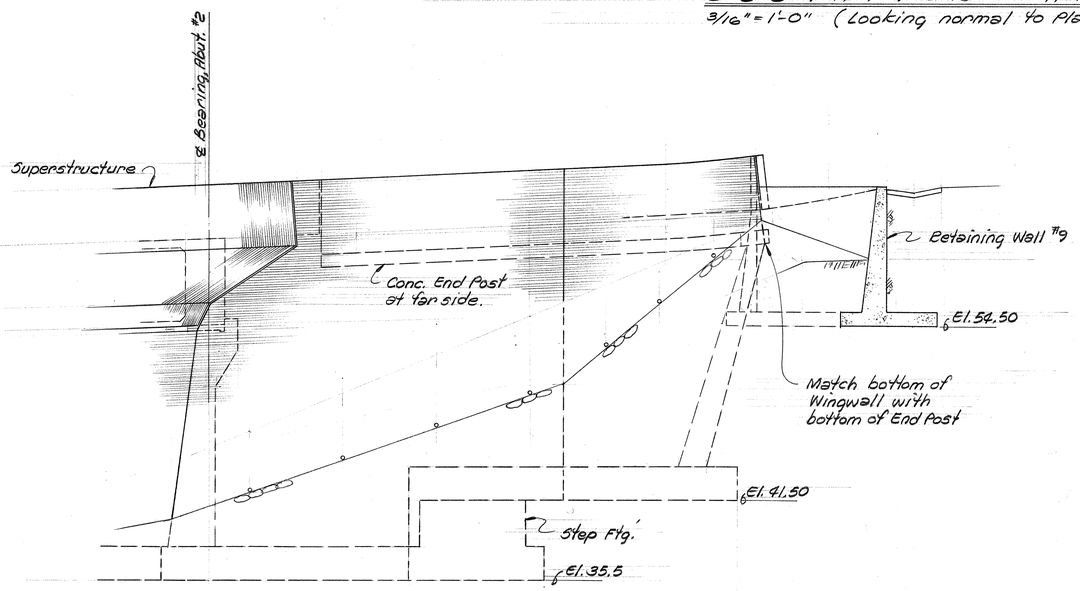
K+E CRYSTALENE TRACING PAPER

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	162	234



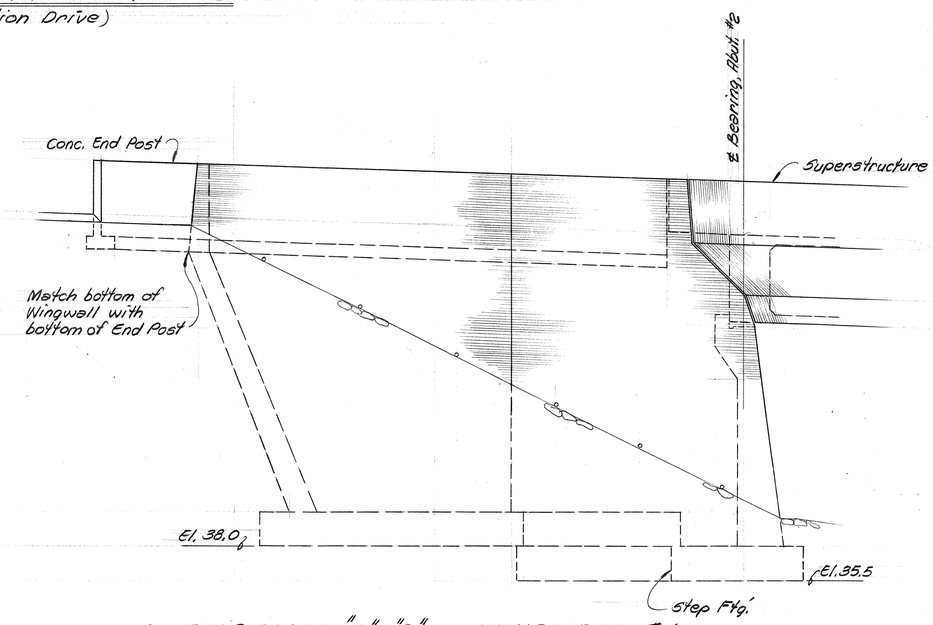
ELEVATION ~ ABUTMENT #2

3/16" = 1'-0" (Looking normal to Plantation Drive)



ELEVATION "C"~"C" - WINGWALL #3

3/16" = 1'-0"



ELEVATION "D"~"D" ~ WINGWALL #4

3/16" = 1'-0"

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

ABUTMENT #2 & WINGWALLS #3 & #4 ELEVATION

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111):14

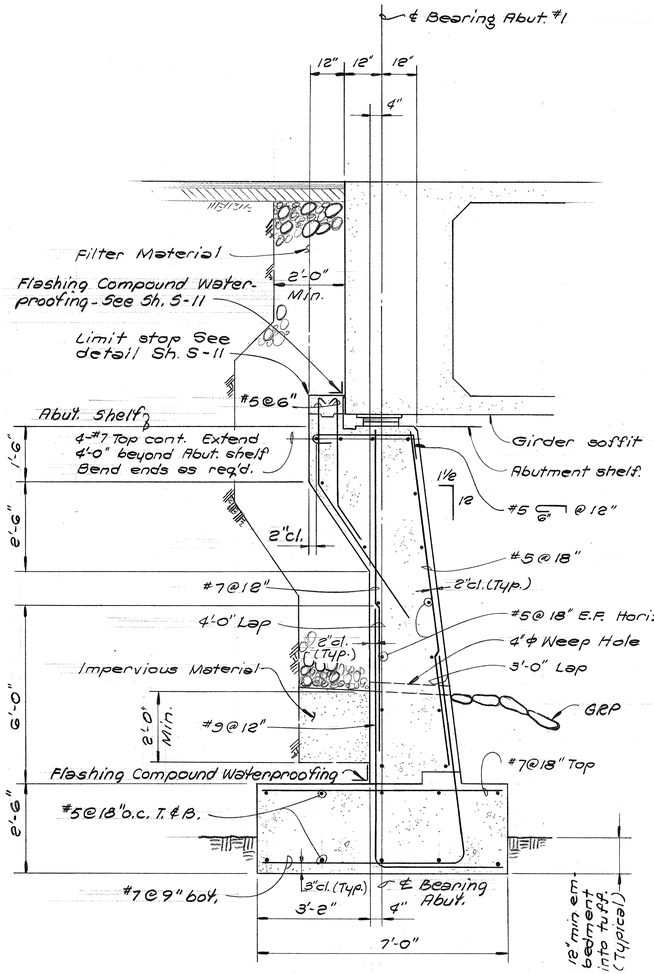
Scale: As Shown — Date: DEC. 14, 1973

SHEET No. 5-8 OF 34 SHEETS

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

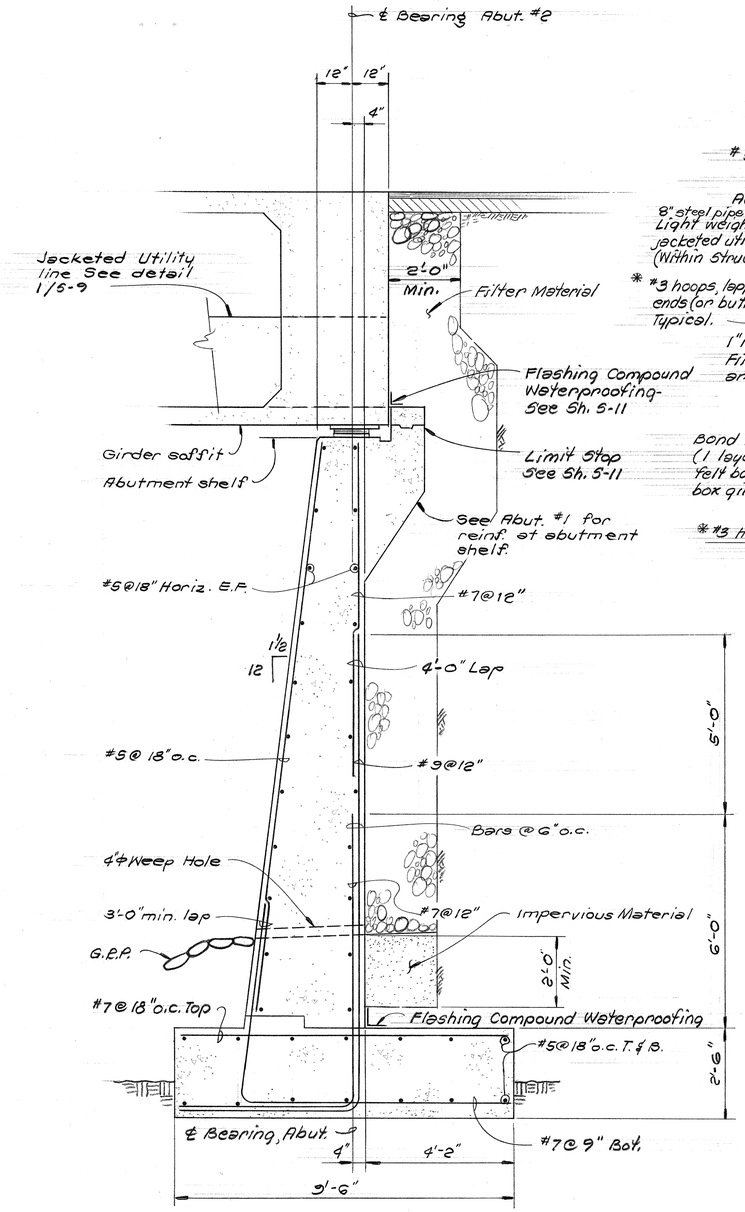
K+E CRYSTALENE TRACING PAPER

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(III):14	1974	163	234



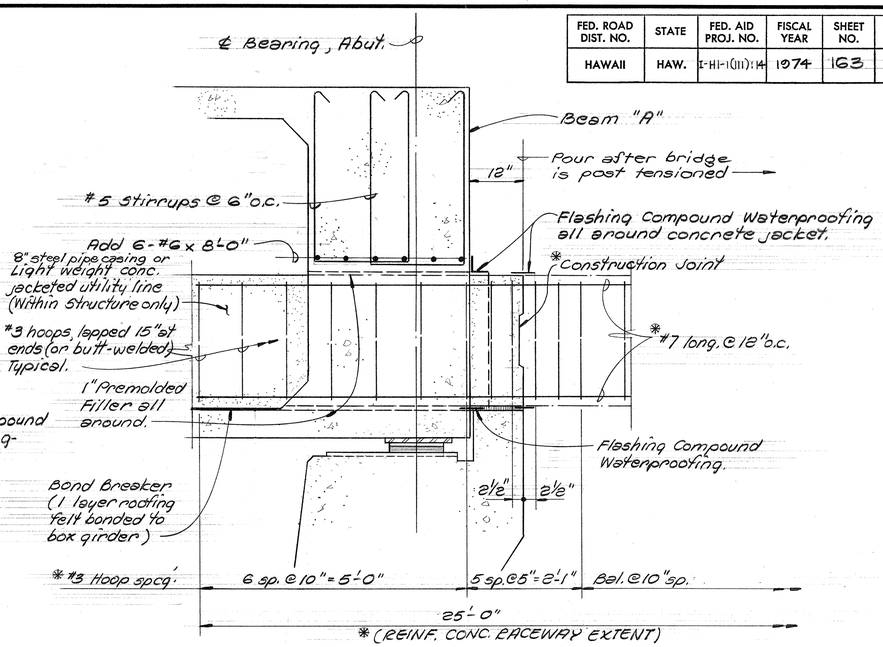
TYPICAL SECTION ABUTMENT #1

½" = 1'-0"



TYPICAL SECTION ABUTMENT #2

½" = 1'-0"



DETAIL 1/S-9

¾" = 1'-0"

* For Electrical, Telephone, & communication relocation only. For sewer relocation details, see Civil Drawings.

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
2016 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

TYPICAL ABUTMENT #1 & #2 SECTIONS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(III):14

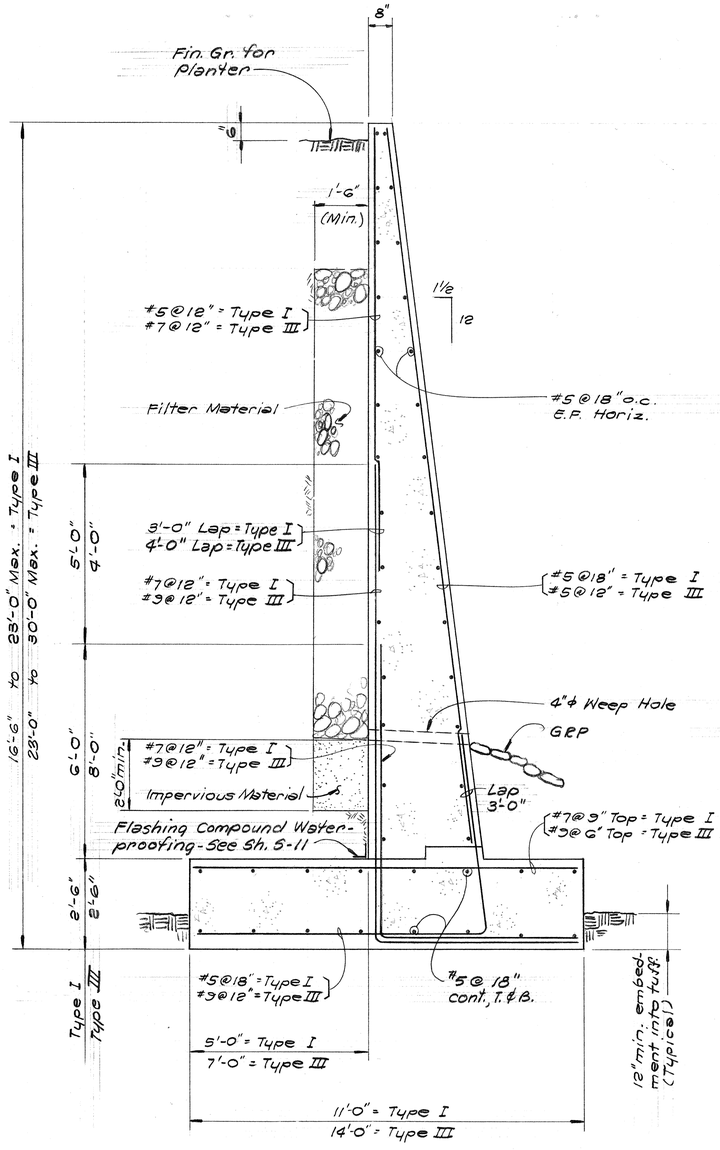
Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-9 OF 34 SHEETS

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

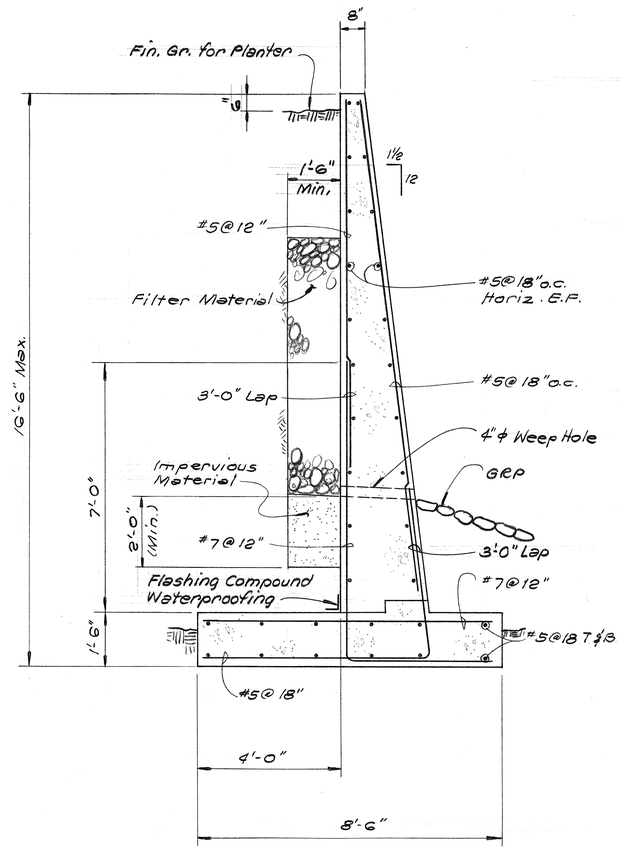
K+E CRYSTALENE TRACING PAPER

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111)14	1974	164	234



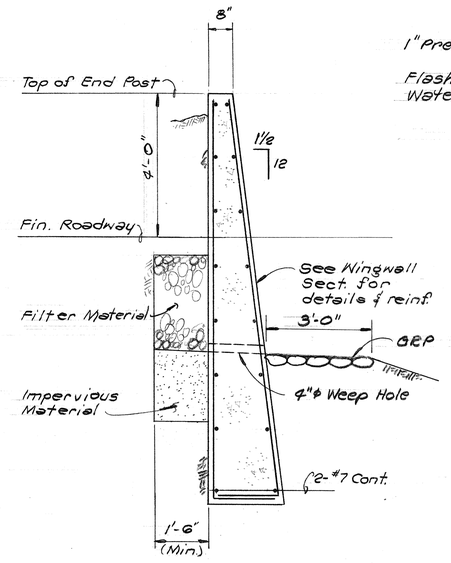
TYPE I & III WINGWALL SECTION

1/8" = 1'-0"



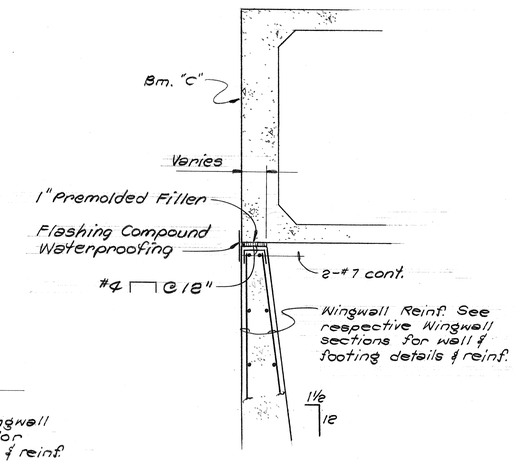
TYPE II WINGWALL SECTION

1/2" = 1'-0"



TYPICAL CANTILEVERED WINGWALL SECTION

1/2" = 1'-0"



WINGWALL SECTION UNDER DECK

1/8" = 1'-0"

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

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ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

TYPICAL WINGWALL SECTIONS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111) 14

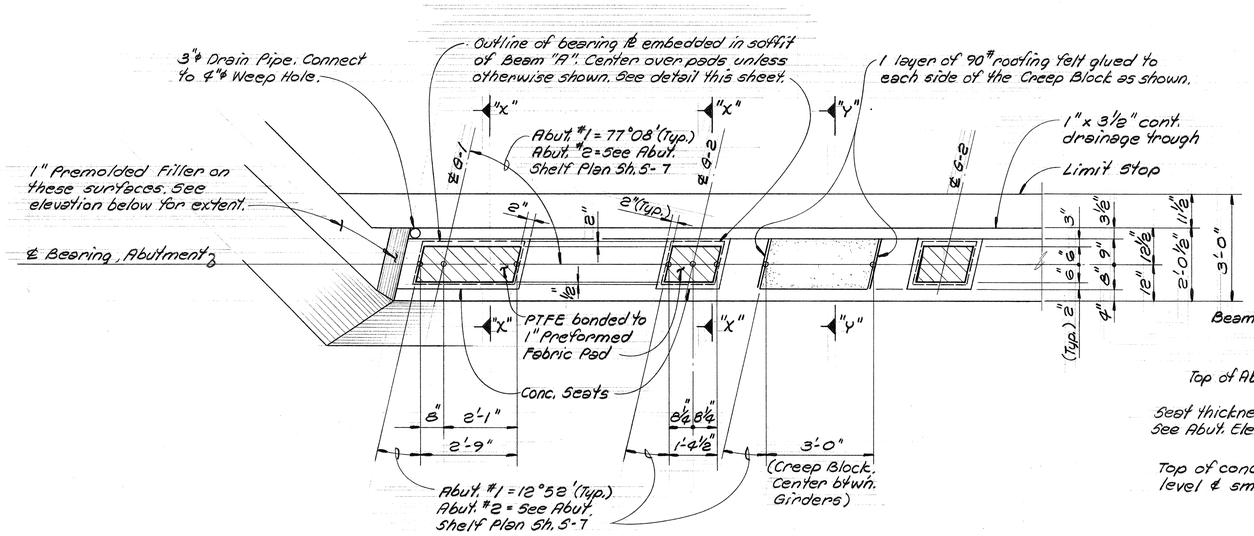
Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-10 OF 34 SHEETS

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

K+E CRYSTALENE TRACING PAPER

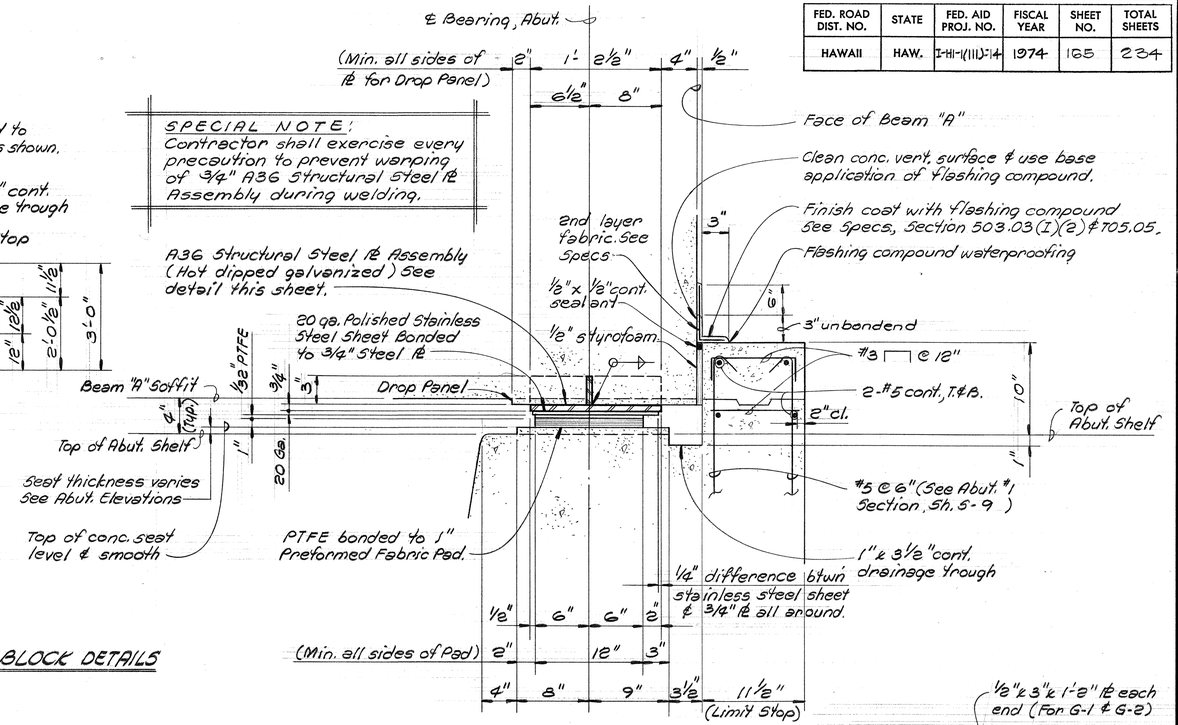
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	165	234



PLAN ~ ABUTMENT SHELF SHOWING CONCRETE SEATS, BEARING PADS & CREEP BLOCK DETAILS

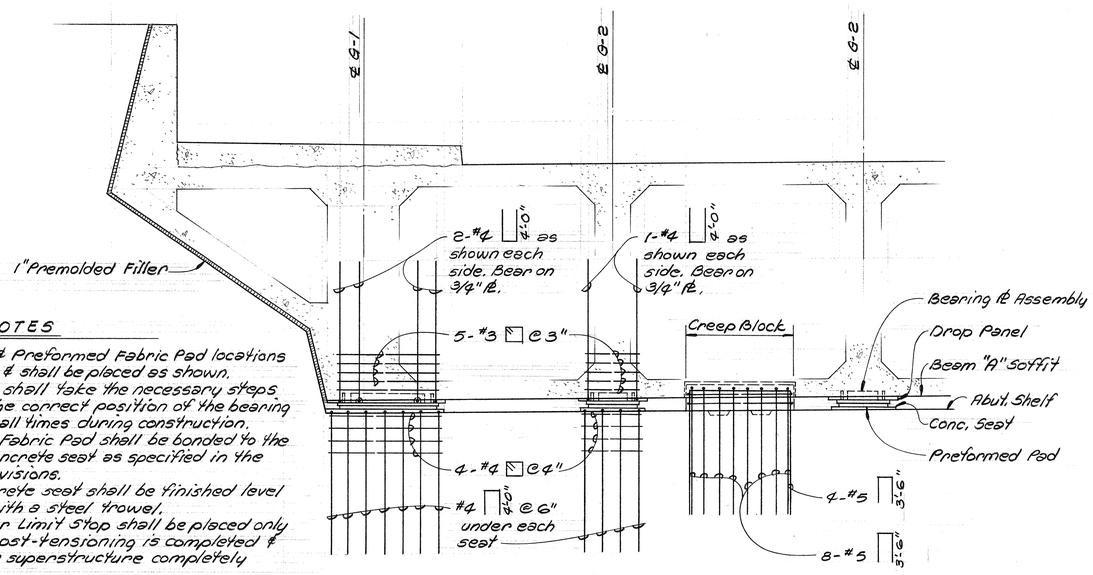
1/2" = 1'-0"

SPECIAL NOTE:
Contractor shall exercise every precaution to prevent warping of 3/4" A36 Structural Steel ℞ Assembly during welding.



SECTION "X"~"X"

1 1/2" = 1'-0"

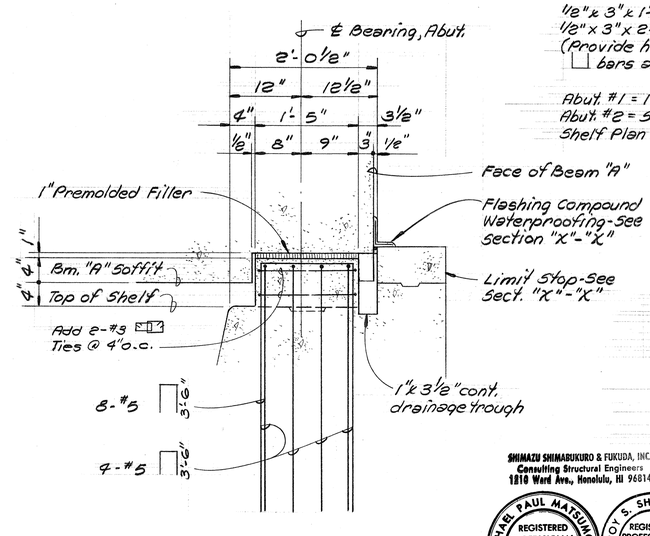


SPECIAL NOTES

1. Bearing ℞ & Preformed Fabric Pad locations are critical & shall be placed as shown. Contractor shall take the necessary steps to insure the correct position of the bearing assembly at all times during construction.
2. Preformed Fabric Pad shall be bonded to the abutment concrete seat as specified in the Special Provisions.
3. Top of concrete seat shall be finished level & smooth with a steel trowel.
4. Concrete for Limit Stop shall be placed only after all post-tensioning is completed & shoring for superstructure completely removed.
5. Concrete Box Girder shall be poured neat to Creep Block faces (2 sides) with Roofing Felt.
6. Flashing Compound Waterproofing shall be continuous full width of superstructure between Beam "A" & Abutment Shelf & Beam "C" & Wingwall.

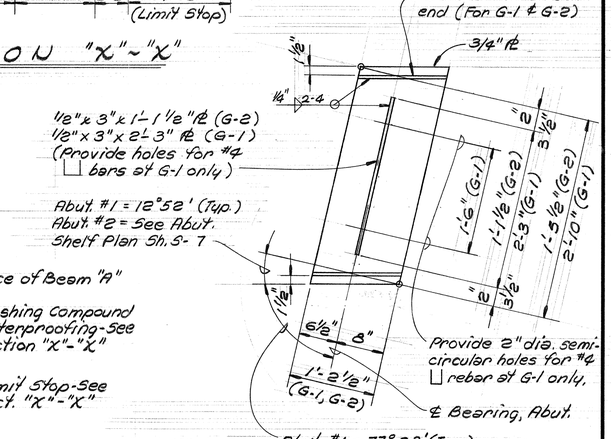
ELEVATION ~ ABUTMENT SHELF SHOWING SPECIAL REINF. FOR CONC. SEATS, DROP PANELS & CREEP BLOCK

1/2" = 1'-0"



SECTION "Y"~"Y"

1" = 1'-0"



DETAIL OF ℞ EMBEDDED IN BEAM "A" SOFFIT

1" = 1'-0"

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Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

ABUTMENT SHELF PLAN & DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111):14

Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-11 OF 34 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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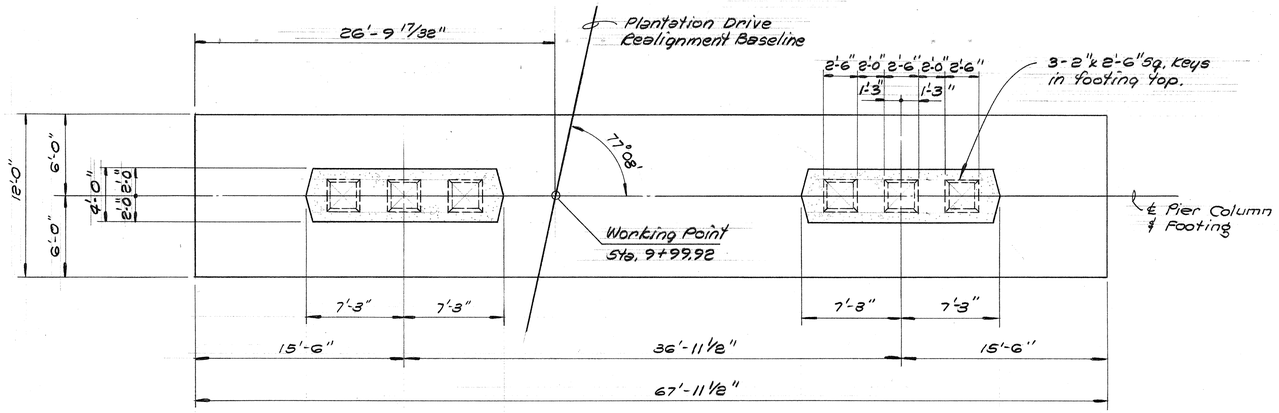
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	166	234



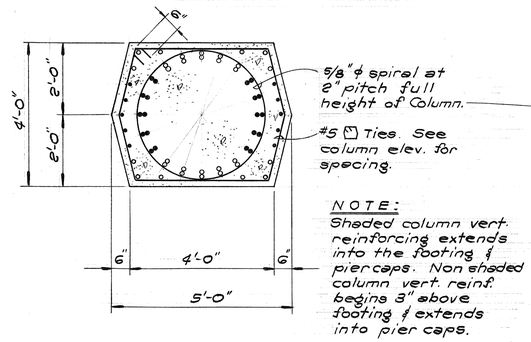
PLAN
3/16"=1'-0"

Non shaded bars within spiral are #18 bars (20 total)

Shaded bars within spiral are #18 bars (20 total)

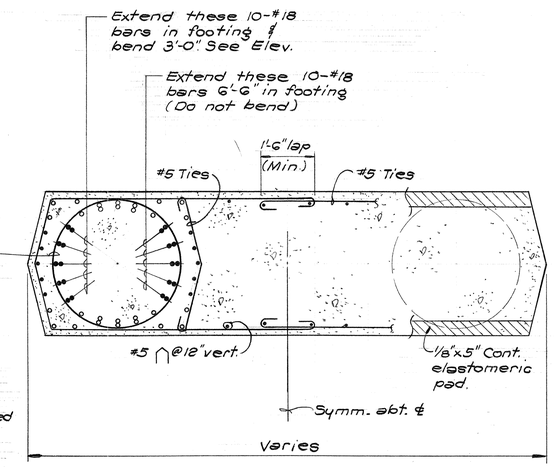
Non shaded bars outside of spiral are #9 bars (10 total)

Shaded bars outside of spiral are #9 bars (10 total)

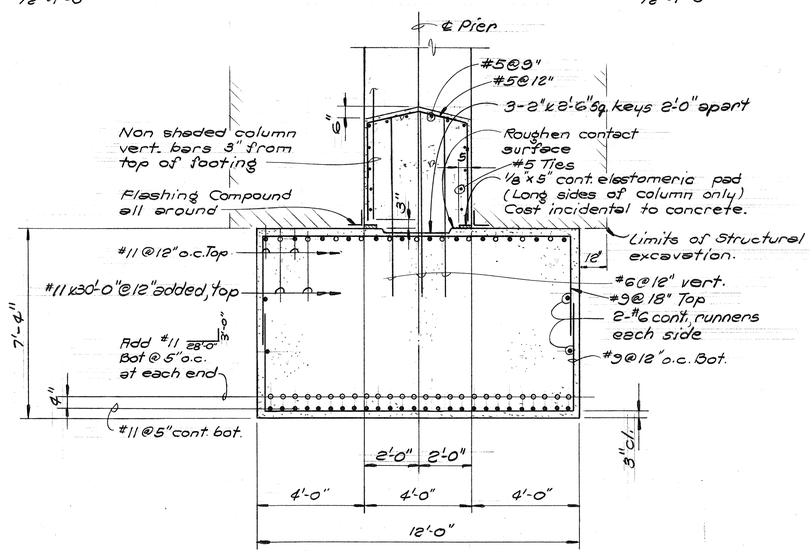


NOTE:
Shaded column vert. reinforcing extends into the footing & pier caps. Non shaded column vert. reinf. begins 3" above footing & extends into pier caps.

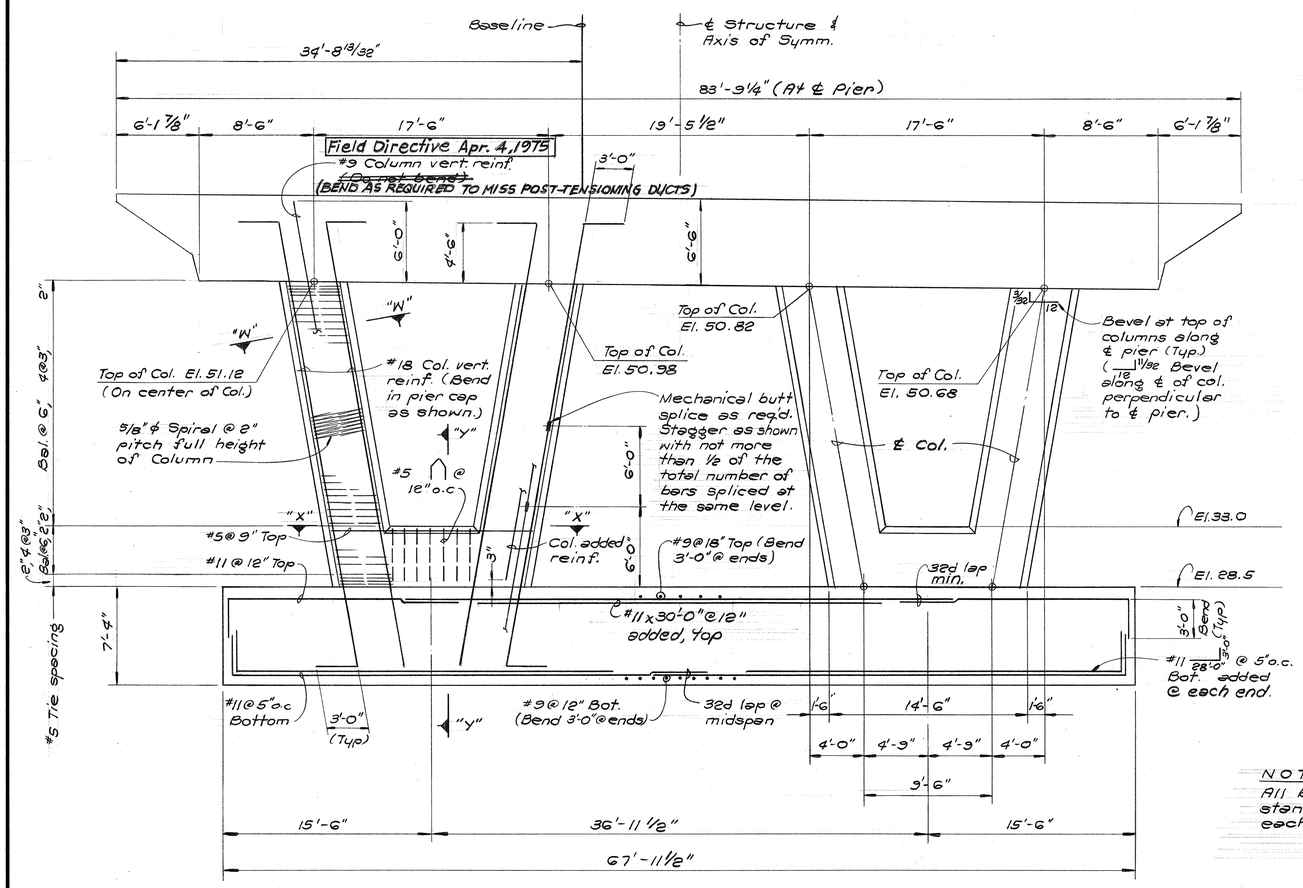
SECTION "W"-"W"
1/2"=1'-0"



SECTION "X"-"X"
1/2"=1'-0"



SECTION "Y"-"Y"
3/8"=1'-0"



ELEVATION
3/16"=1'-0"

NOTE:
All bar bends shall be standard bends for each size, respectively.

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Consulting Structural Engineers
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ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

PIER PLAN, ELEVATION & SECTIONS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111):14

Scale: As Shown Date: DEC. 14, 1973

SHEET No. S-12 OF 34 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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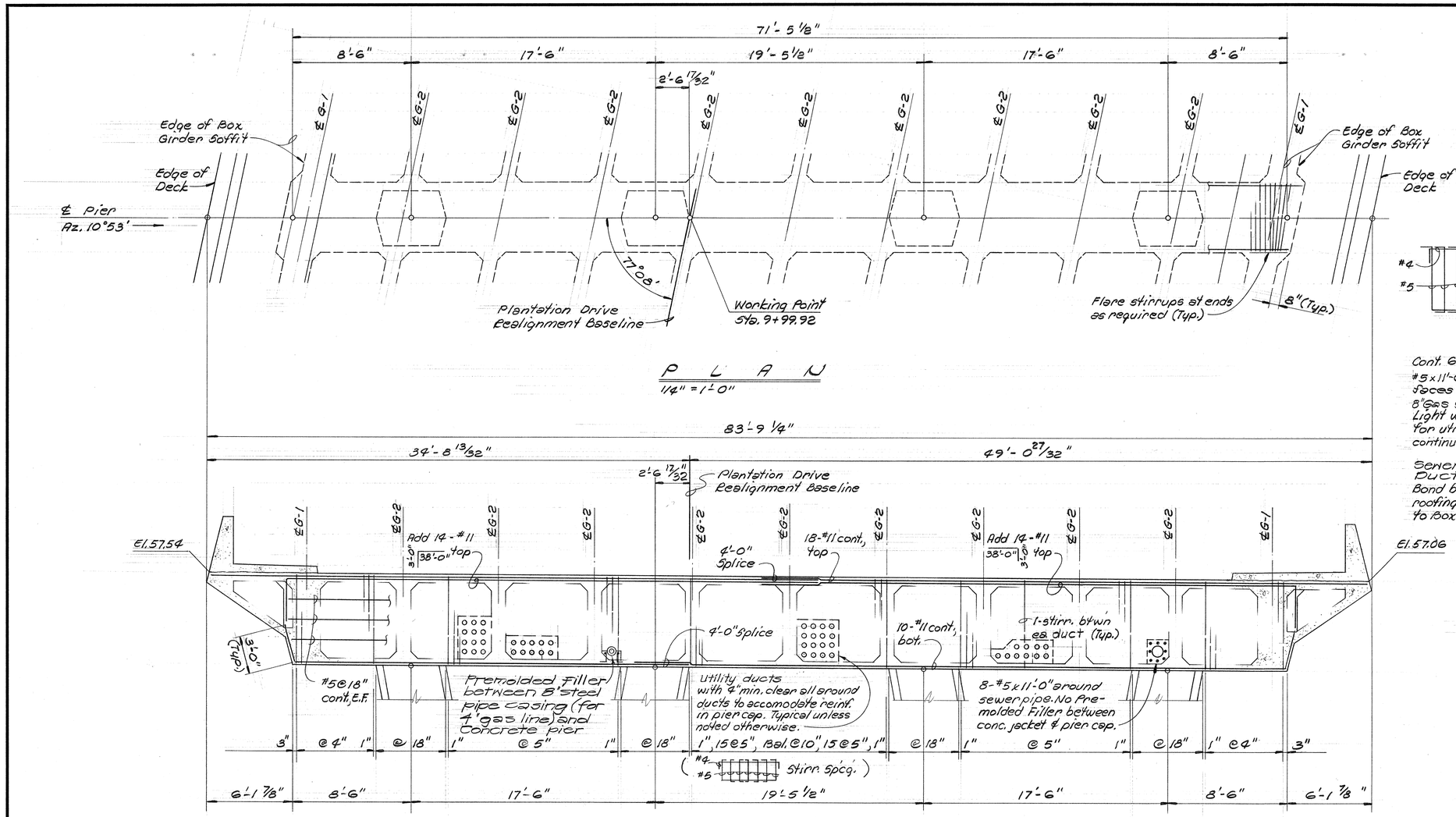
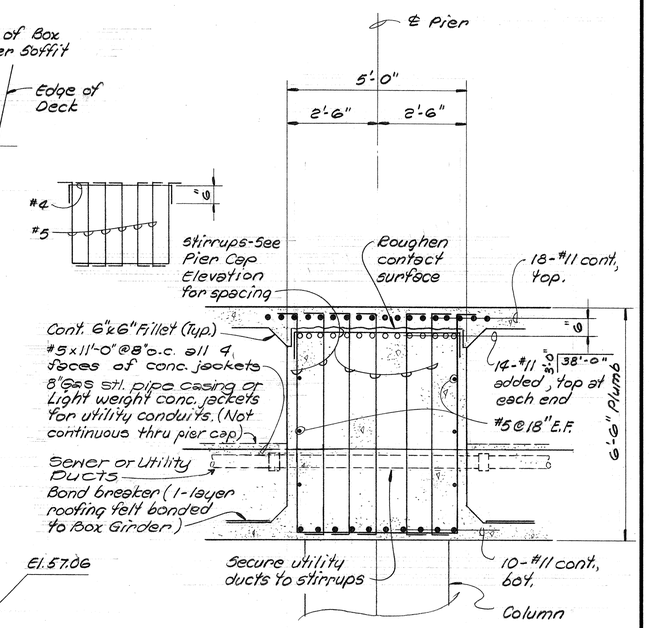
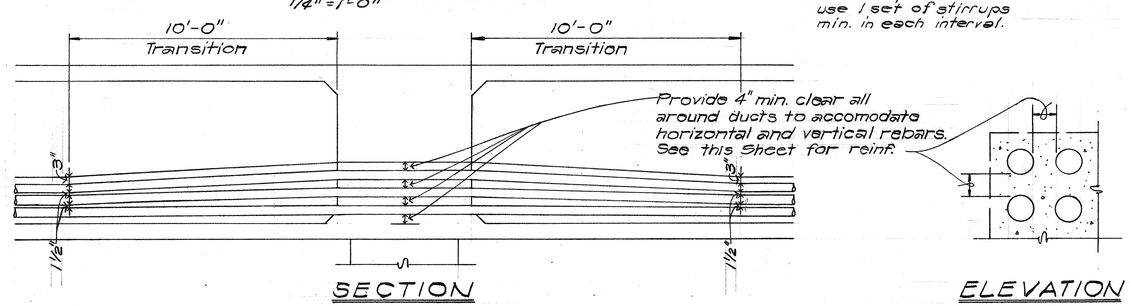
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	167	234





NOTE:
At utility ducts, use 1 set of stirrups min. in each interval.



PARTIAL CONCRETE JACKET DETAIL AT PIER CAP
(TYPICAL FOR ALL ELECTRICAL & COMMUNICATION DUCTS)
NO SCALE

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

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MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.
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HIGHWAYS DIVISION

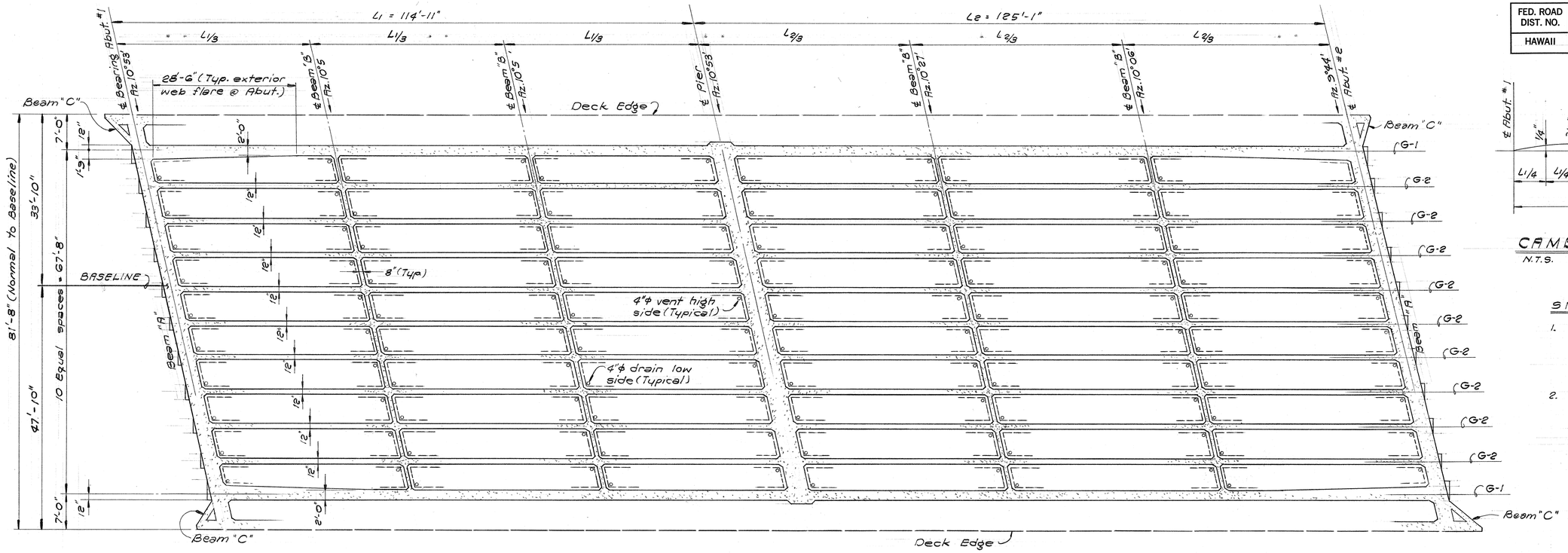
STRUCTURE No. 1
PIER CAP PLAN ELEVATION & SECTION

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111):4

Scale: As Shown Date: DEC. 14, 1973

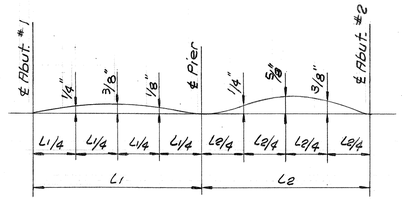
SHEET No. S-13 OF 34 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(III)-14	1974	168	234



DECK FRAMING PLAN

Scale: 3/32" = 1'-0"

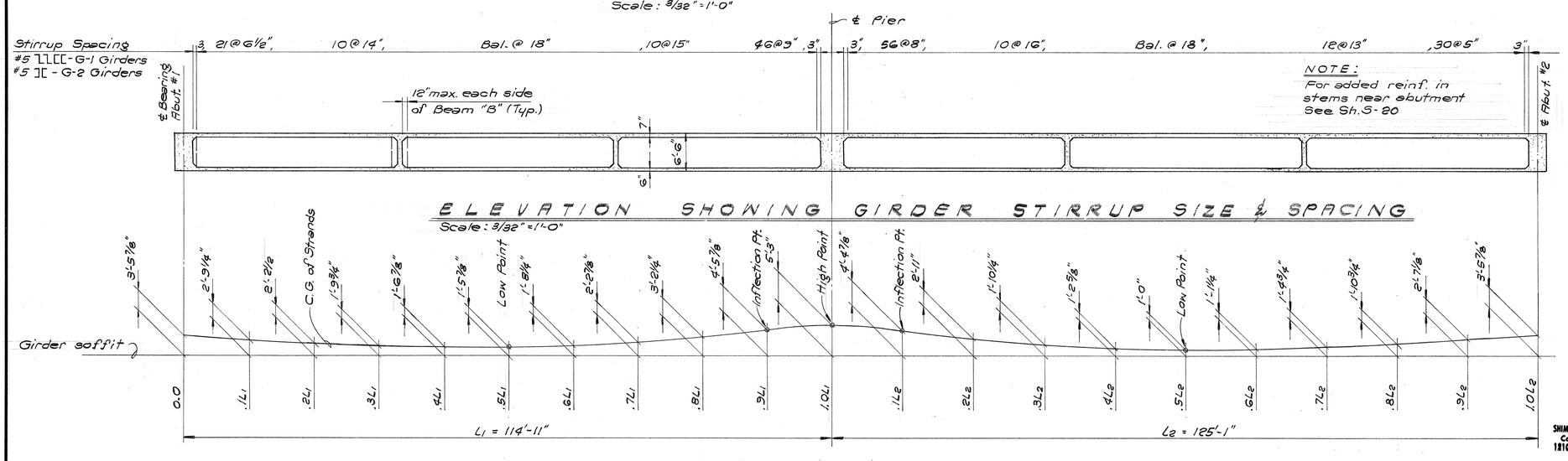


CAMBER DIAGRAM

N.T.S.

SPECIAL NOTES

1. All post tension ducts in each stem shall be placed to satisfy the locations shown for the Center of Gravity of Post Tension Force.
2. All curves in ducts shall be parabolic & smooth.



ELEVATION SHOWING GIRDER STIRRUP SIZE & SPACING

Scale: 3/32" = 1'-0"

CENTER OF GRAVITY OF POST TENSION FORCES

Scale: 3/32" = 1'-0"

POST TENSION NOTES

1. See "TYPICAL POST TENSION NOTES" Sh. S-18
2. Effective post tension force after all losses (in kips) shall be:
   Girder @ 0 (Jacking end), @ 4L1, @ 1.0L1 (Pier), @ 6L2, @ 1.0L2 (LE)
   G-1 -------- 2096k ------ 2276k --- 2218k --- 2282k --- 2096k
   G-2 -------- 1048k ------ 1138k --- 1109k --- 1141k --- 1048k
3. All strands shall be post tensioned simultaneously from Abutment #1 & Abutment #2.
4. Maximum number of ducts per stem shall be three (3) for G-2 Girders & six (6) for G-1 Girders.
5. Prior to final tensioning of the prestressing steel, friction tests shall be conducted by the contractor to verify the friction losses used in calculating the working force. At least two friction tests shall be conducted for each tendon or duct length and profile. The cost of such tests shall be incidental to the prestressing operation and shall not be paid for separately.

REFERENCE DRAWINGS

1. Post Tension Notes ---------- Sh. S-18
2. Typical Deck Cross Section -------- Sh. S-17
3. Beam "A" ---------- Sh. S-19
4. Beam "B" ---------- Sh. S-26

ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

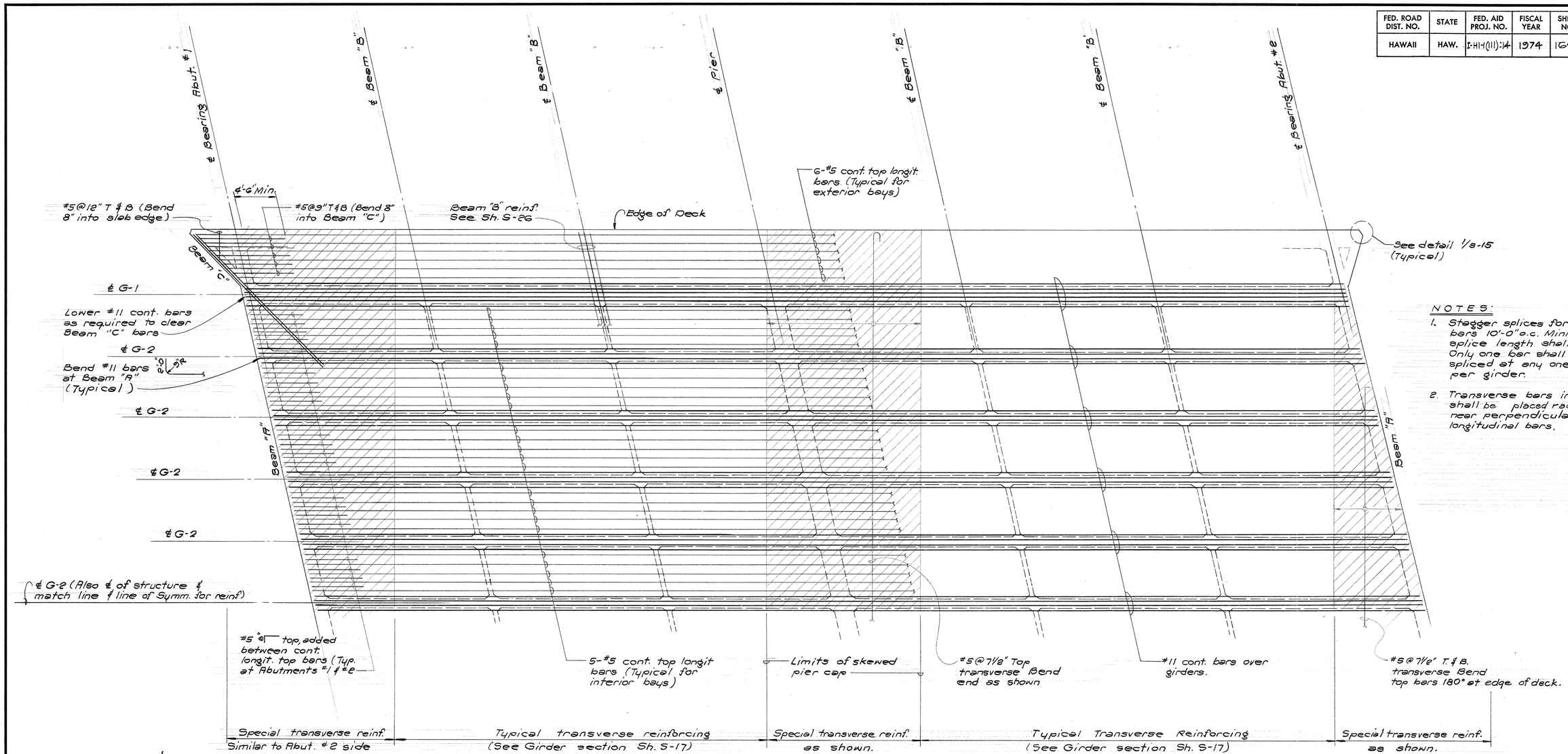
STRUCTURE No. 1

DECK FRAMING PLAN, ELEVATION SHOWING GIRDER STIRRUP SIZE & SPACING, & CENTER OF GRAVITY OF POST TENSION FORCES
PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(III)-14

Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-14 OF 34 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-(111):14	1974	169	234

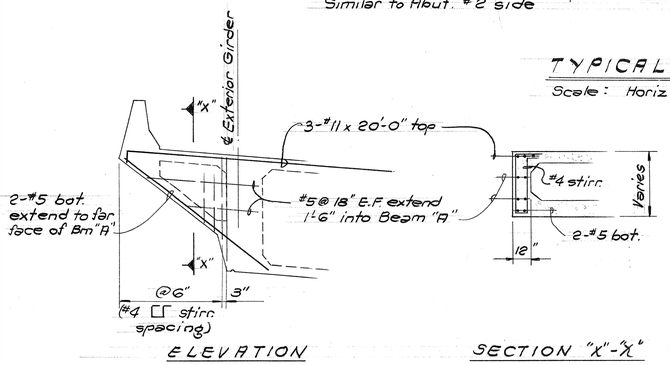


TYPICAL ARRANGEMENT OF TOP SLAB TOP LAYER LONGITUDINAL & TRANSVERSE DECK REINFORCEMENT

Scale: Horiz. 3/32" = 1'-0" Vert. 3/16" = 1'-0"

NOTES:

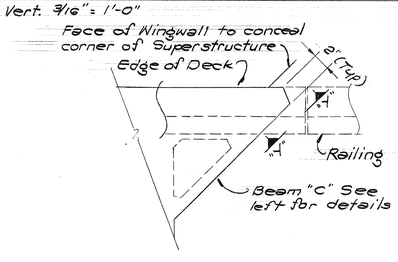
1. Stagger splices for cont. #11 bars 10'-0" o.c. Minimum splice length shall be 36d. Only one bar shall be spliced at any one point per girder.
2. Transverse bars in general shall be placed radially or near perpendicular to longitudinal bars.



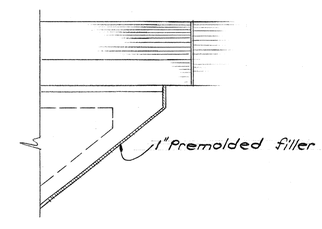
ELEVATION — SECTION "X"-"X"

BEAM "C" DETAIL

1/4" = 1'-0"



PLAN



SECTION "Y"-"Y"

TYPICAL ACUTE DECK CORNER DETAIL

3/8" = 1'-0"

1 / S-15

REFERENCE DRAWINGS

1. Beam "A" ---------- Sh. S-19
2. Beam "B" ---------- Sh. S-26

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Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

TOP SLAB TOP LAYER LONGITUDINAL & TRANSVERSE DECK REINF. & BEAM "C" DETAIL & ACUTE CORNR DET.

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-H1-1 (111) : 14

Scale: As Shown Date: DEC. 14, 1973

SHEET No. S-15 OF 34 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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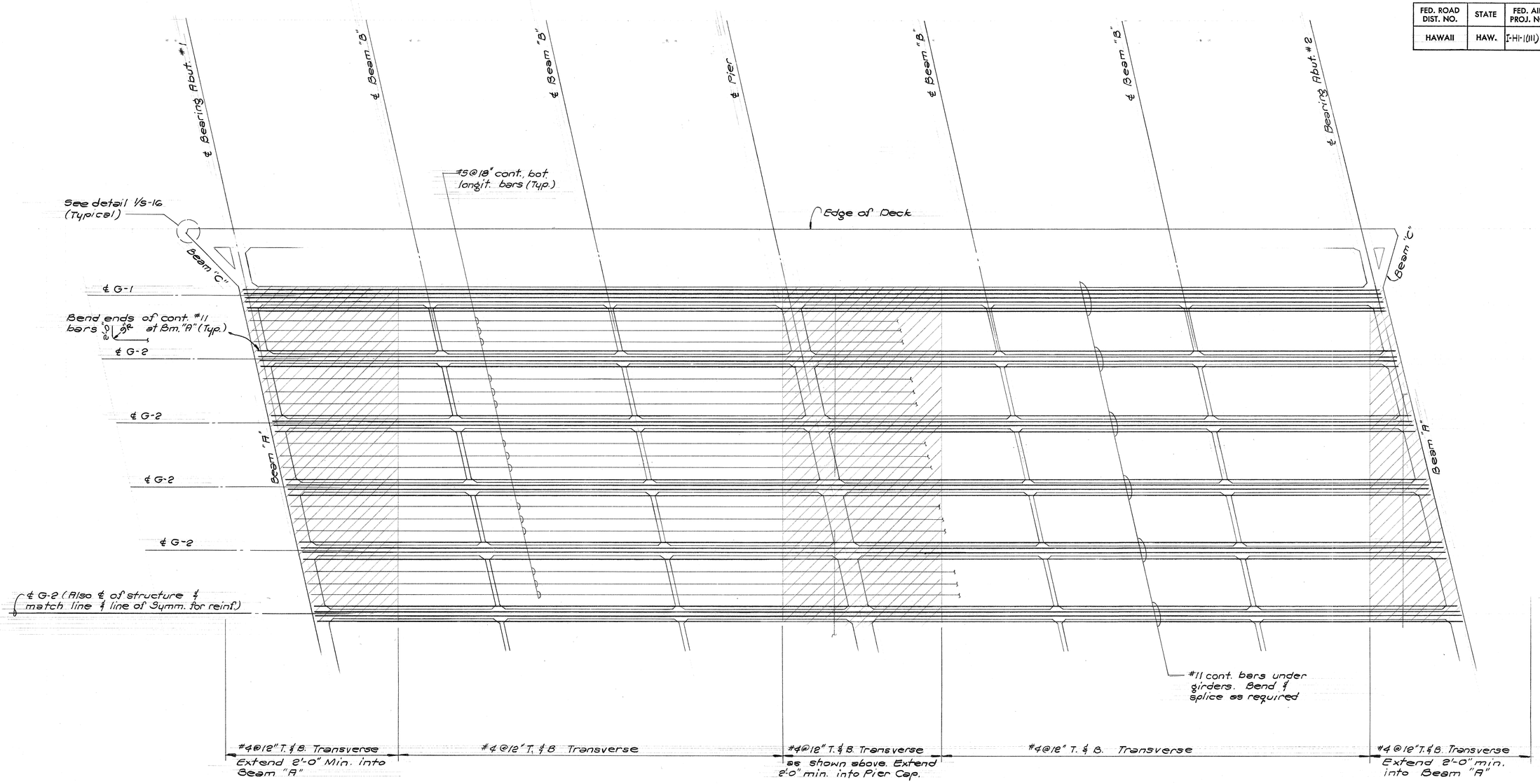
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(11):14	1974	170	234



TYPICAL ARRANGEMENT OF BOTTOM SLAB, BOTTOM LAYER LONGITUDINAL & TRANSVERSE DECK REINFORCEMENT

Scale: Horiz 3/32" = 1'-0" Vert. 3/16" = 1'-0"

NOTES

1. Stagger splice for cont. #11 bars 10'-0" o.c. Minimum splice length shall be 36d. Only one bar shall be spliced at any one point per girder.
2. Transverse bars in general, shall be placed radially or near perpendicular to longitudinal bars.

REFERENCE DRAWINGS

1. Beam "A" ---------- Sh. S-19
2. Beam "B" ---------- Sh. S-26
3. Beam "C" ---------- Sh. S-15

SHIMAZU SHIMABUKURO & FUKUDA, INC.
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MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

BOTTOM SLAB, BOTTOM LAYER LONGITUDINAL & TRANSVERSE DECK REINFORCEMENT.

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-H-1 (11) : 14

Scale: As Shown Date: DEC. 14, 1973

SHEET No. S-16 OF 34 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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No.	CHECKED BY	"

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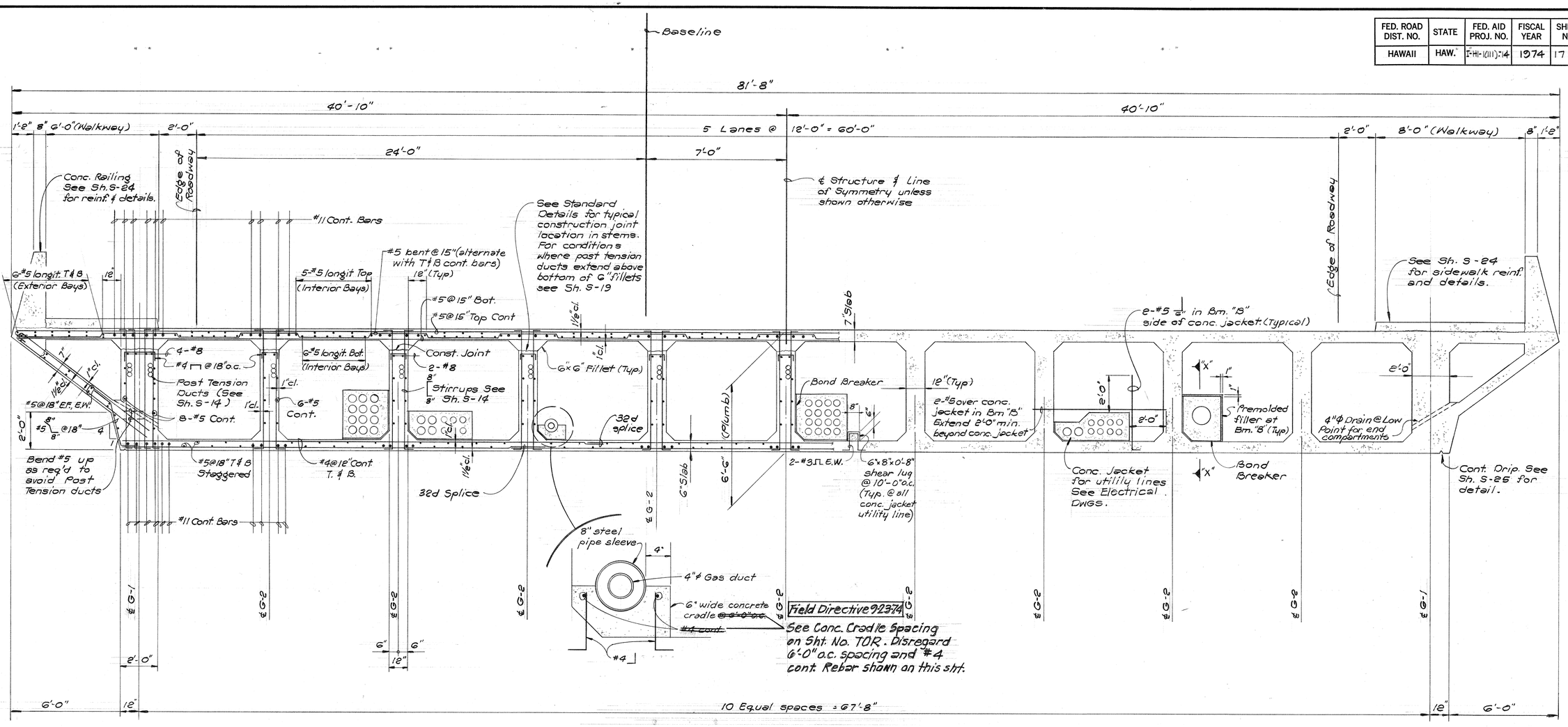
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	171	234



TYPICAL POST TENSION BOX GIRDER SECTION

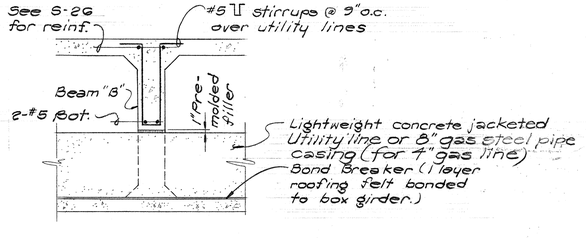
Scale : 3/8" = 1'-0" (Dimensions shown are at right angles to Baseline)

REINFORCING NOTES

1. Bend all bottom longitudinal #11 bars 90° at Abutment ends.
   Splice minimum of 20'-0" from bend.
2. Bend all longitudinal #5 top bars in top slab & all bars in bot. slab 90° at Abutment end.
   Splice minimum of 10'-0" from bend.
3. DO NOT splice #11 cont. bars in top slab at the Pier.
4. All slab transverse reinforcing shall be placed normal to the ℄.

SPECIAL NOTES

1. Longitudinal deck reinf. along edge of deck to follow curvature of deck edge.
2. All vertical dimensions are measured plumb.



SECTION "X"-"X"

3/8" = 1'-0"

REFERENCE DRAWINGS

1. Post Tension Notes ---------- Sh. S-14
2. Stirrup size & spacing -------- Sh. S-14
3. Concrete railing ---------- Sh. S-24
4. Top slab added reinf. Plan ---- Sh. S-15

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Consulting Structural Engineers
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STRUCTURE No. 1

TYPICAL BOX GIRDER SECTION

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111):14

Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-17 OF 34 SHEETS

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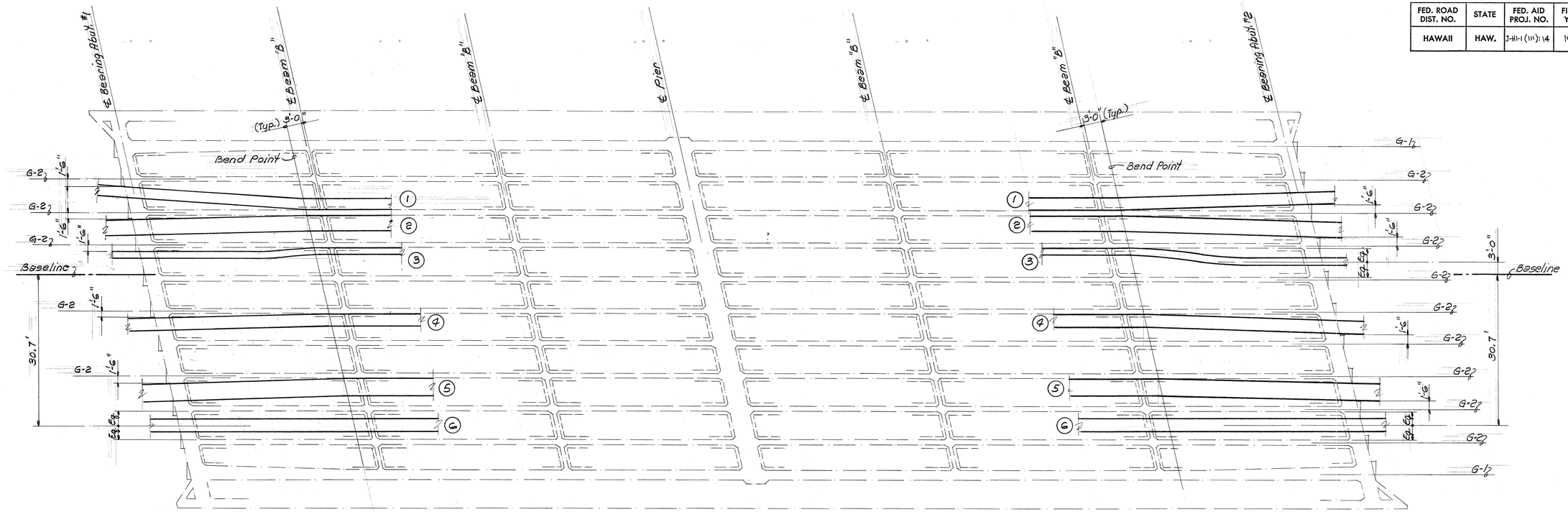
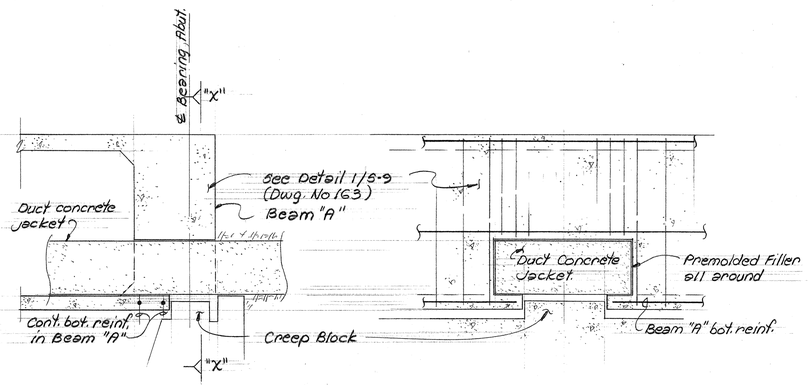
	TRACED BY		"
	DESIGNED BY		"
	QUANTITIES BY		"
No.	CHECKED BY		"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	CO1715-1	234



DECK FRAMING PLAN SHOWING DUCT LAYOUT

Scale: 3/32" = 1'-0"



SECTION THRU BM. "A" @ CREEP BLOCK

3/8" = 1'-0"

SECTION "X"-"X"

3/8" = 1'-0"

Item No	Description	Change From Original Plan	Remarks
1 2 4 5	Utility Cable Ducts	3'-0" from Bm. "B" nearest end Abutment, bend duct jacket to exit structure in manner shown.	Duct bends shall be smooth transitions in accordance with utility company requirements
3	Gas Line & Sleeve	Ditto above	Specified bend points outside the structure shall be relocated to suit in field.
6	Sewer Line	Move alignment so this line falls midway between stem walls for entire length of structure.	Sewer M.H. #C-1 and C-2 shall be shifted so offset from Baseline is 30.7' (2'-0" shift)

GENERAL NOTES

Contract Dwg 174 (Plan at skewed abutment) shows #6 3'-0" added top & bottom of each duct. Wherever these encroach into utility jackets, bend bars on place in skewed direction to clear jackets.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURE No. 1

LAYOUT OF UTILITIES THRU STRUCTURE

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111): 14

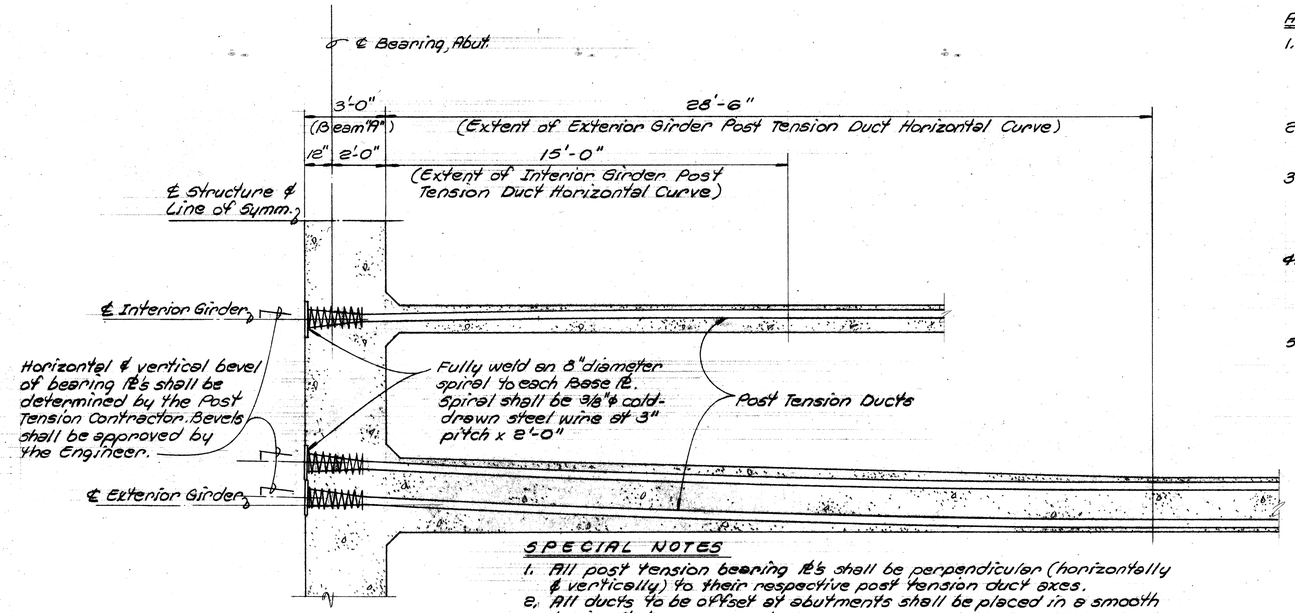
Scale: As Shown Date Aug. 1975

SHEET No. S17A OF 34 SHEETS

CO1715-1

K+E CRYSTALENE TRACING PAPER

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(111):14	1974	172	234



SPECIAL NOTES

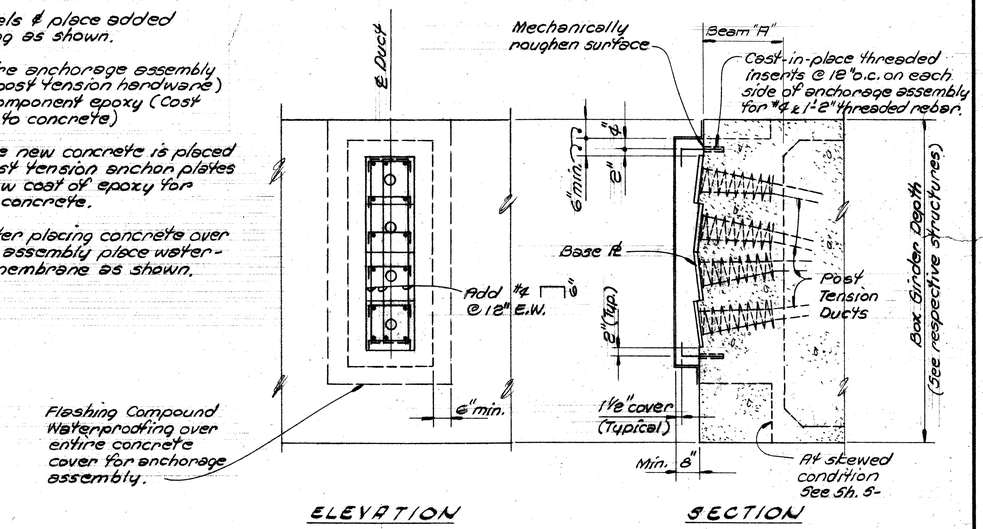
1. All post tension bearing ⊥'s shall be perpendicular (horizontally & vertically) to their respective post tension duct axes.
2. All ducts to be offset at abutments shall be placed in a smooth horizontal curve as shown.
3. Details & notes shown on this sheet shall govern conditions at skewed abutments.

PLAN ~ POST TENSION DUCT LAYOUT IN EXTERIOR & INTERIOR GIRDER

3/8" = 1'-0"

ANCHORAGE ASSEMBLY PROTECTION NOTES

1. After all post tension work is completed, clean hardware as required in order to provide good bonding surface.
2. Bend dowels & place added reinforcing as shown.
3. Paint entire anchorage assembly (including post tension hardware) with two component epoxy (Cost incidental to concrete)
4. Just before new concrete is placed against post tension anchor plates apply a new coat of epoxy for bond with concrete.
5. 7 days after placing concrete over anchorage assembly place water-proofing membrane as shown.



ELEVATION

SECTION

POST TENSION DUCT ANCHORAGE GROUTING DETAILS

1/8" = 1'-0"

TYPICAL POST TENSION NOTES

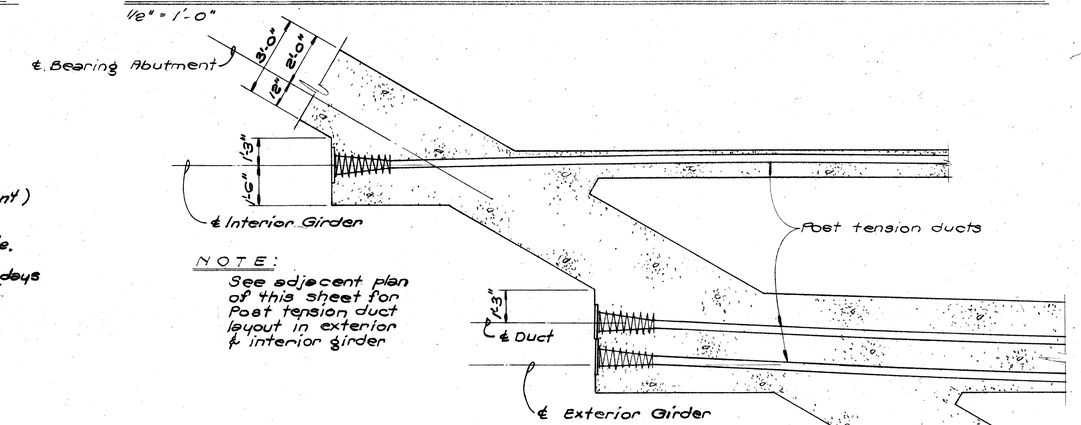
1. See Specifications for other post tension requirements.
2. All ducts shall be securely anchored at all times during construction to prevent any damage. Contractor shall exercise the maximum amount of care during placement of ducts, reinforcing & concrete in order to protect the ducts from damage.
3. 1/2"ϕ 270k strands shall be used for post tensioning.
4. All strands are to be placed after the concrete is poured & the following criterion is met.
   The last concrete placed must have attained a compressive strength equal to 4,000 p.s.i. & a minimum of 14 days must have elapsed since its placement.
5. All prestressing steel shall be tensioned by means of hydraulic jacks so that the force in the prestressing steel shall not be less than the value shown on the plans. The force in the prestressing steel shall be considered as the smaller of the two values as determined by the measured elongation and the gage pressure.
6. All ducts shall be cleaned out before placing strands.
7. Strands shall be end anchored at an equivalent "anchor set" of 1/2".
8. Post tensioning sequence shall be as follows:
   a) All lower-most ducts in each girder shall be completely tensioned in the same day.
   b) A minimum of 30% of the remaining ducts above the lower most ducts in each girder shall be completely tensioned in the same day.
   c) The remaining ducts in each girder shall be completely tensioned.
9. After all post tension operations & testing, if required, are completed, all ducts shall be grouted in accordance with the Specifications.
10. After grouting is completed, the anchorage assembly shall be reinforced & protected as shown above.

POST TENSION DESIGN NOTES

1. Design is based on K=.0002 (friction wobble coefficient) & M = 0.25 (curvature friction coefficient)
2. Jacking stress for all strands shall be 70% of ultimate.
3. Minimum concrete compressive strength at 28 days for the concrete box girder shall be 5,000 p.s.i.

SPECIAL NOTES:

1. Contractor shall take steps necessary to allow Superstructure to contract during tensioning operations. During tensioning operations the box girder soffit forms will be subject to the same compressive force as the concrete box girder unless compressible joints &/or bond breakers are provided to relieve this force.
2. No tensioning or grouting shall be performed in the absence of the Engineer.



NOTE:
See adjacent plan of this sheet for Post tension duct layout in exterior & interior girder

PLAN AT SKEWED ABUTMENT

POST TENSION DUCT LAYOUT IN EXTERIOR & INTERIOR GIRDER

3/8" = 1'-0"

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

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.
RAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAIL

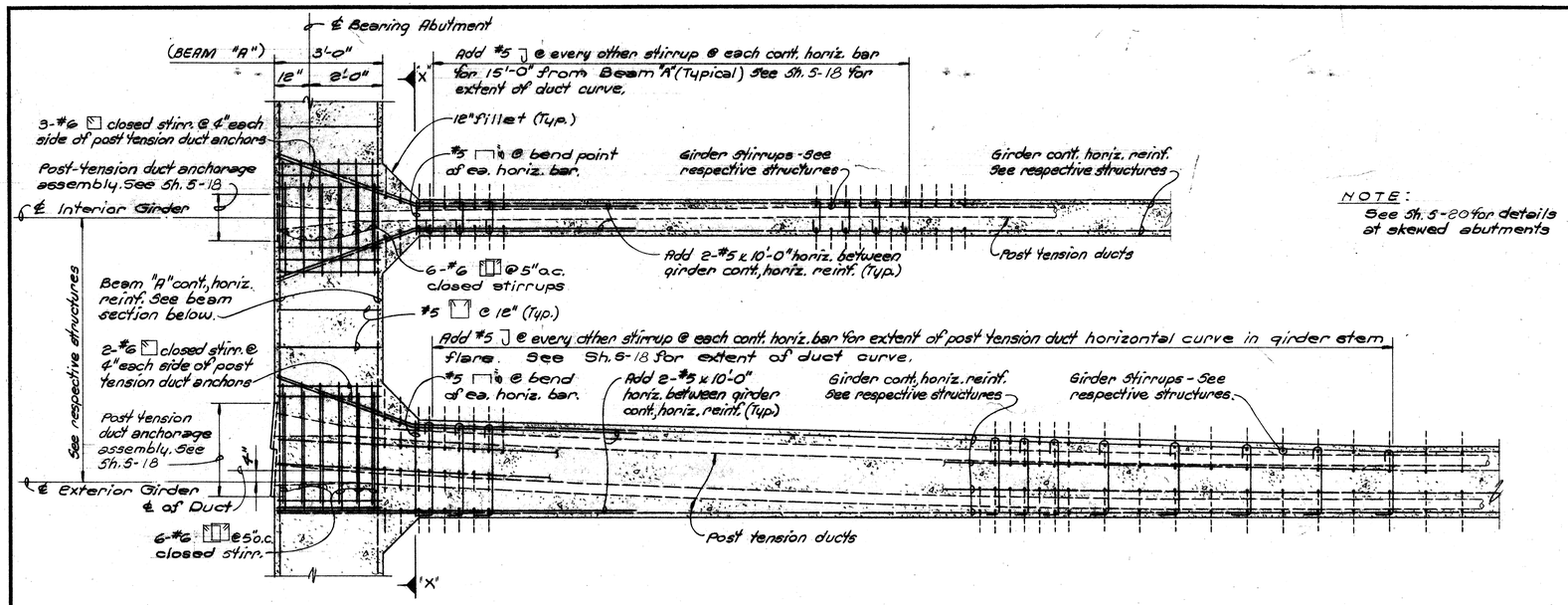
POST TENSION DUCT LAYOUT, DETAILS & NOTES AT BEAM "A"

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-H1-1(111):14

Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-18 OF 34 SHEETS

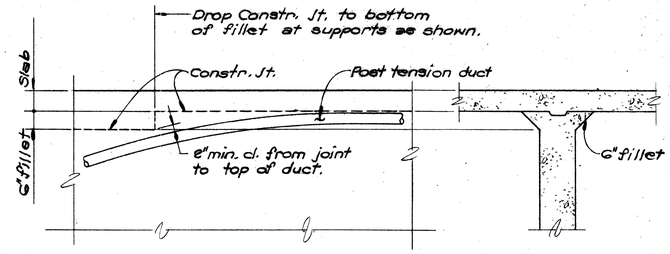
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(III):14	1974	173	234



PLAN SHOWING REINFORCING LAYOUT FOR BEAM "A" & GIRDERS "G-1" & "G-2" AT BEAM "A"

1/2" = 1'-0"

NOTE:
See Sh. 5-20 for details at skewed abutments

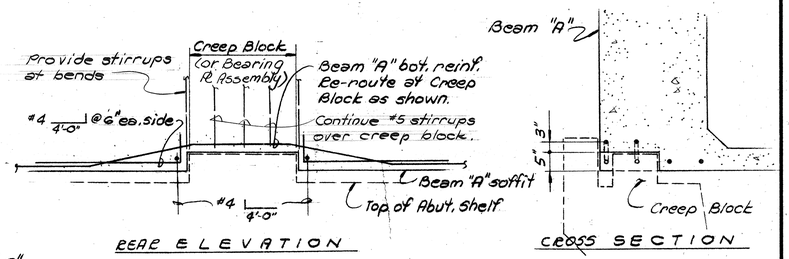


ELEVATION SECTION

NOTE:
For details not shown see Standard Detail Sheets.

STEM CONSTRUCTION JOINT DETAIL

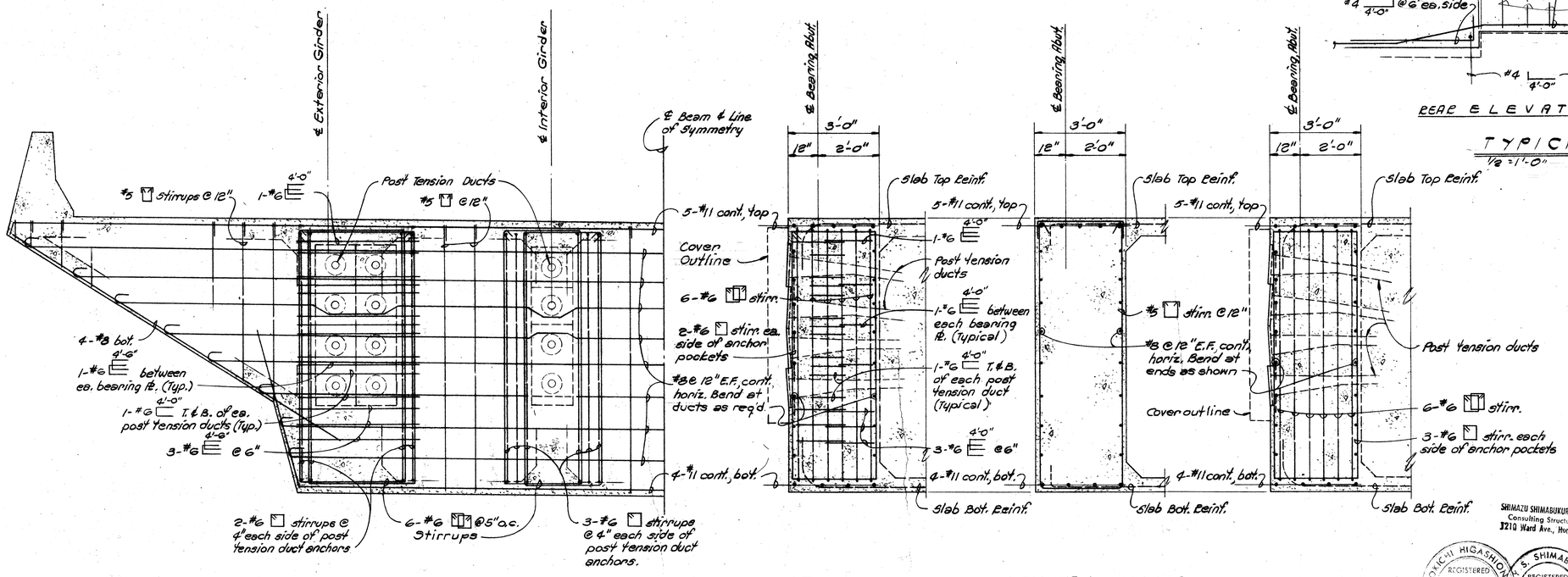
1/8" = 1'-0"



REAR ELEVATION CROSS SECTION

TYPICAL CONDITION @ CREEP BLOCK & BEARING PLATES

1/2" = 1'-0"



AT G-1 BETWEEN GIRDERS AT G-2

BEAM "A" ~ ELEVATION "X"-"X"

1/2" = 1'-0"

BEAM "A" ~ SECTIONS

1/2" = 1'-0"

ORIGINAL PLAN		DATE
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SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
3210 Ward Ave., Honolulu, HI 96814

RYOKICHI HIGASHIONA REGISTERED PROFESSIONAL ENGINEER No. 1762 HAWAII, U.S.A.

T. S. SHIMABUKURO REGISTERED PROFESSIONAL ENGINEER No. 1150 HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAIL

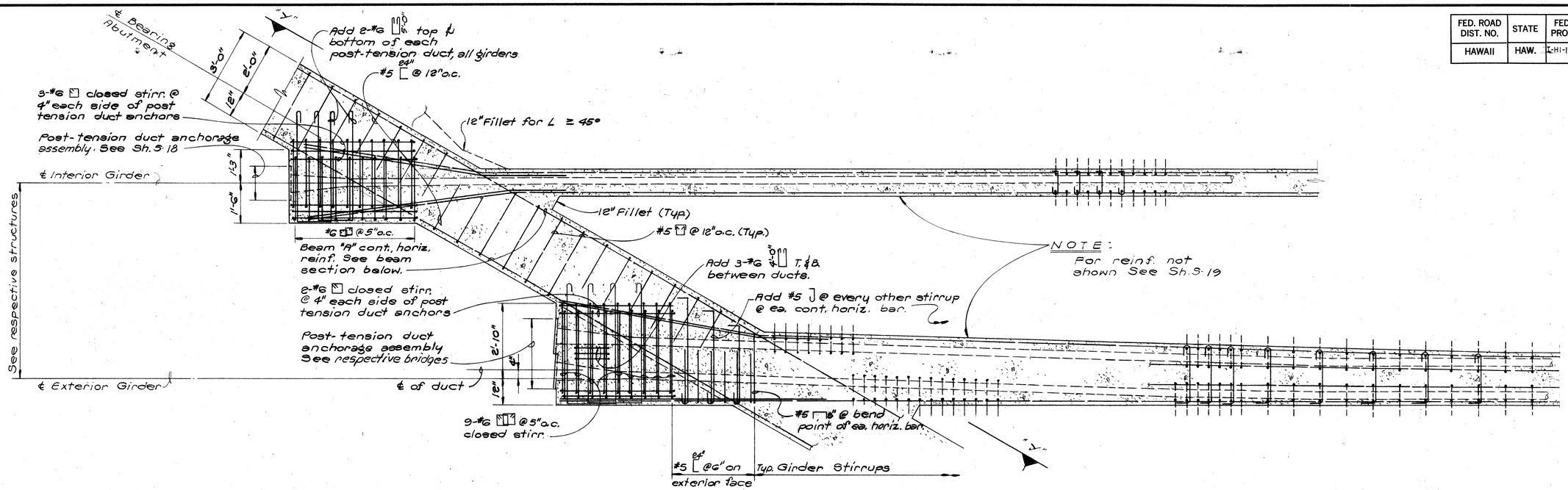
REINFORCING DETAILS FOR BEAM "A" & GIRDERS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(III):14

Scale: As Shown Date: DEC. 14, 1973

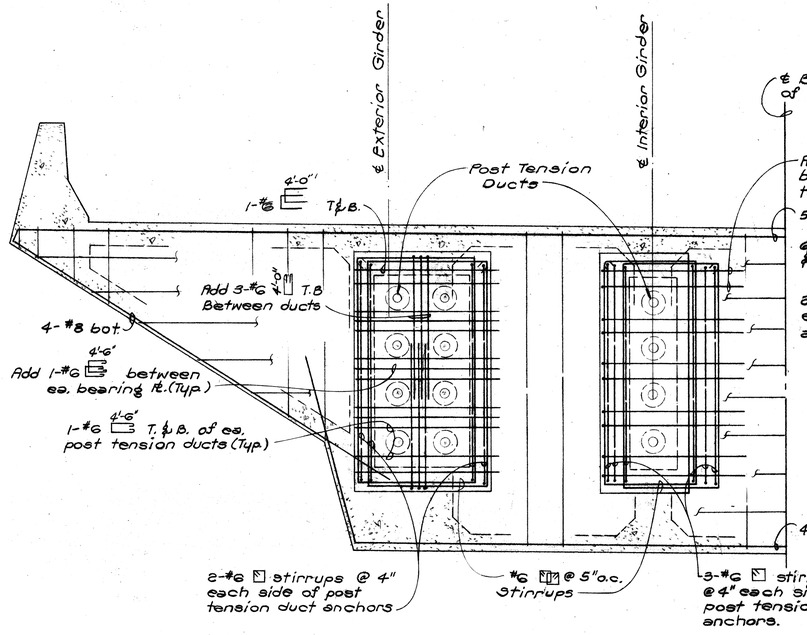
SHEET No. 5-19 OF 34 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	174	234



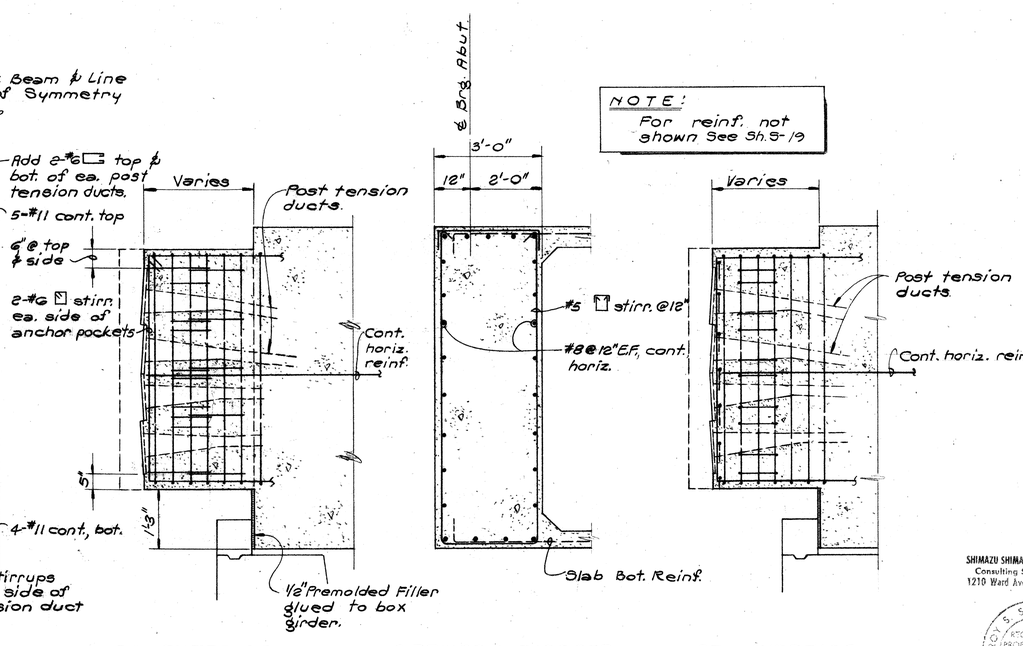
PLAN AT SKEWED ABUTMENTS

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



BEAM "A" ~ ELEVATION "Y"-"Y"

1/2" = 1'-0"



NOTE:
For reinf. not shown See Sh. S-19

AT EXTERIOR GIRDERS | BETWEEN GIRDERS | AT INTERIOR GIRDERS

BEAM "A" SECTIONS

1/2" = 1'-0"

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

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, Hi 96814

ROY S. SHIMABUKURO REGISTERED PROFESSIONAL ENGINEER No. 1150 HAWAII, U.S.A.
MICHAEL PAUL MASUNOKA REGISTERED PROFESSIONAL ENGINEER No. 2974 HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAIL

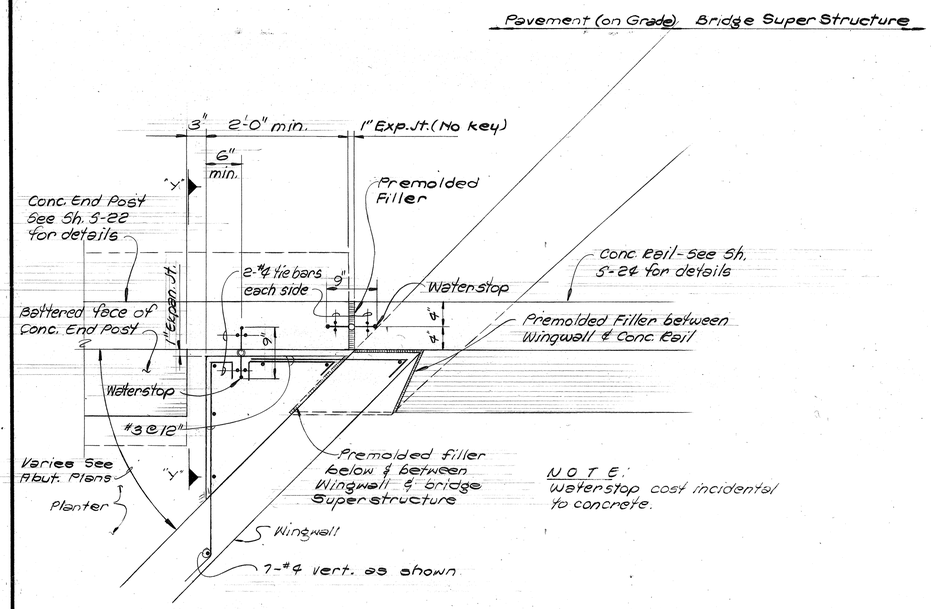
REINFORCING DETAIL FOR BEAM "A" & GIRDERS AT SKEWED ABUTMENTS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No I-HI-1(111):14

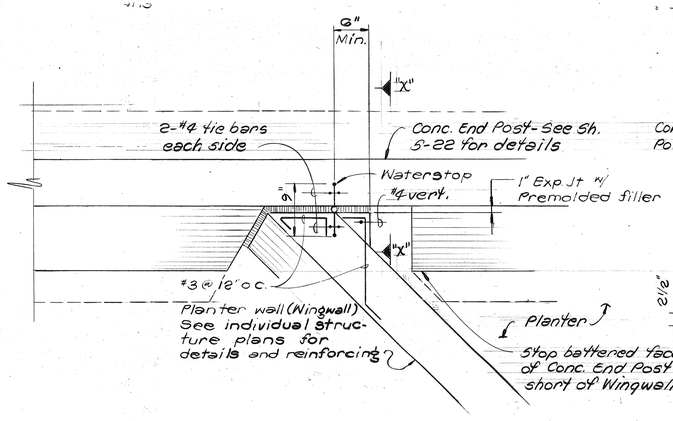
Scale: As Shown | Date: DEC. 14, 1973

SHEET No. S-20 OF 34 SHEETS

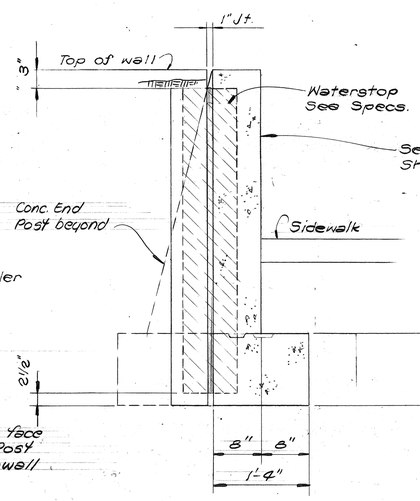
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(111)14	1974	175	234



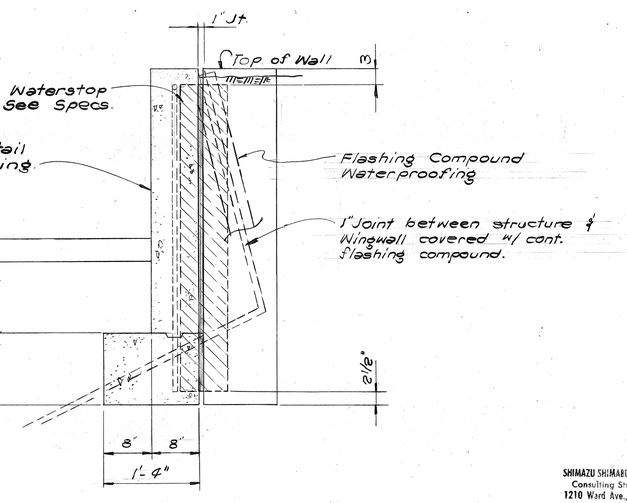
PLAN AT BEGINNING OF WINGWALL



PLAN AT END OF WINGWALL



SECTION "X"-"X"



SECTION "Y"-"Y"

WINGWALL & END POST CONNECTION DETAILS

Scale: 1" = 1'-0"

See Sht. 176R

Field Directive Feb. 3, 1975 — Typical Detail Revisions for End Posts & Wingwall Connections.

DATE	REVISION
4/16/74	BATTERED BACK FACE OF CONC. END POST

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAIL
WINGWALL TO END POST CONNECTION DETAIL

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-H1-1(111) 14

Scale: As Shown — Date: DEC. 14, 1973

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Consulting Structural Engineers
1210 Ward Ave., Honolulu, Hi 96814

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.
MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

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SHEET No. S-21 OF 34 SHEETS

175R

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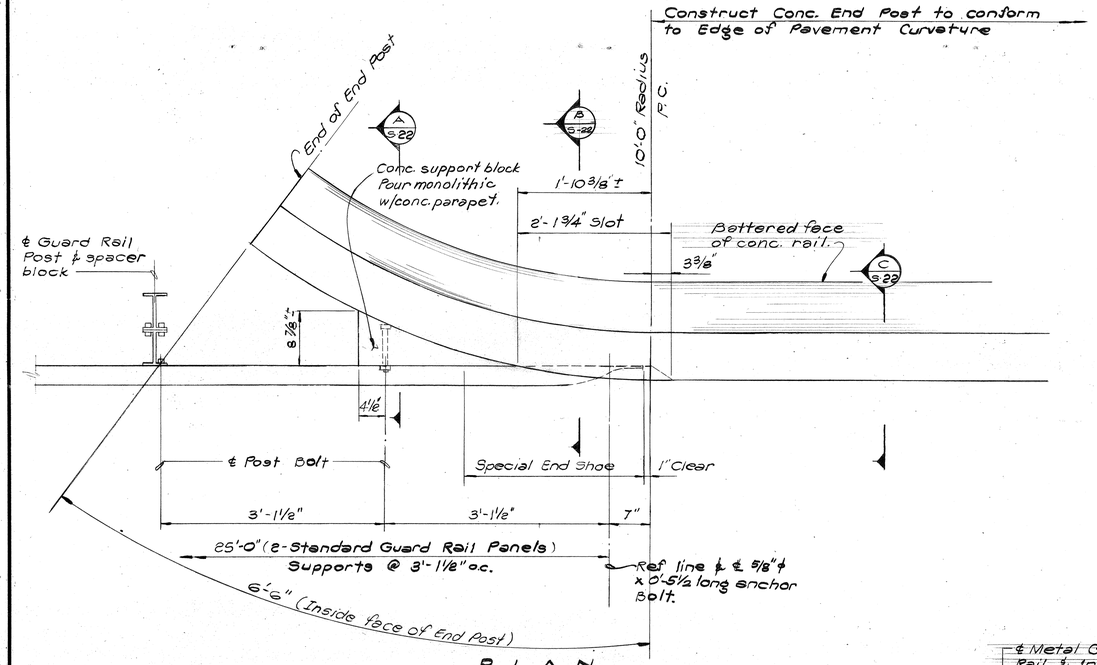
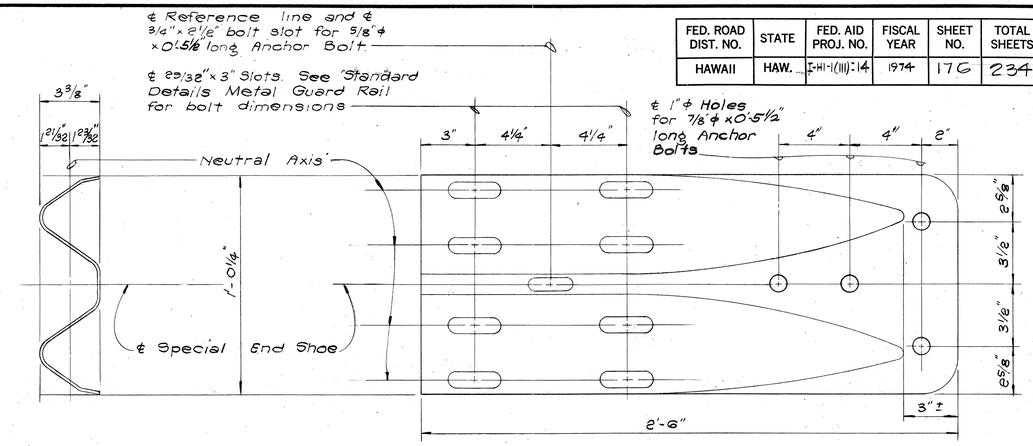
	TRACED BY	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
No.	CHECKED BY	"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(III):14	1974	176	234

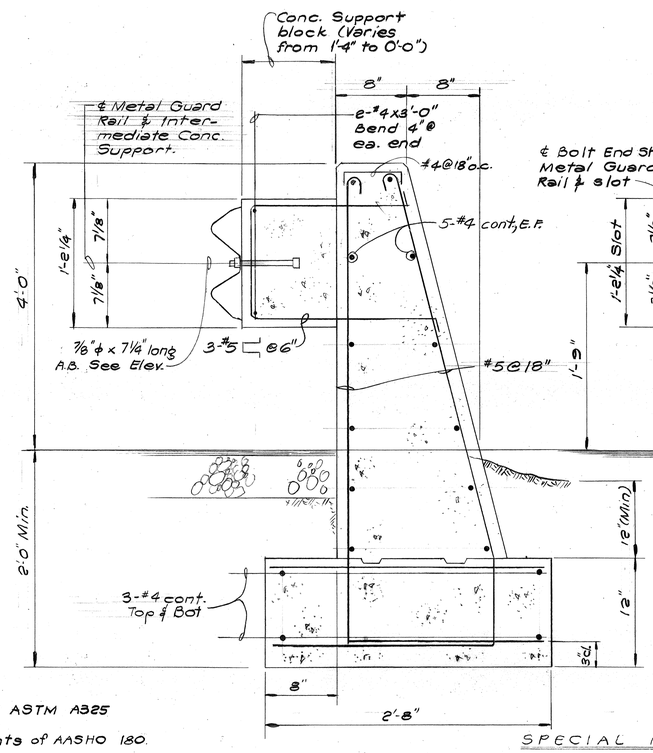


PLAN
Scale: 1" = 1'-0"

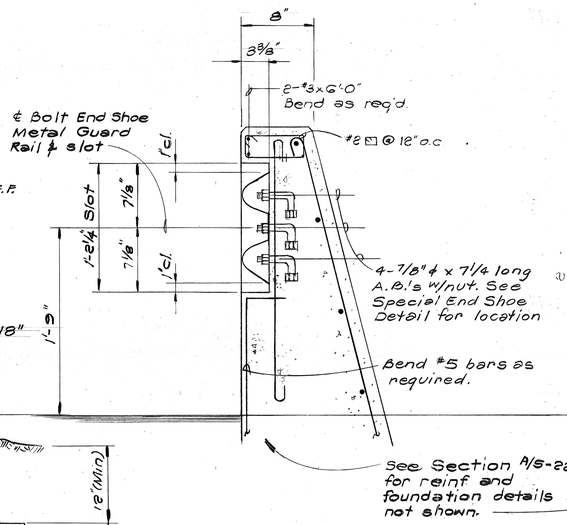


SECTION ELEVATION

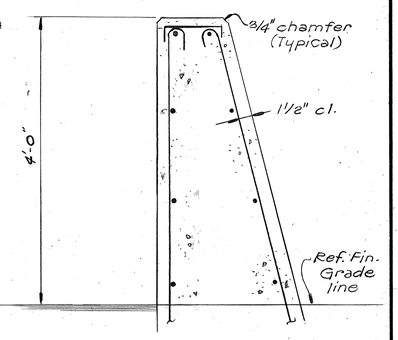
SPECIAL END SHOE DETAILS
Scale: 3" = 1'-0"

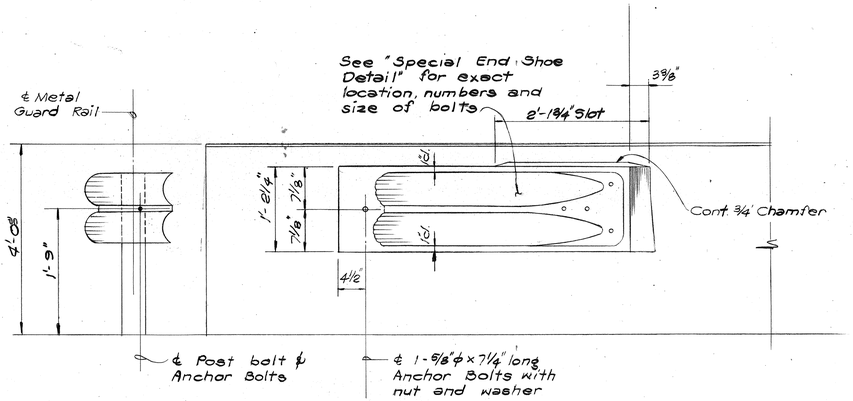


SECTION B
Scale: 1 1/2" = 1'-0"
S-22



SECTION C
Scale: 1 1/2" = 1'-0"
S-22





ELEVATION
Scale: 1" = 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 180.
4. First 25'-0" of guard rail adjoining "Special End Shoe" shall be galvanized steel.
5. Anchor Bolt length given from under bolt head.

SECTION A
Scale: 1 1/2" = 1'-0"
S-22

SPECIAL NOTE:

For concrete end post section at planter See Sh. S-21

See Sht. 175R

Field Directive
Feb. 3, 1975

Typical Detail Revisions for End Posts and Wingwall Connections.

SHINAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

REGISTERED PROFESSIONAL ENGINEER No. 1150 HAWAII, U.S.A.

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DATE	REVISION
4/16/74	Battered Back Face of End Post

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAIL
END POST DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(III):14

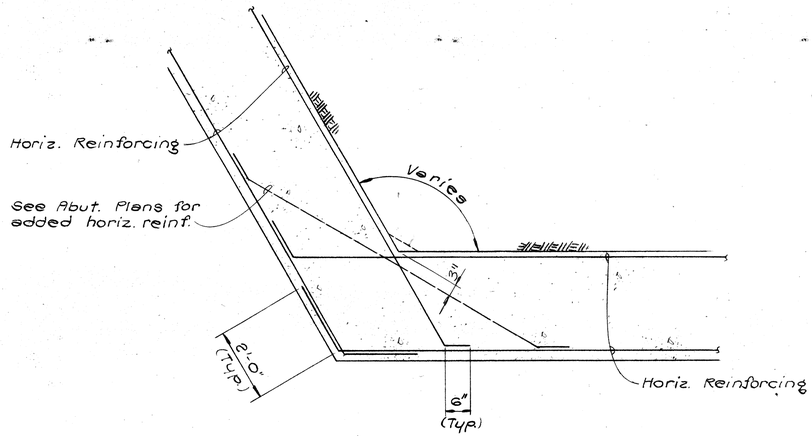
Scale: As Shown Date: DEC. 14, 1973

SHEET No. S-22 OF 34 SHEETS

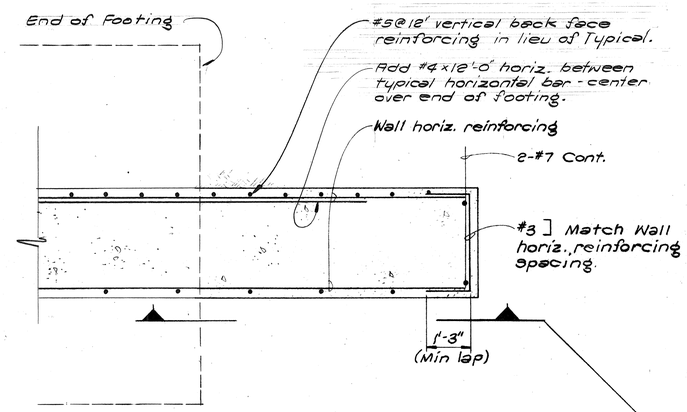
ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE | NOTE BOOK No.

176R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-(111):14	1974	177	234



PLAN AT CORNERS



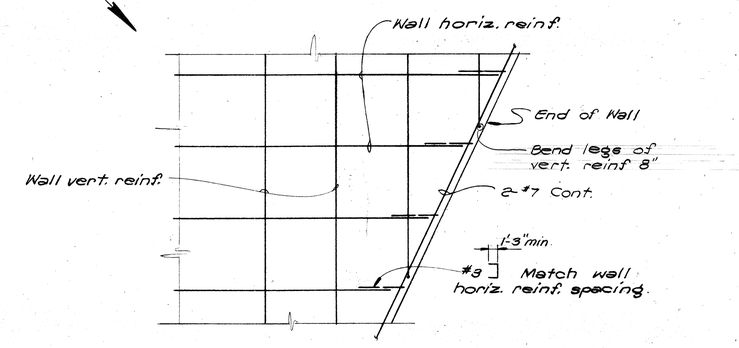
PLAN AT CANTILEVER ENDS

WALL & FOOTING NOTES

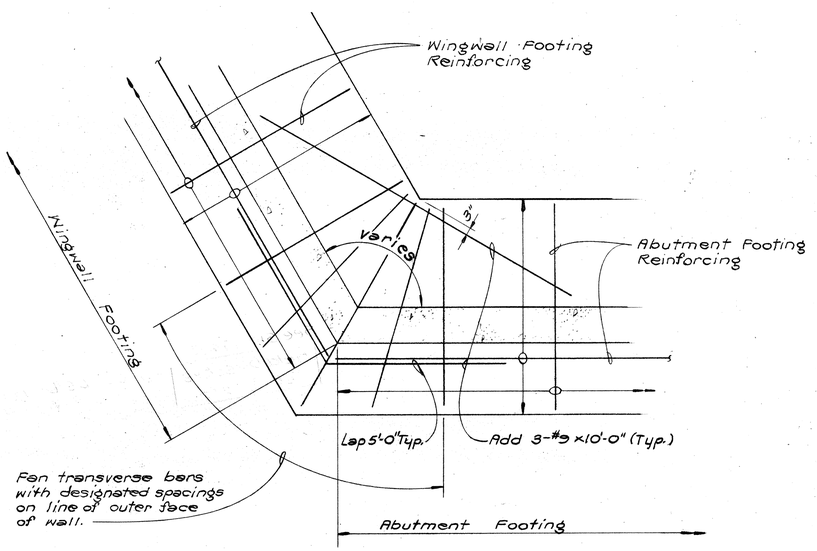
1. Concrete for all footings shall be poured against neat excavations.
2. All footings shall be embedded 1'-0" (minimum) into competent tuff.
3. Bottom of footings shall be to elevations shown in these plans unless minimum embedment into competent tuff is not attainable - in which case the Engineer shall be notified of this situation.
4. Concrete walls may be poured full height, provided pour windows 6'-0" o.c., E.W. are utilized for placing concrete.
5. Minimum 28 day concrete strengths for walls & footings shall be - 3000 p.s.i.
6. Reinforcing steel shall conform to A.S.T.M. A615, Grade 60.

TYPICAL WALL REINFORCING DETAILS

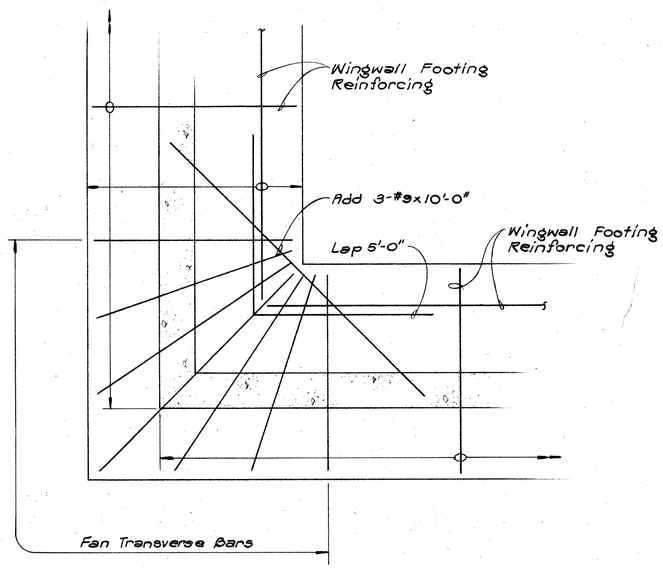
Scale: 1/2" = 1'-0"



ELEVATION



PLAN - ABUTMENT & WINGWALL CORNER FOOTING REINF.



PLAN - WINGWALL CORNER FOOTING REINF.

ABUTMENT WALL & FOOTING DETAILS

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

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

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Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

ROY S. SHIMABUKURO REGISTERED PROFESSIONAL ENGINEER No. 1150 HAWAII, U.S.A.

MICHAEL PAUL MATSUMOTO REGISTERED PROFESSIONAL ENGINEER No. 2974 HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAIL

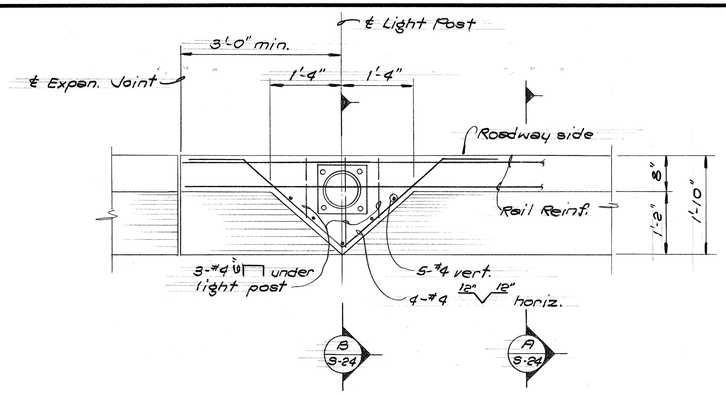
TYPICAL WALL AND FOOTING REINFORCEMENT DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111):14

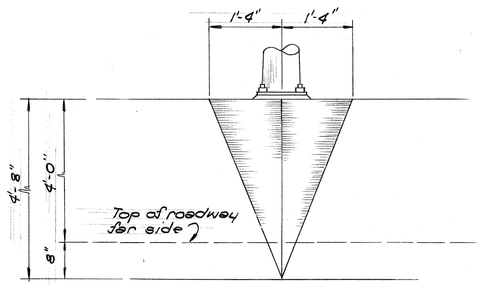
Scale: As Shown Date: DEC. 14, 1973

SHEET No. 5-23 OF 34 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1(11):14	1974	178	234

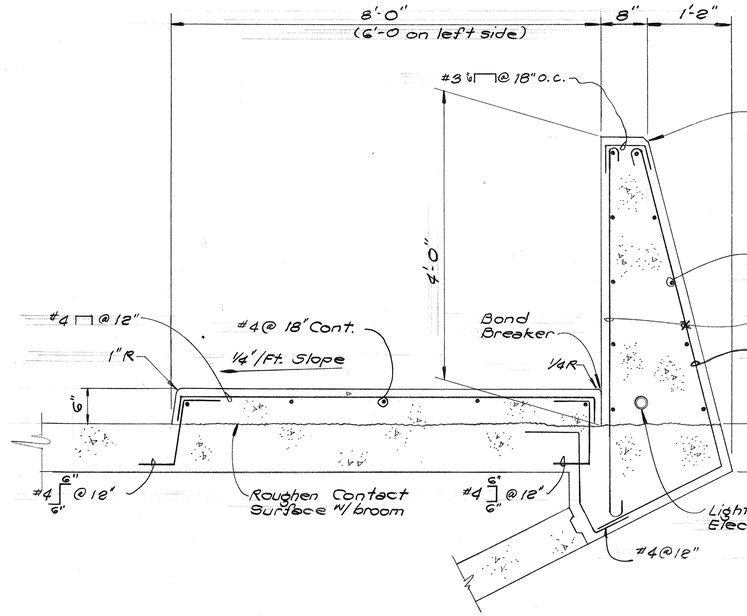


PLAN

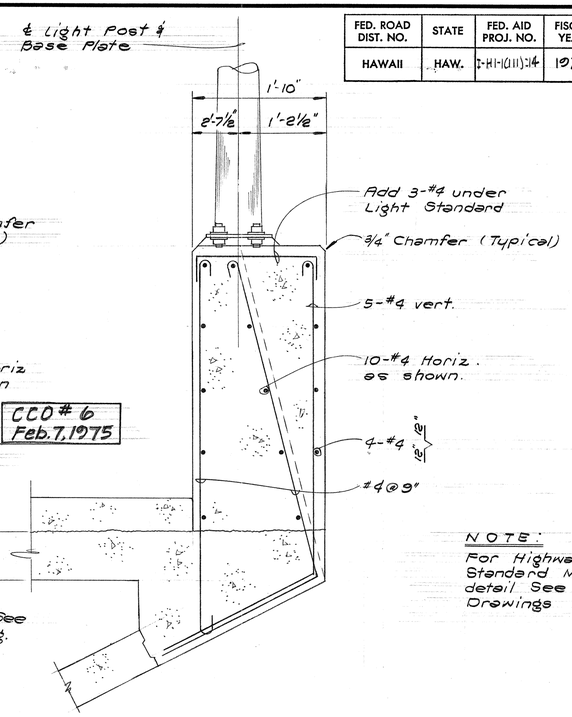


ELEVATION

CONC. RAIL AT LIGHT STANDARD
3/4" = 1'-0"

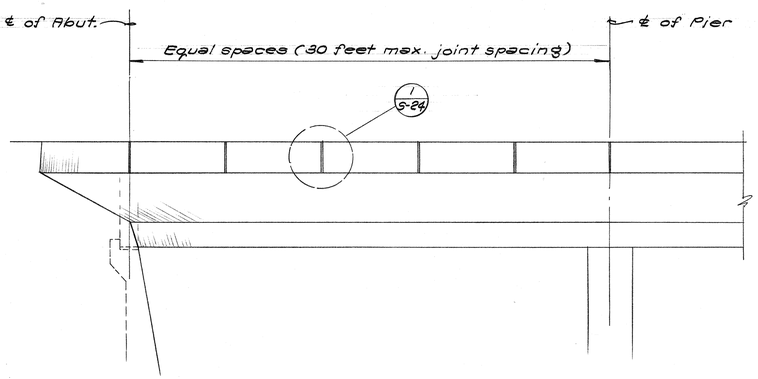


SECTION A S-24
1" = 1'-0"

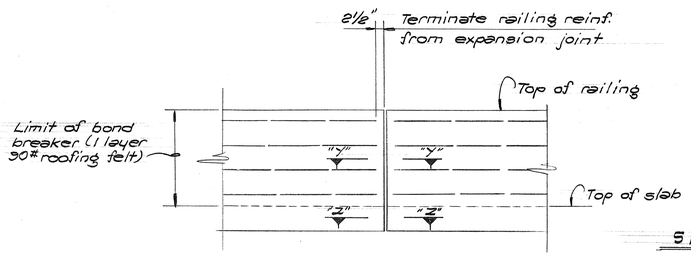


NOTE:
For Highway Lighting Standard Mounting detail See Electrical Drawings

SECTION B S-24
1" = 1'-0"



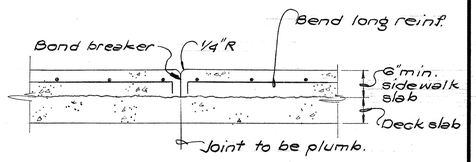
RAIL ELEVATION SHOWING EXPANSION JOINT SPACING
N.T.S.



DETAIL 1 S-24
1/2" = 1'-0"

SECTION "Y"-"Y"
N.T.S.

SECTION "Z"-"Z"
N.T.S.



SIDEWALK CONST. JOINT DETAIL
(Maximum joint spacing 30'-0" match rail expansion joint spacing)

TYPICAL CONCRETE RAILING DETAILS

SHIMAZU SHIMABUKURO & FUKUDA, INC.
Consulting Structural Engineers
1210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

This work was prepared by me or under my supervision.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAIL
CONCRETE RAILING DETAIL & CONCRETE SIDEWALK DETAIL

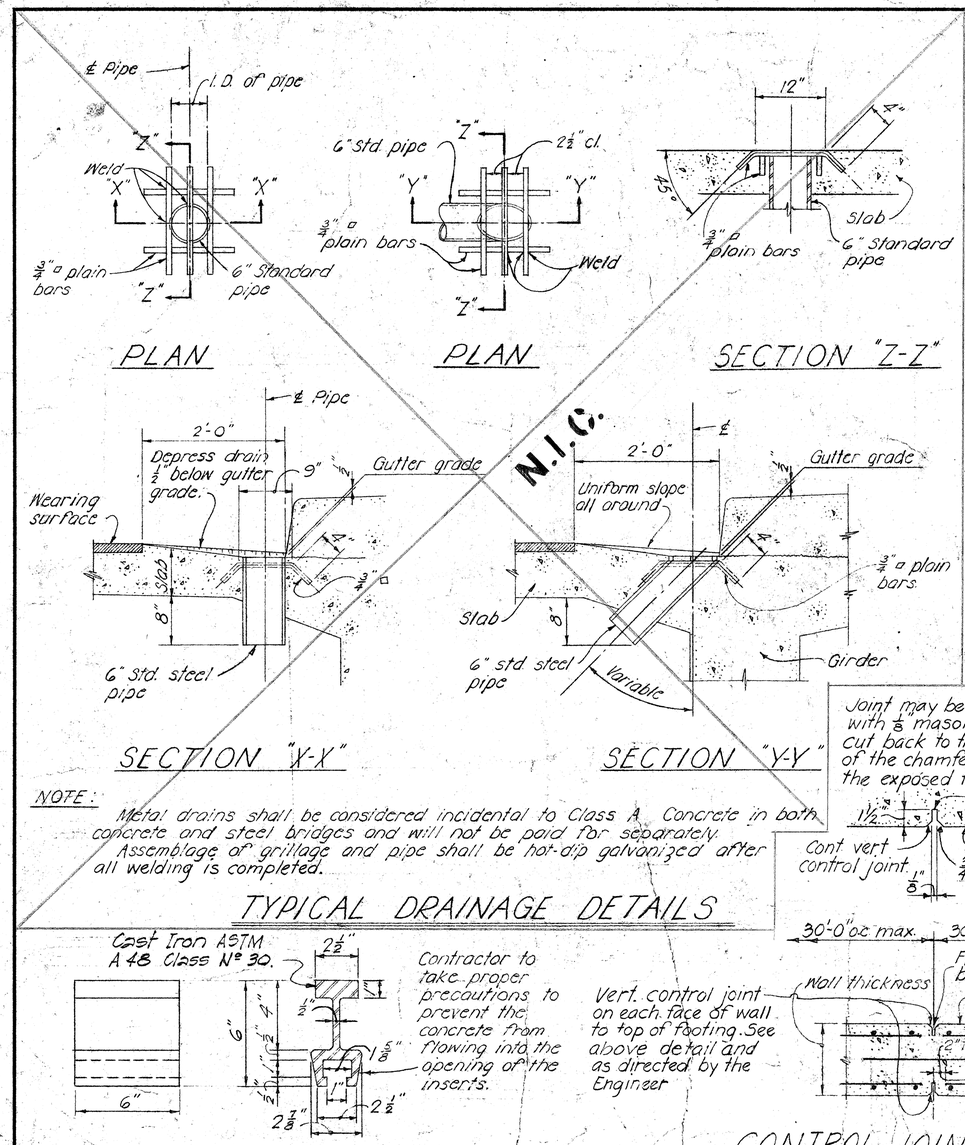
PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-H1(11):14

Scale: As Shown — Date: DEC. 14, 1973

SHEET No. S-24 OF 34 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	(HI-(III)34)	1974	179	234

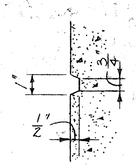


NOTE:

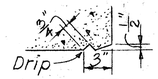
Metal drains shall be considered incidental to Class A Concrete in both concrete and steel bridges and will not be paid for separately.

Assemblage of grillage and pipe shall be hot-dip galvanized after all welding is completed.

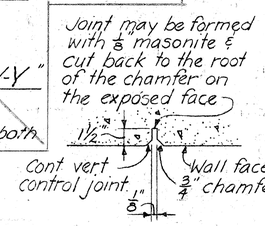
TYPICAL DRAINAGE DETAILS



TYPICAL CONCRETE GROOVE DETAIL



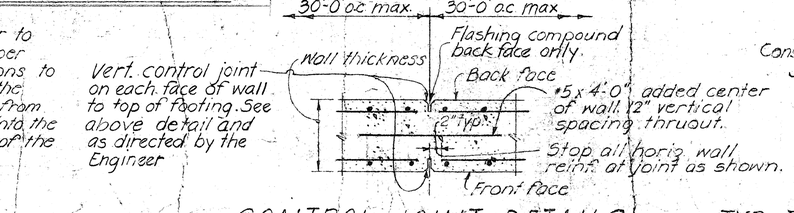
DRIP DETAIL



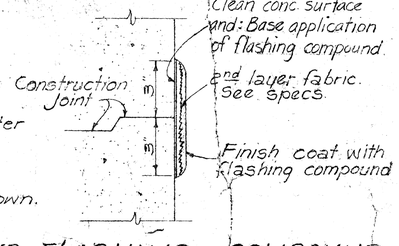
GENERAL NOTES

1 - All concrete shall be Class A unless otherwise noted.
2 - Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
3 - Clearance for reinforcing bars shall be as follows, unless otherwise noted.
  a - 1 1/2" For stirrups of beams & pier caps.
  b - 2" for ties of columns.
  c - 2" For formed walls.
  d - 3" For footings.
4 - Minimum spacing between parallel bars shall be 2 1/2 times the diameter of 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.
5 - All dimensions relating to reinforcing are to centers of bars unless otherwise noted.
6 - Reinforcing bars shall be securely tied at all intersections & lap splices & shall be held in place during pouring to maintain their proper locations as shown on plans.
7 - Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.
8 - Except as otherwise noted on drawings, all exterior corners & re-entrant angles in concrete work shall be chamfered 3/4" x 3/4".
9 - Concrete seats receiving steel plates, lead plates or neoprene pads shall be poured monolithically with supporting structures & top of concrete seats shall be finished with a steel trowel to a smooth level surface at the elevation shown on the plans.
10 - Elastomeric Pads: Bottom of bridge bearing pads shall be secured against displacement with adhesives approved by the Engineer. Pads shall be incidental to concrete and will not be paid for separately.
11 - Forms for all exposed surfaces of separation structures and surfaces of retaining walls visible from a traveled way or from a populated area shall be plywood except that metal forms may permitted provided a surface finish satisfactory to the Engineer can be obtained and the use of such forms is approved in writing by the Engineer. Forms for round columns shall be made of materials that will give a smooth finish and true dimensions as given in the plans. Forms for prestressed concrete members shall be either metal or plywood.
12 - Gothic letters and figures approximating dimensions shown will be acceptable if approved by the Engineer.
13 - The contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation or driving of piles.
14 - 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.

INSERT DETAIL



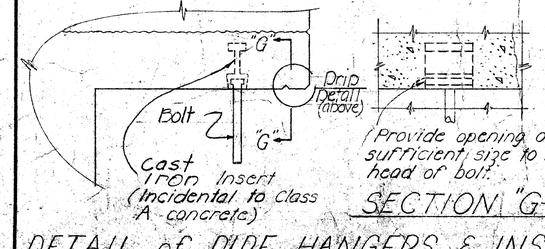
CONTROL JOINT DETAILS



TYP. FLASHING COMPOUND WATERPROOFING DETAIL

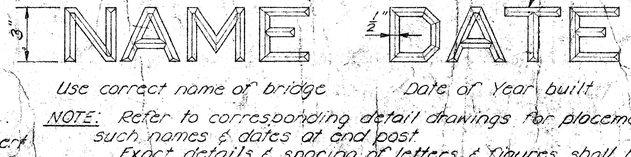
APPROVAL RECOMMENDED:
Paul T. Yamashita — 1-23-76
BRIDGE DESIGN ENGINEER — DATE

APPROVED
For Paul T. Yamashita — 1-28-76
ASSISTANT CHIEF, ENGINEERING — DATE



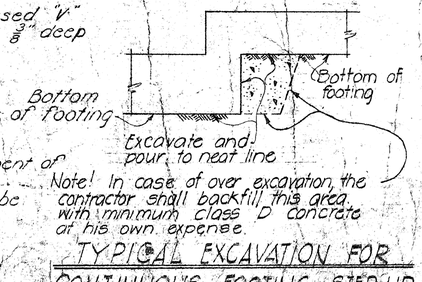
SECTION "G-G"

DETAIL of PIPE HANGERS & INSERTS



NOTE: Refer to corresponding detail drawings for placement of such names & dates at end post.
Exact details & spacing of letters & figures shall be as directed by the Engineer. See Note #12

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST



Note! In case of over excavation, the contractor shall backfill this area with minimum class D concrete at his own expense.

TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

NOTES AND MISCELLANEOUS DETAILS

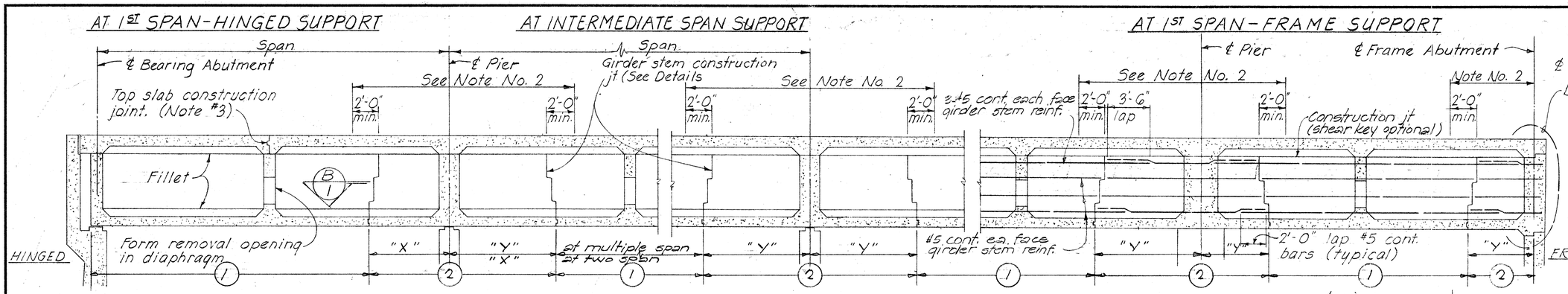
Date: October 1969

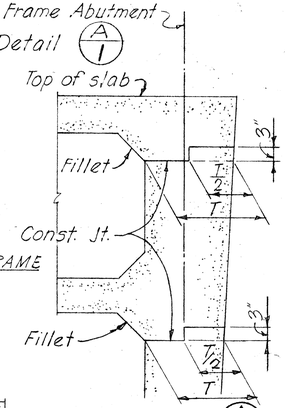
SHEET No. 5-25 OF 34 SHEETS DB-100

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BRM-1(10):14	1974	180	234



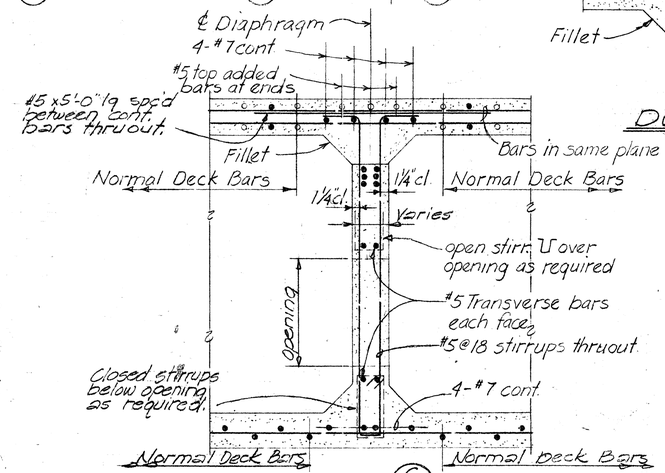


DETAIL A/1

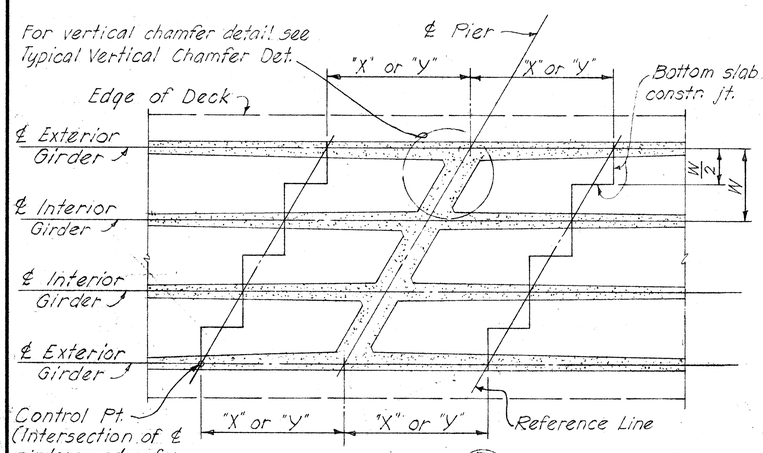
PLACING DIAGRAM FOR SUPERSTRUCTURE CONCRETE

NOTE:

1. Numbers ① & ② indicate sequence of placing bottom slab & girder stem concrete. ② may be placed with ① when approved by the Engineer provided that the ① sections adjoining the ② sections are placed in this pour. For any deviation from the above the Contractor shall submit a diagram to the Engineer for approval.
2. No top slab construction joint or form removal opening shall be located in the region over the piers as noted, nor in the supporting section of a hinged span.
3. When top slab is not poured continuously, and top slab forms are not removed, construction joint in top slab shall be located over an intermediate diaphragm.
4. Top slab concrete shall be placed separately from the stem. Top slab concrete may be placed continuously or in parts as approved by the Engineer, providing pour is not in conflict with the above notes.
5. Dimension "X" = 1/4 span. "Y" = 1/5 span.
6. No lapping of main bars shall be permitted at construction joints.

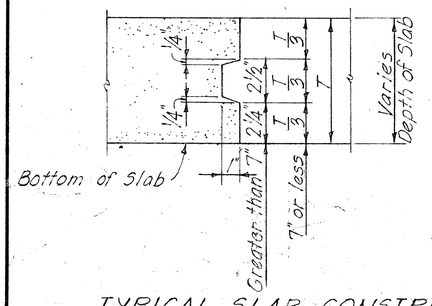


SECTION C/1



SECTION B/1

TREATMENT OF CONSTRUCTION JOINT
BRIDGES ON SKEW

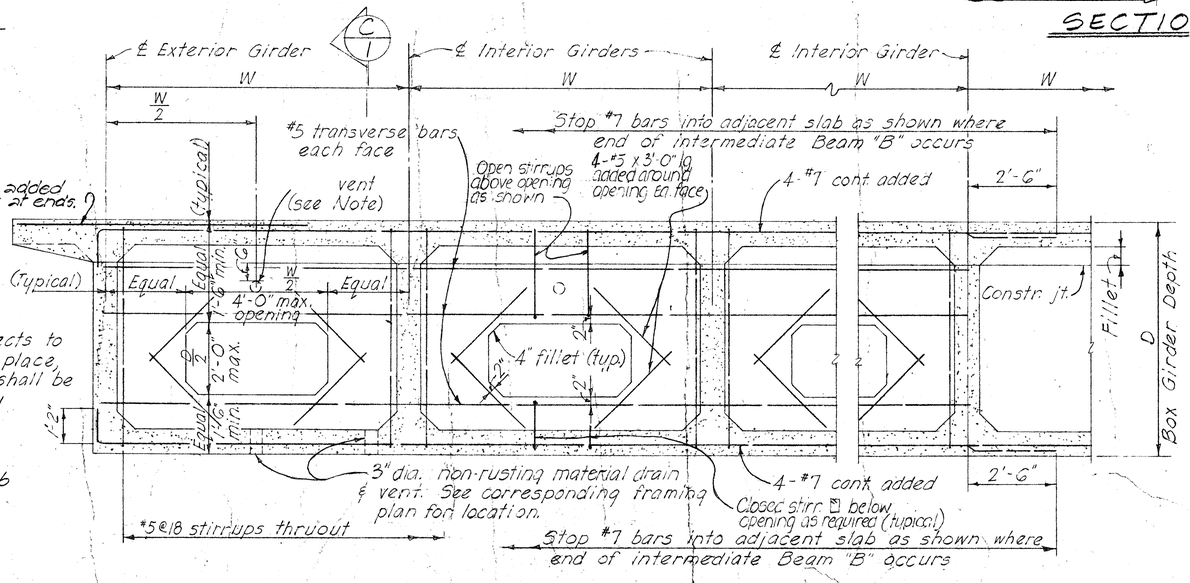


TYPICAL SLAB CONSTRUCTION
JOINT DETAIL

NOTE:

If the Contractor elects to leave top slab forms in place, form removal opening shall be omitted and replaced by 3" vent.

No vertical shoring shall be placed in the center half of top slab span W.



AT NON-CONTINUOUS ENDS TYPICAL INTERIOR SPAN

TYPICAL BEAM "B" DETAILS

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED:
Paul T. Uemashita 1-23-70
BRIDGE DESIGN ENGINEER DATE

APPROVED
Paul T. Uemashita 1-28-70
For ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE BOX GIRDER

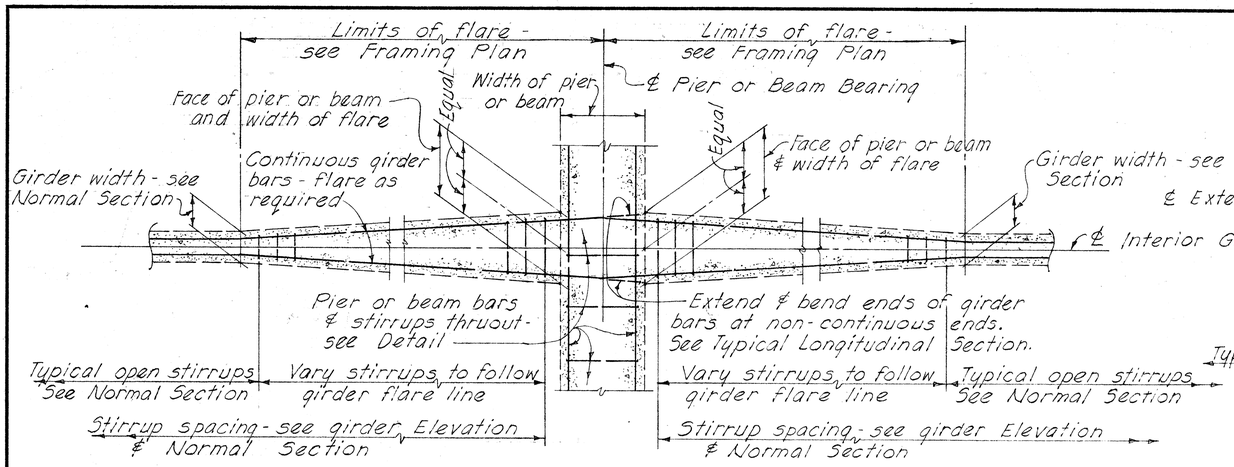
Date:

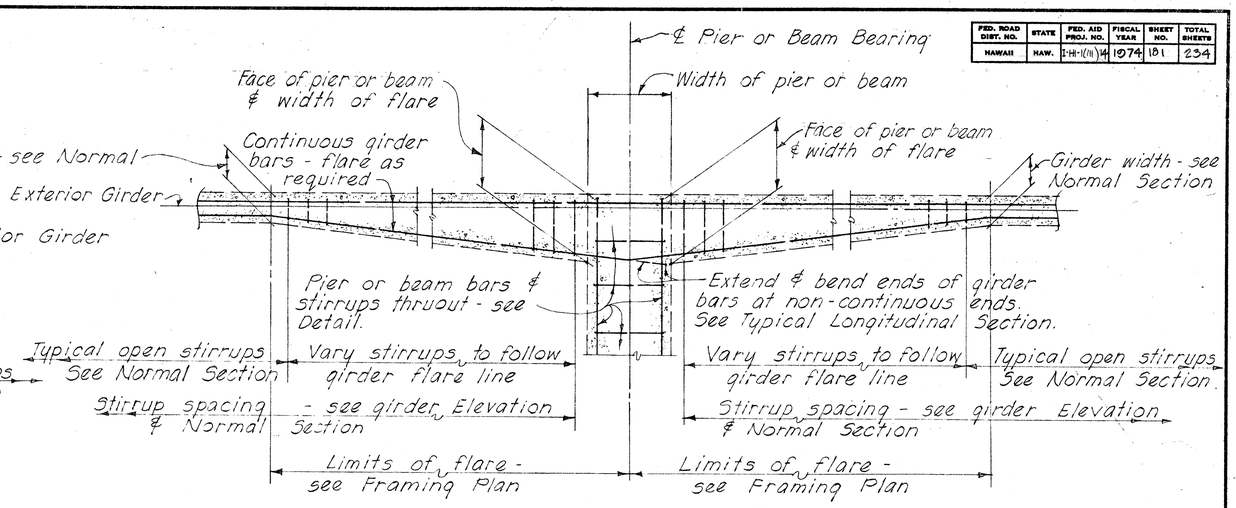
SHEET No. S26 OF 34 SHEETS DB-101-1

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(71) 14	1974	181	234



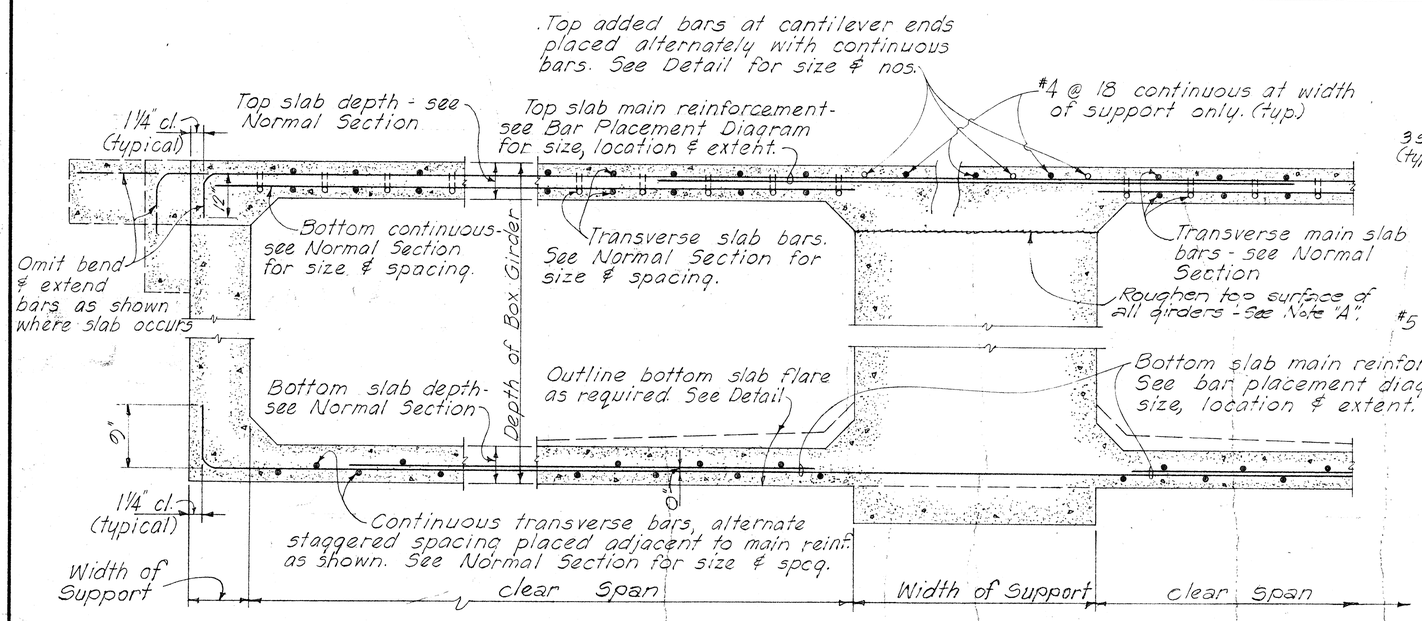


INTERIOR GIRDER

EXTERIOR GIRDER

TYPICAL DETAILS OF GIRDER FLARE AT NORMAL OR RADIAL SUPPORTS – CONTINUOUS ENDS AS SHOWN

(NON-CONTINUOUS ENDS SIMILAR EXCEPT AS OTHERWISE NOTED)

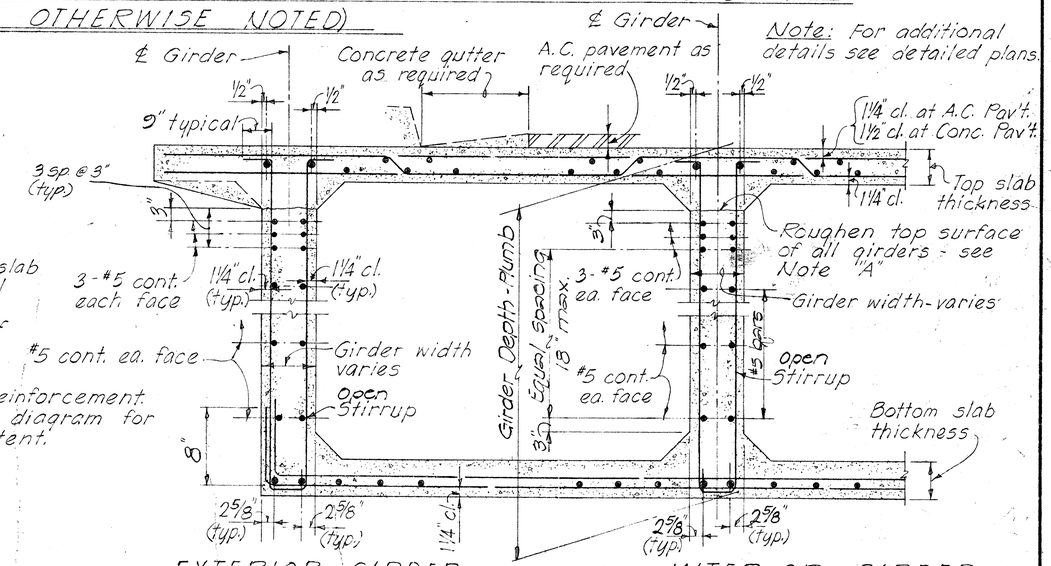


AT NON-CONTINUOUS END

AT CONTINUOUS SUPPORT

TYPICAL LONGITUDINAL DECK SECTION ALONG GIRDER AT NORMAL OR RADIAL SUPPORTS

Note "A" The entire surface of the joint shall be thoroughly cleaned of surface laitance, curing compound, and other material foreign to the concrete, and clean aggregate be exposed by abrasive blast cleaning after the curing period or immediately before placing concrete at the joint.



EXTERIOR GIRDER

INTERIOR GIRDER

TYPICAL NORMAL BOX GIRDER SECTION

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED
Paul T. Yamashita — 1-23-70
BRIDGE DESIGN ENGINEER — DATE

APPROVED
Paul T. Yamashita — 1-28-70
For ASSISTANT CHIEF, ENGINEERING — DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE BOX GIRDER

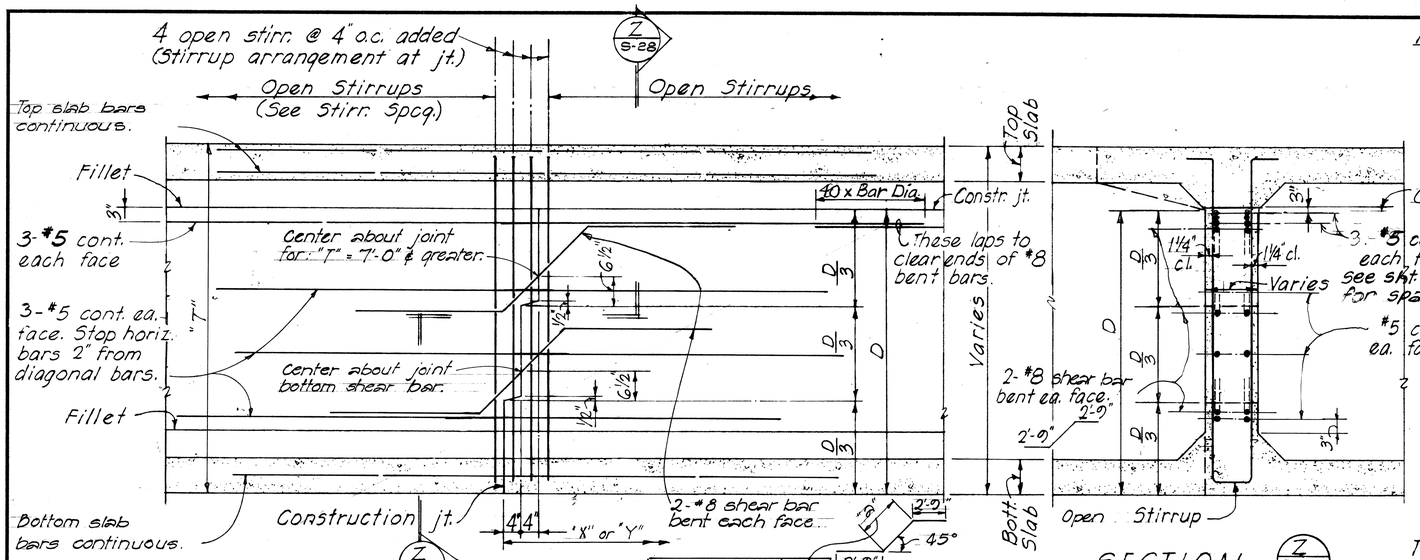
Date

SHEET No. S-27 OF 34 SHEETS DB-101-2

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	(HI-101)(3)4	1974	182	234



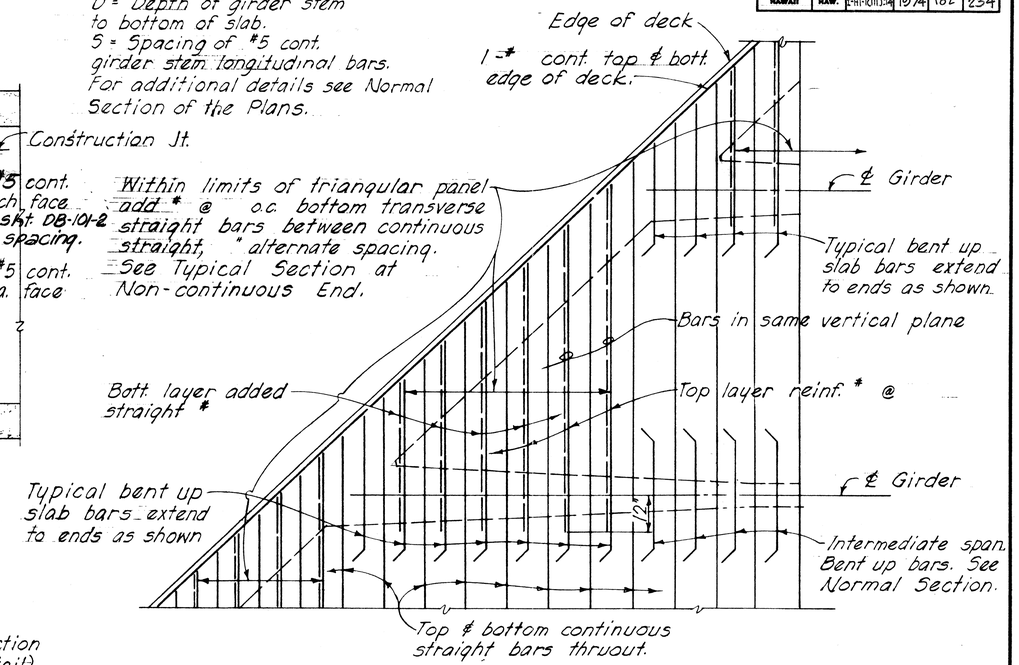
GIRDER STEM CONSTRUCTION JOINT

Depth "T"	"a"
4'-11" & smaller	1'-0"
5'-0" to 5'-11"	2'-0"
6'-0" to 6'-11"	2'-3"
7'-0" & greater	3'-0"

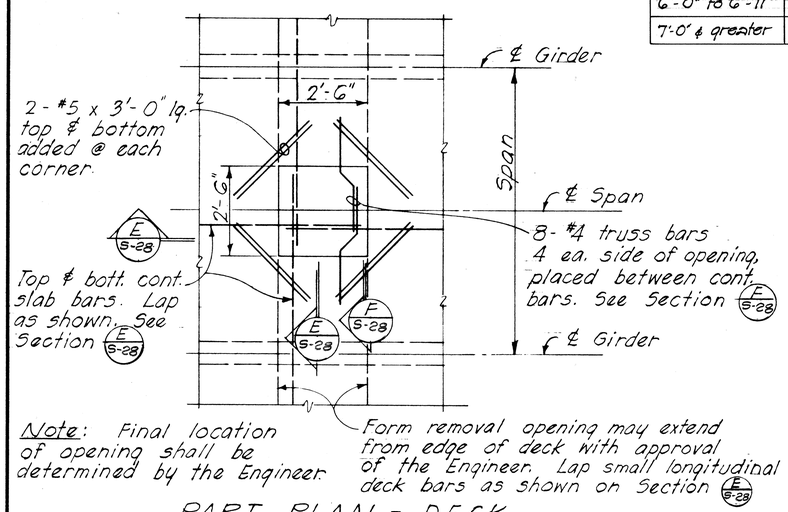
NOTE: D = Depth of girder stem to bott. of slab.

SECTION Z/S-28

NOTE:
D = Depth of girder stem to bottom of slab.
S = Spacing of #5 cont. girder stem longitudinal bars.
For additional details see Normal Section of the Plans.

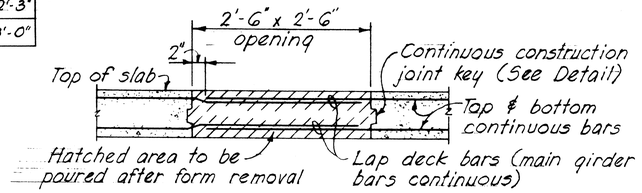


PART PLAN - TYPICAL ARRANGEMENT OF TOP SLAB REINFORCEMENT AT SKEWED ENDS



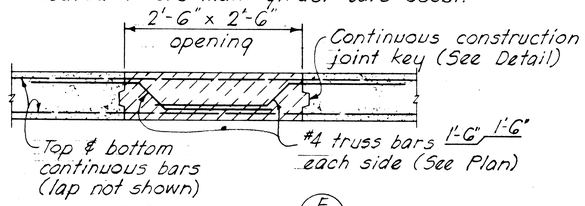
Note: Final location of opening shall be determined by the Engineer.

PART PLAN - DECK SHOWING FORM REMOVAL OPENING

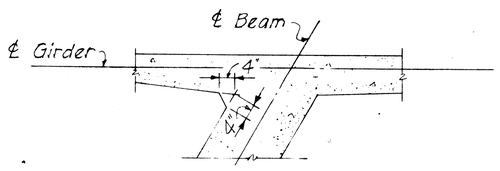


SECTION E/S-28

Note: Form removal opening at top slab shall not be located where main girder bars occur.



SECTION F/S-28



TYPICAL DETAIL OF VERTICAL CHAMFER AT ACUTE INTERSECTION OF SKEWED CONCRETE MEMBER

APPROVAL RECOMMENDED:
Paul T. Yamashita — BRIDGE DESIGN ENGINEER — 1-23-70 DATE

APPROVED
For Paul T. Yamashita — ASSISTANT CHIEF, ENGINEERING — 1-28-70 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE BOX GIRDER

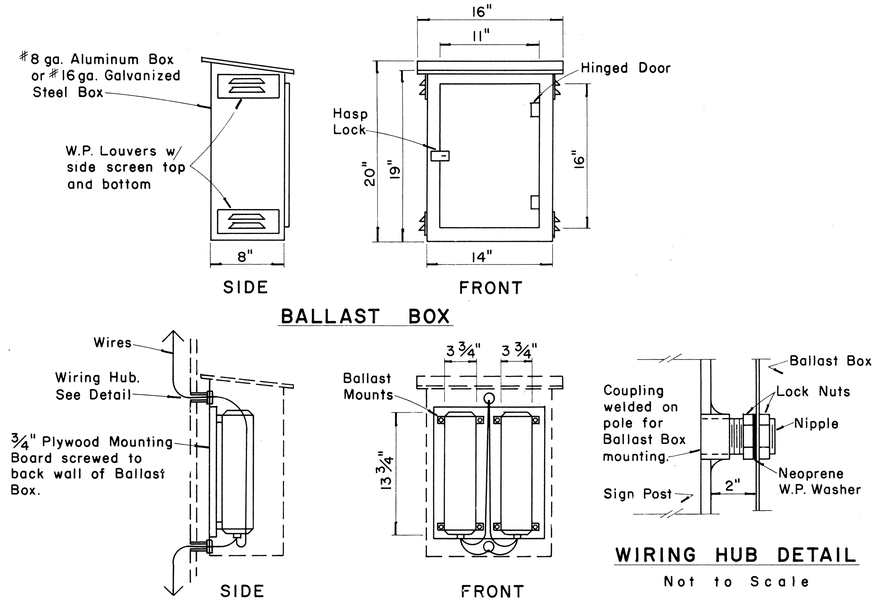
SCALE AS NOTED DATE:

SHEET No. S-28 OF 34 SHEETS DB-101-3

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

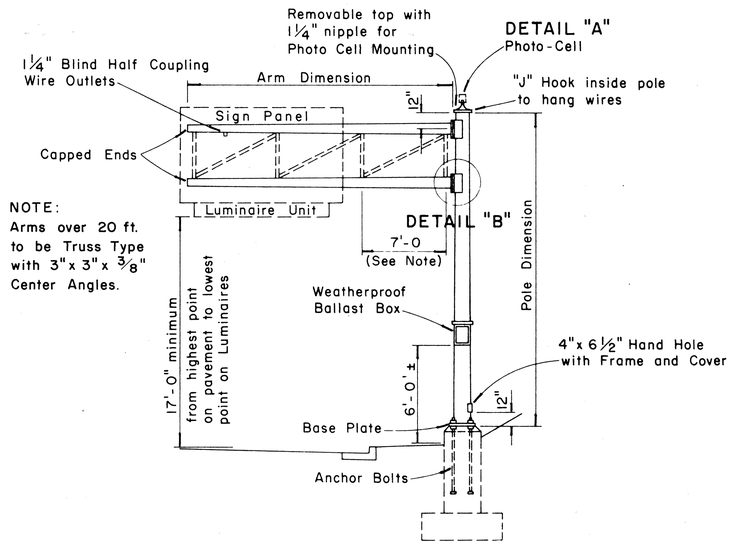
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(11):14	1974	183	234



WEATHERPROOF BALLAST BOX

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

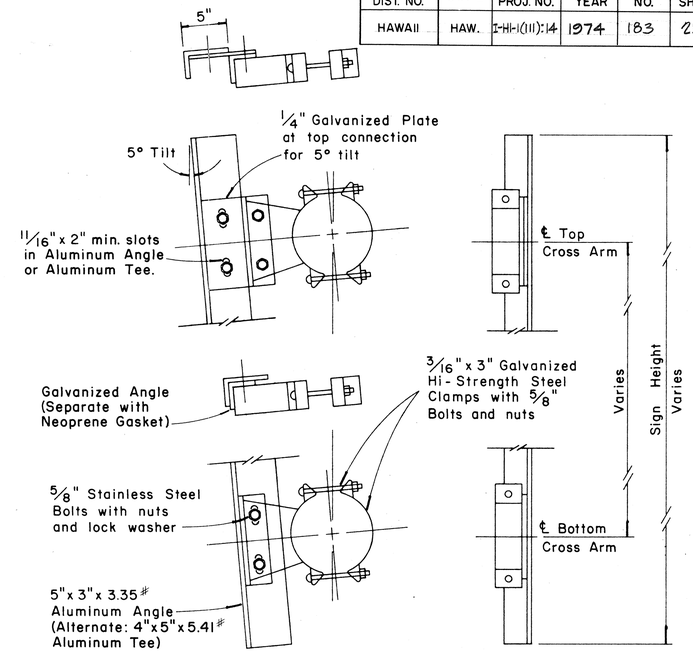


TYPE "C"

SINGLE SIGN POST — CANTILEVER TYPE

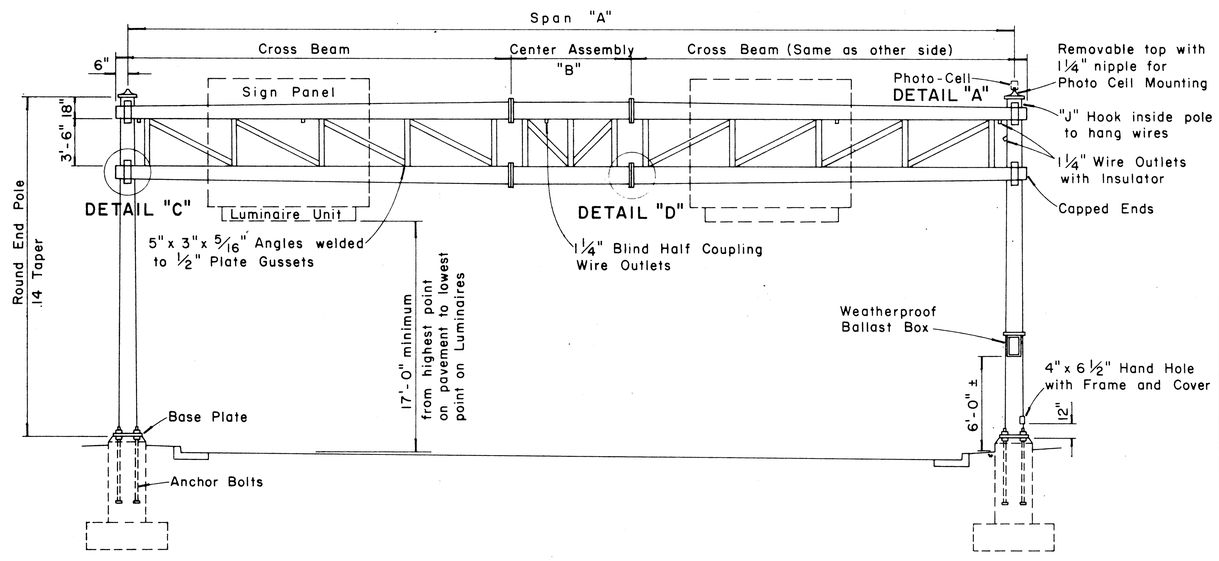
DOUBLE MAST ARM

Scale: 3/16" = 1'-0"



SIGN BRACKET ASSEMBLY

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



TYPE "D"

TWO-TUBE TRUSS — SPAN TYPE

Scale: 3/16" = 1'-0"

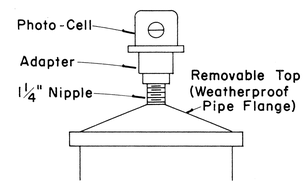
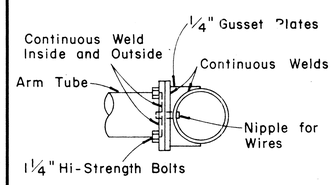


PHOTO-CELL

DETAIL "A"

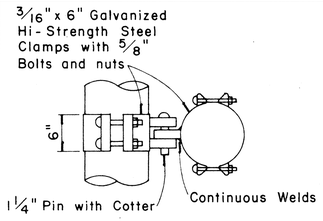
Not to Scale



ARM ATTACHMENT

DETAIL "B"

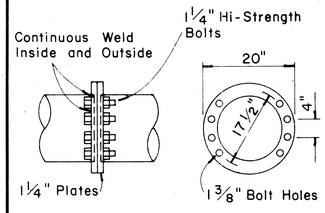
Scale: 3/4" = 1'-0"



BEAM CLAMP

DETAIL "C"

Scale: 1" = 1'-0"



CENTER JOINT

DETAIL "D"

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

APPROVAL RECOMMENDED:

Euichi Tanaka — 12/27/69

TRAFFIC ENGINEER — DATE

APPROVED:

Walter E. Bokel — 12-30-69

ASSISTANT CHIEF, ENGINEERING — DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
OVERHEAD SIGN SUPPORTS

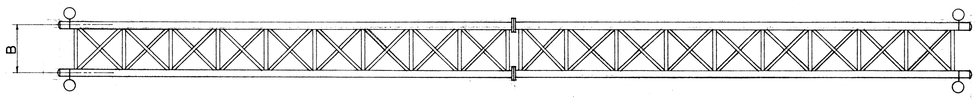
Scale As Shown

SHEET No. S-29 OF 34 SHEETS DT 200

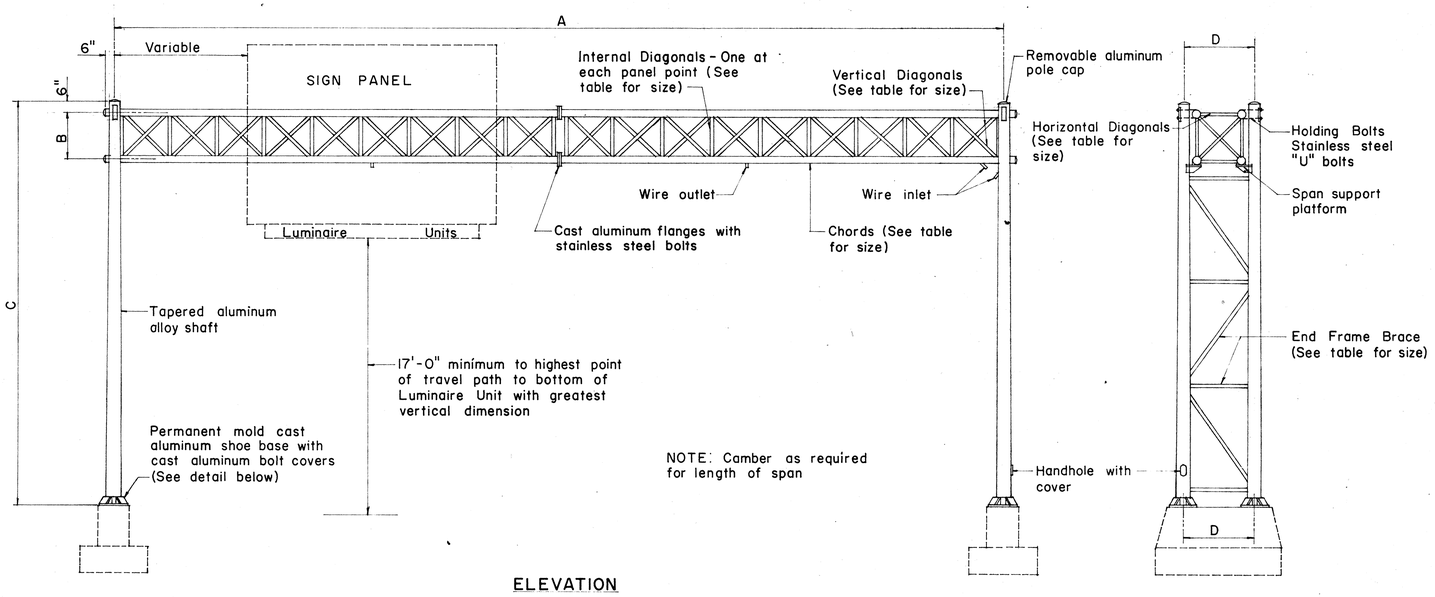
ORIGINAL PLAN | SURVEY PLOTTED BY | TRACED BY | DESIGNED BY | NOTE BOOK | QUANTITIES BY | CHECKED BY | DATE | No.

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(111):14	1974	184	234



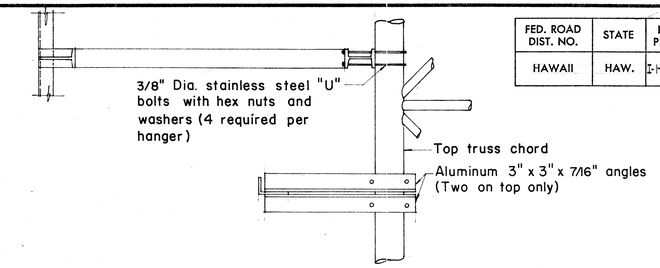
PLAN



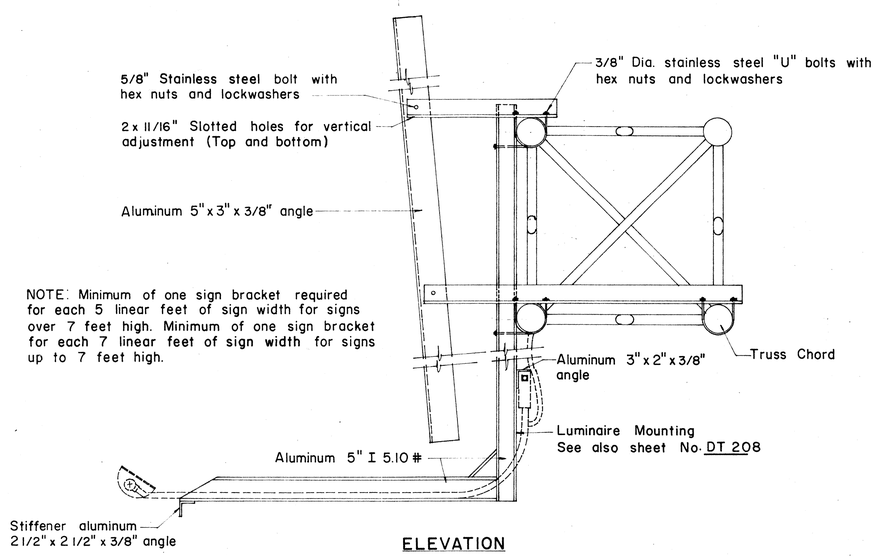
ELEVATION

END VIEW

TYPE "F"



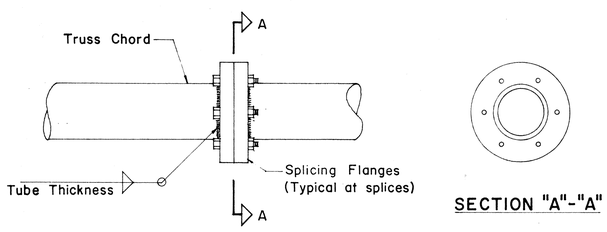
PLAN



ELEVATION

SIGN BRACKET ASSEMBLY

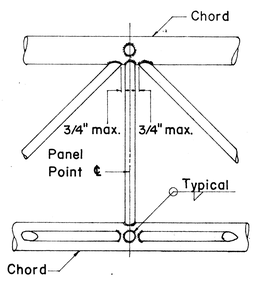
SIGN NO.	A	B	C	D	E	F	SPAN SECTIONS REQ'D.	CHORD SIZE	END FRAME SHAFT SIZE AND TAPER	VERTICAL DIAGONAL SIZE	HORIZONTAL DIAGONAL SIZE	INTERNAL DIAGONAL SIZE	END FRAME BRACE SIZE	BOLT CIRCLE DIA.	ANCHORAGE



PLAN

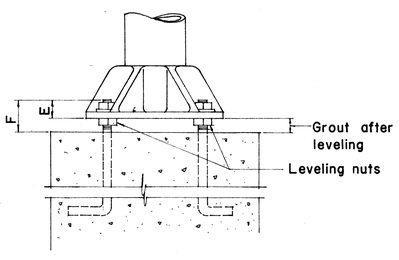
SECTION "A"-"A"

DETAIL OF CHORD SPLICES



NOTE: Fillet weld size to be tube thickness plus 1/16".

TYPICAL JOINT DET.



DETAIL OF BASE

APPROVAL RECOMMENDED:

Eiichi Tanaka — 12/29/69
TRAFFIC ENGINEER — DATE

APPROVED:

[illegible] — 12-30-69
ASSISTANT CHIEF, ENGINEERING — DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

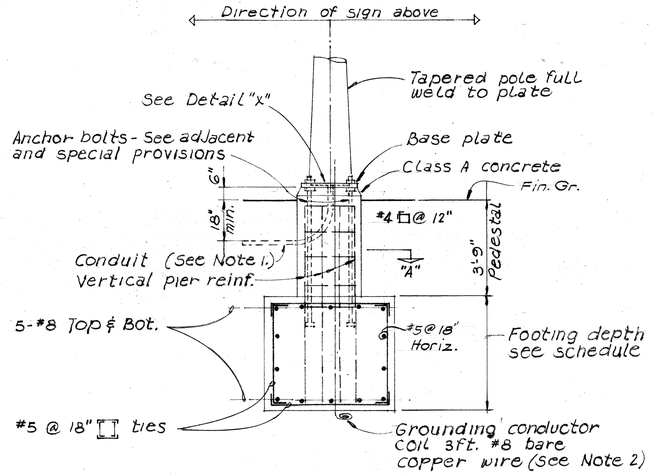
TYPE "F"
OVERHEAD SIGN SUPPORT
BOX TRUSS TYPE
ALUMINUM

SHEET No. 5-30 OF 34 SHEETS DT 201

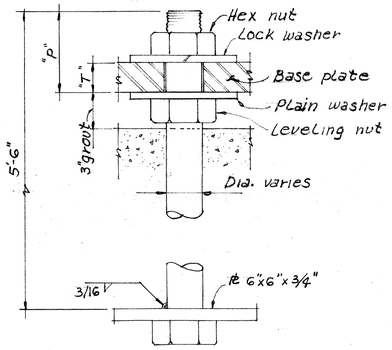
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
	TRACED BY	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
No.	CHECKED BY	"

PRINTED ON NO. 1000H CLEARPRINT

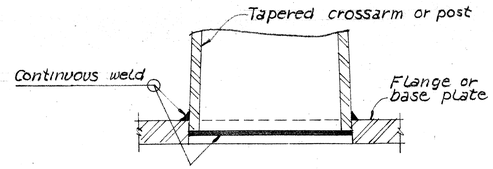
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(111):14	1974	185	234



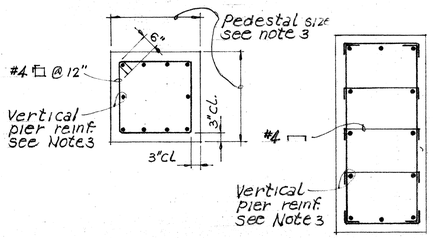
TYPICAL POLE FOUNDATION DETAIL



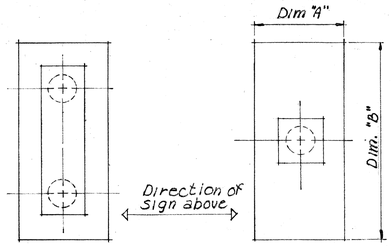
TYPICAL ANCHOR BOLT DETAIL



DETAIL "X"



SECTION "A"



PEDESTAL PLAN

TYPICAL FOOTING DETAIL

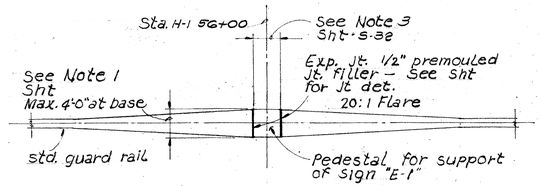
FOUNDATION SCHEDULE					
SIGN	SUPPORT TYPE	FOUNDATION SCH.			REMARKS
		A	B	DEPTH	
E-1	Type "D" or "F"	5'	14'	5'-6"	See note "a."
E-5	Type "D" or "F"	6'	15'	5'-6"	
E-6	Type "C"	8'	14'	6'-9"	
E-13	Standard Detail				

NOTE:

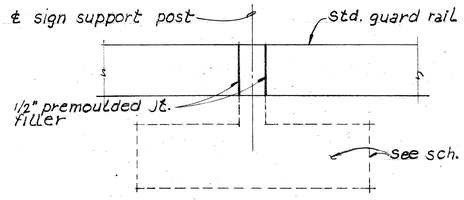
a. Left side on Median Barrier. See "Pedestal at Conc. Guard Rail detail"

NOTES

1. Total number of conduits into pole foundation as indicated on Lighting plans. Conduits shall slope away from pole foundation. Conduit shall stub out 5'-0" min. for direct burial entry.
2. Grounding conductor shall be bonded to sign support.
3. Except specified otherwise, contractor shall determine the detail requirements of the pedestal, base plate, and anchor bolts in accord with type of sign support selected.
4. For exact location of signs and clearance requirements, see frame layout sheets.



PLAN



ELEV.

PEDESTAL AT CONC. GUARD RAIL

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

SHIMAZU SHIMAMUKURO & FUKUDA, INC.
Consulting Structural Engineers
3210 Ward Ave., Honolulu, HI 96814

MICHAEL PAUL MATSUMOTO — REGISTERED PROFESSIONAL ENGINEER No. 2974 — HAWAII, U.S.A.

ROY S. SHIMABUKURO — REGISTERED PROFESSIONAL ENGINEER No. 1150 — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

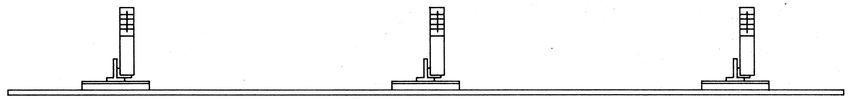
STANDARD SIGN SUPPORT FOUNDATION DETAILS & SCHEDULES

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(111):14

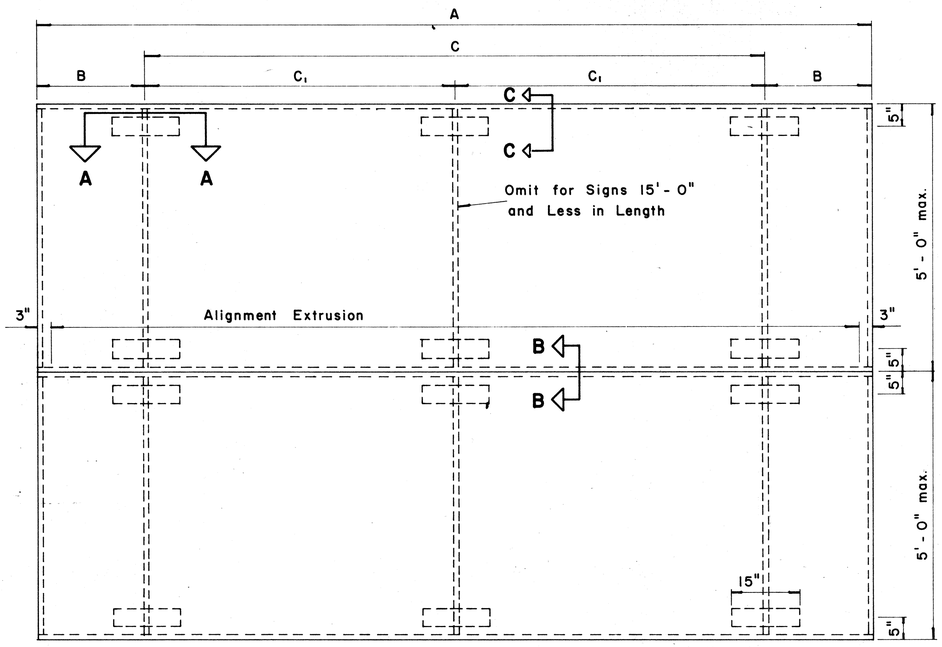
Date: DEC. 14, 1973

SHEET No. S-31 OF 34 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(111)-14	1974	186	234



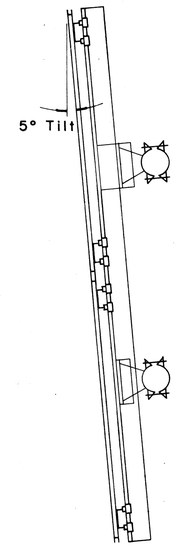
TOP VIEW



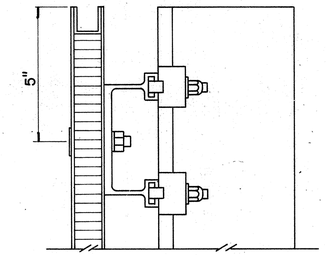
ELEVATION

TYPICAL SIGN ASSEMBLY

Scale: $\frac{3}{4}$" = 1'-0"

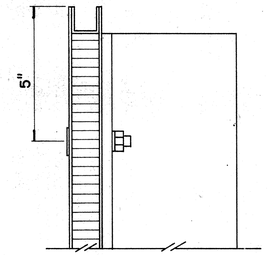


SIDE VIEW



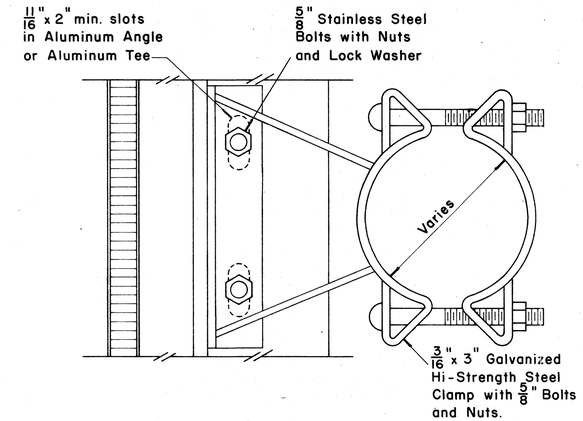
SECTION "C-C"

Scale: $\frac{3}{8}$" = 1"



SECTION "C-C" (Alternate)

Scale: $\frac{3}{8}$" = 1"



SIGN BRACKET ASSEMBLY

Scale: $\frac{3}{8}$" = 1"

NOTE: For additional details of Sign Bracket Assembly, see Standard Detail Sheet "Overhead Sign Supports."

(OVERHEAD SIGNS)

SUPPORT SPACING TABLE

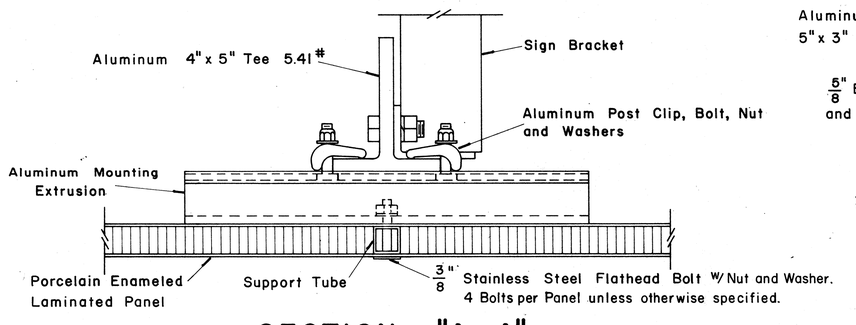
PANEL THICK.	LENGTH OF SIGN A	NO. OF SUPPORTS	OVERHANG B	SUPPORT SPACING C or C1
1"	6'-0"	2	12"	48"
1"	6'-6"	2	15"	48"
1"	7'-0"	2	15"	54"
1"	7'-6"	2	18"	54"
1"	8'-0"	2	18"	60"
1"	8'-6"	2	20"	62"
1"	9'-0"	2	22"	64"
1"	9'-6"	2	23"	68"
1"	10'-0"	2	24"	72"
1"	10'-6"	2	24"	78"
1"	11'-0"	2	24"	84"
1"	11'-6"	2	27"	84"
1"	12'-0"	2	30"	84"
1"	12'-6"	2	30"	90"
1"	13'-0"	2	30"	96"
1"	13'-6"	2	30"	102"
1"	14'-0"	2	30"	108"
1"	14'-6"	2	36"	102"
1"	15'-0"	2	36"	108"
1"	15'-6"	3	24"	69"
1"	16'-0"	3	24"	72"
1"	16'-6"	3	24"	75"
1"	17'-0"	3	24"	78"
1"	17'-6"	3	24"	81"
1"	18'-0"	3	24"	84"
1"	18'-6"	3	27"	84"
1"	19'-0"	3	27"	87"
1"	19'-6"	3	27"	90"
1"	20'-0"	3	30"	90"
1"	20'-6"	3	30"	93"
1"	21'-0"	3	30"	96"
1"	21'-6"	3	33"	96"
1"	22'-0"	3	36"	96"
1"	22'-6"	3	36"	99"
1"	23'-0"	3	36"	102"
1"	23'-6"	3	36"	105"
1"	24'-0"	3	36"	108"

APPROVAL RECOMMENDED:

Eiichi Tanaka — TRAFFIC ENGINEER — DATE 12/23/69

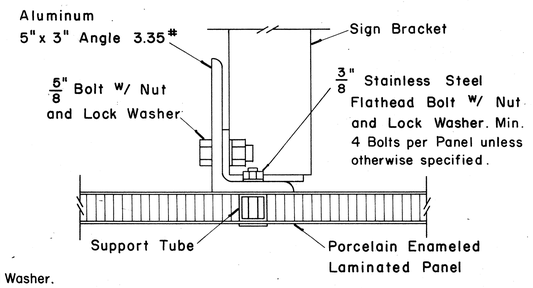
APPROVED:

ASSISTANT CHIEF, ENGINEERING — DATE 12-30-69



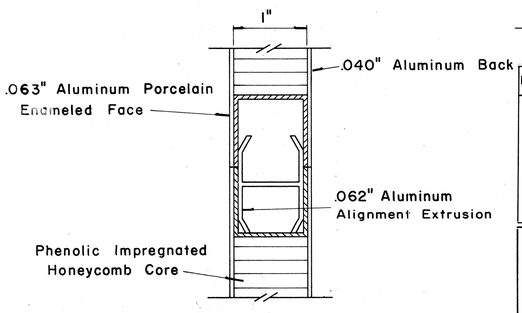
SECTION "A-A"

Scale: $\frac{3}{8}$" = 1"



SECTION "A-A" (Alternate)

Scale: $\frac{3}{8}$" = 1"



CLOSURE DETAIL

SECTION "B-B"

FULL SCALE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
LAMINATED ALUMINUM SIGN PANELS (OVERHEAD)

Scale: As Shown

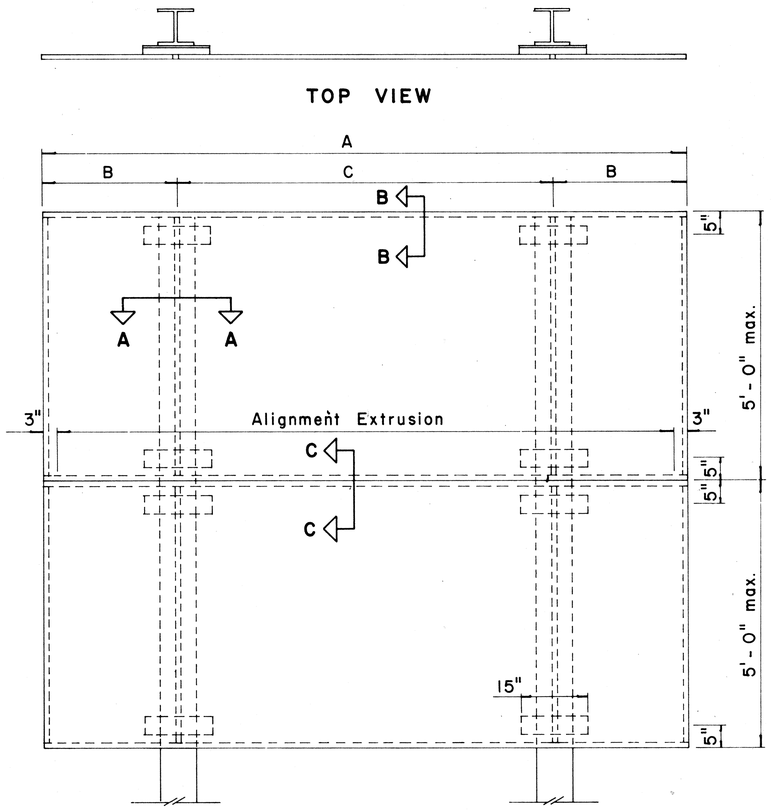
SHEET No. 9-32 OF 34 SHEETS DT 205

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

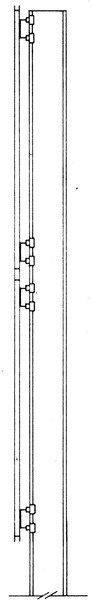
PRINTED ON NO. 1000H CLEARPRINT

186

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(111):14	1974	187	234



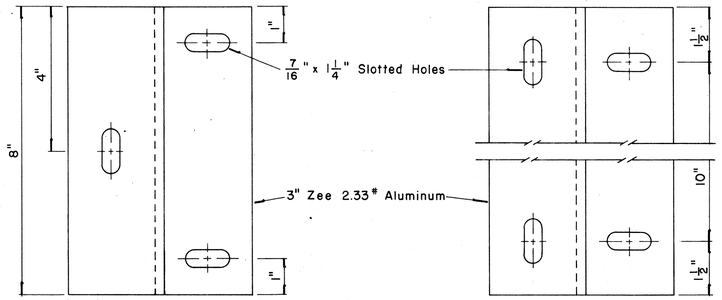
ELEVATION



SIDE VIEW

TYPICAL SIGN ASSEMBLY

Scale: $\frac{3}{4}$" = 1'-0"

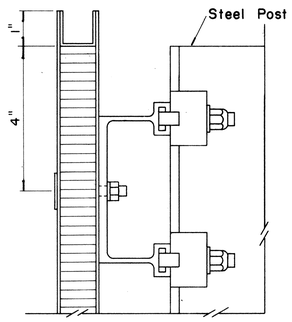


END MOUNTING

INTERMEDIATE MOUNTING

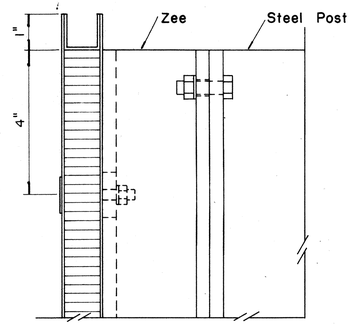
ZEE MOUNTING DETAILS

Scale: $\frac{1}{2}$" = 1"



SECTION "B-B"

Scale: $\frac{1}{2}$" = 1"



SECTION "B-B"

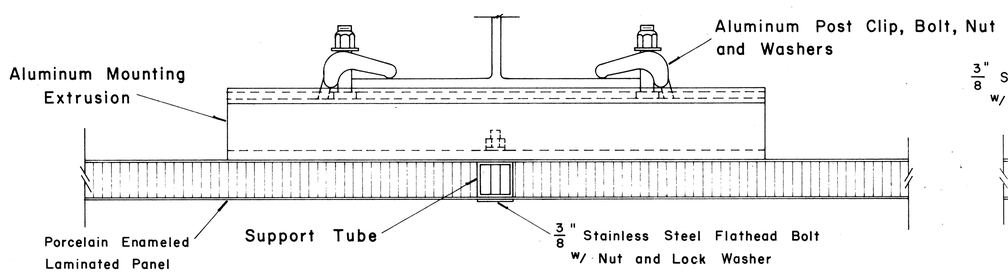
(Alternate)

Scale: $\frac{1}{2}$" = 1"

(GROUND MOUNTED SIGNS)

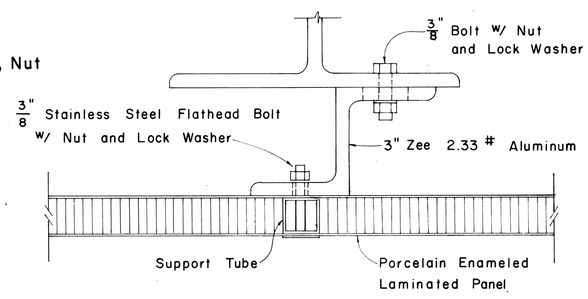
SUPPORT SPACING TABLE

PANEL THICK.	LENGTH OF SIGN A	NO. OF SUPPORTS	OVERHANG B	SUPPORT SPACING C
1"	6'-0"	2	12"	48"
1"	6'-6"	2	15"	48"
1"	7'-0"	2	15"	54"
1"	7'-6"	2	18"	54"
1"	8'-0"	2	18"	60"
1"	8'-6"	2	20"	62"
1"	9'-0"	2	22"	64"
1"	9'-6"	2	23"	68"
1"	10'-0"	2	24"	72"
1"	10'-6"	2	24"	78"
1"	11'-0"	2	24"	84"
1"	11'-6"	2	27"	84"
1"	12'-0"	2	30"	84"
1"	12'-6"	2	30"	90"
1"	13'-0"	2	30"	96"
1"	13'-6"	2	30"	102"
1"	14'-0"	2	30"	108"
1"	14'-6"	2	36"	102
1"	15'-0"	2	36"	108"
2.5"	15'-6"	2	36"	114"
2.5"	16'-0"	2	39"	114"
2.5"	16'-6"	2	39"	120"
2.5"	17'-0"	2	39"	126"
2.5"	17'-6"	2	42"	126"
2.5"	18'-0"	2	42"	132"
2.5"	18'-6"	2	45"	132"
2.5"	19'-0"	2	45"	138"
2.5"	19'-6"	2	45"	144"
2.5"	20'-0"	2	48"	144"
2.5"	20'-6"	2	48"	150"
2.5"	21'-0"	2	51"	150"
2.5"	21'-6"	2	51"	156"
2.5"	22'-0"	2	51"	162"
2.5"	22'-6"	2	54"	162"
2.5"	23'-0"	2	54"	168"
2.5"	23'-6"	2	54"	174"
2.5"	24'-0"	2	57"	174"



SECTION "A-A"

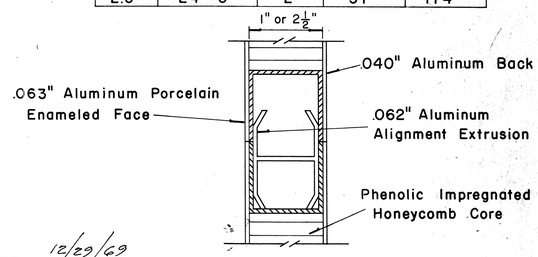
Scale: $\frac{1}{2}$" = 1"



SECTION "A-A"

(Alternate)

Scale: $\frac{1}{2}$" = 1"



CLOSURE DETAIL

SECTION "C-C"

FULL SCALE

APPROVAL RECOMMENDED:

Eiichi Tanaka — TRAFFIC ENGINEER — 12/23/69 DATE

APPROVED:

[illegible] — ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
LAMINATED ALUMINUM
SIGN PANELS
(GROUND MOUNTED)

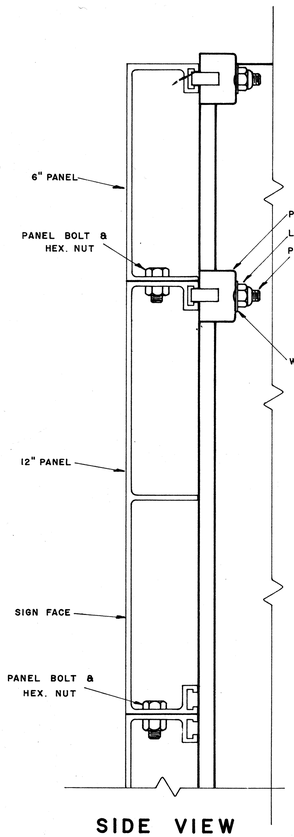
Scale: As Shown

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

SHEET No. 5-33 OF 34 SHEETS DT 206

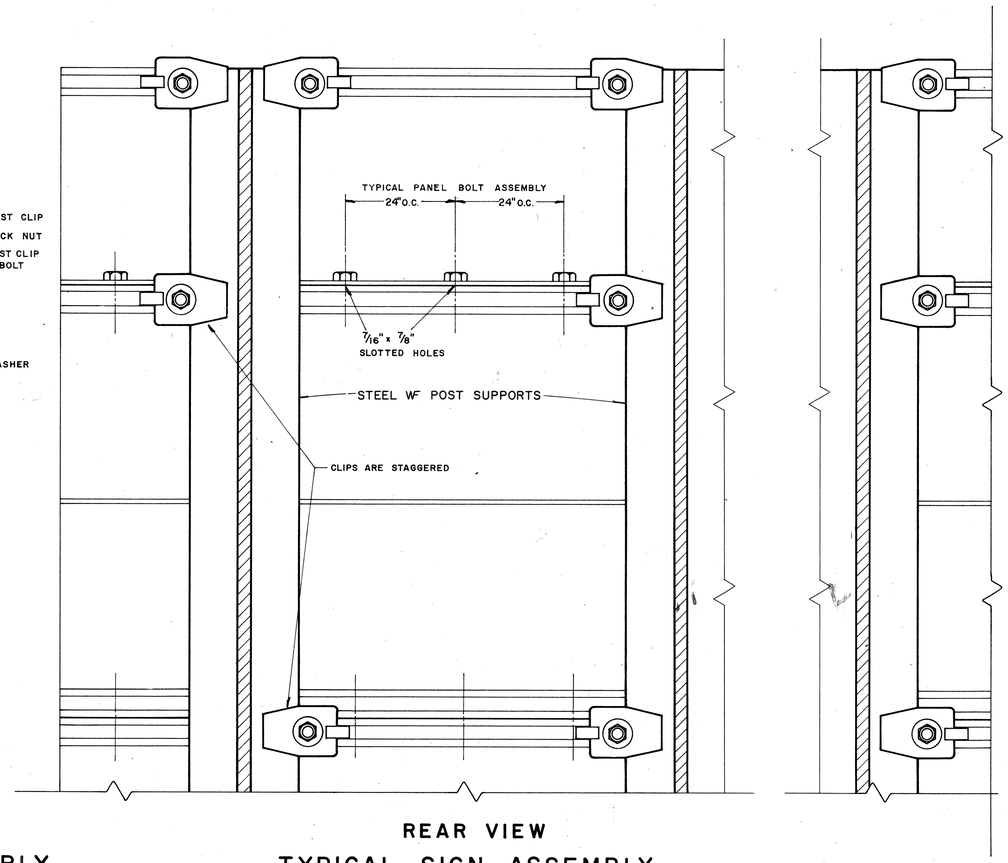
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-H(III):14	1974	188	234



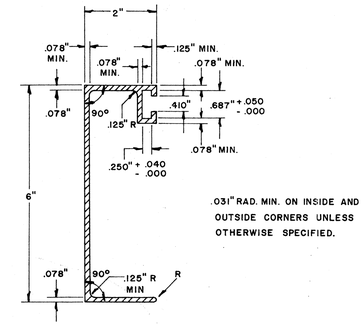
SIDE VIEW

TYPICAL SIGN ASSEMBLY



REAR VIEW

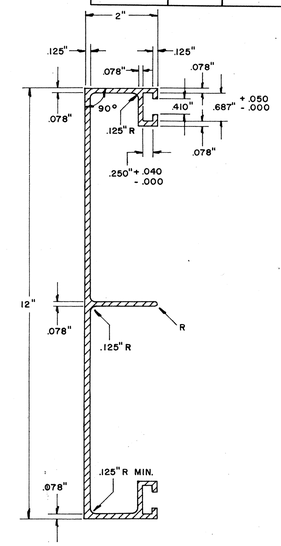
TYPICAL SIGN ASSEMBLY



6" SIGN PANEL

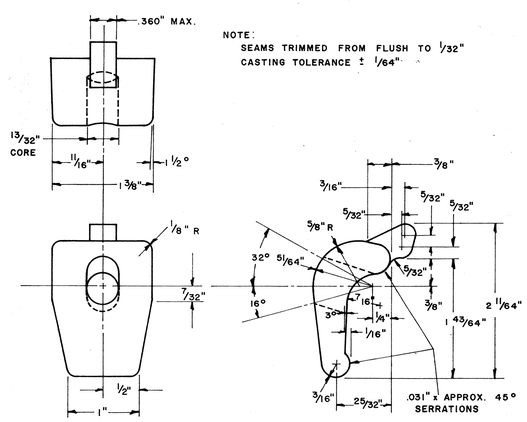
WT./ LINEAL FT. - 1.103 LBS. MIN.
ALLOY - 6061 - F(1)
MOMENT OF INERTIA - 0.487 MIN
MINIMUM SECTION MODULUS 0.341

SOLID EXTRUDED SIGN PANEL DETAILS



12" SIGN PANEL

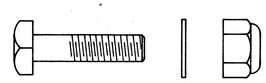
WT./LINEAL FT. - 2.690 LBS. MIN.
ALLOY - 6061 - F(1)
MOMENT OF INERTIA 0.936 MIN.
MINIMUM SECTION MODULUS 0.605



NOTE:
SEAMS TRIMMED FROM FLUSH TO 1/32"
CASTING TOLERANCE ± 1/64"

POST CLIP DETAIL

ALLOY 356 - T6



POST CLIP BOLT ASSEMBLY

3/8" - 16 x 1 3/4" LONG SQ. HD. BOLT - ALLOY 2024 - T4
3/8" - 16 LOCK NUT - ALLOY 2017 - T4
25/32" ID x 3/4" OD x .09" WASHER - ALLOY ALCLAD 2024 - T4

PANEL BOLT ASSEMBLY

3/8" - 16 x 3/4" LONG HEX. HD. BOLT - ALLOY 2024 - T4
3/8" - 16 HEX. NUT - ALLOY 6061 - T6
FLAT WASHER - ALLOY ALCLAD 2024 - T4

NOTE:
Extruded Aluminum Panels to be used for Destination Signs with Reflective Sheeting Background

APPROVAL RECOMMENDED:
Eichi Tanaka — TRAFFIC ENGINEER — 12/29/69 DATE

APPROVED:
[illegible] — ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

SOLID ALUMINUM EXTRUDED SIGN PANEL AND ACCESSORY DETAILS

SCALE:

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

SHEET No. S-34 OF 34 SHEETS DT207

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