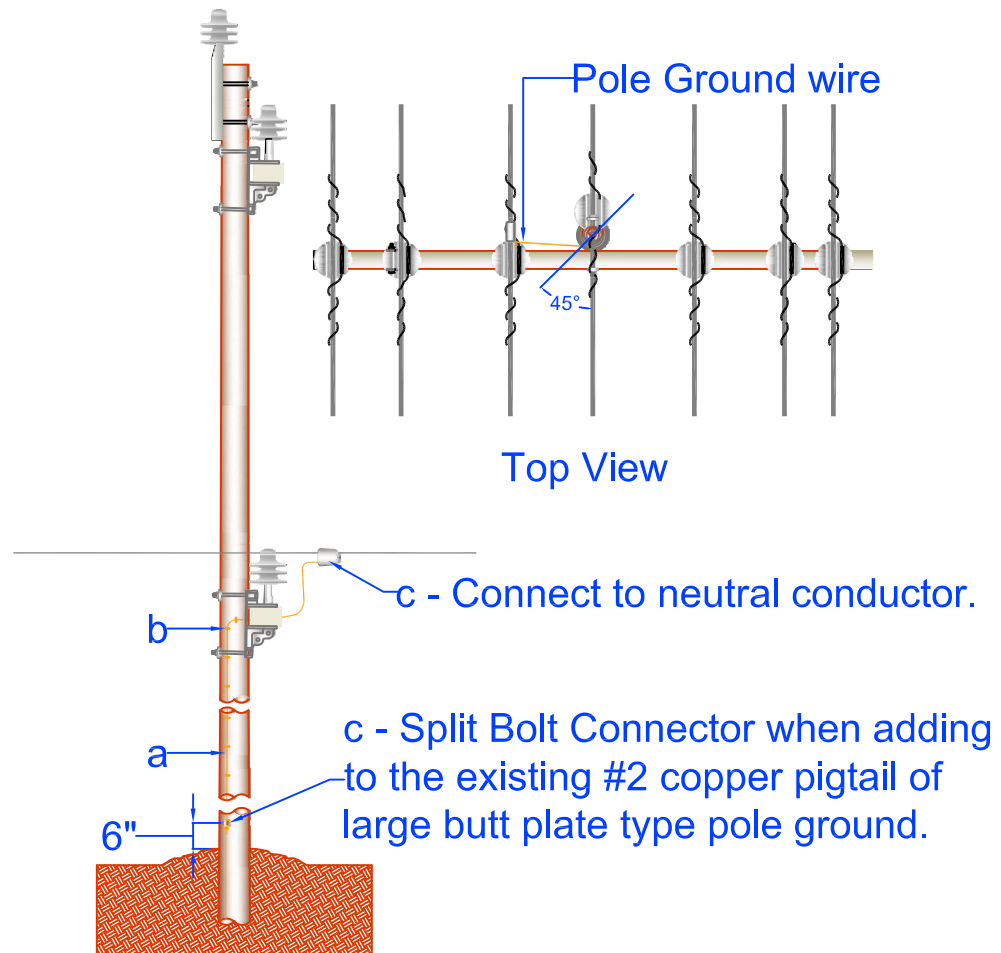




NOTES:

1. Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2' -0" apart except for a distance of 8' above ground and 8' from top of pole where they shall be 6" apart.
3. Ground wire shall have a minimum conductivity of #2 Copper or equivalent for circuits with larger than a #336 AAC neutral - #2 copper ground NESC Rule 093C2.
4. If a #6 copper pole ground exists, the new #2 copper wire or #2 copper clad wire can be installed next to it or the #6 can be removed.
5. This type of ground shall be added on all existing pole locations when replacing a #336 AAC neutral with a larger than #336 AAC Neutral.

Item	Material Number	Item Quantity	Item Description
a	*2001499	As required	Wire Copper Clad Steel #2 Str 7
b	*3000204	As required	Staples 1 1/2" Galv
c	*	As required	Connectors

*Denotes "Grab Bag" item.

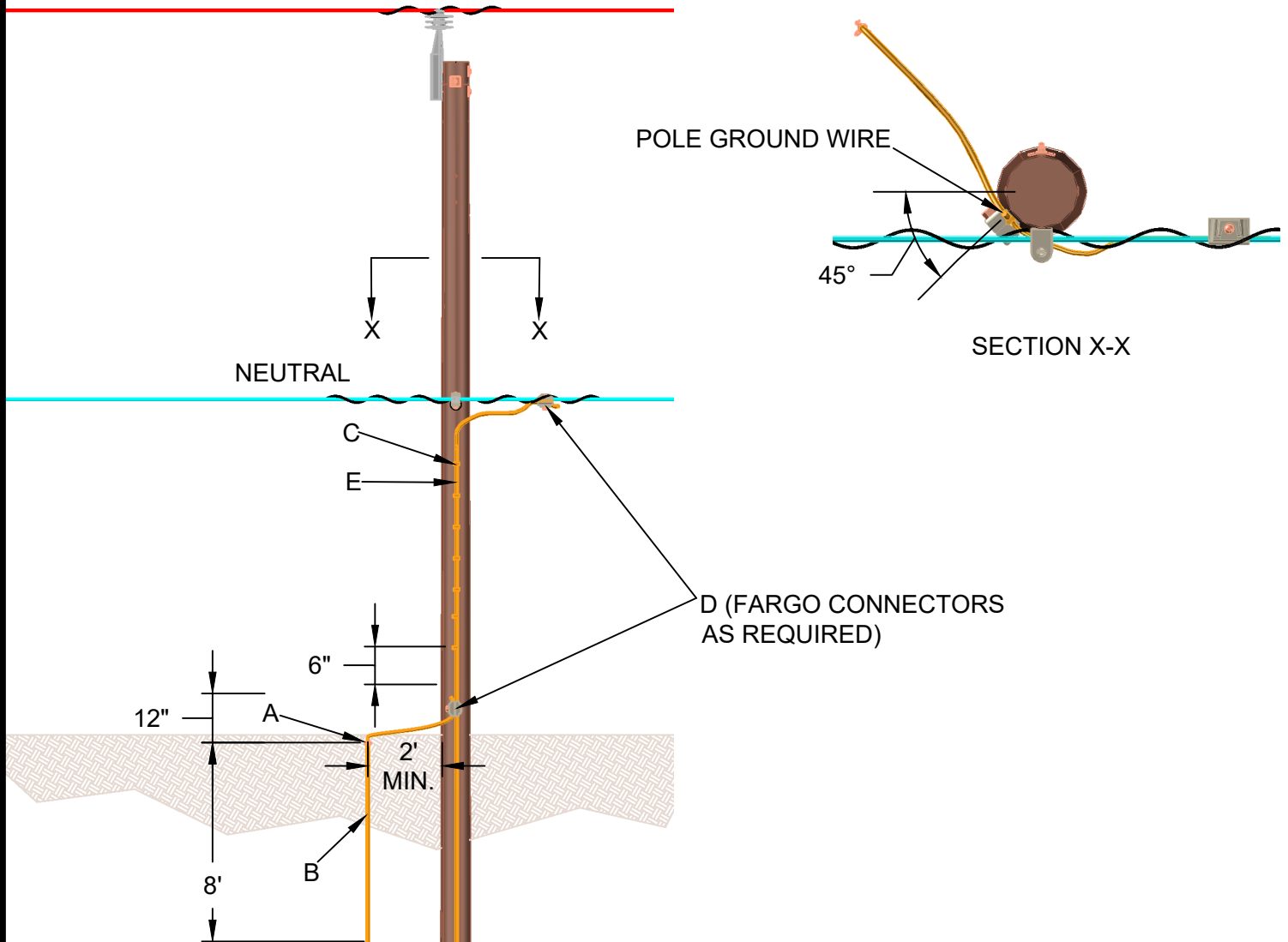


PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Install #2 Copper Ground on an Existing Pole
When Changing Neutral to Larger Than #336 AAC

drawn:	approved	date:
REB	MJB	March 16, 2012

M2



NOTES:

- GROUND WIRE TO BE LOCATED ON SAME SIDE AS NEUTRAL CONDUCTOR AND IN QUADRANT OPPOSITE CLIMBING SPACE OR POLE TOP PIN.
- STAPLES ON GROUND WIRE SHALL BE 2 FEET APART, EXCEPT FOR A DISTANCE OF 8 FEET ABOVE GROUND AND 8 FEET FROM TOP OF POLE, WHERE THEY SHALL BE 6 INCHES APART.
- GROUND WIRE (MATERIAL NUMBER 2001550) SHALL HAVE A MINIMUM CONDUCTIVITY OF NO. 6 COPPER OR EQUIVALENT FOR CIRCUITS WITH #336 OR SMALLER NEUTRAL. ON CIRCUITS WITH A #795 NEUTRAL, USE A MINIMUM OF NO. 2 COPPER OR NO. 2 COPPER-CLAD GROUND.
- THIS TYPE OF GROUND SHALL BE USED ON ALL EXISTING POLE LOCATIONS LACKING A VISABLE GROUND WHEN INSTALLING NEW EQUIPMENT, INCLUDING BUT NOT LIMITED TO: LIGHTNING ARRESTERS, OIL CIRCUIT RECLOSERS, VOLTAGE REGULATORS, SECTIONALIZERS, TRANSFORMERS, CUTOUTS, CAPACITORS, AND METER LOOPS.

ITEM	MATERIAL NUMBER	DESCRIPTION	QUANTITY
A	2000250	CLAMP GROUND ROD 5/8"	1
B	2000848	ROD GROUND 5/8" x 8' CU	1
C	*3000204	STAPLES 1 1/2" GALVANIZED	AS REQ'D
D	*2001511	CONNECTOR GA VISE 4/0 STR. - 795 AAC	AS REQ'D
E	*2001550	WIRE COPPER CLAD STEEL #6 SOLID	AS REQ'D

*DENOTES "GRAB BAG" ITEM.

REV | A | DATE | 05/16/2022 | REVISION | ISSUE FOR CONSTRUCTION | BY | RWC | CHK | SSS | APR | MMG

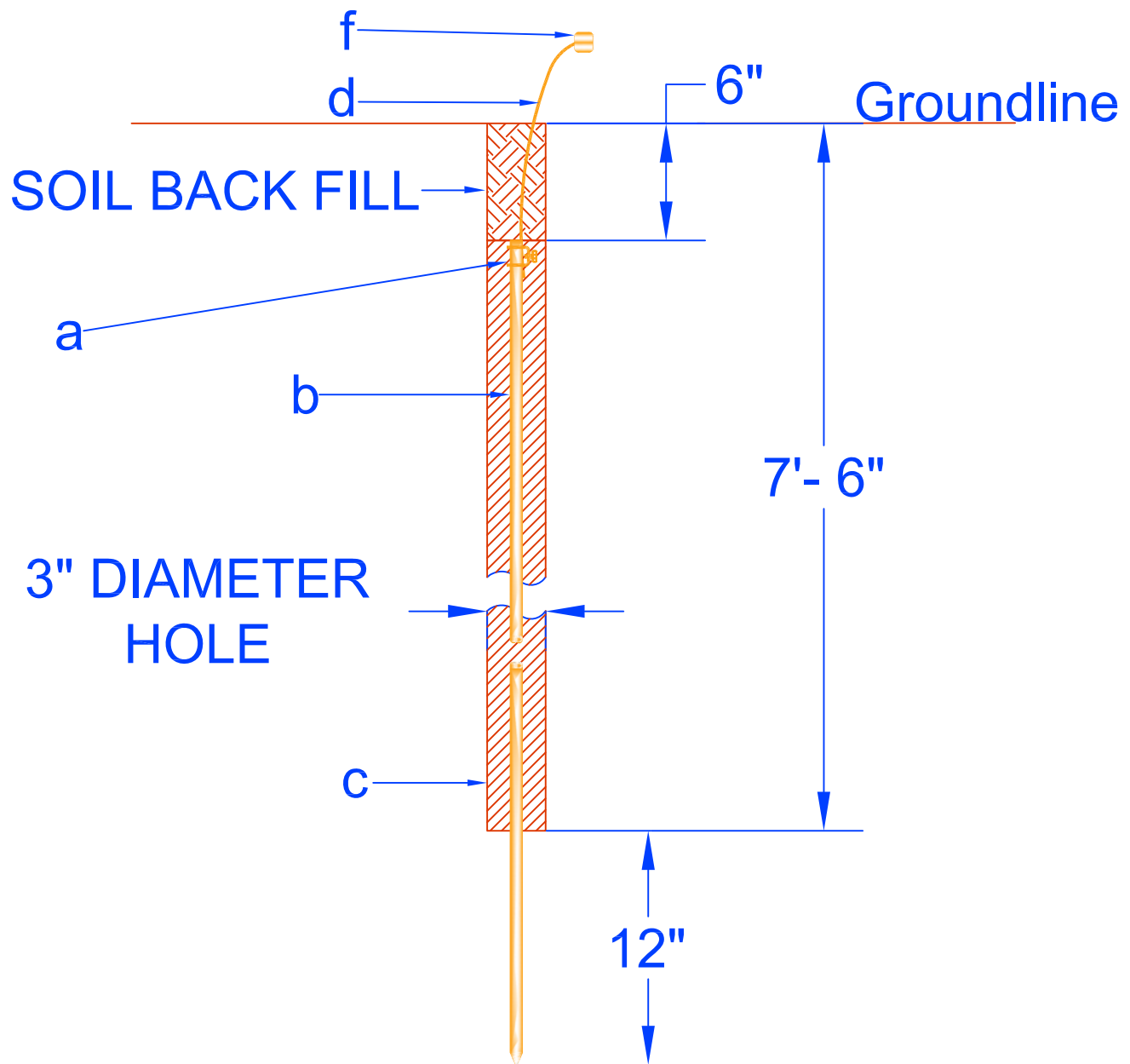


CONSTRUCTION
ASSEMBLY UNIT

POLE GROUND DRIVEN GROUND ROD

drawn:	approved:	date:
RWC	MMG	05/16/2022

M2-1



Item	Material Number	Item Quantity	Item Description
a	2000250	1	Clamp Grd Rod 5/8"
b	2000848	1	Rod Ground 5/8 x 8' CU
c	*2000491	As required	Ground Enhancement
d	*2001550	As required	Wire Copper Clad Steel #6 Solid
e	*3000204	As required	Staples 1 1/2" Galv
f	*	As required	Connector

*Denotes "Grab Bag" item.



PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Pole Ground Driven Ground with Ground Enhancement

Page 1 of 2

drawn:	approved	date:
REB	MJB	March 16, 2012

M2-1.1

- 1.) Auger a 3" diameter hole to a depth of 7' 6".
- 2.) Place a ground rod into augured hole and drive one foot into the bottom. This will place the top of the ground rod approximately 6" below grade.
- 3.) Pour the appropriate amount of Ground Enhancement around the ground rod, tamping as you go. Proper tamping will require about 35 pounds per installation. Before completely covering the top of the ground rod make up the connection for the #2 stranded copper or copper clad pigtail at the top of the ground rod and on the pole ground.
- 4.) Fill the remainder of the hole with the soil removed during augering.

Note : If rock is encountered at a depth of less than 4 feet, use the trench type installation. If rock is encountered at a depth greater than 4 feet, drill hole 1 foot deeper and tamp in 1 foot of Ground Enhancement prior to installing the ground rod.

Caution!

Respiratory Protection: NIOSH approved dust mask recommended.

Ventilation: Local Exhaust-Remove airborne dust.

Protective Gloves: Use rubber type gloves.

Eye Protection: Goggles, safety glasses recommended.

Other Protective Clothing or Equipment: Use gloves, boots, and clothing to protect skin from prolonged contact with wet cement.

Work/Hygienic Practices: No eating, drinking, or smoking while product is in use. Wash exposed skin after use.

See the Material Safety Data Sheets for GEM or Conducrete for more information



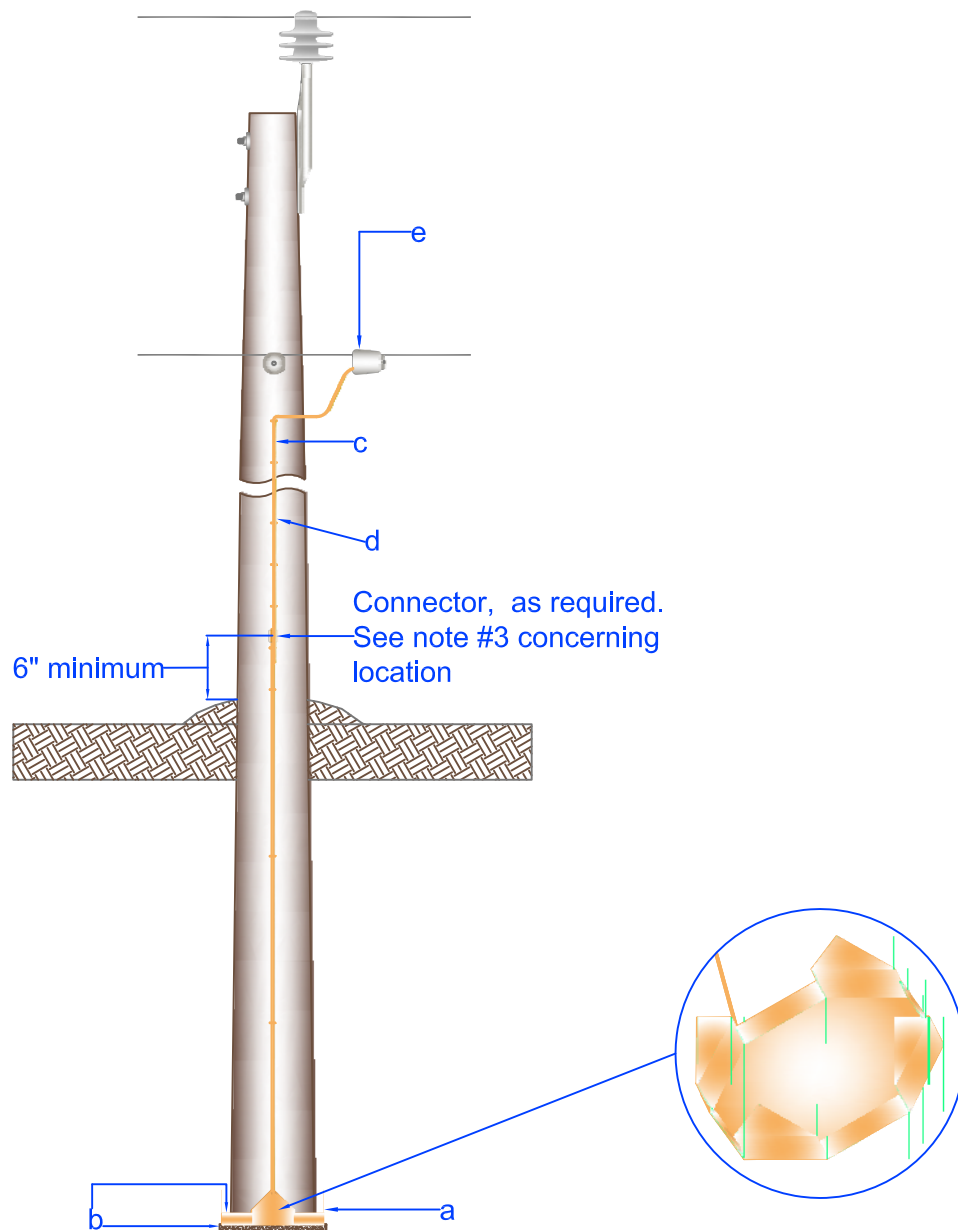
PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Pole Ground Driven Ground with Ground Enhancement

Page 2 of 2

drawn:	approved	date:
REB	MJB	March 16, 2012

M2-1.1



Item	Material Number	Item Quantity	Item Description
a	2000631	1	Plate Pole Ground Full Electrd
b	2000491	25 Pounds	Ground Enhancement
c	2001550	3 Pounds	Wire Copper Clad Steel #6 Solid
d	*3000204	As required	Staples 1 1/2" Galv
e	*	As required	Connectors

*Denotes "Grab Bag" item.



PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Pole Ground Large Butt Plate

Page 1 of 2

drawn:

REB

approved

MJB

date:

March 16, 2012

M2-2

Note:

1. This assembly unit shall be used on all new primary and meter poles. Poles installed exclusively as stub poles or service poles need not be grounded.
2. Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
3. Staples on ground wire shall be 2'0" apart except for a distance of 8'0" above ground and 8'0" from top of pole where they shall be 6" apart.
4. Prior to setting pole in hole remove any standing water from the pole hole and spread enough Ground Enhancement to uniformly cover the bottom of the pole hole about one inch deep.
5. Install the butt plate in the pole hole spreading more Ground Enhancement over it to a depth of about one inch. Backfill hole with a layer of dirt.
6. Install the pole in the hole, connect the pigtail to the pole ground, and spread the remaining Earth Aid in the hole. Cover the Ground Enhancement with about four inches of soil and tamp well.
7. Ground plate shall not have less than two square feet of surface exposed to the soil and at a depth of not less than five feet. Ferrous metal electrodes shall not be less than 0.25 inch in thickness and nonferrous metals not less than 0.06 inch.

Caution!

Respiratory Protection: NIOSH approved dust mask recommended.

Ventilation: Local Exhaust-Remove airborne dust.

Protective Gloves: Use rubber type gloves.

Eye Protection: Goggles, safety glasses recommended.

Other Protective Clothing or Equipment: Use gloves, boots, and clothing to protect skin from prolonged contact with wet cement.

Work/Hygienic Practices: No eating, drinking, or smoking while product is in use.

Wash

exposed skin after use.

See the Material Safety Data Sheets for GEM or Conducrete for more information



PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Pole Ground Large Butt Plate

Page 2 of 2

drawn:

REB

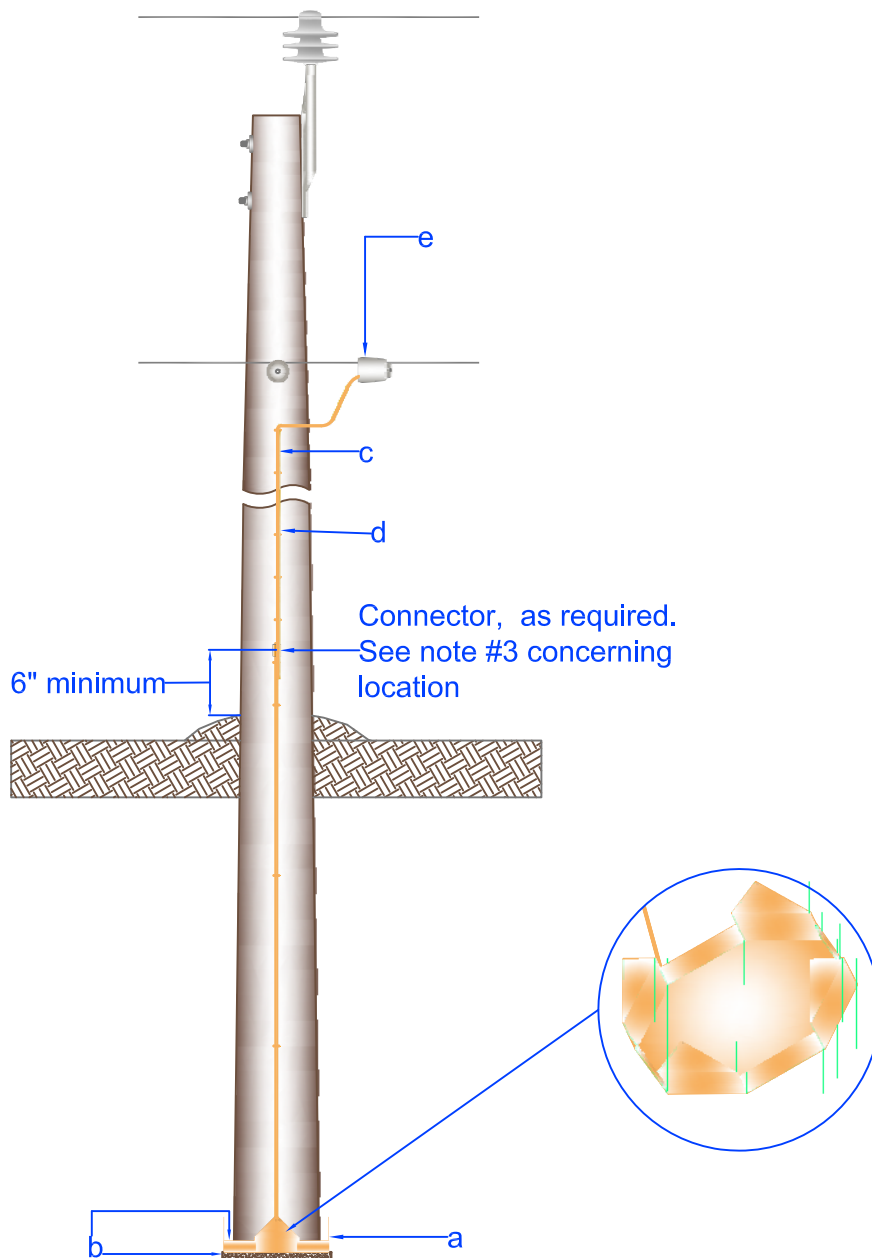
approved

MJB

date:

March 16, 2012

M2-2



Item	Material Number	Item Quantity	Item Description
a	2000631	1	Plate Pole Ground Full Electrd
b	2000491	25 Pounds	Ground Enhancement
c	2001499	4 Pounds	Wire Copper Clad Steel #2 7 Str
d	*3000204	As required	Staples 1 1/2" Galv
e	*	As required	Connectors

*Denotes "Grab Bag" item.



PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Pole Gound Large Butt Plate w/#2 Copper
Page 1 of 2

drawn:	approved	date:
REB	MJB	March 16, 2012

M2-2.2

Note:

1. This construction assembly unit shall be used on all new primary and meter pole installations. Poles installed exclusively as stub or service poles do not require a pole ground
2. For existing poles requiring a pole ground or additional grounding requirements, specify construction assembly unit M2-1.
3. Use the full length (10') of the #2 copper ground wire supplied with the copper grounding plate and connect it to the pole ground above the ground line (for 75' poles and shorter). Install connector above back fill around the pole if possible.
4. Use a #2 copper or #2 copper clad pole ground minimum for poles with a system neutral of 795 kcmil (M2-2.2).
5. Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
6. Staples on ground wire shall be 0"-6.0" apart from the pole top down 8.0' and from the ground line up 8.0'. They shall be 2'-0.0" apart elsewhere on the pole.
7. Prior to setting pole in hole remove any standing water from the pole hole and spread enough Ground Enhancement to uniformly cover the bottom of the pole hole about one inch deep.
8. Install the butt plate in the pole hole spreading more Ground Enhancement over it to a depth of about one inch, backfill the hole with a layer of dirt.
9. Install the pole in the hole, connect the pigtail to the pole ground above the ground line if possible, and spread the remaining Ground Enhancement in the hole. Cove the Ground Enhancement with about four inches of soil and tamp well.
10. Ground plate shall not have less than two square feet of surface exposed to the soil and at a depth of not less than five feet. Ferrous metal electrodes shall not be less than 0.25 inch in thickness and nonferrous metals not less than 0.06 inch.

Caution!

Respiratory Protection: NIOSH approved dust mask recommended.

Ventilation: Local Exhaust-Remove airborne dust.

Protective Gloves: Use rubber type gloves.

Eye Protection: Goggles, safety glasses recommended.

Other Protective Clothing or Equipment: Use gloves, boots, and clothing to protect skin from prolonged contact with wet cement.

Work/Hygienic Practices: No eating, drinking, or smoking while product is in use. Wash exposed skin after use.

See the Material Safety Data Sheets for GEM or Conducrete for more information

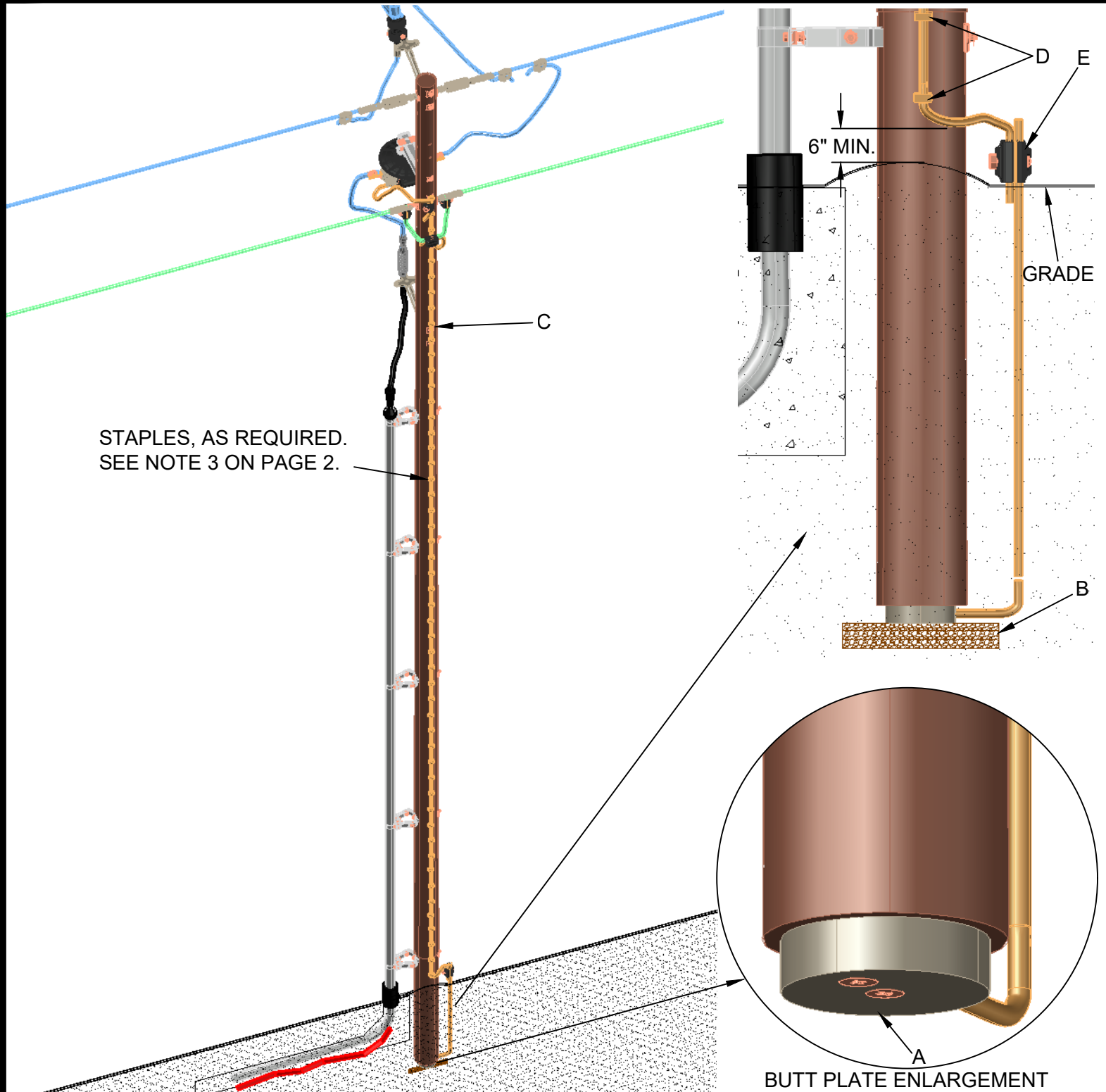


PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Pole Ground Large Butt Plate w/#2 Copper
Page 2 of 2

drawn:	approved	date:
REB	MJB	March 16, 2012

M2-2.2



ITEM	MATERIAL NUMBER	DESCRIPTION	QUANTITY
A	2003088	BUTT PLATE POLE-GROUND POLYMER FULL ELECTRODE	1
B	2000491	GROUND ENHANCEMENT	25 LBS
C	2001293	WIRE COPPER BARE #2 7 STR	8 LBS
D	*3000204	STAPLES 1 1/2" GALV	AS REQ'D
E	*	FARGO-TYPE CONNECTOR. SEE M5-CONN PAGE 2.	AS REQ'D

*DENOTES "GRAB BAG" ITEM.

REV	DATE	REVISION	ISSUE FOR CONSTRUCTION	BY	AMJ	CHK	SSS	APR	MMG
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CONSTRUCTION
ASSEMBLY UNIT

POLE-GROUND CONDUCTIVE
DISC-TYPE BUTT PLATE
1 OF 2

drawn:	approved:	date:	M2-3
AMJ	MMG	1/13/2025	

Notes:

1. This assembly unit shall be used on all new primary poles installed for the following equipment: voltage regulators, single-phase and three-phase electronic reclosers, capacitor banks, autotransformers, stepdowns, and SCADA-controlled air-break switches. For racked voltage regulators, autotransformers, and stepdowns, both primary poles and the center stub pole must be grounded using polymer pole-ground butt plate.
2. Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole-top pin.
3. Staples on ground wire shall be 2' apart, except for a distance of 8' above ground and 8' from top of pole, where they shall be 6" apart.
4. Prior to setting pole in hole, remove standing water from hole and spread enough ground enhancement to uniformly cover bottom of hole about 1" deep.
5. Use lag screws to attach polymer pole-ground butt plate to pole bottom. Use full length (10') of #2 copper ground wire supplied with polymer pole-ground butt plate and connect it to pole ground above ground line (for poles up to 75'). Install connector above backfill if possible.
6. Install pole in hole. Cover ground enhancement with about 4" of soil and tamp well. Backfill hole with a layer of dirt.
7. The polymer pole-ground butt plate shall be at a depth of not less than 5' and shall have not less than 2 square feet of surface area exposed to the soil.

Caution



- **Respiratory protection:** NIOSH-approved dust mask recommended.
- **Ventilation:** Local exhaust. Remove airborne dust.
- **Protective gloves:** Use rubber-type gloves.
- **Eye protection:** Goggles/safety glasses recommended.
- **Other protective clothing or equipment:** Use gloves, boots, and clothing to protect skin from prolonged contact with ground enhancement.
- **Work/hygienic practices:** No eating, drinking, or smoking while ground enhancement is in use. Wash exposed skin after use.

Refer to Safety Data Sheets for more information on ground enhancement material.

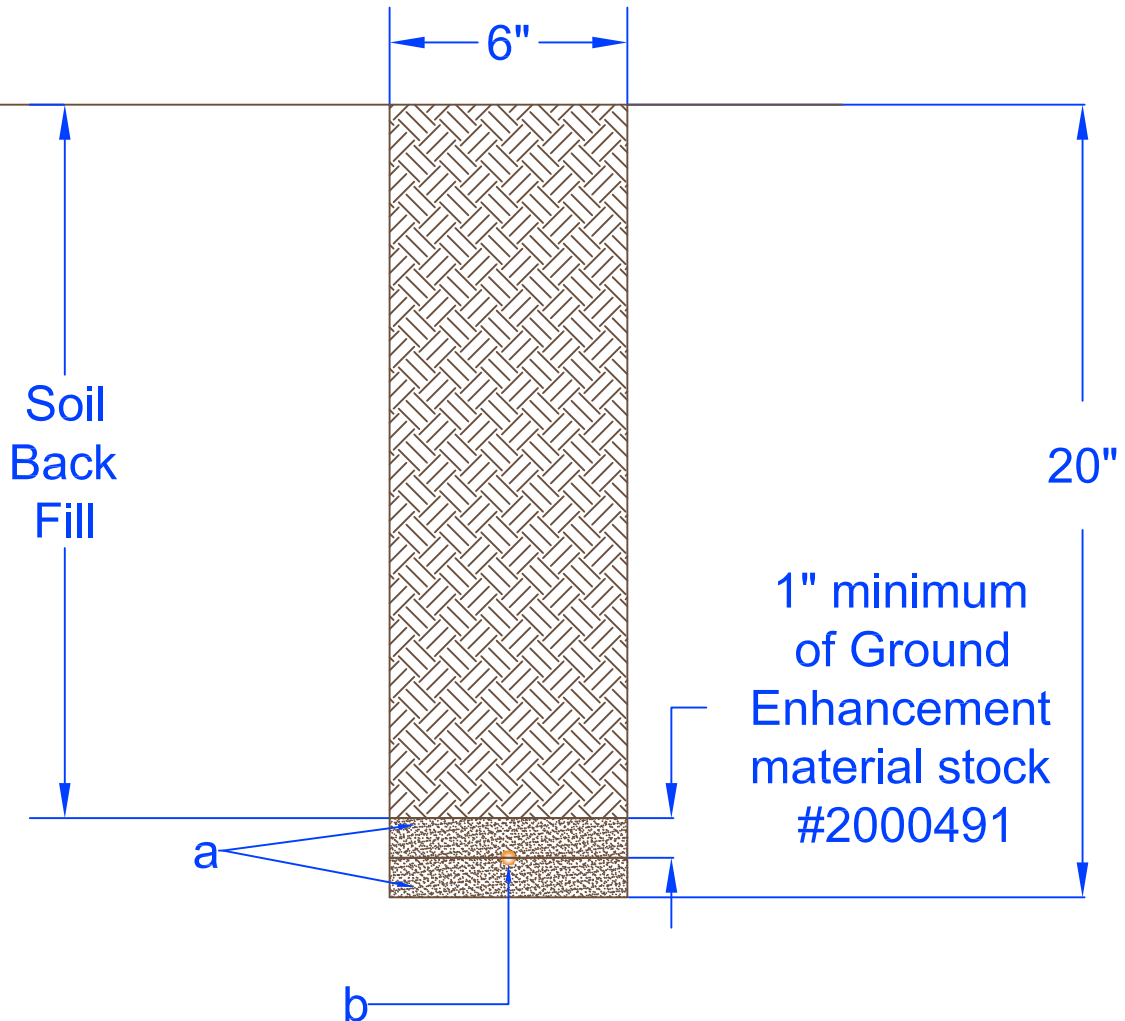
REV	DATE	REVISION	ISSUE FOR CONSTRUCTION	BY	AMJ	CHK	SSS	APR	MMG
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CONSTRUCTION
ASSEMBLY UNIT

POLE-GROUND CONDUCTIVE
DISC-TYPE BUTT PLATE
2 OF 2

drawn:	approved:	date:	M2-3
AMJ	MMG	1/13/2025	



Note: This does not qualify as a "Full Electrode" per the National Electric Safety Code (NESC rule 094B3a). Should not be used to replace assembly units M2-1 or M2-2.

Item	Material Number	Item Quantity	Item Description
a	2000491	75 Pounds	Ground Enhancement
b	*2001499	As required	Wire Copper Clad Steel #2 Str 7

*Denotes "Grab Bag" item.



PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Pole Gound Trench Type with Ground Enhancement

Page 1 of 2

drawn:	approved	date:
REB	MJB	March 16, 2012

M2-5

- 1.) Starting at the base of the pole, dig a 6" wide trench 20" deep by 10' long. The trench should be in line with the primary conductor.
- 2.) Spread enough Ground Enhancement to uniformly cover the bottom of the trench about 1" deep.
- 3.) Place the #2 stranded copper or copper clad conductor on top of the Ground Enhancement. Use Earth Staples to hold the #2 stranded copper or copper clad conductor in place (one staple every 3 to 4 feet). In lieu of Earth Staples, bend a 12" piece of #2 stranded copper or copper clad conductor in half. Connect the #2 stranded copper or copper clad conductor to the pole ground.
- 4.) Spread more Ground Enhancement on top of the #2 stranded copper or copper clad conductor to completely cover it to a depth of about 1".
- 5.) Carefully cover Ground Enhancement with about 4" of soil. Tamp well without exposing the #2 stranded copper or copper clad conductor. Then back fill and tamp the remainder of the trench.

Note: Remove standing water from the trench prior to installing Ground Enhancement.

Caution!

Respiratory Protection: NIOSH approved dust mask recommended.

Ventilation: Local Exhaust-Remove airborne dust.

Protective Gloves: Use rubber type gloves.

Eye Protection: Goggles, safety glasses recommended.

Other Protective Clothing or Equipment: Use gloves, boots, and clothing to protect skin from prolonged contact with wet cement.

Work/Hygienic Practices: No eating, drinking, or smoking while product is in use. Wash exposed skin after use.

See the Material Safety Data Sheets for GEM or Conducrete for more information



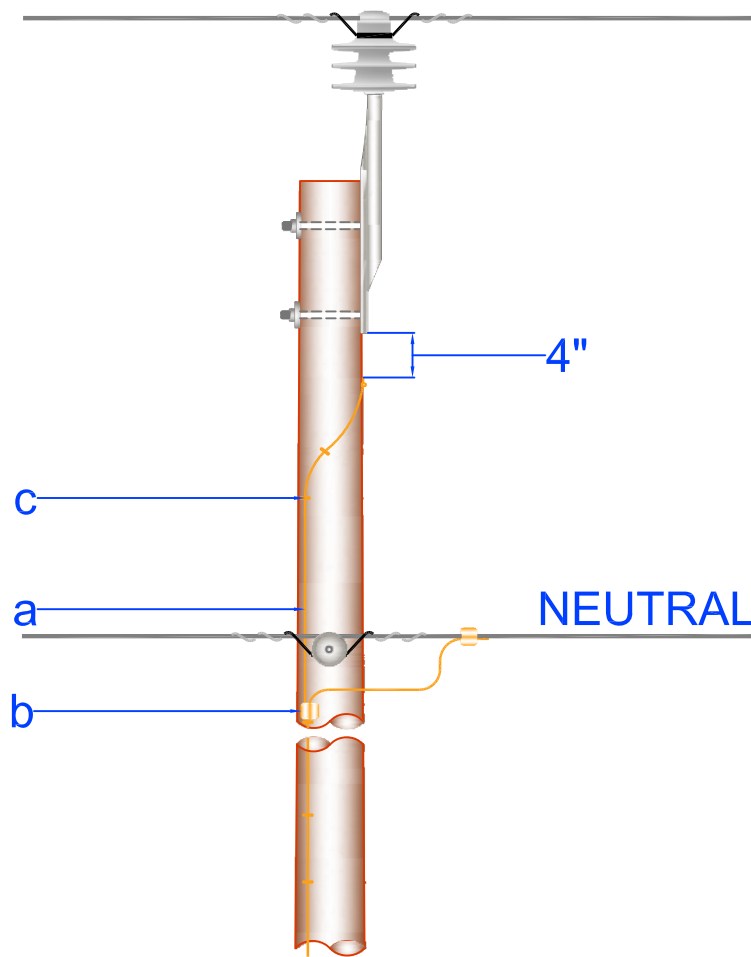
PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Pole Gound Trench Type with Ground Enhancement

Page 2 of 2

drawn:	approved	date:
REB	MJB	March 16, 2012

M2-5



NOTES:

1. **For Removal or Special Applications Only.**
2. When re-insulating 7.2/12.5kV lines for operation at 14.4/24.9kV remove this assembly unit from poles if they exist unless needed for lightning arresters or other reasons such as grounding a guy wire.

Item	Material Number	Item Quantity	Item Description
a	2001550	3 Pounds	Wire Copper Clad Steel #6 Solid
b	*2000345	1	Conn PG Comp CC6-4 8-4
c	*3000204	As Required	Staples 1 1/2 in Galv

***Denotes "Grab Bag" item.**

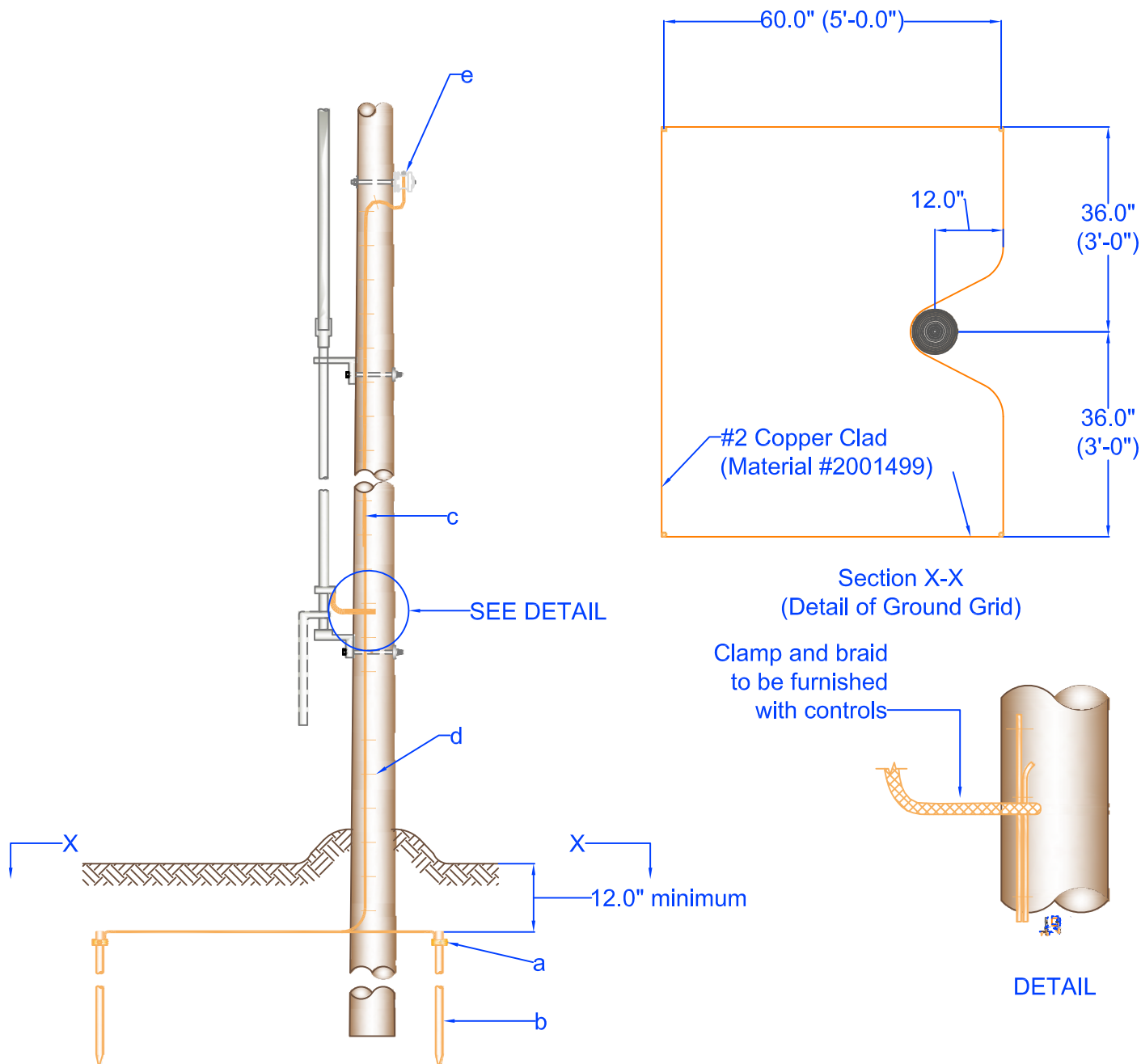


PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Pole Ground Wire From Neutral to PoleTop

drawn:	approved	date:
REB	MJB	March 23, 2012

M2-9



Item	Material Number	Item Quantity	Item Description
a	2000250	4	Clamp Grd Rod 5/8"
b	2000848	4	Rod Ground 5/8 x 8' CU
c	2001499	4 Pounds	Wire Copper Clad Steel #2 Str 7
d	*3000204	As required	Staples 1 1/2 In Galv
e	*	As required	Connectors

*Denotes "Grab Bag" item.



PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

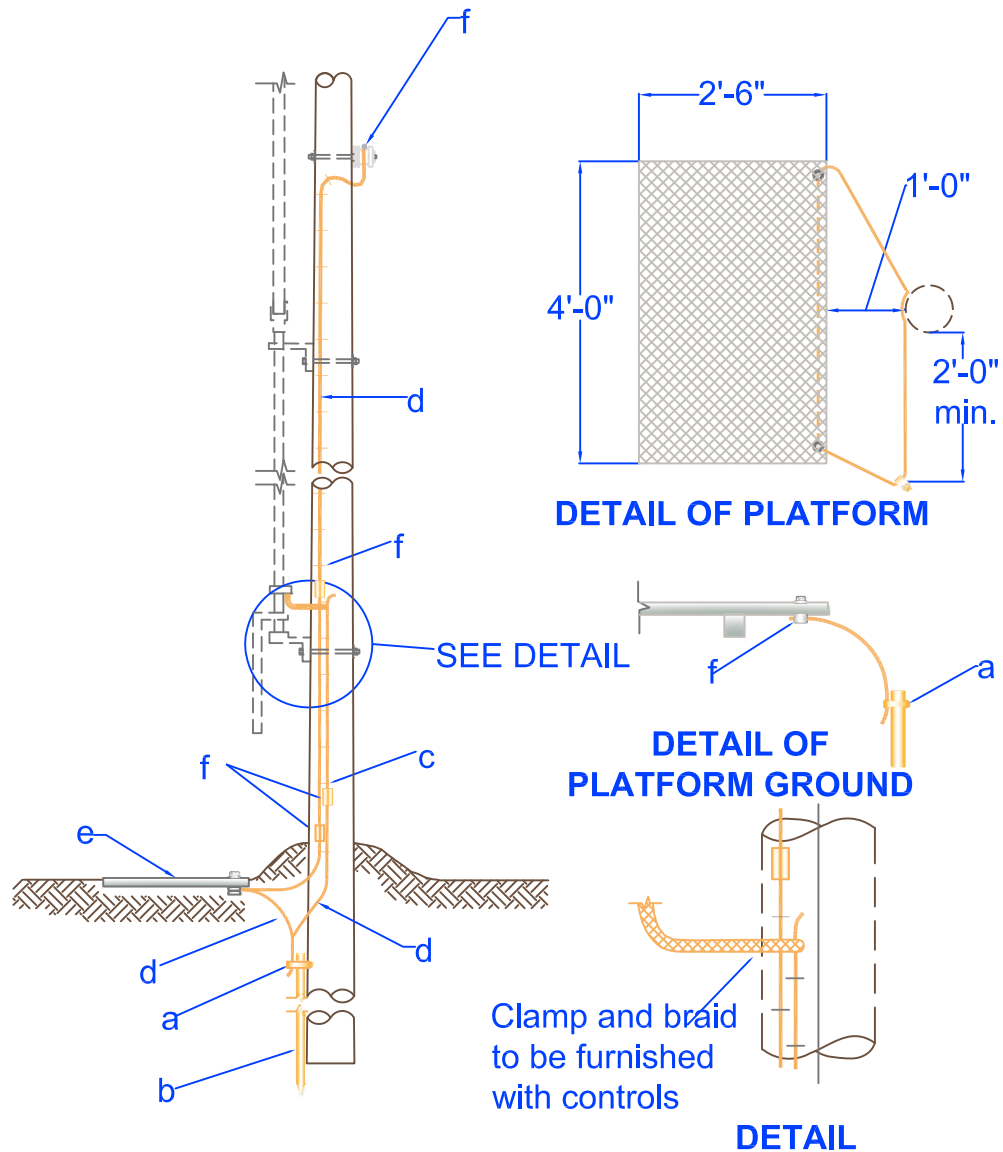
Pole Ground Driven Ground Rods for Air Break Switch

drawn:
REB

approved
MJB

date:
March 16, 2012

M2-15.1



Item	Material Number	Item Quantity	Item Description
a	2000250	1	Clamp Grd Rod 5/8"
b	2000848	1	Rod Ground 5/8 x 8' CU
c	*3000204	As required	Staples 1 1/2" Galv
d	2001499	4 Pounds	Wire Copper Clad Steel #2 Str 7
e	2000492	1	Ground Mat
f	*	As required	Connectors

*Denotes "Grab Bag" item.



PEDERNALES ELECTRIC
COOPERATIVE, INC.
CONSTRUCTION ASSEMBLY UNIT

Ground with Grounding Platform for Air Break Switch

drawn:	approved	date:
REB	MJB	March 16, 2016

M2-15.2