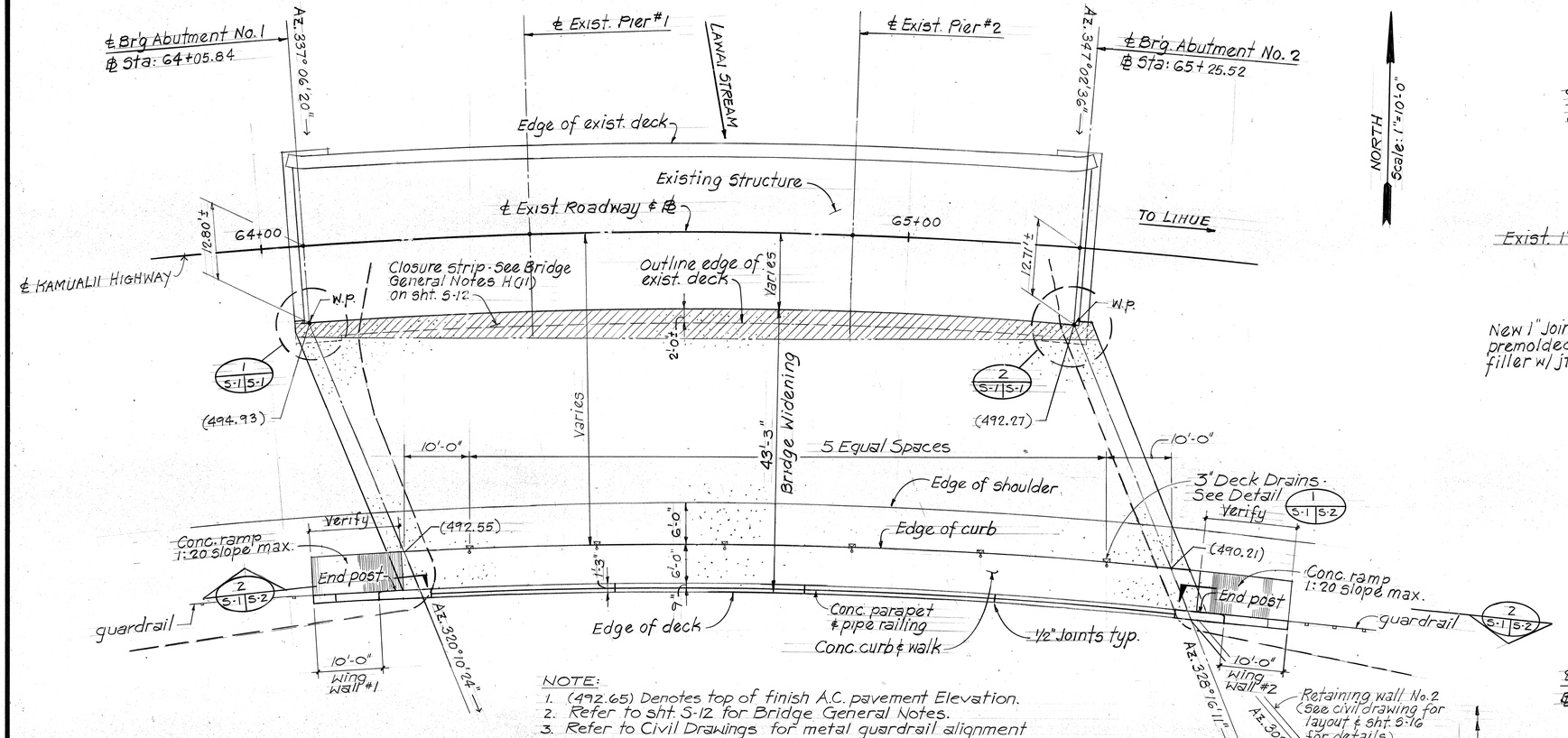
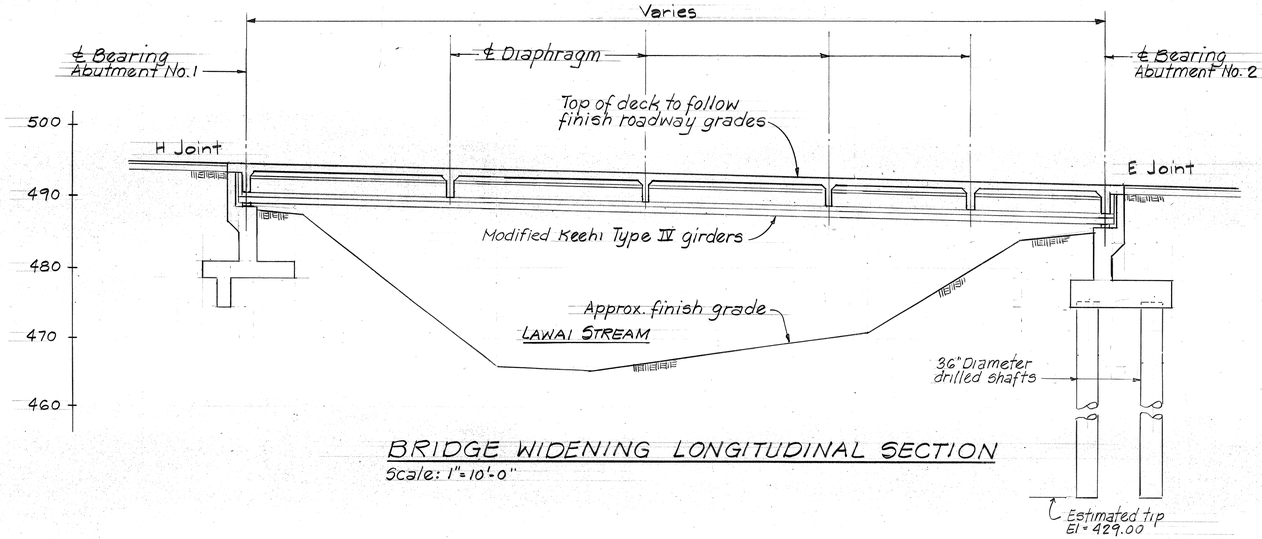
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	43	72

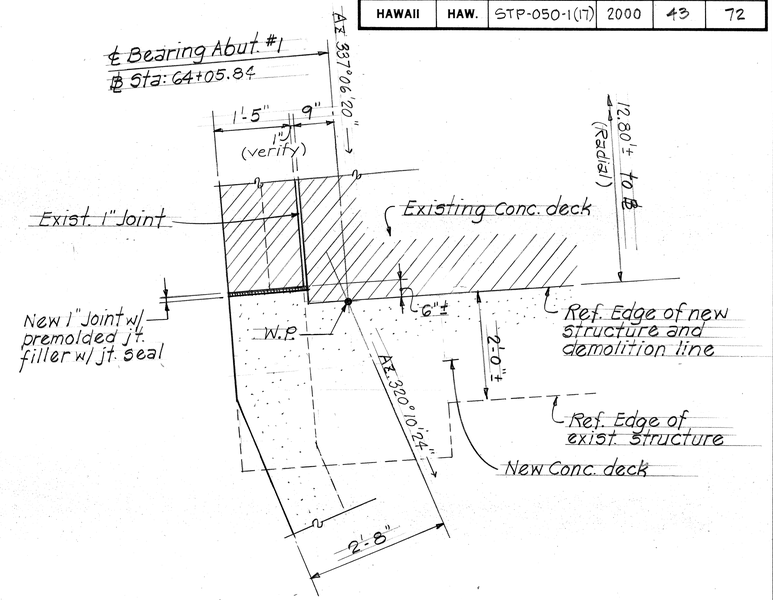


NOTE:
1. (492.65) Denotes top of finish A.C. pavement Elevation.
2. Refer to sht. S-12 for Bridge General Notes.
3. Refer to Civil Drawings for metal guardrail alignment

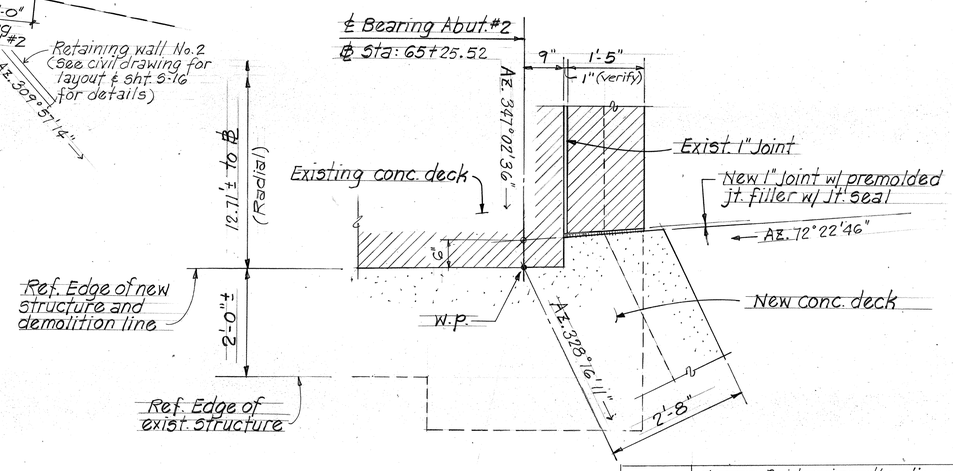
BRIDGE WIDENING LAYOUT PLAN
Scale: 1"=10'-0"



BRIDGE WIDENING LONGITUDINAL SECTION
Scale: 1"=10'-0"



1 / S-1 | S-1 DETAIL PLAN
Scale: 3/4"=1'-0"



2 / S-1 | S-1 DETAIL PLAN
Scale: 3/4"=1'-0"

Date	Revision
7/30/02	Revise Bridge azmuths, dimensions, stations, and deck elevations.
6/5/02	Revise Abutment Footings on Longitudinal Section
5/29/02	Revise Bridge Deck Elevations

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

GEORGE K. NISHIMURA
REGISTERED PROFESSIONAL ENGINEER
No. 1388-S
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BRIDGE LAYOUT PLAN LONGITUDINAL SECTION AND DETAIL PLANS

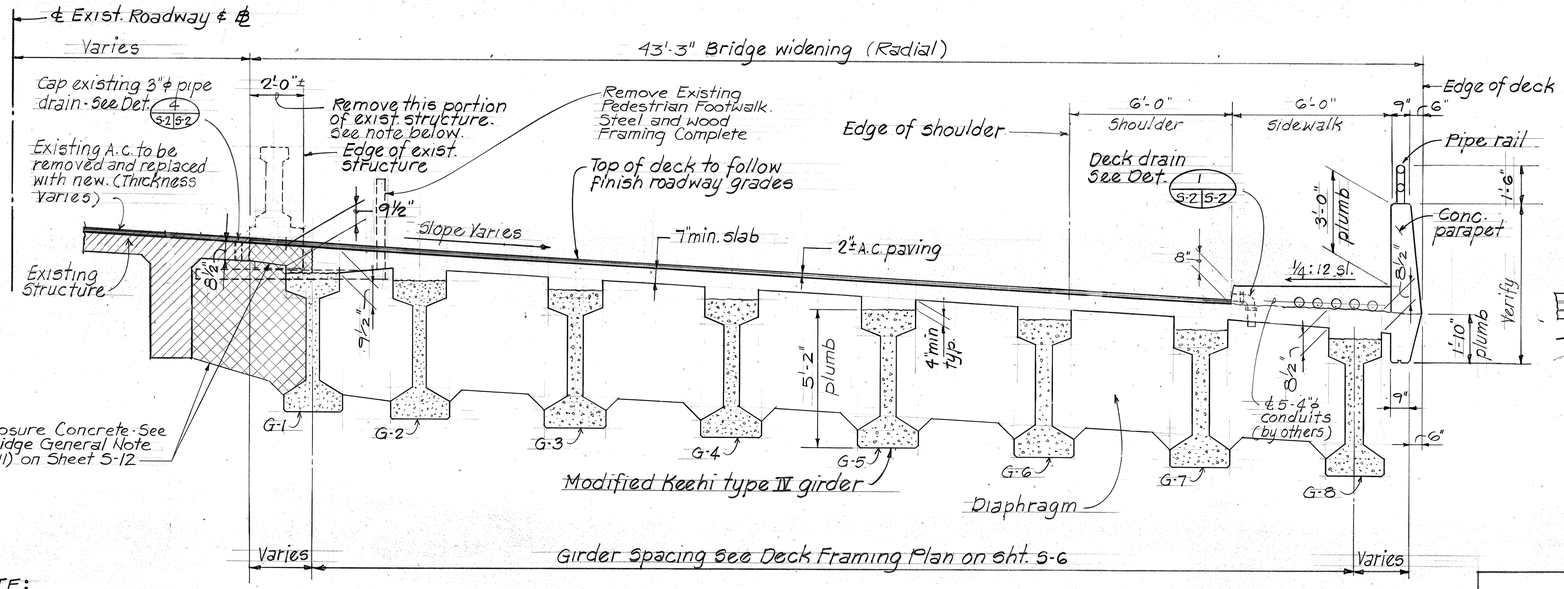
KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
FEDERAL-AID PROJ. NO. STP-050-1(17)
SCALE: AS NOTED DATE: OCT. 6, 1999

SHEET No. S-1 OF 17 SHEETS

137218

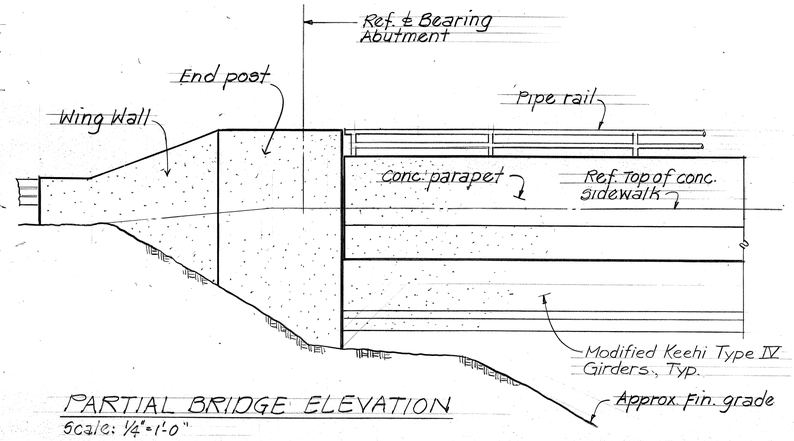
C.O. 43

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	44	72



NORMAL SECTION @ BRIDGE WIDENING

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



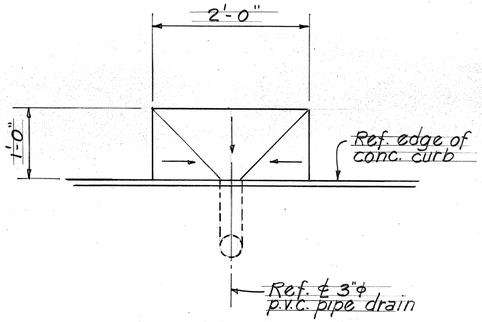
PARTIAL BRIDGE ELEVATION

Scale: ¼"=1'-0"

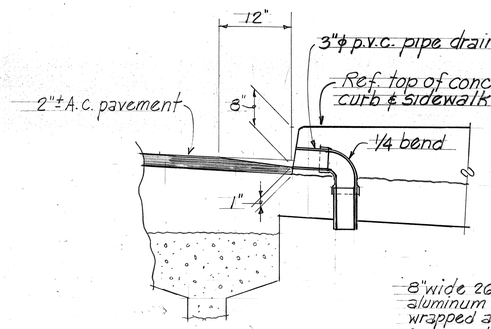
NOTE:
Existing bridge railing section shall not be removed until the contractor is ready for closure concrete phase. Only portions of existing concrete may be removed to allow installation of girder "G-1."

ESTIMATED QUANTITIES

ITEM NO.	CONTRACT ITEMS (STRUCTURAL ITEMS ONLY).	QUANTITIES	UNITS
202.0200	Removal of portion of existing conc. structure.	(50)	(C.Y.) L.S.
202.0440	Removal of existing wooden walkway and railing.	(450)	(S.F.) L.S.
206.6000	Structure, excavation for bridge abutments, wingwalls, and retaining walls.	2,100	C.Y.
206.7000	Structural backfill for bridge abutments, wingwalls, and retaining walls.	1,350	C.Y
206.8200	Filter material.	195	C.Y.
503.1090	Concrete in bridge, abutments, wingwalls, and retaining walls, excluding footings.	505	(C.Y.) L.S.
503.1093	Concrete in abutments, wingwalls, and retaining walls footings.	380	(C.Y.) L.S.
504.4501	Type IV (Modified Keehi) prestressed concrete girders.	950	(L.F.) L.S.
507.1501	Metal railing on parapet.	115	L.F.
507.7001	Concrete parapet for bridge (Including end post)	130	L.F.
511.0100	Drilled shaft - 36 inch diameter	469	L.F.
511.0200	Unclassified shaft excavation.	469	L.F.
511.0600	Furnishing drilled shaft drilling equipment.	(1)	(each) L.S.
602.0091	Reinforcing steel.	163,000	(lbs) L.S.



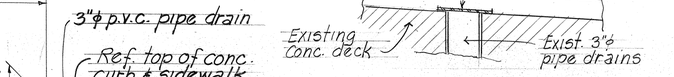
PLAN



SECTION

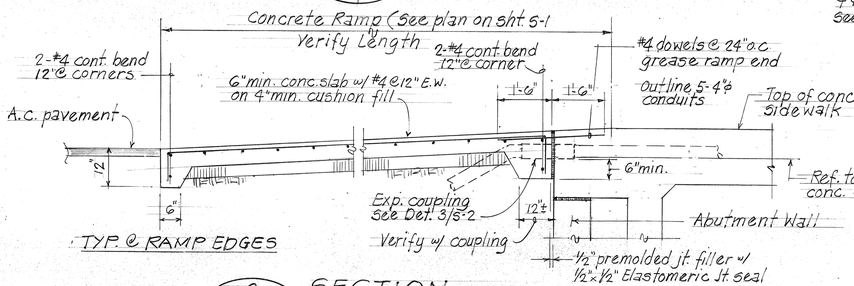
DECK DRAIN DETAIL

1 | S-1, S-2 | S-2 — Scale: 1"=1'-0"



4 | S-2 | S-2 DETAIL @ EXISTING DRAIN

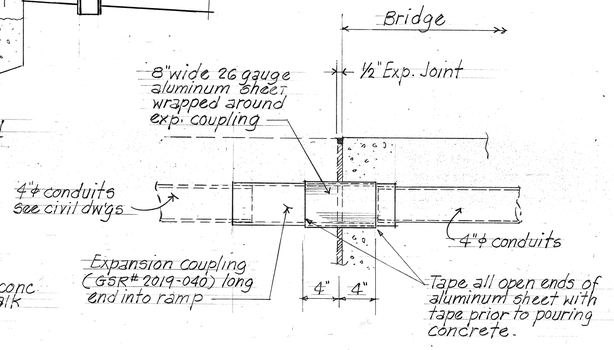
Scale: 1½"=1'-0"



TYP. @ RAMP EDGES

2 | S-1 | S-2 SECTION

Scale: ½"=1'-0"



3 | S-2 | S-2 EXPANSION COUPLING DETAIL

N.T.S.

Date	Revision
11/30/02	Revise dimensions, quantities and add conduits.
5/29/02	Add detail at existing deck drains. and note thickness varies for new A.C. over existing structure.
3/18/02	Revise 5-4"ϕ conduits to be by others & revise estimated quantities.

GEORGE K. NISHIMURA — REGISTERED PROFESSIONAL ENGINEER — No. 1388-E — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BRIDGE SECTION, PARTIAL ELEVATION & ESTIMATED QUANTITIES

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD

FEDERAL-AID PROJ. NO. STP-050-1(17)

SCALE: AS NOTED — DATE: OCT. 8, 1999

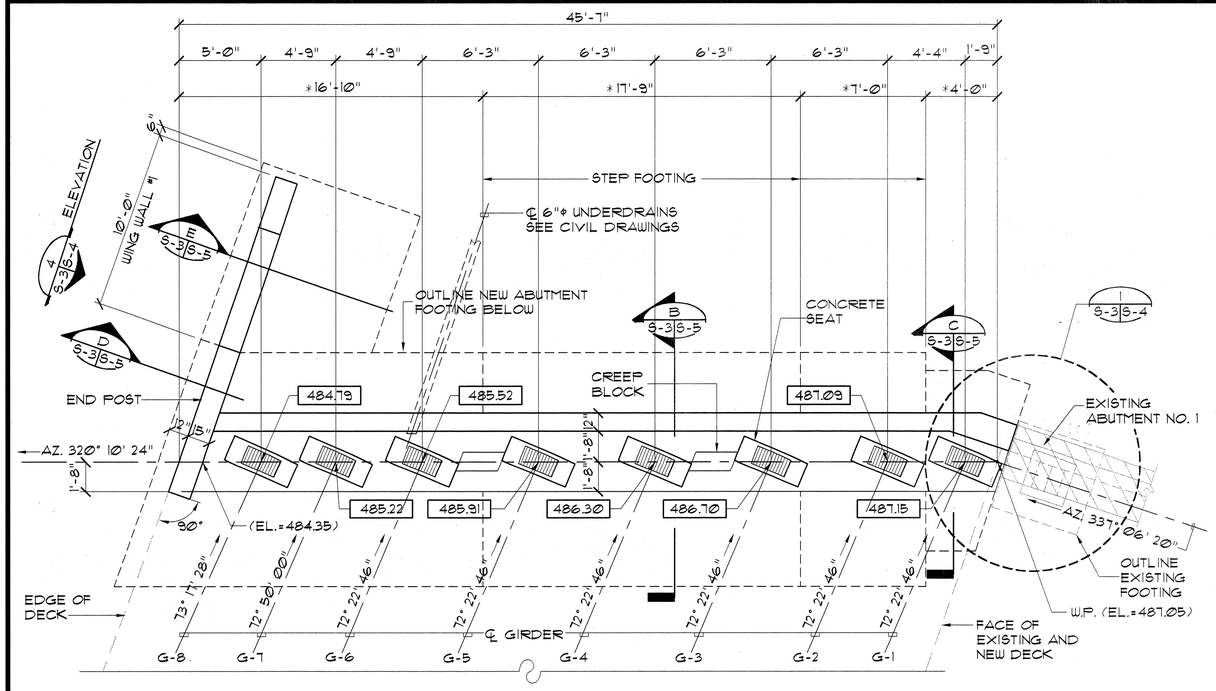
SHEET No. S-2 OF 17 SHEETS

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

137218

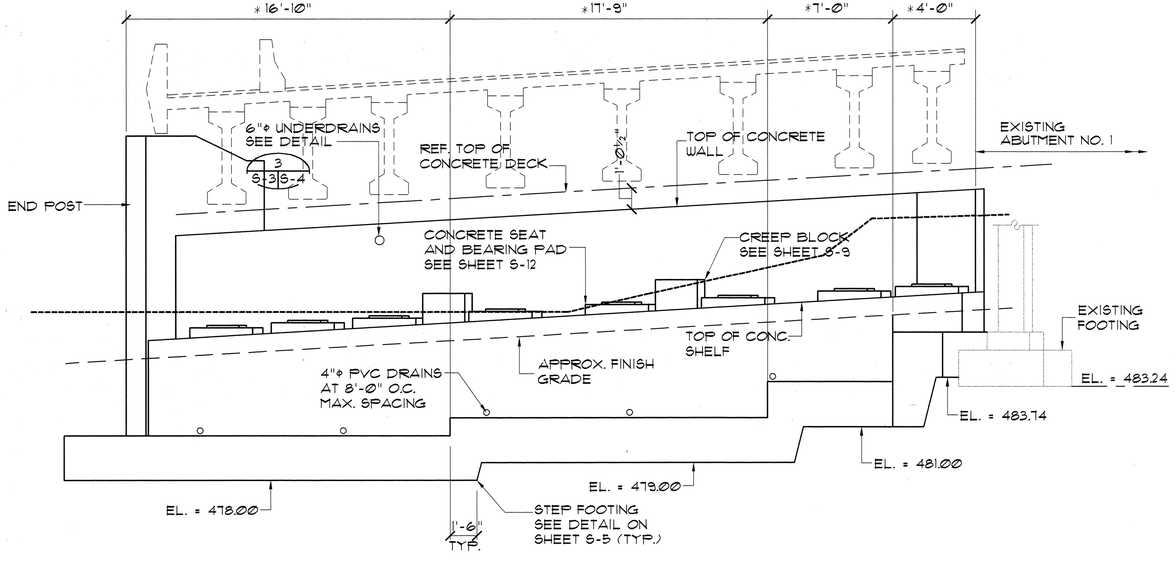
C.O. 44

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	45	72



ABUTMENT NO. 1 PLAN

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



ABUTMENT NO. 1 ELEVATION

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

NOTE:

1. TOP OF CONCRETE WALL TO FOLLOW TOP OF FINISH CONCRETE DECK GRADES.
2. TOP OF CONCRETE SEAT TO FOLLOW TOP OF FINISH CONCRETE DECK GRADES AT ℄ BEARING.
3. FOR GIRDER BEARING AND CONCRETE SEAT DETAIL - SEE SHEETS S-11 AND S-12.
4. * DENOTES DIMENSION FOR STEP FOOTING AT ℄ BEARING ABUTMENT NO. 1.
5. 000.00 DENOTES TOP OF SEAT ELEVATION.
6. (EL.=000.00) DENOTES TOP OF SHELF ELEVATION.

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

GEORGE K. NISHIMURA
LICENSED PROFESSIONAL ENGINEER
No. 1388-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Date	Revision
5/29/02	Revise Girder Seat And Shelf Elevation
3/18/02	Deleted Abutment No. 2 Plan And Elevation
1/30/02	Revise Bridge Azmuths, Dimensions, Deck Elevations And Footing Elevations.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

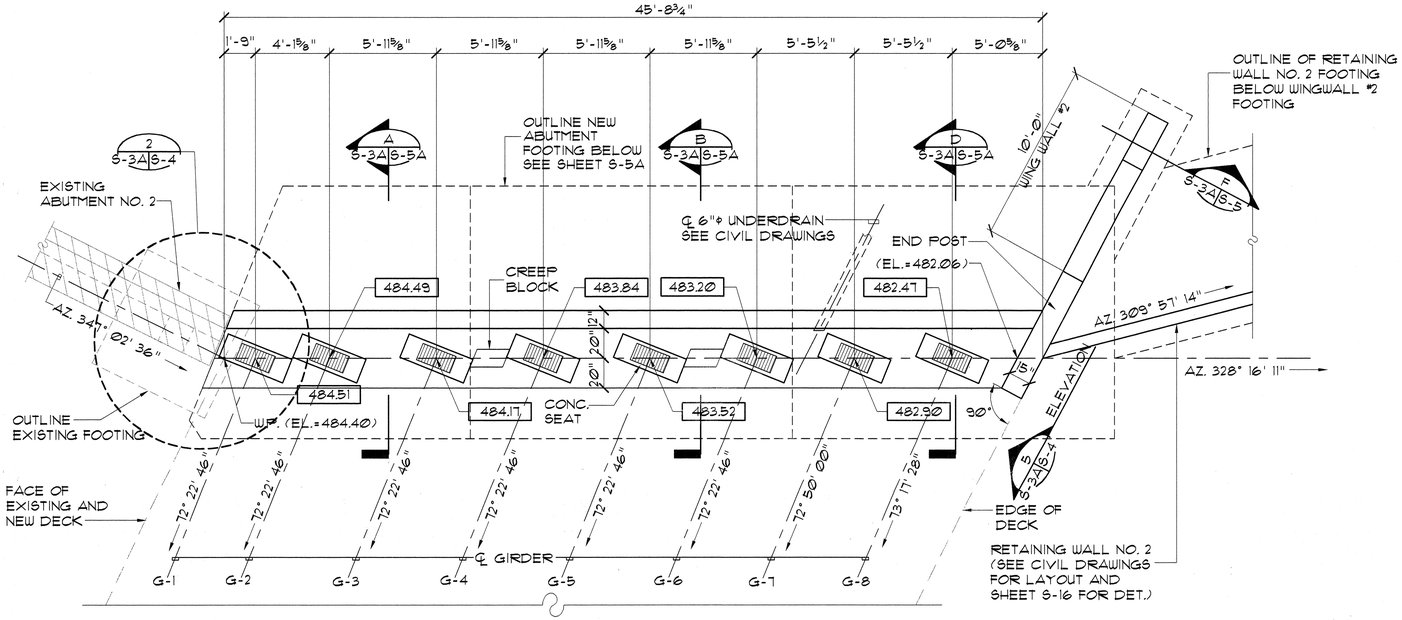
ABUTMENT NO. 1 PLAN AND ELEVATION

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
PROJECT NO. STP-050-1(17)

SHEET No. S-3 OF 17 SHEETS

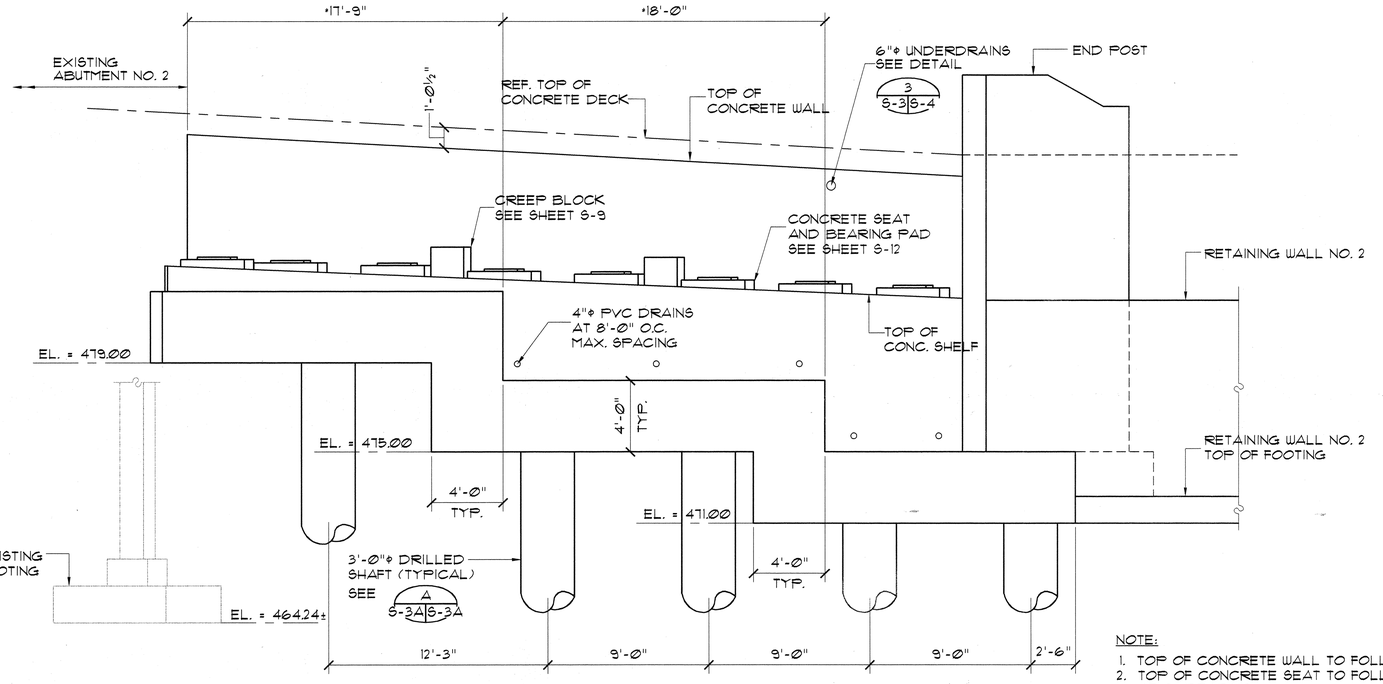
C.O. 45

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	45A	72



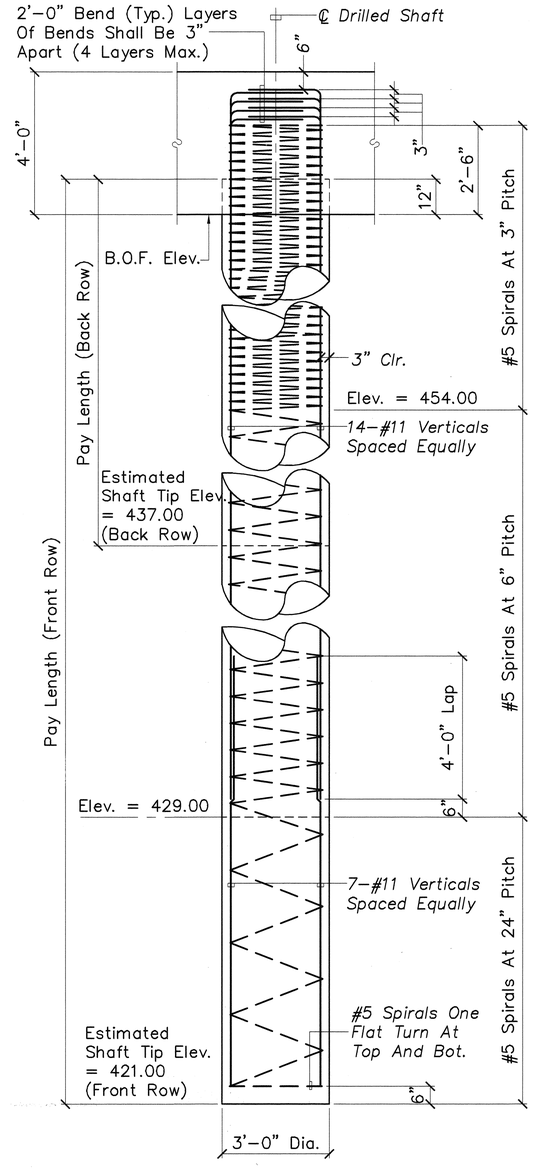
ABUTMENT NO. 2 PLAN

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

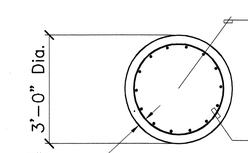


ABUTMENT NO. 2 ELEVATION

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



ELEVATION



SECTION

Notes:

1. Drilled Shaft Concrete Shall Be 4000 PSI Strength At 28 Days.
2. Concrete Spacers Shall Be Used To Maintain The Reinforcement Cage In Position Within The Shaft.
3. Spirals May Be Discontinuous At Footing Reinforcement To Allow For Placing Of Footing Reinforcement. The Discontinuous Spirals Shall Be Terminated With A 135° Hook Around Vertical Reinforcement.
4. Vertical Bars With Hooked Ends Shall Be Provided At All Drilled Shafts. The Hooked Ends Shall Be Bent Into The Drilled Shaft.

DRILLED SHAFT DETAILS

A S-3A | S-3A Not To Scale

NOTE:

1. TOP OF CONCRETE WALL TO FOLLOW TOP OF FINISH CONCRETE DECK GRADES.
2. TOP OF CONCRETE SEAT TO FOLLOW TOP OF FINISH CONCRETE DECK GRADES AT ℄ BEARING.
3. FOR GIRDER BEARING AND CONCRETE SEAT DETAIL - SEE SHEETS S-11 AND S-12.
4. * DENOTES DIMENSION FOR STEP FOOTING AT ℄ BEARING ABUTMENT NO. 2.
5. 000.00 DENOTES TOP OF SEAT ELEVATION.
6. (EL.=000.00) DENOTES TOP OF SHELF ELEVATION.

GEORGE K. NISHIMURA LICENSED PROFESSIONAL ENGINEER No. 1388-S HAWAII, U.S.A.

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Date	Revision
6/5/02	Revise Drilled Shaft Location And Detail
5/29/02	Revise Girder Seat And Bottom Of Footing Elevations
3/18/02	Sheet Added

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT NO. 2 PLAN AND ELEVATION, DRILLED SHAFT DETAILS

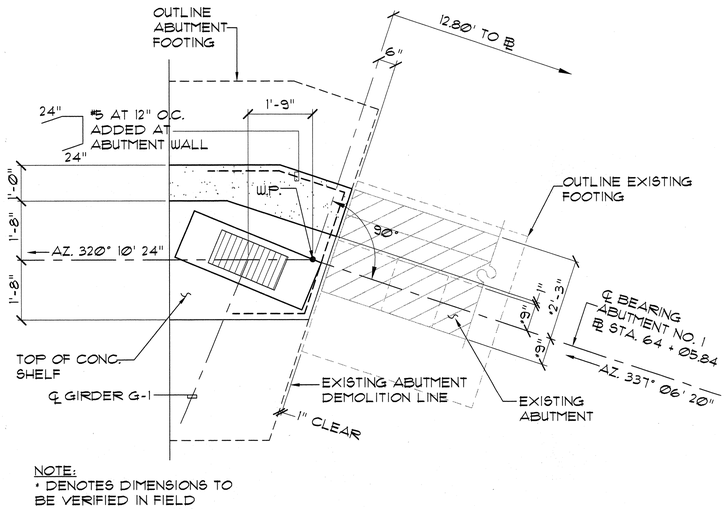
KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
PROJECT NO. STP-050-1(17)

SHEET No. S-3A OF 17 SHEETS

C.O. 45A

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

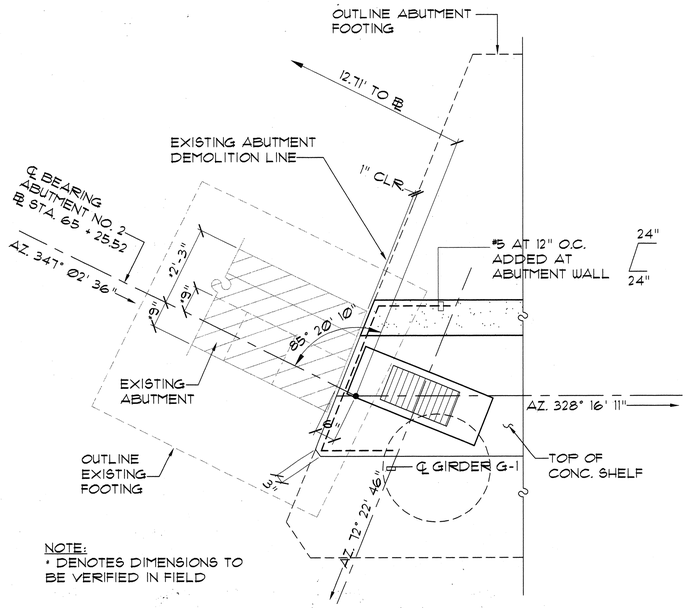
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	46	72



DETAIL AT NEW ABUTMENT TO EXISTING ABUTMENT

1 ABUTMENT NO. 1

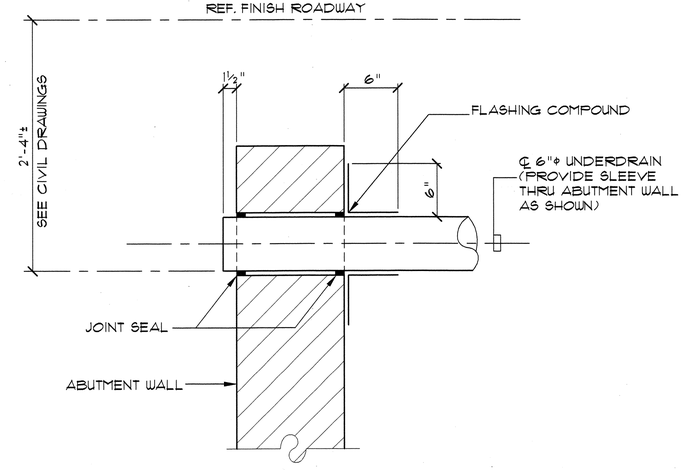
S-3 | S-4 SCALE: 1/2"=1'-0"



DETAIL AT NEW ABUTMENT TO EXISTING ABUTMENT

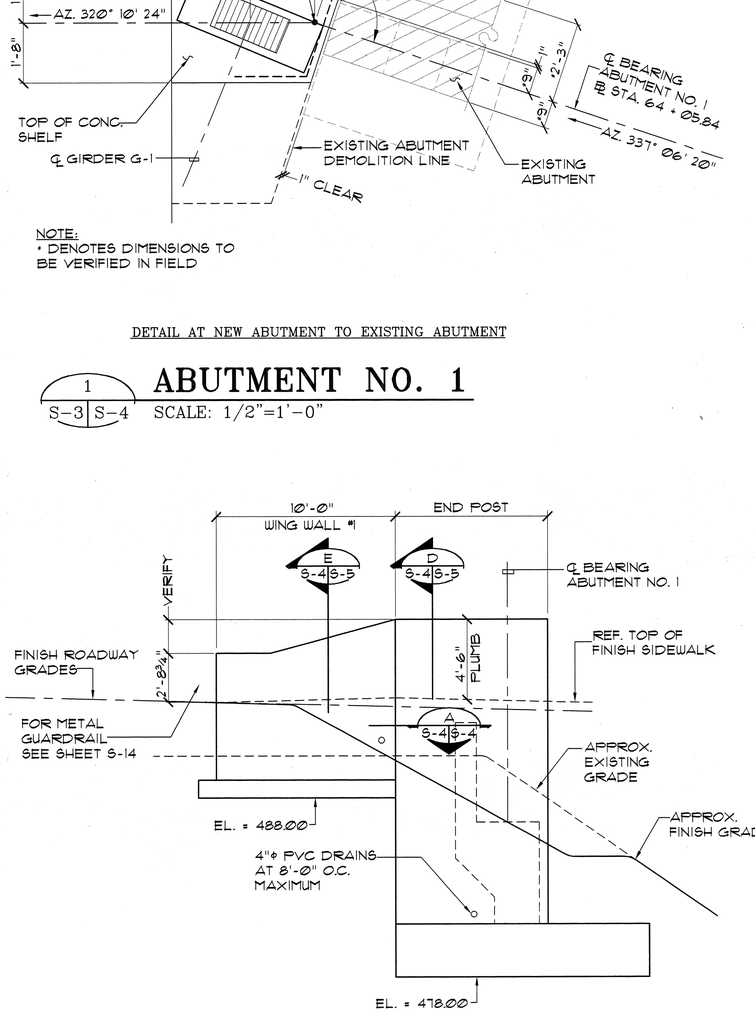
2 ABUTMENT NO. 2

S-3A | S-4 SCALE: 1/2"=1'-0"



3 DETAIL AT UNDERDRAIN

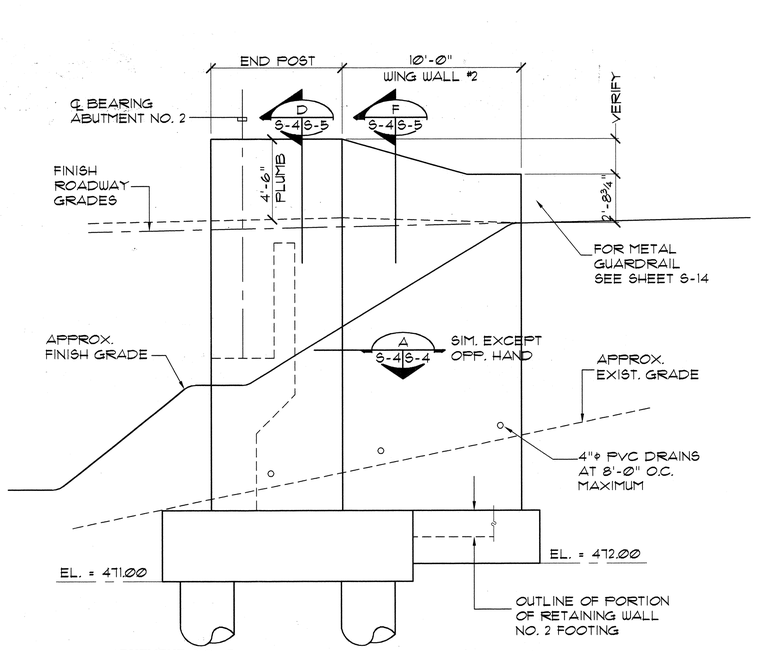
S-3 | S-4 SCALE: 1 1/2"=1'-0"



ABUTMENT NO. 1

4 WING WALL AND END POST ELEV.

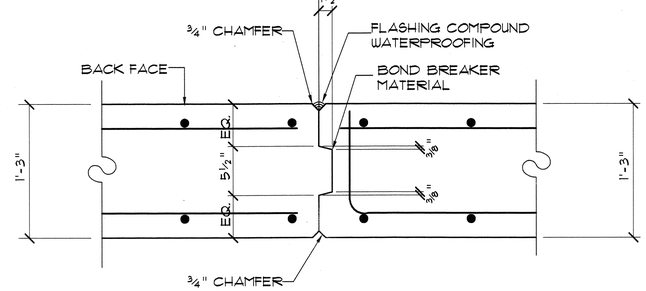
S-3 | S-4 SCALE: 1/4"=1'-0"



ABUTMENT NO. 2

5 WING WALL AND END POST ELEV.

S-3A | S-4 SCALE: 1/4"=1'-0"



A SECTION

S-4 | S-4 SCALE: 1 1/2"=1'-0"

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

3/18/02	Revised Abutment No. 2, Wing Wall And End Post Elevation
1/30/02	Revise Bridge Azmuths, And Dimensions
Date	Revision

GEORGE K. NISHIMURA
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HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

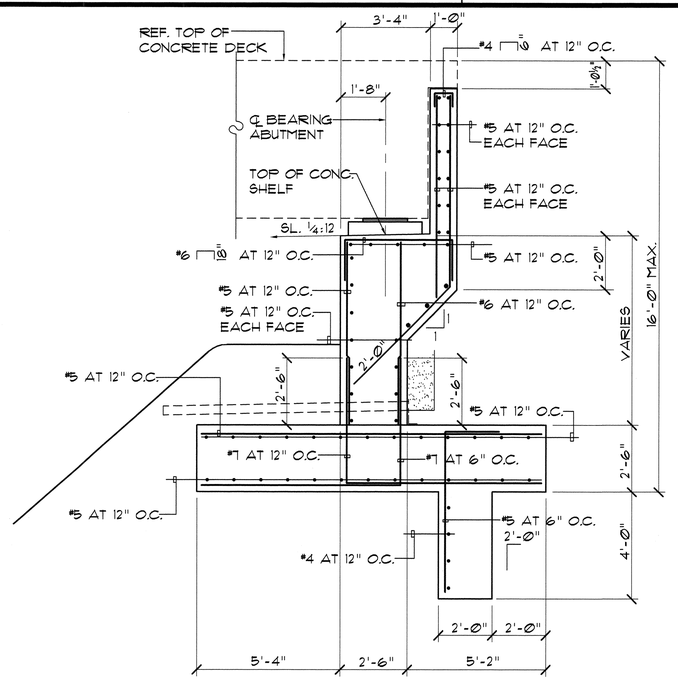
ABUTMENT NO. 1 AND NO. 2 DETAILS

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
PROJECT NO. STP-050-1(17)

SHEET No. S-4 OF 17 SHEETS

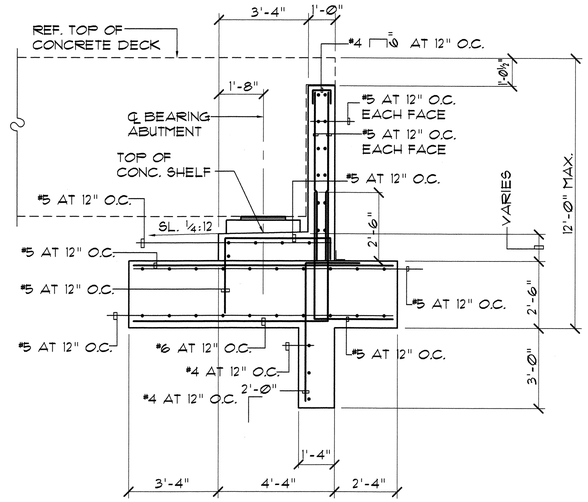
C.O. 46

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	47	72



B S-3 | S-5 **ABUTMENT WALL SECT.**

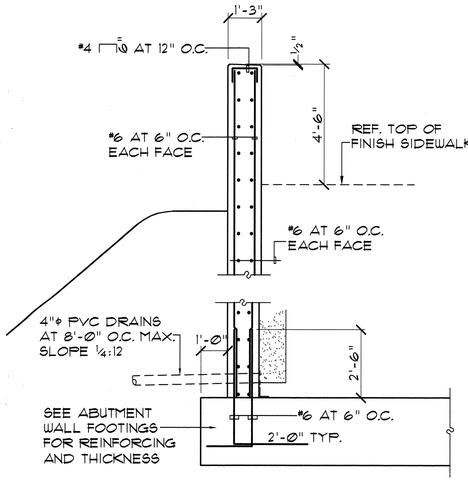
SCALE: 3/8"=1'-0"



C S-3 | S-5 **ABUTMENT WALL SECT.**

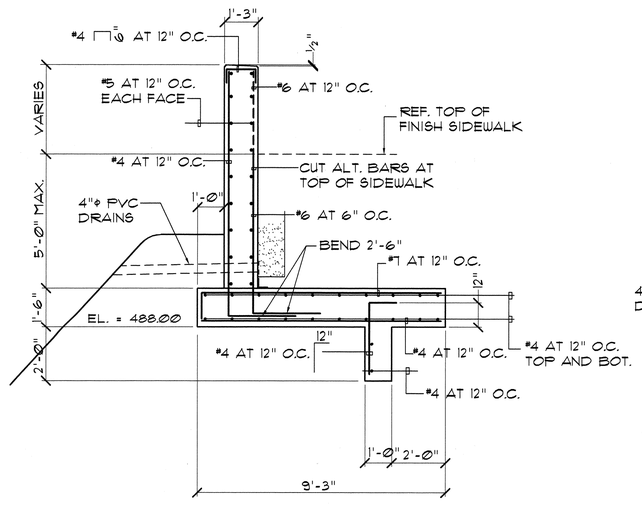
SCALE: 3/8"=1'-0"

NOTE: REFER TO STANDARD PLAN B-03 FOR ABUTMENT AND WING WALL STRUCTURAL EXCAVATION AND BACKFILL PAY LIMITS



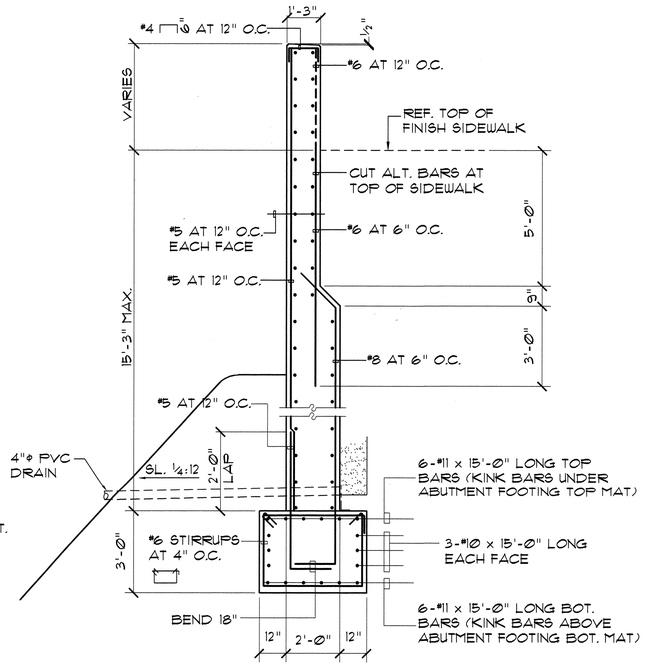
D S-4 | S-5 **END POST SECT.**

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



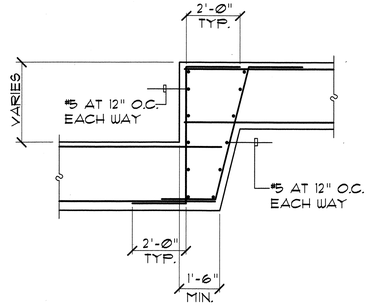
E S-4 | S-5 **WING WALL #1 SECTION**

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



F S-3A, S-4, S-5A | S-5 **WING WALL #2 SECTION**

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



TYP. STEP FOOTING DETAIL

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

Date	Revision
3/18/02	Revised Wing Wall No. 2 Section
1/30/02	Revise Footing Elevations

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT NO. 1 AND NO. 2 SECTIONS AND DETAILS

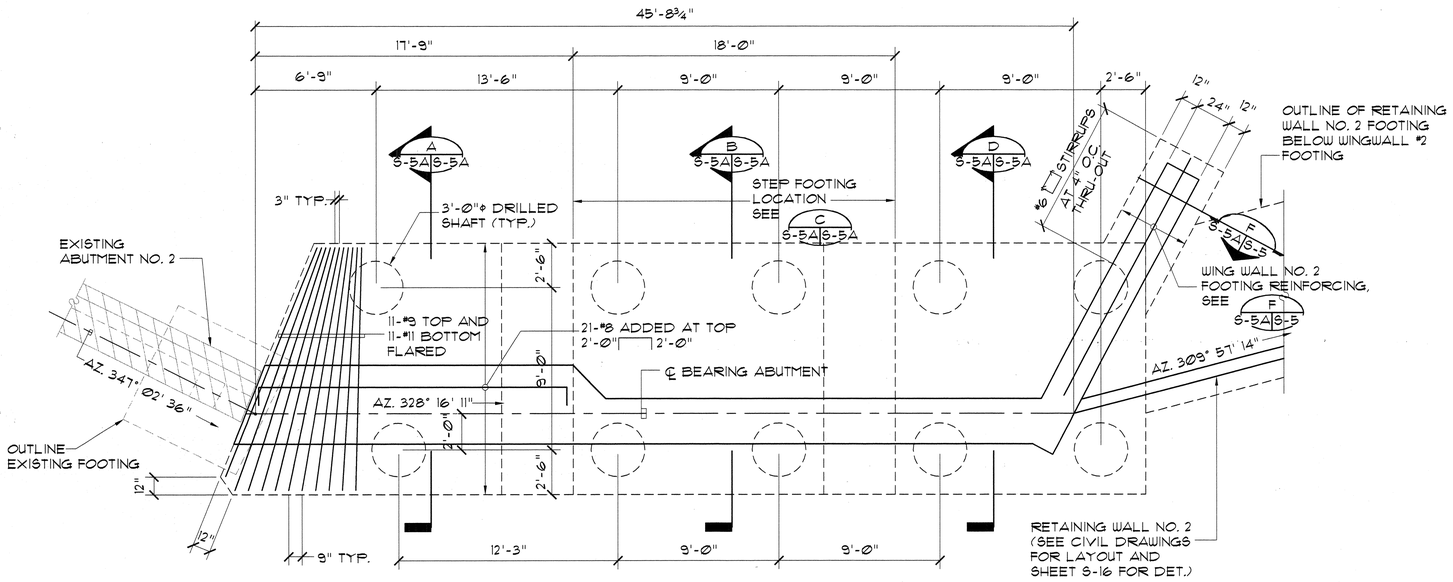
KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
PROJECT NO. STP-050-1(17)

GEORGE K. NISHIMURA
LICENSED PROFESSIONAL ENGINEER
No. 1388-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

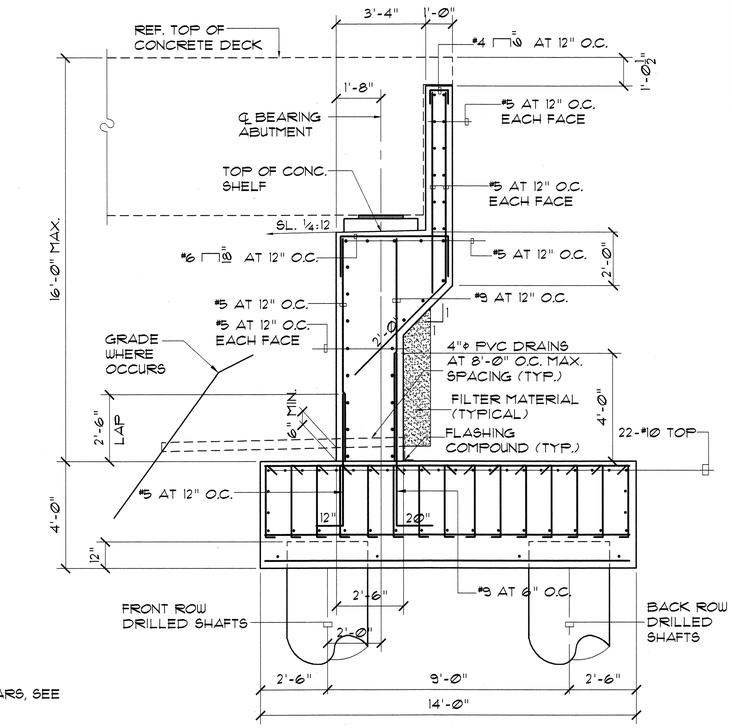
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
ORIGINAL SIGNED
NOTE BOOK
No.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	47A	72



ABUTMENT NO. 2 FOUNDATION PLAN

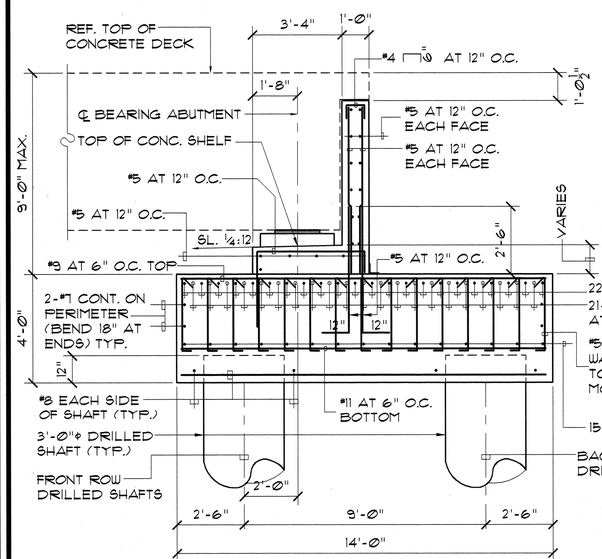
SCALE: 1/8"=1'-0"



NOTE: FOR FOOTING REINFORCING, SEE A/S-5A

D ABUTMENT WALL SECT.

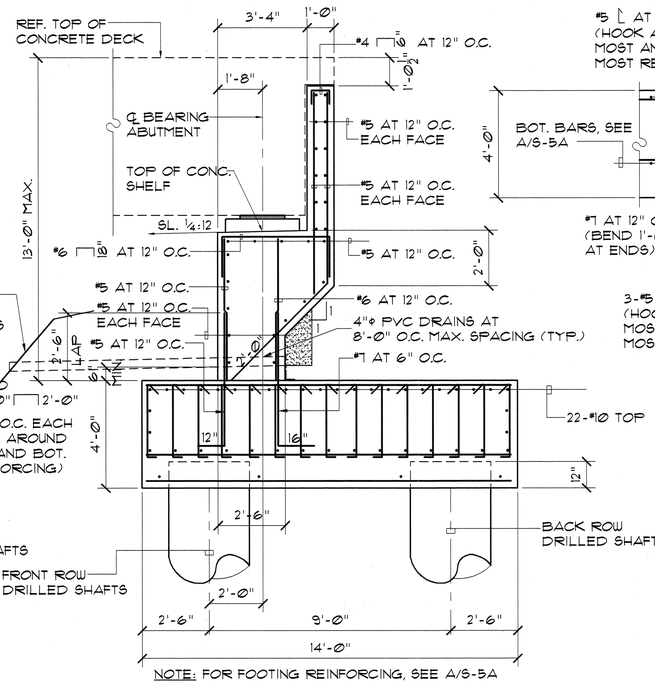
S-3A, S-5A|S-5A SCALE: 3/8"=1'-0"



NOTE: REFER TO STANDARD PLAN B-03 FOR ABUTMENT AND WING WALL STRUCTURAL EXCAVATION AND BACKFILL PAY LIMITS

A ABUTMENT WALL SECT.

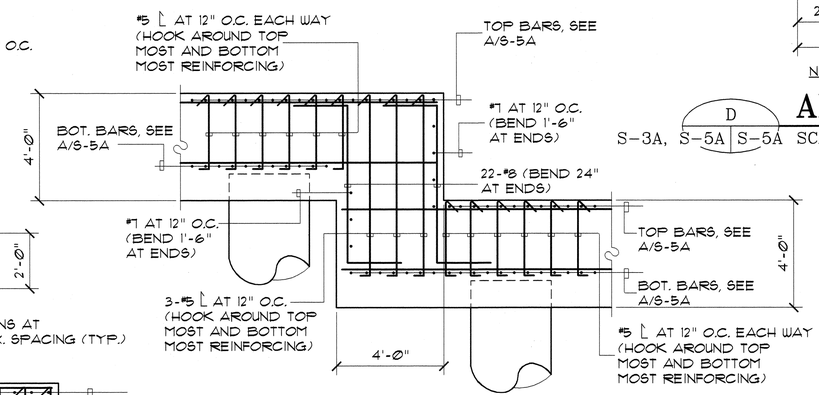
S-3A, S-5A|S-5A SCALE: 3/8"=1'-0"



NOTE: FOR FOOTING REINFORCING, SEE A/S-5A

B ABUTMENT WALL SECT.

S-3A, S-5A|S-5A SCALE: 3/8"=1'-0"



C STEP FOOTING

S-5A|S-5A SCALE: 3/8"=1'-0"

Date	Revision
6/5/02	Revised Drilled Shaft Locations
5/29/02	Revised Drilled Shaft Locations
3/18/02	SHEET ADDED

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

GEORGE K. NISHIMURA LICENSED PROFESSIONAL ENGINEER No. 1388-S HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

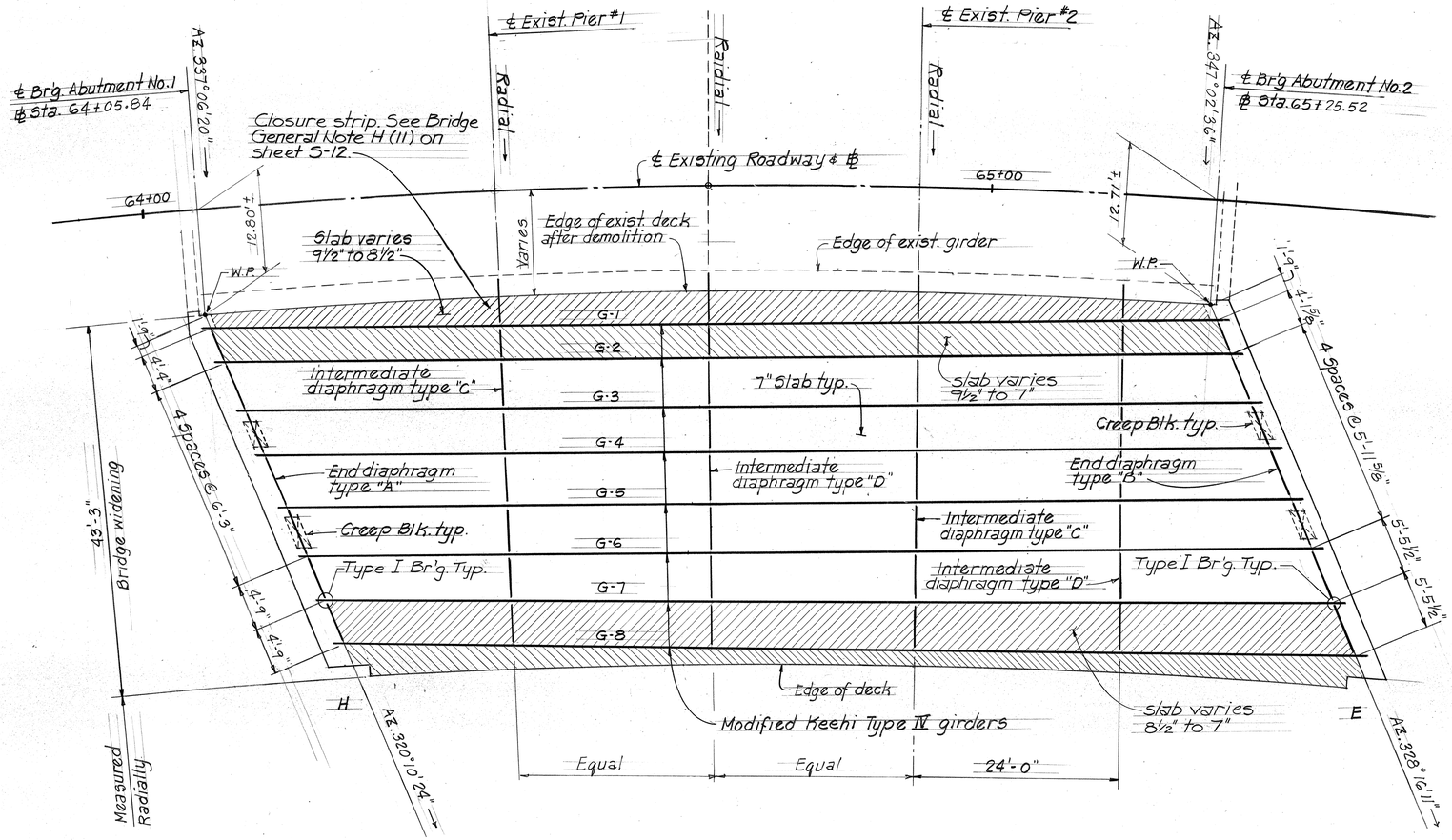
ABUTMENT NO. 2 FOUNDATION PLAN, SECTIONS AND DETAILS

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
PROJECT NO. STP-050-1(17)

SHEET No. 8-5A OF 17 SHEETS

C.O. 47A

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	48	72



DECK FRAMING PLAN

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

NOTE:

1. E-Denotes Expansion Bearing.
2. H-Denotes Hinged Bearing.
3. For Typical Intermediate diaphragm and End diaphragm details-see shts. S-8 & S-9.
4. For creep blocks-See detail on sheet S-9.
5. Refer to sheet S-7 for Normal Deck Section & details

Date	Revision
5/29/02	Remove stations at existing ℄ Pier #1 and Pier #2.
7/30/02	Revise deck azmuths, dimensions, and stations.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DECK FRAMING PLAN

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD

FEDERAL-AID PROJ. NO. STP-050-1(17)

SCALE: 1/8"=1'-0" DATE: OCT. 8, 1999

GEORGE K. NISHIMURA REGISTERED PROFESSIONAL ENGINEER No. 1388-S HAWAII, U.S.A.

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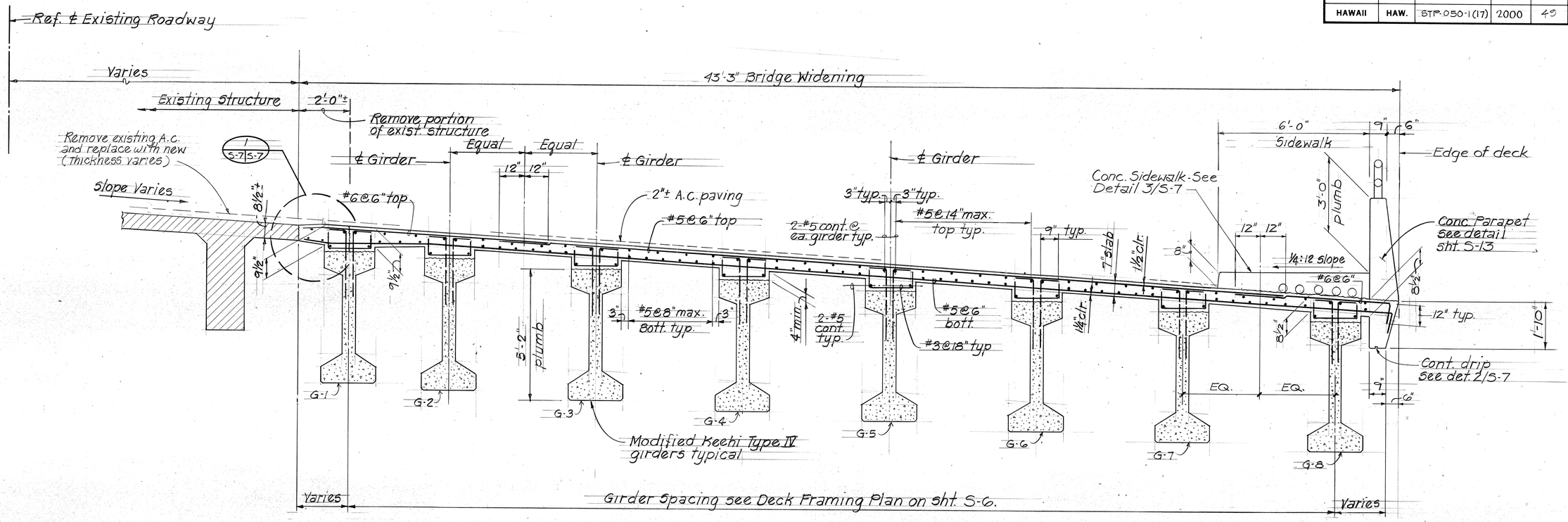
ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

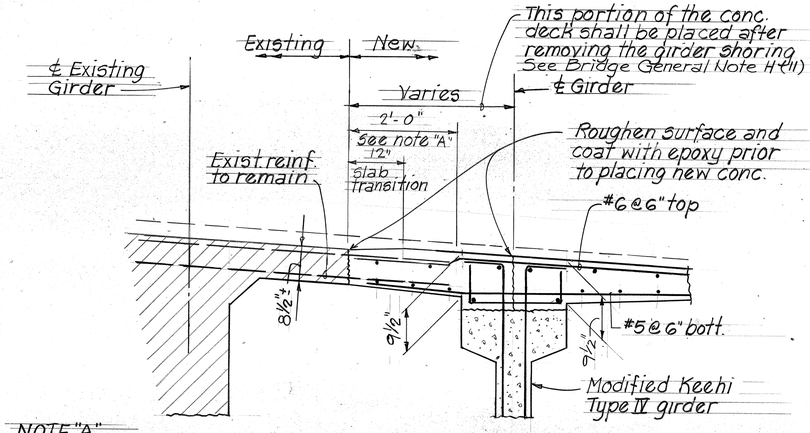
137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	49	72



NORMAL DECK SECTION

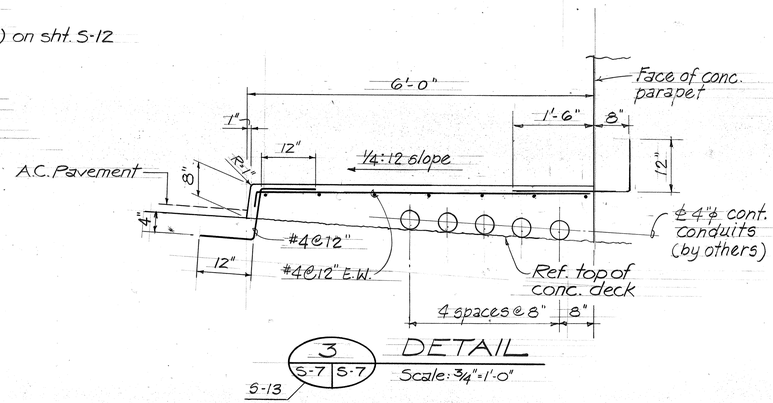
Scale: ½"=1'-0"



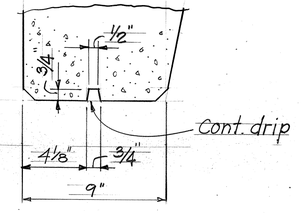
NOTE "A"

Remove 2'-0" portion of existing deck and railing. Existing deck transverse reinforcing to remain. When removing existing conc. deck, the top of the conc. deck shall be saw cut to a depth of 1" and the balance chipped out.

1 S-7 S-7 DETAIL
Scale: ¾"=1'-0"



3 S-7 S-7 DETAIL
Scale: ¾"=1'-0"
5-13



2 5-7 5-7 DRIP DETAIL
Scale: 3"=1'-0"

Date	Revision
1/30/02	Revise dimensions and add conduits in sidewalk.
5/29/02	Revise detail connection at existing deck to new deck.
3/18/02	Revise 5-4"ø conduits to be by others
Date	Revision

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

GEORGE K. NISHIMURA REGISTERED PROFESSIONAL ENGINEER No. 1388-S HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NORMAL DECK SECTION & DETAILS

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD

FEDERAL-AID PROJ. NO. STP-050-1(17)

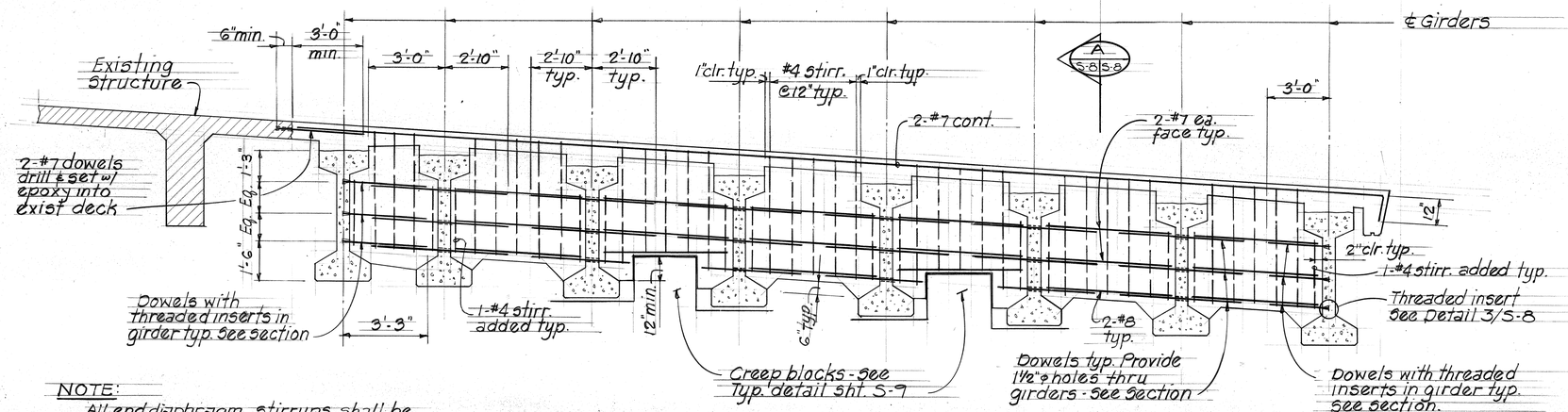
SCALE: AS NOTED DATE: OCT. 8, 1999

SHEET No. S-7 OF 17 SHEETS

137218

C.O. 49

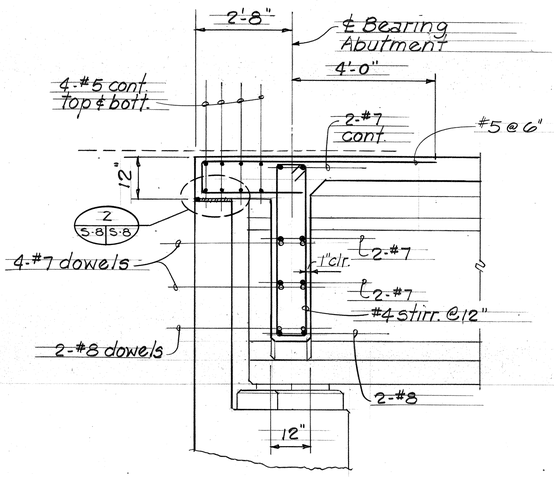
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	50	72



NOTE:
All end diaphragm stirrups shall be placed plumb and perpendicular to diaphragm - See Detail 1/S-8

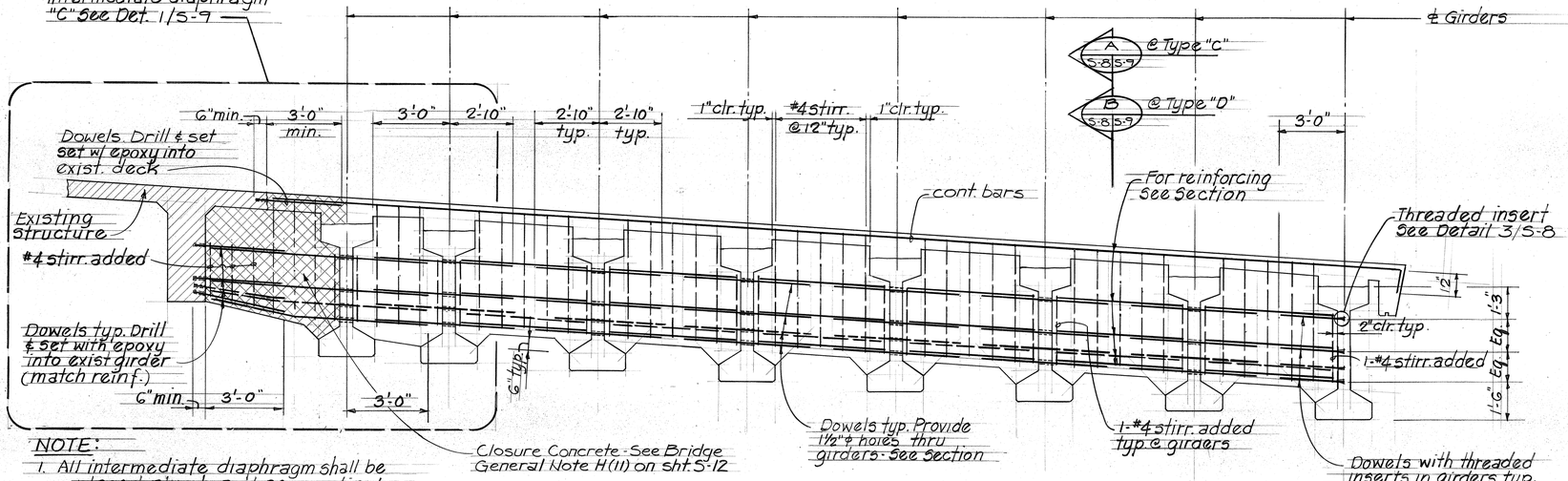
TYPICAL END DIAPHRAGM "A" & "B" ELEVATION

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



A S-8 S-8 SECTION
Scale: ½"=1'-0"

For condition at intermediate diaphragm "C" See Det. 1/S-9

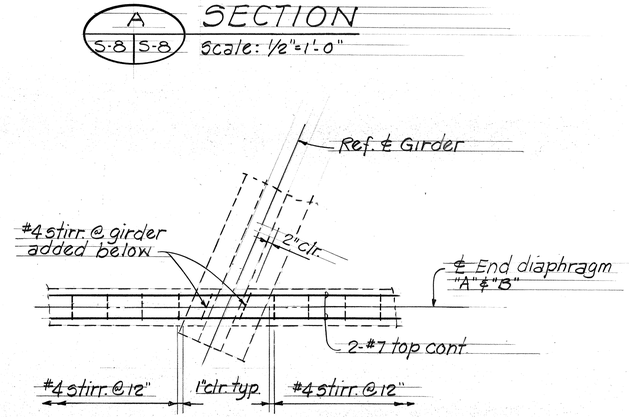


NOTE:
1. All intermediate diaphragm shall be placed plumb and perpendicular to diaphragm - Similar to Detail 1/S-8
2. Refer to note on Detail C/S-9.

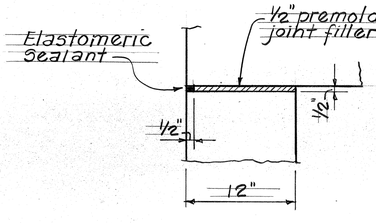
TYPICAL INTERMEDIATE DIAPHRAGM "D" ELEVATION

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

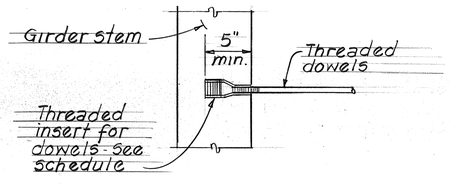
DIAPHRAGM "C" SIMILAR EXCEPT AS NOTED



1 S-8 S-8 PLAN - SHOWING STIRRUP PLACEMENT
Scale: ½"=1'-0"



2 S-8 S-8 DETAIL
Scale: 1½"=1'-0"



3 S-8 S-8 THREADED INSERT DETAIL
Scale: 1½"=1'-0"

THREADED INSERT SCHEDULE *		
Dowel Size	Allow. tension	Allow. shear
#8 Dowels	7.8 kips	6.0 kips
#7 Dowels	6.1 kips	5.0 kips
#6 Dowels	5.1 kips	4.5 kips

*- Based on safety factor of 3.

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

GEORGE K. NISHIMURA REGISTERED PROFESSIONAL ENGINEER No. 1388-S HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DIAPHRAGM "A", "B", "C", & "D" ELEVATION, SECTION AND DETAIL

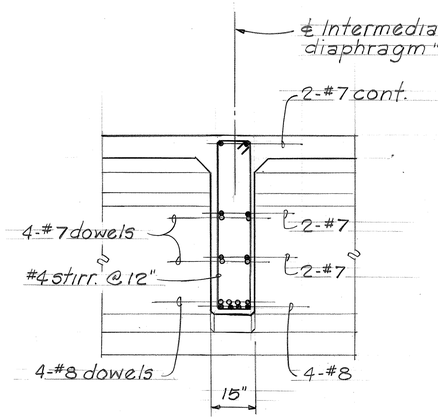
KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
FEDERAL-AID PROJ. NO. STP-050-1(17)

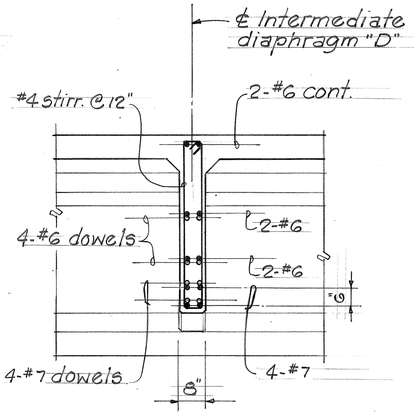
SCALE: AS NOTED DATE: OCT. 8, 1999

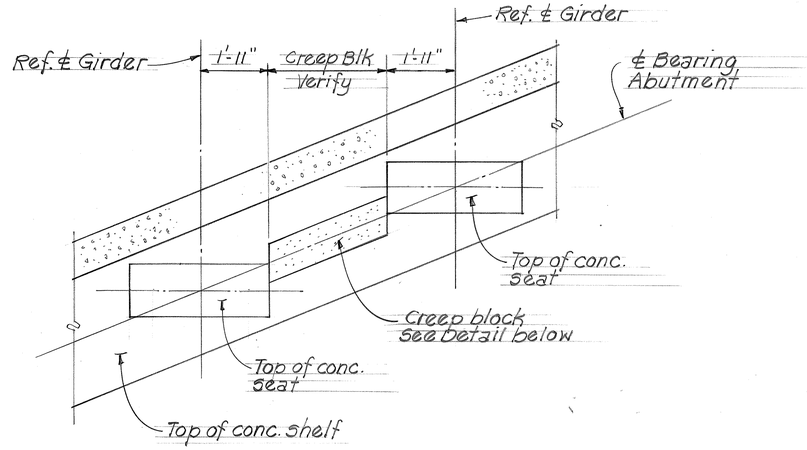
SHEET No. S-8 OF 17 SHEETS

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	51	72



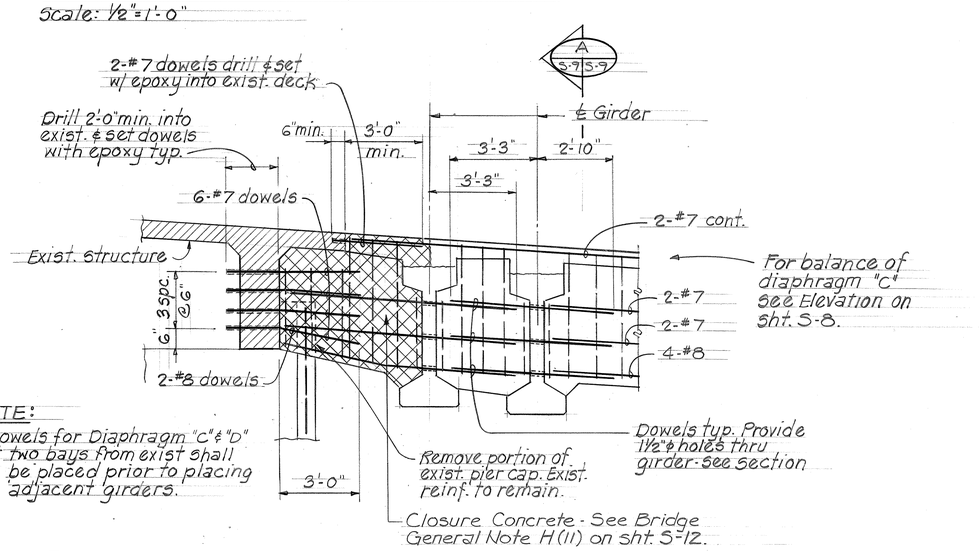




A 5-7 | 5-8 | 5-9 SECTION
Scale: 1/2"=1'-0"

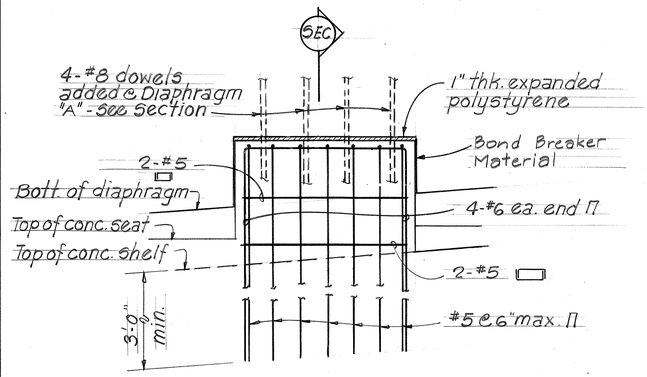
B 5-8 | 5-9 SECTION
Scale: 1/2"=1'-0"

PARTIAL PLAN AT CREEP BLOCK
Scale: 1/2"=1'-0"

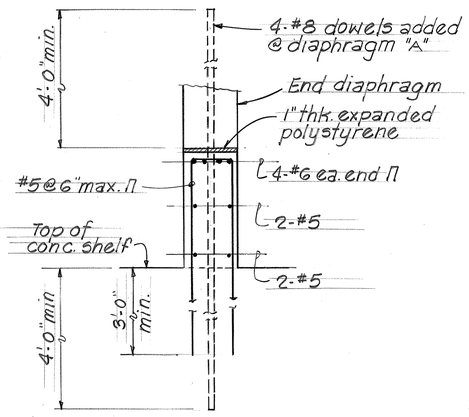


For balance of diaphragm "C" See Elevation on sht. S-8.

NOTE:
Dowels for Diaphragm "C" & "D" first two bays from exist shall be placed prior to placing adjacent girders.

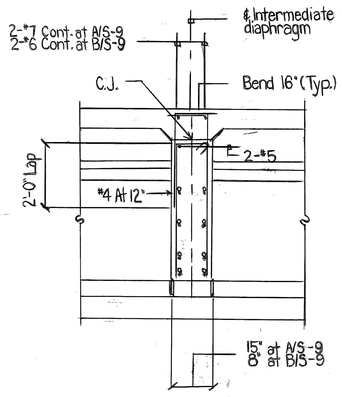


ELEVATION



SECTION

TYPICAL CREEP BLOCK DETAIL
Scale: 3/4"=1'-0"



Note:
See contract drawings for remainder of section.

MODIFIED DIAPHARGM STIRRUPS

1 5-8 | 5-9 PARTIAL INTERMEDIATE DIAPHRAGM "C" ELEVATION
Scale: 3/8"=1'-0"

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DIAPHRAGM SECTION & DETAIL AND CREEP BLOCK PLAN & DETAIL

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD

FEDERAL-AID PROJ. NO. STP-050-1(17)

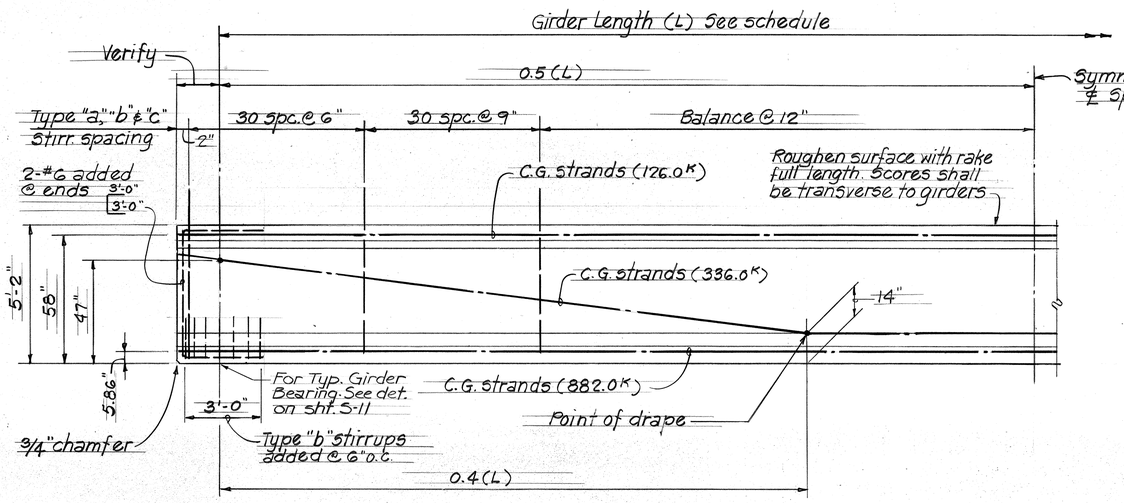
SCALE: AS NOTED DATE: OCT. 8, 1999

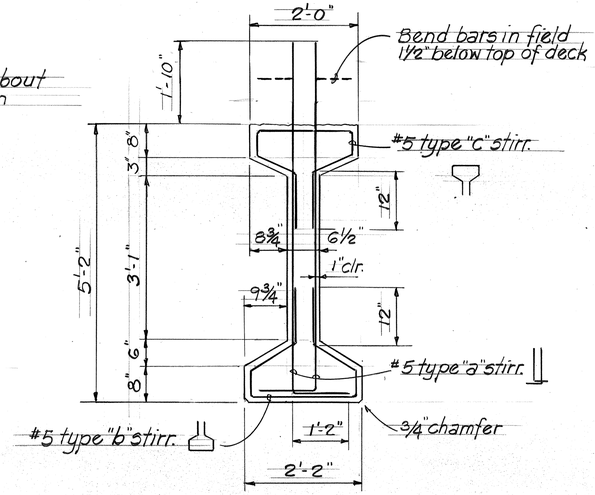
SHEET No. S-9 OF 17 SHEETS

137218

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1 (17)	2000	52	72





NOTE:
1. For Prestressed girder notes, refer to sht. S-12
2. (126.0K) - Denotes final prestress force in KIPS after all losses. Estimated prestress losses = 53,000 psi. Losses are due to creep, shrinkage, elastic shortening and relaxation of steel.

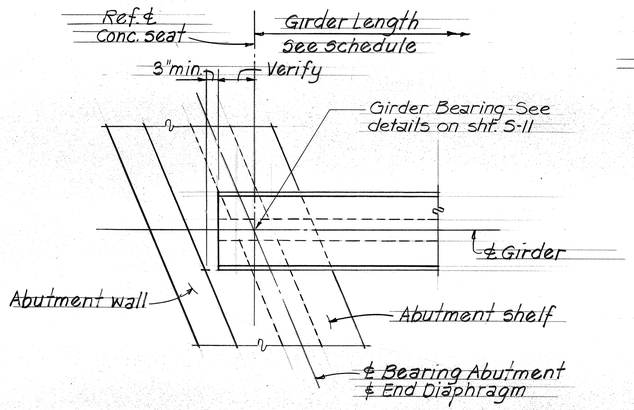
TYPICAL PRESTRESSED GIRDER ELEVATION (KEEHI IV MODIFIED)

Not to scale:

(Girders G-1 thru G-8 Inclusive)

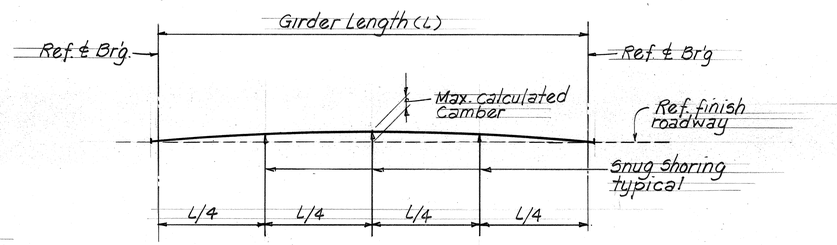
TYPICAL GIRDER SECTION

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



TYPICAL GIRDER END DETAIL

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



TYPICAL GIRDER SHORING DIAGRAM

Not to scale

GIRDER SCHEDULE

Girder Mark	Girder Length (L)	Tapered ℄ @ Abut. #1		Tapered ℄ @ Abut. #2		Calculated Camber (max)
		"t"	Taper	"t"	Taper	
G-1	117'-6 15/16"	1.0"	5/16 : 12	1"	5/16 : 12	3.25"
G-2	116'-11 15/16"	1.0"		1"		
G-3	116'-0 7/16"	1.0"		1"		
G-4	115'-1 9/16"	1.0"		1"		
G-5	114'-2 5/8"	1.0"		1"		
G-6	113'-3 3/4"	1.0"		1"		
G-7	112'-10 1/4"	1.0"		1"		
G-8	112'-4 3/4"	1.0"		1"		

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

1/30/02	Revise girder lengths
Date	Revision

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PRESTRESSED GIRDER DETAIL

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD

FEDERAL-AID PROJ. NO. STP-050-1(17)

SCALE: AS NOTED DATE: OCT. 8, 1999

GEORGE K. NISHIMURA REGISTERED PROFESSIONAL ENGINEER No. 1388-S HAWAII, U.S.A.

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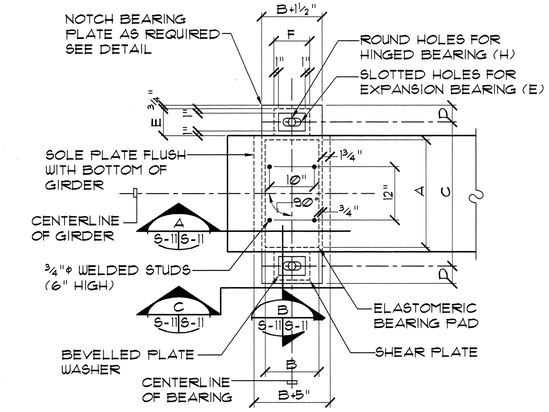
SHEET No. S-10 OF 17 SHEETS

137218

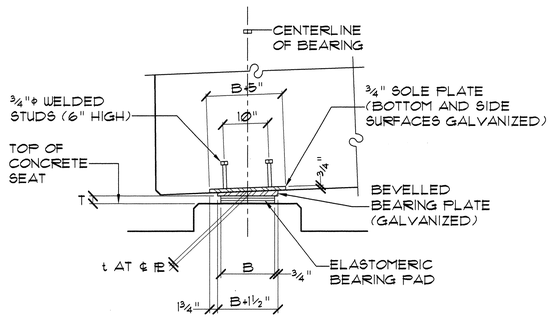
C.O. 52

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	53	72



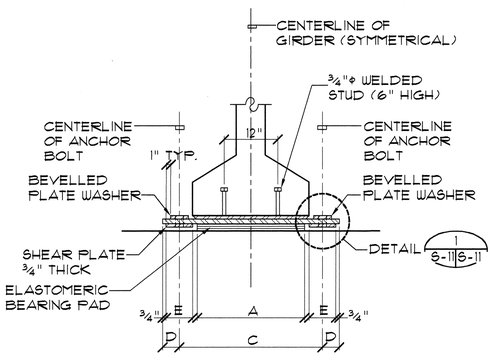
(HINGED AND EXPANSION) TYPICAL BEARING PLAN

NOT TO SCALE



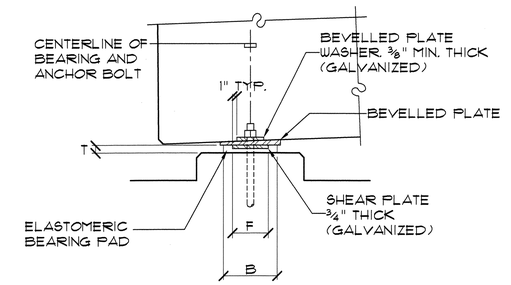
A SECTION

S-11 S-11 NOT TO SCALE



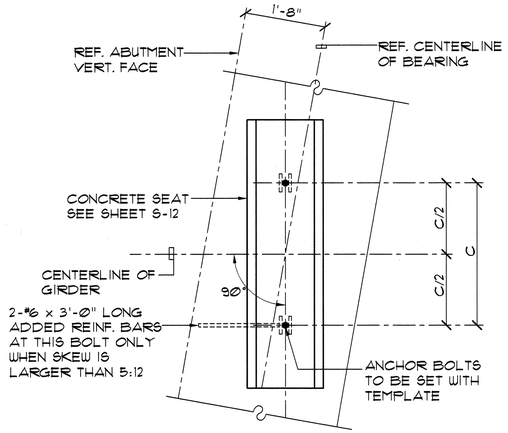
B SECTION

S-11 S-11 NOT TO SCALE



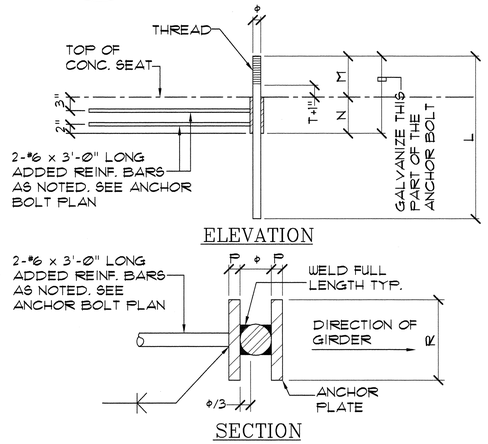
C SECTION

S-11 S-11 NOT TO SCALE



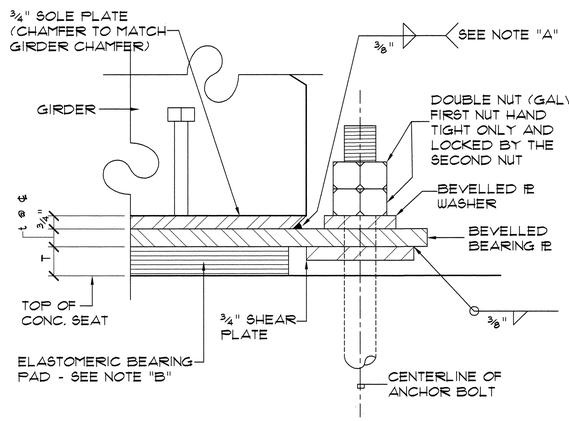
ANCHOR BOLT PLAN

NOT TO SCALE



ANCHOR BOLT DETAIL

NOT TO SCALE



1 DETAIL

S-11 S-11 NOT TO SCALE

NOTES

A. THE CONTRACTOR SHALL MINIMIZE AND DISSIPATE THE HEAT GENERATION DURING THE FIELD WELDING OF THE 3/4" SOLE PLATE TO THE BEVELLED BEARING PLATE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID BURNING THE ELASTOMERIC BEARING PAD DURING WELDING. WELDING OF THE SOLE PLATE TO THE BEARING PLATE SHALL BE DONE PRIOR TO PLACEMENT OF THE DIAPHRAMS AND DECK.

B. ALL ELASTOMERIC BEARING PAD BE STEEL LAMINATED ELASTOMERIC PAD WITH 60 HARDNESS. BEARING PAD SIZE SHALL BE AS SHOWN ON SHEET S-12.

C. AT TIME OF INSTALLATION OF GIRDERS, ANCHOR BOLTS AT EXPANSION END SHALL BE POSITIONED SUCH THAT THEY ARE LOCATED AT THE WAIMEA SIDE OF THE SLOTTED HOLES.

BEARING AND ANCHOR BOLT TABLE

BEARING TYPE	ELASTOMERIC BEARING PAD			STEEL PLATE DIMENSIONS					ANCHOR BOLT HOLES		ANCHOR BOLT			ANCHOR PLATE DIMENSIONS		
	A	B	T	C	D	E	F	t	BR'G. (H)	BR'G. (E)	¢	L	M	N	P	R
I	24"	12"	3-1/8"	32"	3 3/4"	6"	8"	*	1 3/4"	1 3/4" x 4"	1 1/2"	36"	9"	8"	5/8"	4"

* - SEE GIRDER SCHEDULE ON SHEET S-10.

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

ORIGINAL PLAN
NOTE BOOK
No.

GEORGE K. NISHIMURA LICENSED PROFESSIONAL ENGINEER No. 1388-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Date	Revision
1/30/02	Revise Bearing Pad

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

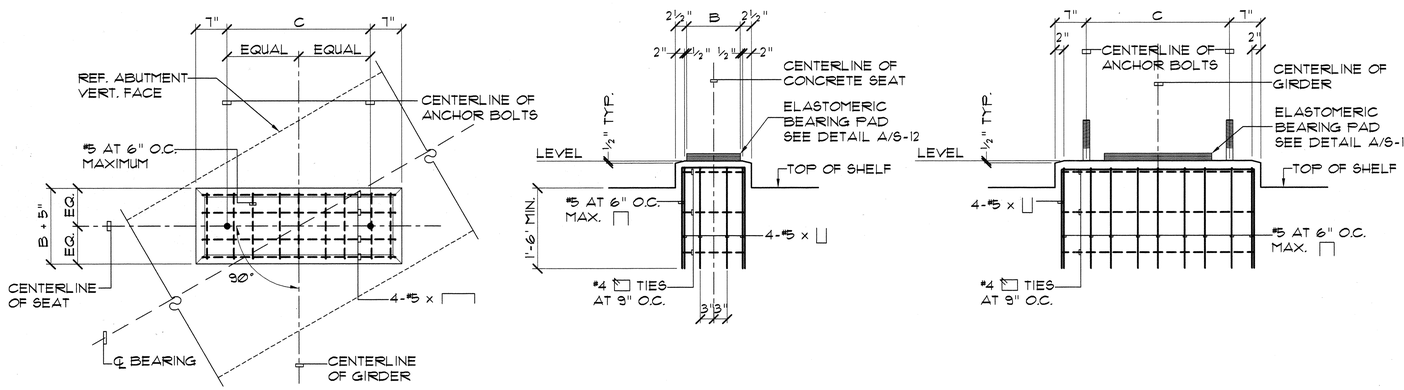
TYPICAL GIRDER BEARING DETAILS

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
PROJECT NO. STP-050-1(17)

SHEET No. S-11 OF 17 SHEETS

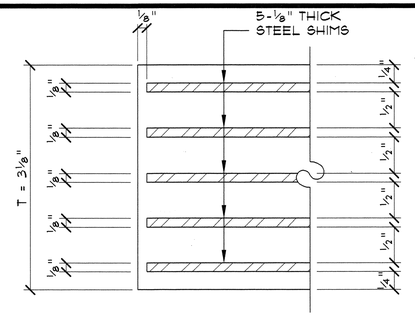
C.O. 53

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	54	72



TYPICAL CONCRETE SEAT DETAIL

NOT TO SCALE



ELASTOMERIC BEARING PAD

A
S-12 | S-12 FULL SCALE

BRIDGE GENERAL NOTES

A. GENERAL SPECIFICATIONS: HAWAII DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION, 1994, TOGETHER WITH SPECIAL PROVISIONS PREPARED FOR THIS CONTRACT.

B. DESIGN SPECIFICATIONS: A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 15TH EDITION (1992), AND ITS SUBSEQUENT INTERIM SPECIFICATIONS.

C. DESIGN LOADS:
1. DEAD LOAD: AN ALLOWANCE FOR 1-1/2 INCHES OF WEARING SURFACE OF ASPHALT CONCRETE HAS BEEN PROVIDED FOR IN THE DESIGN.
2. LIVE LOAD: HS20-44 OR INTERSTATE LOADING.
3. SEISMIC LOAD: ACCELERATION COEFFICIENT – 0.09

D. MATERIALS:
1. ALL CONCRETE EXCEPT PRESTRESSED CONCRETE GIRDERS SHALL BE 4,000 PSI CONCRETE UNLESS OTHERWISE NOTED.
2. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60 UNLESS OTHERWISE NOTED.
3. ALL STRUCTURAL STEEL ITEMS FOR GIRDER BEARING ASSEMBLY SHALL CONFORM TO ASTM A588. ENTIRE FABRICATED ASSEMBLY INCLUDING ANCHORS SHALL BE HOT-DIP GALVANIZED.
4. ALL STEEL PIPE SECTIONS SHALL CONFORM TO ASTM A53, GRADE B AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
5. ALL ANCHOR BOLTS, WASHERS AND NUTS SHALL CONFORM TO ASTM A307 AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
6. OTHER MISCELLANEOUS STEEL PLATES SHALL CONFORM TO ASTM A36 AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
7. FOR MATERIALS OF PRESTRESSED CONCRETE GIRDERS, SEE PRESTRESSED CONCRETE NOTES.

E. DESIGN STRESSES: SHALL FOLLOW A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES IN ADDITION TO THOSE LISTED BELOW.

CONCRETE	CLASS "A"	
f'c	3,000 PSI	4,000 PSI
fc	1,200 PSI	1,600 PSI
n	9	8

FOR PRESTRESSED CONCRETE GIRDERS, SEE PRESTRESSED GIRDER NOTES.

F. REINFORCEMENT:
1. UNLESS OTHERWISE NOTED, THE COVER MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF ANY REINFORCING BARS SHALL BE AS FOLLOWS:
   a. DECK SLABS
      1) TOP BARS = 1-1/2"
      2) BOTTOM BARS = 1-1/4"
   b. BEAMS =1-1/2" TO STIRRUPS
   c. FOR PRESTRESSED CONCRETE GIRDERS, SEE GIRDER DETAILS.
   d. ABUTMENTS AND RETAINING WALLS = 2"
   e. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH = 3"
2. REINFORCING BARS SHALL BE DETAILED IN ACCORDANCE WITH ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE HIGHWAY STRUCTURES UNLESS OTHERWISE NOTED.
3. MINIMUM CLEAR SPACING BETWEEN PARALLEL BARS SHALL BE 1-1/2 TIMES THE DIAMETER OF BARS (FOR NON BUNDLED BARS). BUT IN NO CASE SHALL THE CLEAR DISTANCE BETWEEN THE BARS BE LESS THAN 1-1/2 TIMES THE MAXIMUM SIZE OF THE COARSE AGGREGATE.
4. ALL DIMENSIONS RELATING TO REINFORCING BARS (E.G. SPACING OF BARS, ETC.) ARE TO CENTERS OF BARS UNLESS OTHERWISE NOTED.
5. REINFORCING BARS SHALL BE SECURELY TIED AT ALL INTERSECTIONS AND LAP SPLICES EXCEPT WHERE THE SPACING OF INTERSECTIONS IS LESS THAN ONE FOOT IN EACH DIRECTION, IN WHICH CASE ALTERNATE INTERSECTIONS SHALL BE TIED.

G. GIRDER BEARINGS:
1. GIRDER CONCRETE SEATS RECEIVING ELASTOMERIC BEARING PADS SHALL BE POURED MONOLITHICALLY WITH SUPPORTING STRUCTURE. TOP OF CONCRETE SEATS SHALL BE FINISHED WITH A STEEL TROWEL TO A SMOOTH LEVEL SURFACE TO THE ELEVATION SHOWN ON THE PLANS.
2. BOTTOM OF BRIDGE ELASTOMERIC BEARING PADS SHALL BE SECURED TO THE CONCRETE SEATS, TO PREVENT DISPLACEMENT, WITH ADHESIVES APPROVED BY THE ENGINEER.

H. CONSTRUCTION NOTES:
1. SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
2. IN GENERAL, TOP OF CONCRETE DECK SLAB SHALL BE CONSTRUCTED TO FOLLOW THE ROADWAY VERTICAL AND HORIZONTAL CURVES.
3. FOR THE INSTALLATION OF ANCHOR BOLTS FOR BRIDGE BEARINGS, THE CONTRACTOR SHALL PROVIDE RIGID TEMPLATES TO MAINTAIN THE PROPER LOCATIONS AND SHALL PROTECT SUCH ANCHOR BOLTS AT ALL TIMES DURING THE PERIOD OF CONSTRUCTION. METHODS SHALL BE APPROVED BY THE ENGINEER.
4. EXCEPT AS OTHERWISE NOTED, ALL VERTICAL DIMENSIONS ARE MEASURED PLUMB.
5. THE CONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS.
6. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTITITY LINES AND NOTIFY THE RESPECTIVE OWNERS BEFORE COMMENCING WITH WORK.
7. FOR CONCRETE FINISH, SEE STANDARD SPECIFICATIONS.
8. CONSTRUCTION JOINTS MAY BE RELOCATED OR ADDITIONAL ONES ADDED SUBJECT TO THE APPROVAL OF THE ENGINEER.
9. UNLESS OTHERWISE NOTED, ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4" x 3/4".
10. STRUCTURAL BACKFILL FOR ABUTMENT WALLS SHALL NOT BE PLACED UNTIL AFTER DECK CONCRETE IS PLACED AND SHORINGS FOR BRIDGE GIRDERS REMOVED.
11. CLOSURE STRIP OF CONCRETE BETWEEN EXISTING BRIDGE AND NEW WIDENED AREA SHALL NOT BE PLACED UNTIL 120 DAYS AFTER LAST DECK CONCRETE HAS BEEN PLACED. EXISTING BRIDGE RAILING SECTION, EXCEPT AS MAY BE REQUIRED TO INSTALL GIRDER "G-1", SHALL NOT BE REMOVED UNTIL THIS PHASE.

I. GENERAL:
1. ALL ITEMS NOTED INCIDENTAL WILL NOT BE PAID FOR SEPARATELY.
2. STANDARD DETAIL DRAWINGS REFER TO ALL STRUCTURES IN GENERAL, EXCEPT FOR MODIFICATIONS AS MAY BE REQUIRED FOR SPECIAL CONDITIONS. FOR SUCH MODIFICATIONS, REFER TO THE CORRESPONDING DETAILED DRAWINGS.

J. FOUNDATION:
THESE FOUNDATION NOTES WERE BASED ON RECOMMENDATIONS CONTAINED IN A REPORT "FOUNDATION INVESTIGATION, KAUMUALII HIGHWAY, INTERSECTION IMPROVEMENTS AT KOLOA ROAD, LAWAI, KAUAI, HAWAII" DATED JUNE 19, 1995 ALONG WITH A FAX MEMORANDUM REGARDING DRILLED SHAFT RECOMMENDATIONS DATED MARCH 12, 2002 BY ERNEST K. HIRATA & ASSOCIATES, INC.
1. BRIDGE ABUTMENT NO.1 AND RETAINING WALLS:
   A. FOOTINGS FOR BRIDGE ABUTMENT NO.1 AND RETAINING WALLS SHALL BEAR AT THE INDICATED ELEVATIONS ON THE UNDERLYING STIFF UNDISTURBED SILTY CLAY. FOOTINGS FOR SHORINGS DURING CONSTRUCTION SHALL ALSO BEAR ON STIFF UNDISTURBED SILTY CLAY.
   B. DESIGN SOIL PARAMETERS:
      a. ALLOWABLE SOIL BEARING PRESSURE = 4,000 PSF
      b. COEFFICIENT OF FRICTION = 0.40
      c. PASSIVE EARTH PRESSURE = 350 PCF
      d. ACTIVE EARTH PRESSURE = 40 PCF (LEVEL BACKFILL)
2. BRIDGE ABUTMENT NO.2:
   A. 36-INCH DIAMETER DRILLED SHAFTS:
      a. THE VERTICAL BEARING LOAD CAPACITY FOR THE 36-INCH DIAMETER DRILLED SHAFTS ARE FROM FRICTION BETWEEN THE SHAFT AND THE SURROUNDING SOIL. THE NET VERTICAL LOAD PARAMETER USED FOR DESIGN IS 390 KIPS WITH AN ESTIMATED SHAFT TIP ELEVATION OF +429.00'.
      b. THE LATERAL LOAD CAPACITY FOR THE 36-INCH DIAMETER DRILLED SHAFTS (FIXED-HEAD CONDITION) USED FOR DESIGN IS 55 KIPS.
      c. THE DRILLED SHAFTS ESTIMATED TIP ELEVATIONS SHOWN ON THE PLANS ARE BASED ON THE BORING DATA. THE ACTUAL TIP ELEVATIONS COULD CHANGE DUE TO VARYING SUBSURFACE CONDITIONS. SOILS ENGINEER OF RECORD SHALL BE PRESENT DURING THE DRILLING OPERATION TO DETERMINE THAT THE ACTUAL SUBSURFACE CONDITIONS ARE CONSISTENT WITH THE CONDITIONS ASSUMED FOR DESIGN. BASED ON THE RECOMMENDATIONS, THE TIP ELEVATIONS COULD CHANGE. THE CONTRACTOR SHALL MAKE PROVISIONS FOR EXTENSION OF THE REINFORCING STEEL CAGES FOR THE DRILLED SHAFTS TO ACCOUNT FOR VARIATIONS IN THE FINAL TIP ELEVATIONS.
      d. THE CONTRACTOR SHALL EXERCISE CARE IN DRILLING THE SHAFT HOLES AND IN PLACING CONCRETE INTO THE HOLES. COBBLES AND BOULDERS MAY BE ENCOUNTERED DURING DRILLING OPERATIONS. TEMPORARY CASING MAY BE NEEDED TO REDUCE THE POTENTIAL FOR CAVING IN OF THE HOLES. THE USE OF PERMANENT CASING WILL NOT BE ALLOWED.
      e. DRILLING SHALL NOT BE CONDUCTED BY METHODS UTILIZING DRILLING FLUIDS.
      f. CONCRETE FOR DRILLED SHAFTS SHALL BE PLACED WITHIN 24 HOURS AFTER DRILLING TO REDUCE THE POTENTIAL FOR CAVING IN. DRILLED SHAFTS SHALL BE POURED IN ONE CONTINUOUS LIFT.
      g. IF WATER IS ENCOUNTERED IN THE DRILLED HOLES, PLACEMENT OF CONCRETE SHALL BE BY TREMIE METHODS. A MINIMUM OF 5 FEET OF CONCRETE HEAD SHALL BE MAINTAINED ABOVE THE BOTTOM OF THE TREMIE PIPE DURING PLACEMENT OF CONCRETE.

PRESTRESSED GIRDER NOTES

1. CONCRETE FOR PRESTRESSED CONCRETE GIRDERS SHALL BE 6,000 PSI MINIMUM.
2. MINIMUM CONCRETE STRENGTH AT INITIAL PRESTRESS TRANSFER OR RELEASE OF STRANDS SHALL BE 5,500 PSI.
3. PRESTRESSING STRANDS SHALL BE 7-WIRE 1/2 INCH DIAMETER LOW-RELAXATION STEEL STRANDS (AREA = 0.153 SQUARE INCH) WITH AN ULTIMATE STRENGTH OF 270 KSI. FOR PROPERTIES, SEE STATE STANDARD SPECIFICATIONS.
4. NON-PRESTRESSED REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60 UNLESS OTHERWISE NOTED ON PLANS. FOR PROPERTIES, SEE STATE STANDARD SPECIFICATIONS.
5. STRAND PATTERN SHALL BE SYMMETRICAL ABOUT THE LONGITUDINAL CENTERLINE OF THE GIRDERS.
6. STRAND RELEASE SEQUENCE SHALL NOT INDUCE ANY LATERAL DEFLECTION OF THE GIRDER.
7. THE CONTRACTOR SHALL SUBMIT HIS PROPOSED STRAND PATTERN AND RELEASING SEQUENCE TO THE ENGINEER FOR APPROVAL.
8. DURING CURING, CARE SHALL BE TAKEN TO AVOID ANY LATERAL DEFLECTION OF THE GIRDER DUE TO IMPROPER ORIENTATION.
9. LIFTING DEVICES SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE CENTER LINE BEARING OF THE GIRDERS. DETAILS AND LOCATIONS OF LIFTING DEVICES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. SUCH APPROVAL DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES IF THE GIRDER IS DAMAGED DUE TO FAILURE OF THE LIFTING DEVICES.
10. SEE FRAMING PLANS AND GIRDER DETAILS FOR LOCATION OF DIAPHRAGMS, BEARINGS, TYPE, AND CENTERLINE BEARING TO CENTERLINE BEARING LENGTH OF GIRDERS (L). LENGTH OF GIRDERS DO NOT INCLUDE EFFECT OF ELASTIC SHORTENING.
11. THE CONTRACTOR SHALL INCORPORATE ALL HOLES, INSERTS AND OTHER EMBEDDED ITEMS REQUIRED IN GIRDERS DURING FABRICATION OF THE GIRDERS.
12. GIRDERS SHALL BE SHORED AS SHOWN ON GIRDER SHORING DIAGRAM DURING PLACING OF CONCRETE FOR DECK, DIAPHRAGMS AND BEAMS. CONTRACTOR SHALL PROTECT SHORING FROM POSSIBILITY OF HEAVY STREAM FLOWS. SHORING SHALL NOT BE REMOVED UNTIL DECK SLAB HAS ATTAINED ITS 28-DAY STRENGTH.

3/18/02	Revise Bridge General Notes
1/30/02	Revise Bearing Pad
Date	Revision

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

GEORGE K. NISHIMURA
LICENSED PROFESSIONAL ENGINEER
No. 1388-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

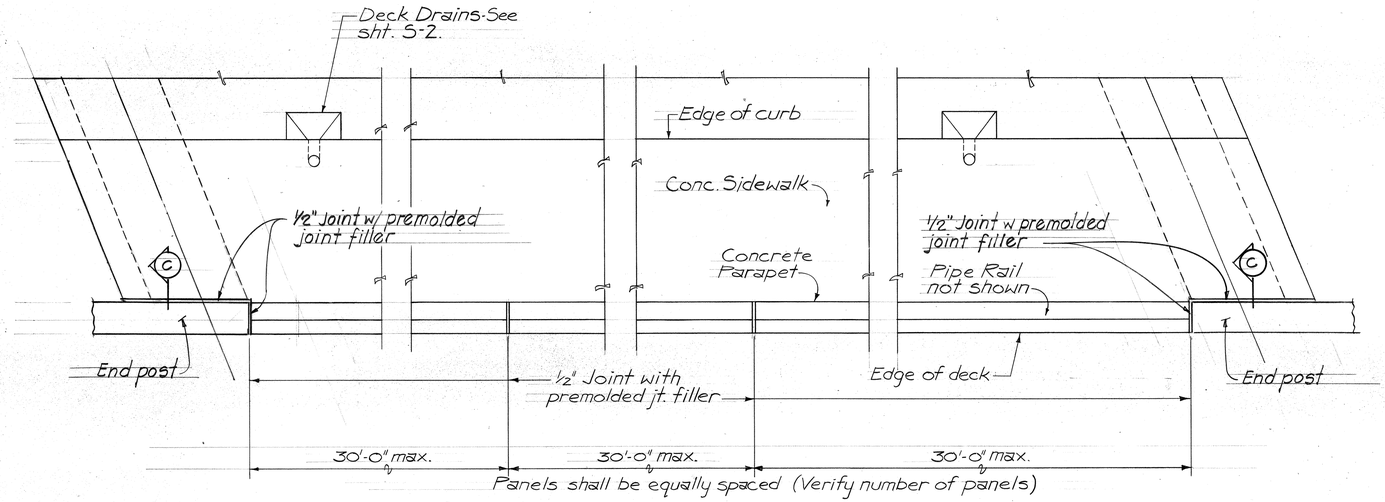
BRIDGE GENERAL NOTES AND TYPICAL DETAILS

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
PROJECT NO. STP-050-1(17)

SHEET No.S-12 OF 17 SHEETS

C.O. 54

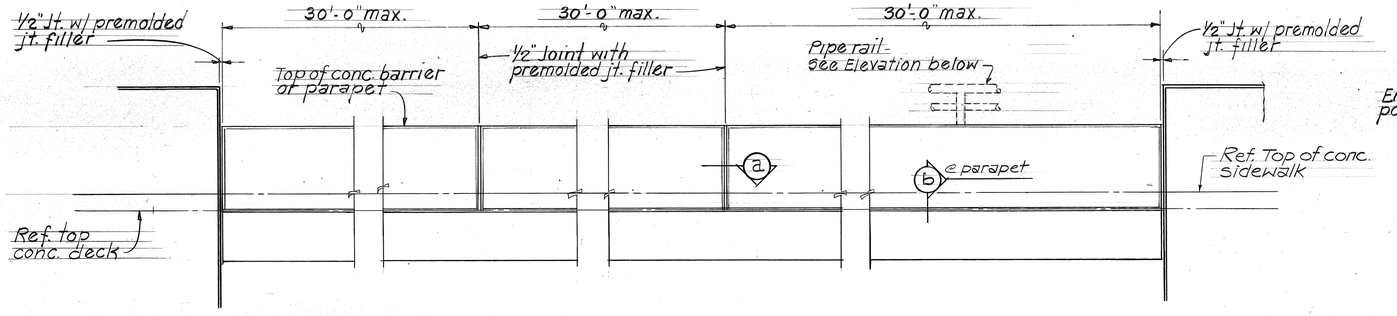
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	55	72



Panels shall be equally spaced (Verify number of panels)

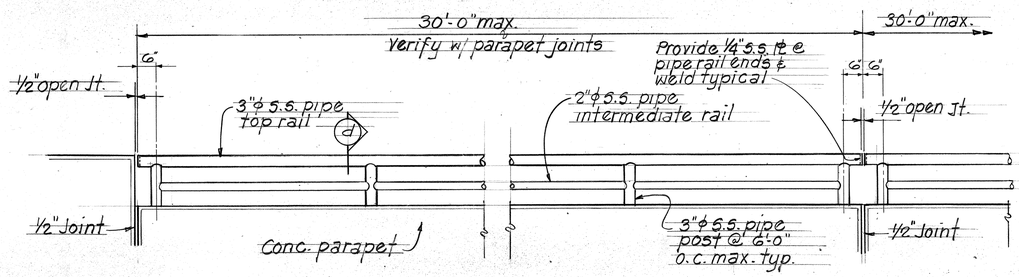
PARTIAL CONCRETE PARAPET PLAN

Not to Scale



PARTIAL CONCRETE PARAPET ELEVATION

Not to Scale

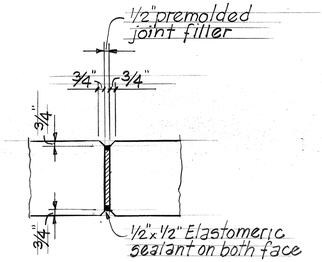


PARTIAL PIPE RAIL ELEVATION

Scale: ½"=1'-0"

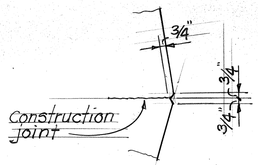
NOTE:

1. All stainless steel pipe, plates & rods shall conform to AISI Type 316.
2. Grind all exposed welded joint on pipe rail smooth.



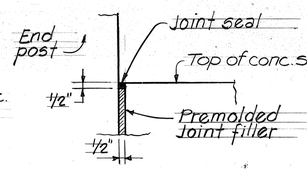
SECTION (a)

Sc: 1½"=1'-0"



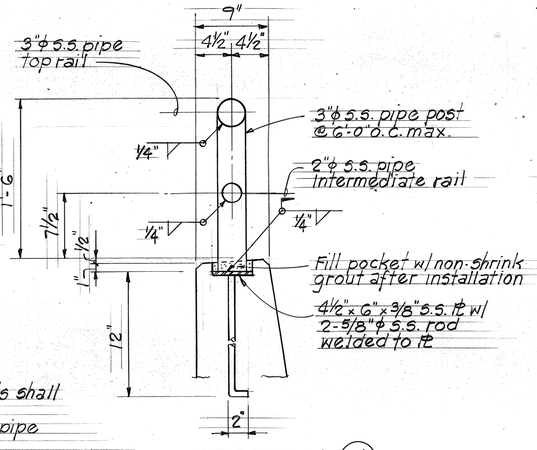
SECTION (b)

Sc: 1½"=1'-0"



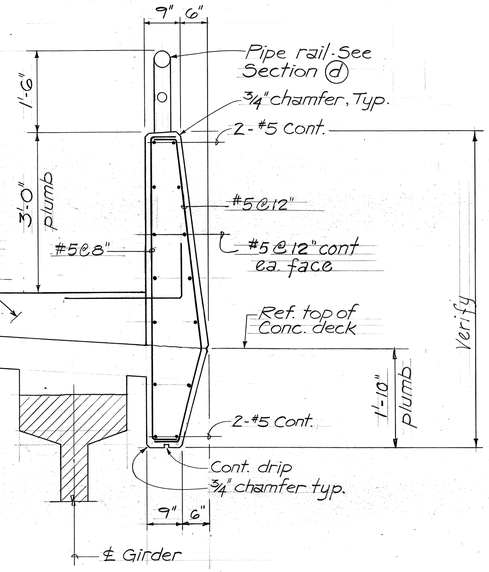
SECTION (c)

Sc: 3"=1'-0"



SECTION (d)

Sc: 1½"=1'-0"



TYP. CONC. PARAPET SECTION

Scale: ¾"=1'-0"

Date	Revision
1/30/02	Revise dimension

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONCRETE PAPAPET AND PIPE RAIL DETAILS

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD

FEDERAL-AID PROJ. NO. STP-050-1(17)

SCALE: AS NOTED DATE: OCT. 8, 1999

GEORGE K. NISHIMURA REGISTERED PROFESSIONAL ENGINEER No. 1388-E HAWAII, U.S.A.

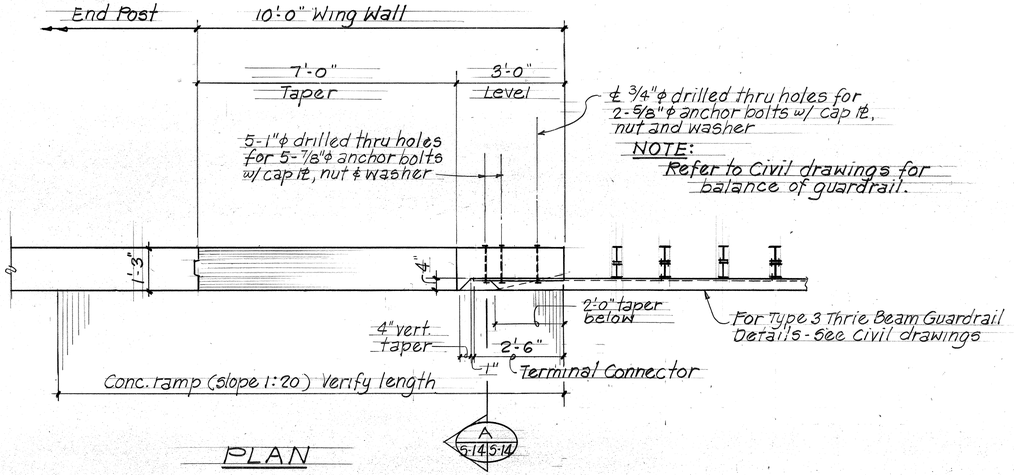
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SHEET No. S-13 OF 17 SHEETS

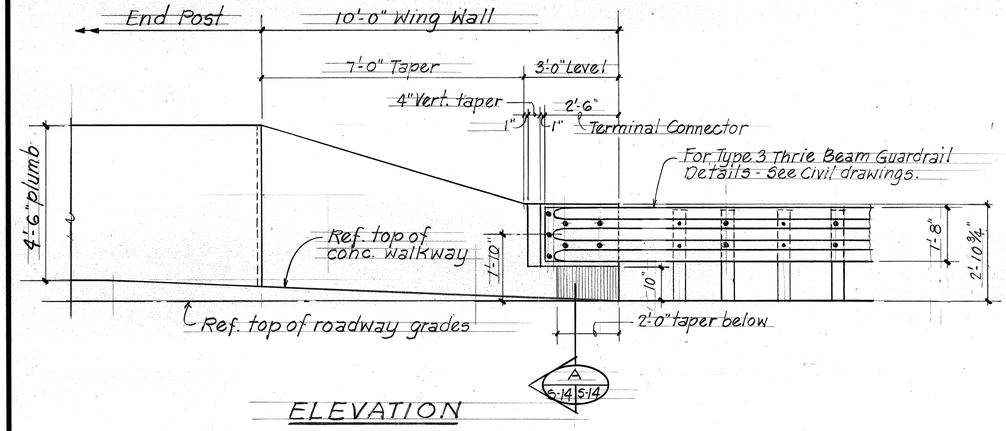
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	56	72



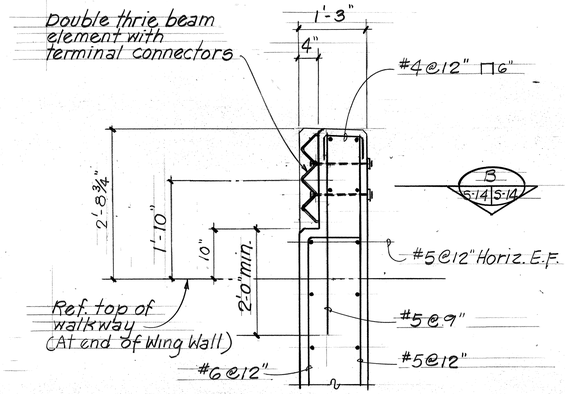
PLAN



ELEVATION

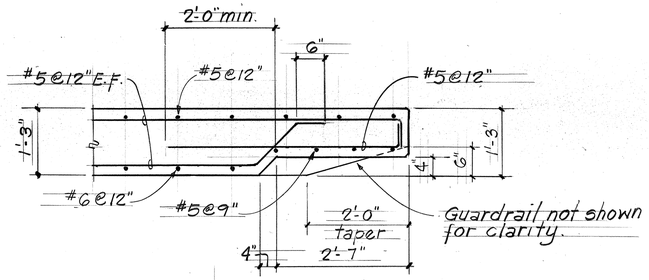
TYPICAL GUARDRAIL TO WING WALL CONNECTION DETAIL

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



A SECTION 5-14 5-14

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



B SECTION 5-14 5-14

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

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

137218

GEORGE K. NISHIMURA REGISTERED PROFESSIONAL ENGINEER No. 1388-S HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

1/30/02	Revise dimensions
Date	Revision

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL GUARDRAIL TO WING WALL CONNECTION DETAIL

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD

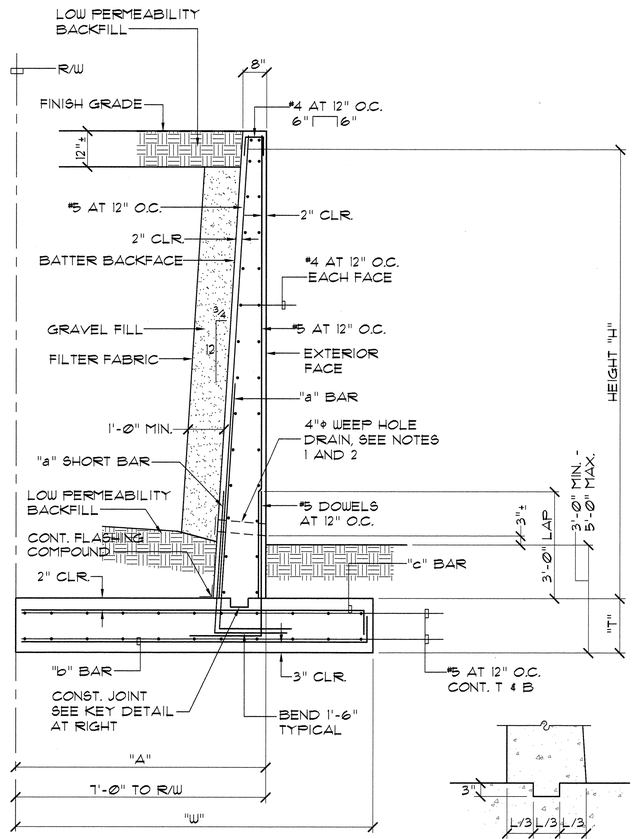
FEDERAL-AID PROJ. NO. STP-050-1(17)

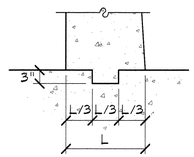
SCALE: AS NOTED DATE: OCT. 8, 1999

SHEET No. 5-14 OF 17 SHEETS

C.O. 56

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	57	72

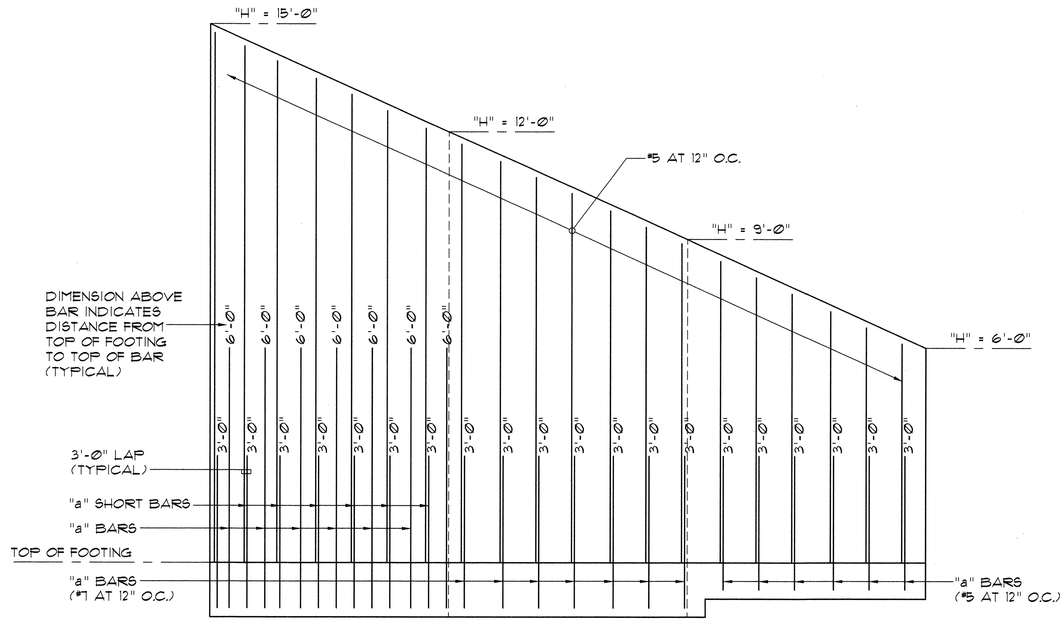




KEY DETAIL
SCALE: 3/4"=1'-0"

NOTES:
1. EXPOSED WALL DRAINS SHALL BE LOCATED 3"+ ABOVE FINISH GRADE OR A.C. PAVEMENT.
2. PROVIDE 6" SQUARE FILTER FABRIC ANCHORED FIRMLY TO BACKFACE OF WEEP HOLE DRAIN.
3. ANY DAMAGES FOR ENCROACHMENT TO THE ABUTTING PROPERTY SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ABUTTING OWNER.

A S-15 TYPICAL RETAINING WALL NO. 1 SECTION
SCALE: 1/2"=1'-0"



TYPICAL RETAINING WALL NO. 1 ELEVATION
NOT TO SCALE

NOTE:
STEP FOOTING AS MAY BE REQUIRED. SEE STEP FOOTING DETAIL ON SHEET S-5.

RETAINING WALL NO. 1 TABLE

HEIGHT "H"	"A"	"T"	"W"	"a" BAR	"b" BAR	"c" BAR
≤ 6'-0"	3'-0"	1'-0"	4'-0"	#5 AT 12" O.C.	#4 AT 12" O.C.	#4 AT 12" O.C.
6'-0" < "H" ≤ 9'-0"	5'-0"	1'-0"	6'-0"	#5 AT 12" O.C.	#4 AT 12" O.C.	#5 AT 12" O.C.
9'-0" < "H" ≤ 12'-0"	7'-0"	1'-6"	8'-0"	#7 AT 12" O.C.	#4 AT 12" O.C.	#7 AT 12" O.C.
12'-0" < "H" ≤ 15'-0"	7'-0"	1'-6"	10'-0"	#7 AT 6" O.C.	#6 AT 12" O.C.	#7 AT 12" O.C.

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

GEORGE K. NISHIMURA
LICENSED PROFESSIONAL ENGINEER
No. 1388-S
HAWAII, U.S.A.

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DATE	REVISION
9/25/01	ADD NOTE TO TYPICAL RETAINING WALL NO. 1 ELEVATION

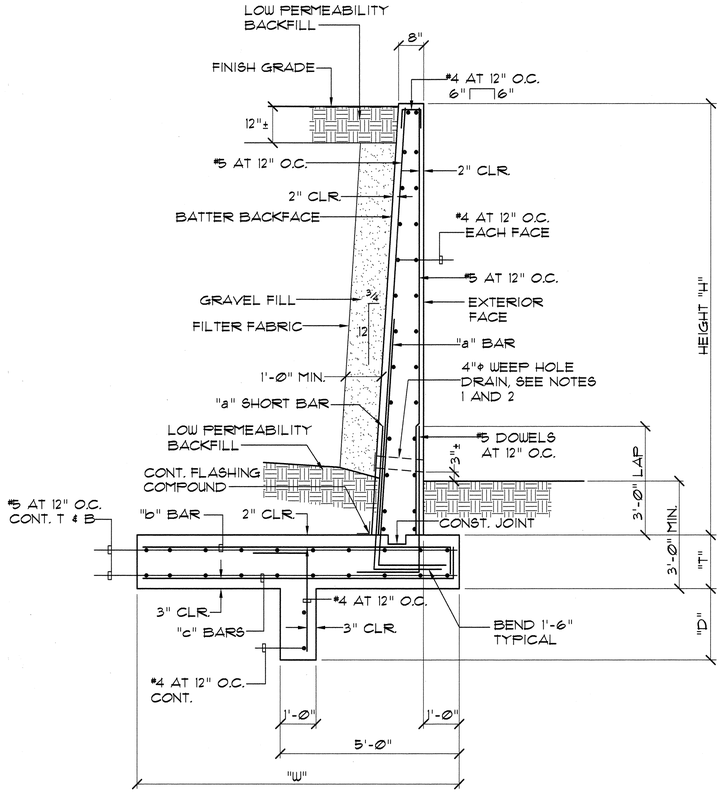
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL DETAILS

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
PROJECT NO. STP-050-1(17)

SHEET No. S-15 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	58	72



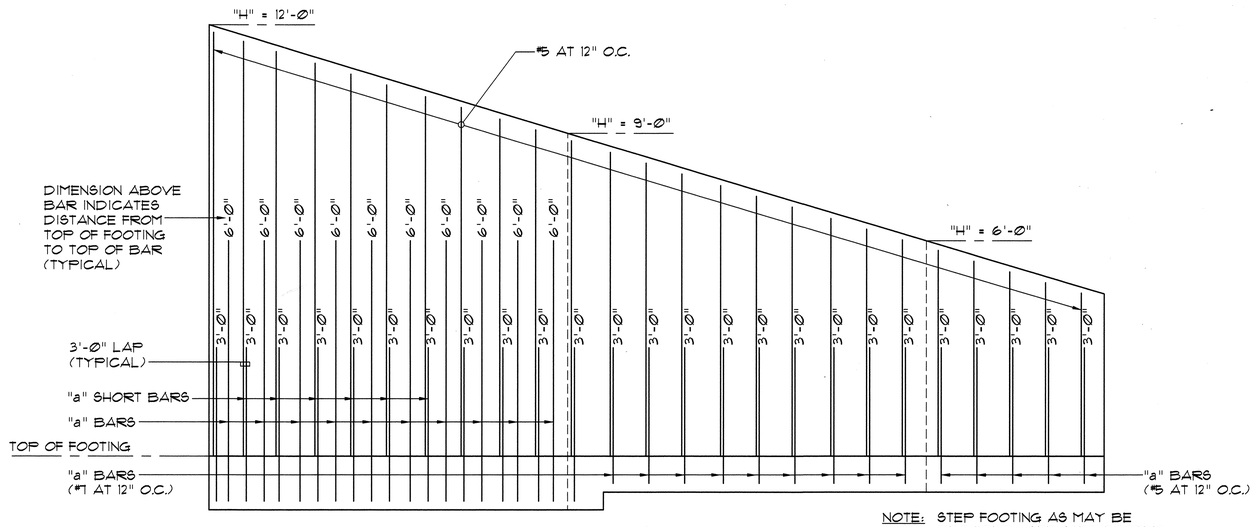
NOTES:

1. EXPOSED WALL DRAINS SHALL BE LOCATED 3"± ABOVE FINISH GRADE OR A.C. PAVEMENT.
2. PROVIDE 6" SQUARE FILTER FABRIC ANCHORED FIRMLY TO BACKFACE OF WEEP HOLE DRAIN.
3. ANY DAMAGES FOR ENCROACHMENT TO THE ABUTTING PROPERTY SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ABUTTING OWNER.

A / S-16

TYPICAL RETAINING WALL NO. 2 SECTION

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



NOTE: STEP FOOTING AS MAY BE REQUIRED. SEE STEP FOOTING DETAIL ON SHEET S-5.

TYPICAL RETAINING WALL NO. 2 ELEVATION

NOT TO SCALE

RETAINING WALL NO. 2 TABLE

HEIGHT "H"	"W"	"T"	"D"	"a" BAR	"b" BAR	"c" BAR
≤ 6'-0"	5'-0"	1'-0"	–	#5 AT 12" O.C.	#5 AT 12" O.C.	#5 AT 12" O.C.
6'-0" < "H" ≤ 9'-0"	7'-0"	1'-4"	1'-0"	#7 AT 12" O.C.	#7 AT 12" O.C.	#5 AT 12" O.C.
9'-0" < "H" ≤ 12'-0"	9'-0"	1'-6"	2'-0"	#7 AT 6" O.C.	#7 AT 6" O.C.	#5 AT 12" O.C.

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

DATE	REVISION
2/7/01	REVISE RETAINING WALL No.2 TABLE "b" BARS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL DETAILS

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
FEDERAL-AID PROJECT NO. STP-050-1(17)

SCALE: AS NOTED DATE: OCT. 8, 1999

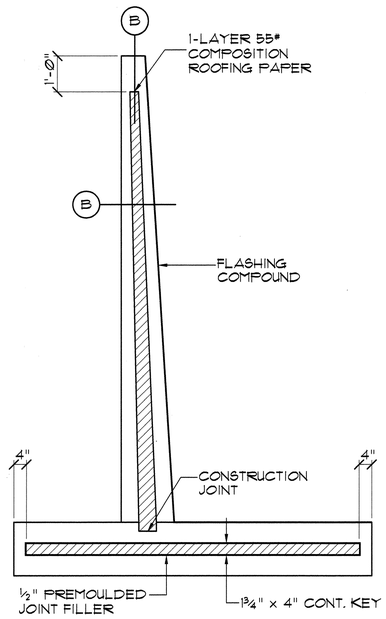
GEORGE K. NISHIMURA LICENSED PROFESSIONAL ENGINEER No. 1388-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

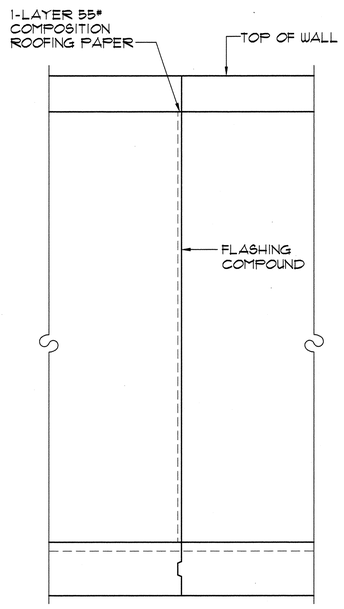
SHEET No. S-16 OF 17 SHEETS

C058

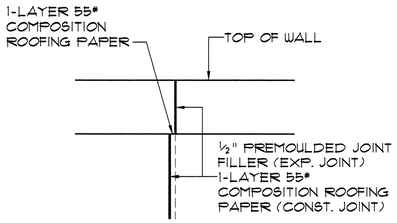
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-050-1(17)	2000	59	72



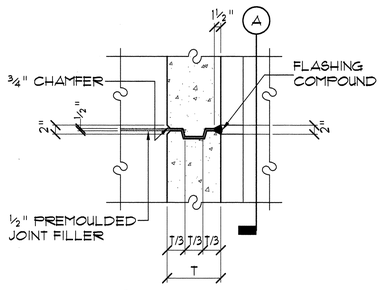
JOINT ELEVATION



(A) SECTION



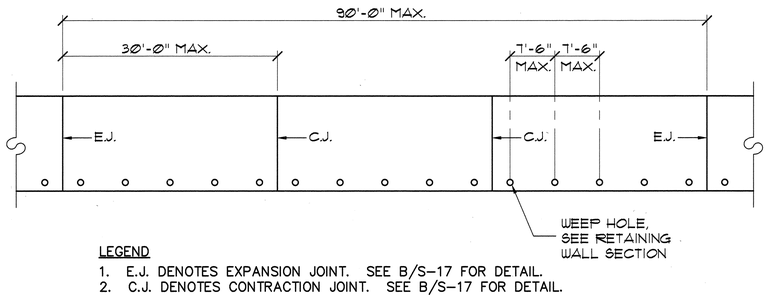
(B) SECTION



(C) SECTION

TYPICAL EXPANSION JOINT DETAILS

A | S-17 NOT TO SCALE

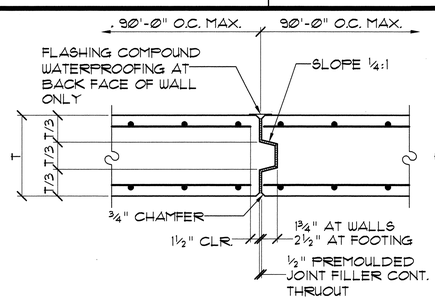


LEGEND

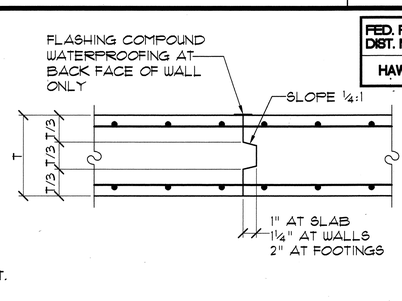
1. E.J. DENOTES EXPANSION JOINT. SEE B/S-17 FOR DETAIL.
2. C.J. DENOTES CONTRACTION JOINT. SEE B/S-17 FOR DETAIL.

WEEP HOLE, E.J. AND C.J. LOCATION

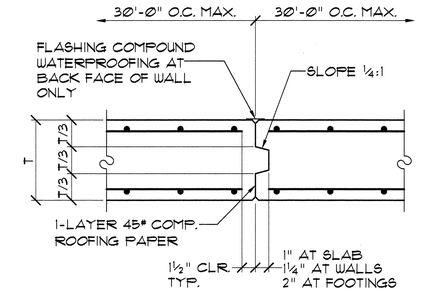
C | S-17 NOT TO SCALE



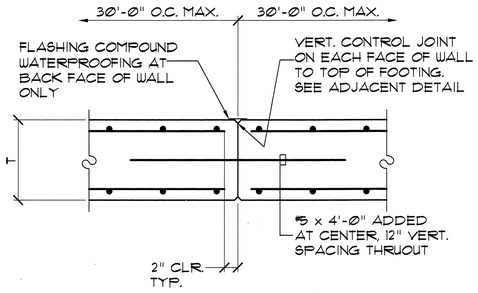
AT EXPANSION JOINT



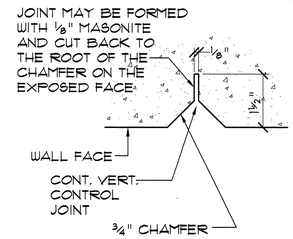
AT CONSTRUCTION JOINT



AT CONTRACTION JOINT

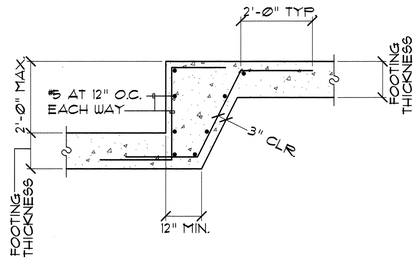


ALTERNATE CONTRACTION JOINT OR CONTROL JOINT



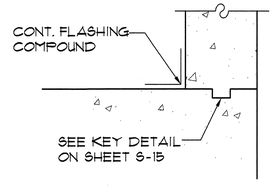
TYPICAL JOINT DETAILS

B | S-17 NOT TO SCALE



TYP. STEPPED FOOTING

D | S-17 NOT TO SCALE



TYP. FLASHING COMPOUND DET.

E | S-17 NOT TO SCALE

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

GEORGE K. NISHIMURA LICENSED PROFESSIONAL ENGINEER No. 1398-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS

KAUMUALII HIGHWAY INTERSECTION IMPROVEMENTS AT KOLOA ROAD
FEDERAL-AID PROJECT NO. STP-050-1(17)

SCALE: AS NOTED DATE: OCT. 8, 1999

SHEET No. S-17 OF 17 SHEETS