A / E2.16 — METER INSTALLATION ON WOOD POLE — Not to Scale

- 3 Wire Weatherhead, 12" below HECo Secondary Crossarm with Enough Slack in Conductors to Tap Into HECo Lines.
- Wood Pole
- Combination Meter Socket & Ckt Bkr with NEMA 3R Stainless Steel Sealable Enclosure
- I.D. Tag, See Detail B/E2.16.
- 2" Steel Conduit
- Fin. Grade
- Approx. 27'-6"
- 72" Max., 60" Min.
- 12"
- Ground Rod
- 12"
- Ground Rod
- See One-Line Diagram D/E2.16.

B / E2.16 — STATE METER SOCKET ID TAG DETAIL — Not to Scale

- 6"
- 2 1/2"
- 1/2"
- 5/8"
- 3/8"
- 1/2"
- 1/2"

TRAFFIC SIGNAL

VAULT NO.000000

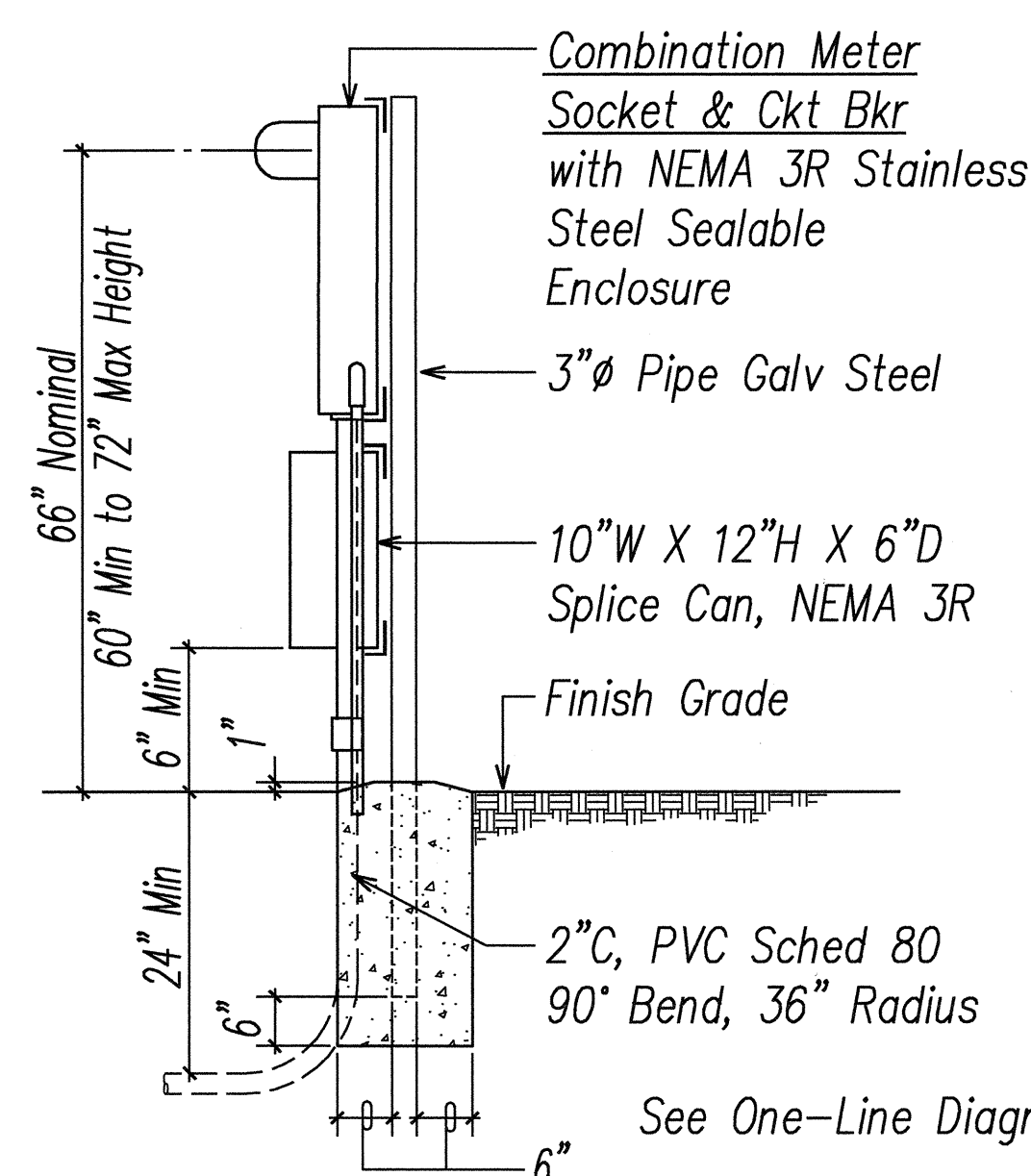- HECo Vault No.

Notes:

1. Use 3-ply laminated flexible plastic, black–white–black thickness: black cap sheet–0.010", white base sheet–0.052", black base sheet–0.010".

2. Attach to meter socket using Scotch 3M brand Very High Bond(VHB) double coated acrylic foam tape or equivalent.

3. Letters/numbers shall be 1/16" stroke, (white in color).

4. Letters/numbers area inscribed by cutting through "black cap sheet" to expose white letters/numbers.

FRONT ELEVATION

- 36" Min. to Controller
- 36" Min. to Controller
- 3/16" (Typ.)
- Plug 3" Pipe with 1/4" Plate, Typ.
- I.D. Tag, See Det B/E2.17 Typ.
- 2 1/2" X 2 1/4" X 1/4"∠ Welded to Pipe, Typ.
- Splice Can
- 3"Ø Pipe Galv. Steel
- Conc. Base 3000 PSI @ 28 Days
- 3"
- Fin. Grade
- Thermoweld
- 24"
- 6" Typ
- 5/8"Ø X 8'-0" Long Ground Rod
- 6" Typ
- To HECo Service
- To Traffic Controller

SIDE ELEVATION

- Combination Meter Socket & Ckt Bkr with NEMA 3R Stainless Steel Sealable Enclosure
- 3"Ø Pipe Galv Steel
- 66" Nominal
- 60" Min to 72" Max Height
- 6" Min
- 1"
- 10"W X 12"H X 6"D Splice Can, NEMA 3R
- Finish Grade
- 24" Min
- 6"
- 2"C, PVC Sched 80 90° Bend, 36" Radius
- 6"
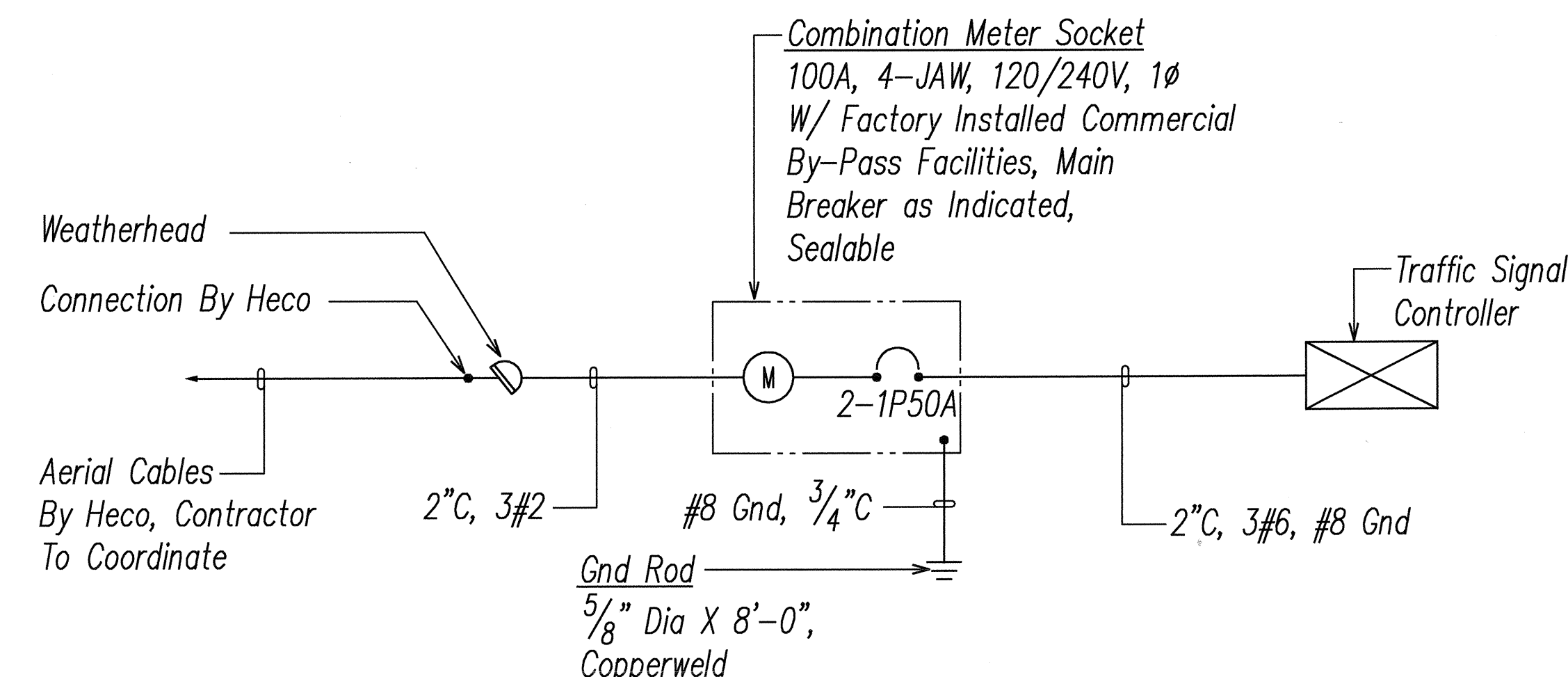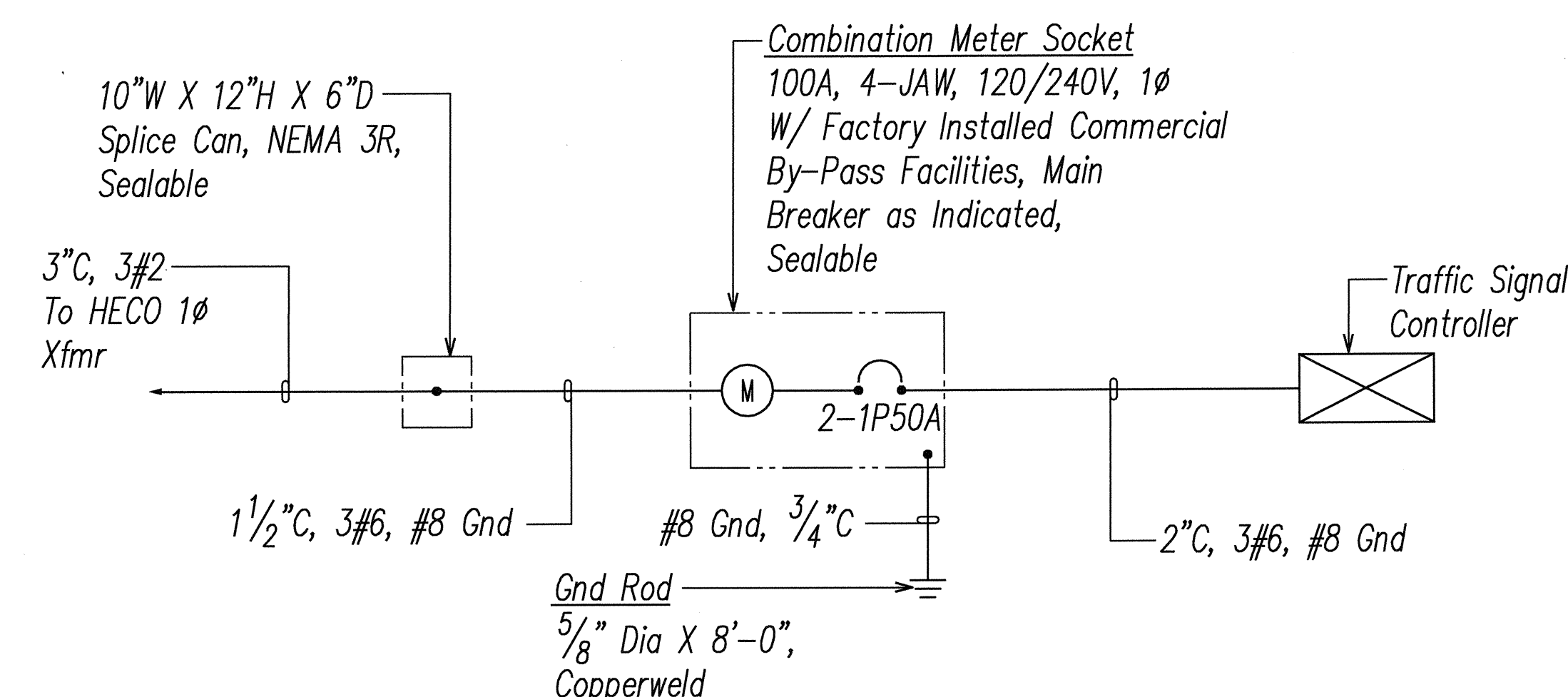- See One-Line Diagram E/E2.16.

Notes:

1. Contractor shall make all electrical connection to controller, provide 2–1P50A breakers, ground and 2" conduit.

2. All conduits to contain a polyolefin pull line. (Jet Line Cat. #232 or Equiv)

3. Pedestal shall be hot-dipped galvanized after fabrication.

4. All fastening bolts, nuts & washers shall be stainless steel. Provide one coat shop primer & two coats of acrylic enamel finish, color to match controller cabinet.

5. Provide 48" clearance in front of meter.

6. See Pipe Guard Detail F/E2.19.

C / E2.16 — ELECTRICAL SERVICE DETAIL — Not to Scale

D / E2.16 — TRAFFIC CONTROLLER ONE-LINE DIAGRAM 1

- Weatherhead
- Connection By Heco
- Aerial Cables By Heco, Contractor To Coordinate
- 2"C, 3#2
- Combination Meter Socket 100A, 4–JAW, 120/240V, 1Ø W/ Factory Installed Commercial By-Pass Facilities, Main Breaker as Indicated, Sealable
- M
- 2–1P50A
- #8 Gnd, 3/4"C
- Gnd Rod 5/8" Dia X 8'-0", Copperweld
- Traffic Signal Controller
- 2"C, 3#6, #8 Gnd

E / E2.16 — TRAFFIC CONTROLLER ONE-LINE DIAGRAM 2 & 3

- 10"W X 12"H X 6"D Splice Can, NEMA 3R, Sealable
- 3"C, 3#2 To HECO 1Ø Xfmr
- 1 1/2"C, 3#6, #8 Gnd
- Combination Meter Socket 100A, 4–JAW, 120/240V, 1Ø W/ Factory Installed Commercial By-Pass Facilities, Main Breaker as Indicated, Sealable
- M
- 2–1P50A
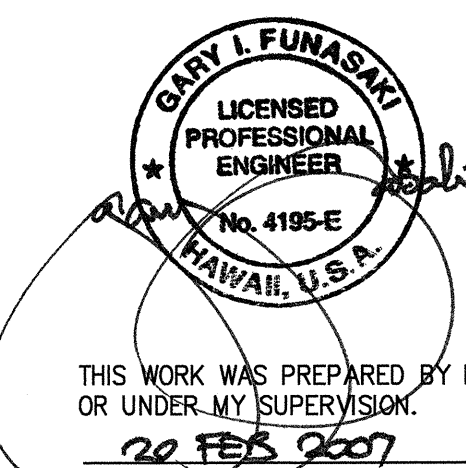- #8 Gnd, 3/4"C
- Gnd Rod 5/8" Dia X 8'-0", Copperweld
- Traffic Signal Controller
- 2"C, 3#6, #8 Gnd

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC.   DATE

STATE OF HAWAII
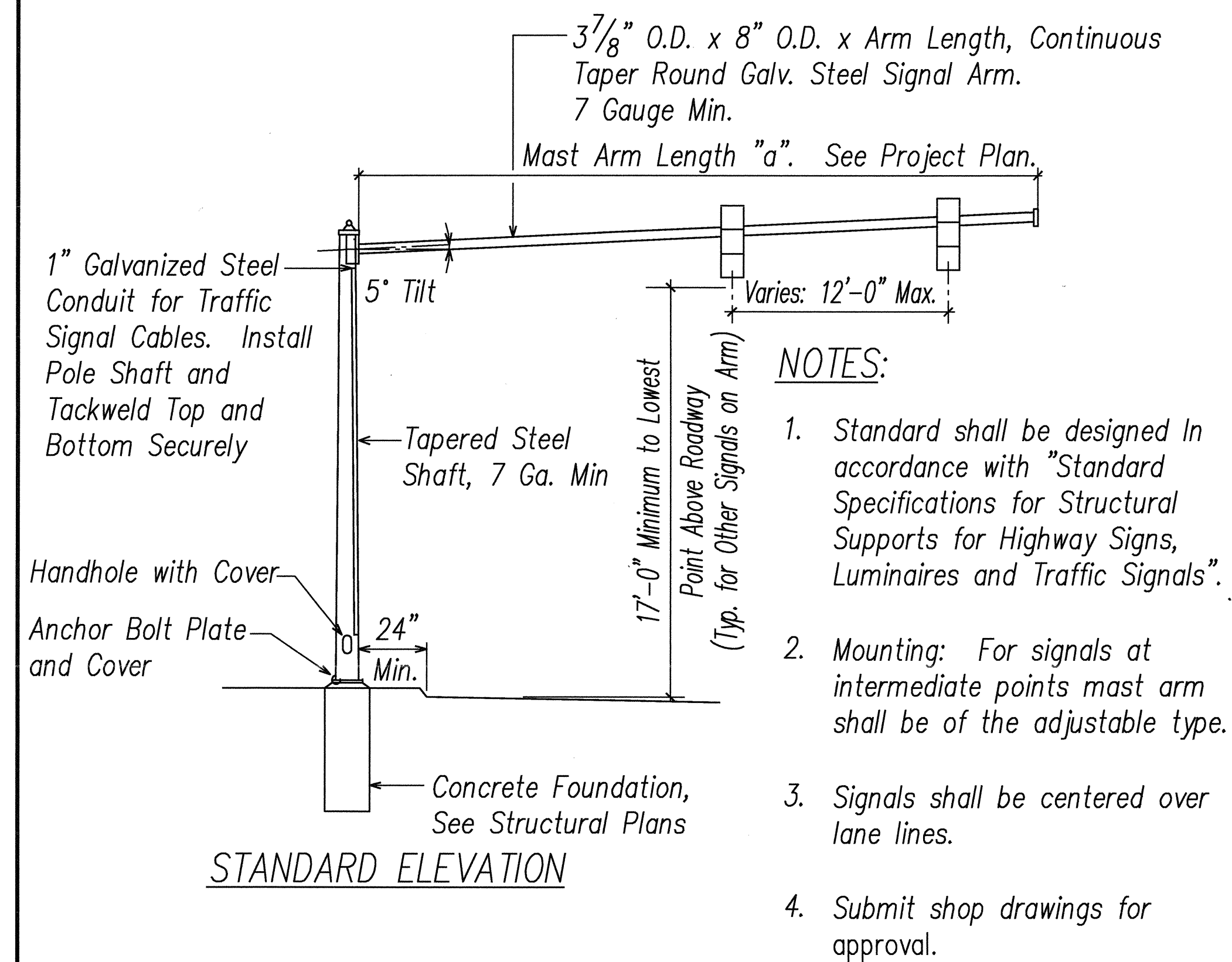DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS I

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

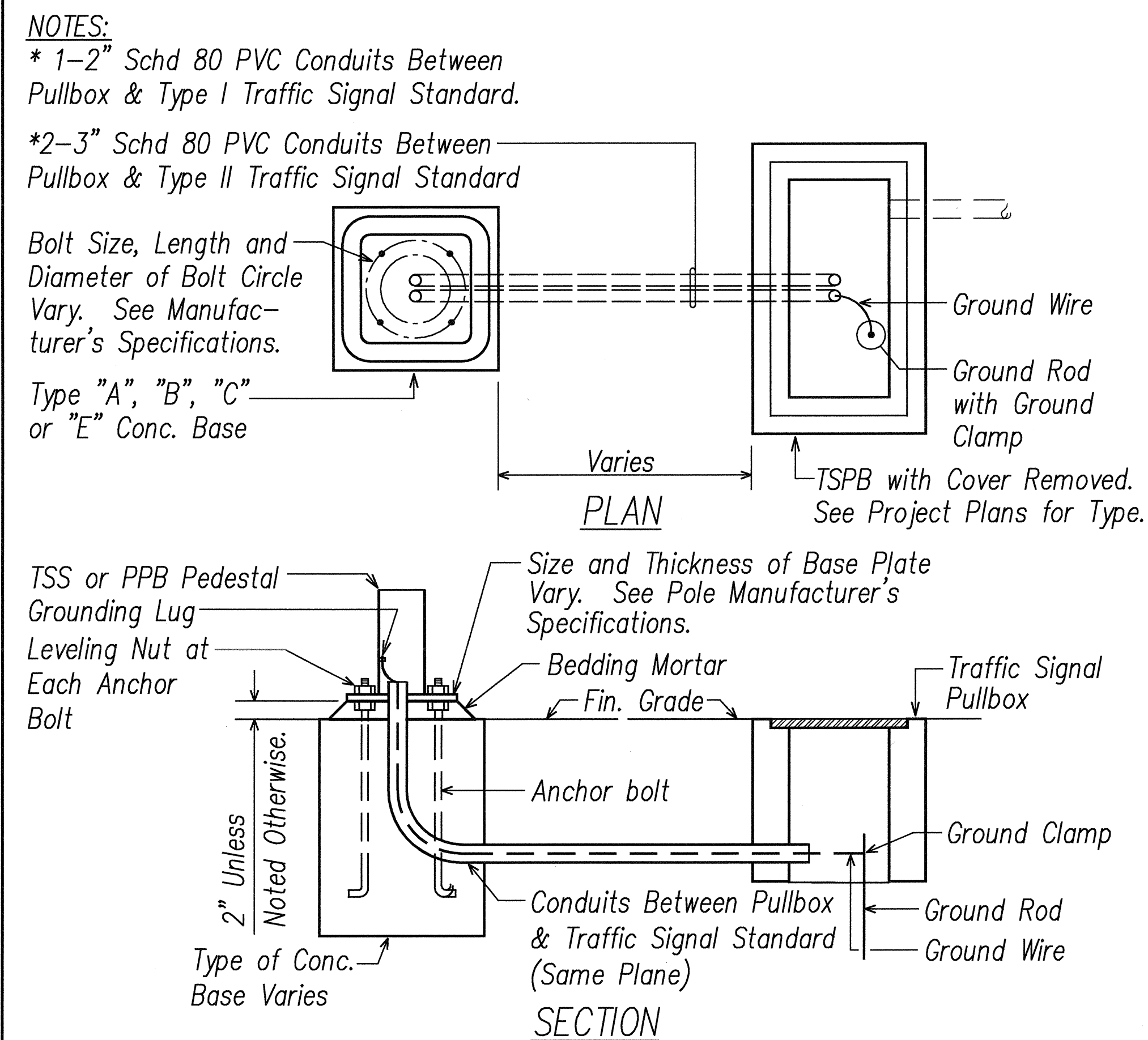Scale: AS NOTED   Date: Feb 21, 2007

DATE	REVISION

SHEET No. E2.16 OF 62 SHEETS

TYPE II TRAFFIC SIGNAL STANDARD

3⅞" O.D. x 8" O.D. x Arm Length, Continuous Taper Round Galv. Steel Signal Arm. 7 Gauge Min.

Mast Arm Length "a". See Project Plan.

1" Galvanized Steel Conduit for Traffic Signal Cables. Install Pole Shaft and Tackweld Top and Bottom Securely

5° Tilt

Varies: 12'-0" Max.

Tapered Steel Shaft, 7 Ga. Min

17'-0" Minimum to Lowest Point Above Roadway (Typ. for Other Signals on Arm)

Handhole with Cover

Anchor Bolt Plate and Cover

24" Min.

Concrete Foundation, See Structural Plans

STANDARD ELEVATION

NOTES:

1. Standard shall be designed In accordance with "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals".

2. Mounting: For signals at intermediate points mast arm shall be of the adjustable type.

3. Signals shall be centered over lane lines.

4. Submit shop drawings for approval.

A / E2.17 / N.T.S.

TYPICAL STANDARD & PEDESTAL DETAIL

NOTES:

* 1-2" Schd 80 PVC Conduits Between Pullbox & Type I Traffic Signal Standard.

*2-3" Schd 80 PVC Conduits Between Pullbox & Type II Traffic Signal Standard

Bolt Size, Length and Diameter of Bolt Circle Vary. See Manufacturer's Specifications.

Type "A", "B", "C" or "E" Conc. Base

Varies

Ground Wire

Ground Rod with Ground Clamp

TSPB with Cover Removed. See Project Plans for Type.

PLAN

TSS or PPB Pedestal Grounding Lug

Leveling Nut at Each Anchor Bolt

Size and Thickness of Base Plate Vary. See Pole Manufacturer's Specifications.

Bedding Mortar

Fin. Grade

Traffic Signal Pullbox

Anchor bolt

2" Unless Noted Otherwise.

Ground Clamp

Conduits Between Pullbox & Traffic Signal Standard (Same Plane)

Ground Rod

Ground Wire

Type of Conc. Base Varies

SECTION

B / E2.17 / N.T.S.

STATE OF HAWAII
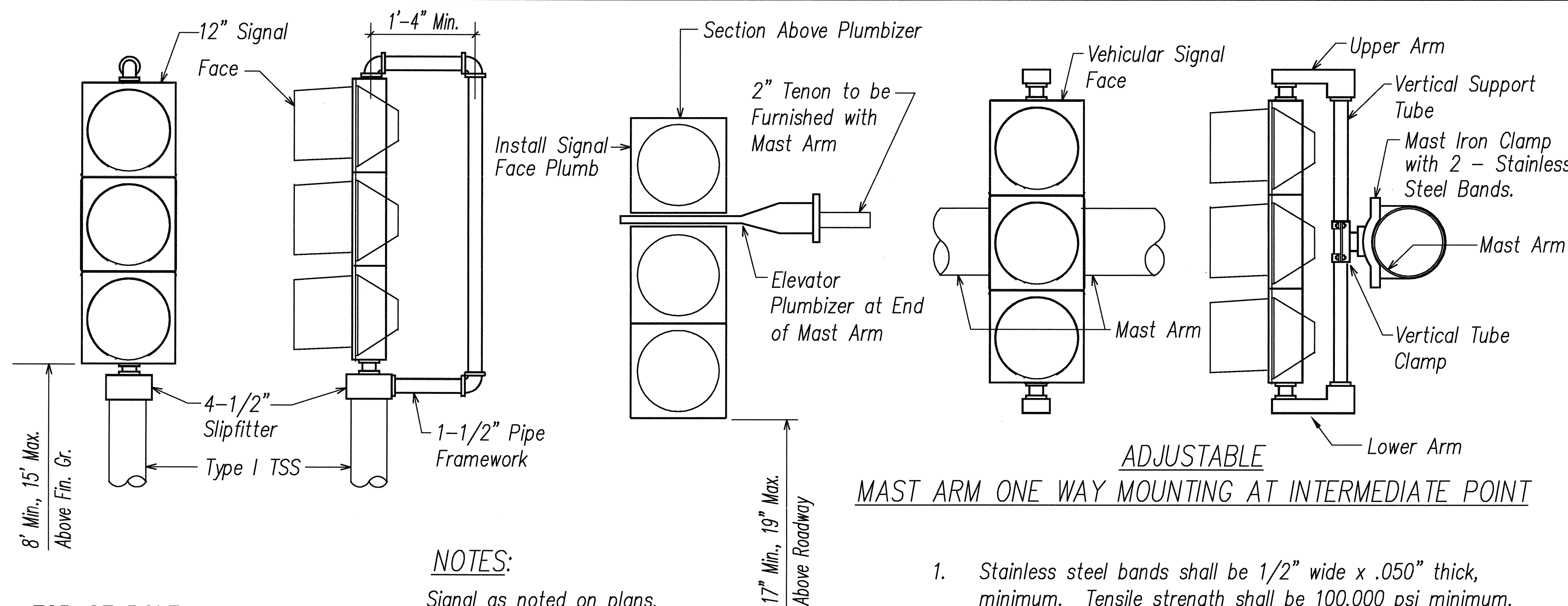**DEPARTMENT OF TRANSPORTATION**
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS II

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

Scale: AS NOTED   Date: Feb 21, 2007

SHEET No. E2.17 OF 62 SHEETS

	DATE	REVISION

A — VEHICULAR SIGNAL MOUNTING DETAILS
E2.18   N.T.S.

12" Signal Face
1'-4" Min.
Install Signal Face Plumb
Section Above Plumbizer
2" Tenon to be Furnished with Mast Arm
Elevator Plumbizer at End of Mast Arm
4-1/2" Slipfitter
Type I TSS
1-1/2" Pipe Framework
8' Min., 15' Max. Above Fin. Gr.

TOP OF POLE – ONE WAY MOUNTING

Vehicular Signal Face
Mast Arm
17" Min., 19" Max. Above Roadway

NOTES:
Signal as noted on plans.

MAST ARM – ONE WAY MOUNTING AT ENDS
ONE WAY MOUNTING AT ENDS

ADJUSTABLE
MAST ARM ONE WAY MOUNTING AT INTERMEDIATE POINT

Vehicular Signal Face
Mast Arm
Upper Arm
Vertical Support Tube
Mast Iron Clamp with 2 – Stainless Steel Bands.
Mast Arm
Vertical Tube Clamp
Lower Arm

NOTES:

1. Stainless steel bands shall be 1/2" wide x .050" thick, minimum. Tensile strength shall be 100,000 psi minimum.
2. Upper arm, lower arm and vertical support tube shall be of 356 cast aluminum.
3. All wiring shall be concealed.
4. Vertical tube clamp shall be of malleable iron, grade 32510.
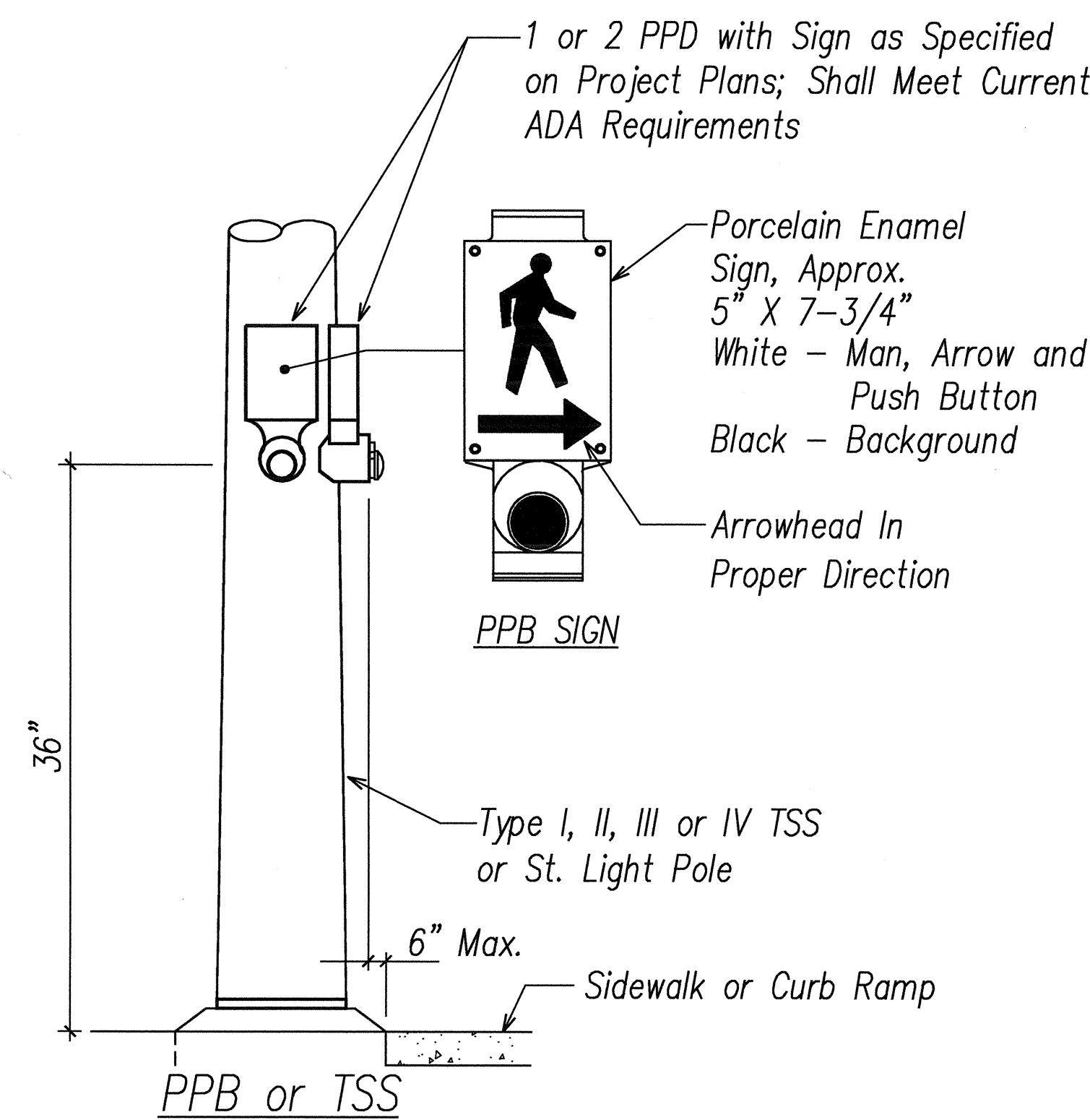5. All aluminum parts shall have an Alodine 1200 finish.

B — PEDESTRIAN SIGNAL MOUNTINGS
E2.18   N.T.S.

Type I, II, III, or IV TSS or St. Light Pole
Length as Required
Pole Plate with 2 – 3/4" Wide Adjustable Bands (Typ.)
Ped Signal
1-1/2" Pipe Framework
Drill 3/4" Hole in Pole
7' Min., 10' Max. Above Sidewalk

BRACKET MOUNT – ONE WAY

Ped Signal
1-1/2" Pipe Framework
Drill 3/4" Hole in Pole
7' Min., 10' Max. Above Sidewalk
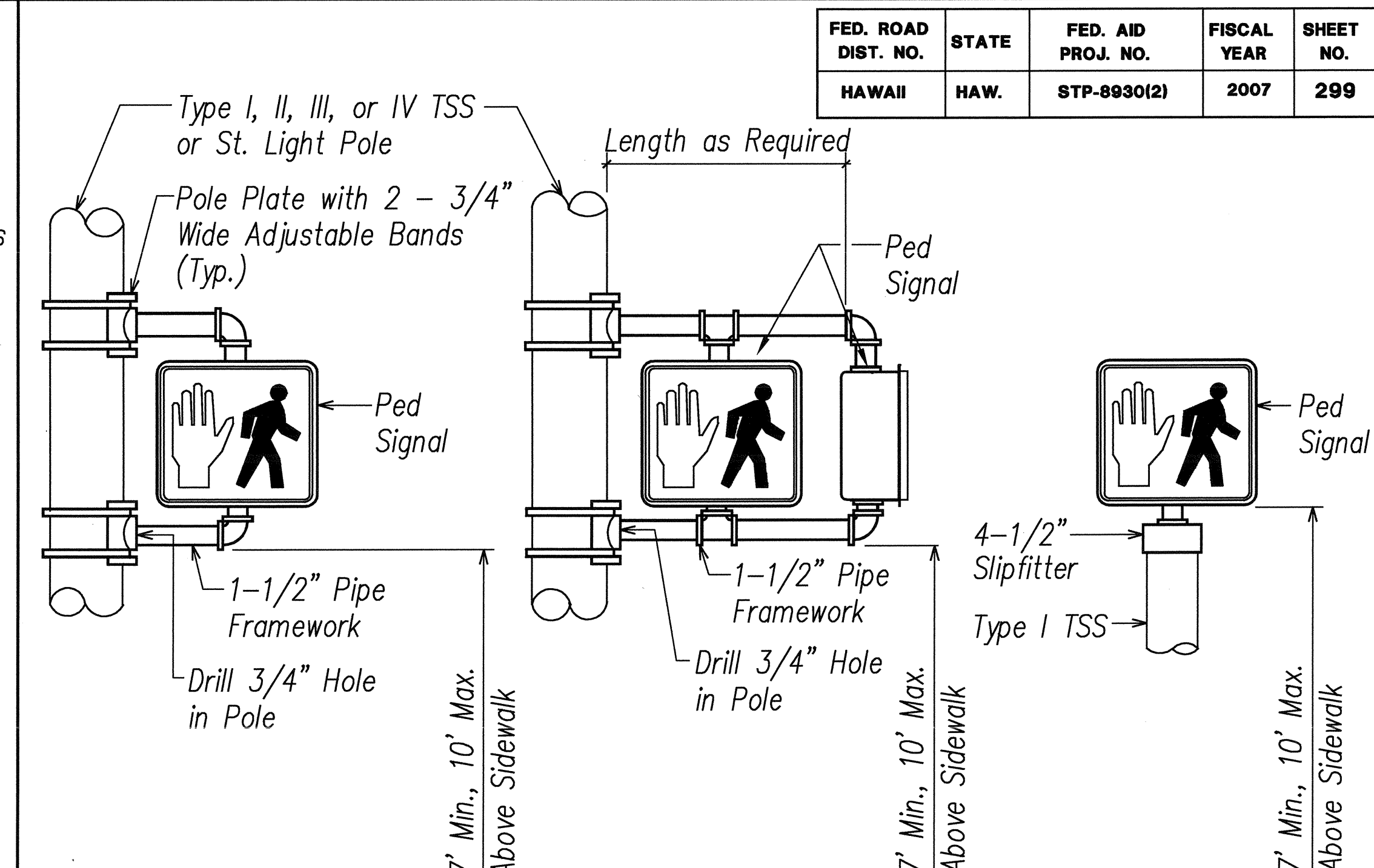
BRACKET MOUNT – TWO WAY

Ped Signal
4-1/2" Slipfitter
Type I TSS
7' Min., 10' Max. Above Sidewalk

TOP OF POLE – ONE WAY

C — PEDESTRIAN PUSHBUTTON DETAILS
E2.18   N.T.S.

1 or 2 PPD with Sign as Specified on Project Plans; Shall Meet Current ADA Requirements
Porcelain Enamel Sign, Approx. 5" X 7-3/4"
White – Man, Arrow and Push Button
Black – Background
Arrowhead In Proper Direction
PPB SIGN
Type I, II, III or IV TSS or St. Light Pole
36"
6" Max.
Sidewalk or Curb Ramp
PPB or TSS
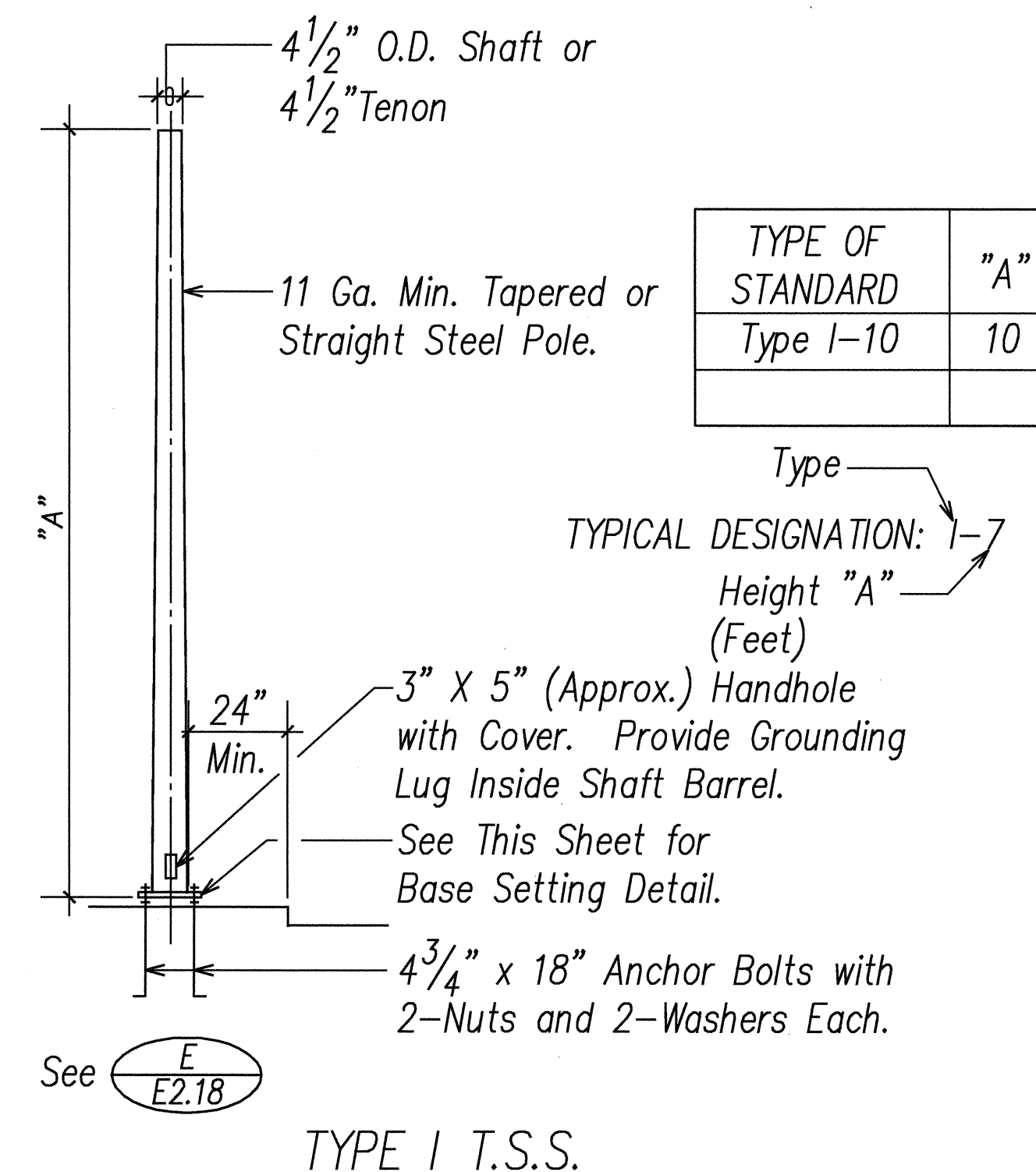
D — TYPICAL STANDARD AND PEDESTAL INSTALLATION
E2.18   N.T.S.

4-1/2" O.D. Shaft or 4-1/2" Tenon
11 Ga. Min. Tapered or Straight Steel Pole.

TYPE OF STANDARD	"A"
Type I-10	10

Type
TYPICAL DESIGNATION: I-7
Height "A" (Feet)
3" X 5" (Approx.) Handhole with Cover. Provide Grounding Lug Inside Shaft Barrel.
See This Sheet for Base Setting Detail.
4-3/4" x 18" Anchor Bolts with 2-Nuts and 2-Washers Each.
"A"
24" Min.
See E2.18

TYPE I T.S.S.

E — TYPE "A" CONCRETE BASE
E2.18   N.T.S.

1'-6"
6" Sq.
1'-6"
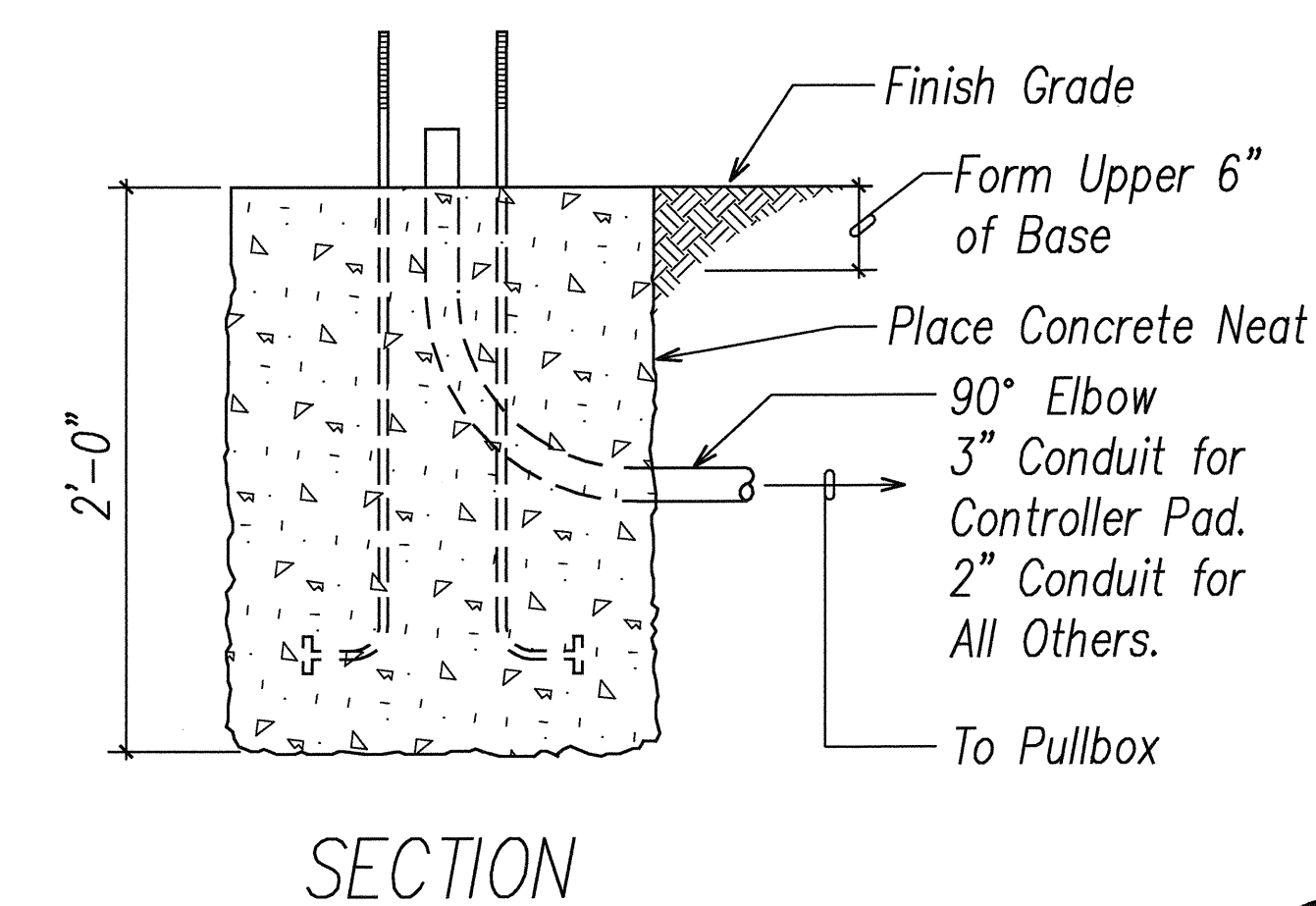Size and Length of Anchor Bolts Vary. See Manufacturer's Literature.

PLAN

NOTES:

1. Concrete shall be Class "B".
2. Type "A" concrete base shall be used for Type I-10, I-7 and I-3 standards.
3. Conduit bend is incidental to concrete base construction.

Finish Grade
Form Upper 6" of Base
Place Concrete Neat
90° Elbow
3" Conduit for Controller Pad.
2" Conduit for All Others.
To Pullbox
2'-0"

SECTION

GARY I. FUNASAKI
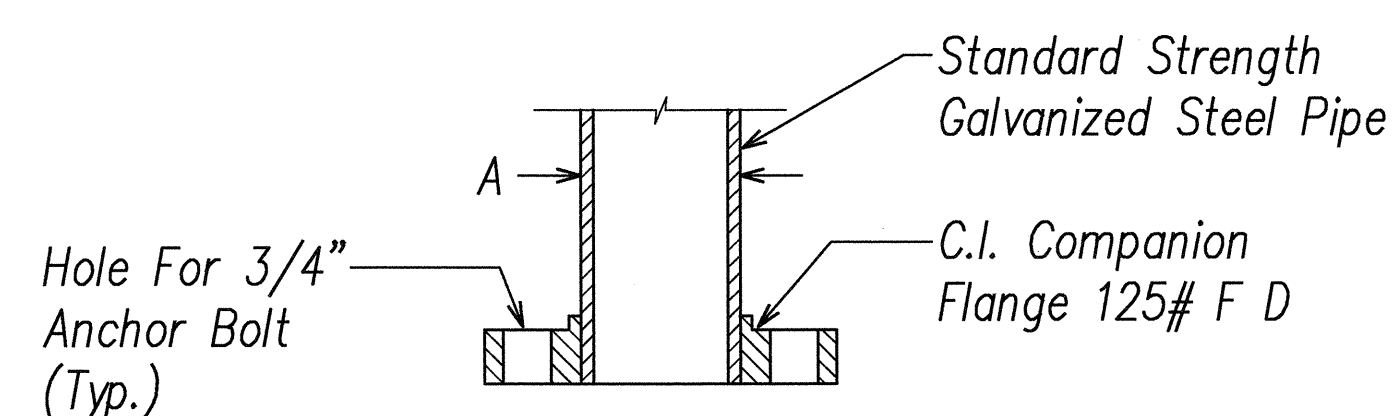LICENSED PROFESSIONAL ENGINEER
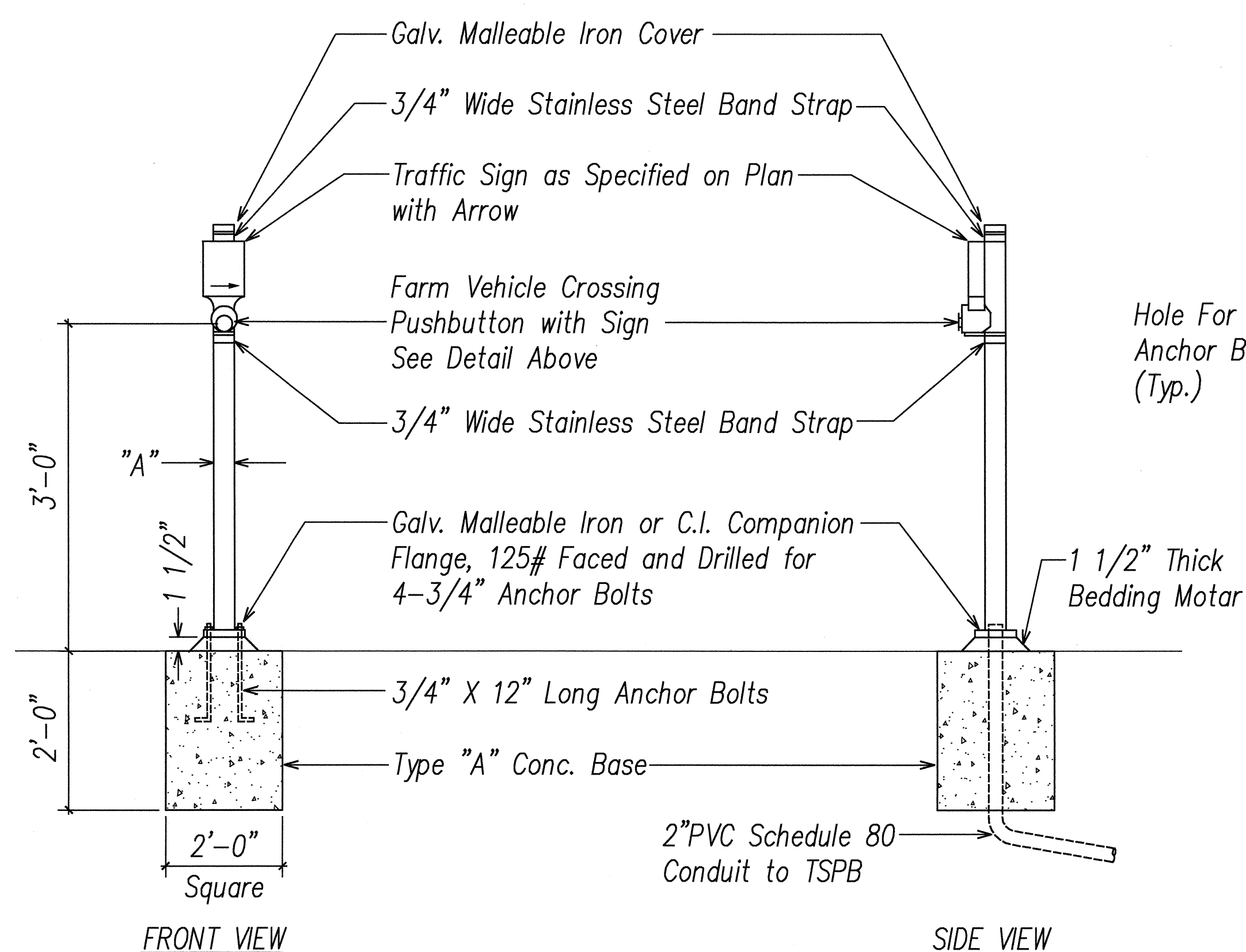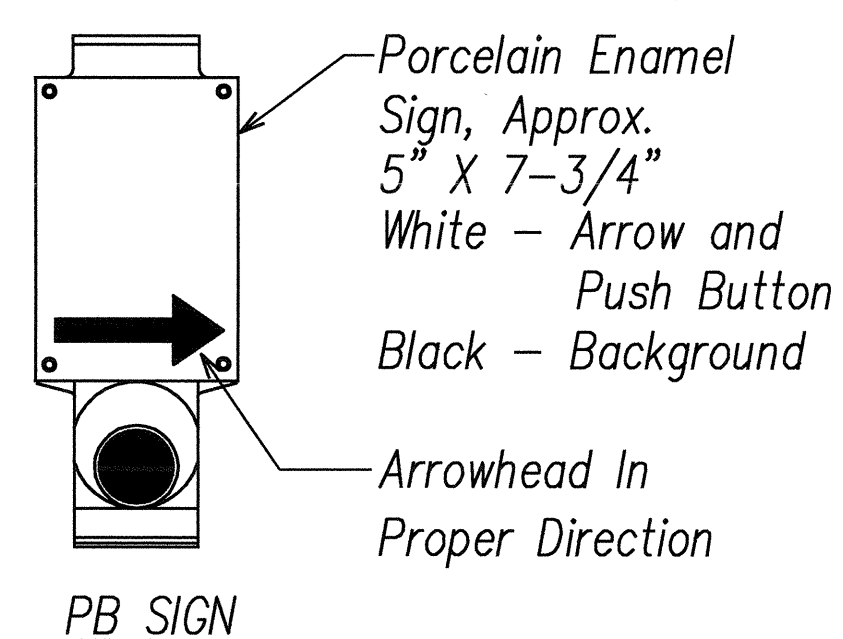No. 4185-E
HAWAII, U.S.A.

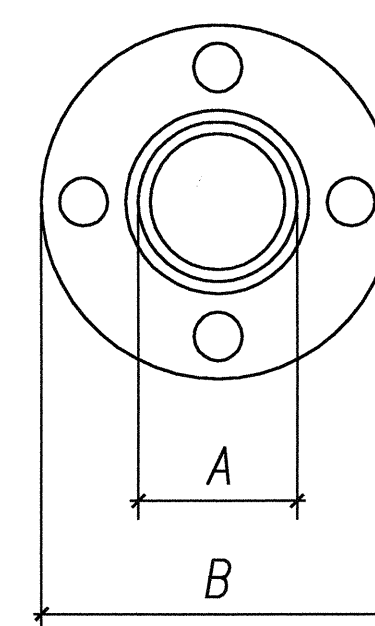THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS III

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

Scale: AS NOTED   Date: Feb 21, 2007

DATE	REVISION

SHEET No. E-2.18 OF 62 SHEETS

Porcelain Enamel Sign, Approx. 5" X 7-3/4"
White — Arrow and Push Button
Black — Background

Arrowhead In Proper Direction

PB SIGN

Galv. Malleable Iron Cover

3/4" Wide Stainless Steel Band Strap

Traffic Sign as Specified on Plan with Arrow

Farm Vehicle Crossing Pushbutton with Sign See Detail Above

3/4" Wide Stainless Steel Band Strap

"A"

1 1/2"

3'-0"

2'-0"

Galv. Malleable Iron or C.I. Companion Flange, 125# Faced and Drilled for 4-3/4" Anchor Bolts

3/4" X 12" Long Anchor Bolts

Type "A" Conc. Base

2'-0"
Square

FRONT VIEW

1 1/2" Thick Bedding Motar

2"PVC Schedule 80 Conduit to TSPB

SIDE VIEW

Standard Strength Galvanized Steel Pipe

C.I. Companion Flange 125# F D

Hole For 3/4" Anchor Bolt (Typ.)
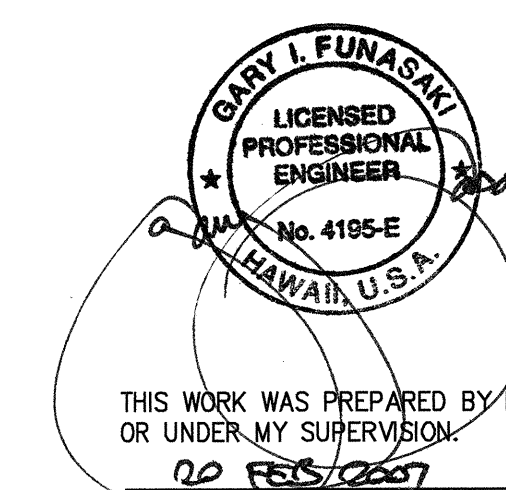
A

SECTION

A

B

TOP VIEW

NOTE:

1. Conduits shall Protrude 2" Max above Finished Surface of Foundation.

2. Conduits Shall slope away from Post Foundation.

DATA TABLE FOR PB POST		
AMOUNT OF PB	DIMENSIONS	
	A	B
1	3 1/2"	8"
2-3	4 1/2"	9"

A
E2.19
FARM VEHICLE CROSSING PUSHBUTTON POST AND FOOTING DETAIL
NOT TO SCALE

FLANGE DETAIL

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS IV

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

Scale: AS NOTED   Date: Feb 21, 2007

SHEET No. E2.19 OF 62 SHEETS

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

DATE	REVISION