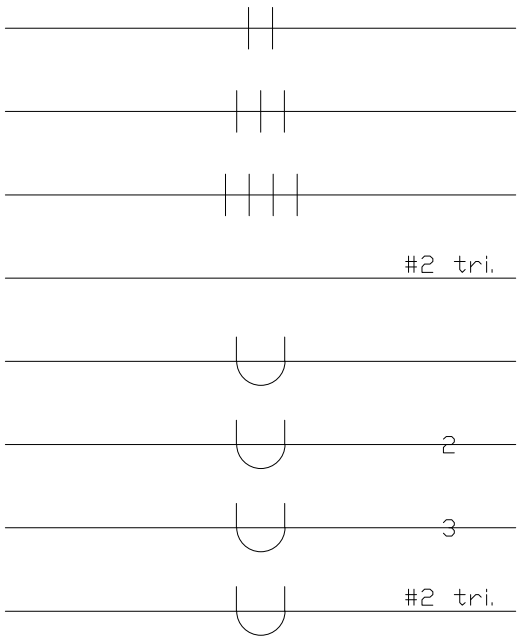
Forked Deer
Electric Cooperative Inc.

SPECIFICATIONS AND DRAWINGS
UNDERGROUND
ELECTRIC DISTRIBUTION

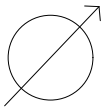
FORKED DEER ELECTRIC CO-OP
HALLS, TN
JOB NO: 81738
REVISED: SEPTEMBER 2018

Allen&Hoshall
engineers-architects-surveyors
1661 International Drive, Suite 100, Memphis, TN 38120

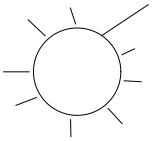


Transformer

Regulator



Yard Light

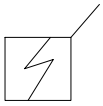


Solid Blade disconnect

Pad Mount Transformer

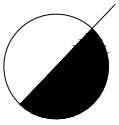
Fuse

Lightning Arrestor



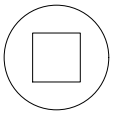
Gang Operated Switch

Recloser



Capacitors

UG Secondary pedestal

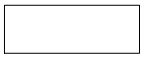


House

Sectionalizer

UG Primary junction box

Trailer



SYMBOLS

Sept. – 18

FDEC

Common Underground Conductors

Primary

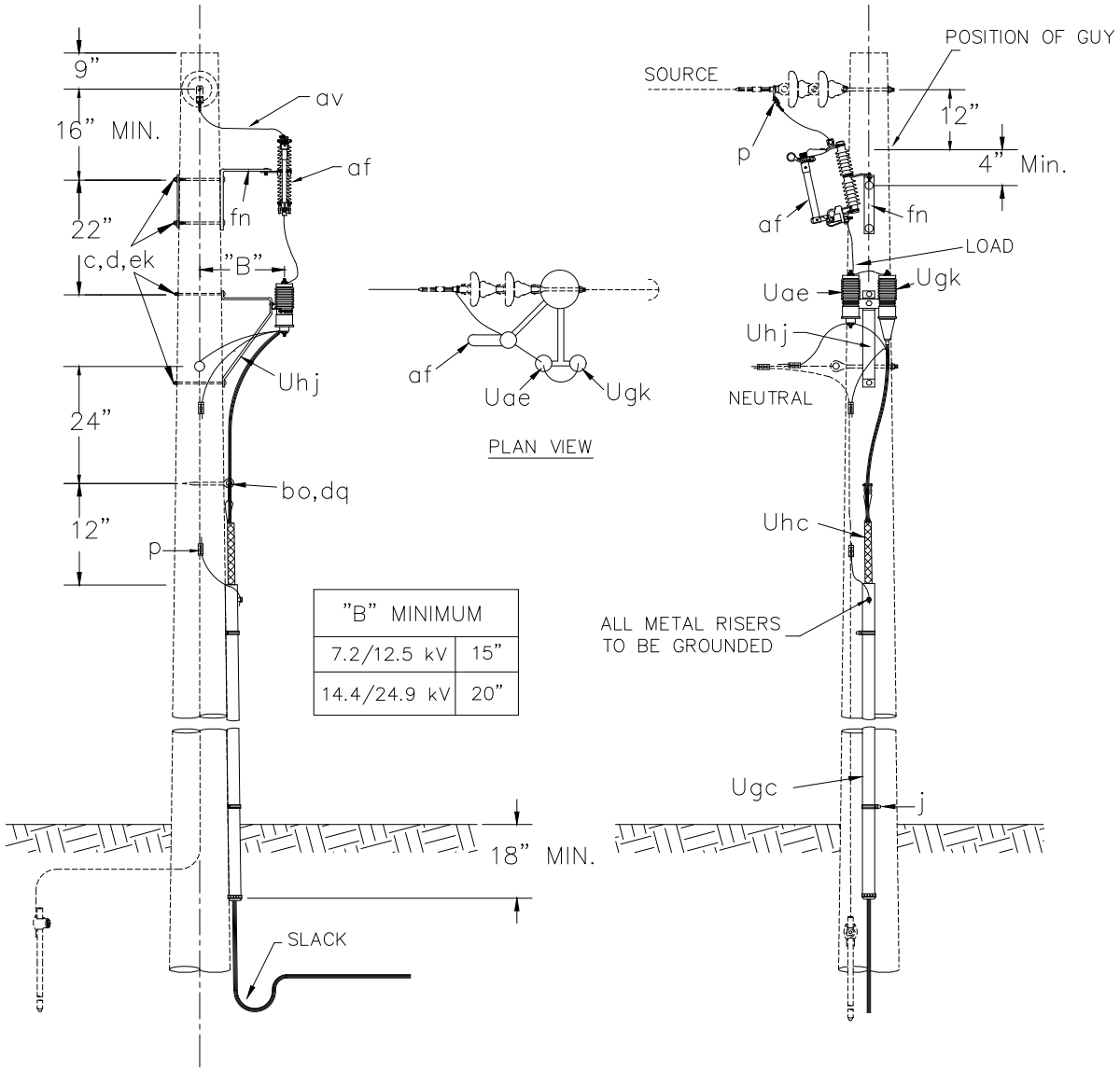
Catalog Number	Conductor Size AWG/kcmil	Nominal Dia. Over Insulation Ins.(mils)	Nominal Dia. Over Insulation Screen Ins.(mils)	Copper Neutral No. x Awg (1)	Nominal O.D. Ins.(mils)	Aprox. Net Weight lbs./1000'	Aprox. Ship Weight lbs./1000'	90°C Ampacity		105°C Ampacity	
								Direct Burial	In Ducts	Direct Burial	In Ducts
Aluminum - Conductor - Full Neutral - Okoguard - 100% Insulation Level											
161-23-2072	1/0 (19x)	0.75(750)	0.83(830)	16 x 14	1.06(1060)	667	725	220	160	235	175
1 inch = 1000 mils											

Secondary

Code Word	Phase Conductor			Neutral			Diameter Ins.(mils)		Weight Per 1000 feet (lbs.)	Allowable Ampacities+	
	Size (AWG)	Strand-ind	Insul. Thick. Ins.(mils)	Size (AWG)	Strand-ing	Insul. Thick. Ins.(mils)	Single Phase Cond.	Complete Cable		Direct Burial	In Ducts
Triplexed With Yellow Extruded Stripe Neutral.											
Brenau	1/0	9	0.080(80)	2	7	0.060(60)	0.512(512)	1.106(1106)	387	215	160
Sweetbriar	4/0	18	0.080(80)	2/0	11	0.080(80)	0.658(658)	1.421(1421)	709	315	240
Quadruplex With Yellow Extruded Stripe Neutral.											
Dyke	2	7	0.060(60)	4	7	0.060(60)	0.403(403)	0.973(973)	342	155	115
Notre Dame	1/0	9	0.080(80)	2	7	0.060(60)	0.512(512)	1.236(1236)	534	200	150
Wake Forest	4/0	18	0.080(80)	2/0	11	0.080(80)	0.658(658)	1.588(1588)	974	290	225

+ Ampacity: 90°C conductor temperature, 20°C ambient, RHO 90, 100% load factor for three conductor triplex with neutral carrying only unbalanced load. Technical data for cable with solid black neutral is identical to yellow extruded stripe data except for "YES" suffix to code word. Also available in paraleled construction. For NEC Aplication, use NEC Table 310.16 Ampacities.

1 mil = 0.001 inches



"B" MINIMUM	
7.2/12.5 kV	15"
14.4/24.9 kV	20"

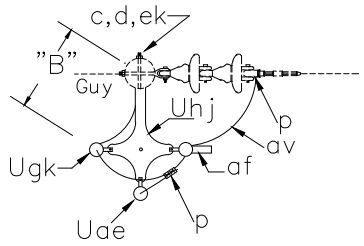
ITEM	QTY.	MATERIAL
c	4	Bolt, machine, 5/8" x required length.
d	4	Washer, square 2 1/4".
j		Screws, lag 1/2" X 4" as required.
p		Connectors, as required.
af	1	Fuse link.
af	1	Cutout
av		Jumpers, as required.
bo	1	Anchor, shackle.Do not use if drive
		hook is used.
dq	1	Eye screw, elliptical or drive hook.
ek	4	Locknuts
fn	1	Bracket, cutout extension.
Uae	1*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	1	Cable termination.
Uhc	1	Cable support.
Uhj	1	Bracket combination.

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

OVERHEAD SOURCE SINGLE PHASE CABLE DEADEND TERMINAL POLE

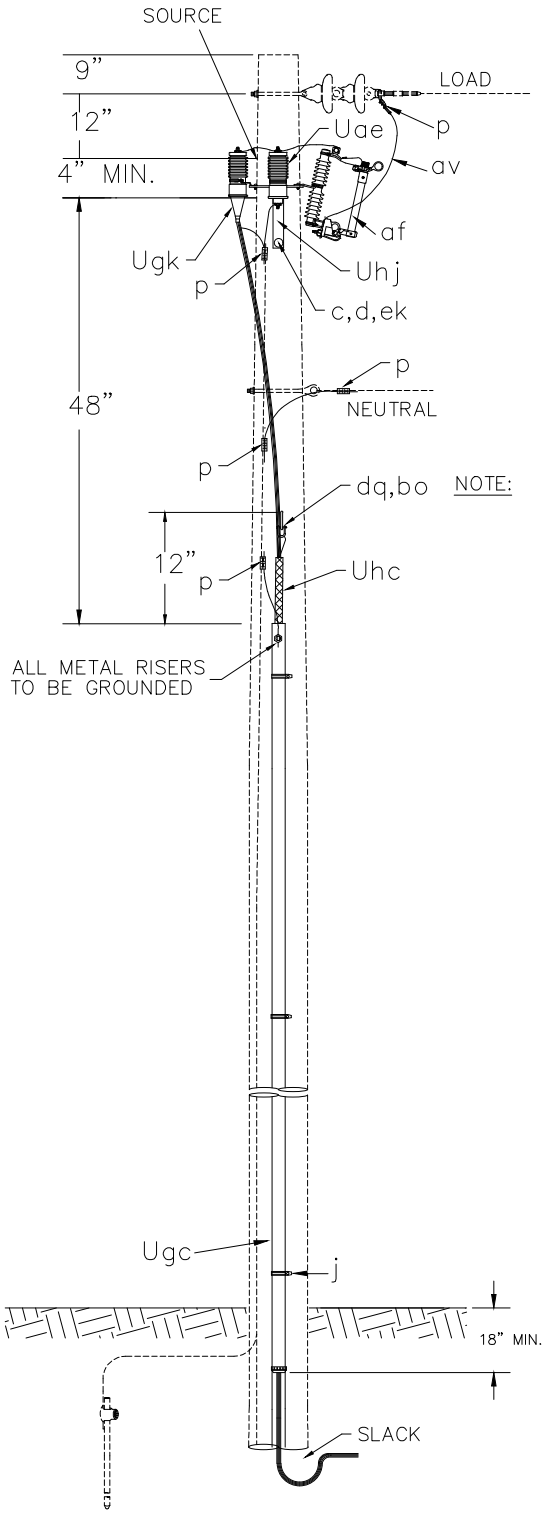
Sept. – 18 FDEC	1 – PHASE PRIMARY 12.47/7.2 kV	UA1



PLAN VIEW

"B" MINIMUM	
7.2/12.5 kV	15"
14.4/24.9 kV	20"

MAY USE 2" SWINGING CLEVIS (ITEM s) INSTEAD OF ANCHOR SHACKLE.



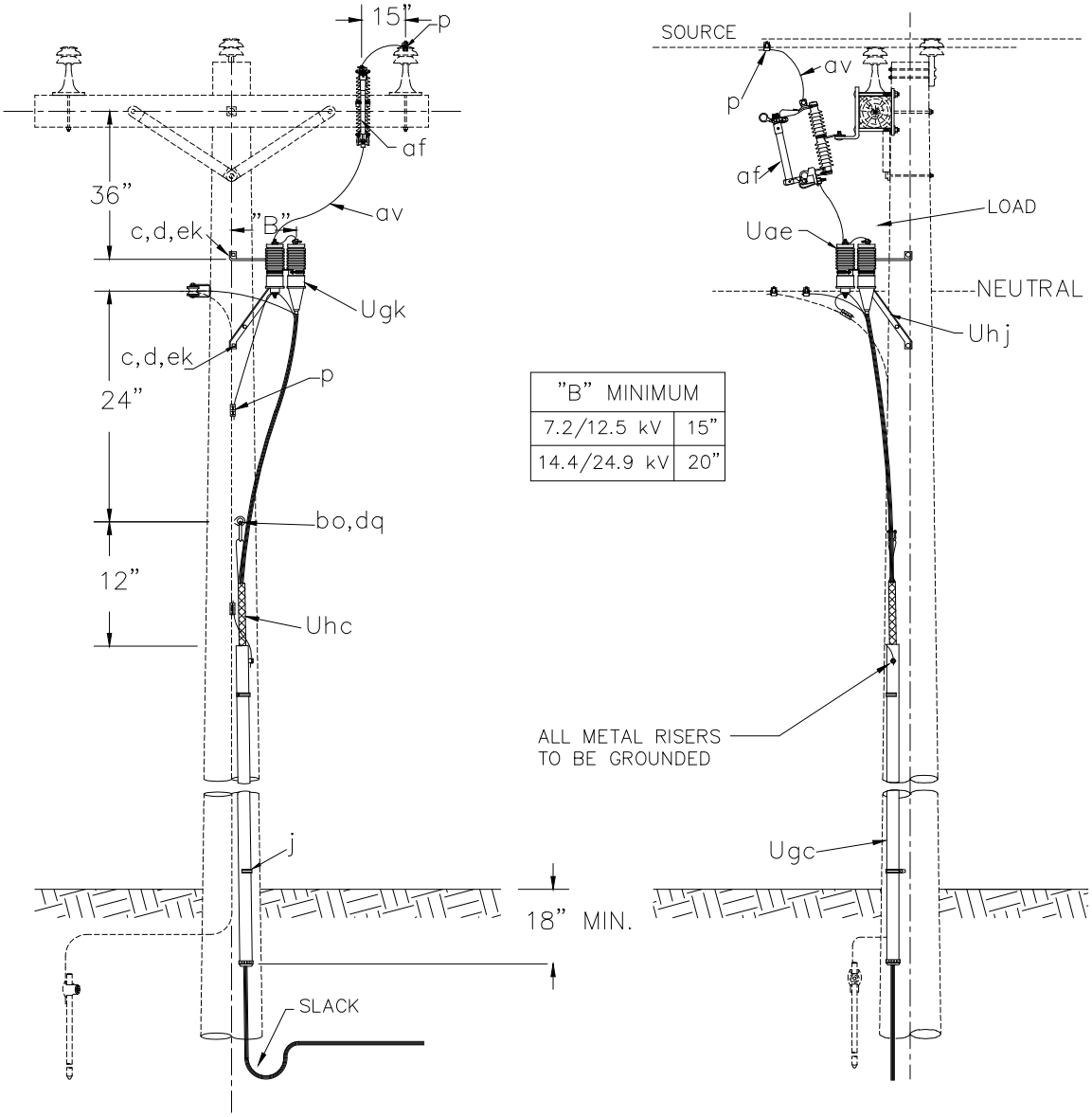
NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

ITEM	QTY.	MATERIAL
c	2	Bolt, machine, 5/8" x required length.
d	2	Washer, square 2 1/4".
p		Connectors, as required.
j		Screw, lag, 1/2" x 4", as required.
af	1	Fuse link.
af	1	Cutout
av		Jumpers, as required.
bo	1	Anchor, shackle.Do not use if drive
		hook is used.
dq	1	Eye screw, elliptical or drive hook.
ek	2	Locknuts, as required.
Uae	1*	Surge arrester
Ugc		Cable Riser Shield, length as required
Ugk	1	Cable termination.
Uhc	1	Cable support.
Uhj	1	Equipment support bracket.

UNDERGROUND SOURCE SINGLE PHASE CABLE DEADEND TERMINAL POLE

Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UA2
FDEC		



"B" MINIMUM	
7.2/12.5 kV	15"
14.4/24.9 kV	20"

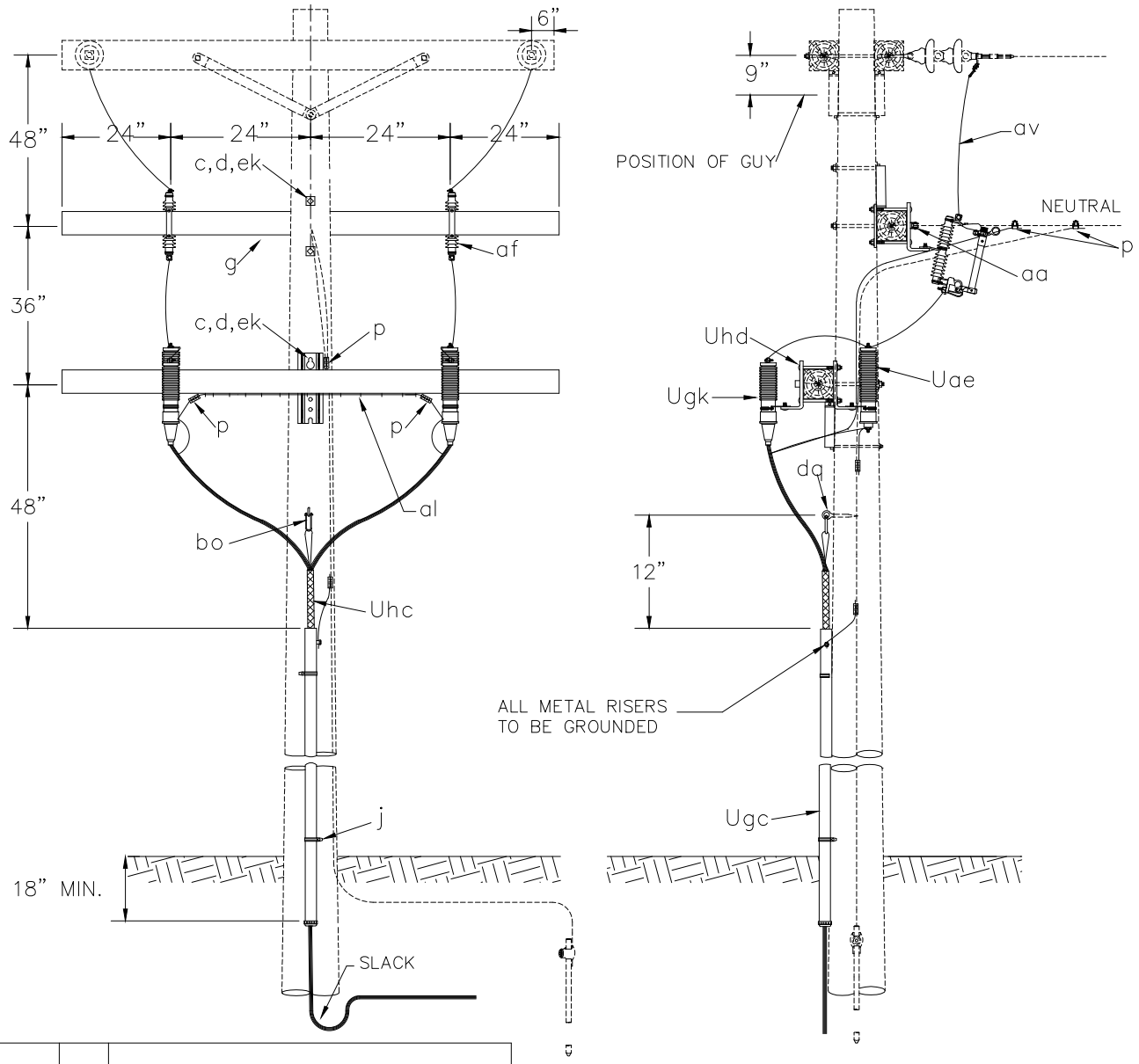
ITEM	QTY.	MATERIAL
c	2	Bolt, machine, 5/8" x required length.
d	2	Washer, square 2 1/4".
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
af	1	Fuse link.
af	1	Cutout
av		Jumpers, as required.
bo	1	Anchor, shackle.Do not use if drive
		hook is used.
dq	1	Eye screw, elliptical or drive hook.
ek	2	Locknuts
Uae	1*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	1	Cable termination.
Uhc	1	Cable support.
Uhj	1	Bracket combination.

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

SINGLE PHASE CABLE TANGENT TERMINAL POLE

Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UA3
FDEC		



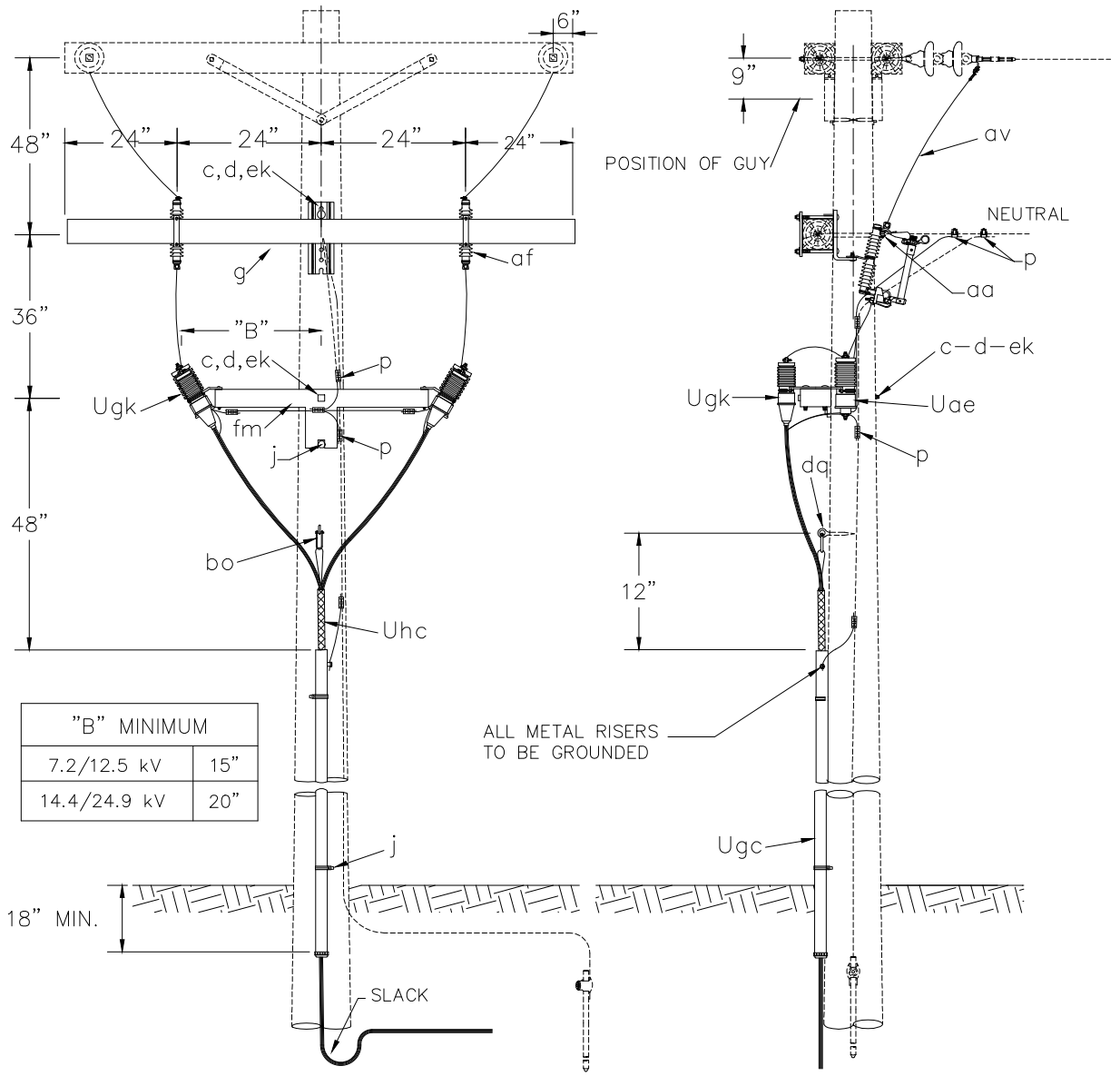
ITEM	QTY.	MATERIAL
c	4	Bolt, machine, 5/8" x required length.
d	4	Washer, square 2 1/4".
g	2	Crossarm, fiberglass, 8'
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
aa	1	Eyenuts, 5/8"
af	2	Cutout
al		Staples, as required.
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek	4	Locknuts, as required.
Uae	2*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	2	Cable termination.
Uhc	2	Cable support.
Uhd	2	Crossarm mounting bracket.

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISERS.

VEE-PHASE CABLE TERMINAL POLE WITH CUTOUTS AND CROSSARM MOUNTING ARRESTERS

Sept. – 18	2 – PHASE PRIMARY 12.47/7.2 kV	UB1
FDEC		



"B" MINIMUM	
7.2/12.5 kV	15"
14.4/24.9 kV	20"

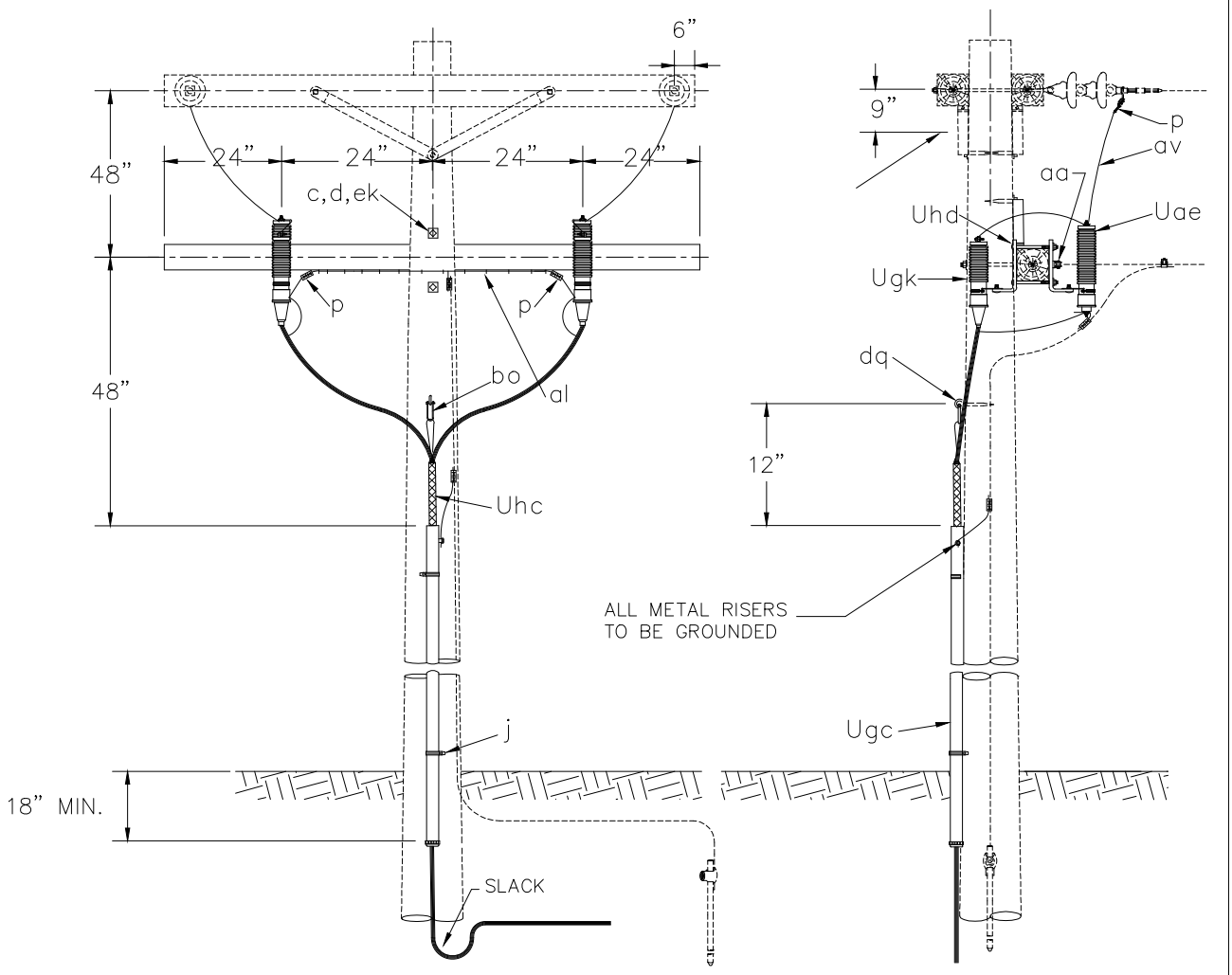
ITEM	QTY.	MATERIAL
c	3	Bolt, machine, 5/8" x required length.
d	3	Washer, square 2 1/4".
g	1	Crossarm, fiberglass, 8'
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
aa	1	Eyenuts, 5/8"
af	2	Cutout
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek	3	Locknuts, as required.
fm	1	Mounting bracket.
Uae	2*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	2	Cable termination.
Uhc	2	Cable support.

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

VEE – PHASE CABLE TERMINAL POLE WITH CUTOUTS AND BRACKET MOUNTING ARRESTERS

Sept. – 18	2 – PHASE PRIMARY 12.47/7.2 kV	UB2
FDEC		



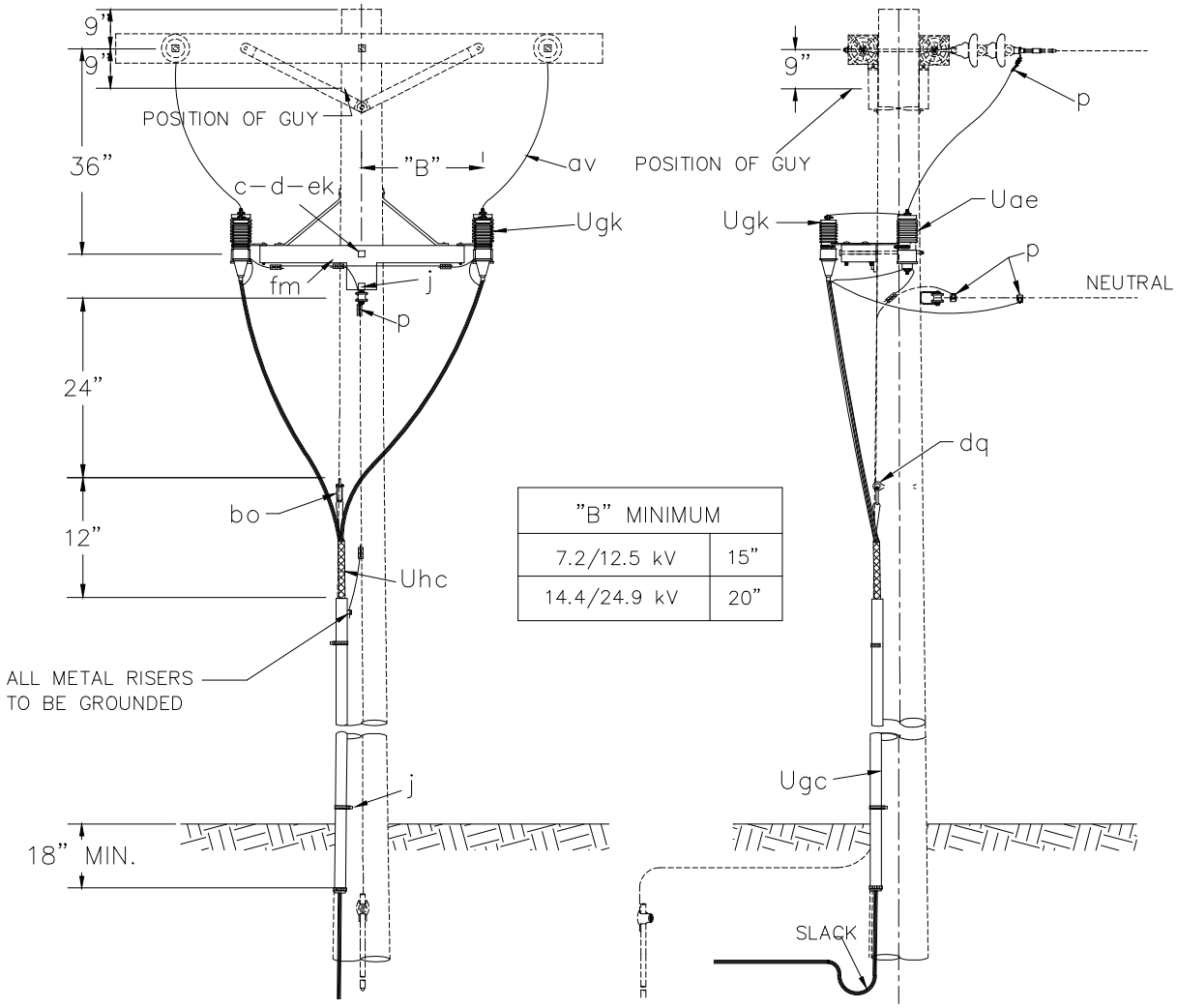
ITEM	QTY.	MATERIAL
c	2	Bolt, machine, 5/8" x required length.
d	2	Washer, square 2 1/4".
g	1	Crossarm, fiberglass, 8'
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
aa	1	Nut, eye, 5/8"
al		Staples, as required.
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek	2	Locknuts, as required.
Uae	2*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	2	Cable termination.
Uhc	2	Cable support.
Uhd	2	Crossarm mounting bracket.

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

VEE – PHASE CABLE TERMINAL POLE WITH CUTOUTS AND CROSSARM MOUNTING ARRESTERS

Sept. – 18	2 – PHASE PRIMARY 12.47/7.2 kV	UB3
FDEC		



"B" MINIMUM	
7.2/12.5 kV	15"
14.4/24.9 kV	20"

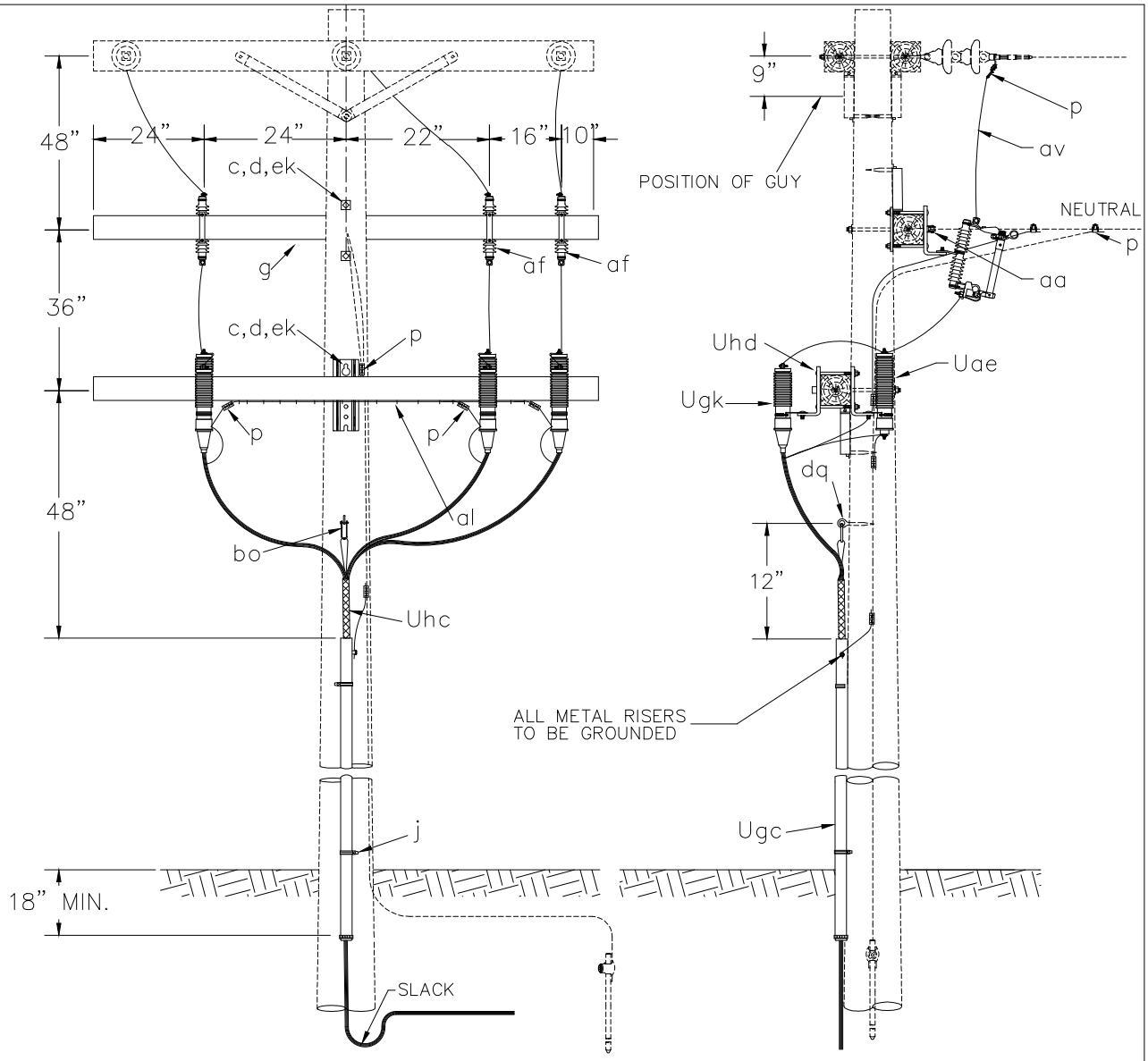
ITEM	QTY.	MATERIAL
c	1	Bolt, machine, 5/8" x required length.
d	1	Washer, square 2 1/4".
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek		Locknuts, as required.
fm	1	Mounting bracket.
Uae	2*	Surge arrester
Ugc		Cable riser shield. Length as required.
Ugk	2	Cable termination.
Uhc	2	Cable support.

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

VEE – PHASE CABLE TERMINAL POLE WITH CUTOUT, WITH BRACKET MOUNTING ARRESTERS

Sept. – 18	2 – PHASE PRIMARY 12.47/7.2 kV	UB4
FDEC		



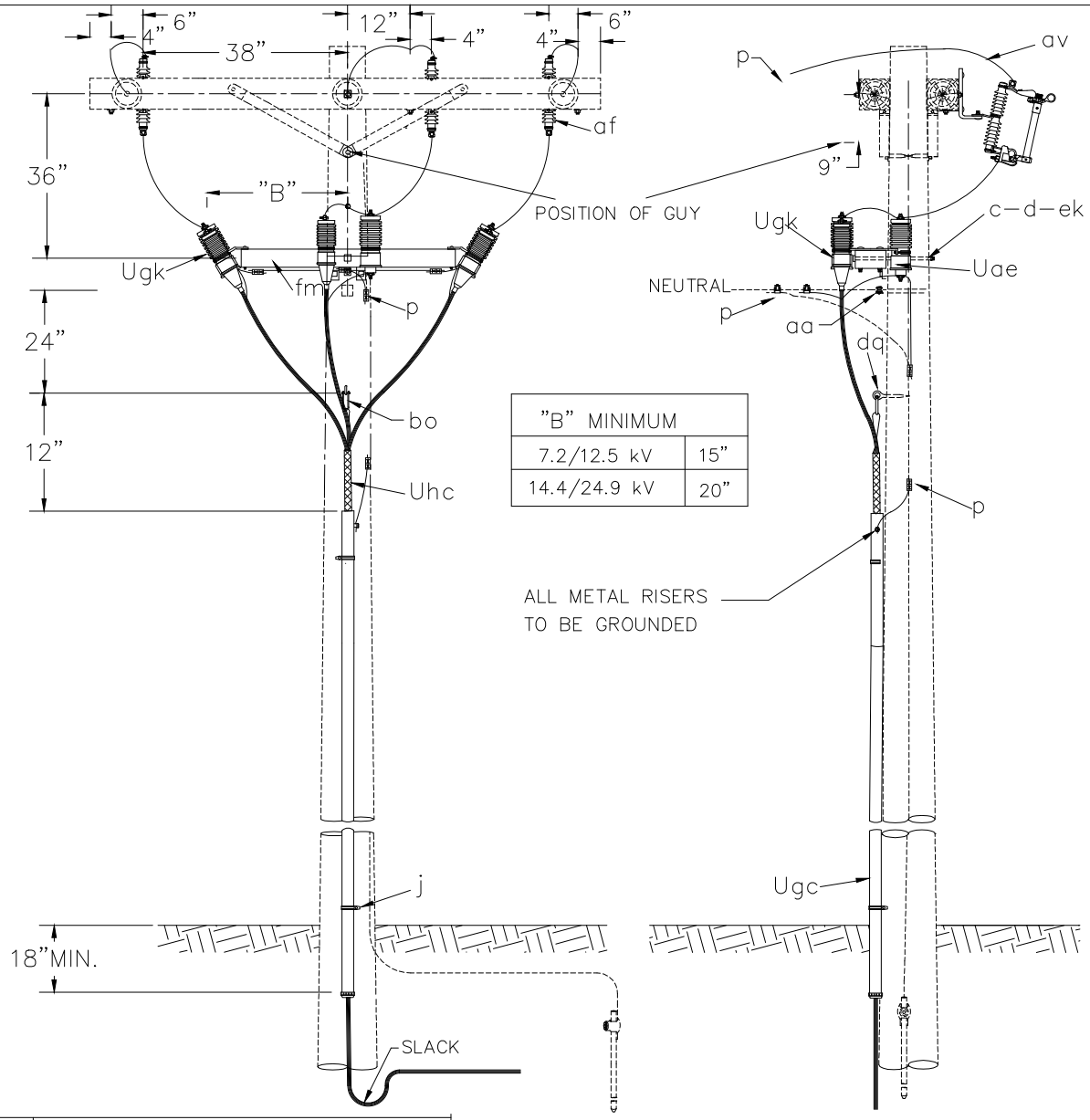
ITEM	QTY.	MATERIAL
c	4	Bolt, machine, 5/8" x required length.
d	4	Washer, square 2 1/4".
g	2	Crossarm, fiberglass, 8'
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
aa	1	Eyenut, 5/8"
af	3	Cutout
al		Staples, as required.
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek	4	Locknuts, as required.
Uae	3*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	3	Cable termination.
Uhc	3	Cable support.
Uhd	2	Crossarm mounting bracket.

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

THREE PHASE CABLE TERMINAL POLE WITH CUTOUTS AND CROSSARM MOUNTING ARRESTERS

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UC1
FDEC		



"B" MINIMUM	
7.2/12.5 kV	15"
14.4/24.9 kV	20"

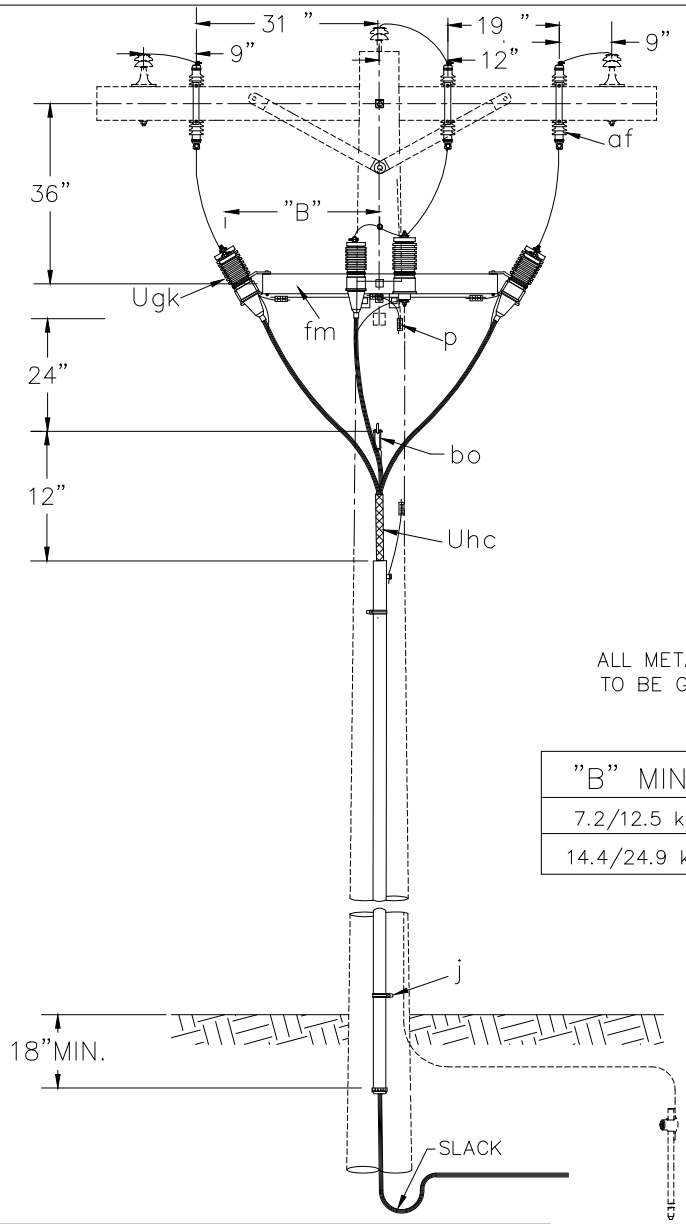
ITEM	QTY.	MATERIAL
a	3	Insulator, pin type
c	1	Bolt, machine, 5/8" x required length.
d	1	Washer, square 2 1/4".
f	3	Pin, crossarm
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
aa	1	Eyenut, 5/8"
af	3	Cutout
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek		Locknuts, as required.
fm	1	Mounting bracket.
Uae	3*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	3	Cable termination.
Uhc	3	Cable support.

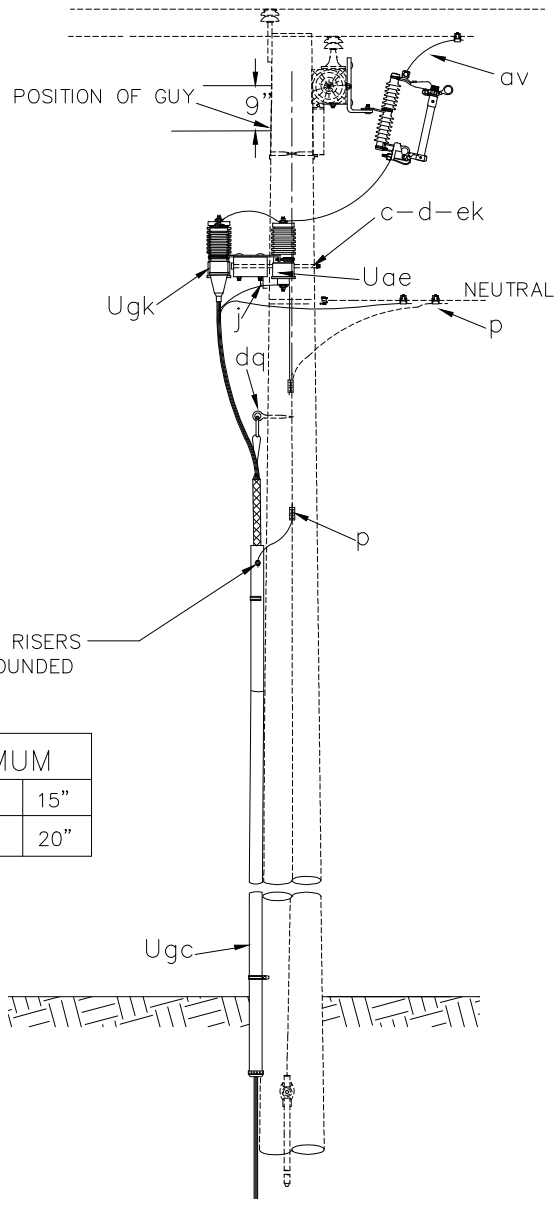
NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

THREE PHASE CABLE DEADEND TERMINAL POLE

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UC2–1
FDEC		





"B" MINIMUM	
7.2/12.5 kV	15"
14.4/24.9 kV	20"

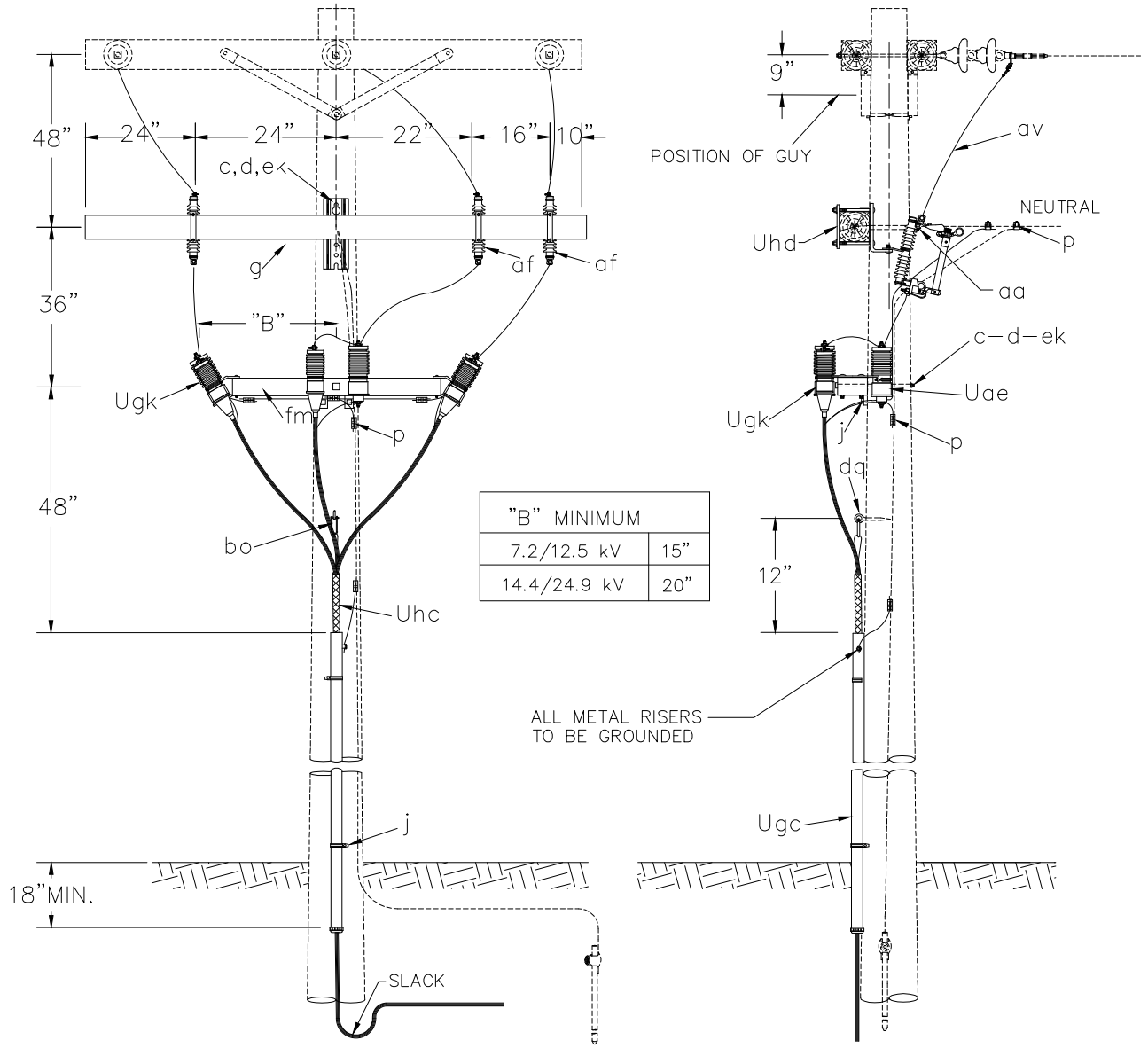
ITEM	QTY.	MATERIAL
c	1	Bolt, machine, 5/8" x required length.
d	1	Washer, square 2 1/4".
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
aa	1	Eyenut, 5/8"
af	3	Cutout
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek		Locknuts, as required.
fm	1	Mounting bracket.
Uae	3*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	3	Cable termination.
Uhc	3	Cable support.

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

THREE PHASE CABLE TANGENT TERMINAL POLE

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UC2–2
FDEC		



"B" MINIMUM	
7.2/12.5 kV	15"
14.4/24.9 kV	20"

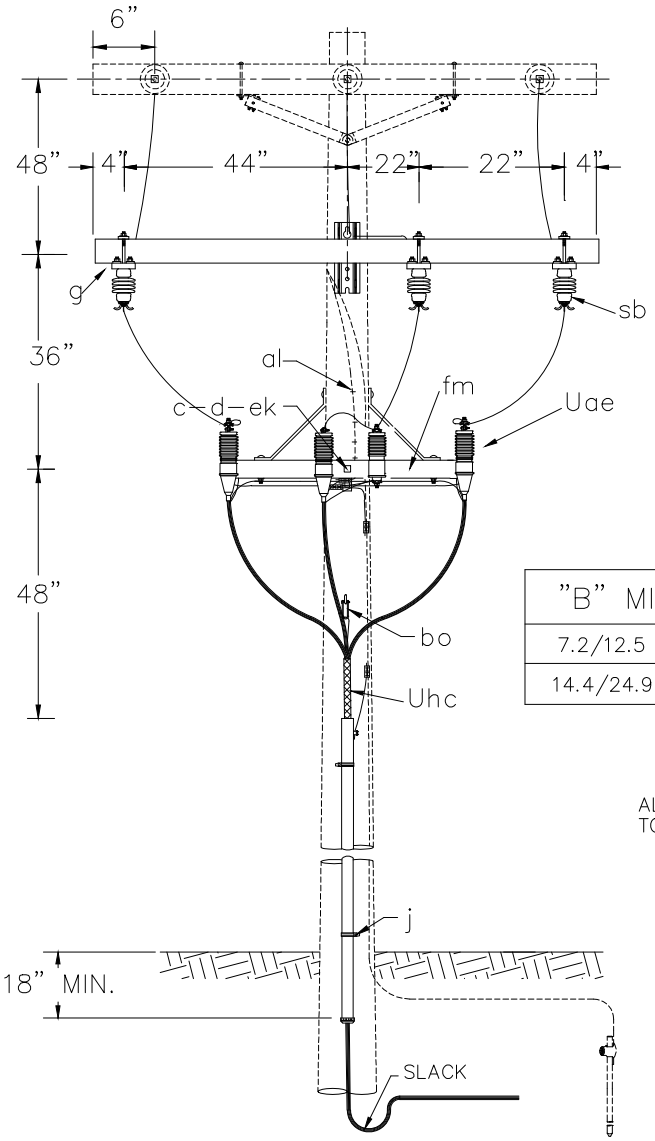
ITEM	QTY.	MATERIAL
c	2	Bolt, machine, 5/8" x required length.
d	2	Washer, square 2 1/4".
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'–0"
i	2	Bolt, carriage, 3/8" x 4 1/2"
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
aa	1	Eyenut, 5/8"
af	3	Cutout
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek	4	Locknuts, as required.
fm	1	Mounting bracket.
Uae	3*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	3	Cable termination.
Uhc	3	Cable support.

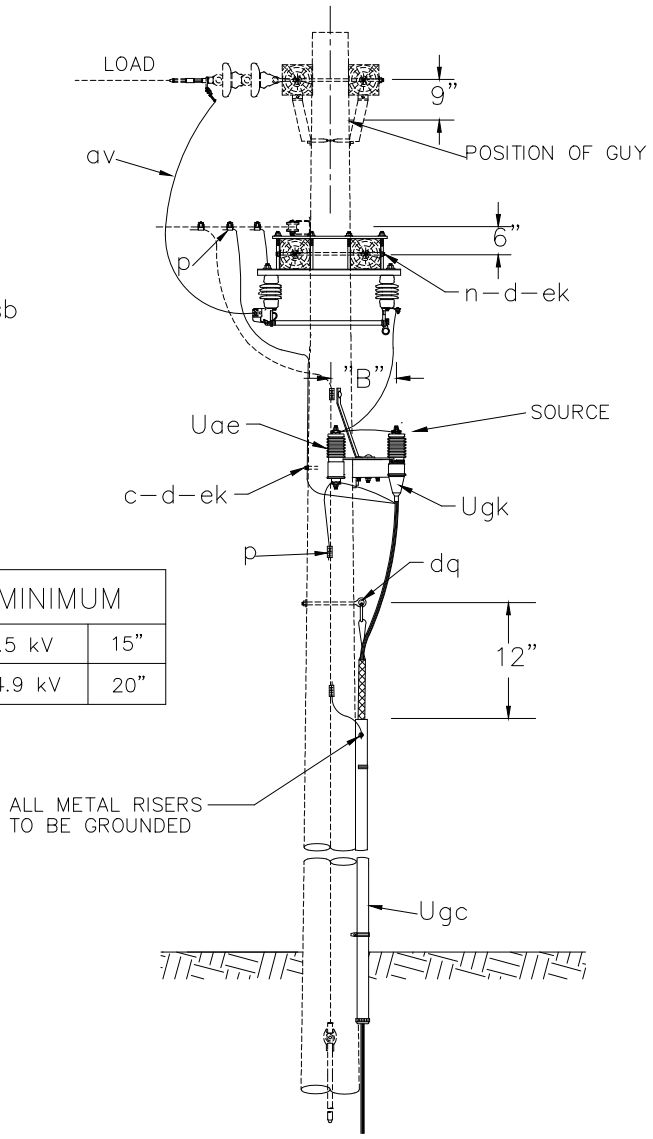
NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

THREE PHASE CABLE TERMINAL POLE WITH CUTOUTS AND BRACKET MOUNTING ARRESTERS

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UC2
FDEC		





"B" MINIMUM	
7.2/12.5 kV	15"
14.4/24.9 kV	20"

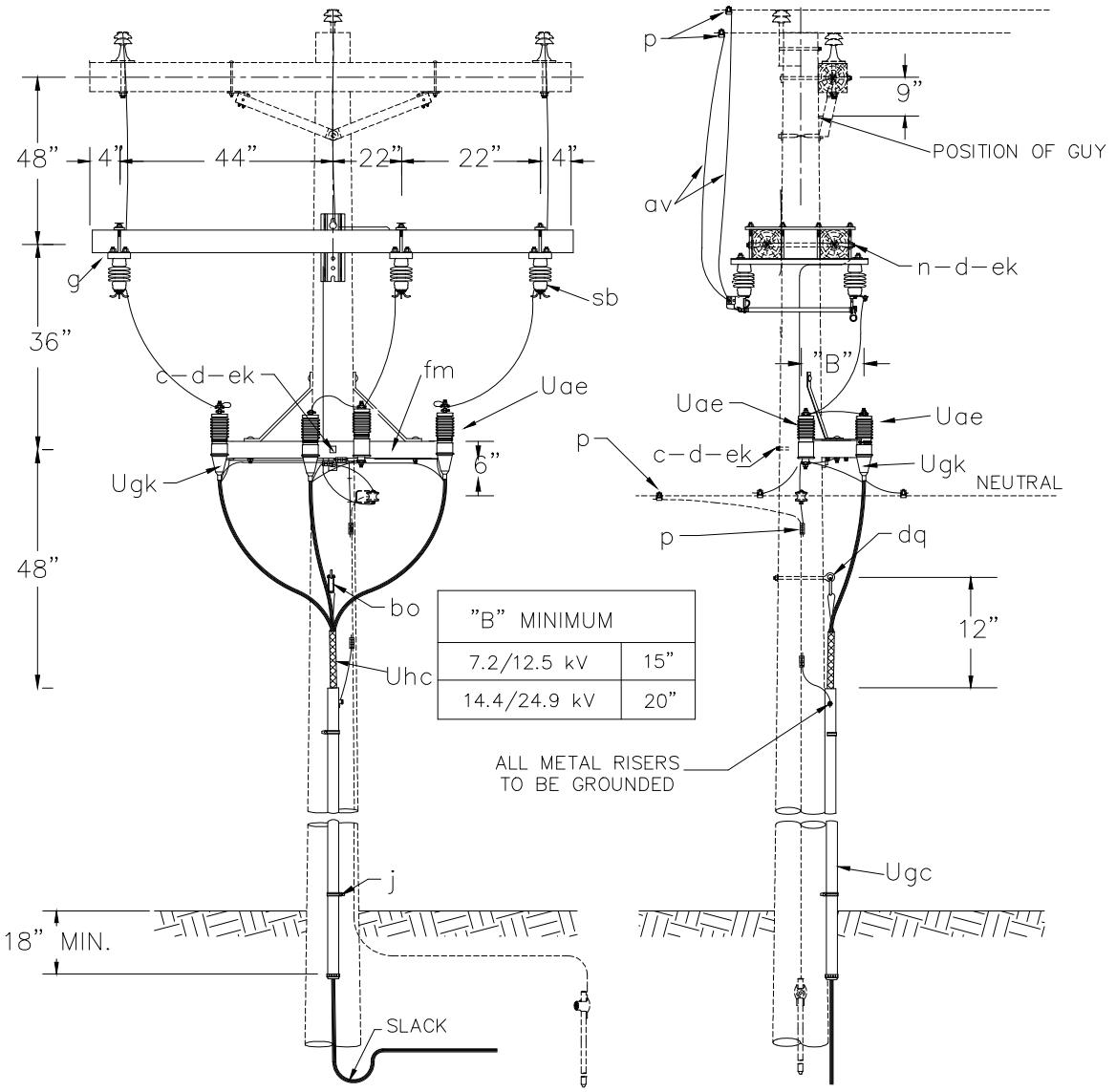
ITEM	QTY.	MATERIAL
c	3	Bolt, machine, 5/8" x as required
d	15	Washer, 2 1/4" square
g	2	Crossarm, fiberglass, 8'
j		Screw, lag 1/2" x 4", as required
n	12	Bolt, double arming, 5/8" x req'd length
p		Connectors, as required.
al		Staples, as required.
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek	16	Locknuts, as required.
fm	1	Bracket, pothead–arrester 3 phase
sb	3	Disconnect, 600 A load break
Uae	3	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	3	Cable termination.
Uhc	3	Grips

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.
4. REVERSE UNDERSLUNG SWITCHES FOR OVERHEAD SOURCE.

THREE PHASE CABLE DEADEND TERMINAL POLE WITH DISCONNECT SWITCHES

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UC5–1
FDEC		



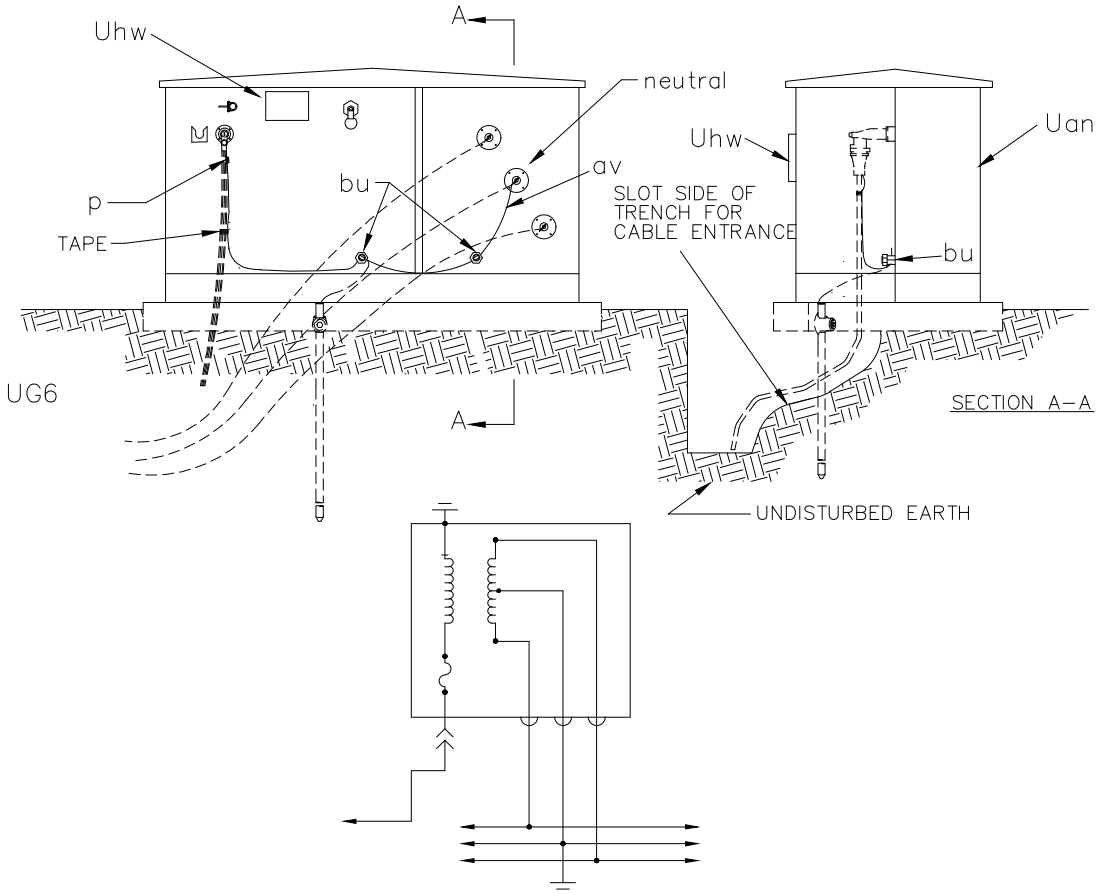
ITEM	QTY.	MATERIAL
c	3	Bolt, machine, 5/8" x as required
d	15	Washer, 2 1/2" square
g	2	Crossarm, fiberglass, 8'
j		Screw, lag 1/2" x 4", as required
n	12	Bolt, double arming, 5/8" x req'd length
p		Connectors, as required.
al		Staples, as required.
av		Jumpers, as required.
bo	1	Anchor, shackle.
dq	1	Eye screw, elliptical or drive hook.
ek		Locknuts, as required.
fm	1	Bracket, pothead–arrester 3 phase
sb	3	Disconnect, 600 A load break
Uae	3	Surge arrester
Ugc		Cable riser shield. Length as required.
Ugk	3	Cable termination.
Uhc	3	Grips

NOTES:

1. TOTAL ARRESTER LEAD LENGTH MUST BE UNDER 3'.
2. NO BENDS PERMITTED WITHIN 6" OF CABLE TERMINAL BASE.
3. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

THREE PHASE CABLE TANGENT TERMINAL POLE WITH DISCONNECT SWITCHES

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UC6–1
FDEC		



WIRING DIAGRAM
UG6

DESIGNATE AS:

TRANSFORMER WITHOUT SECONDARY BREAKERS	TRANSFORMER WITH SECONDARY BREAKERS	
UG6	UG6B	SINGLE TERMINATION TYPE WITH INTERNAL FUSE

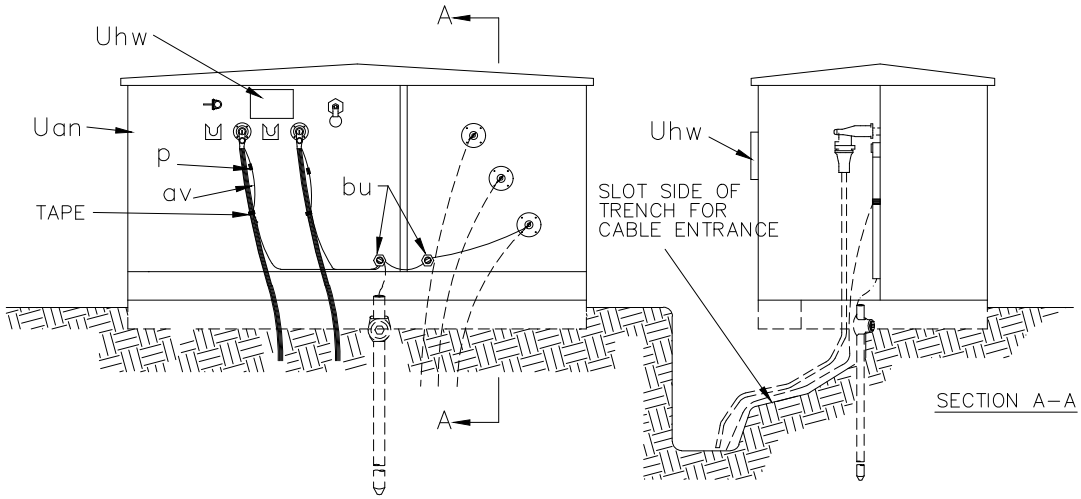
NOTES:

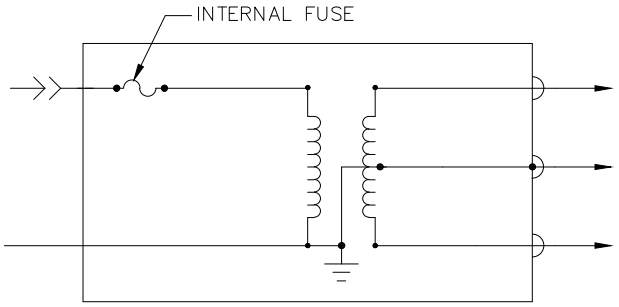
1. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
2. INSTALL WITH UNIT UM48–1 OR OTHER GROUNDING UNIT TO BE SPECIFIED SEPARATELY.
3. SPECIFY PAD OR SLEEVE SEPARATELY.
4. INSTALL "DANGER" SIGN ON TRANSFORMER INSIDE ENCLOSURE. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE.

ITEM	QTY.	MATERIAL
p		Connectors, as required
av		Jumpers, copper as required
bu	2	Connector, equipment ground
Uan	1	Transformer, pad mounted, single primary
		load break bushing and internal fuse
		(UG6 & UG6B).
Uhw	2	Signs, "DANGER" and "WARNING"
		Tape, as required

SINGLE PHASE PAD – MOUNTED TRANSFORMER (RADIAL FEED)

Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UG6, UG6B
FDEC		





WIRING DIAGRAM
UG7

DESIGNATE AS:

TRANSFORMER WITHOUT SECONDARY BREAKERS	TRANSFORMER WITH SECONDARY BREAKERS	
UG7	UG17B	UNIT WITH INTERNAL FUSE

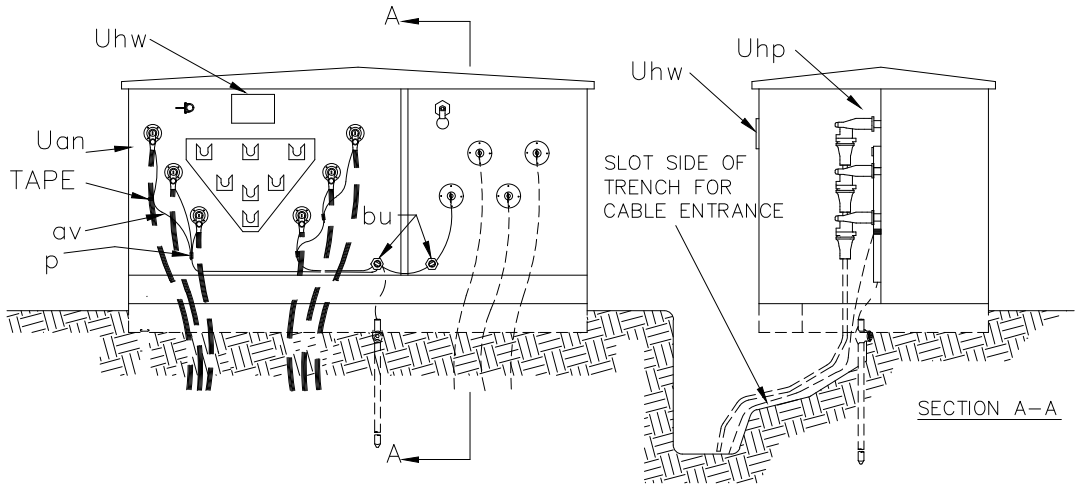
ITEM	QTY.	MATERIAL
p		Connectors, as required
av		Jumpers, copper as required
bu	2	Connector, equipment ground
Uan	1	Transformer, pad mounted, single phase
		with one load break bushing per phase
		and internal fuses (UG7 & UG17B)
Uhw	2	Signs, "DANGER" and "WARNING"
Uhp	1	Elbow Termination
		Ground wire (See Note #3)
		Tape, as required

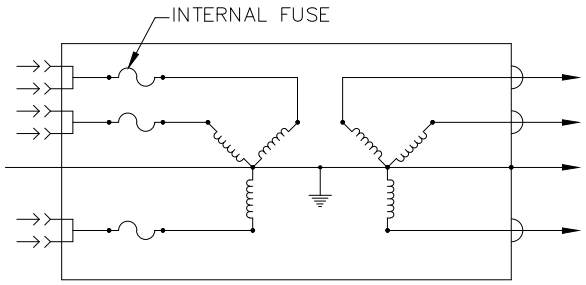
NOTES:

1. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
2. INSTALL WITH UNIT UM48–1 OR OTHER GROUNDING UNIT TO BE SPECIFIED SEPARATELY.
3. SPECIFY PAD OR SLEEVE UNIT SEPARATELY.
4. INSTALL "DANGER" SIGN ON TRANSFORMER AND "WARNING" SIGN ON ENCLOSURE.

SINGLE PHASE PAD MOUNTED TRANSFOMER (LOOP FEED)

Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UG7, UG7B
FDEC		





WIRING DIAGRAM
UG17–2

DESIGNATE AS:

TRANSFORMER WITHOUT SECONDARY BREAKERS	TRANSFORMER WITH SECONDARY BREAKERS	
UG17–2	UG17–2B	UNIT WITH INTERNAL FUSE

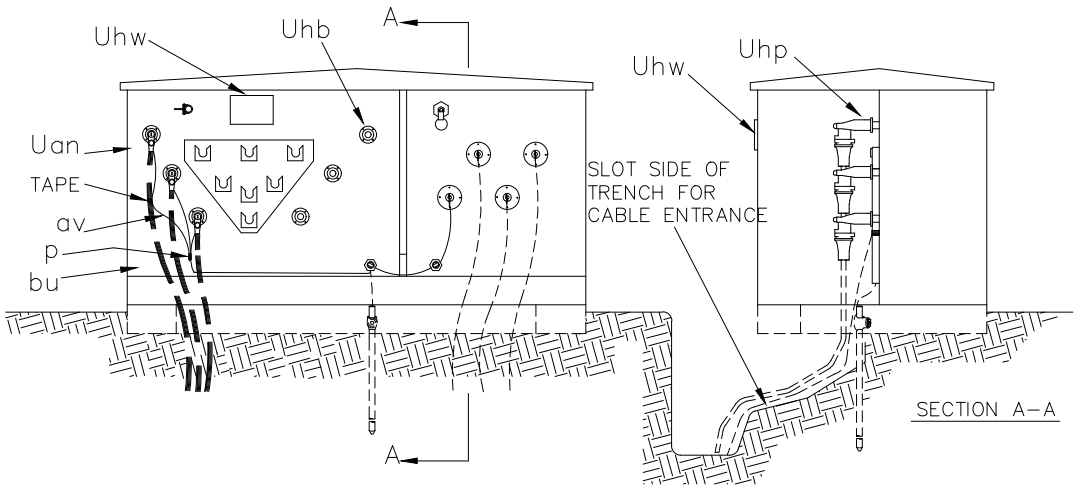
NOTES:

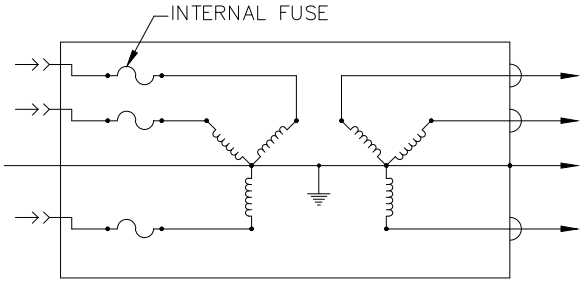
1. ONLY THE WYE–WYE CONNECTION SHOULD BE USED TO AVOID FERRORESONANCE.
2. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
3. INSTALL WITH GROUNDING ASSEMBLY TO BE SPECIFIED.
4. SPECIFY kVA SIZE OF TRANSFORMER.
5. SPECIFY PAD OR SLEEVE UNIT SEPARATELY.
6. INSTALL "DANGER" SIGN ON TRANSFORMER INSIDE ENCLOSURE. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE.

ITEM	QTY.	MATERIAL
p		Connectors, as required
av		Jumpers, copper, as required
bu	2	Connector, equipment ground
Uan	1	Transformer, pad mounted, three phase
		with two load break bushings per phase
		and internal fuse.
Uhw	2	Signs, "DANGER" and "WARNING"
Uhp	6	Elbow termination
		Tape, as required
		Ground wire (See Note #3)

THREE PHASE PAD MOUNTED TRANSFORMER (LOOP FEED)

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UG17 – 2, UG17 – 2B
FDEC		





WIRING DIAGRAM

DESIGNATE AS:

TRANSFORMER WITHOUT SECONDARY BREAKERS	TRANSFORMER WITH SECONDARY BREAKERS	
UG17–3	UG17–3B	UNIT WITH INTERNAL FUSE

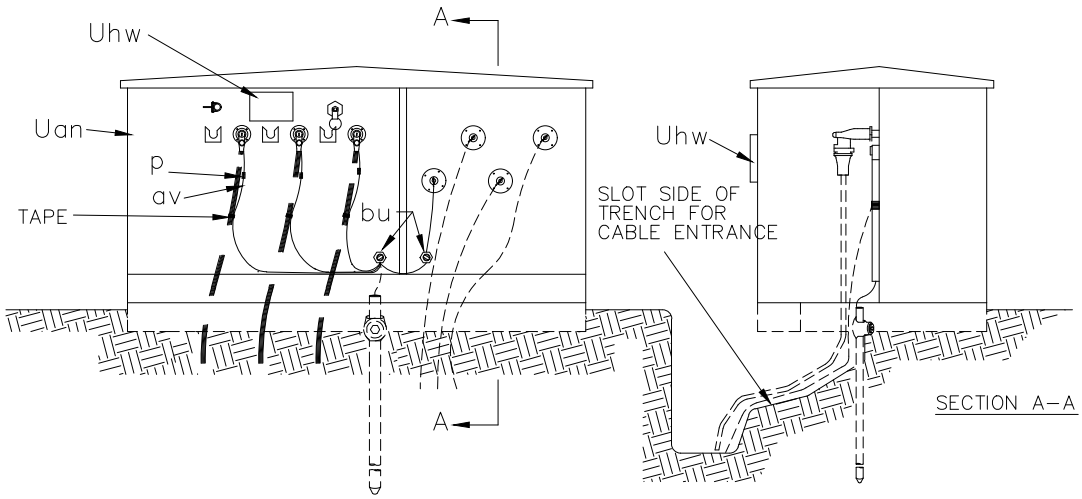
ITEM	QTY.	MATERIAL
p		Connectors, as required
av		Jumpers, copper, as required
bu	2	Connector, equipment ground
Uan	1	Transformer, pad mounted, three phase,
		with two load break bushings per phase
		and internal fuse.
Uhb	3	Insulated covers
Uhw	2	Signs, "DANGER" and "WARNING"
Uhp	3	Elbow termination
		Tape, as required
		Ground wire (See Note #3)

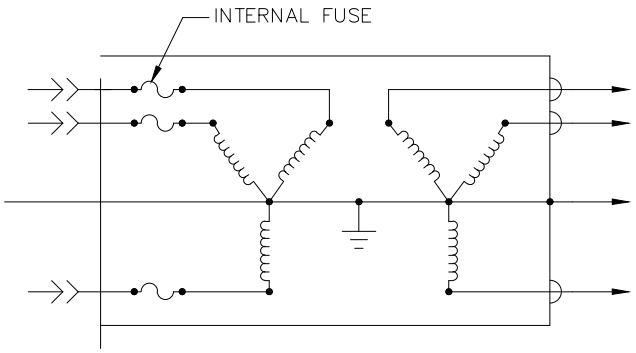
NOTES:

1. ONLY THE WYE–WYE CONNECTION SHOULD BE USED TO AVOID FERRORESONANCE.
2. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
3. INSTALL WITH GROUNDING ASSEMBLY TO BE SPECIFIED SEPARATELY.
4. SPECIFY PAD OR SLEEVE UNIT SEPARATELY.
5. INSTALL "DANGER" SIGN ON TRANSFORMER INSIDE ENCLOSURE. INSTALL "WARNING " SIGN ON OUTSIDE SURFACE OF ENCLOSURE.

THREE PHASE PAD MOUNTED LOOP FEED TRANSFOMRER WITH RADIAL FEED

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UG17 – 3, UG17 – 3B
FDEC		





WIRING DIAGRAM
UG 17

DESIGNATE AS:

TRANSFORMER WITHOUT SECONDARY BREAKERS	TRANSFORMER WITH SECONDARY BREAKERS	
UG17	UG17B	UNIT WITH INTERNAL FUSE

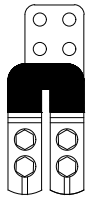
NOTES:

1. ONLY THE WYE–WYE CONNECTION SHOULD BE USED TO MINIMIZE FERRO–RESONANCE.
2. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND. TRAIN CABLES AS SHOWN.
3. INSTALL WITH UNIT UM48–1 OR OTHER GROUNDING UNIT TO BE SPECIFIED SEPARATELY.
4. SPECIFY PAD OR SLEEVE UNIT SEPARATELY.
5. INSTALL "DANGER" SIGN ON TRANSFORMER INSIDE ENCLOSURE. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE.
6. THREE PHASE SWITCHING OF PRIMARY SHOULD BE INSTALLED WHERE FERRORESONANCE MAY OCCUR.

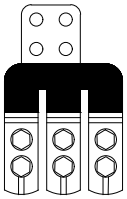
ITEM	QTY.	MATERIAL
p		Connectors, as required
av		Jumpers, copper as required
bu	2	Connector, equipment ground
Uan	1	Transformer, pad mounted, three phase
		with one load break bushing per phase
		and internal fuses (UG17 & UG17B)
Uhw	2	Signs, "DANGER" and "WARNING"
Uhp	3	Elbow Termination
		Ground wire (See Note #3)
		Tape, as required

THREE PHASE PAD MOUNTED TRANSFOMER (RADIAL FEED)

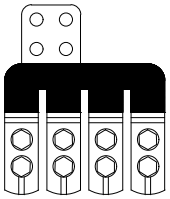
Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UG17, UG17B
FDEC		



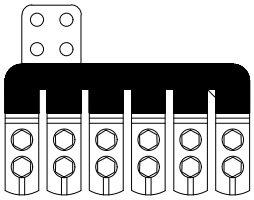
UJ1−2



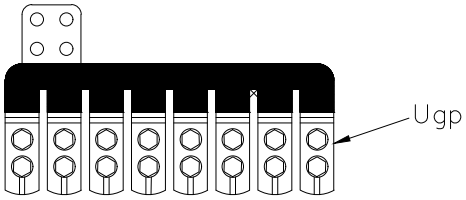
UJ1−3



UJ1−4

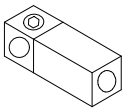


UJ1−6

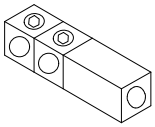


UJ1−8

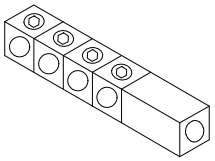
CONNECTOR BLOCKS



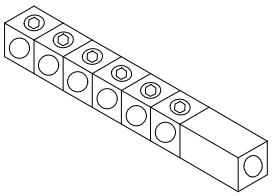
UJ2−1



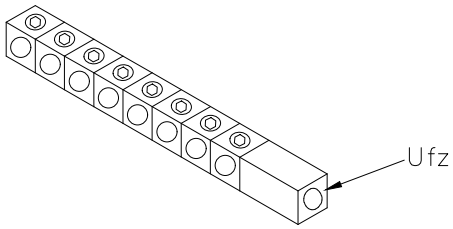
UJ2−2



UJ2−4



UJ2−6



UJ2−8

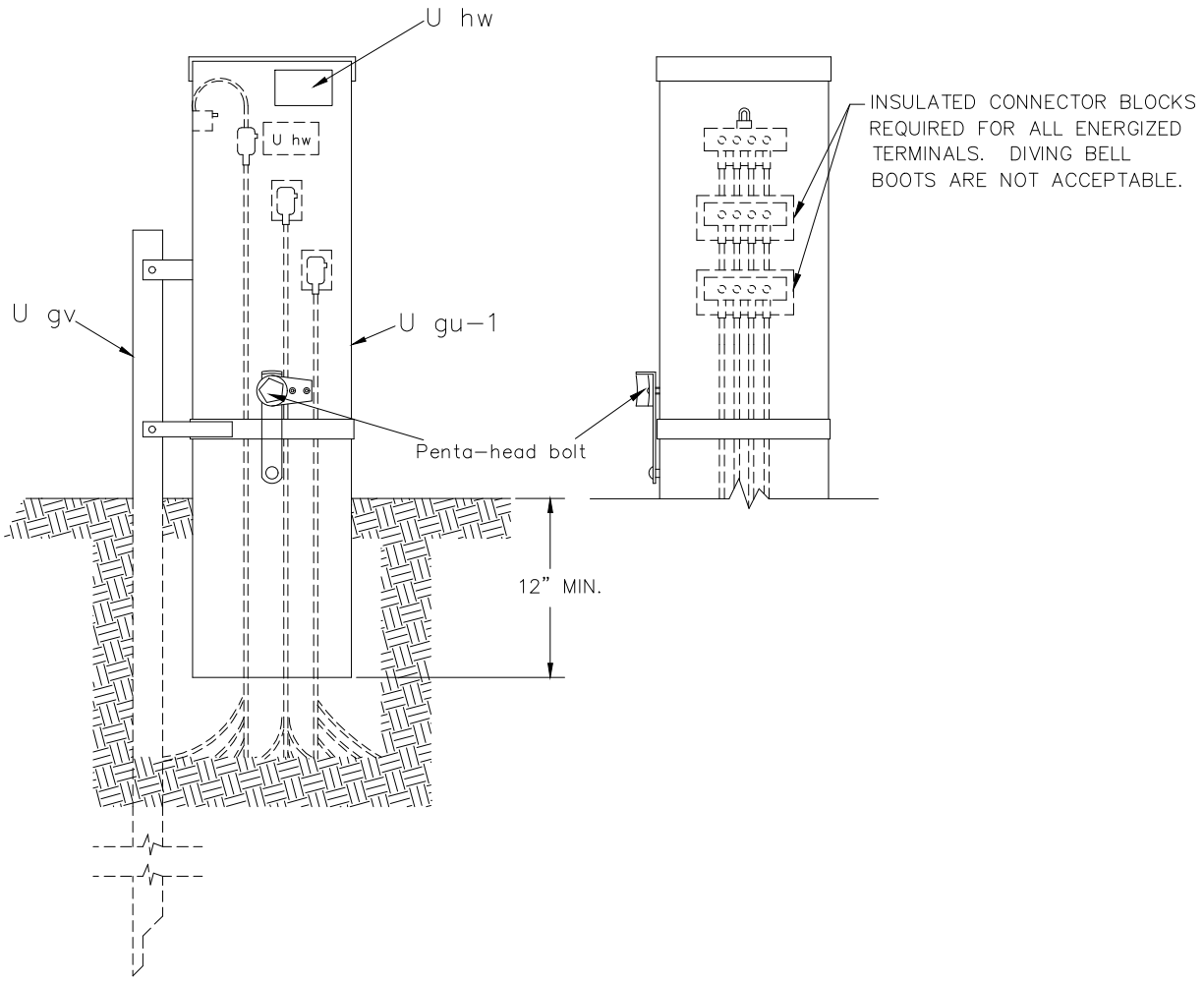
TRANSFORMER CONNECTOR BLOCKS

NOTE: Insulated covers are not shown.

ITEM	QTY.	MATERIAL
Ufz		Transformer connector blocks,
		as required
Ugp		Connector blocks, as required

SECONDARY CONNECTOR BLOCKS

Sept. − 18		UJ1, UJ2
FDEC		



NOTES:

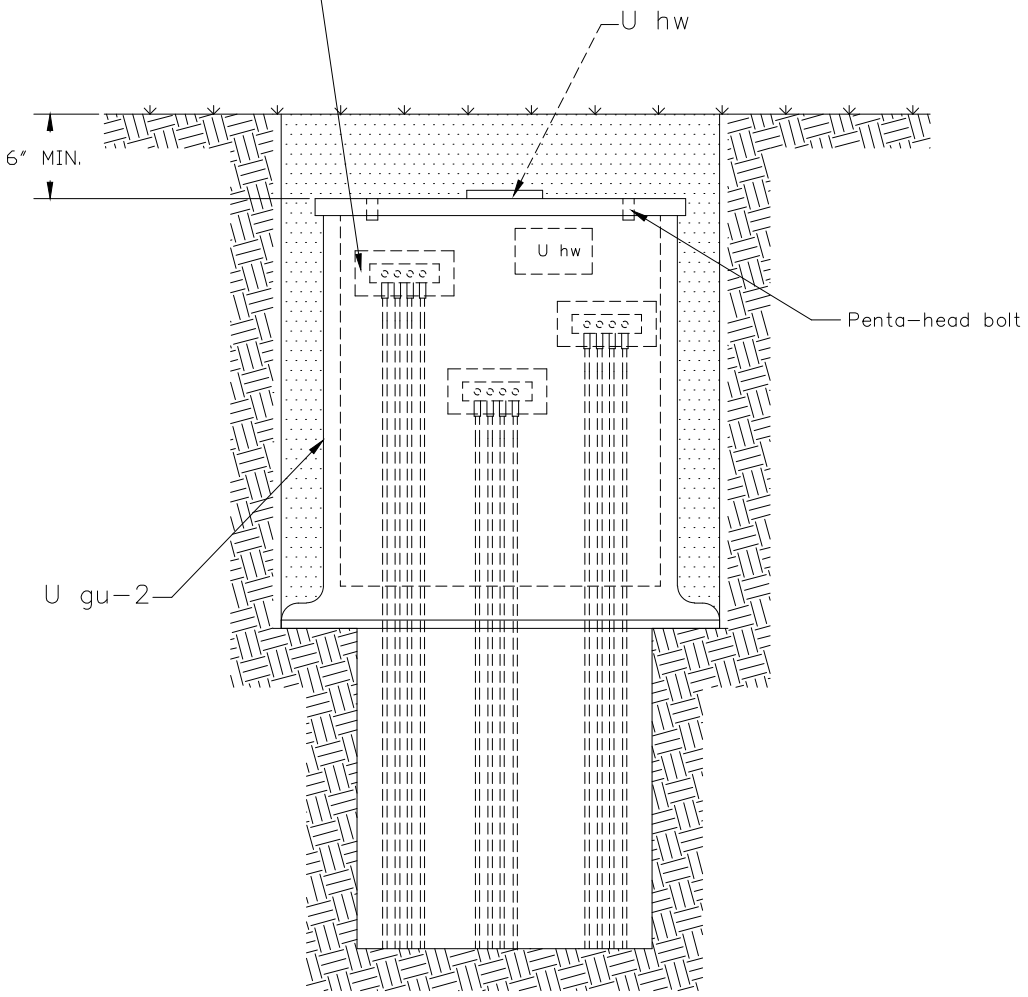
1. INSTALL "WARNING" SIGN ON OUTSIDE OF PEDESTAL.
2. ITEM Ugv OPTIONAL – SEE PEDESTAL MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
3. ALL PEDESTALS SHALL BE GROUNDED IN ACCORANCE WITH THE NATIONAL ELECTRICAL SAFETY CODE (NESC).

ITEM	QTY.	MATERIAL
Ugu–1	1	Power pedestal
Ugv	1	Stake (if necessary)
Uhw	1	Sign, "WARNING" (outside pedestal)
Uhw	1	Sign, "DANGER" (inside pedestal)

SECONDARY PEDESTAL UNDERGROUND CABLE

Sept. – 18		
FDEC		UK5

INSULATED SUBMERSIBLE CONNECTOR BLOCKS
REQUIRED FOR ALL TERMINALS.
DIVING BELL BOOTS ARE NOT ACCEPTABLE.



NOTES:

1. OWNER TO SPECIFY WHETHER UNIT IS TO BE BURIED AS SHOWN OR INSTALLED FLUSH WITH FINAL GRADE. METAL COVER IF USED SHOULD BE GROUNDED.

2. ALL PEDESTALS SHALL BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL SAFETY CODE (NESC).

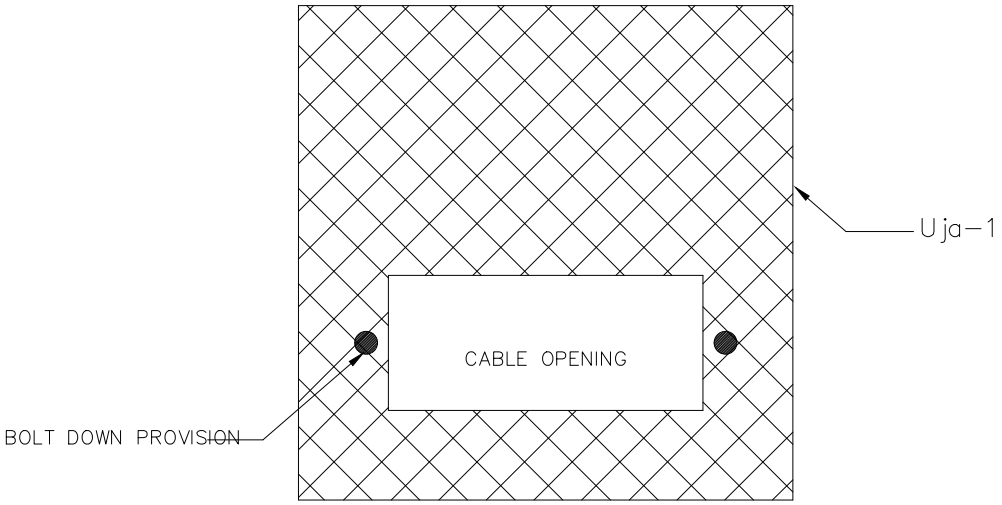
ITEM	QTY.	MATERIAL
U gu–2	1	Power pedestal, buried type
U hw	1	Sign, "DANGER" (inside pedestal)
U hw	1	Sign, "WARNING" (outside pedestal)

SECONDARY CABLE UNDERGROUND CABLE

Sept. – 18

FDEC

UK6



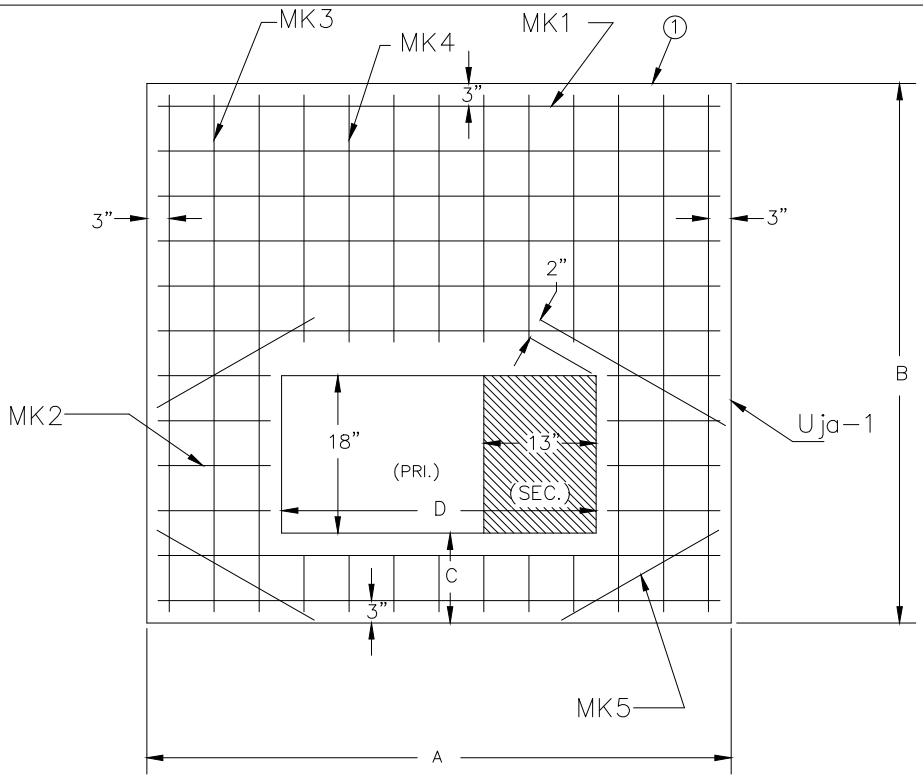
NOTES:

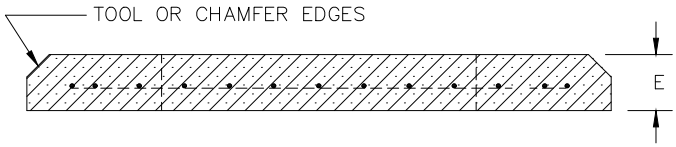
1. PAD ASSEMBLIES INCLUDE SITE PREPARATION, BEDDING AND DRAINAGE.
2. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
3. CABLE OPENING AND PAD DIMENSIONS SHALL BE AS REQUIRED.

UNIT DESIGNATION:

UM1–5C	CONCRETE
UM1–5NC	NON–CONCRETE

PAD ASSEMBLIES		
Sept. – 18 FDEC		UM1 – 5C, UM1 – 5NC





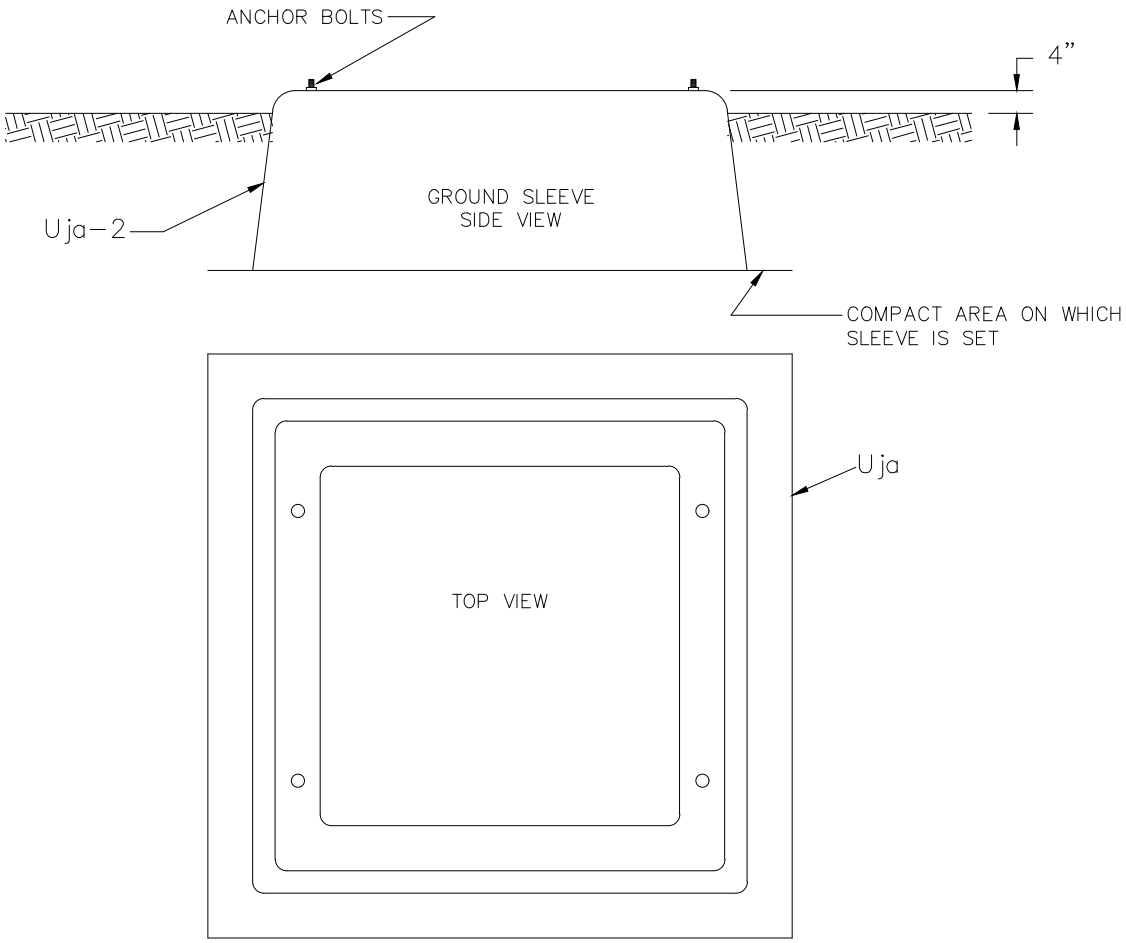
PAD	3–PHASE TRANSF. kVA	DIMENSIONS IN INCHES					REINFORCING BARS				
		A	B	C	D	E	MK1	MK2	MK3	MK4	MK5
#1	75, 112 1/2, 150, 225, 300, 500	76	62	10	42	6	7 #4 70"	4 #4 10"	6 #4 57"	6 #4 28"	4 #4 26"
#2	750, 1000 1500, 2500	104	100	10	54	8	12 #4 98"	6 #4 19"	6 #4 94"	7 #4 66"	4 #4 29"

NOTES:

1. CONCRETE TESTING, 3000 POUNDS MIN. PER SQUARE INCH; 4% TO 6% ENTRAINED AIR, 3/4" MAXIMUM SIZE AGGREGATE.
2. REINFORCING STEEL, ATSM–A615 GRADE 60, PLACE APPROX. 6" O.C. EACH WAY AND SECURELY TIED TOGETHER.
3. MINIMUM CONCRETE COVER OVER REINFORCING STEEL 2 INCHES UNLESS NOTED.
4. WOOD FLOAT FINISH, LEAVING NO DEPRESSIONS.

THREE PHASE TRANSFORMER CONCRETE PADS

Sept. – 18	3 – PHASE PRIMARY	UM1 – 6C
FDEC	12.47/7.2 kV	

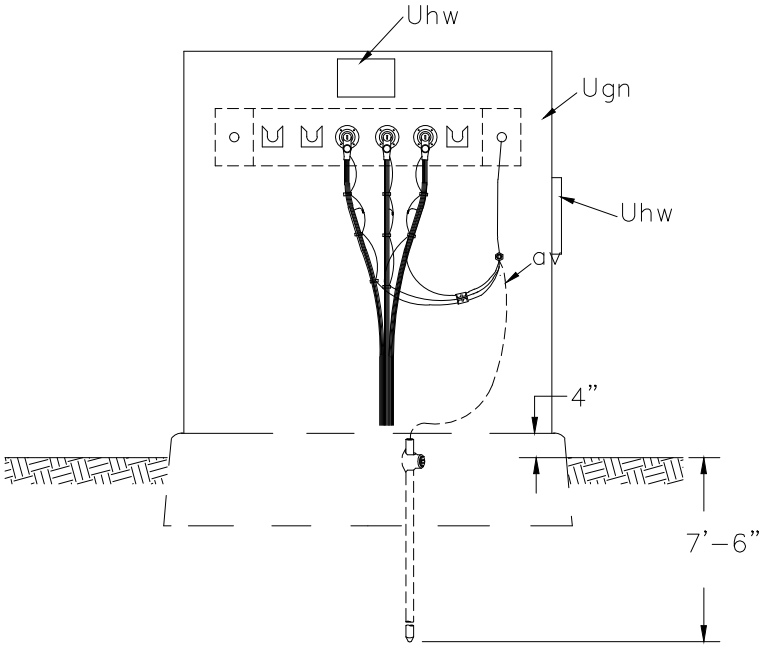


UNIT DESIGNATIONS:

UM1–7C CONCRETE

UM1–7NC NON–CONCRETE

GROUND SLEEVE ASSEMBLY		
Sept. – 18 FDEC		UM1 – 7C, UM1 – 7NC



NOTE:

1. THE FOLLOWING UNITS/ASSEMBLIES ARE NOT PART OF THIS UNIT. SPECIFY SEPARATELY:

   A. MULTIPOINT TERMINATION AND OTHER ACCESSORIES
   B. FUSED OR NON–FUSED LOADBREAK ELBOWS
   C. GROUNDING ASSEMBLY UM48–1 OR OTHER
   D. PAD OR SLEEVE (IF REQUIRED)

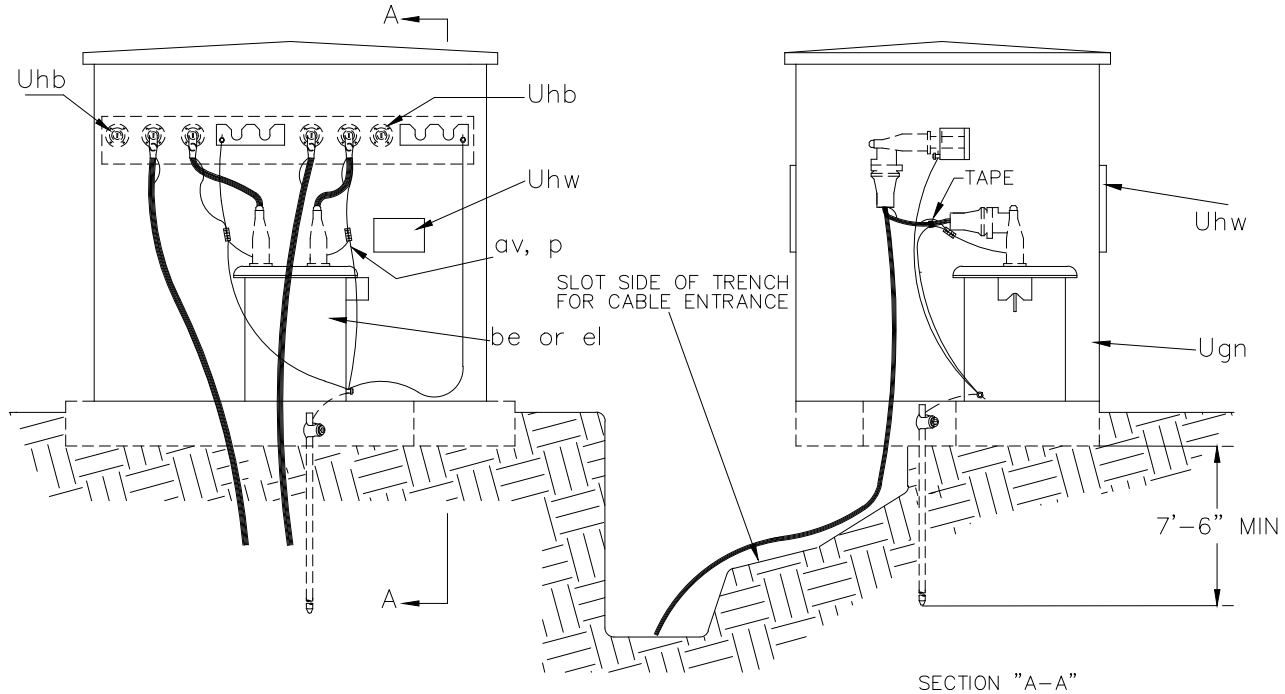
2. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

3. PROVIDE SUFFICIENT PRIMARY NEUTRAL PIGTAIL AND CABLE SLACK TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND.

ITEM	QTY.	MATERIAL
p		Connectors, as required
av		Jumpers, as required
Ugn	1	Enclosure
Uhw	2	Signs, "DANGER" and "WARNING"
Ugc		Cable riser shield, length as required

SINGLE PHASE SECTIONALIZING ENCLOSURE

Sept. – 18 FDEC	1 – PHASE PRIMARY 12.47/7.2 kV	UM3 – 14

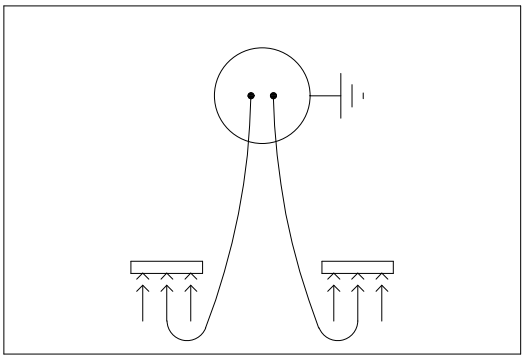


SECTION "A–A"

DESIGNATE AS:

RECLOSER ASSEMBLY UM3–44

SECTIONALIZER ASSEMBLY UM3–45



WIRING DIAGRAM

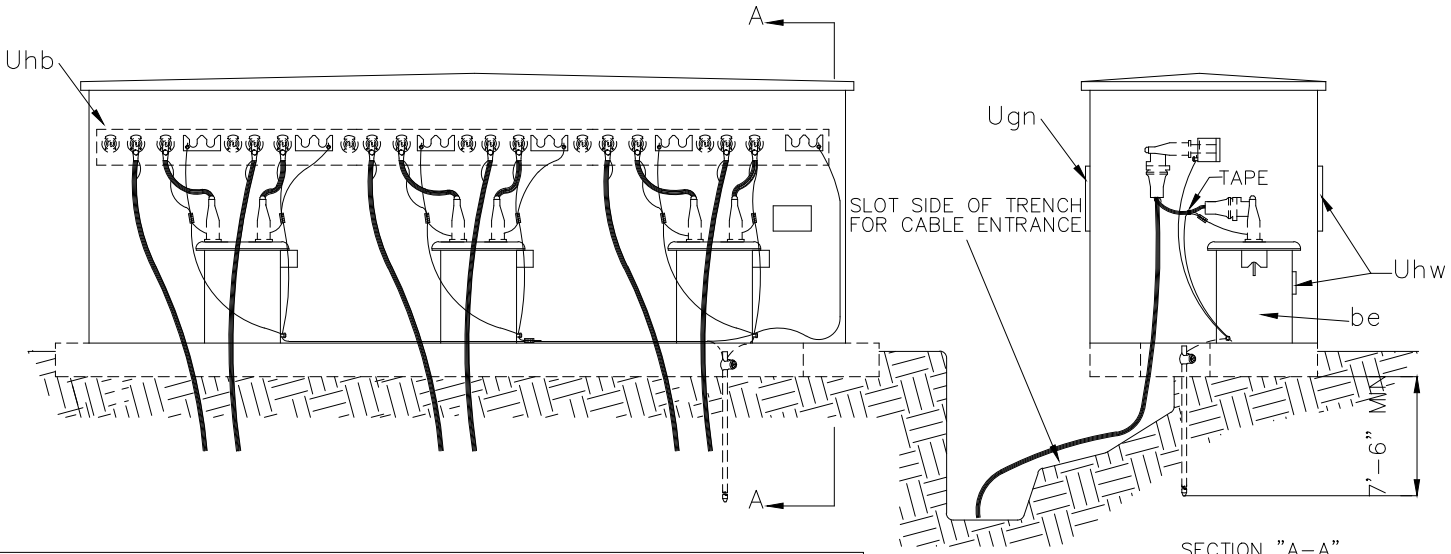
NOTES:

1. THE FOLLOWING UNITS/ASSEMBLIES ARE NOT PART OF THIS UNIT. SPECIFY SEPARATELY:
   - A. MULTIPOINT TERMINATIONS AND OTHER ACCESSORIES
   - B. LOADBREAK ELBOWS
   - C. GROUNDING ASSEMBLY UM48–1 OR OTHER
   - D. PAD ASSEMBLY
2. PROVIDE SUFFICIENT SLACK IN ALL CABLES TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND.
3. ANCHOR RECLOSER AND ENCLOSURE TO PAD.
4. INSTALL "WARNING" SIGN OUTSIDE SURFACE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

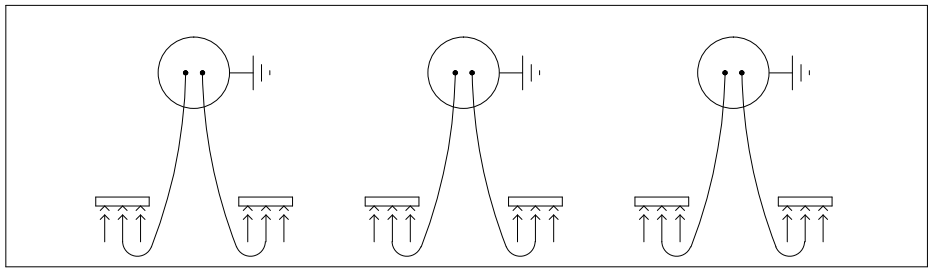
ITEM	QTY.	MATERIAL
p		Connectors, as required
av		Jumpers, as required
be	1	Recloser, oil circuit with bushing wells
		(UM3–44).
el	1	Sectionalizer, with bushing wells
		(UM3–45).
Ugn	1	Enclosure
Uhb	2	Insulated covers
Uhw	2	Signs, "DANGER" and "WARNING"

SINGLE PHASE PAD MOUNTED SECTIONALIZER OR RECLOSER

Sept. – 18 FDEC	1 – PHASE PRIMARY 12.47/7.2 kV	UM3 – 44, UM3 – 45



SECTION "A–A"



WIRING DIAGRAM

ITEM	QTY.	MATERIAL
be	3	Recloser, oil circuit with bushing wells
Ugn	1	Enclosure
Uhb	6	Insulated covers
Uhw	2	Signs, "DANGER" and "WARNING"

NOTES:

1. THE FOLLOWING UNITS/ASSEMBLIES ARE NOT PART OF THIS UNIT. SPECIFY SEPARATELY:

   A. MULTIPOINT TERMINATIONS AND OTHER ACCESSORIES
   B. LOADBREAK ELBOWS
   C. GROUNDING ASSEMBLY UM48–1 OR OTHER
   D. PAD ASSEMBLY

2. PROVIDE SUFFICIENT SLACK IN ALL CABLES TO PERMIT READY DISCONNECTION OF ELBOW AND MOUNTING ON PARKING STAND.

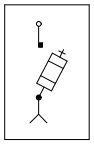
3. ANCHOR RECLOSER AND ENCLOSURE TO PAD.

4. INSTALL "WARNING" SIGN OUTSIDE SURFACE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

THREE, SINGLE PHASE PAD MOUNTED RECLOSERS

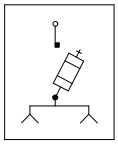
Sept. – 18 FDEC	3 – PHASE PRIMARY 12.47/7.2 kV	UM3–46

FIG. 1A



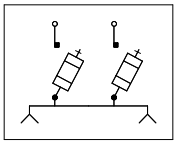
SINGLE PHASE
RADIAL FEED
1 – FUSE

FIG. 1B



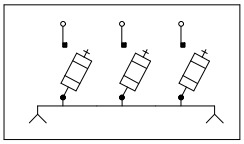
SINGLE PHASE
LOOP FEED
1 – FUSE

FIG. 1C



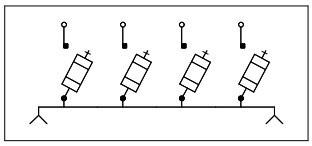
SINGLE PHASE
LOOP FEED
2 – FUSE

FIG. 1D



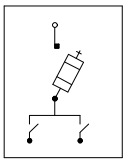
SINGLE PHASE
LOOP FEED
3 – FUSE

FIG. 1E



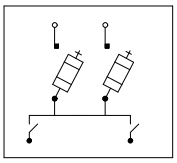
SINGLE PHASE
LOOP FEED
4 – FUSE

FIG. 1F



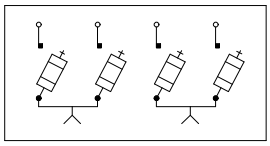
SINGLE PHASE
LOOP FEED
1 – FUSE

FIG. 1G



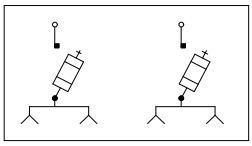
SINGLE PHASE
LOOP FEED
2 – FUSE

FIG. 2A



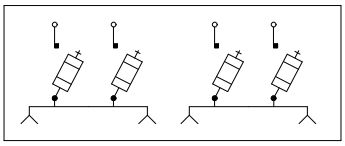
TWO PHASE
RADIAL FEED
2 – FUSE

FIG. 2B



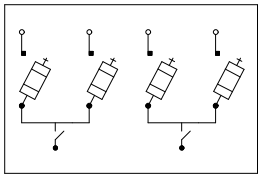
TWO PHASE
LOOP FEED
1 – FUSE

FIG. 2C



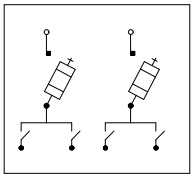
TWO PHASE
LOOP FEED
2 – FUSE

FIG. 2D



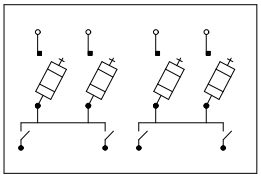
TWO PHASE
RADIAL FEED
2 – FUSE

FIG. 2E



TWO PHASE
RADIAL FEED
1 – FUSE

FIG. 2F



TWO PHASE
LOOP FEED
2 – FUSE

— FUSE

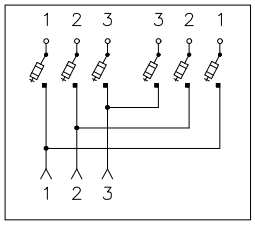
• — TERMINATIONS CAN BE WITH ELBOWS, STRESS CONES OR TERMINATORS

— LOADBREAK ELBOW LINE SWITCHING

— SINGLE POLE SOLID BLADE SWITCHING

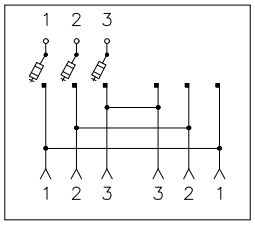
SINGLE POLE SWITCHING 200 AMP FUSE ENCLOSURE INSTALLATION WIRING DIAGRAMS (SINGLE PHASE AND TWO PHASE)		
Sept. – 18 FDEC	2 – PHASE PRIMARY 12.47/7.2 kV	UM3E – 1, UM3E – 2

FIG. 3B



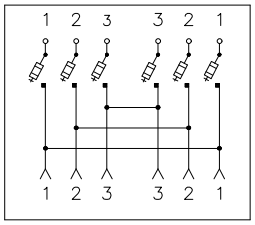
ELBOW SWITCH
2 – FUSE

FIG. 3C



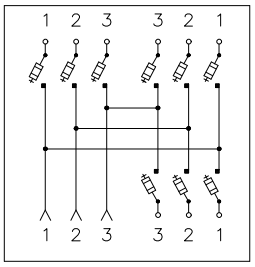
ELBOW SWTCH
1 – FUSE

FIG. 3D



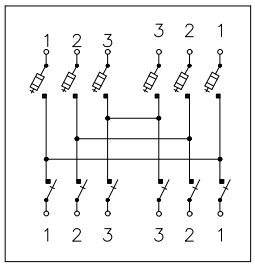
ELBOW SWITCH
2 – FUSE

FIG. 3E



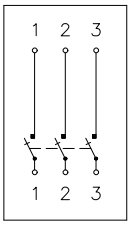
ELBOW SWITCH
3 – FUSE

FIG. 3F



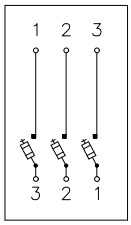
SINGLE POLE SWITCH
2 – FUSE

FIG. 3, 3A



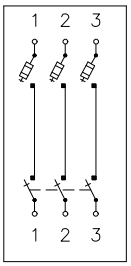
THREE PHASE
SWITCH

FIG. 4, 4A



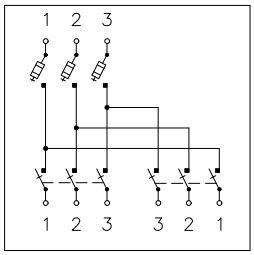
THREE PHASE
SINGLE POLE
SWITCH OR
FUSE

FIG. 5, 5A



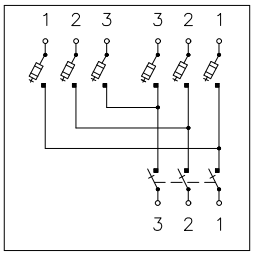
THREE PHASE
SWITCH
1 – FUSE

FIG. 6, 6A



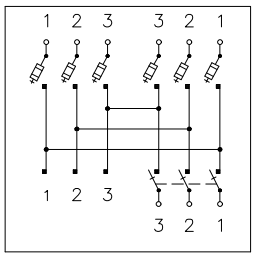
THREE PHASE
SWITCHES
1 – FUSE

FIG. 7, 7A



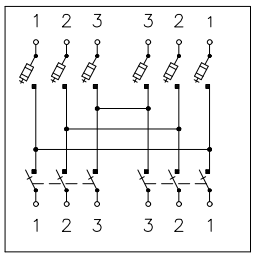
THREE PHASE
SWITCH
2 – FUSE

FIG. 8, 8A



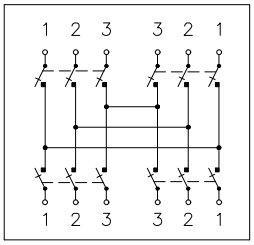
THREE PHASE SWITCH
2 – FUSE
1 – TERMINAL

FIG. 9, 9A



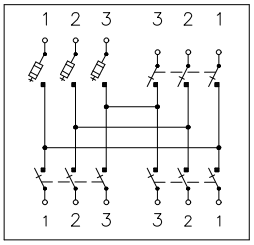
THREE PHASE SWITCHES
2 – FUSES

FIG. 10, 10A



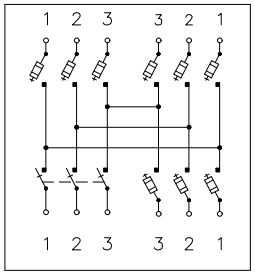
THREE PHASE SWITCHES

FIG. 11, 11A



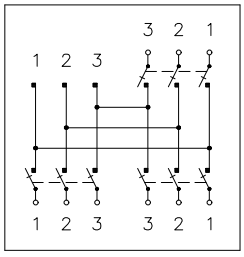
THREE PHASE SWITCHES
1 – FUSE

FIG. 12, 12A



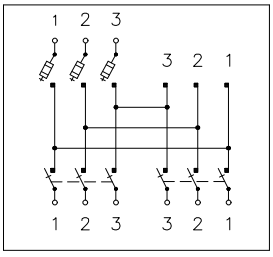
THREE SWITCH
3 – FUSES

FIG. 13, 13A



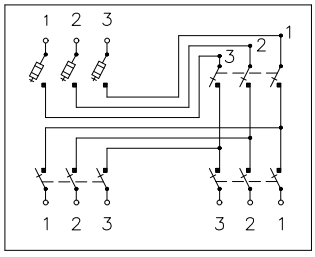
THREE PHASE SWITCHES
1 – TERMINAL

FIG. 14, 14A



THREE PHASE SWITCHES
1 – FUSE
1 – TERMINAL

FIG. 19, 19A



THREE PHASE SWITCHES
THREE PHASE SWITCHED / FUSE TAP

EXAMPLE:

FIG. 3 = 600 AMP MAIN
LINE SWITCH

FIG. 3A = 200 AMP MAIN
LINE SWITCH

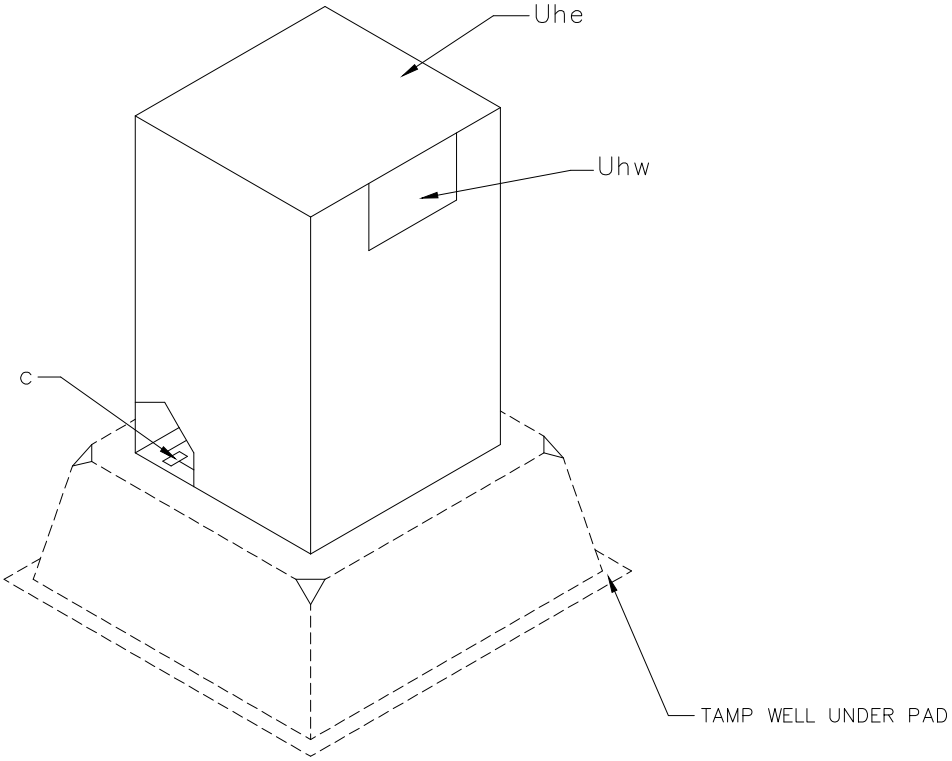
⊣□⊢ – FUSE

• – TERMINATIONS CAN BE
WITH ELBOWS, STRESS
CONES OR TERMINATORS

⋀ – LOADBREAK ELBOW LINE
SWITCHING

FUSE ENCLOSURE (200 – 600 AMP)
WIRING DIAGRAMS
(THREE PHASE)

Sept. – 18	3 – PHASE PRIMARY	
FDEC	12.47/7.2 kV	UM3E – 3



SPECIFICATION NUMBERING CODES:
UM3E–(1,2 or 3) – (FIG. NO.)
SEE DRAWING UM3E–1, 2, OR 3
NUMBER OF PHASES

EXAMPLE:
UM3E–3–9
WIRING DIAGRAM
THREE PHASE CONFIGURATION
FUSE ENCLOSURE

NOTES:

1. PAD OR GROUND SLEEVE LOAD BREAK ELBOWS, STRESS CONES, FUSES OR SWITCH BLADES ARE NOT PART OF THIS ASSEMBLY. THEY SHOULD BE SPECIFIED SEPARATELY ON THE STAKING SHEETS.
2. TAMP WELL UNDER SLEEVE. LEAVE SLACK COIL OF CABLE IN GROUND SLEEVE.
3. PLACE 6" OF FILL AGAINST INSIDE EDGE OF GROUND SLEEVE.
4. ON DEAD FRONT FUSE ENCLOSURES USE GROUNDING ASSEMBLY TO BE SPECIFIED SEPARATELY.
5. TOP OF GROUND SLEEVE TO BE INSTALLED 3" ABOVE GROUND LEVEL.
6. INSTALL "DANGER" SIGN ON EQUIPMENT INSIDE ENCLOSURE. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE.
7. GROUND SLEEVES ARE SPECIFIED.

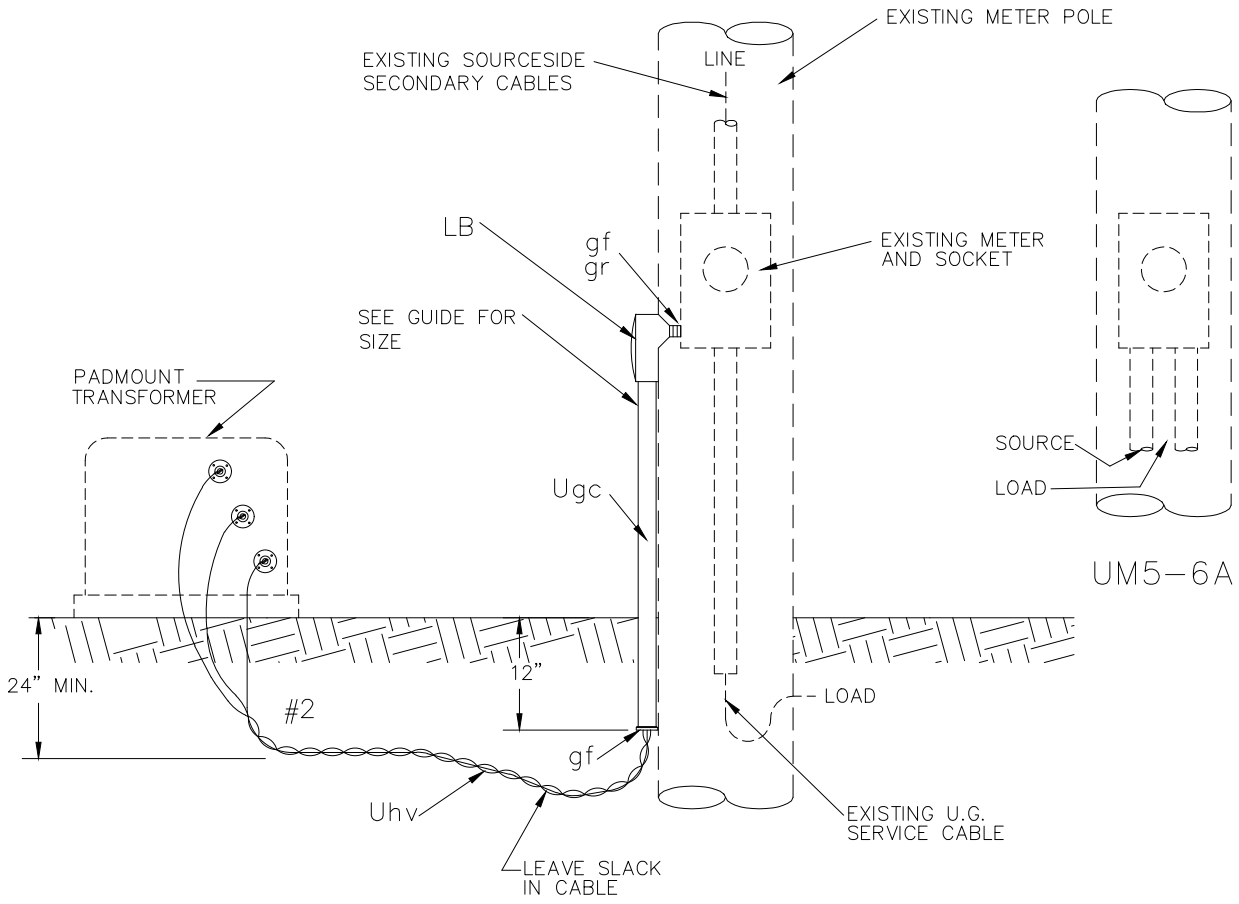
ITEM	QTY.	MATERIAL
C		Bolt, machine, as necessary
Uhe	1	Enclosure as specified
Uhw	2	Signs, "DANGER" and "WARNING"

FUSE / SWITCH ENCLOSURE INSTALLATION

Sept. – 18

FDEC

UM3E



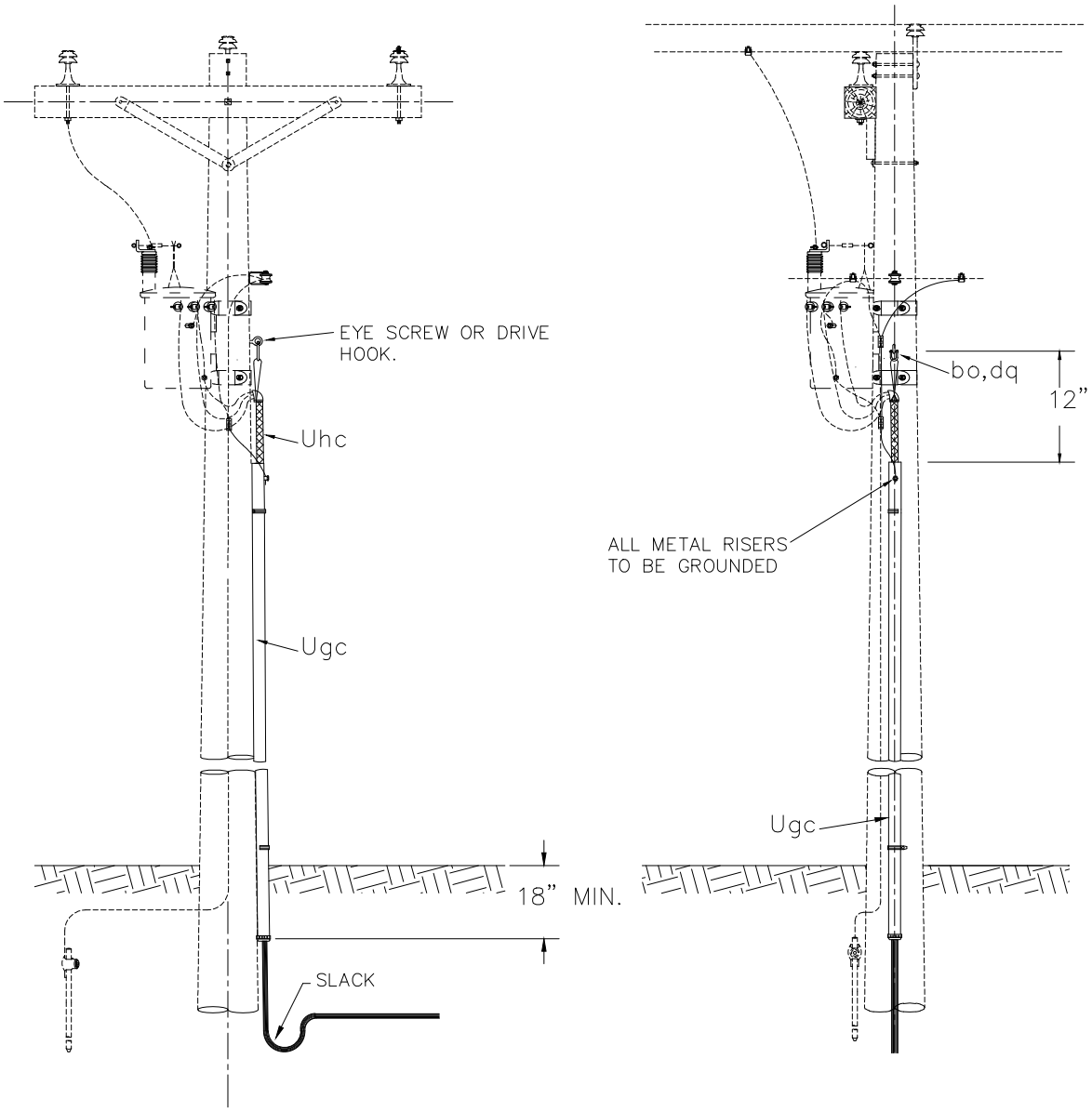
NOTES:

1. DISCONNECT SOURCESIDE CONDUCTORS IN METER SOCKET.
2. CONNECT NEW CABLE TO SOURCESIDE OF METER SOCKET.
3. SECONDARY CABLE, UNIT Uhv, SPECIFIED ON SEPARATE UNIT.
4. IF UNIT UM5–6A IS SPECIFIED, EXISTING METER SOCKET AND TYPE "LB" CONDUIT FITTING ARE REPLACED BY A METER SOCKET WITH TWO CONDUIT KNOCKOUTS ON BOTTOM SIDE.

ITEM	QTY.	MATERIAL
gf	2	Bushings, insulated
gr	2	Locknut
	1	Type "LB" conduit fitting
	1	conduit short nipple, with bushing
Ugc		Conduit, as required
Uhv		Cable, underground, 600 V, as required

SECONDARY CABLE TERMINAL TO METER BASE

Sept. – 18		UM5 – 6, UM5 – 6A
FDEC		



NOTES:

1. ALLOW MINIMUM CABLE SLACK OF 24" AT BOTTOM OF RISER.

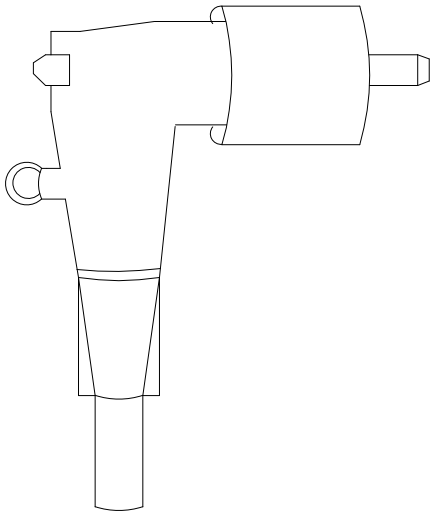
ITEM	QTY.	MATERIAL
bo		Anchor, shackle. Do not use if drive
		hook is used.
dq	1	Eye screw, elliptical or drive hook.
Ugc	1	Cable riser shield. Length as required.
Uhc	1	Cable support.

SECONDARY CABLE TERMINAL POLE

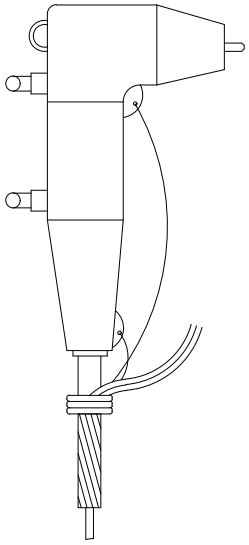
Sept. – 18

FDEC

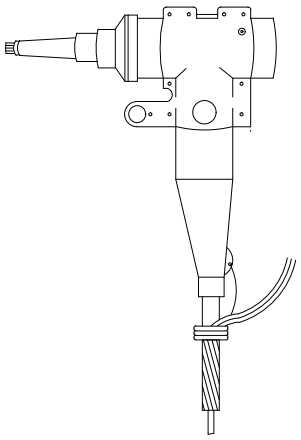
UM5



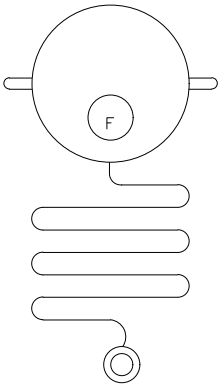
UM6–1 Uhp
LOAD BREAK ELBOW
(200 A)



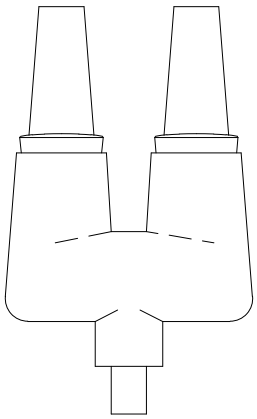
UM6–2 Uhp
FUSED ELBOW TERMINATION
(200 A)



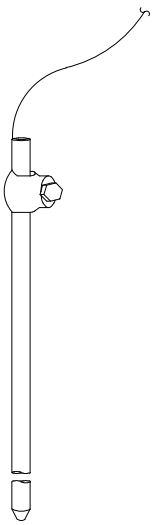
UM6–3 Uhb
DEAD BREAK TERMINATION
(600 A)



UM6–4 Ugo
FAULT INDICATOR



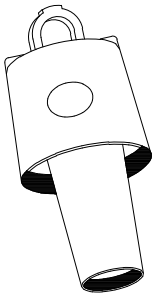
UM6–5 Uhb
FEED THROUGH LOAD BREAK INSERT



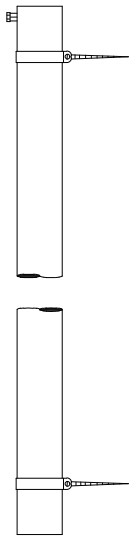
UM6–6 ai, aj, cj
GROUND ROD ASSEMBLY

MICELLANEOUS ACCESSORIES

Sept. – 18 FDEC	PAGE 1 OF 8	UM6 – 1

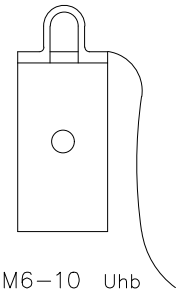


UM6–7 Uhb
BUSHING WELL PLUG
(200 A)

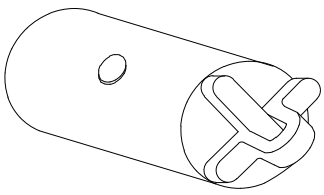


UM6–8 Ugc
RISER SHIELD (U GUARD)

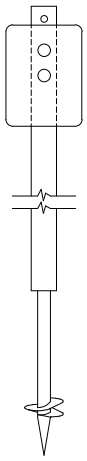
UM6–9 Ugc
CONDUIT CABLE RISER



UM6–10 Uhb
INSULATED PROTECTIVE CAP
(200 A)



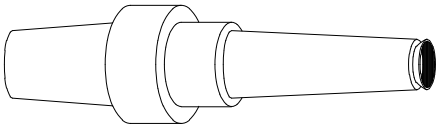
UM6–11 Uhb
INSULATED PROTECTIVE CAP
(600 A)



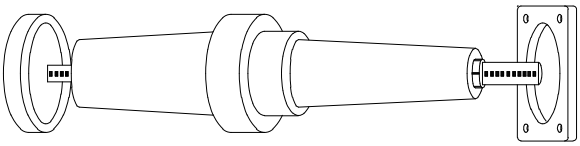
UM6–12 Uhx
CABLE MARKER ASSEMBLY

MISCELLANEOUS ACCESSORIES

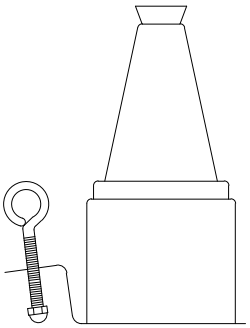
Sept. – 18 FDEC	PAGE 2 OF 8	UM6 – 2



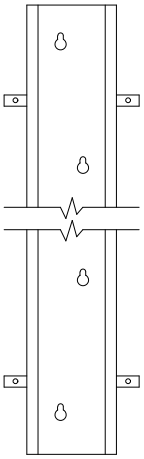
UM6–13 Uhb
LOAD BREAK INSERT
(200 A)



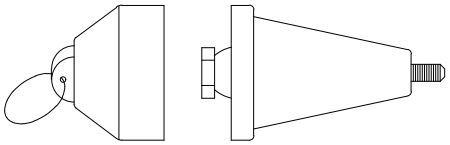
UM6–14 Uhb
DEADBREAK INSERT
(600 A)



UM6–15 Uhq
STAND–OFF INSULATOR
(200 A)

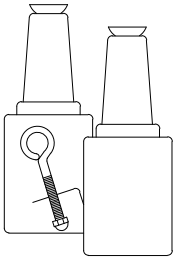


UM6–18
BACKING PLATE FOR
U–GUARD RISER SHIELD

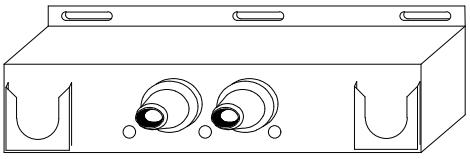


UM6–17 Uhb
INSULATING PLUG
600 AMP CONNECTOR

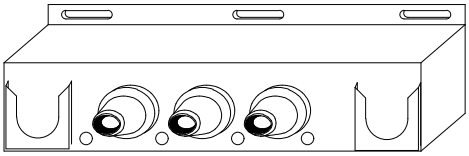
MISCELLANEOUS ACCESSORIES		
Sept. – 18 FDEC	PAGE 3 OF 8	UM6 – 3



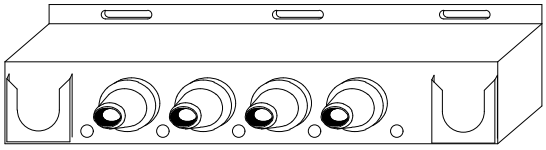
UM6–19 Uhq
STAND–OFF INSULATOR
FEED THROUGH
(200 A)



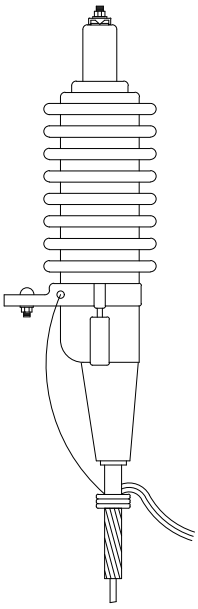
UM6–20 Uhq
TWO POINT JUNCTION
(200 A)



UM6–21 Uhq
THREE POINT JUNCTION
(200 A)

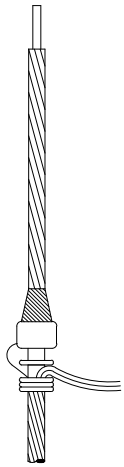


UM6–22 Uhq
FOUR POINT JUNCTION
(200 A)

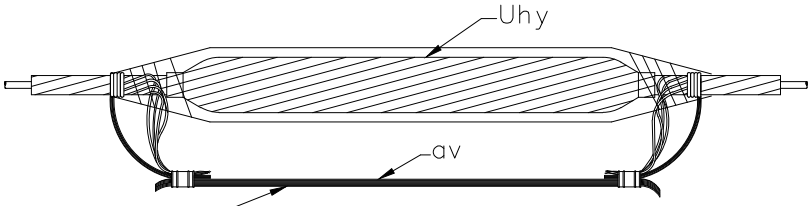


UM6–24 Ugk
OUTDOOR TERMINATION

MISCELLANEOUS ACCESSORIES



UM6–26 Ugk
INDOOR STRESS RELIEF CONE

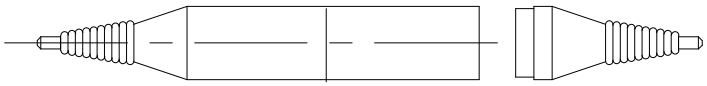


CONCENTRIC NEUTRAL
OR
EQUIVALENT EXTENSION

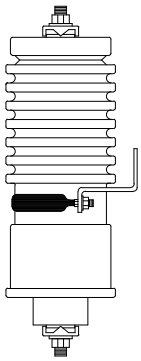
UM6–28 Uhy
IN LINE PRIMARY SPLICE
(FOR JACKETED CABLE)

NOTES:

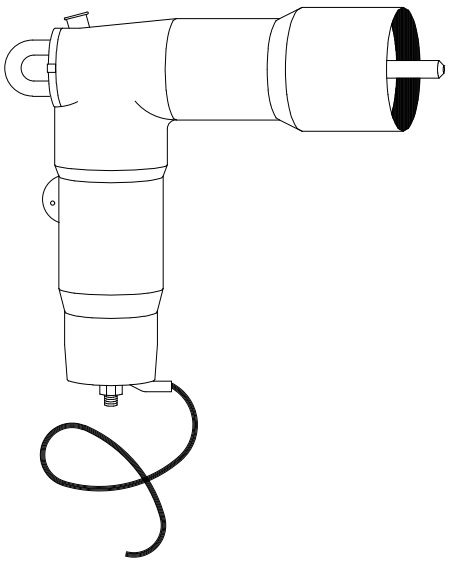
1. Jacketed cable restoration and termination sealing kits (items Uhf) are available for resealing concentric neutral wires after installation of splices, elbows, and outdoor terminations; also for connecting a grounding lead wire to the concentric neutral wires and resealing the jacket.



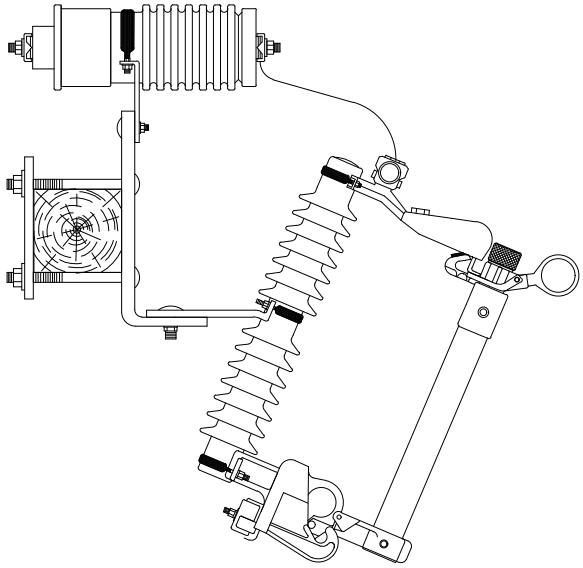
UM6–32 Ugq
BOOT OR SLEEVE – INSULATED
(600 VOLT)



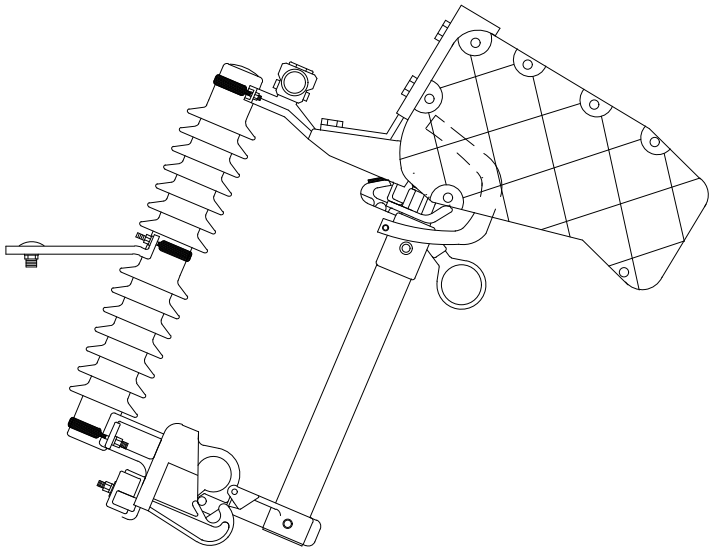
UM6–33 Uae
SURGE ARRESTER



UM6–34 Uae
DEAD BREAK ELBOW
SURGE ARRESTER

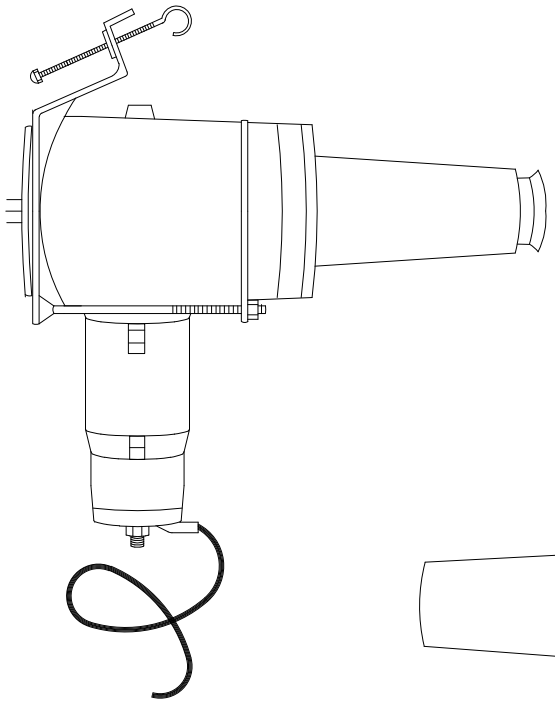


UM6–35 Uax
CUTOUT–ARRESTER COMBINATION

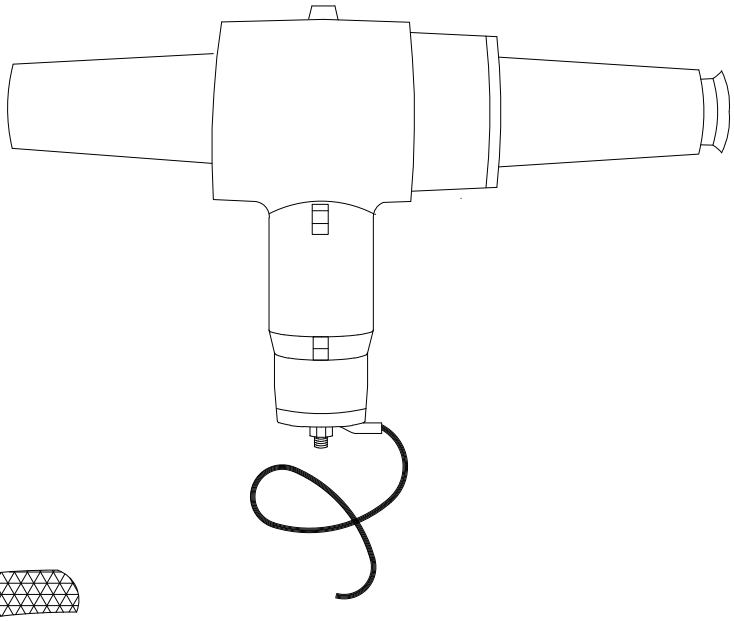


UM6–36 af
LOAD BREAK CUTOUT

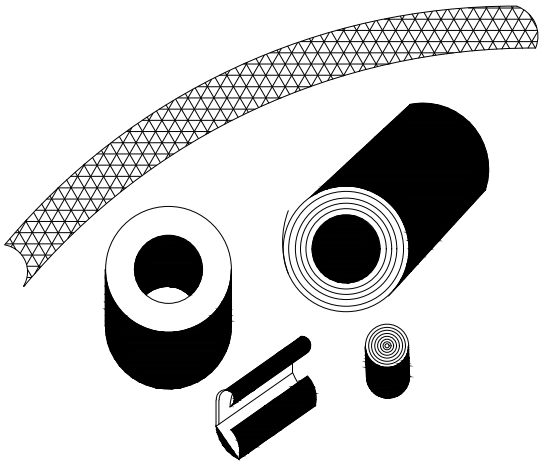
MISCELLANEOUS ACCESSORIES



UM6–37 Uae
PARKING STAND ARRESTER

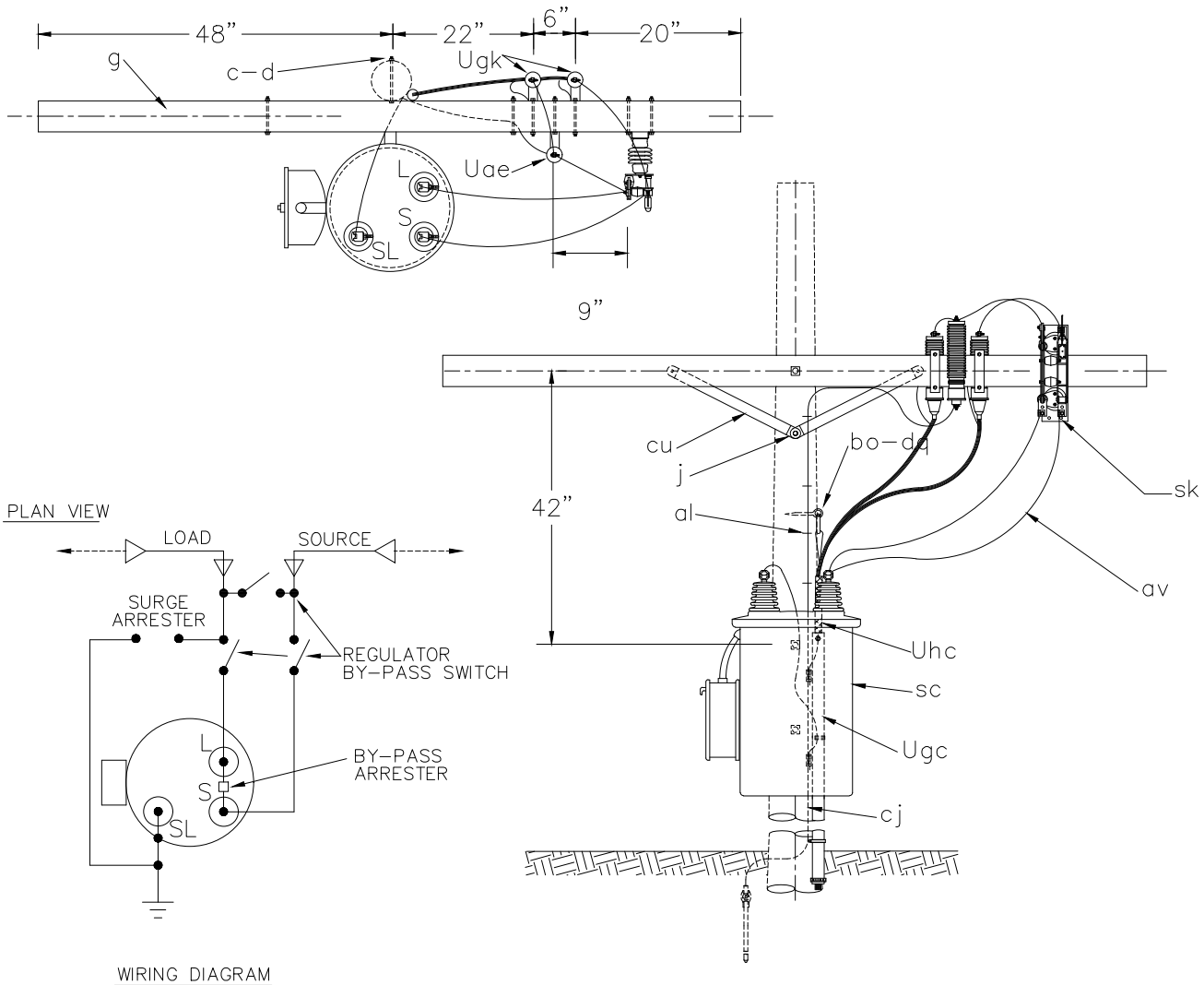


UM6–38 Uae
BUSHING ARRESTERS



UM6–39 Uhf
JACKETED CABLE GROUNDING KITS

MISCELLANEOUS ACCESSORIES



WIRING DIAGRAM

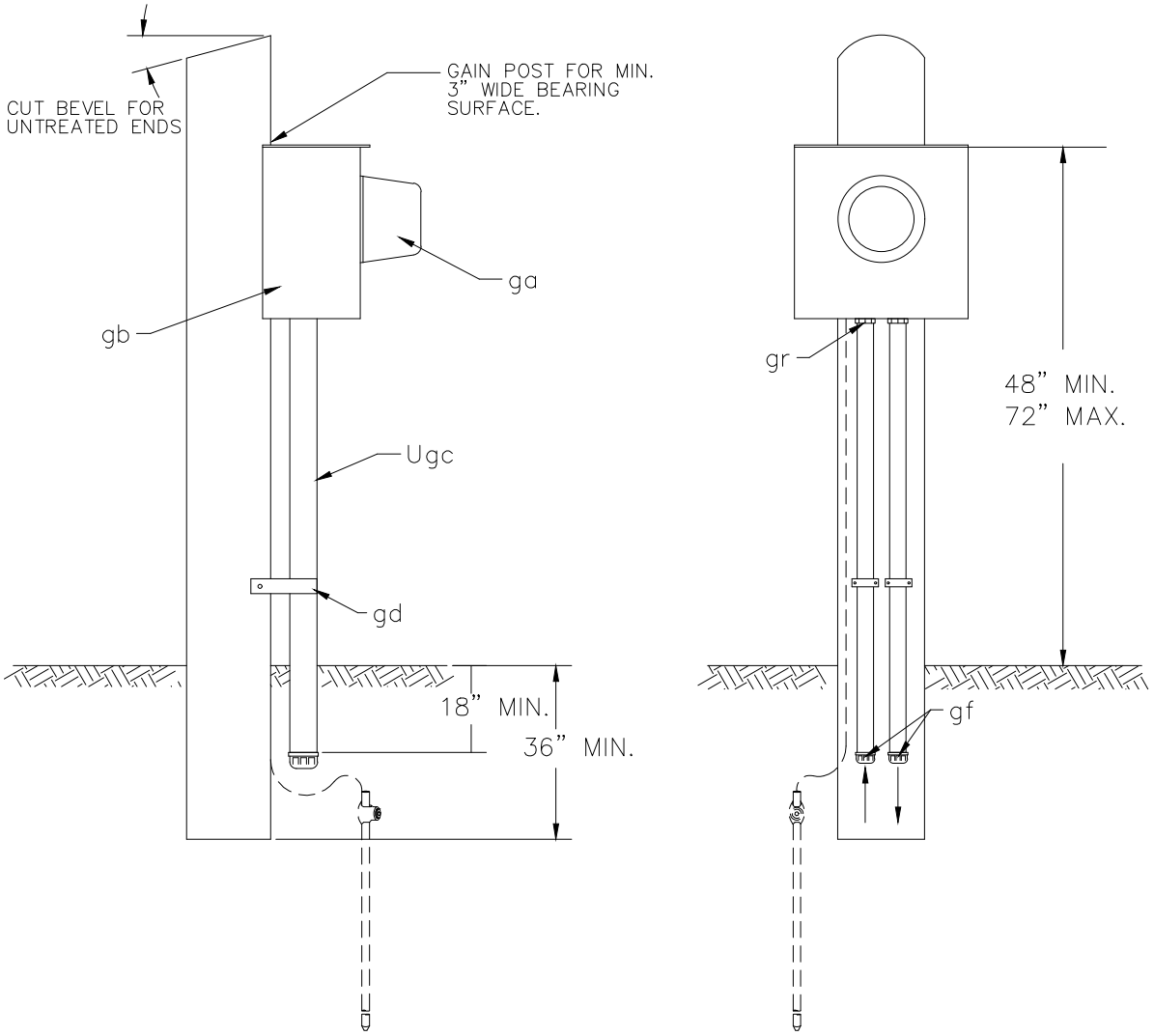
ITEM	QTY.	MATERIAL
c	5	Bolt, machine, 5/8" x required length.
d	6	Washer, square 2 1/4".
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'–0".
i	2	Bolt, carriage, 3/8" x 4 1/2"
j		Screw, lag 1/2" x 4" as required.
p		Connectors, as required.
al		Staples, as required.
av		Jumpers, as required.
bo	1	Anchor, shackle. Omit if drive hook is used.
cj		Ground wire, as required.
cu	2	Brace, wood, 28"
dq	1	Eye screw, elliptical or drive hook.
ek		Locknuts
fn	1	Bracket, cutout, extension.
sc	1	Regulator, step type.
sk	1	Regulator, by–pass switch.
Uae	1*	Surge arrester
Ugc	1	Cable riser shield. Length as required.
Ugk	2	Cable termination.
Uhc	2	Cable support.
Uhd	2	Crossarm mounting bracket.

NOTES:

1. Three of these assemblies may be used for three phase installation.
2. Total arrester lead length must be under 3 feet if possible.
3. All clearances must meet NESC requirements.

SINGLE PHASE REGULATOR ASSEMBLY WITH BY – PASS SWITCHING FUNCTION UNDERGROUND TO UNDERGROUND

Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UM7 – 1
FDEC		

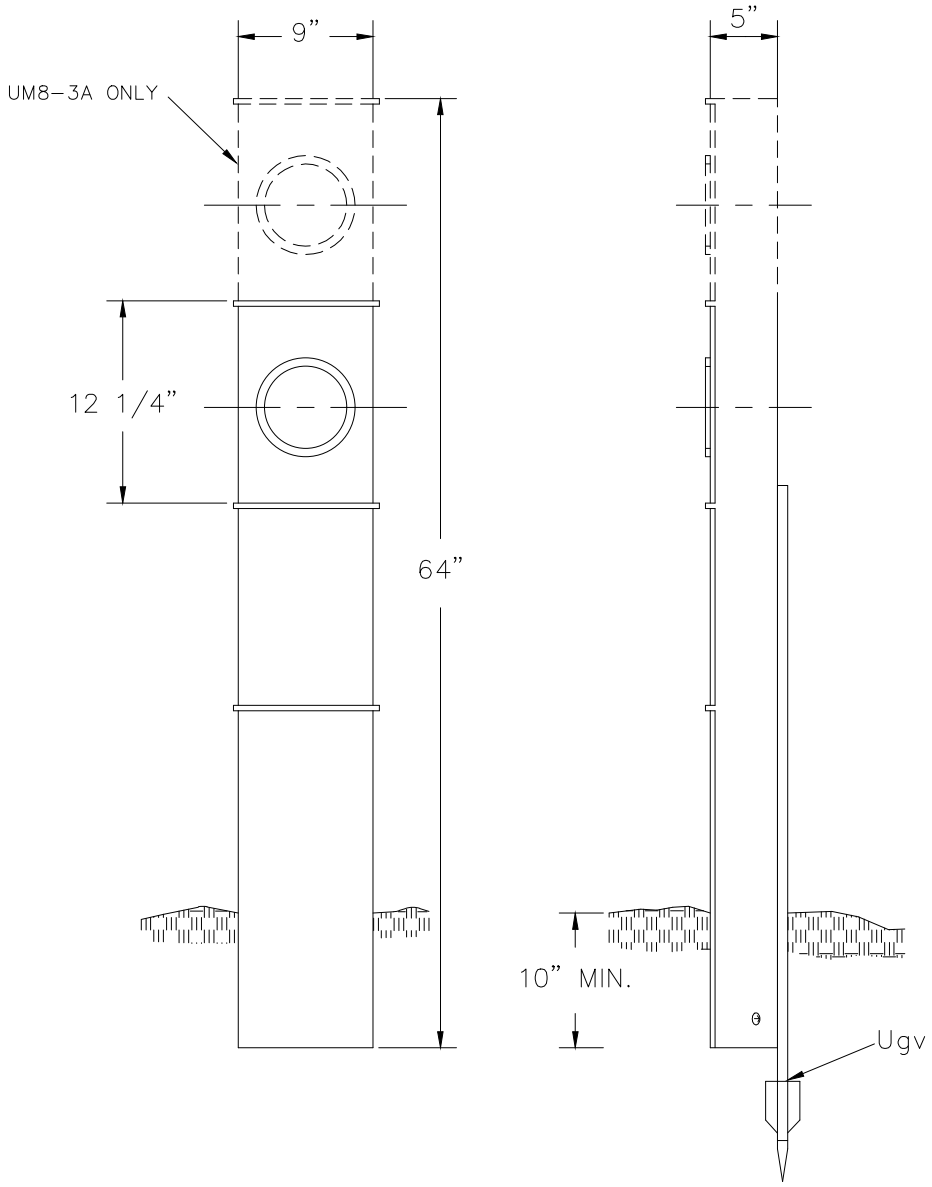


NOTE: MINIMUM POST SIZE SHALL BE FOUR INCHES SQUARE OR IN DIAMETER.

ITEM	QTY.	MATERIAL
	1	Wood post, approx. 9 ft. long, treated
ga	1	Meter, as required
gb	1	Meter socket
gd	1	Pipe strap
gf	2	Insulated bushings, size as required
gr	2	Conduit locknuts, size as required
Ugc	2	Conduit, diameter and length as required

WOOD POST
METER PEDESTAL

Sept. – 18		
FDEC		UM8 – 2



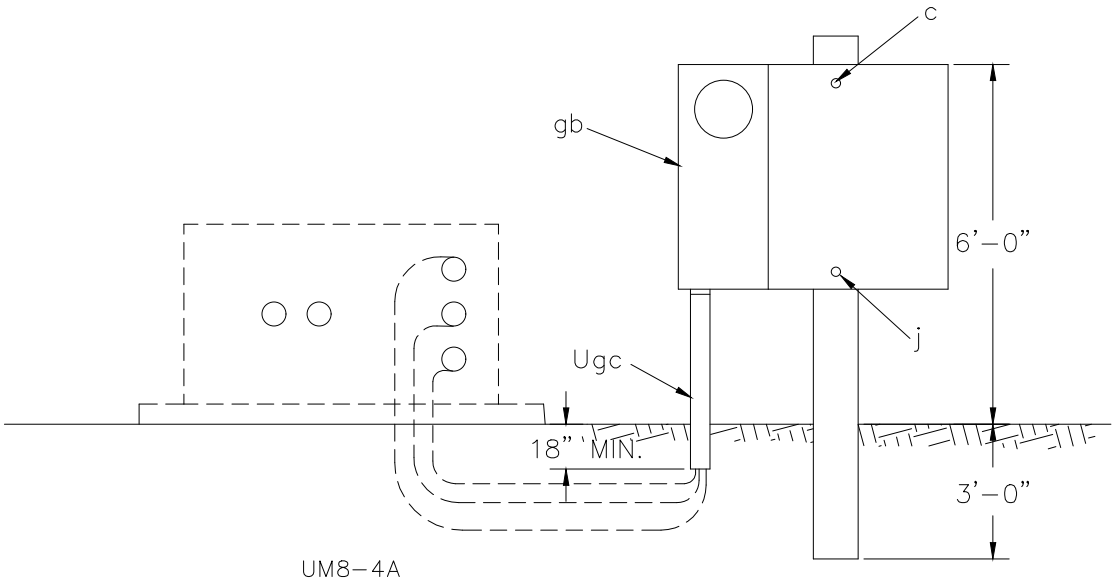
ITEM	QTY.	MATERIAL
	1	Meter, pedestal, 200 A Main,
		200 Amp. per position (UM8–3)
	1	Meter, pedestal, 400 A Main,
		200 Amp. per position (UM8–3A)
Ugv	1	Stake, support

THROUGH TYPE
METER PEDESTAL

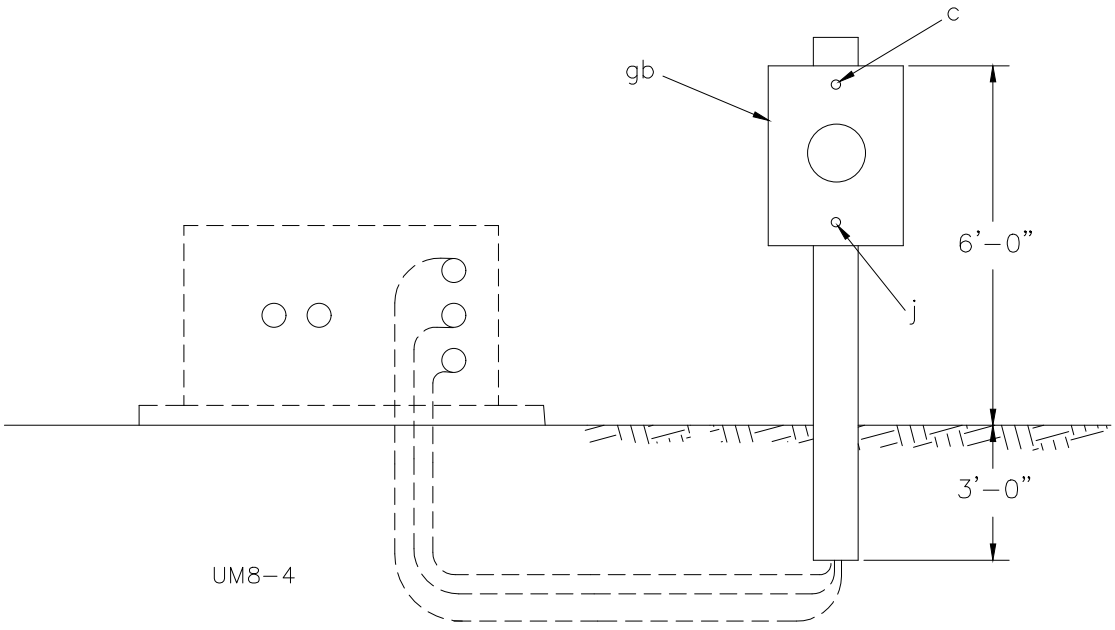
Sept. – 18

FDEC

UM8 – 3



UM8–4A

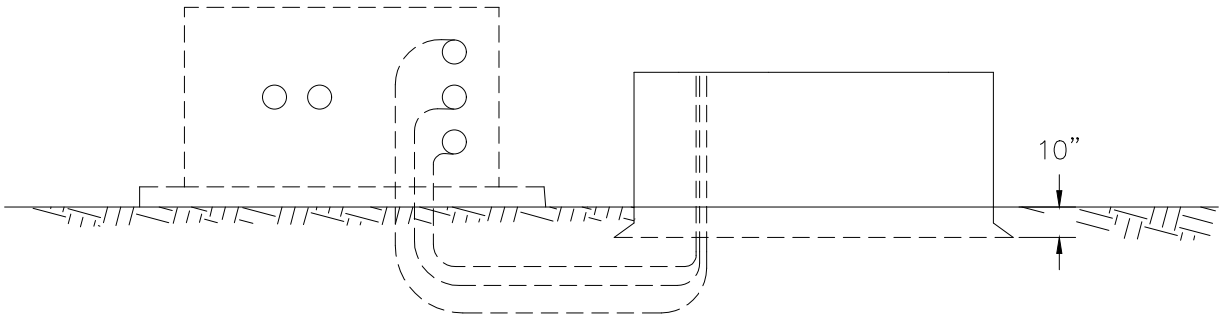


UM8–4

ITEM	QTY.	MATERIAL
		Stub pole, 9'–0"
		Switch, as required
c	1	Machine bolt, 1/2" x 10"
d	1	Washer, square, 2" x 2"
j	1	Lag screw, 1/2" x 4"
ek	1	Locknut, 1/2"
gb		Meter base, as required
Ugc		Conduit, as required

METER & SWITCH INSTALLATION
UNDERGROUND SOURCE

Sept. – 18		UM8 – 4, UM8 – 4A
FDEC		



NOTE:

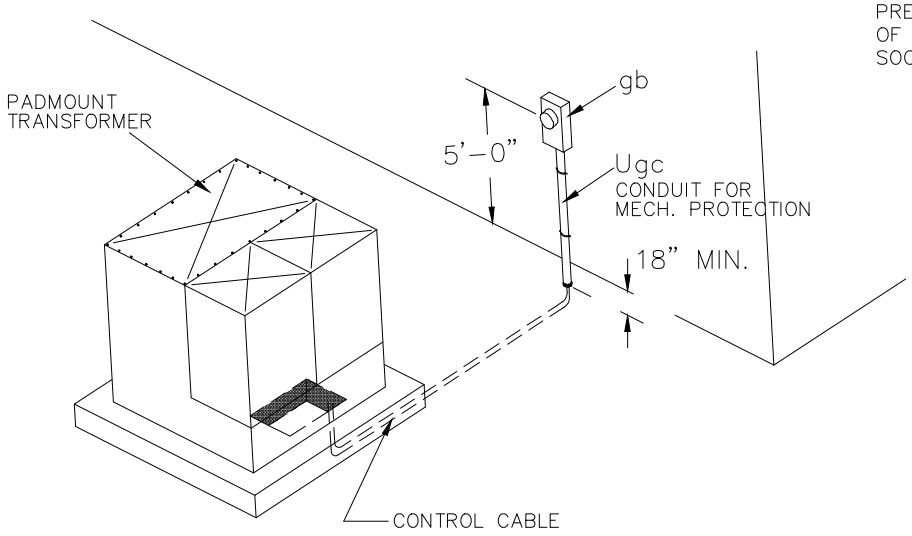
SPECIFY PAD OR SLEEVE UNIT SEPARATELY

ITEM	QTY.	MATERIAL
	1	Switch, as required

PAD MOUNTED SWITCH
INSTALLATION UNDERGROUND SOURCE

Sept. – 18		
FDEC		UM8 – 5

METHOD 1



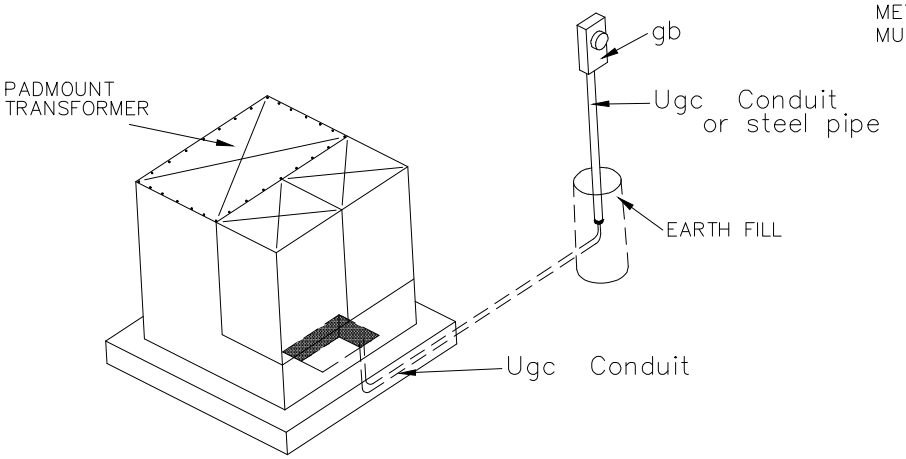
PREFERRED METHOD FOR INSTALLATION OF METERING IS TO MOUNT METER SOCKET ON BUILDING WALL.

METER HEIGHT SHALL BE 5'–0" TO CENTER OF METER.

METER SOCKET MUST NOT BE ATTACHED DIRECTLY TO PADMOUNTED TRANSFORMER.

CONDUIT SHALL BE USED FOR SECONDARY CONTROL WIRES TO METER SOCKETS.

METHOD 2



METHOD TO USE IF METER CABINET MUST BE MOUNTED FREE STANDING.

METER SOCKET MUST NOT BE ATTACHED DIRECTLY TO PADMOUNTED TRANSFORMER.

4'–0" MINIMUM HEIGHT TO CENTER OF METER.

CONDUIT SHALL BE USED FOR SECONDARY CONTROL WIRES TO METER SOCKET.

NOTE: CT & PT TO BE MOUNTED AS REQUIRED IN TRANSFORMER ENCLOSURE.

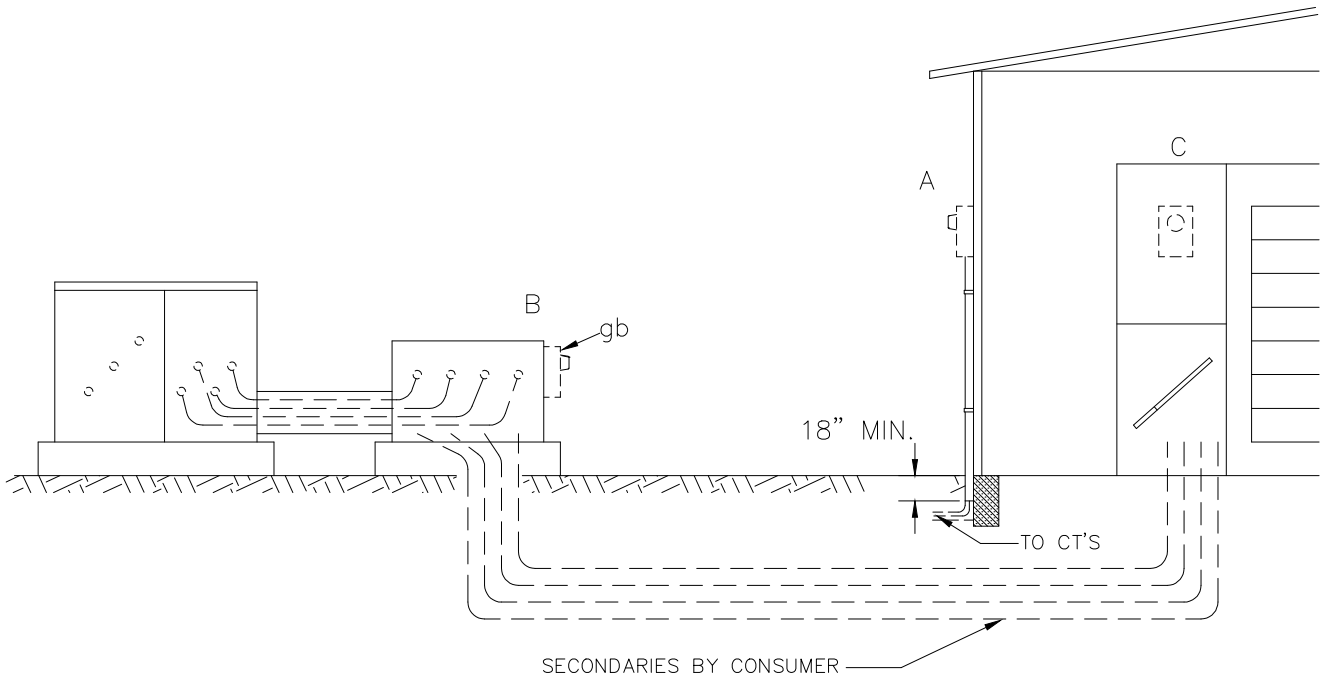
ITEM	QTY.	MATERIAL
		Control cable, as required
		Pipe strap, as required
gb	1	Meter socket
se		Potential transformer, as required
Ugc		Steel pipe, as required
Ugc		Conduit, as required
Usd		Current transformer, as required

C.T. METER INSTALLATION SINGLE PHASE

Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UM8 – 6
FDEC		

UM8–7–A METER ON BUILDING
UM8–7–B METER ON TAP BOX
UM8–7–C METER ON LOAD CENTER

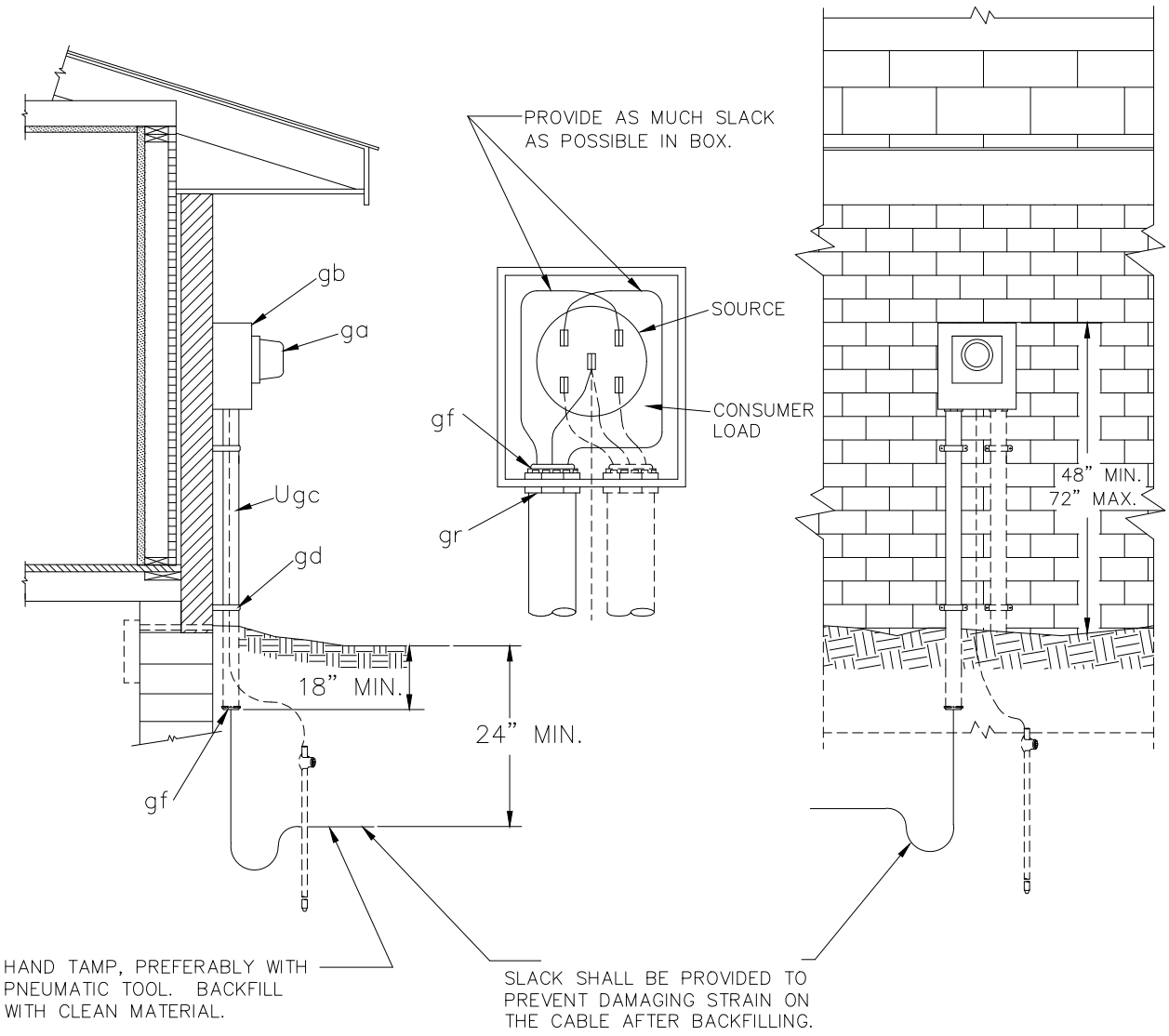
METER SOCKET MUST NOT BE ATTACHED
DIRECTLY TO PADMOUNTED TRANSFORMER.



ITEM	QTY.	MATERIAL
		Control cable, as required
		Pipe strap, as required
gb	1	Meter socket
se		Potential transformer, as required
Ugc		Conduit, as required
Ugc		Steel pipe, as required
Usd		Current transformer, as required

C.T. METER INSTALLATION THREE PHASE

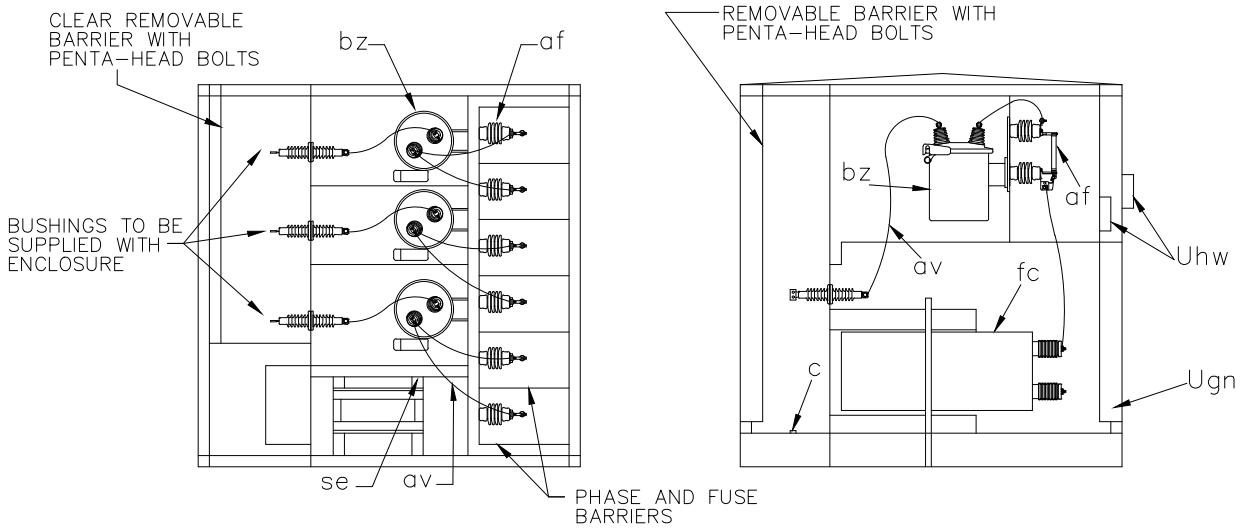
Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UM8 – 7
FDEC		



ITEM	QTY.	MATERIAL
ga	1	Meter, as required
gb	1	Meter socket
gd	2	Pipe strap
gf	2	Insulated bushing, size as required
gr	2	Conduit locknuts, size as required
Ugc	1	Conduit, diameter and length as required

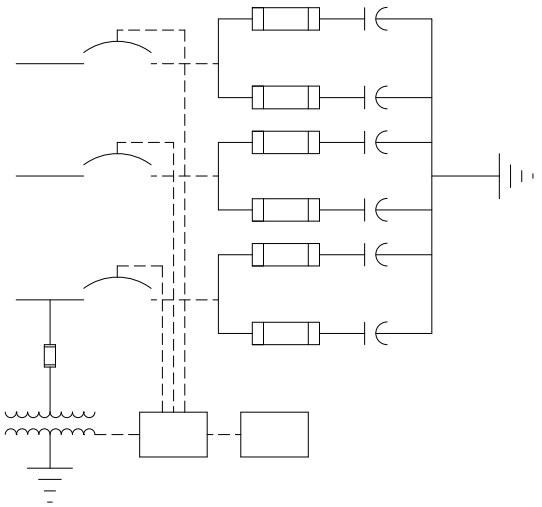
METER INSTALLATION UNDERGROUND SOURCE

Sept. – 18		
FDEC		UM8



TOP VIEW

SIDE VIEW



ONE LINE DIAGRAM

NOTES:

1. LOAD BREAK ELBOWS, STRESS CONES, FUSES OR SWITCH BLADES; GROUND SLEEVE IS NOT PART OF THIS ASSEMBLY. THEY SHOULD BE SPECIFIED SEPARATELY ON THE STAKING SHEETS.
2. TAMP WELL UNDER SLEEVE, LEAVE SLACK COIL OF CABLE IN GROUND SLEEVE.
3. PLACE 6" OF FILL AGAINST INSIDE EDGE OF GROUND SLEEVE.
4. GROUNDING UNIT TO BE SPECIFIED SEPARATELY.
5. INSTALL "WARNING" SIGN ON OUTSIDE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

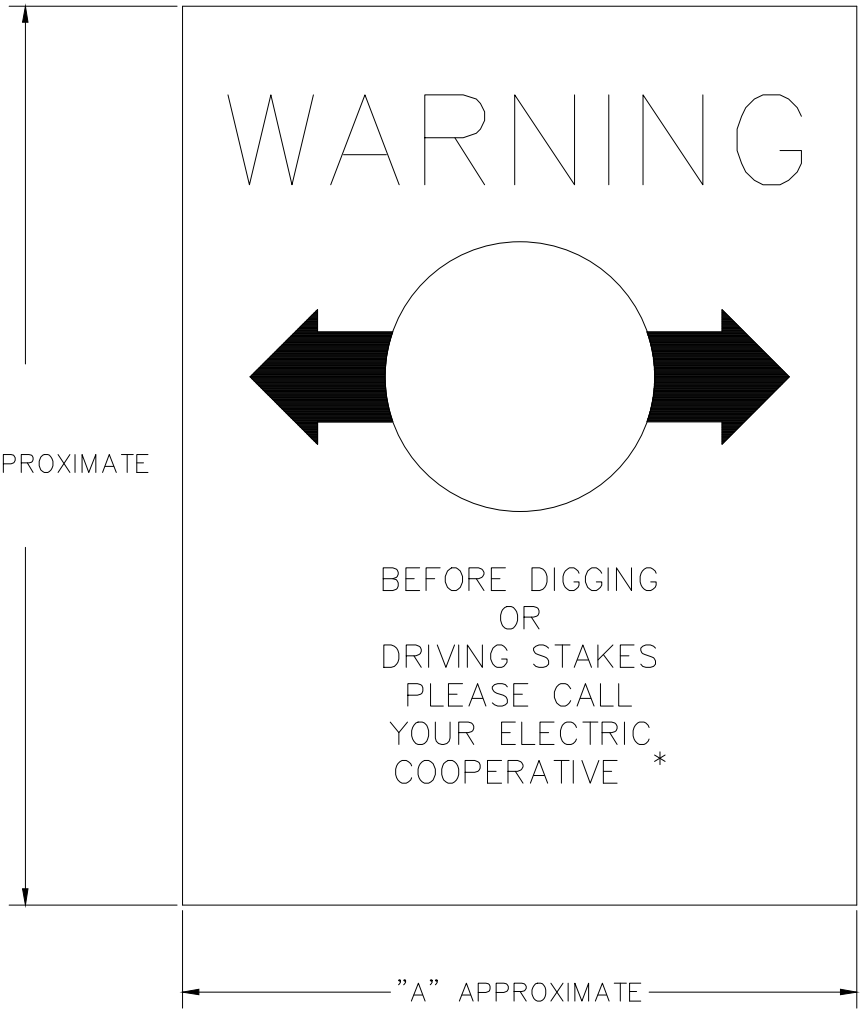
ITEM	QTY.	MATERIAL
c		Bolts, machine, as required
af	6	Power fuse, current limiting
av		Jumpers, copper, as required
bz	3	Single phase oil switch
fc	6	Shunt capacitor
se	1	Potential transformer line voltage to
		120 VAC
	3	Bushing with spade
Ugn	1	Enclosure, as specified
Uhw	2	Signs, "DANGER" and "WARNING"

PAD MOUNTED SWITCHED CAPACITOR ENCLOSURE

Sept. – 18

FDEC

UM9 – 2



* COOPERATIVE NAME AND TELEPHONE NUMBER MAY BE INSERTED AS AN ALTERNATE.

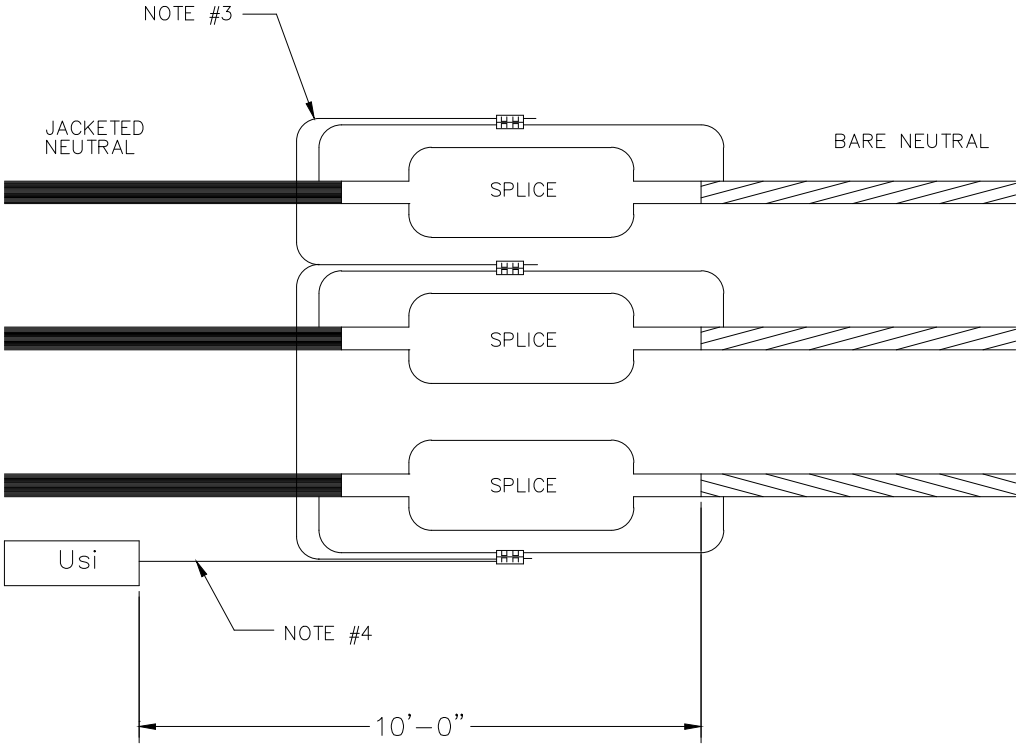
NOTES:

1. BACKING MATERIAL SHALL BE 16 GAUGE GALVANIZED STEEL, OR EQUAL.
2. SIGN SHALL HAVE A YELLOW BACKGROUND WITH BLACK LETTERS.
3. SIGN SHALL BE SUPPORTED AND DISPLAYED AS SPECIFIED BY OWNER.
4. SIGN SHALL MEET ANSI Z535 STANDARD.

WIDTH ("A")	HEIGHT ("B")
4"	5"
7"	12"
3"	12"

CABLE ROUTE
MARKER

Sept. – 18		
FDEC		UM12



TOP VIEW

NOTES:

1. ENGINEER TO SPECIFY NUMBER AND TYPE OF ANODES. DESIGNATE AS:

   UM27–1–(1, 2, or 3)–(lbs.)–(M or Z)

   └MAGNESIUM OR ZINC

2. MOISTURE SEAL AROUND CABLE NEUTRAL.

3. INSTALL FULL–SIZE CONCENTRIC NEUTRAL EXTENSION AS IN A PRIMARY CABLE SPLICE.

4. INSTALL No. 14 AWG INSULATED COPPER WIRE TO ANODE.

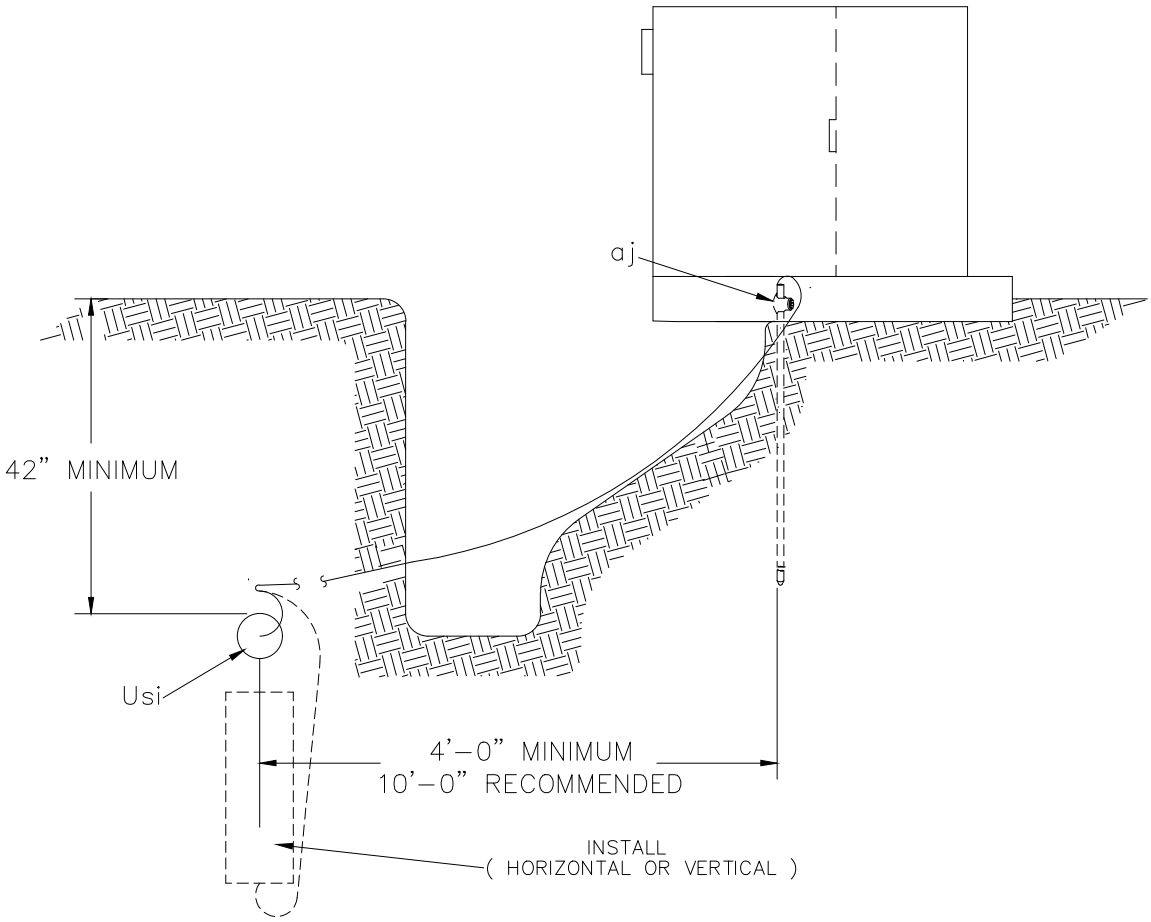
ITEM	QTY.	MATERIAL
p		Connector, compression, as required.
Usi		Anode, sacrificial, insulated, lead
		length as required.
		Size and quantity specified in note #1.

SACRIFICIAL ANODE
FOR CABLE SPLICE PROTECTION
(BARE TO JACKETED CABLE)

Sept. – 18

FDEC

UM27 – 1



NOTE:

1. CONNECT ANODE LEAD WIRE INSIDE PADMOUNTED EQUIPMENT TO ENABLE TESTING OF ANODE OUTPUT.

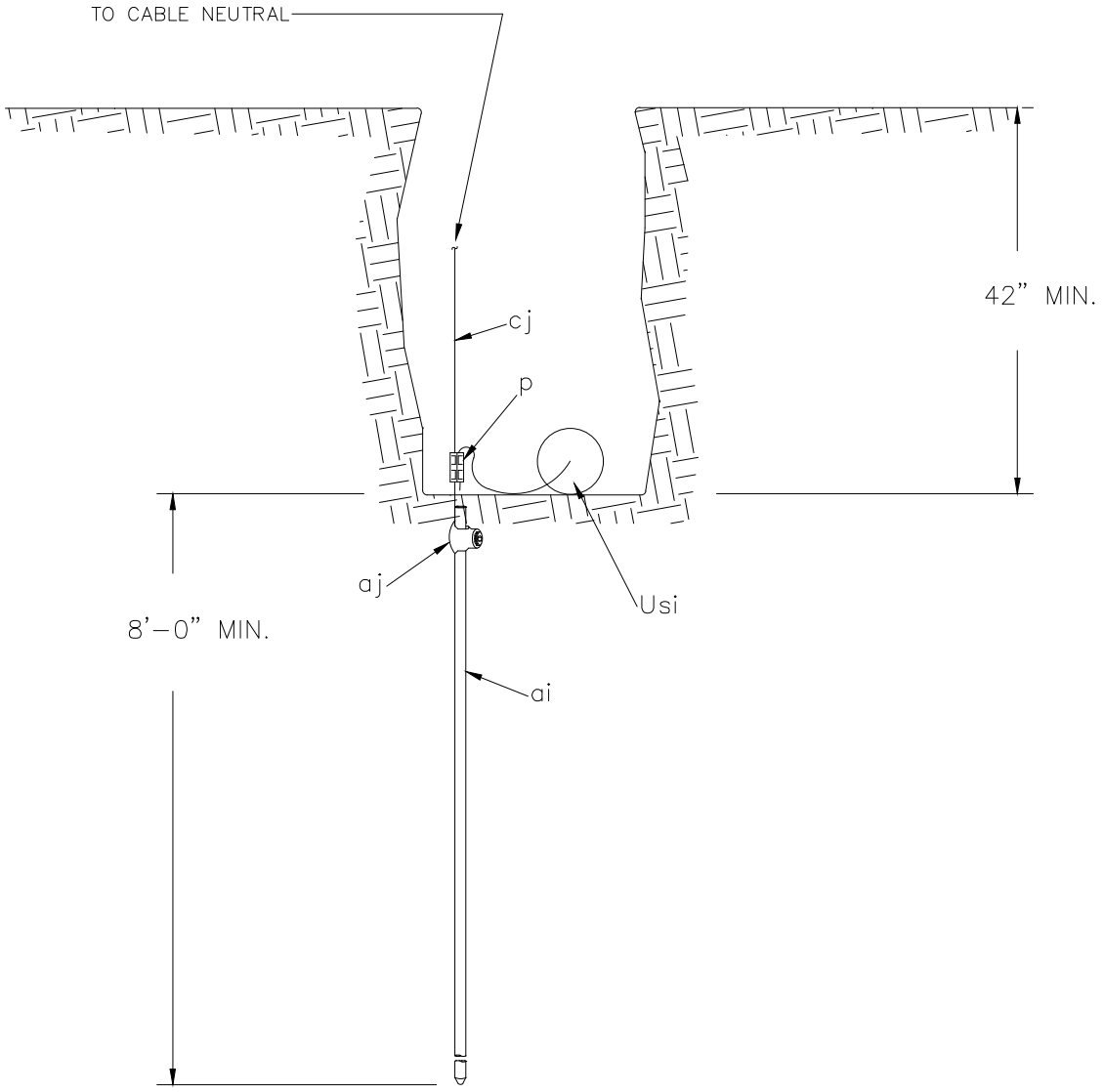
ITEM	QTY.	MATERIAL
p		Connectors, compression, as required
aj		Clamps, ground rod, as required
Usi		Anode, sacrificial, as required

SACRIFICIAL ANODE
FOR EQUIPMENT
GROUND PROTECTION

Sept. – 18

FDEC

UM27 – 2



NOTES:

1. INSTALLATION OF AN ANODE IS NOT REQUIRED AT ALL GROUNDING LOCATIONS.
2. ROUTE ANODE LEAD SO AS TO BE ACCESSIBLE FOR TESTING WHENEVER FEASIBLE. (SEE UNITS UM28 OR UM28–1.)

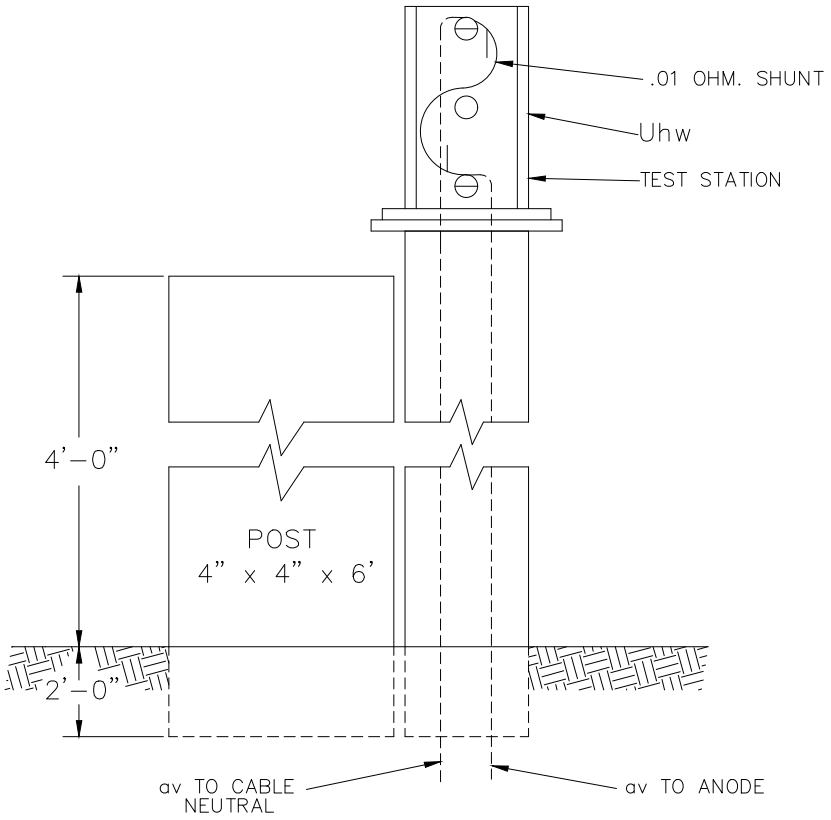
ITEM	QTY.	MATERIAL
p	1	Connector, compression
ai	1	Ground rod, 5/8" x 8'–0" Copper clad
aj	1	Clamp, ground rod
cj		Ground wire, #6 S.D. copper (min.)
Usi	1	Anode, sacrificial

SACRIFICIAL ANODE FOR CABLE GROUND PROTECTION

Sept. – 18

FDEC

UM27 – 3



UM28 ABOVE GROUND LEVEL.

UM28–1 FLUSH WITH GROUND LEVEL
(DELETE POST AND ADD SUITABLE METHOD
FOR LOCATING.)

NOTE:

CONNECTIONS TO BE MADE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

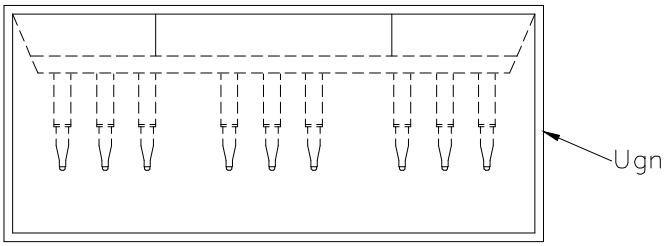
ITEM	QTY.	MATERIAL
	1	4" x 4" x 6' Treated post
	1	Test station, anode
	1	Shunt, anode
av		Jumper, insulated, as required
Uhw	1	Sign, "WARNING"

TEST STATION

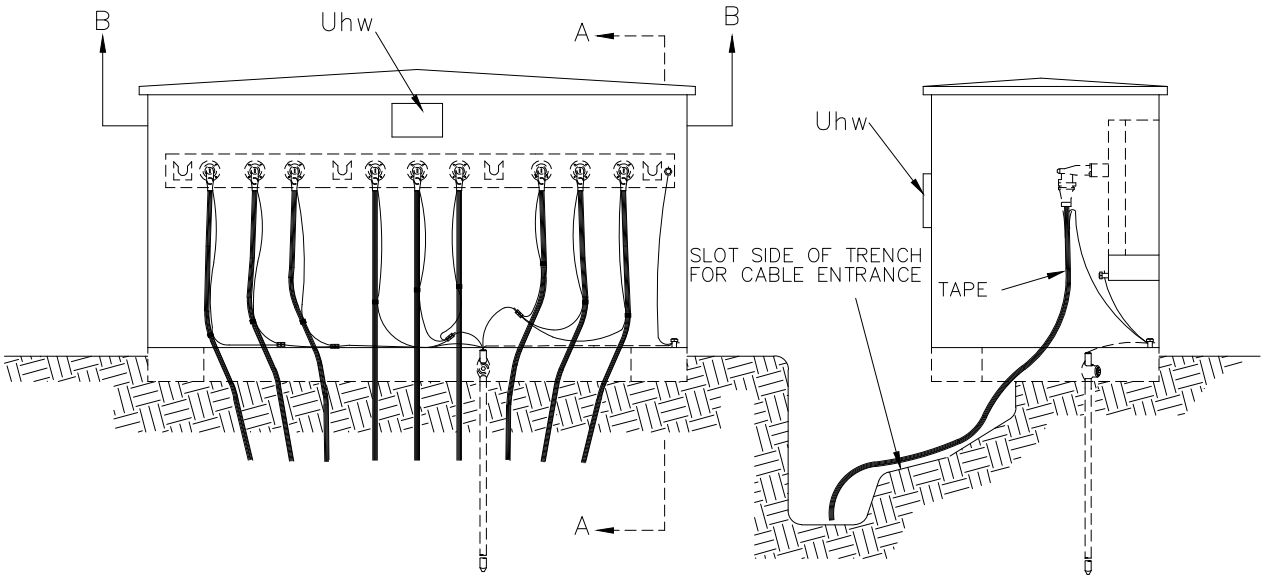
Sept. – 18

FDEC

UM28



SECTION "B–B"



SECTION "A–A"

NOTES:

1. THE FOLLOWING UNITS/ASSEMBLIES ARE NOT PART OF THIS UNIT. SPECIFY SEPARATELY:

   A. MULTIPOINT TERMINATIONS AND OTHER ACCESSORIES
   B. FUSED OR NON–FUSED LOADBREAK ELBOWS
   C. GROUNDING ASSEMBLIES UM48–1 OR OTHER
   D. PAD OR SLEEVE ASSEMBLIES (IF REQUIRED)

2. ALL NEUTRALS AND METALLIC NON–CURRENT CARRYING PARTS SHALL BE INTERCONNECTED AND GROUNDED.

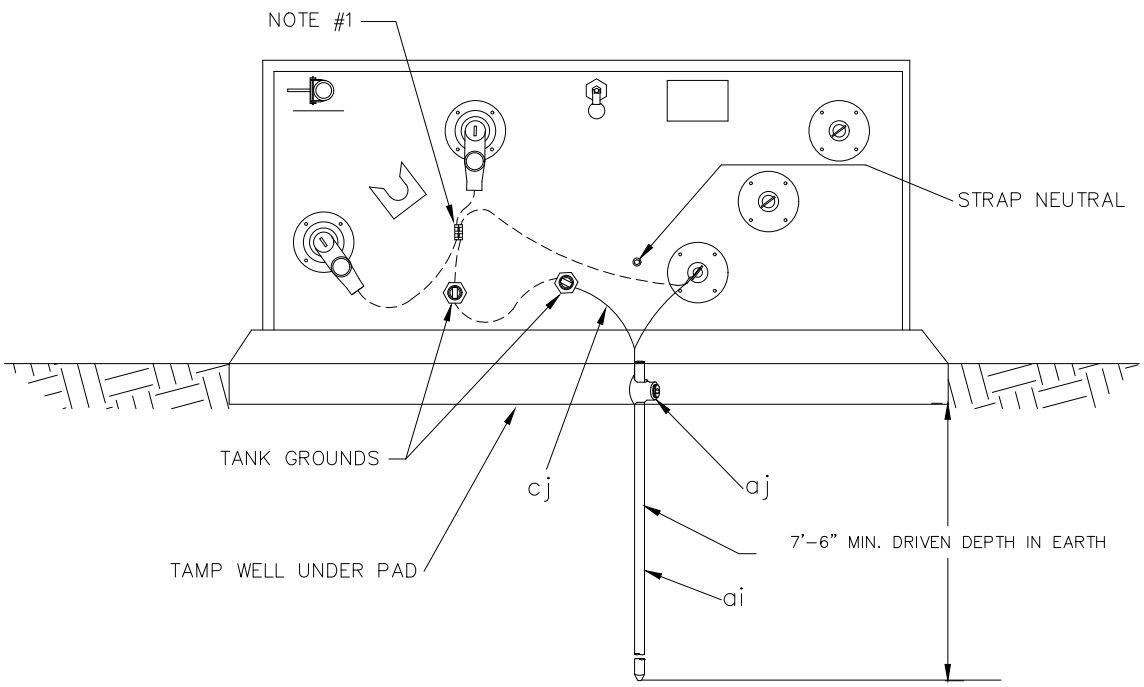
3. INSTALL "WARNING" SIGN ON OUTSIDE SURFACE OF ENCLOSURE AND "DANGER" SIGN INSIDE ENCLOSURE.

ITEM	QTY.	MATERIAL
p		Connectors, as required
av		Jumpers, as required
Ugn	1	Enclosure
Uhw	2	Signs, "DANGER" and " WARNING"

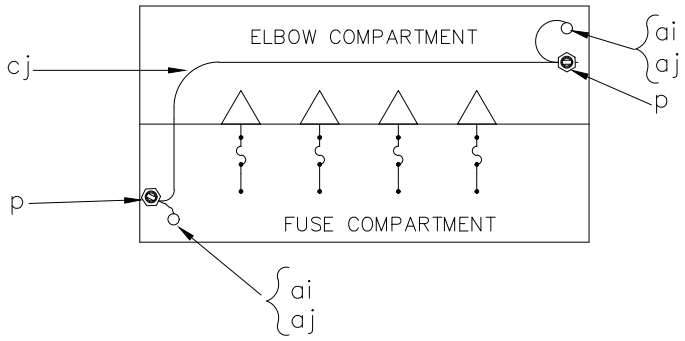
MULTI PHASE
SECTIONALIZING ENCLOSURE
PAD OR SLEEVE MOUNTED

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UM33
FDEC		

TRANSFORMER INSTALLATION
(FRONT VIEW)



DEADFRONT FUSE ENCLOSURE
(TOP VIEW)



NOTES:

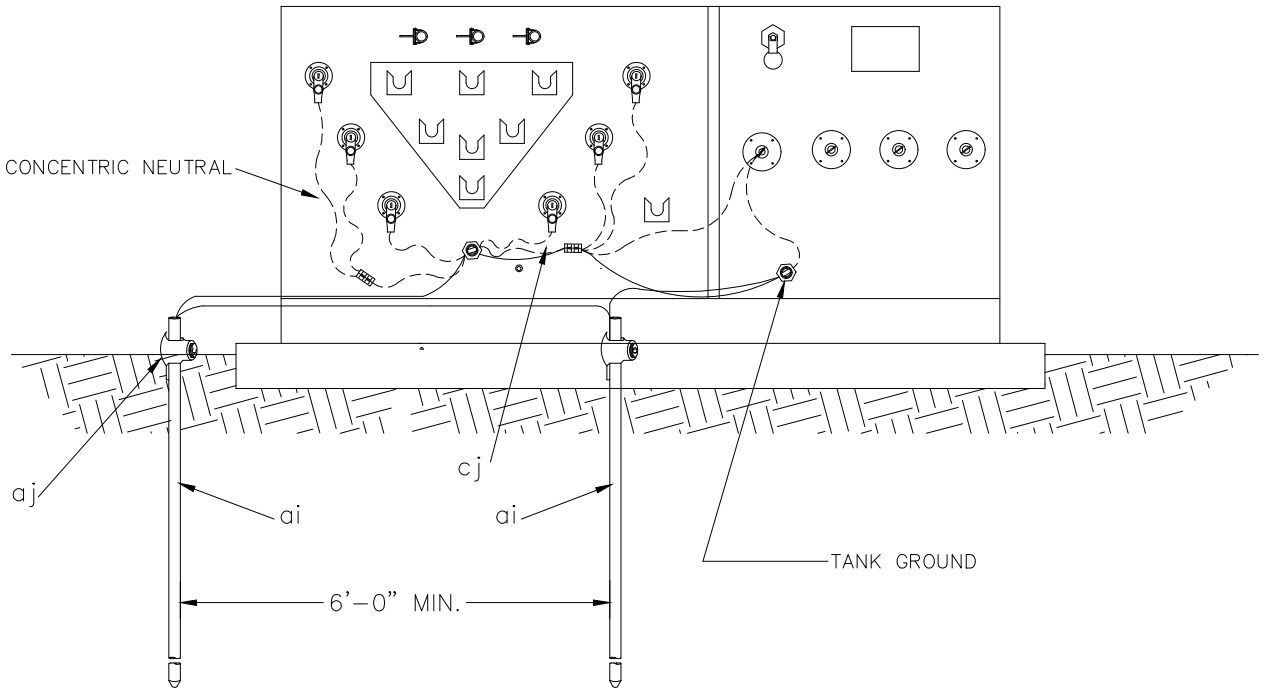
1. TIE CONCENTRIC NEUTRALS TOGETHER BEFORE TAP TO GROUND LOOP TO ASSURE SAME CONDUCTIVITY AS CABLE NEUTRAL.

ITEM	QTY	MATERIAL
p		Connectors, (as required)
ai		Ground rods, specify number and length
aj		Clamp, ground rod (1 per rod)
cj		Ground wire, #4 copper (as required)

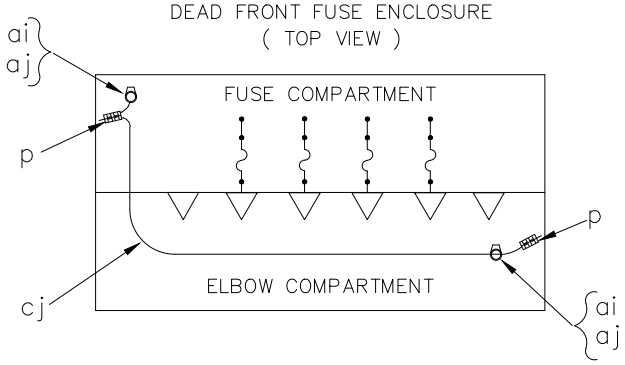
GROUNDING ASSEMBLY FOR PAD MOUNTED SINGLE PHASE TRANSFORMERS AND ENCLOSURES

Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UM48 – 1
FDEC		

TRANSFORMER INSTALLATION
(FRONT VIEW)



DEAD FRONT FUSE ENCLOSURE
(TOP VIEW)



NOTES:

1. TIE CONCENTRIC NEUTRALS TOGETHER BEFORE TAP TO GROUND LOOP TO ASSURE SAME CONDUCTIVITY AS CABLE NEUTRAL.
2. MULTIPLE RODS MAY NOT FIT INSIDE ENCLOSURE. ONLY 1 ROD MUST BE INSTALLED INSIDE ENCLOSURE.
3. THE QUANTITY OF RODS IS TO BE DETERMINED BY THE SPECIFIER. THE USE OF TWO RODS RATHER THAN ONE AT A MUTI–PHASE TRANSFORMER OR ENCLOSURE IS NOT A STANDARD OR REQUIREMENT BY RUS.

ITEM	QTY	MATERIAL
p		Connectors, as required
ai		Ground rods, specify number and length
aj		Clamp, ground rod (1 per rod)
		Jumpers, copper, as required
cj		Ground wire, #4 copper min. (as required)

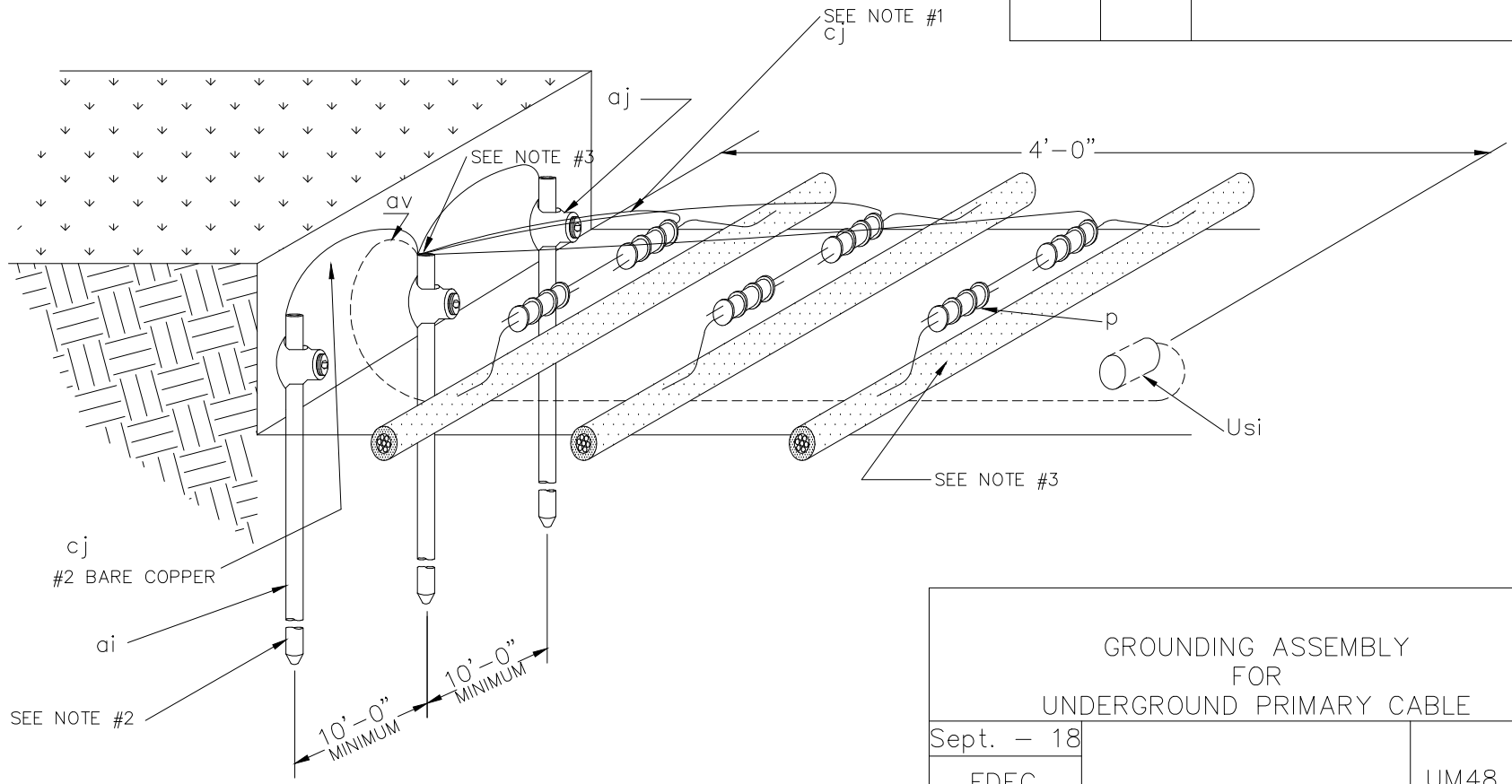
GROUNDING AND ASSEMBLY FOR PAD MOUNTED MULTI PHASE TRANSFORMERS AND ENCLOSURES

Sept. – 18	3 – PHASE PRIMARY 12.47/7.2 kV	UM48 – 2
FDEC		

NOTES:

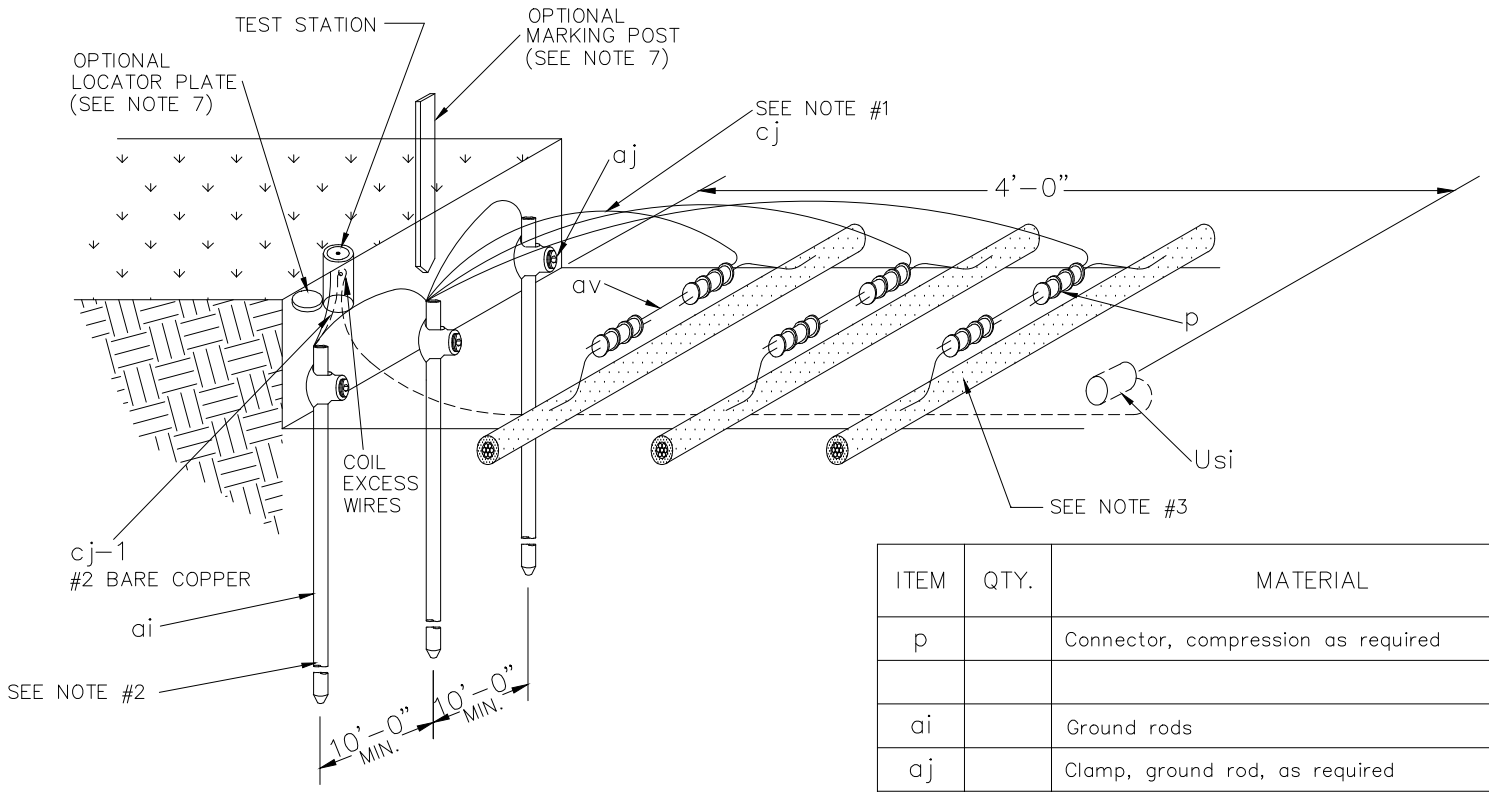
1. #2 THRU 4/0 CONDUCTOR – USE #4 BARE, SOLID CU JUMPER (av) #4 STRD CU GROUND WIRE (cj) 500 MCM CONDUCTOR – USE #2/0 BARE SOLID CU JUMPER (av) #2 STRD CU GROUND WIRE (cj).
2. ENGINEER TO SPECIFY NUMBER AND LENGTH OF GROUND RODS.
3. MOISTURE SEAL AROUND CONNECTIONS TO THE JACKETED CABLE NEUTRAL. USE SOLID COPPER INSIDE AND EXTENDED THROUGH MOISTURE SEAL.
4. FOUR GROUNDS PER MILE MINIMUM. MORE REQUIRED WITH HIGH GROUND RESISTANCE.
5. GROUND RODS MAY BE INSTALLED IN SEPARATE PITS SPACED 30 FEET APART.

ITEM	QTY.	MATERIAL
p		Connector, compression as required
ai		Ground rods
aj		Clamp, ground rod, as required
av		Jumper, See Note #1
cj		Grounding wire, #4, #2, copper
cj		Jumpers, (2) – #14 stranded leads



GROUNDING ASSEMBLY
FOR
UNDERGROUND PRIMARY CABLE

Sept. – 18		
FDEC		UM48 – 3



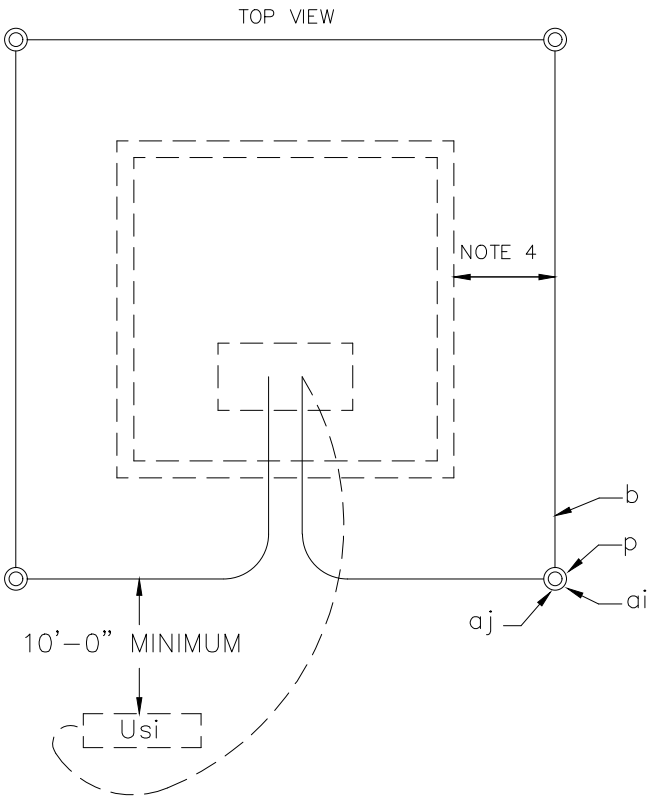
ITEM	QTY.	MATERIAL
p		Connector, compression as required
ai		Ground rods
aj		Clamp, ground rod, as required
av		Jumper, copper (See Note #1)
cj		Grounding wire #4, #2, copper
cj		Jumper (2) – #14 stranded leads
	1	Test station, flush mount

NOTES:

1. #2 THRU 4/0 CONDUCTOR – USE #4 BARE, SOLID CU. JUMPER (av) #4 STRD. CU. GROUND WIRE (cj) 500 MCM CONDUCTOR – USE #2/0 BARE, SOLID CU. JUMPER (av) #2 STRD. CU. GROUND WIRE (cj).
2. ENGINEER TO SPECIFY NUMBER AND LENGTH OF GROUND RODS.
3. MOISTURE SEAL AROUND CONNECTIONS TO THE JACKETED CABLE NEUTRAL. USE SOLID COPPER INSIDE EXTENDED THROUGH MOISTURE SEAL.
4. FOUR (4) GROUNDS PER MILE MINIMUM. MORE REQUIRED WITH HIGH GROUND RESISTANCE.
5. INSTALL TEST STATION EVEN WITH GRADE.
6. GROUND RODS MAY BE INSTALLED IN SEPARATE PITS SPACED 30 FEET APART.
7. SEE DRAWING UX–7 FOR POSSIBLE LOCATING METHODS.

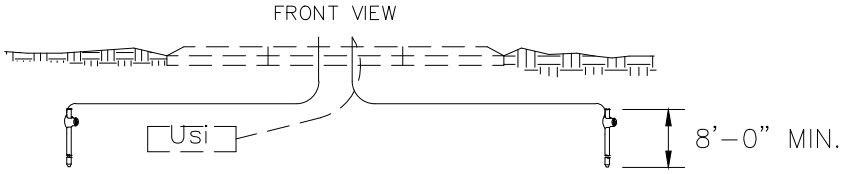
GROUNDING ASSEMBLY FOR UNDERGROUND PRIMARY CABLE (WITH TEST STATION)

Sept. – 18		
FDEC		UM48 – 3



NOTE:

CONNECT ANODE, LEAD INSIDE PAD MOUNTED ENCLOSURES FOR TESTING PURPOSES.



NOTES:

1. PLACE ONE GROUND ROD AT EACH CORNER.
2. GROUNDING GRID 1/0 BARE COPPER BURIED 6" BELOW GROUND, RUN WIRE INTO BASEMENT AND ALLOW 5'–0" FOR GROUNDING LIVE FRONT SWITCH / FUSE ENCLOSURES.
3. PAD OR BASEMENT IS NOT PART OF THIS UNIT.
4. PLACE GROUND WIRE A MINIMUM OF 24" AWAY FROM THE SIDE OR SIDES OF PAD THAT A PERSON WOULD STAND TO OPERATE THE EQUIPMENT. THE GROUND WIRE MAY BE PLACED WITHIN 12" OF THE OTHER SIDES.
5. SPECIFY LENGTH OF GROUND RODS AT EACH CORNER.

ITEM	QTY.	MATERIAL
av		1/0 bare copper (as required) 30'–0" Min.
p		Connectors (as required)
ai	4	Ground rods
aj	4	Clamp, ground rod, 1 per rod

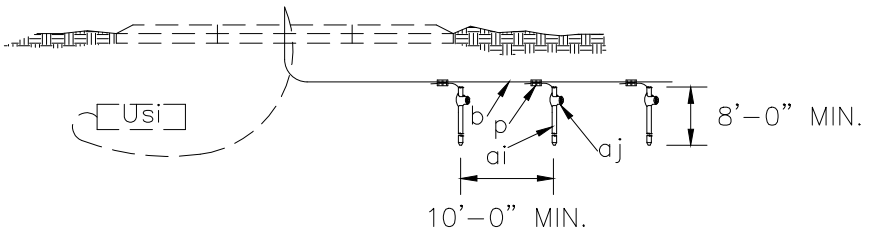
GROUNDING GRID FOR PAD MOUNTED EQUIPMENT INSTALLATION

Sept. – 18

FDEC

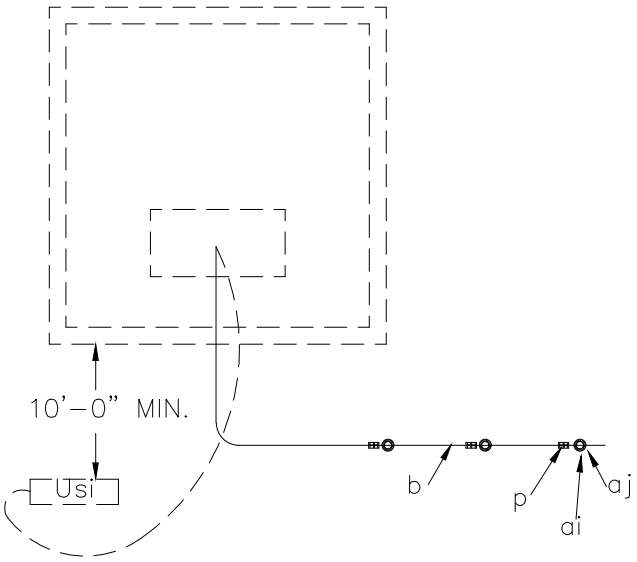
UM48 – 5

FRONT VIEW



NOTE:
CONNECT ANODE LEAD INSIDE PAD MOUNTED ENCLOSURES FOR TESTING PURPOSES

TOP VIEW



NOTES:

1. PLACE A MINIMUM OF TWO GROUND RODS IN SERIES. MINIMUM DISTANCE BETWEEN GROUND UNIT ASSEMBLIES – 10'–0".

2. GROUNDING GRID 1/0 BARE COPPER BURIED 6" BELOW GROUND, RUN WIRE INTO BASEMENT AND ALLOW 5'–0" FOR GROUNDING LIVE FRONT SWITCH / FUSE ENCLOSURES.

3. PAD OR BASEMENT IS NOT PART OF THIS UNIT.

4. SPECIFY NUMBER AND LENGTH OF GROUND RODS.

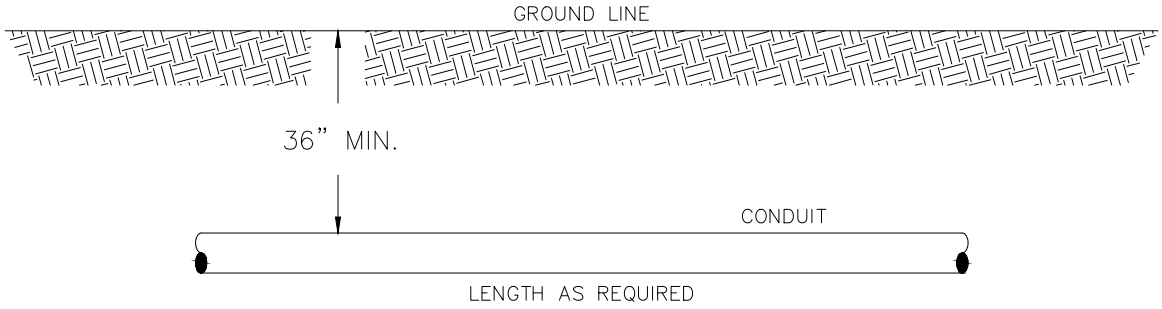
ITEM	QTY.	MATERIAL
av		1/0 bare copper as required
p		Connectors, as required
ai		Ground rods
aj		Clamp, ground rod, 1 per rod

GROUNDING ARRAY
FOR PAD MOUNTED
EQUIPMENT INSTALLATION

Sept. – 18

FDEC

UM48 – 6



SPECIFICATION NUMBER CODES:

UM50–(P,S OR H)–(DIAMETER)

EXAMPLE: UM50–S–3

IS 3" STEEL CONDUIT

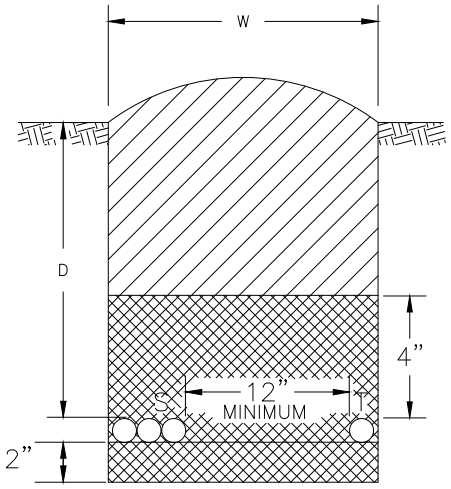
MATERIAL	–P–2	–P–2.5	–P–3	–P–3.5	–P–4	–P–5	–P–6
1–2" P.V.C CONDUIT	1						
1–2.5" P.V.C CONDUIT		1					
1–3" P.V.C CONDUIT			1				
1–3.5" P.V.C CONDUIT				1			
1–4" P.V.C CONDUIT					1		
1–5" P.V.C CONDUIT						1	
1–6" P.V.C CONDUIT							1
MATERIAL	–S–2	–S–2.5	–S–3	–S–3.5	–S–4	–S–5	–S–6
1–2" Steel CONDUIT	1						
1–2.5" Steel CONDUIT		1					
1–3" Steel CONDUIT			1				
1–3.5" Steel CONDUIT				1			
1–4" Steel CONDUIT					1		
1–5" Steel CONDUIT						1	
1–6" Steel CONDUIT							1
MATERIAL	–H–2	–H–2.5	–H–3	–H–3.5	–H–4	–H–5	–H–6
1–2" H.D.P.E CONDUIT	1						
1–2.5" H.D.P.E CONDUIT		1					
1–3" H.D.P.E CONDUIT			1				
1–3.5" H.D.P.E CONDUIT				1			
1–4" H.D.P.E CONDUIT					1		
1–5" H.D.P.E CONDUIT						1	
1–6" H.D.P.E CONDUIT							1

NOTE:

SPECIFY TRENCH UNIT SEPARATELY

MISCELLANEOUS CONDUIT INSTALLATION

Sept. – 18		
FDEC		UM50–_–_



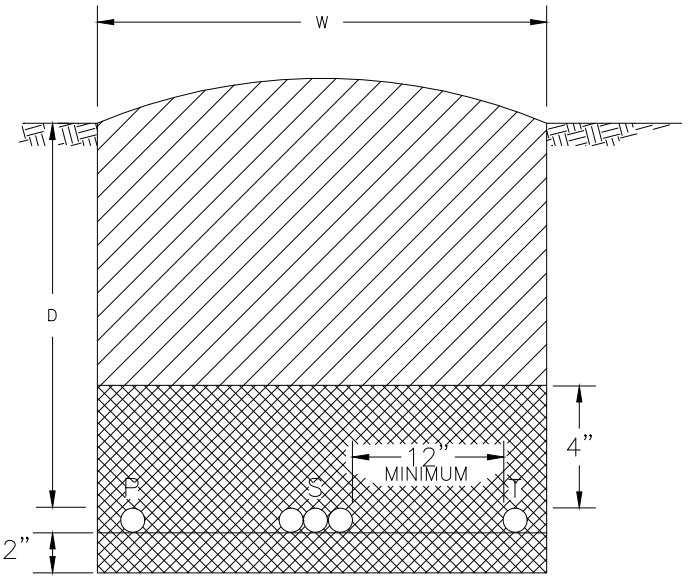
UR2–3 (D x W)
SERVICE OR SECONDARY
AND
TELEPHONE

LEGEND

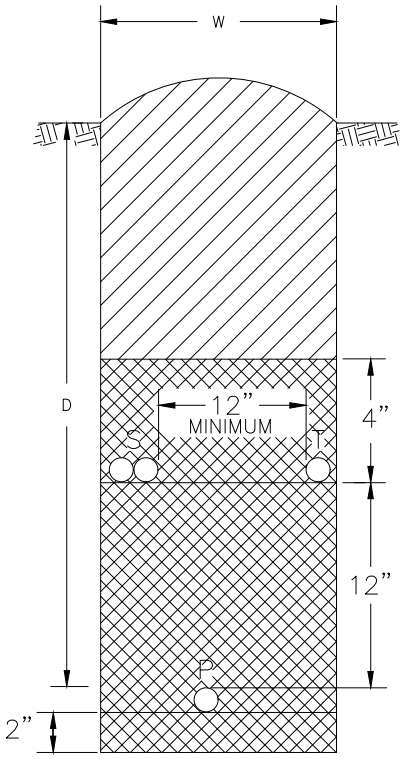
BEDDING SAND OR CLEAN SOIL

COMPACTED BACKFILL UNLESS OTHERWISE SPECIFIED

UNDISTURBED EARTH



UR2–5 (D x W)
PRIMARY, SECONDARY
AND
TELEPHONE



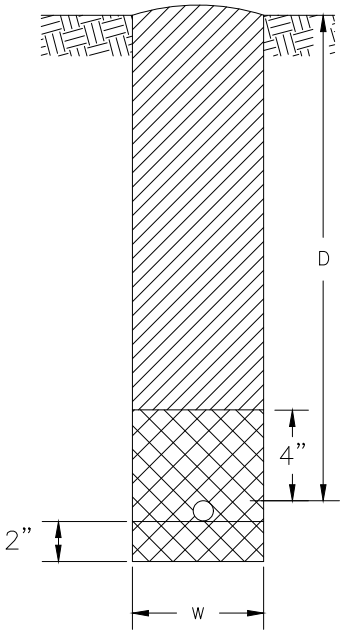
UR2–4 (D x W)
PRIMARY
AND
SECONDARY OR TELEPHONE

NOTES:

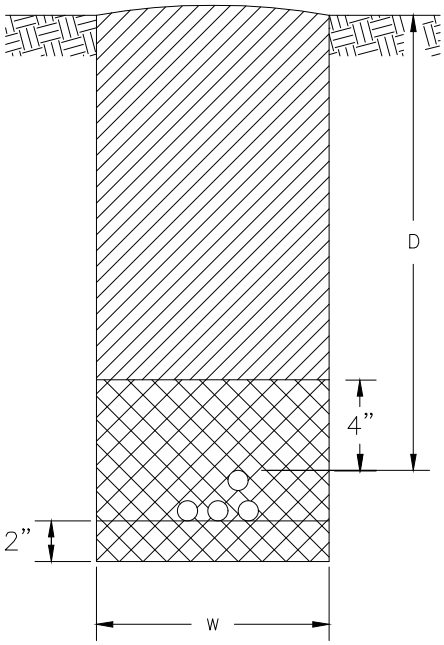
1. DEPTH (D) AND WIDTH (W) ARE SPECIFIED IN DESCRIPTION OF UNITS.
2. DEPTHS SPECIFIED ARE TO FINISHED GRADE.
3. OVER–EXCAVATE TRENCHES AS NECESSARY TO ALLOW FOR (a) SAND BEDDING OR (b) LOOSE AND SANDY SOILS OR (c) WHERE MORE THAN ONE CABLE WILL BE INSTALLED IN TRENCH AND LAYING OF FIRST CABLE MAY CAUSE TRENCH DAMAGE AND REDUCTION IN DEPTH.
4. SAND BEDDING IS NOT PART OF THESE UNITS AND WILL BE SPECIFIED AS NEEDED.
5. BACKFILLING IS PART OF ALL TRENCHING UNITS INCLUDING JOINT–USE TRENCHES.

TRENCHES FOR DIRECT BURIAL CABLES

Sept. – 18 FDEC		UR2 – 3, UR2 – 5



UR2 (D x W)
TRENCHING UNIT
ONE CABLE OR
CABLE ASSEMBLY



UR2–1 (D x W)
TRENCHING UNIT
MULTIPLE POWER CABLES
PRIMARY, SECONDARY OR SERVICE

LEGEND

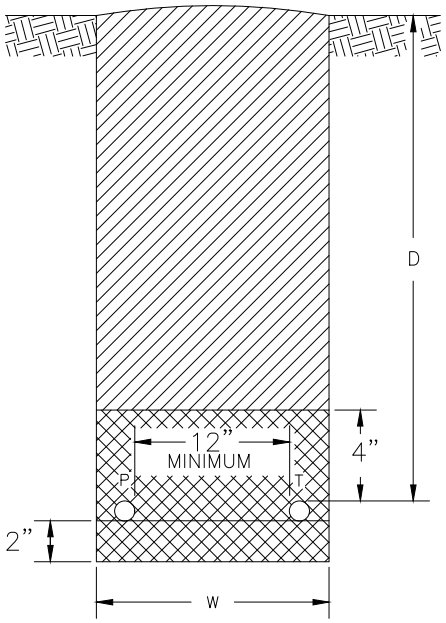
SAND OR CLEAN SOIL

COMPACTED BACKFILL UNLESS OTHERWISE SPECIFIED

UNDISTURBED EARTH

NOTES:

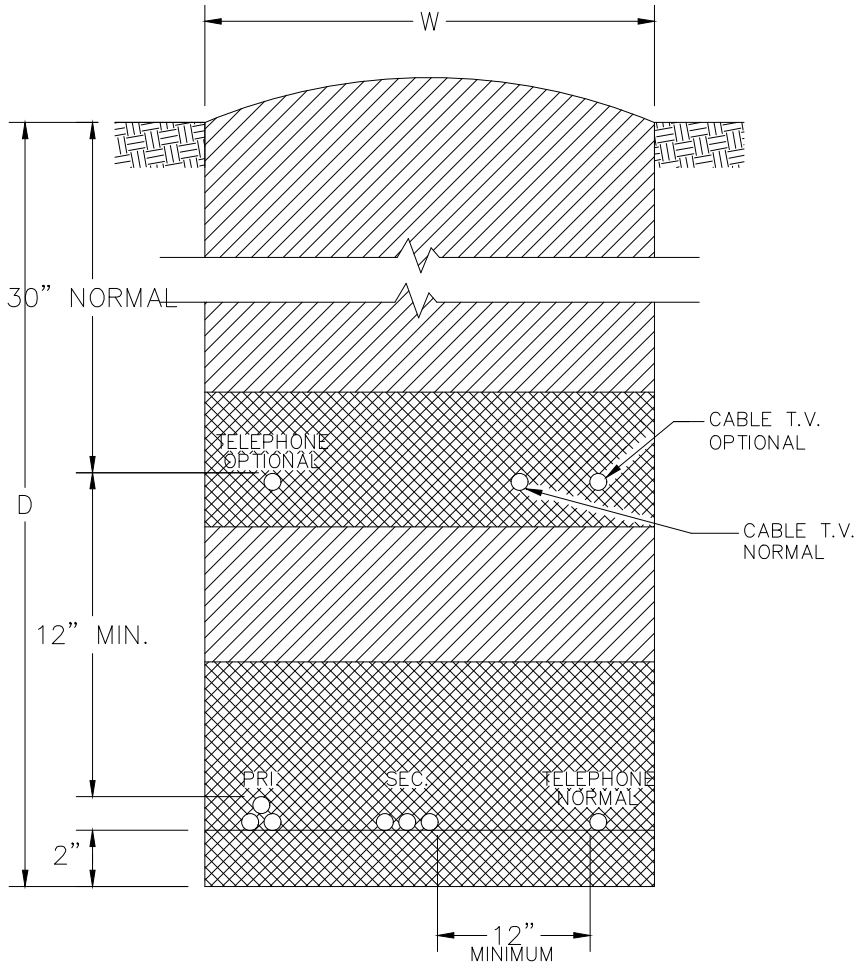
1. DEPTH (D) AND WIDTH (W) ARE SPECIFIED IN DESCRIPTION OF UNITS.
2. DEPTHS SPECIFIED ARE TO FINISHED GRADE.
3. OVER–EXCAVATE TRENCHES AS NECESSARY TO ALLOW FOR (a) SAND BEDDING OR (b) LOOSE SANDY SOILS OR (c) WHERE MORE THAN ONE CABLE WILL INSTALLED IN TRENCH AND LAYING FIRST CABLE MAY CAUSE TRENCH DAMAGE AND REDUCTION IN DEPTH.
4. SAND BEDDING IS NOT PART OF THESE UNITS AND WILL BE SPECIFIED AS NEEDED.
5. BACKFILLING IS PART OF ALL TRENCHING UNITS INCLUDING JOINT–USE TRENCHES.
6. OPTIONAL WARNING TAPE IS RECOMMENDED TO BE PLACED ABOVE THE INSTALLED CABLE.



UR2–2 (D x W)
TRENCHING UNIT
POWER AND TELEPHONE CABLE

TRENCHES FOR DIRECT BURIAL CABLES

Sept. – 18 FDEC		UR2, UR2 – 2



LEGEND

BEDDING SAND OR CLEAN SOIL

COMPACTED BACKFILL UNLESS OTHERWISE SPECIFIED

UNDISTURBED EARTH

PRI. = PRIMARY SUPPLY CABLES
SEC. = SECONDARY OR STREETLIGHT WIRES

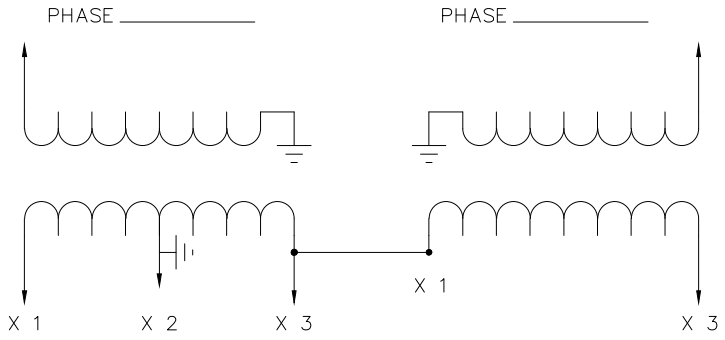
URT–NT = NORMAL TRENCH 42" – 48" DEPTH
URT–ST = SUPER TRENCH 60" + DEPTH
W = 18" – 24" NORMAL

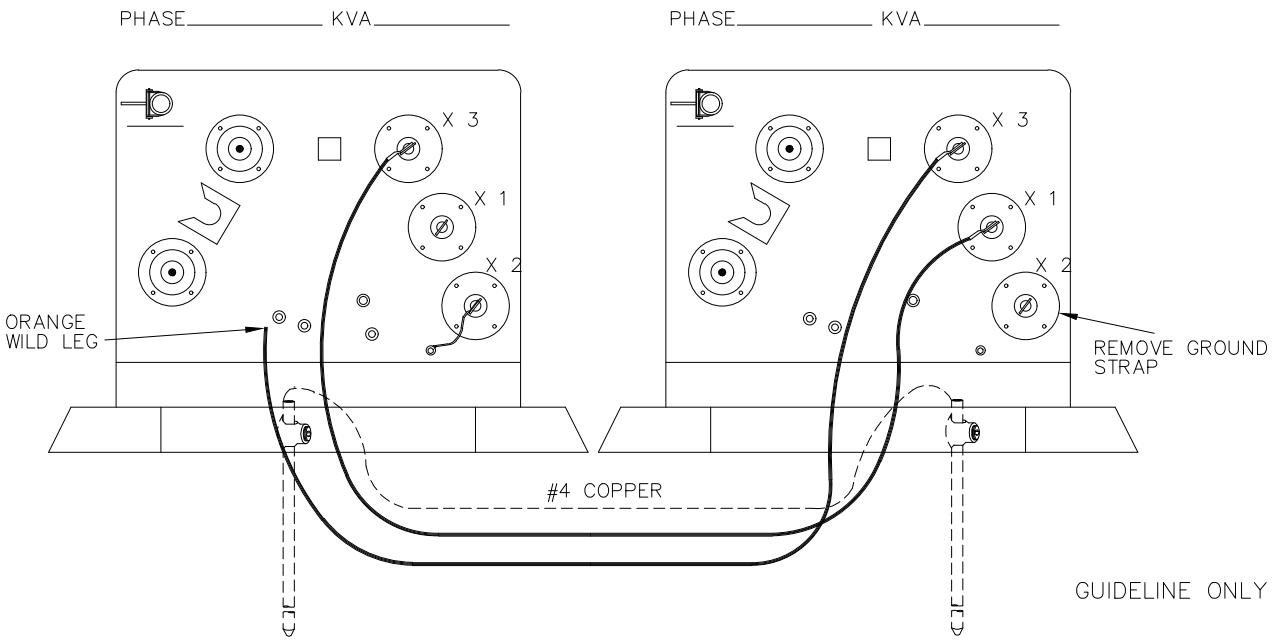
NOTES:

1. DEPTH (D) AND WIDTH (W) ARE SPECIFIED IN DESCRIPTION OF UNITS.
2. DEPTHS SPECIFIED ARE TO FINISHED GRADE.
3. OVER–EXCAVATE TRENCHES AS NECESSARY TO ALLOW FOR (a) SAND BEDDING OR (b) LOOSE AND SANDY SOILS OR (c) WHERE MORE THAN ONE CABLE WILL BE INSTALLED IN TRENCH AND LAYING OF FIRST CABLE MAY CAUSE TRENCH DAMAGE AND REDUCTION IN DEPTH.
4. SAND BEDDING IS NOT PART OF THESE UNITS AND WILL BE SPECIFIED AS NEEDED.
5. BACKFILLING IS PART OF ALL TRENCHING UNITS INCLUDING JOINT–USE TRENCHES.

TRENCHES FOR DIRECT BURIAL CABLE

Sept. – 18 FDEC		UR2 – NT, UR2 – ST

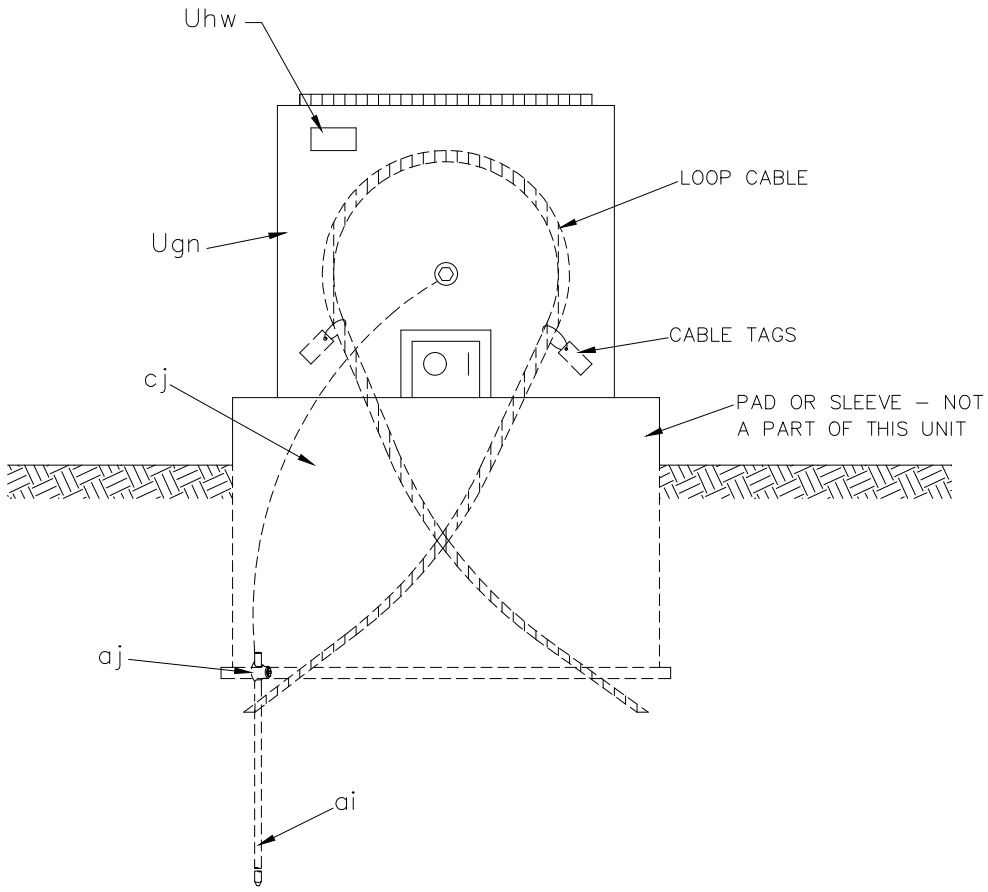




NOTE:

1. SPECIFY (2) APPLICABLE SINGLE PHASE TRANSFORMER ASSEMBLIES.

OPEN DELTA CONNECTION WITH SINGLE PHASE PADMOUNT TRANSFORMERS		
Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UX1
FDEC		



INSTALLATION NOTES:

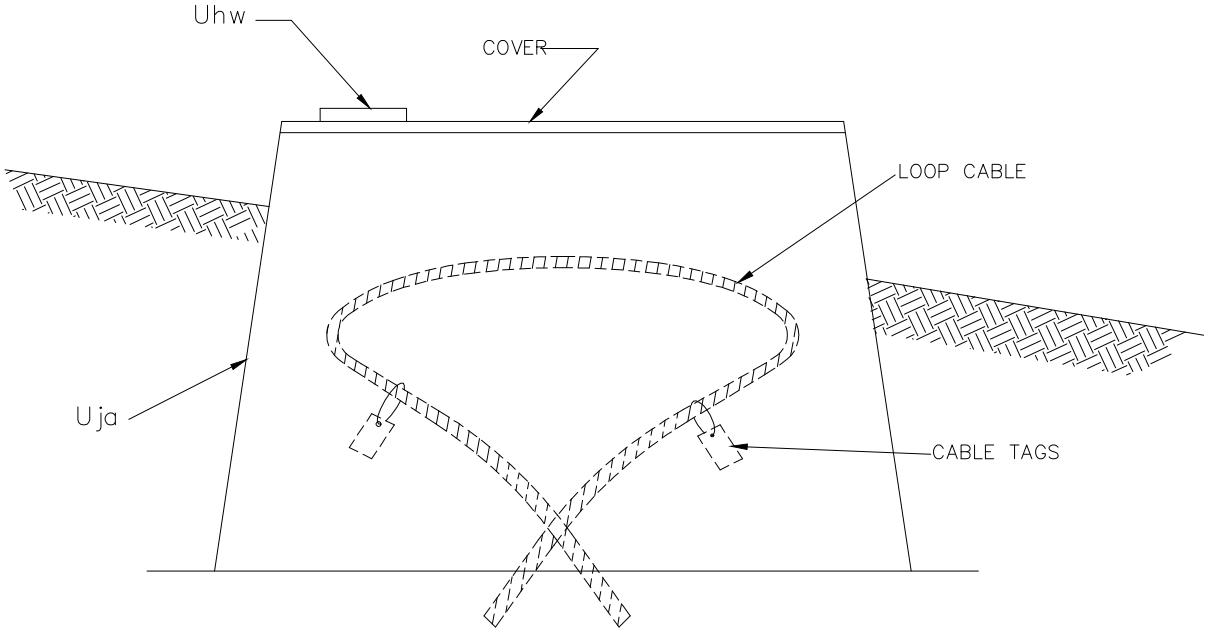
1. LOOP CABLE TO PROVIDE SUFFICIENT LENGTH FOR TERMINATING IN A PAD–MOUNTED TRANSFORMER.

2. INSTALL CABLE TAGS ON CABLE.

ITEM	QTY.	MATERIAL
ai	1	Ground rod
aj	1	Clamp, ground rod
cj		As required
Ugn	1	Primary junction enclosure
Uhw	1	Sign, "WARNING"

SINGLE PHASE PAD MOUNTED
TRANSFORMER DEFERRED UNIT
PEDESTAL TYPE

Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UX2
FDEC		



INSTALLATION NOTES:

1. LOOP CABLE TO PROVIDE SUFFICIENT LENGTH FOR TERMINATING IN A LOW PROFILE TRANSFORMER.

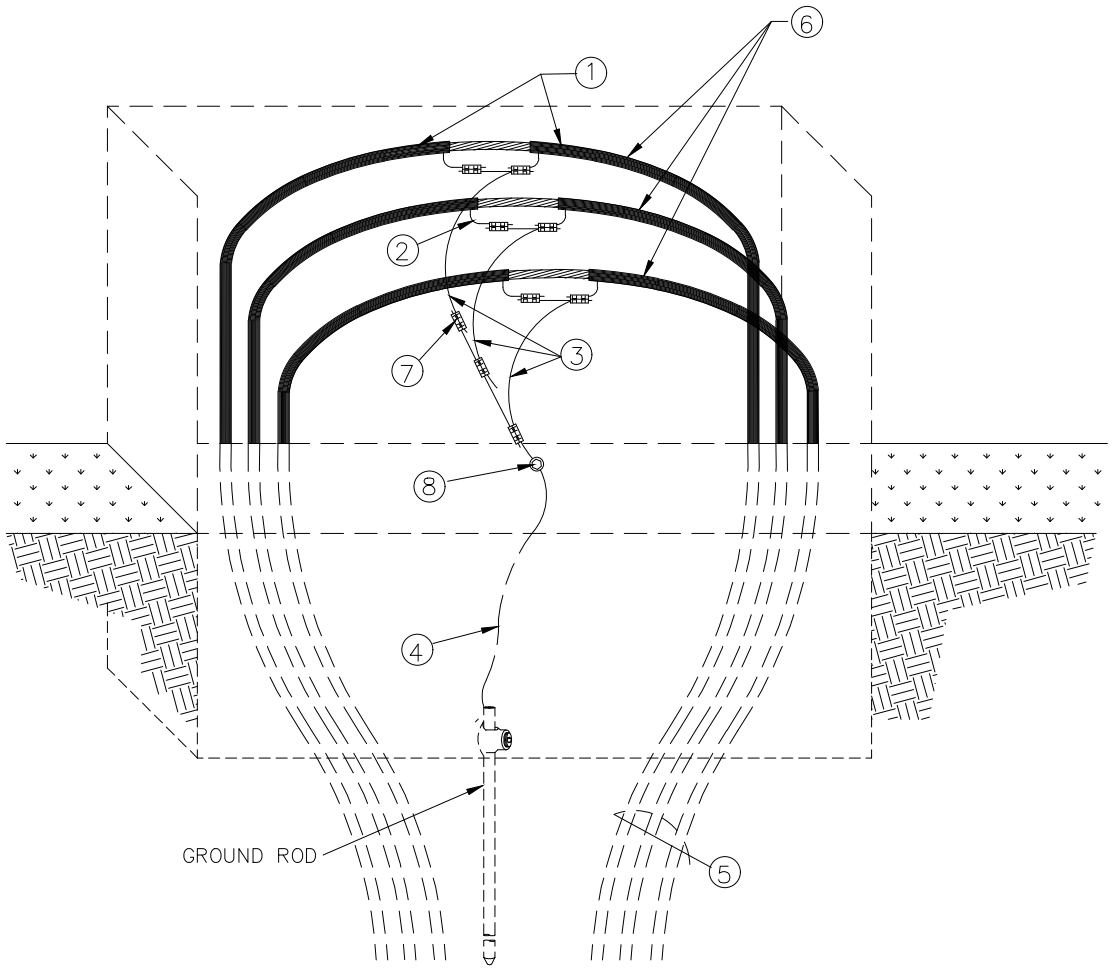
2. INSTALL CABLE TAGS ON CABLE.

3. COVER, IF METAL, SHALL BE GROUNDED

ITEM	QTY.	MATERIAL
Uhw	1	Sign, "WARNING"
Uja	1	Transformer pad–sleeve combination
Uja	1	Cover

SINGLE PHASE PAD MOUNTED
TRANSFORMER DEFERRED UNIT
PAD SLEEVE TYPE

Sept. – 18	1 – PHASE PRIMARY 12.47/7.2 kV	UX3
FDEC		

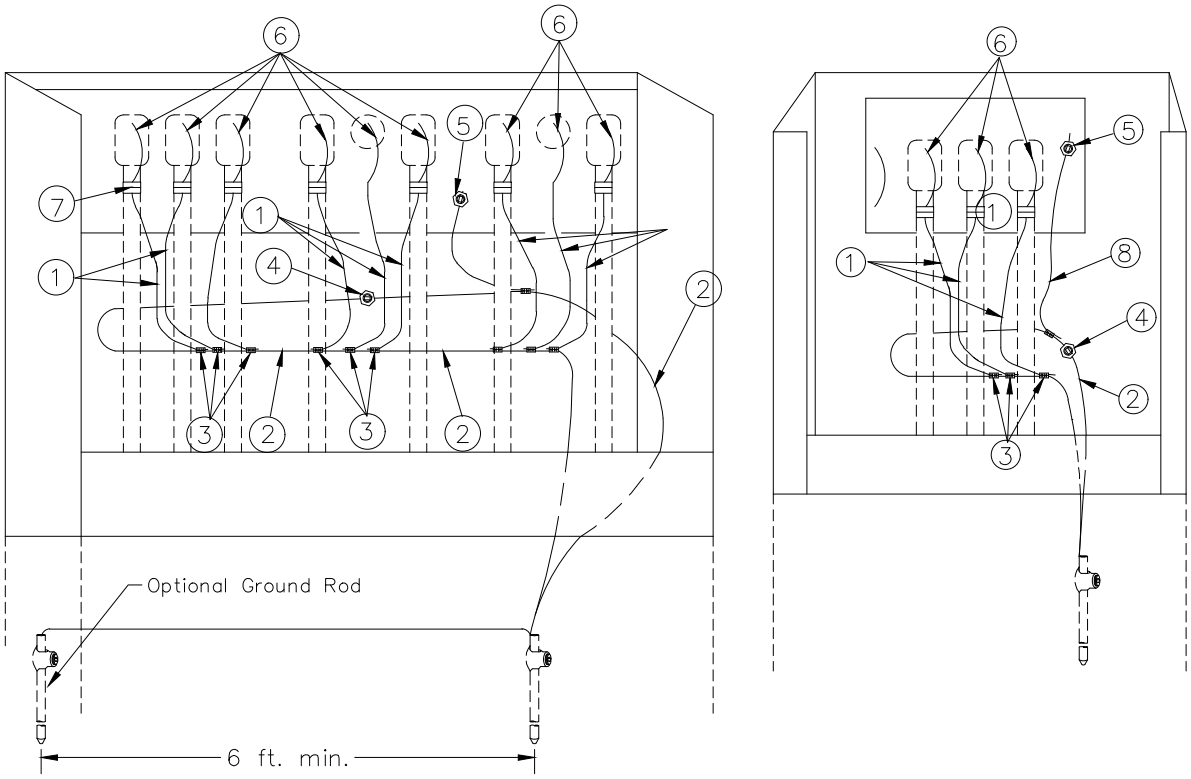


REFERENCE NO.	MATERIAL
1	Label cable for direction leaving sectionalizer
2	Seal cable
3	Neutral extension
4	Ground bus
5	Leave sufficient slack in cable for future terminating
6	Label cable per phase (A, B or C)
7	Parallel compression connector
8	Box grounding connector

GUIDELINE ONLY

INSTALLATION OF NEUTRAL CONNECTION IN ABOVE GRADE PEDESTAL

Sept. – 18		
FDEC		UX4



NOTE:

1. LEAVE SUFFICIENT SLACK IN NEUTRAL EXTENSION AND GROUND BUS TO FACILITATE REMOVAL AND PARKING OF PRIMARY CABLES.
2. MULTIPLE GROUND RODS MAY NOT FIT INSIDE ENCLOSURE.
3. MULTIPLE GROUND RODS MAY NOT BE NECESSARY.

REFERENCE NO.	MATERIAL
①	Neutral extension
②	Ground bus
③	Parallel compression connector
④	Box grounding connector
⑤	Plate grounding connector
⑥	Bleed wire from elbow termination
⑦	Bleed wire compression connector
⑧	#6 SD CU

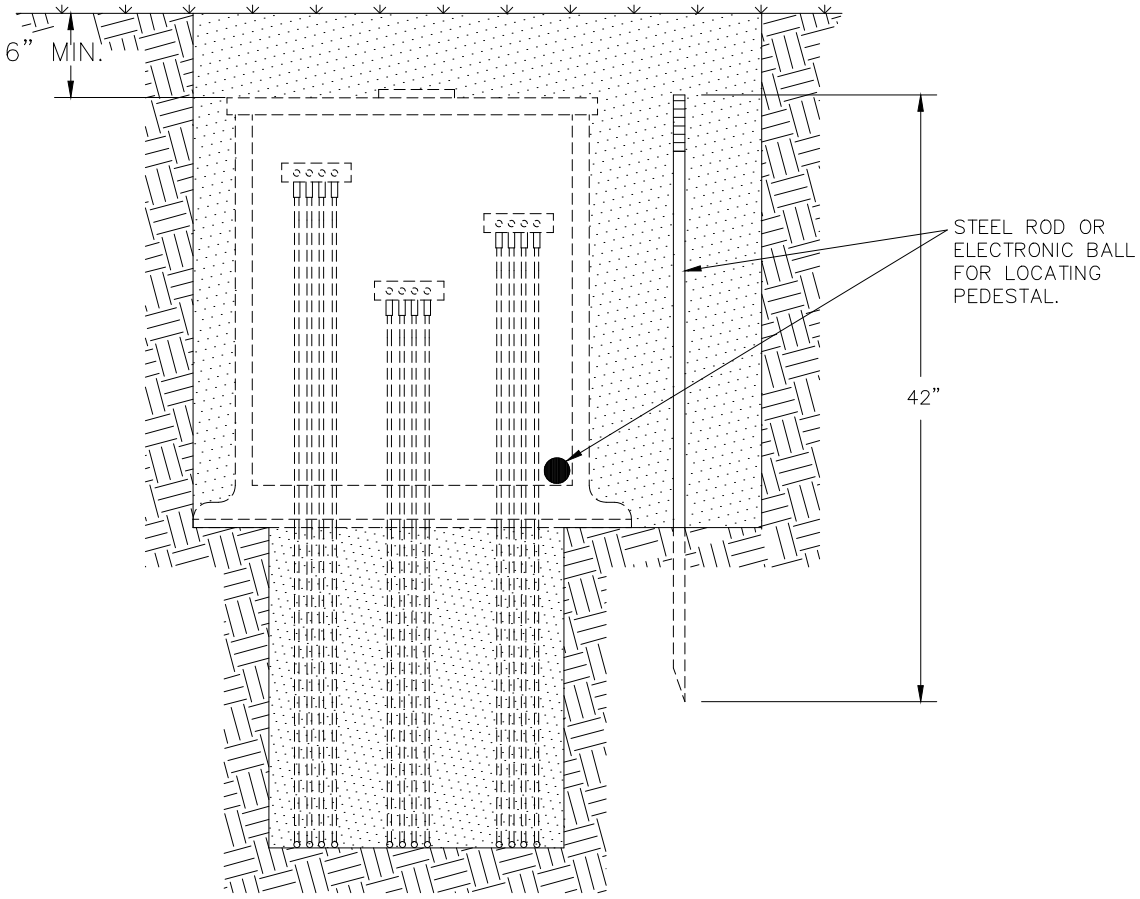
GUIDELINE ONLY

SECTIONALIZING PEDESTAL GROUNDING

Sept. – 18

FDEC

UX5

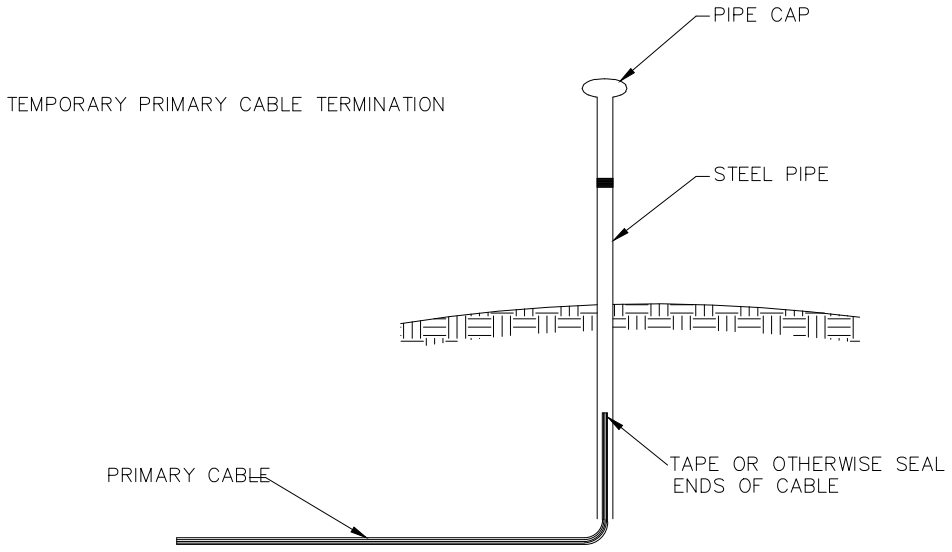


NOTE:

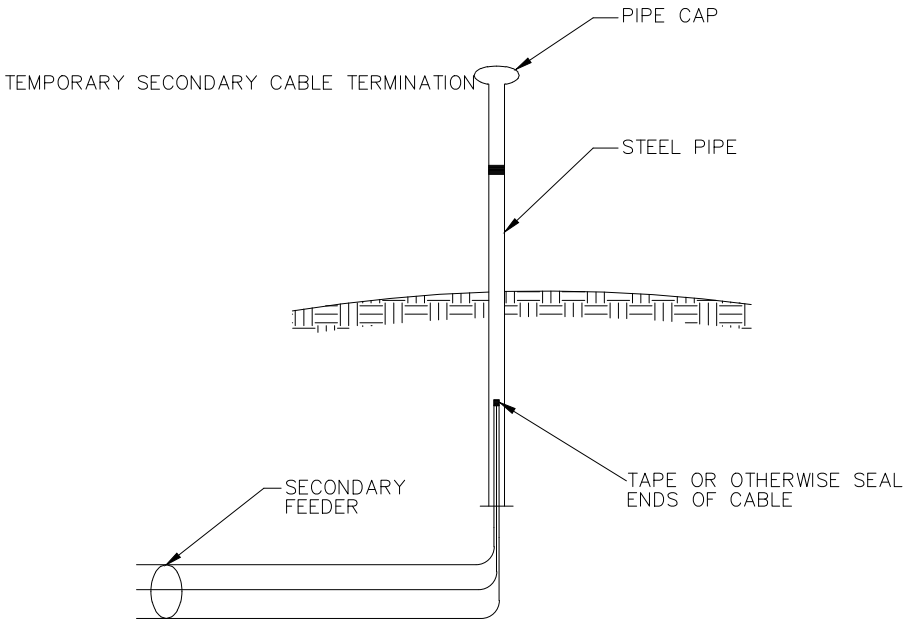
SEE DRAWING UK6

GUIDELINE ONLY

LOCATION METHODS FOR BELOW GRADE ENCLOSURE		
Sept. – 18		UX7
FDEC		

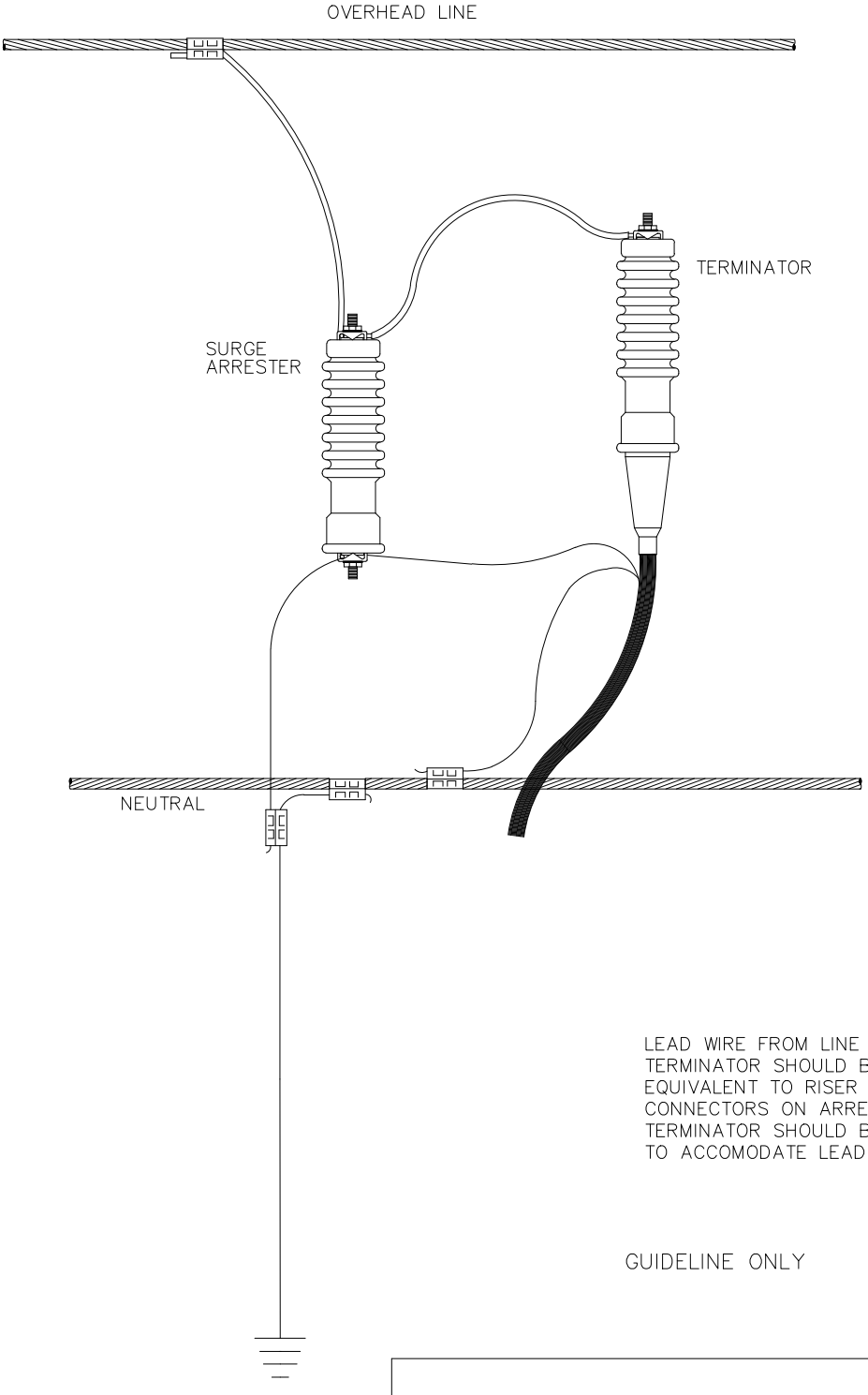


OR



GUIDELINE ONLY

TEMPORARY PRIMARY OR SECONDARY SECONDARY CABLE TERMINATION FOR FUTURE USE		
Sept. – 18		
FDEC		UX8



LEAD WIRE FROM LINE TO ARRESTER TO TERMINATOR SHOULD BE OF A SIZE EQUIVALENT TO RISER CONDUCTOR. CONNECTORS ON ARRESTER AND TERMINATOR SHOULD BE SPECIFIED TO ACCOMODATE LEAD WIRE.

GUIDELINE ONLY

CONNECTION OF TERMINATOR / ARRESTER TO OVERHEAD LINE

Sept. – 18		
FDEC		UX11