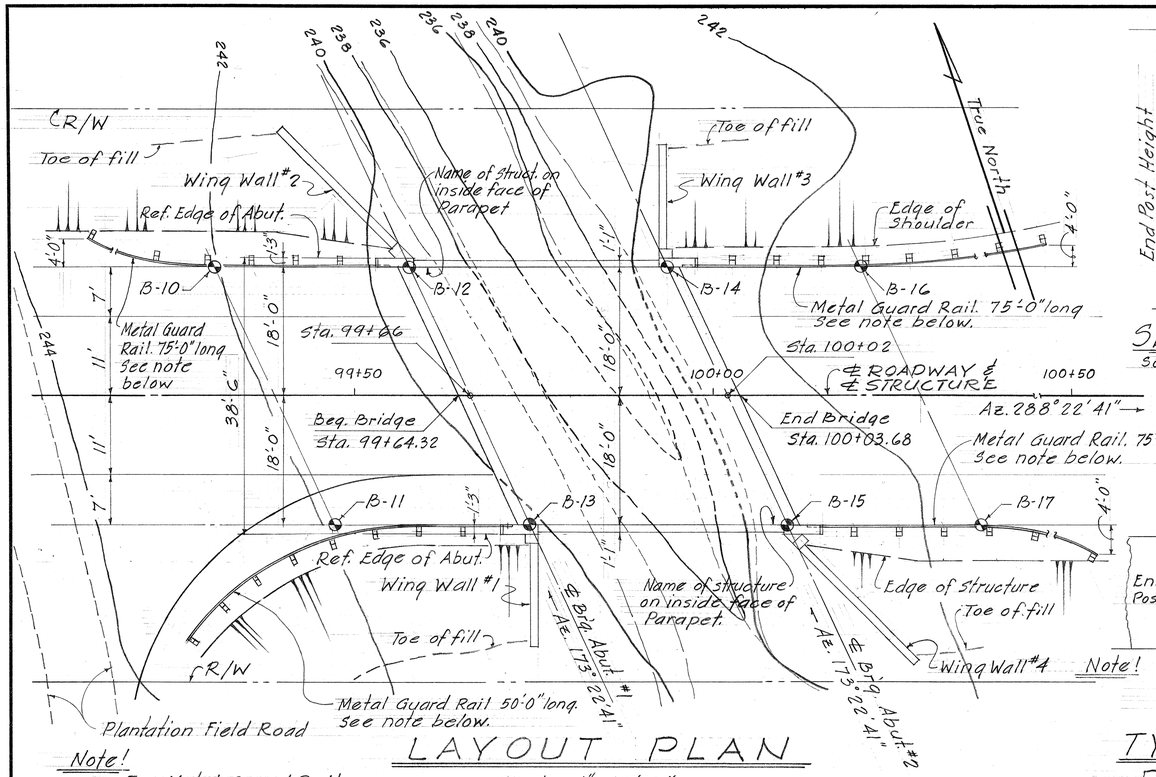
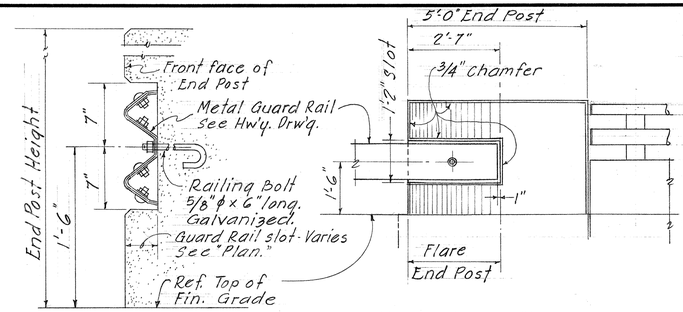



## LAYOUT PLAN

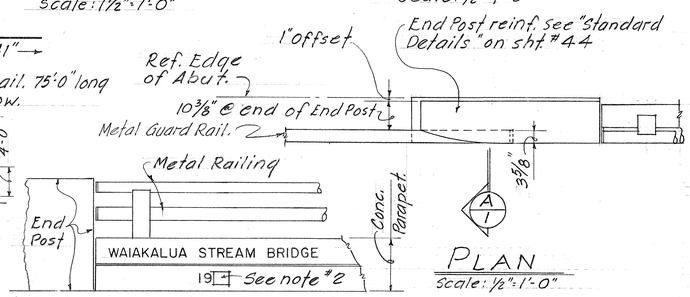
Scale: 1" = 10'-0"

**Note!** For Metal Guard Rail details, see Highway Drawings.




SECTION (A/1)
Scale: 1½" = 1'-0"

ELEVATION
Scale: ½" = 1'-0"




PLAN
Scale: ½" = 1'-0"

**Note!**
① Place name of structure as shown. See "Layout Plan" for location.
② Year shown will be year structure is completed.
③ Letter size & detail - See "Standard Bridge" drawing sht. #47

## TYP. GUARD RAIL CONNECTION DETAILS AT BRIDGE END POST

# GENERAL NOTES

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F-056-1(8) | 1967 | 34 | 64 |

**DESIGN LOAD:** HS 20-44

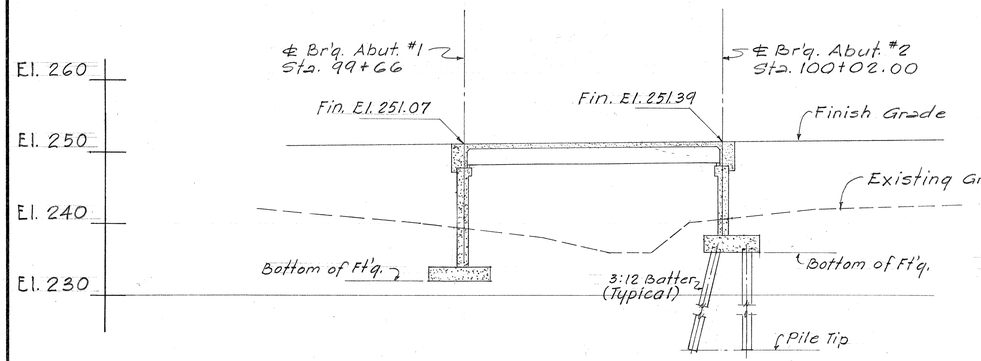
**DESIGN SPECIFICATIONS:**
AASHO Specifications for Highway Bridges (8th Edition with subsequent additions and modifications.)

**DESIGN STRESSES:**
R.C. Beams & Slabs. Except as otherwise noted, see AASHO Specifications and the Special Provisions.
f'c = 3000 p.s.i., fc = 1,200 p.s.i., n = 10, fs = 20,000 p.s.i.
Prestressed Girders
f'c = 5,500 p.s.i., f'ci = 4,000 p.s.i., ½" ϕ 7 wire strands
Tension Load = 25,200 lbs., Design Load = 20,160 lbs.

**MATERIALS:**
1. All concrete shall be Class A-1, except as otherwise noted on the plans. See Special Provisions for concrete for prestressed girders.
2. See Special Provisions for Admixture in concrete.
3. Neoprene Pads shall be incidental to prestressed beams and will not be paid for separately.

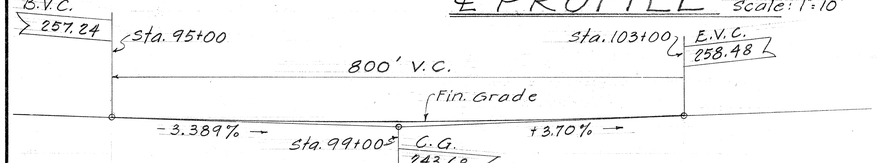
**CONSTRUCTION METHOD:**
1. See Standard Specifications and Special Provisions.
2. Over excavation beyond the elevations indicated on the plans for the bottom of ftgs for abutment #1 and wingwalls #1 & #2 shall be backfilled with a minimum of Class D concrete at the Contractor's expense and as directed by the Engineer.
3. All fill behind abutment & wingwalls shall be placed up to the shelf level before superstructure is placed.
4. See Special Provisions for concrete finish. Concrete seats shall be poured monolithically with abutment sections. Seats shall be finished, level and true to elevations.
5. Forms for prestressed concrete beams shall be removed and the beams inspected before the strands are cut.
6. Neoprene Pads shall be secured against displacement by adhesives, approved by the Engineer.

**REFERENCE:**
Refer to Standard Detailed Drawing sht. #42 thru #46 inclusive, for details not covered by these drawings.



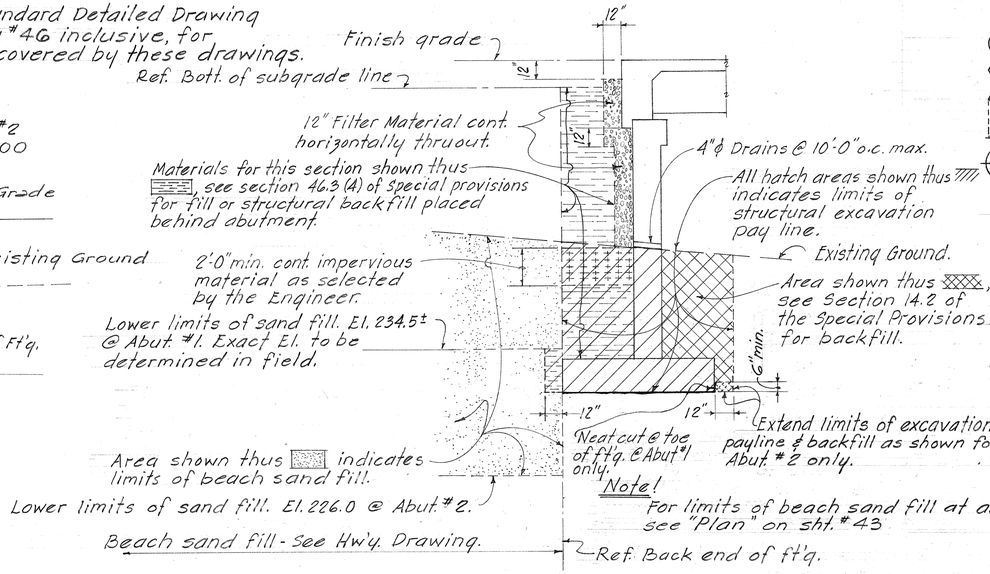

## ℄ PROFILE

Scale: 1" = 10'




## VERTICAL CURVE DATA

Scale: 1" = 100'




**Note!** For limits of beach sand fill at abutment, see "Plan" on sht. #43

## TYPICAL SECTION ABUTMENT EXCAVATION PAYLINE & BACKFILL

**Note!** WING WALL EXCAVATION PAYLINE & BACKFILL - See sht. #43. At CANTILEVERED WALLS. See "SECT. (B/2)."

## SYMBOLS

- Boring
- Vertical Type I P.C. Piles
- Battered Type I P.C. Piles
- Direction of batter
- (A/1) Section designation — Sheet number detail is drawn on.

## ESTIMATED QUANTITIES

| | |
|---|---|
| Concrete --- Lump Sum ( | 241.0 c.y.) |
| Reinf. Steel -- Lump Sum ( | 28,000 lbs.) |
| Structural Excavation | 315.0 c.y. |
| Filter Material | 46.0 c.y. |
| P.C. Girders --- Lump Sum ( | 186.0 lin.ft.) |
| Concrete Piles | 1,615.0 lin.ft. |
| Metal Railing | 71.0 lin.ft. |
| Concrete Parapet | 91.0 lin.ft. |

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# WAIAKALUA STREAM BRIDGE

Kauai Belt Rd. Kauai
Scale as shown Proj. No. F-056-1(8)
Date: May, 1967

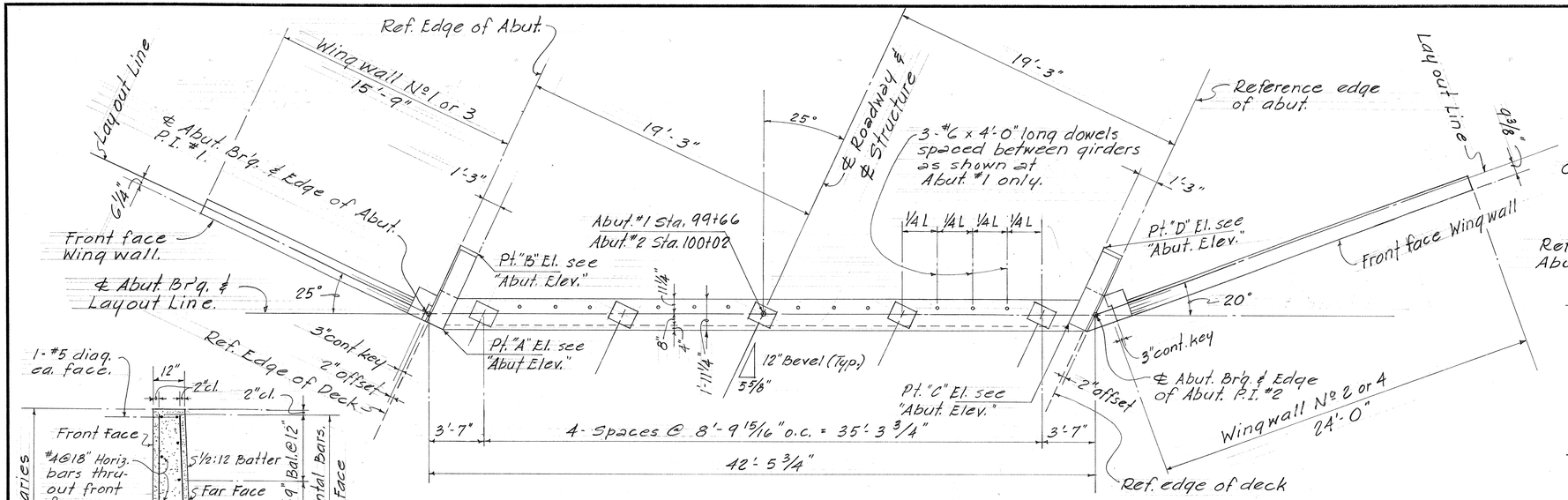
**SHEET No. 1 OF 8 SHEETS**

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE 5-67 |
|---|---|---|
| | DRAWN BY T.S. | " " |
| | TRACED BY | " " |
| | DESIGNED BY S.M.A. & M.I. | 7-67 |
| NOTE BOOK | QUANTITIES BY T.S. & M.I. | " " |
| No. | CHECKED BY H.L. & L.A. | " " |

PRINTED ON NO. 1000H CLEARPRINT

3 4

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F-056-1(8) | 1967 | 35 | 64 |




# TYPICAL ABUTMENT PLAN

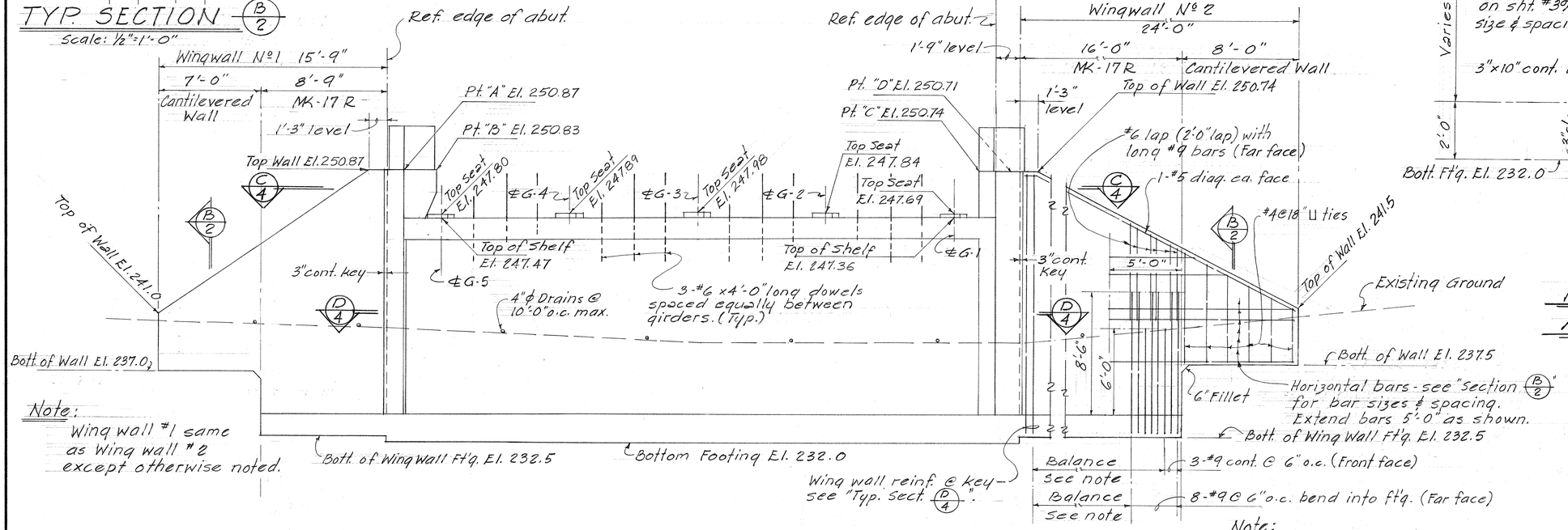
Scale: ¼"=1'-0"




Hatch area indicates limits of structural excavation payline. Backfill to be ordinary backfill.
℄ Ref. Bott. of Wall

# TYP. SECTION (B/2)

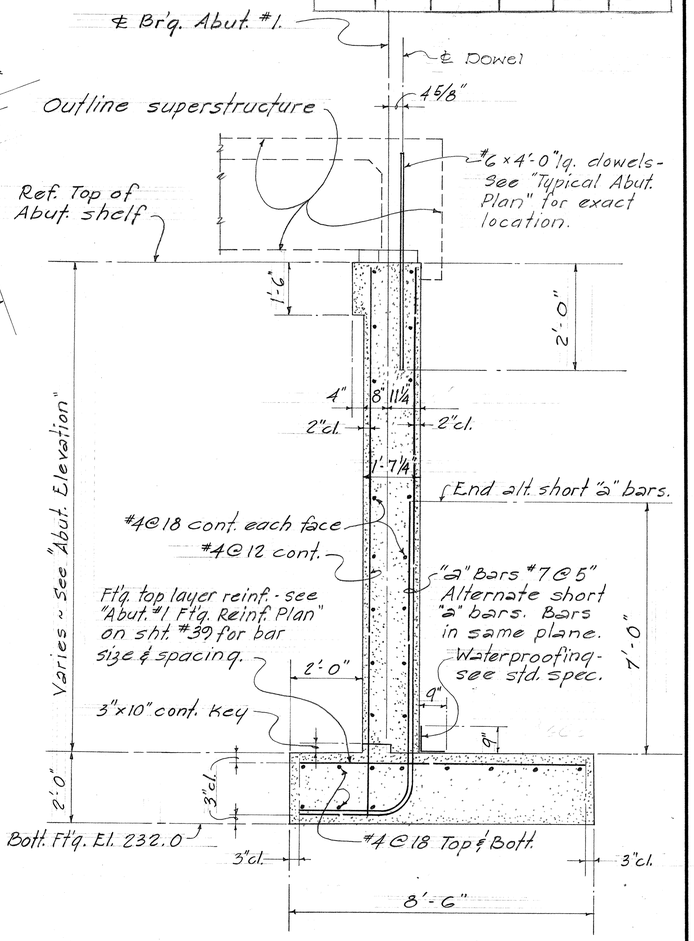
Scale: ½"=1'-0"




# ABUTMENT No 1 DEVELOPED ELEVATION

Scale: ¼"=1'-0"

Note: Except otherwise noted, wing wall to be standard T-1 wall. See "Standard Ret. Wall Type T-1" on sht. # 42 & 43.




# NORMAL SECTION ABUTMENT No 1

Scale: ½"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# WAIAKALUA STREAM BRIDGE

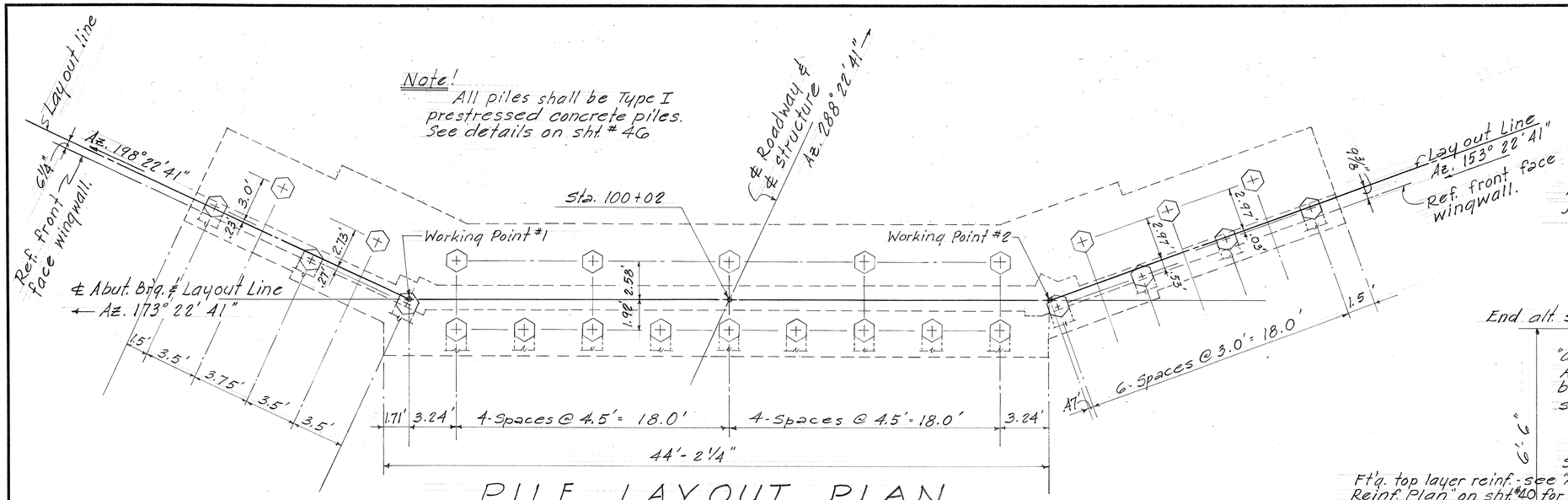
Kauai Belt Rd. Kauai
Scale as shown Proj. No. F-056-1(8)
Date: May, 1967

SHEET No. 2 OF 8 SHEETS

ORIGINAL PLAN
NOTE BOOK No.
SURVEY PLOTTED BY — DATE 5-67
DRAWN BY J.C.L.
TRACED BY
DESIGNED BY S.M.A. & M.T.
QUANTITIES BY J.C.L. & M.T.
CHECKED BY J.C.L. & S.M.A. 4-67

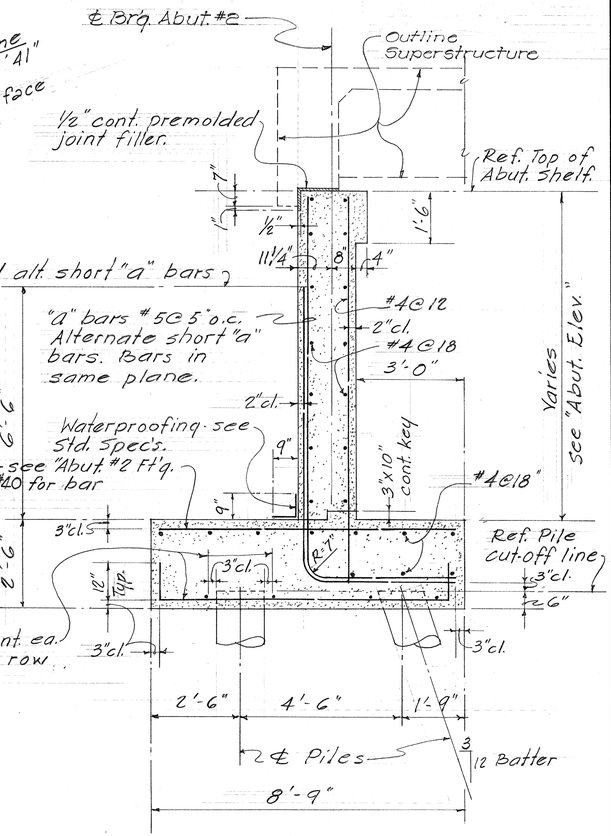
PRINTED ON NO. 1000H CLEARPRINT

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F056-1(8) | 1967 | 36 | 64 |



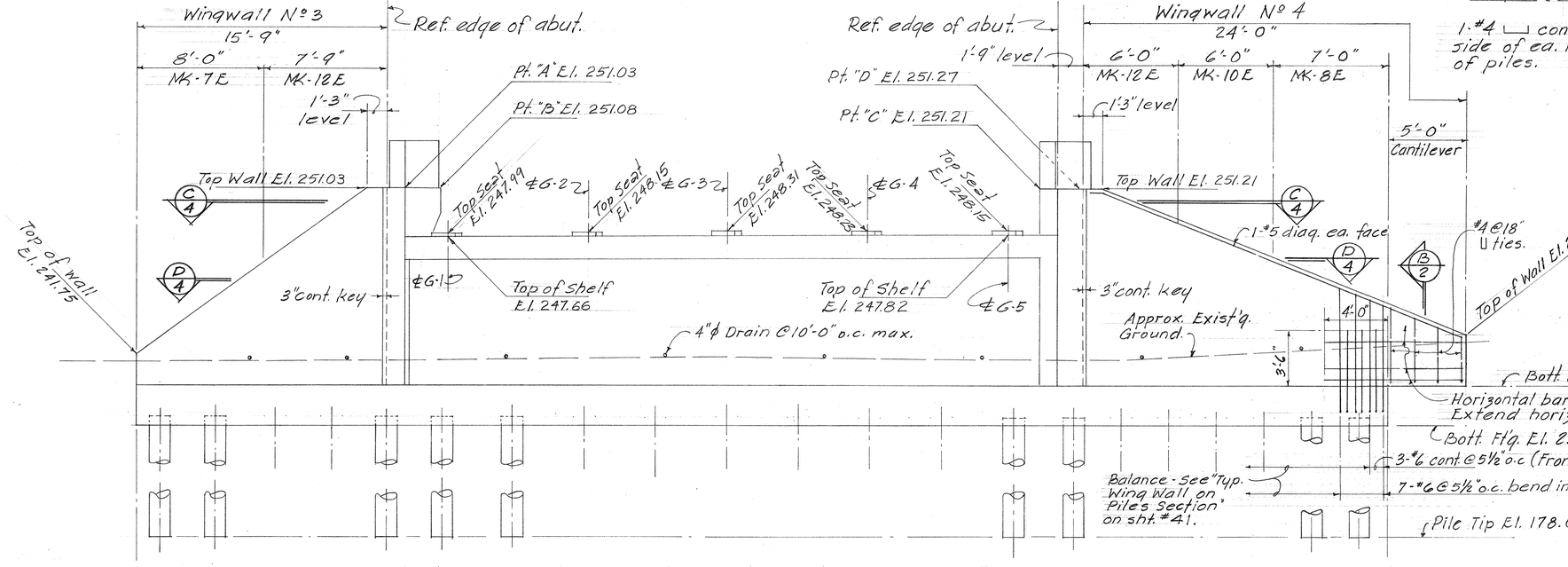

# PILE LAYOUT PLAN

Scale: ¼" = 1'-0"




# NORMAL SECTION ABUTMENT Nº 2

Scale: ½" = 1'-0"




# ABUTMENT Nº 2 DEVELOPED ELEVATION

Scale: ¼" = 1'-0"

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE 7-67 |
|---|---|---|
| | DRAWN BY T.S. | " " |
| | TRACED BY | " " |
| NOTE BOOK | DESIGNED BY S.M.A. & M.F. | 7-67 |
| | QUANTITIES BY T.S. & M.A. | |
| No. | CHECKED BY T.S. & M.A. | |

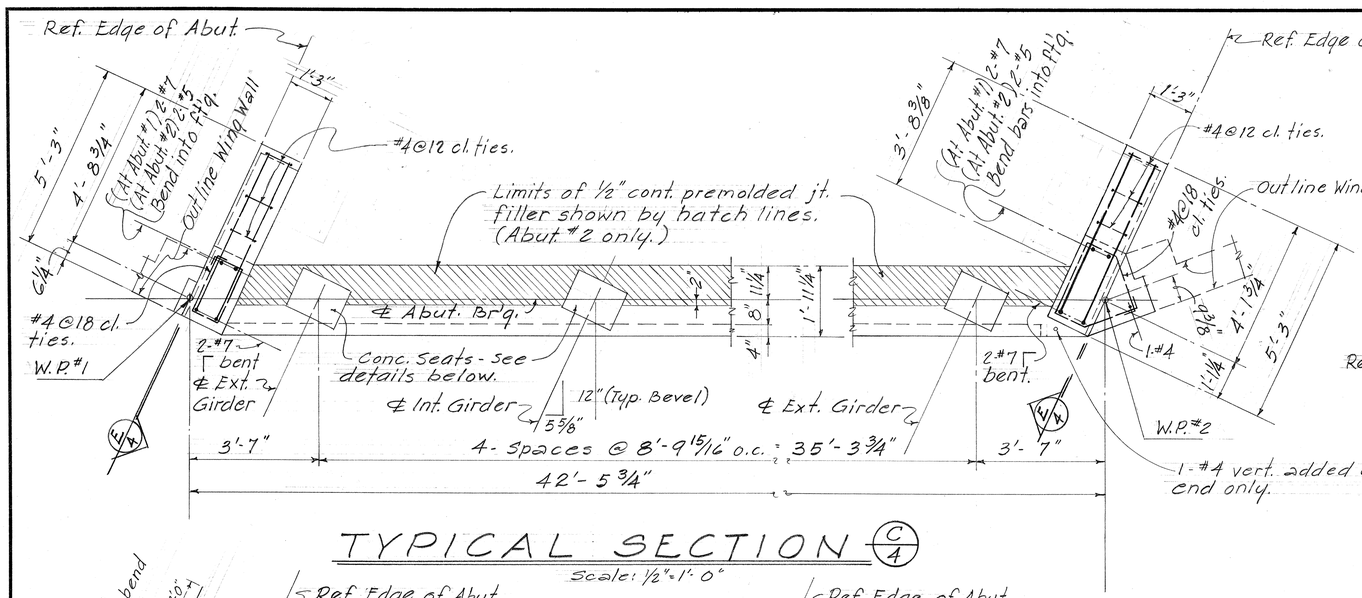
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# WAIAKALUA STREAM BRIDGE

Kauai Belt Rd. Kauai
Scale as shown Proj. Nº F-056-1(8)
Date: May, 1967

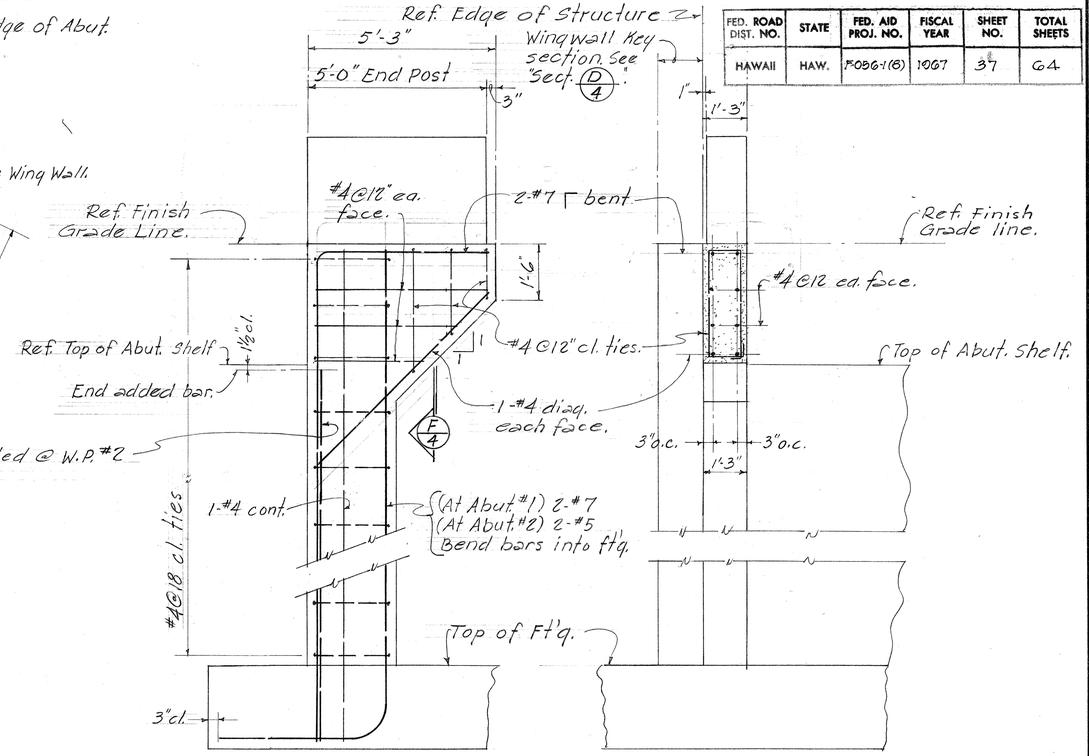
SHEET No. 3 OF 8 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F-056-1(8) | 1967 | 37 | 64 |




## TYPICAL SECTION (C/4)

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

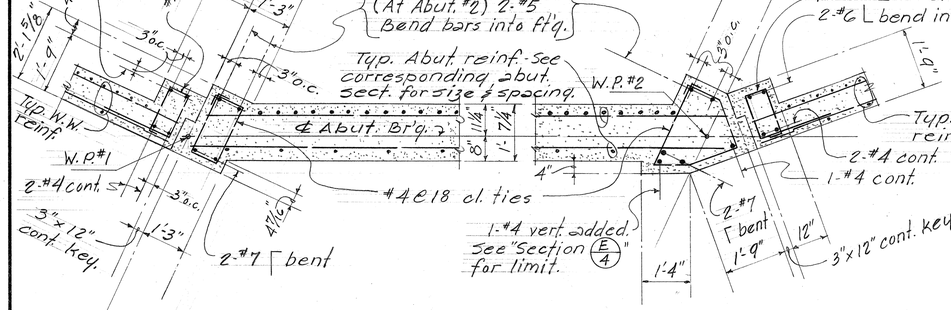



## SECTION (E/4)

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

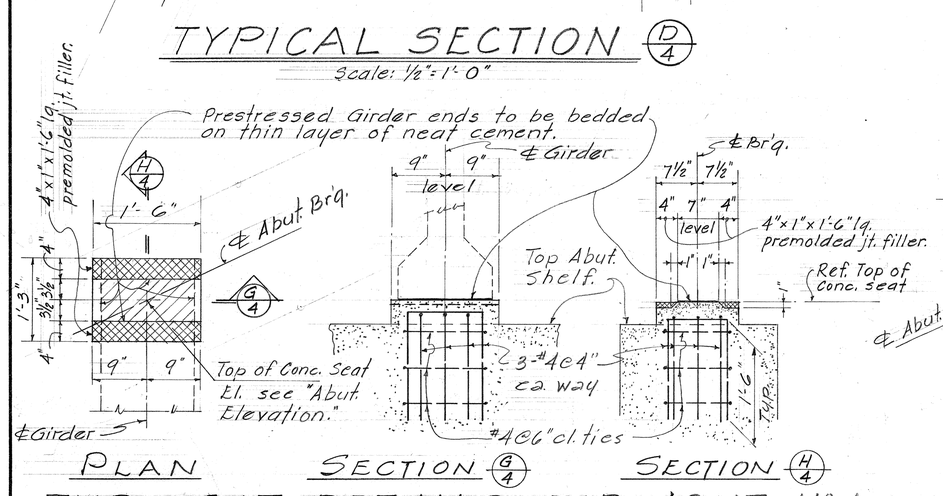
## SECTION (F/4)

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




## TYPICAL SECTION (D/4)

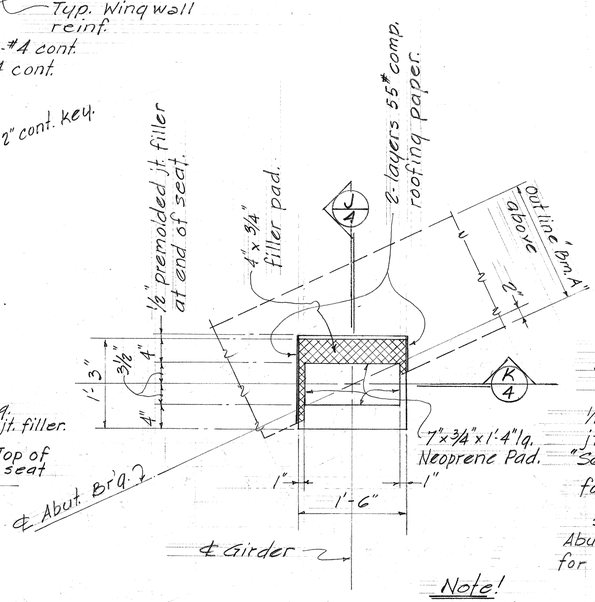
Scale: 1/2"=1'-0"




PLAN — SECTION (G/4) — SECTION (H/4)

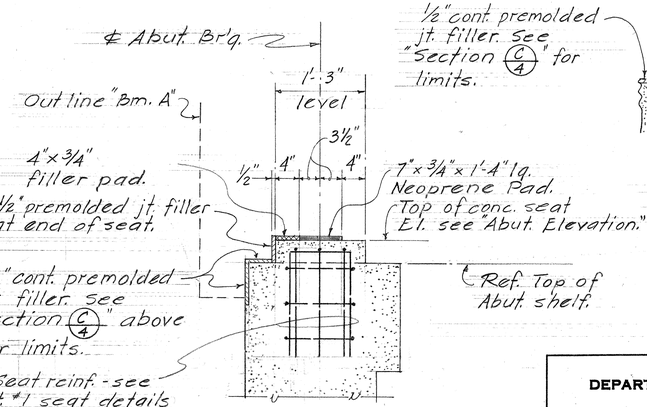
## TYP. SEAT DETAILS FOR ABUT. Nº 1

Scale: 1"=1'-0"

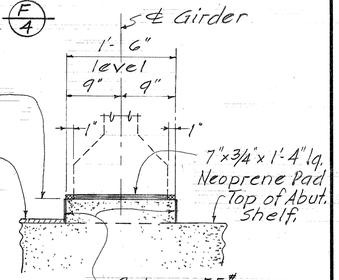



PLAN

Note! Neoprene pad may be non-laminated.




SECTION (J/4)




SECTION (K/4)

## TYP. SEAT DETAILS FOR ABUT. Nº 2

Scale: 1"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# WAIAKALUA STREAM BRIDGE

Kauai Belt Rd. Kauai

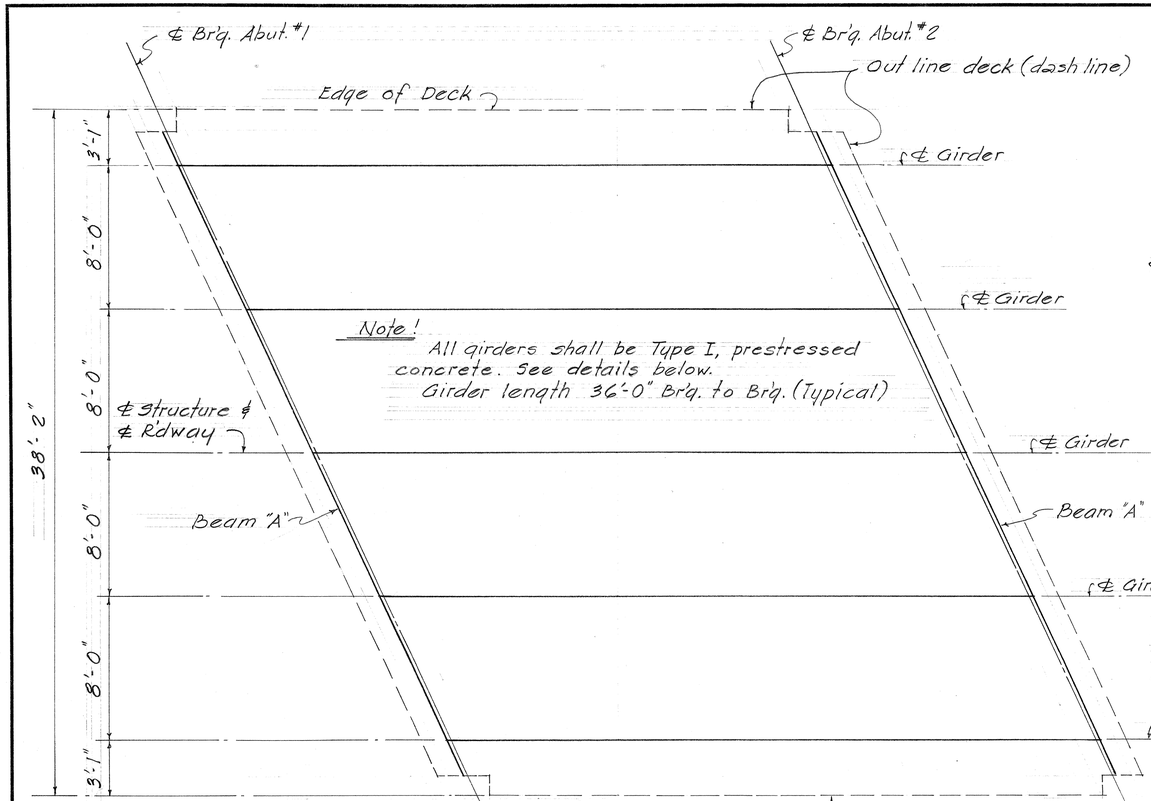
Scale as shown Proj. Nº F-056-1(8)

Date: May, 1967

SHEET No. 4 OF 8 SHEETS

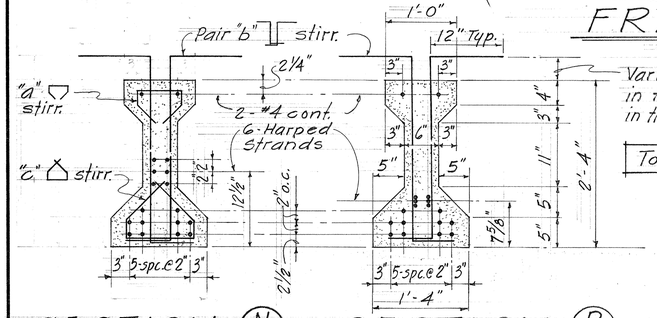
| ORIGINAL PLAN | | DATE |
|---|---|---|
| | SURVEY PLOTTED BY | 5/67 |
| | DRAWN BY F.S. | " |
| | TRACED BY | 2/67 |
| NOTE BOOK | DESIGNED BY E.M.A. & M.I. | " |
| | QUANTITIES BY F.S. & M.I. | " |
| No. | CHECKED BY H.C. & L.A. | " |

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F-056-1(8) | 1967 | 38 | 64 |




## FRAMING PLAN

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




Varies - Bent on "b" stirr. located in the deck slab may be done in the field. See "Normal Section."

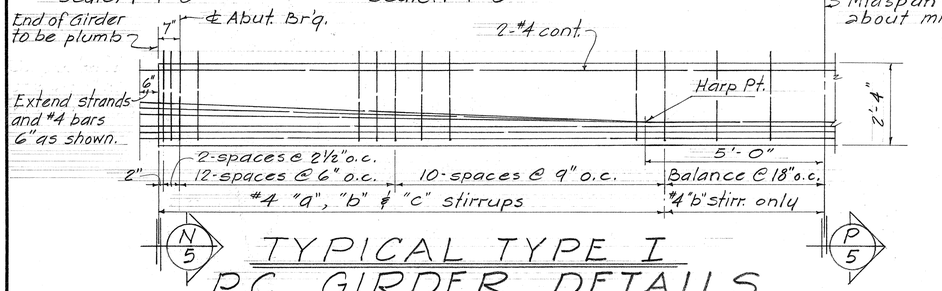
Total 16-½"ϕ Strands

## SECTION (N/5)

Scale: 1" = 1'-0"

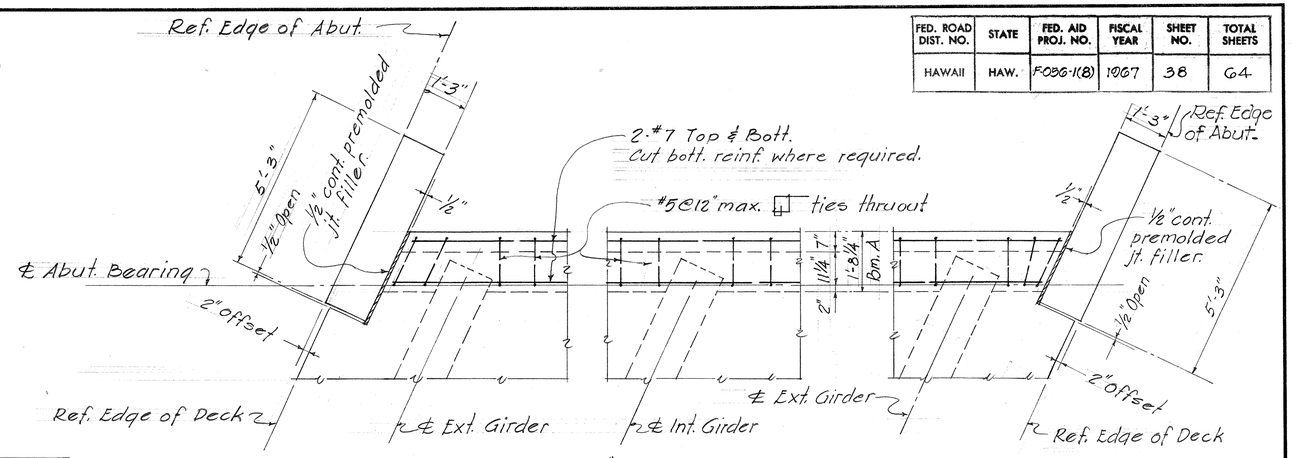
## SECTION (P/5)

Scale: 1" = 1'-0"



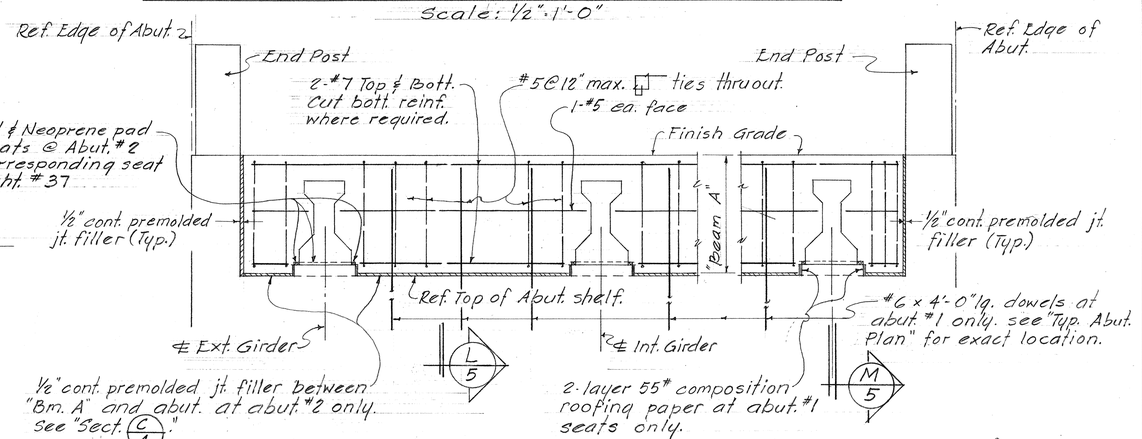

## TYPICAL TYPE I P.C. GIRDER DETAILS

Scale: ½" = 1'-0"



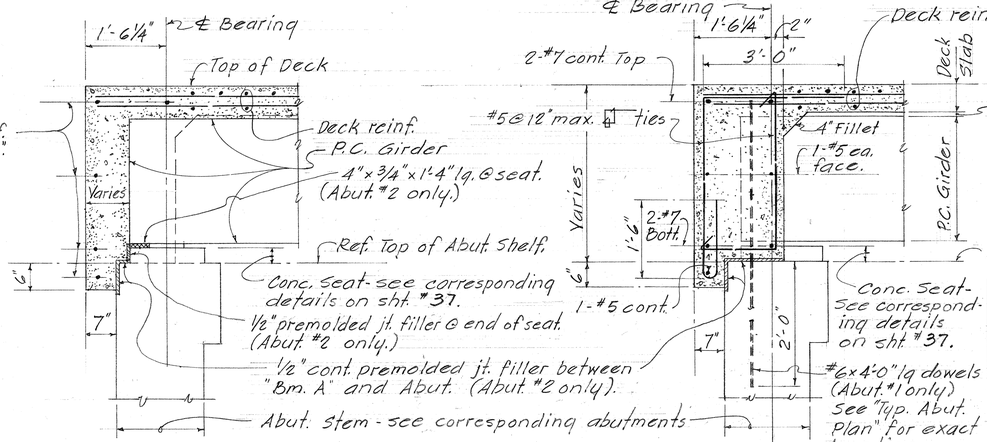

## TYP. "BEAM A" PART PLAN

Scale: ½" = 1'-0"




## "BM. A" ELEVATION ALONG ℄ ABUT. BR'G.

Scale: ½" = 1'-0"




## SECT. (M/5) @ GIRDERS

Scale: ¾" = 1'-0"

## TYP. SECT. (L/5)

Scale: ¾" = 1'-0"

| ORIGINAL PLAN | SURVEY PLOTTED BY | J.S. | DATE | 2-67 |
|---|---|---|---|---|
| | DRAWN BY | " " | | " " |
| | TRACED BY | " " | | " " |
| NOTE BOOK | DESIGNED BY | S.M.A. & M.T. | | 4-67 |
| No. | QUANTITIES BY | T.C. & M.A. | | |
| | CHECKED BY | T.C. & S.A. | | |

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# WAIAKALUA STREAM BRIDGE

Kauai Belt Rd. Kauai

Scale as shown Proj. No. F-056-1(8)

Date: May, 1967

SHEET No. 5 OF 8 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F056-1(8) | 1967 | 39 | 64 |

## BORING LOG

Scale: 1" = 10'-0"

**B-10**
El. 241.9 — Very soft brown clay.
El. 237.0 — Unweathered dense basaltic rock.
El. 235.4 — Slightly weathered dense basaltic rock.
El. 233.5 — Unweathered dense basaltic rock.
El. 222.0

**B-11**
El. 241.5 — Very soft brown clay.
El. 237.5 — Unweathered dense basaltic rock.
El. 224.8 — Moderately weathered dense basaltic rock.
El. 222.8 — Unweathered dense basaltic rock.
El. 220.5

**B-12**
El. 239.9 — Very soft brown clay.
El. 235.1 — Unweathered dense basaltic rock.
El. 219.9

**B-13**
El. 240.5 — Very solf brown clay.
El. 233.8 — Unweathered dense basaltic stone.
El. 231.5 — Unweathered dense basaltic rock.
El. 221.8 — Moderately weathered dense basaltic rock.
El. 219.5

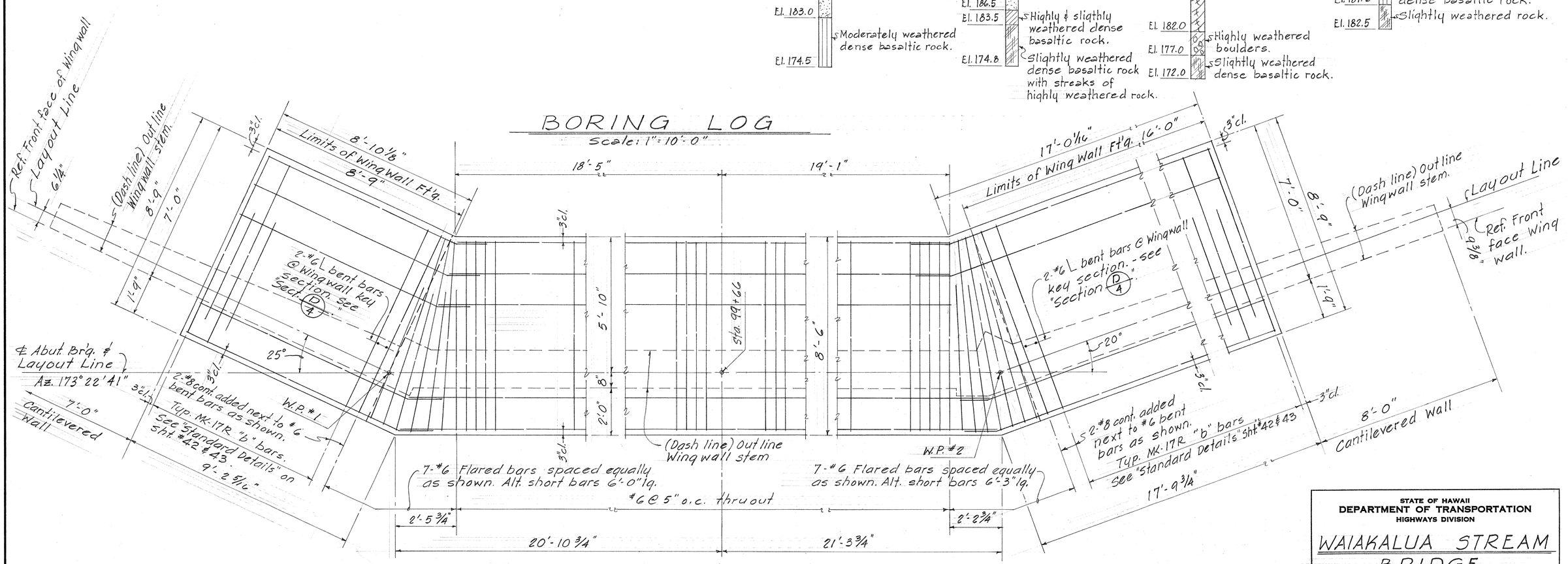
**B-14**
El. 241.0 — Solf brown clay
El. 235.8 — Very soft grey clay.
El. 230.4 — Soft brown clay
El. 225.8 — Firm brown clay
El. 213.3 — Stiff brown clay.
El. 183.0 — Moderately weathered dense basaltic rock.
El. 174.5

**B-15**
El. 240.8 — Soft brown clay.
El. 235.8 — Very soft grey clay.
El. 231.0 — Very soft brown clay.
El. 230.0 — Unweathered dense basaltic stone.
El. 229.7 — Very soft brown clay.
El. 226.8 — Very stiff brown clay.
El. 186.5 — Highly & slighly weathered dense basaltic rock.
El. 183.5 — Slightly weathered dense basaltic rock with streaks of highly weathered rock.
El. 174.8

**B-16**
El. 242.5 — Soft brown clay
El. 227.5 — Soft grey clay
El. 224.5 — Firm brown clay
El. 182.0 — Highly weathered boulders.
El. 177.0 — Slightly weathered dense basaltic rock.
El. 172.0

**B-17**
El. 243.3 — Soft brown clay
El. 278.3 — Firm brown clay
El. 208.3 — Stiff brown clay
El. 192.6 — Moderately weathered dense basaltic rock.
El. 187.6 — Slightly weathered rock.
El. 182.5

Reference El. 210.0




TOP LAYER

Note: Bottom layer reinf. - see sht. #40.

## ABUTMENT Nº1 FOOTING REINF. PLAN

Scale: ½" = 1'-0"

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE 5-67 |
|---|---|---|
| | DRAWN BY T.S. | |
| | TRACED BY | |
| NOTE BOOK | DESIGNED BY S.M.A. & M.F. | 7-67 |
| | QUANTITIES BY T.S. & M.F. | |
| No. | CHECKED BY T.C. & L.A.F. | |

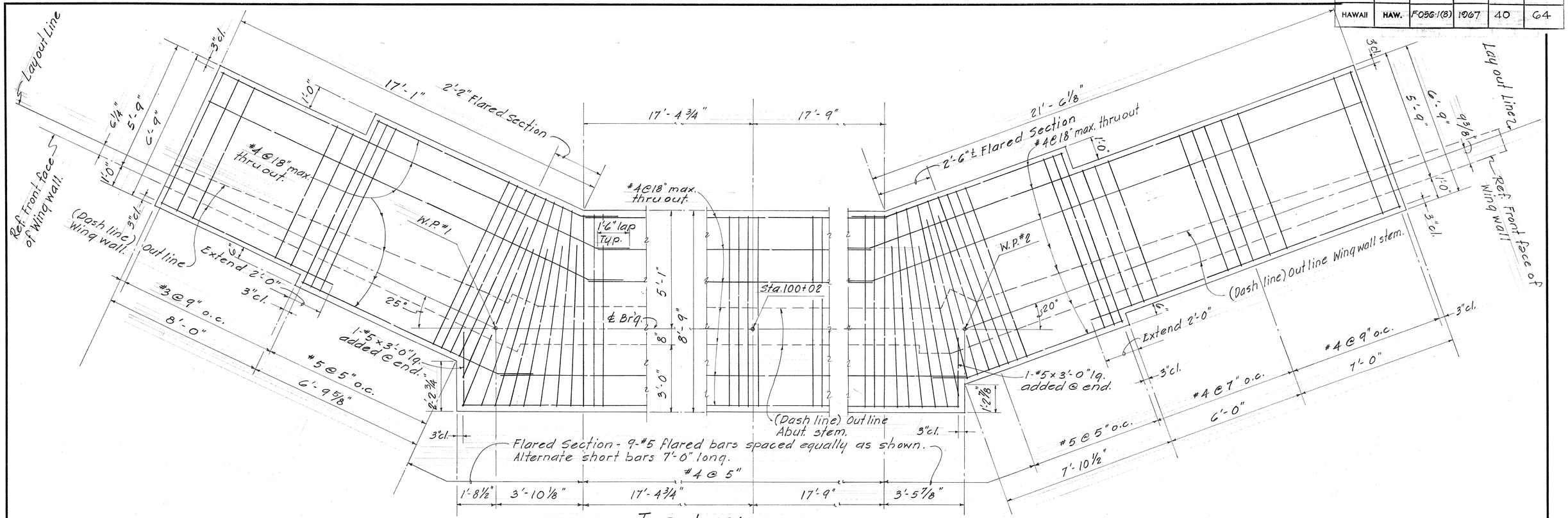
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAKALUA STREAM BRIDGE

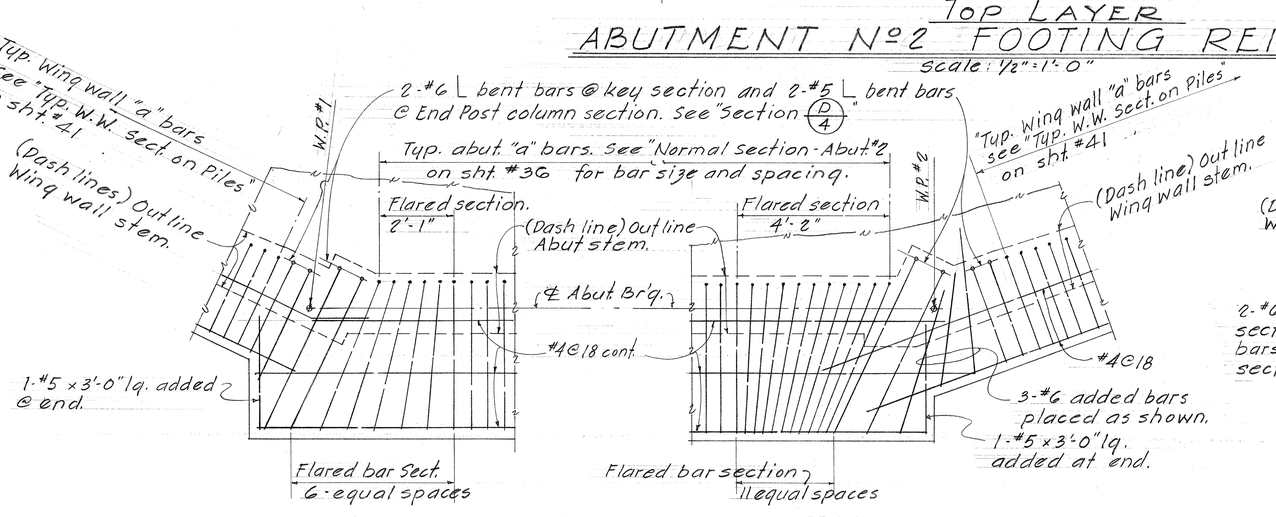
Kauai Belt Rd. Kauai
Scale as shown Proj. Nº F-056-1(8)
Date: May, 1967

SHEET No. 6 OF 8 SHEETS

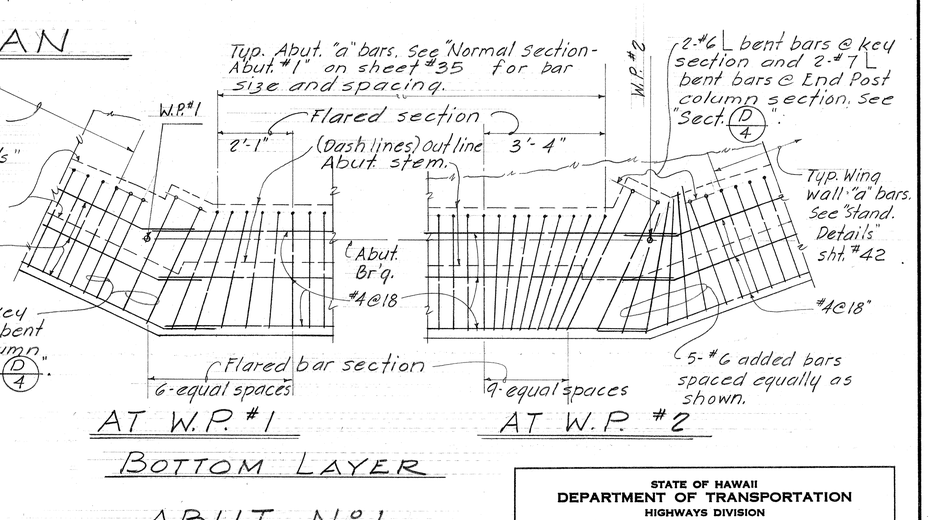
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F056-1(8) | 1967 | 40 | 64 |




## TOP LAYER
## ABUTMENT Nº2 FOOTING REINF. PLAN
scale: ½"=1'-0"




## BOTTOM LAYER
## ABUT. Nº2 FT'G. REINF. PART PLAN
Scale: ½"=1'-0"




## BOTTOM LAYER
## ABUT. Nº1 FT'G. REINF. PART PLAN
Scale: ½"=1'-0"

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE 5-67 |
|---|---|---|
| | DRAWN BY T.S. | " " |
| | TRACED BY | " " |
| NOTE BOOK | DESIGNED BY S.M.A. & M.I. | 7-67 |
| | QUANTITIES BY T.S. & A.I. | " " |
| No. | CHECKED BY V.C. & L.A. | " " |

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# WAIAKALUA STREAM BRIDGE

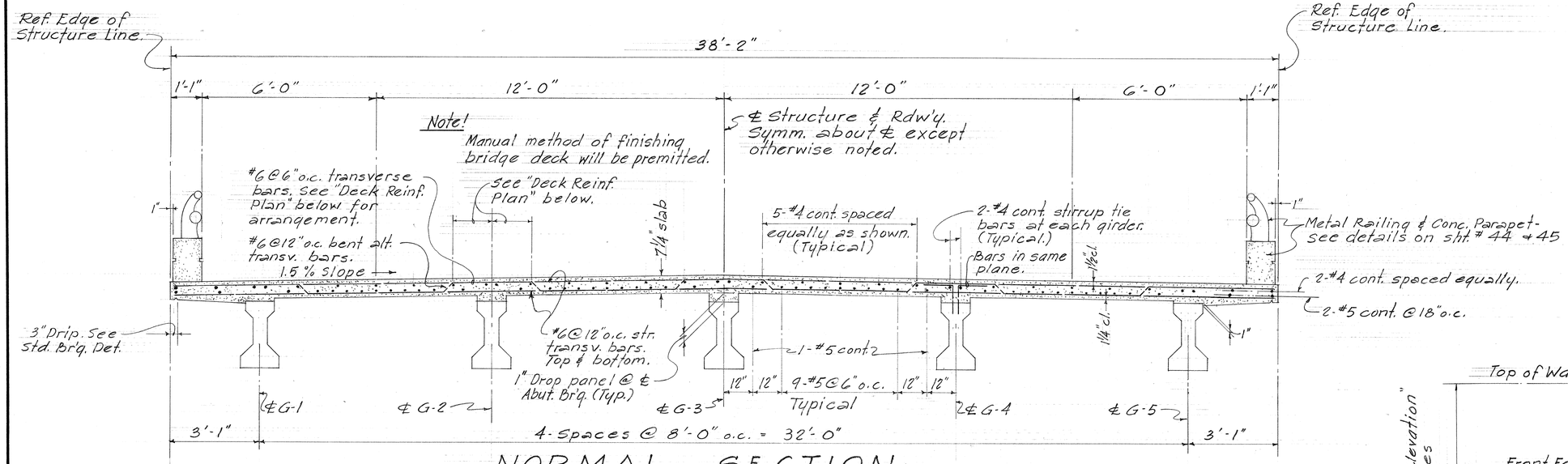
Kauai Belt Rd. Kauai

Scale as shown Proj. Nº F-056-1(8)

Date: May, 1967

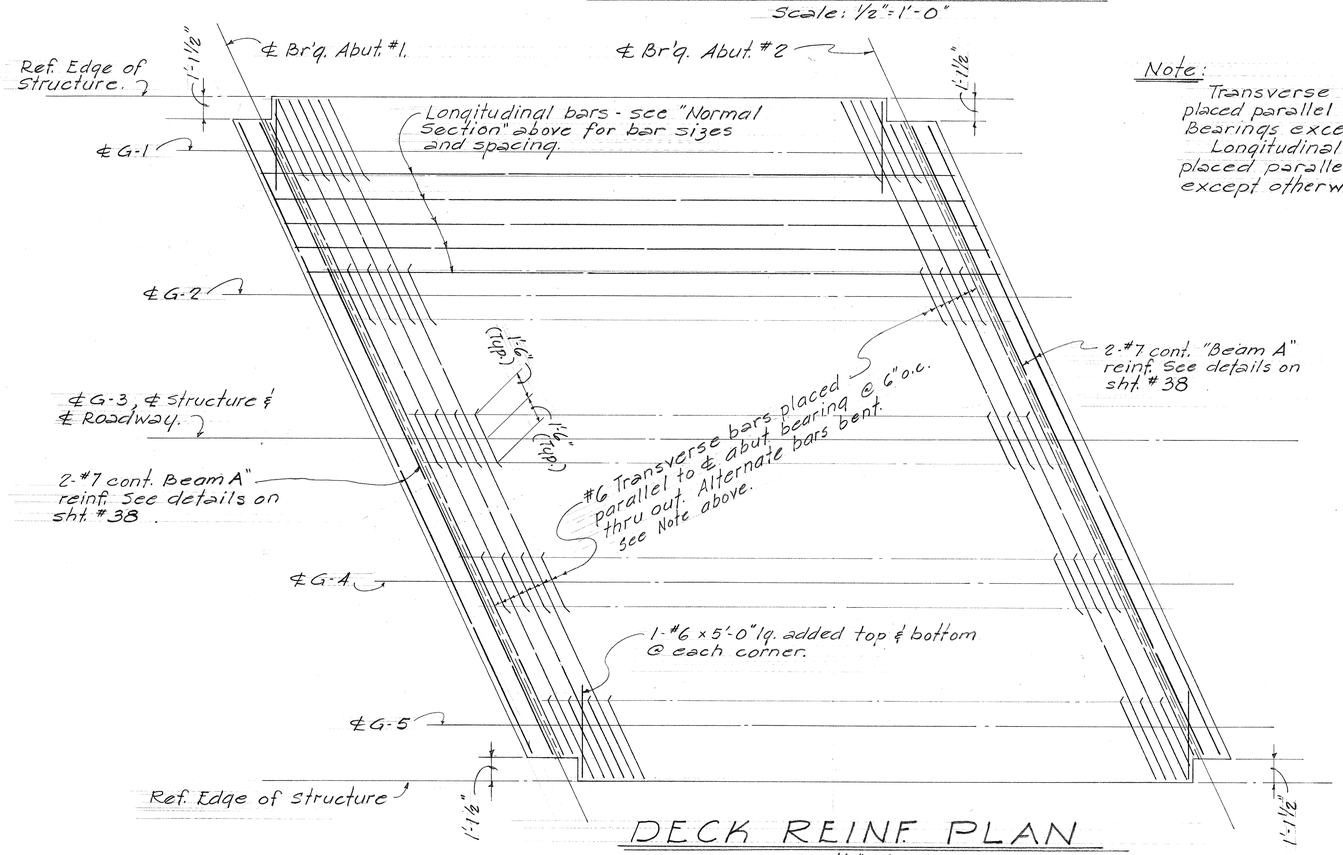
SHEET No. 7 OF 8 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F-056-1(8) | 1967 | 41 | 64 |




## NORMAL SECTION

Scale: ½"=1'-0"

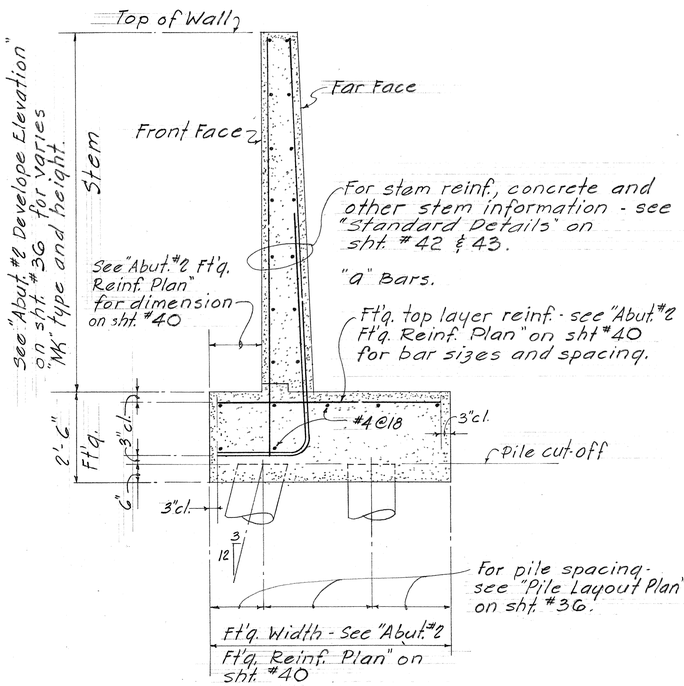



## DECK REINF. PLAN

Scale: ¼"=1'-0"

**Note:**

Transverse bars shall be placed parallel with ℄ Abutment Bearings except otherwise noted. Longitudinal bars shall be placed parallel to girders except otherwise noted.




## TYP. WING WALL ON PILES SECTION

Scale: ½"=1'-0"

| | |
|---|---|
| ORIGINAL PLAN | SURVEY PLOTTED BY: DATE 5-67 |
| | DRAWN BY F.S. " " |
| | TRACED BY " " " |
| NOTE BOOK | DESIGNED BY S.M.A. & M.I. 7-67 |
| | QUANTITIES BY F.S. & M.I. " |
| No. | CHECKED BY Y.C. & L.A. " |

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# WAIAKALUA STREAM BRIDGE

Kauai Belt Rd. Kauai

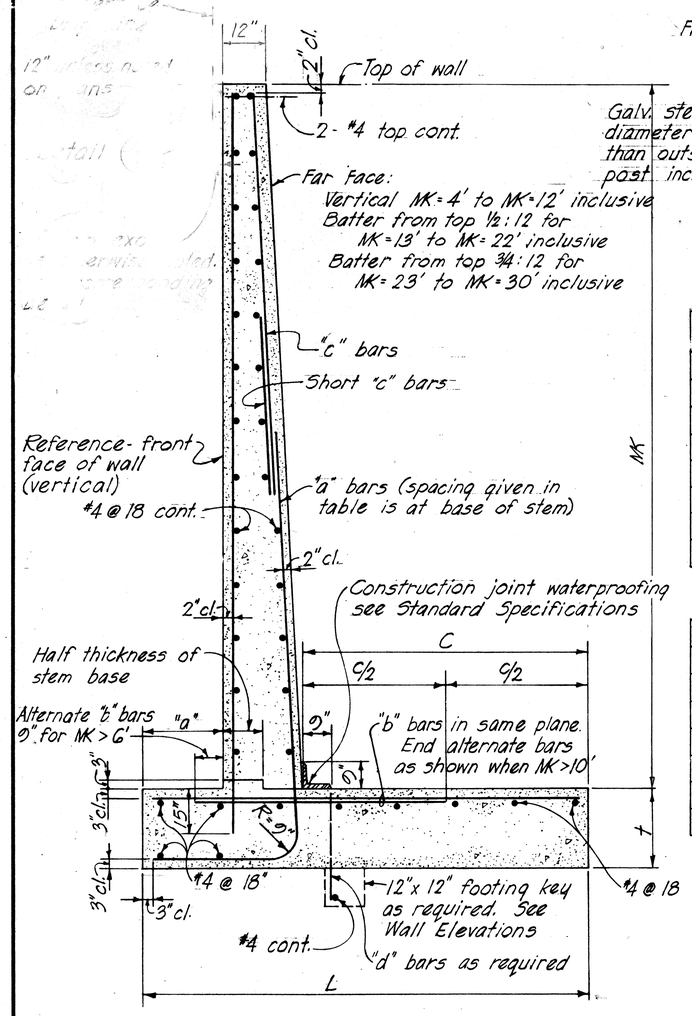
Scale as shown Proj. № F-056-1(8)

Date: May, 1967

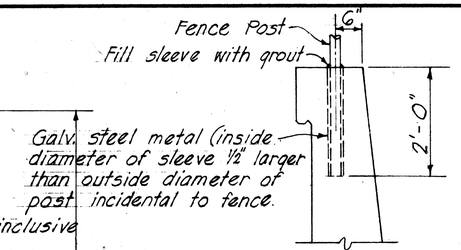
SHEET No. 8 OF 8 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F-056-1(8) | 1967 | 42 | 64 |

Revision - Dec. 1966
Revision - Jan. 1967




WALL SECTION

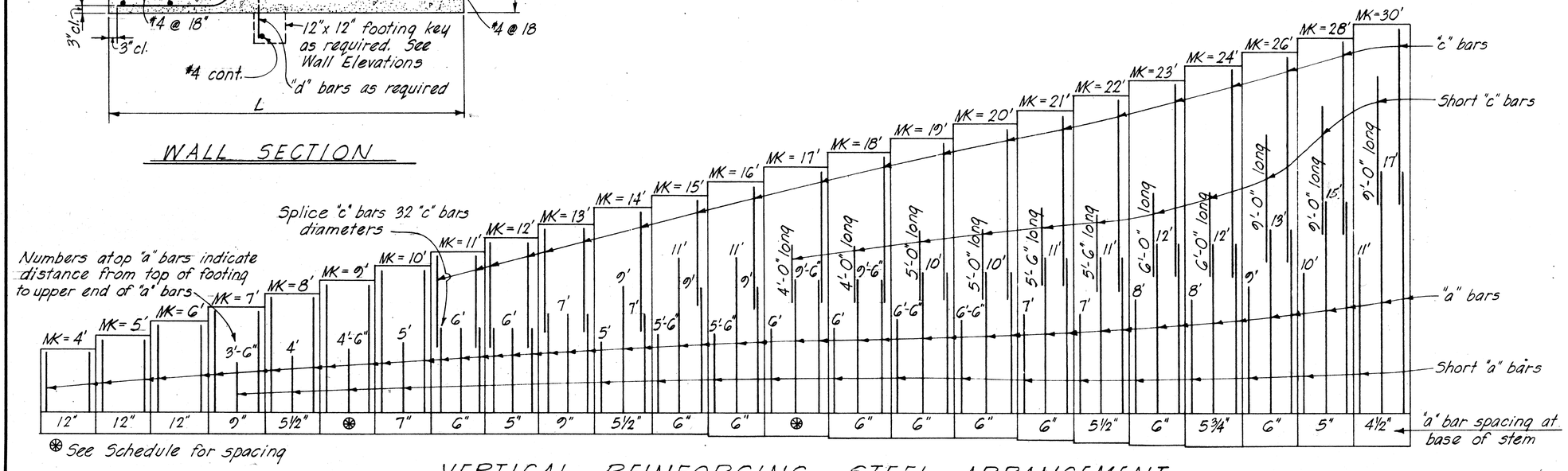



CHAIN LINK FENCE POST DETAIL

## SCHEDULE OF DIMENSIONS AND REINFORCING STEEL

| Maximum "MK" | 4E | 5E | 6E | 7E | 8E | 9E | 10E | 11E | 12E | 13E | 14E | 15E | 16E | 17E | 18E | 19E | 20E | 21E | 22E | 23E | 24E | 26E | 28E | 30E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a | 6" | 6" | 6" | 12" | 12" | 12" | 12" | 12" | 12" | 12" | 15" | 18" | 21" | 24" | 24" | 24" | 27" | 30" | 33" | 36" | 39" | 54" | 60" | 72" |
| t | 14" | 14" | 14" | 14" | 14" | 14" | 14" | 18" | 18" | 18" | 18" | 18" | 21" | 21" | 24" | 24" | 24" | 27" | 30" | 31" | 33" | 36" | 39" | 42" |
| L | 2.5' | 3.0' | 3.5' | 4.0' | 4.5' | 5.0' | 5.5' | 6.0' | 6.5' | 7.0' | 7.75' | 8.25' | 9.0' | 9.75' | 10.5' | 11.5' | 12.5' | 13.5' | 14.5' | 15.25' | 16.0' | 18.0' | 20.0' | 21.0' |
| "a" bars | #3@12" | #3@12" | #4@12" | #4@9" | #4@5½" | #5@7" | #6@7" | #6@6" | #6@5" | #7@9" | #6@5½" | #7@6" | #8@6" | #8@5¾" | #9@6" | #9@6" | #10@6" | #10@6" | #10@5½" | #10@6" | #10@5¾" | #11@6" | #11@5" | #11@4½" |
| "b" bars | #3@12" | #3@12" | #3@12" | #3@9" | #4@11" | #4@7" | #5@7" | #5@6" | #5@5" | #7@9" | #6@5½" | #7@6" | #8@6" | #7@5¾" | #8@6" | #9@6" | #10@6" | #10@6" | #10@5½" | #10@6" | #10@5¾" | #11@6" | #11@5" | #11@4½" |
| "c" bars | | | | | | | | #4 | #4 | #4 | #4 | #4 | #5 | #5 | #5 | #6 | #6 | #6 | #7 | #7 | #7 | #7 | #7 | #7 |
| "d" bars | #3@12" | #3@12" | #3@12" | #3@12" | #4@18" | #4@15" | #4@15" | #4@12" | #4@11" | #4@9" | #5@12" | #5@12" | #5@10" | #5@9" | #5@9" | #5@8" | #6@10" | #6@9" | #7@12" | #7@11" | #7@10" | #7@ | #7@ | #7@6" |

| Maximum "MK" | 4R | 5R | 6R | 7R | 8R | 9R | 10R | 11R | 12R | 13R | 14R | 15R | 16R | 17R | 18R | 19R | 20R | 21R | 22R | 23R | 24R | 26R | 28R | 30R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a | 6" | 6" | 6" | 12" | 12" | 12" | 12" | 12" | 12" | 12" | 15" | 18" | 21" | 21" | 21" | 21" | 24" | 24" | 27" | 30" | 33" | 39" | 39" | 51" |
| t | 14" | 14" | 14" | 14" | 14" | 14" | 14" | 18" | 18" | 18" | 18" | 18" | 18" | 18" | 18" | 21" | 21" | 21" | 21" | 24" | 24" | 27" | 30" | 36" |
| L | 2.5' | 3.0' | 3.5' | 4.0 | 4.5' | 5.0' | 5.5' | 6.0' | 6.5' | 6.75 | 7.25' | 7.75 | 8.25' | 8.75' | 9.25' | 9.75' | 10.25' | 10.5' | 11.0' | 11.5' | 12.0' | 13.0' | 14.0' | 15.0' |
| "a" bars | #3@12" | #3@12" | #4@12" | #4@9" | #4@5½" | #5@6" | #6@7" | #6@6" | #6@5" | #7@9" | #6@5½" | #7@6" | #8@6" | #8@6" | #9@6" | #9@6" | #10@6" | #10@6" | #10@5½" | #10@6" | #10@5¾" | #11@6" | #11@5" | #11@4½" |
| "b" bars | #3@12" | #3@12" | #3@12" | #3@9" | #4@11" | #4@6" | #5@7" | #5@6" | #5@5" | #7@9" | #6@5½" | #7@6" | #7@6" | #8@6" | #9@6" | #9@6" | #10@6" | #10@6" | #10@5½" | #10@6" | #10@5¾" | #10@6" | #10@5" | #9@4½" |
| "c" bars | | | | | | | | #4 | #4 | #4 | #4 | #4 | #5 | #5 | #5 | #6 | #6 | #6 | #7 | #7 | #7 | #7 | #7 | #7 |
| "d" bars | #3@12" | #3@12" | #3@12" | #3@12" | #4@18" | #4@15" | #4@15" | #4@12" | #4@11" | #4@9" | #5@12" | #5@12" | #5@10" | #5@9" | #5@9" | #5@8" | #6@10" | #6@9" | #7@12" | #7@11" | #7@10" | #7@ | #7@ | #7@6" |




⊛ See Schedule for spacing

VERTICAL REINFORCING STEEL ARRANGEMENT

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

RETAINING WALL TYPE T-1

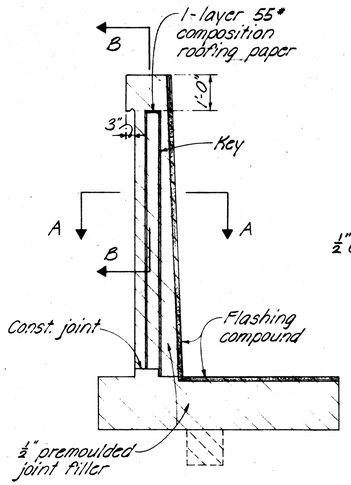
SCALE AS NOTED DATE: JUNE 1967

SHEET No. 51 OF 64 SHEETS

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

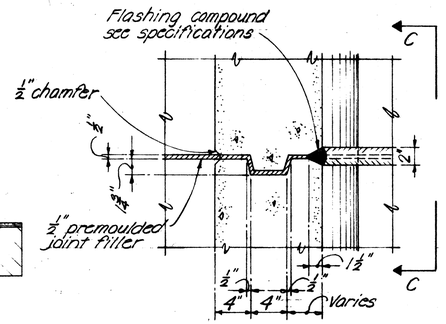
PRINTED ON NO. 1000H CLEARPRINT

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F-056-1(8) | 1967 | 43 | 64 |

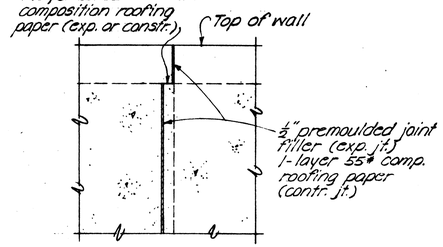



JOINT ELEVATION

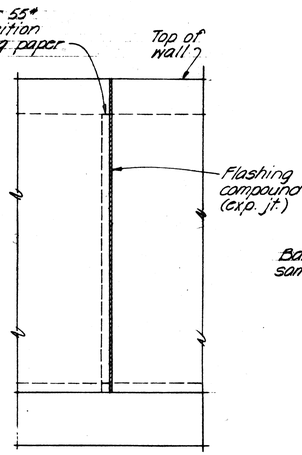
NOTE
Spacing of joints
Exp. = 90'-0" max.
Contr. = 30'-0" max.
For alternate contraction joint and control joint details - see Standard Bridge Details.




SECTION A-A



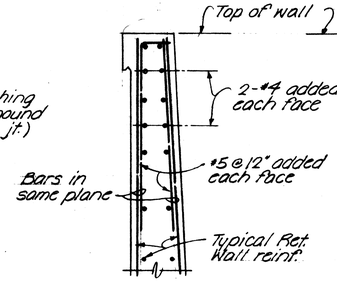

SECTION B-B



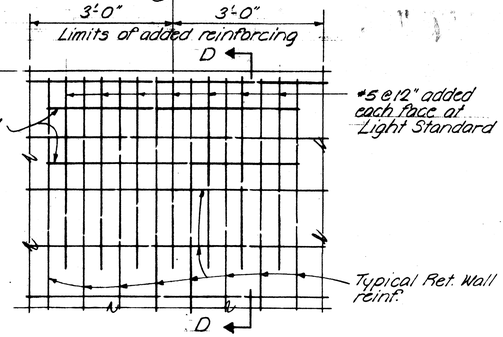

SECTION C-C

TYPICAL EXPANSION JOINT DETAILS No Scale

NOTE:
Limits of added reinf.
Height 0'-18' L = h/2 - 0"
Height 19'-30' L = G - 0"

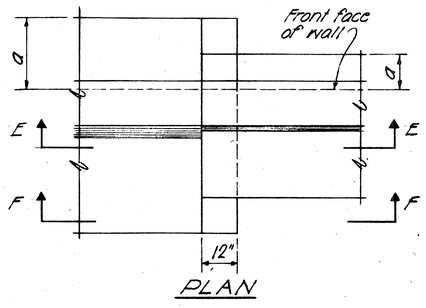



SECTION D-D

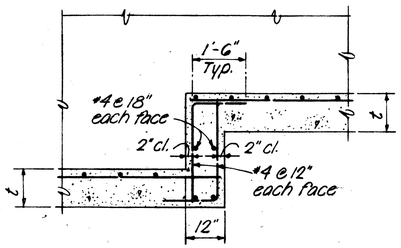



ELEVATION

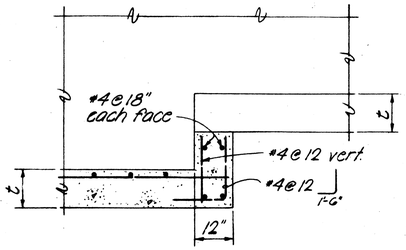
TYPICAL ADDED REINFORCEMENT AT LIGHT STANDARD BASE No Scale




PLAN



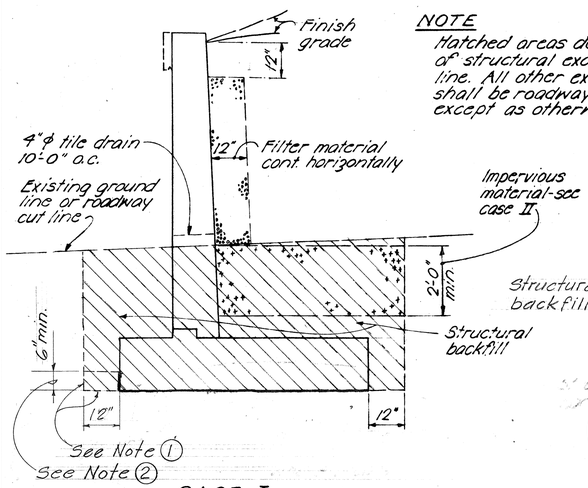

SECTION E-E



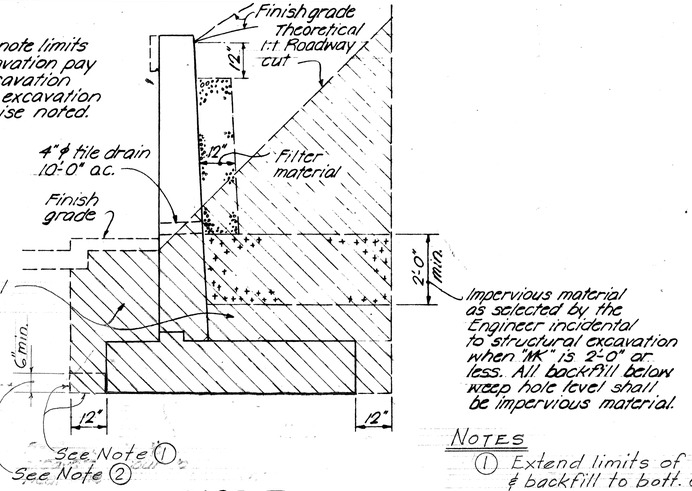

SECTION F-F

FOOTING STEP-UP DETAILS No Scale

NOTE
Hatched areas denote limits of structural excavation pay line. All other excavation shall be roadway excavation except as otherwise noted.

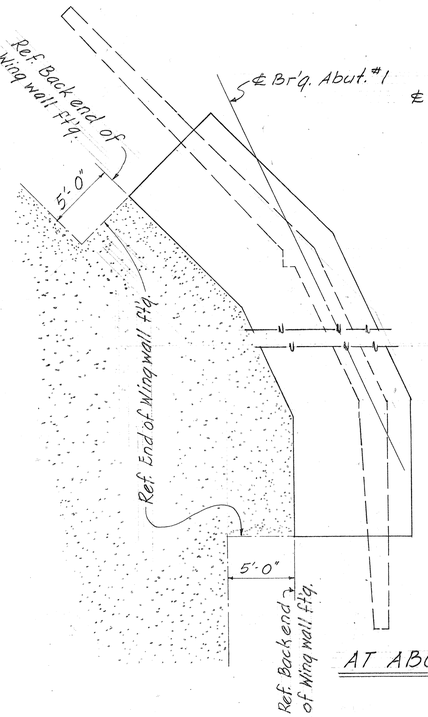



CASE I

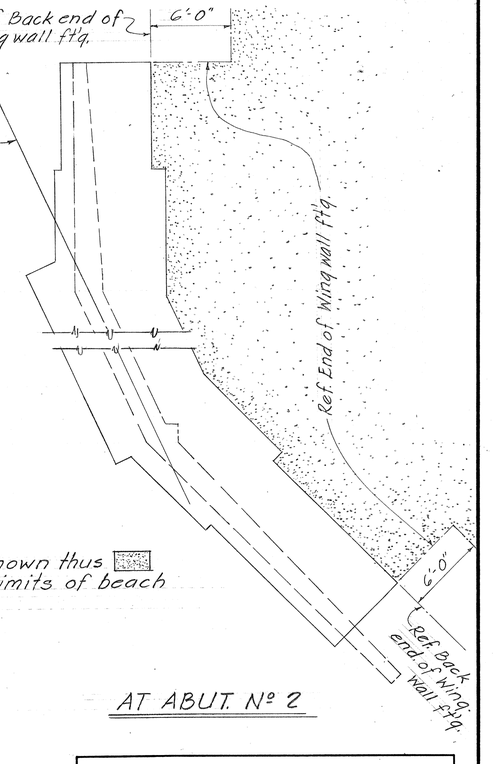



CASE II

STRUCTURAL EXCAVATION & DRAINAGE DETAILS No Scale




AT ABUT. Nº 1




AT ABUT. Nº 2

PLAN
LIMITS OF BEACH SAND FILL AT ABUTMENTS
No scale

Note!
Area shown thus ▨ indicates limits of beach sand fill.

NOTES
① Extend limits of excavation payline & backfill to bott. of ft'g. when ft'g. is on piles.
② Excavate and pour to neat line at toe of ft'g. as shown, for spread ft'g.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

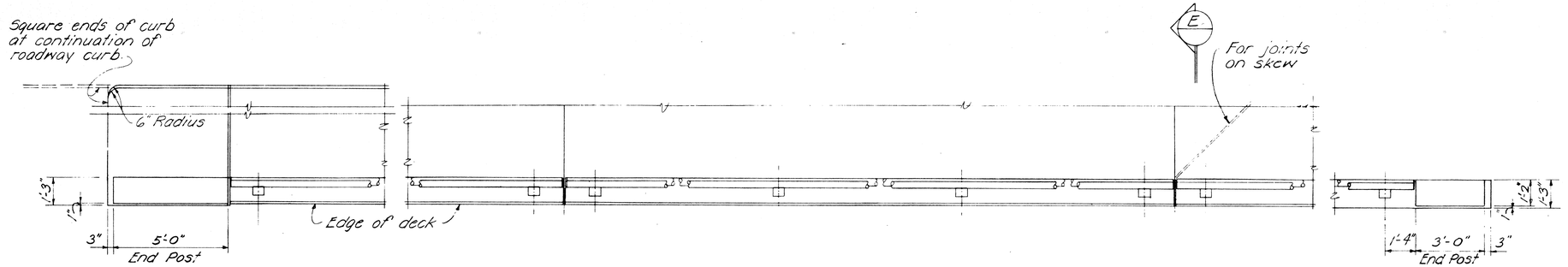
STANDARD DETAILS
RETAINING WALL TYPE T-1

SCALE AS NOTED DATE: JUNE 1967
SHEET No. 32 OF 64 SHEETS

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

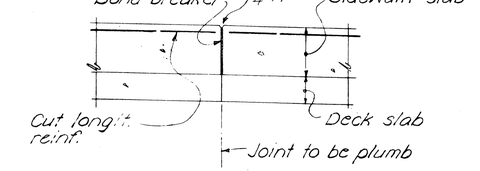
PRINTED ON NO. 1000H CLEARPRINT

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F-056-1(8) | 1967 | 44 | 64 |




AT BRIDGE END POST

AT RETAINING WALL OR WING WALL END POST




SIDEWALK CONSTRUCTION JOINT DETAIL

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

** NOTE !!

The contractor shall layout the railing to provide 3 cont. panels whenever possible. 2 or 4 cont. panels will be permitted to complete the layout when 3 cont. panels cannot be made. Single panels will not be permitted

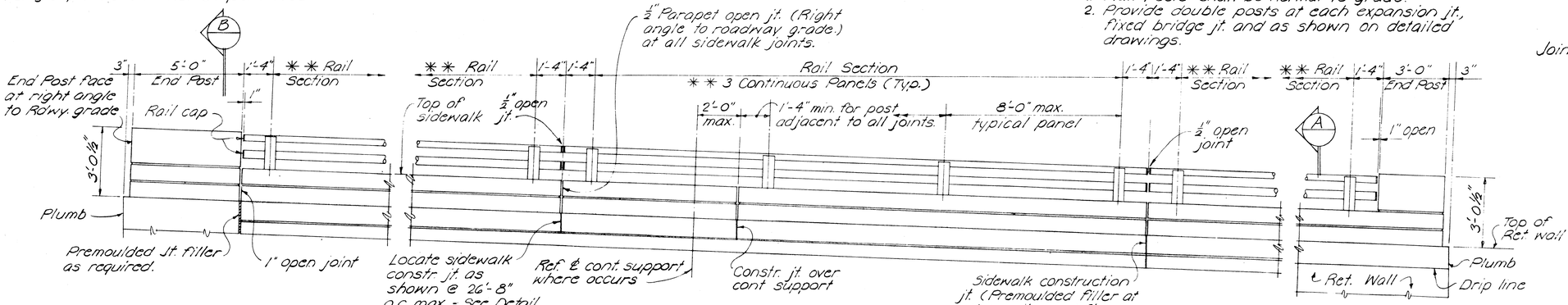
INTERMEDIATE

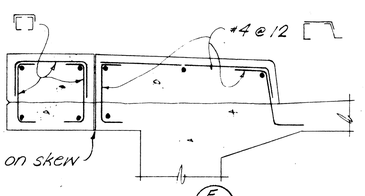
# RAILING PLAN

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

NOTES !!

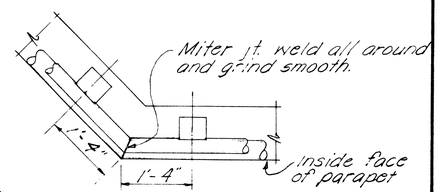
1. Rail Posts shall be normal to grade.
2. Provide double posts at each expansion jt., fixed bridge jt. and as shown on detailed drawings.




SECTION E AT SKEW

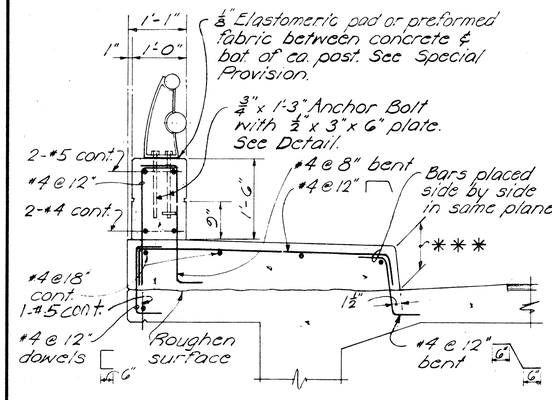
Scale: 3/4" = 1'-0"




PLAN TREATMENT OF RAILING AT SKEWED ENDS

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

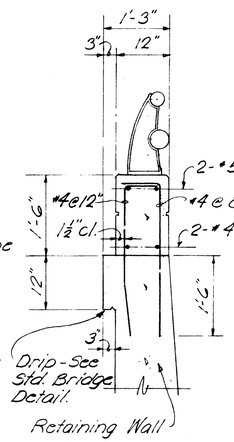
AT BRIDGE END POST




*** 9" if sidewalk 4'-0" or more. 10" if sidewalk less than 4'-0."

TYPICAL SECTION

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



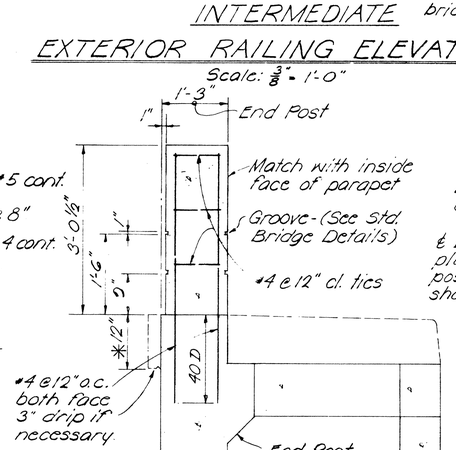

SECTION A

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

INTERMEDIATE

EXTERIOR RAILING ELEVATION

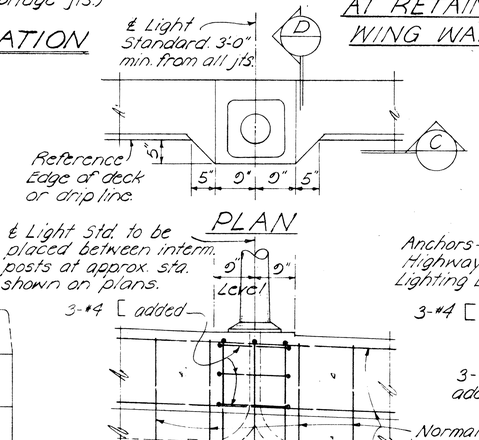
Scale: 3/8" = 1'-0"



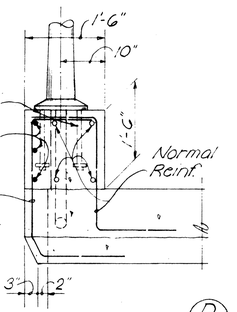

SECTION B

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

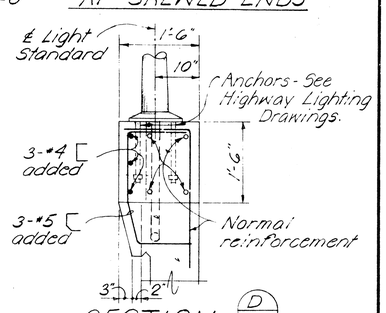
AT RETAINING WALL OR WING WALL END POST




ELEVATION C




SECTION D AT BRIDGE




SECTION D AT WING WALL

DETAILS OF RAILING AT LIGHT STANDARD

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# STANDARD DETAILS
## METAL BRIDGE RAILING
## DOUBLE RAIL COMBINATION TYPE ON PARAPET

JUNE 1967

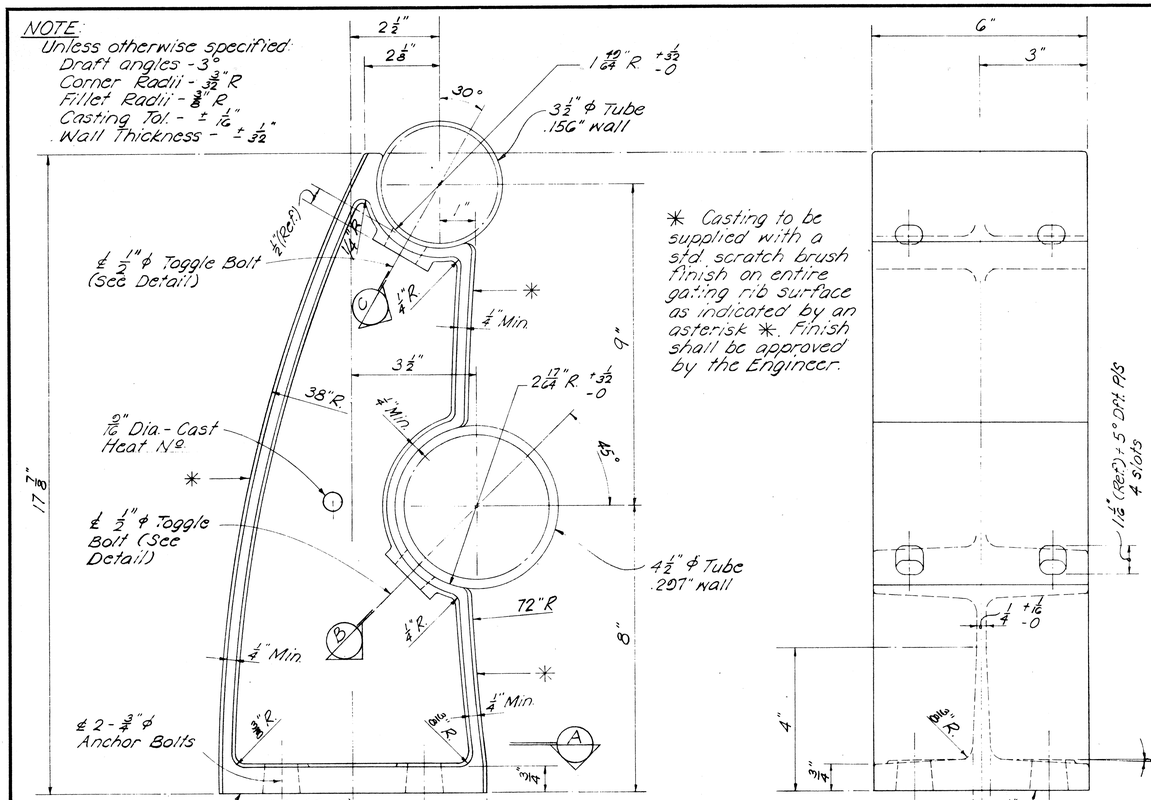
SHEET No. 53 OF 64 SHEETS

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
|---|---|---|
| | DRAWN BY | |
| | TRACED BY | |
| | DESIGN 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. | F056-1(8) | 1967 | 4-5 | 64 |

NOTE:
Unless otherwise specified:
Draft angles - 3°
Corner Radii - $\frac{3}{32}$" R
Fillet Radii - $\frac{3}{8}$" R
Casting Tol. - $\pm \frac{1}{16}$"
Wall Thickness - $\pm \frac{1}{32}$"




This surface to be smooth, clean and free of draft.

SIDE ELEVATION

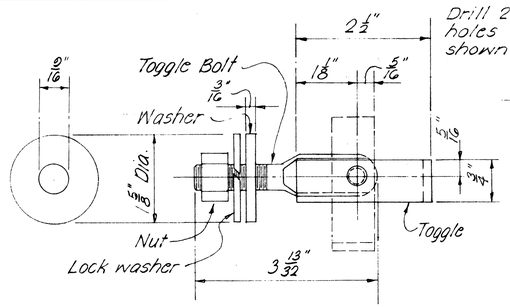
* Casting to be supplied with a std. scratch brush finish on entire gating rib surface as indicated by an asterisk *. Finish shall be approved by the Engineer.




This surface to be smooth, clean and free of draft.

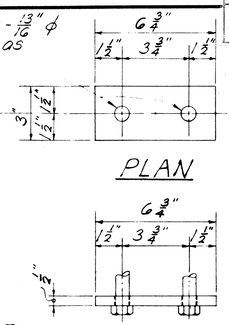
END ELEVATION

NOTE: All surfaces to receive one coat of clear lacquer.



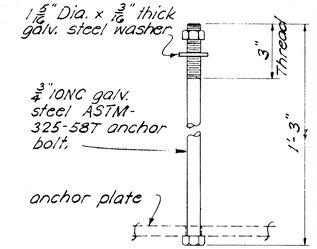

WASHER

SIDE ELEVATION ASSEMBLAGE




PLAN

ELEVATION

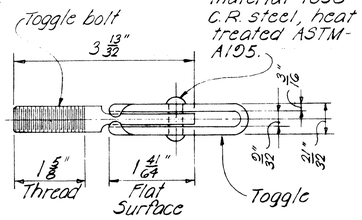



ANCHOR BOLT

## TYPICAL RAIL POST ANCHOR BOLT ASSEMBLY

Scale: 3" = 1'-0"

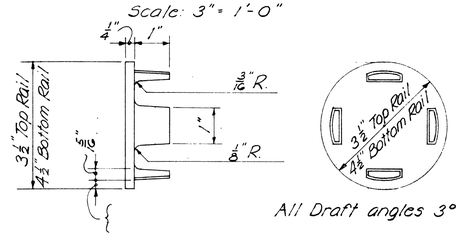
NOTE:
Toggle Bolt Material - $\frac{1}{2}$" - 13 N.C. 1335 C.R. - Steel heat treated R.C. 32-38 ASTM-A354
Toggle Material - 1015 H.R. steel pickled and oiled. Round edges ASTM-A303-58T
Washer Material - SAE 1020 H.R. steel plates. A.S.T.M. - A-7 Break sharp edges.
Nut - $\frac{1}{2}$" - 13 Amer. hex. nut - Heavy Mat'l. 1035 C.R. Stl. - Heat treated ASTM A325
Cadmium plating on steel - Type N.S. .0005 thick ASTM-A165-55 (All parts)
For cast post specifications, see special provisions.




TOP PLAN

## 1/2" ϕ TOGGLE BOLT DETAIL

Scale: 3" = 1'-0"



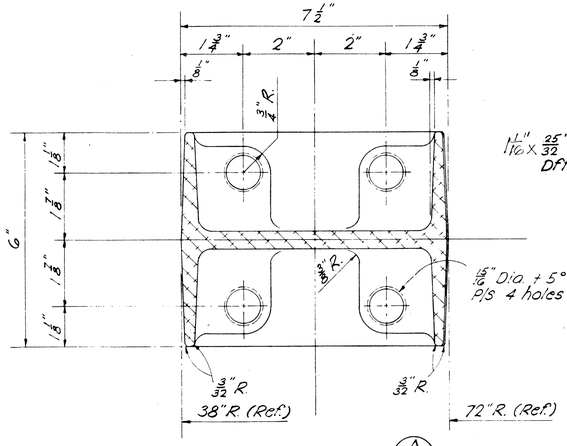

All Draft angles 3°

## RAIL CAP DETAIL

Scale: 6" = 1'-0"

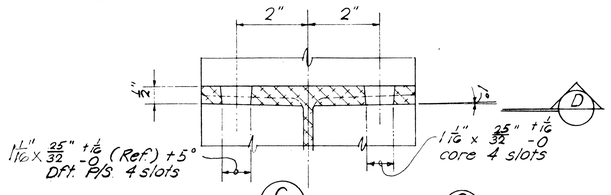
## TYPICAL RAIL POST DETAILS

Scale: 6" = 1'-0"



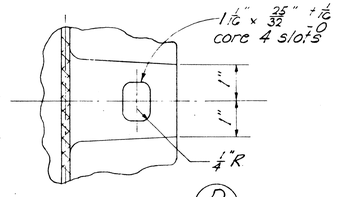

SECTION (A)

Scale: 6" = 1'-0"




SECTION (C) (SECTION (B) SIMILAR)

Scale: 6" = 1'-0"




SECTION (D)

Scale: 6" = 1'-0"

NOTE:
Metal Bridge Railing shown is for Aluminum Bridge Railing. See Special Provisions for alternate in steel.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# STANDARD DETAILS
# METAL BRIDGE RAILING
# DOUBLE RAIL COMBINATION TYPE ON PARAPET

JUNE 1967

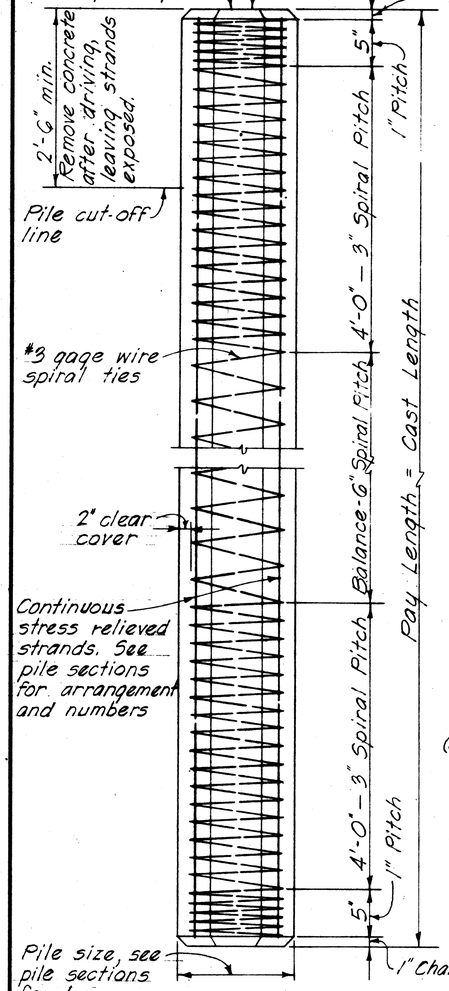
SHEET No. 34 OF 64 SHEETS

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

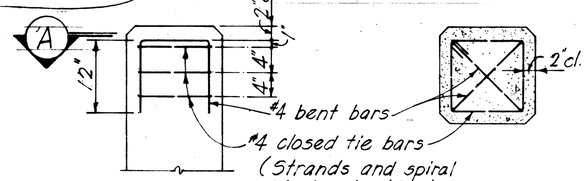
PRINTED ON NO. 1000H CLEARPRINT

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F056-1(8) | 1967 | 46 | 64 |

Revision - Feb. '67
March '67

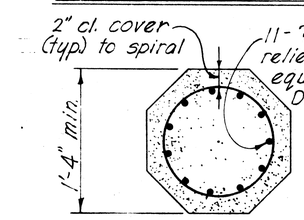



TYPICAL PILE DETAIL



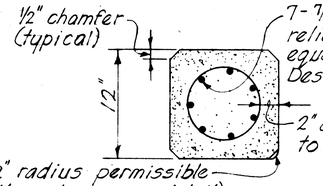

PART ELEVATION SECTION (A)

TYPICAL ADDED REINFORCEMENT PILE ENDS - TYPE II & III ONLY

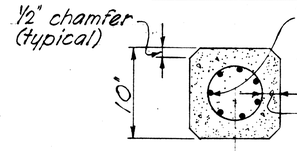



Note: All types of pile spiral reinforcement shall be cold drawn steel wire ASTM A-82

TYPE I




TYPE II




TYPE III

TYPICAL SECTIONS THRU PILES

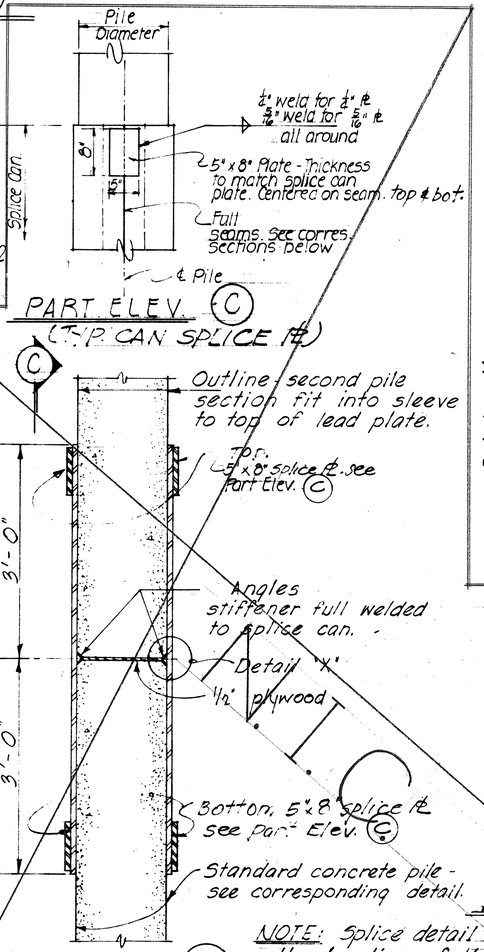
| Max. Length "L"* | Max. Length "L"* | Length "L"* |
|---|---|---|
| Type I "L" = 53'-0" | Type I "L" = 75'-0" | Type I "L" over 75'-0" |
| 12" Type II "L" = 50'-0" | 12" Type II "L" = 72'-0" | 12" Type II "L" over 72'-0" |
| 10" Type III "L" = 46'-0" | 10" Type III "L" = 66'-0" | 10" Type III "L" over 66'-0" |
| 0.30 L 0.70 L | 0.21 L 0.58 L 0.21 L | 0.15 L 0.35 L 0.35 L 0.15 L |

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

1 POINT PICK-UP 2 POINT PICK-UP 3 POINT PICK-UP

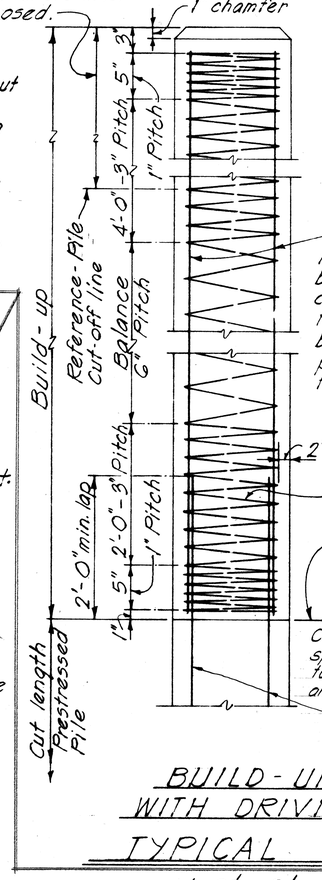
NOTE: Unless special lifting devices are attached for pick-up points, pick-up points shall be plainly marked on all piles after removal of the forms and all lifting shall be done at these points. The use of special embedded or attached lifting devices, the employment of other pick-up points or any other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

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 f'c of 5000 p.s.i. at 28 days. Build-ups may be driven if the speciman of concrete from which the piles were poured develops a strength of at least 3500 p.s.i. but not earlier than 7 days.

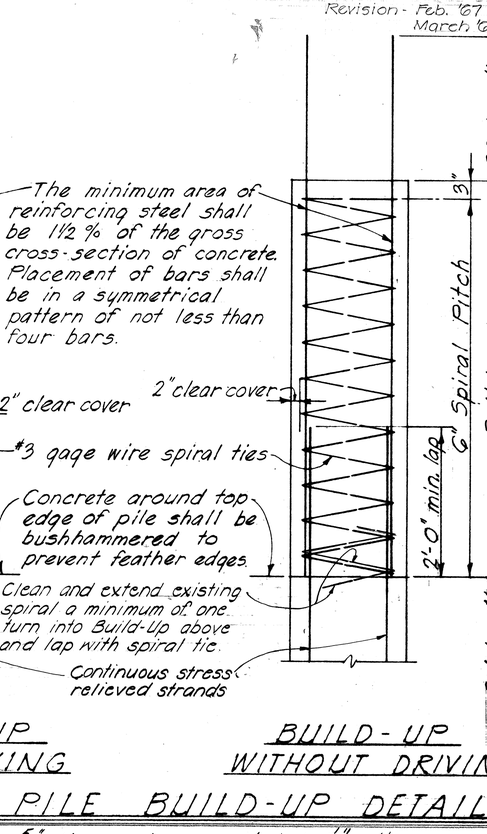



TYPICAL PILE SPLICE DETAILS
(FOR PRESTRESSED CONCRETE PILES WHEN CAST IN TWO OR MORE SECTIONS)

NOTE: All welding shall conform to the latest Specifications for welded Highway & Railway Bridge of the American Welding Society.

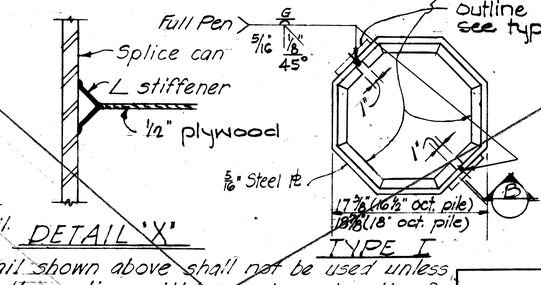



BUILD-UP WITH DRIVING




BUILD-UP WITHOUT DRIVING

TYPICAL PILE BUILD-UP DETAILS




NOTE: Splice detail shown above shall not be used unless the location of the splice within a given length of pile is indicated elsewhere on the bridge plans.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
PRESTRESSED CONCRETE PILES
KAUAI BELT ROAD
Project No. F-056-1(8)

Scale: as Noted Date: June 1967

SHEET No. 38 OF 64 SHEETS

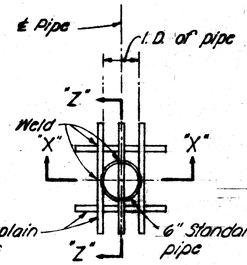
ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
NOTE BOOK
QUANTITIES BY
CHECKED BY
DATE
No.

PRINTED ON NO. 1000H CLEARPRINT

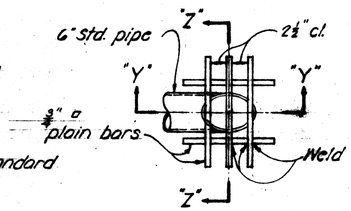
41 (6)

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | F056-1(8) | 1967 | 47 | 64 |

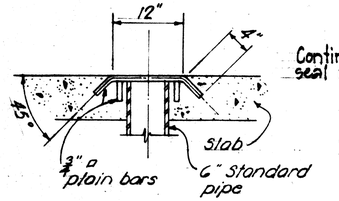
REVISION
Jan. '67
Feb. '67
Apr. '67



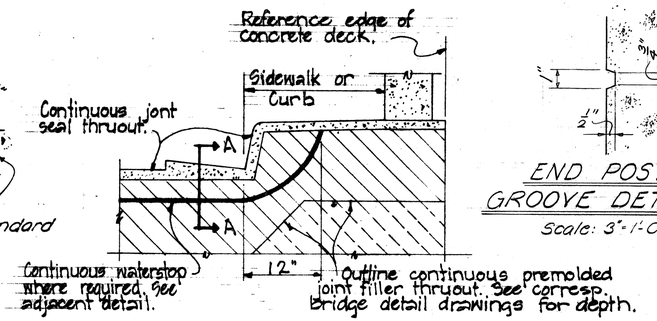

PLAN




PLAN




SECTION "Z-Z"

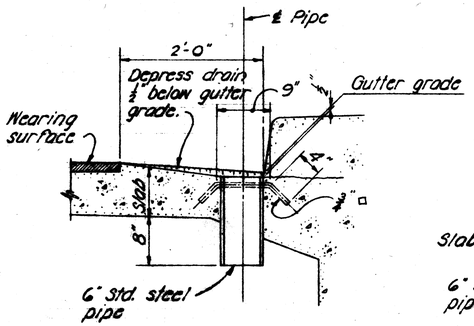



ELEVATION

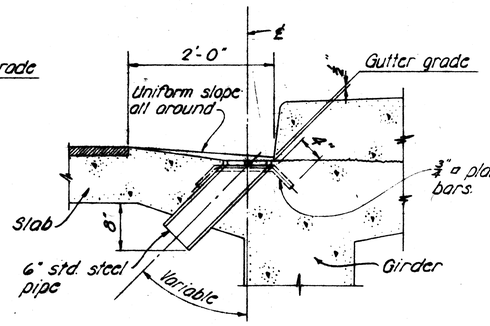



END POST GROOVE DETAIL

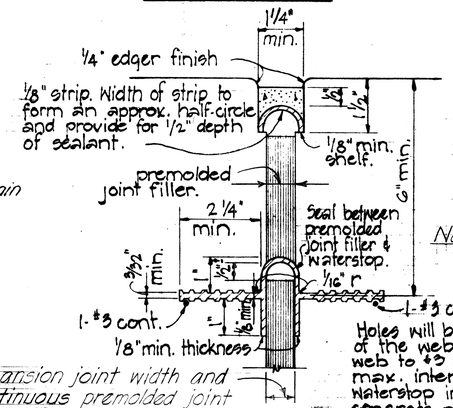
Scale: 3"-1'-0"




SECTION "X-X"




SECTION "Y-Y"




Waterstop to have 5 or more pairs of raised ribs to provide 0.1 sq. in. min. rib cross-section area on each half of the waterstop. Height of ribs to be 3/32" min.

Nailing Strip:
Nail or staple to form or premolded joint filler.

Holes will be permitted in the outer ½" of the web for wires, rings, etc. Tie web to #3 reinforcing bars at 12" max. intervals to support the waterstop in proper position during concrete placement. Alternative detail may be submitted for approval of the Engineer.

Expansion joint width and continuous premolded joint filler, see contract drawings.

SECTION "A-A"

TYPICAL EXPANSION JOINT DETAIL

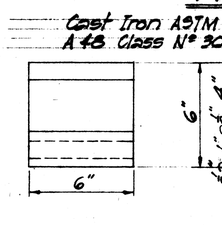
# GENERAL NOTES

Elastomeric Pads: Top & 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 seperately.

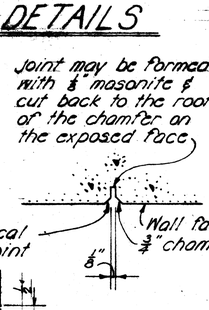
1. The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation.
2. All concrete shall be Class A-1 unless otherwise noted.
3. Clearance for reinforcing bars shall be as follows, unless otherwise noted:
   a. - 1½" For stirrups of beams & pier caps.
   b. - 2" For ties of columns.
   c. - 2" For formed walls.
   d. - 3" For footings.
4. 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.
5. Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures 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. Splices of reinforcing - See Special Provisions.
8. 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 1½ times the maximum size of the coarse aggregate.
9. All dimensions relating to reinforcing are to centers of bars unless otherwise noted.
10. 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 be 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.
11. Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.
12. Except as otherwise noted on drawings, all exterior corners & re-entrant angles in concrete work shall be chamfered ¾" x ¾". See Standard Specifications.
13. Concrete Finish - See Special Provisions.
14. All welders and welding procedures shall be qualified according to the requirements of the Special Provisions.
15. Gothic letters and figures approximating dimensions shown will be acceptable if approved by the Engineer.

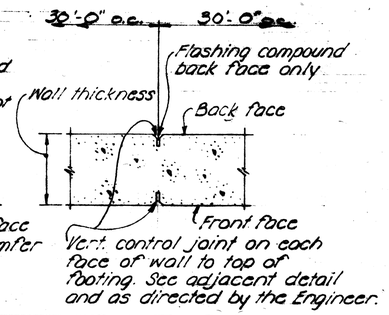
NOTE: Metal drains shall be considered incidental to Class A-1 Concrete in both concrete and steel bridges and will not be paid for separately.
Assemblage of grillage and pipe shall be hot-dip galvanized after all welding is completed.

TYPICAL DRAINAGE DETAILS




Contractor to take proper precautions to prevent the concrete from flowing into the opening of the inserts.

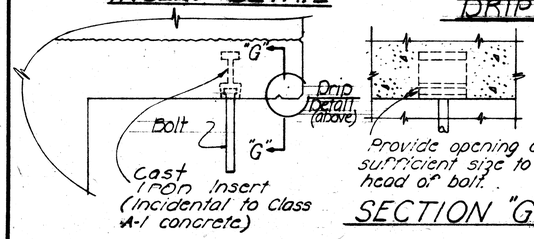



CONTROL JOINT DETAIL


DRIP DET.

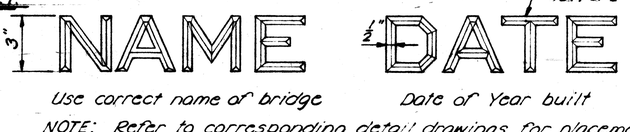
INSERT DETAIL




Provide opening of sufficient size to insert head of bolt.

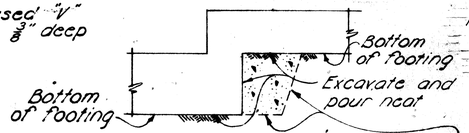
SECTION "G-G"

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 #15.

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-1 concrete at his own expense.

TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD BRIDGE DETAILS

KAUAI BELT RD.

Project No F-056-1(8)

Scale as Noted Date: June 1967

SHEET No. 36 OF 6 SHEETS