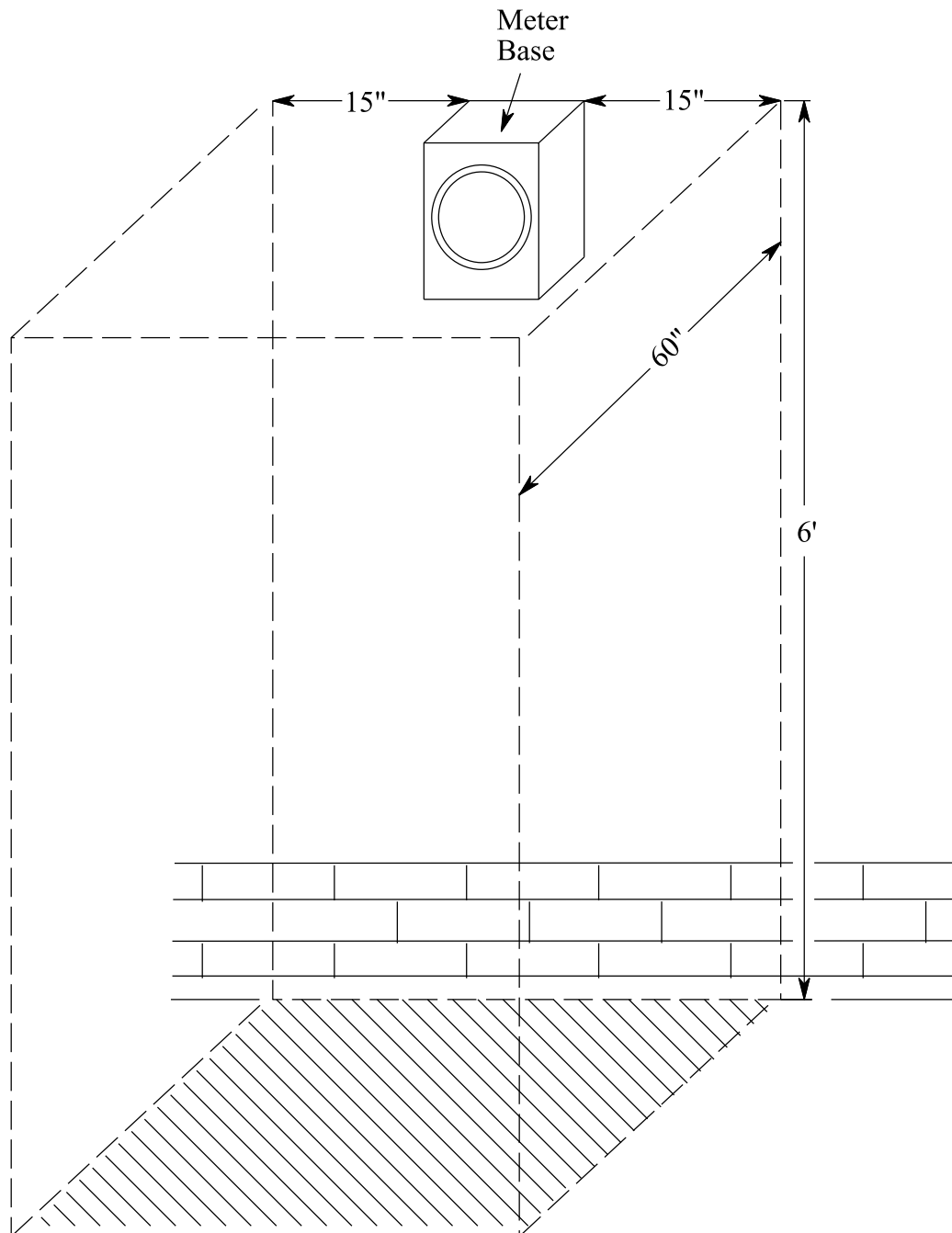


## WORKING CLEARANCES

Sufficient access and working space (shaded area) shall be provided and maintained about all metering equipment to permit ready and safe operation and maintenance of such equipment. The dimension of the working space in the direction to access to live parts operating at 600 volts or less and likely to require examination, adjustment, servicing, or maintenance while alive shall not be less than 30" wide in front of the electric equipment. In no case shall headroom be less than 7'.

Please do not install or store equipment, plants, etc. within working spaces.



## POINT OF DELIVERY LOCATION

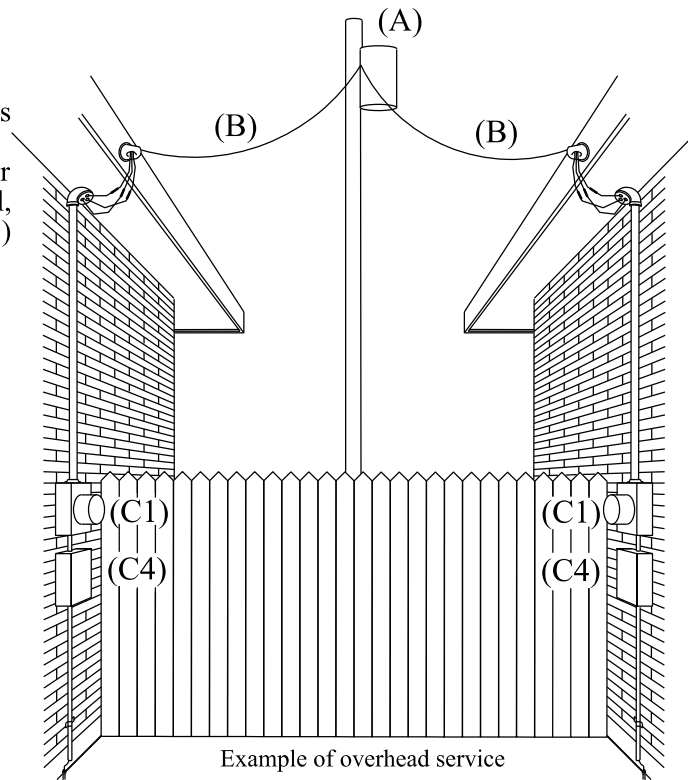
Meter base location is an important consideration to both the cooperative and the member.

**A. Overhead or underground facilities**

**B. Service wire shall not be over or under buildings (residential, commercial buildings, etc.)**

**C. Meter Base:**

1. Requested location to be accessible to MVEC personnel.
2. Alternate location in the shaded area under overhang.
3. Bad location for meter due to tree in the path of service wire.
4. Member disconnect requested location.



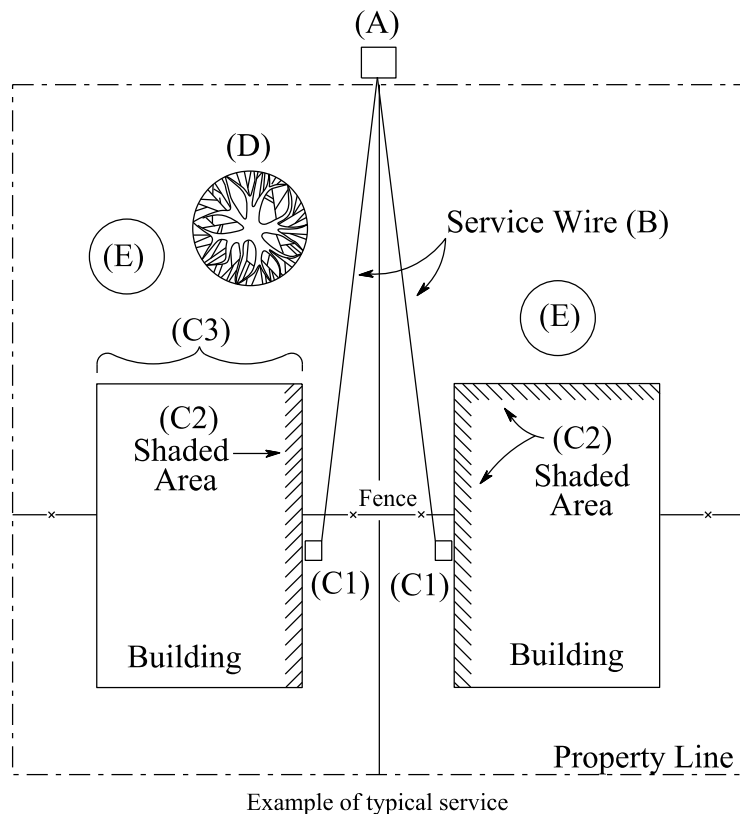
**Note:** Additional pole may be needed if meter location is further than 80 feet from overhead facilities.

**D. Trees:**

Avoid trees in or under path from the service wire.

**E. Septic Tanks:**

Identify location of buried septic tanks for the safety of MVEC personnel and prevention of vehicle damage to the septic tanks and lines.

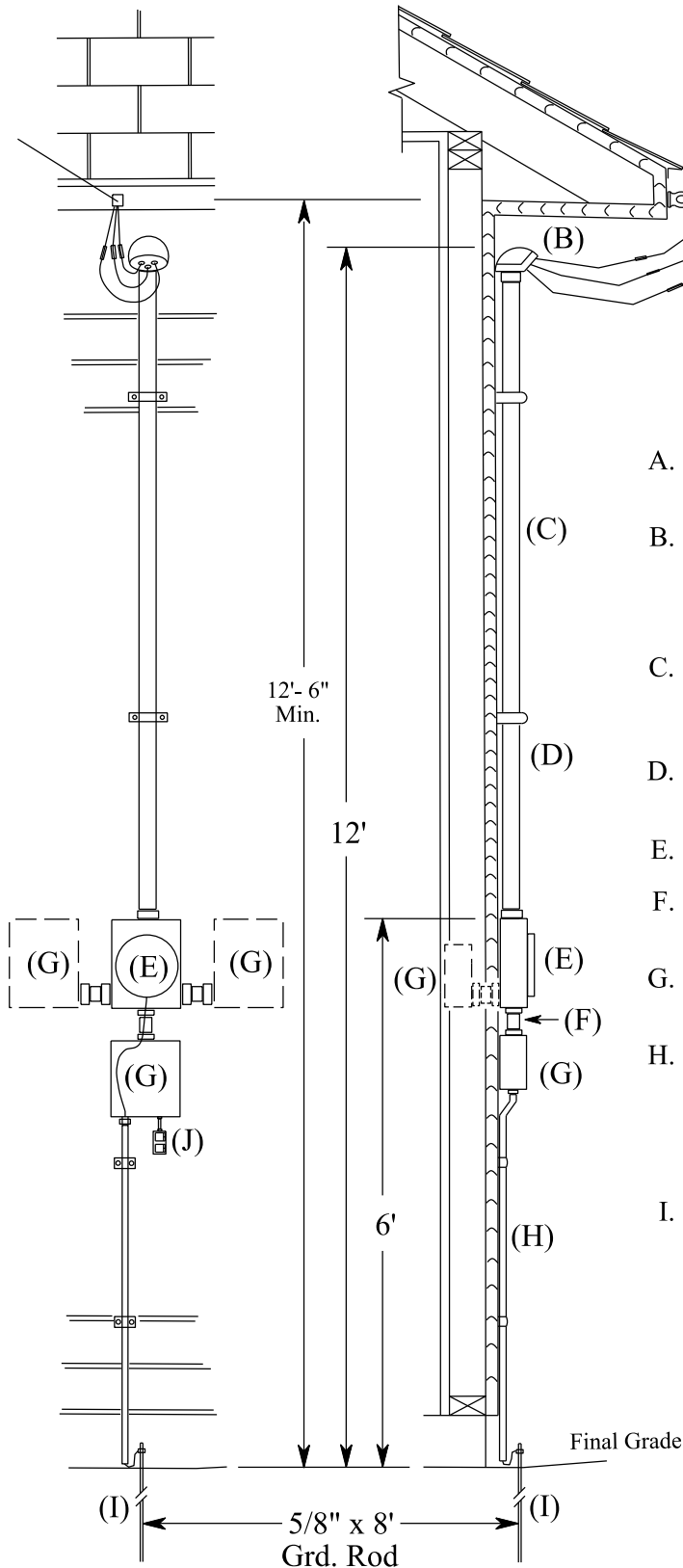


## OVERHEAD METER INSTALLATION

The method shown should generally be satisfactory. The member must consult the architect, contractor, or electrician concerning electrical load and the ability of the house to support tension of service wire (max. 500 lbs. per service). Provide electrical load information to MVEC for proper electrical service and contact MVEC on location of meter.

**Cooperative shall:**  
Install service drop.

**Member shall:**  
Furnish and install meter base and furnish and install weather head, riser, pipe clamps and other required materials. All bases and devices shall be grounded.



**Note:** Commercial meter base to be furnished by MVEC and installed by member.

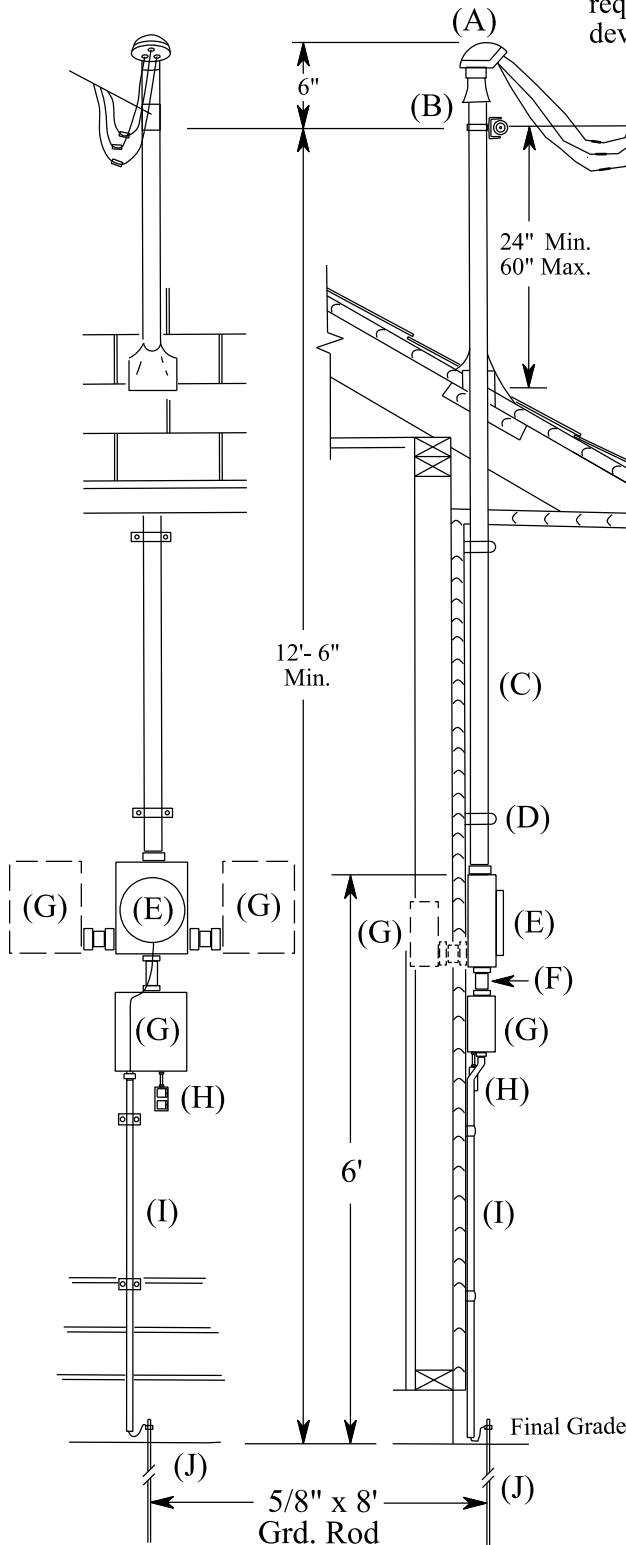
- A. Service attachment or dead-end by MVEC.
- B. Weather head and service entrance wire minimum length 18" and minimum No. 6 copper or AL. equivalent.
- C. Riser conduit size is dependent upon electrical load and strength. Also see service entrance mast drawing.
- D. Pipe clamps: Minimum 2 each - 4' intervals.
- E. Meter base (see page 61)
- F. Minimum 2" clearance between all enclosures.
- G. Members disconnect location: Either below, behind or side of meter base.
- H. Non metallic conduit or metallic conduit with both ends bonded to ground: No. 6 copper ground wire - continuous from meter base to ground rod (NEC 250-92-B).
- I. Required GFCI receptacle or GFCI protection with weather proof cover: 120 volts (if outlet is installed)

## SERVICE ENTRANCE MAST

The method shown should generally be satisfactory. The member must consult the architect, contractor, or electrician concerning electrical load and the ability of the house to support tension of service wire (max. 500 lbs. per service). Provide electrical load information to MVEC for proper electrical service and contact MVEC on location of meter.

**Cooperative shall:**  
Install service drop.

**Member shall:**  
Furnish and install meter base and furnish and install weather head, riser, pipe clamps and other required materials. All bases and devices shall be grounded.



Service Drop

**Note:** Commercial meter base to be furnished by MVEC and installed by member.

**I. 300 volts or less:**

- a.) 36" minimum if standard 4" by 12" roof slope.
- b.) 18" if no more than 4' of service drop conductors pass above roof overhang.

**II. 300 volts or more:**

- a.) 8' clearance required

A. Weather head and service entrance wire minimum length 18" and minimum No. 6 copper or AL. equivalent.

B. Service attachment or dead-end by MVEC.

C. Riser minimum 2" rigid steel exposed conduit when mast does not extend more than 5' above roof and service entrance does not exceed 200 ampere capacity.

D. Pipe clamps: Minimum 2 each 4' intervals.

E. Meter base (see page 61)

F. Minimum 2" clearance between all enclosures.

G. Members disconnect location: Either below, behind or side of meter base.

H. Required GFCI receptacle or GFCI protection with weather proof cover: 120 volts outlet (if outlet is installed).

I. Non metallic conduit or metallic conduit with both ends bonded to ground: No. 6 copper ground wire - continuous from meter base to ground rod (NEC 250-92-B).

J. Approved grounding electrode: 5/8" x 8' copper weld ground rod.

# 1 PHASE OR 3 PHASE SELF-CONTAINED UNDERGROUND METER INSTALLATION

**Cooperative shall:**

Install meter service cable. Connections inside of transformer, secondary or dip pole are installed by MVEC.

**Note:** MVEC will do the wire installation inside transformer, pedestal or from the dip pole.

**Note:** Commercial meter base to be furnished by MVEC and installed by member.

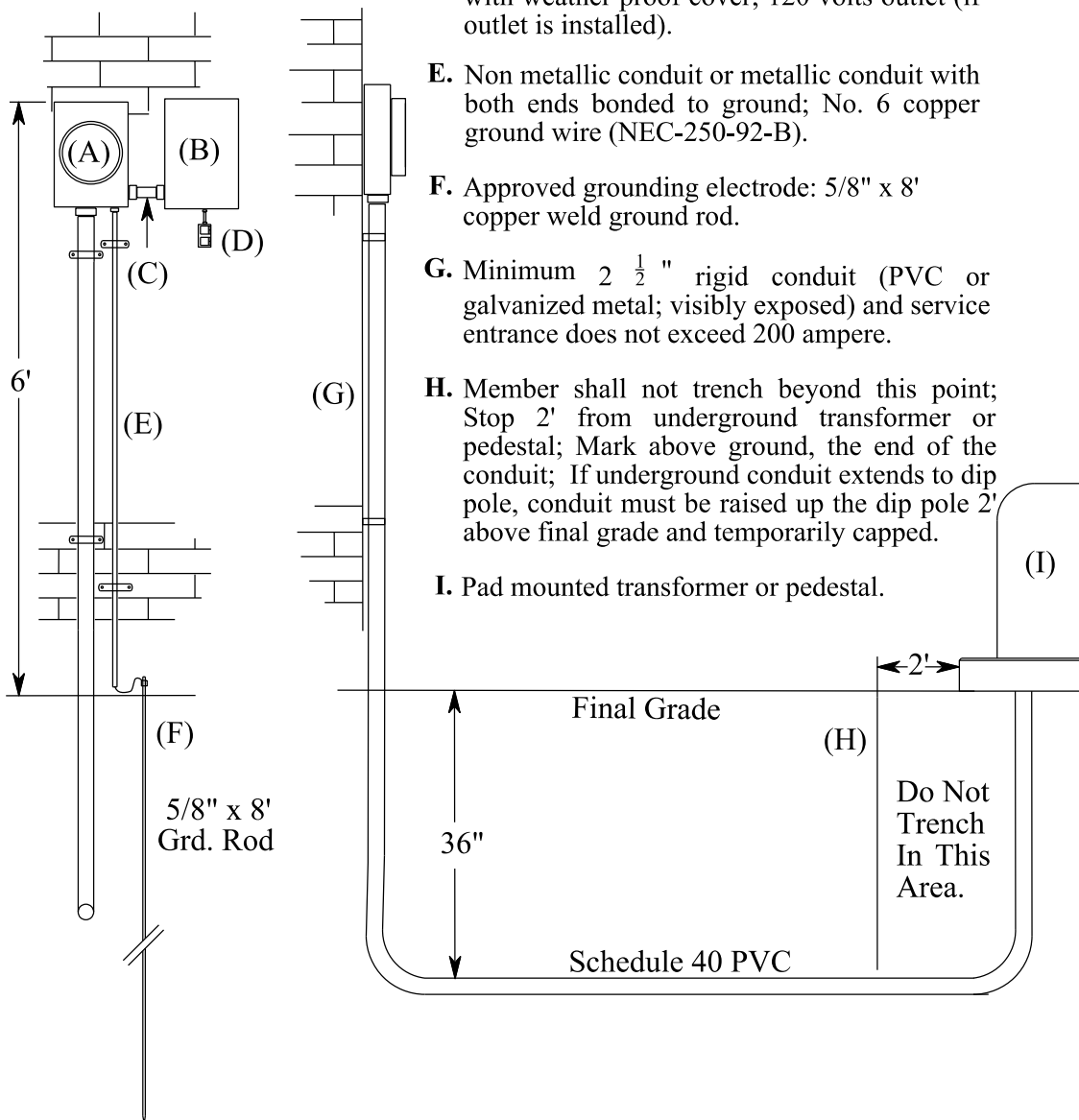
**Member shall:**

Furnish and install meter base and bond to ground. Furnish and install all required materials.

**Note:**

All bases and devices shall be bonded to ground.

Trench, backfill, furnish and install 2 1/2" conduit (schedule 40 PVC) to accommodate 1/0 to 350 MCM service. Furnish pull string from the meter as required to the underground transformer, pedestal or dip pole.

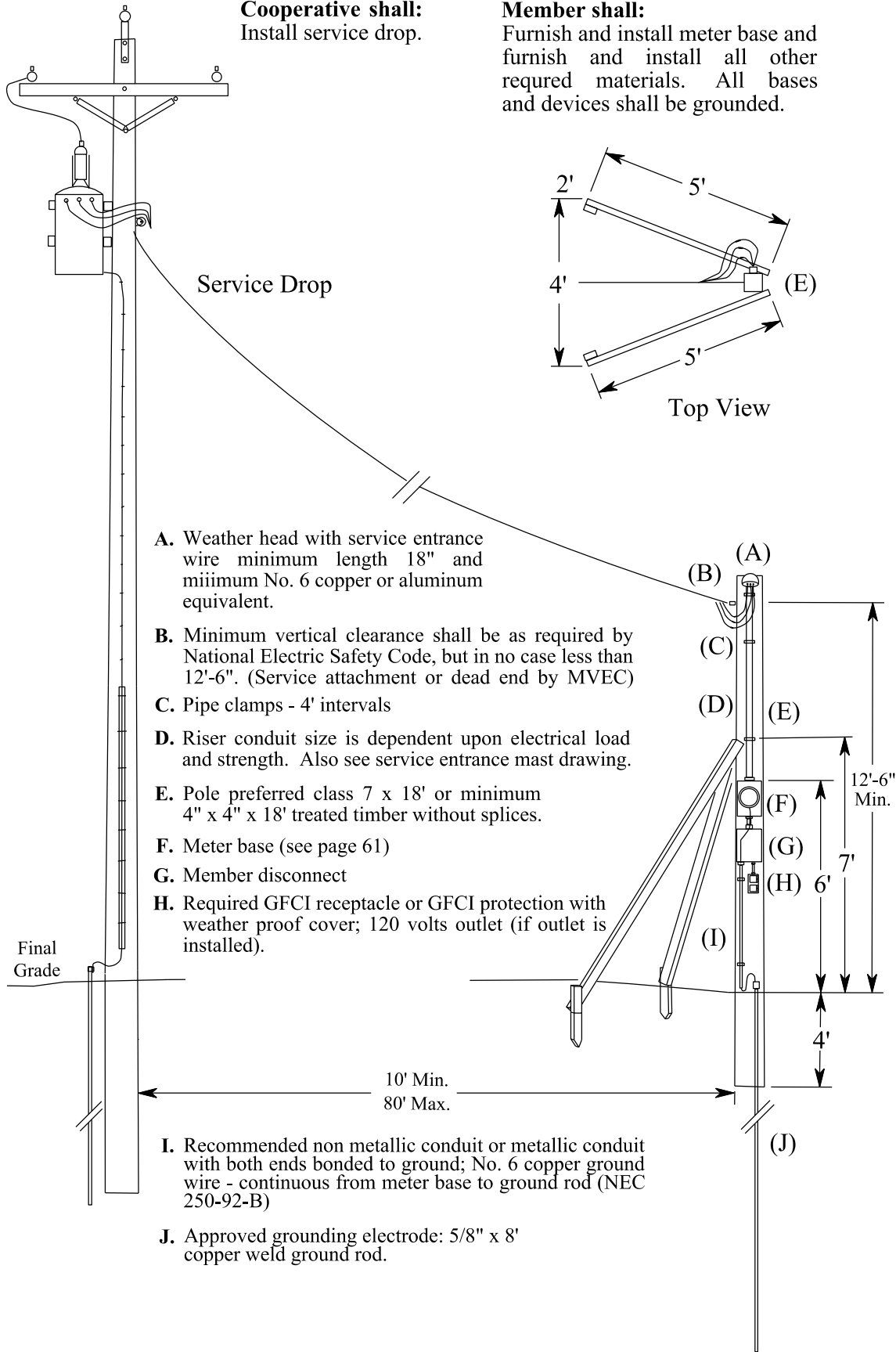


- A. Meter base (see page 61)
- B. Member disconnect
- C. Minimum 2' clearance between all enclosures, minimum 200 ampere entrance.
- D. Required GFCI receptacle or GFCI protection with weather proof cover; 120 volts outlet (if outlet is installed).
- E. Non metallic conduit or metallic conduit with both ends bonded to ground; No. 6 copper ground wire (NEC-250-92-B).
- F. Approved grounding electrode: 5/8" x 8' copper weld ground rod.
- G. Minimum 2 1/2 " rigid conduit (PVC or galvanized metal; visibly exposed) and service entrance does not exceed 200 ampere.
- H. Member shall not trench beyond this point; Stop 2' from underground transformer or pedestal; Mark above ground, the end of the conduit; If underground conduit extends to the dip pole, conduit must be raised up the dip pole 2' above final grade and temporarily capped.
- I. Pad mounted transformer or pedestal.

## TEMPORARY 1 PHASE OVERHEAD METER INSTALLATION

**Cooperative shall:**  
Install service drop.

**Member shall:**  
Furnish and install meter base and  
furnish and install all other  
required materials. All bases  
and devices shall be grounded.



- A. Weather head with service entrance wire minimum length 18" and minimum No. 6 copper or aluminum equivalent.
- B. Minimum vertical clearance shall be as required by National Electric Safety Code, but in no case less than 12'-6". (Service attachment or dead end by MVEC)
- C. Pipe clamps - 4' intervals
- D. Riser conduit size is dependent upon electrical load and strength. Also see service entrance mast drawing.
- E. Pole preferred class 7 x 18' or minimum 4" x 4" x 18' treated timber without splices.
- F. Meter base (see page 61)
- G. Member disconnect
- H. Required GFCI receptacle or GFCI protection with weather proof cover; 120 volts outlet (if outlet is installed).
- I. Recommended non metallic conduit or metallic conduit with both ends bonded to ground; No. 6 copper ground wire - continuous from meter base to ground rod (NEC 250-92-B)
- J. Approved grounding electrode: 5/8" x 8' copper weld ground rod.

## TEMPORARY 1 PHASE UNDERGROUND METER INSTALLATION

**Cooperative shall:**

Furnish and install meter service wire. all connections inside of transformer pedestal or dip pole.

**Note:**

MVEC will do the wire installation inside the transformer, pedestal or from the dip pole.

**Note:**

Commercial meter base to be furnished by MVEC and installed by member.

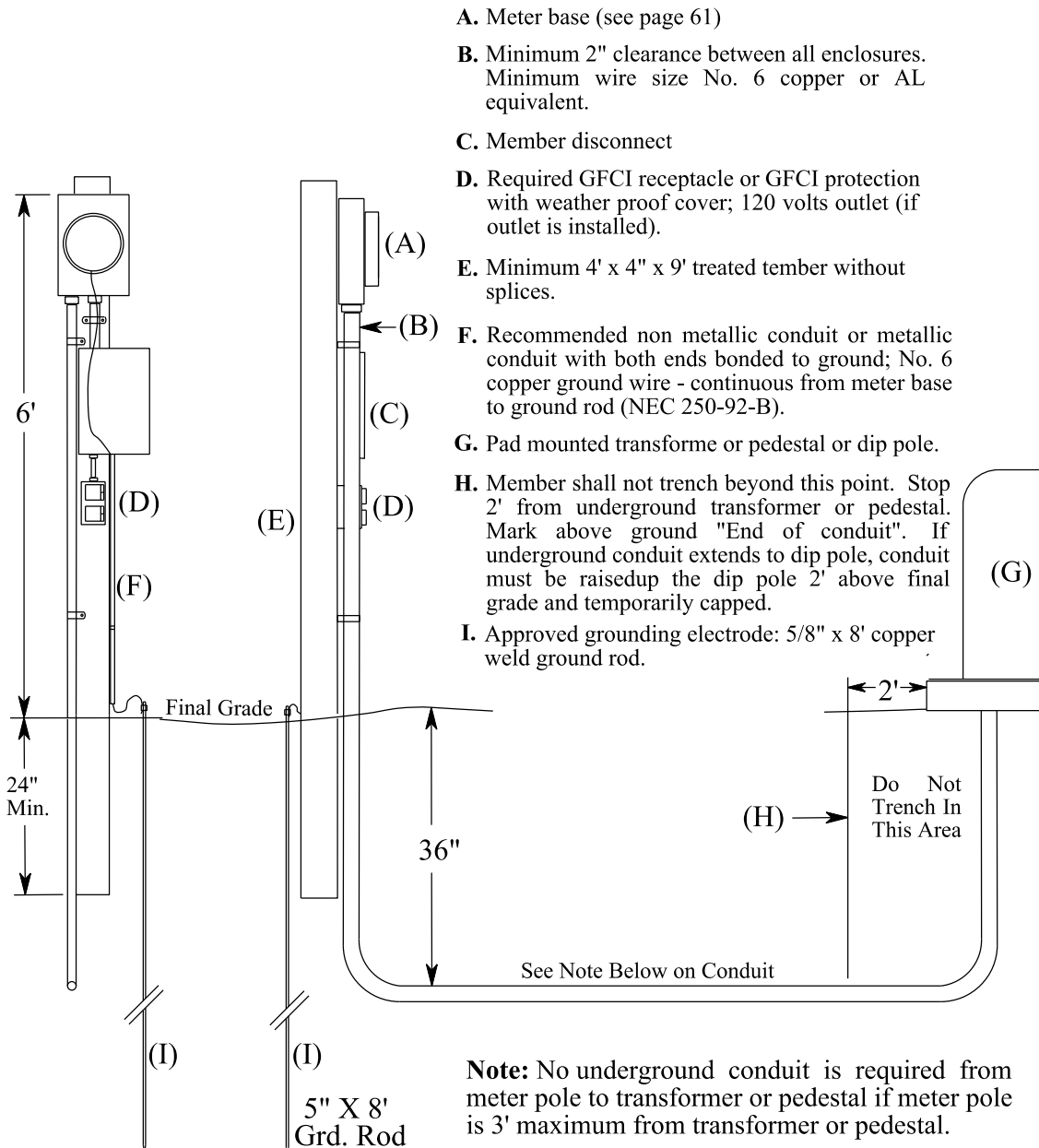
**Note:**

All bases and devices shall be bonded to ground.

**Member shall:**

Furnish and install meter base and bond it to the ground. Furnish and install all required materials.

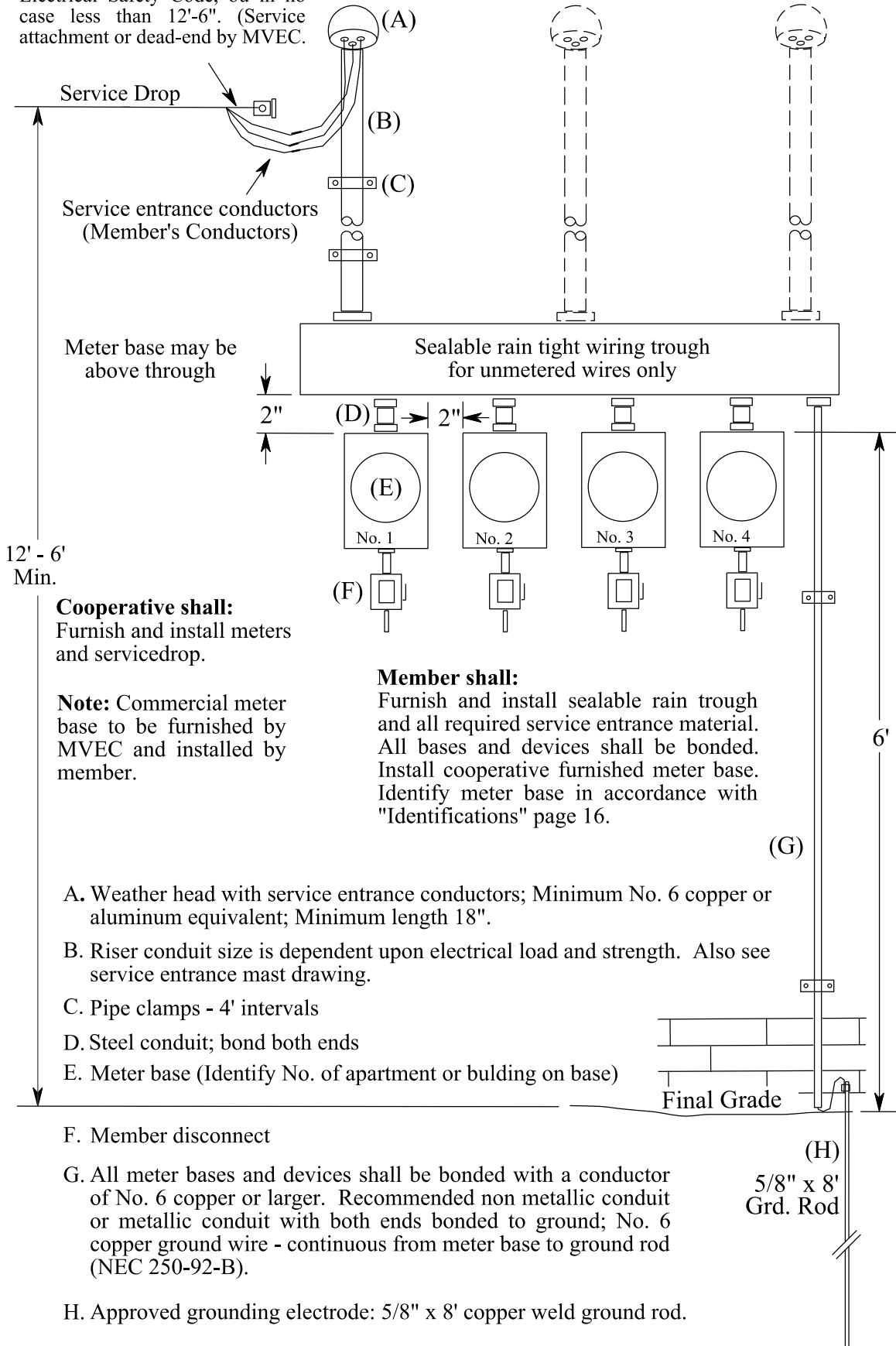
Trench, backfill, furnish and install 2 1/2" conduit (schedule 40 PVC) to accomodate 1/0 to 350 MCM service. Furnish pull string from the meter as required to the underground transformer, pedestal or dip pole.



**Note:** No underground conduit is required from meter pole to transformer or pedestal if meter pole is 3' maximum from transformer or pedestal.

## OVERHEAD GROUP METERING (MAXIMUM 6 METERS)

Minimum vertical clearance shall be as required by National Electrical Safety Code, but in no case less than 12'-6". (Service attachment or dead-end by MVEC.)



**Cooperative shall:**  
Furnish and install meters and servicedrop.

**Note:** Commercial meter base to be furnished by MVEC and installed by member.

**Member shall:**  
Furnish and install sealable rain trough and all required service entrance material. All bases and devices shall be bonded. Install cooperative furnished meter base. Identify meter base in accordance with "Identifications" page 16.

- A. Weather head with service entrance conductors; Minimum No. 6 copper or aluminum equivalent; Minimum length 18".
- B. Riser conduit size is dependent upon electrical load and strength. Also see service entrance mast drawing.
- C. Pipe clamps - 4' intervals
- D. Steel conduit; bond both ends
- E. Meter base (Identify No. of apartment or building on base)

F. Member disconnect

G. All meter bases and devices shall be bonded with a conductor of No. 6 copper or larger. Recommended non metallic conduit or metallic conduit with both ends bonded to ground; No. 6 copper ground wire - continuous from meter base to ground rod (NEC 250-92-B).

H. Approved grounding electrode: 5/8" x 8' copper weld ground rod.



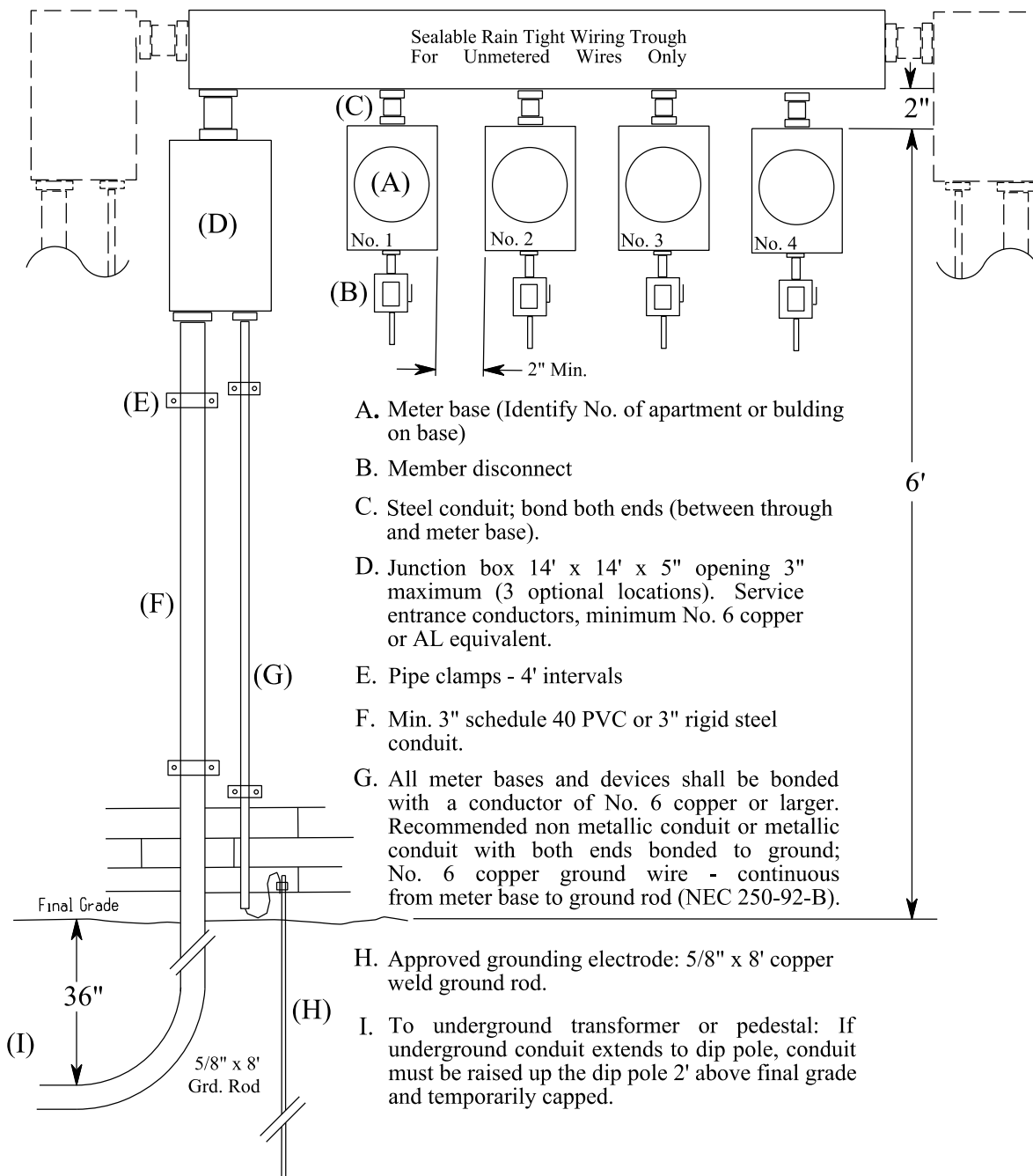
## UNDERGROUND GROUP METERING (MAXIMUM 6 METERS)

**Cooperative shall:**

Connect the service conductor to the member's conductors in the junction box and only to a single set of conductors and install service in accordance with the cooperative's standard underground service policy.

**Member shall:**

Furnish and install sealable rain tight trough, junction box and all required service entrance materials. Install and furnish meter base. All bases and devices shall be bonded. Furnish and install conduit (F&I) from junction box to underground transformer, pedestal or dip pole. (See drawing "underground meter installation" for limits). Identify meter base in accordance with "Identifications" page 16.



## OVERHEAD GROUP METER PACK (MAXIMUM 6 METERS)

**Cooperative shall:**

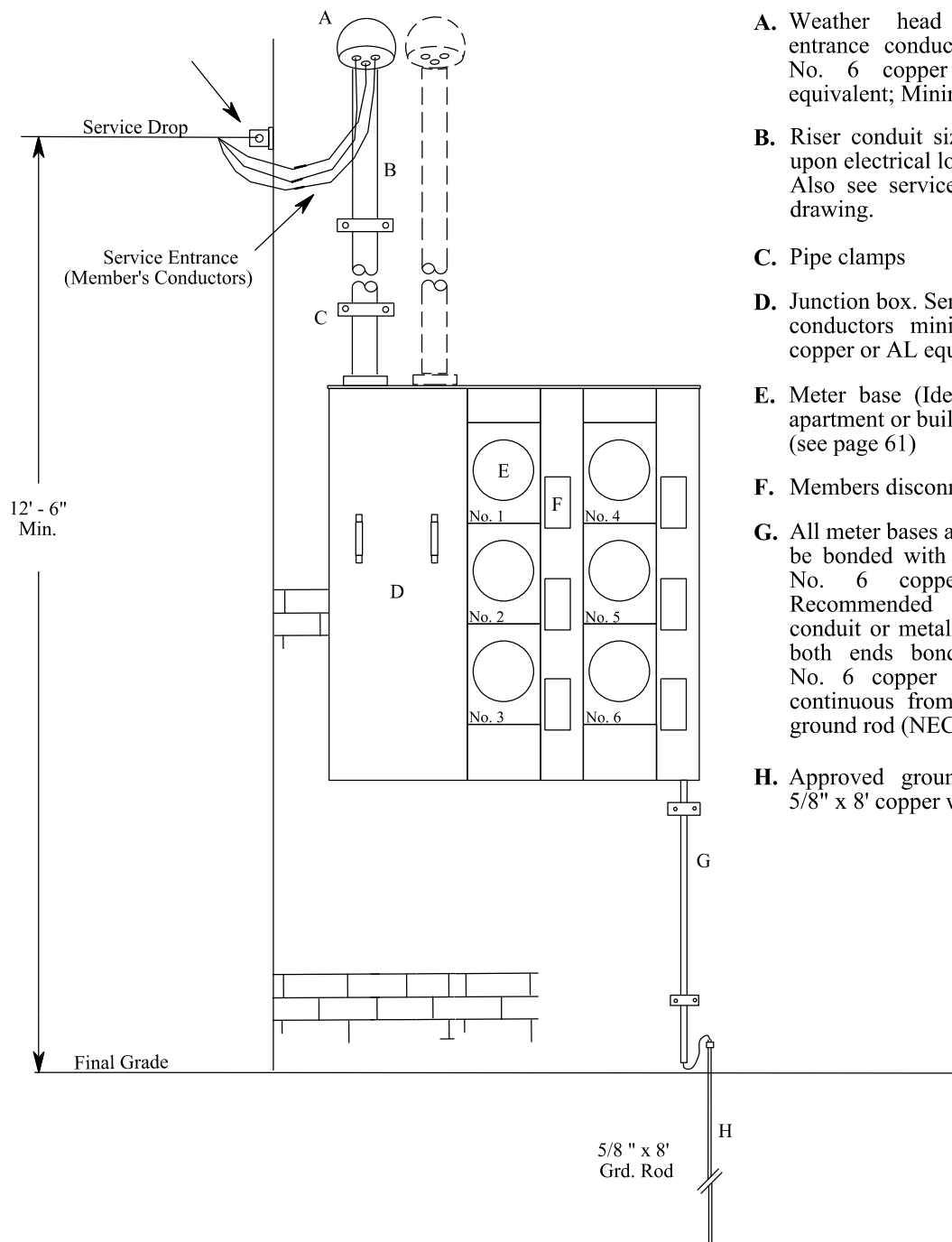
Furnish and install meters and service drop.

**Member shall:**

Furnish and install junction box and all required service entrance material. all bases and devices shall be bonded.

**Note:**

Minimum vertical clearance shall be as required by National Electrical Safety Code, but in no case less than 12' - 6". (Service attachment or dead end by MVEC).



- A. Weather head with service entrance conductors; Minimum No. 6 copper or aluminum equivalent; Minimum length 18".
- B. Riser conduit size is dependent upon electrical load and strength. Also see service entrance mast drawing.
- C. Pipe clamps
- D. Junction box. Service entrance conductors minimum No. 6 copper or AL equivalent.
- E. Meter base (Identify No. of apartment or building on base) (see page 61)
- F. Members disconnect
- G. All meter bases and devices shall be bonded with a conductor of No. 6 copper or larger. Recommended non metallic conduit or metallic conduit with both ends bonded to ground. No. 6 copper ground wire - continuous from meter base to ground rod (NEC 250-92-B)
- H. Approved grounding electrode: 5/8" x 8' copper weld ground rod.

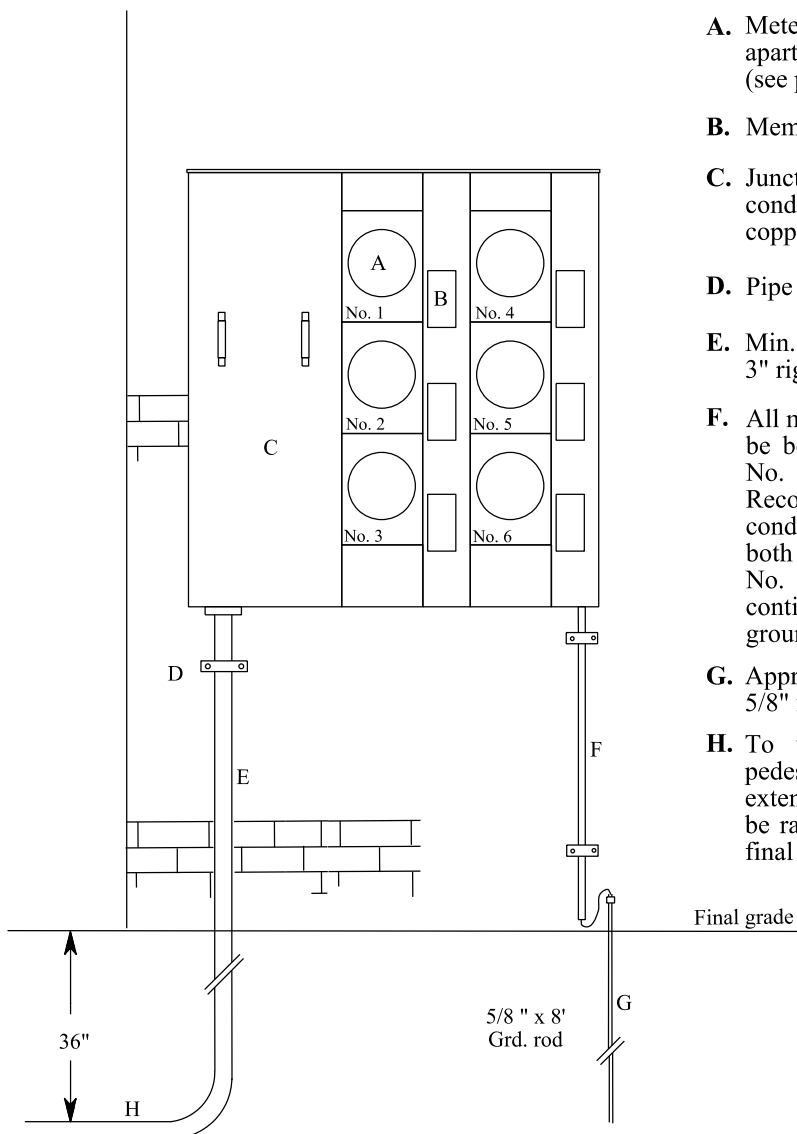
## UNDERGROUND METER PACK (MAXIMUM 6 METERS)

**Cooperative shall:**

Connect the service conductor to the member's conductors in the junction box and only to a single set of conductors, and install service in accordance with the cooperatives standard underground service policy.

**Member shall:**

Furnish junction box and all required service entrance material. all bases and devices shall be bonded. Furnish and install conduit (F&H) from junction box to underground transformer, pedestal or dip pole. (See drawing underground meter installation for limits). Identify meter base in accordance with "Identifications" page 16.



- A.** Meter base (Identify No. of apartment or building on base) (see page 61)
- B.** Members disconnect
- C.** Junction box. Service entrance conductors minimum No. 6 copper or AL equivalent.
- D.** Pipe clamps
- E.** Min. 3" schedule 40 PVC or 3" rigid steel conduit.
- F.** All meter bases and devices shall be bonded with a conductor of No. 6 copper or larger. Recommended non metallic conduit or metallic conduit with both ends bonded to ground. No. 6 copper ground wire - continuous from meter base to ground rod (NEC 250-92-B)
- G.** Approved grounding electrode: 5/8" x 8' copper weld ground rod.
- H.** To underground transformer or pedestal: If underground conduit extends to dip pole, conduit must be raised up the dip pole 2' above final grade and temporarily capped.

## CONSUMER OWNED SERVICE POLE INSTALLATION

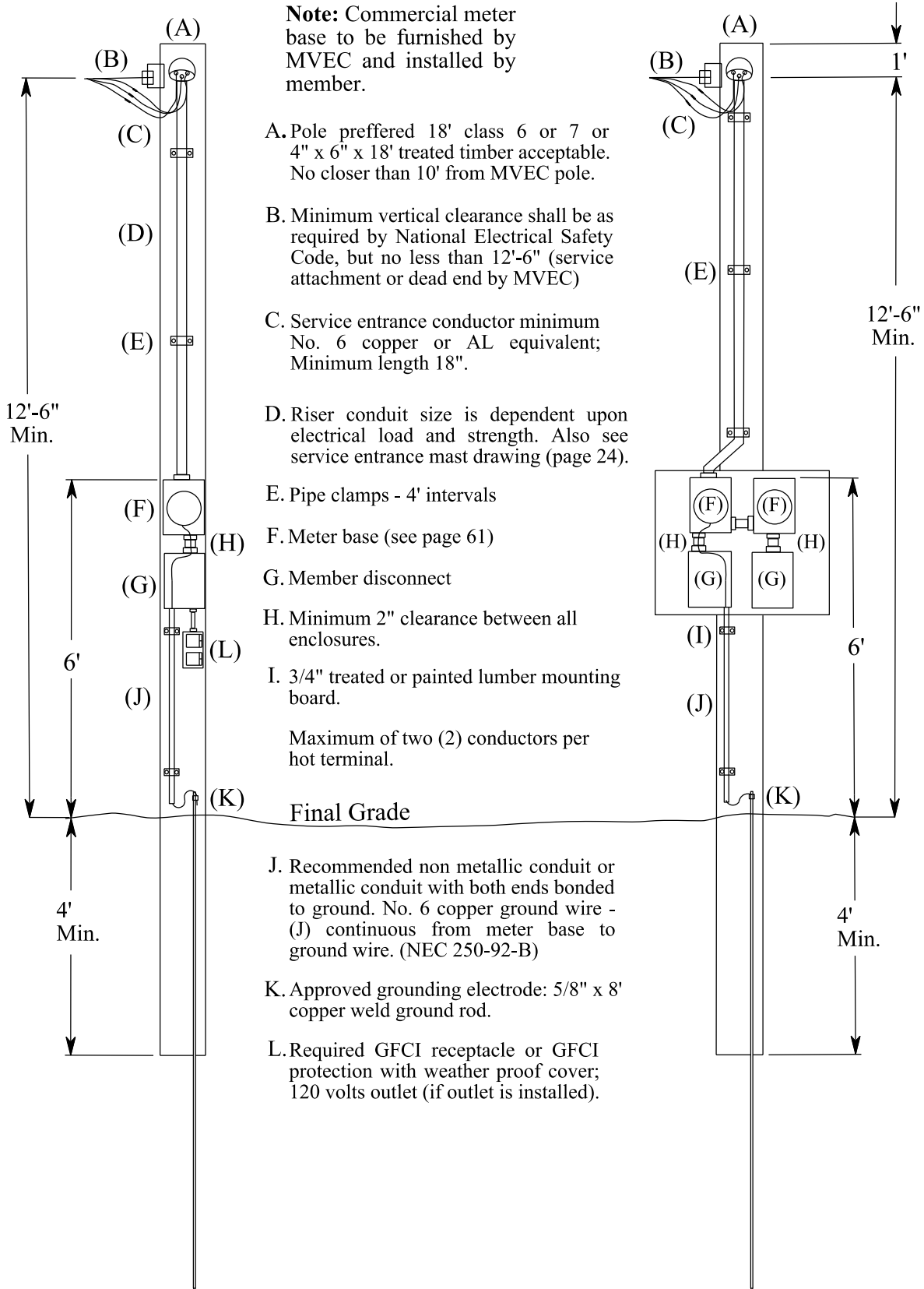
**Cooperative shall:**

Furnish and install meter and service drop.

**Member shall:**

Furnish and install meter base. Furnish and install all other required materials. All base and devices shall be bonded to ground.

**Note:** Commercial meter base to be furnished by MVEC and installed by member.



# 1 PHASE UNDERGROUND METERING (DESIGN "A")

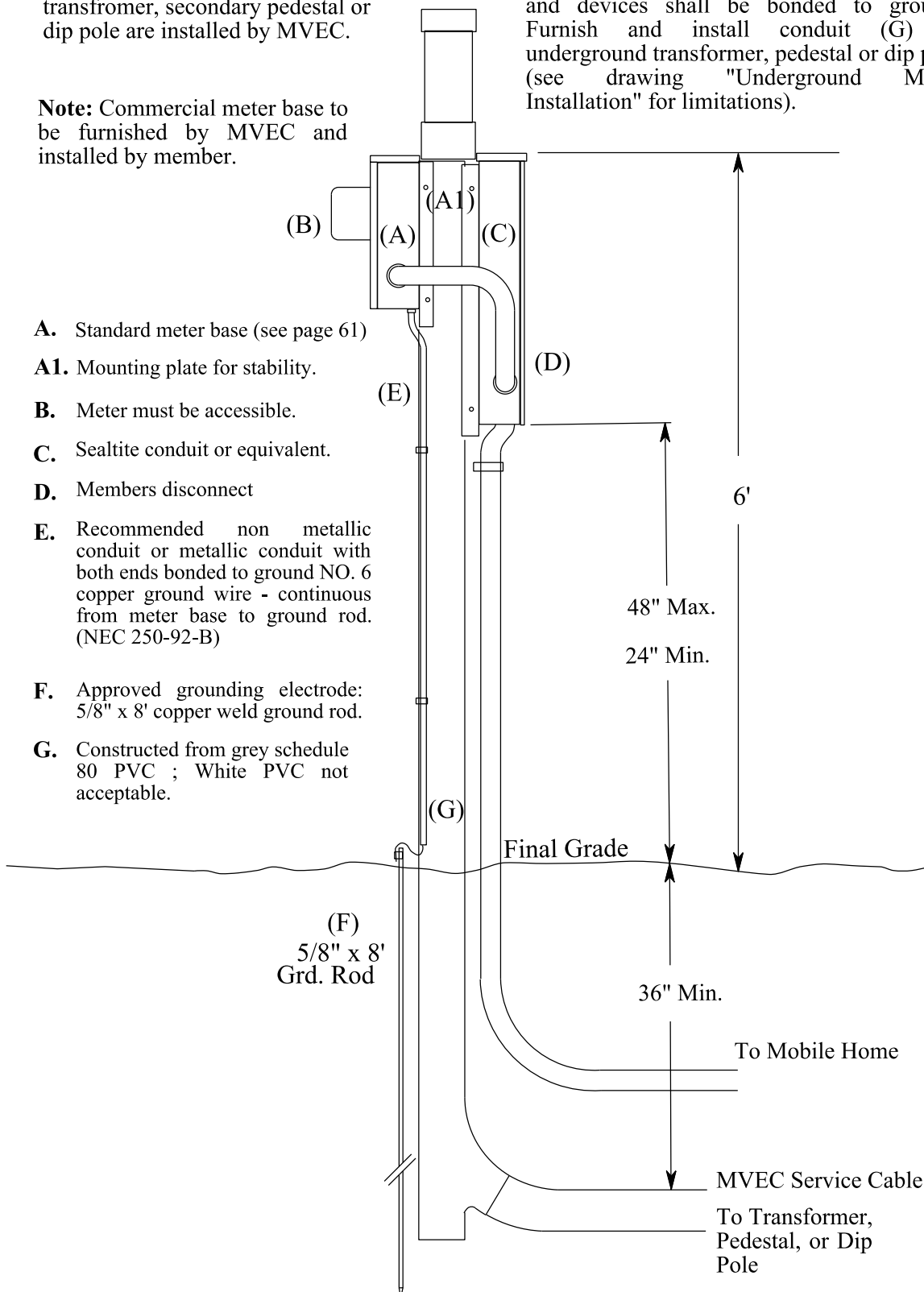
**Cooperative shall:**

Furnish and install meter and service cable. Connections inside transformer, secondary pedestal or dip pole are installed by MVEC.

**Note:** Commercial meter base to be furnished by MVEC and installed by member.

**Member shall:**

Furnish and install meter base. Furnish and install all other required material. All bases and devices shall be bonded to ground. Furnish and install conduit (G) to underground transformer, pedestal or dip pole (see drawing "Underground Meter Installation" for limitations).



- A. Standard meter base (see page 61)
- A1. Mounting plate for stability.
- B. Meter must be accessible.
- C. Seal-tite conduit or equivalent.
- D. Members disconnect
- E. Recommended non metallic conduit or metallic conduit with both ends bonded to ground NO. 6 copper ground wire - continuous from meter base to ground rod. (NEC 250-92-B)
- F. Approved grounding electrode: 5/8" x 8' copper weld ground rod.
- G. Constructed from grey schedule 80 PVC ; White PVC not acceptable.

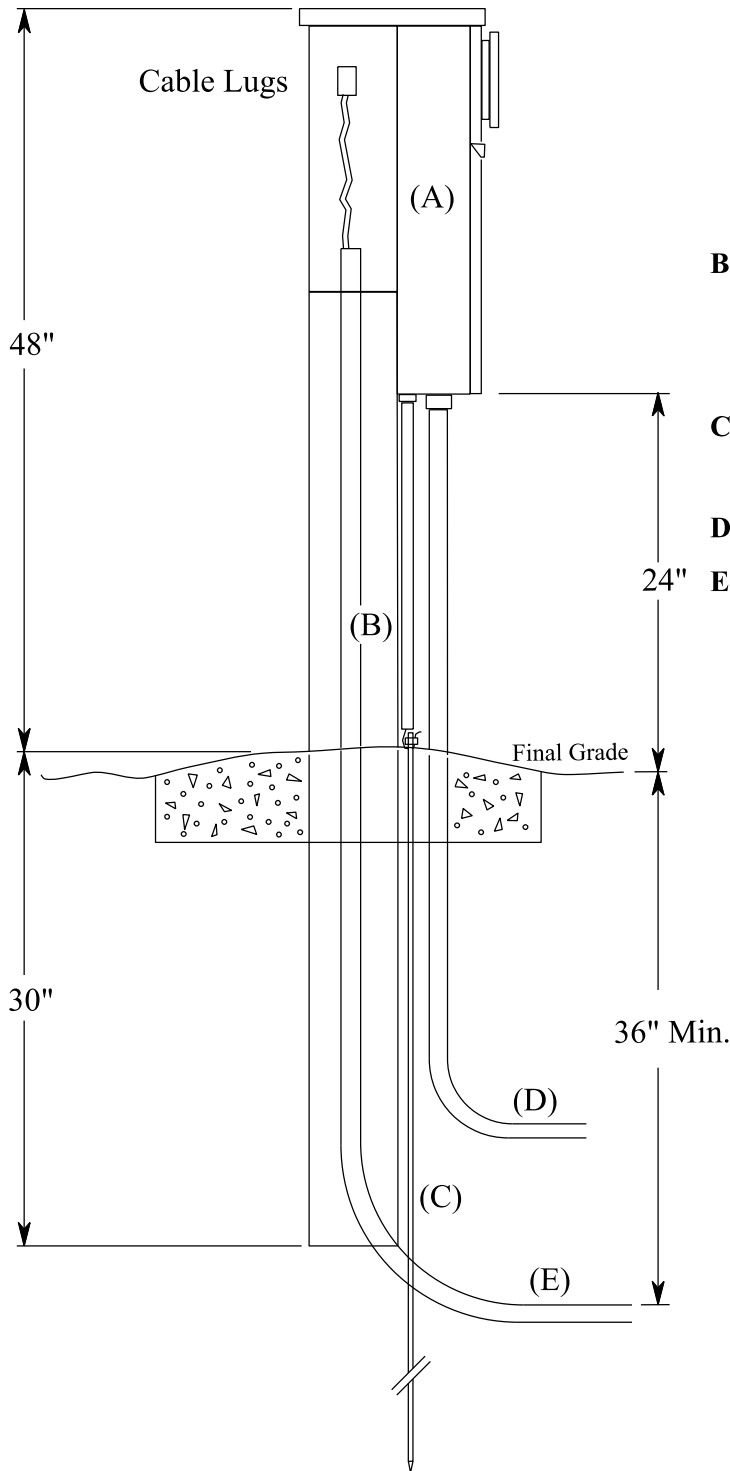
# 1 PHASE UNDERGROUND MOBILE HOME METERING AND SERVICE PEDESTAL (DESIGN "B")

**Cooperative shall:**

Furnish and install meter and service cable. Connections inside transformer, secondary pedestal or dip pole are installed by MVEC.

**Member shall:**

Furnish and install meter base. Furnish and install all other required material. All bases and devices shall be bonded to ground.



Coated aluminum or painted galvanized steel meter base with stainless steel locking ring available in double metering positions. Service entrance wire minimum No. 6 copper or AL equivalent. (See pg. 61)

**B.** Non metallic conduit or metallic conduit with both ends bonded to ground. No. 6 copper ground wire continuous from meter base to ground rod. (NEC 250-92-B)

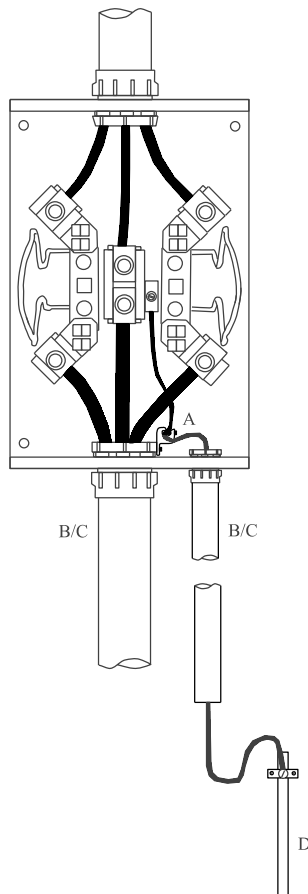
**C.** Approved grounding electrode: 5/8" x 8' copper weld ground rod.

**D.** To mobile home

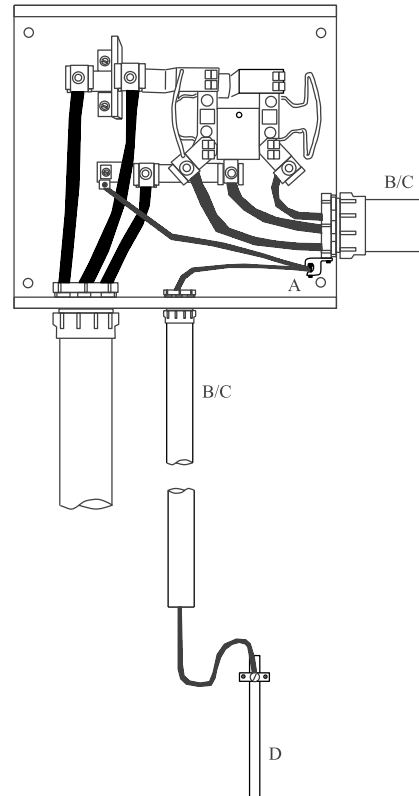
**E.** MVEC service cable in conduit (member shall furnish and install conduit and pull string in trench from meter to within 2 feet from underground transformer, pedestal (mark end of conduit) or up the dip pole 2' above final grade (see drawing underground meter installation).

# 1 PHASE OVERHEAD OR UNDERGROUND METER BASE DETAIL INSTALLATION

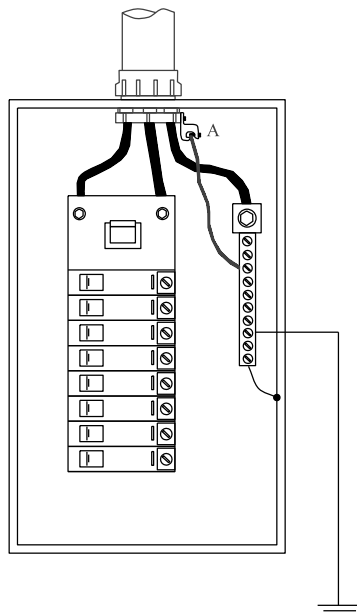
Overhead



Underground



Member Disconnect



- A.** Threaded grounding bushing with set screws used to ensure electrical and mechanical connection and a terminal for connection of a grounding conductor or bonding jumper.
- B.** Metallic conduit with both ends bonded to ground. No. 6 copper ground wire-continuous from meter base to ground rod (NEC 250-92-B).
- C.** Non metallic conduit (does not need to be bonded).
- D.** Approved grounding electrode: 5/8" x 8' copper weld ground rod.

## 3 PHASE POLE MOUNTED METER INSTALLATION

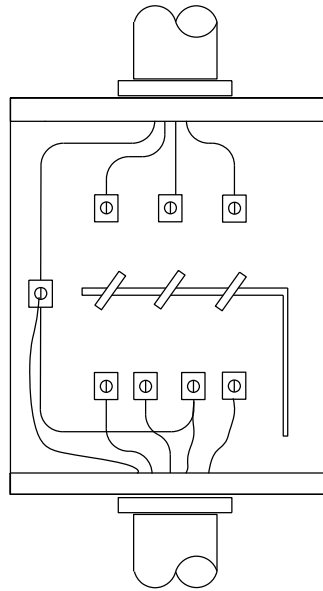
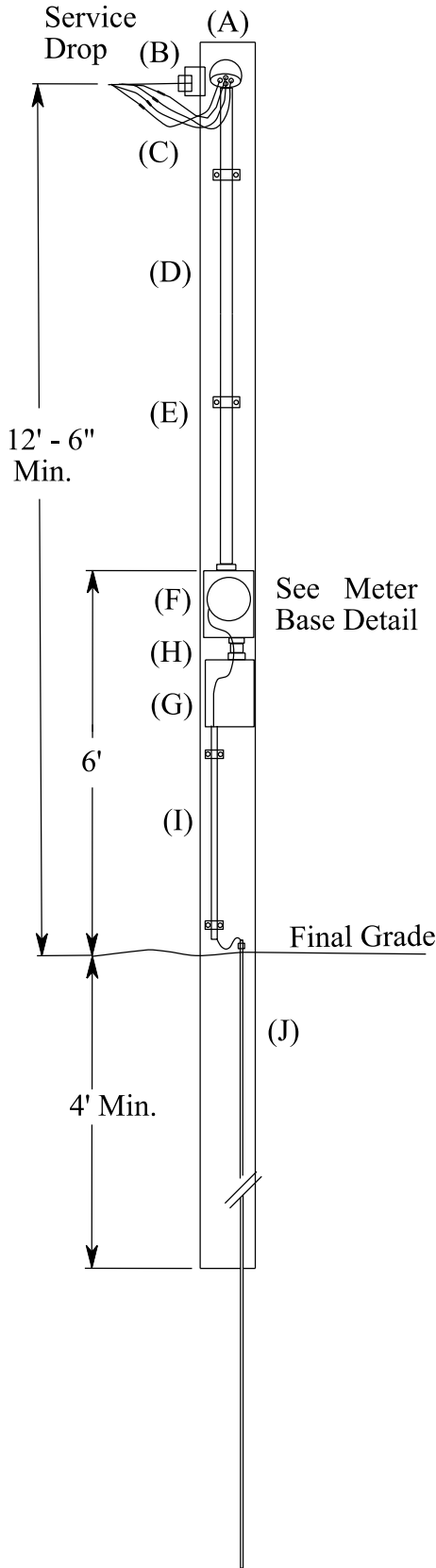
**Cooperative shall:**

Furnish and install meter, meter base and install service drop.

**Member shall:**

Install meter base, furnish and install all other required materials. All bases and devices shall be bonded and grounded.

**Note:** Commercial meter base to be furnished by MVEC and installed by member.



**Meter base detail:**

Refer to page 69 for 3W 3 phase 240 volt or 480 volt installation.

Refer to page 70 for 4W Delta or 4W WYE installation.

Refer to page 61 for details on meter base installations.

- A.** Consumer owned pole shall be 18' class 6 or 7
- B.** Minimum vertical clearance shall be as required by National electrical Safety Code; But in no case less than 12'-6" (service attachment or dead end by MVEC)
- C.** Weather head and service entrance wire. Minimum length 18' and minimum No. 6 copper or aluminum equivalent.
- D.** Riser conduit size is dependent upon electrical load and strength. See also service entrance mast drawing.
- E.** Pipe clamps - 4' intervals
- F.** Meter base (see page 35)
- G.** Members disconnect
- H.** Minimum 2' clearance between all enclosures. Minimum wire No. 6 copper or AL equivalent.
- I.** Non metallic conduit or metallic conduit with both ends bonded to ground. No. 6 copper ground wire - continuous from meter base to ground rod (NEC 250-92-B)
- J.** Approved grounding electrode: 5/8' x 8' copper weld ground rod.



# CURRENT TRANSFORMER- CT METERING OVERHEAD METERING EQUIPMENT TRANSFORMERS MOUNTED ON MAST

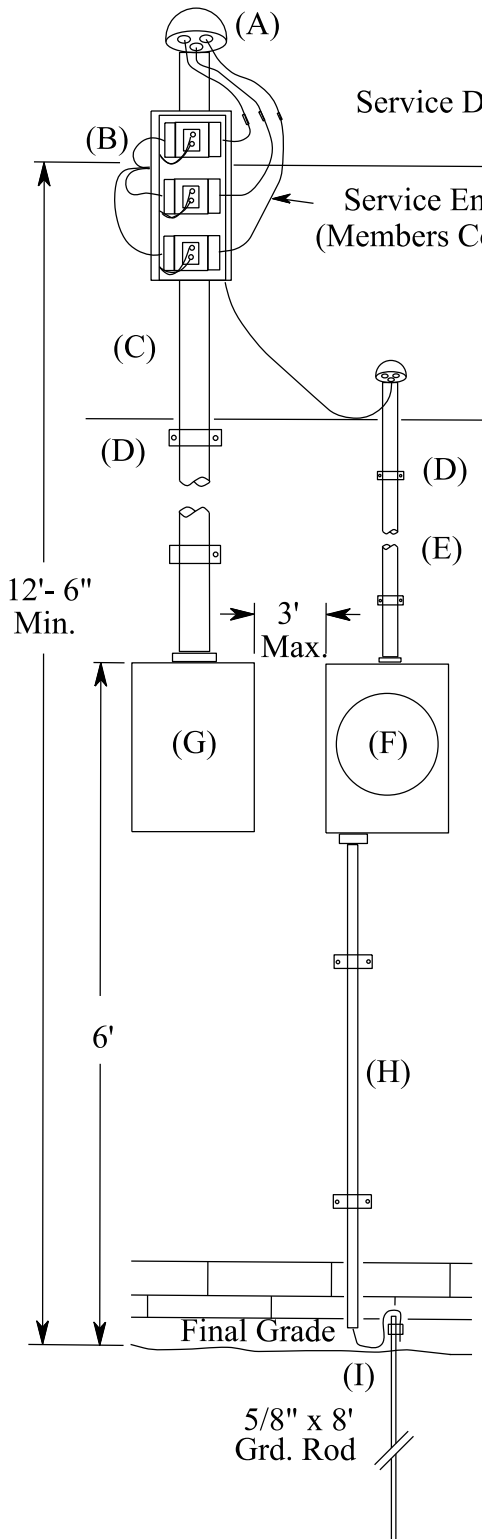
## Cooperative shall:

Furnish meter base and CT equipment. Furnish and install meter and service drop.

## Member shall:

Install meter base and CT bracket. Furnish and install all other required materials. All bases and enclosures bonded to ground.

**Note:** Commercial meter base to be furnished by MVEC and installed by member.



Minimum vertical clearance shall be as required by NATIONAL Electrical Safety Code, but in no case less than 12'-6".

- A.** Weather head (maximum two (when service entrance conductors exceeds 350 MCM copper or equivalent; minimum length 18").
- B.** Current transformer (CT) on CT bracket; (Alternate: bracket may be mounted on building) bond metering plate to meter box with No. 6 copper.
- C.** For CT applications riser conduit should exceed 3" rigid conduit.
- D.** Pipe clamps - 4' intervals
- E.** Riser min. 1" galvanized rigid conduit (furnished and installed by member).
- F.** Meter base with shunt bypass to be used on all CT installations.
- G.** Member disconnect
- H.** Non metallic conduit or metallic conduit with both ends bonded to ground. No. 6 copper ground wire - continuous from meter base to ground rod. (NEC 250-92-B)
- I.** Approved grounding electrode: 5/8" x 8' copper weld ground rod.

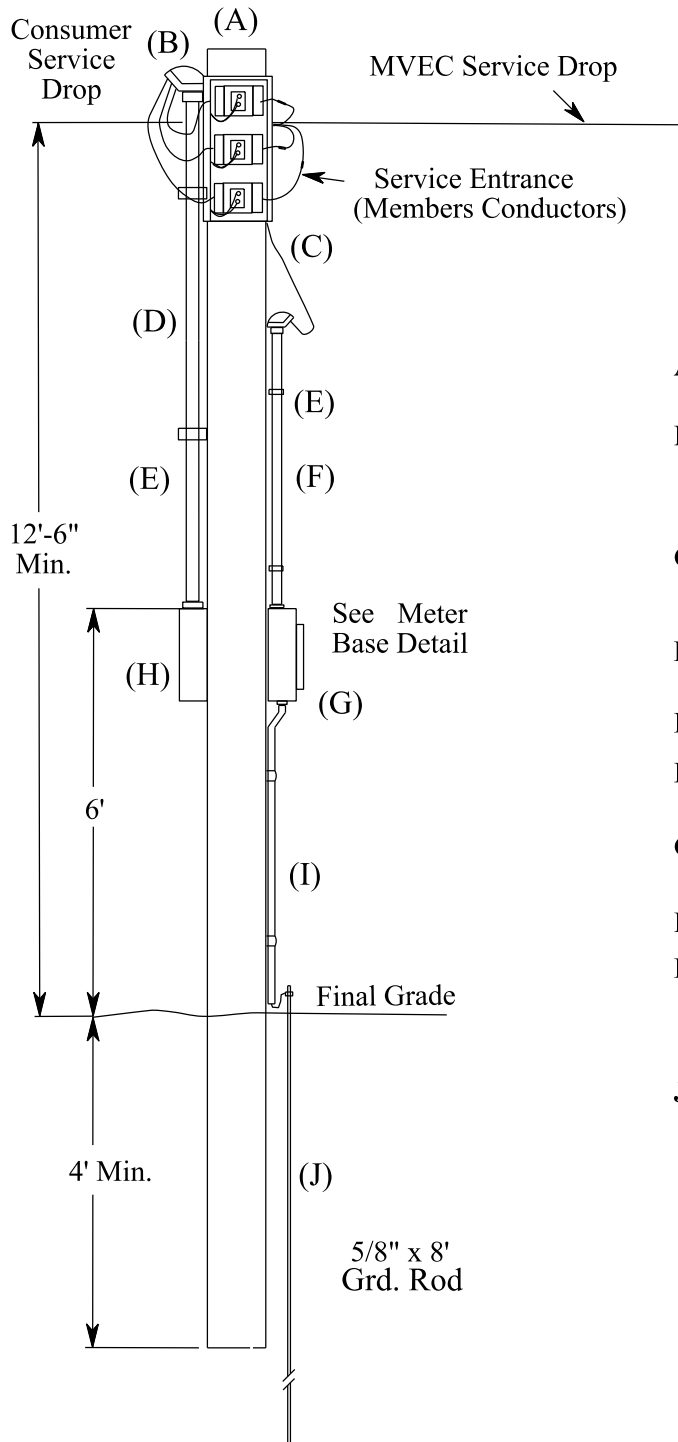
## CURRENT TRANSFORMER - CT METERING OVERHEAD METERING EQUIPMENT TRANSFORMERS MOUNTED ON POLE

**Cooperative shall:**

Furnish and install meter base and CT equipment. Furnish and install meter and service drop.

**Member shall:**

Install meter base and CT bracket. Furnish and install all other required materials. All bases and devices shall be bonded to ground.



**Note:** Commercial meter base to be furnished by MVEC and installed by member.

Minimum vertical clearance shall be as required by National Electrical Safety Code, but in no case less than 12'-6".

- A.** Consumer owned pole preferred 18' class 6 or 7.
- B.** Weather head (maximum two) when service entrance conductors exceeds 350 MCM copper or equivalent; minimum length 18'.
- C.** Current transformer (CT) on CT bracket; bond metering plate to meter box with No. 6 copper.
- D.** For CT applications riser conduit should exceed 3" rigid conduit.
- E.** Pipe clamps - 4' intervals
- F.** Riser min. 1" galvanized rigid conduit (furnished and installed by member).
- G.** Meter base with shunt bypass to be used on all CT installations.
- H.** Member disconnect
- I.** Non metallic conduit or metallic conduit with both ends bonded to ground. No. 6 copper ground wire - continuous from meter base to ground rod. (NEC 250-92-B)
- J.** Approved grounding electrode: 5/8" x 8' copper weld ground rod.

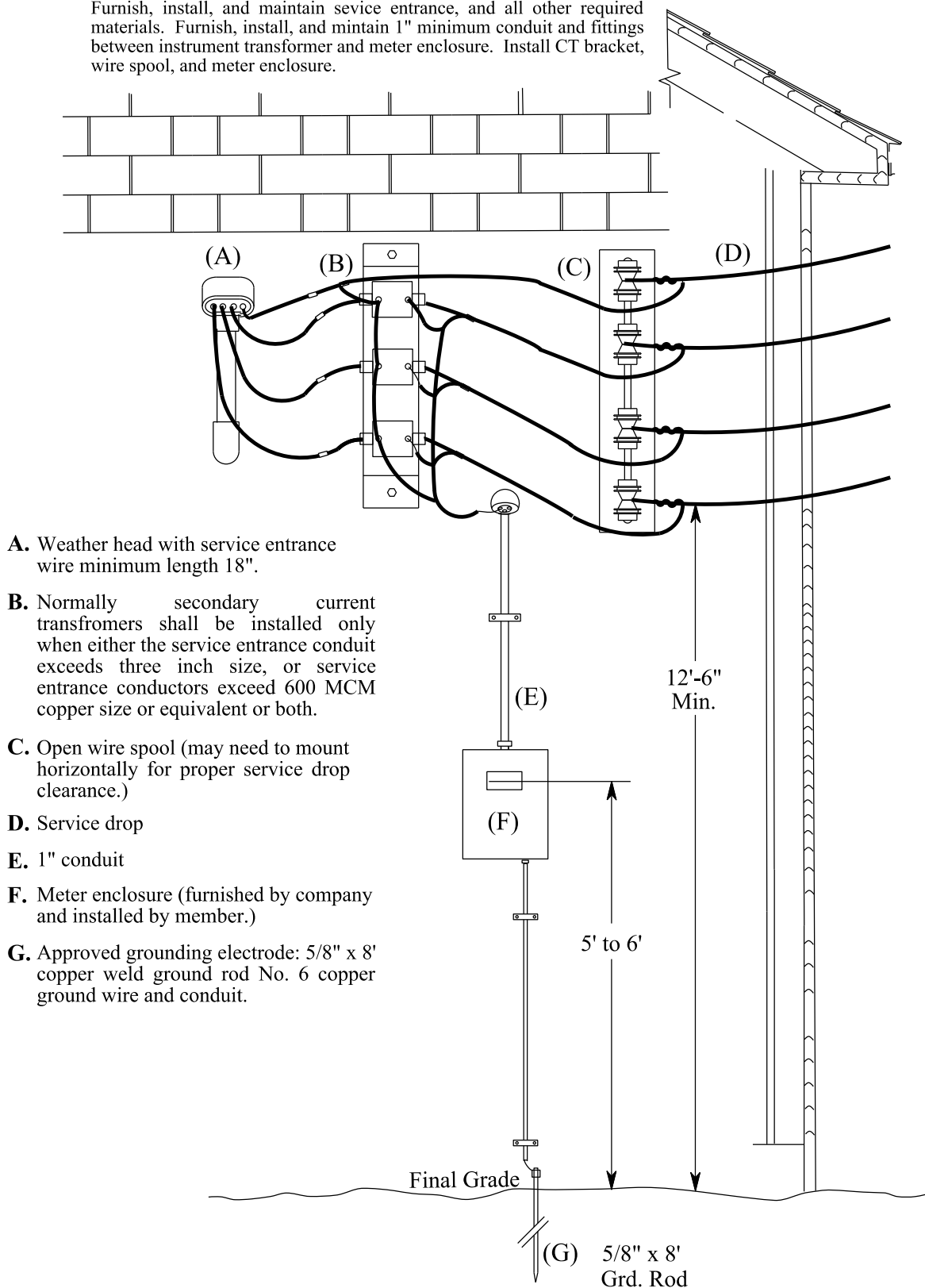
## CURRENT TRANSFORMERS- CT METERING (TRANSFORMERS MOUNTED ON BUILDING)

### Cooperative shall:

Furnish, install, and maintain service drop, current transformer, and make connections to customer's service entrance conductors. Furnish and install wiring between instrument transformer and meter. Furnish meter enclosure wire spool (-7 point track), CT bracket.

### Member shall:

Furnish, install, and maintain service entrance, and all other required materials. Furnish, install, and maintain 1" minimum conduit and fittings between instrument transformer and meter enclosure. Install CT bracket, wire spool, and meter enclosure.



# UNDERGROUND CURRENT TRANSFORMER METERING INSTALLATION

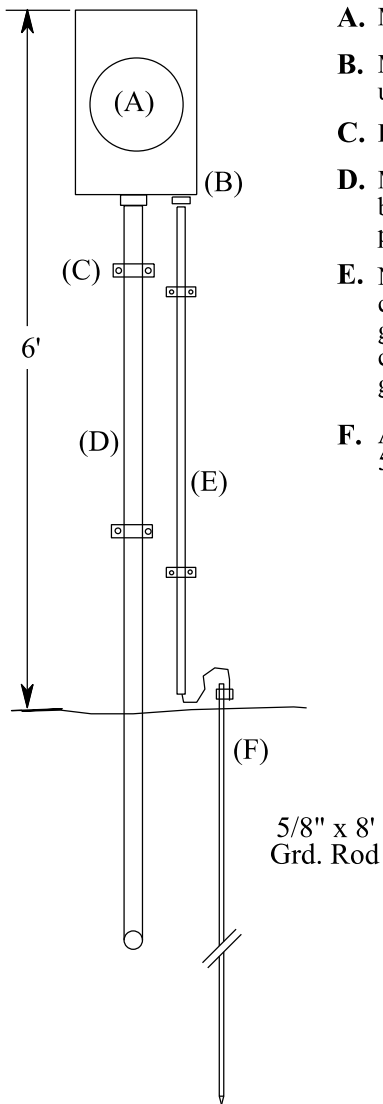
**Cooperative shall:**

Furnish meter base and install meter.

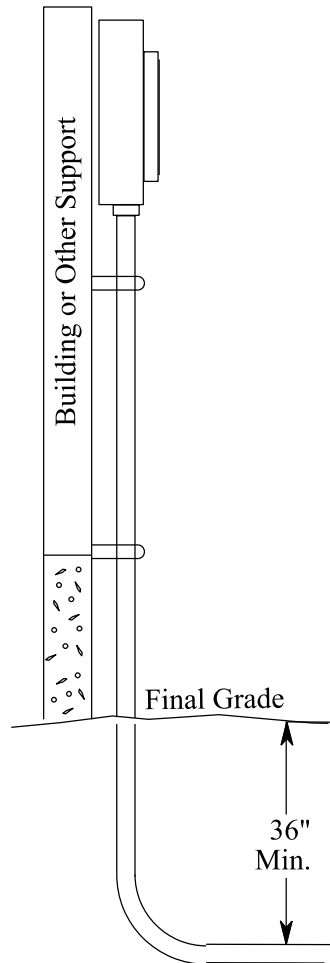
Furnish and install cable, C/T and other connections inside of transformer or secondary enclosure.

**Member shall:**

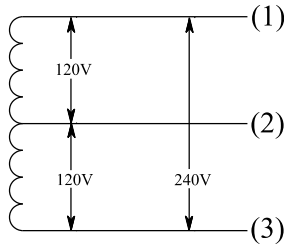
Install meter base. Furnish and install all other required materials, 1" PVC conduit and pull string to be furnished by member from the meter base to the underground transformer or pedestal, install trench and backfill. Special arrangements will be made if C/T cannot be installed in transformers (see pages 73-76).



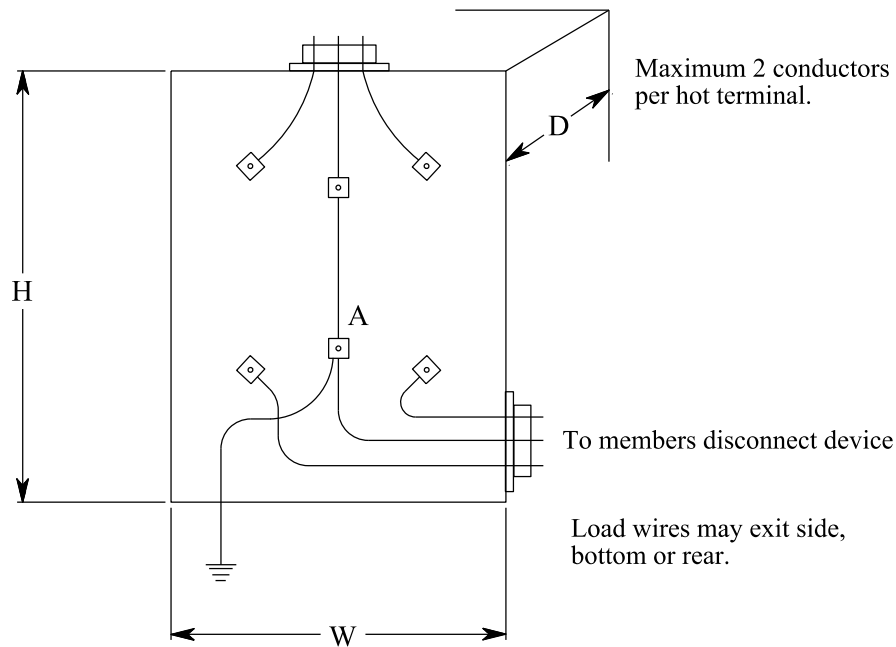
- A. Meter base (see page 61)
- B. Meter base with shunt bypass to be used on all CT installations.
- C. Pipe clamps - 4' intervals
- D. Minimum 1" conduit from meter base to underground transformer, pedestal or dip pole.
- E. Non metallic conduit or metallic conduit with both ends bonded to ground No. 6 copper ground wire-continuous from meter base to ground rod (NEC 250-92-B).
- F. Approved grounding electrode: 5/8" x 8' copper weld ground rod.



# OVERHEAD 1 PHASE METER BASE 120/240 VOLT



3W 1Ø 120/240 volt service

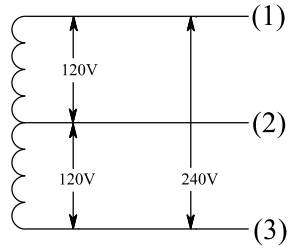


**All dimensions are nominal**

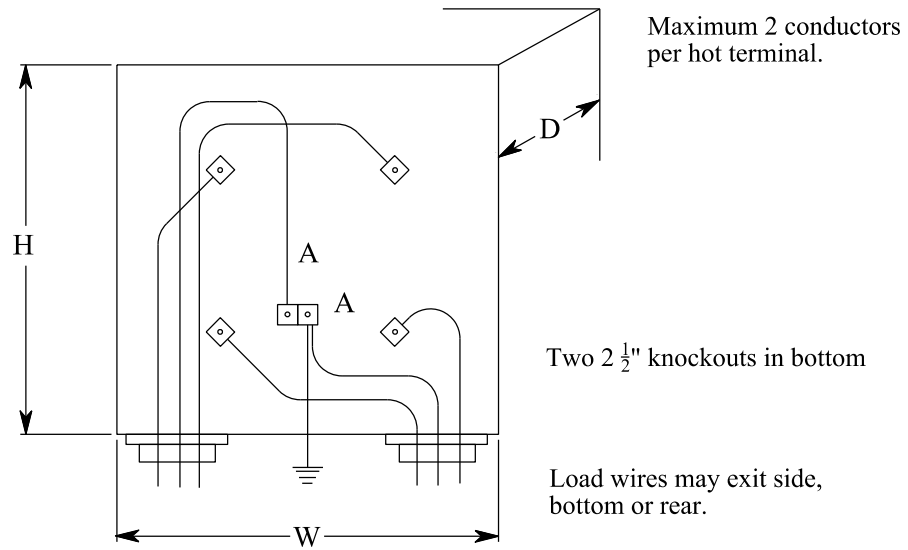
- |                       |  |
|-----------------------|--|
| 100 ampere meter base | H=10", W=8", D=3 $\frac{5}{8}$ ", Hub=1 $\frac{1}{4}$ "<br>Maximum wire size 2/0<br>Maximum wire size 6                              |
| 200 ampere meter base | H=14", W=8", D=4 $\frac{3}{8}$ ", Hub=2"<br>Maximum wire size 250 MCM<br>Maximum wire size 6   |
| 320 ampere meter base | H=26", W=16 $\frac{1}{4}$ ", D=5 $\frac{1}{2}$ ", Hub=3"<br>Maximum wire size 600 MCM<br>or parallel 350 MCM.<br>Maximum wire size 6 |

**Note:** No. 6 copper - continuous ground wire from meter base (connection "A") to ground rod.

# UNDERGROUND 1 PHASE METER BASE 120/240 VOLT



3W 1Ø 120/240 volt service

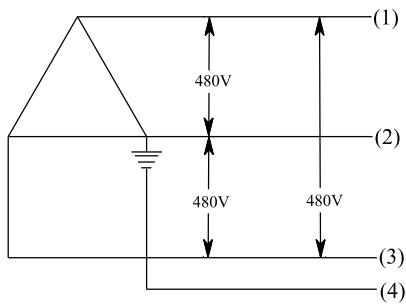


All dimensions are nominal

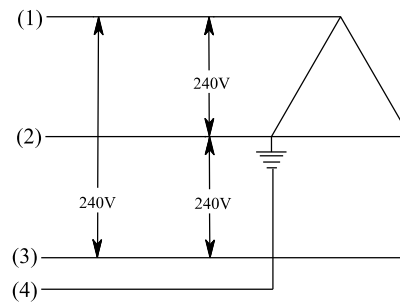
200 ampere meter base H=14", W=11", D=4"  
Maximum wire size 250 MCM

**Note:** No. 6 copper - continuous ground wire from meter base (connection "A") to ground rod.

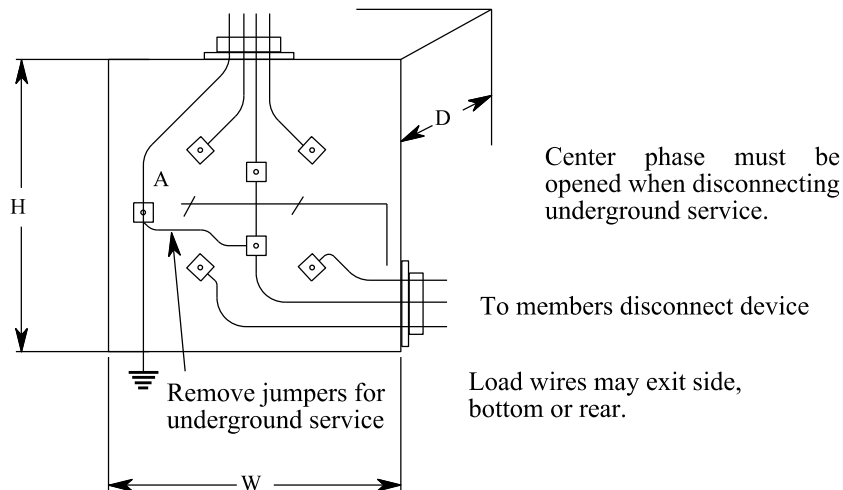
## OVERHEAD 3W 3 PHASE 5 TERMINAL METER BASE 240 OR 480 VOLT WITH 4th WIRE



480 volt grounded service



240 volt grounded service



**All dimensions are nominal**

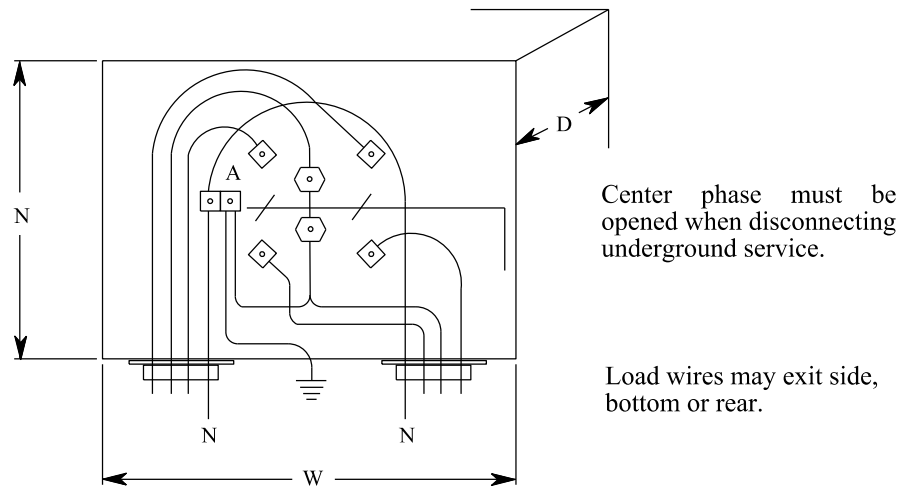
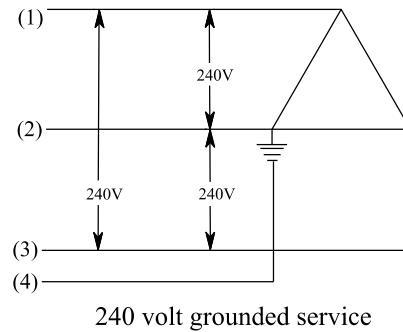
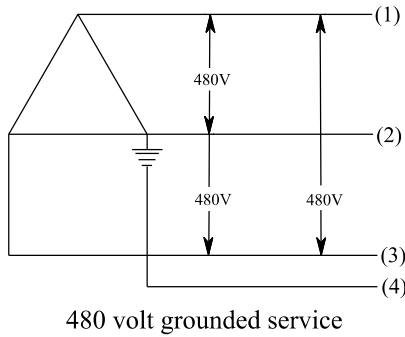
200 ampere meter base 240 volt	H=17", W=10", D=5 1/4", Hub=2" Maximum wire size 350 MCM Maximum 75HP w/bypass and jaw release
200 ampere meter base 480 volt	H=17", W=10", D=5 1/4", Hub=2" Maximum wire size 350 MCM Maximum 150HP w/bypass and jaw release
320 ampere meter base 240 or 480 volt	H=28 1/4", W=13 1/2", D=6", Hub=4" Maximum wire size 600 MCM or parallel 4/0 - 350 MCM per terminal with bypass and jaw release.

**Note:**

1. When used on 480 volt, this meter base will be identified as per use on 480 volt only.
2. No. 6 copper - continuous ground wire from meter base (connection "A") to ground rod.

## UNDERGROUND 3W 3 PHASE 5 TERMINAL METER BASE 240 OR 480 VOLT WITH 4th WIRE

(Overhead transformer only with underground service)



**All dimensions are nominal**

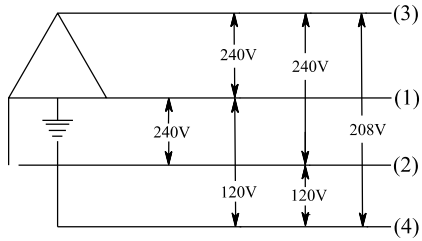
200 ampere meter base 240 volt	H=17", W=10", D=5 $\frac{1}{4}$ ", Hub=2" Maximum wire size 350 MCM Maximum 75HP w/bypass and jaw release
200 ampere meter base 480 volt	H=17", W=10", D=5 $\frac{1}{4}$ ", Hub=2" Maximum wire size 350 MCM Maximum 150HP w/bypass and jaw release
320 ampere meter base 240 or 480 volt	H=28 $\frac{1}{4}$ ", W=13 $\frac{1}{2}$ ", D=6", Hub=4" Maximum wire size 600 MCM or parallel 4/0 - 350 MCM per terminal with bypass and jaw release.

**Note:**

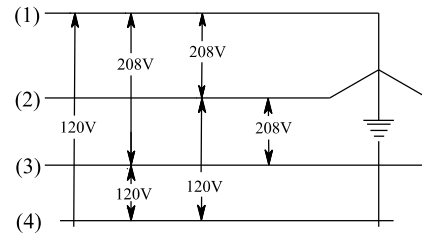
1. When used on 480 volt, this meter base will be identified as per use on 480 volt only.
2. No. 6 copper - continuous ground wire from meter base (connection "A") to ground rod.



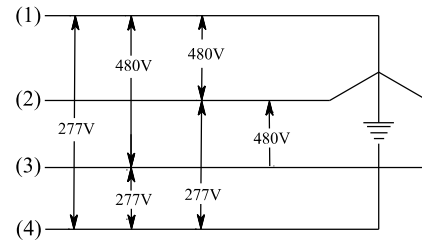
# OVERHEAD 4W 3 PHASE 7 TERMINAL METER BASE



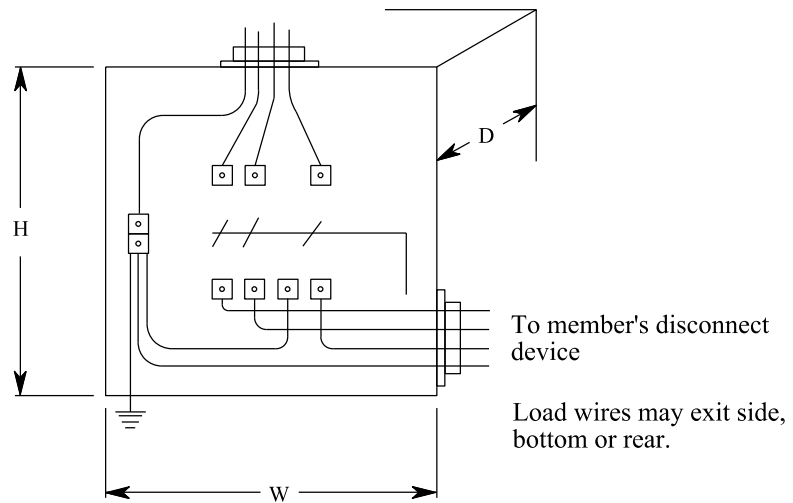
4W 3 phase 120/240 volt service



4W 3 phase 120/208 volt service



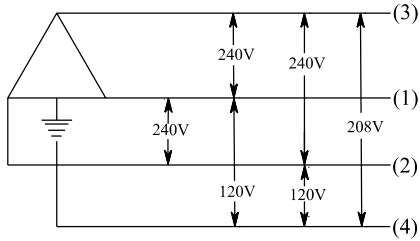
4W 3 phase 277/480 volt service



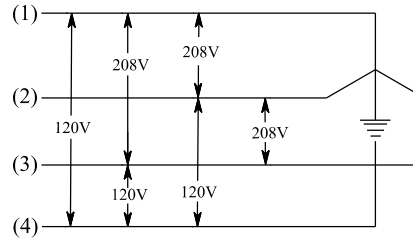
**All dimensions are nominal**

- 200 ampere meter base H=17", W=10", D=5  $\frac{3}{4}$ ", Hub=2  $\frac{1}{2}$ "  
Maximum wire size 350 MCM  
Bypass and jaw release
- 320 ampere meter base H=26  $\frac{1}{4}$ ", W=17  $\frac{3}{4}$ ", D=7", Hub=3"  
Maximum wire size 600 MCM  
Bypass and jaw release
- 320 ampere meter base H=28  $\frac{1}{4}$ ", W=13  $\frac{1}{2}$ ", D=6", Hub=4"  
Maximum wire size 600 MCM  
or parallel 4/0 - 350 MCM  
per terminal with bypass and  
jaw release.

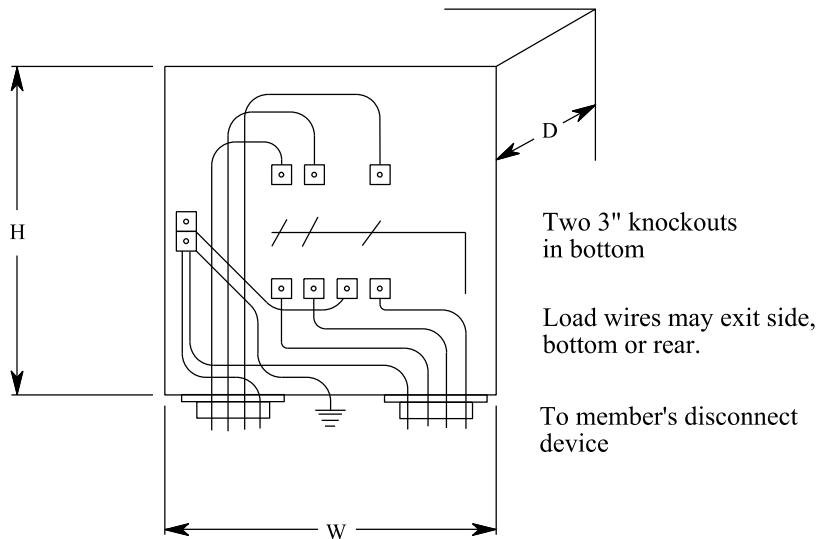
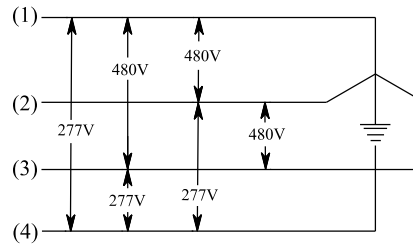
## UNDERGROUND 4W 3 PHASE METER BASE 7 TERMINAL METER BASE



4W 3 phase 120/240 volt service  
Overhead transformer only with  
underground service



4W 3 phase 120/208 volt service

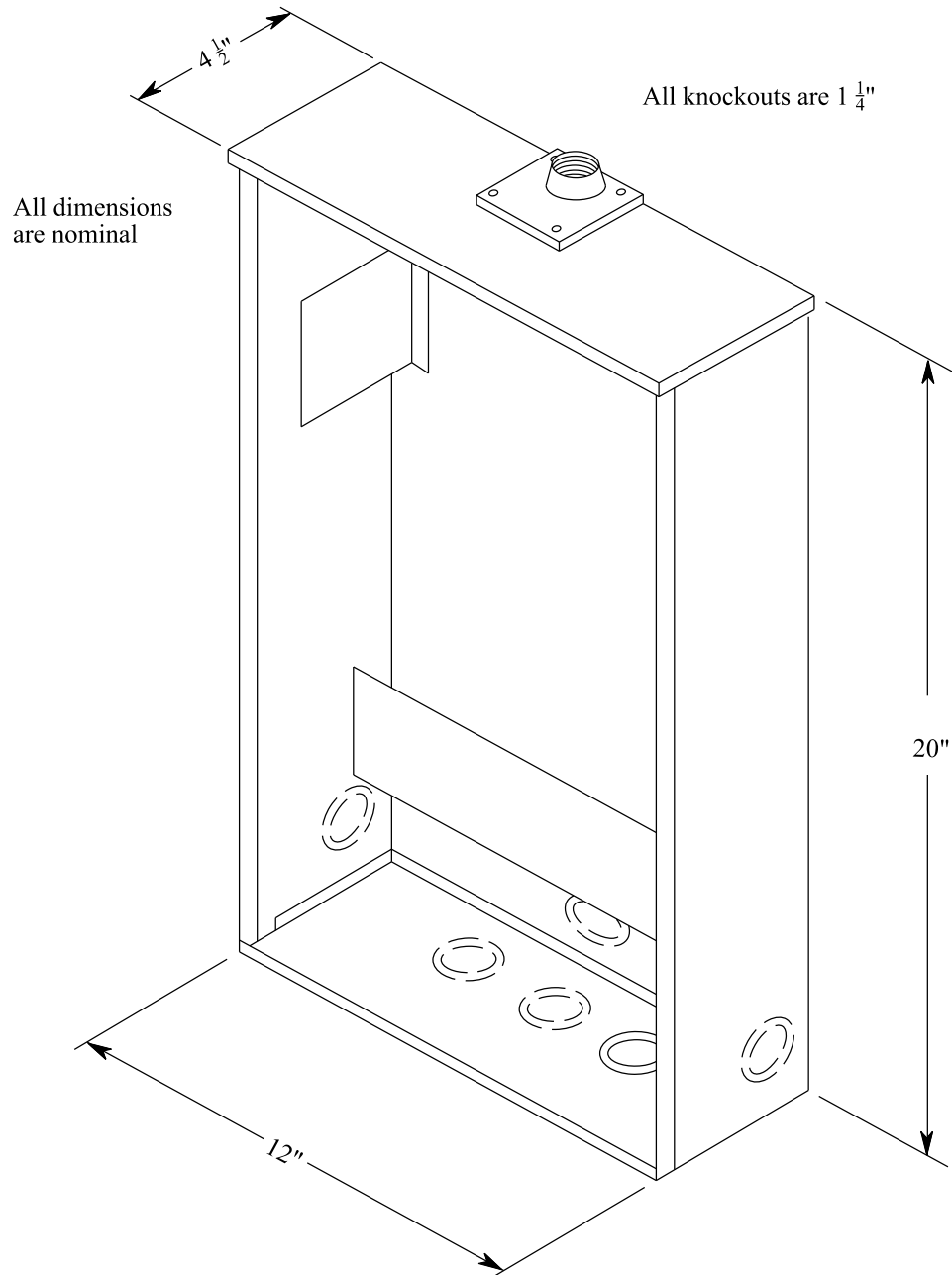


**All dimensions are nominal**

- 200 ampere meter base    H=19  $\frac{1}{4}$ " , W=12  $\frac{3}{4}$ " , D=5  $\frac{1}{4}$ "  
Maximum wire size 350 MCM  
Bypass and jaw release
- 320 ampere meter base    H=26  $\frac{1}{4}$ " , W=17  $\frac{3}{4}$ " , D=7" , Hub=3"  
Maximum wire size 600 MCM  
Bypass and jaw release
- 320 ampere meter base    H=28  $\frac{1}{4}$ " , W=13  $\frac{1}{2}$ " , D=6" , Hub=4"  
Maximum wire size 600 MCM  
or parallel 4/0 - 350 MCM  
per terminal with bypass and  
jaw release.

**Note:** No. 6 copper - continuous ground wire from meter base (connection "A") to ground rod.

# TRANSFORMER RATED METER BASE WITH TEST SWITCH COMPARTMENT



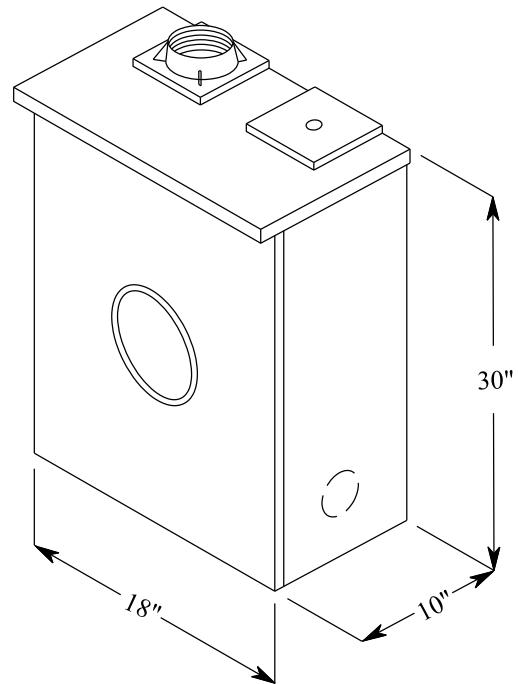
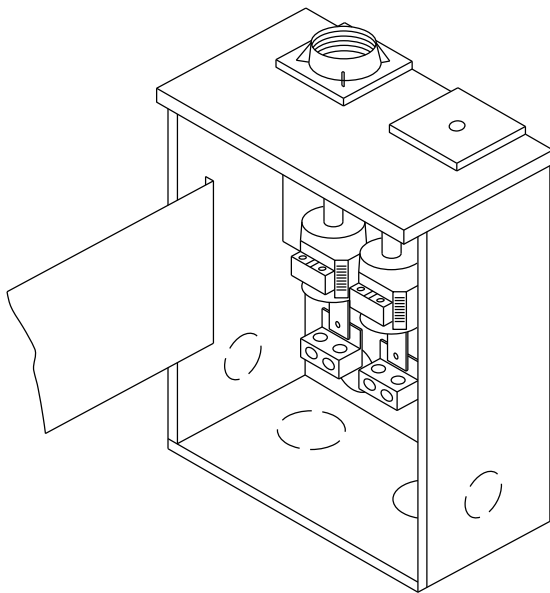
**Cooperative shall:**  
Furnish C/T, meter base, and meter.  
Install meter and meter wiring.

**Member shall:**  
Furnish and install enclosure and  
all other required materials  
Install meter base and C/T  
as directed by cooperative.

## TRANSOCKET (RATING FACTOR 3.0)

Normal hub sizes:  
3", 3 ½", 4"

All dimensions  
are nominal



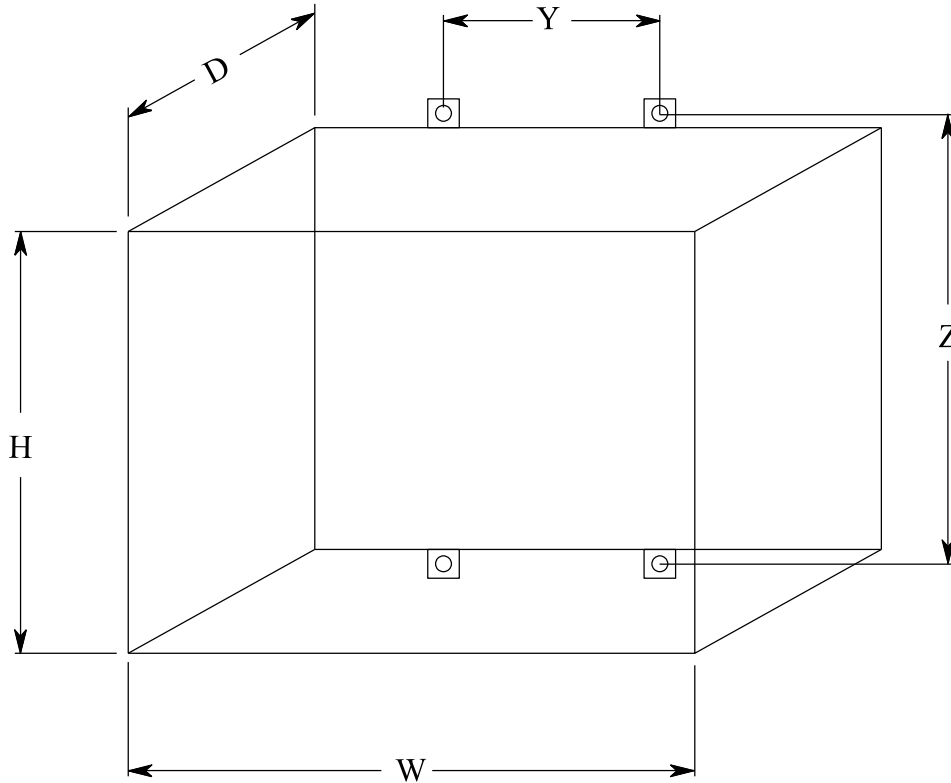
Knockouts thru 3 ½"

**Units:** 300 ampere 120/240 volt 4W delta  
300 ampere 120/240 volt 4W wye  
Maximum wire size parallel 350 MCM

**Cooperative shall:**  
Furnish C/T, meter base, and meter.  
Install meter and meter wiring.

**Member shall:**  
Furnish and install enclosure and  
all other required materials  
Install meter base and C/T  
as directed by cooperative.

WALL MOUNTED METERING  
TRANSFORMER ENCLOSURE USED  
PRIMARILY TO ENCLOSE  
METERING TRANSFORMERS



All dimensions are nominal

XXAN - 25 H=24  $\frac{1}{4}$ ", D=12  $\frac{1}{4}$ ", Y=19", Z=26"

XXAN - 35 H=34  $\frac{1}{2}$ ", D=12  $\frac{1}{4}$ ", Y=26", Z=38"

XXAN - 48" H=48", D=12", Y=29", Z=50  $\frac{1}{2}$ "

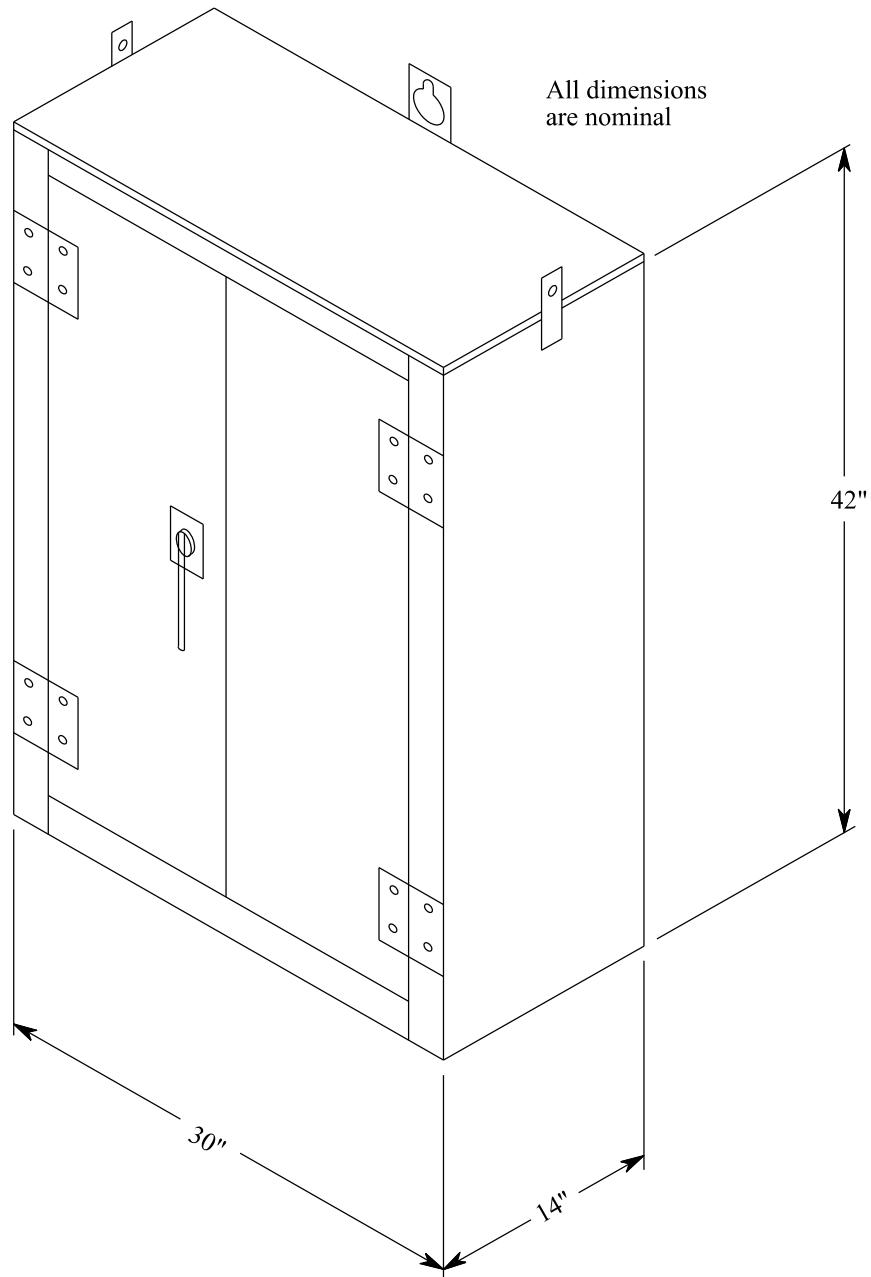
**Cooperative shall:**

Furnish C/T, meter base, and meter.  
Install meter and meter wiring.

**Member shall:**

Furnish and install enclosure and  
all other required materials  
Install meter base and C/T  
as directed by cooperative.

## METERING TRANSFORMER ENCLOSURE (DOUBLE DOOR)



**Cooperative shall:**

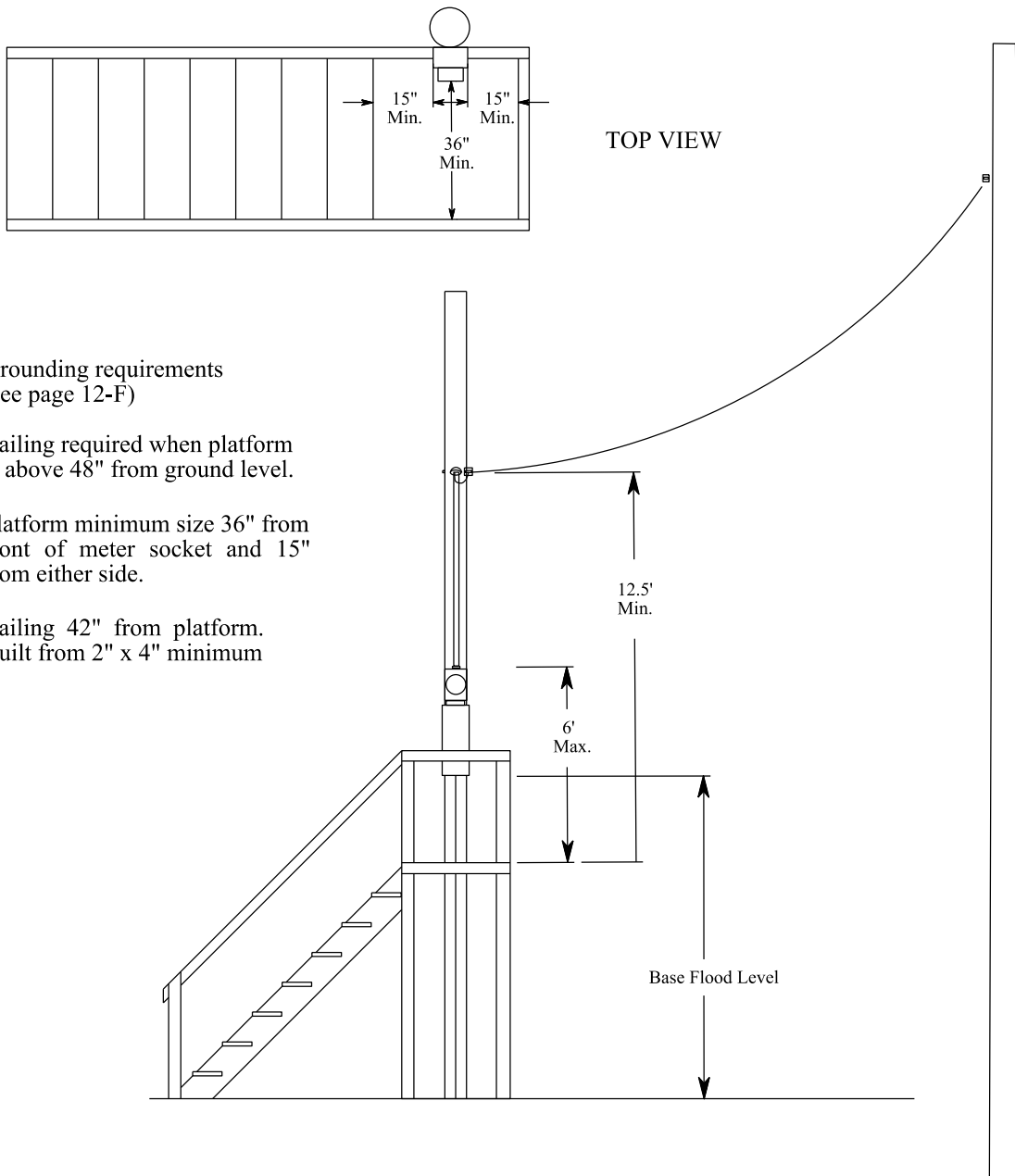
Furnish C/T, meter base, and meter.  
Install meter and meter wiring.

**Member shall:**

Furnish and install enclosure and all other required materials  
Install meter base and C/T as directed by cooperative.

# 1 PHASE OVERHEAD METER INSTALLATION POLE MOUNT ABOVE FLOOD LEVEL W/PLATFORM

Platform shall safely withstand  
a 500 pound working load.



Grounding requirements  
(see page 12-F)

Railing required when platform  
is above 48" from ground level.

Platform minimum size 36" from  
front of meter socket and 15"  
from either side.

Railing 42" from platform.  
Built from 2" x 4" minimum

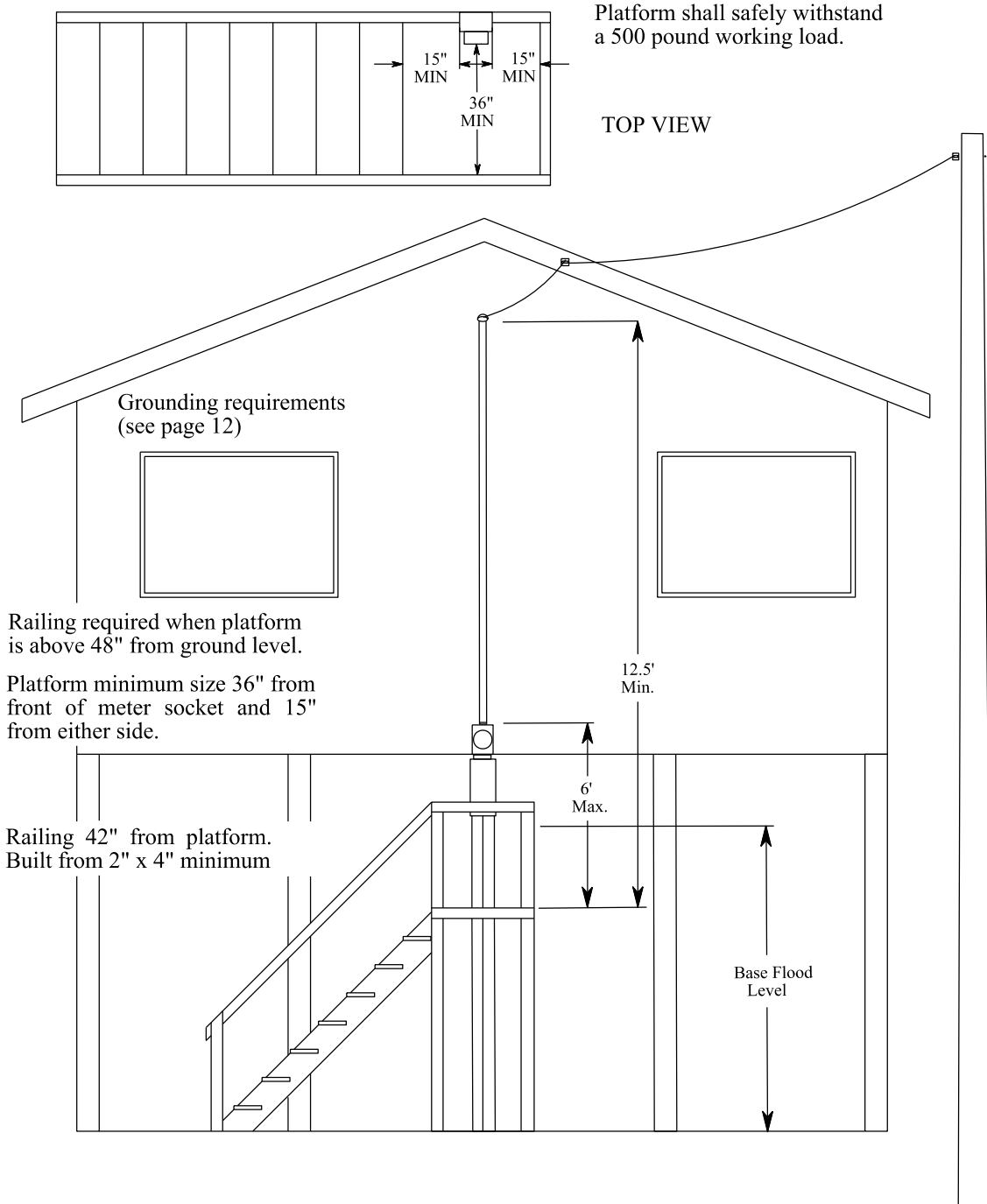
TOP VIEW

12.5'  
Min.

6'  
Max.

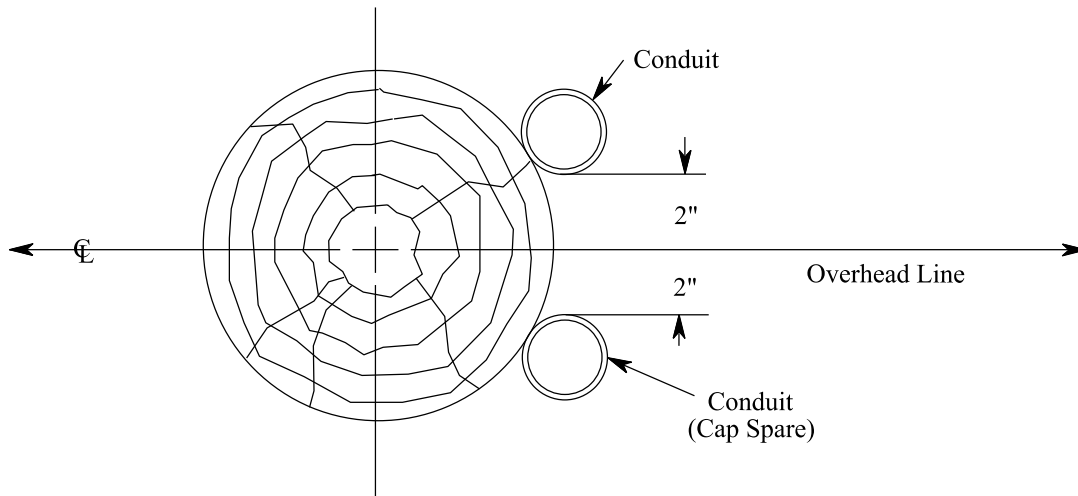
Base Flood Level

# 1 PHASE OVERHEAD METER INSTALLATION WALL MOUNT ABOVE FLOOD LEVEL W/PLATFORM

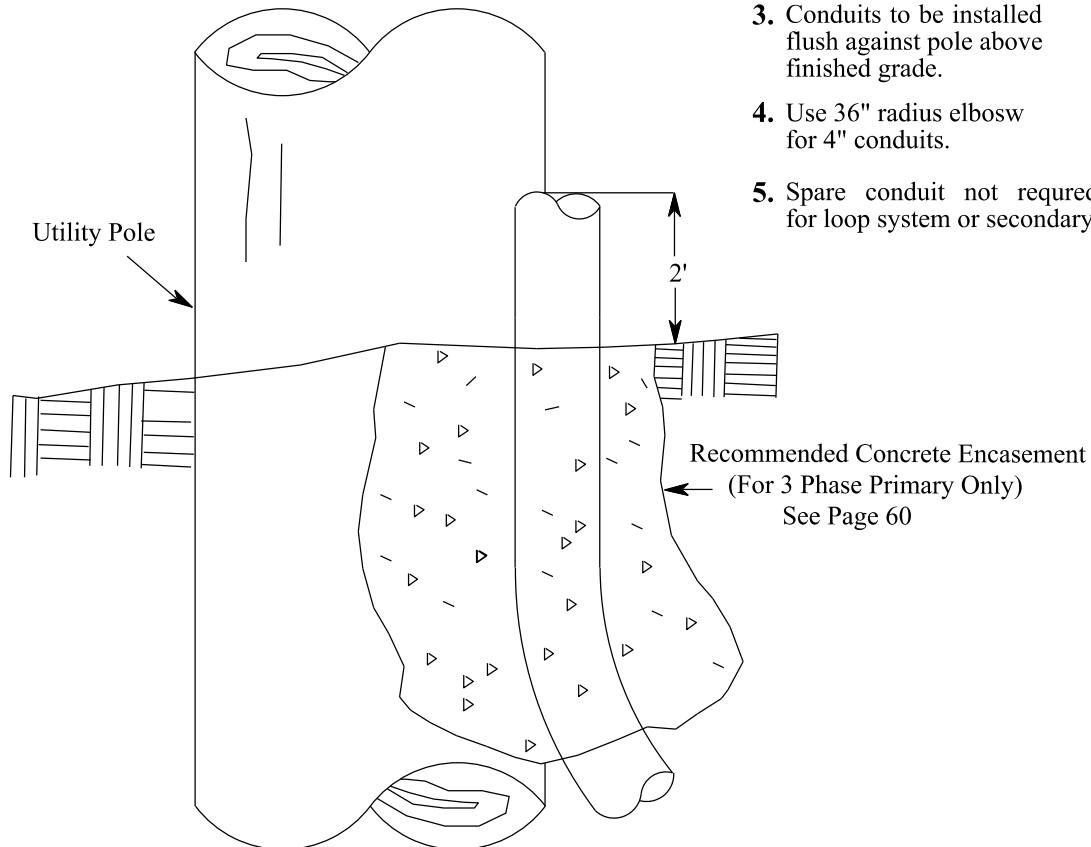




# DETAIL OF CONDUIT INSTALLATION AT PRIMARY OR SECONDARY RISER POLE



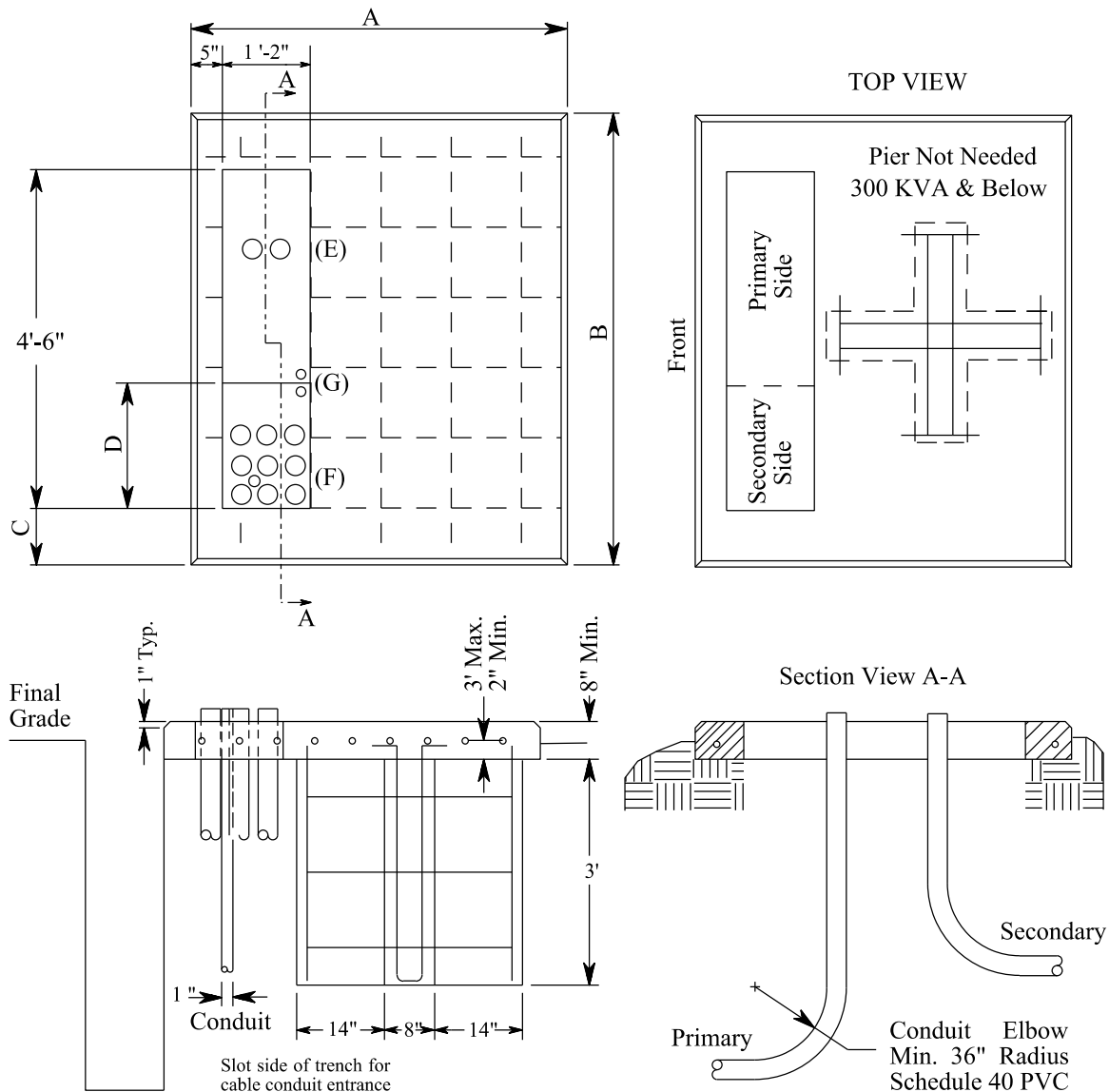
**TOP VIEW**



**SIDE VIEW**

1. MVEC to install riser pole prior to conduit installation.
2. MVEC to inspect and approve conduit for proper installation prior to concrete encasement.
3. Conduits to be installed flush against pole above finished grade.
4. Use 36" radius elbow for 4" conduits.
5. Spare conduit not required for loop system or secondary.

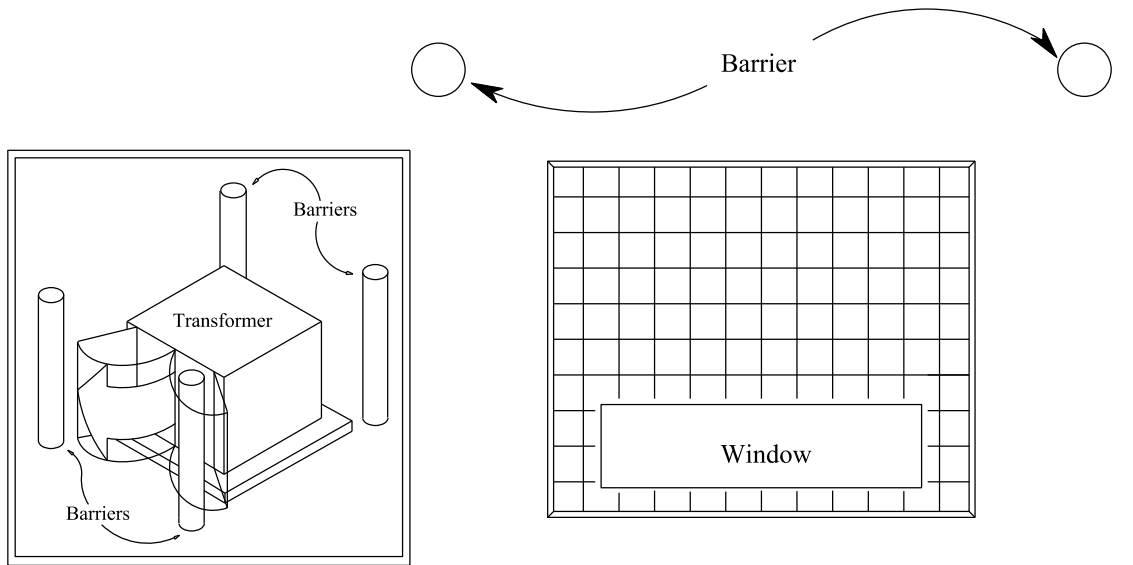
## CONCRETE PAD ASSEMBLY FOR THREE PHASE PADMOUNT TRANSFORMER



DIM	UP TO 300 KVA	500 THRU 1000 KVA	1500 THRU 3000 KVA
A.	5' - 0 "	6' - 0 "	7' - 0 "
B.	6' - 0 "	7' - 0 "	8' - 0 "
C.	0' - 9 "	1' - 3 "	1' - 9 "
D.	1' - 8 "	2' - 0 "	2' - 0 "
E.	High voltage or primary side of transformer, primary conduits.		
F.	Low voltage or secondary side of transformer, on 1" conduit in compartment opening.		
G.	Consumer to install ground rods $\frac{5}{8}$ " x 8' in compartment opening.		

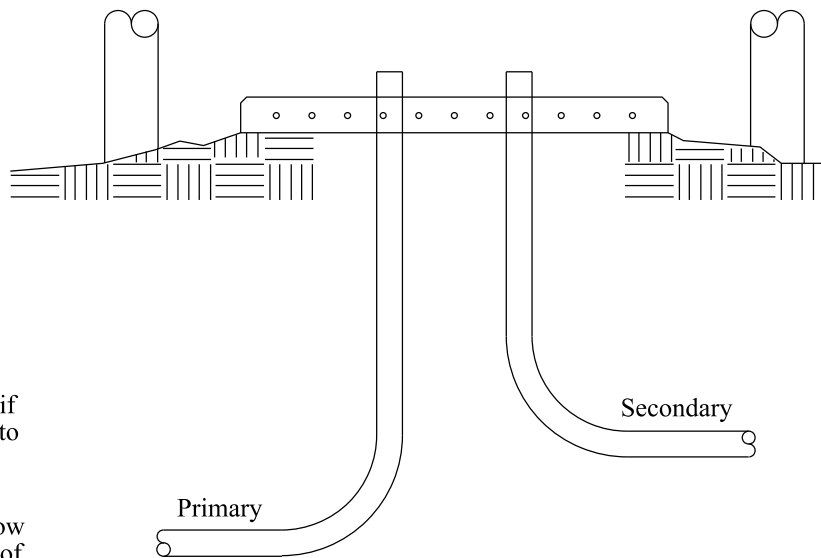
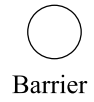
1. Pad assemblies include site preparation, bedding and drainage.
2. Slabs may be precast or poured in place.
3. Concrete testing 4000 pounds per square inch.
4. Steel reinforcing should be No. 4 rear, aat-sm-a615 grade 60, place approx. 6" opposite corner each way and securely tied together.
5. Minimum concrete cover over reinforcing steel 5 inches.
6. Wood float finish, leaving no depression.
7. Contact MVEC representative to inspect before pouring concrete.
8. A clear area should be maintained for 10' in front of pad mount.
9. Top of pad should be a minimum of 5' below grade.
10. Conduits should be in front but not under weight of transformer.

# THREE PHASE PADMOUNT TRANSFORMER FOUNDATION AND BARRIER DETAIL



ISOMETRIC VIEW

TOP VIEW

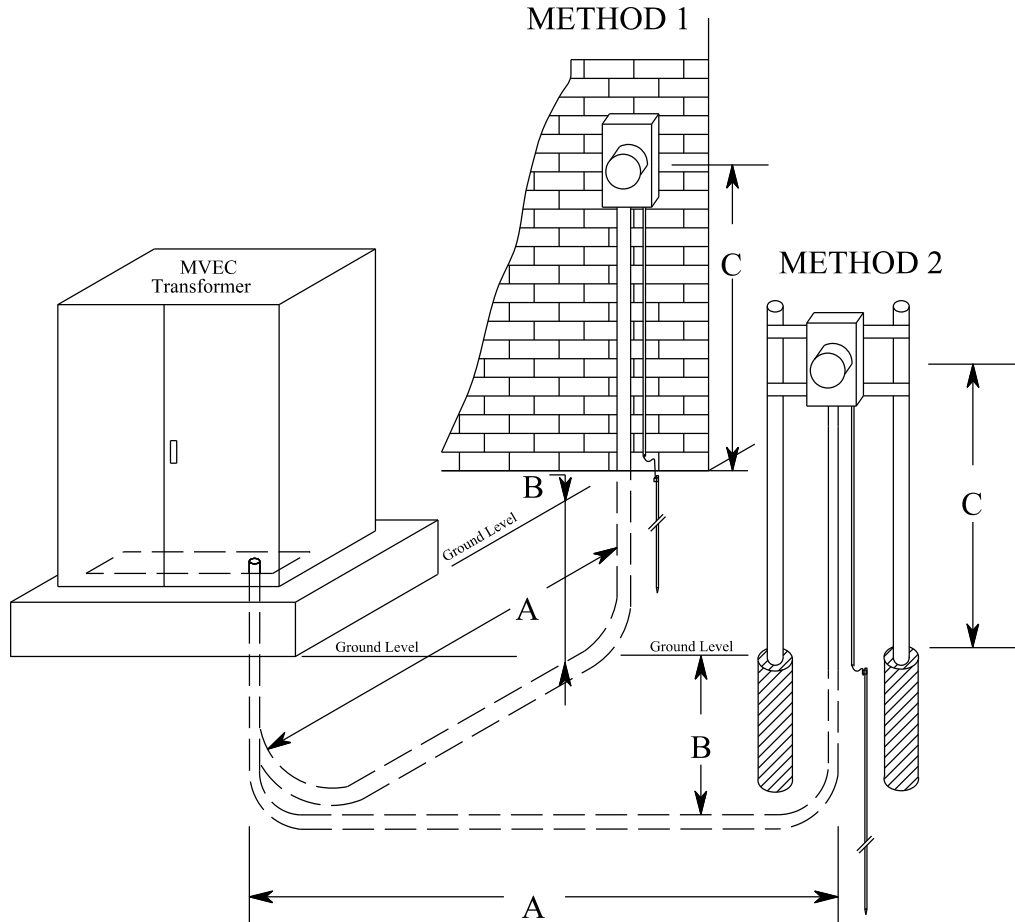


FRONT VIEW

**Notes:**

1. Barriers are needed only if transformer is accessible to vehicle damage.
2. Barriers are placed to allow open access to front of transformer.
3. Transformer doors open as shown above.

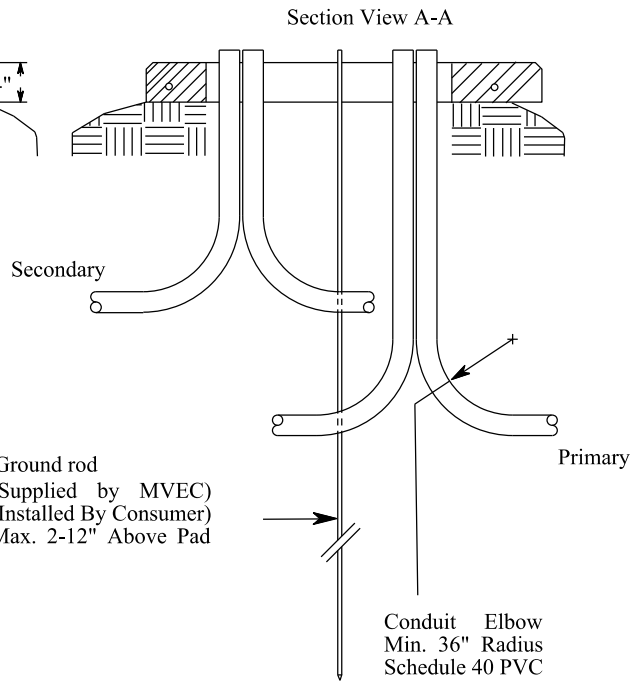
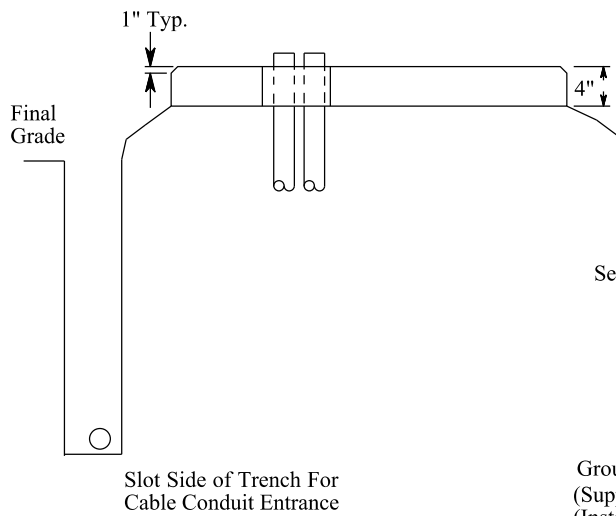
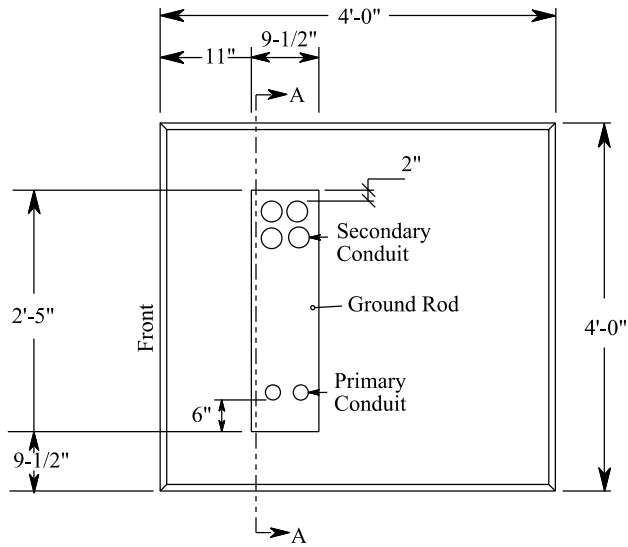
## C.T. METER INSTALLATION UNDERGROUND



1. Method 1 preferred method of installation. Method 2 to be used if meter socket or cabinet is on building wall.
2. Meter socket must not be attached directly to pad mount transformer.
3. 1" conduit shall be used for secondary control wires to meter socket.

Point	METHOD 1 & 2	
	Ft.	Clearances
A	30	Maximum distance to meter base
B	3	Minimum depth to top of conduit
C	5	Minimum height to the center of the meter

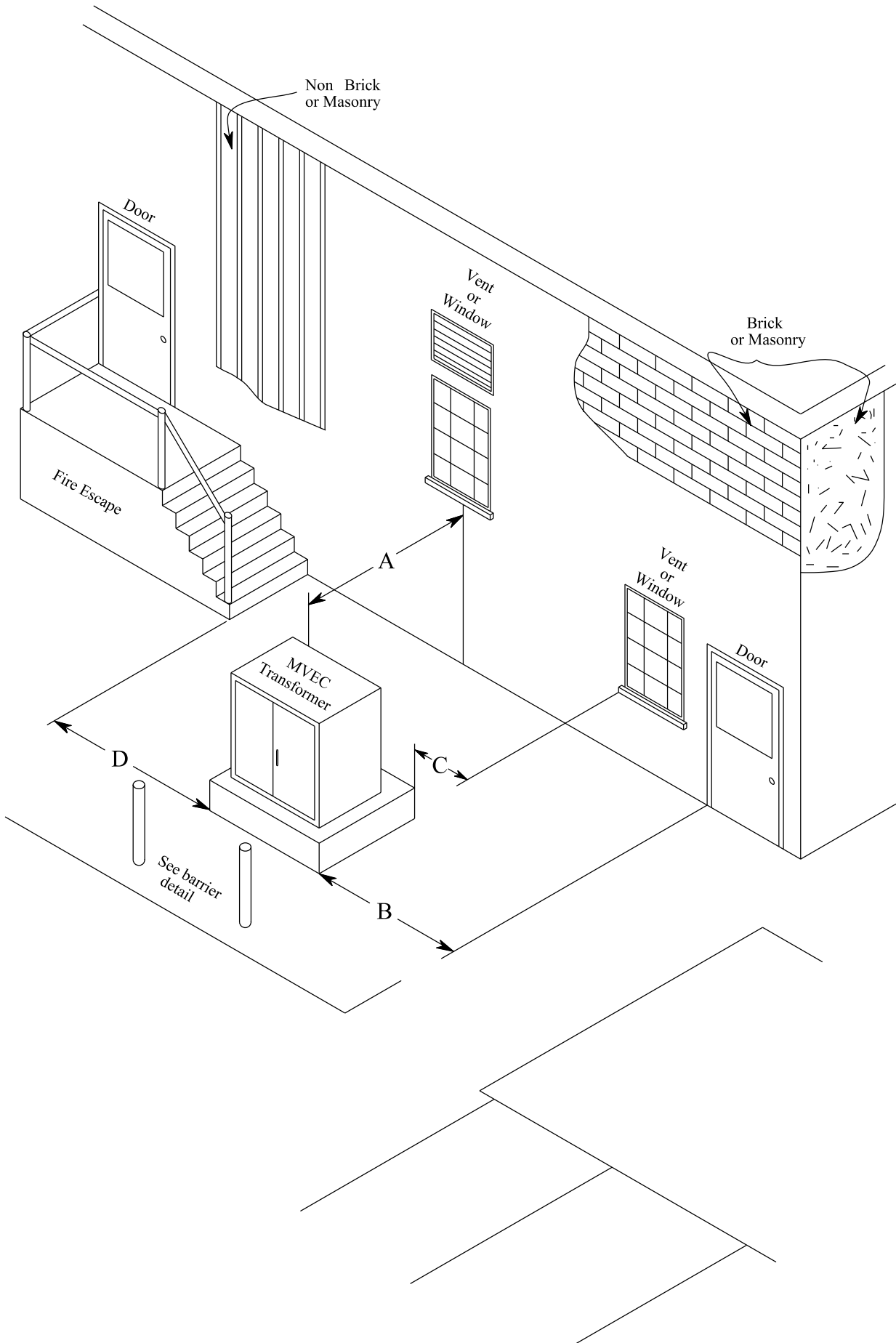
## PAD ASSEMBLY FOR SINGLE PHASE PADMOUNT TRANSFORMER



**Notes:**

1. Pad assemblies include site preparation, bedding and drainage.
2. A clear area should be maintained for 10 feet in front of pad mount.
3. Conduits should be in front but not under weight of transformer.
4. Primary conduit is 48" below final grade  
Secondary conduit is 36" below final grade.

# CLEARANCE REQUIREMENTS FOR OIL FILLED TRANSFORMERS AT BUILDINGS

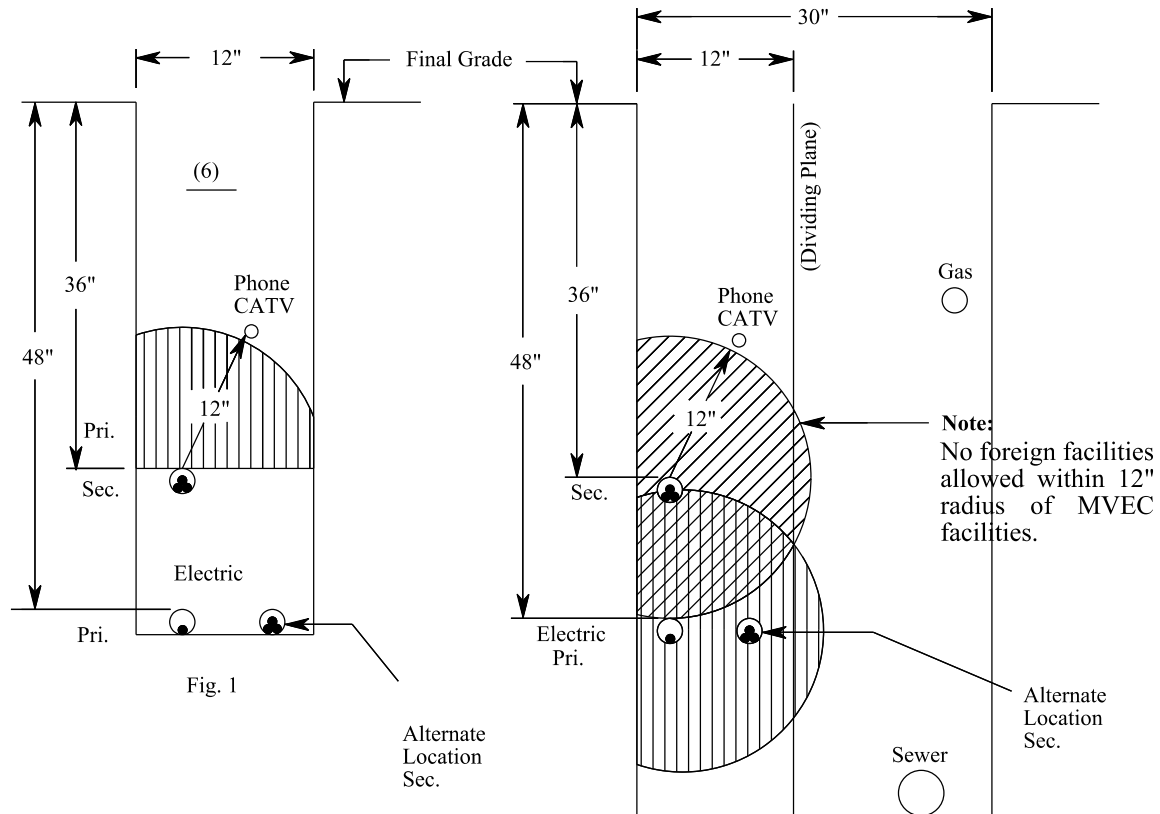


Point	Chart 1. Brick or Masonry Building	
	FT.	Recommended Minimum Clearances (See notes 6&7 below) Diagonals that meet clearances are acceptable.
A.	5'	In front of wall without window or with window 12 feet or higher
	8'	In front of wall with fire safety glass window & window is below 12 feet
	12'	In front of wall with window (no fire safety glass) below 12 feet
B.	8'	On the side of doors that are not fire escape
C.	5'	On the side of window or vents if less than 12 feet above ground
D.	20'	Away from bottom of fire escape stairs or door

1. Maintain a minimum of **10** feet clearance in front of transformer from landscape and structures for access. Adequate space required for trucks and lifting equipment.
2. Maintain the drainage flow around the transformer away from the building. Cooling towers, gas meters, etc. are not allowed within 5 feet of pad.
3. No pipes or conduits are allowed under the pad except those for the transformer connections. Exception with MVEC written approval.
4. No part of the building may extend over transformer. Front door of transformer faces away from the building.
5. If transformer subject to vehicular damage, install barriers. See more detail on other sketches for barriers, pad, metering, and conduits.
6. Clearances depend on transformer KVA & type of building material. Check local building codes, insurance regulation, and ordinances affecting transformer location.
7. Local code enforcement authority may approve in writing alternate means of the fire protection and comply with NEC, NESC, and IEEE.

Point	Chart 2. "NON" Brick or Masonry Building		
	Transformer KVA	FT.	Minimum Clearances Diagonals that meet clearances are acceptable
A.	75 or less	10'	In front of wall without window or with window 12 feet or higher
		10'	In front of wall with fire safety glass window & window is below 12 feet
		12'	In front of wall with window (no fire safety glass) below 12 feet
D.	75 or less	20'	Away from fire escape stairs or door
A.	100 - 333	20'	In front of wall
A.	333 or larger	30'	In front of wall
<b>Note:</b> B & C Points do not apply. Distances in Chart 2 will provide proper clearance.			

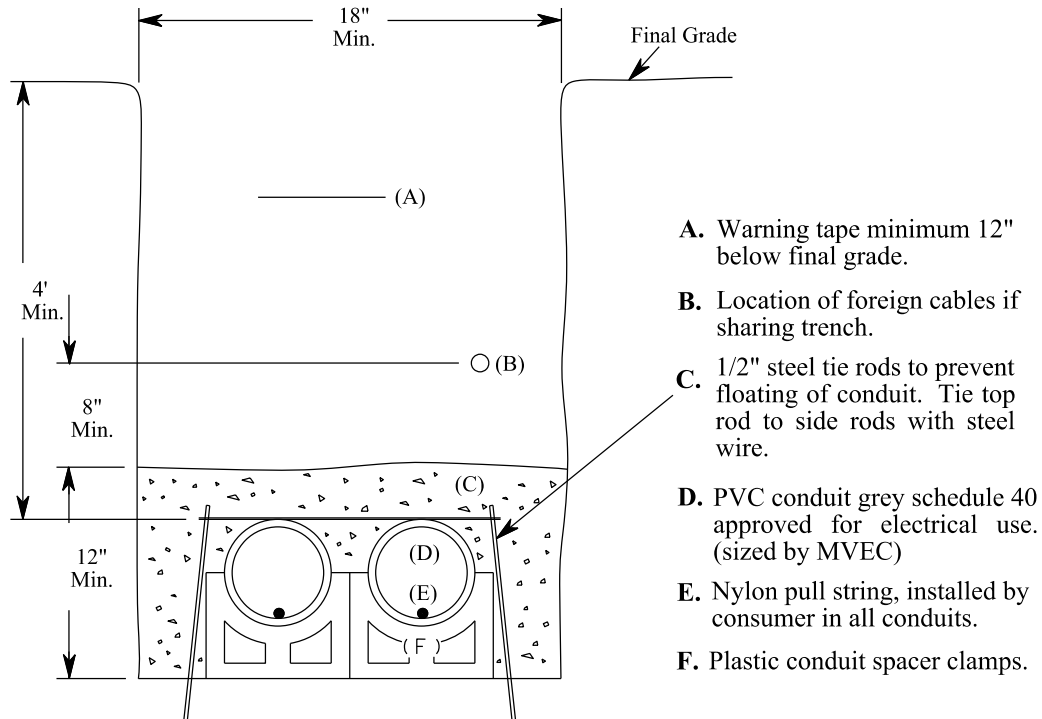
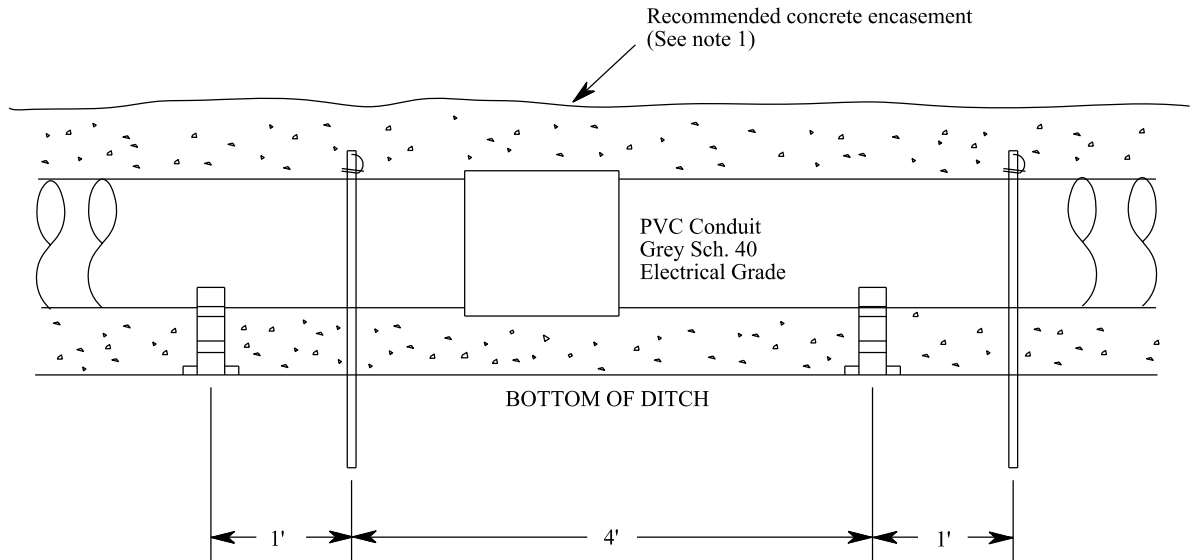
## PRIMARY TRENCH DETAIL CONDUIT SYSTEM



1. The separation between MVEC conduit system and other underground structures paralleling it should be as large as necessary to permit maintenance of the system without damage to the paralleling structures. A conduit which crosses over other subsurface structures shall have a separation sufficient to prevent damage to either structure. These separations should be determined by the parties involved.
2. MVEC conduit system should be separated from conduit systems to be used for communications conductors (phone, CATV) by a minimum of 12 inches of well tamped dirt (fig. 1).
3. If conditions require MVEC conduit system to be installed parallel to and directly over a sanitary or storm sewer, it may be done provided both parties are in agreement as to the method. Where a conduit run crosses a sewer, it shall be designed to have a suitable support on each side of the sewer to prevent transferring any direct load onto the sewer.
4. MVEC conduit system should be installed as far as practical from a water main in order to protect it from being undermined if the main breaks.
5. Where trench is to be used for other utilities in addition to telephone and/or television cables such as water, gas or sewer lines, special arrangements on location of the facilities must be made. The various utilities must be arranged such that the sewer, gas and water lines at their respective levels, occupy one side of the trench and the electric, telephone and television occupy the other side (see fig. 2). The trench dimensions shall be increased in width or depth as necessary to maintain minimum horizontal and vertical separations between utilities.
6. Installation of yellow underground marking tape should be 6' - 12" below final grade.



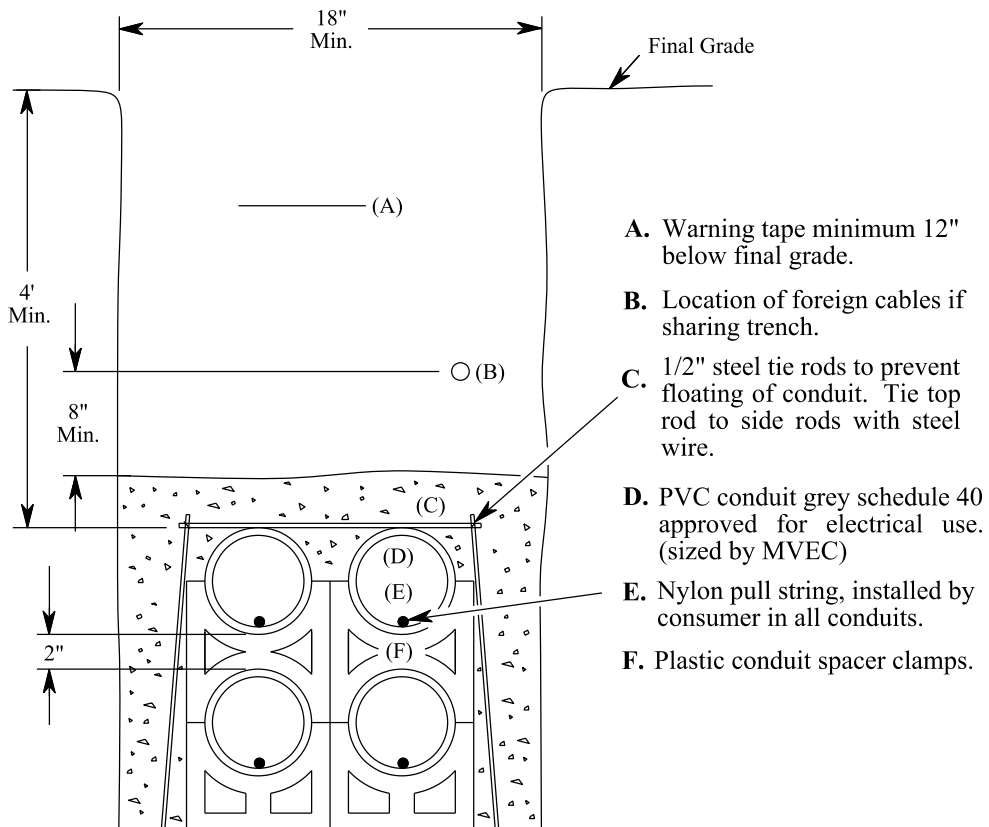
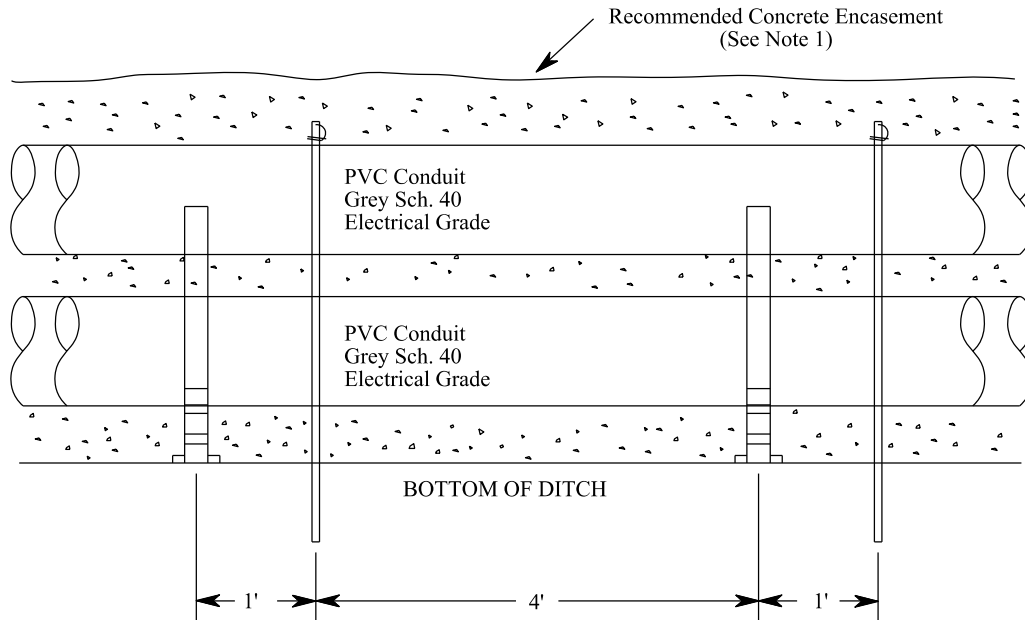
# MINIMUM REQUIREMENTS FOR CONCRETE ENCASED CONDUIT (TWO CONDUITS -RADIAL FEED) (ONE CONDUIT- LOOP FEED)



**Notes:**

1. Concrete to 1:3:6 mix with no aggregate larger than  $\frac{3}{4}$ " - 3" minimum cover required around all conduits.
2. MVEC representative to inspect and approve conduit installation prior to concrete encasement.

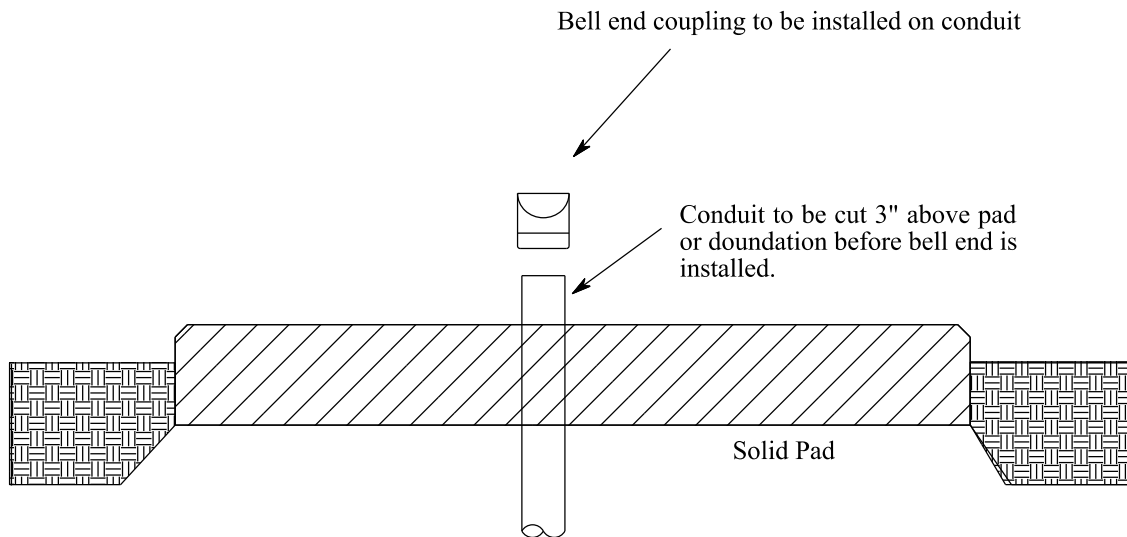
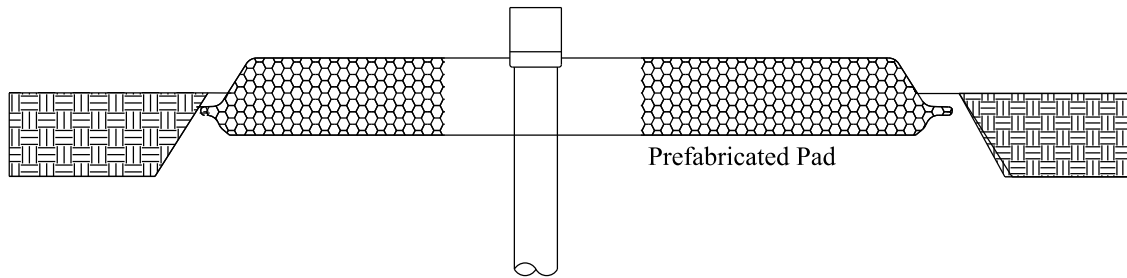
# MINIMUM REQUIREMENTS FOR CONCRETE ENCASED CONDUIT (FOUR CONDUITS)



**Notes:**

1. Concrete to 1:3:6 mix with no aggregate larger than 3/4" - 3" minimum cover required around all conduits.
2. MVEC representative to inspect and approve conduit installation prior to concrete encasement.

# BELL END COUPLING INSTALLATION CONDUIT TERMINATIONS

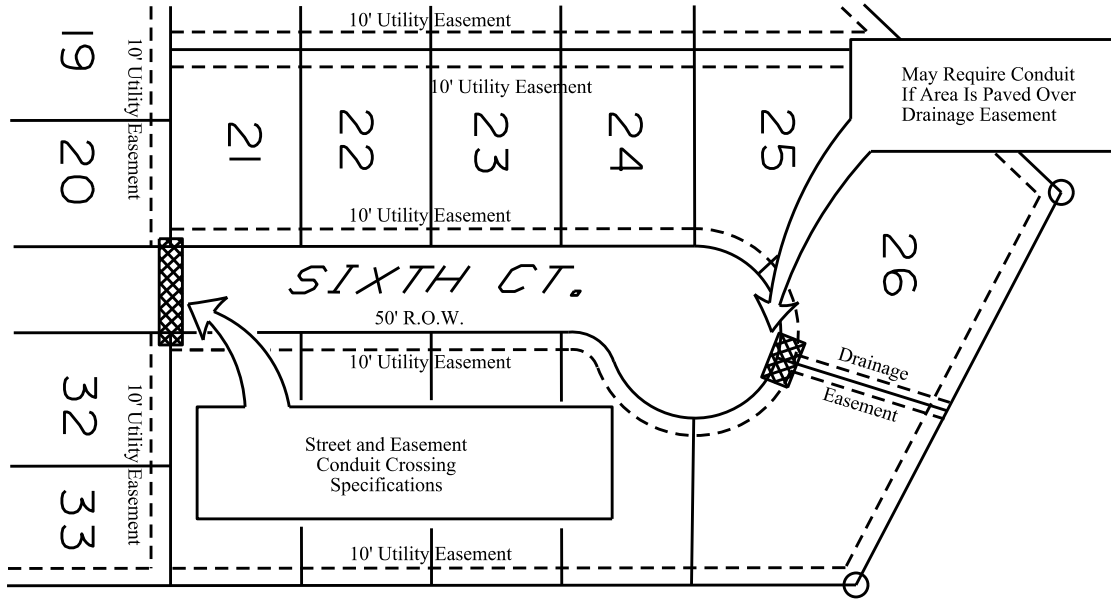


**Note:**

Place bell coupling on end of conduit (Exception meter enclosures).  
Cover ends of unused conduits.

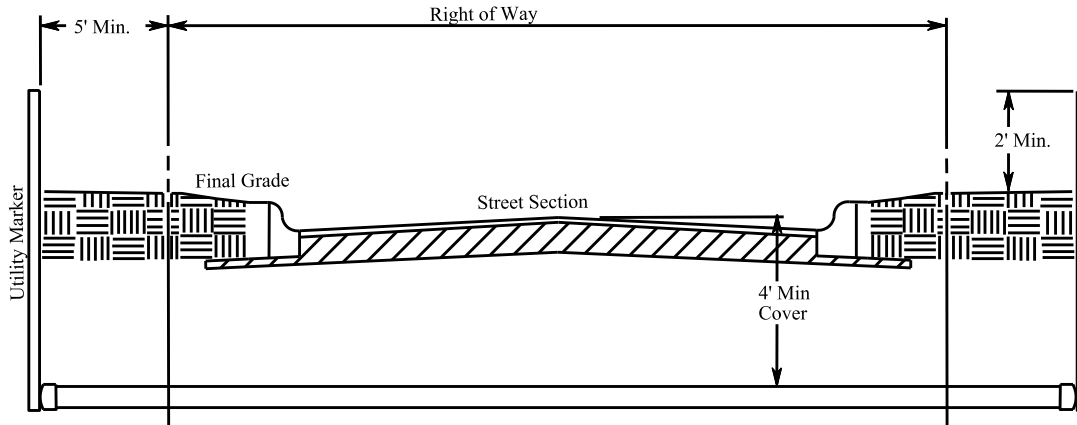
(Bell couplings designed to prevent damage to wire when pulled)

# UNDERGROUND ROAD CROSSING DETAIL

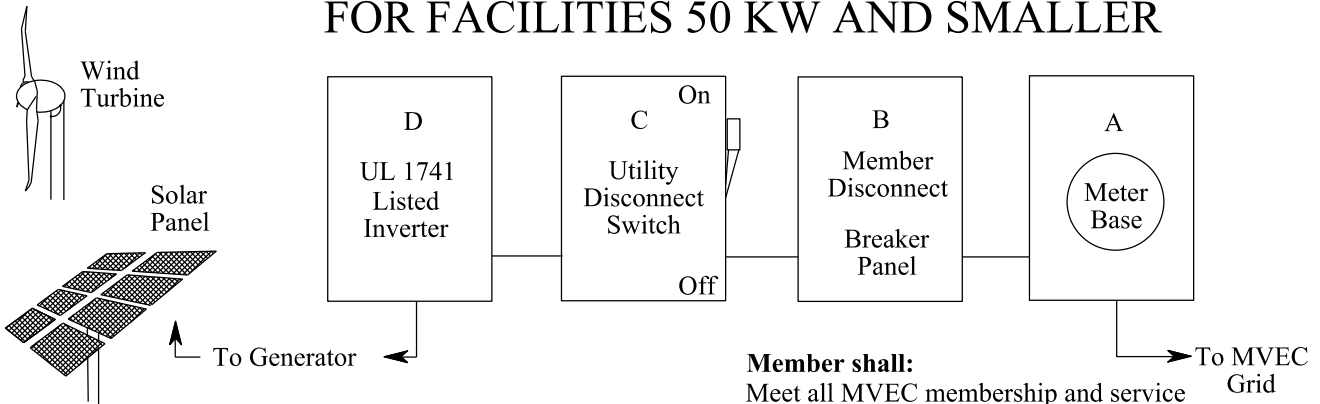


**Developer or contractor:**

Install conduit with pull string in specified street crossing locations. Please extend conduit five feet past right of way with temporary conduit end caps. When water line, gas line and sewer line easements cross electrical easements. Encase conduit in concrete (-1 foot covering). Please extend conduit three feet beyond easements. Please use a wooden 2x4 or other visible utility marker (PVC or steel) to locate conduit crossing ends. The utility markers are a minimum of two feet above final grade.



# SINGLE "NET METERING" INSTALLATION FOR FACILITIES 50 KW AND SMALLER



**Cooperative shall:**  
Furnish and install meter and service wire.  
Initially test for loss of grid power isolation of generator.  
Furnish and install labels accordingly.

**Note:**  
MVEC "Distribution Generation Procedures & Guidelines Manual for Members" contains additional information, requirements and responsibilities for satisfactory operation of generating systems on MVEC distribution facilities.

**Member shall:**  
Meet all MVEC membership and service requirements.

Meet all requirements for the "Distributed Generation Procedures & Guidelines Manual for Members".

Pay all required MVEC fees for service.

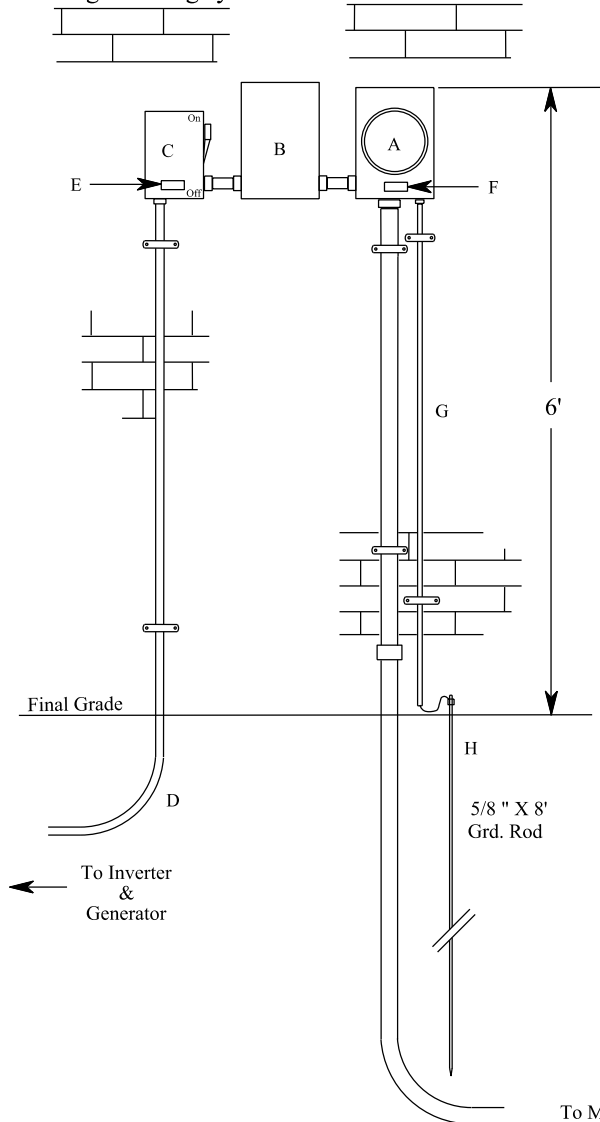
Furnish manufacturer's detailed electrical schematic for MVEC review.

Furnish and install meter base and all other required materials.

Bond meter base and all other devices to visible ground.

Provide a lockable utility disconnect switch. (MVEC may lock utility disconnect switch in the open position when necessary. Member shall not remove lock without permission from MVEC).

**Note:**  
Commercial meter base to be furnished by MVEC and installed by member.



**A.** Meter base (see page 61)

**B.** Member disconnect breaker panel.

**C.** Utility disconnect switch (lockable - with fuses) located 1'-3' from meter.

**D.** Underwriter Laboratories, Inc. 1741 listed inverter.

**E.** Yellow label that reads "Utility Disconnect Switch Alternate Power Source". MVEC will provide and install.

**F.** Yellow label that reads "Caution Alternate Power Source". MVEC will provide and install.

**G.** Non metallic conduit or metallic conduit with both ends bonded to ground; No. 6 copper ground wire (NEC-250-92-B).

**H.** Approved grounding electrode: 5/8" x 8' copper weld ground rod.

