FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	51	75

REV. #1, 7/5/66 - Bridge Widening

NOTE!
All abutment piles to be prestressed concrete piles Type I - see Std. details Sht. #5-1.

TRUE NORTH

OUTBOUND

INBOUND

BRIDGE WIDENING

REVISION NO. 1

10 spaces @ 5'-3" = 52'-6" c/ back row pile spacing

12 spaces @ 3'-6" = 42'-0" c/ Front & 2nd row pile spacing

11.59' to W.P. "L"

11.52' to W.P. "M"

2.98' (N.P. to ℄ pile)

2.33' (N.P. to ℄ pile)

W.P. "L"

W.P. "M"

W.P. "N"

W.P. "P"

W.P. "Q"

W.P. "H"

℄ Sta. 324 + 31.64

℄ Sta. 325 + 91.64

Interstate Baseline

℄ Bearing Abut. #1 Az. 328° 52' 00"

℄ Bearing Abut. #2 Az. 328° 52' 00"

℄ Pier Az. 328° 52' 00"

Az. 238° 52' 00"

Az. 328° 45' 40"

Az. 328° 52' 40"

Az. 328° 52' 20"

Az. 328° 53' 40"

Az. 328° 53' 40"

Az. 328° 53' 40"

Az. 328° 45' 40"

Az. 328° 45' 40"

Az. 328° 52' 40"

7° 06' 20"

7° 06' 20"

7° 06' 20"

7° 06' 20"

82° 53' 40"

82° 53' 40"

82° 53' 40"

82° 53' 40"

P-1 P-2 P-2a P-3 P-3a P-4 P-5 P-5a P-6 P-7 P-8 P-8a

B-31 B-32 B-33 B-34 B-35 B-36

Wing Wall #1 Wing Wall #2 Wing Wall #3 Wing Wall #4 Wing Wall #5 Wing Wall #6 Wing Wall #7 Wing Wall #8 Wing Wall #9 Wing Wall #10 Wing Wall #11

3'-0" End Post

Edge of deck

Edge of Deck

Existing Kunia Rd.

Light Stand. See Hiway Lighting

Min. vert. cl. @ E.P. of proposed rd. (see sht #2)

Horiz. min. cl. = 5.5'

Traffic Railing - measured along inside edge of rail.

103.54'

195.54'

196.56'

Bridge name & year location - See Sht. #9

Sta. 324 + 28.62 Begin. of Bridge

Sta. 325 + 04.66 End of Bridge

Sta. 325 + 11.64 ℄ Pier

Sta. 325 + 91.64 ℄ Bearing Abut. #2

62'-6" Outbound Bridge

66'-6"

54'-6" Inbound Bridge

50'-6"

2'-0" curb

10'-0"

C.P.M. wall between Wing wall Sta. See typ. sect. Sht. #7 for exact location

Symbols

Vertical Piles

Batter Piles - Direction of batter

All batter piles to be driven on a 2:12 slope.

27 Vertical Piles
27 Batter Piles

21 Vertical Piles
22 Batter Piles

ABUTMENT PILE LAYOUT PLAN
Scale: 1/8" = 1'-0"

LAYOUT PLAN
Scale: 1" = 10'-0"

REVISION NO. 1

PRESTRESSED CONCRETE PILE DATA

Location	Pile Cutoff El.	Vert. Pile Tip El.	Batter Pile Tip El.	Vert. Pile Length	Batter Pile Length
INBOUND ABUT. #1	El. 184.75	*El. 158.25 El. 154.25	*El. 158.67 El. 154.67	*20 33	*20 33
OUTBOUND ABUT. #1	El. 188.75	El. 162.25	El. 162.61	29 L.F.	29 L.F.
INBOUND ABUT. #2	El. 185.75	*El. 161.25 El. 164.25	*El. 161.54 El. 164.54	*21 24	*21 24
OUTBOUND ABUT. #2	El. 190.75	El. 171.25	El. 171.52	22 L.F.	22 L.F.

*Denotes data for widened portion. If * is not indicated, use original data for widened portion.

Location	Pile Cutoff El.	Vert. Pile Tip El.	Vert. Pile Length
P-2a	El. 198.51	*El. 158.01	* 43 L.F.
P-3a	El. 198.34	*El. 160.84	* 31 L.F.
P-5a	El. 202.54	*El. 162.04	* 43 L.F.
P-1	El. 197.74	El. 149.24	51 L.F.
P-2	El. 198.51	El. 150.01	51 L.F.
P-3	El. 198.34	El. 159.84	41 L.F.
P-4	El. 197.75	El. 159.25	41 L.F.
P-5	El. 202.54	El. 158.04	47 L.F.
P-6	El. 201.17	El. 157.27	47 L.F.
P-7	El. 201.59	El. 166.09	38 L.F.
P-8, P-8a	El. 202.32	El. 166.82	38 L.F.

REVISION NO. 1

REFERENCE NOTES:
For Estimated Quantities see Sht. #3
For Prestressed Girder details see Sht. #4 & #4a
For General Notes & Miscell. Details see Sht. #9
For additional details not shown on these drawings refer to Standard Det. Drawings Sht. #5-1, #5-2, #5-3.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE
FOUNDATION & LAYOUT PLAN
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-HI-1(18), UNIT 2
SCALE: AS SHOWN JULY 1965

SHEET No. 13 OF 13 SHEETS

C051

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

PRINTED ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	52	75

REV. #1: 7/6/66 - Bridge Widening

Hatched areas denote arrangement of reinforcement at skewed ends - see Typical Detail Sht. #4.

Typical Band - #6 @ 8" maximum cont. added straight top & bottom over Beam "B" & Beam "D". Place normal slab reinforcement between bands.

℄ Bearing Abut. #1

℄ Pier

℄ Bearing Abut. #2

Beam "D"

Beam "B"

G-1 Type "C"
G-2 Type "C"
G-3 Type "C"
G-4 Type "C"
G-5 Type "C"
G-6 Type "C"
G-7 Type "C"
G-8 Type "C"

TSS-1
TSS-2
TSS-3

BM. "A"
BM. "B"
BM. "C"
BM. "D"

54'-6" Outbound Bridge

26'-8"

℄ Beam "B" Location ℄ ℄ Girder

26'-8" Typical

Baseline-Interstate

G-9 Type "B"
G-10 Type "B"
G-11 Type "B"
G-12 Type "B"
G-13 Type "B"
G-14 Type "C"

42'-6" Inbound Bridge

SUPERSEDED BY DETAIL SHT. #2-A

VOID

DECK FRAMING PLAN - INBOUND AND OUTBOUND BRIDGES

Scale: 1" = 10'-0"

Measured along ℄ Pier

Col. ① Col. ② Col. ③ Col. ④ Col. ⑤ Col. ⑥ Col. ⑦

56'-8 1/16"

21'-1 15/16" 21'-4 7/8"

44'-4"

Outline - pier extension: bridge widening

Top of Col. @ ℄ Pier El. 195.56

El. 195.78

El. 196.23

El. 196.01

El. 192.20 Top of Col. @ ℄ Pier

El. 191.71

El. 191.95

AS CONSTRUCTED - MODIFIED FOR NEW BRIDGE WIDENING REVISION

5'-0" 15'-0" 15'-0" 15'-0" 27'-10" 27'-8 1/8" 16'-6" 16'-6" 5'-0"

SEE SHT. #5A

Approx. existing ground line

Bottom Ftg. El. 169.00

El. 171.00 El. 170.75 El. 168.75 El. 167.00 El. 166.75 El. 167.00

REVISION NO. 1

OUTBOUND PIER ELEVATION INBOUND

Scale: 1/8" = 1'-0"

Reference edge of deck

54'-6" 50'-6" 36'-0" (Roadway) 2'-0" Curb 1'-3" 10'-0" 6'-0" 7 1/2" Thickness

Interstate Baseline

22'-0" 22'-0"

42'-6" 38'-6" 24'-0" (Roadway) 2'-0" Curb 1'-3" 6'-0" 10'-0" 7 1/2" Thickness

Reference edge of deck

℄ G-1 Type "C" ℄ G-2 Type "C" ℄ G-3 Type "C" ℄ G-4 Type "C" ℄ G-5 Type "C" ℄ G-6 Type "C" ℄ G-7 Type "C" ℄ G-8 Type "C" ℄ G-9 Type "B" ℄ G-10 Type "B" ℄ G-11 Type "B" ℄ G-12 Type "B" ℄ G-13 Type "B" ℄ G-14 Type "C"

2'-11" 7 spaces @ 7'-1" = 49'-7" 2'-0" 2'-0" 5 spaces @ 7'-6" = 37'-6" 3'-0"

OUTBOUND BRIDGE INBOUND BRIDGE

Note: For typical deck reinforcing & additional details see Sht. #3

NORMAL DECK SECTION

Scale: 1/8" = 1'-0"

REVISION NO. 1

℄ Bearing @ Abutments

Slab thickness - see Normal Section

℄ Span

Slab thickness - see Normal Section

Drop panel of Slab Varies

℄ Pier

1" min. lip @ exterior girder as required. See Normal Section

Top of prestressed girder

Depth prestressed girder

1" min. lip @ exterior girder as required. See Normal Section

Transverse beam

DIAGRAM SHOWING DROP PANEL OF SLAB AT EACH GIRDER

No Scale

REVISION NO. 1

℄ Bearing Abut. #1

℄ Pier

℄ Bearing Abut. #2

80'-0" 80'-0"

210 200 190 180

Top of concrete deck slab & Finish grade

Hatched area denotes limits of struct. exc. pay line

Top shelf line Elev. see Details

Min. clearance 16.15

Prestressed Girder

Prestressed Girder

Top shelf line Elev. See Details

Roadway embankment see H'way drawings

Roadway embankment see H'way drawings

Batt. pile ftg. Elev. See Sht. #6

Batt. pile ftg. Elev. See Sht. #7

Complete embankment to bottom of footing before commencing with pile driving

E.P.

Approx. existing ground

Hatched area denotes limits of pier structural excavation pay limits & backfill

Excavate and pour neat

Batt. ftg. elevation - see Pier Elevation above

12"

12"

TYPICAL LONGITUDINAL SECTION - INBOUND OR OUTBOUND BRIDGES

Scale: 1" = 10'-0"

CRM wall see Layout Plan

TYPICAL SECTION B/2

Roadway Embankment See H'way Drawings

Varies

1/2"

℄ Girder

Drop panel line as required - see Normal Section

Varies 1" min. lip @ exterior girders as required. See Normal Section.

Top flange of prestressed girder

Reference - bottom of deck slab elev. ⏥ slope

TYPICAL SECTION OF SLAB DROP PANEL @ ℄ BEARING

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE

FRAMING PLAN, SECTIONS & DETAILS

INTERSTATE ROUTE H-1

F.A.I. PROJ. No. I-HI-1(18), UNIT 2

SCALE: AS SHOWN. JULY 1965

SHEET No. 2 OF 13 SHEETS

C0052

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

ED ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(8) UNIT 2	1965	52A	75

REV.#1 7/5/66 BRIDGE WIDENING

Hatched areas denote arrangement of reinforcement at skewed ends see Typical Detail sht. #4

Typical Band - #6@8" max. cont. added straight top & bottom over Beam "B" & Beam "D". Place normal slab reinforcing between bands

℄ Bearing Abut. #1 — ℄ Pier 1 — ℄ Bearing Abut. #2

Outbound Bridge — 66'-6" — 7 spaces @ 7'-1" = 49'-7" — 2 spaces @ 2'-0" = 4'-0" — 2'-11"

G-1 Type "C" · G-2 Type "C" · G-3 Type "C" · G-4 Type "C" · G-5 Type "C" · G-6 Type "C" · G-7 Type "C" · G-8 Type "C" · G-8a Type "D" · G-8b Type "D"

T55-1 · T55-2 · T55-3 · Bm."B" · Bm."4" · 26'-8" · Beam "D"

Locate ¾"ø bolts see adj. ø det.

℄ Beam "B" location @ ℄ Girder — 26'-8" typical — 26'-8" typical — 26'-8" typical — 26'-8" typical

Interstate Baseline — 10'-9" — 10'-9"

Inbound Bridge — 54'-6" — 5 spaces @ 7'-6" = 37'-6" — 2 spaces @ 2'-0" = 4'-0" — 3'-0"

G-9b Type "D" · G-9a Type "D" · G-9 Type "B" · G-10 Type "B" · G-11 Type "B" · G-12 Type "B" · G-13 Type "B" · G-14 Type "C"

Typical Band - #6@8" max. cont. added straight top & bottom over Beam "B" & Beam "D". Place normal slab reinforcing between bands.

Hatched areas denote arrangement of reinforcement at skewed ends see Typical Detail sht. #4

DECK FRAMING PLAN - INBOUND AND OUTBOUND BRIDGES

ORIGINAL PLAN — BRIDGE WIDENING

℄ Girder G8 OR G9

NOTE: For reinforcing see Typical Transverse Beam "B" sht. #4

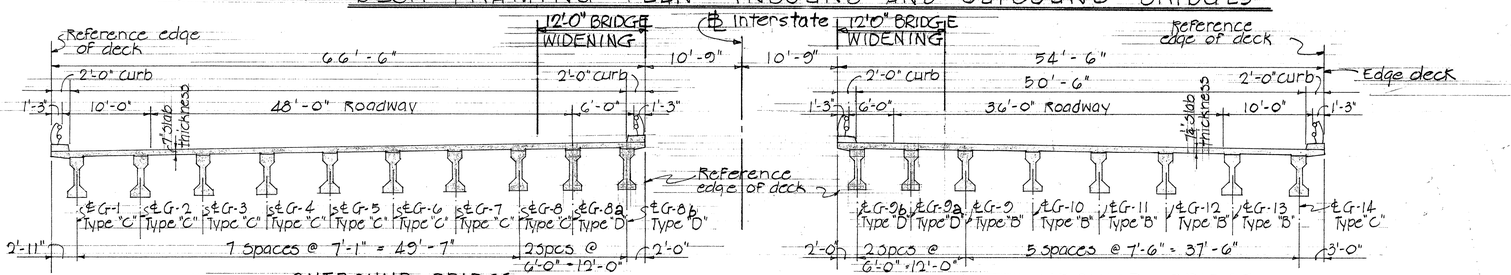
1'-2" · 3" · 1'-6" EQ. · 3" · 3"

Typ. Weld ℄ & anchors at non-cont. ends. see

℄ 3-7/8"ø Anchor bolts & expansion shields, centr on Beam "B" - see framing plan for location.

SPECIAL BEAM "B" CONNECTION AT GIRDERS G-8 & G-9

Scale: ½" = 1'-0"



OUTBOUND BRIDGE — INBOUND BRIDGE

NOTE: for typical deck reinforcing & additional details see sht. #3

NORMAL DECK SECTION

Scale: ⅛" = 1'-0"

REVISION Nº 1. JULY 5, 1966

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE
FRAMING PLAN, SECTIONS & DETAILS

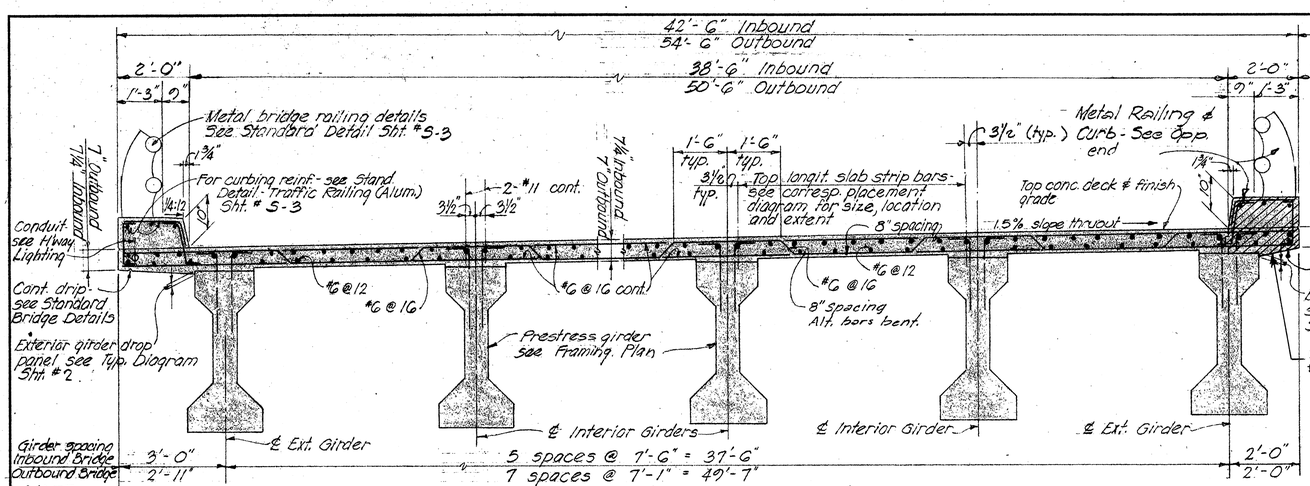
INTERSTATE ROUTE H-1
F.A.I. PROJ. Nº I-HI-1(8) UNIT 2
SCALE: AS SHOWN — JULY 1966

SHEET No. 2A OF 13 SHEETS

C 0 52A

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

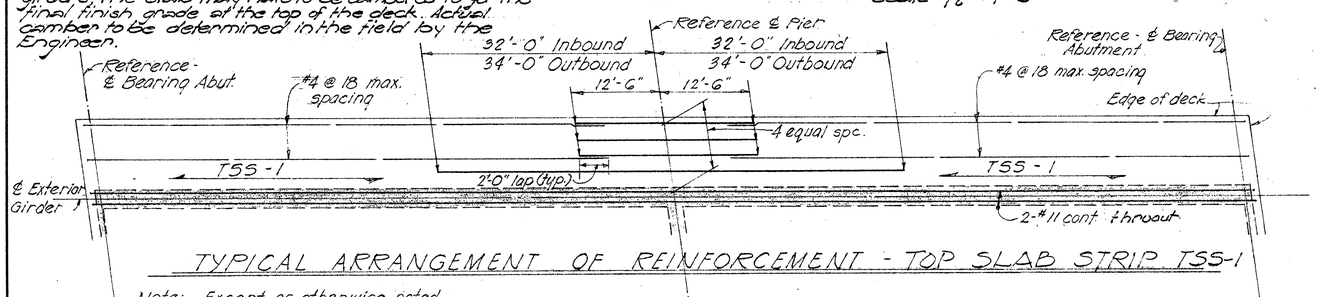
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(15) UNIT 2	1965	33	75



NOTE: Depending on the initial camber of the prestressed girders, the slab may have to be cambered to get the final finish grade at the top of the deck. Actual camber to be determined in the field by the Engineer.

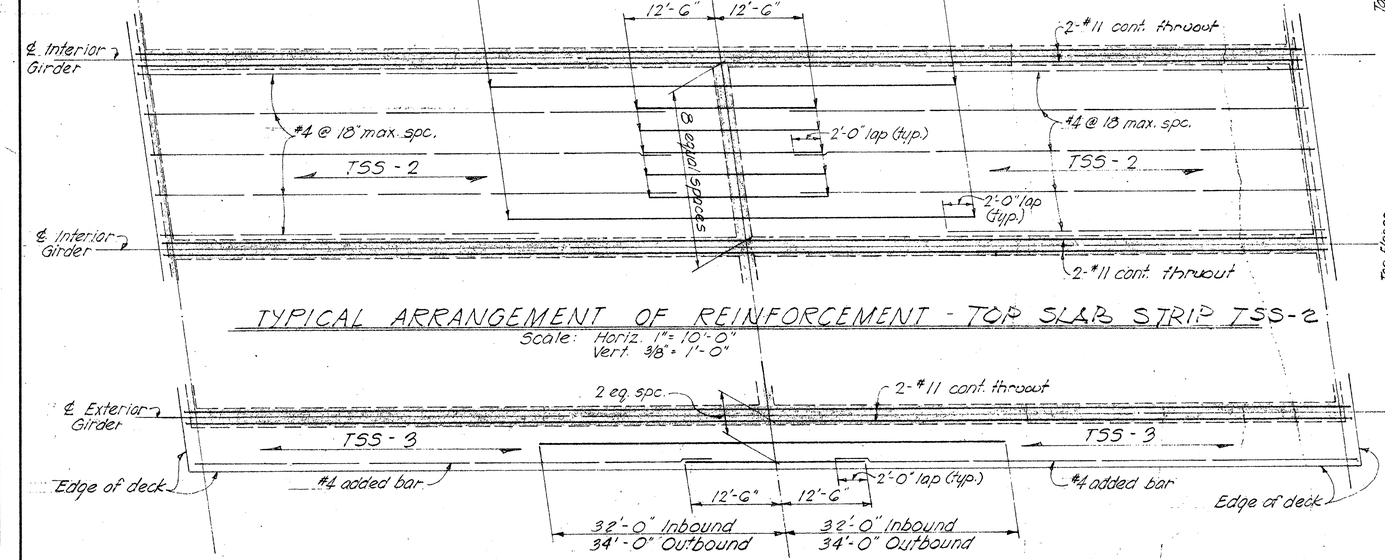
NORMAL DECK SECTION - INBOUND or OUTBOUND BRIDGES

Scale 1/2" = 1'-0"



TYPICAL ARRANGEMENT OF REINFORCEMENT - TOP SLAB STRIP TSS-1

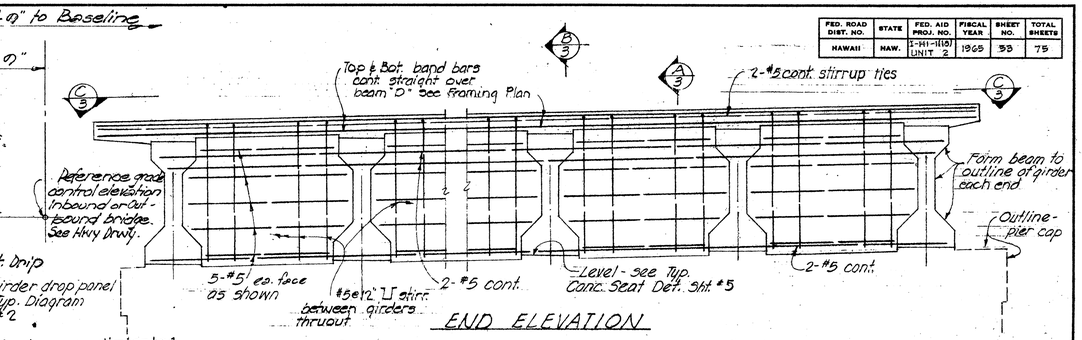
Note: Except as otherwise noted all slab strip reinf. bars to be #11 bars.
For location of slab strip see Framing Plan.



TYPICAL ARRANGEMENT OF REINFORCEMENT - TOP SLAB STRIP TSS-2

Scale: Horiz. 1" = 10'-0"
Vert. 3/8" = 1'-0"

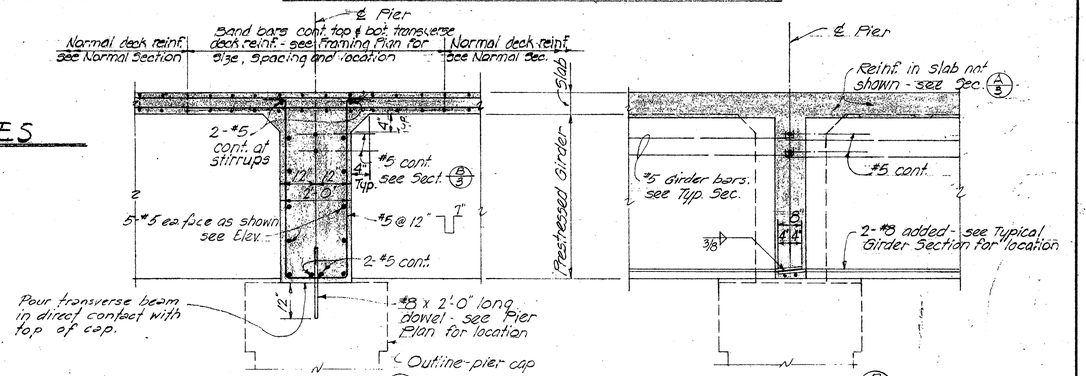
TYPICAL ARRANGEMENT OF REINFORCEMENT - TOP SLAB STRIP TSS-3



END ELEVATION

TYPICAL TRANSVERSE BEAM "D"

Scale: 3/8" = 1'-0"

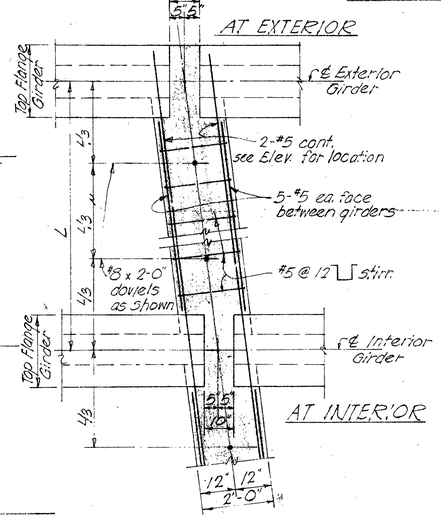


SECTION (A/3) (BETWEEN GIRDER)

SECTION (B/3) (AT GIRDER)

TYPICAL SECTION - BEAM "D"

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



TRANSVERSE BEAM "D" PLAN (C/3)

TYPICAL ARRANGEMENT & LOCATION OF TRANSVERSE BEAM REINF. AT GIRDERS

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

ESTIMATED QUANTITIES

Class A-1 Conc.: Lump Sum	(1,135	cu. yd.)
Reinf. Steel: Lump Sum	(224,000	lbs.)
Prestressed Girder: Lump Sum	(2,251	L.F.)
Structural Exc.:	930	cu. yd.
Filter Material:	70	cu. yd.
C.R.M.:	20	cu. yd.
Metal Bridge Railing (Traffic Railing):	780	L.F.
Concrete Piles	4,700	L.F.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE

DECK SECTIONS & DETAILS

INTERSTATE ROUTE H-1

F.A.I. PROJ. No. I-HI-1(18), UNIT 2

SCALE: AS SHOWN JULY 1965

SHEET No. 3 OF 9 SHEETS

53

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	54A	75

8-24-65

2-#5 x 6'-6" long added ea. end. See section B/4 for location.

2-#5 x 6'-6" long added ea. end. See section B/4 for location.

Form beam to outline of girder

#4 @ 12 cl. stirrups

2-#7 cont. top & bot.

2-#4 cont.

Form beam to outline of girder

℄ Exterior Girder

℄ Interior Girder

℄ Exterior Girder

END ELEVATION

TYPICAL TRANSVERSE BEAM "A"

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

Girder Slot

Edge of Top Flange of Girder

Working Point

W.P.

Top Flange Girder

#4 @ 12 cl. stirrups

AT EXTERIOR GIRDER

Width of Beam

Exterior face of beam to be constructed by a straight line between working points of each adjacent corner of girder as shown thruout

Interior face of Beam "A" to be constructed by a straight line drawn parallel to exterior face from W.P.

2-#7 cont. top & bot.

W.P.

W.P.

Top Flange Girder

AT INTERIOR GIRDER

TRANSVERSE BEAM "A" PLAN (A/4) TYPICAL ARRANGEMENT & LOCATION OF TRANSVERSE BEAM REINF. AT GIRDERS

SCALE: 1" = 1'-0"

1'-8"

Roughen top surface of girder thruout ℄ as directed by the engineer

4 strands
4 strands
4 strands
6 strands
6 strands
8 strands
8 strands
6 strands

4-#5 cont. as shown

#4 "a" stirrup

Pair #4 "c" stirrup

#4 "b" stirrup

18 masked strands See detail below for limits

2-#8 added at pier end only. See conns. det. for extent.

2½" Cont chamfer bot. exposed corners only

⊗ = Masked Strands

46-½"ϕ Prestressed Strands

TYPE "C" AT PIER END

2 strands
4 strands
6 strands
8 strands
8 strands
8 strands
6 strands

14 masked strands See detail below for limits.

44-½"ϕ Prestressed Strands

TYPE "B" AT PIER END

2 sets #5 ties added at abut. end only

2 masked strands see detail below for limits

AT ABUT. ENDS

TYPICAL TYPE "B" & "C" GIRDER SECTIONS

#5 @ 5 straight added bars top & bot. each span. See Typical Arrangement of Transverse Slab Reinf. at Skewed Ends

2-#5 x 6'-6" long added at each end

1-#6 top & bot. along edge of slab thruout

½" cont. deck expansion jt. See Abut. detail.

Normal deck reinf. see Normal Section

Top conc. deck & finish grade

4" typ.

2-#7 cont. top & bot.

2-#4 cont.

#4 @ 12 cl. stirrups

Beam Depth

Prestressed Girder

Slab

3½"

Reference bot. of girder slot

2½" Varies

1"

Width of Beam

AT INTERIOR GIRDER

SECTION (B/4)

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

Top & bot. bend cont. straight over beam "B" see Framing Plan

2-#5 cont.

2-#4 cont. between girders

2-#7 as shown

2'-4" typ.

3'-1"

1'-8"

2-#5 cont. between girders

#4 @ 12 cl. stirr. as shown

Weld ℄ see detail below centered on Beam "B"

AT NON-CONTINUOUS ENDS

centered on Beam "B" 1½" ϕ sleeves. Grout sleeves after bars are in place.

2-#7 as shown

Beam Depth

AT CONTINUOUS ENDS

TYPICAL TRANSVERSE BEAM "B"

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

Band cont. top & bot transverse deck reinf. See Framing Plan for size, spacing & location.

Normal Deck reinf. See Normal Section

℄ Beam "B"

2-#5 cont.

Deck Reinf.

2-#4 cont. between girders

#4 @ 12 cl. stirrups

2-#5 cont. between girders

4" 4" 8"

SECTION (C/4)

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

Reference ℄ Bearing

Typical bent slab bars extend at ends as shown

℄ Exterior Girder

#5 @ 5 straight added bars top & bot. each span

Outline slab overhang see sect. (B/4)

1-#6 top & bot see sect. (B/4)

℄ Interior Girder

Typical bent bars thruout see normal section

℄ Exterior Girder

NOTE: For additional top slab reinf. see corresponding details.

PART PLAN

TYPICAL ARRANGEMENT OF TRANSVERSE SLAB REINFORCEMENT AT SKEWED ENDS

Slot Measured along ℄ Girder

Reference ℄ Bearing-Abutment

Locate ends plumb

4'-6"

2 sets #5 ties added

4'-0"

masked strands limits - see corresp. section above for location & spacing

1-#4 U Bend as req'd.

3"

6"

11 spcs. @ 9" = 8'-3"

12 spcs. @ 12" = 12'-0"

#4 "a" stirr., #4 "b" stirr. & #4 "c" stirr. each spacing

Balance of 18"

#4 "c" stirr. each spacing

12 spcs @ 12" = 12'-0"

11 spcs. @ 9" = 8'-3"

#4 "a" stirr., #4 "b" stirr. & #4 "c" stirr. each spacing

9"

3"

½" ϕ Prestressed strands. See sections above for location & spacing

4-#5 cont. added see sect. above for location.

2-#6 added see sect. above for location

Reference ℄ Pier

5"

Measured along ℄ Girder

Locate ends plumb

Extend ends of #5 bars as required see Sec. (B/3)

Stub out #5 added 9" see Sec. (B/3)

Masked strands limits - see corresp. sect. above for location & spacing

12'-0" Type "C"

8'-0" Type "B"

20'-0"

NOTE: Girder stirrups to be placed plumb.

TYPICAL TYPE "B" & "C" GIRDER DETAIL

SCALE: 3/8" = 1'-0"

6"

3½"

4-#5 x 15" long anchors

11" typical

4" x ½" x 6'-8"

PLAN

11" typical

3/8" V

4'

4-#5 x 15" long anchors

6"

3/8"

NOTE: Weld ℄ incidental to pre-stressed girder & not paid for separately.

SECTION

WELD PLATE DETAIL

SCALE: 1½" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE
PRESTRESSED GIRDER & DECK DETAILS
INTERSTATE ROUTE H-1
F.A.I. PROJ. No. I-HI-1(18), UNIT 2
SCALE: AS SHOWN JULY 1965

SHEET No. 4 OF 13 SHEETS

THIS SHEET SUPERSEDES SHT. No. 54

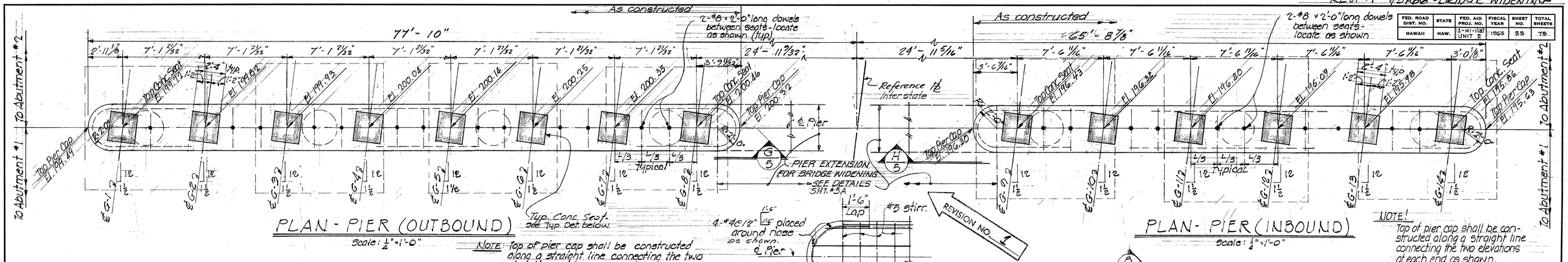
C 005 4E 4

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

NOTE BOOK | No.

REV. #1 7/5/66 - BRIDGE WIDENING

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	55	75



PLAN - PIER (OUTBOUND)

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

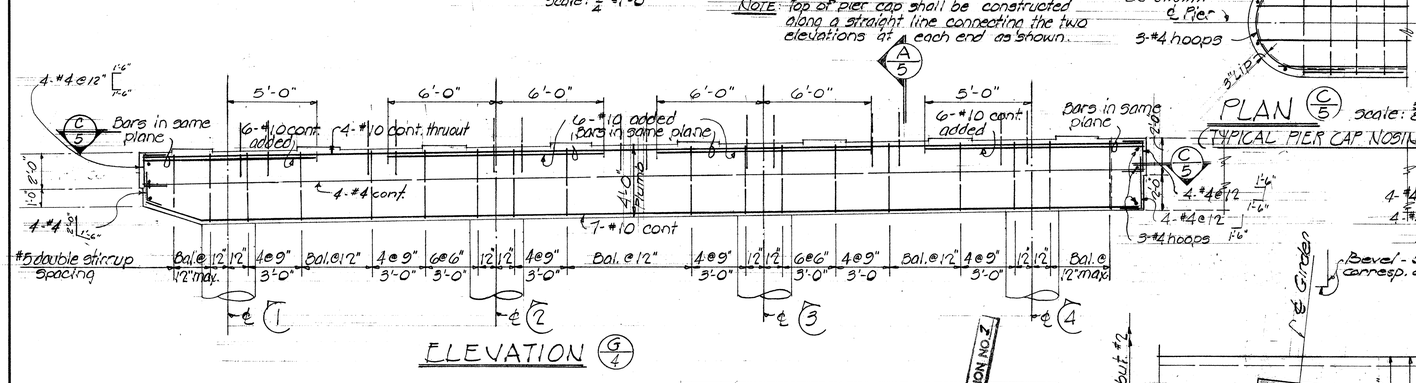
NOTE Top of pier cap shall be constructed along a straight line connecting the two elevations at each end as shown.

REVISION NO. 1

PLAN - PIER (INBOUND)

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

NOTE!
Top of pier cap shall be constructed along a straight line connecting the two elevations at each end as shown.



ELEVATION (G/4)

ELEVATION (H/5)

TYPICAL COLUMN DETAIL

No Scale

TYPICAL COLUMN SECTIONS

No Scale

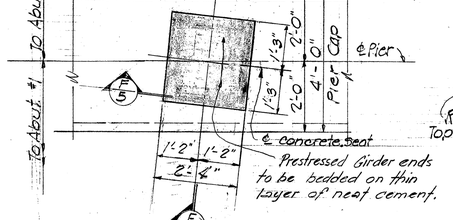
REVISION NO. 2

PIER COLUMN SCHEDULE

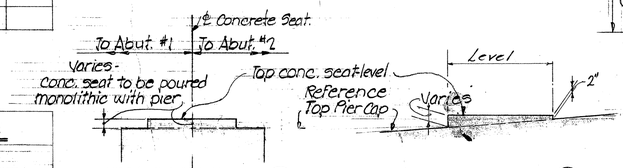
COLUMN № / LOCATION	1 4	2 3	5 7	6	8	9
BOT. PIER CAP	36" DIA. 8-#11	36" DIA. 8-#11	36" DIA. 12-#11	36" DIA. 16-#11	36" DIA. 16-#11	36" DIA. 16-#11
TOP FTG. DOWELS	8-#11	8-#11	12-#11	16-#11	16-#11	16-#11
FTG. TYPE	F-1	F-3	F-2	F-4	F-5	F-5

PIER FOOTING SCHEDULE

TYPE	SIZE	DEPTH	BOTTOM REINFORCEMENT
F-1	10'-6" x 10'-6"	2'-0"	14-#9 EACH WAY
F-2	12'-0" x 12'-0"	2'-3"	19-#9 EACH WAY
F-3	11'-0" x 11'-0"	2'-0"	14-#10 EACH WAY
F-4	12'-6" x 12'-6"	2'-3"	19-#10 EACH WAY
F-5	11'-0" x 13'-0"	2'-3"	18-#9 LONG BARS (Bott. Layer); 15-#9 SHORT BARS (Upper Layer)

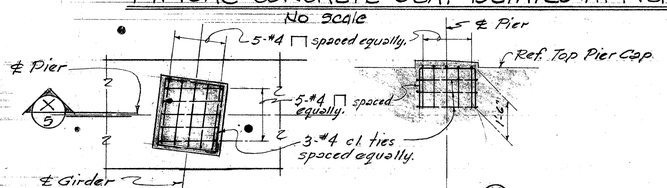


PLAN



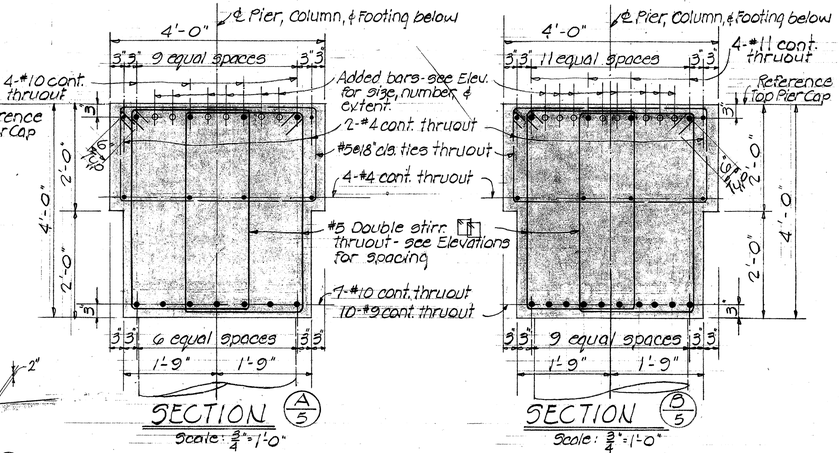
SECTION (E/5) SECTION (E/5)

TYPICAL CONCRETE SEAT DETAILS AT PIERS



TYP. CONC. SEAT REINF. DETAIL AT PIER

No Scale



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE Nov. 1964
	DRAWN BY K. Zachary, T. S. Yang	" " Oct. 1965
	TRACED BY	" "
	DESIGNED BY H. Nakamura, F. Kaneya	" "
NOTE BOOK	QUANTITIES BY	" "
No.	CHECKED BY	" "

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE

PIER DETAILS

INTERSTATE ROUTE H-1

F.A.I. PROJ. No. I-HI-1(18), UNIT 2

SCALE: AS SHOWN JULY 1965

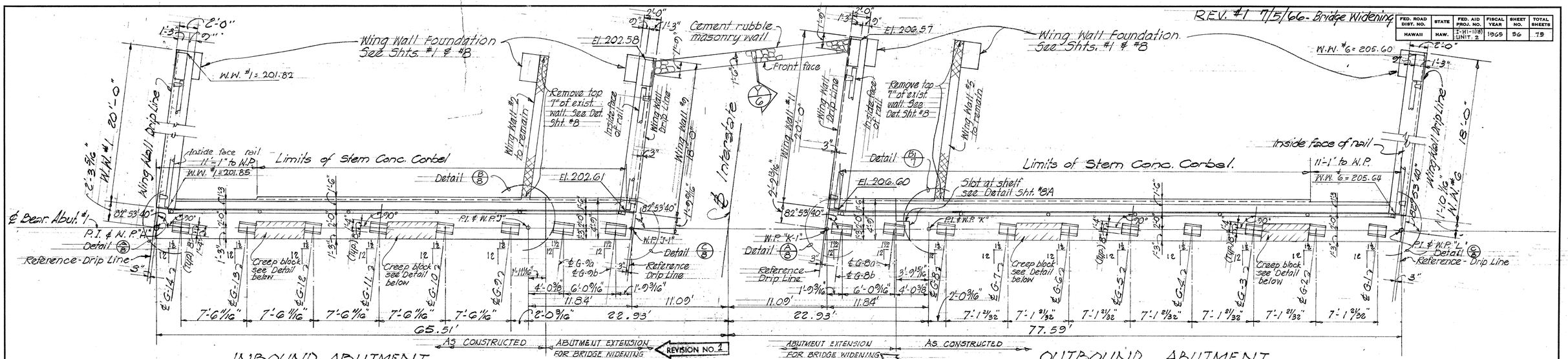
SHEET No. 5 OF 13 SHEETS

C 10 55

REDUCED ON CLEARPRINT 1000-H

REV. #1 7/5/66 - Bridge Widening

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(8) UNIT 2	1965	56	79



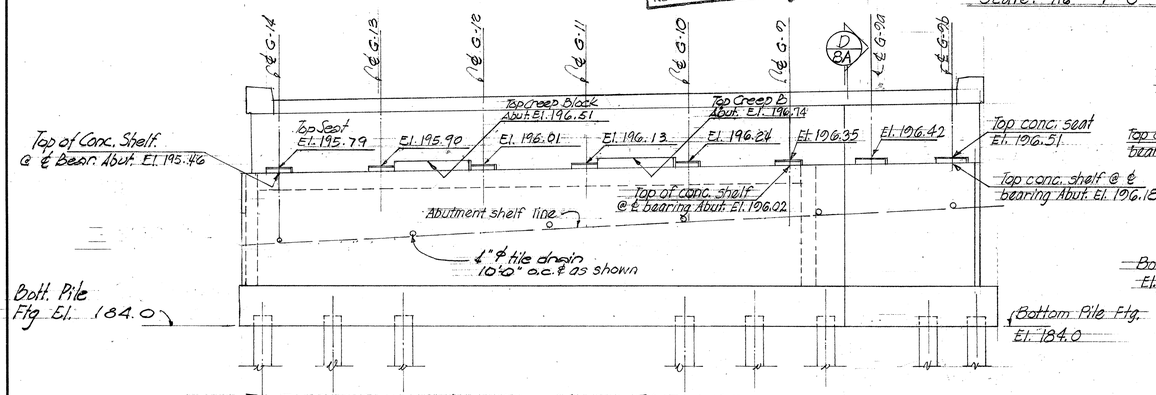
INBOUND ABUTMENT

OUTBOUND ABUTMENT

REVISION NO. 1

PLAN ABUTMENT No. 1

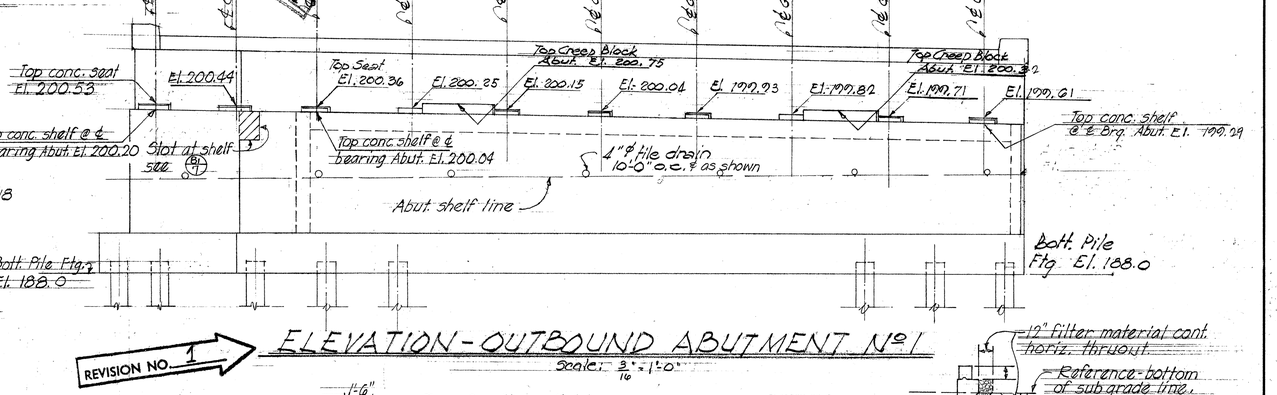
Scale: 3/16" = 1'-0"



ELEVATION - INBOUND ABUTMENT No. 1

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

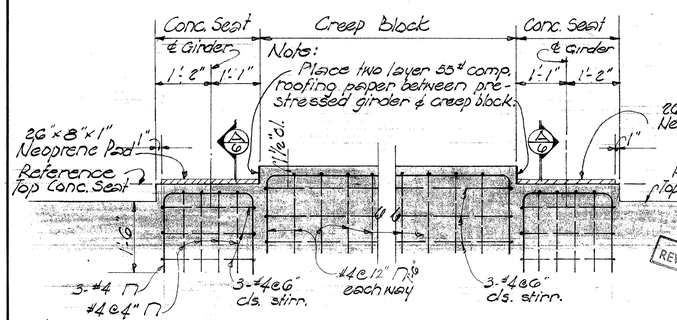
REVISION NO. 1



REVISION NO. 1

ELEVATION - OUTBOUND ABUTMENT No. 1

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

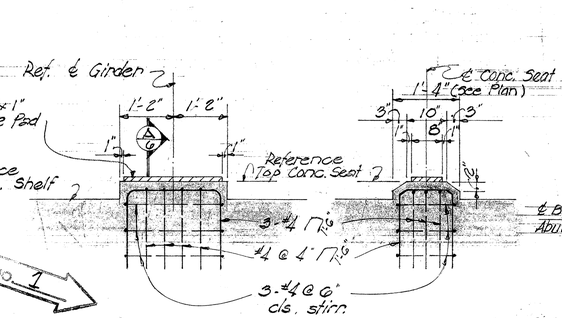


AT GIRDERS G-2 - G-3; G-6 - G-7; G-10 - G-11; G-12 - G-13

CONCRETE SEAT DETAILS AT ABUTMENTS

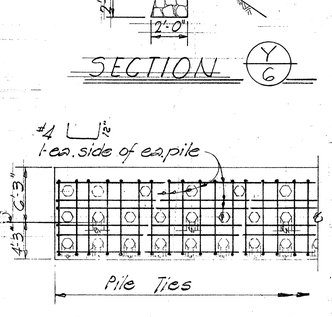
Scale: 3/4" = 1'-0"

REVISION NO. 1

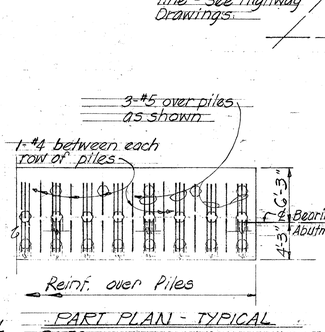


AT GIRDERS G-1, G-4, G-5, G-8, G-8a, G-8b, G-9, G-9a, G-9b & G-14

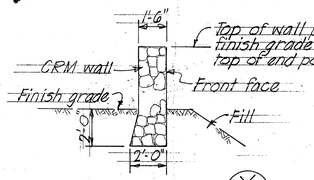
NORMAL SECTION (A/6)

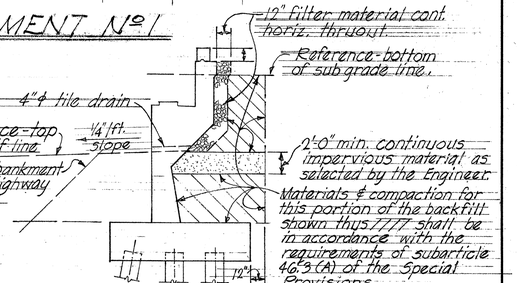


PART FOOTING PLAN - TYPICAL ARRANGEMENT OF PILE TIES REINFORCEMENT Scale: 1/8" = 1'-0"



PART PLAN - TYPICAL BOTTOM LAYER PILE FOOTING AND REINFORCEMENT Scale: 1/8" = 1'-0"





TYPICAL LIMITS OF ABUTMENTS #1 & #2 BACKFILL

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE

ABUTMENT No. 1 DETAILS

INTERSTATE ROUTE H-1

F.A.I. PROJ. No. I-HI-1(18), UNIT 2

SCALE: AS SHOWN JULY 1965

SHEET No. 6 OF 13 SHEETS

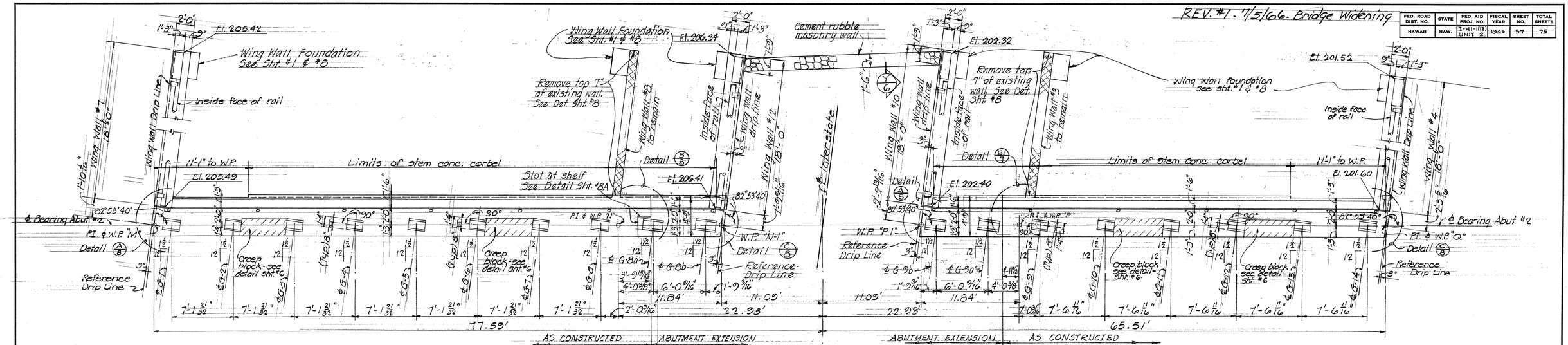
C 0 5 6

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

ED ON CLEARPRINT 1000-H

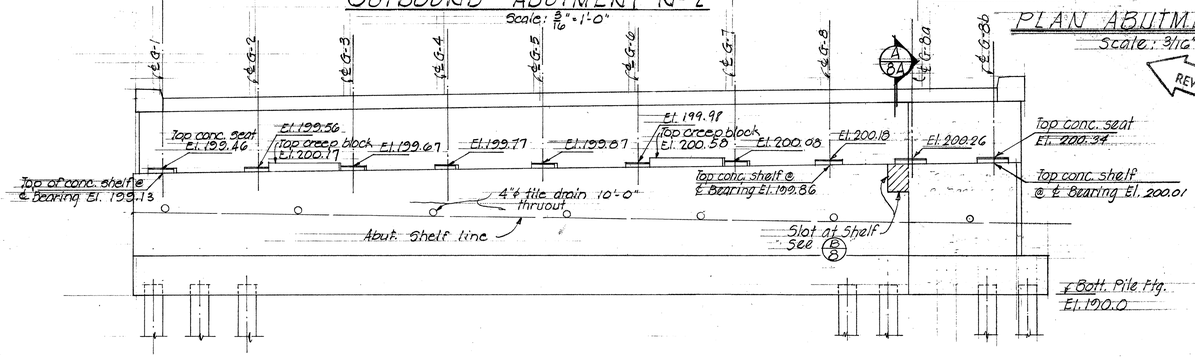
REV. #1 - 7/5/16 - Bridge Widening

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	57	75



OUTBOUND ABUTMENT Nº 2

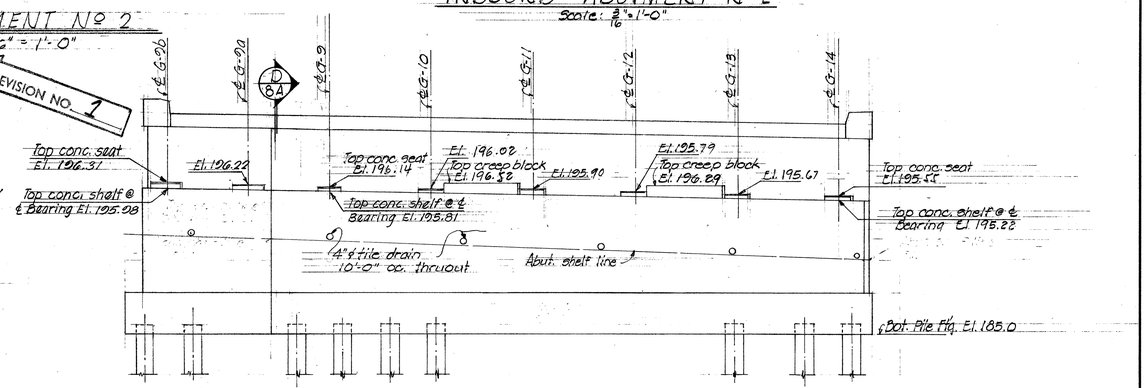
Scale: 3/16" = 1'-0"



PLAN ABUTMENT Nº 2

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

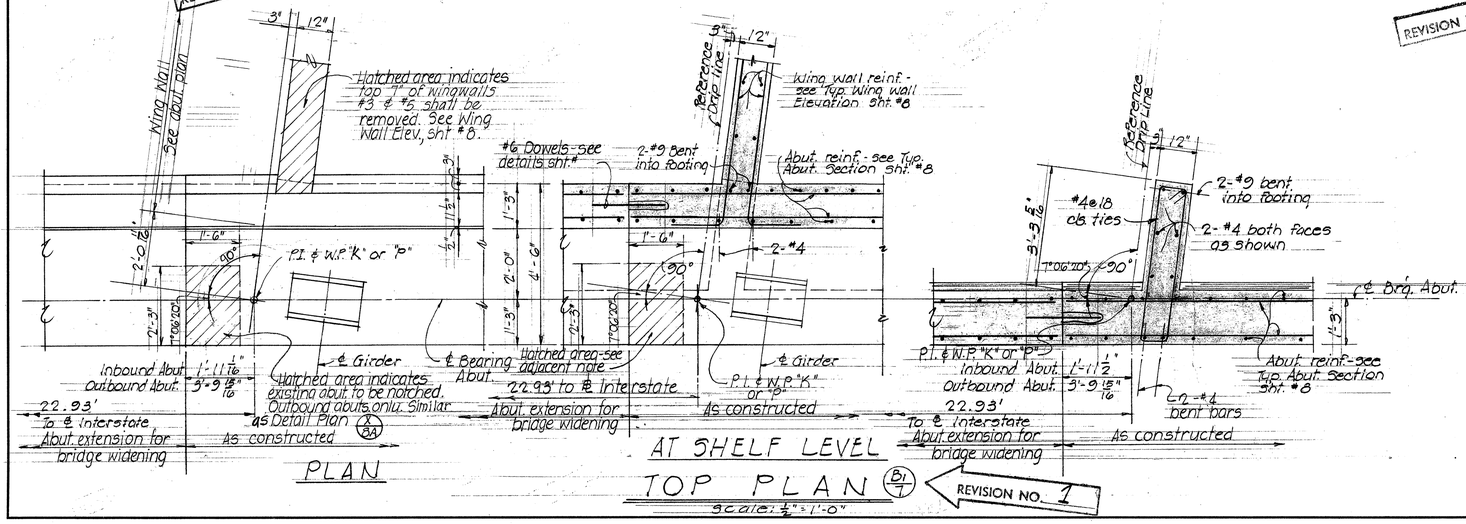
REVISION NO. 1



ELEVATION - OUTBOUND ABUTMENT Nº 2

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

REVISION NO. 1



REVISION NO. 1

ELEVATION - INBOUND ABUTMENT Nº 2

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

REVISION NO. 1

SURVEY PLOTTED BY
DRAWN BY A.A.S. DATE Dec. '64
TRACED BY " "
DESIGN DATA CHECKED BY " "
NOTE BOOK DESIGNED BY " "
QUANTITIES BY " "
CHECKED BY " "
ORIGINAL PLAN
No.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE

ABUTMENT Nº 2 DETAILS

INTERSTATE ROUTE H-1

F.A.I. PROJ. Nº I-HI-1(18), UNIT #2

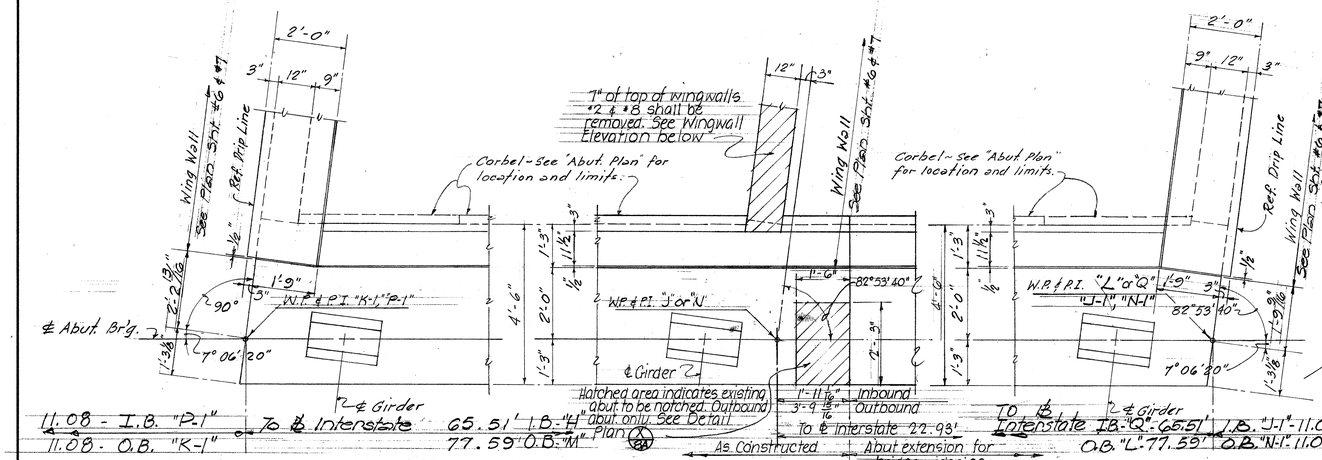
SCALE: AS SHOWN JULY 1965

SHEET No. 7 OF 13 SHEETS

C 0 5 7

REV. #1 - 7/5/66 Bridge Widening

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-HI-1(8) UNIT 2	1965	58	75



TOP PLAN (A/8)

TOP PLAN (B/8)

TOP PLAN (C/8)

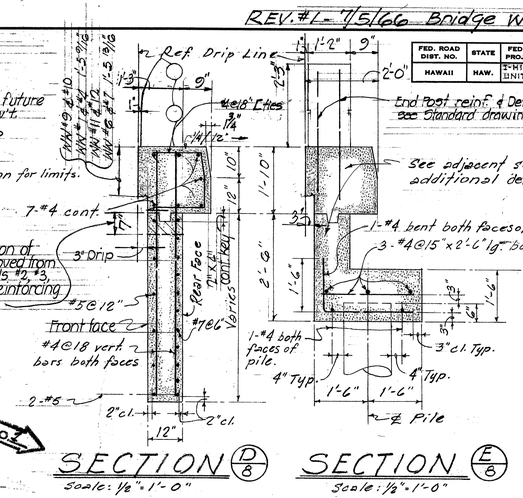
NORMAL SECTION THRU ABUT. Nº 1 & Nº 2

Scale: 3/8" = 1'-0"

REVISION NO. 1

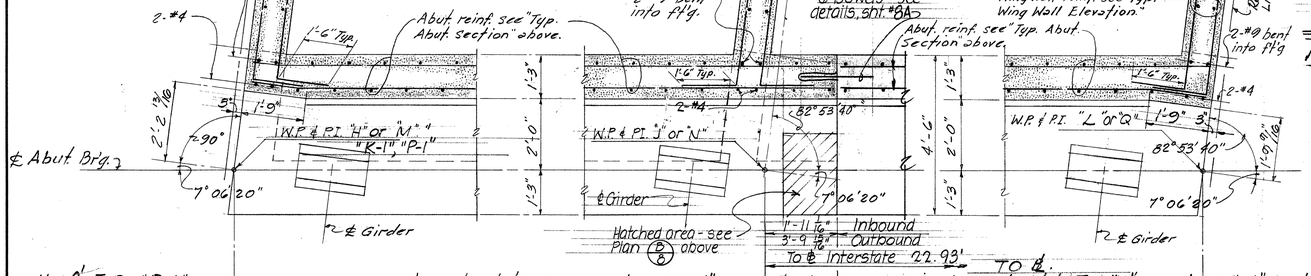
SECTION (D/8)

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



SECTION (E/8)

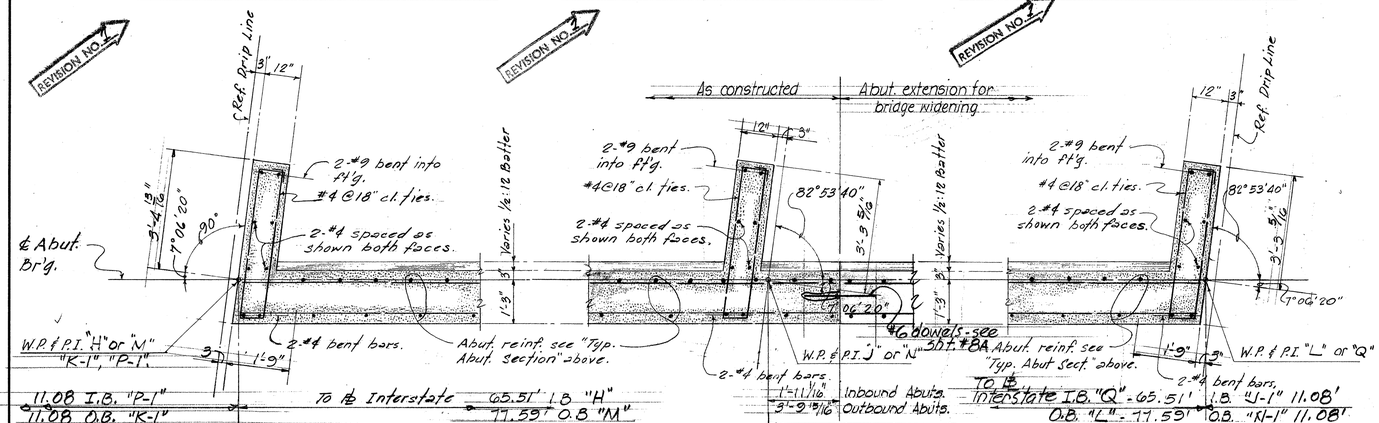
Scale: 1/2" = 1'-0"



AT SHELF LEVEL

AT SHELF LEVEL

AT SHELF LEVEL



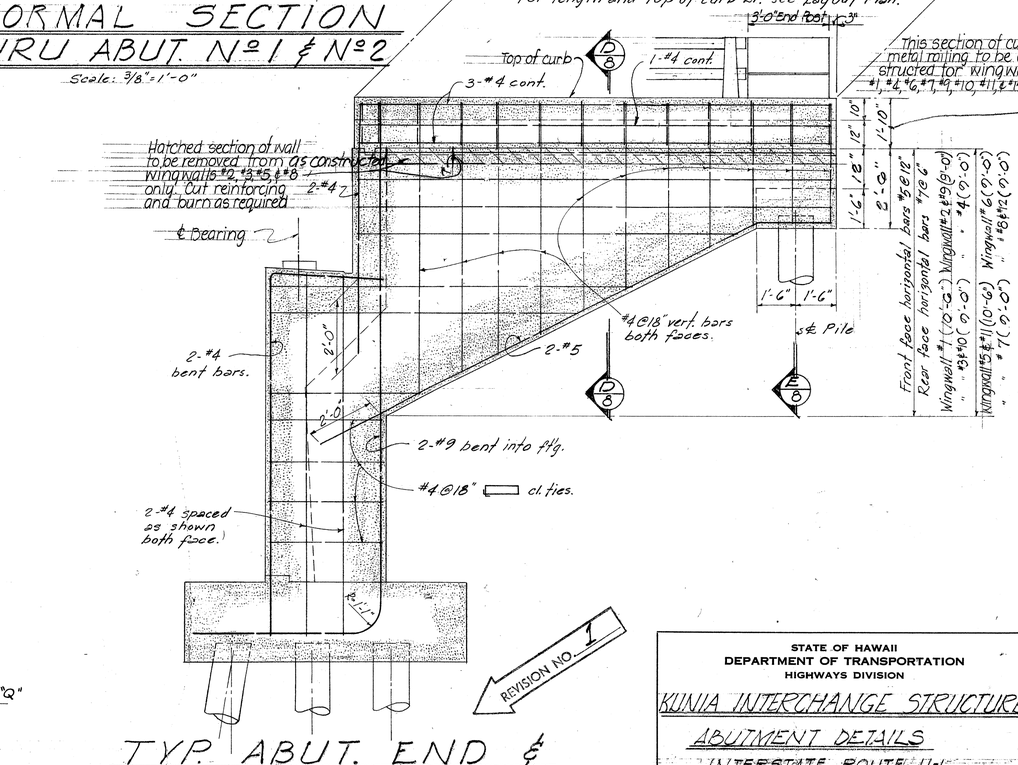
AT STEM

AT STEM

AT STEM

REVISION NO. 1

TYP. ABUT. END ℄ WING WALL ELEVATION



REVISION NO. 1

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE

ABUTMENT DETAILS

INTERSTATE ROUTE H-1

F.A.I. PROJ. Nº I-HI-1(8), UNIT 2

SCALE: AS SHOWN JULY 1965

SHEET No. 8 OF 13 SHEETS

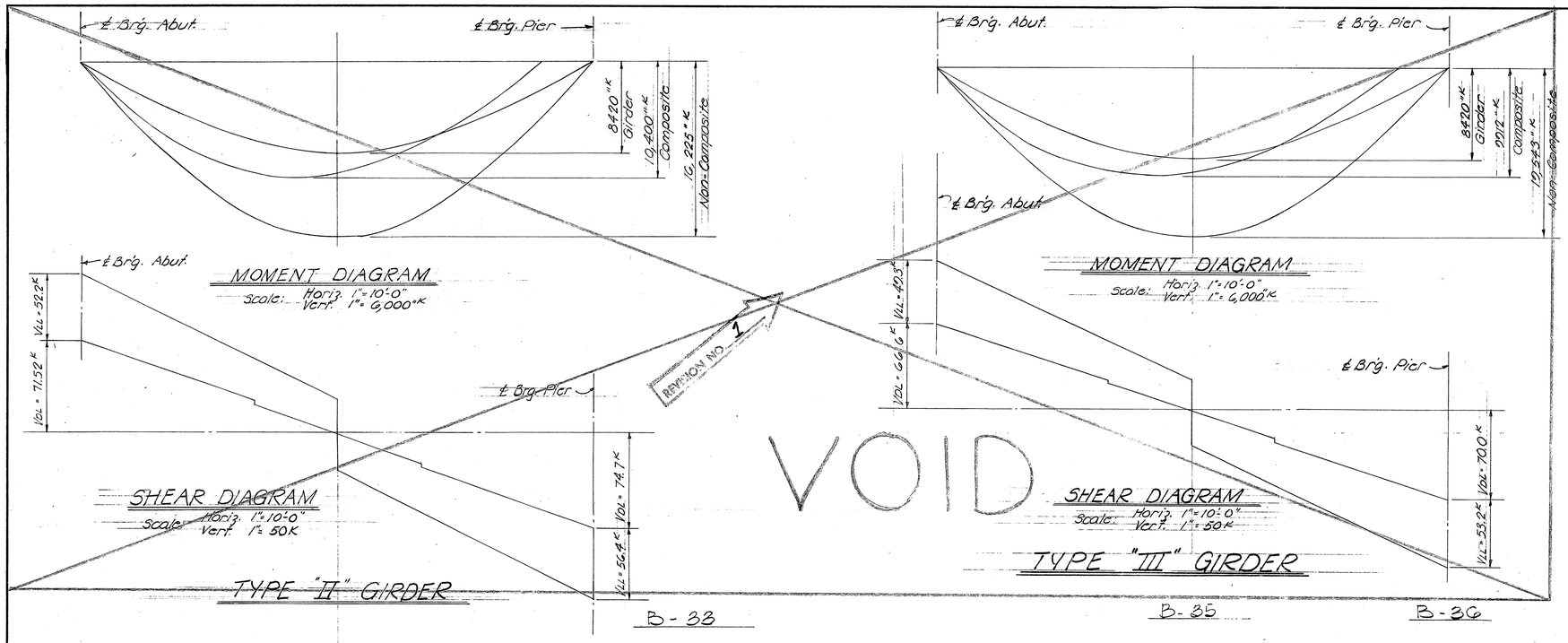
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	" "
	TRACED BY	" "
	DESIGNED BY	" "
NOTE BOOK	QUANTITIES BY	" "
No.	CHECKED BY	" "

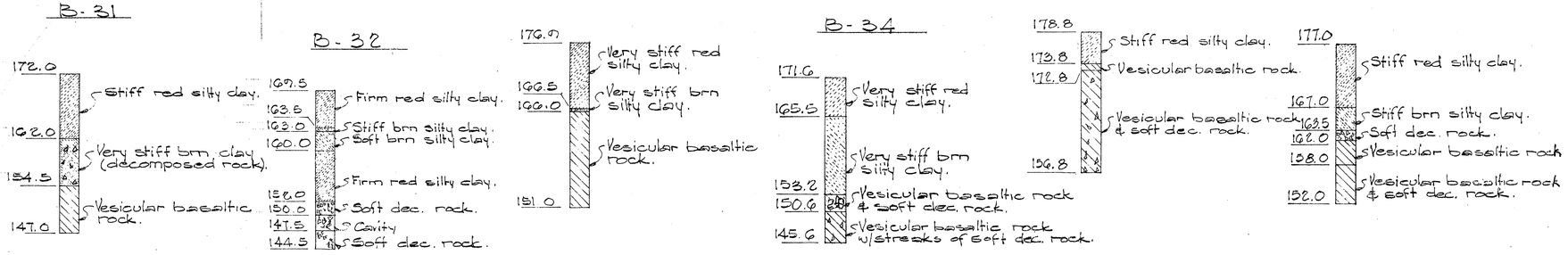
C055

PRINTED ON CLEARPRINT 1000-H

REV. #1 - 7/5/66 - DELETED DIAGRAM

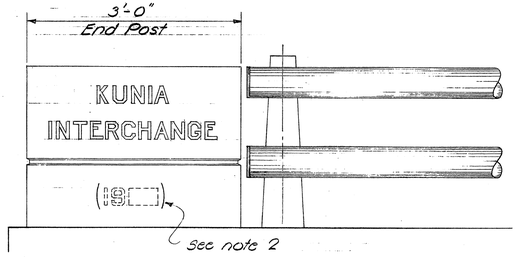
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	52	75





BORING LOG FOR KUNIA INTERCHANGE

SCALE 1"=10'-0"



NOTE!
1. Place name of structure as shown. For location, see Layout Plan.
2. Year shown will be year structure is completed.
3. Letter size & detail - see Standard Letter drawings.

TYPICAL BRIDGE NAME & YEAR LOCATION AT END POST

Scale: 1"=1'-0"

GENERAL NOTES

Specifications: AASHO

Standard specifications for Highway Bridges (8th Edition) with subsequent additions and modifications.

Design Stresses; R.C. Beams & Slabs:

See AASHO specification except as otherwise noted and see Special Provisions.

$f'c$ = 3,000 psi
fc = 1,200 psi
n = 10
fs = 20,000 psi - tension

Materials:

1. All concrete shall be Class A-1 except as otherwise noted on plans. Concrete for prestressed concrete girders see Special Provisions & as noted below.
2. Neoprene pads are incidental to prestressed conc. girders and will not be paid for separately.
3. See Special Provisions for admixture in concrete.
4. All piles to be prestressed concrete piles Type I - see Standard Details sht #3-1

Construction Methods:

1. See Standard Specifications and Special Provisions.
2. Except for footings on piles & as otherwise noted, all other footings shall be excavated & poured to neat lines. In case of over excavation, space between footing & ground shall be filled with concrete at the Contractor's expense. The fill concrete shall have a minimum quality of Class D-1. Limits of excavation for pile footing, see corresponding details.
3. The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation or pile driving.
4. All fill behind abutments & wingwalls shall be complete in place before placing superstructure prestressed concrete girders.
5. For concrete finish see Special Provisions. Concrete seats & creep blocks to be poured monolithically with pier or abutment sections. Seats shall receive a hard trowel finish, level & true to Elevations.
6. Neoprene pad: The neoprene pads shall be secured against displacement by adhesives. The adhesive shall be approved by the Engineer.

General Notes:

1. Symbols

(No.) - Denotes column numbers
(A / No.) - Alphabet section no. description / Sheet no. detail is drawn on
⟵ - Direction in which main reinforcing bars extend

P.I. - Point of intersection
W.P. - Working point
TSS - Top slab strip
⊗ - Boring

2. For additional details & general notes not covered by these drawings, refer to Standard Drawings S-1, S-2, & S-3.

Design Stresses:

Prestressed Beams
$f'c$ = 5,500 psi
$f'ci$ = 4,000 psi
½" dia. 7 wire strands
Tensioning load = 25,200 lb. per strand
Design Load = 20,160 lb. per strand
Forms must be removed and the beam inspected before the strands are cut.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KUNIA INTERCHANGE STRUCTURE
MISCELLANEOUS DETAILS & GENERAL NOTES
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-HI-1(18), UNIT 2
SCALE: AS SHOWN JULY 1965

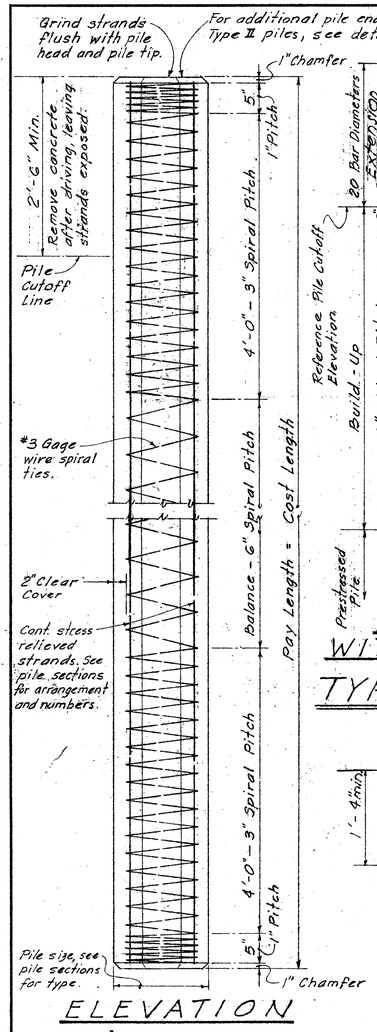
SHEET No. 9 OF 13 SHEETS

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

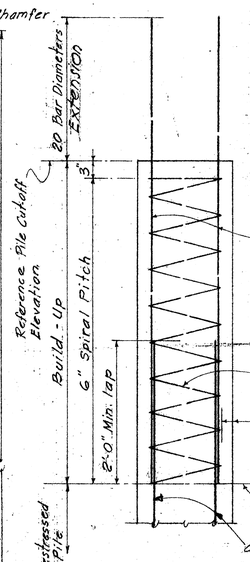
PRINTED ON CLEARPRINT 1000-H

C 0059

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	60	75



ELEVATION



BUILD-UP WITHOUT DRIVING

Note:
Concrete in pile build-ups without driving shall be class A-1 concrete. Concrete in pile build-ups with driving shall have a minimum compressive cylinder strength fc of 5000 p.s.i. at 28 days. Build-ups may be driven if the specimen of concrete from which the piles were poured develops a strength of at least 3500 p.s.i. but not earlier than 7 days.

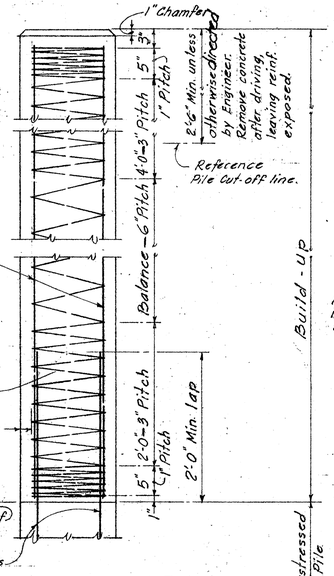
The minimum area of reinforcing steel shall be 1½% of the gross cross-section of concrete. Placement of bars shall be in a symmetrical pattern of not less than four bars.

#3 Gage wire spiral ties.

2" Clear cover

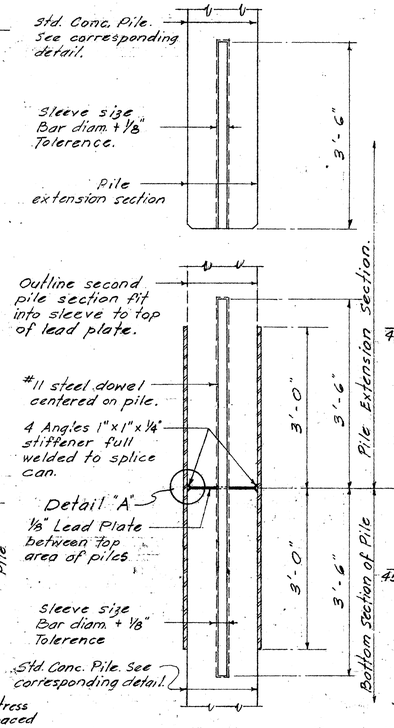
Concrete around top edge of pile shall be bushhammered to prevent feather edges.

Cont. stress relieved strands

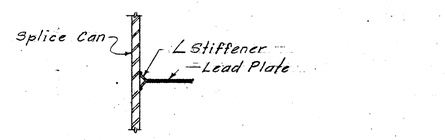


BUILD-UP WITH DRIVING

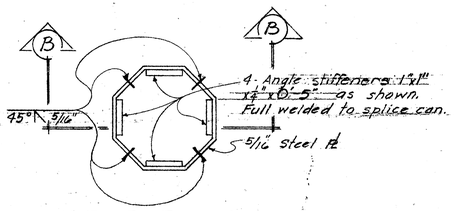
TYPICAL PILE BUILD-UP DETAILS



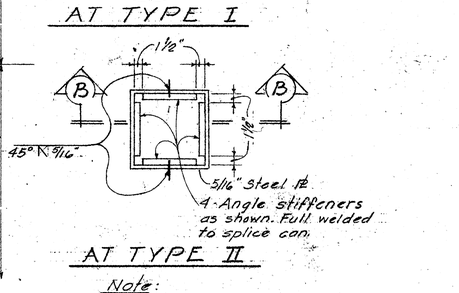
SECTION "B-B"



DETAIL "A"



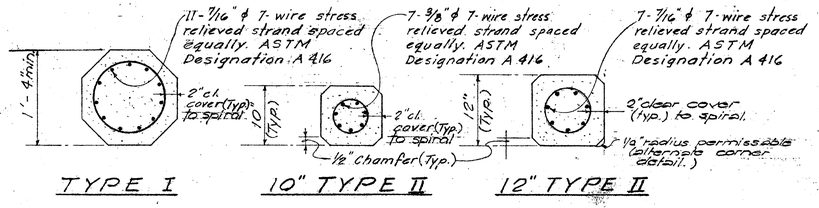
AT TYPE I



AT TYPE II

Note:
For permissible splice of concrete piles, see Special Provisions.

TYPICAL PILE SPLICE DETAILS
FOR PRECAST OR PRESTRESSED CONC. PILES WHEN CAST IN TWO OR MORE SECTIONS.

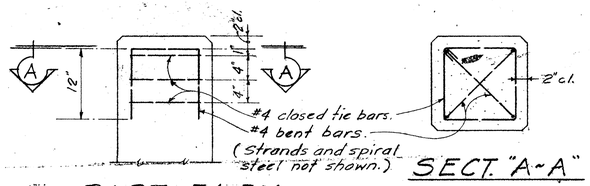


TYPE I 10" TYPE II 12" TYPE II

TYPICAL SECTIONS THRU PILES

Note:
Spiral reinforcement shall be cold-drawn steel wire ASTM A-82.

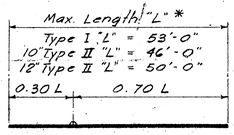
STANDARD PRESTRESSED CONCRETE PILES



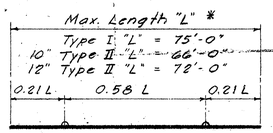
PART ELEV. SECT. "A-A"

PILE ENDS REINFORCING IN TYPE II PILES

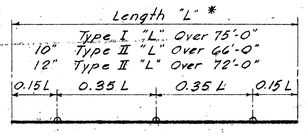
Note:
Unless special lifting devices are attached for pick-up, pick-up points shall be plainly marked on all piles after removal of the forms and all lifting shall be done at these points.
The use of special embedded or attached lifting devices, the employment of other pick-up points or any other method of pick-up shall be subject to approval by the Engineer.



1 POINT PICK-UP



2 POINT PICK-UP



3 POINT PICK-UP

* The length "L" is the distance end to end of pile.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PRESTRESSED CONCRETE PILES

Date: March 12, 1964

SHEET No. 59 OF 3 SHEETS

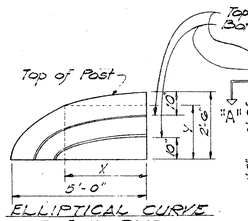
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
	TRACED BY	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
No.	CHECKED BY	"

TED ON CLEARPRINT 1000-H

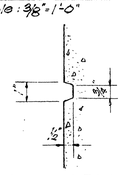
60

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	G1	75

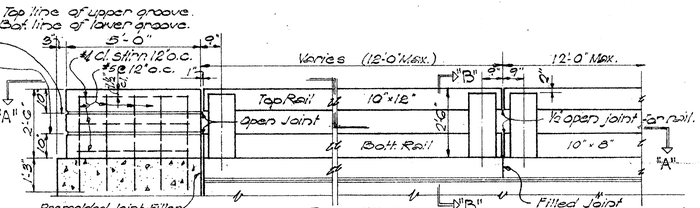
June '64



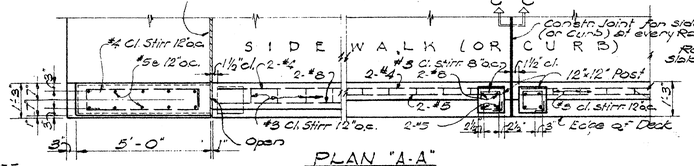
ELLIPTICAL CURVE AT END POST
Scale: 3/8"=1'-0"



END POST GROOVE DET.
Scale: 3"=1'-0"



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



PLAN "A-A"
Scale: 3/8"=1'-0"

Top of Post

X	0	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-3"	4'-6"	4'-9"	4'-10½"	5'-0"
Y	2'-6"	2'-5 3/8"	2'-4 5/8"	2'-3½"	2'-2"	2'-0"	1'-9 7/16"	1'-6"	1'-3 15/16"	1'-1 7/16"	0'-9 3/8"	0'-6 11/16"	0"

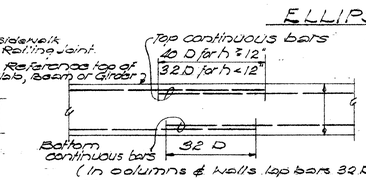
Top Line of Upper Groove

X	0	0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-3"	3'-6"	3'-9"	4'-0"	4'-1"	4'-2"
Y	1'-8"	1'-7 3/8"	1'-7 7/16"	1'-6 11/16"	1'-5 9/16"	1'-4"	1'-1 7/8"	1'-0½"	10 7/8"	8 1/16"	5 5/8"	4"	0"

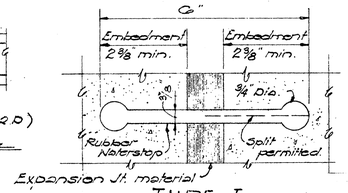
Bottom Line of Lower Groove

X	0	0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-2"	3'-3"	3'-4"			
Y	10"	9 7/8"	9 9/16"	8 15/16"	8"	6 5/8"	5 5/16"	4 3/8"	3 1/8"	2½"	0"		

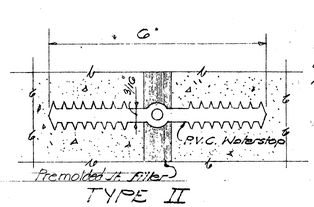
ELLIPSE COORDINATES



TYPICAL LAP DETAIL



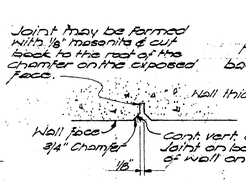
TYPE I

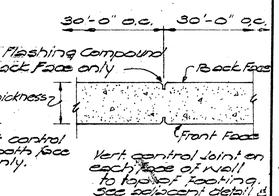


TYPE II

NOTE: For additional waterstop information see Special Provisions.

WATERSTOP DETAILS
Scale: Half Size

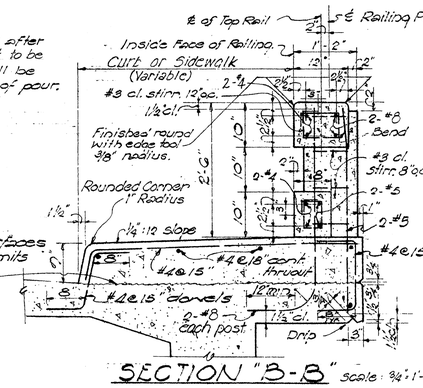




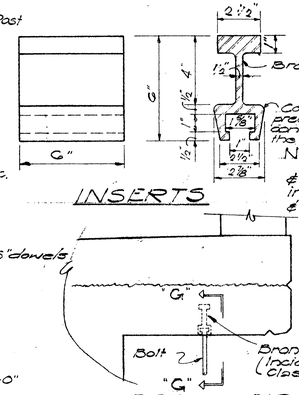
Vert. control joint on each face of wall to top of footing. See adjacent detail as directed by the Engineer.

TYPICAL CONTROL JOINT OR ALTERNATE CONTRACTION JT. DETAIL

NOTE:
Sidewalk, Curb and Railing to be poured after release of falsework. Forms for railing and end post to be made of plywood. Bottom forms for top rails shall be kept in place a minimum of 14 days from date of pour.

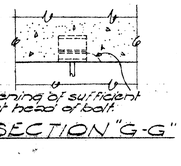


SECTION "B-B" Scale: ¾"=1'-0"



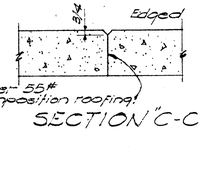
INSERTS

NOTE: Inserts, bolts, plates, nuts & washers to be bronze conforming to A.S.T.M. Designation B 22 & shall be class "D" grade.



SECTION "G-G"

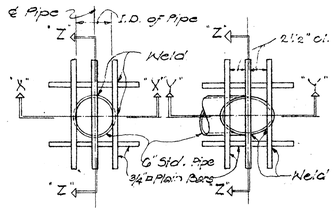
DETAIL OF PIPE HANGERS and INSERTS
Scale: ¾"=1'-0"

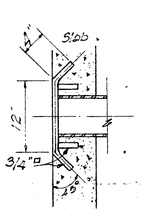


SECTION "C-C"

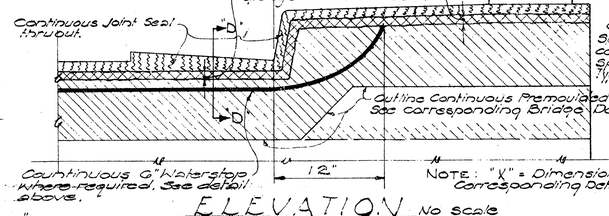
TYPICAL CONCRETE RAILING DETAILS Scale: As Noted

NOTE:
Metal drains shall be considered incidental to Class A-1 Concrete in both concrete and steel bridges and will not be paid for separately.
Assemblage of drillage and pipe shall be hot-dip galvanized after all welding is completed.



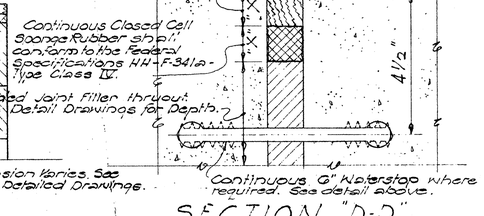


SECTION "Z-Z"



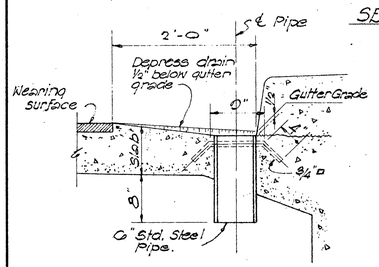
ELEVATION No scale

NOTE: "X" = Dimension Varies. See Corresponding Detailed Drawings.

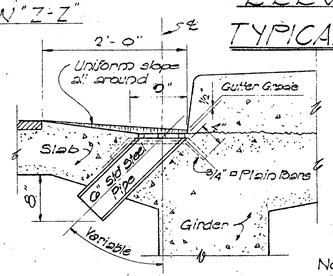


SECTION "D-D"

TYPICAL BRIDGE DECK EXPANSION JOINT DETAIL



SECTION "X-X"



SECTION "Y-Y"

TYPICAL DRAINAGE DETAILS Scale: 1"=1'-0"

Depressed "V" Letters ⅜" deep.

3" NAME — Use correct name of bridge. LEFT HAND SIDE

½" DATE — Date of Year built. RIGHT HAND SIDE

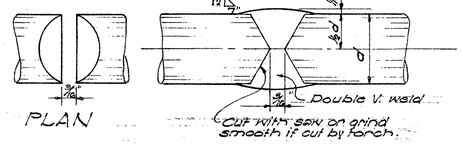
DETAIL of LETTERS & FIGURES AT BOTH APPROACHES

NOTE: Name of bridge to be placed in left end post panels & date in right post panels on entering bridge using modified block letters 3" in height. In case of stream crossings use name of stream for name of bridge. For all others use name as designated by the Engineer.

GENERAL NOTES

1 - Class of concrete to be used in different parts of the structure are as noted on plans.
2 - Clearance for reinforcing shall be as follows unless otherwise noted:
a - 1½" for stirrups of beams & pier caps.
b - 2" for ties of column
c - 2" for formed walls.
d - 3" for footings.
3 - Concrete seats receiving steel plates, lead plates or neoprene pads shall be poured monolithically with supporting structures & top surfaces of the concrete seats shall be finished with a steel trowel to a smooth level at the elevation shown on the plans.
4 - Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
5 - 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.
6 - Splicing of reinforcing shall be done as shown in above sketch except where shown otherwise. Splices are to be staggered. Splices in main bridge bars are permitted only in bars exceeding 60'-0" in length at points indicated by the Engineer. Splices to be electrically welded shall be according to detail & specifications. No allowance will be made in the quantities for extra weight of steel required for splices not shown on the plans.
Minimum spacing between parallel bars shall be 2½ times the diameter of bars, but in no case shall the clear distance between the bars be less than 1½ times the maximum size of the coarse aggregate.
All dimensions relating to reinforcing are to centers of bars unless otherwise noted.
7 - Forms for all exposed surfaces of separation structures including retaining walls (except round columns) shall be plywood. Forms for round columns shall be made of material that results in smooth finishes and true dimensions as shown on the plans. Forms for prestressed concrete members shall be either metal or plywood.
8 - Concrete finish - See Special Provisions.
9 - All welding shall conform to the latest Specifications for Welded Highway & Railway Bridge of the American Welding Society.
10 - Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.
11 - Except as otherwise noted on drawings all exterior corners & re-entrant angles in concrete work shall be chamfered ¾" x ¾". See Standard Specifications.

NOTE: Carbon content of reinforcing bars for welding shall not be over 0.40%. Low hydrogen electrodes E7015 or E7016 shall be used with preheat and interpass temperature not less than 200°F.



REINFORCING BAR SPLICE
Scale: Full Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD BRIDGE DETAILS

April 6, 1964

SHEET No. 5-2 OF 3 SHEETS

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

G1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6) UNIT 2	1965	62	75

2/9/65
3/22/65
4/1/65

AT BRIDGE END POST

AT RETAINING WALL END POST

**NOTE!
The contractor shall layout the railings to provide 3 continuous panels whenever possible. 2 or 4 continuous panels will be permitted to complete the layout when 3 continuous cannot be made. Single panels will not be permitted.

EXTERIOR RAILING ELEVATION

INTERMEDIATE

SECTION AT SKEW SCALE: 3/8"=1'-0"

AT BRIDGE END POST

INTERMEDIATE

AT RETAINING WALL END POST

PLAN OF RAILING

SIDEWALK CONSTR JT. DETAIL
SCALE: 3/8"=1'-0"

NOTE !!
Casting to be supplied with a std. scratch brush finish on surfaces indicated by an asterisk (*). Finish shall be approved by the Engineer. Cast Post mechanical properties must meet AASHO Specifications.

SIDE ELEVATION

END ELEVATION

TYPICAL RAIL POST DETAILS Scale: 3"=1'-0"

SECTION "C-C"

SECTION "D-D"

SECTION "B-B"

SECTION "A-A"

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

PLAN
1/2"=1'-0"

SECTION (P S-3) AT BRIDGE
Scale: 1/2"=1'-0"

SECTION (A S-3)
Scale: 1/2"=1'-0"

PLAN

TREATMENT OF RAILING AT SKEWED ENDS

ANCHOR PLATE
1"=1'-0"

ANCHOR BOLT DETAIL AT LIGHT STANDARD
1 1/2"=1'-0"

SECTION (P S-3) AT BRIDGE

SECTION (P S-3) AT RET. WALL

DETAILS OF RAILING AT LIGHT STANDARD ON BRIDGE

SIDE ELEVATION

PLAN

ANCHOR PLATE

TYPICAL ANCHOR BOLT ASSEMBLY FOR RAIL POST

NOTE!
METAL BRIDGE RAILING SHOWN IS FOR ALUMINUM BRIDGE RAILING. SEE SPECIAL PROVISIONS FOR ALTERNATE IN STEEL.

BOLT
NOTE: 1 1/8" N.C. Galvanized steel ASTM-A325 Anchor Bolts

WASHER

NOTE!
Toggle Bolt Mat'l - 1/2"-13 N.C. 1335 Rc - Steel heat treated Rc 32-38 ASTM-A354
Toggle Mat'l - 1015, H.R. steel Pickled and oiled round edge ASTM A108
Washer Mat'l - SAE 1020 HR STL PL ASTM-A7. Break sharp edges.
Nut 1/2"-13 Amer. hex. nut - Heavy Mat'l - 1035 C.R. STL. - Heat treated ASTM-A325
Cadmium plating on all Type NS. .0005" thick - ASTM-A165 (All parts)

SIDE ELEVATION-ASSEMBLAGE

TOP PLAN

TOGGLE BOLT DETAILS
Full Scale

RAIL CAP DETAIL Scale: 3/8"=1"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL BRIDGE RAILING
TRAFFIC TYPE

Scale: As Noted

SHEET No. S3 OF 3 SHEETS

62

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	" " "
No.	TRACED BY	" " "
	DESIGNED BY P.J.N.	
	QUANTITIES BY	
	CHECKED BY L.J.A.S.T.T.C.	