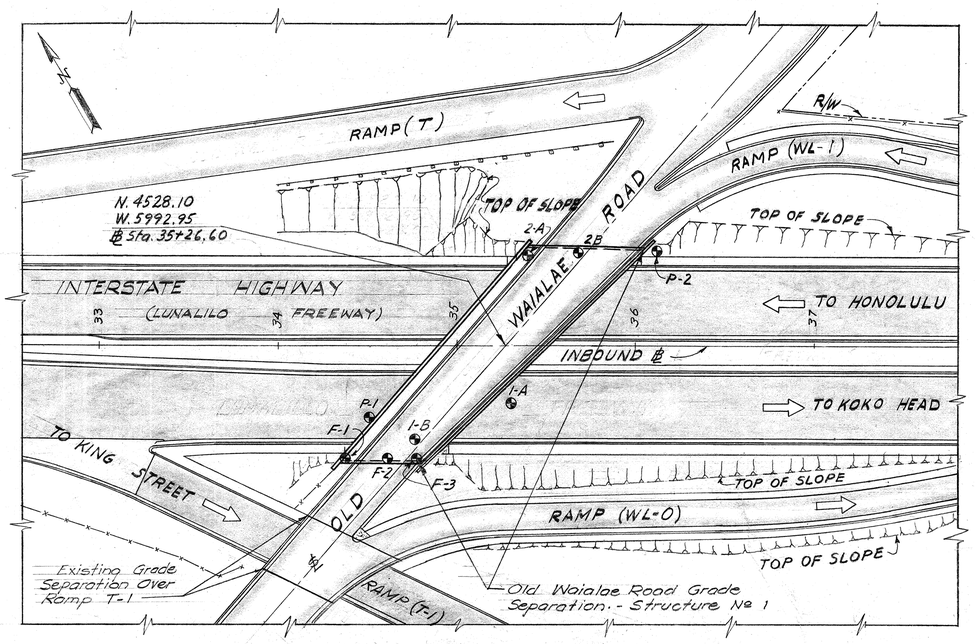
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-H-(6)24 Unit 2	1965	148	276



LOCATION PLAN

Scale: 1"=40'

ESTIMATED QUANTITIES

Concrete	Lump Sum	(850.0 c.y.)
Reinforcing Steel	Lump Sum	(202,543.0 lbs.)
Structural Excavation	139.0	c.y.
Asphaltic Concrete Paving	116.0	Tons
Bituminous Tack Coat	135.0	Gals.
Metal Railing	332.0	Lin. Ft.
Bronze ℄	668.0	lbs.

GENERAL NOTES

DESIGN DATA

H 20-S16-44 Loading
fs = 20,000 p.s.i.
fc = 1,200 p.s.i.
n = 10

MATERIALS

All concrete shall be class A-1 unless otherwise noted on plans.
All steel reinforcement shall be intermediate grade

CONSTRUCTION METHODS

Curb and Sidewalk on Bridge shall not be poured until after release of Falsework

All surfaces of railing parapets and end posts above sidewalk level, all other surfaces seen in elevation, all columns above curb level and all exposed surfaces of Abutment walls and retaining walls shall be given "Class 2 Surface Finish."

Footings shall be poured to neat lines as shown. In case of over excavation, space between footing and ground shall be filled with concrete at the Contractors expense. This fill concrete shall have a minimum quality of "Class D-1".

Reinforcing cover- Deck Slab 1¼" minimum. Abutment Walls, Retaining Walls and Columns 2" Minimum. Footings 3" minimum.

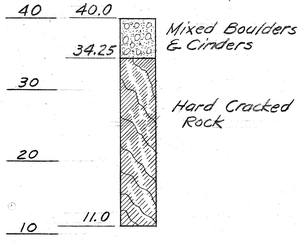
Falsework and Forms for the support of Box Girders shall be designed to support the load that would be superimposed were the entire superstructure poured at one time. Falsework and forms supporting the bottom slab of box girders shall not be removed until 14 days after the final top slab pour. All interior forms except those permitted to remain in place shall be removed completely and the inside cleared of all loose material and swept clean. Forms for bottom slab of Box Girder shall be 5 Ply panel board.

Refer to Standard Detailed drawing sheets "S-1, "S-2, "S-3, "S-4, & "S-5 for details not covered by these drawings.

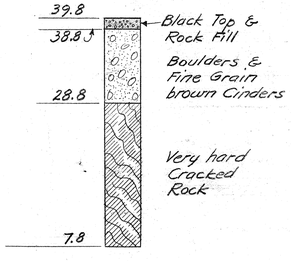
SHEET REFERENCE

All reference to sheets concerning Structure No.1 Details are confined only to Structure No.1 Plans, sht. 1 through sht. 13, or to the Standard Details, sht. S-1 through sht. S-5, except where reference is made to "Plan Sheet No. ____" which refers to consecutive numbering of sheets of the entire Contract Plans.

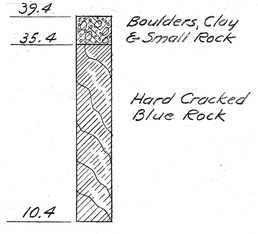
BORING NO. P-1



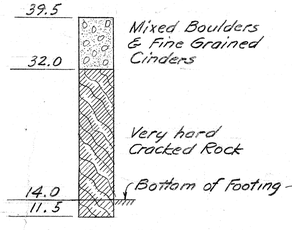
BORING NO. 1-B



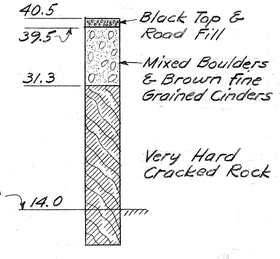
BORING NO. 1-A



BORING NO. 2-A



BORING NO. 2-B



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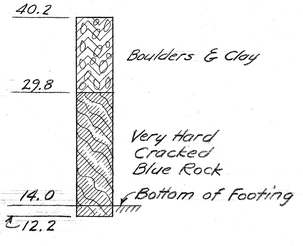
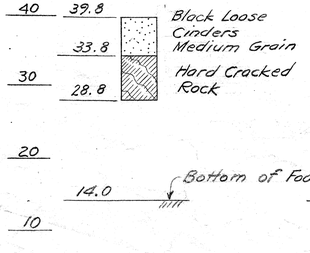
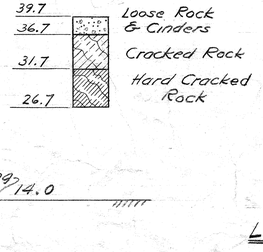


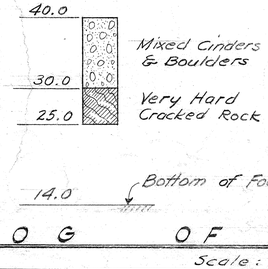
BORING NO. F-1



BORING NO. F-2



BORING NO. F-3



LOG OF BORINGS

Scale: 1"=10'

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
OLD WAIALAE ROAD
GRADE SEPARATION
STRUCTURE Nº 1
LOCATION PLAN
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: AS NOTED FAI Proj. No. I-HI-1(6): 24, UNIT 2

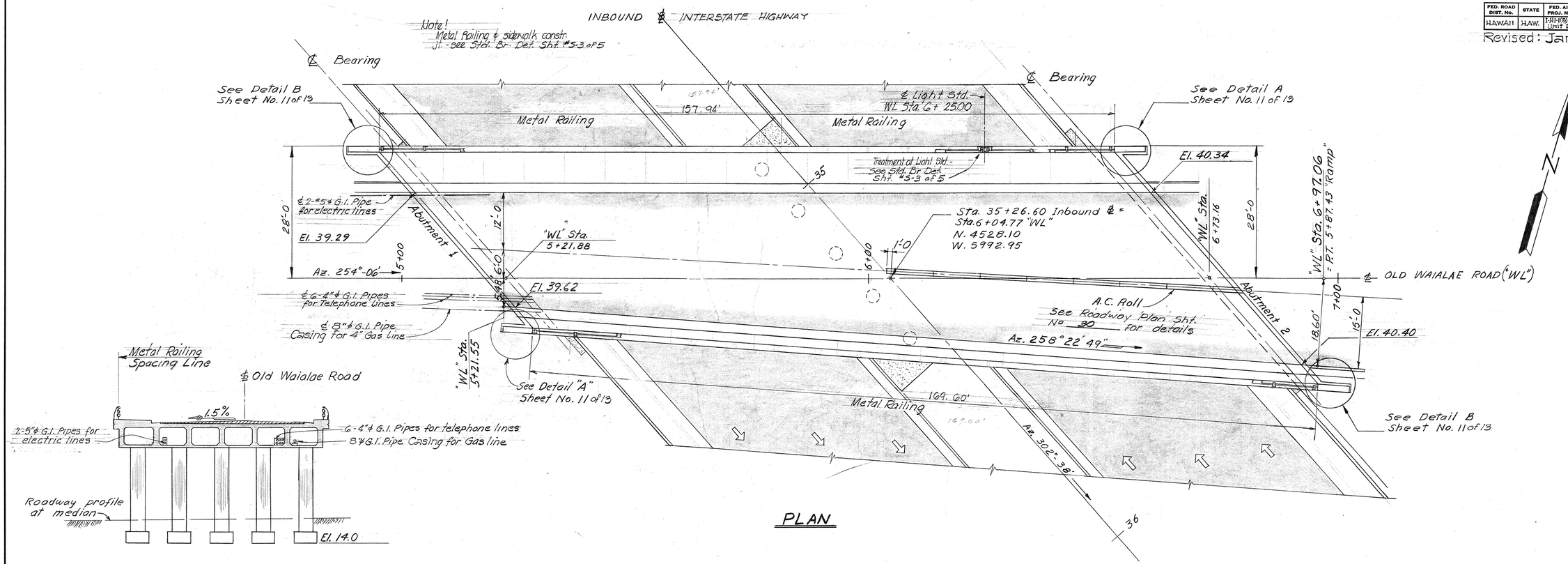
SHEET No. 1 OF 13 SHEETS

ORIGINAL PLAN	
SURVEY PLOTTED BY	DATE
DESIGNED BY K.A. & M.R.	2-26-68
DRAWN BY	
TRACED BY	
QUANTITIES BY	
QUANTITIES CHECKED BY	2-26-68
CHECKED BY	
NOTE BOOK No.	

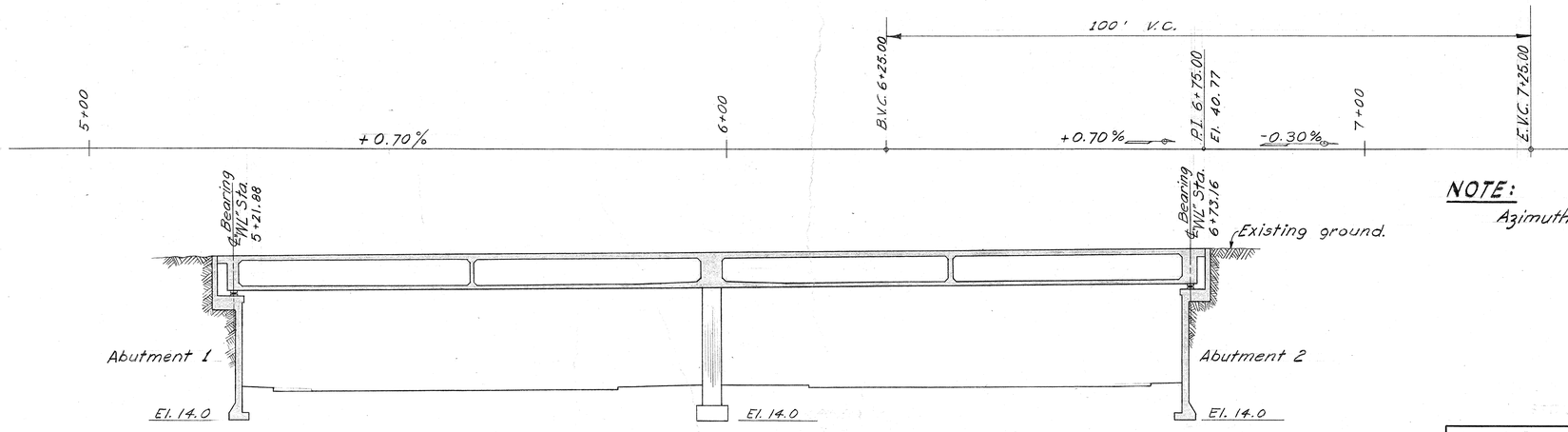
PRINTED ON DIEPO 1000H CLEARPRINT

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-HI-H(6)-24 Unit 2	1965	149	276

Revised: Jan. 10, 1967



TRANSVERSE SECTION



LONGITUDINAL SECTION AT ℄ OLD WAIALAE ROAD

NOTE:
Azimuths measured from South

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	REVISED PLAN	
	DRAWN BY C. ANDERSON	5/1968
	TRACED BY	
NOTE BOOK No.	DESIGN BY	
	QUANTITIES BY	
	QUANTITIES CHECKED BY	
	CHECKED BY GF	11/25/68

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

OLD WAIALAE ROAD GRADE SEPARATION STRUCTURE No. 1

LAYOUT PLAN

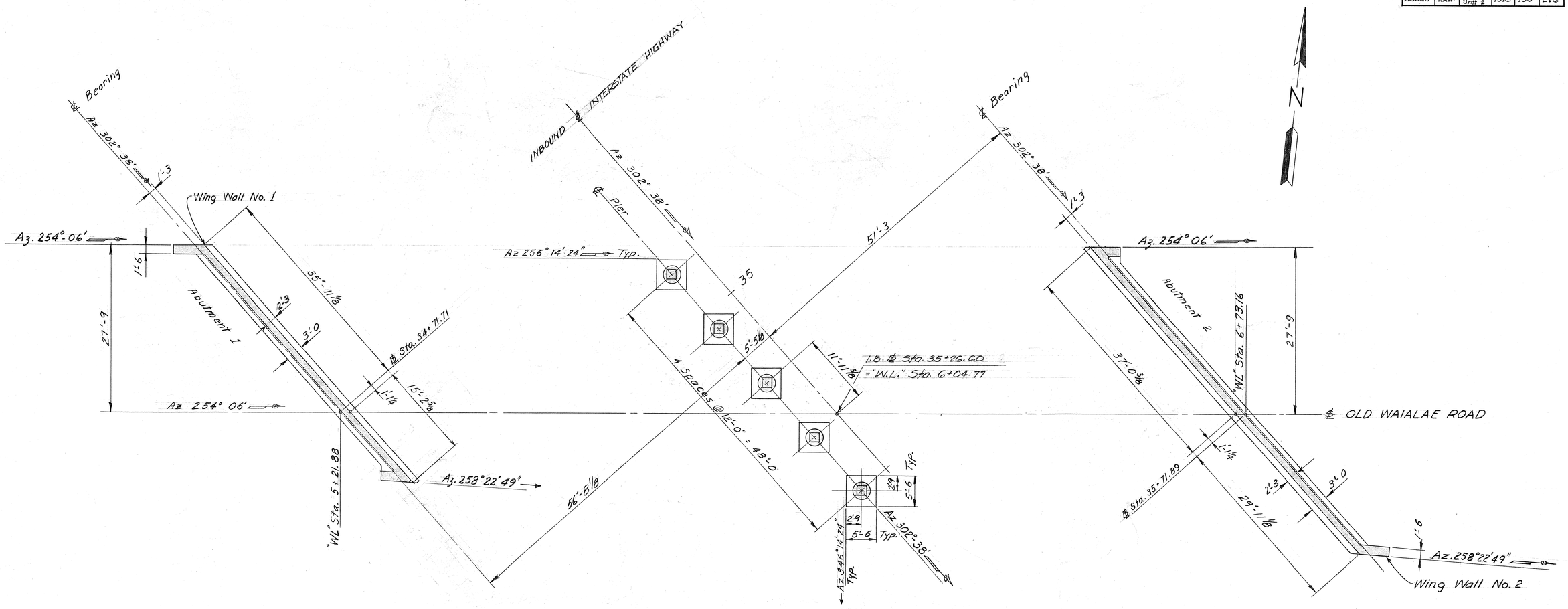
INTERSTATE HIGHWAY (KUNALILO FREEWAY)
SCALE: 3/30 = 1'-0" FAI Proj. No. I-HI-1(6): 24, Unit 2

SHEET No. 2 OF 13 SHEETS

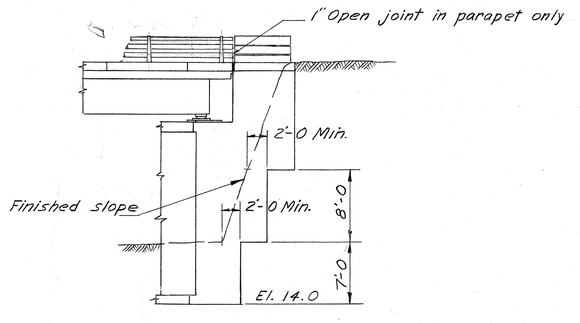
(C) 149

PRINTED ON DIEPO 1000H CLEARPRINT

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(57)24 Unit 2	1965	150	276



FOUNDATION PLAN



TYPICAL WINGWALL ELEVATION

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DESIGNED BY	
	DRAWN BY E. ANDERSON	2/28/68
	TRACED BY	
NOTE BOOK No.	QUANTITIES BY	
	QUANTITIES CHECKED BY MM	2-4-68
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
OLD WAIALAE ROAD
GRADE SEPARATION
STRUCTURE NO. 1
FOUNDATION PLAN
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: 1/8" = 1'-0" FAI Proj. No. I-HI-1(5): 24, Unit 2

SHEET No. 3 OF 13 SHEETS

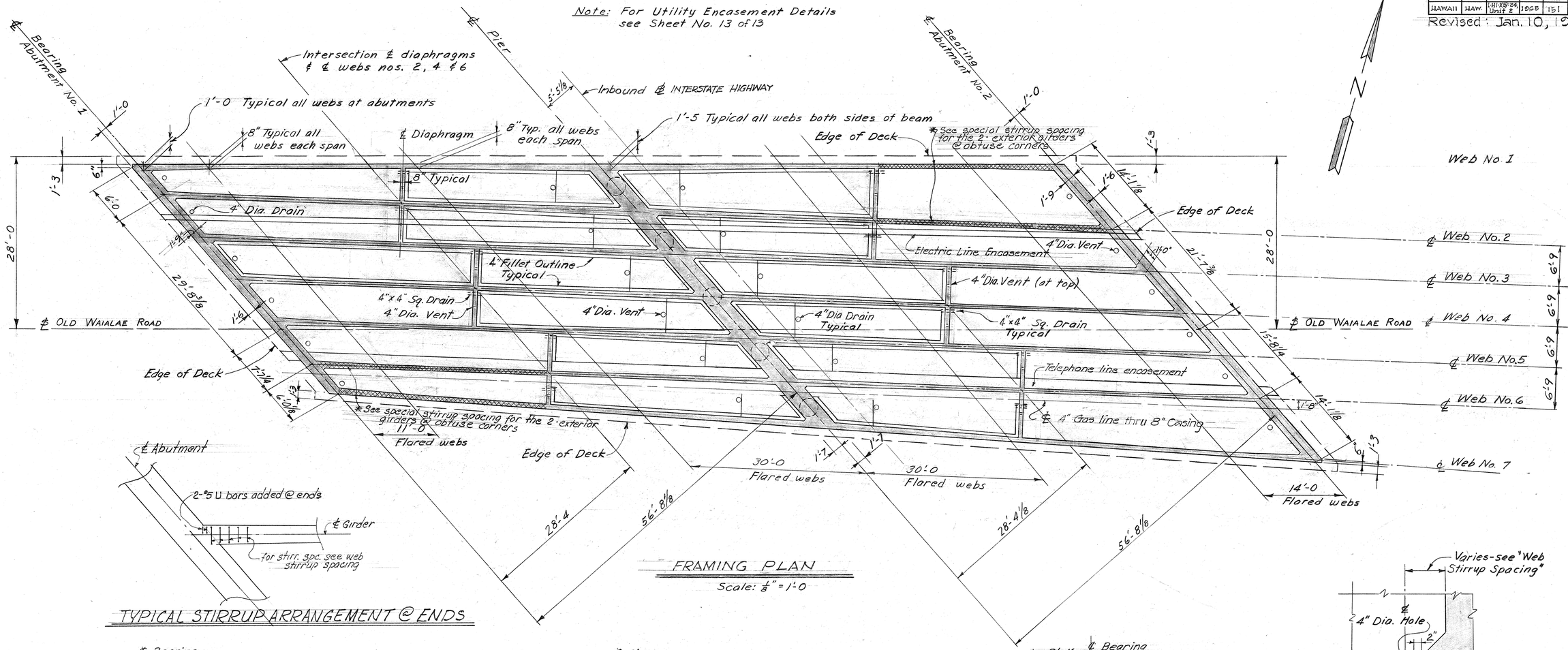
150

PRINTED ON DIEPO 1000H CLEARPRINT

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-HI-H-1(24) Unit 2	1965	151	276

Revised: Jan. 10, 1967

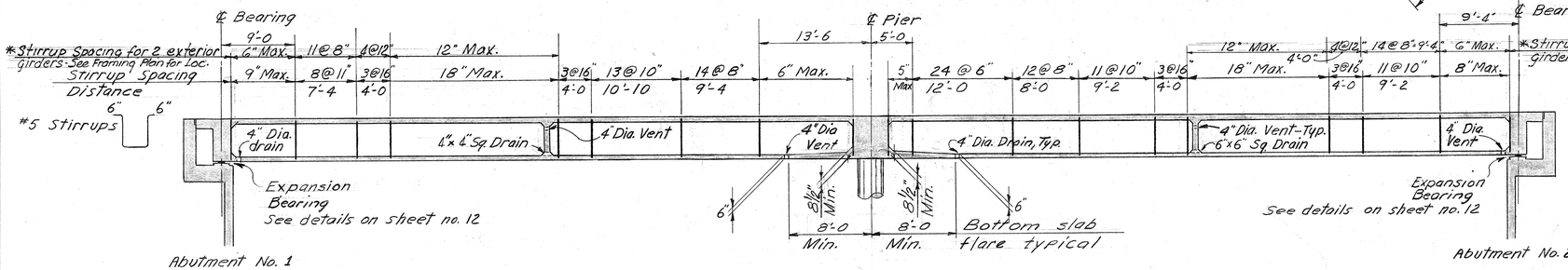
Note: For Utility Encasement Details see Sheet No. 13 of 13



FRAMING PLAN

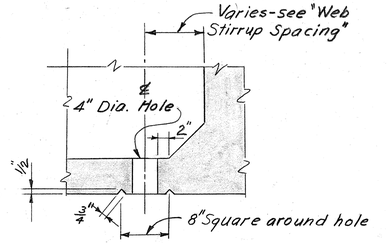
Scale: 1/8" = 1'-0

TYPICAL STIRRUP ARRANGEMENT @ ENDS



WEB STIRRUP SPACING

Scale: 1/8" = 1'-0



TYPICAL SECTION AT DRAIN

Scale: 1"=1'-0

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DESIGNED BY M.R. & C.A.	2-15-68
	DRAWN BY	
	TRACED BY	
NOTE BOOK	QUANTITIES BY	
	QUANTITIES CHECKED BY M.T.	11-22-68
No.	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

OLD WAIALAE ROAD GRADE SEPARATION STRUCTURE No. 1

DECK FRAMING PLAN & SECTION
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: AS NOTED. FAI Proj. No. I-HI-H(5):24 Unit 2

SHEET No. 4 OF 13 SHEETS

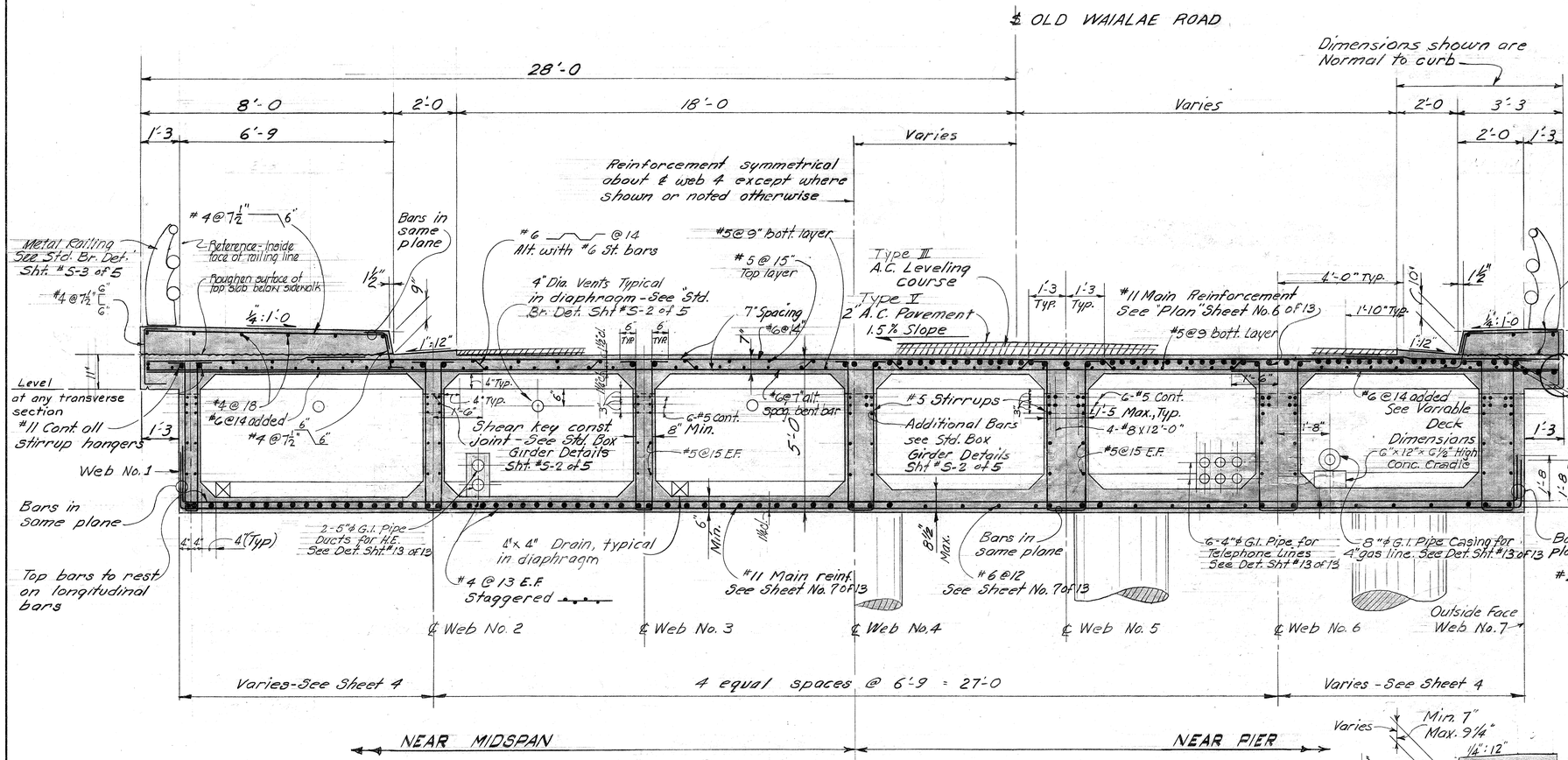
C 0 151

PRINTED ON DIEPO 1000H CLEARPRINT

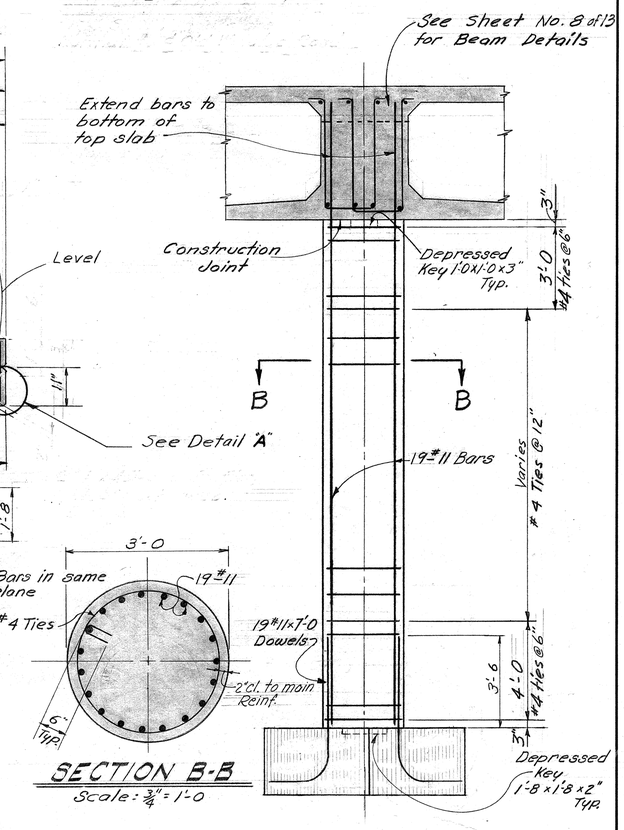
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1968	152	276

Revised: Jan. 10, 1967

NOTES:
Cross Slopes shown are Normal to ℄ Old Waialae Road



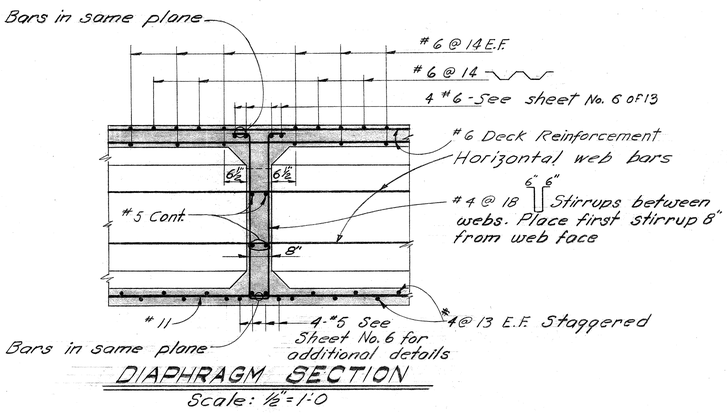
BRIDGE SECTIONS
Scale: ½"=1'-0



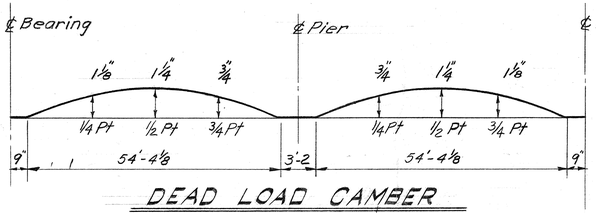
SECTION B-B
Scale: ¾"=1'-0

COLUMN DETAILS
Scale: ⅜"=1'-0

See Sht. No 8 of 13 for footing reinforcement

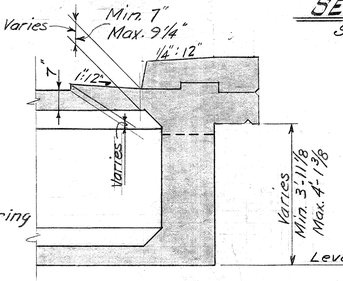


DIAPHRAGM SECTION
Scale: ½"=1'-0

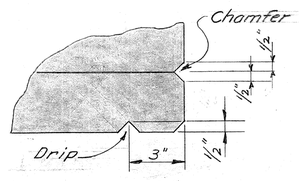


DEAD LOAD CAMBER
No Scale

NOTE:
This curve shows the dead load camber only and should be increased by the amount of the anticipated take up in the falsework.
Dimensions shown are normal to I.B. ℄ INTERSTATE HIGHWAY



VARIABLE DECK DIMENSIONS
Scale: ½"=1'-0



DETAIL 'A'
No Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
OLD WAIALAE ROAD
GRADE SEPARATION
STRUCTURE NO 1
BRIDGE SECTIONS
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: AS NOTED FAI: Proj. No I-HI-1(5):24, Unit 2

SHEET No. 5 OF 13 SHEETS

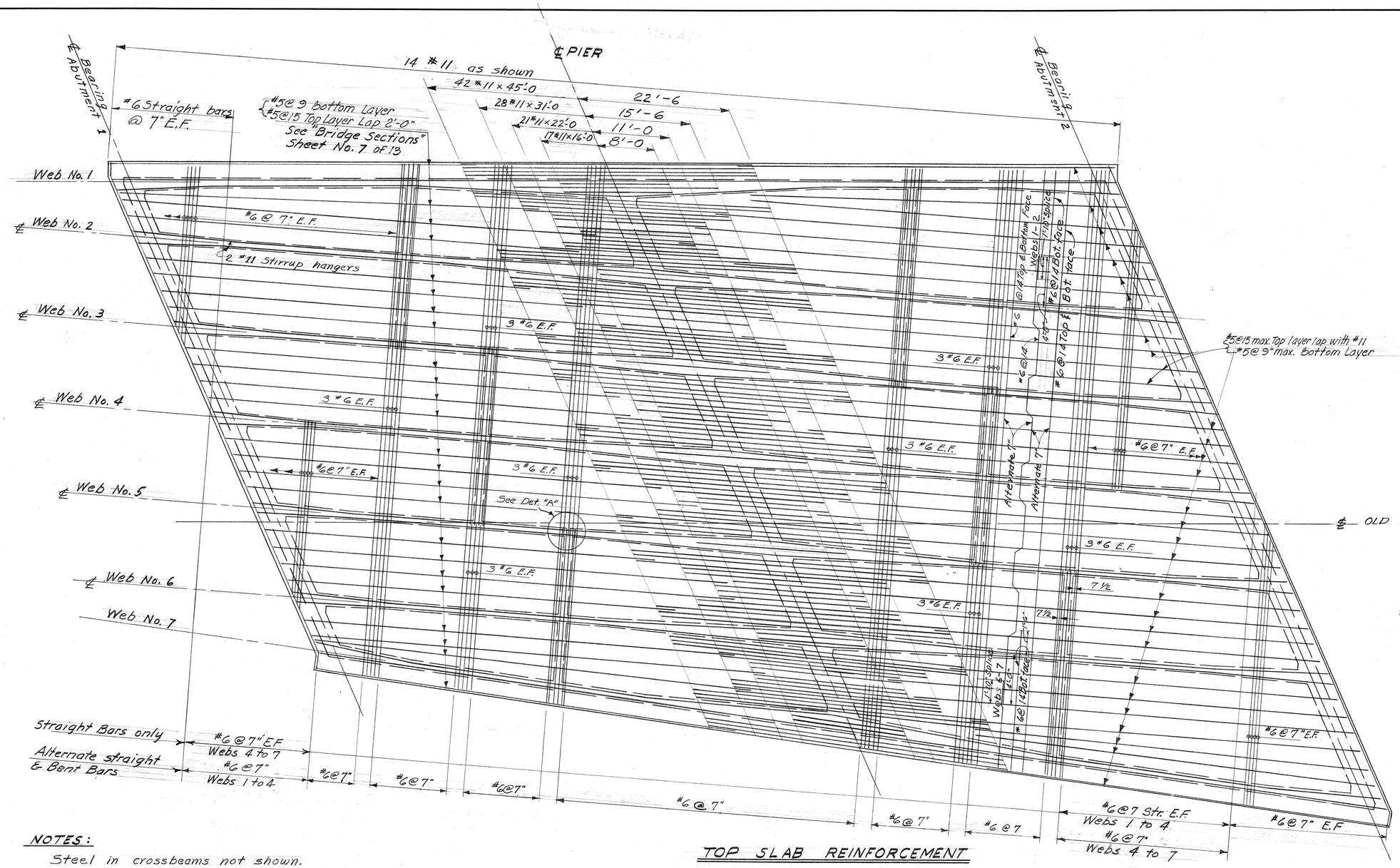
C0 152

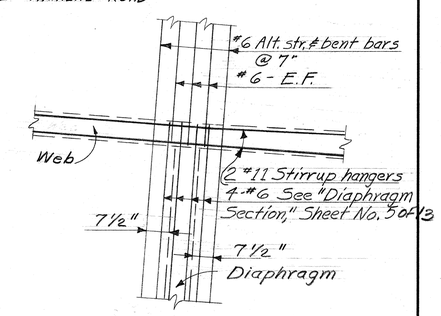
ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DESIGNED BY	6-10-68
DRAWN BY C.A.	
TRACED BY	
QUANTITIES BY	
NOTE BOOK	CHECKED BY
No.	CHECKED BY 11-25-68

5

PRINTED ON DIEPO 1000H CLEARPRINT

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5):24, Unit 2	1965	153	276





DETAIL "A"
Scale: ½" = 1'-0
(Typical where diaphragm is not continuous)

NOTES:

Steel in crossbeams not shown.
Dashed lines indicate outline of webs.
For additional diaphragm reinforcement, see "Diaphragm Section", Sheet No. 5 of 13 and "Bridge Sections", Sheet No. 5 of 13

TOP SLAB REINFORCEMENT

Scale: Longitudinal 1/8" = 1'-0
Transverse 1/4" = 1'-0

ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	
	DESIGNED BY	
	DRAWN BY C. ANDERSON & B.H.	3/22/58
	TRACED BY	
NOTE BOOK No.	QUANTITIES BY	
	QUANTITIES CHECKED BY JM	12-4-58
	CHECKED BY	11-25-58

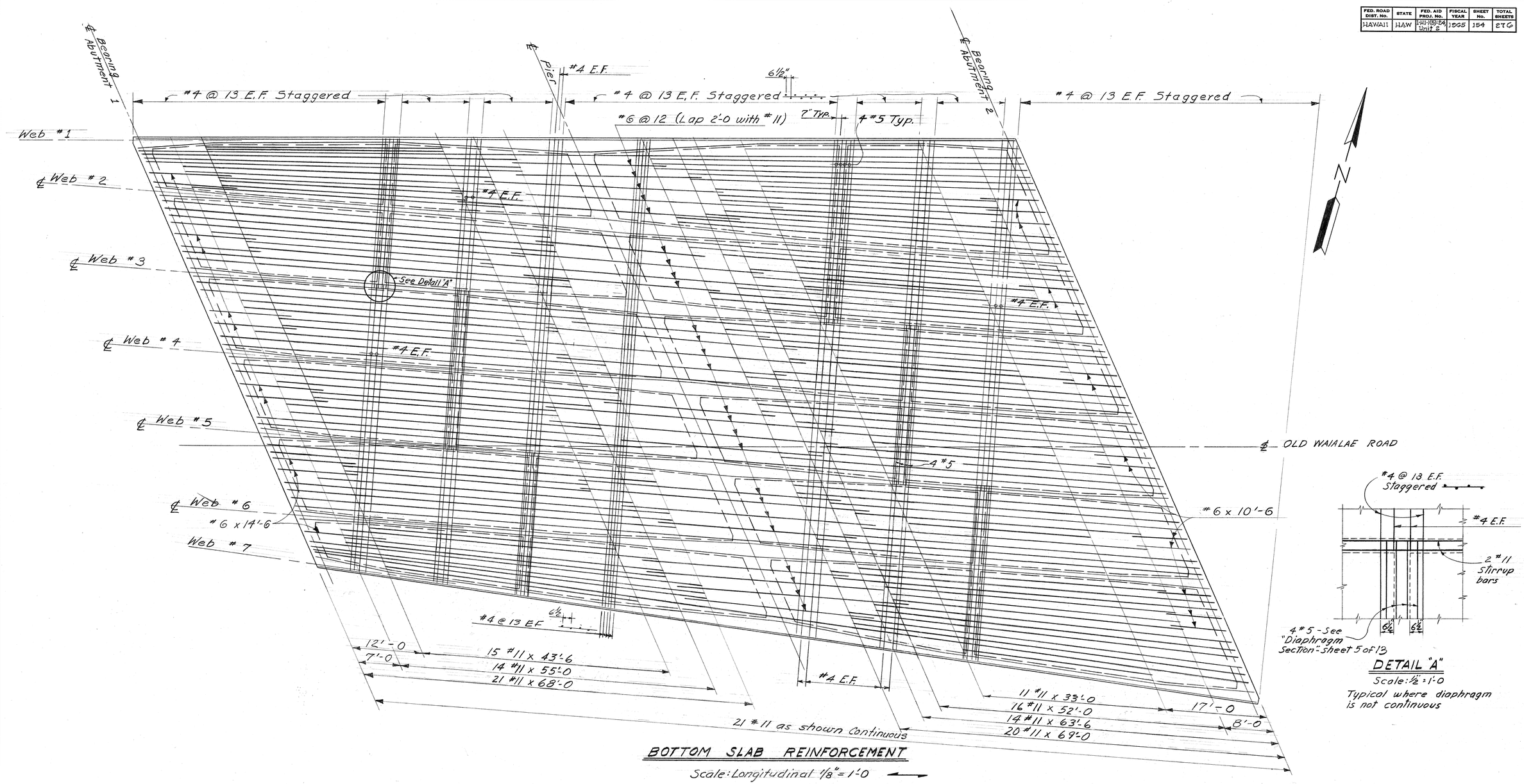
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
OLD WAIALAE ROAD
GRADE SEPARATION
STRUCTURE NO. 1
TOP SLAB REINFORCEMENT
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: AS NOTED FAI Proj. No. I-HI-1(5):24, Unit 2

SHEET No. 6 OF 13 SHEETS

153

PRINTED ON DIEPO 1000H CLEARPRINT

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW	I-HI-(15)24 Unit 2	1965	154	276



BOTTOM SLAB REINFORCEMENT

Scale: Longitudinal 1/8" = 1'-0
Transverse 1/4" = 1'-0

DETAIL "A"

Scale: ½" = 1'-0

Typical where diaphragm is not continuous

NOTES:

Steel in crossbeams not shown.
Dashed lines indicate outline of Webs & Diaphragms.
The transverse top face reinforcement #4 @ 13 is to be supported directly on the longitudinal bars.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DESIGNED BY	
	DRAWN BY C. ANDERSON & B.H.	5/21/52
	TRACED BY	
NOTE BOOK No.	QUANTITIES BY	
	QUANTITIES CHECKED BY	JW
	CHECKED BY	12-4-58

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

OLD WAIALAE ROAD GRADE SEPARATION STRUCTURE NO. 1

BOTTOM SLAB REINFORCEMENT

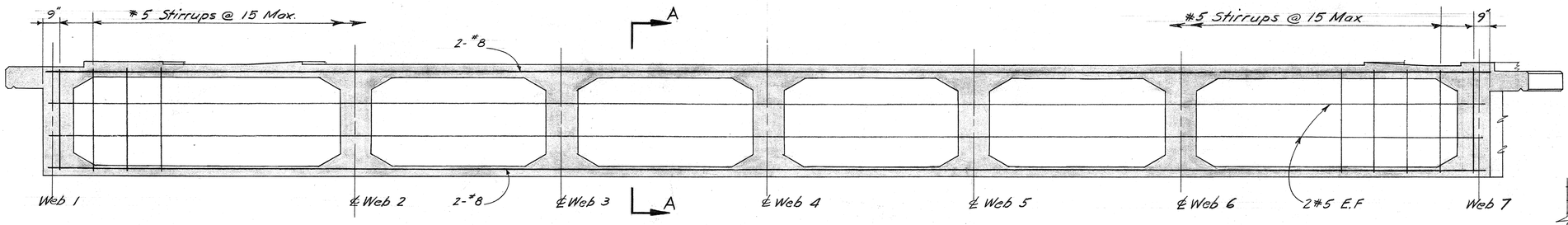
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: As Noted FAI Proj. No. I-HI-15(5):24, Unit 2

SHEET No. 7 OF 13 SHEETS

154

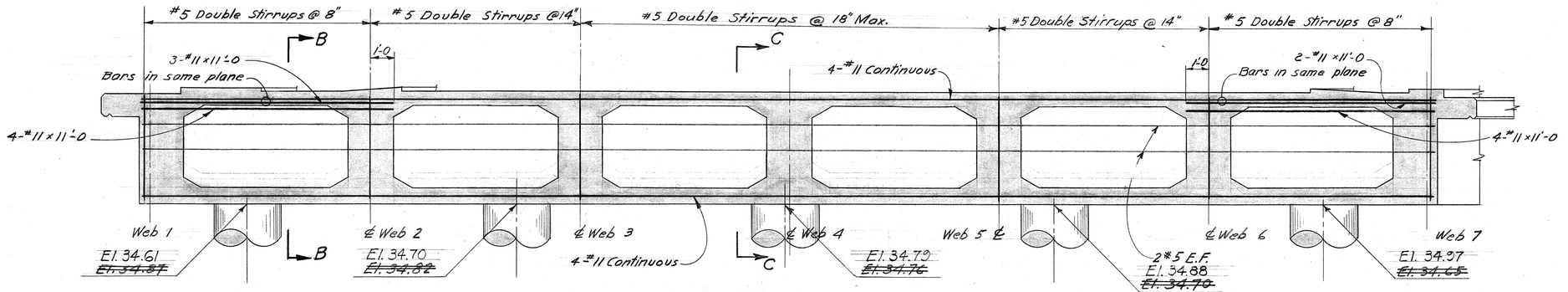
PRINTED ON DIEPO 1000H CLEARPRINT

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(24) Unit E	1965	155	276



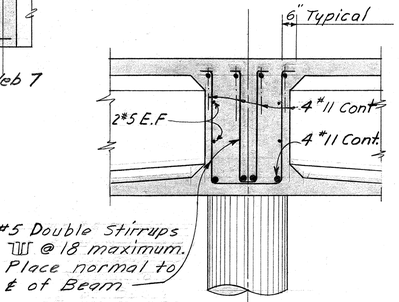
BEAM OVER ABUTMENTS

(Abutment 2 shown - Abutment 1 similar except narrower outside boxes)
Utility encasements not shown
Scale: 3/8" = 1'-0



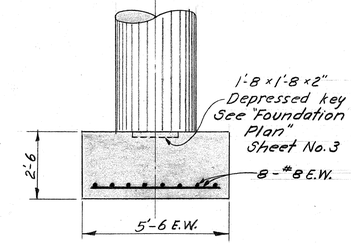
BEAM OVER PIER

Utility encasements not shown
Scale: 3/8" = 1'-0



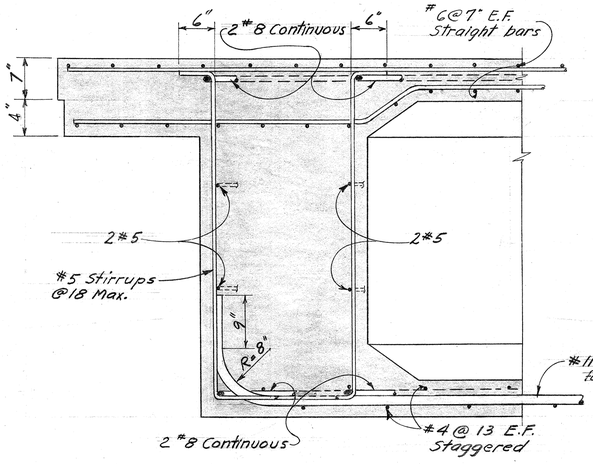
SECTION C-C

Normal to Beam
Scale: 3/8" = 1'-0
Main Deck Reinforcing not shown
See Section B-B



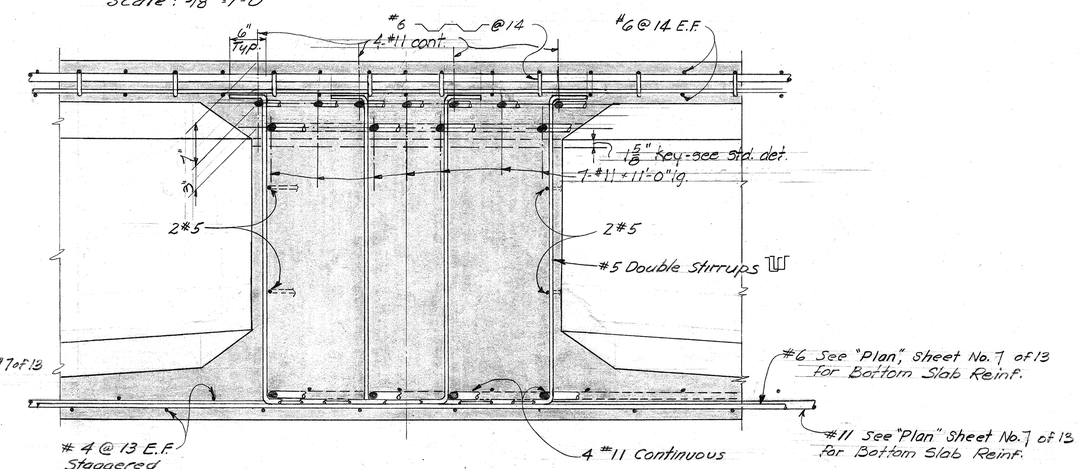
TYPICAL FOOTING

Scale: 3/8" = 1'-0



SECTION A-A

Scale: 1" = 1'-0
(Taken parallel to webs 2-6)



SECTION B-B

Scale: 1" = 1'-0
Taken parallel to webs 2-6

ORIGINAL PLAN	SURVEY PLOTTED BY		DATE
	DESIGNED BY	L. ANDERSON E.A.R.	12/65
	DRAWN BY		
	TRACED BY		
NOTE BOOK No.	QUANTITIES BY		
	QUANTITIES CHECKED BY		
	CHECKED BY		12/65

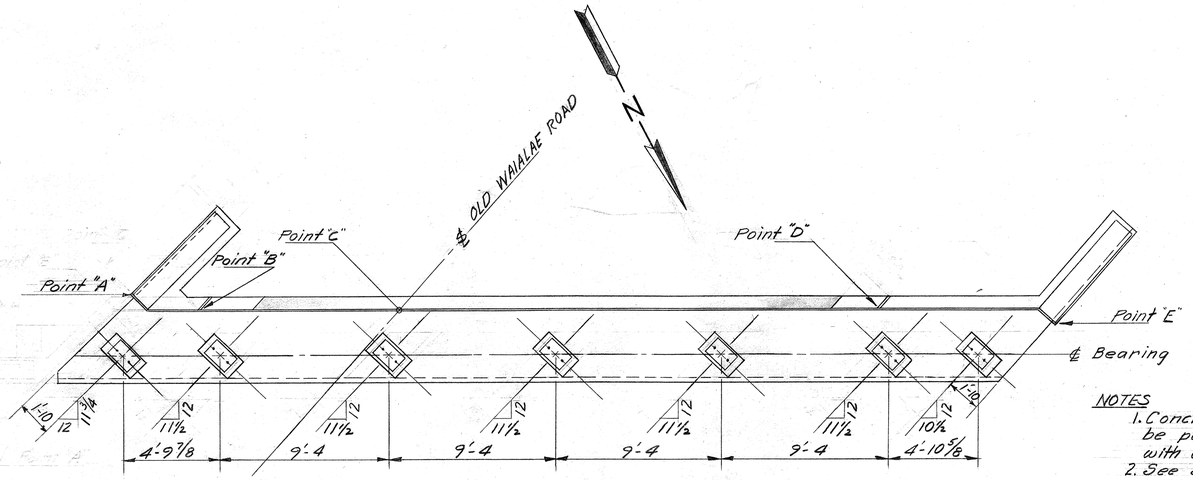
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
OLD WAIALAE ROAD
GRADE SEPARATION
STRUCTURE No. 1
CENTER AND END BEAM DETAILS
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: AS NOTED FAI Proj. No. I-HI-1(5): 24; UNIT 2

SHEET No. 8 OF 13 SHEETS

155

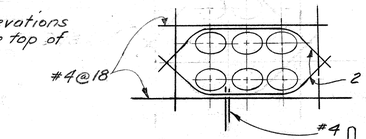
PRINTED ON DIEPO 100OH CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24, Unit 2	1965	156	270

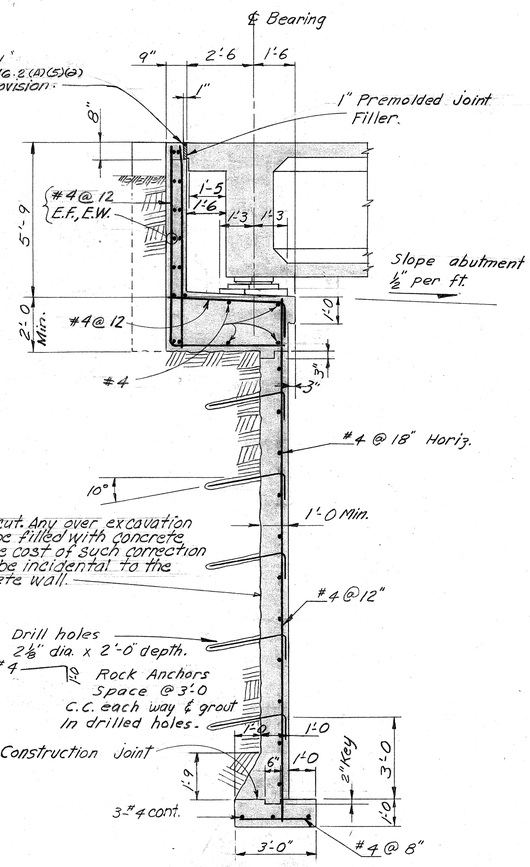


PLAN – ABUTMENT 1
Scale: 1/4" = 1'-0

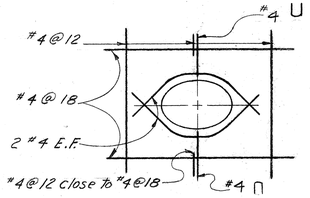
NOTES
1. Concrete seats shall be poured monolithic with abutments.
2. See Sheet No. 12 of 13 for bearing and seat details.
3. Bearing Elevations shown are top of Concrete



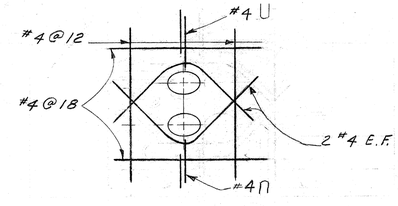
DETAIL -"A"
Scale: 1"=1'-0



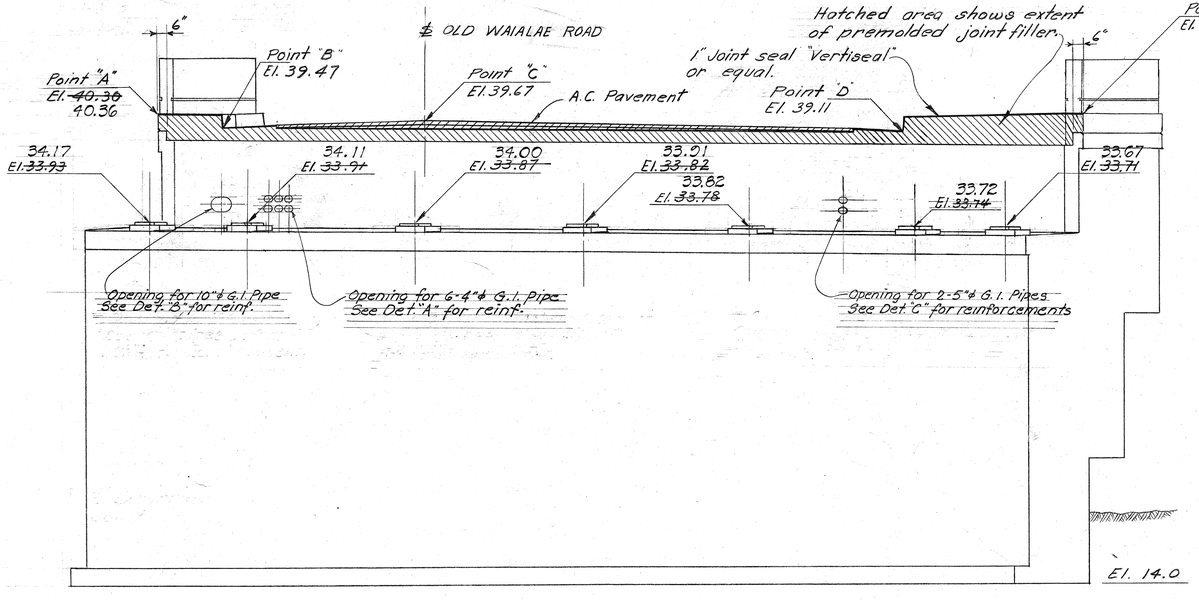
TYPICAL SECTION ABUTMENTS 1 & 2
Scale: 3/8" = 1'-0



DETAIL - B
Scale 1"=1'-0



DETAIL - C
Scale: 1"=1'-0



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

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY C. ANDERSON	2-28-66
NOTE BOOK	TRACED BY	
No.	QUANTITIES BY	
	QUANTITIES CHECKED BY	N/A
	CHECKED BY	11-25-66

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
OLD WAIALAE ROAD GRADE SEPARATION STRUCTURE Nº 1
ABUTMENT 1 DETAILS
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: AS NOTED FAI PROJ. Nº I-HI-1(5):24, UNIT 2

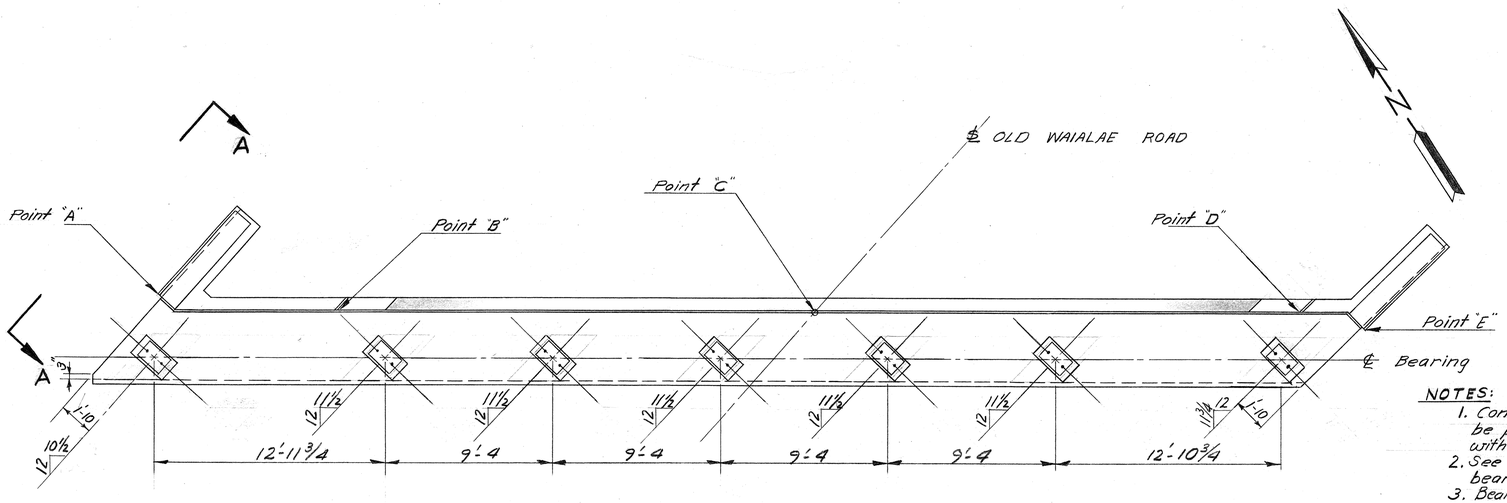
SHEET No. 9 OF 13 SHEETS

156

PRINTED ON DIEPO 1000H CLEARPRINT

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)-24, Unit 2	1965	157	276

REVISED: Jan. 10, 1967

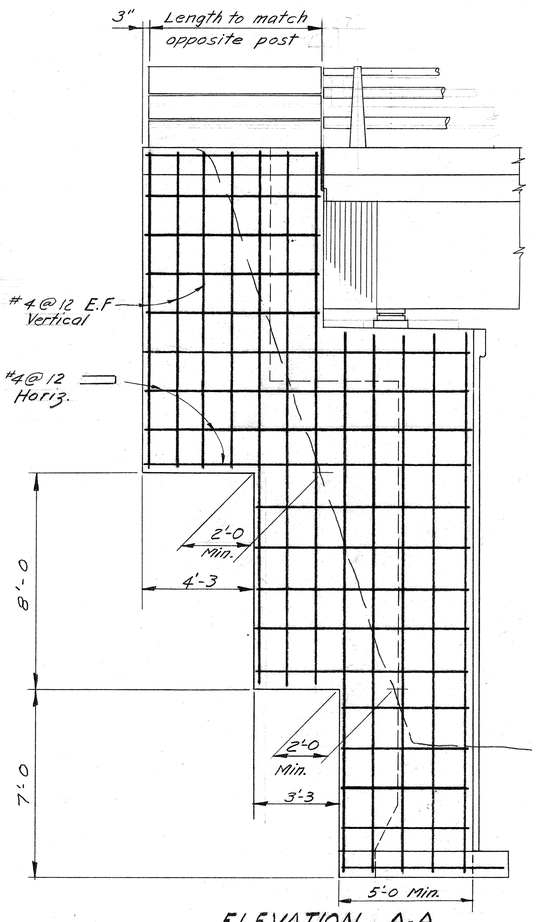


PLAN ABUTMENT 2

SCALE: ¼" = 1'-0

NOTES:

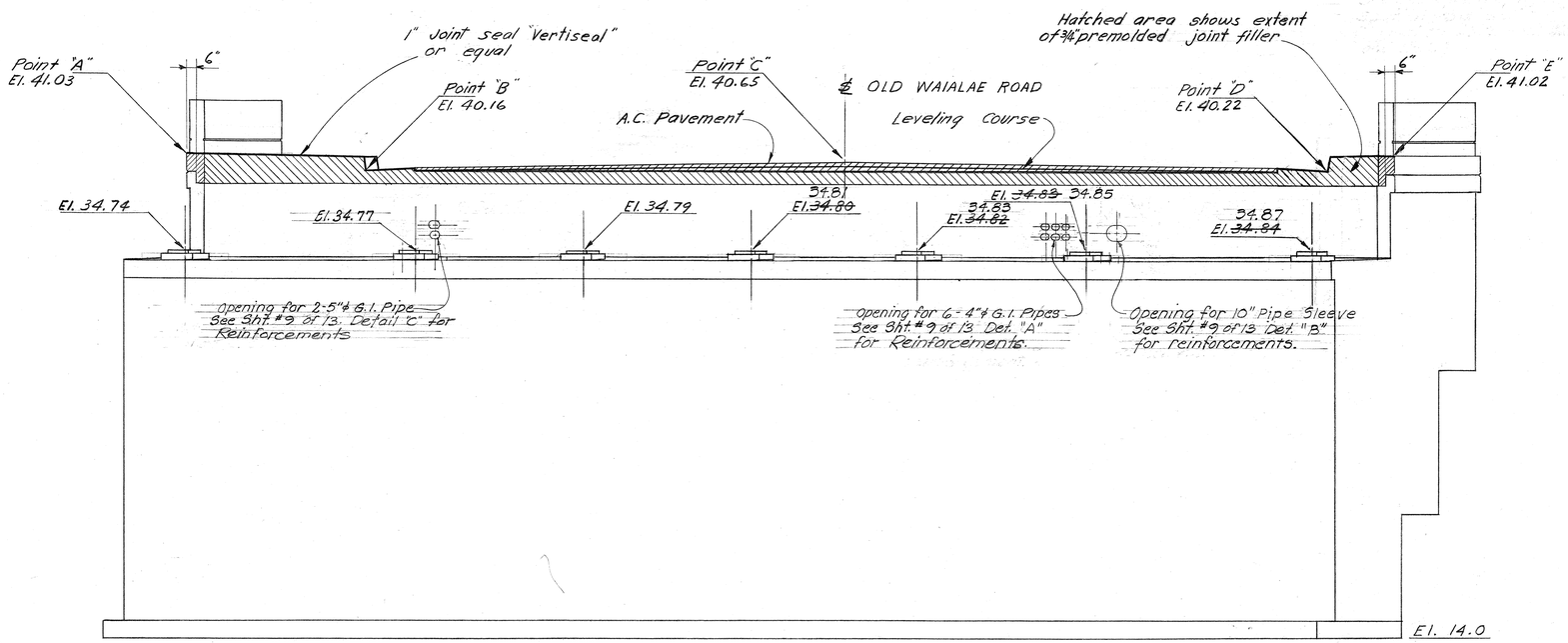
1. Concrete seats shall be poured monolithic with abutment.
2. See Sheet No. 12 of 13 for bearing and seat details.
3. Bearing Elevations shown are top of Concrete



ELEVATION - A-A

TYPICAL WINGWALL REINFORCING

Scale: ⅜ = 1-0



ELEVATION ABUTMENT 2

SCALE ¼" = 1'-0

ORIGINAL PLAN	SURVEY PLOTTED BY: DATE:
	DESIGNED BY: C. ANDERSON 5/29/58
	DRAWN BY:
	TRACED BY:
NOTE BOOK No.	QUANTITIES BY:
	QUANTITIES CHECKED BY: VM 12-4-58
	CHECKED BY:

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
OLD WAIALAE ROAD
GRADE SEPARATION
STRUCTURE No 1
ABUTMENT 2 DETAILS
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: As NOTED FAI Proj No I-HI-1(5):24, Unit 2

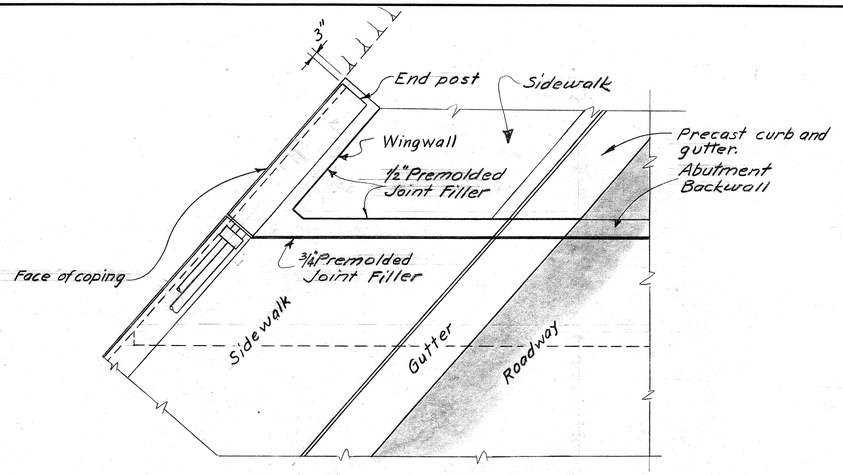
SHEET No. 10 OF 13 SHEETS

C0157

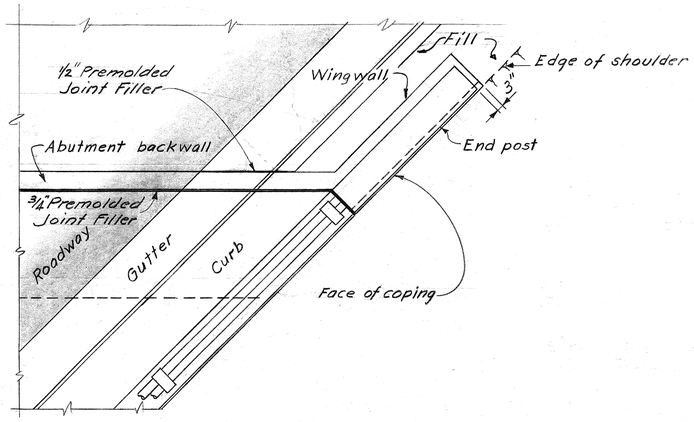
6

PRINTED ON DIEPO 1000H CLEARPRINT

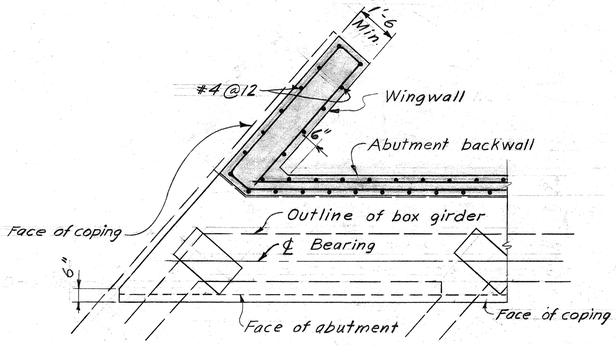
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	158	276



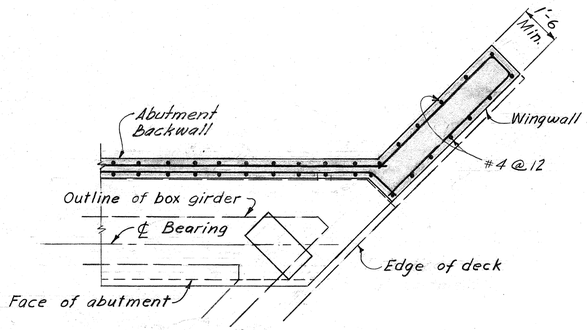
PLAN



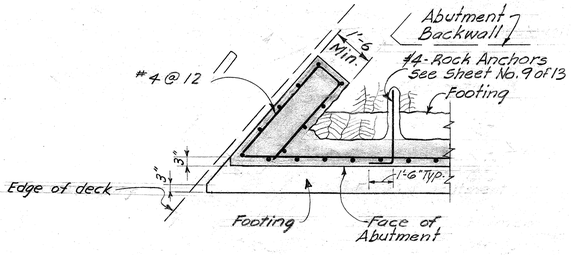
PLAN



SECTIONAL PLAN
Taken above abutment seat

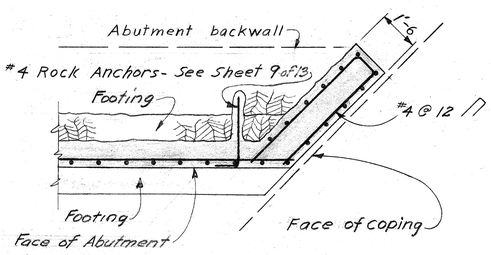


SECTIONAL PLAN
Taken above abutment seat



SECTIONAL PLAN
Taken below abutment seat

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



SECTIONAL PLAN
Taken below abutment seat

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

NOTE:
All horizontal steel shown is #4 @ 18 except as noted. All vertical steel shown is #4 @ 12 except as noted.

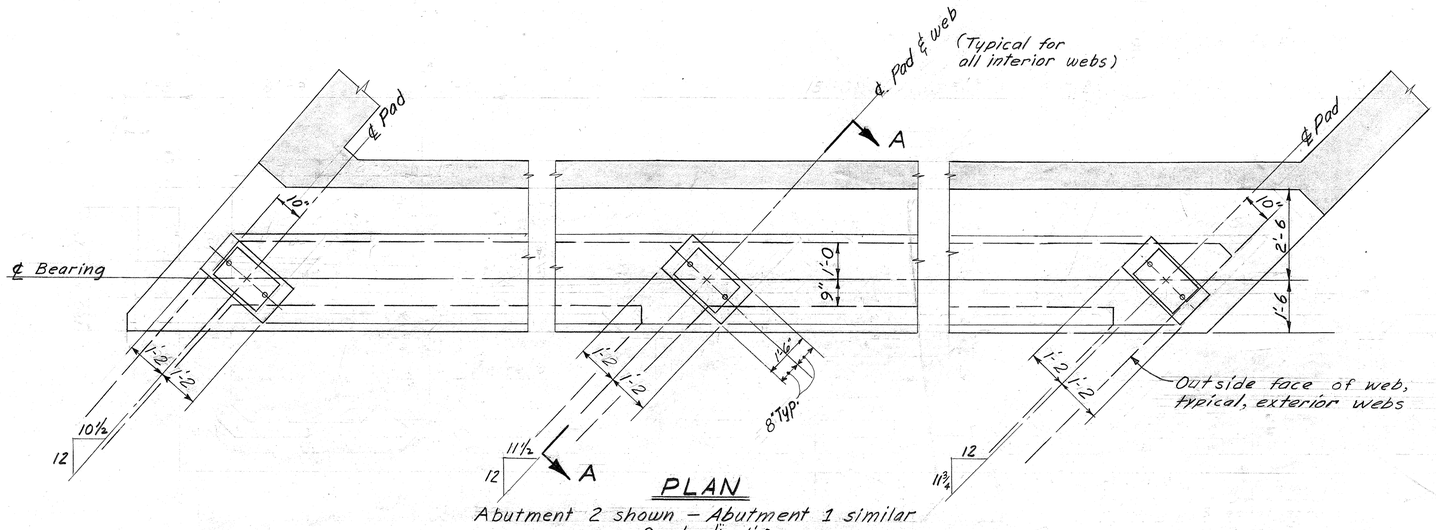
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DESIGNED BY	6-25-58
	DRAWN BY	
	TRACED BY	
	NOTE BOOK	
	QUANTITIES BY	
	QUANTITIES CHECKED BY	
	CHECKED BY	7-22-58

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
OLD WAIALAE ROAD
GRADE SEPARATION
STRUCTURE NO. 1
DETAILS
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: AS NOTED FAI Proj. No. I-HI-1(5):24, Unit 2

SHEET No. 11 OF 13 SHEETS

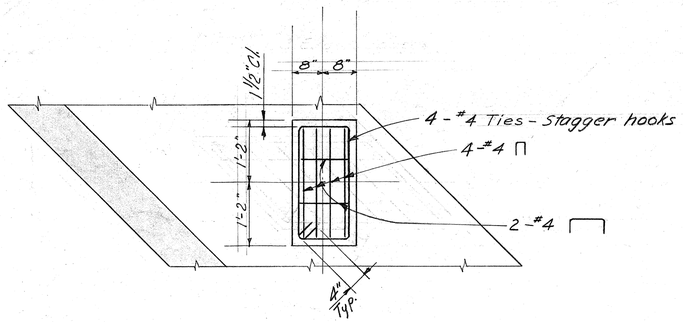
PRINTED ON DIEPO 1000H CLEARPRINT

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)24 Unit 2	1968	159	276



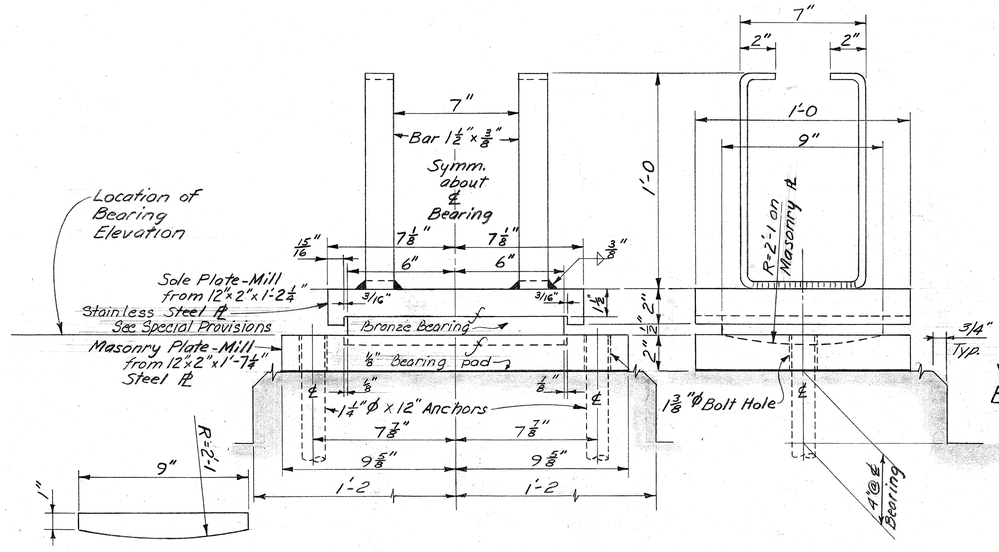
PLAN

Abutment 2 shown – Abutment 1 similar
Scale: ½ = 1'-0



SECTIONAL PLAN B-B

Scale: ¾" = 1'-0



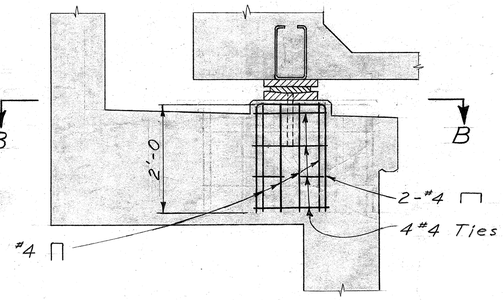
END VIEW

SELF LUBLICATED BRONZE BEARING ELEVATION

END VIEW

EXPANSION BEARING DETAIL

Scale: 3" = 1'-0



SECTION A-A

Scale: ¾" = 1'-0

(Abutment main reinforcement not shown)

TYPICAL BEARING AND BEARING SEAT DETAILS

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DESIGNED BY	4-30-68
PREPARED BY	4-30-68
TRACED BY	
QUANTITIES BY	
QUANTITIES CHECKED BY	
CHECKED BY	
NOTE BOOK No.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
OLD WAIALAE ROAD
GRADE SEPARATION
STRUCTURE No. 1
BEARING DETAIL
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
SCALE: AS NOTED FAI Proj No. IH1-1(5):24 Unit 2

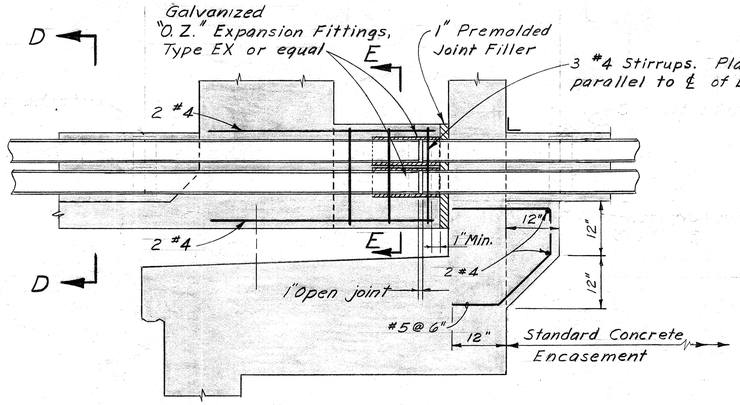
SHEET No. 12 OF 13 SHEETS

159

PRINTED ON DIEPO 100OH CLEARPRINT

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)24 Unit 2	1965	160	276

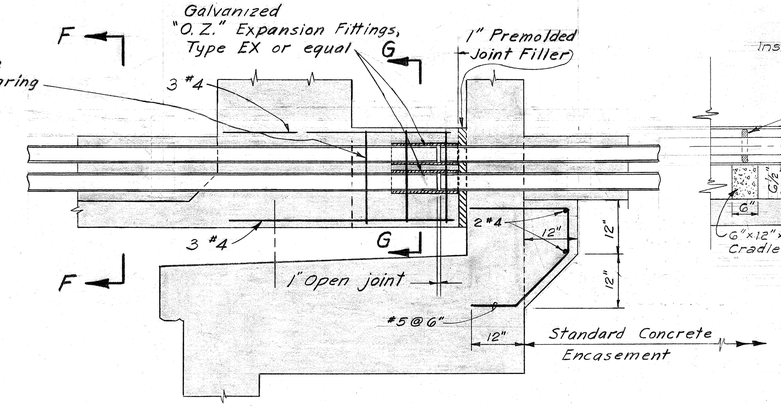
Revised : Jan. 10, 1967



Abutment No. 2 shown, Abutment No. 1 similar

SECTION A-A

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



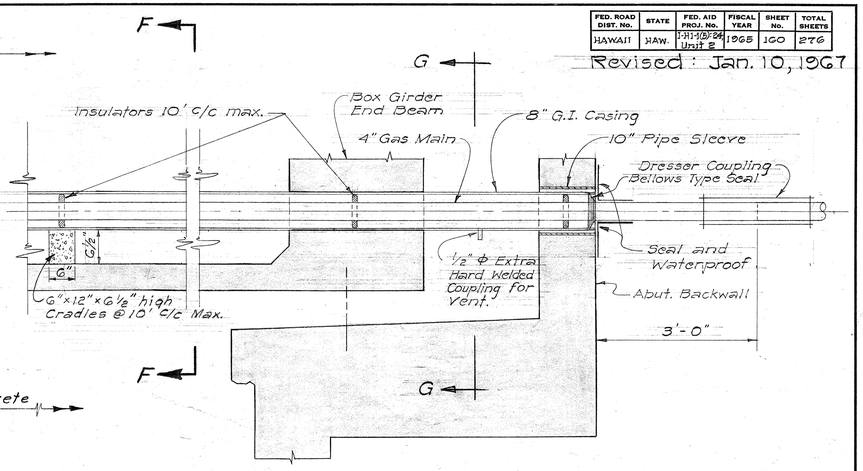
Abutment No. 2 shown, Abutment No. 1 similar

SECTION B-B

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

NOTES:

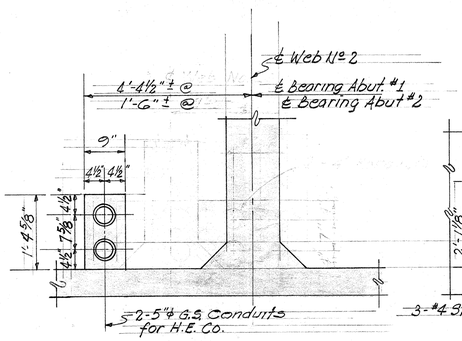
All utility reinforcing to be 2" clear minimum to face of concrete. Main structure reinforcement not shown.



Abutment No. 2 shown, Abutment No. 1 similar

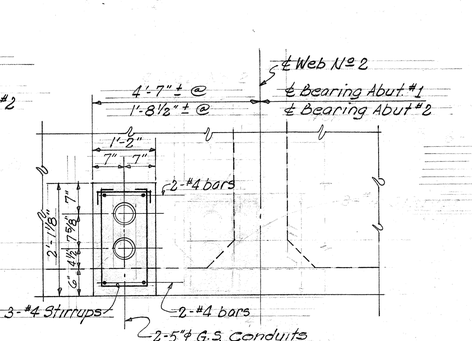
SECTION C-C

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



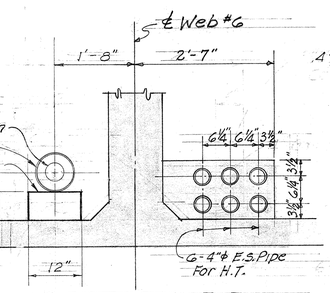
SECTION D-D

Scale 3/4"=1'-0"



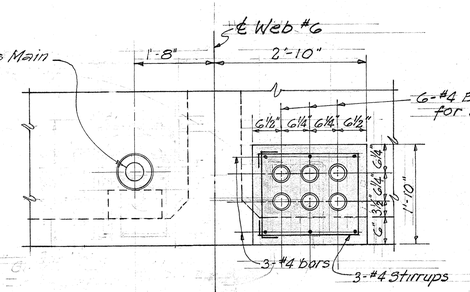
SECTION E-E

Scale 3/4"=1'-0"



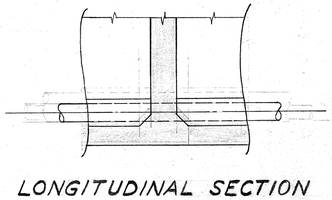
SECTION F-F

Scale 3/4"=1'-0"



SECTION G-G

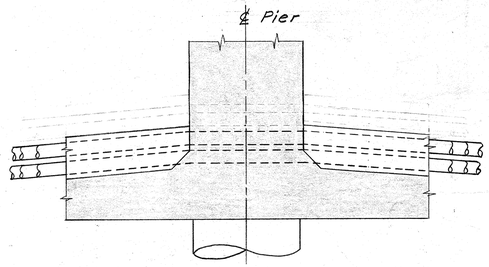
Scale 3/4"=1'-0"



LONGITUDINAL SECTION AT DIAPHRAGM

Showing Gas Line Position

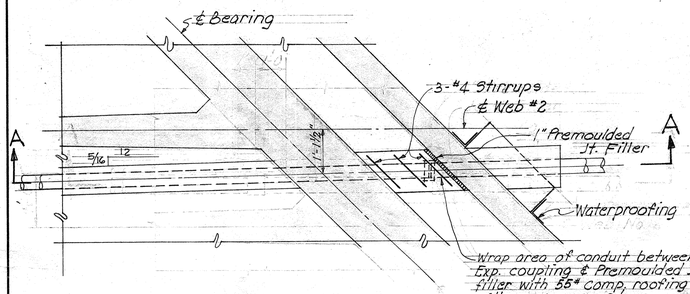
Scale: $\frac{1}{2}$" = 1'-0



LONGITUDINAL SECTION AT PIER

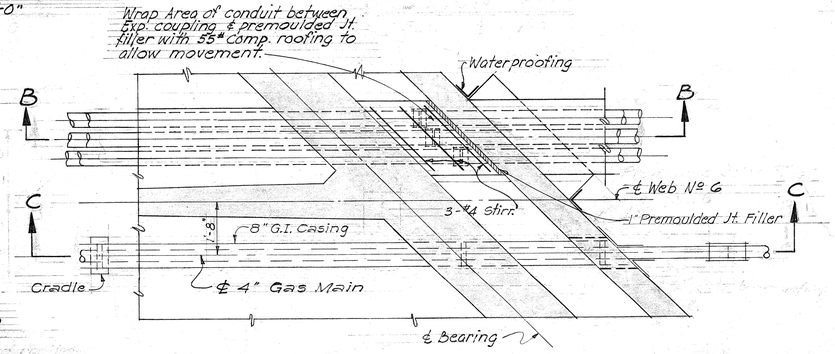
Showing Telephone Conduits Thru Crossbeam

Scale: $\frac{1}{2}$" = 1'-0



SECTIONAL PLAN AT ABUTMENT Nº 2 Scale ½"=1'-0"

Showing Encasement of Electrical Conduits. Abutment Nº1 Similar & Opposite Hand Except As Noted in Section "D-D" & "E-E"



SECTIONAL PLAN AT ABUTMENT Nº 2 Scale ½"=1'-0"

Showing Encasement of Telephone Conduit and Gas Line Abutment Nº1 Similar but Opposite Hand

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

OLD WAIALAE ROAD GRADE SEPARATION STRUCTURE NO. 1

UTILITY DETAILS

INTERSTATE HIGHWAY (LUNALILO FREEWAY)

SCALE: AS NOTED FAI PROJ. No. IHI-1(5): 24 UNIT 2

SHEET No. 13 OF 13 SHEETS

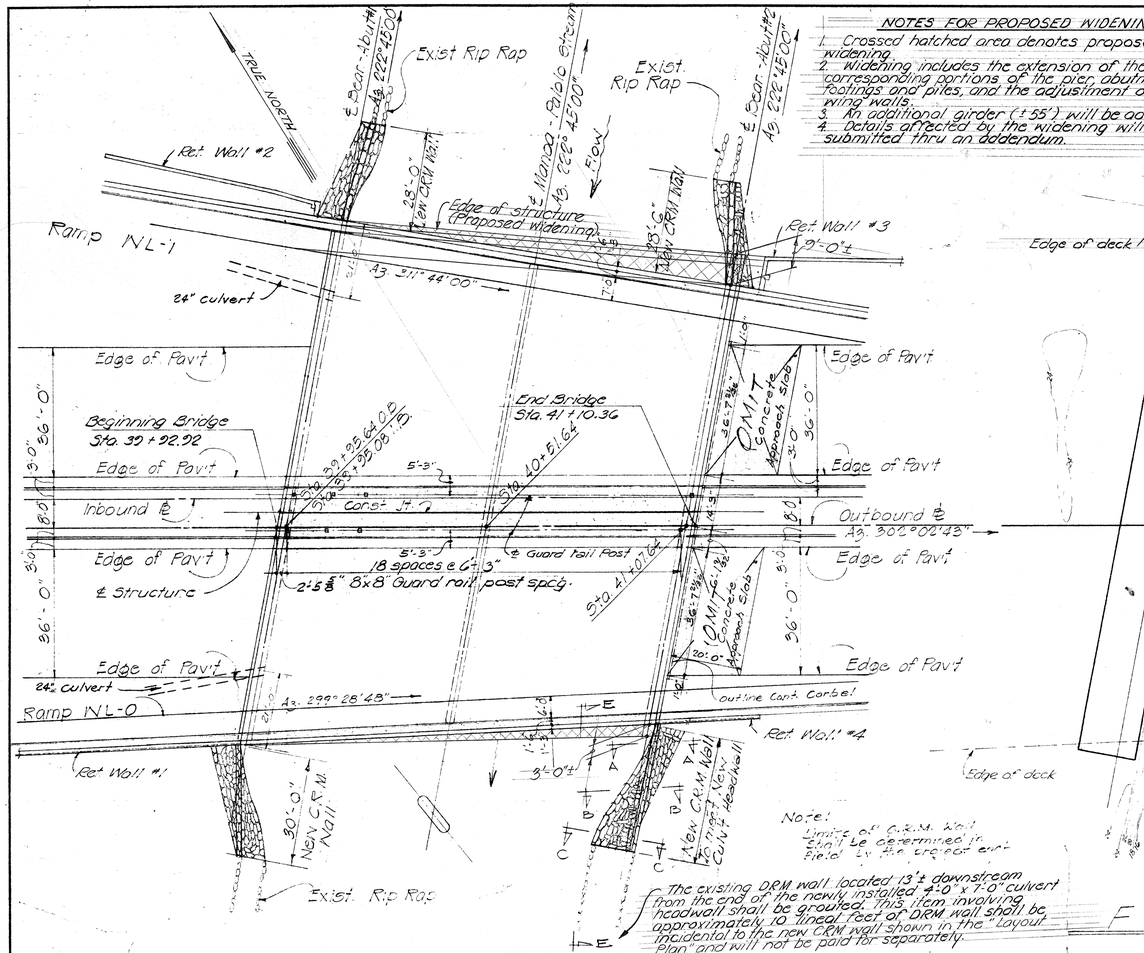
CO 160

PRINTED ON DIEPO 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FAI-H1-(6)24 Unit 2	1965	161	27

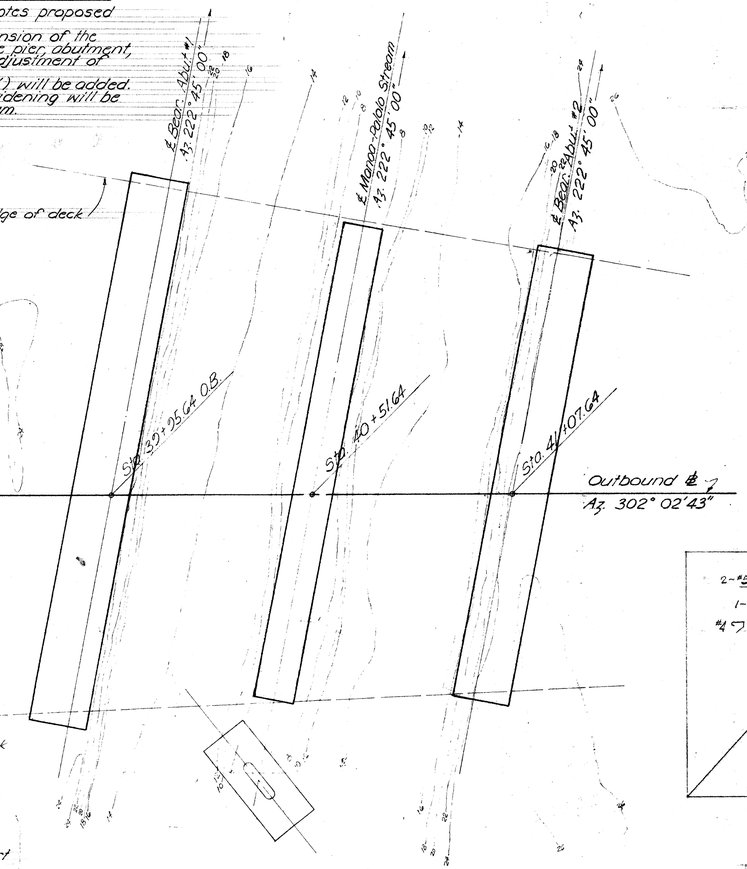
NOTES FOR PROPOSED WIDENING

1. Crossed hatched area denotes proposed widening.
2. Widening includes the extension of the corresponding portions of the pier, abutment, footings and piles, and the adjustment of wing walls.
3. An additional girder (± 55') will be added.
4. Details affected by the widening will be submitted thru an addendum.



LAYOUT PLAN

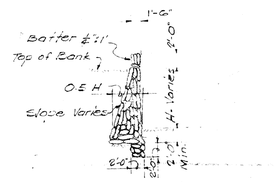
Scale: 1" = 20'-0"



FOUNDATION PLAN

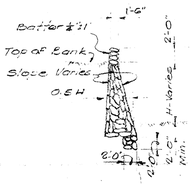
LONGITUDINAL SECTION

Scale: 1" = 10'-0"



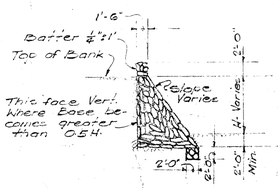
SECTION A-A

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



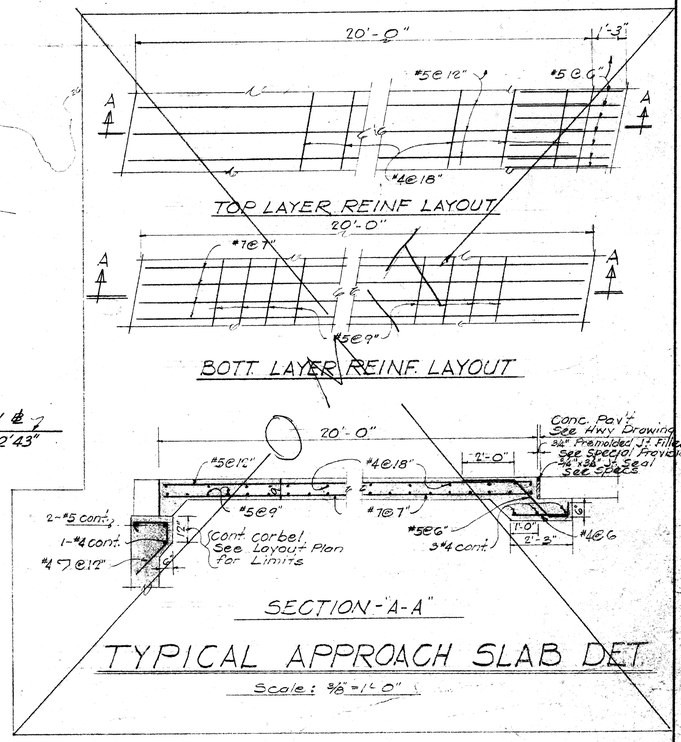
SECTION B-B

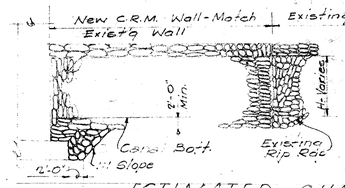
Scale: 3/32" = 1'-0"



SECTION C-C

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





ELEVATION E-E

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

TYPICAL CRM DETAILS

Scale: As Shown

ESTIMATED QUANTITIES

Item	As Drawn	Proposed Widening	Total
Class A-1 Concrete	Lump Sum (1,949.0 cy)	Lump Sum (85.0 cy)	Lump Sum (2,034.0 cy)
Reinf. Steel	Lump Sum (245,750.0 #)	Lump Sum (10,810.0 #)	Lump Sum (256,560.0 #)
Structural Excavation	3432.0 c.y.	108.0 c.y.	3540.0 c.y.
Filter Material	233.0 c.y.	8.0 c.y.	241.0 c.y.
C.R.M.	111.0 c.y.	0.0 c.y.	111.0 c.y.
End Post	6.0 L.F.	0.0 L.F.	6.0 L.F.
Metal Railing	242.0 L.F.	0.0 L.F.	242.0 L.F.
Prestressed Girder	1,982.0 L.F.	55.0 L.F.	2,037.0 L.F.
Prestressed Concrete Piles	13,085.0 L.F.	591.0 L.F.	13,626.0 L.F.

GENERAL NOTES

See sheet #2

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY G.T.	"
	TRACED BY "	"
	DESIGNED BY K.K.Y.	T.M.
NOTE BOOK	QUANTITIES BY S.K.	R.H.
No.	CHECKED BY J.T.C.	R.H.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA - PALOLO DRAINAGE CANAL BRIDGE

STRUCTURE No. 2

LAYOUT PLAN & SECTION

INTERSTATE HIGHWAY (LUNALILO FREEWAY)

FAI PROJ. NO. I-HI-1(6)24, UNIT 2

SCALE: AS SHOWN DATE:

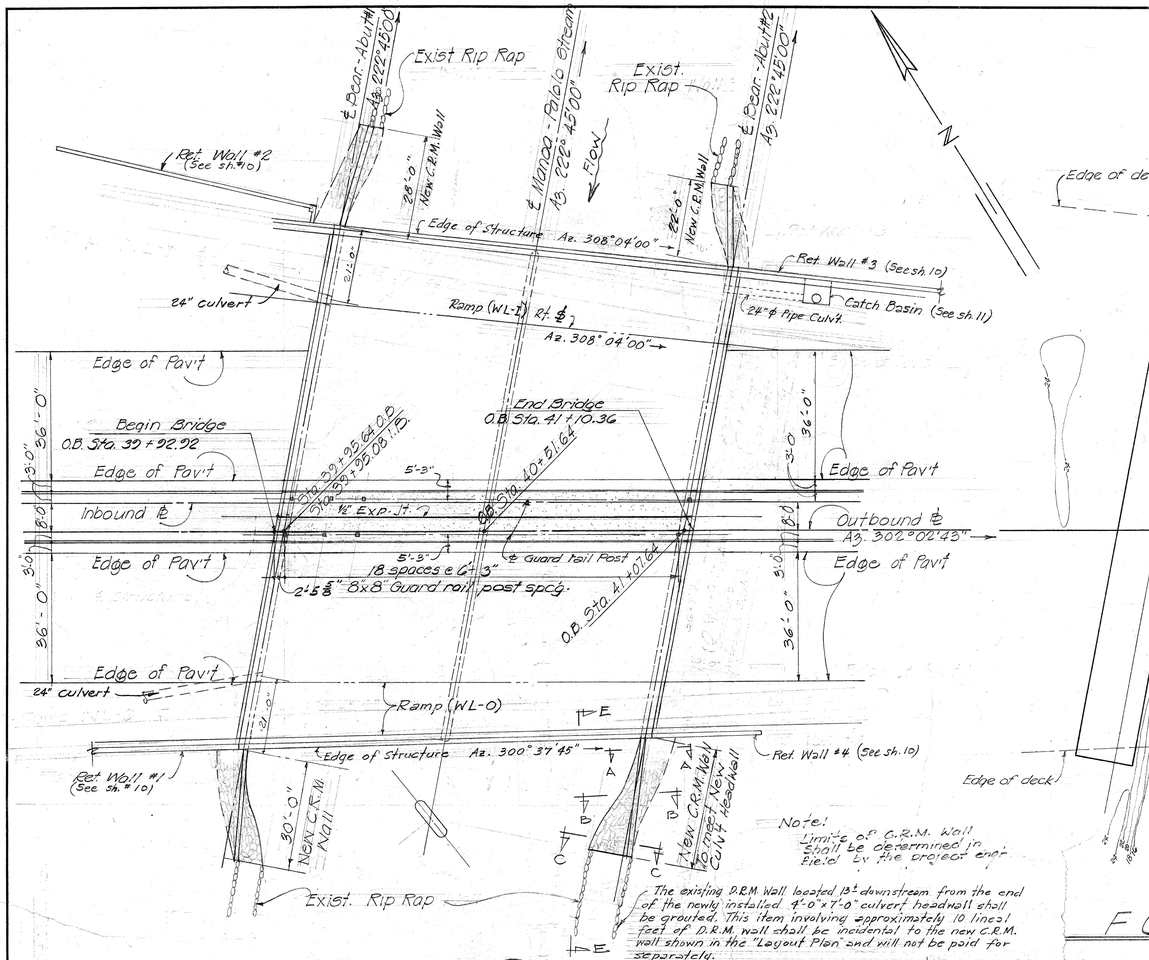
SHEET No. 1 OF 11 SHEETS

161

PRINTED ON CLEARPRINT 1000-H

Revised: July 16, 1965

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-HI-H3-2(8) UNIT 2	1965	161A	276



Note!
Limits of C.R.M. Wall shall be determined in field by the project engr.

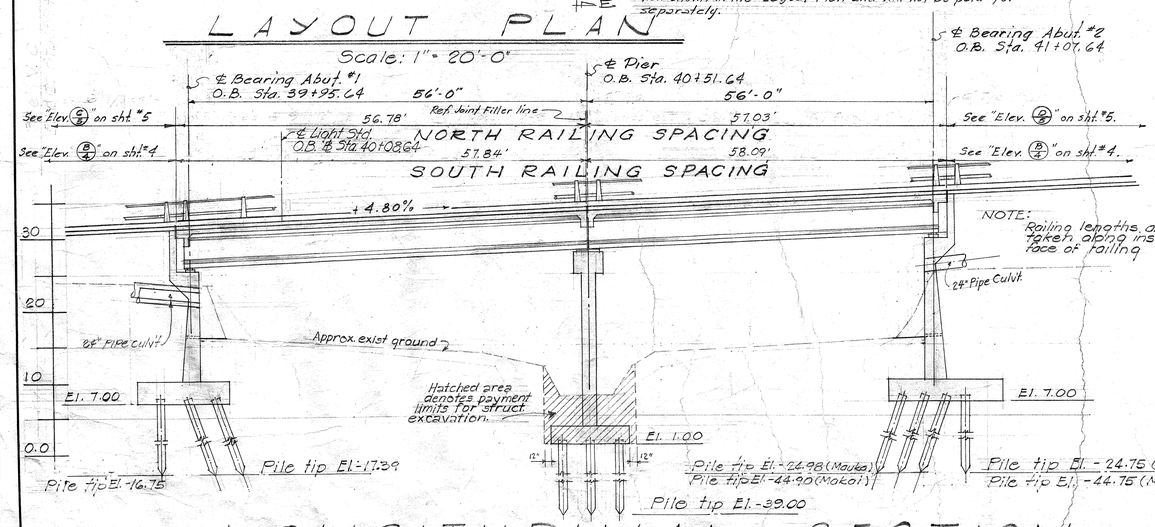
The existing D.R.M. Wall located 13± downstream from the end of the newly installed 4'-0"x7'-0" culvert headwall shall be grouted. This item involving approximately 10 lineal feet of D.R.M. wall shall be incidental to the new C.R.M. wall shown in the "Layout Plan" and will not be paid for separately.

LAYOUT PLAN

Scale: 1" = 20'-0"

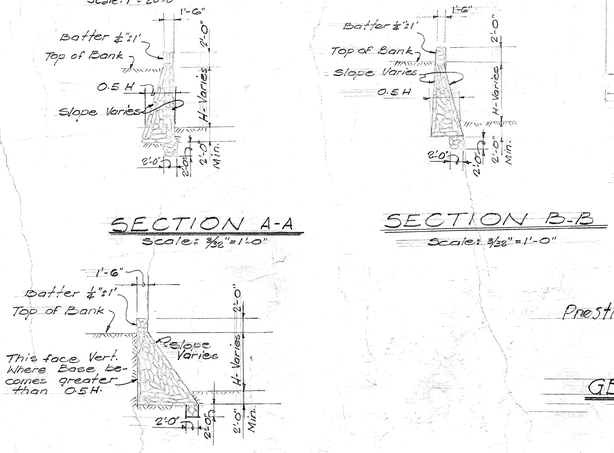
FOUNDATION PLAN

Scale: 1" = 20'-0"



LONGITUDINAL SECTION

Scale: 1" = 10'-0"



SECTION A-A

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

SECTION B-B

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

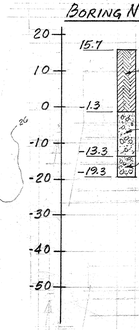
SECTION C-C

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

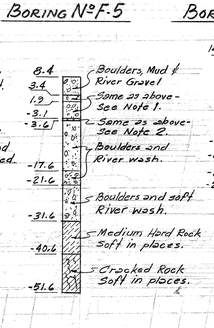
TYPICAL CRM DETAILS

Scale: As Shown

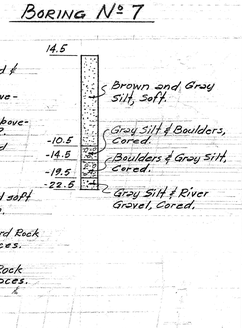
BORING Nº P-5



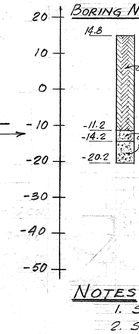
BORING Nº F-5



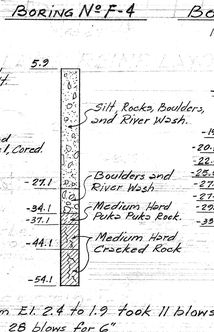
BORING Nº 7



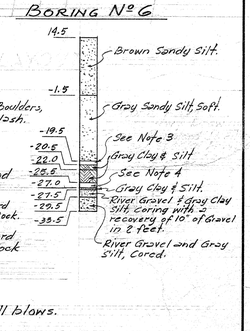
BORING Nº P-4



BORING Nº F-4



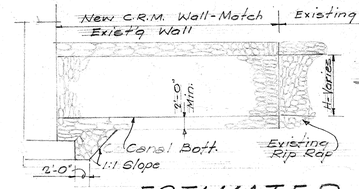
BORING Nº 6



NOTES:
1. Sample from El. 2.4 to 1.9 took 11 blows.
2. Sample took 28 blows for 6".
3. 19 blows, 6" recovery, 2⅜" Moran & Procter sampler.
4. 19 blows 5" recovery.

LOG OF BORINGS

Scale: 1" = 20'-0"



ELEVATION E-E

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

ESTIMATED QUANTITIES

Class A-1 Concrete	Lump Sum (2,030.2 c.y.)
Reinf. Steel	Lump Sum (264,310.2 lbs.)
Structural Excavation	3,432.2 c.y.
Filter Material	192.2 c.y.
C.R.M.	162.2 c.y.
Metal Railing	228.0 Lin. ft.
Prestressed Girder	2,039.1 Lin. ft.
Prestressed Concrete Piles	13,539.0 Lin. ft.

GENERAL NOTES
See sheet #2

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA-PALOLO DRAINAGE CANAL BRIDGE
STRUCTURE Nº 2
LAYOUT PLAN & SECTIONS
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
FAI PROJ. Nº: I-HI-1(5): 24, UNIT 2
SCALE: AS SHOWN DATE: JUNE 1965

SHEET No. 1 OF 11 SHEETS

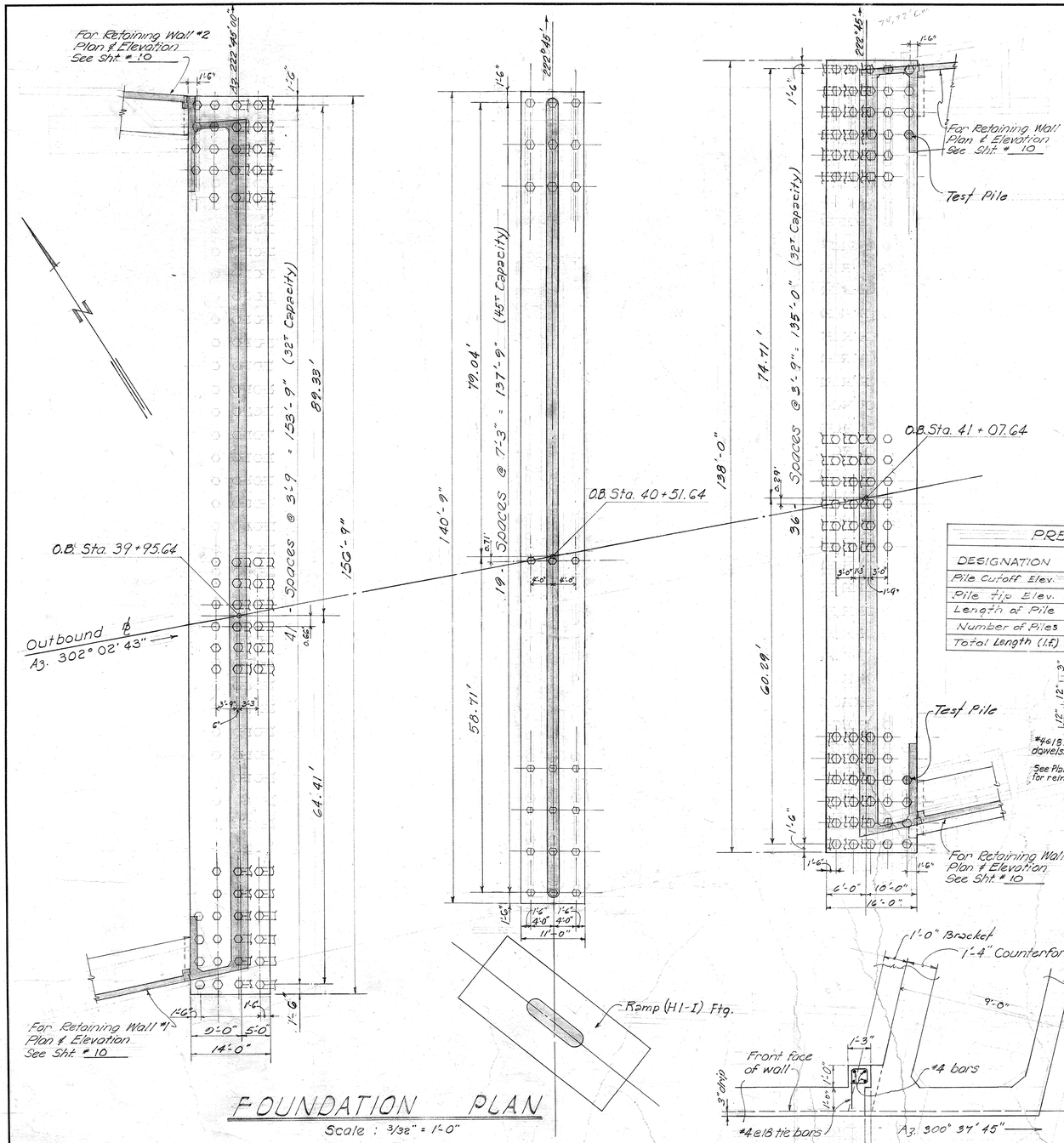
ORIGINAL PLAN	SURVEY PLOTTED BY	G.T.T.S.	DATE 6/65
	DRAWN BY	" " "	" "
	TRACED BY	" " "	" "
	DESIGNED BY	S.Y.T.	6/65
NOTE BOOK	QUANTITIES BY	T.M.	6/65
No.	CHECKED BY	J.J.C.	6/65

PRINTED ON CLEARPRINT 1000-H

161A

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	16A	27G

Revised: July 16, 1965



GENERAL NOTES

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

DESIGN LOADS:
HS 20-44 as defined in design specifications.

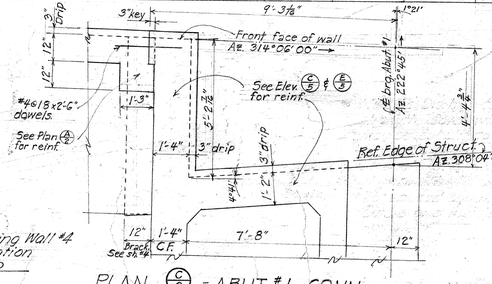
DESIGN STRESSES:
1. See AASHO specifications except as otherwise noted and see Special Provisions.
2. Prestressed Girders
f'_c = 6000 psi after 28 days
f'_{ci} = 4000 psi at time of releasing prestressed strands.
½" diameter 7 wire strands.
Forms must be removed and beams inspected before strands are cut.
3. Pile Bearing Capacity: 32 Tons at abuts. and 45 Tons at pier.

MATERIALS:
1. All concrete shall be class A-1 except as otherwise noted on Plans. Concrete for prestressed concrete girders - see Special Provisions and as noted above.
2. Neoprene pads are incidental to prestressed concrete girders and will not be paid for separately.
3. See Special Provisions for Admixture in concrete.

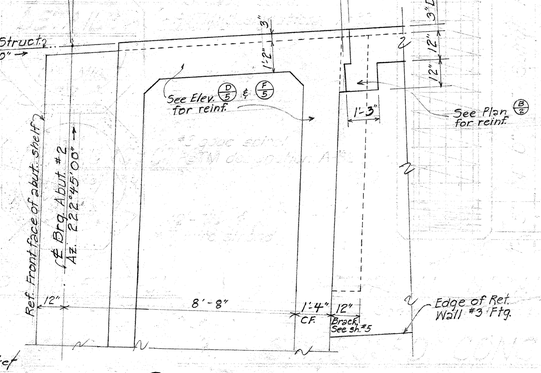
CONSTRUCTION METHODS:
1. See Standard Specifications and Special Provisions.
2. The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing excavation or pile driving.
3. All fill behind abutments and ret. walls shall be complete in place before placing prestressed girders and pouring concrete for the superstructure.
4. For concrete finish see Special Provisions.
5. Neoprene pads shall be secured against displacement by adhesives. The adhesives used shall be approved by the Engineer.
6. Refer to Standard Detailed Drawing sheets #S-1, #S-2 - #S-3, #S-4 & #S-5 for details not covered by these drawings.
7. All reference to sheets concerning Structure N° 2 Details are confined only to Structure N° 2 plans, sheets #1 through #11 or to the Standard Details, sheets S-1 thru S-5, except where reference is made to "Plan Sheet N° ___" which refers to consecutive numbering of sheets of the entire Contract Plans.

PRESTRESSED CONCRETE PILE SCHEDULE

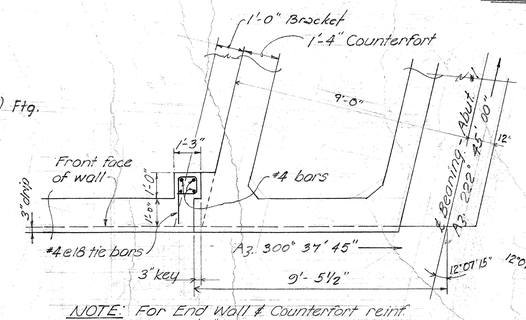
DESIGNATION	ABUT. #1		PIER	ABUT. #2 (Mauka)		ABUT. #2 (Makai)	
	Vert.	Batter	Vert.	Vert.	Batter	Vert.	Batter
Pile Cutoff Elev.	7.75	7.75	1.50	7.75	7.75	7.75	7.75
Pile Tip Elev.	-16.75	-17.39	-39.00	-24.75	-24.98	-44.75	-44.90
Length of Pile	27.00	29.00	43.00	35.00	37.00	55.00	58.00
Number of Piles	50	84	60	24	60	21	51
Total Length (l.f.)	1350.00	2436.00	2580.00	840.00	2220.00	1155.00	2958.00



PLAN (C/2) - ABUT. #1 CONN. AT RET. WALL #2
Scale: ⅜" = 1'-0"

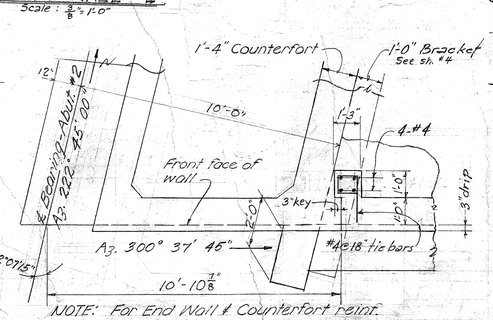


PLAN (D/2) - ABUT. #2 CONN. AT RET. WALL #3
Scale: ⅜" = 1'-0"



NOTE: For End Wall # Counterfort reinf. See Sht. #4

PLAN (A/2) - ABUT. #1 CONNECTION AT RETAINING WALL #1
Scale: ⅜" = 1'-0"



NOTE: For End Wall # Counterfort reinf. See Sht. #4

PLAN (B/2) - ABUT. #2 CONNECTION AT RETAINING WALL #4
Scale: ⅜" = 1'-0"

FOUNDATION PLAN

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

Legend: ○ Vertical piles ◉ Test piles
Battered piles
Direction of batter

Note: All piles to be Type I Std. Prestressed Concrete Piles. See sh. # S-4 for details.

ORIGINAL PLAN	SURVEY PLOTTED BY	T.S. DATE 4/65
	DRAWN BY	" " "
	TRACED BY	" " " 6/65
NOTE BOOK	DESIGNED BY	T.C. " " 6/65
	QUANTITIES BY	J.H.K. " " 6/65
No.	CHECKED BY	J.F.D. & L.A. " " 6/65

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA PALOLO DRAINAGE CANAL BRIDGE
STRUCTURE N° 2
FOUNDATION PLAN
INTERSTATE HIGHWAY (WAIALILO FREEWAY)
F.A.I. PROJ. NO. I-HI-1(5): 24, UNIT 2
SCALE AS SHOWN DATE: JUNE 1965

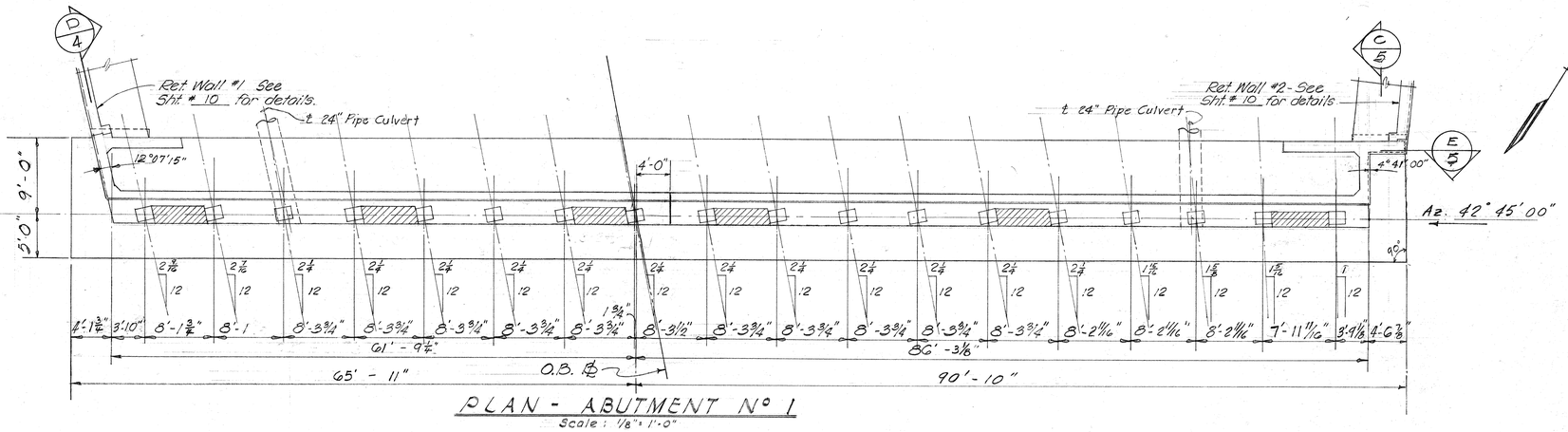
SHEET No. 2 OF 11 SHEETS

1621

PRINTED ON CLEARPRINT 1000-H

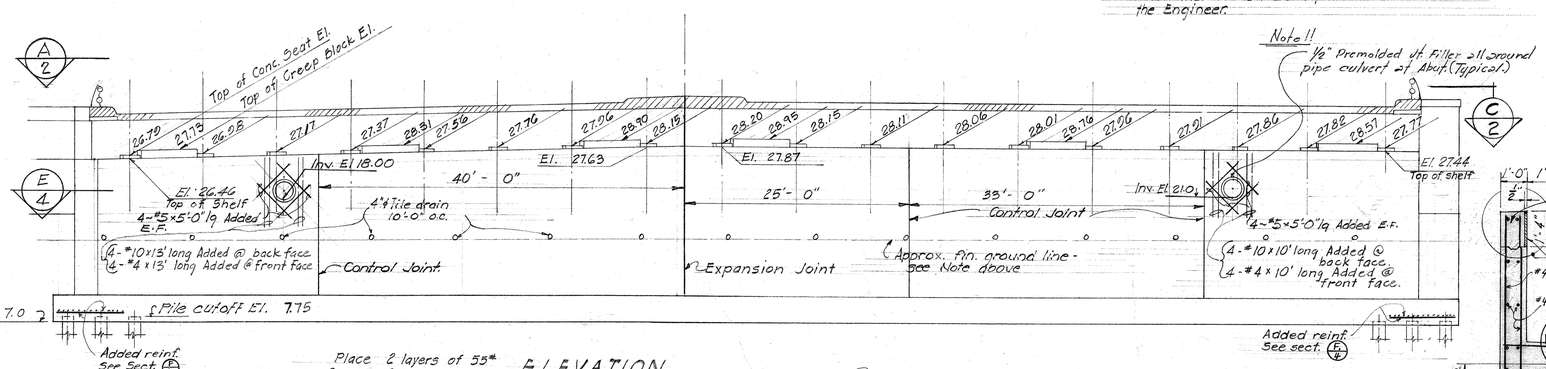
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-HI-1(25), Unit 2	1965	163A	276

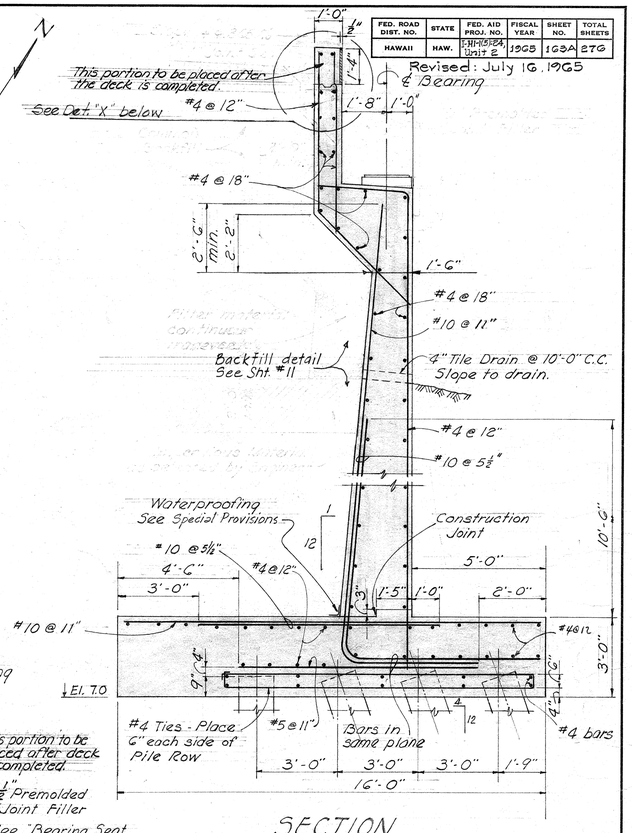
Revised: July 16, 1965



PLAN - ABUTMENT N° 1

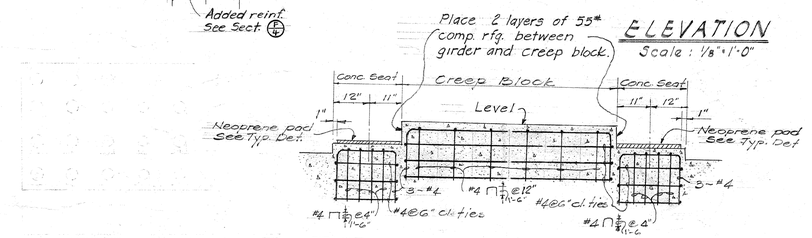
Scale : 1/8" = 1'-0"





SECTION

ABUTMENT N° 2 Scale: 3/8" = 1'-0"

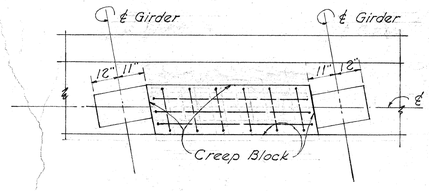


ELEVATION

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

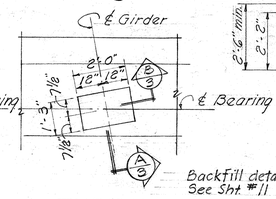
TYP. SECTION @ CREEP BLOCK

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

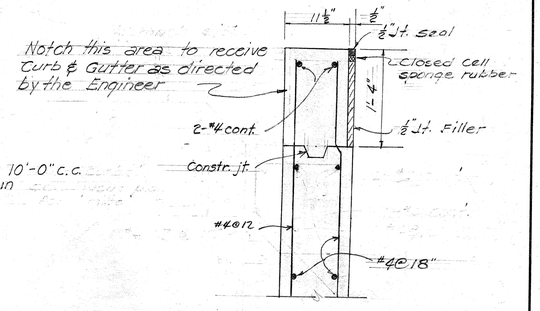


AT CREEP BLOCK

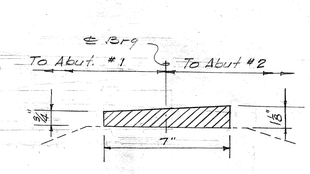
Scale : 3/8" = 1'-0"



TYPICAL

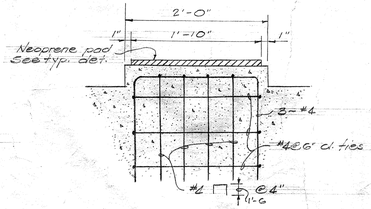


DETAIL "X" scale: 1"=1'-0"



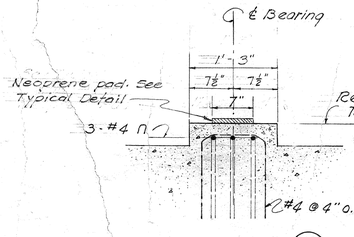
TYP. NEOPRENE PAD DTL.

Scale: 3"=1'-0"



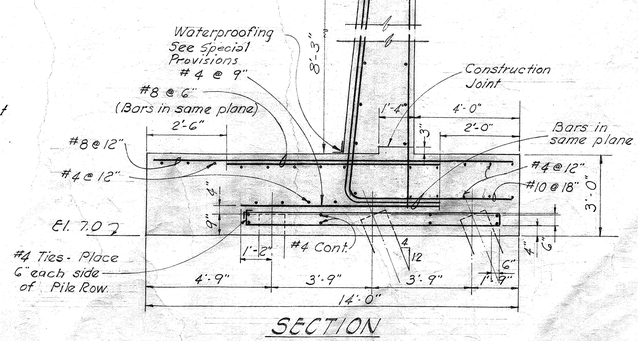
SECTION (B/3)

Scale: 1"=1'-0"



SECTION (A/3)

Scale : 1"=1'-0"



SECTION

ABUTMENT N° 1 Scale: 3/8" = 1'-0"

TYPICAL BEARING SEAT DETAILS AT ABUTMENT N° 1 & 2

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA-PALOLO DRAINAGE CANAL BRIDGE

STRUCTURE N° 2

ABUTMENT N° 1 DETAILS

INTERSTATE HIGHWAY (LUNALILO FREEWAY)
FAI PROJ. N° I-HI-1(25): 24, UNIT 2
SCALE: AS SHOWN DATE: JUNE 1965

SHEET No. 3 OF 11 SHEETS

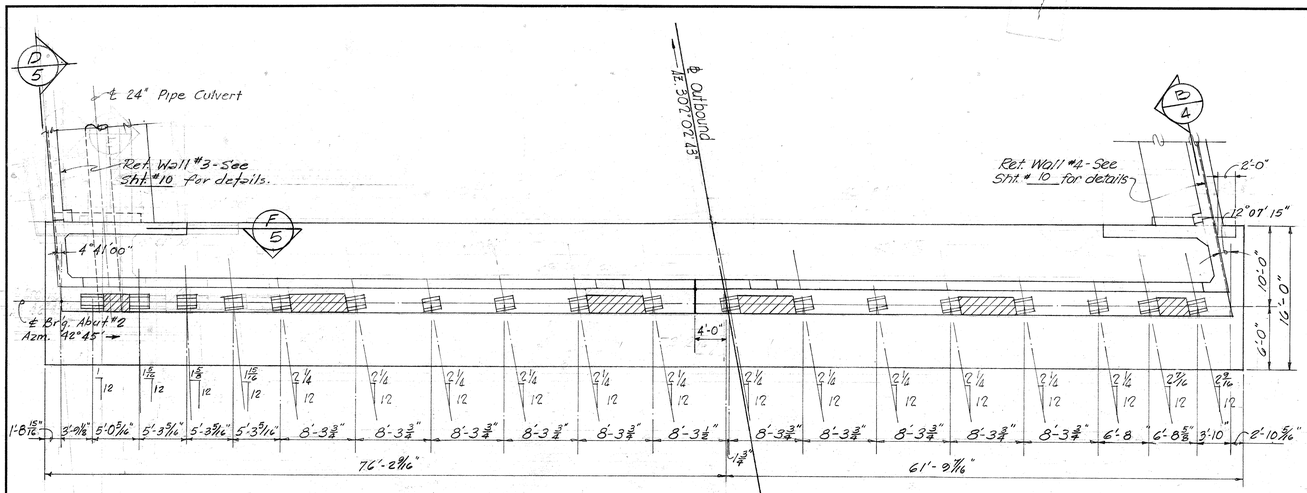
1631

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
NOTE BOOK	TRACED BY	"
No.	DESIGNED BY HRM, DGY, JCC, [illegible]	7-64, 7-64, 7-64
	QUANTITIES BY [illegible]	7-64
	CHECKED BY [illegible]	7-64

PRINTED ON CLEARPRINT 1000-H

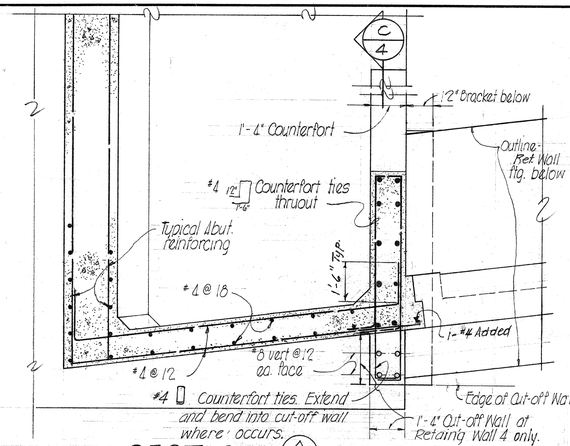
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(8)24 Unit 2	1965	164A	276

Revised: July 16, 1965



PLAN - ABUTMENT # 2

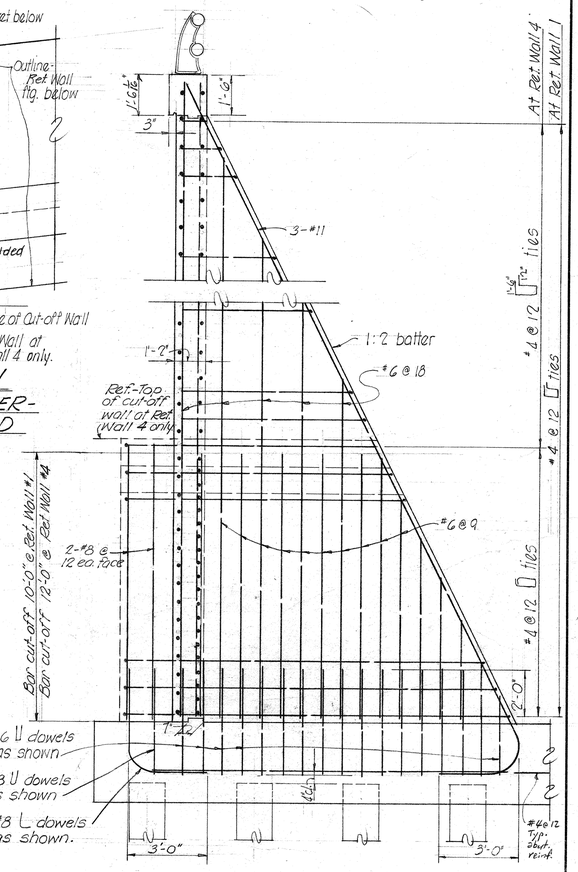
SCALE: 1/8" = 1'-0"



SECTION (A/4) AS SHOWN

SECTION (E/4) SIMILAR EXCEPT AS OTHERWISE NOTED AND OPPOSITE HAND

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



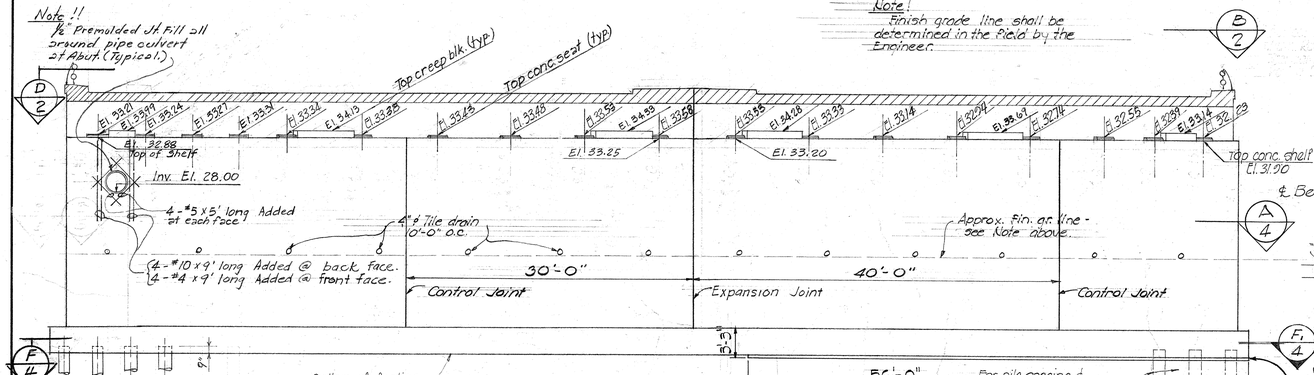
ELEVATION (C/4)

SHOWING COUNTERFORT REINF.

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

Note !!
1/4" Premolded Jt. Fill all around pipe culvert at Abut. (Typical.)

Note!
Finish grade line shall be determined in the field by the Engineer.

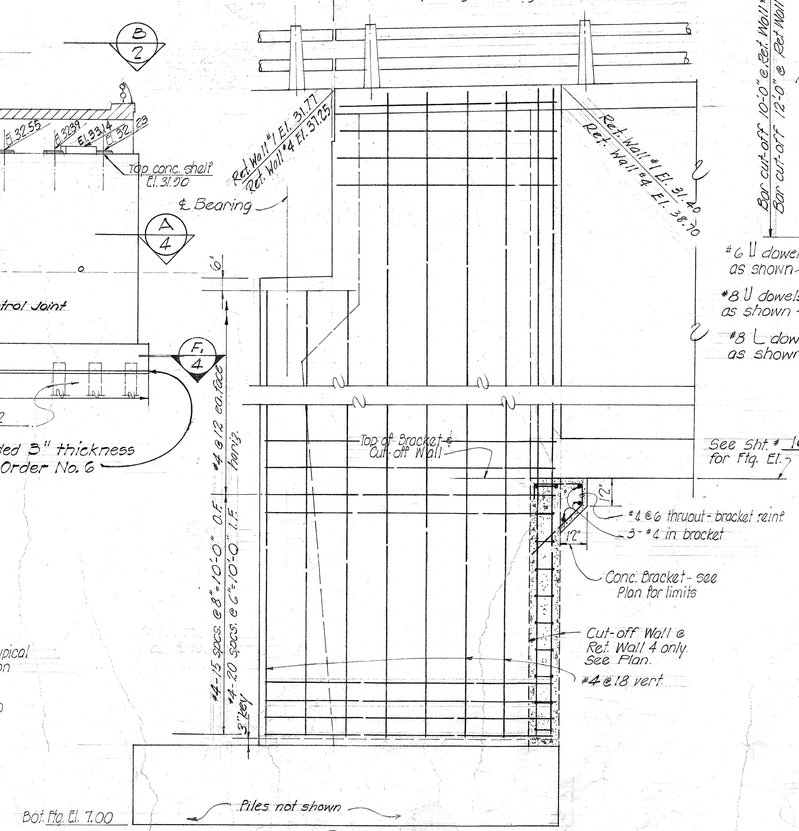


ELEVATION - ABUTMENT # 2

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

See "Longitudinal Section on #1.

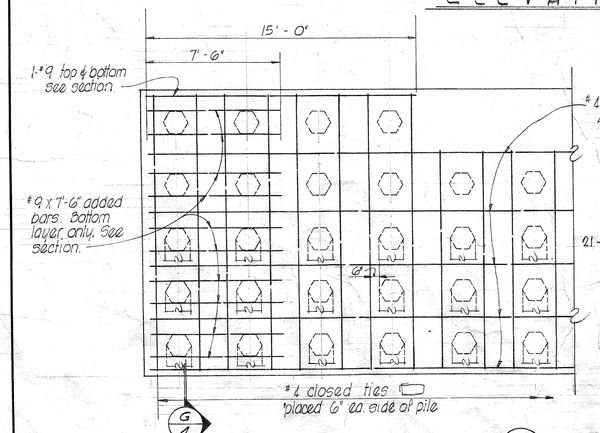
103.49' to end of rail Retaining Wall #1
28.58' to end of rail Retaining Wall #4
(See corresponding Retaining Walls on Sht. #10)



ELEVATION (F/4) AS SHOWN

SECTION (G/4) SIMILAR EXCEPT AS OTHERWISE NOTED AND OPPOSITE HAND

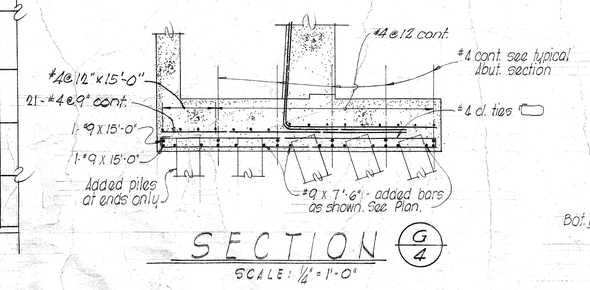
Scale: 3/8" = 1'-0"



SECTIONAL PLAN (F/4)

SECTION (F/4) SIMILAR EXCEPT OPPOSITE HAND

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



SECTION (G/4)

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

SURVEY PLOTTED BY ____ DATE ____
DRAWN BY LC " " 7/65
TRACED BY " " " "
DESIGNED BY LC, H.H.F. " " S.F.
QUANTITIES BY " " " "
CHECKED BY WEF & A.L. " " 9/65

ORIGINAL PLAN
NOTE BOOK
No.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA - PALOLO DRAINAGE CANAL BRIDGE
STRUCTURE Nº 2
ABUTMENT Nº 2 DETAILS

INTERSTATE HIGHWAY (UNAUILO FREEWAY)
FAI PROJ. Nº I-HI-1(5): 24, UNIT 2
SCALE: AS SHOWN DATE: JUNE 1965

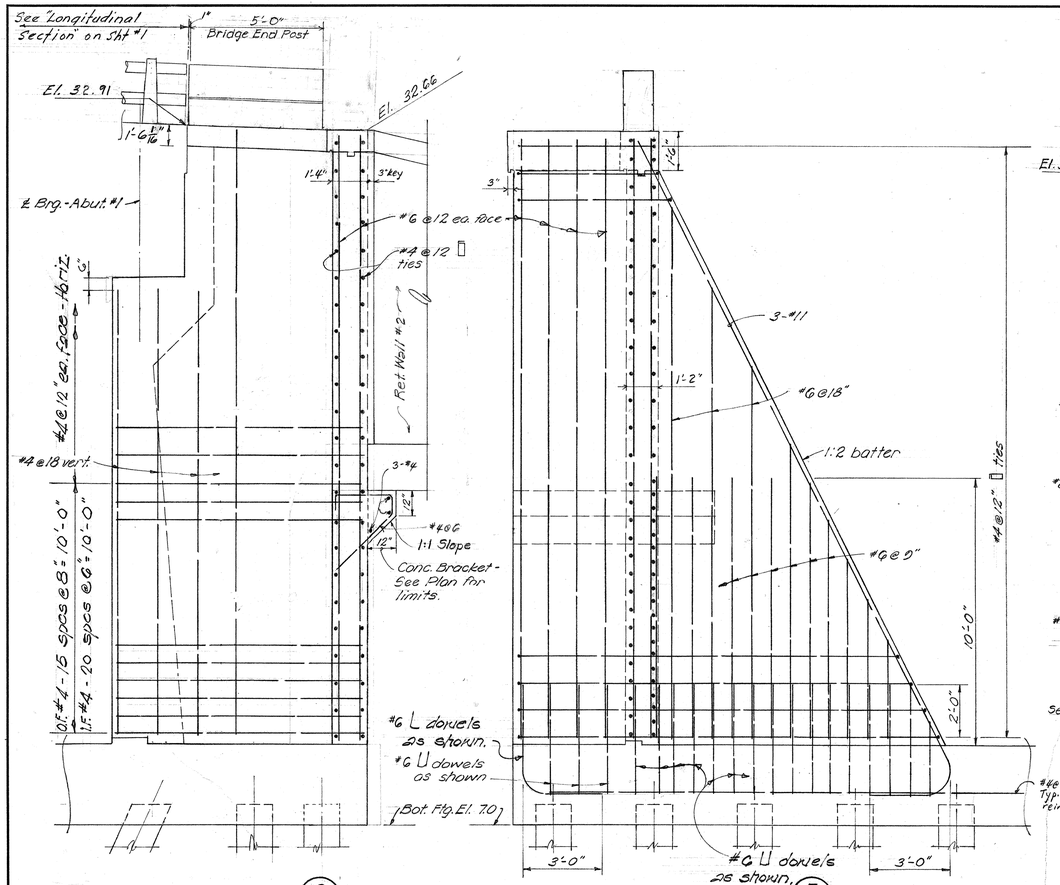
SHEET No. 4 OF 11 SHEETS

164A

PRINTED ON CLEARPRINT 1000-H

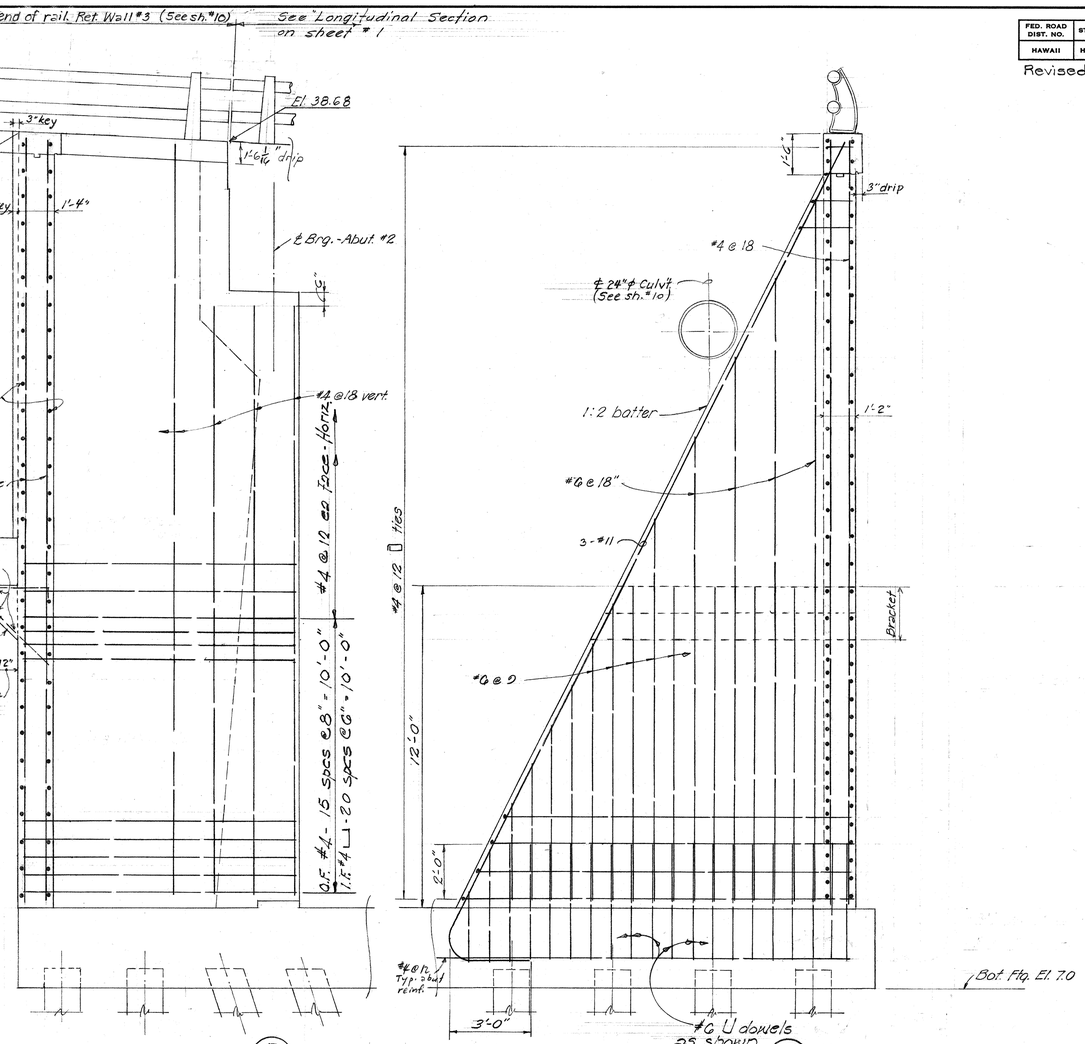
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)-24, Unit 2	1965	165A	276

Revised: July 16, 1965



ELEVATION C/5
Scale: 3/8" = 1'-0"

ELEVATION E/5
Scale: 3/8" = 1'-0"



ELEVATION D/5
Scale: 3/8" = 1'-0"

ELEVATION F/5
Scale: 3/8" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
	TRACED BY (L.A.)	" 6/65
NOTE BOOK	DESIGNED BY T.K.H. & S.L.Y.	" 6/65
No.	QUANTITIES BY J.T.O. & L.A.	" 6/65
	CHECKED BY	"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA PALOLO DRAINAGE CANAL BRIDGE

STRUCTURE No 2

RET. WALL CONN. & COUNTERFORT DETAILS

(INTERSTATE HIGHWAY LUNALILO FREEWAY)

FAI PROJ. No 1-HI-(5): 24, UNIT 2

SCALE: AS SHOWN DATE: JUNE 1965

SHEET No. 5 OF 11 SHEETS

165A

D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	1GGA	276

Revised: July 16, 1965

139'-1½"

O.B. ℄

1/12	1 5/16/12	5/8/12	1 15/16/12	2 3/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 1/4/12	2 7/16/12	2 7/16/12				
El. 30.54	El. 30.58	El. 30.61	El. 30.65	El. 30.69	El. 30.74	El. 30.79	El. 30.84	El. 30.89	El. 30.94	El. 30.89	El. 30.69	El. 30.49	El. 30.29	El. 30.10	El. 29.9	El. 29.73	El. 29.56							
El. 30.45	El. 30.49	El. 30.52	El. 30.56	El. 30.60	El. 30.65	El. 30.70	El. 30.75	El. 30.80	El. 30.85	El. 30.80	El. 30.60	El. 30.40	El. 30.21	El. 30.01	El. 29.81	El. 29.64	El. 29.46							
3'-0"	6'-6"	6'-9"	6'-9"	6'-9"	8'-3¾"	8'-3¾"	8'-3¾"	8'-3¾"	8'-3¾"	8'-3½"	8'-3¾"	8'-3¾"	8'-3¾"	8'-3¾"	8'-3¾"	7'-4½"	7'-5¼"	3'-0"						

4'-0"

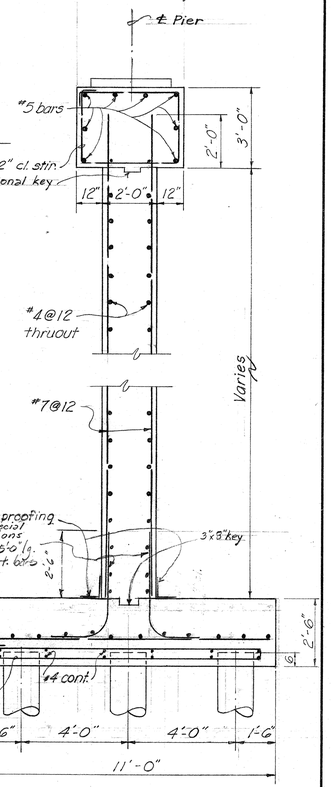
1¾"

℄ Pier

PLAN OF PIER

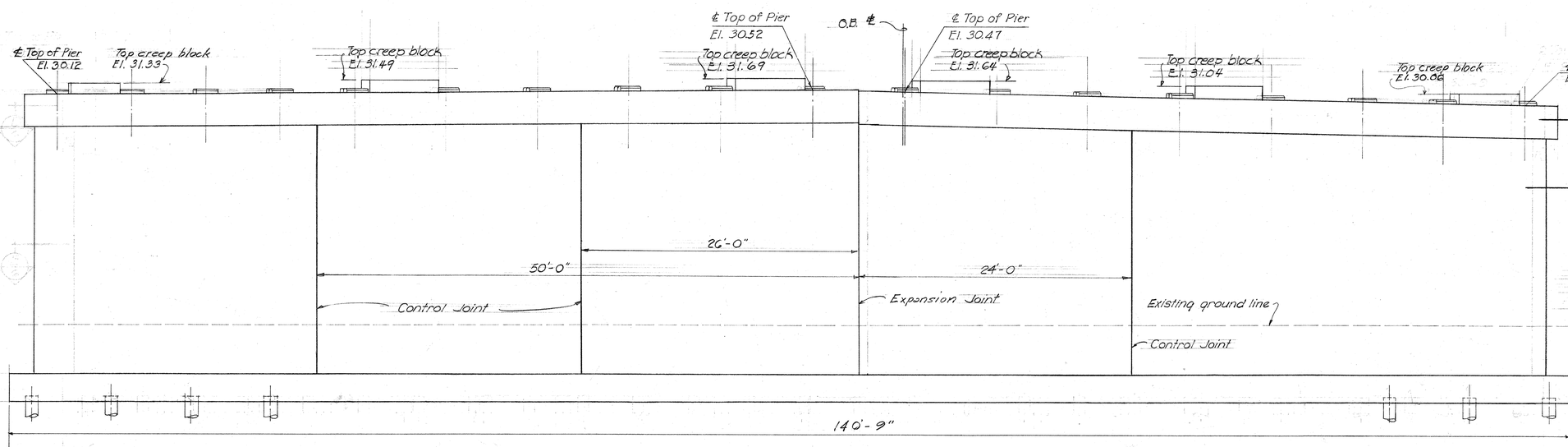
Scale 3/16" = 1'-0"

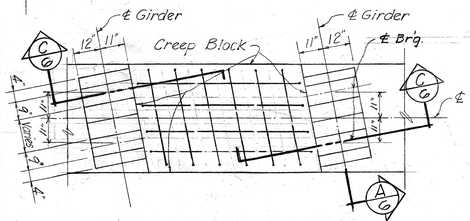
Note: Elev. taken at top conc. seat at ℄ brg.

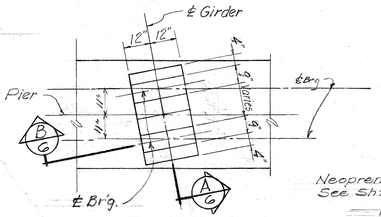


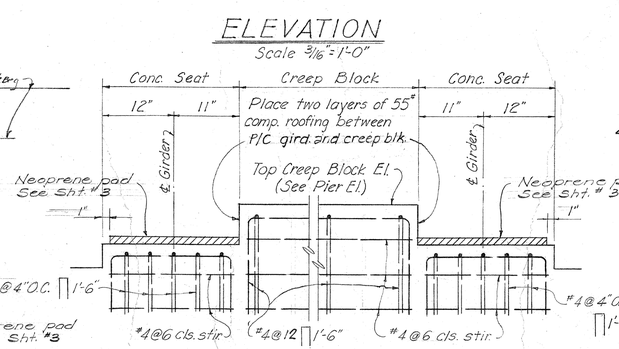
TYPICAL PIER SECTION

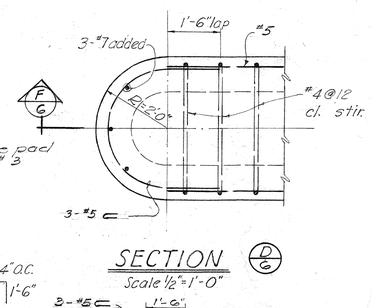
Scale 3/8" = 1'-0"

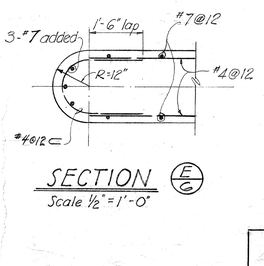


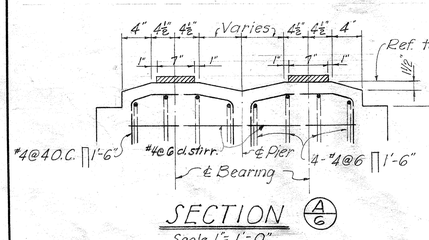


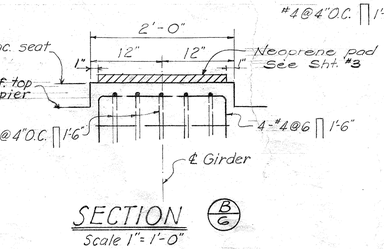


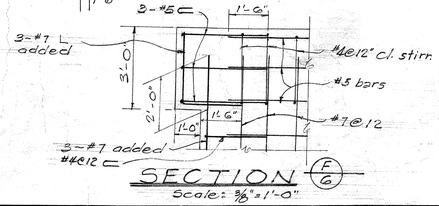












SURVEY PLOTTED BY: DATE
DRAWN BY: " " "
TRACED BY: HK (L.A.) 6/65
DESIGNED BY: " " " 6/65
QUANTITIES BY: J.F.S. & L.A. 6/65
CHECKED BY: J.F.S. & L.A. 6/65

ORIGINAL PLAN
NOTE BOOK
No.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA PALOLO DRAINAGE CANAL BRIDGE

STRUCTURE No. 2

PIER DETAILS

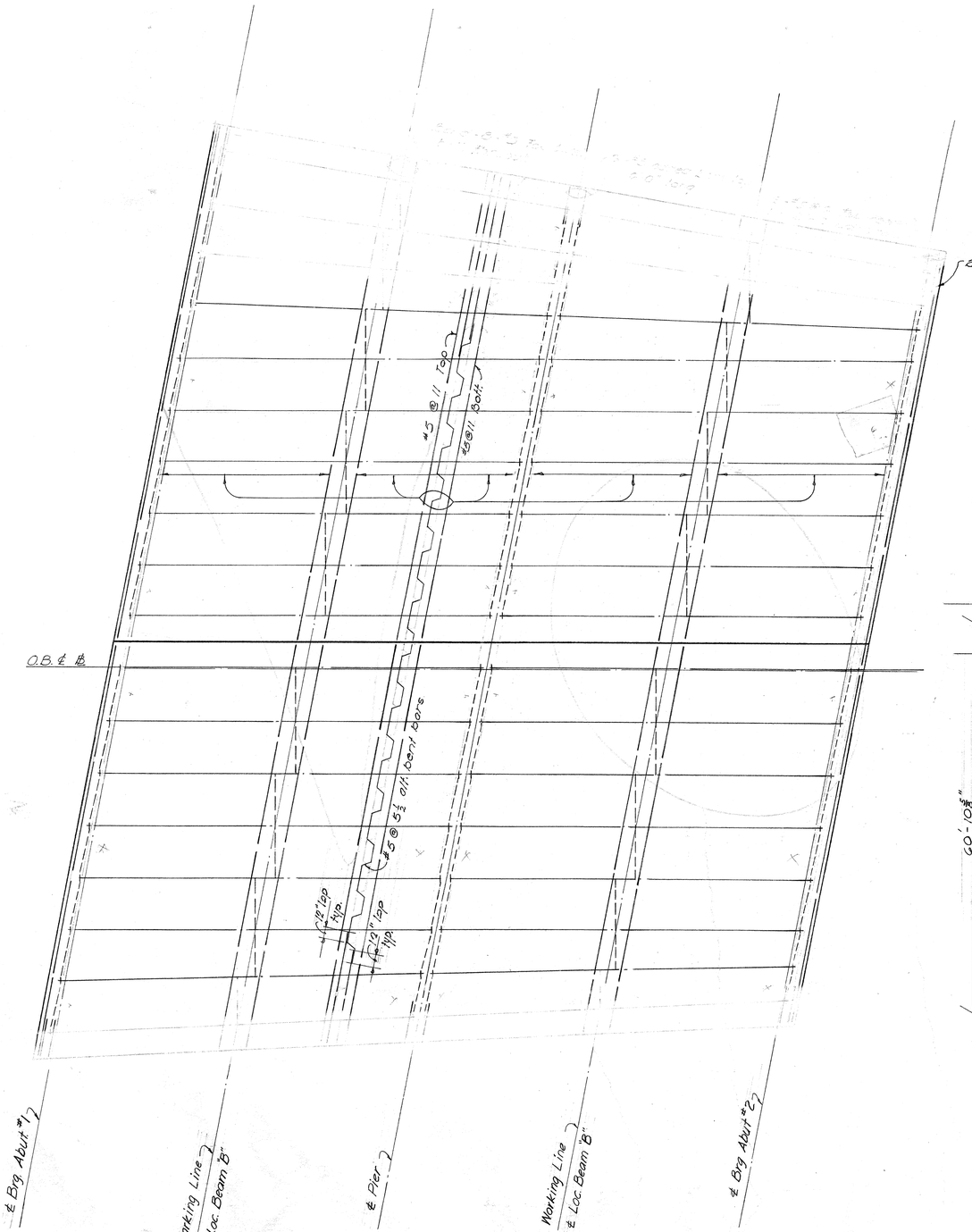
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
FAI PROJ. No. I-HI-1(5):24, UNIT 2
SCALE: AS SHOWN DATE: JUNE 1965

SHEET No. 6 OF 11 SHEETS

1666

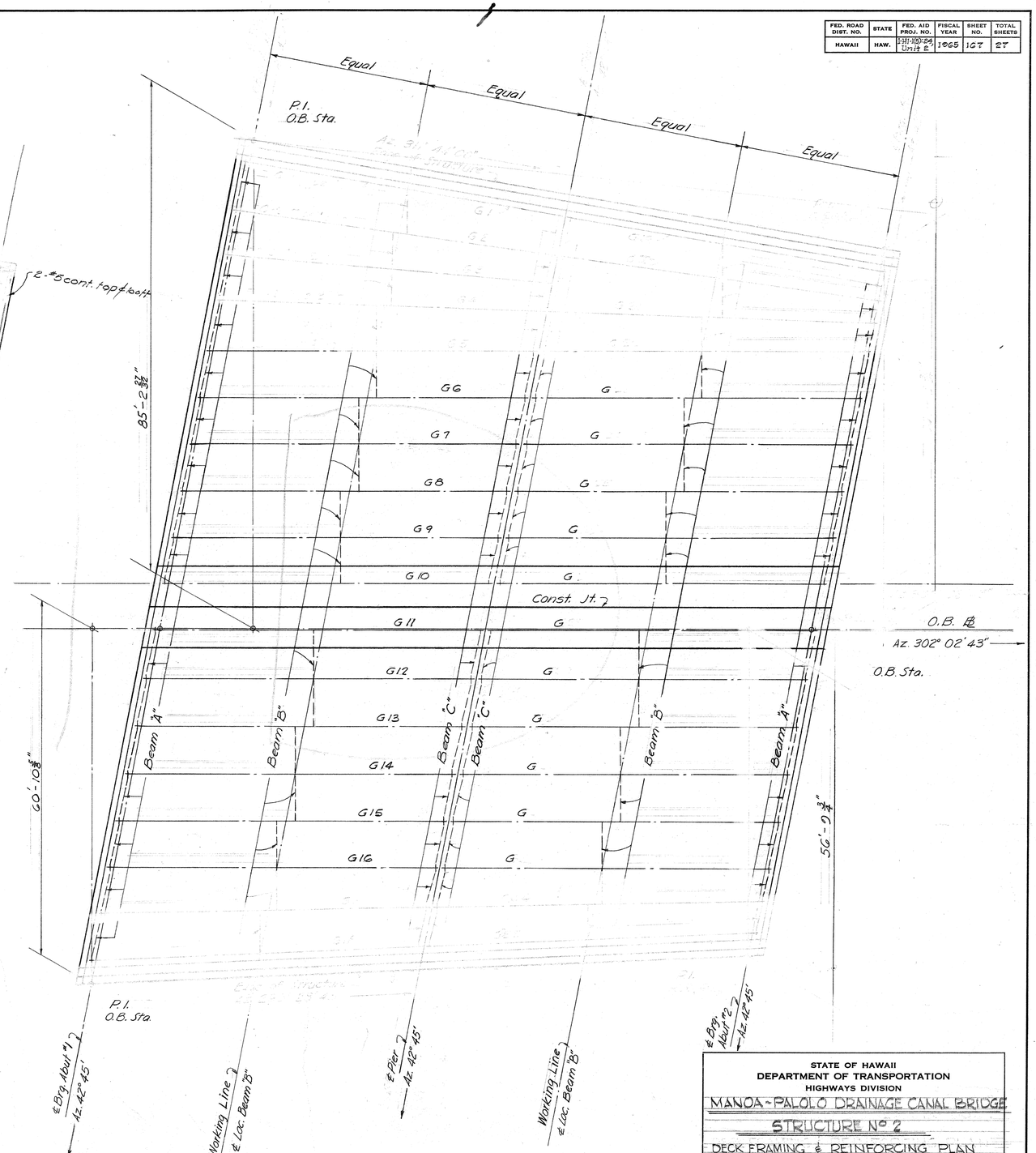
PRINTED ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	167	27



DECK TRANSVERSE REINFORCEMENT PLAN

Scale: 1" = 10'-0"



NOTE!! For Girder length & type See Girder Schedule, Sht #

FRAMING PLAN

Scale: 1" = 10'-0"

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

PRINTED ON CLEARPRINT 1000-H

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA-PALOLO DRAINAGE CANAL BRIDGE

STRUCTURE NO 2

DECK FRAMING & REINFORCING PLAN

INTERSTATE HIGHWAY (LUNALILO FREEWAY)

FAI PROJ. NO. I-HI-1(5): 24, UNIT 2

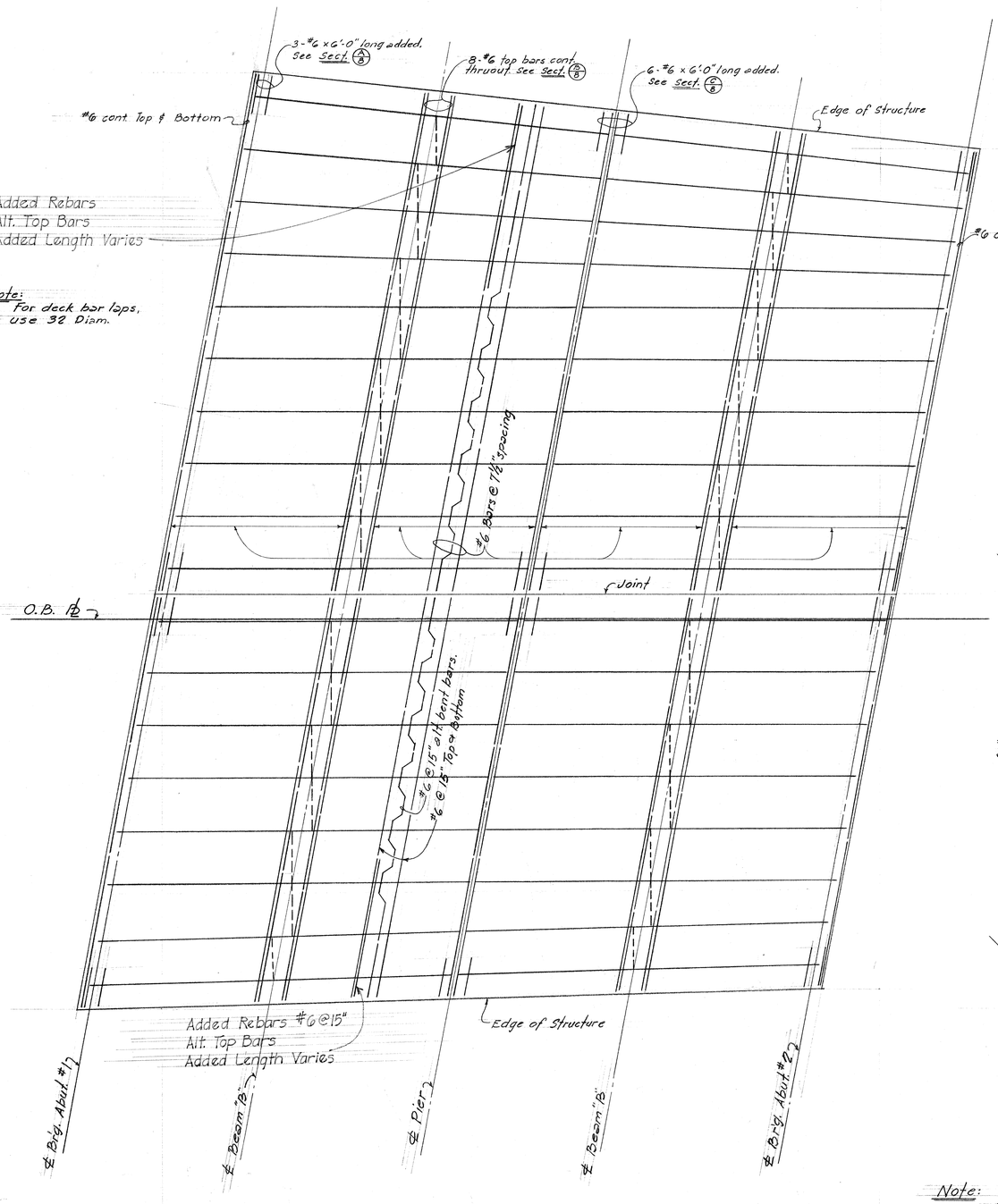
SCALE: AS SHOWN DATE:

SHEET No. 7 OF 11 SHEETS

167

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	167A	276

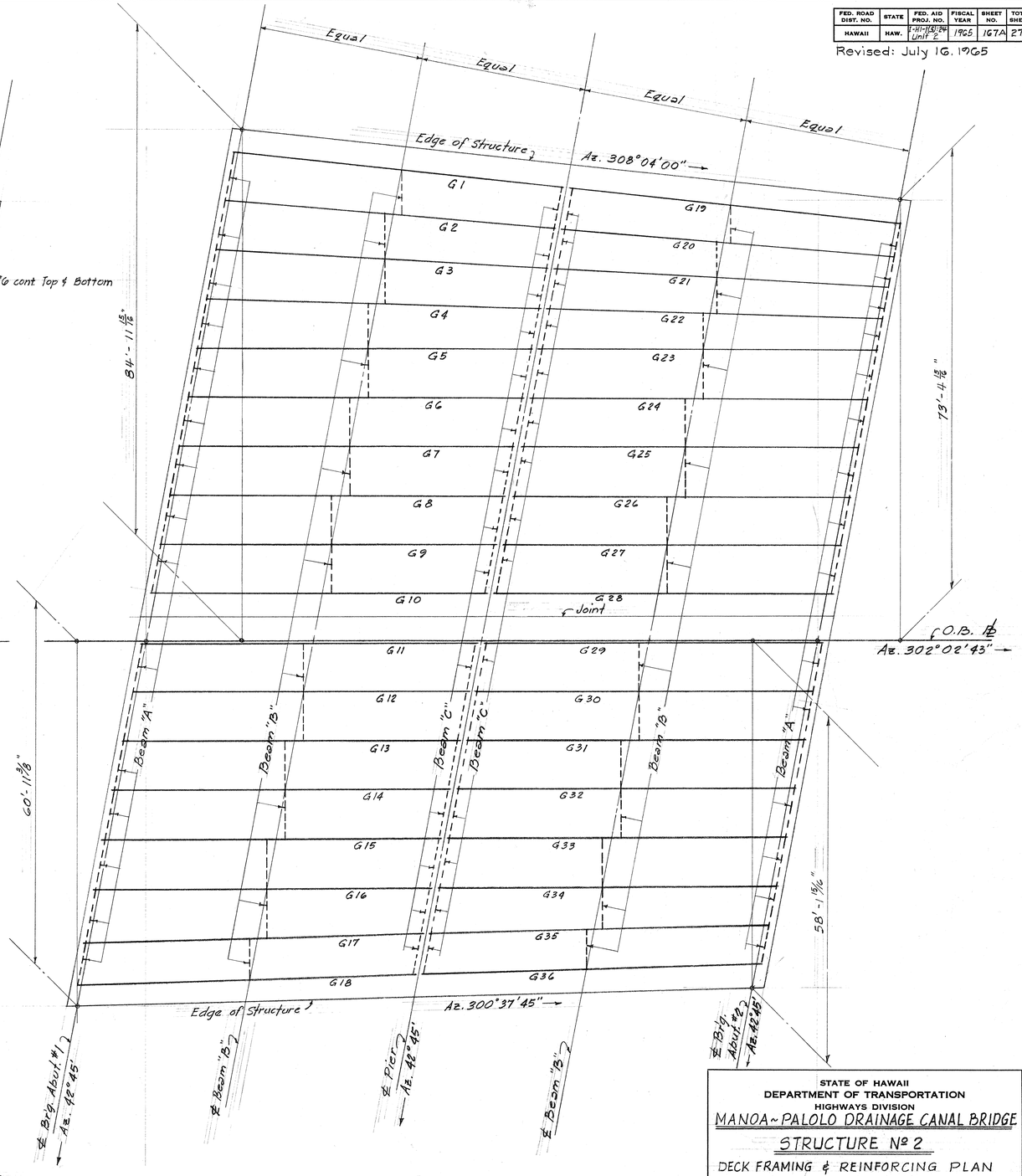
Revised: July 16, 1965



Note:
For deck bar laps, use 32 Diam.

DECK TRANSVERSE REINFORCEMENT PLAN

Scale: 1" = 10'-0"



Note:
For Girder length & type see Girder Schedule, sheet #9.

FRAMING PLAN

Scale: 1" = 10'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 6/65
	DRAWN BY T.E.	" " 6/65
	TRACED BY	" " " "
	DESIGNED BY V.C. (L.A.)	" " 6/65
NOTE BOOK	QUANTITIES BY	" " " "
	CHECKED BY L.T.O. & L.A.	" " 6/65
No.		

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA-PALOLO DRAINAGE CANAL BRIDGE

STRUCTURE Nº 2

DECK FRAMING & REINFORCING PLAN

INTERSTATE HIGHWAY (LUNALILO FREEWAY)
FAI PROJ. Nº I-HI-1(5): 24, UNIT 2
SCALE: AS SHOWN DATE: JUNE 1965

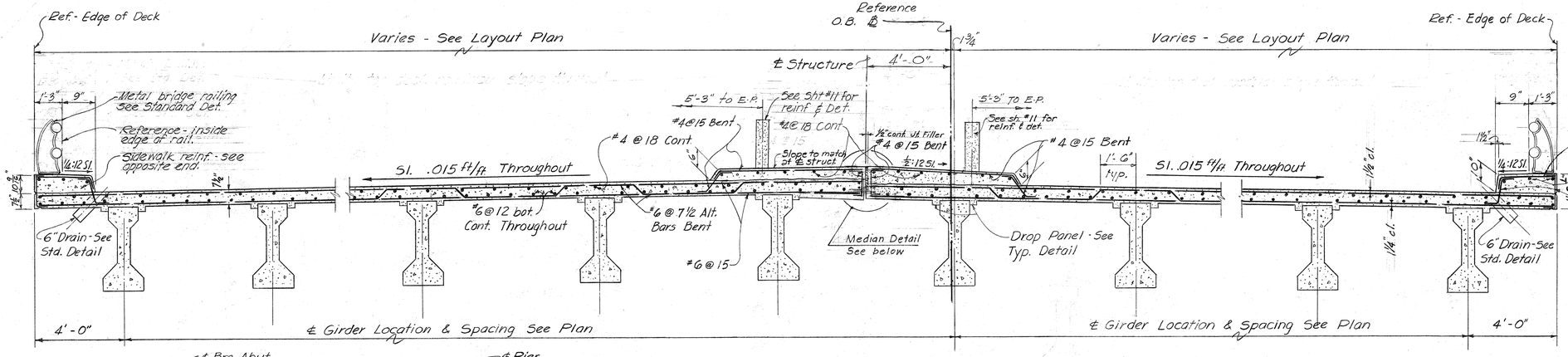
SHEET No. 7 OF 11 SHEETS

167A

D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)-24 Unit 2	1965	168A	276

Revised: July 16, 1965



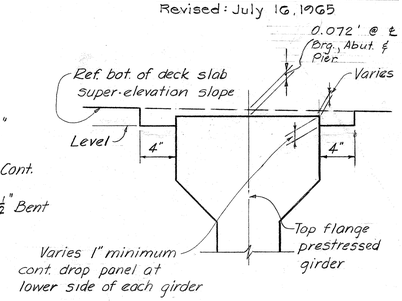
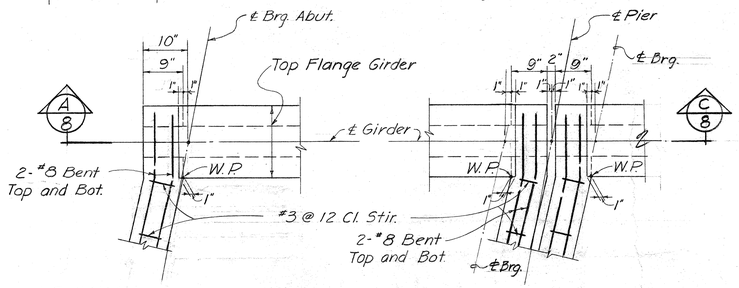
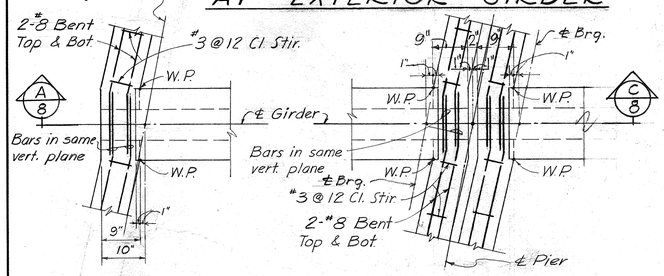


DIAGRAM SHOWING TYPICAL DROP PANEL AT EACH GIRDER

Scale 1½" = 1'-0"



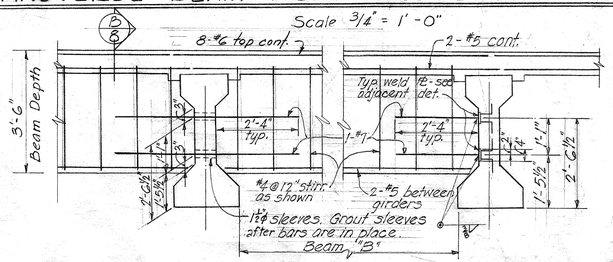
AT EXTERIOR GIRDER



AT INTERIOR GIRDER

TRANSVERSE BM. "A" TRANSVERSE BM. "C"

PLAN ~ TYPICAL ARRANGEMENT & LOCATION OF TRANSVERSE BEAM REINFORCEMENT AT GIRDERS

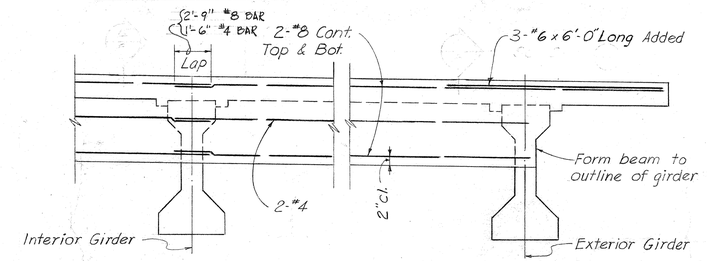


AT INTERMEDIATE AT ENDS

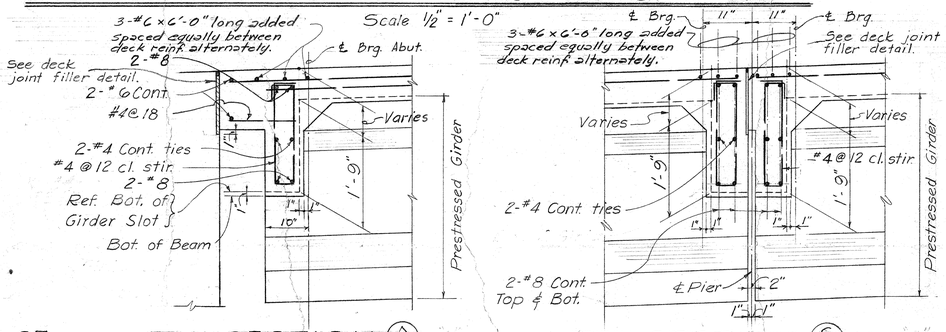
TYPICAL BEAM "B" DETAIL

Scale ½" = 1'-0"

NORMAL SECTION ~ Scale 3/8" = 1'-0"



END ELEVATION ~ TYPICAL TRANSVERSE BEAM "A" & "C"

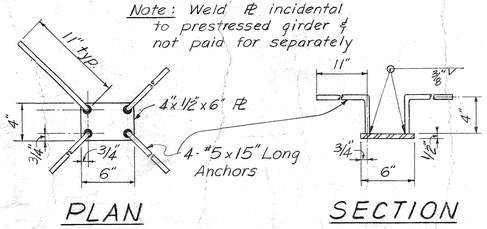


SECTION A/8

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

SECTION C/8

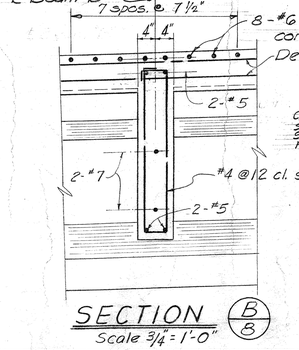
Scale: 3/4" = 1'-0"



PLAN SECTION

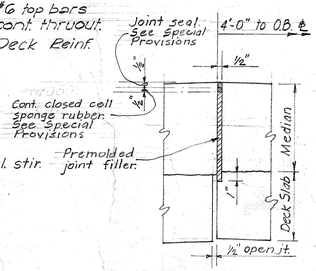
WELD PLATE DETAIL

Scale 1½" = 1'-0"



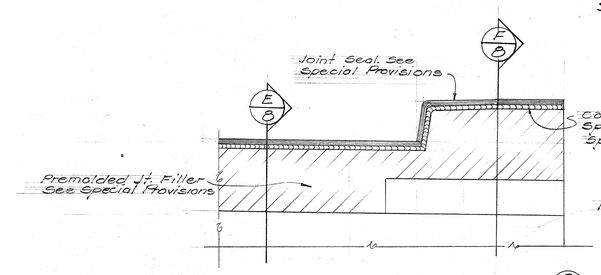
SECTION B/8

Scale 3/4" = 1'-0"



MEDIAN DETAIL

Scale: 1½" = 1'-0"

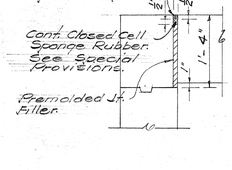


TYPICAL DETAIL D/8

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

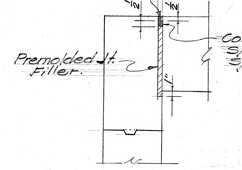
Note!!

Closed cell sponge rubber shall conform to specification HH-F-341a, type I, class A.



SECTION E/8

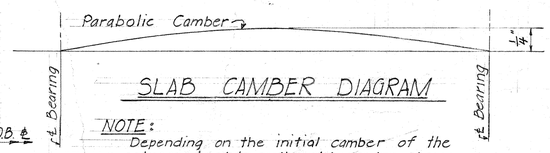
Scale: 3/4" = 1'-0"



SECTION F/8

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

TYPICAL DECK JOINT FILLER DETAIL



SLAB CAMBER DIAGRAM

NOTE:

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

		DATE
ORIGINAL PLAN	SURVEY PLOTTED BY	
	DRAWN BY	" " 7/65
	TRACED BY	" " 7/65
	DESIGNED BY	V.C. (H.E.A.) 6/65
NOTE BOOK	QUANTITIES BY	T.T.S. & E.L.A. 6/65
No.	CHECKED BY	T.T.S. & E.L.A. " "

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA-PALOLO DRAINAGE CANAL BRIDGE

STRUCTURE No 2

NORMAL DECK SECTION & BEAM DETAILS

INTERSTATE HIGHWAY (LUNALILO FREEWAY)
FAI PROJ. No I-HI-1(2):24, UNIT 2

SCALE: AS SHOWN DATE: JUNE 1965

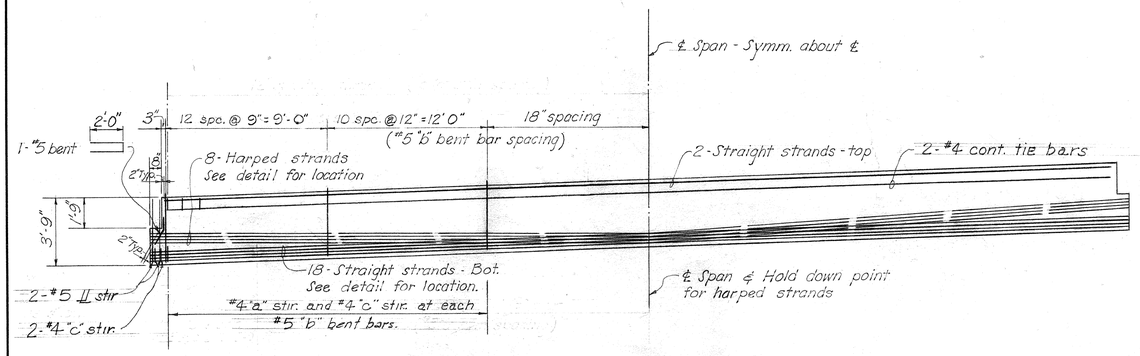
SHEET No. 8 OF 11 SHEETS

168A

PRINTED ON CLEARPRINT 1000-H

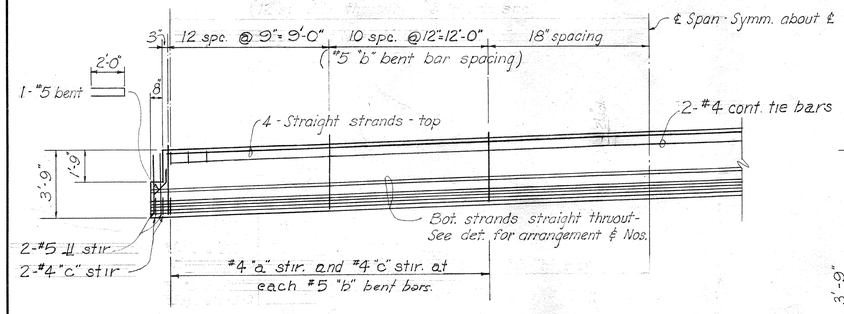
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	169A	276

Revised: July 16, 1965



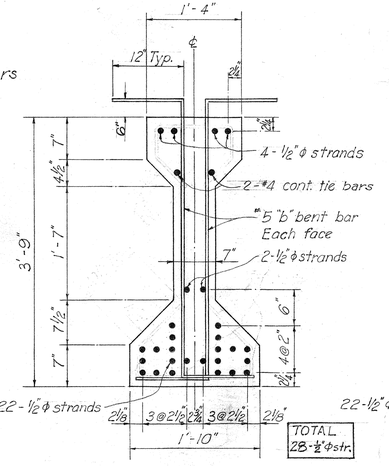
TYPE "A" - PRESTRESSED GIRDER

Scale 1/4" = 1'-0"

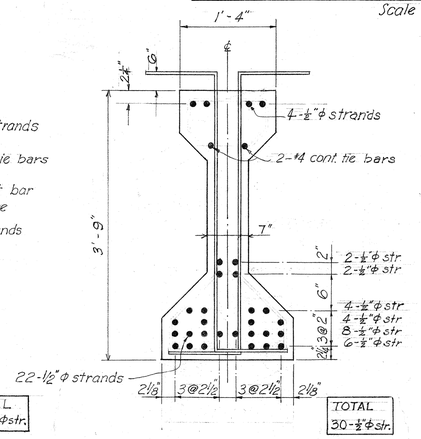


TYPE "B" OR "C" - PRESTRESSED GIRDER

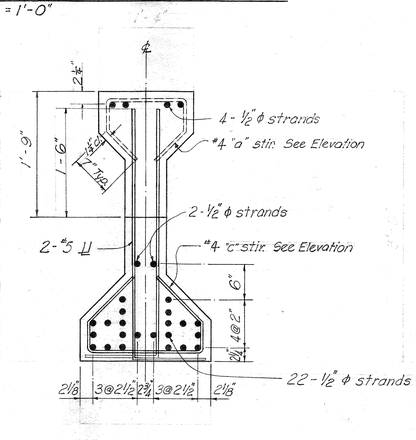
Scale 1/4" = 1'-0"



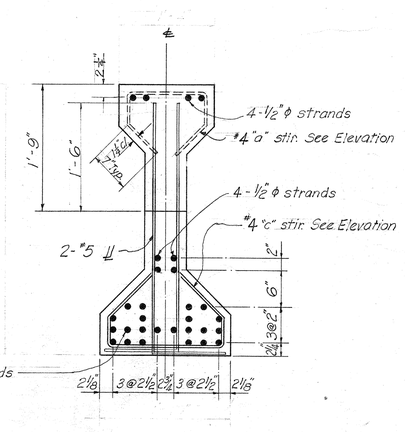
AT ℄ SPAN - TYPE "B"



AT ℄ SPAN - TYPE "C"



AT ENDS - TYPE "B"



AT ENDS - TYPE "C"

TYPICAL TYPE "A" GIRDER SECTIONS

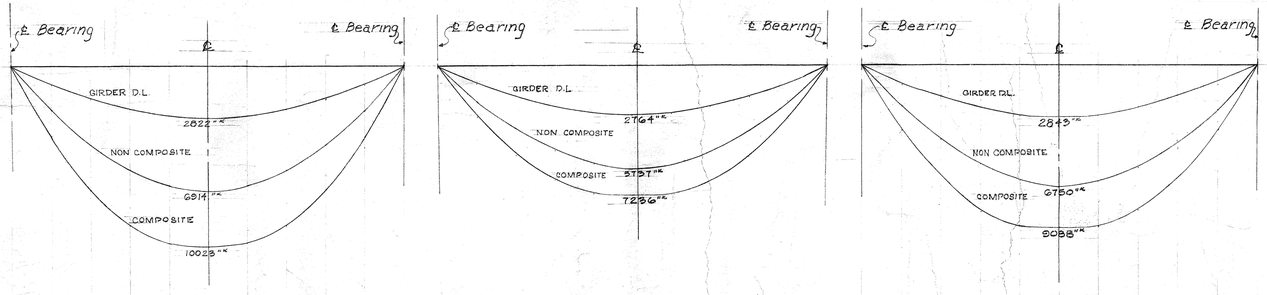
Scale 1" = 1'-0"

AT ℄ SPAN — AT ENDS

TYPICAL GIRDER SECTIONS - TYPE "B" & "C"

Scale 1" = 1'-0"

NOTE: The submittal of preliminary plans and engineering calculations at least ten (10) working days prior to bid opening for an alternate prestressing strand arrangement, as called for in Subarticle 4.02.1 of the Special Provisions, shall be waived for the prestressed concrete girders for the Manoa-Palolo Drainage Canal Bridge.



PRESTRESSED GIRDER MOMENT DIAGRAMS

SCALE: HORIZONTAL = 1" = 10'
VERTICAL = 1" = 4000"ᵏ

GIRDER SCHEDULE

GIRDER DESIGNATION	TYPE	*GIRDER LENGTH	STRANDS
G-1	C	54' - 2 7/16"	30
G-2	C	54' - 5 1/8"	30
G-3	C	54' - 7 13/16"	30
G-4	C	54' - 10 1/16"	30
G-5 Thru G-16 Incl.	A	55' - 0 15/16"	28
G-17	C	55' - 2 7/16"	30
G-18	C	55' - 4 13/16"	30
G-19	C	54' - 3 1/16"	30
G-20	B	54' - 5 1/8"	28
G-21	B	54' - 7 7/16"	28
G-22	B	54 - 9 13/16"	28
G-23 Thru G-34 Incl.	A	55' - 0 15/16"	28
G-35	C	55' - 2 7/16"	30
G-36	C	55 - 4 7/16"	30

* GIRDER LENGTHS ARE HORIZONTAL DISTANCES FROM BEARING TO BEARING

ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	
	DRAWN BY	6/66
NOTE BOOK	TRACED BY	" " " "
No.	DESIGNED BY	6/66
	QUANTITIES BY	6/65
	CHECKED BY	6/65

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA PALOLO DRAINAGE CANAL BRIDGE
STRUCTURE No 2
GIRDER DETAILS

INTERSTATE HIGHWAY (LUNALILO FREEWAY)
FAI PROJ. No I-HI-1(5): 24, UNIT 2
SCALE: AS SHOWN DATE: JUNE 1965

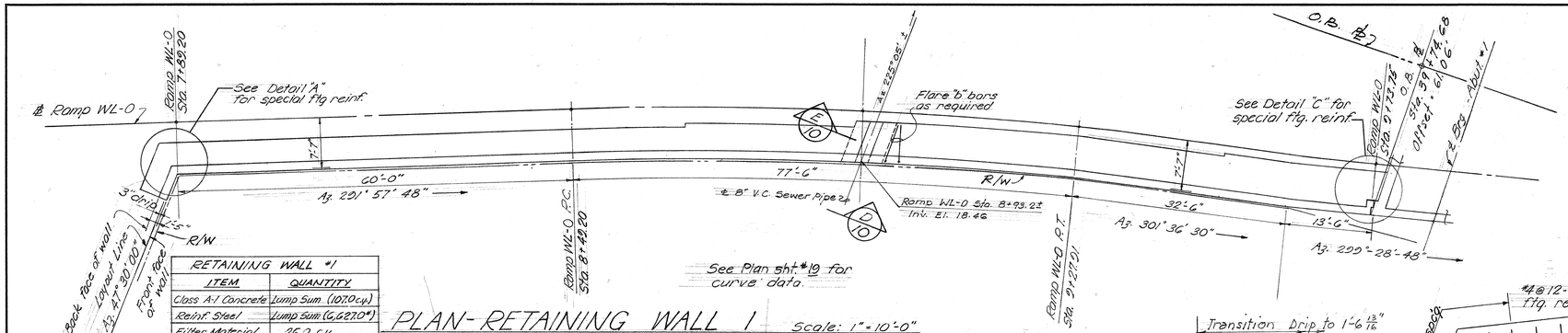
SHEET No. 9 OF 11 SHEETS

169A

PRINTED ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	170	27

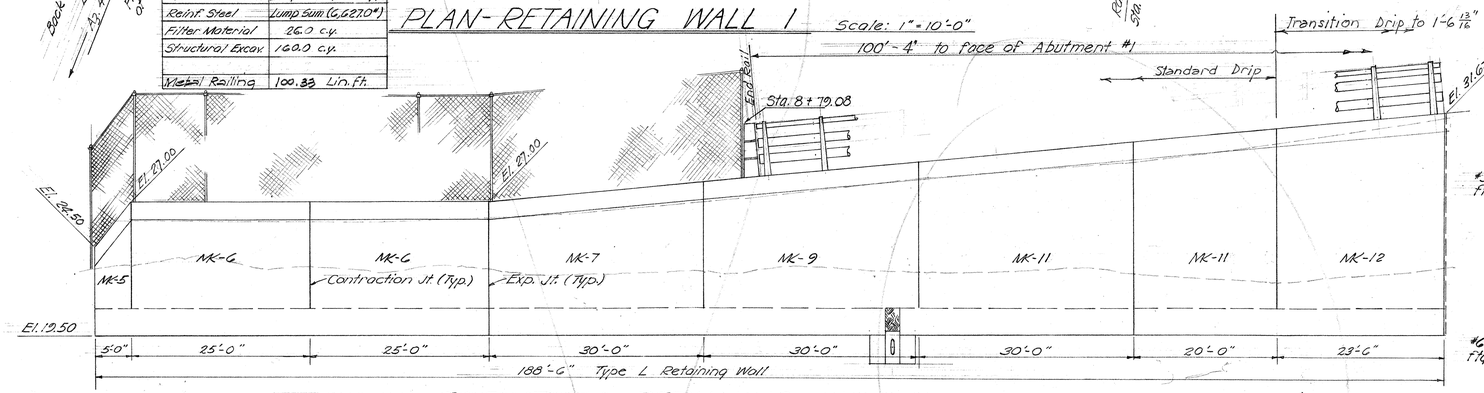
RETAINING WALL #4	
ITEM	QUANTITY
Class A-1 Concrete	Lump Sum (29.0 cy.)
Reinf. Steel	Lump Sum (2,300.0#)
Filter Material	8.5 c.y.
Structural Excav.	39.0 c.y.
Metal Railing	28.83 Lin. Ft.



RETAINING WALL #1	
ITEM	QUANTITY
Class A-1 Concrete	Lump Sum (107.0 cy.)
Reinf. Steel	Lump Sum (6,627.0#)
Filter Material	26.0 c.y.
Structural Excav.	160.0 c.y.
Metal Railing	100.33 Lin. Ft.

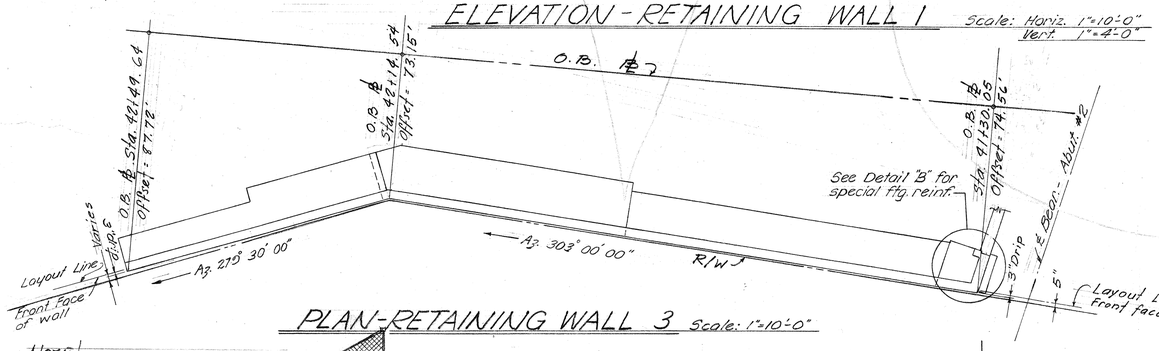
PLAN - RETAINING WALL 1

Scale: 1" = 10'-0"



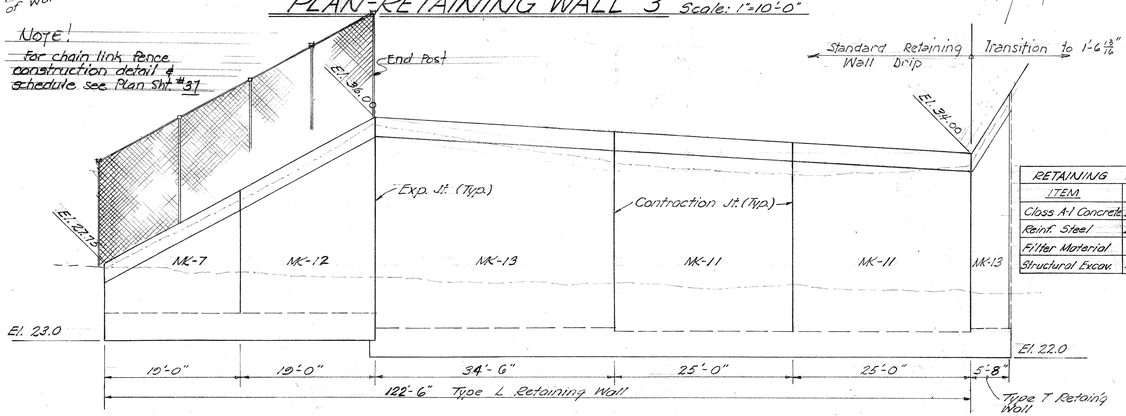
ELEVATION - RETAINING WALL 1

Scale: Horiz. 1" = 10'-0" Vert. 1" = 4'-0"



PLAN - RETAINING WALL 3

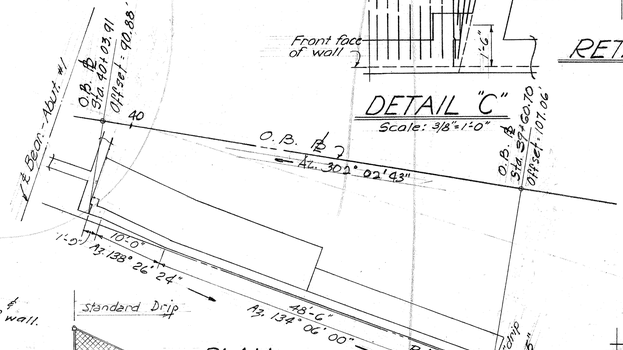
Scale: 1" = 10'-0"



RETAINING WALL #3	
ITEM	QUANTITY
Class A-1 Concrete	Lump Sum (94.0 cy.)
Reinf. Steel	Lump Sum (5,591.0#)
Filter Material	24.0 c.y.
Structural Excav.	140.5 c.y.

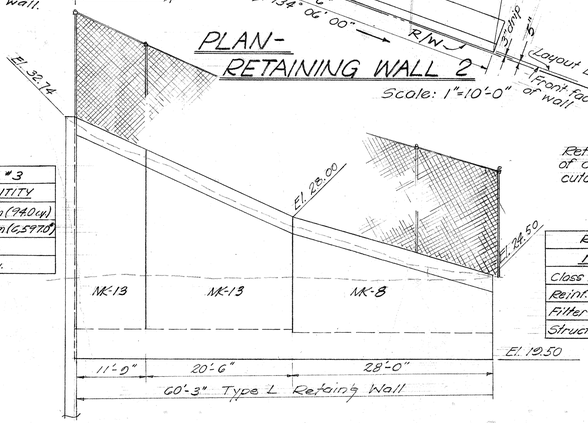
ELEVATION - RETAINING WALL 3

Scale: Horiz. 1" = 10'-0" Vert. 1" = 4'-0"



PLAN - RETAINING WALL 2

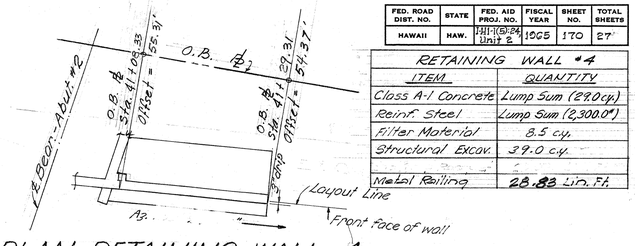
Scale: 1" = 10'-0"



RETAINING WALL #2	
ITEM	QUANTITY
Class A-1 Concrete	Lump Sum (38.0 cy.)
Reinf. Steel	Lump Sum (2,650.0#)
Filter Material	6.5 c.y.
Structural Excav.	77.0 c.y.

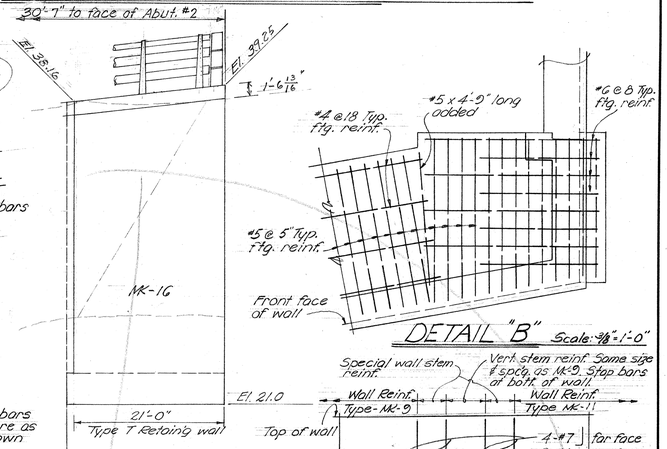
ELEVATION - RETAINING WALL 2

Scale: Horiz. 1" = 10'-0" Vert. 1" = 4'-0"



PLAN - RETAINING WALL 4

Scale: 1" = 10'-0"



DETAIL "A"

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

DETAIL "C"

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

DETAIL "B"

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

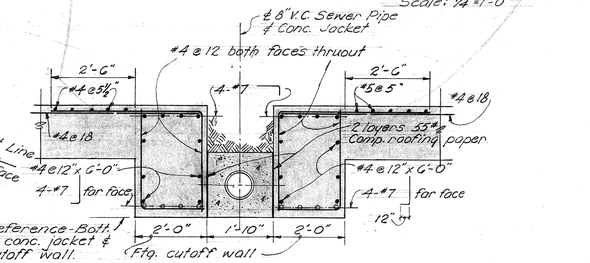
ELEVATION RETAINING WALL 4

Scale: Horiz. 1" = 10'-0" Vert. 1" = 4'-0"

NOTE: Extend all stem horiz. reinf. thruout the entire wall. See Typical Retaining Wall Det.

ELEVATION (D/10)

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



SECTION (E/10)

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA-PALOLO DRAINAGE CANAL BRIDGE

STRUCTURE Nº 2

RETAINING WALL DETAILS

INTERSTATE HIGHWAY (LUNALILO FREEWAY)

FAI PROJ. Nº I-HI-1(6):24, UNIT 2

SCALE: AS SHOWN DATE:

SHEET No. 10 OF 11 SHEETS

170

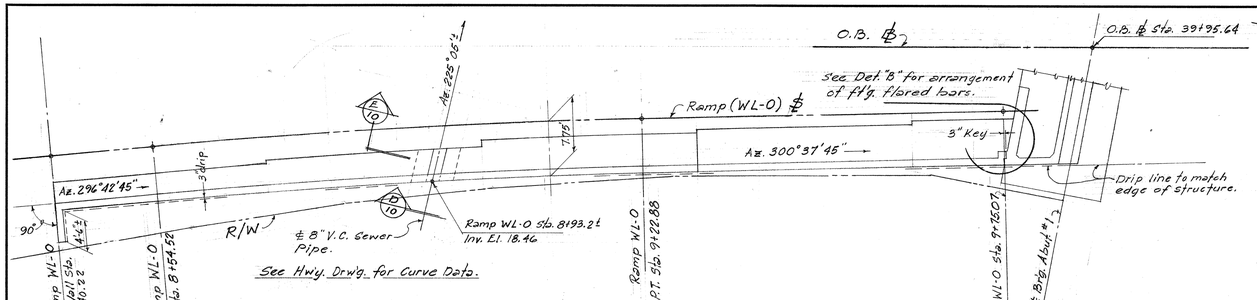
PRINTED ON CLEARPRINT 1000-H

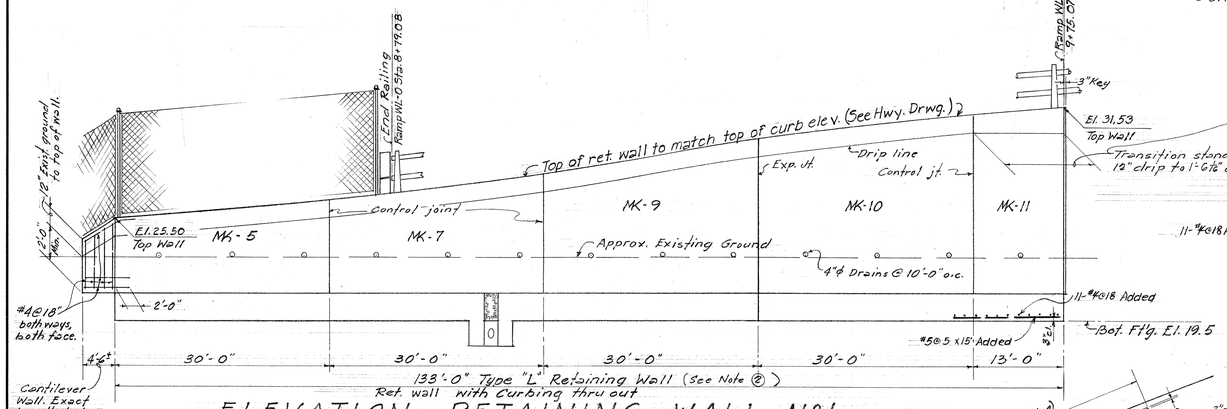
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-HI-1(5)24 Unit 2	1965	170A	276

Revised: July 16, 1965

PLAN ~ RETAINING WALL Nº 1

Scale: 1"=10'-0"



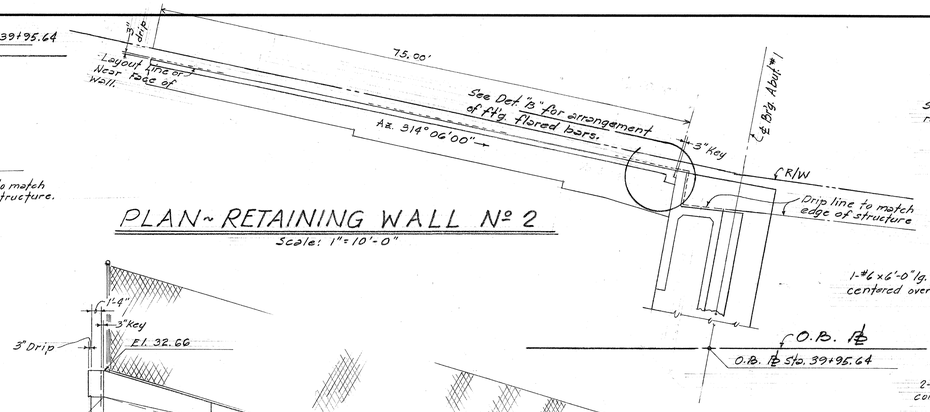


ELEVATION ~ RETAINING WALL Nº 1

Scale: 1"=10'-0" Horizonal
1"=4'-0" Verfical

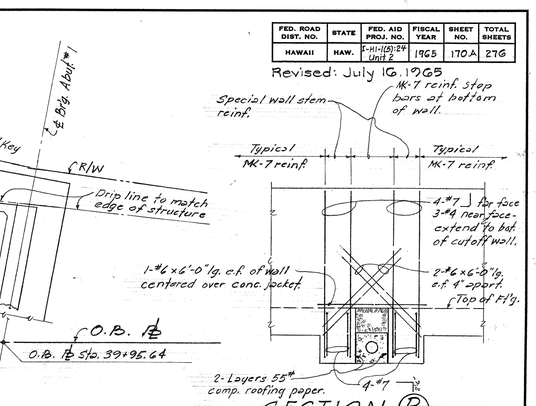
PLAN ~ RETAINING WALL Nº 3

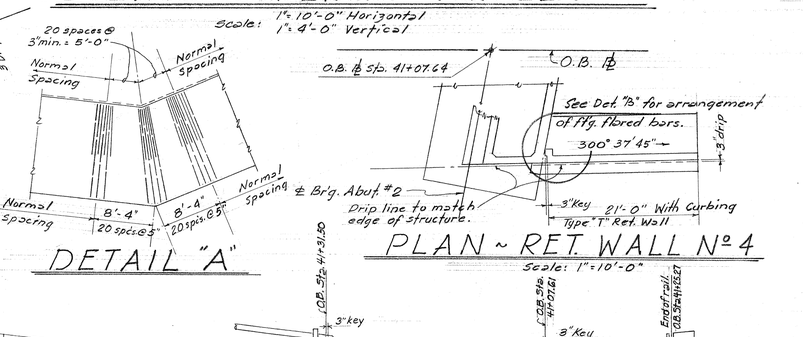
Scale: 1"=10'-0"



ELEVATION ~ RETAINING WALL Nº 2

Scale: 1"=10'-0" Horizontal
1"=4'-0" Vertical

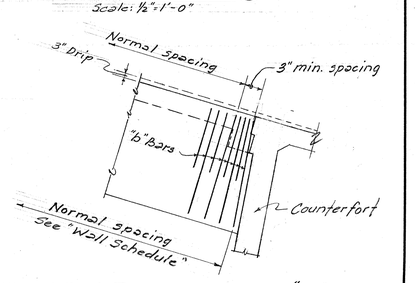




DETAIL "A"

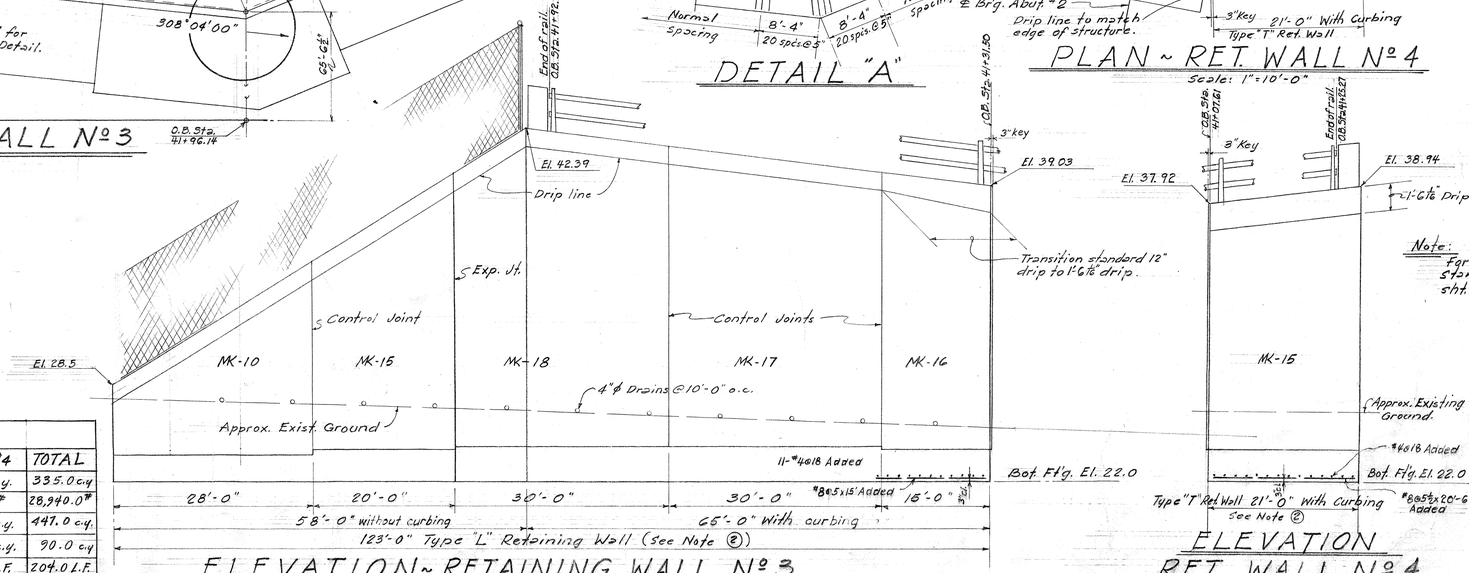
PLAN ~ RET WALL Nº 4

Scale: 1"=10'-0"



TYP. DETAIL "B"

Scale: ¼"=1'-0"



ELEVATION ~ RETAINING WALL Nº 3

Scale: 1"=10'-0" Horizontal
1"=4'-0" Vertical

ELEVATION RET. WALL Nº 4

Scale: 1"=10'-0" Horizontal
1"=4'-0" Vertical

Note:
For Type "T" Ret. Wall Standard see PLAN sht. Nº 239

NOTE:

① For chain link fence construction detail & schedule, see PLAN sht. #37.
② Retaining Wall lengths given along near face of wall.

ESTIMATED QUANTITIES

ITEM	RET. WALL #1	RET. WALL #2	RET. WALL #3	RET. WALL #4	TOTAL
Class A-1 Concrete	79.0 c.y.	44.0 c.y.	186.0 c.y.	26.0 c.y.	335.0 c.y.
Reinf. Steel	5570.0#	2940.0#	17,800.0#	2630.0#	28,940.0#
Structural Exc.	111.0 c.y.	74.0 c.y.	236.0 c.y.	26.0 c.y.	447.0 c.y.
Filter Material	21.0 c.y.	10.0 c.y.	50.0 c.y.	9.0 c.y.	90.0 c.y.
Metal Railing	104.0 L.F.		71.0 L.F.	29.0 L.F.	204.0 L.F.

ORIGINAL PLAN
SURVEY PLOTTED BY: TS — DATE: 7/65
DRAWN BY: " "
TRACED BY: " "
DESIGNED BY: H.K.T.H.A. — DATE: 7/65
NOTE BOOK: " "
QUANTITIES BY: K.T.H.A.
No. " "
CHECKED BY: T.O.F.L.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA PALOLO DRAINAGE CANAL BRIDGE
STRUCTURE Nº 2

RETAINING WALL DETAILS

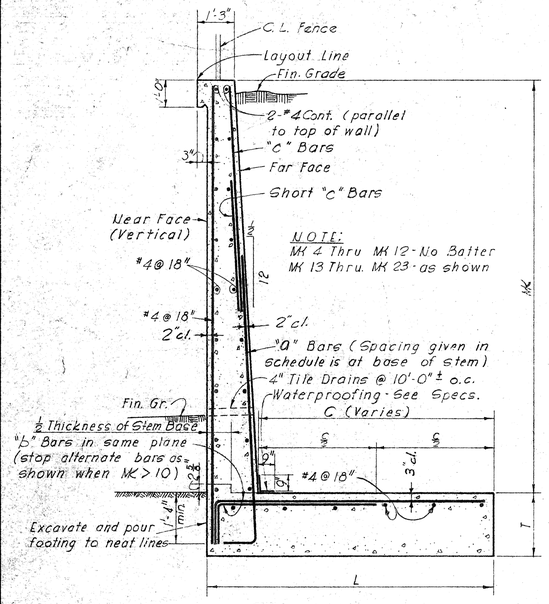
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
FAI PROJ. Nº I-HI-1(5); 24, UNIT 2
SCALE: AS SHOWN — DATE: JUNE 1965

SHEET No. 10 OF 11 SHEETS

170A

PRINTED ON CLEARPRINT 1000-H

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	HI-I(5)-24 Unit 2	1965	171	27



TYPICAL SECTION TYPE "L" WALL

TYPE "L" WALL SCHEDULE

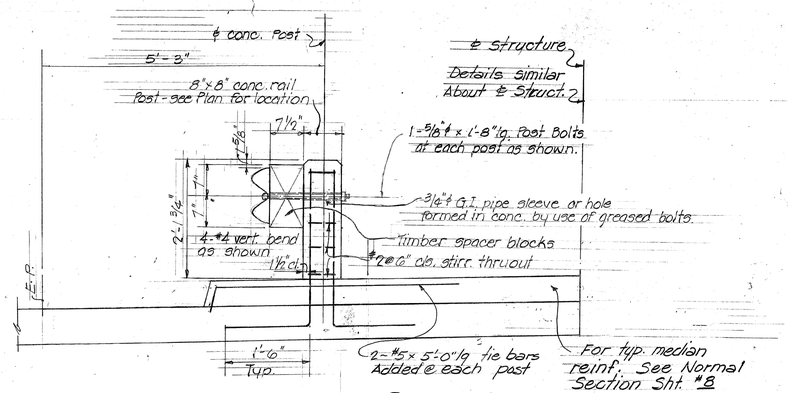
	MK	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
***	L	3'-6"	4'-0"	4'-6"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-6"	8'-0"	9'-0"	10'-0"	11'-0"	12'-3"	13'-6"	14'-9"	16'-0"	18'-0"	20'-0"	22'-0"
	T	18"	18"	18"	18"	18"	18"	18"	18"	20"	20"	22"	22"	22"	24"	24"	24"	24"	26"	26"	30"
*	"c" Bars	—	—	—	—	—	—	—	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#6	#6	#7
**	"a" Bars	#3@12"	#3@12"	#4@12"	#3@6"	#4@6"	#4@5½"	#5@6"	#5@5½"	#6@6"	#6@8"	#6@6"	#6@5½"	#6@5"	#7@6"	#7@5"	#8@6"	#8@5"	#9@6"	#9@5½"	#10@6"
	"b" Bars	#3@12"	#3@12"	#4@12"	#3@6"	#4@6"	#4@5½"	#5@6"	#5@5"	#6@6"	#8@8"	#8@6"	#8@5½"	#8@5"	#9@6"	#8@5"	#9@6"	#8@5"	#10@5"	#11@5½"	#11@5½"

NOTE: See Typ Retaining Wall Details, Sht. #3-1 of 5 - For Vertical Reinforcing Steel Arrangements.

* See Vert. Reinforcing Steel Arrangement on Sht. #3-1 of 5 for reinforcing bar length and arrangement.

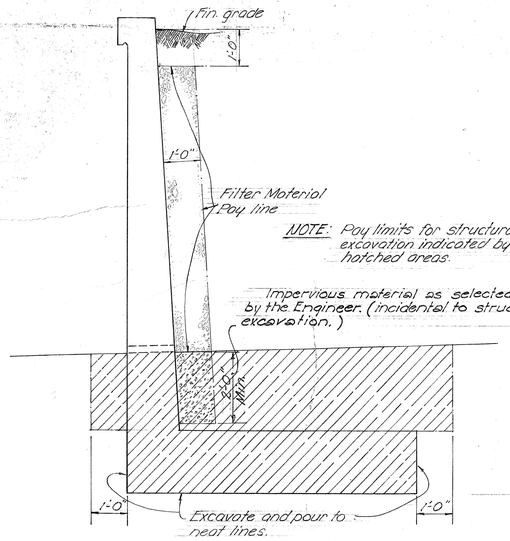
** See Vert. Reinforcing Steel Arrangement on Sht. #3-1 of 5 for length, arrangement and spacing of combined "a" and short "a" bars.

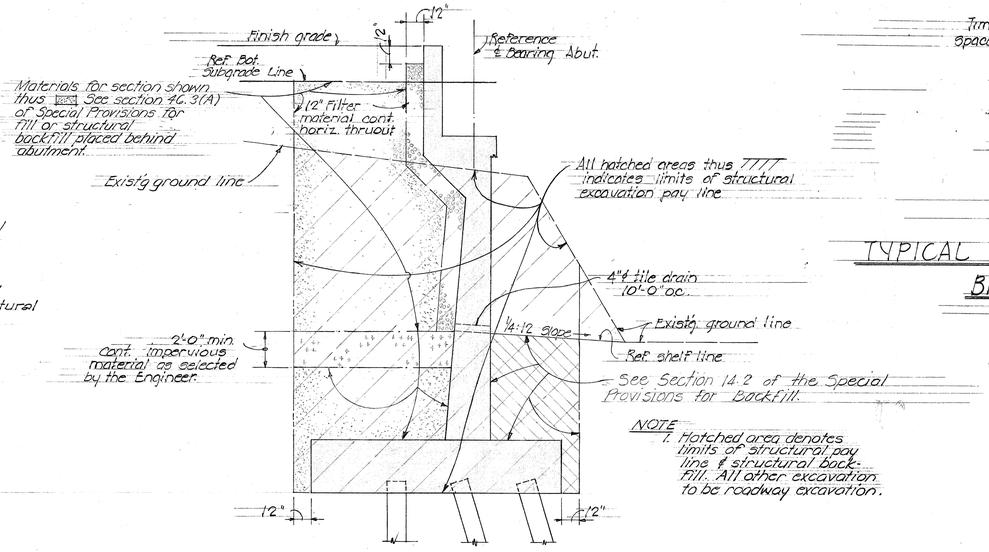
*** In locating Vert. Reinforcing Steel Arrangement, MK numbers as indicated on the schedule refer to the corresponding "h" as indicated on Sht. #3-1 of 5



SECTION (A-11)

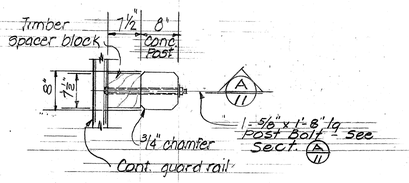
NOTE!! For alternate guard ℄ detail see plan sheet #





TYPICAL SECTION - ABUTMENT WALL EXCAVATION PAY LINE & BACKFILL

scale: ¼" = 1'-0"



PLAN

TYPICAL GUARD RAIL POST AT BRIDGE MEDIAN

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA PALOLO DRAINAGE CANAL BRIDGE
STRUCTURE № 2
LAYOUT PLAN & SECTION
INTERSTATE HIGHWAY (H-1 FREEWAY)
FAI PROJ. № 1-HI-1(5): 24, UNIT 2
SCALE AS SHOWN DATE:

SHEET No. 11 OF 11 SHEETS

171

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RII-1(5)24 UNIT 2	1968	171 A	276

Revised: July 16, 1965

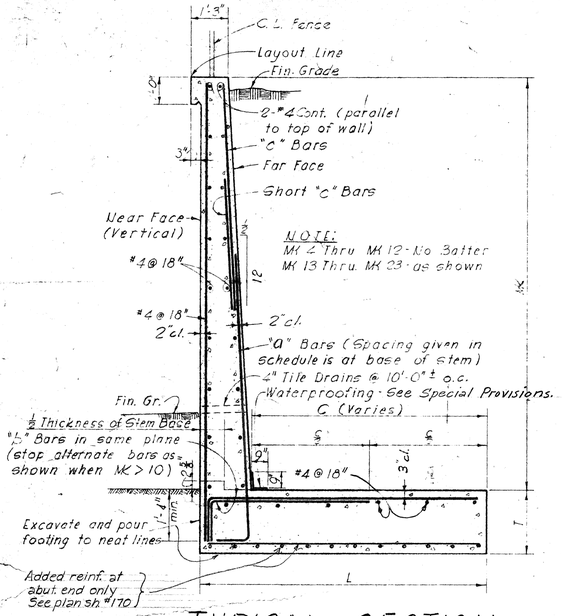
***	TYPE "L" WALL SCHEDULE																				
	MK	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	L	3'-6"	4'-0"	4'-6"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-6"	8'-0"	9'-0"	10'-0"	11'-0"	12'-3"	13'-6"	14'-9"	16'-0"	18'-0"	20'-0"	22'-0"
	T	18"	18"	18"	18"	18"	18"	18"	18"	20"	20"	22"	22"	22"	24"	24"	24"	24"	26"	28"	30"
*	"C" Bars	—	—	—	—	—	—	—	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#6	#6	#7
**	"a" Bars	#3@12"	#3@12"	#4@12"	#3@6"	#4@6"	#4@5½"	#5@6"	#5@5"	#6@6"	#6@8"	#6@6"	#6@5½"	#6@5"	#7@6"	#7@5"	#8@6"	#8@5"	#9@6"	#9@5½"	#10@6
	"b" Bars	#3@12"	#3@12"	#4@12"	#3@6"	#4@6"	#4@5½"	#5@6"	#5@5"	#6@6"	#8@8"	#8@6"	#8@5½"	#8@5"	#9@6"	#8@5"	#9@6"	#8@5"	#10@5"	#11@5½"	#11@5½"

NOTE: See Typ. Retaining Wall Details, Sht. #9-1 of 5 - For Vertical Reinforcing Steel Arrangements.

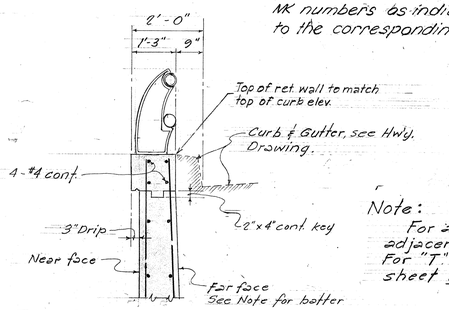
* See Vert. Reinforcing Steel Arrangement on Sht. #9-1 of 5 for reinforcing bar length and arrangement.

** See Vert. Reinforcing Steel Arrangement on Sht. #9-1 of 5 for length, arrangement and spacing of combined "a" and short "a" bars.

*** In locating Vert. Reinforcing Steel Arrangement, MK numbers as indicated on the schedule refer to the corresponding "h" as indicated on Sht. #9-1 of 5

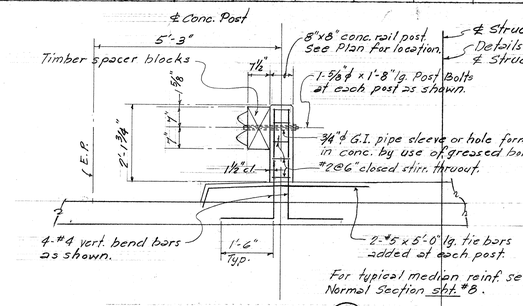


TYPICAL SECTION TYPE "L" WALL WITHOUT CURBING

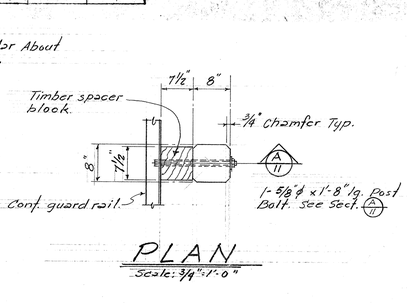


TYP. WALL SECTION WITH CURBING

Note: For additional information see adjacent "L" Type Wall Section. For "T" Type Wall, see Plan sheet № 239.



SECTION (A/11)
Scale: ½"=1'-0"

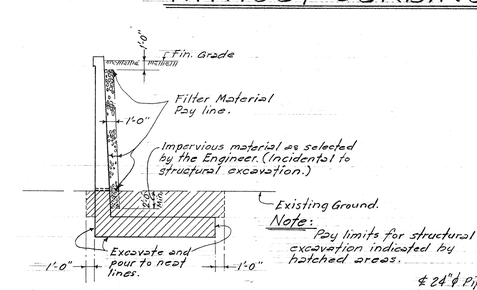


PLAN
Scale: ¾"=1'-0"

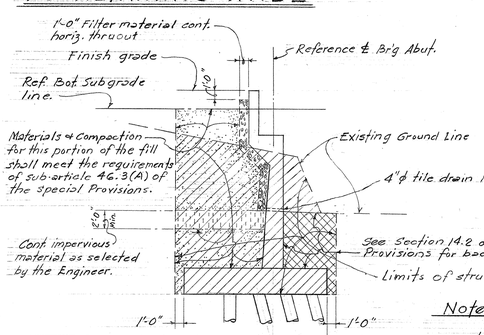
Note! For alternate guard rail & detail see Plan sht. # 35.

TYPICAL GUARD RAIL POST AT BRIDGE MEDIAN

Scale: as shown



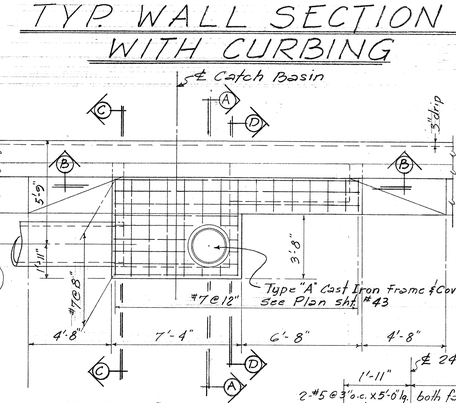
AT RETAINING WALL



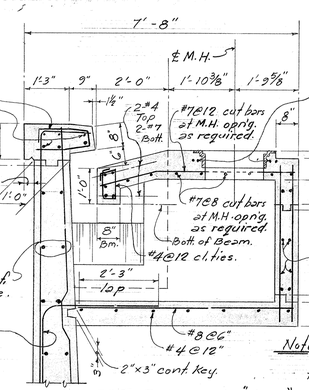
AT ABUTMENT

TYPICAL SECTIONS EXCAVATION PAY LINE & BACKFILL

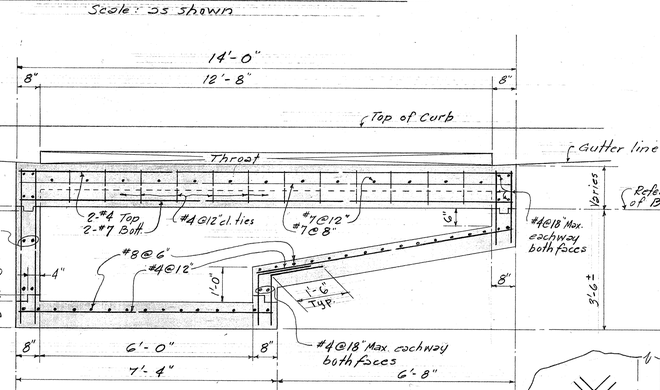
Note! Hatched area denotes limits of structural pay line & structural backfill. All other excavation to be roadway excavation.



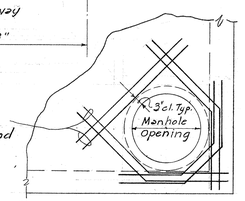
C.B. PLAN
Scale: ¼"=1'-0"



SECTION "AA"
Scale: ½"=1'-0"

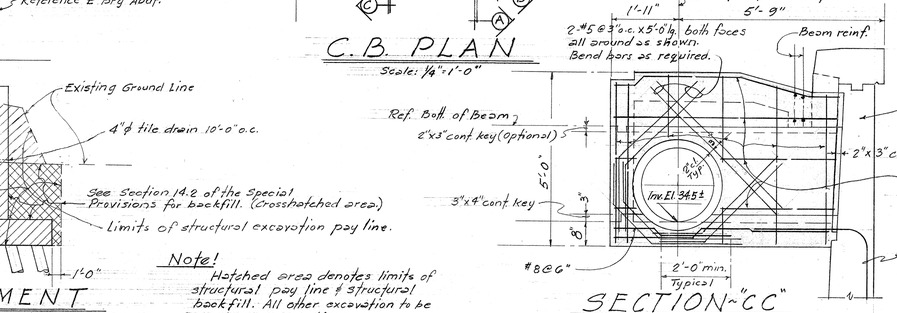


SECTION "BB"
Scale: ½"=1'-0"

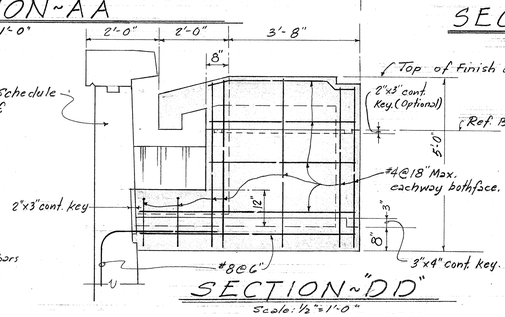


2-#7 Diag. bars @ 3" o.c. x 5'-0" long added. Bend bars as required as shown.

MANHOLE REINF. DETAIL
Scale: ½"=1'-0"



SECTION "CC"
Scale: ½"=1'-0"



SECTION "DD"
Scale: ½"=1'-0"

Note: Reinf. shown in "Sect. AA" typical throat Catch Basin.

CATCH BASIN DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANOA PALOLO DRAINAGE CANAL BRIDGE
STRUCTURE № 2

RET. WALL SCHEDULE & SECT. - C.B. DETAILS
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
FAI PROJ. № I-HI-1(5): 24, UNIT 2
SCALE AS SHOWN DATE: JUNE 21, 1965

SHEET No. 11 OF 11 SHEETS

171 A

Revised : Dec. 9, 1965

INDEX TO DRAWINGS

SHT. NO.	DESCRIPTION
	MAIN STRUCTURE #3, RAMPS-H1-O & H1-I
1	INDEX TO DRAWINGS AND GENERAL NOTES
2	SITE PLAN AND ELEVATIONS
3	BORING PLAN & LOG OF BORINGS
4	LOG OF BORINGS
5	LOG OF BORINGS
6	PART FOUNDATION PLAN & DETAILS — {O.B. @ STA. 45+78.44 to STA. 49+74.00; RAMP H1-I @ STA. 15+68.73 to STA. 24+67.31}
7	PART FOUNDATION PLAN & DETAILS — O.B. @ STA. 49+74.00 to STA. 54+58.61
8	RAMP H1-I - PART LAYOUT PLAN & DETAILS — RAMP H1-I @ STA. 15+51.33 to STA. 22+2.96
9	MAIN STRUCT. #3, RAMPS "H1-O" "H1-I" PART LAYOUT PLAN & DETAILS — {O.B. @ STA. 45+78.44 to 49+59.00; RAMP H1-I @ STA. to 24+67.31}
10	MAIN STRUCT. #3, RAMPS "H1-O" "H1-I" DECK LAYOUT PLAN & DETAILS — O.B @ STA. 49+59.00 to STA. 54+58.61
11	MAIN STRUCT. #3 - SUPERSTRUCTURE LONGITUDINAL CONSTRUCTION JOINT ELEVATION & DETAILS
12	MAIN STRUCT. #3, RAMPS "H1-O" "H1-I" - TYPICAL NORMAL SECTIONS - ABUTMENT #2 to O.B. @ STA. 52+74.00
13	MAIN STRUCT. #3, RAMPS "H1-O" "H1-I" TYPICAL NORMAL SECTIONS - {O.B. @ STA. 52+74.00 to STA. 54+50.61; RAMP H1-I @ STA.}
14	MAIN STRUCT. #3, RAMPS "H1-O" "H1-I" LAYOUT PLAN SHOWING LIMITS OF SPECIAL DECK REINFORCEMENT
15	RAMP H1-I - DECK FRAMING PLAN — RAMP H1-I @ STA. 15+ to STA. 23+80.84
16	MAIN STRUCT. #3 & RAMP H1-O - PART DECK FRAMING PLAN — O.B. @ STA. 45+78.44 to STA. 47+92.00
17	MAIN STRUCT. #3, RAMPS "H1-O" "H1-I" - PART DECK FRAMING PLAN — {O.B. @ STA. 47+92.00 to STA. 50+74.00; RAMP H1-I @ STA. 23+80.84 to STA.}
18	MAIN STRUCT. #3, RAMPS "H1-O" "H1-I" - PART DECK FRAMING PLAN — O.B. @ STA. 50+74.00 to STA. 52+74.00
19	MAIN STRUCT. #3, RAMPS "H1-O" "H1-I" PART DECK FRAMING PLAN — {O.B. @ STA. 52+74.00 to STA. 54+58.61; RAMP H1-I @ STA.}
20	MAIN STRUCT. #3, RAMPS "H1-O" "H1-I" SUPERSTRUCTURE CAMBER DIAGRAM & DETAILS
	MAIN STRUCT. #3 & RAMP H1-O - TYPICAL BAR PLACEMENT DIAGRAM
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22	SLAB STRIPS B55.14, B55.18; B55.25; B55.26; B55.27
23	SLAB STRIPS B55.15 THRU B55.17; B55.19; B55.28 THRU B55.29 INCL.
24	SLAB STRIPS B55.30 THRU B55.39 INCL.
25	SLAB STRIPS B55.40 THRU B55.48 INCL.
26	SLAB STRIPS B55.40 THRU B55.42; B55.45; B55.49 THRU B55.54 INCL.
27	SLAB STRIPS B55.45; B55.55 THRU B55.63 INCL.
28	SLAB STRIPS T55.1 THRU T55.13 INCL.
29	SLAB STRIPS T55.14; T55.15; T55.18; T55.19; T55.32 THRU T55.34 INCL, T55.37; T55.38
30	SLAB STRIPS T55.15 THRU T55.31 INCL, T55.34 THRU T55.36 INCL, T55.38 THRU T55.40 INCL.
31	SLAB STRIPS T55.41 THRU T55.57 INCLUSIVE
32	SLAB STRIPS T55.58 THRU T55.67 INCLUSIVE
33	SLAB STRIPS T55.58; T55.59; T55.68 THRU T55.76 INCL.
34	SLAB STRIPS T55.77 THRU T55.90 INCLUSIVE
	RAMP H1-I - TYPICAL BAR PLACEMENT DIAGRAM
35	SLAB STRIPS B55.100 THRU B55.117 INCLUSIVE
36	SLAB STRIPS T55.100 THRU T55.123 INCLUSIVE
37	TYPICAL GIRDER STIRRUP SPACING - RG1a, RG2, RG3, RG4, RG5a
38	SLAB STRIPS T55.124 THRU T55.135 INCL, B55.118 THRU B55.128 INCL.
39	SLAB STRIPS B55.129 THRU B55.140 INCLUSIVE
40	SLAB STRIPS T55.136 THRU T55.147 INCLUSIVE
41	SLAB STRIPS T55.148 THRU T55.156 INCL, B55.141 THRU B55.151 INCL.
42	SLAB STRIPS T55.157 THRU T55.162 INCL, B55.152 THRU B55.157 INCL.

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44	PIERS #2B, #3B, #5 & #6 CAP DETAILS
45	PIERS #1A, #8A, & #9A CAP DETAILS
46	PIERS #10A, #11A & #12A CAP DETAILS
47	MAIN STRUCT. #3 & RAMP H1-I - PIERS #9B, #10B, #11B, #12B & #13B CAP DETAILS
48	MAIN STRUCT. #3 & RAMP H1-I PIERS #14 THRU #21 INCL, #7B & #8B CAP DETAILS
	MAIN STRUCTURE #3 & RAMP H1-O
49	ABUTMENT #2 & RET. WALL #1 - PART LAYOUT PLAN & ELEVATION
50	ABUTMENT #1 & 2 & RET. WALL #2 - PART LAYOUT PLAN & ELEVATION
51-A	ABUTMENT #1 & 2 & RET. WALL #2 — REVISED PILE LAYOUT PLAN
52-A, 52-B	ABUTMENT #2 — PART FOOTING REINFORCEMENTS
53	ABUTMENT #2 — SECTIONS & DETAILS
54-A, 54-B	ABUTMENT #2 — REVISED SECTIONS & DETAILS
55	ABUTMENT #2 & RET. WALL #2 — SECTIONS & DETAILS
56	ABUTMENT #1 — SECTIONS & DETAILS
	MAIN STRUCTURE #3, RAMPS H1-O & H1-I
57	MISCELLANEOUS DETAILS —
58	MISCELLANEOUS DETAILS — EXPANSION BEARINGS, APPROACH SLAB, & DECK DRAINS
59	MISCELLANEOUS DETAILS
60	MISCELLANEOUS DETAILS
61	MISCELLANEOUS DETAILS —
62	TYPICAL DETAILS - SUPERSTRUCTURE
63	TYPICAL DETAILS — SUPERSTRUCTURE
64	TYPICAL DETAILS — SUPERSTRUCTURE
65	TYPICAL DETAILS — COLUMNS & FOUNDATIONS
66	SCHEDULES — PIER COLUMNS & PILE CAPS
67	SCHEDULES — PIER COLUMNS & FOOTINGS

* 4,500.0 Lin. Ft. Item 51A(2) Pier #2A & #2B.
24,388.0 Lin. Ft. included in item 51A(1).
28,888.0 Lin. Ft. Total

** Estimated quantities include Retaining Wall #1 & #2.

SYMBOLS AND ABBREVIATIONS

(00.00) — Denotes bottom of footing or pile cap elevation
[00.00] — Pile cut-off elevation
(A / No.) — Alphabet section number description / Sheet number detail is drawn on
— Direction in which main reinforcing bars extend.
(No.) — Column number
— Boring
— Vertical, — Batter } Piles
Direction of batter
Test Piles

E.F.	Each face
B.F.	Both face
N.F.	Near face
F.F.	Far face
TSS	Top slab strip
BSS	Bottom slab strip
MG	Main (structure) girder
RG	Ramp Girder
Bot., Bott.	Bottom
T.	Top
O.R.	Outer ring (column bars)
I.R.	Inner ring (column bars)
Ps	Pile cap - square
Pr	Pile cap - rectangle
F	Footing

GENERAL NOTES

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FHH(D)24, Unit 2	1965	C0172	276

Revision No. 1 - Change Abutment #1 & #2 Retaining Wall #2 & Estimated Quantities.

DESIGN SPECIFICATIONS: Design is in accordance with AASHO Standard Specifications for Highway Bridges. (Eighth Edition).

DESIGN LOADS: H20-S16-44 as defined in specifications.

DESIGN STRESSES:

f'_c = 3000 p.s.i.	4,500 p.s.i.
f_c = 1,200 p.s.i.	1,800 p.s.i.
n = 10	8
f_s = 20,000 p.s.i. - tension	

MATERIALS:

1. All concrete shall be Class A-1 unless otherwise noted on plans.
2. Concrete clear cover for reinforcing bars shall be as follows unless noted otherwise:
   1½" for stirrups on sides of beams
   2½" to main reinforcing of pier caps | 2 5/8" to main reinforcing of column.
   2" for formed walls | 3" for footings.
3. Concrete seats receiving steel plates, lead plates or neoprene pads shall be poured monolithically with supporting structures and top surfaces of the concrete seats shall be finished with a steel trowel to a smooth level surface at the elevation shown on the plan.
4. Reinforcing bars shall be detailed in accordance with A.C.I. "Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures" unless otherwise noted.
5. Reinforcing bars shall be securely tied at all intersections and lap splices, and shall be held in place during pouring to maintain their proper locations as shown on plans.
6. All splices for deck and pier cap reinforcing bars larger than #11 shall be butt welded. See Std. Details.
7. All reinforcing steel to be ASTM Designation A15 Billet steel, intermediate grade, except as otherwise noted.

CONSTRUCTION METHODS:

1. Shop placement and detail drawings for all reinforcing steel in deck are required. Splices for continuous slab strip bars shall be located near midspan for top slab and near pier support for bottom slab. All splices shall be staggered.
2. Sides of footings shall be excavated and poured to neat lines when called for on the plans. For excavation of bottom of footings, see Standard Specifications. Over excavation beyond neat lines for sides of footings and the elevations 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.
3. All backfill behind abutments shall be complete in place before placing of superstructure.
4. Forms for all exposed surfaces of separation structures including retaining walls (except round columns) shall be plywood. Forms for round columns shall be made of material that results in a smooth finish and true dimensions as shown in the plans.
5. Concrete finish - see Standard Specifications and for Special Provisions.
6. All welding shall conform to the latest Specifications for Welded Highway and Railway Bridge Design, Construction and Repair of the American Welding Society.
7. Vert.. Col. bars shall be arranged in such a manner as to miss Pier Cap reinf above.
8. In general, top of concrete deck of structure shall be constructed to follow the finish roadway vertical and horizontal curves and grades.

CAMBER: Obtain camber by forming and shoring concrete surfaces above profile grades amount shown in camber diagram and as indicated on detailed drawings

REFERENCE:

Typical details as shown on sheets #62, #63, #64, & #65 refer to the structure except for modifications as may be required for special conditions. For such modifications see corresponding detailed drawings.

Refer to Standard Detailed drawing sheets #51, #52, #53, #54 & #55 for details not covered by these drawings.

GENERAL:

In general, all elevations, stations and locations of existing Abutment #3 and supporting structure shall be verified in the field before commencing with the new work.
The contractor shall verify the location of all existing utility lines.
The contractor shall furnish shop placement and detail drawings for all structural steel work including bearings and Frame & Grating Assemblage for deck drains.

REFERENCE OF SHEETS:

All reference to sheets concerning Structure N°3 Details are confined only to Structure N°3 Plans, sheet 1 through sheet 67 or to the standard Details sheet S-1 through sheet S-8, except where reference is made "Plan Sheet No." which refer to consecutive numbering of sheets of the entire Contract Plans.

REVISION NO. 1

****ESTIMATED QUANTITIES**

Concrete	Lump Sum (19,900 c.y.)
Reinforcing Steel	Lump Sum (5,997,772 lbs.)
Structural Excavation	10,250 c.y.
Prestress Concrete Piles Type I	* 23,538 lin. ft.
Filter Material	340 c.y.
Metal Bridge Railing	4,029 lin. ft.
Bronze & Stainless Steel Bearing & Expansion Plates.	Lump Sum (2,910.0 lbs.)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KAPIOLANI GRADE SEPARATION
STRUCTURE #3
RAMPS "H1-O" "H1-I"
INDEX TO DRAWINGS & GENERAL NOTES

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(6): 24, Unit 2
March 1965

SHEET No. 1 OF 67 SHEETS

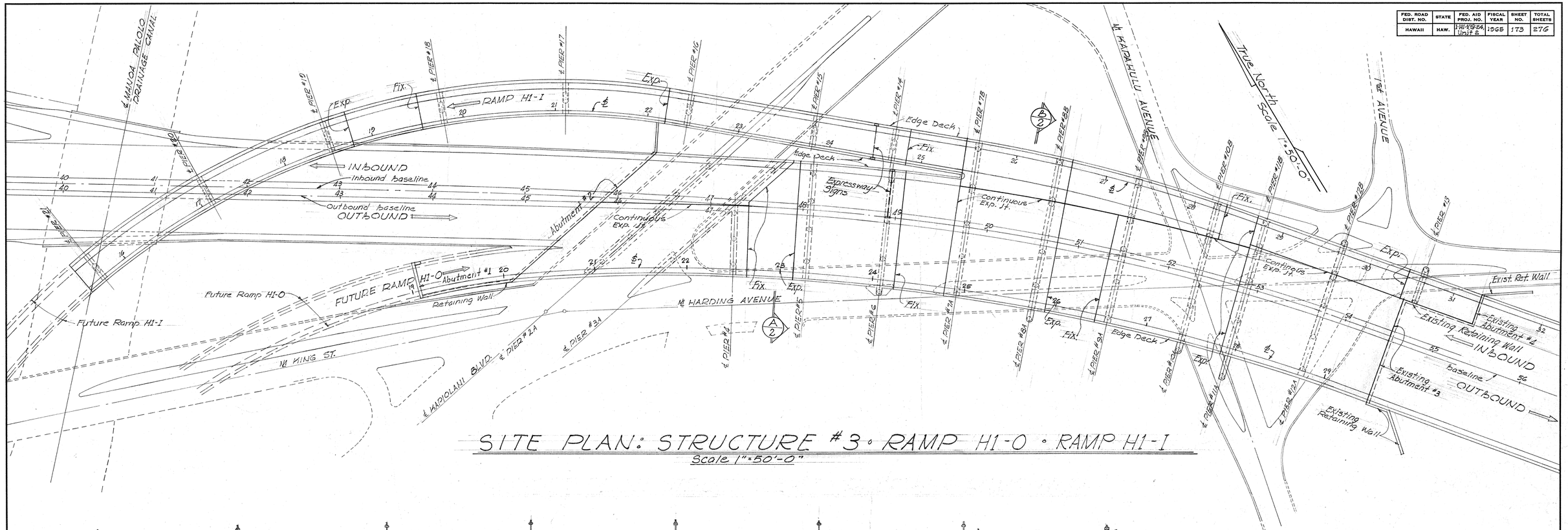
SURVEY PLOTTED BY: DATE: " " " "
DRAWN BY:
TRACED BY:
DESIGNED BY:
QUANTITIES BY:
CHECKED BY:
ORIGINAL PLAN | NOTE BOOK | No.

SHEET No. 172 S SUPERSEDES SHEET No. 172

C.O. 172S

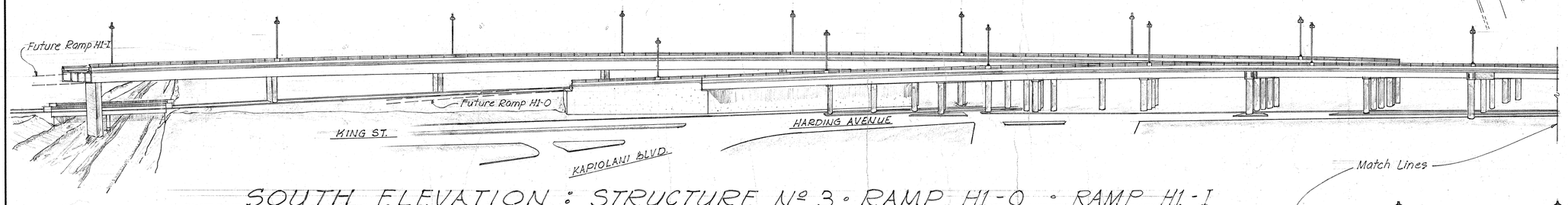
ID ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	173	276

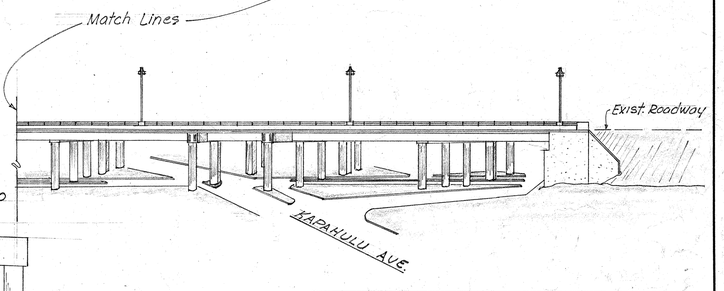


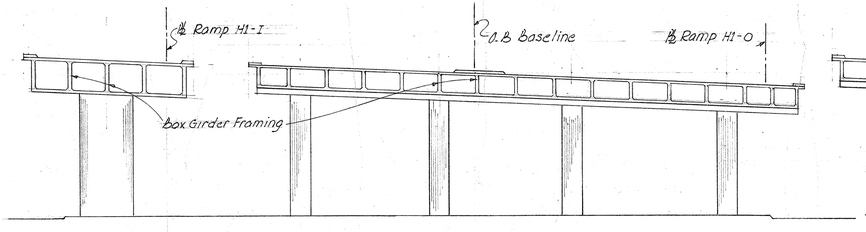
SITE PLAN: STRUCTURE #3 · RAMP H1-O · RAMP H1-I

Scale 1"=50'-0"



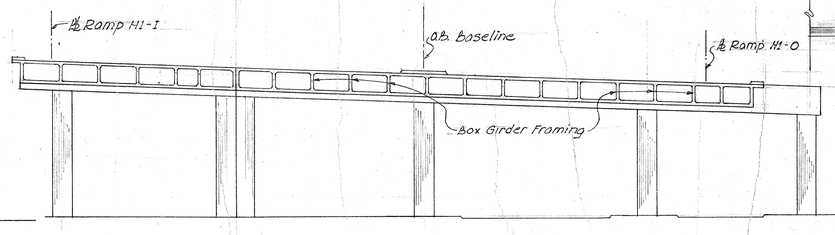
SOUTH ELEVATION: STRUCTURE Nº 3 · RAMP H1-O · RAMP H1-I





TYPICAL SECTION (A/2)

Scale 1/16"=1'-0"



TYPICAL SECTION (B/2)

Scale 1/16"=1'-0"

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

"H1-O"
"H1-I"

MAIN STRUCTURE #3, RAMPS

SITE PLAN & ELEVATIONS

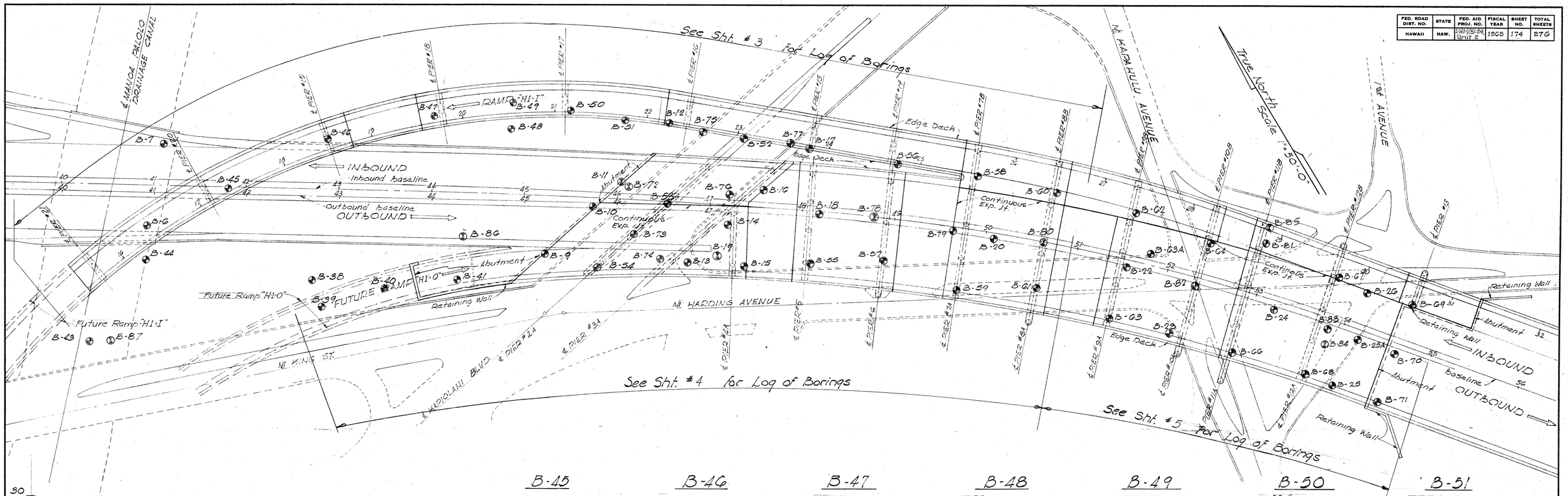
Interstate Highway (Lunalilo Freeway)
F.A.I. Project No. I-H1-1(6): 24, Unit 2
Scale: as shown March 1965

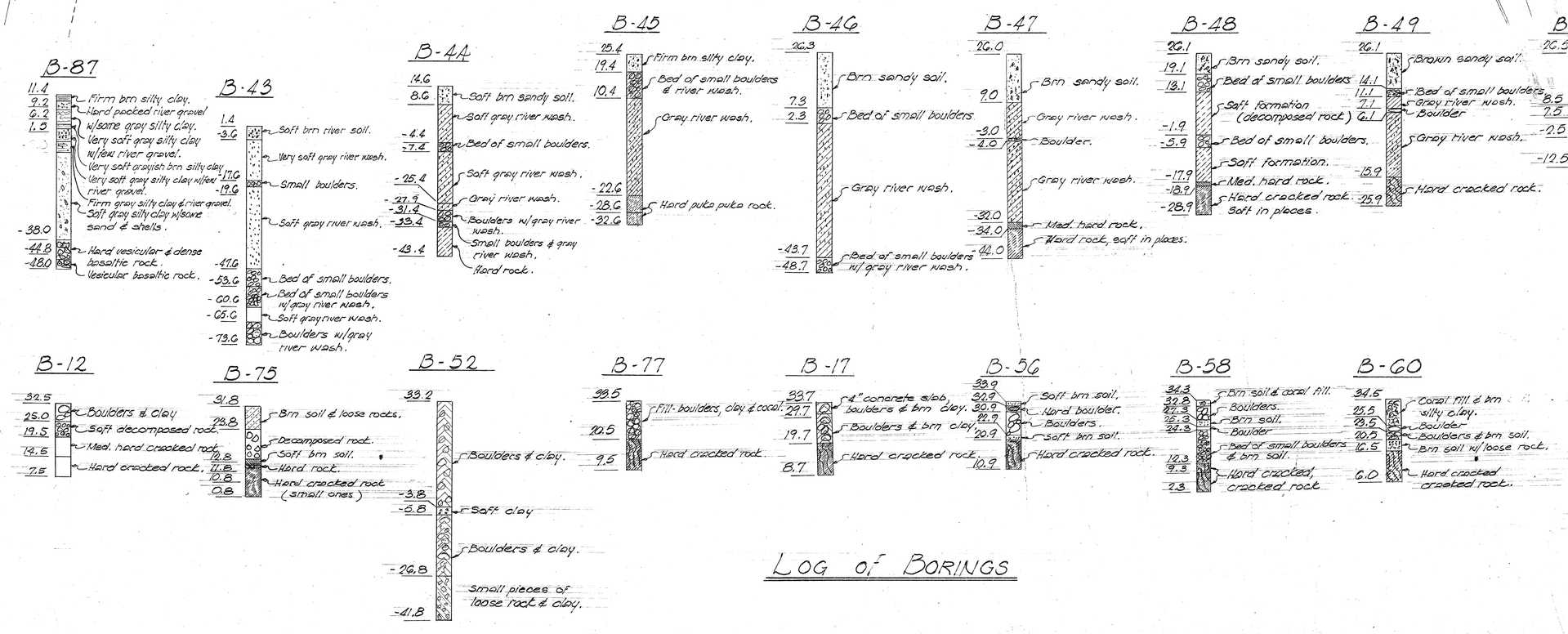
SHEET No. 2 OF 67 SHEETS

173

D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1-(6)-24 Unit 2	1965	174	276





LOG OF BORINGS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMP "H1-0" "H1-I"

BORING PLAN & LOG OF BORINGS

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(6):24, Unit 2
Scale: as shown March 1965

SHEET No. 3 OF 67 SHEETS

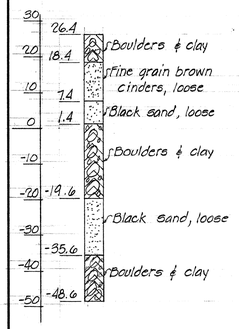
Note: For Log of Borings on B-C & B-7, see Manoa Palolo Stream Bridge drngs.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY S. Lang	"
NOTE BOOK	TRACED BY	"
	DESIGN BY R.K.	"
No.	QUANTITIES BY	"
	CHECKED BY J.T.O., R.T.F.	"

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RH-1(6)-24 Unit 2	1965	175	276

B-38



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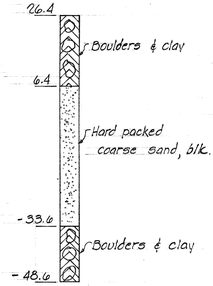

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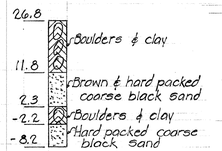

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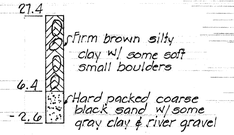

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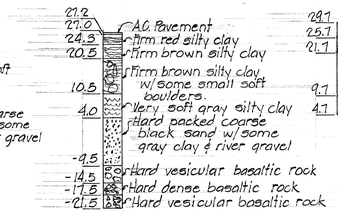

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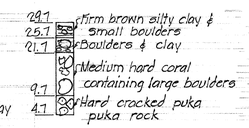

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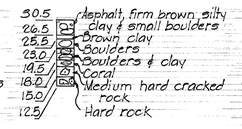

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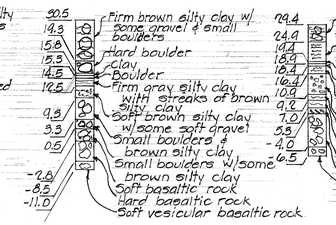

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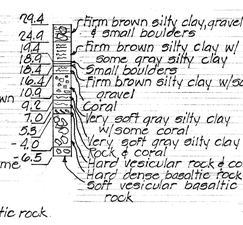

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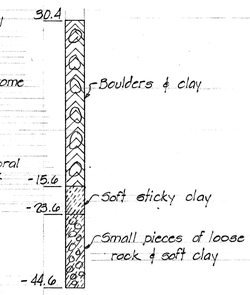

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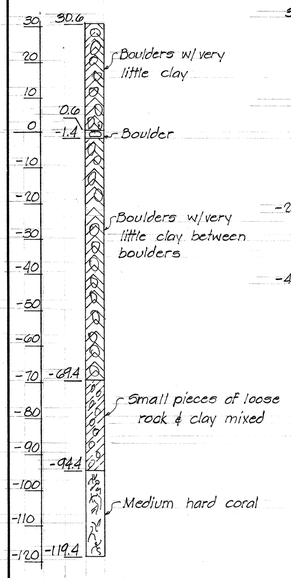

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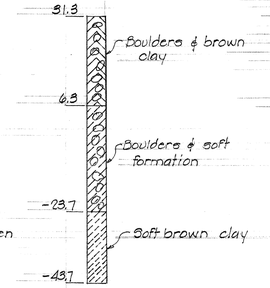

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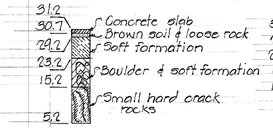

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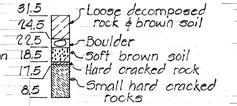

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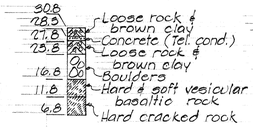

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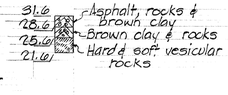

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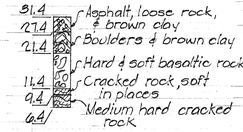

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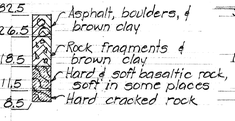

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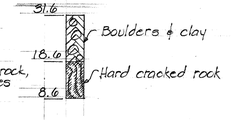

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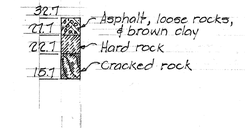

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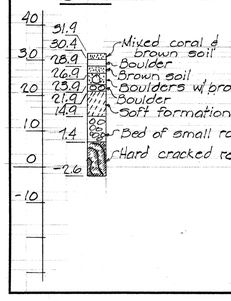

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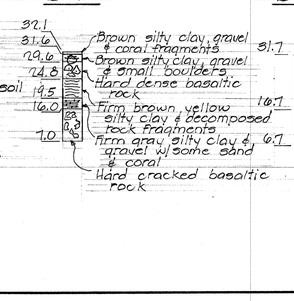

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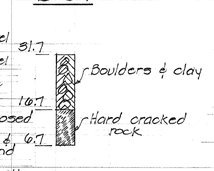

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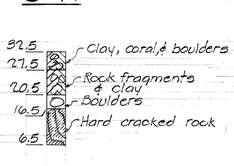

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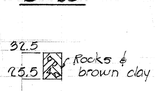

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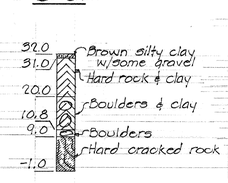

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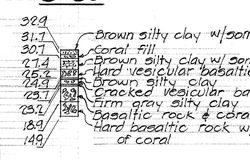

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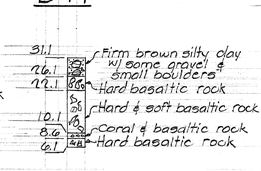


NOTE: For boring locations see layout plan sheet #3.

LOG OF BORINGS

SURVEY PLOTTED BY	DATE
DRAWN BY W.B.	"
TRACED BY	"
DESIGNED BY R.K.	"
QUANTITIES BY	"
CHECKED BY R.K., M.T.O.	"
ORIGINAL PLAN	
NOTE BOOK	
No.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1 - O" "H1 - I"

LOG OF BORINGS

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(6): 24, Unit 2
Scale: as shown March 1965

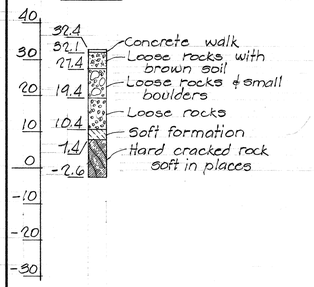
SHEET No. 4 OF 67 SHEETS

175

D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(3)24, Unit 2	1965	176	276

B-63



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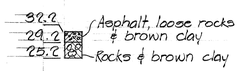

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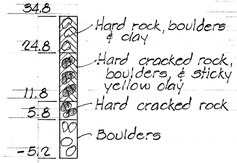

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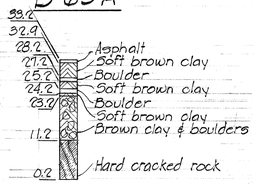

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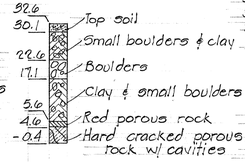

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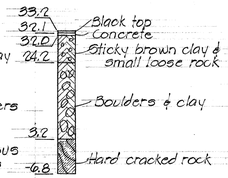

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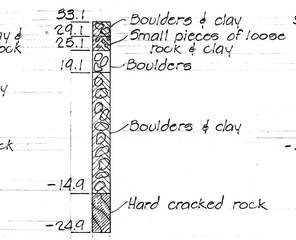

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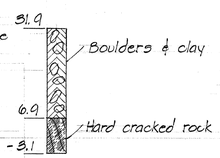
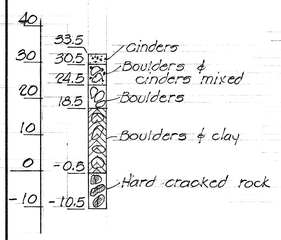


B-85

B-81



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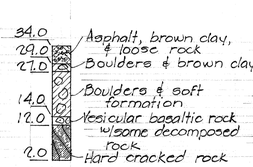

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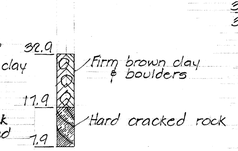
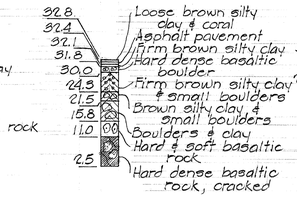


B-84



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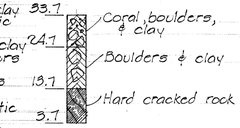

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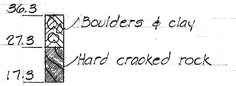

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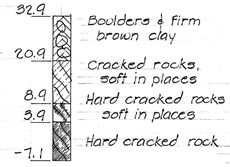
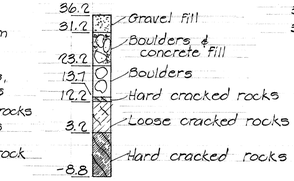


B-25 A



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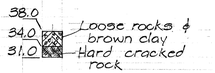

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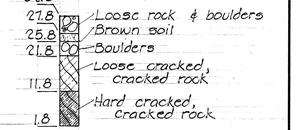

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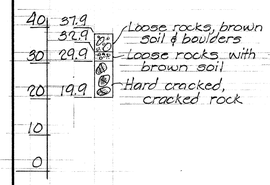
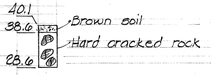


B-69



LOG of BORINGS

NOTE: For boring locations see layout plan sheet #3

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 RAMPS "H1-O" "H1-I"
LOG OF BORINGS

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(3):24, Unit 2
Scale: as shown March 1965

SHEET No. 5 OF 67 SHEETS

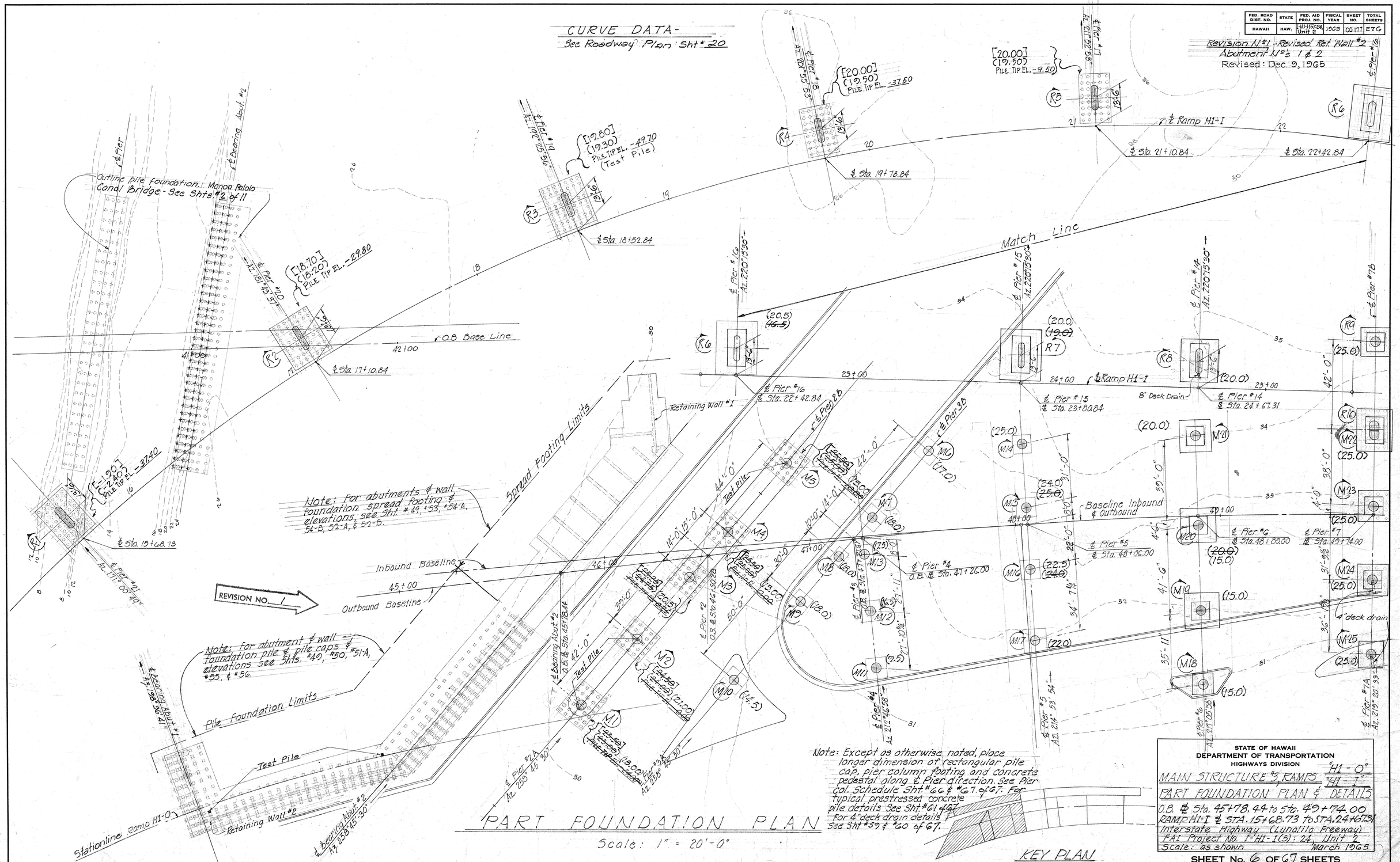
176

ORIGINAL PLAS	SURVEY PLOTTED BY	DATE
	DRAWN BY W.B.	"
NOTE BOOK	TRACED BY R.K.	"
	DESIGNED BY	"
No.	QUANTITIES BY	"
	CHECKED BY J.T.O., S.T.Y.	"

D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5):24, Unit 2	1965	CO 177	276

Revision No. 1 - Revised Ret. Wall #2
Abutment No's 1 & 2
Revised: Dec. 9, 1965


CURVE DATA -
See Roadway Plan Sht # 20

PART FOUNDATION PLAN
Scale: 1" = 20'-0"

KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-O" "H1-I"
PART FOUNDATION PLAN & DETAILS
O.B. ℄ Sta. 45+78.44 to Sta. 49+74.00
RAMP H1-I ℄ STA. 15+68.73 to STA. 24+67.31
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5): 24, Unit 2
Scale: as shown March 1965

SHEET No. 6 OF 67 SHEETS

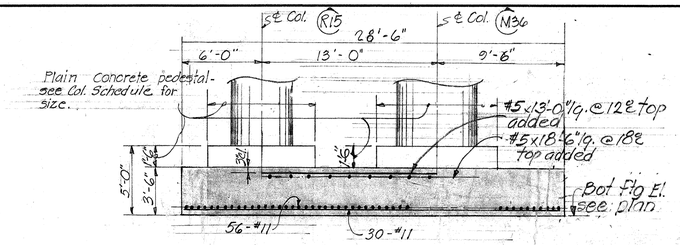
SHEET No. 177S SUPERSEDES SHEET No. 177

C.O. 177S

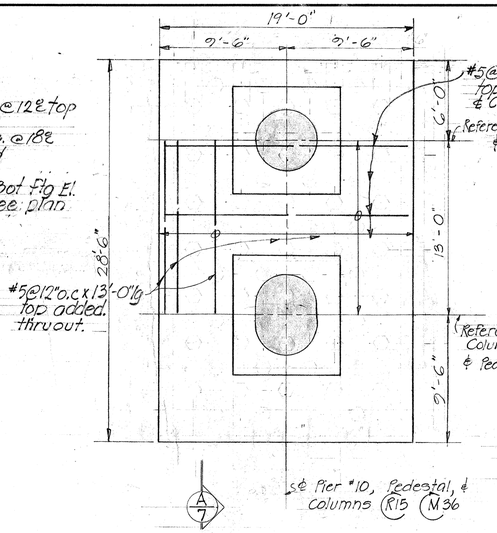
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY W.B., K.K.	"
	TRACED BY	"
NOTE BOOK	DESIGNED BY R.K., V.C., C.Y., D.O.	"
	QUANTITIES BY J.F., H.M., T.S.	"
No.	CHECKED BY J.T.O., P.Y.	"

ED ON CLEARPRINT 1000-H

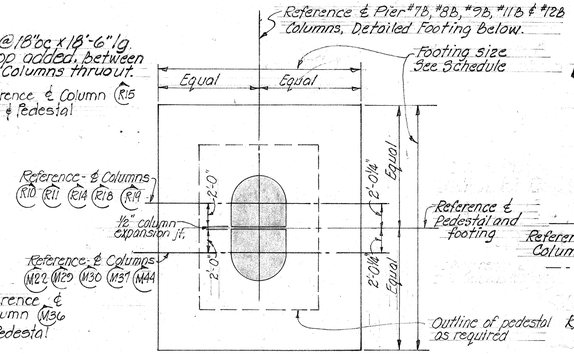
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	178	276



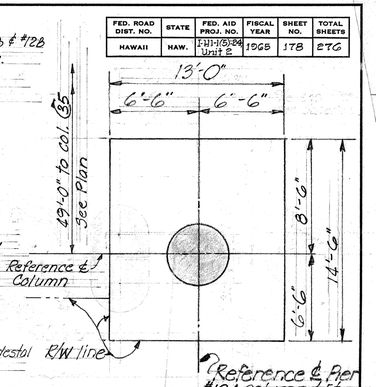
SECTION A/7
Scale: 3/16" = 1'-0"



℄ Pier #10, Pedestal, ℄ columns R15 M36



AT COLUMNS
R10 - M22; R11 - M29; R14 - M30; R18 - M37; R19 - M44

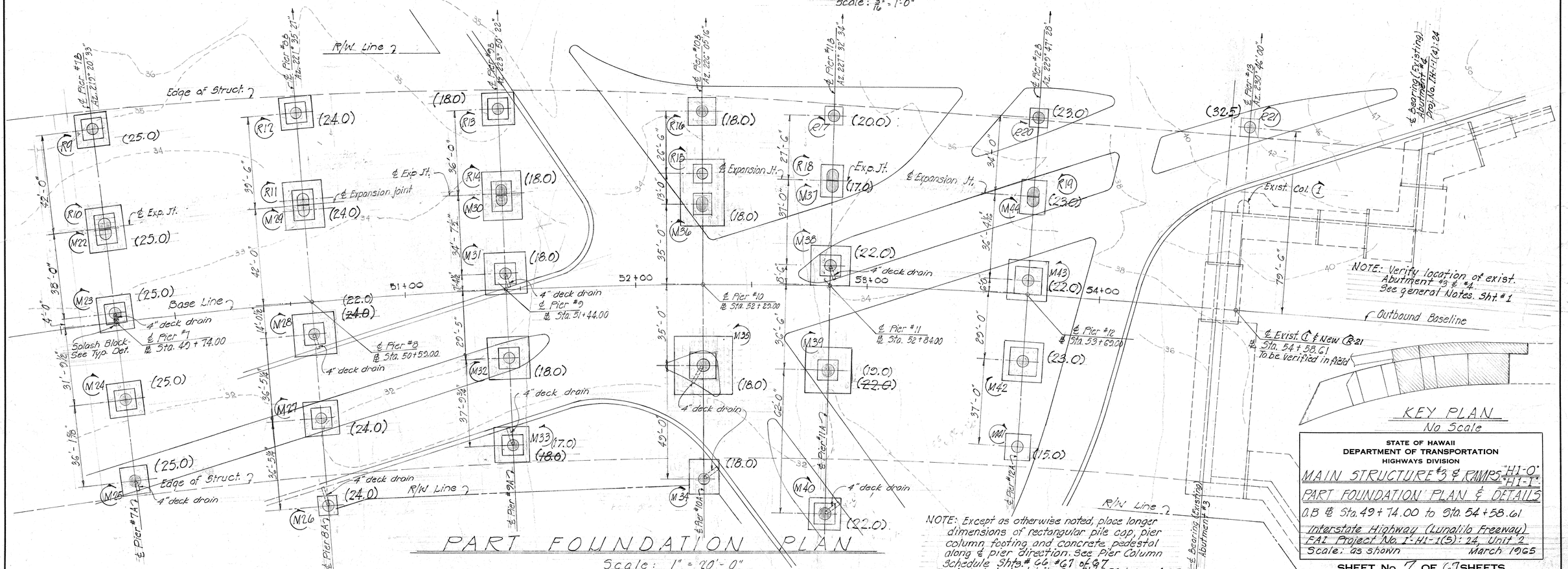


AT COLUMN M34

PLAN - TYPICAL COMBINED COLUMN FOUNDATION DETAILS

CURVE DATA-
Refer to Roadway Detail Sheets.

PLAN - COMBINED COLS. R15 - M36
FOUNDATION
Scale: 3/16" = 1'-0"



PART FOUNDATION PLAN
Scale: 1" = 20'-0"

NOTE: Except as otherwise noted, place longer dimensions of rectangular pile cap, pier column footing and concrete pedestal along ℄ pier direction. See Pier Column Schedule Shts. # 66 & 67 of 67. For 4" deck drain details. See Sht. # 59 & 60 of 67

KEY PLAN
No Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMPS "H1-0"
PART FOUNDATION PLAN & DETAILS
O.B ℄ Sta. 49+74.00 to Sta. 54+58.61
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(6): 24, Unit 2
Scale: as shown March 1965

SHEET No. 7 OF 67 SHEETS

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

D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1968	179	276

Constant super elevation | Super elevation transition - Refer to Rdwy. Plan Sht. #15 | Constant super elevation | Super elevation transition - Refer to Roadway Plan Sht. #15 | Constant super elevation | See super elevation drawings Structure #3, Sht. # 10 of 67

Left edge of deck

Sta. 14+50 | Sta. 15+50 | +8.00% | -8.00% | Sta. 21+25 | Sta. 24+25 | Sta. 25+37.31

℄ Ramp H1-I

Right edge of deck

Note:
Refer to Roadway Plan sheet #15 for super transition data & super elevation grade.

SUPER ELEVATION DIAGRAM - PART RAMP H1-I

No Scale

Outline Palolo-Manoa Canal Bridge below
See Sht. # 11 of 11

SPAN No. 1R | SPAN No. 2R | SPAN No. 3R | SPAN No. 4R | SPAN No. 5R

342.02' | 333.28' | 82.11' | 78.37' | 274.56' | 262.07'

Rail lengths measured along inside edge of rail

Left Edge of Structure

Right Edge of Structure

Ramp H1-I Station Line

℄ Light Std. Ramp H1-I Sta. 13+35.50

℄ Light Std. Ramp H1-I Sta. 16+46.55

℄ Light Std. Ramp H1-I Sta. 22+18.65

℄ Pier #20 | ℄ Pier #19 | ℄ Pier #18 | ℄ Pier #17

℄ Bearing Ramp H1-I Sta. 13+41.17

℄ Bearing Ramp H1-I Sta. 16+16.42

℄ Bearing Ramp H1-I Sta. 19+55.26

℄ Bearing Ramp H1-I Sta. 22+18.89

℄ Exp. Hinged Bearing Type II Sta. 19+94.36

℄ Exp. Hinged Bearing Type II Sta. 20+89.33

℄ Exp. Hinged Bearing-Type II

Ramp H1-I Sta. 15+41.17 to ℄ Exp. Hinged Brg. Type II Sta. 16+94.36 = 153.19'

Ramp H1-I ℄ Sta. 41+74.01

I.B. Base Line

O.B. Base Line

Curve Data
Refer to Roadway Plan sht. #20

Match Line "A" See Sht. # 9

PART LAYOUT PLAN

Scale: 1" = 20'-0"

142.11' to ℄ Pier #21 | 142'-0" | 126'-0" | 132'-0" | 132'-0" to ℄ Pier #16

Match line "A" See Sht # 9

Approx. Finish grade

Approx. Exist Ground Line

Pile Tip El. -29.80 | Pile Tip El. -49.70 | Pile Tip El. -37.50 | Pile Tip El. -9.50

CANTILEVERED SPAN No. 1R

Ramp H1-I Sta. 15+41.17 ℄ Exp. Hinged Brg. Type II Sta. 16+94.36 = 153.19' @ 43°-09'-00"

R = 100.00'

Ramp H1-I Sta. 15+65.97

Match Line

LONGITUDINAL SECTION ALONG BASE LINE RAMP H1-I

Scale: 1" = 20'-0"

27.56' | 142.11' to ℄ Pier #20

℄ Exp. Hinged Bearing-Type II

Apply 2-coats of red lead paint on exposed surfaces of bearing angle (see spec.)

Future Str.

℄ Pier #21

Approximate Existing Ground Line

Pile Tip El. -37.40

Reference Notes
Top of concrete deck to follow finish roadway grades.

KEY PLAN
No Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAMP H1-I

PART LAYOUT PLAN & DETAILS

H1-I ℄ Sta. 15+41.17 to 22+18.89

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5):24, Unit 2
Scale: as shown March 1965

SHEET No. 8 OF 67 SHEETS

179

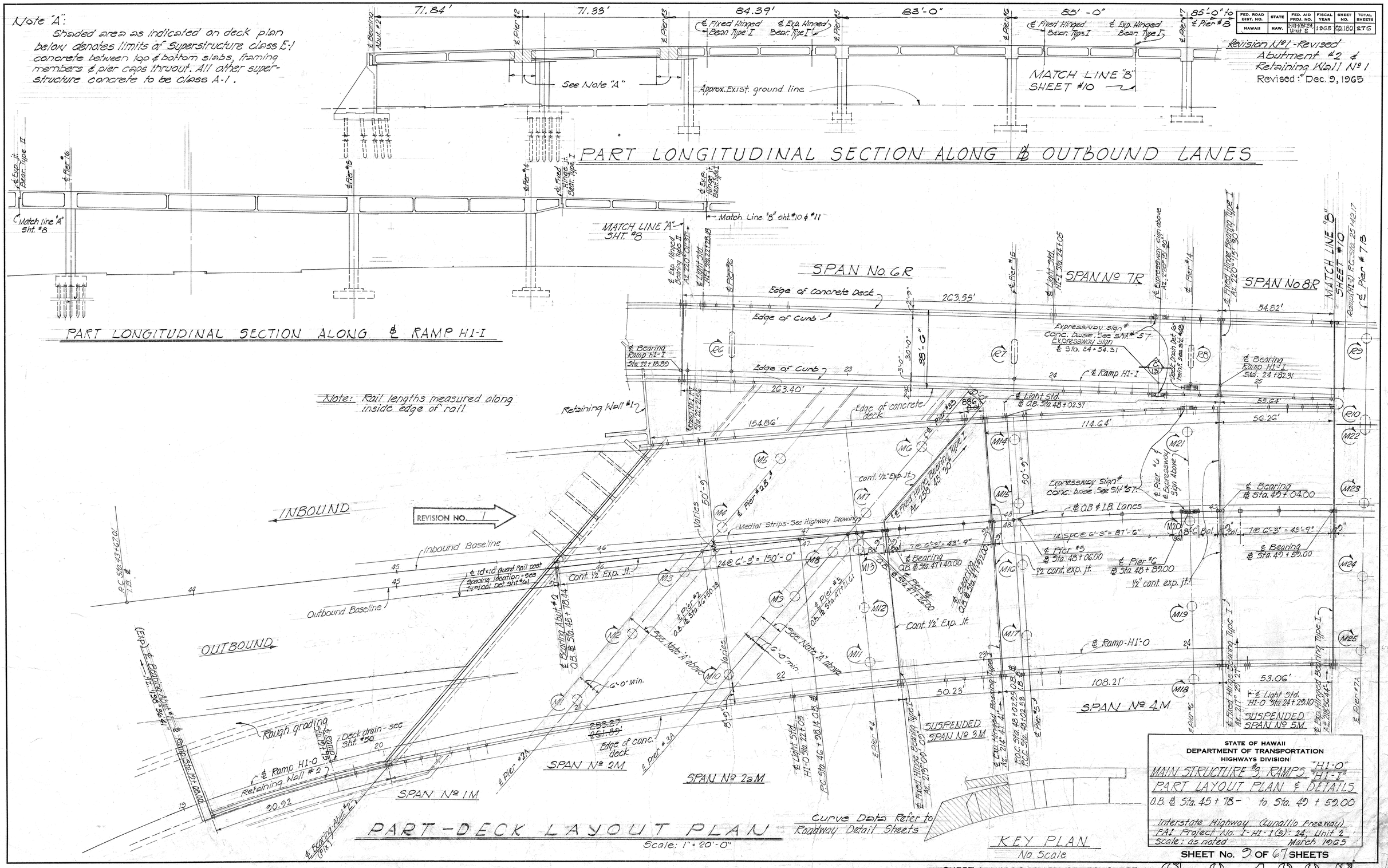
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY MB	"
NOTE BOOK	TRACED BY	"
	DESIGNED BY RC, MB, DO, CY	"
No.	QUANTITIES BY HH	"
	CHECKED BY JTO, RC	"

D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)-24, Unit 2	1965	C0.180	276

Revision No 1 - Revised Abutment #2 & Retaining Wall No 1
Revised: Dec. 9, 1965

Note "A":
Shaded area as indicated on deck plan below denotes limits of Superstructure class E-1 concrete between top & bottom slabs, framing members & pier caps thruout. All other superstructure concrete to be class A-1.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-O" "H1-I"
PART LAYOUT PLAN & DETAILS
O.B. ℄ Sta. 45+78- to Sta. 49+59.00

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5): 24, Unit 2
Scale: as noted March 1965

SHEET No. 9 OF 67 SHEETS

SHEET No. 180S SUPERSEDES SHEET No. 180

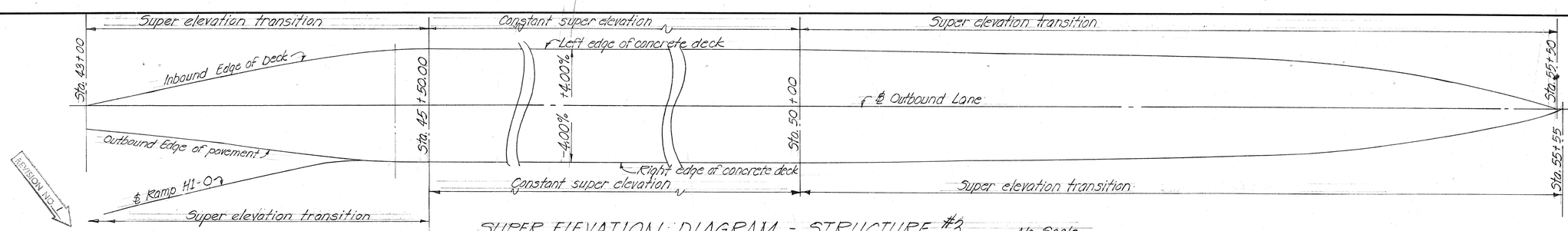
C.0.180S

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY S.Y. W.B.	
	TRACED BY R.K. V.C. D.O. C.Y.	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY H.M. G.T. C.H.	
No.	CHECKED BY P.Y. J.O.	

ED ON CLEARPRINT 1000-H

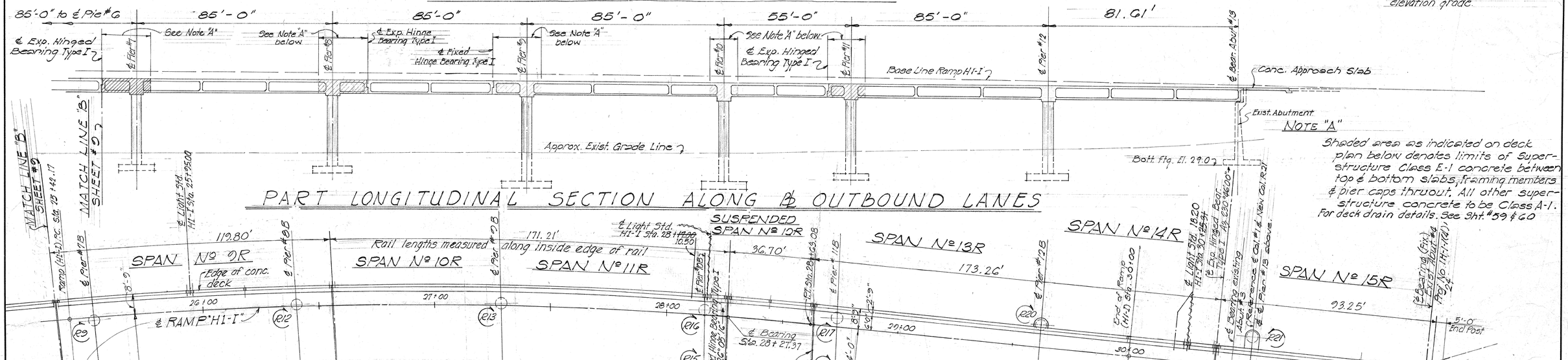
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	C0181	276

Revision #1 Jan 6, 1966
Revised deck superstructure class A-1 to class E-1



SUPER ELEVATION DIAGRAM - STRUCTURE #3 No Scale

Note:
Refer to Roadway Detail shts. for transition data & super elevation grade.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-0" "H1-I"

DECK LAYOUT PLAN & DETAILS

O.B. ℄ Sta. 49+59.00 to Sta. 54+51.61

Interstate Highway (Lunalilo Freeway)
FAI Project No. 1-HI-1(5): 24, Unit 2
Scale: as shown March 1965

SHEET No. 10 OF 67 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	M.Y.	DATE
	DRAWN BY	"	"
	TRACED BY	"	"
	DESIGNED BY	J.D. H.H.	C.Y. R.K.
NOTE BOOK	QUANTITIES BY	"	H.H.
No.	CHECKED BY	J.D.	P.Y.

SHEET No. 1815 SUPERSEDES SHT. No 181

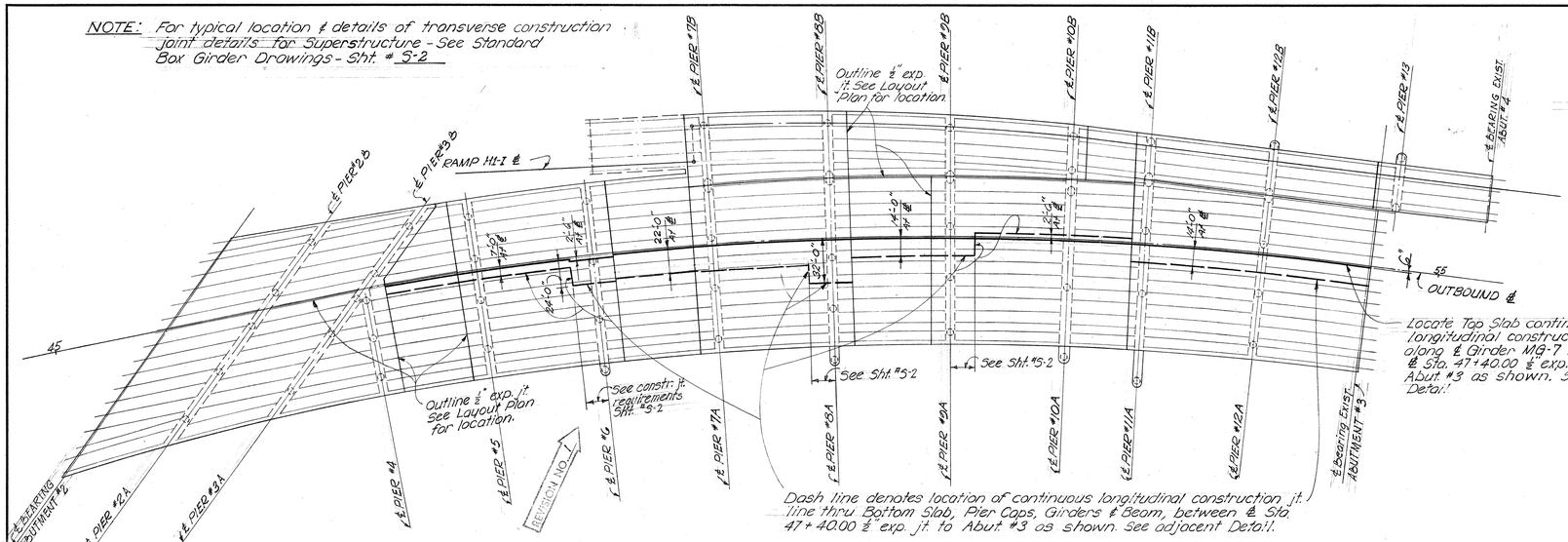
C.O.181S

ED ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(6)24 Unit 2	1965	60182	276

Revision #1 Jan. 1966
Relocate top slab cont. longit. const. jt.

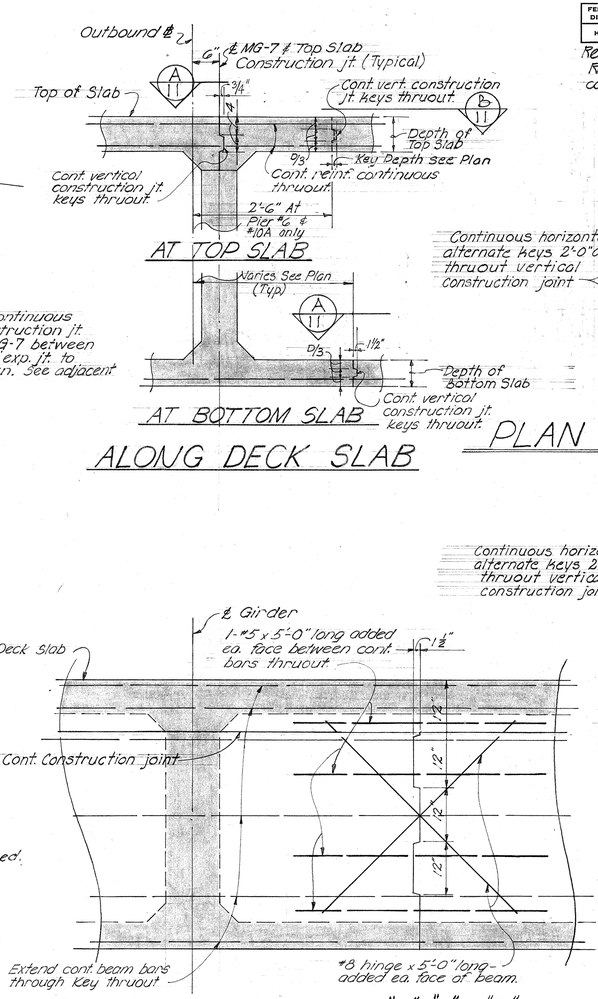
NOTE: For typical location & details of transverse construction joint details for Superstructure - See Standard Box Girder Drawings - Sht. # S-2

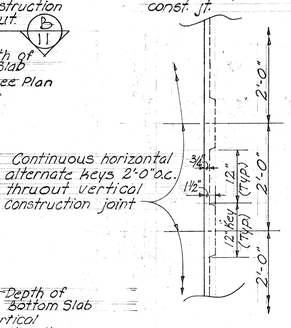


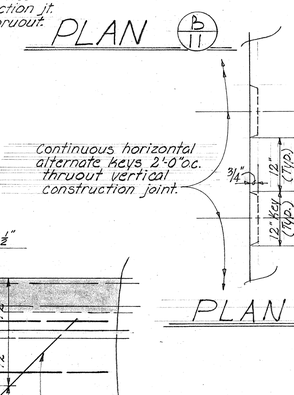
Locate Top Slab continuous longitudinal construction jt. along ℄ Girder MG-7 between ℄ Sta. 47+40.00 ℄ exp. jt. to Abut. #3 as shown. See adjacent Detail.

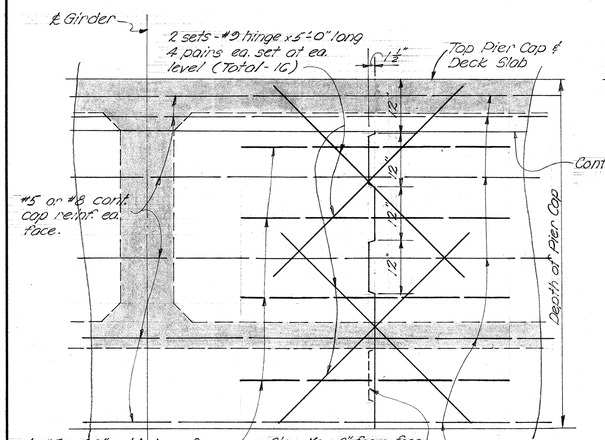
LAYOUT PLAN — LONGITUDINAL DECK CONSTRUCTION JOINT LOCATION

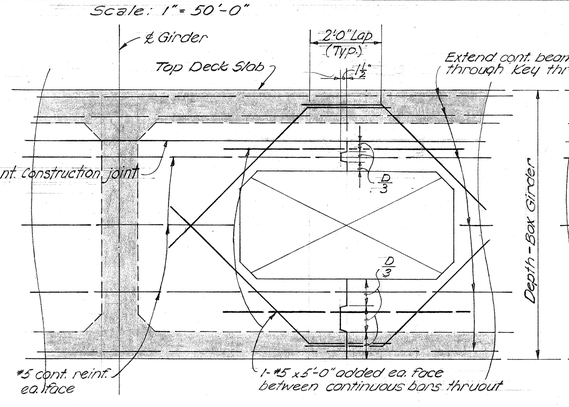
Scale: 1" = 50'-0"

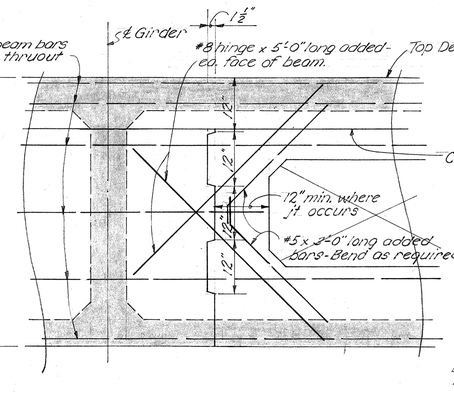








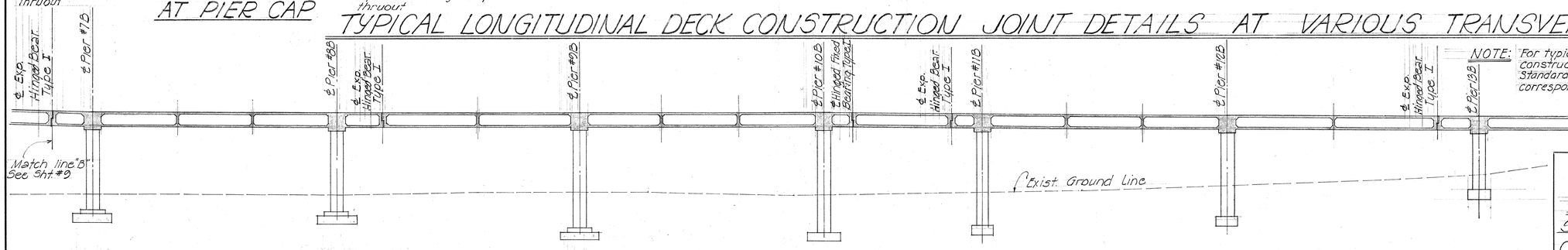




AT INTERMEDIATE BEAM "B"

NOTE: Continuous Beam bars may be lapped. Exact location of permissible lap points shall be as directed by the Engineer.

TYPICAL LONGITUDINAL DECK CONSTRUCTION JOINT DETAILS AT VARIOUS TRANSVERSE MEMBERS



NOTE: For typical location and details of transverse construction joint details for superstructure - See Standard Box Girder Drawings - Sht #S2 and corresponding Detail Drawings.

PART LONGITUDINAL SECTION ALONG ℄ RAMP H1-I

Scale: 1" = 20'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
SUPERSTRUCTURE LONGITUDINAL CONSTRUCTION JOINT ELEVATION & DETAILS
Interstate Highway (Queen Liliuokalani Freeway)
FAI Project No. I-HI-1(6): 24, Unit 2
Scale: as shown March 1965

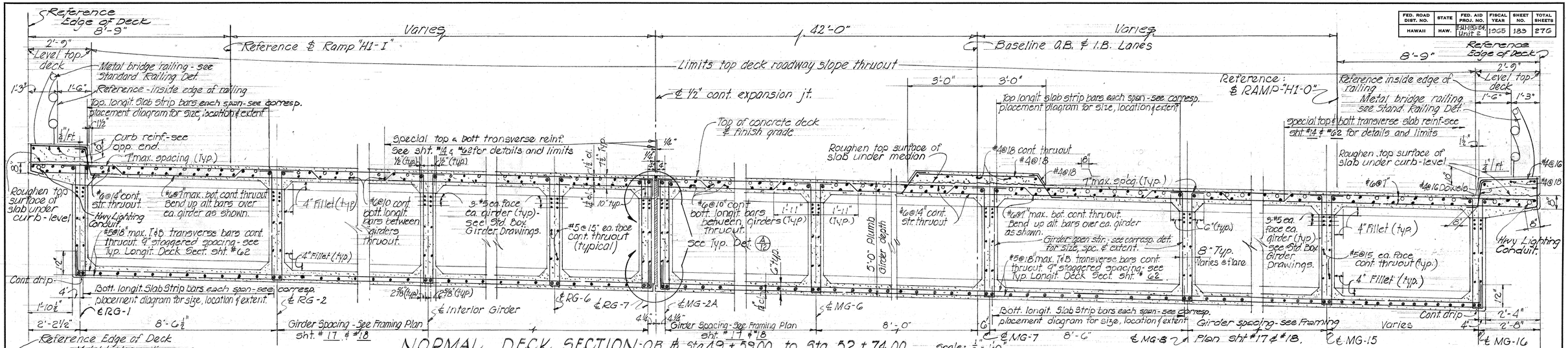
SHEET No. 11 OF 67 SHEETS

ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	"
	DRAWN BY G.T.	"
	TRACED BY	"
	DESIGNED BY R.K.	"
	QUANTITIES BY S.K. S.Y.	"
NOTE BOOK	CHECKED BY D.P. V.H.O.	"
No.		"

SHEET No. 1825 SUPERSEDES SHT. No. 1822. 1822

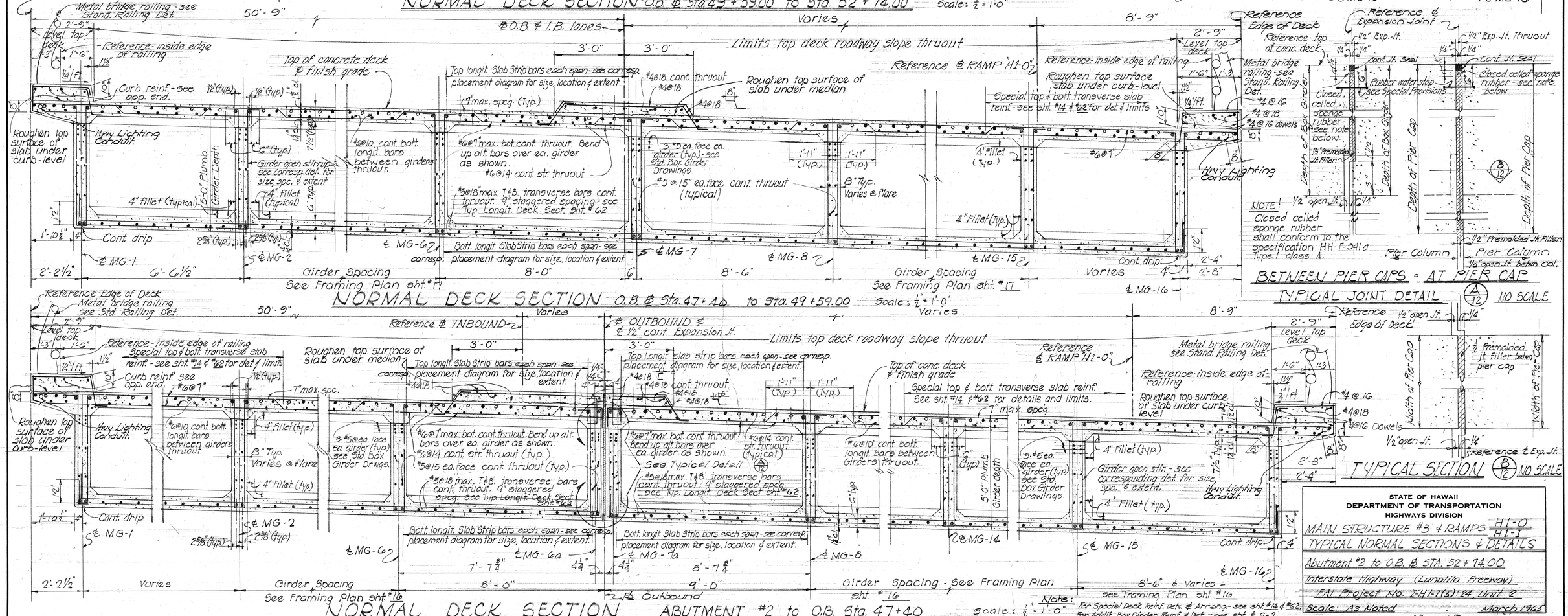
3 ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FAI-H1-1(5)24 Unit 2	1965	183	276



NORMAL DECK SECTION - O.B. ℄ Sta. 49 + 39.00 to Sta. 52 + 74.00

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



NORMAL DECK SECTION O.B. ℄ Sta. 47+40 to Sta. 49+59.00

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

NORMAL DECK SECTION ABUTMENT #2 to O.B. Sta. 47+40

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

Note: For Special Deck Reinf. Dets. & Arrang. - see sht. #14 & #62. For Addit. Box Girder Reinf. & Det. - see sht. # S-2. For Addit. Superstructure Dets. - see sht. #G2, #G3 & #G4.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMPS H1-0 H1-1

TYPICAL NORMAL SECTIONS & DETAILS

Abutment #2 to O.B. ℄ STA. 52 + 74.00

Interstate Highway (Lunalilo Freeway)

FAI Project No. I-HI-1(5):24, Unit 2

Scale: As Noted March 1965

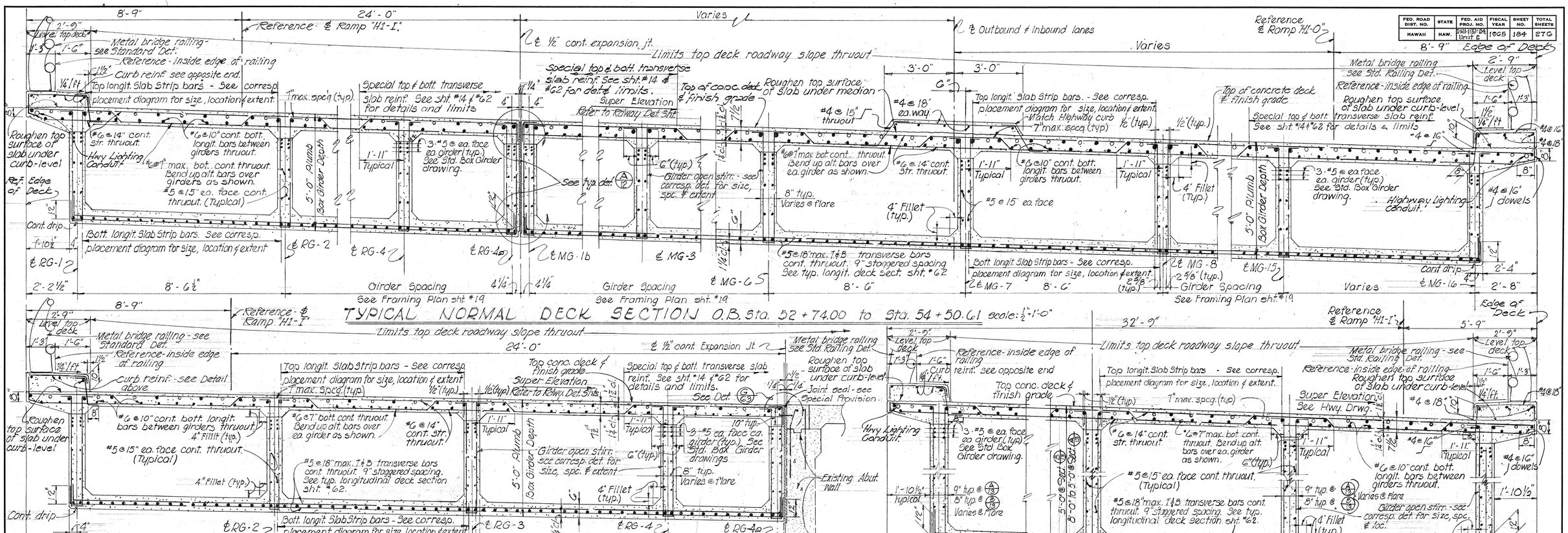
SHEET No. 12 OF 67 SHEETS

183

D ON CLEARPRINT 1000-H

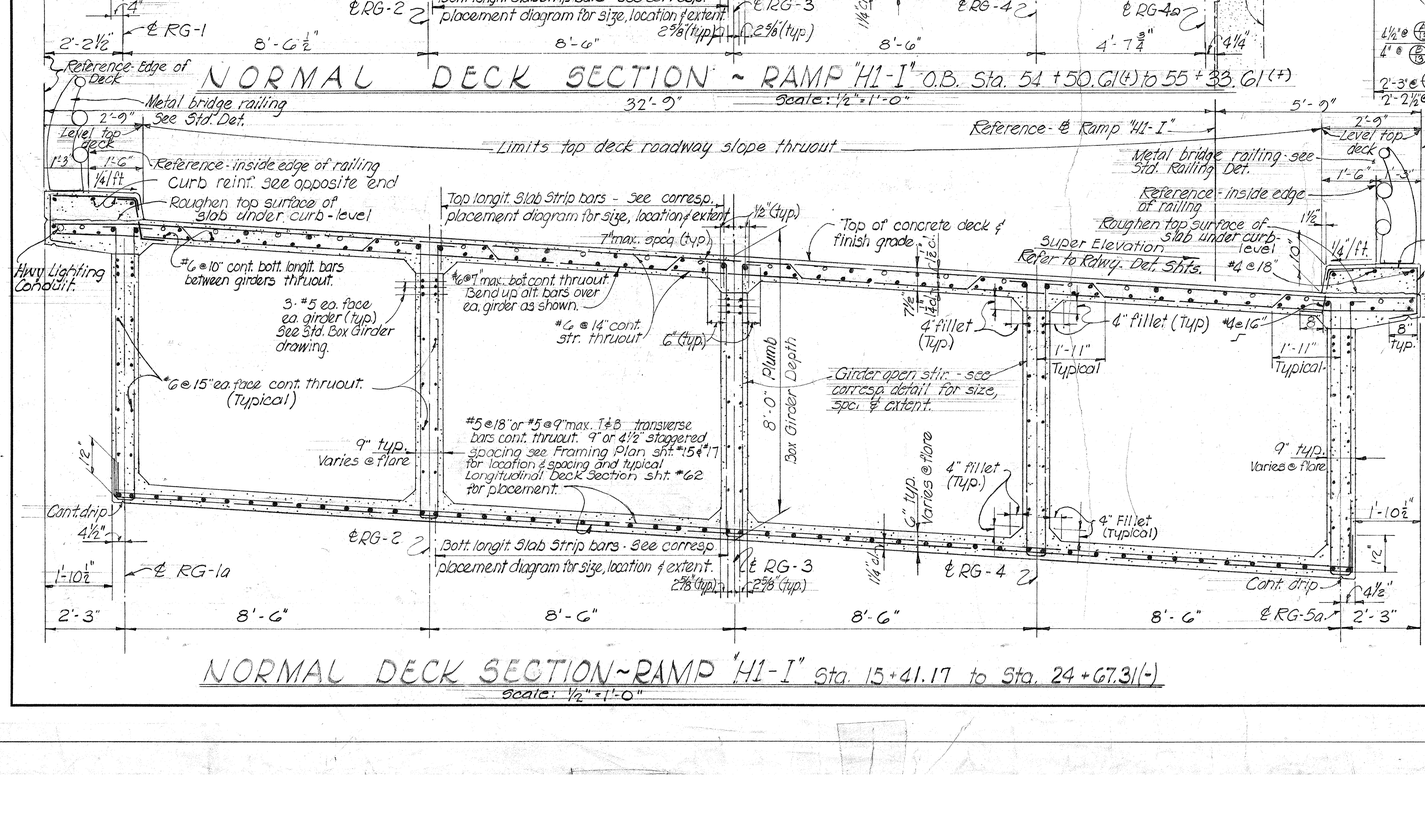
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FAI-(6)-24 Unit 2	1965	184	276

TYPICAL NORMAL DECK SECTION O.B. Sta. 52 + 74.00 to Sta. 54 + 50.61 scale: 1/2"=1'-0"



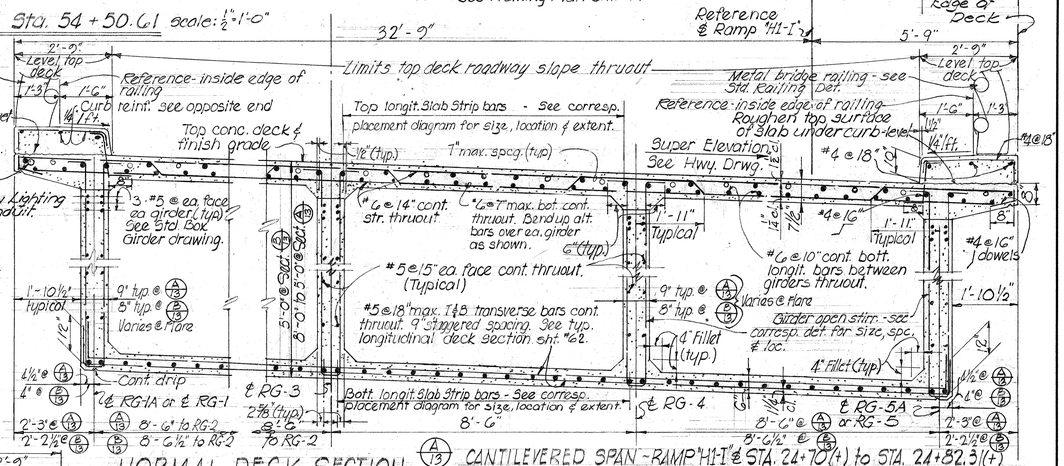
NORMAL DECK SECTION ~ RAMP "H1-I" O.B. Sta. 54 + 50.61(+) to 55 + 33.61(+)

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



NORMAL DECK SECTION ~ RAMP "H1-I" Sta. 15+41.17 to Sta. 24+67.31(-)

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



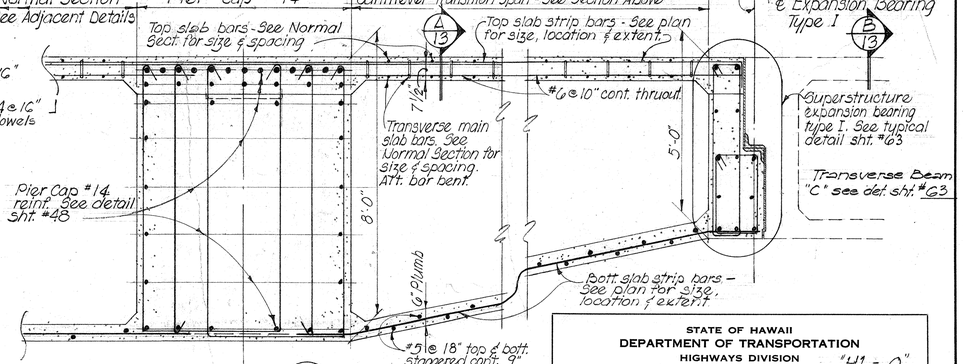
NORMAL DECK SECTION

A/13 CANTILEVERED SPAN - RAMP "H1-I" ℄ STA. 24+10(+) to STA. 24+82.31(+)

B/13 SUSPENDED SPAN OR RAMP "H1-I" ℄ STA. 24+82.31(+) to O.B. ℄ STA. 49+59(+)

Reference Edge of Deck Normal Section See Adjacent Details

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



SECTION C/13

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

NOTES:

1- All vertical dimensions are measured plumb.
2- For Special Deck reinforcement details & arrangements - see sheets #14 & #62
3- For additional Box Girder reinforcement & details see standard drawings Sheet # S-2
4- For additional Superstructural details, see sheets #62, #63 & #64

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

"H1 - 0"
"H1 - I"

MAIN STRUCTURE #3 & RAMPS

TYPICAL NORMAL SECTIONS & DETAILS

O.B. ℄ STA. 52 + 74.00 to STA. 54 + 50.61
RAMP H1-I ℄ STA. 15+40.73 to STA. 55+33.61(+)

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5)24 Unit 2
Scale: As noted March 1965

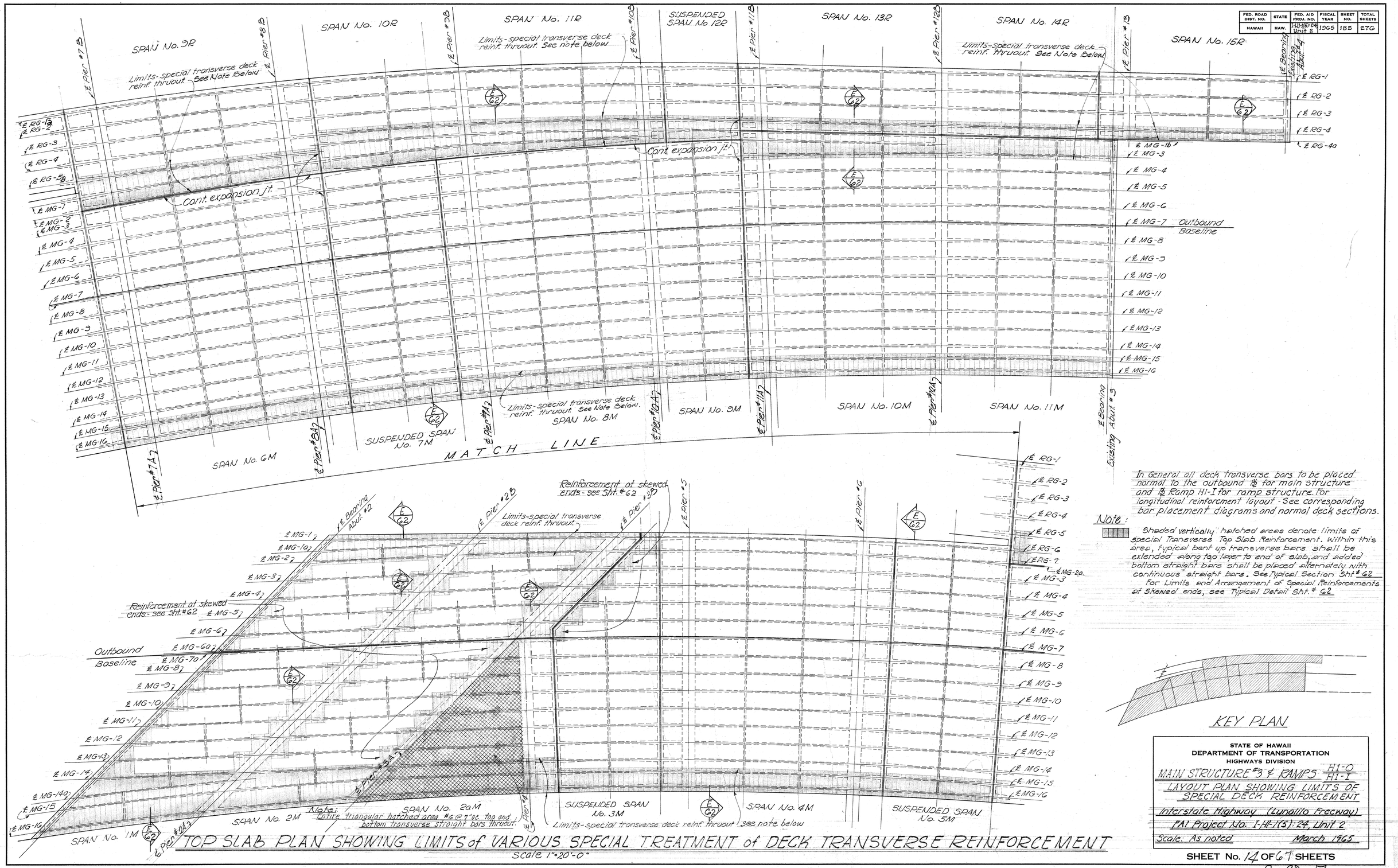
SHEET No. 13 OF 67 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE:
	DRAWN BY A.M.M.	"
NOTE BOOK	TRACED BY R.K. V.C. C.Y.	"
No.	DESIGN BY A.M. W.B. F.S. Y.M.	"
	QUANTITIES BY	"
	CHECKED BY J.T.C.	"

184

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-(5)-24 Unit 2	1965	185	276



TOP SLAB PLAN SHOWING LIMITS of VARIOUS SPECIAL TREATMENT of DECK TRANSVERSE REINFORCEMENT

Scale 1"=20'-0"

In General all deck transverse bars to be placed normal to the outbound ℄ for main structure and ℄ Ramp H1-I for ramp structure. For longitudinal reinforcement layout - See corresponding bar placement diagrams and normal deck sections.

Note:

Shaded vertically hatched areas denote limits of special Transverse Top Slab Reinforcement. Within this area, typical bent up transverse bars shall be extended along top layer to end of slab, and added bottom straight bars shall be placed alternately with continuous straight bars. See Typical Section Sht # 62

For Limits and Arrangement of Special Reinforcements at Skewed ends, see Typical Detail Sht. # 62

KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMPS H1-O H1-I

LAYOUT PLAN SHOWING LIMITS OF SPECIAL DECK REINFORCEMENT

Interstate Highway (Lunalilo Freeway)

FAI Project No. I-H1-1(5):24, Unit 2

Scale: As noted March 1965

SHEET No. 14 OF 67 SHEETS

185

ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY H.M. | TRACED BY R.K. | DESIGNED BY J.F. H.J. | QUANTITIES BY J.T.O. | CHECKED BY P.T.Y. | DATE

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-IHI(5)24 Unit 2	1965	186	276

L = Length of span between ℄ adjacent piers and measured radially along stationline Ramp "H1-I"

℄ Expansion Joint Typ.

BEAM "D" | ℄ Pier #21 | Radial Line Limits of girder Flare | BEAM "B" | BEAM "B" | BEAM "B" | Radial Line Limits of girder Flare | ℄ Pier #20 | Radial Line Limits of girder Flare | BEAM "B" | BEAM "B" | Radial Line Limits of girder Flare | ℄ Pier #19

Edge of deck

TSS 100 / BSS 100
TSS 104 / BSS 103
TSS 105 / BSS 104
TSS 101 / BSS 101
TSS 102 / BSS 102
TSS 106 / BSS 105

3 spaces @ 8'-6" = 25'-6"

60'-0" flare See Typ. Det. Sht #64

Bottom Slab 4"℄ Drain (Typ)

32'-0" Typ. Flare

56'-0"

℄ RG-1a | ℄ RG-2 | ℄ RG-3 | ℄ RG-4 | ℄ Ramp "H1-I" | ℄ RG-5a

CANTILEVERED SPAN No 1R

Bottom Slab Transverse Reinf. Top & Bott. Layers

FULL SPAN #5@9" Top & Bottom Layers 4½" staggered spacing

L/4 #5@18" Top & Bottom Balance Thruout 9" staggered spacing

L/4 SPAN No 1R L/4

L/4 #5@9" Top & Bottom Layers 4½" staggered spacing

L/4 #5@9" Top & Bottom Layers 4½" staggered spacing

L/4 SPAN No 2R L/4

L/4 #5@18" Top & Bottom Balance Thruout 9" staggered spacing

L/4 #5@9" Top & Bottom Layers 4½" staggered spacing

MATCH LINE

MATCH LINE | ℄ Pier #19 | BEAM "D" | ℄ Exp. Hinge Bearing Type II | BEAM "D" | Radial Line Limits of girder Flare | BEAM "B" | BEAM "B" | Radial Line Limits of girder Flare | BEAM "D" | ℄ Fixed Hinge Bearing Type II | BEAM "D" | ℄ Pier #18 | Radial Line Limits of girder Flare | BEAM "B" | BEAM "B" | Edge of deck | BEAM "B" | Radial Line Limits of girder Flare | ℄ Pier #17 | Radial Line Limits of girder Flare | BEAM "B"

TSS 103 / BSS 100
TSS 107 / BSS 103
TSS 122 / BSS 106
TSS 123 / BSS 107
TSS 123 / BSS 101
TSS 108 / BSS 100
TSS 111 / BSS 103
TSS 109 / BSS 108
TSS 112 / BSS 110

3 spaces @ 8'-6" = 25'-6"

56'-0" flare See Typ. Det. Sht #64

15'-0" Typ. Flare

8" typ.

Bottom Slab 4"℄ Drain (Typ.)

27'-0" Typ. Flare

℄ RG-1a | ℄ RG-2 | ℄ RG-3 | ℄ RG-4 | ℄ Ramp "H1-I" | ℄ RG-5a

CANTILEVERED SPAN No 2R

Bottom Slab Transverse Reinf. Top & Bott. Layers

FULL SPAN #5@9" Top & Bott. Layers 4½" staggered spacing

L/3 #5@9" Top & Bott. 4½" staggered spcg.

L/3 SUSPENED SPAN No 3R L/3

L/2 #5@18" Top & Bott. 9" staggered spacing

L/4 #5@9" Top & Bott. 4½" staggered spcg.

CANTILEVERED SPAN No 4R

FULL SPAN #5@9" Top & Bott. 4½" staggered spacing

L/4 #5@9" Top & Bottom 4½" staggered spacing

L/4 SPAN No 4R L/4

L/4 #5@18" Top & Bottom Balance Thruout 9" staggered spacing

L/4 #5@9" Top & Bottom 4½" staggered spacing

L/4 #5@9" Top & Bottom 4½" staggered spcg.

MATCH LINE

MATCH LINE | ℄ Pier #16 | Radial Line Limits of girder Flare | BEAM "D" | ℄ Exp. Hinge Bearing Type II | BEAM "D" | ℄ Pier #15 | Limits of girder Flare | BEAM "B" | BEAM "B" | Limits of girder Flare | ℄ Pier #14 | Edge of deck

TSS 110 / BSS 109
TSS 113 / BSS 111
TSS 113 / BSS 111
TSS 110 / BSS 109
TSS 114 / BSS 100
TSS 118 / BSS 103
TSS 118 / BSS 103
TSS 114 / BSS 100
TSS 115 / BSS 112
TSS 119 / BSS 114
TSS 119 / BSS 114
TSS 115 / BSS 112

3 spaces @ 8'-6" = 25'-6"

8" typ.

51'-0" flare See Typ. Det. Sht. #64

Bottom Slab 4"℄ Drain (Typ.)

27'-0" Typ. Flare

38'-6"

℄ RG-1a | ℄ RG-2 | ℄ RG-3 | ℄ RG-4 | ℄ Ramp "H1-I" | ℄ RG-5a

BEAM "B" | BEAM "B"

Bottom Slab Transverse Reinf. Top & Bott. Layers

#5@18" Top & Bottom Layers (9" staggered spcg.) | #5@9" Top & Bottom Layers 4½" staggered spcg.

SUPPORTED SPAN No 5R

CANTILEVERED SPAN No 6R

#5@18" Top & Bottom Layers Typical Thruout 9" staggered spacing

SPAN No 6R

Edge of deck

BM "B"

Edge of deck

MATCH LINE

SUPPORTED SPAN NO. 5R

Note: Provide 4"℄ bottom slab pipe drain & vent @ each span & ea. cell as shown thruout.

NOTE: For additional superstructure details see "Typical Detail Shts. #62 #63 #64 & Standard drawings.

See Sht. #17

KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAMP "H1-I"
DECK FRAMING PLAN

H1-I & Sta. 15+41.17 to 23+80.84
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5)24 Unit 2
Scale: 1"=10'-0" March 1965

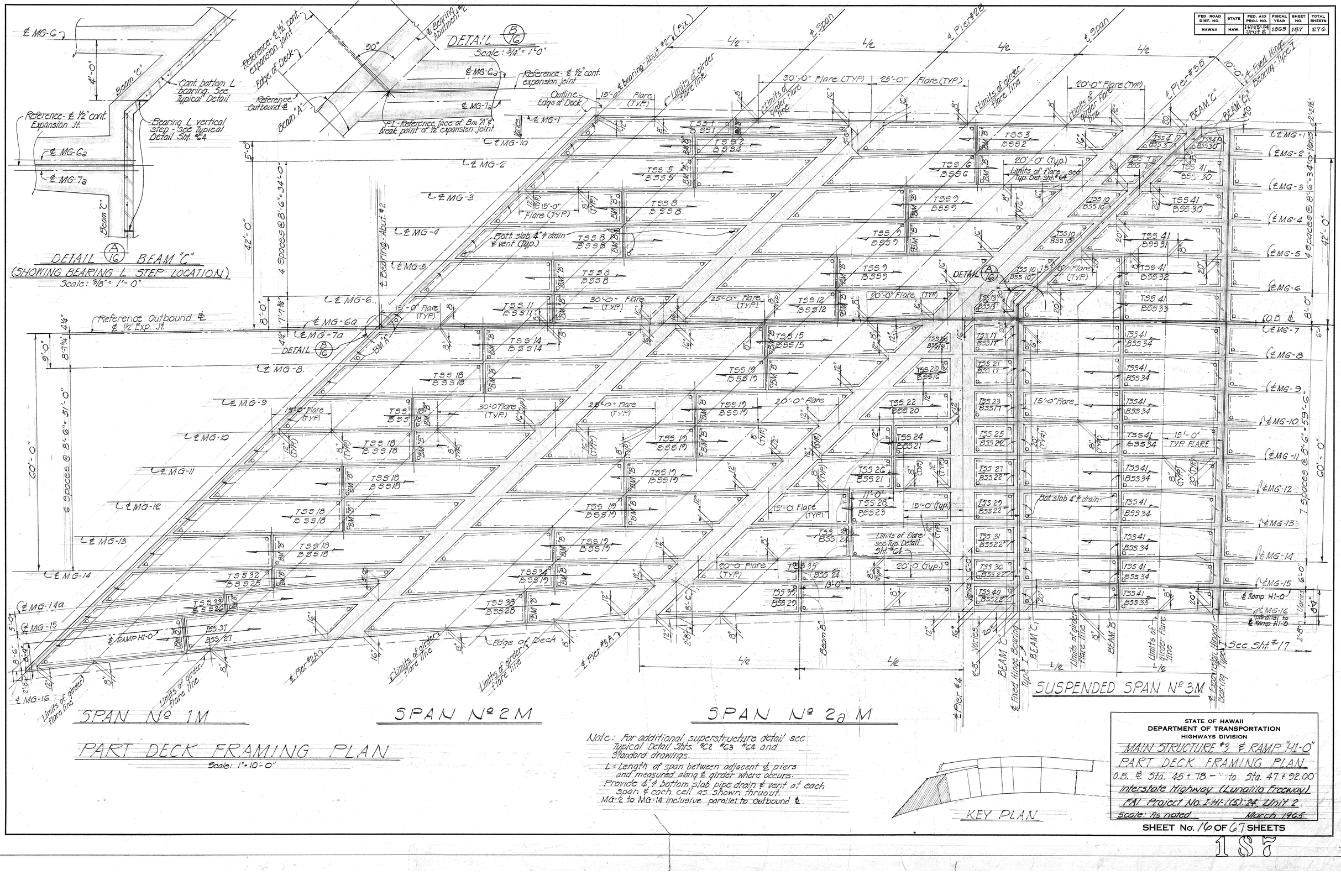
SHEET No. 15 OF 67 SHEETS

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY AM	"
	TRACED BY	"
NOTE BOOK	DESIGNED BY RK CY	"
	QUANTITIES BY AH JES	"
No.	CHECKED BY JFO	"

15 G

D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)-24 UNIT 2	1965	187	276



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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
PART DECK FRAMING PLAN
O.B. ℄ Sta. 45+78 – to Sta. 47+92.00
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5)-24, Unit 2
Scale: As noted March 1965

SHEET No. 16 OF 67 SHEETS

187

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	188	276

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY BJF	" "
NOTE BOOK	TRACED BY RK, DD, HV, CY, GK	" "
	DESIGNED BY WF, HV, BJF	" "
No.	QUANTITIES BY " " "	" "
	CHECKED BY JTD, BJF	" "

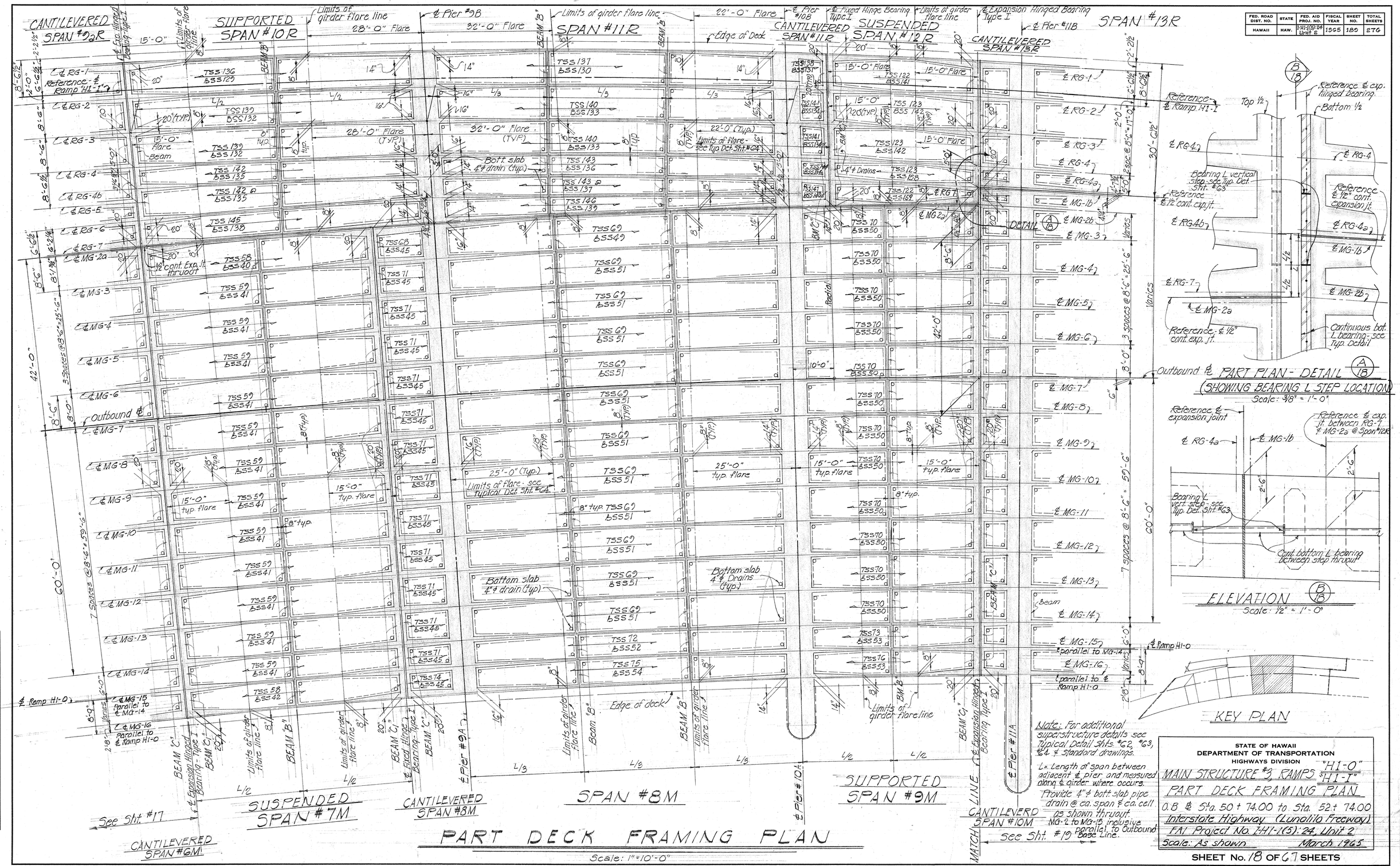
SPAN No. 6R — ℄ Pier #5 — 9" — Limits under Flare line — BEAM "B" — SPAN No. 7R — Edge of Deck — Limits of Girder Flare line — ℄ Pier #6 — RG-1 & RG-5a CANTILEVERED TRANSITION SPAN No. 7R — 1" Thick Elastomeric Bearing Pad — RG-1 RG-5 — Limits of Girder Flare line — SUSPENDED SPAN No. 8R — Limits of Girder Flare line — ℄ Expansion Hinged Bearing Type I — ℄ Pier #7B — CANTILEVERED SPAN No. 9R — SPAN No. 9R — ℄ Pier #8B — CANTILEVERED SPAN No. 9R — BEAM "C"

℄ RG-1 — ℄ RG-2 — ℄ RG-3 — ℄ RG-4 — ℄ RG-4b — ℄ RG-5 — ℄ RG-6 — ℄ RG-7 — ℄ MG-2a — ℄ MG-3 — ℄ MG-4 — ℄ MG-5 — ℄ MG-6 — ℄ MG-7 — ℄ MG-8 — ℄ MG-9 — ℄ MG-10 — ℄ MG-11 — ℄ MG-12 — ℄ MG-13 — ℄ MG-14 — ℄ MG-15 — ℄ MG-16

℄ Ramp H1-1 — Stationline Ramp H1-1 — ℄ Ramp H1-0 — Outbound Baseline — Outbound ℄

TSS115 BSS112 · TSS116 BSS113 · TSS119 BSS114 · TSS120 BSS115 · TSS119 BSS114 · TSS120 BSS115 · TSS116a BSS113 · TSS117a BSS100 · TSS117 BSS100 · TSS121 BSS103 · TSS121 BSS103 · TSS122 BSS116 · TSS123 BSS117 · TSS122 BSS116 · TSS123 BSS117 · TSS124 BSS118 · TSS125 BSS119 · TSS127 BSS121 · TSS128 BSS122 · TSS127 BSS121 · TSS128 BSS122 · TSS127 BSS121 · TSS128 BSS122 · TSS130 BSS121 · TSS131 BSS124 · TSS135 BSS120 · TSS134 BSS127 · TSS126 B.S.S120 · TSS129 BSS123 · TSS129 BSS123 · TSS132 BSS125 · TSS135 BSS126 · TSS42 BSS36 · TSS43 BSS37 · TSS45 BSS36 · TSS46 BSS38 · TSS48 BSS36 · TSS49 BSS38 · TSS50 BSS36 · TSS51 BSS38 · TSS50 BSS36 · TSS51 BSS38 · TSS50 BSS36 · TSS51 BSS38 · TSS50 BSS36 · TSS51 BSS38 · TSS50 BSS36 · TSS51 BSS38 · TSS50 BSS36 · TSS52 BSS36 · TSS55 BSS36 · TSS53 BSS38 · TSS56 BSS39 · TSS44 BSS36 · TSS47 BSS36 · TSS47 BSS36 · TSS47 BSS36 · TSS47 BSS36 · TSS47 BSS36 · TSS47 BSS36 · TSS54 BSS36 · TSS57 BSS36 · TSS58 BSS40 · TSS59 BSS41 · TSS59 BSS41 · TSS59 BSS41 · TSS59 BSS41 · TSS59 BSS41 · TSS59 BSS41 · TSS59 BSS41 · TSS58 BSS42 · TSS60 BSS43 · TSS62 BSS45 · TSS62 BSS45 · TSS62 BSS45

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)-24 Unit 2	1965	189	276



PART DECK FRAMING PLAN

Scale: 1" = 10'-0"

PART PLAN - DETAIL (A/18)

(SHOWING BEARING L STEP LOCATION)

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

ELEVATION (B/18)

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

KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-O" "H1-I"

PART DECK FRAMING PLAN

O.B. ℄ Sta. 50 + 74.00 to Sta. 52 + 74.00

Interstate Highway (Lunalilo Freeway)

FAI Project No. I-H1-1(5):24, Unit 2

Scale: As shown March 1965

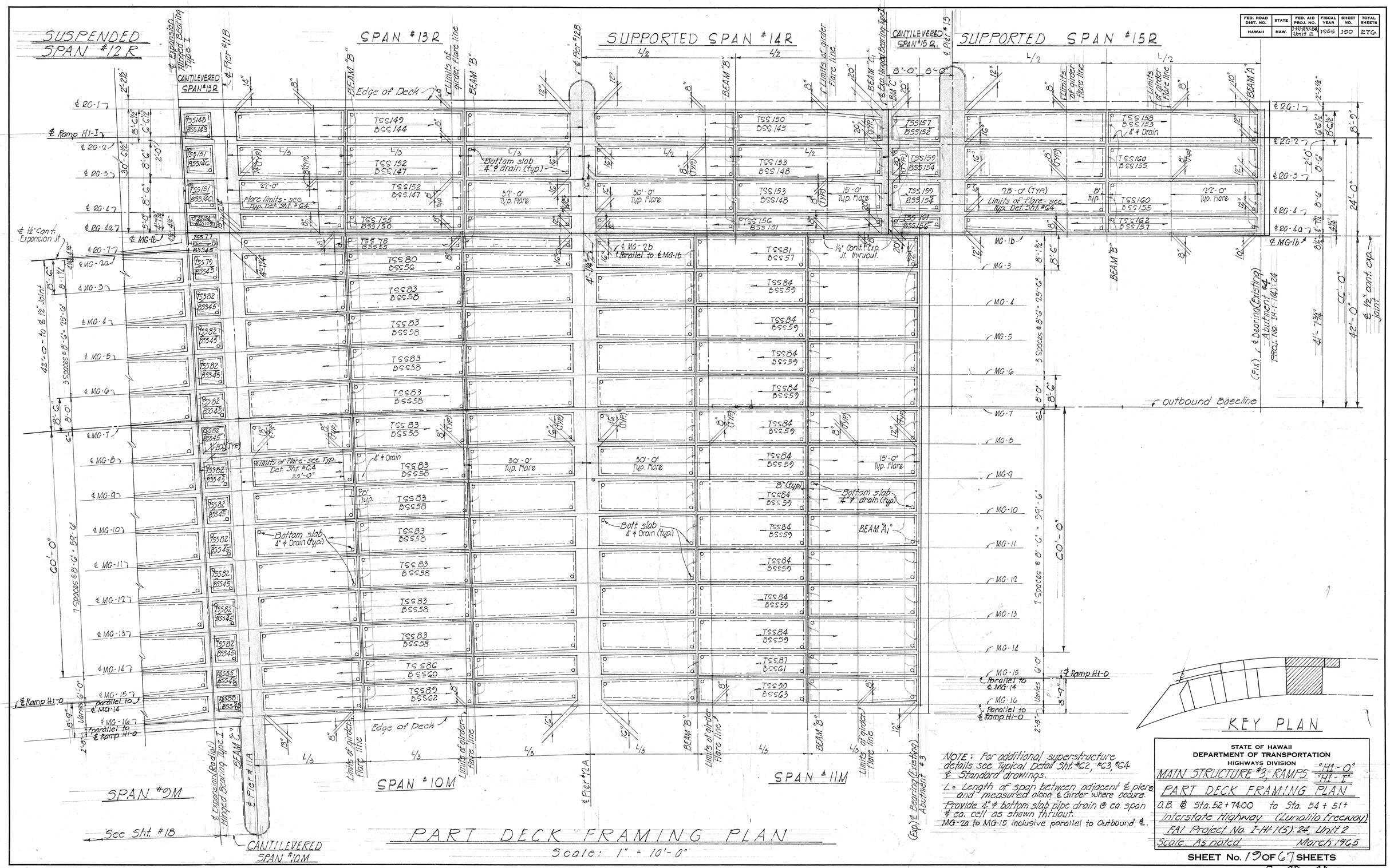
SHEET No. 18 OF 67 SHEETS

189

ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY GT | TRACED BY RK HN DO CY | DESIGNED BY | QUANTITIES BY JF HM TOY WB | CHECKED BY JTO PTY | DATE

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	190	276



NOTE: For additional superstructure details see Typical Detail Sht. #62, #63, #64 & Standard drawings.

L = Length of span between adjacent ℄ piers and measured along ℄ Girder where occurs.

Provide 4" ϕ bottom slab pipe drain @ ea. span & ea. cell as shown thruout.

MG-2a to MG-15 inclusive parallel to Outbound ℄.

KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-O" "H1-I"

PART DECK FRAMING PLAN

O.B. ℄ Sta. 52+74.00 to Sta. 54+51+

Interstate Highway (Lunalilo Freeway)

FAI Project No. I-HI-1(5)24, Unit 2

Scale: As noted March 1965

SHEET No. 19 OF 67 SHEETS

190

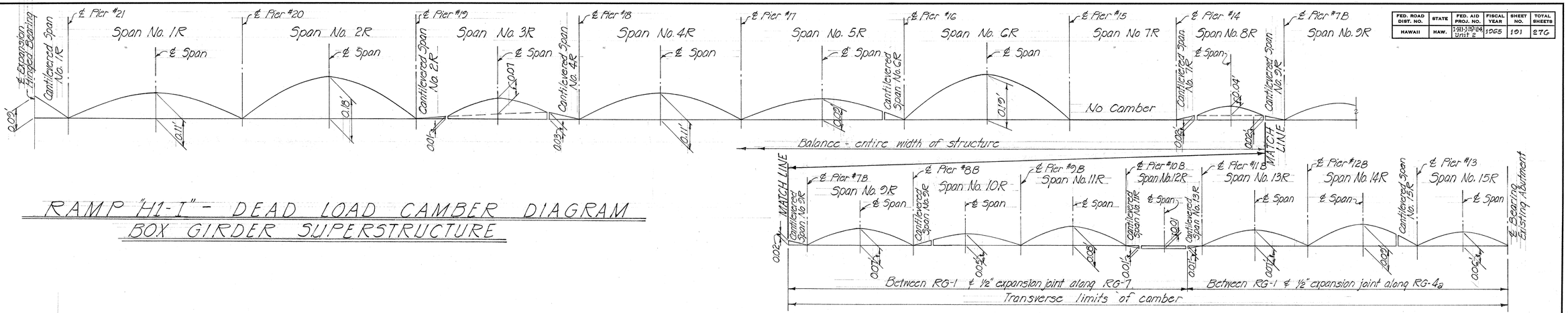
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
NOTE BOOK	TRACED BY RK DO HN	"
	DESIGNED BY JF NY TS HM	"
No.	QUANTITIES BY JF NY TS HM	"
	CHECKED BY JTO PTY	"

PART DECK FRAMING PLAN

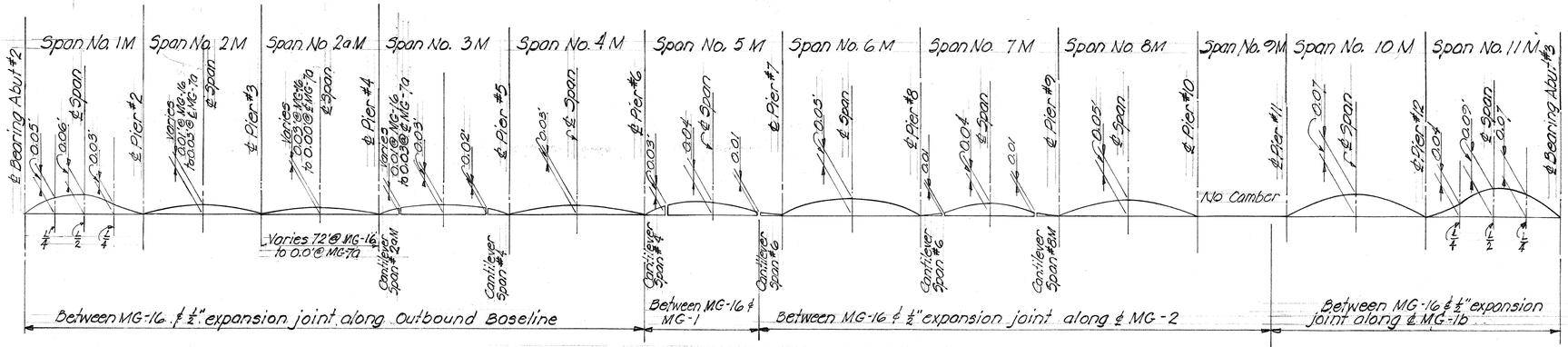
Scale: 1" = 10'-0"

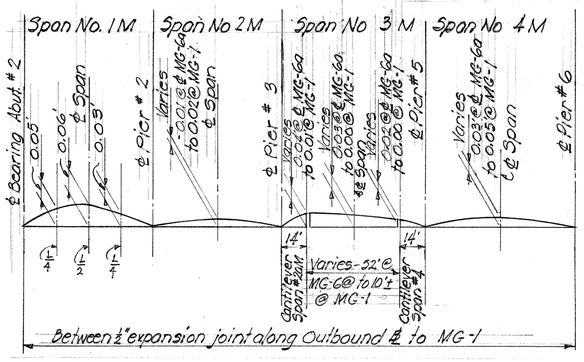
ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(9)24 Unit 2	1965	191	276



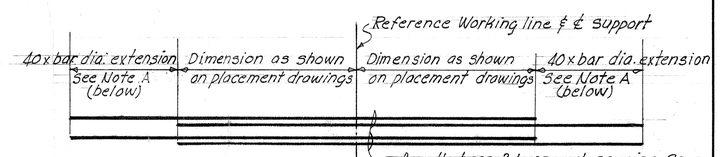
RAMP "H1-I" - DEAD LOAD CAMBER DIAGRAM
BOX GIRDER SUPERSTRUCTURE





MAIN STRUCTURE No. 3 ~ DEAD LOAD CAMBER DIAGRAM
BOX GIRDER SUPERSTRUCTURE

Note!
See shts. #43 to #48 inclusive for Pier Cap camber.



PART PLAN

NOTE A: Alternate ends of all bundle bars shall be extended and staggered as shown, except as otherwise detailed and dimensioned on placement diagram.

TYPICAL ARRANGEMENT OF BUNDLED BARS IN SLAB STRIPS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY AY	CM "
NOTE BOOK	TRACED BY	"
No.	DESIGNED BY RK	DO "
	QUANTITIES BY	"
	CHECKED BY VTO	PTY "

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-O", "H1-I"
SUPERSTRUCTURE CAMBER DIAGRAM & DETAILS

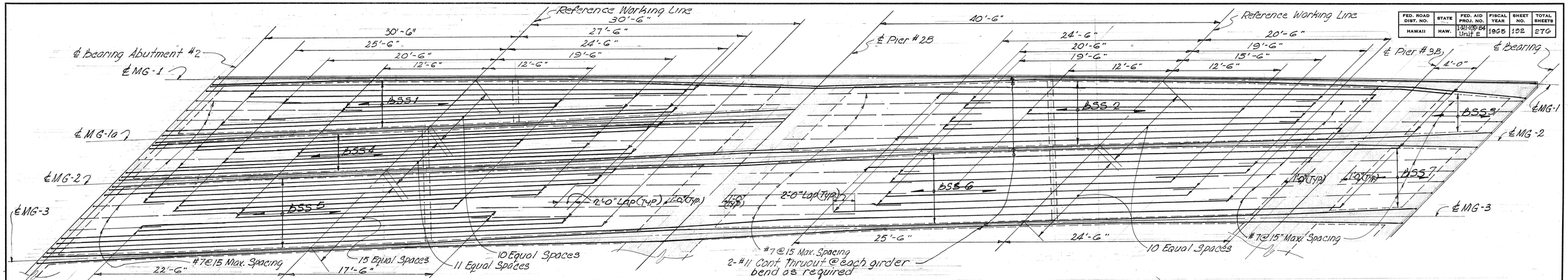
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(6):24 Unit 2
Scale: As noted March 1965

SHEET No. 20 OF 67 SHEETS

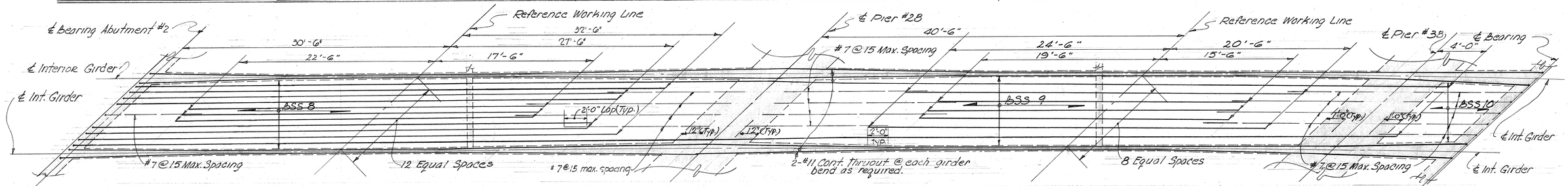
191

ON CLEARPRINT 1000-H

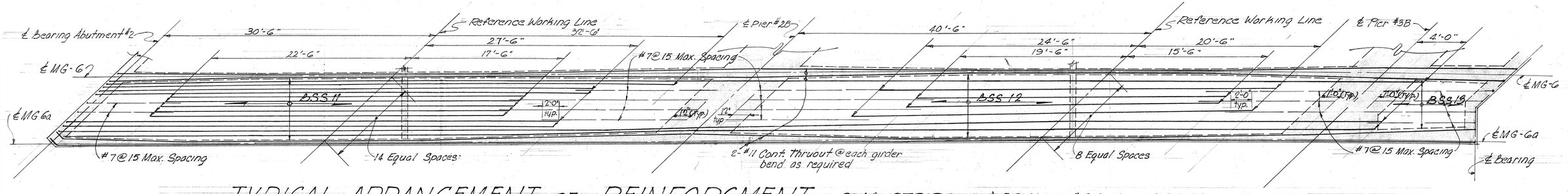
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-(5)-24 Unit 2	1965	192	276



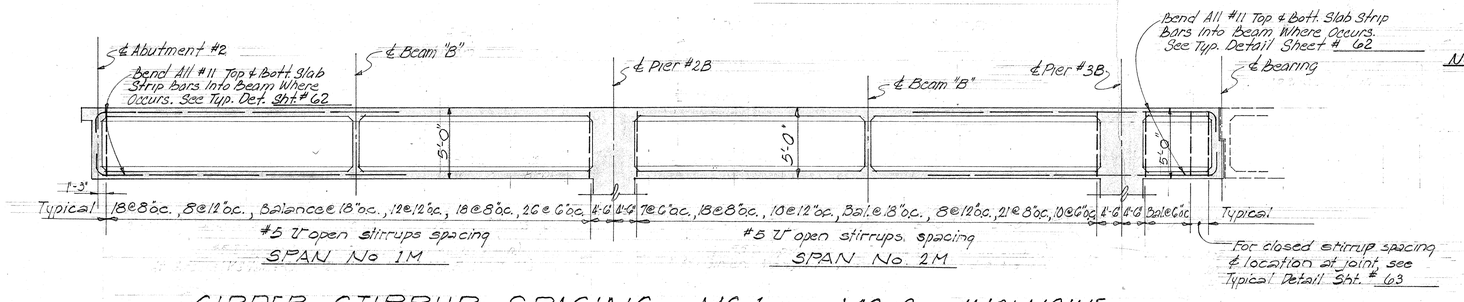
TYPICAL ARRANGEMENT OF REINFORCMENT ∘ SLAB STRIPS BSS 1, BSS 2, BSS 3, BSS 4, BSS 5, BSS 6, BSS 7



TYPICAL ARRANGEMENT OF REINFORCMENT ∘ SLAB STRIPS ∘ BSS 8, BSS 9, BSS 10



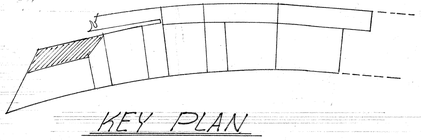
TYPICAL ARRANGEMENT OF REINFORCMENT ∘ SLAB STRIPS ∘ BSS 11, BSS 12, BSS 13



GIRDER STIRRUP SPACING ∘ MG-1 thru MG-6a INCLUSIVE

Note: All Stirrups To Be Placed Plumb.
Girder Depth Measured Plumb. See Normal Sect.
See Sht. #64 for stirrup layout plan at skew pier & abutment.

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and normal section.
All #7 @ 15" max. bars shall be extended & lapped at a minimum of 2'-0" with the adjacent #11 bars as shown.



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3

TYPICAL BAR PLACEMENT DIAGRAM

SLAB STRIPS BSS 1 thru BSS 13 INCLUSIVE

OB & Sta. 45+74- to Sta. 47+40.00
Interstate Highway (Lunalilo Freeway) FAI Proj. No. I-HI-1(5):24, Unit 2 Scale: As noted March 1965

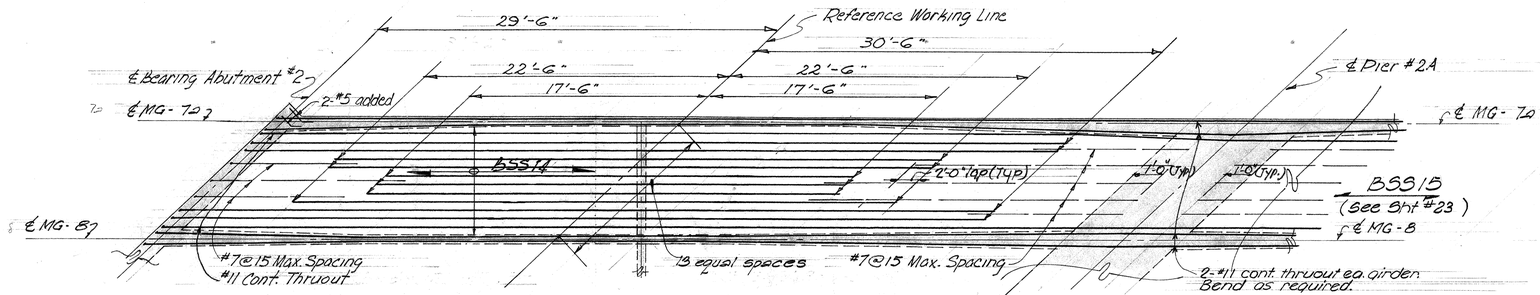
SHEET No. 21 OF 67 SHEETS

192

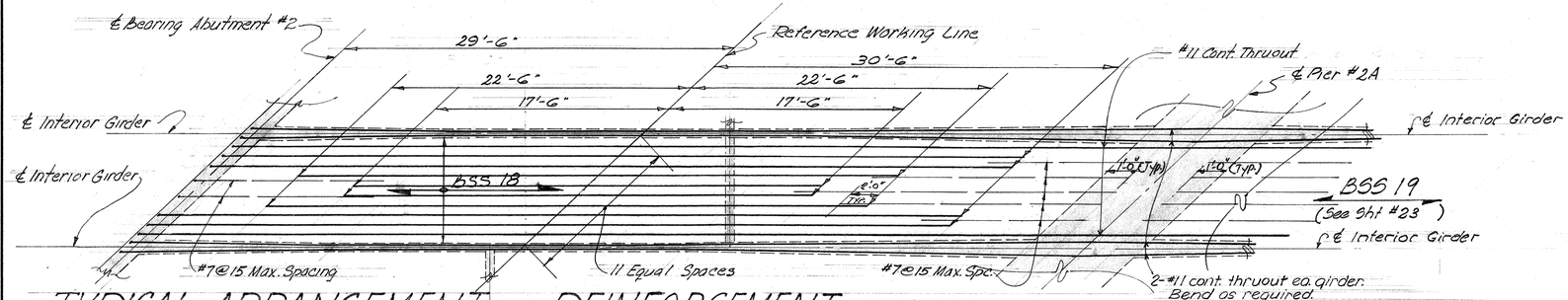
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY RK	"
NOTE BOOK	TRACED BY RK VC	"
	DESIGNED BY RK VC	"
No.	QUANTITIES BY JF MY TS	"
	CHECKED BY JTO PTY	"

ON CLEARPRINT 1000-H

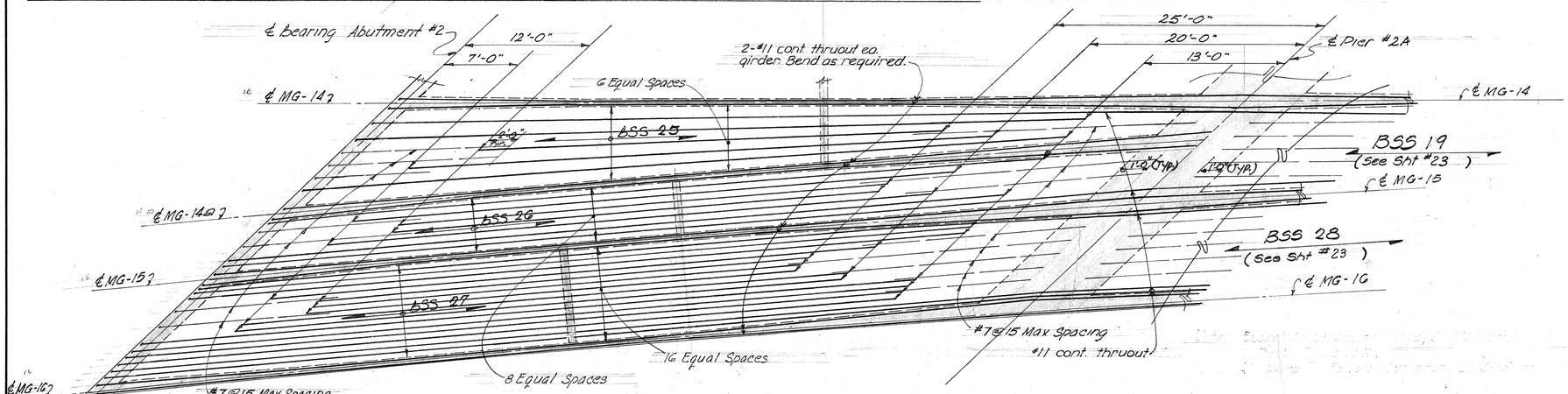
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(63) 24 Unit 2	1965	193	276



TYPICAL ARRANGEMENT OF REINFORCEMENT ◦ SLAB STRIP ◦ BSS 14

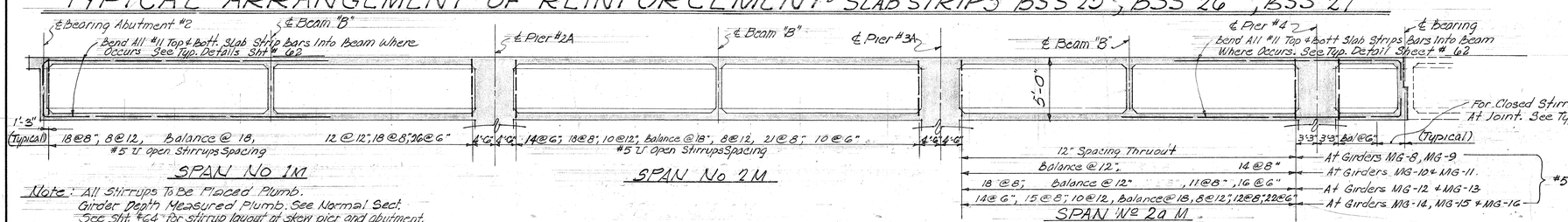


TYPICAL ARRANGEMENT OF REINFORCEMENT ◦ SLAB STRIP ◦ BSS 18



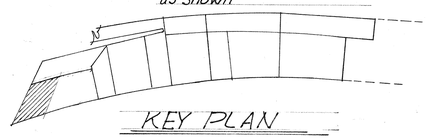
TYPICAL ARRANGEMENT OF REINFORCEMENT ◦ SLAB STRIPS BSS 25, BSS 26, BSS 27

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and normal sections
All #7@15" max. bars shall be extended and lapped at a minimum of 2'-0" with the adjacent #11 bar as shown



Note: All Stirrups To Be Placed Plumb. Girder Depth Measured Plumb. See Normal Sect. See Sht. #64 for stirrup layout at skew pier and abutment.

TYPICAL GIRDER STIRRUPS SPACING AT MG-7a THRU MG-16 INCLUSIVE EXCEPT AS OTHERWISE NOTED



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS BSS 14, 18, 25, 26 & 27

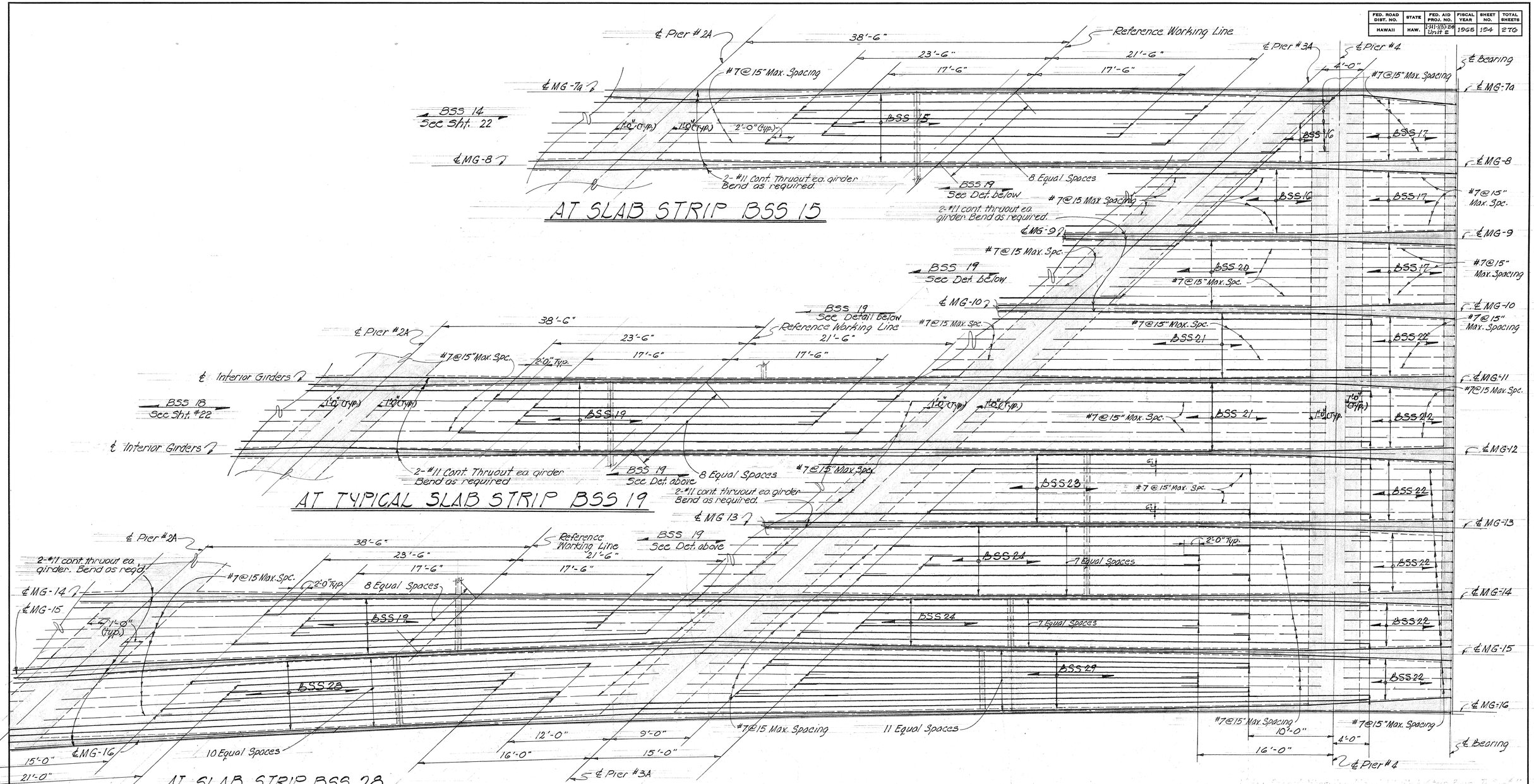
OB & Sta 45+78.44 to 46+50.28
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(63) 24 Unit 2
Scale: As noted March 1965

SHEET No. 22 OF 67 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY LE VC	
	TRACED BY LE	
NOTE BOOK	DESIGNED BY VC	
	QUANTITIES BY JS JE CH	
No.	CHECKED BY JS EM	

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	194	270



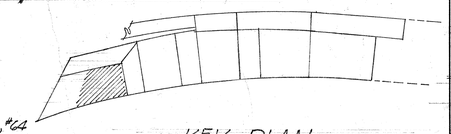
AT SLAB STRIP BSS 15

AT TYPICAL SLAB STRIP BSS 19

AT SLAB STRIP BSS 28

TYPICAL ARRANGEMENT OF REINFORCEMENT - SLAB STRIPS BSS 15, BSS16, BSS 17, BSS19 thru 24 incl., BSS 28 & BSS 29

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and normal section.
All #7@15 max. bars shall be extended and lapped at a min. of 2'-0" with the adjacent #11 bars as shown.



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS BSS 14 THRU BSS 17; BSS 19 THRU BSS 24; BSS 28 THRU BSS 19 INCL.

Interstate Highway (Lunalilo Freeway) FAI Proj. No. I-HI-1(5)24 Unit 2 Scale: As noted March 1965

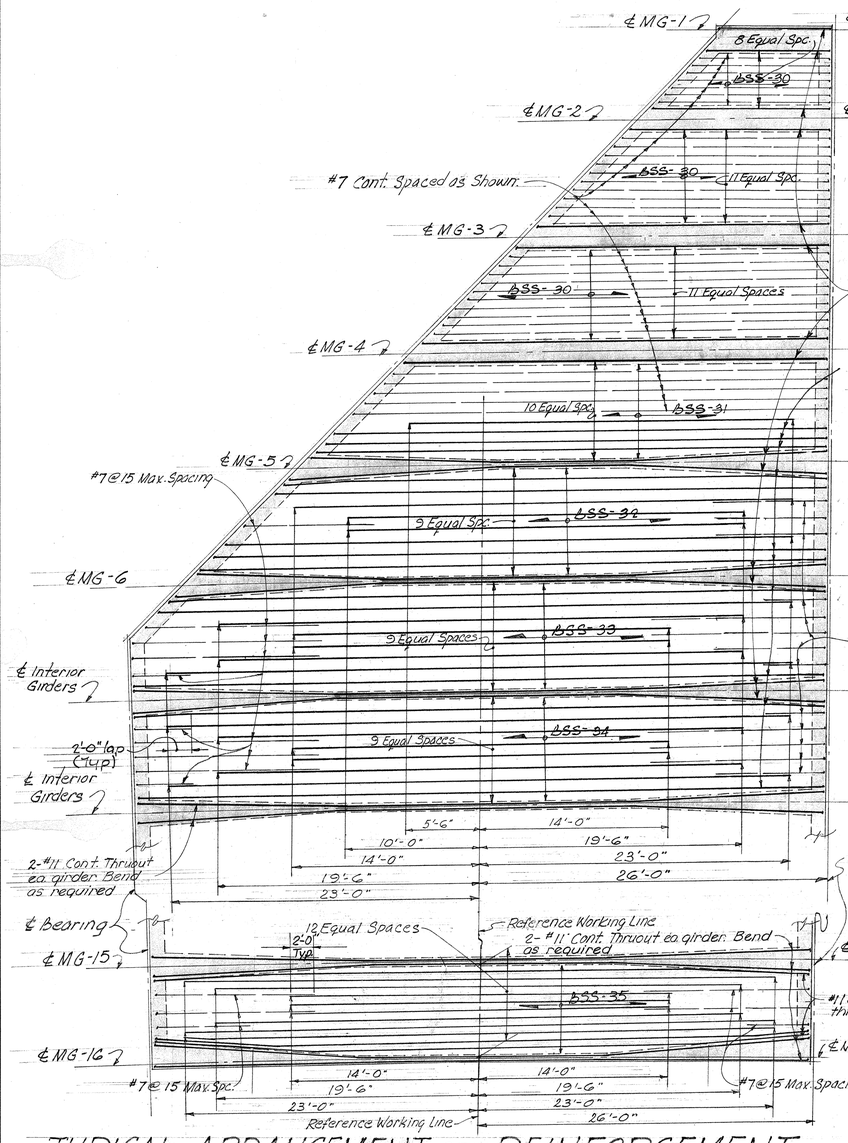
SHEET No. 23 OF 67 SHEETS

194

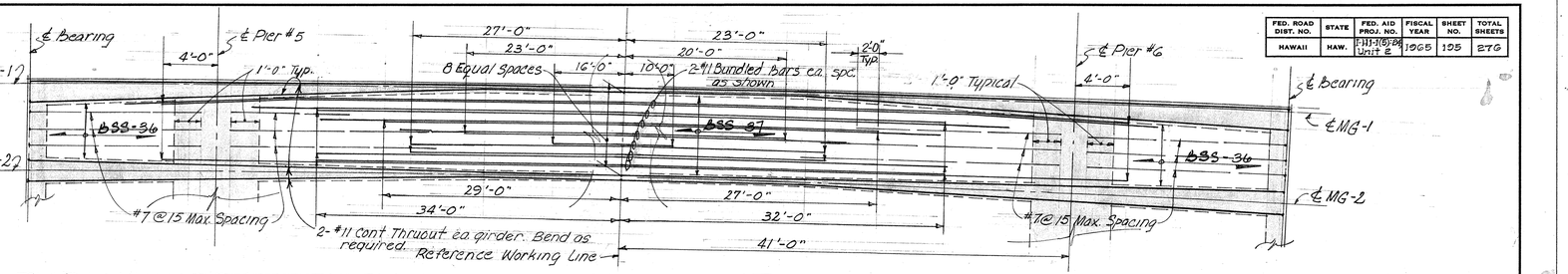
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY EK VC	" " " "
NOTE BOOK	TRACED BY	" " " "
No.	DESIGNED BY HH JF	" " " "
	QUANTITIES BY	" " " "
	CHECKED BY HH FHF	" " " "

ON CLEARPRINT 1000-H

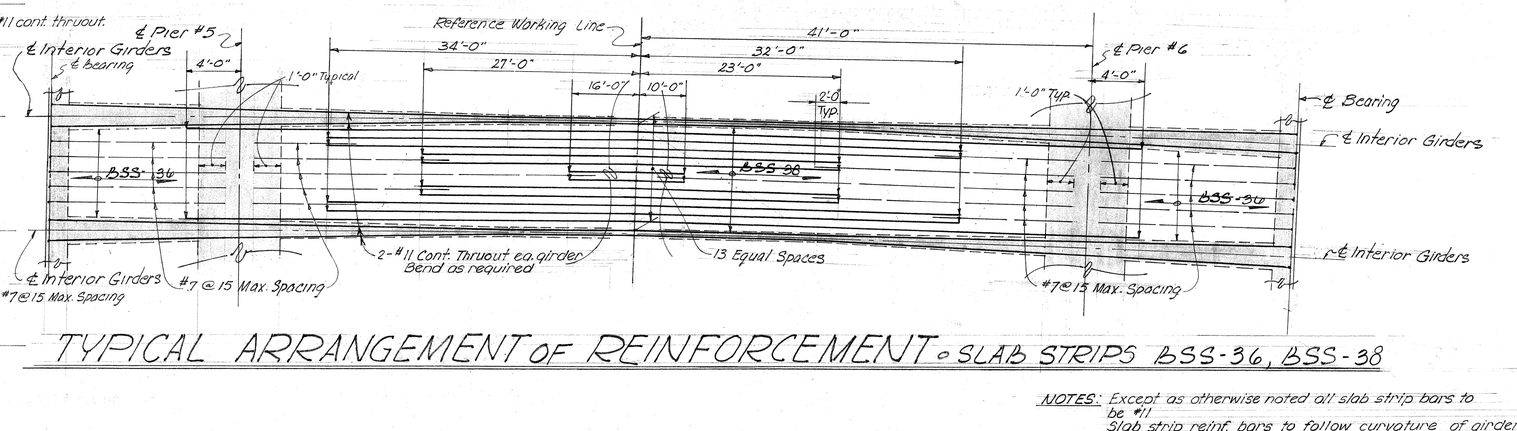
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FAI-1(6)24 Unit 2	1965	195	276



TYPICAL ARRANGEMENT OF REINFORCEMENT ◦ SLAB STRIPS ◦ BSS-30 THRU BSS-35 INCLUSIVE

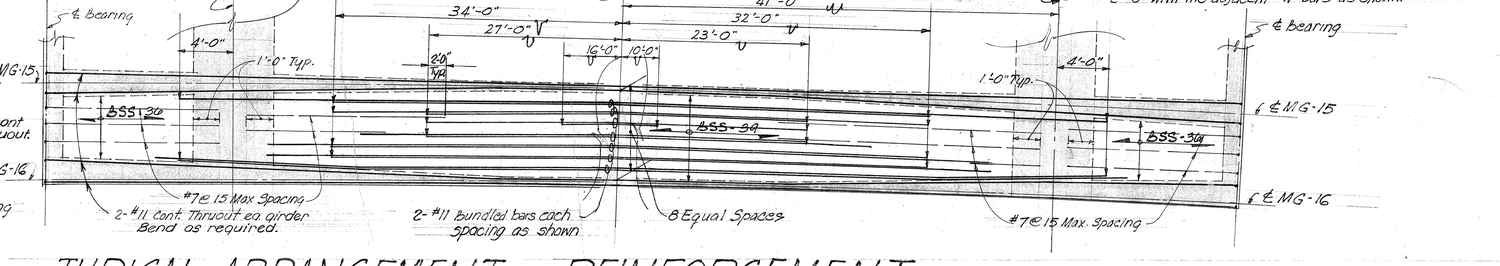


TYPICAL ARRANGEMENT OF REINFORCEMENT ◦ SLAB STRIPS BSS-36, BSS-37

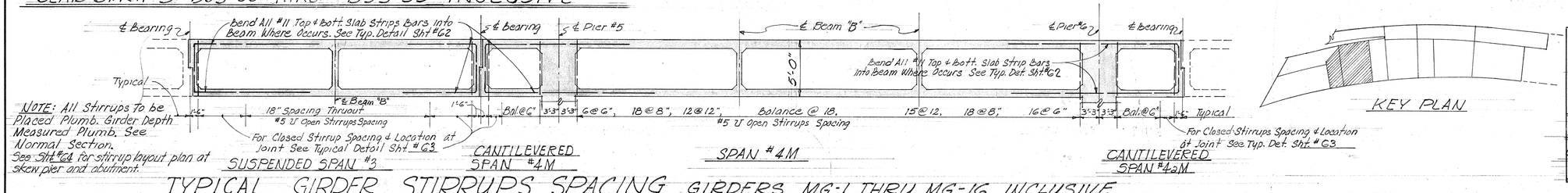


TYPICAL ARRANGEMENT OF REINFORCEMENT ◦ SLAB STRIPS BSS-36, BSS-38

NOTES: Except as otherwise noted all slab strip bars to be #11
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details See Shts. #62, #63, #64 & Normal Sections
For typical arrangement and detail of bundled bars - See Sht. #20
All #7 @ 15" max. bars shall be extended & lapped @ a min. of 2'-0" with the adjacent #11 bars as shown.



TYPICAL ARRANGEMENT OF REINFORCEMENT ◦ SLAB STRIPS BSS-36, BSS-39



NOTE: All Stirrups to be Placed Plumb. Girder Depth Measured Plumb. See Normal Section.
See Sht #64 for stirrup layout plan at skew pier and abutment.

TYPICAL GIRDER STIRRUPS SPACING GIRDERS MG-1 THRU MG-16 INCLUSIVE

KEY PLAN

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY RE	"
	TRACED BY RE VC GK	"
	DESIGNED BY RE VC GK	"
NOTE BOOK	QUANTITIES BY HM JE FH	"
No.	CHECKED BY HD EFF	"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"

TYPICAL BAR PLACEMENT DIAGRAM

SLAB STRIPS BSS-30 thru BSS-39 INCLUSIVE

OB #1 STA. 47+40.00 to 49+04.00

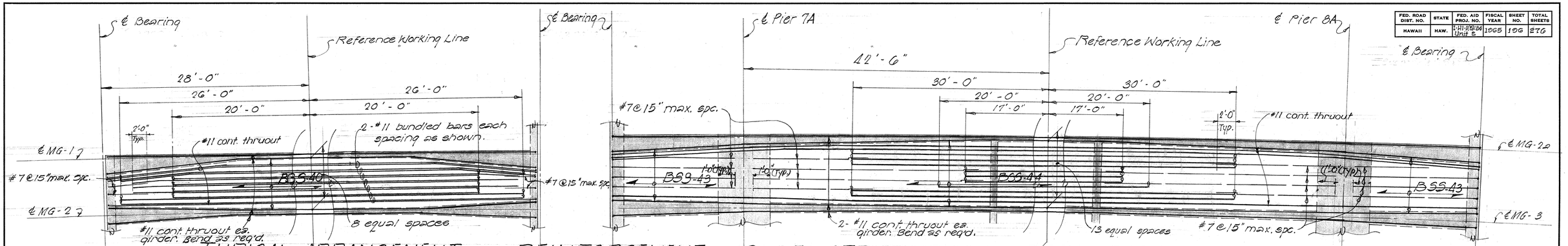
Interstate Highway (Lunalilo Freeway) FAI Proj. No. FAI-1(6)24 Unit 2 Scale: As noted March 1965

SHEET No. 24 OF 67 SHEETS

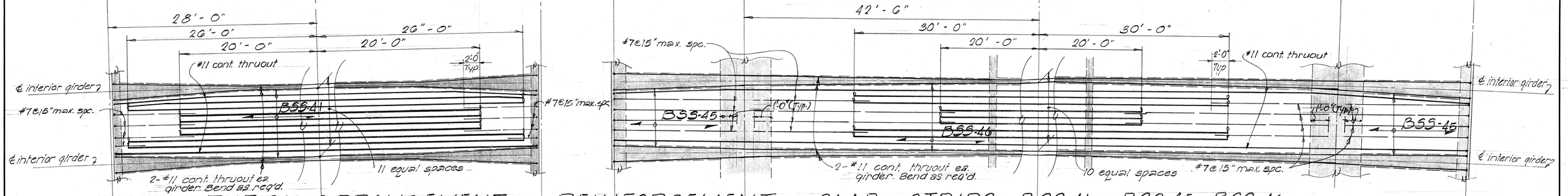
195

ON CLEARPRINT 1000-H

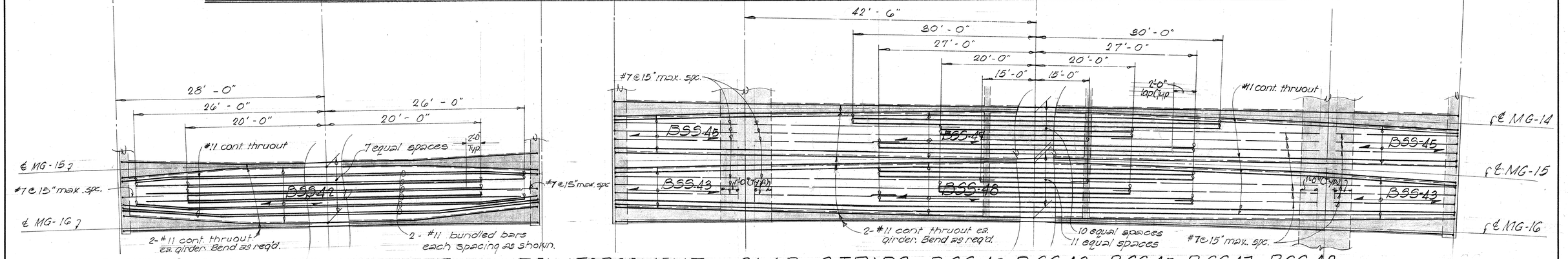
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(8)24 Unit 2	1965	196	276



TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS BSS 40, BSS 43, BSS 44

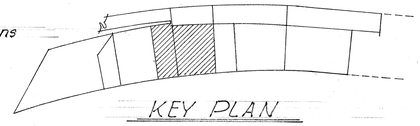


TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS BSS 41, BSS 45, BSS 46



TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS BSS 42, BSS 43, BSS 45, BSS 47, BSS 48

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 normal sections
For typical arrangement & detail of bundled bars in slab strip See sht #20
All #7@15" max. bar shall be extended and lapped at a min. of 2'-0" with the adjacent #11 bars as shown.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS BSS 40 thru BSS 48 INCLUSIVE
OB & Sta. 49+04.00 to 50+74.00
Interstate Highway (Lunalilo Freeway) FAI Proj. No. I-HI-1(5):24 Unit 2 Scale: As noted March 1965

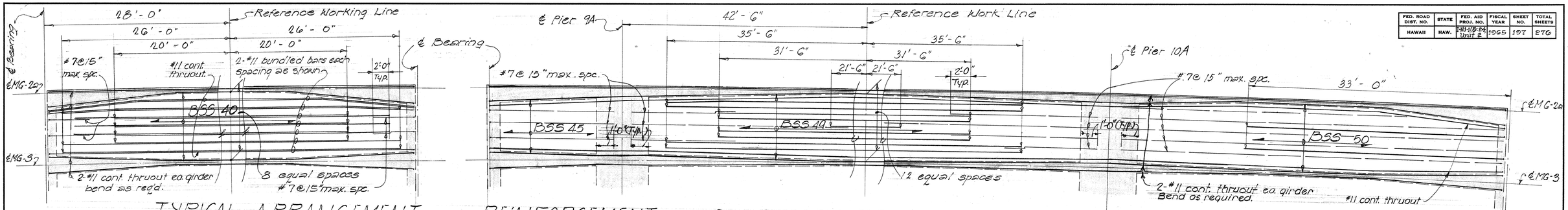
SHEET No. 25 OF 67 SHEETS

196

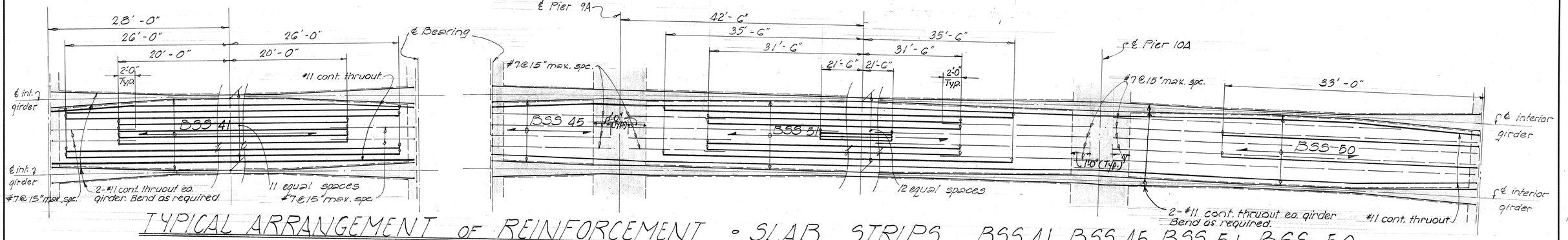
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY SY	
	TRACED BY "	
NOTE BOOK	DESIGNED BY RE	
	QUANTITIES BY RS HM JE	
No.	CHECKED BY JTO PTY	

ON CLEARPRINT 1000-H

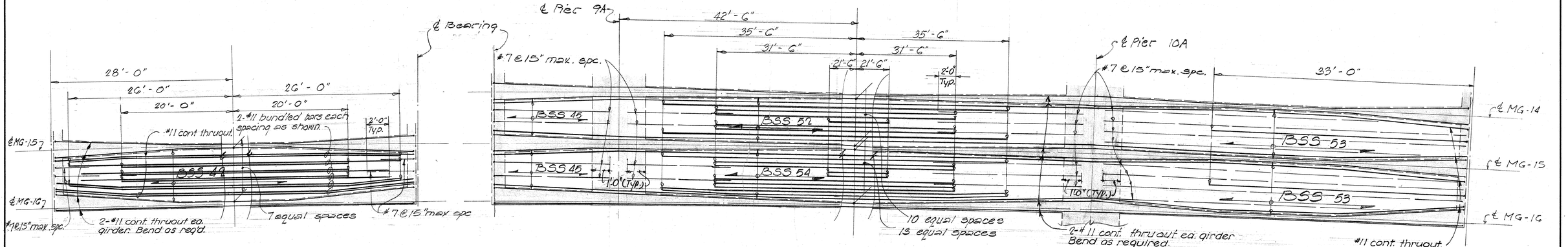
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(8)-24 Unit 2	1965	197	276



TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS BSS 40, BSS 45, BSS 49, BSS 50

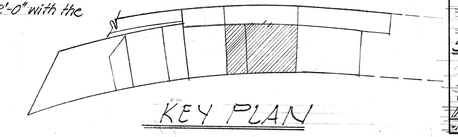


TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS BSS 41, BSS 45, BSS 51, BSS 50



TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS BSS 42, BSS 45, BSS 52, BSS 53, BSS 54

NOTES: Except as otherwise noted all slab strip bars to be #11
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and normal section
For typical arrangement and details of bundle bars. See Sht. #20
All #7 @ 15" max. bars shall be extended & lapped a min. of 2'-0" with the adjacent #11 bars as shown.



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS BSS 40 thru BSS 42; BSS 45; BSS 49 thru BSS 54 INCL.
O.B. & STA. 50+74.00 to 52+74.00
Interstate Highway (Lunalilo Freeway) FAI Proj. No. I-1-1(5)-24, Unit 2 Scale: As noted March 1965

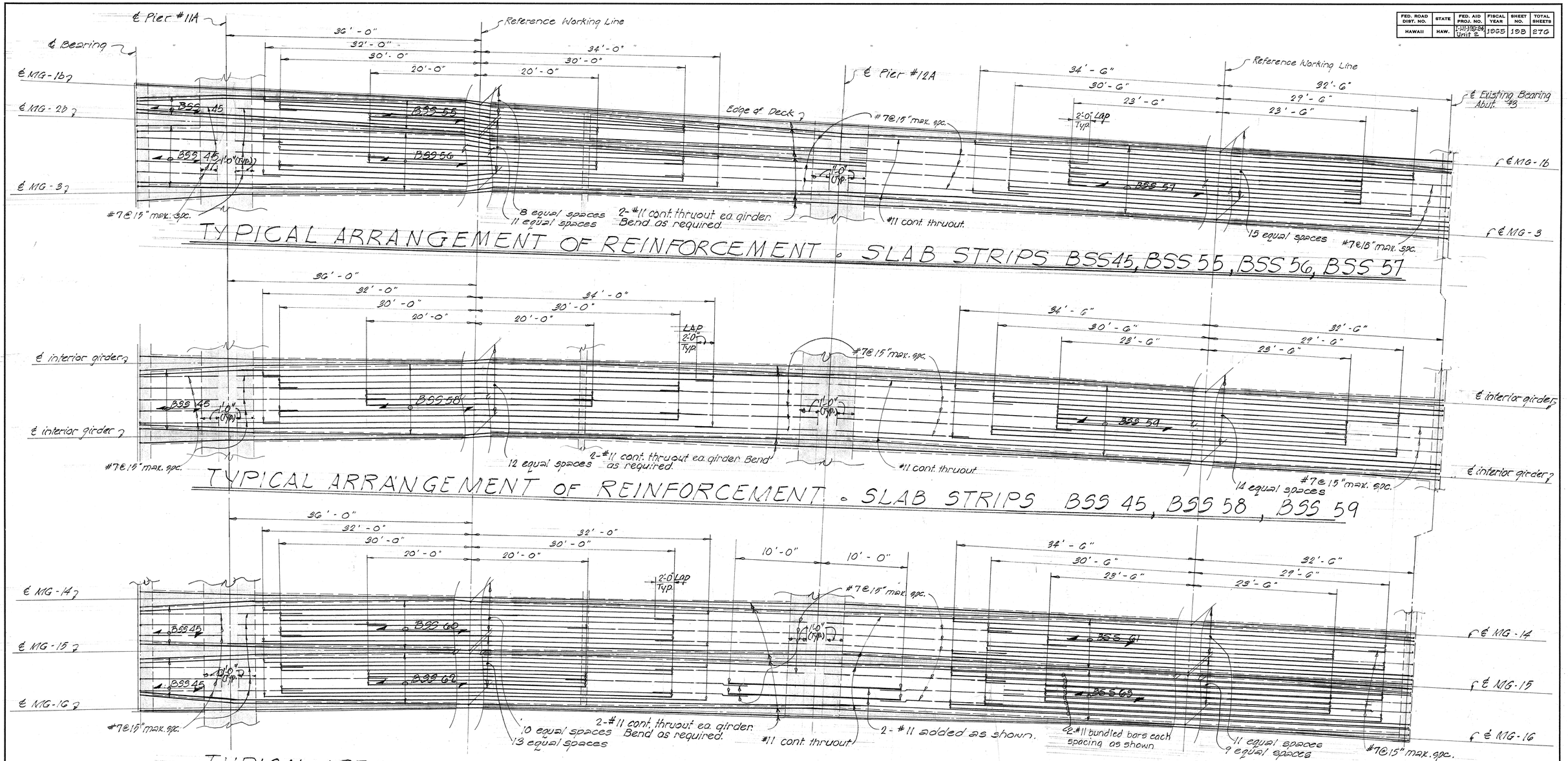
SHEET No. 26 OF 67 SHEETS

197

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY SY	"
NOTE BOOK	TRACED BY RK DO	"
	DESIGNED BY RK DO	"
No.	QUANTITIES BY JF TS HM	"
	CHECKED BY JTO PTY	"

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	198	276

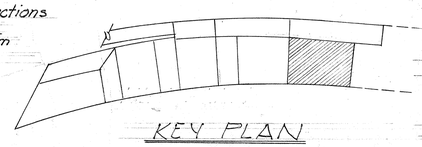


TYPICAL ARRANGEMENT OF REINFORCEMENT - SLAB STRIPS BSS45, BSS55, BSS56, BSS57

TYPICAL ARRANGEMENT OF REINFORCEMENT - SLAB STRIPS BSS45, BSS58, BSS59

TYPICAL ARRANGEMENT OF REINFORCEMENT - SLAB STRIPS BSS45, BSS60, BSS61, BSS62, BSS63

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and normal sections
For typical arrangement and details of bundled bars See Sht #20
All #7@15 max. bars shall be extended and lapped at a minimum of 2'-0" with the adjacent #11 bars as shown.



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS BSS45, BSS55 THRU BSS63 INCL.
OB & Sta. 52+14.00 to 54+50.61
Interstate Highway (Lunalilo Freeway) FAI Proj. No. I-HI-1(6)-24 Unit 2 Scale: As noted March 1965

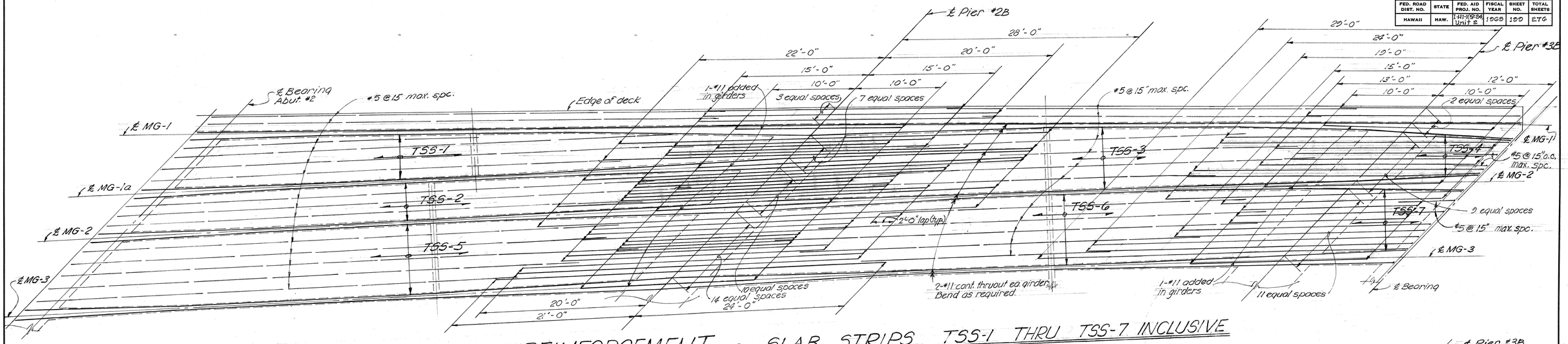
SHEET No. 27 OF 67 SHEETS

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

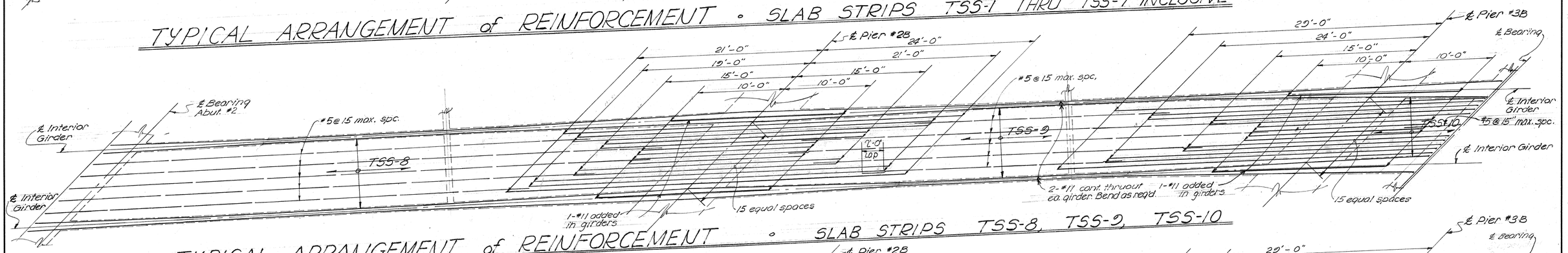
D ON CLEARPRINT 1000-H

198

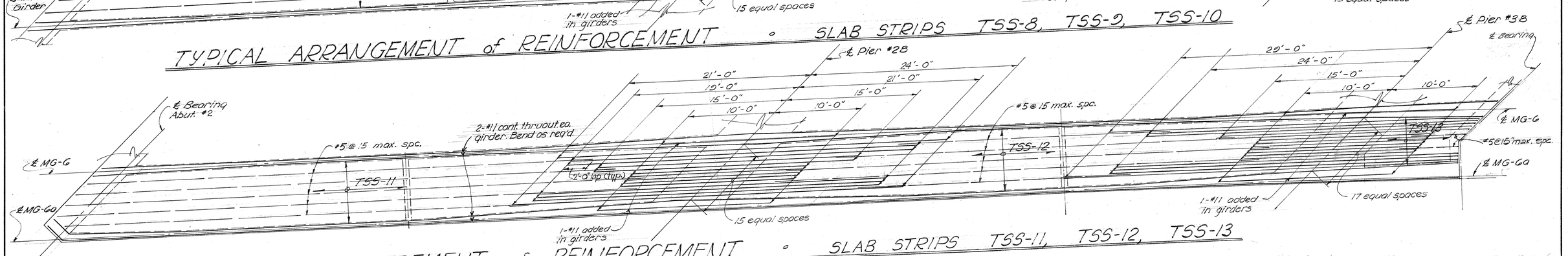
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-H(6)24 Unit 2	1965	199	276



TYPICAL ARRANGEMENT of REINFORCEMENT ◦ SLAB STRIPS TSS-1 THRU TSS-7 INCLUSIVE

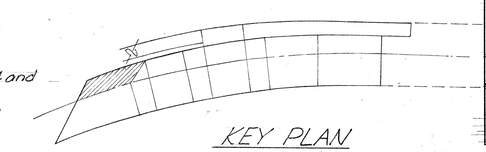


TYPICAL ARRANGEMENT of REINFORCEMENT ◦ SLAB STRIPS TSS-8, TSS-9, TSS-10



TYPICAL ARRANGEMENT of REINFORCEMENT ◦ SLAB STRIPS TSS-11, TSS-12, TSS-13

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and normal sections.
All #5 @ 15" max. bars shall be extended & lapped a min. of 2'-0" with the adjacent #11 bar as shown.



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3

TYPICAL BAR PLACEMENT DIAGRAM

SLAB STRIPS TSS 1 thru TSS 13 INCLUSIVE

O.R. & ℄ Sta. 45+78.44 to 47+40+

Interstate Highway (Lunalilo Freeway) FAI Proj. No. I-HI-1(6)24, Unit 2 Scale: As noted March 1965

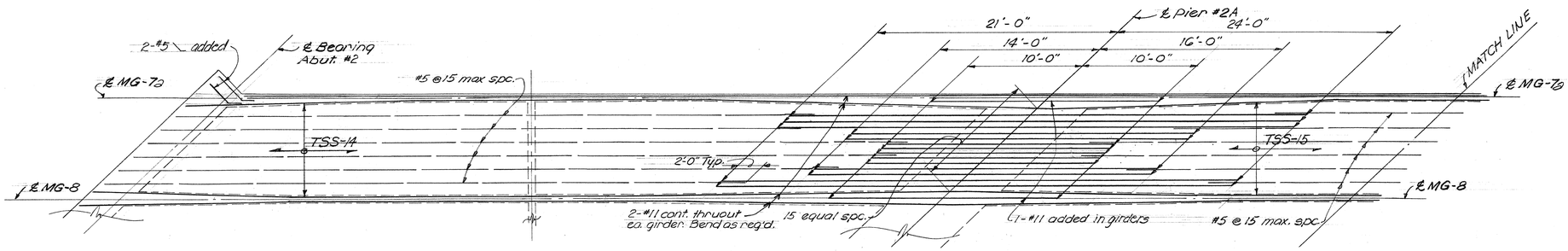
SHEET No. 28 OF 67 SHEETS

199

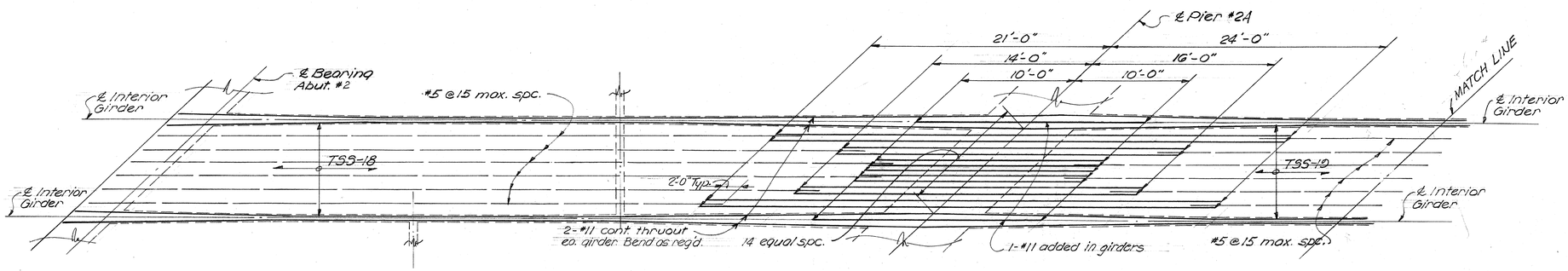
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY HM	"
	TRACED BY RK VC	"
NOTE BOOK	DESIGNED BY JE TS HM NT	"
No.	QUANTITIES BY	"
	CHECKED BY JFO EFP	"

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)24 Unit 2	1965	200	276

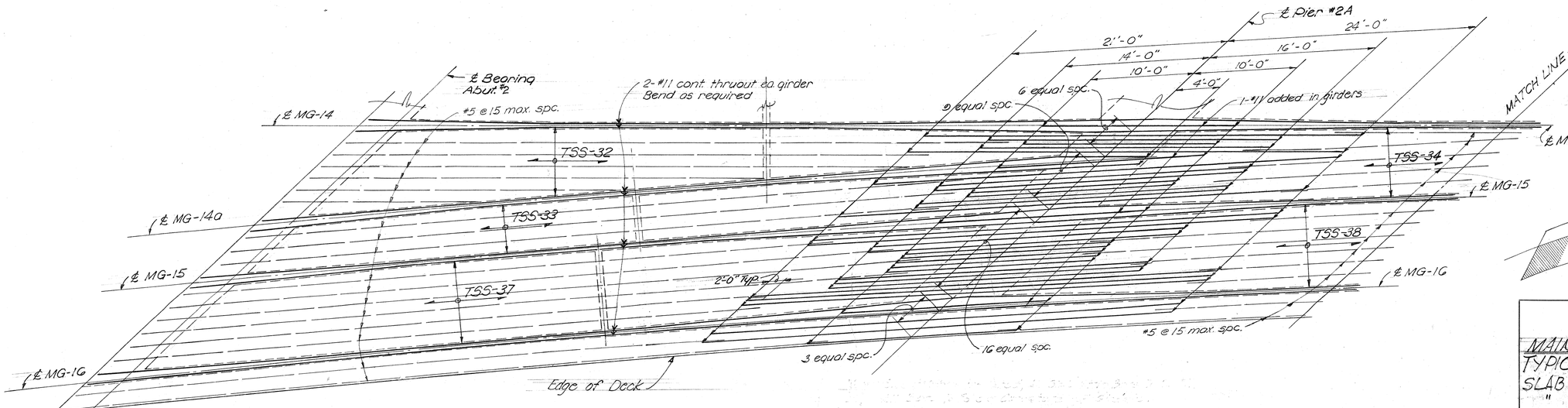


TYPICAL ARRANGEMENT of REINFORCEMENT ∘ SLAB STRIPS TSS-14, TSS-15

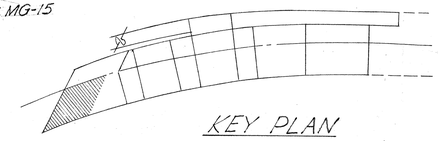


TYPICAL ARRANGEMENT of REINFORCEMENT ∘ SLAB STRIPS TSS-18, TSS-19

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. # 62, #63, #64 and normal section.
All #5 @ 15" max. bars shall be extended & lapped a min. of 2'-0" with the adjacent #11 bars as shown.



TYPICAL ARRANGEMENT of REINFORCEMENT ∘ SLAB STRIPS TSS-32, TSS-33, TSS-34, TSS-37, TSS-38



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS TSS14, TSS15; TSS18; TSS19
" " TSS32 THRU TSS34 INCL
TSS37; TSS38;
O.B. ℄ Sta. 45+78.44 to 46+85±
Interstate Highway FAI Project No. I-H1-1(5)24, Unit 2

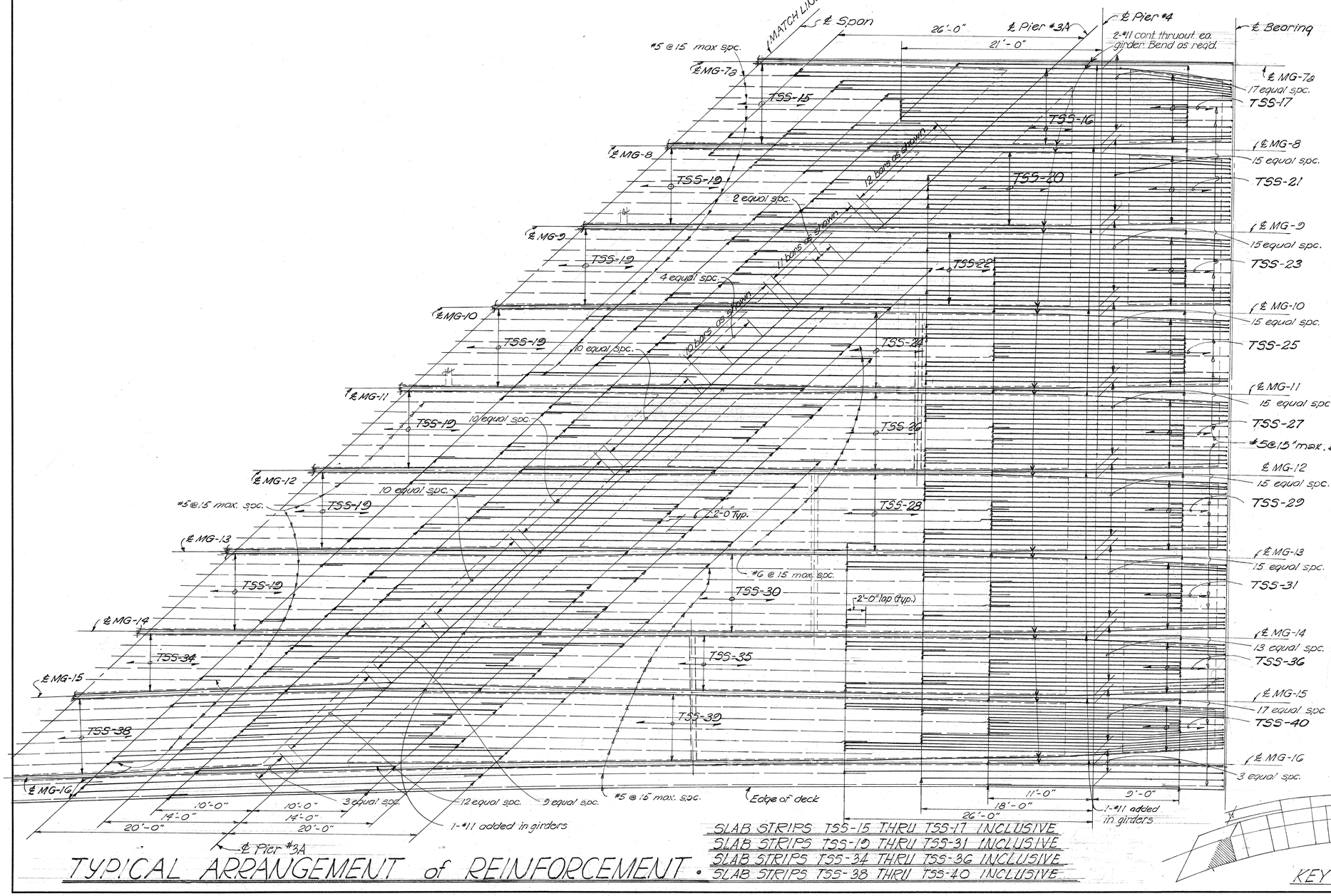
SHEET No. 29 OF 67 SHEETS

200

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY HM	"
NOTE BOOK	TRACED BY RK YC	"
	DESIGNED BY JE TS TH	"
No.	QUANTITIES BY	"
	CHECKED BY JTO PTY	"

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	201	276



TYPICAL ARRANGEMENT of REINFORCEMENT.

SLAB STRIPS TSS-15 THRU TSS-17 INCLUSIVE
SLAB STRIPS TSS-19 THRU TSS-31 INCLUSIVE
SLAB STRIPS TSS-34 THRU TSS-36 INCLUSIVE
SLAB STRIPS TSS-38 THRU TSS-40 INCLUSIVE

KEY PLAN

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and normal section.
All #5 @15" max. bars shall be extended and lapped at a min. of 2'-0" with the adjacent #11 bars as shown.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 ℄ RAMP "H1:0"
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS TSS15 THRU TSS31 INCL.
" " TSS34 THRU TSS36 INCL.
" " TSS38 THRU TSS40 INCL.
O.B.℄ Sta. 40+85 ± to 47+40.00
Interstate Highway FAI Proj. No. I-HI-1(6):24, Unit 2

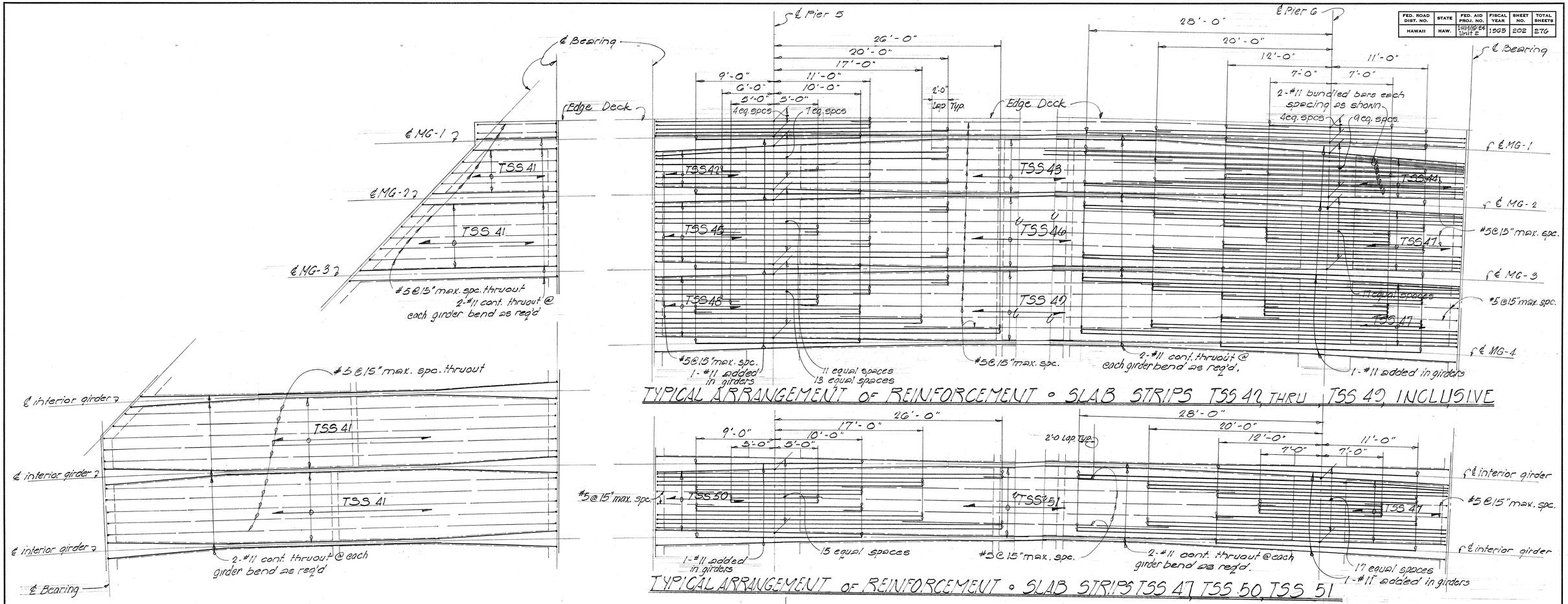
SHEET No. 30 OF 67 SHEETS

ORIGINAL PLAN	NOTE BOOK	No.	SURVEY PLOTTED BY	DRAWN BY	TRACED BY	DESIGNED BY	QUANTITIES BY	CHECKED BY	DATE
			HW	RK	VS	JE	HH	JH	8-67

201

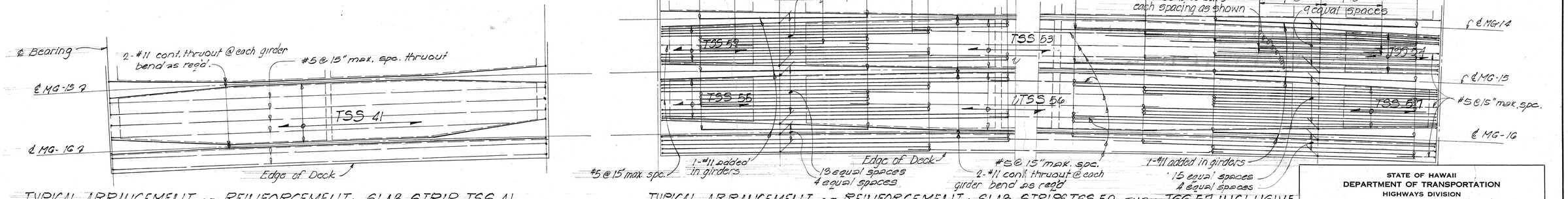
ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1963	202	276



TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS TSS 42 THRU TSS 49 INCLUSIVE

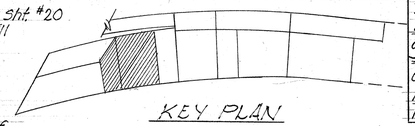
TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS TSS 47, TSS 50, TSS 51



TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIP TSS 41

TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS TSS 52 THRU TSS 57 INCLUSIVE

NOTES: For typical arrangement and details of bundled bars - see Sht. #20
Except as otherwise noted all slab strip bars to be #11
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and Normal Section.
All #5 @ 15" max. bars shall be extended & lapped a min. of 2'-0" with the adjacent #11 bars as shown.



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"

TYPICAL BAR PLACEMENT DIAGRAM

SLAB STRIPS TSS41 thru TSS57 INCLUSIVE

OB ℄ Sta. 47+40.00 to 49+04.00
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5):24, Unit 2

SHEET No. 31 OF 67 SHEETS

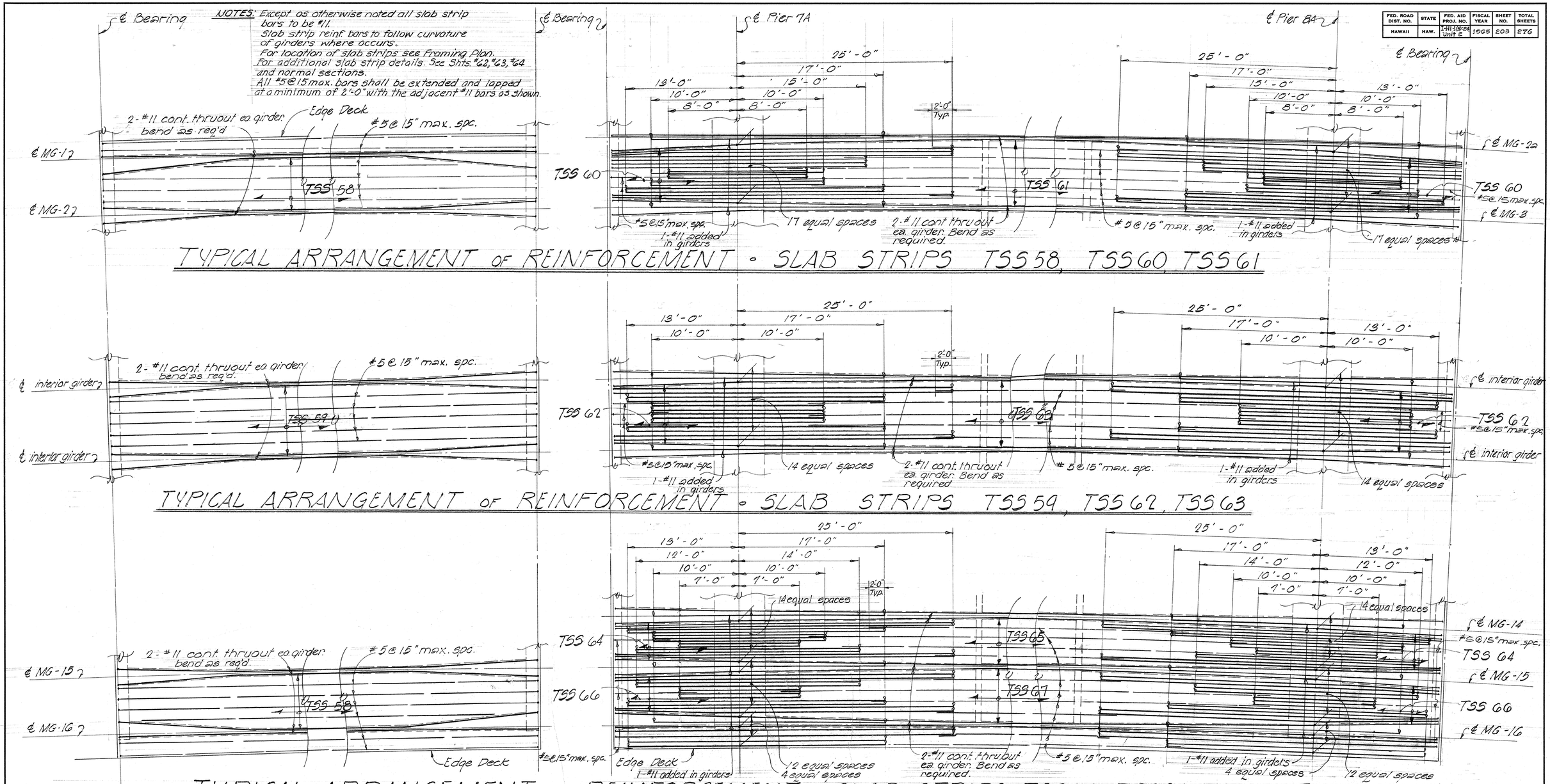
202

ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY SY | TRACED BY RK VC GK | DESIGNED BY RS NY CM | QUANTITIES BY | CHECKED BY JTO PTY | DATE

ON CLEARPRINT 1000-H

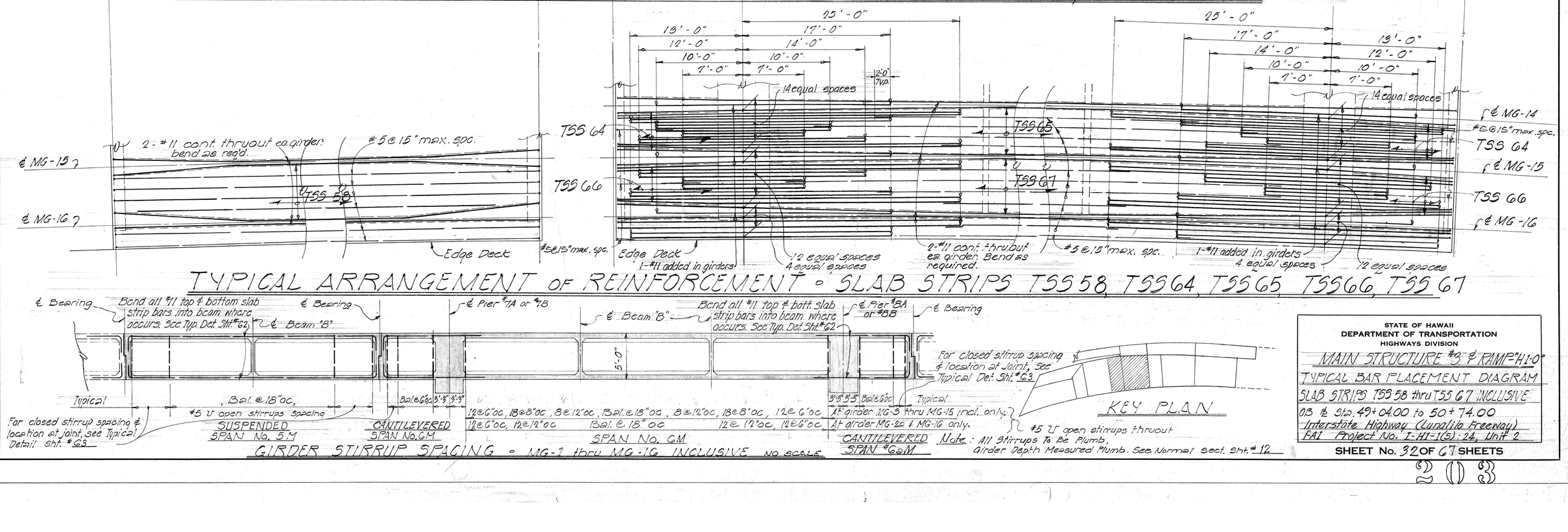
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5):24 Unit 2	1965	203	276

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details. See Shts. #62, #63, #64 and normal sections.
All #5@15 max. bars shall be extended and lapped at a minimum of 2'-0" with the adjacent #11 bars as shown.



TYPICAL ARRANGEMENT OF REINFORCEMENT - SLAB STRIPS TSS 58, TSS 60, TSS 61

TYPICAL ARRANGEMENT OF REINFORCEMENT - SLAB STRIPS TSS 59, TSS 62, TSS 63



TYPICAL ARRANGEMENT OF REINFORCEMENT - SLAB STRIPS TSS 58, TSS 64, TSS 65, TSS 66, TSS 67

GIRDER STIRRUP SPACING - MG-1 thru MG-16 INCLUSIVE NO SCALE

KEY PLAN

Note: All Stirrups To Be Plumb. Girder Depth Measured Plumb. See Normal Sect. Sht. #12

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS TSS 58 thru TSS 67 INCLUSIVE
OB ℄ Sta. 49+04.00 to 50+74.00
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5):24, Unit 2

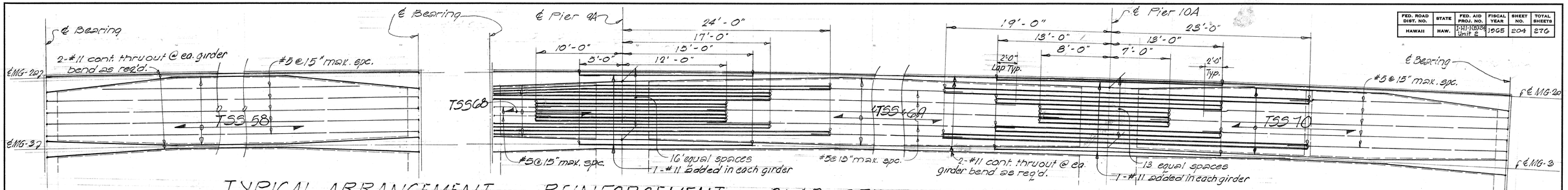
SHEET No. 32 OF 67 SHEETS

203

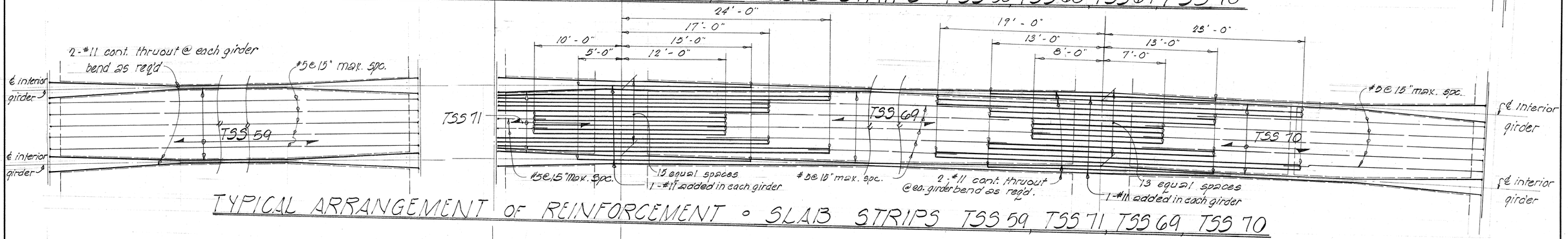
ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY SY | TRACED BY RK VC DO CY | DESIGNED BY | QUANTITIES BY TW HM SY | CHECKED BY JTO PTY | DATE

D ON CLEARPRINT 1000-H

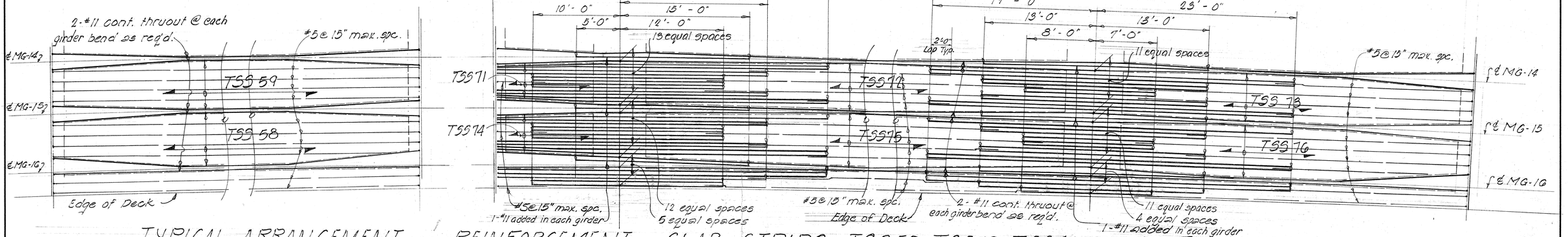
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(53)6 Unit 2	1965	204	276



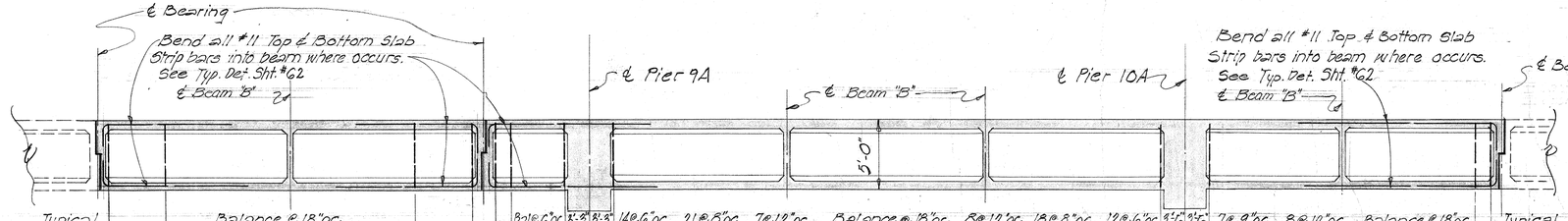
TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS TSS 58 TSS 68 TSS 69 TSS 70



TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS TSS 59, TSS 71, TSS 69, TSS 70

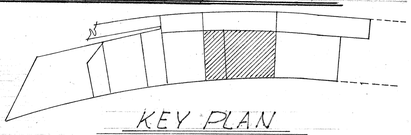


TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS TSS 58 TSS 59, TSS 71, TSS 72 TSS 73 TSS 74, TSS 75, TSS 76



GIRDER STIRRUP SPACING • MG-2a thru MG-16 INCLUSIVE

NOTES: Except as otherwise noted all slab strip reinf. to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plans.
For additional slab strip details see Shts. #62, #63, #64 and normal sections.
All #5 @ 15" max. bars shall be extended & lapped a min. of 2'-0" with the adjacent #11 bar as shown.



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP 'H2-0'
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS TSS 58 ; TSS 59
TSS 68 THRU TSS 76 INCL.
O.B. & STA. 50+74.00 to 52+74.00
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5):24, Unit 2

SHEET No. 33 OF 67 SHEETS

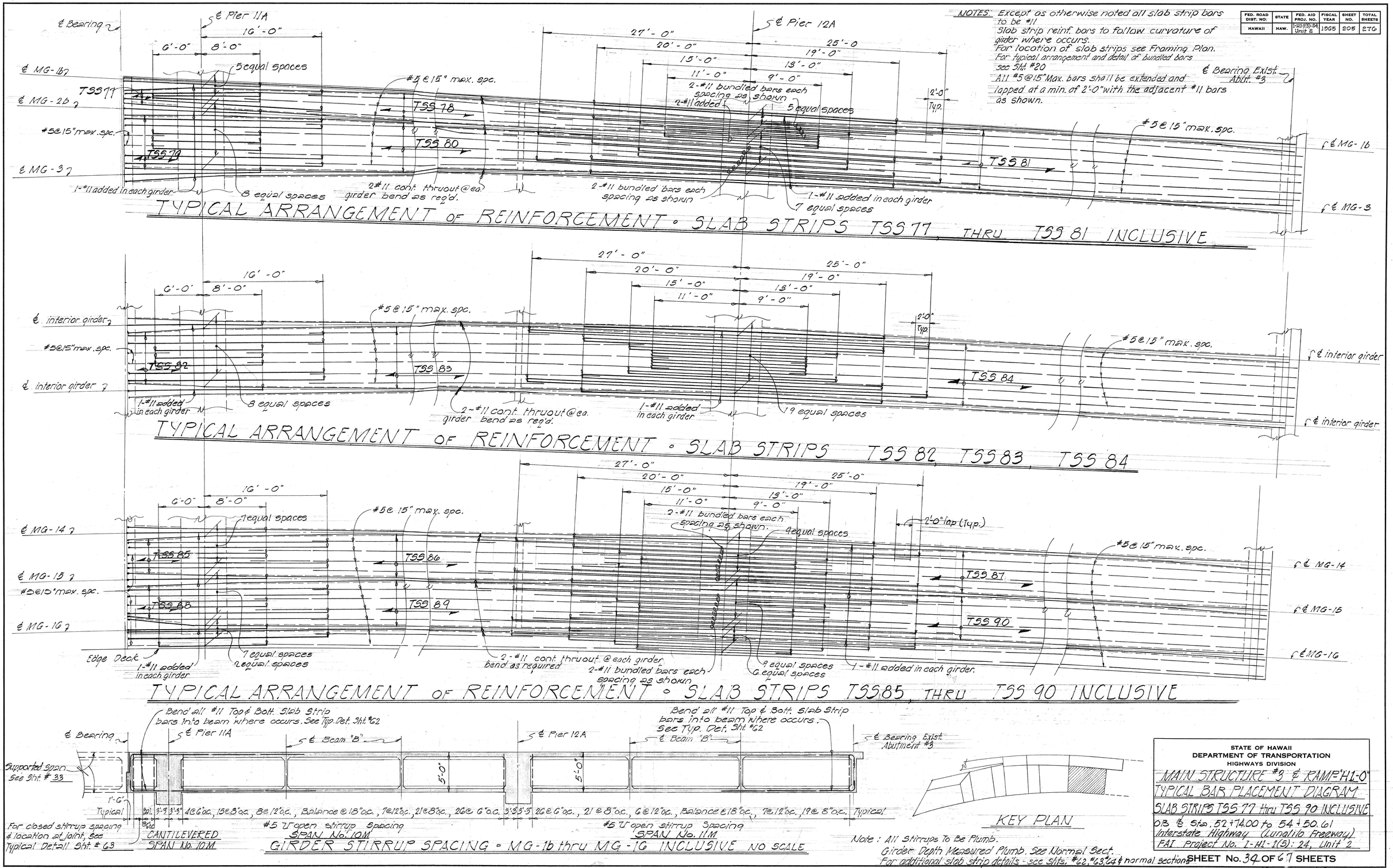
2 0 4

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY S.Y.	"
	TRACED BY R.K. DO	"
NOTE BOOK	DESIGN BY H.H. CAI	"
No.	QUANTITIES BY T.H. KEY	"
	CHECKED BY J.P.O.	"

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5):24 Unit 2	1965	205	276

NOTES: Except as otherwise noted all slab strip bars to be #11
Slab strip reinf. bars to follow curvature of girder where occurs.
For location of slab strips see Framing Plan.
For typical arrangement and detail of bundled bars see Sht. #20
All #5@15" Max. bars shall be extended and lapped at a min. of 2'-0" with the adjacent #11 bars as shown.



TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS TSS 77, THRU TSS 81 INCLUSIVE

TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS TSS 82, TSS 83, TSS 84

TYPICAL ARRANGEMENT OF REINFORCEMENT • SLAB STRIPS TSS 85, THRU TSS 90 INCLUSIVE

GIRDER STIRRUP SPACING • MG-1b thru MG-16 INCLUSIVE NO SCALE

KEY PLAN

Note: All Stirrups To Be Plumb.
Girder Depth Measured Plumb. See Normal Sect.
For additional slab strip details - see Shts. #62, #63, #64 & normal sections

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS TSS 77 thru TSS 90 INCLUSIVE
OB ℄ Sta. 52+74.00 to 54+50.61
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5): 24, Unit 2

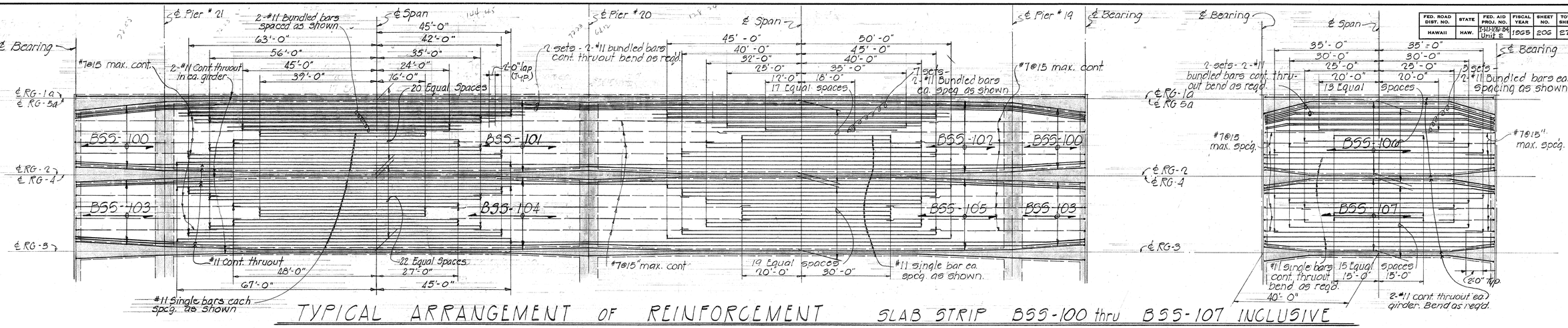
SHEET No. 34 OF 67 SHEETS

205

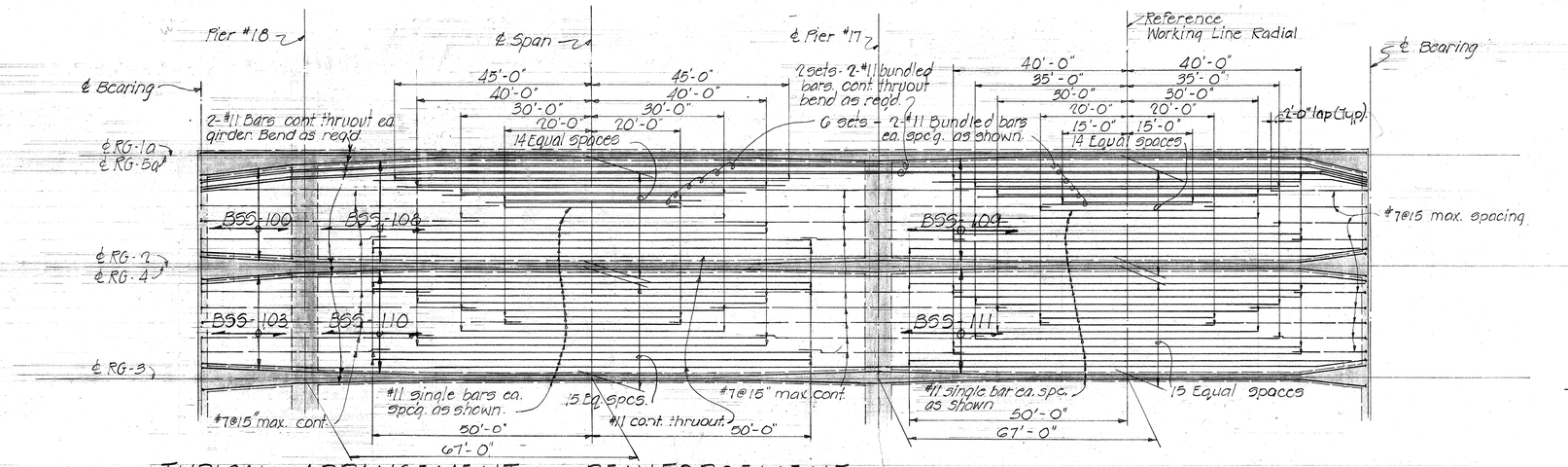
ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY SY | TRACED BY | DESIGNED BY RK DO | QUANTITIES BY TH HY CH | CHECKED BY JTO PTY | DATE

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-1-1(75)-84 Unit 2	1985	206	276

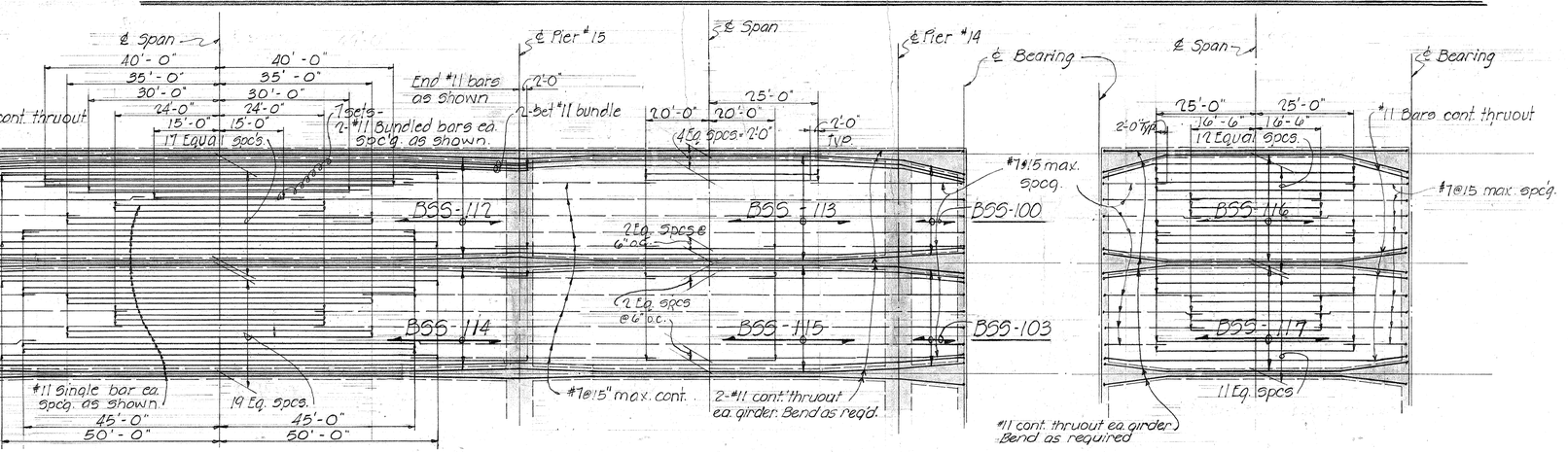


TYPICAL ARRANGEMENT OF REINFORCEMENT SLAB STRIP BSS-100 thru BSS-107 INCLUSIVE

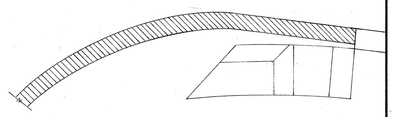


TYPICAL ARRANGEMENT OF REINFORCEMENT SLAB STRIP BSS-108 thru BSS-111 INCLUSIVE

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders.
For location of slab strips see Framing Plan
For additional slab strip details see Shts. #62, #63, #64 and Normal Sections
for typical arrangement & detail of bundled bars, see sht #20
All #7 @ 15" max. bars shall be extended & lapped a min. of 2'-0" with the adjacent #11 bar as shown.



TYPICAL ARRANGEMENT OF REINFORCEMENT SLAB STRIP BSS-112 thru BSS-117 INCLUSIVE



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAMP "H1-I"

TYPICAL BAR PLACEMENT DIAGRAM

SLAB STRIPS BSS-100 thru BSS-117 INCLUSIVE
RAMP ℄ STA. 15+41.17 to OB ℄ STA. 49+59.00
Interstate Highway (Lunalilo Freeway)
FAI Project No. 1-H1-1(5): 24, Unit 2

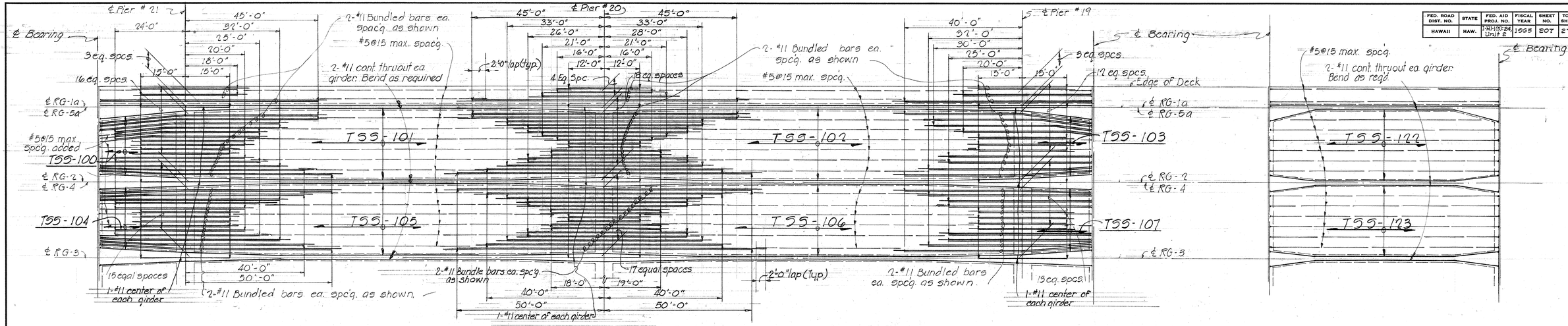
SHEET No. 35 OF 67 SHEETS

2 0 6

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	W.S.
TRACED BY	
DESIGN BY	S.K. G.Y.
QUANTITIES BY	N.A. J.F. T.S.
CHECKED BY	P.S. J.O.
NOTE BOOK	
No.	

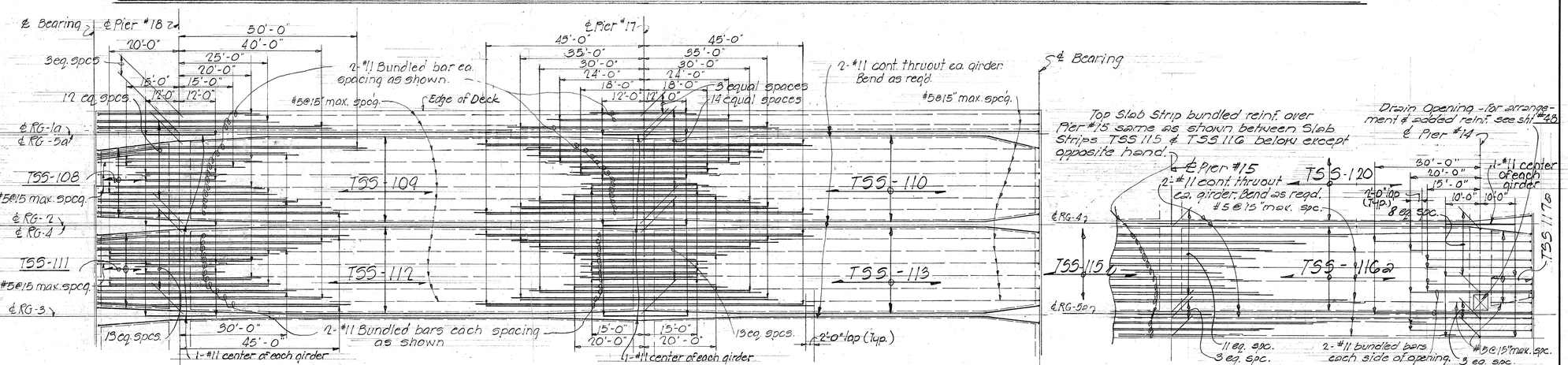
ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(55)24, Unit 2	1965	207	270



TYPICAL ARRANGEMENT OF REINFORCEMENT SLAB STRIP TSS-100 thru TSS-107 INCLUSIVE

NOTE:
Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details. See Shts. #62, #63, #64 and normal section.
All #5@15" max. bars shall be extended and lapped at min. of 2'-0" with the adjacent #11 bars as shown.
For Typical Detail & arrangement of bundled bars, see Sht. #20.

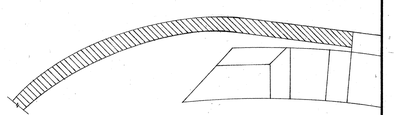


TYPICAL ARRANGEMENT OF REINFORCEMENT SLAB STRIP TSS-108 thru TSS-113 INCLUSIVE

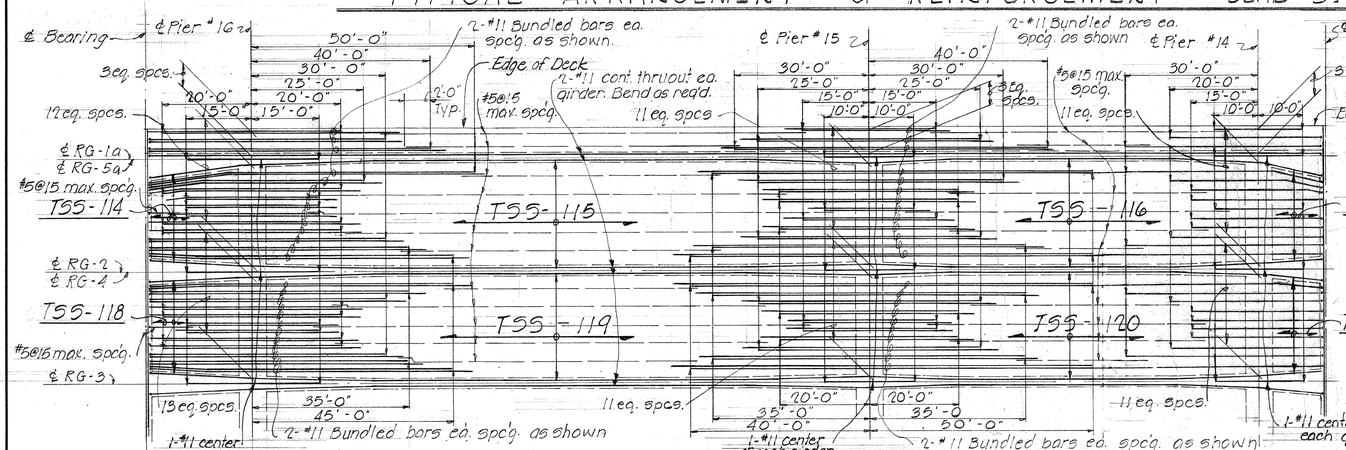
Top Slab Strip bundled reinf. over Pier #15 same as shown between Slab Strips TSS 115 & TSS 116 below except opposite hand.

Drain Opening - for arrangement & added reinf. see sht #48

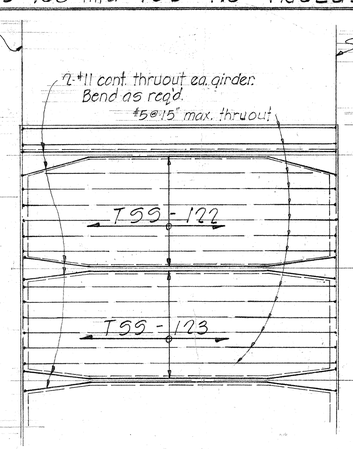
TYPICAL ARRANGEMENT OF REINFORCEMENT SLAB STRIP TSS-116a and TSS-117a only



KEY PLAN



TYPICAL ARRANGEMENT OF REINFORCEMENT SLAB STRIP TSS-114 thru TSS-123 INCLUSIVE



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAMP "H1-I"

TYPICAL BAR PLACEMENT DIAGRAM

SLAB STRIPS TSS-100 thru TSS-123 INCLUSIVE
RAMP ℄ STA. 15+41.17 to OB. ℄ STA. 49+59.00
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(55):24, Unit 2

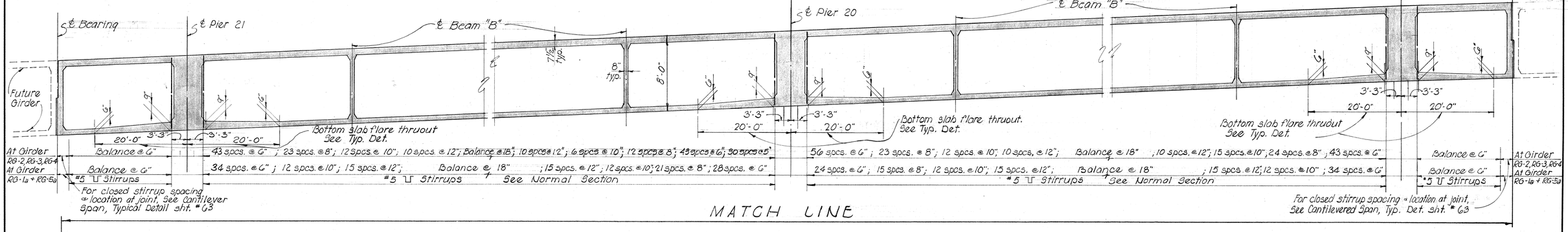
SHEET No. 36 OF 67 SHEETS

207

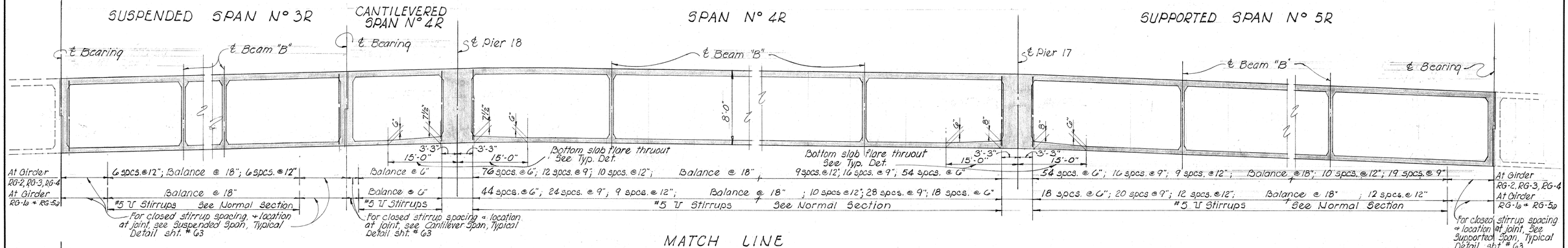
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY WB	
	TRACED BY RK CY	
	DESIGN BY RK TS TM	
NOTE BOOK	QUANTITIES BY DP JG	
No.	CHECKED BY DP JG	

ON CLEARPRINT 1000-H

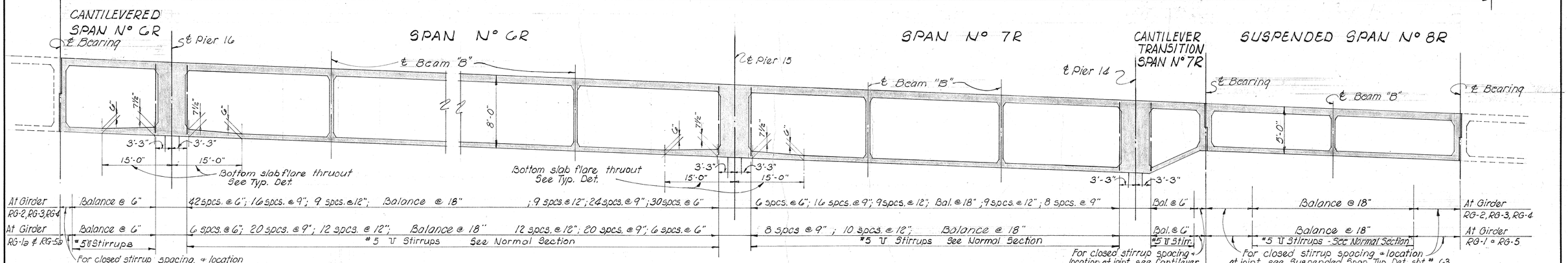
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(8)-24 Unit 2	1965	208	276



MATCH LINE

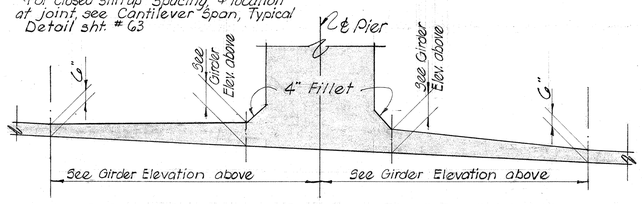


MATCH LINE

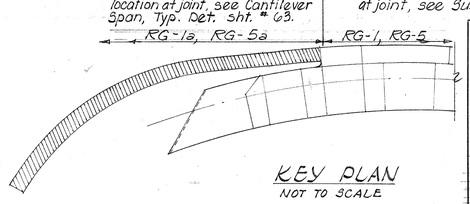


NOTE:
All stirrups to be plumb.
Girder depth to be measured plumb. See Normal Section.

TYPICAL GIRDER STIRRUP SPACING



TYPICAL BOTTOM SLAB FLARE DETAIL
NOT TO SCALE



KEY PLAN
NOT TO SCALE

ORIGINAL PLAN	SURVEY PLOTTED BY: DATE
	DRAWN BY: HJ
	TRACED BY: RK
	DESIGN BY: HH, GT, TH
NOTE BOOK	QUANTITIES BY:
No.	CHECKED BY: JTO, RTT

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAMP "H1-1"

TYPICAL GIRDER STIRRUP SPACING
RG-1a, RG-2, RG-3, RG-4, RG-5a

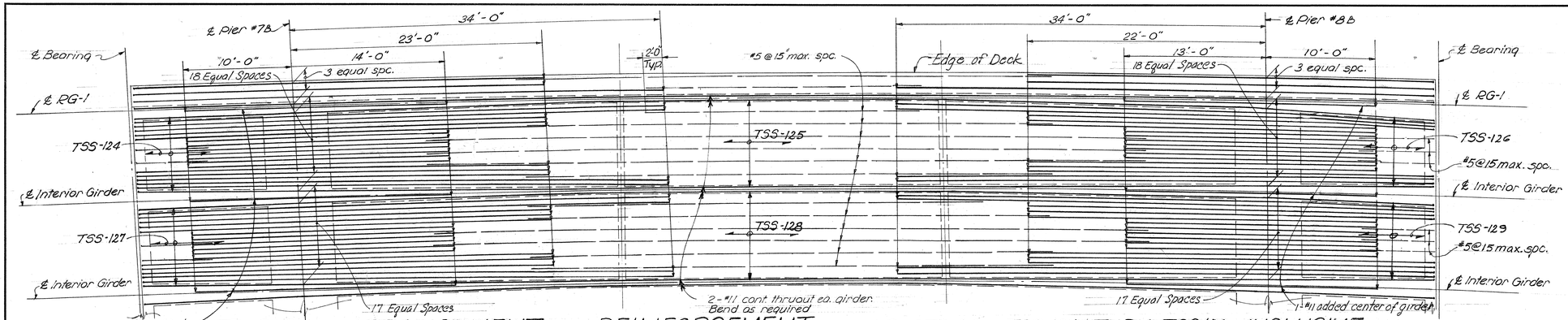
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5): 24, Unit 2
Scale: as shown March 1965

SHEET No. 37 OF 67 SHEETS

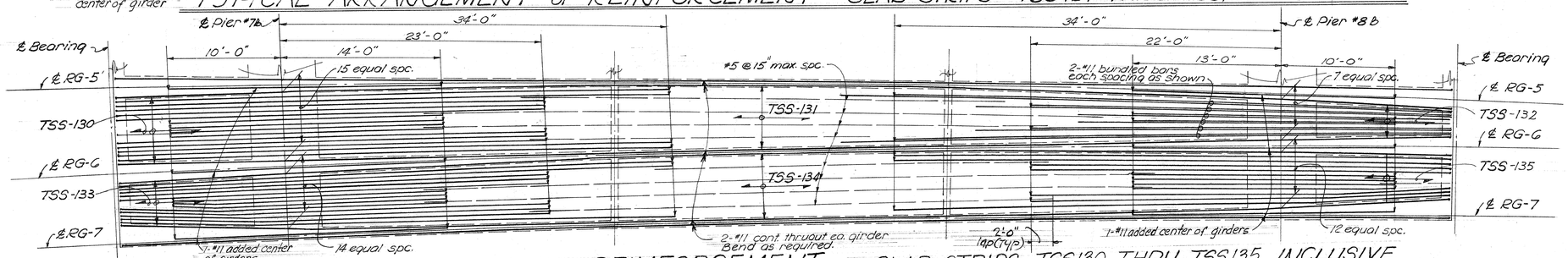
208

) ON CLEARPRINT 1000-H

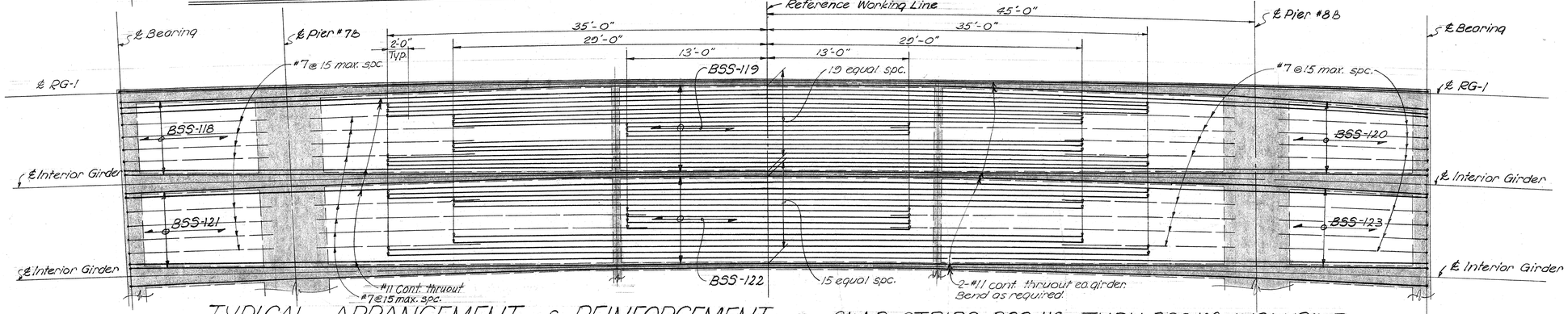
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	209	276



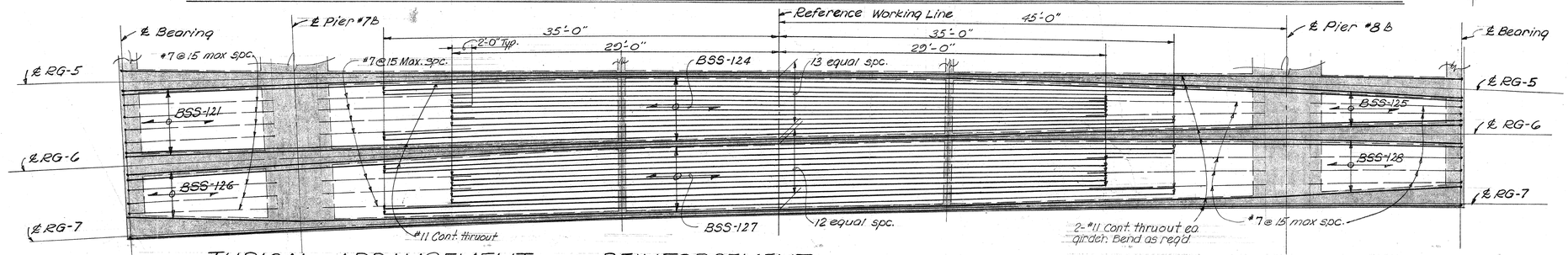
TYPICAL ARRANGEMENT of REINFORCEMENT ◦ SLAB STRIPS TSS124 THRU TSS129 INCLUSIVE



TYPICAL ARRANGEMENT of REINFORCEMENT ◦ SLAB STRIPS TSS130 THRU TSS135 INCLUSIVE



TYPICAL ARRANGEMENT of REINFORCEMENT ◦ SLAB STRIPS BSS 118 THRU BSS 123 INCLUSIVE



TYPICAL ARRANGEMENT of REINFORCEMENT ◦ SLAB STRIPS BSS 124 THRU BSS 128 INCLUSIVE

NOTES: Except as otherwise noted all slab strip bars to be #11
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and normal sections.
For Typical arrangement and detail of bundled bars. See Sht. #20
All #5 or #7 @ 15 max. bars shall be extended and lapped at a min. of 2'-0" with the adjacent #11 bars as shown

KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

R.A.M.P. "H1-I"

TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS TSS124 thru TSS135 INCLUSIVE
SLAB STRIPS BSS118 thru BSS128 INCLUSIVE
O. B. & Sta. 49+59.00 to 50+74.00+
Interstate H'way FAI Proj. No. 1-H1-1(5):24 Unit 2

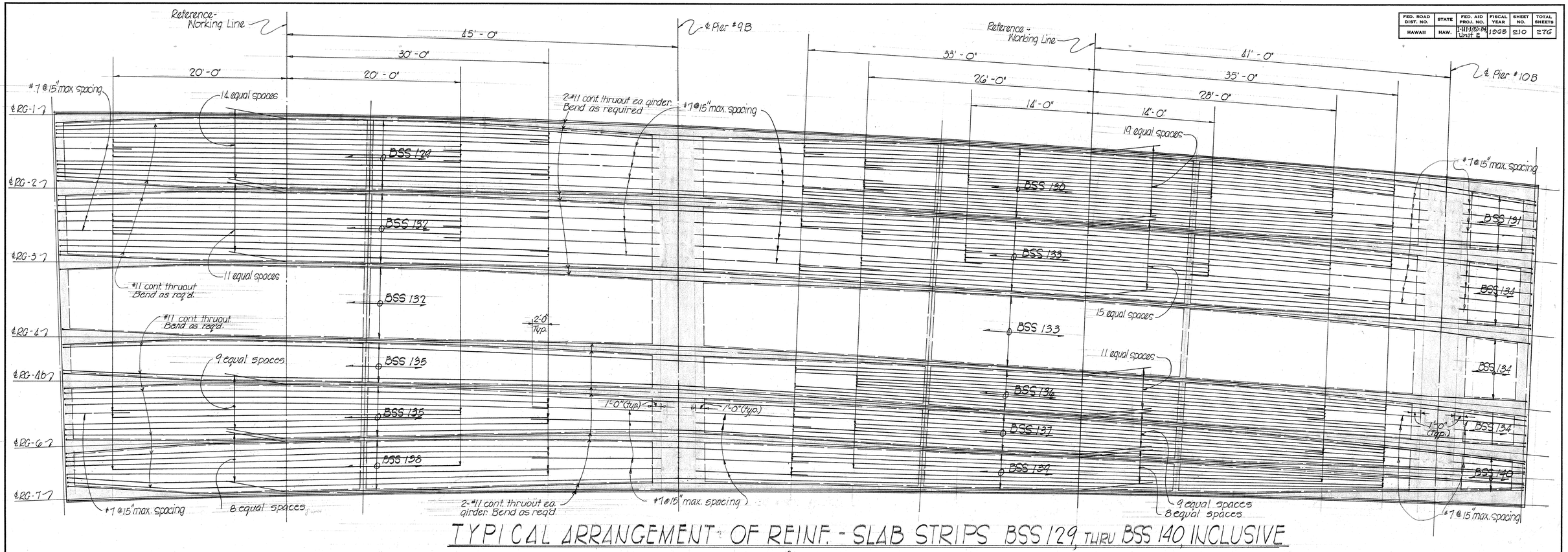
SHEET No. 38 OF 67 SHEETS

2 (1) 9

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

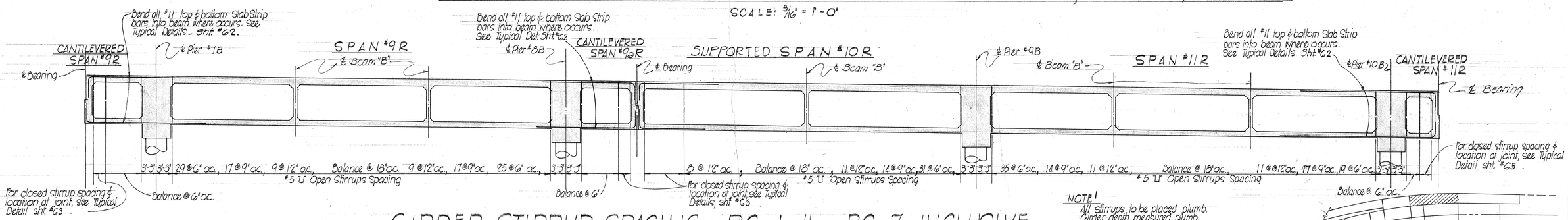
ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)-24 Unit 2	1965	210	276



TYPICAL ARRANGEMENT OF REINF. - SLAB STRIPS BSS 129 THRU BSS 140 INCLUSIVE

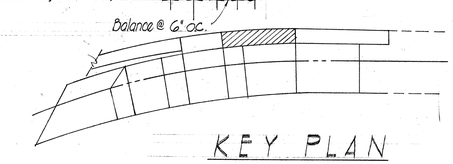
SCALE: 3/16" = 1'-0"



GIRDER STIRRUP SPACING - RG-1 thru RG-7 INCLUSIVE

NO SCALE

NOTE!
All stirrups to be placed plumb.
Girder depth measured plumb.
See Normal Section.



KEY PLAN

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan.
For additional slab strip details see Shts. #62, #63, #64 and normal section.
All #7 @ 15" max. bars shall be extended & lapped a min. of 2'-0" with the adjacent #11 bar as shown.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAMP "H1-I"

TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS BSS 129 thru BSS 140 INCLUSIVE
O.B. ℄ STA. 50+74.00 to RAMP ℄ STA. 28+27.37
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5): 24, Unit 2

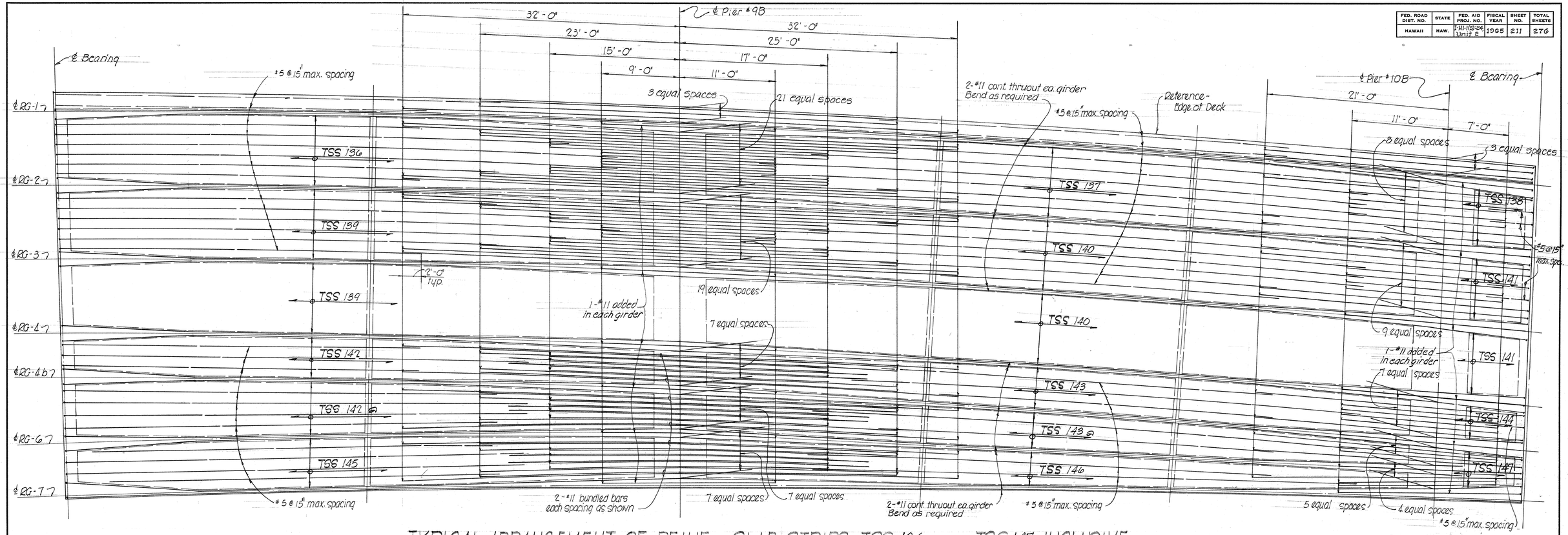
SHEET No. 39 OF 67 SHEETS

210

ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY JF | TRACED BY | DESIGNED BY RK HN | QUANTITIES BY JF HM TS | CHECKED BY JTO PTY | DATE

ON CLEARPRINT 1000-H

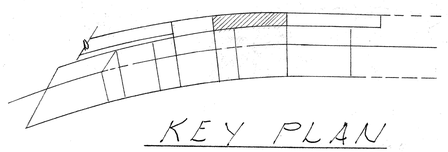
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5):24, Unit 2	1965	211	276



TYPICAL ARRANGEMENT OF REINF. - SLAB STRIPS TSS 136, THRU TSS 147, INCLUSIVE

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

NOTES:
1. Except as otherwise noted all slab strip bars to be #11.
2. Slab strip reinf. bars to follow curvature of girders where occurs.
3. For location of slab strips see Framing Plan.
4. For additional slab strip details see Shts. #62, #63, #64, and normal sections.
5. For Typical arrangement and details of bundled bars. See sht. #20.
6. All #5 @ 15 max. bars shall be extended and lapped at min. 2'-0" with the adjacent #11 bars as shown.



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAMP-"H1-I"

TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS TSS 136 thru TSS 147 INCLUSIVE

O.B. ℄ STA. 50+74.00 to RAMP ℄ STA. 28+27.37
Interstate Highway (Lunalilo Freeway)
FAI Proj. No. I-H1-1(5):24, Unit 2
Scale: as shown March 1965

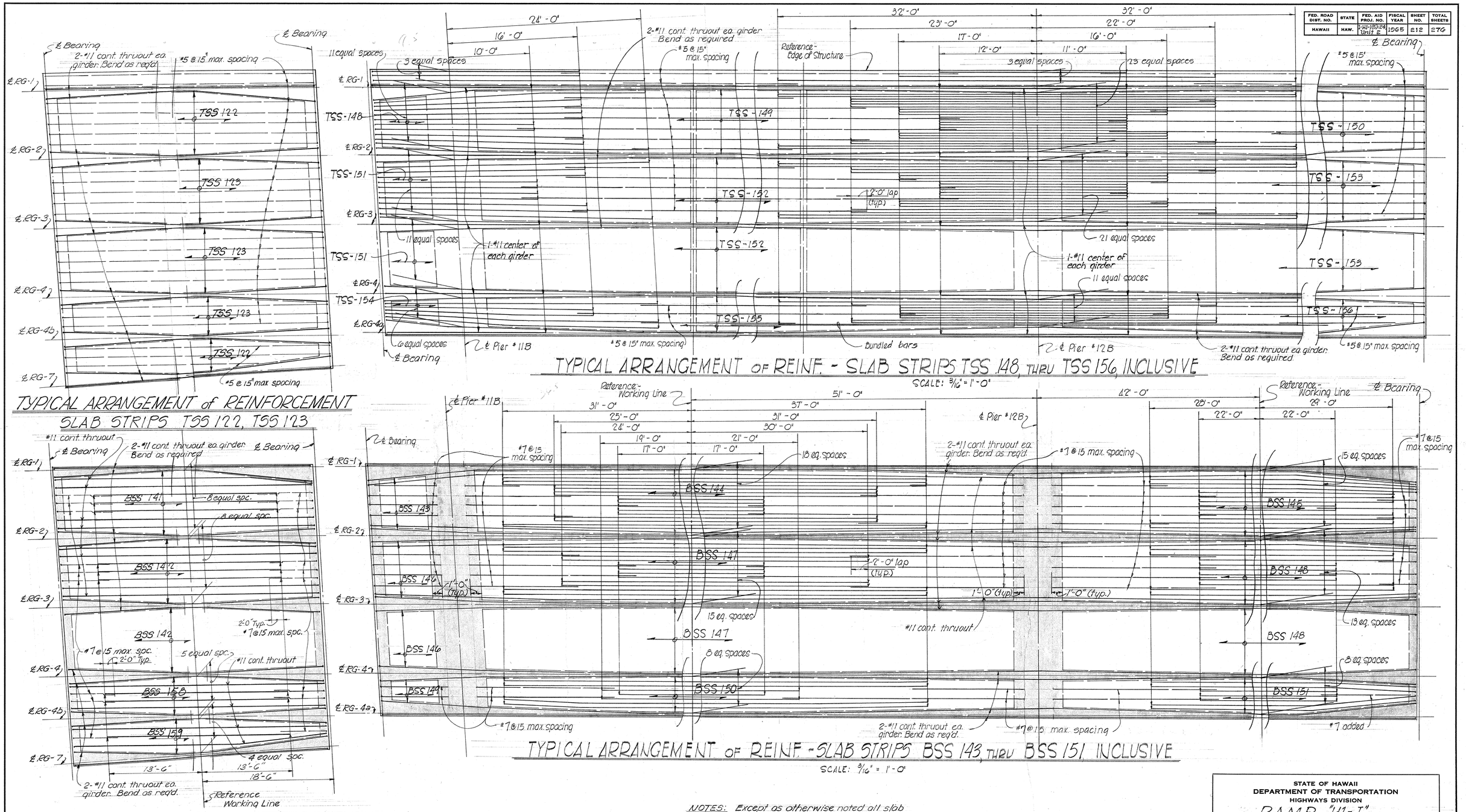
SHEET No. 40 OF 67 SHEETS

211

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY JF	"
NOTE BOOK	TRACED BY	"
	DESIGNED BY RK HN	"
No.	QUANTITIES BY NY HM TS	"
	CHECKED BY JTO PTY	"

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)-24 Unit 2	1965	212	276



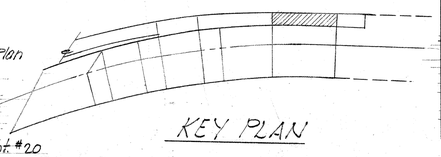
TYPICAL ARRANGEMENT of REINFORCEMENT
SLAB STRIPS TSS 122, TSS 123

TYPICAL ARRANGEMENT OF REINF. - SLAB STRIPS TSS 148, THRU TSS 156, INCLUSIVE
SCALE: 3/16" = 1'-0"

TYPICAL ARRANGEMENT OF REINF. - SLAB STRIPS BSS 143, THRU BSS 151, INCLUSIVE
SCALE: 3/16" = 1'-0"

TYPICAL ARRANGEMENT of REINFORCEMENT
SLAB STRIPS BSS-141, BSS-142, BSS-158, BSS-159

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan
For additional slab strip details see Shts. #62, #63, #64 and normal sections.
All #5 or #7 @ 15" max. bars shall be extended and lapped at a min. of 2'-0" with the adjacent #11 bars as shown.
For Typical Arrangement & Detail of bundled bars see sht. #20



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAMP "H1-I"

TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS TSS 148 thru TSS 156 INCLUSIVE
SLAB STRIPS BSS 141 thru BSS 151 INCLUSIVE
O.B. ℄ Sta. 52 + 74 to H1-I Sta. 30 + 36.73 + Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5): 24, Unit 2

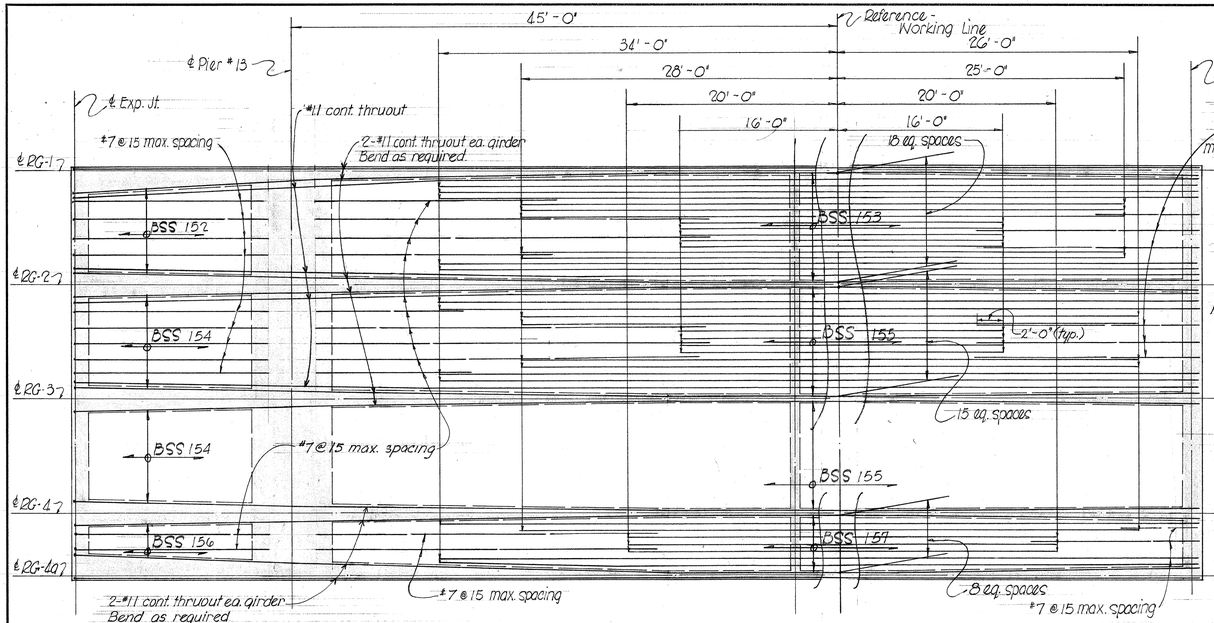
SHEET No. 41 OF 67 SHEETS

212

ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY HM | TRACED BY RK HN | DESIGNED BY | QUANTITIES BY HM NY TS | CHECKED BY PTY JTO | DATE

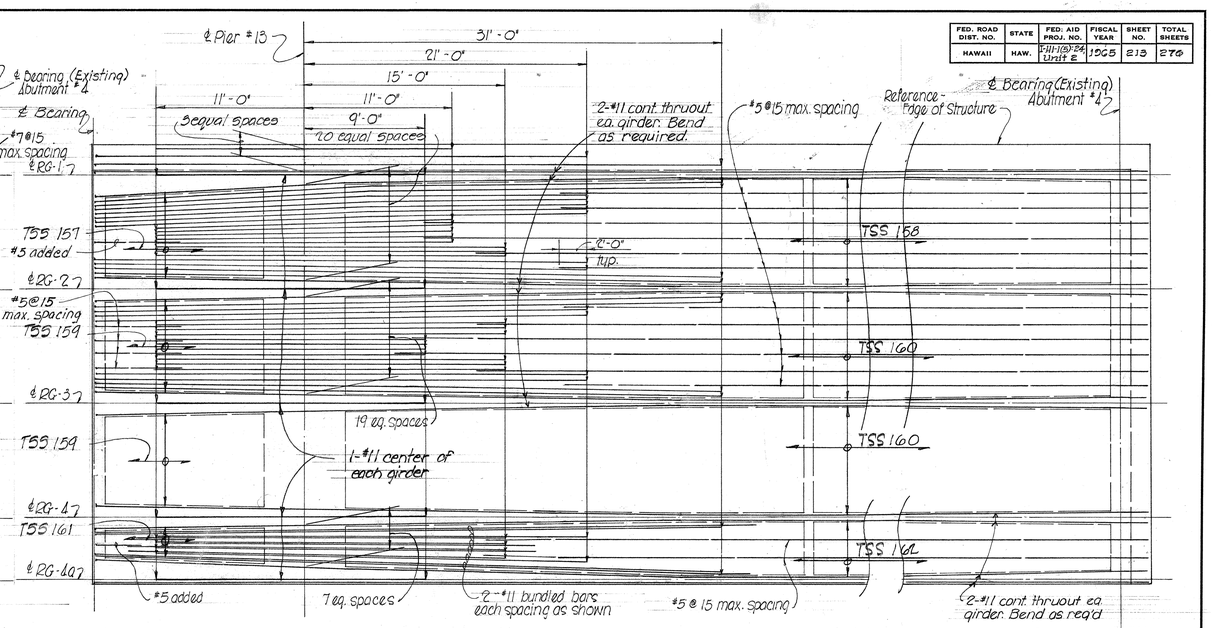
ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)-24 Unit 2	1965	213	276



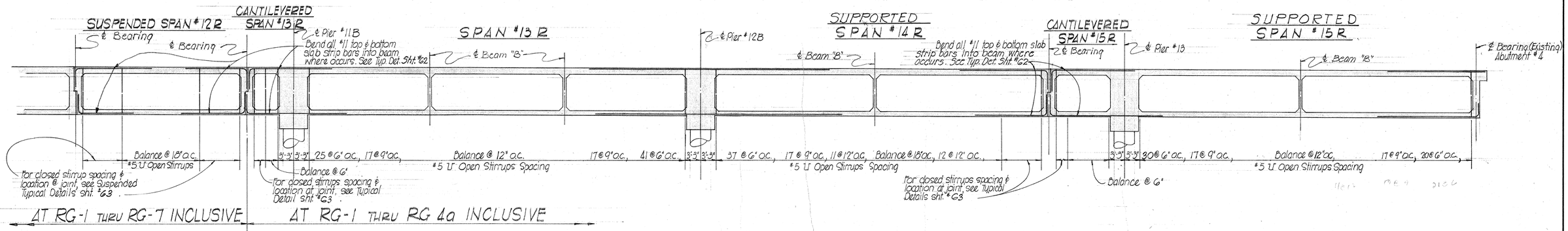
TYPICAL ARRANGEMENT OF REINF. - SLAB STRIPS BSS152, THRU BSS157, INCLUSIVE

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



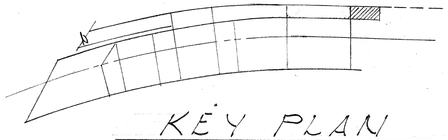
TYPICAL ARRANGEMENT OF REINF. - SLAB STRIPS TSS157, THRU TSS162, INCLUSIVE

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



TYPICAL GIRDER STIRRUPS SPACING

NO SCALE



KEY PLAN

NOTES: Except as otherwise noted all slab strip bars to be #11.
Slab strip reinf. bars to follow curvature of girders where occurs.
For location of slab strips see Framing Plan
For additional slab strip details see Shts. #62, #63, #64 and normal sections.
For Typical Arrangement and detail of bundled bars. See Sht. #20
All #7 or #5 @ 15 max. bars shall be extended and lapped at a min. of 2'-0" with the adjacent #11 bars as shown.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAMP "H1-I"

TYPICAL BAR PLACEMENT DIAGRAM
SLAB STRIPS TSS157 thru TSS162 INCLUSIVE
SLAB STRIPS BSS152 thru BSS157 INCLUSIVE
H1-I ℄ Sta. 30+36.73 to O.B. Sta. 55+33.61+
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5): 24, Unit 2

SHEET No. 42 OF 67 SHEETS

213

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY JF	"
	TRACED BY RK HN	"
NOTE BOOK	DESIGNED BY JF HN WB	"
	QUANTITIES BY JF HN WB	"
No.	CHECKED BY JTP PTY	"

D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	214	276

PIER Nº 2A CAP DETAIL Scale: 1/4" = 1'-0"

PIER Nº 3A CAP DETAIL Scale: 1/4" = 1'-0"

PIER Nº 4 CAP DETAIL Scale: 1/4" = 1'-0

NOTE: Deck reinf. in pier caps not shown For location size and spacing See corresponding details.

TYPICAL SECTION (A 43) Scale 1/2" = 1'-0"

SECTION (B 43) Scale 1/2" = 1'-0"

TYPICAL SECTION (C 43) Scale 1/2" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY CK	"
	TRACED BY RK VG DD	"
NOTE BOOK	DESIGNED BY AGK SY TH	"
	QUANTITIES BY AGK SY TH	"
No.	CHECKED BY JFD AFY	"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
PIERS Nº 2A, 3A & 4, CAP DETAILS

O.B. ℄ STA.	46+50.28	PIER Nº 2A
O.B. ℄ STA.	47+21.61	PIER Nº 3A
O.B. ℄ STA.	47+26.00	PIER Nº 4A

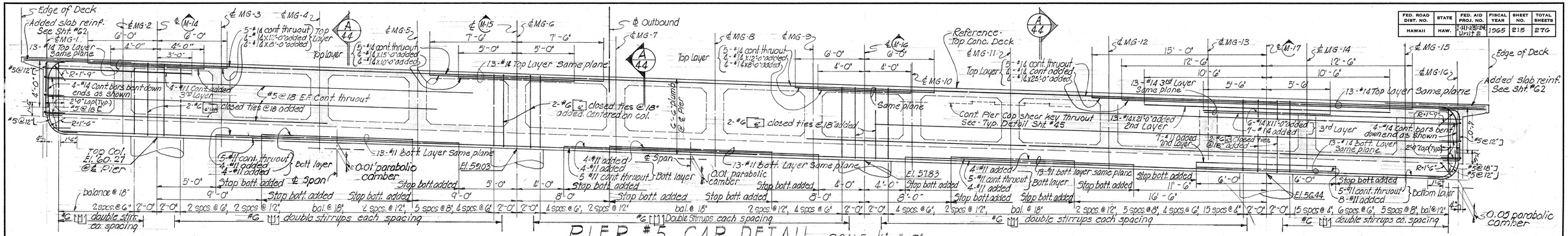
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5): 24, Unit 2

SHEET No. 43 OF 67 SHEETS

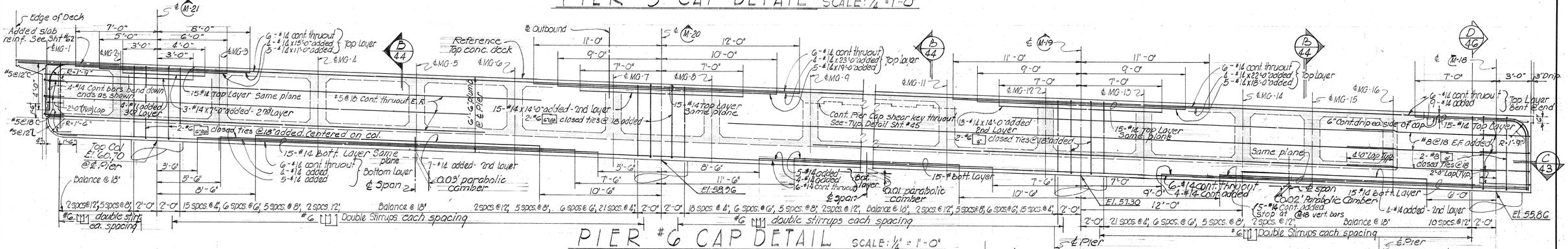
214

) ON CLEARPRINT 1000-H

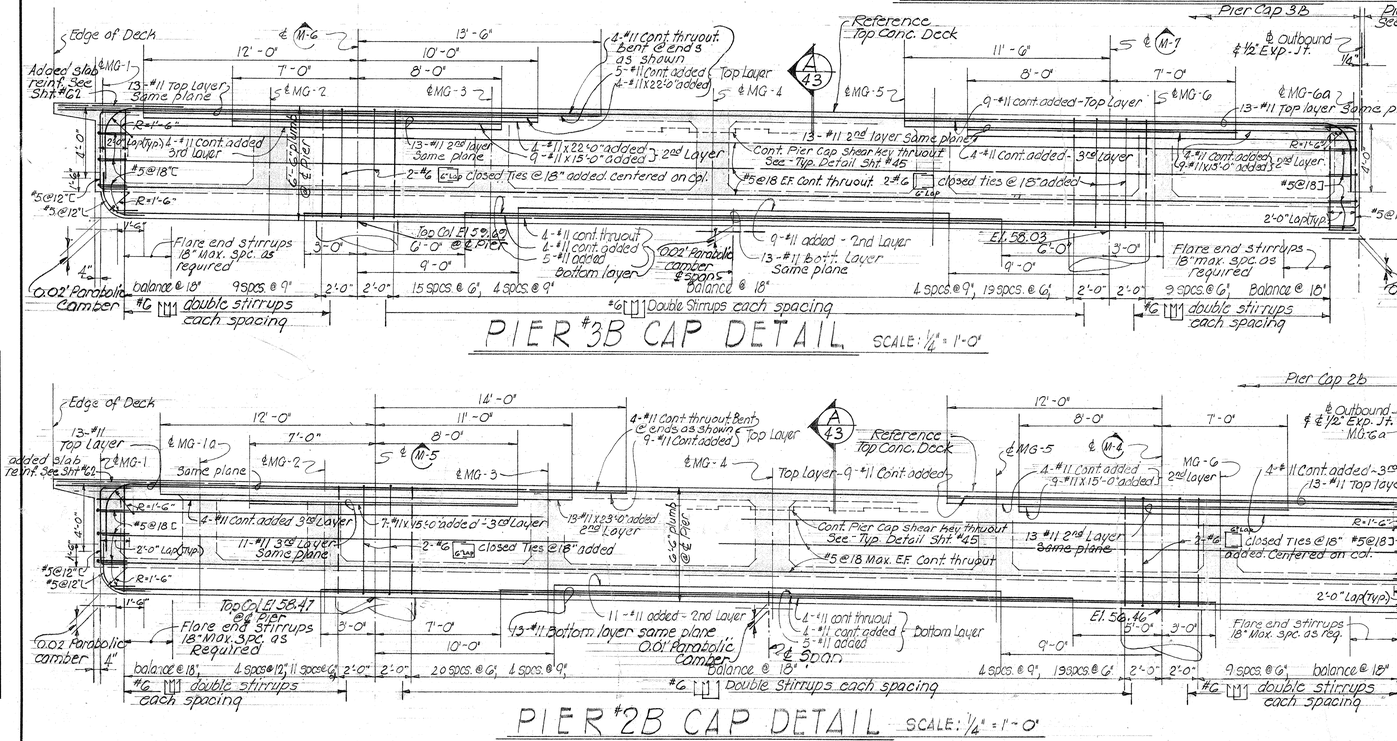
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(8)24 Unit 2	1965	215	276



PIER #5 CAP DETAIL SCALE: 1/4" = 1'-0"

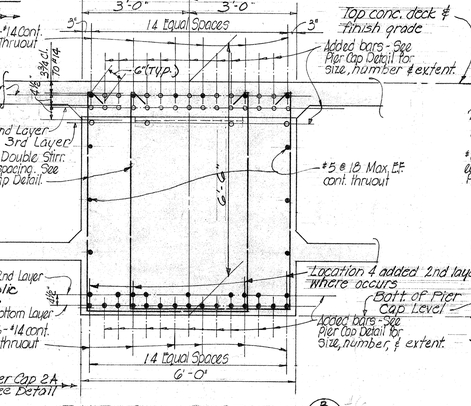


PIER #6 CAP DETAIL SCALE: 1/4" = 1'-0"



PIER #3B CAP DETAIL SCALE: 1/4" = 1'-0"

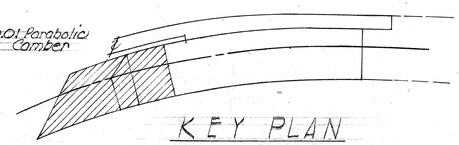
PIER #2B CAP DETAIL SCALE: 1/4" = 1'-0"



TYPICAL SECTION (B/44) SCALE: 1/2" = 1'-0"

TYPICAL SECTION (A/44) SCALE: 1/2" = 1'-0"

NOTE: Deck reinf. in pier cap not shown. For location size and spacing See corresponding details



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"

PIERS Nº 2B, 3B, 5 & 6, CAP DETAILS

O.B. ℄ STA.	46+50.25	PIER Nº 2B
O.B. ℄ STA.	47+21.61	PIER Nº 3B
O.B. ℄ STA.	48+06.00	PIER Nº 5
O.B. ℄ STA.	48+89.00	PIER Nº 6

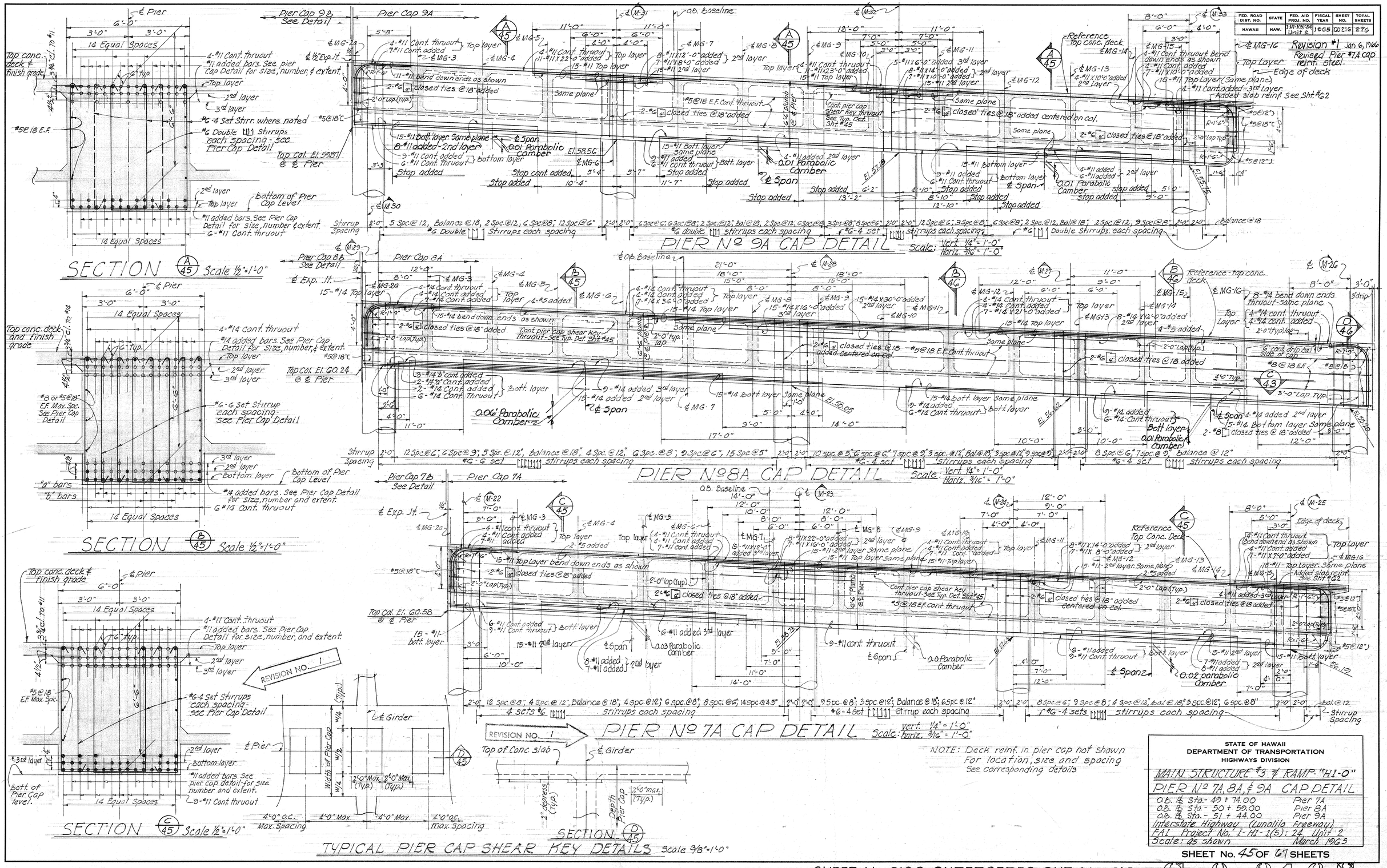
Interstate H'way FAI Proj. No. I-HI-1(8)24, Unit 2

SHEET No. 44 OF 67 SHEETS

215

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY RK	
	TRACED BY RK, VC, GE, DO	
NOTE BOOK	DESIGN BY JS, NY, PH	
	QUANTITIES BY JS, NY, PH	
No.	CHECKED BY JTD, PH	

ON CLEARPRINT 1000-H



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)24 Unit 2	1965	CO216	276

Revision #1 Jan. 6, 1966
Revised Pier #7A cap reinf. steel.

NOTE: Deck reinf. in pier cap not shown
For location, size and spacing
See corresponding details

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"

PIER No 7A, 8A, & 9A CAP DETAIL

O.B. ℄ Sta. - 49 + 74.00	Pier 7A
O.B. ℄ Sta. - 50 + 59.00	Pier 8A
O.B. ℄ Sta. - 51 + 44.00	Pier 9A

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5): 24, Unit 2
Scale: as shown March 1965

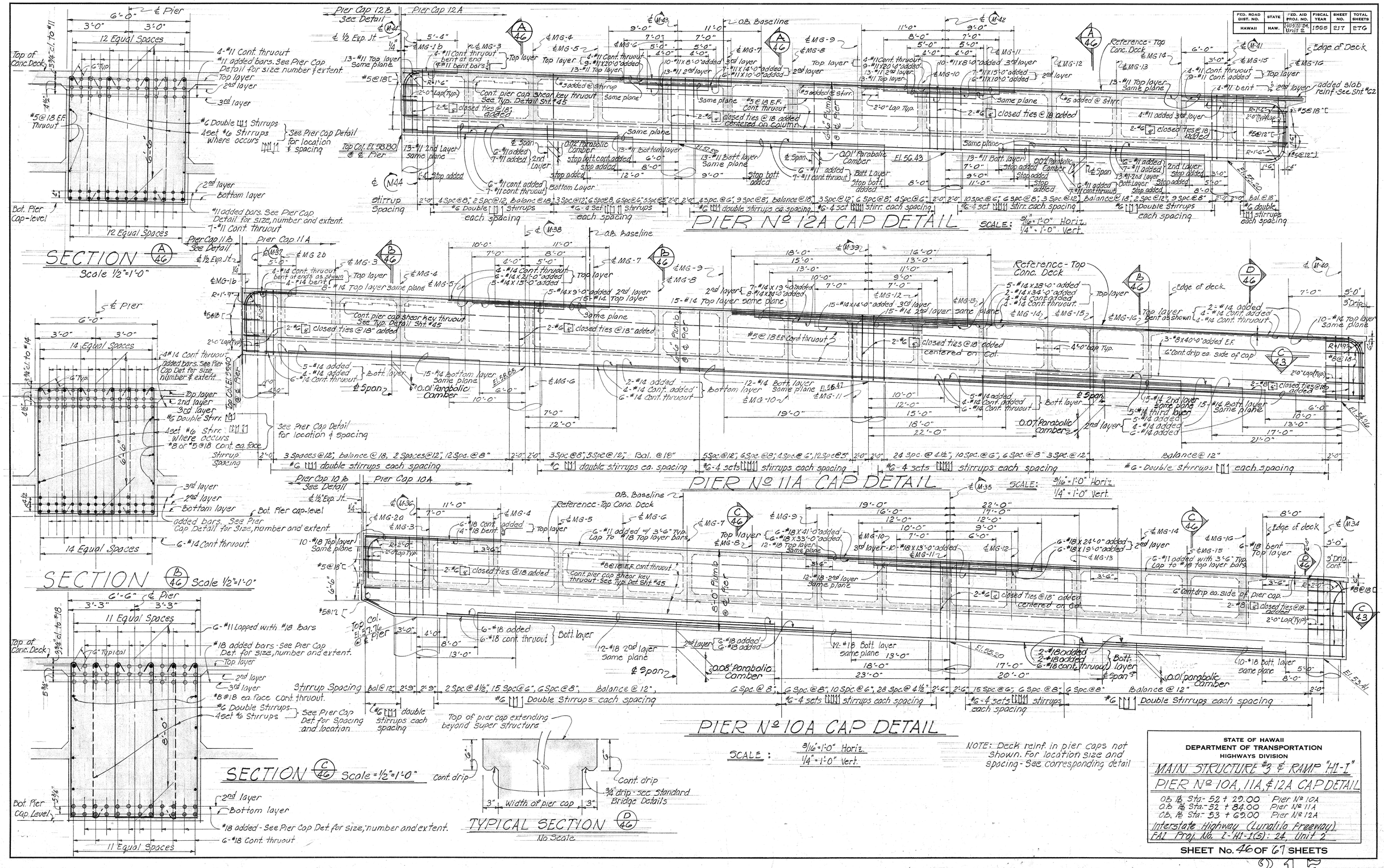
SHEET No. 45 OF 67 SHEETS

SHEET No. 216S SUPERSEDES SHT. No. 216

C.O. 216S

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HH(5):24, Unit 2	1965	217	276



NOTE: Deck reinf. in pier caps not shown. For location size and spacing - See corresponding detail

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-I"

PIER Nº 10A, 11A, & 12A CAP DETAIL

O.B. ℄ Sta.- 52 + 29.00 Pier Nº 10A
O.B. ℄ Sta.- 52 + 84.00 Pier Nº 11A
O.B. ℄ Sta.- 53 + 69.00 Pier Nº 12A

Interstate Highway (Lunalilo Freeway)
FAI Proj. No. I-H1-1(5): 24, Unit 2

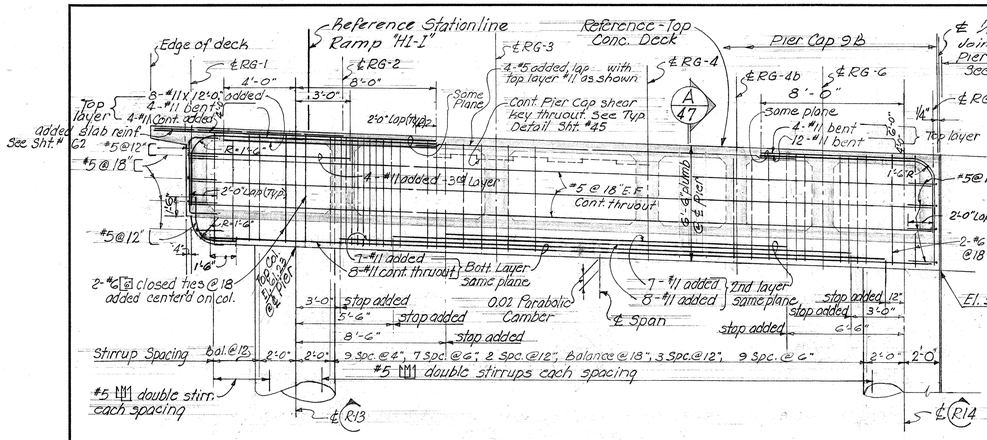
SHEET No. 46 OF 67 SHEETS

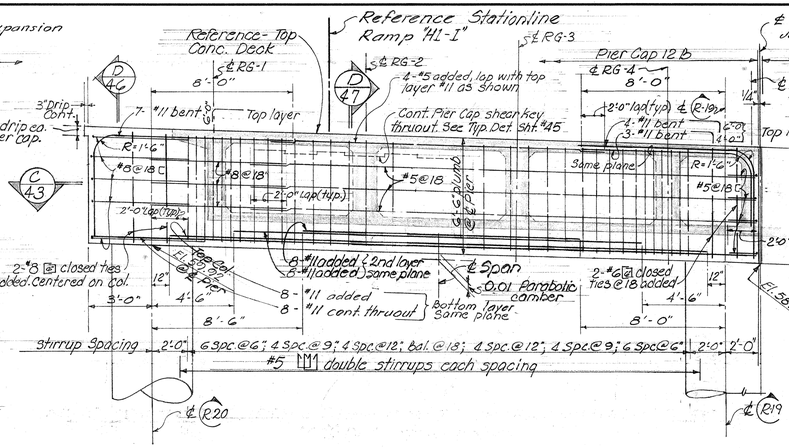
217

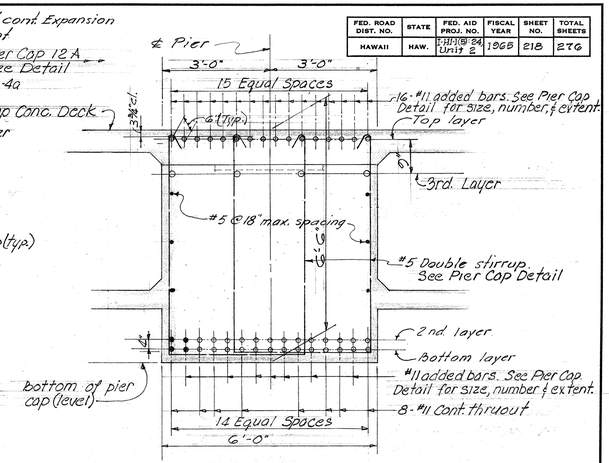
ORIGINAL PLAN | NOTE BOOK | No.
SURVEY PLOTTED BY
DRAWN BY RK
TRACED BY
DESIGNED BY RK DO
QUANTITIES BY WB TS CM
CHECKED BY JTO PTY
DATE

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-H1-2(4) Unit 2	1968	218	276

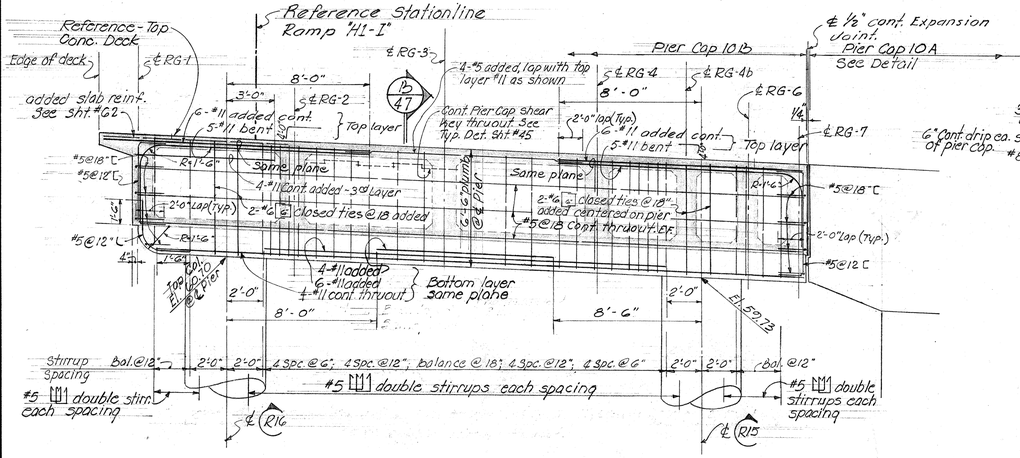






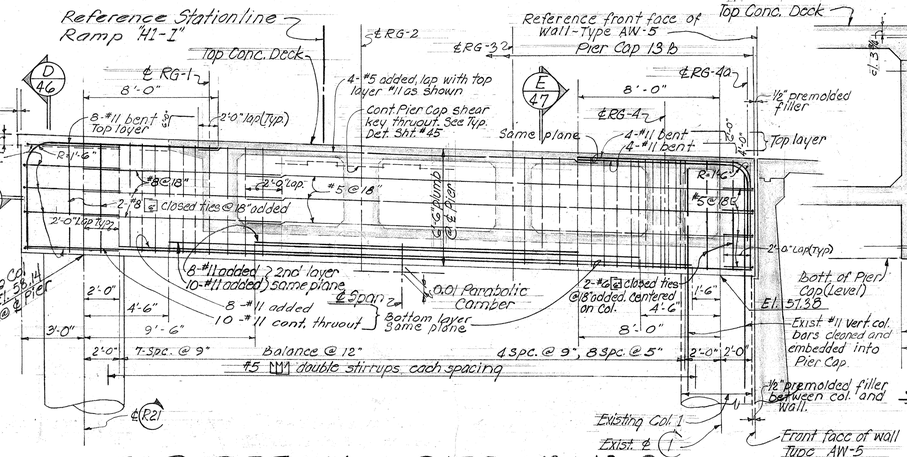
CAP DETAIL - PIER Nº 9B

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

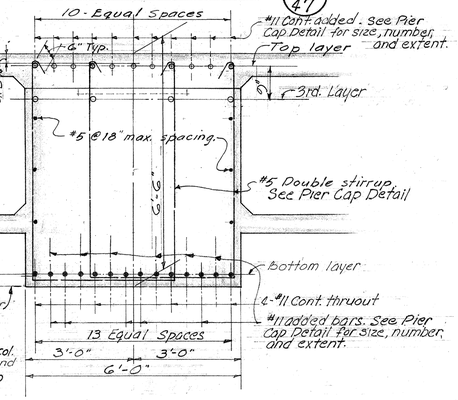


CAP DETAIL - PIER Nº 12B

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

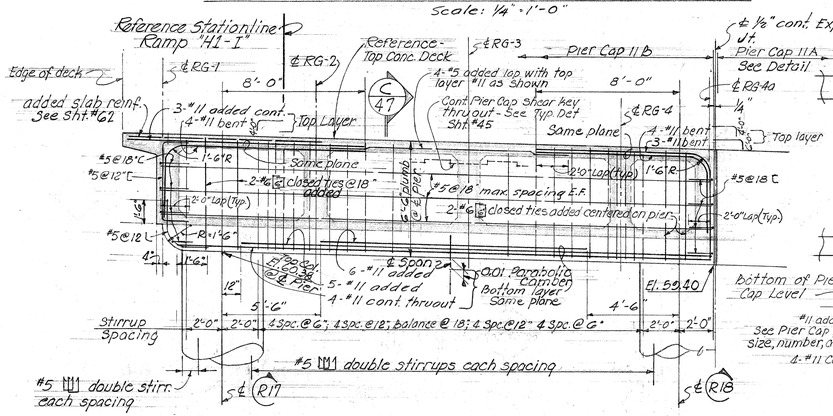


SECTION (A 47)



CAP DETAIL - PIER Nº 10B

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

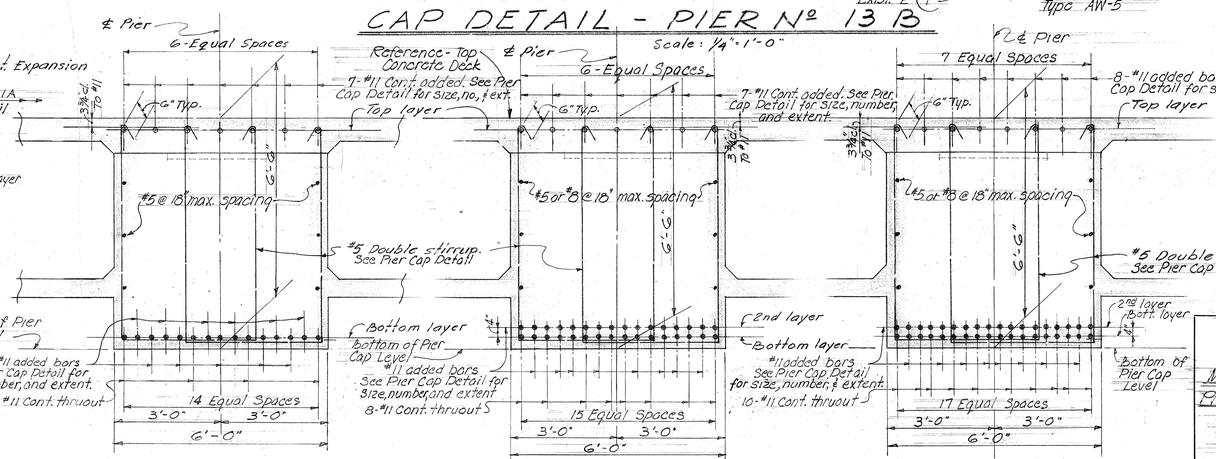


CAP DETAIL - PIER Nº 11B

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

CAP DETAIL - PIER Nº 13B

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



SECTION (C 47)

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

SECTION (D 47)

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

SECTION (E 47)

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

SECTION (B 47)

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

NOTE: Deck reinf. in pier cap not shown. For size and spacing - See corresponding details

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #9 & RAMP "H1-I"

PIERS Nº 9B, 10B, 11B, 12B & 13B CAP DETAILS

O.B. @ Sta.	51+44.00	Pier No. 9B
O.B. @ Sta.	52+29.00	Pier No. 10B
O.B. @ Sta.	52+84.00	Pier No. 11B
O.B. @ Sta.	53+69.00	Pier No. 12B
O.B. @ Sta.	54+58.61	Pier No. 13B

Interstate H'way. FAI Proj. No. I-HI-1(5)24, Unit 2.

SHEET No. 47 OF 67 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY RK	HW
NOTE BOOK	TRACED BY RK	SY
	DESIGNED BY EK	WB
No.	QUANTITIES BY EK	FTP
	CHECKED BY JTO	

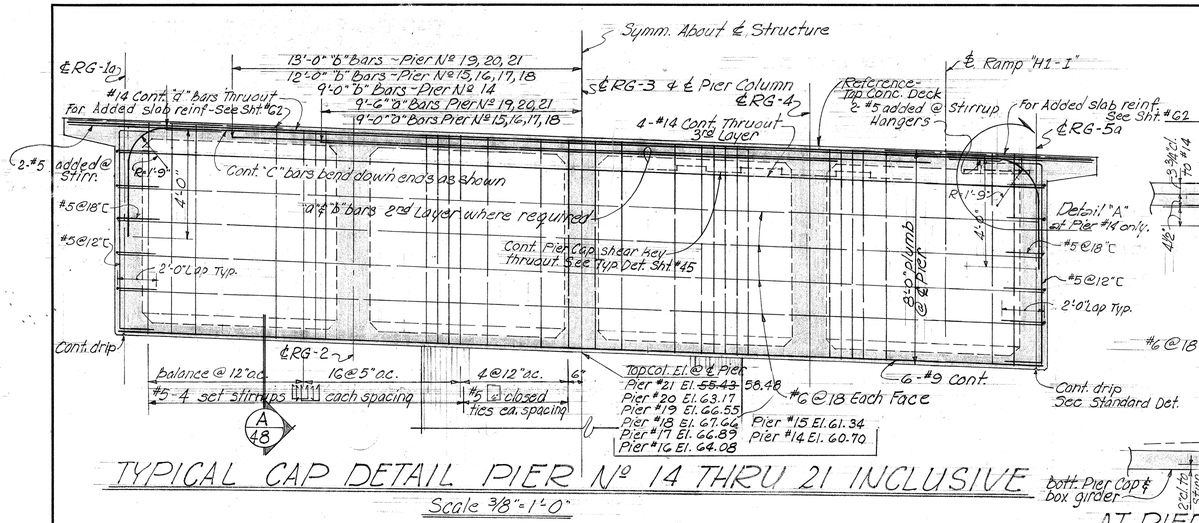
21S

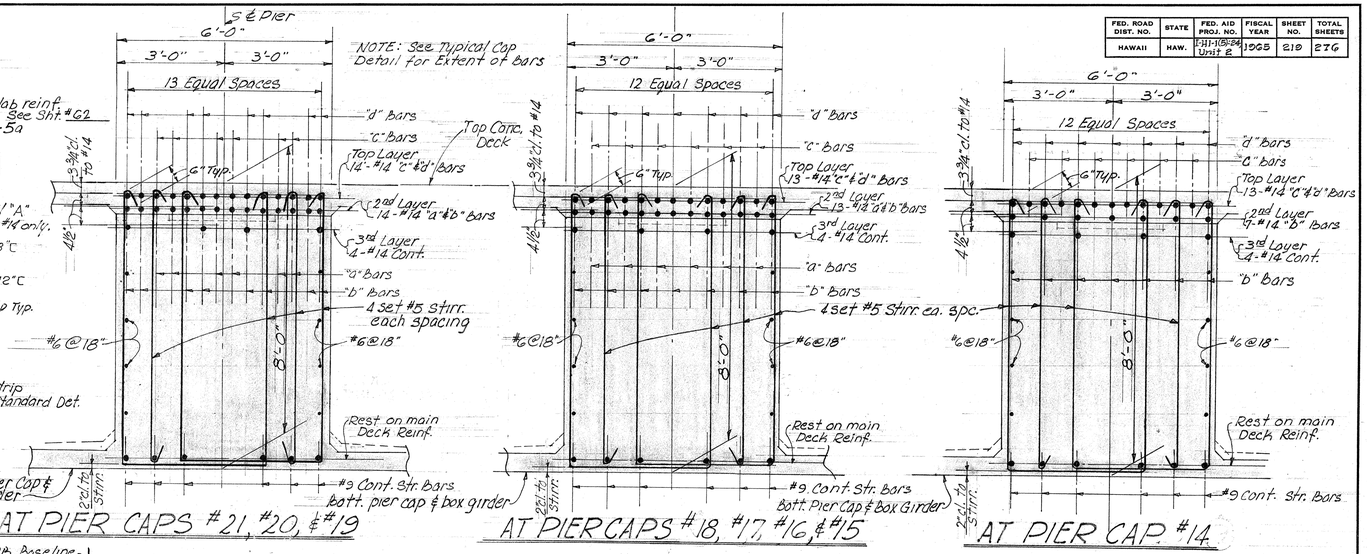
ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FHI-1(6)-24 Unit 2	1965	219	276

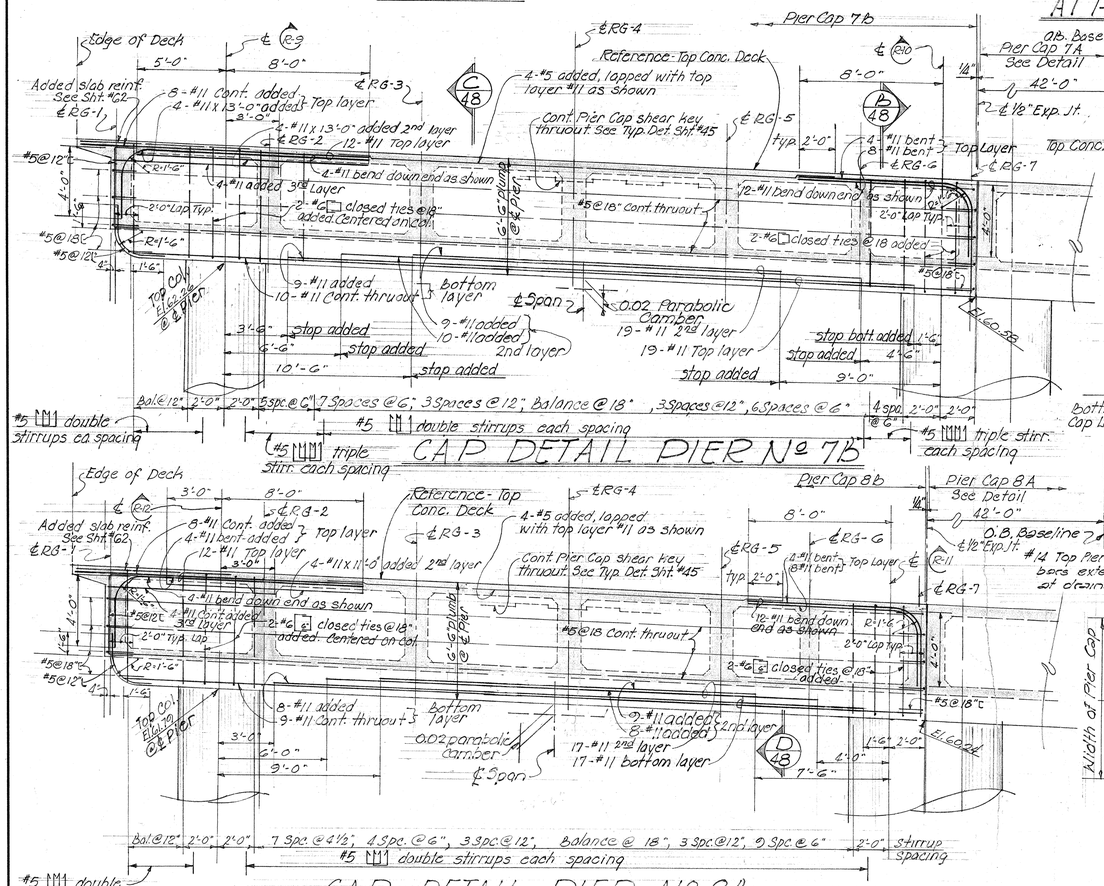
TYPICAL CAP DETAIL PIER Nº 14 THRU 21 INCLUSIVE

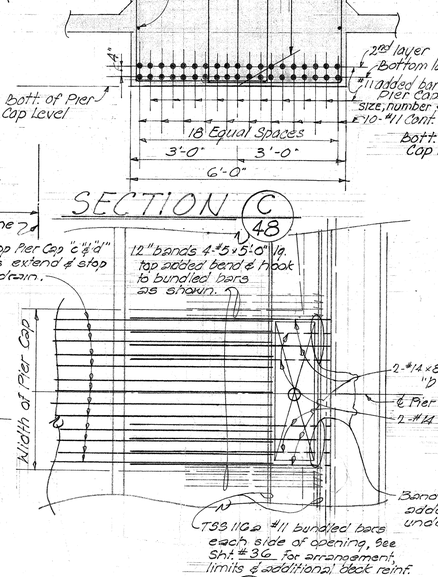
Scale 3/8"=1'-0"

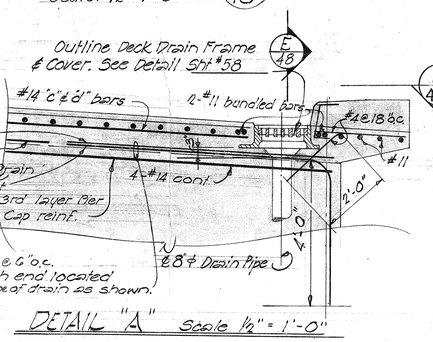


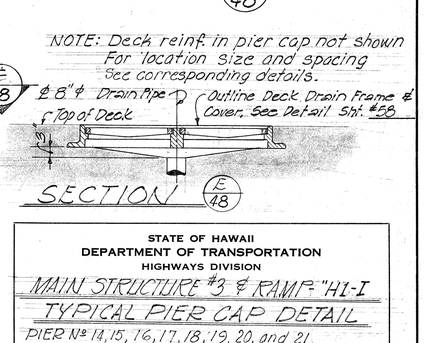


TYPICAL PIER CAP SECTION (A 48) Scale 1/2"=1'-0"









STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-I"

TYPICAL PIER CAP DETAIL

PIER Nº 14, 15, 16, 17, 18, 19, 20, and 21
PIER Nº 7b and 8b

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(6): 24, Unit 2
Scale: as shown March 1965

SHEET No. 48 OF 67 SHEETS

219

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY LL	
	TRACED BY RK CY HN	
NOTE BOOK	DESIGNED BY SK MB SY	
No.	QUANTITIES BY PSY MHO	
	CHECKED BY PSY MHO	

O ON CLEARPRINT 1000-H

Revision No. 1 - Revised Abut. No. 2 & Ret. Wall #1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(61)24 Unit 2	1965	C0220	276

Revised: Dec. 2, 1965

Abutment Wall Type AW-3 (For limits - see sheet #50) | Abutment Wall Type AW-6 | Abutment Wall Type AW-1 | Abutment Wall Type AW-2

11½" Wide cont. Abutment stem curb

Top of Abutment stem curb to follow finish roadway grade See Plan Sheet # 15

Top of Abut. stem curb. El. 59.99

Top of Abut. stem. El. 58.99

Top of Abutment stem to follow straight grade line between vertical elevations as indicated

Cont. rubber water stop in dock - see Typical Section

Top of curb El. 64.57

Top of Abut. stem curb El. 63.71

Top of Abut. stem El. 62.71

Top Wall El. 64.50

Retaining Wall #1 - See Std. Drawing S-1

13'-0" h=3.0 | 13'-0" h=2.2

Reference top of conc. shelf on ℄ bearing at edge of shelf El. 58.53

℄ MG-11 | ℄ MG-10 | ℄ MG-9 | ℄ MG-8 | ℄ MG-7a | ℄ MG-6a | ℄ MG-6 | ℄ MG-5 | ℄ MG-4 | ℄ MG-3 | ℄ MG-2 | ℄ MG-1a | ℄ MG-1

Reference top of conc. shelf on ℄ bearing at Exp. Jt. El. 54.53

4-#9 x 23'-0" added below seat.

8'-0"

Outline #11 dowels thruout. See plan for location and spacing

Top of conc. shelf to follow straight grade line between vertical elevation as shown

Outline #11 dowels thruout See plan for location and spacing

1.0' drip.

Top Wall El. 63.0

28.00' to Control Jt.

43.00'

Control Joint See Typ. Det. Sht #61

#9@18"o.c. x 23'-0" lg. added E.F. of Abut. stem thruout.

4-#11 added ea. face 10'-0" lg. ea.

½" Exp. Jt. in stem to top of footing only. see Detail Sht. # 61

6'-3" | 6'-3" | 6'-3" | 6'-3"

Control Jt. See Typ. Detail Sht. # 61

2-#4 added EF. 6'-0" long each

Panel "A" opening see Det. Sht. #141 & #145.

1-4" ϕ drain at ea. counterfort as shown see sht. #61

½" Exp. Jt. See Ret. Wall Std.

Aprox. 1½:1 line Top of fill @ wall

4" Tile drains as shown

4" ϕ Tile drains @ 10'-0"± oc. @ side walk. See Sht. #61

Existing Pav't Line

Approx. top of sidewalk line at Abutment See Highway Drawings

Match Line

2'-6" Lap

3"x12" cont. constr. Jt. key

Bottom of Pile Cap El. 24.0

Cont. footing reinf. see detail.

#9@12"o.c. x 23'-0" added top & bott. thruout width of footing.

Bottom of Footing El. 24.0

Cont. footing reinf. See details.

Bottom Footing El. 24.25

Bott. of footing El. 24.0

Bott. of footing El. 25.0

REVISION NO. 1

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

Part Abutment #2 and Retaining Wall #1

REVISION NO. 1

GENERAL NOTE

For Revised Abutment Wall - AW-1, AW-2, AW-3, AW-4, Foundation Details & Reinforcements, see Revised Sheets # 51A, 52A, 52B, 53, 54A, 54B & 55.

REVISION NO. 1

(24.25) | (24.0) | 15'-0" | 11'-9" | 3' drip | 2'-9" | 6'-0" | 22'-0" | 7'-0" | 5'-11½" | 19'-0" (Type T) | 15'-0" (Type X) | 4'-0" | 8'-3" | 45°03'41" | Top of conc. shelf at ℄ bearing El. 58.47 | Top Edge of Bond Beam El. 58.78 | Top of conc. Seat El. 58.82 | Retaining Wall #1 see Standard Ret. Wall Type T-1, Sht. #55-1 | Measured along front face of Ret. Wall | Reference front face of Ret. Wall | Abutment Wall Type AW-2 | ℄ Bearing Abutment #2 Az. 258°45'30" | ℄ MG-12

Az. 213°41'40"

#11 dowel grouping Locate along ℄ bearing at each ℄ grade beam & between girders as shown.

Revision No. 1 - Retaining Wall #1 & Abutment #2

℄ Counterfort Type CF-6 | ℄ Counterfort Type CF-5 | ℄ Counterfort Type CF-4

#9 Top & Bott. Rtg. added Thruout - See Elevation Above

3"x12" cont. constr. jt. key in footing

Reference Out Bound Baseline

Match Line (See Sht. #50)

4" ϕ Tile drain

11½" wide cont. abutment stem curb

23'-0" | 14'-9" | 29'-0" | 20'-0" | 8'-3" | 21'-0" | 13'-9" | 7'-3"

Top of Conc. Seat El. 58.82

P.I. ℄ bearing Abut. #2 & Out Bound Baseline Sta: 45+78.44

℄ MG-11 | ℄ MG-10 | ℄ MG-9 | ℄ MG-8 | ℄ MG-7a | ℄ MG-6a | ℄ MG-6 | ℄ MG-5 | ℄ MG-4 | ℄ MG-3 | ℄ MG-2 | ℄ MG-1a | ℄ MG-1

Ref. Top of stem El. 62.71 | Ref. Top of curb El. 63.57

9 equal spaces | 9 equal spaces | 9 equal spaces | 9 equal spaces | 8 equal spaces | 8 equal spaces | 9 equal spaces | 9 equal spaces | 9 equal spaces | 9 equal spaces | 5 equal spaces | 5 equal spaces

4" | 5'-11 15/16" | 12'-6" | 12'-6" | 12'-6" | 12'-6" | 12'-6" | 3½"

126.62' To W.P. "A" (See Sht. #50)

49.04' To End of Wall Type AW-3 (see sht. #50)

29.76' Abutment Wall Type AW-6

79'-10"

Abutment Wall Type AW-1

℄ & ½" Exp. Jt. in stem only.

PART LAYOUT PLAN Scale 3/16"=1'-0"

Part Abutment #2 and Retaining Wall #1

REVISION NO. 1

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 RAMP "H1-0"

ABUTMENT #2, RETAINING WALL #1

PART LAYOUT PLAN & ELEVATION

Interstate Highway (Queen Kaahumanu Freeway)
FAI Project No. I-HI-1(3):24, Unit 2
Scale: as shown March 1965

SHEET No. 49 OF 67 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY K.K	"
NOTE BOOK	TRACED BY ASK	"
No.	DESIGN BY K.K. VC	"
	QUANTITIES BY K.K. VC TS	"
	CHECKED BY J.T.O. E.F.Y.	"

SHEET No. 220S SUPERSEDES SHEET No. 220

C.O.220S

ON CLEARPRINT 1000-H

Revised: Dec. 9, 1965

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	00221	276

Abut #1 — Retaining Wall #2 — Abutment #2

Abut. Wall — Top of curb El. 51.02 — Top of curb to follow roadway vertical curve. Refer to Roadway Detail Shts. — Metal bridge railing - see Standard Bridge Details — End Abut. stem curb El. 56.33

Abutment Wall Type AW-4 — Abutment Wall Type AW-3 See Sht. #49.

℄ Bearing — Reference Top of curb El. 53.79 — Top Abut. Stem El. 51.23 — Top of Abutment stem to follow straight line grade between vertical elevations as indicated — Cont. rubber water stop in dock - see Typ. Sec. (B/53) — Top Abut. stem El. 55.33

℄ W.P. "A" — ℄ MG-16 — ℄ MG-14b — ℄ MG-14a — ℄ MG-14 — ℄ MG-13 — ℄ MG-12

Reference Top of Cap - Shelf on ℄ bearing at Edge of Shelf El. 47.37 — Top of concrete shelf to follow straight line grade between vertical elevation as shown — Outline #11 dowels thruout. See plan for location and spacing

Expansion Jt. See Ret. Wall Std — Exp. Joint - See Typ. Detail (B/53) — Control Jt. - See Ret. Wall Std — Control Jt. - See Typ. detail Sht. #63 — 26'-0" — 28'-0" to prior Control Jt.

Approx. sidewalk line @ Ret. Wall. See Highway Drawing. — 4" Tile drain @ 10'-0"± @ sidewalk. See Typ. Det. Sht. #61 — Existing Pavt Line — Existing Pavt. Line — Approx. top of sidewalk line at abutment. See Hwy Drawings — 4" Tile drain @ 10'-0"± @ sidewalk. See Typ Det. Sht. #61 — Match Line

Bottom Pile Cap El. 21.50 — Bottom Pile Cap El. 22.75 — Bottom Pile Cap El. 23.75 — Bottom Pile Cap El. 24.25 — Bottom Pile Cap El. 24.0

ELEVATION - (RETAINING WALL #2 & PART ABUTMENT #2)

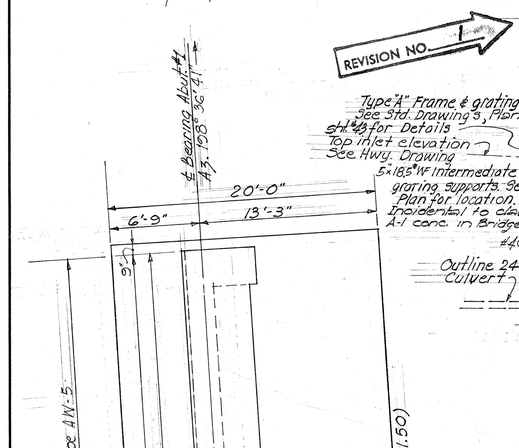
Scale 3/16"=1'-0"

REVISION NO. 1

GENERAL NOTE

For Revised Abutment Walls AW-3, AW-4, AW-5, Retaining Wall #2 Foundation Details & Reinforcements, see Revised Sheets #51A #53, #55 & #56.

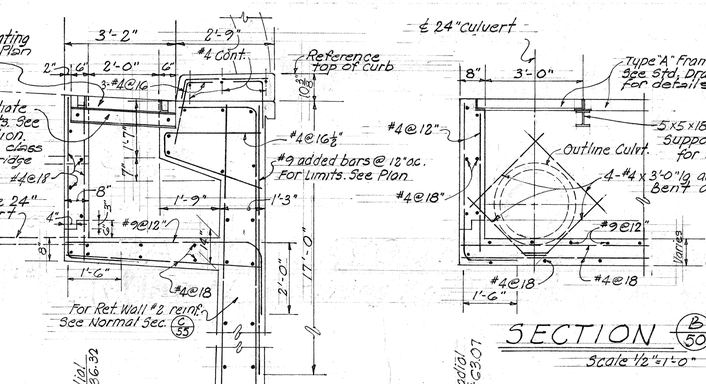
REVISION NO. 1



PART LAYOUT PLAN Scale 3/16"=1'-0"

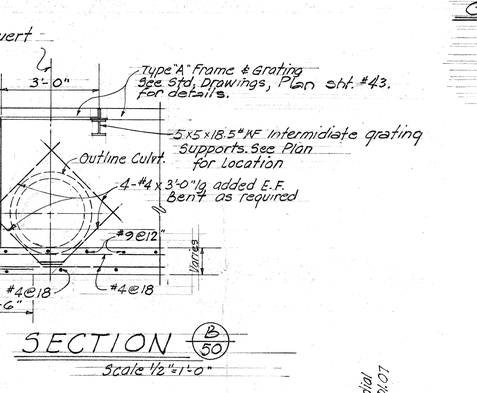
Retaining Wall #2

REVISION NO. 1



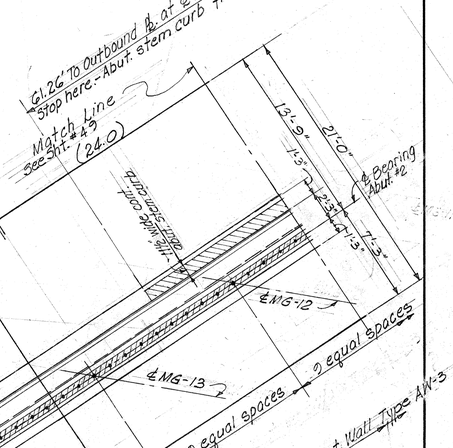
SECTION (A/50)

Scale 1/2"=1'-0"



SECTION (B/50)

Scale 1/2"=1'-0"



Revision No1 - Revised Abutment #2 & Retaining Wall #2

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
ABUTMENT #1 & 2, RETAINING WALL #2
PART LAYOUT PLAN & ELEVATION

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(6):24, Unit 2
Scale: as shown — March 1965

SHEET No. 50 OF 67 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY KK	"
	TRACED BY KK VG	"
	DESIGNED BY KK YS JF	"
NOTE BOOK	QUANTITIES BY KK ETY	"
No.	CHECKED BY JFD ETY	"

SHEET No. 221S SUPERSEDES SHEET No. 221

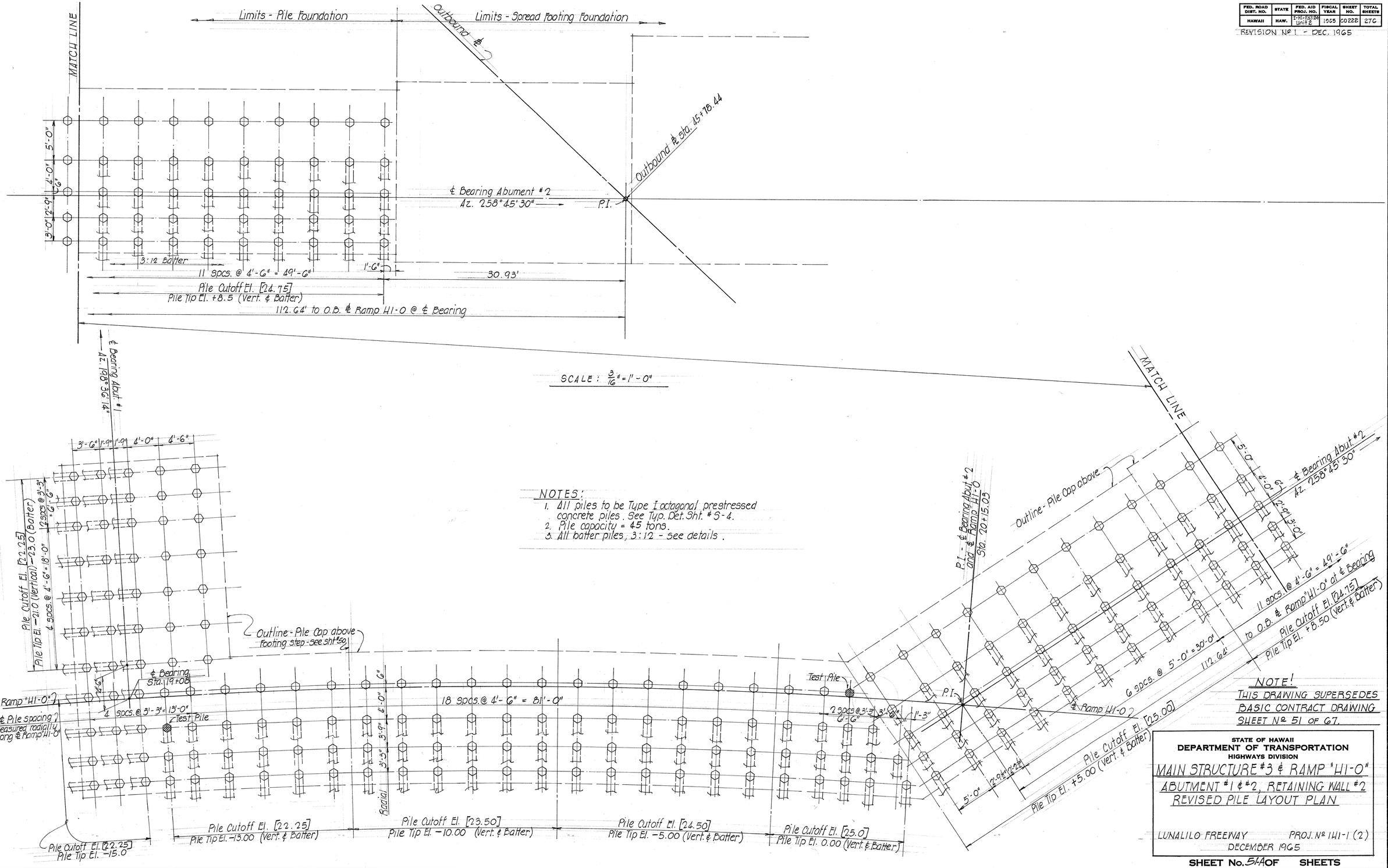
C.O. 221S

R-760

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-(15)-24 Unit 2	1965	C0222	276

REVISION Nº 1 - DEC. 1965



NOTES:
1. All piles to be Type I octagonal prestressed concrete piles. See Typ. Det. Sht. # S-4.
2. Pile capacity = 45 tons.
3. All batter piles, 3:12 - see details.

NOTE!
THIS DRAWING SUPERSEDES BASIC CONTRACT DRAWING SHEET Nº 51 OF 67.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
ABUTMENT #1 & #2, RETAINING WALL #2
REVISED PILE LAYOUT PLAN

LUNALILO FREEWAY PROJ. Nº IHI-1 (2)
DECEMBER 1965

SHEET No. 51-A OF SHEETS

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

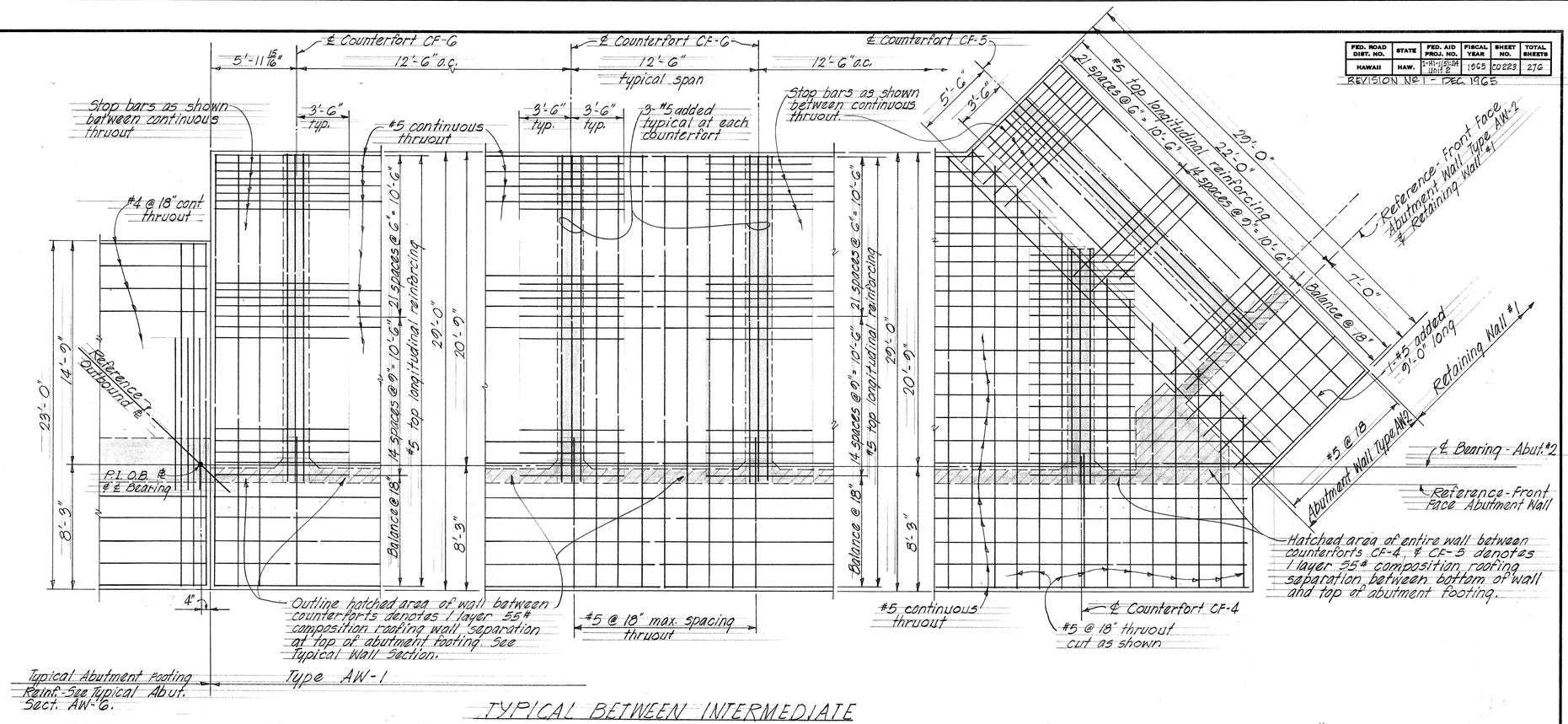
PRINTED ON NO. 1000H CLEARPRINT

SHEET No. 222S SUPERSEDES SHEET No. 222

C.0.222S

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	00223	276

REVISION No 1 - DEC. 1965



END OF WALLS TYPE AW-6 & AW-1

TYPICAL BETWEEN INTERMEDIATE COUNTERFORT CF-6

CORNER AT RETAINING WALL #1

TYPICAL ARRANGEMENT OF TOP ABUTMENT FOOTING REINFORCEMENT - ABUTMENT No 2

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

NOTE: This drawing supersedes basic contract drawing Sht. #52 of 67

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H-O"
ABUTMENT #2
PART FOOTING REINFORCEMENT

Interstate Highway (Lunalilo Freeway)
F.A.I. Proj. No. IH-1-1(5): 24, Unit 2
Dec. 1965

SHEET No. 52A OF SHEETS

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

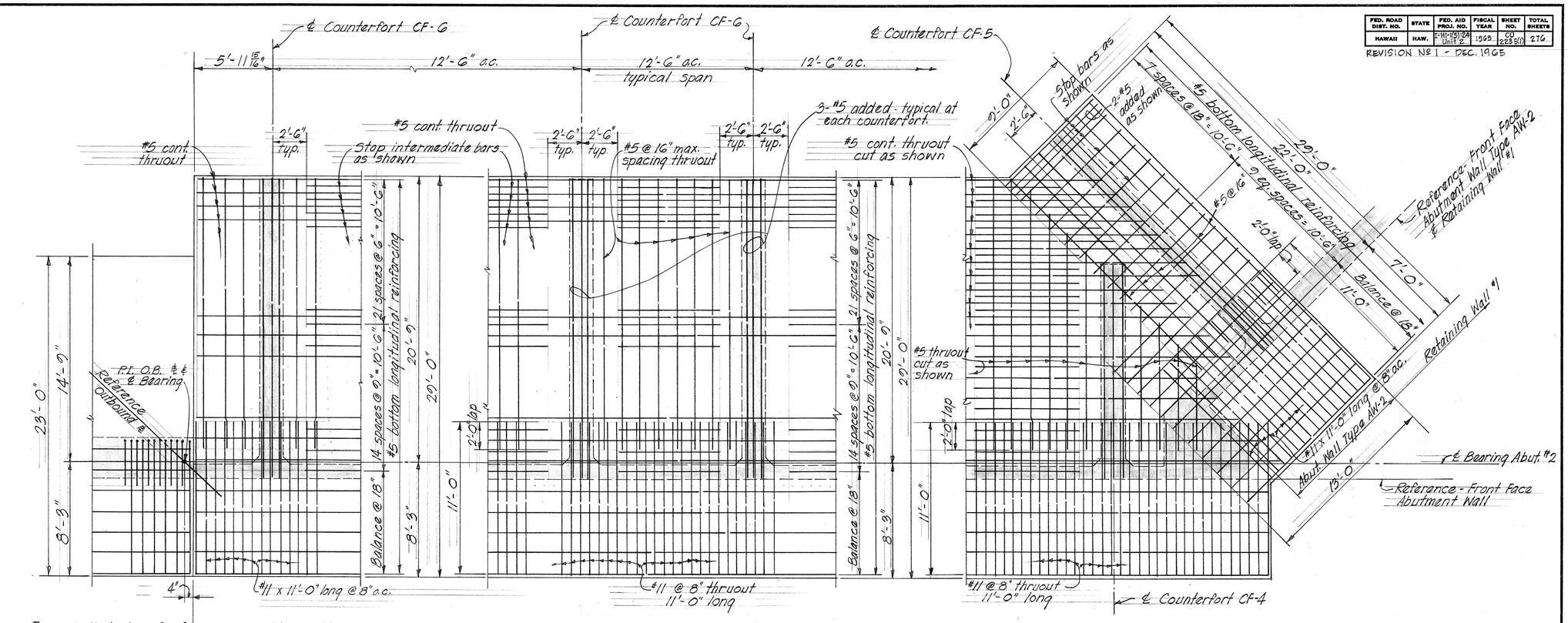
PRINTED ON NO. 1000H CLEARPRINT

SHEET No.s 2235, 2235(1) & 2265 SUPERSEDES SHEET No. 223

F. A. P. 223

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(9):24 Unit 2	1965	223S(1)	276

REVISION NO 1 - DEC. 1965



END OF WALLS TYPE AW-6 & AW-1 — TYPICAL BETWEEN INTERMEDIATE COUNTERFORT CF-6 — CORNER AT RETAINING WALL #1

TYPICAL ARRANGEMENT OF BOTTOM ABUTMENT FOOTING REINFORCEMENT - ABUTMENT #2

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

NOTE: This drawing supersedes basic contract drawing Sht. #52 of 67.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
ABUTMENT #2
PART FOOTING REINFORCEMENT

Interstate Highway (Lunalilo Freeway)
F.A.I. Project No. IH-1-1(6):24, Unit 2
Dec. 1965

SHEET No. 52 OF SHEETS

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

PRINTED ON NO. 1000H CLEARPRINT

SHEET No.s 223S, 223S(1), & 226S SUPERSEDES SHEET No. 223

(1).(1).223S(1)

Revised: Dec. 9, 1965

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(6)24 Unit 2	1965	CO224	276

REVISION NO. 1

Retaining Wall #2 — Reference ℄ Ramp H1-0 — Reference OUTBOUND ℄ — 3" drip 8'-6" — 2'-0" — 1'-3" — 3'-1" — 2'-3" — 1'-3" — 1'-0" — Expansion Jt. "H1-0 STA. 20+01.36" — R=751.50' — W.P. "A" — ℄ Exp. Jt. "H1-0 STA. 20+01.36" — 11½" "About. stem curb, see Sht. #50 for limits" — 3" — 1½" recess for premolded Jt. filler — W.P. "A" - Edge shelf at ℄ bearing — Reference front face of wall for location of premolded filler — ℄ Bearing Abut. #2 — PT-OB Baseline ℄ Bearing — 4" — 1'-0" — 126.62' — TYPE AW-4 & TYPE AW-3 — TYPE AW-6 — WALL AW-4 CONNECTION AT RETAINING WALL #2 — WALL AW-6 CONNECTION TO WALL AW-1

℄ Counterfort Type CF-5 — ℄ Counterfort Type CF-4 — Radial — 1'-6" — 1'-1" — 3" — 5'-0" End Post — 5'-3" — 2'-0" level — 7'-0" — P.I. — 12" — 1'-3" — 12" — 3" strip — Reference front face of wall Retaining Wall #1 — 12'-9" — TYPE AW-2 — 5'-11½" — W.P. "B" — 45°03'41" — ℄ Bearing Abut. #2 — Construction Joint — #11 dowels not shown. For location & spc. see Sht. #49 — 1'-3" — 79.83' — TYPE AW-1 — WALLS AW-1, AW-2 AT RETAINING WALL #1

PLAN (A/53) SCALE: 3/8"=1'-0"

5'-8" — 12'-6" o.c. — 12'-6" o.c. — 12'-6" — 12'-6" o.c. — 1'-0" (Typ.) — 10½" — 10½" — ℄ Counterfort Type CF-6 — ℄ Counterfort Type CF-5 — Counterfort Type CF-6. For reinf. & det. see sht. #54B — #4 ⊐ horiz. ties. See Det. Counterfort type CF-6 sht. #54B — 8-#11 Counterfort reinf. See typ. det. for location & extent. — #6 ⊥L Vert. ties. See Det. Counterfort type CF-6 sht. #54B — Counterfort Type CF-6. For reinf. & det. see sht. #54B — Abut. Type AW-6 — Cont. waterproofing around base of each counterfort. See Std. Spec. — Counterfort - Varies — Stop alt. top bars — 3'-6" — Top ftg. reinf. See Abut. Wall Type AW-1 for size, location & spacing — 1-6 typ. — 2'-6" Stop alt. batt. bars — 2'-6" — Batt. ftg. reinf. See Abut. wall type AW-1 for size, location & spacing.

END SPAN AT AW-6 — INTERMEDIATE SPAN BETWEEN COUNTERFORT

TYPICAL SECTION (D/53) - (ABUT. WALL TYPE AW-1)

Retaining Wall #2 — Reference ℄ Ramp H1-0 — Reference OUTBOUND ℄ — 3" drip 8'-6" — 2'-0" — 1'-3" — 2'-3" — 1'-3" — 3'-1" — 1'-0" — ℄ Exp. Jt. "H1-0 STA. 20+01.36" — R=751.50' — W.P. "A" — 3" — 3-#4 vert. extend 2'-0" into stem — 4" drain — Slope to drain — Cont. shelf drain see Typ detail sht #65 — 4" — 1'-6" ℄ Bearing — P.T. 0.0'℄ — ℄ Exp. Jt. "H1-0 STA. 20+01.36" — 126.62' — TYPE AW-4 & TYPE AW-3 — TYPE AW-6 — WALL AW-4 AT R.W. #2

℄ Counterfort Type CF-6 — ℄ Counterfort Type CF-4 — Radial — 1'-9" — 3-#4 — 2-0½" — 3-#7 bent — 8'-0" — 2'-6" — 4" dia. tile drain 2-#7 straight — P.I. — 5'-11½" — W.P. "B" — 45°03'41" — ℄ Bearing Abut. #2 — Ref. Front Face Abut. Wall — 1'-3" — 79.83' — TYPE AW-1 — WALLS AW-1, AW-2 AT R.W. #1

TYPICAL SECTION (B/53) SCALE: 3/8"=1'-0"

Retaining Wall #2 — Reference ℄ RAMP H1-0 — Fan shaped reinf. at cone-back see detail above — 8'-6" — 12" — 1'-3" — 2'-3" — 1'-3" — 3'-1" — 2'-3" — 1'-3" — 3" strip above — ℄ Exp. Jt. "H1-0 STA. 20+01.36" — R=751.50' — W.P. "A" — Ref. Front Face Abut. wall — 126.62' — TYPE AW-4 & TYPE AW-3 — TYPE AW-6 — TYPE AW-1 — WALL AW-4 AT R.W. #2

Abut. wall reinf. see typ. section — Reference OUTBOUND BASELINE — ℄ Bearing Abut. #2 — 4" — ℄ Exp. Jt. similar as shown for Wall type H1-0 see Sht. #61 — 2'-0" stop here alt. front face bar — 2'-6" — 2'-6" — Stop alt. front face bars — 2'-6" — 2'-6" — Stop here alt. front face bar — 2'-6" — 79.83' — WALLS AW-6 CONN. TO AW-1 — WALLS AW-1, AW-2 AT R.W. #1

Front face wall reinf. see wall type AW-1 for size, location & spacing

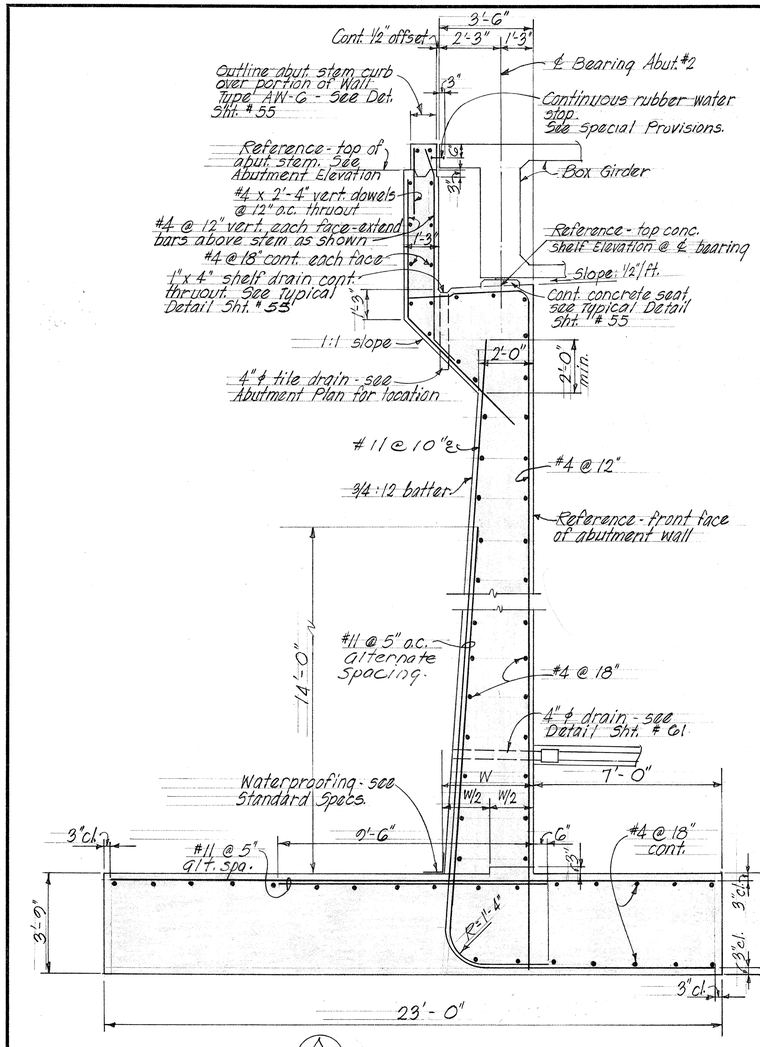
TYPICAL SECTION (C/53) — INTERMEDIATE SPAN BETWEEN COUNTERFORT

REVISION NO. 1

5'-11 15/16" — 12'-6" o.c. — 12'-6" o.c. — 12'-6" — 12'-6" o.c. — 12'-6" o.c. — ℄ Counterfort Type CF-6 — ℄ Counterfort Type CF-4 — Counterfort type CF-4 for reinf. & det. see sht. #54B — 8-#11 Counterfort reinf. See typ. det. for location & extent. — #4 ⊐ horiz. ties. See Det. Counterfort type CF-6 sht. #54B — #6 ⊥L vert. ties. See Det. Counterfort type CF-6 sht. #54B — 1'-6" (Typ.) — 1'-9" — 10½" — 10½" — Counterfort varies - See det. — Stop alt. back face bars — Stop here alt. back face bars — 3'-6" — Back face wall reinf. See Abut. wall type AW-1 for size, location & spacing — #7 @ 12" added 8'-6" long — Front face wall reinf. see wall type AW-1 for size, location & spacing — 2'-0" — 2'-6" — 2'-6" — 2'-6

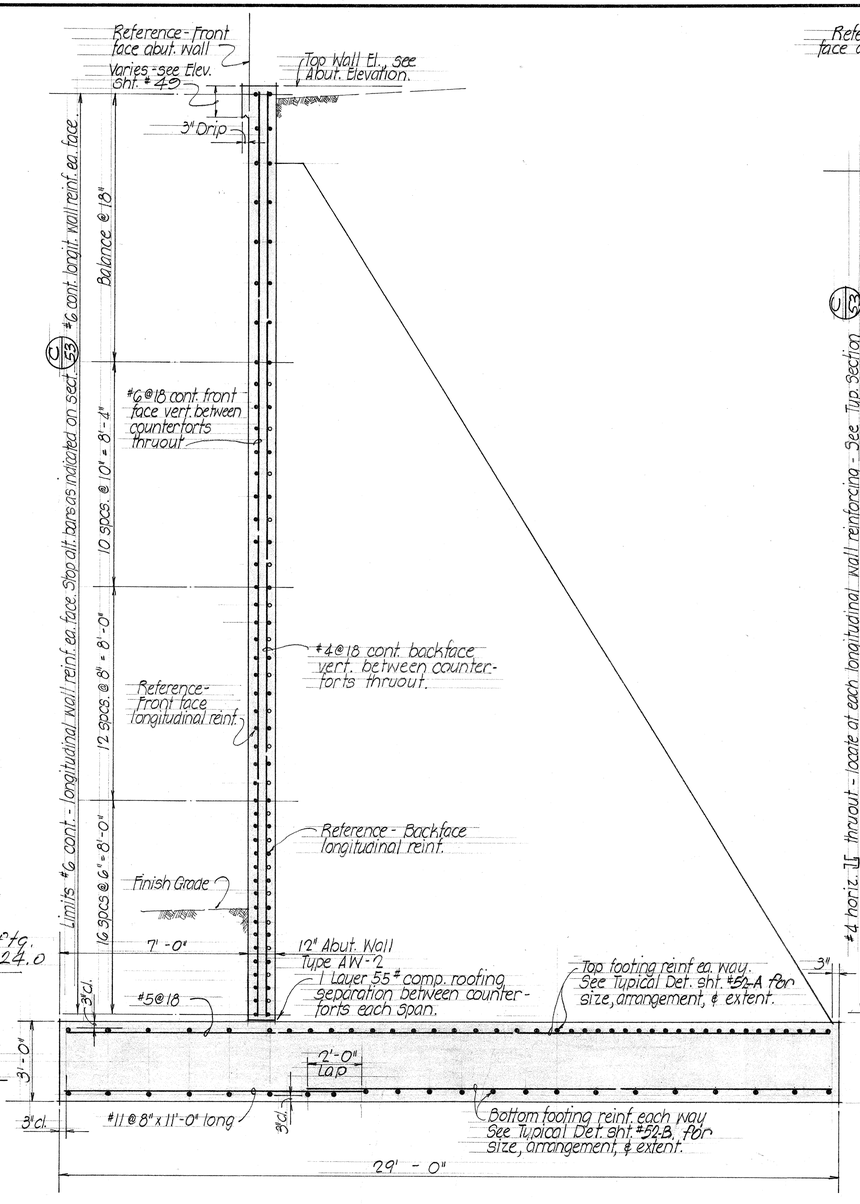
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5);24 UNIT 2	1965	60225	276

REVISION No 1 - DEC. 1965



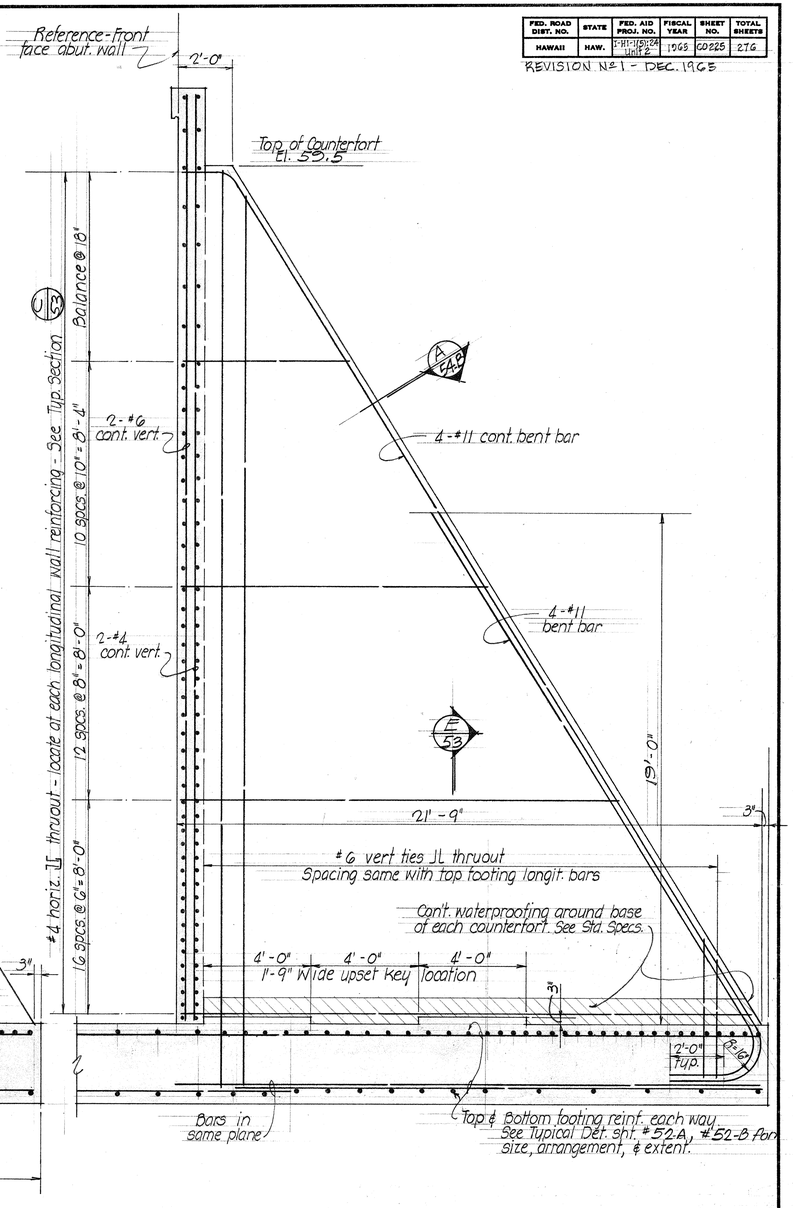
NORMAL SECTION (A / 54 A) THRU ABUTMENT WALL TYPE "AW-6"

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



TYPICAL SECTION THRU ABUTMENT WALL TYPE AW-2

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



TYPICAL COUNTERFORT TYPE CF-5

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

NOTE!
THIS DRAWING SUPERSEDES BASIC CONTRACT DRAWING SHT. No 54 OF 67.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP H1-0
ABUTMENT #2 REVISED
SECTIONS & DETAILS

Interstate Highway (Lunalilo Freeway)
FAI Project No. IH-1-1(5):24, Unit 2
Scale: as shown Dec. 1965

SHEET No. 54 A OF 67 SHEETS

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

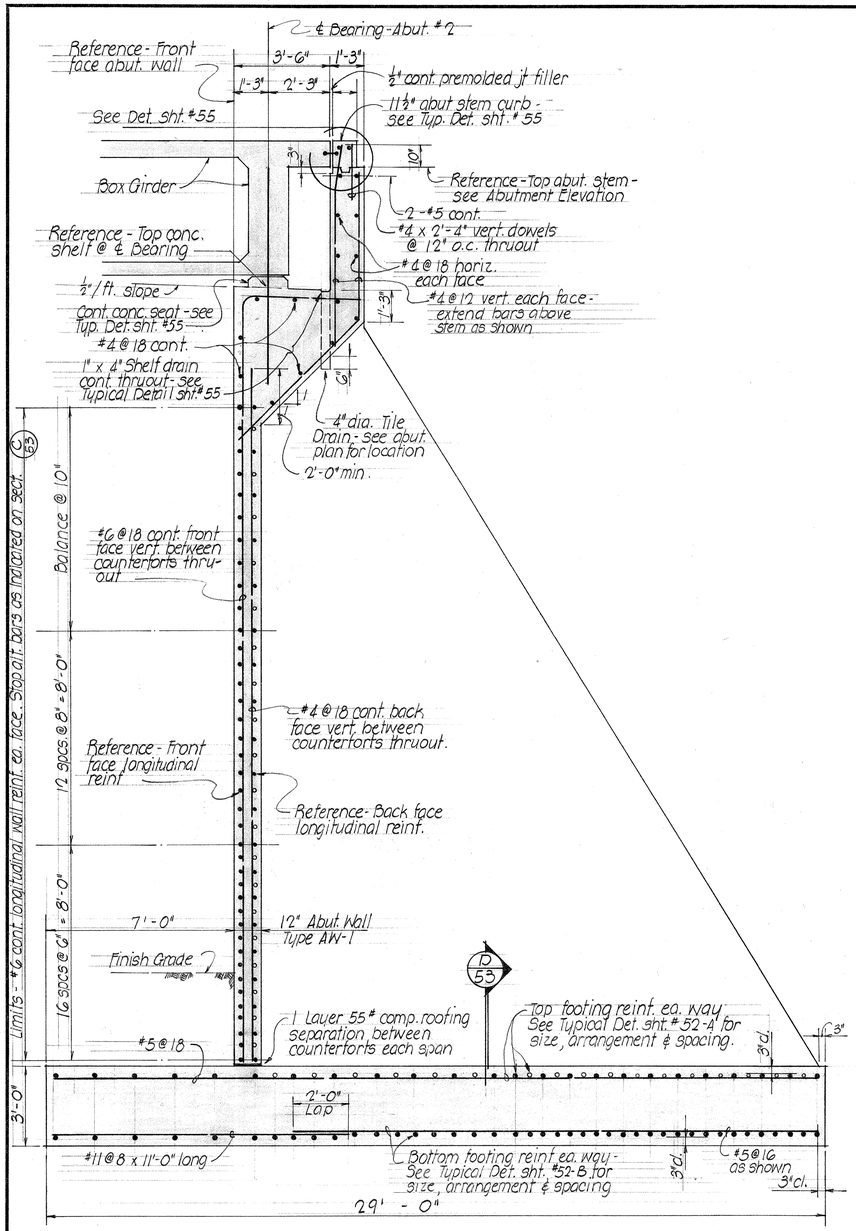
PRINTED ON NO. 1000H CLEARPRINT

SHEET No. 2255 & 2255(1) SUPERSEDES SHEET No. 225

No. 2255

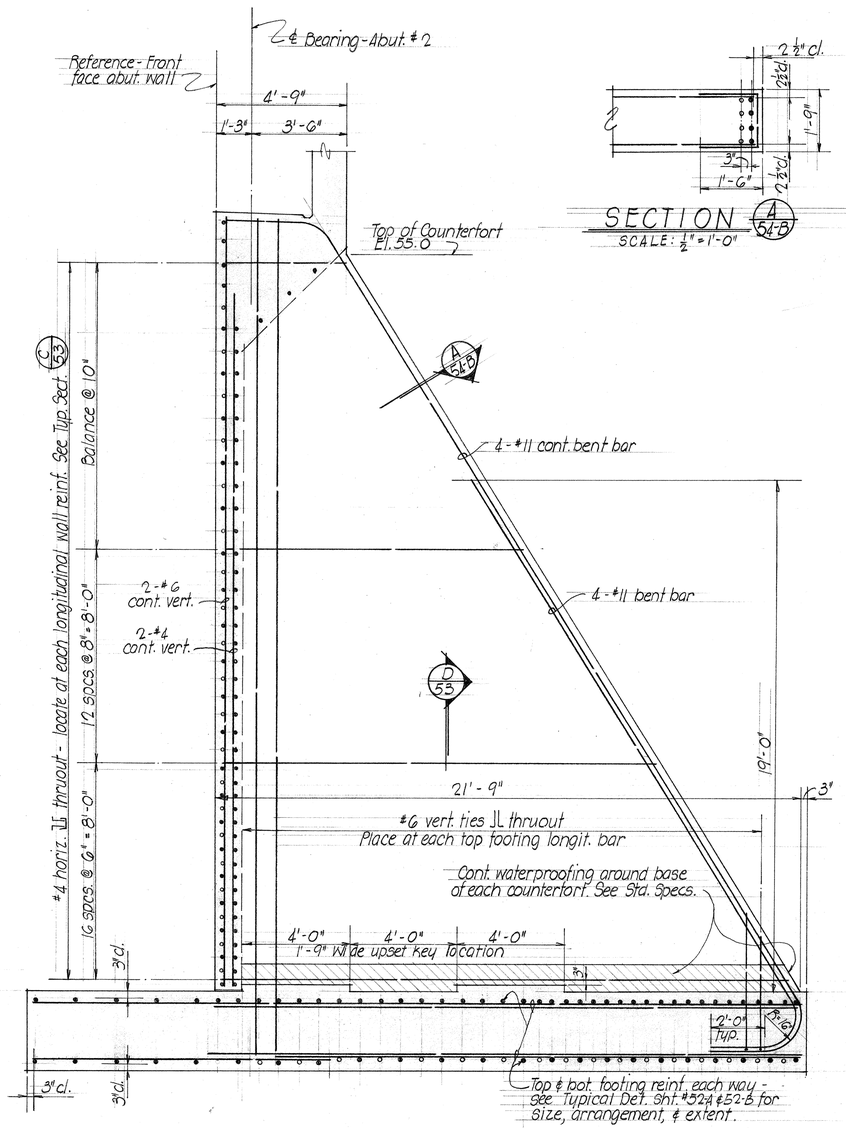
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(51)-2A Unit 2	1965	225S(1)	276

REVISION No 1 - DEC. 1965



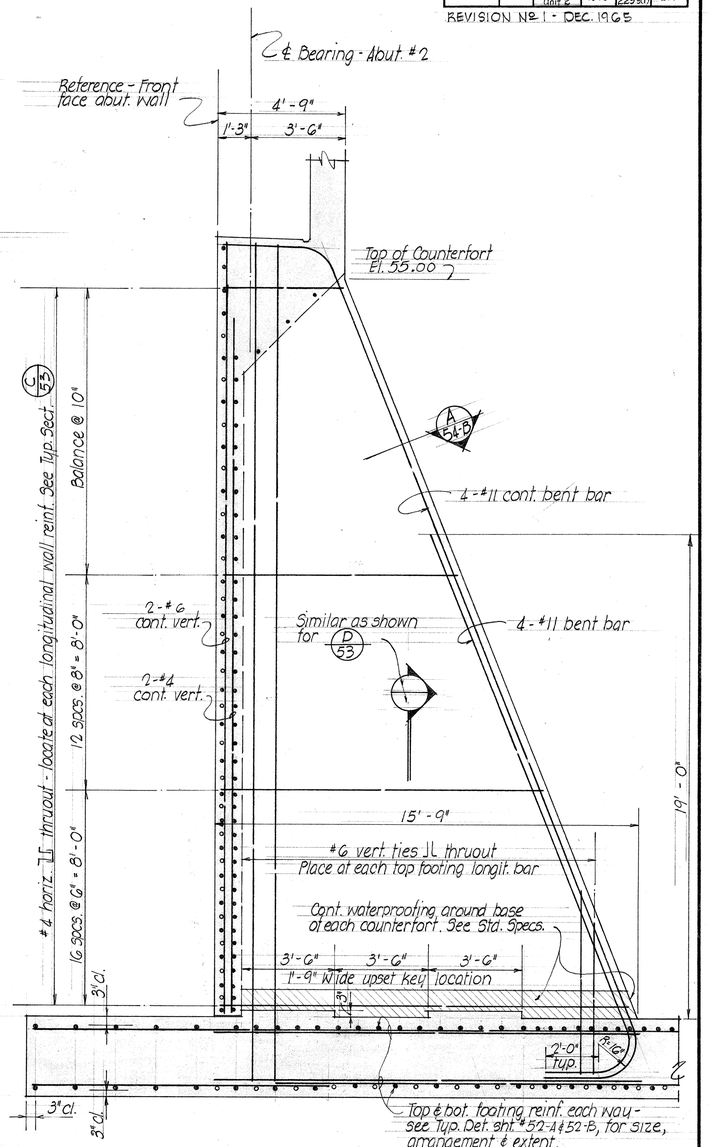
TYPICAL SECTION THRU ABUTMENT WALL TYPE AW-1

SCALE: $\frac{3}{8}$" = 1'-0"



TYPICAL COUNTERFORT TYPE CF-6

SCALE: $\frac{3}{8}$" = 1'-0"



TYPICAL COUNTERFORT TYPE CF-4

SCALE: $\frac{3}{8}$" = 1'-0"

NOTE!
THIS DRAWING SUPERSEDES BASIC CONTRACT DRAWING SHEET No. 54 OF 67.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP #1-0"
ABUTMENT #2
SECTIONS & DETAILS

LUNALILO FREEWAY PROJ. No. 1H1-1 (2)
DECEMBER 1965

SHEET No. 54-B OF SHEETS

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

PRINTED ON NO. 1000H CLEARPRINT

SHEET No. 225S & 225S(1) SUPERSEDES SHEET No. 225

(2) 0 225S (1)

Revised: Dec. 5, 1965

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)24 Unit 2	1965	CO 22G	276

NOTE: These footing reinforcing details supersede corresponding basic contract pile cap reinforcement plan Sht. #52 of 67.

REVISION NO. 1

℄ Ramp "H1-0"

2'-9" 1'-6" 1'-3"

Metal Railing. See Special Provisions and Standard Bridge Details.

#4 @ 16"

Top roadway rough grade

¼" / 1ft. slope

Reference - top of curb - See Retaining Wall Elevation

1'-7" 2'-10½" 1'-3" 1'-9"

3" drip

#4 @ 16½"

8'-6"

Reference front face of Ret. Wall.

¾ : 12 Batter

#10 @ 16½"

#4 @ 12"

#10 @ 16½"

#4 @ 18"

15'-0"

#10 @ 16½"

#10 @ 5½" alternate spc.

4"ϕ drain similar as shown on det. Sht. #61

Waterproofing - see Std. Specs.

#5 pile cap reinf. see footing plan below for arrangement nos & spcg

4'-0" 4'-0"

#5 @ 12"

#10 @ 16½"

#10 @ 5½" alt. spcg

#10 @ 16½"

Top of pile cutoff El. See Sht. #51 A

3'-3" 9"

6" 6"

4" Typ. 4" Typ.

Bot. pile cap Elevation - See Abut. Layout Plan

1-#4 cont. pile tie ea. side of ea. row of piles thruout. See Plan below for arrangement at corners.

4'-0" 4'-6" 3'-9" 3'-3" 1'-6"

17'-0"

3 1/2 3 1/2 3 1/2

NORMAL SECTION (C/55) THRU RETAINING WALL #2

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

RADIAL

Reference - ℄ Ramp "H1-0"

4'-6" 4'-0" 3" cl.

11'-0" 12'-6"

Reference: front face of retaining wall

2" cl. 1½"

#5 @ 12" cont.

#5 @ 12" cont. thruout

12'-0" 20'-0" 7'-9"

Retaining Wall #2 See Typical Section

#10 @ 5½" added bars as shown

2-#10 added flare as required

1-#11 added as shown

Typical Abutment Footing Reinf. See Typ. Abut. Sec. AW-3 & AW-4

Type AW-4

SHOWING TOP PILE CAP REINFORCEMENT Scale: ¼" = 1'-0"

REVISION NO. 1

1-#4 cont. straight ea. side of ea. row of piles thruout

#4 U each side of each row of piles thruout. See Normal Section

℄ Ramp "H1-0"

SHOWING ARRANGEMENT OF PILE TIES AT CORNER Scale: 3/16" = 1'-0"

REVISION NO. 1

#5 @ 12" cont.

3'-0"

1-#5 added between each row of piles

2-#5 added between ea. row of piles

#5 @ 12" cont. thruout

Band 3-#5 @ 8" o.c. typical over each row of piles

Reference: front face of retaining wall

Retaining Wall #2 See Typical Section

#5 @ 12" cont.

12'-0" 20'-0" 7'-9" 3'-0"

#11 @ 6" L added

4-#11 added flare as required

3'-0" anchor Varies

Typical Abutment Stem Reinf. See Typ. Abut. Sect. AW-3 & AW-4

Type AW-4

SHOWING BOTTOM PILE CAP REINFORCEMENT Scale: ¼" = 1'-0"

PART PLANS - ABUTMENT #2 AT RETAINING WALL #2

1-#4 cont.

#4 vert. front face added

2'-0"

#4 @ 18" see Typ. Section (C/53)

#4 @ 12" o.c. vert. front face - extend into ftg.

℄ Bearing Abutment #2

Type AW-3 Type AW-4

Top of pile cutoff El. See Sht. #51 A

3'-3" 9"

Bot. pile cap El. - see Layout Plan

1-#4 cont pile tie ea. side of ea. row of piles thruout See Plan below for arrangement at corners.

3 3 3 3

1'-6" 3'-0" 3'-3" 4'-0" 5'-0"

21'-0" Type AW-3

20'-0" Type AW-4

END ELEVATION (E/55) Scale: 3/8" = 1'-0"

℄ Bearing Abutment

REVISION NO. 1

7½" 7½"

5½" 4" 5½"

4" x ¾" cont. lead fr.

Top conc. seat El. See layout plan Slope: ½"/ft.

Top conc. shelf

Continuous shelf drain

4"

2½"

1'

#4 @ 12"

2-#4 cont.

2-#11 cont.

4'-0"

#11 x 8'-0" long dowels thruout - see Abut. Plan for location & extent.

Reference: Front Face of Abutment.

TYPICAL CONTINUOUS CONCRETE SEAT DETAIL ~ ABUTMENT # 2

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

Cant. abut stem curb. See Layout Plan for limits

1'-0" 11½"

2-#6 thruout

See Det. (C/53)

Place Type DG curb & Gutter on notch as directed by the Engineer

Box Girder

Reference - Top abut. stem

#4 @ 12" o.c. added

Continuous ½" offset for jt. filler

1'-3"

TYPICAL ABUT. STEM CURB DET. AT WALL TYPE AW-1 & AW-3

(AW-6 Where Occurs)

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

℄ Bearing Abut #2

3'-6"

1'-3" 2'-3"

Cant. ½" offset

Cant. rubber water stop - See Special Provisions

3"

Outline abut stem curb over portion of Wall Type AW-3 See adjacent detail.

Reference - top of abut. stem - see Abut. Elevation

#4 x 2'-4" vert. dowels @ 12" o.c. thruout

1'-3"

#4 @ 12 vert. each face - extend bars above stem as shown

#4 @ 18" cant. ea. face

1" x 4" shelf drain cant. thruout - see Typ. Det. below

Cant. conc. seat - see Typ. Det. below

2'-0" min.

4"ϕ tile drain see Abutment Plan for location

1:1 Slope

#4 @ 12"

Reference - front face abut. wall

¾ : 12 Batter

#4 @ 18"

#11 @ 5" o.c. Type AW-3

#11 @ 6" o.c. Type AW-4

4"ϕ drain - see det. Sht. #59

14'-0"

Waterproofing - see Std. Specifications

6'-0"

11'-0" AW-4

12'-0" AW-3

Alternate spacing same plane. See adjacent footing plan.

8'-0"

6" 6"

3"

3'-0"

#5 @ 12 o.c. top & batt. cont.

#5 bottom pile cap reinf. - see adjacent footing plan for arrangement, numbers & spacing.

4" Typ. 4" Typ.

1'-6" 3'-0" 3'-3" 4'-0" 5'-0"

TYPICAL SECTION (D/55) thru ABUT. WALL TYPE "AW-3" & "AW-4"

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

REVISION NO. 1

Revision No 1 - Revised Abutment #2 and Retaining Wall #2

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY MM SY	"
NOTE BOOK	TRACED BY RK VC	"
	DESIGNED BY AT KK HM	"
No.	QUANTITIES BY " "	"
	CHECKED BY JFO EFY	"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 RAMP "H1-0"
ABUTMENT #2, RETAINING WALL #2
SECTIONS and DETAILS

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(6):24 Unit 2
Scale: as shown March 1965

SHEET No. 55 OF 67 SHEETS

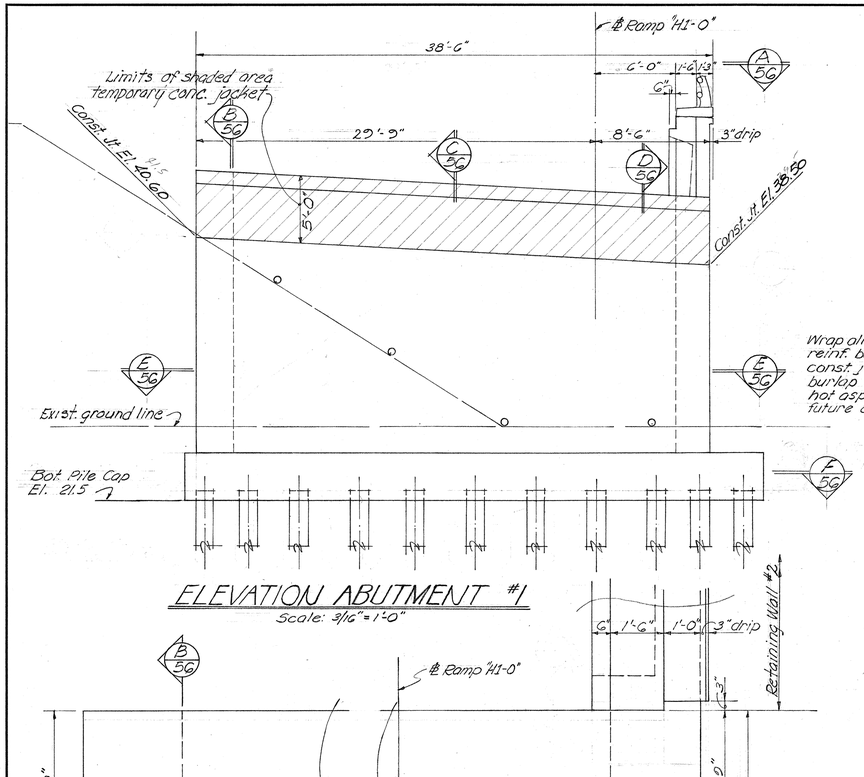
SHEET No. 22G5 SUPERSEDES SHEET No. 22G5 (C.O. 22G5)

ON CLEARPRINT 1000-H

Revised: Dec. 5, 1965

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	CO 227	276

Revision No. 1 - Revised Retaining Wall No. 2

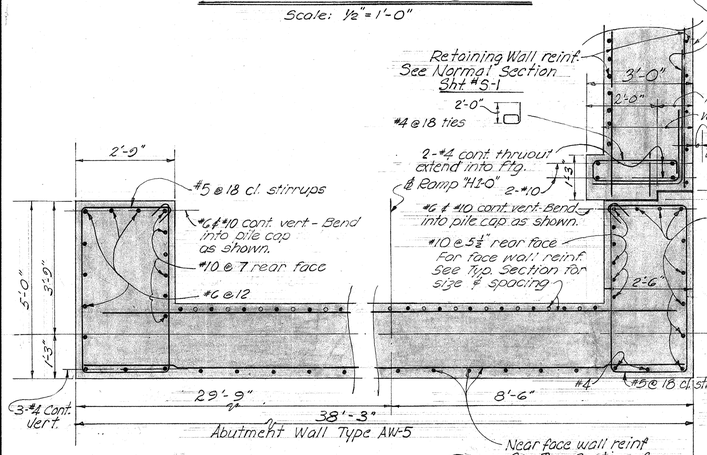


ELEVATION ABUTMENT #1

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

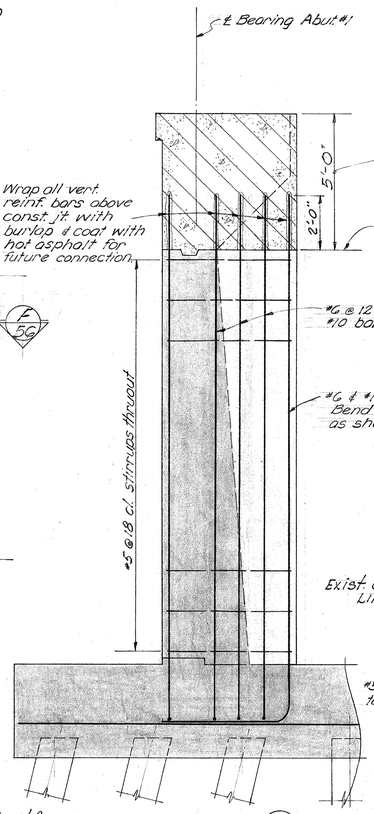
TOP PLAN (A 5G)

Scale: ½" = 1'-0"



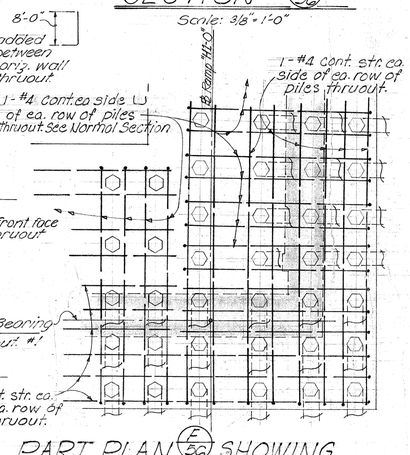
SECTION (E 5G)

Scale: ½" = 1'-0"



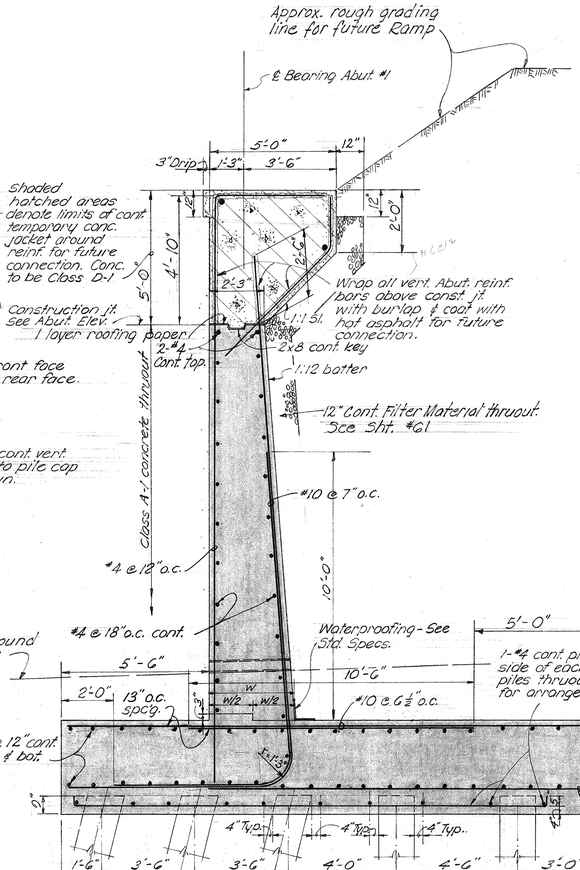
SECTION (B 5G)

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



PART PLAN (F 5G) SHOWING ARRANGEMENT of PILE TIES AT CORNER

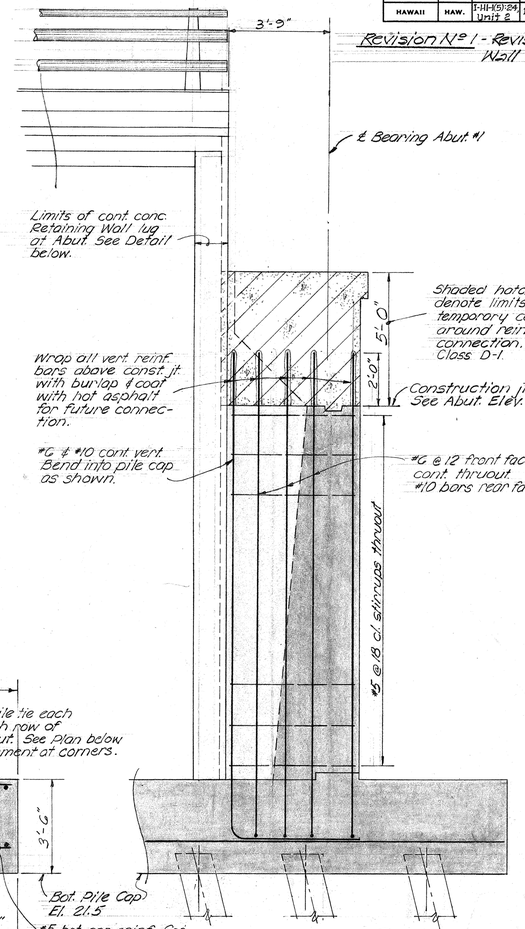
Scale 3/16" = 1'-0"



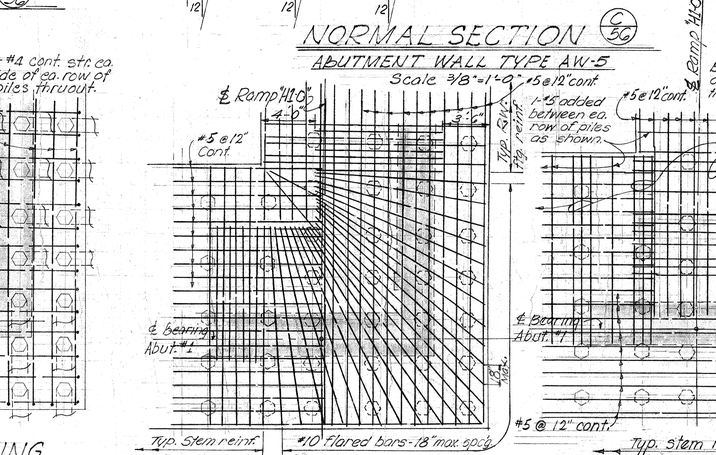
NORMAL SECTION (C 5G)

ABUTMENT WALL TYPE AW-5

Scale 3/8" = 1'-0"



SECTION (D 5G)



TOP PILE CAP CORNER REINF. AT RETAINING WALL #2

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

REVISION NO. 1

BOTTOM PILE CAP CORNER REINF. AT RETAINING WALL #2

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

REVISION NO. 1

Notes:

(1) Except as otherwise noted - all concrete of abutment #1 to be class A-1.

(2) Limits of abutment #1 excavation payline and backfill details similar as shown for Wall Type AW-3 & AW-4 Sht #G1

ORIGINAL PLAN AS	SURVEY PLOTTED BY	DATE
	DRAWN BY ZM RK	
NOTE BOOK	TRACED BY	
	DESIGNED BY RK ZM	
No.	QUANTITIES BY	
	CHECKED BY JFC PHT	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"

ABUTMENT #1

SECTIONS and DETAILS

Interstate Highway (Lunalilo Freeway)

FAI Project No. I-HI-1(5)24 Unit 2

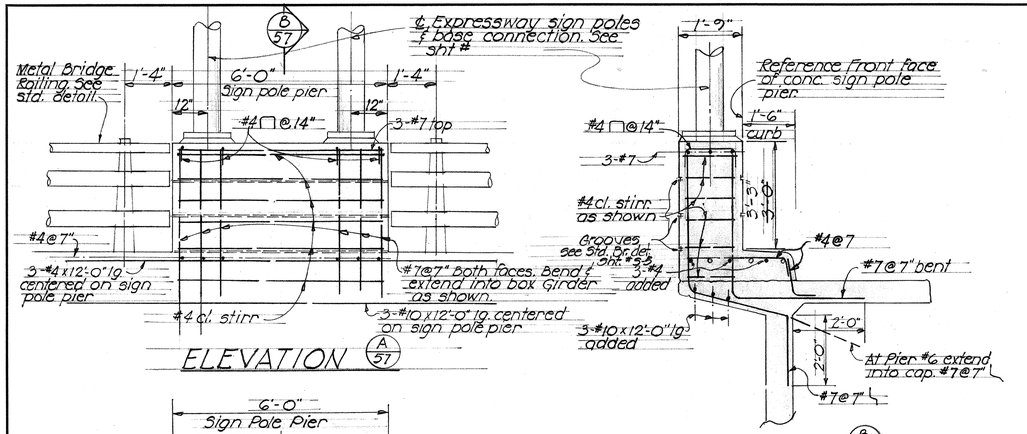
Scale: As noted — March 1965

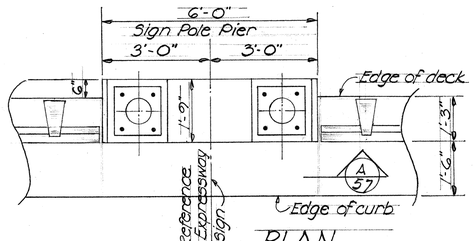
SHEET No. 56 OF 67 SHEETS

SHEET No. 227S SUPERSEDES SHEET No. (227) (C.O. 227S)

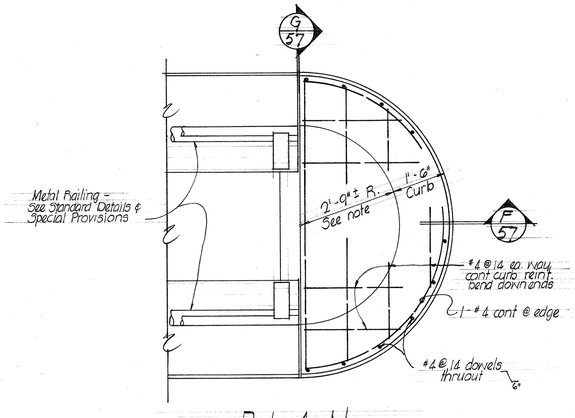
D ON CLEARPRINT 1000-H

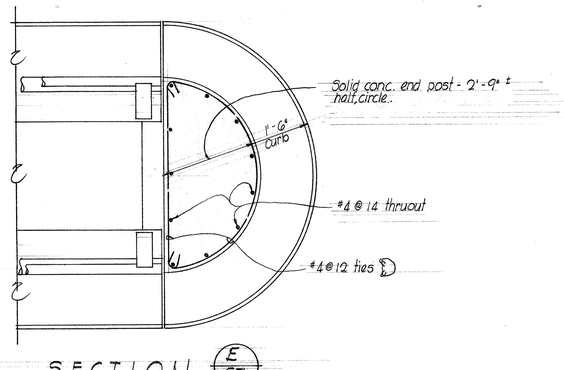
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FHH(5)24 Unit 2	1965	228	276

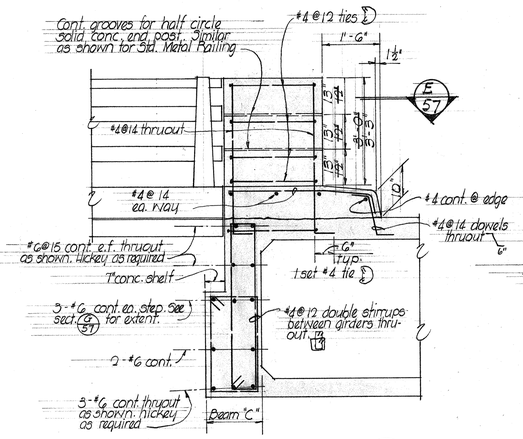


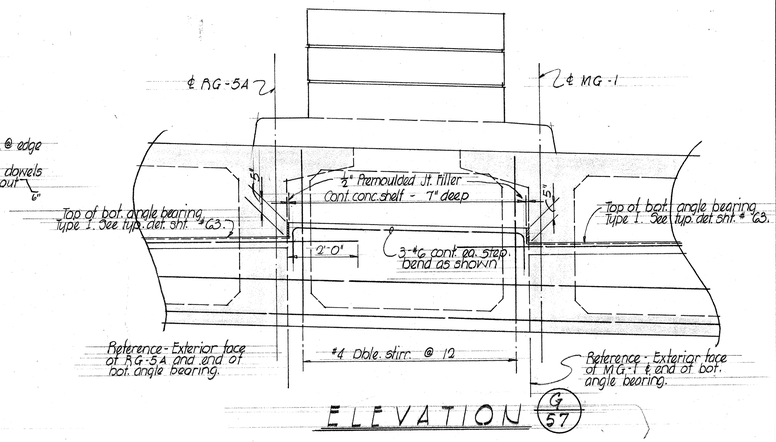


TYPICAL EXPRESSWAY SIGN # CONC BASE DETAIL AT METAL RAILING Scale: 1/2"=1'-0"

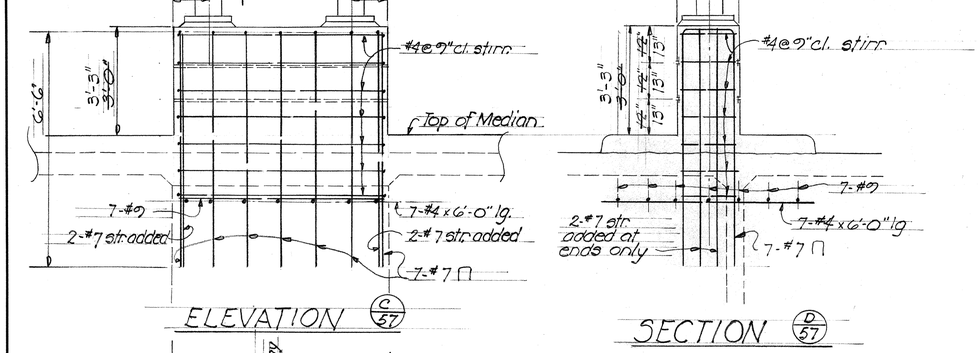


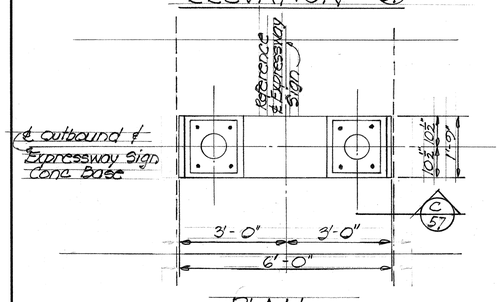






INTERMEDIATE END POST & BEAM "C" DETAILS AT INTERSECTION OF RAMP "H1-I" & MAIN STRUCTURE O.B. # STA. 49+59.00 Scale: 1/2"=1'-0"





EXPRESSWAY SIGN # CONC BASE DETAIL AT MEDIAN Scale: 1/2"=1'-0"

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3-RAMPS "H1-O" "H1-I"

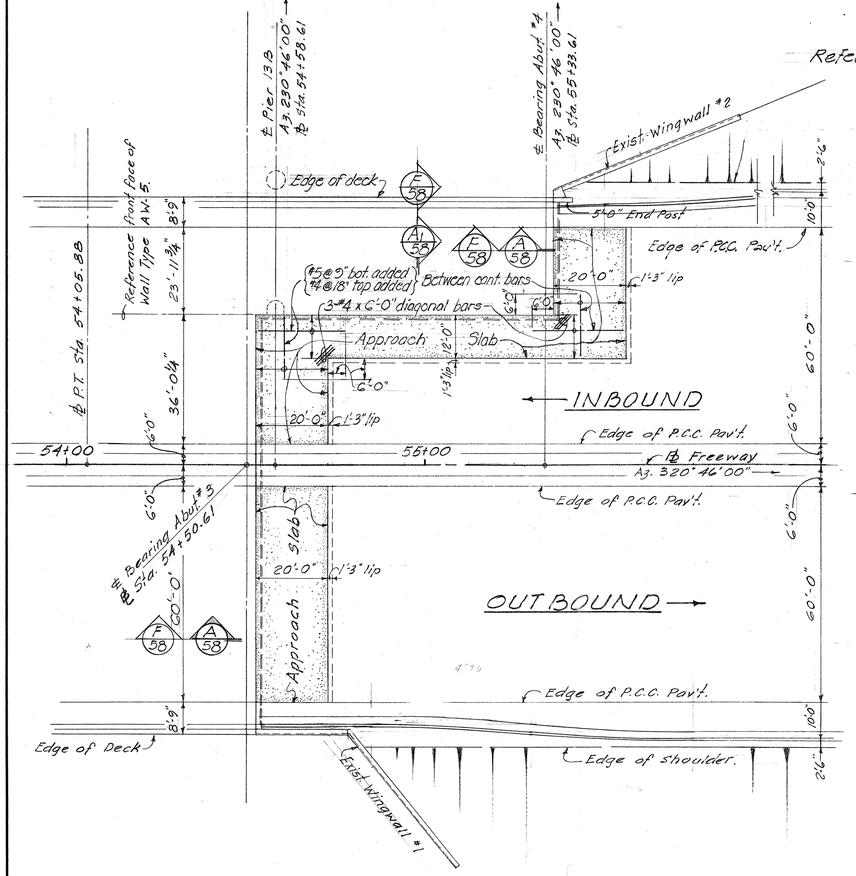
MISCELLANEOUS DETAILS

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(6)24 Unit 2
Scale: As noted March 1965

SHEET No. 57 OF 67 SHEETS

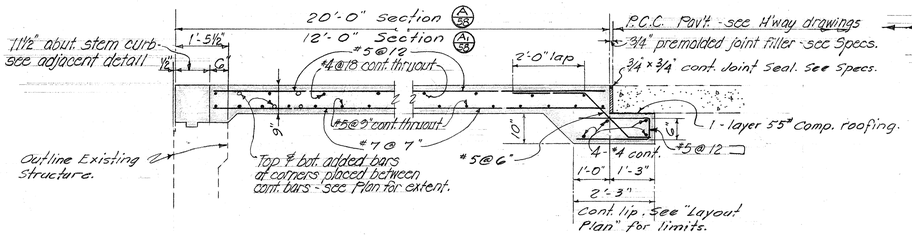
D ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(5)24 Unit 2	1965	229	276



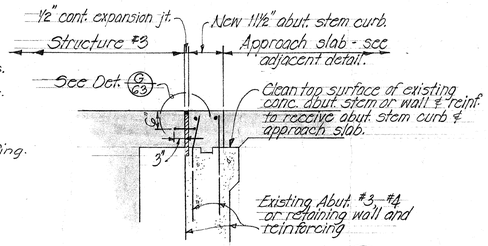
LAYOUT PLAN

Scale: 1" = 20'



APPROACH SLAB SECTION (A/58)

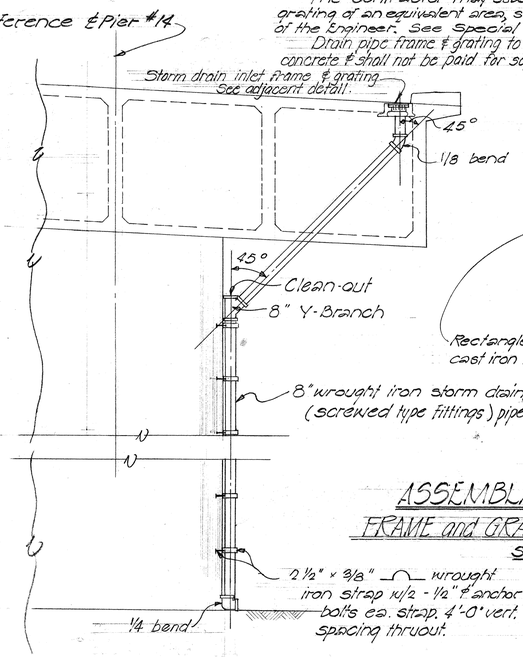
(Section A1 similar except otherwise noted.)



TYPICAL SECTION (F/58)

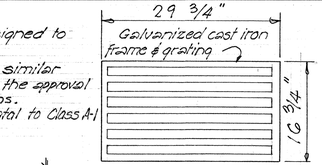
Scale: ½" = 1'-0"

Note:
Steel frame & grating shall be designed to carry a H20-S16-44 loading.
The Contractor may substitute a similar grating of an equivalent area, subject to the approval of the Engineer. See Special Provisions.
Drain pipe, frame & grating to be incidental to Class A-1 concrete & shall not be paid for separately.



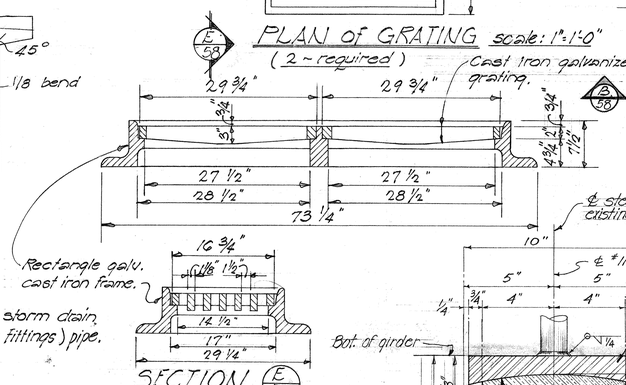
ELEVATION - STORM DRAIN DETAIL

AT RAMP "H1-I" Sta 24+67.31



PLAN of GRATING scale: 1"=1'-0"

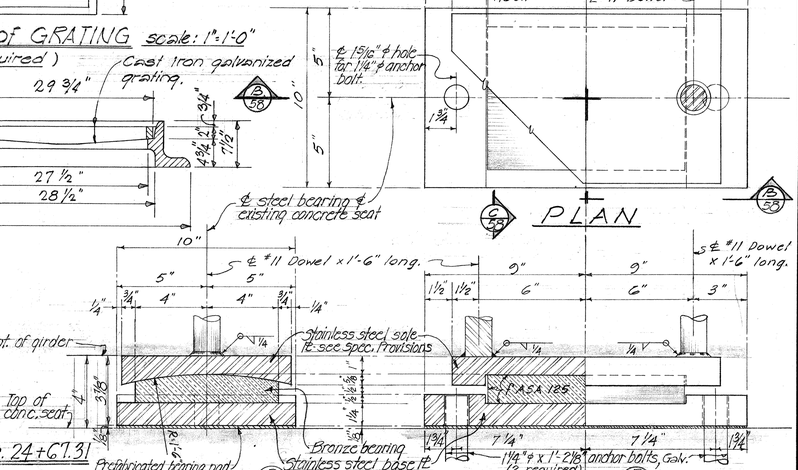
(2 - required)



SECTION (E/58)

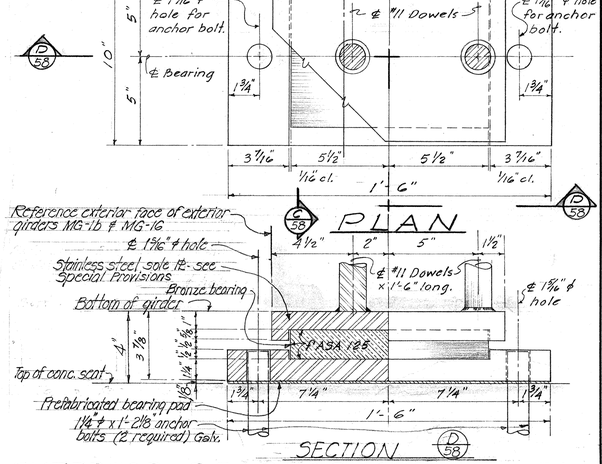
ASSEMBLAGE - STORM DRAIN FRAME and GRATING at RAMP "H1-I" - Sta. 24+67.31

Scale: 1" = 1'-0"



TYPICAL INTERIOR BEARING (MG-3 THRU MG-15 INCLUSIVE)

(13 REQUIRED)



TYP. EXTERIOR BEARING (MG-1b & MG-16)

(2 REQUIRED)

BRONZE & STAINLESS STEEL BEARING & EXPANSION PLATES

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-O", "H1-I"

MISCELLANEOUS DETAILS

EXPANSION BEARINGS, APPROACH SLAB, DECK DRAINS

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-H1-1(5)24, Unit 2
Scale: As noted — March 1965

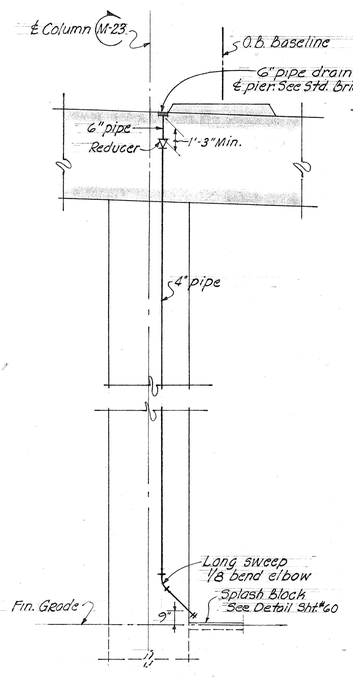
SHEET No. 58 OF 67 SHEETS

229

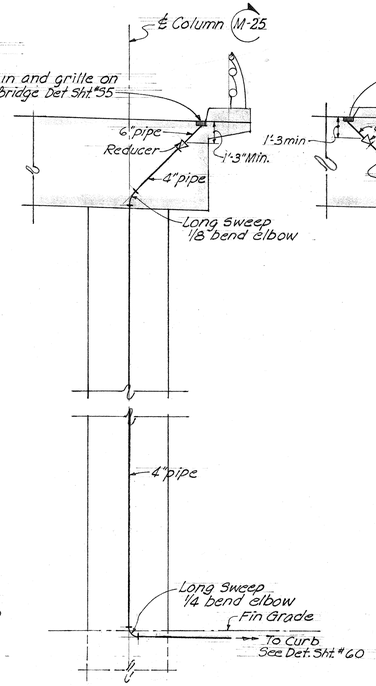
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY J.S., S.Y.	
	TRACED BY	
NOTE BOOK	DESIGNED BY R.K., V.C., T.S.	
	QUANTITIES BY	
No.	CHECKED BY E.F., J.K.O.	

PRINTED ON CLEARPRINT 1000-H

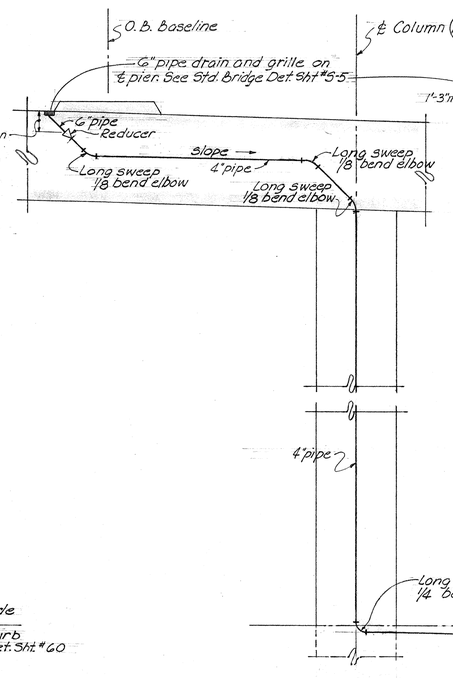
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	230	276



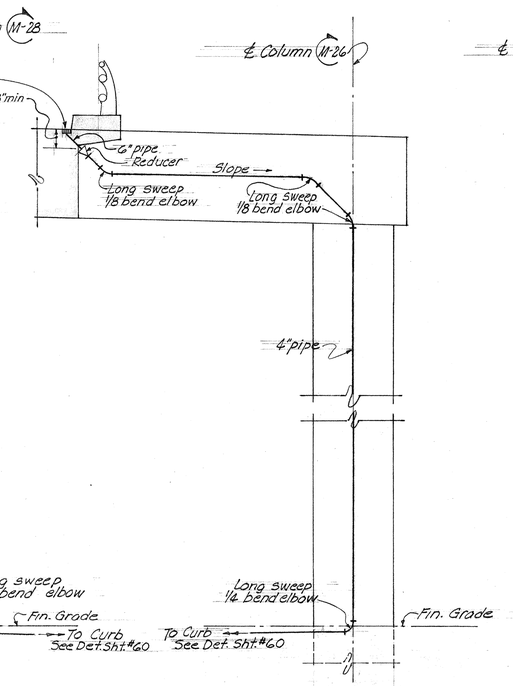
AT COLUMN M-23



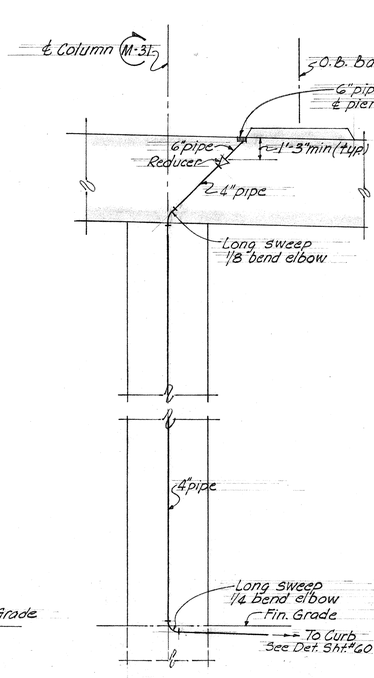
AT COLUMN M-25



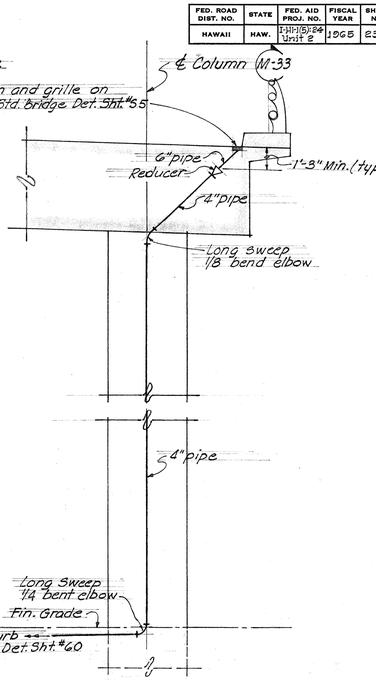
AT COLUMN M-28



AT COLUMN M-26

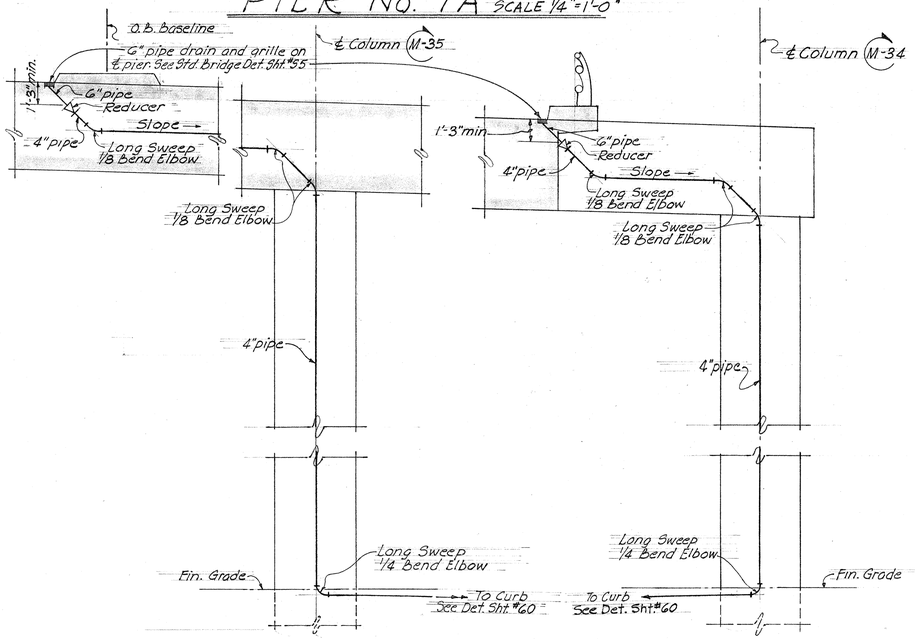


AT COLUMN M-31



AT COLUMN M-33

PIER No. 7A SCALE 1/4"=1'-0"

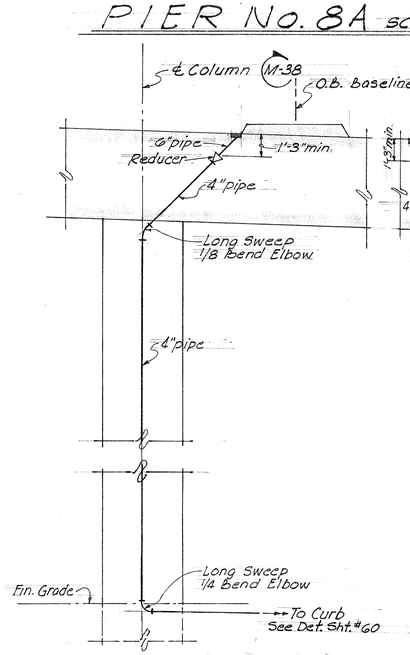


AT COLUMN M-35

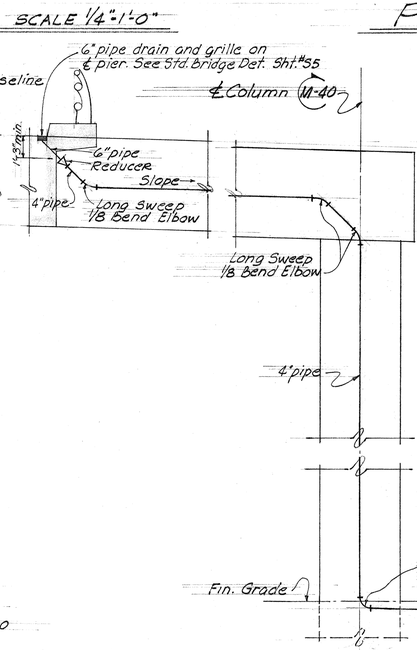
AT COLUMN M-34

PIER No. 10A SCALE 1/4"=1'-0"

PIER No. 8A SCALE 1/4"=1'-0"



AT COLUMN M-38

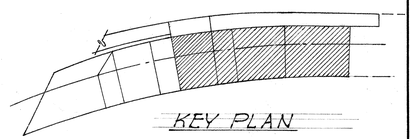


AT COLUMN M-40

PIER No. 11A SCALE 1/4"=1'-0"

PIER No 9A SCALE 1/4"=1'-0"

NOTE:
All pipes to be standard galvanized steel ASTM-A120. All pipe fittings to be cast iron skrewed type drainage fitting (with 1/4" pitch) Federal Specification WW-P-491 a(1). All drain pipes and fittings shall be incidental to Class A-1 concrete and will not be paid for separately.



KEY PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"
MISCELLANEOUS DETAILS
DECK DRAIN DETAILS
PIERS #7A, #8A, #9A, #10A, #11A
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5)24 Unit 2
Scale: As noted March 1965

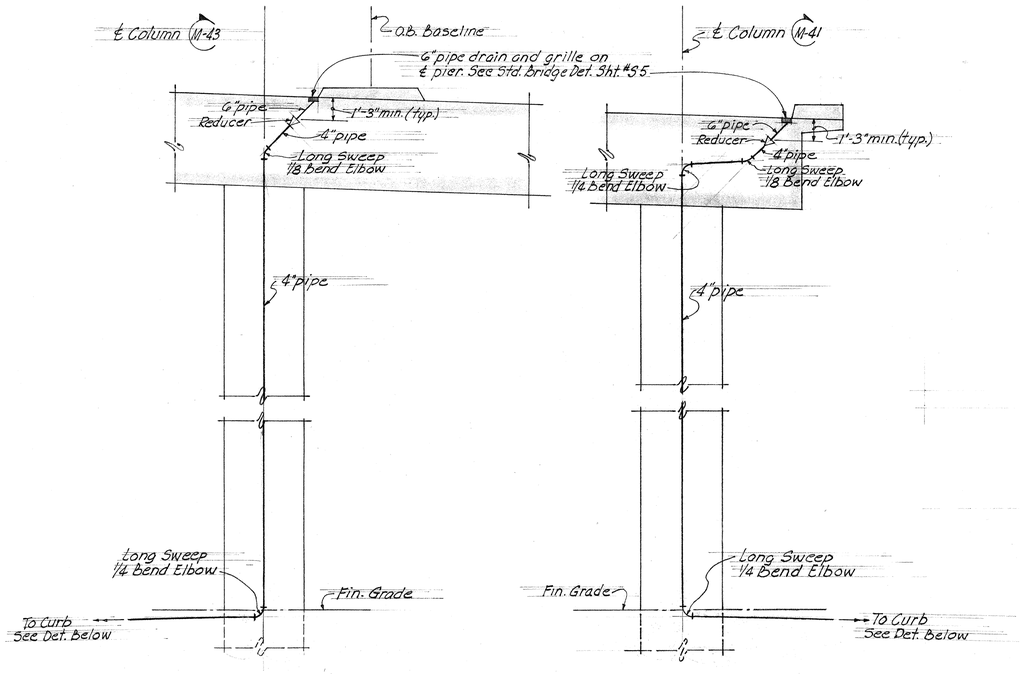
SHEET No. 59 OF 67 SHEETS

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

ON CLEARPRINT 1000-H

2 33 (1)

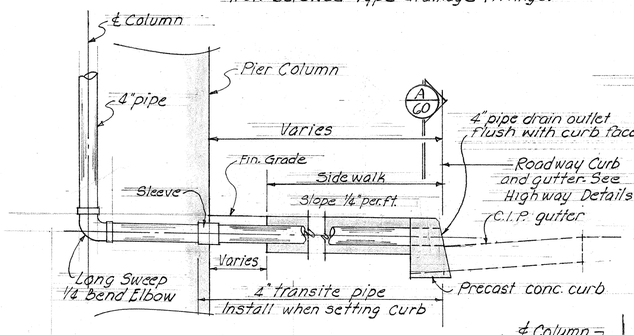
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FAH(D)-24 Unit 2	1965	231	276



AT COLUMN M-43 AT COLUMN M-41

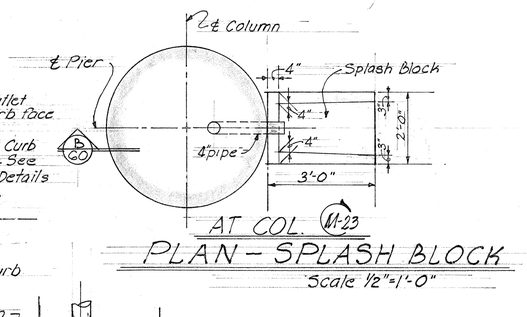
PIER No. 12A SCALE 1/4"=1'-0"

NOTE: All pipes to be galvonized steel. All pipe fittings to be cast iron screwed type drainage fittings.



TYPICAL DECK DRAIN DETAIL AT SIDEWALK AND CURB

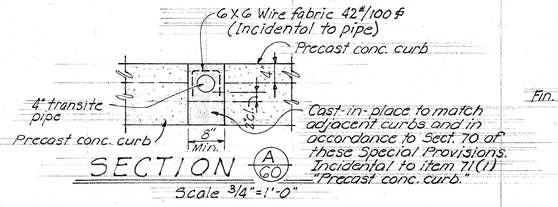
Scale 3/4"=1'-0"



AT COL. M-23

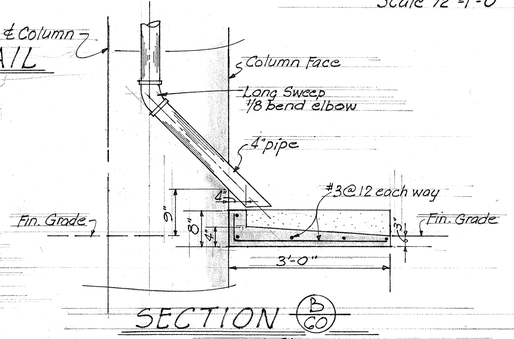
PLAN - SPLASH BLOCK

Scale 1/2"=1'-0"



SECTION A/60

Scale 3/4"=1'-0"



SECTION

Scale 3/4"=1'-0"

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 & RAMP "H1-0"

MISCELLANEOUS DETAILS

DECK DRAIN DETAILS

Interstate Highway (Lunalilo Freeway)

FAI Project No. 1-HI-1(5)24 Unit 2

Scale: As noted March 1965

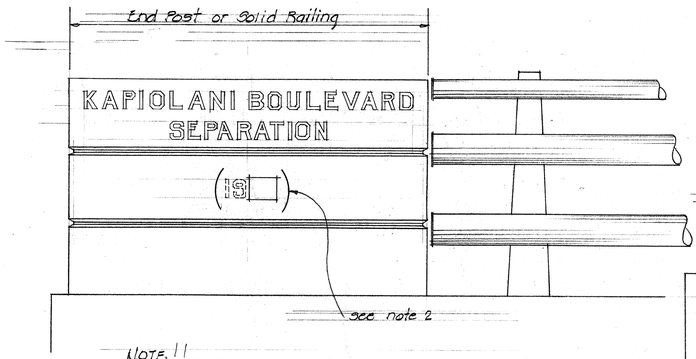
SHEET No. 60 OF 67 SHEETS

231

ON CLEARPRINT 1000-H

Revised: Dec. 9, 1965

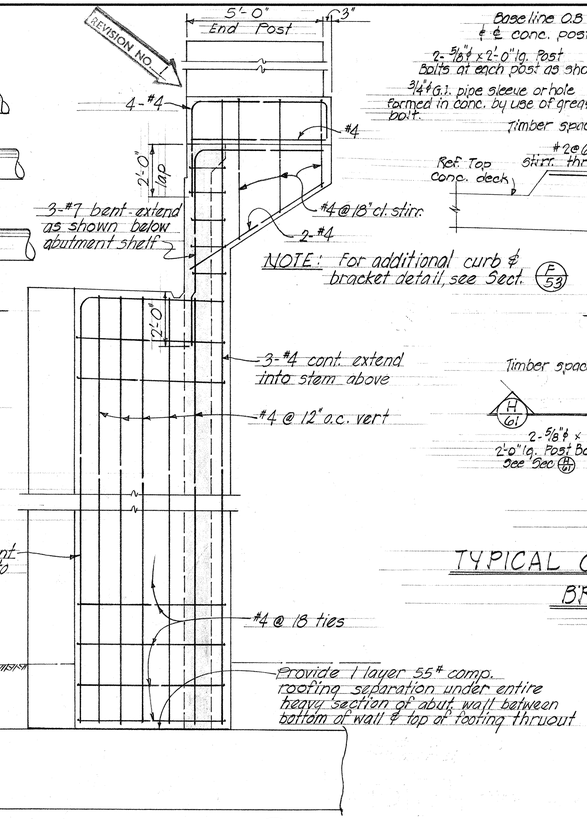
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6):24 Unit 2	1965	00232	276



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

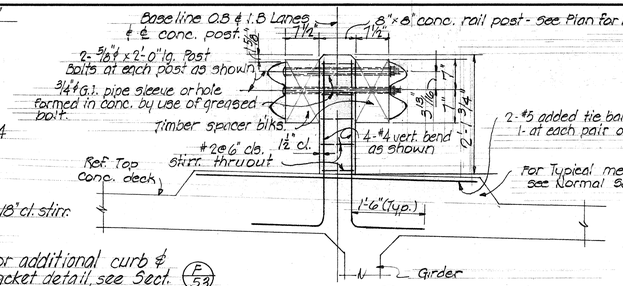
TYPICAL BRIDGE NAME & YEAR LOCATIONS AT END POST

scale: 1"=1'-0"



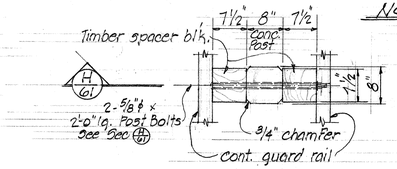
END ELEVATION (J/61)

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



NOTE: For additional curb & bracket detail, see Sect. (F/53)

SECTION (H/61)



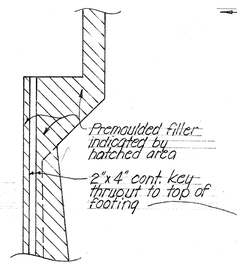
PLAN

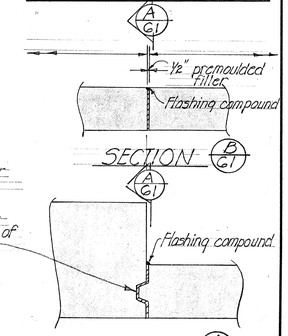
TYPICAL GUARD RAIL POST AT BRIDGE MEDIAN

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

Except as otherwise shown expansion joint details similar as shown for Retaining Wall "T-1" Sht. #5-1.

Note: For alternate guard rail & details refer to plan sheet No. 35.

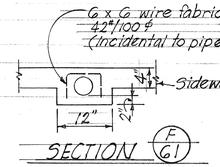




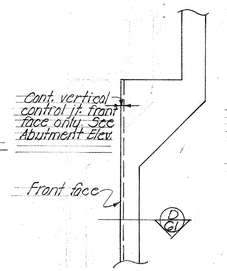
SECTION (A/61) SECTION (C/61)

EXPANSION JOINT DETAIL - ABUTMENT #2

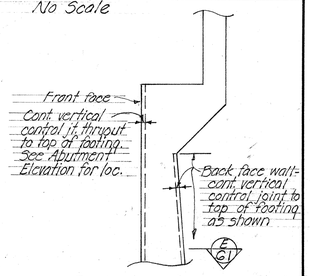
No Scale



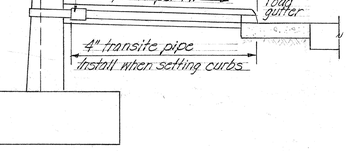
SECTION (F/61)



AT ABUTMENT AW-1

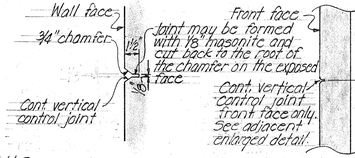


AT ABUTMENT AW-3 & AW-4



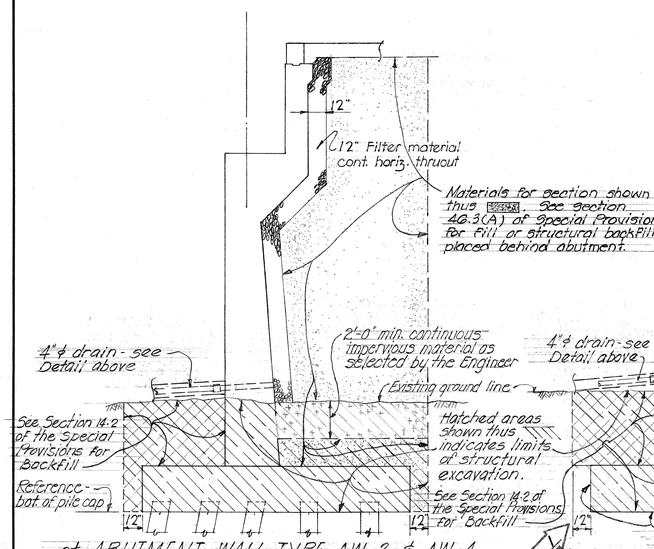
TYPICAL ABUTMENT #2 & RETAINING WALL #3 DRAINAGE DETAILS

No Scale

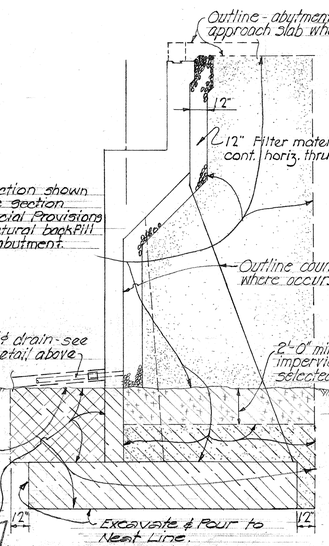


TYPICAL SECTION (D/61) SECTION (E/61)

TYPICAL CONTROL JOINT DETAILS No Scale

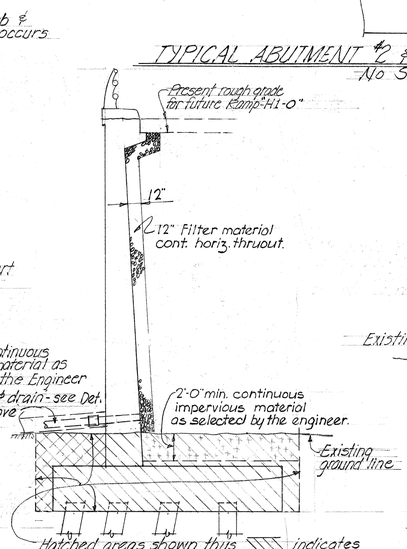


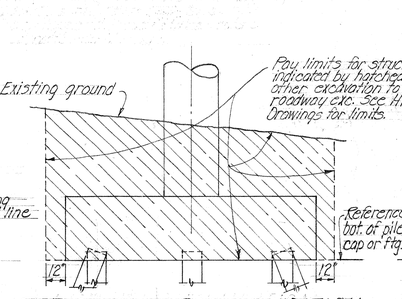
at ABUTMENT WALL TYPE AW-3 & AW-4
(ABUTMENT WALL TYPE AW-5 SIMILAR)



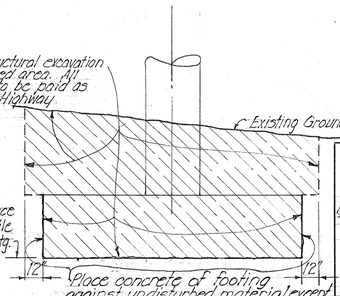
REVISION NO. 1

at ABUTMENT WALL TYPE AW-1
ABUMENT WALL TYPE AW-2 & AW-6 SIMILAR





PIER COLUMN - PILE FOUNDATION



PIER COLUMN - SPREAD FOOTING

TYPICAL LIMITS OF STRUCTURAL EXCAVATION PAYLINE AND BACKFILL No Scale

Revision No. 1 - Revised Abutment Wall Type AW-1, AW-2 & AW-6

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 RAMPS "H1-0" "H1-1"

MISCELLANEOUS DETAILS

Interstate Highway (Lunalilo Freeway)
F.A.I. Project No. I-HI-1(6):24, Unit 2
Scale: as shown March 1965

SHEET No. 61 OF 67 SHEETS

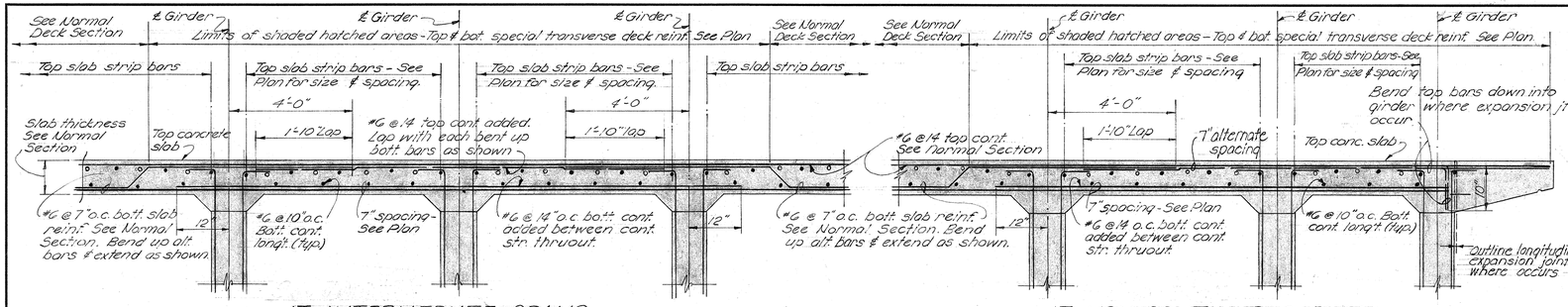
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY AY	"
	TRACED BY RK	"
NOTE BOOK	DESIGN BY	"
No.	QUANTITIES BY	"
	CHECKED BY ETY JTO	"

SHEET No. 2325 SUPERSEDES SHEET No. 2332

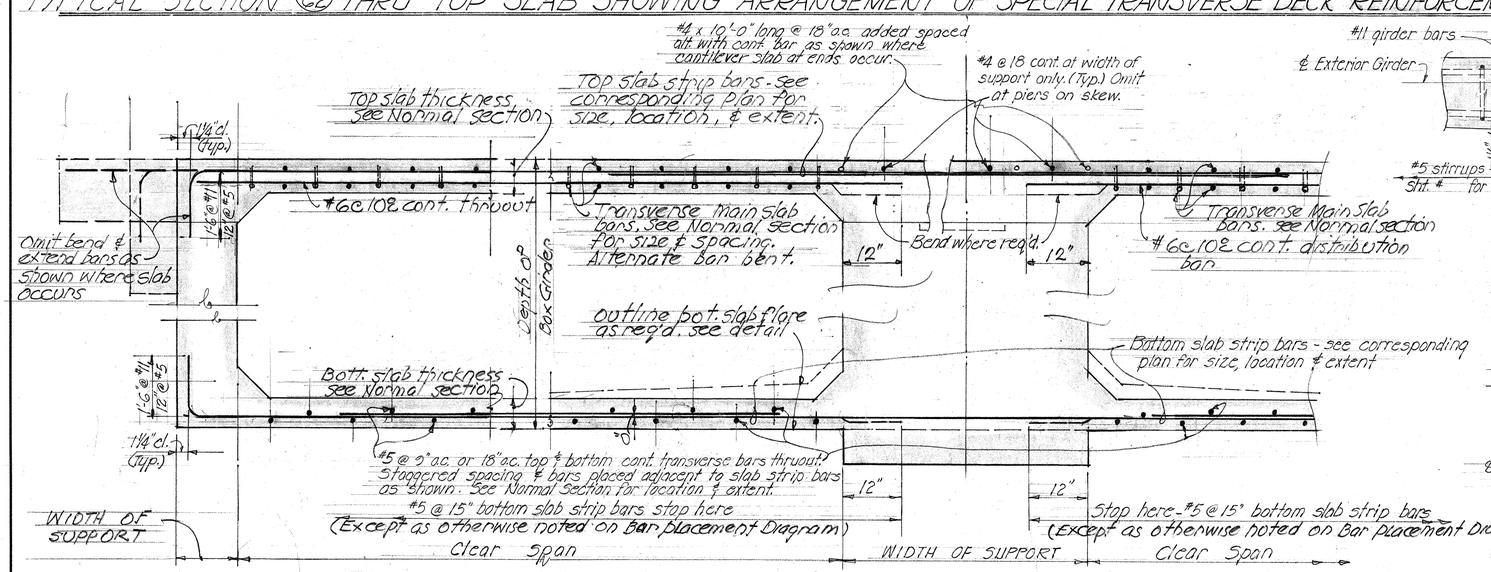
0 0 2 3 2 5

ON CLEARPRINT 1000-H

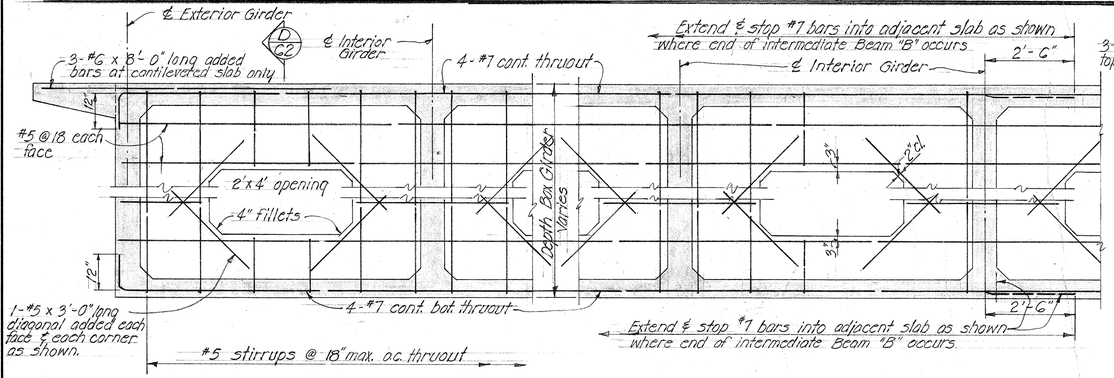
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(53)24 Unit 2	1965	233	276



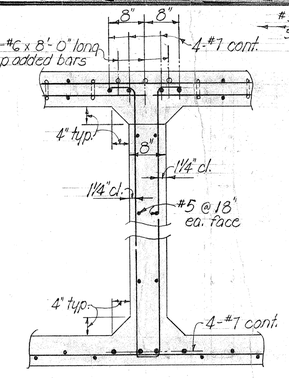
TYPICAL SECTION (E/C2) THRU TOP SLAB SHOWING ARRANGEMENT OF SPECIAL TRANSVERSE DECK REINFORCEMENT

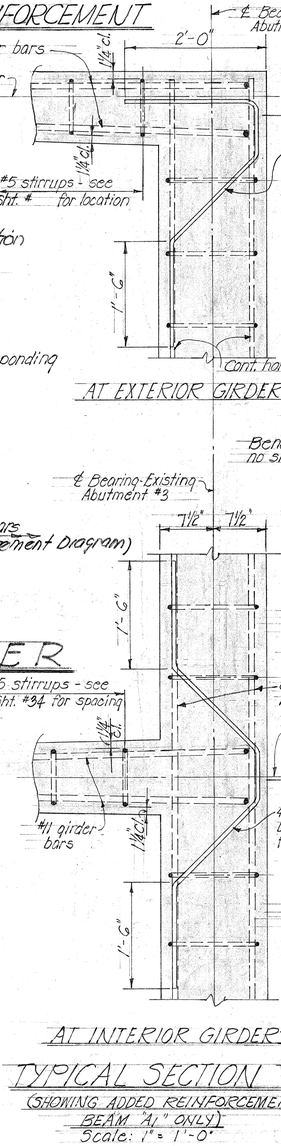


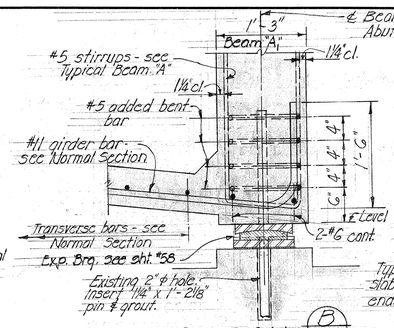
TYPICAL LONGITUDINAL DECK SECTION ALONG GIRDER

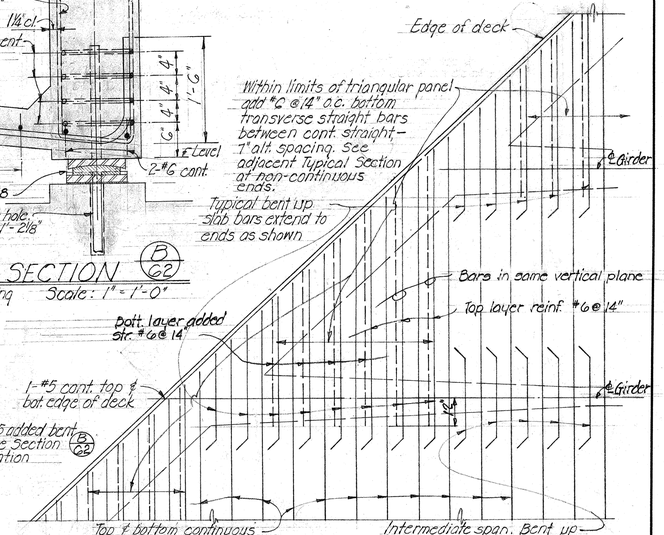


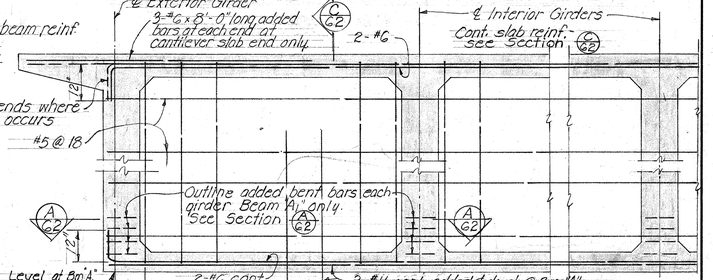
TYPICAL BEAM "B" DETAILS

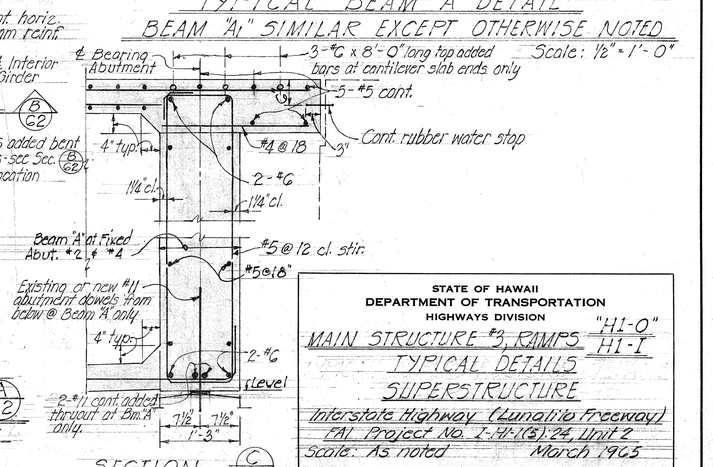












STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-0" "H1-1"

TYPICAL DETAILS
SUPERSTRUCTURE

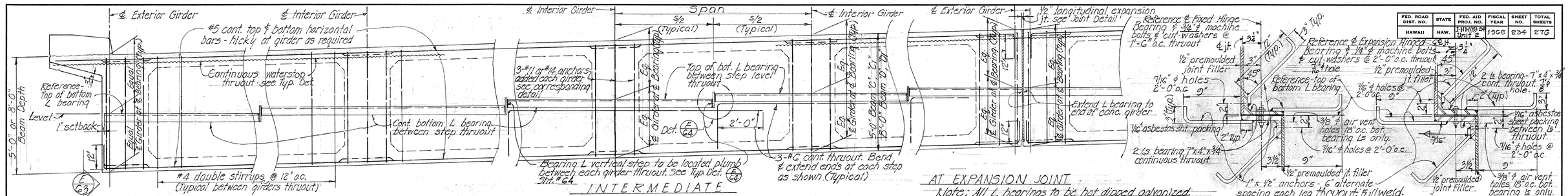
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(53)24, Unit 2
Scale: As noted March 1965

SHEET No. 62 OF 67 SHEETS

233

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

ON CLEARPRINT 1000-H



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-HH-(10)-24 Unit 2	1966	234	276

AT NON-CONTINUOUS ENDS

ELEVATION - TYPICAL BEAM "C" & "D" (CANTILEVER SUPPORT) AS SHOWN

BEAM "C1" & "D1" (SUPPORTED OR SUSPENDED END) SIMILAR EXCEPT REVERSED BEARING

Scale: ½" = 1'-0"

AT INTERMEDIATE

AT EXPANSION JOINT

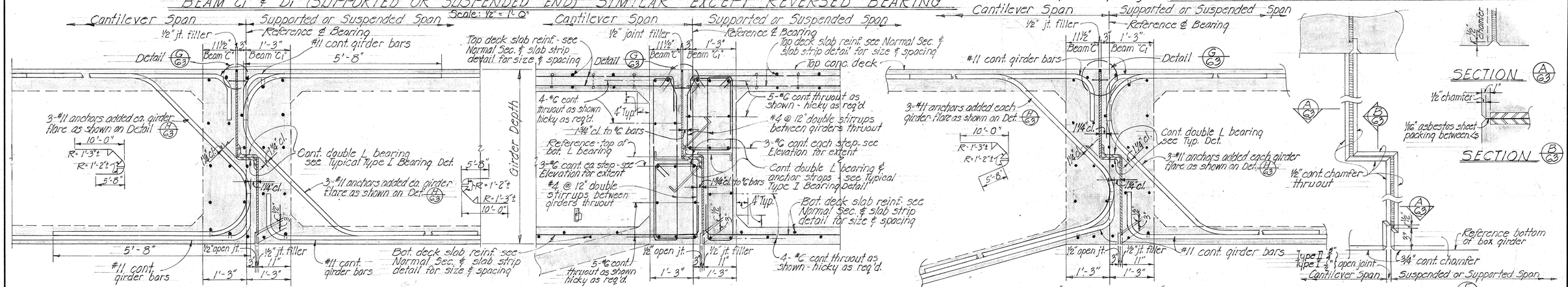
Note: All L bearings to be hot dipped galvanized. See Specs.

Bearing L assemblage & connectors incidental to conc. ℄ shall not be paid for separately.

AT FIXED HINGE BEARING

AT EXPANSION HINGED BEARING

TYPICAL DOUBLE ANGLE TYPE I BEARING



TYPICAL AT EACH GIRDER

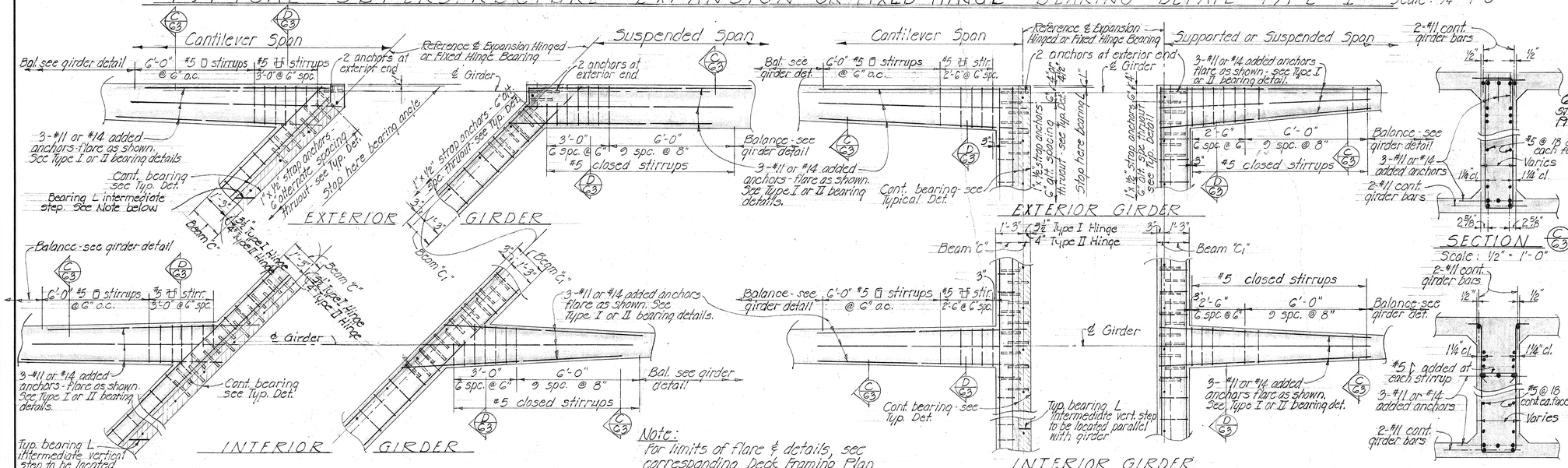
BETWEEN GIRDERS

AT GIRDERS #RG-1 THRU #RG-7 INCLUSIVE

END ELEVATION (E/C63)

TYPICAL SUPERSTRUCTURE EXPANSION OR FIXED HINGE BEARING DETAIL TYPE I

Scale: ¾" = 1'-0"



AT SKEWED BEARINGS

TYPICAL SUPERSTRUCTURE CONTINUOUS EXPANSION OR HINGED BEARING JOINT DETAIL (H/C63)

Scale: ⅜" = 1'-0"

Note: For limits of flare & details, see corresponding Deck Framing Plan & Details Sht. #64

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY JY	"
	TRACED BY JY, RK	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
No.	CHECKED BY JFP, DFY	"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3 RAMPS "H1-0" "H1-1"

TYPICAL DETAILS

SUPERSTRUCTURE

Interstate Highway (Lunalilo Freeway)

FAI Project No. I-HH-1(6):24, Unit 2

Scale: As noted March 1965

SHEET No. C3 OF 67 SHEETS

2 3 4

ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	235	276

Stirrup spacing - see girder Elevation
Typ. open stirrup see Normal Sect.
Vary stirrup to follow girder flare line
Shear keys see Std. Det. No. 5-21
℄ Pier or Beam Bearing
Girder width - see Normal Sect.
Reference - width of flare - see Framing Plan
P.I. ℄ working point of flare
Flare stirrup at pier as shown - 3" min. spacing
A/64
Girder width - see Normal Section
#11 or #14 cont. girder bars - flare as required
#11 top where occurs - see Plan for location.
℄ exterior girder
Typical open stirrup, see Normal Section
Continue flare line to face of pier
Vary stirrup to follow girder flare line
Stirrup spacing - see girder Elevation
Pier or beam bars ℄ stir. thruout - see Detail
Width of pier or Beam
Extend ℄ bend ends of girder bars at non-continuous ends - see Typical Longitudinal Section.
Limits of flare - see Framing Plan

EXTERIOR GIRDER

#11 or #14 cont. girder bars - flare as required
#11 top added where occurs see Plan for location & length
Face of pier ℄ width of flare
Width of pier or Beam
Vary stirrup to follow girder flare line
Stirrup spacing - see Girder Elevation & Normal Sect.
Extend ℄ bend ends of girder bars of non-continuous ends. See Typ. Longitudinal Section
Typical open stir. - see Normal Section.
Stir. spacing - see girder Elevation & Normal Sect.

EXTERIOR GIRDER

Limits of flare - see Framing Plan
Stirrup spacing - see girder Elevation
Typical open stir. see Normal Sect.
Vary stirrup to follow girder flare line
Pier or beam bars ℄ stir. thruout - see Detail
Extend ℄ bend ends of girder bars at non-continuous ends. See Typ. Longitudinal Section.
Continue flare line to face of pier
Girder width - see Normal Sect.
Reference - width of flare - see Framing Plan
Equal
P.I. ℄ working point of flare
Flare stirrup at pier as shown - 3" min. spacing
Girder width - see Normal Section
#11 or #14 cont. girder bars - flare as required
#11 top where occurs - see Plan for location
℄ interior girder
Reference - width of flare, see Framing Plan
Continue flare line to face of pier
Vary stirrup to follow girder flare line
Stir. spacing - see girder Elev. ℄ Normal Section
Typical open stirrup See Normal Section
Width of Pier or Beam

INTERIOR GIRDER

Limits of flare - see Framing Plan
Width of pier or Beam
Face of pier ℄ width of flare
#11 top added where occurs see Plan for location & length
Pier or beam bars ℄ stir. thruout - see Detail
Extend ℄ bend ends of girder bars of non-continuous ends. See Typical Longitudinal Section.
Vary stirrup to follow girder flare line
Stirrup spacing - see girder Elev. ℄ Normal Section
Typical open stir. - see Normal Sect.

INTERIOR GIRDER

℄ Exterior Girder
Typical
1½" cl.
1¼" cl.
#5 @ 18 cont. ea. face
Varies
Varies where flare occurs
2⅝"

SECTION A/64
Scale: ½" = 1'-0"

TYPICAL DETAILS OF GIRDER FLARE AT SKEWED SUPPORTS - CONTINUOUS ENDS AS SHOWN
(GIRDER FLARE AT NON-CONTINUOUS ENDS SIMILAR EXCEPT AS OTHERWISE NOTED)

Reference ℄ Pier
Reference ℄ Bearing
Typical girder width - see Normal Section
Flare dimension - see Framing Plan
Width of Beam "C" or
℄ Exterior Girder
Extend flare line to P.I. at face of pier as shown
Pier Width
Limits of flare - see Deck Framing Plan

EXTERIOR GIRDER

Reference ℄ Pier
Reference ℄ Bearing
Typical girder width - see Normal Section
Flare dimension see Framing Plan
℄ Interior Girder
Extend flare line each side to P.I. at face of pier as shown.
Pier Width
Width of Beam "C" or
Limits of flare - see Deck Framing Plan

INTERIOR GIRDER

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

Reference ℄ Fixed Hinge Bearing ℄ ¾" ϕ machine bolts & cut washers @ 1'-6" o.c. thruout, 1⅛" ϕ holes
¾" premoulded joint filler
1⅛" ϕ holes @ 2'-0" o.c.
Reference - top of bot. L bearing
1/16" asbestos sheet packing thruout
2 ℒ bearing 8"x6"x¾" continuous thruout
1⅛" ϕ holes @ 2'-0" o.c.
⅜" ϕ air vent holes 18" o.c. bottom bearing L only
¾" premoulded jt. filler
1" x 1½" anchors - 6" alternate spacing each leg full weld

AT FIXED HINGE BEARING

Reference ℄ Expansion Hinged Bearing ℄ 1¼" ϕ machine bolt & cut washers @ 2'-0" o.c. thruout, 1⅜" ϕ holes
¾" premoulded joint filler
1⅜" ϕ holes @ 2'-0" o.c.
1/16" asbestos sheet packing between ℒs thruout
1⅜" ϕ holes @ 2'-0" o.c.
⅜" ϕ air vent holes 18" o.c. bot. bearing L only.
2 ℒs bearing 8"x6"x¾" cont.
¾" premoulded joint filler

AT EXPANSION HINGED BEARING

Note: Bearing L assemblage & connectors incidental to concrete & shall not be paid for separately.

℄ Interior Girder
1¼" cl.
Varies
#5 @ 18 cont. ea. face
Varies where flare occurs
2⅝"

SECTION B/64
Scale: ½" = 1'-0"

TYPICAL DOUBLE ANGLE TYPE II BEARING

Cantilever Span
Supported or Suspended Span
¾" joint filler
DETAIL G/63
Beam "D"
Beam "D1"
Reference ℄ Bearing
#11 cont. girder bars
5'-8"
Hicky horizontal bars at girders
3-#14 anchors added ea. girder flare as shown on Detail F/63
10'-0"
R=1'-3½"
R=1'-2½"
Cont. double L bearing 8"x6"x 13/16" ℒs see Typical Type II Bearing Det.
3-#14 anchors added each girder flare as shown on Det. H/63
R=1'-2"
R=1'-3"
1¼" cl.
¾" open jt.
2½"
¾" jt. filler
1'-3"
#11 girder bars

TYPICAL AT EACH GIRDER

Top deck slab reinf. - see Normal Section ℄ slab strip detail for size ℄ spacing
4" Typ.
8-#6 cont. thruout as shown - hicky as req'd.
#4@12 double stirrups between girders thruout. See Sht. #63 for extent.
7-#6 cont. thruout as shown - hicky as req'd.
3-#6 cont ea. step - see Elevation for extent.
Reference - top of bot. L bearing
1¼" cl. to #6 bars
Girder Depth
Bot. deck slab reinf. - see Normal Section ℄ slab strip detail for size ℄ spacing.

BETWEEN GIRDERS

Top deck slab reinf. - see Normal Sect. ℄ Slab strip detail for size ℄ spacing.
#4@12 double stirrups between girders thruout. see Sht. #63 for extent.
3-#6 cont ea. step - see Elevation for extent.
Cont. double L bearing ℄ anchor straps - see Typical Type II Bearing Detail 8"x6"x¾" ℒs.
8-#6 cont. thruout as shown - hicky as req'd.
℄ bearing

TYPICAL SUPERSTRUCTURE EXPANSION OR FIXED HINGE BEARING DETAIL - TYPE II
Scale: ¾" = 1'-0"

Top L bearing stop here
¼" Expansion jt. filler
8"x¾" butt ℓℓ shape as detailed
Reference top of ½" premoulded joint filler
Top L bearing
1/16" asbestos sheet
1/16" asbestos sheet
Bottom L bearing - full weld to intermediate L step butt ℓℓ

DETAIL E/64
TYPICAL L BEARING STEP DET.

Premoulded jt. filler
Reference ℄ Bearing
Outline top L bearing
Top L bearing
Top of bot. L bearing
½" premoulded jt. filler
Cross-hatched area denotes ¼" Expansion jt. filler
Bottom L bearing
Intermediate L step butt ℓℓ shape as shown
Premoulded jt. filler

SECTION C/64

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-0" "H1-1"
TYPICAL DETAILS
SUPERSTRUCTURE
Interstate Highway (Lunalilo Freeway)
FAI Project No. 1-HI-1(5)24, Unit 2
Scale: As noted March 1965

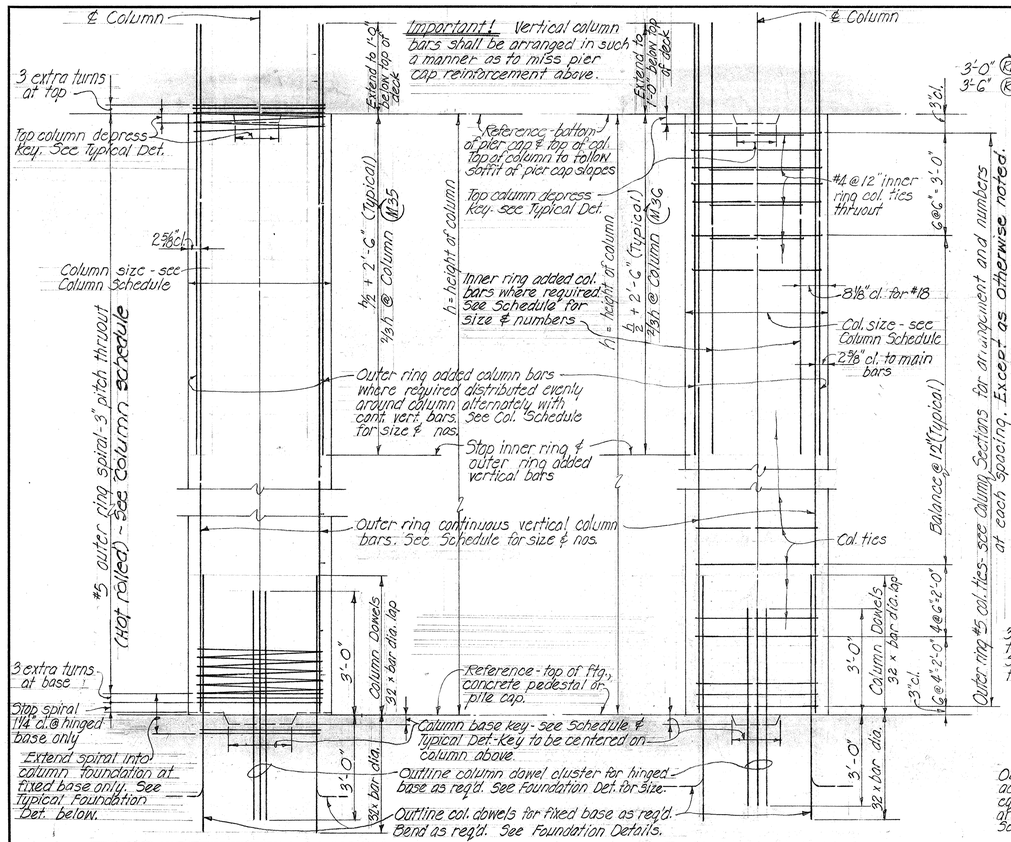
SHEET No. G4 OF 67 SHEETS

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY M.B.	"
	TRACED BY	"
	DESIGNED BY R.K.	"
	QUANTITIES BY	"
NOTE BOOK	CHECKED BY J.T.D. PTY	"
No.		

D ON CLEARPRINT 1000-H

235

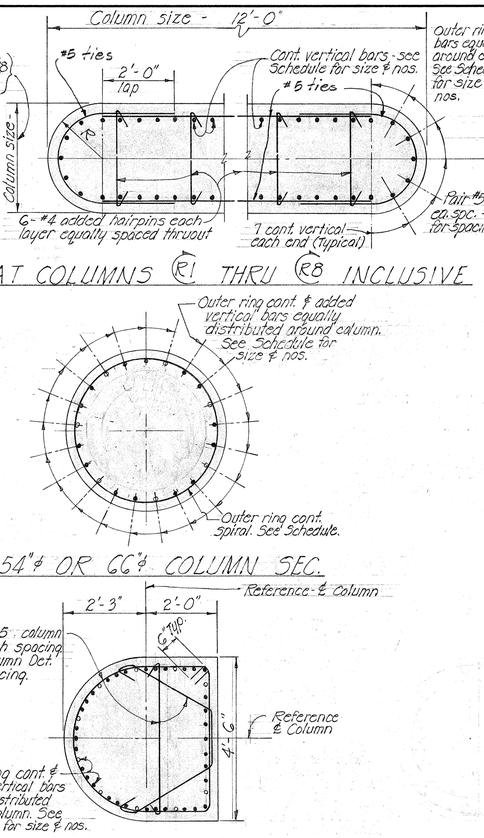
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(8)-24 Unit 2	1965	236	276



AT SPIRAL COLUMNS — AT TIED COLUMNS

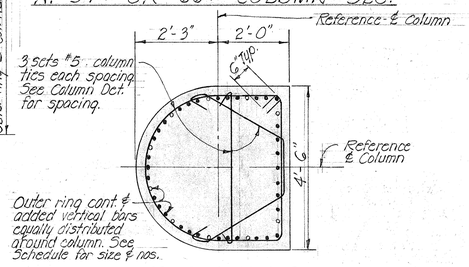
TYPICAL PIER COLUMN DETAILS

No Scale



AT COLUMNS R1 THRU R8 INCLUSIVE

AT 54"℄ OR 66"℄ COLUMN SEC.

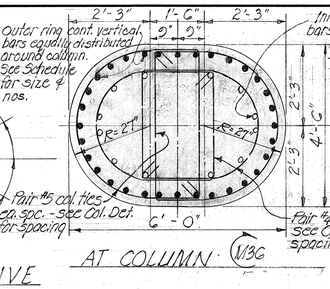


AT COLUMNS

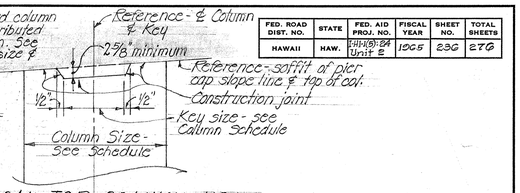
R10 R11 R14 R18 R19 M22 M30 M37 M44 M29

TYPICAL COLUMN SECTIONS

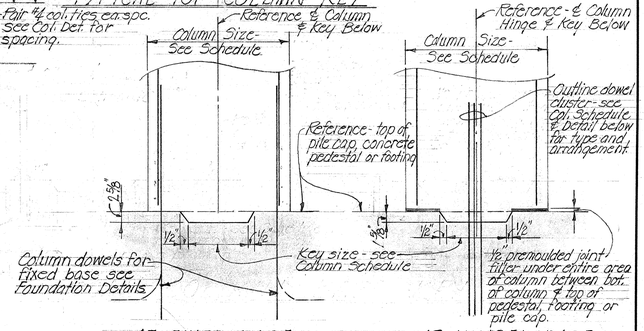
No Scale



AT COLUMN M36



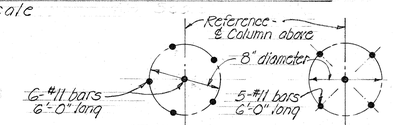
TYPICAL TOP COLUMN KEY



AT FIXED BASE — AT HINGED BASE

TYPICAL COLUMN BASE KEY DETAILS

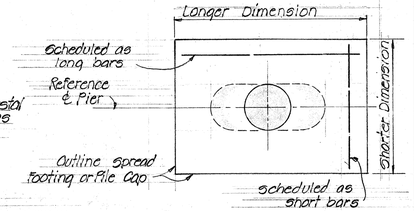
No Scale



AT TYPE D6 — AT TYPE D5

TYPICAL DETAIL - DOWEL CLUSTER FOR HINGED BASE

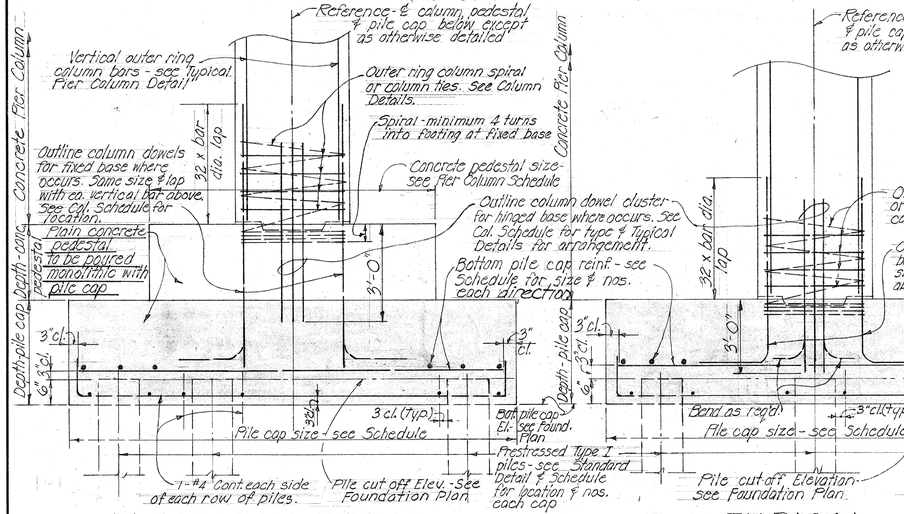
No Scale



PLAN

TYP. RECTANGULAR SPREAD FTG. DET.

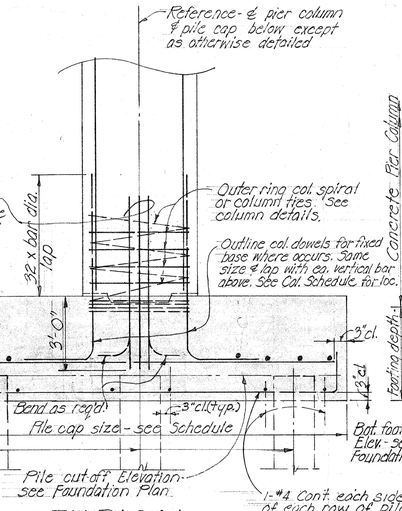
No Scale



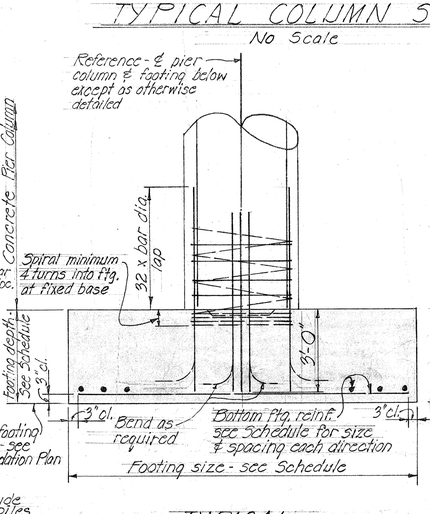
AT CONCRETE PEDESTAL

AT PILE CAP

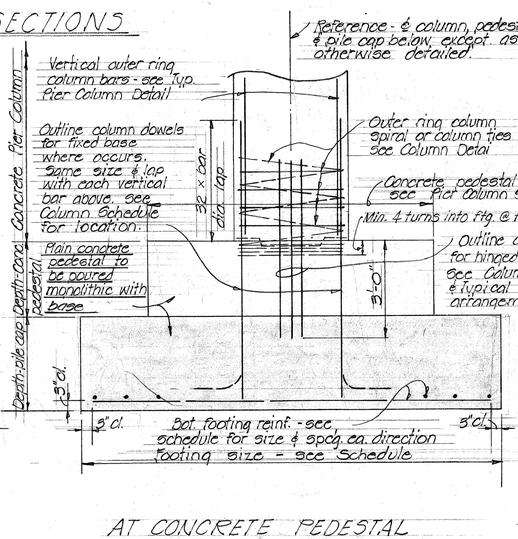
TYPICAL



TYPICAL



AT SPREAD FOOTING



AT CONCRETE PEDESTAL

TYPICAL PIER COLUMN FOUNDATION DETAILS

No Scale

NOTE! Except as otherwise noted, place long dimensions of rectangular pile cap, pier column ftg. & conc. pedestal along ℄ pier.

ORIGINAL PLAN	SURVEY PLOTTED BY	" " "
	DRAWN BY M.Y.	" " "
	TRACED BY A.K.	" " "
NOTE BOOK	DESIGNED BY	" " "
No.	QUANTITIES BY	" " "
	CHECKED BY J.T.O. H.T.K.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-0" H1-1

TYPICAL DETAILS

COLUMNS & FOUNDATIONS

Interstate Highway (Lunalilo Freeway)

FAI Project No. I-H-1(5):24 Unit 2

Scale: As shown March 1965

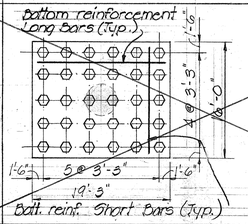
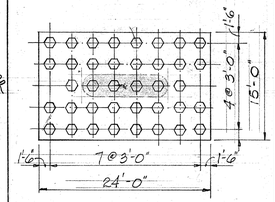
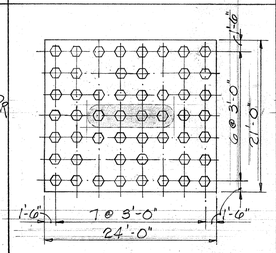
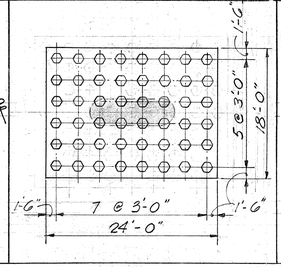
SHEET No. 65 OF 67 SHEETS

236

PRINTED ON CLEARPRINT 1000-H

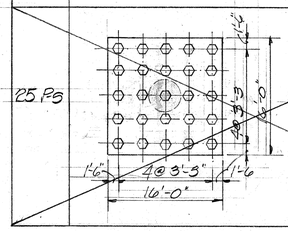
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(5)24 Unit 2	1965	237	276

RECTANGLE PILE CAP SCHEDULE

MARK	DESCRIPTION	DEPTH CAP	BOTTOM REINFORCEMENT LONG BARS	BOTTOM REINFORCEMENT SHORT BARS
30 P.R		5'-0"	28-#11	24-#10
38 P.R		5'-0"	21-#11	31-#11
52 P.R		5'-6"	24-#11	43-#11
48 P.R		6'-0"	24-#11	32-#11

Note: All piles to be Type I octagonal prestress concrete piles. See Standard Prestress Concrete Pile drawing Sht. #54.

SQUARE PILE CAP SCHEDULE

MARK	DESCRIPTION	DEPTH CAP	BOTTOM REINFORCEMENT LONG BARS	BOTTOM REINFORCEMENT SHORT BARS
25 P.S		5'-0"	20-#11	20-#11

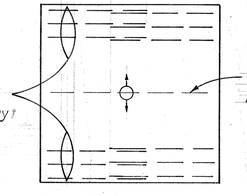
PIER COLUMN SCHEDULE

RAMP STRUCTURE

COLUMN NOS. / LOCATION	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	R21	C	C
TOP COLUMN KEY	12"×4'-0"	12"×4'-0"	12"×4'-0"	12"×4'-0"	12"×4'-0"	12"×4'-0"	12"×4'-0"	12"×10'-0"	18"×18"	18"×18"	18"×18"	18"×18"	18"×18"	18"×18"	18"×18"	18"×18"	18"×18"	18"×18"	18"×18"	18"×18"	18"×18"		
BOTTOM PIER CAP	SEE DET. W/ COLUMN TIE 40 - #18 CONT. fc = CLASS E-1	SEE DET. W/ COL TIE 40-#18 CONT. fc = CLASS E-1	SEE DET. W/ COL. TIE 32-#18 CONT. fc = CLASS E-1	SEE DET. W/ COL. TIE 46-#18 CONT. fc = CLASS E-1	SEE DET. W/ COL. TIE 50-#18 CONT. fc = CLASS E-1	SEE DET. W/ COL. TIE 42-#11 CONT. fc = CLASS E-1	SEE DET. W/ COL. TIE 46-#14 CONT. fc = CLASS E-1	SEE DET. W/ COL. TIE 36-#14 CONT. fc = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 18-#11 OUTER RING ADDED fc = CLASS E-1	SEE DET. W/COL. TIE 18-#11 ADDED fc = CLASS E-1	SEE DET. W/COL. TIE 16-#11 ADDED fc = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 8-#11 O.R. CONT. fc = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 8-#11 O.R. ADDED fc = CLASS E-1	SEE DET. W/COL. TIE 16-#11 ADDED fc = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. fc = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. ADDED fc = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 13-#14 O.R. CONT. fc = CLASS E-1	SEE DET. W/ COL. TIE 18-#11 CONT. fc = CLASS E-1	SEE DET. W/COL. TIE 18-#14 ADDED fc = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 12-#14 O.R. CONT. fc = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 18-#11 O.R. CONT. fc = CLASS E-1		
TOP-FOOTING, CONC. PEDESTAL OR PILE CAP																							
COLUMN DOWEL — FIXED BASE	40-#18	40-#18	32-#18	46-#18	50-#18	42-#11	46-#14	36-#14															
COLUMN DOWEL — HINGED BASE									D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5	D5		
COLUMN BASE KEY — FIXED BASE	12"×9'-0"×3" DEEP	12"×9'-0"×3" DEEP	12"×9'-0"×3" DEEP	12"×9'-0"×3" DEEP	12"×9'-0"×3" DEEP	12"×9'-0"×3" DEEP	12"×9'-0"×3" DEEP	12"×9'-0"×3" DEEP															
COLUMN BASE KEY — HINGED BASE									38" DIA.	36" DIA.	34" DIA.	36" DIA.	36" DIA.	34" DIA.	32" DIA.	30" DIA.	30" DIA.	30" DIA.	32" DIA.	30" DIA.	30" DIA.		
CONCRETE PEDESTAL — SIZE						9'-0" × 18'-0"	9'-0" × 18'-0"	9'-0" × 17'-0"	9'-0" × 9'-0"	9'-0" × 13'-0"	9'-0" × 13'-0"	9'-0" × 9'-0"	9'-0" × 9'-0"	9'-0" × 13'-0"	8'-0" × 8'-0"		9'-0" X 9'-0"	9'-0" X 13'-0"					
CONCRETE PEDESTAL — DEPTH						1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"		1'-6"	1'-6"					
PILE CAP FOUNDATION	48 P.R	52 P.R	52 P.R	38 P.R	38 P.R																		
SPREAD FOOTING FOUNDATION						F-34	F-31	F-27	F-20	F-28 See Sht #7	F-32 See Sht #7	F-20	F-20 See Sht #7	F-25 See Sht #7	See Sht #7	F-17	F-37 ~~F-2~~	F-43 ~~F-19~~ See Sht #7	F-21 See Sht #7	F-2	F-2		
CLASS OF CONCRETE FOR FOOTING OR PILE CAP	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1		
FOOTING PRESSURE K/ft²						7.94	7.82	7.76	7.88	7.94	7.83	7.71	7.93	7.95	7.91	7.21	~~14.40~~ 6.31	~~14.90~~ 6.52	15.31	14.65	15.25		
GROUP LOADING TYPE						I	I	IV	I	I	I	I	I	I	I	I	I	I	I	I	I		
PILE CAPACITY	45T.	45T.	45T.	45T.	45T.																		

PIER COLUMN FOOTING SCHEDULE

MARK	DESCRIPTION	DEPTH	BOTTOM REINFORCEMENT LONG BARS	BOTTOM REINFORCEMENT SHORT BARS
F-35	10'-6" X 10'-0"	3'-0"	22-#9	22-#9
F-36	12'-0" X 12'-0"	3'-0"	20-#14	20-#14
F-37	13'-0" X 13'-0"	2'-0"	20-#11	20-#11
F-38	13'-0" X 13'-0"	2'-6"	6-#9 / 14-#11	6-#9 / 14-#11
F-39	13'-0" X 13'-0"	2'-6"	6-#10 / 14-#11	6-#10 / 14-#11
F-40	14'-0" X 14'-0"	2'-6"	6-#10 / 19-#11	6-#10 / 19-#11
F-41	10'-0" X 16'-0"	2'-6"	33-#11	33-#11
F-42	18'-0" X 16'-0"	2'-6"	30-#11	27-#11
F-43	18'-0" X 22'-0"	3'-0	32-#11	38-#11
F-44	17'-0" X 16'-0"	2'-6	27-#11	27-#11
F-45	21'-0" X 16'-0"	2'-9"	32-#11	25-#11
F-46	27'-0" X 16'-0"	3'-6"	30-#14	27-#11



TYP. REINF. FOR F-38, F-39, F-40

NOTE:

1. Except as otherwise noted all concrete to be Class A-1.
2. Except as otherwise noted, place long dimensions of rectangular pile cap, pier column footing & concrete pedestal along ℄ Pier.

IMPORTANT! All column steel vertical bars & dowels to be ASTM Designation A-432 Billet steel.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAIN STRUCTURE #3, RAMPS "H1-0" / H1-1

SCHEDULES

PIER COLUMNS & PILE CAPS

Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5)24, Unit 2
March 1965

SHEET No. 66 OF 67 SHEETS

2237

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY G.F. & M.S. | TRACED BY | DESIGNED BY S.S. & J.F. | QUANTITIES BY J.F. | CHECKED BY J.F.D. | NOTE BOOK | No. | DATE

PRINTED ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-111-1(24) Unit 2	1965	238	276

PIER COLUMN SCHEDULE

MAIN STRUCTURE

COLUMN Nos / LOCATION		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32
TOP COLUMN KEY		18"x18" Sq.	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"
BOTTOM PIER CAP		54" DIA. W/#5 SPIRAL TIE 18-#11 OUTER RING CONT. 9-#11 OUTER RING ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 14-#14 O.R. CONT. 8-#14 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 14-#14 O.R. CONT. 8-#14 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 6-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 20-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 18-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 15-#14 O.R. CONT. 15-#14 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 14-#14 O.R. CONT. 7-#14 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 15-#14 O.R. CONT. 8-#14 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 18-#11 O.R. CONT. 9-#11 O.R. ADDED — f'c = CLASS E-1	SEE DET. W/COL. TIES 14-#14 O.R. CONT. 7-#14 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIES 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIES 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIES 16-#11 O.R. CONT. 8-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIES 15-#11 O.R. CONT. 15-#11 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIES 16-#11 O.R. CONT. — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIES 15-#14 O.R. CONT. 14-#14 O.R. ADDED — f'c = CLASS E-1	SEE DET. W/COL. TIES 12-#8 O.R. CONT. 6-#8 O.R. ADDED — f'c = CLASS E-1	SEE DET. W/COLUMN TIE 28-#11 O.R. CONT. — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 20-#11 O.R. CONT. — f'c = CLASS E-1
TOP-FOOTING, CONC. PEDESTAL OR PILE CAP																																	
COLUMN DOWEL	FIXED BASE																													28-#11	16-#11	20-#11
	HINGED BASE	D6	D5	D5	D5	D6	D5	D5	D5	D5	D6	D6	D5	D5	D5	D5	D5	D6	D5	D6	D6	D5	D5	D6	D6	D5	D5	D5	D6	D6			
COLUMN BASE KEY	FIXED BASE																													18"x18"	18"x18"	18"x18"
	HINGED BASE	40" DIA.	36" DIA.	38" DIA.	38" DIA.	40" DIA.	36" DIA.	38" DIA.	38" D	36" D	40" D	40" DIA.	36" DIA.	36" DIA.	36" DIA.	36" DIA.	40 DIA.	39" DIA.	24" DIA.	40" DIA.	40" DIA.	36" DIA.	33" DIA.	40" DIA.	40" DIA.	36" DIA.	30" DIA.	36" DIA.	42" DIA.	40" DIA.			
CONCRETE PEDESTAL	SIZE	9'-0"x 9'-0"	9'-0"x 9'-0"	9'-0"x 9'-0"	9'-0"x 9'-0"										9'-0"x 9'-0"	9'-0"x 9'-0"	9'-0"x 9'-0"	9'-0"x 9'-0"		9'-0"x 9'-0"	~~9'-0"x 9'-0"~~ 7'-0"x 7'-0"	9'-0"x 9'-0"	9'-0"x 9'-0"	See Col. R-10	9'-0"x 9'-0"	9'-0"x 9'-0"			9'-0"x 9'-0"	9'-0"x 9'-0"	See Col. R-11	See Col. R-14	9'-0"x 9'-0"	9'-0"x 9'-0"
	DEPTH	1'-6"	1'-6"	1'-6"	1'-6"										1'-6"	1'-6"	1'-6"	1'-6"		1'-6"	~~1'-6"~~ 1'-9"	1'-6"	See R-10	1'-6"	1'-6"			1'-6"	1'-6"	See R-11	See R-14	1'-6"	1'-6"
PILE CAP FOUNDATION		~~30 P.R~~	~~25 P.R~~	~~25 P.R~~	~~25 P.R~~	~~25 P.R~~																											
SPREAD FOOTING FOUNDATION		F-46	F-45	F-42	F-44	F-35	F-12	F-12	F-1	F-6	F-13	F-13	F-13	F-3	~~F-5~~ F-38	~~F-8~~ F-40	~~F-8~~ F-32	~~F-16~~ F-41	F-10	F-26	~~F-24~~ F-36	F-23	See Sht. R-10 See Sht. #7	F-22	F-22	F-17	F-4	F-22	F-26	See Col. R-11 See Sht. #7	See Col. R-14 See Sht. #7	F-26	F-26
CLASS OF CONCRETE FOR FOOTING OR PILE CAP		CLASS E-1	CLASS A-1	CLASS A-1	CLASS A-1	CLASS E-1	CLASS A-1	CLASS A-1	CLASS A-1	CLASS A-1	CLASS E-1	CLASS E-1	CLASS A-1	CLASS A-1	CLASS E-1	CLASS E-1	CLASS E-1	CLASS E-1 8.01	CLASS E-1	CLASS E-1	CLASS E-1	CLASS E-1	CLASS A-1	CLASS E-1	CLASS E-1	CLASS A-1	CLASS A-1	CLASS E-1	CLASS E-1	CLASS A-1	CLASS A-1	CLASS A-1	CLASS A-1
FOOTING PRESSURE K/ft²		5.02	5.86	5.86	5.02	13.02	14.20	14.20	10.40	12.20	15.30	15.30	15.30	15.60	14.30	14.80	14.05	~~14.78~~	7.59	7.81	7.76	7.62	7.94	7.63	7.81	7.92	7.00	7.68	7.77	7.83	7.95	7.71	7.94
GROUP LOADING TYPE		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	VII	I	I	I	I	I	I	I	I	I	I	I	I	I	I
PILE CAPACITY		~~32T.~~	~~32T.~~	~~32T.~~	~~32T.~~	~~32T.~~																											

PIER COLUMN SCHEDULE

MAIN STRUCTURE

COLUMN Nos / LOCATION		M33	M34	M35	M36	M37	M38	M39	M40	M41	M42	M43	M44
TOP COLUMN KEY		18"x18" Sq.	18"x18"	22"x22"	18"x24"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"
BOTTOM PIER CAP		54" DIA. W/#5 SPIRAL TIE 18-#11 OUTER RING CONT. — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 21-#14 O.R. CONT. — f'c = CLASS E-1	60" DIA. W/#5 SPIRAL TIES 21-#18 O.R. CONT. 7-#18 O.R. ADDED — f'c = CLASS E-1	SEE DET. W/COL. TIE 24-#18 O.R. CONT. 8-#18 O.R. ADDED 12-#18 I.R. ADDED — f'c = CLASS E-1	SEE DET. W/COL. TIE 18-#14 O.R. CONT. 12-#14 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 22-#11 O.R. CONT. — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 12-#18 O.R. CONT. 10-#18 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 15-#18 O.R. CONT. 8-#18 O.R. ADDED — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. — f'c = CLASS E-1	54" DIA. W/#5 SPIRAL TIE 16-#11 O.R. CONT. — f'c = CLASS E-1	SEE DET. W/COL. TIE 16-#11 O.R. CONT. — f'c = CLASS E-1
TOP-FOOTING, CONC. PEDESTAL, OR PIER CAP													
COLUMN DOWEL	FIXED BASE	18-#11	21-#14	21-#18	24-#18	18-#14	22-#11	12-#18	15-#18	16-#11	16-#11	16-#11	16-#11
	HINGED BASE												
COLUMN BASE KEY	FIXED BASE	18"x18"	18"x18"	22"x22"	18"x24"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"	18"x18"
	HINGED BASE												
CONCRETE PEDESTAL	SIZE	9'-0"x9'-0"		11'-0"x11'-0"	8'-0"x9'-0"	See Col. R-18	9'-0"x9'-0"	9'-0"x9'-0"	9'-0"x9'-0"		9'-0"x9'-0"	9'-0"x9'-0"	
	DEPTH	1'-6"		1'-6"	1'-6"		1'-6"	1'-6"	1'-6"		1'-6"	1'-6"	
PILE CAP FOUNDATION													
SPREAD FOOTING FOUNDATION		F-23	F-18 See Sht. #7	F-33	See Det. Sht. #7	See Col. R-18 See Sht. #7	F-24	F-30	F-22	F-15	F-24	F-26	See Col. R-19 See Sht. #7
CLASS OF CONCRETE FOR FOOTING OR PILE CAP		CLASS A-1	CLASS A-1	CLASS A-1	CLASS A-1	CLASS A-1 6.52	CLASS A-1	CLASS A-1	CLASS A-1	CLASS A-1	CLASS A-1	CLASS A-1	CLASS A-1
FOOTING PRESSURE K/ft²		7.96	7.61	7.93	7.91	~~14.98~~	7.66	7.85	7.88	15.30	8.00	7.97	15.31
GROUP LOADING TYPE		I	VI	I	I	I	I	I	IV	I	I	I	I

PIER COLUMN FOOTING SCHEDULE

MARK	DESCRIPTION	DEPTH	BOTTOM REINFORCEMENT LONG BARS	BOTTOM REINFORCEMENT SHORT BARS
F-1	6'-0" x 8'-0"	3'-6"	6-#11	8-#11
F-2	8'-0" x 8'-0"	3'-6"	16-#8	16-#8
F-3	8'-0" x 9'-0"	3'-6"	14-#11	12-#11
F-4	8'-6" x 8'-6"	2'-6"	13-#7	13-#7
F-5	9'-0" x 9'-0"	3'-6"	11-#9	11-#9
F-6	9'-0" x 9'-0"	3'-6"	11-#11	11-#11
F-7	9'-0" x 13'-0"	3'-6"	18-#9	18-#9
F-8	9'-6" x 9'-6"	3'-6"	12-#10	12-#10
F-9	9'-6" x 9'-6"	3'-6"	16-#9	16-#9
F-10	10'-0" x 10'-0"	2'-6"	15-#9	15-#9
F-11	10'-0" x 10'-0"	3'-6	17-#8	17-#8
F-12	10'-0" x 10'-0"	3'-6"	15-#11	15-#11
F-13	10'-0" x 10'-0"	3'-6"	17-#11	17-#11
F-14	10'-0" x 14'-0"	3'-6"	21-#9	30-#9
F-15	11'-0" x 11'-0"	3'-0"	20-#10	20-#10
F-16	11'-6" x 11'-6"	3'-6"	18-#11	18-#11
F-17	12'-0" x 12'-0	2'-9"	24-#9	24-#9
F-18	13'-0" x 14'-6"	3'-3"	22-#10	15-#10
F-19	14'-0" x 11'-0"	3'-6"	20-#10	28-#10

PIER COLUMN FOOTING SCHEDULE

MARK	DESCRIPTION	DEPTH	BOTTOM REINFORCEMENT LONG BARS	BOTTOM REINFORCEMENT SHORT BARS
F-20	14'-0" x 14'-0"	2'-6"	23-#11	23-#11
F-21	15'-0" x 11'-0"	3'-6"	22-#10	30-#10
F-22	15'-0" x 15'-0"	2'-6"	27-#11	27-#11
F-23	16'-0" x 16'-0"	2'-6"	28-#11	28-#11
F-24	17'-0" x 17'-0"	2'-9"	25-#14	25-#14
F-25	17'-0" x 21'-0"	3'-0"	34-#11	41-#11
F-26	18'-0" x 18'-0"	3'-0"	28-#14	28-#14
F-27	18'-0" x 21'-0"	3'-0"	17-#11	36-#11
F-28	19'-0" x 16'-0"	3'-0"	27-#11	34-#11
F-29	19'-0" x 28'-6"	3'-6"	30-#11	56-#11
F-30	20'-0" x 20'-0"	3'-3"	33-#14	33-#14
F-31	20'-0" x 25'-0"	3'-3"	24-#14	40-#14
F-32	20'-6" x 17'-0"	3'-0"	34-#11	41-#11
F-33	25'-0" x 25'-0"	4'-0"	49-#14	49-#14
F-34	20'-0" x 26'-0"	3'-3"	27-#14	42-#14

NOTE!
Except as otherwise noted, all concrete to be class A-1.
Except as otherwise noted, place long dimensions of rectangular pile cap, pier column, footing & concrete pedestal along ℄ pier.
IMPORTANT! All column steel vertical bars & dowels to be ASTM Designation A-432 Billet steel.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MAIN STRUCTURE #3, RAMPS "H1-0"
SCHEDULES "H1-1"
PIER COLUMNS & FOOTINGS
Interstate Highway (Lunalilo Freeway)
FAI Project No. I-HI-1(5)24 Unit 2
March 1965

SHEET No. 67 OF 67 SHEETS

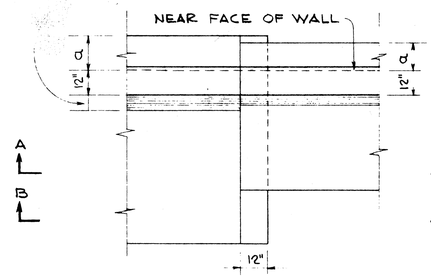
ORIGINAL PLAN | NOTE BOOK | No. | SURVEY PLOTTED BY | DRAWN BY S.L.T. & K.C. | TRACED BY | DESIGNED BY S.L.T. & T.K.M. | QUANTITIES BY | CHECKED BY J.T.C. | DATE

3 ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	FHWA(BR)-84 Unit 2	1965	259	276

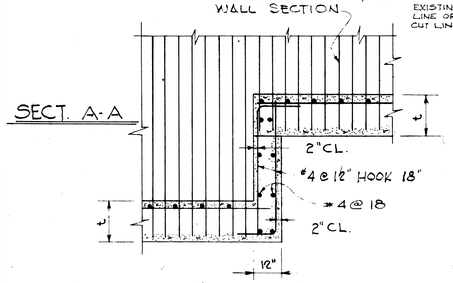
BATTERED WALL VARIES, SEE WALL SECTION

NEAR FACE OF WALL

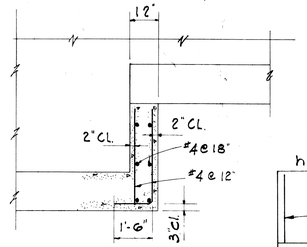


PLAN

"a" BARS BENT INTO FTG, SEE WALL SECTION



SECT. A-A

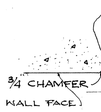


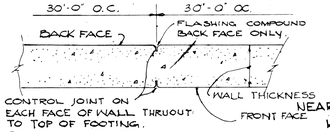
SECTION B-B

STEPPED FTG. DET.

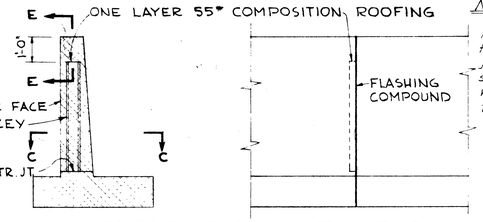
SCALE: 3/8" = 1'-0"

JOINT MAY BE FORMED WITH 1/8" MASONITE AND CUT BACK TO THE ROOT OF THE CHAMBER ON THE EXPOSE FACE.



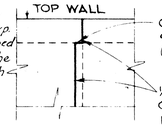


ALTERNATE CONTRACTION JOINT DETAIL



JOINT ELEVATION

NOTE:
For ret walls with bridge railing, spacing for contr. joint and exp. joint shall be determined so that the joints in the wall will coincide with the joints in railing.



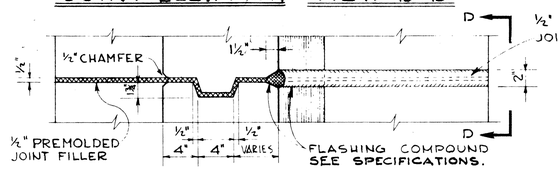
SECT. E-E

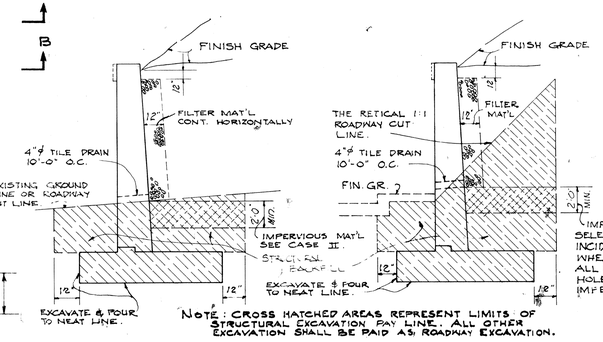
NOTE:
In lieu of the composition roofing for contraction joint, the surface may be cleaned smooth and coated with bond breaking material.

(SPACING OF JOINTS)
CONTRACTION JOINT - 30'-0" MAX.
EXPANSION JOINT - 90'-0" MAX.

NOTE:
CONTRACTION JOINT IS SIMILAR TO EXPANSION JOINT EXCEPT THAT ONE LAYER OF 55# COMPOSITION ROOFING SHALL BE USED IN PLACE OF PREMOLDED JOINT FILLER AND THE JOINT SHALL EXTEND THRU THE STEM ONLY.

VIEW D-D





NOTE: CROSS HATCHED AREAS REPRESENT LIMITS OF STRUCTURAL EXCAVATION PAY LINE. ALL OTHER EXCAVATION SHALL BE PAID AS ROADWAY EXCAVATION.

IMPERVIOUS MATERIAL AS SELECTED BY THE ENGINEER INCIDENTAL TO STRUCT. EXC. WHEN "H" IS 2'-0" OR LESS ALL BACKFILL BELOW WEEP-HOLE LEVEL SHALL BE IMPERVIOUS MATERIAL.

CASE I CASE II

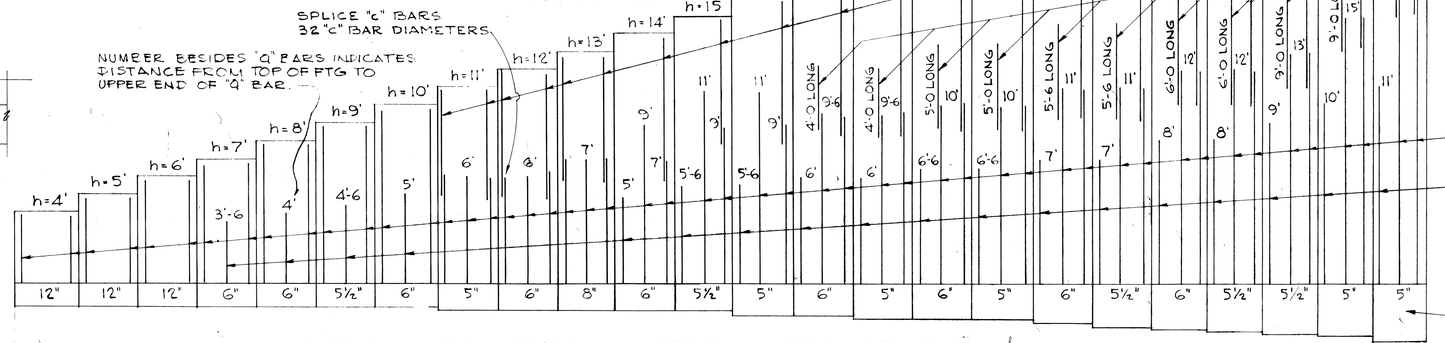
STRUC. EXC. & DRAINAGE DETAILS

NO SCALE

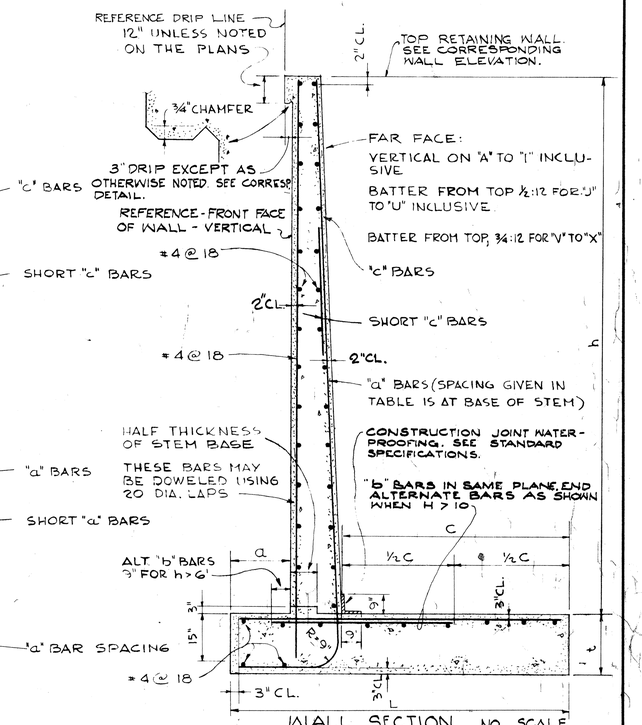
SECTION C-C

TYPICAL EXPANSION JOINT DETAIL

NO SCALE



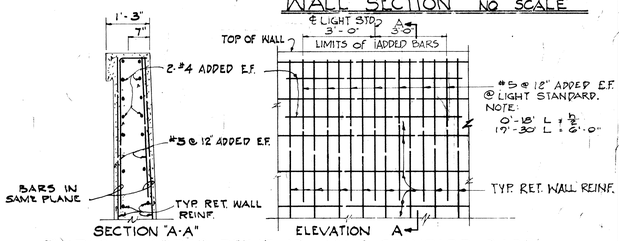
VERTICAL REINFORCING STEEL ARRANGEMENT NO SCALE.



WALL SECTION NO SCALE

MAXIMUM h	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	26'	28'	30'
"a" BARS	#3@12	#3@12	#4@12	#3@6	#4@6	#4@5½	#5@6	#5@5	#6@6	#6@8	#6@6	#6@5½	#6@5	#7@6	#7@5	#8@6	#8@5	#9@6	#9@5½	#10@6	#10@5½	#10@5½	#10@5	#11@5
"c" BARS	—	—	—	—	—	—	—	#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#6	#6	#7	#7	#7	#7	#7
TYPE (FTG. ON EARTH)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
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"
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'
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"
"b" BARS	#3@12	#3@12	#3@12	#3@12	#3@12	#4@11	#5@9	#5@10	#5@6	#6@8	#6@6	#6@5½	#6@5	#7@6	#7@5	#9@6	#9@5	#10@6	#10@5½	#11@6	#11@5½	#11@5½	#11@5	#11@5

TYPE (FTG. ON ROCK)	A	B	C	D	E	F	G	H	I	J-R	K-R	L-R	M-R	N-R	O-R	P-R	Q-R	R-R	S-R	T-R	U-R	V-R	W-R	X-R
a	6"	6"	6"	12"	12"	12"	12"	12"	12"	12"	15"	18"	21"	21"	21"	21"	24	27"	30"	33"	36"	42"	48"	54"
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'	8.50'	9.25'	10.00'	10.50'	11.00'	11.50'	12.00'	12.50'	13.00'	14.00'	15.00'	16.00'
t	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	18"	18"	18"	18"	18"	21"	21"	21"	24"	24"	24"	27"	30"	36"
"b" BARS	#3@12	#3@12	#3@12	#3@12	#3@12	#4@11	#5@9	#5@10	#5@6	#6@8	#6@6	#6@5½	#6@5	#7@6	#7@5	#9@6	#9@5	#10@6	#10@5½	#10@6	#10@5½	#10@5½	#10@5	#10@6



TYPICAL ADDED REINF AT LIGHT STANDARD BASE

GENERAL NOTE:
FENCE POST INSERT DETAIL TO BE SAME AS SHOWN ON "L" TYPE WALL DETAILS. EXCEPT WHERE DETAILED OTHERWISE IN THE PLANS ALL DETAIL ON THIS SHEET GOVERN.

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

STANDARD RETAINING WALL DETAIL TYPE "T-1"

SHEET No. 5-1 OF 5 SHEETS

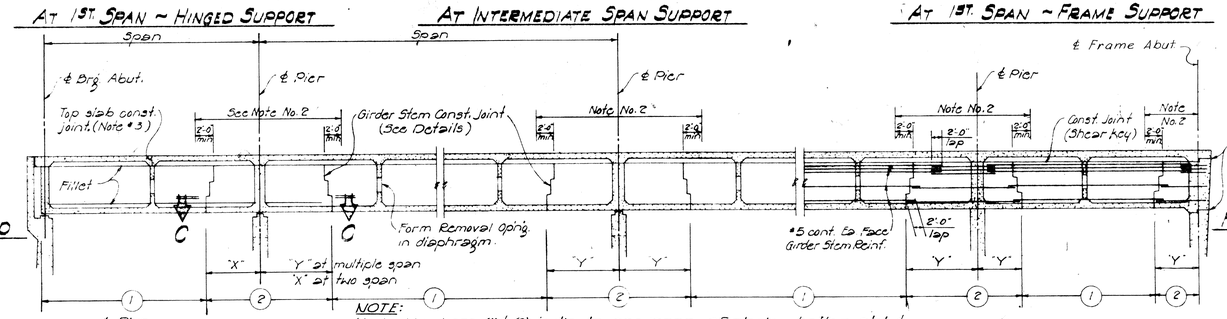
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DESIGNED BY M.O.	5/15/64
	DRAWN BY P.P. M.O.	5/20/64
NOTE BOOK No.	TRACED BY	
	QUANTITIES BY	
	QUANTITIES CHECKED BY	
	CHECKED BY E.E. Jr. S.H.F.	

PRINTED ON DIEPO 1000H CLEARPRINT

233

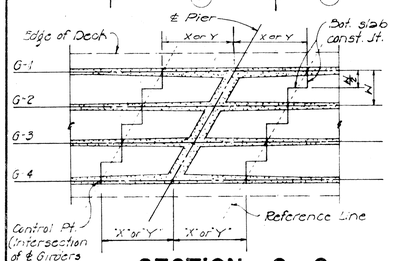
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	H.A.W.	I-HI-(6)24, Unit 2	1965	240	276

May 59
OCT 60
MAY 62
NOV. 62
MAY 63

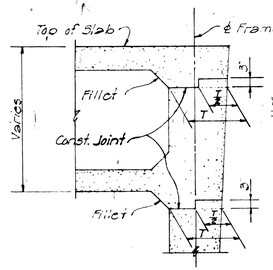


NOTE:
No. 1 - Numbers (1) & (2) indicate sequence of placing bottom slab & girder stem concrete. (2) may be placed simultaneously with (1) when approved by the Engr., and provided that the (1) sections are placed in adjoining spans. For any deviation from the above the contractor shall submit a diagram 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.
No. 3 - When top slab forms are not removed, const. joint in top slab shall be located over an intermediate diaphragm.
No. 4 - Dimension "X" = 1/4 span "Y" = 1/5 span
No. 5 - No lapping of main girder bars shall be permitted at construction joints.

PLACING DIAGRAM FOR SUPERSTRUCTURE CONCRETE

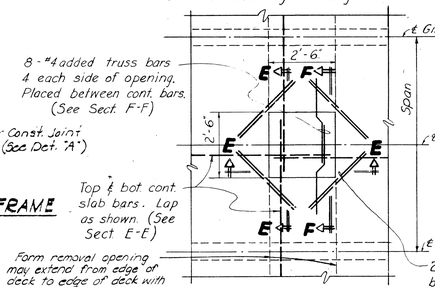


SECTION C-C
SHOWING TREATMENT OF CONST. JOINT FOR BRIDGES ON SKEW

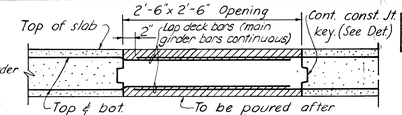


DETAIL - A

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

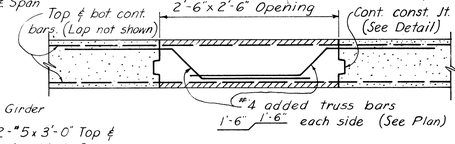


PART PLAN - DECK
SHOWING FORM REMOVAL OPENING

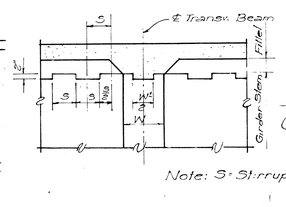


SECTION E-E

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

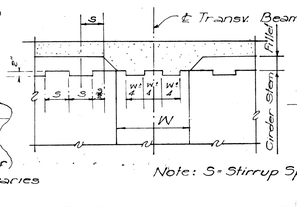


SECTION F-F



Note: S = Stirrup Spacing

SECTION - BEAM WIDTH LESS THAN 2'-0" PLAN

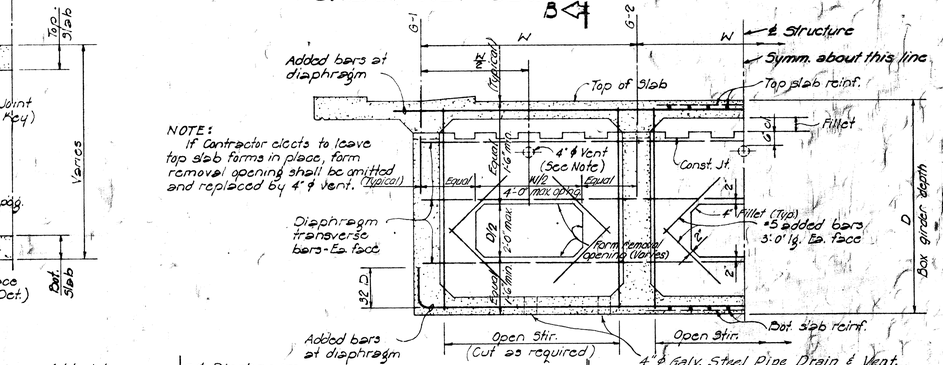


Note: S = Stirrup Spacing

SECTION - BEAM WIDTH MORE THAN 2'-0" PLAN

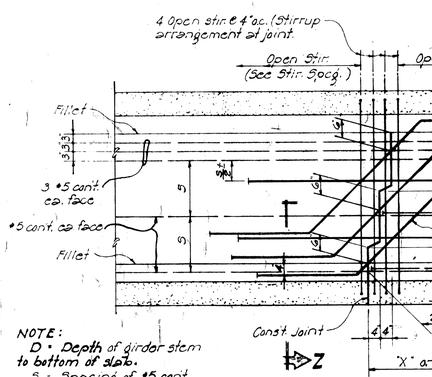
NOTE: Shear keys for box girders may be eliminated if the entire surface of the joint is thoroughly cleaned of surface laitance, curing compound and other materials foreign to the concrete, and clean aggregate is exposed by abrasive blast cleaning after the curing period or immediately before placing concrete of the joint.

SHEAR KEY DETAIL



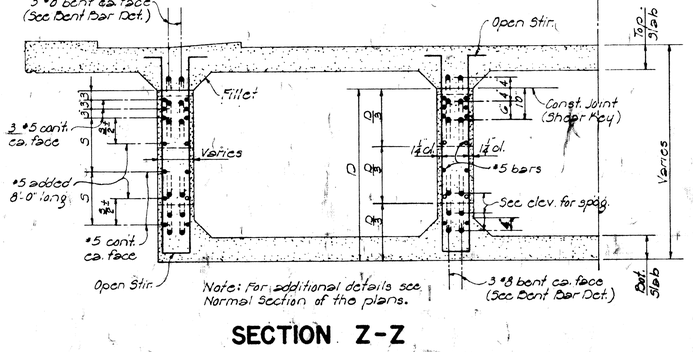
NOTE: If Contractor elects to leave top slab forms in place, form removal opening shall be omitted and replaced by 4" ℄ Vent. (Typical)

FORM REMOVAL OPENING DETAIL IN DIAPHRAGM

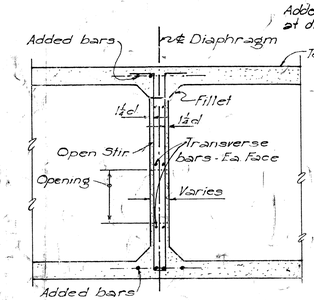


NOTE:
D = Depth of girder stem to bottom of slab.
S = Spacing of #5 cont. girder stem long. bars.

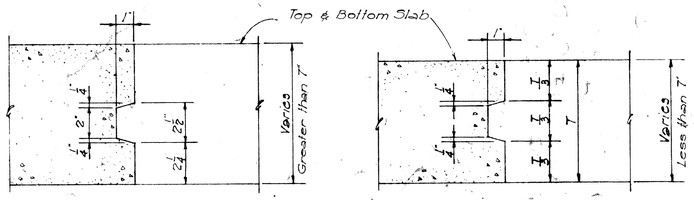
GIRDER STEM CONST. JOINT



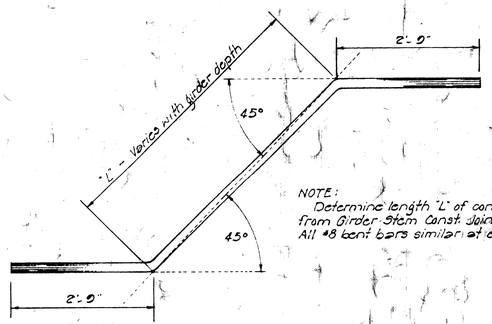
SECTION Z-Z



SECTION B-B



TOP AND BOTTOM SLAB CONST. JOINT



NOTE: Determine length "L" of control bar from Girder Stem Const. Joint detail. All #8 bent bars similar at each joint.

DETAIL - NO. 8 BENT BAR

GENERAL NOTE

Except where detailed otherwise in the plans, all details on this sheet govern.

APPROVED: DATE: Aug. 26, 1959

STATE HIGHWAY ENGINEER

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

STANDARD DETAILS

BOX GIRDER

SCALES AS NOTED

SHEET No. 5-20F 5 SHEETS

240

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

PRINTED ON DIEPO 1000H CLEARPRINT

1-8-65
4-23-65
5-10-65

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(16)29 Unit E	1965	241	276

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

7/32" Batt Rail
1/8" Top Rail
5" Bottom Rail
3" Top Rail
4" Batt. Rail
3" Top Rail
All Draft Angles 3°
RAIL CAP DETAIL
Scale: 3"=1'-0"

Rail ** Section
Rail Section
Rail Section
** 3 Continuous Panels (typical)
Rail Section **
End Post face at right angle to roadway grade
End Post
Rail cap ea. end
Rail cap each end
1/2" Open Jt.
8'-0" max. typical panel
1'-4" min. for posts adjacent to all joints
4'-0" max.
Plumb
Premoulded Joint filler as required
Locate sidewalk constr. jts. as shown @ 20'-0" maximum - see detail
Reference & Continuous Support where occurs
Construction Jt.
Sidewalk constr. jt. premoulded joint filler in sidewalk, at all expansion joints, and fixed bridge jts.
Rail cap
Top Ret. wall
End Post face at right angle to roadway grade
Plumb
AT BRIDGE END POST
INTERMEDIATE
NOTE! Rail posts shall be normal to grade.
AT RETAINING WALL END POST
EXTERIOR RAILING ELEVATION
SCALE: 1/2"=1'-0"

Bond breaker
1/2" R
Sidewalk Slab
Joint to be plumb
Cut long. reinf.
Deck Slab
SIDEWALK CONSTR JT DETAIL
SCALE: 3/8"=1'-0"
NOTE! Unless otherwise specified, Off angles ± 5° corner radii = 1/2" R Fillet radii = 1/8" radii.

Reference Edge of Rail & Layout Line
1'-3"
Sidewalk
Edge of deck
1/8" Neoprene pad or preformed fabric between conc. & bolt. at each post. See Special Provisions. This item will be incidental and shall not be paid for separately.
Level
#4 or #5 @ 7 1/2", see plan
1/4" fall slope
Sec "Normal Section"
Rounded Corners 1" Radius
9" if sidewalk 4'-0" or more.
10" if sidewalk less than 4'-0".
A.C. Pavement
Drip
Anchor Bolt Assembly - See detail below.
Anchor @ ± 1'-9" & another bolt at each post. See details.
#4 or #5 @ 7 1/2"
Bars placed side by side in same plane.
Roughen surface
TYPICAL SECTION
Scale: 1/2"=1'-0"

5'-0" End Post
1'-4"
1'-4" 1'-4"
3 Continuous Panels (maximum)
1'-4" 1'-4"
1'-4" 3'-0" 3"
Sidewalk constr. jt.
Balance - #4 @ 7 1/2
#5 @ 7 1/2
Sidewalk constr. jt. or premolded filler jt.
Edge of Deck or Wall
Jts. on skew
SECTION AT SKEW
SCALE: 3/8"=1'-0"
AT BRIDGE END POST
INTERMEDIATE
PLAN OF RAILING
SCALE 1/4" = 1'-0"

AT RET. WALL END POST
ELEVATION
℄ 1/2" ϕ Toggle Bolt (See det.)
This surface to be smooth & free of draft.
℄ 2 - 1" ϕ Anchor Bolts. See Typical Detail below.
Miter Jt. - Weld all around & grind smooth
2 - 1" ϕ Anchor Bolts - See Typical Detail below
SIDE ELEVATION
Bridge Railing Post Cast Aluminum Alloy 4344-T4
℄ 3/4" ϕ Toggle Bolt (See det.)
5" ϕ Tube - 7" Wall - 6062 - T6
3" ϕ Tube 8" Wall - 6063 - T6
℄ Anchor Bolts see detail below.
1" Draft @ ℄ Bolt Hole Bosses
* Casting to be supplied with a std. scratch brush finish, an entire gating rib surface & as indicated by an asterisk (*), or cross-hatched area. Finish, shall be approved by the Engineer.
END ELEVATION
Reference - Edge of rail & Layout Line
Taper Web
SECTION E
SCALE: 3"=1'-0"
SECTION F
SCALE: 3"=1'-0"
SECTION G
SCALE: 3"=1'-0"
TYPICAL RAIL POST DETAILS
SCALE: 3"=1'-0"

Groove (See Standard Bridge Details)
#4 @ 12" c.l. ties.
#4 @ 12" o.c. both faces.
3'-0"
1'-0"
Line with edge of deck
End Post Bracket
Anchor Bolt & 1" ϕ anchor bolts. see detail.
Optional constr. Jt.
6 - #6 @ 9" dogged bars below each post.
Edge of Deck Line
If constr. jt. is made, extend reinf. 2'-0" below Jt.
PLAN
SECTION B
SCALE: 1/2"=1'-0"
TREATMENT OF RAILING AT SKEWED ENDS
* For Girder Bridges, carry to bottom of deck slab.
NOTE! 1" dia. bolt washer size 2 1/2" O.D. x 1 1/16" I.D. x 1/4" thick. 1 1/8" dia. bolt washer size 1 5/8" O.D. x 1 3/16" I.D. x 1/4" thick.
Drill 2 - 1 1/16" ϕ holes as shown
galv. steel washer
Anchor Plate at 1" ϕ bolts only
See corresponding detail location.
NOTE! 1" ϕ 1/2" galvanized Steel ASTM - A 325 - 58T Anchor Bolts.
BOLT
WASHER
NOTE!! Toggle Bolt Material - 1/8" - 13 N.C. 1935 C.R. Steel heat treated R.C. 32 - 38 ASTM - A 354
Toggle Material - 1015 H.R. steel pickled and oiled. Round edges ASTM - A 303
Washer Material - SAE 1020 H.R. steel plates. ASTM - A-7 Break sharp edges
Nut - 3/4" - 15 Amer. Nat. ex. nut - Heavy Mat'l. 1035 C.R. St. - Heat treated ASTM - A 325
Cadmium plating on steel - Type N.S. .0005" thick - ASTM - A165 - (All parts)
for cast post specifications, see special provisions.
SIDE ELEVATION - ASSEMBLAGE
TOP PLAN
1/2" ϕ TOGGLE BOLT DETAILS
Scale: 9"=1'-0"

Toggle Bolt
Washer
Cut
Lock washer
Toggle
SIDE ELEVATION - ASSEMBLAGE
NOTE!! Toggle Bolt Mat'l. - 9/16" - 18 N.C. SAE 1020 C.R. steel unannealed after forming
Toggle Mat'l. - H.R. Steel pickled and oiled
Washer Mat'l. - C.R. steel (1020)
Nut Mat'l. - 5/16" - 18 N.C. Amer. Std. hex. nut cold punched (1020 st'l)
Cadmium plating on steel. Type N.S. .0005" thick - ASTM - A165 (All Parts)
TOP PLAN
5/16" ϕ TOGGLE BOLT DETAILS
Scale 9"=1'-0"

Lock Washer
Nut
Toggle Bolt
Toggle
Washer
SIDE ELEVATION - ASSEMBLAGE
TOP PLAN
WASHER
Scale: 3"=1'-0"

Reference Top of Sidewalk
4 - 1" ϕ Galv. Anchor bolts - ASTM - A-325 - 58T with 2 std. galv. washers & 2 galv. nuts per bolt.
2 Anchor Plate see detail below left.
ANCHOR BOLT DETAIL AT LIGHT STANDARD
SCALE: 1 1/2"=1'-0"

Anchor Plate ASTM - A36
2 1/2" 3 1/2" 2 1/2"
5"
2 1/2" 2 1/2"
PLAN - PLATE
ANCHOR PLATE DETAIL
Scale: 3"=1'-0"

℄ Light Standard
10"
Edge of Rail
1'd.
2 3/8" Galv. Conduit
2 - #4 added
3 - #4 ℄ added
#4 - Typical end added bars
3"
Reference - Edge of deck line
SECTION C AT BRIDGE
Scale: 1/2"=1'-0"
SIDE ELEVATION
TYPICAL ANCHOR BOLT DETAIL
Scale: 3"=1'-0"

℄ Light Standard
1'-3"
Adjacent bridge sidewalk thickness
Top of Ret. Wall
12" Radius
2 - #4 added
3 - #4 ℄ added
6 - #6 @ 9" added bars below each light standard. See note - sect. B
Optional Constr. Jt.
Reference bottom of adjacent bridge deck slab.
Reference strip line.
SECTION C AT RET. WALL
Scale: 1/2"=1'-0"

℄ Light Standard
Reference Edge of deck or strip line
℄ Anchor bolt location. See manufacturers drawings.
#4 @ 18" cont.
Waterproof membrane Type I - See Special Prov.
2 3/8" Galv. Conduit
Level
Adapter
3 - #4 ℄ added as shown
2 - #4 added
Anchor Plate ASTM - A-36
Drill 2 - 1 1/16" ϕ holes for 1" ϕ anchor bolts
ANCHOR PLATE FOR LIGHT STD
Scale: 1" = 1'-0"
SECTION D on bridge
Scale: 1/2"=1'-0"
DETAILS OF RAILING AT LIGHT STANDARD

SURVEY PLOTTED BY
DRAWN BY M.U.
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY T.A.F.T.O.

No.	NOTE BOOK	DATE
	ORIGINAL PLAN	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS METAL BRIDGE RAILING

(ALUMINUM - COMBINATION TYPE THREE RAIL)

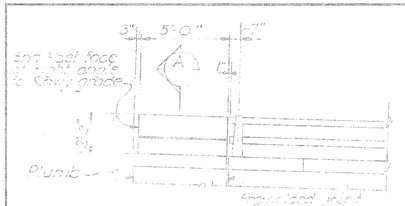
Scale: As Noted

SHEET No. S-3 OF 5 SHEETS

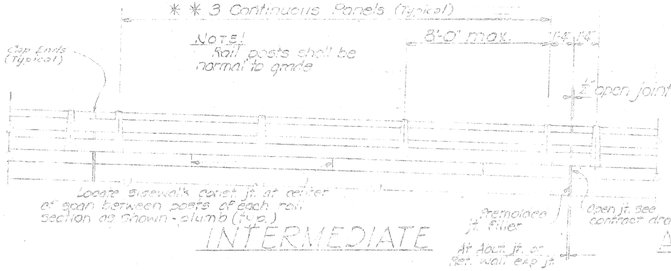
241

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NAWAH	HAW.	RH-1(19)84 Unit 2	1965	241(1)	276

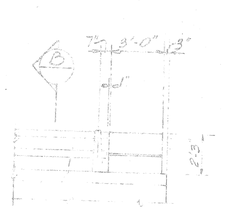
2/4/65
3/22/65
4/7/65
Revised: July 16, 1965



AT BRIDGE END POST



INTERMEDIATE



AT RETAINING WALL END POST

EXTERIOR RAILING ELEVATION

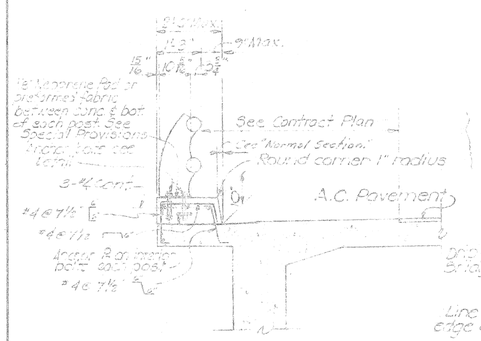
** NOTE:
4 continuous panels (Max.) will be permitted at ends of railing layout to avoid single panel.

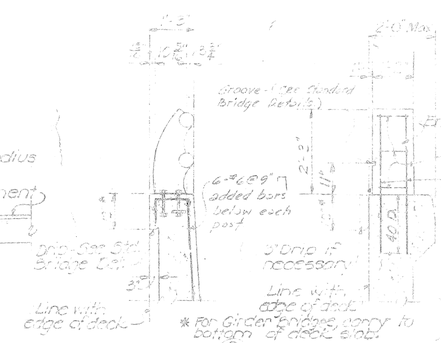
AT BRIDGE END POST

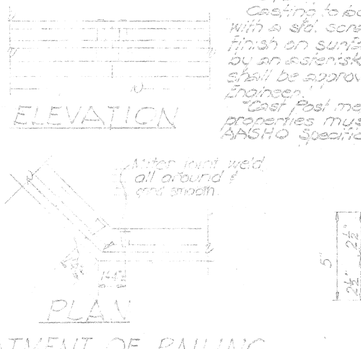
INTERMEDIATE

AT RETAINING WALL END POST

PLAN OF RAILING

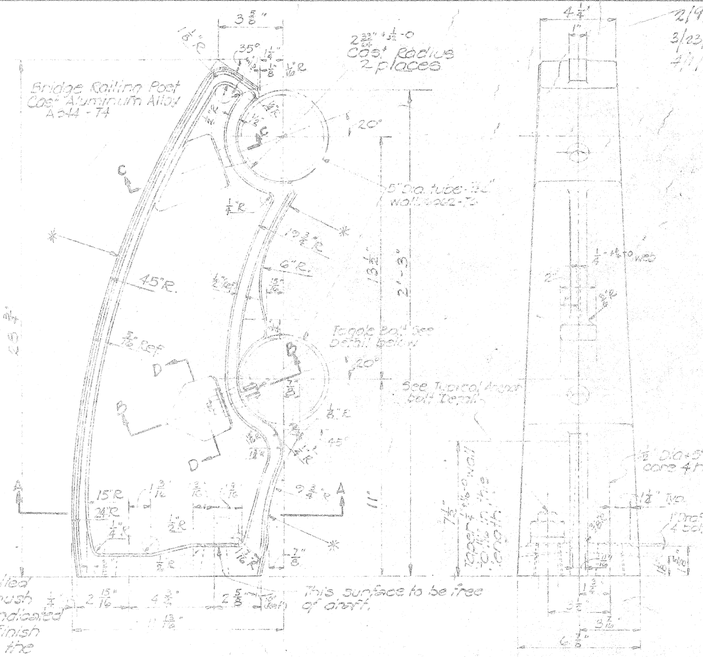






ELEVATION

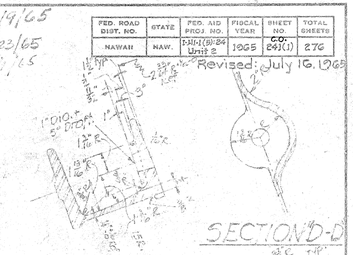
NOTE II
Casting to be supplied with a std. scratch brush finish on surfaces indicated by an asterisk (*). Finish shall be approved by the Engineer.
Cast Post mechanical properties must meet AASHO Specifications.

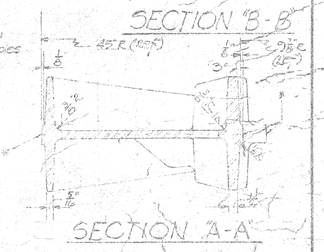


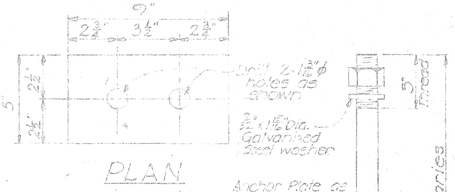
SIDE ELEVATION

END ELEVATION

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





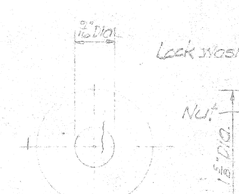


SIDE ELEVATION ANCHOR PLATE

BOLT

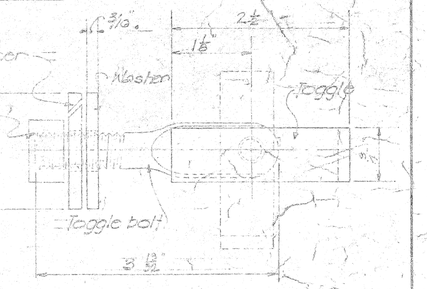
NOTE: 1⅛" - 7 N.C. Galvanized steel ASTM-A325 Anchor Bolts

TYPICAL ANCHOR BOLT ASSEMBLY FOR RAIL POST

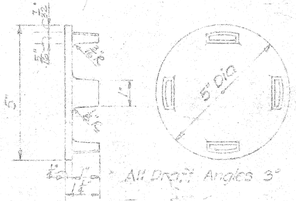


WASHER

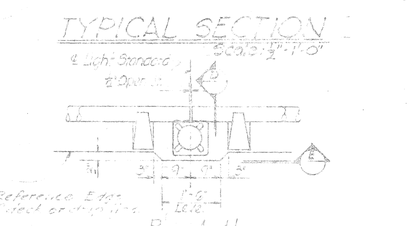
NOTE!
Toggle Bolt Mat'l - ½"-13 N.C. 1335 Steel - Steel Rod - Treated R.C. 32-36 ASTM-A 354
Toggle Mat'l - 1015 H.R. Steel, Pickled and Oiled to Juna Edge ASTM A 108
Washer Mat'l - SAE 1020 H.R. ETL. FL. ASTM-A7 Broad Chorp edges
Nut - ½"-13 Amer. Hex. nut - Heavy Mat'l - 1035 C.R. ST. - Blank treated ASTM-A325
Cadmium plating on all Type N.S. .0005" thick - ASTM-A165 (All parts)

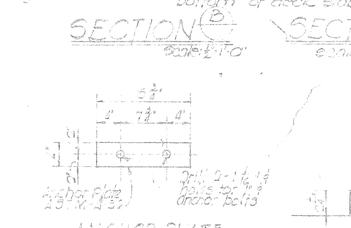


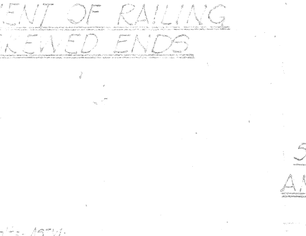
TOGGLE BOLT DETAILS
Full Scale



RAIL CAP DETAIL Scale ⅜"=1"







DETAILS OF RAILING AT LIGHT STANDARD ON BRIDGE

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL BRIDGE RAILING
(ALUMINUM TRAFFIC TYPE)

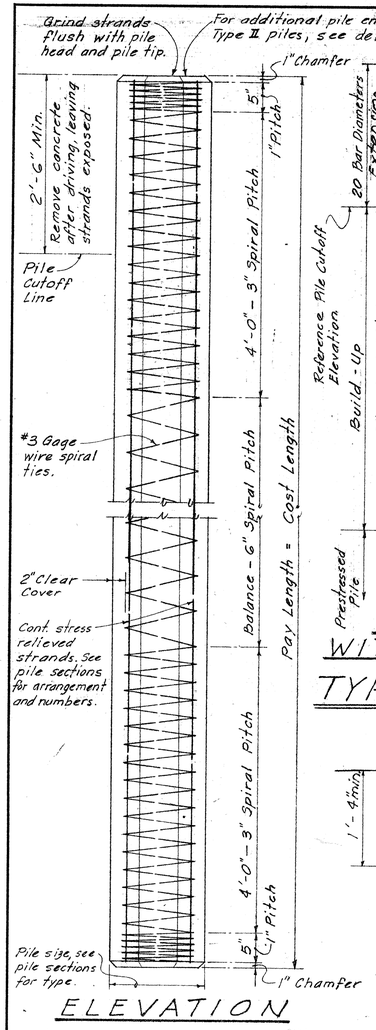
Scale: As Noted

SHEET No. OF SHEETS

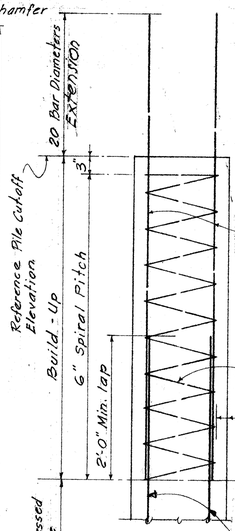
C. O. 241 (1)

PRINTED ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-HI-[illegible] Unit 2	1965	242	276



ELEVATION



BUILD-UP WITHOUT DRIVING

Note:
Concrete in pile build-ups without driving shall be class A-1 concrete. Concrete in pile build-ups with driving shall have a minimum compressive cylinder strength 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.

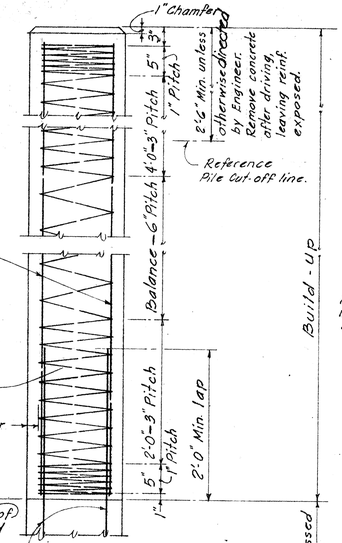
The minimum area of reinforcing steel shall be 1½% of the gross cross-section of concrete. Placement of bars shall be in a symmetrical pattern of not less than four bars.

#3 Gage wire spiral ties.

2" Clear cover

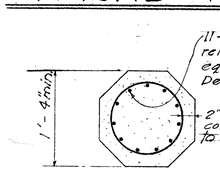
Concrete around top edge of pile shall be bushhammered to prevent feather edges.

Cont. stress relieved strands

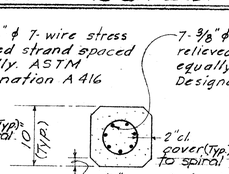


BUILD-UP WITH DRIVING

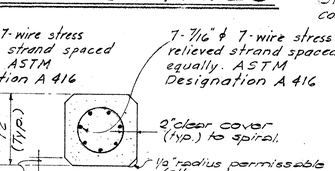
TYPICAL PILE BUILD-UP DETAILS



TYPE I

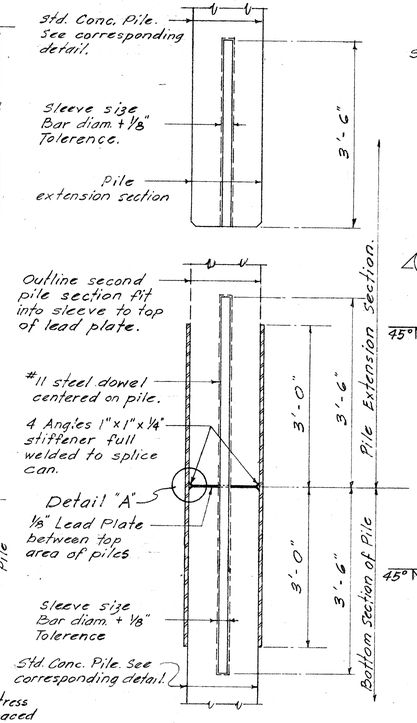


10" TYPE II

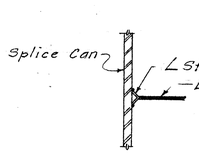


12" TYPE II

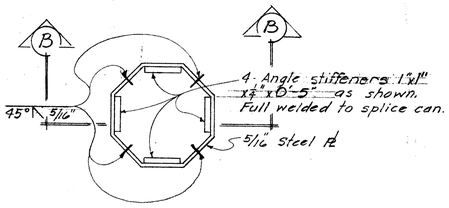
TYPICAL SECTIONS THRU PILES



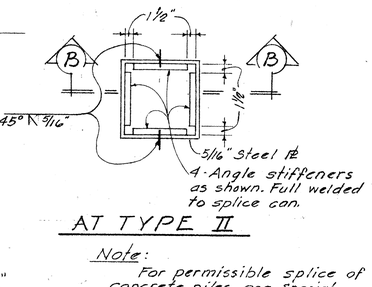
SECTION "B-B"



DETAIL "A"



AT TYPE I



AT TYPE II

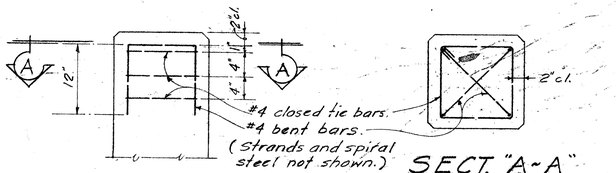
Note:
For permissible splice of concrete piles, see Special Provisions.

TYPICAL PILE SPLICE DETAILS

FOR PRECAST OR PRESTRESSED CONC. PILES WHEN CAST IN TWO OR MORE SECTIONS.

STANDARD PRESTRESSED CONCRETE PILES

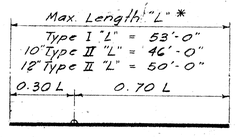
Note:
Spiral reinforcement shall be cold-drawn steel wire ASTM A-82.



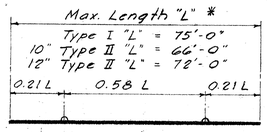
PART ELEV. SECT. "A-A"

PILE ENDS REINFORCING IN TYPE II PILES

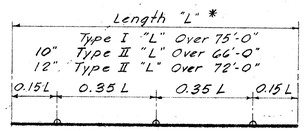
Note:
Unless special lifting devices are attached for pick-up, pick-up points shall be plainly marked on all piles after removal of the forms and all lifting shall be done at these points.
The use of special embedded or attached lifting devices, the employment of other pick-up points or any other method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



1 POINT PICK-UP



2 POINT PICK-UP



3 POINT PICK-UP

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PRESTRESSED CONCRETE PILES

Date: March 12, 1964

SHEET No. 54 OF 5 SHEETS

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

CLEARPRINT 1000-H

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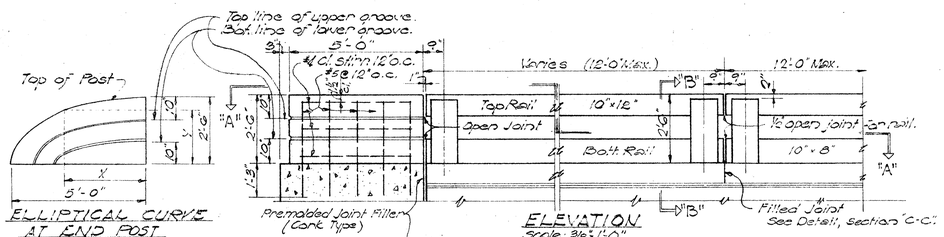
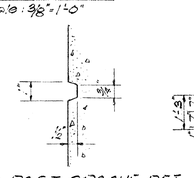
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	S-111-(18)24 Unit 2	1965	343	270

Revised
June 64
April 65

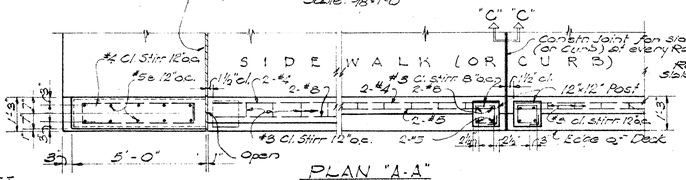


ELLIPTICAL CURVE AT END POST
Scale: 3/8"=1'-0"

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



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



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

ELLIPSE COORDINATES

Top of Post

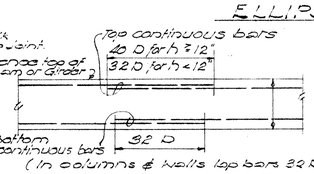
X	0	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-3"	4'-6"	4'-9"	4'-10½"	5'-0"
Y	2'-6"	2'-5 3/16"	2'-4 5/16"	2'-3½"	2'-2"	2'-0"	1'-9 7/16"	1'-6"	1'-3 13/16"	1'-1 7/16"	0'-11 3/16"	0'-6 11/16"	0"

Top Line of Upper Groove

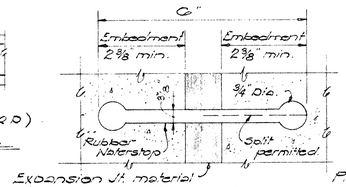
X	0	6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-3"	3'-6"	3'-9"	4'-0"	4'-1"	4'-2"
Y	1'-8"	1'-7 3/8"	1'-7 7/16"	1'-6 11/16"	1'-5 9/16"	1'-4"	1'-1 7/8"	1'-0½"	10⅜"	8 11/16"	5 5/16"	4"	0"

Bottom Line of Lower Groove

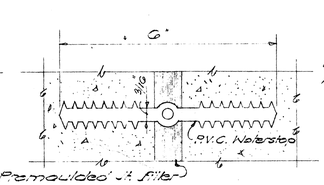
X	0	6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-2"	3'-3"	3'-4"			
Y	10"	9 11/16"	9 9/16"	8 15/16"	8"	6 5/16"	5 5/16"	4 3/8"	3⅛"	2¼"	0"		



TYPICAL LAP DETAIL



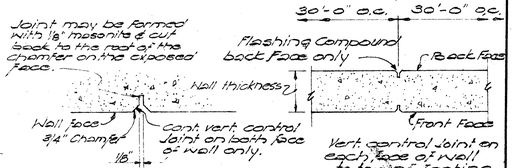
TYPE I



TYPE II

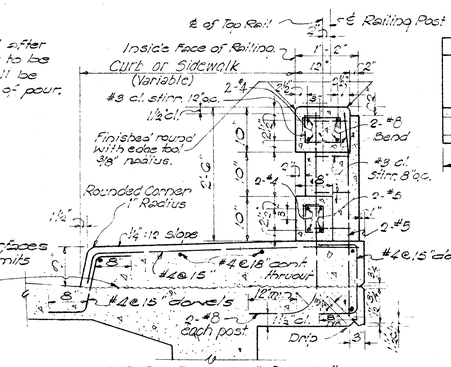
NOTE
For additional waterstop information see Special Provisions.

WATERSTOP DETAILS
Scale: Half Size

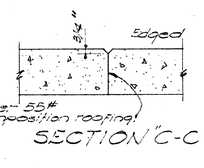


ALTERNATE CONTRACTION JOINT DETAIL

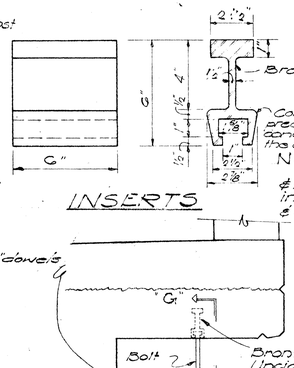
NOTE:
Sidewalk, Curb and Railing to be poured after release of falsework. Forms for railing and endpost to be made of plywood. Bottom forms for top rails shall be kept in place a minimum of 14 days from date of pour.



SECTION "B-B" Scale: ¾"=1'-0"

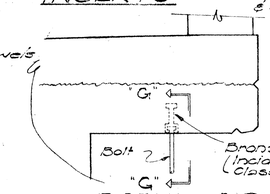


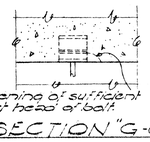
SECTION "C-C"



INSERTS

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



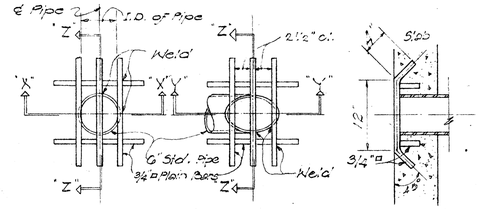


SECTION "G-G"

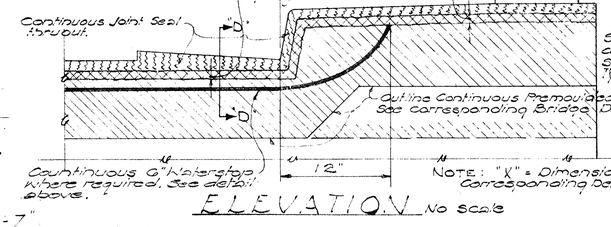
TYPICAL CONCRETE RAILING DETAILS Scale: As Noted

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

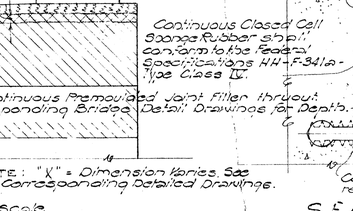
NOTE:
Metal drains shall be considered incidental to Class A-1 Concrete in both concrete and steel bridges and will not be paid for separately.
Assemblage of drainage and pipe shall be hot-dip galvanized after all welding is completed.



SECTION "Z-Z"

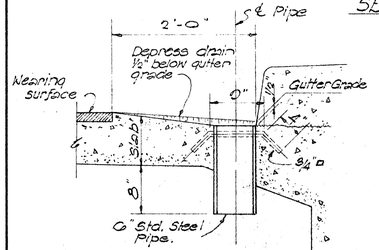


ELEVATION No scale

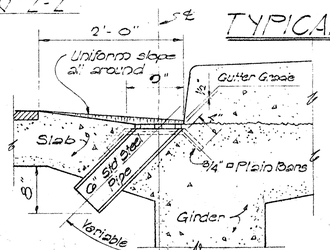


SECTION "D-D"

TYPICAL BRIDGE DECK EXPANSION JOINT DETAIL



SECTION "X-X"



SECTION "Y-Y"

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

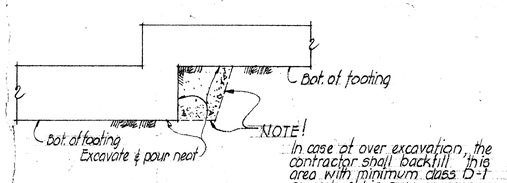
Depressed "V" Letters ⅜" deep.

3" NAME ½" DATE

Use correct name of bridge. Date of Year built.

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST

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.



TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP
NO SCALE

GENERAL NOTES

1 - Class of concrete to be used in different parts of the structure are as noted on plans.

2 - 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.

3 - Concrete seats receiving steel plates, lead plates or neoprene pads shall be poured monolithically with supporting structures & top surfaces of the concrete seats shall be finished with a steel trowel to a smooth level at the elevation shown on the plans.

4 - Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.

5 - Reinforcing bars shall be securely tied at all intersections & lap splices & shall be held in place during pouring to maintain their proper locations as shown on plans.

6 - Splicing of reinforcing shall be done as shown in above sketch except where shown otherwise. Splices are to be staggered. Splices in main bridge bars are permitted only in bars exceeding 60'-0" in length at points indicated by the Engineer. Splices to be electrically welded shall be according to detail & specifications. No allowance will be made in the quantities for extra weight of steel required for splices not shown on the plans.

Minimum spacing between parallel bars shall be 1½ times the diameter of bars, but in no case shall the clear distance between the bars be less than 1½ times the maximum size of the coarse aggregate.

All dimensions relating to reinforcing are to centers of bars unless otherwise noted.

7 - Forms for all exposed surfaces of separation structures including retaining walls (except round columns) shall be plywood. Forms for round columns shall be made of material that results in smooth finishes & true dimensions as shown on the plans. Forms for prestressed concrete members shall be either metal or plywood.

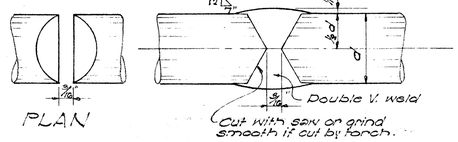
8 - Concrete finish - See Special Provisions.

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

10 - Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.

11 - Except as otherwise noted on drawings all exterior corners & re-entrant angles in concrete work shall be chamfered ¾" x ¾". See Standard Specifications.

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



REINFORCING BAR SPLICE
Scale: Full Scale

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD BRIDGE DETAILS

April 6, 1964

SHEET No. 5 OF 5 SHEETS

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ED ON CLEARPRINT 1000-H