

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	ADD. 181	331

STRUCTURAL GENERAL NOTES

1. General Specifications: Hawaii Department of Transportation, Standard Specifications for Road and Bridge and Public Works Construction, 1994, together with Special Provisions prepared for this contract.

2. Design Specifications:

(A) AASHTO 2004 LRFD Bridge Design Specifications (Third Edition) and its subsequent interim specifications with interim supplements and modifications by the Highways Division, Department of Transportation, State of Hawaii.

(B) HDOT Memorandum HWY-DB 2.6843 dated February 14, 2005 with subject title "Design Criteria for Bridges and Structures".

3. Loads:

- (A) Dead Load: An allowance of 25 PSF for future wearing surface of asphalt concrete has been provided for in the design.
- (B) Live Load: AASHTO HL-93 Truck Loading
- (C) Seismic Load: Acceleration coefficient - 0.16
Seismic Performance Zone - 2
Importance Category - Critical
Soil Profile - Type II
- (D) Wind Load: 105 mph. Value is a 3 second gust speed at 32.8 ft above ground for Exposure C category and is associated with an annual probability of 0.02 (50 year mean recurrence interval).
- (E) Utility Load: An allowance of 150 PLF on each side of the bridge for utility loads has been provided for in the design.
- (F) East-West Collector Road Culvert
- (1) Fill above culvert12'-0"
- (2) Live Load AASHTO HL-93 Truck Loading

4. Materials:

(A) All concrete strengths shall be as noted below:

Item No.	Structural Parts	Classes of Concrete	Specified Compressive Strength, f'c (28 Days)
2 (1)	East-West Collector Road Culvert (see Structural General Note 4.(B))	-	5000 PSI 2
2 (2)	Drain Culvert "C", including Culvert "C" Inlet Structure and Culvert "C" Outlet Structure (see Structural General Note 4.(B))	-	5000 PSI 2
2 (3)	Basin Spillway Culvert, including Spillway Culvert Inlet Structure and Spillway Culvert Outlet Structure (see Structural General Note 4.(B))	-	5000 PSI 2
2 (4)	Drainage Outlet Structures "R2", "R3", "R4" and "F" (see Structural General Note 4.(B))	-	4000 PSI 2

4. Materials (Cont.):

- 2 (5) Catch Basins and Manholes - 4000 PSI
- 2 (6) Drain Inlet Extensions - 4000 PSI 2
- (7) Except as noted otherwise, all others - 4000 PSI

All concrete with a 28 day compressive strength of 4000 psi or greater shall have a maximum W/C Ratio of 0.45. The W/C Ratio for Class A concrete shall follow the Standard Specifications.

(B) A shrinkage reducing admixture (SRA), Tetraguard AS20 by Master Builders or Eclipse by W.R. Grace & Co., shall be added to the concrete mix for the invert slab and cutoff wall and the top slab and head wall of Culvert "C", Spillway Culvert and the East-West Collector Road culvert, outlet structures for Culvert "C" and Spillway Culvert and drainage outlet structures "R2", "R3", "R4", and "F".
2 The minimum dosage requirement shall be 128 ounces per cubic yard of concrete.

- (C) All reinforcing steel shall be ASTM A615 Grade 60 unless otherwise noted.
- (D) Reinforcing steel shall be ASTM A706 where welded connections are required.
- (E) All structural steel shall be ASTM A36 hot dip galvanized after fabrication, unless otherwise noted.
- (F) All anchor bolts, washers and nuts shall be ASTM A325 hot dip galvanized after fabrication, unless otherwise specified.
- (G) Grouted rubble paving shall conform to Specification Section 612.
- (H) Aggregate subbase materials below the drainage structures shall conform to the requirements stipulated in subsection 703.16 of the State of Hawaii, Standard Specifications for Road, Bridge, and Public Works Construction, 1994 and shall be compacted to at least 95% percent relative compaction.

5. Reinforcement:

- (A) The minimum covering measured from the surface of the concrete to the face of any reinforcing bars shall be as follows, except as otherwise shown:
- (1) Concrete cast against and permanently exposed to earth = 3"
- (2) All others unless otherwise noted = 2".
- (B) Reinforcing bars shall be detailed in accordance with the latest edition of the design specification in note 2 unless otherwise noted.
- (C) Minimum clear spacing between parallel bars shall be 1 1/2 times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate or 1 1/2".
- (D) All dimensions relating to reinforcing bars are to centers of bars unless otherwise noted.

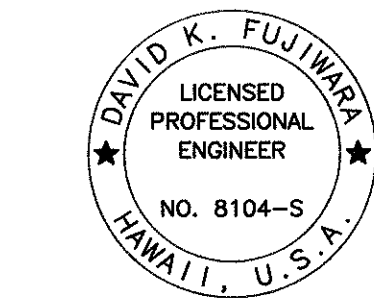
5. Reinforcement (Cont.):

(E) 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.

6. Construction Notes:

- (A) See Standard Specifications and Special Provisions.
- (B) Except as otherwise noted, all vertical dimensions are measured plumb.
- (C) The Contractor shall verify all site conditions and not rely upon these plans since conditions may differ from those shown.
- (D) The Contractor shall verify the location of all utility lines and notify the respective owners before commencing with excavation, and any temporary piling or sheeting.
- (E) For concrete finish see Standard Specifications and Special Provisions.
- (F) Construction joints may be relocated or additional ones added subject to the approval of the Engineer.
- (G) Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4"x3/4".
- (H) Contractor shall verify elevations before fabricating wall reinforcing.
- (J) In general, top of concrete deck slab shall be constructed to follow the roadway vertical and horizontal curves and superelevations.

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
NOTE BOOK	_____
QUANTITIES BY	_____
CHECKED BY	_____
No.	_____



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE: David K. Fujiwara
EXPIRATION DATE OF THE LICENSE: 4-30-08

5/31/07	4 Revised Note
5/11/07	2 Revised Notes
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION STRUCTURAL GENERAL NOTES North-South Road Phase 1B F.A.I. Proj. No. STP-8930(2) Scale: None Date: Feb. 21, 2007 SHEET No. 50.3 OF 78 SHEETS	

STRUCTURAL GENERAL NOTES

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	182	331

7. General:

- (A) 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.

8. Foundation:

- (A) Active pressure = 40 pcf (level backfill condotion)
(B) At-rest pressure = 60 pcf (level backfill condition)
(C) Earthquake load (level backfill, active condition) = $6.5H^2$ (lb./ft.)
(D) Earthquake load (level backfill, at-rest condition) = $10.6H^2$ (lb./ft.)
(E) Bearing Pressure at bottom culvert
(1) Extreme event limit state = 18 ksf
(2) Strength limit state = 9 ksf
(3) Service limit state = 6 ksf

For additional information, see soils report by Geolabs dated February 8, 2007.

9. Segmental Retaining Wall:

- (A) Segmental concrete facing units:
(1) Units shall have a 28-day compressive strength of not less than 4,000 psi.
(2) Absorption = 8% maximum for standard weight aggregates
(3) Unit depth = 18 inches minimum
(4) Unit width to height ratio = 2.25 : 1
(5) Unit weight = 100 lbs/unit minimum for standard weight aggregates
(6) Inter-unit shear strength = 1000 plf minimum at 2 psi normal pressure
(B) Shear connectors
(1) Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F. Shear connectors shall be 1/2 inch diameter thermoset isopthalic polyester resin-pultruded fiberglass reinforcement rods. Connectors shall have a minimum flexural strength of 128,000 psi and short beam shear of 6,400 psi.

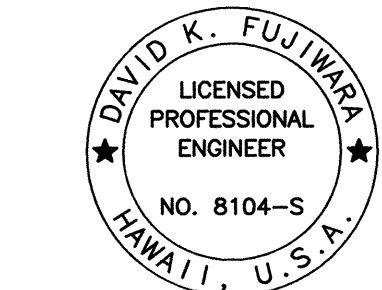
9. Segmental Retaining Wall (Cont.):

- (2) Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.
(3) The connection strength between the geogrid and the concrete facing units shall be greater than the long-term design strength of the geogrid, exclusive of friction between the concrete facing units.
(C) Geogrid
(1) Geogrid structure shall be select high-density polyethylene, polyester or polypropylene resin. Geogrid shall be a geosynthetic reinforcement material having regular and defined open areas, and shall have a long-term design strength of 2500 lbs/ft as determined by GRI GG4.
(D) Drainage collection pipe (6" perforated pipe)
(1) Install drainage collection pipe to maintain gravity flow of water from behind the reinforced soil zone.
(E) Exposed holes near top of walls shall be filled with concrete identical to standard units.
(F) Exposed or protruding material, (such as geogrid, backfill, fiberglass, pins, etc.) shall be removed.

10. Glass Fiber Reinforced Polymer Rebar:

- (A) Glass Fiber Reinforced Polymer (GFRP) rebar shall have a tensile strength of 100 ksi for #4 bars, 95 ksi for #5 bars and 90 ksi for #6 bars. The allowable tensile stress is equal to 20% of the minimum ultimate tensile strength.
(B) The modulus of elasticity of the GFRP bar shall be 5,900,000 psi.
(C) Minimum concrete cover for the GFRP bars shall be 3/4" unless otherwise noted.
(D) Minimum lap splice lengths for the GFRP bars shall be 42 bar diameters unless otherwise noted.
(E) All GFRP bars shall be securely tied in place.
(F) The GFRP bars may be cut in the field with a masonry or diamond blade.
(G) All work including materials and bends shall follow manufacturer's recommendations.

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



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

Signature: David K. Fujiwara
EXPIRATION DATE OF THE LICENSE: 4-30-08

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURAL GENERAL NOTES

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Scale: None Date: Feb. 21, 2007

SHEET No. 50.4 OF 78 SHEETS

DESIGN SPECIFICATIONS:
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, THIRD EDITION, 2004 W/ SUBSEQUENT INTERIM REVISIONS.

A. REINFORCED CONCRETE: CLASS A ($f'_c = 3,000$ psi min.)
 B. REINFORCED STEEL: ASTM A 615, GRADE 60.
 C. ADMIXTURE IN CONCRETE: SEE SPECIAL PROVISIONS.
 D. ALL EXPANSION AND PREMOLDED JOINT FILLER SHALL BE INCIDENTAL TO CONCRETE AND WILL NOT BE PAID FOR SEPARATELY.
 E. ALL STRUCTURAL STEEL SHALL BE ASTM A 36, HOT-DIP GALVANIZED AFTER FABRICATION.
 F. ALL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE ASTM A 325, HOT-DIP GALVANIZED AFTER FABRICATION, UNLESS NOTED OTHERWISE.
 G. ALL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF REINFORCING STEEL WELDING CODE AWS D 14.

- A. REFER TO HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION, (HAWAII 1994 EDITION AND SPECIAL PROVISIONS).
- B. EXCEPT AS NOTED OTHERWISE, ALL VERTICAL DIMENSIONS ARE MEASURED PLUMB.
- C. FOR STEEL REINFORCING, STAGGER ALL SPLICES WHERE POSSIBLE.
- D. STEEL REINFORCING SHALL BE SUPPORTED, BENT AND PLACED AS PER THE ACI DETAILING MANUAL, 1994.
- E. FOR CAST-IN-PLACE CONCRETE, MINIMUM REINFORCEMENT COVER:
CONCRETE CAST AGAINST EARTH: 3'
WALLS: 2'
- F. AT TIME CONCRETE IS PLACED, REINFORCING SHALL BE FREE FROM MUD, OIL LAITANCE OR OTHER COATINGS ADVERSELY AFFECTING BOND CAPACITY.
- G. REINFORCEMENT, DOUELS AND OTHER EMBEDDED ITEMS SHALL BE POSITIVELY SECURED BEFORE POURING.
- H. MINIMUM CLEAR SPACING BETWEEN PARALLEL BARS SHALL BE ONE AND ONE-HALF (1 1/2) TIMES THE DIAMETER OF THE BARS (FOR NON-BUNDLED BARS) BUT IN NO CASE SHALL THE CLEAR DISTANCE OF THE BARS BE LESS THAN ONE AND ONE-HALF (1 1/2) TIMES THE MAXIMUM SIZE OF THE COARSE AGGREGATE.
- J. ALL FOOTINGS SHALL BEAR ON FIRM UNDISTURBED NATURAL SOILS OR PROPERLY COMPACTED STRUCTURAL FILL.

A. REFER TO STANDARD PLANS FOR ADDITIONAL DETAILS AND NOTES NOT COVERED BY DETAILS AND TYPICAL DRAWINGS.

A. THE CONTRACTOR SHALL CONDUCT HIS WORK IN SUCH A MANNER AND PROVIDE SUCH TEMPORARY SHORING OR OTHER MEASURES AS MAY BE NECESSARY TO INSURE THE SAFETY OF ALL CONCERNED AND TO PROTECT EXISTING STRUCTURES.

B. IN THE EVENT OF OVER-EXCAVATION, THE SPACE BETWEEN THE FOOTING OR FOOTING KEY AND GROUND SHALL BE FILLED WITH A MINIMUM OF CLASS D CONCRETE AT THE CONTRACTOR'S EXPENSE AT NO COST TO THE STATE.

C. UNLESS NOTED OTHERWISE, CHAMFER ALL EXPOSED CONCRETE EDGES THREE-QUARTERS (3/4) OF AN INCH.

A. THE FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT TITLED: GEOTECHNICAL ENGINEERING EXPLORATION - NORTH-SOUTH ROAD, PHASE 1B - F.A.I. PROJECT NO. STP-8930(2) - EUA, OAHU, HAWAII - W.O. 3860-30 DATED FEBRUARY 8, 2007, PREPARED BY GEOLABS, INC. UNLESS OTHERWISE INDICATED FOUNDATION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THIS REPORT. THE REPORT IS PART OF THIS PLAN AND SHOULD BE KEPT ON THE JOB SITE AT ALL TIMES.

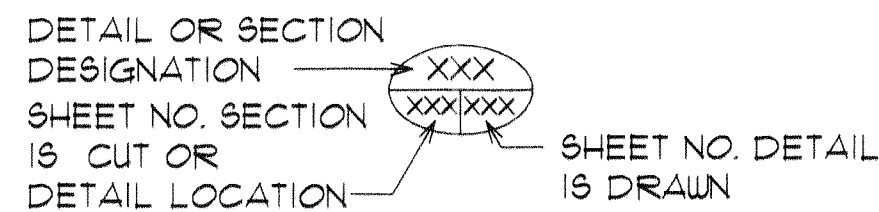
B. SEGMENTAL WALL SUBGRADE SHALL BE COMPACTED TO A MINIMUM 90 PERCENT RELATIVE COMPACTION. SOFT AND OR LOOSE SOILS ENCOUNTERED AT THE WALL SUBGRADE SHALL BE OVER-EXCAVATED TO A MINIMUM DEPTH OF 24 INCHES BELOW THE BOTTOM OF WALL ELEVATION. THE OVER-EXCAVATION SHALL ALSO EXTEND 24 INCHES Laterally BEYOND THE FRONT FACE OF WALL. AGGREGATE SUBBASE MATERIAL SHALL BE USED TO BACKFILL THE OVER-EXCAVATION.


C. A MINIMUM HORIZONTAL DISTANCE OF 6 FEET SHALL BE MAINTAINED BETWEEN THE BOTTOM EDGE OF FOOTING AND THE SLOPE FACE. BOTTOM OF ALL FOOTING EXCAVATIONS SHALL BE OBSERVED AND APPROVED BY A QUALIFIED FOUNDATION ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL OR CONCRETE.

D. THE REINFORCED FILL MATERIAL FOR THE SEGMENTAL RETAINING WALL SHALL CONSIST OF IMPORTED SELECT GRANULAR FILL. REFER TO GEOTECHNICAL REPORT FOR LIFT PLACEMENT AND COMPACTION REQUIREMENTS.

E. ALL WATER, MUD AND DEBRIS SHALL BE REMOVED FROM THE BOTTOM OF FOOTING EXCAVATIONS PRIOR TO THE PLACEMENT OF CONCRETE.

F. CONTRACTOR SHALL NOTIFY GEOLABS, INC., 3 WORKING DAYS PRIOR TO BEGINNING ANY FOUNDATION WORK (BOTTOM OF FOOTING, STRUCTURAL FILL, ETC.).



 - & BEARING ABUTMENT SEAT LINE
 - BORING NO. & DESIGNATION

ABUT.	ABUTMENT
AC	ASFHALTIC CONCRETE
ADJ.	ADJACENT
ALT.	ALTERNATE
APPROX.	APPROXIMATE
AZ.	AZIMUTH
B.	BASELINE
BAL.	BALANCE
BET., BTWN.	BETWEEN
B.F.	BOTH FACES
B.FE.	BOTTOM FOOTING ELEVATION
BK.	BACK
BLT.	BOLT
BM.	BEAM
B, BOT., BOTT.	BOTTOM
BR.	BRIDGE
BRG., BRGS.	BEARING, BEARINGS
B.V.C.	BEGINNING OF VERTICAL CURVE

CANT.	CENTERLINE
C.F.	CANTILEVER
CIP	CUBIC FEET
C.I.P.	CAST IN PLACE
CL., CLR.	CAST IRON PIPE
COL.	CLEAR
CONC.	COLUMN
CONN.	CONCRETE
CONST.	CONNECTION
CONT.	CONSTRUCTION
CRM	CONTINUOUS
C.Y., CU. YD.	CORNER RUBBLE
	CEMENT RUBBLE
	CUBIC YARDS

DET.	DETAIL
DIA., ϕ	DIAMETER
DIM.	DIMENSION
DWG., DWGS.	DRAWING, DRAWINGS

EA, Ea, ea.	EACH
EF	EACH FACE
ELEC.	ELECTRICAL
EL., ELEV.	ELEVATION
EMB.	EMBANKMENT
E.P.	EDGE OF PAVEMENT
EQ.	EQUAL
EST.	ESTIMATE
E.W.	EACH WAY
EXC	EXCAVATION
EXIST.	EXISTING
EXP., (E)	EXPANSION
EXT.	EXTERIOR

FF	FIXED
F _C	SPECIFIED STRENGTH OF CONCRETE
F _{CI}	STRENGTH OF CONCRETE AT TIME OF INITIAL PRESTRESS
FF	FRONT FACE
FIG.	FIGURE
FIN.	FINISH
FIN. GR.	FINISH GRADE
FTG.	FOOTING

G.A.	GAGE, GAUGE
GALV.	GALVANIZED
GIR, G	GIRDER
G.R.P.	GROUTED RUBBLE PAVING
GR.	GRADE
GRD.	GROUND

(H)	HINGE
HORIZ.	HORIZONTAL
HS	HIGH STRENGTH
HT.	HEIGHT
HWY.	HIGHWAY

I.B.	INBOUND
I.F.	INSIDE FACE
IN.	INCH
INT.	INTERIOR
INV.	INVERT

JT.	JOINT
L	LENGTH
LBS., lb, lbs.	POUND, POUNDS
L.F., Lin. Ft.	LINEAR FEET
L.G.	LONG
LONGIT.	LONGITUDINAL
L.S.	LUMP SUM
L.T.	LEFT
LTG. STD.	LIGHTING STANDARD
MAX.	MAXIMUM
MECH.	MECHANICAL
MIN.	MINIMUM
MISC.	MISCELLANEOUS

N	NORTH
N.B.	NORTHBOUND
N.F.	NEAR FACE
NO., #	NUMBER
N.T.S.	NOT TO SCALE
O.B.	OUTBOUND
O.C.	ON CENTER
O.G.	OUTSIDE GIRD
OFN'G	OPENING
O/S, O/S	OFFSET

P.B.	FULL BOX
P.C.	POINT OF CURVATURE
P.C.C.	PORTLAND CEMENT CONCRETE
PERF.	PERFORATED
PG-()	PRESTRESSED GIRDER-(TYPE)
PL	PLATE
P/S	PRESTRESSED STRANDS
P.V.M.T.	PAVEMENT

R	RADIUS
RDWY	ROADWAY
REF.	REFERENCE
REINF.	REINFORCEMENT
RET.	RETAINING
REQ'D	REQUIRED
RF.	REAR FACE
RT.	RIGHT
R/W	RIGHT OF WAY

S	SOUTH
S.B.	SOUTH BOUND
SECT.	SECTION
SF	SQUARE FEET
SHLDR.	SHOULDER
SHT.	SHEET
SFC.	SFACE
SFCD.	SFACED
SFCC.	SFACING
SFEC.	SPECIFICATION
SFRD.	SFREAD
STA.	STATION
STD.	STANDARD
STR.	STRIPUP
STR.	STRAIGHT
STRUCT.	STRUCTURAL
SYMM.	SYMMETRICAL

T	TOP
TEMP.	TEMPORARY
THK.	THICK, THICKNESS
T.O.D.	TOP OF DECK
TOT.	TOTAL
TRANSV.	TRANSVERSE
TYP.	TYPICAL

VAR.	VARIABLES
V.C.	VERTICAL CURVE
VERT.	VERT.

W	WEST
W/	WITH
W.W.	WINGWALL

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	C.O.182S-1	331

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

THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

Ty Tamm
SIGNATURE

APRIL 30, 2010
DATE OF LICENSE
EXPIRATION

cp&e Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor Honolulu, Hawaii

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

North-South Road

Phase 1B

F.A.I. Proj. No. STP-8930(2)

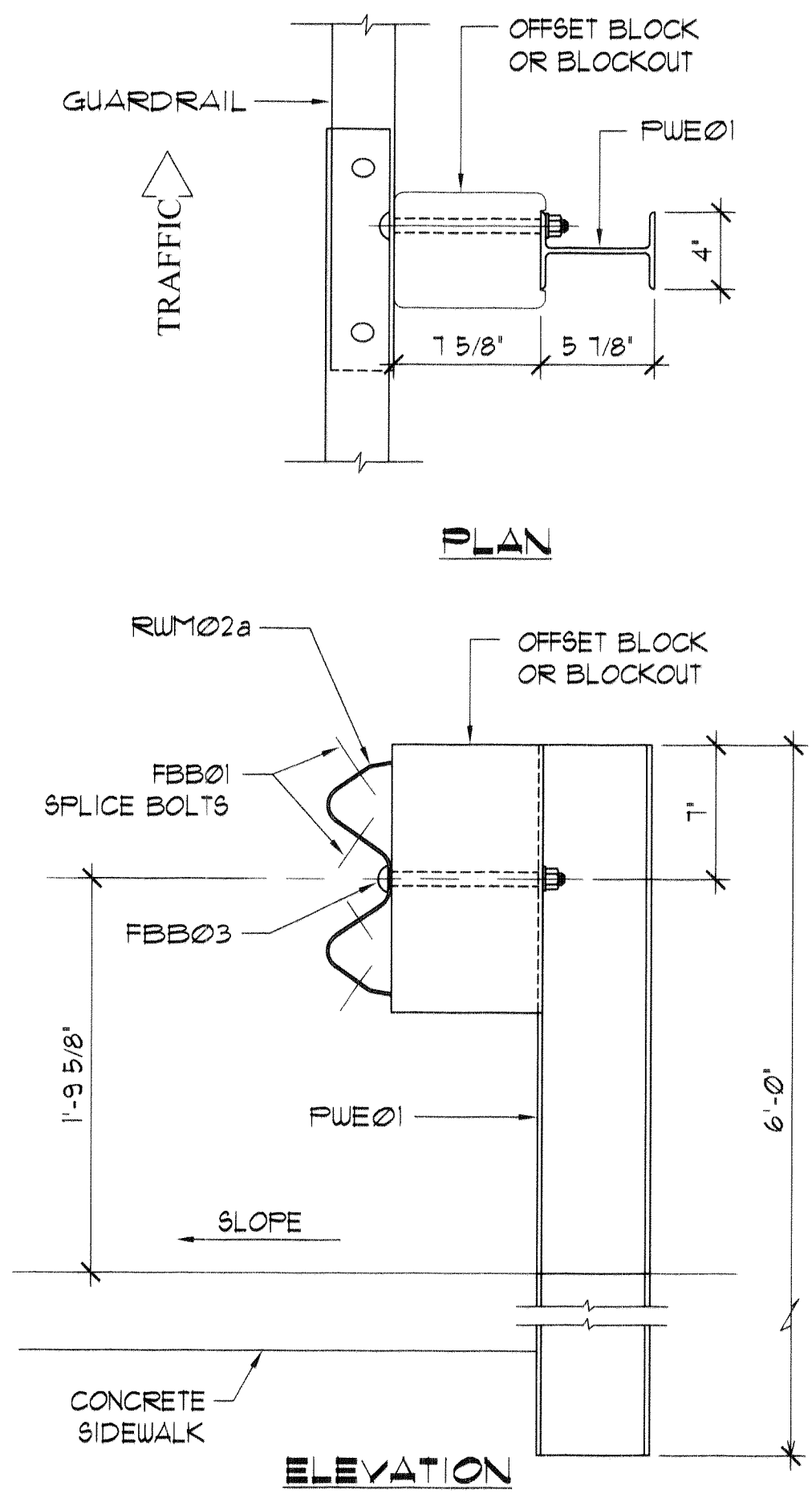
Scale : As Shown

Date : APR. 15, 2008

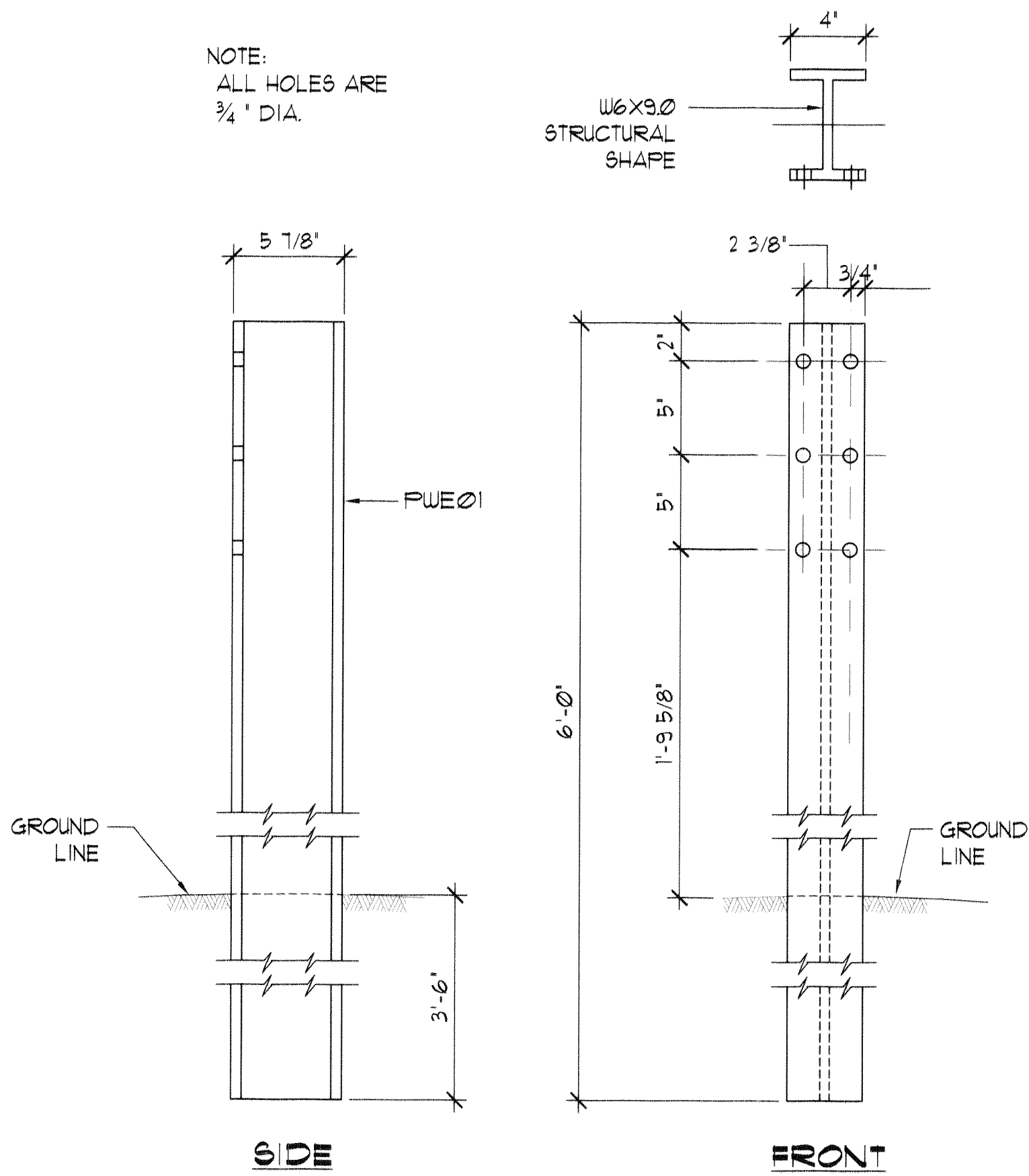
SHEET No. OF SHEETS

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

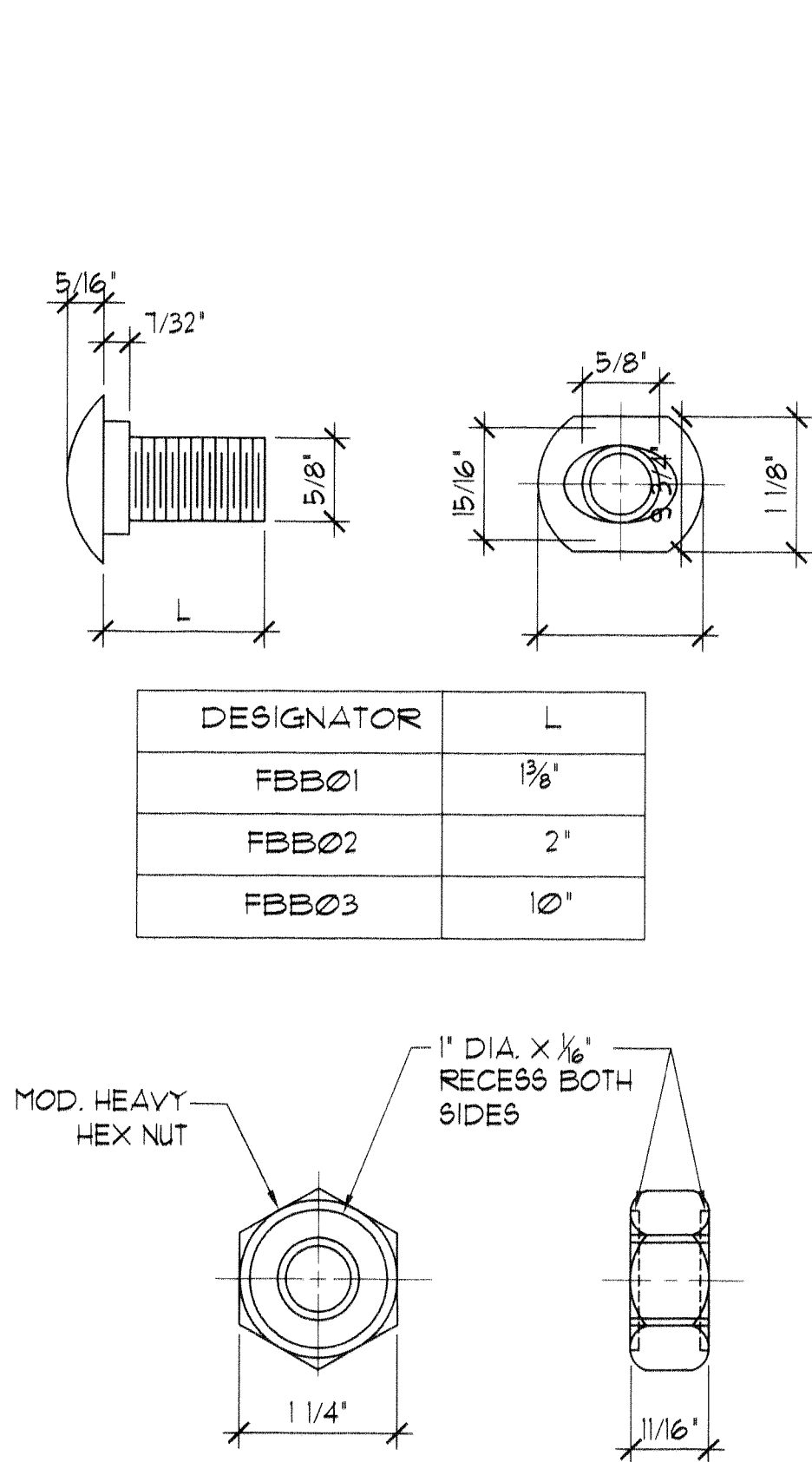
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	C.O.182S-2	331



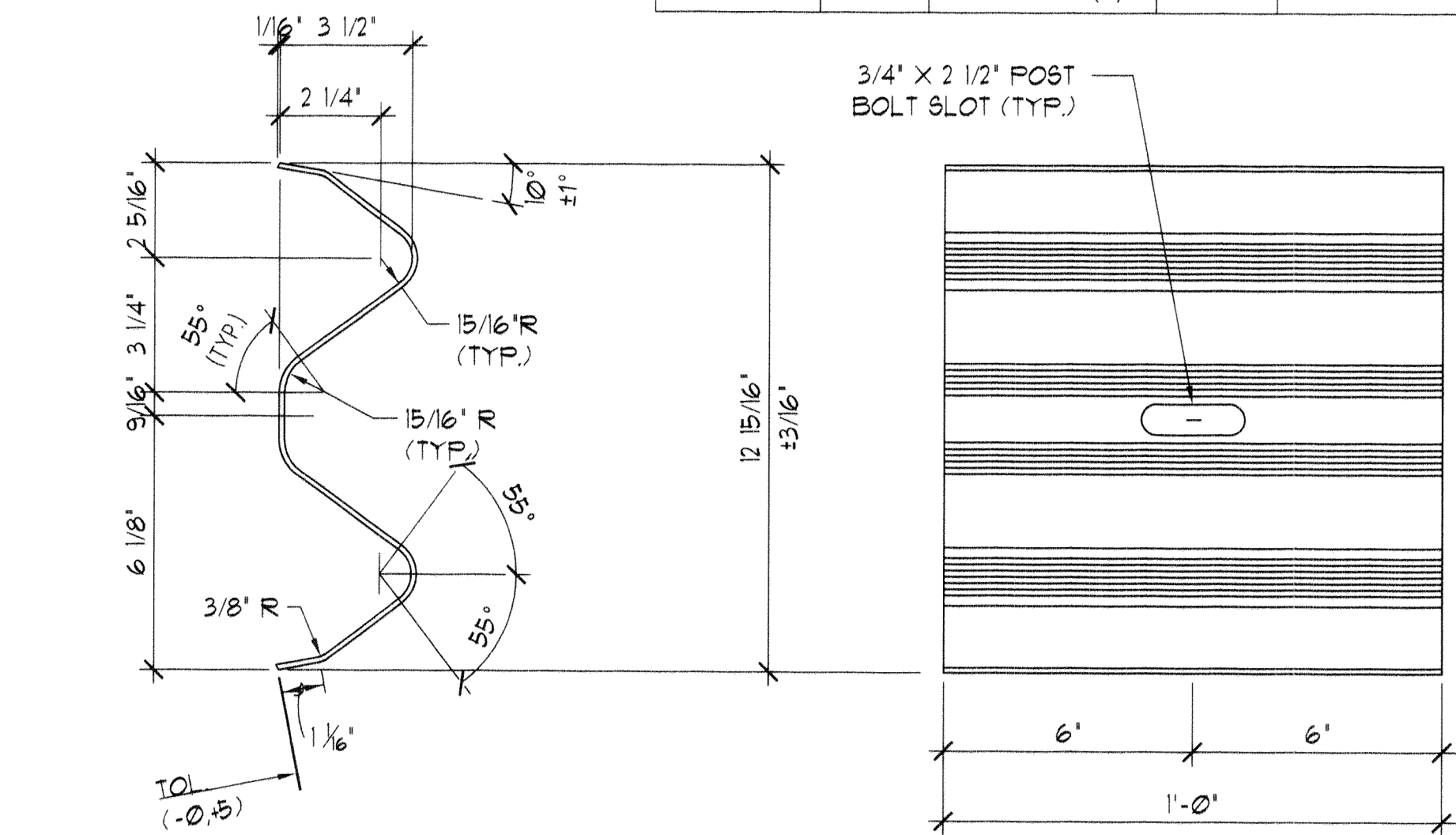
STRONG POST W-BEAM GUARDRAIL
(SGR04a)



W-BEAM STRONG POST (PWE01)

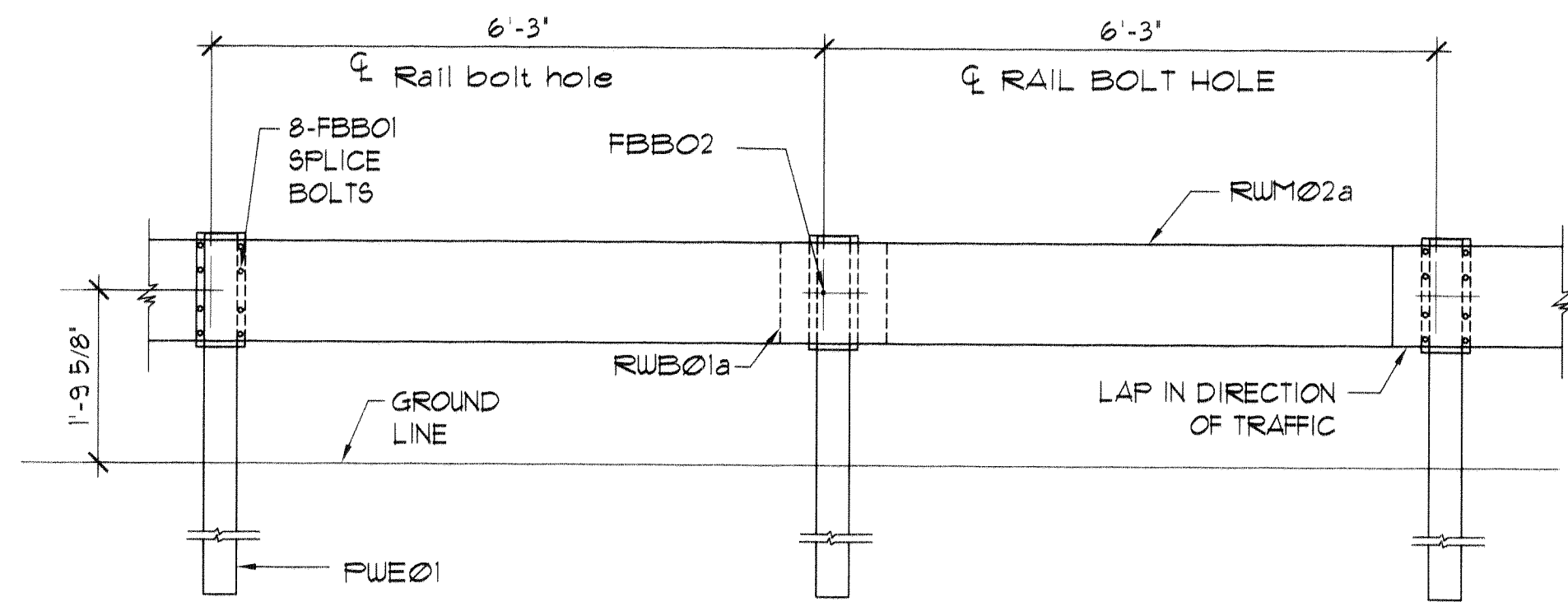


GUARDRAIL BOLTS AND RECESSED NUT

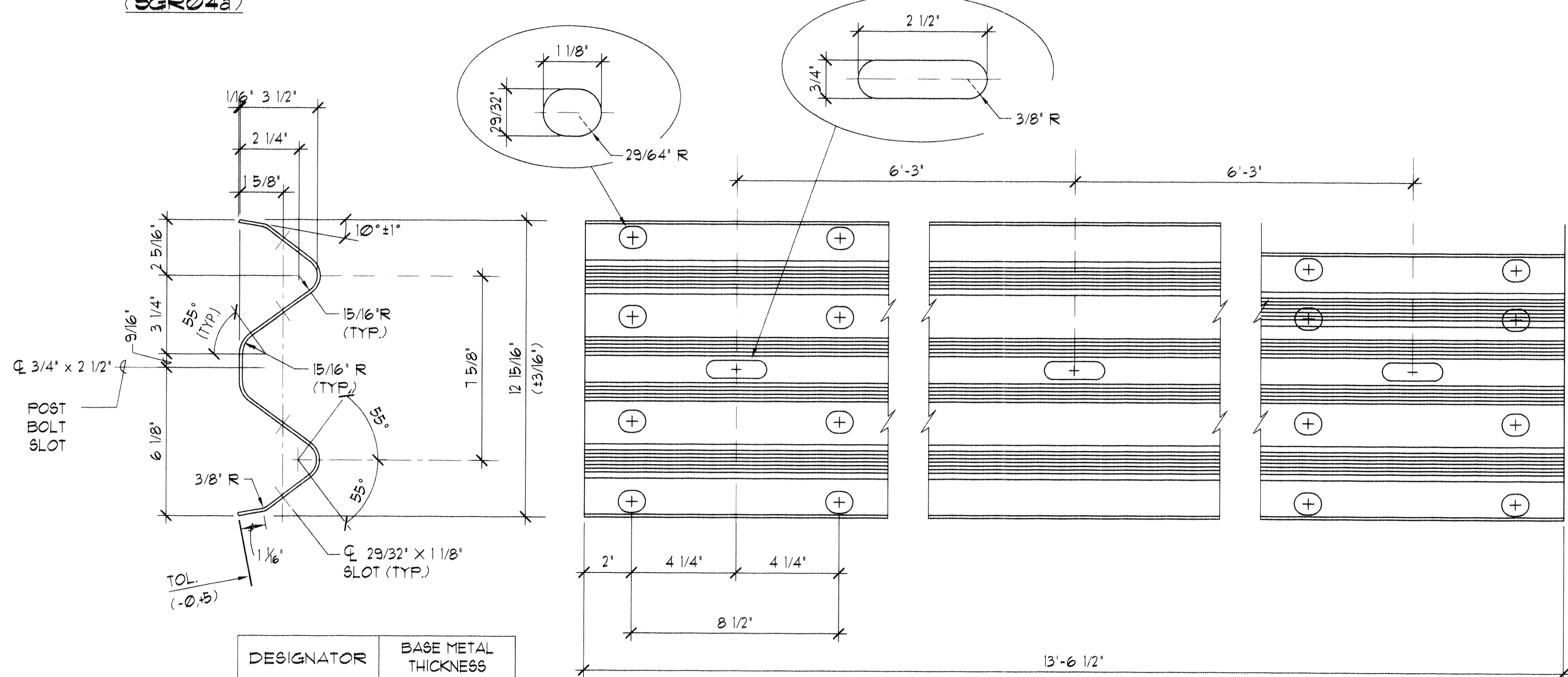


DESIGNATOR	BASE METAL THICKNESS
RWB01a	12 Gauge

W-BEAM BACK-UP-PLATE (RWB01a)



STRONG POST W-BEAM GUARDRAIL WITH RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT



DESIGNATOR	BASE METAL THICKNESS
RWB01a	12 Gauge

2 SPACE W-BEAM GUARDRAIL (RWM02a)

W-BEAM AND APPURTENANCES DETAILS

NOT TO SCALE

A
C.O.182S-3 C.O.182S-3

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
APRIL 30, 2010
DATE OF LICENSE EXPIRATION

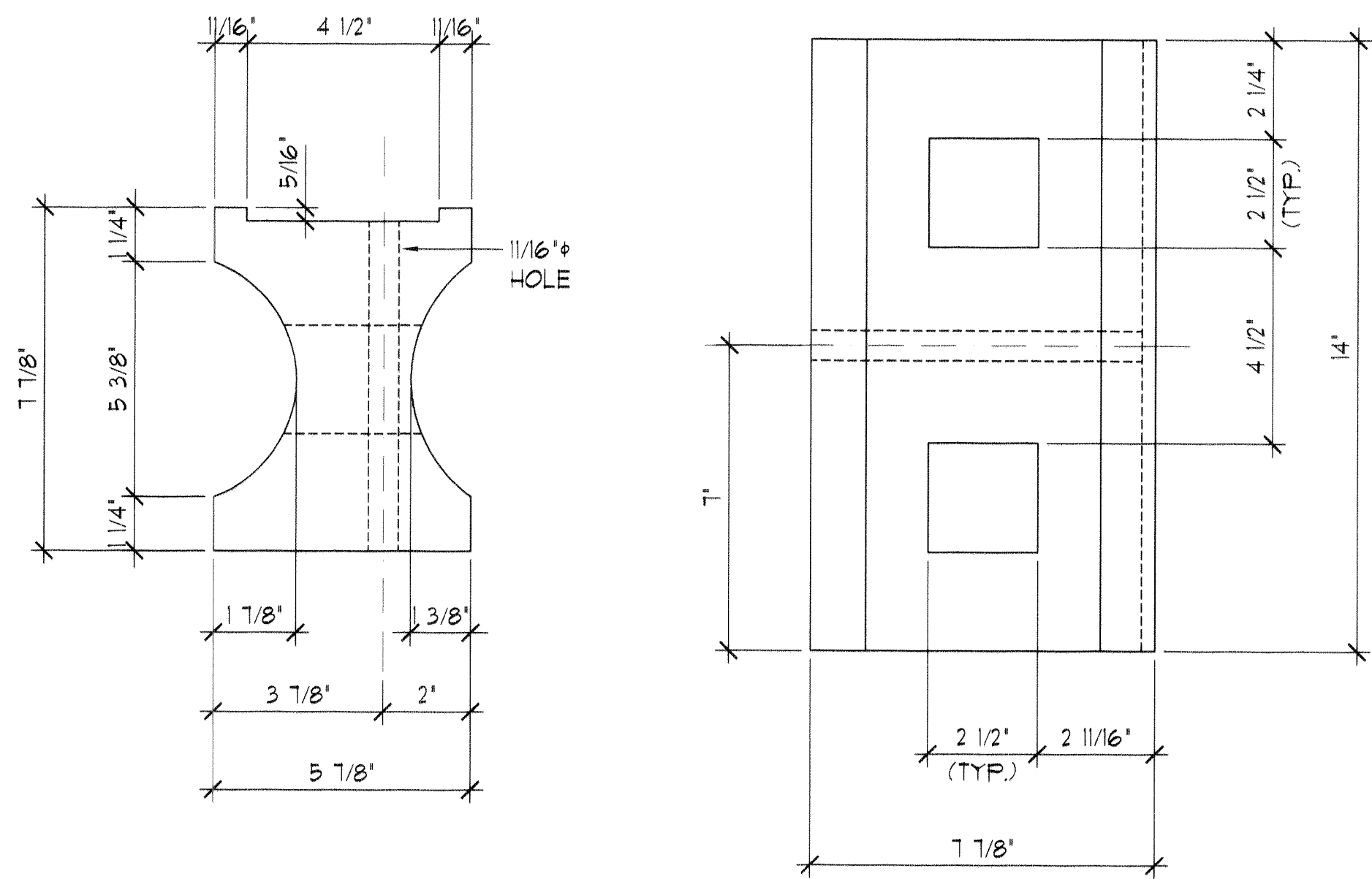
Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor
Honolulu, Hawaii

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
GUARD RAIL DETAILS
North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)
Scale : As Shown Date : APR. 15, 2008
SHEET No. OF SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	C.O.182S-3	331

GENERAL NOTES

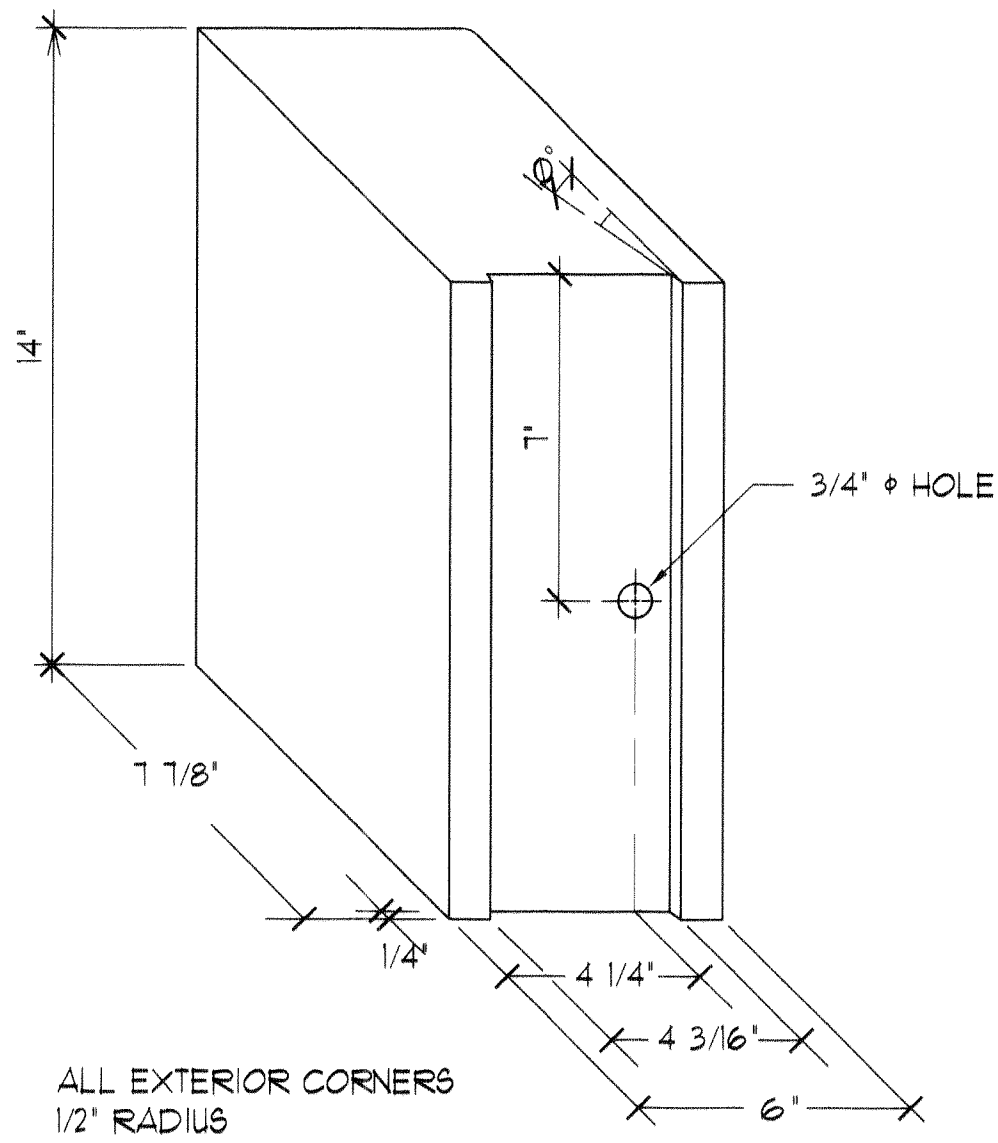
- ALL HARDWARE, POSTS AND FASTENERS SHALL BE HOT-DIP ZINC COATED GALVANIZED AFTER FABRICATION. NO PUNCHING, DRILLING OR CUTTING WILL BE PERMITTED AFTER GALVANIZING.
- WHERE CONDITIONS REQUIRE, SPECIAL POST LENGTHS IN INCREMENTS OF 6 INCHES MAY BE SPECIFIED.
- ALL FASTENERS, POSTS, AND RAIL ELEMENTS (I.E. FBBØ3, FWEØ1, RUMØ2B, ETC.) SHALL CONFORM TO THE LATEST EDITION AND AMENDMENTS OF 'A GUIDE TO STANDARDIZED HIGHWAY BARRIER RAIL HARDWARE,' A REPORT PREPARED AND APPROVED BY THE AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE, SUBCOMMITTEE ON NEW HIGHWAY MATERIALS, TASK FORCE 13 REPORT. DIMENSIONS OF FASTENERS, POSTS AND RAIL ELEMENTS HAVE BEEN CONVERTED FROM METRIC UNITS INTO THEIR PRESENT FORM.
- THE RECYCLED PLASTIC BLOCK OR OFFSET BLOCK SHALL BE APPROVED BY THE STATE.
- WHERE DOUBLE (NESTED) BEAM OCCUR, 12" BACK-UP PLATE (RUBØ1a NOT REQUIRED.



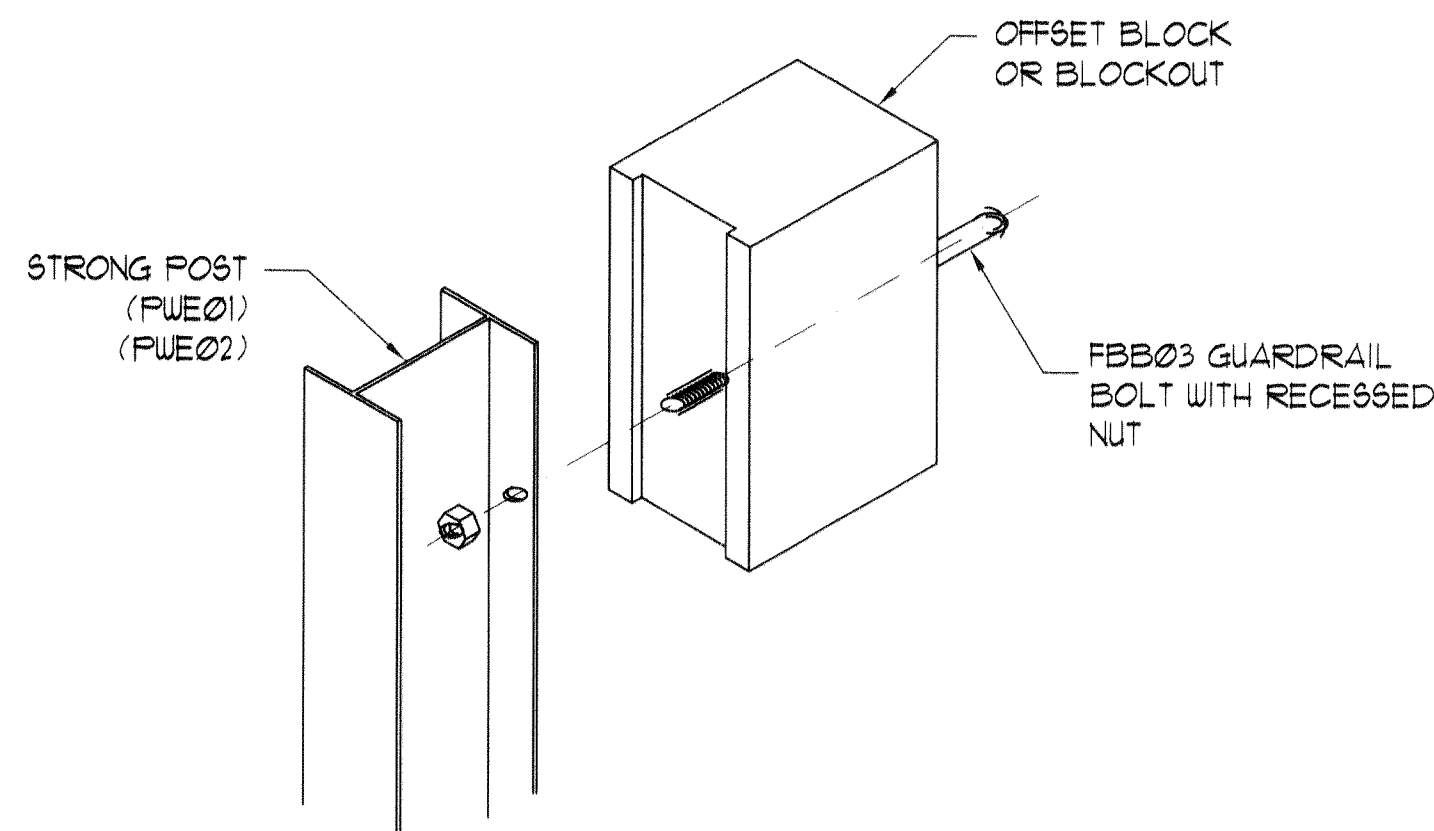
TOP

SIDE

RECYCLED PLASTIC BLOCKOUT (TYPE I)



RECYCLED POLYETHYLENE
OFFSET BLOCK (TYPE II)

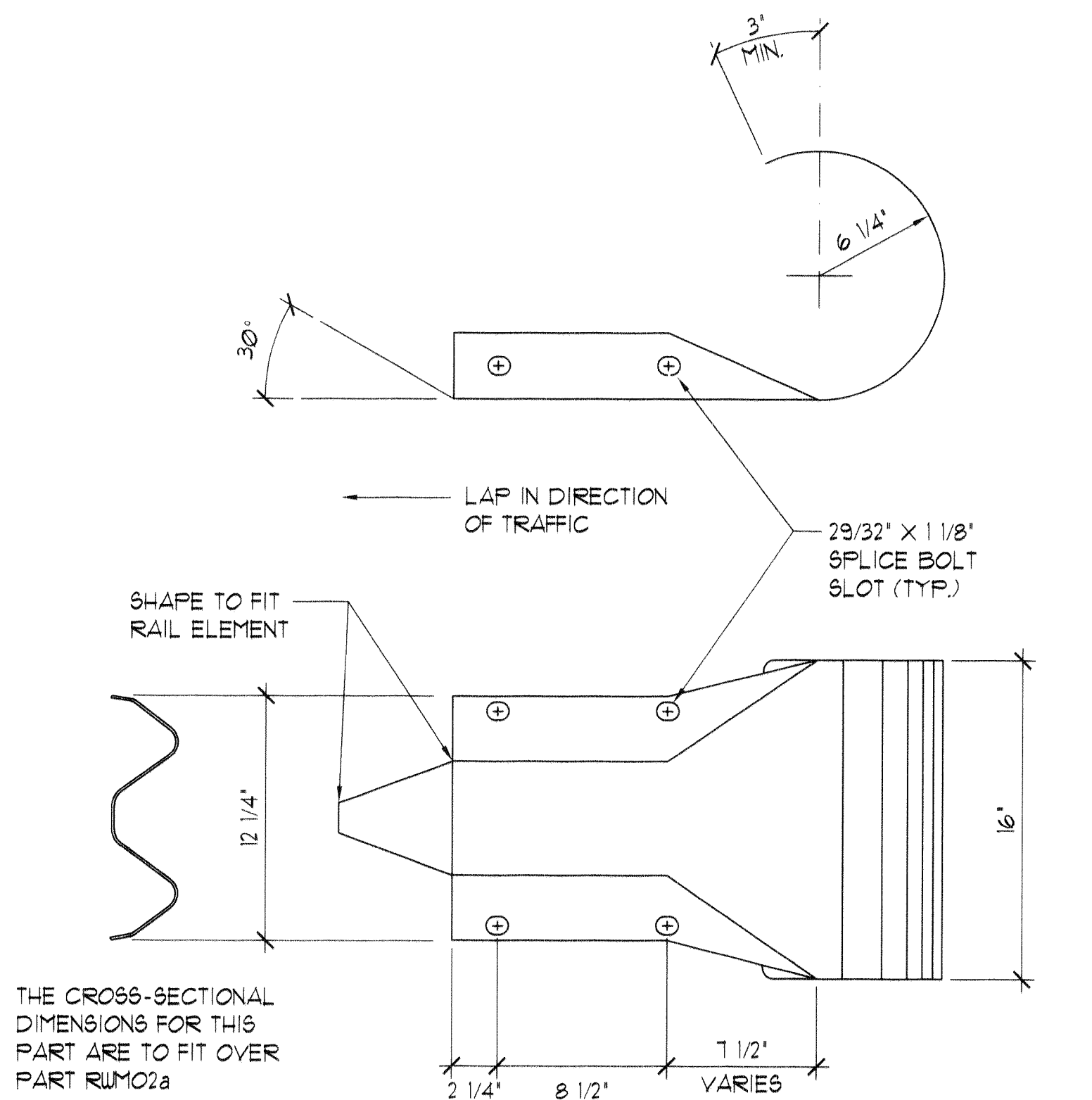


EXPLODED VIEW
(RAIL AND WASHER NOT SHOWN)

STEEL POST AND BLOCK DETAIL

W-BEAM AND APPURTENANCES DETAILS
NOT TO SCALE

A
C.O.182S-3 C.O.182S-3



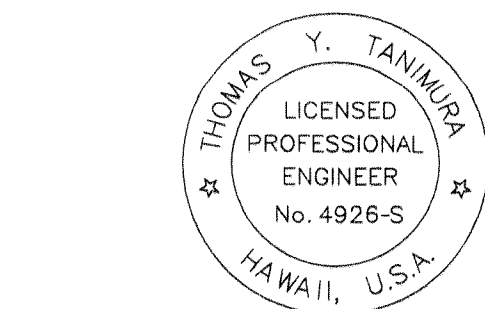
THE CROSS-SECTIONAL DIMENSIONS FOR THIS PART ARE TO FIT OVER PART RUMØ2a

DESIGNATOR	BASE METAL THICKNESS
RWEØ3a	12 GAUGE

OFFSET BLOCK DETAILS
NOT TO SCALE

B
C.O.182S-3 C.O.182S-3

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



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

T.Y. Taniguchi
SIGNATURE

APRIL 30, 2010

DATE OF LICENSE EXPIRATION

Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alaheka Street, Sixth Floor
Honolulu, Hawaii

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARD RAIL
DETAILS

North-South Road

Phase 1B

F.A.I. Proj. No. STP-8930(2)

Scale : As Shown

Date : APR. 15, 2008

SHEET No. OF SHEETS