FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	106	185

INDEX TO DRAWINGS

AUSTIN BISHOP GRADE SEPARATION

1. BRIDGE LAYOUT
2. CROSS SECTION, FOUNDATION PLAN
3. FRAMING PLAN & LONGITUDINAL SECTION
4. NORMAL DECK SECTION & DETAILS
5. TOP & BOTTOM SLAB REINFORCING PLAN
6. PIER CAP & PIER FOOTING REINFORCEMENT
7. PLAN & ELEVATION ABUTMENT NO.1 & NO.2
8. ELEVATION - WING WALL NO. 2 & NO.4
9. ABUTMENT ELEVATION & PLAN
10. ABUTMENT SECTIONS & DETAILS
11. CONCRETE BARRIER DETAILS
12. BORING LOGS

WAIAU INTERCHANGE GRADE SEPARATION

1. LAYOUT PLAN
2. ELEVATION & LONGITUDINAL SECTION
3. FRAMING PLAN
4. DECK FINISH GRADE
5. BOTTOM SLAB REINFORCING PLAN
6. TOP SLAB REINFORCING PLAN
7. NORMAL SECTION AT MID-SPAN
8. NORMAL SECTION AT PIER
9. PIER CAP ELEVATION
10. PIER CAP SECTIONS & FOOTING
11. RAIL & BARRIER SECTION & DETAILS
12. FOUNDATION PLAN
13. ABUTMENT NO. 1 PLAN & ELEVATION
14. ABUTMENT NO. 2 PLAN & ELEVATION
15. END BEAM "A" & "C" DETAILS
16. ABUTMENT SECTION & DETAILS
17. ABUTMENT SECTION & DETAILS
18. WING WALL NO. 1 & NO. 3
19. WING WALL NO. 2 & NO. 4
20. WING WALL SECTION & DETAILS
21. CONCRETE BARRIER DETAILS
22. BORING LOGS

RETAINING WALL NO. 1 & NO. 2

1. LAYOUT PLAN, ELEV., & DETAILS
2. DEVELOPED ELEVATION
3. PLAN & DETAILS

STANDARD DETAILS - DRAWINGS

S1 THRU S14

A. INDEX TO DRAWINGS, ABBREVIATIONS & GENERAL NOTES.

SYMBOLS & ABBREVIATIONS



Alphabet (A) or numeral (3) indicate sec. or det. designation.
No. (14) indicates sht. no. where sec. or detail is drawn on

B 5 Boring no and designation.
B-A, B-B Beam designations.
G-1, G-2 Girder designations.
P-1, P-2 Pier designations.
PG-2 Prestressed girder type 2.

(A)
ABUT. Abutment.
ADJ. Adjacent.
ALT. Alternate.
AZ. Azimuth.

(B)
BAL. Balance.
B.F. Both face.
℄ Base line
BM. Beam.
B.V.C. Begin vertical curve.
B, BOT, BOTT. Bottom.

(C)
℄ Center line.
CG. Center of gravity. Change of grade.
CL. Clear or closed.
COL. Column.
CONN. Connection.
CONST. Construction.
CONT. Continuous.

(D)
DET. Detail
DIA., ϕ Diameter.
DIAG. Diagonal.
DIAGM. Diagram.
DRWG. Drawing

(E)
EA. Each.
E.F. Each face.
E.P. Edge of paving.
EL., ELEV. Elevation.
E.V.C. End vertical curve.
EQ. Equal.
EXP. Expansion
EXT. Exterior

(F)
F.F. Far face.
FTG. Footing.

(G)
GALV. Galvanized.

(H)
HOR. Horizontal.

(I)
I.B. Inbound.
INCLU. Inclusive.
I.R. Inner ring (col bars)
INT. Interior.

(J)
JT. Joint.

(L)
LG. Long
LOC. Location.
LONGIT. Longitudinal.
LT.WT Light weight.

M
MAX. Maximum.
MIN. Minimum.

(N)
N.F. Near face.
NO. Number.

(O)
O.C. on center.
OPN'G. Opening.
O.B. Outbound.
O.TO.O Out to out
O.R. Outer ring (col. bars)

(P)
℗ Plate.
PT. Point.

(R)
R. Radius.
REF. Reference.
REINF. Reinforcement.
R.C. Reinforced Concrete.
REQ'D Required.

(S)
SEC. SECT. Section
SHT. Sheet
SPC. Spaces.
SPCG. Spacing.
STA. Station.
STR. Straight.
STIRR. Stirrup.
STD. Standard
SYMM. Symmetrical.

(T)
T. Top.
TYP. Typical

(V)
VERT. Vertical.
V.C. Vertical curve.

(W)
W.P. Working point.

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DRAWN BY
TRACED BY
DESIGN BY
QUANTITIES BY
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DATE
ORIGINAL PLAN
NOTE BOOK
No.

GENERAL NOTES

SPECIFICATIONS AASHO:
STANDARD SPECIFICATION FOR HIGHWAY BRIDGES (9TH EDITION) WITH SUBSEQUENT ADDITIONS & MODIFICATIONS.

DESIGN LOADS:
HS-20-44 OR INTERSTATE LOADING.

DESIGN STRESSES:
REINFORCED CONCRETE: SEE AASHO SPECIFICATIONS AND GENERAL PROVISIONS, EXCEPT AS OTHERWISE NOTED ON PLAN.

CLASS A-1	CLASS E-1	
f'_c = 3,000 Psi, f_c = 1,200 Psi, n = 10	f'_c = 4,500 Psi, f_c = 1,800 Psi, n = 8	f_s = 20,000 Psi

MATERIALS:
1. CONCRETE: ALL CONCRETE SHALL BE CLASS A-1, EXCEPT AS OTHERWISE NOTED ON PLANS OR INDICATED IN SPECIFICATIONS.
2. REINFORCING STEEL: ALL REINFORCING STEEL TO BE ASTM DESIGNATION A-15 BILLET STEEL INTERMEDIATE GRADE, EXCEPT AS OTHERWISE NOTED.
3. ITEMS INCIDENTAL TO CONCRETE WILL NOT BE PAID FOR SEPARATELY
   A. ALL PREMOLDED JOINT FILLER AND SEALANT.
   B. ALL PREMOLDED ASPHALTIC FILLER AROUND UTILITY LINE THROUGH CONCRETE SECTIONS.
   C. ELASTOMERIC BEARING PADS 60 DUROMETER
   D. STEEL ANGLE AND ANCHORAGE AT BOTH SIDES OF EXPANSION JOINTS.
4. ADMIXTURE IN CONCRETE: SEE SPECIAL PROVISIONS.

CONSTRUCTION METHODS:
1. SEE STANDARD SPECIFICATIONS & SPECIAL PROVISIONS.
2. SIDE OF SPREAD FOOTINGS SHALL BE EXCAVATED AND POURED TO NEAT LINES. FOR EXCAVATION OF BOTTOM OF FOOTINGS, SEE STANDARD SPECIFICATIONS. IN CASE OF OVER EXCAVATION, SPACE BETWEEN FOOTING & GROUND SHALL BE FILLED WITH CONCRETE AT THE CONTRACTORS EXPENSE & AS DIRECTED BY THE ENGINEER. THE FILL CONCRETE SHALL HAVE A MINIMUM QUALITY OF CLASS D-1.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITY LINES & NOTIFY THE RESPECTIVE OWNERS BEFORE COMMENCING EXCAVATION WORK.
4. BACKFILL BELOW ABUTMENT ROCKER SHALL BE IN PLACE BEFORE ROCKER IS POURED. REMAINDER OF BACK FILL TO BE PLACED SIMULTANEOUSLY AT EACH ABUTMENT AFTER SUPER STRUCTURE FALSE WORK IS RELEASED FOR AUSTIN BISHOP GRADE SEPARATION.
5. ALL BACKFILL BEHIND ABUTMENTS & WING WALLS SHALL BE COMPLETED IN PLACE BEFORE PLACING SUPER STRUCTURE FOR WAIAU INTERCHANGE GRADE SEPARATION.
6. IN GENERAL, TOP & EDGE OF CONCRETE DECK OF SUPER STRUCTURE SHALL BE CONSTRUCTED TO FOLLOW THE FINISH ROADWAY VERTICAL & OR HORIZONTAL CURVES, GRADES SLOPES & ELEVATIONS.
7. CONCRETE SEATS & CREEP BLOCKS TO BE POURED MONOLITHICALLY WITH ABUTMENT SECTIONS. SEATS SHALL RECEIVE A HARD TROWEL FINISH, LEVEL & TRUE TO ELEVATIONS.
8. VERTICAL PIER COL BARS SHALL BE ARRANGED IN SUCH A MANNER AS TO MISS PIER CAP REINF. BARS ABOVE.
9. WING WALLS ON FILL SHALL BE CONSTRUCTED AFTER THE ROADWAY FILL IS COMPLETED TO REQUIRED FIN GRADE.
10. FOR CONCRETE FINISHES SEE SPECIAL PROVISIONS.

CAMBER:
OBTAIN DEAD LOAD CAMBER BY FORMING & SHORING CONCRETE SURFACES ABOVE THE PROFILE GRADES WITH AMOUNT AS SHOWN IN DEAD LOAD CAMBER DIAGRAM.

REFERENCE:
1. REFER TO STANDARD DETAIL DRAWINGS SHTS # S1 - S9 INCL., FOR DETAILS NOT COVERED BY THESE DRWS.
2. REPORT ON STRUCTURE FOUNDATIONS INTERSTATE PROJECT I-HI-1(9) WAIAU TO AIEA STREAM BY HIGHWAYS DIVISION, MATERIALS, TESTING & RESEARCH BRANCH (APRIL 1968) & BY DAMES & MOORE, HONOLULU, HAWAII. (APRIL 29, 1969)

PRESTRESSED CONCRETE PILES
1. ALL PILES TO BE TYPE I.
2. MINIMUM CAPACITY = 45 TONS

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HIGHWAYS DIVISION

INTERSTATE ROUTE H-1

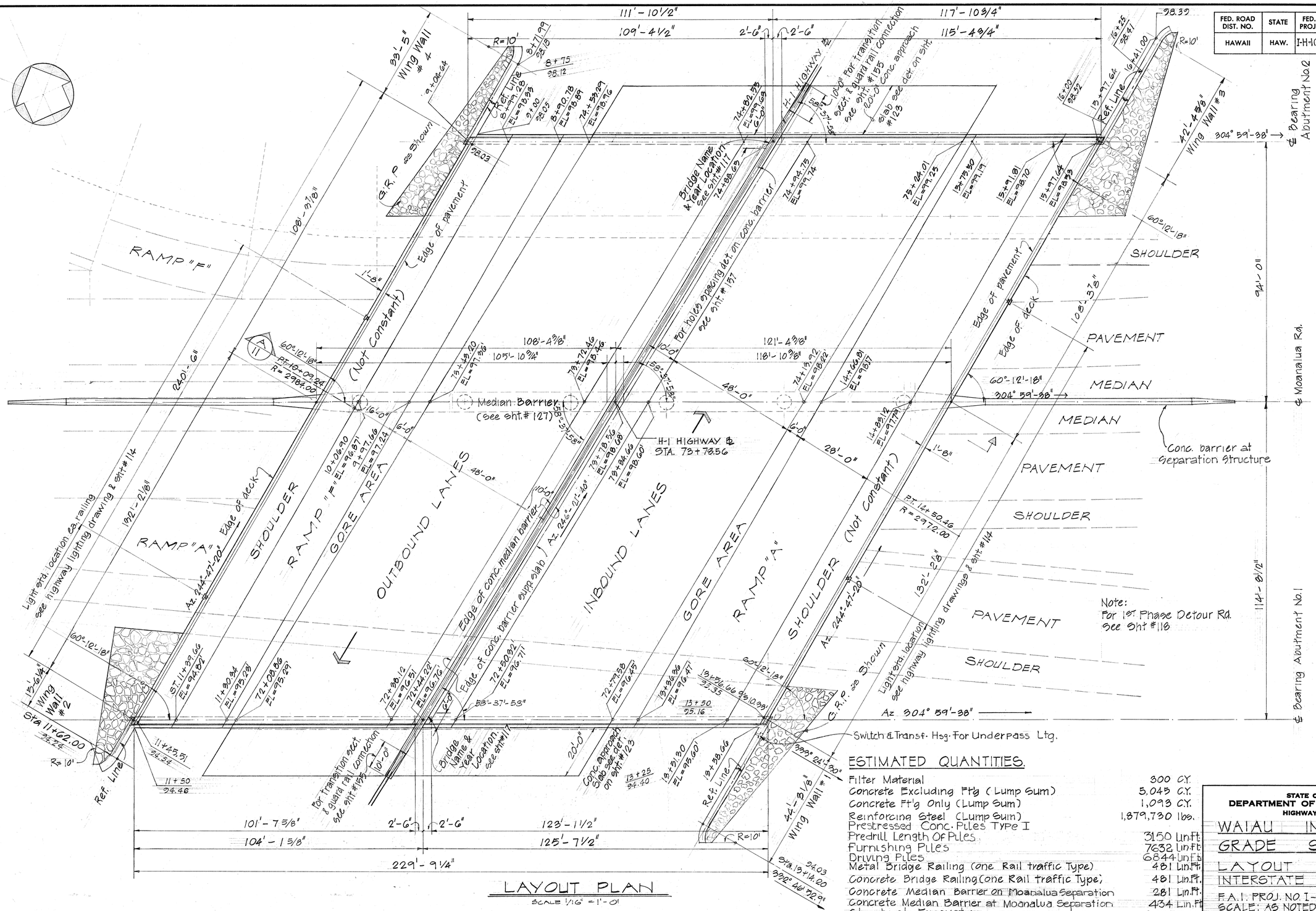
INDEX TO DRAWINGS
ABBREVIATIONS & GENERAL NOTES

F.A.I. PROJ. NO. I-H-1 (65): 10
SCALE: AS NOTED DATE 1969

SHEET No. A OF I SHEETS

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	107	185



LAYOUT PLAN

SCALE 1/16" = 1'-0"

ESTIMATED QUANTITIES.

Filter Material	300 C.Y.
Concrete Excluding Ftg (Lump Sum)	5,045 C.Y.
Concrete Ftg Only (Lump Sum)	1,093 C.Y.
Reinforcing Steel (Lump Sum)	1,879,730 lbs.
Prestressed Conc. Piles Type I	
Predrill Length Of Piles	3150 Lin.Ft.
Furnishing Piles	7632 Lin.Ft.
Driving Piles	6844 Lin.Ft.
Metal Bridge Railing (one Rail traffic Type)	481 Lin.Ft.
Concrete Bridge Railing (one Rail traffic Type)	481 Lin.Ft.
Concrete Median Barrier on Moanalua Separation	281 Lin.Ft.
Concrete Median Barrier at Moanalua Separation	434 Lin.Ft.
Structural Excavation.	6,335 C.Y.
Grouted Rubble Paving	500 C.Y.

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LAYOUT PLAN INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1 (65):10
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SHEET No. 1 OF 22 SHEETS

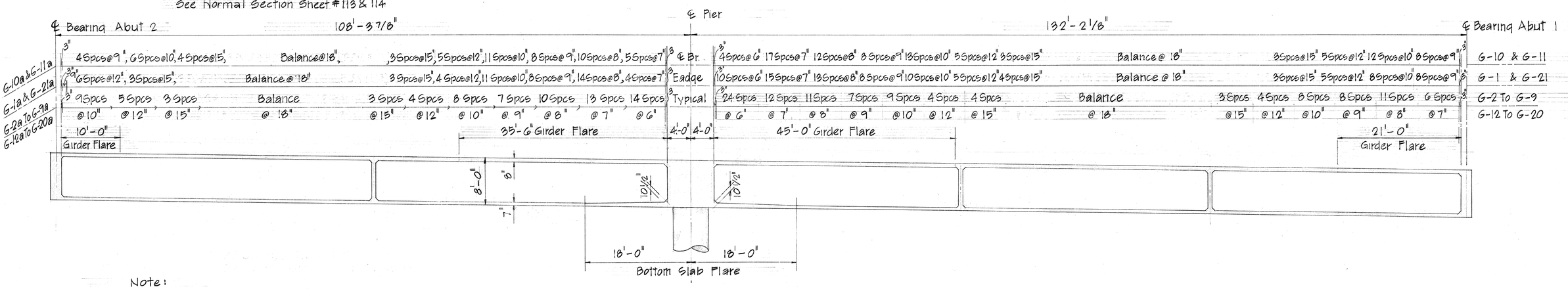
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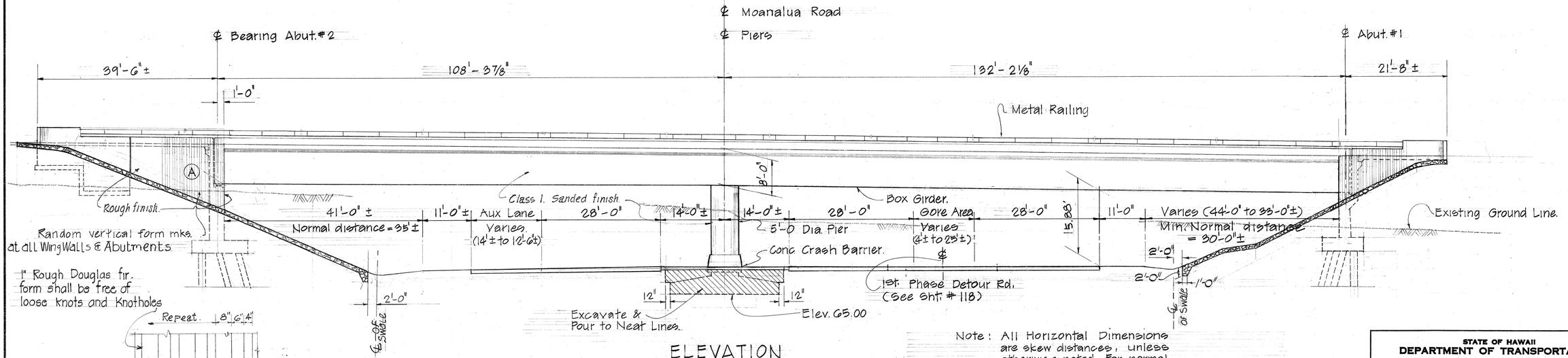
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	108	185

#5 Stirrups thru-out
See Normal Section Sheet #113 & 114



Note:
See General Notes on Sheet #100

LONGITUDINAL SECTION
SCALE: 1/8" = 1'-0



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

DETAIL OF FORMING — (A)
Scale: 1/2" = 1'-0"

Note:
Surfaces of Abutment & Wing Walls shall receive an "ordinary surface finish" (See Sec. 46.8(0)(1) of special provisions) with the following exceptions:
(a) Air holes exceeding 1/2" in maximum dimension or in depth shall be filled with mortar the surface shall remain unfinished. (No rubbing with carborundum stone.)
(b) All fins at form joints shall remain unfinished.
(c) Where patching is necesary surface texture and color shall approximate adjacent surface.

Note: All Horizontal Dimensions are skew distances, unless otherwise noted. For normal dimensions see detailed roadway plans, shts 11 to 18

For 1ST Phase Detour Rd. See Sht. #118

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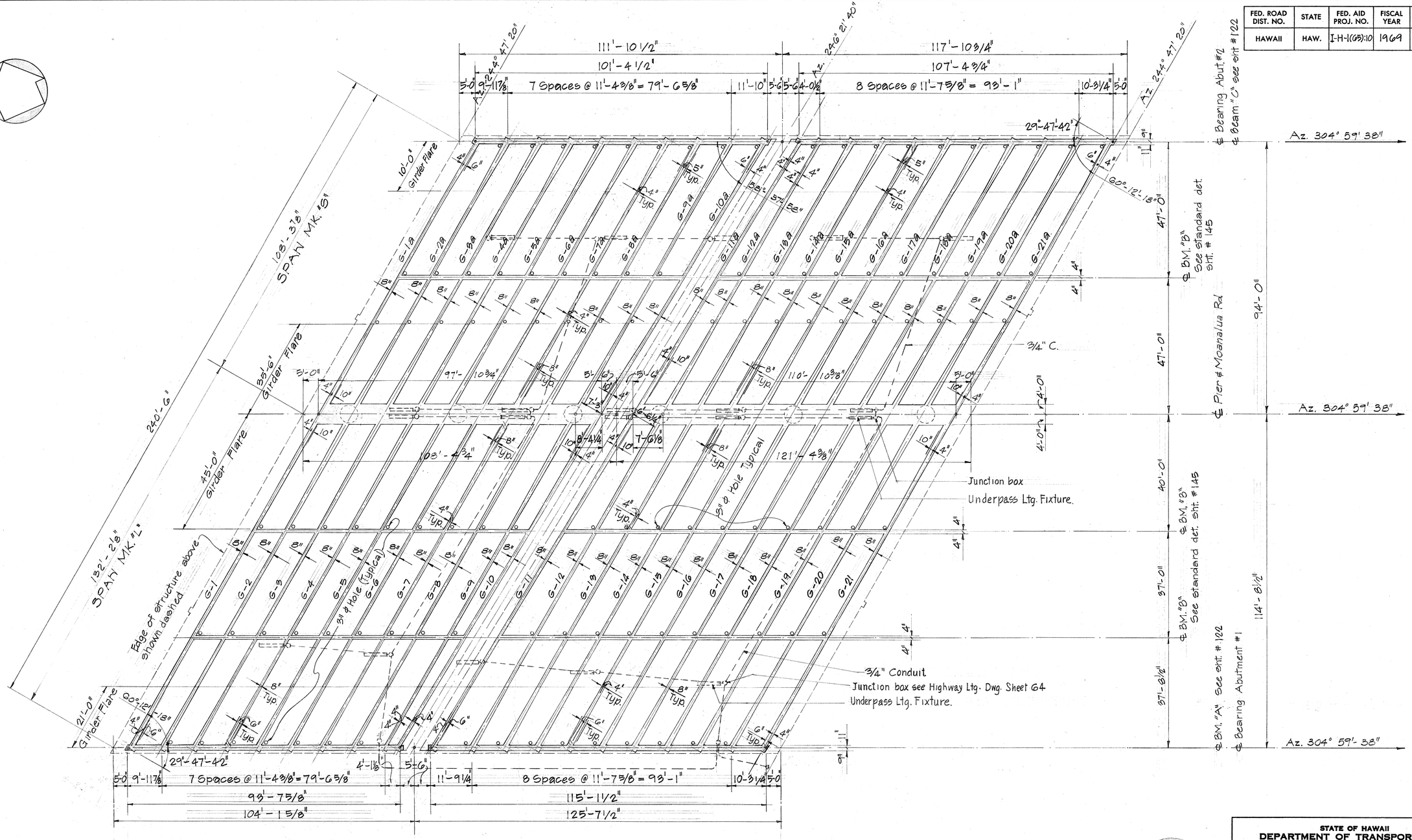
WAIAU INTERCHANGE
GRADE SEPARATION
ELEVATION & LONGIT. SECTION
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE: 1969

SHEET No. 2 OF 22 SHEETS

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	109	185



FRAMING PLAN

SCALE 1/16" = 1'-0"

ORIGINAL PLAN	DATE
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HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION
FRAMING PLAN
INTERSTATE ROUTE H-1

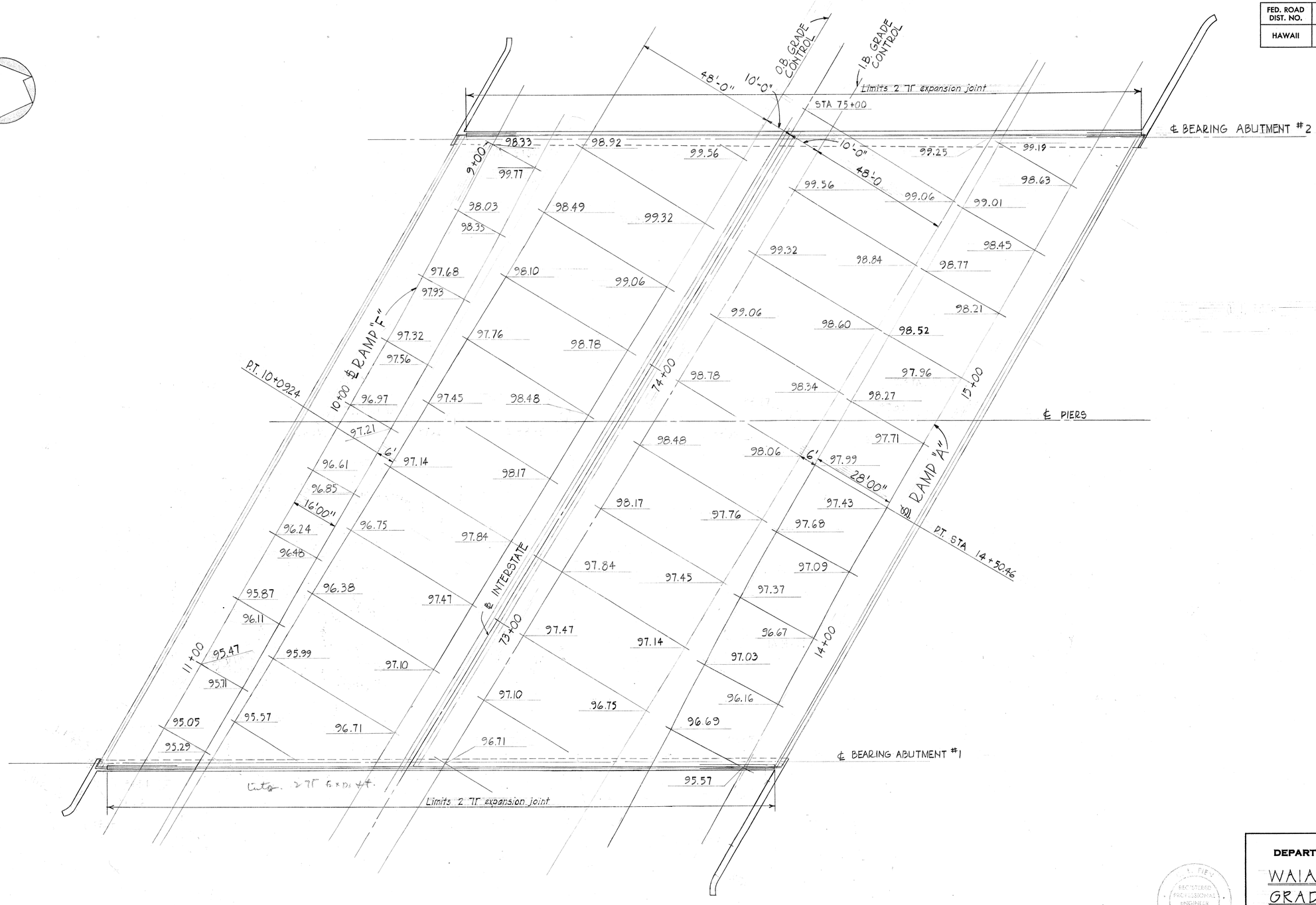
F.A.I. PROJ. NO. I-H-1 (65): 10
SCALE: AS NOTED DATE: 1969

SHEET No. 3 OF 22 SHEETS

109

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(68):10	1969	110	185



DECK FINISH GRADE

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

STATE OF HAWAII
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HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION
DECK FINISH GRADE
INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1(68):10
SCALE: AS NOTED DATE 1969

SHEET No. 4 OF 22 SHEETS

110

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

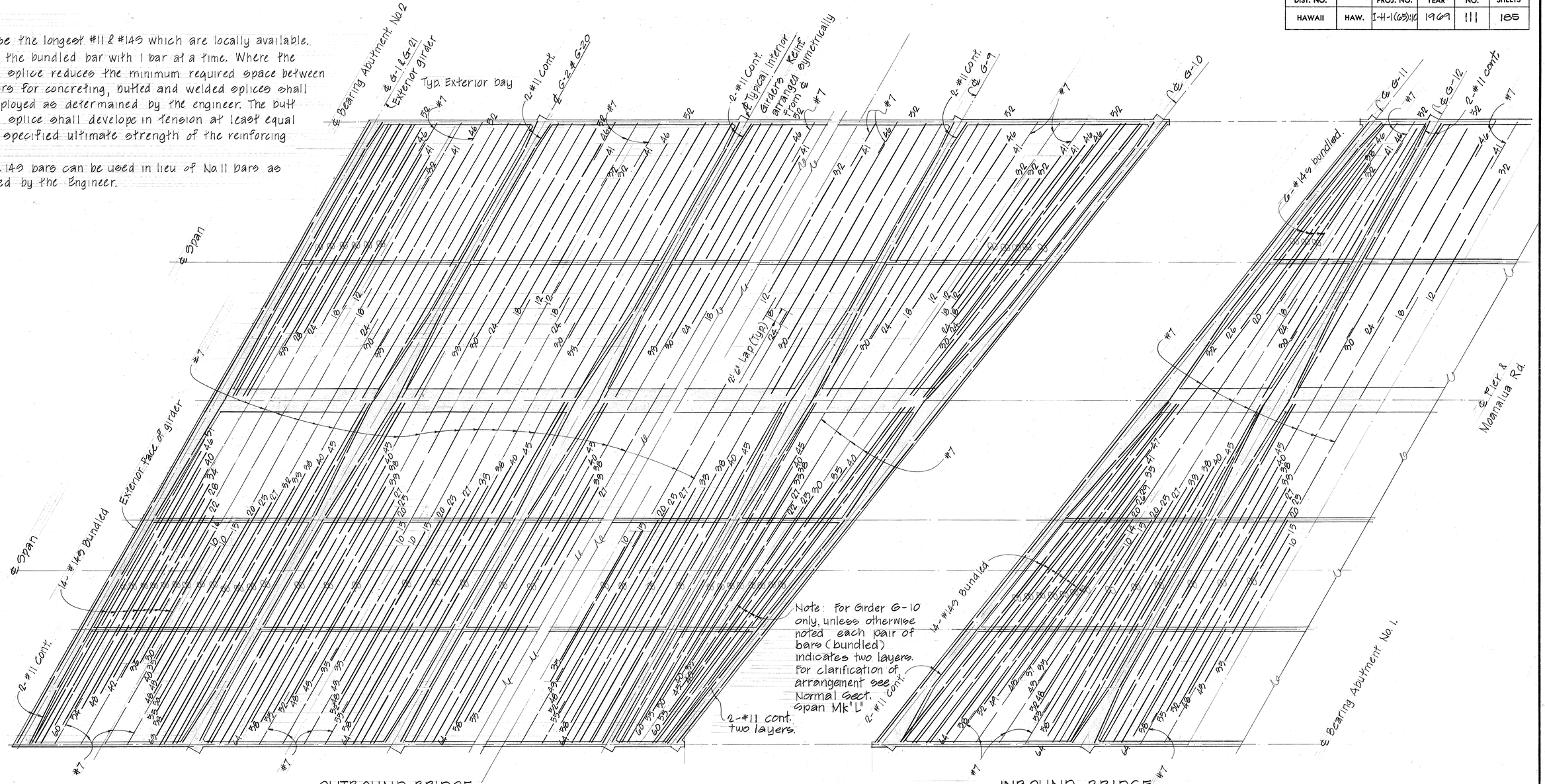
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HAWAII	HAW.	I-H-1(65):10	1969	111	185

Note:

Use the longest #11 & #14S which are locally available. Splice the bundled bar with 1 bar at a time. Where the lapped splice reduces the minimum required space between the bars for concreting, butted and welded splices shall be employed as determained by the engineer. The butt welded splice shall develope in tension at least equal to the specified ultimate strength of the reinforcing bar.

No. 14S bars can be used in lieu of No. 11 bars as approved by the Engineer.



OUTBOUND BRIDGE

BOTTOM SLAB REINFORCING PLAN

SCALE: VERTICAL: 1/16" = 1'-0"
HORIZONTAL: 3/8" = 1'-0"

INBOUND BRIDGE

Note:

Except as otherwise noted all slab bars shall be #11.
All #7 bars shall be extended & lapped 2'-6" with adjacent #11 bars as shown.
Wherever clearance between main reinforcing bars less than min. allowed clearances, bundle bars in grouping shall be used.
Numbers at ends of bars indicate distance in feet from ℄ span.
Indicate bundle bars in groups of two. For additional slab reinf. details see sht. # 113 & sht. #114

Note: For interior girder G-13 thru G-20 reinf. & arrangement see outbound bridge Typ. interior girders.

ORIGINAL PLAN
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DEPARTMENT OF TRANSPORTATION
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WAIAU INTERCHANGE
GRADE SEPARATION

BOTTOM SLAB REINFORCING PLAN
INTERSTATE ROUTE H-1

F. A. I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE: 1969.

SHEET No. 5 OF 22 SHEETS

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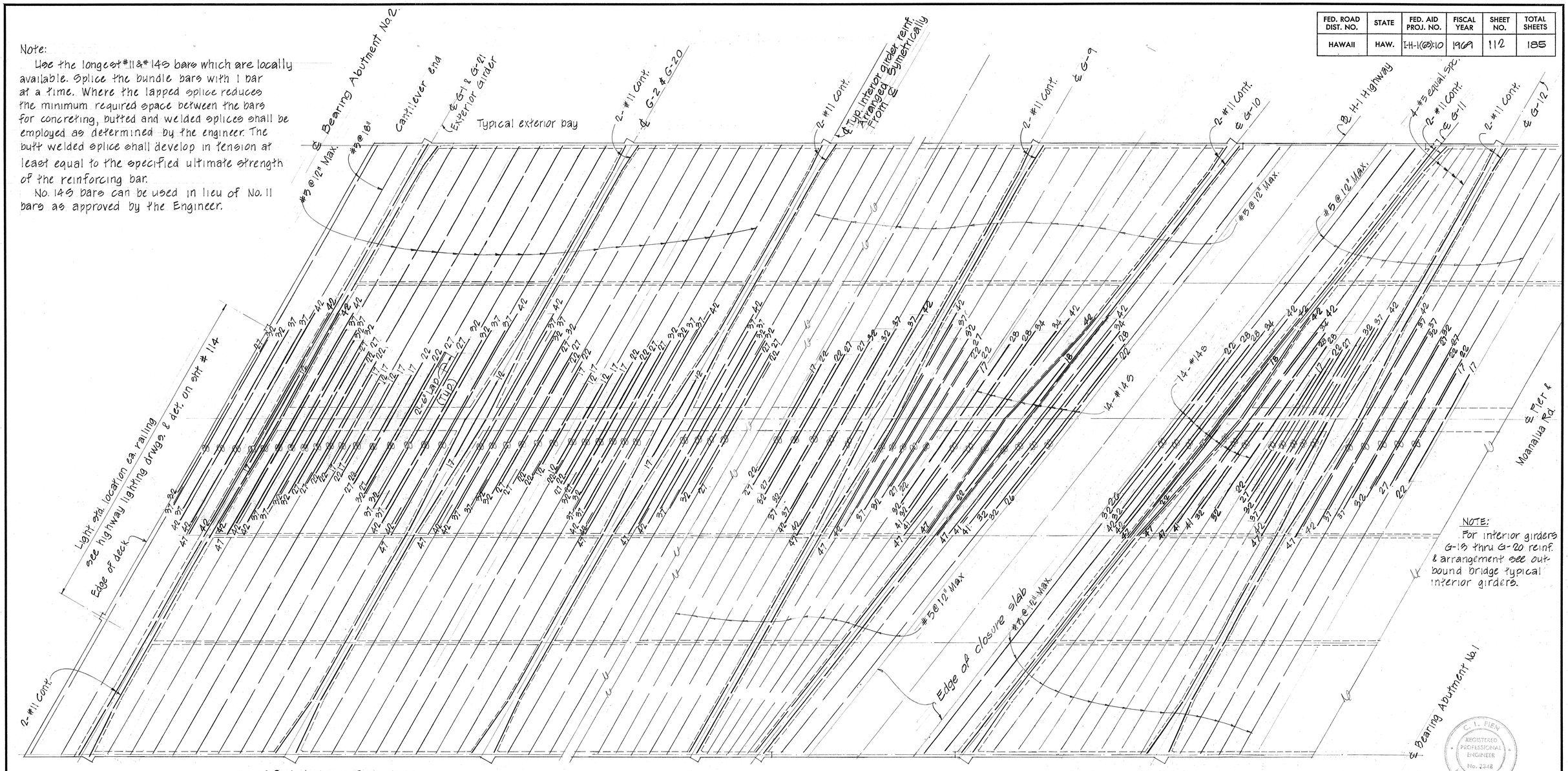
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(68):10	1969	112	185

Note:

Use the longest #11 & #14S bars which are locally available. Splice the bundle bars with 1 bar at a time. Where the lapped splice reduces the minimum required space between the bars for concreting, butted and welded splices shall be employed as determined by the engineer. The butt welded splice shall develop in tension at least equal to the specified ultimate strength of the reinforcing bar.

No. 14S bars can be used in lieu of No. 11 bars as approved by the Engineer.



OUTBOUND BRIDGE

INBOUND BRIDGE

NOTE:

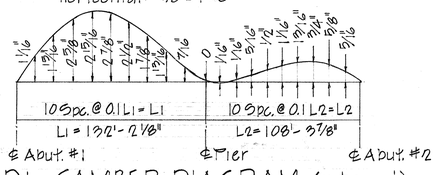
For interior girders G-13 thru G-20 reinf. & arrangement see outbound bridge typical interior girders.

NOTE:

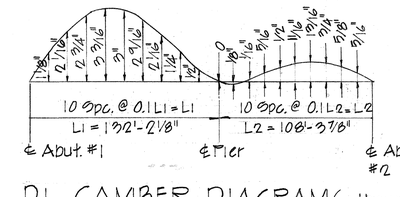
Except as otherwise noted all slab bars shall be #11.
All #5 bars shall be extended & lapped 2'-6" with adjacent #11 bars as shown.
Wherever clearance between main reinforcing bars less than min. allowed clearances, bundle bars in grouping shall be used
Numbers at ends of bars indicate distance in feet from ℄ pier.
═S═ indicate bundle bars in groups of two. For additional slab reinf. details see sht. # 113 & sht. # 114

TOP SLAB REINFORCING PLAN

scale: vertical 1/16" = 1'-0"
horizontal 3/32" = 1'-0"



D.L. CAMBER DIAGRAM (inbound)



D.L. CAMBER DIAGRAM (outbound)

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HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION
TOP SLAB REINFORCING PLAN
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1 (G5):10
SCALE: AS NOTED DATE 1969

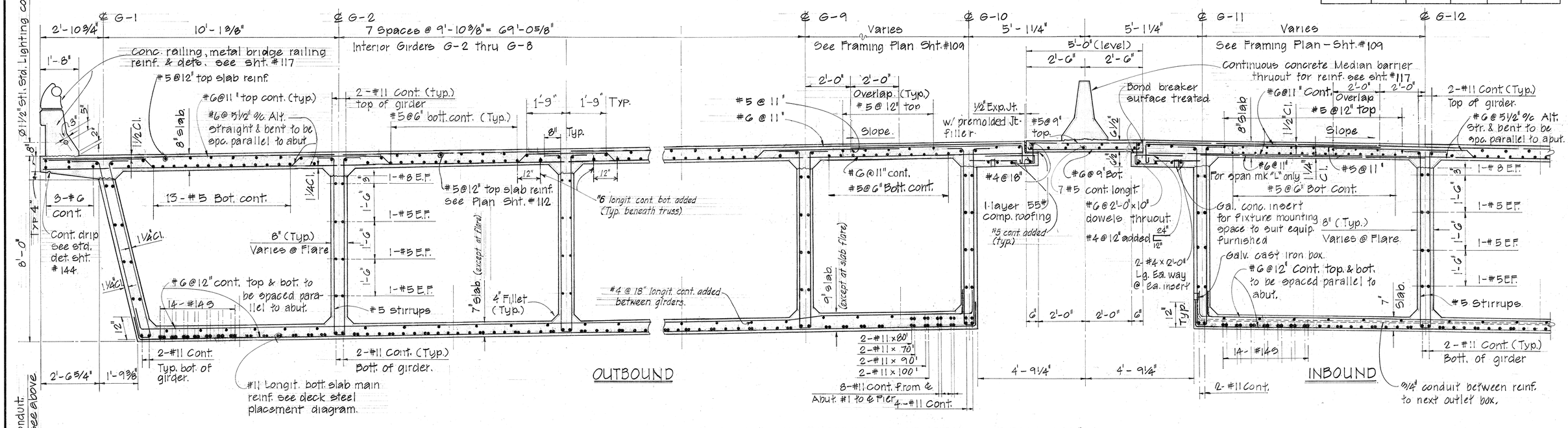
SHEET No. 6 OF 22 SHEETS

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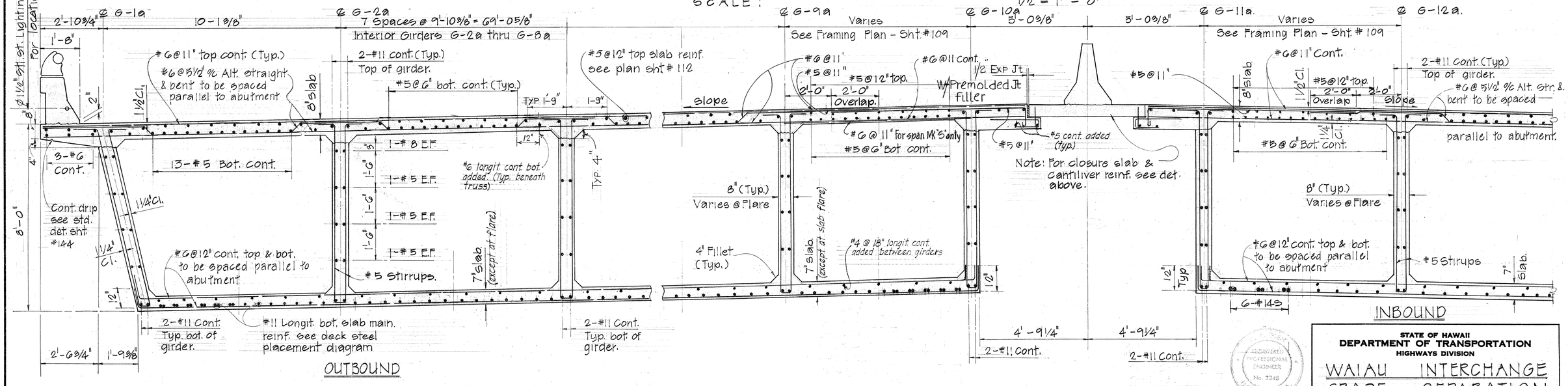
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HAWAII	HAW.	I-H-1(65):10	1969	113	185



NORMAL SECTION @ MID-SPAN - SPAN MK "L"

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



Note:

All transverse reinf. to be parallel to the abutments and pier cap.

NORMAL SECTION @ MID-SPAN - SPAN MK "S"

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE GRADE SEPARATION

NORMAL SECTION AT MID-SPAN
INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1 (65) :10
SCALE: AS NOTED DATE: 1969

REGISTERED PROFESSIONAL ENGINEER No. 2348 HAWAII, U.S.A.

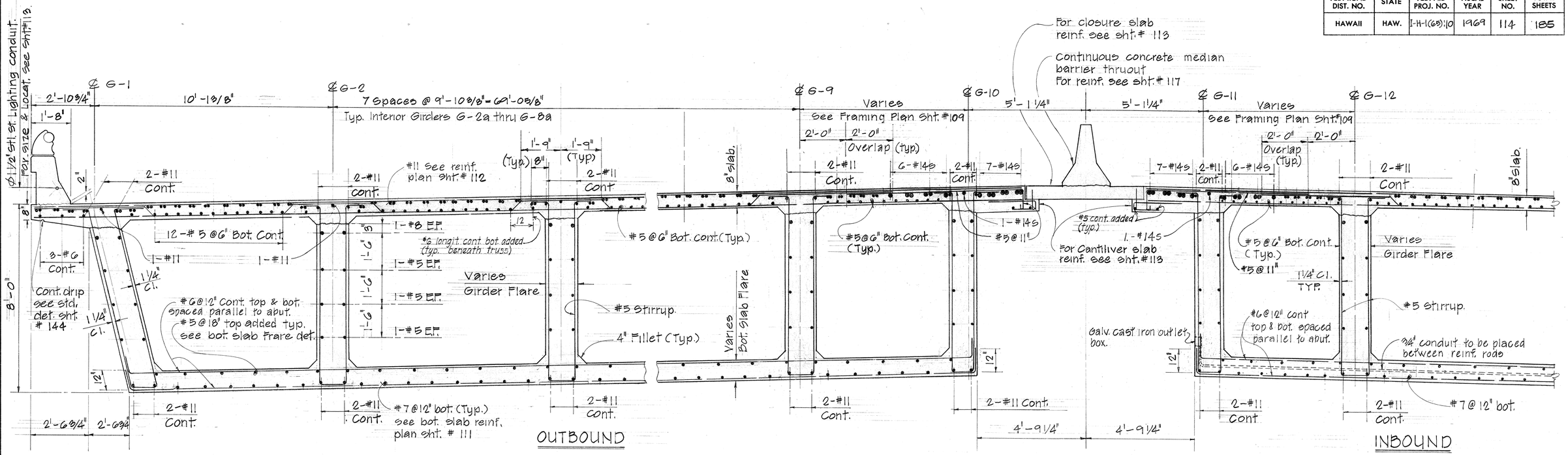
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113

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(68):10	1969	114	185

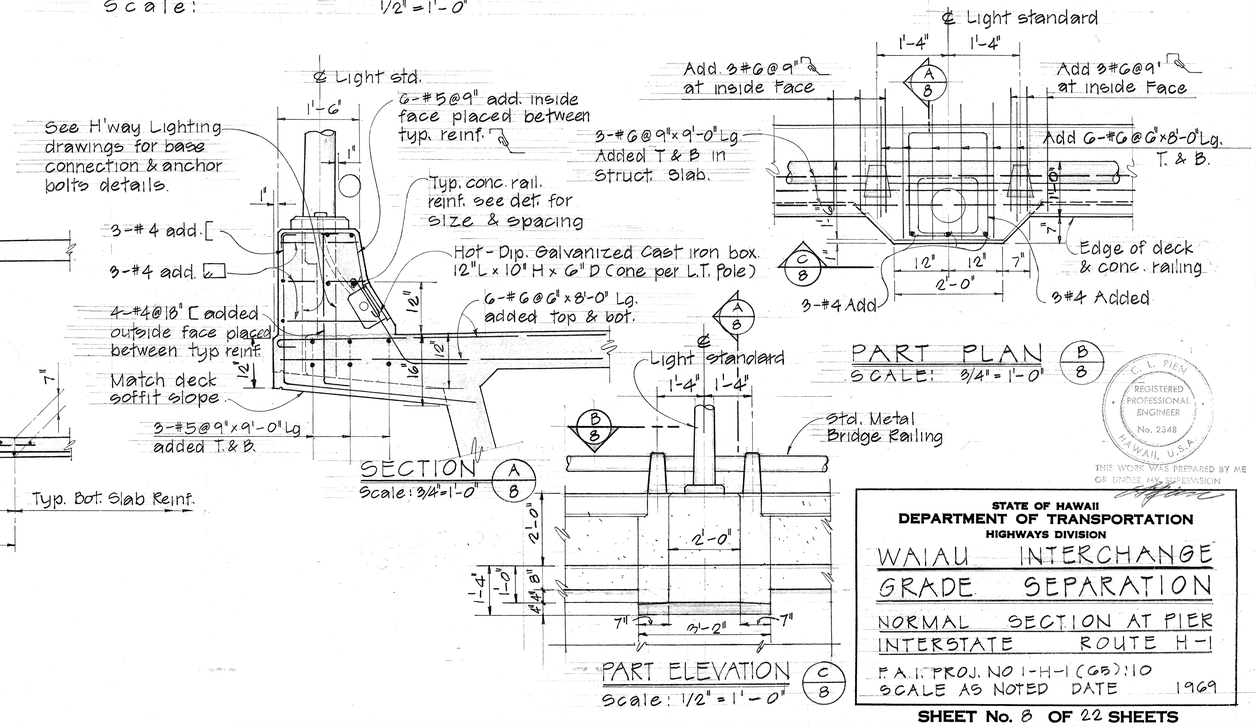


Note :

All transverse reinf. to be parallel to the abutments and pier cap.

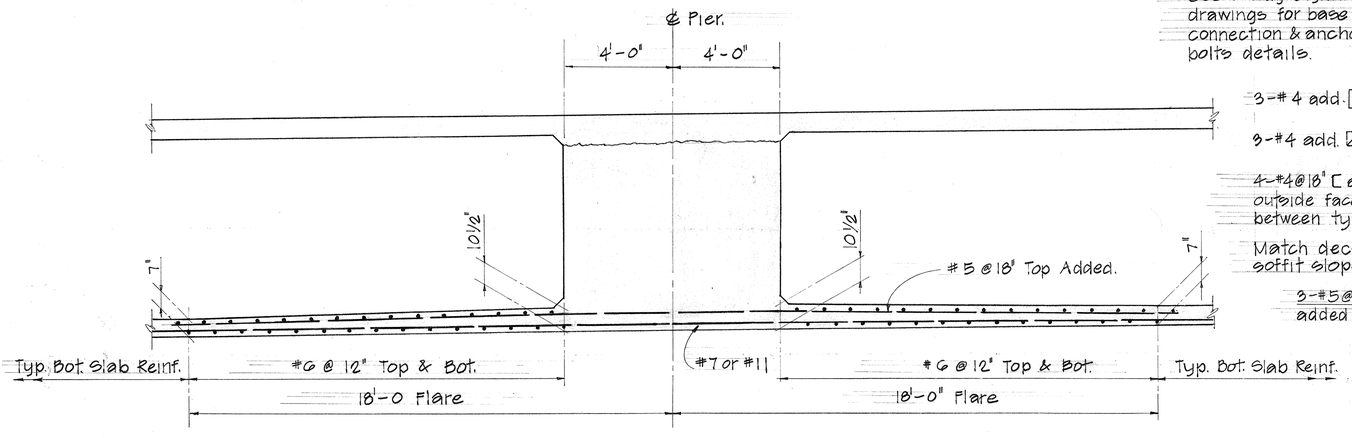
NORMAL SECTION AT PIER

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



BOTTOM SLAB FLARE DETAIL

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



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE GRADE SEPARATION

NORMAL SECTION AT PIER

INTERSTATE ROUTE H-1

F.A.I. PROJ. NO I-H-1 (GB):10
SCALE AS NOTED DATE 1969

SHEET No. 8 OF 22 SHEETS

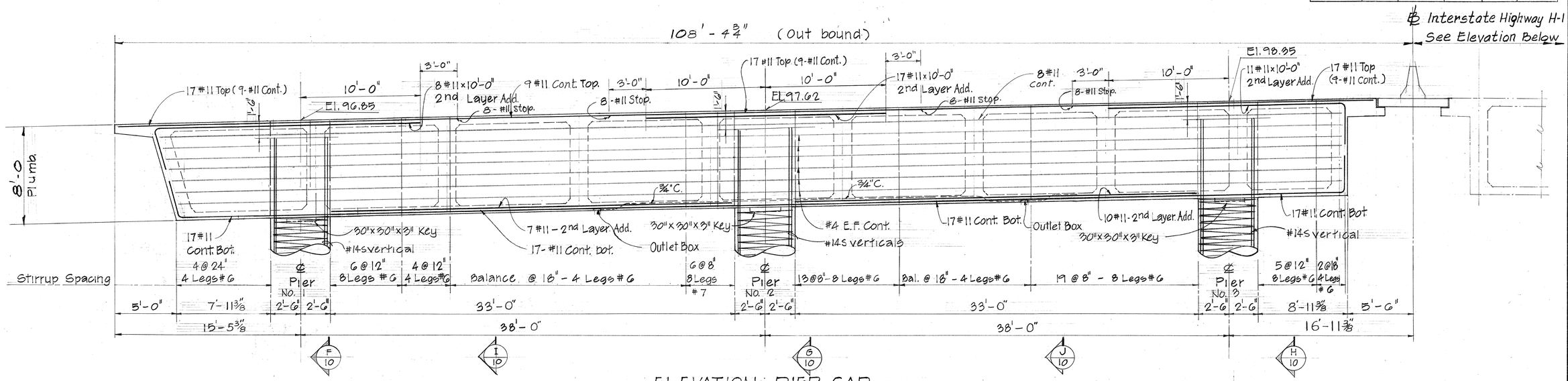
1 1 4

C. L. PIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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

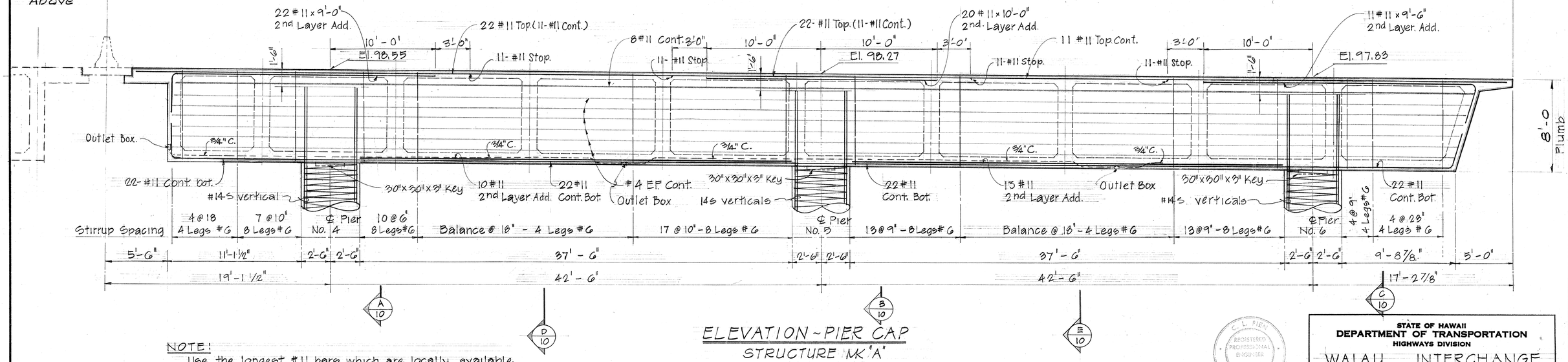
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	115	185



ELEVATION - PIER CAP
STRUCTURE MK "F"
SCALE: ¼" = 1'-0"

Note!
Elevations indicated to be at the center line of Bearing



ELEVATION - PIER CAP
STRUCTURE MK "A"
SCALE: 1/4" = 1'-0"

NOTE!
Use the longest #11 bars which are locally available. Splice the bundled bars with 1 bar at a time. Where the lapped splice reduces the minimum required space between the bars for concreting, butted and welded splices shall be employed as determined by the engineer. The butt welded splice shall develop in tension at least equal to the specified ultimate strength of the reinforcing bar.
No. 14S Bars can be used in lieu of No. 11 bars as Approved by Engineer.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE GRADE SEPARATION
PIER CAP ELEVATION INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1 (65):10
SCALE: AS NOTED DATE: 1969

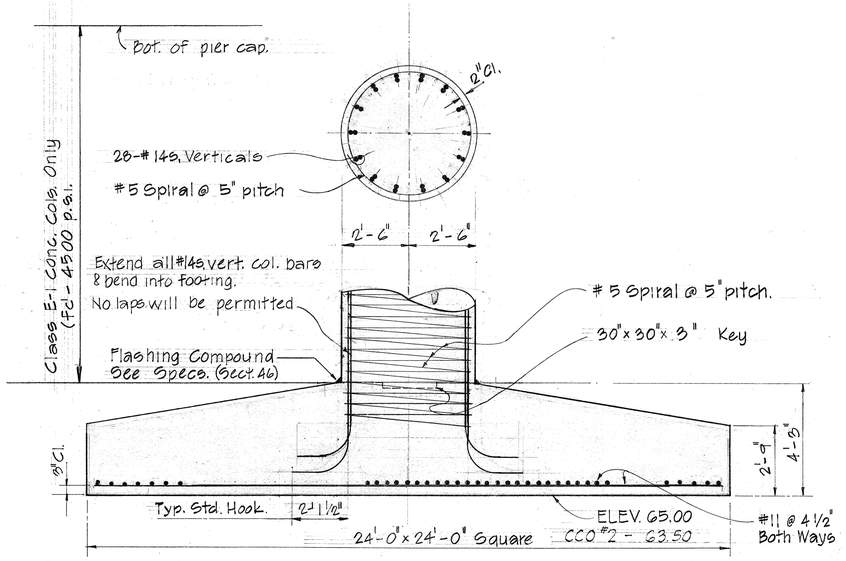
SHEET No. 9 OF 22 SHEETS

115

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

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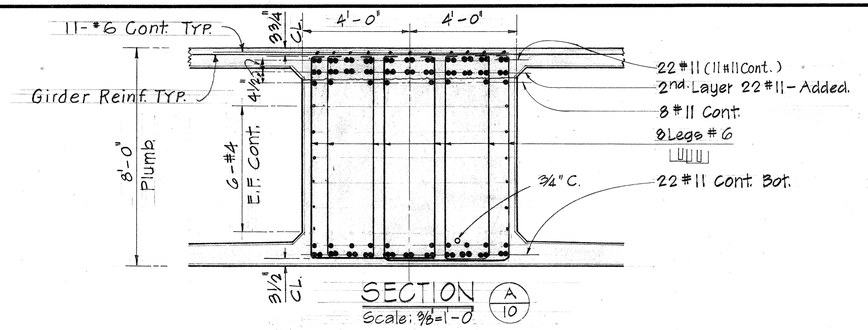
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	116	185



INBOUND

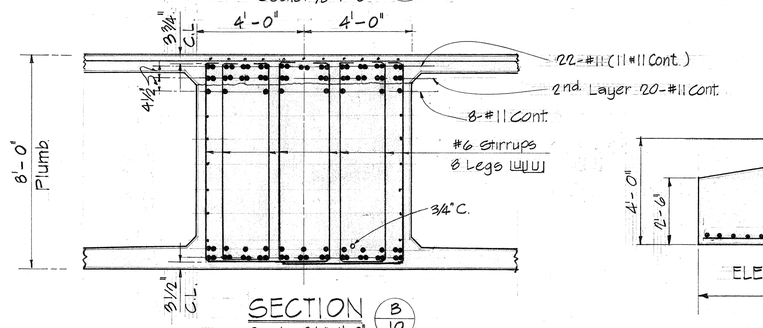
SECTION THRU TYP PIER & FOOTING @ ~~OUTBOUND~~ LANES

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



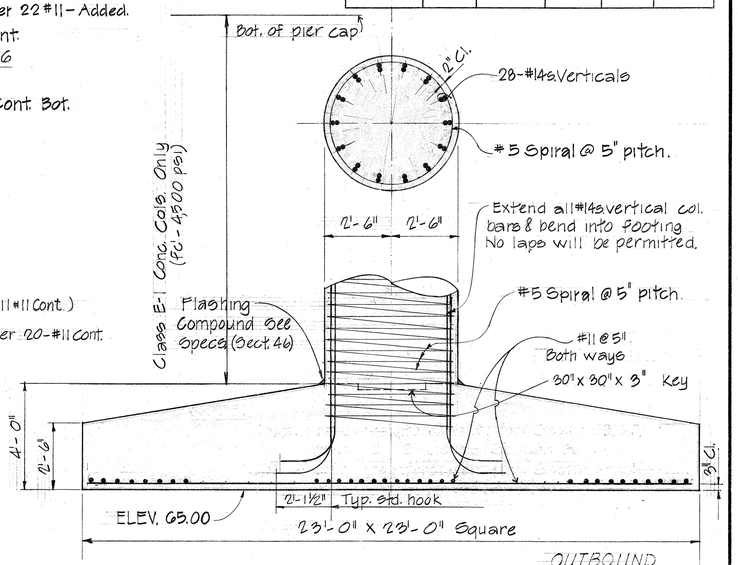
SECTION (A/10)

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



SECTION (B/10)

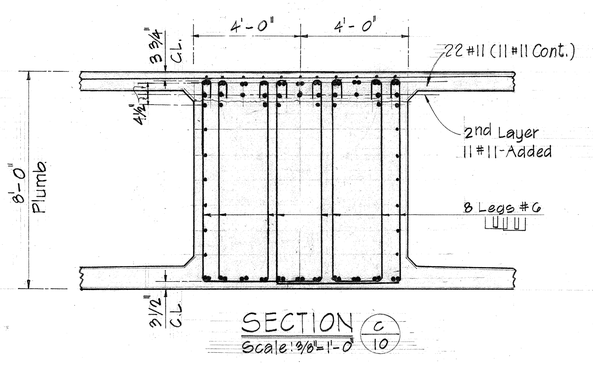
Scale: 3/8"=1'-0"



OUTBOUND

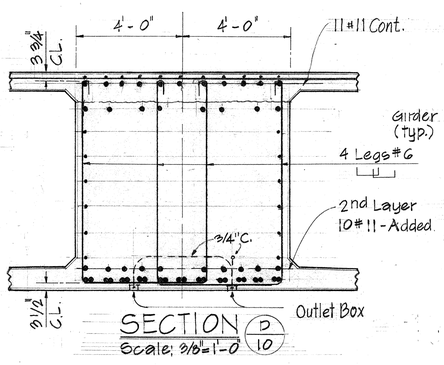
SECTION THRU TYP. PIER & FOOTING @ ~~INBOUND~~ LANES

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



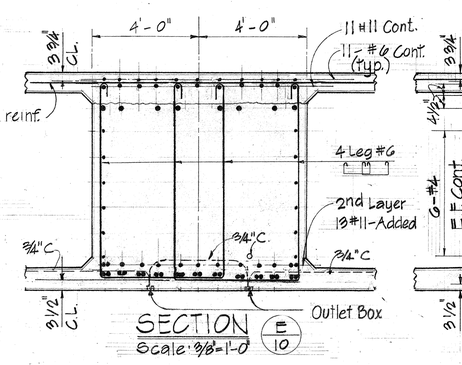
SECTION (C/10)

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



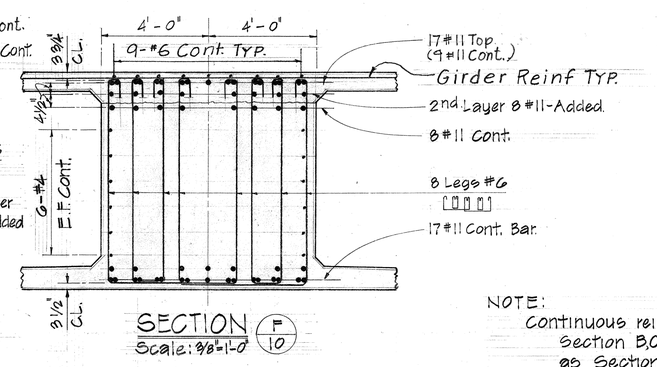
SECTION (D/10)

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



SECTION (E/10)

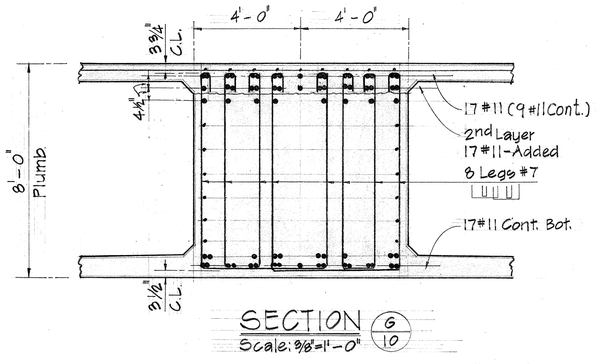
Scale: 3/8"=1'-0"



SECTION (F/10)

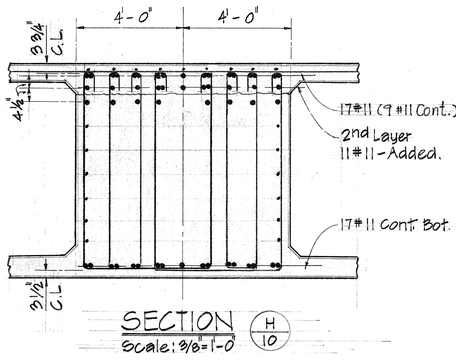
Scale: 3/8"=1'-0"

NOTE:
Continuous reinforcement for Section B,C,D and E. Same as Section A.
Continuous reinforcement for Section G,H, I and J. Same as Section F



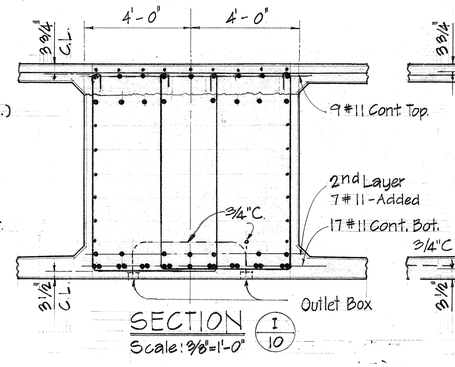
SECTION (G/10)

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



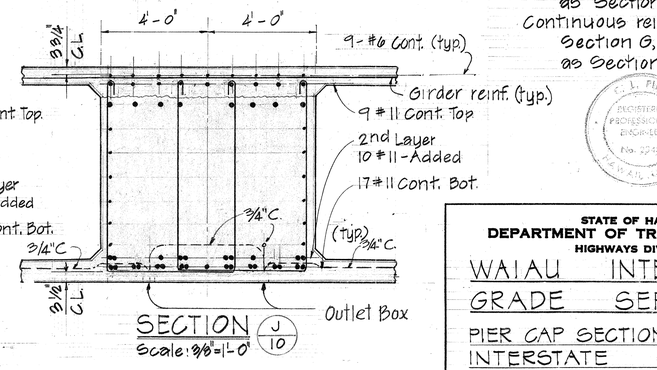
SECTION (H/10)

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



SECTION (I/10)

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



SECTION (J/10)

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

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HAWAII, U.S.A.

THIS PLAN WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION

PIER CAP SECTIONS & F.T.G.
INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1 (65):10
SCALE: AS NOTED. DATE: 1969

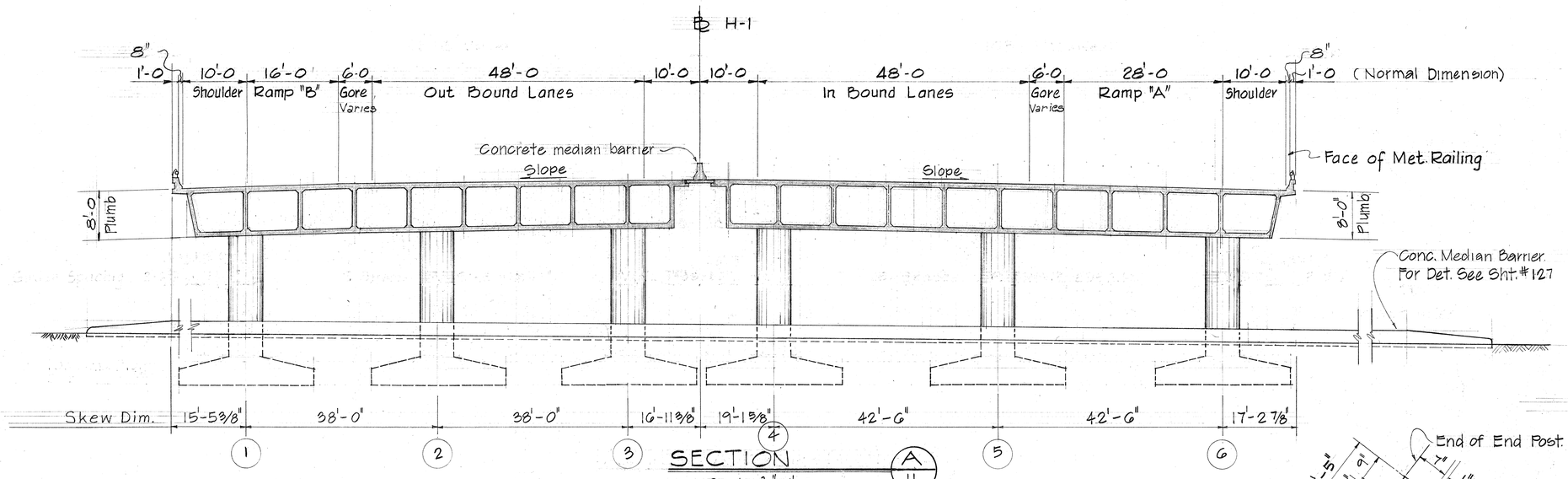
SHEET No. 10 OF 22 SHEETS

116

ORIGINAL PLAN
NOTE BOOK
No.
DRAWN BY
TRACED BY
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CHECKED BY

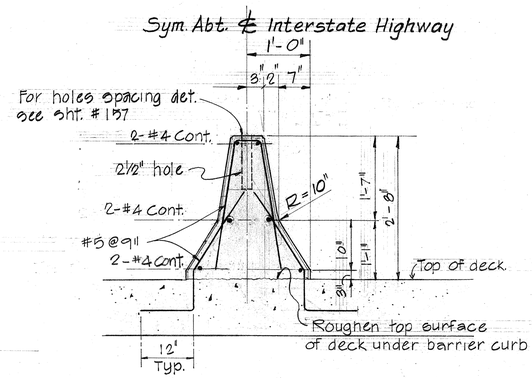
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	117	185



SECTION A/11

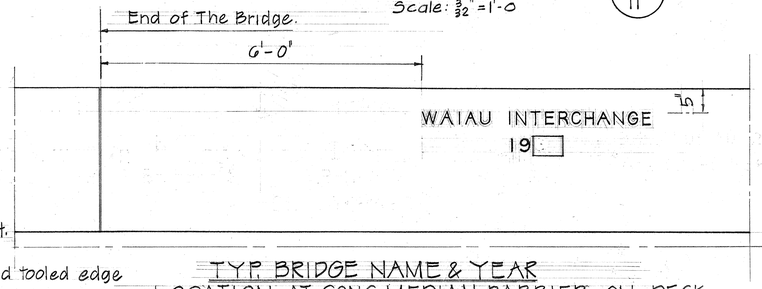
Scale: 3/32" = 1'-0



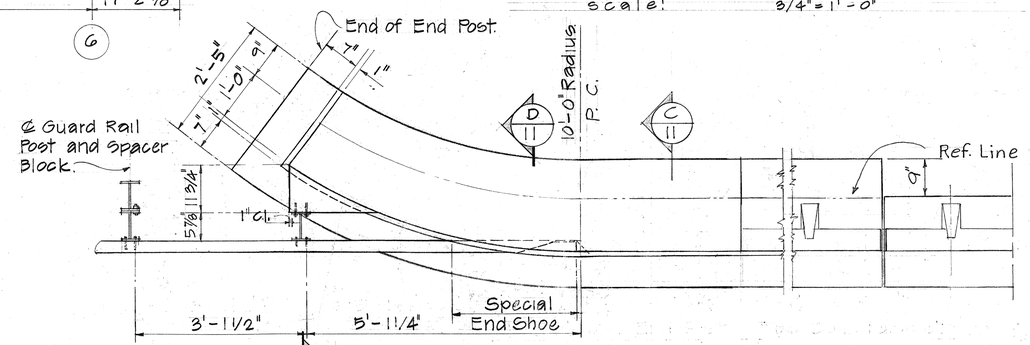
TYPICAL SECTION
CONC. MEDIAN BARRIER ON DECK

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

Note:
1. Place Name of Structure as Shown For Location See Sht. # 107
2. Year Shown Will be Year Structure is Completed.
3. Letter Size & Detail - See Std. Det. Sht. # 144

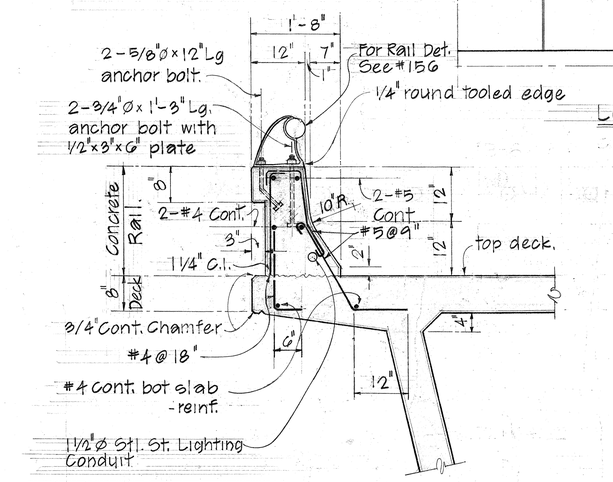


TYP. BRIDGE NAME & YEAR LOCATION AT CONC. MEDIAN BARRIER ON DECK



PLAN - WING WALL

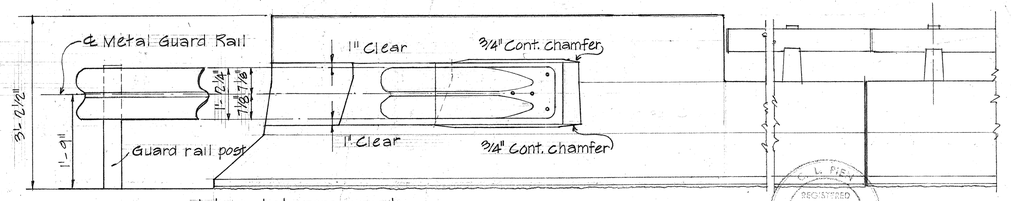
Scale 3/4" = 1'-0"

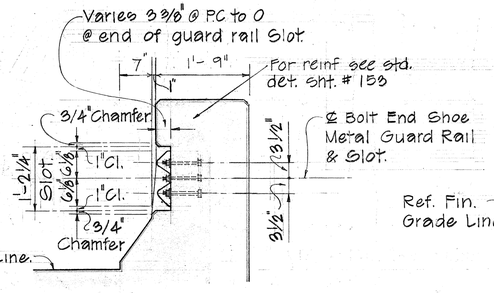


TYPICAL CONCRETE RAILING SECTION

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

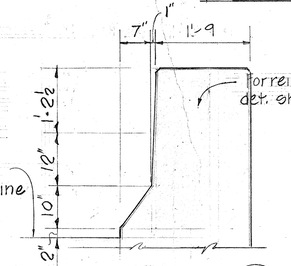
Note:
1. For Details of Connections for metal Guard Rail see sht. #159
2. Guard Rail including post, spacer block & element shall be by others.





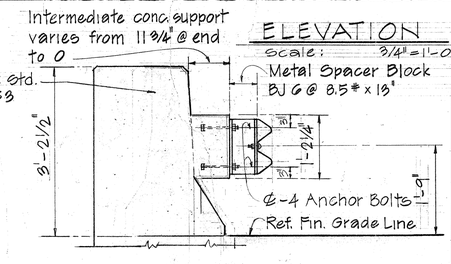
SECTION D/11

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



SECTION C/11

Scale: 3/4" = 1'-0



ELEVATION

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

Metal Spacer Block BJ G@ 8.5# x 13"

SECTION B/11

Scale 3/4" = 1'-0"

L. FIEY
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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION
RAIL & BARRIER SECT. & DET.
INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1 (65): 10
SCALE: AS NOTED DATE: 1969

SHEET No. 11 OF 22 SHEETS

117

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

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(68):10	1969	118	185

Note:
All piles to be type I (16" Min. Octagon) and to have a minimum capacity of 45 tons.
Driving shall be done with a hammer delivering at least 26,000 foot-pounds of energy per blow.

For predrilling of piles see Dames & Moore's Report on Found. Investigation.

Suggested tip elevations for test pile penetration

(A) +40'	(G) +35'	(N) + 58'
(B) +40'	(H) +35'	(O) + 55'
(C) +40'	(J) +60'	(P) + 58'
(D) +45'	(K) +60'	(Q) + 58'
(E) +45'	(L) +60'	
(F) +55'	(M) + 58'	

℄ Bearing Pier
℄ Moanalua Rd.

H-1 Highway

Wing Wall #2

Wing Wall #3

111'-10½"

117'-10 9/4"

Sta. 74+88.65

℄ Bearing Abutment No. 2
Az. 304°-59'-38"

9-Spaces @ 9'-6" = 85'-6" ℄ back row

13-Spaces @ 9'-0" = 117'-0" ℄ back row

14-Spaces @ 9'-0" = 126'-0" ℄ second row

22-Spaces @ 4'-9" = 104'-6"

29-Spaces @ 4'-6" = 130'-6"

108'-3 1/8"

108'-6"

134'-6"

Edge of Deck

Soil pressure = 6 Kips per sq. ft.

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

B-5 B-6 B-7 B-8 B-10 B-11 B-12

Az. 244°-47'-20"

Az. 246°-21'-40"

Sta. 73+78.56 (H-1)
Sta. 45+85.58 (Moanalua)

OUTBOUND

INBOUND

℄ Piers
Az. 304°-59'-38"

℄ 1st. Phase Detour Rd. (For exact Alignment see phasing plans shts. 28 & 29).

132'-2 1/8"

114'-8 1/2"

SYMBOLS

○ Vertical piles
○3 Batter piles, direction of batter

All batter piles to be driven on a 1:3 slope unless otherwise noted.

Note:
1. For boring logs see sht. # 128
2. The contractor shall follow the phasing plans as indicated on plan shts. 28-29
3. The bridge substructure shall be installed during the phase 1 construction. Vehicular access shall be maintained on the Cane Haul Road.
4. Erection of the bridge superstructure shall be during the phase 2 construction. Opening below the structure for access purposes shall be 28' clear min. horizontal distance ℄ 15' min. vertical distance.

46'-1½" 52'-3" 85'-3" 34'-10½"

8-Spaces @ 5'-3" = 42'-0"
10-Spaces @ 4'-9" = 47'-6"
17-Spaces @ 4'-9" = 80'-9"
12-Spaces @ 4'-3" 9/16 = 51'-0"
8-Spaces @ 9'-6" = 76'-0" ℄ Back row
4 Spc. @ 10'-6" = 31'-6" ℄ Back row
4 Spc. @ 9'-6" = 38'-0" ℄ Back row
4 Spaces @ 8'-6" = 34'-0" ℄ Back row

B-1 B-2 B-3 B-4

104'-1 3/4"

125'-7½"

Sta. 72+44.22

℄ Bearing Abut. No. 1.
Az. 304°-59'-38"

WING WALL #2

WING WALL #1

FOUNDATION PLAN
Scale: 1/16" = 1'-0"

C. L. PIEN
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No. 2348
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

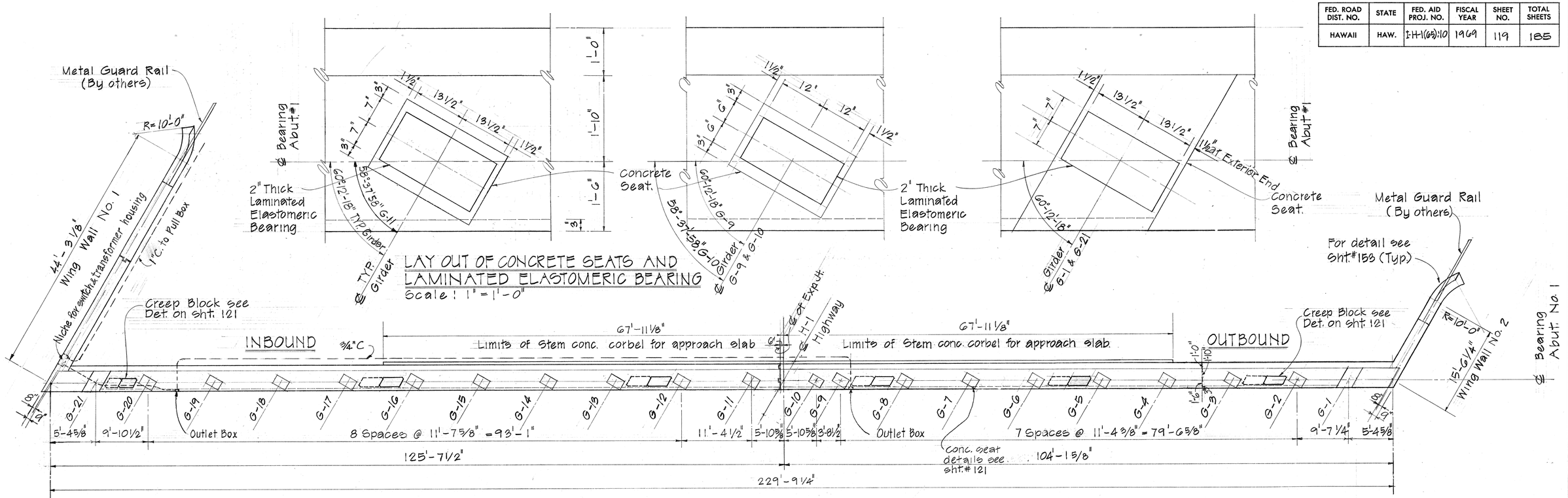
WAIAU INTERCHANGE
GRADE SEPARATION
FOUNDATION PLAN
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1 (68):10
SCALE: AS NOTED DATE: 1969

SHEET No. 12 OF 22 SHEETS

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

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	119	185



Girder No.	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8	G-9	G-10	G-11	G-12	G-13	G-14	G-15	G-16	G-17	G-18	G-19	G-20	G-21
Elevation	86.50'	86.71'	86.93	87.18	87.42	87.68	87.92	88.07	88.40	88.47	88.57	88.53	88.47	88.42	88.36	88.31	88.31	88.11	87.77	87.49	87.28

CONCRETE SEAT ELEVATION SCHEDULE

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

C. L. FIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION
ABUT. NO. 1, PLAN & ELEVATION
INTERSTATE ROUTE H-1

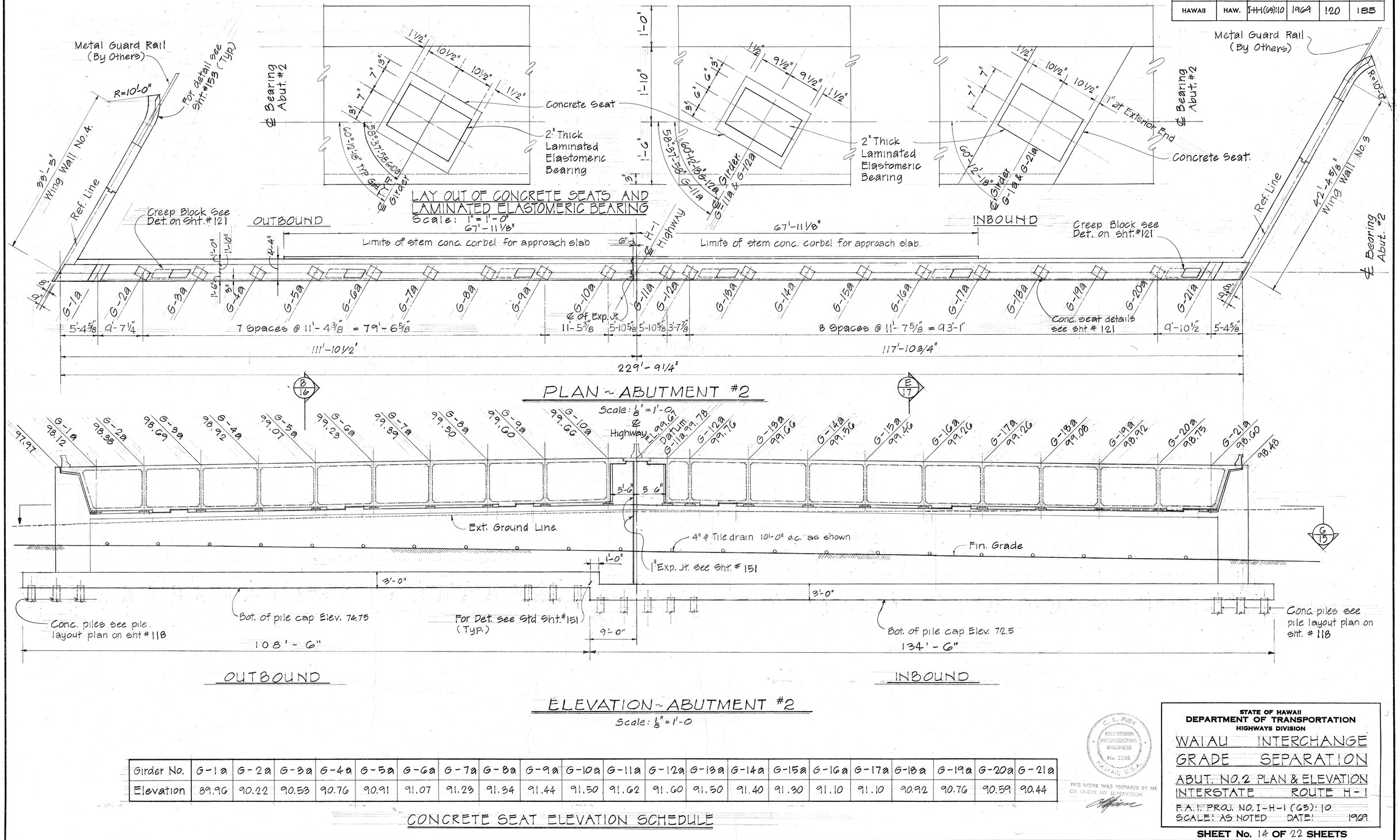
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE: 1969

SHEET No. 13 OF 22 SHEETS

119

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HH(69):10	1969	120	185



LAY OUT OF CONCRETE SEATS AND LAMINATED ELASTOMERIC BEARING

Scale: 1" = 1'-0"

PLAN ~ ABUTMENT #2

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

ELEVATION ~ ABUTMENT #2

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

Girder No.	G-1a	G-2a	G-3a	G-4a	G-5a	G-6a	G-7a	G-8a	G-9a	G-10a	G-11a	G-12a	G-13a	G-14a	G-15a	G-16a	G-17a	G-18a	G-19a	G-20a	G-21a
Elevation	89.96	90.22	90.53	90.76	90.91	91.07	91.23	91.34	91.44	91.50	91.62	91.60	91.50	91.40	91.30	91.10	91.10	90.92	90.76	90.59	90.44

CONCRETE SEAT ELEVATION SCHEDULE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

C. L. FIELD REGISTERED PROFESSIONAL ENGINEER No. 2345 HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION
ABUT. NO.2 PLAN & ELEVATION
INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1 (69):10
SCALE: AS NOTED DATE: 1969

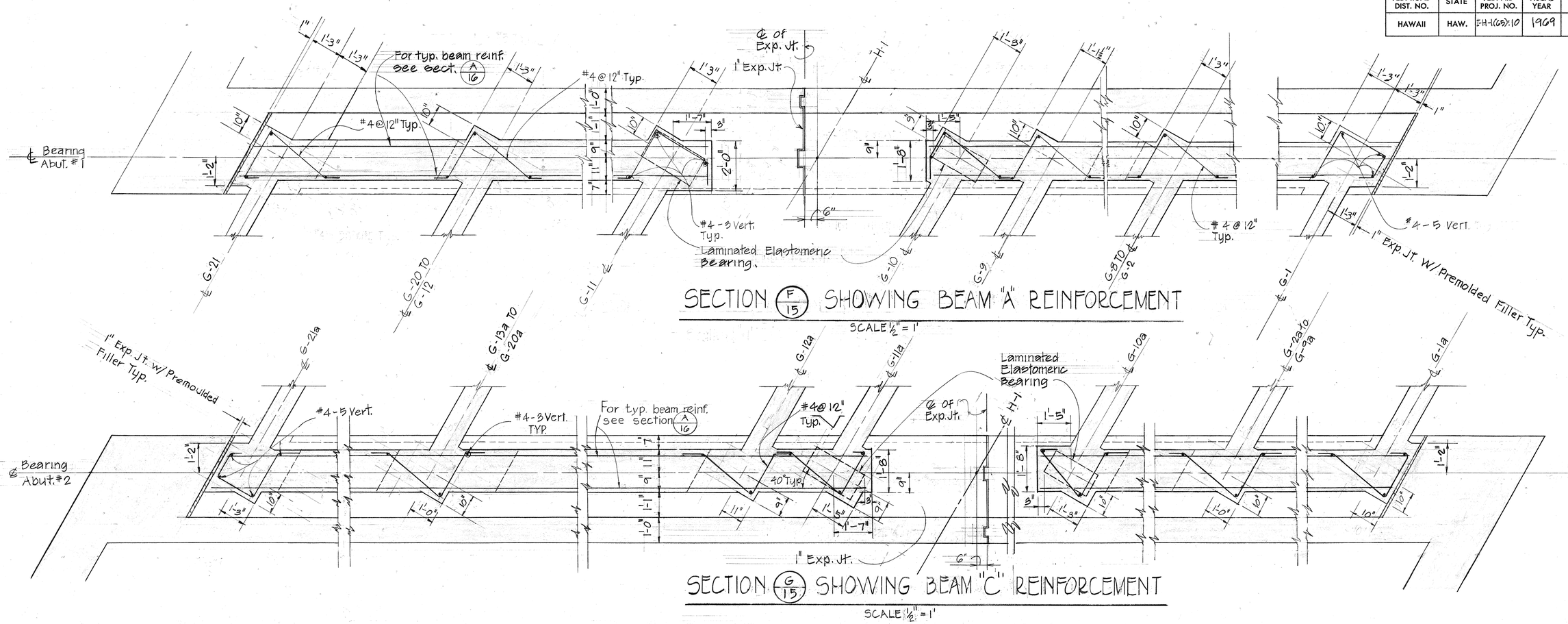
SHEET No. 14 OF 22 SHEETS

120

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

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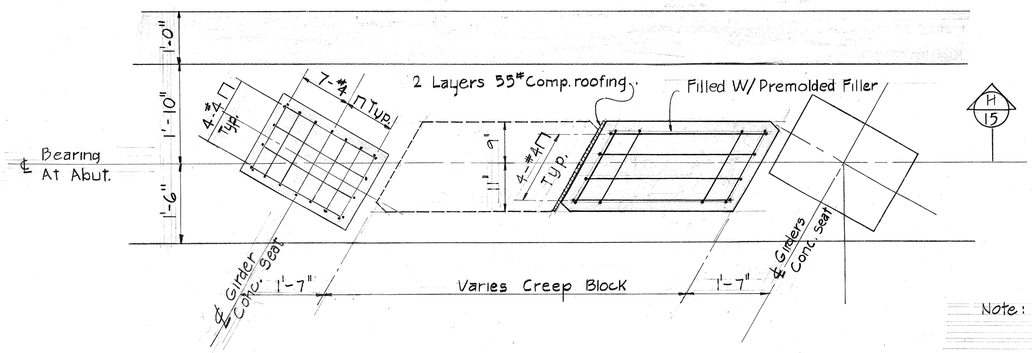
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-H-1(65):10	1969	121	185



SECTION F/15 SHOWING BEAM "A" REINFORCEMENT

SECTION G/15 SHOWING BEAM "C" REINFORCEMENT

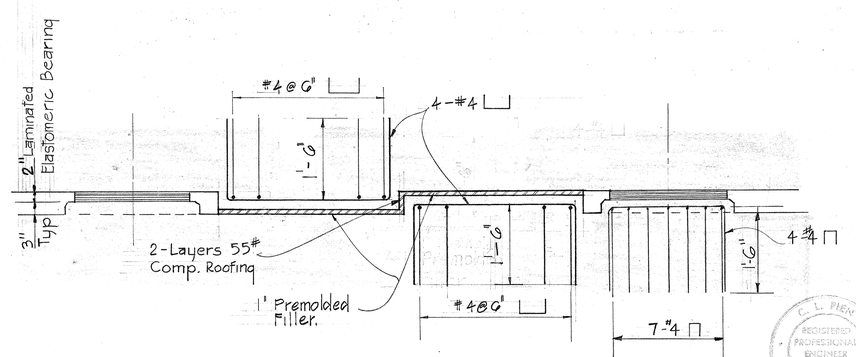
SCALE 1/2" = 1'



TYPICAL CONC. SEAT & CREEP BLOCK PLAN

Scale 3/4" = 1'0"

Note: For Location of Creep Blocks & Girder Seats see Sht. No's 119 & 120



SECTION H/15

Scale 3/4" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU - INTERCHANGE
GRADE SEPARATION
END BEAM "A" & "C" DETAILS
INTERSTATE ROUTE H-1

F. A. I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE 1969

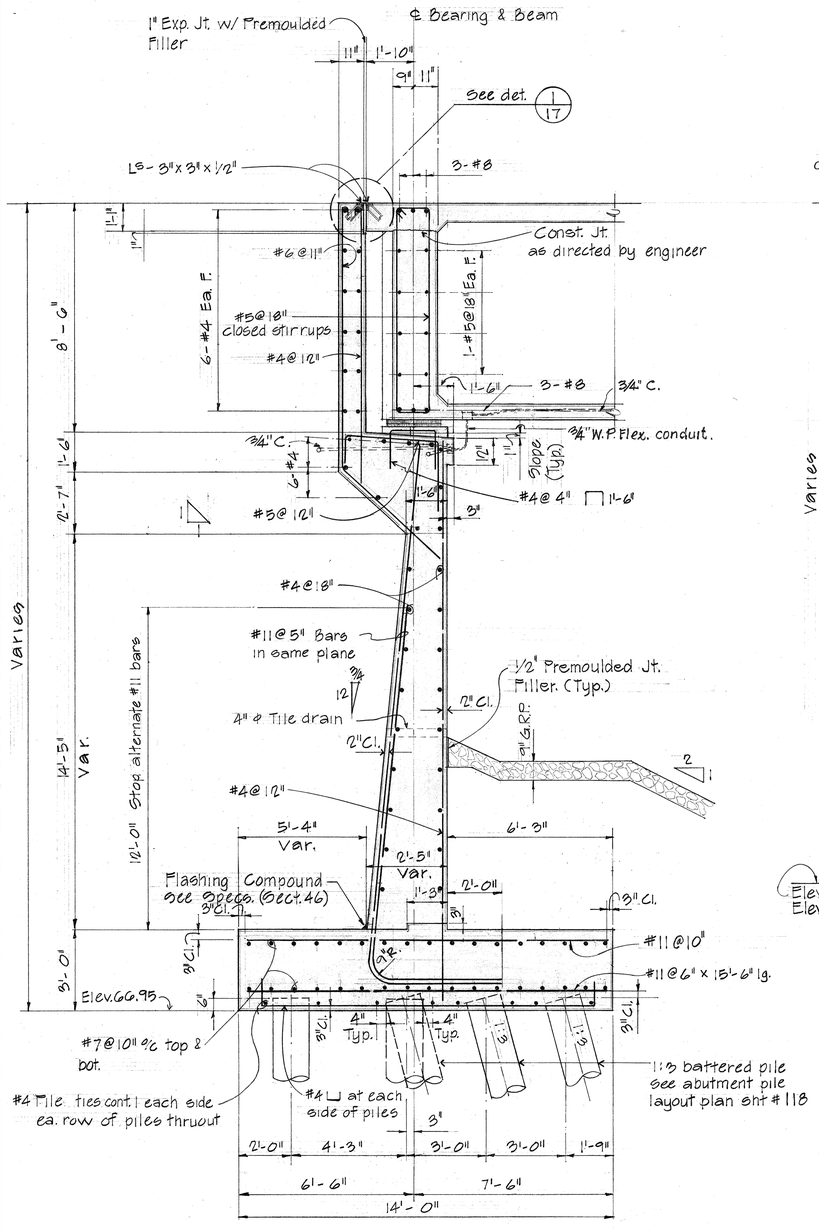
SHEET No. 15 OF 22 SHEETS

121

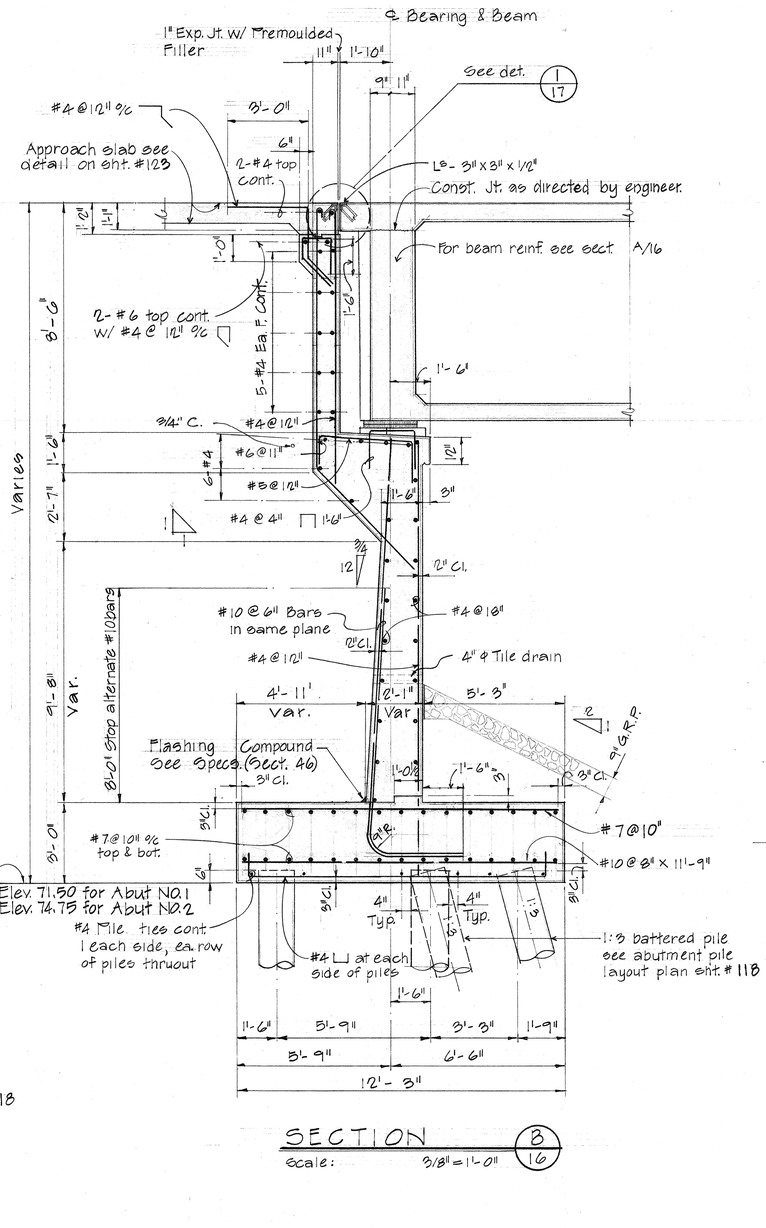
ORIGINAL PLAN	SURVEY PLOTTED BY:	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

PRINTED ON NO. 1000H CLEARPRINT

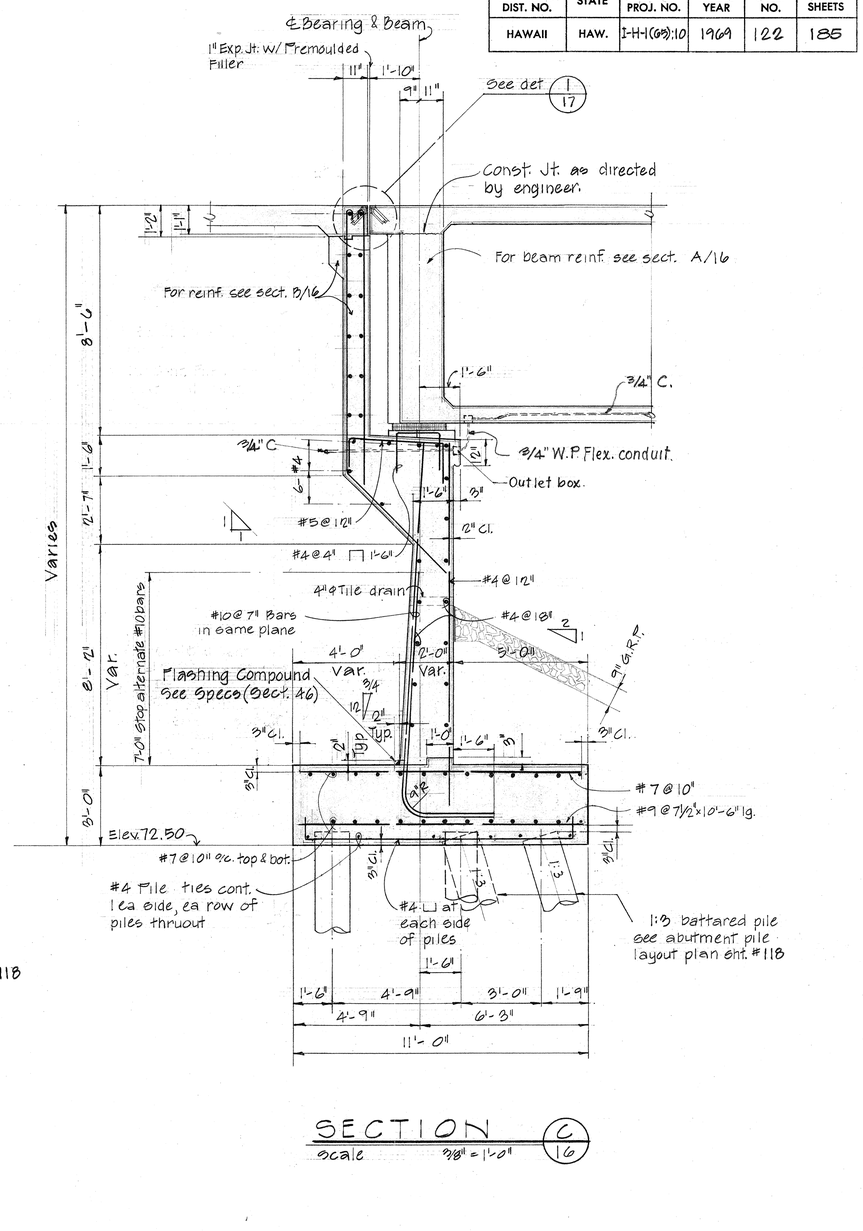
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(63):10	1969	122	185



SECTION A 16
Scale: 3/8" = 1'-0"



SECTION B 16
Scale: 3/8" = 1'-0"



SECTION C 16
Scale: 3/8" = 1'-0"

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CHECKED BY
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ORIGINAL PLAN
NOTE BOOK
No.

C. L. PIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION

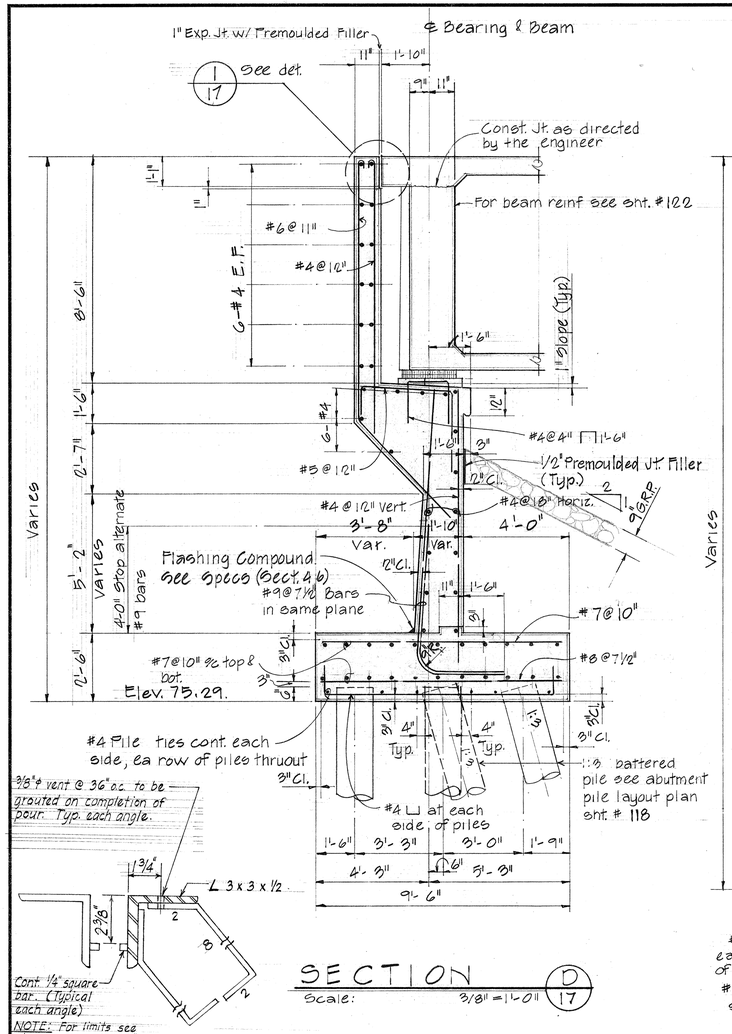
ABUTMENT SECTIONS & DETAILS
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1 (63):10
SCALE AS NOTED DATE 1969

SHEET No. 16 OF 22 SHEETS

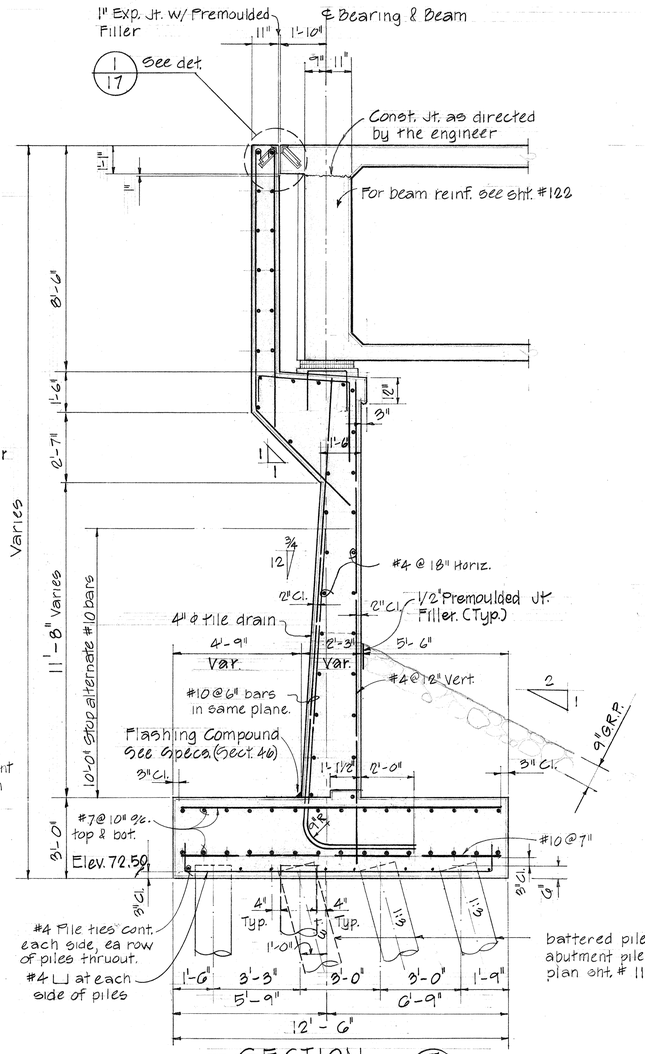
122

PRINTED ON NO. 1000N CLEARPRINT

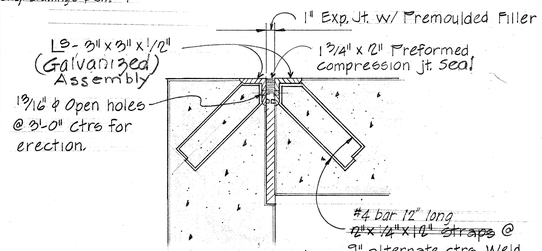
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	123	185



SECTION (D 17)
Scale: 3/8"=1'-0"

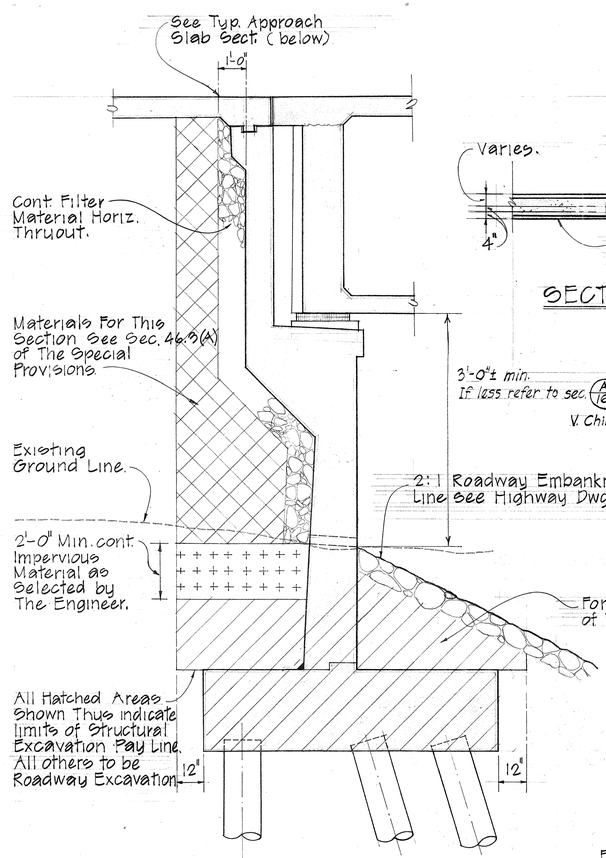


SECTION (E 17)
Scale: 3/8"=1'-0"

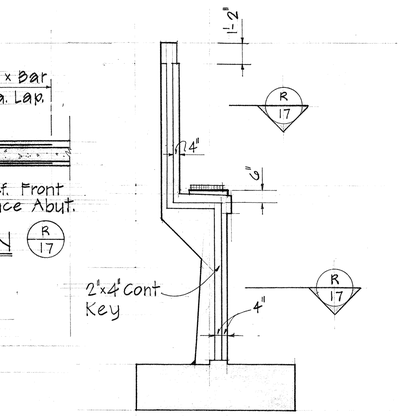


Note: The minimum thickness of the preformed compression jt. seal shall be 1/8" for the sides, bottom, top & vertical & 1/16" for the diagonal.

TYPICAL DETAIL (1 17)
Scale: 1½"=1'-0" (Typ. exp. jts.)



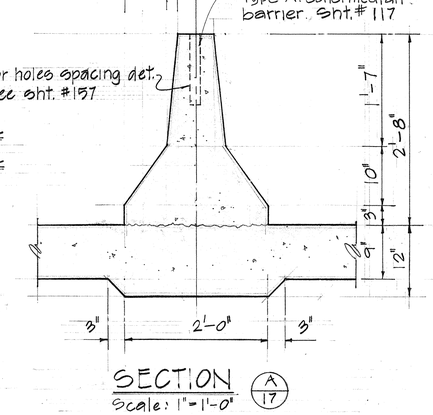
AT ABUTMENTS
TYPICAL LIMITS OF STRUCTURAL EXCAVATION-PAY LINE & BACKFILL
Not To Scale



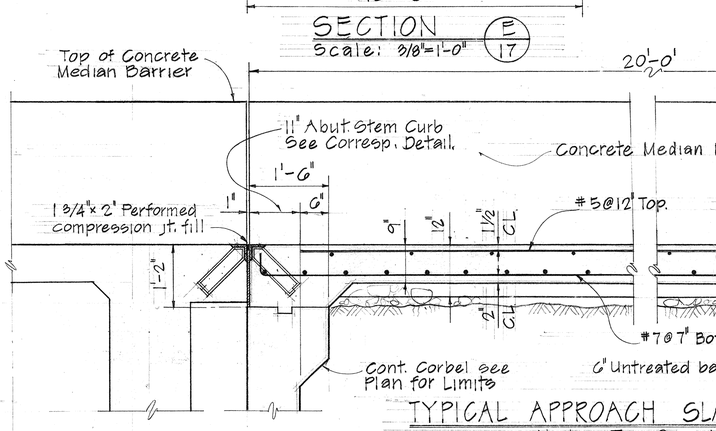
SECTION (R 17)

ELEVATION

TYP. CONST. JT. DET. AT ABUT.
Scale: 1/4"=1'-0"



SECTION (A 17)
Scale: 1"=1'-0"



TYPICAL APPROACH SLAB SECTION
Not To Scale

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE GRADE SEPARATION ABUTMENT SECT. & DET. INTERSTATE ROUTE H-1

F. A. I. PROJ. NO. I-H-1 (65): 10
SCALE: AS NOTED DATE: 1969

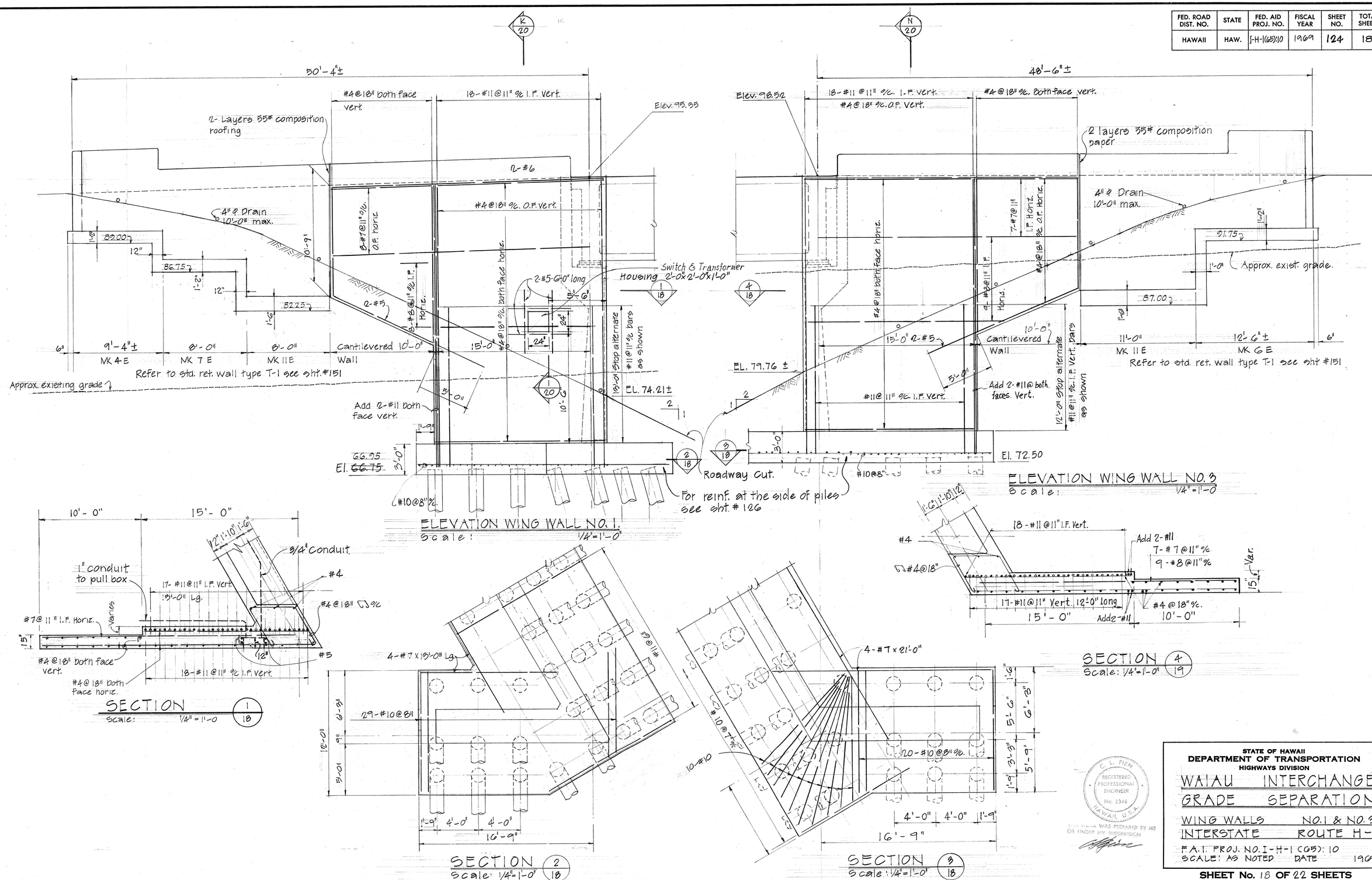
SHEET No. 17 OF 22 SHEETS

1 2 3

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	QUANTITIES BY	
	CHECKED BY	

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	124	185



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

C. L. FIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

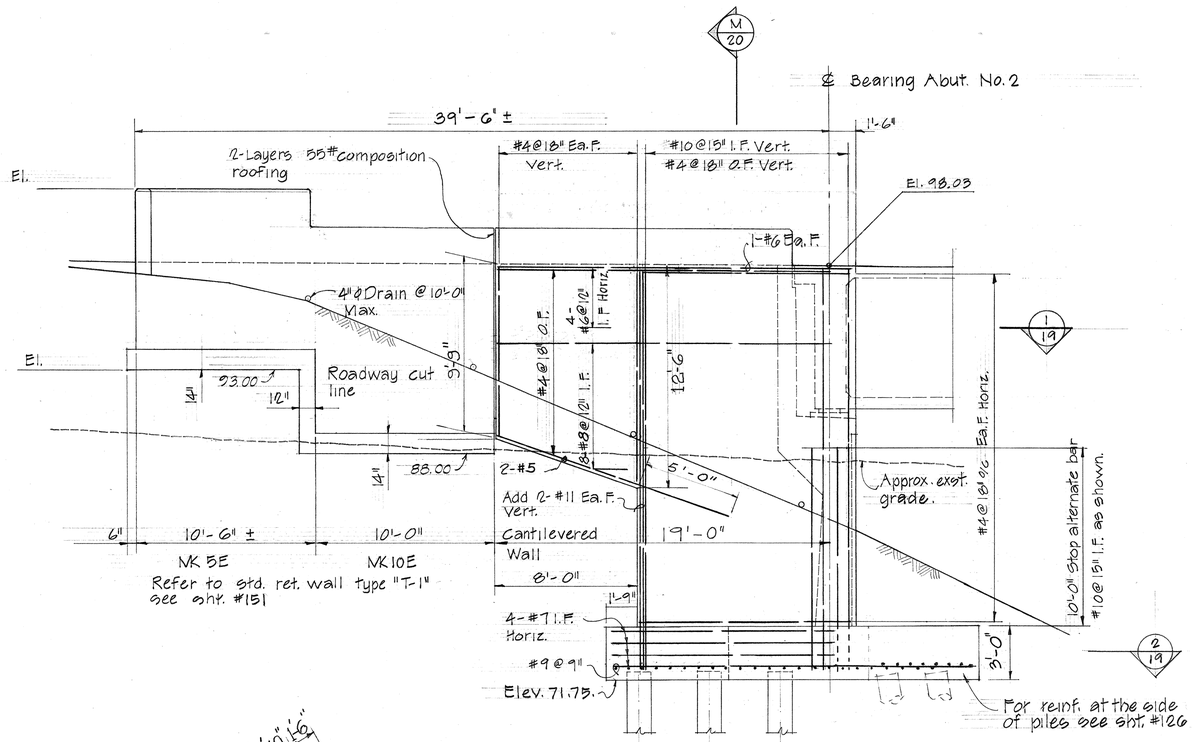
WAIAU INTERCHANGE
GRADE SEPARATION
WING WALLS NO. 1 & NO. 3
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1 (65): 10
SCALE: AS NOTED DATE 1969

SHEET No. 18 OF 22 SHEETS

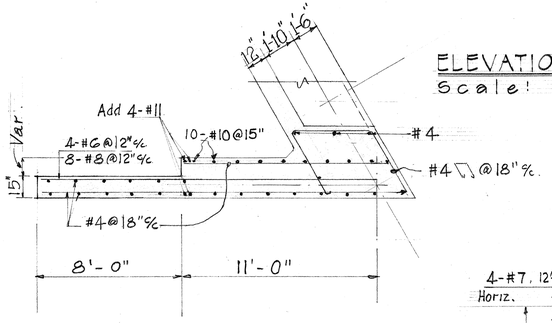
124

PRINTED ON NO. 1000H CLEARPRINT

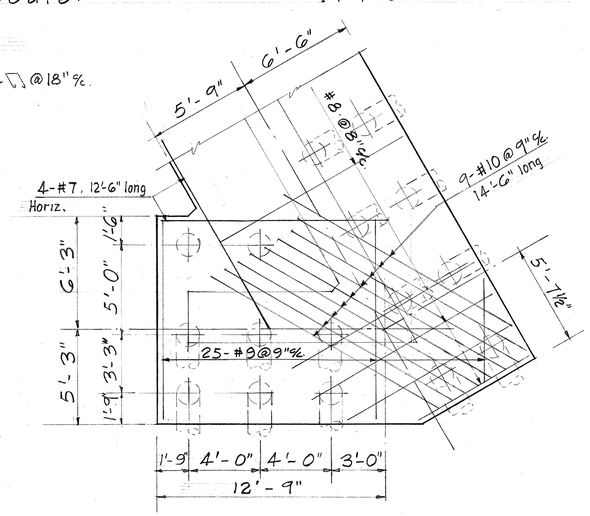
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(69):10	1969	125	185



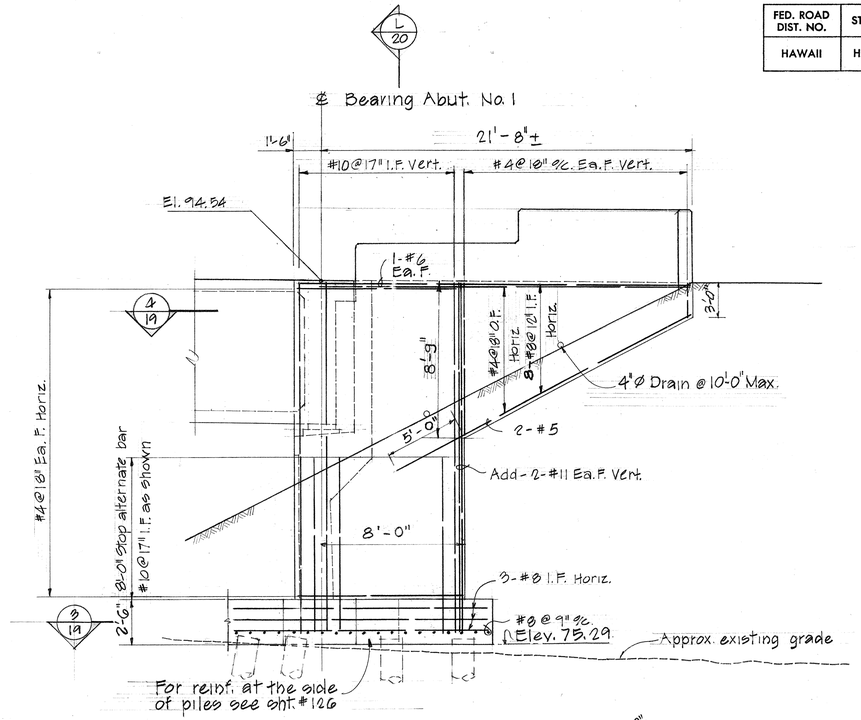
ELEVATION OF WING WALL NO. 4
Scale: 1/4"=1'-0"



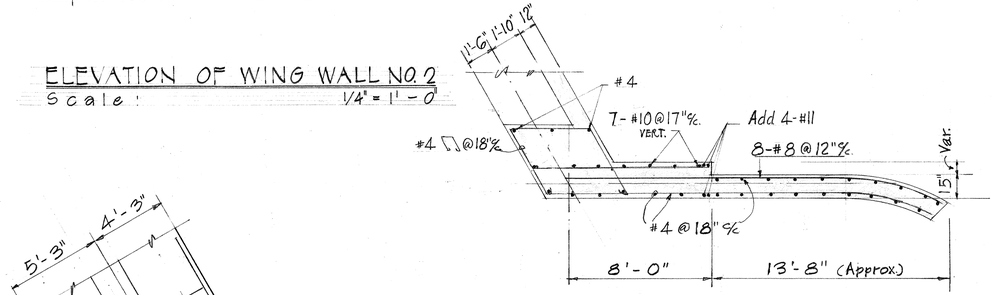
SECTION 1/19
Scale: 1/4"=1'-0"



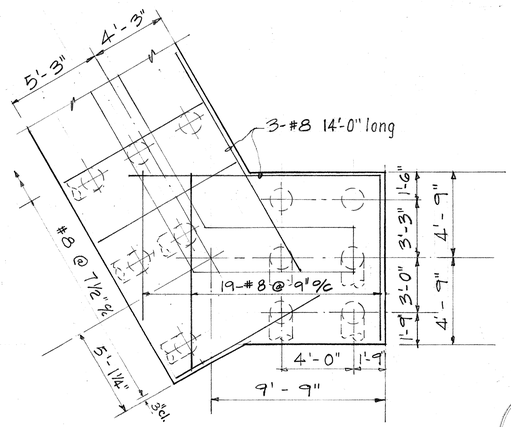
SECTION 2/19
Scale: 1/4"=1'-0"



ELEVATION OF WING WALL NO. 2
Scale: 1/4"=1'-0"



SECTION 4/19
Scale: 1/4"=1'-0"



SECTION 3/19
Scale: 1/4"=1'-0"

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE GRADE SEPARATION

WING WALLS NO. 2 & NO. 4 INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1 (69):10
SCALE: AS NOTED DATE 1969

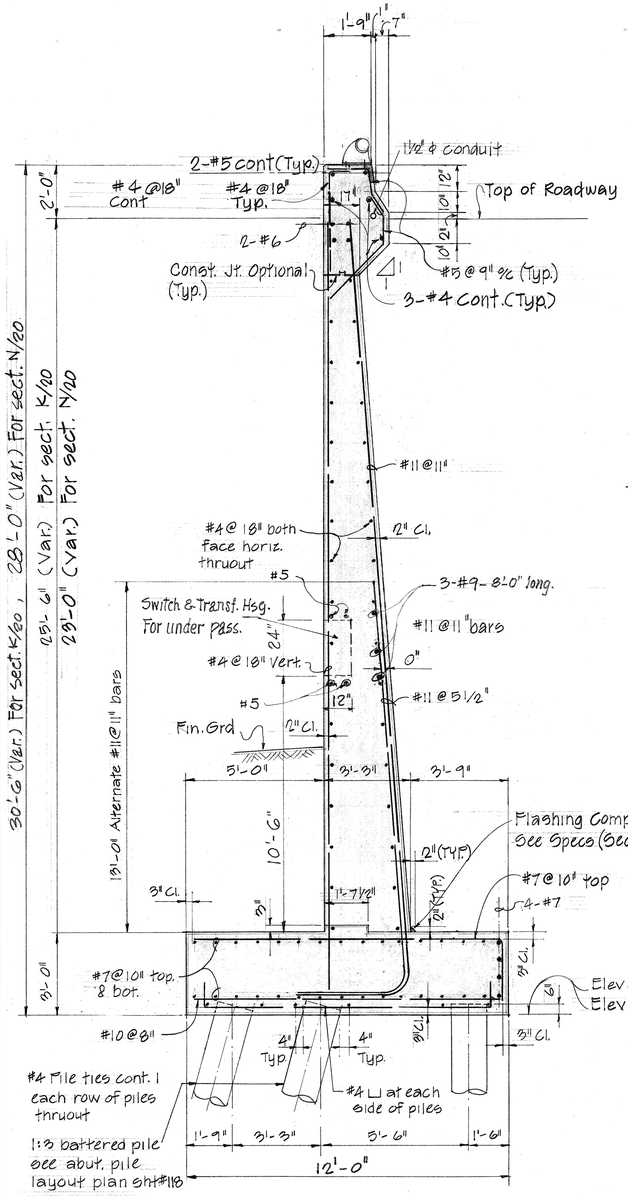
SHEET No. 19 OF 22 SHEETS

125

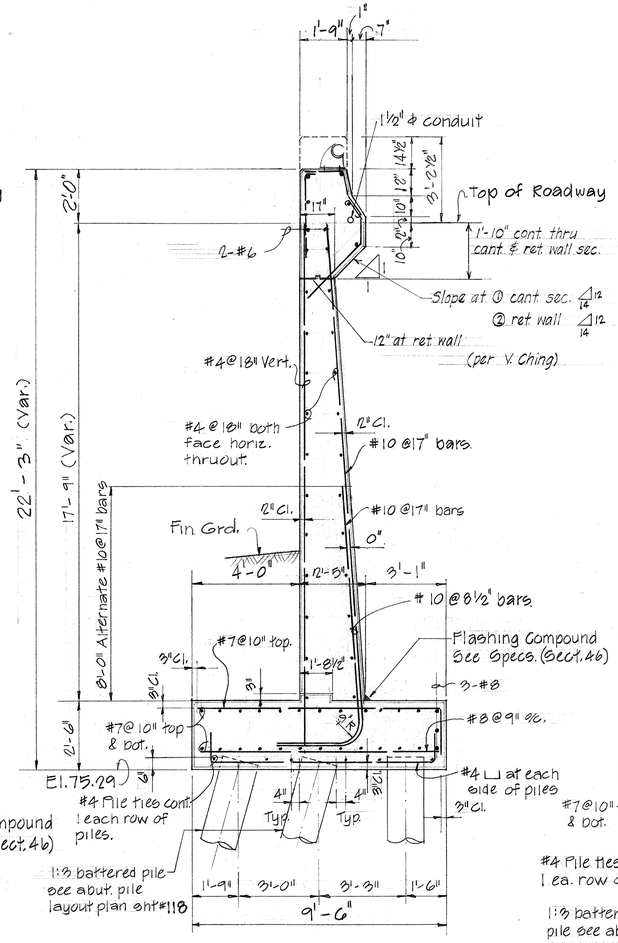
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	TRACED BY	
	DESIGNED BY	
NOTE BOOK	QUANTITIES BY	
No.	CHECKED BY	

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	126	185

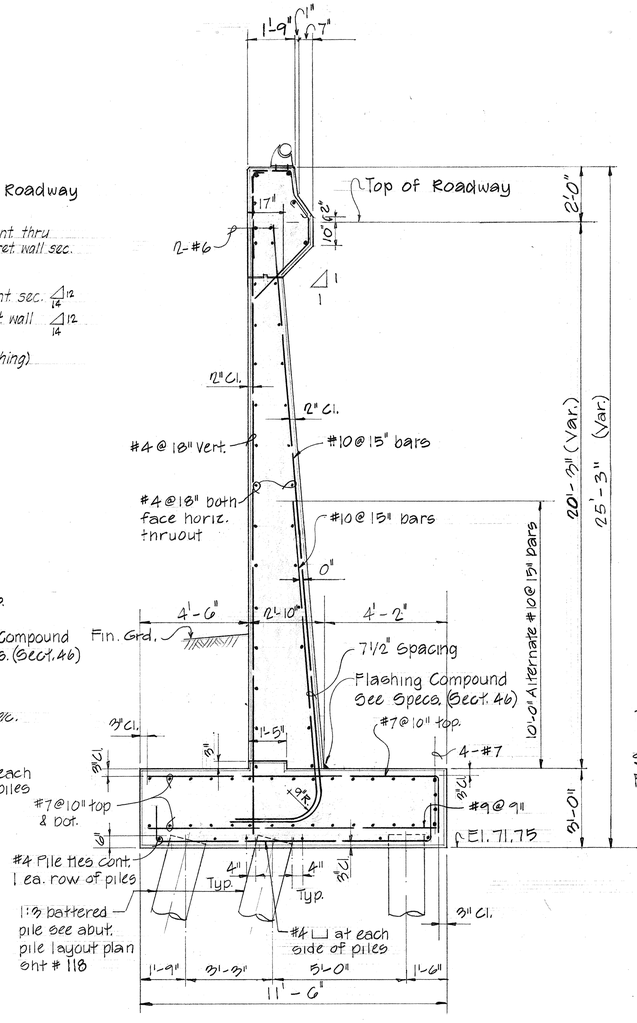


SECTION (K/20) & (N/20)
SCALE: 3/8" = 1'-0"

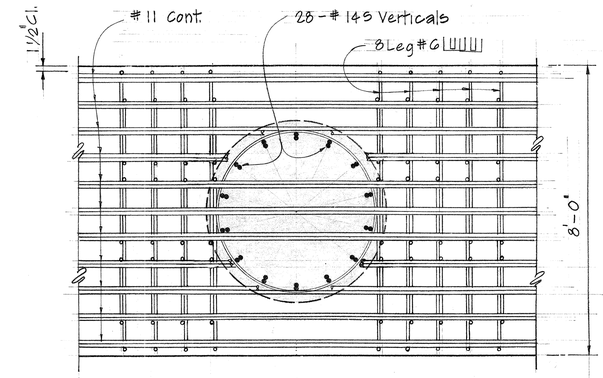


SECTION (L/20)
Scale 3/8" = 1'-0"

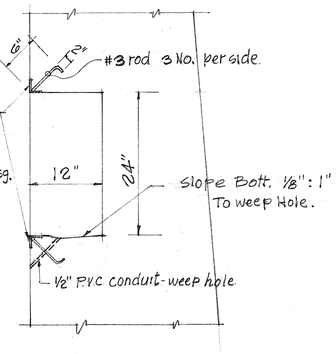
Elev. 66.75 for Wng. Wall #1.
Elev. 72.50 for Wng. Wall #3.



SECTION (M/20)
Scale: 3/8" = 1'-0"



TYP. ARRANGEMENT OF PIER VERTICAL BARS & PIER CAP BOTTOM BARS
Scale: 1/2" = 1'-0"



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

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DRAWN BY
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DESIGN BY
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ORIGINAL PLAN
NOTE BOOK
No.

C. L. FIEN
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No. 2348
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION
WING WALL SECT. & DET.
INTERSTATE ROUTE H-1

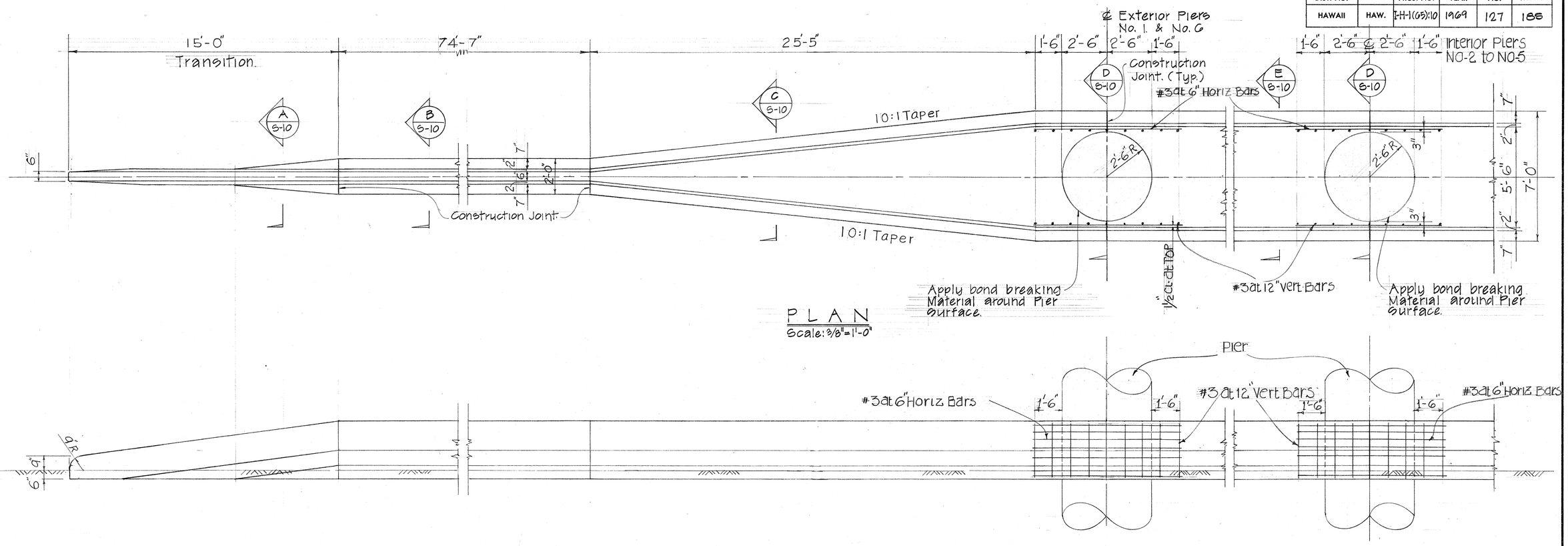
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE 1969

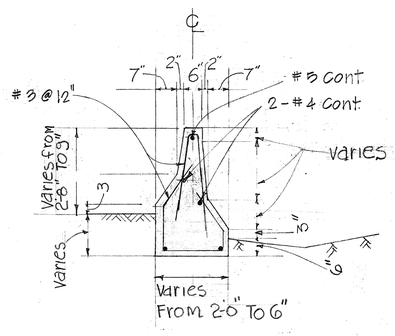
SHEET No. 20 OF 22 SHEETS

126

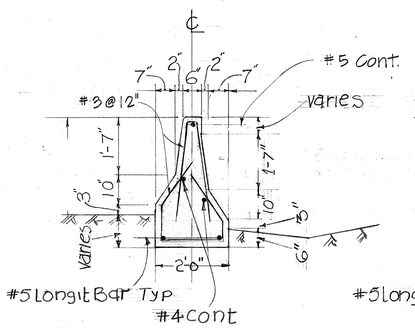
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	127	185

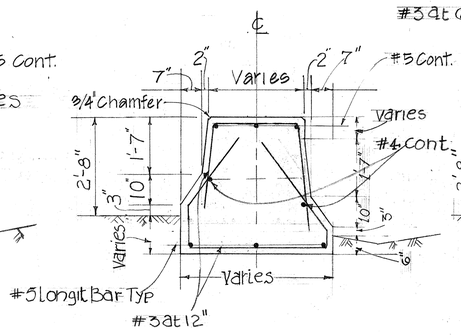




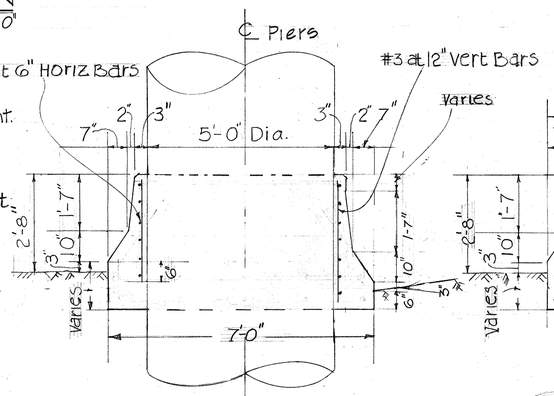
SECTION A S-10
Scale: 1½"=1'-0"



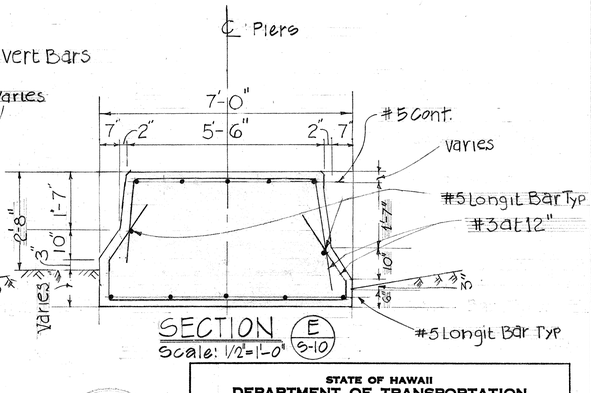
SECTION B S-10
Scale: 1½"=1'-0"



SECTION C S-10
Scale: 1½"=1'-0"



SECTION D S-10
Scale: 1½"=1'-0"



SECTION E S-10
Scale: 1½"=1'-0"

G. L. PIEH
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE
GRADE SEPARATION
CONC. MEDIAN BARRIER DETS
INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1(69):10
SCALE AS NOTED DATE 1969

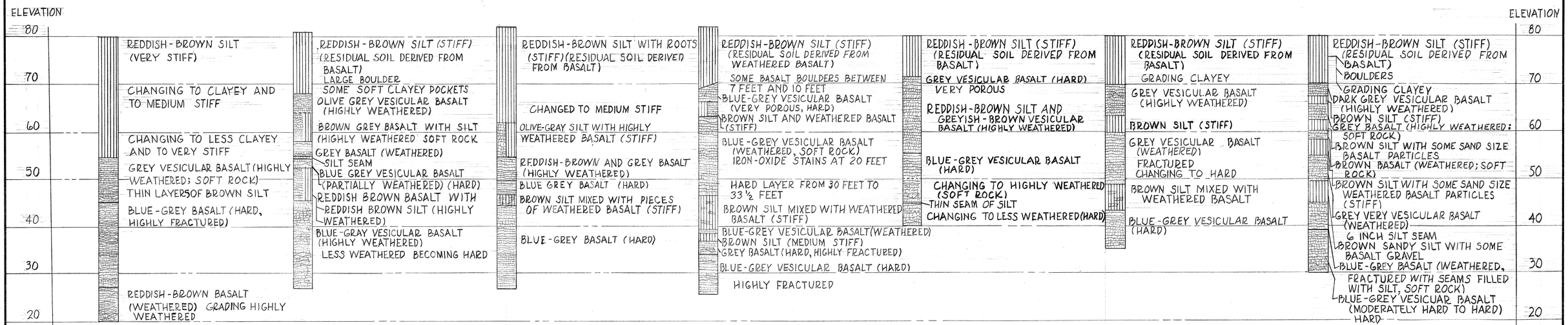
SHEET No. 21 OF 22 SHEETS

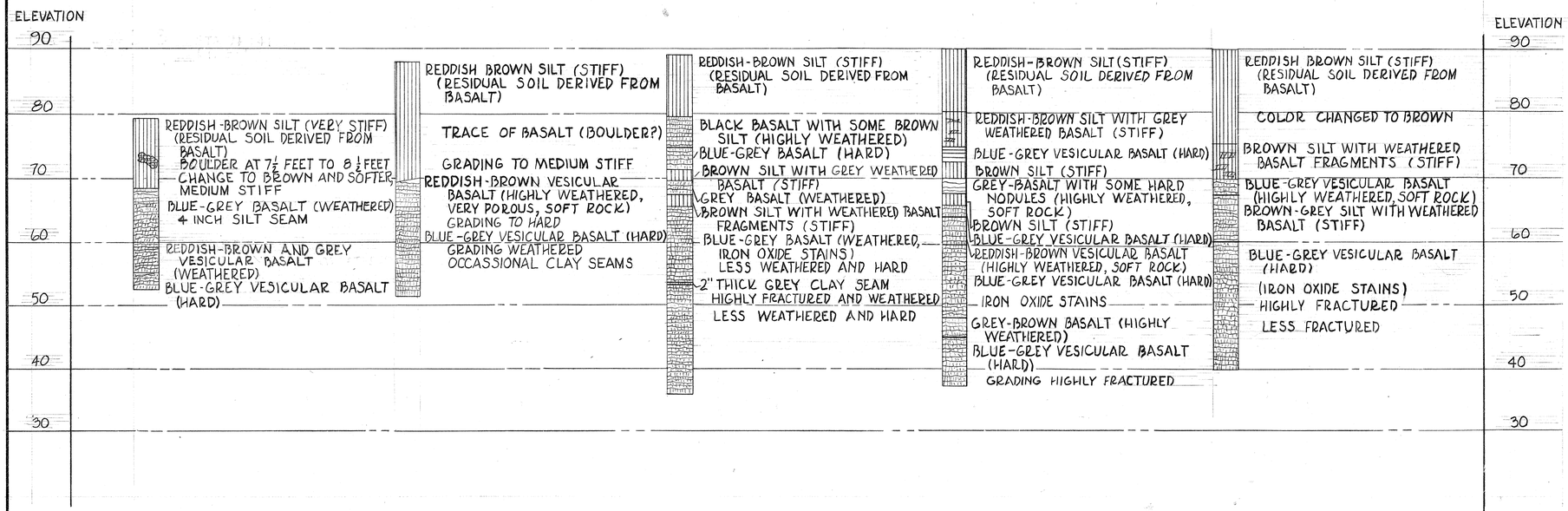
ORIGINAL PLAN
SURVEY PLOTTED BY: DATE
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TRACED BY:
DESIGNED BY:
NOTE BOOK QUANTITIES BY:
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127

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	128	185





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

C. L. FIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

THIS PLAN WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAU INTERCHANGE GRADE SEPARATION

BORING LOGS
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE: 1969

SHEET No. 22 OF 22 SHEETS

128

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI(65):10	1969	129	185

℄ Defense Highway H-1
℄ Pier

℄ Bearing Abut. #1 — 100'-0 — ℄ Bearing Abut. #2

39'-0 Wing Wall #1 — 35'-0 Wing Wall #3

Top of future Sidewalk

Sidewalk ℄ Highway Sign

For detail of Faetening see Traffic Signs sht. #40

Standard Bridge Railing

El. 113.25'
El. 109.25'
El. 105.00'
El. 93.00'
Max. soil pressure 4K/FT²

Box Girder

3'-0" ℄ Pier Typical

El. 80.33'
Max soil pressure 6K/FT²

El. 97.75'
El. 94.75'
El. 91.25'
El. 79.00'
Max. soil pressure 4K/FT²

Note:
Random vertical form marks at all Wing Walls & Abutments shall be optional to contractor

ESTIMATED QUANTITIES

CONCRETE ——— EXCLUDING FTG. (LUMP SUM)	940 C.Y.
CLASS A-1 CONC. ~ FOOTING ONLY (LUMP SUM)	200 C.Y.
REINFORCING STEEL (LUMP SUM)	251,000 LBS.
STRUCTURAL EXCAVATION	550 C.Y.
FILTER MATERIAL	90 C.Y.
GROUTED RUBBLE PAVING	153 C.Y.
MET. RAILING - 3 RAIL COMBINATION TYPE	396 L.F.
MEDIAN BARRIER AT AUSTIN - BISHOP SEPARATION	74 L.F.

ELEVATION

Scale: 1" = 10'-0

NOTE: For General Notes, Symbols & Abbreviations, See Sht. #106

℄ Brg. Abut. #1 — ℄ Swale — Az. of Piers - 288° 55' 50" Install Barrier to Match ℄ Curve. — ℄ Swale — ℄ Brg. Abut. #2

Bridge Name & Year Location (See Sht. #130)

Wing Wall #2 — 6'-0 — 10'-0 Shoulder — 48'-0 Pavement — 10'-0 Median — 10'-0 — 48'-0 Pavement — 12'-0 — 10'-0 Shoulder — 6'-0 — Wing Wall #4

Bridge Railing (Tot. Length = 198'-2)

Waiau - Waimalu Boundary

Austin - Bishop Sep.

Sidewalk

198° 55' 50"

℄ Sta. 95+21.15 = 0+00 Austin Bishop Separation

197° 49' 31.7"

Sta. -(1+00) El. 105.60'

El. 119.49' End Bridge Sta. +(1+00.83)

El. 117.23' Sta. +(1+00) El. 117.20'

Face of Abut. Below

El. 111.43'

El. 105.63' Begin Bridge Sta. -(1+00.83)

El. 103.60'

Bridge Name & Year Location (See Sht. #130)

El. 119.07' Contractor shall prevent ponding during construction. El. 116.81'

90° 00'
107° 33' 01.35"
1° 22' 48.65"

℄ Sta. 94+97.14 = -0+00.98'

198° 55' 50"

197° 16' 31"

El. 105.21' Contractor shall prevent ponding during construction. El. 103.18'

Face of Abut. Below

Sidewalk

El. 111.01'

Bridge Railing (Tot. Length = 198'-2)

Wing Wall #1

Wing Wall #3

TRUE NORTH

Or as Directed by Engineer. Typical

GRP as Shown

Or as Directed by Engineer

OUTBOUND

INBOUND

Conc. median barrier (See sht. # 139)

For guard rail connection & dets. see sht. # 155

11" End of Bridge Railing Typ. (See Std Det. Sht. #148)

LAYOUT PLAN

Scale: 1" = 10'-0

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

C. L. PIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

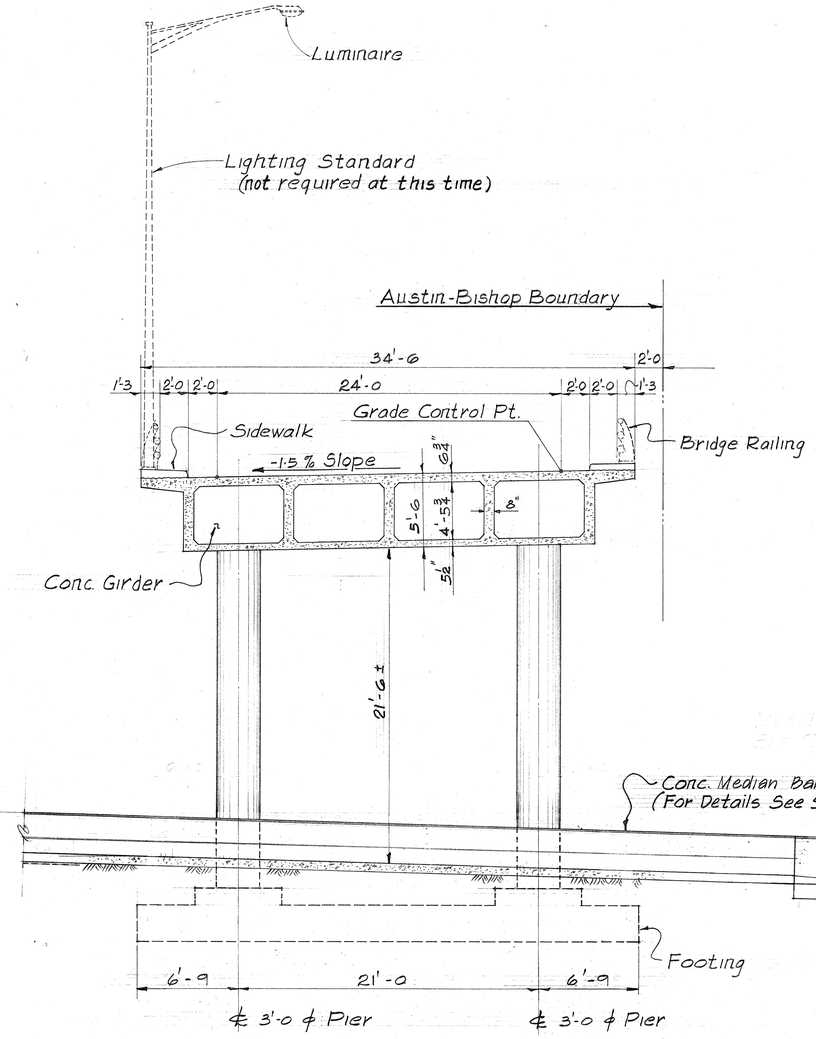
AUSTIN BISHOP GRADE SEPARATION
BRIDGE LAYOUT
INTERSTATE ROUTE H-1.
F.A.I. PROJ. NO I-HI (65):10 UNIT
SCALE AS NOTED DATE 1968

SHEET No. 1 OF 12 SHEETS

129

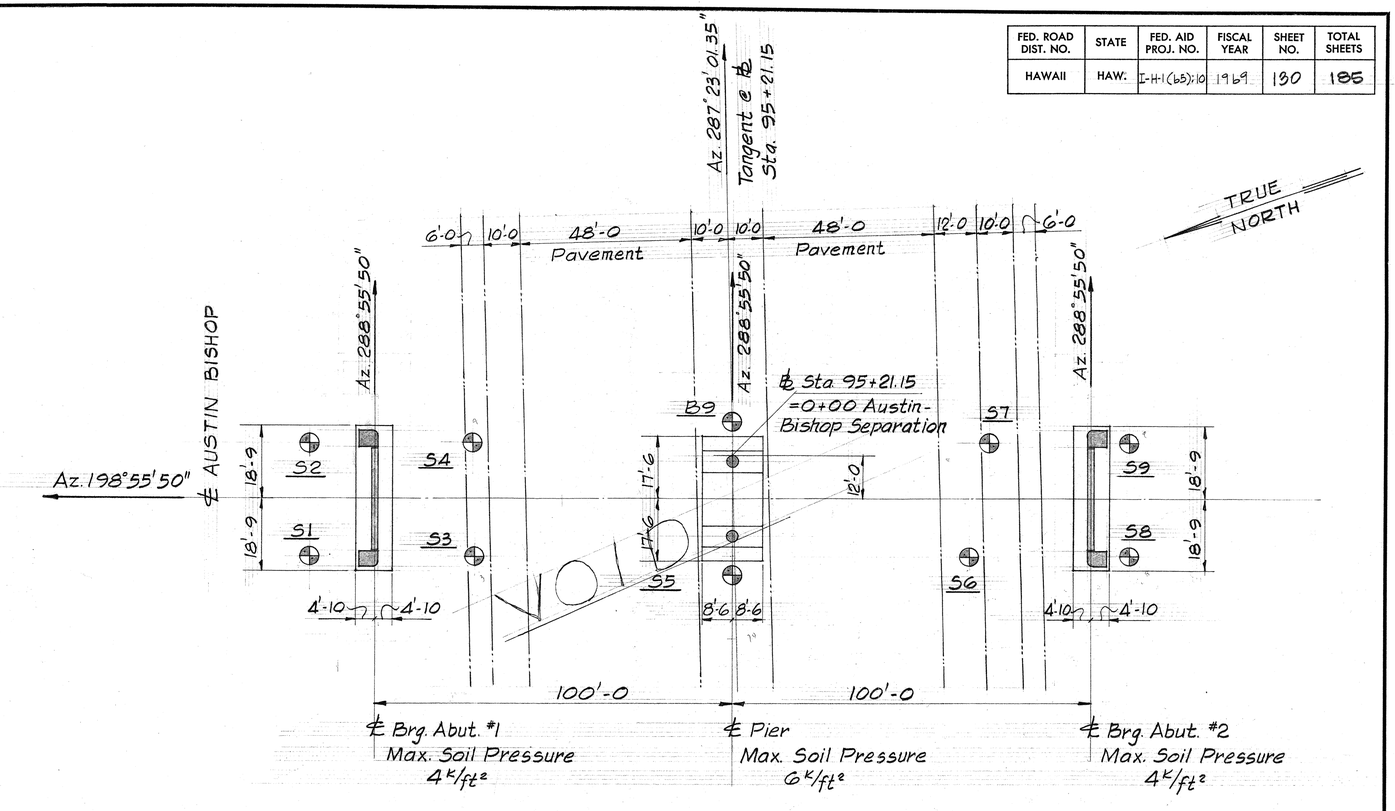
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	130	185



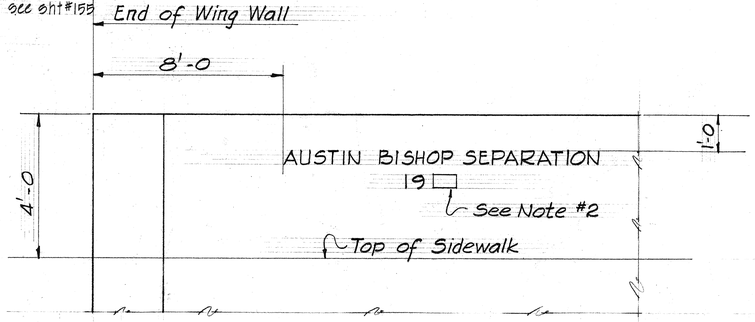
TYPICAL CROSS SECTION

Scale: 1" = 5'-0



FOUNDATION PLAN

Scale: 1" = 20'-0



GENERAL NOTES

SPECIFICATIONS: AASHO

Standard Specifications for Highway Bridges (9th edition) With Subsequent Additions and Modifications.

DESIGN LOADS: HS 20-44

DESIGN STRESSES:

	A-1 Concrete	E-1 Concrete
	f'c - 3,000 psi	4,500 psi
	fc - 1,200 psi	1,800 psi
	n = 10	8
	fs = 20,000 psi	

MATERIALS

1. ALL Concrete Shall be Class A-1 Unless Otherwise Noted On Plans.
2. ALL Reinforced Steel to be ASTM Designation A-15 Billet Steel, Intermediate Grade Except Otherwise Noted.

CONSTRUCTION METHODS

1. Sides of footing shall be excavated and poured to Neat lines. For excavation of bottom of footings see standard specifications Over excavation beyond neat lines for sides of footings and the excavations indicated on the plans for the bottom of footings shall be backfilled with a minimum of class "D" concrete at the contractor's expense and as directed by the Engineer.
2. Backfill behind abutments shall not be placed until release of superstructure false work. Backfill behind abutments shall be brought up simultaneously so as to prevent unbalanced earth pressure.

CONSTRUCTION METHODS (Cont.)

3. Vertical pier column bars shall be arranged in such a manner as to miss pier cap reinforcing above
4. Top of concrete deck of structure shall be constructed to follow the finish roadway grades.

CAMBER

1. Obtain camber by forming and shoring concrete surfaces above profile grades as shown in camber diagram, Sht-130

REFERENCE:

1. Refer to standard detail drawings shts. #144 ~ 157

NOTE:

1. Place Name of Structure as Shown. For Location See Sht. #128
2. Year Shown Will be Year Structure is Completed.
3. Letter Size & Detail - See Std. Details Sht. #144

TYPICAL BRIDGE NAME & YEAR LOCATION AT WING WALL #2 & WING WALL #3

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HIGHWAYS DIVISION

AUSTIN ℄ BISHOP
GRADE SEPARATION
CROSS SECT. & FOUND. PLAN
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO I-H-1(65):10
SCALE AS NOTED DATE 1969

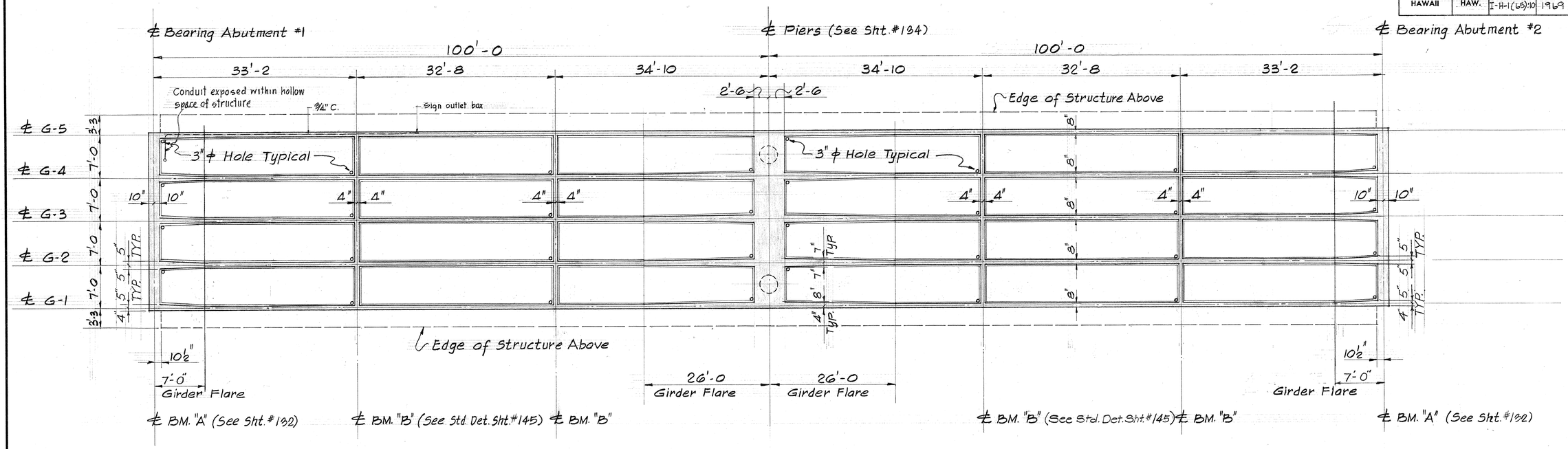
SHEET No. 2 OF 12 SHEETS

130

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

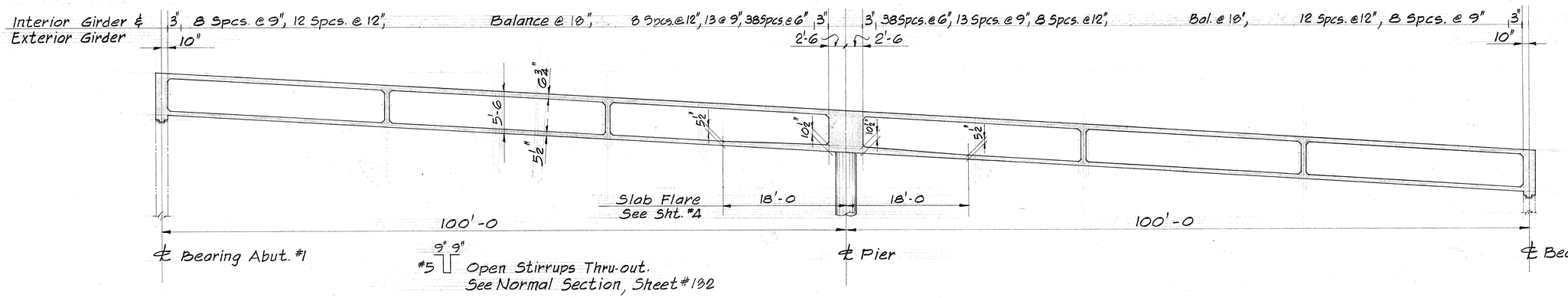
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	131	185



FRAMING PLAN

Scale: 1/8" = 1'-0



LONGITUDINAL SECTION

Scale: 1/8" = 1'-0

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HIGHWAYS DIVISION

AUSTIN BISHOP
GRADE SEPARATION
FRAMING PLAN & LONGIT. SECT.
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE 1969

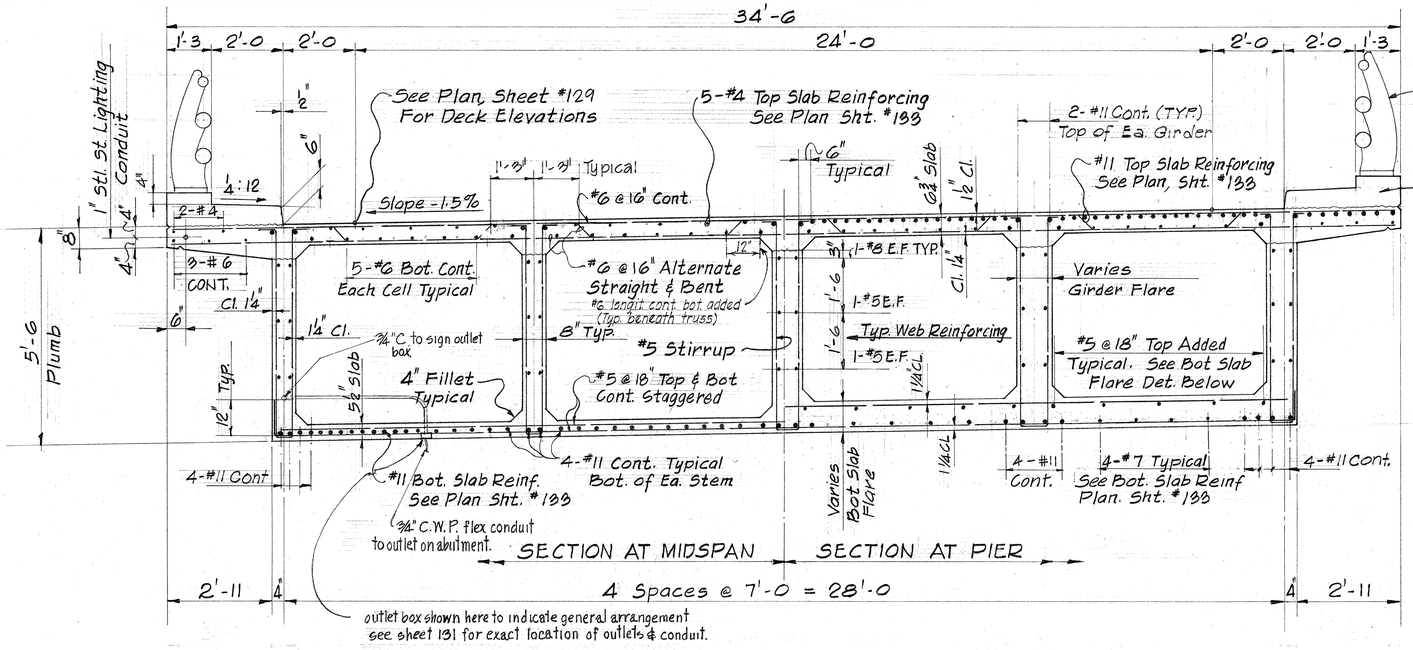
SHEET No. 3 OF 12 SHEETS

131

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

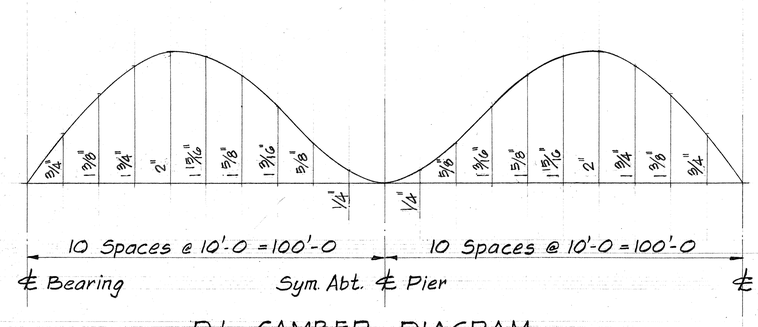
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI(65):10	1969	132	185

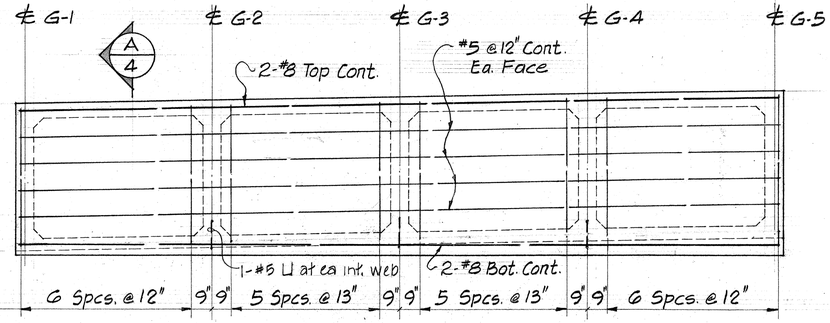


NORMAL SECTION

Scale: ½" = 1'-0

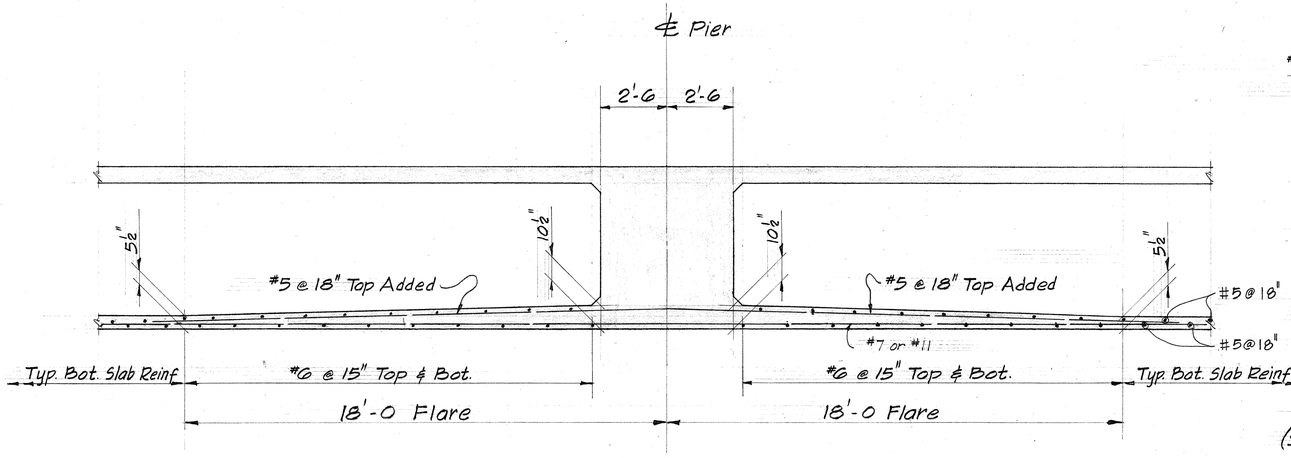


D.L. CAMBER DIAGRAM



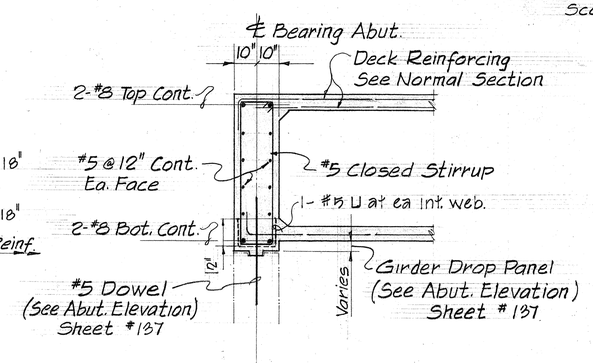
ELEVATION BEAM "A"

Scale: ⅜" = 1'-0



BOTTOM SLAB FLARE DETAIL

Scale: ⅜" = 1'-0



SECTION A/4

Scale: ⅜" = 1'-0

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HIGHWAYS DIVISION

AUSTIN BISHOP
GRADE SEPARATION
NORMAL DECK SECT. & DETAILS
INTERSTATE ROUTE H-1
FAI. PROJ. NO I-H-1(65):10
SCALE: AS NOTED DATE 1969

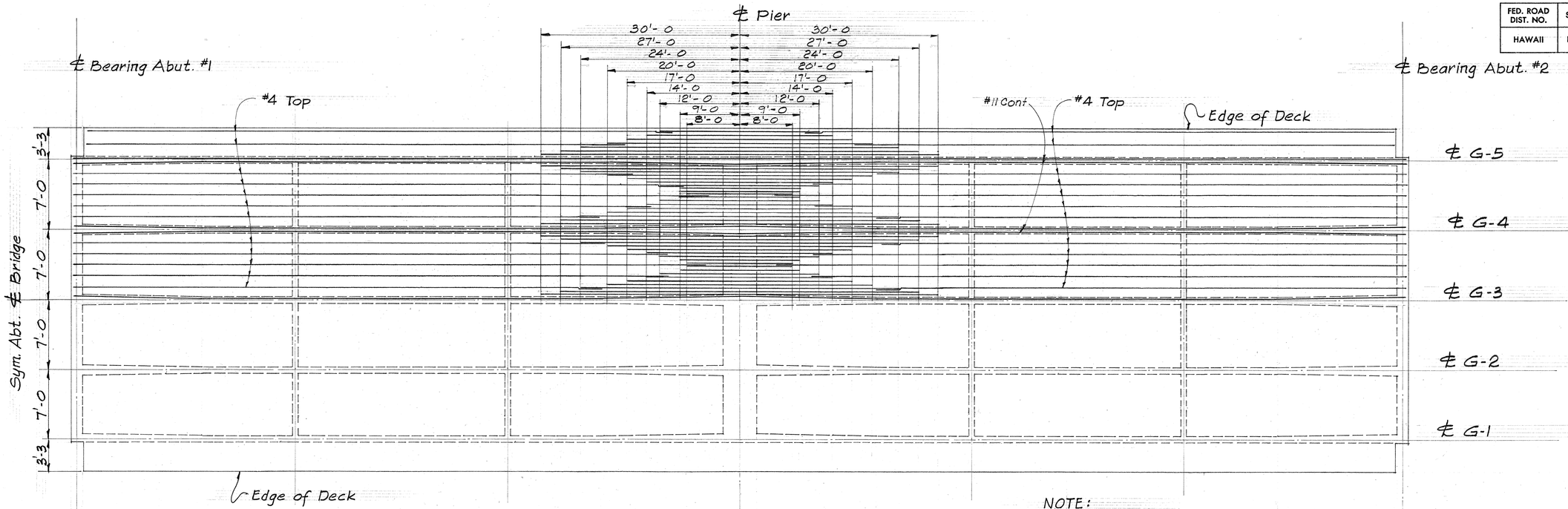
SHEET No. 4 OF 12 SHEETS

132

ORIGINAL PLAN
SURVEY PLOTTED BY
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QUANTITIES BY
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DATE

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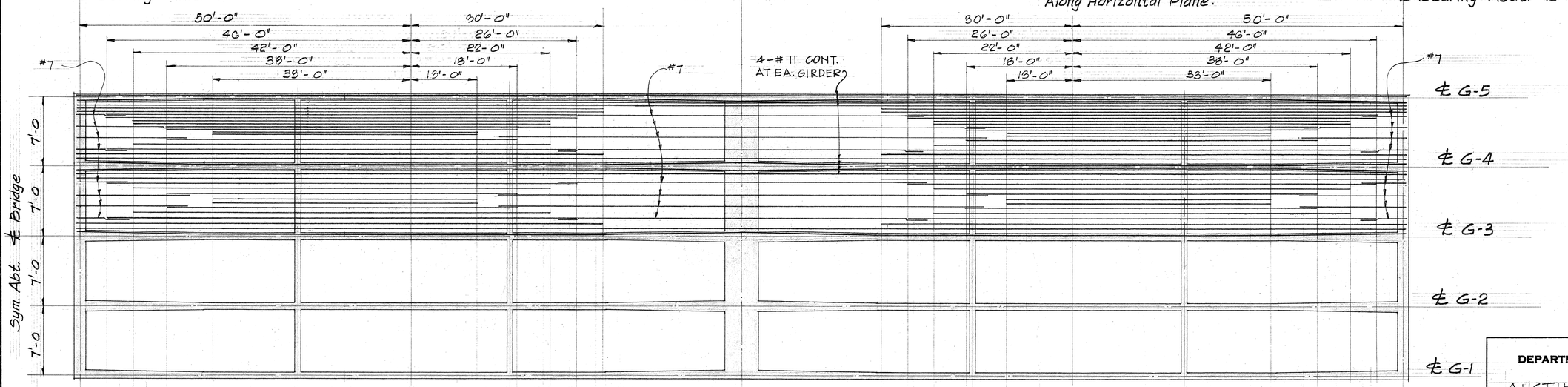
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	133	185



TOP SLAB REINFORCING PLAN

Horizontal : 1/8" = 1'-0
Vertical : 3/16" = 1'-0

NOTE:
Except as Otherwise Noted All Slab Bars Shall be #11
All #4 Bars Shall be Lapped 2'-0 With Adjacent #11 Bars.
Bend & Place All Longitudinal Bars Along Horizontal Plane.



NOTE:
Except as Otherwise Noted All Slab Bars Shall be #11.
All #7 Bars Shall be Lapped 2'-6 With Adjacent #11 Bars.
Where ever clearance between main reinforcing bars less than min. allowed clearances, bundle bars in grouping shall be used.

BOTTOM SLAB REINFORCING PLAN

Horizontal : 1/8" = 1'-0
Vertical : 3/16" = 1'-0

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HIGHWAYS DIVISION

AUSTIN BISHOP
GRADE SEPARATION
TOP & BOTT. SLAB REINF. PLAN
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO I-H-1(65) 10
SCALE : AS NOTED DATE 1969

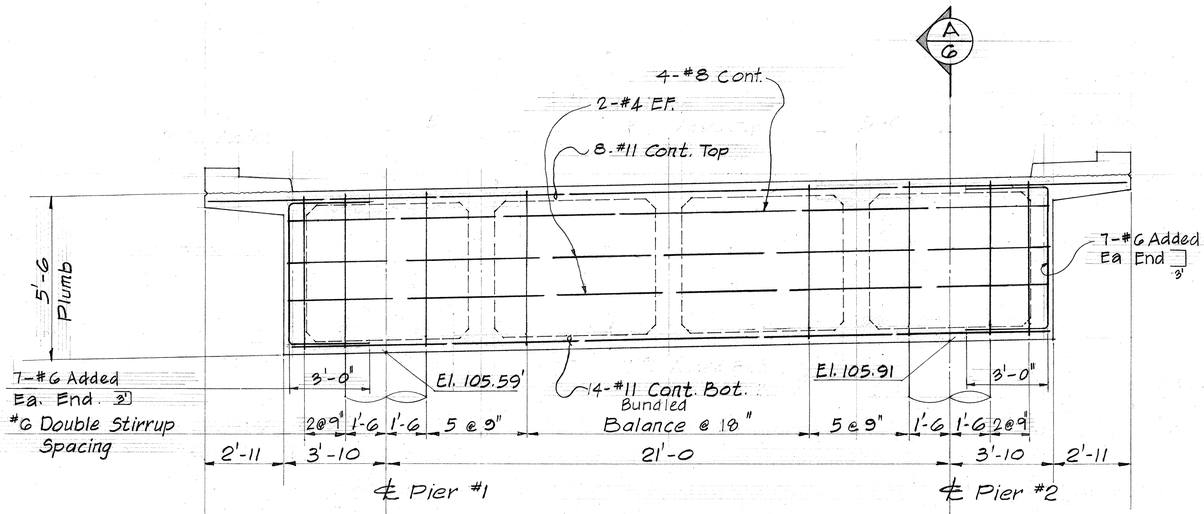
SHEET No. 5 OF 12 SHEETS

133

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

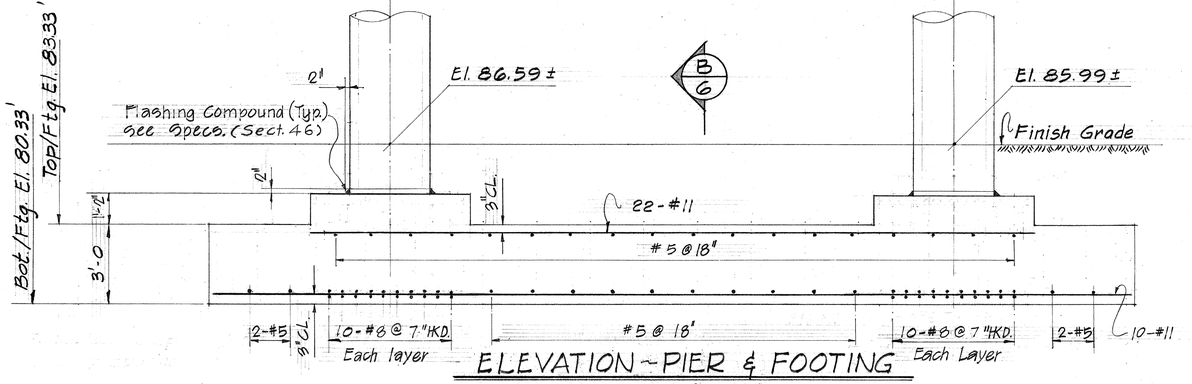
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	134	185



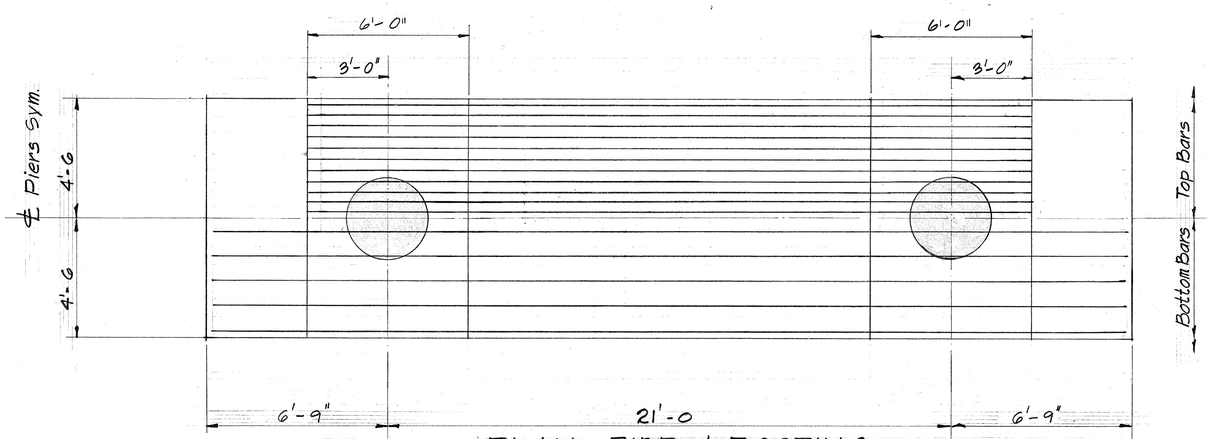
PIER CAP REINFORCING

Scale: 3/8" = 1'-0



ELEVATION - PIER & FOOTING

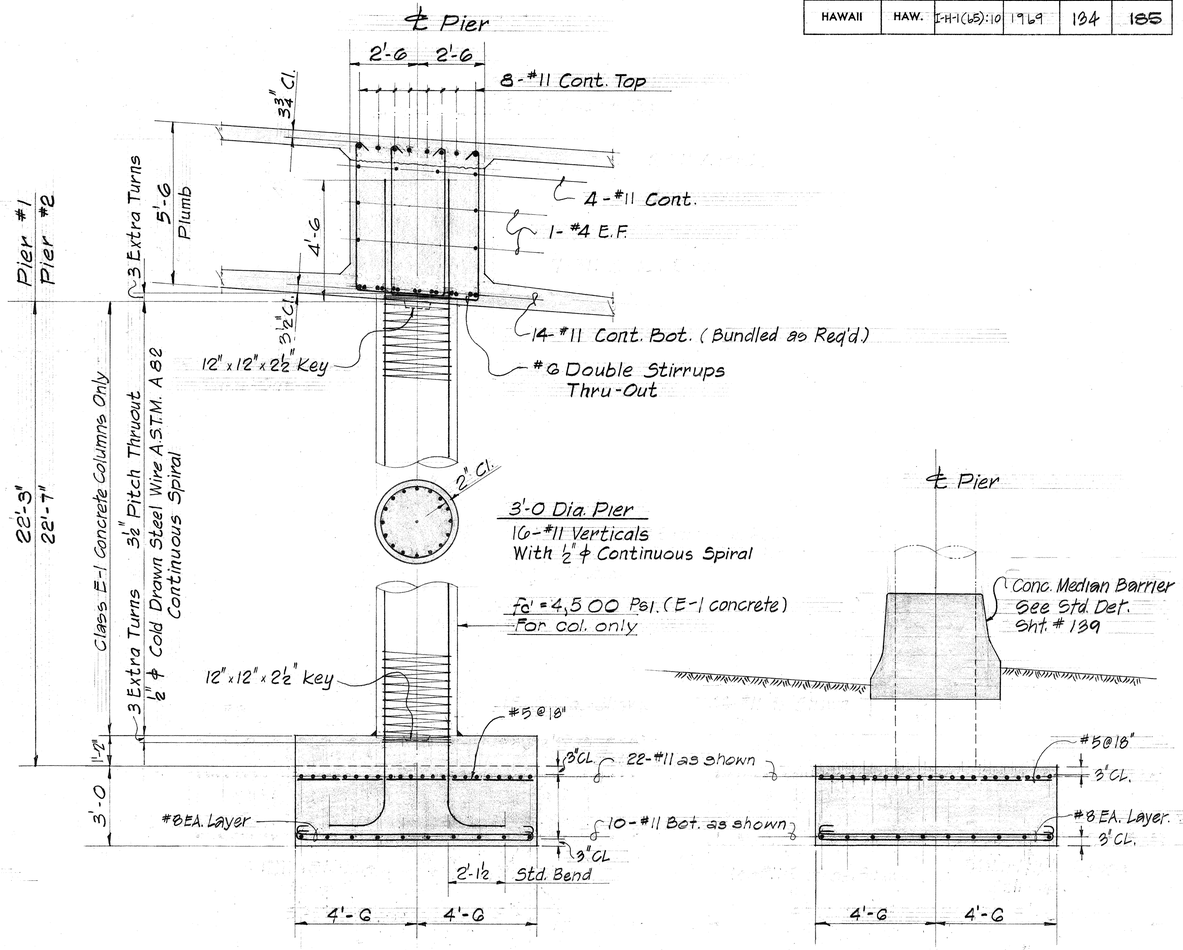
Scale: 3/8" = 1'-0



NOTE: All Bars Shown are #11's

PLAN - PIER & FOOTING

Scale: 3/8" = 1'-0



SECTION A/6

Scale: 3/8" = 1'-0

SECTION B/6

Scale: 3/8" = 1'-0

Note: Vertical Pier Column Bars Shall Be Arranged In Such a manner As to Miss Pier Cap Reinforcement Above.

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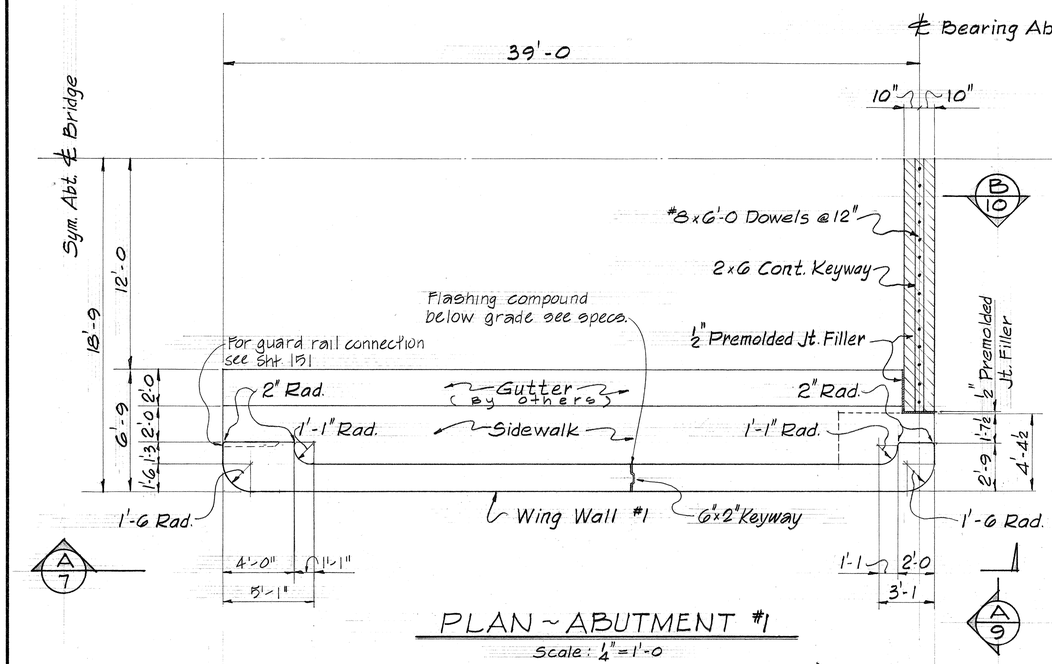
AUSTIN BISHOP
GRADE SEPARATION
PIER CAP & PIER FTG. REINF.
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1 (65):10
SCALE: AS NOTED DATE 1969

SHEET No. 6 OF 12 SHEETS

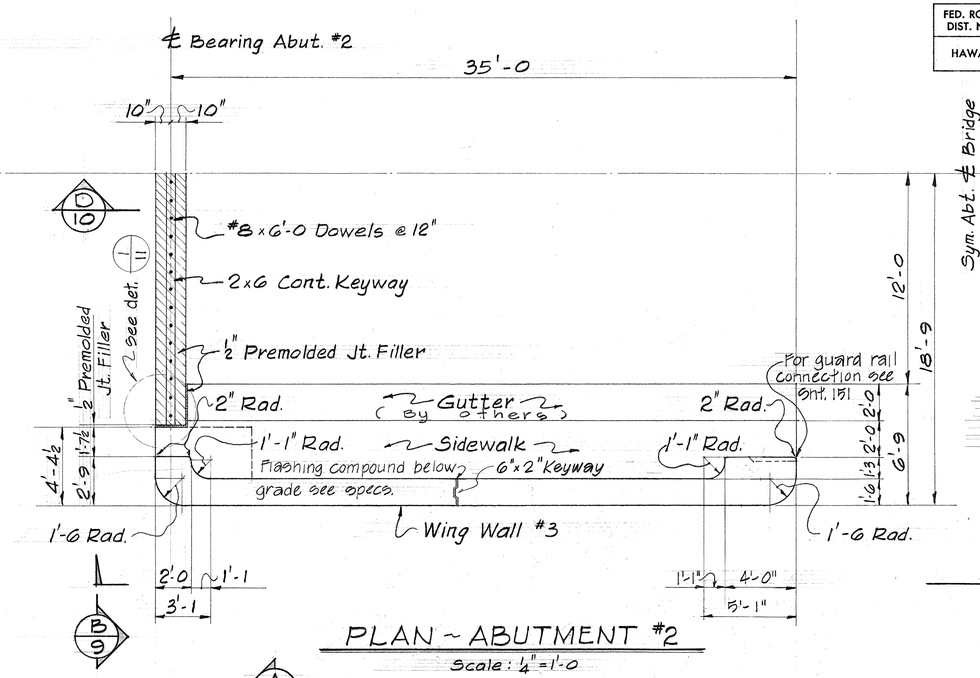
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
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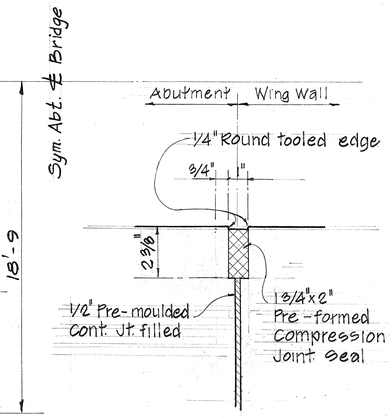
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	135	185



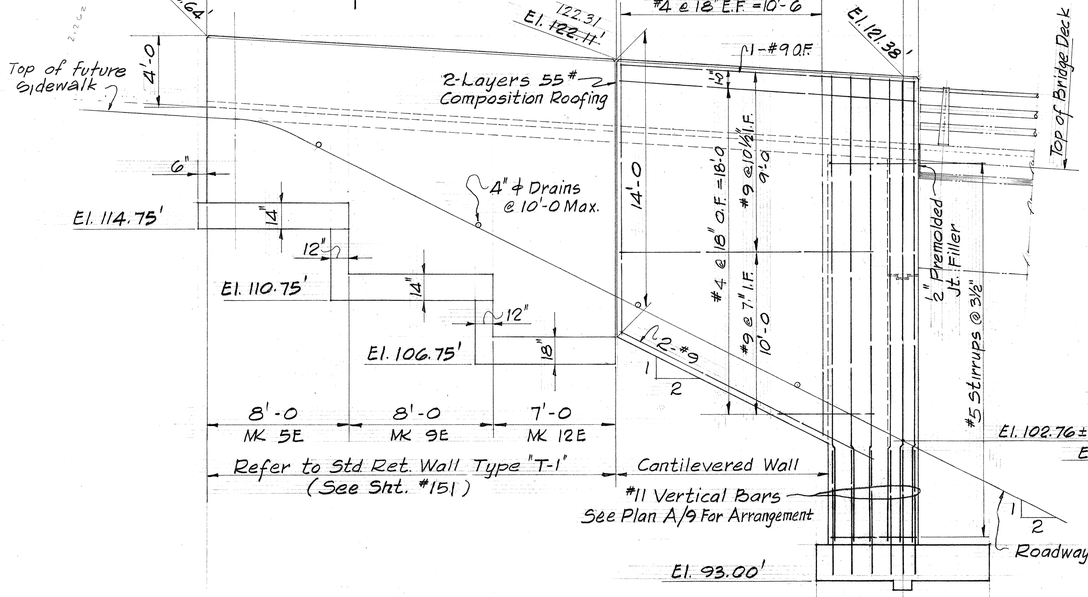
PLAN ~ ABUTMENT #1
Scale: ¼" = 1'-0



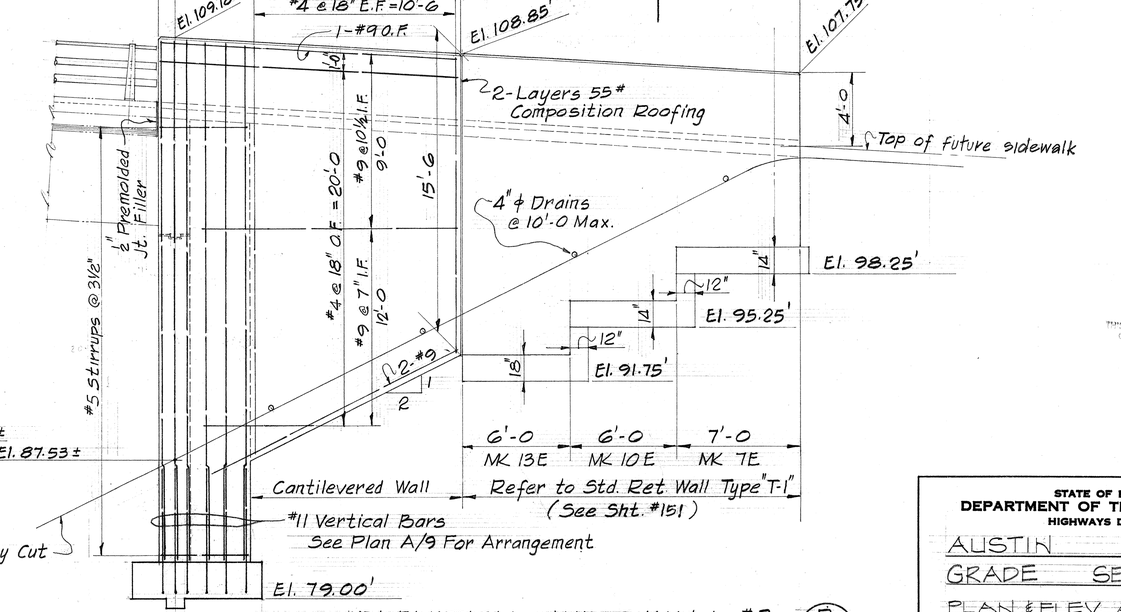
PLAN ~ ABUTMENT #2
Scale: ¼" = 1'-0



DETAIL
Scale: 3" = 1'-0" (1/11)



ELEVATION ~ WING WALL #1
Scale: ¼" = 1'-0



ELEVATION ~ WING WALL #3
Scale: ¼" = 1'-0

B 7

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AUSTIN BISHOP
GRADE SEPARATION
PLAN & ELEV. ABUT. #1 & #2
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1 (65) : 10
SCALE : AS NOTED DATE 1969

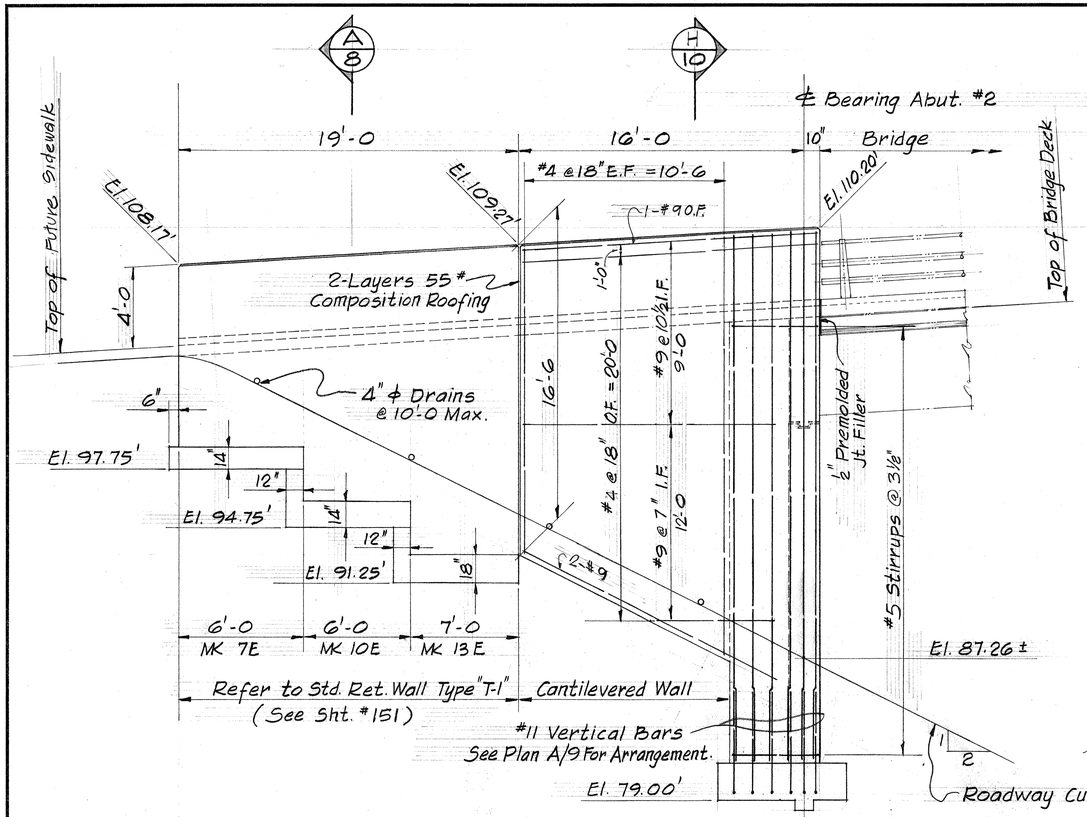
SHEET No. 7 OF 12 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	TRACED BY	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
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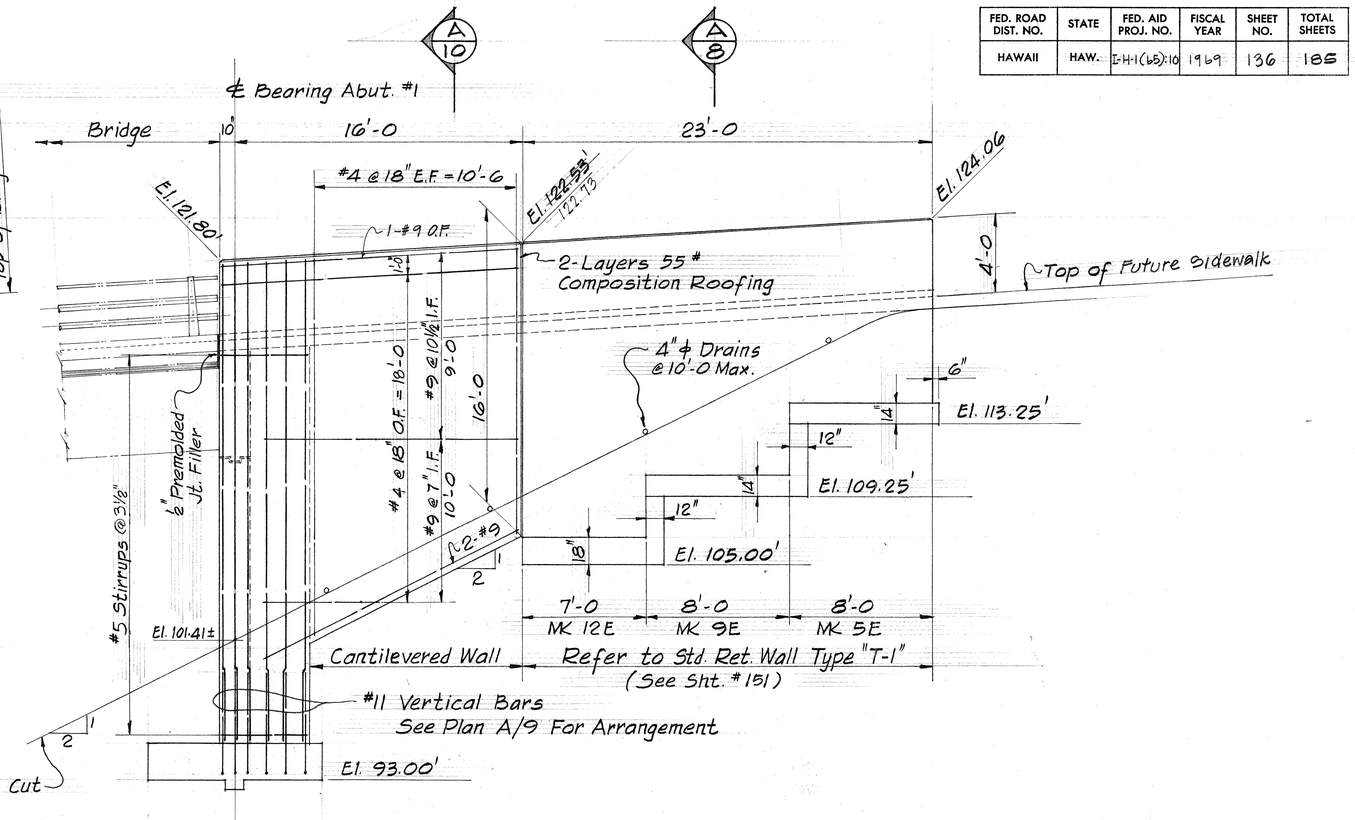
135

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	136	185



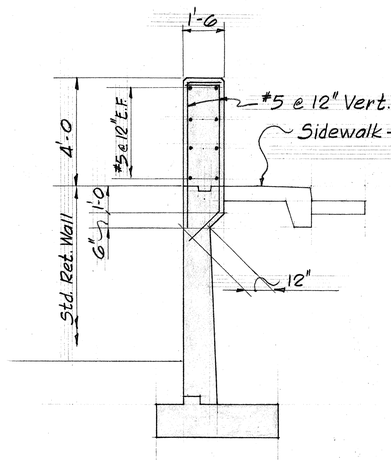
ELEVATION ~ WING WALL #4 (For Location See Plan, Sht. #129)

Scale: ¼" = 1'-0



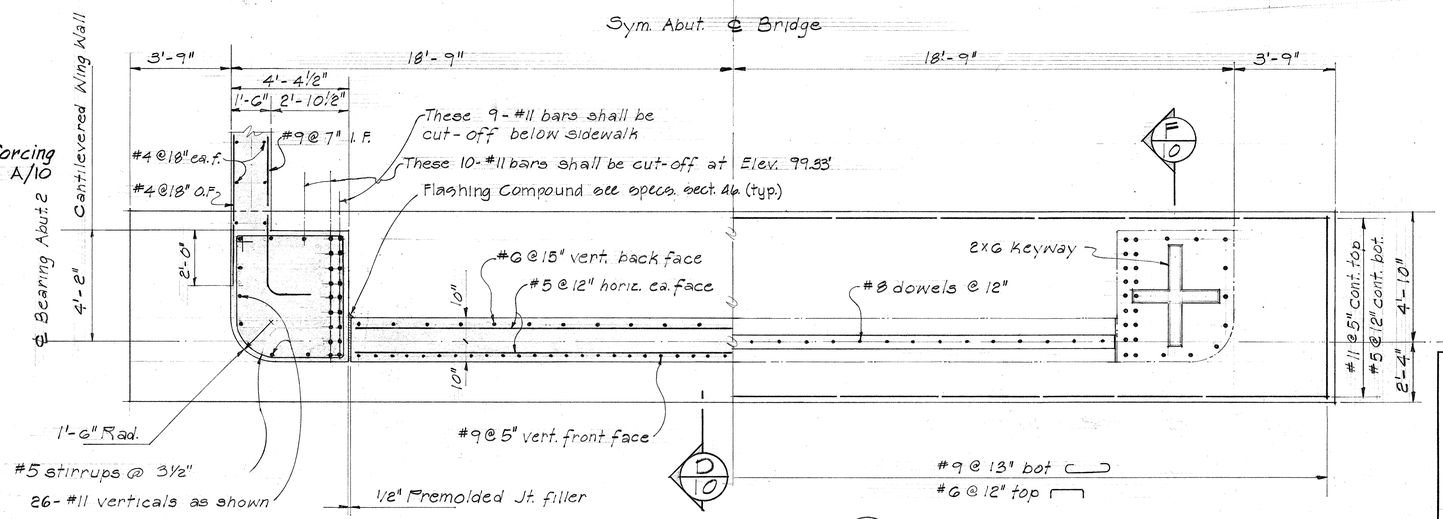
ELEVATION ~ WING WALL #2 (For Location See Plan Sht. #129)

Scale: ¼" = 1'-0



SECTION A/8

Scale: ⅜" = 1'-0



PLAN - SECTION E/8 ABUT. NO. 2

SCALE ⅜" = 1'-0"

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HAWAII, U.S.A.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

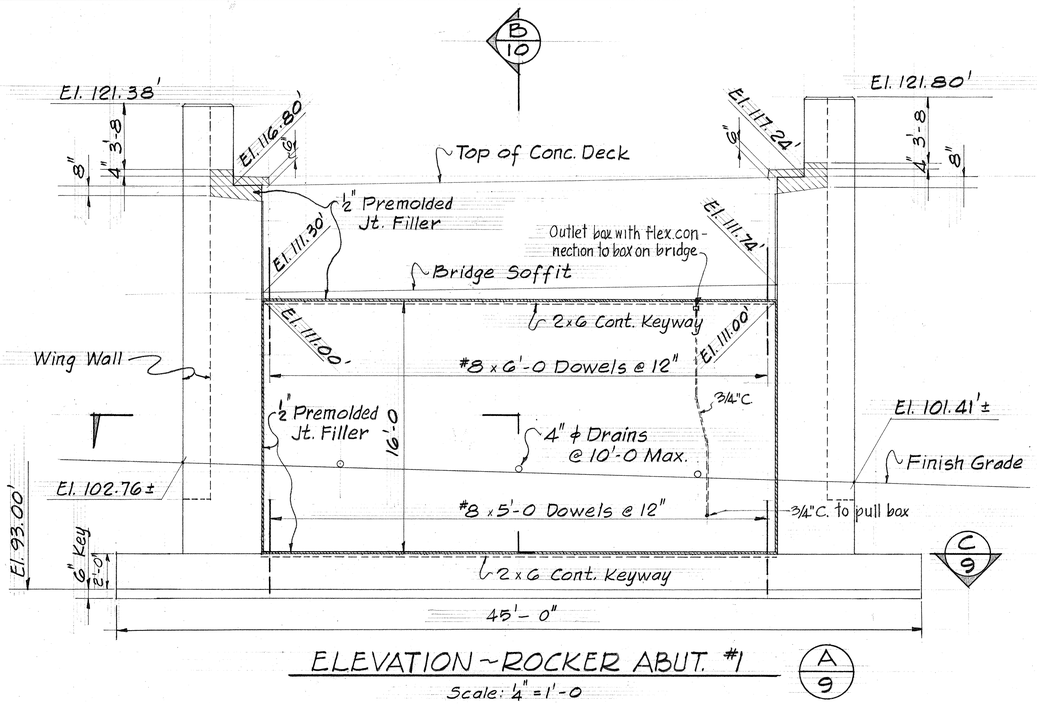
AUSTIN BISHOP
GRADE SEPARATION
ELEVATION - WING WALL #2 & #4
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE 1969

SHEET No. 8 OF 12 SHEETS

136

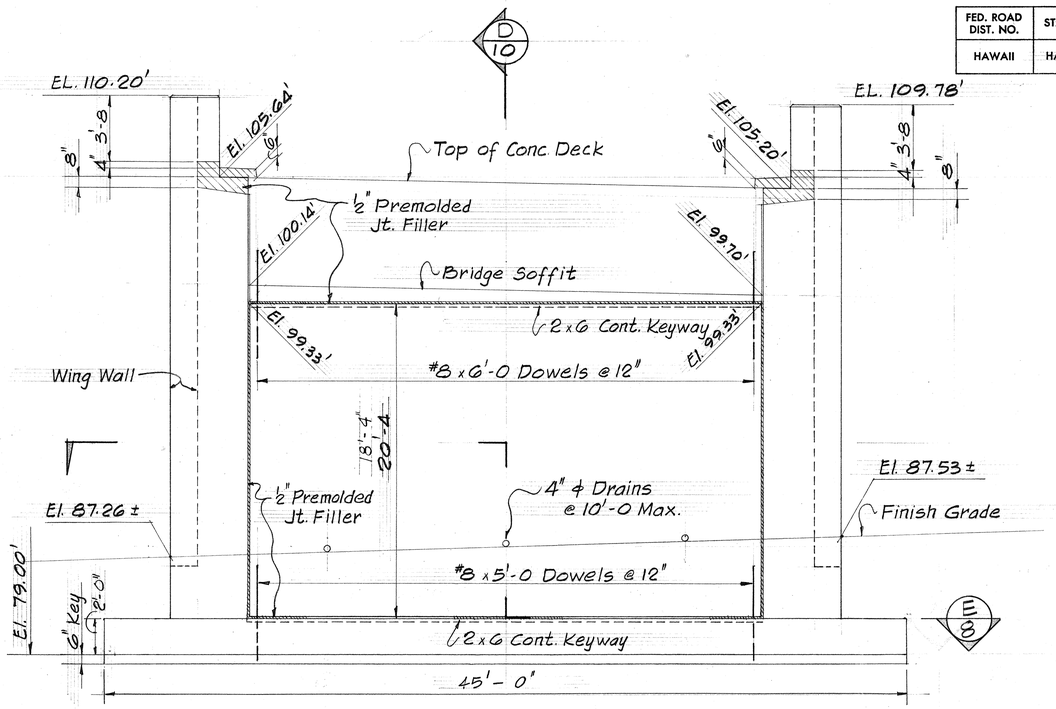
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	137	185



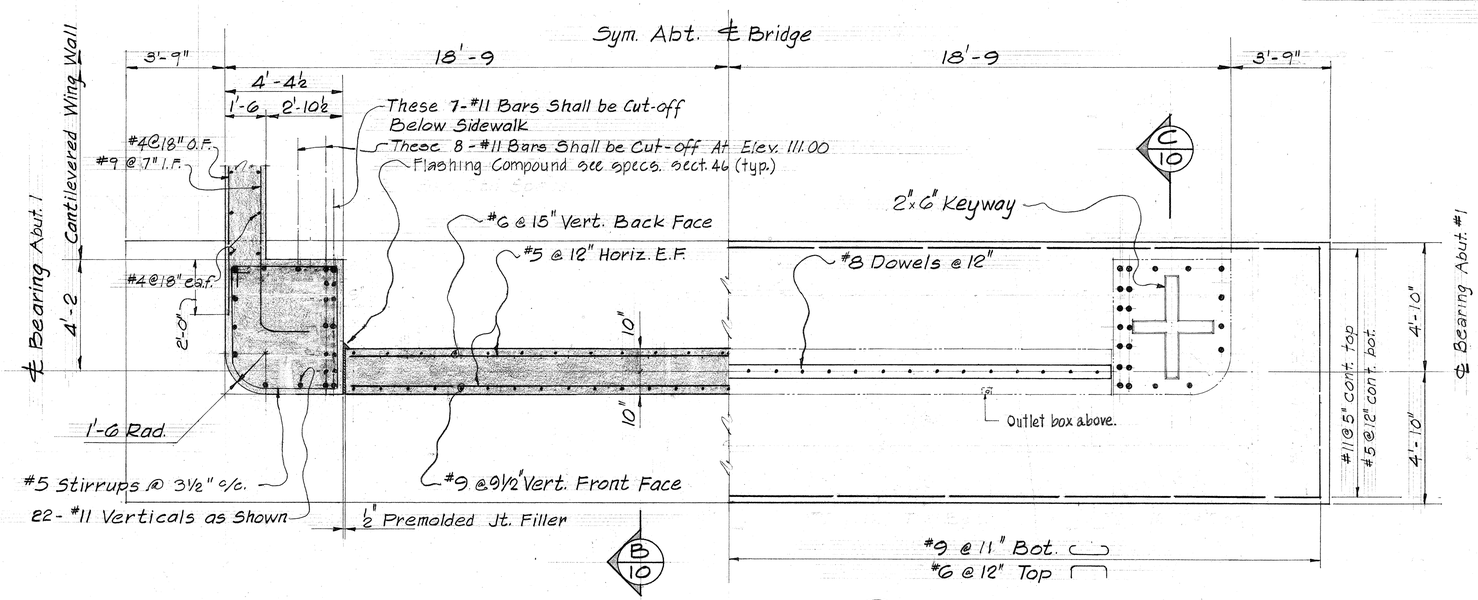
ELEVATION ~ ROCKER ABUT. #1 (A/9)

Scale: 1/4" = 1'-0



ELEVATION ~ ROCKER ABUT. #2 (B/9)

Scale: 1/4" = 1'-0



PLAN ~ SECTION (C/9) ABUT. NO. 1

Scale: 3/8" = 1'-0

C. L. PIEH
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

AUSTIN BISHOP
GRADE SEPARATION
ABUTMENT ELEVATION & PLAN
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE 1969

SHEET No. 9 OF 12 SHEETS

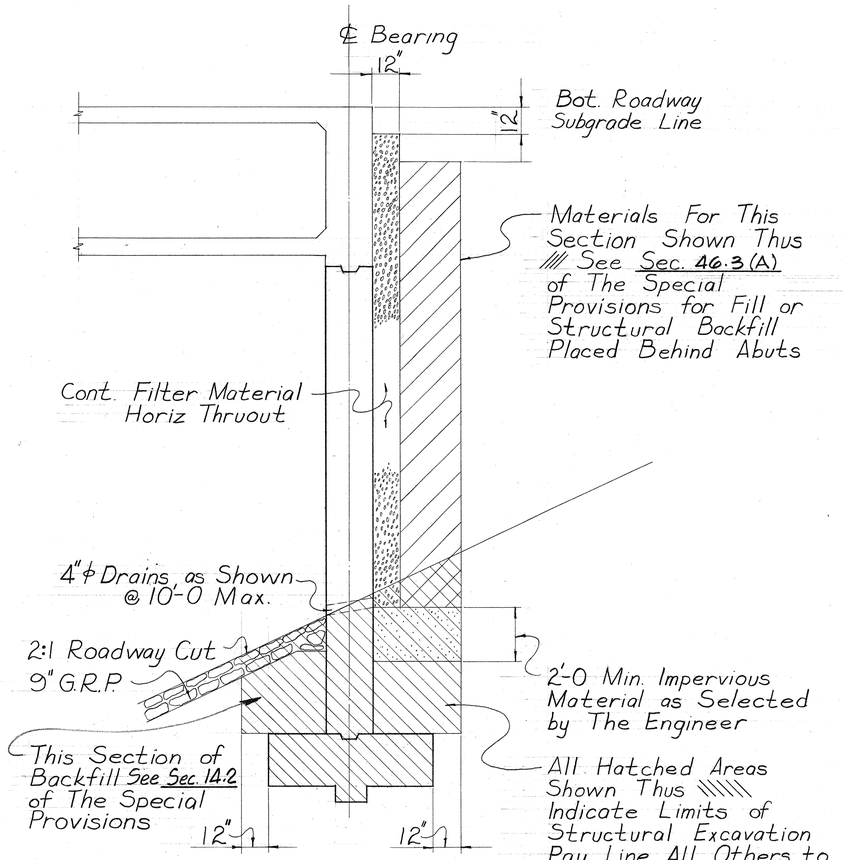
137

ORIGINAL PLAN
NOTE BOOK
No.

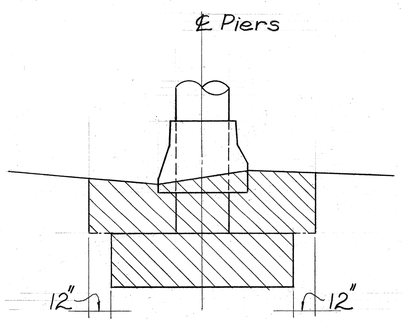
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	138	185

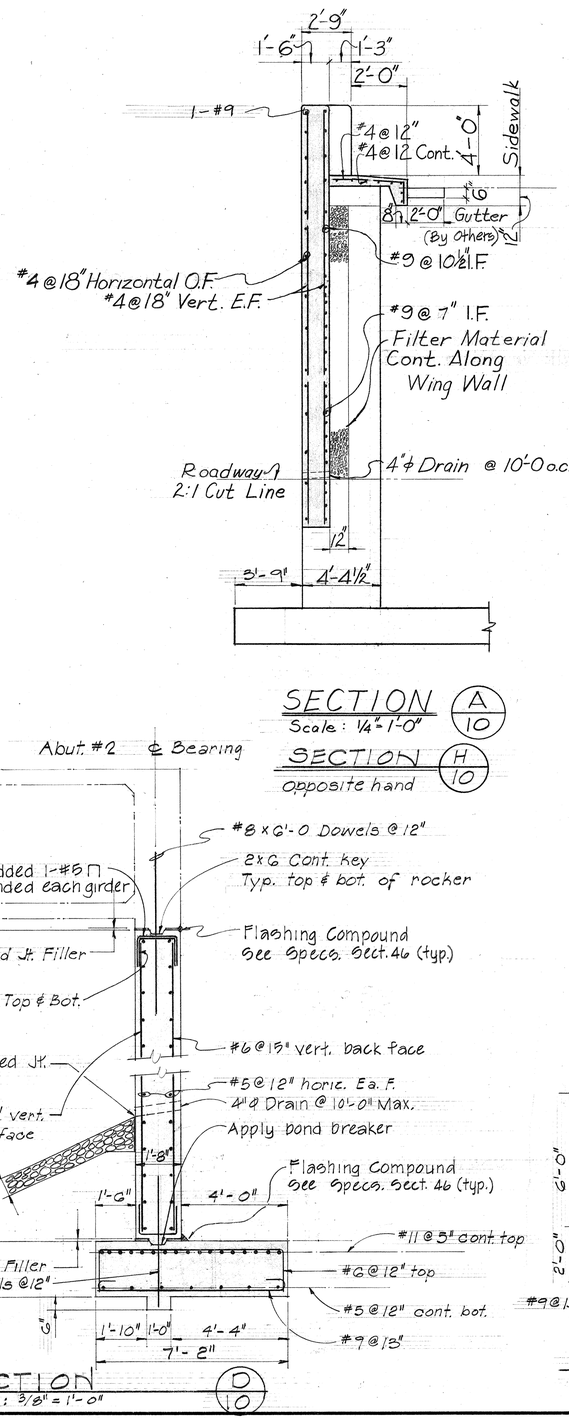


AT ABUTMENTS
STRUCTURAL EXCAVATION PAY LIMITS & BACKFILL DETAIL



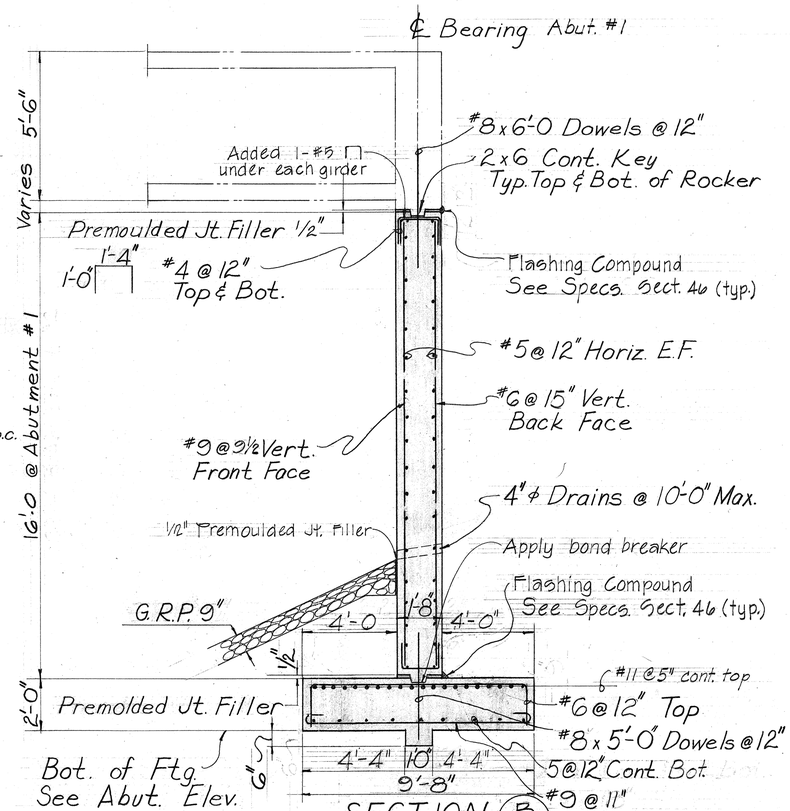
AT PIER FOOTING
STRUCTURAL EXCAVATION PAY LIMITS

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

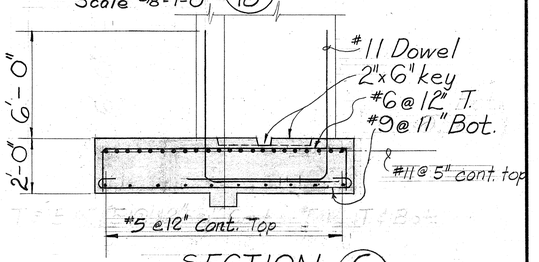


SECTION (A/10)
Scale: 1/4"=1'-0"

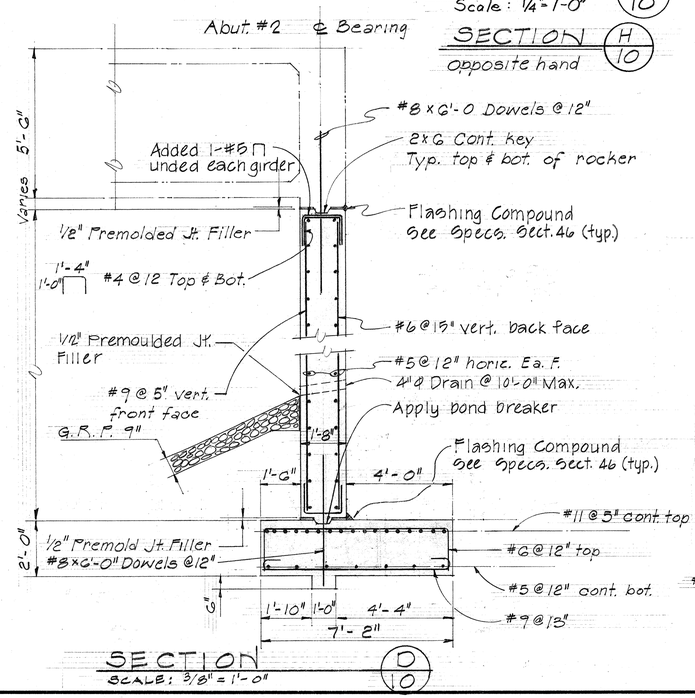
SECTION (H/10)
opposite hand



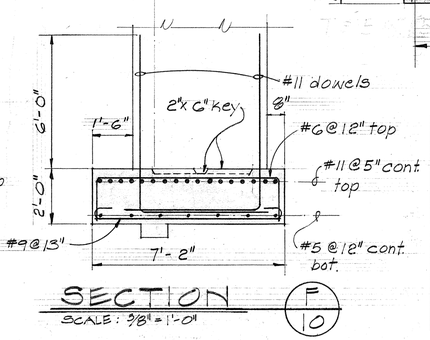
SECTION (B/10)
Scale 3/8"=1'-0"



SECTION (C/10)
Scale 3/8"=1'-0"



SECTION (D/10)
SCALE: 3/8"=1'-0"



SECTION (F/10)
SCALE: 3/8"=1'-0"

REGISTERED PROFESSIONAL ENGINEER No. 2349 HAWAII, U.S.A.
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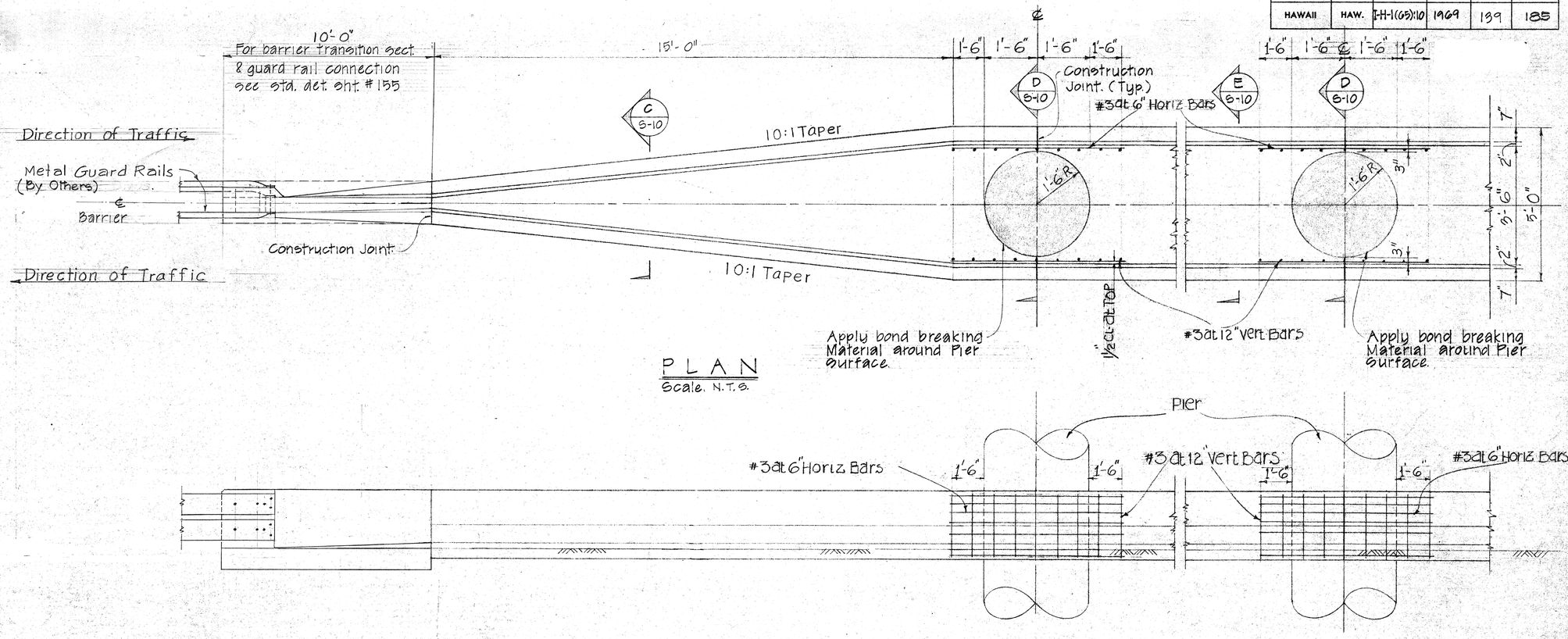
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

AUSTIN BISHOP
GRADE SEPARATION
ABUTMENT SECT. & DETAILS
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE 1969

SHEET No. 10 OF 12 SHEETS

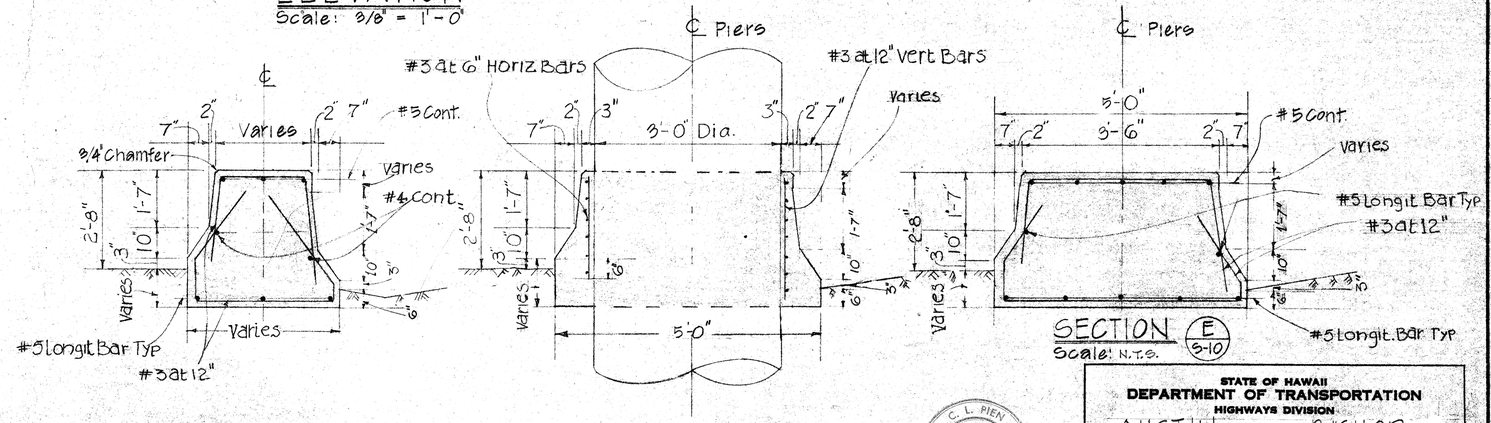
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	139	185



PLAN
Scale: N.T.S.

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



SECTION (C S-10)
Scale: 1½"=1'-0"

SECTION (D S-10)
Scale: N.T.S.

SECTION (E S-10)
Scale: N.T.S.

C. L. PIEN
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No. 2348
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

AUSTIN BISHOP

GRADE SEPARATION

CONC. MEDIAN BARRIER DETS

INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1(65):10

SCALE AS NOTED DATE 1969

SHEET No. 11 OF 12 SHEETS

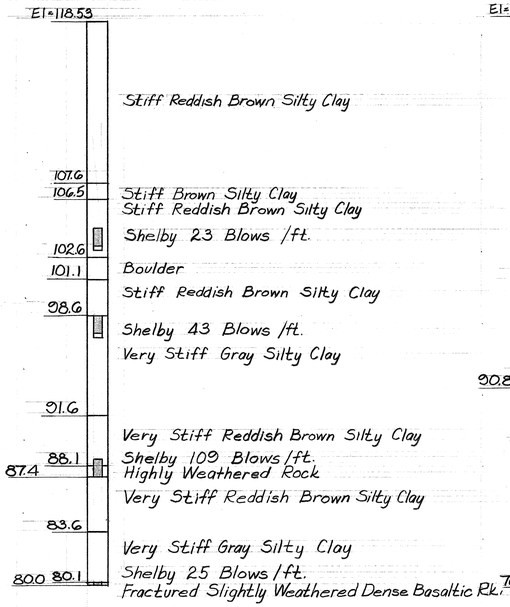
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
PLAN
NOTE BOOK
No.

PRINTED ON NO. 1000H CLEARPRINT

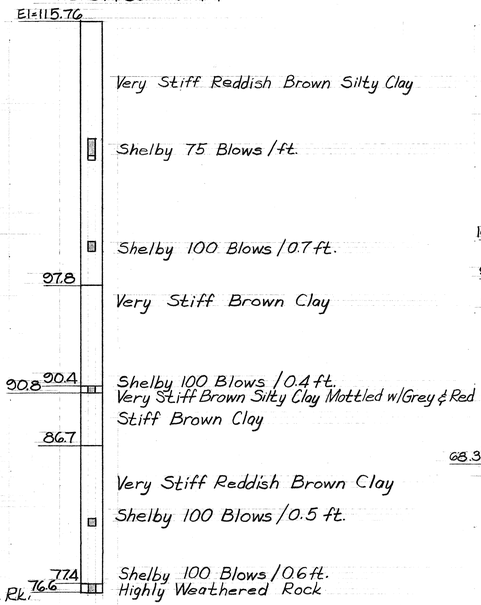
1339

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	140	185

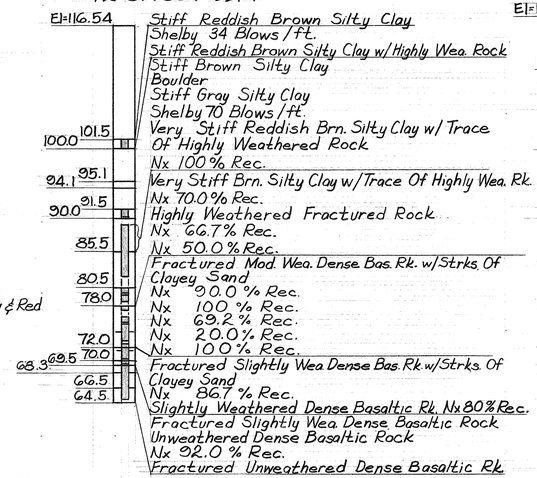
S-1
STA. 94+93
118' OFFSET LEFT



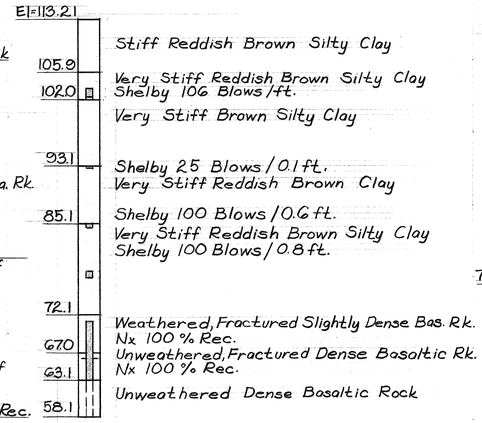
S-2
STA. 95+25
118' OFFSET LEFT



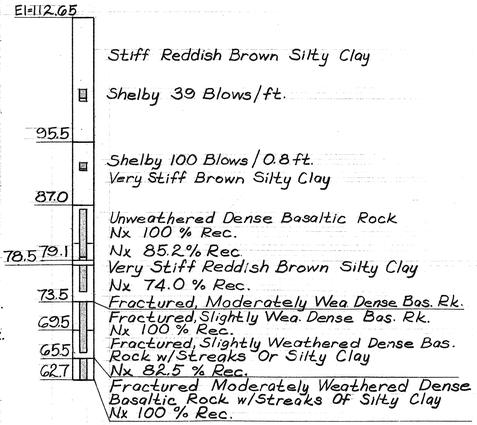
S-3
STA. 94+93
72 OFFSET LEFT



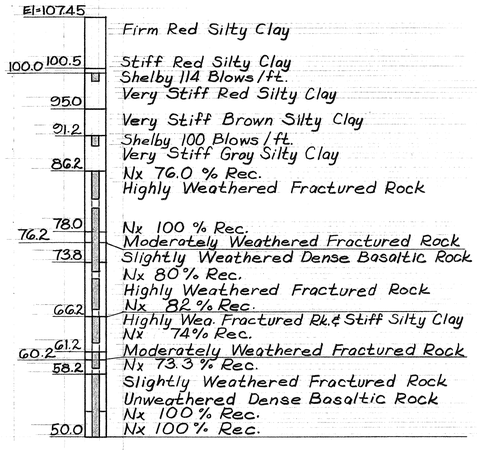
S-4
STA. 95+25
72' OFFSET LEFT



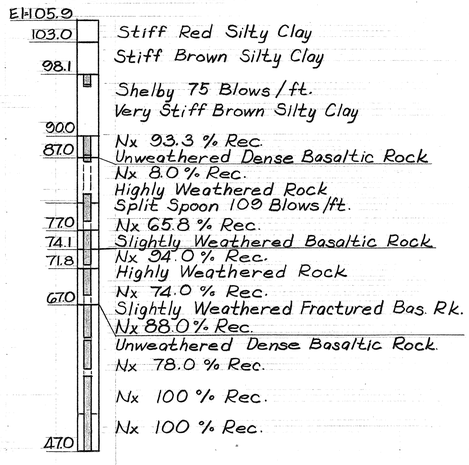
S-5
℄ STA. 94+93



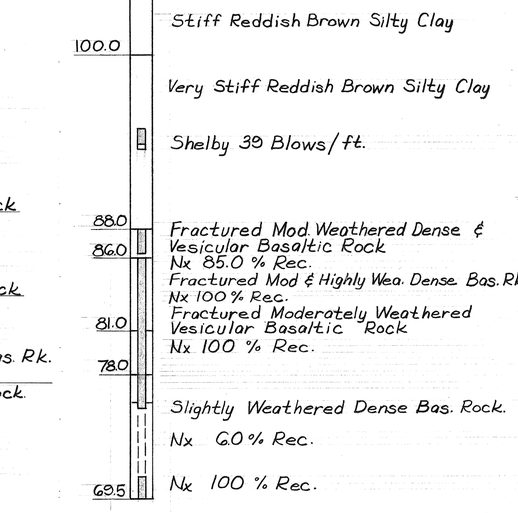
S-6
STA. 94+93
66' OFFSET RIGHT



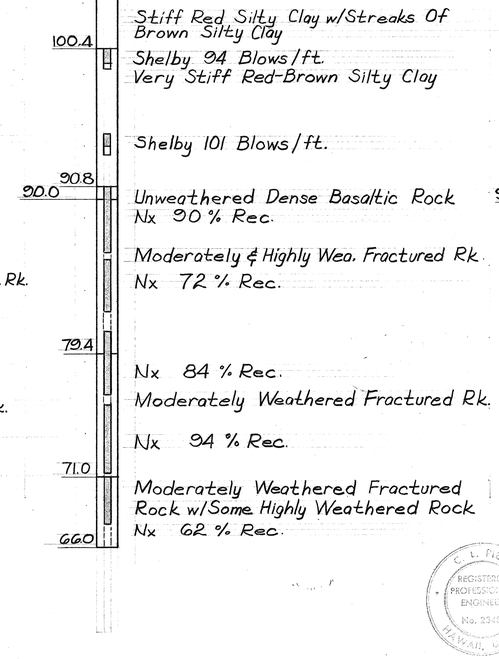
S-7
STA. 95+25
72' OFFSET RIGHT



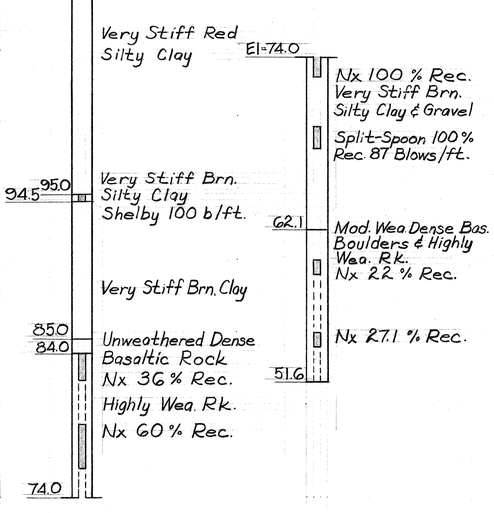
S-8
STA. 94+93
El=105.06 111' OFFSET RIGHT



S-9
STA. 95+25
111' OFFSET RIGHT



B-9
STA. 95+25



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NOTE BOOK
No.

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C. L. FIELD
REGISTERED PROFESSIONAL ENGINEER
No. 2345
HAWAII, U.S.A.

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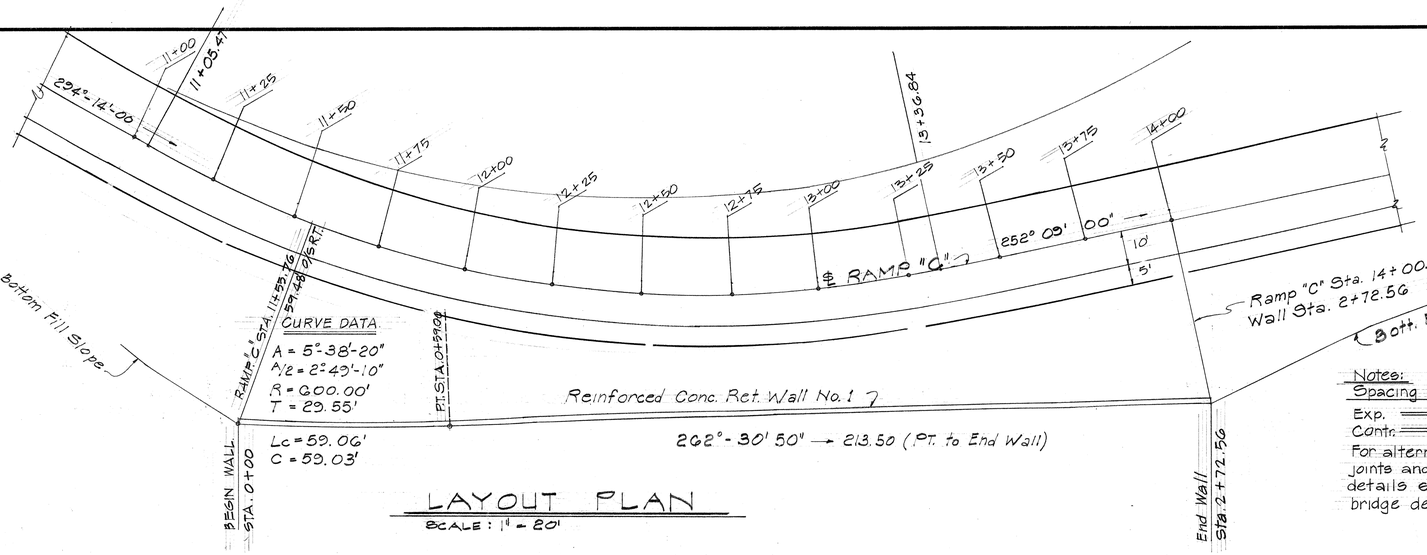
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

AUSTIN BISHOP
GRADE SEPARATION
BORING LOGS
INTERSTATE ROUTE H1
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE 1969

SHEET No. 12 OF 12 SHEETS

140

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	141	185

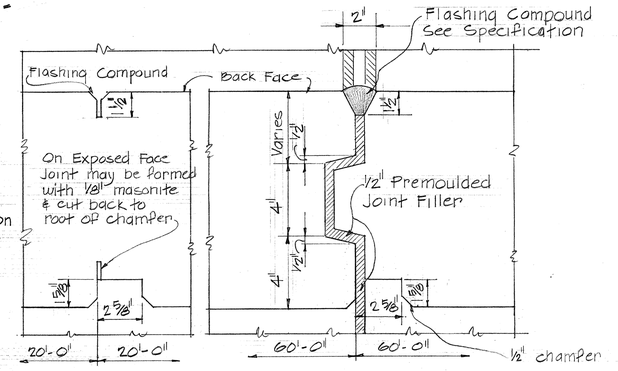


LAYOUT PLAN

SCALE: 1" = 20'

Notes:
Spacing of joints
Exp. ═══ 60'-0" max.
Contr. ═══ 20'-0" max.
For alternate contraction joints and control joints details see standard bridge details. Sht. 144.

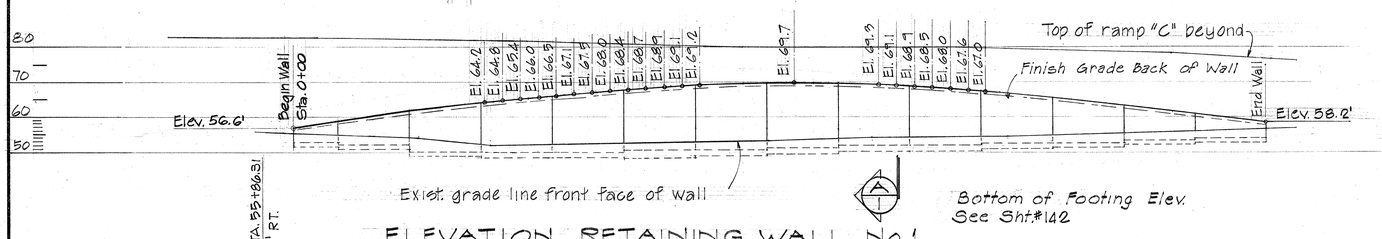
NOTES:
1. Retaining wall elevations and bottom of footing elev. see drwgs. No. 141
2. Plan of retaining wall No. 1 & No. 2 and light standard see drwg. No. 153.
3. Refer to drwgs 150 & 151 for standard details for retaining walls.
4. See civil drwgs for finish grade elevs. and roadway elevs.



Vertical Contr. Joint Vertical Expansion Joint

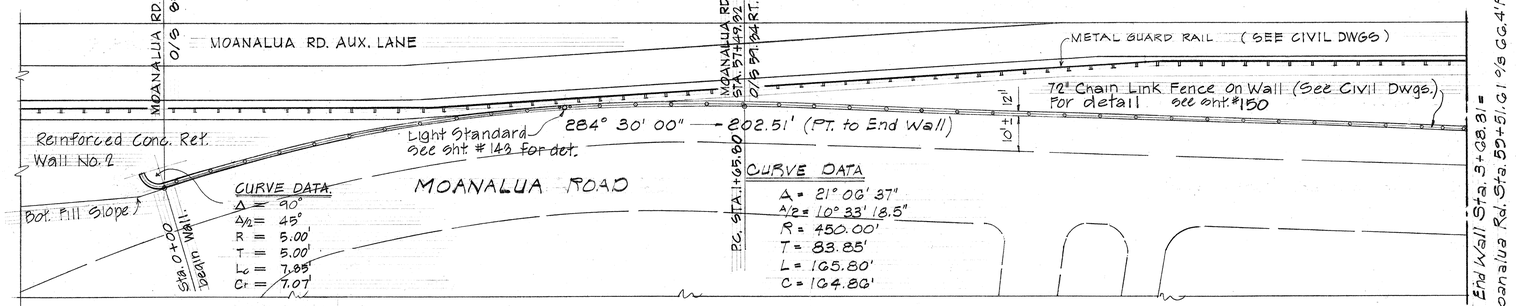
TYPICAL RETAINING WALL JOINTS DETAILS

SCALE: 3" = 1'-0"



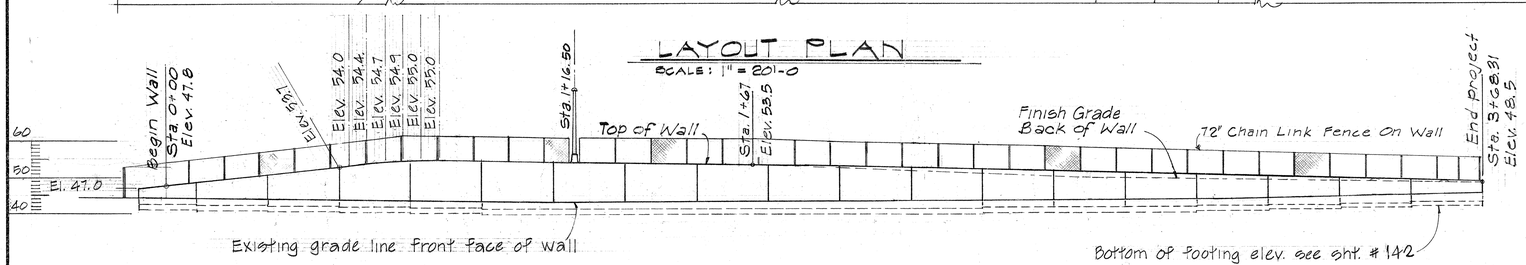
ELEVATION RETAINING WALL No. 1

SCALE: 1" = 80'



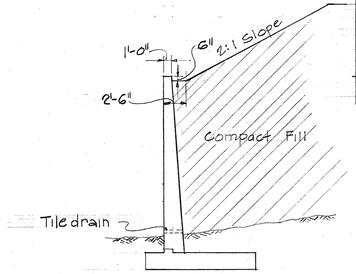
LAYOUT PLAN

SCALE: 1" = 20'-0"



ELEVATION RETAINING WALL No. 2

SCALE: 1" = 20'-0



TYPICAL WALL SECTION

SCALE: ⅛" = 1'-0"

C. L. PIEN
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No. 3348
HAWAII, U.S.A.

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ESTIMATED QUANTITIES	
CLASS A-1 CONC. EXCLUDING FTG. (LUMP SUM)	400 c.y.
CLASS A-1 CONC. FOOTING ONLY (L.S.)	500 c.y.
REINF. STEEL (LUMP SUM)	98,200 lbs.
STRUCTURAL EXCAVATION	3,400 c.y.
FILTER MATERIAL	3,100 c.y.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALLS

LAYOUT PLAN, ELEV., & DETAILS
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE 1969

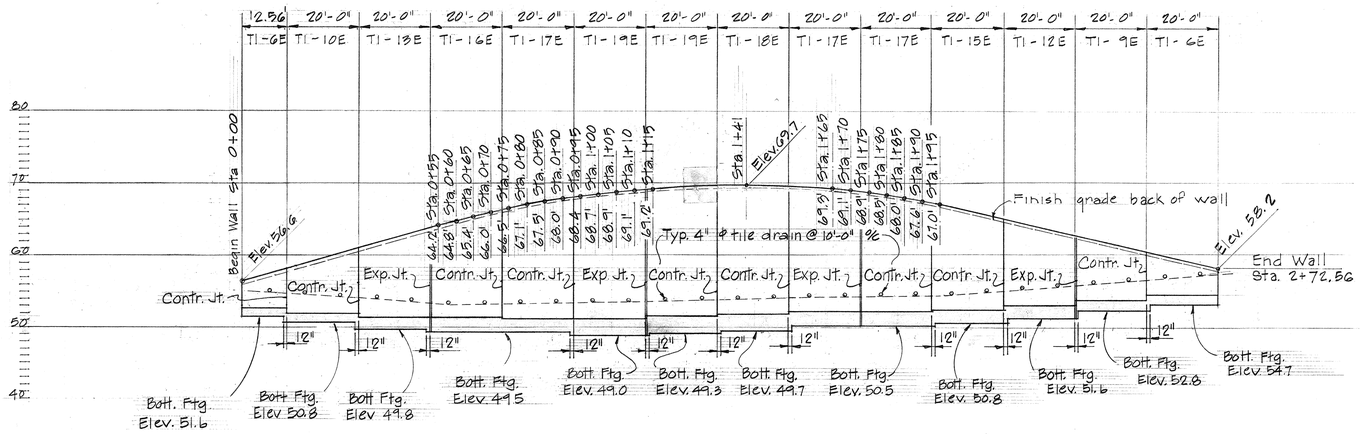
SHEET No. 1 OF 3 SHEETS

141

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

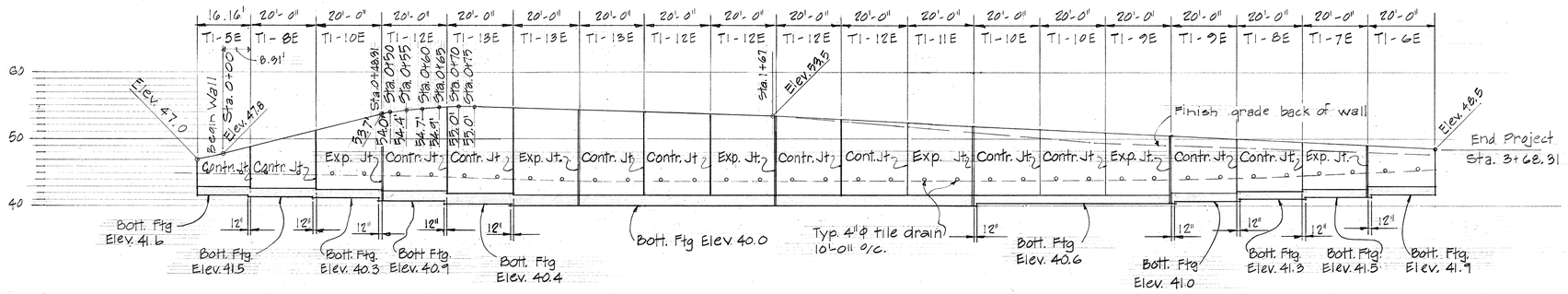
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65):10	1969	142	188



DEVELOPED ELEVATION RETAINING WALL NO. 1

Scale: Horiz. 1" = 20'-0"
Vert. 1" = 10'-0"



DEVELOPED ELEVATION RETAINING WALL NO. 2

Scale: Horiz. 1" = 20'-0"
Vert. 1" = 10'-0"

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

PRINTED ON NO. 1000H CLEARPRINT

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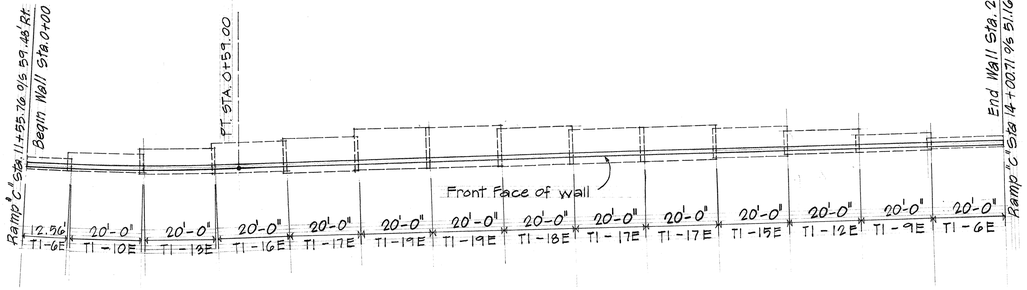
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALLS
DEVELOPED ELEVATION
INTERSTATE ROUTE H-1
F.A.I PROJ. NO I H-1 (65):10
SCALE: AS NOTED DATE 1969

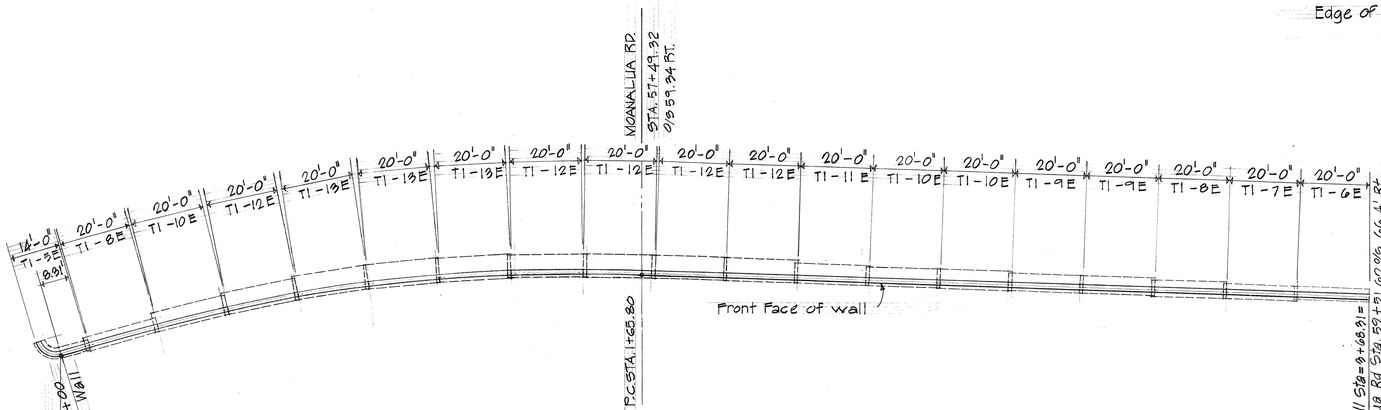
SHEET No. 2 OF 3 SHEETS

142

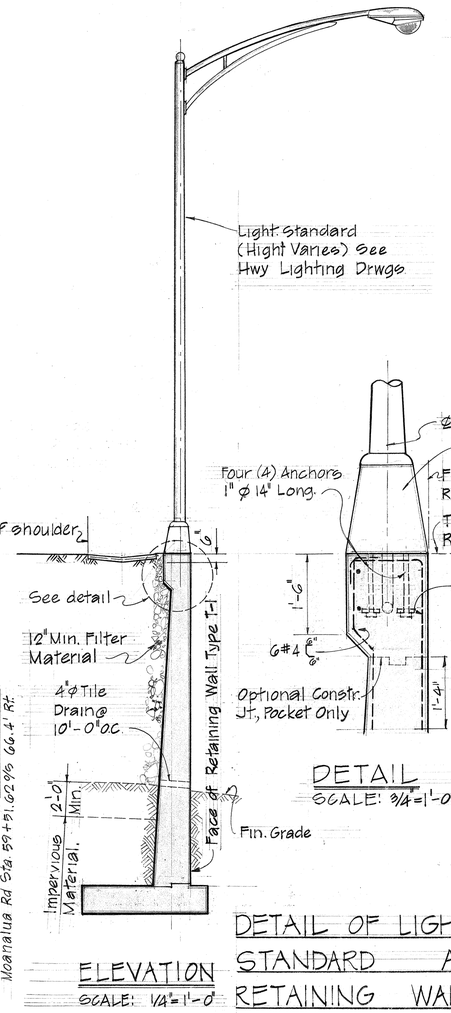
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI(65):10	1969	143	185



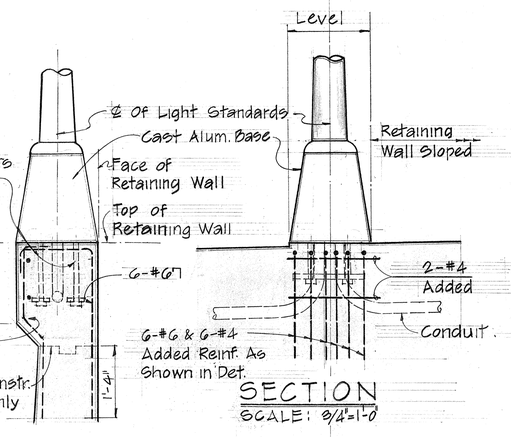
PLAN - RETAINING WALL NO. 1
SCALE: 1" = 20'



PLAN - RETAINING WALL NO. 2
SCALE: 1" = 20'



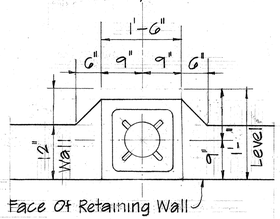
ELEVATION
SCALE: 1/4" = 1'-0"



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

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

DETAIL OF LIGHT STANDARD AT RETAINING WALL



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

Note:
Center Line of Light Std. 3'-0" Min. From Any Jts & To Be Placed Between Interm. Posts At Approx. Station Shown On Hwy. Lighting Plan. See electrical drwgs. for lighting standard base detail.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALLS
PLANS & DETAILS
INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1(65):10
SCALE: AS NOTED DATE 1969

SHEET No. 3 OF 3 SHEETS

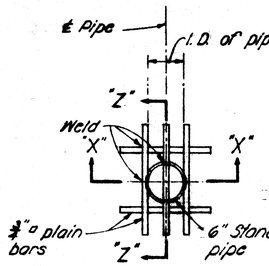
143

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

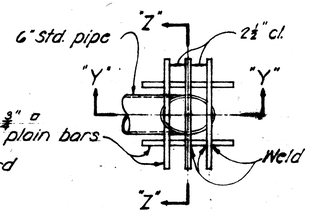
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	44	185

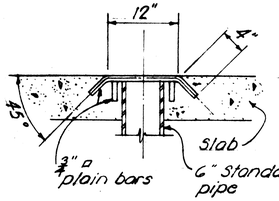
REVISION
Jan. '67
Feb. '67
Apr. '67
June '68
Apr. '69
May '69



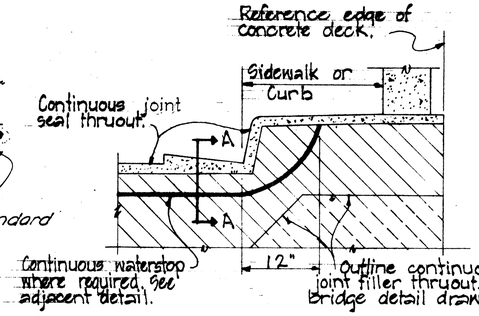
PLAN



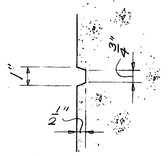
PLAN



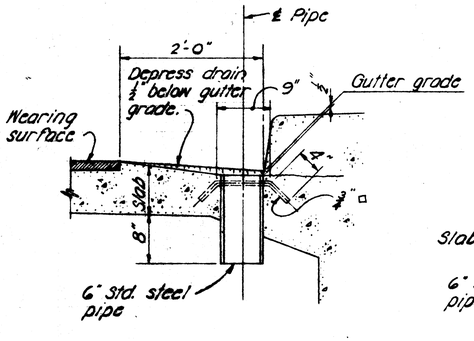
SECTION "Z-Z"



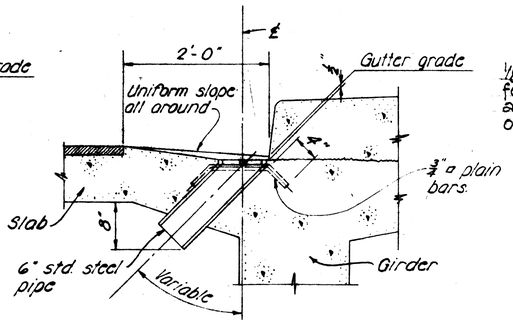
ELEVATION



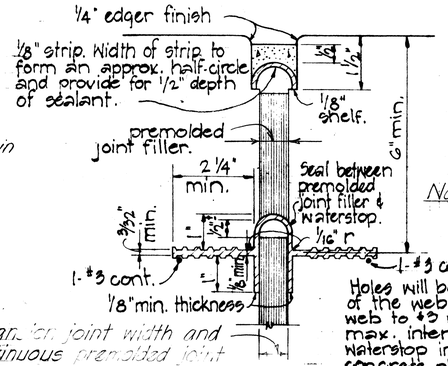
END POST GROOVE DETAIL
Scale: 3"=1'-0"



SECTION "X-X"



SECTION "Y-Y"



Expan. jt. joint width and continuous premolded joint filler, see contract drawings.

SECTION "A-A"

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.

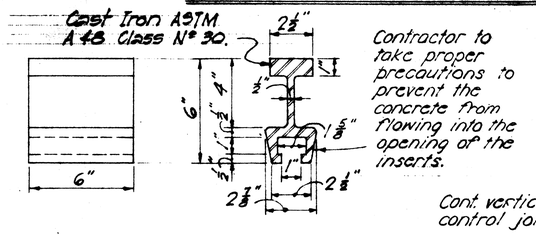
Nailing Strip:
Nail or staple to form or premolded joint filler.

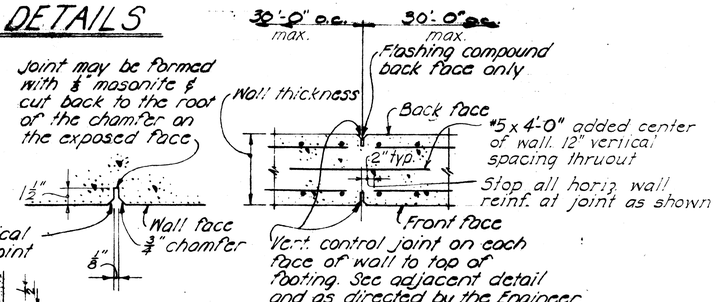
Holes will be permitted in the outer ½" of the web for wires, rings, etc. Tie web to #3 reinforcing bars at 12" max. intervals to support the waterstop in proper position during concrete placement. Alternative detail may be submitted for approval of the Engineer.

TYPICAL EXPANSION JOINT DETAIL

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

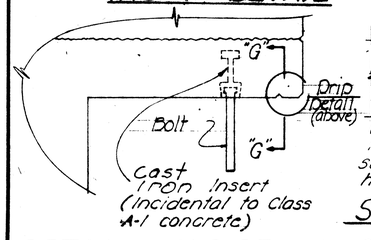




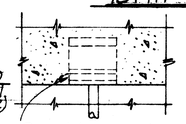


DRIP DET.

CONTROL JOINT DETAIL



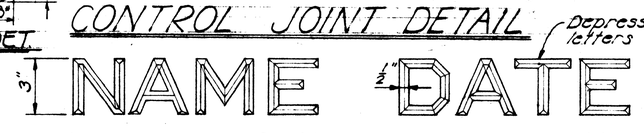
INSERT DETAIL



Provide opening of sufficient size to insert head of bolt.

SECTION "G-G"

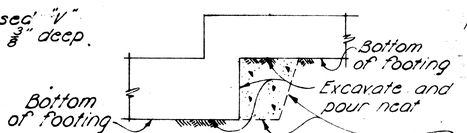
DETAIL of PIPE HANGERS & INSERTS



Use correct name of bridge — Date of Year built

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

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 separately.

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 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 less than 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.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD BRIDGE DETAILS

INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1 (65)10
Scale as Noted Date: 1969

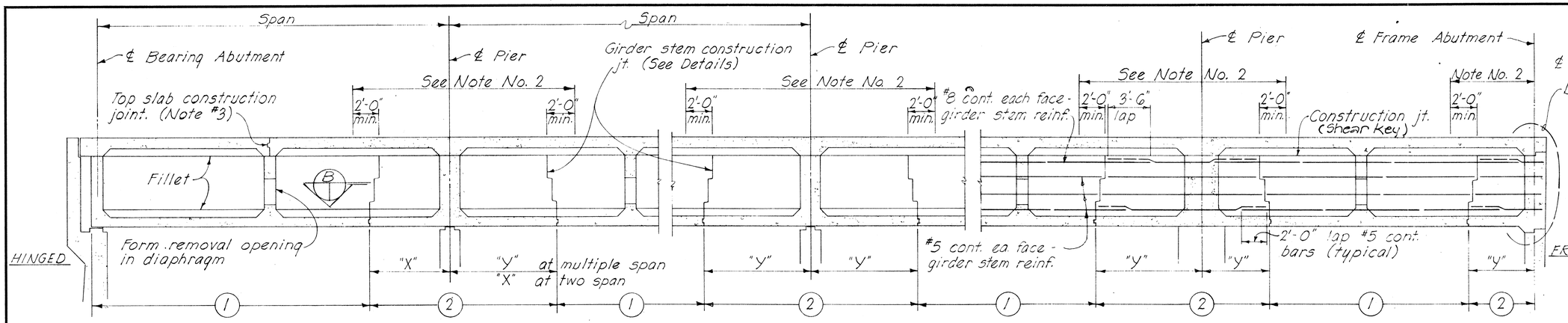
SHEET No. 51 OF 514 SHEETS

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

PRINTED ON NO. 1000W CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(66)10	1969	145	185

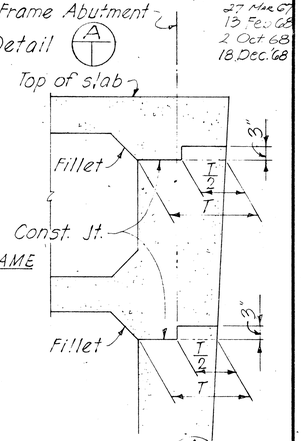
Revision
27 Mar 67
13 Feb 68
2 Oct 68
18 Dec 68



AT 1ST SPAN – HINGED SUPPORT

AT INTERMEDIATE SPAN SUPPORT

AT 1ST. SPAN – FRAME SUPPORT



DETAIL

NOTE:

No. 1 – Numbers ① & ② indicate sequence of placing bottom slab & girder stem concrete. ② may be placed with ① when approved by the Engineer provided that the ① sections adjoining the ② sections are placed in this pour. For any deviation from the above the Contractor shall submit a diagram to the Engineer for approval.

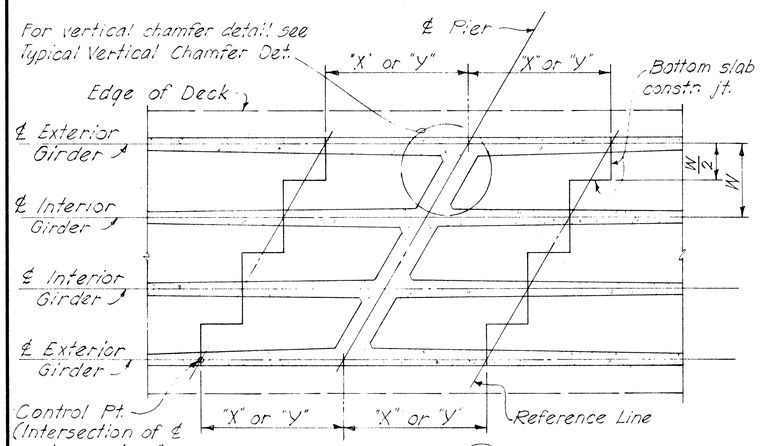
No. 2 – No top slab construction joint or form removal opening shall be located in the region over the piers as noted, nor in the supporting section of a hinged span.

No. 3 – When top slab is not poured continuously, and top slab forms are not removed, construction joint in top slab shall be located over an intermediate diaphragm.

No. 4 – Top slab concrete shall be placed separately from the stem. Top slab concrete may be placed continuously or in parts as approved by the Engineer, providing pour is not in conflict with the above notes.

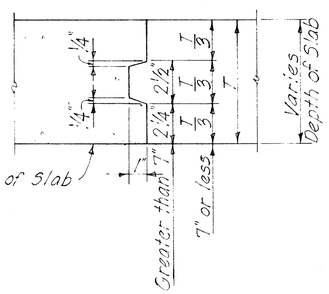
No. 5. – Dimension "X" = 1/4 span. "Y" = 1/5 span.

No. 6. – No lapping of main bars shall be permitted at construction joints.



SECTION B

TREATMENT OF CONSTRUCTION JOINT BRIDGES ON SKEW



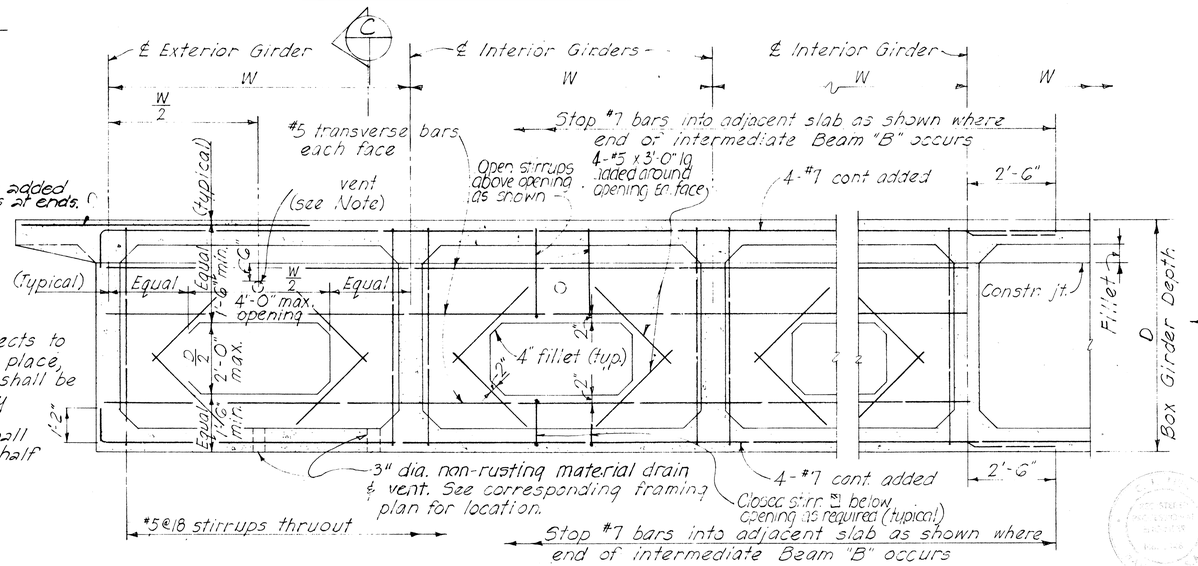
TYPICAL SLAB CONSTRUCTION JOINT DETAIL

NOTE:

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

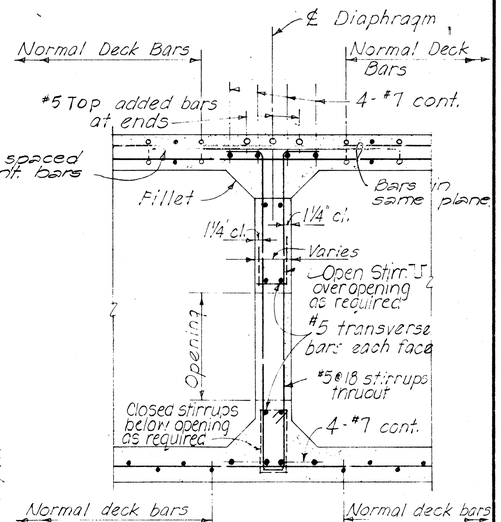
No vertical shoring shall be placed in the center half of top slab span W.

PLACING DIAGRAM FOR SUPERSTRUCTURE CONCRETE



AT NON-CONTINUOUS ENDS TYPICAL INTERIOR SPAN

TYPICAL BEAM "B" DETAILS



SECTION C

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

CONCRETE BOX GIRDER

INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1 (65): 10

SCALE As Noted DATE: 1969

SHEET No. 52 OF 514 SHEETS

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

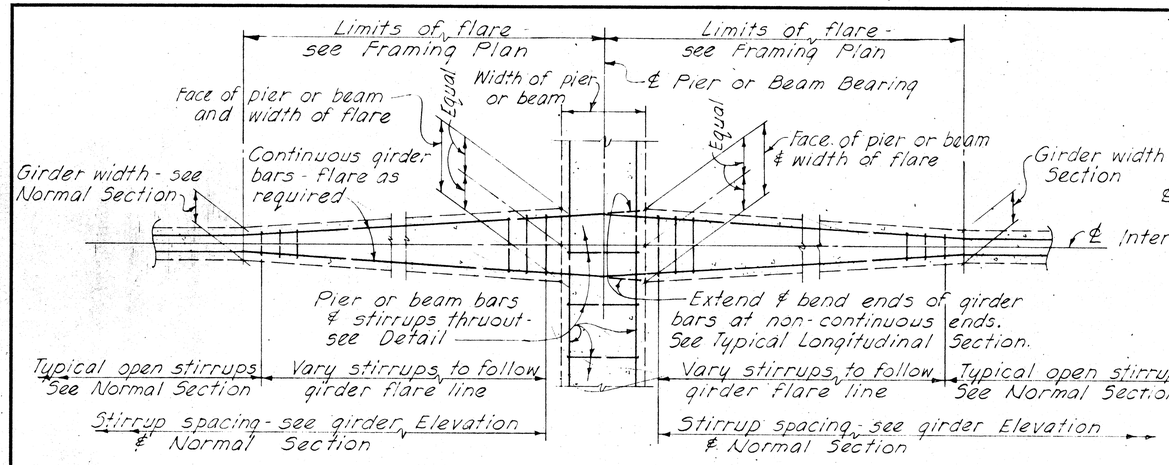
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

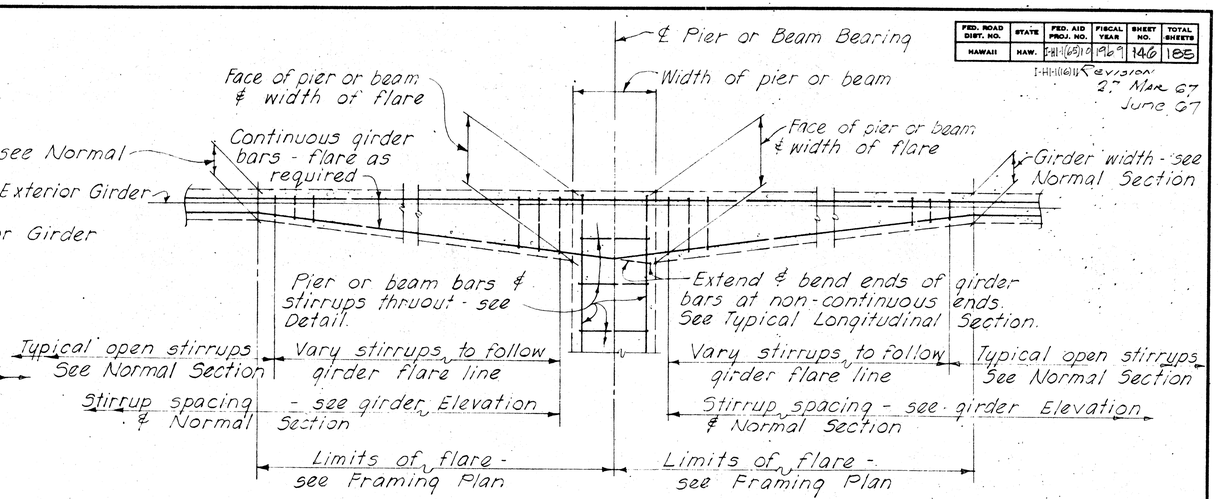
PRINTED ON NO. 1000H CLEARPRINT

145

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(65)10	1969	146	185

I-HI-1(16)11 Revision 2." Mar. 67 June 67

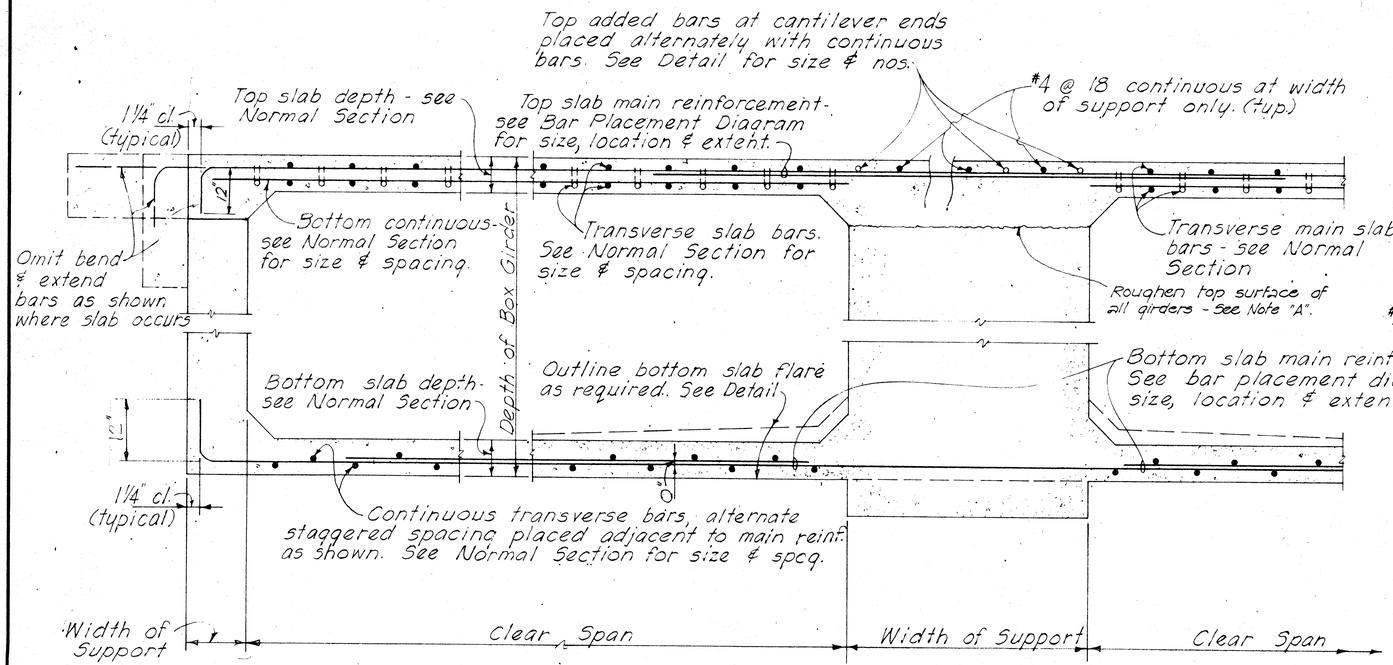




INTERIOR GIRDER

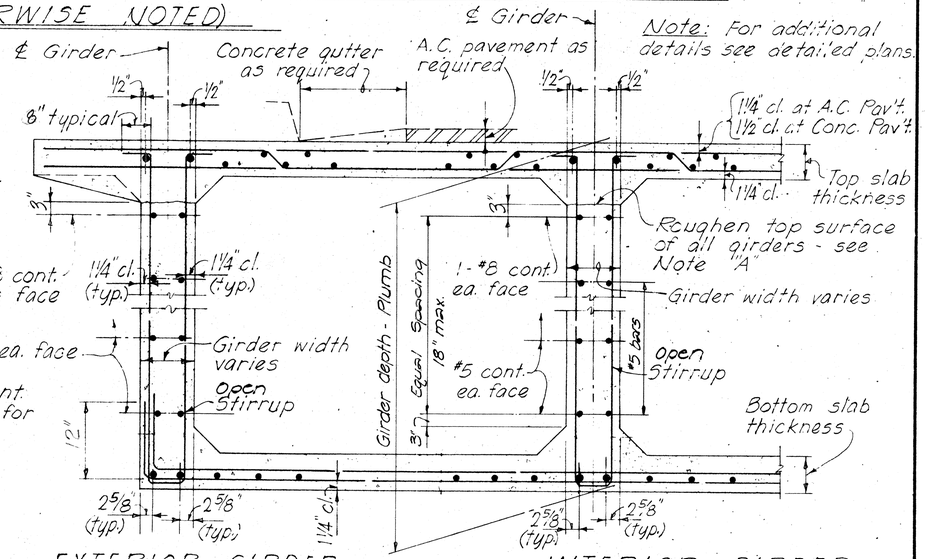
EXTERIOR GIRDER

TYPICAL DETAILS OF GIRDER FLARE AT NORMAL OR RADIAL SUPPORTS — CONTINUOUS ENDS AS SHOWN (NON-CONTINUOUS ENDS SIMILAR EXCEPT AS OTHERWISE NOTED)



AT NON-CONTINUOUS END — AT CONTINUOUS SUPPORT

TYPICAL LONGITUDINAL DECK SECTION ALONG GIRDER AT NORMAL OR RADIAL SUPPORTS



EXTERIOR GIRDER — INTERIOR GIRDER

TYPICAL NORMAL BOX GIRDER SECTION

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE BOX GIRDER

INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-HI-1(65)10
SCALE AS NOTED DATE: 1969

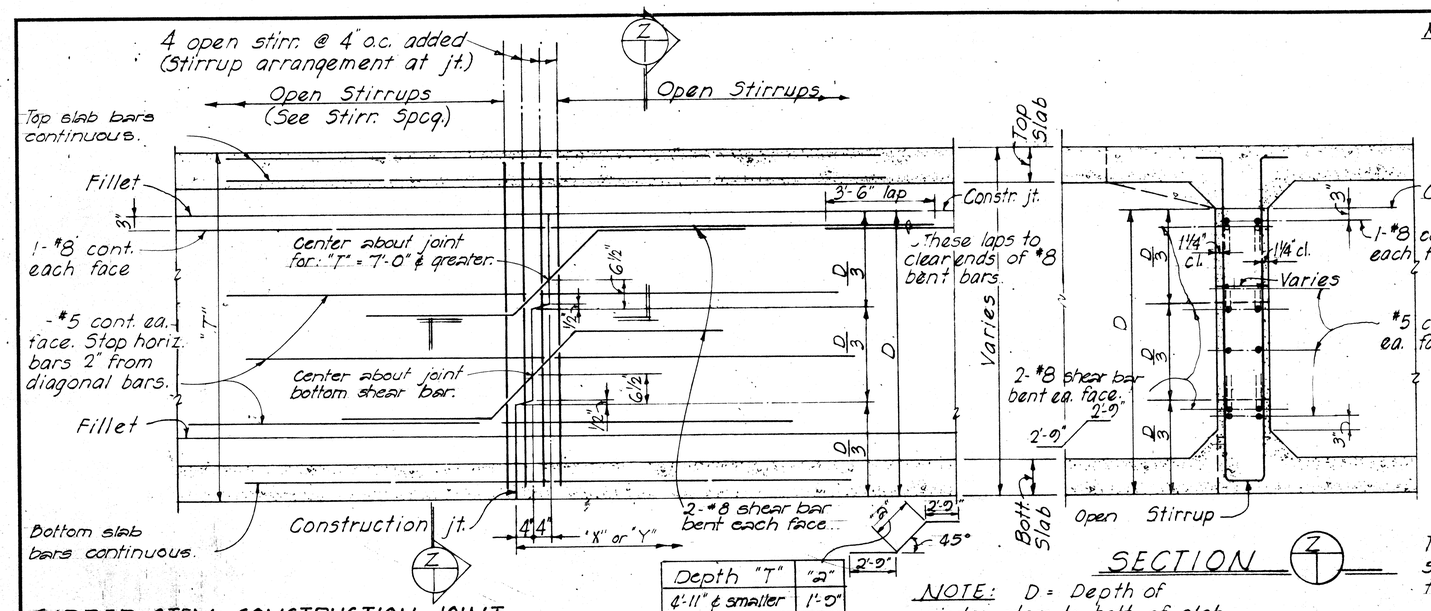
SHEET No. 53 OF 514 SHEETS

146

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HH-1(69)10	1969	147	185

July 1967



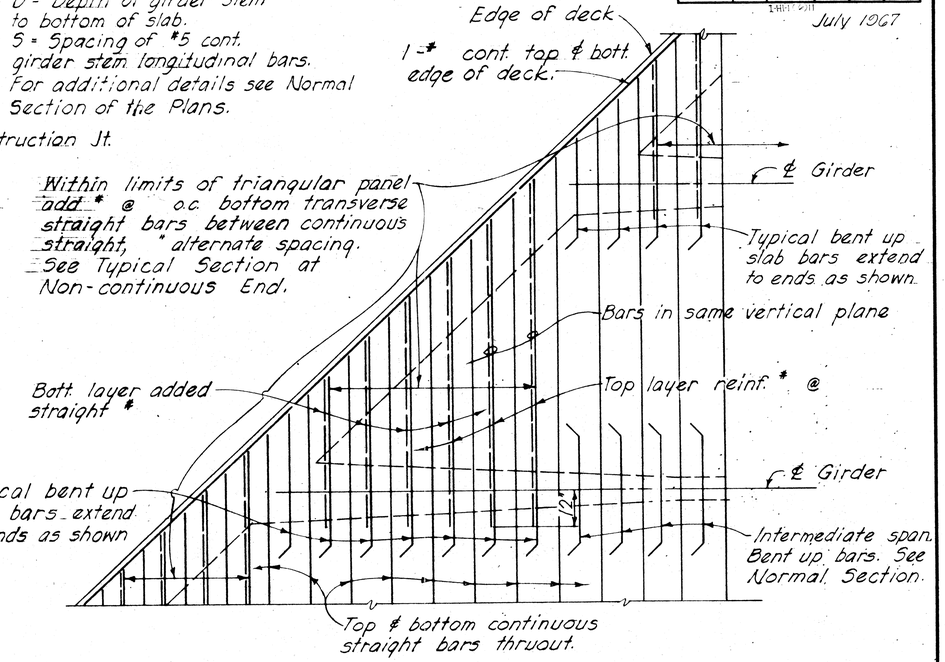
GIRDER STEM CONSTRUCTION JOINT

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

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

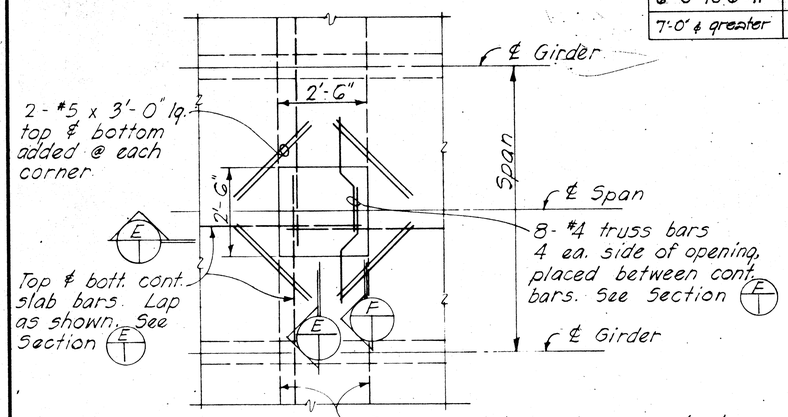
SECTION Z

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



Within limits of triangular panel add # @ o.c. bottom transverse straight bars between continuous straight, " alternate spacing. See Typical Section at Non-continuous End.

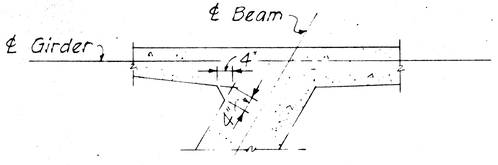
PART PLAN - TYPICAL ARRANGEMENT OF TOP SLAB REINFORCEMENT AT SKEWED ENDS



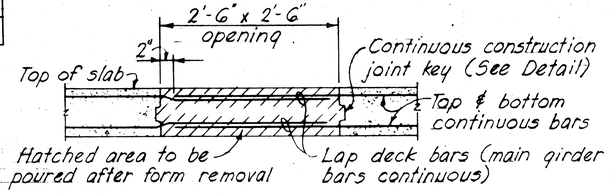
Note: Final location of opening shall be determined by the Engineer.

Form removal opening may extend from edge of deck with approval of the Engineer. Lap small longitudinal deck bars as shown on Section E

PART PLAN - DECK SHOWING FORM REMOVAL OPENING

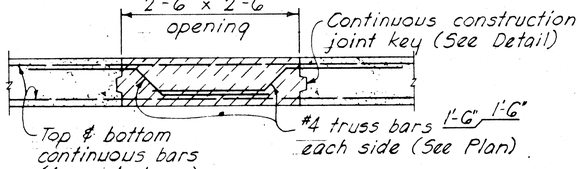


TYPICAL DETAIL OF VERTICAL CHAMFER AT ACUTE INTERSECTION OF SKEWED CONCRETE MEMBER



SECTION E

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



SECTION F

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE BOX GIRDER

INTERSTATE ROUTE H-1

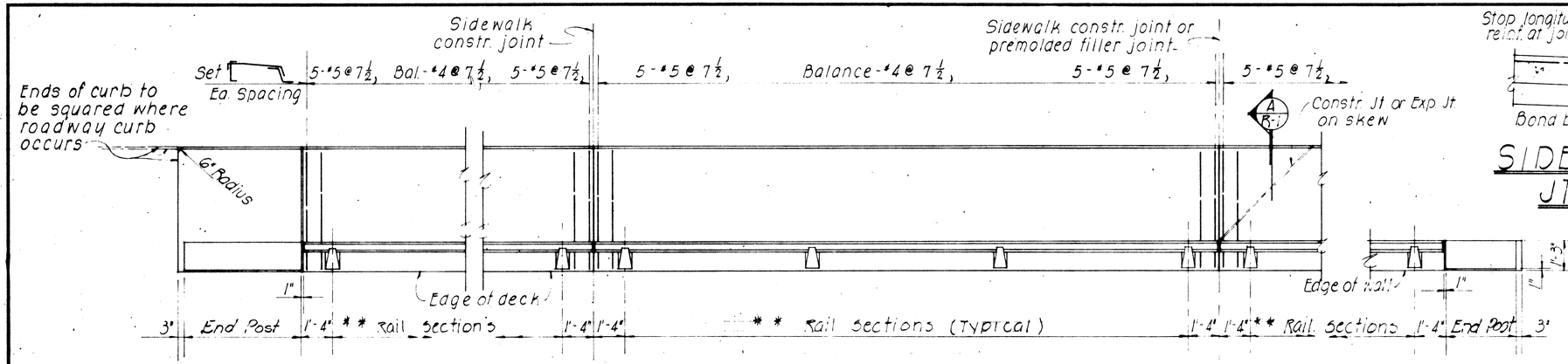
F.A.I. PROJ. NO. I-HH-1(69)10
SCALE AS NOTED DATE: 1969

SHEET No. 54 OF 514 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.	FAH-0816	1969	148	185



AT BRIDGE END POST

INTERMEDIATE

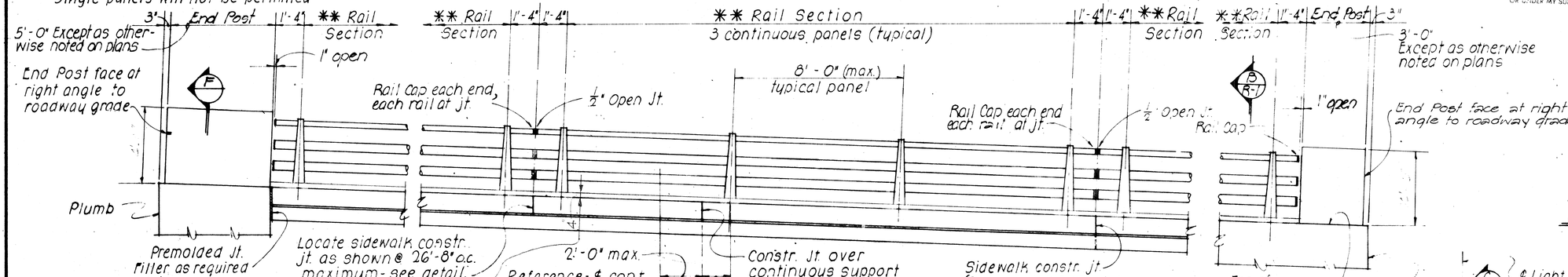
AT RETAINING WALL END POST

RAILING PLAN

SCALE: ⅜" = 1'-0"

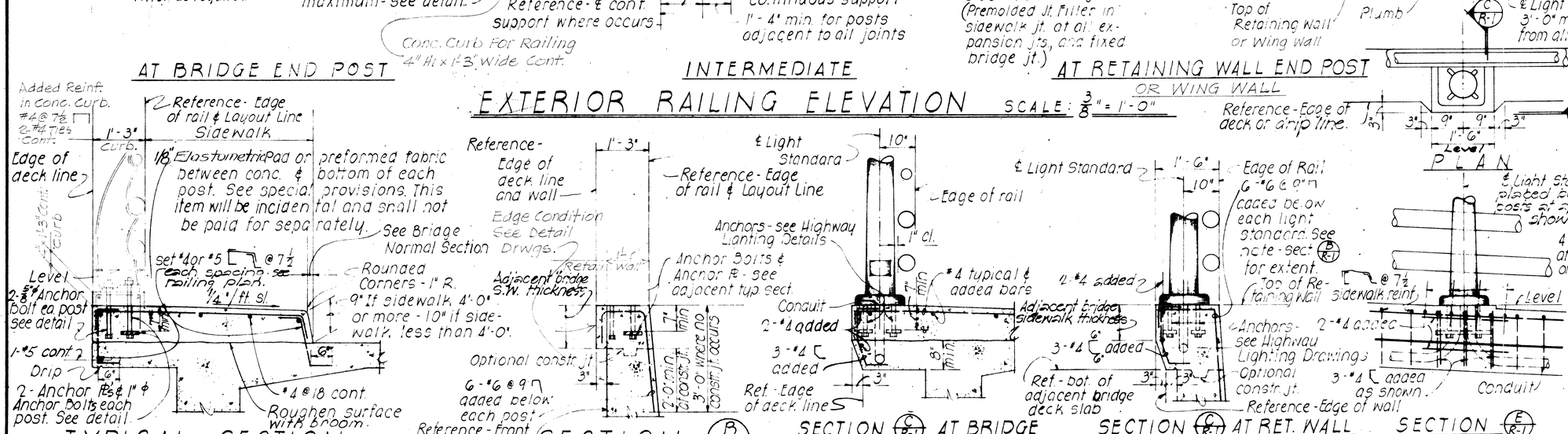
**NOTE!!
The contractor shall layout the railing to provide 3 continuous panels whenever possible. 2 or 4 continuous panels will be permitted to complete the layout when 3 continuous panels cannot be made. Single panels will not be permitted

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



EXTERIOR RAILING ELEVATION

SCALE: ⅜" = 1'-0"



TYPICAL SECTION
SCALE: ¾" = 1'-0"

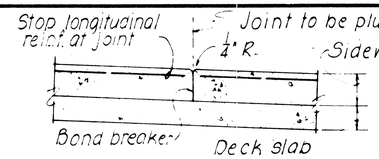
SECTION (B R-1)
SCALE: ¾" = 1'-0"

SECTION (C R-1) AT BRIDGE

SECTION (E R-1) AT RET. WALL

SECTION (E R-1)

DETAILS OF RAILING AT LIGHT STANDARD SCALE: ¾" = 1'-0

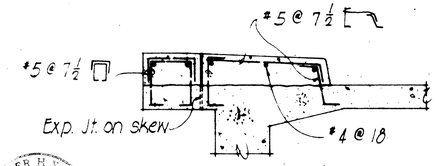


SIDEWALK CONSTR. JT. DETAIL

SCALE: ½" = 1'-0"

NOTE!
Details shown on this sheet are standard details except for modifications as may be required for special conditions. For such conditions, refer to corresponding details shown on the plans.

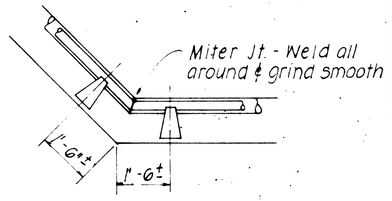
REVISION 28 Mar 67



SECTION (A R-1) AT SKEW

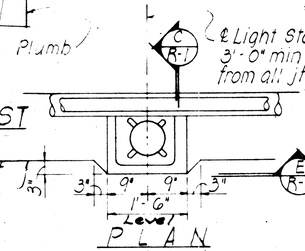
SCALE: ½" = 1'-0"

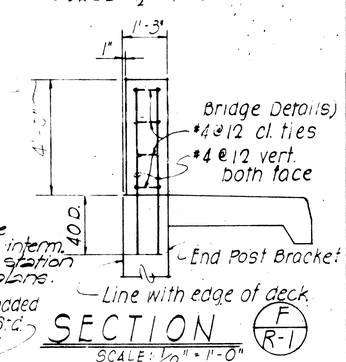
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.



PLAN TREATMENT OF RAILING AT SKEWED ENDS

SCALE: ½" = 1'-0"





SECTION (F R-1)

SCALE: ½" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL BRIDGE RAILING

THREE RAIL COMBINATION TYPE
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-HI-1(65)-10
Scale as Noted Date: 1969

SHEET No. 65 OF 214 SHEETS

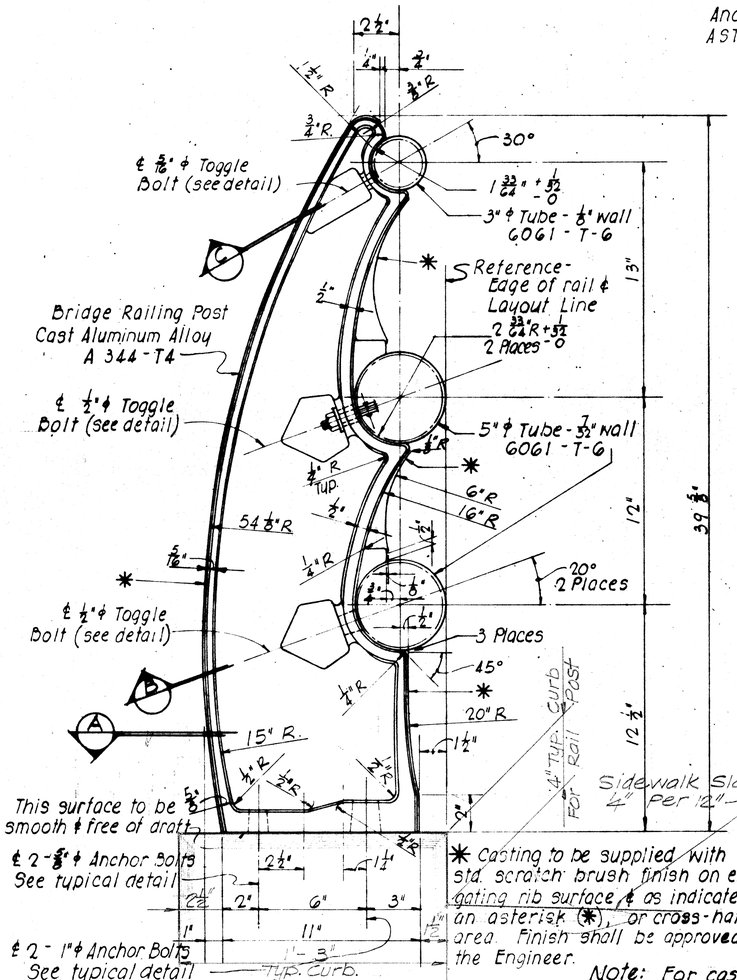
DATE	ORIGINAL PLAN	SURVEY PLOTTED BY	DRAWN BY	TRACED BY	DESIGNED BY	QUANTITIES BY	CHECKED BY
	NOTE BOOK						
No.							

PRINTED ON NO. 1000H CLEARPRINT

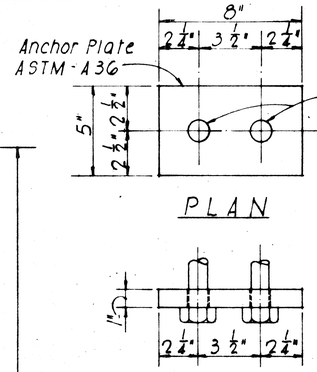
1 48

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(65)10	1969	149	185

I-HI-1(65)11



SIDE ELEVATION

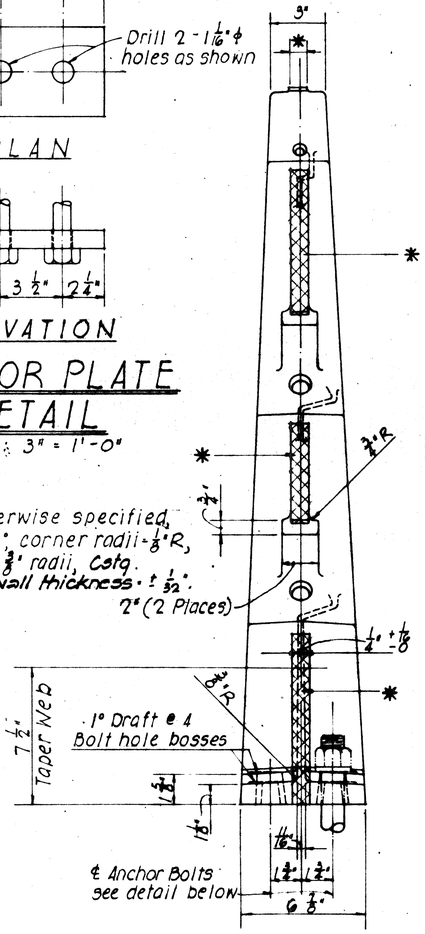


ANCHOR PLATE DETAIL

SCALE: 3" = 1'-0"

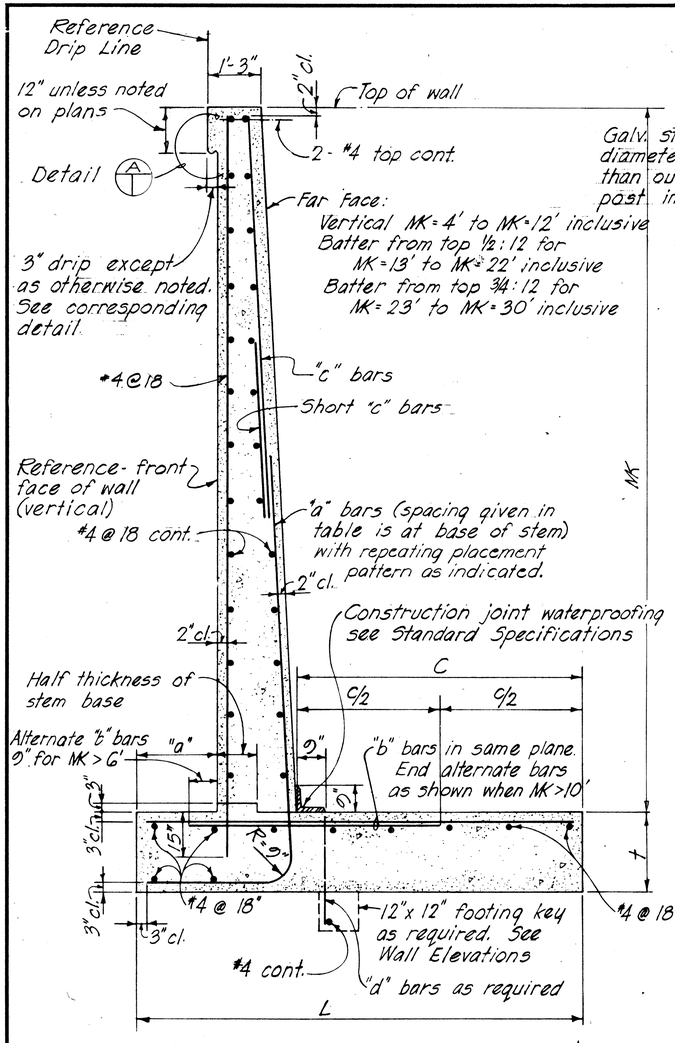
NOTE!!

Unless otherwise specified, Dft. angles - 3°, corner radii - ⅜" R, Fillet radii - ⅜" radii, Cstg. tol. - ± 1/16", ℄ wall thickness - ± 1/32".

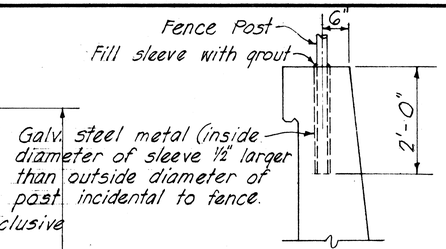

3"
2" (2 Places)
¼" + ⅛
3" R
1° Draft @ 4 Bolt hole bosses
7½" Taper Web
1½"
1½"
1½"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	150	165

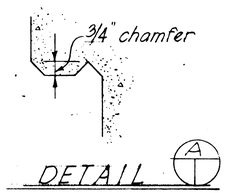
Revision - Dec. 1966
" Jan. 1967
" July 1968
" Sept 1968



WALL SECTION



CHAIN LINK FENCE POST DETAIL

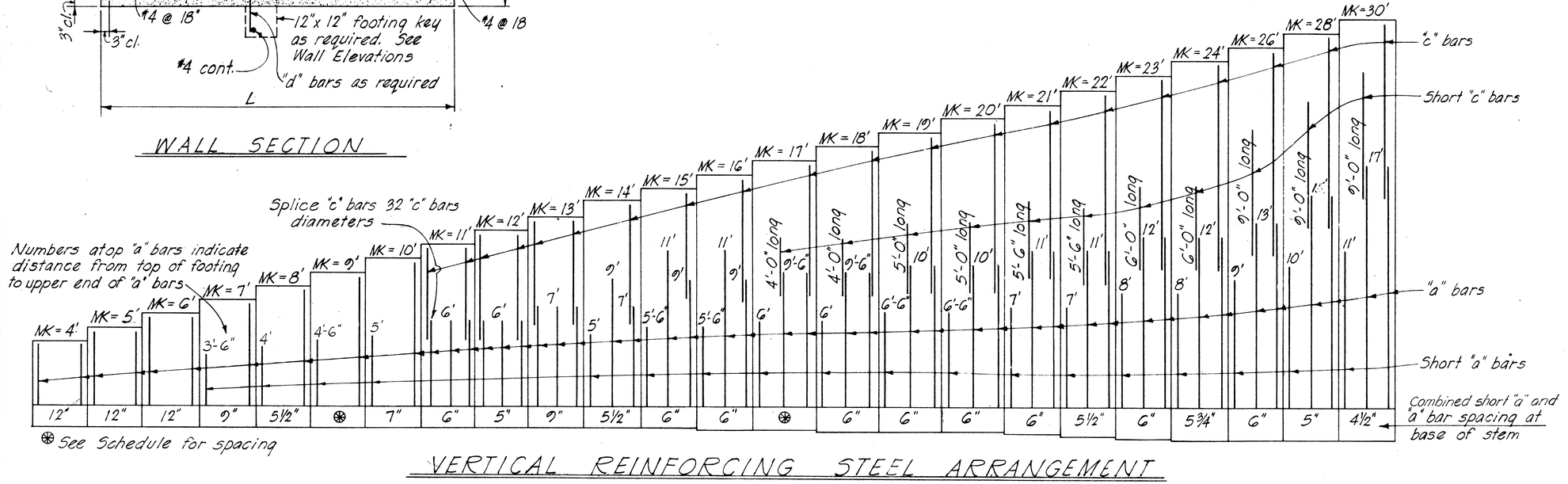


DETAIL

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"	#8@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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

RETAINING WALL TYPE T-1

INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1(69):10

SCALE AS NOTED DATE: 1969

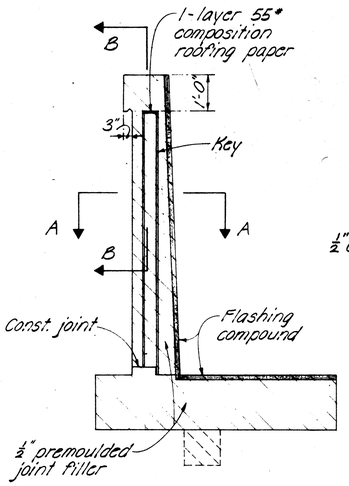
SHEET No. 57 OF 514 SHEETS

150

PRINTED ON NO. 1000H CLEARPRINT

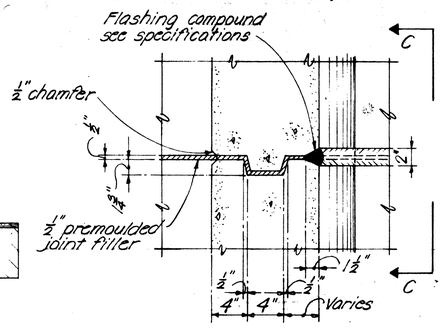
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IHH(65)10	1969	151	185

June, 1968
Sept. 1968

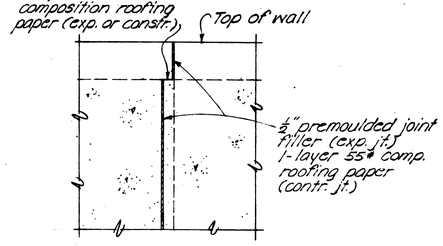


JOINT ELEVATION

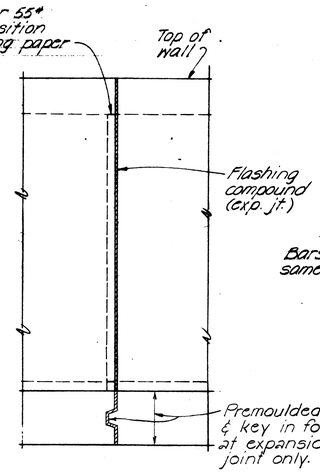
NOTE
Spacing of joints
Expansion = 90'-0" max.
Contraction = 30'-0" max. except where conc. railing or curb occurs 26'-8" max. (match with railing joint above.)
For alternate contraction joint and control joint details - See Standard Bridge Details.



SECTION A-A



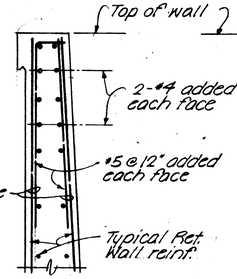
SECTION B-B



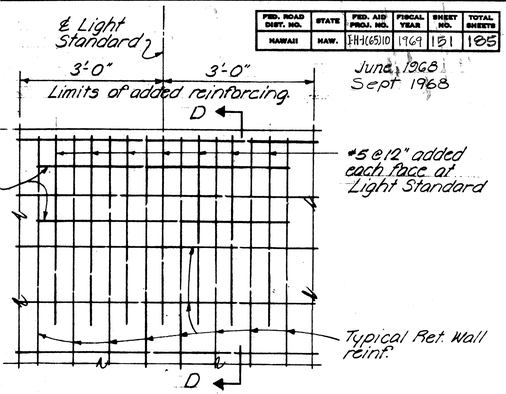
SECTION C-C

TYPICAL EXPANSION JOINT DETAILS No Scale

NOTE:
Limits of added reinf.
Height 0'-18" L = h/2 - 0"
Height 19'-30" L = 2/3 - 0"

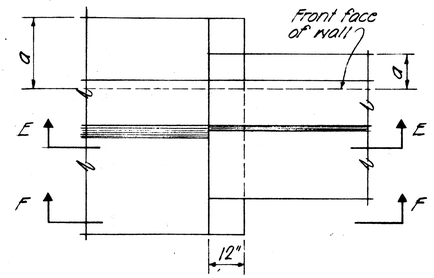


SECTION D-D

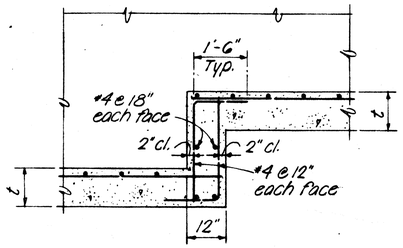


ELEVATION

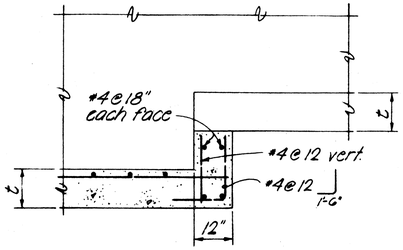
TYPICAL ADDED REINFORCEMENT AT LIGHT STANDARD BASE No Scale



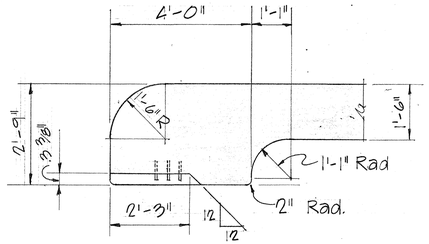
PLAN



SECTION E-E

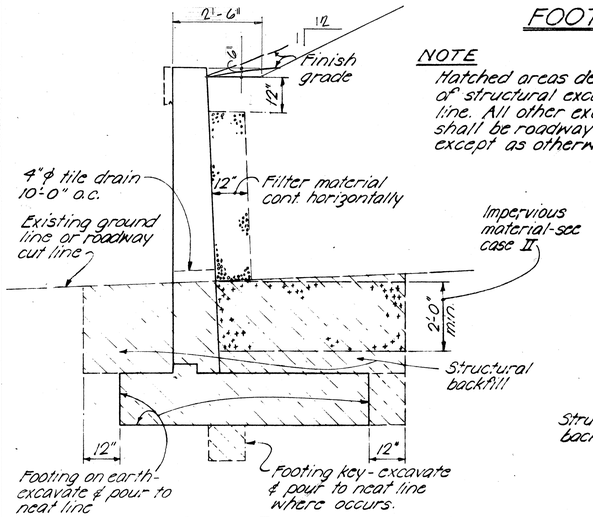


SECTION F-F



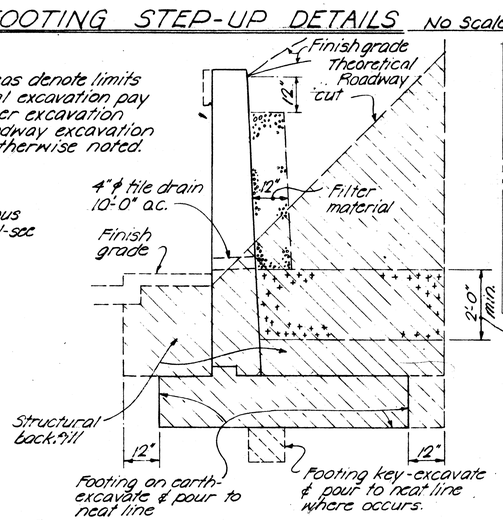
PLAN AT AUSTIN BISHOP
SCALE: 1/2" = 1'-0"

FOOTING STEP-UP DETAILS No Scale



CASE I

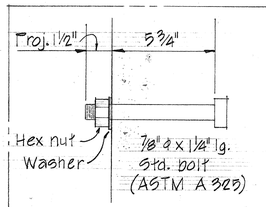
NOTE
Hatched areas denote limits of structural excavation pay line. All other excavation shall be roadway excavation except as otherwise noted.



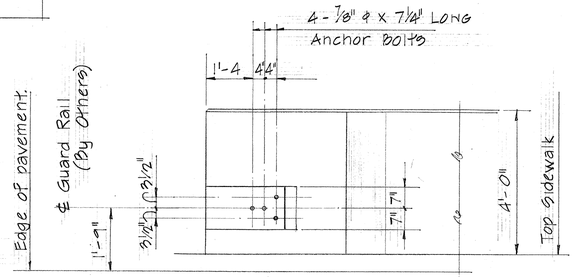
CASE II

Impervious material as selected by the Engineer incidental to structural excavation when "M" is 2'-0" or less. All backfill below weep hole level shall be impervious material.

STRUCTURAL EXCAVATION & DRAINAGE DETAILS No Scale



4 BOLTS THUS PER CONNECTION



ELEVATION

GUARD RAIL CONNECTIONS AT WING WALLS
SCALE: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
RETAINING WALL TYPE T-1

INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1 (65): 10
SCALE AS NOTED DATE: 1969
SHEET No. 58 OF 214 SHEETS

151

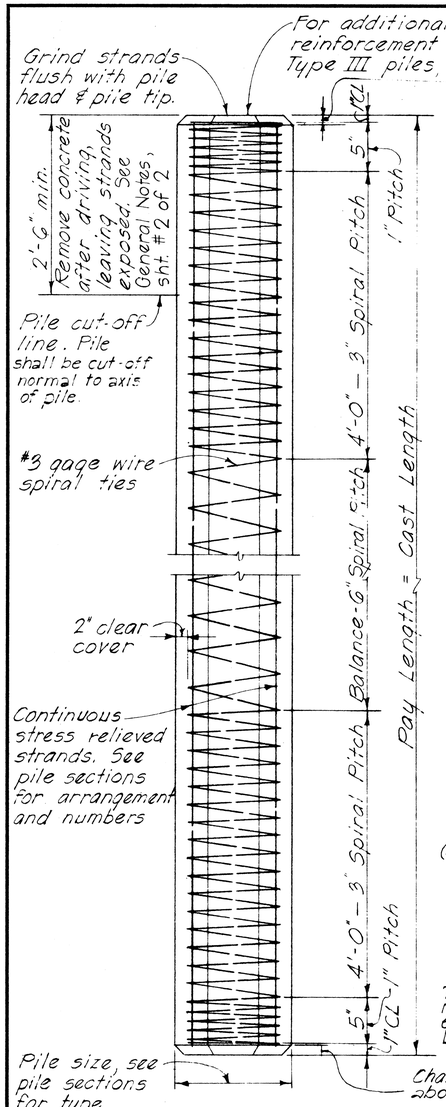
ORIGINAL PLAN	SURVEY PLOTTED BY:	DATE
NOTE BOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

PRINTED ON NO. 1000H CLEARPRINT

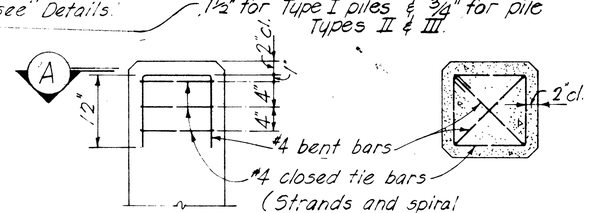
7

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	152	185

Revision: Feb. 67, Mar. 67
Jan. 68, June 68
Aug. 68, Oct 68
Apr. 69

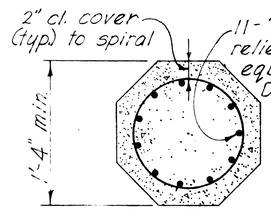


TYPICAL PILE DETAIL



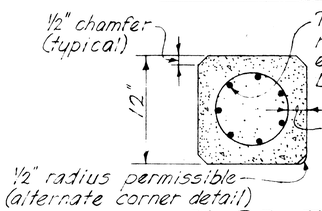
PART ELEVATION — SECTION (A)

TYPICAL ADDED REINFORCEMENT PILE ENDS - TYPE II & III ONLY

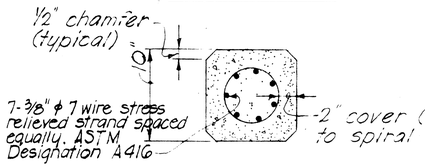


Note: All types of pile spiral reinforcement shall be cold drawn steel wire ASTM A-82

TYPE I



TYPE II



TYPE III

TYPICAL SECTIONS THRU PILES

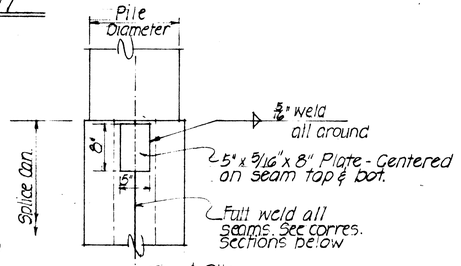
Max. Length "L"*	Max. Length "L"*	Length "L"*
Type I "L" = 53'-0"	Type I "L" = 75'-0"	Type I "L" over 75'-0"
12" Type II "L" = 50'-0"	12" Type II "L" = 72'-0"	12" Type II "L" over 72'-0"
10" Type III "L" = 46'-0"	10" Type III "L" = 66'-0"	10" Type III "L" over 66'-0"
0.30 L — 0.70 L	0.21 L — 0.58 L —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

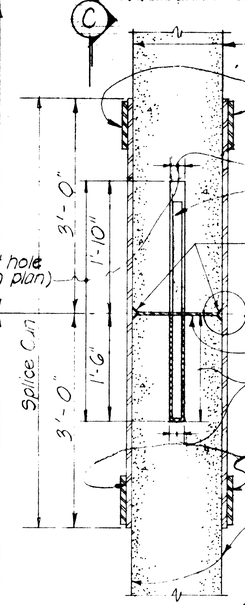
NOTE: Unless special lifting devices are attached for pick-up points, pick-up points shall be plainly marked on all piles after removal of the forms and all lifting shall be done at these points. The use of special embedded or attached lifting devices, the employment of other pick-up points or any other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

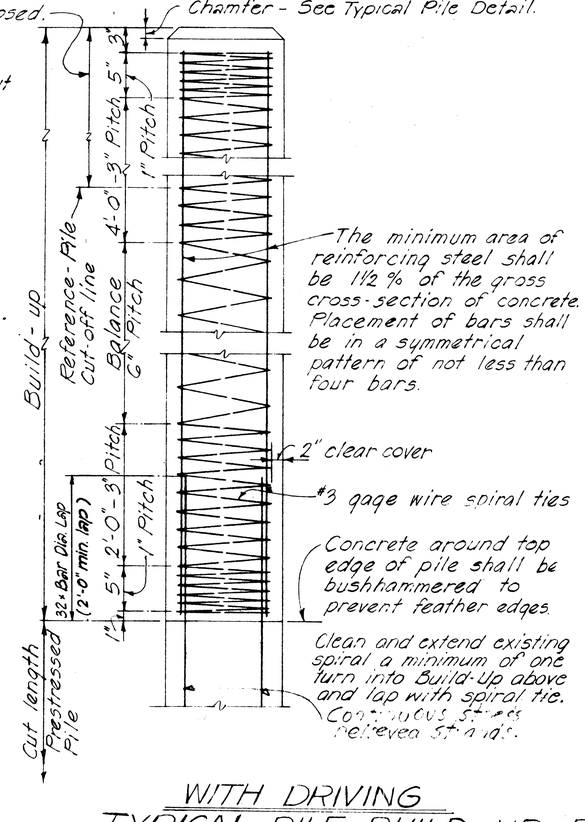


PART ELEV. (C)

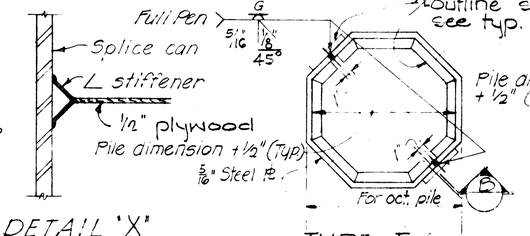
(TYP. CAN SPLICE ℄)



SECTION (B)



WITH DRIVING
TYPICAL PILE BUILD-UP DETAIL



DETAIL 'X'

NOTE!!
1. Splice detail shown above shall not be used except for pile length in excess of 100'-0" long. (See Specifications)
2. Structural steel for splice can shall be ASTM A-36.

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
PRESTRESSED CONCRETE PILES

INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1(65)10
DATE: 1969

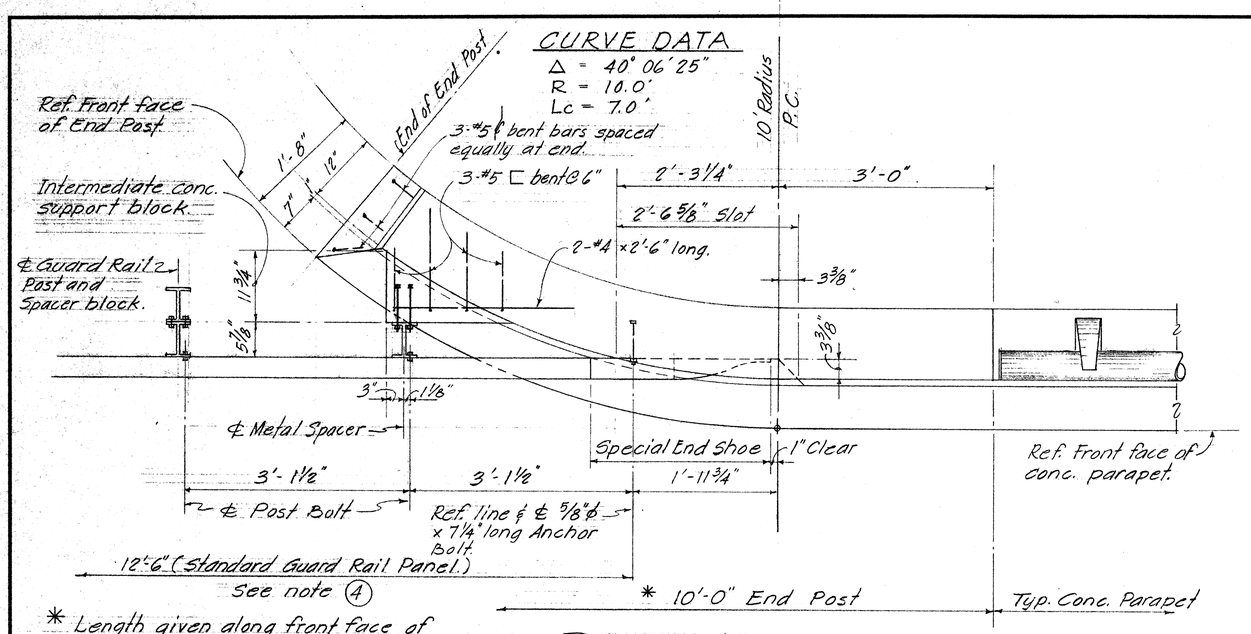
SHEET No. 69 OF 914 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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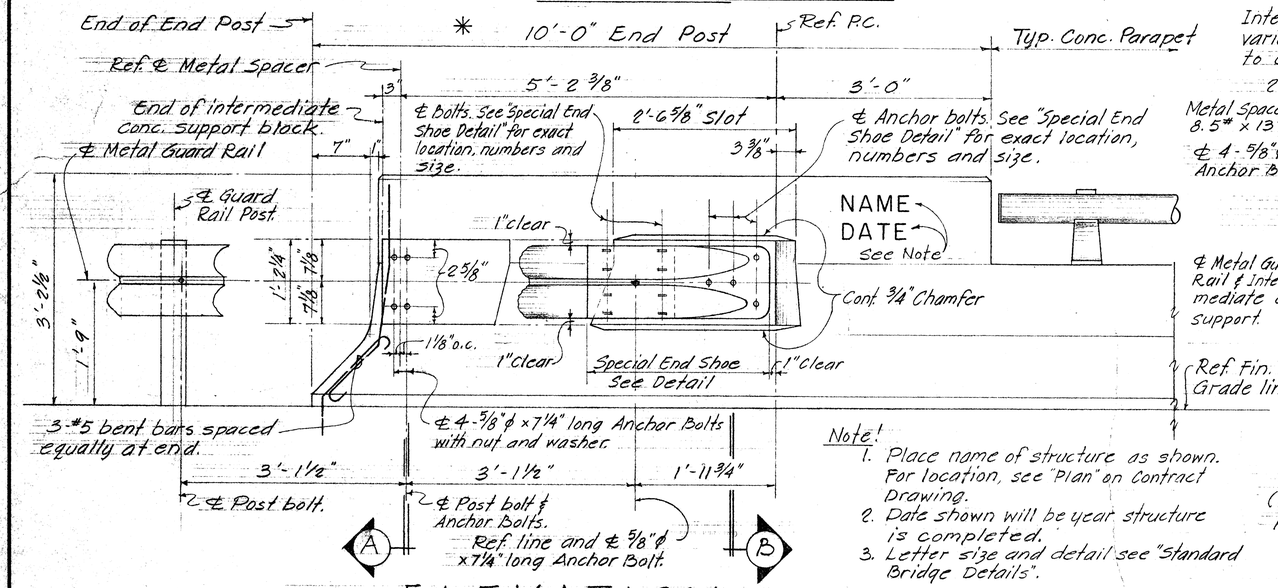
152

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	153	185



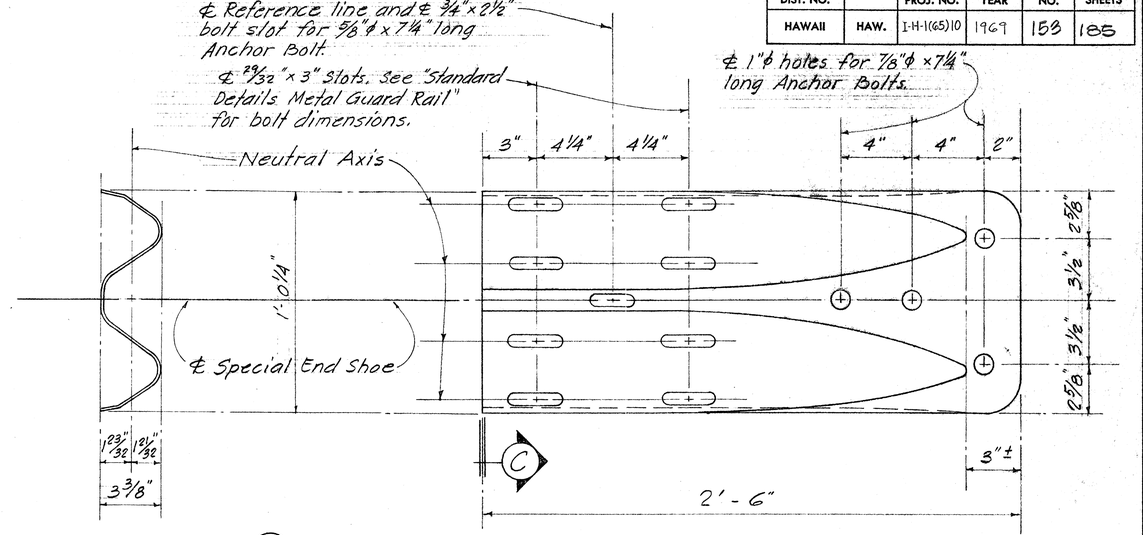
* Length given along front face of parapet and end post.

PLAN
Scale: 1" = 1'-0"



ELEVATION
Scale: 1" = 1'-0"

Note!
1. Place name of structure as shown. For location, see "Plan" on Contract Drawing.
2. Date shown will be year structure is completed.
3. Letter size and detail see "Standard Bridge Details".



SECTION (C)

ELEVATION

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

SECTION (A)
Scale: 1½" = 1'-0"

SECTION (B)
Scale: 1½" = 1'-0"

NOTES

(1) All Anchor Bolts shall be High Strength bolts conforming to the requirements of ASTM A-325.
(2) All Shoe assembly, including anchor bolts, nuts and washers, shall be galvanized.
(3) Special End Shoe shall be fabricated from 10 gage steel conforming to the requirements of AASHO 180.
(4) First Guard Rail Panel adjoining "Special End Shoe" shall be of galvanized steel. See Special Provisions for requirements.
(5) Anchor Bolt length given from under bolt head.

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

CONNECTION DETAILS OF METAL GUARD RAIL TO SLOPED FACE CONC. END POST

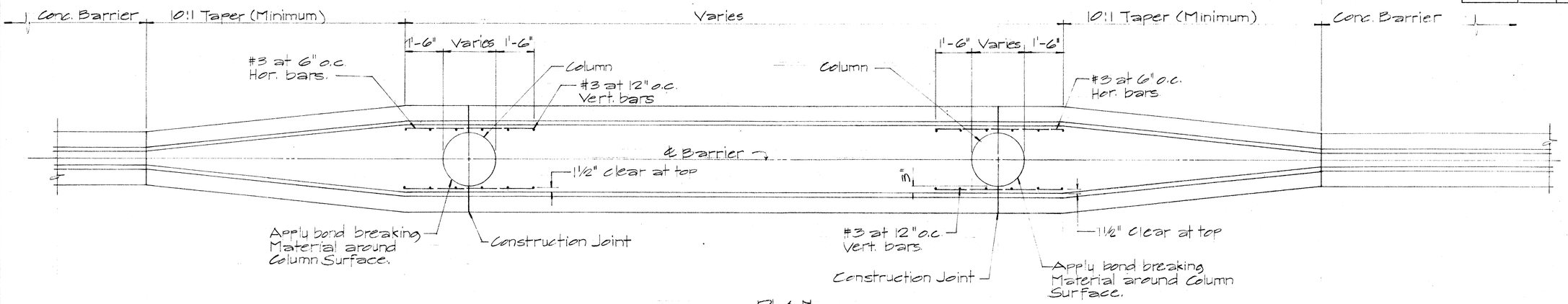
SCALE AS SHOWN
DATE: MARCH, 1969

SHEET No. 510 OF 514 SHEETS

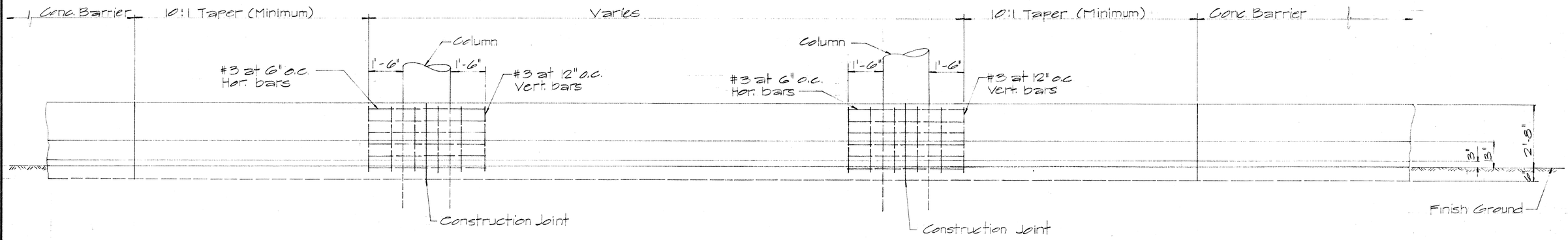
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K&E CRYSTALENE® LA 2020 TRACING PAPER

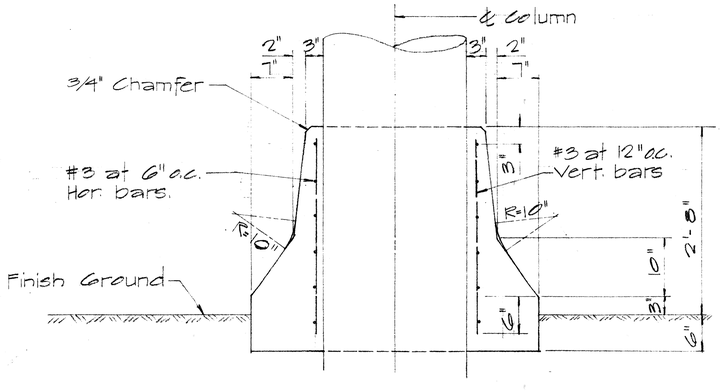
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	154	185



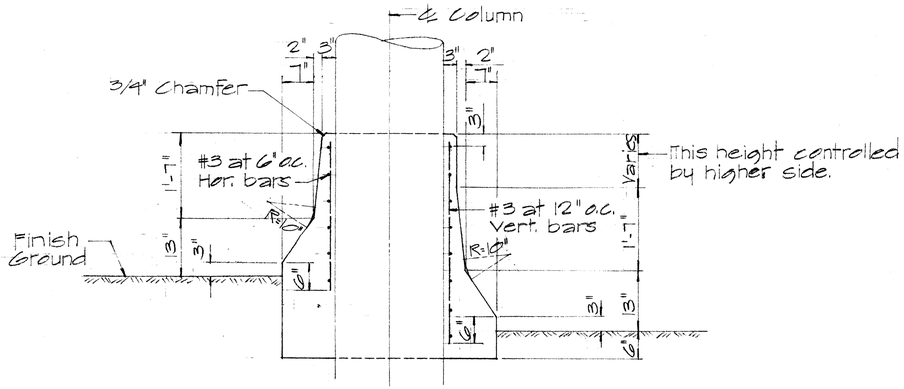
PLAN
Sc. ½"=1'-0"



ELEVATION
Sc. ½"=1'-0"



TYP. SEC. AT TANGENT
Sc. 1"=1'-0"



TYP. SEC. AT SUPER
Sc. 3/4"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL
CONCRETE BARRIER TRANSITION

INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1 (65): 10
Scale As Noted Feb. 1969

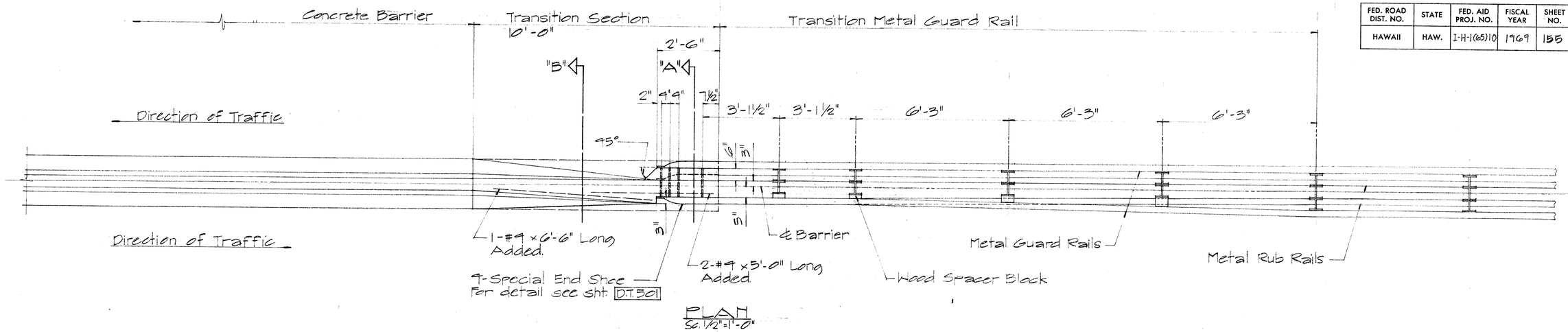
SHEET No. 511 OF 514 SHEETS | DT 512

ORIGINAL PLAN
SURVEY PLOTTED BY
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QUANTITIES BY
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DATE
NOTE BOOK
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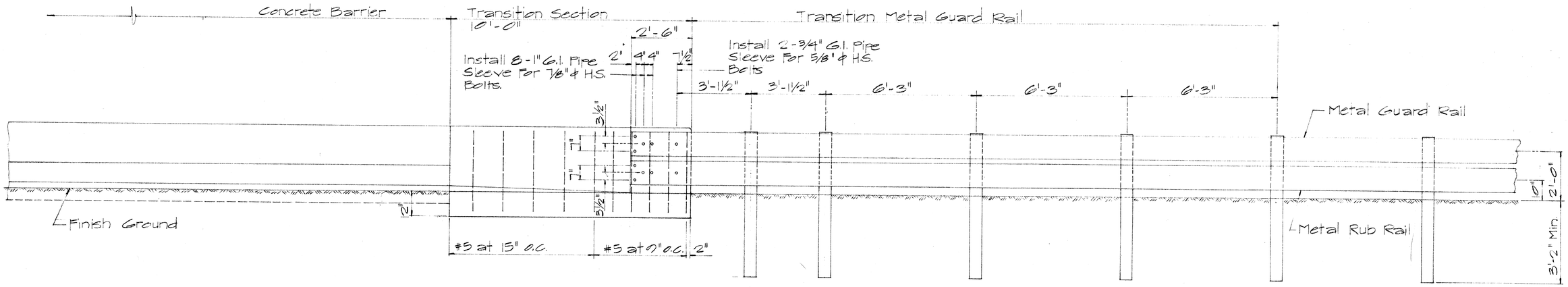
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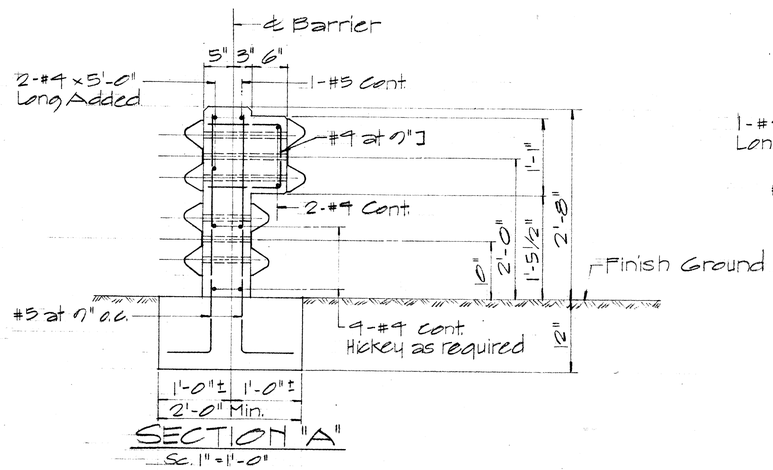
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	155	185



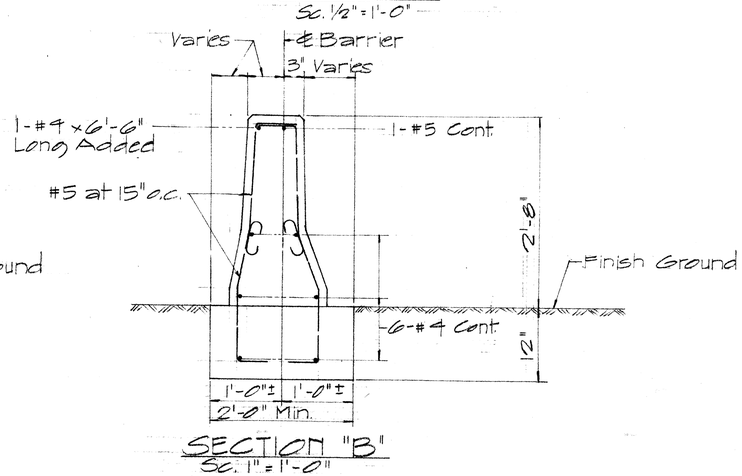
PLAN
Sc. 1½"=1'-0"





SECTION "A"
Sc. 1"=1'-0"

ELEVATION
Sc. ½"=1'-0"



SECTION "B"
Sc. 1"=1'-0"

NOTE:
For anchoring metal guard rail elements to concrete barrier, the Contractor shall furnish and install reinforcing steel, bolts of appropriate lenghts and size with appurtenant washers, nuts, wooden blocks and pipe sleeves. (Paiments shall be incidental to concrete barrier.)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL
METAL GUARD RAIL
CONNECTION TO CONC. BARRIER
INTERSTATE ROUTE H-1
Scale As Noted Feb. 1967

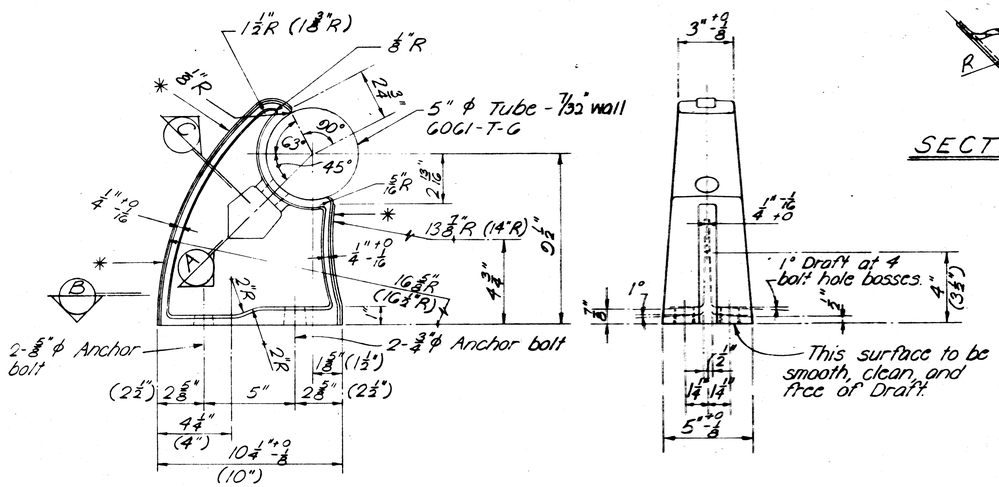
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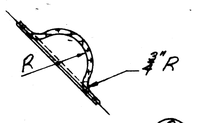
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	156	185

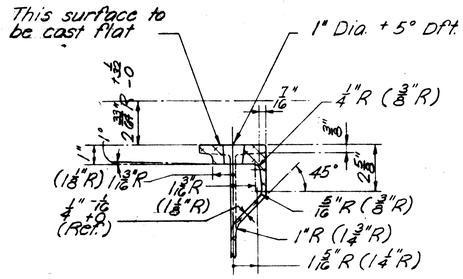


SIDE ELEVATION

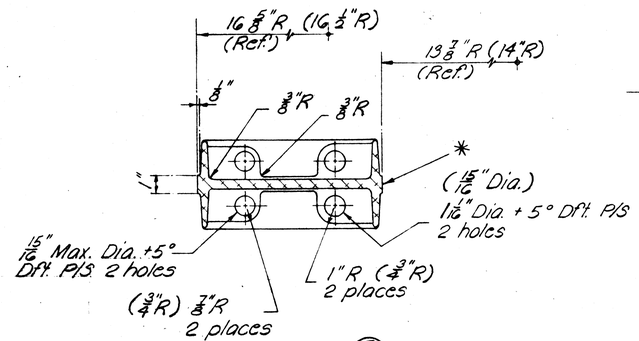
END ELEVATION



SECTION C



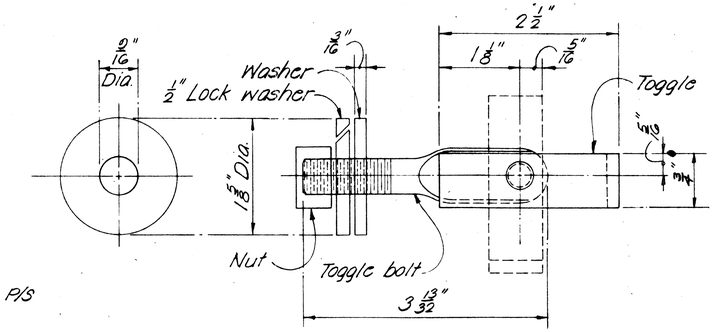
SECTION A



SECTION B

NOTE:

Toggle Bolt Material - ½"-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.
Washer Material - SAE 1020 H.R. steel plates. ASTM-A-7. Break sharp edges.
Nut - ½"-13 American hex. nut - Heavy Material 1035 C.R. - Steel heat treated ASTM A325 Grade 2H.
Cadmium plating on steel - Type N.S. .0005" thick ASTM-A165. (all parts).
For cast post specifications, see Special Provisions.



WASHER

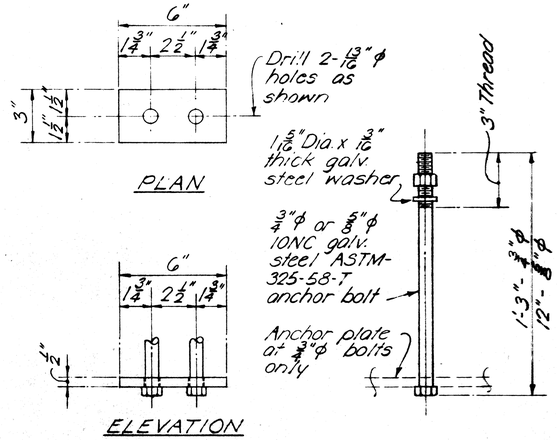
SIDE ELEVATION ASSEMBLAGE

NOTE:

* Casting to be supplied with a standard scratch brush finish on entire gating rib surface and as indicated by an asterisk (*). Finish shall be approved by the Engineer.
Casting to be neatly trimmed and any protruding flash to be broken off.
For cast post specifications, see Special Provisions.
Unless otherwise specified, draft angles to be 3° corner radii to be 3/32" R, fillet radii to be ⅜"R, casting tol. to be ±1/16", wall thickness to be ±3/32".
Dimensions may be as shown or as shown in parenthesis ( ).

TYPICAL RAIL POST DETAILS

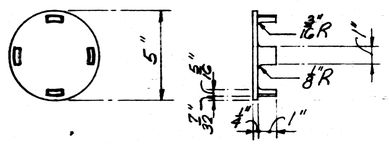
Scale: 3"=1'-0"



ANCHOR BOLT DETAIL

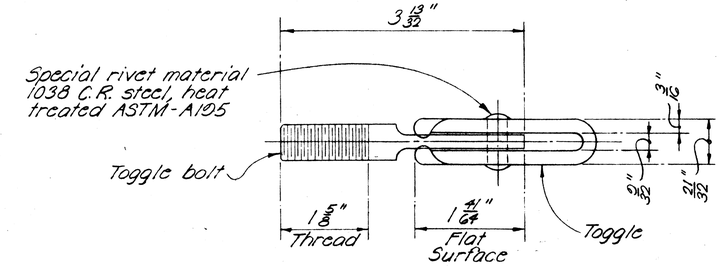
TYPICAL RAIL POST ANCHOR BOLT ASSEMBLY

Scale: 3"=1'-0"



RAIL CAP DETAIL

Scale: 3"=1'-0"



TOP PLAN

½" ϕ TOGGLE BOLT DETAILS

Full Scale

GENERAL NOTES

Metal bridge railing shown is for Aluminum bridge railing. See Special Provisions for alternate railing in steel.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL BRIDGE RAILINGS
SINGLE RAIL

INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-H-1(65):10
Scale as noted Date: 1969

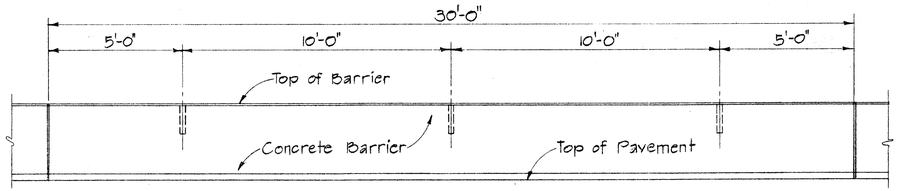
SHEET No. 9/13 OF 9.14 SHEETS

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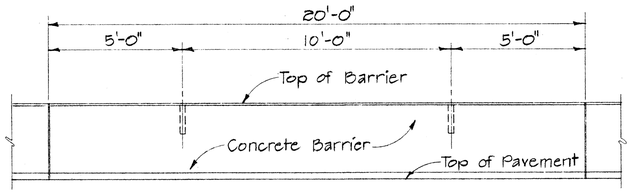
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(65)10	1969	157	185



ELEVATION

30' LENGTH CONCRETE BARRIER

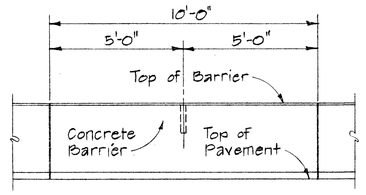
Scale: 3/8"=1'-0"



ELEVATION

20' LENGTH CONCRETE BARRIER

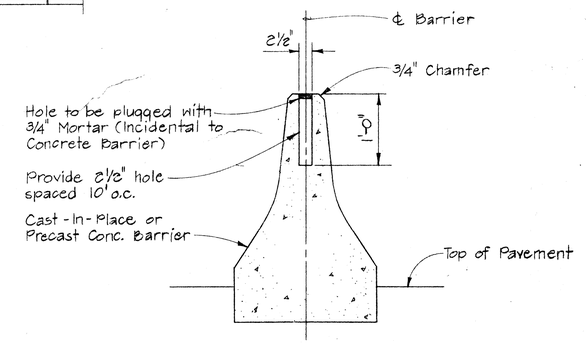
Scale: 3/8"=1'-0"



ELEVATION

10' LENGTH CONC. BARRIER

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



TYPICAL SECTION

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

HOLE SPACING DETAIL FOR CONCRETE BARRIER

ORIGINAL PLAN
NOTE BOOK
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CHECKED BY
DATE

R. L. HIEM
REGISTERED PROFESSIONAL ENGINEER
No. 2346
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HOLE SPACING DETAILS FOR CONC. BARRIER

INTERSTATE ROUTE H-1

F.A.I. PROJ. NO. I-H-1(65):10

Scale: As Shown DATE 1969

SHEET No. 514 OF 14 SHEETS | DT 507

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157