FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-H1C-01-97			

GENERAL

1. IN GENERAL, THE WORK SHALL CONFORM TO THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION) AND AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES W/ CURRENT INTERIMS.

REINFORCED CONCRETE

1. UNLESS OTHERWISE NOTED, ALL STRUCTURAL CONCRETE SHALL BE CLASS 'A CONFORMING TO THE ABOVE SPECIFICATION. BRIDGE DECK CONCRETE WHICH SHALL BE CLASS "BD".
2. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60. EXCEPT STIRRUPS AND TIES SHALL BE GRADE 40.
3. UNLESS OTHERWISE NOTED, ,SPLICES, LAPS, DOWEL EXTENSIONS AND EMBEDMENTS SHALL BE 50 BAR DIAMETERS MINIMUM.
4. ALL REINFORCING BARS MARKED CONTINUOUS (CONT.) ON THE PLANS SHALL BE LAPPED 40 BAR DIAMETERS MINIMUM.
5. STAGGER ALL SPLICES AS SPECIFIED.
6. ALL WELDING OF REINFORCING SHALL CONFORM TO "STRUCTURAL WELDING CODE – REINFORCING STEEL" (AWS D1.4).
7. REBARS SHALL BE SUPPORTED, BENT AND PLACED AS PER AASHTO AND THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" (LATEST EDITION). UNLESS OTHERWISE NOTED, ALL HOOKS SHALL BE STANDARD HOOKS.
8. MINIMUM COVER IN INCHES FOR REBARS FOR CAST–IN–PLACE CONCRETE:

CONCRETE CAST AGAINST EARTH	3"
DECK SLAB	
TOP BARS	1–1/2"
BOTTOM BARS	1–1/4"
BEAMS	
OUTSIDE FACE TO STIRRUPS	1–1/2"
MAIN REINFORCING	2"
ABUTMENTS, PIERS & RETAINING WALLS	2"
COLUMNS – TO TIES	2"

9. AT TIME CONCRETE IS PLACED, REINFORCING SHALL BE FREE FROM MUD, OIL, LAITANCE, MILL SCALE, RUST OR OTHER DELETERIOUS COATINGS.
10. REINFORCEMENT, ANCHOR BOLTS, DOWELS AND ALL OTHER EMBEDDED ITEMS SHALL BE POSITIVELY SECURED BEFORE PLACING CONCRETE.
11. WHEN REBARS OR THREADED RODS ARE DRILLED AND GROUTED IN PLACE USE SIKADUR HI–MOD EPOXY OR APPROVED EQUAL. FOLLOW THE MANUFACTURER'S INSTRUCTIONS FOR INSERT INSTALLATION.

BRIDGE

1. CENTER PIER AND ABUTMENT FOOTINGS DESIGNED TO BEAR ON WEATHERED BASALT. THIS CONDITION WAS ASSUMED TO BE ENCOUNTERED AT THE SAME ELEVATIONS AS THE EXISTING FOUNDATIONS (EXCEPT AT ABUTMENT #2). ANY OVEREXCAVATION THAT MAY BE REQUIRED SHALL BE BACKFILLED WITH A MINIMUM OF CLASS 'D' CONCRETE AT THE CONTRACTOR'S EXPENSE AND AS DIRECTED BY THE ENGINEER. AT ABUTMENT #2 OVEREXCAVATION IS ANTICIPATED. SEE DETAIL C/S–10.
2. BACKFILL BELOW ABUTMENT ROCKERS SHALL BE IN PLACE BEFORE ROCKER IS POURED. THE REMAINDER OF THE BACKFILL SHALL BE PLACED AFTER ENTIRE DECK IS CURED AND SHALL BE BROUGHT UP SIMULTANEOUSLY AT EACH ABUTMENT TO PREVENT UNBALANCED EARTH PRESSURES.
3. VERTICAL PIER COLUMN BARS SHALL BE ARRANGED IN SUCH A MANNER AS TO MISS PIER CAP REINFORCING ABOVE.
4. IN GENERAL, TOP OF CONCRETE DECK OF STRUCTURE SHALL BE CONSTRUCTED TO FOLLOW THE FINISH ROADWAY GRADES WITH ADJUSTMENTS FOR CAMBER AND DEFLECTION OF THE PRESTRESSED GIRDERS AS SHOWN ON THE PRESTRESSED CAMBER DIAGRAM.
5. CLOSURE STRIP AND OVERLAY SHALL NOT BE POURED ~~LESS THAN 60 DAYS~~ until AFTER THE BRIDGE SIDEWALKS AND CONCRETE RAILINGS HAVE BEEN POURED. NO CONCRETE TRUCK OR OTHER HEAVY EQUIPMENT SHALL BE PERMITTED ON THE BRIDGE DURING THE CLOSURE STRIP POUR, unless placement of concrete can be completed w/in 90 minutes and there is no measurable change in deflection of the new bridge deck. NOR FOR A MIN. OF 24 HOURS AFTER INITIAL SET OF CONC.
6. SALVAGE EXISTING PIPE RAILS AND HAUL TO THE HDOT DISTRICT YARD.
7. SALVAGE EXISTING RAIL POSTS. RAILING POSTS MAY BE REUSED WHEN APPROVED BY THE ENGINEER. REFINISH WHEN REQUIRED BY THE ENGINEER.

RETAINING WALLS

1. ALL FOOTINGS SHALL BEAR ON FIRM UNDISTURBED NATURAL SOILS OR PROPERLY COMPACTED STRUCTURAL FILL. THE BOTTOM OF ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY A QUALIFIED FOUNDATION ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL OR CONCRETE. COMPACT ANY STRUCTURAL FILL UNDER FOOTING TO 95% MAXIMUM RELATIVE DENSITY IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
2. ALL WATER, MUD AND DEBRIS SHALL BE REMOVED FROM THE BOTTOM OF FOOTING EXCAVATIONS PRIOR TO THE PLACEMENT OF CONCRETE.
3. AN 18" THICK CONTINUOUS BLANKET OF FREE DRAINING GRAVEL SHALL BE PLACE AT THE BACK OF ALL WALLS. AT THE BOTTOM OF THE BLANKET A 6 INCH MINIMUM DIAMETER PERFORATED DRAIN PIPE SHALL BE PLACED AND SLOPED TO DAY LIGHT AS DIRECTED BY THE ENGINEER.
4. THE GRAVEL SHALL BE HARD, TOUGH, DURABLE ROCK WRAPPED IN A FILTER FABRIC AND SHALL CONFORM TO THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING BY DRY WEIGHT
1–1/2 INCH	90 – 100
3/4 INCH	50 – 100
NO. 4	0 – 50
NO. 200	0 – 5

STANDARD SIZE AGGREGATES NO. 6, 57 AND 67 AND 1–1/2 INCH FILTER MATERIALS SHOULD SATISFY THIS GRADATION REQUIREMENT. FILTER FABRIC SHALL BE MIRAFI 140N OR ALTERNATE TYPE APPROVED BY THE ENGINEER.

5. BACKFILL SHALL CONSIST OF ON SITE MATERIAL APPROVED BY THE SOILS ENGINEER. BACKFILL SHALL BE COMPACTED TO 90% MAXIMUM RELATIVE DENSITY IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS UNDER THE DIRECTION OF THE ENGINEER.

PRESTRESSED CONCRETE

1. ALL CONCRETE SHALL BE NORMAL WEIGHT WITH AGGREGATES CONFORMING TO ASTM C–33.
2. THE FABRICATOR SHALL BE A COMPANY SPECIALIZING IN PROVIDING PRECAST, PRESTRESSED CONCRETE PRODUCTS AND SERVICES NORMALLY ASSOCIATED WITH THE INDUSTRY FOR AT LEAST 3 YEARS, AND CERTIFIED BY THE PCI.
3. PRESTRESSING STRANDS SHALL BE UNCOATED, 1/2" DIAMETER 7–WIRE, LOW RELAXATION STRANDS, GRADE 270K CONFORMING TO AASHTO M203.
4. MINIMUM CONCRETE STRENGTH AT RELEASE, f'ci = 4,500 PSI. MINIMUM CONCRETE STRENGTH AT 28 DAYS, f'c = 6,000 PSI.
5. THE FOLLOWING ESTIMATED CENTERLINE CAMBERS & DEFLECTIONS ARE PROVIDED FOR THE CONTRACTOR'S INFORMATION:

	G104	G120
* CAMBER (UP) @ ERECTION	1 1/4"	2"
* INITIAL DEFLECTION (DOWN) FROM DECK, SIDEWALK & RAILING LOADS	1/2"	1"
* ADDITIONAL NET DEFLECTION (DOWN) FROM LONG TERM EFFECTS	1/2"	1 1/8"

6. GIRDERS SHALL BE ERECTED NO SOONER THAN 90 DAYS AFTER CASTING.
7. PLAN LENGTH SHALL BE INCREASED AS NECESSARY TO COMPENSATE FOR SHORTENING DUE TO PRESTRESS AND SHRINKAGE.
8. EXTRA CAUTION MUST BE EXERCISED IN HANDLING AND PLACING ALL GIRDERS.
9. THE TOP SURFACE OF THE GIRDER FLANGE SHALL BE ROUGHENED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
10. IF THE LIFTING LOOPS EXTEND WITHIN 3" OF THE TOP OF THE ROADWAY SLAB THEY SHALL BE CUT OFF PRIOR TO POURING THE ROADWAY SLAB. ALL LIFTING STRANDS SHALL BE OF THE SAME MATERIAL AND STRENGTH AS THE PRESTRESSING STRANDS. WRAP THE LIFTING LOOPS SO THAT EACH STRAND WILL CARRY ITS SHARE OF THE TOTAL LOAD. EXTEND LIFTING LOOPS SO THAT EACH STAND WILL CARRY ITS SHARE OF THE TOTAL LOAD. EXTEND LIFTING LOOPS ENDING WITH A 9" LONG 90 DEG. HOOK TO WITHIN 3" CLEAR OF THE BOTTOM OF THE GIRDER.
11. CUT ALL STRANDS FLUSH WITH THE GIRDER ENDS AND PAINT WITH AN APPROVED EPOXY RESIN.

DESIGN CRITERIA

1. THE FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS IN THE FOUNDATION INVESTIGATION REPORT BY PSC ASSOCIATES, INC., JOB NO. 91152.10.

   7,000 PSF BEARING ON WEATHERED BASALT
   3,000 PSF BEARING ON OTHER NON–EXPANSIVE SOILS
   45 PCF ACTIVE PRESSURE (TOP FREE)
   65 PCF AT REST (TOP RESTRAINED)
   360 PCF PASSIVE PRESSURE (REDUCE 1/3 WHEN COMBINED WITH FRICTION)
   0.45 COEFF. OF FRICTION ON BASALT, CONCRETE & GRANULAR FILL
   0.40 COEFF. OF FRICTION ON OTHER ON–SITE SOILS
2. AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES FOURTEENTH EDITION 1989 AND ALL SUBSEQUENT INTERIMS.

LIVE LOAD: HS20–44

SEISMIC DESIGN: CATEGORY 'B'
ACCELERATION COEFF. 0.15
SITE COEFF. (S) 1.2

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ABUT.	ABUTMENT
ALT.	ALTERNATE
ALUM.	ALUMINUM
APPROX.	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
@	AT
AZ.	AZIMUTH
BM.	BEAM
BRG.	BEARING
BET.	BETWEEN
BOT.	BOTTOM
℄	CENTER LINE
CLR.	CLEAR
COL.	COLUMN
CONC.	CONCRETE
CONT.	CONTINUOUS
C.R.	CORROSION RESISTANT
DBL.	DOUBLE
DET.	DETAIL
DIA.	DIAMETER
DFT.	DRAFT
DWGS.	DRAWINGS
EA.	EACH
E.F.	EACH FACE
ELECT.	ELECTRICAL
ELEV., EL.	ELEVATION
E.W.	EACH WAY
EXIST'G	EXISTING
EXP.	EXPANSION
EXT.	EXTERIOR
FT.	FEET
FIN.	FINISH
FTG.	FOOTING
GALV.	GALVANIZED
GRSP	GROUTED RUBBLE SLOPED PROJECTION
HDWL.	HEADWALL
HORIZ.	HORIZONTAL
INT.	INTERIOR
JT.	JOINT
L	LENGTH
LG.	LONG
LOC.	LOCATION
LONGIT.	LONGITUDINAL
MAX.	MAXIMUM
MECH.	MECHANICAL
MIN.	MINIMUM
NC	NATIONAL COARSE
NO.	NUMBER
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
PAVEM'T	PAVEMENT
P/S	PER SIDE
P.I.	POINT OF INTERSECTION
R	RADIUS/RADII
REF.	REFERENCE
REINF.	REINFORCEMENT
REQ'D	REQUIRED
SC:	SCALE
SL.	SLOPE
SPAC'G, SPCG.	SPACING
SPECS.	SPECIFICATIONS
STD.	STANDARD
STIRR.	STIRRUP
SYMM.	SYMMETRICAL
TB	TOP OF BEAM ELEVATION
THK.	THICK
T&B	TOP & BOTTOM
TOL.	TOLERANCE
TS	TOP OF SEAT ELEVATION
TYP.	TYPICAL
VERT.	VERTICAL
W/	WITH
W.P.	WORKING POINT

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

DATE	REVISION
5/4/99	Revise Notes

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

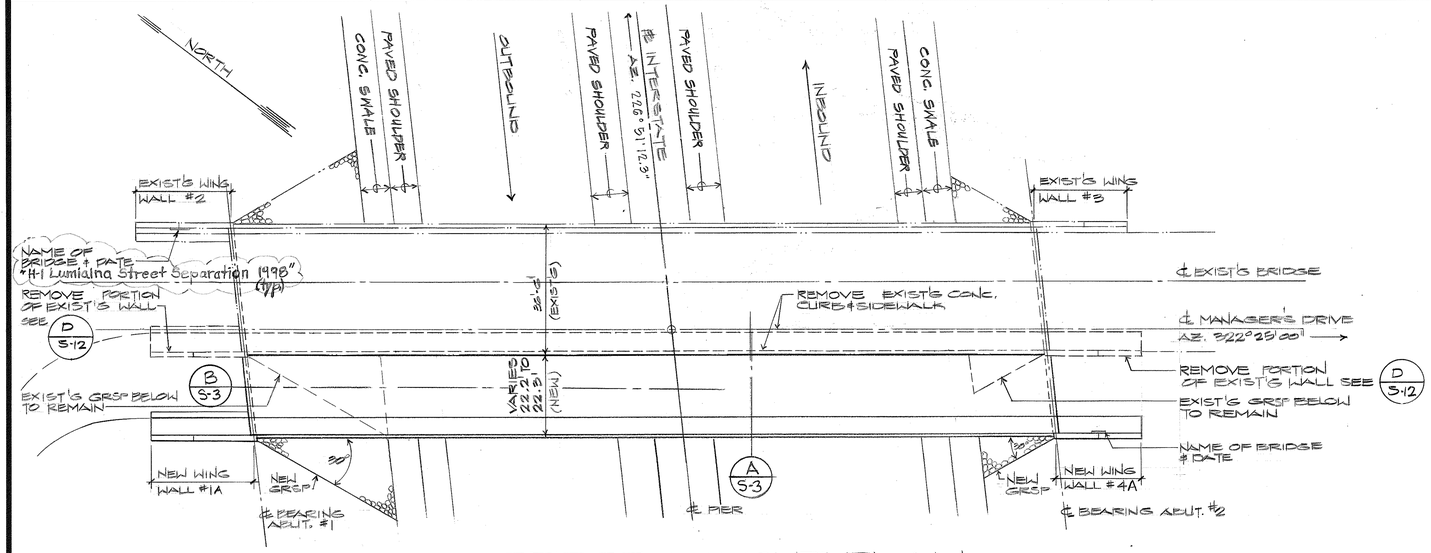
GENERAL NOTES

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H–1

SHEET NO. S-1 OF 16 SHEETS

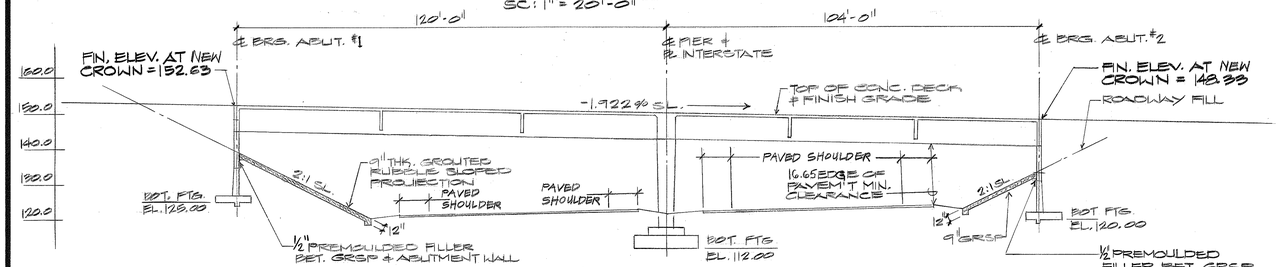
ORIGINAL PLAN
NOTE BOOK No.
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-HIC-01-97			



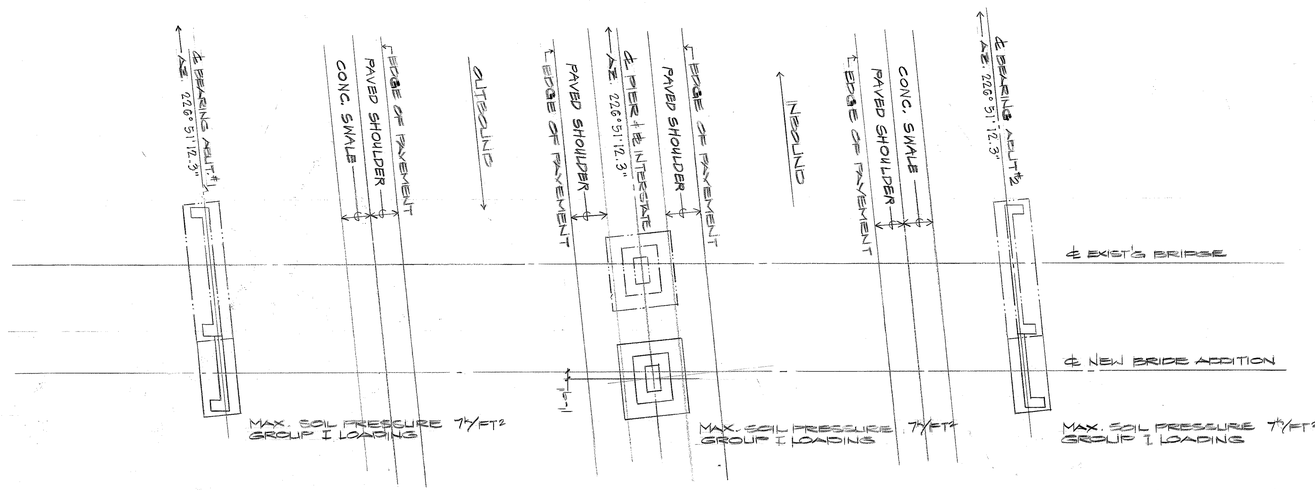
BRIDGE LAYOUT PLAN

SC: 1" = 20'-0"



BRIDGE PROFILE - SECTION

SC: 1" = 20'-0"



FOUNDATION PLAN

SC: 1" = 20'-0"

NOTES: 1. CONTRACTOR TO INSTALL SAFETY NETTING UNDER THE GIRDERS AFTER THEIR INSTALLATION. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.

2. CONTRACTOR TO PROVIDE PUMP TO PREVENT STORM WATER FROM SITTING IN FOOTING EXCAVATION.

ORIGINAL PLAN

NOTE BOOK No.

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

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4826-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

5/4/99	Add Sign Name
DATE	REVISION

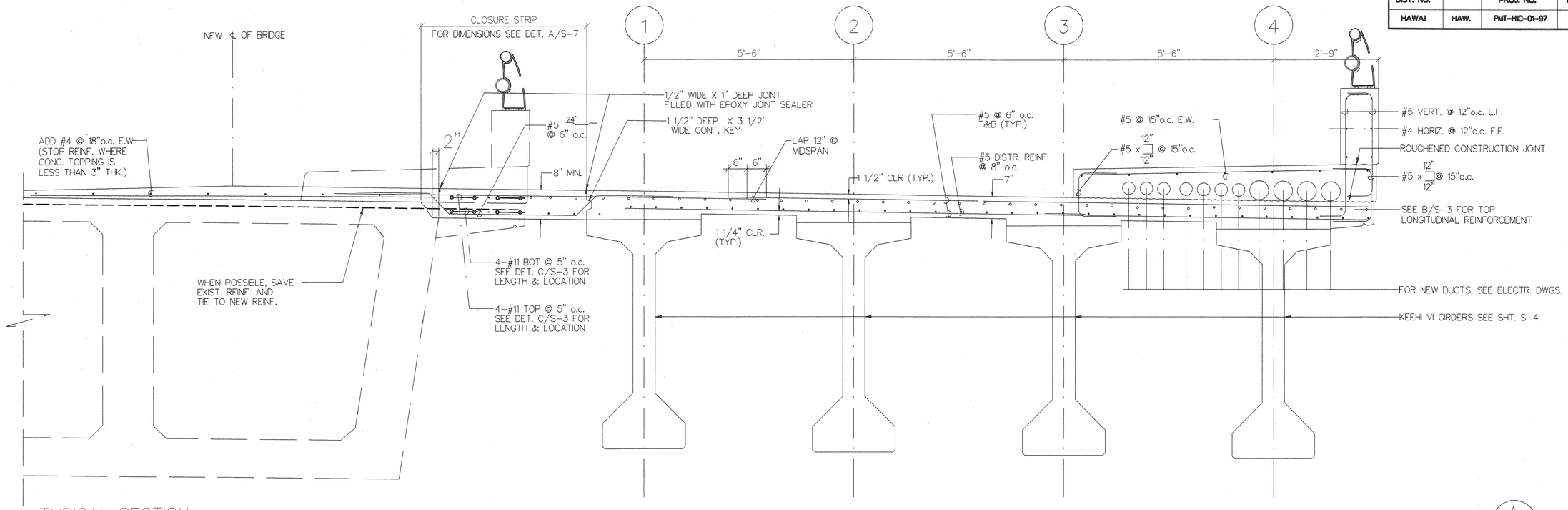
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LAYOUT PLAN & PROFILE

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET No. S-2 OF 16 SHEETS

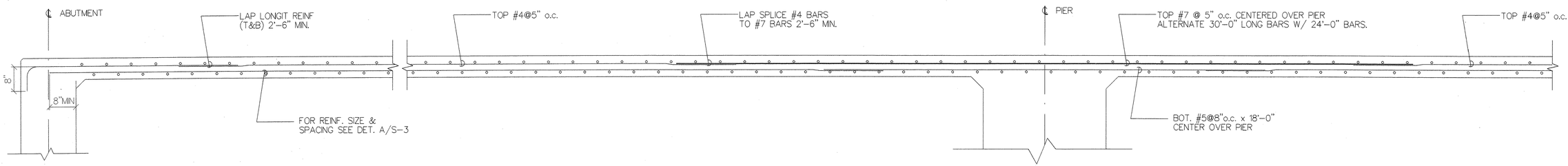
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-HIC-01-97			



TYPICAL SECTION

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

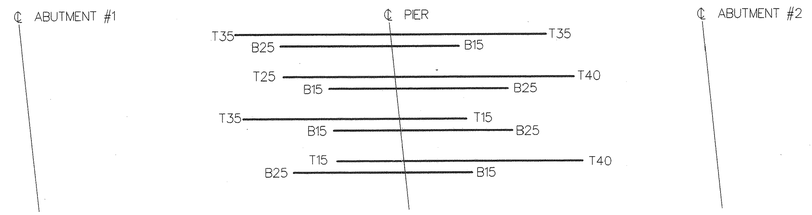
A S-3



DECK SECTION SHOWING LONGITUDINAL REINFORCING

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

B S-3



LAYOUT PLAN SHOWING DECK LONGIT. REINF. TO BE REPLACED IN CLOSURE STRIP

N.T.S.

C S-3

NOTE:
1. 'T' INDICATES TOP BAR, 'B' INDICATES BOTTOM BAR.
2. '25' INDICATES LENGTH TO END OF BAR MEASURED FROM CENTER LINE OF PIER EQUALS 25 FEET.
3. ALL BARS SHOWN ARE #11 BARS.
4. LAP #4 BARS 2'-6" TO #11 BARS, SIMILAR TO DET. B/S-3.
5. THESE BARS REPLACE LONGIT. REINF. FROM REMOVED SECTION OF EXISTING BRIDGE.

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL CROSS SECTION AND DECK REINFORCING

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET NO. S-3 OF 16 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-H1C-01-97			

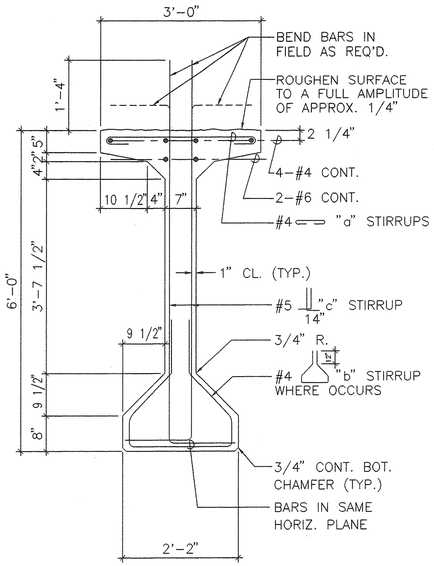
SECTION PROPERTIES

AREA ____ 944 in.^{2}

I ____ 638,894 in.^{4} W ____ 1.02 K/Ft.

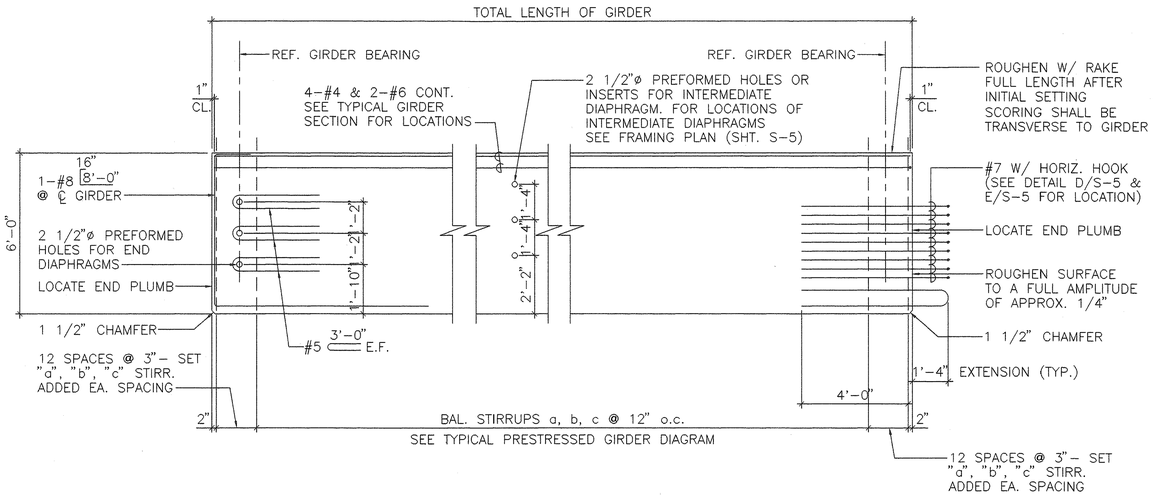
Y_t ____ 36.75 in. S_t ____ 17,394 in.^{3}

Y_b ____ 35.27 in. S_b ____ 18,114 in.^{3}



TYP. PRESTRESSED CONCRETE GIRDER – KEEHI VI (A / S-4)

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



EXPANSION END FIXED END

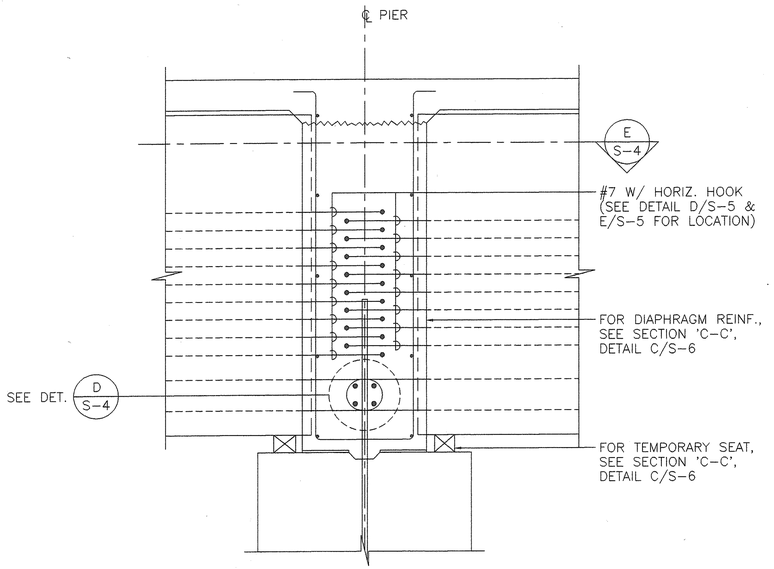
ELEVATION – TYPE KEEHI VI GIRDER END DETAILS (B / S-4)

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

THOMAS Y. TANIMURA LICENSED PROFESSIONAL ENGINEER No. 4926-S HAWAII, U.S.A.

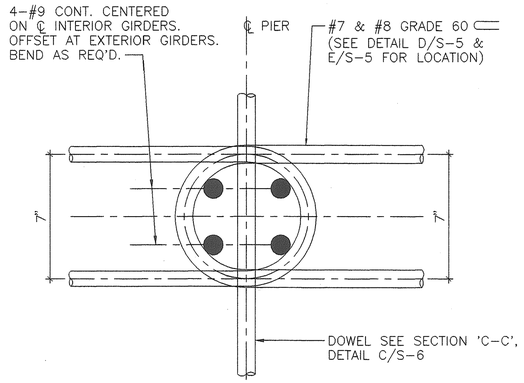
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature



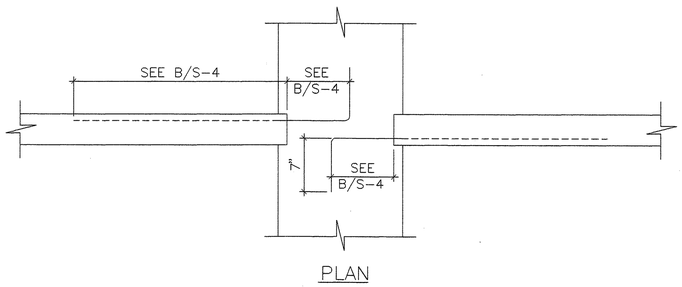
GIRDER REINF. @ CENTER PIER DIAPHRAGM (C / S-4)

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



DETAIL (D / S-4)

SC: 3" = 1'-0"



PLAN

SECTION (E / S-4)

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

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

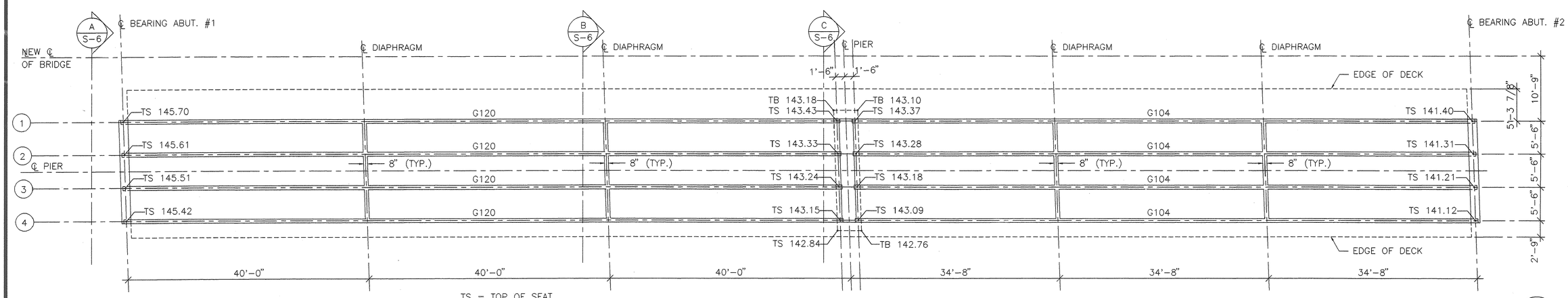
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PRESTRESS GIRDER DETAILS

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET NO. S-4 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-H1C-01-97			

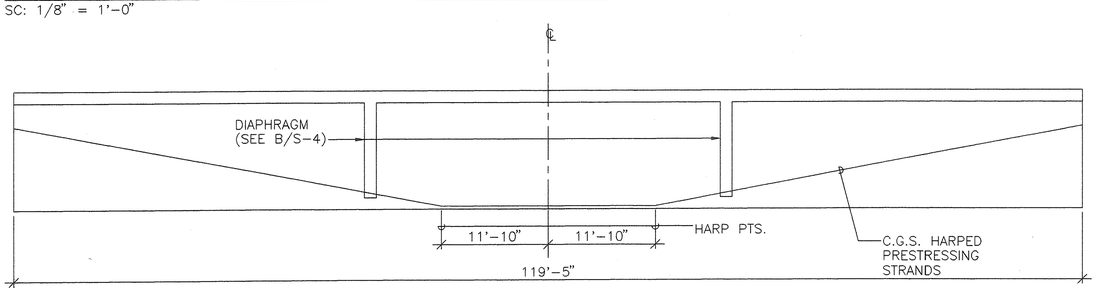


TS = TOP OF SEAT
TB = TOP OF PIER BEAM

FRAMING PLAN & GIRDER SEAT ELEVATIONS

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

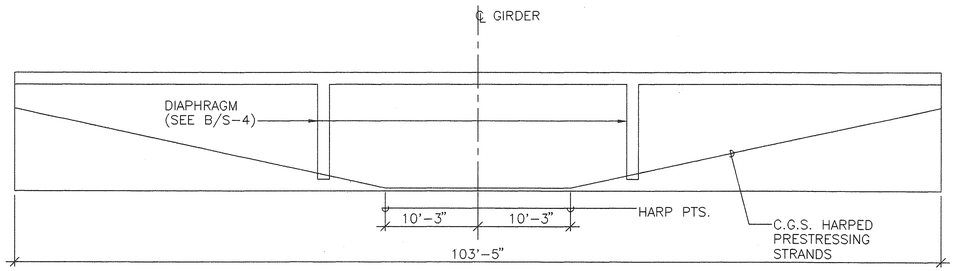
A S-5



G120 GIRDER ELEVATION

SC: HORIZ. 1/8" = 1'-0" VERT. 1/4" = 1'-0"

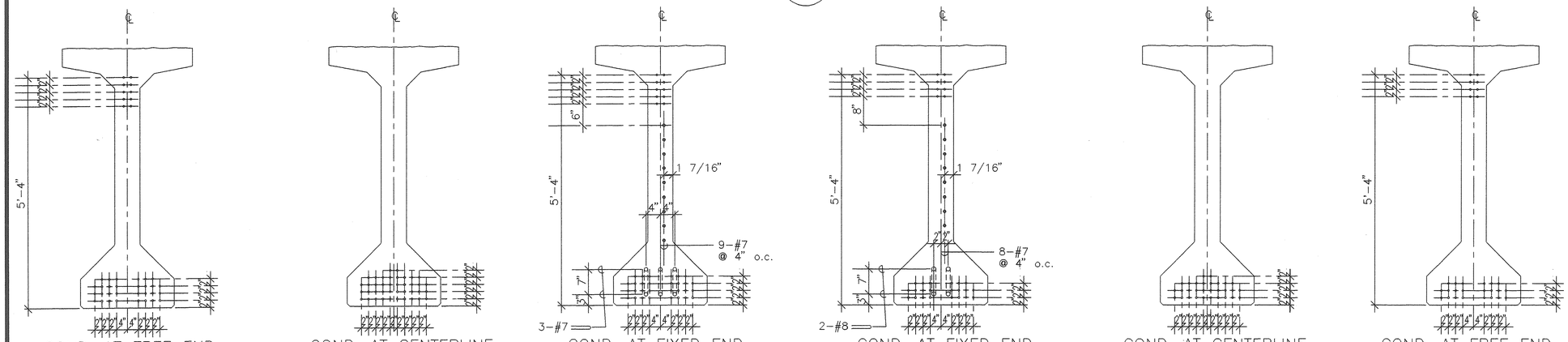
B S-5



G104 GIRDER ELEVATION

SC: HORIZ. 1/8" = 1'-0" VERT. 1/4" = 1'-0"

C S-5



COND. AT FREE END | COND. AT CENTERLINE | COND. AT FIXED END

INITIAL PRESTRESS (PULL) = 30.98K/STRAND

FINAL PRESTRESS (AFTER ALL LOSSES) = 25.26K/STRAND

STRAND PATTERNS FOR G120 GIRDERS (40 STRANDS/GIRDER)

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

D S-5

COND. AT FIXED END | COND. AT CENTERLINE | COND. AT FREE END

INITIAL PRESTRESS (PULL) = 30.98K/STRAND

FINAL PRESTRESS (AFTER ALL LOSSES) = 26.02K/STRAND

STRAND PATTERNS FOR G104 GIRDERS (30 STRANDS/GIRDER)

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

E S-5

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

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

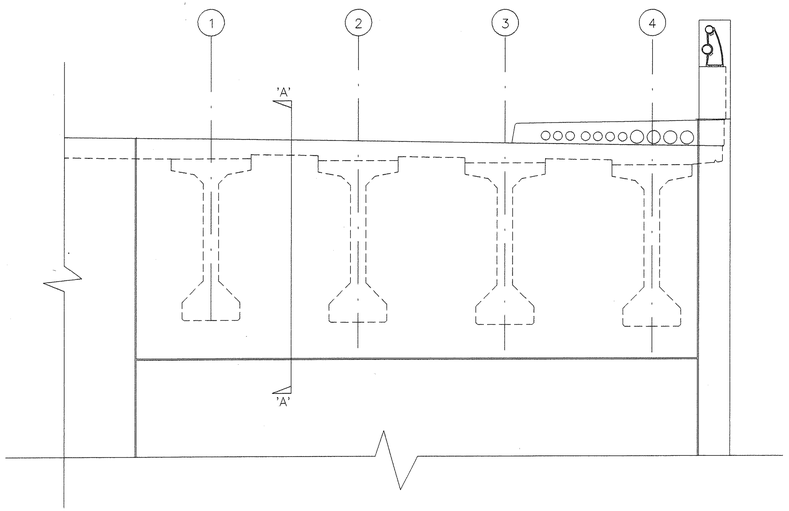
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

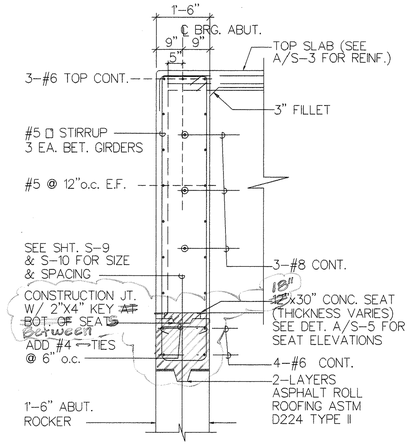
FRAMING PLAN, GIRDER ELEVATIONS & STRAND DETAILS

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET NO. S-5 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-H1C-01-97			

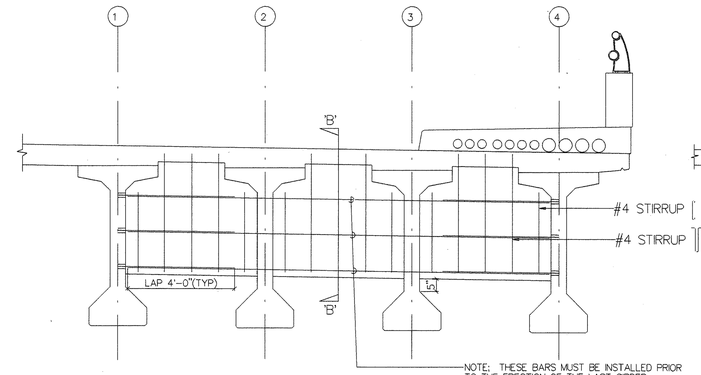


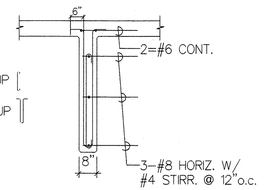


SECTION 'A-A'
SC: 1/2" = 1'-0"

ABUTMENT BEAM ELEVATION & SECTION
SC: 3/8" = 1'-0"

A
S-6

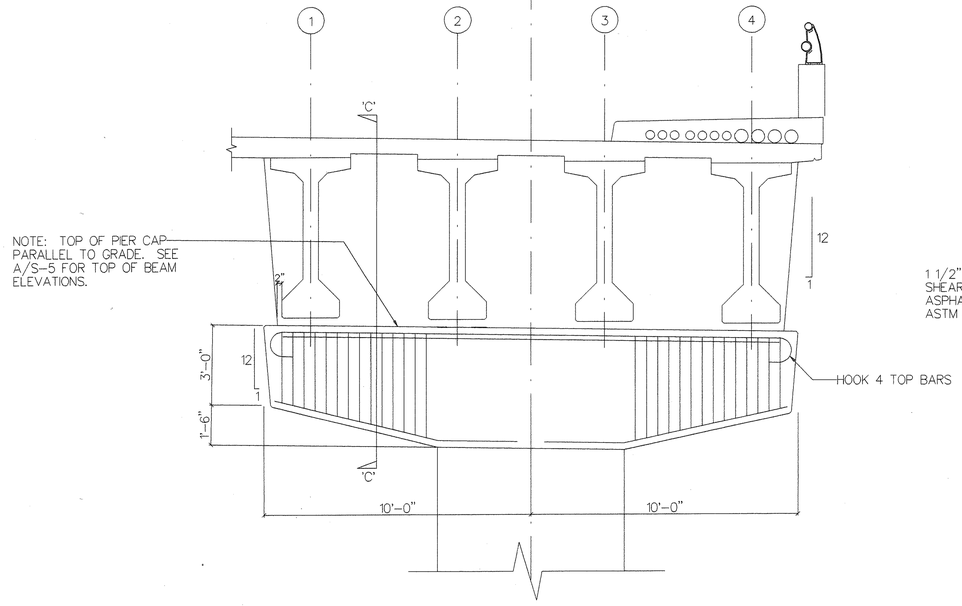


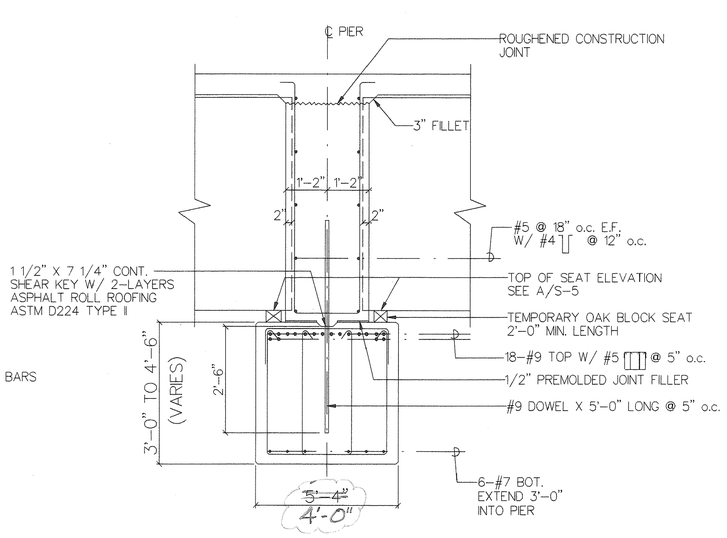


SECTION 'B-B'

DIAPHRAGM BEAM ELEVATION & SECTION
SC: 3/8" = 1'-0"

B
S-6





SECTION 'C-C'
SC: 1/2" = 1'-0"

PIER BEAM ELEVATION & SECTION
SC: 3/8" = 1'-0"

C
S-6

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

DATE	REVISION
5/4/99	Revise Seat Condition & Beam Dimensions

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT, PIER AND DIAPHRAGM BEAMS

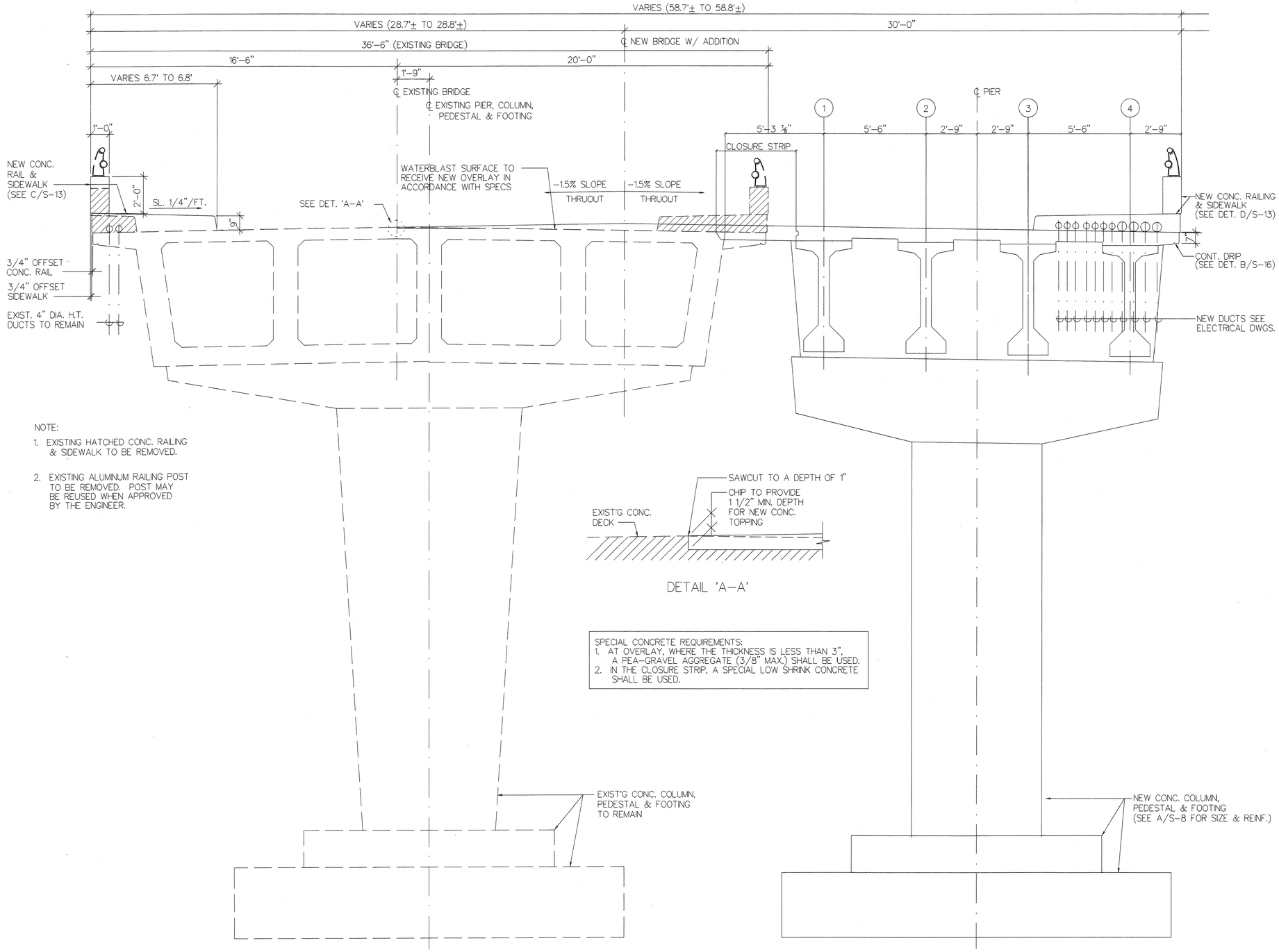
MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET NO. S-6 OF 16 SHEETS

13

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FMT-H1C-01-97			



NOTE:

1. EXISTING HATCHED CONC. RAILING & SIDEWALK TO BE REMOVED.
2. EXISTING ALUMINUM RAILING POST TO BE REMOVED. POST MAY BE REUSED WHEN APPROVED BY THE ENGINEER.

DETAIL 'A-A'

SPECIAL CONCRETE REQUIREMENTS:
1. AT OVERLAY, WHERE THE THICKNESS IS LESS THAN 3", A PEA-GRAVEL AGGREGATE (3/8" MAX.) SHALL BE USED.
2. IN THE CLOSURE STRIP, A SPECIAL LOW SHRINK CONCRETE SHALL BE USED.

TYPICAL CROSS SECTION
SC: 3/8" = 1'-0"

A
S-7

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

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

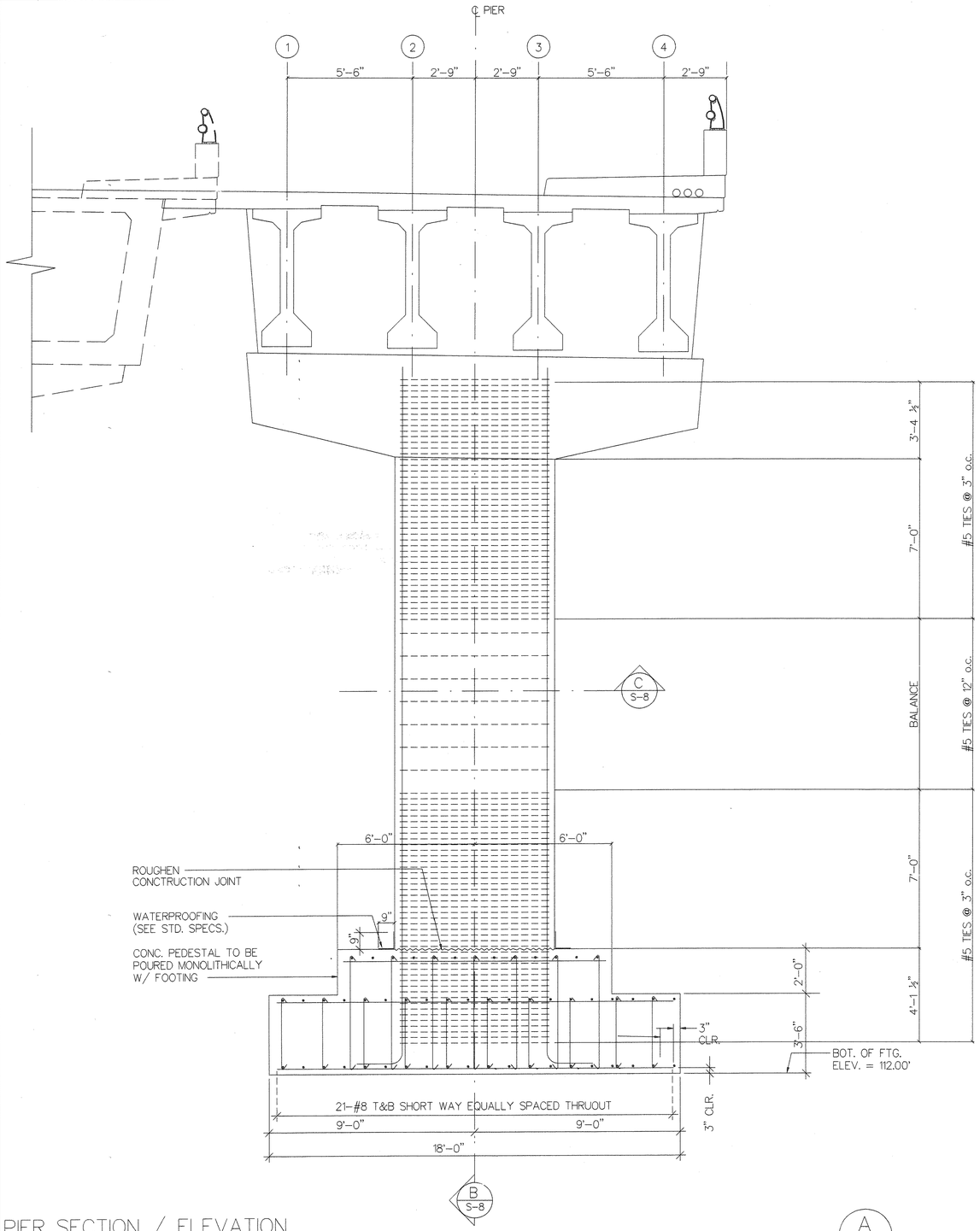
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL CROSS SECTION AT CENTER PIER

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET NO. S-7 OF 16 SHEETS

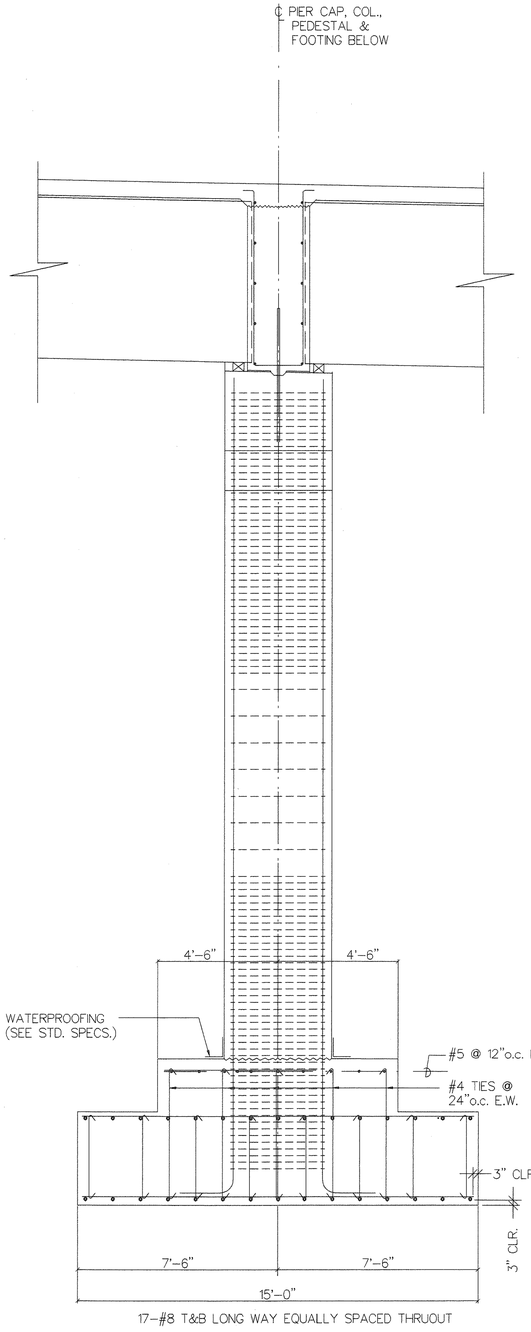
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-HIC-01-97			



PIER SECTION / ELEVATION

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

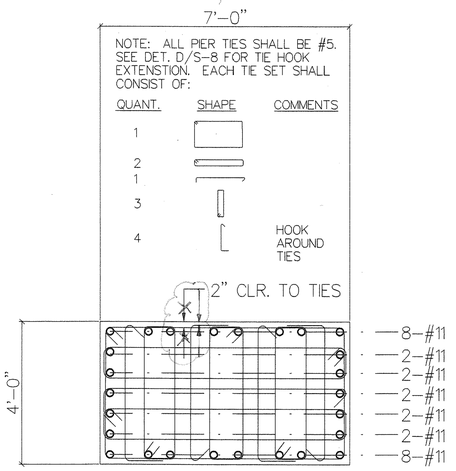
A S-8



PIER SECTION

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

B S-8

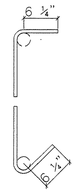


NOTES:
1. ALL PIER TIES SHALL BE #5.
2. ALTERNATE HOOKS.

TYP. SECTION THRU CENTER PIER

N.T.S.

C S-8



NOTE: ALTERNATE HOOKS

TYP. TIE HOOK EXTENSION

N.T.S.

D S-8

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

DATE	REVISION
5/4/99	Clarify Dimensions

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

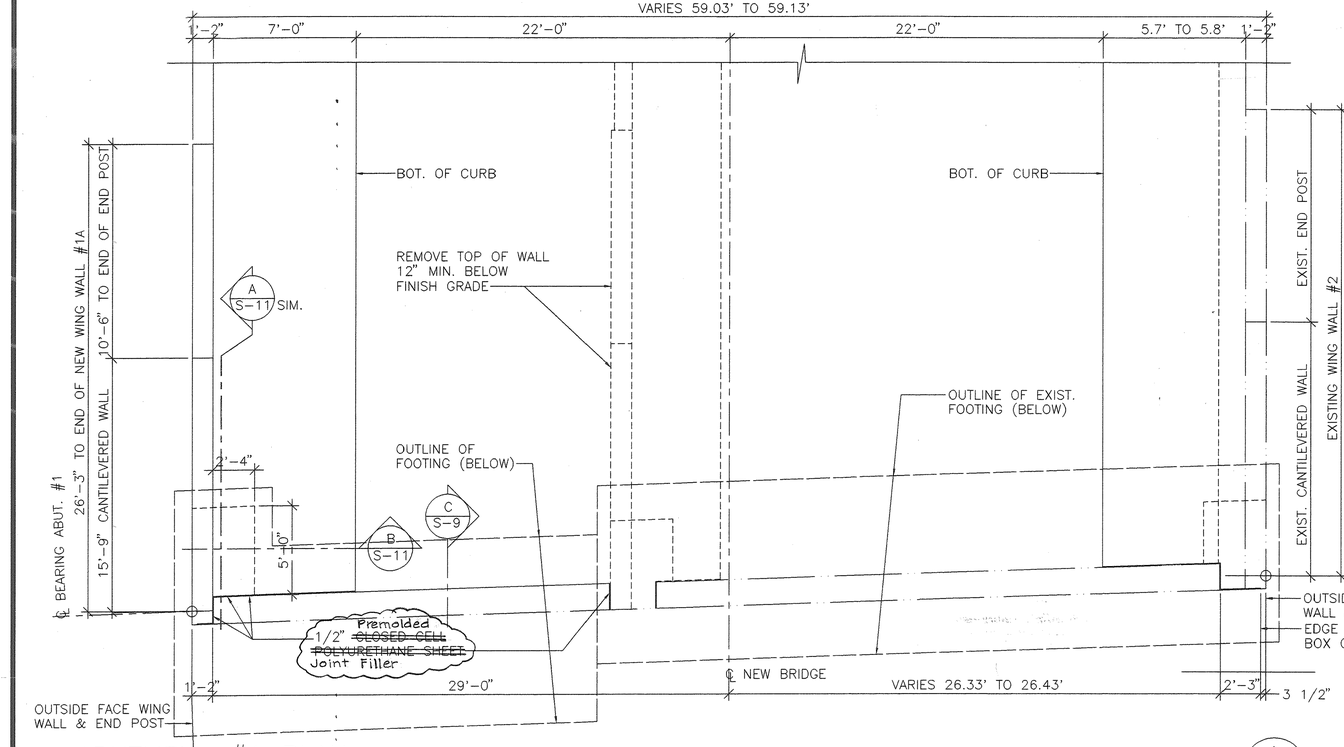
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PIER ELEVATION/SECTION & DETAILS

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET NO. S-8 OF 16 SHEETS

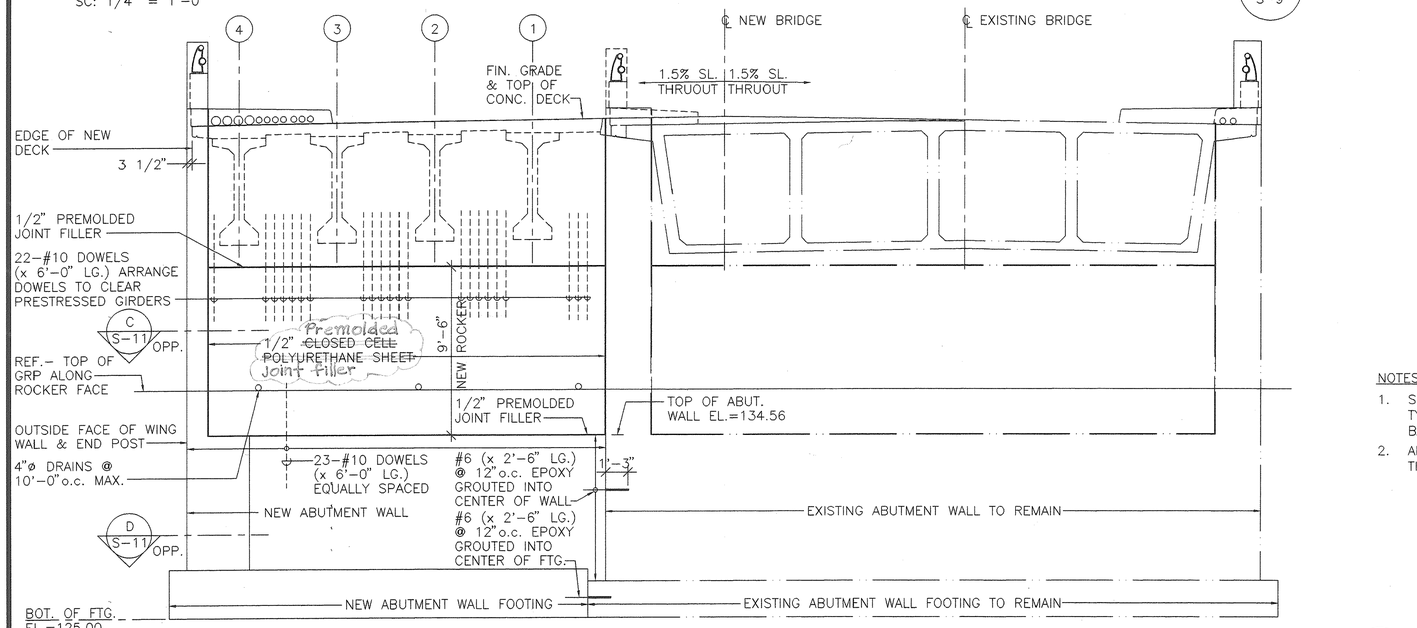
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FMT-H1C-01-97			



ABUTMENT #1 PLAN

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

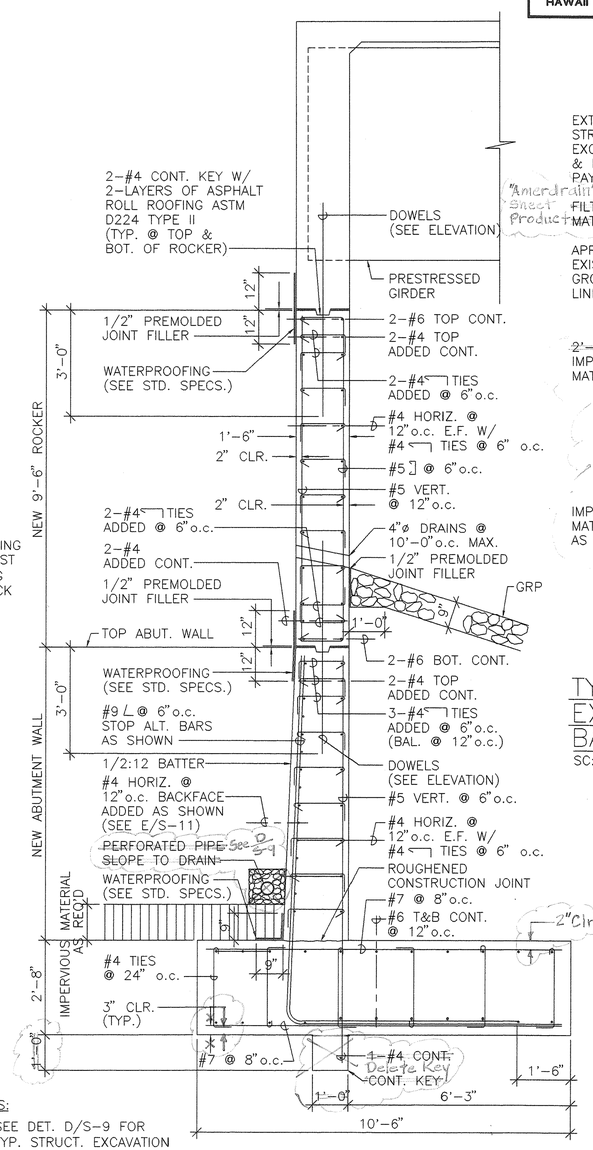
A S-9



ABUTMENT #1 ELEVATION

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

B S-9



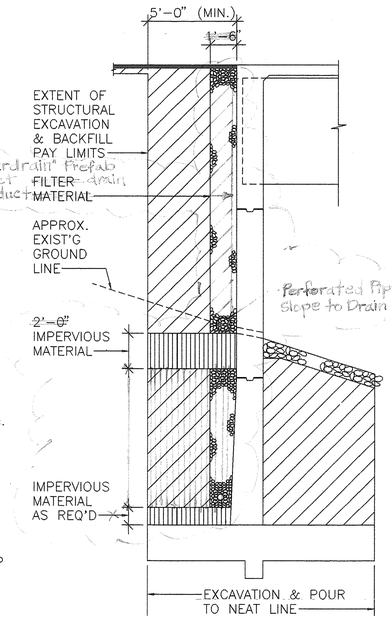
NOTES:

1. SEE DET. D/S-9 FOR TYP. STRUCT. EXCAVATION BACKFILL & PAY LIMITS
2. ALTERNATE HOOKS FOR TIES.

ABUTMENT #1 SECTION

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

C S-9



TYP. STRUCTURE EXCAVATION & BACKFILL PAY LIMITS

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

D S-9

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

ORIGINAL PLAN
NOTE BOOK
No.

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

5/4/99 Delete Key, Modify Drain & Backfill

DATE REVISION

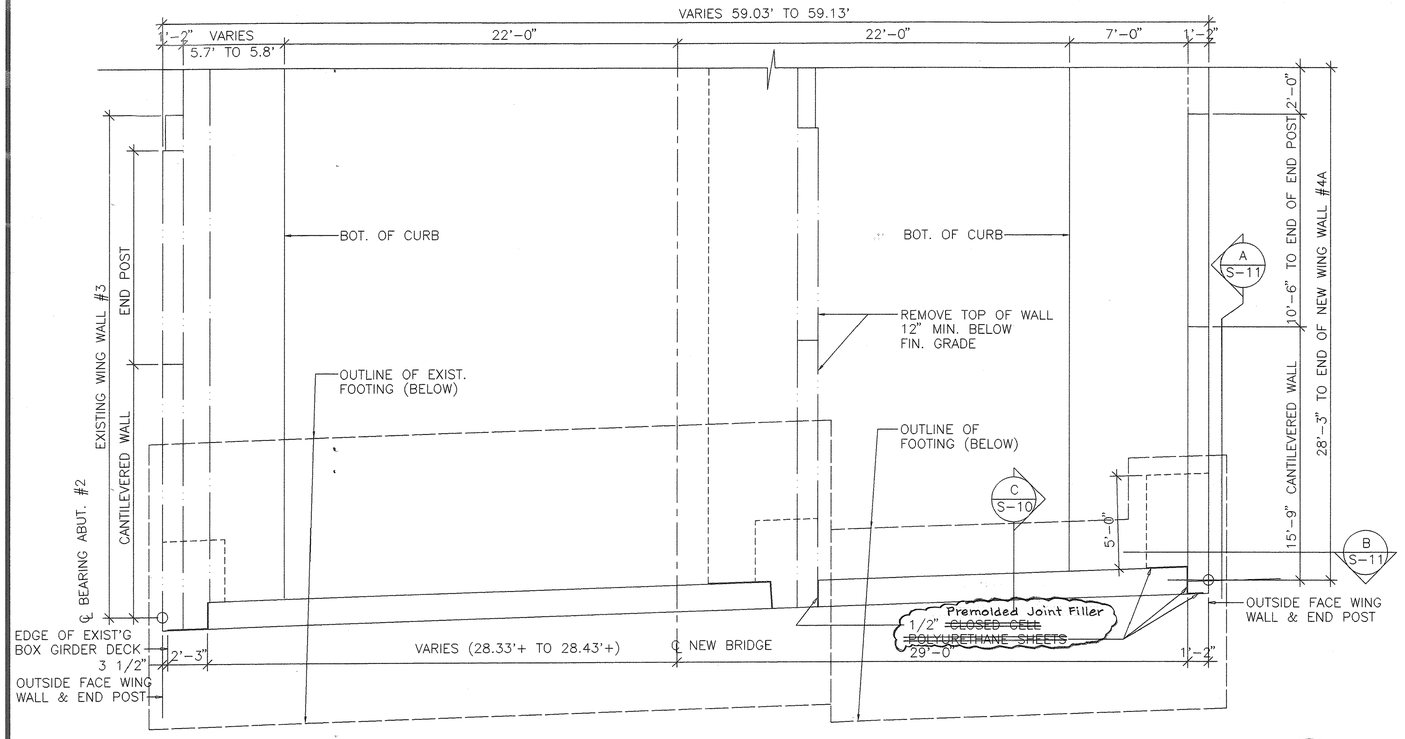
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT WALL #1 PLAN, ELEVATION & SECTION

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

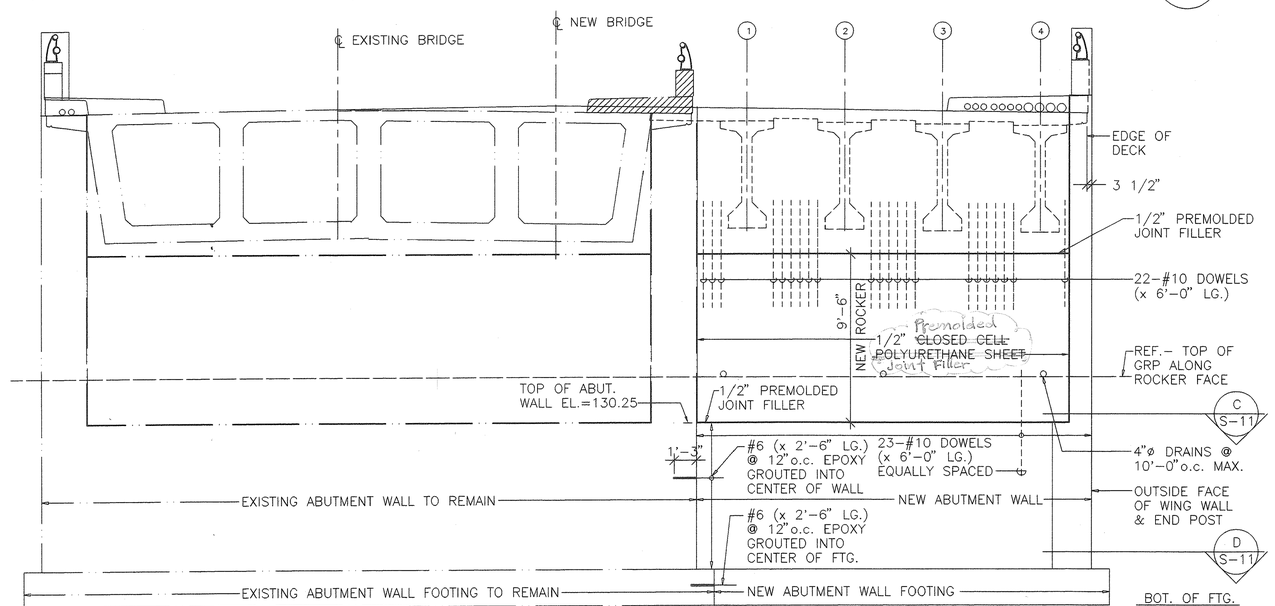
SHEET NO. S-9 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-HSC-01-97			



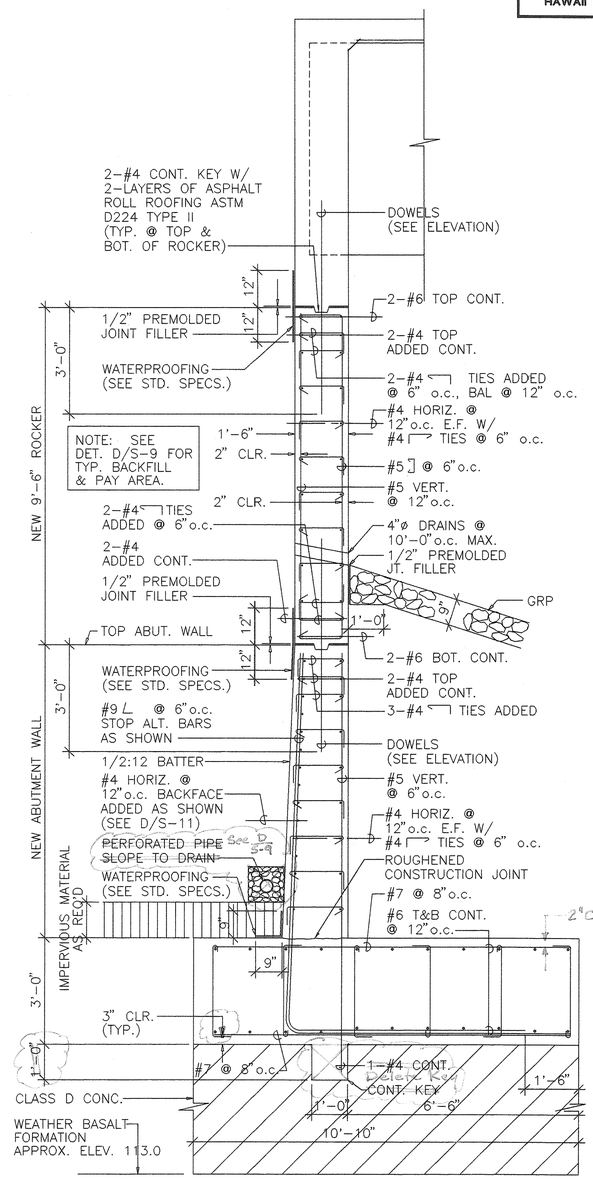
ABUTMENT #2 PLAN
SC: 1/4" = 1'-0"

A S-10



ABUTMENT #2 ELEVATION
SC: 1/4" = 1'-0"

B S-10



NOTES:
1. ALTERNATE HOOKS FOR TIES.

ABUTMENT #2 SECTION
SC: 1/2" = 1'-0"

C S-10

DATE	REVISION
5/4/91	Delete Key, Modify Drain & Joint Filler

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

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

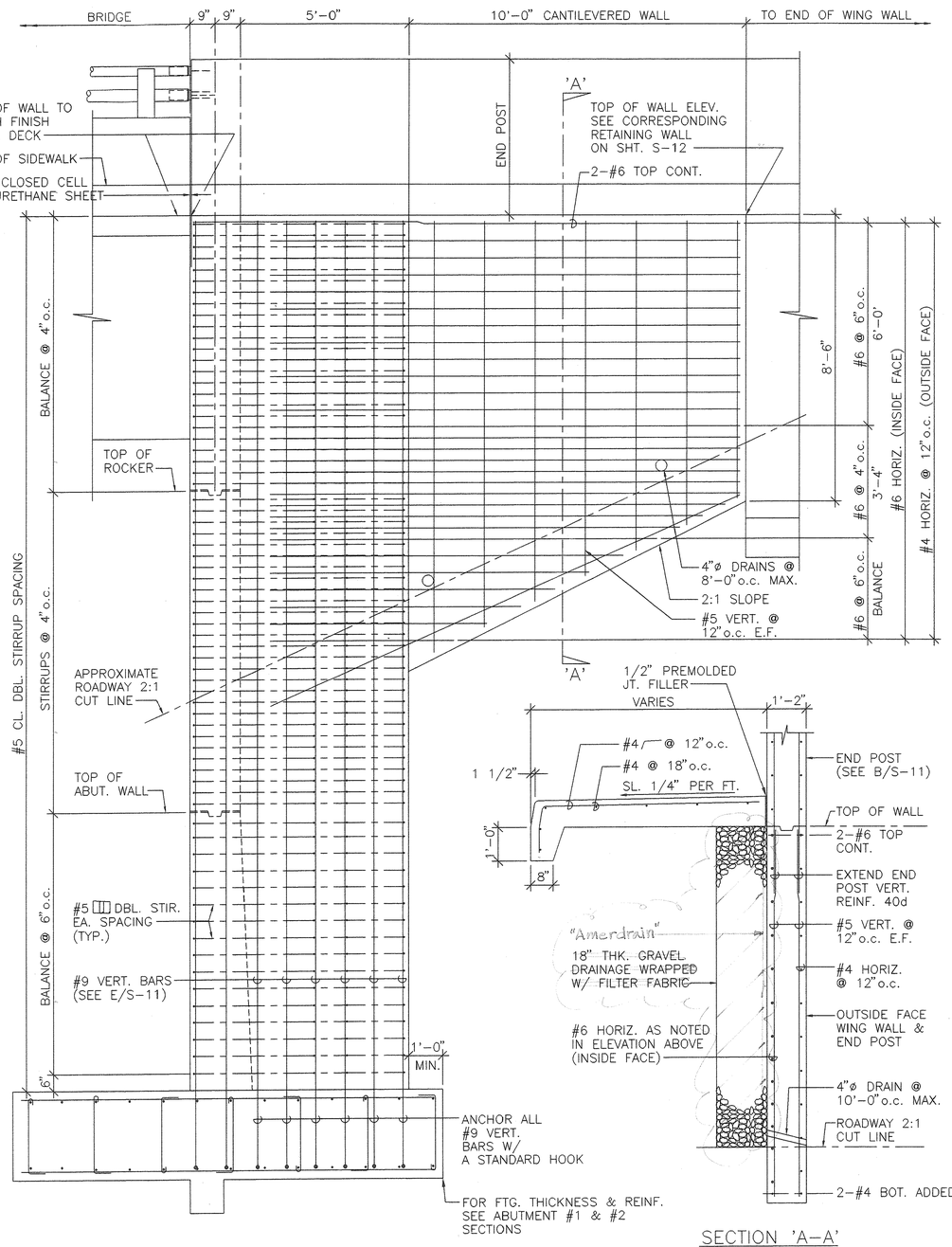
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT WALL #2 PLAN, ELEVATION & SECTION

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET NO. S-10 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-HIC-01-97			

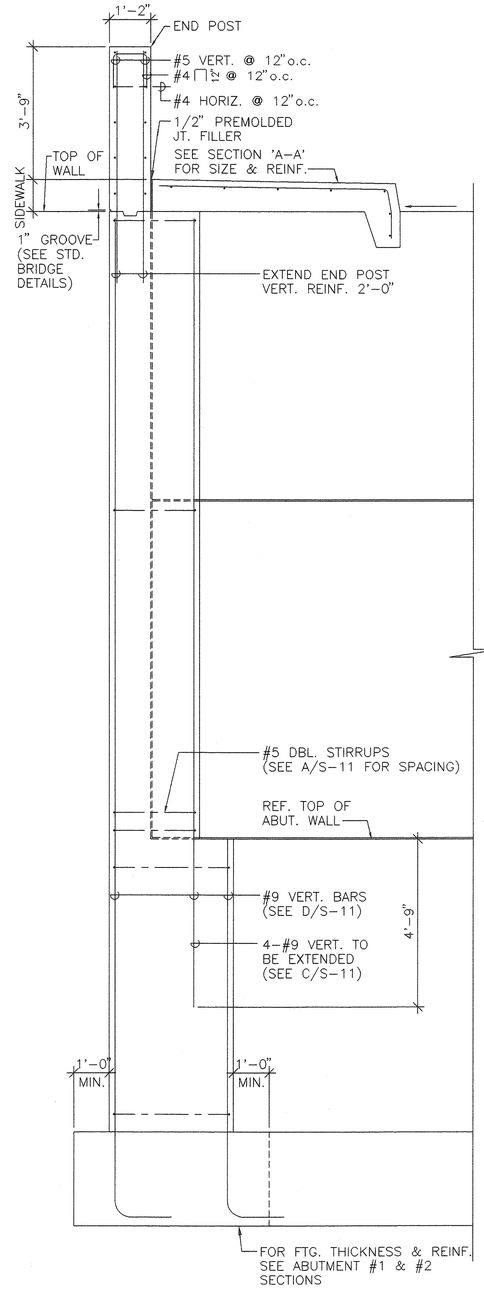


SECTION 'A-A'

TYPICAL END WALL ELEVATION / SECTION

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

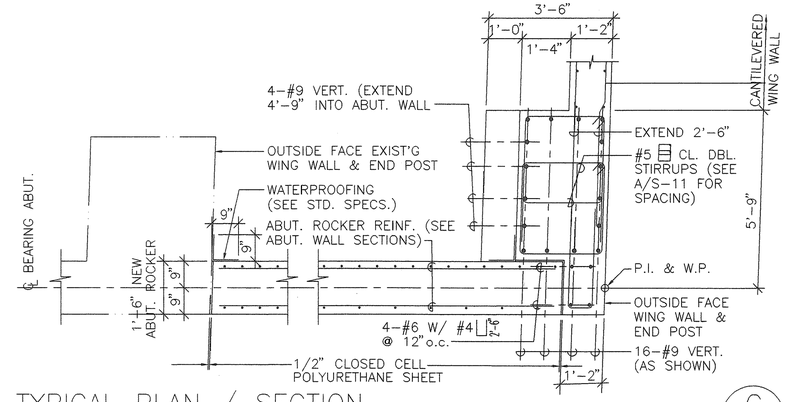
A S-11



TYPICAL END WALL SECTION

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

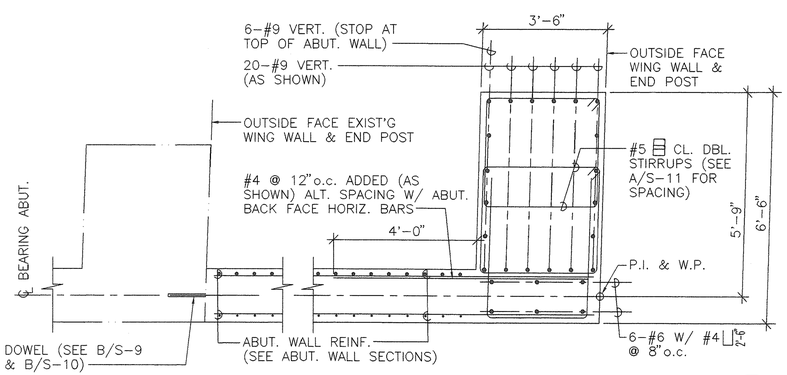
B S-11



TYPICAL PLAN / SECTION

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

C S-11



TYPICAL PLAN / SECTION

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

D S-11

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

ORIGINAL PLAN
NOTE BOOK
No.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL END WALL ELEVATION & SECTIONS

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

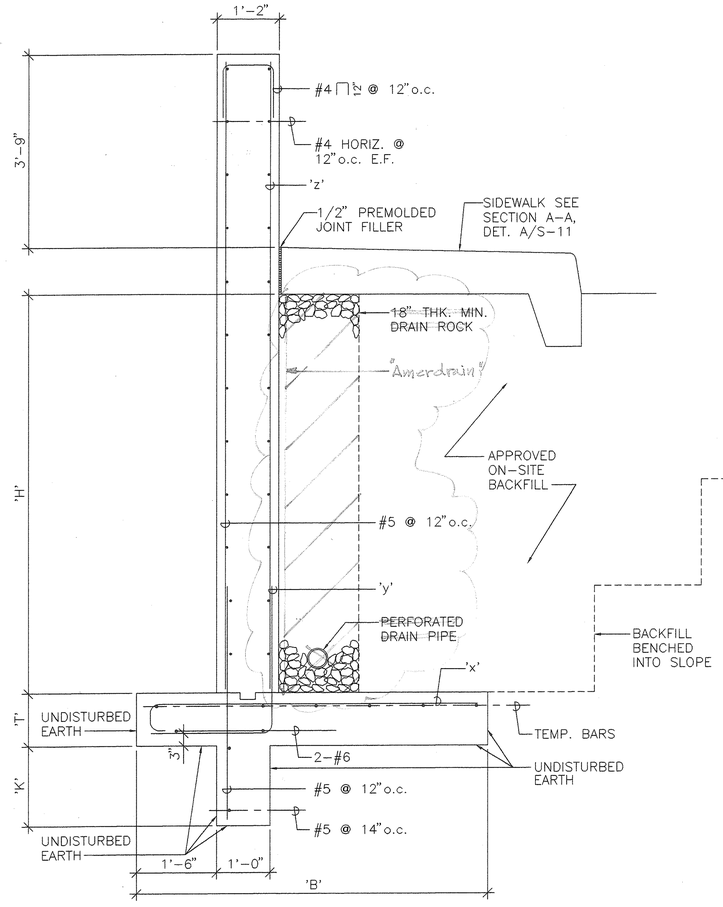
THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

T Y Tanimura
Signature

SHEET NO. S-11 OF 16 SHEETS

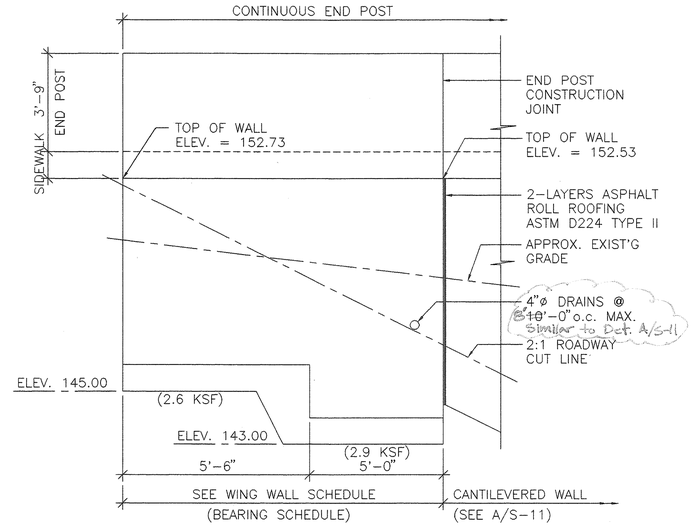
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-H1C-01-97			



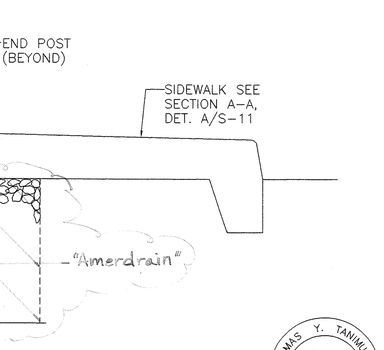
NOTE: 'y' & KEY REINF. SHALL EXTEND 48 BAR DIAMETERS MIN. INTO THE STEM

NEW WING WALLS #1A & 4A SCHEDULE							
'H'	'B'	'T'	'K'	'x'	'y'	'z'	TEMP. BARS
≤9'-0"	7'-6"	1'-2"	1'-6"	#7 @ 5"o.c.	#6 @ 5"o.c.	#6 @ 10"o.c.	#5 @ 12"o.c.
≤7'-0"	6'-6"	1'-2"	1'-0"	#6 @ 8"o.c.	#6 @ 8"o.c.	#5 @ 8"o.c.	#5 @ 12"o.c.
≤5'-0"	6'-0"	1'-2"	1'-0"	#6 @ 12"o.c.	#6 @ 12"o.c.	#5 @ 12"o.c.	#5 @ 12"o.c.

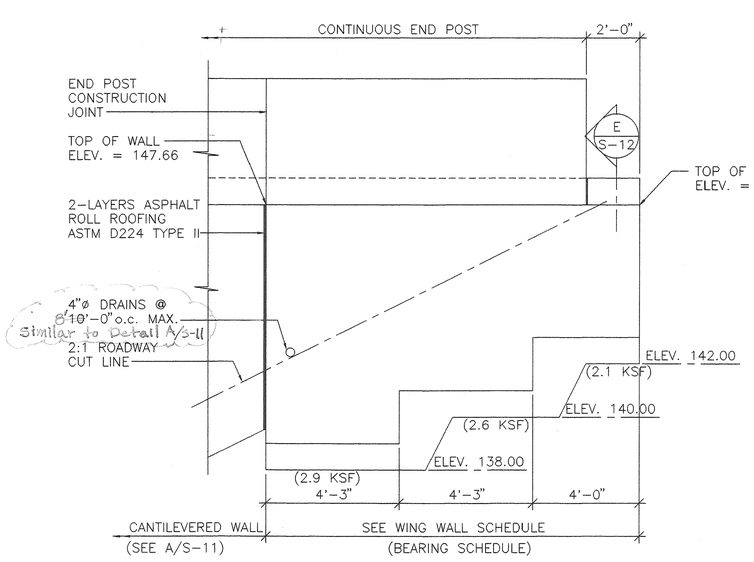
SECTION THRU NEW WING WALLS #1A & #4A
SC: 3/4" = 1'-0"
A S-12



PARTIAL ELEVATION WING WALL #1A
SC: 3/8" = 1'-0"
B S-12



TYPICAL EXISTING WING WALL REMOVAL DETAIL
SC: 3/4" = 1'-0"
D S-12



PARTIAL ELEVATION WING WALL #4A
SC: 3/8" = 1'-0"
C S-12

SECTION
SC: 3/4" = 1'-0"
E S-12

THOMAS Y. TANIMURA LICENSED PROFESSIONAL ENGINEER No. 4926-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

ORIGINAL PLAN | NOTE BOOK | No.

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

DATE	REVISION
5/4/99	Revise Weephole Spacing, Change to "Amerdrain"

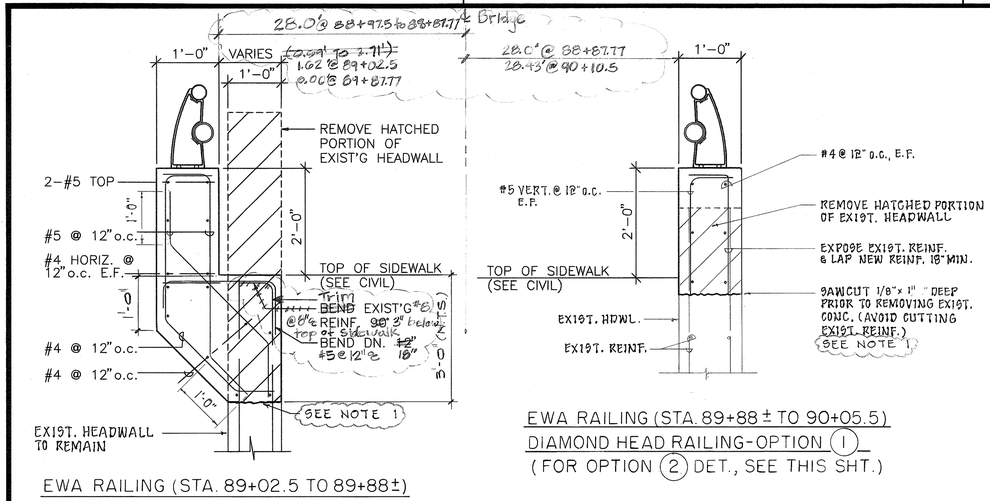
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WING WALL SECTION, ELEVATIONS & DETAIL

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET NO. S-12 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-HIC-01-97			



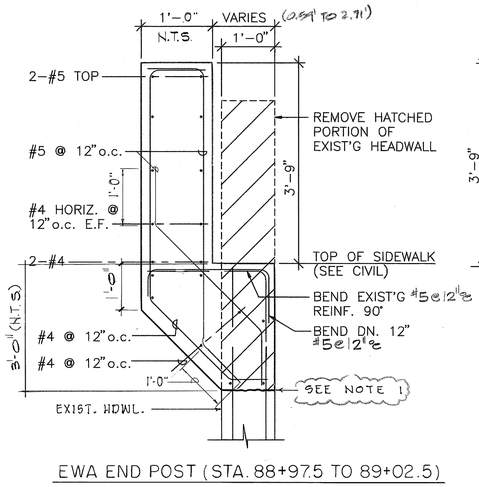
EWA RAILING (STA. 89+88 ± TO 90+05.5)
DIAMOND HEAD RAILING-OPTION (1)
(FOR OPTION (2) DET., SEE THIS SHT.)

EWA RAILING (STA. 89+02.5 TO 89+88±)

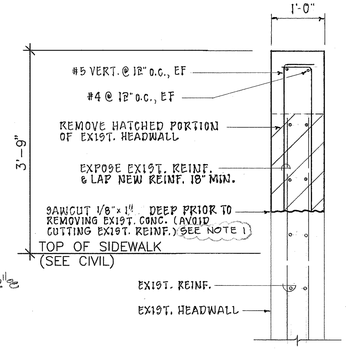
TYPICAL RAILING DETAIL AT BOX CULVERT

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

A S-13



EWA END POST (STA. 88+97.5 TO 89+02.5)

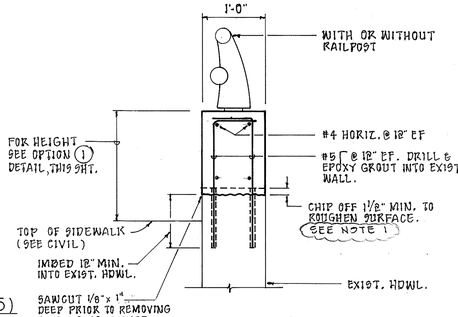


EWA END POST (STA. 90+05.5 TO 90+10.5)
DIAMOND HEAD END POST - OPTION (1)
(FOR OPTION (2) DET.. SEE THIS SHT.)

TYPICAL END POST DETAIL AT BOX CULVERT

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

B S-13



OPTION (2) DETAIL
FOR DIAMOND HEAD RAILING & END POST
FOR EWA RAILING & END POST

NOTE:
1. APPLY AN APPROVED EPOXY BONDING AGENT JUST PRIOR TO POURING NEW CONC. (TYPICAL FOR ALL JOINTS)

TYP. RAIL POST DETAIL AT EXISTING BRIDGE

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

C S-13

TYP. RAIL POST DETAIL AT NEW BRIDGE

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

D S-13

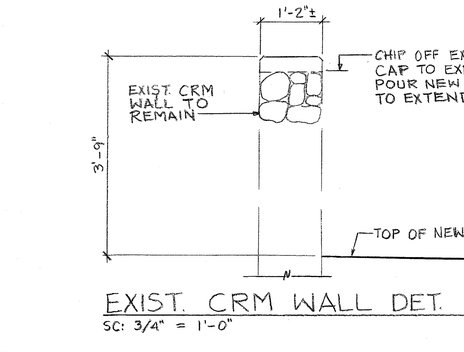
TYP. EXISTING END POST DET.

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

E S-13

APPROVED: DATE

CHIEF, DIVISION OF ENGINEERING, DPW (FOR CONSTRUCTION WITHIN CITY R/W ONLY) 11/24/97



EXIST. CRM WALL DET.

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

F S-13

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

DATE	REVISION
5/4/99	Revise Dimensions & Notes

THOMAS Y. TANIMURA LICENSED PROFESSIONAL ENGINEER No. 4828-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

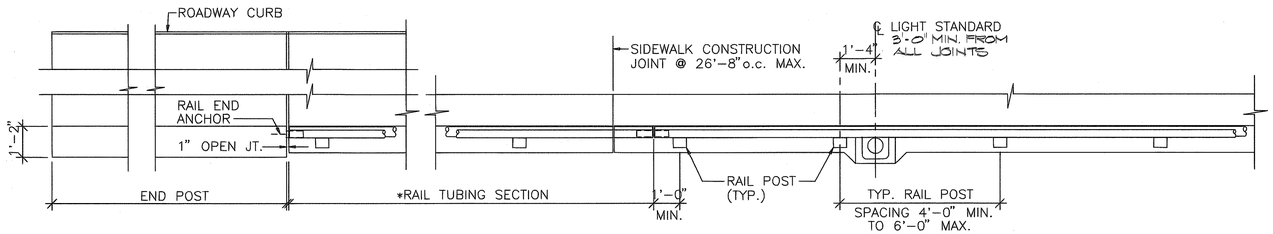
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL RAILING & END POST DETAILS

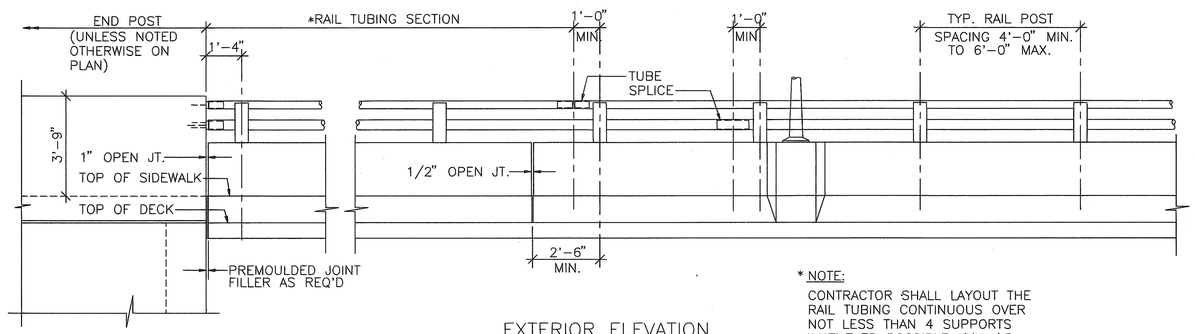
MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET No. S-13 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-H1C-01-97			



PLAN VIEW



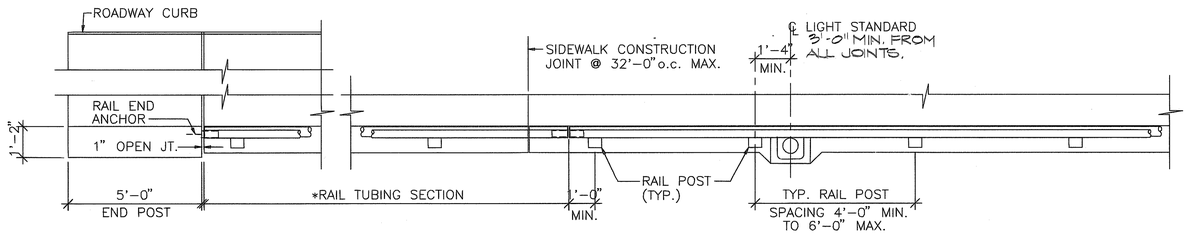
EXTERIOR ELEVATION

* NOTE:
CONTRACTOR SHALL LAYOUT THE RAIL TUBING CONTINUOUS OVER NOT LESS THAN 4 SUPPORTS WHENEVER POSSIBLE. TUBING OVER (2) SUPPORTS WILL NOT BE PERMITTED.

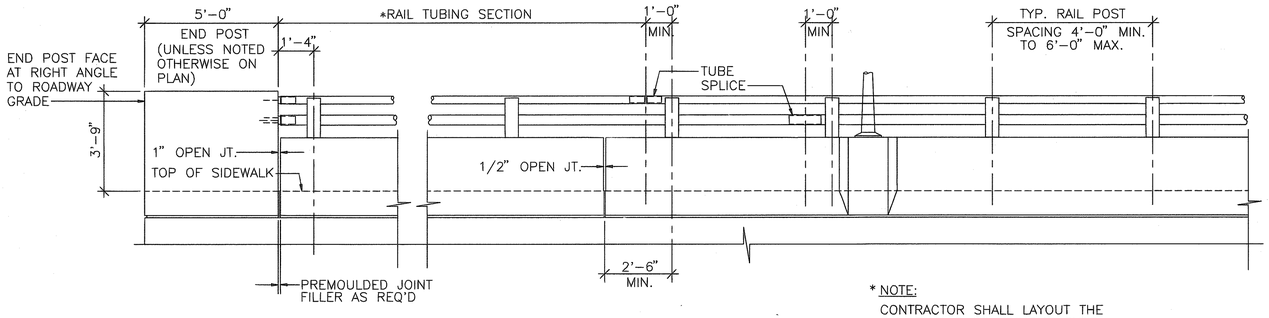
TYPICAL RAILING LAYOUT AT BRIDGE

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

A S-14



PLAN VIEW



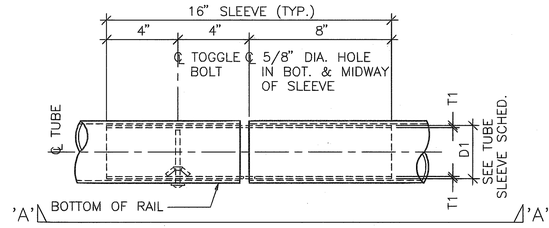
EXTERIOR ELEVATION

* NOTE:
CONTRACTOR SHALL LAYOUT THE RAIL TUBING CONTINUOUS OVER NOT LESS THAN 4 SUPPORTS WHENEVER POSSIBLE. TUBING OVER (2) SUPPORTS WILL NOT BE PERMITTED.

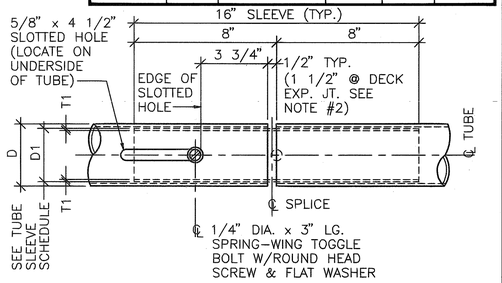
TYPICAL RAILING LAYOUT BEYOND BRIDGE

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

B S-14



SIDE ELEVATION



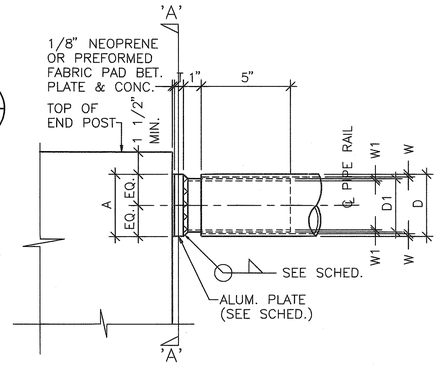
UNDERSIDE VIEW 'A-A'

TUBE SLEEVE SCHEDULE		
D	D1	T1
3 1/2"	3"	1/8"
4 1/2"	3 3/4"	3/8"

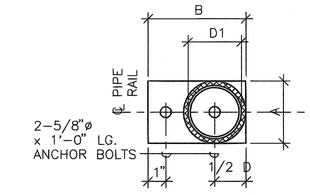
TYPICAL TUBE SPLICE DETAIL (NEW)

SC: 3" = 1'-0"

C S-14

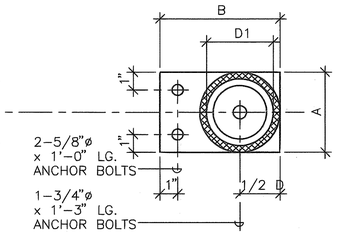


SIDE ELEVATION



NOTE:
ALL ANCHOR BOLTS TO BE A325

SECTION 'B-B'
COND. AT 3 1/2" PIPE RAIL



SECTION 'B-B'
COND. AT 4 1/2" PIPE RAIL

RAIL END ANCHOR SCHEDULE									
6061-T6 ALUMINUM TUBE				6061-T6 ALUMINUM PLATE				
D	W	D1	W1	D	A	B	T	WELD
3 1/2"	5/32"	3"	1/8"	3 1/2"	3 1/2"	5 1/2"	1/2"	1/4"
4 1/2"	19/64"	3 1/2"	5/16"	4 1/2"	4 1/2"	6 3/4"	1 1/2"	1/2"

TYPICAL RAIL END ANCHOR DETAIL (NEW)

SC: 3" = 1'-0"

D S-14

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

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4926-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

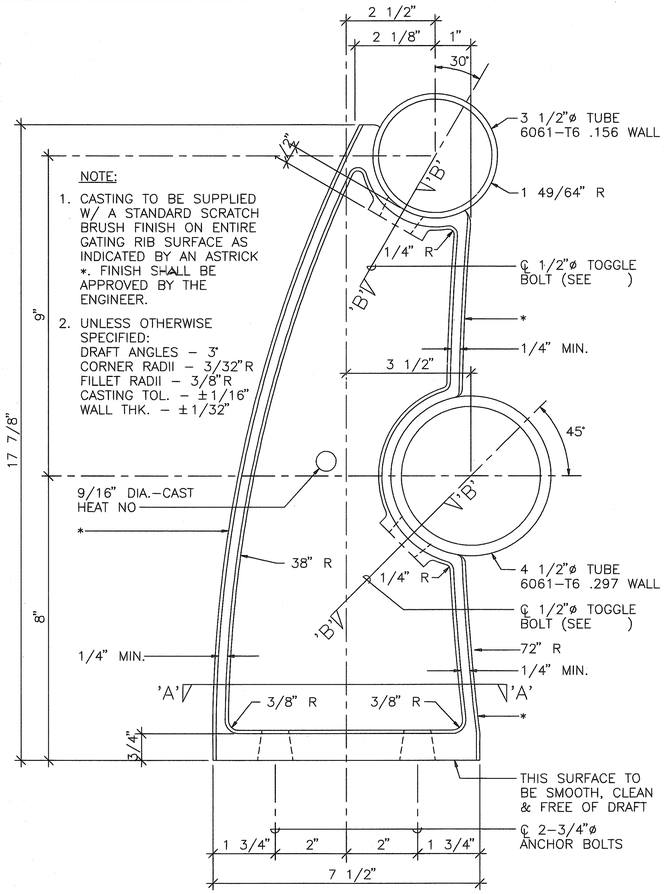
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYP. RAILING LAYOUT AT BRIDGE & BEYOND BRIDGE, TUBE SPLICE & RAIL END ANCHOR DETAILS

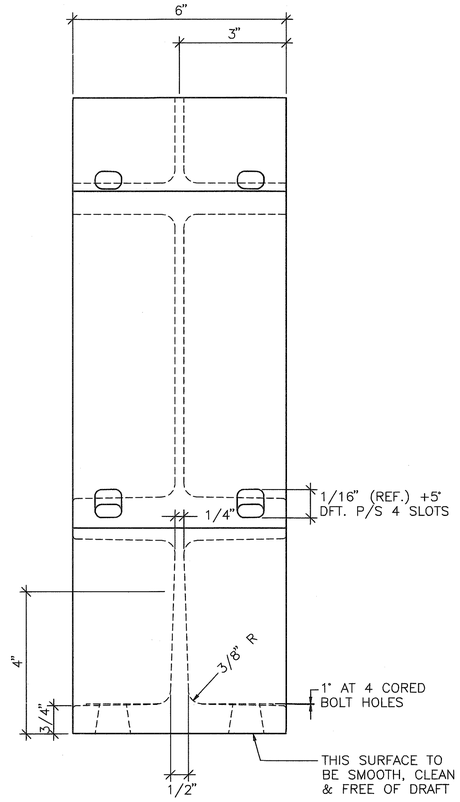
MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET No. 5-14 OF 16 SHEETS

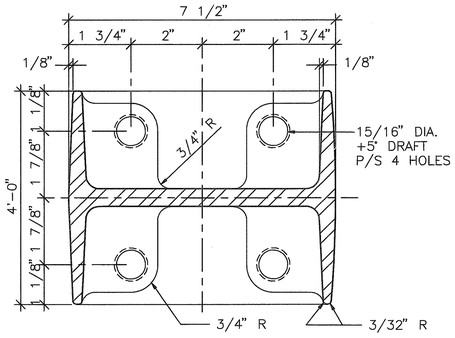
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-H1C-01-97			



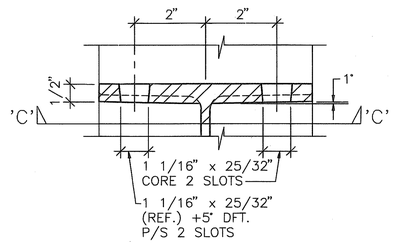
SIDE ELEVATION



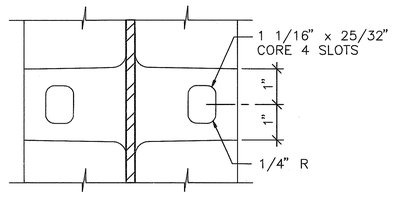
END ELEVATION



SECTION 'A-A'



SECTION 'B-B'

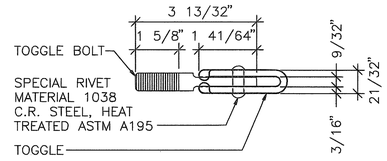


SECTION 'C-C'

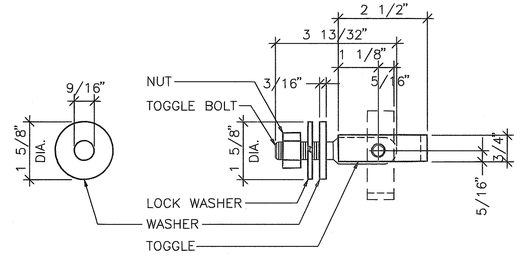
TYPICAL RAIL POST DETAILS (NEW)

SC: 6" = 1'-0"

A S-15



PLAN VIEW

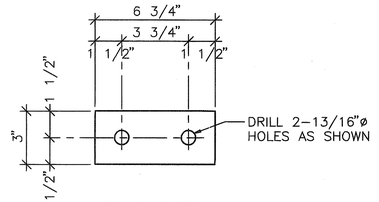


WASHER ELEVATION SIDE ELEVATION ASSEMBLAGE

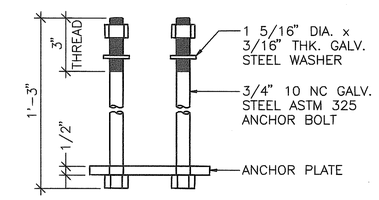
TYPICAL TOGGLE BOLT DETAIL

SC: 6" = 1'-0"

B S-15



PLAN VIEW



ELEVATION

TYP. ANCHOR BOLT DET. (NEW)

SC: 6" = 1'-0"

C S-15

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

ORIGINAL PLAN
NOTE BOOK
No.

THOMAS Y. TANIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4986-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature

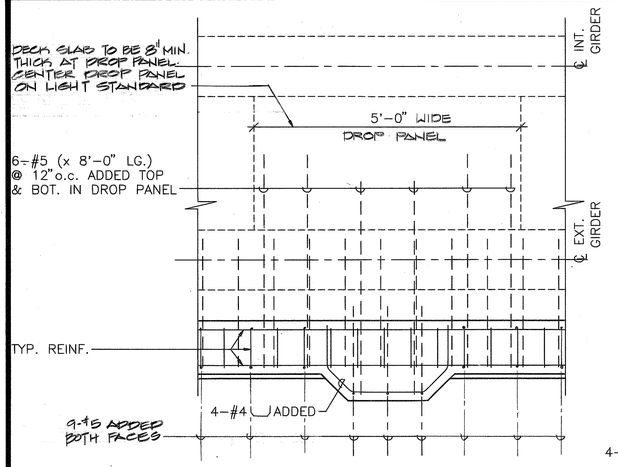
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYP. RAIL POST, TOGGLE BOLT & ANCHOR BOLT DETAILS

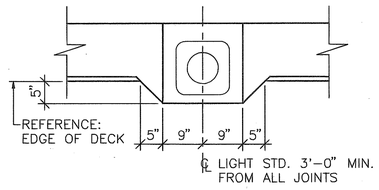
MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET No. 15 OF 16 SHEETS

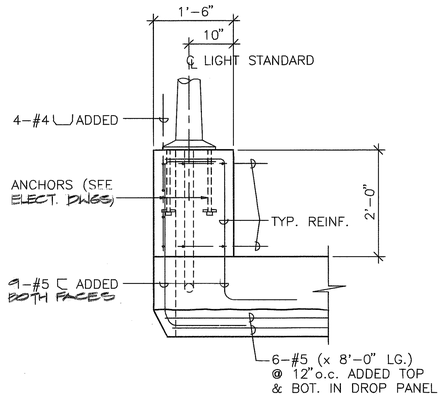
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PMT-HIC-01-97			



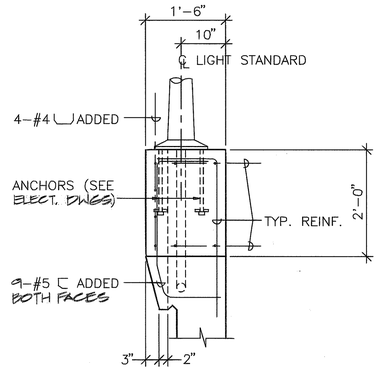
SECTION



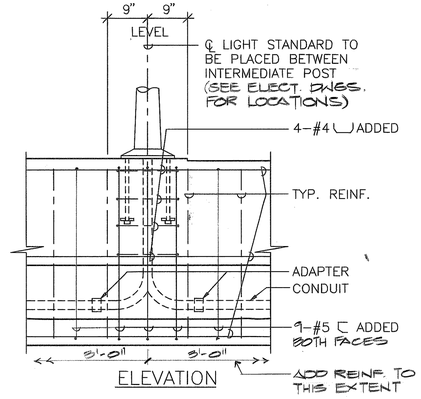
PLAN VIEW



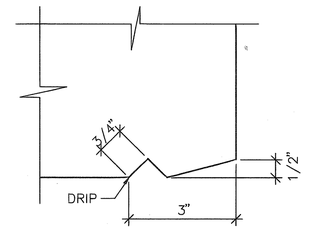
COND. AT BRIDGE



COND. AT RETAINING WALL



ELEVATION



TYP. DRIP DETAIL — B, S-16

NOT TO SCALE

TYPICAL RAILING DETAIL AT LIGHT STANDARD — A, S-16

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

5½" NAME 1/2" DATE

USE CORRECT NAME OF BRIDGE — DATE OF YEAR BUILT

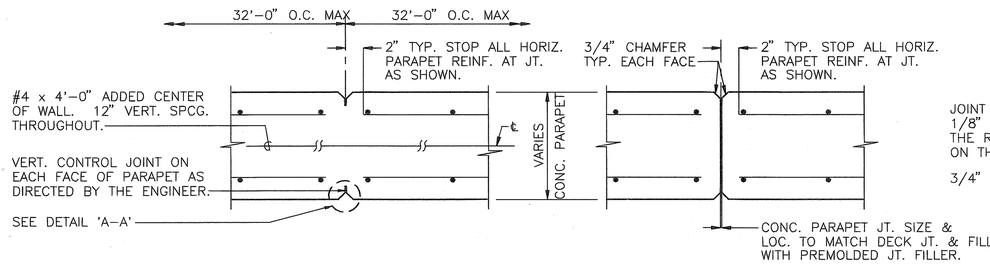
NOTE:

1. REFER TO CORRESPONDING DETAIL DRAWINGS FOR PLACEMENT OF SUCH NAMES & DATES AT END POST.
2. GOTHIC LETTERS & FIGURES APPROXIMATING DIMENSIONS SHOWN WILL BE ACCEPTABLE IF APPROVED BY THE ENGINEER OR EXACT DETAILS & SPACING OF LETTERS & FIGURES SHALL BE AS DIRECTED BY THE ENGINEER.

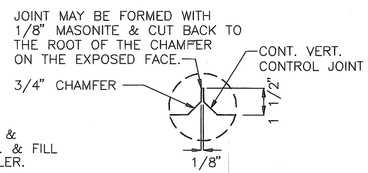
TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST — C, S-16

NOT TO SCALE

NOTE: TO POUR NEW SIGN AT EXIST. END POST, REMOVE 4" MIN. THICKNESS OF CONCRETE FROM FACE.



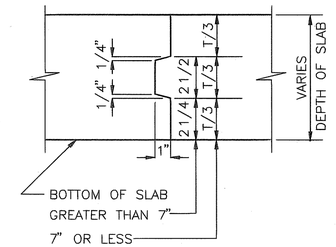
AT CONTROL JOINT — AT EXPANSION JOINT



DETAIL 'A-A'

TYPICAL CONTROL JOINT DETAIL — D, S-16

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



NOTE:

FORM REMOVAL OPENINGS SHALL BE OMITTED AND REPLACED BY 4"ø VENTS ONLY IF CONTRACTOR LEAVES TOP SLAB FORMS IN PLACE.

TYP. SLAB CONSTRUCTION JOINT DETAIL — E, S-16

NOT TO SCALE

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

THOMAS Y. TANIMURA — LICENSED PROFESSIONAL ENGINEER — No. 4926-S — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

T Y Tanimura
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYP. RAILING AT LIGHT STANDARD, DRIP, LETTERING, CONTROL & CONSTRUCTION JOINT DETAILS

MANAGER'S DRIVE BRIDGE WIDENING
INTERSTATE ROUTE H-1

SHEET No. S-16 OF 16 SHEETS